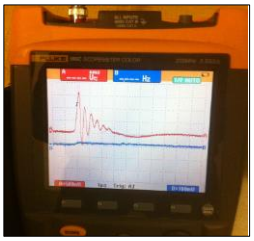
CoolBLUE® and NaLA®

A *MORE* Powerful Solution

Filter Design Guide for Motor Bearing and Stray Ground Currents

MH&W presents CoolBLUE® inductive absorbers, and NaLA® differential mode line absorbers for the highest reliability and longevity of your motor!

Variable frequency drive (VFD) systems create damaging motor bearing currents. If these currents aren't filtered or "choked" – bearing fluting, frosting, breakdown of lubrication, electrical discharge machining (EDM), and motor bearing failure will result. CoolBLUE® with NaLA® absorbs this damaging current before it gets to the motor.



High frequency noise generated by VFD

Fluting from CM Currents

What is a common mode choke?

A common mode choke is an inductor used to prevent unwanted high frequency electric signals, and energy, from being transmitted along undesired paths or into inappropriate parts of an electric circuit or system.

CoolBLUE® cores act as a common mode choke by absorbing the high frequency noise, so you can maximize equipment reliability, reduce maintenance costs, and avoid unscheduled downtime.

What is a differential mode line absorber?

NaLA® differential mode line absorbers further reduce the current and slow the high frequency down to even lower levels for the highest reliability of your system!

CoolBLUE® and NaLA® are easy to choose, with fast installation, in all VFD applications!

Product Features

- Common Mode Choke
- All VFD motor power ranges (AC, DC & Servo)
- Simple selection
- Easy and quick installation
- Lasts a lifetime
- No maintenance.

CoolBLUE® and NaLA® solutions are used in:

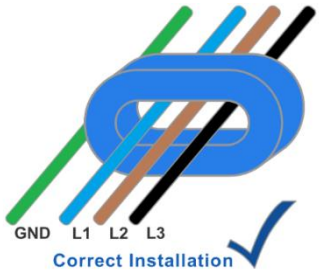
- OEM manufacturers of HVAC equipment
- All International VFD manufacturers
- Paper/bottling/food/chemical manufacturing
- Hospital, office, and commercial buildings
- Automotive manufacturing
- Electric vehicle (EV) applications
- All types of pumps and fans
- Wind, solar, and other renewable energies

No Maintenance…unlike motor shaft products subject to rust, dirt, grease, and worn grounding brushes.

The CoolBLUE® cores have already saved millions of **$$** in the world's industrial plants, hospitals, and office buildings by avoiding down time and equipment failures.

In order to achieve an effective reduction in destructive currents, four or more CoolBLUE® cores have to be placed in series over the line power cables at the inverter output. In this configuration, the cores operate as a common mode choke.

This method significantly increases the service life of the motor bearings and thus reduces maintenance costs and standstill periods.



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Rev.3.0

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CoolBlue®

VFD Application Guide - CoolBLUE® cores per horsepower and cable length

CoolBLUE® Round	Round Ver. N/A	Round Ver. N/A	Round Ver. N/A	***M-116***	***M-117***	Round Ver. N/A
CoolBLUE® Oval	***M-049***	***M-049***	***M-283***	***M-302***	***M-111***	***M-248***
Power Range (hp)	*1/4-10 (Use with NaLA®)	11-50 (Use with NaLA®)	51-100	101-428	429-1632	1632+
Cable Length	**# Cores**	**# Cores**	**# Cores**	**# Cores**	**# Cores**	**# Cores**
150ft/50m	2	4	4	4	4	4
300ft/100m	2	4	4	4	4	4
450ft/150m	2	4	6	6	6	6
900ft/300m	4	8	8	8	8	8

Note 1 – CoolBLUE normal operation is below 158°F/70°C. It is important to use the correct number of cores to avoid saturation.
***Note 2** – On motors up to **10hp**, two turns are needed through the cores (pass cable through cores twice).*
Note 3 – Data above is for information and guideline purposes. Please contact MH&W Engineering for detailed information.
Note 4 – Round and oval shaped cores are for ease of installation and mechanical functionality. Round and oval cores have same basic electrical absorption.
Note 5– Cores must be installed on the load side of the drive only. If possible, installing cores in a drive cabinet is preferred.
Note 6 – Do not place conductive wires through the cores for holding cores in place. MH&W offers brackets, and cable ties to hold cores in place.

