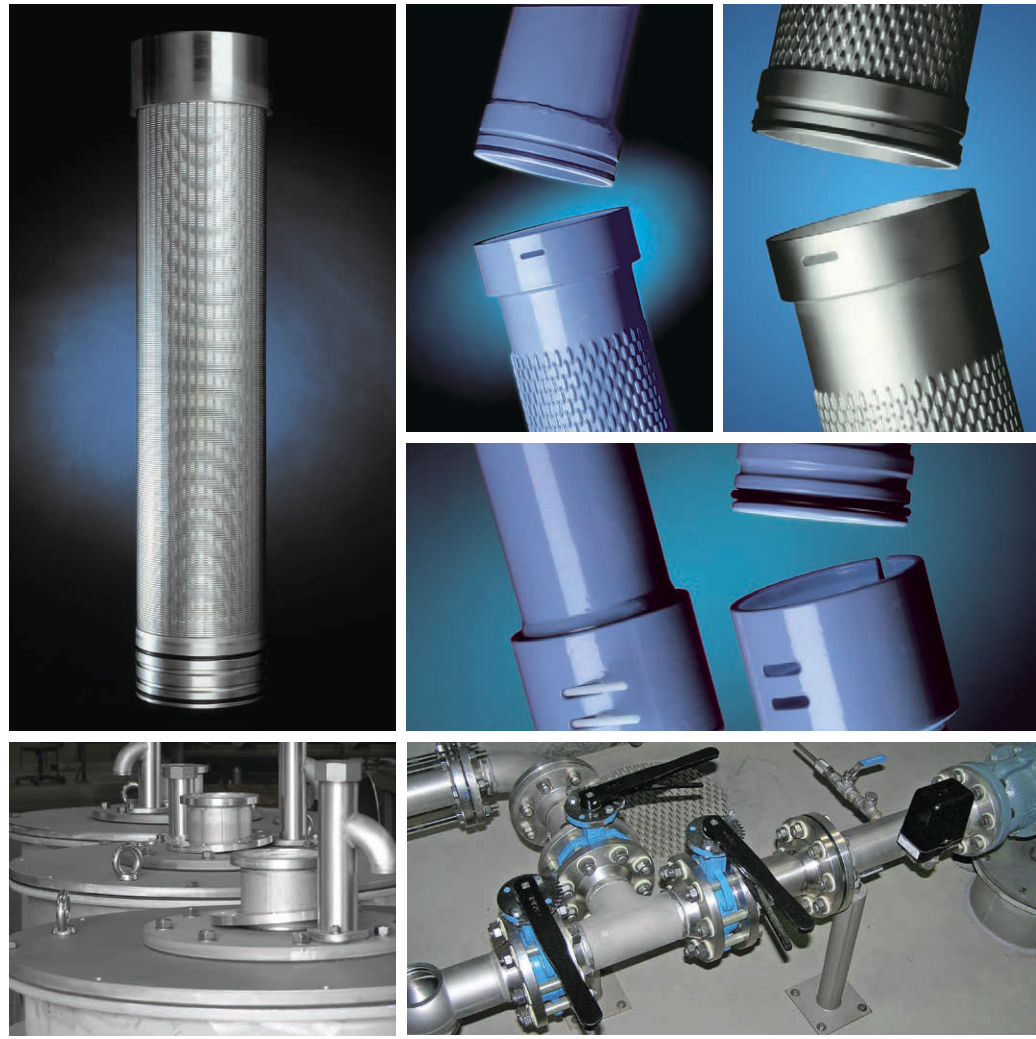


Well equipment and well construction materials in stainless and steel, HAGULIT®



Stainless steel is corrosion- and heat-resistant, meets high mechanical demands and withstands chemical agents. Stainless steel is an ideal material for long-term use in aggressive waters.

However, even stainless steel can corrode if the surface has not been properly treated or if the material grade is not properly fit for the respective media. Appropriate surface treatment of the finished product is essential to give stainless steel materials the necessary resistance.

We only treat surfaces after all other work has been completed (i.e. moulding, cutting, welding). The pickling and subsequent passivating is performed at our own facilities or those of our partners, using up-to-date techniques. This enables us to ensure that our stainless steel products are of the utmost quality.

We stock all stainless steel grades normally used in well construction and are pleased to assist you in selecting the right material grade for your application.

Progressive technology and solid expertise are the best guarantees for high-quality products. Turnaround times are also considerably reduced thanks to our well-stocked inventory and our flexible production arrangements.

The HAGULIT® coating is the result of our own long standing research, driven by our Client's needs for well construction products made out of steel and having a nearly unlimited and maintenance free lifetime.

Casings and screens are coated with an especially developed epoxy-based powder. The coating process is performed using the fluidised-bed-coating process, being a leading-edge technology. The high qualities of the end products are ensured by monitoring all critical parameters continuously during the coating process.

HAGULIT® offers the following advantages:

- Safe transport and installation due to the extreme surface hardness of the coating, hence high impact resistance.
- Increased temperature resistance for use between -30 °C and +80 °C due to high elasticity of the coating.
- Long-term resistance against most cleaning and regeneration products and procedures. The key to the HAGULIT® coating's premium quality lies in the selected epoxy powder as well as the pre-treatment of the steel products.
- Minimal oxygen diffusion through the coating layer.
- Excellent coating adhesion due to pretreatment by steelblasting.
- No below-coating rust or blistering.

The connector system ZSM (tension proof push-fit socket) HAGUESTA® and HAGUDOSTA® minimise the installation time for screens, casings and riser pipes in well construction.

The amazingly simple connectors for HAGULIT®-coated and stainless-steel pipes make the system highly cost effective. After spigot and socket are fitted together effortlessly one or two splines have to be inserted into the box of the socket. This ensures a mechanically and hydraulically pressure tight connection. The time-saving per joint boosts the economical advantage especially in deep wells.

As an alternative to afore described connection systems our pipes can be fitted with round thread connectors or flanges in accordance with DIN standards.

The disassembly of riser pipe columns in case of pump maintenance is performed as quickly as the original installation procedure of the riser pipes.

In addition to sleeve connectors, our riser pipes can be fitted with threaded connectors or flanges, in accordance with DIN requirements.

For special applications, rubber-coated riser pipes are also available.

Riser pipes compliant with DIN 4927, in stainless steel, pickled and passivated

Riser pipes with flange connectors in accordance with DIN 4927, weld-neck flange at both ends DIN 2633, PN 16, with 2 cable cutouts.

Nominal size	ND	50	65	80	100	125	150	200
Wall thickness (mm)	S	2,0	2,0	2,6	3,0	3,0	3,0	4,0
External diameter	d ₁	60,3	76,1	88,9	114,3	139,7	168,3	219,1
Flanges	D	165	185	200	220	250	285	340
DIN 2633	k	125	145	160	180	210	240	295
Weight (kg)	L = 1,0 m	8,6	10,3	14,1	18,1	23,0	30,0	44,8
	L = 2,0 m	11,5	14,0	19,7	26,0	32,8	42,8	66,2
	L = 3,0 m	14,4	17,6	25,1	34,0	42,5	56,0	87,7
	L = 4,0 m	20,6	21,3	30,7	42,0	52,3	69,0	109,1
	L = 5,0 m	23,5	24,9	36,2	50,0	62,1	82,0	130,5
	L = 6,0 m	26,4	28,5	41,8	57,9	71,9	95,0	152,0

L = effective pipe length

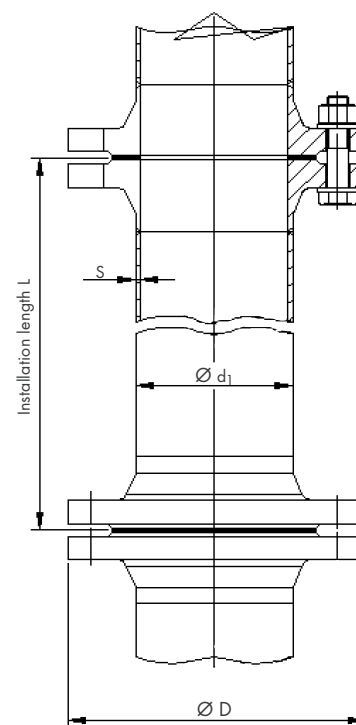


Riser pipes compliant with DIN 4927, HAGULIT® coating acc. to VDI 2538

Riser pipes in accordance with DIN 4927, weld-neck flange at both ends DIN 2633, PN 16, with 2 cable cutouts.

