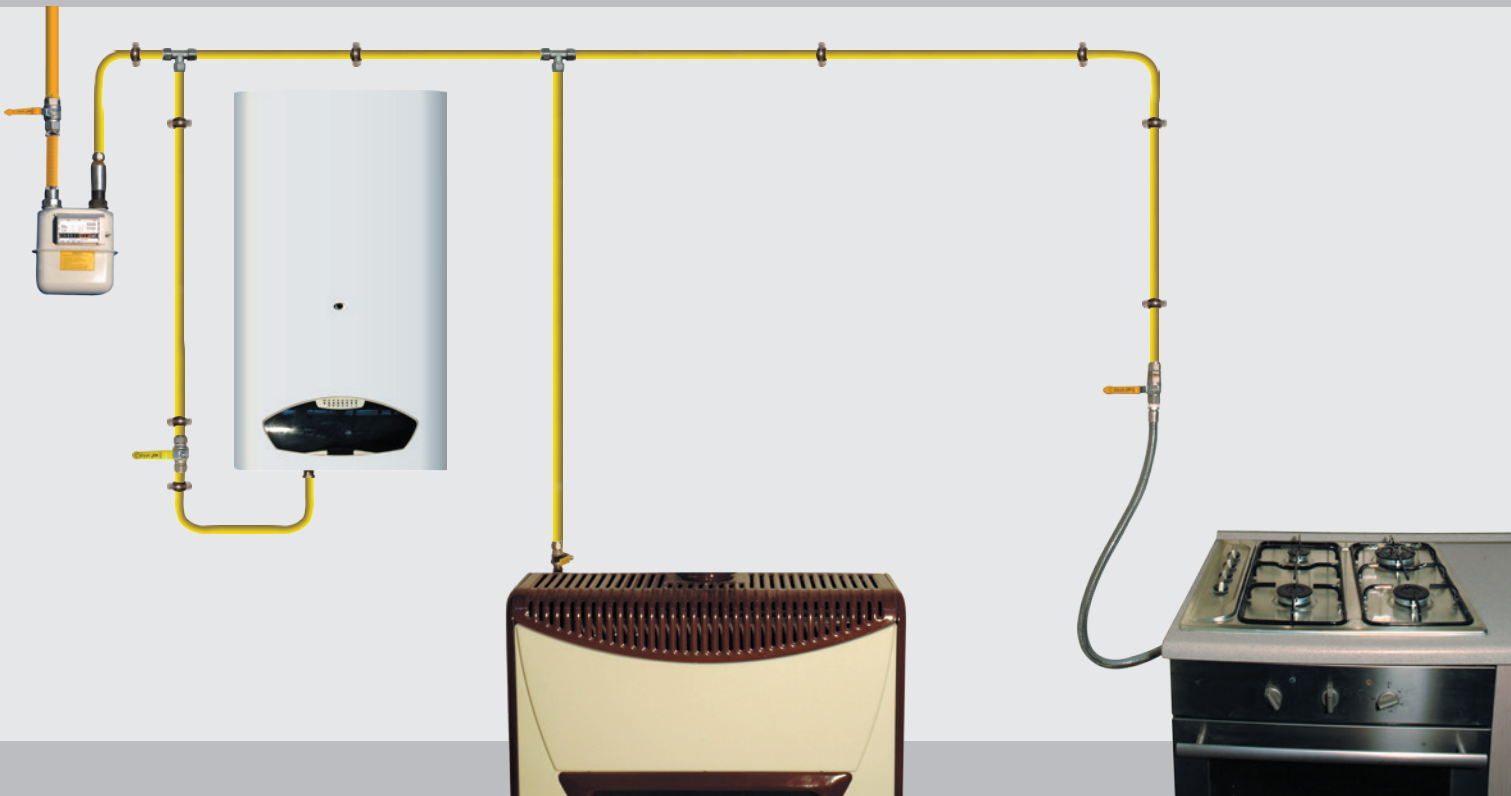


 **AYVAZ**

**INDOOR FLEX**

Easy  
Economic  
Quick

# Corrugated Coated Stainless Steel Hoses for gas use with European Standard EN 15266:2007



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**DVGW**  
EN 15266:2007

A MEMBER OF EURO-QUALIFLEX (AEQ)





# INDOOR FLEX

## FLEXIBLE SOLUTIONS

FOR DOMESTIC NATURAL GAS INSTALLATIONS

**Stainless Steel Hoses (AISI 316L) Conform to EN 15266 Standard**

Ayvaz's Indoor-flex domestic natural gas connection system is certified as to conform the EN 15266 European Standard which specifies the requirements for material, design, manufacture, testing, marking and documentation of stainless steel pliable corrugated gas tubing kits for buildings with a maximum operating pressure (MOP) less than or equal to 0,5 bar and a nominal size range from DN 10 to DN 50.

The aim of the standard (EN 15266) is to improve the safety level of domestic natural gas connections in the buildings and to provide countless benefits for both users and installers.

**Safe and Reliable Flexibility at Every Bend (Acc. to 15266)**

Delivering natural gas to the using points in domestic applications has always been a worry for the installers in various aspects, because of using black pipe and fittings. Classic natural gas installations by such materials is time consuming and labour intensive, creating service points at every turn and connection.

Today, Ayvaz offers a great solution for all needs of contractors and installers which is a much more flexible, reliable and effective way of natural gas installation and distribution for domestic applications by its Stainless steel corrugated hose named Indoor-flex.

Indoor-flex is a continuous and highly flexible natural gas distribution system that brings remarkable performance and installation advantages over rigid pipe products also delivers a safer installation for especially, earthquake prone regions.

