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SOUTH AFRICA
Ferrotrade International (Pty) Ltd

Precision Steel, Built on Trust.

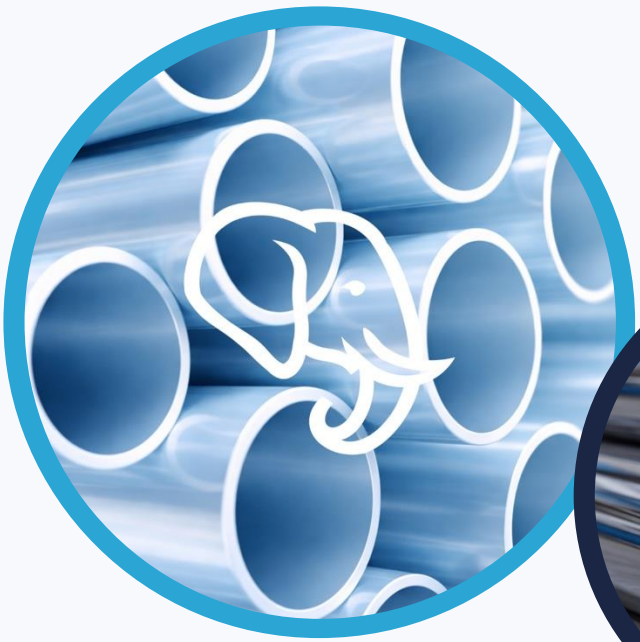
PRODUCT CATALOGUE
03.2026

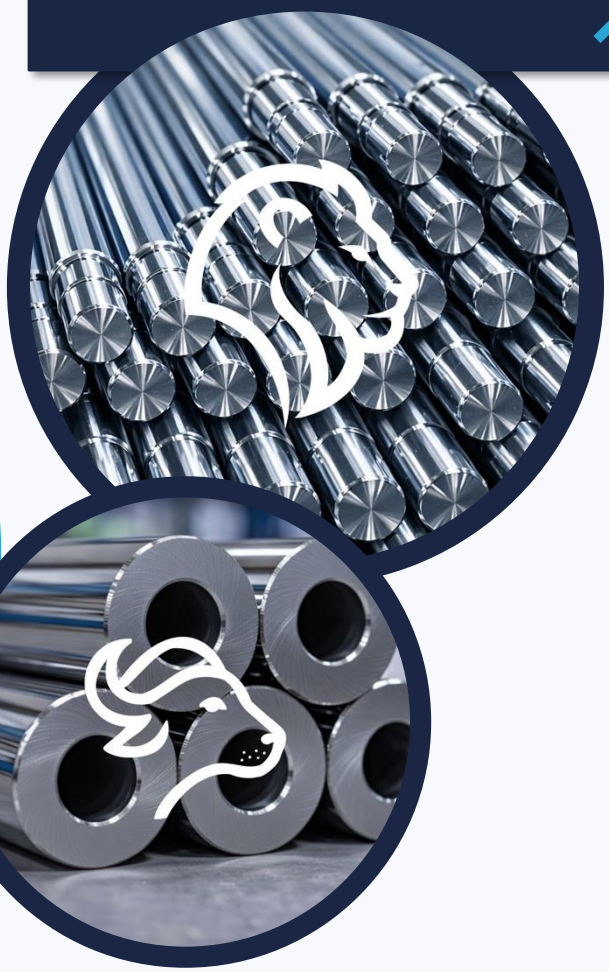
CYLINDER TUBES

HP · HPG · HPS · HPI · PNA

CHROME PLATED PISTON TUBES / RODS

KSV · KSH · KSNI · KSI · KRV





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CYLINDER TUBES

HP · HPG · HPS · HPI · PNA

Cylinder Tubes — Overview

Product Range

Product Types

HP	**Seamless Cylinder Tubes, cold drawn** *EN 10305-1 (DIN 2391)*	›
HP	**Seamless Cylinder Tubes, hot rolled** *EN 10297-1 (DIN 1629)*	›
HPG	**Welded, cold drawn, rolled Cylinder Tubes** *EN 10305-2 (DIN 2393)*	›
HPS	**Welded Cylinder Tubes, cold drawn** *EN 10305-2 (DIN 2393)*	›
HPI	**Cylinder Tubes Stainless Steel** *Seamless or welded-drawn*	›
PNA	**Aluminium Pneumatic Tubes** *Hard-coated, Ra max. 1.0 µm*	›

Note: Cylinder tubes machined acc. to drawing available on request

Seamless Cylinder Tubes (HP) — Specifications

EN 10305-1 (DIN 2391) / EN 10297-1 (DIN 1629)

Technical Specifications

Quality	E355+SR (St 52 BK+S), S355J2H / E355+N (St 52 / St 52-3N); E410+SR on request
Tolerance OD	acc. EN 10305-1 (DIN 2391) for cold drawn; S355J2H/E355+N acc. EN 10210/10297 for hot rolled; acc. ISO H8–H11 (depending on size)
Interior Surface	Honed or roller burnished
Roughness	Ra max. 0.5 µm
Straightness	1:1,000 mm measured on outer surface
Eccentricity (cold drawn)	acc. EN 10305-1 (DIN 2391)
Eccentricity (hot rolled)	acc. EN 10297-1 / EN 10210 (DIN 1629 / DIN 2448)
Random Lengths	1.5 – 12.0 m
Cut-to-Length Tolerance	+2/−0 mm; other tolerances on request
Inspection Certificate	EN10204/3.1 available at a surcharge

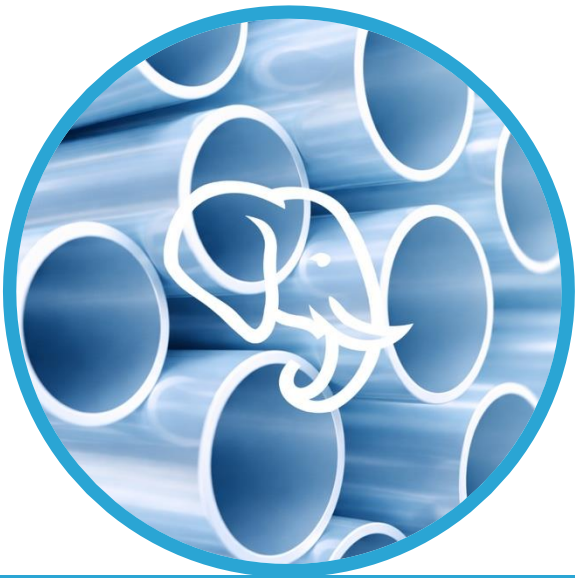
Mechanical Properties

Quality	Yield point ReH N/mm² min.	Tensile str. Rm N/mm² min.	Elongation A5 % min.
E355+SR (St 52 BK+S) 1.0580	450	580	10
E355 (St 52.0) 1.0580	335	490	21
S355J2H (St 52-3N) 1.0570	335	490	22
S460N (StE 460) 1.8953	440	570	17

Machining or special production according to drawing & other qualities and dimensions on request

Seamless Cylinder Tubes (HP), Cold Drawn

HP



Seamless Cylinder Tubes (HP), Cold Drawn — Dimensions (2 of 6)

EN 10305-1 (DIN 2391)