Nominal size	ND	50	65	80	100	125	150	200	250
Wall thickness (mm)	S	2,9	2,9	2,9	3,2	3,6	4,0	4,5	5,0
External diameter	d ₁	60,3	76,1	88,9	114,3	139,7	168,3	219,1	273
Flanges	D	165	185	200	220	250	285	340	405
DIN 2633	k	125	145	160	180	210	240	295	355
Weight (kg)	L = 1,0 m	8	11	13	18	24	31	44	61
	L = 2,0 m	12	16	20	27	37	48	69	95
	L = 3,0 m	15	21	26	36	49	65	93	129
	L = 4,0 m	19	26	33	45	62	82	118	164
	L = 5,0 m	23	31	40	55	75	99	143	198

L = effective pipe length

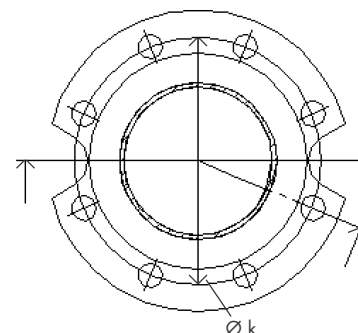


Riser pipes compliant with DIN 4927, in steel, galvanised

Riser pipe with flange connectors in accordance with DIN 4927, weld-neck flange at both ends DIN 2633, PN 16, with 2 cable cutouts.

Nominal size	ND	50	65	80	100	125	150	200
Wall thickness (mm)	S	2,0	2,0	2,9	3,2	3,2	3,2	4,0
External diameter	d ₁	60,3	76,1	88,9	114,3	139,7	168,3	219,1
Flanges	D	165	185	200	220	250	285	340
DIN 2633	k	125	145	160	180	210	240	295
Weight (kg)	L = 1,0 m	8,6	10,3	14,1	18,1	23,0	30,0	44,8
	L = 2,0 m	11,5	14,0	19,7	26,0	32,8	42,8	66,2
	L = 3,0 m	14,4	17,6	25,1	34,0	42,5	56,0	87,7
	L = 4,0 m	20,6	21,3	30,7	42,0	52,3	69,0	109,1
	L = 5,0 m	23,5	24,9	36,2	50,0	62,1	82,0	130,5
	L = 6,0 m	26,4	28,5	41,8	57,9	71,9	95,0	152,0

L = effective pipe length



Riser pipes with tension-proof push-fit (ZSM) connectors

Riser pipes compliant with DIN 4945-2, in stainless steel, pickled and passivated

Riser pipes with ZSM connectors in accordance with DIN 4945-2, with two O-rings, one spline and torque security

Nominal size	ND	50	65	80	100	125	150	175	200
Wall thickness (mm)	S	2,0	2,0	2,6	3,0	3,0	3,2	3,6	4,0
External diameter	d ₁	60,3	76,1	88,9	114,3	139,7	168,3	193,7	219,1
	D	85	102	115	139	165	198	226	249
Weight (kg)	L = 1,0 m	5	6	9	12	14	19	25	31
	L = 2,0 m	8	10	15	20	24	32	42	52
	L = 3,0 m	11	14	21	28	34	45	59	74
	L = 4,0 m	14	18	27	36	44	59	76	95
	L = 5,0 m	17	21	32	44	54	72	93	117
	L = 6,0 m	20	25	38	52	64	85	110	138

L = effective pipe length

Riser pipes compliant with DIN 4945-1, HAGULIT® coating compliant with VDI 2538

Riser pipes with ZSM connectors in accordance with DIN 4945-1, with two O-rings, two splines and torque security

Nominal size	ND	50	65	80	100	125	150	175	200	250
Wall thickness (mm)	S	2,9	2,9	2,9	3,2	3,6	4,0	4,0	4,5	5,0
External diameter	d ₁	60,3	76,1	88,9	114,3	139,7	168,3	193,7	219,1	273
	D	84	102	115	141	170	202	229	255	310
Weight (kg)	L = 1,0 m	6	7	10	13	17	24	30	34	45
	L = 2,0 m	9	12	16	22	30	41	51	58	79
	L = 3,0 m	12	17	23	32	43	58	73	83	114
	L = 4,0 m	16	22	29	41	55	75	95	108	148
	L = 5,0 m	19	27	36	50	68	92	117	133	182

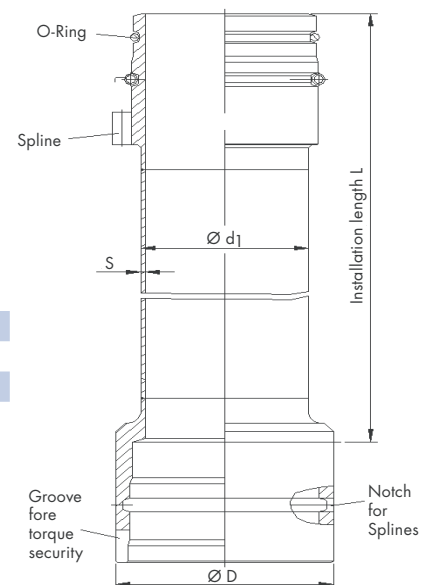
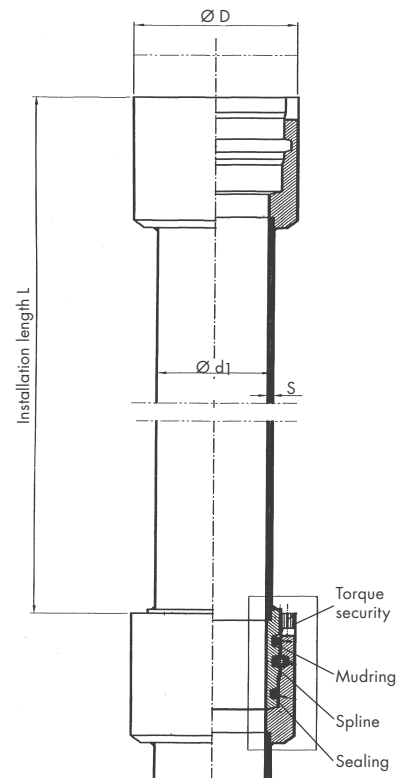
L = effective pipe length

Riser pipes compliant with company production standards, in stainless steel, pickled and passivated

Riser pipes with ZSM connectors in accordance with company production standards, with O-ring seal, one spline and torque security

Nominal size	ND	40	50	65	80	100	125	150	200
Wall thickness (mm)	S	2,0	2,0	2,0	2,6	3,0	3,0	3,2	4,0
External diameter	d ₁	48,3	60,3	76,1	88,9	114,3	139,7	168,3	219,1
	D	69,0	85,0	102,0	115,0	139,0	165,0	198,0	249,0
Weight (kg)	L = 1,0 m	3,1	4,5	5,4	8,4	11,4	14,2	19,4	29,5
	L = 2,0 m	5,4	7,4	9,1	13,9	19,4	24,2	32,6	51,1
	L = 3,0 m	7,7	10,3	12,9	19,5	27,6	34,1	45,8	72,6
	L = 4,0 m	10,0	13,2	16,6	25,4	35,6	44,0	59,0	94,2
	L = 5,0 m	12,1	16,0	20,3	30,8	43,6	53,9	72,7	115,7
	L = 6,0 m	14,6	19,0	24,0	36,4	51,6	63,8	85,4	137,2

L = effective pipe length



Well construction pipes with round threads/flange connectors

Bridge slot screens and casings in stainless steel

Screens and casings in accordance with DIN 4922, in stainless steel, pickled and passivated with round threads or flange connectors with sealing or screws and nuts.