### ADVANTAGES OF INDOOR-FLEX

- Indoor-flex requires less time and labouring, saves time and money. The system prevents heavy lifting, extensive measuring, cutting, threading and extra workers to position and install. Connections can be completed with simple hand tools safely and quickly.
- Indoor-flex contains stainless steel hose, fittings, supportive elements, valves, cutting tools, hose crushing and preparing tools for connections also installation tubes. It is one smart system with many advantages for both new buildings and maintenance works in domestic applications.
- Indoor-flex eliminates potential gas leaks. A typical rigid pipe installation has so many 90° elbows, tee and coupling fittings that change the direction of the gas or join two straight pipes together. Each of those cast fittings can be the source of a leak. Indoor flex minimizes the number of fittings and leak potential accordingly.



# Flexible Installation Everywhere

Sizing the domestic gas lines properly delivers the perfect performance along with. Indoor-flex makes sure the shortest and most direct connection from the gas meter to the appliances.

## Indoor-flex can be installed in non-visible areas

- Attics
- Basements
- Interior and exterior wall spaces and surfaces

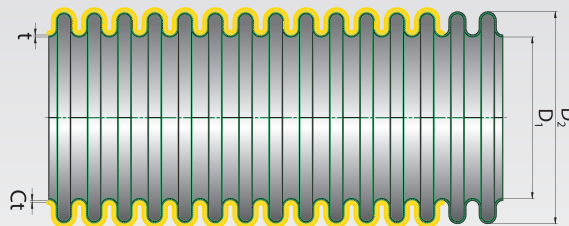
## A Safe Main Line Connection for All Domestic Gas Appliances

Ayvaz's Indoor-flex hoses can be used for the main gas lines of;

- Fixed appliances such as furnaces, stoves, and gas burning fireplaces
- Cookers, grills, patio heaters, fire pits
- Combi-boilers and water heaters

## Stainless Steel Flexible Hose

Stainless steel hose AISI 316L (1.4404) DIN EN ISO 10380 with soft PVC cover.



AYVAZ INDOOR-FLEX STAINLESS STEEL AISI 316L, YELLOW PVC COATED									
DN	Internal Diam. (D <sub>1</sub> )	External Diam. (D <sub>2</sub> )	Wall Thickness (t)	Coating Thickness (Ct)	Tolerance (±)	Minimum Bending Radius	Nominal Bending Radius	Surface Area	Internal Volume
						r <sub>min</sub>	m		
	mm	mm	mm	mm	mm	mm	mm	m <sup>2</sup> /m	l/m
12	11,6	15,8	0,2	1,15	±0,2	20	140	0,068	0,14
16	15,5	20,3	0,2	1,15	±0,2	28	160	0,082	0,24
20	20,7	26,4	0,22	1,5	±0,2	32	170	0,11	0,44
25	25,4	31,8	0,2	1,5	±0,2	40	190	0,15	0,64
32	33,2	39,7	0,22	1,5	±0,3	50	260	0,19	1,04

# PRESSURE DROP PERFORMANCE

Pressure Drop					
Test Item	Nominal Diameter	Test Medium	Test Pressure	Flow Rate	Pressure Drop
5 m Indoor-flex	DN 12	Air	500 mbar	0,1 m <sup>3</sup> /h	0,1 mbar
				0,3 m <sup>3</sup> /h	0,3 mbar
				0,5 m <sup>3</sup> /h	0,5 mbar
				0,9 m <sup>3</sup> /h	1,4 mbar
				1,5 m <sup>3</sup> /h	3,6 mbar
5 m Indoor-flex	DN 12	Air	500 mbar	0,1 m <sup>3</sup> /h	0,1 mbar
				0,3 m <sup>3</sup> /h	0,5 mbar
				0,5 m <sup>3</sup> /h	0,6 mbar
				0,9 m <sup>3</sup> /h	2,2 mbar
				1,5 m <sup>3</sup> /h	5,7 mbar
5 m Indoor-flex	DN 15	Air	500 mbar	0,1 m <sup>3</sup> /h	0,3 mbar
				0,3 m <sup>3</sup> /h	0,4 mbar
				0,5 m <sup>3</sup> /h	0,6 mbar
				0,9 m <sup>3</sup> /h	0,8 mbar
				1,5 m <sup>3</sup> /h	1,6 mbar
10 m Indoor-flex	DN 15	Air	500 mbar	0,1 m <sup>3</sup> /h	0,2 mbar
				0,3 m <sup>3</sup> /h	0,4 mbar
				0,5 m <sup>3</sup> /h	0,5 mbar
				0,9 m <sup>3</sup> /h	1,1 mbar
				1,5 m <sup>3</sup> /h	2,2 mbar
5 m Indoor-flex	DN 20	Air	500 mbar	0,3 m <sup>3</sup> /h	0,1 mbar
				0,9 m <sup>3</sup> /h	0,3 mbar
				1,5 m <sup>3</sup> /h	0,5 mbar
				2 m <sup>3</sup> /h	0,7 mbar
				3,5 m <sup>3</sup> /h	1,3 mbar

