Hydromechanical Spring Clamping Systems I Series ZSF/ZDF

- mechanical clamping - hydraulic releasing
- high operational safety
- leak-proof and robust
- economical clamping solution

General

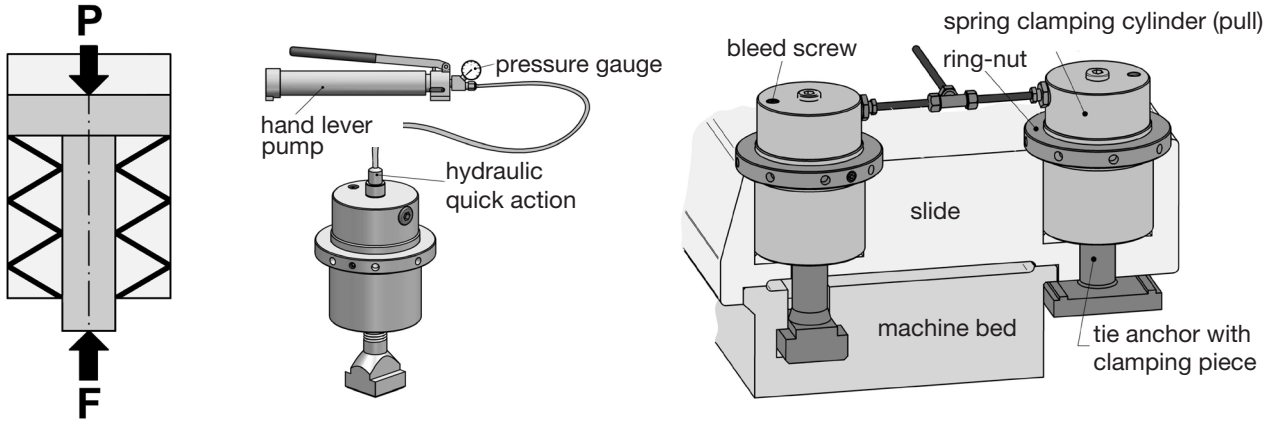
Hydromechanical spring clamping systems work through interaction of mechanical and hydraulic systems. The clamping force is applied mechanically through a pre-loaded disk spring packet.
The two types are provided as spring clamping or spring pressure cylinders. The hydraulic pressure is only required for the release stroke during which the tie rod or thrust pin is lifted. This system guarantees the greatest reliability because the clamping force is maintained fully independent of the oil pressure or leak-losses. With the hydraulic unit's short operating times, this system is also cost-effective. The spring clamping cylinders of the ZSF and ZDF series provide sturdy and reliable clamping elements that can be used wherever sliding and movable machine parts need to be clamped or locked temporarily. Other applications are fixture construction and workpiece or tool clamping.

Operational principle

The thrust or draw piston is pressurised reciprocally by the disk spring packet or hydraulic pressure. The spring packet is compressed with increasing oil pressure; the spring force increases. Under 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. The setting pressure is required only for precise force adjustment during initial installation. During the actual operating cycle, the cylinders are either pressureless or at release pressure. The corresponding pressure values can be seen in the spreadsheet.
In ZSF series spring clamping cylinders, a mandrel or a tie rod is threaded down and secured in the draw piston's thread 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 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 is free from play; fasten thrust piston with screws or secure the ring guide nut on the clamping cylinder
- release 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 pressure gauge provides a cost effective alternative (see fig. at left).