∅ 12–168,3 mm

SYSTEM **KAN-therm**

Inox

Noble material
Giga possibilities

TECHNOLOGY OF SUCCESS

ISO **9001**

Contents

6 System KAN-therm Inox

6 System **KAN-therm** Inox

System KAN-therm Inox is a system made of stainless steel pipes and fittings in diameters 12 to 168 mm. The use of stainless steel enables to design long-lasting and failure-free systems for transporting highly corrosive media.

Modern connection technology

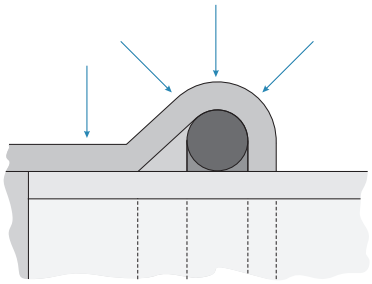
„Press" technology used in System KAN-therm Inox enables to make fast and reliable connections by pressing fittings using widely available press tools, eliminating twisting and welding of individual elements. The system permits a very quick assembly even when using pipes and fittings in large diameters.

System KAN-therm Inox pipes and fittings are made of thin-walled steel, which significantly decreases weight of individual elements and facilitates system assembly.

Connecting elements in „press" technology allows to obtain connections of minimized pipe section narrowing, which significantly decreases waste of system pressure and creates excellent hydraulic conditions.

Long-lasting connection technology

Connection leak tightness in System KAN-therm Inox is provided by special O-Ring seals and a three-point „M" type jaw.



Application possibilities

- central heating, hot and cold potable water systems (Attention!!! 1.4301 steel type pipes are not suitable for potable water installations),
- fire protection systems,
- industrial systems,
- compressed air systems,
- cooling water systems,
- heat pumps.

Advantages

- quick and reliable system assembly without welding and twisting,
- wide range of pipe and fitting diameters up to 168 mm,
- wide range of working temperatures: from -35°C to 135°C,
- high pressure resistance up to 16 bar,
- compatible with plastic systems KAN-therm Press and Push,
- lightweight pipes and fittings,
- system high aesthetics,
- resistance to mechanical damage.

Fitting assembly

1 **Pipe cutting**

Pipes should be cut perpendicular to their axes using pipe roll-cutter (full cut, with no breaking off nicked pipe segments). Using other tools is permissible provided the cut is perpendicular and cut edges are not damaged (no breaking off, no material decrements or other deformations of pipe section). Tools that emit a lot of heat, e.g. a flame torch, an angle grinder, etc., cannot be used.

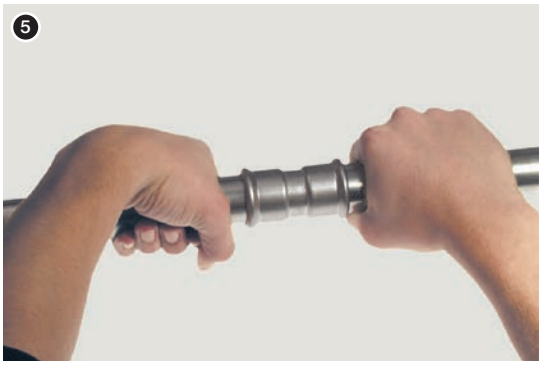
2 Beveling

Using a hand operated stripping tool (for 76,1-168,3 mm half-rounded steel file), bevel outside and inside the tip of the cut pipe, and remove all file dust that can damage an O-Ring during assembly. Stripping tool may also be mounted on electric machines (for instance electric drill).

3 Marking the insertion depth of the pipe in the fitting

In order to obtain proper connection strength it is necessary to keep the correct insertion depth (Tab.1, Fig.1) of the pipe in the fitting (it should be slid home).

To make sure the pipe is properly slid into the fitting during pressing, mark the required insertion depth with a pen marker. After the connection have been made, the marking should be visible just next to edge of the fitting. Also, there are special markers for marking the insertion depth.