**Test conditions:** Test medium air, test pressure 500 mbar

**Allowed measurement uncertainty:** Flow rate  $\pm 2\%$ , temperature  $\pm 2\%$ , pressure  $\pm 2\%$

Pressure Drop					
Test Item	Nominal Diameter	Test Medium	Test Pressure	Flow Rate	Pressure Drop
10 m Indoor-flex	DN 20	Air	500 mbar	0,3 m <sup>3</sup> /h	0,1 mbar
				0,9 m <sup>3</sup> /h	0,3 mbar
				1,5 m <sup>3</sup> /h	0,8 mbar
				2 m <sup>3</sup> /h	1,6 mbar
				3,5 m <sup>3</sup> /h	3,8 mbar
5 m Indoor-flex	DN 25	Air	500 mbar	0,7 m <sup>3</sup> /h	0,1 mbar
				2 m <sup>3</sup> /h	0,3 mbar
				2,5 m <sup>3</sup> /h	0,4 mbar
				3,5 m <sup>3</sup> /h	0,6 mbar
				6,5 m <sup>3</sup> /h	2,1 mbar
10 m Indoor-flex	DN 25	Air	500 mbar	0,7 m <sup>3</sup> /h	0,2 mbar
				2 m <sup>3</sup> /h	0,4 mbar
				2,5 m <sup>3</sup> /h	0,5 mbar
				3,5 m <sup>3</sup> /h	1,1 mbar
				6,5 m <sup>3</sup> /h	3,2 mbar
5 m Indoor-flex	DN 32	Air	500 mbar	1,7 m <sup>3</sup> /h	0,1 mbar
				4 m <sup>3</sup> /h	0,2 mbar
				5 m <sup>3</sup> /h	0,3 mbar
				7 m <sup>3</sup> /h	0,5 mbar
				13 m <sup>3</sup> /h	1,1 mbar
10 m Indoor-flex	DN 32	Air	500 mbar	1,7 m <sup>3</sup> /h	0,2 mbar
				4 m <sup>3</sup> /h	0,4 mbar
				5 m <sup>3</sup> /h	0,5 mbar
				7 m <sup>3</sup> /h	0,9 mbar
				13 m <sup>3</sup> /h	2,1 mbar

**Test conditions:** Test medium air, test pressure 500 mbar

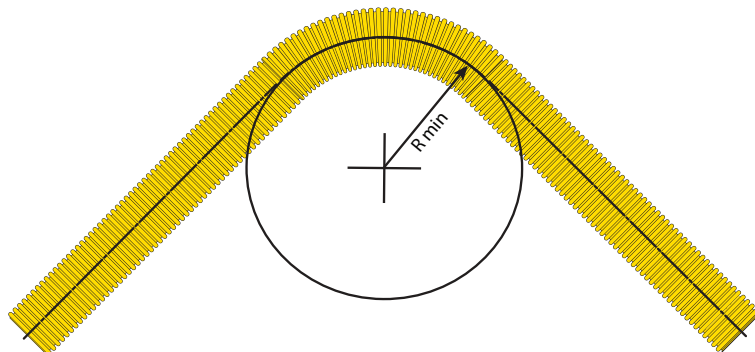
**Allowed measurement uncertainty:** Flow rate  $\pm 2\%$ , temperature  $\pm 2\%$ , pressure  $\pm 2\%$

# BENDING FEATURES OF THE HOSE

Thanks to its flexible corrugated structure, indoor-flex domestic natural gas hose can easily be adopted the direction changes through the connection line with requiring no additional fittings (elbows, etc).

The hose can easily be bent in the limits of bending radius characteristics, but must not be exposed repeated bending.

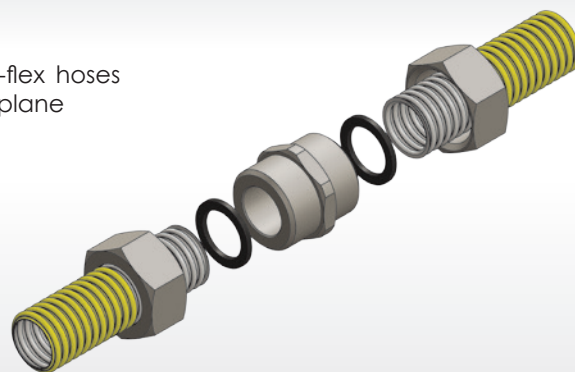
Nominal Dimension (DN)	Min. Bending Radius (R min) mm
12	20
16	28
20	32
25	40
32	50



## Connection Types:

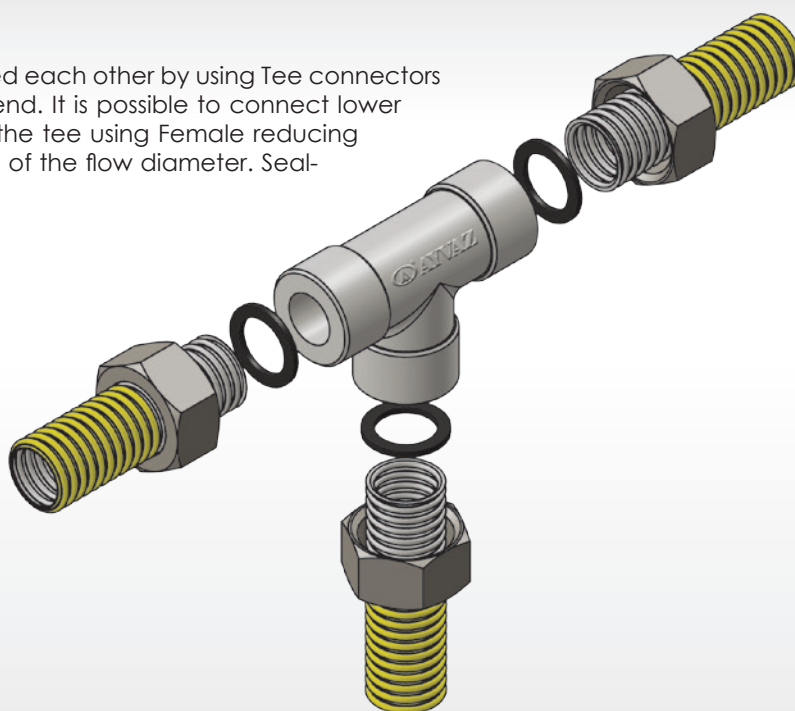
### 1. Connection through Male simple screw:

The picture below illustrates the connection of two indoor-flex hoses through an M/M adapter with double ISO 228G thread and plane end. Sealing is provided by NBR gaskets.



