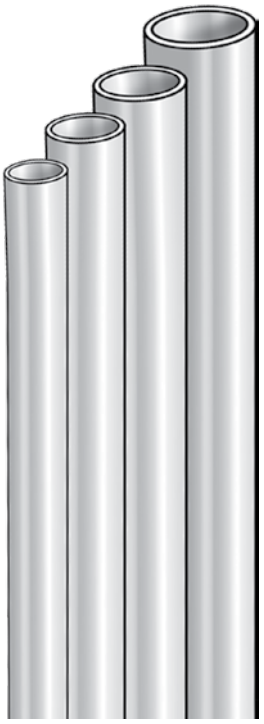
STEEL FIX® DATA SHEET

STEELFIX Metal Pipe Systems



The KE KELIT pipe concept for robust, simple and elegant applications

This is what is used:

STEELFIX thin-walled, longitudinally welded stainless steel pipes according to EN 10088, EN 10312, EN 10296-2 and EN 10217-7.

STEELFIX carbon steel pipes, thin-walled, longitudinally welded precision steel pipes according to EN 10305-3 with a particularly low carbon content.

With compressed air lines, consult with KE KELIT to determine the suitability of the metal pipe. If the compressed air has a high water content, you must use STEELFIX stainless steel.

When using stainless steel pipes in cooling and chilling systems the water-soluble chloride content must not exceed a maximum value of 250 mg/l.

Glycol or antifreeze products that are available from specialist dealers present no problems for stainless steel and carbon steel pipes and their connection components when mixed with water at temperatures of up to -30°C.

Other additives, e.g. in anti-freeze, must be EPDM-compatible. In individual cases, KE KELIT will issue approval.

The STEELFIX pipe system is continuously adapted to meet changing engineering requirements, and is enhanced on a systematic basis. The most up-to-date version of our available product range can be found in the current STEELFIX price lists.

Certifications:

ÖNORM-tested
ÖNORM EN 10312
registered

STEELFIX
W 1.477

Watermark No.: WM-022766
Certificate of Conformity for the right to use the Watermark in acc. with Australian Standards

Codemark No.: CM70043
Compliance with the New Zealand Building Code NZBC

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NF100 stainless steel pipes 1.4401 (AISI 316)

STEELFIX NF100 stainless steel pipes are thin-walled, longitudinally welded 1.4401 stainless steel pipes according to EN 10088, EN 10312 and EN 10217-7.

STEELFIX NF100 stainless steel pipes have been tested for drinking water installation and approved for installing pipes above ground (not laying in the ground).

Operating temperature: -35°C to 120°C; tmax 150°C/16bar

Material number: 1.4401 according to EN 10088

Area of application:

- For all drinking water installations
- Waste water and rainwater utilisation systems
- Drinking water for industrial facilities
- Wet and dry sprinkler distribution lines
- Wet and dry fire-extinguishing water systems according to DIN 1988-600 or TRVB 128 S
- Closed water heating systems as per ÖNORM EN 12828
- Treated water, service water and the use of completely demineralized water do not present any problems to STEELFIX stainless steel pipes; you should, however, coordinate the application with KE KELIT.
- Vacuum systems up to -0.6 bar
- Compressed air systems according to ISO 8573. Compressed air in conjunction with press fittings ONLY:
  d15 - 54mm - max. 16bar
  d76 - 108mm - max. 10bar

STEELFIX NF100 stainless steel pipes have been tested for drinking water installation and approved for installing pipes above ground (not laying in the ground).

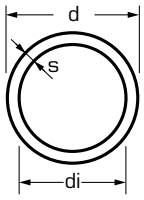
The internal and external surfaces of the pipes are bare metal, free from annealing colour and are supplied free from corrosive residue.

Double inspections at the factory ensure that strict dimensional tolerances and weld seam execution are complied with.

