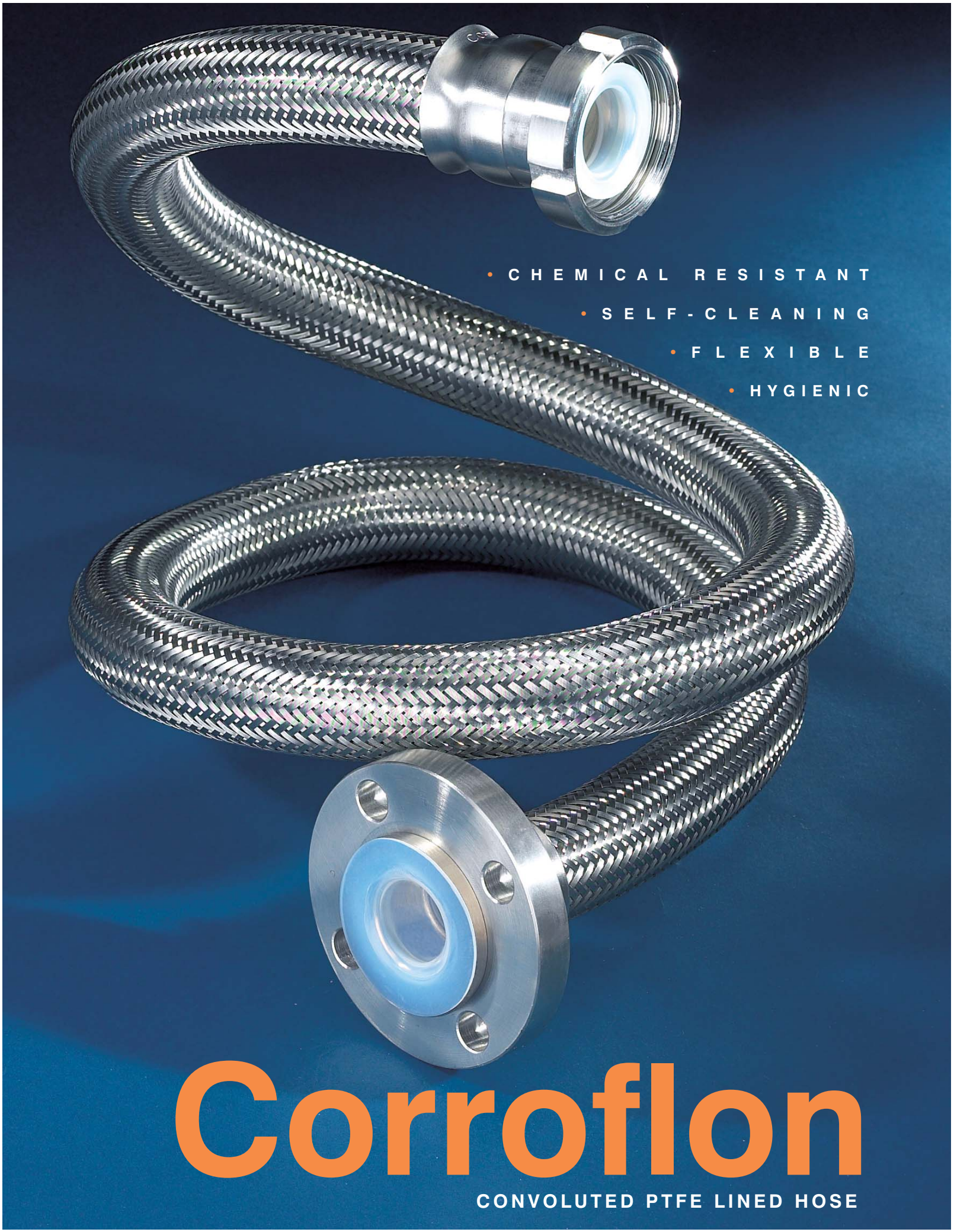
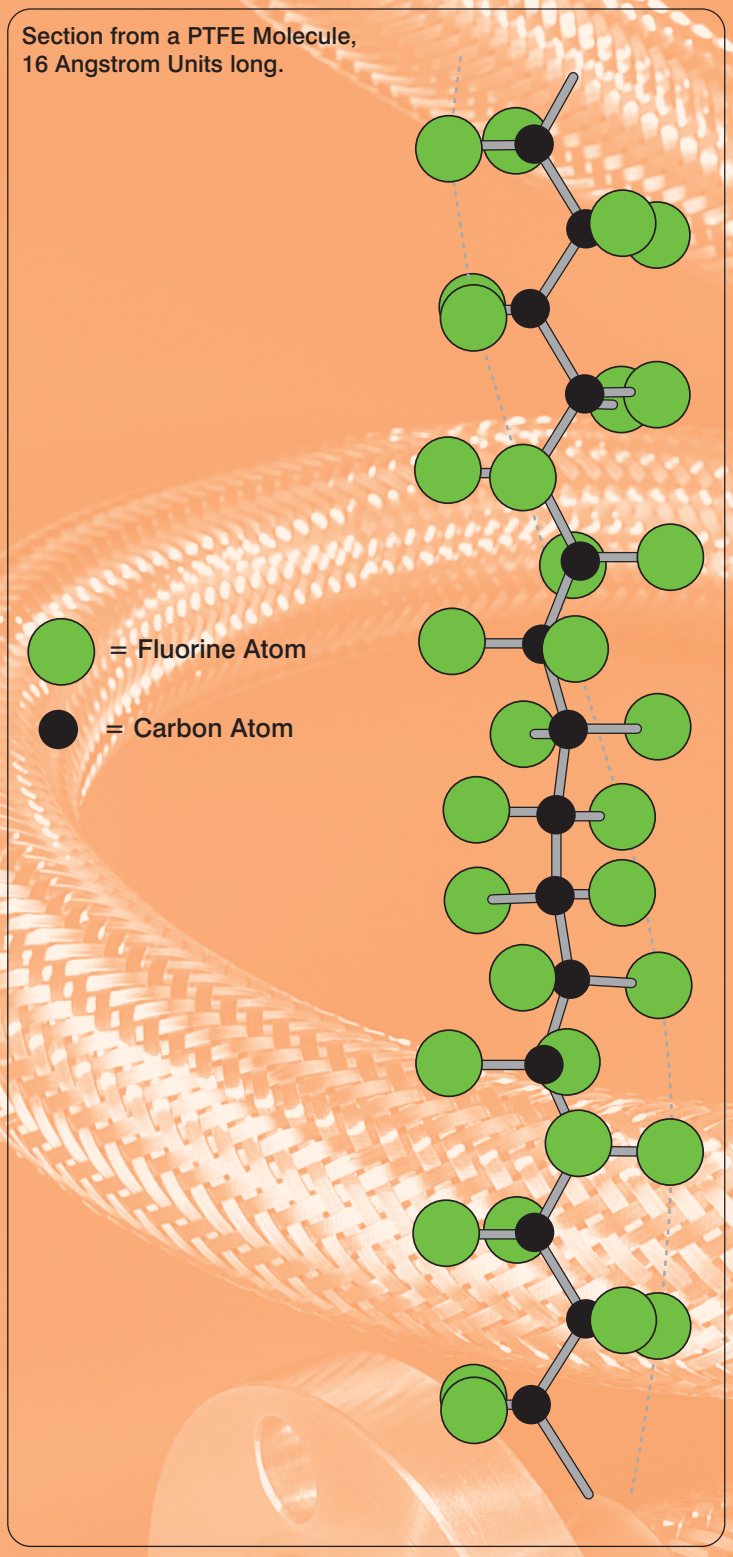

• CHEMICAL RESISTANT
• SELF-CLEANING
• FLEXIBLE
• HYGIENIC
Corroflon
CONVOLUTED PTFE LINED HOSE

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 -240˚F up to +500˚F, 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.

Contents

Aflex Hose

The World's Leading Manufacturer of PTFE Flexible Hose

Aflex Hose pioneered the concept of PTFE lined flexible hose for the transfer of process fluids more than 25 years ago.

Corroflon convoluted and Bioflex smoothbore hose, both manufactured and supplied by Aflex, are used by major Chemical, Pharmaceutical and Food companies worldwide.

Over the years, hundreds of thousands of custom-built hoses have been designed and built to cope with the most difficult of operating conditions, and we have continuously developed and expanded our product range to meet increasingly stringent customer demands.

Corroflon

Convoluted, Reinforced PTFE Lined Hose

Corroflon was launched in 1978 and, since then, has been continually updated and improved. Now it is the industry-standard convoluted flexible PTFE hose for major chemical, pharmaceutical and food companies worldwide.

The key to Corroflon's success lies in its design and build quality, which guarantees a long, safe and reliable service life.

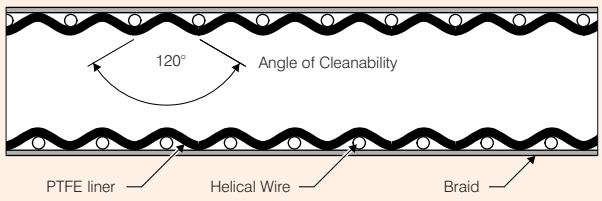
Corroflon's design differs from every other convoluted PTFE hose on the market, which results in distinctive and measurable performance and safety advantages.

Firstly, Corroflon will give better cleanability and drainability than any other convoluted PTFE hose on the market. This is because Corroflon is designed and manufactured in such a way that the angle of the convolutions is extremely shallow - 80˚ to 120˚, compared with only 45˚ to 65˚ in other convoluted hose designs.

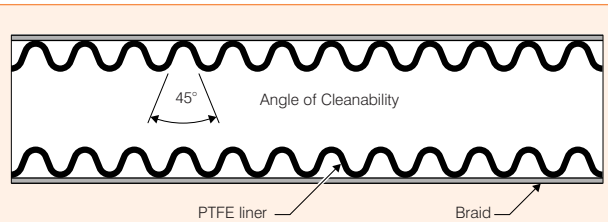
Secondly, Corroflon is the only PTFE lined convoluted hose on the market to be fully kink and vacuum resistant at high pressures and temperatures. This is because Corroflon's design incorporates a thick section external helical reinforcement wire which gives the radial support necessary to ensure maximum strength, whilst maintaining optimum flexibility and cleanability. The helix wire is welded directly to the end fittings at each end, ensuring security of attachment and electrical continuity.

And thirdly, Aflex is the only PTFE hose manufacturer to guarantee a minimum PTFE liner thickness of $^{1}/_{16}$in (1.5mm) for hose sizes 1in and above, which ensures sufficient strength to prevent the tube from being internally pressurized from a sine wave shape into an extended square wave shape, which would lead to porosity, and eventually premature failure of the tube. This thick wall liner also minimizes permeation, and is extended through the end fittings to give an uninterrupted clean flow of fluid through the fitting.

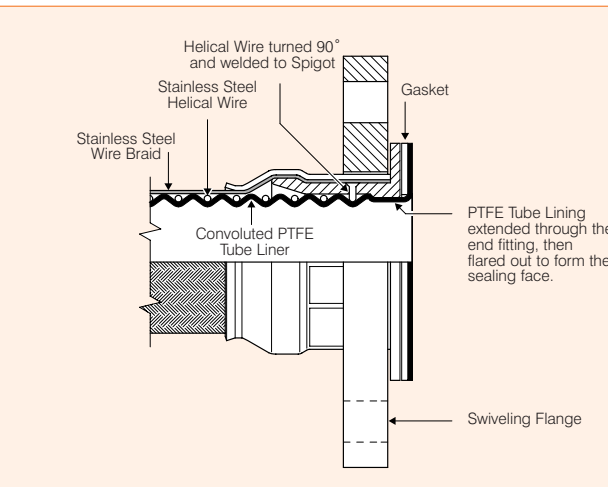
Corroflon GP PTFE Hose



Typical Convoluted PTFE Hose



Corroflon GP, SS Hose and PTFE Lined Flange Fitting



How to Order Corroflon

Corroflon Hose Assemblies

Corroflon is custom built to individual order and is supplied in the form of finished hose assemblies after the length, liner, braid and end fittings have been decided upon.

Selecting the Hose Grade

The basic grade of Corroflon is Corroflon GP,SS. In many cases, however, one or more of the alternative design options shown on pages 7 to 10 are incorporated in order to 'custom build' a hose. A hose grade is specified by using the abbreviations given. For example, a hose which requires a general purpose, anti-static liner with a polymer braid would be designated Corroflon GP,AS,PB.

Selecting the End Fittings

Corroflon is available with a range of standard end fittings, both integrally PTFE lined and non-lined, which are described on pages 11 to 18. These fittings may be applied to any grade of Corroflon hose, with either the same or different end fittings at each end of the hose assembly. Non-standard PTFE lined end fittings including RJP, Cherry Burrell and TW fittings are also available.