4 Control

Before assembly, check visually that there is an O-Ring in the fitting, whether it is not damaged, and whether there are no file dust or any other sharp objects which can cause damage to the O-Ring during assembly. In order to proper assembling it is necessary to check the minimal allowed distance between the fittings according to Table
In order to proper assembling it is necessary to check the minimal allowed distance between the fittings according to Table 1. Fig.1).

5 Pipe and fitting assembly

Before making the connection, axially insert the pipe into the fitting to a marked depth (To make the assembly easier it is possible to slightly twist the pipe in relation to the fitting).

Using any kinds of oils, lubricating oils and fats in order to make the montage of the pipe into the fitting easier is not allowed (it is allowed to use only water or spoiled soap - recommended in case of pressure test by air). In the case of making many connections (inserting pipes into fittings and pressing) it is very important to watch the pipe insertion depth. To do so watch previously made markings on pipes near fitting edges.


6


7

6 Making a press connection

Before the beginning of the process of making the press connection, please check the efficiency of tools. Recommended is the usage of pressing machine and jaws provided by the System KAN-therm.

Always choose the suitable size of the jaw to the diameter of executing connection.

The jaw should be placed on the fitting in the way, which will ensure that the grooves in the jaw will cover the space, where are the O-Rings placed (raised parts of the fitting). After start of pressing, the process takes place automatically and cannot be stopped. If for some reasons the process of the pressing will be aborted, the connection need to be disassembled (cut out) and then the new connection should be executed one more time in correct way. If the contractors have different machines and jaws than those supplied by KAN, every use of them must be consulted with the KAN company individually.

7 Making a press connection in range 76,1–168 mm Preparing the jaw

To make a press connection of the three biggest dimensions of the Steel and Inox (76,1; 88,9; 108; 139,7; 168,3) a special jaws should be used (tetramerous) and the Klauke pressing machine. The jaw after release should be unlocked by removing the special bolt.


8


9

8 Locking the jaw

Unlocked jaw need to be put on the fitting. The jaw has special groove, where the fitting edge need to be placed.

Caution: The label on the jaw should be always at the pipe side (see picture).

9 **After the correct assembling the jaw onto the fitting, the jaw need be to locked using the special bolt. At this moment the jaw is ready to do the connection.**

10 **Assembling the machine to the jaw**

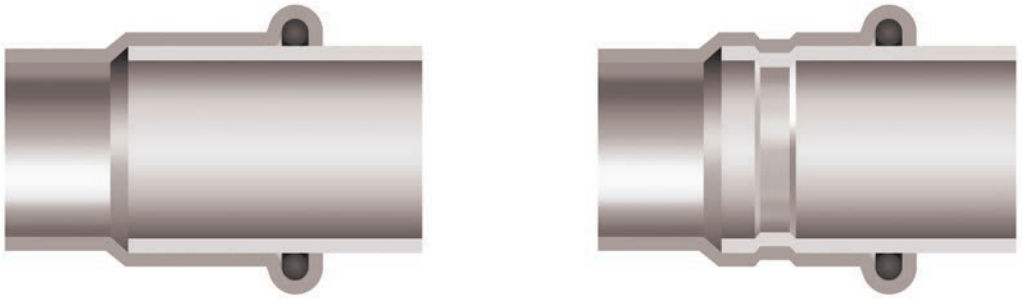
The machine need to be connected with the jaw in the way how it is shown on the picture. The arms of the machine have to be slip in up to the end. Maximal slip in is marked on the arm of the machine. Now, the machine is ready to be started.

11 **Making a connection**

The time of the full press connection is about 1 min. After the start of pressing, the process takes place automatically and cannot be stopped. If, for some reasons the process of the pressing will be aborted, the connection need to be disassembled (cut out) and then the new connection should be executed one more time in correct way. After the connection is finished, the machine will automatically back to the previous position. The arms of the machine need to be move out form the jaw. To remove the jaw from the fitting, the jaw need to be unlocked. The jaws should be stored in the locked box.

