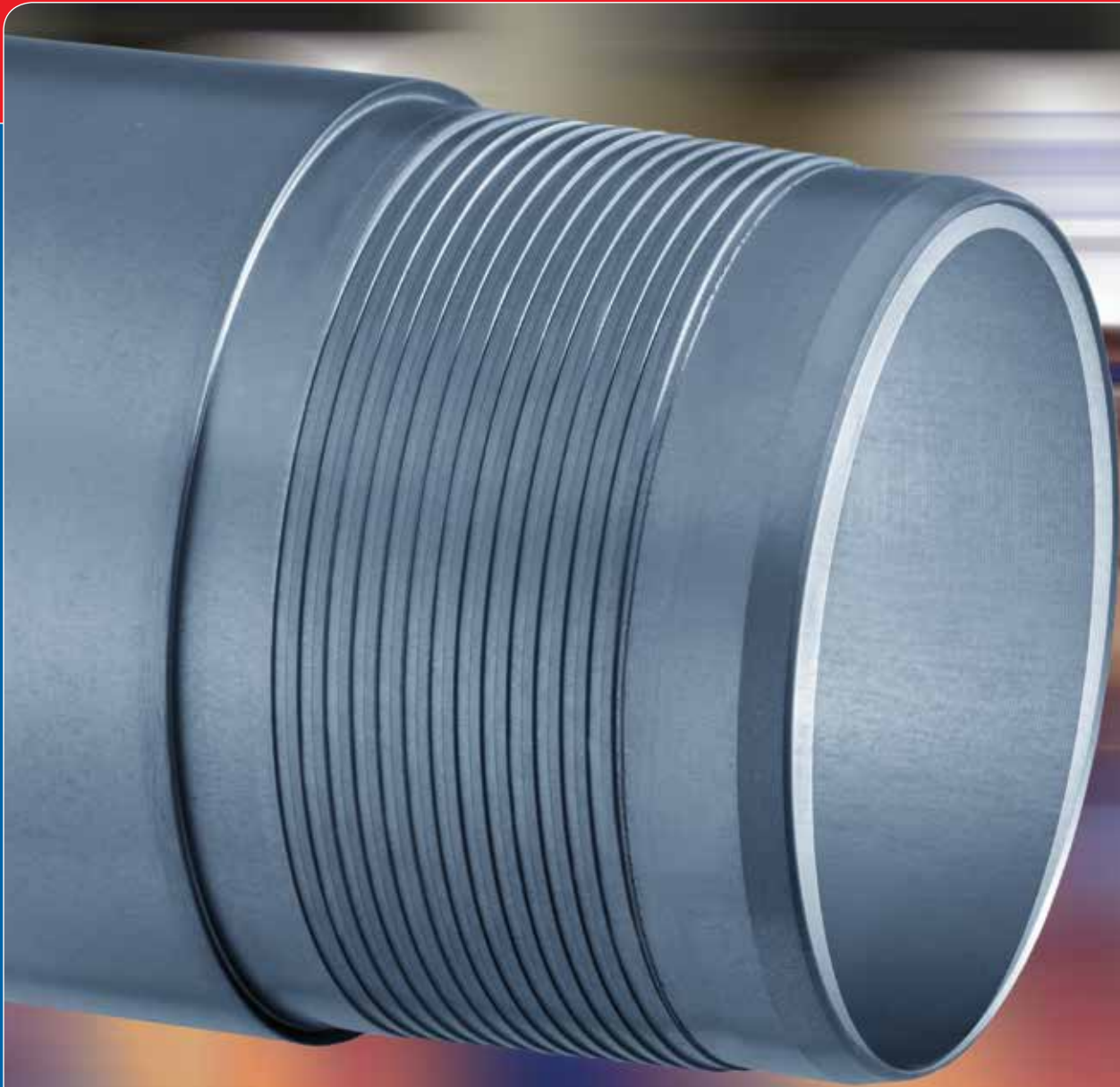


USS-LIBERTY FJM[®]



A TRUE FLUSH CONNECTION FOR CLEARANCE-CRITICAL APPLICATIONS



U. S. Steel Tubular Products

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When clearance between tubes is of paramount concern, the optimal solution is a flush joint connection. U. S. Steel Tubular Products offers USS-LIBERTY FJM®, a flush joint connection with a true flush outside diameter designed for clearance-critical applications. Such applications include use as a repair liner where casing has been damaged by corrosion or wear or as intermediate casing in horizontal wells.