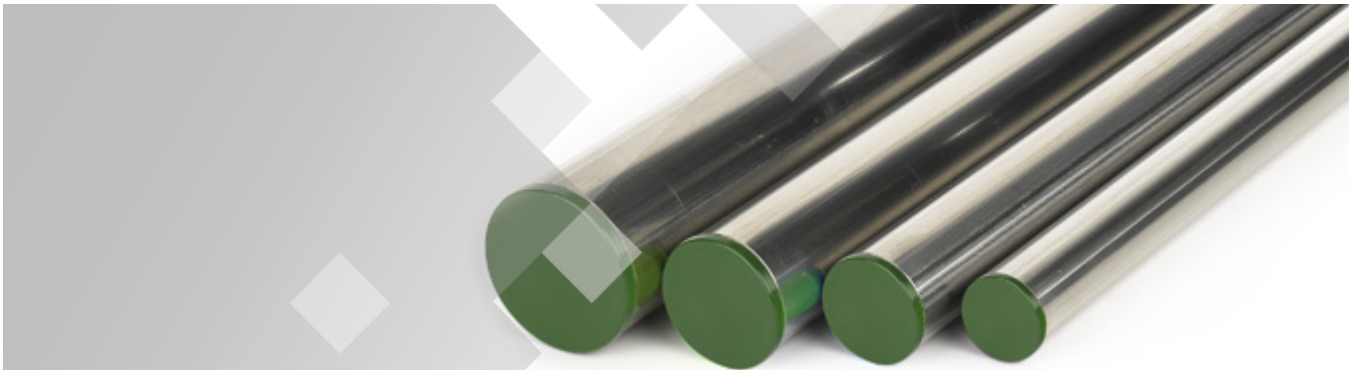
The limit values for nickel migration of <0.02 mg/l as per the EU Directive are fallen short of significantly; apart from this, no heavy metals (e.g. nickel) are discharged into drinking water.

NF100	Stainless steel-pipe 1.4401

Colour: Bare metallic, rod length 6m, colour of protective cap green



d mm	s mm	di mm	Weight kg/m	Capacity l/m
15	1.0	13.0	0.33	0.133
18	1.0	16.0	0.41	0.201
22	1.2	19.6	0.62	0.302
28	1.2	25.6	0.79	0.515
35	1.5	32.0	1.24	0.804
42	1.5	39.0	1.50	1.195
54	1.5	51.0	1.97	2.042
76.1	2.0	72.1	3.55	4.548
88.9	2.0	84.9	4.15	5.661
108	2.0	104.0	5.05	8.495



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NF110 stainless steel pipes 1.4521 - nickel-free (AISI 444)

STEELFIX NF110 stainless steel pipes are thin-walled, longitudinally welded stainless steel pipes according to EN 10088 and EN 10296.

STEELFIX NF110 stainless steel pipes have been tested for drinking water installation and approved for installing pipes above ground (not laying in the ground).

Operating temperature: -35°C to 120°C; tmax 150°C/16bar

Material number: 1.4521 according to EN 10296-2 (NICKEL-FREE)

Area of application:

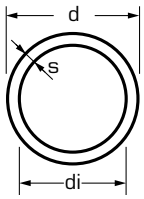
- For all drinking water installations
- Waste water and rainwater utilisation systems
- Drinking water for industrial facilities
- Wet and dry sprinkler distribution lines
- Wet and dry fire-extinguishing water systems according to DIN 1988-600 or TRVB 128 S
- Closed water heating systems as per ÖNORM EN 12828
- Treated water, service water and the use of completely demineralized water do not present any problems to STEELFIX stainless steel pipes; you should, however, coordinate the application with KE KELIT.
- Vacuum systems up to -0.6 bar
- Compressed air systems according to ISO 8573. Compressed air in conjunction with press fittings ONLY:
  d15 - 54mm - max. 16bar
  d76 - 108mm - max. 10bar

From a dimensional point of view the STEELFIX nickel-free stainless steel pipe, is similar to the NF100 pipe; however, the 1.4521 alloy contains NO nickel.

Other properties of the NF110 include slight magnetisation in addition to reduced linear expansion of about 35% compared to the NF100.

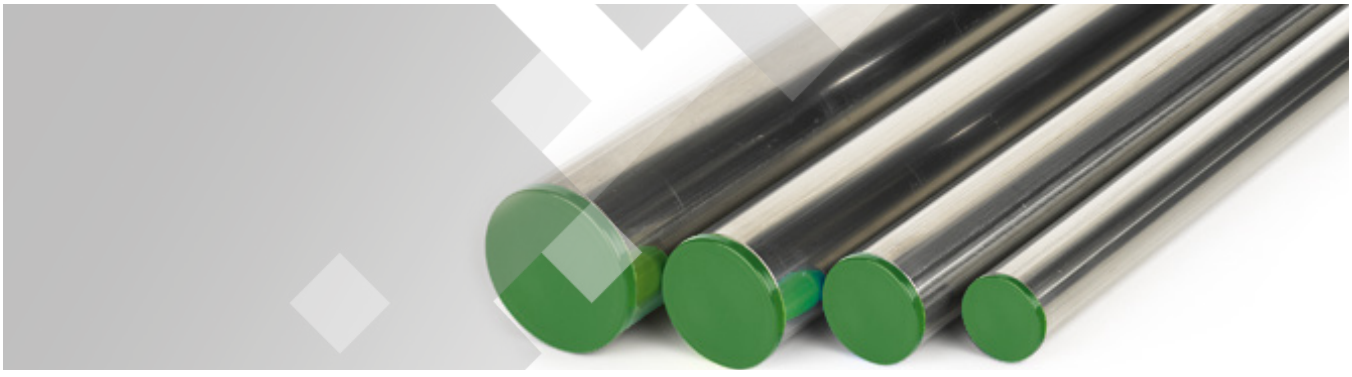
NF110	Stainless steel pipe 1.4521 - nickel-free

