

Grooved Piping System **The only system that provides the option of rigidity or flexibility**

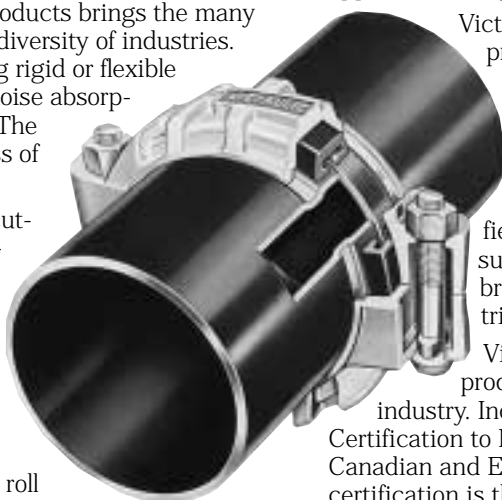
PRODUCT DESCRIPTION

The Victaulic grooved piping system is the most versatile, economical and reliable piping system available. It is up to three times faster to install than welding, and easier and more reliable than threading or flanging, resulting in lowest total installed cost.

The versatility of Victaulic piping products brings the many benefits of the grooved system to a diversity of industries. Capabilities which include providing rigid or flexible pipe joining to allow vibration and noise absorption without special compensators. The ability to absorb the temporary stress of seismic action is well documented.

Assembly without flame, or messy cutting oils and chips, and with a minimum of bolts, has great appeal for many users. Reduced downtime for maintenance, repairs, or additions; capabilities to join metallics, plastics, and specialty piping; plus an unparalleled breadth of product line further expands potential uses.

The grooved system is designed for roll grooved or cut grooved standard pipe or roll grooved light wall pipe. It can be utilized with varied pipe materials including carbon steel, stainless steel, aluminum, copper, ductile iron, PVC and HDPE plastics plus coated, lined and specialty pipe. Pipe end preparation is fast and



easy either in the shop or on the job site with the variety of Victaulic grooving tools available.

Grooved systems can join pipe from ½ - 48" (21,3 - 1219,2 mm). Up to 144" (3650 mm) pipe can be joined using the applied Vic-Ring® system.

Victaulic plain end systems require no pipe preparation, especially useful for maintenance, repairs and retrofit. The unique Pressfit® system joins small diameter (½ - 2"/21,3 - 60,3 mm) Schedule 5 carbon or stainless steel pipe with a hand-held electric pressing tool.

Added to this are diverse design services, field sales service, engineering/application support, and product availability through branch warehouses and premier stocking distributors worldwide.

Victaulic is committed to excellence – in our products, people, programs and service to the industry. Indicative of this commitment is our Certification to ISO 9001 standards for our principal U.S., Canadian and European locations. A major factor in our ISO certification is the continuing Quality Improvement Process. Establishing this management direction has put into practice the corporate mission:

"We will satisfy our customers' requirements by furnishing defect free products and services on time, every time."

APPROVED WORLDWIDE, CERTIFIED TO ISO-9001*

General Code Groups, Associations, Laboratories and Approval Bodies

(ABS) American Bureau of Shipping
 (ANSI) American National Standards Institute
 (ANSI/AWWA) American Water Works Association – C-606
 (ANSI/NSF) Standard 61 for potable water service
 (API) American Petroleum Institute – API Std. 5L, Sect. 7.5
 (ASHRAE) American Society of Heating, Refrigerating and Air Conditioning Engineers
 (ASME) American Society of Mechanical Engineers Power Piping, B-31.1; Chemical Plant and Petroleum Refinery Piping, B-31.3; Refrigeration Piping, B-31.5; Building Services Piping, B-31.9; Slurry Pipelines, B-31.11
 (ASTM) American Society of Testing and Materials – F-1476 Couplings; F-1548 Fittings; F-1155 Shipbuilding
 (BOCA) Building Officials and Code Administrators
 (CSA) Canadian Standards Association – B-242, registered to CAN 3-Z299.3
 (FM) Factory Mutual Research Corp. - approved for fire protection services
 (IAPMO) International Association of Plumbing & Mechanical Officials
 (LLOYD'S) Lloyd's Register of Shipping
 (LPC) Loss Prevention Council (formerly F.O.C.)
 (NFPA) National Fire Protection Association
 (NY-MEA) New York Materials and Equipment Acceptance
 (SBCCI) Southern Building Code Congress International – Standard Plumbing and Mechanical Code
 (UL) Underwriter's Laboratories, Inc. – Listed for fire protection services.
 (ULC) Underwriter's Laboratories of Canada – Listed for fire protection services.

