



# VArroughneck®

Customized for rotating operations





# PERFORMANCE IN TUBULARS

Our world is based on high tech seamless pipes that can withstand the toughest conditions, day in, day out. We promise highest performance based on the core values customization, innovation, sustainability and responsibility.



CUSTOMIZATION



INNOVATION



SUSTAINABILITY



RESPONSIBILITY

# PRODUCTION, R&D, SALES LOCATIONS AND LICENSEES



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# DESIGN CHARACTERISTICS

voestalpine Tubulars Proprietary Connections like VAroughneck® offer benefits which are not addressed by the API specification or exceed the API standards.



## PRODUCT CHARACTERISTICS & CUSTOMER BENEFITS

### **STRONG CONNECTION** » ENSURES WELL INTEGRITY

The connection minimizes the risk of jump out failures under bending loads. In addition, with at least twice the torque transfer compared to API connections, VAroughneck® is suitable for deviated wells, drilling with casing operations or the completion of extended reach wells.

### **ROTATION DURING INSTALLATION** » IMPROVES QUALITY OF CEMENT BOND

The thread design offers the opportunity to rotate the casing string during installation. Due to the thread profile, the connection is able to handle axial loads without inducing high radial forces to pin and box.

### **SMOOTH INTERNAL PROFILE** » MINIMIZES TURBULENCES

The flush internal profile minimizes turbulences and provides good conditions for internal pipe coating.

### **COMPATIBILITY WITH API BUTTRESS** » SAVES COSTS

With the VAroughneck thread design, the make-up is limited by pin-to-pin contact. VAroughneck® and API Buttress can be made-up together without using a crossover. If specific parts of the string require higher torque properties, they can be achieved by installing a spacer ring to occupy the J-Distance or by applying a thread locking compound, such as Baker-lok® or Tube-Lok.



# GRADES

VAroughneck® is available in API standard and proprietary grades. Also tailor-made customer specifications can be fulfilled upon request.

## Our tools in manufacturing the VA series include but are not limited to

- » Steel with special chemical composition
- » Unique melting, refining and casting practices
- » Controlled processes in the pipe rolling, heat treatment, straightening and end finishing operations
- » Tighter tolerances
- » Restricted mechanical properties
- » Special testing and inspection methods

Some of the product names explain the application, e.g. deep well, sour service, low temperature.

### The applications for other grades are defined as follows:

- » **VA-High Collapse-Series**  
for use in high external pressure environments
- » **VA-Mild Sweet Gas-Series**  
for mildly corrosive environments where – in combination with an adequate inhibition program – a higher corrosion resistance can be expected compared to regular API grades

Specified Minimum Yield Strength [psi]	Grade API Spec 5CT	HIGH COLLAPSE	ENHANCED PROPERTIES
55,000	J55		
	K55		
75,000			
80,000	N80-Q	VA-HC-N80-Q	VA-EP-N80-Q
	L80-1	VA-HC-L80-1	VA-EP-L80-1
	L80-13Cr		
90,000	C90-1	VA-HC-C90-1	VA-EP-C90-1
95,000	R95	VA-HC-R95	VA-EP-R95
	T95-1	VA-HC-T95-1	VA-EP-T95-1
110,000	C110	VA-HC-C110	VA-EP-C110
	P110	VA-HC-P110	VA-EP-P110
125,000	Q125-1	VA-HC-Q125-1	VA-EP-Q125-1
140,000			
150,000			

On request in combination with:



## PROPRIETARY GRADES – THE VA SERIES

EXTREME PROPERTIES	SOUR SERVICE			DEEP WELL		LOW TEMPERATURE	MILD SWEET GAS	MILD SWEET GAS	SWEET GAS
		with High Collapse	with Enhanced Properties		with High Collapse		Ferrite Pearlite	Quenched & Tempered	
						VA-LT-J55	VA-FP-55-1CR		
						VA-LT-K55			
							VA-FP-75-1CR		
VA-XP-N80-Q						VA-LT-N80-Q	VA-FP-80-1CR	VA-N80-Q-1CR/ VA-N80-Q-3CR	
VA-XP-L80-1						VA-LT-L80-1		VA-L80-1-1CR/ VA-L80-1-3CR	
	VA-SS-80	VA-SS-80-HC	VA-SS-80-EP						
VA-XP-C90-1						VA-LT-C90-1			
	VA-SS-90	VA-SS-90-HC	VA-SS-90-EP						
VA-XP-R95						VA-LT-R95		VA-R95-1CR/ VA-R95-3CR	
VA-XP-T95-1						VA-LT-T95-1			
	VA-SS-95	VA-SS-95-HC	VA-SS-95-EP						VA-95-13CR
						VA-LT-C110			
	VA-SS-110	VA-SS-110-HC	VA-SS-110-EP						
	VA-S-110	VA-S-110-HC	VA-S-110-EP						
VA-XP-P110						VA-LT-P110		VA-P110-1CR/ VA-P110-3CR	
VA-XP-Q125-1						VA-LT-Q125-1			
	VA-S-125	VA-S-125-HC	VA-S-125-EP	VA-D-125	VA-D-125-HC				
				VA-D-140	VA-D-140-HC				
				VA-D-150	VA-D-150-HC				