Connection		Round thread										Flange	
Nominal size	ND	100	125	150	200	250	300	350	400	500	600	800	
Wall thickness (mm)	S	3,0	3,0	3,0	4,0	4,0	4,0	4,0	5,0	6,0	6,0	6,0	
External diameter	d ₁	114,3	139,7	168,3	219,1	256	306	356	403	504	612	804	
	D _(Prüf)	100	125	154	203	239	289	338	383	481	588	778	
	D	132	160	188	238	276	336	386	431	530	702	894	
	k										662	854	
Weight (kg)	L = 1,0 m	13	16	20	30	35	46	52	69	100	115	162	
	L = 1,5 m	17	21	26	41	48	61	79	94	137	160	223	
	L = 2,0 m	22	26	32	51	60	77	88	119	175	206	284	
	L = 2,5 m	26	31	39	62	73	92	106	144	212	252	345	
	L = 3,0 m	30	36	45	73	86	107	123	169	250	297	406	
	L = 4,0 m	38	47	57	95	111	137	159	219	325	389	528	
	L = 5,0 m	47	57	70	116	136	168	194	269	400	480	650	
	L = 6,0 m	55	67	82	138	162	198	229	319	475	571	772	

L = effective pipe length

Bridge slot opening: 1.0 mm – 2.5 mm

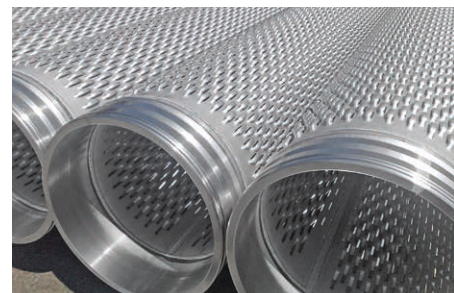
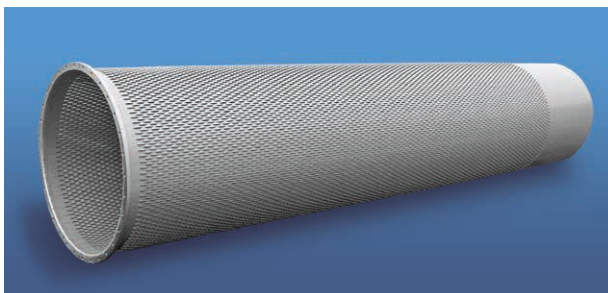
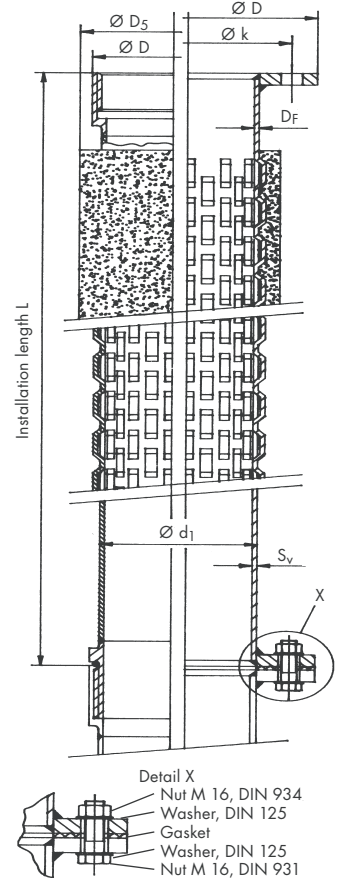
Open area h = 2.5 mm	%	23	23	23	16	16	16	16	14	13	13	13
Collapse pressure casing	N/mm ²	4,4	3,7	3,1	2,3	1,3	0,9	0,7	0,8	0,7	0,5	0,3
Tensile strength screens	kN	66	91	122	180	188	225	260	370	555	380	420
Tensile strength casings	kN	100	138	185	270	285	340	400	570	845	450	560

Bridge slot perforation in accordance with DIN 4922

Gravel pre-coated screens

Connection		Round thread										Flange	
Nominal size	ND	100	125	150	200	250	300	350	400	500	600	800	
External diameter over gravel coating (mm)	D ₅	175	200	210	265	315	365	415	470	570	675	870	
Weight with coating (kg)	L = 2,5 m	58	68	85	126	160	183	210	267	363	463	672	

Gravel coat thickness over bridge slot min. 15 mm, quartz gravel acc. to DIN 4924, available in grain sizes 1 mm – 2 mm, 2 mm – 3 mm, 3 mm – 5 mm, 4 mm – 7 mm
Custom designs on request



Well construction screens and casings with threads/flange connectors

Bridge slot screens and casings in stainless steel with HAGULIT® coating

Screens and casings in accordance with DIN 4922, with HAGULIT® coating in accordance with Association of German Engineers standard VDI 2538, steel ST 37 with O-ring sealing.

Connection		Round thread										Flange	
Nominal size	ND	100	125	150	200	250	300	350	400	500	600	800	
(voll)-Wall thickness S	S	3,2	3,6	4,0	4,5	4,0	4,0	4,0	5,0	6,0	6,0	6,0	
(SB) Wall thickness (mm)	S	3,0	3,0	3,0	4,0	4,0	4,0	4,0	5,0	6,0	6,0	6,0	
External diameter	d ₁	114,3	139,7	168,3	219,1	256	306	356	408	504	612	816	
	D _(Test)	100	125	154	203	239	289	338	388	481	588	790	
	D	133	160	188	238	276	336	386	436	530	703	909	
	k										662	866	
Weight (kg)	L = 1,0 m	13	16	19	31	36	47	54	70	101	116	163	
	L = 1,5 m	18	22	26	43	49	63	72	96	139	162	225	
	L = 2,0 m	22	27	32	54	62	78	90	122	177	208	287	
	L = 2,5 m	26	32	39	65	75	94	108	148	215	254	349	
	L = 3,0 m	31	38	45	76	88	110	126	173	253	301	410	
	L = 4,0 m	40	49	59	99	114	141	163	225	329	393	534	
	L = 5,0 m	49	60	72	122	140	172	199	277	405	486	658	

L = effective pipe length

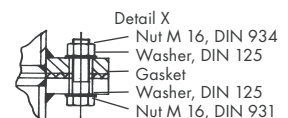
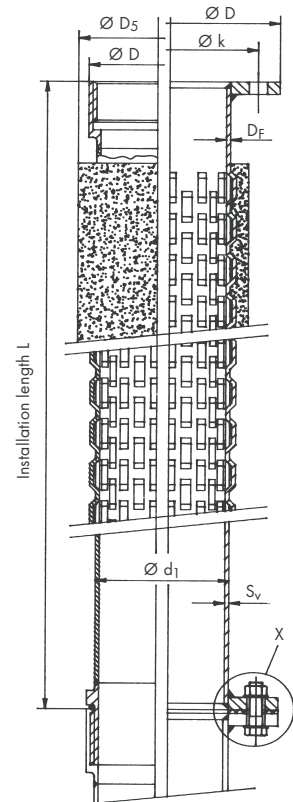
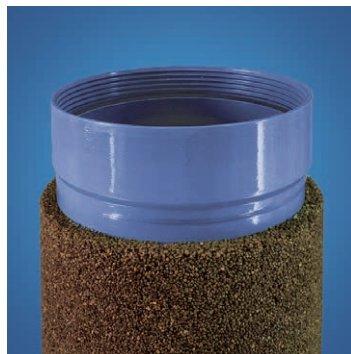
Bridge slot opening: 1.3 mm – 2.5 mm

Open area h = 2.5 mm	%	23	23	23	16	16	16	16	14	13	13	13
Collapse pressure casing	N/mm ²	4,4	3,7	3,1	2,3	1,3	0,9	0,7	0,8	0,7	0,5	0,3
Tensile strength screens	kN	66	91	122	180	188	225	260	370	555	380	420
Tensile strength casing	kN	100	138	185	270	285	340	400	570	845	450	560

Gravel pre-coated screens

Connection		Round thread										Flange	
Nominal size	ND	100	125	150	200	250	300	350	400	500	600	800	
External diameter over gravel coating (mm)	D ₅	175	200	210	265	315	365	415	470	570	675	870	
Weight with coating (kg)	L = 2,5 m	59	69	86	128	162	185	212	271	366	465	676	

Gravel coat thickness over bridge slot min. 15 mm, quartz gravel acc. to DIN 4924, available in grain sizes 1 mm – 2 mm, 2 mm – 3 mm, 3 mm – 5 mm, 4 mm – 7 mm
Custom designs on request



Well construction pipes with push-fit connectors

Bridge slot screens and casings in stainless steel

Screens and casings in stainless steel, pickled and passivated with push-fit connectors with O-ring sealing and spline.

