

HDPE Fittings

SUSTAINABLE, RESILIENT,
AND LONG-LASTING PIPE
FITTINGS





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Infrastructure for a Sustainable Future.

Since 1988, Georgetown, SC-based AGRU America, Inc. has created innovative engineering plastics solutions for a safer and more sustainable future. AGRU America is part of AGRU Kunststofftechnik GmbH, an Austrian family-owned enterprise in business since 1948. AGRU maintains production facilities in Austria, the United States, and China. AGRU solutions, including state-of-the-art products such as AGRU geosynthetics, concrete protective liners, pipes and fittings, and semi-finished products, are sold in over 100 countries on six continents from over 150 distribution sites. Learn more about AGRU America at <https://www.agruamerica.com>.



Service, Quality, and Dependability

AGRU offers industry-leading service, from customer service to technical support. Dedicated project coordinators ensure prompt attention to detail to address project-specific requirements. AGRU structures each touchpoint with customers in mind, from exploration and specification to payments and shipping.

The AGRU quality assurance system complies with multiple international standards. The company's attention to quality from start to finish delivers products that meet and exceed the strictest technical specifications, providing safe operation within civil, mining, industrial, water, and wastewater infrastructures.

AGRU's growing network of production facilities, trained installers, distributors, and engineers offer an unmatched level of dependability across many industries.

Pipe Fittings Overview

AGRU America manufactures high-density polyethylene (HDPE) pipe fittings from the newest generation of resins available in the market. AGRU's products are compliant with the Plastic Pipe Institute, ASTM, ISO, and NSF. These fittings meet a range of project requirements including AWWA C901/C906, and FM1613. HDPE piping systems offer a leak-free solution, the lowest life-cycle cost, ease of installation, and superior flow characteristics—all the while keeping their lightweight and flexible properties when compared with other piping materials. AGRU HDPE piping systems are made in the United States and Austrian production facilities.

Principal applications include wastewater, potable water, oil and gas gathering, gas distribution, mining, landfill, industrial, and irrigation. Benefits of using HDPE fittings include the ability to create permanent leak-free homogenous joints, convenient installations, and high operational reliability.

Engineering Plastics

- Outstanding expertise in the field of plastics processing
- Superior customer service during the order fulfillment process
- Flexible, solution-oriented service and technical support addressing all phases: before, during, and after project design and execution, as well as throughout operation
- Modern production machines and processes
- Machined and molded engineered piping components.

Low-Maintenance Piping Systems

- Welded HDPE piping systems are leak-free and homogenous in nature when compared with the joining methods required by alternative legacy materials like ductile iron, steel, and concrete
- The AGRU piping system is proven with decades of in-service pipelines worldwide
- 100+ year design life.

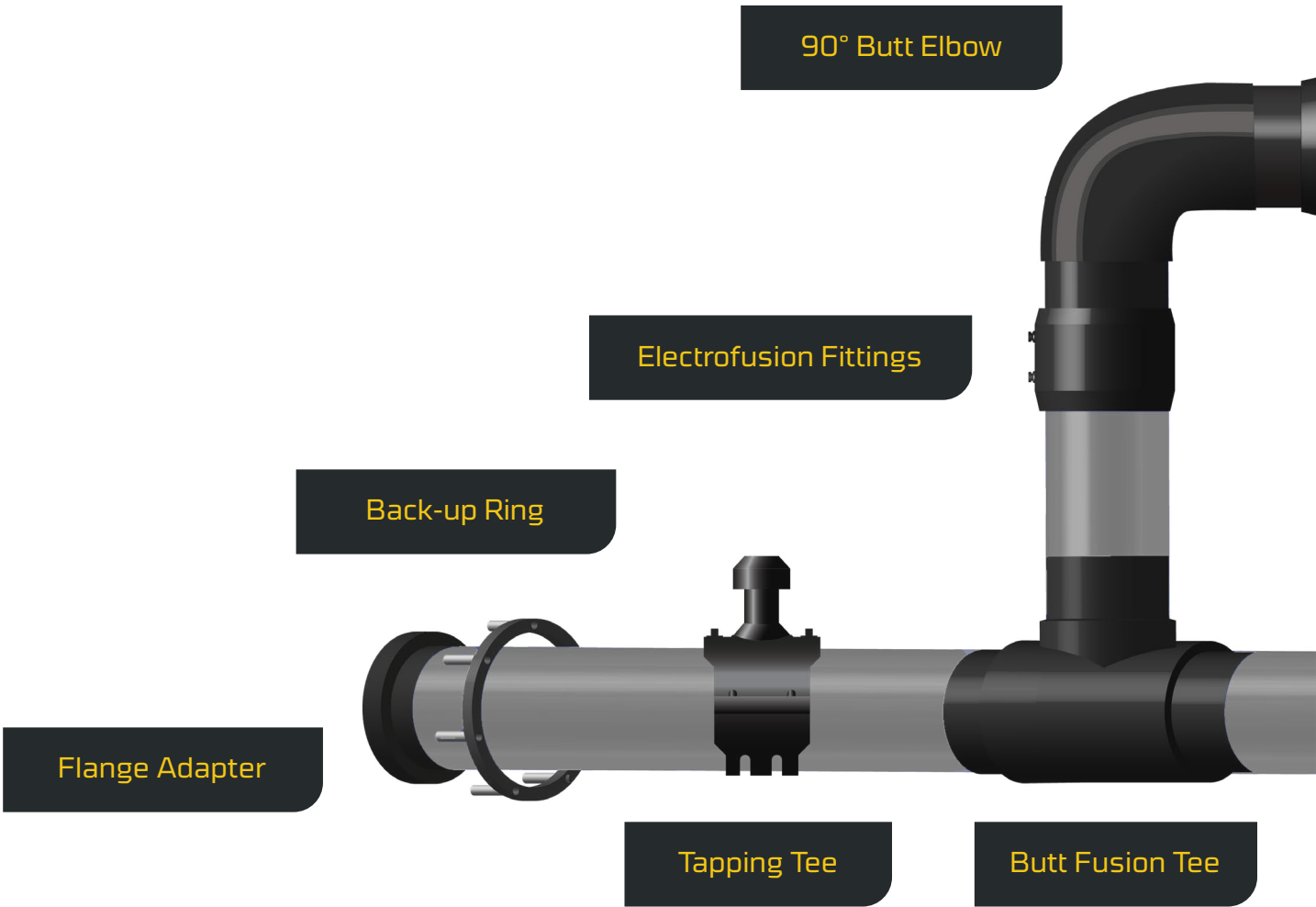
Efficient Solutions

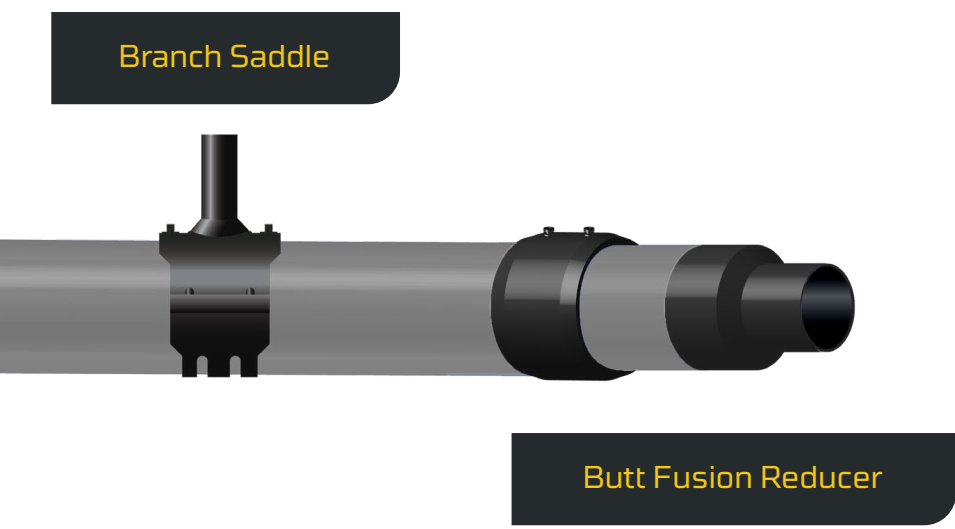
- One-stop shopping for pipes, fittings, and other accessories as needed
- Easy to install and maintain
- Supports a variety of installation methods including horizontal directional drilling
- Smooth inner surfaces ensure high flow capacity throughout the system's service life.

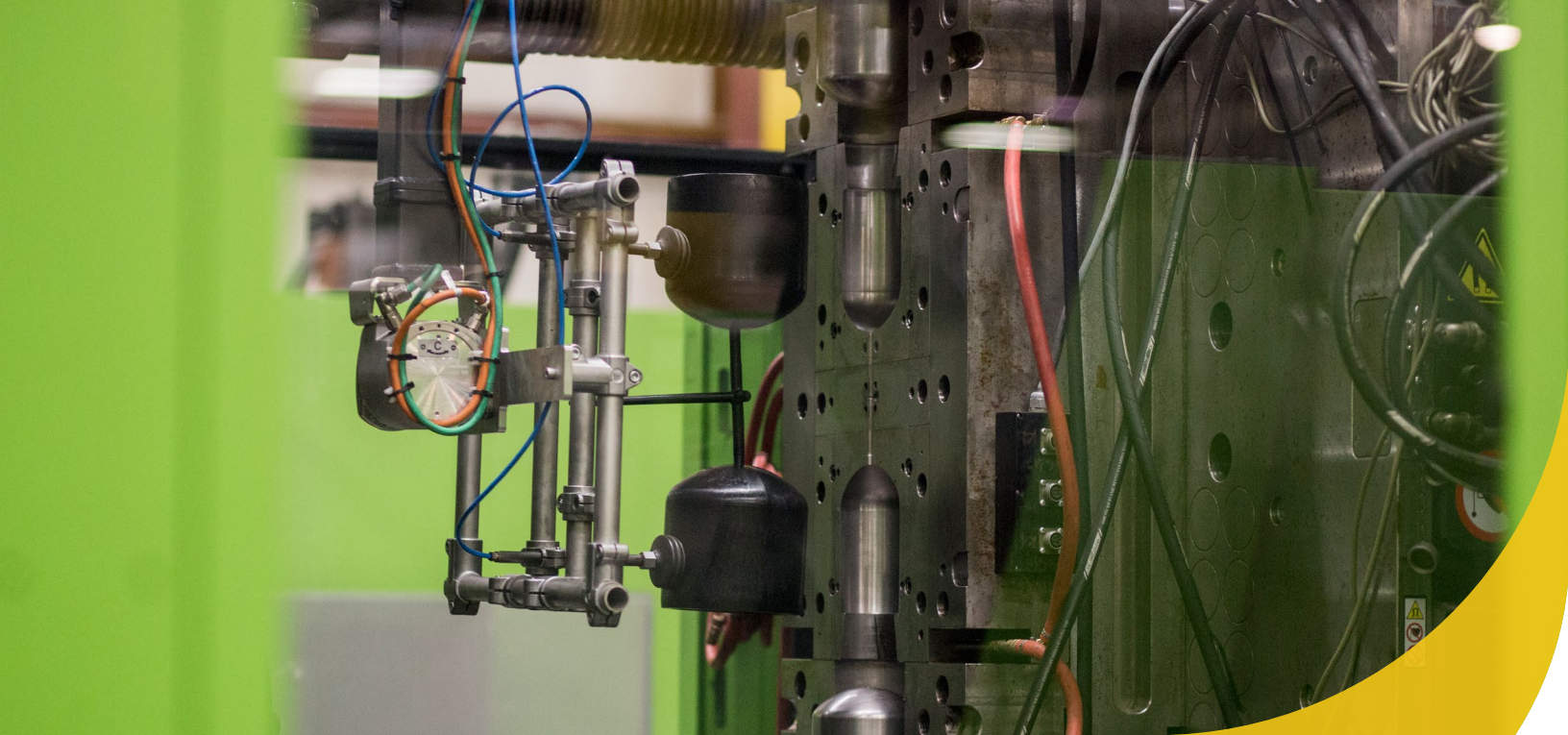
Certified Materials

- PE 100 and PE 4710 certified materials all listed in PPI's TR-4 listing
- Suitable for high-pressure applications
- Non-corrosive with high chemical resistance
- Products are marked in accordance with certifications or standards, including ASTM D3261, ASTM D2513, ASTM F2880, NSF 61, and FM Approval.

Pipe Fittings Overview







Fittings for Unique and Specialized Applications

High-Pressure Applications

AGRU molded fittings are available in SDR 7 and 9 for high-pressure applications, including 10- and 12-inch fittings. These fittings are fully pressure rated and feature higher wall thickness that can withstand pressures of up to 335 PSI in water applications.

For industrial applications that require FM Approved piping systems for reliable operations, AGRU offers FM 1613 Approved fittings. Use FM 1613 Approved fittings for reliable underground fire protection lines and more.



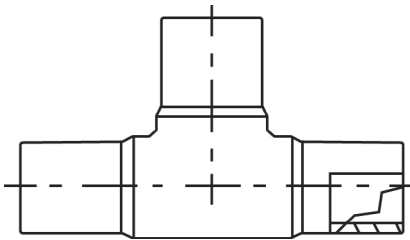
HDPE Fittings

TABLE 1. AGRULINE HDPE FITTINGS GENERAL SPECIFICATIONS

| | |
|---|-----------------|
| A | ASTM D2513 |
| B | ASTM D3261 |
| C | NSF/ANSI/CAN 61 |
| D | ANSI/AWWA C906 |
| E | FM-1613 |
| F | ASTM F2880 |
| G | AWWA C901 |

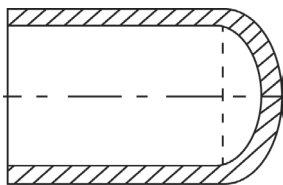
Butt Fusion Tees

- Injection molded from PE 100/PE 4710 material
- Available in SDR 7, SDR 9, SDR 11, and SDR 17
- Size range: 3/4" IPS through 12" IPS
- All fittings follow specifications A, B, and C
- Select configurations also follow specification D and/or E.



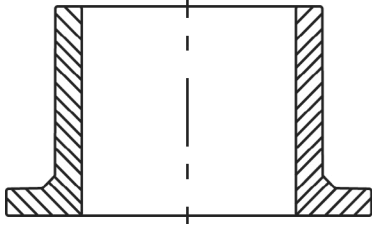
Butt Fusion End Caps

- Injection molded or machined from PE 100/PE 4710 material
- Available in SDR 7, SDR 9, SDR 11, and SDR 17
- Size range: 3/4" IPS through 12" IPS
- All fittings follow specifications A, B, and C
- Select configurations also follow specification D, E, and/or G.



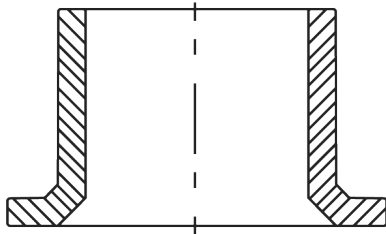
Butt Fusion Flange Adapters

- Injection molded or machined from PE 100/PE 4710 material
- Available in SDR 7, SDR 9, SDR 11, and SDR 17
- Size range: 3/4" IPS through 18" IPS
- All fittings follow specifications A, B, C, and F
- Select configurations also follow specifications D, E, and/or G.



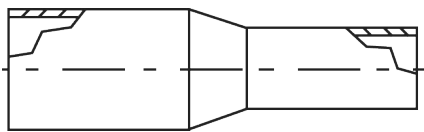
Beveled Flange Adapters

- Injection molded or machined from PE 100/PE 4710 material
- 2" IPS to 18" IPS
- Select configurations follow specifications A, B, C, D, E, and/or F
- Available in SDR 7, SDR 9, and SDR 11.