Government Agencies

Bureau of Marine Inspection – Salt and fresh water, oil transfer
 Bureau of Public Roads – Div. of Bridges – Drain lines and bridge crossings
 Canadian Coast Guard
 U.S. Coast Guard – Approves each vessel individually
 (COE) Corps of Engineers – CEGS 15000
 (FAA) Federal Aviation Admin. - HVAC, Plumbing, Fire Protection
 (FHA) Federal Housing Administration
 (GSA) General Services Administration – 15000 Series
 (MIL) Military Specifications – MILP-10388 Fittings; MIL-C-10387 Couplings; MIL-P-11087A(CE) Steel Pipe, Grooved MIL-I-45208 Inspection Procedure
 (NASA) National Aeronautics and Space Admin. – 15000 Series
 (NAVFAC) Naval Facilities Engrg. Command – NFGS 15000 Series
 (NIH) National Institute of Health (Dept. of Health) – 15000 Series
 (TVA) Tennessee Valley Authority – Fire protection, storm drains
 (VA) Veterans Affairs – 15000 Series

Worldwide

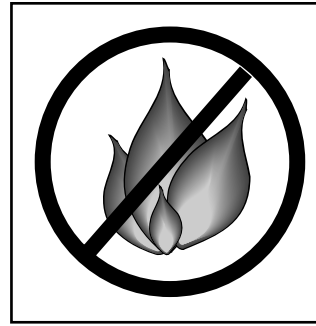
(AS) AS4041-1992 Australian Standard (3.24.10)
 (BV) Bureau Veritas
 (DNV) Det Norske Veritas
 (DVGW) Deutscher Verein des Gas-und Wasserfaches e.V.
 (HDB) Singapore Housing Development Board
 Hong Kong Fire Services Board
 Korean Registry of Shipping
 New Zealand Insurance Council
 New Zealand Building Act. (1991)
 (NK) Nippon Kaiji Kyokai
 (SSL) Scientific Services Laboratory
 Standards Australia
 (VdS) Verband der Schadenversicherer e.V.
 (WRC) Water Research Council – U.K.

* Contact Victaulic for details and the specific nature of each listing.



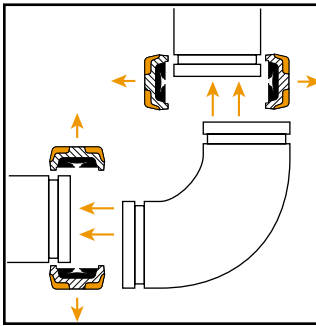
Economical and practical

Up to five times faster to install than welding, flanging or threading, the Victaulic system can reduce total installed costs by 20 to 40%. Cost estimates are more accurate; completion dates more predictable.



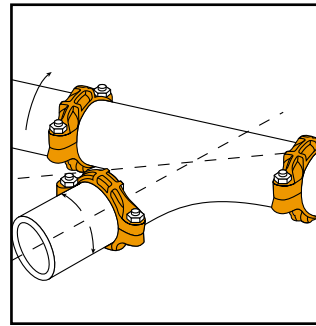
No fire hazard

As a fully mechanical, bolted system Victaulic products present no fire hazard. It is far safer and requires no shielding or fire watch.



