

# Mechanical-T<sup>®</sup> Bolted Branch Outlet

## Style 422



Style 422 OGS Grooved



Style 422 Female Threaded

### 1.0 PRODUCT DESCRIPTION

#### Available Sizes

- 2 x ¾"/DN50 x DN20 through 10 x 2"/DN250 x DN50

#### Pipe Material

- 300 Series Stainless Steel

#### Maximum Working Pressure

- Up to 300 psi/2065 kPa
- For HDPE solutions, working pressure dependent on material, wall thickness and size of pipe.

#### Operating Temperature Range

- Dependent on gasket selection from Section 3.0
- For alternate gasket materials available, reference Victaulic submittal [publication 05.01](#)

#### Function

- Provides a direct branch connection at any location a hole can be cut in a pipe.

#### Pipe Preparation

- Victaulic Original Groove System (OGS)
- Female National Pipe Thread (FNPT)

#### Application

- This product provides a reduced size, 90° grooved OGS or Female Threaded (NPT) outlet in place of a reducing tee.

#### NOTES

- Not compatible for use on PVC plastic pipe.
- Must be installed so that the main and branch connections are a true 90° angle.
- Not approved for use in hot tapping applications.
- May be supplied with stainless steel lower housings.

### 2.0 CERTIFICATION/LISTINGS



This product is registered in Canada in accordance with CSA B51, the Canadian Boiler, Pressure Vessel and Pressure Piping Code. Contact Victaulic for registered working pressures, temperatures and confirmation of the applicable CRN by Province or Territory.

**ALWAYS REFER TO ANY NOTIFICATIONS AT THE END OF THIS DOCUMENT REGARDING PRODUCT INSTALLATION, MAINTENANCE OR SUPPORT.**

System No.		Location	
Submitted By		Date	

Spec Section		Paragraph	
Approved		Date	

### 3.0 SPECIFICATIONS - MATERIAL

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**Outlet Housing:** Grade CF8M (Type 316 stainless steel) conforming to ASTM A 351/A 351M.

**Lower Housing:** Ductile iron conforming to ASTM A 536, Grade 65-45-12, hot dip galvanized.

**Optional:** Grade CF8M (Type 316 stainless steel) conforming to ASTM A 351/A 351M

**Gasket: (specify choice<sup>1</sup>)**

**NOTE**

- Additional gasket styles are available. Contact Victaulic for details.

**Victaulic Grade “E” EPDM**

EPDM (Green stripe color code). Temperature range –30°F to +230°F/ –34°C to +110°C. May be specified for cold and hot water service within the specified temperature range plus a variety of dilute acids, oil-free air and many chemical services. UL classified in accordance with ANSI/NSF 61 for cold +73°F/+23°C and hot +180°F/+82°C potable water service and ANSI/NSF 372. NOT COMPATIBLE FOR PETROLEUM SERVICES.

**Victaulic Grade “T” Nitrile**

Nitrile (Orange stripe color code). Temperature range –20°F to +180°F/–29°C to +82°C. May be specified for petroleum products, air with oil vapors, vegetable and mineral oils within the specified temperature range. Not compatible for hot water services over +150°F/+66°C or for hot dry air over +140°F/+60°C.

<sup>1</sup> Services listed are General Service Guidelines only. It should be noted that there are services for which these gaskets are not compatible. Reference should always be made to the latest Victaulic Gasket Selection Guide for specific gasket service guideline and for a listing of services which are not compatible.

**Bolts/Nuts: (specify choice<sup>2</sup>)**

Standard: Carbon steel oval neck track bolts meeting the mechanical property requirements of ASTM A449 (imperial) and ISO 898-1 Class 9.8 (metric). Carbon steel hex nuts meeting the mechanical property requirements of ASTM A563 Grade B (imperial – heavy hex nuts) and ASTM A563M Class 9 (metric – hex nuts). Track bolts and hex nuts are zinc electroplated per ASTM B633 FE/ZN5, finish Type III (imperial) or Type II (metric).

Optional:

Stainless steel oval neck track bolts meeting the mechanical property requirements of ASTM F593, Group 2 (316 stainless steel), condition CW. Stainless steel heavy nuts meeting the mechanical property requirements of ASTM F594, Group 2 (316 stainless steel), condition CW. Bolts and nuts include galling reducing coating.<sup>2</sup>

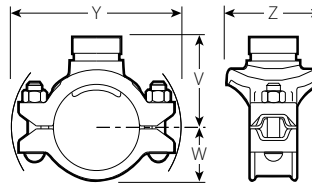
<sup>2</sup> Optional bolts/nuts are available in imperial size only.

**NOTE**

- Carbon steel oval neck track bolts are the standard offering for the galvanized ductile iron lower housing option. Stainless steel oval neck track bolts are the standard offering for the stainless steel lower strap option.

