Mechanical Tubes

voestalpine Tubulars
www.vatubulars.com

voestalpine
ONE STEP AHEAD.

Mechanical Tubes

Mechanical tubes, measured in exact OD sizes and wall thickness, expressed in gauge, decimals or fractions of an inch, are used for a variety of purposes where tolerances and dimensions are critical.

These products are tailored to meet individual designs and loads. voestalpine Tubulars is constantly setting new standards by developing innovative products in concert with the customers. voestalpine Tubulars delivers mechanical tubes for numerous industries. The applications include but are not limited to crane fabrication, construction and machinery, civil and mechanical engineering and for slope and tunnel reinforcement.

Mechanical tubes made by voestalpine Tubulars are available in the following range of dimensions, standards, grades and lengths.

STANDARD PRODUCTION RANGE & MAXIMUM LENGTH

		WALL THICKNESS WT												
mm		2.60	2.90	3.20	3.60	4.00	4.50	5.00	5.60	6.30	7.10	8.00	8.80	9.50
	inch	0.102	0.114	0.126	0.142	0.157	0.177	0.197	0.220	0.248	0.280	0.315	0.346	0.374
26.90	1.059													
30.00	1.181													
31.80	1.252													
33.70	1.327													
38.00	1.496													
42.40	1.669													
44.50	1.752													
48.30	1.902													
51.00	2.008													
54.00	2.126													
57.00	2.244													
60.30	2.374													
63.50	2.500													
70.00	2.756													
73.00	2.874													
76.10	2.996													
82.50	3.248													
88.90	3.500													
95.00	3.740													
101.60	4.000													
108.00	4.252													
114.30	4.500													
121.00	4.764													
127.00	5.000													
133.00	5.236													
139.70	5.500													
146.00	5.748													
152.40	6.000													
159.00	6.260													17.1 56.1
165.10	6.500													16.4 53.8
168.30	6.626												17.3 56.8	16.1 52.8
177.80	7.000											17.9 58.7	16.3 53.5	15.4 50.5

OUTSIDE DIAMETER OD

length in metric units (m)
length in US units (ft)

We welcome inquiries with special requirements from our customers.

SIZE RANGE:

Outside diameter: as rolled:
1.051 to 7.157 inches (26.7 to 181.8 mm).
heat treated: 2.374 to 7.157 inches (60.3 to 181.8 mm).
Wall thickness: 0.102 to 0.787 inches (2.6 to 20.0 mm).

GRADES:

E 235 to S 890 and other high strength steels on request.

STANDARDS:

Mechanical tubes made by voestalpine Tubulars can be manufactured to various specifications and standards, e.g. EN 10297-1, EN 10210-1 or to customer specifications.

PRODUCTION LENGTHS:

As rolled: 0.03 to 57.4 feet (0.01 to 17.5 m), heat treated: up to 42 feet (12.8 m).

	10.00	11.00	11.50	12.00	12.50	14.20	16.00	17.50	20.00
	0.394	0.433	0.453	0.472	0.492	0.559	0.630	0.689	0.787
								17.2 56.4	
							17.3 56.8	15.8 51.8	
							16.1 52.8	14.8 48.6	
						17.1 56.1	15.2 49.9	14.2 46.6	
						16.2 53.1	15.1 49.5	14.0 45.9	
						15.8 51.8	14.3 46.9	13.2 43.3	
					17.0 55.8	15.1 49.5	13.5 44.3	12.4 40.7	10.7 35.1
			17.4 57.1	16.7 54.8	16.1 52.8	14.6 47.9	12.7 41.7	11.7 38.4	10.1 33.1
		17.2 56.4	16.5 54.1	15.8 51.8	15.5 50.9	13.8 45.3	12.3 40.4	11.4 37.4	9.8 32.2
		16.0 52.5	15.3 50.2	15.4 50.5	14.8 48.6	13.1 43.0	11.7 38.4	10.8 35.4	9.3 30.5
	17.0 55.8	15.5 50.9	15.2 49.9	14.6 47.9	14.1 46.3	12.5 41.0	11.1 36.4	10.2 33.5	8.8 28.9
	16.3 53.5	15.2 49.9	14.5 47.6	13.9 45.6	13.4 44.0	11.9 39.0	10.6 34.8	9.7 31.8	8.3 27.2
	15.6 51.2	14.5 47.6	13.9 45.6	13.3 43.6	12.8 42.0	11.3 37.1	10.1 33.1	9.3 30.5	8.0 26.2
	15.6 51.2	14.2 46.6	13.6 44.6	13.1 43.0	12.6 41.3	11.1 36.4	9.9 32.5	9.1 29.9	7.5 24.6
	14.7 48.2	13.4 44.0	12.8 42.0	12.3 40.4	11.8 38.7	10.4 34.1	9.3 30.5	8.5 27.9	6.9 22.6