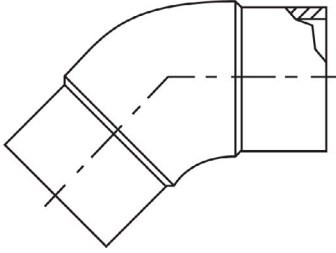
Butt Fusion Reducers

- Injection molded or machined from PE 100/PE 4710 material
- Available in SDR 7, SDR 9, SDR 11, and SDR 17
- Size range: 2" x 1" IPS through 12" x 10" IPS
- Select configurations follow specifications A, B, C, D, E, and/or G.



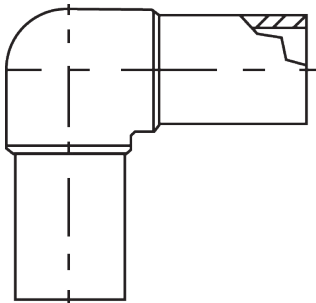
Butt Fusion 45 Degree Elbows

- Injection molded from PE 100/PE 4710 material
- Available in SDR 7, SDR 9, SDR 11, and SDR 17
- Size range: 3/4" IPS through 12" IPS
- All fittings follow specifications A, B, and C
- Select configurations also follow specification D, E, and/or G.

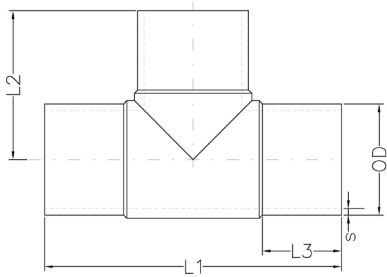


Butt Fusion 90 Degree Elbows

- Injection molded from PE 100/PE 4710 material
- Available in SDR 7, SDR 9, SDR 11, and SDR 17
- Size range: 3/4" IPS through 12" IPS
- All fittings follow specifications A, B, and C
- Select configurations also follow specification D, E, and/or G.



Butt Fusion IPS Tees



- Molded from black PE 100 / 4710 material & NSF-61 certified
- Complies with the following product standards: ASTM D2513, D3261, D3350, AWWA C906, and C901
- Made in the USA
- FM Approval Class 1613



SDR 7 (STANDARD DIMENSION RATIO) 335 PSI (WORKING PRESSURE AS 73.4° F)

| Product Code | Nominal Diameter (inch) | L1 (inch) | L2 (inch) | L3 (inch) | s (inch) Min Wall | OD (inch) | FM Pressure Rating (psi.) |
|-------------------|-------------------------|-----------|-----------|-----------|-------------------|-----------|---------------------------|
| FF-51.115.0002.07 | 2" IPS | 9.69 | 4.88 | 2.87 | 0.339 | 2.375 | 335 |
| FF-51.115.0003.07 | 3" IPS | 11.61 | 5.79 | 3.54 | 0.500 | 3.500 | 335 |
| FF-51.115.0004.07 | 4" IPS | 13.78 | 6.89 | 3.94 | 0.643 | 4.500 | 335 |
| FF-51.115.0006.07 | 6" IPS | 17.68 | 8.82 | 4.72 | 0.946 | 6.625 | 335 |
| FF-51.115.0008.07 | 8" IPS | 23.03 | 11.46 | 5.67 | 1.232 | 8.625 | 335 |
| FF-51.115.0010.07 | 10" IPS | 27.17 | 13.54 | 6.22 | 1.536 | 10.750 | 335 |
| FF-51.115.0012.07 | 12" IPS | 29.72 | 14.84 | 6.77 | 1.821 | 12.750 | 335 |

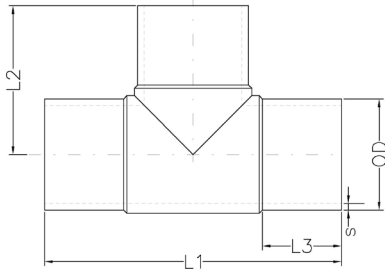
SDR 9 (STANDARD DIMENSION RATIO) 250 PSI (WORKING PRESSURE AS 73.4° F)

| Product Code | Nominal Diameter (inch) | L1 (inch) | L2 (inch) | L3 (inch) | s (inch) Min Wall | OD (inch) | FM Pressure Rating (psi.) |
|-------------------|-------------------------|-----------|-----------|-----------|-------------------|-----------|---------------------------|
| FF-51.115.0002.09 | 2" IPS | 9.69 | 4.88 | 2.87 | 0.264 | 2.375 | 250 |
| FF-51.115.0003.09 | 3" IPS | 11.61 | 5.79 | 3.54 | 0.389 | 3.500 | 250 |
| FF-51.115.0004.09 | 4" IPS | 13.78 | 6.89 | 3.94 | 0.500 | 4.500 | 250 |
| FF-51.115.0006.09 | 6" IPS | 17.68 | 8.82 | 4.72 | 0.736 | 6.625 | 250 |
| FF-51.115.0008.09 | 8" IPS | 23.03 | 11.46 | 5.67 | 0.958 | 8.625 | 250 |
| FF-51.115.0010.09 | 10" IPS | 27.17 | 13.54 | 6.22 | 1.194 | 10.750 | 250 |
| FF-51.115.0012.09 | 12" IPS | 29.72 | 14.84 | 6.77 | 1.417 | 12.750 | 250 |

Notes:

1. All dimensions shown are nominal and subject to manufacturing tolerance. OD and minimum wall are determined in accordance with ASTM standards. Drawing shown is an approximation only.
2. The maximum pressure for gas applications should be calculated based on the applicable local and federal regulations.
3. Fittings are marked to meet the applicable standards.
4. Only fittings with an FM pressure rating are FM approved.

Butt Fusion IPS Tees



- Molded from black PE 100 / 4710 material & NSF-61 certified
- Complies with the following product standards: ASTM D2513, D3261, D3350, AWWA C906, and C901
- Made in the USA
- FM Approval Class 1613



SDR 11 (STANDARD DIMENSION RATIO) 200 PSI (WORKING PRESSURE AS 73.4° F)

| Product Code | Nominal Diameter (inch) | L1 (inch) | L2 (inch) | L3 (inch) | s (inch) Min Wall | OD (inch) | FM Pressure Rating (psi.) |
|-------------------|-------------------------|-----------|-----------|-----------|-------------------|-----------|---------------------------|
| FF-51.115.0075.11 | ¾" IPS | 5.12 | 2.56 | 1.65 | 0.100 | 1.050 | - |
| FF-51.115.0001.11 | 1" IPS | 5.67 | 2.83 | 1.77 | 0.120 | 1.320 | - |
| FF-51.115.0125.11 | 1¼" IPS | 6.61 | 3.31 | 2.01 | 0.150 | 1.660 | - |
| FF-51.115.0150.11 | 1½" IPS | 7.99 | 4.00 | 2.52 | 0.170 | 1.900 | - |
| FF-51.115.0002.11 | 2" IPS | 9.69 | 4.88 | 2.87 | 0.216 | 2.375 | 200 |
| FF-51.115.0003.11 | 3" IPS | 11.61 | 5.79 | 3.54 | 0.318 | 3.500 | 200 |
| FF-51.115.0004.11 | 4" IPS | 13.78 | 6.89 | 3.94 | 0.409 | 4.500 | 200 |
| FF-51.115.0006.11 | 6" IPS | 17.68 | 8.82 | 4.72 | 0.603 | 6.625 | 200 |
| FF-51.115.0008.11 | 8" IPS | 23.03 | 11.46 | 5.67 | 0.785 | 8.625 | 200 |
| FF-51.115.0010.11 | 10" IPS | 27.17 | 13.54 | 6.22 | 0.978 | 10.750 | 200 |
| FF-51.115.0012.11 | 12" IPS | 29.72 | 14.84 | 6.77 | 1.160 | 12.750 | 200 |

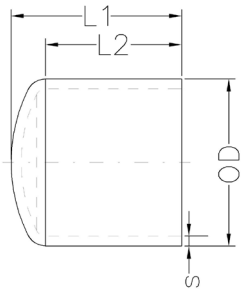
SDR 17 (STANDARD DIMENSION RATIO) 125 PSI (WORKING PRESSURE AS 73.4° F)

| Product Code | Nominal Diameter (inch) | L1 (inch) | L2 (inch) | L3 (inch) | s (inch) Min Wall | OD (inch) | FM Pressure Rating (psi.) |
|-------------------|-------------------------|-----------|-----------|-----------|-------------------|-----------|---------------------------|
| FF-51.115.0002.17 | 2" IPS | 9.69 | 4.88 | 2.87 | 0.14 | 2.38 | - |
| FF-51.115.0003.17 | 3" IPS | 11.61 | 5.79 | 3.54 | 0.21 | 3.50 | - |
| FF-51.115.0004.17 | 4" IPS | 13.78 | 6.89 | 3.94 | 0.26 | 4.50 | - |
| FF-51.115.0006.17 | 6" IPS | 17.68 | 8.82 | 4.72 | 0.39 | 6.63 | - |
| FF-51.115.0008.17 | 8" IPS | 23.03 | 11.46 | 5.67 | 0.51 | 8.63 | - |
| FF-51.115.0010.17 | 10" IPS | 27.17 | 13.54 | 6.22 | 0.63 | 10.75 | - |
| FF-51.115.0012.17 | 12" IPS | 29.72 | 14.84 | 6.77 | 0.75 | 12.75 | - |

Notes:

1. All dimensions shown are nominal and subject to manufacturing tolerance. OD and minimum wall are determined in accordance with ASTM standards. Drawing shown is an approximation only.
2. The maximum pressure for gas applications should be calculated based on the applicable local and federal regulations.
3. Fittings are marked to meet the applicable standards.
4. Only fittings with an FM pressure rating are FM approved.

Butt Fusion IPS End Caps



- Made from black PE 100 / 4710 barstock & NSF-61 certified
- Complies with the following product standards: ASTM D2513, D3261, D3350, AWWA C906, and C901
- Made in the USA
- FM Approval Class 1613



SDR 7 (STANDARD DIMENSION RATIO) 335 PSI (WORKING PRESSURE AS 73.4° F)

| Product Code | Nominal Diameter (inch) | L1 (inch) | L2 (inch) | s (inch) Min Wall | OD (inch) | FM Pressure Rating (psi.) |
|-------------------|-------------------------|-----------|-----------|-------------------|-----------|---------------------------|
| FF-51.314.0002.07 | 2" IPS | 3.86 | 3.15 | 0.339 | 2.38 | 335 |
| FF-51.314.0003.07 | 3" IPS | 4.61 | 3.58 | 0.500 | 3.50 | 335 |
| FF-51.314.0004.07 | 4" IPS | 5.24 | 3.89 | 0.643 | 4.50 | 335 |
| FF-51.314.0006.07 | 6" IPS | 6.77 | 4.72 | 0.946 | 6.63 | 335 |
| FF-51.314.0008.07 | 8" IPS | 8.43 | 5.57 | 1.232 | 8.63 | 335 |
| FF-51.314.0010.07 | 10" IPS | 9.69 | 6.12 | 1.536 | 10.75 | 335 |
| FF-51.314.0012.07 | 12" IPS | 11.50 | 7.25 | 1.821 | 12.75 | 335 |

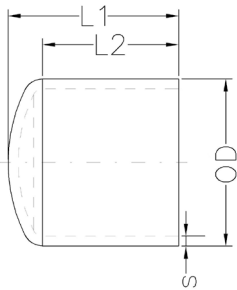
SDR 9 (STANDARD DIMENSION RATIO) 250 PSI (WORKING PRESSURE AS 73.4° F)

| Product Code | Nominal Diameter (inch) | L1 (inch) | L2 (inch) | s (inch) Min Wall | OD (inch) | FM Pressure Rating (psi.) |
|-------------------|-------------------------|-----------|-----------|-------------------|-----------|---------------------------|
| FF-51.314.0002.09 | 2" IPS | 3.86 | 3.15 | 0.264 | 2.38 | 250 |
| FF-51.314.0003.09 | 3" IPS | 4.61 | 3.58 | 0.389 | 3.50 | 250 |
| FF-51.314.0004.09 | 4" IPS | 5.24 | 3.89 | 0.500 | 4.50 | 250 |
| FF-51.314.0006.09 | 6" IPS | 6.77 | 4.72 | 0.736 | 6.63 | 250 |
| FF-51.314.0008.09 | 8" IPS | 8.43 | 5.57 | 0.958 | 8.63 | 250 |
| FF-51.314.0010.09 | 10" IPS | 9.69 | 6.12 | 1.194 | 10.75 | 250 |
| FF-51.314.0012.09 | 12" IPS | 11.50 | 7.25 | 1.417 | 12.75 | 250 |

Notes:

1. All dimensions shown are nominal and subject to manufacturing tolerance. OD and minimum wall are determined in accordance with ASTM standards. Drawing shown is an approximation only.
2. The maximum pressure for gas applications should be calculated based on the applicable local and federal regulations.
3. Fittings are marked to meet the applicable standards.
4. Only fittings with an FM pressure rating are FM approved.

Butt Fusion IPS End Caps



- Molded from black PE 100 / 4710 material & NSF-61 certified
- Complies with the following product standards: ASTM D2513, D3261, D3350, AWWA C906, and C901
- Made in the USA
- FM Approval Class 1613



SDR 11 (STANDARD DIMENSION RATIO) 200 PSI (WORKING PRESSURE AS 73.4° F)

| Product Code | Nominal Diameter (inch) | L1 (inch) | L2 (inch) | s (inch) Min Wall | OD (inch) | FM Pressure Rating (psi.) |
|-------------------|-------------------------|-----------|-----------|-------------------|-----------|---------------------------|
| FF-51.114.0075.11 | ¾" IPS | 2.05 | 1.77 | 0.10 | 1.05 | - |
| FF-51.114.0001.11 | 1" IPS | 2.20 | 1.77 | 0.12 | 1.32 | - |
| FF-51.114.0125.11 | 1¼" IPS | 2.52 | 1.99 | 0.15 | 1.66 | - |
| FF-51.114.0150.11 | 1½" IPS | 2.83 | 2.20 | 0.17 | 1.90 | - |
| FF-51.114.0002.11 | 2" IPS | 3.15 | 2.48 | 0.22 | 2.38 | 200 |
| FF-51.114.0003.11 | 3" IPS | 4.57 | 3.62 | 0.32 | 3.50 | 200 |
| FF-51.114.0004.11 | 4" IPS | 5.16 | 3.90 | 0.41 | 4.50 | 200 |
| FF-51.114.0006.11 | 6" IPS | 6.69 | 4.72 | 0.60 | 6.63 | 200 |
| FF-51.114.0008.11 | 8" IPS | 8.43 | 5.83 | 0.79 | 8.63 | 200 |
| FF-51.114.0010.11 | 10" IPS | 9.57 | 6.30 | 0.98 | 10.75 | 200 |
| FF-51.114.0012.11 | 12" IPS | 11.46 | 7.48 | 1.16 | 12.75 | 200 |

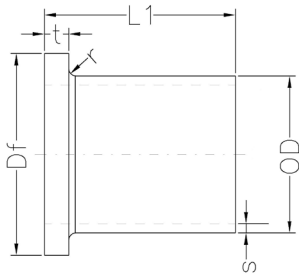
SDR 17 (STANDARD DIMENSION RATIO) 125 PSI (WORKING PRESSURE AT 73.4° F)

| Product Code | Nominal Diameter (inch) | L1 (inch) | L2 (inch) | s (inch) Min Wall | OD (inch) | FM Pressure Rating (psi.) |
|-------------------|-------------------------|-----------|-----------|-------------------|-----------|---------------------------|
| FF-51.114.0002.17 | 2" IPS | 3.15 | 2.48 | 0.14 | 2.38 | - |
| FF-51.114.0003.17 | 3" IPS | 4.57 | 3.62 | 0.21 | 3.50 | - |
| FF-51.114.0004.17 | 4" IPS | 5.16 | 3.90 | 0.26 | 4.50 | - |
| FF-51.114.0006.17 | 6" IPS | 6.69 | 4.72 | 0.39 | 6.63 | - |
| FF-51.114.0008.17 | 8" IPS | 8.43 | 5.83 | 0.51 | 8.63 | - |
| FF-51.114.0010.17 | 10" IPS | 9.57 | 6.30 | 0.63 | 10.75 | - |
| FF-51.114.0012.17 | 12" IPS | 11.46 | 7.48 | 0.75 | 12.75 | - |

Notes:

1. All dimensions shown are nominal and subject to manufacturing tolerance. OD and minimum wall are determined in accordance with ASTM standards. Drawing shown is an approximation only.
2. The maximum pressure for gas applications should be calculated based on the applicable local and federal regulations.
3. Fittings are marked to meet the applicable standards.
4. Only fittings with an FM pressure rating are FM approved.

