

### Electrically Heated Hose Assemblies



#### Design Features

- \* Base Hose has a smooth bore Teflon® core with Stainless Steel overbraid.
- \* Self-vulcanizing Silicone TGL bedding tape at 50% overlap.
- \* Kapton® insulation wrapped stranded nichrome alloy heater element.
- \* 2 layers of 1/8" Nomex® felt insulation.
- \* Layer of 2" wide black tape for final wrap.
- \* Heavy duty abrasive resistant outer covering, polyester braid; optional water resistant jacket is available upon request.
- \* Heat shrink tube end caps.
- \* Male NPT or 37° JIC female swivel fittings are standard; options include Tri-Clamp or Tubing/Pipe for compression fittings. Choice of Stainless Steel or plated carbon steel.
- \* Temperature range to 450°F/232°C.
- \* Overall length up to 600 inches.
- \* Temperature sensors such as thermocouples or RTDs can be built-in to the assembly.
- \* Snap action thermostats can be built in to the assembly to limit the maximum temperature.
- \* 6 ft. power leads standard; length can vary upon request.
- \* Hose assemblies available in 120 and 240 Vac.
- \* Ground connection to the Stainless Steel overbraid.



#### Tempco's Control Consoles

Ideal for controlling process temperatures on heated hose assemblies. Complete information can be found on page 13-52.

Tempco's Electrically Heated Hose Assemblies are designed for optimum transfer of non-explosive liquids or gases. Tempco's HEH Transfer Hoses are Teflon® lined stainless steel braid heated flexible assemblies. Style R (regular pressure) or Style H (high pressure) transfer hoses are used in a wide range of applications such as water (freeze protection), steam, wax, plastics and many others. Heated transfer hoses improve fluid transfer for many applications.



#### Typical Applications

- ↔ Hot Melt Systems
- ↔ Petroleum Products
- ↔ Food Products
- ↔ Hot Oil Lines
- ↔ Chemical Transfer
- ↔ Gas Analyzer Systems
- ↔ Steam Transfer
- ↔ Water & Waste Disposal
- ↔ Bulk Transfer
- ↔ Paint Systems
- ↔ Tar & Asphalt
- ↔ Waxes – Candle Making
- ↔ Adhesives

#### Construction Characteristics

Tempco's Heated Transfer Hoses are built to the most stringent standards. Each hose is hand assembled to exact physical and electrical specifications. The heated hose assembly starts with the highest quality Teflon® smooth bore core with Stainless Steel overbraid style hose. Over this is wrapped a layer of self-vulcanizing silicone TGL bedding tape at 50% overlap as a base for the resistance wire. The stranded resistance wire is pre-wrapped with Kapton® insulation before winding around the growing assembly in the precise pattern required for uniform heating. Next is wound two layers of Nomex® felt insulation, to maintain consistent heat and a safe cool-to-the-touch design, followed by a layer of 2" wide black tape. The standard hose outer cover is an abrasion resistant polyester braid for normally dry environments. An optional outer cover can be provided for water resistant protection.

The hose assembly is then finished with heat shrink end caps, specified hydraulic fittings and electrical connectors. Hoses are also manufactured with optional built-in sensors including RTDs or thermocouples.

#### HEH Heated Hose Assembly Length Definition

1. For Heated Hose Assemblies with 37° JIC Female Swivel fittings, the specified Length is defined as fitting seat to seat.
2. For Heated Hose Assemblies with other permanently attached fittings, such as Tri-Clamps, Rigid NPT or Tubing, regardless of fitting type or gender, the specified Length is measured from the outside edge to the outside edge of the fittings.
3. Fitting adapters such as male JIC to male NPT, are not included in the Length specification.
4. Length Tolerances are stated as follows:

17.99" or less: ±0.5"	10 feet to 20 feet: ±1.5"
18" to 36": ±0.75"	20 feet to 50 feet: ±2.5"
3 feet to 10 feet: ±1.0"	



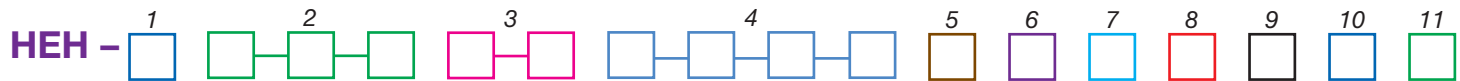
### Specifications for Heated Hose Assemblies

