AGRULINE HDPE Fittings

SUSTAINABLE, RESILIENT, AND LONG-LASTING FITTINGS AND ACCESSORIES FOR YOUR PIPING SYSTEM

2025

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 offers an unmatched level of dependability across many industries.

AGRULINE Pipe Fittings Overview

AGRU America manufactures high-density polyethylene (HDPE) pipe fittings from the newest generation of HDPE resins available in the market compliant with the Plastic Pipe Institute, the PE100+ Association, ASTM, ISO, and NSF. These fittings meet a range of project requirements including AWWA C906. HDPE piping systems offer a leak-free solution, the lowest life-cycle cost, ease of installation, and superior flow characteristics—all the while keeping its lightweight and flexible properties when compared with other piping materials. AGRU HDPE piping systems are produced in U.S. 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.

AGRU: The Plastics Experts

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

Low-Maintenance Piping Systems

- Welded HDPE piping systems are considered "leak-free" and homogenous in nature when compared with other joining methods required by other alternative legacy materials such as ductile iron, steel, and concrete
- The AGRULINE piping system is proven with decades of in-service pipelines worldwide
- 100+ year design life (1).

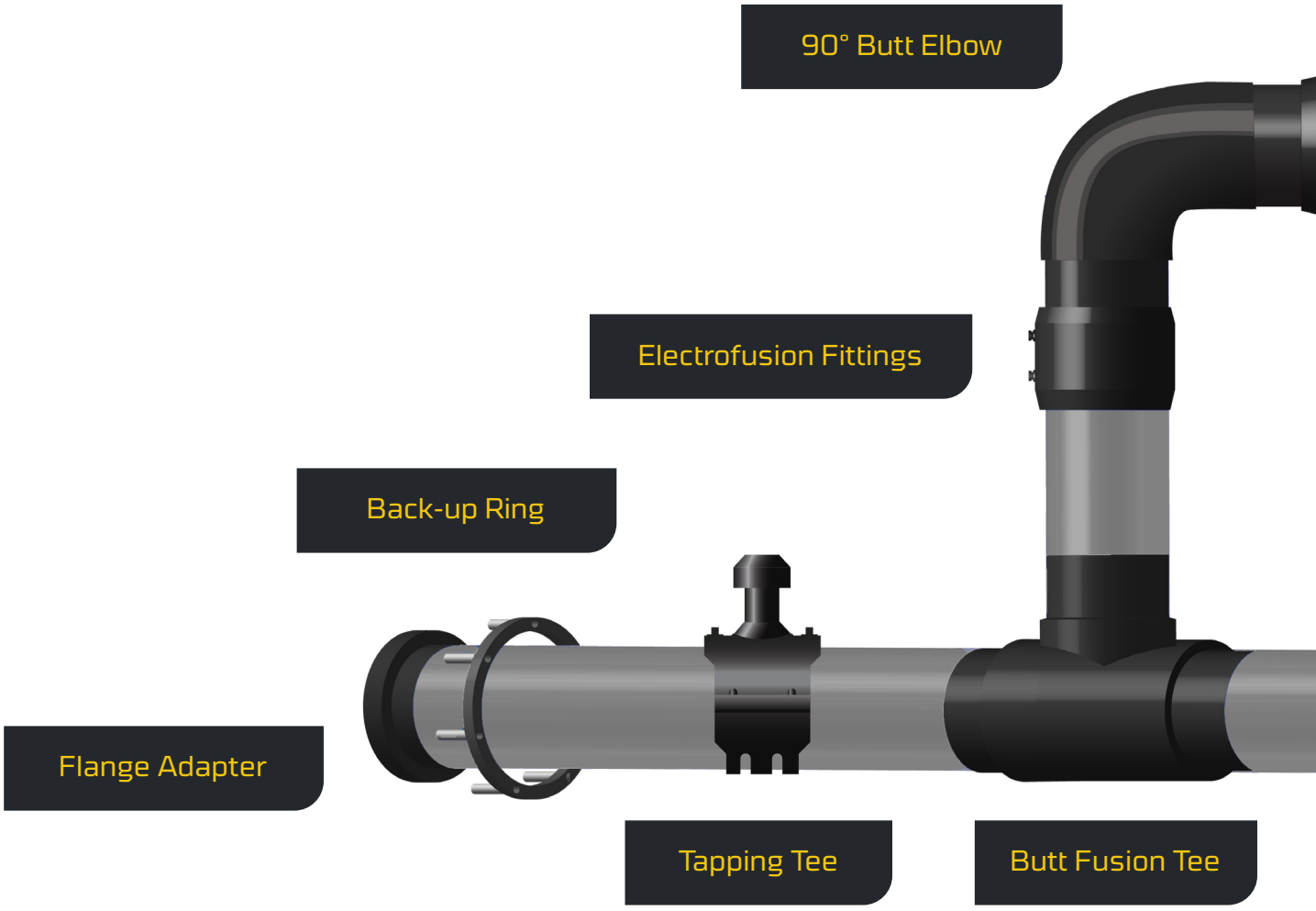
Efficient Solutions

- 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

- PE100, PE 100-RC, and PE 4710 certified materials all listed in PPI's TR-4 listing
- Suitable for high pressure applications
- Non-corrosive with high chemical resistance
- For higher resistance to slow crack growth, and the longest life, request fittings made from PE 100-RC
- Products are marked in accordance with certifications or standards, including ASTM D3261, ASTM D2513, ASTM F2880, NSF 61, FM Approval, and AWWA C906.