Butt Fusion
IPS
Flange Adapters



- Made from black PE 100 / 4710 material & NSF-61 certified
- Complies with the following product standards: ASTM D2513, D3261, D3350, AWWA C906, and C901
- Made in the USA
- FM Approval Class 1613



SDR 7 (STANDARD DIMENSION RATIO) 335 PSI (WORKING PRESSURE AS 73.4° F)

| Product Code | Nominal Diameter (inch) | L1 (inch) | s (inch) Wall | OD (inch) | Df (inch) | t (inch) Wall | r (inch) | FM Pressure Rating (psi.) |
|-------------------|-------------------------|-----------|---------------|-----------|-----------|---------------|----------|---------------------------|
| FF-51.312.0002.07 | 2" IPS | 7.40 | 0.34 | 2.380 | 3.85 | 0.49 | 0.19 | 335 |
| FF-51.312.0003.07 | 3" IPS | 6.03 | 0.50 | 3.500 | 5.00 | 0.84 | 0.28 | 335 |
| FF-51.112.0004.07 | 4" IPS | 6.33 | 0.64 | 4.500 | 6.54 | 1.00 | 0.28 | 335 |
| FF-51.112.0006.07 | 6" IPS | 7.247 | 0.95 | 6.630 | 8.60 | 1.00 | 0.28 | 335 |
| FF-51.312.0008.07 | 8" IPS | 8.105 | 1.23 | 8.625 | 10.70 | 1.12 | 0.35 | 335 |
| FF-51.112.0010.07 | 10" IPS | 11.98 | 1.54 | 10.75 | 12.75 | 1.54 | 0.35 | 335 |
| FF-51.112.0012.07 | 12" IPS | 10.80 | 1.82 | 12.75 | 15.75 | 2.32 | 0.38 | 335 |

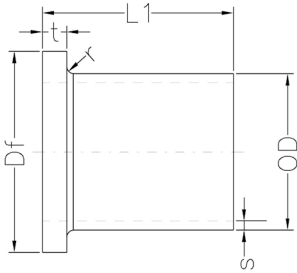
SDR 9 (STANDARD DIMENSION RATIO) 250 PSI (WORKING PRESSURE AS 73.4° F)

| Product Code | Nominal Diameter (inch) | L1 (inch) | s (inch) Wall | OD (inch) | Df (inch) | t (inch) Wall | r (inch) | FM Pressure Rating (psi.) |
|-------------------|-------------------------|-----------|---------------|-----------|-----------|---------------|----------|---------------------------|
| FF-51.312.0002.09 | 2" IPS | 7.4 | 0.26 | 2.38 | 3.85 | 0.49 | 0.19 | 250 |
| FF-51.312.0003.09 | 3" IPS | 6.03 | 0.39 | 3.50 | 5.00 | 0.84 | 0.28 | 250 |
| FF-51.112.0004.09 | 4" IPS | 6.33 | 0.50 | 4.50 | 6.54 | 1.00 | 0.28 | 250 |
| FF-51.112.0006.09 | 6" IPS | 7.247 | 0.74 | 6.63 | 8.60 | 1.00 | 0.28 | 250 |
| FF-51.312.0008.09 | 8" IPS | 8.105 | 0.96 | 8.625 | 10.70 | 1.12 | 0.35 | 250 |
| FF-51.112.0010.09 | 10" IPS | 11.98 | 1.19 | 10.75 | 12.75 | 1.54 | 0.35 | 250 |
| FF-51.112.0012.09 | 12" IPS | 10.80 | 1.42 | 12.75 | 15.75 | 2.32 | 0.38 | 250 |

Notes:

1. All dimensions shown are nominal and subject to manufacturing tolerance. OD and minimum wall are determined in accordance with ASTM standards. Drawing shown is an approximation only.
2. The maximum pressure for gas applications should be calculated based on the applicable local and federal regulations.
3. Fittings are marked to meet the applicable standards.
4. Only fittings with an FM pressure rating are FM approved.

Butt Fusion IPS Flange Adapters



- Molded from black PE 100 / 4710 material & NSF-61 certified
- Complies with the following product standards: ASTM D2513, D3261, D3350, AWWA C906, and C901
- Made in the USA
- FM Approval Class 1613



SDR 11 (STANDARD DIMENSION RATIO) 200 PSI (WORKING PRESSURE AT 73.4° F)

| Product Code | Nominal Diameter (inch) | L1 (inch) | s (inch) Wall | OD (inch) | Df (inch) | t (inch) Wall | r (inch) | FM Pressure Rating (psi.) |
|-------------------|-------------------------|-----------|---------------|-----------|-----------|---------------|----------|---------------------------|
| FF-51.112.0075.11 | ¾" IPS | 4.02 | 0.09 | 1.05 | 1.85 | 0.39 | 0.12 | - |
| FF-51.112.0001.11 | 1" IPS | 4.02 | 0.12 | 1.32 | 2.36 | 0.39 | 0.12 | - |
| FF-51.112.0125.11 | 1¼" IPS | 4.02 | 0.15 | 1.66 | 2.80 | 0.39 | 0.20 | - |
| FF-51.112.0150.11 | 1½" IPS | 4.02 | 0.17 | 1.90 | 3.15 | 0.39 | 0.20 | - |
| FF-51.112.0002.11 | 2" IPS | 6.10 | 0.22 | 2.38 | 3.94 | 0.55 | 0.20 | 200 |
| FF-51.112.0003.11 | 3" IPS | 6.10 | 0.32 | 3.50 | 5.00 | 0.67 | 0.28 | 200 |
| FF-51.112.0004.11 | 4" IPS | 6.10 | 0.41 | 4.50 | 6.61 | 0.79 | 0.28 | 200 |
| FF-51.112.0006.11 | 6" IPS | 7.87 | 0.60 | 6.63 | 8.50 | 1.02 | 0.28 | 200 |
| FF-51.112.0008.11 | 8" IPS | 10.63 | 0.79 | 8.63 | 10.63 | 1.26 | 0.35 | 200 |
| FF-51.112.0010.11 | 10" IPS | 12.99 | 0.98 | 10.75 | 12.99 | 1.38 | 0.35 | 200 |
| FF-51.112.0012.11 | 12" IPS | 15.75 | 1.16 | 12.75 | 15.75 | 1.5 | 0.35 | 200 |
| FF-51.112.0014.11 | 14" IPS | 13.00 | 1.27 | 13.94 | 17.5 | 1.50 | 0.43 | 200 |
| FF-51.112.0016.11 | 16" IPS | 13.00 | 1.45 | 15.93 | 20.0 | 1.77 | 0.43 | 200 |
| FF-51.112.0018.11 | 18" IPS | 13.00 | 1.64 | 17.92 | 21.38 | 1.89 | 0.43 | 200 |

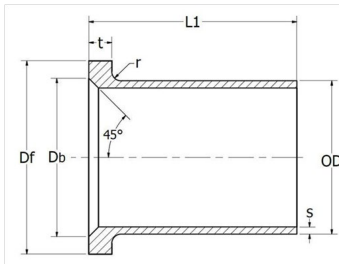
SDR 17 (STANDARD DIMENSION RATIO) 125 PSI (WORKING PRESSURE AT 73.4° F)

| Product Code | Nominal Diameter (inch) | L1 (inch) | s (inch) Wall | OD (inch) | Df (inch) | t (inch) Wall | r (inch) | FM Pressure Rating (psi.) |
|-------------------|-------------------------|-----------|---------------|-----------|-----------|---------------|----------|---------------------------|
| FF-51.112.0002.17 | 2" IPS | 6.10 | 0.14 | 2.38 | 3.94 | 0.55 | 0.20 | - |
| FF-51.112.0003.17 | 3" IPS | 6.10 | 0.21 | 3.50 | 5.00 | 0.67 | 0.28 | - |
| FF-51.112.0004.17 | 4" IPS | 6.10 | 0.26 | 4.50 | 6.61 | 0.79 | 0.28 | - |
| FF-51.112.0006.17 | 6" IPS | 8.50 | 0.39 | 6.63 | 8.50 | 1.02 | 0.28 | - |
| FF-51.112.0008.17 | 8" IPS | 10.51 | 0.51 | 8.63 | 10.63 | 1.02 | 0.35 | - |
| FF-51.112.0010.17 | 10" IPS | 11.61 | 0.63 | 10.75 | 12.99 | 1.18 | 0.35 | - |
| FF-51.112.0012.17 | 12" IPS | 10.83 | 0.75 | 12.75 | 15.75 | 1.38 | 0.35 | - |
| FF-51.112.0014.17 | 14" IPS | 13.00 | 0.83 | 13.94 | 17.50 | 1.50 | 0.43 | - |
| FF-51.112.0016.17 | 16" IPS | 13.00 | 0.94 | 15.93 | 20.00 | 1.77 | 0.43 | - |
| FF-51.112.0018.17 | 18" IPS | 13.00 | 1.06 | 17.92 | 21.38 | 1.89 | 0.43 | - |

Notes:

1. All dimensions shown are nominal and subject to manufacturing tolerance. OD and minimum wall are determined in accordance with ASTM standards. Drawing shown is an approximation only.
2. The maximum pressure for gas applications should be calculated based on the applicable local and federal regulations.
3. Fittings are marked to meet the applicable standards.
4. Only fittings with an FM pressure rating are FM approved.

Butt Fusion IPS Beveled Flange Adapters



- Made from black PE 100 / 4710 material & NSF-61 certified
- Complies with the following product standards: ASTM D2513, D3261, D3350, AWWA C906, and C901
- Made in the USA
- FM Approval Class 1613



SDR 7 (STANDARD DIMENSION RATIO) 335 PSI (WORKING PRESSURE AS 73.4° F)

| Product Code | Nominal Diameter (inch) | L1 (inch) | s (inch) Wall | OD (inch) | Df (inch) | Db (inch) | t (inch) Wall | r (inch) | FM Pressure Rating (psi.) |
|----------------------|-------------------------|-----------|---------------|-----------|-----------|-----------|---------------|----------|---------------------------|
| FF-51.312B45.0002.07 | 2" IPS | 5.90 | 0.339 | 2.38 | 3.94 | 2.80 | 0.60 | 0.25 | 335 |
| FF-51.312B45.0003.07 | 3" IPS | 5.90 | 0.500 | 3.50 | 5.00 | 3.80 | 0.71 | 0.25 | 335 |
| FF-51.112B45.0004.07 | 4" IPS | 6.50 | 0.643 | 4.50 | 6.61 | 4.80 | 0.93 | 0.38 | 335 |
| FF-51.112B45.0006.07 | 6" IPS | 8.00 | 0.946 | 6.63 | 8.50 | 6.60 | 1.24 | 0.38 | 335 |
| FF-51.312B45.0008.07 | 8" IPS | 10.60 | 0.958 | 8.63 | 10.83 | 8.60 | 1.67 | 0.38 | 335 |
| FF-51.112B45.0010.07 | 10" IPS | 11.40 | 1.194 | 10.75 | 12.99 | 10.75 | 1.90 | 0.38 | 335 |
| FF-51.112B45.0012.07 | 12" IPS | 10.80 | 1.417 | 12.75 | 15.75 | 12.75 | 2.32 | 0.38 | 335 |

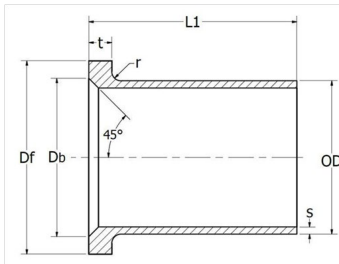
SDR 9 (STANDARD DIMENSION RATIO) 250 PSI (WORKING PRESSURE AS 73.4° F)

| Product Code | Nominal Diameter (inch) | L1 (inch) | s (inch) Wall | OD (inch) | Df (inch) | Db (inch) | t (inch) Wall | r (inch) | FM Pressure Rating (psi.) |
|----------------------|-------------------------|-----------|---------------|-----------|-----------|-----------|---------------|----------|---------------------------|
| FF-51.312B45.0002.09 | 2" IPS | 5.90 | 0.264 | 2.38 | 3.94 | 2.80 | 0.60 | 0.25 | 250 |
| FF-51.312B45.0003.09 | 3" IPS | 5.90 | 0.389 | 3.50 | 5.00 | 3.80 | 0.71 | 0.25 | 250 |
| FF-51.112B45.0004.09 | 4" IPS | 6.50 | 0.500 | 4.50 | 6.61 | 4.80 | 0.93 | 0.38 | 250 |
| FF-51.112B45.0006.09 | 6" IPS | 8.00 | 0.736 | 6.63 | 8.50 | 6.60 | 1.24 | 0.38 | 250 |
| FF-51.312B45.0008.09 | 8" IPS | 10.60 | 0.958 | 8.63 | 10.83 | 8.60 | 1.67 | 0.38 | 250 |
| FF-51.112B45.0010.09 | 10" IPS | 11.40 | 1.194 | 10.75 | 12.99 | 10.75 | 1.90 | 0.38 | 250 |
| FF-51.312B45.0012.09 | 12" IPS | 10.80 | 1.417 | 12.75 | 15.75 | 12.75 | 2.32 | 0.38 | 250 |

Notes:

1. All dimensions shown are nominal and subject to manufacturing tolerance. OD and minimum wall are determined in accordance with ASTM standards. Drawing shown is an approximation only.
2. The maximum pressure for gas applications should be calculated based on the applicable local and federal regulations.
3. Fittings are marked to meet the applicable standards.
4. Only fittings with an FM pressure rating are FM approved.