LOW TEMPERATURE

EP/XP

EP/XP

HC

# DIMENSIONS

PIPE OUTSIDE DIAMETER		NOMINAL WEIGHT		WALL THICKNESS		INSIDE DIAMETER		DRIFT DIAMETER	
inch	mm	lb/ft	kg/m	inch	mm	inch	mm	inch	mm
4 ½	114.30	10.50	15.63	0.224	5.69	4.052	102.92	3.927	99.75
		11.60	17.26	0.250	6.35	4.000	101.60	3.875	98.43
		12.60	18.75	0.271	6.88	3.958	100.53	3.833	97.36
		13.50	20.09	0.290	7.37	3.920	99.57	3.795	96.39
		15.10	22.47	0.337	8.56	3.826	97.18	3.701	94.01
5	127.00	15.00	22.32	0.296	7.52	4.408	111.96	4.283	108.79
		18.00	26.79	0.362	9.19	4.276	108.61	4.151	105.44
		21.40	31.85	0.437	11.10	4.126	104.80	4.001	101.63
		23.20	34.53	0.478	12.14	4.044	102.72	3.919	99.54
		24.10	35.86	0.500	12.70	4.000	101.60	3.875	98.43
5 ½	139.70	17.00	25.30	0.304	7.72	4.892	124.26	4.767	121.08
		20.00	29.76	0.361	9.17	4.778	121.36	4.653	118.19
		23.00	34.23	0.415	10.54	4.670	118.62	4.545	115.44
		26.00	38.69	0.476	12.09	4.548	115.52	4.423	112.34
6 ½	168.28	20.00	29.76	0.288	7.32	6.049	153.64	5.924	150.47
		24.00	35.72	0.352	8.94	5.921	150.39	5.796	147.22
		28.00	41.67	0.417	10.59	5.791	147.09	5.666	143.92
		32.00	47.62	0.475	12.06	5.675	144.15	5.550	140.97
7	177.80	23.00	34.23	0.317	8.05	6.366	161.70	6.241	158.52
		26.00	38.69	0.362	9.19	6.276	159.41	6.151	156.24
		29.00	43.16	0.408	10.36	6.184	157.07	6.059	153.90
		32.00	47.62	0.453	11.51	6.094	154.79	5.969	151.61
		35.00	52.09	0.498	12.65	6.004	152.50	5.879	149.33
7 ½	193.68	26.40	39.54	0.328	8.33	6.969	177.02	6.844	173.84
		29.70	44.70	0.375	9.52	6.875	174.64	6.750	171.45
		33.70	50.68	0.430	10.92	6.765	171.84	6.640	168.66
		39.00	58.12	0.500	12.70	6.625	168.28	6.500	165.10
		42.80	64.60	0.562	14.27	6.501	165.14	6.376	161.95
		45.30	68.00	0.595	15.11	6.435	163.46	6.310	160.27



VAroughneck® accessories are available on request. The values shown are based on T&C pipe lengths of L = 10.0 m (32.81 ft).

Other dimensions and 20° beveled couplings are available on request.

Blanking dimensions for accessories are available as a download on our web page [www.voestalpine.com/tubulars](http://www.voestalpine.com/tubulars)

COUPLING LENGTH		COUPLING OUTSIDE DIAMETER		VOLUME				MAKE UP LOSS	
				DISPLACEMENT		PRODUCTION			
inch	mm	inch	mm	us gal/ft	lit/m	us gal/ft	lit/m	inch	mm
8.583	218.00	5.250	133.35	0.833	10.34	0.670	8.32	4.173	106.00
8.583	218.00	5.250	133.35	0.833	10.34	0.653	8.11	4.173	106.00
8.583	218.00	5.250	133.35	0.833	10.34	0.639	7.94	4.173	106.00
8.583	218.00	5.250	133.35	0.833	10.34	0.627	7.79	4.173	106.00
8.583	218.00	5.250	133.35	0.833	10.34	0.598	7.42	4.173	106.00
8.858	225.00	5.800	147.32	1.028	12.77	0.792	9.84	4.311	109.50
8.858	225.00	5.800	147.32	1.028	12.77	0.746	9.26	4.311	109.50
8.858	225.00	5.800	147.32	1.028	12.77	0.695	8.63	4.311	109.50
8.858	225.00	5.800	147.32	1.028	12.77	0.668	8.29	4.311	109.50
8.858	225.00	5.800	147.32	1.028	12.77	0.653	8.11	4.311	109.50
8.976	228.00	6.300	160.02	1.243	15.44	0.977	12.13	4.370	111.00
8.976	228.00	6.300	160.02	1.243	15.44	0.932	11.57	4.370	111.00
8.976	228.00	6.300	160.02	1.243	15.44	0.890	11.05	4.370	111.00
8.976	228.00	6.300	160.02	1.243	15.44	0.844	10.48	4.370	111.00
9.350	237.50	7.390	187.70	1.802	22.38	1.493	18.54	4.557	115.75
9.350	237.50	7.390	187.70	1.802	22.38	1.430	17.76	4.557	115.75
9.350	237.50	7.390	187.70	1.802	22.38	1.368	16.99	4.557	115.75
9.350	237.50	7.390	187.70	1.802	22.38	1.314	16.32	4.557	115.75
9.724	247.00	7.875	200.03	2.012	24.99	1.654	20.54	4.744	120.50
9.724	247.00	7.875	200.03	2.012	24.99	1.607	19.96	4.744	120.50
9.724	247.00	7.875	200.03	2.012	24.99	1.561	19.38	4.744	120.50
9.724	247.00	7.875	200.03	2.012	24.99	1.516	18.82	4.744	120.50
9.724	247.00	7.875	200.03	2.012	24.99	1.471	18.27	4.744	120.50
10.098	256.50	8.500	215.90	2.387	29.65	1.981	24.61	4.933	125.30
10.098	256.50	8.500	215.90	2.387	29.65	1.929	23.95	4.933	125.30
10.098	256.50	8.500	215.90	2.387	29.65	1.867	23.19	4.933	125.30
10.098	256.50	8.500	215.90	2.387	29.65	1.791	22.24	4.933	125.30
10.098	256.50	8.500	215.90	2.387	29.65	1.724	21.42	4.933	125.30
10.098	256.50	8.500	215.90	2.387	29.65	1.690	20.98	4.933	125.30

# PERFORMANCE PROPERTIES

(METRIC UNITS)

