

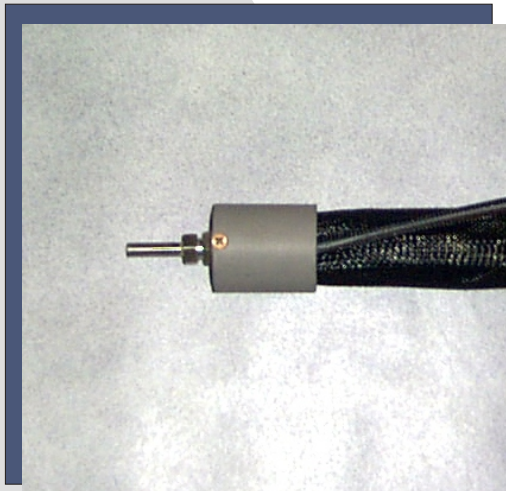


**ATMO/**  
**SEAL<sup>®</sup>, INC.**

Emissions Sample Transport Systems

## **Enduro-Flex Emissions Hoses**

Atmo-Seal Engineering, Inc.<sup>(tm)</sup> is committed to providing high quality heated sample hoses on time! Our Modular Manufacturing Techniques allow us to deliver hoses, custom-made to your specifications, without waiting weeks or months for your order.



### IGH CGH DGH Heated Hose

- Choice of AC 50-60 HZ or DC operation in a wide range of voltages
- Choice of Thermocouple, RTD, Internal Thermostat or other sensors
- Choice of Teflon, Stainless Steel or other user-changeable sample tubes
- Super-flexible design
- 1/8" to 1/2" ID Sample Tubes
- Optional Exteriors to match your needs and operational conditions.

IGH Hose - Used in virtually all emissions testing situations for gasoline engine and diesel engine development.

CGD Hose - Used for diesel engine Dyno certification and on-road testing.

DGH Hose - Used in Stack Monitoring and Dew Point control.

Temperature profiles available.

### **Tough, Accurate Heated Hose**

Atmo-Seal, Inc. we know that heated hoses are stretched, dropped and slammed every day. Our Enduro-Flex Heated Emission Hoses are designed for their environment: Engine and Dyno Test Cells, Job Sites, and CEMS.

Our heated hoses all feature light-weight end treatments made from high-temperature pheno-plastics with operational temperatures in excess of 200 C. There are no epoxy-potted ends- which break, crack and burn; no cumbersome heat shrink ends - which melt and become brittle in time; just a high-quality end - suitable for ovens or other high-temp situation - on every hose.

Another advantage of our hoses is that they are designed to be easily repaired! In most cases, our hoses may be repaired easily in the field by our staff or yours!

### **Options**

As always, Atmo-Seal, Inc., will customize your hose to your exacting specifications WITHOUT jeopardizing your delivery schedule.

"Timely Quality" It's more than just a saying at Atmo-Seal, Inc., it's our success, and yours.

## Emissions Sampling Hose Part Number Guide

Hose Type	Hose Length	Sample Tube Mat'l	Tube OD / Tube ID	Configuration Code
CGH IGH DGH	Specify in Inches	T - PFA Teflon S - 316 S.S.	4/2    1/4" x 1/8" 4/3    1/4" x 3/16" 6/4    3/8" x 1/4" 6/5    3/8" x 5/16" 8/4    1/2" x 1/4" 8/6    1/2" x 3/8"	See below

**CGH-Series Hoses** - Used for Diesel Engine Certification and Certified On-Road Testing. Hose tolerances as tight as +/-6 C. Operates at 200 C. Requires a temperature controller.

**IGH-Series Hoses** - Used for Diesel Engine Development and Gasoline Engine Testing and Certification. An economical alternative to the CGH Series Hose tolerances as tight as +/-11 C. Operates at 200 C. Requires a temperature controller.

**DGH-Series Hoses** - Used for sample maintenance over Dew Point. Used extensively in process & stack monitoring; gasoline engine development. This hose may be either controller driven or self-limiting.

**Configuration Code** - The configuration code at the end our part number(s) refer to your individual design criteria. Information covered in the Configuration Code may include thermocouple or RTD type, exterior hose sleeve and environmental conditions; operation voltage, etc. The Configuration Code also covers common options such as Replaceable Sample Tube, Over-Temperature Protection, R.F. Shielded Thermocouple Wire, Messenger Wires for remote control of upstream devices, etc.

**Example Part Number: IGH-240-T-6/5-A19** = IGH Series Hose, **240** (inches or 20 ft) long, **T** for Teflon Core; **6/5** for 3/8" OD x 5/16" ID. Config Code (**A19**) denotes environmentally sealed ends, three thermocouples inside the hose, 42 watts/ft for high flow application.

Of course, we will customize our products to your exact specifications.

### Common Options

**Re-Tube:** Replaceable Sample Tube. This feature allows the easy removal and replacement of the sample tube. (Re-Tube kits are available from the factory.)

**Over-Temperature Protection:** Built in thermal switch(es) which will open if the hose exceeds its maximum operational temperature. Switch(es) will close again once the hose has cooled down to a safe range.

**Exteriors:** Atmo-Seal. Inc., offers a variety of exterior sleeves to suit your application and environment. We offer exteriors that are chemical and oil resistant; suited for outdoor use or hazardous locations; lightweight and flexible; extremely high-temperature for direct splatter of molten metals; construction that meets FDA requirements; silicone-free designs for paint., Etc. Please contact the factory for more information.