Butt Fusion IPS Beveled Flange Adapters



- Molded from black PE 100 / 4710 material & NSF-61 certified
- Complies with the following product standards: ASTM D2513, D3261, D3350, AWWA C906, and C901
- Made in the USA
- FM Approval Class 1613



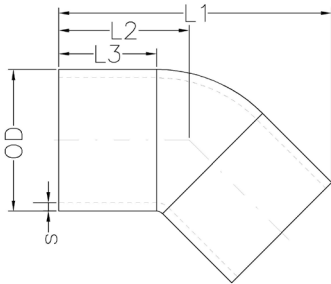
SDR 11 (STANDARD DIMENSION RATIO) 200 PSI (WORKING PRESSURE AT 73.4° F)

| Product Code | Nominal Diameter (inch) | L1 (inch) | s (inch) Wall | OD (inch) | Df (inch) | Db (inch) | t (inch) Wall | r (inch) | FM Pressure Rating (psi.) |
|----------------------|-------------------------|-----------|---------------|-----------|-----------|-----------|---------------|----------|---------------------------|
| FF-51.112B45.0002.11 | 2" IPS | 6.10 | 0.22 | 2.38 | 3.94 | 2.8 | 0.55 | 0.20 | 200 |
| FF-51.112B45.0003.11 | 3" IPS | 6.10 | 0.32 | 3.50 | 5.00 | 3.8 | 0.67 | 0.28 | 200 |
| FF-51.112B45.0004.11 | 4" IPS | 6.10 | 0.41 | 4.50 | 6.61 | 4.8 | 0.79 | 0.28 | 200 |
| FF-51.112B45.0006.11 | 6" IPS | 7.87 | 0.60 | 6.63 | 8.50 | 6.6 | 1.02 | 0.28 | 200 |
| FF-51.112B45.0008.11 | 8" IPS | 10.63 | 0.79 | 8.63 | 10.83 | 8.6 | 1.26 | 0.35 | 200 |
| FF-51.112B45.0010.11 | 10" IPS | 12.99 | 0.98 | 10.75 | 12.99 | 10.75 | 1.38 | 0.35 | 200 |
| FF-51.112B45.0012.11 | 12" IPS | 15.75 | 1.16 | 12.75 | 15.75 | 12.75 | 1.50 | 0.35 | 200 |
| FF-51.112B45.0014.11 | 14" IPS | 13.0 | 1.27 | 13.94 | 17.5 | 8.6 | 1.70 | 0.50 | 200 |
| FF-51.112B45.0016.11 | 16" IPS | 13.0 | 1.45 | 15.93 | 20.0 | 10.75 | 1.93 | 0.50 | 200 |
| FF-51.112B45.0018.11 | 18" IPS | 13.0 | 1.64 | 17.92 | 21.38 | 12.75 | 2.00 | 0.50 | 200 |

Notes:

1. All dimensions shown are nominal and subject to manufacturing tolerance. OD and minimum wall are determined in accordance with ASTM standards. Drawing shown is an approximation only.
2. The maximum pressure for gas applications should be calculated based on the applicable local and federal regulations.
3. Fittings are marked to meet the applicable standards.
4. Only fittings with an FM pressure rating are FM approved.

Butt Fusion IPS 45° Elbows



- Molded from black PE 100 / 4710 material & NSF-61 certified
- Complies with the following product standards: ASTM D2513, D3261, D3350, AWWA C906, and C901
- Made in the USA
- FM Approval Class 1613



SDR 7 (STANDARD DIMENSION RATIO) 335 PSI (WORKING PRESSURE AS 73.4° F)

| Product Code | Nominal Diameter (inch) | L1 (inch) | L2 (inch) | L3 (inch) | s (inch) Min Wall | OD (inch) | FM Pressure Rating (psi.) |
|-------------------|-------------------------|-----------|-----------|-----------|-------------------|-----------|---------------------------|
| FF-51.110.0002.07 | 2" IPS | 8.28 | 4.2 | 2.40 | 0.339 | 2.38 | 335 |
| FF-51.110.0003.07 | 3" IPS | 10.15 | 5.00 | 2.50 | 0.500 | 3.50 | 335 |
| FF-51.110.0004.07 | 4" IPS | 10.70 | 5.07 | 2.80 | 0.643 | 4.50 | 335 |
| FF-51.110.0006.07 | 6" IPS | 16.27 | 8.13 | 4.00 | 0.946 | 6.63 | 335 |
| FF-51.110.0008.07 | 8" IPS | 16.97 | 7.90 | 4.80 | 1.232 | 8.63 | 335 |
| FF-51.110.0010.07 | 10" IPS | 20.28 | 9.10 | 5.60 | 1.536 | 10.75 | 335 |
| FF-51.110.0012.07 | 12" IPS | 21.93 | 10.12 | 5.98 | 1.821 | 12.75 | 335 |

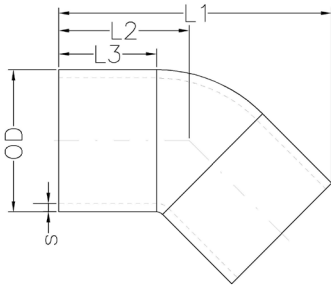
SDR 9 (STANDARD DIMENSION RATIO) 250 PSI (WORKING PRESSURE AS 73.4° F)

| Product Code | Nominal Diameter (inch) | L1 (inch) | L2 (inch) | L3 (inch) | s (inch) Min Wall | OD (inch) | FM Pressure Rating (psi.) |
|-------------------|-------------------------|-----------|-----------|-----------|-------------------|-----------|---------------------------|
| FF-51.110.0002.09 | 2" IPS | 8.28 | 4.20 | 2.40 | 0.264 | 2.38 | 250 |
| FF-51.110.0003.09 | 3" IPS | 10.15 | 5.00 | 2.50 | 0.389 | 3.50 | 250 |
| FF-51.110.0004.09 | 4" IPS | 10.70 | 5.07 | 2.80 | 0.500 | 4.50 | 250 |
| FF-51.110.0006.09 | 6" IPS | 16.27 | 8.13 | 4.00 | 0.736 | 6.63 | 250 |
| FF-51.110.0008.09 | 8" IPS | 16.97 | 7.90 | 4.80 | 0.958 | 8.63 | 250 |
| FF-51.110.0010.09 | 10" IPS | 20.28 | 9.10 | 5.60 | 1.194 | 10.75 | 250 |
| FF-51.110.0012.09 | 12" IPS | 21.93 | 10.12 | 5.98 | 1.417 | 12.75 | 250 |

Notes:

1. All dimensions shown are nominal and subject to manufacturing tolerance. OD and minimum wall are determined in accordance with ASTM standards. Drawing shown is an approximation only.
2. The maximum pressure for gas applications should be calculated based on the applicable local and federal regulations.
3. Fittings are marked to meet the applicable standards.
4. Only fittings with an FM pressure rating are FM approved.

Butt Fusion IPS 45° Elbows



- Molded from black PE 100 / 4710 material & NSF-61 certified
- Complies with the following product standards: ASTM D2513, D3261, D3350, AWWA C906, and C901
- Made in the USA
- FM Approval Class 1613



SDR 11 (STANDARD DIMENSION RATIO) 200 PSI (WORKING PRESSURE AS 73.4° F)

| Product Code | Nominal Diameter (inch) | L1 (inch) | L2 (inch) | L3 (inch) | s (inch) Min Wall | OD (inch) | FM Pressure Rating (psi.) |
|-------------------|-------------------------|-----------|-----------|-----------|-------------------|-----------|---------------------------|
| FF-51.110.0075.11 | ¾" IPS | 4.53 | 2.44 | 1.77 | 0.10 | 1.05 | - |
| FF-51.110.0001.11 | 1" IPS | 4.84 | 2.56 | 1.85 | 0.12 | 1.32 | - |
| FF-51.110.0125.11 | 1¼" IPS | 5.71 | 2.99 | 2.05 | 0.15 | 1.66 | - |
| FF-51.110.0150.11 | 1½" IPS | 6.14 | 3.23 | 2.24 | 0.17 | 1.90 | - |
| FF-51.110.0002.11 | 2" IPS | 6.38 | 3.23 | 2.52 | 0.22 | 2.38 | 200 |
| FF-51.110.0003.11 | 3" IPS | 9.09 | 4.57 | 3.39 | 0.32 | 3.50 | 200 |
| FF-51.110.0004.11 | 4" IPS | 10.24 | 5.04 | 3.58 | 0.41 | 4.50 | 200 |
| FF-51.110.0006.11 | 6" IPS | 13.82 | 6.61 | 4.53 | 0.60 | 6.63 | 200 |
| FF-51.110.0008.11 | 8" IPS | 16.97 | 8.15 | 5.63 | 0.79 | 8.63 | 200 |
| FF-51.110.0010.11 | 10" IPS | 20.28 | 9.61 | 6.18 | 0.98 | 10.75 | 200 |
| FF-51.110.0012.11 | 12" IPS | 21.93 | 10.04 | 6.50 | 1.16 | 12.75 | 200 |

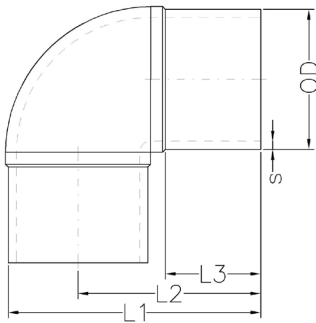
SDR 17 (STANDARD DIMENSION RATIO) 125 PSI (WORKING PRESSURE AS 73.4° F)

| Product Code | Nominal Diameter (inch) | L1 (inch) | L2 (inch) | L3 (inch) | s (inch) Min Wall | OD (inch) | FM Pressure Rating (psi.) |
|-------------------|-------------------------|-----------|-----------|-----------|-------------------|-----------|---------------------------|
| FF-51.110.0002.17 | 2" IPS | 6.38 | 3.23 | 2.52 | 0.14 | 2.38 | - |
| FF-51.110.0003.17 | 3" IPS | 9.09 | 4.57 | 3.39 | 0.21 | 3.50 | - |
| FF-51.110.0004.17 | 4" IPS | 10.24 | 5.04 | 3.58 | 0.26 | 4.50 | - |
| FF-51.110.0006.17 | 6" IPS | 13.82 | 6.61 | 4.53 | 0.39 | 6.63 | - |
| FF-51.110.0008.17 | 8" IPS | 16.97 | 8.15 | 5.63 | 0.51 | 8.63 | - |
| FF-51.110.0010.17 | 10" IPS | 20.28 | 9.61 | 6.18 | 0.63 | 10.75 | - |
| FF-51.110.0012.17 | 12" IPS | 21.93 | 10.04 | 6.50 | 0.75 | 12.75 | - |

Notes:

1. All dimensions shown are nominal and subject to manufacturing tolerance. OD and minimum wall are determined in accordance with ASTM standards. Drawing shown is an approximation only.
2. The maximum pressure for gas applications should be calculated based on the applicable local and federal regulations.
3. Fittings are marked to meet the applicable standards.
4. Only fittings with an FM pressure rating are FM approved.

Butt Fusion IPS 90° Elbows



- Molded from black PE 100 / 4710 material & NSF-61 certified
- Complies with the following product standards: ASTM D2513, D3261, D3350, AWWA C906, and C901
- Made in the USA
- FM Approval Class 1613



SDR 7 (STANDARD DIMENSION RATIO) 335 PSI (WORKING PRESSURE AS 73.4° F)

| Product Code | Nominal Diameter (inch) | L1 (inch) | L2 (inch) | L3 (inch) | s (inch) Min Wall | OD (inch) | FM Pressure Rating (psi.) |
|-------------------|-------------------------|-----------|-----------|-----------|-------------------|-----------|---------------------------|
| FF-51.113.0002.07 | 2" IPS | 5.75 | 4.25 | 2.45 | 0.339 | 2.38 | 335 |
| FF-51.113.0003.07 | 3" IPS | 7.53 | 5.65 | 3.05 | 0.500 | 3.50 | 335 |
| FF-51.113.0004.07 | 4" IPS | 8.68 | 6.13 | 3.25 | 0.643 | 4.50 | 335 |
| FF-51.113.0006.07 | 6" IPS | 12.80 | 9.28 | 4.05 | 0.946 | 6.63 | 335 |
| FF-51.113.0008.07 | 8" IPS | 15.75 | 10.71 | 4.80 | 1.232 | 8.63 | 335 |
| FF-51.113.0010.07 | 10" IPS | 18.82 | 12.64 | 5.55 | 1.536 | 10.75 | 335 |
| FF-51.113.0012.07 | 12" IPS | 20.83 | 14.29 | 5.98 | 1.821 | 12.75 | 335 |

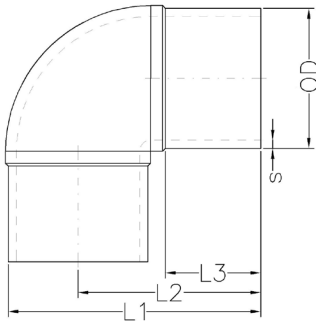
SDR 9 (STANDARD DIMENSION RATIO) 250 PSI (WORKING PRESSURE AS 73.4° F)

| Product Code | Nominal Diameter (inch) | L1 (inch) | L2 (inch) | L3 (inch) | s (inch) Min Wall | OD (inch) | FM Pressure Rating (psi.) |
|-------------------|-------------------------|-----------|-----------|-----------|-------------------|-----------|---------------------------|
| FF-51.113.0002.09 | 2" IPS | 5.75 | 4.25 | 2.45 | 0.264 | 2.38 | 250 |
| FF-51.113.0003.09 | 3" IPS | 7.53 | 5.65 | 3.05 | 0.389 | 3.50 | 250 |
| FF-51.113.0004.09 | 4" IPS | 8.68 | 6.13 | 3.25 | 0.500 | 4.50 | 250 |
| FF-51.113.0006.09 | 6" IPS | 12.8 | 9.28 | 4.05 | 0.736 | 6.63 | 250 |
| FF-51.113.0008.09 | 8" IPS | 15.75 | 10.71 | 4.80 | 0.958 | 8.63 | 250 |
| FF-51.113.0010.09 | 10" IPS | 18.82 | 12.64 | 5.55 | 1.194 | 10.75 | 250 |
| FF-51.113.0012.09 | 12" IPS | 20.83 | 14.29 | 5.98 | 1.417 | 12.75 | 250 |

Notes:

1. All dimensions shown are nominal and subject to manufacturing tolerance. OD and minimum wall are determined in accordance with ASTM standards. Drawing shown is an approximation only.
2. The maximum pressure for gas applications should be calculated based on the applicable local and federal regulations.
3. Fittings are marked to meet the applicable standards.
4. Only fittings with an FM pressure rating are FM approved.

