

# PTFE LINED HOSE

for automotive and general purpose applications  
**from Aflex Hose**



SMOOTHBORE HOSE

HYPERLINE SB HOSE

HYPERLINE FX HOSE

HYPERLINE V HOSE  
(VISIFLON)

# PTFE – THE OPTIMUM CHOICE FOR HOSE LININGS

PTFE, or Polytetrafluoroethylene, comprises long-chain molecules of carbon atoms, each linked to two fluorine atoms.

The fluorine atoms provide a helical spiral which surrounds the carbon chain and protects it.

It is this structure which creates the unique properties for which PTFE is well-known.

## EXCELLENT CHEMICAL RESISTANCE

PTFE is renowned as the most chemically resistant material known. Only a very few, very unusual substances and conditions can affect it, like fluorine gas at high temperature and pressure and liquid, boiling sodium metal.

PTFE lined hoses can therefore be used for a wider variety of chemicals than any other hose type, making it the ideal choice for very corrosive chemical applications and multi-product applications.

## NON-STICK SURFACE

The use of PTFE as a surface for cookware products has demonstrated to the world how easily cleanable PTFE surfaces are.

This means that PTFE lined hoses can be purged 100% clean more quickly, easily and reliably than any other type of hose.

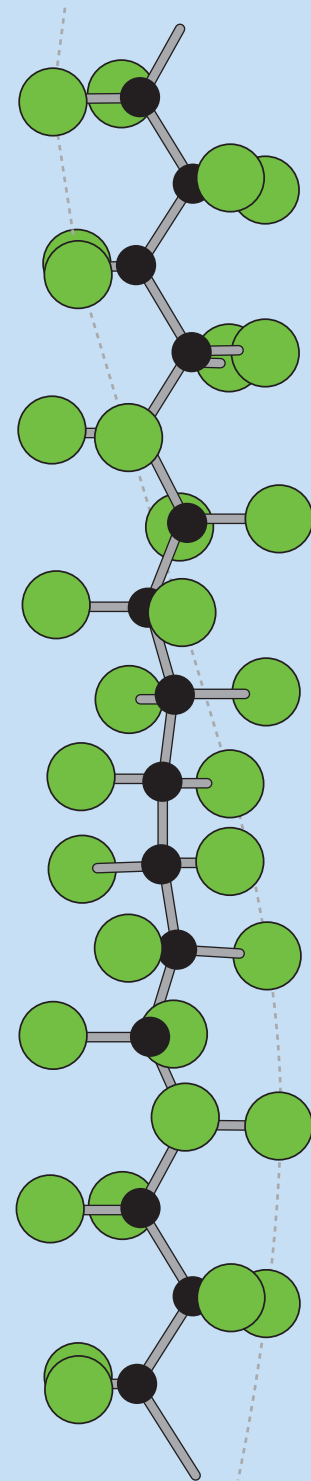
## EXCELLENT TEMPERATURE RANGE

The cookware application also demonstrates another of PTFE's many attributes – temperature resistance. PTFE itself can be used as a hose liner at temperatures from  $-150^{\circ}\text{C}$  up to  $+260^{\circ}\text{C}$ , dependent upon the hose design and the application conditions.

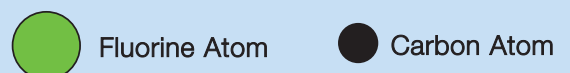
This is the widest temperature range of any rubber or plastic hose lining material.

## HOSE DESIGN

The only issue with PTFE as a hose lining material is the best way it can be integrated in to the hose design. This is where Aflex Hose have a proven record of success over the last 30 years.



Section from a PTFE Molecule, 16 Angstrom Units long



# INTRODUCTION TO AFLEX HOSE



Aflex Hose was established as a PTFE hose manufacturing company in 1973 and, since then, has led the world in inventing and developing all the major innovations in PTFE hose design for use in process fluids transfer applications.

Aflex PTFE hose has found use in a number of Automotive applications, as well as being used in refrigerant systems, also for steam, printing inks, hot oils, paints and a host of other applications where the exceptional properties of PTFE have made it the best choice.



Technically trained Aflex Hose sales staff are available to respond quickly and effectively to every kind of enquiry, and to advise the optimum hose solution for any application.

