

# Parker Hannifin Instrument Tubing

SANDVIK Seamless Stainless Steel tubes for Hydraulic and Instrumentation Systems



Looking to complete your tube fittings system?

When you want to reduce the risk of leakage in your hydraulic and instrumentation system, consider Sandvik seamless stainless steel coiled or straight length tubing.



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## Product Features:

- Weldability
- Plugged Ends
- Superior OD Finish
- Strictly controlled ovality, eccentricity and close tolerances
- Made under high quality standards

## Product Benefits:

- Controlled and consistent quality of steel grades provide easy welding
- Protection during transit and inside contamination
- Ensure no leakage when connecting straight tubes with Parker Fittings
- Superior performance in a wide variety of system applications, temperatures and pressures.
- Meets ASME ISO 9001, QS-9000, PED 97/23/EC, JIS, TUV , and LRQA requirements for tubing

ENGINEERING YOUR SUCCESS.

## Testing of stock standard tubing in straight condition

Sandvik hydraulic and instrumentation tubing are tested according to the standards as follows.

Standard	Tests							
	Chemical analysis	Tensile	Hardness	Flattening	Ring-expanding	Flaring	Corrosion	Hydrostatic
EN 10216-5 TC1 <sup>1)</sup>	S	S	–	S <sup>1)</sup>	S <sup>1)</sup>	–	– <sup>4)</sup>	T <sup>2)</sup>
NFA 49-117	S	S	S	S	–	S	S <sup>5)</sup>	T <sup>2)</sup>
ASTM A269	S	–	S	–	–	S	– <sup>4)</sup>	T <sup>2)</sup>
ASTM A213	S <sup>2)</sup>	S	S	S	–	S	– <sup>4)</sup>	T <sup>2)</sup>
ASTM A789	S <sup>2)</sup>	S	S	–	–	S	–	T <sup>2)</sup>
ASTM B677	S	S	– <sup>4)</sup>	–	–	–	–	T <sup>2)</sup>
ASTM B668	S	S	– <sup>4)</sup>	–	–	S	–	T <sup>2)</sup>
ASTM A632	S	S	– <sup>4)</sup>	–	–	S	– <sup>4)</sup>	T

S = Sampling T = 100%

<sup>1)</sup> Either flattening or ring expanding test, depending on tube size.

<sup>2)</sup> Hydrostatic test is replaced by Eddy current test at option of Sandvik.

<sup>3)</sup> Also product analysis of a billet or tube from each heat.

<sup>4)</sup> Sandvik Materials Technology performs EN ISO 3651-2 Method A (DIN 50914).

<sup>5)</sup> Sandvik Materials Technology performs ASTM A262 PrE.

<sup>6)</sup> Sandvik Materials Technology also performs ASTM A262 PrE.

<sup>7)</sup> Sandvik Materials Technology performs hardness test.

<sup>8)</sup> Also according to DIN 17458 TC1.

## Standards

### Metric sizes

#### 3R12 (TP 304/304L) and 3R60 (TP 316/316L)

EN 10216-5 TC1

PED 97/23/EC

DIN 17458, TC1

NFA 49-117

ASTM A213-AW (average wall), ASTM A269.