PIPE OUTSIDE DIAMETER		NOMINAL WEIGHT	WALL THICKNESS	GRADE 55						GRADE 80							
inch	mm			P <sub>I</sub>	P <sub>C</sub>	S <sub>Y</sub>	S <sub>U</sub>	L	B	T <sub>Y</sub>	P <sub>I</sub>	P <sub>C</sub>	S <sub>Y</sub>	S <sub>U</sub>	L	B	T <sub>Y</sub>
		lb/ft	mm	MPa	MPa	kN	kN	kN	°/30.48m	Nm	MPa	MPa	kN	kN	kN	°/30.48m	Nm
4 ½	114.30	10.50	5.69	33.00	27.60	740	900	1060	49	6300	48.10	34.10	1070	1170	1540	72	8100
		11.60	6.35	36.80	34.20	820	1000	1060		7400	53.70	43.80	1190	1290	1540		9600
		12.60	6.88	39.90	39.40	880	1080	1060		7900	58.10	51.70	1280	1390	1540		10300
		13.50	7.37	42.80	44.30	940	1150	1060		8800	62.30	58.90	1370	1490	1540		11400
		15.10	8.56	49.70	52.50	1080	1320	1060		10700	72.30	76.40	1570	1710	1540		14000
5	127.00	15.00	7.52	39.30	38.30	1070	1300	1280	44	10200	57.20	50.00	1560	1690	1860	65	13800
		18.00	9.19	48.00	50.90	1290	1570	1280		13200	69.90	72.40	1880	2030	1860		17900
		21.40	11.10	58.00	60.50	1530	1530	1280		16800	84.40	88.00	2230	2420	1860		23000
		23.20	12.40	59.70	65.60	1660	2020	1280		18800	86.90	95.40	2420	2620	1860		25700
		24.10	12.70	59.70	68.30	1730	2100	1280		19800	86.90	99.30	2520	2730	1860		27100
5 ½	139.70	17.00	7.72	36.70	33.90	1210	1470	1390	40	13900	53.40	43.40	1770	1900	2030	59	18100
		20.00	9.17	43.50	45.60	1430	1720	1390		17300	63.40	60.90	2080	2240	2030		22700
		23.00	10.54	50.00	52.90	1620	1960	1390		20200	72.90	77.00	2360	2540	2030		26600
		26.00	12.09	55.50	60.00	1840	2220	1390		23600	80.90	87.20	2680	2880	2030		31400
6 ¾	168.28	20.00	7.32	28.80	20.50	1400	1670	1550	33	15300	42.00	24.00	2040	2180	2260	49	21000
		24.00	8.94	35.20	31.40	1700	2010	1550		20700	51.30	39.70	2470	2630	2260		28800
		28.00	10.59	41.70	42.60	1990	2360	1550		25500	60.80	56.40	2900	3090	2260		34900
		32.00	12.06	46.10	50.50	2240	2660	1550		30100	67.20	71.20	3270	3480	2260		41300
7	177.80	23.00	8.05	30.00	22.50	1630	1920	1960	31	19200	43.70	26.40	2370	2520	2860	46	26200
		26.00	9.19	34.30	29.80	1850	2180	1960		23000	49.90	37.30	2690	2850	2860		31500
		29.00	10.36	38.60	37.30	2070	2440	1960		27500	56.30	48.50	3010	3190	2860		37700
		32.00	11.51	42.90	44.60	2280	2690	1960		31800	62.50	59.40	3320	3520	2860		43800
		35.00	12.65	47.20	50.10	2490	2940	1960		36000	68.70	70.20	3620	3850	2860		49700
7 ¾	193.68	26.40	8.33	28.50	19.90	1840	2150	2130	29	30000	41.50	23.40	2680	2820	3100	42	39900
		29.70	9.52	32.60	27.00	2090	2440	2130		24800	47.50	33.00	3040	3210	3100		32800
		33.70	10.92	37.40	35.20	2380	2780	2130		30000	54.50	45.20	3460	3650	3100		39900
		39.00	12.70	43.50	45.60	2740	3200	2130		36300	63.30	60.80	3980	4200	3100		48500
		42.80	14.27	46.00	51.80	3050	3570	2130		43900	67.10	74.50	4440	4680	3100		59000
		45.30	15.11	46.00	54.50	3170	3760	2130		50600	67.10	79.40	4610	4930	3100		68300

PIPE OUTSIDE DIAMETER		NOMINAL WEIGHT	WALL THICKNESS	GRADE 110						GRADE 125							
inch	mm			P <sub>I</sub>	P <sub>C</sub>	S <sub>Y</sub>	S <sub>U</sub>	L	B	T <sub>Y</sub>	P <sub>I</sub>	P <sub>C</sub>	S <sub>Y</sub>	S <sub>U</sub>	L	B	T <sub>Y</sub>
		lb/ft	mm	MPa	MPa	kN	kN	kN	°/30.48m	Nm	MPa	MPa	kN	kN	kN	°/30.48m	Nm
4 ½	114.30	10.50	5.69	66.00	38.30	1470	1550	2120	99	10100	75.10	40.20	1670	1680	2410	112	10600
		11.60	6.35	73.70	52.30	1630	1710	2120		11900	83.80	55.20	1860	1870	2410		12600
		12.60	6.88	79.80	63.50	1760	1850	2120		12800	90.80	68.20	2000	2010	2410		13500
		13.50	7.37	85.50	73.70	1880	1970	2120		14200	97.30	80.20	2130	2150	2410		15100
		15.10	8.56	99.30	98.90	2160	2260	2120		17600	113.00	109.20	2450	2470	2410		18700
5	127.00	15.00	7.52	78.50	61.00	2140	2240	2580	89	17800	89.30	65.40	2430	2440	2900	101	19000
		18.00	9.19	96.00	92.90	2580	2700	2580		23200	109.20	102.20	2930	2940	2900		24800
		21.40	11.10	115.90	121.00	3070	3200	2580		29800	131.80	137.50	3490	3490	2900		32100
		23.20	12.14	119.40	131.20	3320	3470	2580		33400	135.70	149.00	3780	3790	2900		35900
		24.10	12.70	119.40	136.50	3460	3610	2580		35300	135.70	155.10	3930	3940	2900		37900
5 ½	139.70	17.00	7.72	73.30	51.60	2430	2530	2780	81	22800	83.40	54.40	2760	2760	3160	92	24200
		20.00	9.17	87.10	76.60	2850	2970	2780		28700	99.00	83.30	3240	3240	3160		30500
		23.00	10.54	100.10	100.30	3240	3380	2780		33700	113.80	110.70	3680	3680	3160		35900
		26.00	12.09	111.00	119.90	3670	3830	2780		39900	126.30	136.30	4170	4170	3160		42500
6 ¾	168.28	20.00	7.32	57.70	27.80	2810	2890	3100	67	26700	65.60	28.70	3170	3170	3530	76	28600
		24.00	8.94	70.50	46.40	3390	3500	3100		36500	80.10	48.40	3830	3830	3530		39200
		28.00	10.59	83.50	70.10	3980	4100	3100		45300	94.90	75.80	4490	4490	3530		48600
		32.00	12.06	92.20	91.20	4490	4630	3100		53700	104.90	100.30	5060	5060	3530		57700