Nominal size	ND	100	125	150	200	250	300	350	400	500
Wall thickness (mm)	S _F	3,0	3,0	3,0	4,0	4,0	4,0	4,0	5,0	6,0
Wall thickness (mm)	S _V	3,2	3,6	4,0	4,5	4,0	4,0	4,0	5,0	6,0
External diameter	d ₁	114,3	139,7	168,3	219,1	256	306	356	403	504
	D _(Test)	100	125	154	203	239	289	338	383	481
	D	140	165	200	251	288	348	398	445	546
Weight (kg)	L = 1,0 m	13	17	24	35	37	47	55	70	110
	L = 1,5 m	17	23	33	47	50	62	73	95	147
	L = 2,0 m	22	30	41	59	63	77	91	120	185
	L = 2,5 m	27	36	49	71	75	92	108	126	170
	L = 3,0 m	32	43	57	83	88	108	126	170	260
	L = 4,0 m	41	56	74	108	113	138	162	220	335
	L = 5,0 m	51	69	91	132	139	168	197	270	410
	L = 6,0 m	69	82	112	156	164	199	232	320	485

L = effective pipe length

Bridge slot opening: 1.0 mm – 2.5 mm

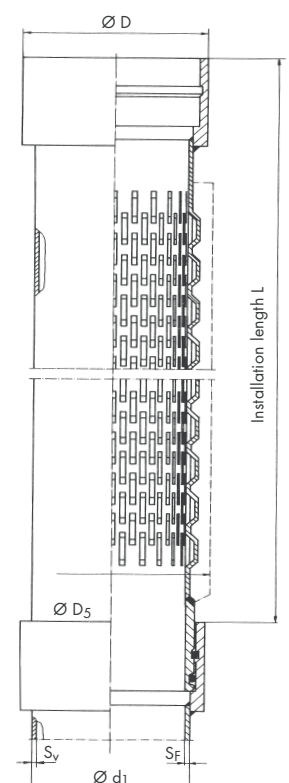
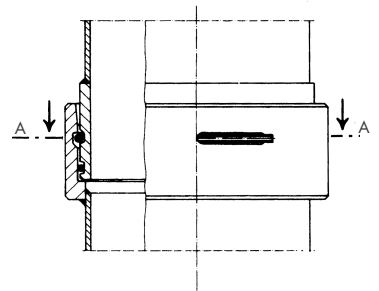
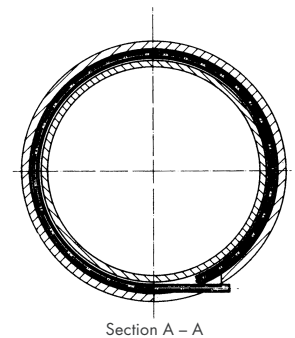
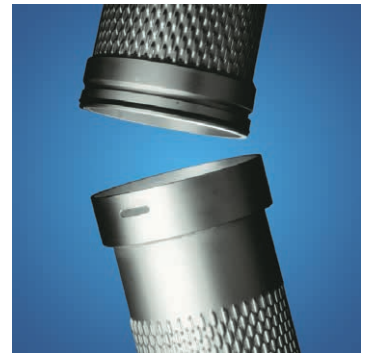
Open area h = 2.5 mm	%	23	23	23	16	16	16	16	14	13
Collapse pressure casing	N/mm ²	4,4	3,7	3,1	2,3	1,3	0,9	0,7	0,8	0,7
Tensile strength screens	kN	66	66	122	180	180	225	260	290	350
Tensile strength casings	kN	100	138	185	270	285	340	400	570	845

Bridge slot perforation in accordance with DIN 4922

Gravel pre-coated screens

Nominal size	ND	100	125	150	200	250	300	350	400	500
External diameter over gravel coating (mm)	D ₅	175	200	210	265	315	365	415	470	570
Weight with coating (kg)	L = 2,5 m	56	67	86	129	162	183	212	268	373

Gravel coat thickness over bridge slot min. 15 mm, quartz gravel acc. to DIN 4924, available in grain sizes 1 mm – 2 mm, 2 mm – 3 mm, 3 mm – 5 mm, 4 mm – 7 mm
Custom designs on request
A version with two splines is available for high-load applications.



Well construction screens and casings with push-fit connectors

Bridge slot screens and casings with HAGULIT® coating

Screens and casings with O-ring sealing, spline and HAGULIT® coating in accordance with Association of German Engineers standard VDI 2538, steel ST 37, with push-fit connectors.

Nominal size	ND	100	125	150	200	250	300	350	400	500
Wall thickness (mm)	S _F	3,0	3,0	3,0	4,0	4,0	4,0	4,0	5,0	6,0
Wall thickness (mm)	S _V	3,2	3,6	4,0	4,5	4,0	4,0	4,0	5,0	6,0
External diameter	d ₁	114,3	139,7	168,3	219,1	273	323,9	356	406	508
	D _(Test)	100	125	154	203	239	289	338	383	481
	D	140	165	210	261	298	355	408	458	556
Weight (kg)	L = 1,0 m	13	17	25	35	38	48	57	72	111
	L = 1,5 m	17	23	33	48	51	63	75	98	149
	L = 2,0 m	22	29	42	60	64	79	93	123	187
	L = 2,5 m	27	36	50	73	77	95	111	149	225
	L = 3,0 m	31	42	59	85	90	110	129	175	263
	L = 4,0 m	40	55	76	110	116	141	166	226	339
	L = 5,0 m	50	68	93	135	142	173	202	278	415

L = effective pipe length

Bridge slot opening: 1.3 mm – 2.5 mm

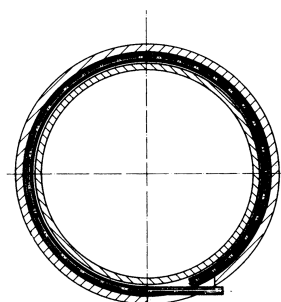
Open area h = 2.5 mm	%	23	23	23	16	16	16	16	14	13
Collapse pressure casing	N/mm ²	4,4	3,7	3,1	2,3	1,3	0,9	0,7	0,8	0,7
Tensile strength screens	kN	66	66	122	180	180	225	260	290	350
Tensile strength casing	kN	100	138	185	270	285	340	400	570	845

Bridge slot perforation in accordance with DIN 4922

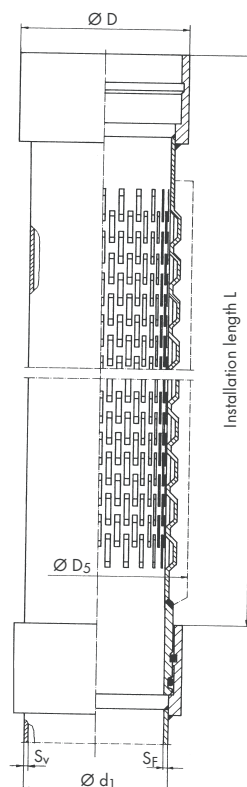
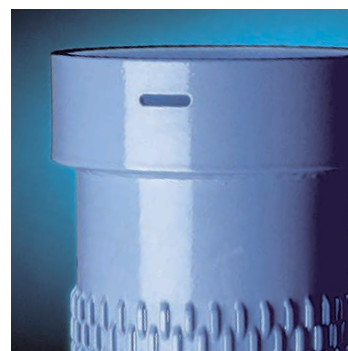
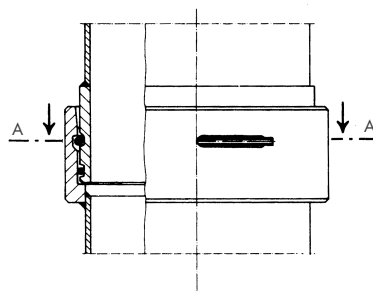
Gravel pre-coated screens

Nominal size	ND	100	125	150	200	250	300	350	400	500
External diameter over gravel coating (mm)	D ₅	175	200	210	265	315	365	415	470	570
Weight with coating (kg)	L = 2,5 m	57	68	93	130	164	186	215	272	376

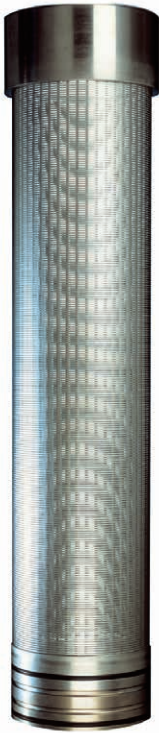
Gravel coat thickness over bridge slot min. 15 mm, quartz gravel acc. to DIN 4924, available in grain sizes 1 mm – 2 mm, 2 mm – 3 mm, 3 mm – 5 mm, 4 mm – 7 mm
Custom designs on request
A version with two splines is available for high-load applications.



