

Sizing an In-Line Furnace

by:

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Before you begin your inquiries in the process of specifying an in-line furnace, make sure you have your “scope of work” figures handy.

What size oven do I need to stress relieve this part? Furnace manufacturers love to answer this question with a few of their own. It's not because they weren't listening or love to be obstinate. It's just that they need to understand the scope of work to be performed in the oven before they can answer such a question.

The most difficult point in purchasing a furnace is often the initial call. Many times, the first telephone conversation is cut short due to lack of pertinent information on the part of the caller making the inquiry. An informed purchaser can lessen the back-and-forth routine from the shop floor, to the phone, back to engineering and then back to the phone again to find the right answers.

Having a decent grasp of the scope of work is imperative in the oven selection process. The last thing either party wants is to purchase or sell an oven that is insufficient for the application.

Determining the “Scope of Work”

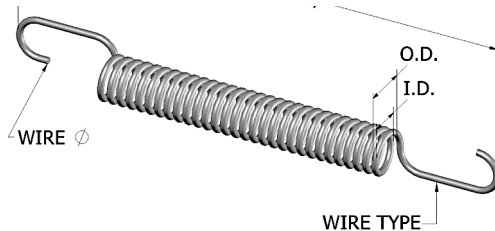
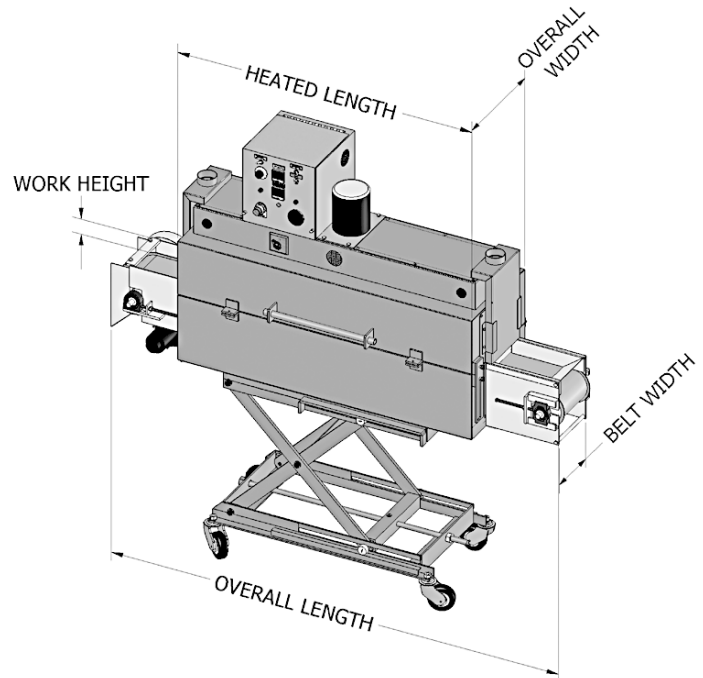
At Furnace Fixers, Inc., we have narrowed down the task of determining the scope of work to a few key elements. Having the following figures and data before you decide to shop will dramatically focus your purchasing power.

Be sure to jot down and have ready the following application requirements:

- Pounds per hour.
- Wire type, size and dimensions.
- Production rate (current or desired); speed.
- Temperature needed.
- Time in process and/or soak time.
- Voltage needed.
- Footprint dimensions of the furnace area.

Many furnace buyers have saved themselves a lot of headaches by double-checking these application requirement figures.

It is Also Critical to Know... Many spring makers and wire formers run different lines on a single furnace. If



Furnace dimensional data (top) and spring workpiece data (bottom) to be included in determining the “scope of work” when specifying an in-line furnace system.

you are planning to run multiple parts, have your smallest and largest parts wire type, size, weight and dimensions available when you begin your inquiry.

Wire type will help determine the temperature and soak time. Wire size and dimensions help figure out the displacement that will occur on the belt. Weight per part will help determine the pounds per hour.

Mistakes can occur when converting your line from a batch-type furnace to an in-line conveyor. For instance, baskets are no longer needed, thus lessening the load

the oven needs to stress relieve. Production rate is similar to pounds per hour, but deals more with your coiler or wire former. If the goal is to produce "X" amount of parts, but you are currently running at two-thirds that rate, it is best to factor for the larger number. In-line ovens have their limitations just like batch ovens, and speeding up the belt and temperature on an in-line oven is not always an option if the kW output is not great enough to match the displacement, a.k.a., rejected parts.

Less critical, but no less important... are the voltage as well as the footprint where the oven system will be working. Voltage will only become an issue if you order a 480-V oven to place on the 240-V side of your facility, and if your circuit breaker panel only has space for 30 A when the oven needs a 50-A breaker. Floor space is typically not a crucial factor, unless the oven will be paired up with other conveyors to complete an assembly line.

Conclusion

Every little factor can make a huge difference when sizing an oven system. A transposed decimal place on the weight or on the OD of a workpiece can result in a

high degree of frustration when it comes time to run your springs or wire formed parts.

How well do you know your scope of work?

To receive additional technical specifications on in-line conveyor oven systems for use in the spring making and wire formed parts industry, contact the author or **Circle 206**.

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Company Profile...

*Furnace Fixers, Inc., manufactures industrial heat-treating and related equipment. The company's speciality is its line of MKP in-line belt stress relief ovens. Main focus is on the manufacture of small-to-medium sized, portable conveyor ovens, mainly for use in cell operations in the spring manufacturing industry. In recent years the company has also branched out into larger conveyor ovens, batch ovens, conveyors and color coating systems. Furnace Fixers has also teamed up with the **Egyptian Lacquer Company** to furnish Simplecoat coating systems that apply polymer-based ThermadepSM color solutions to the surfaces of heated parts and components.*