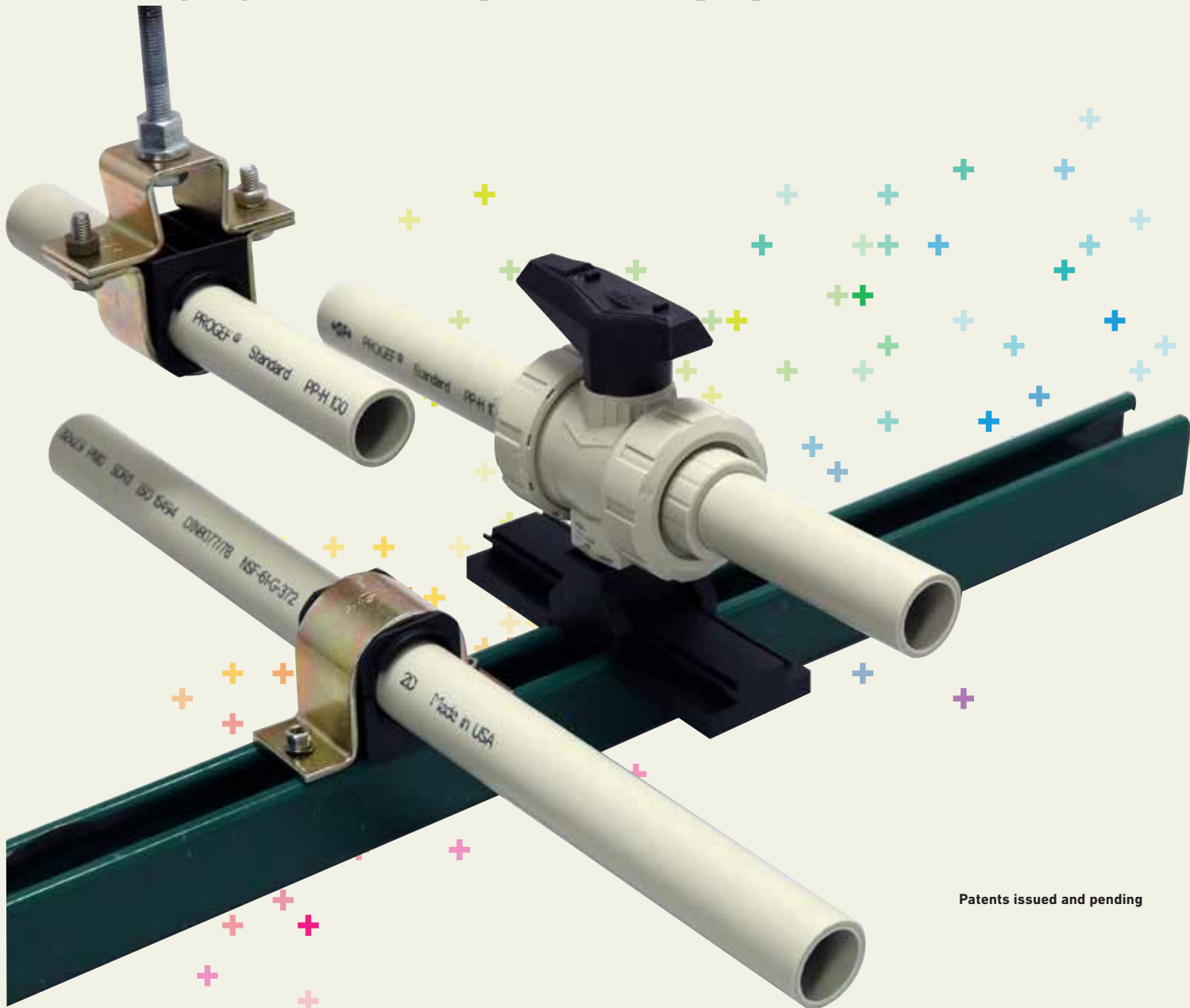


Stress Less[®]