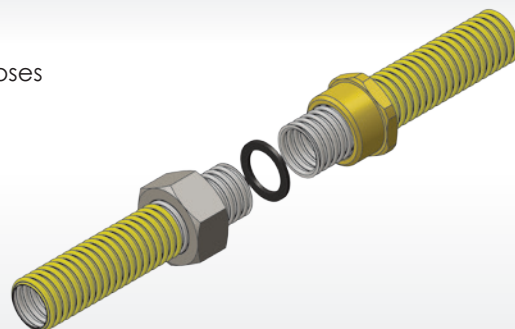
### 2. Connection through Tee connector:

Three indoor-flex hoses may be connected each other by using Tee connectors with ISO 228 G male thread and plane end. It is possible to connect lower diameter hoses to one or more ends of the tee using Female reducing nuts with ISO 228G thread with reduction of the flow diameter. Sealing is provided by NBR gasket.



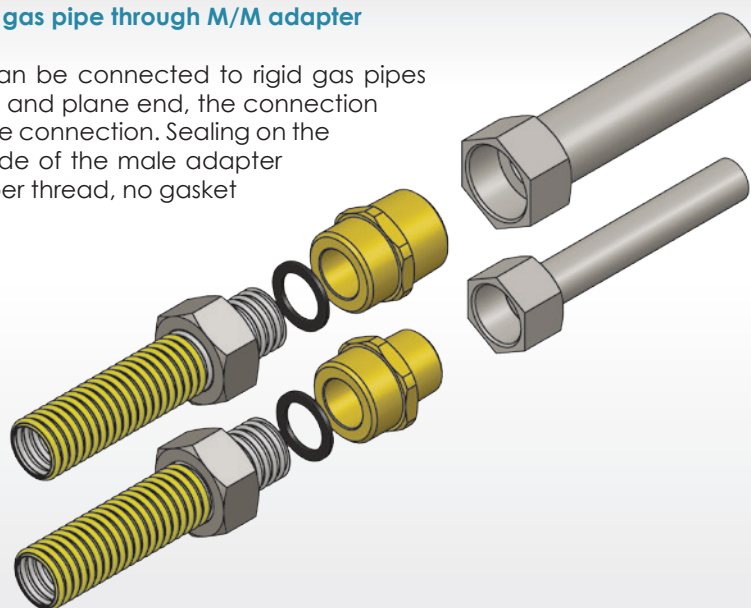
### 3. Connection through nipple adapter:

The picture below illustrates the connection of two indoor-flex hoses through an nipple adapter with ISO 228G thread and plane end. Sealing is provided by NBR gasket.



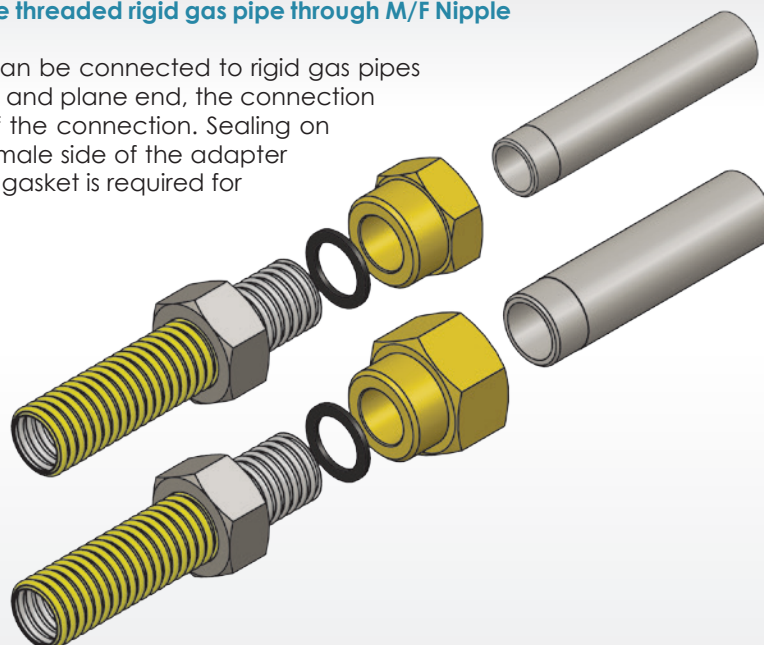
### 4. Connection between Indoor-flex and rigid gas pipe through M/M adapter

Indoor-flex domestic gas distribution hose can be connected to rigid gas pipes through M/M adapters with ISO 228G thread and plane end, the connection adapters may also reduce the diameter of the connection. Sealing on the hose side is provided by NBR gasket, pipe side of the male adapter has EN 10226 R (ISO 7R) or ISO 228G male taper thread, no gasket is required for sealing on this side.