Proprietary thread form delivers a compressive strength rating that is equal to the tensile strength in all outside diameter sizes, overcoming a typical weakness in flush joint connections.

Internal and external gas-tight, metal-to-metal seals ensure integrity of the connection under pressure.

Clearance, strength and gas-tight sealing advantages make USS-LIBERTY FJM® a superior solution for clearance-critical applications.

Rigorous testing to API 5C5/ISO 13679 requirements, including internal and external pressure testing combined with tension and compression loads, confirms connection integrity.

Available in 3-1/2" to 8-5/8" pipe outside diameter sizes.



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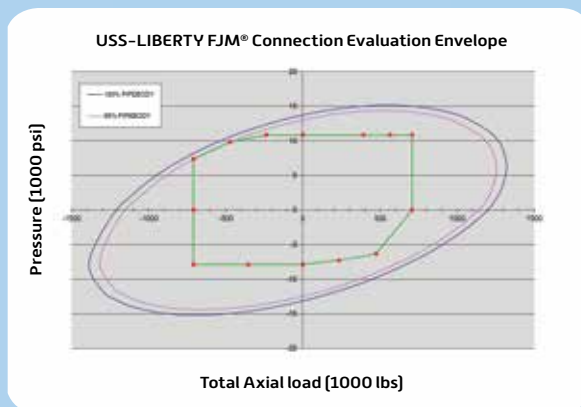
PERFORMANCE PROPERTIES