Section A – A



Wire wrapped screens with push-fit or threaded connectors



Our wire wrapped screens are highly permeable and have excellent hydraulic properties. Advantages comprise:

- Up to 50% or more free open entry area
- Installation possible to depths of > 3000 m

- Smaller diameters can be drilled as gravel packing is not necessarily required
- The slots can't be clogged due to wedgeshaped surface wires

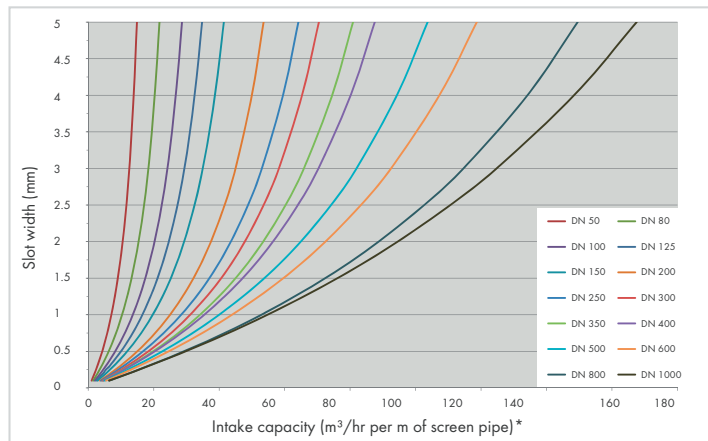
A wire wrapped screen consists of a wedge-shaped surface wire that has been wrapped and welded to a number of perpendicular support rods that define the inner diameter.

This type of screen has originally been developed in order to install wells in fine, uniform sands. Such wells are generally constructed in

aquifers of low thickness and in shallow depths, but with high yield perspectives. Nowadays, wire-wrapped screens are highly effective in any formation and application due to the fact that slot widths of less than 0.2 mm can be realised. At the same time, the large open area ensures that friction as well as entrance losses are kept to a minimum.

Depending on local requirements, a wire wrapped screen can be produced in a number of material grades, starting with simple stainless steel right up to highly corrosion-resistant alloys.

Intake capacity in dependence of slot width and diameter



Versions for combination with stainless casing pipes

ND	OD/ID (mm)	Tensile strenght (kN)	Collapse resistance* (bar)	Weight screens (kg/m)
50	62/52	50	144.2	3.34
80	90/80	72	63.9	4.83
100	118/108	87	31.8	6.19
125	143/133	108	18.7	7.55
150	170/160	130	11.4	8.99
200	223/211	151	8.7	13.63
250	278/265	180	7.0	19.22
300	305/292	216	5.3	21.40
350	364/350	252	4.6	28.55
400	410/394	288	4.6	35.67
500	509/490	525	3.6	53.00
600	661/590	590	6.0	69.86
800	813/790	833	1.9	105.43
1000	1019/990	1205	2.0	168.05

* at slot width of 0.5 mm

Other versions for combinations with PVC casing pipes and customized designs are available on request.

Stainless steel manhole covers

Chamber cover plate, weather proof in quadratic form and round design

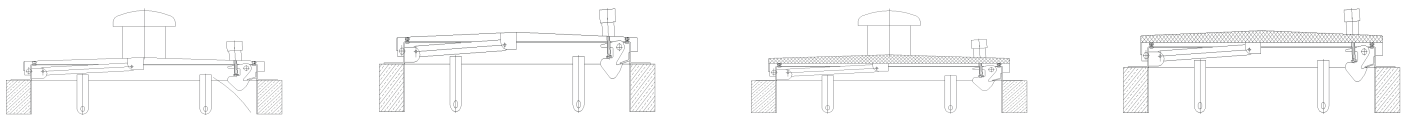
Chamber cover plates and frames, welded under protective gas, pickled and passivated.

Installation by treenailing or concreting. Cover made of stainless steel, domed, self-locking. Stainless steel gas springs for easy opening. Can also be supplied with plug-in safety lock (optional).

Burglar-proof version also available. Cover frame and plaster frame are screwed together on the inside corners so as to prevent unauthorised removal of the cover.

Simultaneous locks can also be supplied.

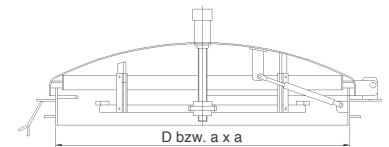
Dimensions, quadriform (mm)	600 x 600	700 x 700	800 x 800	1000 x 1000
Dimensions, round (Ø mm)	600	700	800	1000



Chamber cover plate, watertight to 1 m water column

Cover made of stainless steel, domed, with heavy-duty external hinges, mech. holding device, continuous, frost-proof rubber seal trapped in groove and central screwed lever lock. Frame for casting in concrete with anchors. Price includes operator key.

Standard design, quadriform (mm)	600 x 600	800 x 800	1000 x 1000
Dimensions, round (Ø mm)	600	800	1000

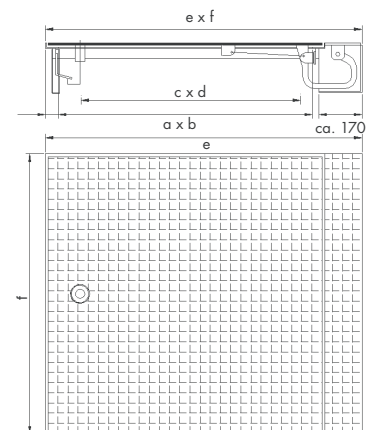


Chamber cover plate, load bearing up to 15 kN – Class A load bearing up to 125 kN – Class B

Chamber cover plate for at ground level installation. Cover made of stainless steel chequer plate of appropriate thickness with additional underlying reinforcement, appropriate to load, self-locking, only unlockable with special key, protection against unauthorised opening, internal hinges, self-locking holding device only unlockable by hand, gas springs for easy cover opening by one person.

Extra: Anti-burglar plug-in safety lock. Floor-covering angular frame with fitted rubber seal and external anchors. Price includes operator key.

Standard size	(a x b)	Length	600 x 600	800 x 800	1000 x 1000
Inside pass	(c x d)	Length	565 x 565	765 x 765	965 x 965
External frame dimensions	(e x f)	Length	810 x 700	1010 x 900	1210 x 1100



Custom designs on request

Stainless steel/reinforced concrete well chambers

Pre-fabricated, reinforced concrete chamber, single section

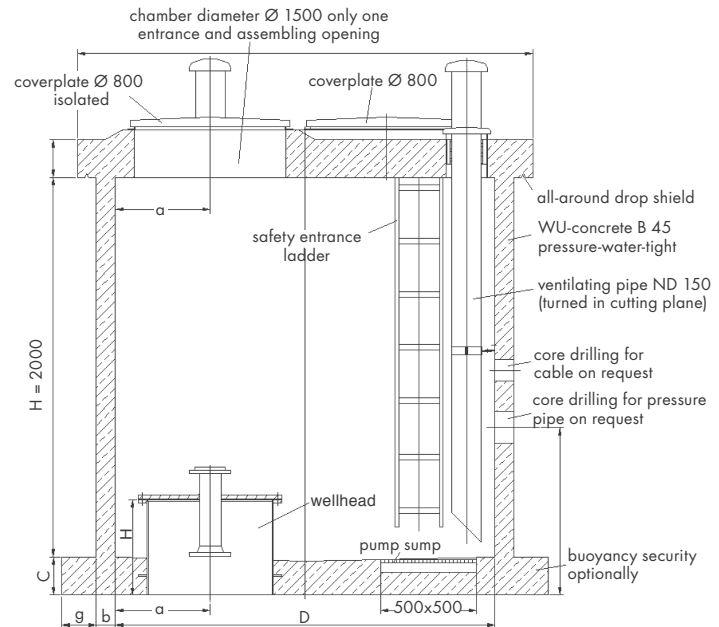
Water-pressure-tight, buoyancy safe (optional), supplied from factory with water-tight over-concreted cover plate

- Pump sump with grated cover
- Protective painting on outside
- Quick assembly due to cast-in threaded sleeves
- Y-cover plate with drip flap, weighing approx. 8 t

Dimensions:

1500 mm (2000, 2500, 3000 mm) x 2000 mm

Other heights on request



Compact chamber

Weight up to approx. 80.0 t

Length up to 8.0 m

Width up to 5.0 m

Size tailored to application.