■ Dimensions upon request

Please note that maximum length for all dimensions is 57.4 ft (17.5 m), except those specified in the table.

MECHANICAL HOLLOW BARS – PRODUCTION RANGE

OUTSIDE DIAMETER (in)	Tolerance in %	WALL THICKNESS (in) * 0.102	0.114	0.126	0.142	0.157	0.177	0.197	0.220	0.248	0.280	0.315	0.346	0.374
		12.50	12.50	12.50	12.50	10.00	10.00	10.00	10.00	9.50	9.50	9.00	8.50	7.50
1.051	0.016	0.85	0.82	0.80	0.77	0.74								
1.059	0.016	0.85	0.83	0.81	0.78	0.74	0.70							
1.252	0.016	1.05	1.02	1.00	0.97	0.94	0.90	0.86						
1.280	0.016	1.07	1.05	1.03	1.00	0.96	0.93	0.89						
1.315	0.016	1.11	1.09	1.06	1.03	1.00	0.96	0.92						
1.327	0.016	1.12	1.10	1.07	1.04	1.01	0.97	0.93						
1.437	0.016	1.23	1.21	1.19	1.15	1.12	1.08	1.04	1.00					
1.496	0.016	1.29	1.27	1.24	1.21	1.18	1.14	1.10	1.06					
1.594	0.016	1.39	1.37	1.34	1.31	1.28	1.24	1.20	1.15	1.10	1.04			
1.661	0.016	1.46	1.43	1.41	1.38	1.35	1.31	1.27	1.22	1.17	1.10	1.03	0.97	0.91
1.669	0.016	1.46	1.44	1.42	1.39	1.35	1.31	1.28	1.23	1.17	1.11	1.04	0.98	0.92
1.752	0.016	1.55	1.52	1.50	1.47	1.44	1.40	1.36	1.31	1.26	1.19	1.12	1.06	1.00
1.791	0.016	1.59	1.56	1.54	1.51	1.48	1.44	1.40	1.35	1.30	1.23	1.16	1.10	1.04
1.902	0.016	1.70	1.67	1.65	1.62	1.59	1.55	1.51	1.46	1.41	1.34	1.27	1.21	1.15
2.008	0.016	1.80	1.78	1.76	1.72	1.69	1.65	1.61	1.57	1.51	1.45	1.38	1.31	1.26
2.126	0.016		1.90	1.87	1.84	1.81	1.77	1.73	1.69	1.63	1.57	1.50	1.43	1.38
2.244	0.016		2.02	1.99	1.96	1.93	1.89	1.85	1.80	1.75	1.69	1.61	1.55	1.50
2.374	0.016		2.15	2.12	2.09	2.06	2.02	1.98	1.93	1.98	1.81	1.74	1.68	1.63
2.500	0.020		2.27	2.25	2.22	2.19	2.15	2.11	2.06	2.00	1.94	1.87	1.81	1.75
2.756	0.020		2.53	2.50	2.47	2.44	2.40	2.36	2.31	2.26	2.20	2.13	2.06	2.01
2.823	0.020		2.59	2.57	2.54	2.51	2.47	2.43	2.38	2.33	2.26	2.19	2.13	2.07
2.874	0.020		2.65	2.62	2.59	2.56	2.52	2.48	2.43	2.38	2.31	2.24	2.18	2.13
2.996	0.020		2.77	2.74	2.71	2.68	2.64	2.60	2.56	2.50	2.44	2.37	2.30	2.25
3.181	0.020			2.93	2.90	2.87	2.83	2.79	2.74	2.69	2.62	2.55	2.49	2.43
