



Metric Tube



The Fitting Authority

Introduction

Parker offers three types of seamless metric tubes for hydraulic, pneumatic and instrumentation applications:

- Steel seamless cold drawn tube, phosphate and oil dipped for corrosion resistance
- Steel seamless cold drawn tube, zinc plated with yellow chromate conversion process for enhanced corrosion resistance
- Stainless steel cold drawn tube

Conformance and Material Specifications

Tests and Certificates

All tubes are subjected to a non-destructive leak test and marked accordingly. This marking is used in lieu of a works certificate DIN 50 049-2-2. Test Class 1 DIN 17458 Table 7 applies for tubes made of 1.4571 material.

Materials and Mechanical Properties

Steel Types, mechanical properties and conditions are listed in [Table R1](#).

Welding Suitability and Weldability:

- Steel tubes of St. 37.4, R Series, are weldable according to usual techniques.
- Not recommended to weld St. 37.4, R-VZ series, Zinc/Chromate plated tubes.

Stainless steel tubes of 1.4571 are suitable for arc welding. The welding filler should be selected in accordance with DIN 8556 part 1 taking into account the type of application and the welding technique.

Applications

Recommended Bend Radius

A bend radius of 3 times the tube O.D. or greater is recommended for cold bending of Parker tubes with hand, mechanical and power bending equipment.

Use of Tube Supports

The use of VH tube supports for EO and EO-2 fittings is required in certain thinner wall tubes to ensure proper assembly. Consult the tube charts.

Temperature Range

- Parker steel (St. 37.4) metric seamless tube can be used at the full rated working pressures without pressure rating reductions within the following temperature range: -40°C to +120°C. Maximum allowable operating temperature of +250°C.
- Parker stainless steel (1.4571) metric seamless tube can be used at full rated working pressures with-out pressure reductions within the following temperature ranges: 60°C to 20°C. Maximum allowable operating temperature of +400°C. Elevated temperature pressure reductions are as listed in [Table R2](#).

As Delivered Conditions:

Standard Tube Lengths: 6 meters (approx. 20 ft)

Surface Finish:

- Steel (St. 37.4): Phosphated and oiled
 - I.D. dimensions 1.5 –5 mm, outside and inside oiled
 - I.D. dimensions 6 mm and higher, outside and inside phosphated and oiled
- Steel (St. 37.4) R-VZ Series: Zinc Plated, Yellow Chromate Conversion Coating 8-12 micrometer thickness, inside oiled

Parker Series	Material	Tensile Strength	Yield Strength	% Elongation	Condition
R Series	Steel, fine grain quality (RR) St 37.4 per DIN 1630	340 N/mm ² min. 49,000 PSI	235 N/mm ² min. 34,000 PSI	25% min.	Seamless, cold drawn under inert gas, normal annealed, abbreviation NBK DIN 2391C, Part 2
R-71 Series	1.4571 X6CrNiMoTi17122	500 N/mm ² min. 72,500 PSI	245 N/mm ² min. 35,500 PSI	35% min.	Seamless, cold drawn free of scale, heat treated in accordance with DIN 17458 tab. 6

Table R1 –Parker Steel tubes mechanical properties and conditions

Temperature	Material	-60° up to +20° C	50° C	100° C	200° C	300° C	400° C
Pressure reductions in %	1.4571	—	4.5	11	20	29	33

Note: Interpolation is acceptable for intermediate temperature level.