Check and lubricate the equipment before starting work and during the intervals determined by the producer.

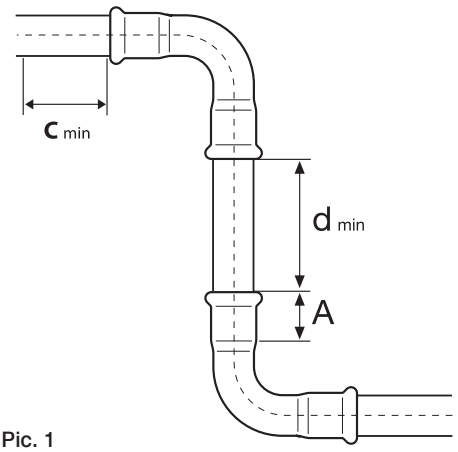
Press conection before and after press



Mounting distance

Table 1 Pipe insertion depth into the fitting and minimum distance between pressed fittings

Ø [mm]	A [mm]	d_{min} [mm]
12	17	10
18	20	10
22	21	10
28	23	10
35	26	10
42	30	20
54	35	20
76	55	55
88	63	65
108	77	80
139	100	32
168	121	37



Pic. 1

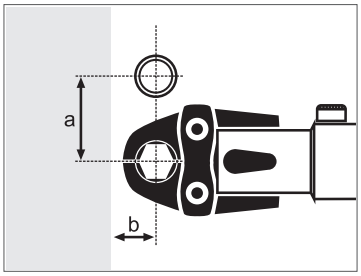
A – pipe insertion depth into the fitting,

d_{min} – minimum distance between fittings allowing for press correctness

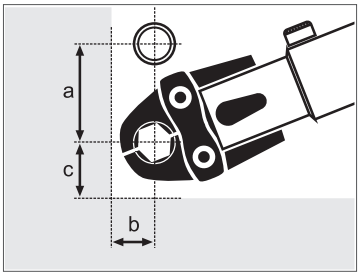
Table 2 Minimum assembly distances

Ø [mm]	Pic. 2		Pic. 3		
	a [mm]	b [mm]	a [mm]	b [mm]	c [mm]
12/15	56	20	75	25	28
18	60	20	75	25	28
22	65	25	80	31	35
28	75	25	80	31	35
35	75	30	80	31	44
42	140/115*	60/75*	140/115*	60/75*	75
54	140/120*	60/85*	140/120*	60/85*	85
76	140*	110*	165*	115*	115
88	150*	120*	185*	125*	125
108	170*	140*	200*	135*	135
139	290*	230*	290*	230*	230*
168	330*	260*	330*	260*	260*

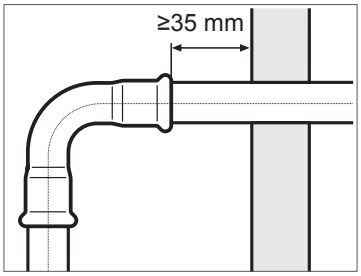
*applies to four-part pressing jaws



Pic. 2



Pic. 3



Pic. 4

Tools

Depending on the diameter, KAN-therm provides various configuration of tools. In order to select optimal set of tools, please follow chart:

