

## Hydraulic Assist Lockout Tool

The hydraulic assist tool is used with the Z-5 lower choke lockout tool during the permanent lock open of the safety valves.

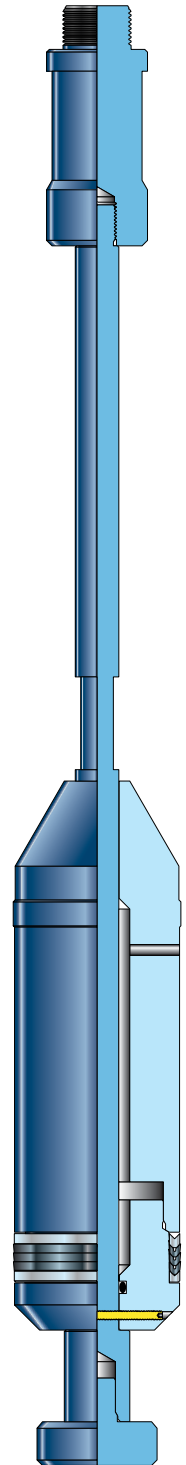
Valves locked open with this feature do not require activation of the secondary hydraulic communication system. Hydraulic assist is accomplished by applying a constant downward force with hydraulic pressure above the tool while jarring down using standard slickline methods. The hydraulic assist system overcomes the power spring force, which resists (dampens) downward jarring.

The Schlumberger hydraulic assist tool consists of a no-go sub and a blind box-hydraulic ram sub. The tool is adaptable in length by removing the blind box from the bottom of the hydraulic ram and inserting an appropriate length spacer pipe.

The complete hydraulic assist tool is run after the Z-5 lower lockout tool has been positioned in the safety valve. It is attached to the bottom of a conventional slickline tool string and lowered through the tubing until it reaches the Z-5 lockout tool in the safety valve.

The lower choke lockout mechanism enables safety valves fitted with the feature to be permanently locked open without activating the secondary communication feature. This operation is accomplished by using standard slickline methods to set a lock in the lower choke and shift the choke under the flapper.

For specific hydraulic assist tool application information, contact your local Schlumberger representative, or see the appropriate safety valve operating manual.



*Hydraulic assist lockout tool.*