

HARMONICGUARD[®] *LOW CAPACITANCE*

HarmonicGuard[®] Series HGL CP/KP Filter Kit Installation Instructions



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Performance Guarantee

Select and install the appropriate HarmonicGuard® Low Capacitance Harmonic Filter in a variable torque, variable frequency AC drive application, within our published technical specifications and we guarantee that the input current distortion will be less than or equal to 5% THID for standard HGL Series filters at full load. If a properly sized and installed filter fails to meet its specified THID level, TCI will provide material for necessary modifications or replacement filter at no charge.

HG filters can also provide similar performance in other drive applications such as constant torque, DC drives and other phase controlled rectifiers, but actual THID levels can vary by load and/or speed and therefore cannot be guaranteed.

Consult factory for assistance when applying HGL filters on these types of equipment.

MINIMUM SYSTEM REQUIREMENTS:

The guaranteed performance levels of this filter will be achieved when the following system conditions are met:

Frequency: 60Hz \pm 0.75Hz

System Voltage: Nominal System Voltage (line to line) \pm 10%

Balanced Line Voltage: Within 0.5%

Background Voltage Distortion: < 0.5% THVD

The input VFD current waveform shall be consistent with that of a VFD with 5% AC line reactance at full load and a 5% source impedance.

NOTE: The presence of background voltage distortion will cause motors and other linear loads to draw harmonic currents.

Additional harmonic currents may flow into the HGL filter if there is harmonic voltage distortion already on the system.

Table of Contents

| | |
|--|-----------|
| Introduction..... | 2 |
| Safety Instructions Overview | 2 |
| Warnings and Cautions..... | 2 |
| General Safety Instructions..... | 3 |
| Receiving Inspection and Storage..... | 4 |
| Receiving Inspection | 4 |
| TCI Limited Warranty Policy | 4 |
| Storage Instructions | 5 |
| Pre-installation Planning | 6 |
| Intended Audience | 6 |
| Verify the Application | 6 |
| Select a Suitable Location | 6 |
| Mounting the Filter Kit..... | 7 |
| Power Wiring..... | 7 |
| Filter Schematic | 8 |
| KDR Line Reactor Installation Instructions | 8 |
| Line Reactor Wiring | 9 |
| Tuning Reactor | 11 |
| Tuned Circuit Capacitors..... | 12 |
| Capacitor Brackets..... | 13 |
| Recommendations for CP/KP Kit Usage..... | 13 |
| Short Circuit Current Rating (SCCR)..... | 13 |
| Wire Sizing..... | 14 |
| Contactor (Optional Customer Supplied) | 15 |
| Fuse (Optional Customer Supplied) | 15 |
| Installation Guidelines | 16 |
| Product Description | 17 |
| HGL CP Filter Kit | 17 |
| HGL CP Kits Configuration Package P/N..... | 17 |
| HGL KP Filter Kit | 18 |
| HGL KP Kits Configuration Package P/N..... | 18 |
| HGL Kit Part Numbering System..... | 19 |

Introduction

The information presented in this manual covers the HGL CP/KP kit only. For the full HGL manual please visit: www.transcoil.com/Products/HGL-HarmonicGuard-Low-Capacitance.htm

Safety Instructions Overview

This section provides the safety instructions which must be followed when installing, operating, and servicing the HGL CP/KP Kit filter. If neglected, physical injury or death may follow, or damage may occur to the filter or equipment connected to the filter. The material in this chapter must be read and understood before attempting any work on, or with, the product.

The HGL CP/KP Kit filter is intended to be connected to the input terminals of one or more VFDs. Three-phase power is connected to the input terminals of the filter and power is supplied to the VFD or VFDs through the filter. The instructions, and particularly the safety instructions, for the VFDs, motors, and any other related equipment must be read, understood, and followed when working on any of the equipment.

Warnings and Cautions

This manual provides two types of safety instructions. Warnings are used to call attention to instructions that describe steps that must be taken to avoid conditions that can lead to a serious fault condition, physical injury, or death.

Cautions are used to call attention to instructions that describe steps that must be taken to avoid conditions that can lead to a malfunction and possible equipment damage.

Warnings

Readers are informed of situations that can result in serious physical injury and/or serious damage to equipment with warning statements highlighted by the following symbols:

| | |
|---|---|
| Warning  | Dangerous Voltage Warning: warns of situations where high voltage can cause physical injury and/or damage equipment. The text next to this symbol describes ways to avoid the danger. |
| Warning  | General Warning: warns of situations that can cause physical injury and/or damage equipment by means other than electrical. The text next to this symbol describes ways to avoid the danger. |
| Warning  | Electrostatic Discharge Warning: warns of situations in which an electrostatic discharge can damage equipment. The text next to this symbol describes ways to avoid the danger. |

Cautions

Readers are informed of situations that can lead to a malfunction and possible equipment damage with caution statements:

| | |
|---|---|
| Caution  | General Caution: identifies situations that can lead to a malfunction and possible equipment damage. The text describes ways to avoid the situation. |
|---|---|

General Safety Instructions

These safety instructions are intended for all work on the HGL CP/KP Kit filter. Additional safety instructions are provided at appropriate points on other sections of this manual.

| | |
|---|---|
| <p>Warning</p>  | <p>Be sure to read, understand, and follow all safety instructions.</p> |
| <p>Warning</p>  | <p>Only qualified electricians should carry out all electrical installation and maintenance work on the HGL filter.</p> |
| <p>Warning</p>  | <p>All wiring must be in accordance with the National Electrical Code (NEC) and/or any other codes that apply to the installation site.</p> |
| <p>Warning</p>  | <p>Disconnect all power before working on the equipment. Do not attempt any work on a powered HGL filter.</p> |
| <p>Warning</p>  | <p>The HGL filter, drive, motor, and other connected equipment must be properly grounded.</p> |
| <p>Warning</p>  | <p>After switching off the power, always allow 5 minutes for the capacitors in the HGL filter and in the drive to discharge before working on the HGL, the drive, the motor, or the connecting wiring. It is a good idea to check with a voltmeter to make sure that all sources of power have been disconnected and that all capacitors have discharged before beginning work.</p> |

Receiving Inspection and Storage

Thank you for selecting the HGL CP/KP Kit filter. TCI has produced this filter for use in many variable frequency drive (VFD) applications that require input power line harmonic current reduction. This manual gives an overview of how to install, operate and maintain the HGL CP/KP Kit filter. Please contact TCI Technical Support or visit transcoil.com/Support.htm for additional information.

