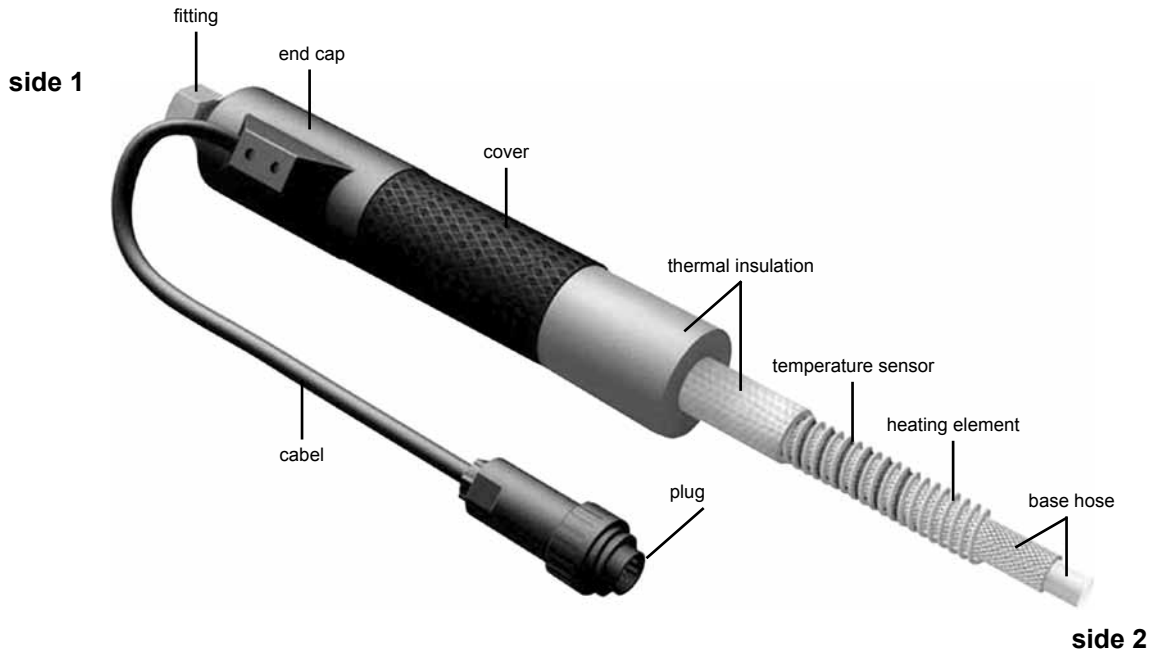
Electrically trace heated hoses

ETH HL T

Designed for applications where the medium passing through the hose requires heating, melting or maintaining fixed, elevated temperature. It usually concerns: oil, grease, wax, resins, tar, paints, granulated products, adhesives, food products etc. Very popular in dosing systems in all branches of industry. Compatible with the majority of hoses for Hot-Melt system - binding with hot adhesive.

ETH HL T - basic information	
Available lengths	From 0.3 to 50 m depending on a base hose diameter.
Max. working temp.	Depending on a base hose (+250°C for T1, T2 and T3 hoses, +600°C for T5).
Working temp. tolerance	± 10°C.
Thermal insulation	Elastomeric foam up to +100°C. Silicone foam up to +250°C. Fibre glass above +250°C.
Supply voltage	230 V AC/DC (other voltage 12 ÷ 500 V).
Temperature sensor	Thermocouple type J (Fe-CuNi), type K (NiCr-Ni); PT100, NI120 sensors and other.
Connecting cable	1.5 m (as a standard, other lengths available).
Plug	According to customer specifications or without a plug (open ends).
Protection class	IP 54 (EN 60529).

Each heated hose assembly is custom designed and built. Requirements and initial conditions of the project must be supplied by filling in 'ETH Enquiry - Information Card' A4 attachment for P4-04 supplied by TUBES INTERNATIONAL®.



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ETH HL T - base hoses

picture	hose I.D. [mm]	working pressure [bar]	bending radius [mm]	description
 **T 1**	4	275	50	Smooth PTFE hose in AISI 304 steel braid. Max. working temperature: +250°C.
	6	240	75	
	8	200	100	
	10	175	120	
	12	150	135	
	16	135	160	
	20	100	200	
	25	80	250	
 **T 2**	6	275	75	Smooth PTFE hose in two layers of AISI 304 steel braid. Max. working temperature: +250°C.
	8	250	100	
	10	225	120	
	12	200	135	
	16	175	160	
	20	150	200	
	25	130	250	
	32	70	500	
	40	50	850	
 **T 3**	6	500	60	Smooth PTFE hose with two layers of helically wound and one braided layer of AISI 304 wire. Max. working temperature: +250°C. Diameters from DN8 to DN25 available as FEP version (max. +200°C).
	8	475	85	
	10	475	110	
	12	450	150	
	16	400	175	
	20	300	200	
	25	275	240	
 **T 5**	4	100	80	Smooth PTFE hose with two layers of helically wound and one braided layer of AISI 304 wire. Max. working temperature:+250°C. Diameters from DN8 to DN25 available as FEP version (max. +200°C).
	6	150	80	
	8	100	120	
	10	100	130	
	12	65	140	
	16	65	160	
	20	40	170	
	25	50	190	
	32	25	260	
	40	40	300	
	50	25	320	

