CABLE MANUFACTURING & ASSEMBLY CO. INC.

HOW TO STRUCTURE PRINTS FOR FASTEST TURNAROUND

Synopsis:

We work hard to serve our customers with accurate and high-quality products delivered on time, even if some delays occur, because we know that you also have deadlines.

However, certain documentation problems in the early stages of the design phase as described in this article can easily make it impossible for either of us to meet production deadlines, regardless of the magnitude of our efforts. Below we outline these potential documentation problems and include all that is needed for an effective print or sketch.

Purchase Order Information

If the customer documentation contains contradicting purchase order information, we may have to contact you for clarification.

In particular, it is important to make sure that the purchase order itself contains correct part numbers, with the correct revision levels noted. If these numbers do not match other documentation, such as the provided prints, we may need to check with you before we can continue your job.

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Missing or Conflicting Information

The lack of important details or contradicting information in your drawings, prototypes, or sketches can create uncertainty about what you have ordered, requiring us to contact you to establish an accurate understanding.

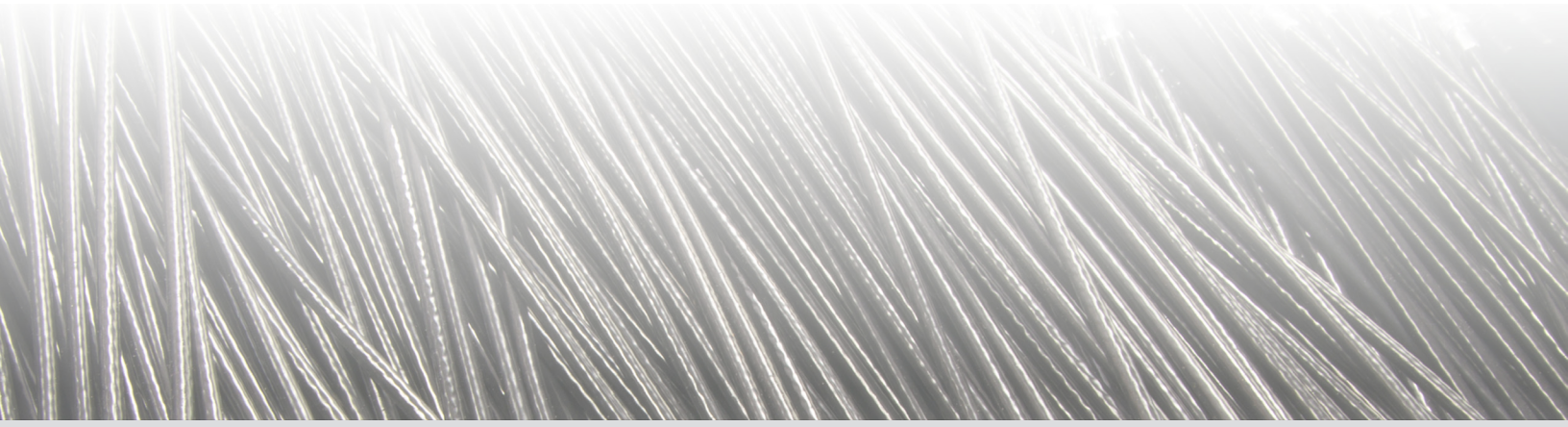
Production of your item may be delayed until we have the information we need.

Schematics or Connection Diagrams

A very clear schematic or wiring diagram showing where both ends of each conductor are to be connected is absolutely essential in this industry.

Don't forget to include small jumpers that may be used to connect together two pins in a connector.

You may feel that certain connections are obvious. However, it is very dangerous to set up a production run using assumptions. The lack of a clear specification may still require a work hold on your assembly until we can check with you to make sure that we understand exactly what you are expecting in the final assembly.



