

Applications⁽¹⁾

- Pipeline Rehabilitation
- Production Lines
- Injection Lines
- Transfer Lines
- Disposal Lines
- Oil, Gas, Saltwater
- CO₂ and Sour Services

Product Description

- **Sizes** - 2 through 6 inches
- **Pressure** - Up to 3,500 psi (24.1 MPa)
- **E** = High density polyethylene (HDPE) to 140°F (60°C)
- **X** = High temperature polyethylene to 180°F (82°C)
- **High Temperature** and **Custom Designs** available for specific applications
- **Resin System** - Anhydride Cured Epoxy
- **Reinforcement** - Premium Fiberglass (E-Glass)
- **Joining Systems** - Compression Slip Connectors
- **Joint Length** - Up to 9,000 ft (2743 m)
- **Absolute Roughness** - 0.00006 in (0.0015 mm)
- **Manufactured** in an API Q1/ISO 9001 Certified and API 15S Licensed Facility

High Pressure Design

(> 750 psi per API 15S)

- **Regression Curve Reference Time (RCRT)** - 20 years
- **Hoop Stress** - 95% Lower Confidence Limit (LCL) of Long Term Hydrostatic Strength according to ASTM D2992-B
- All products are **factory hydro tested** to 1.5 times the Nominal Pressure Rating (NPR)⁽²⁾
- Recommended **field test pressure** is 1.1 to 1.25 times the maximum operating pressure of the system, with a maximum of 1.25 times the Nominal Pressure Rating (NPR) of the LinePipe⁽²⁾

Benefits

- Corrosion Control
- Reduced Installation Costs
- Improved Flow Efficiency
- Reduced Paraffin & Scale Build-Up
- Reduced Maintenance Cost

Joining System

- **Weld Prep** - Suitable for welding to existing steel lines
- **Welded on Flange** - 300, 600, 900 or 1500 Series ANSI Flanges. Other standard flange drillings available for special order
- **Threaded** - NPT or 8 Round EUE pin or box or API Line Pipe Thread
- **Custom end-preps** are available on request

Fiberspar Connectors are available in:

- Carbon Steel with Electroless Nickel Coated (ENC) wetted parts per ASTM B733
- Coated Carbon Steel with 316L Stainless Steel wetted surface (Pipe to Pipe only)
- 316L Stainless Steel
- Other Corrosion Resistant Alloys (CRA) available upon request

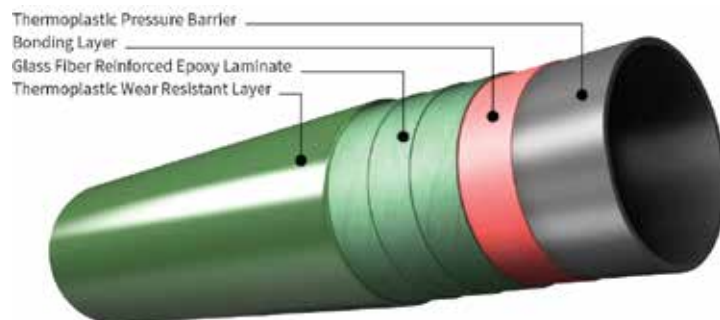
View of Joint Illustrations



Service-End Connector



Pipe-to-Pipe Connector



E Series

Series 750

750 psi (5.2 MPa) API 15S Nominal Pressure Rating (NPR)⁽²⁾

Product & Size	Pipe Dimensions										Minimum Bending Radius		Short-Term Tensile Rating		Reel Capacity	
	Inside Diameter		Outside Diameter		Reinforced Wall Thickness		Min. Reinforced Wall Thickness		Pipe Weight							
	in	mm	in	mm	in	mm	in	mm	lbs/ft	kg/m	in	cm	lbf	kgf	ft	m
FS LP 2" 750 (E)	2.00	51	2.50	63	0.079	2.0	0.071	1.8	0.97	1.44	62	157	3480	1570	9000 ^(A)	2743
FS LP 2 ½" 750 (E)	2.51	64	3.05	77	0.082	2.1	0.074	1.9	1.30	1.93	76	193	4480	2030	6000 ^(A)	1829
FS LP 3" 750 (E)	2.96	75	3.53	90	0.089	2.3	0.080	2.0	1.63	2.43	88	224	5720	2590	6000 ^(B)	1829
FS LP 3 ½" 750 (E)	3.48	88	4.11	104	0.106	2.7	0.096	2.4	2.12	3.16	103	262	7960	3610	4500 ^(B)	1372
FS LP 4" 750 (E)	3.99	101	4.68	119	0.122	3.1	0.109	2.8	2.72	4.05	117	297	10440	4730	4500 ^(C)	1372
FS LP 5" 750 (E)	4.75	121	5.57	141	0.150	3.8	0.135	3.4	3.86	5.74	139	353	15360	6960	2100 ^(C)	640
FS LP 5 ½" 750 (E)	5.20	132	6.16	157	0.157	4.0	0.141	3.6	4.84	7.20	154	391	17840	8090	1200 ^(C)	366
FS LP 6" 750 (E)	5.60	142	6.64	169	0.163	4.1	0.147	3.7	5.56	8.27	166	422	20040	9080	600 ^(C) 1800 ^(D)	183 549