## CUSTOM HOSES FOR CRITICAL ENVIRONMENTS

Aflex Hose takes particular pride in our ability to specify, design and custom build hoses and hose assemblies to Customer's non-standard requirements.

From small bore hose for use in under-bonnet applications requiring a high temperature resistant silicone rubber cover, to hoses used in racing cars which require a lightweight poly aramid fibre braid, whatever the customer requires, Aflex Hose can develop a specific solution.

## TOTAL MANUFACTURE

The primary reason for our success is that Aflex is the only PTFE hose company in the world to carry out all the hose manufacturing operations ourselves, from raw materials to finished products, at our plants in Yorkshire (UK) and Pennsylvania (USA).

- PTFE powder is extruded into tube and convoluted if required.
- Stainless steel or poly aramid fibre is wound and braided onto the tube.
- Plastic and rubber extruders are used to apply external covers when required.
- End fittings are machined from bar stock on state of the art CNC lathes.
- And, finally, the hoses are assembled to individual customer requirements, tested and dispatched to end users.

Because of this, Aflex is able to achieve unbeatable levels of build quality, design excellence and economy of scale, which are unmatched by our competitors.

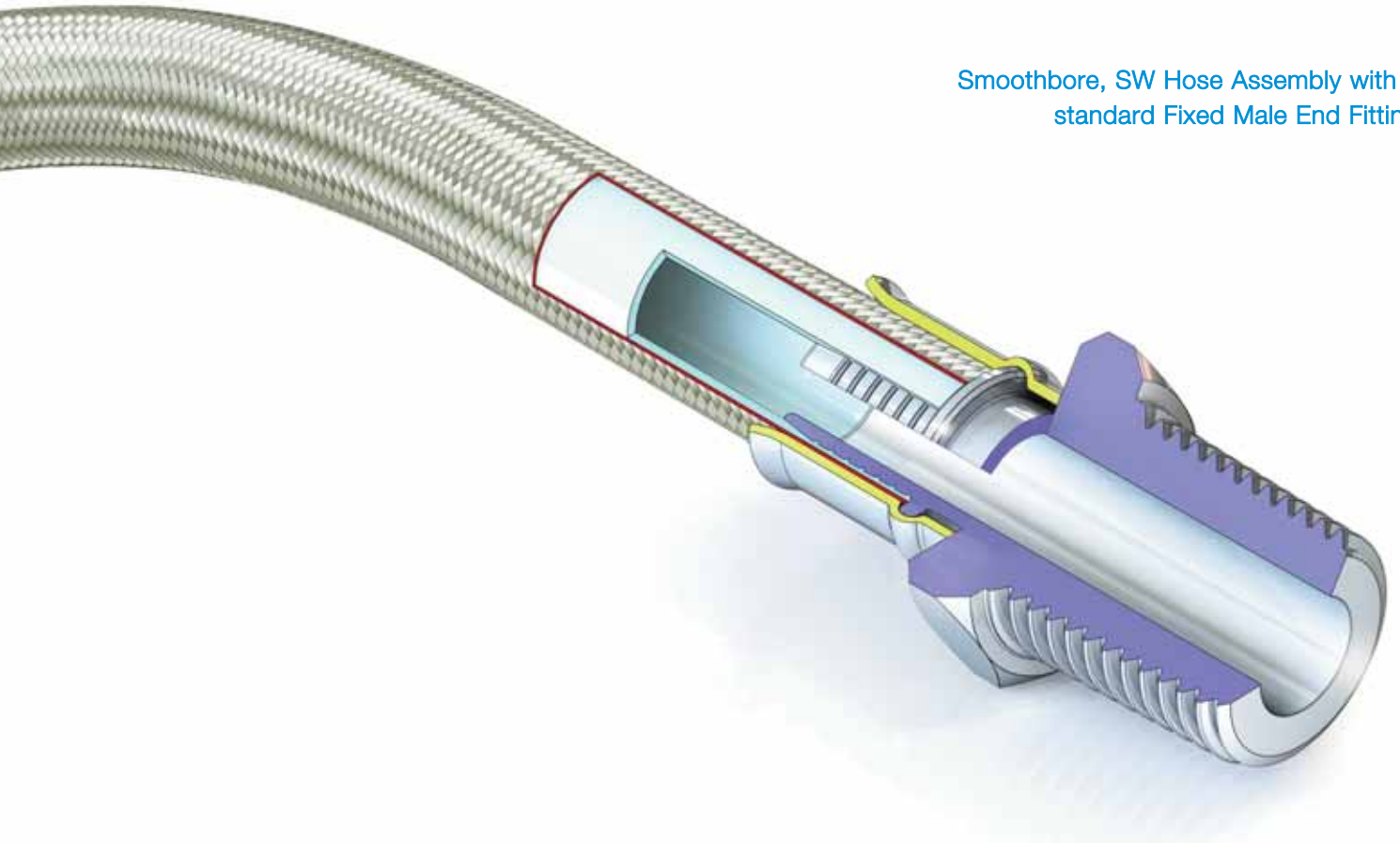
## PTFE PROCESS FLUID HOSE FOR PHARMA, BIOTECH & CHEMICAL APPLICATIONS

Aflex Hose also manufactures another range of PTFE hose products for use in Process Fluid transfer applications. Corroflon, Bioflex, Pharmaline and Pharmalex are described in another brochure and information is also available on our website.