Receiving Inspection

The HGL CP/KP Kit filter has been thoroughly inspected at the factory and carefully packaged for shipment. When you receive the unit, you should immediately inspect the shipping container and report any damage to the carrier that delivered the unit. Verify that the part number of the components you received is the same as the part numbers listed on the engineering drawings for the kit, which can be found at:

www.transcoil.com/Products/HGL-HarmonicGuard-Low-Capacitance/HGL-CP-Drawings.htm

www.transcoil.com/Products/HGL-HarmonicGuard-Low-Capacitance/HGL-KP-Kit-Drawings.htm

TCI Limited Warranty Policy

TCI, LLC (“TCI”) warrants to the original purchaser only that its products will be free from defects in materials and workmanship under normal use and service for a period originating on the date of shipment from TCI and expiring at the end of the period described below:

| Product Family | Warranty Period |
|------------------------|--|
| KLR, KDR | For the life of the drive with which they are installed. |
| HGA, VIK, KLC | One (1) year of useful service, not to exceed 18 months from the date of shipment. |
| HGP, HG7, KH, KRF, HGL | Three (3) years from the date of shipment. |
| KCAP, KTR | Five (5) years from the date of shipment. |
| All Other Products | One (1) year of useful service, not to exceed 18 months from the date of shipment. |

The foregoing limited warranty is TCI’s sole warranty with respect to its products and TCI makes no other warranty, representation, or promise as to the quality or performance of TCI’s products. THIS EXPRESS LIMITED WARRANTY IS GIVEN IN LIEU OF AND EXCLUDES ANY AND ALL EXPRESS OR IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

This warranty shall not apply if the product was:

- a) Altered or repaired by anyone other than TCI;
- b) Applied or used for situations other than those originally specified; or
- c) Subjected to negligence, accident, or damage by circumstances beyond TCI’s control, including but not limited to, improper storage, installation, operation, or maintenance.

If, within the warranty period, any product shall be found in TCI’s reasonable judgment to be defective, TCI’s liability and the Buyer’s exclusive remedy under this warranty is expressly limited, at TCI’s option, to (i) repair or replacement of that product, or (ii) return of the product and refund of the purchase price. Such remedy shall be Buyer’s sole and exclusive remedy. TCI SHALL NOT, IN ANY EVENT, BE LIABLE FOR INCIDENTAL DAMAGES OR FOR CONSEQUENTIAL DAMAGES INCLUDING, BUT NOT LIMITED TO, LOSS OF INCOME, LOSS OF TIME, LOST SALES, INJURY TO PERSONAL PROPERTY, LIABILITY BUYER INCURS WITH RESPECT TO ANY OTHER PERSON, LOSS OF USE OF THE PRODUCT OR FOR ANY OTHER TYPE OR FORM OF CONSEQUENTIAL DAMAGE OR ECONOMIC LOSS.

The foregoing warranties do not cover reimbursement for removal, transportation, reinstallation, or any other expenses that may be incurred in connection with the repair or replacement of the TCI product.

The employees and sales agents of TCI are not authorized to make additional warranties about TCI's products. TCI's employees and sales agent's oral statements do not constitute warranties; these shall not be relied upon by the Buyer, and are not part of any contract for sale. All warranties of TCI embodied in this writing and no other warranties are given beyond those set forth herein.

TCI will not accept the return of any product without its prior written approval. Please consult TCI Customer Service for instructions on the Return Authorization Procedure.

Storage Instructions

If the HGL CP/KP Kit filter is to be stored before use, be sure that it is in a location that conforms to published storage humidity and temperature specifications on the applicable technical drawings available at: transcoil.com/Support.htm. Store the unit in its original packaging.

Pre-installation Planning

Intended Audience

This manual is intended for use by all personnel responsible for the assembly, wiring installation, operation and maintenance of the HGL filters and kits. Such personnel are expected to have knowledge of electrical wiring practices, electronic components and electrical schematic symbols. Panel design using a TCI HGL Filter Kit should be performed with appropriate engineering supervision so the design meets the requirements based on materials utilized in the construction of the panel, wiring practices followed by your shop, and the actual ambient conditions of the components for each application.

Verify the Application

HGL Ratings

Make sure that the HGL CP/KP Filter Kit is correct for the application. The voltage rating of the filter kit must match the input voltage rating of the connected drive. The horsepower and current ratings of the filter kit must be appropriate for the connected load.

Select a Suitable Location

Environment

Locating the HGL CP/KP Filter in a suitable environment will help ensure proper performance and a normal operating life. Refer to the environmental specifications listed on Table 1.

Table 1 - HarmonicGuard® Low Capacitance Filter Technical Specifications

| | |
|---|--|
| Voltage Rating | 3 Phase: 480V/600 VAC |
| Operating Frequency | 60 Hz |
| Motor drive input power rating range | 20-900HP for 480V/600V units. Power range varies depending on system voltage |
| Overload Capability | 200% of current rating for 3 minutes |
| Environmental Conditions | |
| Operating Temperature | Kit component ambient: 50°C (122°F) |
| Storage Temperature | 60°C (140°F) |
| Elevation | Up to 2,000 m without derating |
| Humidity | 95% non-condensing |
| Agency approvals or certifications | |
| Capacitor Assemblies |  UL US UL and cUL Listed |
| Capacitors |  UL US UR and cUR Recognized |
| Reactors |  UL US UR and cUR Recognized |
| Performance Guarantee | |

To meet the requirements for the Performance Guarantee the minimum system conditions must conform to the following:

- At least a 5% Source inductance
- The input VFD current waveform shall be consistent with that of a VFD with 5% AC line reactance at full load

Please consult TCI regarding optimum filter performance when applied to DC drives.