Pipe and Valve Support System

Finally, just for plastic pipe



Problem

Traditional piping supports are inadequate and can cause severe stress



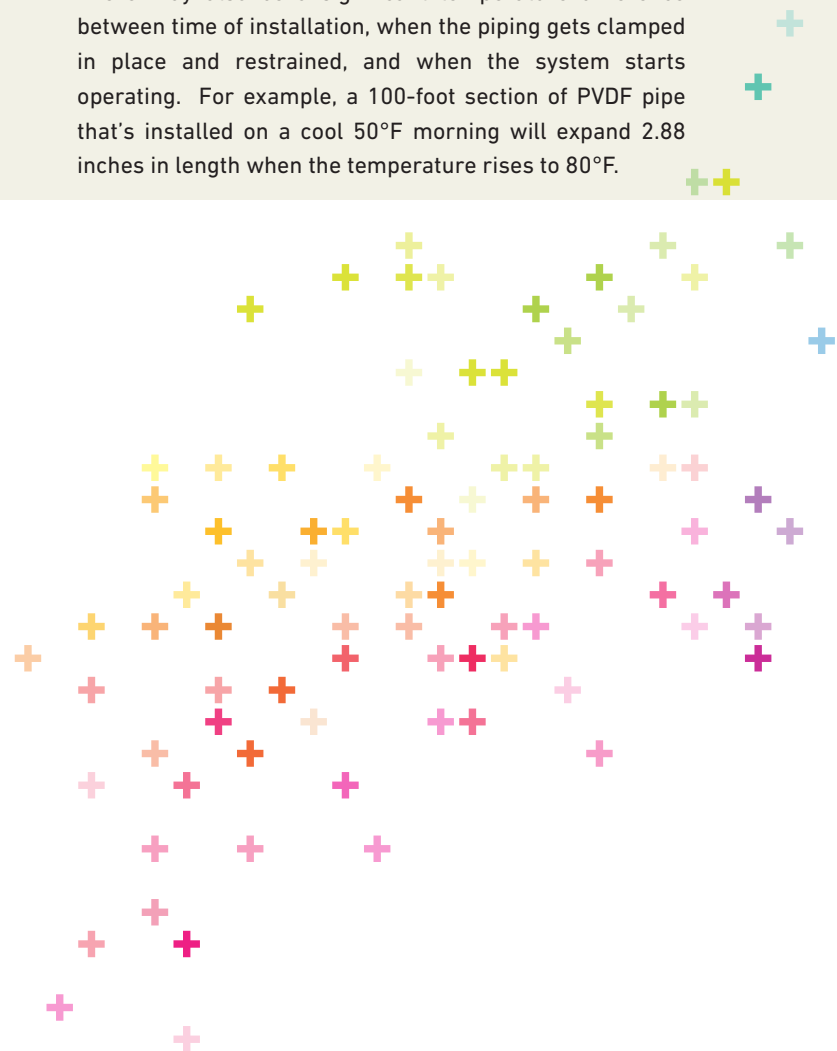
Improper piping system support can result in premature

Overview

Most engineers and installers treat thermoplastic piping systems like metal during design and installation. As a result, mechanical stresses get permanently locked into the piping system, which can reduce its life expectancy. This is the most common failure mode of a piping system.

GF Piping Systems has developed a better way to support piping and valves that can help extend the life of the piping system: Stress Less Pipe and Valve Supports.

Piping systems are dynamic. They expand and contract due to temperature changes in the ambient environment, and the media flowing inside. Thermoplastic piping expands and contracts more than metallic piping when subjected to temperature changes, so engineers must give this subject careful attention when designing a plastic piping layout. There may also be a significant temperature difference between time of installation, when the piping gets clamped in place and restrained, and when the system starts operating. For example, a 100-foot section of PVDF pipe that's installed on a cool 50°F morning will expand 2.88 inches in length when the temperature rises to 80°F.



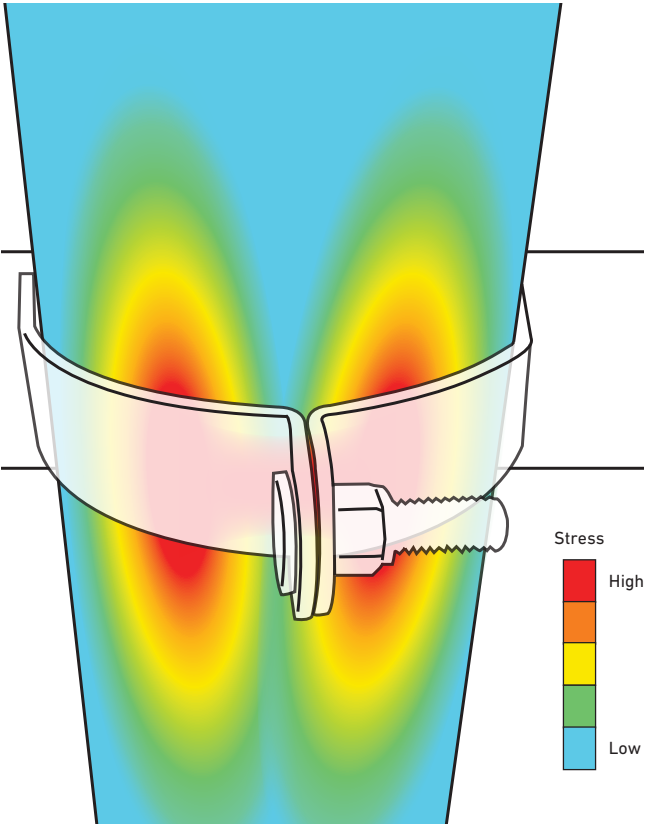
failures and subsequent damages. Leaks and downtime are very expensive in an industrial production facility.

