GF Piping Systems

+GF+

Beyond endurance

SYGEF ECTFE

Challenges with harsh chemicals

Extremely aggressive media under high pressure present manufacturers with special challenges.

When aggressive media such as concentrated sulfuric acid (H2SO4) or hydrogen peroxide (H2O2) is transported under high pressure and temperature conditions, lined steel piping is an often used solution.

PFA or PTFE inliners are used due to their chemical resistance and temperature range. But PFA or PTFE are characterized by a relatively low tensile strength and impact resistance, therefore steel is used as an outer layer to ensure machanical strength.

Lined steel pipes are not an entirely satisfying system solution due to their lengthy assembly times, high weight and exterior corrosion susceptibility.

Corrosion of steel outliners lowers the mechanical properties and can lead to stress cracks in the steel outliner as well as the PFA or PTFE inliners. To ensure the safety of lined steel pipes under harsh conditions frequent inspections, repairs and replacements are necessary.

Therefore, to provide the highest level of safety for people, the environment and the production process in a cost effective way GF Piping Systems' SYGEF ECTFE piping system is a more beneficial solution.

+ Corrosion leads to metal degradation and leakages

+ Contamination of the transported media and the environment

+ High frequency of inspections, repairs, and replacements

+ Heavy weight solutions due to high density of metals

+ **High chemical, pressure and temperature resistance**

+ **Safe and reliable**

+ **Low weight plastic solution**

+ **Economic and efficient operation**

Beyond reliability

The ECTFE system was established as a safe, reliable and cost reducing high-end solution for extremely aggressive media. SYGEF ECTFE is suitable for exceptionally demanding applications in the industrial sector and combines highest chemical, pressure and temperature resistance with economic and efficient operation.

With the SYGEF ECTFE system, GF Piping Systems has expanded its proven solutions with a complete system, which sets new standards for transporting particularly aggressive media such as highly concentrated sulfuric acid. The ECTFE product portfolio includes the complete range of pipes, fitting and innovative jointing technology. This gives users a suitable solution that complements the existing industrial portfolio of PP-, PVC- or PVDF-plastic piping systems.

The ECTFE system from GF Piping Systems was designed specifically as a high-end solution for extreme conditions. The piping system has been proven to be extremely resistant and reliable for the transport of bases or highly concentrated acids. At the same time, users benefit from quick assembly, a long system service life, and lower initial costs than welded PFA systems.The combination with the latest IR welding technology from GF Piping Systems provides the highest level of safety for people, the environment and the production process. Similar to all SYGEF system solutions, the particularly robust ECTFE system is produced at the world's largest clean room plant for fluoropolymer products in Ettenheim, Germany. The fully controlled processes coupled with unique quality assurance warranties 100% traceability of each individual product.

The ECTFE fluoropolymer system benefits wherever other plastic piping system solutions reach their limits or metal pipes are chemically attacked. Alternative materials like PFA or PTFE can be quickly, reliably and cost-effectively substituted by ECTFE. Compared to PFA ECTFE enables higher pressure ranges and allows a streamlined and efficient installation design. The ECTFE system is about 50% more cost-effective than IR-welded PFA solutions.

Beyond endurance

The SYGEF ECTFE piping system shows its advantages when it comes to manufacturing, transport and filling of concentrated chemicals under high temperature and pressure. This property makes ECTFE an ideal addition to the SYGEF fluoropolymer family. Due to faster assembly, lower initial costs and longer service life compared to alternative solutions, an economical transport of particularly aggressive media is achieved. The system is well suited for the chemical process industry, water treatment and microelectronics.

Safe and reliable
The ECTFE system enables safe handling of chemicals including those with a pH value below 2 and above 12. At the same time, the high-end system solution is absolutely reliable thanks to advanced IR welding technologies.

Long system lifetime
Aggressive media often considerably affect the service life of piping systems. Due to its extremely high chemical resistance, ECTFE reduces maintenance costs and eliminates process interruptions.

200% higher pressure range
Due to its excellent mechanical properties, ECFTE allows a 200% higher pressure range than PFA. This provides users with more efficient processes and higher safety standards.

20% more efficient pipe volume
Thanks to its high mechanical stability, the wall thickness of the ECTFE components has an optimal SDR and is 20% more efficient compared to PFA. Thereby the system enables higher flow rates with equal or less space requirements.

Low initial costs
Compared to the widely used PFA solutions, ECTFE is also characterized by significant cost savings and optimum permeation characteristics. The initial costs are 50 % lower than those of IR-welded PFA piping systems.

85% faster assembly
The ECTFE components are securely connected in a few minutes using most advanced IR-welding technology. Compared to pipes made of lined steel, installation time is significantly reduced.

Full solution provider

GF Piping Systems offers a complete portfolio including pipes, fittings and valves from d20 - d110mm or DN15 - 100. All components are designed for industrial pressure piping applications with SDR21/ PN10 pressure rating.

All raw material grades used by GF are characterized by excellent behavior in fire tests.

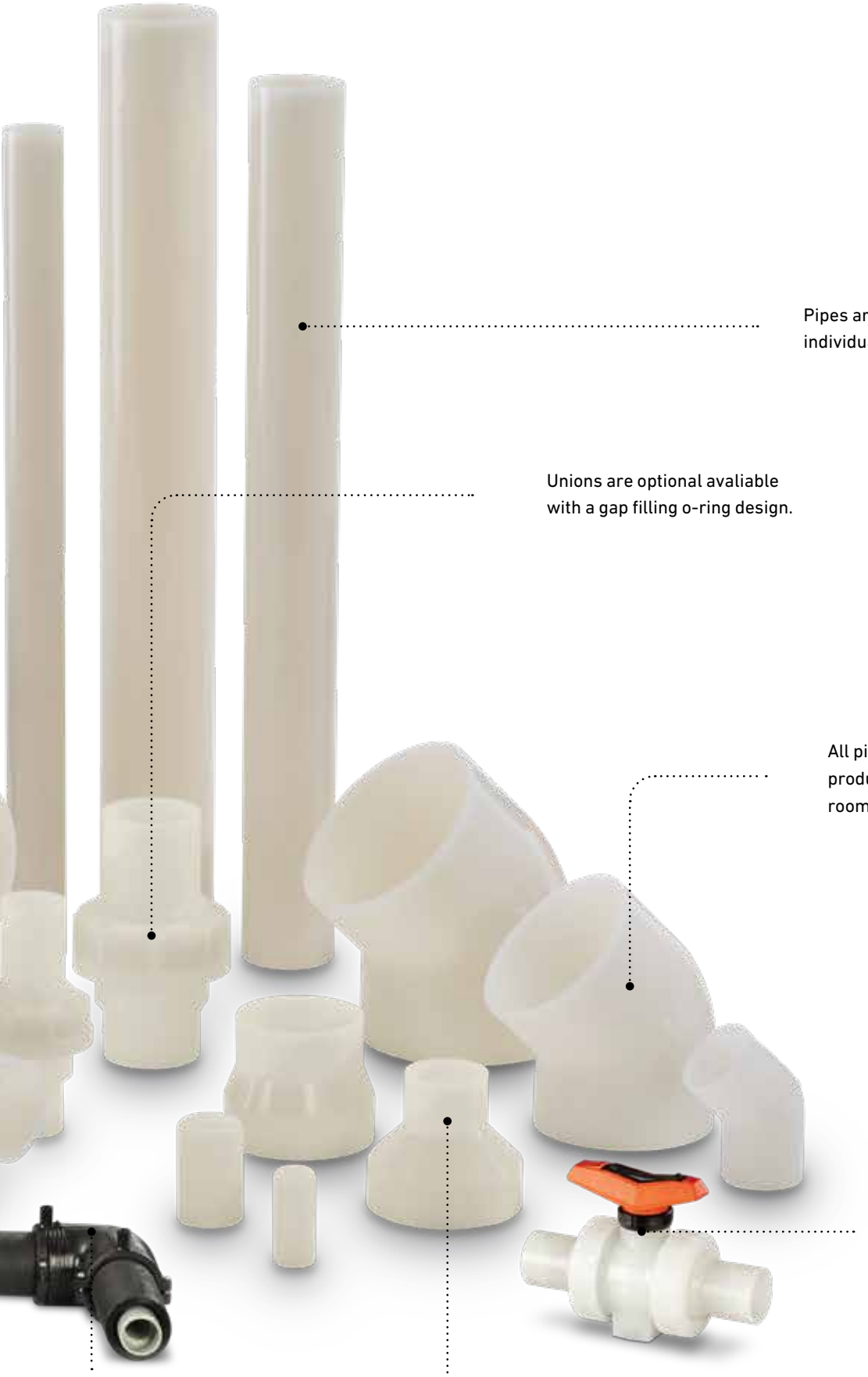
(UL 94 classification: V-0)

The components have been tested to reach the best fire classification that can be reached by thermoplastic polymers.

(EN ISO 13501-1 classification: B-S1, d0)

All components are eligable for IR-welding which guaranties 100% replicable weldings.

The U3000 Clamp-on ultrasonic flow meter ensures accurate and non-contact flow measurement.



Pipes are capped and individually packed in foil.

Unions are optional avaliable with a gap filling o-ring design.

All pipes and fittings are produced under clean room conditions.

PVDF Ball and Diaphragm Valves with ECTFE ends are extending the portfolio.

If required, GF offers a double containment solution with CONTAIN-IT Plus.

All fittings are individually packed in foils.

Ultra system performance

	SYGEF ECTFE
Material	ECTFE Halar
Color	opaque
Density	~1.68 g / cm^3
Thermal expansion coefficient	0.08 – 0.135 mm / mK (DIN 53752 / ASTM D696)
Thermal conductivity at 23°C	0.15 W / mK (ASTM C177)
Tensile stress at 23°C	≥ 30 N / mm^2 (EN ISO 527-1)
E-module at 23°C	≥ 1 600 N / mm^2 (EN ISO 527-1)
Charpy notched impact strength at 23°C	no breaking (EN ISO 179 / 1eA)
Dimensions	d20 – d110 acc. to ISO 10931
Temperature range raw material	-76 °C to 140 °C (-104.8 °F to 284 °F)
Temperature range applied on chemicals	0 °C to +80 °C (32 °F to 176 °F)
Surface properties	Inner surface Ra < 0.5 µm (20 µin) for injection moulded and extruded components
Internal stress	Pipes: ≤ 2.5 N / mm^2; stress relieved by thermal annealing during manufacturing
Packaging	Pipes are capped and individually packed in foil like the fittings
Marking and labeling	During production, all components are embossed with a permanent identification to ensure full traceability: - Brand name - Lot number - Material - Product description - Dimensions - Article number - Pressure rating - Standards
	Colored labels for differentiation between SYGEF ECTFE and SYGEF Standard PVDF

Safe and reliable

From the characteristics of the raw material to the quality control of the finished part: GF Piping Systems ensures that the warranted properties are met thanks to its unique laboratory expertise.

GF Piping Systems examines the material, jointing technology, and products beyond mandatory standards in detail at its accredited laboratory (OSO/IEC 17025) in Schaffhausen (Switzerland). The guaranteed characteristics of the applied ECTFE raw materials are tested by GF Piping Systems. Despite decades of collaboration with material suppliers, GF Piping Systems strictly adheres to the principle of "trust and verify." SYGEF ECTFE has been and is continuously tested under temperature, also with chemicals, under long-term conditions. So you can be assured that information from our chemical experts is based on decades of experience and various tests. Your medium is tested by GF Piping Systems under application conditions on real components. Additional details are also provided by the microscopic inspection of the parts morphology and the IR-joints. Besides important insights regarding production process and correct fusion parameters, the effect of test and application conditions is also carefully inspected. Has the product been chemically attacked? Extremely experienced staff members examine the samples and products not only visually but also using infrared microscopy.

