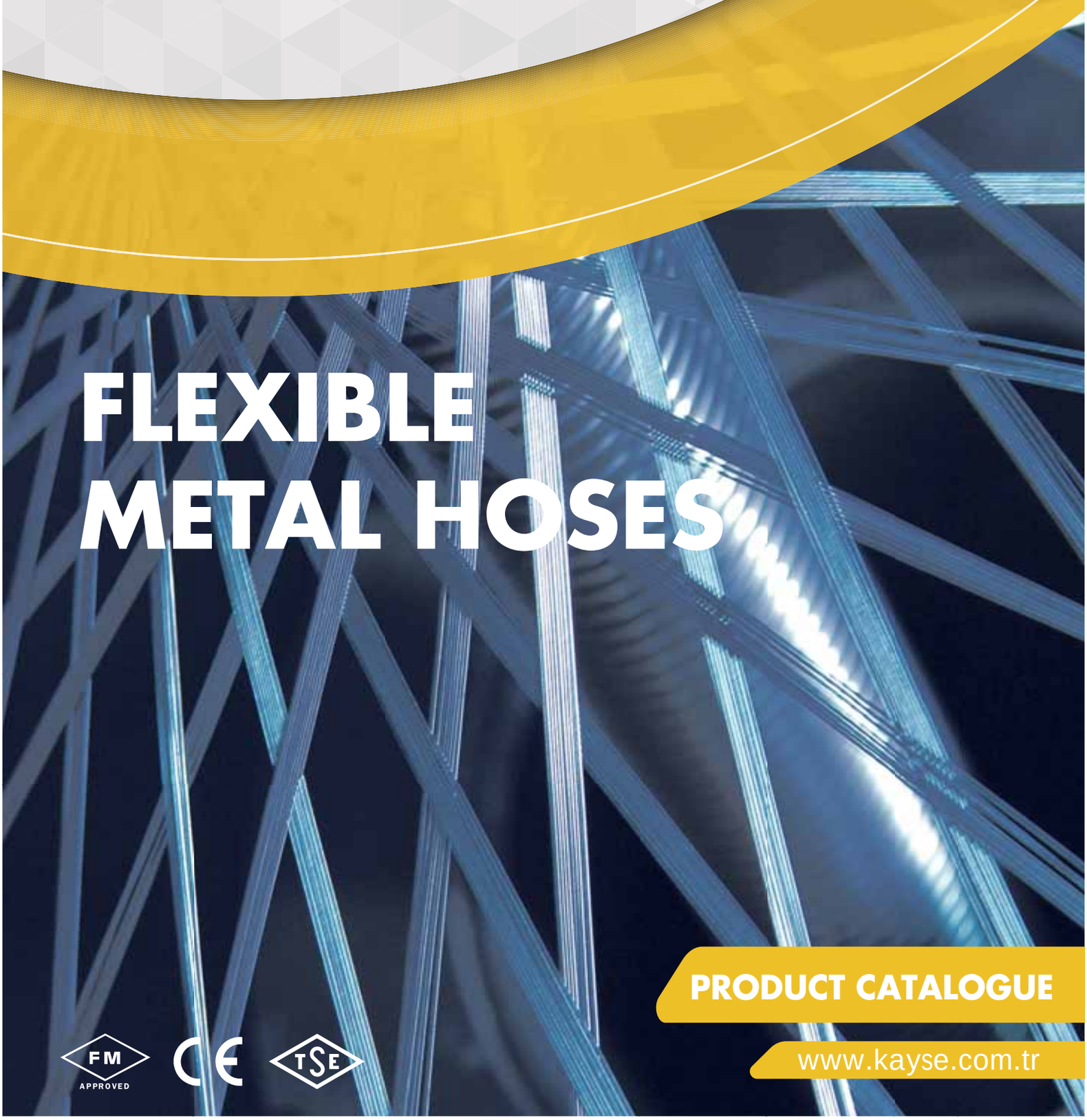
kayse®

QUALITY MAKES DIFFERENCE



FLEXIBLE METAL HOSES

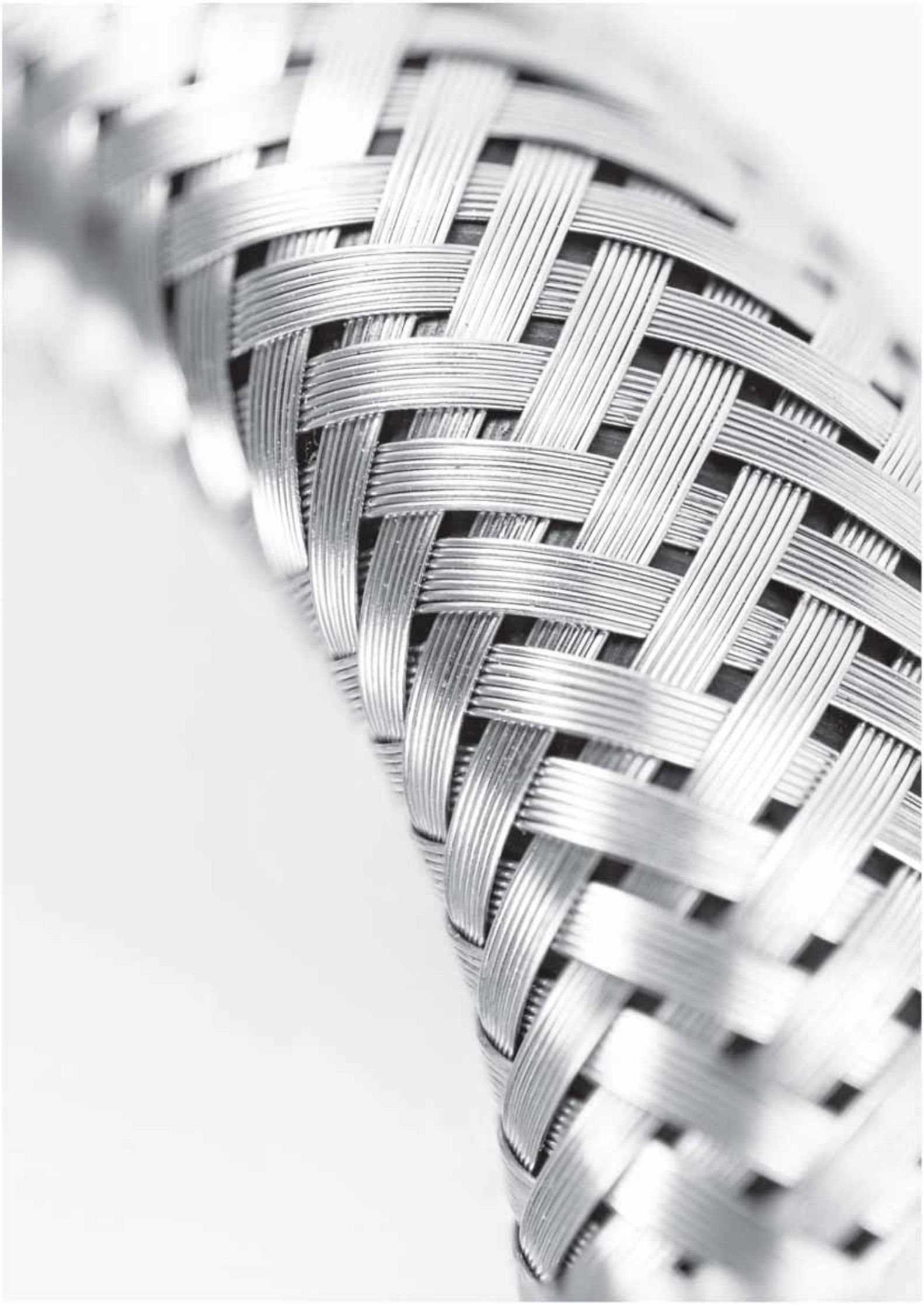
PRODUCT CATALOGUE

www.kayse.com.tr

FM APPROVED

CE

TSE



ALL AROUND
THE WORLD

ABOUT US

Founded in 2006 and having a successful history, KAYSE A.Ş. has become one of the leading brands in Turkey and has been taking firm steps forward to become a global leader in its field. With its specialized engineer staff, KAYSE A.Ş. is engaged in the production of stainless steel flexible hoses, metal expansion joints, rubber expansion joints, omega loop expansion joints, sprinkler connection hoses, and level, flow, and temperature gauges and commercial activities for special valves. As well as the sectors it serves, it continues to grow with its new investments. Behind the success of KAYSE A.Ş. is the customer-oriented and productivity-focused management approach. This approach has been developing not only with material gains but also with the awareness of corporate citizenship that the whole society benefits and will benefit from. Within the framework of this awareness, it carries out various corporate social responsibility and sponsorship projects focusing especially on education, environment, culture & arts, and sports.

KAYSE A.Ş., which is aware of its responsibilities in all areas it supports, acts with a vision for being a pioneer and a guide for the society and contributes to the national economy and employment with its investments. It offers superior technology, high quality and dynamic human resources for its customers. KAYSE A.Ş. aims at boosting brand value not only in Turkey but also in the regional and global scale. It reveals its vision of becoming a regional leader, especially in the production sector. KAYSE always offers its products based on the principles of customer satisfaction and trust. As a result of this, it represents Turkey in the whole world by creating a prestigious brand on a global scale. The synergies with large global companies also contribute considerably to this process. Being one of the pioneers of change in Turkey, KAYSE adapts quickly to the changes in the world as a result of all this experience and network. It makes the best use of its wide production, knowledge, and cooperation network. KAYSE A.