Thermal Expansion of Piping Materials

Piping Material	Thermal Expansion Coefficient (in/in/°F)	Example: Length change per 100 feet pipe for temperature change of +30°F
Polypropylene (PP)	0.89×10^{-4}	3.20 in
Polyvinylidene fluoride (PVDF)	0.80×10^{-4}	2.88 in
Polyvinyl Chloride (PVC)	0.29×10^{-4}	1.04 in
Stainless Steel (type 304)	0.096×10^{-4}	0.35 in
Copper	0.092×10^{-4}	0.33 in
Carbon Steel (1.08% C)	0.060×10^{-4}	0.22 in

Issues with traditional clamps and supports

- Most are made of metal that may have sharp edges in direct contact with plastic piping. Or they do not completely support the pipe around its circumference, which creates higher stress points.
- Other clamps allow inconsistent and unpredictable stress concentrations that transfer to the pipe.
- Any time aggressive media flows in piping, it will attack (chemically) the weakest points in the system, i.e. areas under higher mechanical stress.
- Installer can overtighten directly against the pipe.
- Earthquakes, or seismic events, can be especially damaging to piping systems in industrial plants. Seismic accelerations can cause the piping to apply a great deal of force to clamping locations, due to the large mass of the pipe and media, which is also more challenging at the system design stage.
- Often valves are not supported correctly. Manufacturers typically require they be independently supported, leading to creation of unintended fixed points in the system.



* Other standard clamp types create unintended fixed points with compressive and concentrated stresses, which cause premature leaks.

Solution

GF to the rescue!

We applied our decades of engineering experience to develop the first pipe support system especially designed to eliminate stress transfer to pipe due to thermal expansion or seismic events. Stress is one of the leading causes of premature piping leaks and failures. Ensure your piping system reaches its intended design life with Stress Less Pipe and Valve Supports.

Features

- Mount pipe supports on any flat surface, unistrut or hanging configuration
- Simple installation
- UV resistant
- Recommended for PP, PE, PVC, CPVC, ABS, and PVDF pressure, waste and double-contained piping systems
- Pipe supports ½" to 8" (IPS and metric sizes)
- Valve supports ¾" to 2" (IPS and metric sizes)
- Hardware is trivalent gold chromium-coated galvanized steel and stainless steel.

Benefits

- Stress-free support for life of piping system
 - Thermal expansion and contraction
 - Seismic events
- By design, installer can't overtighten support against the pipe and impart stress
- Valves move with pipe expansion, while properly supported
- Brackets and hardware suitable for clean room and corrosive environments



GF has engineered solutions to complete your piping system and to provide the best possible support.

Stress Less® Pipe Guides

Soft touch. Inserts are low friction, molded HDPE. Piping can easily slide with absolute minimal stress and wear during each thermal expansion cycle. Piping can never touch metal.

Engineered for control. Guide inserts have a designed 3mm gap around the OD of the supported piping. This simplifies the system design: no need to account for load accelerations during seismic or water hammer events.

Strong and user friendly. The guide insert fits precisely within the specially-coated steel hoop, which has two functions. First, it provides the necessary strength to support the weight of the piping in normal conditions (for example, 10 times the weight of the pipe when filled with media) and even during a very strong earthquake (subjected to seismic accelerations over 5G). Second, the installer tightens down only the steel hoop and cannot overtighten the support against the pipe.

Firm grip. Optionally, we offer pipe supports with an elastomer insert that holds pipe in place vertically.

Stress Less® Valve Supports

GF Piping Systems introduces a new and unique product that allows valves to move in two directions as the pipe expands and contracts, all in a controlled manner and while properly supported.

Controlled movement. The support base and slide components are made of low friction PP. Valves can slide with virtually no resistance. Range of travel is ± 3 inches (6 inches total).