Note: Most of the sizes of hose and fittings listed in this brochure are available as ex-stock items and are priced accordingly. However, when certain items have not been purchased in the last 12 months, they are no longer held in stock, and are only available to Special Order.

Aflex Hose will advise accordingly when enquiries are placed for these items.

Hose End Fitting Materials

(1) Mild Steel (MS) End Fittings - These are manufactured from any suitable grade of carbon steel, and are zinc plated and iridescent (gold) passivated after machining.

Note: Due to the greater popularity and availability of Stainless Steel end fittings, however, end fittings ordered as MS are often supplied partly with SS components at no extra charge.

(2) Stainless Steel (SS) End Fittings - All hose end fitting spigots are supplied made from Grade 316 SS, and all ferrules, swiveling nuts and flanges are from Grade 304 SS, or Grade 316 SS if Grade 304 is not available. The exception is for 1in, 1 1/2in and 2in DIN specification PN10 flanges, which are supplied in Grade 316 SS. Grade 316 SS and Grade 304 SS, depending upon the method of manufacture, will be to one of the following specifications:

Grade	British Standard	American Standard	German/Euro Standard
316	316 S31	AISI 316	1.4401
316	316 S11	AISI 316L	1.4404
316	316 C16	CF8M	1.4408
304	304 S15	AISI 304	1.4301
304	304 S11	AISI 304L	1.4307
304	304 C15	CF8	1.4308

Corroflon Hose Lengths

Corroflon hose assemblies are made up to the specific lengths required. The hose length is taken as the length from the sealing face at one end of the hose to the same at the other end. The length tolerance is +10% -0% for lengths above 3ft 3in (1 meter) and +5% -0% for lengths up to 3ft 3in (1 meter). Closer length tolerances are possible, but may incur an extra charge, and must be specified on the order.

Corroflon Hose Assembly Length Limitations
(*For PTFE lined end fittings crimped to braided hose without a rubber cover)

Nominal Size of Hose		*Minimum Hose Assembly Length Used Straight		*Minimum Hose Assembly Length Flexed Thru' 90°		Maximum Hose Assembly Length	
in	mm	in	mm	in	mm	ft	mtrs
1/2	15	6	150	6	150	100	30
3/4	20	6	150	6	150	131	40
1	25	7	180	9	230	131	40
1 1/4	32	7	180	10	250	72	22
1 1/2	40	8	200	14	350	65	20
2	50	8	200	18	450	60	18
2 1/2	65	10	250	24	600	43	13
3	80	10	250	30	750	32	10
4	100	14	350	40	1000	16	5
6	150	20	500	60	1500	14	4

*For unbraided hose type TO (see page 8) the minimum lengths of hose assemblies may be reduced by 2in (50mm). For Assemblies with Non-Lined end fittings, and for PTFE lined end fittings on Rubber Covered Hose, the minimum lengths are longer, +4in (100mm) up to 1 1/2in bore, +6in (150mm) for larger sizes.

Corroflon

Quality Assurance, Certification and Approvals

BS EN ISO 9001:2000

Aflex products are all manufactured in accordance with BS EN ISO 9001: 2000 Quality Management Systems independently assessed and registered by National Quality Assurance Limited (NQA).

USP Class VI

Natural and Antistatic PTFE Hose Liners, Platinum Cured Silicone Rubber Covers (White and Clear) and EPDM Rubber Cover (Blue) have been tested in accordance with USP protocols and are found to conform to the requirements of USP Class VI Chapter <88>

Natural and Antistatic PTFE Hose Liners, Platinum Cured Silicone Rubber Covers (White and Clear) have also been tested in accordance with USP protocols and are found to conform to the requirements of USP Class VI Chapter <87>, the L929 MEM Elution Test and are considered non-cytotoxic.

FDA

The Materials used to manufacture the natural PTFE Tube liner conforms to FDA 21 CFR 177.1550, and the antistatic PTFE liner conforms to FDA 21 CFR 178.3297.

3-A Sanitary Standards

The PTFE used in the liner is manufactured solely from materials which meet the requirements of the 3-A Sanitary Standards

Pharmaceutical Manufacturers Approvals

Most of the major pharmaceutical manufacturing companies in the world have audited and/or approved Aflex Hose as a Hose Supplier.

CE Marking (Europe only)

Aflex has been assessed by Zurich Risk Services and found to comply with the Pressure Equipment Directive 97/23/EC (European Community) Conformity Assessment Module D1, approved to CE Mark applicable hose products, accompanied by a Hose Usage Data Sheet, and a Declaration of Conformity.

Attestations of Conformity to ATEX Directive 94/9/EC (Potentially Explosive Atmospheres)

Available for hose and assemblies for components used in Gas Zones 1 & 2 and Dust Zones 21 & 22, when applicable.

Material Certification to EN10204

Available for all the hose or hose assembly components.

Certificates of Conformity to EN45014

Are available for all products.

Hose Identification and Testing

All Aflex Hose assemblies are identified with a stainless steel identification tag, ring or ferrule, vibro etched with a unique serial number for traceability, and other relevant information.

Each assembly is pressure tested to1.5 times maximum working pressure before despatch, and pressure test certificates can be supplied.

Corroflon GP, SS

Purpose

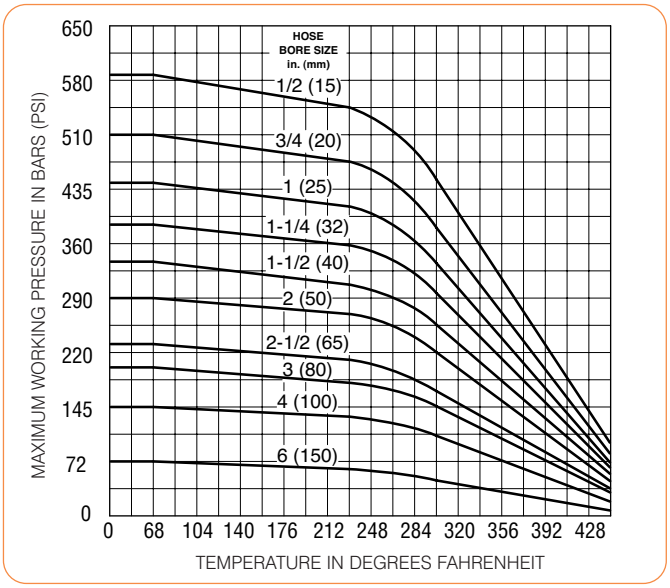
Corroflon GP, SS is the general purpose grade of hose and has been carefully designed to satisfy the widest range of application requirements.

Design

The hose liner is manufactured from hose quality grade PTFE conforming to FDA requirements 21 CFR 177.1550 and USP Class VI, extruded into tube and helically convoluted. It also includes a heavy gauge Grade 304 stainless steel reinforcing wire helically wound into the external root of the convolutions to strengthen the convoluted shape. The braid is high tensile grade 304 stainless steel wire braid to give maximum protection to the hose against internal pressure and external abrasion.

Temperature vs Pressure

The graph below gives maximum working pressures for each size of Corroflon GP, SS hose. At temperatures less than 32˚F, the listed maximum working pressures apply, down to -95˚F.



Temperature vs. Vacuum

All sizes of Corroflon GP,SS up to 2in bore are usable at full vacuum up to 265˚F. At higher temperatures, the vacuum resistance should be reduced 1% for every degree above 265˚F. For sizes above 2in bore, the vacuum resistance depends on the bend radius used. In general, for sizes above 2in when high/full vacuum resistance is required, use SP grade.

Corroflon Hose - Flow Rate Calculation

If it is required to determine the flow rate of a particular hose assembly, or if it is required to determine the pressure required to generate a certain flow rate, then this can sometimes be approximately calculated by the (Corroflon) supplier.

It should be noted that calculations can only be made for fluids with a viscosity like water, and for hose assemblies with PTFE lined end fittings (no bore restrictions at the ends of the hose).

The following information should be given to the supplier:
To calculate the Flow Rate in gallons per Hour:

- Pressure in psi at the Entry into the Hose Assembly
- Pressure in psi at the Exit from the Hose Assembly
- The hose configuration (roughly straight, or 33% Bends, or 66% Bends, or 100% Tightly Coiled).

To Calculate the Pressure Drop in psi over the length of the Hose Assembly:

- Required Flow Rate in gallons per Hour
- The hose configuration (roughly straight, or 33% Bends, or 66% Bends, or 100% Tightly Coiled).

Maximum Operating Temperatures (internal fluid): SS Braid -95˚F through +445˚F, PB Braid -22˚F through +212˚F.

SS, RC and SS, FP -40˚F through +285˚F, SS,SI -40˚F through +355˚F, KYB -40˚F through +250˚F.

(For external temperature limits, reduce maximum temperatures by 40˚F).

Pressure Variation with Temperature:
SS Braid as per graph (left); PB pressure as listed from -22˚F through +175˚F, then reducing 3% per 2˚F up to a maximum temperature of 212˚F.

RC, FP and SI grades as per graph (left), BUT only within the temperature range for the particular grade of rubber.

MWP: the Maximum Working Pressure of a hose assembly is limited to the lowest of the MWP's of either of the two end fittings, as given for each end fitting design on pages 11 to 18, or of the hose itself as listed.

Corroflon Size Range

Nominal Hose Bore Size		Actual Bore Size		O/D of Tube		Braid Type	O/D of Braid or Rubber		Minimum Bend Radius	
in	mm	in	mm	in	mm		in	mm	in	mm
1/2	15	3/8	9.5	0.63	16.00	TO	-	-	1.5	38
						SS	0.69	17.5	1.5	38
						PB	0.75	19.1	1.5	38
						SS,RC/FP	0.93	23.5	2.2	57
						RC,SI	0.93	23.5	2.2	57
						KYB	0.75	19.1	1.5	38
3/4	20	9/16	14.3	0.84	21.40	TO	-	-	2.0	51
						SS	0.90	23.1	2.0	51
						PB	1.02	26.0	2.0	51
						SS,RC/FP	1.17	29.6	3.0	76
						RC,SI	1.17	29.6	3.0	76
						KYB	1.02	26.0	2.0	51
1	25	13/16	20.6	1.16	29.40	TO	-	-	2.8	70
						SS	1.25	31.7	2.8	70
						PB	1.34	34.0	2.8	70
						SS,RC/FP	1.44	36.6	4.1	105
						RC,SI	1.44	36.6	4.1	105
						KYB	1.34	34.0	2.8	70
1 1/4	32	1	25.4	1.46	37.00	TO	-	-	3.2	82
						SS	1.51	38.4	3.2	82
						PB	1.71	43.6	3.2	82
						SS,RC/FP	1.69	42.8	4.8	123
						RC,SI	1.69	42.8	4.8	123
						KYB	1.71	43.6	3.2	82
1 1/2	40	1 1/4	31.7	1.68	42.70	TO	-	-	3.9	100
						SS	1.76	44.6	3.9	100
						PB	1.91	48.6	3.9	100
						SS,RC/FP	2.20	55.8	5.9	150
						RC,SI	2.20	55.8	5.9	150
						KYB	1.91	48.6	3.9	100
2	50	1 3/4	44.4	2.22	56.50	TO	-	-	5.5	140
						SS	2.32	59.0	5.5	140
						PB	2.44	62.0	5.5	140
						SS,RC/FP	2.68	68.0	8.3	210
						RC,SI	2.68	68.0	8.3	210
						KYB	2.44	62.0	5.5	140
2 1/2	65	2	50.8	2.80	71.00	TO	-	-	7.0	178
						SS	2.87	73.0	7.0	178
						PB	3.03	77.0	7.0	178
						SS,RC/FP	3.11	79.0	10.5	267
						RC,SI	3.11	79.0	10.5	267
						KYB	3.03	77.0	7.0	178
3	80	2 1/2	63.5	3.29	83.60	TO	-	-	9.0	230
						SS	3.39	86.0	9.0	230
						PB	3.54	90.0	9.0	230
						SS,RC/FP	3.74	95.0	13.5	345
						RC,SI	3.74	95.0	13.5	345
						KYB	3.54	90.0	9.0	230
4	100	3 1/2	89.0	4.85	123.30	TO	-	-	11.8	300
						SS	4.92	125.0	11.8	300
						PB	5.04	128.0	11.8	300
						SS,RC/FP	5.16	131.0	17.7	450
						RC,SI	5.16	131.0	17.7	450
						KYB	-	-	-	-
6	150	5 1/4	130.0	6.35	161.20	TO	-	-	23.6	600
						SS	6.69	170.0	23.6	600
						PB	6.81	173.0	23.6	600
						SS,RC/FP	6.93	176.0	35.4	900
						RC,SI	6.93	176.0	35.4	900
						KYB	-	-	-	-