3.248	0.020			3.00	2.96	2.93	2.89	2.85	2.81	2.75	2.69	2.62	2.56	2.50
3.382	0.020			3.13	3.10	3.07	3.03	2.99	2.94	2.89	2.82	2.75	2.69	2.63
3.500	0.020			3.25	3.22	3.19	3.15	3.11	3.06	3.00	2.94	2.87	2.81	2.75
3.579	0.020			3.33	3.30	3.26	3.22	3.19	3.14	3.08	3.02	2.95	2.89	2.83
3.740	0.020			3.49	3.46	3.43	3.39	3.35	3.30	3.24	3.18	3.11	3.05	2.99
3.780	0.020				3.50	3.46	3.43	3.39	3.34	3.28	3.22	3.15	3.09	3.03
4.000	0.020				3.72	3.69	3.65	3.61	3.56	3.50	3.44	3.37	3.31	3.25
4.217	0.022				3.93	3.90	3.86	3.82	3.78	3.72	3.66	3.59	3.52	3.47
4.252	0.022				3.97	3.94	3.90	3.86	3.81	3.76	3.69	3.62	3.56	3.50
4.453	0.024				4.17	4.14	4.10	4.06	4.01	3.96	3.89	3.82	3.76	3.70
4.500	0.024				4.22	4.19	4.15	4.11	4.06	4.00	3.94	3.87	3.81	3.75
4.693	0.024				4.41	4.38	4.34	4.30	4.25	4.20	4.13	4.06	4.00	3.94
4.764	0.024				4.48	4.45	4.41	4.37	4.32	4.27	4.20	4.13	4.07	4.02
4.972	0.024					4.66	4.62	4.58	4.53	4.48	4.41	4.34	4.28	4.22
5.000	0.024					4.69	4.65	4.61	4.56	4.50	4.44	4.37	4.31	4.25
5.236	0.026					4.92	4.88	4.84	4.80	4.74	4.68	4.61	4.54	4.49
5.500	0.026					5.19	5.15	5.11	5.06	5.00	4.94	4.87	4.81	4.75
5.563	0.028						5.21	5.17	5.12	5.07	5.00	4.93	4.87	4.81
5.709	0.028						5.35	5.31	5.27	5.21	5.15	5.08	5.02	4.96
5.748	0.028						5.39	5.35	5.31	5.25	5.19	5.12	5.06	5.00
5.965	0.030						5.61	5.57	5.52	5.47	5.41	5.33	5.27	5.22
6.000	0.030						5.65	5.61	5.56	5.50	5.44	5.37	5.31	5.25
6.260	0.031						5.91	5.87	5.82	5.76	5.70	5.63	5.57	5.51
6.362	0.031						6.01	5.97	5.92	5.87	5.80	5.73	5.67	5.61
6.500	0.033						6.15	6.11	6.06	6.00	5.94	5.87	5.81	5.75
6.626	0.033						6.27	6.23	6.18	6.12	6.06	6.00	5.93	5.88
6.760	0.033											6.13	6.07	6.01
7.000	0.033											6.37	6.31	6.25
7.071	0.033											6.44	6.38	6.32
7.157	0.035													

All pipes are available in as rolled condition.
☐ Within the framed section heat treatment is available.

* Note: Above dimensions are standards according to DIN / EN.
Other pipe sizes and wall thicknesses may be furnished by agreement.