Ş. acts with the aim of increasing its investments both in Turkey and abroad. In line with this aim, it exports its world-class products to 62 countries by getting their international certificates. With its young and dynamic structure and new generation management approach, KAYSE A.Ş. has established strong collaborations with its international partners and looks forward to the future with confidence.

kayse®
QUALITY MAKES DIFFERENCE

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GENERAL

Sprinkler hoses are flexible braided hoses that links the fire line to the sprinkler and they are not affected by seismic activity. The technology, which shortens work times, decreases time-related costs while the carefully developed connecting apparatus offers a dependable installation at high pressures without burdening the ceiling. With proper installation, sprinkler connection hoses, which are preferred in public spaces (such as hospitals, hotels, and retail centers), can be used in fire installations securely for a lifetime.

FM APPROVED

Hose Fixing Clamp

Side Support Clamps

Ceiling Suspension Profile (Galvanised)

SPR 20

SPR **25**

USAGE AREAS

Shopping Malls, Airports, Hotels, Hospitals, High-rise Buildings, Public Buildings

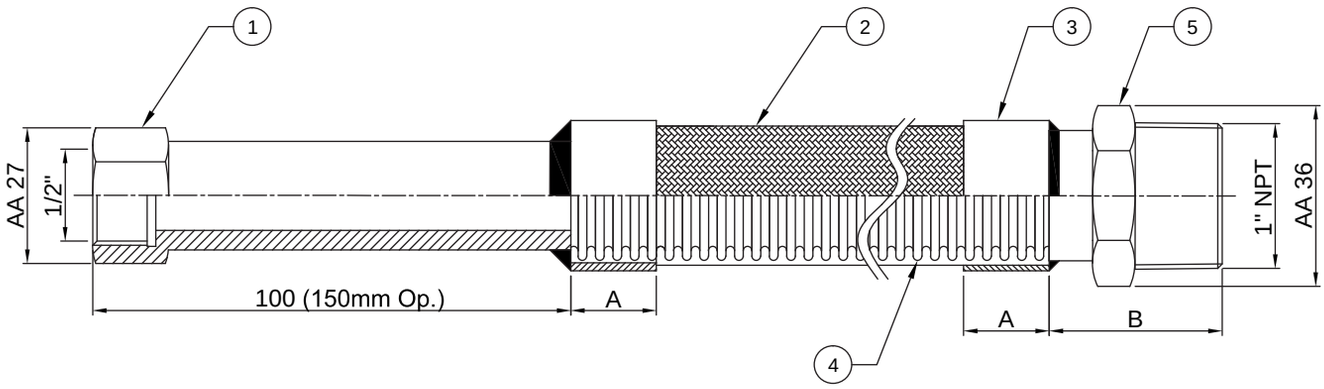
ADVANTAGES

Labor costs are very low
Flexible structure of the hose makes it vibration-resistant
The seismic motions that will take place during an earthquake can be easily absorbed by it,
It is easily adjustable between the ceiling and the main pipeline thanks to its flexible structure

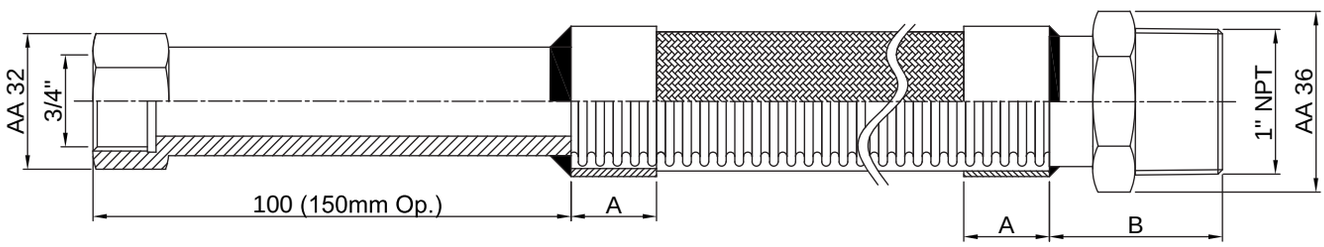
Standard Product Materials	
Hose	1.4301 (AISI 304)
Braid	1.4301 (AISI 304)
Fittings	1.0038 (St 37-2)