Series 1500

1500 psi (10.3 MPa) API 15S Nominal Pressure Rating (NPR)⁽²⁾

Product & Size	Pipe Dimensions										Minimum Bending Radius		Short-Term Tensile Rating		Reel Capacity	
	Inside Diameter		Outside Diameter		Reinforced Wall Thickness		Min. Reinforced Wall Thickness		Pipe Weight							
	in	mm	in	mm	in	mm	in	mm	lbs/ft	kg/m	in	cm	lbf	kgf	ft	m
FS LP 2" 1,500 (E)	1.89	48	2.46	63	0.111	2.8	0.100	2.5	1.15	1.71	62	157	4760	2150	9000 ^(A)	2743
FS LP 2 ½" 1,500 (E)	2.37	60	3.04	77	0.140	3.5	0.126	3.2	1.72	2.55	76	193	7480	3390	9000 ^(B)	2743
FS LP 3" 1,500 (E)	2.82	72	3.52	90	0.134	3.4	0.121	3.1	2.06	3.07	88	224	8440	3820	4500 ^(A)	1372
FS LP 3 ½" 1,500 (E)	3.33	84	4.13	105	0.161	4.1	0.145	3.7	2.82	4.19	103	262	11920	5400	4500 ^(B)	1372
FS LP 4" 1,500 (E)	3.75	95	4.63	118	0.178	4.5	0.160	4.1	3.46	5.15	116	295	14880	6740	4500 ^(C)	1372
FS LP 5" 1,500 (E)	4.52	115	5.57	141	0.218	5.5	0.196	5.0	5.02	7.47	139	353	22040	9990	2100 ^(C)	640
FS LP 5 ½" 1,500 (E)	5.00	127	6.15	156	0.248	6.3	0.223	5.7	6.15	9.16	154	391	27720	12570	1200 ^(C)	366
FS LP 6" 1,500 (E)	5.60	142	6.83	173	0.262	6.7	0.236	6.0	7.34	10.92	171	434	32720	14840	600 ^(C) 1800 ^(D)	183 549

Series 2250

2250 psi (15.5 MPa) API 15S Nominal Pressure Rating (NPR)⁽²⁾

Product & Size	Pipe Dimensions										Minimum Bending Radius		Short-Term Tensile Rating		Reel Capacity	
	Inside Diameter		Outside Diameter		Reinforced Wall Thickness		Min. Reinforced Wall Thickness		Pipe Weight							
	in	mm	in	mm	in	mm	in	mm	lbs/ft	kg/m	in	cm	lbf	kgf	ft	m
FS LP 4" 2,250 (E)	3.57	91	4.72	120	0.273	6.9	0.246	6.2	4.76	7.08	118	300	22800	10340	3000 ^(C)	914

Series 2500

2500 psi (17.2 MPa) API 15S Nominal Pressure Rating (NPR)⁽²⁾

Product & Size	Pipe Dimensions										Minimum Bending Radius		Short-Term Tensile Rating		Reel Capacity	
	Inside Diameter		Outside Diameter		Reinforced Wall Thickness		Min. Reinforced Wall Thickness		Pipe Weight							
	in	mm	in	mm	in	mm	in	mm	lbs/ft	kg/m	in	cm	lbf	kgf	ft	m
FS LP 2" 2,500 (E)	1.89	48	2.68	68	0.181	4.6	0.163	4.1	1.76	2.62	67	170	8240	3730	6000 ^(A)	1829
FS LP 2 ½" 2,500 (E)	2.37	60	3.31	84	0.223	5.7	0.200	5.1	2.65	3.94	83	211	12720	5760	4500 ^(A)	1372
FS LP 3" 2,500 (E)	2.82	72	3.91	99	0.263	6.7	0.237	6.0	3.67	5.46	98	249	17880	8110	4500 ^(B)	1372