GRADE 90								GRADE 95						
P <sub>i</sub>	P <sub>c</sub>	S <sub>y</sub>	S <sub>u</sub>	L	B	T <sub>y</sub>	P <sub>i</sub>	P <sub>c</sub>	S <sub>y</sub>	S <sub>u</sub>	L	B	T <sub>y</sub>	
MPa	MPa	kN	kN	kN	°/30.48m	Nm	MPa	MPa	kN	kN	kN	°/30.48m	Nm	
54.10	35.80	1210	1240	1730	81	8800	57.10	36.60	1270	1300	1830	85	9200	
60.40	47.00	1340	1380	1730		10400	63.70	48.40	1410	1450	1830		10800	
65.40	56.00	1440	1480	1730		11100	69.00	58.00	1520	1560	1830		11600	
70.10	64.10	1540	1580	1730		12400	73.90	66.60	1620	1660	1830		12900	
81.40	84.20	1770	1820	1730		15300	85.80	88.00	1860	1910	1830		16000	
64.30	54.00	1750	1800	2090	73	15200	67.90	55.90	1850	1890	2200	77	15900	
78.60	79.40	2110	2160	2090		19700	82.90	82.90	2230	2280	2200		20700	
95.00	99.00	2510	2570	2090		25300	100.20	104.50	2650	2700	2200		26600	
97.80	107.30	2720	2790	2090		28300	103.10	113.30	2870	2930	2200		29800	
97.80	111.70	2830	2900	2090		29900	103.10	117.90	2990	3050	2200		31400	
60.10	46.40	1990	2030	2280	66	19700	63.30	47.90	2100	2130	2410	70	20600	
71.30	66.40	2340	2380	2280		24800	75.20	69.10	2460	2510	2410		25900	
82.00	85.30	2660	2710	2280		29100	86.50	89.20	2800	2850	2410		30400	
91.00	98.10	2680	3070	2280		34300	95.90	103.60	3180	3230	2410		35900	
47.30	25.50	2300	2330	2540	55	22800	49.90	26.20	2430	2450	2680	58	23900	
57.70	42.30	2780	2810	2540		31100	60.90	43.50	2930	2960	2680		32600	
68.40	61.20	3260	3300	2540		38400	72.10	63.60	3440	3470	2680		40400	
75.60	78.10	3680	3720	2540		45500	79.60	81.50	3880	3910	2680		47800	
49.20	27.80	2670	2690	3220	52	28900	51.90	28.60	2810	2830	3390	55	30400	
56.20	39.60	3020	3050	3220		34700	59.20	40.60	3190	3210	3390		36500	
63.30	52.20	3380	3420	3220		41600	66.80	54.00	3570	3590	3390		43700	
70.40	64.60	3730	3770	3220		48300	74.20	67.20	3940	3960	3390		50800	
77.30	77.00	4080	4110	3220		54900	81.60	80.30	4300	4330	3390		57700	
46.70	24.90	3010	3030	3490		48	43600	49.30	25.60	3180	3180		3680	50
53.40	34.70	3420	3440	3490	35800		56.30	35.40	3610	3620	3680	37400		
61.30	48.60	3890	3910	3490	43600		64.60	50.20	4110	4120	3680	45600		
71.30	66.30	4480	4510	3490	53100		75.20	68.90	4730	4740	3680	55600		
75.40	82.00	4990	5020	3490	64700		79.60	85.60	5270	5280	3680	67800		
75.40	89.30	5190	5290	3490	75000		79.60	94.20	5470	5560	3680	78600		