Optional Product Materials	
Hose	1.4401 (AISI 316)
Braid	1.4401 (AISI 316)
Fittings	Stainless Steel

Design Parameters	
Design Pressure	232 psi
Design Temperature	200 °C (max.)
Connection Dia.	DN20 - DN25
Certifications	FM Approved



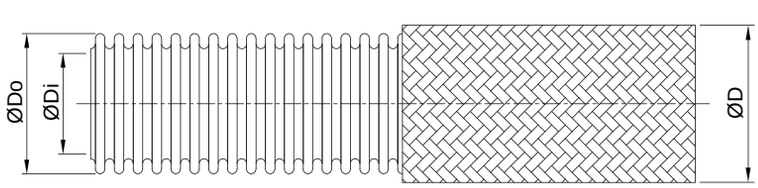
1/2" Connection



3/4" Connection

Part Number	Properties	
	Part Name	Material
1	Sprinkler Connector End	1.0038 (S235JR / St37-2)
2	Braid	1.4301 (AISI 304)
3	Braid Holder	1.4301 (AISI 304)
4	Hose	1.4301 (AISI 304)
5	Fire-Line Connector	1.0038 (S235JR / St37-2)

Model	Hose Dia.	Sprinkler Dia.	Fire Line Connection	Standard Length
SPR20	DN20	1/2",3/4"	1"	500, 700, 1000, 1200, 1500
SPR25	DN25	1/2",3/4"	1"	500, 700, 1000, 1200, 1500

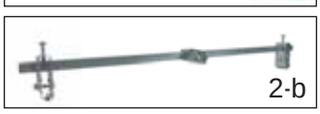


Model	ØD (mm)	ØDo (mm)	ØDi (mm)	A (mm)	B (mm)	Min. Bending Radius (mm)	Weight (kg/m)
SPR20	27,6	26,1	20,5	15	35	200	0,55
SPR25	32,5	31,3	25	18	36	200	0,6

- Please contact our sales team for different connection sizes and materials.
- Standard length of Ceiling Suspension Profile is 700mm. Please contact our sales team for different lengths.

INSTALLATION DETAILS

The sprinkler hose's 1" nipple section is attached to the fire line's T or sleeve.

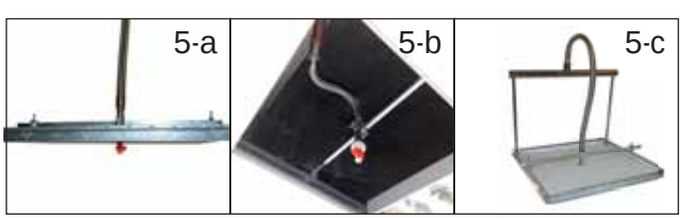


As shown in Figure 2-A, the box profile, right- and left-side supports and central clamp are joined. It must be noted that this measure is accurate only when there is no contact between the rotating and stationary components, i.e. in shaft-free conditions.

To keep it equal from the edges, the box profile should be changed on the side supports. The connection set is then attached to the ceiling's T-profile as shown in Figure 2-B.

As seen in figure 3, the remaining 1/2" of the sprinkler line is fed to the middle clamp.

To close the gap, the bolts on the right and left side supports, as well as the bolt on the central clamp, are tightened.



Finally, the hole in the suspended ceiling's middle is centered with the sprinkler hose. The end of the hose should remain at the upper level of the ceiling tile by completely tightening the side supports from the top and sides and clamping them at the center point. The sprinkler nozzle can be repositioned if there is an axial misalignment after installation.

GENERAL

By addressing issues that could result in vibration and noise during installation, Kayse Fan-Coil hoses offer a useful, simple, and secure connection. Spot corrosions that could result from moisture at the fitting connection (welding points) are prevented by its unique welding technology, and optional welding protection sheaths also prevent issues that could result from improper grounding, ensuring that the installation is fully sealed for many years. The systems make use of fan-coil connections, combi boilers, water heaters, reservoirs, sanitary systems, solar energy systems, etc.

ADVANTAGES

It provides full sealing and is long-lasting
Vibration impacts are kept to a minimum thanks to its flexible structure
Without cross-sectional constriction, fluid transmission is guaranteed
Attaches quickly to nearly all types of fittings
Depending on the material they are made of, metal hoses can withstand temperatures of up to 700–800 °C Unlike the majority of other hose types, it can handle a wide range of substances.

ORDER CODES

Kys - xx - xx - xx / xx - xx / xx - xx

- Product Length
- Connection Type- 2
- Connection Type - 2 Material
- Connection Type - 1
- Connection Type - 1 Material
- Hose Type
- Dia. (DN)

Hortum Tipi
- H — Without Insulation
- HI — With Insulation
- HB — Without Insulation & Braided
- HBI — With Insulation & Braided

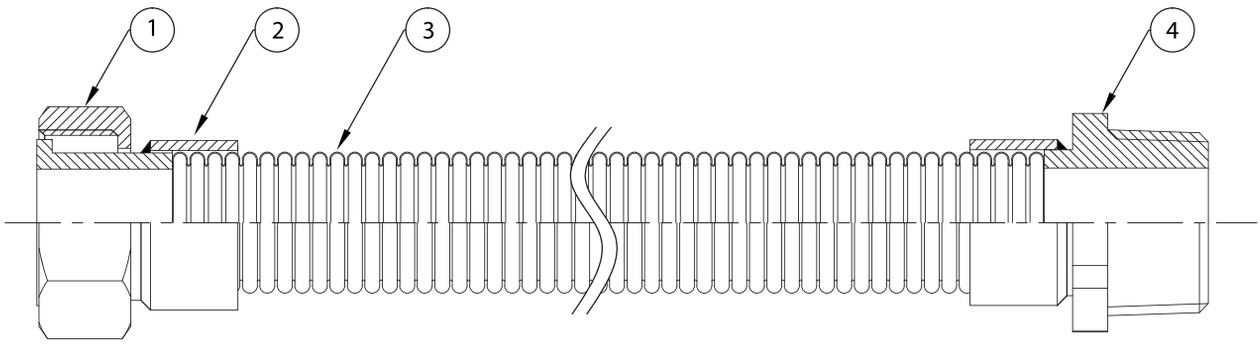
Malzeme
- CS — Carbon Steel Connection
- SS — Stainless Steel Connection