## 4.0 DIMENSIONS

### Style 422 Grooved



Grooved Outlet

Size		Maximum Working Pressure psi kPa	Dimensions								Weight
Nominal inches DN	Actual Outside Diameter inches mm		Hole Size Diameter		V <sup>3</sup> Grv.	W	Y	Z	Approximate (Each) Grv.		
			Req'd	Max.						lb kg	
		inches mm									
3 DN80 x 2 DN50	3.500 x 2.375 88.9 x 60.3	300 2065	2.50 64	2.63 67	3.50 90	2.2 58	6.75 172	3.88 99	4.6 2.1		
	4 DN100 x 2 DN50	4.500 x 2.375 114.3 x 60.3	300 2065	2.50 64	2.63 67	4.00 102	2.6 68	7.00 178	3.88 99	4.6 2.1	
3 DN80		3.500 88.9	300 2065	3.50 89	3.63 92	4.13 105	2.63 68	7.75 196	5.13 130	6.4 2.9	
	6 DN150 x 2 DN50	6.625 x 2.375 168.3 x 60.3	300 2065	2.50 64	2.63 67	5.13 130	3.75 96	9.13 232	3.88 99	5.6 2.5	
3 DN80		3.500 88.9	300 2065	3.50 89	3.63 92	5.13 130	3.63 94	10.50 267	5.38 135	8.4 3.8	
		4 DN100	4.500 114.3	300 2065	4.50 114	4.63 118	5.38 137	3.63 94	10.50 267	6.25 159	10.1 4.6
8 DN200 x 2 DN50	8.625 x 2.375 219.1 x 60.3	300 2065	2.75 70	2.88 73	6.25 159	4.88 122	12.38 316	4.50 114	11.6 5.3		
	3 DN80	3.500 88.9	300 2065	3.50 89	3.63 92	6.50 165	4.88 122	12.38 316	5.38 135	11.6 5.3	
		4 DN100	4.500 114.3	300 2065	4.50 114	4.63 118	6.38 162	4.88 122	12.38 316	6.25 150	12.5 5.7

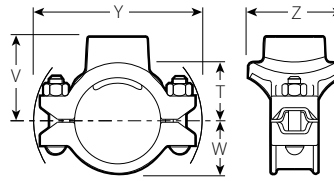
<sup>3</sup> Center of run to end of fitting.

**NOTE**

- WARNING: FOR ONE-TIME FIELD TEST ONLY, the Maximum Working Pressure may be increased to 1 1/2 times the figures shown.

## 4.1 DIMENSIONS

### Style 422 Threaded



Threaded Outlet

Size		Maximum Working Pressure	Dimensions								Weight
Nominal inches DN	Actual Outside Diameter inches mm		Hole Size Diameter		V	W	Y	Z	Approx. (Each)		
			Req'd	Max.							
			inches mm								lb kg
2 DN50	¾ DN20	2.375 60.3	1.050 26.7	300 2065	1.50 38	1.63 41	2.47 63	1.55 39	5.39 137	2.75 70	3.0 1.3
	1 DN25		1.315 33.4	300 2065	1.5 38	1.63 41	2.47 63	1.55 39	5.39 137	2.75 70	3.0 1.3
3 DN80	¾ DN20	3.500 88.9	1.050 26.7	300 2065	1.50 38	1.63 41	2.99 76	2.22 56	6.21 158	2.75 70	3.4 1.5
	1 DN25		1.315 33.4	300 2065	1.50 38	1.63 41	2.99 76	2.22 56	6.21 158	2.75 70	3.4 1.5
	1 ½ DN40		1.900 48.3	300 2065	2.00 51	2.13 54	3.44 87	2.22 56	6.21 158	3.88 99	5.0 2.3
	2 DN50		2.375 60.3	300 2065	2.50 64	2.63 67	3.44 87	2.22 56	6.34 161	3.88 99	5.3 2.4
4 DN100	¾ DN20	4.500 114.3	1.050 26.7	300 2065	1.5 38	1.63 41	3.50 89	2.63 67	7.73 196	2.75 70	5.1 2.3
	1 DN25		1.315 33.4	300 2065	1.5 38	1.63 41	3.50 89	2.63 67	7.73 196	2.75 70	5.0 2.2
	1 ½ DN40		1.900 48.3	300 2065	2.00 51	2.13 54	3.94 100	2.63 67	7.73 196	3.25 83	5.6 2.5
	2 DN50		2.375 60.3	300 2065	2.50 64	2.63 67	3.94 100	2.63 67	7.73 196	3.88 99	6.0 2.7
6 DN150	¾ DN20	6.625 168.3	1.050 26.7	300 2065	2.00 51	2.13 54	5.06 129	3.63 92	10.34 263	3.25 83	9.1 4.1
	1 DN25		1.315 33.4	300 2065	2.00 51	2.13 54	5.06 129	3.63 92	10.34 263	3.25 83	9.0 4.1
	1 ½ DN40		1.900 48.3	300 2065	2.00 51	2.13 54	5.06 129	3.63 92	10.34 263	3.25 83	8.3 3.8
	2 DN50		2.375 60.3	300 2065	2.50 64	2.63 67	5.07 129	3.63 92	10.34 263	3.88 99	8.9 4.0
8 DN200	¾ DN20	8.625 219.1	1.050 26.7	300 2065	2.75 70	2.88 73	6.13 156	4.62 117	12.53 318	4.50 114	13.4 6.1
	1 DN25		1.315 33.4	300 2065	2.75 70	2.88 73	6.13 156	4.62 117	12.53 318	4.50 114	13.3 6.0
	1 ½ DN40		1.900 48.3	300 2065	2.75 70	2.88 73	6.13 156	4.62 117	12.53 318	4.50 114	12.6 5.7
	2 DN50		2.375 60.3	300 2065	2.75 70	2.88 73	6.13 156	4.62 117	12.53 318	4.50 114	11.8 5.4
10 DN250	¾ DN20	10.750 273.0	1.050 26.7	300 2065	2.75 70	2.88 73	7.20 183	5.82 148	14.63 372	4.50 114	17.0 7.7
	1 DN25		1.315 33.4	300 2065	2.75 70	2.88 73	7.2 183	5.82 148	14.63 372	4.5 114	16.8 7.6
	1 ½ DN40		1.900 48.3	300 2065	2.75 70	2.88 73	7.2 183	5.82 148	14.63 372	4.5 114	16.2 7.4
	2 DN50		2.375 60.3	300 2065	2.75 70	2.88 73	7.2 183	5.82 148	14.63 372	4.5 114	15.4 7.0