Warning



Unless specifically labeled as approved for such use, this equipment is not suitable for use in an explosive atmosphere or in a "Hazardous (Classified) Location" as defined in article 500 of the National Electrical Code (NEC).

The unit must be installed in an area where it will not be exposed to:

- ◆ Direct sunlight
- ◆ Rain or dripping liquids (unless the filter kit is installed in a Type 3R enclosure)
- ◆ Corrosive liquids or gasses
- ◆ Explosive or combustible gases or dust
- ◆ Excessive airborne dirt and dust
- ◆ Excessive vibration

Working Space

Provide sufficient access and working space around the unit to permit ready and safe installation, operation, and maintenance. Make sure that the installation conforms to all working space and clearance requirements of the National Electrical Code (NEC) and/or any other applicable codes. Provide sufficient unobstructed space to allow cooling air to flow through the unit.

Mounting the Filter Kit

When mounting the filter kit in your own enclosure, you must provide an enclosure that is adequately sized and ventilated sufficiently to prevent overheating. Refer to the applicable kit drawings for rating and dimensions. The maximum temperature of the air around the HGL filter capacitors, line reactor, and tuning reactor should not exceed 50°C (122°F). Consult the table of filter power dissipation below when planning enclosure ventilation.

Power Wiring

When selecting a mounting location for the HGL CP/KP Filter Kit, plan for the routing of the power wiring.

Filter Schematic

The schematic shown in Figure 1 is an illustration of a typical HGL filter wiring.

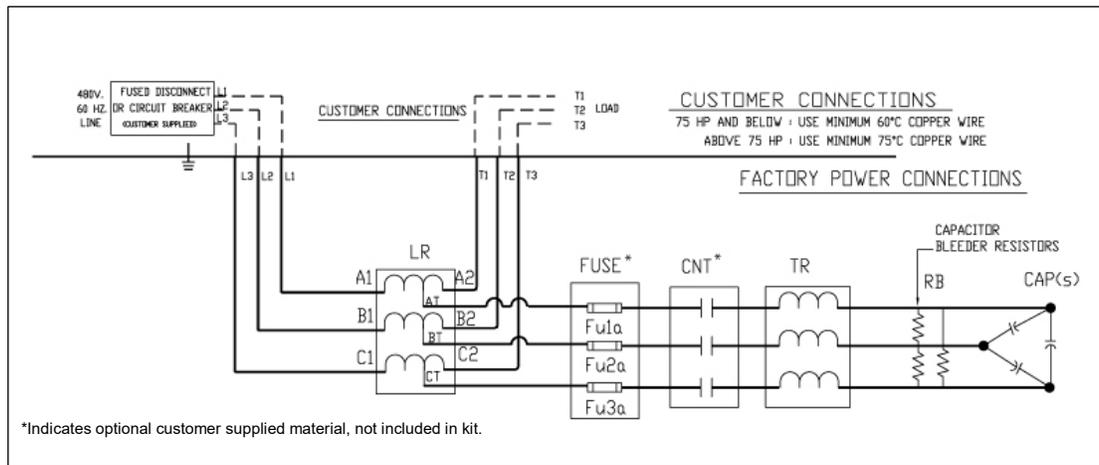


Figure 1 – Typical HGL Filter Wiring

KDR Line Reactor Installation Instructions

Recommendations and Considerations

When installing the KDR Line Reactors on the INPUT side of the VFD, please use the following guidelines when wiring the unit:

The KDR Line Reactor is a 3-phase device and should be wired in series and positioned on the input side of the VFD.

All terminal block connectors will be marked. A1, B1, and C1 are the input terminals where the three phases of incoming power are to be wired. The tap for the filter connection will be marked AT, BT, and CT. Output terminals will be marked A2, B2, and C2. Do not swap input and output terminals. Units with copper bus or ring lug terminals are not marked. Wiring from the output terminals should connect to the input of the VFD.

Refer to NEC (National Electrical Code) wiring practices for appropriate wire sizes for your application.

TCI recommends that these reactors be wired and located as close to the front end of the VFD as possible to have the greatest success in both protecting the VFD as well as mitigating line harmonics. We recommend this be 10 feet of cable or less.

Reactors dissipate a significant amount of heat in normal operations and their surfaces get very hot. In standard 40°C ambient or less installations, a clearance of 3 inches on all sides of the reactors and its enclosure is recommended for assisting in heat dissipation. This is a general guideline for typical applications. If the reactor is being installed next to a heat sensitive instrument or control device, we recommend reviewing specific requirements on heat limitations. Line reactor heat loss information is available in the standard TCI product literature or on the web at www.transcoil.com.

These reactors are designed to be floor-mounted or wall-mounted. Large open-style devices should be panel mounted by incorporating a bracket that would act as a shelf to support the reactor and/or enclosure. When installing an open style device in an existing control cabinet, drive cabinet, motor control center, or other large enclosure, the reactor should be mounted in the lower half of the cabinet to prevent hot spots or pockets of heat. Locating the reactor in the lower half of the cabinet typically allows better thermal dissipation and heat convection. Reactors with ducts should be mounted vertically for proper cooling.

Line Reactor Wiring

In the higher performance HGL design, tapped line reactor wiring is more critical than standard line reactor designs. Before tapped line reactors, it did not matter if you connected the A1, B1, C1 to the line side or the drive side, however, on the HGL, the terminals cannot be swapped. Incorrect wiring of the line reactor will result in poor harmonic mitigation and could damage the reactor. Consult the specific reactor drawing for your line reactor to verify proper filter wiring. All line reactor drawings are available on the parts web page:

www.transcoil.com/Products/HGL-HarmonicGuard-Low-Capacitance/HGL-CP-Drawings.htm

www.transcoil.com/Products/HGL-HarmonicGuard-Low-Capacitance/HGL-KP-Kit-Drawings.htm

The incoming lines must be wired to the winding starts noted as A1, B1, and C1 in the reactor drawing. The tuned circuit is typically connected to the winding taps noted as AT, BT, and CT in the reactor drawing, or it may be connected to the winding ends noted as A2, B2, and C2 in the reactor drawing.