Pre-fabricated, stainless steel chamber, welded under protective gas, pickled and passivated

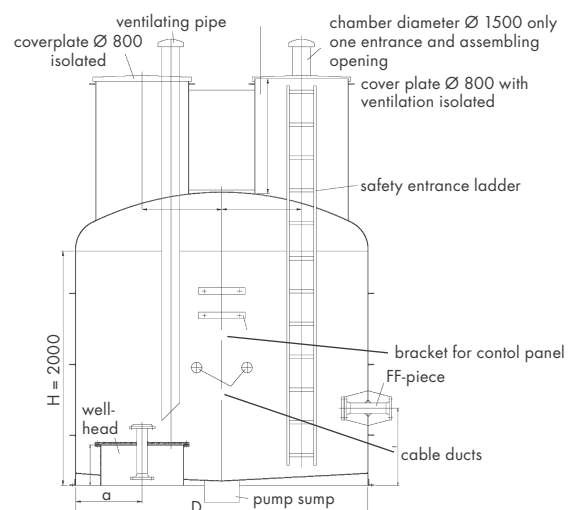
With access and construction opening, pressure-water-tight, made buoyancy safe by customer

- Well head
- Domed top with round chamber cover, without air dome
- Safety ladder
- Entrance support, foldaway or tilting
- Air ventilation pipe ND 150, ending over the chamber floor
- Double-flanged fitting
- Bracket for current distribution board
- Cable glands
- Lifting eyes
- Sloped floor with pump sump

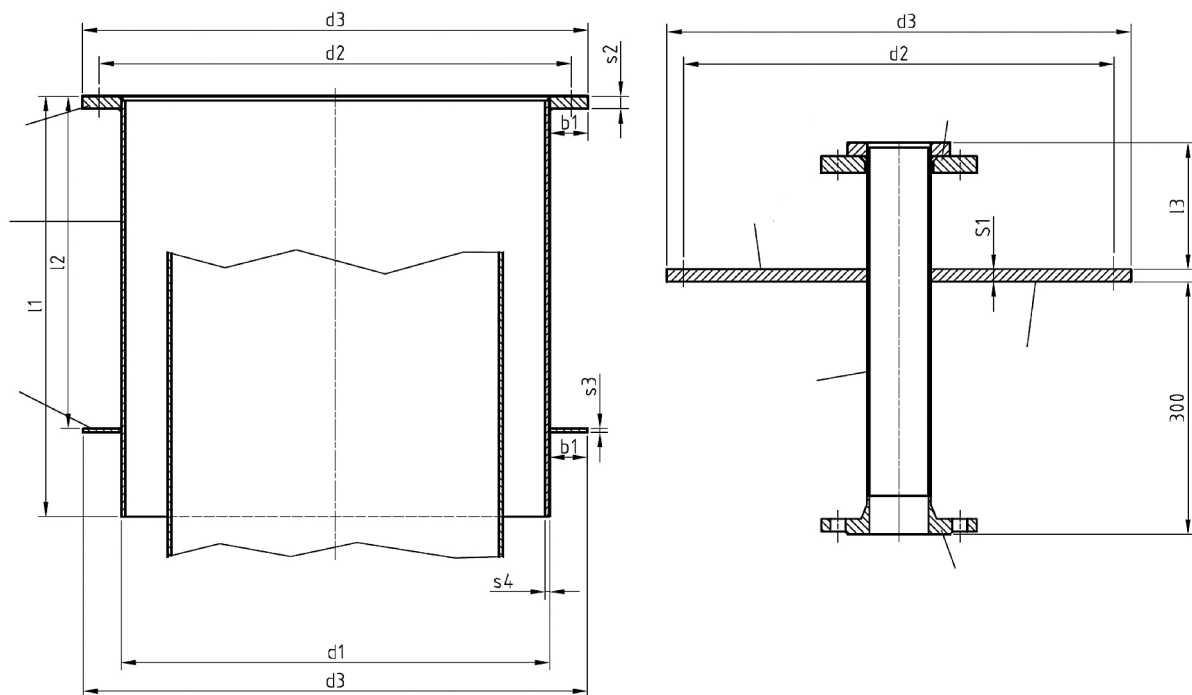
Dimensions:

1500 mm (2000, 2500 mm)

Also available as completely pre-assembled units. Other lengths available.
Custom designs on request.



Well heads



ND	Protective Casing			Top flange and cover plate						Wall flange and riser pipe		
	d1	s4	l1	d2	d3	b1x s2	s1*) min.	No. and diameter of holes	Screws	b1 x s3	l2	l3
200	208	4	Acc. to order specification	260	300	45x15	15	8x15	M12x50	45x4	Acc. to order specification	150
250	260	5		312	352	45x15	15	8x15	M12x50	45x5		150
300	310	5		362	402	45x15	15	8x15	M12x50	45x5		150
350	360	5		412	452	45x15	15	8x15	M12x50	45x5		150
400	410	5		462	502	45x15	15	12x19	M16x55	45x5		150
450	460	5		512	552	45x15	15	12x19	M16x55	45x5		150
500	510	5		562	602	45x15	15	12x19	M16x55	45x5		150
550	560	5		612	652	45x15	15	12x19	M16x55	45x5		150
600	612	6		662	704	45x15	20	16x19	M16x65	45x5		150
650	662	6		712	754	45x15	20	16x19	M16x65	45x5		150
700	712	6		762	804	45x15	20	16x19	M16x65	45x5		200
750	762	6		812	854	45x15	20	16x19	M16x65	45x5		200
800	816	8		872	918	50x20	20	20x19	M16x70	50x8		200
850	866	8		922	968	50x20	20	20x19	M16x70	50x8		200
900	916	8		972	1018	50x20	25	20x19	M16x70	50x8		200
1000	1016	8		1072	1118	50x20	25	28x19	M16x70	50x8		200
1200	1220	10		1272	1324	50x20	30	28x19	M16x80	50x10		200

Safety ladders

Over 5 m drop height

Fixed ladders with cages. Made entirely of stainless steel, pickled and passivated.

Side rails made of piping material, steps of deep-drawn C profiles with profiled tread surface, rungs spaced at 280 mm intervals.

Clear width 400 mm/500 mm

Cage Ø 700 mm,

in accordance with DIN 24532, fully welded or screwed.

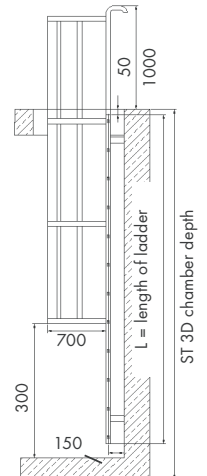
Ladder designed for vertical installation with brackets for treenailing, including fasteners.

Accessories:

1. Entrance support, tilting
2. Entrance support, detachable
3. Side rail extension for use as hand rail

Note:

The climb height of a vertical ladder with cage may not exceed 10 m. For descents over 10 m, several ladders can be installed, but only if the ladders are linked by intermediate platforms which are fitted with a railing in accordance with DIN 24533, T1. As an alternative to fixed vertical ladders with cage, we also supply ladders with a fall protection guard rail.