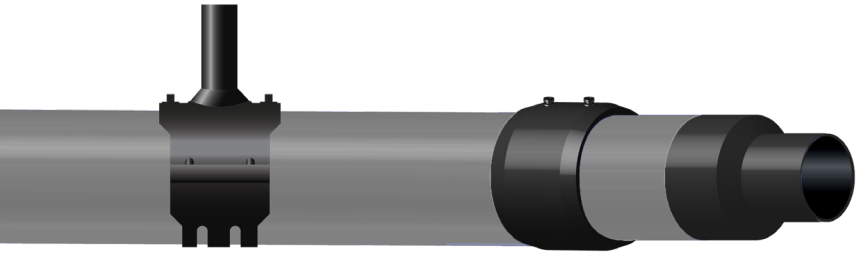
AGRULINE Pipe Fittings



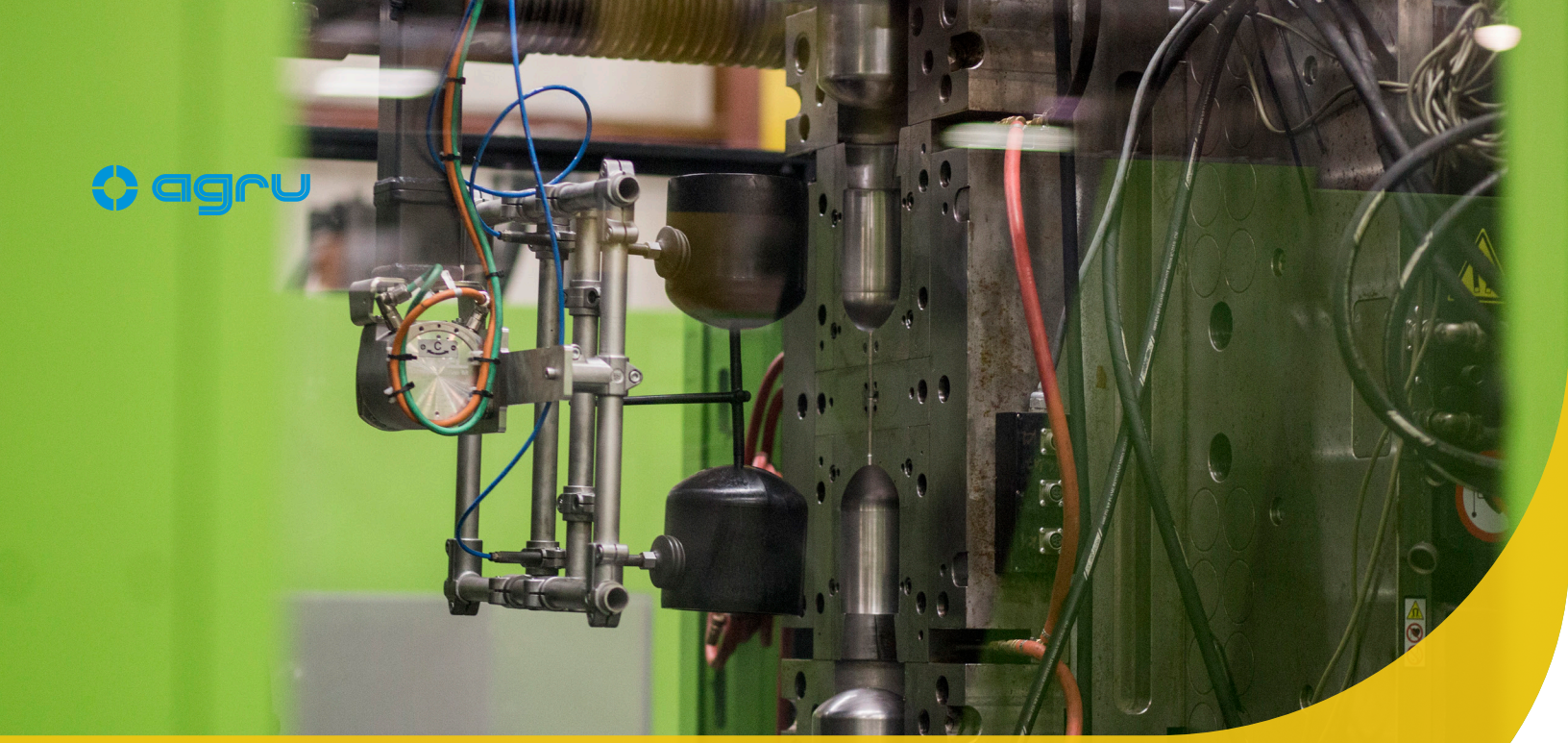
End Cap

45° Butt Elbow

Branch Saddle



Butt Fusion Reducer



AGRULINE Fittings for Unique and Specialized Applications

High-Pressure Applications

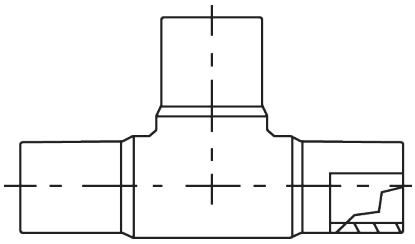
AGRULINE fittings are available in SDR 7 and 9 molded fittings for high-pressure applications, including 10- and 12-inch fittings. These fittings are fully pressure rated and feature higher wall thickness that can withstand pressures of up to 335 PSI in water applications.

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.

AGRULINE HDPE Fittings

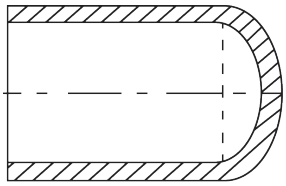
Butt Fusion Tees

- Injection molded from PE 100-RC or 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-RC or 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.



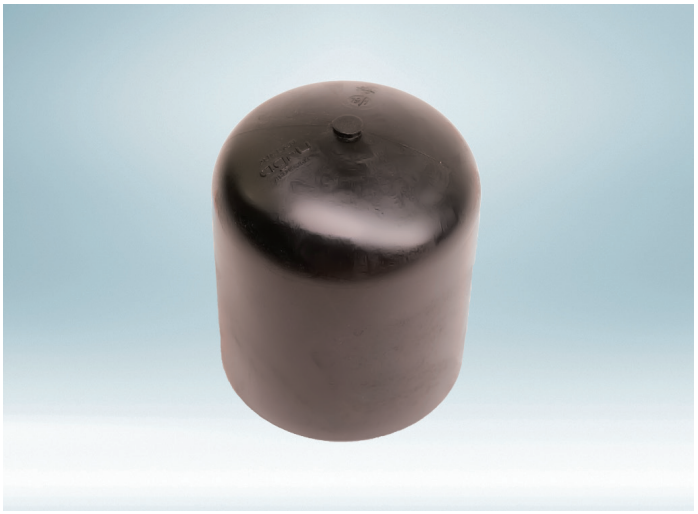
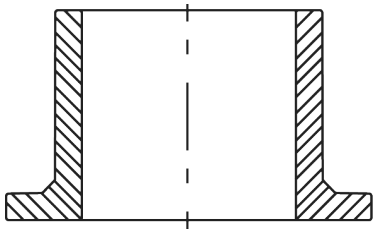