Tab. 3 Selection of tools table: System KAN-therm Steel & Inox

Brand	Press machine		Diameter [mm]	Press jaws / collars		Adapter		Type of System KAN-therm			
	Mark-ing	Code		Marking	Code	Mark-ing	Code	Steel	Inox	Steel Sprinkler	Inox Sprinkler
REMS	Power Press E Aku Press	ZAPR01 ZAPRAK	12	M12	570100	-	-	+	-	-	-
			15	M15	570110	-	-	+	+	-	-
			18	M18	570120	-	-	+	+	-	-
			22	M22	570130	-	-	+	+	-	-
			28	M28	570140	-	-	+	+	-	-
			35	M35	570150	-	-	+	+	-	-
			42	M42	570160	-	-	+	+	-	-
			54	M54	570170	-	-	+	+	-	-
KLAUKE	UAP100	UAP100	64	KSP3 64	BP64M	-	-	+	-	-	-
			67	KSP3 66,7	BP667M	-	-	+	-	-	-
			76,1	KSP3 76,1	BP761M	-	-	+	+	-	-
			88,9	KSP3 88,9	BP889M	-	-	+	+	-	-
			108	KSP3 108	BP108M	-	-	+	+	-	-
NOVOPRESS	ECO301	620570.5	12	M12	620572.7	-	-	+	-	-	-
			15	M15	620573.8	-	-	+	+		
			18	M18	620574.9	-	-	+	+	-	-
			22	M22	620575.1	-	-	+	+	+	+
			28	M28	620576.0	-	-	+	+	+	+
			35	HP 35 Snap On	634106.0	ZB 303	634111.5	+	+	+	+
			42	HP 42 Snap On	634107.1			+	+	+	+
			54	HP 54 Snap On	634108.2			+	+	+	+
			66,7	M 67	634139.0	ZB 323	634143.4	+	+	-	-
	ACO401	634008.1	76,1	HP 76,1	634009.2	-	-	+	+	+	+
			88,9	HP 88,9	634010.3	-	-	+	+	+	+
			108	HP 108	634011.4	-	-	+	+	+	+
			139,7	HP 139,7	BF139	-	-	-	+	-	-
			168,3	HP 168,3	BF168	-	-	-	+	-	-

REMS tools:

1. Aku Press machine
2. Power Press E machine
3. Press jaw M12-54 mm

KLAUKE tools:

1. UAP100 machine
2. Press collar KSP3 64-108 mm

NOVOPRESS tools:

1. ECO 301 machine
2. Press jaw M12-28 mm
3. Press collar HP 35 Snap On

4. ACO 401 machine
5. Press collar HP 42 - 54 Snap On
6. Collar M67

7. Press collar HP 76,1 – 168,3
8. Adapter ZB 303
9. Adapter ZB 323

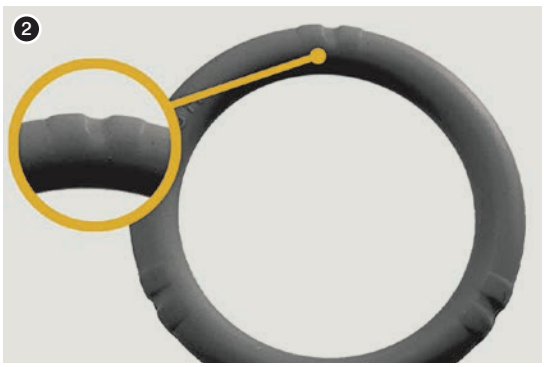
For connecting KAN-therm Inox Giga Size 139,7 mm and 168,3 mm elements, company KAN delivers appropriate tools directly to the building site.

Tools - Safety

All tools must be applied and used in accordance with their purpose and the manufacturer's instructions. Use for other purposes or in other areas are considered to be inconsistent with the intended use. Intended use also requires compliance with the instructions, conditions of inspection and maintenance and relevant safety regulations in their current version. All works done with tools, which do not meet the application compatible with the intended purpose may result in damage to tools, accessories and pipes. The consequence may be the leak and / or damage.

LBP Function

All the KAN-therm Inox System fittings in diameter range of 12-168 mm have LBP function (signaling unpressed connections - LBP-Leak Before Press). In scope of 12–54 mm diameters the function is implemented by means of special construction of O-rings. Thanks to their special grooves the LBP O-rings guarantee optimal connection control during pressure test. Unpressed connections are leaky and therefore easy to locate. In diameters over 54 mm the LBP function is realized by means of an appropriate fitting construction (stub ovalization).



