

FOR 24 HOUR EMERGENCY RESPONSE: CALL 800-255-3503

DAILY GENERATOR OPERATING INSTRUCTIONS

- Power generation and distribution equipment is intended for use by trained personnel. Untrained personnel may be exposed to severe injury or death.
- The Block Heater and Battery Charger must be plugged in when the generator is delivered to ensure proper starting.
- Check the fluids weekly: Fuel, Oil, Coolant, and DEF (for Tier4 only).
- A complete Level 2 service will be completed every 250 run hours by a Kinsley Power Systems generator technician and will be billed in addition to the rental rate of the equipment.
- The customer is responsible for the well-being of the equipment while out on rent. Equipment should be protected from damage due to excessive dirt, debris and from vandalism or theft.
- At no time shall the customer, or anyone acting on behalf of the customer, alter or make any attempt to repair Kinsley Power Systems owned equipment without written consent from Kinsley Power Systems.

LOW VOLTAGE CABLE HANDLING PROCEDURES

Kinsley Rental Agreement requires the Customer to use the Equipment in accordance with these handling instructions.

The Cable You are Receiving:

- Has been inspected prior to shipping.
- Should be inspected upon receipt. Any issues should be reported immediately to Kinsley Power.

CAMLOK End Handling:

- CAMLOK ends should always remain clean.
- Avoid placing CAMLOK ends in or near dirt, mud, or debris.
- Any debris that enters CAMLOK ends should be thoroughly cleaned prior to making any connections.



Cable Connection Procedures:

- Connection - Insert the male end into the female end and twist until locked (right to tighten/left to loosen). Attempt to pull apart after making connections to ensure that the cables are secure. Cables that are not tightened properly will result in cable overheating, arcing, and cable destruction. Cables that are damaged due to customer negligence and not ensuring of a correct and tight connection will result in additional charges for repairing or replacing cable.
- No Alterations - If pigtails are furnished per the Customer's request with bare, pinned or lugged ends, do not alter the ends in any way (i.e., cutting off lugs). Any alterations to cable ends will result in a **CHARGE** for parts and labor to return the pigtail to its original condition.

NOTE: The Customer is responsible for ensuring that all cable connections are correct and that there are no "cross phase" connections which could lead to damaging Customer or Kinsley Power equipment.

Cable Routing and Connection Procedures:

Routing is critical to ensure that cables can carry their full amperage rating. There are many factors that contribute to cable capacity. The most common critical factors are:

- Cable placement
- Cable run length
- Ambient temperature

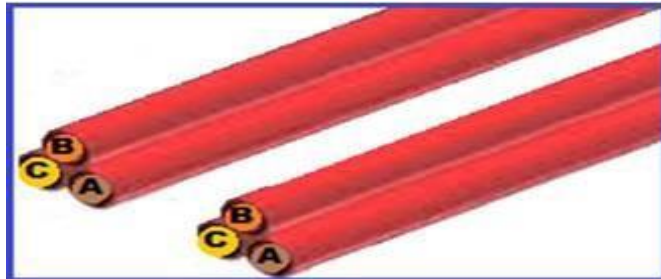
Cable Run Length – Should be as short as possible. Cable run length is proportional to voltage drop and therefore power delivered.

Temperature – Temperature above the 86°F ambient will de-rate cable ampacity. Per NEC/NFPA70, 4/0 type W cable is rated @ 405 amperes 90°C rise (194°F) over a 30°C (86°F) ambient (in free air). See table 310.17.

Correct Placement

Kinsley Power practices a method known as the "Triangular Triplex" method. This means that the cables are routed A/B/C – A/B/C – A/B/C – etc.... in a triangular pattern. This ensures that the cables will operate with the least risk, lowest temperature, and the lowest cable current de-rating.

- Correct Cable Layout



- Incorrect Placement
 - Cables **must not** be placed all A phase, then all B phase and C phase (or all piled on top of each other).
 - Extreme caution should be taken to avoid this occurrence. Note that the amperage rating Kinsley Power utilizes is per NEC/NFPA70, which is in “free air”.
- If the proper layout is not used, **the following may result:**
 1. *Inductance in the cable ends, which could hog the load and overheat and cause a fire.*
 2. *A reduction of the current carrying capacity of the cables.*
 3. *Severe damage to insulation which may result in electric shock.*

Cables may not be coiled when energized. Energizing coiled cables can create induction and cause a fire which will destroy the cable.

Improper Cable Layout



Proper Cable Layout



Cable Layout

- Begin by plotting your cable route, and be sure to consider the following:
 - Choose the shortest path.
 - Avoid heat sources or exhaust discharge.
 - Avoid sharp edges or other obstructions.
- Once the path has been established, run one phase separately to establish how all other cables will be placed.

Grouping and Tri-plexing

- Once three conductor-phase passes have been made, use the lanyard (located on each cable), or electrical tape, to secure the cables into the triangular tri-plexed pattern as discussed in the previous section.
- When grouping the conductor passes, be sure to follow these procedures.
- Use each cable's lanyard at the beginning, middle, and front of each 50-foot pass.
- Keep the triangular pattern consistent throughout each run.

Identifying Phases

- Cross-Phasing is a hazard that is easily caused, but it is even easier to prevent. Run each phase individually.
- Color code your conductors with phase tape on each pass, not after the fact.
- In addition to color coding each conductor, you can color code each tri-plexed group. This will help identify any issues that may be caused by loose connections.

Finished Cable Pass

- After finishing the first tri-plexed group cable pass, now is a good time to re-check the following:
 - Cable Connections.
 - Phase and group identifiers.
 - Female end is on the Rental Generator side and the Male end is on the customer connection end.

Initial Use Cable Monitoring

- Customers should monitor individual cables with an ammeter and thermal gun once connected and placed under load. The purpose of this is to enable Customer to identify cables with loose connections.
- Customers should observe that the cables are not showing any physical signs of malfunction such as: arcing, burning, or changing color.

- When cables do have amperage differences, immediately remove power and check for cable connection and cable end cleanliness.
- EXAMPLE: if there are six (6) cables per phase and one is detected to be carrying very little amperage and the others are carrying more than the calculated load, there is a possibility that the one carrying the low amperage has a loose connection. This can cause higher than normal resistance, which will limit the current flow. The procedure for this is for the customer to mark this cable, remove all load then double check the cable to ensure a proper connection, re-apply the load and confirm that the correction made has improved the current carrying capacity of the cable.

Thermal Gun



Amp Clamp



Returning Cable:

- It is the Customer's responsibility to ensure that all cables are kept in a secure facility until they are picked up and to ensure that all cables are returned in the same satisfactory condition in which they were delivered. Customer will be charged replacement charges for any lost or damaged cables/pigtails, shipping boxes and lids or excessive handling due to improper cable return.
- All cables will be counted at a Kinsley Power location when returned. Customer will be notified of missing cables. Customer will be subject to rental charges until the missing cables are returned to Kinsley Power.

Proper Cable Return



Improper Cable Return