ID mm	ID inch	OD mm	WT mm	Tol. ID	kg/m
20		30	5	H8	3.08
20		35	7.5	H8	5.09
20		40	10	H8	7.40
22		30	4	H8	5.55
24		32	4	H8	6.31
25		30	2.5	H8	5.55
25		32	3.5	H8	6.31
25		35	5	H8	3.70
25		40	7.5	H8	6.01
25		45	10	H8	8.63
26		40	7	H8	9.86
28		35	3.5	H8	7.55
28		36	4	H8	7.99
28		42	7	H8	10.88
30		35	2.5	H9	2.00
30		38	4	H8	8.90
30		40	5	H9	4.32
30		42	6	H8	5.33
30		45	7.5	H8	6.94
30		50	10	H8	9.86
32		38	3	H8	2.59
32		40	4	H8	3.55
32		42	5	H8	4.56
32		45	6.5	H8	6.17
32		50	9	H8	9.10
32		52	10	H8	10.36
34		42	4	H8	10.88
35		42	3.5	H8	3.32
35		45	5	H8	4.93
35		50	7.5	H8	7.86
35		55	10	H8	11.10
36		45	4.5	H8	4.49
36		50	7	H8	15.41
36		55	9.5	H8	18.65
37		50	6.5	H8	15.41
38		45	3.5	H8	12.48
38		50	6	H8	15.41
38		55	8.5	H8	9.75
38.1	1½"	50.8	6.35	H8	6.96
38.1	1½"	44	2.95	H8	11.94
38.1	1½"	47	4.45	H8	4.67
40		45	2.5	H8	2.62
40		48	4	H8	4.34
40		50	5	H8	5.55
40		52	6	H8	6.81
40		55	7.5	H8	8.79
40		60	10	H8	12.33
40		70	15	H8	20.35
42		50	4	H8	4.54
42		60	9	H8	11.32
44		50	3	H8	15.41
45		50	2.5	H8	2.93
45		55	5	H8	6.17
45		60	7.5	H8	9.71
45		65	10	H8	13.56

Seamless Cylinder Tubes (HP), Cold Drawn — Dimensions (3 of 6)

EN 10305-1 (DIN 2391)

ID mm	ID inch	OD mm	WT mm	Tol. ID	kg/m
45		75	15	H8	22.20
48		60	6	H8	7.99
50		55	2.5	H8	18.65
50		56	3	H8	3.92
50		60	5	H8	6.78
50		62	6	H8	8.29
50		65	7.5	H8	10.64
50		70	10	H8	14.80
50		75	12.5	H8	19.27
50		80	15	H8	24.04
50		82	16	H8	26.04
50.8	2"	56.9	3.05	H8	19.96
50.8	2"	60.3	4.75	H8	22.42
50.8	2"	63.5	6.35	H8	8.95
52		60	4	H8	22.20
54		68	7	H8	28.51
55		60	2.5	H8	7.40
55		65	5	H8	7.40
55		68	6.5	H8	9.86
55		70	7.5	H8	11.56
55		75	10	H8	16.03
55		80	12.5	H8	20.81
55		85	15	H8	25.89
55		90	17.5	H8	31.29
56		65	4.5	H8	6.71
58		70	6	H8	9.47
60		70	5	H8	8.01
60		72	6	H8	9.77
60		75	7.5	H8	12.48
60		80	10	H8	17.26
60		85	12.5	H8	22.35
60		90	15	H8	27.74
62		70	4	H8	30.21
63		73.6	5.3	H8	8.93
63		68	2.5	H10	4.04
63		70	3.5	H8	5.74
63		73	5	H8	8.38
63		75	6	H8	10.21
63		77	7	H8	12.08
63		78	7.5	H8	13.04
63		80	8.5	H8	14.99
63		83	10	H8	18.00
63		88	12.5	H8	23.27
63		95	16	H8	31.17
63.5	2½"	73.4	5.2	H8	8.75
63.5	2½"	76.2	6.35	H8	10.94
65		75	5	H8	8.63
65		80	7.5	H8	13.41
65		85	10	H8	18.50
65		90	12.5	H8	23.89
65		95	15	H8	29.59
70		80	5	H8	9.25
70		80.5	5.25	H8	9.74
70		82	6	H8	11.25

Seamless Cylinder Tubes (HP), Cold Drawn — Dimensions (4 of 6)

EN 10305-1 (DIN 2391)

ID mm	ID inch	OD mm	WT mm	Tol. ID	kg/m
70		85	7.5	H8	14.33
70		90	10	H8	19.73
70		95	12.5	H8	25.43
70		100	15	H8	31.44
70		105	17.5	H8	37.76
75		85	5	H8	9.86
75		87	6	H8	11.99
75		90	7.5	H8	15.26
75		95	10	H8	20.96
75		100	12.5	H8	26.97
75		105	15	H8	33.29
75		110	17.5	H8	39.92
76	3"	90	7	H8	49.94
76.2	3"	86.2	5	H8	45.81
76.2	3"	88.9	6.35	H8	12.93
76.2	3"	95.25	9.525	H8	20.14
80		90	5	H8	10.48
80		92	6	H8	12.73
80		95	7.5	H8	16.18
80		100	10	H8	22.20
80		105	12.5	H8	28.51
80		110	15	H8	35.14
80		115	17.5	H8	42.08
80		120	20	H8	49.32
82.55	3¼"	95.25	6.35	H8	55.94
82.55	3¼"	101.6	9.525	H8	21.63
85		95	5	H8	11.10
85		100	7.5	H8	17.11
85		105	10	H8	23.43
85		110	12.5	H8	30.06
85		115	15	H8	36.99
88.9	3½"	101.6	6.35	H8	14.92
88.9	3½"	107.95	9.525	H8	23.12
90		100	5	H8	11.71
90		102	6	H8	14.21
90		105	7.5	H8	18.03
90		108	9	H8	21.97
90		110	10	H8	24.66
90		115	12.5	H8	31.60
90		120	15	H8	38.84
90		125	17.5	H8	46.39
90		130	20	H8	54.26
95		105	5	H8	12.33
95		107	6	H8	14.94
95		110	7.5	H8	18.96
95		115	10	H8	25.89
95		120	12.5	H8	33.14
95		125	15	H8	40.69

Seamless Cylinder Tubes (HP), Cold Drawn — Dimensions (5 of 6)

EN 10305-1 (DIN 2391)