Chemical resistance

Chemical resistance at 20 °C / 68 °F
Detailed evaluation is depending on concentration. Contact ChemRes

			Thermoplastics				Steel		
			semi-crystalline		amorphous				
Media group	**Medium**	**Concentration**	**ECTFE**	**PVDF**	**PVC-U**	**PVC-C**	**SS 1.4301 / 304**	**SS 1.4401 / 316**	**Hastelloy C 276**
Acids	**Inorganic oxidizing acids**								
	Nitric acid	> 50 %	+	+	o	o	+	+	+
	Chromic acid	> 30 %	+	+	o	o	+	+	+
	Sulfuric acid	≥ 96 - 98 %	+	o	+	-	o	o	+
	Inorganic non-oxidizing acids								
	Hydrochloric acid	</= 37 %	+	+	+	+	-	-	o
	Hydrofluoric acid	> 40 %	+	+	-	-	-	-	o
	Organic acids								
	Formic acid	> 85 %	+	+	o	-	o	+	+
	Acetic acid	> 85 %	+	+	o	-	o	+	+
Bases	**Inorganic** (caustic soda lye)	</= 50 %	+	-	+	o	+	+	+
Halogens	**Chlorine, bromine, iodine, (no fluorine)**		o	o	o	o	-	-	o
Fuels / oils	**Aliphatic hydrocarbons**		+	+	o	o	+	+	+
	Aromatic hydrocarbons		+	+	-	-	+	+	+
Oxidizing agent	**Hypochlorite, hydrogen peroxide, ...**		+	-	+	o	o	o	+

\+ resistant
o conditionally resistant, please consult gss@georgfischer.com
\- not resistant

* Please note: The above list is only intended as a guideline and does not replace an in-depth review of material suitability for the particular application. The information is based on our experience and is state of the art. This data consists only of general indicators. In practice, however, other factors such as concentration, pressure and jointing technology must also be taken into consideration. The technical data is not binding and does not constitute expressly warranted characteristics of the goods. Please contact gss@georgfischer.com for help with selecting the right materials.

Our teams of experts have decades of experience in the chemical resistance of materials. The online tool ChemRes PLUS provides you with the most important basic information.
The ChemRes PLUS Online Tool from GF Piping Systems summarizes a large amount of data about materials and media and presents it visually. Choose among all materials and solvent cements of the GF Piping Systems product portfolio and compare them to get a comprehensive overview.

Scan the QR code to visit our chemical resistance online tool.

Ensuring maximum safety under extreme conditions

Dosing sodium hypochlorite

The ECTFE range can also be used effectively for drinking water treatment. In the application example, SYGEF ECTFE is used for a dosing system in water treatment. A sodium hypochlorite solution is dosed into water for disinfection and preparation for drinking water use.

Storage of acid

The transport of aggressive media in particular, such as highly concentrated sulfuric acid, requires an exceptionally reliable piping system to ensure safe handling at all times. The ECTFE assortment is used to fill the tank and subsequently transport such medias. In this case, one of the tanks contains 98% sulfuric acid, a very corrosive liquid.

Your benefits

- Extreme corrosion resistance and reliability when handling aggressive chemicals
- Great permeation and temperature resistance
- Low initial and maintenance costs
- Long system service life
- Low stress installation due to low stress components (pipes and fittings)
- Safe and 100% traceable installation due to the IR welding technology

Customer reference: Merck & Cie

Long-lasting and reliable plastic piping systems for hazardous chemicals

Merck & Cie. is a subsidiary of the German group Merck KGaA and specializes in the Healthcare and Life Science sectors. With several facilities across Switzerland, the company produces high-quality products for the global market. In the field of wastewater treatment, plastic piping systems are used to safely and reliably transport hazardous media. Here, Merck relies on the SYGEF ECTFE system by GF Piping Systems.

Customer benefits

- ECTFE is an exceptionally resistant material for the transport of highly aggressive chemicals and is suitable for high process pressures and temperatures.
- The space-saving components have been designed andtested for especially challenging applications and are particularly suited for tight spaces.
- System components and jointing technology from a single source not only guarantee the best possible welding quality, but also maximum safety.

Scan the QR code to read the full article.

The pioneer in IR fusion

GF Piping systems has been the pioneer and leader for innovative infrared fusion technology since 1992. We have been working closely together with our customers focussing on their real-life needs. As a result we developed the automated IR-A family, which covers the dimension range from d20 up to d400mm and is the completion of the IR-Plus line-up.

The optimized heating process

Non-contact heating (IR) shortens the heating time by more than 50% compared to conventional butt fusion. The entire equalization process is no longer necessary which solves the problem of varying bead formations. The tendency for melted material to stick to the heating element (especially PVDF) is eliminated.

Advantages of IR fusion:

- Short welding time
- Minimal defined bead
- High reproducibility
- High reliability
- Less thermo-stress
- Best for high purity applications

The Weld-Bead Inspection (WBI) Tool

Built to provide peace of mind for piping systems in the microelectronics sector, the Weld-Bead Inspection Tool from GF Piping Systems assesses the quality of infrared-weld beads more reliably than ever.

When an infrared butt fusion process is used to join plastic piping components together, a weld (or fusion) bead is produced. In the past, experienced welders or quality control managers assess the quality of the bead with the naked eye to see whether it is perfectly fused and as uniform as possible. But there are fewer and fewer qualified workers with this expertise, so why take the risk?

Better to be objective

As small as a computer mouse and packed with state-of-the-art photo-sensory technology: welds for highly demanding applications can now be digitally inspected to ensure potential weaknesses are highlighted objectively, ensuring the risks of leaks resulting in millions of dollars worth of damage are reduced. There has never been a tool like it before that can assess a weld bead and provide a seal of approval as quickly and objectively.

WBI-L assessing the strength of a weld

Protect and preserve

Scan the QR code to know more.

The Contain-It™ secondary containment piping system comprises lightweight and clear PVC split pipes and fittings that are easy to fit over primary piping systems. When combined with GF's variety of primary piping systems, the Contain-It™ system is suitable for virtually any piping application, from pressure process lines to drainage waste systems. With the pipe split along its length, the Contain-It™ piping system can be installed over virtually any carrier system. The carrier system can be tested without interference from the containment piping. Any leaks found during testing are easily repaired. A leak detection cable can be installed as the split components are assembled, eliminating the need for time consuming cable pulling or the inclusion of lines to pull the cable through. Containment piping can be retrofitted over plastic and metal systems above and below ground, protecting employees, equipment, and the environment.

Applications

The retrofit capability and chemical resistance of Contain-It make this an ideal choice for containment piping of chemical process lines. When you combine the advantages of Contain-It with the complete line of thermoplastic piping systems from GF, you'll see that you can use "one source" for all your process and waste piping needs.

Solid Pipe

Solid pipe may be combined with split fittings in installations that do not require retrofit capability or where it is preferred to pull a leak detection cable. Solid pipe is available in 3" (90 mm), 4" (107 mm) and 6" (160 mm).

Centralizer

Centralizers center and support the carrier pipe. They are available for IPS, metric, and CTS carrier pipes.

Outside pipes/fittings	Details
Material	Clear Polyvinyl Chloride (Clear PVC)
Pressure rating	32 PSI for PVC bonded termination 5 PSI for flexible terminations
Operational temperature	32°F to 140°F (0°C to 60°C)
Jointing technology	Adhesive joint

Together as one

Process automation

We offer a true partnership with a unified vision toward active water conservation. Our solutions for automated flow processes ease the way toward autonomous vessels.

One user experience across the whole control loop

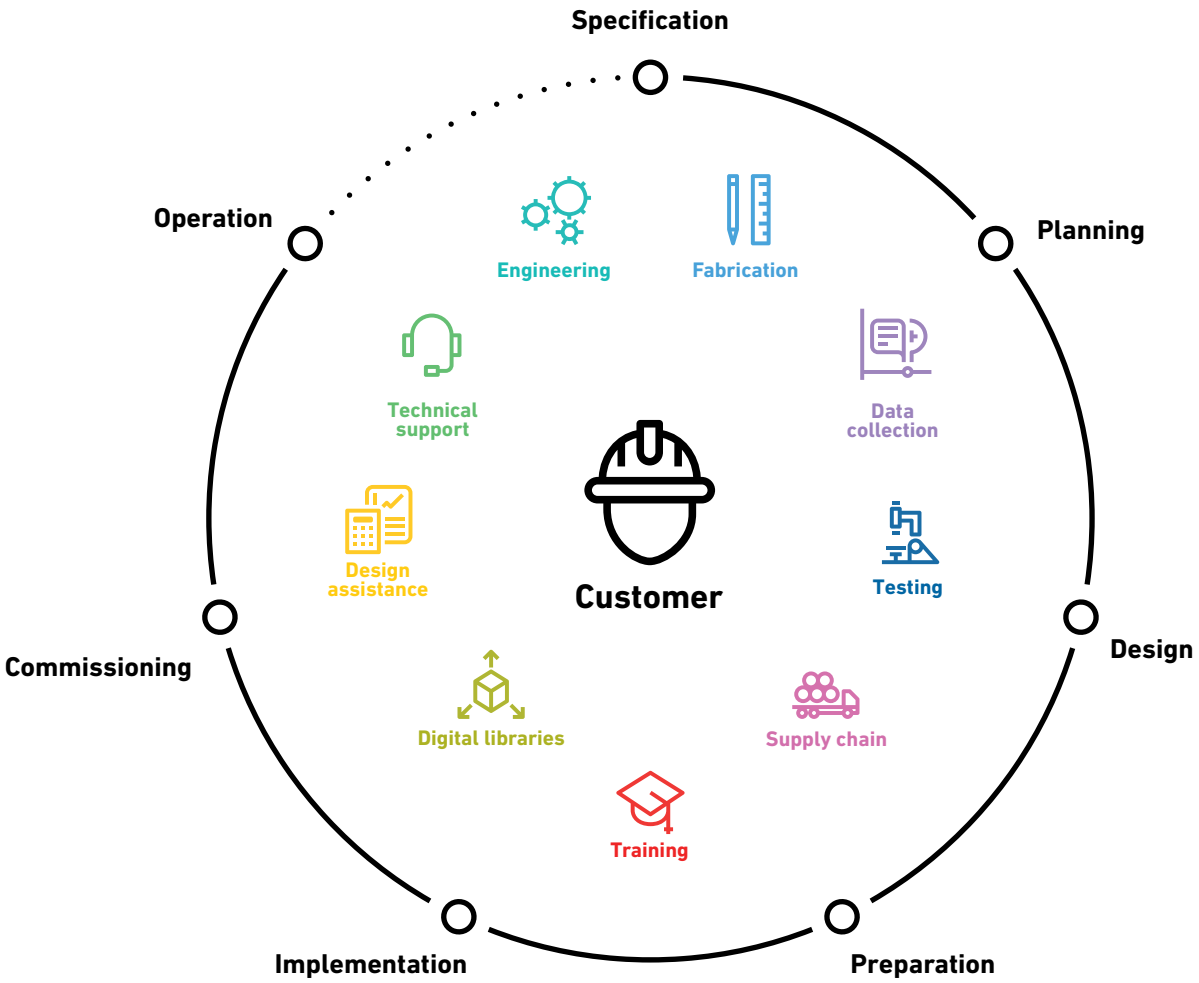
GF Piping Systems is your experienced partner with a full portfolio of measurement, control, and actuation components, which are easy to install and use and have local support through all project phases. We offer the full package with our products and solutions, providing top-quality installation, a highly skilled team of experts standing by our customers' side every step of the way worldwide, and digitalized services ensuring a project is at the forefront of the market.