PIPE OUTSIDE DIAMETER		NOMINAL WEIGHT	WALL THICKNESS	GRADE 110							GRADE 125						
inch	mm	lb/ft	mm	P <sub>i</sub>	P <sub>c</sub>	S <sub>y</sub>	S <sub>u</sub>	L	B	T <sub>y</sub>	P <sub>i</sub>	P <sub>c</sub>	S <sub>y</sub>	S <sub>u</sub>	L	B	T <sub>y</sub>
				MPa	MPa	kN	kN	kN	°/30.48m	Nm	MPa	MPa	kN	kN	kN	°/30.48m	Nm
7	177.80	23.00	8.05	60.10	30.60	3250	3350	3930	63	34000	68.30	32.00	3660	3660	4470	72	36500
		26.00	9.19	68.60	43.00	3690	3790	3930		41000	78.00	44.50	4150	4150	4470		44000
		29.00	10.36	77.30	58.80	4130	4250	3930		49100	87.90	62.80	4650	4650	4470		52800
		32.00	11.51	85.90	74.30	4560	4690	3930		57100	97.70	80.80	5130	5130	4470		61400
		35.00	12.65	94.40	89.90	4980	5110	3930		64900	107.30	98.70	5600	5600	4470		69900
7 ½	193.68	26.40	8.33	57.10	27.00	3680	3760	4260	58	50700	64.90	27.90	4180	4120	4840	66	52200
		29.70	9.53	65.20	36.90	4180	4270	4260		41500	74.10	39.10	4750	4680	4840		42700
		33.70	10.92	74.80	54.30	4760	4860	4260		50700	85.10	57.60	5410	5330	4840		52200
		39.00	12.70	87.00	76.40	5480	5600	4260		62000	98.90	83.20	6220	6140	4840		63800
		42.80	14.27	92.10	96.00	6100	6230	4260		75700	104.70	105.80	6940	6830	4840		78000
		45.30	15.11	92.10	106.40	6340	6570	4260		87800	104.70	117.80	7210	7200	4840		90500

Performance properties for proprietary and other grades or for special clearance couplings on request.

- P<sub>i</sub> ... internal yield pressure
- P<sub>c</sub> ... collapse pressure
- S<sub>y</sub> ... joint yield strength
- S<sub>u</sub> ... joint ultimate strength – API joint strength (calculation according to API TR 5C3)
- L ... max. load on coupling face
- B ... max. bending (uniaxial)
- T<sub>y</sub> ... connection yield torque

Other grades on request.

# PERFORMANCE PROPERTIES

(US CUSTOMARY UNITS)

PIPE OUTSIDE DIAMETER		NOMINAL WEIGHT lb/ft	WALL THICKNESS inch	GRADE 55							GRADE 80						
inch	mm			P <sub>i</sub>	P <sub>c</sub>	S <sub>y</sub>	S <sub>u</sub>	L	B	T <sub>y</sub>	P <sub>i</sub>	P <sub>c</sub>	S <sub>y</sub>	S <sub>u</sub>	L	B	T <sub>y</sub>
				psi	psi	1000lb	1000lb	1000lb	%/100ft	ft.lb	psi	psi	1000lb	1000lb	1000lb	%/100ft	ft.lb
4 ½	114.30	10.50	0.224	4790	4010	165	203	238	49	4650	6980	4950	241	262	340	72	5950
		11.60	0.250	5340	4960	183	225	238		5450	7790	6350	267	291	340		7100
		12.60	0.271	5790	5720	198	242	238		5850	8430	7500	288	313	340		7600
		13.50	0.290	6210	6420	211	259	238		6500	9040	8540	307	334	340		8400
		15.10	0.337	7210	7620	242	297	238		7900	10490	11080	353	384	340		10350
5	127.00	15.00	0.296	5700	5560	241	292	288	44	7500	8300	7250	350	379	418	65	10200
		18.00	0.362	6960	7390	290	353	288		9750	10140	10500	422	457	418		13200
		21.40	0.437	8410	8770	345	419	288		12400	12240	12760	502	543	418		16950
		23.20	0.478	8660	9510	373	454	288		13850	12600	13840	544	589	418		18950
		24.10	0.500	8660	9900	388	473	288		14600	12600	14400	566	613	418		20000
5 ½	139.70	17.00	0.304	5320	4910	273	329	312	40	10250	7750	6300	397	428	456	59	13350
		20.00	0.361	6310	6610	320	387	312		12750	9200	8830	467	503	456		16750
		23.00	0.415	7250	7680	364	440	312		14900	10570	11170	531	572	456		19600
		26.00	0.476	8050	8700	413	499	312		17400	11730	12650	601	648	456		23150
6 ¾	168.28	20.00	0.288	4190	2970	315	375	349	33	11300	6090	3480	459	489	508	49	15500
		24.00	0.352	5110	4560	381	453	349		15250	7440	5760	556	592	508		21250
		28.00	0.417	6050	6170	447	531	349		18800	8820	8180	651	694	508		25750
		32.00	0.475	6690	7320	504	599	349		22200	9750	10330	735	783	508		30450
7	177.80	23.00	0.317	4350	3270	366	432	441	31	14150	6340	3830	533	565	643	46	19300
		26.00	0.362	4970	4320	415	490	441		16950	7240	5410	604	641	643		23250
		29.00	0.408	5600	5410	464	548	441		20300	8170	7030	676	718	643		27800
		32.00	0.453	6220	6470	512	605	441		23450	9070	8620	746	792	643		32300
		35.00	0.498	6850	7270	559	660	441		26550	9960	10180	814	864	643		36650
7 ¾	193.68	26.40	0.328	4130	2890	414	483	479	29	22150	6020	3400	602	635	697	42	29450
		29.70	0.375	4730	3910	470	549	479		18300	6890	4790	683	721	697		24200
		33.70	0.430	5420	5100	535	625	479		22150	7900	6560	778	821	697		29450
		39.00	0.500	6310	6610	616	719	479		26750	9180	8820	895	945	697		35750
		42.80	0.562	6670	7510	686	801	479		32400	9730	10810	998	1053	697		43500
		45.30	0.595	6670	7910	713	845	479		37300	9730	11510	1036	1109	697		50400