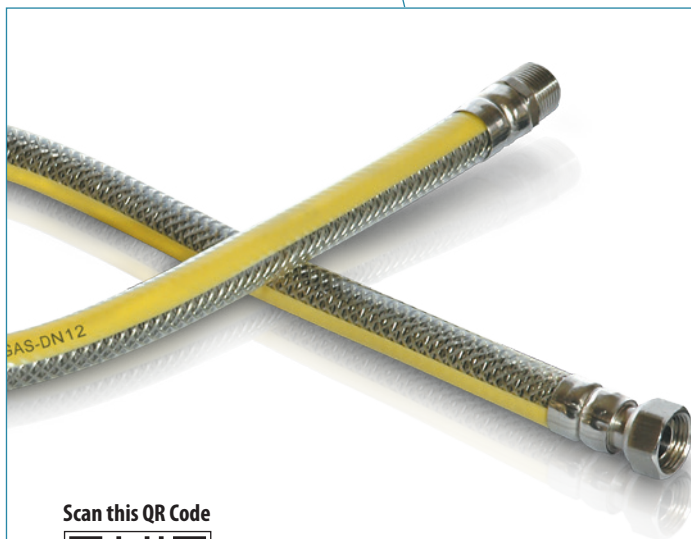
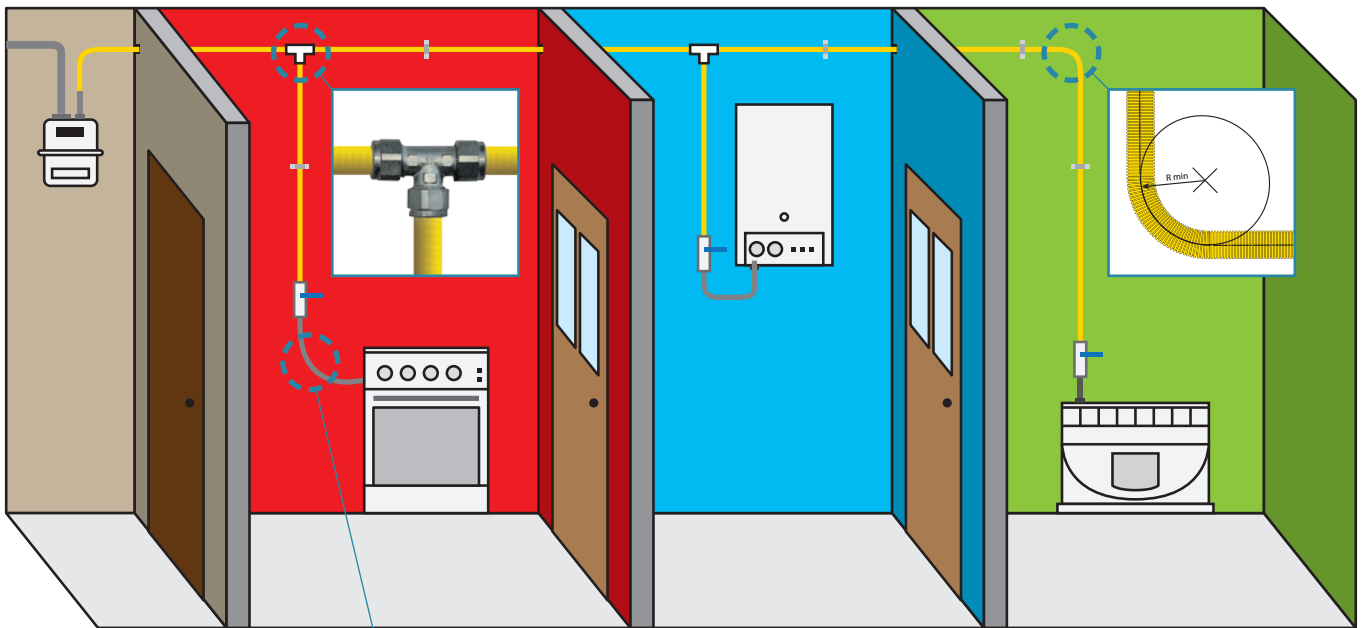


### 5. Connection between Indoor-flex and Male threaded rigid gas pipe through M/F Nipple

Indoor-flex domestic gas distribution hose can be connected to rigid gas pipes through M/F adapters with ISO 228G thread and plane end, the connection adapters may also reduce the diameter of the connection. Sealing on the hose side is provided by NBR gasket, female side of the adapter has EN 10226 R (ISO 7Rp) female thread, no gasket is required for sealing on this side.



# CONNECTION OF MOVABLE GAS EQUIPMENT



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NOMINAL DIMENSIONS		
DN	Connection	Length (mm)
12	1/2"x1/2"	500
		750
		1000
		1250
		1500
		2000

## DIN EN 14800 Domestic Gas Connection Hose

For the connection of movable gas equipment, it is suggested to use stainless steel flexible hose with braiding and PVC cover which is manufactured according to EN 14800 norm.

European Norm DIN EN 14800 represents high safety standards for corrugated metal gas hoses used in domestic appliances intended for use by individual householder inside or outside dwelling throughout Europe.

By its superior capabilities of Ayvaz's DIN EN 14800 Domestic Gas Connection Hose is highly rated by the National Gas Associations in many countries.

### Marking

Ayvaz EN 14800, cooker and oven gas connection hoses are marked as follows;

- Manufacturer's ID and logo
- EN 14800 marking
- Diameter and Length
- CE certificate number
- Type number

### Packing

Hoses are packed individually in transparent plastic bags with complete installation and using instruction card.



Indoor-flex domestic natural gas connection hose and all related equipment (fittings, gaskets, clamps, etc...) must be checked carefully before the use and to be kept in their original packages in a dry and safe place until installation. The system elements must be preserved as them to avoid contacting with corrosive substances.

PVC coated stainless steel hose should not be left outdoor for long time and must be avoided from direct sun light. The ends of the hose must be covered by caps or adhesive tapes in order to seal from foreign substances. Applying excessive force while unrolling the indoor-flex hose may cause deformation through the hose corrugations, the hose must be unrolled gently.