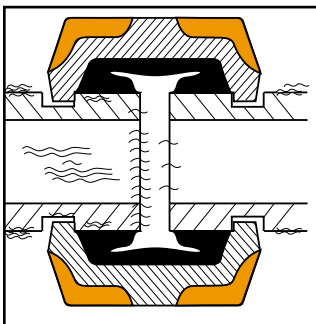
Easy system or equipment access

Removal of two couplings (just four bolts) provides access for cleaning, maintenance, system expansion or changes. Victaulic butterfly valves provide "dead-end" shut-off service to isolate equipment or systems.



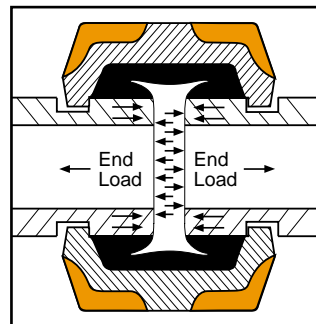
Alignment ease

The grooved system allows full rotation of pipe, valves, fittings or couplings before tightening for easy alignment. This compensates for some alignment errors and eliminates the "two-holing" required with flanges. Fitting in tight places is eased. Request 26.02.



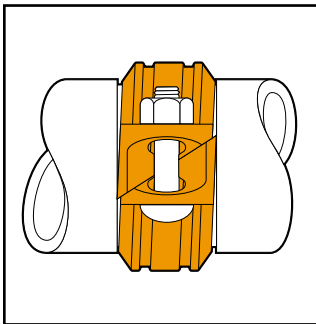
Noise and vibration attenuation

The basic design of independent grooved pipes, sealed by a rubber gasket and unified by an externally bolted coupling housing, reduces noise/vibration transmission geometrically throughout a system. Independent tests verify superior vibration attenuation. Request 26.04.



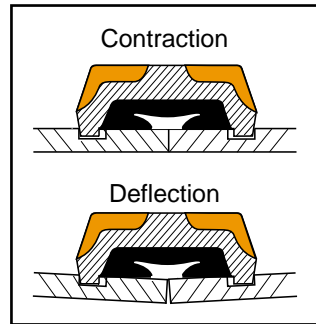
Seismic stress absorption

The full engagement of the housing keys into grooves around the full pipe circumference provides significant pressure restraint and end load capabilities to withstand pipe movement from varied internal and external sources. Request 26.05.



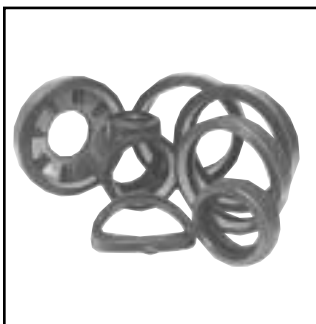
Rigidity

Versatility is the key, utilizing standard grooved pipe, fittings and valves, rigidity can be achieved with standard couplings. The unique patented angle-pad design of Zero-Flex® stainless steel or ductile couplings provides positive clamping of the pipe to resist torsional and flexural loads.



Flexibility

The Victaulic system is unique in the ability to accommodate expansion/contraction/deflection and to permit designing to take advantage of these characteristics within published standards. Elimination or reduction of special vibration accessories, expansion loops and settlement allowance are among the options.



Varied gaskets for varied services

Since the gasket is the only joint part touching the internal media, standard couplings can be used with gaskets to meet the service requirements, including fluoroelastomers, EPDM, hydrin and others. Request 05.01 for selection data.

WEIGHT/BOLTS COMPARISON				
Size In.	Lighter (Wgt. Lbs.)		Fewer Bolts	
	Vic®	Flgd.	Vic®	Flgd.
2	2	18	2	4
4	5	24	2	8
6	9	35	2	8
10	25	80	2	12
16	41	110	4	16
24	76	230	6	20

Lighter and fewer bolts than flanging

The grooved system requires two bolts for each coupling (through 12"/323.9 mm sizes). Bolt hole alignment is not critical, as with flanges. There is no "make-on" time and "make-up" time is significantly reduced.