# SMOOTHBORE HOSE, STANDARD and HEAVY WALL (SW and HW)

Smoothbore hose was the original PTFE hose product design, first introduced in 1955 for automotive and military applications. It includes a straight PTFE tube, with a standard or thick PTFE wall thickness, and an external braid of stainless steel wire. PTFE exhibits unique properties including excellent chemical resistance, very high temperature resistance (up to 260°C, 500°F) and a frictionless, easy clean surface. These properties determine the types of application areas in which PTFE hose can provide the best possible hose product for the job.

Smoothbore PTFE hose is consequently used in a very wide variety of flexible hose applications worldwide, with particular usage in automotive and motorsport applications, refrigeration systems, high pressure steam, hot oil, semiconductor applications, chemicals, paints and inks transfer applications and many more.



Smoothbore, SW Hose Assembly with a standard Fixed Male End Fitting

## SIZE RANGE

- 1/8" (0.125", 3.2mm actual bore) up to 1" (1.000", 25.4mm actual bore).

## HOSE DESIGN OPTIONS

- Natural or anti-static (black) PTFE hose liner, Standard Wall, SW or Heavy Wall, HW. Single Stainless Steel Wire Braid, SB or Double Braid, DB if required.
- PVC, Nylon, Hytrel or Sarlink plastic covered, and EPDM or Silicone rubber covered.
- PTFE Liner to 'HPG' (High Pressure Gas grade) for very high specification applications.

## END FITTING OPTIONS

- BSPT and NPT Fixed Males in MS or SS, BSP Cone Seat Females in MS or SS, Elbows, Metric & JIC fittings and many more.