	0.394	0.433	0.453	0.472	0.492	0.559	0.630	0.689	0.787
	7.50	7.50	7.50	7.00	7.00	6.50	6.00	5.50	5.00
	0.87								
	0.88								
	0.96	0.89							
	1.00	0.93							
	1.11	1.04							
	1.22	1.14	1.10						
	1.34	1.26	1.22						
	1.46	1.38	1.34	1.30					
	1.59	1.51	1.47	1.43	1.39				
	1.71	1.63	1.59	1.56	1.52				
	1.97	1.89	1.85	1.81	1.77				
	2.04	1.96	1.92	1.88	1.84				
	2.09	2.01	1.97	1.93	1.89	1.76			
	2.21	2.13	2.09	2.05	2.01	1.88			
	2.39	2.31	2.28	2.24	2.20	2.06			
	2.46	2.38	2.34	2.30	2.26	2.13	1.99		
	2.59	2.52	2.48	2.44	2.40	2.26	2.12		
	2.71	2.63	2.59	2.56	2.52	2.38	2.24	2.12	
	2.79	2.71	2.67	2.63	2.59	2.46	2.32	2.20	
	2.95	2.87	2.83	2.80	2.76	2.62	2.48	2.36	
	2.99	2.91	2.87	2.83	2.80	2.66	2.52	2.40	
	3.21	3.13	3.09	3.06	3.02	2.88	2.74	2.62	
	3.43	3.35	3.31	3.27	3.23	3.10	2.96	2.84	
	3.46	3.39	3.35	3.31	3.27	3.13	2.99	2.87	
	3.67	3.59	3.55	3.51	3.47	3.33	3.19	3.07	
	3.71	3.63	3.59	3.56	3.52	3.38	3.24	3.12	
	3.91	3.83	3.79	3.75	3.71	3.57	3.43	3.31	
	3.98	3.90	3.86	3.82	3.78	3.65	3.50	3.39	
	4.19	4.11	4.07	4.03	3.99	3.85	3.71	3.59	
	4.21	4.13	4.09	4.06	4.02	3.88	3.74	3.62	3.43
	4.45	4.37	4.33	4.29	4.25	4.12	3.98	3.86	3.66
	4.71	4.63	4.59	4.56	4.52	4.38	4.24	4.12	3.93
	4.78	4.70	4.66	4.62	4.58	4.44	4.30	4.19	3.99
	4.92	4.84	4.80	4.76	4.72	4.59	4.45	4.33	4.13
	4.96	4.88	4.84	4.80	4.76	4.63	4.49	4.37	4.17
	5.18	5.10	5.06	5.02	4.98	4.85	4.70	4.59	4.39
	5.21	5.13	5.09	5.06	5.02	4.88	4.74	4.62	4.43
	5.47	5.39	5.35	5.31	5.28	5.14	5.00	4.88	4.69
	5.57	5.50	5.46	5.42	5.38	5.24	5.10	4.98	4.79
	5.71	5.63	5.59	5.56	5.52	5.38	5.24	5.12	4.93
	5.84	5.76	5.72	5.68	5.64	5.51	5.37	5.25	5.05
	5.97	5.89	5.85	5.81	5.78	5.64	5.50	5.38	5.19
	6.21	6.13	6.09	6.06	6.02	5.88	5.74	5.62	5.43
	6.28	6.20	6.17	6.13	6.09	5.95	5.81	5.69	5.50
						6.04	5.90	5.78	5.59

Inside diameter nominal in inches

■ Outside diameter for Mechanical Tubes

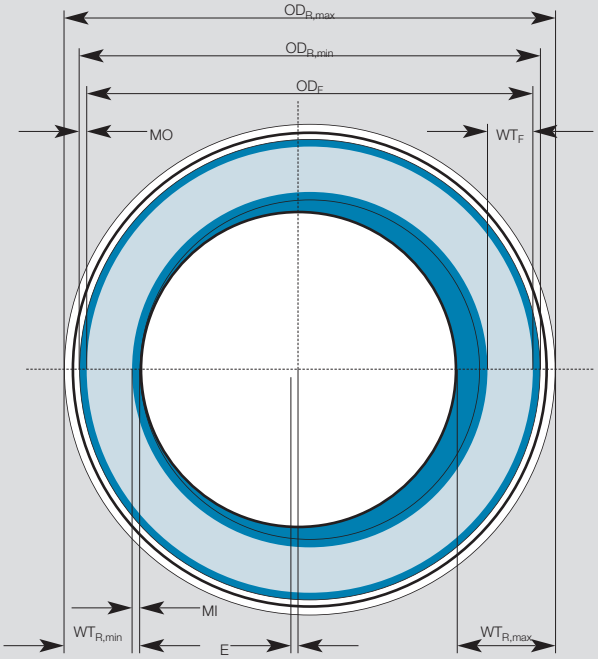
■ Other possible outside diameters according to the standard program of voestalpine Tubulars