1. The activity O-Rings with the function of signallings not pressed connections (LBP)
2. O-Rings with the function of signallings not pressed connections (LBP)

Detailed information

Pipes and fittings - material

- Cro-Nickel-Moly corrosion resistant steel - X5CrNiMo 17122 no.1.4401 acc. to DIN-EN 10088, pipes acc. to DIN-EN 17455, acc. to AISI 316.
- Corrosion-resistance chrome-nickel-molybdenum steel X2CrNiMo17-12-2, no. 1.4404, in accordance with DIN-EN 10088 and AISI 316L.
- Corrosion-proof chrome-molybdenum-titanium steel X2CrMoTi18-2, no. 1.4521, in accordance with DIN-EN 10088 and AISI 444.

O-Rings and flat gaskets

O-Ring	Properties and work parameters	Application
EPDM (butyl rubber) 	color: black max. operating pressure: 16 bar operating temperature: -35°C to 135°C short duration: 150°C	potable water hot water treated water (softened, decalcified, distilled, with glycol up to 50%) compressed air (with no oil content)
FPM / Viton (fluorine rubber) 	color: green max. operating pressure: 16 bar operating temperature: -30°C to 200°C short duration: 230°C	**solar systems** **compressed air** **fuel oil** **vegetable fat** **engine fuels** **Caution!!** **Not suitable for pure hot water installations. Do not use in potable water systems.**
Flat gasket FPM Viton 	colour: green maks. operating pressure: 16 bar operating temperature: -30 °C to 200 °C, short-term: 230 °C	solar installations (glycol) compressed air heating oil vegetable fats motor fuels Caution!! Do not use in clean hot water systems.
FPM / Viton (fluorine rubber) 	color: gray max. operating pressure: 9 bar operating temperature: -20°C to 175°C short duration: 190°C	steam installations 15 - 54 mm

Fittings come with standard EPDM O-Rings.

For special applications Viton O-Rings are delivered separately. In case of exchanging the standard O-Rings EPDM to the VITON one it is not allowed to use again the dismounted O-Rings. Areas of application that are outside the elementary scope of the closed heating installations, should be always consulted with the company KAN.

Elongation and thermal conductivity data

Material	Linear elongation coefficient [mm/(m×K)]	Elongation of 4 m segment at 60°C [mm]	Thermal conductivity [W/(m²×K)]
Inox	0,0160	3,84	15

Recommendations

- System KAN-therm Inox pipes made of thin walled stainless steel 1.4404 and 1.4301 can not be used in installations that will be exposed to additional loads (such as hanging on the pipes, devastation, etc.).
- KAN-therm Inox steel pipes cannot be bent when warm. Cold bending is permissible provided the minimum bending radius is kept (R=3.5×dz). Do not expose pipe external surface to prolonged direct moisture during storage and use.
- Pipes over Ø 28 mm should not be bent.
- Use ready-made pipe bends or 90° and 45° elbows offered by System KAN-therm Inox.
- It is not allowed to cut pipes using tools which emit a lot of heat, e.g. flame torches or grinders. To cut KAN-therm Inox pipes use only pipe cutters (hand operated and mechanical).
- When KAN-therm Inox pipes are concealed in walls, pipes should be insulated because of thermal elongation compensation and construction chemicals.
- In the case of using external heat sources (e.g. heating cables) heating a pipe wall, the pipe wall temperature should not exceed 60°C.
- General content of chlorides in water cannot exceed 250 mg/l. In the case of transporting chemical substances the possible use of KAN-therm Inox pipes should be consulted with KAN Technical Department.
- System KAN-therm Inox installations require potential equalization.

Screw connections and joining with other KAN-therm Systems

KAN-therm Steel and Inox System offers a wide range of connectors with male and female threads. In fittings with male thread there are taper threads (pipe), therefore in brass fittings for brass couplings only male threads are acceptable, sealed e.g. with a small amount of hemp. To avoid loading the clamp connection it is advised to make a threaded connection (screwing) before pressing the connector.

Standard PTFE (Teflon) tape and other halide agents (e.g. chlorides) must not be used to seal threads in KAN-therm Inox installations.

