

Synflex® Subsea Blow-Out Prevention (BOP) Pod Hose Bundles and Hot Lines



Leading the Industry in Deepwater Drilling



Applications

- BOP Pod Hose Bundle for subsea drilling
- Intervention Control Bundles
- Methanol Injection
- Other Injection and Controls

Fastest and Safest Pilot Line Available. The new 3ULV-03 (ultra low volumetric) pilot line is now available and greatly increases the speed of hydraulic signals to the BOP pod. A faster signal is a safer signal and enables the operator to quickly communicate to the BOP stack. The hose is over 40% faster than our previous “fastest” hose.

Long Life and Easy to Use. The new pilot line can bring longer life to control bundles and enables hydraulic control systems to reach extended depths well within signal time guidelines. The new hose is easy to transition to as it uses the same fittings and tooling as the popular 37LV-03 product. Drillers can upgrade and not change the bundle configuration, clamps, or tooling.

Long Continuous Lengths. Eaton® makes Synflex bundles and hot lines over 10,000 feet long. Our reinforcing processes enable long lengths and reduced splicing. The Eaton cabling equipment is a unique piece that is designed to create low-torque planetary cabled bundles. This means they do not jerk or twist when pressurized. With little or no internal tension, they remain in place and last longer in service. Call Eaton Corp. for the best quality hoses in the best quality bundle.

Construction

- **Cover.** Bundles are typically jacketed in abrasion resistant urethane. Other materials are also used and include; PVC, Polyethylene, Nylon.
- **Reinforcement.** Eaton’s Synflex Subsea hoses use aramid fiber. We exclusively use the DuPont Kevlar® brand.
- **Core.** Seamless extrusion of Nylon 11.

Specifications

- **Working Pressure.** BOP Pod hoses are available in 3,000 psi and 5,000 psi ratings. Other control bundles are available in pressures up to 15,000 psi. There is a wide range of pressures available. (Contact Eaton for the additional pressure ranges that are offered.)
- **API 17E.** Most of the hoses produced by Eaton for subsea production applications are fully API 17E tested and compliant.



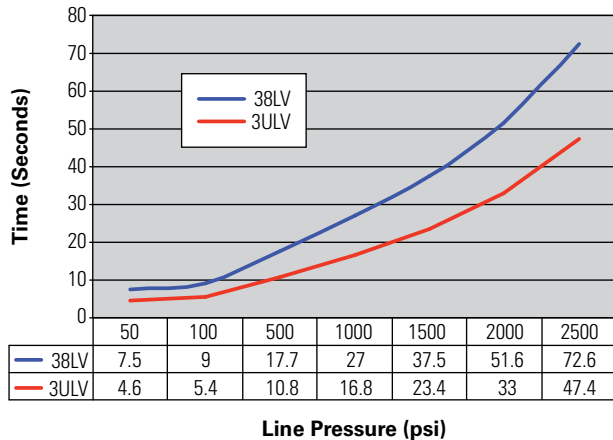
Powering Business Worldwide



BOP Pod Hose Control Bundles

From the beginning, Synflex has been synonymous with quality and innovation. Particularly when it comes to solving the problems that face industry leaders, Eaton's engineering and manufacturing expertise are well known to be dependable.

Pressure vs. Response Time (10,500 foot hose length)



Deeper Water?

Fastest Response Time—Hydraulic Hoses

With the well known Synflex name, Eaton has once again raised the bar in subsea performance. The new 3ULV-03 hose is a dramatic improvement in design for the fastest response time possible. This ultra-fast hose will enable hydraulic systems to perform in ever deeper waters and increases the safety factor.

Longer Life and Longer Lengths

- With average bursts over 25,000 psi, this new 3ULV-03 pilot line has more Kevlar than other hoses.
- Designed to extend the life of BOP control bundles.

Other advantages include:

- 40% faster response time than the already fast 38LV. Faster and safer. See chart and data.
- Same fittings and tooling as the popular 37LV-03. A drop-in replacement.
- When used in 3000 psi systems, greatly extends the life of the bundle without increasing the bundle OD or reducing the hose count.
- Rated to 5000 psi with an average burst over 25,000 psi!