ID mm	ID inch	OD mm	WT mm	Tol. ID	kg/m
100		110	5	H8	12.95
100		112	6	H8	15.68
100		115	7.5	H8	19.88
100		120	10	H8	27.13
100		122	11	H8	30.11
100		125	12.5	H8	34.68
100		130	15	H8	42.54
100		135	17.5	H8	50.71
100		140	20	H8	59.19
100		150	25	H8	77.07
101.6	4"	114.3	6.35	H8	16.91
101.6	4"	127	12.7	H8	35.80
101.6	4"	120.65	9.525	H8	26.10
105		115	5	H9	13.56
105		120	7.5	H8	20.81
105		125	10	H8	28.36
105		130	12.5	H8	36.22
105		135	15	H8	44.39
107.95	4¼"	127	9.525	H8	99.44
107.95	4¼"	133.35	12.7	H8	109.63
107.95	4¼"	139.7	15.875	H8	120.32
110		120	5	H9	14.18
110		125	7.5	H8	21.73
110		130	10	H8	29.59
110		135	12.5	H8	37.76
110		140	15	H8	46.24
110		145	17.5	H8	55.03
110		150	20	H8	64.12
110		160	25	H8	83.23
114.3	4½"	139.7	12.7	H8	39.78
114.3	4½"	127	6.35	H8	18.89
114.3	4½"	133.35	9.525	H8	29.09
115		125	5	H9	14.80
115		130	7.5	H8	22.66
115		133	9	H8	27.52
115		135	10	H8	30.83
115		140	12.5	H8	39.30
115		145	15	H8	48.09
120		130	5	H9	15.41
120		132	6	H9	18.64
120		135	7.5	H8	23.58
120		140	10	H8	32.06
120		145	12.5	H8	40.85
120		150	15	H8	49.94
120		155	17.5	H8	59.34
120		160	20	H8	69.05
120		170	25	H8	89.40
125		135	5	H9	16.03
125		140	7.5	H8	24.51
125		142	8.5	H8	27.98
125		145	10	H8	33.29
125		150	12.5	H8	42.39
125		155	15	H8	51.79
125		160	17.5	H8	61.50
125		170	22.5	H8	81.85

Seamless Cylinder Tubes (HP), Cold Drawn — Dimensions (6 of 6)

EN 10305-1 (DIN 2391)

ID mm	ID inch	OD mm	WT mm	Tol. ID	kg/m
127	5"	139.7	6.35	H8	20.88
127	5"	135	4	H8	112.36
127	5"	146	9.5	H8	131.42
127	5"	152.4	12.7	H8	143.20
127	5"	159	16	H8	155.87
127	5"	146.1	9.53	H8	32.07
130		140	5	H10	16.65
130		145	7.5	H8	25.43
130		150	10	H8	34.53
130		155	12.5	H8	43.93
130		160	15	H8	53.64
130		165	17.5	H8	63.66
130		170	20	H8	73.98
130		180	25	H8	95.56
135		150	7.5	H8	26.36
135		155	10	H8	35.76
135		160	12.5	H8	45.47
135		170	17.5	H8	65.82
140		150	5	H11	17.88
140		155	7.5	H8	27.28
140		157	8.5	H8	31.13
140		160	10	H8	36.99
140		165	12.5	H8	47.01
140		170	15	H8	57.34
140		175	17.5	H8	67.97
140		180	20	H8	78.92
140		190	25	H8	101.73
145		160	7.5	H8	28.21
145		165	10	H8	38.23
145		170	12.5	H8	48.55
145		175	15	H8	59.19
150		160	5	H11	19.11
150		165	7.5	H8	29.13
150		170	10	H8	39.46
150		175	12.5	H8	50.09
150		180	15	H8	61.04
150		185	17.5	H8	72.29
150		190	20	H8	83.85
150		200	25	H8	107.89
152.4	6"	168.3	7.95	H8	31.44
152.4	6"	171.5	9.55	H8	38.14
152.4	6"	160	3.8	H8	157.83
152.4	6"	165.1	6.35	H9	24.86
152.4	6"	177.8	12.7	H8	51.71
152.4	6"	180	13.8	H8	56.56
155		170	7.5	H9	30.06
160		170	5	H11	20.35
160		175	7.5	H8	30.98
160		180	10	H8	41.92
160		185	12.5	H8	53.18
160		190	15	H8	64.74
160		195	17.5	H8	76.60
160		200	20	H8	88.78
160		210	25	H8	114.06
165		185	10	H8	43.16

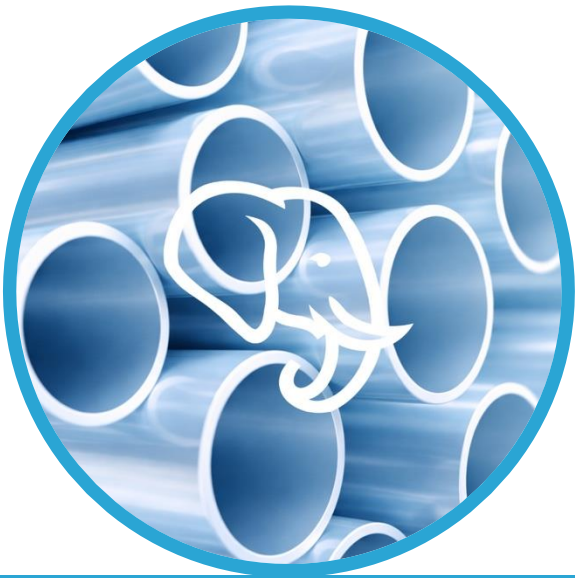
Seamless Cylinder Tubes (HP), Cold Drawn — Dimensions (3 of 3)

EN 10305-1 (DIN 2391)

ID mm	ID inch	OD mm	WT mm	Tol. ID	kg/m
165		190	12.5	H8	54.72
165		195	15	H8	66.59
165		200	17.5	H8	78.76
165		210	22.5	H8	104.04
170		190	10	H8	44.39
170		195	12.5	H8	56.26
170		200	15	H8	68.44
170		210	20	H8	93.71
175		200	12.5	H8	57.80
177.8	7"	203.2	12.7	H8	254.57
180		200	10	H8	46.86
180		205	12.5	H8	59.34
180		210	15	H8	72.13
180		215	17.5	H8	85.24
180		220	20	H8	98.65
180		225	22.5	H8	112.36
180		230	25	H8	126.39
184		200	8	H8	37.88
185		205	10	H8	48.09
185		210	12.5	H8	60.88
190		210	10	H8	49.32
190		215	12.5	H8	62.42
190		220	15	H8	75.83
190		230	20	H8	103.58
200		210	5	H8	271.89
200		215	7.5	H10	38.38
200		220	10	H8	51.79
200		225	12.5	H8	65.51
200		230	15	H8	79.53
200		235	17.5	H8	93.87
200		240	20	H8	108.51
200		245	22.5	H8	123.46
200		250	25	H8	138.72
203.2	8"	228.6	12.7	H8	67.62
203.2	8"	235	15.9	H8	85.91
210		240	15	H8	83.23
210		245	17.5	H8	98.18
210		250	20	H8	113.44
220		240	10	H9	56.72
220		245	12.5	H8	71.67
220		250	15	H8	86.93
220		254	17	H8	99.36
220		255	17.5	H8	102.50
220		260	20	H8	118.38
220		270	25	H8	151.05
220		273	26.5	H8	161.10
230		267	18.5	H8	439.52
230		270	20	H8	123.31
230		273	21.5	H8	133.35
240		270	15	H8	94.33
240		280	20	H8	128.24
250		267	8.5	H11	54.19
250		280	15	H8	98.03
250		290	20	H8	133.17
250		300	25	H8	169.55
260		300	20	H8	138.10
290		325	17.5	H8	132.71
290		330	20	H8	152.90

Seamless Cylinder Tubes (HP), Hot Rolled

HP



Seamless Cylinder Tubes (HP), Hot Rolled — Dimensions (1 of 2)

EN 10297-1 (DIN 1629)