FLEXIBLE SYSTEMS

Flexible grooved-type couplings (such as Styles 77, 75, 72, 750, 78 and 791) allow controlled angular, linear and rotational movement at each joint to accommodate expansion, contraction, setting, vibration, noise and other piping system movement. These features provide advantages in designing piping systems but must be

considered when determining hanger and support spacing and location.

Victaulic couplings offer superior vibration attenuation characteristics to both flexible metal and elastomeric flexible arch-type connectors. Independent vibration testing data (request

Section 26.04) verifies that three Victaulic couplings in close proximity to a vibration source (pump, equipment, etc.) provide superior vibration attenuation in piping systems.

Both type couplings offer installed cost savings from 10 to 30% and higher, plus the convenience of a union

at every joint and the proven pressure-responsive "C" shaped Victaulic gasket. Both type products fit into standard roll or cut grooved pipe and provide the security of all circumferential engagement of the coupling housing into the groove for high pressure and end load service.

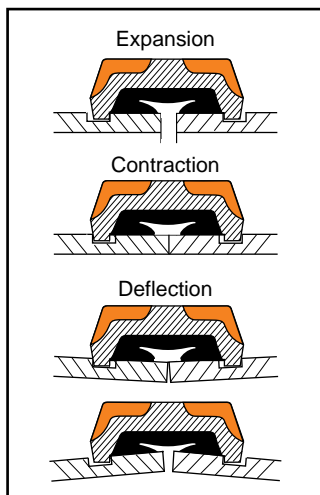
FLEXIBLE COUPLING PERFORMANCE†

06.01-2A

Nom. Size Inches mm	O.D. Inches mm	Allow. Pipe End Sep. † Inch./mm	Deflect. Fr. C _L †		Nom. Size Inches mm	O.D. Inches mm	Allow. Pipe End Sep. † Inch./mm	Deflect. Fr. C _L †		Nom. Size Inches mm	O.D. Inches mm	Allow. Pipe End Sep. † Inch./mm	Deflect. Fr. C _L †	
			Degrees per Cplg.	Pipe In./ft. mm/m				Degrees per Cplg.	Pipe In./ft. mm/m				Degrees per Cplg.	Pipe In./ft. mm/m
¾ 20	1.050 26.7	0 - 0.06 0 - 1.6	3° - 24'	0.72 60	4½ 120	5.000 127.0	0 - 0.13 0 - 3.2	1° - 26'	0.25 21	10 250	10.750 273.0	0 - 0.13 0 - 3.2	0° - 40'	0.14 12
1 25	1.315 33.4	0 - 0.06 0 - 1.6	2° - 43'	0.57 48	5 125	5.563 141.3	0 - 0.13 0 - 3.2	1° - 18'	0.27 22	12 O.D.	12.000 304.8	0 - 0.13 0 - 3.2	0° - 36'	0.13 11
1¼ 32	1.660 42.2	0 - 0.06 0 - 1.6	2° - 10'	0.45 38	5¼ O.D.	5.250 133.0	0 - 0.13 0 - 3.2	1° - 21'	0.28 23	12 300	12.750 323.9	0 - 0.13 0 - 3.2	0° - 34'	0.12 10
1½ 40	1.900 48.3	0 - 0.06 0 - 1.6	1° - 56'	0.40 33	5½ O.D.	5.500 139.7	0 - 0.13 0 - 3.2	1° - 18'	0.28 23	14 350	14.000 355.6	0 - 0.13 0 - 3.2	0° - 31'	0.11 9
2 50	2.375 60.3	0 - 0.06 0 - 1.6	1° - 31'	0.32 27	6 O.D.	6.000 152.4	0 - 0.13 0 - 3.2	1° - 12'	0.21 17	15 375	15.000 381.0	0 - 0.13 0 - 3.2	0° - 29'	0.10 8
2½ 65	2.875 73.0	0 - 0.06 0 - 1.6	1° - 15'	0.26 22	6 150	6.625 168.3	0 - 0.13 0 - 3.2	1° - 5'	0.23 19	16 400	16.000 406.4	0 - 0.13 0 - 3.2	0° - 27'	0.10 8
3 O.D.	3.000 76.2	0 - 0.06 0 - 1.6	1° - 12'	0.26 22	6¼ O.D.	6.250 159.0	0 - 0.13 0 - 3.2	1° - 9'	0.24 20	18 450	18.000 457.0	0 - 0.13 0 - 3.2	0° - 24'	0.08 7
3 80	3.500 88.9	0 - 0.06 0 - 1.6	1° - 2'	0.22 18	6½ O.D.	6.500 165.1	0 - 0.13 0 - 3.2	1° - 6'	0.23 19	20 500	20.000 508.0	0 - 0.13 0 - 3.2	0° - 22'	0.08 7
3½ 90	4.000 101.6	0 - 0.06 0 - 1.6	0° - 54'	0.19 16	8 O.D.	8.000 203.2	0 - 0.13 0 - 3.2	0° - 54'	0.16 13	22 550	22.000 559.0	0 - 0.13 0 - 3.2	0° - 19'	0.07 6
4 100	4.500 114.3	0 - 0.13 0 - 3.2	1° - 36'	0.34 28	8 200	8.625 219.1	0 - 0.13 0 - 3.2	0° - 50'	0.18 15	24 600	24.000 610.0	0 - 0.13 0 - 3.2	0° - 18'	0.07 6
4¼ O.D.	4.250 108.0	0 - 0.13 0 - 3.2	1° - 41'	0.35 29	10 O.D.	10.000 254.0	0 - 0.13 0 - 3.2	0° - 43'	0.15 13					