Working pressure correction factor for T type base hoses

hose type	temperature				
	+100°C	+200°C	+250°C	+350°C	+500°C
T1	0.95	0.83	0.6	-	-
T2	0.95	0.83	0.6	-	-
T3	0.95	0.83	0.6	-	-
T5	0.73	0.6	0.55	0.49	0.46

Hoses up to DN 200 diameter are supplied.

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ETH HL T - fittings

Fittings are made of chrome-plated steel (without hexavalent chromium) as a standard. Optionally they can be made of AISI 303 (1.4305), AISI 316Ti (1.4571), AISI 420 (1.2316) stainless steel and with the internal surface covered with PTFE or PFA. Standard fittings: DKR, RSL, RSS, DKL, DKM, DKS, DKJ and BDN.
Also available:
- fittings with imperial and metric male threads,
- fixed and swivel flanges according to DIN (PN-EN 1092-1) and ANSI,
- DIN 11851, SMS or TRICLOVER hygienic fittings.

picture	hose I.D. [mm]	thread size [inch]	description
 **DKR**	4	1/8, 1/4	Fitting with BSP female thread, metal/metal sealing on 60° cone.
	6	1/4	
	8	3/8	
	10	3/8, 1/2	
	12	1/2, 5/8	
	16	3/4	
	20	1	
	25	1, 1.1/4	
	32	1.1/4, 1.1/2	
	40	1.1/2	

picture	hose I.D. [mm]	thread size [mm]			description
		DKL	DKS	DKM	
 **DKL, DKS, DKM**	4	12x1.5	-	-	Fitting with metric female thread, metal/metal sealing on 24/60°cone. DKM - 60° cone.
	6	14x1.5	18x1.5	-	
	8	16x1.5	20x1.5	-	
	10	18x1.5	22x1.5	-	
	12	22x1.5	24x1.5	-	
	16	26x1.5	30x2	-	
	20	30x2	36x2	30x1.5	
	25	36x2	42x2	38x1.5	
	32	45x2	52x2	45x1.5	
	40	52x2	-	52x1.5	

picture	hose I.D. [mm]	thread size [inch]	description
 **BDN**	4	1/8	Fitting with BSP female thread, flat sealing.
	6	1/4	
	8	3/8	
	10	3/8	
	12	1/2	
	16	3/4	
	20	1	
	25	1	
	32	1.1/4	
	40	1.1/2	

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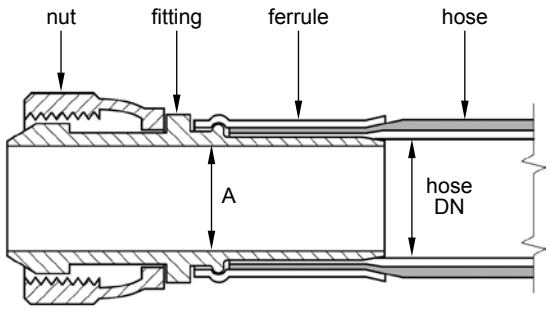
ETH HL T - fittings

picture	hose I.D. [mm]	thread size [inch]	description
 **DKJ**	4	7/16-20	Fitting (JIC) with UNF female thread, metal/metal sealing on 74° cone.
	6	1/2-20	
	8	9/16-18, 1/2-20, 5/8-18	
	10	9/16-18, 3/4-16	
	12	3/4-16	
	16	7/8-14	
	20	1.1/16-12	
	25	1.5/16-12	
	32	1.5/8-12	
	40	1.7/8-12	

picture	hose I.D. [mm]	tube O.D. [mm]		description
		RSL	RSS	
 **RSL, RSS**	4	6	8	Fitting with a tube end for assembly of connectors with a cutting ring.
	6	8	10	
	8	10	12	
	10	12	14	
	12	15	16	
	16	18	20	
	20	22	25	
	25	28	30	
	32	35	38	
	40	42	-	

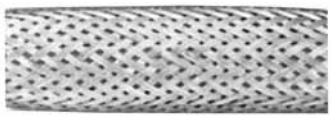
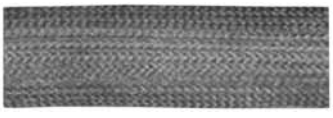
NOTE! Fittings reduce flow rates of the hose.