TABLE 1. AGRULINE HDPE FITTINGS GENERAL SPECIFICATIONS	
A	ASTM D2513-20
B	ASTM D3261-16
C	NSF/ANSI/CAN 61-2020
D	ANSI/AWWA C906-21 (PE Pressure Pipe and Fittings, 4 In. through 65 In. (100 mm through 1,650 mm), for Waterworks)
E	FM-1613-2/2017
F	ASTM F2880-21

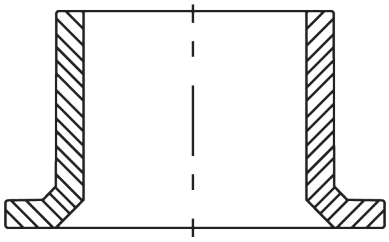
Butt Fusion Flange Adapters

- Injection molded or machined from PE 100-RC or 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 and/or E.



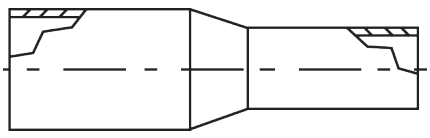
Beveled Flange Adapters

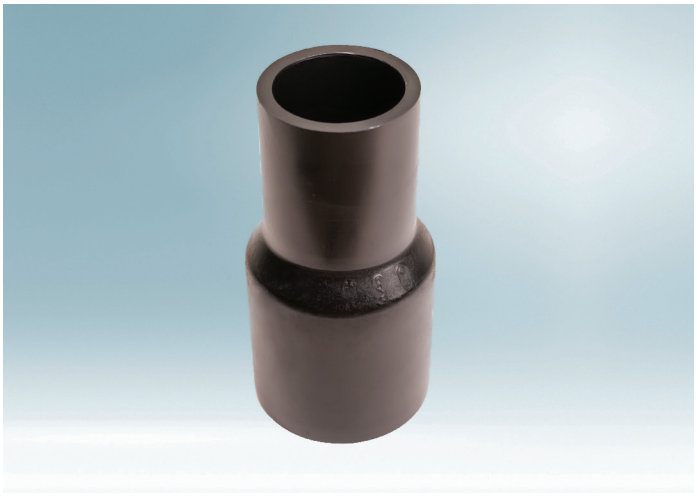
- Injection molded or machined from PE 100-RC or PE 4710 material
- 2" IPS to 18" IPS
- Select configurations follow specifications A, B, C, D, E, and/or F
- Available in SDR 11 and SDR 17.



Butt Fusion Reducers

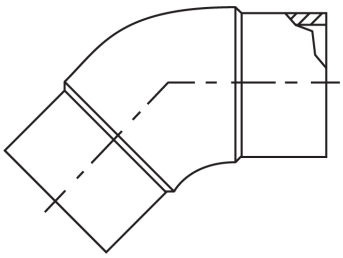
- Injection molded or machined from PE 100-RC or PE 4710 material
- Available in SDR 7, SDR 9, SDR 11, and SDR 17
- Size range: 2" x 1" IPS through 12" x 10" IPS
- Select configurations follow specifications A, B, C, D, and/or E.





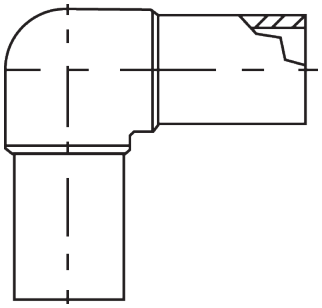
Butt Fusion 45 Degree Elbows

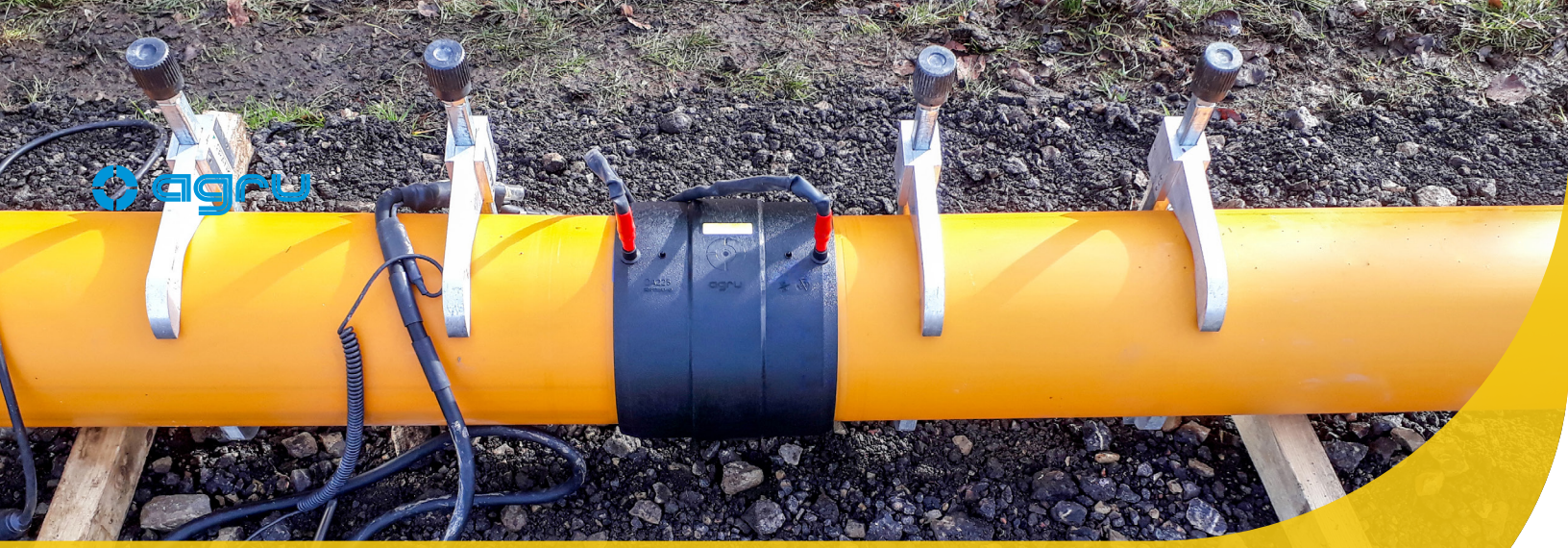
- Injection molded from PE 100-RC or PE 4710 material
- Available in SDR 7, SDR 9, SDR 11, and SDR 17
- Size range: 3/4" IPS through 12" IPS
- All fittings follow specifications A, B, and C
- Select configurations also follow specification D and/or E.



