

Control line and cable protectors

SIVAM's CONTROL LINE AND CABLE PROTECTORS are designed to provide excellent protection of control lines and/or cables during running in hole. The protectors prevent the cables/control lines from twisting, crushing and also from erosion against the tubing coupling and the casing.

SIVAM uses the following guide lines when designing CONTROL LINE PROTECTORS:

- Streamlined design
- Rapid installation
- Excellent resistance against slippage of the protector on the tubing

- Excellent prevention from twisting of control line, crushing and also from erosion against the tubing coupling and the casing
- Minimum risk of getting stuck while running the tubing in the well.

SIVAM designs CONTROL LINE PROTECTORS to meet each customer's specific requirements. The size and shape of the protectors are designed according to:

- Dimensions and type of tubing
- Number and type of control lines and/or cables
- Casing Drift

SIVAM's PROTECTOR models can be grouped in four main categories:

1 - KWIK

*Single Completion Cross Coupling
"ALL CAST" Model*



3 - B-KWIK

*Dual Completion Cross Coupling
"ALL CAST" Model*



4 - M-KWIK

*Single Completion Middle Joint
"ALL CAST" Model*



2 - S-KWIK

*Single Completion Cross Coupling
"STRAP TYPE" Model*



ALSO AVAILABLE

Single Completion "UPSET" Model



Characteristics of our control line and cable protectors

CONTROL LINE AND CABLE PROTECTORS designed by SIVAM are:

Studied to have minimum overall dimensions, we designed the strap type protector which can satisfy even the smallest drift size;

The ends of the protectors, are linked using a WIDE RANGE CURVATURE and SMOOTH ANGLE to allow for an easier running in the well;

Sivam's protectors meet the NACE MR-01-75 standards;

Studied to offer the MAXIMUM RESISTANCE against sliding of the protector-tubing and slippage of the control line from the slots of the protector;

Designed to AVOID the control line and cable from twisting, crushing and also from erosion against the tubing coupling and the casing;

Built in SOFTER METAL than the casing, in order to avoid damage to the casing while running in hole. Can also be made in a range of other materials including stainless steel;

Installation of the CONTROL LINE AND CABLE PROTECTORS is made SAFE AND EASY thanks to the hook-up of the clamp-protector;

Equipped with a "CIRCLIP" to avoid that the locking screws unscrew and fall into the well;

Every component can be SUBSTITUTED or REPAIRED.

Design

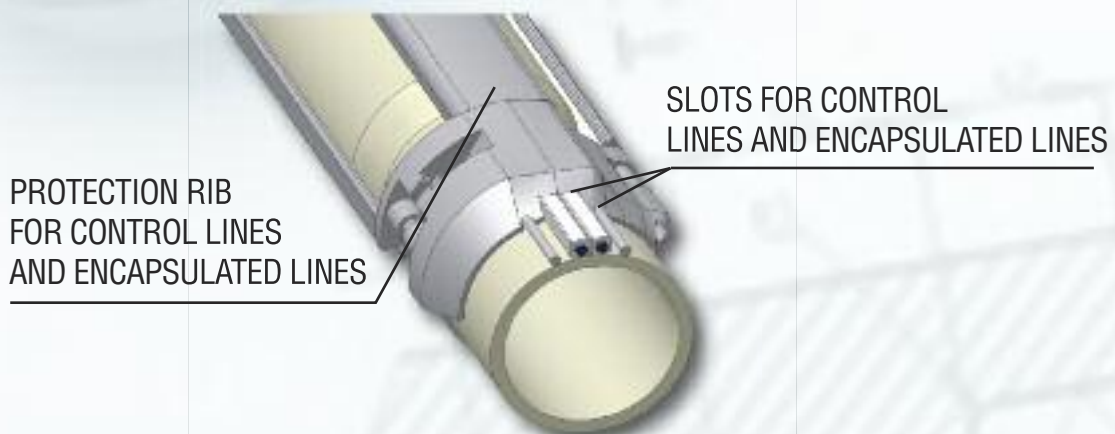
If the client's "drift needs" are not limited than SIVAM can offer ALL CAST CONTROL LINE AND CABLE PROTECTORS, with protector body and clamps, both manufactured using "LOST WAX" or "SAND" casting:

If the diameter of the drift is limited than a strap type solution can be used, this type of CONTROL LINE AND CABLE PROTECTOR is made from a casted body and plate clamps which thickness ranges from 2-2.5mm:



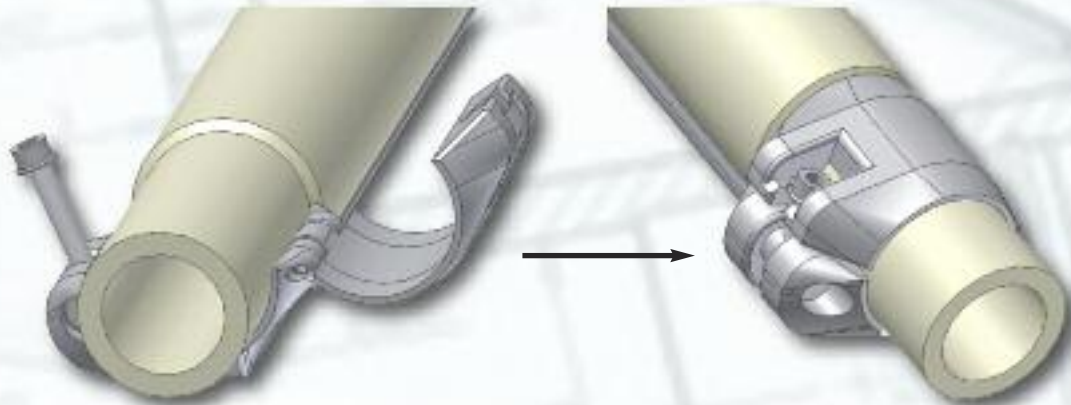
Protection

To protect the control line and cables while running in, they are locked in the slots, as can be seen in the figure below, between the body of the protector and the tubing.



Installation

Installation of the CONTROL LINE AND CABLE PROTECTORS is made easy thanks to the hookup of the clamp on the protector as can be seen below:



Installation is made easier thanks to the correct sizing of the lock screws

Test

Visual and functional inspections are carried out on the entire production.

Load tests are performed upon request.

The dimensional test is an overall check that all components conform to the design of the protector.

The correct assembly and the overall dimensions (which must be less than the drift) are checked.

The functional and load tests verify that the protector assembly - control line - tubing can support the stress of the running in the well.

Sivam carries out sliding tests on the protectors mounted on the tubing and slippage tests on the control line and the tubing.

Sliding test

After having assembled the protector onto the tubing, using a hydraulic press, an axial load is applied allowing the protector to slide on the tubing.

This is incremented until the protector slides. Acceptable test values can be found in attached test reports.

Control line and cable slippage tests

After having assembled the protector onto the control line and tubing, each control line is pulled and the slippage value or strength needed in order for the control to slide against the rest of the system is measured.

Every order is supplied with TEST REPORTS and TECH UNITS containing test results, drawings and lock screw values along with other useful information.

Sizes

Some of our most requested Protectors can be found in the chart below.

KWIK TYPES

Size	Protector Code	Min Drift	Cables
2-3/8"	SA2301	5-1/2" 20# (118,2 mm)	1 x 1,23" (31,2 mm)
2-7/8"	SSU2701 SA2704	6" 26# (127,2 mm) 6-5/8" 36,7# (136,6 mm)	4 x 1/4" 1 x 1/4" + 1 x 3/8" + 1 x 1,295" (32,9mm)
3-1/2"	SA3503 SA3505 SA3506	7" 41# (144,7 mm) 6-5/8" 33# (139,7mm) 6-5/8" 35# (138,4 mm)	1 x 1/4" + 1 x 3/4" 2 x 11x11 + 2 x 1/4" 1 x 1/4" + 2 x 11x11 + 1 x 3/8"
4-1/2"	SA4501-3	7-5/8" 26,4# (173,8mm)	1 R.C. 36,5mm + 1 x 3/8" + 1 x 1/4"
5-1/2"	SA5502	8-5/8" 36# (195,6 mm)	2 x 1/4" + 1 x 3/8" + 1 R.C. 1,315"
7"	SA7002	10-3/4" 60,7# (237,6mm)	2 x 3/8" + 1 R.C. 1,50"
4-1/2" x 2-3/8"	DA452301	9-5/8" 70,3# (203,2mm)	1 x 1/4" + 2 x 11x11 + 1 R.C. 1,34"



We will design and build protectors for:
ANY SIZE of tubing or coil tubing
ANY GEOMETRY of casing/tubing
ANY COMBINATION of power or injection or control line