In small line reactors with a nine-position terminal block, the terminal block is wired A1, AT, A2, B1, BT, B2, C1, CT, and C2 from left to right.

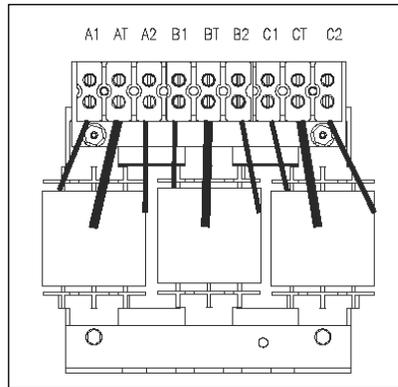


Figure 2 – Nine-Position Terminal Block

In small line reactors with a six position terminal block, the terminal block is wired A1, A2, B1, B2, C1, and C2 from left to right. The tap lugs AT, BT, and CT extend out from the front face of the coil.

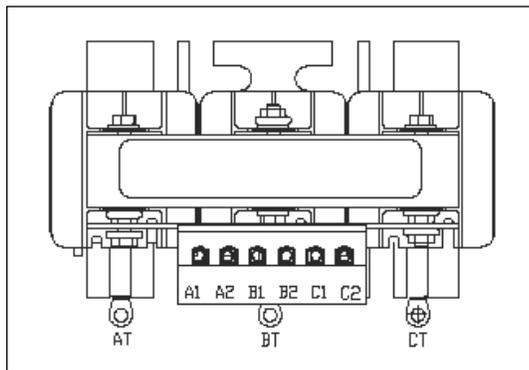


Figure 3 – Six Position Terminal Block

In line reactors where the current exceeds terminal block capability, ring lugs are used for all nine terminations. Note from drawing below, the tap connection is at the lower right side of the coil.

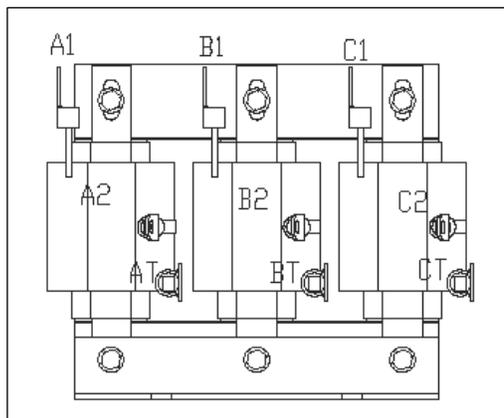


Figure 4 – Ring Lug Terminations

In larger line reactors, all nine terminals extend from the front of the reactor, and are constructed from copper bus bar terminals. Unless you are an expert on start and finish windings, consult the specific reactor drawing to be sure which terminal is which. In the example below, the tap winding is on the bottom of the coil.

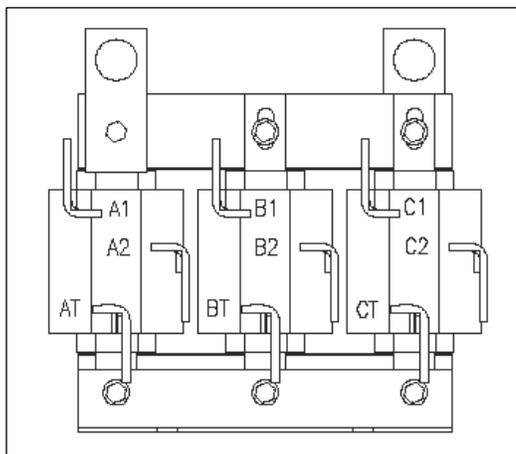


Figure 5 – Copper Flag Terminations

In the largest line reactors the tap connection is off a turn that projects out from the front of the reactor.

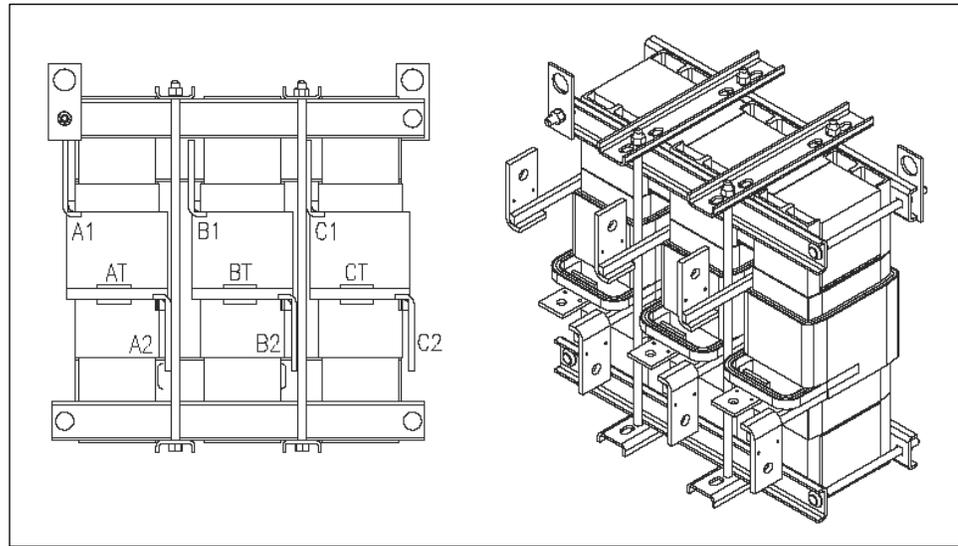


Figure 6 – In-Line Tap Termination

Tuning Reactor

The standard schematics above illustrate the normal configuration where the tuned circuit is connected to the line reactor tap. If high background voltage distortion is present, typically when the background voltage distortion exceeds 3% THD, the tuned circuit is connected to A2, B2, and C2 of the line reactor to improve harmonic performance under high background distortion conditions.