ID mm	ID inch	OD mm	WT mm	Tol. ID	kg/m
55		101.6	23.3	H8	44.99
70		114.3	22.15	H8	50.34
75		114.3	19.65	H8	45.87
80		127	23.5	H8	59.98
88.9		114.3	12.7	H8	31.82
100		146	23	H8	69.77
100		152.4	26.2	H8	81.54
107.95		139.7	15.875	H8	48.48
110		159	24.5	H8	81.27
115		146	15.5	H8	49.88
120		152.4	16.2	H8	54.41
120		159	19.5	H8	67.09
125		177.8	26.4	H8	98.57
127		152.4	12.7	H8	43.75
127		159	16	H8	56.43
133.35		159.57	13.11	H8	47.35
135		177.8	21.4	H8	82.54
139.7		152.4	6.35	H8	22.87
140		219.1	39.55	H8	175.13
160		219.1	29.55	H8	138.13
165.1		193.7	14.3	H8	63.27
170		219.1	24.55	H8	117.79
180		219.1	19.55	H8	96.21
180		229	24.5	H8	123.56
180		244.5	32.25	H8	168.81
180		267	43.5	H8	239.77
200		244.5	22.25	H8	121.95
200		254	27	H8	151.15
200		273	36.5	H8	212.88
200		298.5	49.25	H8	302.73
203.2		219.1	7.95	H8	41.40
210		244.5	17.25	H8	96.67
220		254	22	H8	125.87
220		279	29.5	H8	181.51
220		298.5	39.25	H8	250.94
225		254	14.5	H8	85.64
225		267	21	H8	127.40
225		273	24	H8	147.38
225		279	24.5	H8	153.77
230		292	31	H8	199.54
230		298.5	34.25	H8	223.20
240		273	16.5	H9	104.37
240		298.5	29.25	H8	194.22
240		323.9	36.95	H8	261.48
250		298.5	24.25	H8	164.01
250		305	27.5	H8	188.20
250		343	46.5	H8	340.01
254		267	6.5	H8	41.76
254		273	9.5	H8	61.73
254		298.5	22.25	H8	151.58
260		298.5	19.25	H8	132.57
260		305	22.5	H8	156.75
260		330	35	H8	254.63
280		323.9	21.95	H8	163.45
280		343	31.5	H8	241.98

Seamless Cylinder Tubes (HP), Hot Rolled — Dimensions (2 of 2)

EN 10297-1 (DIN 1629)

ID mm	ID inch	OD mm	WT mm	Tol. ID	kg/m
280		355.6	37.8	H8	296.25
300		323.9	11.95	H8	91.93
300		343	21.5	H8	170.47
300		355.6	27.8	H8	224.74
300		368	34	H8	280.06
300		381	40.5	H8	340.09
304.8	12"	323.9	9.55	H11	74.03
304.8	12"	355.6	25.4	H8	206.84
320		343	11.5	H11	94.02
320		368	24	H8	203.61
320		381	30.5	H8	263.64
320		394	37	H8	325.75
320		406.4	43.2	H8	386.94
320		419	49.5	H8	451.07
350		368	9	H11	79.68
350		381	15.5	H8	139.71
350		419	34.5	H8	327.14
350		457	53.5	H8	532.37
355.6	14"	368	6.2	H11	53.32
355.6	14"	406.4	25.4	H8	238.66
360		419	29.5	H8	283.37
360		670	55	H8	562.90
400		419	9.5	H11	95.94
400		470	35	H8	375.47
450		558.8	54.4	H8	676.70
450		470	10	H11	113.44
500		521	10.5	H11	132.19
500		523	11.5	H11	145.07
550		572	11	H11	152.19
550		660	55	H8	820.61
600		622	11	H11	165.75
600		711	55.5	H8	897.19
630		660	15	H8	238.60

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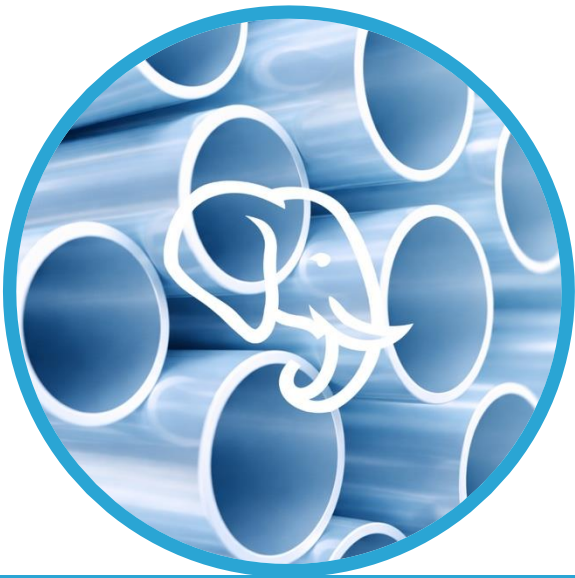
Welded, Cold Drawn, Rolled Cylinder Tubes

HPG



Welded, Cold Drawn, Rolled Cylinder Tubes (HPG) — Specifications

EN 10305-2 (DIN 2393)

Technical Specifications

Quality	E355+SR/+C (St 52 BK+S/+BK)
Tolerance OD	acc. EN 10305-2 (DIN 2393)
Tolerance ID	acc. ISO H8–H11 (depending on size)
Interior Surface	Roller burnished
Roughness	Ra max. 0.4 µm
Straightness	1:1,000 mm measured on outer surface
Eccentricity	acc. EN 10305-2 (DIN 2393)
Random Lengths	5–12 m
Cut-to-Length Tolerance	+2/–0 mm; other tolerances on request
Inspection Certificate	EN10204/3.1 available at a surcharge

Mechanical Properties

Quality / Material No.	Yield point ReH N/mm² min.	Tensile strength Rm N/mm² min.	Elongation A5 % min.
E355+SR (St 52 BK+S) / 1.0580	540	590	15

Machining or special production according to drawing & other qualities and dimensions on request

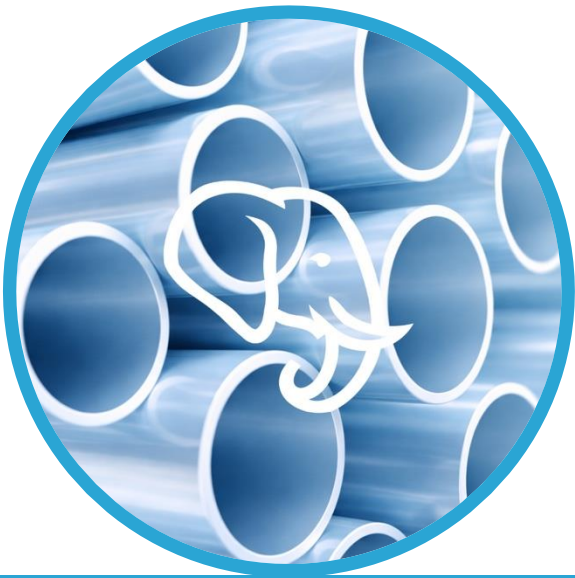
Welded Cylinder Tubes (HPG), Cold Drawn — Dimensions

EN 10305-2 (DIN 2393)