Practical. Designed to keep centerlines of piping in double strut configuration aligned with valves mounted on single strut. Smaller valve support base is taller than the larger valve support.

Designed to securely and easily mount all of the following GF valves, in any material, manual and actuated.

- Type 546 ball valves
- Type 523 ball valves
- Type 543 horizontal 3-way valves
- 5-Series diaphragm valves



Installation

Stress Less Pipe Guides give installers the flexibility to mount directly on any flat surface, on unistrut, horizontally as a hanger, or vertically. In vertical orientation, an elastomer material is inserted to create sufficient friction and snugly secure the pipe. In a horizontal mount, the pipe is free to move. A separate hanger kit allows mounting to all thread or rods connected to the ceiling. In all cases, the pipe can never touch the steel hoop or hardware.

Stress Less Pipe Guides are available in IPS and metric sizes. The sizes are embossed on the inserts, and it's easy to distinguish between the two on the construction site: IPS inserts are gray and metric are black.

Stress Less Valve Guide installation is simple. All GF valves Type 546, 523, 543 and 5-series diaphragm come with integrated base supports that directly line up with the sliding portion of the valve support and the included stainless steel hardware.

The valve support base can be mounted to any flat surface or directly and securely onto standard unistrut due to the

profile molded underside. The valve and pipe supports are designed to work as a system; piping centerlines will be aligned when the pipe guides are mounted one unistrut height taller than the valve support. For example, mount the pipe guide on double unistrut and valve support on single unistrut.

Applications

Stress Less Pipe and Valve Supports are an engineered solution that can help ensure the entire design service life of industrial piping systems. They are recommended for all thermoplastic piping systems, including stringent high purity facilities and corrosive environments. All support inserts and valve supports are made from UV-resistant plastics. Piping systems in critical applications, with harsh media, indoor to outdoor transitions or subject to wide temperature variations will especially benefit.



Stress Less Pipe Guides

Metric Pipe Size	Part Number	IPS Pipe Size	Part Number
20mm	155484500	½"	155484520
25mm	155484501	¾"	155484521
32mm	155484502	1"	155484522
40mm	155484503	1¼"	155484523
50mm	155484504	1½"	155484524
63mm	155484505	2"	155484525
75mm	155484506	2½"	155484526
90mm	155484507	3"	155484527
110mm	155484508	4"	155484528
160mm	155484509	6"	155484529
225mm	155484510	8"	155484530

Includes coated steel hoop and HDPE clamp insert
Mounting hardware not included

Stress Less Pipe Supports, Vertical

Metric Pipe Size	Part Number	IPS Pipe Size	Part Number
20mm	155484560	½"	155484580
25mm	155484561	¾"	155484581
32mm	155484562	1"	155484582
40mm	155484563	1¼"	155484583
50mm	155484564	1½"	155484584
63mm	155484565	2"	155484585

Includes coated steel hoop and HDPE clamp insert with elastomer on ID
Mounting hardware not included
Not for use as restraint fitting in horizontal or vertical mounting

Stress Less Clevis Hanger Kit

Must also purchase Stress Less Pipe Guides

Metric or IPS Pipe Size	Part Number
20mm (½")	155484540
25mm (¾")	155484541
32mm (1")	155484542
40mm (1¼")	155484543
50mm (1½")	155484544
63mm (2")	155484545
75mm (2½")	155484546
90mm (3")	155484547
110mm (4")	155484548
160mm (6")	155484549
225mm (8")	155484550

Includes coated steel clevis bracket and hardware for mounting to Stress Less
Fits IPS and metric size Stress Less Pipe Guides

Stress Less Valve Supports

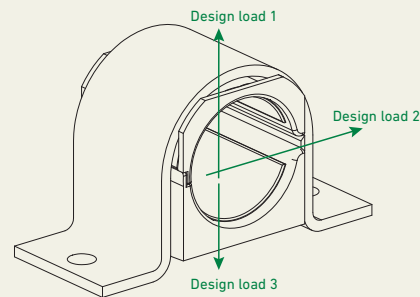
Metric or IPS Valve Size	Part Number
20-32mm (¾-1")	155484120
40-63mm (1½-2")	155484121

Fits all GF Type 546, 523, 543, and 5-series valves with mounting inserts
Includes hardware to attach valve
Does not include hardware for mounting to surface or unistrut