The tuning reactor supplied with the HGL kit has six terminals, A1, A2, B1, B2, C1, and C2. As long as a consistent three terminals are used, the A1, B1, and C1 tuned reactor terminals or A2, B2, and C2 tuned reactor terminals can be connected to the line reactor tap at AT, BT, and CT.

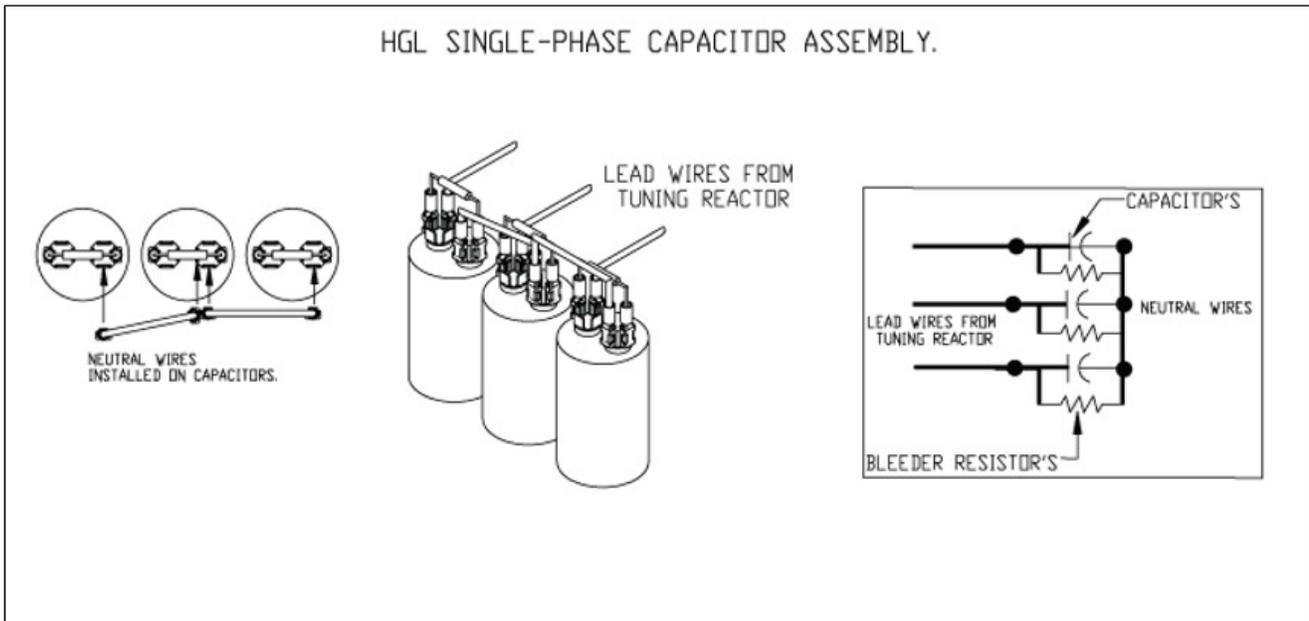
Tuned Circuit Capacitors

The capacitors supplied in the HGL kit are intended to be connected in parallel with each other. Typically these are three terminals, three-phase capacitors with the internal capacitive elements connected in delta. Each capacitor has bleeder resistors connected across the three input terminals to ensure voltage discharge in the time required by UL. Do not connect capacitors to power unless the bleeder resistors are connected, hazardous voltages will remain across the capacitors after the power has been disconnected.

As a check, the total kVAR of capacitors connected to the tuned reactor should match the part number of the trap reactor. For example, the kit for a 480 V/200 HP HGL contains three 10 kVAR capacitors for a total of 30 kVAR. These are wired in parallel to the tuning reactor, KTR30A65HL.

Some small HP kits are supplied with single-phase capacitors, which should be WYE connected.

Figure 7 –Bleeder Resistor Installation and Wiring for Single-Phase



Wiring for Single-Phase

Capacitor Brackets

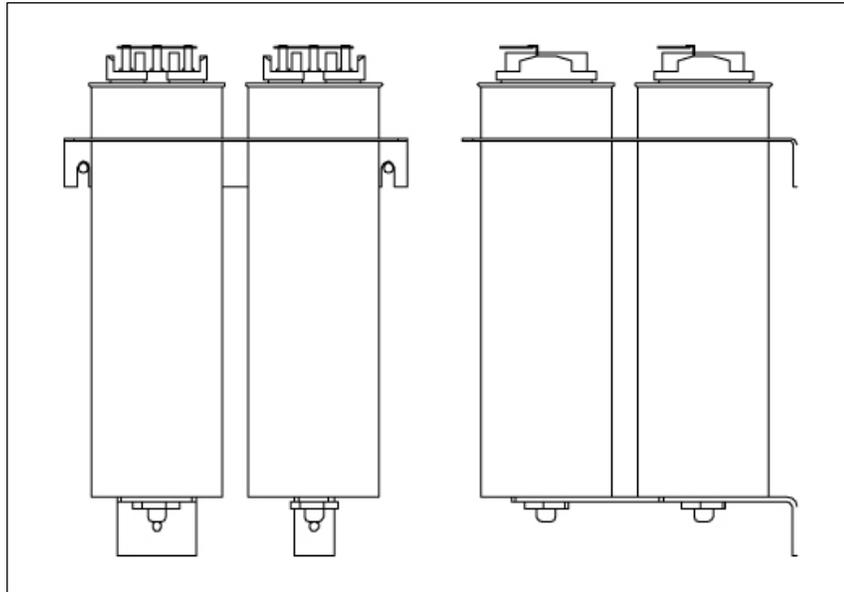


Figure 8 – Capacitors and Brackets

Capacitor brackets supplied with the HGL CP kits mount the capacitors from a right angle bracket using the studs on the bottom of the capacitors. The bracket surrounding the capacitors is mounted near the top of the capacitor can. Rubber grommet material is placed around the large diameter holes to prevent the edges of the bracket damaging the capacitor cans. This hole does not firmly clamp the capacitors, and is not intended to do so: such a design would prevent the internal capacitor pressure disconnection means from operating. This bracket prevents gross motion of the capacitors during shipping vibration, which could fracture the mounting bracket or allow the capacitors to hit other components.