ID mm	ID inch	OD mm	WT mm	Tol. ID	kg/m
32		40	4	H8	3.55
40		50	5	H8	5.55
45		55	5	H8	6.17
50		60	5	H8	6.78
50		65	7.5	H8	10.64
50.8		63.5	6.35	H8	8.95
55		65	5	H8	7.40
55		70	7.5	H8	11.56
60		70	5	H8	8.01
60		72	6	H8	9.77
60		75	7.5	H8	12.48
60		80	10	H8	17.26
63		75	6	H8	10.21
65		75	5	H8	8.63
65		77	6	H8	10.51
65		80	7.5	H8	13.41
70		80	5	H9	9.25
70		82	6	H8	11.25
70		85	7.5	H8	14.33
75		87	6	H8	11.99
75		90	7.5	H8	15.26
76.2		88.9	6.35	H8	12.93
80		90	5	H8	10.48
80		92	6	H8	12.73
80		95	7.5	H8	16.18
80		100	10	H8	22.20
85		100	7.5	H8	17.11
85		105	10	H8	23.43
90		102	6	H8	14.21
90		105	7.5	H8	18.03
90		110	10	H8	24.66
95		110	7.5	H8	18.96
100		110	5	H8	12.95
100		115	7.5	H8	19.88
100		120	10	H8	27.13
105		120	7.5	H8	20.81
110		125	7.5	H8	21.73
110		130	10	H8	29.59
120		135	7.5	H8	23.58
120		140	10	H8	32.06
125		145	10	H8	33.29
127		139.7	6.35	H8	20.88
130		150	10	H8	34.53
140		150	5	H11	17.88
140		160	10	H8	36.99
140		165	12.5	H8	47.01
140		170	15	H8	57.34
150		160	5	H11	19.11
150		170	10	H8	39.46
160		185	12.5	H8	53.18
180		192	6	H11	27.52

Welded Cylinder Tubes, Cold Drawn

HPS



Welded Cylinder Tubes, Cold Drawn (HPS) — Specifications

EN 10305-2 (DIN 2393)

Technical Specifications

Quality	E355+C (St52-3 BK)
Tolerance OD	acc. EN 10305-2 (DIN 2393) for cold drawn tubes
Tolerance ID	acc. ISO H9–H11 (depending on size)
Roughness	Ra max. 0.8 µm
Straightness	1:1,000 mm measured on outer surface
Eccentricity	acc. EN 10305-2 (DIN 2393) for cold drawn tubes
Random Lengths	1.5–11 m
Cut-to-Length Tolerance	+2/−0 mm; other tolerances on request
Inspection Certificate	EN10204/3.1 available at a surcharge

Mechanical Properties

Quality	Tensile strength Rm N/mm² min.	Tensile strength Rm N/mm² min. (E355)	Elongation A5 % min.
St37-2 / 1.0038	490		6
St52-3 / 1.0570	640		4
E355+C / 1.0580	640		4

Machining or special production according to drawing & other qualities and dimensions on request

Welded Cylinder Tubes, Cold Drawn (HPS) — Dimensions

EN 10305-2 (DIN 2393)

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ID mm	ID inch	OD mm	WT mm	Tol. ID	kg/m
20		25	2.5	H10	1.39
20		30	5	H9	3.08
22		30	4	H9	2.56
25		30	2.5	H10	1.70
25		31	3	H9	2.07
25		35	5	H9	3.70
30		35	2.5	H10	2.00
30		36	3	H9	2.44
30		38	4	H9	3.35
30		40	5	H9	4.32
32		36	2	H10	1.68
32		38	3	H9	2.59
32		40	4	H9	3.55
32		42	5	H9	4.56
35		40	2.5	H10	2.31
35		42	3.5	H9	3.32
35		43	4	H9	3.85
35		45	5	H9	4.93
36		45	4.5	H10	4.49
40		45	2.5	H10	2.62
40		48	4	H9	4.34
40		50	5	H9	5.55
40		55	7.5	H9	8.79
42		50	4	H9	4.54
44		50	3	H9	3.48
45		50	2.5	H10	2.93
45		52	3.5	H9	4.19
45		55	5	H9	6.17
45		60	7.5	H9	9.71
46		52	3	H9	3.63
50		55	2.5	H10	3.24
50		56	3	H9	3.92
50		57	3.5	H9	4.62
50		58	4	H9	5.33
50		60	5	H9	6.78
50		62	6	H9	8.29
50		65	7.5	H9	10.64
55		63	4	H9	5.82
55		65	5	H9	7.40
55		70	7.5	H9	11.56
60		65	2.5	H10	3.85
60		67	3.5	H9	5.48
60		68	4	H9	6.31
60		70	5	H9	8.01
60		72	6	H9	9.77
60		75	7.5	H9	12.48
63		69	3	H9	4.88
63		73	5	H9	8.38
63		75	6	H9	10.21
63		78	7.5	H9	13.04
65		75	5	H9	8.63
65		80	7.5	H9	13.41
70		75	2.5	H10	4.47
70		78	4	H9	7.30
70		80	5	H9	9.25

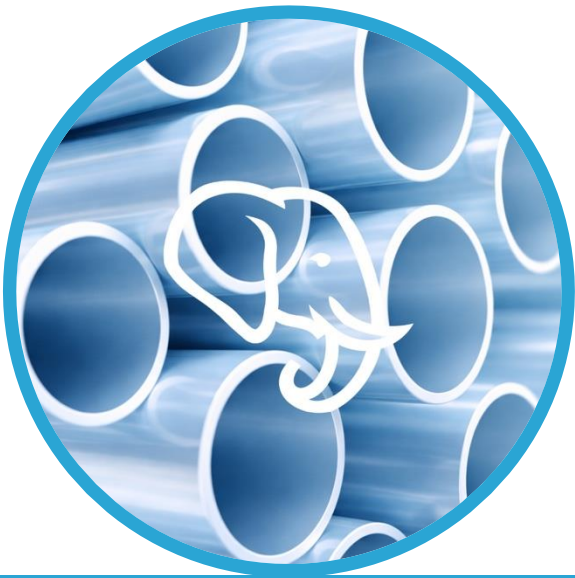
Welded Cylinder Tubes, Cold Drawn (HPS) — Dimensions

EN 10305-2 (DIN 2393)

ID mm	ID inch	OD mm	WT mm	Tol. ID	kg/m
70		82	6	H9	11.25
70		85	7.5	H9	14.33
75		85	5	H9	9.86
75		87	6	H9	11.99
75		90	7.5	H9	15.26
80		86	3	H9	6.14
80		90	5	H9	10.48
80		92	6	H9	12.73
80		95	7.5	H9	16.18
82.55	3½"	88.9	3.175	H9	6.71
85		95	5	H9	11.10
85		100	7.5	H9	17.11
90		98	4	H9	9.27
90		100	5	H9	11.71
90		102	6	H9	14.21
90		105	7.5	H9	18.03
93		105	6	H9	14.65
95		105	5	H9	12.33
95		110	7.5	H9	18.96
100		106	3	H10	7.62
100		110	5	H9	12.95
100		112	6	H9	15.68
100		115	7.5	H9	19.88
100		120	10	H10	27.13
101.6	4"	114.3	6.35	H9	16.91
105		120	7.5	H9	20.81
110		125	7.5	H9	21.73
120		130	5	H9	15.41