Stress Less Pipe Supports Load Rating

Pipe Size		Design Load 1 (lbs) **	Design Load 2 (lbs) **	Design Load 3 (lbs) **
mm	inch			
20	½	150	150	180
25	¾	150	150	180
32	1	150	150	180
40	1¼	150	150	180
50	1½	150	150	180
63	2	200	200	240
75	2½	300	300	360
90	3	450	450	540
110	4	650	650	780
160	6	900	900	1080
225	8	1750	1750	2100

** Recommended Design Load Rating considering both static and dynamic loading



**Stress Less Pipe and Valve Supports.
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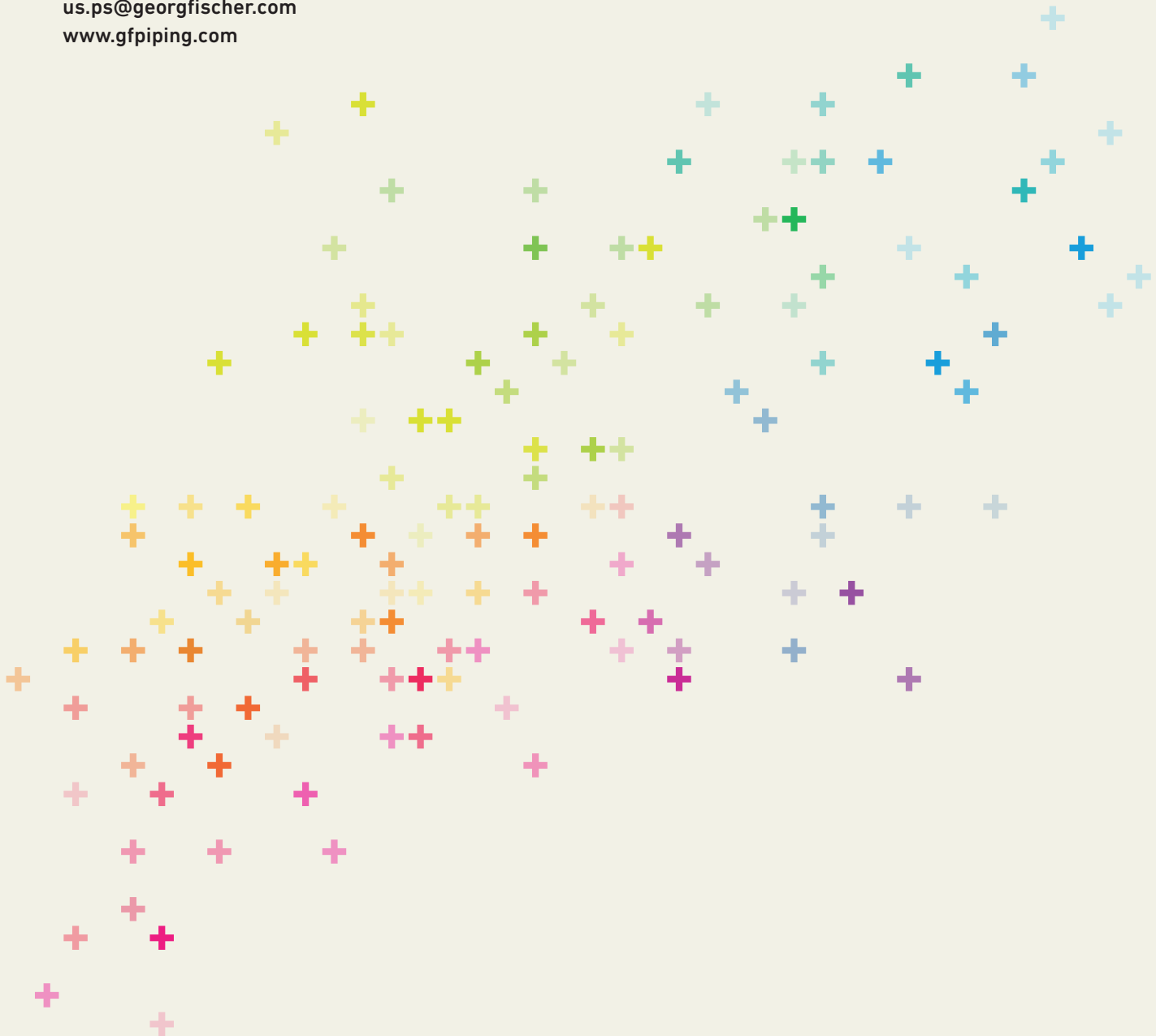
Contact us

Tel. (714) 731-8800, Toll Free (800) 854-4090

Fax (714) 731-6201

us.ps@georgfischer.com

www.gfpiping.com



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