Butt Fusion IPS 90° Elbows



- Molded from black PE 100 / 4710 material & NSF-61 certified
- Complies with the following product standards: ASTM D2513, D3261, D3350, AWWA C906, and C901
- Made in the USA
- FM Approval Class 1613



SDR 11 (STANDARD DIMENSION RATIO) 200 PSI (WORKING PRESSURE AS 73.4° F)

| Product Code | Nominal Diameter (inch) | L1 (inch) | L2 (inch) | L3 (inch) | s (inch) Min Wall | OD (inch) | FM Pressure Rating (psi.) |
|-------------------|-------------------------|-----------|-----------|-----------|-------------------|-----------|---------------------------|
| FF-51.113.0075.11 | 3/4" IPS | 3.35 | 2.83 | 1.77 | 0.10 | 1.05 | - |
| FF-51.113.0001.11 | 1" IPS | 3.66 | 3.03 | 1.85 | 0.12 | 1.32 | - |
| FF-51.113.0125.11 | 1 1/4" IPS | 4.33 | 3.46 | 2.05 | 0.15 | 1.66 | - |
| FF-51.113.0150.11 | 1 1/2" IPS | 4.88 | 3.94 | 2.24 | 0.17 | 1.90 | - |
| FF-51.113.0002.11 | 2" IPS | 5.71 | 4.41 | 2.44 | 0.22 | 2.38 | 200 |
| FF-51.113.0003.11 | 3" IPS | 7.48 | 5.67 | 3.23 | 0.32 | 3.50 | 200 |
| FF-51.113.0004.11 | 4" IPS | 8.9 | 6.54 | 3.66 | 0.41 | 4.50 | 200 |
| FF-51.113.0006.11 | 6" IPS | 12.13 | 8.74 | 4.49 | 0.60 | 6.63 | 200 |
| FF-51.113.0008.11 | 8" IPS | 15.75 | 11.42 | 5.63 | 0.79 | 8.63 | 200 |
| FF-51.113.0010.11 | 10" IPS | 18.82 | 13.35 | 6.14 | 0.98 | 10.75 | 200 |
| FF-51.113.0012.11 | 12" IPS | 20.83 | 14.17 | 6.30 | 1.16 | 12.75 | 200 |

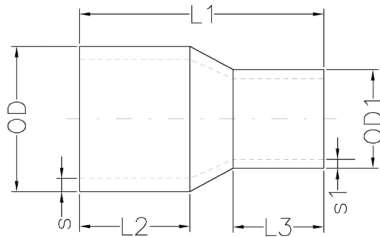
SDR 17 (STANDARD DIMENSION RATIO) 125 PSI (WORKING PRESSURE AS 73.4° F)

| Product Code | Nominal Diameter (inch) | L1 (inch) | L2 (inch) | L3 (inch) | s (inch) Min Wall | OD (inch) | FM Pressure Rating (psi.) |
|-------------------|-------------------------|-----------|-----------|-----------|-------------------|-----------|---------------------------|
| FF-51.113.0002.17 | 2" IPS | 5.71 | 4.41 | 2.44 | 0.14 | 2.38 | - |
| FF-51.113.0003.17 | 3" IPS | 7.48 | 5.67 | 3.23 | 0.21 | 3.50 | - |
| FF-51.113.0004.17 | 4" IPS | 8.90 | 6.54 | 3.66 | 0.26 | 4.50 | - |
| FF-51.113.0006.17 | 6" IPS | 12.13 | 8.74 | 4.49 | 0.39 | 6.63 | - |
| FF-51.113.0008.17 | 8" IPS | 15.75 | 11.42 | 5.63 | 0.51 | 8.63 | - |
| FF-51.113.0010.17 | 10" IPS | 18.82 | 13.35 | 6.14 | 0.63 | 10.75 | - |
| FF-51.113.0012.17 | 12" IPS | 20.83 | 14.17 | 6.30 | 0.75 | 12.75 | - |

Notes:

1. All dimensions shown are nominal and subject to manufacturing tolerance. OD and minimum wall are determined in accordance with ASTM standards. Drawing shown is an approximation only.
2. The maximum pressure for gas applications should be calculated based on the applicable local and federal regulations.
3. Fittings are marked to meet the applicable standards.
4. Only fittings with an FM pressure rating are FM approved.

Butt Fusion IPS Reducers



- Made from black PE 100 / 4710 material & NSF-61 certified
- Complies with the following product standards: ASTM D2513, D3261, D3350, AWWA C906, and C901
- Made in the USA
- FM Approval Class 1613



SDR 7 (STANDARD DIMENSION RATIO) 335 PSI (WORKING PRESSURE AS 73.4° F)

| Product Code | Nominal Diameter (inch) | L1 (inch) | L2 (inch) | L3 (inch) | s (inch) Min Wall | OD (inch) | s1 (inch) Min Wall | OD 1 (inch) | FM Pressure Rating (psi.) |
|-------------------|-------------------------|-----------|-----------|-----------|-------------------|-----------|--------------------|-------------|---------------------------|
| FF-51.118.0201.07 | 2 x 1" IPS | 6.15 | 3.00 | 1.525 | 0.340 | 2.375 | 0.190 | 1.315 | - |
| FF-51.118.0302.07 | 3 x 2" IPS | 7.91 | 3.46 | 3.310 | 0.500 | 3.500 | 0.339 | 2.380 | 335 |
| FF-51.118.0402.07 | 4 x 2" IPS | 8.82 | 3.58 | 3.310 | 0.643 | 4.500 | 0.339 | 2.380 | 335 |
| FF-51.118.0403.07 | 4 x 3" IPS | 7.99 | 3.58 | 3.460 | 0.643 | 4.500 | 0.500 | 3.500 | 335 |
| FF-51.118.0604.07 | 6 x 4" IPS | 9.88 | 4.21 | 3.580 | 0.946 | 6.630 | 0.643 | 4.500 | 335 |
| FF-51.118.0806.07 | 8 x 6" IPS | 11.18 | 5.08 | 4.210 | 1.232 | 8.630 | 0.946 | 6.630 | 335 |
| FF-51.317.1008.07 | 10 x 8" IPS | 12.83 | 5.87 | 5.080 | 1.536 | 10.75 | 1.232 | 8.630 | 335 |
| FF-51.317.1210.07 | 12 x 10" IPS | 14.02 | 6.26 | 5.87 | 1.821 | 12.75 | 1.536 | 10.75 | - |

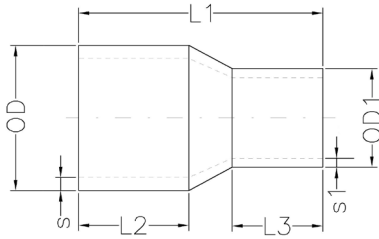
SDR 9 (STANDARD DIMENSION RATIO) 250 PSI (WORKING PRESSURE AS 73.4° F)

| Product Code | Nominal Diameter (inch) | L1 (inch) | L2 (inch) | L3 (inch) | s (inch) Min Wall | OD (inch) | s1 (inch) Min Wall | OD 1 (inch) | FM Pressure Rating (psi.) |
|-------------------|-------------------------|-----------|-----------|-----------|-------------------|-----------|--------------------|-------------|---------------------------|
| FF-51.118.0201.09 | 2 x 1" IPS | 6.15 | 3.00 | 1.525 | 0.26 | 2.375 | 0.150 | 1.315 | 250 |
| FF-51.118.0302.09 | 3 x 2" IPS | 7.91 | 3.46 | 3.310 | 0.389 | 3.500 | 0.264 | 2.380 | 250 |
| FF-51.118.0402.09 | 4 x 2" IPS | 8.82 | 3.58 | 3.310 | 0.500 | 4.500 | 0.264 | 2.380 | 250 |
| FF-51.118.0403.09 | 4 x 3" IPS | 7.99 | 3.58 | 3.460 | 0.500 | 4.500 | 0.389 | 3.500 | 250 |
| FF-51.118.0604.09 | 6 x 4" IPS | 9.88 | 4.21 | 3.580 | 0.736 | 6.630 | 0.500 | 4.500 | 250 |
| FF-51.118.0806.09 | 8 x 6" IPS | 11.18 | 5.08 | 4.210 | 0.958 | 8.630 | 0.736 | 6.630 | 250 |
| FF-51.317.1008.09 | 10 x 8" IPS | 12.83 | 5.87 | 5.080 | 1.194 | 10.75 | 0.958 | 8.630 | - |
| FF-51.317.1210.09 | 12 x 10" IPS | 14.02 | 6.26 | 5.87 | 1.417 | 12.75 | 1.194 | 10.75 | - |

Notes:

1. All dimensions shown are nominal and subject to manufacturing tolerance. OD and minimum wall are determined in accordance with ASTM standards. Drawing shown is an approximation only.
2. The maximum pressure for gas applications should be calculated based on the applicable local and federal regulations.
3. Fittings are marked to meet the applicable standards.
4. Only fittings with an FM pressure rating are FM approved.

Butt Fusion IPS Reducers



- Molded from black PE 100 / 4710 material & NSF-61 certified
- Complies with the following product standards: ASTM D2513, D3261, D3350, AWWA C906, and C901
- Made in the USA
- FM Approval Class 1613



SDR 11 (STANDARD DIMENSION RATIO) 200 PSI (WORKING PRESSURE AT 73.4° F)

| Product Code | Nominal Diameter (inch) | L1 (inch) | L2 (inch) | L3 (inch) | s (inch) Min Wall | OD (inch) | s1 (inch) Min Wall | OD 1 (inch) | FM Pressure Rating (psi.) |
|-------------------|-------------------------|-----------|-----------|-----------|-------------------|-----------|--------------------|-------------|---------------------------|
| FF-51.118.2150.11 | 2 x 1½" IPS | 6.22 | 2.87 | 2.48 | 0.22 | 2.38 | 0.17 | 1.90 | - |
| FF-51.118.0302.11 | 3 x 2" IPS | 7.72 | 3.74 | 2.83 | 0.318 | 3.50 | 0.216 | 2.38 | 200 |
| FF-51.118.0402.11 | 4 x 2" IPS | 8.82 | 4.09 | 2.76 | 0.409 | 4.50 | 0.216 | 2.38 | 200 |
| FF-51.118.0403.11 | 4 x 3" IPS | 8.78 | 4.13 | 3.70 | 0.409 | 4.50 | 0.318 | 3.50 | 200 |
| FF-51.118.0603.11 | 6 x 3" IPS | 11.18 | 5.06 | 3.78 | 0.603 | 6.63 | 0.318 | 3.50 | 200 |
| FF-51.118.0604.11 | 6 x 4" IPS | 10.94 | 4.84 | 3.90 | 0.603 | 6.63 | 0.409 | 4.50 | 200 |
| FF-51.118.0806.11 | 8 x 6" IPS | 12.36 | 5.51 | 4.96 | 0.785 | 8.63 | 0.603 | 6.63 | 200 |
| FF-51.118.1008.11 | 10 x 8" IPS | 14.21 | 6.22 | 5.94 | 0.978 | 10.75 | 0.785 | 8.63 | 200 |
| FF-51.118.1208.11 | 12 x 8" IPS | 16.34 | 6.54 | 5.91 | 1.16 | 12.75 | 0.785 | 8.63 | 200 |
| FF-51.118.1210.11 | 12 x 10" IPS | 16.14 | 6.61 | 6.46 | 1.16 | 12.75 | 0.978 | 10.75 | 200 |

SDR 17 (STANDARD DIMENSION RATIO) 125 PSI (WORKING PRESSURE AT 73.4° F)

| Product Code | Nominal Diameter (inch) | L1 (inch) | L2 (inch) | L3 (inch) | s (inch) Min Wall | OD (inch) | s1 (inch) Min Wall | OD 1 (inch) | FM Pressure Rating (psi.) |
|-------------------|-------------------------|-----------|-----------|-----------|-------------------|-----------|--------------------|-------------|---------------------------|
| FF-51.118.0302.17 | 3 x 2" IPS | 7.72 | 3.74 | 2.83 | 0.21 | 3.50 | 0.14 | 2.38 | - |
| FF-51.118.0402.17 | 4 x 2" IPS | 8.82 | 4.09 | 2.76 | 0.26 | 4.50 | 0.14 | 2.38 | - |
| FF-51.118.0403.17 | 4 x 3" IPS | 8.78 | 4.13 | 3.70 | 0.26 | 4.50 | 0.21 | 3.50 | - |
| FF-51.118.0603.17 | 6 x 3" IPS | 11.18 | 5.06 | 3.78 | 0.39 | 6.63 | 0.21 | 3.50 | - |
| FF-51.118.0604.17 | 6 x 4" IPS | 10.94 | 4.84 | 3.90 | 0.39 | 6.63 | 0.26 | 4.50 | - |
| FF-51.118.0806.17 | 8 x 6" IPS | 12.36 | 5.51 | 4.96 | 0.51 | 8.63 | 0.39 | 6.63 | - |
| FF-51.118.1008.17 | 10 x 8" IPS | 14.21 | 6.22 | 5.94 | 0.75 | 10.75 | 0.51 | 8.63 | - |
| FF-51.118.1208.17 | 12 x 8" IPS | 16.34 | 6.54 | 5.91 | 0.75 | 12.75 | 0.51 | 8.63 | - |
| FF-51.118.1210.17 | 12 x 10" IPS | 16.14 | 6.61 | 6.46 | 0.75 | 12.75 | 0.63 | 10.75 | - |

Notes:

1. All dimensions shown are nominal and subject to manufacturing tolerance. OD and minimum wall are determined in accordance with ASTM standards. Drawing shown is an approximation only.
2. The maximum pressure for gas applications should be calculated based on the applicable local and federal regulations.
3. Fittings are marked to meet the applicable standards.
4. Only fittings with an FM pressure rating are FM approved.



AGRU Electrofusion Fittings Easier and Safer Installations

In addition to its HDPE butt fusion fittings, AGRU electrofusion fittings are made with both PE 4710 and PE 100-RC modern resins, allowing AGRU to produce the highest quality electrofusion fittings on the market. In a comprehensive series of tests, the renowned HESSEL Ingenieurtechnik GmbH test institute showed that the service life of AGRU's PE 100-RC E-couplers is about 10 times longer than standard E-couplers currently available on the market under test conditions (Figure 1).

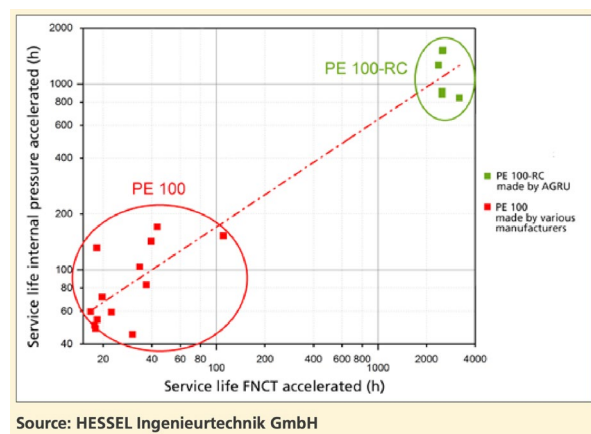


Figure 1. Service life of PE and PE 100-RC electrofusion couplers under test conditions.

Electrofusion fittings support an easier and safer installation thanks to their welding standards. The electrofusion welding method uses a specialized fitting with a fully embedded heating wire around the welding zone that ensures precision and risk reduction. Installers secure the fitting to the pipe and connect it to an electrofusion processor. The processor then generates heat to the fitting, which produces a homogenous weld between the pipe and the fitting.

Other benefits:

- Training available for electrofusion coupler installers.
- Best-in-class weld quality ensured by the stable position of the embedded heating wire and the excellent gap closing ability.
- External temperature compensated welding times also achieve best-in-class results at temperatures as low as 32°F and as high as 114°F.
- With embedded heating wires, fittings feature smooth and easy-to-clean internal weld surfaces.
- The embedded heating wire is protected against installation damage and corrosion during operations.

Monofilar and Bifilar Couplings

AGRU offers two advanced electrofusion (EF) coupling designs, monofilar and bifilar, each engineered to optimize joint integrity and installation efficiency.

Monofilar Couplings

Employ a single continuous resistance wire to create one heating zone, producing a consistent melt with a straightforward single heating cycle. This makes them cost-effective and reliable for standard applications.

Bifilar Couplings

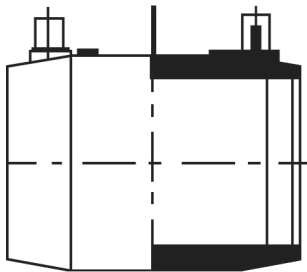
Utilize two parallel resistance wires that generate separate heating zones, allowing for improved heat distribution across the pipe wall. This design supports more uniform fusion, reduces localized stresses, and enables advanced multi-cycle heating sequences, where zones can be energized in stages for enhanced joint control. These staged heating cycles are especially advantageous for larger diameters or demanding service conditions, ensuring stronger and longer-lasting connections.

Both types reflect AGRU's commitment to precision, durability, and leak-tight performance, giving customers the flexibility to select the best balance of reliability and efficiency, customized to meet the project's requirements.