## PACKAGING INSTRUCTIONS

Ayvaz's indoor-flex hoses may be provided as the bobbins and coils.

BOBBIN					
Diameter (DN)	DN 12	DN 15	DN 20	DN 25	DN 32
Max. Length (m)	900-1000	600-700	400-450	200-250	150-200

COIL		
Diameter (DN)	Length (m)	Code
12	5	701900431005
	10	701900431010
	20	701900431020
16	5	701900441005
	10	701900441010
	20	701900441020
20	5	701900451005
	10	701900451010
	20	701900451020
25	5	701900460005
	10	701900460010
	20	701900460020



## “MONTAGE BAG” KESTAK FITTINGS SET (BAG)

### INCLUDES

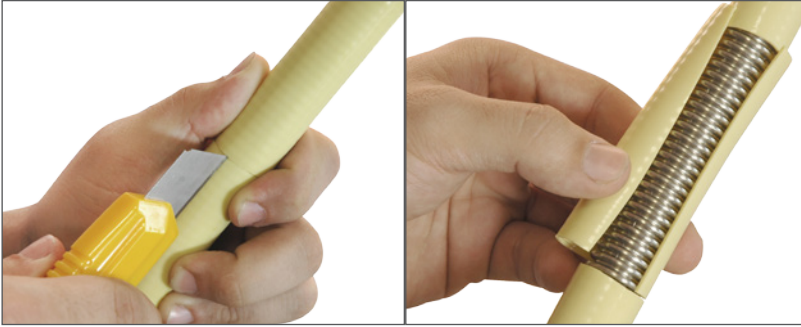
- 1 Kestak Piston (1/2", 3/4", 1")
- 1 Cutting Device
- 2 Crushing Tool (DN12 - DN16)  
(DN20 - DN25)
- Nut (10 pieces of each size)  
(DN12 - DN16 - DN20 - DN25)
- Clamping Washer (10 pieces of each size)  
(DN12 - DN16 - DN20 - DN25)
- Gasket (10 pieces of each size)  
(DN12 - DN16 - DN20 - DN25)



\* For bigger sizes please contact to sales office.

# A PERFECTLY RELIABLE CONNECTION IN MINUTES

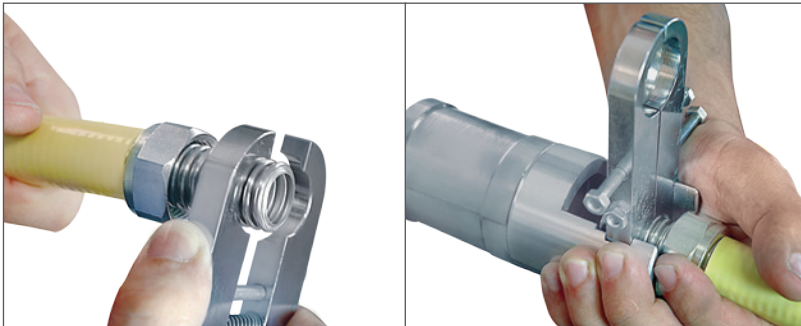
## PREPARING THE KES-TAK ASSEMBLY



1. Remove the coating as at least 8 or 9 corrugations to stay uncovered.



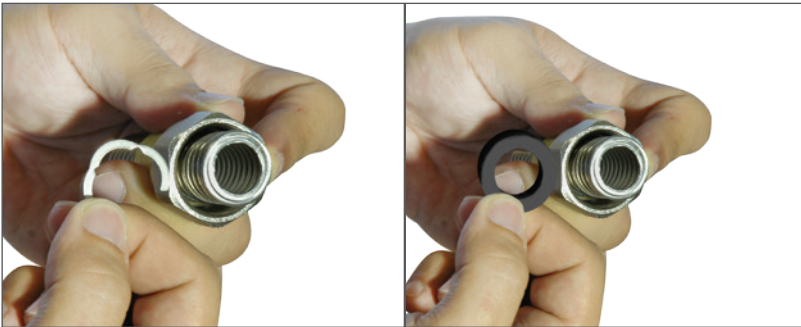
2. Cut the hose to the required size in the middle of two corrugations.



3. Slide the nut over the hose with the thread on the side of the end to be flanged and insert the apparatus on the second wing of the hose to compress two corrugations.



4. Insert the apparatus in the crushing piston and operate a few times on the piston, sliding it out and pressing it in to achieve a sealing surface (flange).

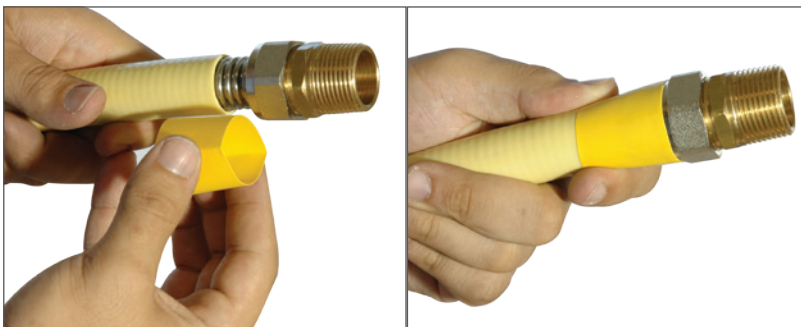


Fit the clamping washer around the depressed corrugations.

Fit the NBR gasket and complete the female fitting.



Screw in the male adapter through the nut for the male connection end.