Hose Size	Style R – Regular Pressure		Style H – High Pressure		Max. Rec. Watt Density (w/ft.)		Max. Working Pressure (PSI)		Minimum Bend Radius in. / mm	Male NPT Fitting Size SS	JIC Fitting Size, SS
	Core ID in. / mm	Hose Assembly OD in. / mm	Core ID in. / mm	Hose Assembly OD in. / mm	R Style		H Style				
					R Style	H Style	R Style	H Style			
#4	.187 / 4.75	1.40 / 35.6	.222 / 5.64	1.40 / 35.6	23	30	2250	4000	4 / 102	1/4-18	7/16-20
#6	.312 / 7.92	1.50 / 38.1	.308 / 7.82	1.50 / 38.1	25	40	1875	4000	8 / 203	3/8-18	9/16-18
#8	.406 / 10.31	1.59 / 40.4	.401 / 10.19	1.59 / 40.4	30	50	1500	4000	10 / 254	1/2-14	3/4-16
#10	.500 / 12.70	1.69 / 42.9	.495 / 12.57	1.69 / 42.9	35	55	1312	4000	13 / 330	1/2-14	7/8-14
#12	.625 / 15.87	1.79 / 45.5	.617 / 15.67	1.79 / 45.5	40	65	1125	4000	15 / 381	3/4-14	1 1/16-12
#16	.875 / 22.22	2.10 / 53.3	.867 / 22.02	2.30 / 58.4	50	85	750	4000	18 / 457	1-11 1/2	1 5/16-12
#20	1.12 / 28.57	2.60 / 66.0	1.118 / 28.40	2.70 / 68.6	65	95	500	4000	24 / 610	1 1/4-11 1/2	1 5/8-12



**Notes:** Operating pressures are for non-impulsive applications only.  
#20 and High Pressure can only be done for special applications, consult Tempco.

### Ordering Code:



**Hose Style** BOX 1  
**R** = Regular Pressure, Teflon®  
**H** = High Pressure, Teflon®  
**X** = Other

**Length** BOX 2  
 In 6" increments  
 From **006** to **600** inches

**Trade Size** BOX 3  
**04, 06, 08, 10, 12, 16, 20**  
**XX** = Other

**Wattage** BOX 4  
 Insert Required Wattage  
 Example: **0120** = 120 Watts

**Note:** Larger wattages are limited to 240V due to overall amperage requirements.

**Voltage** BOX 5  
**1** = 120 Vac  
**2** = 240 Vac  
**3** = 208 Vac  
**4** = 277 Vac  
**X** = Other

**Electrical Connectors** BOX 6  
**A** = Hubbell® #4720C, 15A, 120 Vac, locking plug (NEMA L5-15P)  
**B** = Hubbell® #4570C, 15A, 240 Vac, locking plug (NEMA L6-15P)  
**C** = Industry common, 9-pin Amp® connector  
**D** = No connector, flying leads  
**E** = Standard straight blade, 15A, 120 Vac, (NEMA 5-15P)  
**F** = Standard straight blade, 15A, 240 Vac, (NEMA 6-15P)  
**X** = Other

**Temperature Sensor** BOX 7  
**N** = None  
**A** = RTD, 100 ohms, platinum, 2-wire, leads only  
**B** = Thermocouple, Type J, leads only  
**C** = Thermocouple, Type K, leads only  
**D** = RTD, 100 ohms, platinum, 3-wire, leads only  
**E** = RTD, 100 ohms, platinum, 2-wire, Std. Plug  
**F** = Thermocouple, Type J, Std. Plug  
**G** = Thermocouple, Type K, Std. Plug  
**H** = RTD, 100 ohms, platinum, 3-wire, Std. Plug  
**L** = RTD, 100 ohms, platinum, 2-wire, Mini-Plug  
**M** = Thermocouple, Type J, Mini-Plug  
**P** = Thermocouple, Type K, Mini-Plug  
**Q** = RTD, 100 ohms, platinum, 3-wire, Mini-Plug  
**X** = Other

**Note:** It is strongly recommended that a sensor and separate temperature control or a thermostat be used to control the temperature of Tempco's Heated Hose Assemblies. It is very difficult to limit the overall temperature by using a lower wattage and have a reasonable rise time.