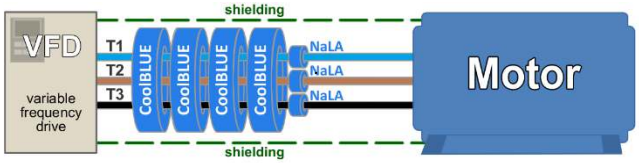
NaLA®

VFD Application Guide - NaLA® cores per horsepower and cable length

In applications where high reliability is needed, or 10hp motors and below, the use of NaLA® differential mode line absorber in conjunction with CoolBLUE® common mode choke cores is necessary. The use of NaLA® increases the reliability of these systems by further reducing the noise and peak values. These cores must be placed around each individual cable.

NaLA® Part number	***M-053***	***M-102***	***M-381***	***M-613***	***M-614***	***M-616***
Power Range (hp)	1/4-10	11-40	41-102	103-428	429-1631	over 1631
Cable Length	**# Cores**	**# Cores**	**# Cores**	**# Cores**	**# Cores**	**# Cores**
150ft/50m	2	1	1	1	1	1
300ft/100m	3	2	2	2	2	2
450ft/150m	4	3	3	3	3	3
900ft/300m	5	4	4	4	4	4

Note 1 – NaLA normal operation is below 158°F/70°C. It is important to use the correct number of cores to avoid the cores getting hot.
Note 2 – NaLA cores must go around each individual power cable. Not around all like CoolBLUE.).
Note 3 – Data in the application guide is for information and guideline purposes. Please contact MH&W Engineering for detailed information, if needed.
Note 4 – Cores must be installed on the load side of the drive only.
Note 5 – Do not place conductive wires through the cores for holding cores in place. This effectively bypasses the inductive properties of the cores. MH&W offers brackets, and cable ties to hold cores in place.



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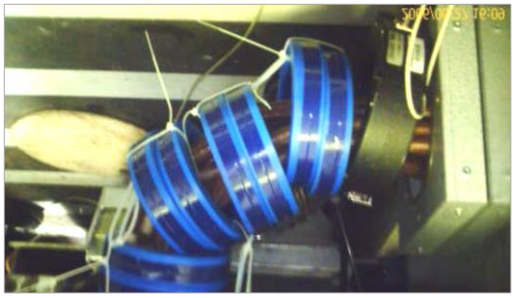
Installation Examples

High Voltage (HV)

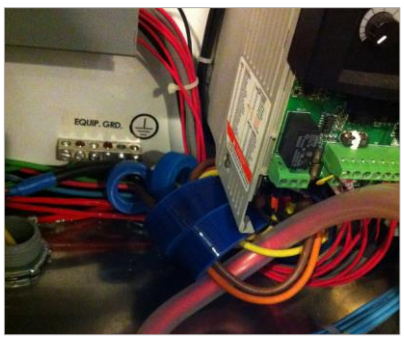
800hp



Flat Wire

Multiconductor

Typical VFD Drive Installations



Installation videos can be found at: www.coolblue-mhw.com/installation/

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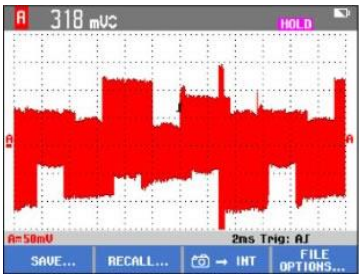
Testing is simplified with the MH&W DCM100 Damaging Current Meter.

DCM100 is comprised of an integrated oscilloscope, Rogowski coil, coil integrator, and Windows tablet. Software of the DCM100 has everything you need to diagnose your system for the exact CoolBLUE system solution.

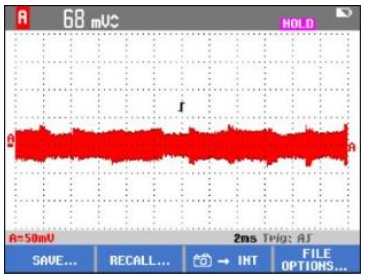
Other tools are available for test and evaluation. Certified engineers are available for onsite testing. Contact MH&W for more information.

Common mode current *(inverter output)*

Without CoolBLUE Core



With CoolBLUE Cores



Current OEM customers of CoolBLUE®

GRUNDFOS · Electrolux · Rockwell Automation · ABB · SIEMENS · BOSCH · Danfoss · SEW EURODRIVE · VACON®

For more information please call MH&W at *201-252-8125*
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