Connection Type
- R — Union
- N — Nipple
- SF — Fixed Flange
- DF — Rotary Flange
- KB — Welding End
- Y — Grooved
- KL — Camlock

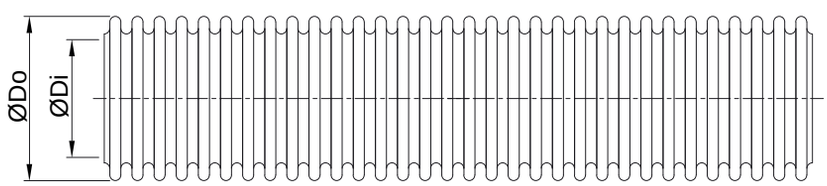
Kys - □□□ - □□□ - □□ / □□ - □□ / □□ - □□□□□

Standard Product Materials		Optional Product Materials	
Hose	1.4301 (AISI 304)	Hose	1.4401 (AISI 316)
Braid	-	Braid	Stainless Steel
Fittings	1.0038 (St 37-2)	Fittings	Stainless Steel

Design Parameters	
Design Pressure	0 - 3 bar
Design Temperature	100 °C (max.)
Connection Dia.	DN12 - DN65
Connection Types	Union x Nipple / Union x Union / Nipple x Nipple
Certificates	TSE - CE Module H (Optional)



Part Number	Properties	
	Part Name	Materials
1	Union (Nippel Optional)	1.0038 (ST 37-2)
2	Reinforcement Ring	1.4301 (AISI 304)
3	Flexible Metal Hose	1.4301 (AISI 304)
4	Nippel (Union Optional)	1.0038 (ST 37-2)



Kys ...H (Unbraid)

DN		Di (mm)	Do (mm)	Bending Radius (mm)		Working Pressure (bar)
mm	inch			Static	Dynamic	
12	1/2"	12,1	16,7	50	200	3,0
16	5/8"	16,2	21,6	50	200	3,0
20	3/4"	20,7	26,8	70	200	2,0
25	1"	25,7	32,3	90	200	2,0
32	11/4"	32,7	41,1	110	250	1,5
40	11/2"	40,7	49,1	130	250	1,5
50	2"	50,7	60,2	175	350	1,0
65	21/2"	65,7	80,1	200	410	1,0

• Please contact our sales team for different connection sizes and materials

GENERAL

By addressing issues that could result in high pressure vibration and noise during installation, Kayse Fan-Coil hoses offer a useful, simple, and secure connection. Spot corrosions that could result from moisture at the fitting connection (welding points) are prevented by its unique welding technology, and optional welding protection sheaths also prevent issues that could result from improper grounding, ensuring that the installation is fully sealed for many years. The systems make use of fan-coil connections, combi boilers, water heaters, reservoirs, sanitary systems, solar energy systems, etc.

ADVANTAGES

It provides full sealing and is long-lasting
Vibration impacts are kept to a minimum thanks to its flexible structure
Without cross-sectional constriction, fluid transmission is guaranteed
Attaches quickly to nearly all types of fittings
Depending on the material they are made of, metal hoses can withstand temperatures of up to 700–800 °C Unlike the majority of other hose types, it can handle a wide range of substances.

ORDER CODES

Kys - xx - xx - xx / xx - xx / xx - xx

- Product Length
- Connection Type - 2
- Connection Type - 2 Material
- Connection Type - 1
- Connection Type - 1 Material
- Hose Type
- Dia. (DN)

Hose Type

H	Without Insulation
HI	With Insulation
HB	Without Insulation & Braided
HBI	With Insulation & Braided

Material

CS	Carbon Steel Connection
SS	Stainless Steel Connection

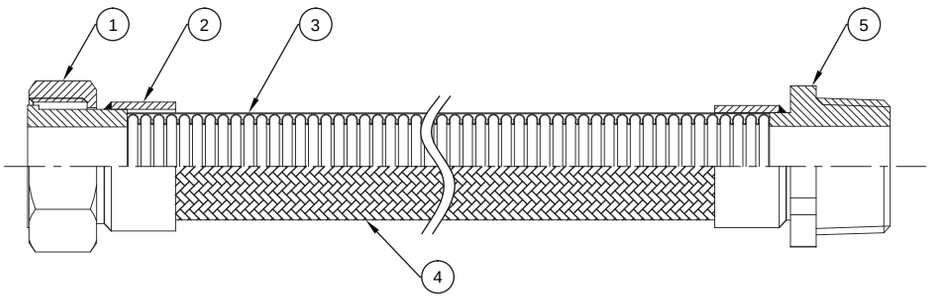
Connection Type

R	Union
N	Nipple
SF	Fixed Flange
DF	Rotary Flange
KB	Welding Ends
Y	Grooved
KL	Camlock

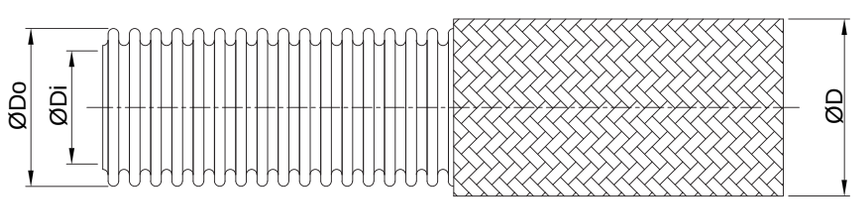
Kys - □□□ - □□□ - □□ / □□ - □□ / □□ - □□□□□

Standard Product Materials		Optional Product Materials	
Hose	1.4301 (AISI 304)	Hose	1.4401 (AISI 316)
Braid	1.4301 (AISI 304)	Braid	1.4401 (AISI 316)
Fittings	1.0038 (St 37-2)	Fittings	Stainless Steel

Design Parameters	
Design Pressure	0 - 140 bar
Design Temperature	100 °C (max.)
Connection Dia.	DN12 - DN65
Connection Types	Union x Nipple / Union x Union / Nipple x Nipple
Certificates	TSE - CE Module H (Optional)



Part Number	Properties	
	Part Name	Materials
1	Union (Nipple Optional)	1.0038 (ST 37-2)
2	Reinforcement Ring	1.4301 (AISI 304)
3	Flexible Metal Hose	1.4301 (AISI 304)
4	Braid	1.4301 (AISI 304)
5	Nipple (Union Optional)	1.0038 (ST 37-2)



Kys...HB (Braided)

DN		Di (mm)	Do (mm)	D (mm)	Bending Radius (mm)		Operating Pressure Single Ply (bar)	Operating Pressure Two Ply (bar)
mm	inch				Static	Dynamic		
12	1/2"	12,1	16,7	17,5	50	200	80,0	128,0
16	5/8"	16,2	21,6	23,1	50	200	70,0	112,0
20	3/4"	20,7	26,8	28,4	70	200	64,0	102,0
25	1"	25,7	32,3	35,0	90	200	50,0	80,0
32	11/4"	32,7	41,1	42,0	110	250	40,0	64,0
40	11/2"	40,7	49,1	50,8	130	250	30,0	48,0
50	2"	50,7	60,2	62,5	175	350	28,0	44,0
65	21/2"	65,7	80,1	82,5	200	410	24,0	38,0

* Please contact our sales team for different connection sizes and materials

GENERAL

Large diameter hoses are typically used in industrial and commercial settings. Large industrial facilities, cement plants, the iron and steel sector, fuel production and storage facilities, and gas distribution facilities all employ this type of hose. Due to their simplicity of assembly in moving parts, big diameter hoses are desirable, especially in large facilities.