Table R2 –Parker stainless tube elevated temperature derating factors

Seamless EO Steel Tubes

Material St. 37.4

St. 37.4 Phosphated & Oiled Part No.	St. 37.4 Zinc Plated & Yellow Chromate Part No.	Tube O.D. (mm)	Toler- ance	Wall Thickness (mm)	Tube I.D. (mm)	Design Pressure (bar)		Burst Pressure (bar)	Weight (kg/m)	Standard From Stock	
						DIN 2413 I Static	DIN 2413 III Dynamic			Phos & Oil	ZGC
R04x0.5	R04x0.5 VZ	4		0.5	3	313	274	1160	0.047	•	
R04x0.75	R04x0.75 VZ	4	±0.1	0.75	2.5	409	393	1820	0.063		
R04x1	R04x1 VZ	4		1	2	522	502	2850	0.074	•	•
R05x1	R05x1 VZ	5	±0.1	1	3	432	416	2120	0.099		•
R06x0.75	R06x0.75 VZ	6		0.75*	4.5	333	289	1230	0.103		
R06x1	R06x1 VZ	6		1	4	389	374	1680	0.123	•	•
R06x1.5	R06x1.5 VZ	6	±0.1	1.5	3	549	528	3050	0.166	•	•
R06x2	R06x2 VZ	6		2	2	692	665		0.197	•	
R06x2.25	R06x2.25 VZ	6		2.25	@5	757	728		0.208		
R08x1	R08x1 VZ	8		1	6	333	289	1190	0.172	•	•
R08x1.5	R08x1.5 VZ	8	±0.1	1.5	5	431	414	1860	0.240	•	•
R08x2	R08x2 VZ	8		2	4	549	528	3020	0.296	•	•
R08x2.5	R08x2.5 VZ	8		2.5	3	658	632		0.339		
R10x1	R10x1 VZ	10		1	8	282	249	870	0.222	•	•
R10x1.5	R10x1.5 VZ	10		1.5	7	373	358	1380	0.314	•	•
R10x2	R10x2 VZ	10	±0.1	2	6	478	460	2100	0.395	•	•
R10x2.5	R10x2.5 VZ	10		2.5	5	576	553	3180	0.462		
R10x3	R10x3 VZ	10		3	4	666	641		0.518	•	
R12x1	R12x1 VZ	12		1	10	235	210	760	0.271	•	•
R12x1.5	R12x1.5 VZ	12		1.5	9	353	305	1150	0.388	•	•
R12x2	R12x2 VZ	12	±0.08	2	8	409	393	1580	0.493	•	•
R12x2.5	R12x2.5 VZ	12		2.5	7	495	476	2600	0.586	•	
R12x3	R12x3 VZ	12		3	6	576	553	3200	0.666		
R12x3.5	R12x3.5 VZ	12		3.5	5	651	627		0.734		
R14x1	R14x1 VZ	14		1*	12	201	182	620	0.321		
R14x1.5	R14x1.5 VZ	14		1.5	11	302	265	940	0.462	•	
R14x2	R14x2 VZ	14		2	10	403	343	1340	0.592	•	•
R14x2.5	R14x2.5 VZ	14	±0.08	2.5	9	434	417	1760	0.709		
R14x3	R14x3 VZ	14		3	8	507	487	2400	0.814		
R14x3.5	R14x3.5 VZ	14		3.5	7	576	553	3220	0.906		
R14x4	R14x4 VZ	14		4	6	641	616		0.986		
R15x1	R15x1 VZ	15		1*	13	188	171	590	0.345	•	•
R15x1.5	R15x1.5 VZ	15		1.5	12	282	249	980	0.499	•	•
R15x2	R15x2 VZ	15	±0.08	2	11	376	323	1250	0.641	•	•
R15x2.5	R15x2.5 VZ	15		2.5	10	409	393	1690	0.771		
R15x3	R15x3 VZ	15		3	9	478	460	2120	0.888		
R16x1	R16x1 VZ	16		1*	14	176	160	540	0.370		
R16x1.5	R16x1.5 VZ	16		1.5	13	264	234	820	0.536	•	•
R16x2	R16x2 VZ	16	±0.08	2	12	353	305	1170	0.691	•	•
R16x2.5	R16x2.5 VZ	16		2.5	11	386	372	1470	0.832	•	•
R16x3	R16x3 VZ	16		3	10	452	435	1920	0.962	•	•
R18x1	R18x1 VZ	18		1*	16	157	143	510	0.419	•	
R18x1.5	R18x1.5 VZ	18		1.5	15	235	210	780	0.610	•	•
R18x2	R18x2 VZ	18	±0.08	2	14	313	274	1040	0.789	•	•
R18x2.5	R18x2.5 VZ	18		2.5	13	392	335	1320	0.956	•	
R18x3	R18x3 VZ	18		3	12	409	393	1830	1.111		

* Tubes which need a [support sleeve \(VH\)](#) for assembly in EO and EO-2 fittings.