Product Specifications – BOP Control Bundle Hoses

Part Number	Nominal I.D.		Max. Working Pressure at Ambient Temp.		Minimum Burst Pressure		Weight		Fitting Part Number
	mm	in	bar	psi	bar	psi	100 m	100 ft	
37LV-03	4.8	3/16	207	3,000	827	12,000	4.44	3.0	390E-03544-C05
3ULV-03	4.8	3/16	345	5,000	1,379	20,000	4.45	3.0	390E-03544-C05
37LV-16	25.4	1	207	3,000	827	12,000	58.16	39.3	390E-16556-C05
38LV-16	25.4	1	345	5,000	1,379	20,000	58.76	39.7	390E-16556-C05



BOP Hot Line Hoses with Overlay

In keeping with our innovative approach to problem solving, Eaton now offers Synflex hot line hoses with several changes designed to extend hose life and increase up-time for your rig.



Hot Lines Challenge

Hot lines can see an incredible amount of longitudinal force exerted on them, especially in rough water and strong currents.

It is not uncommon for these hoses to be under so much strain that they “sing” with vibrations.

The stress translates into strain as the hose is stretched and may flatten out on the reel.

An Eaton Solution

The new 38LV-16PLS and 3395-08PLS Overlay Hot Lines incorporate two changes to combat hose damage and lengthen the life of the hose in application.

First, the overlay material has been hardened to better resist flattening. Acting as an external skeleton while maintaining overall hose flexibility, the harder material will better support the hose as it is stretched across the reel.

Second, an embedded Kevlar strength member is added to the overlay. The Kevlar package has break strength of 4000 lbs.

This added strength member is 100% dedicated to longitudinally supporting the hose. This leaves the Kevlar in the pressure hose free to do its job, hold pressure.

This dramatically increases the rated tensile load of the new Synflex Hot Line Hose.

Product Specifications – Hot Line Hose with Overlay



Part Number	Nominal I.D.		Maximum O.D.		Max. Working Pressure at Ambient Temp.		Minimum Burst Pressure		Weight		Fitting Part Number	Rated Tensile Load	
	mm	in	mm	in	bar	psi	bar	psi	100 m	100 ft		Kg	Lb
38LV-16OVL	25.4	1	44.2	1.74	345	5,000	1,379	20,000	105.82	71.50	390E-16556-C05	295	650
38LV-16PLS	25.4	1	45.2	1.78	345	5,000	1,379	20,000	107.74	72.80	390E-16556-C05	1134	2500+
3395-08OVL	12.70	1/2	29.2	1.15	345	5,000	1,379	20,000	19.68	13.30	90A08-085400	295	650
3395-08PLS	12.70	1/2	29.7	1.17	345	5,000	1,379	20,000	19.98	13.50	90A08-085400	1134	2500+

Spooling Recommendations for Eaton's Synflex BOP Bundles

Caution:

BOP Hose Bundles may be seriously damaged by introducing hose ovality (flattening) of the initial wraps onto the BOP Hose reel. Ovality or crushing damage is caused by excessive tension on hose bundles with no fluid or internal pressure during the installation of the bundle on the BOP hose reel.

Initial Installation:

To eliminate ovality of the Hose during installation it is recommended to first fill the pilot and center conductor hoses with BOP Control fluid and pressurize each hose to 500-1000 psi. After pressurizing, begin the installation of the bundle onto the BOP Hose reel. It is also recommended to monitor the installation by using the following steps:

- Uniformly traverse the hose bundle across the inner drum of the Bop Hose reel.
- Maintain a level wind to prevent hose "crossovers" during the spooling process.

If the hose or bundle is not filled with fluid, the winding tension MUST be minimized to avoid flattening of the inner wraps and potential subsequent damage to the hose or reel when the hose/bundle is pressurized on the reel.

- For unfilled bundles, using the deployment reel to pull the bundle off the delivery spool is HIGHLY discouraged and is known to cause ovality and contribute to premature failures.
- Tension in the bundle needs to be reduced and controlled by using either catenary pullers or a means of driving the delivery spool separate from the deployment reel.

BOP Hose Reel Design Recommendations.

- Minimize the number of hose layers on the reel to ten (10) or less.
- Use largest inner drum diameter possible, and always above the stated Bundle Minimum Bend Radius (MBR) – indicated on marking text of bundle.

Instructions for Use.

In addition to the installation recommendations above:

- Crushing of the inner wraps may be caused by excessive reel tension when reeling up subsequent layers of the Hose wraps when pulling the BOP. The reel tension should be regulated to the minimum tension required to reel up the Hose.

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