More information at
www.gfps.com/processautomation

The U3000 Clamp-on ultrasonic flow meter ensures accurate and non-contact flow measurement.

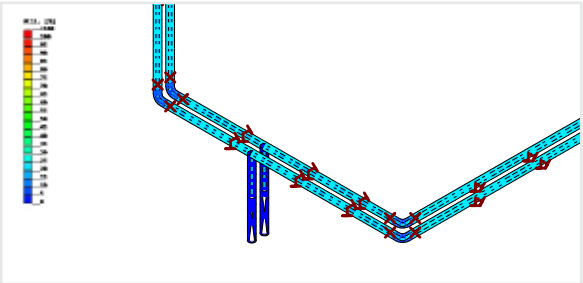
Ready when you are

With Specialized Solutions, the global leader GF Piping Systems provides project support every step of the way to achieve construction excellence. Allowing owners and planners to concentrate on their daily business without interruption.



Pipe stress calculations
To evaluate a piping installation regarding dead load, thermal expansion and additional loads the following evaluations and calculations are offered by GFs Advanced Engineering:

- Flexibility of the pipe system geometry
- Stresses in pipes and fittings
- Pipe displacement
- Pipe deformations
- Loads on components
- Loads on supports



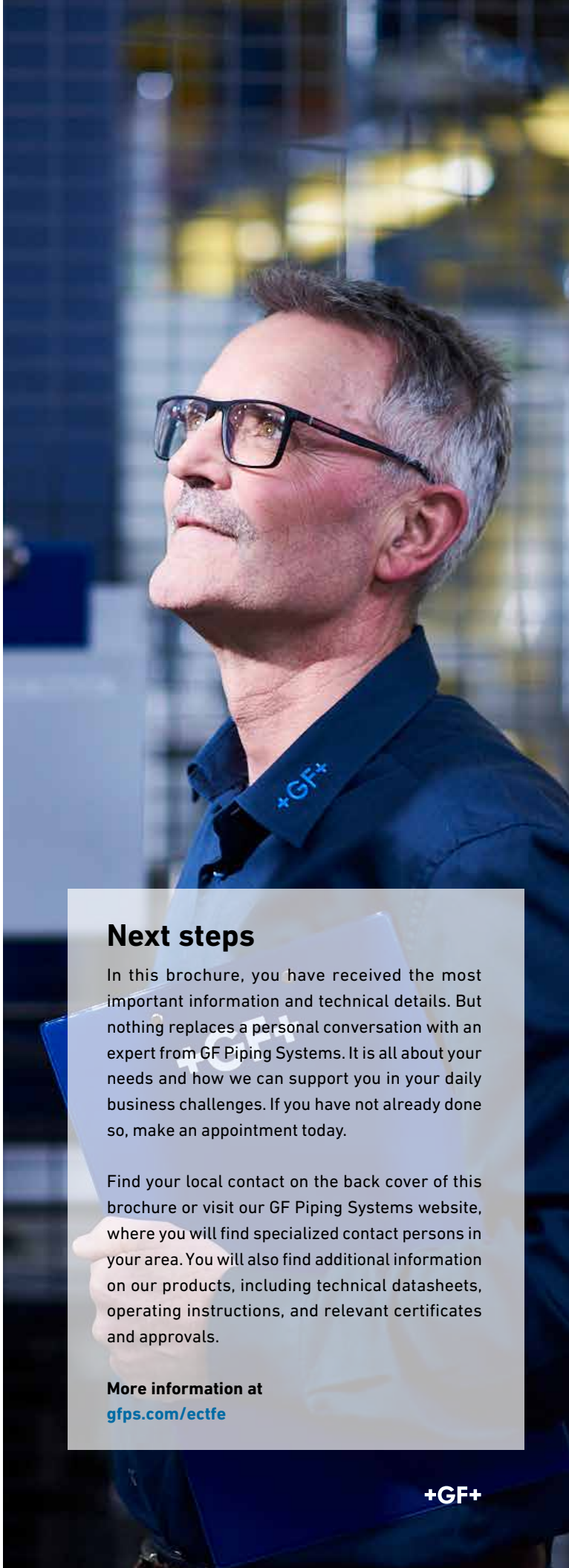
Ultra precise design
Optimize planning and execution phases and avoid failures due to improper design and pipe support.

Ultra training support
Increase quality and safety throughout every phase of your project with industry-leading training programs.

Ultra fast response
Reduce project and operation lead times through off-site pre-fabrication and advanced stock management.

Ultrasonic analysis
The integrity of a piping system is essential for the semiconductor industry. Our weld-bead inspection tools and ultrasonic NDT (Non-Destructive Testing) provides testing options at the point of installation, while Pipe Condition Assessment can be employed during operation to acquire real data about the state of piping systems.

More information at
gfps.com/specialized-solutions



Next steps

In this brochure, you have received the most important information and technical details. But nothing replaces a personal conversation with an expert from GF Piping Systems. It is all about your needs and how we can support you in your daily business challenges. If you have not already done so, make an appointment today.

Find your local contact on the back cover of this brochure or visit our GF Piping Systems website, where you will find specialized contact persons in your area. You will also find additional information on our products, including technical datasheets, operating instructions, and relevant certificates and approvals.

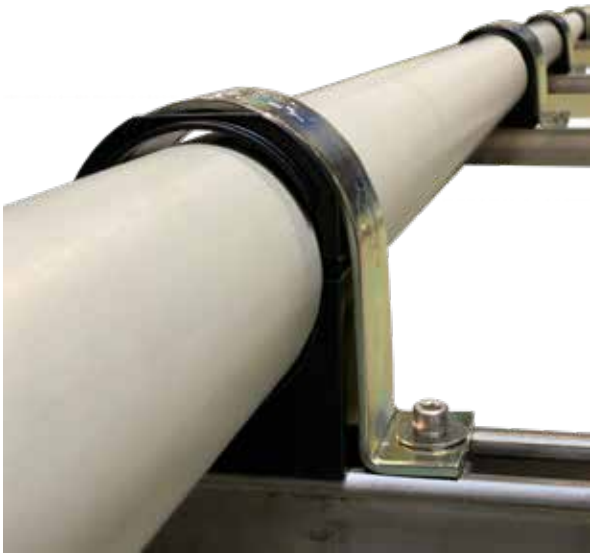
More information at
gfps.com/ectfe

+GF+

Stress Less®

Pipe Support System Engineered for Plastic Pipe

Stress Less® pipe support system is specially designed to eliminate stress transfer to the pipe caused by thermal expansion or overtightening of clamps onto the pipe. The patented design consists of a uniquely designed plastic insert that aloows for pipe movement during thermal expansion and prevents severe pipe impact when seismic acceleration occur. The trivalent chrome-coated metal hoop meets pipe hanger and support standards and withstands a myriad of indoor and outdoor operating conditions. Stress Less® pipe support system gives you peace of mind and extands the life of your piping system.



Engineered Control
Engineered to perform and protect against:
- Thermal expansion
- Seismic conditions
- Water hammer events

Protection
Protects plastic piping systems for peace of mind:
- Extends the life of the piping system
- Installation and operation

Install Options
Multiple mounting options and configurations:
- Full range of metric sizes
- Mounts directly on any flat surface or strut channels
- Mounts horizontal, vertical, or hanging

Install Environment
- Indoor / outdoor
- High purity facilities
- Corrosive environment

Traditional Clamps **Stress Less®**

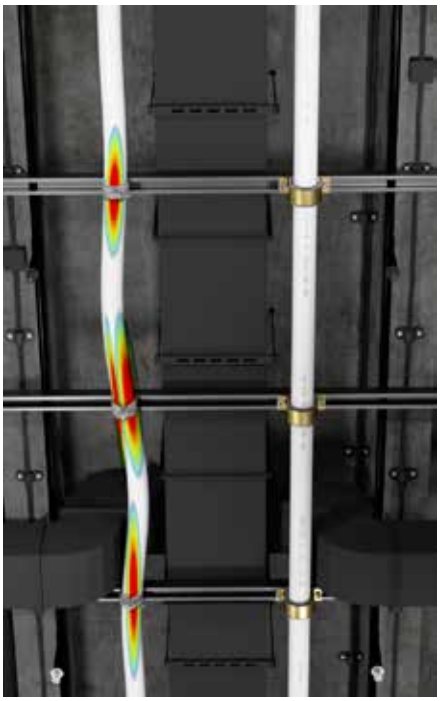
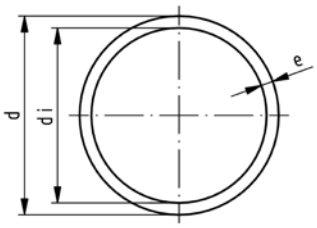


Table of contents

SYGEF ECTFE

Pipe, Fittings and Accessories

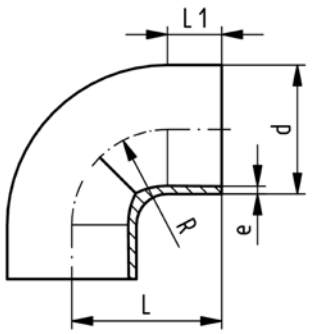


SYGEF ECTFE pipe SDR21/PN10

Model:

- Material: ECTFE
- Supplied in 5m (16.4 foot) length

d (mm)	DN (mm)	SDR	PN (bar)	FM	Code	weight (kg)	e (mm)	di (mm)
20	15	21	10	IR	**177 480 106**	0.182	1.9	16.2
25	20	21	10	IR	**177 480 107**	0.232	1.9	21.2
32	25	21	10	IR	**177 480 108**	0.375	2.4	27.2
40	32	21	10	IR	**177 480 109**	0.476	2.4	35.2
50	40	21	10	IR	**177 480 110**	0.744	3.0	44.0
63	50	21	10	IR	**177 480 111**	0.950	3.0	57.0
75	65	21	10	IR	**177 480 112**	1.357	3.6	67.8
90	80	21	10	IR	**177 480 113**	1.945	4.3	81.4
110	100	21	10	IR	**177 480 114**	2.929	5.3	99.4

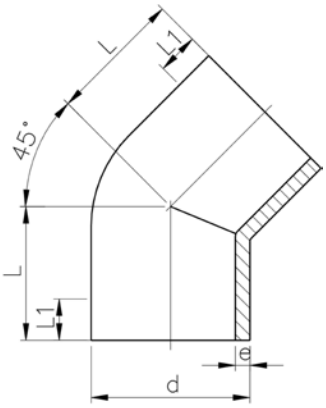


SYGEF ECTFE bend 90° SDR21/PN10

Model:

- Material: ECTFE

d (mm)	PN (bar)	SDR	FM	Code	weight (kg)	e (mm)	L (mm)	L1 (mm)	R (mm)
20	10	21	IR	**737 018 106**	0.016	1.9	38	23	15
25	10	21	IR	**737 018 107**	0.022	1.9	42	23	19
32	10	21	IR	**737 018 108**	0.038	2.4	46	22	24
40	10	21	IR	**737 018 109**	0.055	2.4	51	21	30
50	10	21	IR	**737 018 110**	0.095	3.0	58	21	37
63	10	21	IR	**737 018 111**	0.137	3.0	66	21	45
75	10	21	IR	**737 018 112**	0.243	3.6	75	23	62
90	10	21	IR	**737 018 113**	0.423	4.3	90	23	77
110	10	21	IR	**737 018 114**	0.705	5.3	110	23	98