Pipe Nominal OD	Nominal Weight	Plain-End Weight	Nominal Wall	Drift Diameter	Pin Bored ID	Makeup Loss	Connection Efficiency	55 KSI Tensile and Compressive Strength	80 KSI Tensile and Compressive Strength	95 KSI Tensile and Compressive Strength
inches	lbs/ft	lbs/ft	inches	inches	inches	inches		1000 lbs	1000 lbs	1000 lbs
3 1/2	9.2	8.81	2.992	2.867	2.906	2.93	63.10%	90	131	155
3 1/2	10.2	9.92	2.922	2.797	2.836	3.17	62.64%	100	146	173
3 1/2	12.7	12.53	2.750	2.625	2.664	3.67	61.77%	125	182	216
3 1/2	14.3	14.11	2.640	2.515	2.554	4.05	61.48%	140	204	242
4	9.5	9.12	3.548	3.423	3.462	2.81	63.97%	94	137	163
4	11.0	10.47	3.476	3.351	3.390	2.93	62.77%	106	154	183
4	11.6	11.35	3.428	3.303	3.342	3.18	63.02%	116	168	200
4	13.2	12.95	3.340	3.215	3.254	3.43	62.45%	131	190	226
4 1/2	11.6	11.36	4.000	3.875	3.914	2.94	63.57%	117	170	202
4 1/2	12.6	12.25	3.958	3.833	3.872	3.07	63.24%	125	182	216
4 1/2	13.5	13.05	3.920	3.795	3.834	3.19	62.80%	132	193	229
4 1/2	15.1	15.00	3.826	3.701	3.740	3.44	62.28%	151	220	261
5	11.5	11.24	4.560	4.435	4.474	2.70	63.70%	116	168	200
5	13.0	12.84	4.494	4.369	4.408	2.95	63.15%	131	191	226
5	15.0	14.88	4.408	4.283	4.322	3.20	62.69%	151	219	261
5	18.0	17.95	4.276	4.151	4.190	3.58	62.00%	180	262	311
5	20.3	20.03	4.184	4.059	4.098	3.83	61.59%	199	290	344
5	20.8	20.65	4.156	4.031	4.070	3.95	61.56%	205	299	355
5	21.4	21.32	4.126	4.001	4.040	4.08	61.57%	212	309	366
5	23.2	23.11	4.044	3.919	3.958	4.33	61.42%	229	334	396
5 1/2	15.5	15.36	4.950	4.825	4.864	2.80	58.02%	144	210	249
5 1/2	17.0	16.89	4.892	4.767	4.806	2.97	58.14%	159	231	274
5 1/2	20.0	19.83	4.778	4.653	4.692	3.30	58.09%	186	271	322
5 1/2	23.0	22.56	4.670	4.545	4.584	3.47	57.66%	210	306	363
5 1/2	26.0	25.56	4.548	4.500	4.539	3.80	54.10%	224	325	386
6 5/8	20.0	19.51	6.049	5.924	5.963	3.27	59.60%	188	273	325
6 5/8	23.2	22.21	5.965	5.840	5.879	3.60	59.95%	215	313	372
6 5/8	24.0	23.60	5.921	5.796	5.835	3.76	60.03%	229	333	396
6 5/8	28.0	27.67	5.791	5.666	5.705	4.10	59.56%	266	388	460
6 5/8	28.6	28.60	5.761	5.636	5.675	4.10	59.21%	274	398	473
6 5/8	32.0	31.23	5.675	5.550	5.589	4.43	59.44%	300	436	518
6 5/8	33.0	32.74	5.625	5.500	5.539	4.60	59.38%	314	457	543
7	20.0	19.56	6.456	6.331	6.370	3.41	60.12%	190	277	328
7	23.0	22.65	6.366	6.250	6.289	3.58	58.80%	215	313	372
7	26.0	25.69	6.276	6.151	6.190	3.91	59.57%	247	360	427
7	29.0	28.75	6.184	6.125	6.164	4.24	56.15%	261	380	451
7	32.0	31.70	6.094	6.000	6.039	4.41	57.92%	297	432	513
7 5/8	26.40	25.59	0.328	6.844	6.883	3.76	59.94%	248	360	428
7 5/8	29.70	29.06	0.375	6.750	6.789	3.92	59.41%	279	406	482
7 5/8	33.70	33.07	0.430	6.640	6.679	4.26	59.23%	316	460	547
7 5/8	35.80	35.59	0.465	6.570	6.609	4.42	59.09%	340	495	587
7 5/8	39.00	38.08	0.500	6.500	6.539	4.75	59.55%	366	533	633
7 5/8	42.80	42.43	0.562	6.376	6.415	5.09	59.42%	407	593	704
7 5/8	45.30	44.71	0.595	6.310	6.349	5.25	59.34%	429	623	740
7 3/4	46.10	45.51	0.595	6.500	6.539	5.26	56.81%	418	608	722
8 5/8	28.00	27.04	0.304	7.892	7.931	3.91	60.71%	265	386	458
8 5/8	32.00	31.13	0.352	7.875	7.914	4.25	55.57%	280	407	483
8 5/8	36.00	35.17	0.400	7.700	7.739	4.58	60.70%	345	502	596
8 5/8	40.00	39.33	0.450	7.625	7.664	4.91	59.48%	378	550	653

NOTES:

1. Connection efficiency is calculated by dividing the connection-critical area by the nominal pipe body area.
 2. Tensile and compressive strengths are calculated by multiplying the pipe body yield and connection critical area.
- Contact U. S. Steel Tubular Products to receive information for grades not listed.