Butt Fusion 90 Degree Elbows

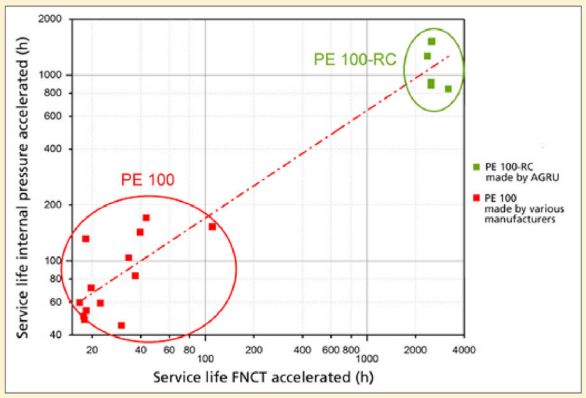
- Injection molded from PE 100/PE 4710 material
- Available in SDR 7, SDR 9, SDR 11, and SDR 17
- Size range: 3/4" IPS through 12" IPS
- All fittings follow specifications A, B, and C
- Select configurations also follow specification D and/or E.





AGRULINE Electrofusion Fittings Easier and Safer Installations

In addition to its HDPE butt fusion fittings, AGRULINE includes a line of electrofusion fittings made with PE 100-RC. This modern resin allows 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).



Source: HESSEL Ingenieurtechnik GmbH

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 electrofusion welding. The electrofusion welding method uses a specialized fitting with a fully embedded heating wire around the welding zone that ensures precise welding 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.

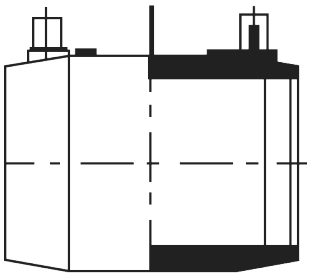
Other benefits:

- 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.

AGRULINE Electrofusion Fittings

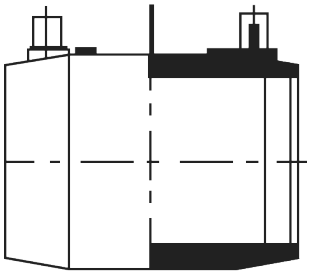
Monofilar Electrofusion Couplers

- Injection molded from PE 100-RC 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.



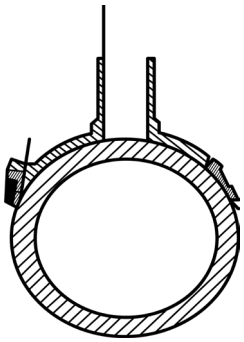
Bifilar Electrofusion Couplers

- Injection molded from PE 100-RC and NSF-61 approved resins
- Fusion barcode and traceability barcodes on each fitting
- 4.0 mm fusion connectors
- MOP of 125 psi at SDR 17 to SDR 33 for water applications*; 18" IPS to 63" IPS
- MOP of 200 psi at SDR 11 for water applications*; 18" IPS to 28" IPS.



Electrofusion Branch Saddles

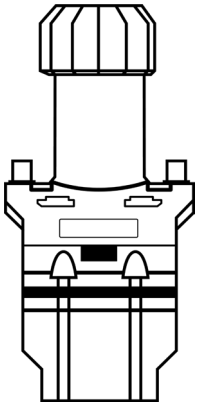
- Injection molded from PE100/PE 4710 material and NSF-61 approved resins
- Barcoded to facilitate automated fusion and traceability
- Piano hinges to allow for the easy opening of the under saddle



- Fixing tab to assist in holding the fittings 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 Tapping Tees

- Injection molded from PE100/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 fittings in place until it is clamped



- Electrofusion Weldcap is an available option
- 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 Equipment

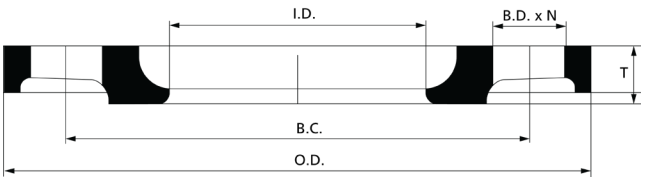
- AGRU is the exclusive distributor of 100 V and 230 V HÜRNER electrofusion equipment, including the latest HCU 300 and the HST 300.
- HÜRNER equipment allows exact welding at a fraction of the time and effort of traditional methods.
- Electrofusion fittings of up to 63" IPS are designed to work seamlessly with the processors with ISO-compliant barcodes.
- Electrofusion processors equipped with GPS and Bluetooth are also available as well as supplementary equipment such as scrapers.
- The HCU 300 (pictured right) model includes a black plastic case for easy and protective storage.

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

Other AGRULINE Fittings

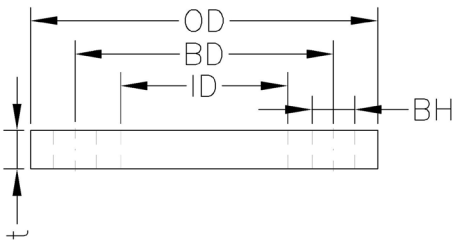
Ductile Iron Back-up Rings

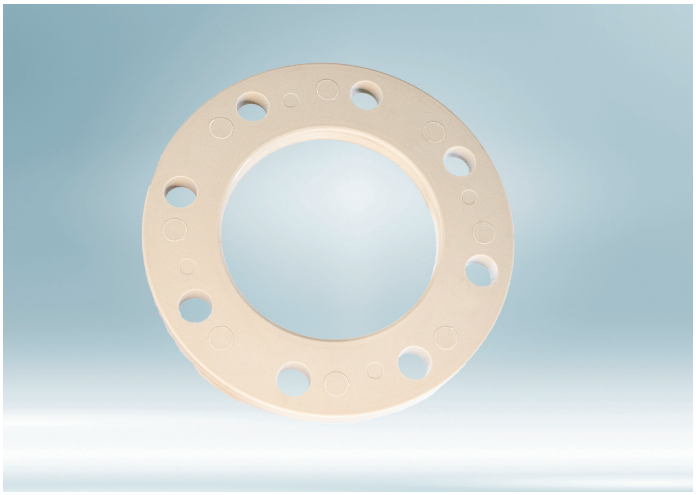
- Follows ASTM A536 specification
- Connecting dimensions: AWWA C207; ANSI B16.5, Class 150
- Convoluted, fusion-bonded epoxy
- Optional red oxide primer coating for use with HDPE Flange Adapters
- MOP of 335 psi at SDR 7; ¾" to 12" IPS
- MOP of 200 psi at SDR 11; 2" to 48" IPS.