E Series Continued

Series 3500

3500 psi (24.1 MPa) API 15S Nominal Pressure Rating (NPR)⁽²⁾

Product & Size	Pipe Dimensions										Minimum Bending Radius		Short-Term Tensile Rating		Reel Capacity	
	Inside Diameter		Outside Diameter		Reinforced Wall Thickness		Min. Reinforced Wall Thickness		Pipe Weight							
	in	mm	in	mm	in	mm	in	mm	lbs/ft	kg/m	in	cm	lbf	kgf	ft	m
FS LP 2" 3,500 (E)	1.89	48	2.79	71	0.236	6.0	0.212	5.4	2.16	3.21	70	178	11000	4989	6000 ^(A)	1829
FS LP 2 1/2" 3,500 (E)	2.37	60	3.45	88	0.294	7.5	0.265	6.7	3.28	4.88	86	218	17200	7801	4500 ^(A)	1372
FS LP 3" 3,500 (E)	2.82	72	4.07	103	0.343	8.7	0.309	7.9	4.52	6.73	102	259	23840	10813	3000 ^(B)	914

⁽¹⁾ Consult Fiber Glass Systems Engineering for recommendations and limitations.

⁽²⁾ The API 15S Nominal Pressure Rating includes a manufacturer's Service Factor (F_s). For further guidance, consult Fiber Glass Systems Engineering.

E = High density polyethylene (HDPE) rated from -29°F to 140°F (-34°C to 60°C)

X = High temperature polyethylene (HTP) rated from -29°F to 180°F (-34°C to 82°C)

Reel Size:

(A) = 12 feet (3.6 m)

(B) = 14 feet (4.2 m)

(C) = 16 feet (4.8 m)

(D) = 18.5 feet (5.6 m)

X Series

Series 750

750 psi (5.2 MPa) API 15S Nominal Pressure Rating (NPR)⁽²⁾

Product & Size	Pipe Dimensions										Minimum Bending Radius	Short-Term Tensile Rating		Reel Capacity			
	Inside Diameter		Outside Diameter		Reinforced Wall Thickness		Min. Reinforced Wall Thickness		Pipe Weight			in	cm	lbf	kgf	ft	m
	in	mm	in	mm	in	mm	in	mm	lbs/ft	kg/m							
FS LP 2" 750 (X)	2.00	51	2.50	63	0.079	2.0	0.071	1.8	0.97	1.44	62	157	3480	1570	9000 ^(A)	2743	
FS LP 2 ½" 750 (X)	2.51	64	3.05	77	0.082	2.1	0.074	1.9	1.30	1.93	76	193	4480	2030	6000 ^(A)	1829	
FS LP 3" 750 (X)	2.96	75	3.53	90	0.089	2.3	0.080	2.0	1.63	2.43	88	224	5720	2590	6000 ^(B)	1829	
FS LP 3 ½" 750 (X)	3.48	88	4.11	104	0.106	2.7	0.096	2.4	2.12	3.16	103	262	7960	3610	4500 ^(B)	1372	
FS LP 4" 750 (X)	3.99	101	4.68	119	0.122	3.1	0.109	2.8	2.72	4.05	117	297	10440	4730	4500 ^(C)	1372	
FS LP 5" 750 (X)	4.75	121	5.57	141	0.150	3.8	0.135	3.4	3.86	5.74	139	353	15360	6960	2100 ^(C)	640	
FS LP 5 ½" 750 (X)	5.20	132	6.16	157	0.157	4.0	0.141	3.6	4.84	7.20	154	391	17840	8090	1200 ^(C)	366	
FS LP 6" 750 (X)	5.60	142	6.64	169	0.163	4.1	0.147	3.7	5.56	8.27	166	422	20040	9080	600 ^(C) 1800 ^(D)	183 549	