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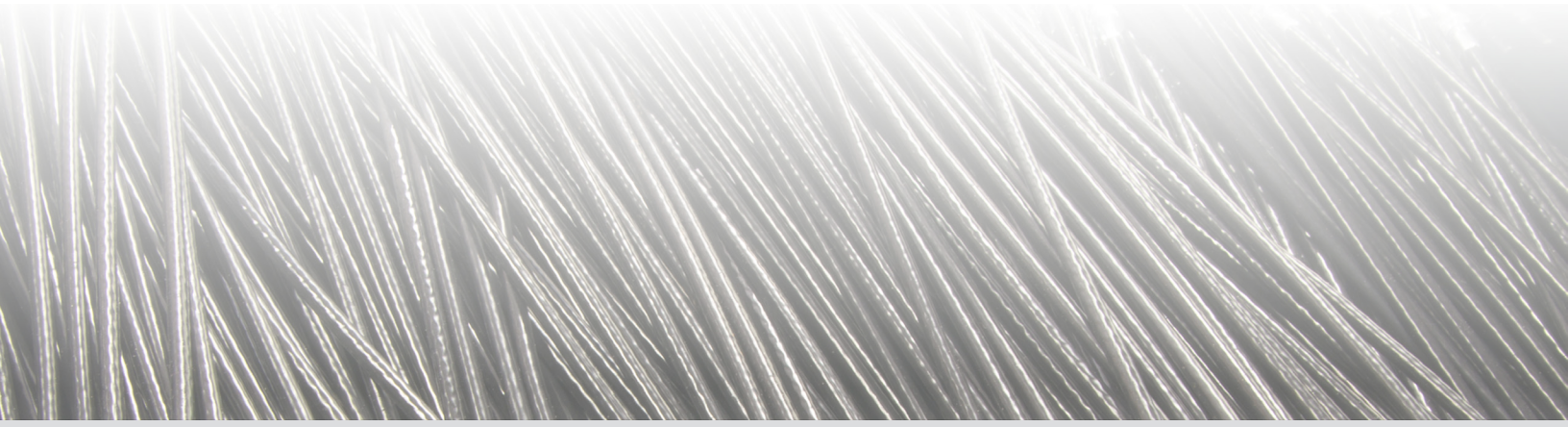
Assembly Diagrams, Drawings, or Sketches

Although 2D line drawings can be useful for some highly complex assemblies, for most assemblies, a side or top view of a 3D representation of a harness or lead, with a supporting 2D wiring diagram, is vastly preferred since it depicts where dimensions are to be measured as well as gives manufacturing personnel an idea of how the final product should appear.

Number bubbles or explicit callouts should be used to identify each component or feature clearly. Lengths should be represented either directly on the drawing for each breakout, or in a table that references a clearly marked section of the assembly. If a table is used and it is not obvious which part of the assembly each length is to be used, clarification will be needed to start manufacturing.

Revisions

It is a good practice to provide a clear revision block or list on each and every single document that is provided to a vendor, including those documents that contain only words (BOM's, for example). Without a revision callout on each piece of documentation, old and new BOM's or prints could be used with eachother and lead to nonconforming or entirely unuseable product.



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Any change, no matter how small, should be marked nearby with a letter or number as a change identifier. A complete revision table should include columns for the change identifier, a thorough description of the change, and the date of the change.