110 KSI Tensile and Compressive Strength	125 KSI Tensile and Compressive Strength
1000 lbs	1000 lbs
180	204
201	228
250	284
280	319
189	214
212	241
231	263
261	297
233	265
250	285
265	301
302	343
231	263
262	298
302	343
360	409
399	453
411	467
424	482
459	521
288	327
317	361
372	423
421	478
447	508
376	427
430	489
458	521
533	605
547	622
600	682
628	714
380	432
430	489
495	562
522	593
594	675
495	563
558	634
633	719
680	773
733	832
815	926
857	974
836	950
531	603
560	636
690	784
756	860



USS-LIBERTY FJM® connection is API RP 5C5:2014 CAL II Qualified



USS-LIBERTY FJM® Capped End FEA



USS-LIBERTY FJM® Make-Up FEA



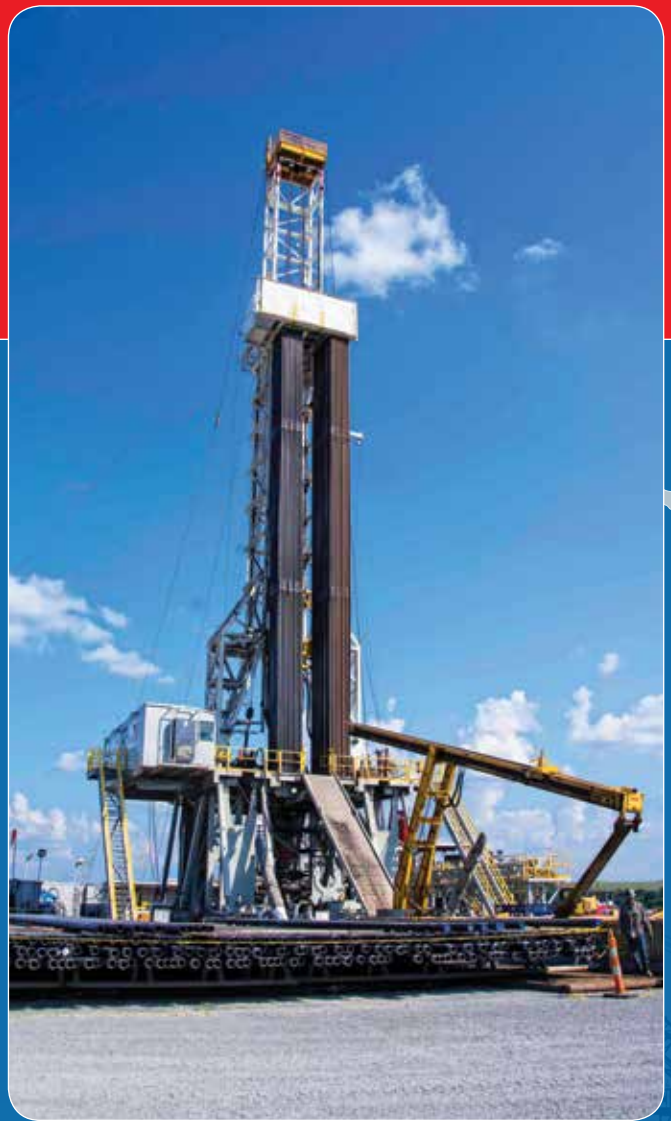
U. S. Steel Tubular Products

RIG SITE SERVICES

U. S. Steel Oilwell Services recognizes the value of quality rig site services, particularly when running premium connections such as USS-LIBERTY FJM® connections.

Trained and experienced technicians are available to assist in running casing and tubing connections worldwide, both onshore and offshore. Rig site personnel will inspect U. S. Steel Tubular Products connections in the storage yard or at the rig site, and are trained to perform minor field repairs. Rig site services and benefits include:

- 24/7/365 service, onshore or offshore
- Assurance that correct running procedures are followed
- Visual inspection of connections
- Tools and training required to perform field repair
- Knowledge of full technical specifications and product performance data
- Ongoing training and direct access to engineering and technical staff
- Direct contact with licensed repair facilities



U. S. Steel Oilwell Services
Rig Site Services

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U. S. Steel Oilwell Services provides rig site services throughout North America and the Gulf of Mexico. Contact us for a list of international rig site services locations.

Casper

Pittsburgh

Oklahoma City

Midland

Dallas

Houston

Rig Site Services
Field Locations



U. S. Steel Oilwell Services



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