Ladders

Version in accordance with DIN 3620 and German accident prevention provisions UVV-VGB 74 300 m/400 mm step width

Side rails made of rectangular piping:

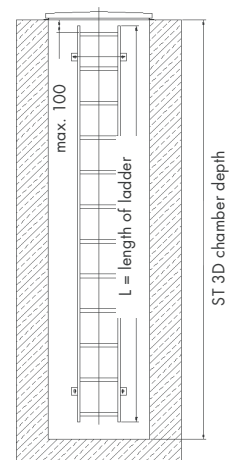
40 mm x 20 mm x 2.5 mm

Rungs made of special non-slip profiles:

C 23 mm x 30 mm x 2 mm

Optional: adjustable wall holder

Ladder length (mm)	Chamber depth (mm)
1500	1550 - 1780
1780	1781 - 2060
2060	2061 - 2340
2620	2621 - 2900
2900	2901 - 3180
3180	3181 - 3460
3460	3461 - 3740
3740	3741 - 4020



Single-rail safety ladder

with fall protection guard rail

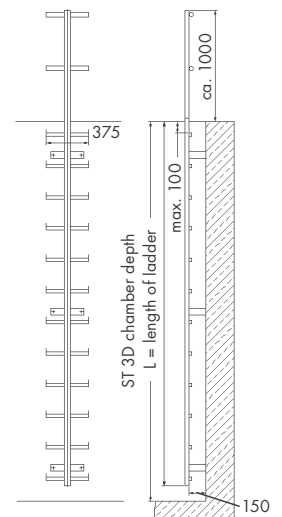
Central rail shaped with fall protection guard rail with upper and lower end stops in accordance with German safety guidelines provisions. Rung width 350 mm, spaced at 280 mm intervals with profiled tread surface and side stops.

The single-rail ladder is designed for vertical installation with brackets for anchor bolts, including fasteners.

Accessories for the fall protection guard rail: entrance support
fall protection rail slider (GS certified)
safety harness (GS certified)

Note:

By using the fall protection rail slider, the single-rail ladder meets the requirements for a guard rail in terms of German accident prevention provisions (safety guidelines).



Stainless steel safety ladders

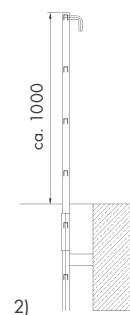
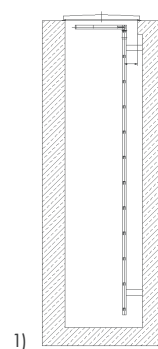
Entrance support

- (1) tilting
- (2) detachable

300 mm/400 mm step width

Chamber size

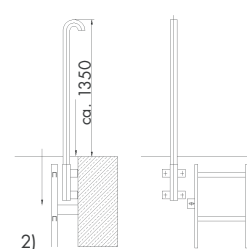
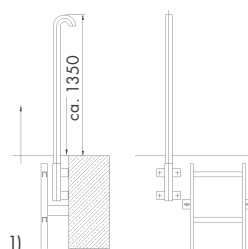
600
700
800
1000



Entrance support

- (1) attachable or
- (2) foldaway

Attachable entrance support, entirely in stainless steel. Consisting of guide (R 48.3 x 2.6) and stay (R 42.4 x 2.6). The guide is secured to the chamber wall by means of M10 anchor bolts. Welded entirely under protective gas, pickled in dipping tank and passivated.



Air ventilation pipe

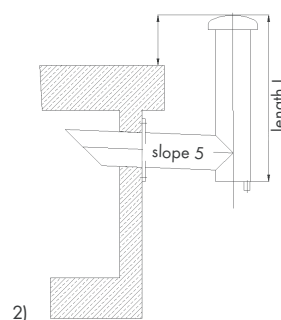
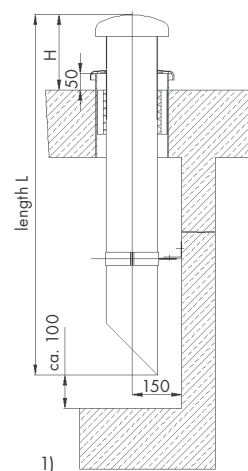
- (1) vertical installation
- (2) horizontal installation

Air ventilation pipe available in:
stainless steel, pickled and passivated
galvanised steel

Air ventilation pipe ND 100/150/200
with dome and insect mesh
with flanged wall channel for casting
in concrete

(or mounting flange;
installation clamps ND 150¹ as accessory)

Custom designs on request



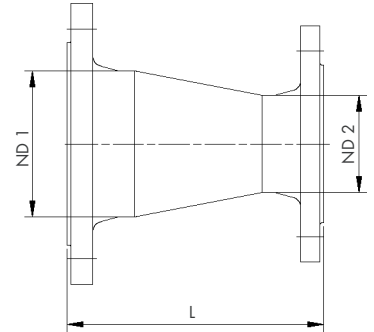
Cross-over flange, concentric

Flange in accordance with DIN 2632/33, reducer in accordance with DIN 2616.

Galvanised steel and stainless steel

Nominal size	ND1 (mm)	50	65	80	100
Nominal size / length	ND2/L (mm)	65/182	80/187	100/204	125/236
		80/187	100/199	125/234	150/249
		100/199	125/229	150/247	200/268
Nominal size	ND1 (mm)	125	150	200	250
Nominal size / length	ND2/L (mm)	150/252	200/271	250/312	300/353
		200/271	250/305	300/345	350/484
		250/305	300/338	350/476	400/512

Custom designs on request



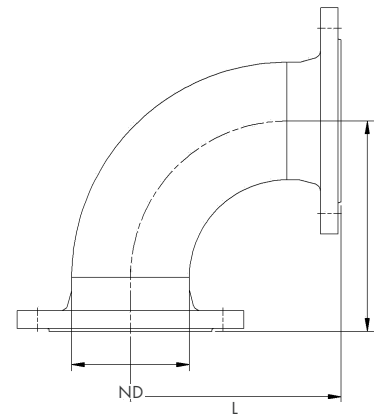
Q fitting $r = 1.5 d$

Flange in accordance with DIN 2632/33, bend in accordance with DIN 2605.

Galvanised steel and stainless steel

Nominal size	ND (mm)	50	65	80	100	125	150
Length	L (mm)	122	141	166	206	247	285
Nominal size	ND (mm)	200	250	300	350	400	
Length	L (mm)	368	452	536	616	696	

Custom designs on request



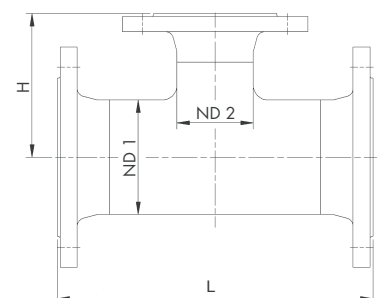
T fitting

Flange in accordance with DIN 2632/33, T fitting in accordance with DIN 2615.

Galvanised steel and stainless steel

Nominal size	ND1 (mm)	50	65	80	100	125	150
Nominal size / height	ND2/H (mm)	50/110	65/122	80/137	100/158	125/180	150/199
		40/103	50/116	65/129	80/149	100/170	125/192
		32/98	40/110	50/122	65/141	80/161	100/183
Length L (mm)		220	244	274	316	360	398
Nominal size / height	ND1 (mm)	200	250	300	350	400	
Nominal size	ND2/H (mm)	200/241	250/287	300/333	350/362	400/391	
		150/224	200/263	250/311	300/349	350/388	
		125/218	150/250	200/293	250/328	300/374	
Length L (mm)		482	574	666	724	782	

Custom designs on request



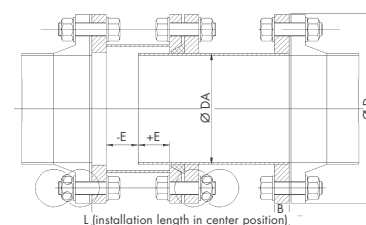
Pipe sections and fittings

Adapter and extender, stainless steel, adjustable

Seal is suitable for drinking water and chlorine-resistant. Drilled plain flanges, PN 10, in accordance with DIN 2576, from ND 50 onwards with reduced sheet thickness. Manufactured entirely of stainless steel, welded under protective gas, pickled and passivated.