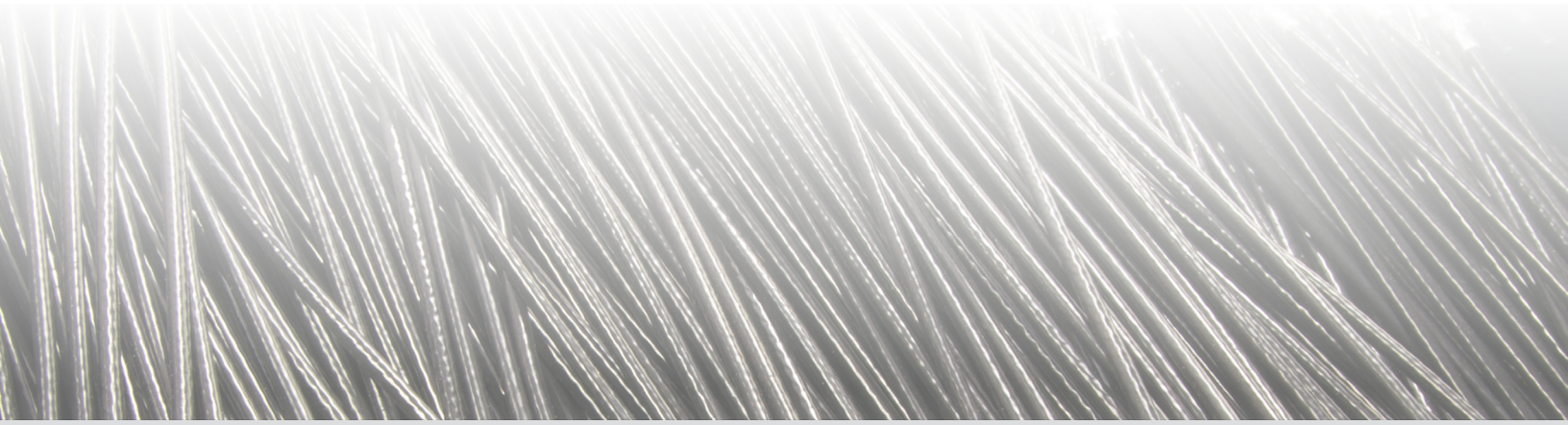
Bills of Material

Accurate and complete bills of material are also an essential part of the information needed to make your assembly.

Include as many details as possible about components that we are to source and use in your assembly. There are often many options available for even the simplest components. If a close substitution or equivalent part would be acceptable, please indicate this on the BOM. When we find an opportunity to use a substitution for cost or tooling reasons, we will reach out to you to make sure the new part will be acceptable. If we are not given enough information to confidently order a component, we will have to reach out for clarification before finishing a quote.

Don't forget that your own internal part numbers, while important, are not likely to help us locate parts for your assembly. Always include the manufacturers part number and name as well as your own numbers. This is pertinent to providing an accurate quote, so providing it up front only helps with turnaround.

The bill of materials should also be numbered such that the BOM matches each and every bubble callout on the print. Finally, don't forget to include a quantity for each component.



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Tolerances

Although ideal dimensions are useful, quality production isn't possible without a sensible tolerance specification for every dimension.

We understand that developing specifications for unknown tolerances can be quite difficult and time consuming. Using typical drawing tolerance blocks can be helpful but are quite often far too restrictive for this type of product.

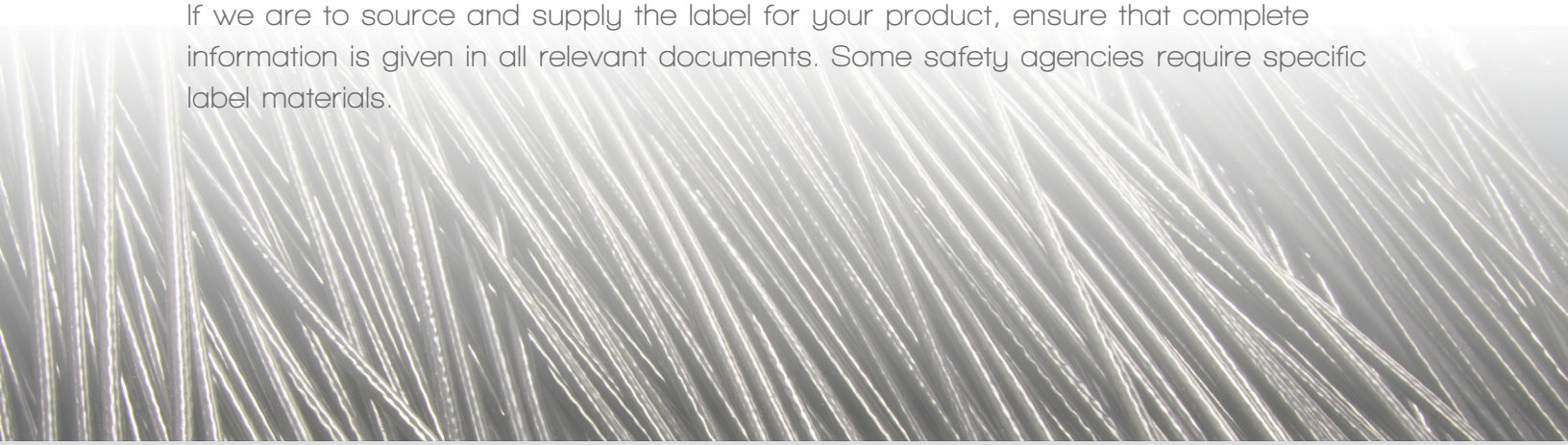
If a tolerance specification is too difficult to reach economically in this industry, we will contact you and work out what the tolerance should be, which can create some delays. We will generally apply IPC recommended tolerances if the customer provides no tolerance specification at all.