PIPE OUTSIDE DIAMETER		NOMINAL WEIGHT lb/ft	WALL THICKNESS inch	GRADE 110							GRADE 125						
inch	mm			P <sub>i</sub>	P <sub>c</sub>	S <sub>y</sub>	S <sub>u</sub>	L	B	T <sub>y</sub>	P <sub>i</sub>	P <sub>c</sub>	S <sub>y</sub>	S <sub>u</sub>	L	B	T <sub>y</sub>
				psi	psi	1000lb	1000lb	1000lb	%/100ft	ft.lb	psi	psi	1000lb	1000lb	1000lb	%/100ft	ft.lb
4 ½	114.30	10.50	0.224	9570	5560	331	347	477	99	7450	10890	5830	376	378	542	112	7800
		11.60	0.250	10690	7590	367	385	477		8800	12150	8010	417	420	542		9300
		12.60	0.271	11570	9210	396	415	477		9450	13170	9890	450	452	542		9950
		13.50	0.290	12400	10690	422	443	477		10450	14110	11630	480	482	542		11150
		15.10	0.337	14400	14340	484	509	477		13000	16390	15840	551	554	542		13800
5	127.00	15.00	0.296	11390	8850	481	503	573	89	13150	12950	9490	547	548	652	101	14000
		18.00	0.362	13920	13470	580	606	573		17100	15840	14820	659	661	652		18300
		21.40	0.437	16810	17550	689	720	573		22000	19120	19940	784	785	652		23700
		23.20	0.478	17320	19030	747	780	573		24650	19680	21610	849	851	652		26500
		24.10	0.500	17320	19800	777	812	573		26050	19680	22500	884	886	652		27950
5 ½	139.70	17.00	0.304	10630	7480	545	568	625	81	16800	12100	7890	620	620	710	92	17850
		20.00	0.361	12630	11110	641	667	625		21150	14360	12080	728	728	710		22500
		23.00	0.415	14520	14550	729	759	625		24850	16510	16060	828	828	710		26500
		26.00	0.476	16100	17390	826	860	625		29450	18320	19770	938	938	710		31350
6 ¾	168.28	20.00	0.288	8370	4030	631	651	697	67	19700	9510	4160	712	712	793	76	21100
		24.00	0.352	10230	6730	763	787	697		26900	11620	7020	860	860	793		28900
		28.00	0.417	12110	10170	894	922	697		33400	13760	10990	1008	1008	793		35850
		32.00	0.475	13370	13230	1009	1040	697		39600	15210	14550	1138	1138	793		42550



GRADE 90							GRADE 95						
P <sub>i</sub>	P <sub>c</sub>	S <sub>y</sub>	S <sub>u</sub>	L	B	T <sub>y</sub>	P <sub>i</sub>	P <sub>c</sub>	S <sub>y</sub>	S <sub>u</sub>	L	B	T <sub>y</sub>
psi	psi	1000lb	1000lb	1000lb	°/100ft	ft.lb	psi	psi	1000lb	1000lb	1000lb	°/100ft	ft.lb
7850	5190	271	279	389	81	6500	8280	5310	286	293	411	85	6800
8760	6820	301	309	389		7650	9240	7020	317	325	411		7950
9490	8120	324	333	389		8200	10010	8410	342	350	411		8550
10170	9300	346	355	389		9150	10720	9660	365	374	411		9500
11810	12210	397	408	389		11300	12440	12760	419	429	411		11800
9330	7830	394	404	470	73	11200	9850	8110	416	424	495	77	11750
11400	11520	475	486	470		14550	12020	12020	501	512	495		15250
13780	14360	565	578	470		18650	14530	15160	596	608	495		19600
14180	15560	611	627	470		20850	14950	16430	645	659	495		22000
14180	16200	637	652	470		22050	14950	17100	672	686	495		23150
8720	6730	447	456	513	66	14550	9180	6950	471	480	542	70	15200
10340	9630	525	536	513		18300	10910	10020	554	564	542		19100
11890	12370	597	609	513		21450	12550	12940	630	641	542		22400
13200	14230	677	691	513		25300	13910	15030	714	726	542		26500
6860	3700	517	523	571	55	16800	7240	3800	545	550	603	58	17650
8370	6140	625	632	571		22950	8830	6310	659	665	603		24050
9920	8880	732	741	571		28300	10460	9220	773	780	603		29800
10970	11330	826	837	571		33550	11560	11820	872	880	603		35250
7140	4030	599	605	723	52	21300	7530	4150	632	636	763	55	22400
8150	5740	680	686	723		25600	8590	5890	717	721	763		26900
9180	7570	761	768	723		30700	9690	7830	803	808	763		32250
10210	9370	839	847	723		35600	10760	9750	886	891	763		37450
11210	11170	916	925	723		40500	11840	11650	966	973	763		42550
6770	3610	677	680	784	48	32150	7150	3710	714	716	827	50	33650
7750	5040	769	772	784		26400	8170	5140	811	813	827		27600
8890	7050	875	879	784		32150	9370	7280	923	925	827		33650
10340	9620	1007	1013	784		39150	10910	10000	1063	1065	827		41000
10940	11890	1122	1128	784		47700	11540	12410	1185	1187	827		50000
10940	12950	1166	1189	784		55300	11540	13660	1231	1251	827		57950

PIPE OUTSIDE DIAMETER		NOMINAL WEIGHT	WALL THICKNESS	GRADE 110							GRADE 125						
inch	mm	lb/ft	inch	P <sub>i</sub>	P <sub>c</sub>	S <sub>y</sub>	S <sub>u</sub>	L	B	T <sub>y</sub>	P <sub>i</sub>	P <sub>c</sub>	S <sub>y</sub>	S <sub>u</sub>	L	B	T <sub>y</sub>
inch	mm	lb/ft	inch	psi	psi	1000lb	1000lb	1000lb	°/100ft	ft.lb	psi	psi	1000lb	1000lb	1000lb	°/100ft	ft.lb
7	177.80	23.00	0.317	8720	4440	732	752	883	63	25100	9910	4640	823	823	1004	72	26900
		26.00	0.362	9950	6240	830	853	883		30250	11310	6450	933	933	1004		32450
		29.00	0.408	11210	8530	929	955	883		36200	12750	9110	1045	1045	1004		38950
		32.00	0.453	12460	10780	1025	1053	883		42100	14170	11720	1153	1153	1004		45300
		35.00	0.498	13690	13040	1118	1150	883		47850	15560	14320	1258	1258	1004		51550
7 ½	193.68	26.40	0.328	8280	3920	827	845	957	58	37400	9410	4050	940	926	1089	66	38500
		29.70	0.375	9460	5350	940	960	957		30600	10750	5670	1068	1052	1089		31500
		33.70	0.430	10850	7870	1069	1093	957		37400	12340	8350	1215	1198	1089		38500
		39.00	0.500	12620	11080	1231	1258	957		45750	14340	12060	1399	1379	1089		47050
		42.80	0.562	13360	13920	1372	1401	957		55850	15190	15350	1559	1536	1089		57550
		45.30	0.595	13360	15430	1426	1477	957		64750	15190	17090	1620	1619	1089		66750

Performance properties for proprietary and other grades or for special clearance couplings on request.