& Specifications

MWP of Hose		Minimum Burst Pressure		Maximum Continuous Hose Length		Weight per Unit Length	
Psi	Bar	Psi	Bar	Ft	Mtrs	Lbs/ft	Kg/Mtr
87	6	261	18	91.8	28	0.14	0.21
595	41	1784	123	91.8	28	0.22	0.33
595	41	1784	123	91.8	28	0.17	0.26
595	41	1784	123	65.6	20	0.26	0.49
595	41	1784	123	32.8	10	0.26	0.49
297	20.5	899	61.5	91.8	28	0.15	0.23
76	5.25	228	15.75	98.4	30	0.19	0.29
508	35	1523	105	98.4	30	0.30	0.45
508	35	1523	105	98.4	30	0.24	0.36
508	35	1523	105	65.6	20	0.36	0.56
508	35	1523	105	65.6	20	0.36	0.56
254	17.5	761	52.5	98.4	30	0.20	0.31
67	4.65	202	13.95	131.2	40	0.30	0.45
450	31	1349	93	131.2	40	0.47	0.70
450	31	1349	93	131.2	40	0.38	0.56
450	31	1349	93	65.6	20	0.56	0.98
450	31	1349	93	32.8	10	0.56	0.98
225	15.5	674	46.5	131.2	40	0.33	0.49
59	4.05	176	12.15	98.4	30	0.36	0.53
392	27	1175	81	98.4	30	0.55	0.82
392	27	1175	81	98.4	30	0.44	0.66
392	27	1175	81	65.6	20	0.66	1.12
392	27	1175	81	32.8	10	0.66	1.12
196	13.5	587	40.5	98.4	30	0.38	0.57
50	3.45	150	10.35	82.0	25	0.65	0.97
334	23	1001	69	82.0	25	1.00	1.50
334	23	1001	69	82.0	25	0.80	1.20
334	23	1001	69	82.0	25	1.21	1.90
334	23	1001	69	32.8	10	1.21	1.90
167	11.5	500	34.5	82.0	25	0.70	1.05
44	3	131	9	59	18	0.91	1.36
290	20	870	60	59	18	1.40	2.10
290	20	870	60	59	18	1.13	1.68
290	20	870	60	59	18	1.69	2.72
290	20	870	60	32,8	10	1.69	2.72
145	10	435	30	59	18	0.99	1.47
35	2.40	104	7.20	42.6	13	1.13	1.68
232	16	696	48	42.6	13	1.73	2.58
232	16	696	48	42.6	13	1.38	2.06
232	16	696	48	42.6	13	2.01	3.10
232	16	696	48	32.8	10	2.01	3.10
116	8	348	24	42.6	13	1.21	1.81
30	2.10	91	6.30	32.8	10	1.43	2.14
203	14	609	42	32.8	10	2.20	3.29
203	14	609	42	32.8	10	1.76	2.63
203	14	609	42	32.8	10	2.65	3.95
203	14	609	42	32.8	10	2.65	3.95
102	7	305	21	32.8	10	1.54	2.30
22	1.5	65	4.5	16	5	2.32	3.46
145	10	435	30	16	5	3.57	5.33
145	10	435	30	16	5	2.85	4.26
145	10	435	30	16	5	4.30	6.40
145	10	435	30	16	5	4.30	6.40
-	-	-	-	-	-	-	-
11	0.75	33	2.25	13.1	4	4.35	6.50
73	5	218	15	13.1	4	6.70	10.00
73	5	218	15	-	-	5.36	8.00
73	5	218	15	13.1	4	8.04	12.00
73	5	218	15	13.1	4	8.04	12.00
-	-	-	-	-	-	-	-

SPECIAL CONDITIONS

PTFE Hose - Use with Halogens

When PTFE lined hose is used with the halogens chlorine and fluorine, or any corrosive halogen compounds which diffuse easily and are gaseous for example phosgene, then trace quantities may diffuse through the PTFE liner to the outside.

Only trace quantities are required, mixed with atmospheric moisture, to create a serious corrosion condition with stainless steel wire braid in particular.

Also, if any halogen ions are present in the environment external to the hose (for example, chloride ions in salt in a sea water spray), and if the temperature of the hose exceeds 120˚F, there is a serious risk of "Chloride Stress Corrosion" of the stainless steel wire braid on the hose.

For such applications, always use the alternative braid materials, either HB or KYB (for fluorine & chlorine) or PB (for external chlorides).

"Penetrating" Fluids and Gasses

Like other plastics and rubbers, in certain special circumstances PTFE is sometimes subject to diffusion through the tube wall, dependant upon the nature of the chemical, and the pressure and temperature of operation.

As mentioned above, Halogens represent a specific problem. Automotive fuels, on the other hand, diffuse much less through PTFE than through other plastics, like nylon.

Some other types of penetrating fluids can also diffuse through PTFE to varying degrees, which may or may not present a problem. Known examples are sulphur trioxide, glacial acetic acid and methyl methacrylate.

Consult with Aflex Hose if these, or any other gasses or fluids which are known to be penetrating are to be used.

Gas/Fluid Cycling

There are some applications where the fluid passing through the hose turns into a gas, then back into a fluid, then into a gas again, and so on in a cyclic sequence.

This is normally associated with changes in temperature and/or pressure.

For complex reasons these conditions are extremely damaging to the hose liner, whatever material it is made from.

For example, hoses are sometimes used to pass steam, then water, then steam again into rubber molding presses, in order to heat the mold, then rapidly cool it before reheating in the next cycle. Hoses of all types fail rapidly in such an application, and PTFE lined hose is no exception.

Consult Aflex Hose for further information if these conditions apply.

CONNECTING ASSEMBLIES FOR USE IN APPLICATIONS

When being connected for use in applications, the end fittings on hose assemblies must be connected to correct mating parts in the correct way, using the correct tools - wrenches, clamps, nuts and bolts etc.

The connections must be sufficiently tightened to ensure that the joint is leak-free, but must not be over-tightened as this can damage the sealing surfaces.

In applications involving the transfer through the hose of expensive or dangerous fluids or gasses, the connections must be pressure tested first before being put in to service. This should be done with some harmless medium, like water or compressed air, to 1 1/2 times the maximum working pressure of the hose assembly, as defined in this brochure.

If in doubt, consult Aflex Hose for advice.

Gas Applications - Whistling

When carrying gasses at high flow rates all convoluted hoses sometimes make a loud "whistling" noise, due to turbulent gas flow. It is preferable to use Bioflex where possible in such applications.

Corroflon Hose Liners

AS - Anti-Static PTFE Liner

Purpose

Corroflon AS is an essential requirement in applications where there is the risk of an electrostatic charge build-up on the inside surface of the PTFE tube which may then discharge through the tube wall. Medium passing through which create such a risk are fluids which have a Conductance of less than 3 x 10^{-8} S/ft (Siemens per foot), such as fuels, solvents, freons, and non-polar organics which are being transferred at a medium to high flow velocity.

All twin or multi phase media, and any non-mixing media, such as powder in air, or water droplets in steam, in gasses or in oil, also colloidal fluids constitute a particular hazard for static charge generation, and always require grade AS.

A typical example involves cleaning systems which create a twin phase mixture passing through the hose at high velocity, such as WFI water purged out with air or nitrogen.

If in doubt, consult Aflex Hose.

Design

Corroflon AS is an anti-static PTFE liner manufactured from FDA approved PTFE, and less than 2.5% of "high purity" Carbon Black material to FDA requirement 21 CFR 178.3297. The carbon is encapsulated by the PTFE, and in normal, non-abrasive applications will not come loose to contaminate any fluid passing through.

Specifications

When "AS" (Antistatic) grade hose is specified, then the hose supplied will be in accordance with the requirements of BS5958 Part 2, 1991 Clause 19.3, when tested in accordance with EN ISO 8031 Clause 3.1, which requires that the resistance between a plug inserted 25mm into the bore at the end of the hose assembly, and one of the metallic end fittings should be less than 10^8 ohms.

NOTE: When in service, at least one end fitting must be connected to earth, to permit dissipation of the static charge from the end fitting.

SP - Special Purpose Liner

Purpose

For applications requiring a higher temperature/pressure rating, greater flexibility and improved kink and crush resistance. Also for applications requiring full vacuum resistance for hose sizes larger than 2in.

Design

The convolutions are closer together, yielding greater radial strength to the hose design.

Specifications

As for Corroflon GP, except that the maximum working pressure for wire braided grades is increased by 25%, the weight per unit length is increased by 30%, the actual through bore is reduced by 1/8in (3mm), the maximum continuous length is reduced by 50%, the minimum bend radius is reduced by 25% and the angle of cleanability is $<80°$.

Available as SP (Natural) and SP, AS (Antistatic) Grades.

EC - Electrical Continuity

When EC grade is requested, it is necessary that the hose assembly supplied is electrically continuous, or conductive, between metal end fittings at each end of the hose.

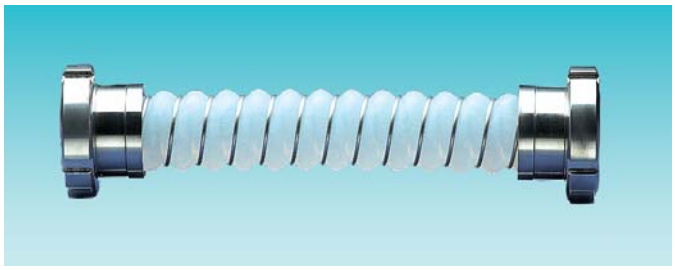
The requirements for this are specified in the German Document BRG132, and the Specification EN ISO 12115, tested to EN ISO 8031 Clause 3.7, which requires that for hose assemblies with a resistance between fittings of $\leqslant 10^2$ ohms, a letter "M" can be applied, or $\leqslant 10^6$ ohms, a letter "Ω" can be applied.

Braided Corroflon Hose Assemblies all meet the requirements of both "M" and "Ω".

The only exception is for assemblies without braid. Grade AS, TO (Antistatic, Tube Only) meets the requirements of "Ω", $\leqslant 10^6$ ohms, but Grade GP, TO (Natural, Tube Only) does not meet either "M" or "Ω".

Corroflon Hose Braids

TO - Tube Only (no braid)



Purpose

TO grade hose is a lightweight hose, used in applications where working pressures are low and where there is no need for the physical protection offered by an external braid.

HB - Hastelloy Braid (C276 grade)

Purpose

Hastelloy Wire Braid is used instead of SS where severe chemical corrosion conditions exist around the outside of the hose. One way in which this can happen is when chlorine or fluorine are being transfered. Diffusion of trace quantities of such gasses through the PTFE liner can lead to atmospherically wetted fluorine or chlorine attacking the braid material, in which case the Hastelloy Braid would be resistant.

Specifications

Same as for SS on Pages 5 and 6, except the Burst Pressure and MWP are 50% lower.

PB - Polypropylene Braid

Purpose

Polypropylene braided hose is often preferred to SS Braid in applications involving frequent handling and movement of the hose, and where temperatures are within the range -22˚F through +212˚F. PB braid is lighter in weight, and any broken strands will not cut the operator's hands. In addition, PB braid is not prone to chloride stress corrosion.

NB Electrical Continuity is maintained between end fittings by welding the helix wire to the spigot or ferrule at each end.

Specifications

As for GP, SS except that the operating temperature range (internal) is reduced to -22˚F to +212˚F, and the weight per unit length is reduced by about 20%.

NOTE: Prolonged exposure to sunlight eventually results in UV degradation of PB braid.

KYB - Kynar Braid (Polyvinylidene Fluoride Monofilament)

Purpose

Kynar Braid is used for the same reasons as HB, but only in applications where the reduced pressure and temperature ratings of KYB are acceptable.

Specifications

As for GP,SS except that the maximum working pressure is reduced by 50%, the maximum operating temperature (internal) is 250˚F and the weight per unit length is reduced by 30%.

Corroflon External Protection & Coding

RC - Rubber Covered

Purpose

For the most rugged applications where the hose may be subjected to rough treatment and severe external abrasion. Also for hygienic applications, where the external smoothness and cleanability of the hose is of prime importance.

Design

An SS braided hose assembly has an Antistatic Black EPDM external rubber cover vulcanised directly onto the braid. EPDM has excellent chemical resistance, and is temperature resistant up to 250˚F (external) 285˚F (internal). Alternative colors of rubber, and strips with alternative text titles are available to special order.

A specially smooth finish can be supplied to special order.

Alternative types of rubber, such as Hypalon, or Nitrile rubber are also available to special order.