**Hydraulic Fitting – Near Electrical Connection** BOX 8  
**J** = JIC 37° Female Swivel  
**N** = JIC 37° Female Swivel and Male NPT adapter  
**Optional**  
**T** = Tri-Clamp  
**P** = Tubing / Pipe (for compression fitting)  
**X** = Other

**Hydraulic Fitting – Opposite End** BOX 9  
**J** = JIC 37° Female Swivel  
**N** = JIC 37° Female Swivel and Male NPT adapter  
**Optional**  
**T** = Tri-Clamp  
**P** = Tubing / Pipe (for compression fitting)  
**X** = Other

**Hydraulic Fitting Material** BOX 10  
**S** = Stainless Steel  
**X** = Other

**External Covering** BOX 11  
**P** = Heavy duty polyester braid  
**Optional**  
**N** = Water resistant jacket (Available for limited sizes; consult Tempco)  
**X** = Other

#### Accessory Item (Optional)

9-pin mating connectors, includes 12" of pre-attached leads to crimp sockets and cable clamp/strain relief.

Part Number	Mounting	Heated Hose Sensor Type
EHDR-1115	Cable	Type J thermocouple
EHDR-1207	Cable	Type K thermocouple
EHDR-1208	Cable	2 or 3 wire RTD temperature sensor
EHDR-1116	Panel	Type J thermocouple
EHDR-1209	Panel	Type K thermocouple
EHDR-1210	Panel	2 or 3 wire RTD temperature sensor

**Ordering Information**

Heated Hose Assemblies are offered with the features listed above. Create an ordering code by filling in the boxes with the appropriate number and/or letter designation for your requirements and a part number will be assigned.

*Consult Tempco with your requirements.*  
**Standard lead time is 2 to 3 weeks.**

## Heated Tube Assemblies

### HET — Electrically Heated Tubing Assemblies

Tempco's electrically heat-traced tubing assemblies are designed for optimum transfer of non-explosive liquids or gases. Tempco's high purity PTFE Teflon® provides maximum flexibility for low pressure applications. Choose copper, aluminum or stainless steel tubing for high pressure applications.

We offer machine-wrapped heat tracing from 1/4" O.D. to 1-3/4" O.D., as well as hand-wrapped tracing of unusually small or large outer diameter tubing to meet a wide range of applications.

The key to Tempco's flexible, energy efficient, heat-traced tubing is the powerful low-profile heat tape spirally wrapped around your choice of tubing. The heat tape is manufactured with a top reflective layer to direct heat into the tube. This reflective layer, combined with the heat tape applied directly to the surface of the tube, results in a highly efficient thermal transfer. The simplicity of the heater design allows for the heated assembly to be extremely lightweight and flexible for use in portable and stationary applications. Each tube is then insulated with one or two layers of Nomex felt, depending on the temperature to be maintained.



#### Typical Applications

- ✦ **Aerospace** \* \* \* \* *Satellites, Vacuum Chambers, Testing, Laboratory*
- ✦ **Automotive** \* \* \* \* *Fuel Cell Development, Cold Chamber Testing*
- ✦ **Composites** \* \* \* \* *Adhesives, Epoxy Transfer, 2-Part Spray*
- ✦ **Environmental** \* \* \* \* *EPA-Required Testing, Diesel Emissions*
- ✦ **Food Industry** \* \* \* \* *Viscosity Control, Production Technology*
- ✦ **Gas Samples** \* \* \* \* *Stack Samples, Analyzer Components*
- ✦ **Government** \* \* \* \* *Meteorological Analysis*
- ✦ **Industrial** \* \* \* \* *Machinery, Systems Engineering, Semiconductors*
- ✦ **Laboratory** \* \* \* \* *Thermal Testing, Instrumentation*
- ✦ **Medical** \* \* \* \* *Flow Control, Instrumentation, Scientific Research*
- ✦ **Pharmaceutical** \* \* \* \* *Production Machinery, R&D, Testing*
- ✦ **Transportation** \* \* \* \* *Aviation Freeze Protection, Heated Lines*
- ✦ **Universities** \* \* \* \* *Mechanical, Chemical, Electrical Engineering*