- P<sub>i</sub> ... internal yield pressure
- P<sub>c</sub> ... collapse pressure
- S<sub>y</sub> ... joint yield strength
- S<sub>u</sub> ... joint ultimate strength – API joint strength (calculation according to API TR 5C3)
- L ... max. load on coupling face
- B ... max. bending (uniaxial)
- T<sub>y</sub> ... connection yield torque

Other grades on request.

# MAKE UP TORQUE

## RECOMMENDED OPTIMUM MAKE-UP TORQUE FOR REGULAR COUPLINGS

PIPE OUTSIDE DIAMETER		NOMINAL WEIGHT		WALL THICKNESS		GRADE 55		GRADE 80		GRADE 90		GRADE 95		GRADE 110		GRADE 125	
inch	mm	lb/ft	kg/m	inch	mm	Nm	ft.lb	Nm	ft.lb	Nm	ft.lb	Nm	ft.lb	Nm	ft.lb	Nm	ft.lb
4 ½	114.30	10.50	15.63	0.224	5.69	5040	3720	6480	4780	7040	5190	7360	5430	8080	5960	8480	6250
		11.60	17.26	0.250	6.35	5920	4370	7680	5660	8320	6140	8640	6370	9520	7020	10080	7430
		12.60	18.75	0.271	6.88	6320	4660	8240	6080	8880	6550	9280	6840	10240	7550	10800	7970
		13.50	20.09	0.290	7.37	7040	5190	9120	6730	9920	7320	10320	7610	11360	8380	12080	8910
		15.10	22.47	0.337	8.56	8560	6310	11200	8260	12240	9030	12800	9440	14080	10390	14960	11030
5	127.00	15.00	22.32	0.296	7.52	8160	6020	11040	8140	12160	8970	12720	9380	14240	10500	15200	11210
		18.00	26.79	0.362	9.19	10560	7790	14320	10560	15760	11620	16560	12210	18560	13690	19840	14630
		21.40	31.85	0.437	11.10	13440	9910	18400	13570	20240	14930	21280	15700	23840	17580	25680	18940
		23.20	34.53	0.478	12.14	15040	11090	20560	15160	22640	16700	23840	17580	26720	19710	28720	21180
		24.10	35.86	0.500	12.70	15840	11680	21680	15990	23920	17640	25120	18530	28240	20830	30320	22360
5 ½	139.70	17.00	25.30	0.304	7.72	11120	8200	14480	10680	15760	11620	16480	12160	18240	13450	19360	14280
		20.00	29.76	0.361	9.17	13840	10210	18160	13390	19840	14630	20720	15280	22960	16930	24400	18000
		23.00	34.23	0.415	10.54	16160	11920	21280	15700	23280	17170	24320	17940	26960	19880	28720	21180
		26.00	38.69	0.476	12.09	18880	13930	25120	18530	27440	20240	28720	21180	31920	23540	34000	25080
6 ¾	168.28	20.00	29.76	0.288	7.32	12240	9030	16800	12390	18240	13450	19120	14100	21360	15750	22880	16880
		24.00	35.72	0.352	8.94	16560	12210	23040	16990	24880	18350	26080	19240	29200	21540	31360	23130
		28.00	41.67	0.417	10.59	20400	15050	27920	20590	30720	22660	32320	23840	36240	26730	38880	28680
		32.00	47.62	0.475	12.06	24080	17760	33040	24370	36400	26850	38240	28200	42960	31690	46160	34050
7	177.80	23.00	34.23	0.317	8.05	15360	11330	20960	15460	23120	17050	24320	17940	27200	20060	29200	21540
		26.00	38.69	0.362	9.19	18400	13570	25200	18590	27760	20470	29200	21540	32800	24190	35200	25960
		29.00	43.16	0.408	10.36	22000	16230	30160	22250	33280	24550	34960	25790	39280	28970	42240	31160
		32.00	47.62	0.453	11.51	25440	18760	35040	25840	38640	28500	40640	29970	45680	33690	49120	36230
		35.00	52.09	0.498	12.65	28800	21240	39760	29330	43920	32390	46160	34050	51920	38290	55920	41250
7 ¾	193.68	26.40	39.54	0.328	8.33	19840	14630	26240	19350	28640	21120	29920	22070	33200	24490	35360	26080
		29.70	44.70	0.375	9.52	24000	17700	31920	23540	34880	25730	36480	26910	40560	29920	43200	31860
		33.70	50.68	0.430	10.92	29040	21420	38800	28620	42480	31330	44480	32810	49600	36580	52960	39060
		39.00	58.12	0.500	12.70	35120	25900	47200	34810	51760	38180	54240	40010	60560	44670	64720	47740
		42.80	64.60	0.562	14.27	40480	29860	54640	40300	60000	44250	62880	46380	70240	51810	75200	55470
		45.30	68.00	0.595	15.11	43280	31920	58480	43130	64240	47380	67360	49680	75280	55520	80640	59480