RC, SI - Silicone Rubber Covered

Purpose

As for RC hose, but where the hose may be required to withstand temperatures up to 360˚F. SI grade hose is semi-transparent, allowing visual monitoring of the braid.

Design

An SS braided hose assembly has an external smooth finish silicone rubber cover vulcanised directly onto the braid.

Limitations

Available in lengths up to 33ft (10 meters).

FP - Fireproof Rubber Covered

Purpose

For the same applications as normal rubber covered hose but where the hose is also required to be able to resist failure in the event of a fire, in accordance with Specification BS5173 Section 103.13 1994 (Fireproof).

Design

As for RC hose, but the red EPDM rubber is specially compounded to be fire resistant. FP grade is not anti-static, but can be supplied anti-static (black) to special order.

Specifications

As for GP, SS, RC

RC-300 - Rubber Covered 300mm at End

Purpose

In applications where excessive flexing of the hose at the end fitting occurs, it is sometimes necessary to 'stiffen' the hose in this area to prevent kinking.

Design

A layer of rubber is applied and vulcanized directly to the ferrule, and 1ft (300mm) along the hose from the fitting. This can be done either on an SS braided hose (RC-300) or on a rubber covered hose as a 1ft (300mm) long double layer of rubber at the end (DRC-300).

The rubber used is normally Black EPDM, but if the hose is FP, or SI covered, then the same type and colour of rubber would be used (DFP-300 or DSI-300).

Limitations

Cannot be applied to PB or KYB braided hose. If required consult Aflex Hose for an alternative "EPR" system. (EPR includes a 1ft (300mm) length of loose rubber hose jubilee clipped to the ferrule).

Corroflon External Protection

SR - Scuff Rings

Purpose

For medium/heavy duty applications where the hose requires some protection against abrasion when dragged over the ground, but where a full rubber cover would be too heavy and cumbersome. Also for PB braided hose, which cannot be Rubber Covered.

Design

Specially molded abrasion resistant rubber scuff rings are placed every 20 inches along the hose.

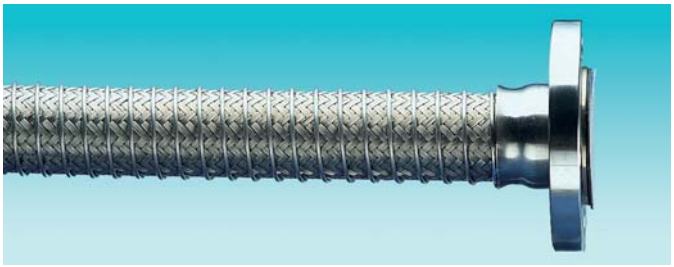
Limitations

Hose sizes 1in (25 mm) to 3in (80 mm) only.

Specifications

As for GP,SS except that the internal operating temperature should not exceed 285˚F.

PC - Protection Coil



Purpose

For applications where the hose requires protection against abrasion when dragged over the ground, but where any rubber reinforcement is not permissible (owing to temperature, chemicals etc).

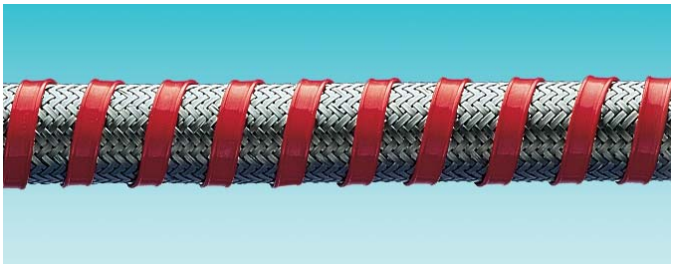
Design

A stainless steel wire helix is wound on to the braid and is then welded to the ferrules at each end.

Specifications

As for GP, SS except that the weight is increased by 15%.

CC - PTFE Color Coded



Purpose

A colored PTFE spiral tube marker is wound onto the hose. It is possible to do this with the hose already in application if required, and the marker may be removed with equal ease. The advantages of PTFE colored markers are that they have excellent chemical resistance, and the non-stick PTFE surface ensures that the color remains clean and bright. If required, it can be secured in place on the hose by a transparent heat-shrink polyolefin sleeve, but the PO sleeve cannot be applied to hoses in application.

Corroflon Standard Flange Fittings

Flange Fittings

Description

Swivel flange fitting, integrally PTFE lined and flared.

Specifications

Flanges to ASA150 or DIN PN10. Different pressure ratings of flanges to these specifications are also available.

Note: DIN Standard PN10 and PN16 flange dimensions and specifications are identical. Flanges are normally stamped PN10, but are suitable for PN16 use if required.

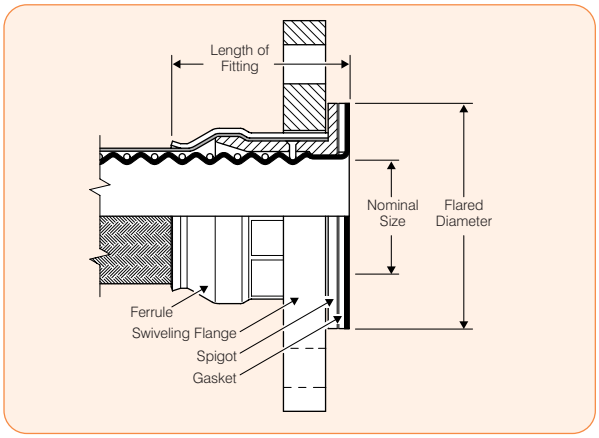
Materials

Spigot in 316 SS, Ferrule in 304 SS, Flanges either MS, Zinc Plated Mild Steel or in Grade 304 SS, except 1in, 1 1/2in and 2in PN10 flange in Grade 316 SS.

Maximum Working Pressures

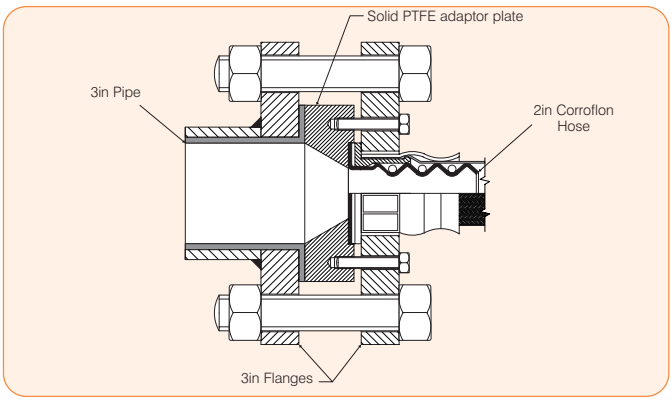
These are defined by the flange specification. For standard ASA 150, the maximum working pressure is 230 psi (16 Bar). For PN10, 145 psi (10 Bar). For PN40, 580 psi (40 Bar) etc. Test pressures are 1.5 times the Maximum Working Pressure. (Exceptions: when the hose MWP is less

Standard Flange Fitting



Nominal Size - Flange & Hose		Fitting Length		Flared Diameter		Recommended Bolt Tightening Torques		Weight/ Fitting	
in	mm	in	mm	ASA150 mm	PN10/16 mm	ft.lbs	Nm	lb	kg
1/2	15	1 5/8	42	32.0	32.0	8	10.79	1.20	0.54
3/4	20	2 1/4	56	43.0	50.0	8	10.79	2.00	0.88
1	25	2 3/8	60	50.8	63.5	10	13.73	2.10	0.96
1 1/4	32	2 3/8	60	63.0	78.0	12	16.67	3.00	1.36
1 1/2	40	2 1/2	63	73.0	88.0	15	20.59	3.90	1.75
2	50	2 5/8	66	92.0	102.0	25	34.32	6.00	2.70
2 1/2	65	3 1/4	82	105.0	122.0	30	41.18	8.80	4.00
3	80	3 1/4	82	127.0	127.0	40	53.94	11.00	5.00
4	100	4 1/2	114	158.0	158.0	40	53.94	15.50	7.00
6	150	6	150	213.0	213.0	50	67.67	28.60	13.00

Flange Adaptor Joint



Adapting for Different Flange Sizes

To fit larger than nominal flange sizes

It may be necessary to fit a larger than nominal flange size to the hose - for example, 3in flange fitted to one end of a 2in hose - in which case it may also be necessary to increase the diameter of the sealing face to the correct size for the larger flange. This can be achieved by means of a flange adaptor as shown.

To fit smaller than nominal flange sizes

Within limits, it is also possible to make up an assembly with a flange one size smaller than the nominal size. The smaller flange is bored out and fitted to the larger hose and, if necessary, the flared diameter is reduced to suit.

Corroflon Triclover Fittings

Triclover Fittings

Description

Triclover fitting integral PTFE lined and hot formed. Design patented in Europe by Aflex Hose Ltd.

Specifications

Generally in accordance with BS4825: Pt 3, or DIN 32676.

Maximum Working Pressures and Temperatures

All sizes 230 psi (16 Bar). Test Pressure = 350 psi (24 Bar). Only up to the temperature limit of the rubber seal.

Materials

Spigots Grade 316 SS. Ferrules Grade 304 SS.

Size of Triclover Fittings

When ordering, it is necessary to determine:

(a) What Flange Diameter is required?

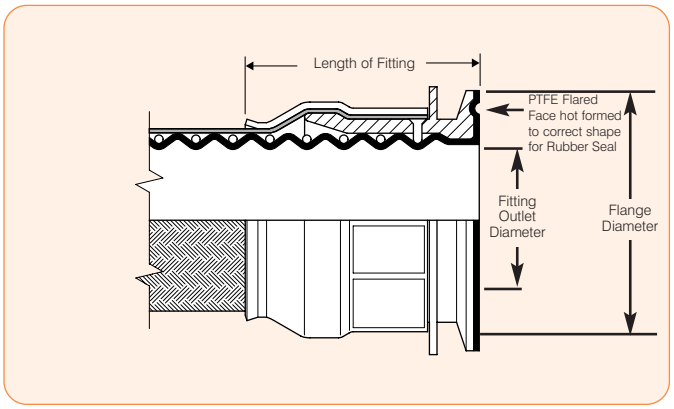
(b) What is the Hose Size required?

(c) Is the Outlet Diameter for the hose fitting the same as the I/D of the Pipe to which it will be connected?

See the List for the Standard Sizes & Outlet Diameters. If the requirement is not on this list, then please specify the alternative dimensions required.

If in doubt, request a "Triclover Enquiry Form" from Aflex Hose, to be filled out and returned.

PTFE Lined Triclover Fitting



Non-lined Triclover Fittings

Non-lined Triclover Fittings are also available, manufactured in the same materials to the same specifications as the lined Triclover Fittings.

Available to special order with a polished or electro-polished bore to customers' requirements.

'Step Up or Step Down' sizes are also available to special order, only for the non-lined triclover design.

Standard Range - BS 4825 Pt 3 Range

Nominal Hose Bore Size		Nominal Pipe Size		Pipe Inside Diameter		Fitting Outlet Diameter		Flange Diameter	Length of Fitting	
in	mm	in	mm	in	mm	in	mm	mm	in	mm
1/2	15	1/2	12.7	3/8	9.5	3/8	9.5	25.4•	2	50
1	25	1	25.4	7/8	22.2	7/8	22.2	50.5	2 3/8	60
1 1/2	40	1 1/2	38.1	1 3/8	34.9	1 3/8	34.9	50.5	2 1/2	63
2	50	2	50.8	1 7/8	47.6	1 7/8	47.6	64	2 5/8	66
2 1/2	65	2 1/2	63.4	2 3/8	60.3	2 3/8	60.3	77.5	3 1/4	82
3	80	3	76.1	2 7/8	73.0	2 7/8	73.0	91	3 1/4	82

• A special, non standard size, not specified in ISO 2852 or BS 4825

DIN 32676 Range

Nominal Hose Bore Size		Nominal Pipe Size		Pipe Inside Diameter		Fitting Outlet Diameter		Flange Diameter		Length of Fitting	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
3/4	20	3/4	DN20	0.788	20.0	0.709	18.0	1.340	34	2	50
1	25	1	DN25	1.024	26.0	0.875	22.2	2.000	50.5	2 3/8	60
1 1/4	32	1 1/4	DN32	1.250	32.0	1.103	28.0	2.000	50.5	2 1/2	63
1 1/2	40	1 1/2	DN40	1.500	38.0	1.375	34.9	2.000	50.5	2 1/2	63
2	50	2	DN50	2.000	50.0	1.875	47.6	2.500	64	2 5/8	66

Corroflon Standard Cam Action Fittings

Cam Action Coupler (Female) Fittings

Description

Cam Action quick release coupler (female) fitting, integral PTFE lined.