Electrofusion Fittings

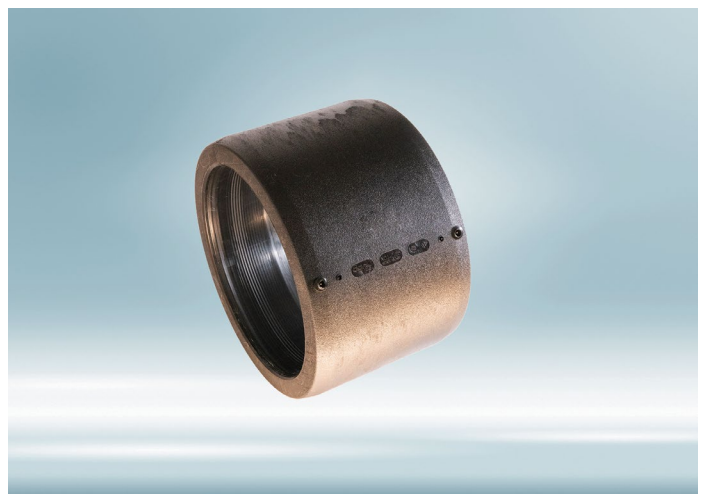
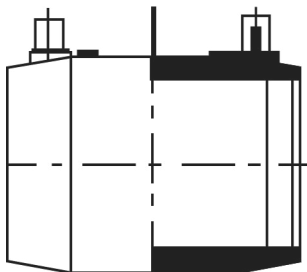
Monofilar Electrofusion Couplers

- Made from PE 100-RC/PE 4710 and NSF-61 approved resins
- Fusion barcode and traceability barcodes on each fitting
- 4.0 mm fusion connectors
- MOP of 200 psi at SDR 11 for water applications*; 1/2" IPS to 16" IPS
- Meets ASTM F1055 standards.



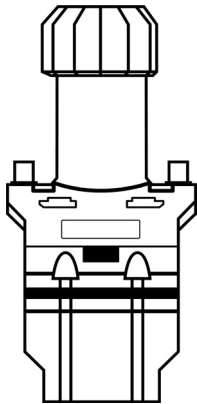
Bifilar Electrofusion Couplers

- Made from PE 100-RC/PE 4710 and NSF-61 approved resins
- Fusion barcode and traceability barcodes on each fitting
- 4.0 mm fusion connectors
- MOP of 150 psi at SDR 17 to SDR 33 for water applications*; 18" IPS to 48" IPS
- MOP of 200 psi at SDR 11 for water applications*; 18" IPS to 28" IPS
- Meets ASTM F1055 standards.



Electrofusion Tapping Tees

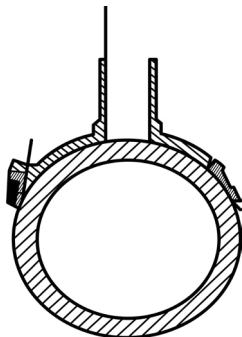
- Injection molded from PE 100-RC/PE 4710 material and NSF-61 approved resins
- Barcoded to facilitate automated fusion and traceability
- Piano hinges to allow for the easy opening of the under saddle
- Fixing tab to assist in holding the fitting in place until it is clamped



- Extra-long outlet to allow for multiple rounds of welding
- Brass punch for use with water and gas
- Telescopic punch assembly to allow the main to be connected without any fluid escaping
- Main Sizes: 2" IPS through 6" IPS
- Outlet Sizes: 1/2" CTS through 1" IPS.

Electrofusion Branch Saddles

- Injection molded from PE 100-RC/PE 4710 material and NSF-61 approved resins
- Barcoded to facilitate automated fusion and traceability
- Piano hinges to allow for the easy opening of the under saddle



- Fixing tab to assist in holding the fitting in place until it is clamped
- MOP of 200 psi at SDR 11 for water applications*
- Main sizes: 3" IPS through 12" IPS
- Outlet sizes: 1" IPS through 4" IPS.

Electrofusion Equipment

- AGRU is a distributor of the 110V and 230V V HÜRNER electrofusion equipment.
- HÜRNER equipment allows exact welding at a fraction of the time and effort of traditional methods.
- Electrofusion fittings of up to 48" IPS are designed to work seamlessly with the processors with ISO-compliant barcodes.
- Electrofusion processors equipped with GPS and Bluetooth are also available.

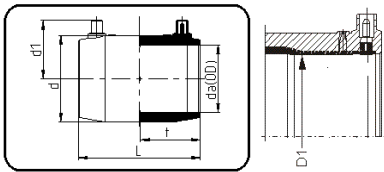


*Calculate the maximum pressure for gas applications according to regulatory requirements.



Electrofusion IPS Couplings

MONOFILAR



- Molded from black PE 100-RC / 4710 & NSF-61 approved resin
- Complies with the following product standards: ASTM D2513, D3261, D3350, F1055, AWWA C906, and C901
- FM Approval Class 1613
- 1/2" CTS Couplers are also available for sale



SDR 11 (STANDARD DIMENSION RATIO) WATER 200 PSI, GAS* (WORKING PRESSURE AT 73.4° F)

| Product Code | Nominal Diameter da OD (inch) | D1 (ID) | L (inch) | d (inch) | d1 (inch) | t (inch) | Weight (lbs.) | FM Pressure Rating (psi.) |
|--------------------|-------------------------------|---------|----------|----------|-----------|----------|---------------|---------------------------|
| RI-51.173.0050.11 | ½" IPS | 0.839 | 2.913 | 1.220 | 1.378 | 1.457 | 0.1 | - |
| RI-51.173.0075.11 | ¾" IPS | 1.047 | 3.150 | 1.406 | 1.496 | 1.575 | 0.1 | - |
| RI-51.173.0001.11 | 1" IPS | 1.315 | 3.465 | 1.693 | 1.654 | 1.732 | 0.1 | - |
| RI-51.173.0125.11 | 1 ¼" IPS | 1.661 | 3.898 | 2.146 | 1.752 | 1.949 | 0.2 | - |
| RI-51.173.0150.11 | 1 ½" IPS | 1.902 | 4.382 | 2.531 | 1.969 | 2.191 | 0.3 | - |
| RI-51.173.0002.11 | 2" IPS | 2.378 | 5.031 | 3.130 | 2.224 | 2.516 | 0.5 | 250** |
| RI-51.173.0003.11 | 3" IPS | 3.524 | 5.551 | 4.331 | 2.835 | 2.736 | 0.8 | 250** |
| RI-51.173.0004.11 | 4" IPS | 4.528 | 5.984 | 5.591 | 3.346 | 2.953 | 1.3 | 250** |
| RI-51.173.0006.11 | 6" IPS | 6.634 | 7.126 | 8.110 | 4.390 | 3.524 | 3.3 | 250** |
| RI-51.173.0008.11 | 8" IPS | 8.646 | 9.094 | 10.551 | 5.433 | 4.469 | 6.8 | 250** |
| RI-51.173.0010.11 | 10" IPS | 10.787 | 9.843 | 13.228 | 6.496 | 4.843 | 13.3 | 250** |
| RI-51.173.0012.11 | 12" IPS | 12.795 | 10.236 | 15.709 | 7.480 | 5.039 | 18.3 | 250** |
| RI-51.173.0014.11 | 14" IPS | 14.028 | 11.024 | 17.402 | 8.750 | 5.500 | 30.6 | - |
| RI-51.173.0016.11M | 16" IPS | 16.024 | 12.000 | 19.600 | 9.250 | 6.000 | 42.3 | - |

All dimensions shown are nominal and subject to manufacturing tolerance. OD and minimum wall are determined in accordance with ASTM standards. Drawing shown is an approximation only. 2"-12" E-Couplings are FM Approved. Pressures listed are sustainable maximum operating pressure at 73°F.

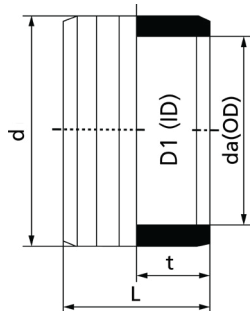
Approved processing temperatures between -10°C (14°F) and 45°C (113°F) for couplings 28" or less. Approved processing temperatures between 0°C (32°F) and 45°C (113°F) for couplings 30" to 48".

* The maximum pressure for gas applications should be calculated based on the applicable local and federal regulations.

** Passed FM approval testing at a pressure of 250 psi, couplings have a max operating pressure rating of 200 psi.

Electrofusion IPS Couplings

BIFILAR



- Molded from black PE 100-RC / 4710 & NSF-61 approved resin
- Complies with the following product standards: ASTM D2513, D3261, D3350, F1055, and AWWA C906

SDR 11 (STANDARD DIMENSION RATIO) WATER 200 PSI, GAS* (WORKING PRESSURE AT 73.4° F)

| Product Code | Nominal Diameter da OD (inch) | D1 (ID) | L (inch) | d (inch) | t (inch) | Weight (lbs.) | FM Pressure Rating (psi.) |
|-------------------|-------------------------------|---------|----------|----------|----------|---------------|---------------------------|
| RI-51.373.0018.11 | 18" IPS | 18.016 | 13.780 | 22.008 | 6.890 | 57.8 | - |
| RI-51.373.0020.11 | 20" IPS | 20.000 | 14.567 | 24.449 | 7.283 | 78.3 | - |
| RI-51.373.0022.11 | 22" IPS | 21.980 | 14.961 | 26.969 | 7.480 | 95.7 | - |
| RI-51.373.0024.11 | 24" IPS | 23.976 | 16.142 | 29.331 | 8.071 | 123.5 | - |
| RI-51.373.0026.11 | 26" IPS | 25.984 | 16.142 | 31.811 | 8.071 | 148.8 | - |
| RI-51.373.0028.11 | 28" IPS | 27.972 | 16.142 | 34.252 | 8.071 | 179.7 | - |

SDR 33-17 (STANDARD DIMENSION RATIO) WATER 125 PSI, GAS* (WORKING PRESSURE AT 73.4° F)

| Product Code | Nominal Diameter da OD (inch) | D1 (ID) | L (inch) | d (inch) | t (inch) | Weight (lbs.) | FM Pressure Rating (psi.) |
|-------------------|-------------------------------|---------|----------|----------|----------|---------------|---------------------------|
| RI-51.373.0018.17 | 18" IPS | 18.016 | 13.780 | 20.433 | 6.890 | 34.2 | - |
| RI-51.373.0020.17 | 20" IPS | 20.000 | 14.567 | 22.677 | 7.283 | 45.2 | - |
| RI-51.373.0022.17 | 22" IPS | 21.980 | 14.961 | 25.197 | 7.480 | 60.0 | - |
| RI-51.373.0024.17 | 24" IPS | 23.976 | 16.142 | 27.205 | 8.071 | 70.6 | - |
| RI-51.373.0026.17 | 26" IPS | 25.984 | 16.142 | 29.488 | 8.071 | 84.9 | - |
| RI-51.373.0028.17 | 28" IPS | 27.972 | 16.142 | 31.772 | 8.071 | 104.7 | - |
| RI-51.373.0030.17 | 30" IPS | 29.980 | 19.685 | 34.016 | 9.843 | 145.3 | - |
| RI-51.373.0032.17 | 32" IPS | 31.969 | 19.685 | 36.299 | 9.843 | 166.3 | - |
| RI-51.373.0034.17 | 34" IPS | 33.937 | 20.079 | 38.504 | 10.039 | 183.0 | - |
| RI-51.373.0036.17 | 36" IPS | 35.945 | 20.079 | 40.906 | 10.039 | 209.5 | - |
| RI-51.373.0042.17 | 42" IPS | 41.929 | 20.866 | 47.638 | 10.433 | 304.7 | - |
| RI-51.373.0048.17 | 48" IPS | 47.913 | 21.260 | 54.409 | 10.630 | 403.5 | - |

All dimensions shown are nominal and subject to manufacturing tolerance. OD and minimum wall are determined in accordance with ASTM standards. Drawing shown is an approximation only. 2"-12" E-Couplings are FM Approved. Pressures listed are sustainable maximum operating pressure at 73°F. 54" and the 63" are made to order.

Approved processing temperatures between -10°C (14°F) and 45°C (113°F) for couplings 28" or less. Approved processing temperatures between 0°C (32°F) and 45°C (113°F) for couplings 30" to 48".

* The maximum pressure for gas applications should be calculated based on the applicable local and federal regulations.

IPS EF Coupler Weldability Chart

- This AGRU America E-Coupler Weldability Chart provides a quick reference for evaluating compatible electrofusion joining options across applicable HDPE pipe systems.
- Final fusion suitability should always be verified against AGRU America procedures, project specifications, and field preparation requirements prior to welding.
- Where mixed pipe materials, manufacturers, or dimensional classes are involved, consult AGRU America technical support to verify the appropriate coupling solution and fusion approach before proceeding.

E-COUPLER SDR 11

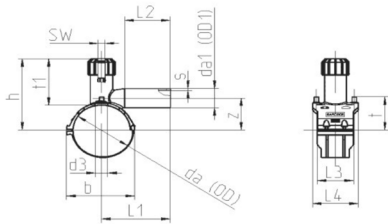
| OD (inch) | SDR 41 | SDR 33 | SDR 26 | SDR 17 | SDR 13.6 | SDR 11 | SDR 9 | SDR 7.4 |
|-----------|--------|--------|--------|--------|----------|--------|-------|---------|
| 1/2" | No | No | No | Yes | Yes | Yes | Yes | No |
| 3/4" | No | No | No | Yes | Yes | Yes | Yes | No |
| 1" | No | No | No | Yes | Yes | Yes | Yes | No |
| 1 1/4" | No | No | No | Yes | Yes | Yes | Yes | No |
| 1 1/2" | No | No | No | Yes | Yes | Yes | Yes | No |
| 2" | No | No | No | Yes | Yes | Yes | Yes | No |
| 3" | No | No | No | Yes | Yes | Yes | Yes | No |
| 4" | No | No | No | Yes | Yes | Yes | Yes | No |
| 6" | No | No | No | Yes | Yes | Yes | Yes | No |
| 8" | No | No | No | Yes | Yes | Yes | Yes | No |
| 10" | No | No | No | Yes | Yes | Yes | Yes | No |
| 12" | No | No | No | Yes | Yes | Yes | Yes | No |
| 14" | No | No | No | Yes | Yes | Yes | No | No |
| 16" | No | No | No | Yes | Yes | Yes | No | No |
| 18" | No | No | No | No | No | Yes | No | No |
| 20" | No | No | No | No | No | Yes | No | No |
| 22" | No | No | No | No | No | Yes | No | No |
| 24" | No | No | No | No | No | Yes | No | No |
| 26" | No | No | No | No | No | Yes | No | No |
| 28" | No | No | No | No | No | Yes | No | No |

E-COUPLER SDR 17

| OD (inch) | SDR 41 | SDR 33 | SDR 26 | SDR 17 | SDR 13,6 | SDR 11 | SDR 9 | SDR 7,4 |
|-----------|--------|--------|--------|--------|----------|--------|-------|---------|
| 18 | No | Yes | Yes | Yes | No | No | No | No |
| 20 | No | Yes | Yes | Yes | No | No | No | No |
| 22 | No | Yes | Yes | Yes | No | No | No | No |
| 24 | No | Yes | Yes | Yes | No | No | No | No |
| 26 | No | Yes | Yes | Yes | No | No | No | No |
| 28 | No | Yes | Yes | Yes | No | No | No | No |
| 30 | No | Yes | Yes | Yes | No | No | No | No |
| 32 | No | Yes | Yes | Yes | No | No | No | No |
| 34 | No | Yes | Yes | Yes | No | No | No | No |
| 36 | No | Yes | Yes | Yes | No | No | No | No |
| 42 | No | Yes | Yes | Yes | No | No | No | No |
| 48 | No | Yes | Yes | Yes | No | No | No | No |

Note: Preheating required unless explicitly stated otherwise.