Cylinder Tubes, Stainless Steel

HPI



Cylinder Tubes Stainless Steel (HPI) — Specifications

AISI 304 · AISI 316L · AISI 316Ti

Technical Specifications

Quality	AISI 304 (1.4301) · AISI 316Ti (1.4571) · AISI 316L (1.4401)
Execution	Seamless or welded-drawn (★)
Tolerance OD	On request
Tolerance ID	acc. ISO H9–H11
Inside Surface	Honed or roller burnished
Roughness (seamless)	Ra max. 0.4 µm drawn; Ra max. 1.0 µm welded
Straightness	1:1,000 mm measured on outer surface
Eccentricity	acc. EN 10216-5 (DIN 2462) or EN 10217-7 (DIN 2463)
Random Lengths	1.5–8.0 m
Cut-to-Length Tolerance	+2/−0 mm; other tolerances on request
Inspection Certificate	EN10204/3.1 available at a surcharge

Mechanical Properties

Quality	Yield point Rp0.2 N/mm² min.	Tensile strength Rm N/mm² min.	Elongation A5 % min.
AISI 304 (1.4301) X 5CrNi18 10	190	500	45
AISI 316L (1.4401) X 5CrNiMo17 12 2	200	500	40
AISI 316Ti (1.4571) X 6CrNiMoTi17 12 2	200	500	40

Cylinder Tubes Stainless Steel (HPI) — Dimensions

★ = welded

ID mm	Weld	OD mm	WT mm	Tol. ID	kg/m
8	★	9.30	0.65	H11	0.14
10	★	11.30	0.65	H11	0.17
12	★	13.30	0.65	H11	0.20
16	★	17.30	0.65	H11	0.27
20	★	21.30	0.65	H11	0.33
25	★	26.60	0.80	H11	0.51
25		30.00	2.50	H11	1.70
25		32.00	3.50	H11	2.46
25		35.00	5.00	H11	3.70
30	★	40.00	5.00	H11	4.32
32	★	33.60	0.80	H11	0.65
32		36.00	2.00	H11	1.68
32		37.00	2.50	H11	2.13
32		40.00	4.00	H11	3.55
35	★	40.00	2.50	H11	2.31
35		45.00	5.00	H11	4.93
40	★	41.60	0.80	H11	0.80
40		44.00	2.00	H11	2.07
40		45.00	2.50	H11	2.62
40		50.00	5.00	H9	5.55
50	★	52.40	1.20	H11	1.52
50		54.00	2.00	H11	2.56
50		55.00	2.50	H11	3.24
50		57.00	3.50	H11	4.62
50		60.00	5.00	H9	6.78
50		62.00	6.00	H11	8.29
60	★	70.00	5.00	H9	8.01
60		80.00	10.00	H9	17.26
63	★	65.40	1.20	H11	1.90
63		68.00	2.50	H11	4.04
63		73.00	5.00	H9	8.38
63		75.00	6.00	H9	10.21
70	★	76.00	3.00	H11	5.40
70		80.00	5.00	H9	9.25
80	★	86.00	3.00	H11	6.14
80		90.00	5.00	H9	10.48
80		95.00	7.50	H9	16.18
80		100.00	10.00	H9	22.20
100	★	106.00	3.00	H11	7.62
100		110.00	5.00	H11	12.95
100		115.00	7.50	H9	19.88
100		120.00	10.00	H9	27.13
100		125.00	12.50	H9	34.68
120	★	130.00	5.00	H11	15.41
125	★	132.00	3.50	H11	11.09
125		133.00	4.00	H11	12.73
125		140.00	7.50	H11	24.51
125		150.00	12.50	H11	42.39
130	★	140.00	5.00	H11	16.65
150	★	159.00	4.50	H11	17.15
160	★	168.00	4.00	H11	16.18
160		170.00	5.00	H11	20.35
160		180.00	10.00	H11	41.92
200	★	212.00	6.00	H11	30.48
200		224.00	12.00	H11	62.74

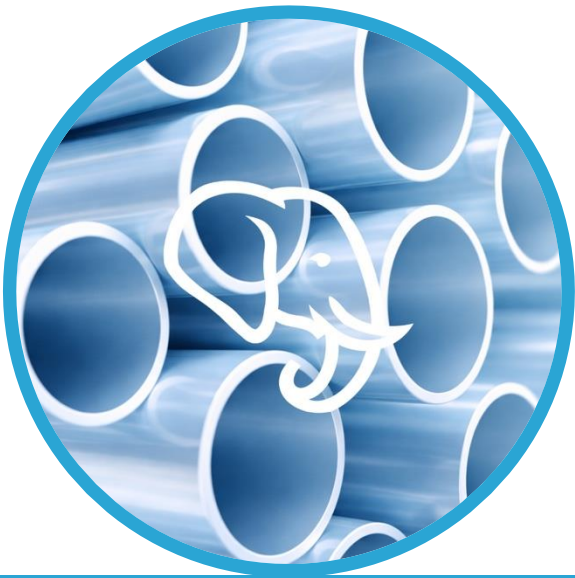
ISO Basis Fits — Tolerance Ranges (DIN ISO 286 T1+T2)

Tolerance range in µm

Range (mm)	H8	H9	H10	H11	H12	H13	F7	F8
>1 – ≤3	+14/0	+25/0	+40/0	+60/0	+100/0	+140/0	-6/-16	-6/-20
>3 – ≤6	+18/0	+30/0	+48/0	+75/0	+120/0	+180/0	-10/-22	-10/-28
>6 – ≤10	+22/0	+36/0	+58/0	+90/0	+150/0	+220/0	-13/-28	-13/-35
>10 – ≤18	+27/0	+43/0	+70/0	+110/0	+180/0	+270/0	-16/-24	-16/-43
>18 – ≤30	+33/0	+52/0	+84/0	+130/0	+210/0	+330/0	-20/-41	-20/-53
>30 – ≤50	+39/0	+62/0	+100/0	+160/0	+250/0	+390/0	-25/-50	-25/-64
>50 – ≤80	+46/0	+74/0	+120/0	+190/0	+300/0	+460/0	-30/-60	-30/-76
>80 – ≤120	+54/0	+87/0	+140/0	+220/0	+350/0	+540/0	-36/-71	-36/-90
>120 – ≤180	+63/0	+100/0	+160/0	+250/0	+400/0	+630/0	-43/-83	-43/-106
>180 – ≤250	+72/0	+115/0	+185/0	+290/0	+460/0	+720/0	-50/-96	-50/-122
>250 – ≤315	+81/0	+130/0	+210/0	+320/0	+520/0	+810/0	-56/-108	-56/-137
>315 – ≤400	+89/0	+140/0	+230/0	+360/0	+570/0	+890/0	-62/-119	-62/-151
>400 – ≤500	+97/0	+155/0	+250/0	+400/0	+630/0	+970/0	-68/-131	-68/-165

Aluminium Pneumatic Tubes

PNA



Aluminium Pneumatic Tubes (PNA) — Specifications

Al Mg Si 0.5 · Hard-coated

Technical Specifications

Quality	Al Mg Si 0.5 (3.3206)
Tolerance ID	H11
Roughness	Ra max. 1.0 µm
Surface	Hard-coated 25 +/– 5 µm
Random Lengths	2.0–4.0 m
Cut-to-Length Tolerance	+2/–0 mm; other tolerances on request

Mechanical Properties

Quality	Yield point Rp0.2 N/mm² min.	Tensile strength Rm N/mm² min.	Elongation A5 % min.
Al Mg Si 0.5 / 3.3206	16	215	12