Table R3 — Seamless EO steel tubes

Seamless EO Steel Tubes (cont'd.)

Material St. 37.4

St. 37.4 Phosphated & Oiled Part No.	St. 37.4 Zinc Plated & Yellow Chromate Part No.	Tube O.D. (mm)	Toler- ance	Wall Thickness (mm)	Tube I.D. (mm)	Design Pressure (bar)		Burst Pressure (bar)	Weight (kg/m)	Standard From Stock	
						DIN 2413 I Static	DIN 2413 III Dynamic			Phos & Oil	ZGC
R20x1.5	R20x1.5 VZ	20		1.5*	17	212	191	570	0.684	•	
R20x2	R20x2 VZ	20		2	16	282	249	920	0.888	•	•
R20x2.5	R20x2.5 VZ	20	±0.08	2.5	15	353	305	1220	1.079	•	•
R20x3	R20x3 VZ	20		3	14	373	358	1450	1.258	•	•
R20x3.5	R20x3.5 VZ	20		3.5	13	426	410	1720	1.424		
R20x4	R20x4 VZ	20		4	12	478	460	2080	1.578	•	
R22x1.5	R22x1.5 VZ	22		1.5	19	192	174	590	0.758	•	•
R22x2	R22x2 VZ	22	±0.08	2	18	256	228	850	0.986	•	•
R22x2.5	R22x2.5 VZ	22		2.5	17	320	280	1040	1.202	•	
R22x3	R22x3 VZ	22		3	16	385	329		1.406		
R25x2	R25x2 VZ	25		2	21	226	202	670	1.134	•	•
R25x2.5	R25x2.5 VZ	25		2.5	20	282	249	920	1.387	•	•
R25x3	R25x3 VZ	25	±0.08	3	19	338	294	1050	1.628	•	•
R25x4	R25x4 VZ	25		4	17	394	379	1520	2.072	•	
R25x4.5	R25x4.5 VZ	25		4.5	16	437	420	1780	2.275		
R25x5	R25x5 VZ	25		5	15	478	460	2120	2.466		
R28x1.5	R28x1.5 VZ	28		1.5	25	151	139	450	0.980		
R28x2	R28x2 VZ	28		2	24	201	182	620	1.282	•	•
R28x2.5	R28x2.5 VZ	28	±0.08	2.5	23	252	224	770	1.572	•	
R28x3	R28x3 VZ	28		3	22	302	265	920	1.850	•	
R28x4	R28x4 VZ	28		4	20	403	343		2.368		
R28x5	R28x5 VZ	28		5	18	434	417		2.836		
R30x2	R30x2 VZ	30		2*	26	188	171	620	1.381	•	
R30x2.5	R30x2.5 VZ	30		2.5	25	235	210	770	1.695	•	
R30x3	R30x3 VZ	30	±0.08	3	24	282	249	920	1.998	•	•
R30x4	R30x4 VZ	30		4	22	376	323	1250	2.565	•	•
R30x5	R30x5 VZ	30		5	20	409	393	1580	3.083		
R35x2	R35x2 VZ	35		2	31	161	147	470	1.628	•	•
R35x2.5	R35x2.5 VZ	35		2.5	30	201	182	620	2.004		
R35x3	R35x3 VZ	35	±0.15	3	29	242	216	720	2.367	•	•
R35x4	R35x4 VZ	35		4	27	322	281	960	3.058	•	
R35x5	R35x5 VZ	35		5	25	403	343		3.699		
R35x6	R35x6 VZ	35		6	23	419	403		4.291		
R38x2.5	R38x2.5 VZ	38		2.5*	33	186	168	550	2.189		
R38x3	R38x3 VZ	38		3	32	223	200	660	2.589	•	
R38x4	R38x4 VZ	38	±0.15	4	30	297	261	970	3.354	•	•
R38x5	R38x5 VZ	38		5	28	371	319	1350	4.069	•	•
R38x6	R38x6 VZ	38		6	26	390	375		4.735	•	
R38x7	R38x7 VZ	38		7	24	446	429		5.352	•	
R42x2	R42x2 VZ	42		2*	38	134	124	390	1.973	•	•
R42x3	R42x3 VZ	42	±0.2	3	36	201	182	580	2.885	•	•
R42x4	R42x4 VZ	42		4	34	269	238	850	3.749	•	
R50x6	R50x6 VZ	50	±0.2	6	38	338			6.511		
R50x9	R50x9 VZ	50		9	32	437			9.100		
R65x8	R65x8 VZ	65	±0.3	8	49	347			11.246		
R80x10	R80x10 VZ	80	±0.35	10	60	353			17.263		