PP-FRP Back-up Rings

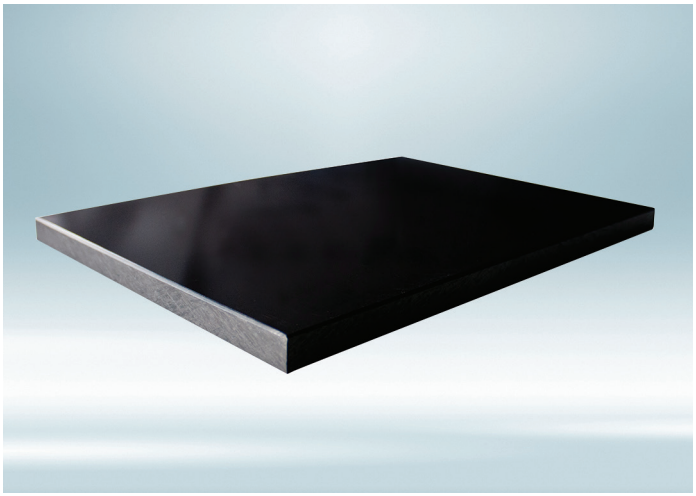
- Connecting dimensions: ANSI/ASME B16.5, Class 150
- Contains a steel insert for enhanced strength
- Resistant to UV, heat, chemical, and corrosion
- MOP of 200 psi at SDR 11; ½" to 12" IPS.





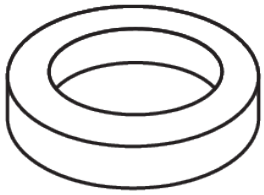
Semi-Finished Products

- AGRU now carries black HDPE pipe grade sheet stock and weld rod
- HDPE PE100/PE4710, approved sheet stock in available from 1/2" to 2" IPS thickness
- HDPE PE100/PE4710, welding rod is available.



Valve Spacers

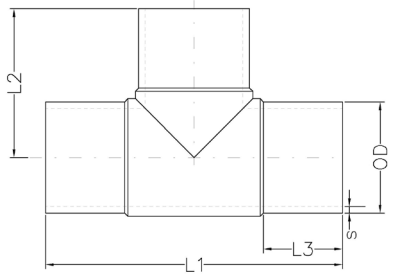
- PE valve spacers made with PE4710
- Size ranging from 2" to 16" IPS
- Available in 1- and 2-inch thickness.



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.

Butt Fusion IPS Tees



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

FM APPROVED

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

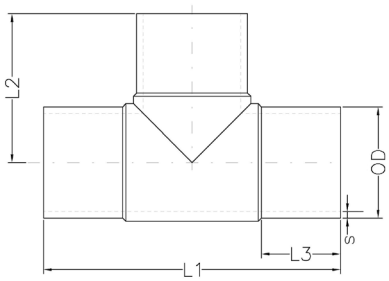
Product Code	Nominal Diameter (inch)	L1 (inch)	L2 (inch)	L3 (inch)	s (inch) Min Wall	OD (inch)	FM Pressure Rating (psi.)
FF-51.115.0002.07	2″ IPS	9.69	4.88	2.87	0.339	2.375	335
FF-51.115.0003.07	3″ IPS	11.61	5.79	3.54	0.500	3.500	335
FF-51.115.0004.07	4″ IPS	13.78	6.89	3.94	0.643	4.500	335
FF-51.115.0006.07	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 a FM pressure rating are FM approved.

Butt Fusion IPS Tees



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

FM APPROVED

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

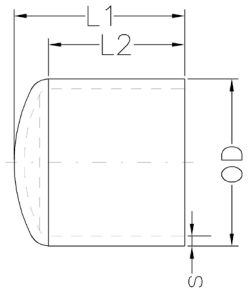
Product Code	Nominal Diameter (inch)	L1 (inch)	L2 (inch)	L3 (inch)	s (inch) Min Wall	OD (inch)	FM Pressure Rating (psi.)
FF-51.115.0075.11	¾" IPS	5.12	2.56	1.65	0.100	1.050	-
FF-51.115.0001.11	1" IPS	5.67	2.83	1.77	0.120	1.320	-
FF-51.115.0125.11	1¼" IPS	6.61	3.31	2.01	0.150	1.660	-
FF-51.115.0150.11	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 a FM pressure rating are FM approved.

Butt Fusion IPS End Caps



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

FM APPROVED

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

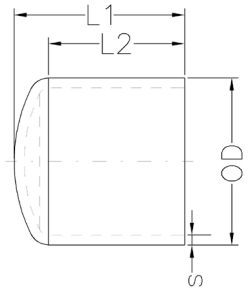
Product Code	Nominal Diameter (inch)	L1 (inch)	L2 (inch)	s (inch) Min Wall	OD (inch)	FM Pressure Rating (psi.)
FF-51.314.0002.07	2" IPS	3.86	3.15	0.339	2.38	335
FF-51.314.0003.07	3" IPS	4.61	3.58	0.500	3.50	335
FF-51.314.0004.07	4" IPS	5.24	3.89	0.643	4.50	335
FF-51.314.0006.07	6" IPS	6.77	4.72	0.946	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 a FM pressure rating are FM approved.