ORDER CODES

Kys - xx - xx - xx / xx - xx / xx - xx

- Product Length
- Connection Type - 2
- Connection Type - 2 Material
- Connection Type - 1
- Connection Type - 1 Material
- Hose Type
- Dia. (DN)

Hose Type:

H	Without Insulation
HI	With Insulation
HB	Without Insulation & Braided
HBI	With Insulation & Braided
2HB	Without Insulation & Double Braided
2HBI	With Insulation & Double Braided

Material:

CS	Carbon Steel
SS	Stainless Steel

Connection Type:

R	Union
N	Nipple
SF	Fixed Flange
DF	Rotary Flange
KB	Welding Ends
Y	Grooved
KL	Camlock

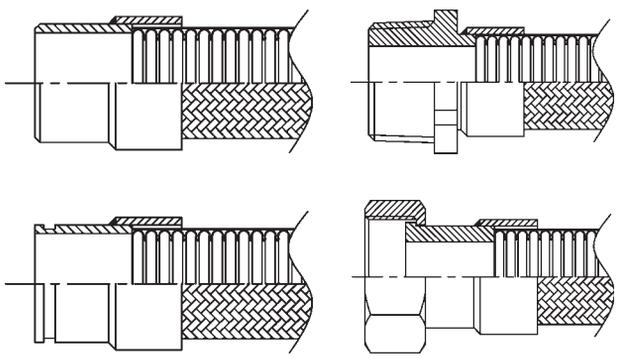
Kys - □□□ □□□ - □□ / □□ - □□ / □□ - □□□□□

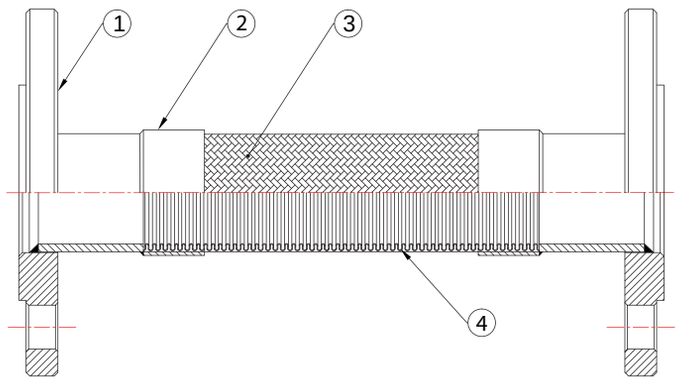
ADVANTAGES

It provides full sealing and is long-lasting
Vibration impacts are kept to a minimum thanks to its flexible structure
Without cross-sectional constriction, fluid transmission is guaranteed
Attaches quickly to nearly all types of fittings
Depending on the material they are made of, metal hoses can withstand temperatures of up to 700–800 °C Unlike the majority of other hose types, it can handle a wide range of substances.

Standard Product Materials		Optional Product Materials	
Hose	1.4301 (AISI 304)	Hose	1.4401 (AISI 316)
Braid	1.4301 (AISI 304)	Braid	1.4401 (AISI 316)
Fittings	1.0038 (St 37-2)	Fittings	Stainless Steel

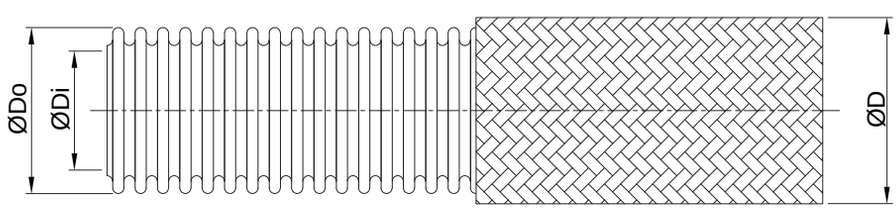
Design Parameters	
Design Pressure	0 - 128 bar
Design Temperature	100 °C (max.)
Connection Dia.	DN80 - DN300
Connection Types	Flanged , Welding Ends, Grooved, Threaded, Camlock
Certificates	CE Module H (Optional)