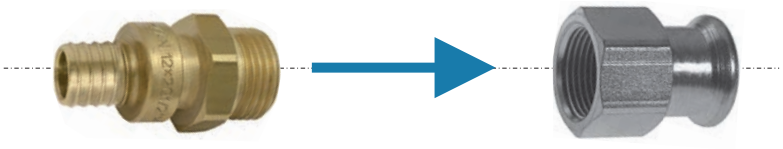
Thread sealing

It is advised to seal threaded connections with such an amount of tow, that leaves the thread tops not covered. Using too much tow may lead to thread damage. By winding tow just after the first thread ridge you can avoid skew screwing and damaging the thread.

Recommended method of connecting plastic systems (Push, Press) with steel systems (Steel, Inox) is a properly made screw connection.

Male brass fitting
System KAN-therm Push, Press

Female steel fitting
System KAN-therm Inox



Caution

Do not use chemical sealants or glues.

Elements of the System KAN-therm Steel can be assembled (through the screw or flanged connections) with elements made of others materials (see the table below).

Possibility of connections for Systems KAN-therm Steel and Inox with other materials

Type of installation		Pipes/Fittings			
		Copper	Bronze/Brass	Carbon steel	Stainless steel
Steel	closed	yes	yes	yes	yes
	open	no	no	no	no
Inox	closed	yes	yes	yes	yes
	open	yes	yes	no	yes

Remember, that connecting directly the elements made from the stainless steel with the elements made of carbon steel zinc plated (eg. pipes) can lead to corrosion. This process can be eliminated by using the plastic inserts or independent metal inserts (bronze, brass) with minimal length of 50 mm (eg. using the brass ball valve).

Pipeline assembly

Maximum distances between attachment points are presented in Table 4:

Table 4 Maximum distances between pipeline attachment points

Pipe diameter [mm]	Distance between attachment points [m]
12	1,00
15	1,25
18	1,50
22	2,00
28	2,25
35	2,75
42	3,00
54	3,50
76,1	4,25
88,9	4,75
108	5,00
139	5,00
168	5,00

Attachment points can be done as:

- slidable points PP - slidable points should enable free axial motion of the pipeline (caused by thermal motions), that is why they shouldn't be fixed next to the fittings (minimal distance from fitting flange must be higher than maximum elongated of pipeline). The slidable point can be made as "unscrewed" metal clamps with rubber pads,
- fixed points PS - to make fixed point, the metal clamp with rubber pad should be used, it should enables precise and reliability stabilization of the pipe on the whole circuit. The metal clump

should be maximally tighten on the pipe,

— attachment points preventing the pipeline from moving downwards; used if the pipeline movement on compensation arm length was blocked by required PP position.

Fixed (PS) and slidable (PP) points

— fixed points should prevent any movement of pipelines and should be fixed next to fittings (at both sides of a fitting, e.g. coupling, tee connection),

— fixed or slidable points cannot be fixed directly onto fittings,

— when fixing PSs near tee connections make sure that clamps blocking the pipeline are not fixed onto branches of smaller diameters than one dimension in relation to the pipeline (forces induced by large diameter pipes can damage small diameters),

— PPs enable only axial motion of the pipeline (they should be treated as fixed points for perpendicular direction to the pipeline axis) and should be made by clamps,

— PPs should not be fixed next to fittings because this may block thermal motions of the pipeline,

— remember that PPs prevent the pipeline from moving transverse to its axis and that is why their position may determine compensation arms length.

Elongation compensation

Along with water temperature rise ΔT pipelines become elongated by ΔL value. Thermal elongation ΔL causes pipeline deformation on expansion compensation length A. Expansion compensation length A should not cause excessive stresses in the pipeline and depends on the pipeline external diameter, thermal elongation ΔL and a linear expansion coefficient for a given material. Elongations ΔL in function of pipe length (L) and temperature rise ΔT are presented in Table 5:

Table 5 Total length elongation ΔL [mm] – System KAN-therm Inox

L [m]	ΔT [°C]									
	10	20	30	40	50	60	70	80	90	100
1	0,16	0,32	0,48	0,64	0,80	0,96	1,12	1,28	1,44	1,60
2	0,32	0,64	0,96	1,28	1,60	1,92	2,24	2,56	2,88	3,20
3	0,48	0,96	1,44	1,92	2,40	2,88	3,36	3,84	4,32	4,80
4	0,64	1,28	1,92	2,56	3,20	3,84	4,48	5,12	5,76	6,40
5	0,80	1,60	2,40	3,20	4,00	4,80	5,60	6,40	7,20	8,00
6	0,96	1,92	2,88	3,84	4,80	5,76	6,72	7,68	8,64	9,60
7	1,12	2,24	3,36	4,48	5,60	6,72	7,84	8,96	10,08	11,20
8	1,28	2,56	3,84	5,12	6,40	7,68	8,96	10,24	11,52	12,80
9	1,44	2,88	4,32	5,76	7,20	8,64	10,08	11,52	12,96	14,40
10	1,60	3,20	4,80	6,40	8,00	9,60	11,20	12,80	14,40	16,00
12	1,92	3,84	5,76	7,68	9,60	11,52	13,44	15,36	17,28	19,20
14	2,24	4,48	6,72	8,96	11,20	13,44	15,68	17,92	20,16	22,40
16	2,56	5,12	7,68	10,24	12,80	15,36	17,92	20,48	23,04	25,60
18	2,88	5,76	8,64	11,52	14,40	17,28	20,16	23,04	25,92	28,80
20	3,20	6,40	9,60	12,80	16,00	19,20	22,40	25,60	28,80	32,00

„L", „Z", and „U" compensator selection

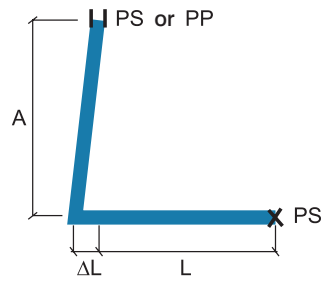
Table 6 Required expansion compensation length A [mm] for System KAN-therm Inox

Elongation values ΔL [mm]	Pipe external diameters dz [mm]												
	12	15	18	22	28	35	42	54	76,1	88,9	108	139,7	168,3
	Required expansion compensation length A [mm]												
2	12	246	270	298	337	376	412	468	555	600	661	753	826
4	220	349	382	422	476	532	583	661	785	849	935	1064	1168
6	312	427	468	517	583	652	714	810	962	1039	1146	1303	1431
8	382	493	540	597	673	753	825	935	1110	1200	1323	1505	1652
10	441	551	604	667	753	842	922	1046	1241	1342	1479	1683	1846
12	493	604	661	731	825	922	1010	1146	1360	1470	1620	1843	2022
14	540	652	714	790	891	996	1091	1237	1469	1588	1750	1990	2185
16	583	697	764	844	952	1065	1167	1323	1570	1697	1871	2128	2336
18	624	739	810	895	1010	1129	1237	1403	1665	1800	1984	2257	2477
20	661	779	854	944	1065	1191	1304	1479	1756	1897	2091	2379	2611
22	697	817	895	990	1117	1249	1368	1551	1841	1990	2193	2495	2738
24	731	854	935	1034	1167	1304	1429	1620	1923	2079	2291	2606	2860
26	764	889	973	1076	1214	1357	1487	1686	2002	2163	2385	2712	2977
28	795	922	1010	1117	1260	1409	1543	1750	2077	2245	2475	2815	3090
30	825	955	1046	1156	1304	1458	1597	1811	2150	2324	2561	2914	3198
32	854	986	1080	1194	1347	1506	1650	1871	2221	2400	2645	3009	3302
34	882	1016	1113	1231	1388	1552	1700	1928	2289	2474	2727	3102	3404

Table 6 presents required expansion compensation length ***A*** for different thermal elongation values ***ΔL*** and pipe external diameters ***dz***.