Butt Fusion IPS End Caps



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

FM APPROVED

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

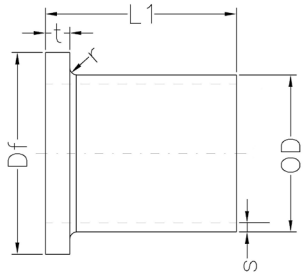
Product Code	Nominal Diameter (inch)	L1 (inch)	L2 (inch)	s (inch) Min Wall	OD (inch)	FM Pressure Rating (psi.)
FF-51.114.0075.11	¾" IPS	2.05	1.77	0.10	1.05	-
FF-51.114.0001.11	1" IPS	2.20	1.77	0.12	1.32	-
FF-51.114.0125.11	1¼" IPS	2.52	1.99	0.15	1.66	-
FF-51.114.0150.11	1½" IPS	2.83	2.20	0.17	1.90	-
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 a FM pressure rating are FM approved.

Butt Fusion IPS Flange Adapters



- Molded from black PE 100 / 4710 resin & NSF-61 certified
- Complies with the following product standards: ASTM D2513, D3261, D3350, F2880, and AWWA C906
- 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	7.400	0.34	2.380	3.85	0.49	0.19	-
FF-51.312.0003.07	3" IPS	6.030	0.50	3.500	5.00	0.84	0.28	-
FF-51.312.0004.07	4" IPS	6.330	0.64	4.500	6.54	1.00	0.28	-
FF-51.312.0006.07	6" IPS	7.247	0.95	6.630	8.60	1.00	0.28	-
FF-51.312.0008.07	8" IPS	8.105	1.23	8.625	10.70	1.12	0.35	-
FF-51.312.0010.07	10" IPS	11.980	1.54	10.75	12.75	1.54	0.35	-

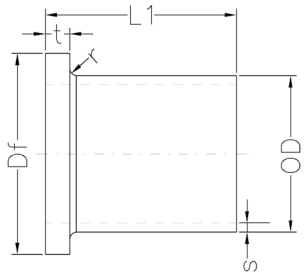
SDR 9 (STANDARD DIMENSION RATIO) 250 PSI (WORKING PRESSURE AS 73.4° F)

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	-
FF-51.312.0003.09	3" IPS	6.03	0.39	3.50	5.00	0.84	0.28	-
FF-51.312.0004.09	4" IPS	6.33	0.50	4.50	6.54	1.00	0.28	-
FF-51.312.0006.09	6" IPS	7.247	0.74	6.63	8.60	1.00	0.28	-
FF-51.312.0008.09	8" IPS	8.105	0.96	8.625	10.70	1.12	0.35	-
FF-51.312.0010.09	10" IPS	11.98	1.19	10.75	12.75	1.54	0.35	-

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 a FM pressure rating are FM approved.

Butt Fusion IPS Flange Adapters



- Molded from black PE 100 / 4710 resin & NSF-61 certified
- Complies with the following product standards: ASTM D2513, D3261, D3350, F2880, and AWWA C906
- Made in the USA
- FM Approval Class 1613

FM APPROVED

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

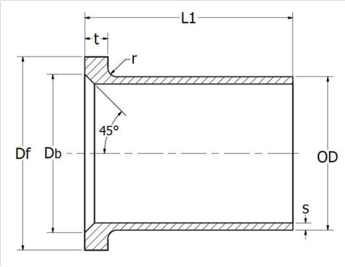
Product Code	Nominal Diameter (inch)	L1 (inch)	s (inch) Wall	OD (inch)	Df (inch)	t (inch) Wall	r (inch)	FM Pressure Rating (psi.)
FF-51.112.0075.11	¾" IPS	4.02	0.09	1.05	1.85	0.39	0.12	-
FF-51.112.0001.11	1" IPS	4.02	0.12	1.32	2.36	0.39	0.12	-
FF-51.112.0125.11	1¼" IPS	4.02	0.15	1.66	2.80	0.39	0.20	-
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	-
FF-51.112.0016.11	16" IPS	13.00	1.45	15.93	20.0	1.77	0.43	-
FF-51.112.0018.11	18" IPS	13.00	1.64	17.92	21.38	1.89	0.43	-

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 a FM pressure rating are FM approved.

Butt Fusion IPS Beveled Flange Adapters



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

FM APPROVED

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	TBD	1.50	0.43	-
FF-51.112B45.0016.11	16" IPS	13.0	1.45	15.93	20.0	TBD	1.77	0.43	-
FF-51.112B45.0018.11	18" IPS	13.0	1.64	17.92	21.38	TBD	1.89	0.43	-

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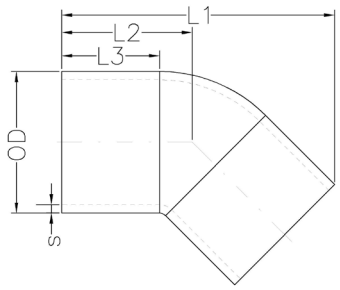
Notes:

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 a FM pressure rating are FM approved.

Butt Fusion IPS 45° Elbows



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

FM APPROVED

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

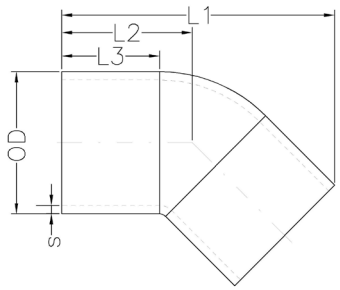
Product Code	Nominal Diameter (inch)	L1 (inch)	L2 (inch)	L3 (inch)	s (inch) Min Wall	OD (inch)	FM Pressure Rating (psi.)
FF-51.110.0002.07	2" IPS	8.28	4.2	2.40	0.339	2.38	335
FF-51.110.0003.07	3" IPS	10.15	5.00	2.50	0.500	3.50	335
FF-51.110.0004.07	4" IPS	10.70	5.07	2.80	0.643	4.50	335
FF-51.110.0006.07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

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)	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	-
FF-51.110.0010.09	10" IPS	20.28	9.10	5.60	1.194	10.75	-
FF-51.110.0012.09	12" IPS	21.93	10.12	5.98	1.417	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 a FM pressure rating are FM approved.

