



Installation Guide For HiTemp EC Aluminum Conductor Steel Supported (ACSS and ACSS/TW)

HiTemp EC, Alcan's Aluminum Conductor Steel Supported Conductor (ACSS), is a composite concentric lay stranded conductor consisting of a stranded steel core with one or more layers of 1350-0 aluminum wires. HiTemp EC conductors are made of either round wires (designated ACSS) or with trapezoidal wires (ACSS/TW). The major difference between this conductor and ACSR is that the aluminum strands in an ACSR conductor are hard drawn, while those of an ACSS conductor are fully annealed (-0). The fully annealed aluminum wires are softer and have higher ductility than hard drawn aluminum wires and are more susceptible to damage during installation and handling.

HiTemp EC ACSS and ACSS/TW can usually be installed using similar procedures as ACSR. Special attention should be given to the following:

1. HiTemp EC has fully annealed outer layers of aluminum. Extra care is required to prevent surface scratching and scuffing. The conductor should not be allowed to drag across bare ground, rocks, or the top of road guard structures, etc.
2. Only tension stringing methods should be used to install ACSS and ACSS/TW. Pay-off equipment and bullwheel tensioners should be in line to prevent scuffing of the conductor against adjacent layers on the reel.
3. A bullwheel diameter of at least 35 times the conductor diameter to the bottom of the groove is recommended. The grooves should be lined. Only multi-groove tensioners should be used. Use of single V-groove tensioners may cause damage to the conductor.
4. To aid in pulling the conductor, a washer and steel compression sleeve can be attached to the leading end of the conductor. The following procedure should be followed:
 - a. the aluminum strands are cutback approximately the length of the steel sleeve and washer.
 - b. the washer is inserted over the exposed steel core, up against the cut aluminum wires. The washer should have an outer diameter approximately the same size as the diameter of the conductor.
 - c. A steel sleeve is then compressed over the steel core.
5. Woven Wire Grips should be properly sized for the conductor being installed, and should be double banded on the open end. The bands should be covered with tape to prevent damage to sheaves.



6. Sheaves should be lined and in good operating order. The sheaves should have a minimum of 20 times the conductor diameter to the bottom of the groove. For larger angles, multiple block assemblies should be used to reduce bearing pressure.
7. All come-alongs and grips should be designed, tested, and certified by the grip manufacturer for the size and type of ACSS or ACSS/TW and the tensions being used during installation. The come-along or grip manufacturers installation instructions should be closely followed.
8. Come-alongs and grips should be clean, in good working order, and load tested prior to installation. High tension installations may require the use of grips in tandem and/or core gripping mechanisms.
9. Bolts on pocketbook type come-alongs should be clean and lubricated, and snugged-up and tightened with multiple passes using the method and torque specified by the manufacturer.
10. Open-sided parallel jaw grips should be sized to the conductor diameter and in accordance with manufacturer's recommendations. Grips designed to fit a range of conductor sizes/diameters should be avoided.

Caution - Using the wrong type or size of grip or not following the manufacturer's recommendations for installation can result in damage to the conductor. While some minor damage may be repaired by hand, severe damage can result from using the wrong pocketbook type come-along or "Chicago-Type" grip.

11. Conductor distortion and minor birdcaging with ACSS and ACSS/TW can often be repaired by hand with a wooden block. Severed strands require armor rods or repair sleeves.
12. HiTemp EC should be installed per IEEE Standard 524, "IEEE Guide to the Installation of Overhead Transmission Line Conductors", unless otherwise stated.
13. HiTemp EC may be prestressed to the maximum anticipated tension and held for 15 minutes. Tension should be confirmed with a dynamometer, or sag measurements. Pocketbook grips should be tested before prestressing and bolts tightened with repetitive passes according to the manufacturer's recommendations.

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