Specifications

Generally to Mil-C-27487 and DIN2828. (Fully interchangeable with other makes of Cam Action type quick-release fittings to these specifications).

Materials

Cam Action spigot in Grade 316 SS, ferrule in Grade 304 SS, standard gasket in buna N nitrile rubber, with alternatives available.

Alternative Gasket Materials

FEP-encapsulated Silicone Rubber Gasket. (Rubber fully encapsulated inside an FEP outer). Usable at temperatures up to 320˚F. (Note: this type of gasket requires higher clamping forces than normal to ensure a positive seal. Normally supplied with an aluminum or polypropylene male adaptor clamped in, to "pre-set" the gasket for easier use).

NOTE: If customers want to use their own gaskets, which are not supplied by Aflex, they must supply these gaskets with their order, so that Aflex can fit these gaskets, then test the hose assemblies before despatch.

Limitations

Usable at temperatures up to 212˚F, but higher temperature use is possible, dependent upon the gasket materials.

Not normally recommended for "Safety Critical" applications, where the locking arm Saflok option is preferred (page 14).

Mating Connectors

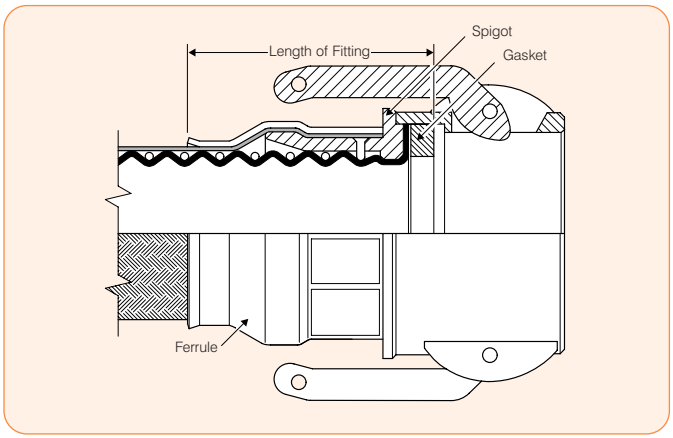
A wide variety of mating connectors is available, including BSP female threaded adaptors and PTFE lined flange adaptors.

Maximum Working Pressures

All sizes 145 psi (10 Bar). Test Pressure = 220 psi (15 Bar)

Higher working pressures up to 260 psi (18 Bar) are available to special order.

Cam Action Coupler (Female) Fitting



Nominal Size		Length		Weight of Fitting	
in	mm	in	mm	lb	kg
3/4	20	2 1/4	57	0.80	0.35
1	25	2 1/2	63	1.00	0.45
1 1/4	32	2 5/8	67	1.37	0.62
1 1/2	40	2 3/4	70	1.80	0.84
2	50	2 3/4	70	2.40	1.10
3	80	3 3/8	86	4.10	1.87
4	100	5	127	6.20	2.81

Cam Action Adaptor (Male) Fittings

Description

Cam Action Quick Release Adaptor (male) fitting, integrally PTFE lined.

Materials & Size Range

As above for the Coupler fitting.

Corroflon Saflok Cam Action Fittings & Connectors

Saflok Autolocking Cam Action Coupler Fittings

Description

PTFE Lined Fixed or Swiveling Auto-Locking Arm Cam Action Quick Release Fitting. The lock is released by pulling a wire ring horizontally away from the fitting, then using the ring to pull the arm open. The lock is designed as a safety feature, to prevent accidental opening of the connection resulting from vibration or "tugging"

Construction & Materials

As for the Cam Action Coupler on the page opposite. The fitting is the same length, but has ring operated trigger locks on both arms.

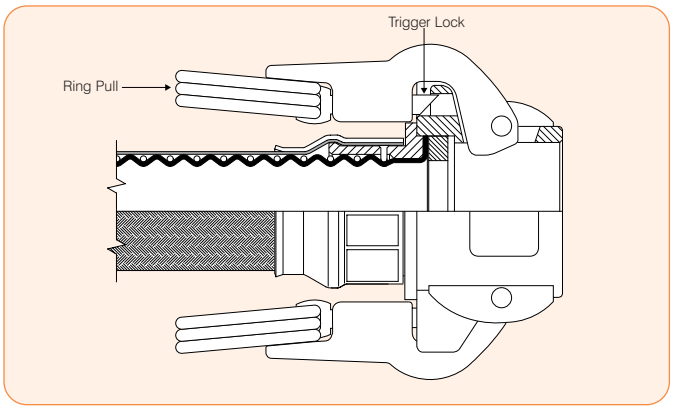
Maximum Working Pressures

As on the page opposite.

Specifications

Nominal Size		Length		Weight of Fitting	
in	mm	in	mm	lb	kg
1	25	3 1/4	82	1.30	0.59
1 1/2	40	3 3/4	95	2.50	1.15
2	50	3 3/4	95	3.00	1.40

Saflok Cam Action Fitting



Cam Action Adaptor to Flange Connectors

Description & Purpose

SS Cam Action Adaptor (male) to Flange Connector, PTFE lined right through the connector.

Construction & Materials

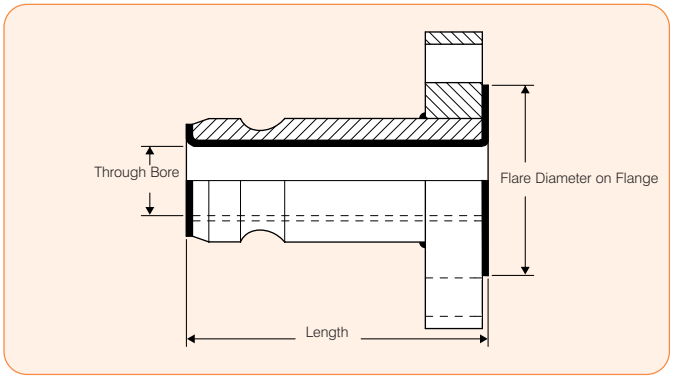
The SS Cam Action Adaptor and Flange components are welded together, and include a thick wall PTFE liner, either GP or AS grade, flared at both ends.

Alternatives

PTFE lined Cam Action Coupler to Flange Connectors can also be supplied, to special order. Also DIN11851 male or female or Triclover-to-Flange Connectors.

Cam Action Adaptor Size		Flange Size & Specification	Flare Dia. on Flange		Length		Minimum Through Bore	
in	mm		in	mm	in	mm	in	mm
1	25	1in ASA 150	2.00	50	4 1/8	105	0.84	21
1	25	DN25/PN16	2.58	63.5	4 1/8	105	0.84	21
1 1/2	40	1 1/2in ASA 150	2.87	73	4 3/8	118	1.35	34
1 1/2	40	DN40/PN16	3.47	88	4 3/8	118	1.35	34
2	50	2in ASA 150	3.63	92	5 1/8	131	1.69	43
2	50	DN50/PN16	4.00	102	5 1/8	131	1.69	43
3	80	3in ASA 150	5.00	127	5 1/8	131	2.79	71
3	80	DN80/PN16	5.44	127	5 1/8	131	2.79	71

Cam Action Adaptor to Flange Connector



Corroflon SMS & RJT Fittings

SMS Female Fittings

Description

SMS female fitting, integrally PTFE lined.

Specification

Generally to Swedish SMS specification.

Materials

All components in stainless steel.

Maximum Working Pressures

All sizes 145 psi (10 Bar). Test Pressure = 220 psi (15 Bar).

Nominal Size		Length		Weight of Fitting	
in	mm	in	mm	lb	kg
1	25	2 1/2	63	0.55	0.25
1 1/4	32	2 5/8	67	0.80	0.36
1 1/2	40	2 3/4	70	1.00	0.46
2	50	2 3/4	70	1.40	0.64
2 1/2	65	3 3/8	86	1.65	0.75
3	80	3 3/8	86	1.92	0.87

RJT Female Fittings

Description

RJT female fitting, integrally PTFE lined.

Specification

Generally to BS4825 Part 5 1991.

Materials

All components in stainless steel.

Alternative Specification

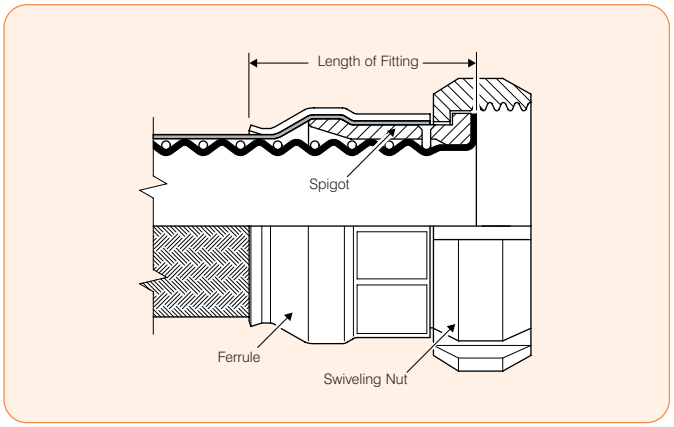
There is a variant of the RJT fitting referred to as the ILC fitting, which uses the RJT nut.

Maximum Working Pressures

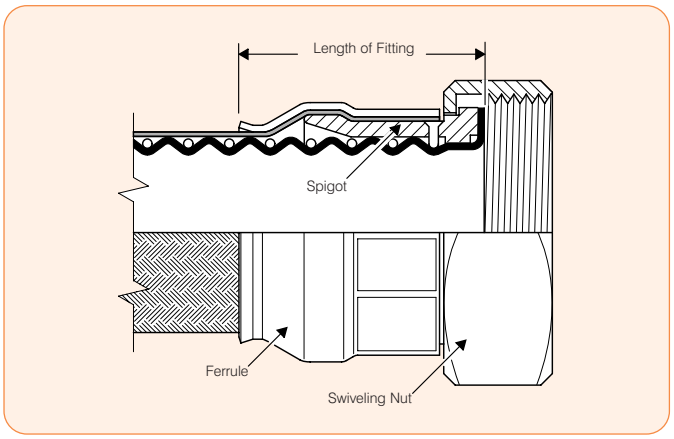
All sizes 145 psi (10 Bar). Test Pressure = 220 psi (15 Bar).

Nominal Size		Length		Weight of Fitting	
in	mm	in	mm	lb	kg
1	25	2 1/2	63	0.55	0.25
1 1/2	40	2 3/4	70	1.00	0.46
2	50	2 3/4	70	1.40	0.64
2 1/2	65	3 3/8	86	1.65	0.75
3	80	3 3/8	86	1.92	0.87

SMS Female Fitting



RJT Female Fitting



Corroflon Non Lined End Fittings

Fixed Male Fittings

Description

Fixed male fitting, BSP taper thread non-lined.

Specifications

Threads to BS21 1985.

Materials

Spigots are either in zinc plated mild steel or grade 316 stainless steel.

Alternatives (to special order)

Can be supplied with NPT, metric or parallel screwthread, with a flat face or a 60˚ internal cone. Can also be supplied in other materials, e.g. Polypropylene.

Maximum Working Pressures (MWP)

MS and SS MWP = As given for the hose. Polypropylene or other Plastic - 1/4 MWP for the hose, up to a maximum working pressure of 145 psi (10 Bar).

Self Sealing Couplings

Fixed males can be supplied with self sealing quick release couplings or "Dry Break" couplings, like Epsilon or Dry-Link screwed on if required.

Cone Seat Female Fittings

Description

60˚ cone seat female union fitting, BSP parallel thread non-lined.

Specifications

Generally to BS5200 1997 and ISO 1179.

Materials

Spigots are either in mild steel or grade 316 stainless steel, Nuts in MS or grade 304 SS, and ferrules in grade 304 SS.

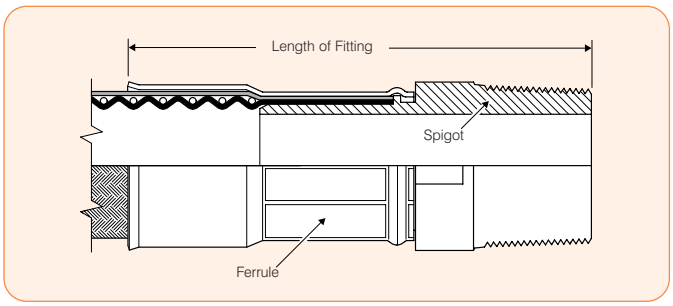
Alternatives (to special order)

These fittings may be supplied with a flat seat, or with a metric or NPSM thread. Lug Nut female union (and male) fittings are also available, in gunmetal or stainless steel.