Series 1500

1500 psi (10.3 MPa) API 15S Nominal Pressure Rating (NPR)⁽²⁾

Product & Size	Pipe Dimensions										Minimum Bending Radius	Short-Term Tensile Rating		Reel Capacity			
	Inside Diameter		Outside Diameter		Reinforced Wall Thickness		Min. Reinforced Wall Thickness		Pipe Weight			in	cm	lbf	kgf	ft	m
	in	mm	in	mm	in	mm	in	mm	lbs/ft	kg/m							
FS LP 2" 1,500 (X)	1.89	48	2.46	63	0.111	2.8	0.100	2.5	1.15	1.71	62	157	4760	2150	9000 ^(A)	2743	
FS LP 2 ½" 1,500 (X)	2.37	60	3.04	77	0.140	3.5	0.126	3.2	1.72	2.55	76	193	7480	3390	9000 ^(B)	2743	
FS LP 3" 1,500 (X)	2.82	72	3.52	90	0.134	3.4	0.121	3.1	2.06	3.07	88	224	8440	3820	4500 ^(A)	1372	
FS LP 3 ½" 1,500 (X)	3.33	84	4.13	105	0.161	4.1	0.145	3.7	2.82	4.19	103	262	11920	5400	4500 ^(B)	1372	
FS LP 4" 1,500 (X)	3.75	95	4.63	118	0.178	4.5	0.160	4.1	3.46	5.15	116	295	14880	6740	4500 ^(C)	1372	
FS LP 5" 1,500 (X)	4.52	115	5.57	141	0.218	5.5	0.196	5.0	5.02	7.47	139	353	22040	9990	2100 ^(C)	640	
FS LP 5 ½" 1,500 (X)	5.00	127	6.15	156	0.248	6.3	0.223	5.7	6.15	9.16	154	391	27720	12570	1200 ^(C)	366	
FS LP 6" 1,500 (X)	5.60	142	6.83	173	0.262	6.7	0.236	6.0	7.34	10.92	171	434	32720	14840	600 ^(D) 1800 ^(D)	183 549	

Series 2250

2250 psi (15.5 MPa) API 15S Nominal Pressure Rating (NPR)⁽²⁾

Product & Size	Pipe Dimensions										Minimum Bending Radius	Short-Term Tensile Rating		Reel Capacity			
	Inside Diameter		Outside Diameter		Reinforced Wall Thickness		Min. Reinforced Wall Thickness		Pipe Weight			in	cm	lbf	kgf	ft	m
	in	mm	in	mm	in	mm	in	mm	lbs/ft	kg/m							
FS LP 4" 2,250 (X)	3.57	91	4.72	120	0.273	6.9	0.246	6.2	4.76	7.08	118	300	22800	10340	3000 ^(C)	914	

Series 2500

2500 psi (17.2 MPa) API 15S Nominal Pressure Rating (NPR)⁽²⁾

Product & Size	Pipe Dimensions										Minimum Bending Radius	Short-Term Tensile Rating		Reel Capacity			
	Inside Diameter		Outside Diameter		Reinforced Wall Thickness		Min. Reinforced Wall Thickness		Pipe Weight			in	cm	lbf	kgf	ft	m
	in	mm	in	mm	in	mm	in	mm	lbs/ft	kg/m							
FS LP 2" 2,500 (X)	1.89	48	2.68	68	0.181	4.6	0.163	4.1	1.76	2.62	67	170	8240	3730	6000 ^(A)	1829	
FS LP 2 ½" 2,500 (X)	2.37	60	3.31	84	0.223	5.7	0.200	5.1	2.65	3.94	83	211	12720	5760	4500 ^(A)	1372	
FS LP 3" 2,500 (X)	2.82	72	3.91	99	0.263	6.7	0.237	6.0	3.67	5.46	98	249	17880	8110	4500 ^(B)	1372	

X Series Continued

Series 3500

3500 psi (24.1 MPa) API 15S Nominal Pressure Rating (NPR)⁽²⁾

Product & Size	Pipe Dimensions										Minimum Bending Radius		Short-Term Tensile Rating		Reel Capacity	
	Inside Diameter		Outside Diameter		Reinforced Wall Thickness		Min. Reinforced Wall Thickness		Pipe Weight							
	in	mm	in	mm	in	mm	in	mm	lbs/ft	kg/m	in	cm	lbf	kgf	ft	m
FS LP 2" 3,500 (E)	1.89	48	2.79	71	0.236	6.0	0.212	5.4	2.16	3.21	70	178	11000	4989	6000 ^(A)	1829
FS LP 2 1/2" 3,500 (E)	2.37	60	3.45	88	0.294	7.5	0.265	6.7	3.28	4.88	86	218	17200	7801	4500 ^(A)	1372
FS LP 3" 3,500 (E)	2.82	72	4.07	103	0.343	8.7	0.309	7.9	4.52	6.73	102	259	23840	10813	3000 ^(B)	914

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⁽²⁾ The API 15S Nominal Pressure Rating includes a manufacturer's Service Factor (F_s). For further guidance, consult Fiber Glass Systems Engineering.

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(C) = 16 feet (4.8 m)

(D) = 18.5 feet (5.6 m)

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