Refer to notes on page 4.

† NOTE: These values are based on standard roll grooved pipe. Figures for standard cut grooved pipe may be doubled. See notes on page 4.



Exaggerated for clarity.

Minimizes noise and vibration transmission

- Isolates noise and vibration
- Resilient gasket helps absorb noise and vibration
- Permits elimination of noise suppression devices
- Provides superior vibration attenuation better than flexible metal or elastomeric arch-type connectors (refer to 26.04)

Provides expansion and contraction

- Up to 0.250" (6.35 mm) linear movement at each joint
- Minimizes or eliminates costly expansion joints and loops (refer to 26.02)

Minimizes system stresses

- Flexible joints provide virtually a stress free system (refer to 26.03)
- Reduces or eliminates stresses from settlement of buried pipe
- Absorbs temporary stresses induced by seismic tremors (refer to 26.05)

RIGID SYSTEMS

Zero-Flex Style 07, FireLock Style 005 and Transition Style 307 Rigid Couplings have a unique, patented angle pad design which constricts the housing keys into the groove around the full circumference to grip the pipe rigidly. The housings slide on the angled pads rather than mating squarely.

This sliding adjustment also forces the key sections into opposed contact on the inside and the outside groove edges, pushing the joint to its maximum pipe end separation (see chart below) during assembly.

These rigid couplings provide a rigid joint allowing no expansion/

contraction or linear movement. Couplings will push the pipe ends to their maximum allowable separation which must be considered during assembly.

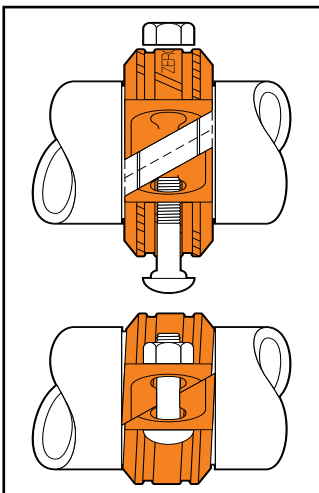
Rigid couplings (Styles 07, 005, 008, 307, HP-70, 741 and others) create a rigid joint, useful for risers,

mechanical rooms and other areas where flexibility is not desired. Zero-Flex Style 07 and FireLock Style 005 couplings are designed to provide rigidity to permit hanging to ANSI B31.1 Power Piping Code, ANSI B31.9 Building Services Piping Code and NFPA 13 Sprinkler Systems.