## 5.0 PERFORMANCE

### Flow Data

Flow test data has shown that the total head loss between point (1) and (2) for the Style 422 fittings can best be expressed in terms of the pressure difference across the inlet and branch. The pressure difference can be obtained from the relationship below.

C<sub>v</sub>/K<sub>v</sub> values for flow of water at +60°F/+16°C are shown in the table.

Formulas for C<sub>v</sub>/K<sub>v</sub> Values:

Formulas for C<sub>v</sub> values:

$$\Delta P = \frac{Q^2}{C_v^2}$$

$$Q = C_v \times \sqrt{\Delta P}$$

**Where:**

Q = Flow (GPM)

ΔP = Pressure Drop (psi)

C<sub>v</sub> = Flow Coefficient

Formulas for K<sub>v</sub> values:

$$\Delta P = \frac{Q^2}{K_v^2}$$

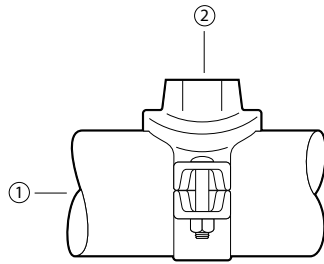
$$Q = K_v \times \sqrt{\Delta P}$$

**Where:**

Q = Flow (m<sup>3</sup>/hr)

ΔP = Pressure Drop (Bar)

K<sub>v</sub> = Flow Coefficient



*Exaggerated for clarity*







Outlet Size		Equivalent Length of Outlet Size Schedule 40S Stainless Steel Pipe FT	C <sub>v</sub> /K <sub>v</sub> Values
Nominal Size inches DN	Actual Outside Diameter inches mm		
1 ½ DN40	1.900 48.3	11	53 45.4
2 DN50	2.375 60.3	9	112 96
3 DN80	3.500 88.9	14	249 213.4
4 DN100	4.500 114.3	20	421 360.8

**NOTE**

- 1½ data for threaded configuration only.

## 6.0 NOTIFICATIONS

**⚠ WARNING**



- **Read and understand all instructions before attempting to install, remove, adjust, or maintain any Victaulic piping products.**
- **Depressurize and drain the piping system before attempting to install, remove, adjust, or maintain any Victaulic piping products.**
- **Wear safety glasses, hardhat, and foot protection.**

**Failure to follow these instructions could result in death or serious personal injury and property damage.**

## 7.0 REFERENCE MATERIALS

- [02.06: Victaulic Potable Water Approvals ANSI/NSF](#)
- [05.01: Gasket Selection Guide](#)
- [26.01: Victaulic Design Data](#)
- [29.01: Victaulic Terms and Conditions of Sale](#)
- [I-100: Field Installation Handbook](#)

### User Responsibility for Product Selection and Suitability

Each user bears final responsibility for making a determination as to the suitability of Victaulic products for a particular end-use application, in accordance with industry standards and project specifications, and the applicable building codes and related regulations as well as Victaulic performance, maintenance, safety, and warning instructions. Nothing in this or any other document, nor any verbal recommendation, advice, or opinion from any Victaulic employee, shall be deemed to alter, vary, supersede, or waive any provision of Victaulic Company's standard conditions of sale, installation guide, or this disclaimer.

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### Note

This product shall be manufactured by Victaulic or to Victaulic specifications. All products to 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.

### Installation

Reference should always be made to the Victaulic installation handbook or installation instructions of the product you are installing. Handbooks are included with each shipment of Victaulic products, providing complete installation and assembly data, and are available in PDF format on our website at [www.victaulic.com](http://www.victaulic.com).

### Warranty

Refer to the Warranty section of the current Price List or contact Victaulic for details.

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