hose DN [mm]	A [mm]
4	3
6	4.5
8	6
10	7.5
12	10
16	12.5
20	16
25	20.1
32	27.5
40	31.5



Electrically trace heated hoses

ETH HL T - covers

picture	description
	Lightweight, PA6 polyamide braid. Black as a standard, other colours available. Ambient temperature (short term): up to +150°C.
	Zinc-plated or stainless steel braid ensures excellent resistance against abrasion. Ambient temperature (short term): up to +300°C (+500°C stainless steel).
	Polyamide hose resistant to kinking, fire, halogen free, recommended for operation in industrial robots. Ambient temperature (short term): up to +120°C.
	Polyurethane hose resistant to kinking, fire, halogen free, recommended for operation in industrial robots. Ambient temperature (short term): up to +90°C.
	Relatively heavy, zinc-plated hose resistant to shavings and damage by sharp edges. Ambient temperature (short term): up to +300°C.
	Fibre glass braid, colour: black. Very good resistance against abrasion and welding spatter. Ambient temperature (short term): up to +400°C.
	Silicone rubber braid, colour: black or brown. Features smooth surface, easy cleaning and moisture resistance. Particularly recommended for food, cosmetics and pharmaceutical industry (because of cleaning properties - does not meet FDA requirements) Ambient temperature (short term): up to +200°C.

Electrically trace heated hoses

ETH HL T - end caps

picture	description
	Hard caps are made of polyamide reinforced with fibre glass. Firmly assembled oh a base hose, they prevent cap abrasion and twisting caused by thermal expansion or hose movement. When the hard cap is used, the bending point of a base hose is moved so that the burden is removed from a critical fitting-hose connection. The hard caps are available for heated hoses up to DN25.
	Soft caps made of silicone or elastomer are more thermally stable compared to hard caps. As the caps are very flexible, they fit tight on the hose so that they need less space than hard caps. Recommended for applications where the required hose length is particularly short.

Temperature control

Hoses supplied by our company can be divided into the following groups:
- without a temperature controller - regulated by a controller of the customer (TH43 temperature controller, recommended for our hoses or multi-channel HT 55 H controller to connect several hoses can be supplied on request). Hoses are supplied without plugs as a standard. Optionally they can be supplied with plugs (then it is necessary to determine a type of a plug and specify the position of sensor and heating element leads in the plug).
- with HT54 mini-controller built into a hard cap. It comes with a factory preset temperature (no option of temperature setting - fixed temperature value).
- with a self-regulating heating element - no temperature controller is needed, it protects the medium against freezing.

HT 43

HT 55

HT 54

Special versions

- EX - intended for operation in potentially explosive atmosphere; the base hose is made of antistatic PTFE or steel, temperature sensors and heating elements in Ex version,
- TWIN - heated twin hose, usually used in polyurethane foam production,
- AN - hoses designed for exhaust fumes analysis systems.

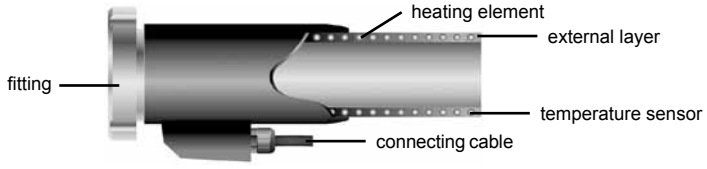
Electrically trace heated hoses

ETH HL 80

Rubber hose with integrated heating system. A special, flexible heating element is wound onto the internal NBR rubber layer and vulcanized. There is no noticeable difference that distinguishes this hose from standard rubber hoses. A temperature sensor reads off the temperature directly in the hose wall.
Primarily designed to transfer oils, animal and vegetable fats, but also alcoholic beverages and juices.

ETH HL 80 - basic information	
Max. length	40 m
Max. working temp.	+80°C
Working temp. tolerance	± 10°C.
Sterilization	CIP sterilization with steam at temperature up to +130°C for a couple of minutes or traditional cleaning.
Standards	Compliant with FDA 21 CFR177.2600 and BfR XXI cat. 2.
Hose construction	Internal layer: smooth NBR rubber. Reinforcement: textile braid. External layer: blue NBR rubber. Suction-delivery hose with steel helix is also available. If working temperature is higher (above +80°C), a hose made of Viton can be supplied.
Hose fittings	Standard: DIN11851 hygienic fitting with a nut (also: TRICLOVER, imperial and metric threads, flanges).
Rated voltage	230 V AC/DC (other voltage 12 ÷ 500 V).
Temperature sensor	PT100.
Connecting cable	1.5 m (as a standard, other lengths available).
Plug	According to customer specifications or without a plug (open ends).
Protection class	IP 54 (EN 60529).