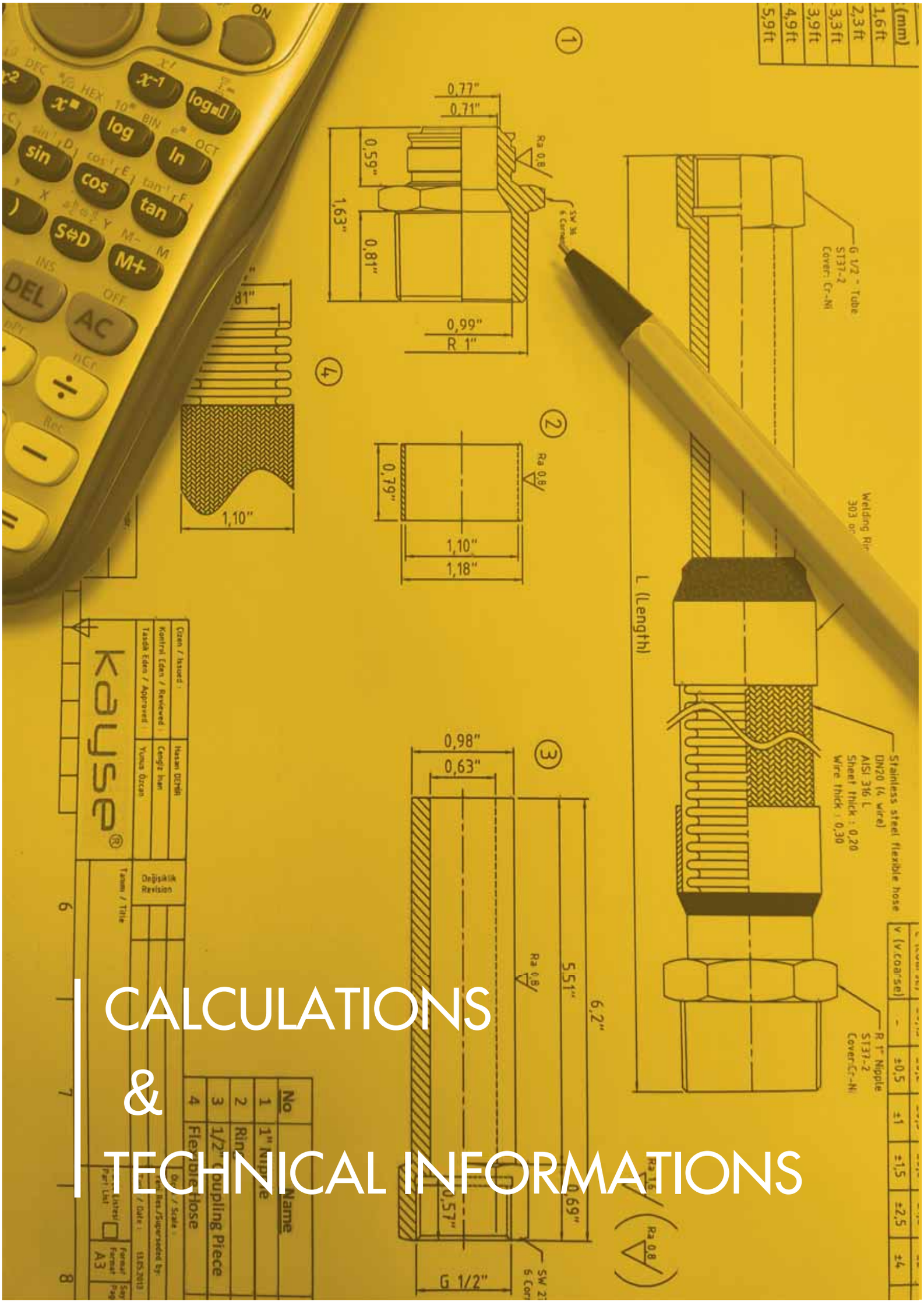


Part Number	Properties	
	Part Name	Material
1	Flange (Grooved-Threaded-Welding Ends Optional)	1.0038 (ST 37-2)
2	Reinforcement Ring	1.4301 (AISI 304)
3	Braid	1.4301 (AISI 304)
4	Flexible Metal Hose	1.4301 (AISI 304)

• Please contact our sales team for different connection sizes and materials.

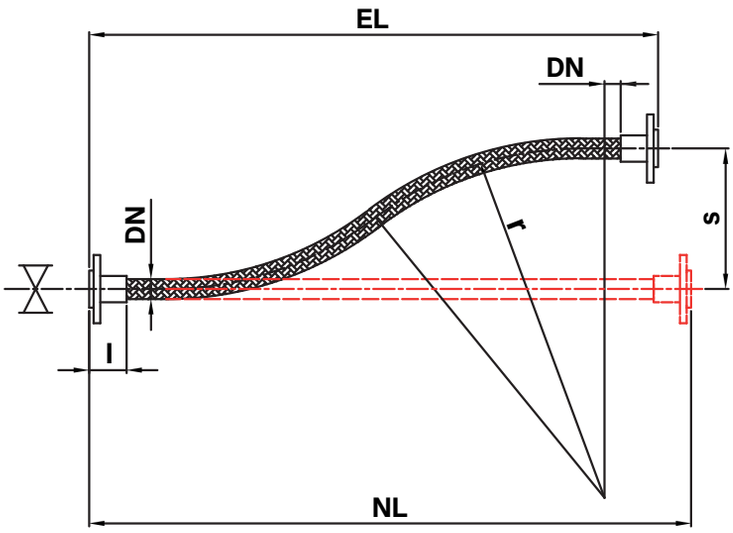


DN		Di (mm)	D (mm)	Bending Radius (mm)		Nominal Pressure Unbraid (bar)	Oper. Pressure Single Braid (bar)	Oper. Pressure Double Braid (bar)
mm	inch			Static	Dynamic			
12	1/2"	12,1	17,5	50	200	3,0	80,0	128,0
16	5/8"	16,2	23,1	50	200	3,0	70,0	112,0
20	3/4"	20,7	28,4	70	200	2,0	64,0	102,0
25	1"	25,7	35,0	90	200	2,0	50,0	80,0
32	11/4"	32,7	42,0	110	250	1,5	40,0	64,0
40	11/2"	40,7	50,8	130	250	1,5	30,0	48,0
50	2"	50,7	62,5	175	350	1,0	28,0	44,0
65	21/2"	65,7	82,5	200	410	1,0	24,0	38,0
80	3"	94,4	80,7	205	450	1,0	18,0	28,0
100	4"	116,6	100,8	230	560	0,8	16,0	26,0
125	5"	149,0	125,7	280	660	0,6	12,0	20,0
150	6"	174,8	150,7	320	815	0,6	10,0	16,0
200	8"	223,5	200,8	435	1015	0,5	8,0	12,0
250	10"	277,0	250,8	635	1270	0,2	7,0	11,0


CALCULATIONS
&
TECHNICAL INFORMATIONS

HOSE LENGTH CALCULATION

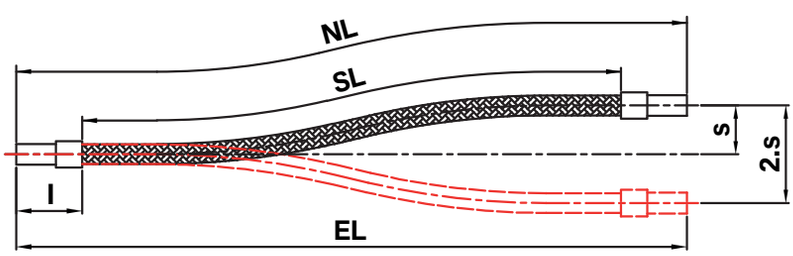
HOSE LENGT CALCULATION FOR S-SHAPPED INSTALLATION



$NL = [(r \times \pi \times \alpha)/90] + 2 \times (l + DN)$
$EL = 2 \times r \times \sin \alpha + 2 \times (l + DN)$
$s = 2 \times r \times (1 - \cos \alpha)$
$\cos \alpha = (2 \times r - s) / (2 \times r)$
$EL = 2{,}414 \times s + 2 \times (l + DN)$
$NL = 2{,}680 \times s + 2 \times (l + DN)$

s:	Axial Deflection	(mm)
r:	Bend Radius	(mm)
α:	Bend Angle (See Table)	(°)
l:	Length of connecting component	(mm)
DN:	Nominal Hose Size	(mm)
EL:	Installation Length	(mm)
NL:	Nominal Length	(mm)