Colour: Bare metallic, rod length 6m, colour of protective cap green



d mm	s mm	di mm	Weight kg/m	Capacity l/m
15	1.0	13.0	0.33	0.133
18	1.0	16.0	0.41	0.201
22	1.2	19.6	0.62	0.302
28	1.2	25.6	0.79	0.515
35	1.5	32.0	1.24	0.804
42	1.5	39.0	1.50	1.195
54	1.5	51.0	1.97	2.042

Product codes (e.g. NF110) make ordering much easier, which means that you should quote them in all your wholesale orders.



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NF130 stainless steel pipes 1.4301 (AISI 304)

STEELFIX NF130 stainless steel pipes are thin-walled, longitudinally welded stainless steel pipes according to EN 10088, EN 10312 and EN 10217-7.

Operating temperature: -35°C to 120°C; tmax 150°C/16bar

Material number: 1.4301 according to EN 10088 **(NOT FOR DRINKING WATER)**

The NF130 stainless steel pipe (material 1.4301) is an austenitic pipe and, as per ÖNORM H 5155, it does not need any special corrosion protection measures. However, this is conditional upon the limitation below stated in H 5155:

Cooling pipes and their components made from stainless austenitic steel DO NOT need any corrosion protection if the medium temperature is between -50°C and 20°C, the ambient temperature during downtimes is not greater than 35°C and the pipe is not flushed with warm media.

Area of application:

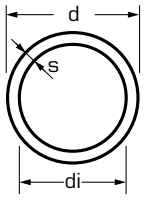
- Closed heating or cooling circuits
- Vacuum systems up to -0.6 bar
- Compressed air systems according to ISO 8573. Compressed air in conjunction with press fittings ONLY:
  d15 - 54mm - max. 16bar
  d76 - 108mm - max. 10bar
- Wet fire extinguishing water piping without supply from an external system as per TRVB 128S

From a dimensional point of view the STEELFIX nickel-free 1.4301 stainless steel pipe, is similar to the NF100.

ATTENTION NOT SUITABLE FOR DRINKING WATER!

