

## Heat Shrink Tubing – Proper Selection & Installation Tips to Help Avoid Downtime

### AVOIDING DOWNTIME

It used to be that when replacing a battery terminal or copper lug, the cable would be stripped back, the terminal or lug would be crimped on, and the job was considered complete. However, by doing so, the cable was left open to moisture intrusion, which leads to corrosion, making this practice something to avoid. To help avoid downtime associated with corrosion, a solution to the negative consequences of leaving an electrical connection open, such as a battery connection, is to use heat shrink tubing.

Where possible, **ALWAYS** use heat shrink tubing to create a sealed connection, whether it's for a new build, splicing into the electrical system, making repairs, or simply maintaining connections already on the vehicle. Additionally, proper selection and installation of heat shrink tubing will offer protection from extreme weather conditions, ensuring a reliable, corrosion-free, electrical connection.

### TYPES OF TUBING

There are different types of heat shrink tubing available for multiple applications, ranging from smaller gauges such as primary wire, to 7-way cable and battery applications. It is always important to select the correct type of tubing for the desired application. And no matter the type of application, a good quality polyolefin heat shrink tubing with meltable sealant, should always be used. Below is a list of common types of heat shrink tubing, and their suggested applications.

**Heavy Duty Dual Wall:** For stiff cable that will never move, such as battery cable. Available in red to denote the battery positive [+], and black to denote either battery ground [-], or for use on non-battery applications.

**Flexible Dual Wall:** Thinner material that offers flexibility needed for cables such as 7-way harnesses. It is also available for smaller gauge jobs. Available in red to denote the battery positive [+], and black to denote either ground [-], or for use on non-battery applications.

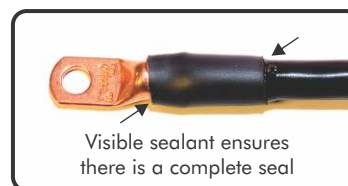
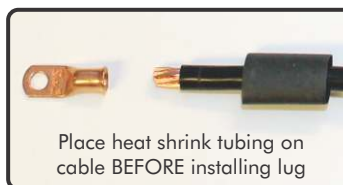
**Single Wall:** For smaller gauge wires, such as primary wire. Available in red, yellow and blue to denote wire gauge identification.

Size is important to take into consideration as well. Always make sure to select heat shrink tubing based on the gauge of the wire. Heat shrink tubing is typically marked with the range of wire gauges that it can be used for, and some are color coded for wire gauge identification, as mentioned above.

### INSTALLATION TIPS

Once the proper type and size of heat shrink tubing has been selected, it's important to make sure that it's installed correctly. The following tips can help with proper installation.

- **ALWAYS** slide the heat shrink tubing onto the cable before crimping the fitting to the cable end. This avoids having to manipulate the heat shrink tubing to get it on over the fitting, or worse having to remove the newly crimped fitting and start all over again. Think of it like putting pants on before putting shoes on.
- **ALWAYS** use a heat gun when available, as it offers a more effective and controlled source of heat. When in the field, a torch can be used as an alternative, however, proper distance should be maintained so as not to melt the cable jacketing with the open flame.
- **NEVER** hold the heat gun or torch still in one position. This can cause the cable jacketing to burn or melt. **ALWAYS** keep the gun or torch moving back and forth until the tubing has completely shrunken down to size.
- **ALWAYS** leave 3/8" or more of heat shrink tubing 'free edge' over the fitting and/or edge of cable (depending on the application) to ensure a complete seal. Too little of a 'free edge' and the heat shrink tubing may shrink more than intended, leaving wiring exposed and the connection susceptible to moisture and corrosion causing contaminants.
- **ALWAYS** take care to make sure that the heat shrink tubing is completely sealed around the edges (no gaps/pockets) to avoid corrosion and keep a solid reliable electrical connection.



## TIPS

- Where possible, **ALWAYS** use heat shrink tubing to create a sealed connection.
- **ALWAYS** use a good quality polyolefin heat shrink tubing with meltable sealant, no matter the application.
- **ALWAYS** select the correct type and size of heat shrink tubing for the desired application.
- **ALWAYS** install heat shrink tubing to ensure a complete seal that does not leave any portion of the wiring exposed, and that is completely sealed around the edges of the heat shrink tubing.

Have technical questions? Get the latest tips from a skilled Phillips engineer!  
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