Maximum Working Pressures

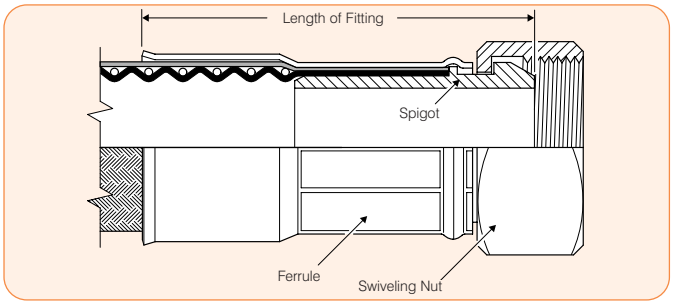
As given for the hose. (Test Pressures = MWP x 1.5).

Fixed Male Fitting



Nominal Size		Length		Weight of Fitting (steel)	
in	mm	in	mm	lb	kg
1/2	15	2 5/8	67	0.22	0.10
3/4	20	3 1/2	89	0.35	0.16
1	25	3 7/8	98	0.57	0.26
1 1/4	32	4 3/8	110	0.88	0.40
1 1/2	40	5 1/8	130	1.27	0.58
2	50	5 1/2	140	2.10	0.95
2 1/2	65	6 3/4	170	3.75	1.70
3	80	6 3/4	170	4.85	2.20
4	100	7 1/2	190	10.00	4.55

Cone Seat Female Fitting



Nominal Size		Length		Weight of Fitting	
in	mm	in	mm	lb	kg
1/2	15	2 1/2	63	0.18	0.08
3/4	20	3 1/2	89	0.39	0.18
1	25	3 1/2	89	0.60	0.27
1 1/4	32	3 1/2	89	1.10	0.50
1 1/2	40	3 7/8	98	1.28	0.58
2	50	4	100	2.00	0.92

Corroflon Dip Pipes & Cuffed Ends

Fixed Dip Pipes

Description

Fixed dip pipes are rigid tubes, either straight or bent through 90˚ (as shown) which, are crimped directly to the end of the Corroflon hoses. They are designed for insertion into drums, tanks and reaction vessels in order to suction drain (or inject) process fluids transferred through the hose.

Materials

Standard dip pipes are in anti-static (AS) PTFE. Also available in 316 SS, polypropylene, virgin PTFE and other materials to special order.

How to order

Specify the size and material of the dip pipe, whether it is straight or 90˚ elbow. Give the length of the straight leg of the dip pipe and the length of the flexible section of the hose section separately.

Limitations

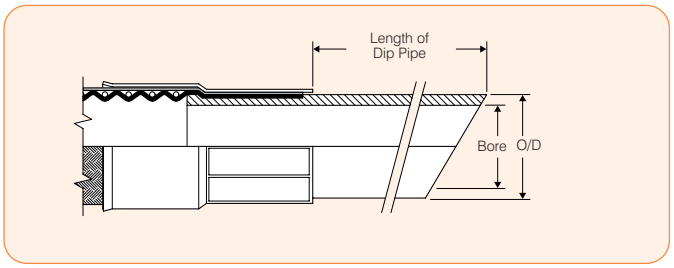
Tested only to 60 psi (4 Bar) pressure and not suitable for use at pressures higher than 45 psi (3 Bar).

Lengths

Dip pipes can be supplied in any length, to individual requirements.
When a 90˚ elbow dip pipe is supplied, the hose length is measured from the hose fitting to the axis of the open ended leg of the dip pipe, and the dip pipe length from the axis of the hose to the open end of the dip pipe. Please specify both when ordering.

Nominal Hose Bore Size				Inside Diameter	
in	mm	in	mm	in	mm
1/2	15	0.63	16	0.31	8
3/4	20	0.87	22	0.51	13
1	25	1.14	29	0.83	21
1 1/2	40	1.54	39	1.00	27
2	50	2.17	55	1.58	40

Fixed Dip Pipe



Cuffed End

Description

Cuffed end.

Limitations in use

Because the outer sleeve retaining the end of the braid is fairly loose, this type of end is only suitable for use where the cuff is to be permanently connected to a spigot. It is unsuitable for use unconnected, and for any disconnection and reconnection duties. It is not suitable for pressures above 45 psi (3 Bar) in sizes up to 1 1/2in or 15 psi (1 bar) in sizes from 2in to 4in. Spigots must be shouldered at the end, all edges rounded, and two clips must be used to make each connection.

Specifications

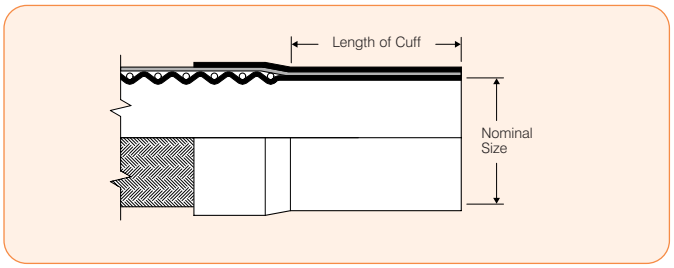
Bore of Cuff = Nominal Bore Size.

Materials

Outer sleeve in black PTFE.

Bore (in)	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4
Bore (mm)	13	19	25	32	38	50	63	76	101
Length (in)	1	1	1 1/2	1 1/2	2	2 1/2	3	3 1/2	4
Length (mm)	25	25	38	38	50	63	76	90	101

Cuffed End



Corroflon DIN 11851 Fittings

DIN 11851 Fittings (Male & Female)

Description

DIN 11851 male and female fittings, integrally PTFE lined.

Also available non-lined, up to 4in (100mm), to special order.

Specification

Generally to German DIN 11851 specification.

NB: The PTFE lined male fitting is designed to be used without a rubber seal. Please note that when connecting to a PTFE Lined DIN11851 Male, extra wrench tightening of the nut is sometimes required in order to provide a leak free connection.

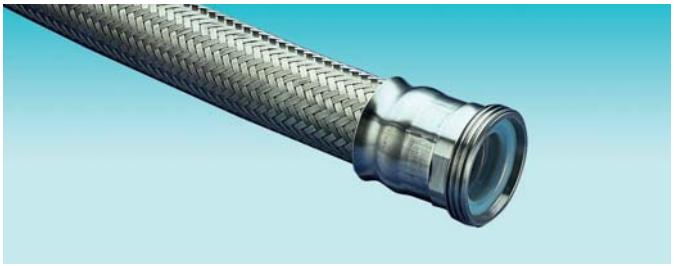
Materials

All components in stainless steel, Spigots Grade 316, Nuts and Ferrules Grade 304.

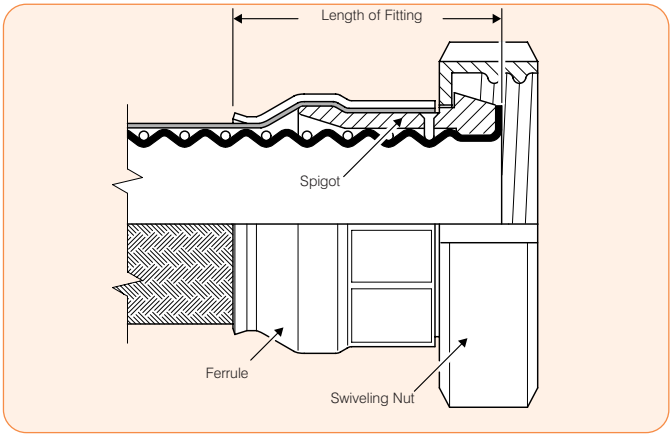
Maximum Working Pressures (MWP)

SS and PB Braided, $^{3}/_{4}$in to $1^{1}/_{4}$in MWP = 580 psi (40 Bar). $1^{1}/_{2}$in and 2in MWP = 360 psi (25 Bar).

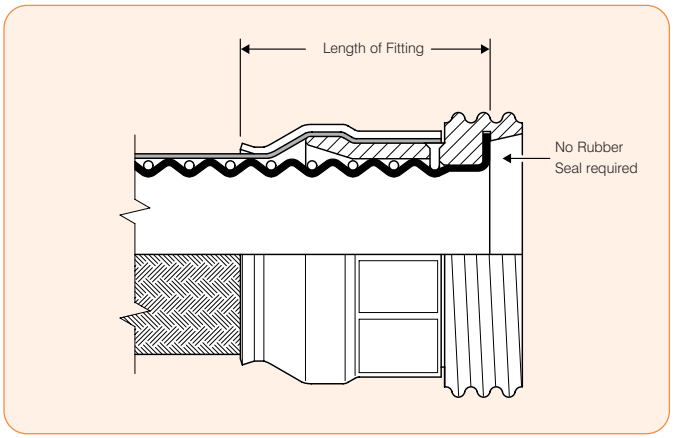
KYB Braided, MWP as for hose. Test Pressure = 1.5 x MWP.



DIN11851 Female Fitting



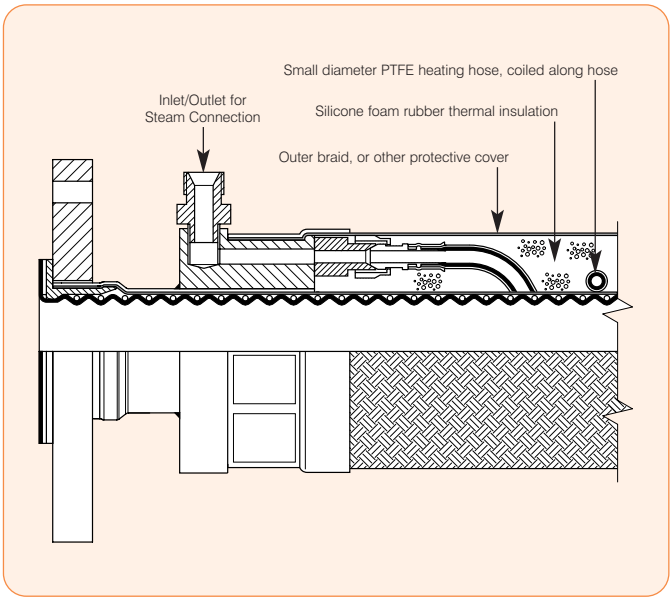
DIN11851 Male Fitting



Nominal Size		Length (Male)		Length (Female)		Weight of Fitting			
						Male		Female	
in	mm	in	mm	in	mm	lb	kg	lb	kg
$^{3}/_{4}$	20	$2^{3}/_{8}$	60	$2^{3}/_{8}$	60	0.18	0.18	0.48	0.22
1	25	$2^{3}/_{8}$	60	$2^{5}/_{8}$	67	0.48	0.22	0.80	0.36
$1^{1}/_{4}$	32	$2^{1}/_{2}$	65	$2^{3}/_{4}$	70	0.60	0.27	1.00	0.47
$1^{1}/_{2}$	40	$2^{5}/_{8}$	67	$2^{7}/_{8}$	73	0.73	0.33	1.22	0.55
2	50	$2^{5}/_{8}$	67	$2^{7}/_{8}$	73	1.28	0.58	2.05	0.93
$2^{1}/_{2}$	65	$3^{1}/_{2}$	89	$3^{5}/_{8}$	92	1.61	0.73	2.88	1.31
3	80	4	100	$3^{5}/_{8}$	92	2.20	1.00	3.46	1.57

Corroflon Steam Heated Hose Assemblies. (CH Grade)

CH Hose Assembly



Purpose

For use in applications where the temperature of the process fluid entering the hose assembly must be maintained as it passes through the hose. This is usually required to prevent solidification or an increase in the fluid viscosity. Steam or hot oil heating is preferred to electrical heating in some applications for reasons of availability or safety, but is less controllable.

Description

The heating element comprises a small diameter PTFE heating hose, 1/4in (6mm) or 3/8in (9.5mm) bore size, with a single SS wire braid. This is spirally wrapped around the hose, with inlet and outlet ports attached either both at one end or at opposite ends of the hose assembly. In the case of hose assemblies longer than 10ft (3 meters), it is usual to have not one but several heating hoses with inlet ports at opposite ends and along the hose. This reduces the effects of temperature loss over the length of the hose assembly. The thermal insulation is closed-cell, fire resistant silicone foam rubber. The outer cover may be SS wire braid with or without a rubber cover if necessary.

Design

Each hose is custom designed and built to suit the requirements of the particular application. The following information is therefore required:

- Fluid in Hose Assembly
- Maintained Temperature of Fluid in Hose
- Temperature of Steam or Fluid in the Heating Hose
- Min/Max Ambient Temperature
- External Conditions of Abrasion etc

Specifications

As for Corroflon GP, SS on page 4, except the size range is 1in to 3in, the minimum bend radius is tripled, and the outside diameter and weight are significantly increased in line with the particular design.

Limitations

1in PTFE lined PN10 flange spigots on heated hoses can only have a maximum flare diameter of 2in (50mm), not 2 1/2in(63mm).