RIGID COUPLING PERFORMANCE

06.01-1A

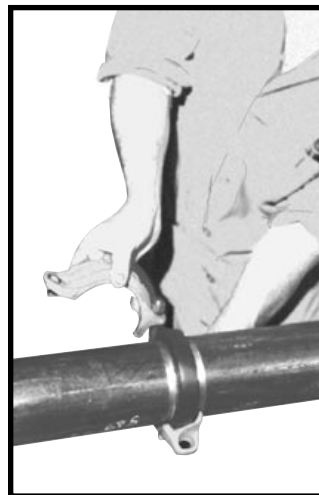
Nominal Size Inches/mm	Outside Diameter Inches/mm	Allowable Pipe End Sep. Inches/mm	Nominal Size Inches/mm	Outside Diameter Inches/mm	Allowable Pipe End Sep. Inches/mm
¾ 20	1.050 26.7	0.05 1.2	5½ O.D.	5.500 139.7	0.16 4.1
1 25	1.315 33.4	0.05 1.2	6 150	6.625 168.3	0.16 4.1
1¼ 32	1.660 42.2	0.05 1.2	6¼ O.D.	6.250 159.0	0.16 4.1
1½ 40	1.900 48.3	0.05 1.2	6½ O.D.	6.500 165.1	0.16 4.1
2 50	2.375 60.3	0.07 1.7	8 200	8.625 219.1	0.19 4.8
2½ 65	2.875 73.0	0.07 1.7	10 250	10.750 273.0	0.13 3.3
3 O.D.	3.000 76.2	0.07 1.7	12 300	12.750 323.9	0.13 3.3
3 80	3.500 88.9	0.07 1.7	14 350	14.000 355.6	0.13 3.3
4 100	4.500 114.3	0.16 4.1	16 400	16.000 406.4	0.13 3.3
4¼ O.D.	4.250 108.0	0.16 4.1	18 450	18.000 457.0	0.13 3.3
5 125	5.563 141.3	0.16 4.1	20 500	20.000 508.0	0.13 3.3
5¼ O.D.	5.250 133.0	0.16 4.1	24 600	24.000 610.0	0.09 2.3



Exaggerated for clarity.

Provides rigidity

- Zero-Flex Style 07, Stainless Style 008 and FireLock Style 005 unique (patented) angled-pad design adjusts to standard pipe tolerances
- Provides positive clamping of the pipe to resist flexural and torsional loads
- Support and hanging requirements correspond to ANSI B31.1 Power Piping Code, ANSI B31.9 Building Services Code and NFPA 13 Sprinkler Systems



Easy swing-over assembly

- Bolt-pad design permits assembly by removing one nut/bolt and scissoring housing over gasket
- Reduces the number of components to handle during assembly
- Speeds and eases installation

