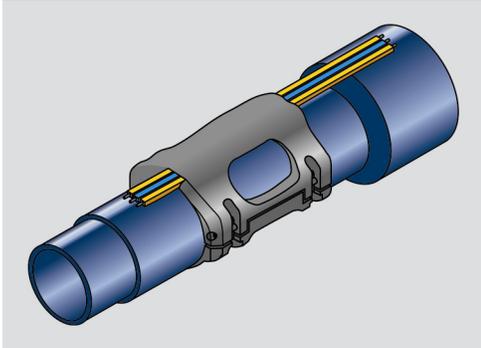


# Special Application Protectors

# Schlumberger

Typical safety valve design.



Lasalle\* protectors have been proven in the field in oil-producing regions around the world, and in all completion types. Lasalle protectors from Schlumberger are used more often than any other type of protector in subsea, deepwater and extended-reach drilling completions.

These protectors are designed to ensure that all control lines and cables are protected for the full length of the production string in these completions. Lasalle protectors extend the run life, functionality, and operability of all downhole equipment by protecting control line and cable from crushing or abrasive forces during installation of the completion string. Without this protection, damage to the control line and cable can lead to premature malfunction or failure of the completion.

## Subsurface Safety Valve Protector

The patented design protects the control line and cable while it is bypassing equipment with large diameters.

The unique flapper mechanism molds control line and cable without rig crew assistance to ensure the control line and cable are lifted

from the tubing to exit the protector parallel to the valve body. The protector securely captures the control line and cable in the protector body. The unit is designed to resist axial movement by locating a cast internal lip profile in the gap between the flow coupling and the equipment sub or groove machined in the flow coupling.

The new style protector is available for popular tubing sizes, and the range of available sizes is being extended continuously. The standard Lasalle subsurface safety valve (SSSV) control line protector is available for all tubing sizes.

## Side Pocket Mandrel Protector

In conjunction with the development of the new SSSV control line/cable protector, a new side pocket mandrel (SPM) protector has been developed. This unit incorporates the same protection capabilities as the SSSV control line/cable protector, with the exception of the flapper mechanism. The minimal step between the tubing and the mandrel body leaves insufficient room to locate the flapper in this unit.

The new style protector is available for popular tubing sizes, and the range of available sizes is being extended continuously. The standard Lasalle SPM protector is available for all tubing sizes.

## Custom Designs

Innovative completion designs have created numerous new applications for protectors. Our engineering team can customize any protector design to suit your completion requirements

## Applications

- Completions with surface-controlled subsurface safety valves
- Completions with permanent gauges
- Electrical submersible pump completions
- Intelligent completions, completions with fiber-optic cable, control line or electrical cable, and all other completion types

## Benefits

- Provides strength with reliability
- Ease of handling
- Prevents damage during dynamic motion of the production tubing
- Enables coverage of a range of flow coupling and SSSV body diameters
- Prevents axial movement
- Speeds installation and prevents cross threading
- Reduces the risk of hang-up
- Demounts easily and allows reinstallation
- Eliminates loose parts
- Molds control line and cable during installation

## Features

- All-cast construction
- Weight reducing pockets
- Optimum standoff
- Versatile
- Internal lip profile
- Pre-engaged fastener
- Maximized chamfers
- Reusable
- One-piece design
- Unique flapper mechanism