7. Cover up the hose corrugations before the fitting by heat shrink tube in order to protect the hose against corrosion.

**\* The seating surface areas of the ball valves and the gaskets must be considered carefully.**

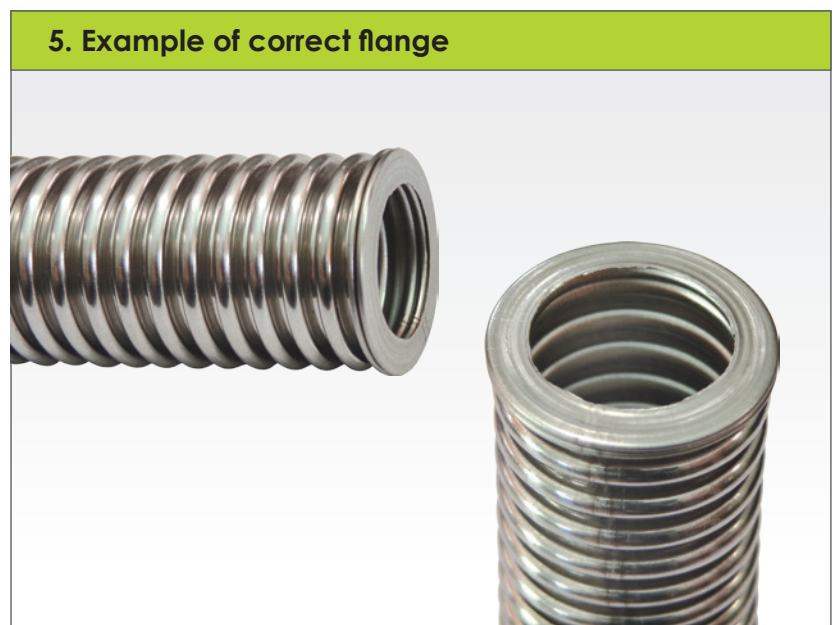
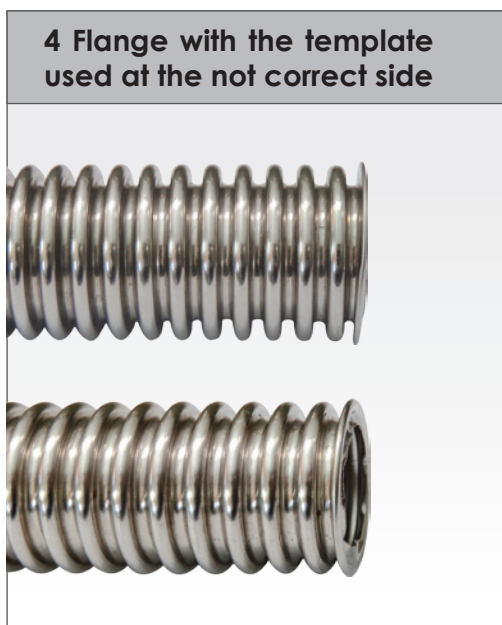
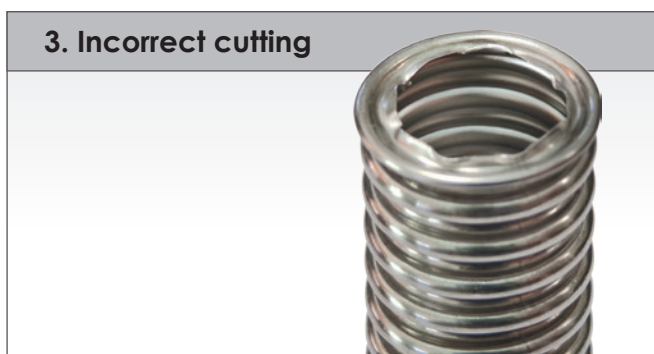
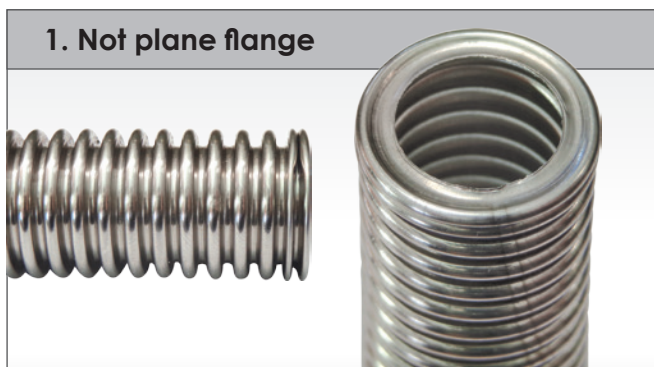
**\*It is advised to use the ball valves and intermediate connection parts manufactured by Ayvaz.**

## PREPARING PROPER GASKET SURFACE

Providing the required tightness is crucial for corrugated pipe connections. In order to grant leak-proof connection, a smooth, flat and well pressed gasket surface should be prepared. Besides of automated flanging tools Ayvaz offers manual gasket surface preparing tool to the installers. This manual system is very easy to use and carry to the all places where the workers can handle easily.

At the end of the gasket surface preparing, the installers must make sure to get a completely flat and circular surface without burr.

Some examples of correct and incorrect and defective flanges are shown in following pictures; in cases of the wrong flanging occurs, the incorrect surface should be removed and flanging operation must be repeated again.