#### Design Features

- \* *Base tubing can be Teflon®, Nylon®, Stainless Steel, Copper or Aluminum*
- \* *Machine-wrapped low-profile flexible heat-tape with multiple heat conductors provides efficient thermal transfer, resulting in even heating from end to end.*
- \* *Spirally wrapped Nomex® felt insulation bound in place with nylon braid.*
- \* *Outer layer from simple heat shrink to moisture/contaminant resistant durable outer silicone sleeve.*
- \* *Temperature range to 400°F / 200°C.*
- \* *Heated Length to 100 ft. available in 1ft. increments. 1ft. unheated section at each end, shipped bare or with fittings.*
- \* *Assembly can be designed with a replaceable inner tubing.*
- \* *Temperature sensors include Type J, K or T thermocouples and RTDs.*
- \* *Thermostats can be built in, eliminating the need for separate control.*
- \* *Standard power leads include flying leads, 6 ft. cordset with standard plug or industrial Hubbell Twist-Lock® plug.*
- \* *Up to 5 total Heated / Unheated tubes in the same bundle.*
- \* *Built-in indicator lamps for Power On, Heat On or Over Temperature.*
- \* *Voltage from 12VDC - 240 VAC.*



### HET — Electrically Heated Tubing Assemblies

#### Ordering Information

Heated Tubing Assemblies are very application specific; Tempco will design and manufacture a Heated Tubing Assembly to meet your process requirements.

To receive a quote send a completed copy of the following Quote Request Form to Tempco.



**⚠ WARNING:** Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

### Electrically Heated Tubing Assembly Quote Request

#### Application Information

Desired Operating Temperature \_\_\_\_\_  
Ambient Condition (indoor, outdoor?) \_\_\_\_\_  
Worst Case Ambient Temperature \_\_\_\_\_  
Expected Pressure \_\_\_\_\_  
Material in the Tubing \_\_\_\_\_  
Comments \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

#### Lead Information

Style: \_\_\_ Teflon® \_\_\_ Industrial Cordage  
\_\_\_ 120VAC cordset w/ standard 5-15 plug  
\_\_\_ 240VAC cordset w/ standard 6-15 plug  
\_\_\_ High Temp Fiberglass  
Length \_\_\_\_\_ Optional Plug \_\_\_\_\_  
Comments \_\_\_\_\_  
\_\_\_\_\_

#### Tubing Information

Tubing Material \_\_\_\_\_  
(PTFE Teflon®, Copper, 304 SS, Aluminum)  
Outside Diameter \_\_\_\_\_  
Wall Thickness if Known \_\_\_\_\_  
Heated Length \_\_\_\_\_  
Overall Length \_\_\_\_\_  
# of tubes \_\_\_\_\_  
    How many heated \_\_\_\_\_  
    How many unheated \_\_\_\_\_  
If replaceable inner tube required: \_\_\_ Yes \_\_\_ No  
    Replaceable inner tube OD \_\_\_\_\_  
Comments \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

#### Sensor & Control Information

Built-in Temperature Sensor: \_\_\_ Yes \_\_\_ No  
Thermocouple Type (J, K, T) \_\_\_\_\_  
RTD (PT100) \_\_\_ Yes \_\_\_ No  
Lead Length \_\_\_\_\_  
Lead Type \_\_\_\_\_  
Built-In Thermostat \_\_\_ Yes \_\_\_ No  
    Setpoint \_\_\_\_\_ (Choices limited to (°F): 40°, 77°,  
86°, 98°, 104°, 120°, 140°, 176°, 212°, 248°, 302°, 356°)  
Indicator Lamps: \_\_\_ Green, type \_\_\_\_\_  
                    \_\_\_ Red, type \_\_\_\_\_  
Comments \_\_\_\_\_  
\_\_\_\_\_

#### Fitting Hardware Information

Bare \_\_\_ Compression + NPT: Male \_\_\_ Female \_\_\_  
Comments \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

#### Electrical Information

Watts (total if Multi-Tube) \_\_\_\_\_  
Volts \_\_\_\_\_ Phase: \_\_\_ Single \_\_\_ Three  
If Multi-Tube: Watts per Tube \_\_\_\_\_  
Comments \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

#### External Covering Information

\_\_\_ Bare Heat Trace Only \_\_\_ Heat Shrink  
\_\_\_ Insulated Polyester Braid  
\_\_\_ Insulated Industrial Scuff Coat  
Comments \_\_\_\_\_  
\_\_\_\_\_