OD < 6 mm Tol acc to A632

#### Hydraulic tubing for 6R35 (TP 321) and 5R75 (316Ti)

EN 10216-5 TC1

PED 97/23/EC

DIN 17458, TC1

OD < 6 mm Tol acc to A632

### Imperial sizes

#### 2RK65 (UNS N08904)

ASTM B677/A269

PED 97/23/EC EN 10216-5 TC1

#### 3R12 (TP 304/304L) and 3R60 (TP 316/316L)

ASTM A213-AW

ASTM A269

OD < 6 mm ASTM A632

PED 97/23/EC EN 10216-5 TC1

#### Sanicro 28 (UNS N08028)

ASTM B668

PED 97/23/EC EN 10216-5 TC1

#### SAF 2507 (UNS S32750)

ASTM A789

**Instrumentation tubing – imperial sizes**

Outside diameter	Wall thickness	Imperial size <sup>1)</sup>	Weight	3R12 TP 304/304L EN 1.4306		3R60 TP 316/316L EN 1.4435		2RK65 UNS N08904 EN 1.4539		SAF 2507 UNS S32750 EN 1.4410		Sanicro 28 UNS N08028 EN 1.4563		
				EN <sup>2)</sup>	ASME <sup>3)</sup>	EN	ASME	EN	ASME	EN	ASME	EN	ASME	
mm	mm		kg/m	Max. working pressure in bar <sup>2)</sup>										
1.59	0.36	1/16" x 28 BWG	0.011			● 740	662							
	0.51		0.014			● 1008	961							
3.18	0.71	1/8" x 22 BWG	0.044			● 727	652							
	0.89		0.051			● 874	834							
4.76	0.89	3/16" x 20 BWG	0.086			● 585	536							
6.35	0.71	1/4" x 22 BWG	0.100			● 323	301							
	0.89		0.122	● 384	386	● 417	386	● 469	392	● 962	748	● 461	400	
	0.91		0.124	● 394	396	● 428	396	● 481	402			● 473	410	
	1.22		0.157	● 557	552	● 604	552	● 680	560			● 669	571	
	1.24		0.159	● 568	562	● 616	562	● 693	570	● 1421	1088	● 682	582	
	1.63		0.193			● 797	759	● 896	771			● 881	786	
	1.65		0.194			● 807	770	● 908	781	● 1861	1490	● 893	797	
7.94	0.89	5/16" x 20 BWG	0.157			● 324	302							
	0.91		0.160			● 332	310							
9.53	0.89	3/8" x 20 BWG	0.193	● 244	248	● 265	248	● 298	252	● 611	480	● 293	257	
	0.91		0.196	● 250	254	● 272	254	● 305	258			● 300	263	
	1.22		0.254			● 376	350	● 423	355			● 416	362	
	1.24		0.257			● 383	356	● 431	361	● 884	689	● 424	368	
	1.63		0.322			● 526	484	● 591	491			● 582	501	
	1.65		0.326			● 534	490	● 600	498	● 1230	950	● 590	508	
	2.03		0.381			● 686	619							
	2.11		0.391			● 720	646							
12.7	0.89	3/4" x 20 BWG	0.263	● 179	183	● 194	183	● 219	185	● 448	354	● 215	189	
	0.91		0.268	● 183	187	● 199	187	● 224	190			● 220	194	
	1.22		0.350	● 252	256	● 273	256							
	1.24		0.356	● 256	260	● 278	260	● 313	264	● 642	504	● 308	269	
	1.63		0.452	● 348	351	● 377	351							
	1.65		0.456	● 353	355	● 383	355	● 430	361	● 882	688	● 423	368	
	2.03		0.542			● 486	448	● 546	455					
	2.11		0.559			● 508	468	● 571	475					
15.88	1.22	5/8" x 18 SWG	0.448			● 214	201							
	1.24		0.454			● 218	205							
	1.63		0.582			● 294	275					● 325	284	
	1.65		0.588			● 298	278					● 330	288	
19.05	1.22	3/4" x 18 SWG	0.544			● 176	166					● 195	172	
	1.24		0.553			● 180	169		● 414	328	● 199	175		
	1.63		0.711			● 241	226							
	1.65		0.718			● 244	229							
	2.11		0.895			● 320	298							
	2.41		1.00			● 371	345							
	2.77		1.13			● 435	403					● 481	417	
25.4	1.22	1" x 18 SWG	0.739			● 130	123							
	1.24		0.750			● 132	125							
	1.65		0.981			● 179	169							
	2.11		1.23			● 233	219							
	2.41		1.39			● 270	252					● 298	261	
	3.20		1.78			● 370	343							
38.1	2.41	1 1/2" x 13BWG	2.15			● 174	164							
50.8	3.05	2" x 11BWG	3.65			● 165	155							

● Size in stock

<sup>1)</sup> SWG = Standard Wire Gauge, BWG = Birmingham Wire Gauge

28 BWG = 0.014 Inch 25 BWG = 0.020 Inch 22 BWG = 0.028 Inch 20 BWG = 0.035 Inch 20 SWG = 0.036 Inch 18 BWG = 0.049 Inch 18 SWG = 0.048 Inch

16 BWG = 0.065 Inch 16 SWG = 0.064 Inch 14 BWG = 0.083 Inch 14 SWG = 0.080 Inch 13 BWG = 0.095 Inch 12 BWG = 0.109 Inch 11 BWG = 0.120 Inch

<sup>2)</sup> 1 bar = 0.1 MPa, 1 ksi = 6.895 MPa

<sup>3)</sup> EN 13480-3 at 50°C.

<sup>4)</sup> ASME B31.3 at 40°C. Max. allowed stress for 3R12 = 304 and for 3R60 = 316.