■ Tighter tolerances on the outside diameter with +/- 0.012 inches possible

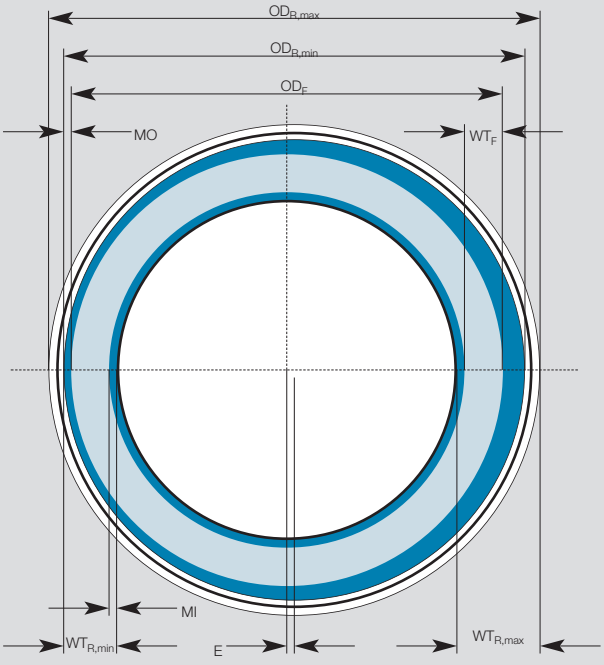
■ Tighter tolerances on the outside diameter with +/- 0.016 inches possible