I.D. [mm]	wall thickness [mm]	working pressure [bar]	bending radius [mm]	thread size DIN 11851	output up to +40°C [W/m]	output up to +80°C [W/m]
20	6	10	150	Rd 44x1/6”	30	50
25	6	10	175	Rd 52x1/6”	40	60
32	6	10	224	Rd 58x1/6”	50	75
40	7	10	280	Rd 65x1/6”	60	90
50	7	10	350	Rd 78x1/6”	75	120
65	7	10	455	Rd 95x1/6”	90	150
80	8	10	560	Rd 110x1/4”	110	200
100	8	10	700	Rd 130x1/4”	140	250



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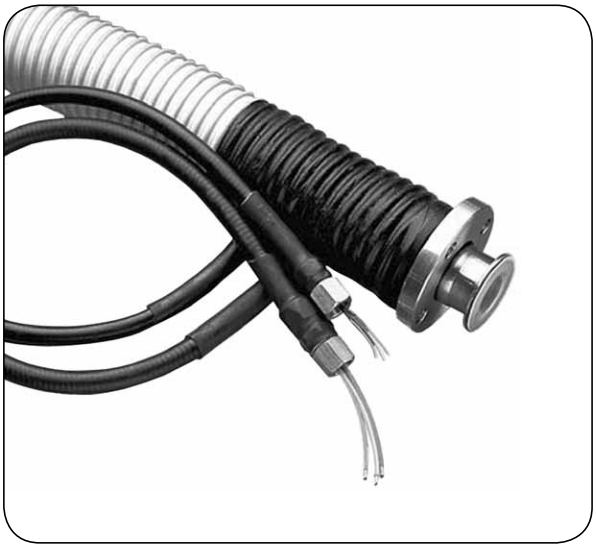
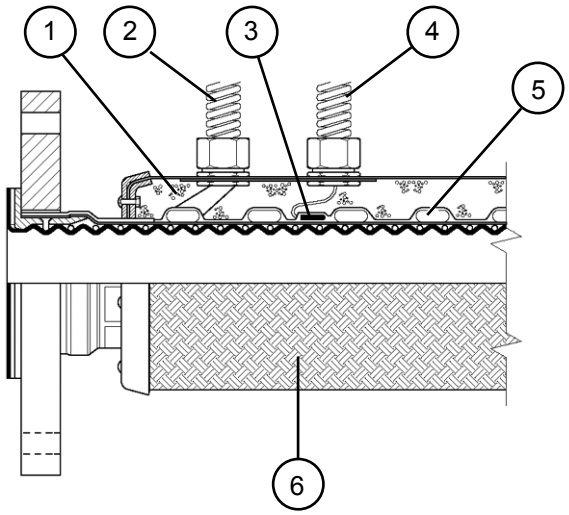


CORROFLON ETH
BIOFLEX ETH

Electrically heated hoses are manufactured using CORROFLON or BIOFLEX as base hoses. Designed for applications where the temperature of the fluid entering the hose assembly must be maintained or the solidified medium requires melting.
Characteristics as of regular CORROFLON and BIOFLEX hoses, except that the minimum bending radius is tripled, compared to the corresponding hose which is not heated. Because of the layer of insulation, the outside diameter is larger and the weight per meter is increased. The maximum length is the same as for standard CORROFLON or BIOFLEX hoses.



1 - foam insulation layer
2 - flexible cover of heating wires
3 - temperature sensor
4 - flexible cover of temperature sensor wires
5 - heating element helically wound a long hose
6 - external braid, or other protective cover

Electrical wire of particular resistance, helically wound along the hose serves as a heating element (self-regulating is also available). These hoses usually require a temperature sensor to be built in under the insulation. The power leads and temperature sensor leads (if applicable) emerge from the hose assembly at one end, through glands and conduits. The foam rubber is applied for thermal insulation (silicone foam rubber for temperatures above +80°C). The external cover can be a polypropylene braid or stainless steel wire braid with an additional cover made of rubber or corrugated, waterproof PVC cover if necessary.

Each ETH hose assembly is custom designed and built. Initial conditions and requirements of the project must be supplied by filling in 'ETH Enquiry - Information Card' supplied by TUBES INTERNATIONAL®. Usually, for Zone 1 hazardous areas, a self-regulating type of heating element is employed, with (or without) a temperature sensor and controller. Flameproof glands and conduits are also applied in this case. The thermal output of the heating element (W/m), the pitch of the helix on the hose and the thickness of the thermal insulation are all calculated in accordance with a special formula in order to obtain the temperature required for the process.

Examples of other electrically heated equipment

Many other electrically heated products are available. For more information, please contact Sales Department of TUBES INTERNATIONAL®.