Butt Fusion IPS 45° Elbows



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

FM APPROVED

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

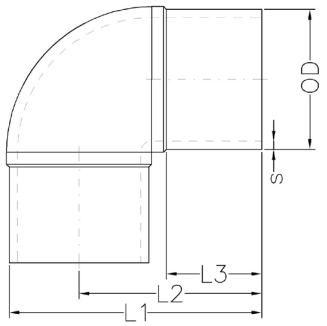
Product Code	Nominal Diameter (inch)	L1 (inch)	L2 (inch)	L3 (inch)	s (inch) Min Wall	OD (inch)	FM Pressure Rating (psi.)
FF-51.110.0075.11	¾" IPS	4.53	2.44	1.77	0.10	1.05	-
FF-51.110.0001.11	1" IPS	4.84	2.56	1.85	0.12	1.32	-
FF-51.110.0125.11	1¼" IPS	5.71	2.99	2.05	0.15	1.66	-
FF-51.110.0150.11	1½" IPS	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 a FM pressure rating are FM approved.

Butt Fusion
IPS
90° Elbows



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

FM APPROVED

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

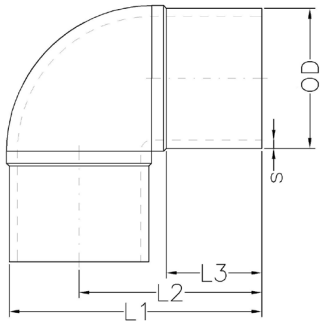
Product Code	Nominal Diameter (inch)	L1 (inch)	L2 (inch)	L3 (inch)	s (inch) Min Wall	OD (inch)	FM Pressure Rating (psi.)
FF-51.113.0002.07	2" IPS	5.75	4.25	2.45	0.339	2.38	335
FF-51.113.0003.07	3" IPS	7.53	5.65	3.05	0.500	3.50	335
FF-51.113.0004.07	4" IPS	8.68	6.13	3.25	0.643	4.50	335
FF-51.113.0006.07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

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)	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	-
FF-51.113.0010.09	10" IPS	18.82	12.64	5.55	1.194	10.75	-
FF-51.113.0012.09	12" IPS	20.83	14.29	5.98	1.417	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 a FM pressure rating are FM approved.

Butt Fusion IPS 90° Elbows



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

FM APPROVED

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	11⁄4" IPS	4.33	3.46	2.05	0.15	1.66	-
FF-51.113.0150.11	11⁄2" 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

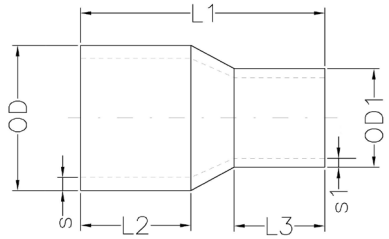
SDR 17 (STANDARD DIMENSION RATIO) 125 PSI (WORKING PRESSURE AS 73.4° F)

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 a FM pressure rating are FM approved.

Butt Fusion IPS Reducers



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

FM APPROVED

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-51.317.0201.07	2x1" IPS	6.15	3.00	1.525	0.340	2.375	0.190	1.315	-
FF-51.317.0302.07	3x2" IPS	7.91	3.46	3.310	0.500	3.500	0.339	2.380	335
FF-51.317.0402.07	4x2" IPS	8.82	3.58	3.310	0.643	4.500	0.339	2.380	335
FF-51.317.0403.07	4x3" IPS	7.99	3.58	3.460	0.643	4.500	0.500	3.500	335
FF-51.317.0604.07	6x4" IPS	9.88	4.21	3.580	0.946	6.630	0.643	4.500	335
FF-51.317.0806.07	8x6" IPS	11.18	5.08	4.210	1.232	8.630	0.946	6.630	335
FF-51.317.1008.07	10x8" IPS	12.83	5.87	5.080	1.536	10.75	1.232	8.630	-

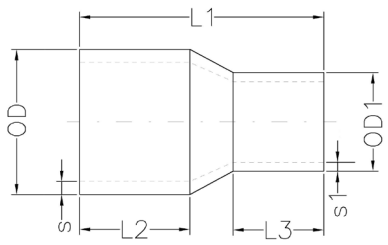
SDR 9 (STANDARD DIMENSION RATIO) 250 PSI (WORKING PRESSURE AS 73.4° F)

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-51.317.0201.09	2x1" IPS	6.15	3.00	1.525	0.26	2.375	0.150	1.315	-
FF-51.317.0302.09	3x2" IPS	7.91	3.46	3.310	0.389	3.500	0.264	2.380	250
FF-51.317.0402.09	4x2" IPS	8.82	3.58	3.310	0.500	4.500	0.264	2.380	250
FF-51.317.0403.09	4x3" IPS	7.99	3.58	3.460	0.500	4.500	0.389	3.500	250
FF-51.317.0604.09	6x4" IPS	9.88	4.21	3.580	0.736	6.630	0.500	4.500	250
FF-51.317.0806.09	8x6" IPS	11.18	5.08	4.210	0.958	8.630	0.736	6.630	250
FF-51.317.1008.09	10x8" IPS	12.83	5.87	5.080	1.194	10.75	0.958	8.630	-

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 a FM pressure rating are FM approved.

Butt Fusion IPS Reducers



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

FM APPROVED

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 a FM pressure rating are FM approved.

Electrofusion IPS Couplings

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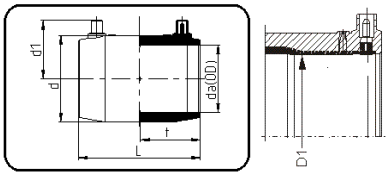

- Molded from black PE 100-RC / 4710 & NSF-61 approved resin
- Complies with the following product standards: ASTM D2513, D3261, D3350, F1055, and AWWA C906
- FM Approval Class 1613

FM APPROVED

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	8.819	5.433	30.6	-
RI-51.173.0016.11	16'' IPS	16.024	11.890	19.646	x	5.945	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

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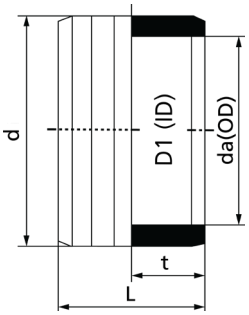


- Molded from black PE 100-RC / 4710 & NSF-61 approved resin
- Complies with the following product standards: ASTM D2513, D3261, D3350, F1055, and AWWA C906

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	-

SDR 26 (STANDARD DIMENSION RATIO) WATER 80 PSI, GAS* (WORKING PRESSURE AT 73.4° F)

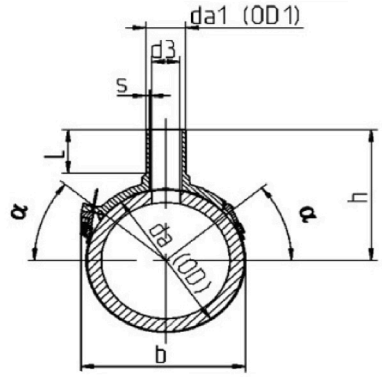
Product Code	Nominal Diameter da OD (inch)	D1 (ID)	L (inch)	d (inch)	t (inch)	Weight (lbs.)	FM Pressure Rating (psi.)
RI-51.373.0054.17	54" IPS	58.465	21.654	x	10.827	295.4	-
RI-51.373.0063.17	63" IPS	68.228	22.441	x	11.220	384.6	-

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.