# SYSTEM ELEMENTS

## Nut



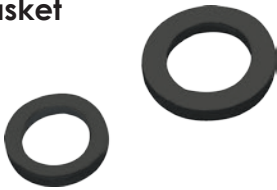
Code	Description	Material	Size
601SMN613402	Nut	Nickel Coated Brass	1/2"
601SMN613003	Nut	Nickel Coated Brass	3/4"
601SMN613004	Nut	Nickel Coated Brass	1"
601SMN613005	Nut	Nickel Coated Brass	1 1/4"

## Clamping Washers



Code	Description	Material	Size
601160101012	Clamping Washer	AISI 304	1/2"
601160101016	Clamping Washer	AISI 304	3/4"
601160101020	Clamping Washer	AISI 304	1"
601160101025	Clamping Washer	AISI 304	1 1/4"

## Gasket



Code	Description	Material	Size
601140201020	Gasket	NBR	1/2"
601140201030	Gasket	NBR	3/4"
601140201054	Gasket	NBR	1"
601140101051	Gasket	NBR	1 1/4"

## Ball Valve



Code	Description	Material	Size
708146100020	Ball Valve	Nickel Coated Brass	1/2"
708146100030	Ball Valve	Nickel Coated Brass	3/4"
708146100040	Ball Valve	Nickel Coated Brass	1"
708146100050	Ball Valve	Nickel Coated Brass	1 1/4"

## Crushing Tool



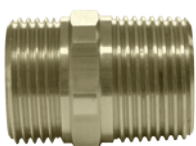
Code	Description	Material	Size
601200104001	Piston	Ni Coated Carbon Steel	
601200104016	Crushing Tool	Ni Coated Carbon Steel	For DN12-16 Hose
601200104025	Crushing Tool	Ni Coated Carbon Steel	For DN20-25 Hose

## Nipple Adapters (MxM)



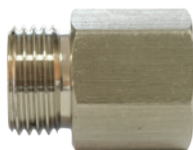
Code	Description	Material	Size
601010472022	Adaptor Male (MxM)	Nickel Coated Brass	G 1/2"
601010472032	Adaptor Male (MxM)	Nickel Coated Brass	G 3/4"
601010472041	Adaptor Male (MxM)	Nickel Coated Brass	G 1"
601010472052	Adaptor Male (MxM)	Nickel Coated Brass	G 1 1/4"

## Nipple Adapter (MxM)



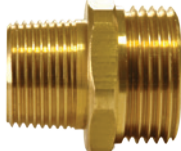
Code	Description	Material	Size
601ADN601373	Adaptor Male (MxM)	Nickel Coated Brass	G 1/2" x R 1/2"
601ADN601376	Adaptor Male (MxM)	Nickel Coated Brass	G 3/4" x R 3/4"
601ADN601379	Adaptor Male (MxM)	Nickel Coated Brass	G 1" x R 1"
601ADN601382	Adaptor Male (MxM)	Nickel Coated Brass	G 1 1/4" x R 1 1/4"

## Plane End Adaptor (MxF)



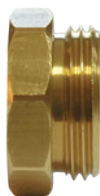
Code	Description	Material	Size
601ADR601273	Plane End Adaptor (MxF)	Nickel Coated Brass	G 1/2" x R 1/2"
601ADR601276	Plane End Adaptor (MxF)	Nickel Coated Brass	G 3/4" x R 3/4"
601ADR601279	Plane End Adaptor (MxF)	Nickel Coated Brass	G 1" x R 1"
601ADR601282	Plane End Adaptor (MxF)	Nickel Coated Brass	G 1 1/4" x R 1 1/4"

## Reduced Nipple (M-M)



Code	Description	Material	Size
601RDN602274	Reduced Nipple (M-M)	Brass	R 1/2" x G 3/4"
601RDN602277	Reduced Nipple (M-M)	Brass	R 3/4" x G 1"
601RDN602280	Reduced Nipple (M-M)	Brass	R 1" x G 1 1/4"

## Nipple Adapter



Code	Description	Material	Size
601628180100	Nipple Adapter	Brass	G 1/2"XDN12
601628180101	Nipple Adapter	Brass	G 3/4"XDN16
601628180102	Nipple Adapter	Brass	G 1"XDN20
601628180103	Nipple Adapter	Brass	G 1 1/4"XDN25

## Tee



Code	Description	Material	Size
601230301100	Tee	Ni Coated Carbon Steel	1/2" x 1/2" x 1/2"
601230301600	Tee	Ni Coated Carbon Steel	1/2" x 1/2" x 3/4"
601230301300	Tee	Ni Coated Carbon Steel	3/4" x 3/4" x 1/2"
601230301700	Tee	Ni Coated Carbon Steel	3/4" x 1/2" x 3/4"
601230301800	Tee	Ni Coated Carbon Steel	3/4" x 3/4" x 3/4"
601230301900	Tee	Ni Coated Carbon Steel	1" x 1" x 1"

## Cutting Device



Code	Description	Material	Size
601200112008	Cutting Tool	For DN12, DN16 and DN20 Hose	1/2" & 3/4" & 1"
601200112009	Cutting Tool	DN25 Hose	1 1/4"

## Pipe Clips



Code	Description	Material	Size
601200112001	Pipe Clips	Rubber Coated Metal	DN12 (1/2")
601200112002	Pipe Clips	Rubber Coated Metal	DN16 (3/4")
601200112003	Pipe Clips	Rubber Coated Metal	DN20 (1")
601200112004	Pipe Clips	Rubber Coated Metal	DN25 (1 1/4")

## Heat Shrink Tube



Code	Description	Material	Size
606000001101	Shrink Tube	Polyolefin Tube Yellow	DN12
606000001101	Shrink Tube	Polyolefin Tube Yellow	DN16
606000001103	Shrink Tube	Polyolefin Tube Yellow	DN20
606000001102	Shrink Tube	Polyolefin Tube Yellow	DN25



# INDOOR FLEX

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## HEAD OFFICE - FACTORY

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