## SMOOTHBORE HOSE, MEDIUM WALL (MW), also called "HYPERLINE SB"

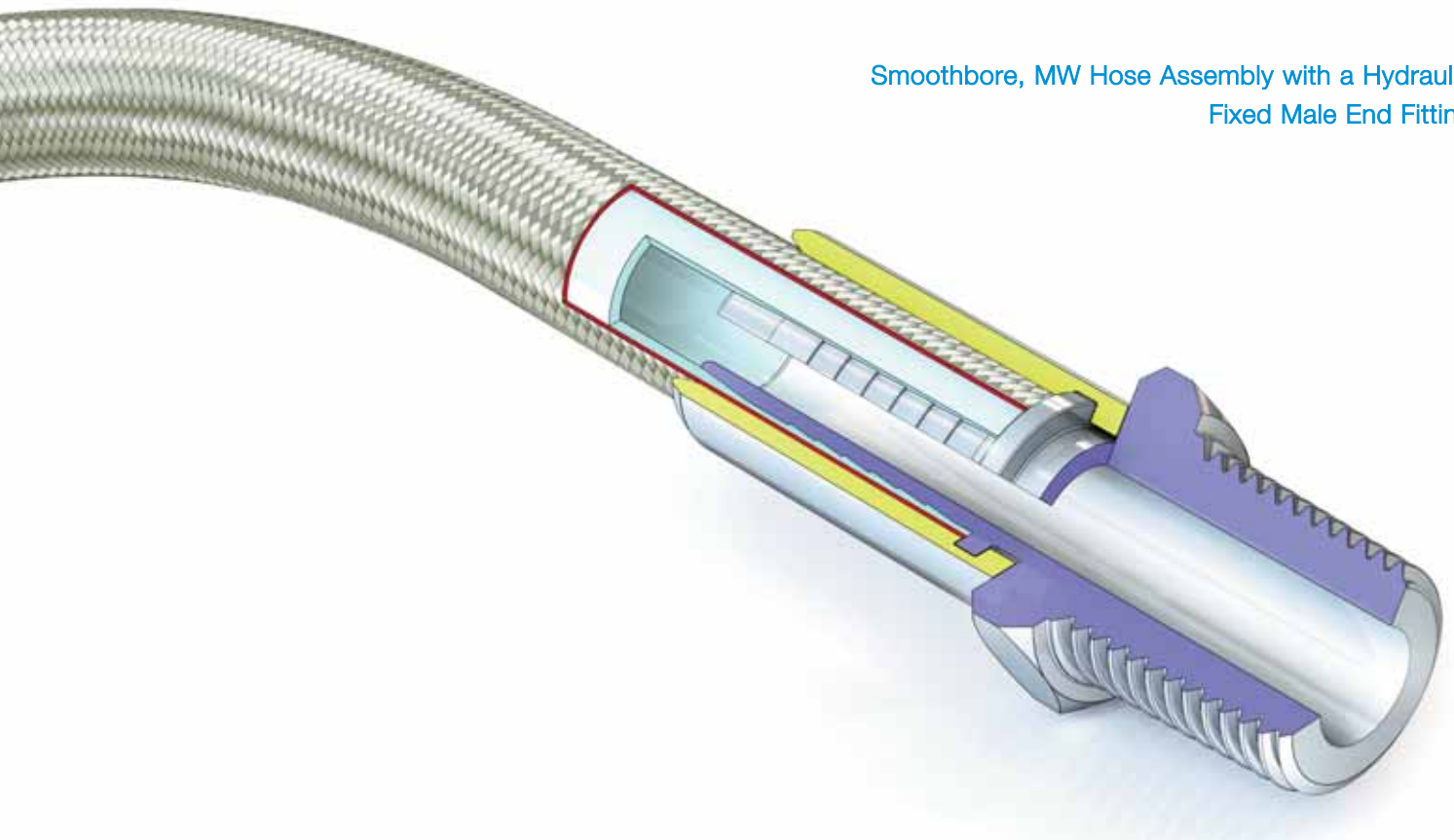
The SW and HW Smoothbore hose range as described opposite has hose bore sizes which are equal to the nominal size - so, a 1/2", SW Smoothbore hose has an actual bore size of 0.500" (12.7mm).

The Smoothbore MW hose size range is the same, except that it has hose bore sizes which are slightly larger than the nominal size - so, a 1/2" MW hose has an actual bore size of 0.536" (13.6mm).

The reason for this is to make it possible for the hose to be fitted with standard, "off the shelf" hydraulic fittings, as used on rubber hose, which are sometimes more available and cheaper than the fittings used on Smoothbore SW and HW hose.

Some of the Smoothbore MW hose sizes are referred to as "dash" sizes - e.g. 1/2" MW hose can also be referred to as "dash 10, or -10 hose".

The properties, and application areas for Smoothbore, MW hose are the same as those for Smoothbore, SW and HW hose.



Smoothbore, MW Hose Assembly with a Hydraulic Fixed Male End Fitting

### SIZE RANGE

- 1/8" (0.138", 3.5mm actual bore) up to 1" (1.040", 26.4mm actual bore).

### HOSE DESIGN OPTIONS

- Natural or anti-static (black) PTFE hose liner, medium wall. Single Stainless Steel Wire Braid or Double Braid if required.
- PVC, Nylon, Hytrel or Sarlink plastic covered, and EPDM or Silicone rubber covered - to special order.
- PTFE Liner to 'HPG' (High Pressure Gas grade) for very high specification applications.