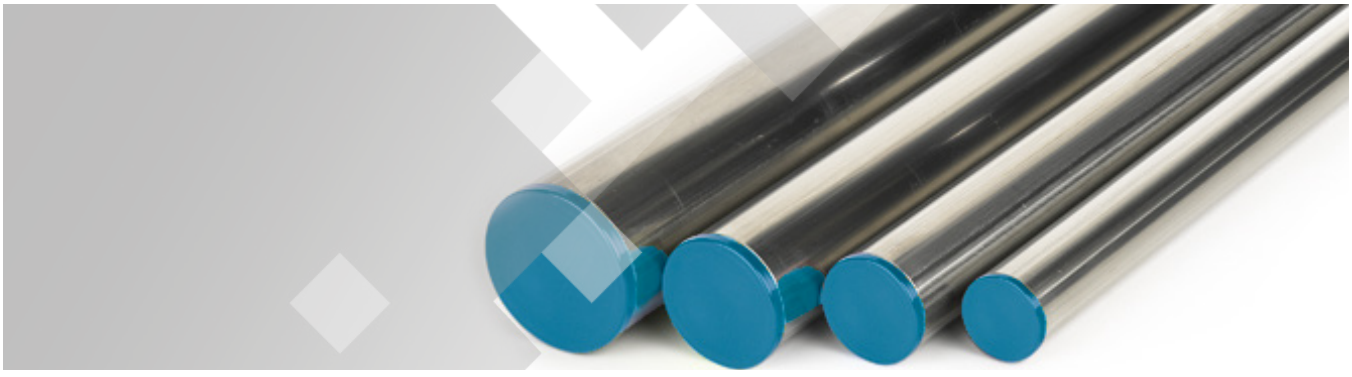
NF130	Stainless steel-pipe 1.4301

Colour: Bare metallic, rod length 6m, colour of protective cap blue



d mm	s mm	di mm	Weight kg/m	Capacity l/m
15	1.0	13.0	0.33	0.133
18	1.0	16.0	0.41	0.201
22	1.2	19.6	0.62	0.302
28	1.2	25.6	0.79	0.515
35	1.5	32.0	1.24	0.804
42	1.5	39.0	1.50	1.195
54	1.5	51.0	1.97	2.042
76.1	2.0	72.1	3.55	4.548
88.9	2.0	84.9	4.15	5.661
108	2.0	104.0	5.05	8.495

Product codes (e.g. NF130) make ordering much easier, which means that you should quote them in all your wholesale orders.



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STEEL FIX® DATA SHEET

TECHNICAL CHARACTERISTICS

AISI	316	444	304
Material	Stainless steel tube X5CrNiMo 17 12 2 Material no. 1.4401 according to DIN-EN 10088-2	Stainless steel tube X2CrMoTi 18 2 Material no. 1.4521 according to DIN-EN 10088-2	Stainless steel tube X5CrNi18-10 Material no. 1.4301 according to DIN-EN 10088-2
Smallest bending radius	3.5 x external diameter of the tube (max. 28mm)		
Supply mode	Tubes, length of 6m +0/-50mm, with protective caps (dark green)	Tubes, length of 6m +0/-50mm, with protective caps (green)	Tubes, length of 6m +0/-50mm, with protective caps (blue)
Heat expansion coefficient	0.0160mm/m with ΔT=1K	0.0104mm/m with ΔT=1K	0.0160mm/m with ΔT=1K

Material specification of 304 vs 444 vs 316

304	C	Mn	Si	P	S	Cr[1]	Mo[2]	Ni	N	Ti[3]
Min						18		8		
Max	0.08	2	0.75	0.045	0.03	20		10.5	0.1	
444	**C**	**Mn**	**Si**	**P**	**S**	**Cr**	**Mo**	**Ni**	**N**	**Ti**
Min						17.5	1.5			
Max	0.025	1	1	0.04	0.03	19.5	2.5	1		0.8
316	**C**	**Mn**	**Si**	**P**	**S**	**Cr**	**Mo**	**Ni**	**N**	**Ti**
Min						16	2	10		
Max	0.08	2	0.75	0.045	0.03	18	3	14	0.1	

1) Chromium (Cr): General corrosion resistance
2) Molybdenum (Mo): Pit/crevice corrosion resistance as well as resistance to chlorides
3) Titanium (Ti): Strength and formability

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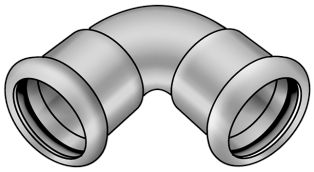
STEELFIX press fittings

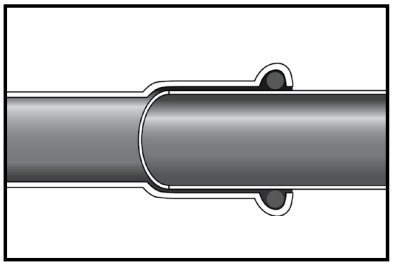


To meet the demanding requirements of an absolutely air- and water-tight pipe connection, STEELFIX stainless steel and carbon steel press fittings have dimensions d15 - 54mm “leak before pressed”.

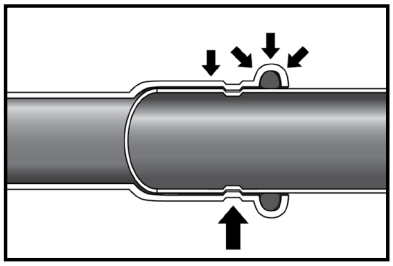
Press fittings with M contour

Both STEELFIX carbon steel and STEELFIX stainless steel press-fittings have a visibly convex M contour edge that encloses the specially perforated O-ring into a sealing chamber.

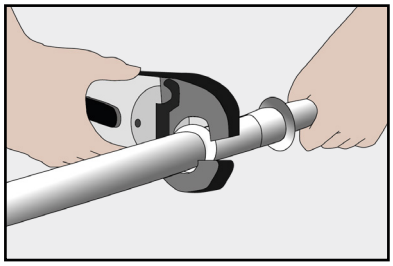
With radial pressing, the sealing chamber and the O-ring inside are deformed uniformly from three sides, which achieves a wide contact surface for the O-ring. This seals the O-ring air- and water-tight.