If the hose is “hanging”, straight or at 90°, under its own weight, special construction is required, so advise Aflex Hose accordingly

Minimum CH Hose Assembly Length 29 1/2in.

Corroflon Electrically Trace Heated Hose Assemblies. (ETH Grade)

Purpose

For use in applications where the temperature of the process fluid entering the hose assembly must be maintained as it passes through the hose. This is usually required to prevent solidification or an increase in the fluid viscosity. In some applications, an additional 'heating up' or 'melting' facility is also required. Electrical heating is often preferred to steam heating because it is more convenient, more controllable and usually more readily available. 'Zone 1 Hazardous Area' requirements can be met.

Description

The heating element comprises either a resistance element or a self-regulating element spirally wrapped around the hose assembly. Resistance element heated hoses usually also require a temperature sensor to be built in to the construction. The power leads and (if applicable) temperature sensor leads emerge from the hose assembly at one end, through glands and conduits. The thermal insulation is foam rubber, closed-cell fire resistant silicone foam rubber for temperatures above 175˚F. The outer cover may be a Polypropylene Braid or SS wire braid with a rubber cover if necessary, or a ribbed PVC waterproof sleeve.

Design

Each hose is custom designed and built to suit the requirements of the particular application. Application details must be supplied by filling out an "ETH Hose Questionnaire", available from Aflex Hose. Generally, for Hazardous Areas, the Self Regulating type of heating element is employed, with or without a temperature sensor and control, and flameproof glands and conduit are also required. The watts per unit length of the heating element, the pitch of the spiral on the hose, and the thickness of the thermal insulation are all calculated in accordance with established formulas to give the required maintained temperature for the process fluid passing through.

Specifications

As for Corroflon GP, SS on page 4, except that the minimum bend radius is tripled and the outside diameter and weight are significantly increased in line with the particular design. Maximum ETH Hose Assembly Lengths are as given for Corroflon GP, SS.

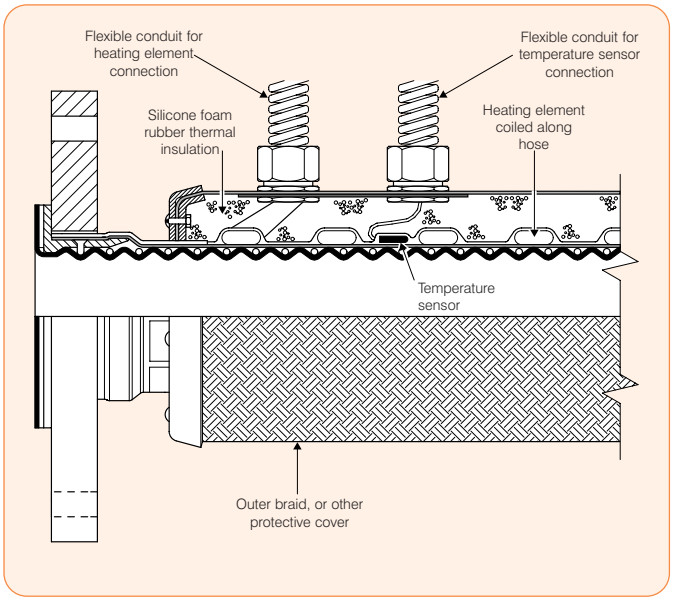
Limitations

1in PTFE lined PN10 flange spigots on heated hoses can only have a maximum flare diameter of 2in (50mm), not 2$^{1}/_{2}$in (63mm).

If the hose is "hanging", straight or at 90˚, under its own weight, special construction is required, so advise Aflex Hose accordingly.

Minimum ETH Hose Assembly Length, when collars are used 29$^{1}/_{2}$in.

ETH Hose Assembly



Hose Configurations & Length Calculations

Hose Configuration Requirements

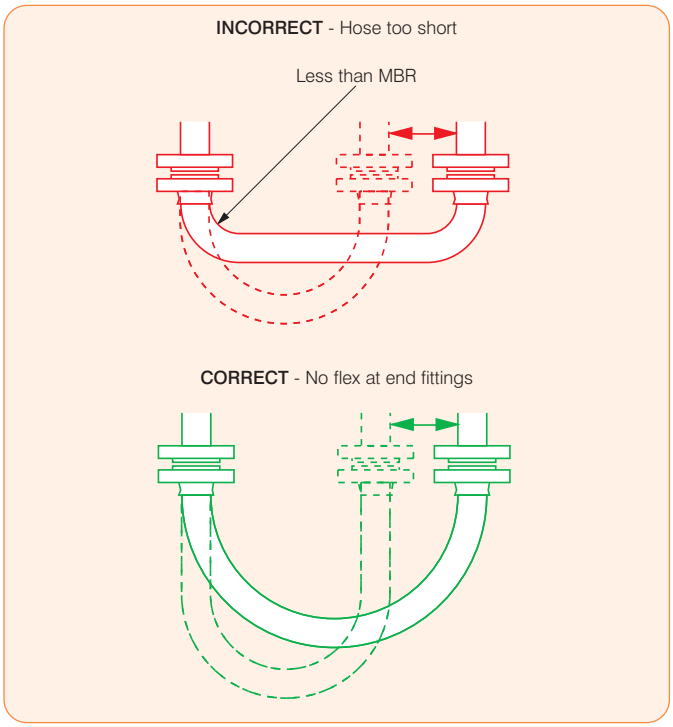
Hose Assemblies are usually connected at both ends in service. They may then either remain in a fixed, or static configuration or in a flexing, or dynamic configuration.

Whether static or dynamic, the First Rule concerning the configuration of the hose is that **the bend radius of the hose must never be less than the Minimum Bend Radius (MBR) for the hose** as listed in the relevant hose brochure.

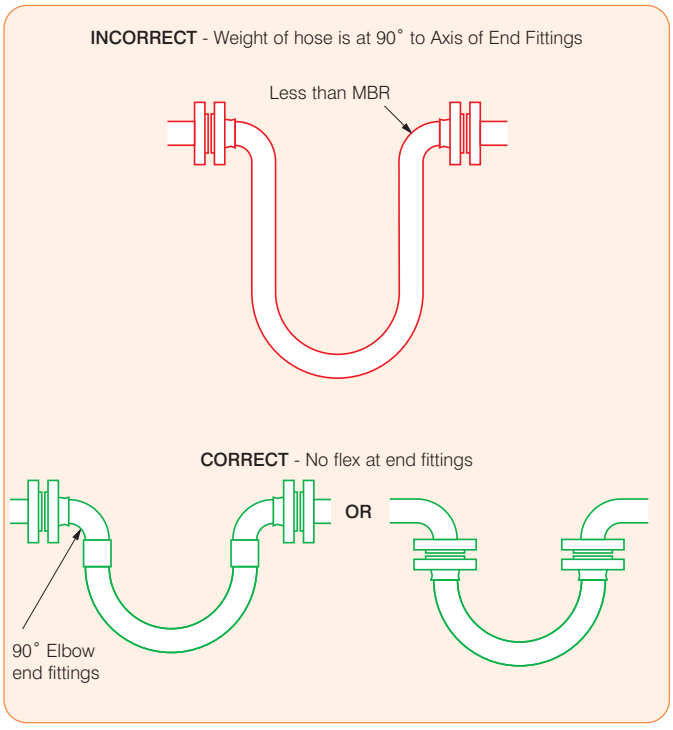
The most common situation when this is likely to occur is when the hose is flexed at the end fitting, with stress being applied to the hose at an angle to the axis of the end fitting. Typically, this happens either because the length of the hose is too short, or because the weight of the hose plus contents creates a stress at an angle to the end fitting.

The Second Rule, therefore, if possible, is to **design the configuration to ensure that any flexing in the hose takes place away from the end fittings.**

(Dynamic) Configuration



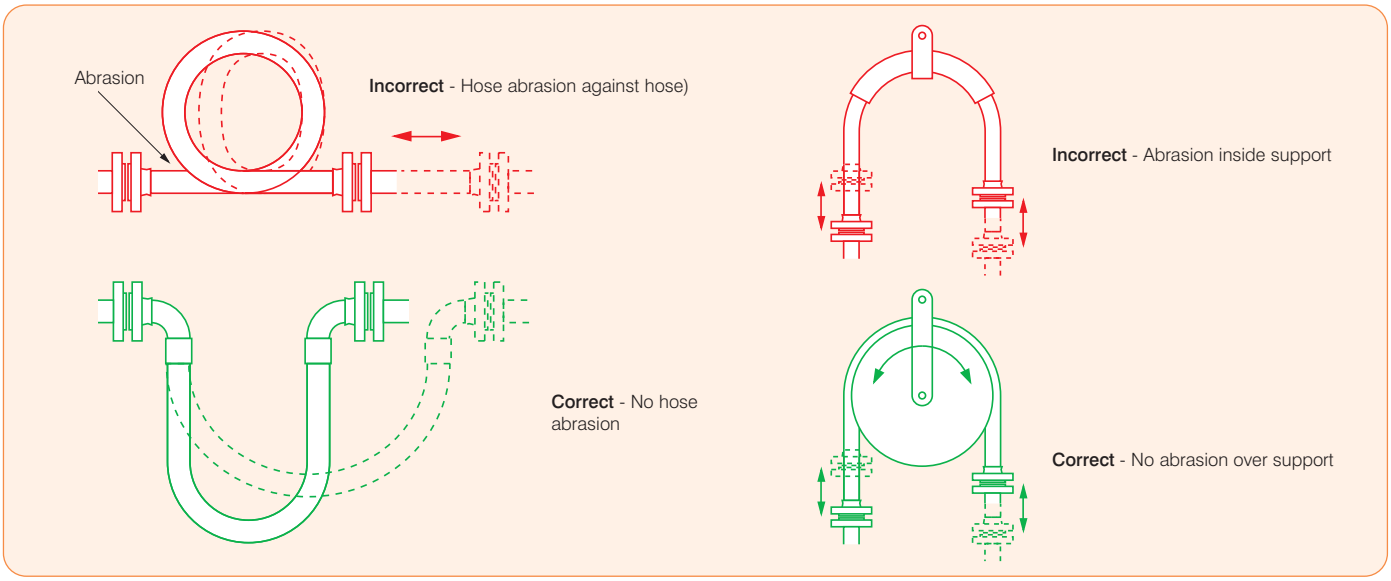
(Static) Configuration



Hose Configurations & Length Calculations

The Third Rule is that **the hose configuration should always be designed, and supported where necessary, to avoid any possibility of external abrasion.**

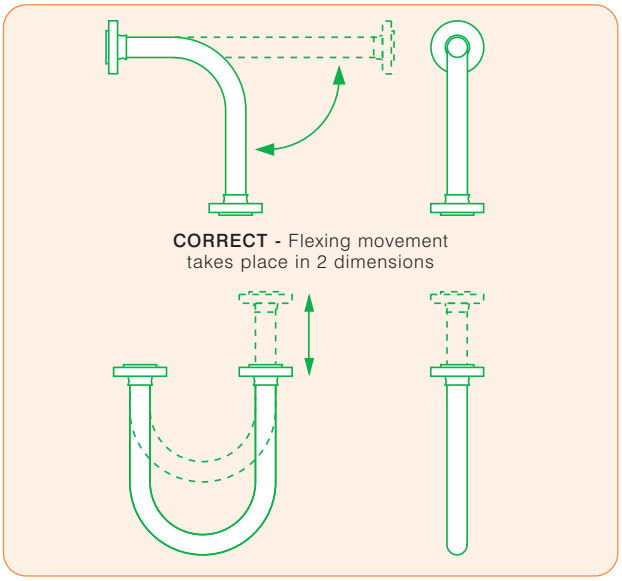
In some cases, the length, configuration and angle of the hose can be designed to avoid abrasion. In others, static or moving support frames or support wheels are required.

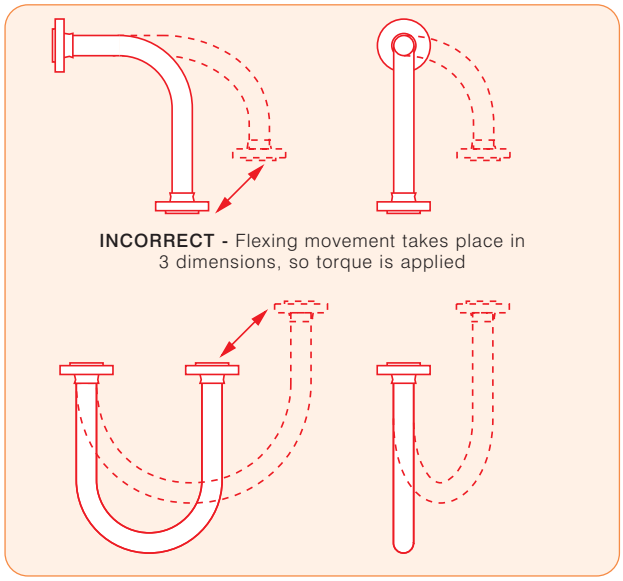


The Fourth Rule is that **the hose must not be subjected to torque, either during connection, or as a result of the flexing cycle.**

Torque (twist) in the hose can be applied during connection if the hose is accidentally twisted, or if the second end being connected is a screwed connection, and the hose is subjected to torque during final tightening.