### END FITTING OPTIONS

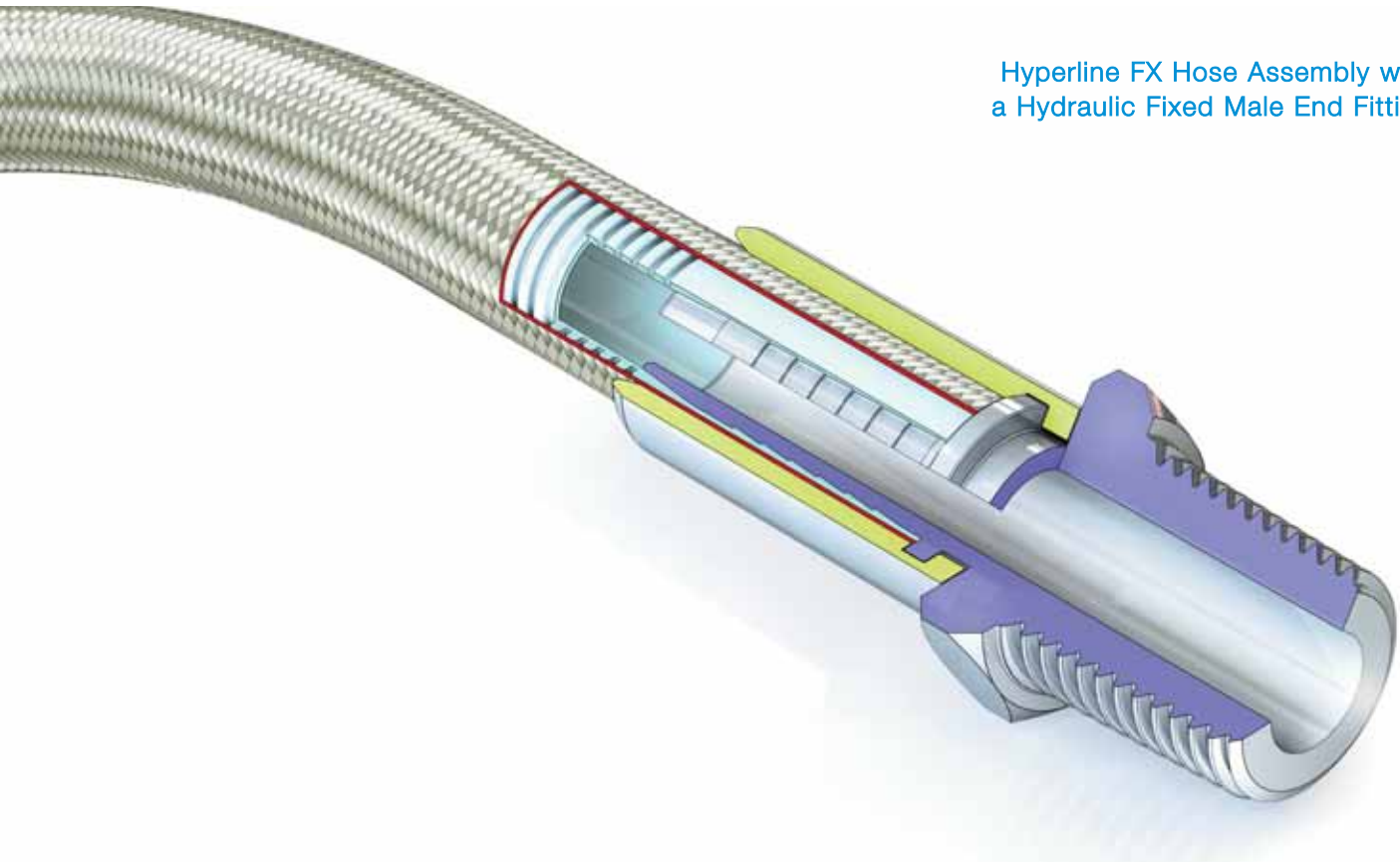
- BSPT and NPT Fixed Males in MS or SS, BSP Cone Seat Females in MS or SS, Elbows, Metric & JIC fittings and many more.