Before pressing

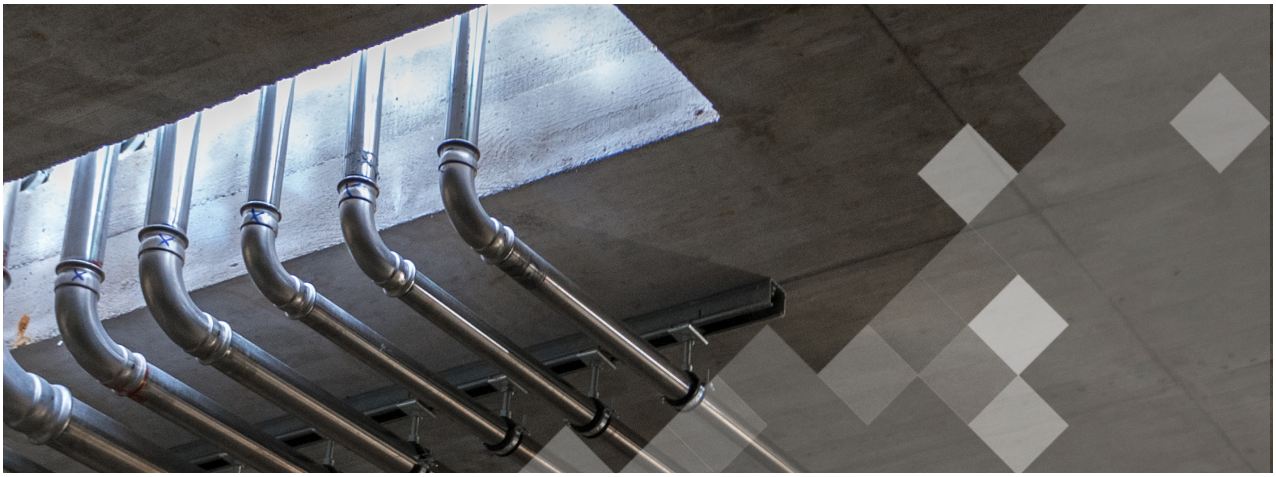


After pressing



KE KELIT recommends using the original pressing tools that are offered. If you use third-party tools, pay attention to system approval for carbon steel and stainless steel pressings (M contour) and to the processing information of the respective manufacturer.

STEELFIX press fittings are continuously adapted to meet changing engineering requirements, and are enhanced on a systematic basis. The most up-to-date version of our available product range can be found in the current STEELFIX price lists.



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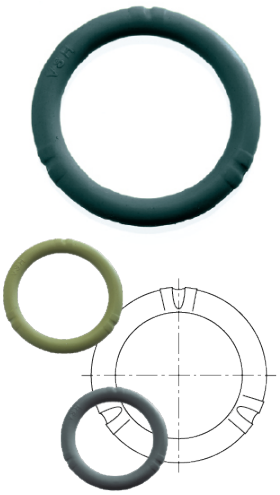
O-rings for press fittings with M contour



O-rings of dimension d15-54mm, “leak before pressed”.

Due to the O-ring geometry, an unpressed press fitting leaks as early as the pressure test.

An O-ring has a small groove at three locations offset from one another by 120°.

Due to this special O-ring design, water escapes at these locations in the case of unpressed fittings at pressure testing.

After pressing, the press fitting is sealed without the O-rings being weakened.

The standard STEELFIX press-fit system is fitted with black EPDM (CP980) O-rings.

Different O-rings are used depending on the area of application; in solar energy systems, for example, the high operating temperatures of the medium mean that you must use a CP990 O-ring made from VITON.

Users must replace O-rings themselves!

O-ring	Material	Operating temperature in °C	Maximum short-term operating temperature in °C	Maximum operating pressure in bar	Colour	Area of application
CP970	FPM	-20/+175	190	16	Grey	Installations for steam systems
CP980	EPDM	-35/+135	150	16	Black	With KTW recommendation. Installations for drinking water and treated water, service water, circulation pipes, and fire-extinguishing water piping, amongst others.
CP990	VITON	-30/+200	230	16	Green	Installations for compressed air, heating oil, vegetable oils, fuels, greases amongst others, industrial purposes, ozone-resistant, solar energy systems

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