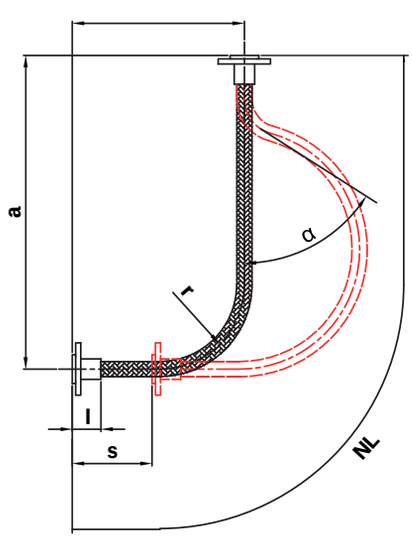
LENGT CALCULATION FOR LATERAL ACTION METAL HOSES



$NL = 2 \times l + \sqrt{20 \times r \times s}$
$s = SL^2 / 20r$
$EL = 0{,}995 \times NL$
$SL = NL - 2 \times l$
$SL_{min} = 6 \times s$

2xs:	Total Lateral Movement	(mm)
s:	Lateral Movement (From The Middle Axis)	(mm)
r:	Bend Radius	(mm)
l:	Length of connecting component	(mm)
DN:	Nominal Hose Size	(mm)
EL:	Installation Length	(mm)
NL:	Nominal Length	(mm)

LENGT CALCULATION FOR 90° INSTALLATION AND MOVEMENT IN ONE DIRECTION

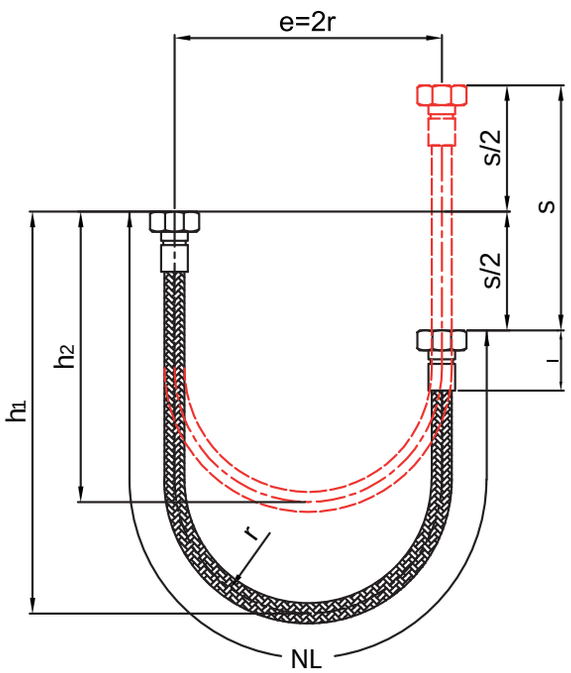


$NL = 0{,}035 \times r \times \alpha + 1{,}57 \times r + 2 \times l$
$b = l + r + r \times (0{,}035 \times \alpha - 2 \times \sin \alpha)$
$a = r + 2 \times r \times \sin\alpha + l$
$f_\alpha = s / r \qquad \alpha < 60°$

s:	Movement	(mm)
a:	Installation Distance	(mm)
b:	Installation Distance	(mm)
r:	Bend Radius (See Rables For Bend Radius)	(mm)
l:	Length of Connecting Components	(mm)
α:	Bend Angle	(°)
NL:	Nominal Length	(mm)

HOSE LENGTH CALCULATION

180° INSTALLATION AND SINGLE -SIDED VERTICAL MOVEMENT



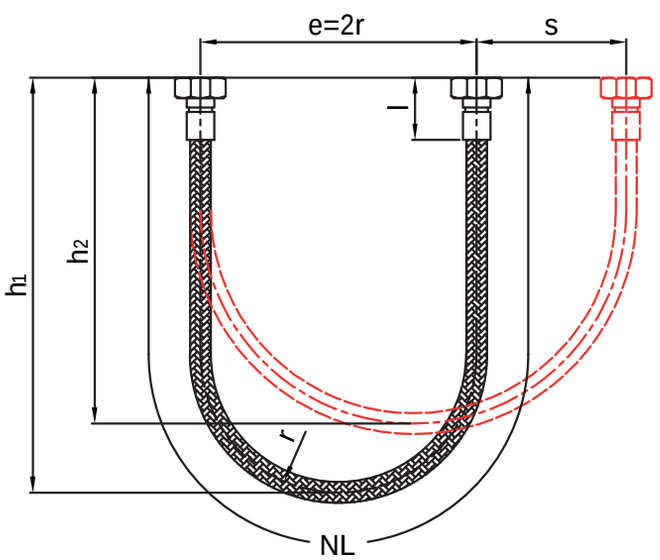
$NL = 4 \times r + 0{,}5 \times s + 2 \times l$

$h_1 = 1{,}43 \times r + 0{,}5 \times s + l$

$h_2 = 1{,}43 \times r + l$

r:	Bend Raius (See Page 3.5-3.6)	(mm)
e:	Installation Distance	(mm)
l:	Length of Connecting Components	(mm)
h1:	Max. Height of The 180° Bend	(mm)
h2:	Min Height of The 180° Bend	(mm)
s:	Movement	(mm)
NL:	Nominal Length	(mm)

180° INSTALLATION AND SINGLE -SIDED HORIZONTAL MOVEMENT



$NL = 4 \times r + 1{,}57 \times s + 2 \times l$

$h_1 = 1{,}43 \times r + 0{,}785 \times s + l$

$h_2 = 1{,}43 \times r + 0{,}5 \times s + l$

r:	Bend Radius	(mm)
e:	Installation Distance	(mm)
l:	Length of connecting Components	(mm)
h1:	Max. Height of The 180° Bend	(mm)
h2:	Min Height of The 180° Bend	(mm)
s:	Movement	(mm)
NL:	Nominal Length	(mm)

- Working pressure at high temperatures: By multiplying the Temperature Correction Factor table value by the relevant value factor, the working pressure of the hose given in the catalog is derived.

Temperature (°C)	-200	-150	-100	-50	0	20	50	100	150	200	250	300	350	400	450	500	550	600	650	700
Correction Factor	1,00	1,00	1,00	1,00	1,00	1,00	0,92	0,83	0,75	0,69	0,65	0,61	0,58	0,56	0,54	0,53	0,52	0,34	0,19	0,10

Table 1. Tamperature Correction Factor

General

There are many factors that can affect the life of flexible metal hoses. It is very important to consider and evaluate these factors for each hose to be installed. If the application conditions and the hose assembly are matched harmoniously, the hose life will be extended and possible failures can be prevented.