TOLERANCES

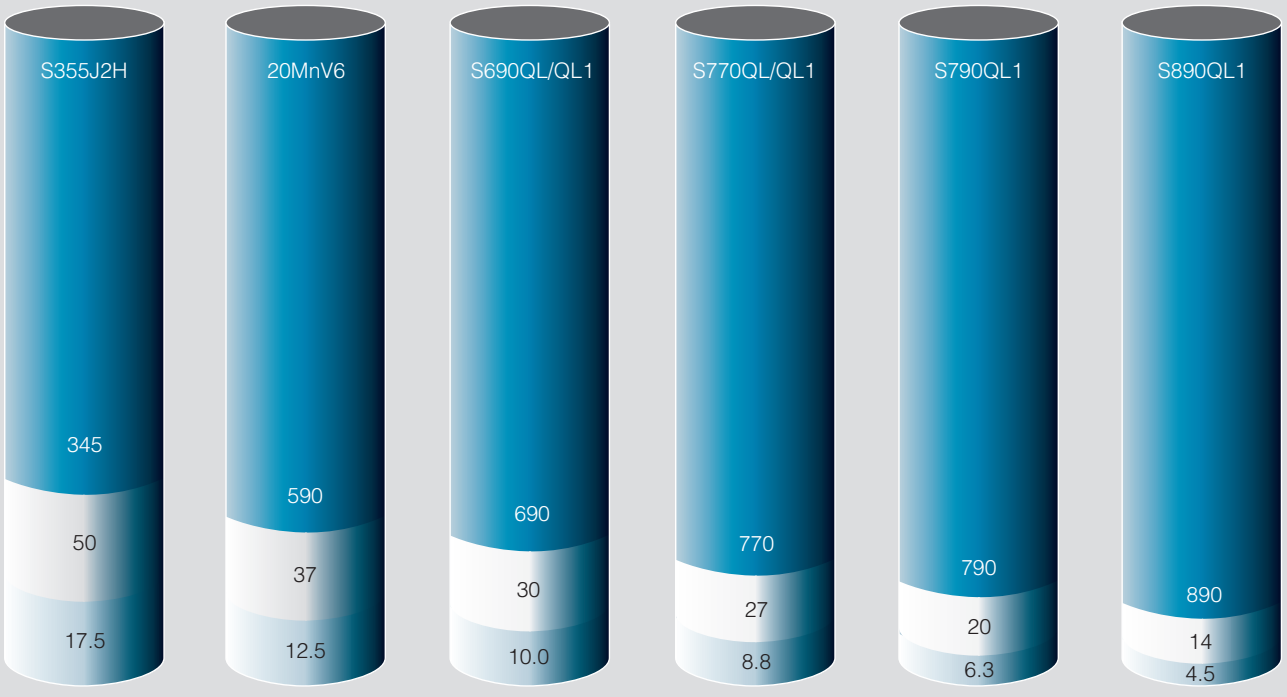
WORKPIECE OUTSIDE CHUCKED



WORKPIECE INSIDE CHUCKED



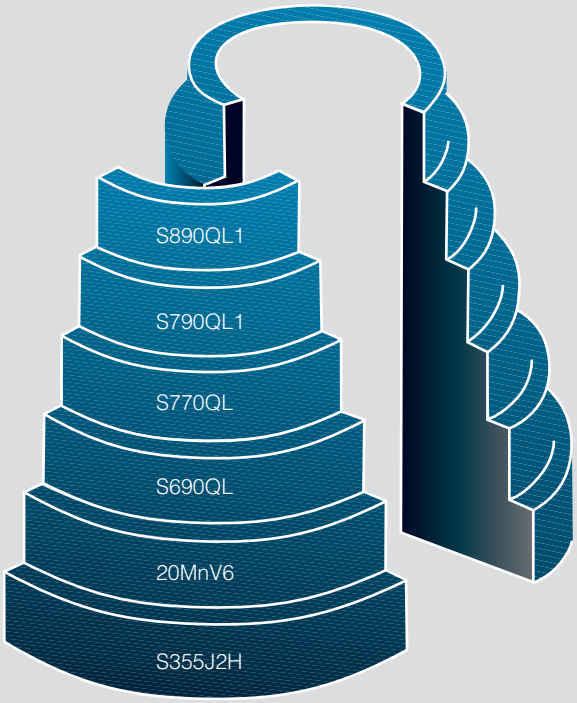
WEIGHT REDUCTION
DUE TO USE OF HIGHER GRADES



Values are based on an outside diameter of 133 mm

standard	**grade**	**yield strength** Re in (N/mm²)	**tensile strength** Rm in (N/mm²)
EN 10210-1	S355J2H	min. 345	490 – 630
–	20MnV6	min. 590	700 – 850
SEW 090-2	S690QL	min. 690	770 – 960
SEW 090-2	S690QL1	min. 690	770 – 960
SEW 090-2	S770QL/QL1	min. 770	820 – 1000
SEW 090-2	S790QL1	min. 790	850 – 1030
SEW 090-2	S890QL1	min. 890	960 – 1110

$OD_{R,min}$	Outside diameter rolled, minimum
$OD_{R,max}$	Outside diameter rolled, maximum
OD_F	Outside diameter finished
$WT_{R,min}$	Wall thickness rolled, minimum
$WT_{R,max}$	Wall thickness rolled, maximum
WT_F	Wall thickness finished
E	Eccentricity
MI	Machining inside
MO	Machining outside



	elongation A min. (longitudinal)	**charpy V-notch** in Joule (longitudinal)		
		-20 °C	-40 °C	-60 °C
	22 %	27	–	–
	16 %	–	27	–
	16 %	50	40	–
	16 %	55	45	40
	15 %	45	40	–
	15 %	55	45	40
	14 %	55	45	30

voestalpine Tubulars GmbH & Co KG
Alpinestrasse 17
8652 Kindberg-Aumuehl, Austria
T. +43/50304/23-0
F. +43/50304/63-532
sales@vatubulars.com
www.vatubulars.com
www.voestalpine.com