Recommendations for CP/KP Kit Usage

Panel design using a TCI HGL Filter Kit should be performed with appropriate engineering supervision so the design meets the requirements based on materials utilized in the construction of the panel, wiring practices followed by your shop, and the actual ambient conditions of the components for each application.

Short Circuit Current Rating (SCCR)

If you need an SCCR greater than the default values of components, for example, 10 kA for terminal blocks or 5 kA for contactors, pay attention to component selection and circuit fusing. Contactors need to be protected by line or branch tuned circuit fusing based on their published SCCR.

TCI HGL CP/KP kits include reactors that are not required to have a short circuit current rating per UL 508A SB4.2.1 Exception 1.

See Table 2 for line fuse requirements to complete 100 kA SCCR. Larger kits include dry-type capacitors that are not required to have a short circuit current rating per UL 508A SB4.2.1 Exception 1. Small horsepower HGL kits (see Table 2) have a line fuse requirement in order to reduce incoming 100 kA short circuit current to 10 kA on the panel suitable for the oil filled capacitors used on these small horsepower ratings.

Table 2 – Customer Installed Line Fuse Requirements to Comply with 100kA SCCR

| Voltage | HP | Customer installed line fuse requirement for 100kA SCCR |
|---------|------|--|
| 600 | ≤ 40 | Use appropriately rated Class J, T, or L fuse less than or equal to 60 A |
| 600 | > 40 | No requirement for SCCR |
| 480 | ≤ 30 | Use appropriately rated Class J, T, or L fuse less than or equal to 60 A |
| 480 | > 30 | No requirement for SCCR |

KP capacitor kit KPCUL assemblies are listed UL 508 assemblies, and therefore do not carry an SCCR.

Customer or installer shall provide UL required overcurrent protection upstream of filter.

Wire Sizing

Wires need to be sized based on currents to be carried, wire insulation temperature rating, panel temperature rating, bundling of wires, and appropriate codes and standards. Wire sizes between the power source and the filter line reactor, as well as the line reactor and the drive input, are based rated filter line current. Wire size in the branch circuit is based on rated tuned circuit current. If the capacitor wiring is split into separate capacitor branches, the current each branch carries is proportional to the value of capacitance in each branch.

Table 3 – 480V, 60Hz, HGL

| HGL Rating (HP) | Tuned Circuit Current (A) | Line Current (A) |
|-----------------|---------------------------|------------------|
| 20 | 7.6 | 27 |
| 25 | 9.9 | 34 |
| 30 | 12.6 | 40 |
| 40 | 15.2 | 52 |
| 50 | 20.2 | 65 |
| 60 | 25.3 | 77 |
| 75 | 25.3 | 96 |
| 100 | 38.0 | 124 |
| 125 | 50.6 | 156 |
| 150 | 63.3 | 180 |
| 200 | 76.0 | 240 |
| 250 | 101 | 302 |
| 300 | 127 | 361 |
| 350 | 139 | 414 |
| 400 | 152 | 477 |
| 450 | 177 | 533.5 |
| 500 | 190 | 590 |
| 600 | 228 | 720 |
| 700 | 266 | 840 |
| 800 | 304 | 960 |
| 900 | 342 | 1080 |

Table 4 – 600V, 60Hz, HGL

| HGL Rating (HP) | Tuned Circuit Current (A) | Line Current (A) |
|-----------------|---------------------------|------------------|
| 20 | 6.2 | 22 |
| 25 | 8.2 | 27 |
| 30 | 10.1 | 32 |
| 40 | 12.1 | 41 |
| 50 | 16.7 | 52 |
| 60 | 20.1 | 62 |
| 75 | 30.0 | 77 |
| 100 | 30.0 | 99 |
| 125 | 40.1 | 125 |
| 150 | 50.1 | 144 |
| 200 | 60.0 | 192 |
| 250 | 80 | 242 |
| 300 | 100 | 289 |
| 350 | 110 | 336 |
| 400 | 120 | 382 |
| 450 | 140 | 412 |
| 500 | 150 | 472 |
| 600 | 181 | 576 |
| 700 | 211 | 672 |
| 800 | 241 | 768 |
| 900 | 271 | 864 |

Contactor (Optional Customer Supplied)

Panels may include contactors to remove the branch circuit from the filter under no load or light load conditions. Select contactors based on the UL general purpose rating of the intended contactors and the tuned circuit current from the tables above. The impedance of the line and tuning reactors removes the need for special capacitor rated contactors in this application. Additional current margin may be desirable based on application conditions.

Fuse (Optional Customer Supplied)

Panels may include fuses in the tuned circuit. These can be selected based on the tuned circuit current from the tables above. Depending upon the application requirements, fuses may be needed to support HIGH SCCR and fuse value/speed will also depend upon the application requirements.

Contact TCI Technical Support or visit transcoil.com/Support.htm for additional information.

Installation Guidelines

Installation Checklist

The following are the key points to be followed for a successful installation.

- Make sure that the installation location will not be exposed to direct sunlight, corrosive or combustible airborne contaminants, excessive dirt or liquids.
- Select a mounting area that will allow adequate cooling air and maintenance access.
- Make sure that all wiring conforms to the requirements of the National Electrical Code (NEC) and/or other applicable electrical codes.
- Connect the HGL equipment-grounding lug to the system ground of the premises wiring system. Use a properly sized grounding conductor.
- Connect three-phase power to the input terminals of the HGL, L1, L2, and L3.
- Connect the output power terminals of the HGL, T1, T2, and T3, to the input power terminals of the VFD.