# HYPERLINE FX HOSE

There is a fundamental problem with larger sizes of the standard, smoothbore PTFE hose products - as the hose size increases above  $\frac{3}{8}$ " , so smoothbore PTFE lined hose become significantly less flexible, and more easily kinked.

Hyperline FX is a new and revolutionary solution to this problem, providing a unique hose liner design which is flexible in the larger bore sizes, yet which retains a smooth bore.

The advantage of a smooth bore as compared with a convoluted bore (see Visiflon, next page) is that it is easy clean, and does not create "turbulent flow", which drastically reduces fluid flow rates.



Hyperline FX Hose Assembly with a Hydraulic Fixed Male End Fitting

Hyperline FX includes a PTFE liner which is smooth bore on the inside, but heavily convoluted on the outside. The liner is usually overbraided with Stainless Steel wire to provide reinforcement against pressure. The actual bore sizes of Hyperline FX hose are sized to fit hydraulic fittings, slightly larger than the nominal size, same as the Smoothbore MW size range.

Hyperline FX is used in the same applications as Smoothbore, but has a wider range of applications because it is much more flexible and kinkproof in sizes above  $\frac{3}{8}$ " (9.5mm).

## SIZE RANGE

- $\frac{1}{4}$ " (0.270", 6.8mm actual bore) to 1" (1.040", 26.4mm actual bore).

## HOSE DESIGN OPTIONS

- Natural or anti-static (black) PTFE hose liner.
- Single Stainless Steel wire braid or Aramid Fibre braid.
- PVC, Nylon, Hytrel or Sarlink plastic covered (on Stainless Steel braid only) - to special order.

## END FITTING OPTIONS

- BSPT and NPT Fixed Males in MS or SS, BSP Cone Seat Females in MS or SS, Elbows, Metric & JIC fittings and many more.

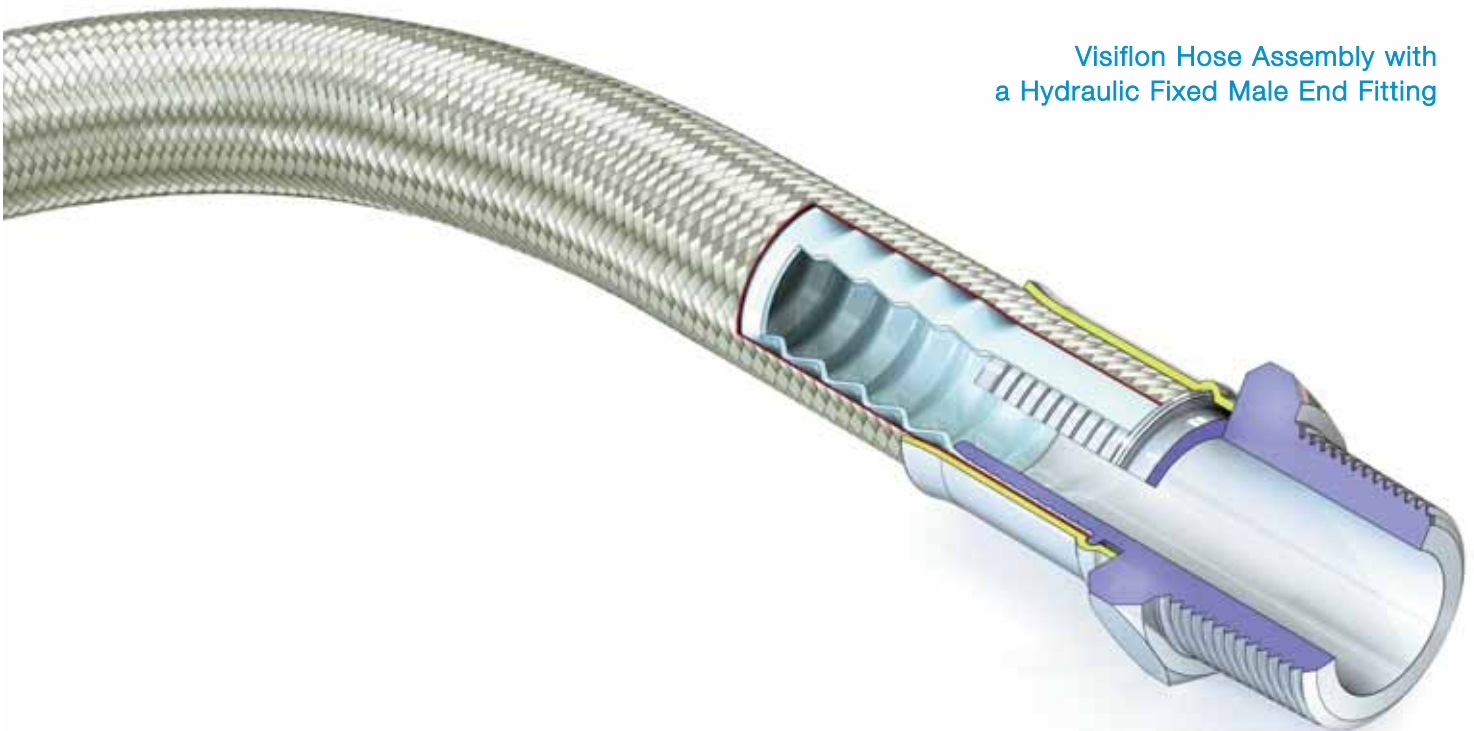
## VISIFLON HOSE, also called "HYPERLINE V"