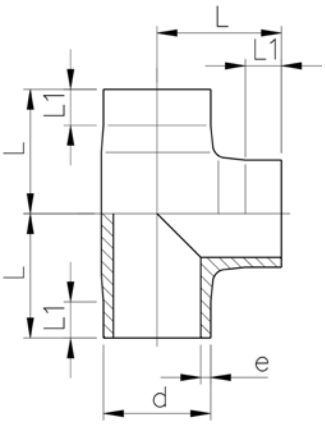


SYGEF ECTFE elbow 45° SDR21/PN10

Model:

- Material: ECTFE

d (mm)	PN (bar)	SDR	FM	Code	weight (kg)	e (mm)	L (mm)	L1 (mm)
20	10	21	IR	**737 158 106**	0.014	1.9	32	25
25	10	21	IR	**737 158 107**	0.019	1.9	34	26
32	10	21	IR	**737 158 108**	0.033	2.4	36	26
40	10	21	IR	**737 158 109**	0.042	2.4	39	28
50	10	21	IR	**737 158 110**	0.084	3.0	42	30
63	10	21	IR	**737 158 111**	0.121	3.0	47	31
75	10	21	IR	**737 158 112**	0.160	3.6	49	32
90	10	21	IR	**737 158 113**	0.271	4.3	57	37
110	10	21	IR	**737 158 114**	0.499	5.3	70	46

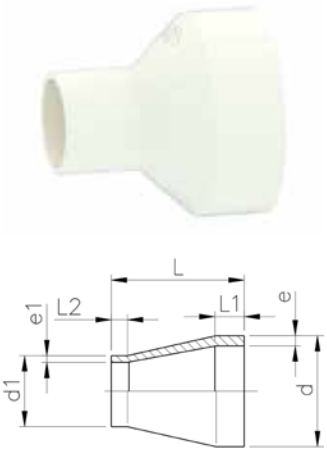


SYGEF ECTFE tee 90° equal SDR21/PN10

Model:

- Material: ECTFE

d (mm)	PN (bar)	SDR	FM	Code	weight (kg)	e (mm)	L (mm)	L1 (mm)
20	10	21	IR	**737 208 106**	0.023	1.9	38	25
25	10	21	IR	**737 208 107**	0.032	1.9	42	27
32	10	21	IR	**737 208 108**	0.056	2.4	46	27
40	10	21	IR	**737 208 109**	0.083	2.4	51	28
50	10	21	IR	**737 208 110**	0.156	3.0	58	28
63	10	21	IR	**737 208 111**	0.270	3.0	66	28
75	10	21	IR	**737 208 112**	0.336	3.6	75	32
90	10	21	IR	**737 208 113**	0.587	4.3	90	39
110	10	21	IR	**737 208 114**	1.054	5.3	110	48



SYGEF ECTFE reducer SDR21/PN10

Model:

- Material: ECTFE

d - d1 (mm)	PN (bar)	FM	Code	weight (kg)	e (mm)	e1 (mm)	L (mm)	L1 (mm)	L2 (mm)
25 - 20	10	IR	**737 908 107**	0.013	1.9	1.9	50	22	22
32 - 20	10	IR	**737 908 108**	0.016	2.4	1.9	50	22	22
32 - 25	10	IR	**737 908 118**	0.017	2.4	1.9	50	22	22
40 - 20	10	IR	**737 908 109**	0.023	2.4	1.9	58	22	24
40 - 25	10	IR	**737 908 119**	0.022	2.4	1.9	55	22	24
40 - 32	10	IR	**737 908 129**	0.026	2.4	2.4	55	22	24
50 - 25	10	IR	**737 908 110**	0.034	3.0	1.9	60	22	25
50 - 32	10	IR	**737 908 120**	0.040	3.0	2.4	60	22	25
50 - 40	10	IR	**737 908 130**	0.039	3.0	2.4	60	22	25
63 - 32	10	IR	**737 908 111**	0.050	3.0	2.4	65	22	25
63 - 40	10	IR	**737 908 121**	0.052	3.0	2.4	65	22	25
63 - 50	10	IR	**737 908 131**	0.059	3.0	3.0	65	22	25
75 - 40	10	IR	**737 908 112**	0.078	3.6	2.4	68	24	25
75 - 50	10	IR	**737 908 122**	0.078	3.6	3.0	65	24	25
75 - 63	10	IR	**737 908 132**	0.082	3.6	3.0	65	24	25
90 - 63	10	IR	**737 908 113**	0.123	4.3	3.0	75	25	30
90 - 75	10	IR	**737 908 123**	0.136	4.3	3.6	75	25	35
110 - 63	10	IR	**737 908 114**	0.218	5.3	3.0	90	30	30
110 - 75	10	IR	**737 908 124**	0.224	5.3	3.6	90	30	35
110 - 90	10	IR	**737 908 134**	0.242	5.3	4.3	90	30	35

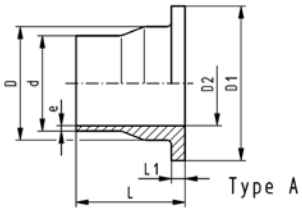
SYGEF ECTFE end cap SDR21/PN10

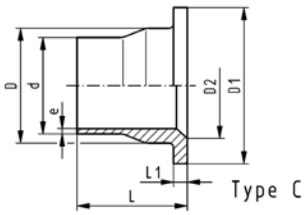
Model:

- Material: ECTFE

d (mm)	SDR	PN (bar)	FM	Code	weight (kg)	e (mm)	L (mm)
20	21	10	IR	**737 968 106**	0.009	1.9	47
25	21	10	IR	**737 968 107**	0.012	1.9	47
32	21	10	IR	**737 968 108**	0.022	2.4	52
40	21	10	IR	**737 968 109**	0.032	2.4	55
50	21	10	IR	**737 968 110**	0.054	3.0	59
63	21	10	IR	**737 968 111**	0.083	3.0	66
75	21	10	IR	**737 968 112**	0.124	3.6	66
90	21	10	IR	**737 968 113**	0.205	4.3	74
110	21	10	IR	**737 968 114**	0.349	5.3	80

SYGEF ECTFE flange adaptor ANSI serrated SDR21/PN10





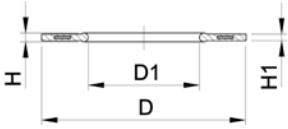
Model:

- Material: ECTFE

d (inch)	SDR	d (mm)	DN (mm)	PN (bar)	FM	Code	weight (kg)
½	21	20	15	10	IR	**737 798 106**	0.029
¾	21	25	20	10	IR	**737 798 157**	0.043
1	21	32	25	10	IR	**737 798 158**	0.063
1 ¼	21	40	32	10	IR	**737 798 159**	0.089
1 ½	21	50	40	10	IR	**737 798 160**	0.140
2	21	63	50	10	IR	**737 798 111**	0.215
2 ½	21	75	65	10	IR	**737 798 112**	0.325
3	21	90	80	10	IR	**737 798 163**	0.389
4	21	110	100	10	IR	**737 798 114**	0.573

e (mm)	D (mm)	D1 (mm)	D2 (mm)	L (mm)	L1 (mm)	Type
1.9	26	45	15	54	6	A
1.9	32	54	20	56	7	A
2.4	40	63	26	58	7	A
2.4	49	72	34	68	8	A
3.0	60	82	43	69	8	A
3.0	75	102	56	72	9	A
3.6	89	122	66	80	10	A
4.3	105	138	78	81	12	A
5.3	125	158	100	81	13	C

Profile Flange Gasket, metric EPDM / FKM

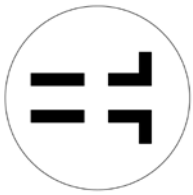


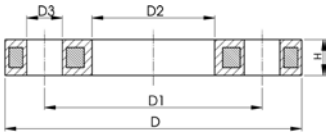
Model:

- For all metric GF Flange Adaptors
- Profile Gasket with steel insert (type G-ST-P/K)
- Hardness: 70° Shore **EPDM**, 75° Shore **FKM**
- **EPDM:** approved acc. to DVGW W 270, KTW recommendation
- Centering on the inner diameter of the screw crown
- material steel insert: carbon steel

di FA are the suitable inner diameters of flange adaptors

d (mm)	PN (bar)	DN (mm)	EPDM Code	FKM Code	weight (lb)	D (mm)	D1 (mm)	H (mm)	H1 (mm)	di FA (mm)
20	16	15	**748 440 706**	**749 440 706**	0.029	51	20	4	3	10 - 20
25	16	20	**748 440 707**	**749 440 707**	0.031	61	22	4	3	12 - 22
32	16	25	**748 440 708**	**749 440 708**	0.042	71	28	4	3	18 - 28
40	16	32	**748 440 709**	**749 440 709**	0.057	82	40	4	3	30 - 40
50	16	40	**748 440 710**	**749 440 710**	0.086	92	46	4	3	36 - 46
63	16	50	**748 440 711**	**749 440 711**	0.110	107	58	5	4	48 - 58
75	16	65	**748 440 712**	**749 440 712**	0.181	127	69	5	4	59 - 69
90	16	80	**748 440 713**	**749 440 713**	0.183	142	84	5	4	73 - 84
110	16	100	**748 440 714**	**749 440 714**	0.280	162	104	6	5	94 - 104





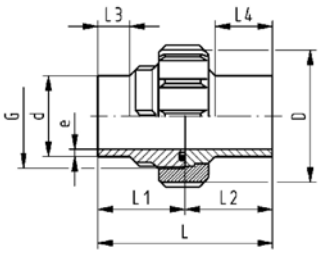
Backing flange PP-Steel For butt fusion systems Inch/ANSI

Model:

- ASME: ANSI/ASME B 16.5 class 150, ASTM D2024, BS 1560, BS EN 1759
- UV-resistant

AL: number of holes

d (mm)	DN (mm)	PN (bar)	Standard	Code	weight (kg)	D (mm)	D1 (mm)	D2 (mm)	D3 (mm)	H max. (mm)	AL	SC
20	15	16	ASME	**727 701 206**	0.213	95	60	28	16	12	4	M12
25	20	16	ASME	**727 701 207**	0.260	105	70	34	16	12	4	M12
32	25	16	ASME	**727 701 208**	0.416	115	79	42	16	16	4	M12
40	32	16	ASME	**727 701 209**	0.730	140	89	51	16	16	4	M16
50	40	16	ASME	**727 701 210**	0.809	150	98	62	16	18	4	M16
63	50	16	ASME	**727 701 211**	0.866	165	121	78	19	18	4	M16
75	65	16	ASME	**727 701 212**	1.117	185	140	92	19	18	4	M16
90	80	16	ASME	**727 701 213**	1.492	200	152	110	19	20	4	M16
110	100	16	ASME	**727 701 214**	1.695	229	190	133	19	20	8	M16

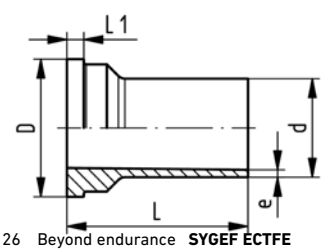


SYGEF ECTFE union SDR21/PN10

Model:

- Material: ECTFE
- O-Ring: FKM black; FFKM on request

d (mm)	PN (bar)	FM	Code	weight (kg)	e (mm)	D (mm)	L (mm)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	G (inch)
20	10	IR	**737 528 206**	0.082	1.9	43	106	53	53	24	37	1
25	10	IR	**737 528 207**	0.123	1.9	53	112	56	56	24	38	1 ¼
32	10	IR	**737 528 208**	0.166	2.4	60	118	59	59	24	40	1 ½
40	10	IR	**737 528 209**	0.263	2.4	74	124	62	62	24	41	2
50	10	IR	**737 528 210**	0.372	3.0	82	130	65	65	24	43	2 ¼
63	10	IR	**737 528 211**	0.463	3.0	100	136	68	68	24	44	2 ¾