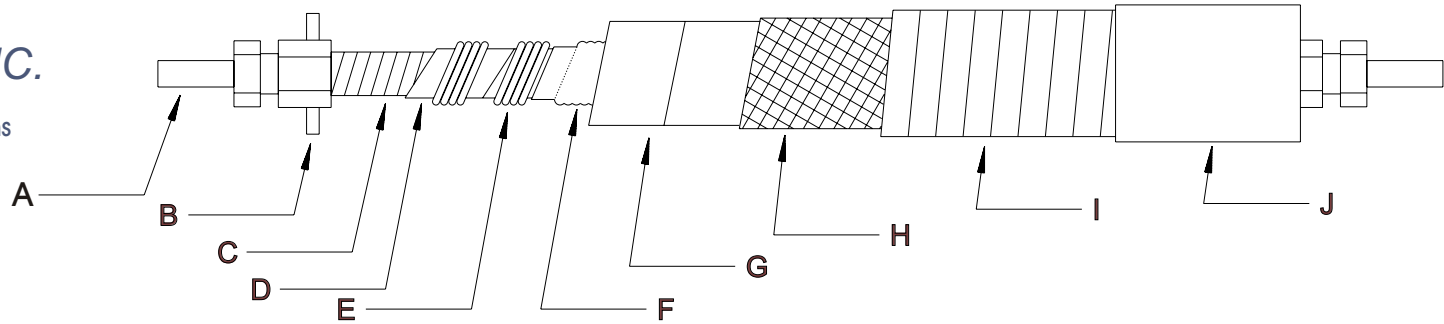
**Messenger Wires:** Feed through signal and/or heater wires to allow for controlling solenoids, heaters, temperature monitors, etc., via internal cables built into your hose.

**Multi-Tubes:** Multiple heated and/or non-heated tubes may be incorporated into one heated hose for sampling from multiple points; feeding multiple analyzers; or providing purge or calibration gases.



**ATMO/SEAL<sup>®</sup>, INC.**

Emissions Sample Transport Systems  
 1091 Wheaton Ave. Troy, MI 48083  
 248-528-9640 fax 248-528-9643  
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- A - END FITTING
- B - END CAP MOUNTING TABS
- C - SUPER-FLEX OVER INTERNAL TEFLON OR SS SAMPLE TUBE
- D - SILICONE LAYER
- E - HI-TEMP ENCAPSULATED HEATER ELEMENTS
- F - SECONDARY LAYER OF SILICONE

- G - MULTIPLE LAYERS OF HI-TEMP INSULATION
- H - PROTECTIVE MESH/SLEEVE
- I - OPTIONAL EXTERIOR SLEEVES
- J - HEAVY-DUTY END CAP

**NOTE: HOSES USED OUTDOOR WILL COME WITH A SEALED END CAP AND WATERTIGHT SLEEVE**

D & F May be silicone, fiberglass or Kapton, depending on the application.

**Silicone Tape:** Meets MIL-A-A-59163 Type II standards.

(Supercedes MIL I-46852C) The tapes' volume resistivity is  $3 \times 10^{14}$  OHM/CM. It is rated at 500 F continuous operation. 2-3 layers of silicone are under the heater elements.

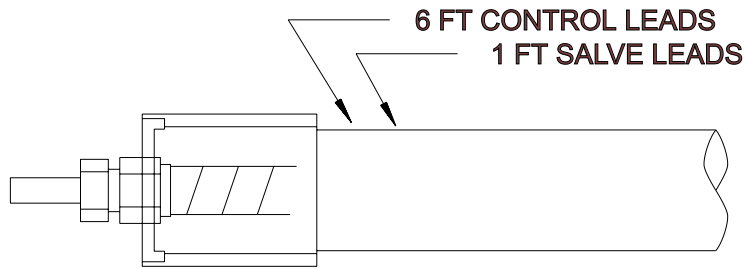
**Fiberglass Tape:** .007 thick and has a dielectric strength of 4000 volts, it is also rated at 500 F operation.

**Kapton Tape:** Has A dielectric strength of 10,000 volts and has a temp rating of over 500 F.

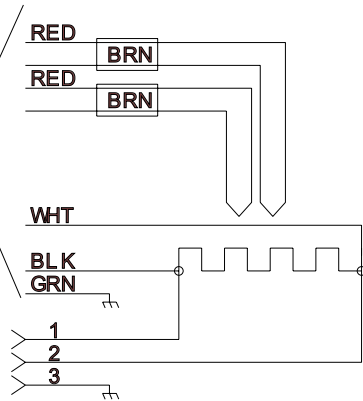
E - The applicable UL approval number for our most recent purchase is SJ-320411 and it carries both a U.S. UL and a UL Canada insignia. We typically operate the elements at 25-35% of their rated wattage output for longer heater life. The heater is sleeved in an extruded layer of Class 22 silicone rated at 200° C continuous operation, 250° C intermittent exposure.



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MAIN CONTROL  
LEADS TO  
TEMPERATURE  
CONTROLLER



**NOTE: A SPARE THERMOCOUPLE IS INCLUDED WITH ALL ASE HEATED HOSES EITHER ONE MAY BE USED FOR CONTROL**

**NOTE: BE SURE THE TEMPERATURE CONTROLLER IS OF THE APPROPRIATE TYPE (J-TYPE, K-TYPE, RTD, ETC) TO MATE WITH THE HEATED SAMPLE LINE. MAX OPERATION TEMPERATURE OF STANDARD ASE HEATED LINES IS 225 C UNLESS OTHERWISE SEOCIFIED.**