


# **OVERHEAD DESIGN MANUAL**

## **Section 0 – Quick Reference Guide**

Approved by: F. Zaini


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# MainsDes – Mains Design Application

MainsDes is the Energex mains design application for distribution line design.

Information produced from this Application supersedes that currently compiled in the Overhead Design Manual. The graphical output produced in the Layout Guides is more comprehensive than the tables compiled in the Design Manual. Designers who have access to the MainsDes application shall use this application as the primary design tool.

External designers who do not have access to MainsDes shall continue to use the information in the Overhead Design Manual.

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# MainsDes Information

## Layout Guides

This tool includes all current layout guide information for distribution pole top constructions, providing graphical results of allowable span lengths with respect to deviation angles for the conductor and stringing table or percent of conductor minimum breaking load.

Assumptions used:

- Wind span = Weight span.
- Span Length = Mean Equivalent Span (MES).
- Crossarm bisects the deviation angle.

All calculations are based on either Working Stress Design or Limit state Design.

- Each pole top construction code may be selected from the dropdown list or typed into the box.
- The selected construction may be only used within the unshaded area of the graph.

*Tips:* Always click the [recalculate](#) button whenever you change your selection.

By clicking on the icons beside the construction and conductor, further detail and images are provided.

## Sag Tension

This tool allows the designer to determine conductor sags and tensions under various selected operating conditions. Maximum Working wind pressures is defaulted to 500Pa and for Limit State it is 900Pa. These can be modified but it is recommended only advanced users who understand the calculation modify this value. Blowout Parameters (vertical sag, Blowout Angle and Midspan Blowout are always calculated at 500Pa wind regardless of the calculation Type

*Tips:* Blowout angle is measured from the vertical. For multiple span calculations, untick the MES=Span box and add individual spans as required to calculate the MES.

## Current Ratings

This tool allows the designer to determine the conductor temperature for a given current and alternatively, for a given conductor temperature, the load current is calculated based on the conditions criteria chosen.


## Constructions

This tool provides images of all distribution constructions including design detail.

## Conductors

This tool provides manufacturer's data of the selected conductor.

## Insulators

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This tool provides images of all distribution insulators with supporting design detail including suitability for coastal or polluted areas.

### **Transformers**

This tool provides images of all pole top distribution transformers including design detail.

### **LV Services**

This tool provides sag information for a selected service cable over a range of span lengths.

When installed to the sags shown in the table, the maximum working tension (with 500 pa wind load) will not exceed 1kN.

### **Mechanical Forces**

This tool provides Everyday Tension (EDT), Serviceability State (SST) and Limit State (LST) loads per conductor attachment for the selected conductor type and stringing table, or percent conductor minimum breaking load over a range of deviation angles.

Full termination loads are also provided.


SST Calculations are based on 500Pa wind pressure and Maximum working methodology

LST Calculations are based on 900Pa wind pressure and Limit State working methodology as per AS/NZS7000

### **Pole Strength Calculator**

This tool provides information on residual wood pole strengths based on inspection data. It provides maximum allowable EDT, SST and LST tip loads for the pole based on its current condition and it also allows for wind load on the pole.

Note, for design purposes, only the EDT & LST values are to be used to determine the remaining design strength of the pole

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