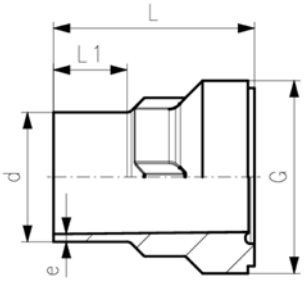
SYGEF ECTFE union end SDR21/PN10

Model:

- Material: ECTFE
- suitable for SYGEF ECTFE union

d (mm)	PN (bar)	FM	Code	weight (kg)	e (mm)	L (mm)	L1 (mm)	D (mm)
20	10	IR	**737 608 106**	0.020	1.9	53	5	30
25	10	IR	**737 608 107**	0.030	1.9	56	5	39
32	10	IR	**737 608 108**	0.044	2.4	59	6	45
40	10	IR	**737 608 109**	0.069	2.4	62	6	57
50	10	IR	**737 608 110**	0.083	3.0	65	7	63
63	10	IR	**737 608 111**	0.130	3.0	68	8	78

SYGEF ECTFE union bush Type I SDR21/PN10

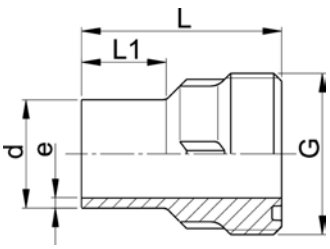


Model:

- Material: ECTFE
- gap filling O-ring positioning
- suitable for SYGEF ECTFE union

d (mm)	PN (bar)	FM	Code	weight (kg)	e (mm)	L (mm)	L1 (mm)	G (inch)
20	10	IR	**737 648 106**	0.024	1.9	53	25	1
25	10	IR	**737 648 107**	0.038	1.9	56	25	1 ¼
32	10	IR	**737 648 108**	0.056	2.4	59	25	1 ½
40	10	IR	**737 648 109**	0.082	2.4	62	25	2
50	10	IR	**737 648 110**	0.113	3.0	65	25	2 ¼
63	10	IR	**737 648 111**	0.168	3.0	68	25	2 ¾

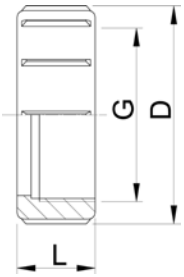
SYGEF ECTFE union bush Type II SDR21/PN10



Model:

- Material: ECTFE
- Suitable for SYGEF ECTFE Union

d (mm)	PN (bar)	FM	Code	weight (kg)	e (mm)	L (mm)	L1 (mm)	G (R/Rp BS Thread) (inch)
20	10	IR	**737 648 206**	0.024	1.9	53	25	1
25	10	IR	**737 648 207**	0.041	1.9	56	25	1 ¼
32	10	IR	**737 648 208**	0.056	2.4	59	25	1 ½
40	10	IR	**737 648 209**	0.089	2.4	62	25	2
50	10	IR	**737 648 210**	0.116	3.0	65	25	2 ¼
63	10	IR	**737 648 211**	0.172	3.0	68	25	2 ¾

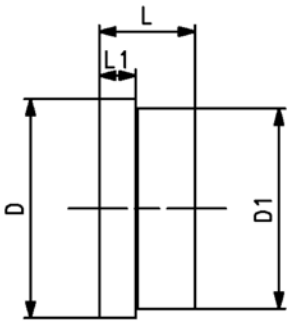


SYGEF ECTFE union nut SDR21/PN10

Model:

- Material: ECTFE

d (mm)	PN (bar)	Code	weight (kg)	L (mm)	D (mm)	G (inch)
20	10	**737 690 106**	0.023	22	43	1
25	10	**737 690 107**	0.034	24	53	1 ¼
32	10	**737 690 108**	0.045	26	60	1 ½
40	10	**737 690 109**	0.070	29	74	2
50	10	**737 690 110**	0.100	33	82	2 ¼
63	10	**737 690 111**	0.151	35	100	2 ¾



SYGEF ECTFE Union end blank SDR21/PN10

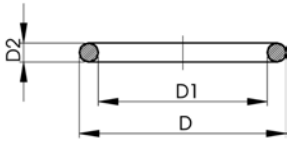
Model:

- Material: ECTFE

Note:

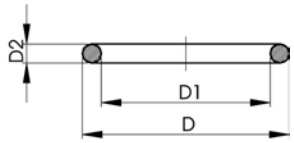
machined from semifinished product
Prefabricated Rp/NPT threads on request

d (mm)	PN (bar)	FM	Code	weight (kg)	*max. Thread (inch)	L (mm)	L1 (mm)	D (mm)	D1 (mm)
20	10	IR	**737 600 106**	0.014	¼	13	5	30	28
25	10	IR	**737 600 107**	0.030	⅜	17	5	39	36
32	10	IR	**737 600 108**	0.050	½	21	6	45	42
40	10	IR	**737 600 109**	0.088	⅝	23	7	57	53
50	10	IR	**737 600 110**	0.126	¾	26	8	63	59
63	10	IR	**737 600 111**	0.248	1	33	8	78	74



O-Ring, FKM white

d (mm)	FKM Code	D (mm)	D1 (mm)	D2 (mm)
20	**749 411 005**	20.6	15.5	2.6
25	**749 411 006**	27.3	20.2	3.5
32	**749 411 120**	33.6	26.6	3.5
40	**749 411 062**	41.6	34.5	3.5
50	**749 411 172**	51.1	44.0	3.5
63	**749 411 054**	63.0	55.0	4.0
75	**749 411 013**	79.9	69.2	5.3
90	**749 411 014**	92.6	81.9	5.3
110	**749 411 015**	117.0	101.0	5.3

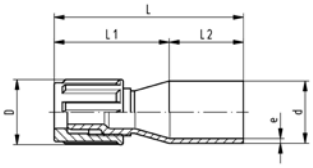


O-Ring Gasket

Model:

- For unions and adaptor unions
- Hardness approx. 65° Shore
- EPDM minimum temperature -40°F
- FKM minimum temperature -15°F

	d (mm)	DN (mm)	EPDM Code	weight (kg)	FKM Code	weight (kg)	D (mm)	D1 (mm)	D2 (mm)	closest inch (inch)
	20	15	**748 410 006**	0.002	**749 410 006**	0.002	27.28	20.22	3.53	½
	25	20	**748 410 007**	0.002	**749 410 007**	0.002	35.23	28.17	3.53	¾
	32	25	**748 410 008**	0.003	**749 410 008**	0.002	39.99	32.93	3.53	1
	40	32	**748 410 009**	0.003	**749 410 009**	0.007	51.33	40.65	5.34	1 ¼
	50	40	**748 410 010**	0.004	**749 410 010**	0.060	57.68	46.99	5.34	1 ½
	63	50	**748 410 011**	0.005	**749 410 011**	0.003	70.37	59.69	5.34	2
	75	65	**748 410 014**	0.007	**749 410 014**	0.012	92.60	81.92	5.34	2 ½
	90	80	**748 410 015**	0.008	**749 410 015**	0.015	111.68	101.00	5.34	3
*	90	80	**748 410 248**	0.002	**749 410 248**	0.020	105.30	94.62	5.34	3
	110	100	**748 410 016**	0.016	**749 410 016**	0.031	134.00	120.20	6.99	4



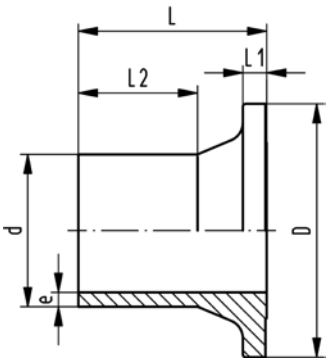
SYGEF ECTFE flare transition fitting SDR21/PN10

Model:

- Material: ECTFE

d (mm)	tube size (inch)	PN (bar)	SDR	FM	Code	weight (kg)	e (mm)	L (mm)	L1 (mm)	L2 (mm)	D (mm)
20	¼	10	21	IR	**737 598 106**	0.028	1.9	75	45	30	20
20	⅜	10	21	IR	**737 598 116**	0.022	1.9	76	46	30	23
20	½	10	21	IR	**737 598 126**	0.034	1.9	76	46	30	26
20	¾	10	21	IR	**737 598 136**	0.043	1.9	78	48	30	34
25	¼	10	21	IR	**737 598 107**	0.033	1.9	75	45	30	20
25	⅜	10	21	IR	**737 598 117**	0.025	1.9	76	46	30	23
25	½	10	21	IR	**737 598 127**	0.028	1.9	76	46	30	26
25	¾	10	21	IR	**737 598 137**	0.048	1.9	78	48	30	34
25	1	10	21	IR	**737 598 147**	0.049	1.9	87	57	30	46
32	½	10	21	IR	**737 598 128**	0.036	2.4	76	46	30	26
32	¾	10	21	IR	**737 598 138**	0.050	2.4	78	48	30	34
32	1	10	21	IR	**737 598 148**	0.050	2.4	87	57	30	46

SYGEF ECTFE valve End SDR21 PN10

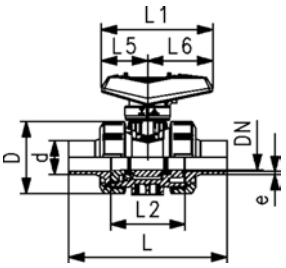


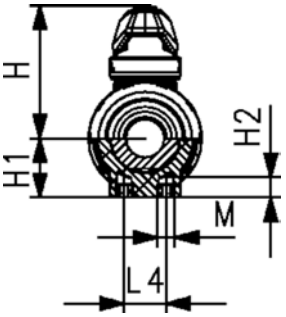
Model:

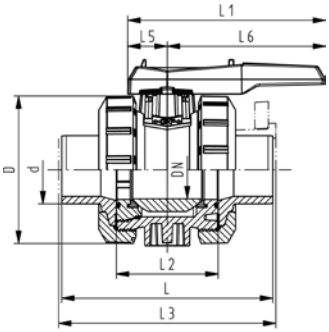
- Material: ECTFE
- Suitable for Ball valve 546

d (mm)	PN (bar)	FM	Code	weight (kg)	D (mm)	L (mm)	L1 (mm)	L2 (mm)	e (mm)
20	10	IR	**177 483 048**	0.019	38	37	4	25	1.9
25	10	IR	**177 483 049**	0.026	44	39	5	25	1.9
32	10	IR	**177 483 050**	0.043	53	40	5	25	2.4
40	10	IR	**177 483 051**	0.065	65	43	5	25	2.4
50	10	IR	**177 483 052**	0.100	77	51	6	25	3.0
63	10	IR	**177 483 053**	0.150	99	60	7	28	3.0
75	10	IR	**177 483 054**	0.348	125	65	9	41	3.6
90	10	IR	**177 483 055**	0.507	150	62	10	33	4.3
110	10	IR	**177 483 056**	0.820	180	69	11	37	5.3

Valves







SYGEF Standard Ball valve type 546 Pro
With ECTFE butt fusion spigots (IR) metric

Model:

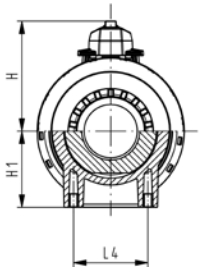
- Ball valve material: **PVDF** / end connection material: **ECTFE**
- Lockable lever as standard (DN10-DN50)
- For easy installation and removal
- Ball seals PVDF
- Integrated stainless steel mounting inserts
- Z-dimension, valve end and union nut **are compatible** with type 546 (1st Generation)

Option:

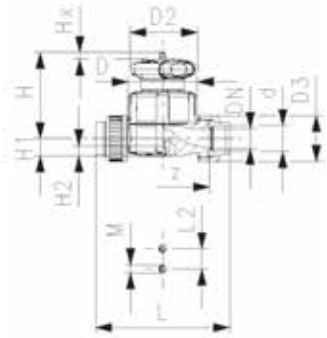
- Interface-module with position feedback sensor, incl. LED feedback (DN10-50)
- Manual spring return lever ("Dead man") (DN10-25)
- Pneumatic or electric actuators from GF
- Individual configuration of the valve

d (mm)	DN (mm)	PN (bar)	Cv-value (l/min)	FKM Code	SP	weight (kg)
20	15	16	185	**175 546 212**	1	0.201
25	20	16	350	**175 546 213**	1	0.310
32	25	16	700	**175 546 214**	1	0.460
40	32	16	1000	**175 546 215**	1	0.780
50	40	16	1600	**175 546 216**	1	1.110
63	50	16	3100	**175 546 217**	1	2.150
75	65	16	5000	**175 546 218**	1	6.600
90	80	16	7000	**175 546 219**	1	9.700
110	100	16	11000	**175 546 220**	1	15.300

d (mm)	D (mm)	H (mm)	H1 (mm)	H2 (mm)	L (mm)	L1 (mm)	L2 (mm)	L4 (mm)	L5 (mm)	L6 (mm)	M	e (mm)	closest inch (inch)
20	50	61	27	12	130	82	56	25	35	47	M6	1.9	½
25	58	74	30	12	143	105	65	25	44	62	M6	1.9	¾
32	68	80	36	15	150	105	71	45	44	62	M8	2.4	1
40	84	95	44	15	171	131	85	45	57	74	M8	2.4	1 ¼
50	97	102	51	15	191	131	89	45	57	74	M8	3.0	1 ½
63	124	117	64	15	219	152	101	70	66	86	M8	3.0	2
75	166	150	85	15	266	269	136	70	64	206	M8	3.6	2 ½
90	200	161	105	15	264	269	141	70	64	206	M8	4.3	3
110	238	178	123	22	301	319	164	120	64	256	M12	5.3	4



+GF+



SYGEF Standard Diaphragm valve type 514
With ECTFE fusion spigots metric

Model:

- Diaphragm valve material: **PVDF** / end connection material: **ECTFE**
- SDR21/PN10
- Double flow rate compared to predecessor
- One housing nut replaces four screws
- Handwheel with built-in locking mechanism
- For easy installation and removal
- Short overall length

Option:

- Individual configuration of the valve
- Self adjusting multifunctional module with integrated limit switches

* O-Ring material: FKM

d (mm)	DN (mm)	PN (bar)	Cv-value (l/min)	PTFE/EPDM Code	weight (kg)	PTFE/FKM Code	weight (kg)
20	15	10	125	**185 514 232**	0.358	**185 514 252**	0.349
25	20	10	271	**185 514 233**	0.546	**185 514 253**	0.546
32	25	10	481	**185 514 234**	0.969	**185 514 254**	0.969
40	32	10	759	**185 514 235**	1.683	**185 514 255**	1.683
50	40	10	1263	**185 514 236**	2.932	**185 514 256**	2.932
63	50	10	1728	**185 514 237**	2.995	**185 514 257**	2.995

d (mm)	D (mm)	D2 (mm)	D3 (mm)	H (mm)	H1 (mm)	H2 (mm)	L (mm)	L2 (mm)	M	z (mm)	Lift = Hx (mm)	closest inch (inch)
20	65	65	43	73	14	12	128	25	M6	100	7	½
25	80	65	53	81	18	12	150	25	M6	118	10	¾
32	88	87	60	107	22	12	162	25	M6	126	13	1
40	101	87	74	115	26	15	184	45	M8	144	15	1 ¼
50	117	135	82	148	32	15	210	45	M8	164	19	1 ½
63	144	135	100	166	39	15	248	45	M8	194	25	2

SYGEF Standard Diaphragm valve DIASTAR Ten
DA (Double acting)
With ECTFE fusion spigots metric

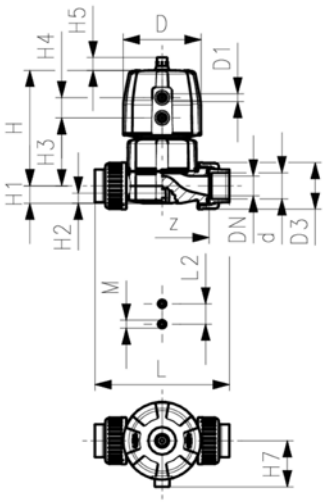
Model:

- Diaphragm valve material: **PVDF** / end connection material: **ECTFE**
- SDR21/PN10
- Double flow rate compared to predecessor
- One housing nut replaces four screws
- For easy installation and removal
- Short overall length

Option:

- Individual configuration of the valve

* O-Ring material: FKM



d (mm)	DN (mm)	Cv-value (l/min)	PTFE/EPDM Code	SP	weight (kg)	PTFE/FKM Code	SP	weight (kg)
20	15	125	**185 654 232**	1	0.565	**185 654 252**	1	0.565
25	20	271	**185 654 233**	1	1.116	**185 654 253**	1	1.116
32	25	481	**185 654 234**	1	1.328	**185 654 254**	1	1.355
40	32	759	**185 654 235**	1	2.116	**185 654 255**	1	2.116
50	40	1263	**185 654 236**	1	3.426	**185 654 256**	1	3.426
63	50	1728	**185 654 237**	1	4.518	**185 654 257**	1	4.518

d (mm)	D (mm)	D1_G (inch)	H (mm)	H1 (mm)	H2 (mm)	H3 (mm)	H4 (mm)	H5 (mm)	H7 (mm)	L (mm)	L2 (mm)	M	z (mm)	Lift = Hx (mm)
20	68	⅛	101	14	12	60	24	16	43	128	25	M6	100	7
25	96	⅛	132	18	12	73	25	16	57	150	25	M6	118	10
32	96	⅛	143	22	12	84	25	16	57	162	25	M6	126	13
40	120	⅛	173	26	15	99	26	26	69	184	45	M8	144	15
50	150	¼	214	32	15	119	36	26	88	210	45	M8	164	19
63	150	¼	226	39	15	132	36	26	88	248	45	M8	194	23

d (mm)	closest inch (inch)
20	½
25	¾
32	1
40	1 ¼
50	1 ½
63	2

+GF+

SYGEF Standard Diaphragm valve DIASTAR Ten
FC (Fail safe to close)
With ECTFE fusion spigots metric

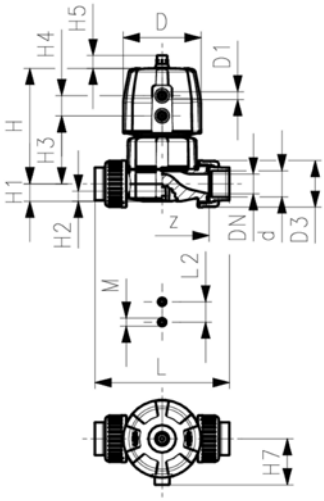
Model:

- Diaphragm valve material: **PVDF** / end connection material: **ECTFE**
- SDR21/PN10
- Double flow rate compared to predecessor
- One housing nut replaces four screws
- For easy installation and removal
- Short overall length

Option:

- Individual configuration of the valve

* O-Ring material: FKM



d (mm)	DN (mm)	PN (bar)	Cv-value (l/min)	PTFE/EPDM Code	SP	weight (kg)	PTFE/FKM Code	SP	weight (kg)
20	15	10/10*	125	**185 624 232**	1	0.611	**185 624 252**	1	0.611
25	20	10/10*	271	**185 624 233**	1	1.216	**185 624 253**	1	1.216
32	25	10/10*	481	**185 624 234**	1	1.565	**185 624 254**	1	1.565
40	32	10/10*	759	**185 624 235**	1	2.489	**185 624 255**	1	2.489
50	40	10/10*	1263	**185 624 236**	1	4.266	**185 624 256**	1	4.266
63	50	10/6*	1728	**185 624 237**	1	5.358	**185 624 257**	1	5.358

d (mm)	D (mm)	D1_G (inch)	H (mm)	H1 (mm)	H2 (mm)	H3 (mm)	H4 (mm)	H5 (mm)	H7 (mm)	L (mm)	L2 (mm)	M	z (mm)	Lift = Hx (mm)
20	68	⅛	101	14	12	60	24	16	43	128	25	M6	100	7
25	96	⅛	132	18	12	73	25	16	57	150	25	M6	118	10
32	96	⅛	143	22	12	84	25	16	57	162	25	M6	126	13
40	120	⅛	173	26	15	99	26	26	69	184	45	M8	144	15
50	150	¼	214	32	15	119	36	26	88	210	45	M8	164	19
63	150	¼	226	39	15	132	36	26	88	248	45	M8	194	23

d (mm)	closest inch (inch)
20	½
25	¾
32	1
40	1 ¼
50	1 ½
63	2

SYGEF Standard Diaphragm valve DIASTAR Ten
FO (Fail safe to open)
With ECTFE fusion spigots metric

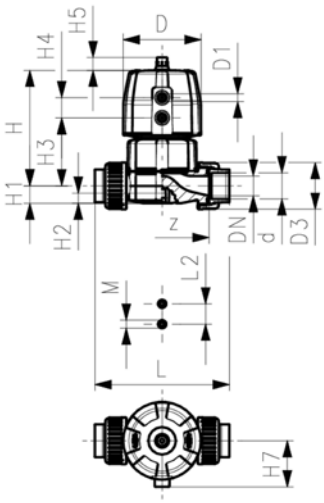
Model:

- Diaphragm valve material: **PVDF** / end connection material: **ECTFE**
- SDR21/PN10
- Double flow rate compared to predecessor
- One housing nut replaces four screws
- For easy installation and removal
- Short overall length

Option:

- Individual configuration of the valve

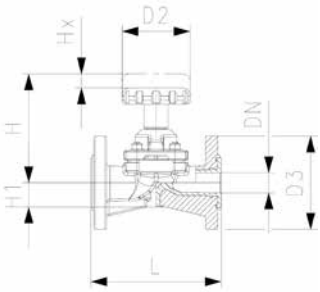
* O-Ring material: FKM

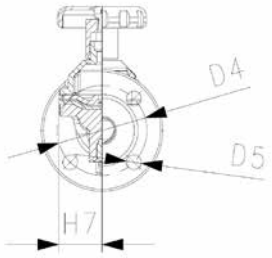


d (mm)	DN (mm)	Cv-value (l/min)	PN (bar)	PTFE/EPDM Code	SP	weight (kg)	PTFE/FKM Code	SP	weight (kg)
20	15	125	10	**185 644 232**	1	0.686	**185 644 252**	1	0.686
25	20	271	10	**185 644 233**	1	1.152	**185 644 253**	1	1.152
32	25	481	10	**185 644 234**	1	1.385	**185 644 254**	1	1.385
40	32	759	10	**185 644 235**	1	2.176	**185 644 255**	1	2.176
50	40	1263	10	**185 644 236**	1	4.176	**185 644 256**	1	4.176
63	50	1728	6	**185 644 237**	1	5.268	**185 644 257**	1	5.268

d (mm)	D (mm)	D1_G (inch)	H (mm)	H1 (mm)	H2 (mm)	H3 (mm)	H4 (mm)	H5 (mm)	H7 (mm)	L (mm)	L2 (mm)	M	z (mm)	Lift = Hx (mm)
20	68	⅛	101	14	12	60	24	16	43	128	25	M6	100	7
25	96	⅛	132	18	12	73	25	16	57	150	25	M6	118	10
32	96	⅛	143	22	12	84	25	16	57	162	25	M6	126	13
40	120	⅛	173	26	15	99	26	26	69	184	45	M8	144	15
50	150	¼	214	32	15	119	36	26	88	210	45	M8	164	19
63	150	¼	226	39	15	132	36	26	88	248	45	M8	194	23

d (mm)	closest inch (inch)
20	½
25	¾
32	1
40	1 ¼
50	1 ½
63	2





Type SDV Diaphragm Valve - with Handwheel - SYGEF ECTFE

Model:

- ANSI flange connection
- Material: PFA lined SSt valve body, PTFE-T/FKM diaphragm

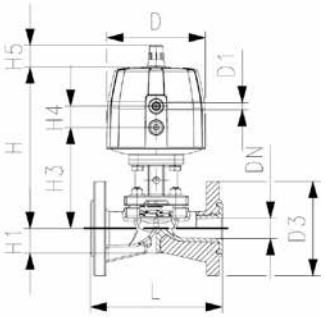
d (inch)	d (mm)	DN (mm)	PN (bar)	Code	weight (kg)
½	20	15	10	**160 144 156**	2.5
¾	25	20	10	**160 144 157**	3.0
1	32	25	10	**160 144 158**	3.5
1 ¼	40	32	10	**160 144 159**	5.2
1 ½	50	40	10	**160 144 160**	6.3
2	63	50	10	**160 144 161**	9.0
2 ½	75	65	10	**160 144 162**	13.5
3	90	80	8	**160 144 163**	16.9
4	110	100	7	**160 144 164**	30.3

L (mm)	D2 (mm)	D3 (mm)	D4 (mm)	D5 (mm)	H (mm)	H1 (mm)	H7 (mm)	Hx (mm)	Umdr.	kv-value (max.(m^3/hr)) (m^3/h)
130	85	90	60	16	115	24	36	8	4.5	7.8
150	85	100	70	16	117	26	36	8	4.5	10.0
146	85	110	80	16	124	30	41	10	5.5	15.0
180	85	115	89	16	134	35	52	12	7.0	22.5
174	120	125	98	16	173	41	56	24	12.0	37.0
200	120	150	121	19	186	44	70	30	15.0	65.0
290	180	180	140	19	208	55	82	30	12.0	95.0
260	180	190	152	19	233	60	100	34	13.5	134.0
327	250	230	191	19	282	72	123	40	13.5	200.0

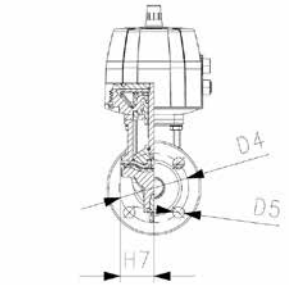
Type SDV Diaphragm Valve - with pneumatic actuator - SYGEF ECTFE FC (fail safe to close)

Model:

- ANSI flange connection
- Material: PFA lined SSt valve body, PTFE-T/FKM diaphragm
- With pneumatic actuator

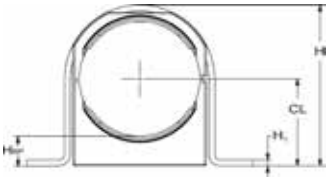


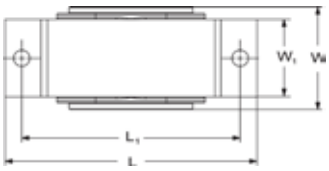
d (inch)	d (mm)	DN (mm)	PN (bar)	Code	weight (kg)
½	20	15	10	**160 144 256**	4.8
¾	25	20	10	**160 144 257**	5.3
1	32	25	10	**160 144 258**	6.1
1 ¼	40	32	10	**160 144 259**	7.8
1 ½	50	40	10	**160 144 260**	12.8
2	63	50	10	**160 144 261**	15.3
2 ½	75	65	10	**160 144 262**	19.8
3	90	80	8	**160 144 263**	31.7
4	110	100	7	**160 144 264**	47.0

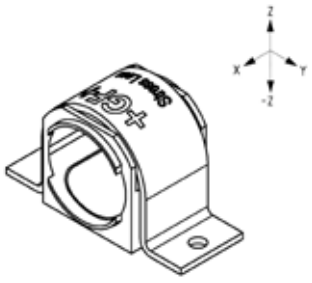


L (mm)	D (mm)	D1 (inch)	D3 (mm)	D4 (mm)	D5 (mm)	H (mm)	H1 (mm)	H3 (mm)	H4 (mm)	H5 (mm)	H7 (mm)	kv-value (max.(m^3/hr)) (m^3/h)
130	120	⅛	90	60	16	211	24	115	26	23	36	7.8
150	120	⅛	100	70	16	213	26	117	26	23	36	10.0
146	120	⅛	110	80	16	227	30	123	26	23	41	15.0
180	150	¼	115	89	16	253	35	141	36	36	52	22.5
174	180	¼	125	98	16	284	41	154	37	36	56	37.0
200	180	¼	150	121	19	302	44	159	37	36	70	65.0
290	280	¼	180	140	19	366	55	182	24	46	82	95.0
260	280	¼	190	152	19	373	60	200	24	46	100	134.0
327	335	¼	230	191	19	448	72	267	24	46	123	200.0

Pipe Guide and Supports







Stress Less Pipe Guide - Metric

First pipe support system especially designed to eliminate stress transfer to pipe due to thermal expansion or seismic events. Has engineered, designed gap of 3mm between guide insert and pipe OD. Excessive force can never be exerted on the pipe regardless of bolt torque.

- Includes steel hoop and plastic guide insert.
- Hoop is trivalent gold chromium-coated galvanized steel, compliant with ASTM B633.
- Guide insert is Polypropylene, Black, UV resistant.
- Mounts to any flat surface or standard strut support.
- Mounting holes in hoop for bolts size "SC" (not included).
- Recommend using 70,000psi (482 MPa) tensile strength or greater bolts in recommended sizes.
- Fy, Fz, and -Fz are rated design loads, in lb-f (pounds-force) and N (Newtons), for respective y, z, and -z directions.

Option:

- Stainless steel hoop bracket available S155484xxx.

Size (mm)	GF Code
20	**155 484 500**
25	**155 484 501**
32	**155 484 502**
40	**155 484 503**
50	**155 484 504**
63	**155 484 505**
75	**155 484 506**
90	**155 484 507**
110	**155 484 508**

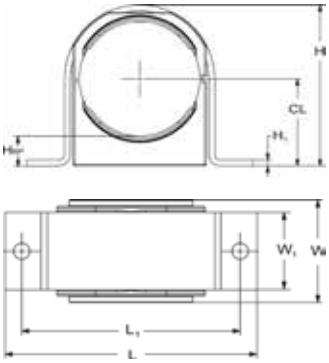
Size (mm)	H (mm)	CL (mm)	Hbp (mm)	H1 (mm)	L (mm)	L1 (mm)	W (mm)	W1 (mm)	SC	Fz	F-z	Fy
20	41	19	9	3	83	66	50	37	1/4" M6	150lbs / 660N	180lbs / 800N	150lbs / 660N
25	47	23	10	3	88	71	50	37	1/4" M6	150lbs / 660N	180lbs / 800N	150lbs / 660N
32	56	28	12	3	95	78	50	37	1/4" M6	150lbs / 660N	180lbs / 800N	150lbs / 660N
40	58	26	6	3	102	86	50	37	1/4" M6	150lbs / 660N	180lbs / 800N	150lbs / 660N
50	69	33	9	3	111	94	50	37	1/4" M6	150lbs / 660N	180lbs / 800N	150lbs / 660N
63	89	47	16	3	124	107	50	37	5/16" M8	200lbs / 800N	240lbs / 880N	200lbs / 800N
75	108	58	21	3	135	119	50	37	5/16" M8	300lbs / 1300N	360lbs / 1600N	300lbs / 1300N
90	113	58	13	3	151	134	50	37	5/16" M8	450lbs / 2000N	540lbs / 2400N	450lbs / 2000N
110	136	68	13	3	175	159	50	37	5/16" M8	650lbs / 2800N	780lbs / 3400N	600lbs / 2670N

Stress Less Pipe Support - Vertical Metric

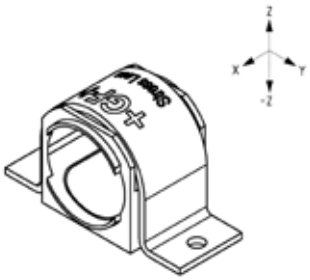
- For use as a vertical pipe support. Includes elastomeric insert strips in support to provide friction and snug fit against pipe.
- Bracket provides strength for support during seismic or excessive loading events.
- For metric size pipe 20mm – 63mm.
- Includes steel hoop and plastic guide insert.
- Hoop is trivalent gold chromium-coated galvanized steel, compliant with ASTM B633.
- Guide insert is Polypropylene, Black, UV resistant.
- Mounts to any flat surface or standard strut support.
- Mounting holes in hoop for bolts size "SC" (not included).
- Fx, Fy and Fz are rated design loads, in lb-f (pounds-force) and N (Newtons), for respective x, y and z directions.

Option:

- Stainless steel hoop bracket available S155484xxx.



Size (mm)	Code
20	**155 484 560**
25	**155 484 561**
32	**155 484 562**
40	**155 484 563**
50	**155 484 564**
63	**155 484 565**



Size (mm)	H (mm)	CL (mm)	Hbp (mm)	H1 (mm)	L (mm)	L1 (mm)	W (mm)	W1 (mm)	SC	Fyz	F-z
20	41	21	11	3	83	66	50	37	1/4" / M6	150lbs / 660N	180lbs / 800N
25	47	25	12	3	88	71	50	37	1/4" / M6	150lbs / 660N	180lbs / 800N
32	56	30	14	3	95	78	50	37	1/4" / M6	150lbs / 660N	180lbs / 800N
40	58	28	8	3	102	86	50	37	1/4" / M6	150lbs / 660N	180lbs / 800N
50	69	35	10	3	111	94	50	37	1/4" / M6	150lbs / 660N	180lbs / 800N
63	89	49	17	3	124	107	50	37	5/16" / M8	200lbs / 800N	240lbs / 880N

Stress Less Pipe Guide - Clevis Hanger Kit

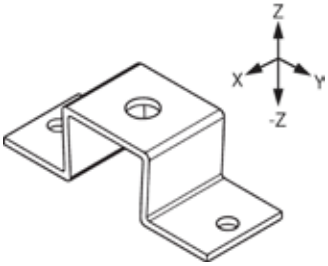
First pipe support system especially designed to eliminate stress transfer to pipe due to thermal expansion or seismic events. Has engineered, designed gap of 3mm between guide insert and pipe OD. Excessive force can never be exerted on the pipe regardless of bolt torque.

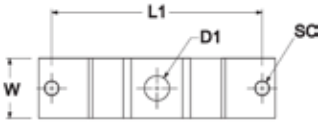
- For use with metric or IPS Stress Less Pipe Supports.
- Does not include pipe guide insert or bracket.
- SC = bolt size.
- Seismic kicker configuration (V-bracing) Fy,z rating plus F-z rating.