Product Description

HGL CP Filter Kit

The HGL CP Filter Kit is a harmonic filter component package designed and developed by TCI to allow qualified customers to build harmonic filters to reduce the harmonic currents drawn from the power source by VFDs. The filter components are tuned to provide a low impedance path for the major harmonic currents demanded by the VFD when following the schematic connections used by TCI in the HGL filter. The HGL CP Filter Kit is available for 480 and 600 volt systems (60 Hz). When properly designed, assembled, and installed, the completed product is intended to be suitable for use with 3-phase diode bridge rectifier loads, such as PWM AC VFDs. Please contact TCI Technical Support about applying a HGL kit to a SCR or thyristor loads, such as a DC drive.

The HGL CP Filter Kit component package consists of the following components:

- ◆ A 3-phase KDR series line reactor.
- ◆ A TCI 3-phase tuning reactor specifically designed for the HGL filter.
- ◆ High-endurance, harmonic-rated capacitors.
- ◆ Bleeder resistors to ensure safe capacitor discharge upon filter shutdown, located on capacitors.
- ◆ Fasten terminals for wiring single-phase capacitors (select models).

NOTE: HGL CP Filter Kit Drawings can be found at

<http://transcoil.com/Products/HGL-HarmonicGuard-Low-Capacitance/HGL-CP-Drawings.htm>

HGL CP Kits Configuration Package P/N

| HGL 480V CP Kits | Part Number | HP | Watts Loss |
|------------------|-----------------|-------|------------|
| | HGL0020AW800000 | 20 | 230 |
| | HGL0025AW800000 | 25 | 420 |
| | HGL0030AW800000 | 30 | 330 |
| | HGL0040AW800000 | 40 | 445 |
| | HGL0050AW800000 | 50 | 515 |
| | HGL0060AW800000 | 60 | 580 |
| | HGL0075AW800000 | 75 | 575 |
| | HGL0100AW800000 | 100 | 755 |
| | HGL0125AW800000 | 125 | 865 |
| | HGL0150AW800000 | 150 | 1,045 |
| | HGL0200AW800000 | 200 | 905 |
| | HGL0250AW800000 | 250 | 1,210 |
| | HGL0300AW800000 | 300 | 1,445 |
| | HGL0350AW800000 | 350 | 1,405 |
| | HGL0400AW800000 | 400 | 1,540 |
| | HGL0450AW800000 | 450 | 1,835 |
| | HGL0500AW800000 | 500 | 2,045 |
| | HGL0600AW800000 | 600 | 1,980 |
| | HGL0700AW800000 | 700 | 2,215 |
| HGL0800AW800000 | 800 | 2,425 | |
| HGL0900AW800000 | 900 | 2,565 | |

| HGL 600V CP Kits | Part Number | HP | Watts Loss |
|------------------|-----------------|-------|------------|
| | HGL0020CW800000 | 20 | 335 |
| | HGL0025CW800000 | 25 | 305 |
| | HGL0030CW800000 | 30 | 290 |
| | HGL0040CW800000 | 40 | 340 |
| | HGL0050CW800000 | 50 | 510 |
| | HGL0060CW800000 | 60 | 600 |
| | HGL0075CW800000 | 75 | 730 |
| | HGL0100CW800000 | 100 | 735 |
| | HGL0125CW800000 | 125 | 915 |
| | HGL0150CW000000 | 150 | 1,175 |
| | HGL0200CW800000 | 200 | 970 |
| | HGL0250CW800000 | 250 | 1,300 |
| | HGL0300CW800000 | 300 | 1,445 |
| | HGL0350CW800000 | 350 | 1,760 |
| | HGL0400CW800000 | 400 | 1,560 |
| | HGL0450CW800000 | 450 | 2,070 |
| | HGL0500CW800000 | 500 | 1,975 |
| | HGL0600CW800000 | 600 | 2,025 |
| | HGL0700CW800000 | 700 | 2,330 |
| HGL0800CW800000 | 800 | 2,710 | |
| HGL0900CW800000 | 900 | 3,065 | |

HGL KP Filter Kit

The HGL KP Kit is a harmonic filter component package designed and developed by TCI to allow qualified customers to build harmonic filters to reduce the harmonic currents drawn from the power source by variable speed drives. The filter components are tuned to provide a low impedance path for the major harmonic currents demanded by the drive when following the schematic connections used by TCI in the HGL HarmonicGuard® filter.

The HGL KP Kit consists of the following components:

- A 3-phase KDR series line reactor.
- A TCI 3-phase tuning reactor specifically designed for the HGL filter.
- KPC panelized, high-endurance, harmonic-rated capacitors.
- Bleeder resistors to ensure safe capacitor discharge upon filter shutdown, located on capacitors.

When properly designed, assembled, and installed, the completed product is intended to be suitable for use with 3-phase diode bridge rectifier loads, such as PWM AC drives. SCR or thyristor loads, such as DC drives, would require a different filter configuration outside the scope of this product offering. Please contact TCI Technical Support for additional information.