Electrofusion IPS Tapping Tees



- Molded from: PE 100-RC / PE 4710
- Color: Black
- Specification: ASTM D2513/F1055, AWWA C906, NSF 61
- Sealed brass punch assembly
- Fixing tab for easy installation
- Permanent under saddle

SDR 11 (STANDARD DIMENSION RATIO) WATER 200 PSI, GAS* (WORKING PRESSURE AT 73.4° F)

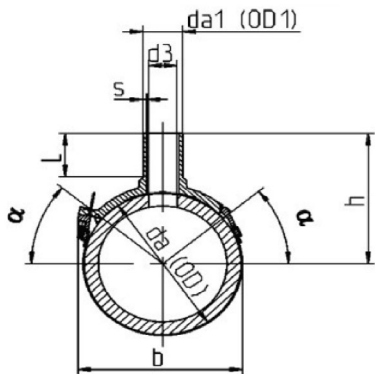
Water - MOP 200 PSI, Gas*

| Nominal Diameter | Code | da (OD) | da1 (OD1) | s | z | L1 | L2 | L3 | L4 | d3 | h | b | SW | t | t1 | Weight |
|------------------|-------------------|---------|-----------|------|------|------|------|------|------|------|------|------|------|------|------|--------|
| in | | in | in | in | in | in | in | in | in | in | in | in | in | in | in | lbs |
| 2" / 1/2" CTS | RI-51.278.0250.12 | 2 | 0.5 | 0.10 | 2.24 | 4.72 | 3.39 | 4.02 | 4.69 | 1.02 | 6.67 | 3.90 | 0.39 | 2.34 | 5.43 | 1.18 |
| 2" / 1" CTS | RI-51.278.0201.12 | 2 | 1.0 | 0.12 | 2.24 | 5.12 | 3.62 | 4.02 | 4.69 | 1.02 | 6.67 | 3.90 | 0.39 | 2.34 | 5.43 | 1.21 |
| 2" / 3/4" IPS | RI-51.278.0275.11 | 2 | 0.75 | 0.09 | 2.24 | 5.12 | 3.62 | 4.02 | 4.69 | 1.02 | 6.67 | 3.90 | 0.39 | 2.34 | 5.43 | 1.20 |
| 2" / 1" IPS | RI-51.278.0201.11 | 2 | 1.0 | 0.12 | 2.24 | 5.12 | 3.62 | 4.02 | 4.69 | 1.02 | 6.67 | 3.90 | 0.39 | 2.34 | 5.43 | 1.21 |
| 3" / 1/2" CTS | RI-51.278.0350.12 | 3 | 0.5 | 0.10 | 2.64 | 4.92 | 3.39 | 4.06 | 5.12 | 1.26 | 7.74 | 5.04 | 0.67 | 2.87 | 5.98 | 1.62 |
| 3" / 1" CTS | RI-51.278.0301.12 | 3 | 1.0 | 0.12 | 2.64 | 5.12 | 3.62 | 4.06 | 5.12 | 1.26 | 7.74 | 5.04 | 0.67 | 2.87 | 5.98 | 1.64 |
| 3" / 3/4" IPS | RI-51.278.0375.11 | 3 | 0.75 | 0.09 | 2.64 | 5.12 | 3.62 | 4.06 | 5.12 | 1.26 | 7.74 | 5.04 | 0.67 | 2.87 | 5.98 | 1.63 |
| 3" / 1" IPS | RI-51.278.0301.11 | 3 | 1.0 | 0.12 | 2.64 | 5.12 | 3.62 | 4.06 | 5.12 | 1.26 | 7.74 | 5.04 | 0.67 | 2.87 | 5.98 | 1.65 |
| 4" / 1/2" CTS | RI-51.278.0450.12 | 4 | 0.5 | 0.10 | 2.99 | 4.92 | 3.39 | 4.06 | 5.12 | 1.26 | 8.13 | 5.87 | 0.67 | 3.27 | 5.98 | 1.71 |
| 4" / 1" CTS | RI-51.278.0401.12 | 4 | 1.0 | 0.12 | 2.99 | 5.12 | 3.62 | 4.06 | 5.12 | 1.26 | 8.13 | 5.87 | 0.67 | 3.27 | 5.98 | 1.74 |
| 4" / 3/4" IPS | RI-51.278.0475.11 | 4 | 0.75 | 0.09 | 2.99 | 5.12 | 3.62 | 4.06 | 5.12 | 1.26 | 8.13 | 5.87 | 0.67 | 3.27 | 5.98 | 1.72 |
| 4" / 1" IPS | RI-51.278.0401.11 | 4 | 1.0 | 0.12 | 2.99 | 5.12 | 3.62 | 4.06 | 5.12 | 1.26 | 8.13 | 5.87 | 0.67 | 3.27 | 5.98 | 1.74 |
| 6" / 1/2" CTS | RI-51.278.0650.12 | 6 | 0.5 | 0.10 | 3.90 | 4.92 | 3.39 | 4.06 | 5.16 | 1.26 | 9.11 | 8.03 | 0.67 | 4.25 | 5.98 | 1.28 |
| 6" / 1" CTS | RI-51.278.0601.12 | 6 | 1.0 | 0.12 | 3.90 | 5.12 | 3.62 | 4.06 | 5.16 | 1.26 | 9.11 | 8.03 | 0.67 | 4.25 | 5.98 | 1.90 |
| 6" / 3/4" IPS | RI-51.278.0675.11 | 6 | 0.75 | 0.09 | 3.90 | 5.12 | 3.62 | 4.06 | 5.16 | 1.26 | 9.11 | 8.03 | 0.67 | 4.25 | 5.98 | 1.89 |
| 6" / 1" IPS | RI-51.278.0601.11 | 6 | 1.0 | 0.12 | 3.90 | 5.12 | 3.62 | 4.06 | 5.16 | 1.26 | 9.11 | 8.03 | 0.67 | 4.25 | 5.98 | 1.90 |

Notes:

1. All dimensions shown are nominal and subject to manufacturing tolerance. OD and minimum wall are determined in accordance with ASTM standards. Drawing shown is an approximation only.
 2. Fittings are marked to meet the applicable standards.
 3. Some items are subject to availability and will require special order.
- * The maximum pressure for gas applications should be calculated based on the applicable local and federal regulations.

Electofusion IPS Branch Saddles



- Molded from: PE 100-RC / PE 4710
- Color: Black
- Specification: ASTM D2513/F1055, AWWA C906, NSF 61
- Sealed brass punch assembly
- Fixing tab for easy installation
- Permanent under saddle

SDR 11 - STANDARD DIMENSION RATIO / WATER - MOP 200 PSI (PN 16), GAS*

| Code | Nominal Diameter [INCH] | da (OD) [INCH] | da1 (OD1) [inch] | h [INCH] | d3 [INCH] | b [INCH] | s [INCH] | alph [°] | L [INCH] | Weight [LBS] |
|-------------------|-------------------------|----------------|------------------|----------|-----------|----------|----------|----------|----------|--------------|
| RI-51.288.0301.11 | 3" x 1" | 3 | 1 | 5.07 | 0.69 | 4.86 | 0.12 | 0 | 2.36 | 0.40 |
| RI-51.288.0325.11 | 3" x 1¼" | 3 | 1.25 | 5.07 | 0.94 | 4.86 | 0.12 | 0 | 2.36 | 0.40 |
| RI-51.288.0302.11 | 3" x 2" | 3 | 2 | 5.52 | 1.53 | 4.86 | 0.12 | 0 | 2.36 | 0.40 |
| RI-51.288.0401.11 | 4" x 1" | 4 | 1 | 5.61 | 0.69 | 5.65 | 0.12 | 0 | 2.36 | 0.46 |
| RI-51.288.0425.11 | 4" x 1¼" | 4 | 1.25 | 5.61 | 0.94 | 5.65 | 0.12 | 0 | 2.36 | 0.46 |
| RI-51.288.0402.11 | 4" x 2" | 4 | 2 | 6.20 | 1.53 | 5.65 | 0.12 | 0 | 2.36 | 0.46 |
| RI-51.288.0601.11 | 6" x 1" | 6 | 1 | 6.93 | 0.69 | 7.62 | 0.12 | 0 | 2.36 | 0.98 |
| RI-51.288.0625.11 | 6" x 1¼" | 6 | 1.25 | 6.93 | 0.94 | 7.62 | 0.12 | 0 | 2.36 | 0.98 |
| RI-51.288.0602.11 | 6" x 2" | 6 | 2 | 7.56 | 1.53 | 7.62 | 0.12 | 0 | 2.36 | 0.98 |
| RI-51.288.0603.11 | 6" x 3" | 6 | 3 | 8.27 | 2.53 | 7.62 | 0.12 | 0 | 2.36 | 0.98 |
| RI-51.288.0604.11 | 6" x 4" | 6 | 4 | 8.27 | 3.53 | 7.62 | 0.12 | 0 | 2.36 | 0.98 |
| RI-51.288.0801.11 | 8" x 1" | 8 | 1 | 7.74 | 0.69 | 9.63 | 0.12 | 0 | 2.36 | 1.02 |
| RI-51.288.0825.11 | 8" x 1¼" | 8 | 1.25 | 7.74 | 0.94 | 9.63 | 0.12 | 0 | 2.36 | 1.02 |
| RI-51.288.0802.11 | 8" x 2" | 8 | 2 | 8.37 | 1.53 | 9.63 | 0.12 | 0 | 2.36 | 1.02 |
| RI-51.288.0803.11 | 8" x 3" | 8 | 3 | 9.08 | 2.53 | 9.63 | 0.12 | 0 | 2.36 | 1.02 |
| RI-51.288.0804.11 | 8" x 4" | 8 | 4 | 9.08 | 3.53 | 9.63 | 0.12 | 0 | 2.36 | 1.02 |
| RI-51.288.1002.11 | 10" x 2" | 10 | 2 | 9.99 | 1.31 | 10.47 | 0.23 | 40 | 3.03 | 1.21 |
| RI-51.288.1003.11 | 10" x 3" | 10 | 3 | 10.78 | 2.31 | 10.47 | 0.23 | 40 | 3.03 | 1.21 |
| RI-51.288.1004.11 | 10" x 4" | 10 | 4 | 10.78 | 3.31 | 10.47 | 0.23 | 40 | 3.03 | 1.21 |
| RI-51.288.1202.11 | 12" x 2" | 12 | 2 | 10.80 | 1.31 | 11.57 | 0.23 | 40 | 3.03 | 1.36 |
| RI-51.288.1203.11 | 12" x 3" | 12 | 3 | 11.55 | 2.31 | 11.57 | 0.23 | 40 | 3.03 | 1.36 |
| RI-51.288.1204.11 | 12" x 4" | 12 | 4 | 11.55 | 3.31 | 11.57 | 0.23 | 40 | 3.03 | 1.36 |

Notes:

1. All dimensions shown are nominal and subject to manufacturing tolerance. OD and minimum wall are determined in accordance with ASTM standards. Drawing shown is an approximation only.
2. Fittings are marked to meet the applicable standards.
3. Some items are subject to availability and will require special order.

* The maximum pressure for gas applications should be calculated based on the applicable local and federal regulations.

Electrofusion Equipment

HST 300 Print+ 2.0/GPS

| Automatic data logging | Operating range, diameters | Power supply | Output current | Output voltage | Weight | Dimensions (W x H x D) |
|---------------------------|----------------------------|------------------------------------|----------------|----------------|--------|------------------------|
| 10,000 welding operations | Up to 1200 mm | 230 V, 50/60 Hz 110 V, 50/60 Hz | max. 110 A | 8 - 48 V | 16 kg | 236 x 295 x 330 mm |

Features:

- GPS
- Bluetooth
- Welding monitoring system
- Standard-compliant ISO 12176 traceability

Note:

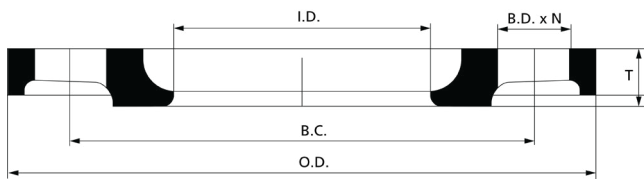
A Non-GPS/Bluetooth version is also available.



Other AGRU Piping Systems Products

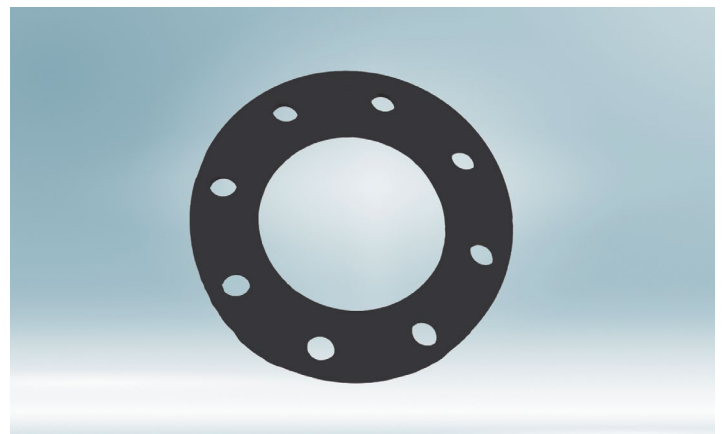
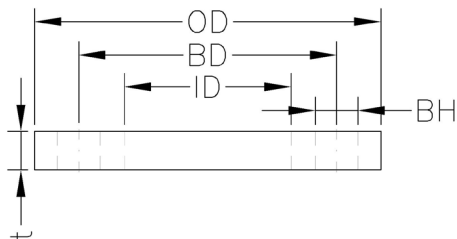
Ductile Iron Backing Rings

- Follows ASTM A536 specification
- Connecting dimensions: AWWA C207; ANSI B16.5, Class 150
- Convolute, fusion-bonded epoxy
- Optional red oxide primer coating for use with HDPE Flange Adapters
- MOP of 335 psi at SDR 7; 3/4" to 12" IPS
- MOP of 200 psi at SDR 11; 2" to 48" IPS.



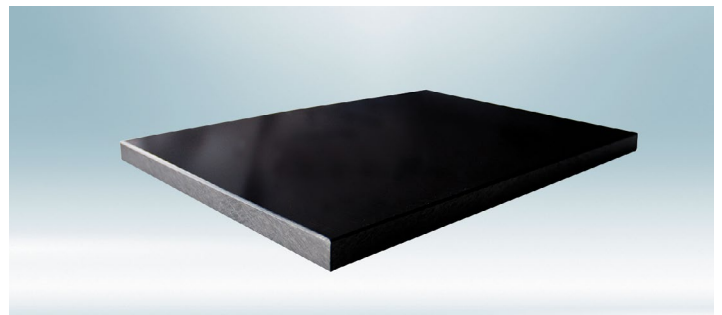
ANSI PP-FRP Backing Rings

- Connecting dimensions: ANSI/ASME B16.5, Class 150
- Contains a steel insert for enhanced strength
- Resistant to UV, heat, chemical, and corrosion
- MOP of 230 psi at SDR 11; 1/2" to 12" IPS
- FM approved.



Semi-Finished Products

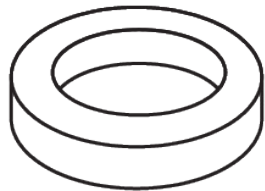
- AGRU now carries black HDPE pipe grade sheet stock and weld rod
- HDPE PE 100/PE4710, approved sheet stock available from 1/2" to 2" IPS thickness
- HDPE PE 100/PE4710, welding rod is available.