Labels

Wire harnesses and cable assemblies often require labels on particular components. Make sure that you include a drawing of the label that includes a clear specification of the wording that it is to have, or a list of needed labels.

Show clearly the location where the label is to be applied and give any relevant instructions for proper application. A top or side view from a 3D assembly drawing or sketch is best for this.

If we are to source and supply the label for your product, ensure that complete information is given in all relevant documents. Some safety agencies require specific label materials.



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Certifications and Classes

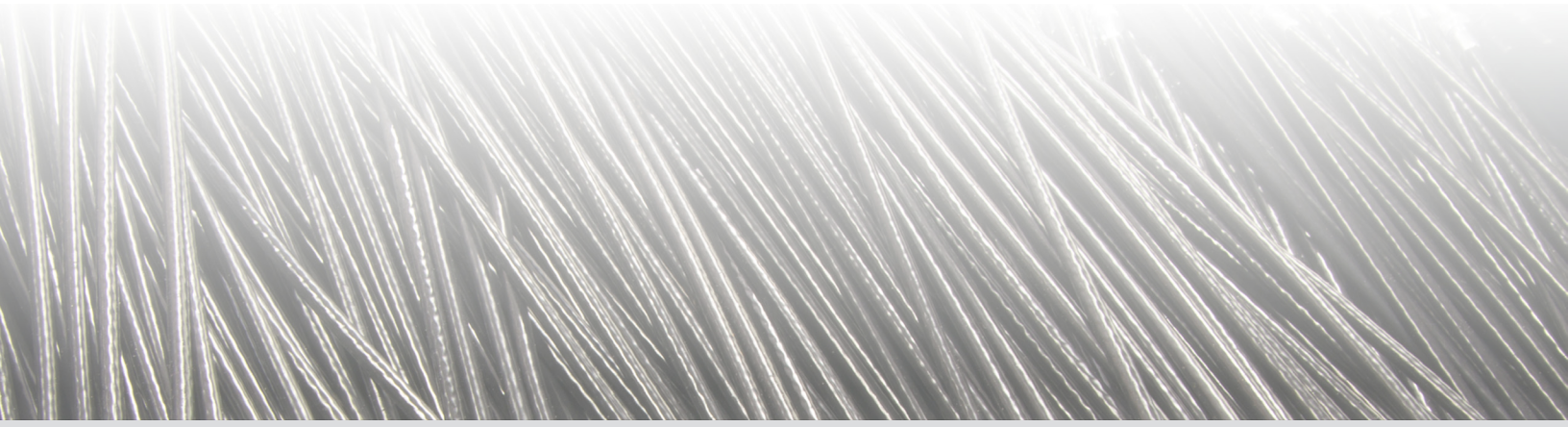
If you require conformance to a particular quality class, such as the common IPC classes (I, II, III, etc.) please clearly note this fact on your drawings. If not listed, we typically strive to provide Class II or better quality with all of our product.

It is of particular importance for you to specify this if you require an IPC class level III or higher because this will require extra steps and increased precision in the production process that would not normally be necessary.

Conclusion

A great many documentation problems can be avoided if one puts him or herself into the "shoes" of those who must make the item using those documents—our engineering team!

Anything that you can do to the documents to improve communication between you and our team will vastly speed up turnaround time for your project. Contact us today to learn more about putting together a print or sketch for our engineering team, or submit yours today to receive a quote!



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Questions?

If you have questions or are interested in speaking with us about the proper conductive cables for your project, we are happy to help.
Contact CMA today!

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