* Tubes which need a [support sleeve \(VH\)](#) for assembly in EO and EO-2 fittings.

Table R3 — Seamless EO steel tubes (cont'd.)

Seamless EO Stainless Steel Tubes

Material-No.: 1.4571

Part No.	Tube (mm)	Tolerance	Wall Thickness (mm)	Tube (mm)	Design Pressure (bar)		1.4571 Burst Pressure (bar)	Weight (kg/m)	STANDARD From Stock
					DIN 2413-1 Static	DIN 2413-1 Dynamic			Stainless Steel (71)
R6x171	6	±0.1	1	4	426	330	2340	0.125	•
R8x171	8	±0.1	1	6	368	256	1660	0.175	•
R8x1.571	8		1.5	5	472	366	2800	0.244	•
R10x171	10		1	8	294	209	1290	0.225	•
R10x1.571	10	±0.1	1.5	7	389	301	1930	0.319	•
R10x271	10		2	6	498	386	3100	0.401	•
R12x171	12		1	10	245	177	1220	0.275	•
R12x1.571	12	±0.08	1.5	9	368	256	1580	0.394	•
R12x271	12		2	8	426	330	2380	0.501	•
R14x1.571	14		1.5	11	315	223	1550	0.469	•
R14x271	14	±0.08	2	10	420	289	2180	0.601	•
R14x2.571	14		2.5	9	452	351	2800	0.720	•
R15x171	15		1*	13	196	143	860	0.351	•
R15x1.571	15	±0.08	1.5	12	294	209	1140	0.507	•
R15x271	15		2	11	392	271	1750	0.651	•
R16x271	16		2	12	368	256	1800	0.701	•
R16x2.571	16	±0.08	2.5	11	403	312	2120	0.845	•
R16x371	16		3	10	472	366	2800	0.977	•
R18x1.571	18	±0.08	1.5	15	245	177	1050	0.620	•
R18x271	18		2	14	327	230	1520	0.801	•
R20x271	20		2	16	294	209	1250	0.901	•
R20x2.571	20	±0.08	2.5	15	368	256	1550	1.095	•
R20x371	20		3	14	389	301	1960	1.277	•
R22x1.571	22	±0.08	1.5	19	200	146	720	0.770	•
R22x271	22		2	18	267	192	1020	1.002	•
R25x2.571	25	±0.08	2.5	20	294	209	1190	1.408	•
R25x371	25		3	19	353	247	1520	1.653	•
R28x1.571	28	±0.08	1.5	25	158	117	620	0.995	•
R28x271	28		2	24	210	153	880	1.302	•
R30x371	30	±0.08	3	24	294	209	1140	2.028	•
R30x471	30		4	22	392	271	1650	2.605	•
R35x271	35	±0.15	2	31	168	124	670	1.653	•
R38x471	38	±0.15	4	30	309	219	1240	3.405	•
R38x571	38		5	28	387	268	1680	4.131	•
R42x271	42	±0.2	2*	38	140	104	520	2.003	•
R42x371	42		3	36	210	153	860	2.930	•

* Tubes which need a [support sleeve \(VH\)](#) for assembly in EO and EO-2 fittings.

Table R4 — Seamless EO stainless steel tubes