Visiflon Hose includes a helically convoluted PTFE liner tube.

The tube is fully convoluted inside and out, unlike Hyperline FX tube, which is only convoluted on the outer surface.

This convoluted design makes the liner very flexible and very kink resistant across the size range. Problems are created, however, by the inner convolutions, which can entrap material and which generate "turbulent flow" in the fluid passing through leading to reduced flow rates.



Visiflon Hose Assembly with a Hydraulic Fixed Male End Fitting

Visiflon Hose is used for the same types of applications as Smoothbore hose, but it is much more flexible and kinkproof in sizes above  $\frac{3}{8}$ ", and is used where high flow rates and internal cleanability are not required.

To assemble end fittings to Visiflon Hose, it is necessary to use an opening tool to flatten out the convolutions at the ends, which makes it possible to fit either standard or hydraulic end fittings, as required.

### SIZE RANGE

- $\frac{3}{8}$ " (9.5mm) up to 2" (51mm).

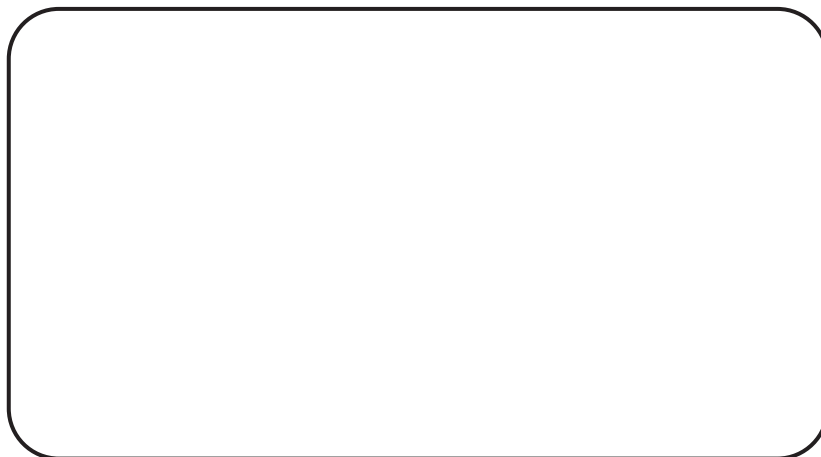
### HOSE DESIGN OPTIONS

- Natural or anti-static (black) PTFE, Stainless Steel Wire Braid.
- Polymer braid or PVC, Nylon, Hytrel or Sarlink plastic covered.

### END FITTING OPTIONS

- BSPT and NPT Fixed Males in MS or SS, BSP Cone Seat Females in MS or SS, Elbows, Metric & JIC fittings and many more.

FOR CERTIFICATION, CONDITIONS OF SALE, HOSE CONFIGURATIONS, ANTISTATIC LINER REQUIREMENT and other information, please contact Aflex Hose, or refer to the relevant section in the Aflex Hose website [www.aflex-hose.com](http://www.aflex-hose.com)



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