Pitting Corrosion

A pit develops at a very small point on the metal surface as a result of a corrosion event. Cathodic and anodic reactions in aqueous solutions take place at various locations on the same metal surface because of the high electrical conductivity of metals. Because of its abrupt onset, disruptive effect, ubiquity, and challenges in control, it is the most harmful type of corrosion. The material utilized, the alloying elements, the kind and concentration of active ions in the environment, the surface properties, and the temperature all affect the likelihood of pitting. The resistance to pitting corrosion increases along with the amount of chromium, nickel, and molybdenum in stainless steels.

Vibration

Very small, erratic cracks close to the vibration source are the first signs of vibration damage. Cracks generally appear on the corrugation's outer edge. Over time, these fissures deepened. The hose will soon distort if the system's vibration frequency matches the natural frequency of the hose.

High Flow Rate

The metal hose may prematurely wear out if liquid or gas flows are above a certain speed level. The hose bends vibrate at a high frequency as a result of the high flow rate. The hose will swiftly distort into spider web-like fissures or shattered bits of metal if this vibration is near to the natural frequency of the hose. The diameter of the hose can be raised to prevent such deformations, and a unique inner lining can be utilized to lessen hose bending and give a smooth flow.

Universal Corrosion

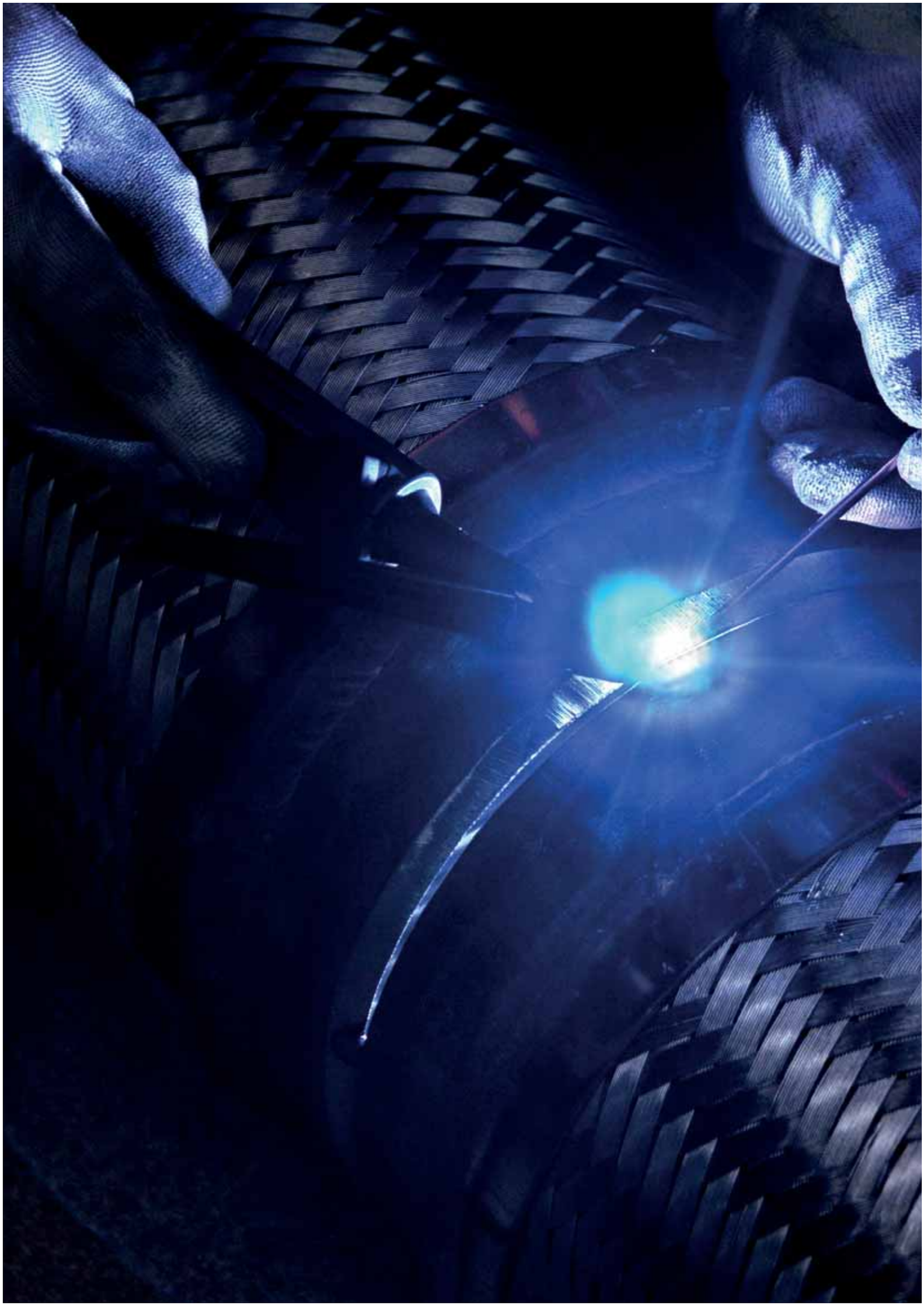
The corrosive action affecting the entire hose assembly is known as universal corrosion. The aggressiveness of the fluid is influenced by its concentration and the metal hose's alloy. Corrosion is more likely to occur at the lowest portion of the corrugation and the area that is heated during welding. Correct alloy selection is necessary to avoid global corrosion in hoses and welding wire. The chemical make-up of the fluid and the surrounding environment must be considered while selecting a hose alloy.

Intergranular Corrosion

Intergranular corrosion is the term used to describe corrosion that happens along the grain boundary line in a metal's crystal structure. Some corrosion-weak flaws may develop in the border regions of the metal atom crystals during the solidification of molten metal or any thermal treatment in the solid-state. When metal is exposed to a corrosive environment, intergranular corrosion occurs. Stainless steel is the most prevalent example of this. The carbon in the steel and the chromium react to generate the chromium carbide compound when these steels are heated to high temperatures or welded. As a result of the compound's accumulation near the grain boundaries, corrosion is unstable there. At the edges of the welded area, the intergranular corrosion phenomenon is more prevalent. This phenomenon is called weld rot. A chromium carbide precipitate develops between the grains as the temperature in the welded area rises. Corrosion is more likely to occur in places where heat is effective.

Hose Break

When exposed to pressures that are steady or vibrating that are more than the hose design pressure of the system they are installed in, metal hoses are susceptible to breaking and tearing. When a hose ruptures, the braid also snaps, and the hose keeps unraveling until the tension limit is reached. This gap causes the hose to tear as it is forced and its folds straighten. The temperature and pressure ranges to which the hose will be subjected should be taken into consideration while choosing the hose.



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