In a flexing application, if any flexing cycle of the hose occurs in 3 dimensions instead of 2, then torque will also occur:





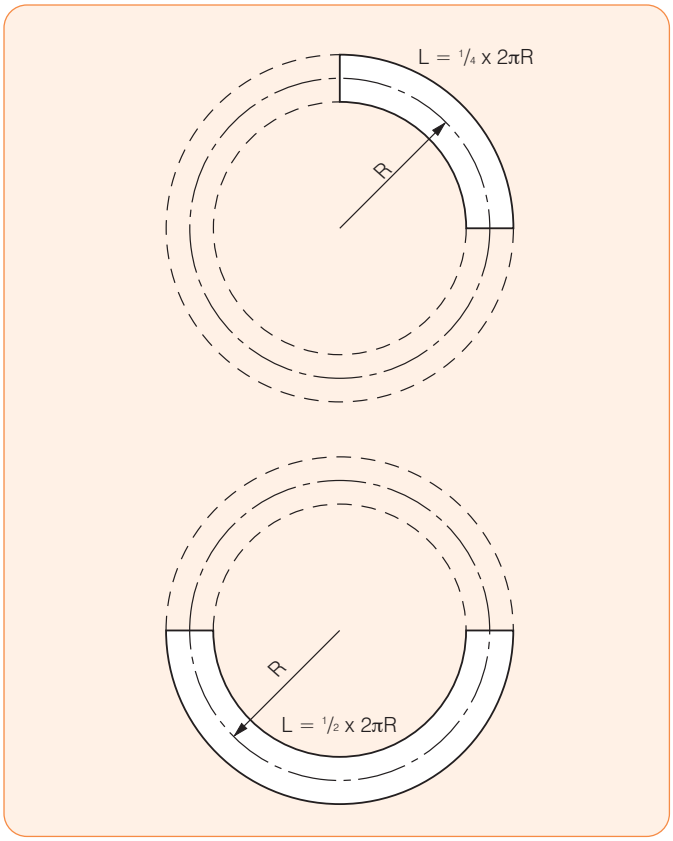
Both Corroflon and Bioflex hose have good resistance to a small level of torque, much better resistance that rubber or SS hose types, but it is still the best practice to take whatever steps are necessary to eliminate torque. If in doubt, consult Aflex Hose.

Hose Configurations & Length Calculations Continued

Calculating the Hose Length

The formula for calculating the bent section of the hose length around a radius is derived from the basic formula that the circumference of a circle = 2πR, where R = the radius of the circle, and π = a constant, = 3.142.

So, if the hose goes around a 90° bend, which is 1/4 of a full circumference, and the radius of the bend is R, then the length of the hose around the bend is = 1/4 x 2πR. Or half way round, in a U-shape, = 1/2 x 2πR.



Note :

In calculating the length of a hose assembly, the (non-flexible) length of the end fittings must be added in, also the length of any straight sections of hose, as in the following example:

Example :

To calculate the length for a 2 in bore size hose with flange end fittings, to be fitted in a 90° configuration with one leg 15 1/2 in long, the other 24 in long.

Length of Bent Section (yelllow) = 1/4 x 2πR (R = 13 in)
= 1/4 x 2 x 3.142 x 13 = **20.4 in**

Length of top, Straight Section, including the top end fitting length
= 24 - 13 = **11 in**

Length of bottom end fitting = **2 1/2 in**

Total length of Hose Assembly = 20.4 + 11 + 2 1/2 = **33.9 in**

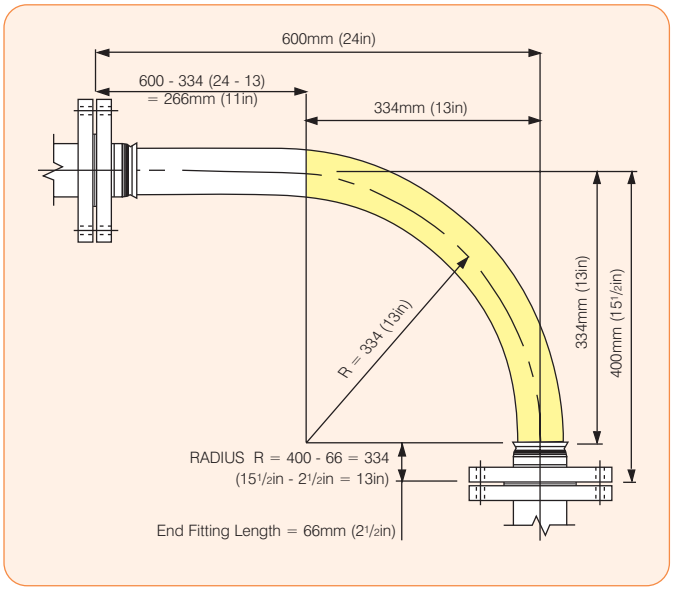
Things to consider

(a) A hose will normally take the longest radius available to it to go around a corner, not the MBR! Also - always remember to include the **non-flexible** end fitting lengths.

(b) In dynamic applications, remember to always calculate the lengths for the most extended configuration during the flexing cycle, not the least extended.

(c) If the configuration is simply too complex for calculation, then obtain a length of flexible tubing of some kind, mark on paper, or a wall, or floor, or both where the connection points will be relative to each other, scaled down if necessary, then manually run the flexible tubing between them with full radii round bends. Measure the extended length, then scale up if necessary to determine the approximate length of the hose.

If in doubt, consult Aflex Hose.



Conditions of Sale

General

Aflex PTFE hose products have not been designed or tested to be suitable for use in **USA Military Vehicles or Equipment, Aerospace applications, Medical Implantation applications or Motorsport applications,** and such use is therefore strictly prohibited unless written approval from Aflex Hose Ltd has been given.

Similarly, PTFE hose should not be used in any **radio active environment** as radiation has a detrimental effect on the mechanical and electrical properties of PTFE.

Aflex Hose Ltd will not accept liability for any failures of the Aflex Hose Products which are caused by customers failing to perform their Responsibilities as specified in these Conditions of Sale.

It is the customer's strict Responsibility to review all of the usage limitations given for the hose which he intends to use in an application, to ensure that the application conditions are in compliance with those usage limitations. The usage limitations are specified both on this page, and throughout the relevant sections under "Products and Information" on the Aflex Hose website. Customers must always consult the latest, up to date information, which is available and downloadable from the Aflex website, or request from Aflex Hose Ltd.

It must be accepted, however, that the usage limitations specified elsewhere in the Hose Product Information and on this page are intended as a guide only, since every possible factor in every type of application cannot possibly be covered. It is therefore the Customer's Responsibility to ensure the design suitability and safety of the products in their intended applications, giving particular consideration to the chemical and electrostatic compatibility of the fluids or gases passing through, the possibility of diffusion of fluid or gases through the PTFE hose lining, the possibility of external corrosive conditions, the types and likelihood of excessive mechanical abuse, such as abrasion (internal or external), crushing, excessive flexing or vibrations etc, and any excessive temperature and/or pressure "pulsing" conditions, all of which may cause premature hose failure. It is also the Customer's Responsibility to consider, and take account of the degree of risk involved in any hose failure, including the provision of adequate protection in the event of any risk to employees or the general public. In applications where any type of hose failure would lead to financial losses if the hose is not replaced immediately, it is the Customer's Responsibility to order and hold in stock spare hose(s) accordingly. It is also the Customer's Responsibility to advise Aflex Hose in writing if there are any special requirements for the hose, including cleaning, or drying, or extra testing requirements which are in addition to normal industrial standards.

If the Customer has any doubts concerning these or any other usage limitation or safety parameters, it is the Customer's Responsibility to consult Aflex Hose Ltd, to request a written response to any queries.

It is the Responsibility of the Customer to ensure that if the product is sold on, or passed on, however many times, that all the necessary information including this page and the Aflex Hose website address are also passed on to the final user, together with a specific requirement that the final user must review the usage limitations in terms of his own application.

Hose Service Life

It is not possible to guarantee a minimum service life for any of the Aflex Hose products which can be applicable for every type of application.

(For example, PTFE lined hose has been used in one application where it was cycled with hot steam, then cold water, also flexed every 17 seconds 24 hours per day, and the customer was very satisfied with a service life of 3 weeks before failure. In other light duty applications carrying pharmaceutical products, however, many Corroflon hoses are still performing satisfactorily after 20 years in service).

Service life predictions or guarantees can only be given in cases where all the relevant information concerning the application is given in writing to Aflex Hose, and Aflex Hose subsequently replies in writing prior to the order being placed.

If such a written undertaking is not sought and given, then Aflex Hose cannot be held liable for any hose product failure which the customer considers to be premature, excepting failures which are due to faulty materials or manufacturing defects.

24 Month Warranty

Aflex Hose Ltd warrants its products to be free from faulty materials or manufacturing defects from the date of the initial sale, for 24 months.

Product Failure

In the event of a product failure, Aflex Hose requests that the product should not be cut up or tampered with, but should be decontaminated and returned to Aflex Hose, plus a decontamination certificate, for examination and analysis of the fault. The customer should also provide full details in writing of the application conditions under which the hose failed, including Pressure, Vacuum, Temperature, Flexing and any cycling of any of these, also the fluid and gases passing through the hose, and the total time that the hose has been in service. The customer may send his own witness to the examination if required. Aflex Hose will provide a full Non Conformance Report for the customer.

If faulty materials or a manufacturing defect in the hose was responsible for the failure to perform then, the maximum liability to be accepted by Aflex Hose would include the invoice value of the failed hose itself, or the invoice value of the whole customer order if appropriate, also any reasonable costs for removal and replacement of the hose, and costs for packing and despatching the failed hose back to Aflex Hose. Aflex Hose Ltd will not accept liability for any other consequential or financial losses, including, but not limited to loss of profits, loss of products or downtime costs.

Untested Hose for Self Assembly by Customers

Aflex Hose sometimes supplies "loose" hose, without end fittings attached to Self Assembly Customers, who will then cut the hose to length and attach end fittings to make up Hose Assemblies.

Self Assembly Customers must then accept the responsibility to carry out pressure testing of 100% of such assemblies to 1^{1}/2 times the Maximum Working Pressure before supply for end use, to validate both the hose and the end fitting attachment.

Unless the customer requests, and Aflex Hose confirm that their loose hose is pressure tested before supply, such testing is not normally applied by Aflex Hose, because this testing requirement is satisfied by the Self Assembly Customer during his own testing of the finished Hose Assembly.

The Self Assembly Customer must also accept responsibility for determining and approving the Design Suitability of the hose assemblies for their intended use before supply.

This includes determining and requesting or applying any special tests which may be identified as necessary to ensure suitability for the intended use.

Aflex Hose will only accept liability for its hose products which are assembled by customers themselves if all the hose and fitting components were either supplied by Aflex Hose or manufactured in accordance with Aflex Hose drawings, and they were assembled and tested in accordance with Aflex Hose's current Manufacturing and Testing Instructions.

Untested Hose Assemblies

Aflex Hose is sometimes requested by customers to attach non-standard end fittings to hose assemblies which they supply, and in some cases it is not possible to connect these fittings to the pressure test system. In such cases a Concession not to test is obtained from the Customer, and a label is attached to the hose assembly, warning that it requires pressure testing before use.

Force Majeure

Aflex Hose Ltd shall not be liable for any delay or default in performing in accordance with any Customers' order if the delay or default is caused by conditions beyond its control, including, but not limited to wars, insurrections, strikes, natural disasters or performance failures by Carriers, sub-contractors or other third parties outside the control of Aflex Hose Ltd.

Legal System

These Conditions of Sale are subject to English Law.

Aflex Hose USA, LLC

World's Leading Manufacturer of PTFE Flexible Hose

The World's Leading Manufacturer of PTFE Flexible Hose.

Aflex Hose USA, L.L.C
6111 Keller's Church Road, Unit B, Pipersville,
Bucks County, Pennsylvania, PA 18947, United States of America
Telephone: (+1) 215 766 1455 Fax: (+1) 215 766 1688
Web Site: www.aflex-hose.com

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