COUPLING MAXIMUM WORKING PRESSURE

06.01-3A

Cplg. Size Inch. mm	Pipe Wall Thick. Sched.	Coupling Style – Working Pressure – PSI/kPa											
		Style 07 Rigid	Style 005 Rigid	Style 77 Flexible	Style 75 Flexible	Style 78 Snap-Joint®	Style 791 Boltless	Style 741 Flange Adpt.	Style 743 Flange Adpt.	HP-70 Rigid	HP-70ES EndSeal®	Style 72 Outlet	Style 750 Reducing
¾ 20	40	–	–	1000 6900	–	–	–	–	–	–	–	–	–
1 25	40	750 5175	–	1000 6900	–	300 2065	–	–	–	–	–	–	–
1¼ 32	40	750 5175	175 1200	1000 6900	–	300 2065	–	–	–	–	–	–	–
1½ 40	40	750 5175	175 1200	1000 6900	500 3450	300 2065	–	–	–	–	–	500 3450	–
2 50	40	750 5175	175 1200	1000 6900	500 3450	300 2065	700 4825	300 2065	720 4965	1000 6900	2500 17235	500 3450	350 2410
2½ 65	40	750 5175	175 1200	1000 6900	500 3450	300 2065	700 4825	300 2065	720 4965	1000 6900	2500 17235	500 3450	350 2410
3 O.D.	40	750 5175	175 1200	1000 6900	500 3450	–	–	–	–	–	–	–	–
3 80	40	750 5175	175 1200	1000 6900	500 3450	300 2065	700 4825	300 2065	720 4965	1000 6900	2500 17235	500 3450	350 2410
3½ 90	40	–	–	1000 6900	500 3450	–	–	–	–	–	–	–	–
4 100	40	750 5175	175 1200	1000 6900	500 3450	300 2065	700 4825	300 2065	720 4965	1000 6900	2500 17235	500 3450	350 2410
4¼ O.D.	40	750 5175	175 1200	1000 6900	450 3100	–	–	–	–	–	–	–	–
4½ O.D.	40	–	175 1200	–	450 3100	–	–	–	–	–	–	–	–
5 125	40	700 4825	175 1200	1000 6900	450 3100	300 2065	700 4825	300 2065	720 4965	–	–	–	350 2410
5¼ O.D.	40	700 4825	175 1200	1000 6900	450 3100	–	–	–	–	–	–	–	–
5½ O.D.	40	700 4825	–	1000 6900	450 3100	–	–	–	–	–	–	–	–
6 150	40	700 4825	175 1200	1000 6900	450 3100	300 2065	700 4825	300 2065	720 4965	1000 6900	2000 13790	400 2750	350 2410
6¼ O.D.	40	700 4825	–	1000 6900	450 3100	–	–	–	–	–	–	–	–
6½ O.D.	40	700 4825	–	1000 6900	450 3100	–	–	300 2065	–	–	–	–	–
8 200	40	600 4130	175 1200	800 5500	450 3100	300 2065	700 4825	300 2065	720 4965	800 5500	2000 13790	–	–
10 250	40	500 3450	–	800 5500	–	–	–	300 2065	720 4965	800 5500	2000 13790	–	–
12 300	30	400 2750	–	800 5500	–	–	–	300 2065	720 4965	800 5500	2000 13790	–	–
14 350	30	300 2065	–	300 2065	–	–	–	300 2065	–	–	–	–	–
15 375	0.375	–	–	300 2065	–	–	–	–	–	–	–	–	–
16 400	30	300 2065	–	300 2065	–	–	–	300 2065	–	–	–	–	–
18 450	STD	300 2065	–	300 2065	–	–	–	300 2065	–	–	–	–	–
20 500	20	300 2065	–	300 2065	–	–	–	300 2065	–	–	–	–	–
22 550	20	–	–	300 2065	–	–	–	–	–	–	–	–	–
24 600	20	250 1725	–	250 1725	–	–	–	300 2065	–	–	–	–	–

NOTES

* Working Pressure and End Load are total, from all internal and external loads, based on standard weight (ANSI) steel pipe, standard **roll** or **cut** grooved in accordance with Victaulic specifications. Contact Victaulic for performance on other pipe.

WARNING: FOR ONE TIME FIELD TEST ONLY, the Maximum Joint Working Pressure may be increased to 1½ times the figures shown.

† Allowable Pipe End Separation and Deflection figures show the maximum nominal range of movement available at each joint for standard **roll** grooved pipe. Figures for standard **cut** grooved pipe may be doubled. These figures are maximums; for design and installation purposes these figures should be reduced by: 50% for ¾ - 3½" (20 - 90 mm); 25% for 4" (100 mm) and larger.

Number of bolts required equals number of housing segments.

Metric thread size bolts are available (color coded gold) for all coupling sizes upon request. Contact Victaulic for details.

WARNING: Piping systems must always be depressurized and drained before attempting disassembly and removal of any Victaulic piping products.

This product shall be manufactured by Victaulic Company. All products shall be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.