Machining or special production according to drawing & other qualities and dimensions on request

Aluminium Pneumatic Tubes (PNA) — Dimensions

Al Mg Si 0.5 · H11

ID mm	OD mm	WT mm	Tol. ID	kg/m
20	25	2.50	H11	0.48
25	28	1.50	H11	0.34
25	30	2.50	H11	0.58
32	36	2.00	H11	0.58
32	37	2.50	H11	0.73
32	38	3.00	H11	0.89
40	44	2.00	H11	0.71
40	45	2.50	H11	0.90
40	46	3.00	H11	1.10
50	55	2.50	H11	1.12
50	56	3.00	H11	1.35
60	67	3.50	H11	1.89
63	68	2.50	H11	1.39
63	69	3.00	H11	1.68
70	76	3.00	H11	1.86
80	85	2.50	H11	1.75
80	86	3.00	H11	2.12
80	87	3.50	H11	2.48
80	88	4.00	H11	2.86
85	92	3.50	H11	2.63
90	98	4.00	H11	3.20
100	105	2.50	H11	2.18
100	106	3.00	H11	2.63
100	107	3.50	H11	3.08
100	108	4.00	H11	3.54
105	115	5.00	H11	4.68
110	116	3.00	H13	2.88
110	120	5.00	H11	4.89
125	132	3.50	H11	3.82
125	135	5.00	H11	5.53
130	140	5.00	H11	5.74
140	150	5.00	H11	6.16
150	160	5.00	H11	6.59
160	167	3.50	H11	4.86
160	170	5.00	H11	7.01
200	210	5.00	H11	8.71
220	230	5.00	H11	9.56
230	246	8.00	H11	16.18
250	262	6.00	H11	13.06
300	312	6.00	H11	15.61
300	317	8.50	H11	22.29
320	336	8.00	H11	22.30

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CHROME PLATED PISTON RODS & TUBES

KSV · KSH · KSNI · KSI · KRV

Chrome Plated Piston Rods / Tubes — Overview

Product Range

Product Types

KSV	Chrome plated piston rods
KSH	Chrome plated piston rods, induction hardened
KSNI	Nickel and chrome plated piston rods
KSI	Chrome plated piston rods stainless steel
KRV	Chrome plated piston tubes

Note: Cylinder tubes machined acc. to drawing available on request

Chrome Plated Piston Tubes / Rods — Specifications

E355+SR or +N (St52 BK+S or NBK)

Chrome Plated Piston Tubes

Quality	E355+SR or +N (St52 BK+S or NBK) · Interior surface cold drawn

Chrome Plated Piston Rods — Specifications

Materials	C45 · 20MnV6 · 42CrMo4 +QT · stainless AISI 304 (1.4301), AISI 431 (1.4057), AISI 329 (1.4460) · Nickel and chrome plated 20MnV6
Tolerance OD (≤Ø17mm)	ISO f8
Tolerance OD (≥Ø18mm)	ISO f7
Chrome Layer Thickness (≤Ø17mm)	min. 10 µm
Chrome Layer Thickness (≥Ø18mm)	ISO f7
Chrome Layer Hardness	63–68 HRC
Roughness	Ra max. 0.25 µm
Corrosion Resistance	120 h NSS acc. ISO 9227, class 9 acc. ISO 10289 as standard
Straightness	0.3:1,000 mm
Roundness	½ of the dimension tolerance
Random Lengths	1.5–8 m
Induction Hardened Quality	C45, 42CrMo4 +QT and 38MnV6 · induction hardened surface layer to 56–60 HRC
Hardness Depth Ø12–25mm	EHT 0.75–1.25 mm
Hardness Depth Ø28–90mm	EHT 1.25–2.25 mm
Hardness Depth Ø95–160mm	EHT 1.80–3.00 mm
Nickel+Chrome (20MnV6)	min. 30 µm nickel-layer + min. 20 µm chrome-layer · min. 150 h CASS – ISO 9227, rating 9 acc. ISO 10289
Cut-to-Length Tolerance	+2/–0 mm; other tolerances on request
Inspection Certificate	EN10204/3.1 available at a surcharge

Mechanical Properties

Quality	C45 1.1191	20MnV6 1.5217	42CrMo4+QT 1.7225	AISI 431 1.4057	AISI 304 1.4301	AISI 329 1.4460
Yield point ReH N/mm² min.	350	360	550	600	190	460
Tensile strength Rm N/mm² min.	600	500	800	800	500	620
Elongation A5 % min.	14	17	10	12	45	20

Note: 38MnVS6 (1.1303) — Yield point 450 N/mm², Tensile strength 800 N/mm², Elongation 12%

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Chrome Plated Piston Rods

KSV · KSH · KSNI · KSI

Chrome Plated Piston Rods — Dimensions (1 of 2)

** = f7 tolerance

OD mm	OD inch	Tol.	kg/m	KSV C45	KSV 20MnV6	KSV 42CrMo4	KSH C45	KSH 42CrMo4	KSH 38MnV6	KSNI 20MnV6	KSI AISI 431	KSI AISI 304
4.000		f8	0.10	•								
5.000		f8	0.15	•								
6.000		f8	0.22	•								
8.000		f8	0.39	•								
9.000		f8	0.50	•								
10.000		f8	0.62	•	•						•	
11.000		f8	0.75	•	•							
12.000	½"	f8	0.89	•	•	•	•	•**			•	
12.700		f8	0.99	•								
14.000		f8	1.21	•	•	•		•**			•	
15.000	⅝"	f8	1.39	•	•						•	
15.875		f8	1.55	•	•							
16.000		f8	1.58	•	•	•	•	•**			•	•
17.000		f8	1.78	•								
18.000	¾"	f7	2.00	•	•	•	•	•**			•	•
19.050		f7	2.24	•								
20.000		f7	2.47	•	•	•	•	•			•	•
22.000	⅞"	f7	2.98	•	•	•	•	•	•		•	•
22.225		f7	3.05		•							
23.000		f7	3.26	•								
24.000		f7	3.55	•	•							
25.000		f7	3.85	•	•	•	•	•	•		•	•
25.150	1"	f7	3.90	•	•							
25.400		f7	3.98	•	•		•					
26.000	1 1/16"	f7	4.17	•	•							
26.990		f7	4.49	•	•							
28.000	1⅛"	f7	4.83	•	•	•	•	•		•		•
28.575		f7	5.03	•	•							
30.000	1¼"	f7	5.55	•	•	•	•	•	•			•
31.750		f7	6.22	•	•		•					
32.000		f7	6.31	•	•	•	•	•	•			•
33.000		f7	6.71	•								
34.000	1⅜"	f7	7.13		•							
34.925		f7	7.52		•			•				
35.000		f7	7.55	•	•	•	•	•	•			•
36.000		f7	7.99	•	•	•	•	•	•			•
37.000		f7	8.44	•	•							
38.000		f7	8.90	•	•	•			•			
38.100	1½"	f7	8.95	•	•		•	•				
40.000		f7	9.86	•	•	•	•	•	•		•	•
42.000		f7	10.88	•	•	•						
43.000		f7	11.40	•								
44.000		f7	11.94	•								
44.450	1¾"	f7	12.18	•	•		•	•				
45.000		f7	12.48	•	•	•	•	•	•		•	•
46.000		f7	13.05	•	•							
47.000		f7	13.62	•	•							
48.000		f7	14.21	•	•							
50.000		f7	15.41	•	•	•	•	•	•		•	•
50.800	2"	f7	15.91	•	•	•	•	•				
52.000		f7	16.67	•	•							
53.975	2⅛"	f7	17.96	•	•							
54.000		f7	17.98	•								
55.000		f7	18.65	•	•	•	•	•	•		•	•
56.000		f7	19.33		•	•	•	•	•		•	•
57.150	2¼"	f7	20.14	•	•		•					
58.000		f7	20.74	•								
60.000		f7	22.20	•	•	•	•	•	•		•	•
60.325	2⅜"	f7	22.44	•	•							
63.000		f7	24.47	•	•	•	•	•	•		•	•