Rules for selection of different types of compensators are given below:

„L" type compensator



A – flexible arm length

PP – sliding support (allows only axial movement of a pipeline)

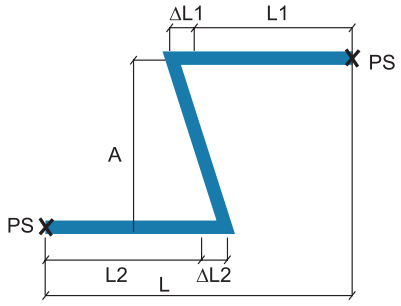
PS – fixed point (prevents any movement of a pipeline)

L – the initial length of a pipeline

ΔL – pipeline thermal elongation

For compensation arm *A* dimensioning, a substitute length *Lz=L* is taken, and for *Lz* length the thermal elongation value *ΔL* is determined from Tab. 5. Next, the expansion compensation length *A* is determined on the basis of Tab 6.

„Z” type compensator



A – expansion compensation length

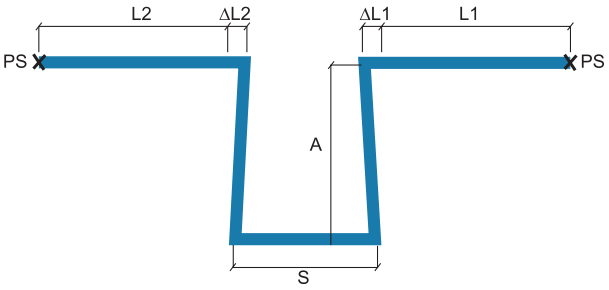
PS – fixed point (prevents the pipeline from moving);

L – pipeline initial length;

ΔL – pipeline thermal elongation.

For compensation arm *A* dimensioning, *L1* and *L2* sum is taken as a substitute length *Lz* = *L1*+*L2*, and for *Lz* length a substitute *ΔL* is determined on the basis of Tab. 5. Next, the expansion compensation length *A* is determined on the basis of Tab. 6.

„U” type compensator



A – expansion compensation length

PS – fixed point (prevents the pipeline from moving)

L – pipeline initial length

ΔL – pipeline thermal elongation

S – U type compensator width

In case of placing fixed point PS in the section of compensator length ***S***, for compensation arm ***A***dimensioning, the greater value from ***L1*** and ***L2*** is taken as a substitute length for ***Lz***: ***Lz=max (L1, L2)*** and for this length the substitute elongation ***ΔL*** is determined on the basis of Tab. 5, and then the length of compensation arm ***A*** is determined on the basis of Tab. 6.

Compensator width ***S = A/2***.

Table 7: selection of Inox flange connections

Code	Size	Amount of screws/ nuts	Screw size	Screw class	Nut class	Amount of washers	Flange	Flat O-Ring
6190756	15 DN15 PN16	4	M12	8.8	8	8	DN15	DN12 EPDM
6190767	18 DN15 PN16	4	M12	8.8	8	8	DN15	DN15 EPDM
6190778	22 DN20 PN16	4	M12	8.8	8	8	DN20	DN20 EPDM
6190789	28 DN25 PN16	4	M12	8.8	8	8	DN25	DN25 EPDM
6190791	35 DN32 PN16	4	M16	8.8	8	8	DN32	DN32 EPDM
6190800	42 DN40 PN16	4	M16	8.8	8	8	DN40	DN40 EPDM
6190811	54 DN50 PN16	4	M16	8.8	8	8	DN50	DN50 EPDM
620412.1	76,1 DN65 PN16	4	M16	8.8	8	8	DN65	DN65 EPDM
620413.2	88,9 DN80 PN16	8	M16	8.8	8	16	DN80	DN80 EPDM
620414.3	108 DN100 PN16	8	M16	8.8	8	16	DN100	DN100 EPDM
6310010	139,7 DN125 PN16	8	M18	8.8	8	16	DN125	DN125 EPDM
6310022	168,3 DN150 PN16	8	M22	8.8	8	16	DN150	DN150 EPDM