PIPING SYSTEMS

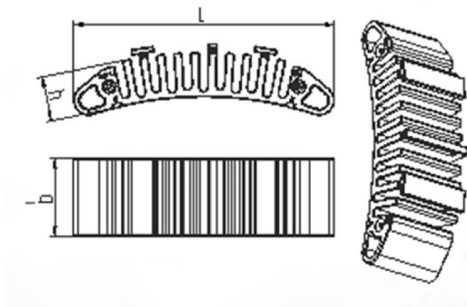
Valve Spacers

- PE valve spacers made with PE 4710
- Size ranging from 2" to 16" IPS with an OD of 3.94" to 20"
- Available in 1" and 2" thickness.



Flex Restraint

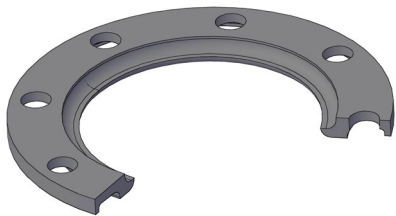
- Made with PE 100-RC
- Flexible electro-socket weldable bar for use on PE 100/PE 100-RC pressure pipes
- Dimension range OD 160 mm – OD 2500 mm
- Creates a rigid fixed-point system to absorb and prevent axial movement.



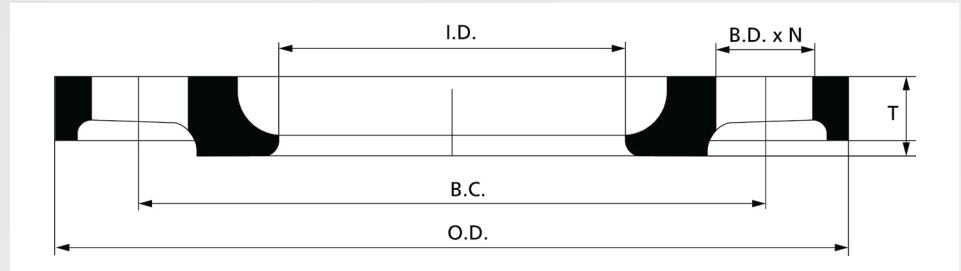
References

1. M. Najafi, A. Habibian, and V. F. Sever, "Durability and Reliability of Large Diameter HDPE Pipe for Water Main Applications." Water Research Foundation. (2015). Accessed online 27 May 2021. https://www.waterrf.org/system/files/resource/2019-07/4485_1.pdf.

Ductile Iron Backing Rings



- Material: ASTM A536, G65-45-12
- Description: Convuluted design with heat fused epoxy for use with HDPE flange adapters
- Meets Requirements: Class 150, Mates with ANSI B16.5 and AWWA C207



SDR 7 (STANDARD DIMENSION RATIO) 335 PSI (WORKING PRESSURE AS 73.4° F)

| IPS Pipe Dia. | Product Code | Outside Dia. (inch) | Inside Dia. (inch) | Flange Thick. (inch) | Bolt Hole No. | Bolt Hole Dia. (inch) | Bolt Hole Circle (inch) | Unit Weight (lbs.) | FM Pressure Rating (psi.) |
|---------------|-----------------------|---------------------|--------------------|----------------------|---------------|-----------------------|-------------------------|--------------------|---------------------------|
| ¾" | RO-BRINGS-DI-R7-00.75 | 3.88 | 1.12 | 0.50 | 4 | 0.63 | 2.75 | 1.10 | - |
| 1" | RO-BRINGS-DI-R7-01.00 | 4.25 | 1.39 | 0.56 | 4 | 0.63 | 3.13 | 1.60 | - |
| 1 ¼" | RO-BRINGS-DI-R7-01.25 | 4.63 | 1.73 | 0.63 | 4 | 0.63 | 3.50 | 1.90 | - |
| 1 ½" | RO-BRINGS-DI-R7-01.50 | 5.00 | 1.98 | 0.69 | 4 | 0.63 | 3.88 | 2.00 | - |
| 2" | RO-BRINGS-DI-R7-02.00 | 6.00 | 2.60 | 0.75 | 4 | 0.75 | 4.75 | 2.80 | - |
| 3" | RO-BRINGS-DI-R7-03.00 | 7.50 | 3.75 | 0.85 | 4 | 0.75 | 6.00 | 4.00 | - |
| 4" | RO-BRINGS-DI-R7-04.00 | 9.00 | 4.75 | 0.92 | 8 | 0.75 | 7.50 | 5.60 | - |
| 6" | RO-BRINGS-DI-R7-06.00 | 11.00 | 6.88 | 1.00 | 8 | 0.88 | 9.50 | 8.00 | - |
| 8" | RO-BRINGS-DI-R7-08.00 | 13.50 | 8.88 | 1.12 | 8 | 0.88 | 11.75 | 12.5 | - |
| 10" | RO-BRINGS-DI-R7-10.00 | 16.00 | 11.00 | 1.22 | 12 | 1.00 | 14.25 | 16.8 | - |
| 12" | RO-BRINGS-DI-R7-12.00 | 19.00 | 13.15 | 1.48 | 12 | 1.00 | 17.00 | 26.8 | - |

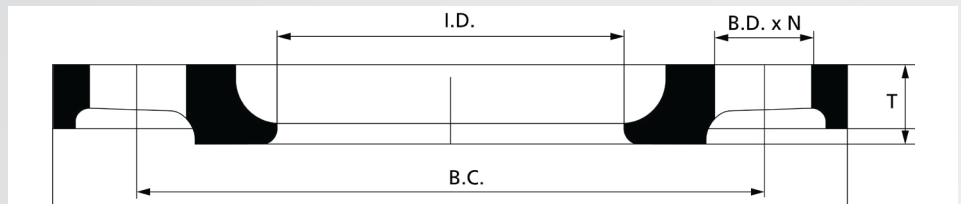
Notes:

1. All dimensions shown are nominal and subject to manufacturing tolerance. OD and minimum wall are determined in accordance with ASTM and ANSI standards. Drawing shown is an approximation only.
2. Back-up Rings are marked to meet the applicable standards.
3. The maximum pressure for gas applications should be calculated based on the applicable local and federal regulations.
4. Only fittings with a FM pressure rating are FM approved.

Ductile Iron Backing Rings



- Material: ASTM A536, G65-45-12
- Description: Convoluted design with heat fused epoxy for use with HDPE flange adapters
- Meets Requirements: Class 150, Mates with ANSI B16.5 and AWWA C207
- FM Approval Class 1613



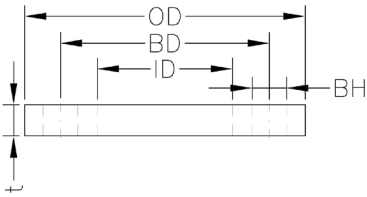
SDR 11 (STANDARD DIMENSION RATIO) 200 PSI (WORKING PRESSURE AT 73.4° F)

| IPS Pipe Dia. | Product Code | Outside Dia. (inch) | Inside Dia. (inch) | Flange Thick. (inch) | Bolt Hole No. | Bolt Hole Dia. (inch) | Bolt Hole Circle (inch) | Unit Weight (lbs.) | FM Pressure Rating (psi.) |
|---------------|------------------------|---------------------|--------------------|----------------------|---------------|-----------------------|-------------------------|--------------------|---------------------------|
| 2" | RO-BRINGS-DI-R11-02.00 | 6.00 | 2.60 | 0.52 | 4 | 0.75 | 4.75 | 2.80 | 200 |
| 3" | RO-BRINGS-DI-R11-03.00 | 7.50 | 3.75 | 0.55 | 4 | 0.75 | 6.00 | 4.00 | 200 |
| 4" | RO-BRINGS-DI-R11-04.00 | 9.00 | 4.75 | 0.60 | 8 | 0.75 | 7.50 | 5.60 | 200 |
| 6" | RO-BRINGS-DI-R11-06.00 | 11.00 | 6.88 | 0.67 | 8 | 0.88 | 9.50 | 8.00 | 200 |
| 8" | RO-BRINGS-DI-R11-08.00 | 13.50 | 8.88 | 0.90 | 8 | 0.88 | 11.75 | 12.5 | 200 |
| 10" | RO-BRINGS-DI-R11-10.00 | 16.00 | 11.00 | 1.05 | 12 | 1.00 | 14.25 | 16.8 | 200 |
| 12" | RO-BRINGS-DI-R11-12.00 | 19.00 | 13.15 | 1.35 | 12 | 1.00 | 17.00 | 26.8 | 200 |
| 14" | RO-BRINGS-DI-R11-14.00 | 21.00 | 14.40 | 1.45 | 12 | 1.13 | 18.75 | 36.0 | 200 |
| 16" | RO-BRINGS-DI-R11-16.00 | 23.50 | 16.40 | 1.72 | 16 | 1.13 | 21.25 | 44.0 | 200 |
| 18" | RO-BRINGS-DI-R11-18.00 | 25.00 | 18.40 | 1.75 | 16 | 1.25 | 22.75 | 49.5 | 200 |
| 20" | RO-BRINGS-DI-R11-20.00 | 27.50 | 20.50 | 1.90 | 20 | 1.25 | 25.00 | 61.0 | - |
| 22" | RO-BRINGS-DI-R11-22.00 | 29.50 | 22.50 | 2.00 | 20 | 1.38 | 27.25 | 73.0 | - |
| 24" | RO-BRINGS-DI-R11-24.00 | 32.00 | 24.50 | 2.23 | 20 | 1.38 | 29.50 | 89.0 | - |
| 28" | RO-BRINGS-DI-R11-28.00 | 36.50 | 28.60 | 2.48 | 28 | 1.38 | 34.00 | 124.0 | - |
| 30" | RO-BRINGS-DI-R11-30.00 | 38.75 | 30.60 | 2.68 | 28 | 1.38 | 36.00 | 148.0 | - |
| 32" | RO-BRINGS-DI-R11-32.00 | 41.75 | 32.60 | 2.74 | 28 | 1.63 | 38.50 | 178.0 | - |
| 36" | RO-BRINGS-DI-R11-36.00 | 46.00 | 36.60 | 3.15 | 32 | 1.63 | 42.75 | 238.0 | - |
| 42" | RO-BRINGS-DI-R11-42.00 | 53.00 | 42.60 | 3.55 | 36 | 1.63 | 49.50 | 345.0 | - |
| 48" | RO-BRINGS-DI-R11-48.00 | 59.50 | 48.60 | 3.95 | 44 | 1.63 | 56.00 | 458.0 | - |

Notes:

1. All dimensions shown are nominal and subject to manufacturing tolerance. OD and minimum wall are determined in accordance with ASTM standards. Drawing shown is an approximation only.
2. Back-up Rings are marked to meet the applicable standards.
3. Only fittings with a FM pressure rating are FM approved.
4. The maximum pressure for gas applications should be calculated based on the applicable local and federal regulations.

ANSI PP-FRP Steel Insert Backing Rings



- For use in highly corrosive environments
- Longer service life than DI backing rings
- Connecting dimensions: ANSI/ASME B16.5, class 150



SDR 11 (STANDARD DIMENSION RATIO) 200 PSI, GAS* (WORKING PRESSURE AT 73.4° F)

| Product Code | Nominal Diameter (inch) | BH (inch) | t (inch) | Diameter (inch) | | |
|-------------------|-------------------------|-----------|----------|-----------------|-------|-------|
| | | | | OD | BD | ID |
| RO-14.013.0020.11 | ½" | 0.63 | 0.47 | 3.74 | 2.38 | 1.12 |
| RO-14.013.0025.11 | ¾" | 0.63 | 0.47 | 4.02 | 2.75 | 1.36 |
| RO-14.013.0032.11 | 1" | 0.63 | 0.63 | 4.49 | 3.12 | 1.68 |
| RO-14.013.0040.11 | 1¼" | 0.63 | 0.63 | 5.12 | 3.50 | 2.03 |
| RO-14.013.0050.11 | 1½" | 0.63 | 0.71 | 5.24 | 3.88 | 2.46 |
| RO-14.013.0063.11 | 2" | 0.79 | 0.71 | 6.38 | 4.75 | 3.12 |
| RO-14.013.0075.11 | 2½" | 0.79 | 0.71 | 7.24 | 5.50 | 3.67 |
| RO-14.013.0090.11 | 3" | 0.79 | 0.71 | 7.64 | 6.00 | 4.41 |
| RO-14.013.0110.11 | 4" | 0.79 | 0.71 | 9.02 | 7.50 | 5.27 |
| RO-14.013.0160.11 | 6" | 0.87 | 0.94 | 11.14 | 9.50 | 7.06 |
| RO-14.013.0200.11 | 8" | 0.87 | 0.94 | 13.58 | 11.75 | 9.33 |
| RO-14.013.0250.11 | 10" | 0.98 | 1.06 | 16.22 | 14.25 | 11.36 |
| RO-14.013.0315.11 | 12" | 0.98 | 1.29 | 19.17 | 17.00 | 13.32 |
| RO-14.013.0355.11 | 14" | 1.10 | 1.60 | 21.00 | 18.50 | 14.80 |
| RO-14.013.0400.11 | 16" | 1.10 | 1.70 | 23.70 | 21.00 | 16.90 |
| RO-14.013.0500.11 | 18" | 1.20 | 1.80 | 27.50 | 25.00 | 21.00 |

Notes:

1. All dimensions shown are nominal and subject to manufacturing tolerance. OD and bolt hole size and location are determined in accordance with ANSI standards. Drawing shown is an approximation only.
2. The maximum pressure for gas applications should be calculated based on the applicable local and federal regulations.
3. Back-up Rings are marked to meet the applicable standards.

AGRU Flex Restraint

Application:

- Create a rigid system



- Fix concrete ballast blocks



- Create wall anchors



AGRU Flex Restraint is a flexible bar for electrofusion welding onto PE 4710/PE 100/PE 100-RC pressure pipes to absorb high forces and prevent axial movement. This specialized fitting is placed onto the pipe with a tensioning belt and homogeneously electrofusion welded in accordance with AGRU installation guidelines based on DVS 2207-1.

AGRU Flex Restraint resists forces of up to 40 kN in an axial direction and can work in conjunction with other AGRU Flex Restraints for higher shear strength. Flex Restraint is suitable for creating rigid systems, fixing concrete ballast blocks, and creating wall anchors.

Product: AGRU Flex Restraint

Product Number: RI-70.169.0233.70

Material: PE 100-RC

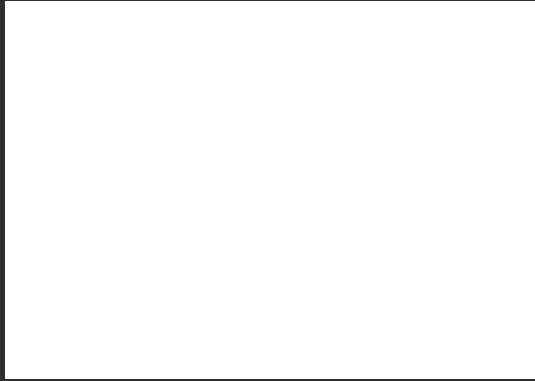
Shear strength: 40 kN

MAIN DIMENSIONS

| | |
|--------|-------|
| L (mm) | 234.0 |
| B (mm) | 70.0 |
| H (mm) | 40.0 |







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Illustrations are generic and for reference only.

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Revision Date: March 18, 2026

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Together. #AGRU