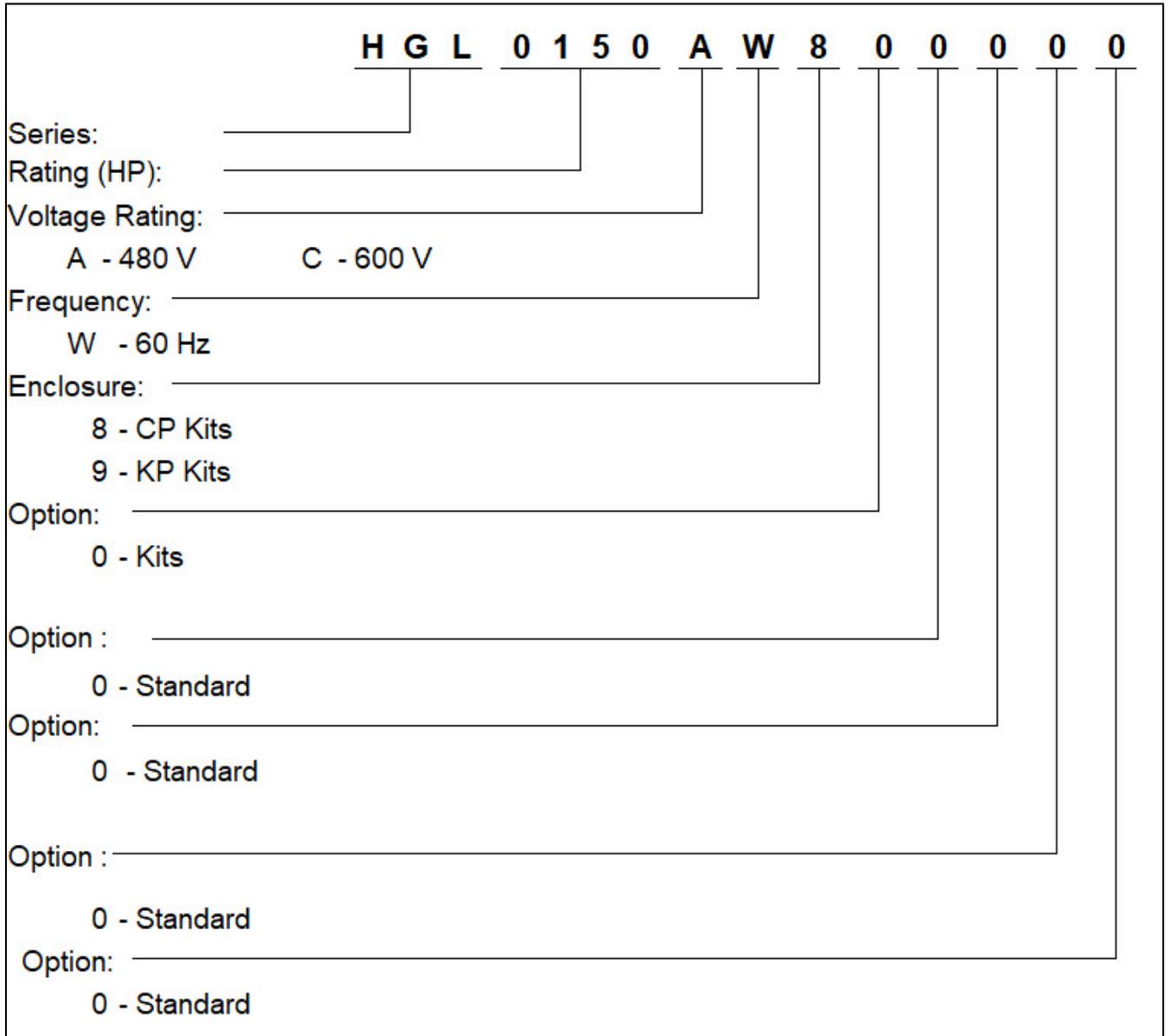
NOTE: HGL KP Filter Kit Drawings can be found at

<http://transcoil.com/Products/HGL-HarmonicGuard-Low-Capacitance/HGL-KP-Kit-Drawings.htm>

HGL KP Kits Configuration Package P/N

| HGL 480V KP Kits | Part Number | HP | Watts Loss | HGL 600V KP Kits | Part Number | HP | Watts Loss |
|------------------|-----------------|-------|-----------------|------------------|-----------------|----|------------|
| | HGL0020AW900000 | 20 | 230 | | HGL0020CW900000 | 20 | 335 |
| HGL0025AW900000 | 25 | 420 | HGL0025CW900000 | 25 | 305 | | |
| HGL0030AW900000 | 30 | 330 | HGL0030CW900000 | 30 | 290 | | |
| HGL0040AW900000 | 40 | 445 | HGL0040CW900000 | 40 | 340 | | |
| HGL0050AW900000 | 50 | 515 | HGL0050CW900000 | 50 | 510 | | |
| HGL0060AW900000 | 60 | 580 | HGL0060CW900000 | 60 | 600 | | |
| HGL0075AW900000 | 75 | 575 | HGL0075CW900000 | 75 | 730 | | |
| HGL0100AW900000 | 100 | 755 | HGL0100CW900000 | 100 | 735 | | |
| HGL0125AW900000 | 125 | 865 | HGL0125CW900000 | 125 | 915 | | |
| HGL0150AW900000 | 150 | 1,045 | HGL0150CW900000 | 150 | 1,175 | | |
| HGL0200AW900000 | 200 | 905 | HGL0200CW900000 | 200 | 970 | | |
| HGL0250AW900000 | 250 | 1,210 | HGL0250CW900000 | 250 | 1,300 | | |
| HGL0300AW900000 | 300 | 1,445 | HGL0300CW900000 | 300 | 1,445 | | |
| HGL0350AW900000 | 350 | 1,405 | HGL0350CW900000 | 350 | 1,760 | | |
| HGL0400AW900000 | 400 | 1,540 | HGL0400CW900000 | 400 | 1,560 | | |
| HGL0450AW900000 | 450 | 1,835 | HGL0450CW900000 | 450 | 2,070 | | |
| HGL0500AW900000 | 500 | 2,045 | HGL0500CW900000 | 500 | 1,975 | | |
| HGL0600AW900000 | 600 | 1,980 | HGL0600CW900000 | 600 | 2,025 | | |
| HGL0700AW900000 | 700 | 2,215 | HGL0700CW900000 | 700 | 2,330 | | |
| HGL0800AW900000 | 800 | 2,425 | HGL0800CW900000 | 800 | 2,710 | | |
| HGL0900AW900000 | 900 | 2,565 | HGL0900CW900000 | 900 | 3,065 | | |

HGL Kit Part Numbering System





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