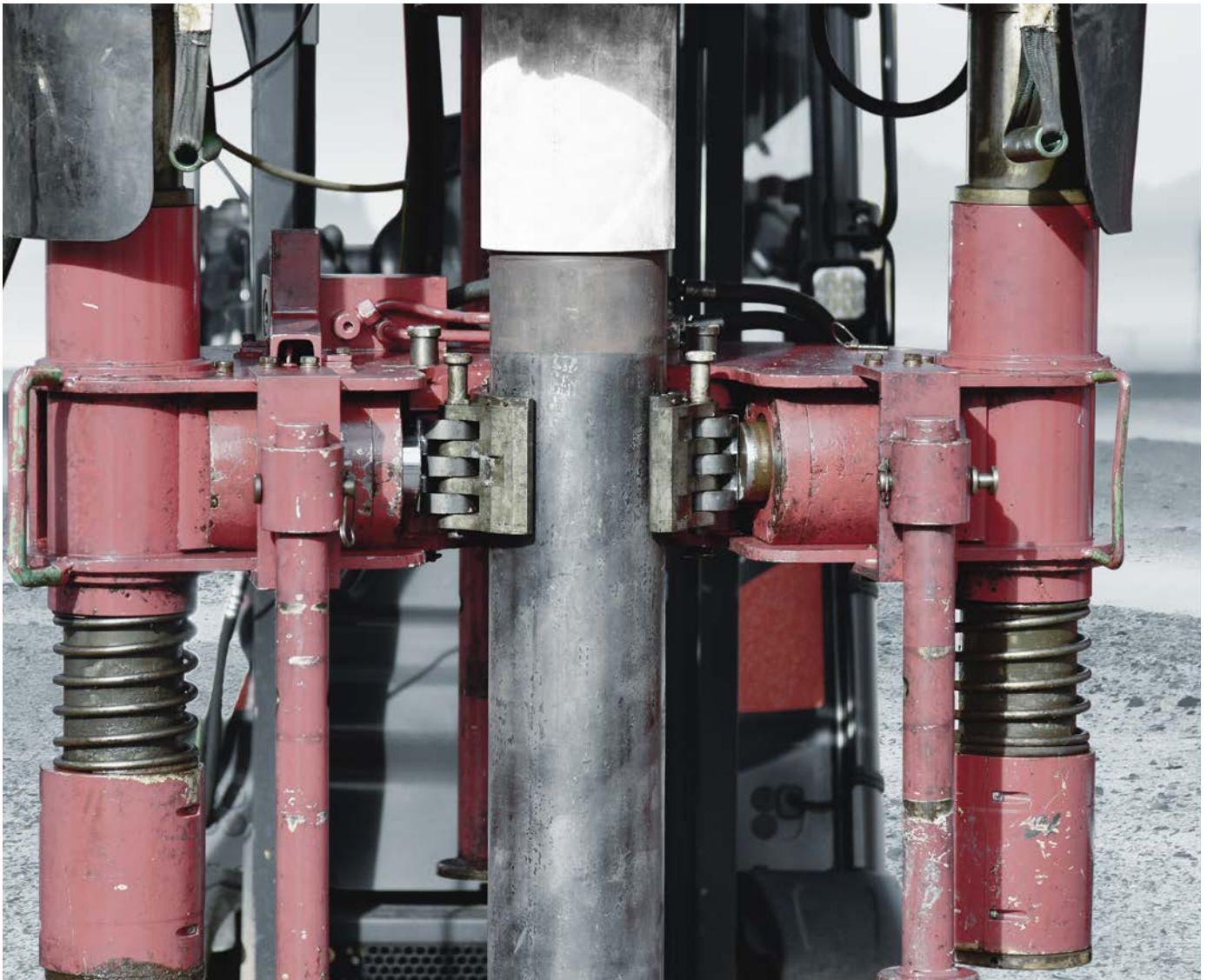
This table shows the values at printing date of this brochure. Actual values available in the Datasheet Generator on our Web Page or in the myTubulars App.



Recommended make-up-torque using a thread compound with a friction factor of 1.0.

Maximum torque: optimum + 10 %  
Minimum torque: optimum - 10 %

Special clearance and 20° beveled couplings have a lower load on coupling face.







# SERVICES



myTubulars

## myTubulars APP PRODUCT DATASHEETS, FIELD SERVICE AND LICENSEES

Generate datasheets and load envelopes containing dimension and performance data for products provided by voestalpine Tubulars with our Datasheet Generator. You can quickly and easily check the product application against field requirements in advance also on your tablet or smartphone by using the myTubulars App.

myTubulars is available for all iOS and Android devices for free in the App stores.

### GET THE APP!



Field Service during the installation can be provided upon request. Please visit the Customer Service site on our web page [www.voestalpine.com/tubulars](http://www.voestalpine.com/tubulars)







# WHY voestalpine Tubulars?

Support from material and product selection, in-house material and product development, to final product and installation consulting from one source.



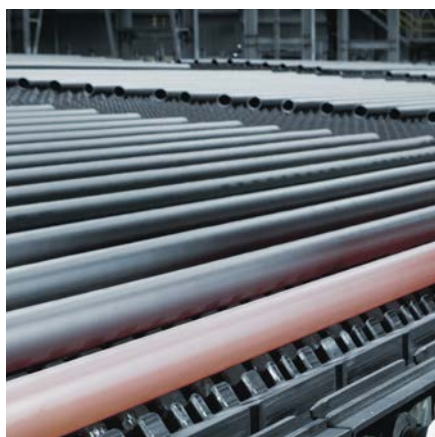
**PRODUCT DEVELOPMENT**



**CONNECTION DEVELOPMENT**



**MATERIAL DEVELOPMENT**



**PROCESS DEVELOPMENT**



**TAILOR-MADE SOLUTIONS**



**FIELD SERVICE**

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**voestalpine**

ONE STEP AHEAD.