Nominal size	ND	50	65	80	100	125	150	200	250	300	350	400
Medium-conveying pipe	DA	60,3	76,1	88,9	114,3	139,7	168,3	219,1	273,0	323,9	355,6	406,4
Flanges	Ø D	165	185	200	220	250	285	340	395	445	505	565
Installation length (mm)	L	300	300	300	300	300	300	300	300	300	350	400
Adjustment	+/-E	40	40	40	40	40	40	50	50	50	50	50
Flange thickness	B	18	18	20	20	22	22	24	18	18	18	18

Custom designs on request

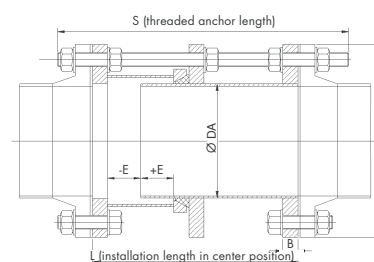


Adapter and extender, stainless steel, fixed

Seal is suitable for drinking water and chlorine-resistant. Drilled plain flanges, PN 10, in accordance with DIN 2576, from ND 50 onwards with reduced sheet thickness. Manufactured entirely of stainless steel, welded under protective gas, pickled and passivated.

Nominal size	ND	50	65	80	100	125	150	200	250	300	350	400
Medium-conveying pipe	DA	60,3	76,1	88,9	114,3	139,7	168,3	219,1	273,0	323,9	355,6	406,4
Flanges	Ø D	165	185	200	220	250	285	340	395	445	505	565
Installation length (mm)	L	300	300	300	300	300	300	300	300	300	350	400
Adjustment	+/-E	25	25	25	25	25	25	25	25	25	25	25
Flange thickness	B	18	18	20	20	22	22	24	18	18	18	18

Custom designs on request

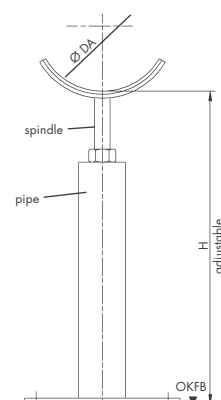


Pipe support with 1/3 shell

Pipe support for bearing the underside of pipelines. For unfixed positioning of pipes on rubber-coated 1/3 shell.

External diameter of pipe	DA = mm
Position height	H = mm
Load	F = N
Height adjustment	= ± 30 mm

Fixed to the ground by means of plug into stable concrete or masonry.



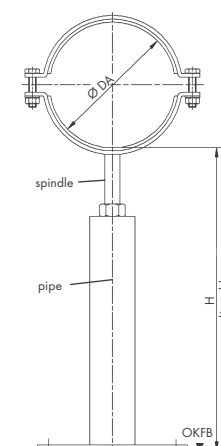
Pipe support with screw clamp

Pipe support for bearing the underside of pipelines (see note). For fixed positioning of pipes in a pipe clamp.

External diameter of pipe	DA = mm
Position height	H = mm
Load	F = N
Height adjustment	= ± 30 mm

Fixed to the ground by means of plug into stable concrete or masonry.

Pipes supports are also available in a heavy-duty version or as pipe brackets for side mounting.



Pipe support with screw clamp and upright spindles

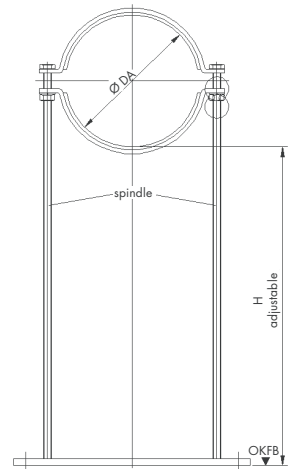
Pipe support for bearing the underside of pipelines (see note).
For fixed positioning of pipes in a pipe clamp on threaded spindles.

External diameter of pipe	DA = mm
Position height	H = mm
Load	F = N
Height adjustment	= ± 30 mm

Fixed to the ground by means of plug into stable concrete or masonry.

Pipes supports are also available in a heavy-duty version or as pipe brackets for side mounting.

Note:
Pipe supports with a fixed bearing in a clamp can also be used for suspended mounting.
Rubber-treated clamps/shells are also available.



Installation equipment and accessories

Complementary to our well construction and riser pipes, we are also able to supply you with specialised equipment as well as the necessary tools to install our products.

The following products are available:

- **Installation (support) clamps**
- **Lifting caps (hoisting aids)**
- **Tail pipes**
- **Well chambers**
- **Adapters**
- **Screens and casings, mild steel, hot dip galvanised**
- **Pipe guides and centralisers**
- **Cross-overs, connectors**
- **Well lids or covers (caps)**



Note:
All diagrams, technical drawings and technical data are without obligation unless explicitly stated otherwise.
This data represents our present state of knowledge, with the aim of providing information about our products, only.
The data provided does not guarantee certain properties.
Property rights and trademarks must be taken into consideration. Our quality is warranted by our General Sales Conditions.
We reserve the right to make changes without prior notice.

HAGUTHERM products for geothermal applications

HAGUTHERM products and services for geothermal applications

Ever since geothermal energy started to be exploited, Hagusta GmbH has worked closely with its partners in the geothermal sector to develop solutions for the construction of geothermal wells.

Best possible corrosion resistance and tailored design govern the manufacture of our products.

Riser pipes and well heads in rubber-coated steel are made to the quality and dimension specifications required by each individual project. These products are an innovation which has emanated from more than 70 years' experience in the manufacture of steel and stainless-steel well construction products and rubber coatings.



Capitalising on our experience

At Hagusta we exploit the properties that different rubbers and steels have to offer. Materials are also professionally treated to produce the following benefits:

- Absence of corrosion
- High thermal and chemical resistance
- Good insulation properties
- Simple and repeated tripping in and out of riser pipes
- Excellent stability and tensile strength

Our expertise in specific applications is also what makes HAGUTHERM solutions so economical. Our application engineers and sales team will be happy to help you.



Quality

The quality of rubber-coated riser pipes and well heads is directly related to the expertise and skill of staff carrying out the work.

In order for the rubber to adhere firmly to the surface, the metal substrate must be properly prepared.

Bright and rough metal surfaces are created by Hagusta through automatic grit blasting of the products' inner and outer surface before coating with rubber.

On this substrate, the various grades of rubber achieve the firmest possible adhesion. The rubber is manually applied and our staff have years of experience as well as the necessary skill and expertise to create this special product line.

Hagusta's expertise also covers the rubber coating of products for the pumping of mineral water for the soft drink industry as well as thermal spa water.

Features of our HAGUTHERM products in brief

- Rubber suitable for industrial or drinking water is available
- Pipes supplied with V-threads from DN 100 to DN 200
- Installation lengths up to 6 m
- Manufacture of adapters, fittings and well heads
- Max. temperature 100 °C
- Highly resistant to aggressive media
- Particularly suitable for use with geothermal waters

Our products are suitable for water showing maximum concentrations of the following substances:

Free carbon dioxide (CO ₂) (mg/l)	1.000
Total salt content (excl. NaCl) (mg/l)	5.000
Cations	
Sodium (Na ⁺) (mg/l)	20.000
Calcium (Ca ⁺⁺) (mg/l)	1.000
Magnesium (Mg ⁺⁺) (mg/l)	1.000
Calcium (K ⁺) (mg/l)	250
Anions	
Chloride (Cl) (mg/l)	20.000
Hydrogen carbonate (HCO ₃) (mg/l)	2.000
Sulphate (SO ₄ ⁻) (mg/l)	2.000

The HAGULIT® coating

The HAGULIT® coating offers the following benefits:

- Excellent adhesion
- High impact resistance
- Screws easily
- No below-coating rust or blistering
- Physiologically safe and chemically resistant to wide range of agents

Features of our HAGULIT® products in brief

- All-round plastic coating in procedure of fluidised bed coating on steel
- Epoxy powder (Duroplast) with applied layer thickness of between 0.3 mm and 0.5 mm
- Well construction screens and casings up to DN 800
- Installation lengths up to 5 m
- Riser pipes up to DN 300
- Manufacture of adapters, fittings and well heads
- Max. temperature load 80 °C
- Highly resistant to aggressive media



Pickling of stainless steel products in the dipping tank

Stainless steel products, if properly treated, will not rust and, depending on the grade of steel, are also resistant to substances in the surrounding media. The final treatment of our stainless steel products is either carried out at our facilities in Renchen, Germany or Nordhausen.

At our site, the products are pickled in a chloride-free process and subsequently passivated with deionised water. This system ensures consistent pickling both for our own manufactured products and those of our customers. If required, we are able to pick up the unfinished products and return them using our own fleet of lorries.

Give us a call!



Products are delivered by our lorries



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D-31228 Peine
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Fax +49 (0)5171 294-177
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