Calculated wall thickness tolerance -10%.

## Hydraulic tubing – metric sizes

Outside diameter mm	Wall thickness mm	Weight kg/m	3R12 TP 304/304L EN 1.4306 Max. working pressure in bar <sup>2)</sup>		3R60 TP 316/316L EN 1.4435		6R35 TP 321 EN 1.4541		5R75 TP 316Ti EN 1.4571	
			EN <sup>2)</sup>	ASME <sup>1)</sup>	EN	ASME	EN	ASME	EN	ASME
3	0.5	0.03			● 510	470				
	0.7	0.04			● 718	684				
6	1.0	0.13	● 470	470	● 510	470	● 522	470	● 550	470
	1.5	0.17			● 774	738			● 835	738
8	1.0	0.18	● 338	340	● 366	340	● 375	340	● 395	340
	1.5	0.24	● 541	537	● 587	537	● 600	537	● 633	537
	2.0	0.30	● 714	738	● 774	738	● 792	738		
10	1.0	0.23	● 263	267	● 286	267	● 292	267	● 308	267
	1.5	0.32	● 416	417	● 451	417	● 461	417	● 486	417
	2.0	0.40	● 585	577	● 635	577	● 649	577	● 684	577
12	1.0	0.28	● 216	220	● 234	220	● 240	220	● 252	220
	1.5	0.39	● 338	340	● 366	340	● 375	340	● 395	340
	2.0	0.50	● 470	470	● 510	470	● 522	470	● 550	470
14	1.0	0.33	● 183	186	● 198	186				
	1.5	0.47							● 332	288
	2.0	0.60	● 393	395	● 426	395	● 436	395	● 460	395
15	1.0	0.35	● 170	173	● 184	173				
	1.5	0.51	● 263	267	● 286	267	● 292	267	● 308	267
	2.0	0.65	● 363	366	● 394	366			● 425	366
16	1.0	0.38	● 158	162	● 172	162				
	1.5	0.54	● 245	249	● 266	249			● 287	249
	2.0	0.70	● 338	340	● 366	340	● 375	340	● 395	340
	2.5	0.85			● 473	437	● 484	437	● 510	437
	3.0	0.98							● 633	537
18	1.0	0.43	● 140	143	● 152	143				
	1.5	0.62	● 216	220	● 234	220	● 240	220	● 252	220
	2.0	0.80	● 296	299	● 321	299	● 328	299	● 346	299
	2.5	0.97							● 445	383
20	1.5	0.69	● 193	196	● 209	196				
	2.0	0.90	● 263	267	● 286	267			● 308	267
	2.5	1.09			● 366	340	● 375	340	● 395	340
	3.0	1.28					● 461	417	● 486	417
	4.0	1.60			● 635	577				
22	1.5	0.77	● 174	177	● 189	177	● 193	177	● 203	177
	2.0	1.00	● 237	241	● 257	241	● 263	241	● 278	241
25	1.5	0.88	● 152	155						
	2.0	1.15	● 206	210	● 224	210			● 242	210
	2.5	1.41	● 263	267	● 286	267			● 308	267
	3.0	1.65	● 322	326	● 350	326			● 377	326
28	1.5	1.00	● 135	138	● 146	138	● 149	138		
	2.0	1.30	● 183	186	● 198	186	● 203	186	● 214	186
	2.5	1.60	● 233	236	● 252	236				
30	2.5	1.72			● 234	220				
	3.0	2.03	● 263	267	● 286	267			● 308	267
	4.0	2.60			● 394	366				
35	2.0	1.65	● 144	147	● 156	147				
	2.5	2.03	● 183	186					● 214	186
	3.0	2.40	● 222	226	● 241	226				
38	2.0	1.80	● 132	135	● 143	135				
	3.0	2.63	● 203	207	● 221	207				
	4.0	3.41			● 302	282			● 326	282
	5.0	4.13			● 388	360				
42	2.0	2.00			● 129	122				
	3.0	2.93	● 183	186	● 198	186			● 214	186
50	5.0	5.63			● 286	267				

● Size in stock

Lengths: Stock standard length is 6000 mm. Random lengths min. 5 meters may also be included in a delivery from stock. Tubes in other lengths on request.  
Line marking, example: SANDVIK 3R12 ASTM A-269 TP304/304L SMLS NDE 12.7 x 1.24 mm HT"number" LOT"number" QA-TUBE