Electofusion IPS Branch Saddles



- Permanent under saddle.
- Fixing tab for easy installation.

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

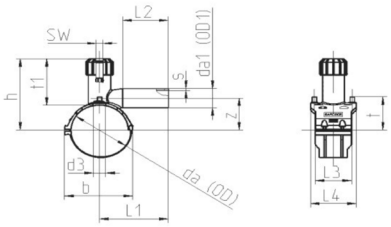
Code	Nominal Diameter [INCH]	da (OD) [INCH]	da1 (OD1) [inch]	h [INCH]	d3 [INCH]	b [INCH]	s [INCH]	alph [°]	L [INCH]	Weight [LBS]
RF-51.288.0301.11	3" x 1"	3	1	5.07	0.69	4.86	0.12	0	2.36	0.40
RF-51.288.0325.11	3" x 1¼"	3	1.25	5.07	0.94	4.86	0.12	0	2.36	0.40
RF-51.288.0302.11	3" x 2"	3	2	5.52	1.53	4.86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

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

Electrofusion IPS Tapping Tees



- Molded from: PE 100 / 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*

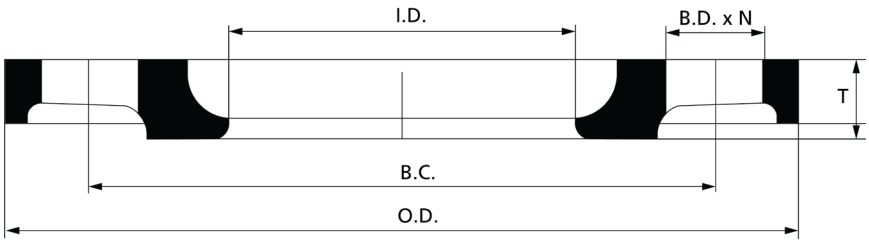
Nominal Diameter	Code	da (OD)	da1 (OD1)	s	z	L1	L2	L3	L4	d3	h	b	SW	t	t1	Weight
in		in	in	in	in	in	in	in	in	in	in	in	in	in	in	lbs
2" / ½" CTS	RI-51.278.0250.12	2	0.5	0.10	2.24	4.72	3.39	4.02	4.69	1.02	6.67	3.90	0.39	2.34	5.43	1.18
2" / 1" CTS	RI-51.278.0201.12	2	1.0	0.12	2.24	5.12	3.62	4.02	4.69	1.02	6.67	3.90	0.39	2.34	5.43	1.21
2" / ¾" 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" / ½" 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" / ¾" 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" / ½" 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" / ¾" 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" / ½" 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" / ¾" 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.

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

Ductile Iron Back-up 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



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	-

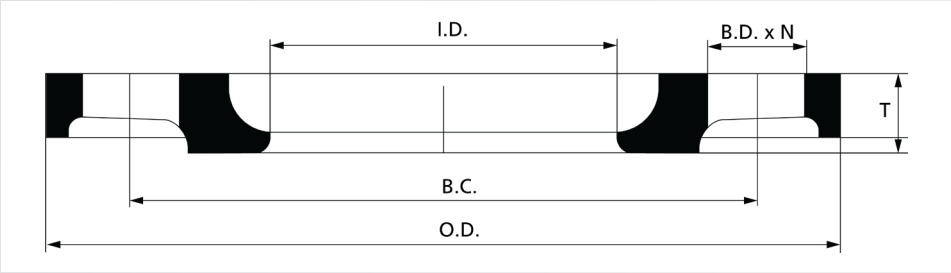
Notes:

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 Back-up 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

FM APPROVED

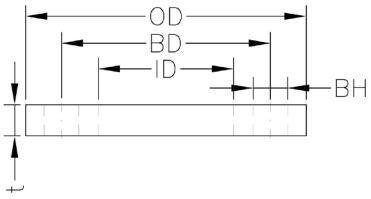


SDR 11 (STANDARD DIMENSION RATIO) 200 PSI (WORKING PRESSURE AT 73.4° F)

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	-
16″	RO-BRINGS-DI-R11-16.00	23.50	16.40	1.72	16	1.13	21.25	44.0	-
18″	RO-BRINGS-DI-R11-18.00	25.00	18.40	1.75	16	1.25	22.75	49.5	-
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 Back-up 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-11.013.0020.11	½"	0.63	0.47	3.74	2.38	1.12
RO-11.013.0025.11	¾"	0.63	0.47	4.02	2.75	1.36
RO-11.013.0032.11	1"	0.63	0.63	4.49	3.12	1.68
RO-11.013.0040.11	1¼"	0.63	0.63	5.12	3.50	2.03
RO-11.013.0050.11	1½"	0.63	0.71	5.24	3.88	2.46
RO-11.013.0063.11	2"	0.79	0.71	6.38	4.75	3.12
RO-11.013.0075.11	2½"	0.79	0.71	7.24	5.50	3.67
RO-11.013.0090.11	3"	0.79	0.71	7.64	6.00	4.41
RO-11.013.0110.11	4"	0.79	0.71	9.02	7.50	5.27
RO-11.013.0160.11	6"	0.87	0.94	11.14	9.50	7.06
RO-11.013.0200.11	8"	0.87	0.94	13.58	11.75	9.33
RO-11.013.0250.11	10"	0.98	1.06	16.22	14.25	11.36
RO-11.013.0315.11	12"	0.98	1.29	19.17	17.00	13.32

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.
4. All Back-up Rings produced at AGRU Austria.

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Revision Date: June 19, 2025

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