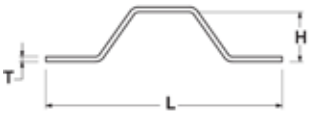
Option:

- Stainless steel hoop bracket available S155484xxx.

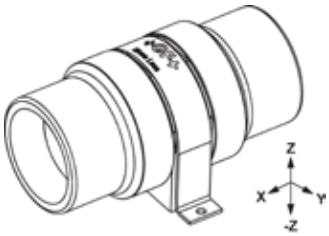
Size (mm)	Size (inch)	Code
20	½	**155 484 540**
25	¾	**155 484 541**
32	1	**155 484 542**
40	1 ¼	**155 484 543**
50	1 ½	**155 484 544**
63	2	**155 484 545**
75	2 ½	**155 484 546**
90	3	**155 484 547**
110	4	**155 484 548**

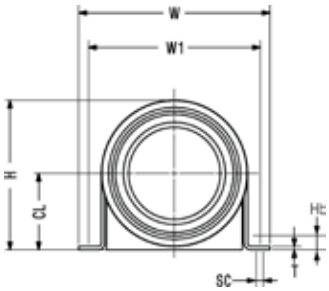


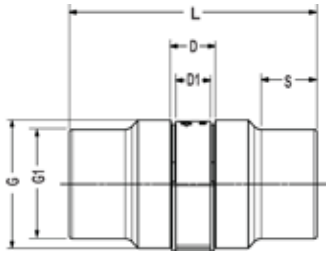




Size (mm)	Size (inch)	L (mm)	L1 (mm)	H (mm)	T (mm)	w (mm)	D1 (mm)	SC	Fy	F-z
20	½	83	66	32	3	38	12.7	1/4" / M6	150lbs / 660N	150lbs / 660N
25	¾	88	71	32	3	38	12.7	1/4" / M6	150lbs / 660N	150lbs / 660N
32	1	95	78	32	3	38	12.7	1/4" / M6	150lbs / 660N	150lbs / 660N
40	1 ¼	103	86	32	3	38	12.7	1/4" / M6	150lbs / 660N	150lbs / 660N
50	1 ½	111	94	32	3	38	12.7	1/4" / M6	150lbs / 660N	150lbs / 660N
63	2	124	107	32	3	38	12.7	5/16" / M8	200lbs / 800N	200lbs / 800N
75	2 ½	136	119	32	3	38	15.9	5/16" / M8	300lbs / 1300N	300lbs / 1300N
90	3	151	134	32	3	38	15.9	5/16" / M8	450lbs / 2000N	450lbs / 2000N
110	4	176	159	32	3	38	19.0	5/16" / M8	600lbs / 2670N	650lbs / 2800N







Linestop Clamp Kit - SYGEF ECTFE

Model:

- Kit includes ECTFE restraint fitting, galvanized steel hoop bracket and HDPE spacer bracket. Does not include hardware for bolting to unistrut or supporting structure.
- To be used with SYGEF ECTFE (PN10) pipe and fittings.
- Hoop is trivalent gold chromium-coated galvanized steel, compliant with ASTM B633.
- Mounting holes in bracket for bolts size "SC" (not included).
- Recommend using 70,000psi (482 MPa) tensile strength or greater bolts in recommended sizes.
- Fx, Fy and Fz are rated design loads, in lb-f (pounds-force) and N (Newtons), for respective x, y and z directions.

Option:

- Stainless steel hoop bracket available S700225xxx.

Size (mm)	GF Code
20	**700 225 320**
25	**700 225 321**
32	**700 225 322**
40	**700 225 323**
50	**700 225 324**
63	**700 225 325**
75	**700 225 326**
90	**700 225 327**
110	**700 225 328**

Size (mm)	H (mm)	CL (mm)	Hbp (mm)	D (mm)	D1 (mm)	W (mm)	W1 (mm)	G (mm)	G1 (mm)	S (mm)	L (mm)	T (mm)	SC
20	41.0	19.0	9.0	46.0	36.6	83.0	66.0	34.0	20.0	14.1	160.0	3.0	1/4" / M8
25	47.0	23.0	10.0	46.0	36.6	88.0	71.0	43.0	25.0	16.0	170.0	3.0	1/4" / M8
32	56.0	28.0	12.0	46.0	36.6	95.0	78.0	52.0	32.0	18.0	170.0	3.0	1/4" / M8
40	58.0	26.0	6.0	46.0	36.6	102.0	86.0	52.0	40.0	20.0	180.0	3.0	1/4" / M8
50	69.0	33.0	9.0	46.0	36.6	111.0	94.0	66.0	50.0	23.0	190.0	3.0	1/4" / M8
63	89.0	47.0	16.0	46.0	36.6	124.0	107.0	80.0	63.0	30.0	210.0	3.0	5/16" / M8
75	108.0	58.0	21.0	46.0	36.6	135.0	119.0	100.0	75.0	31.0	230.0	3.0	5/16" / M8
90	113.0	58.0	13.0	46.0	36.6	151.0	134.0	110.0	90.0	35.0	240.0	3.0	5/16" / M8
110	136.0	68.0	13.0	46.0	36.6	175.0	159.0	134.0	110.0	41.0	260.0	3.0	3/8" / M11

Size (mm)	Fx	Fy	Fz	F-z
20	150lbs / 660N	150lbs / 660N	150lbs / 660N	180lbs / 800N
25	150lbs / 660N	150lbs / 660N	150lbs / 660N	180lbs / 800N
32	150lbs / 660N	150lbs / 660N	150lbs / 660N	180lbs / 800N
40	150lbs / 660N	150lbs / 660N	150lbs / 660N	180lbs / 800N
50	150lbs / 660N	150lbs / 660N	150lbs / 660N	180lbs / 800N
63	200lbs / 800N	200lbs / 800N	200lbs / 800N	240lbs / 880N
75	300lbs / 1300N	300lbs / 1300N	300lbs / 1300N	360lbs / 1600N
90	300lbs / 1300N	450lbs / 2000N	450lbs / 2000N	540lbs / 2400N
110	450lbs / 2000N	600lbs / 2670N	650lbs / 2800N	780lbs / 3400N

Fusion Machines and Tools

IR-110 A Automated Fusion Machine

Model:

- Fully equipped automated infrared fusion machine with integrated work table, for use in clean room conditions
- Welds SYGEF PVDF (HP / Standard), PROGEF PP (Standard / Natural), PE100 ecoFIT
- Weld dimensions d20-110mm
- User friendly, 12.1" touch screen interface with several languages
- 4 USB interfaces, LAN Ethernet interface, 230V output
- Automated facer, clamping slide and heater
- Integrated video camera and temperature sensors
- Movable clamping units
- Clamping inserts d20-90mm (8 pcs per dimension)
- End caps PE d 20-110 mm (4 pcs. per dimension)
- Shavings collection tray
- Transport box with integrated pallet
- 1-phase AC (50/60 Hz) 230 V L/N/PE
- Power supply cable 230V EU Standard
- Torx key for facing blades (KW3)
- Cleaning brush
- Label printer

d-d (mm)	Code	weight (lb)
20 - 110	**790 164 001**	551.156

IR-63 Plus Fusion Machine (without PVC-U parameter)

Model:

- Fully-equipped manually operated infrared fusion machine with integrated remote welding unit
- Welds SYGEF PVDF (HP / Standard), PROGEF PP (Standard / Natural), PE100 ecoFIT
- Weld dimensions d20-110mm
- Monochrome display with icons and several languages
- 2 USB interfaces
- Heating and facing tools
- Clamping head with movable clamping units
- Clamping inserts size d20-63 mm (8 pcs. per dimension)
- End caps size d20-63 mm (4 pcs. per dimension)
- Pipe Stop
- Clean-room compatible accessory tray with tools
- Transport box
- 1-phase AC (50/60 Hz) 230 V L/N/PE
- Power supply cable 230 V
- Extension cable for clamping unit, heater and facing tool for remote welding (5m long each)
- Label printer

Note:

Clamping inserts PFA (inch) on request

d-d (mm)	Code	weight (lb)
20 - 63	**790 131 005**	132.277

IR-110 Plus Fusion Machine (without PVC-U parameter)

Model:

- Fully equipped infrared fusion machine with integrated work table, for use in clean room conditions
- Welds SYGEF PVDF (HP / Standard), PROGEF PP (Standard / Natural), PE100 ecoFIT
- Weld dimensions d20-110mm
- Monochrome display with icons and several languages
- 2 USB interfaces
- Heating and facing tools
- Clamping head with movable clamping units
- Clamping inserts d20-90mm (8 pcs per dimension)
- End caps PE d 20-110 mm (4 pcs. per dimension)
- Pipe Stop
- Clean-room compatible accessory tray with tools
- Transport box with integrated pallet
- 1-phase AC (50/60 Hz) 230 V L/N/PE
- Power supply cable 230 V
- Label printer

Note:

Clamping inserts PFA (inch) on request

d-d (mm)	Code	weight (lb)
20 - 110	**790 132 001**	242.508

IR-225 Plus Fusion Machine

Model:

- Fully equipped infrared fusion machine with integrated work table, for use in clean room conditions
- Welding of PVDF SYGEF (Standard/Plus), PP-H PROGEF (Standard/Plus), PP-n PROGEF Natural, PE100 ecoFIT
- Weld dimensions d63 - 225mm
- Monochrome display with icons and several languages
- 2 USB interfaces
- Heating and facing tools
- Clamping head with movable clamping units
- Cooling fan
- Clamping inserts for size d63 - 225mm (8 pcs. per dimension)
- End caps PE for sizes d63 - 225mm (4 pcs. per dimension)
- Pipe Stop
- Transport box with integrated pallet (stainless steel)
- 1-phase AC (50/60 Hz) 230V L/N/PE or 3-phase AC (50/60 Hz) 400V/230VL1/L2/L3/N/PE
- Connecting cable 400V - 230V
- Additional tools
- Label printer
- Instruction manual

d-d (mm)	Code	weight (lb)
63 - 225	**790 133 009**	998.7

WBI Tool Set S (d20-d63)

WBI-S: Small Tool d20-d63
Printer with accessories
Tablet with accessories
Adapter d20-d63

d (mm)	Code	weight (kg)
20 - 63	**790 170 001**	14

WBI Tool Set L (d20-d225)

WBI-S: Small Tool d20-d63
WBI-L: Large Tool d75-d225
Printer with accessories
Tablet with accessories
Adapter d20-d225

d (mm)	Code	weight (kg)
20 - 225	**790 170 002**	22

Tangit KS-Cleaning Tissues

- Special cleaning agent for plastic fusion connections with PP, PE, PVDF and PB.
- Suitable for Tangit Rapid. Must not be used for solvent cementing
- for plastic welding joints PE, PP, PVDF
- DW 5290 BR 0464
- DVGW approved

Contents	Code	weight (kg)
1 dispenser with 100 tissues	**799 298 024**	0.333

PPC Plastic Pipe Cutter

For cutting plastic pipes d10 - d160. S = wall thickness.

d (mm)	Article	Code	closest inch (inch)
10 - 63	PPC 63 max. s = 7.2 mm	**790 109 001**	⅛ - 2
50 - 110	PPC 110 max. s = 12.7 mm	**790 109 002**	1 ½ - 4
110 - 160	PPC 160 max. s = 19.0 mm	**790 109 003**	4 - 6

Notes

Notes

Notes

Notes

GF Piping Systems

Local support around the world

Visit our webpage to get in touch with your local specialist:
www.gfps.com/our-locations

+GF+

1402 SYGEF ECTFE Cat V3 (10/23)

Printed in USA