• = *available*

Chrome Plated Piston Rods — Dimensions (2 of 2)

** = f7 tolerance

OD mm	OD inch	Tol.	kg/m	KSV C45	KSV 20MnV6	KSV 42CrMo4	KSH C45	KSH 42CrMo4	KSH 38MnV6	KSN I 20MnV6	KSI AISI 431	KSI AISI 304
63.500	2½"	f7	24.86	•	•	•	•	•				
65.000		f7	26.05	•	•	•	•	•	•			•
68.000		f7	28.51	•	•							
69.850	2¾"	f7	30.08	•	•							
70.000		f7	30.21	•	•	•	•	•	•		•	•
75.000		f7	34.68	•	•	•	•	•			•	•
76.200	3"	f7	35.80	•	•		•	•				
77.000		f7	36.55	•	•							
80.000		f7	39.46	•	•	•	•	•	•		•	•
82.550	3¼"	f7	42.01	•	•		•	•				
85.000		f7	44.54		•	•	•	•				
88.900	3½"	f7	48.73	•	•	•	•		•			
90.000		f7	49.94	•	•	•	•	•	•		•	•
95.000		f7	55.64	•	•	•	•					
95.250	3¾"	f7	55.94									•
100.000		f7	61.65	•	•	•	•	•	•		•	•
101.600	4"	f7	63.64	•	•		•	•				
105.000		f7	67.97	•	•	•	•	•				
106.000		f7	69.27		•							
107.950	4¼"	f7	71.85	•	•							
110.000		f7	74.60	•	•	•	•	•			•	•
114.300	4½"	f7	80.55		•							
115.000		f7	81.54	•	•	•		•				
120.000		f7	88.78	•	•	•	•		•		•	
120.650		f7	89.75					•				
125.000		f7	96.33	•	•				•			•
127.000	5"	f7	99.44	•	•	•	•					
130.000		f7	104.19	•	•	•	•	•		•		
135.000		f7	112.36		•							
139.700	5½"	f7	120.32	•								
140.000		f7	120.84	•	•	•	•			•	•	•
145.000		f7	129.63				•	•				
146.050		f7	131.51	•								
150.000		f7	138.72	•	•	•		•		•		
160.000		f7	157.83	•	•	•	•	•		•		
165.000		f7	167.85	•								
170.000		f7	178.18	•	•							
177.800		f7	194.91				•					
180.000		f7	199.76	•	•	•	•	•			•	•
190.000		f7	222.57		•							
200.000		f7	246.62	•	•	•	•	•				
203.200	8"	f7	254.57	•								
210.000		f7	271.89	•	•							
220.000		f7	298.40	•	•	•		•				
225.000		f7	312.12				•					
240.000		f7	355.13	•	•							
250.000		f7	385.34	•				•				
280.000		f7	483.37	•								
300.000		f7	554.88	•								
320.000		f7	631.33	•								
350.000		f7	755.26	•								

• = *available*

SCHIERLE
SOUTH AFRICA
Ferrotrade International (Pty) Ltd

Chrome Plated Piston Tubes

KRV

Chrome Plated Piston Tubes — Dimensions

E355+SR or +N (St52 BK+S or NBK)

SCHIERLE SOUTH AFRICA

OD mm	WT mm	Tol. OD	kg/m
10.00	2.50	f8	0.46
12.00	2.00	f8	0.49
12.00	3.00	f8	0.67
15.00	2.50	f8	0.77
16.00	2.50	f8	0.83
16.00	3.00	f8	0.96
18.00	3.00	f7	1.11
20.00	3.00	f7	1.26
20.00	4.00	f7	1.58
20.00	5.00	f7	1.85
22.00	3.00	f7	1.41
25.00	2.50	f7	1.39
25.00	3.00	f7	1.63
25.00	5.00	f7	2.47
25.00	7.50	f7	3.24
28.00	4.00	f7	2.37
28.00	5.00	f7	2.84
28.00	6.00	f7	3.26
28.00	8.00	f7	3.95
30.00	2.50	f7	1.70
30.00	3.00	f7	2.00
30.00	4.00	f7	2.56
30.00	5.00	f7	3.08
30.00	6.00	f7	3.55
30.00	7.50	f7	4.16
30.00	10.00	f7	4.93
32.00	4.00	f7	2.76
32.00	6.00	f7	3.85
32.00	8.00	f7	4.74
35.00	3.00	f7	2.37
35.00	5.00	f7	3.70
35.00	7.50	f7	5.09
35.00	10.00	f7	6.17
36.00	3.00	f7	2.44
36.00	6.00	f7	4.44
40.00	5.00	f7	4.32
40.00	7.50	f7	6.01
40.00	10.00	f7	7.40
42.00	8.00	f7	6.71
45.00	5.00	f7	4.93
45.00	7.50	f7	6.94
45.00	10.00	f7	8.63
50.00	5.00	f7	5.55
50.00	7.50	f7	7.86
50.00	10.00	f7	9.86
50.00	11.00	f7	10.58
55.00	5.00	f7	6.17
55.00	7.50	f7	8.79
55.00	10.00	f7	11.10
55.00	12.50	f7	13.10
60.00	5.00	f7	6.78
60.00	6.00	f7	7.99
60.00	7.50	f7	9.71
60.00	10.00	f7	12.33
63.00	7.50	f7	10.27

Chrome Plated Piston Tubes — Dimensions

E355+SR or +N (St52 BK+S or NBK)

OD mm	WT mm	Tol. OD	kg/m
63.00	10.00	f7	13.07
65.00	5.00	f7	7.40
65.00	7.50	f7	10.64
65.00	10.00	f7	13.56
70.00	5.00	f7	8.01
70.00	6.00	f7	9.47
70.00	7.50	f7	11.56
70.00	10.00	f7	14.80
70.00	15.00	f7	20.35
75.00	7.50	f7	12.48
75.00	10.00	f7	16.03
80.00	5.00	f7	9.25
80.00	10.00	f7	17.26
80.00	15.00	f7	24.04
85.00	7.50	f7	14.33
90.00	5.00	f7	10.48
90.00	7.50	f7	15.26
90.00	10.00	f7	19.73
90.00	15.00	f7	27.74
100.00	7.50	f7	17.11
100.00	10.00	f7	22.20
100.00	15.00	f7	31.44
110.00	10.00	f7	24.66
120.00	10.00	f7	27.13
125.00	12.50	f7	34.68
130.00	15.00	f7	42.54
140.00	10.00	f7	32.06

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