

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?

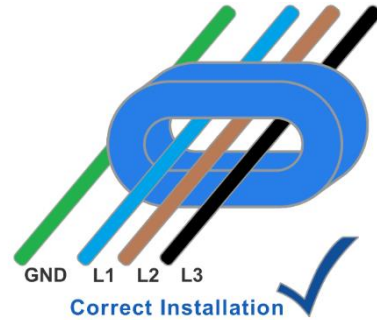
A common mode choke is an inductor that is used to prevent unwanted high frequency electric signals, and energy, from being transmitted along undesired paths or into inappropriate parts of an electric circuit or system.

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 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 power ranges in oval or round shape
- Simple selection
- Easy installation
- Lasts a lifetime
- No maintenance.

CoolBLUE® and NaLA® solutions are used in:

- OEM manufacturers of HVAC equipment
- All International VFD manufacturers
- Paper manufacturing
- Hospital, office, and commercial buildings
- Automotive manufacturing
- All types of pumps and fans
- Wind, solar, and other renewable energies

No Maintenance...unlike motor shaft products. Not subject to rust, dirt, grease, worn grounding brushes.

CoolBLUE® Cores have already saved millions of \$\$ in the world's industrial plants, wind turbines, hospitals, paper mills, silicon fabrication, and office buildings by avoiding down time and equipment failures.

In order to achieve an effective reduction in high frequency destructive currents, 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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CoolBlue®

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

| | | | | | | |
|-------------------------|-----------------------------|---------------------------|----------------|----------------|----------------|-------------------|
| CoolBLUE® Round | M-367 | M-367 | M-113 | 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®

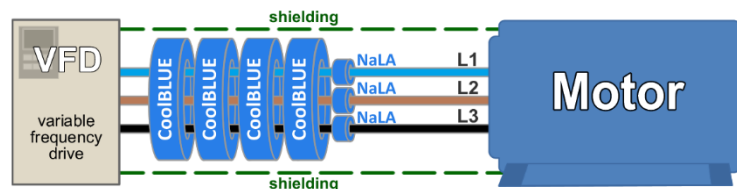
VFD Application Guide - NaLA® cores per horsepower and cable length

In applications where high reliability is needed, or 10hp motors and below, the use of NaLA® differential mode line absorber 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.

Below is a simple application chart to be used in conjunction with CoolBLUE® common mode choke cores.

| | | | | | | |
|--------------------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 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 |

It is important to use the correct number of cores to prevent the cores from getting too hot.



CoolBLUE[®] and NaLA[®]

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Installation Examples

Installation – High Voltage (HV)



More Installation Examples



NaLA CoolBLUE

Installation Example

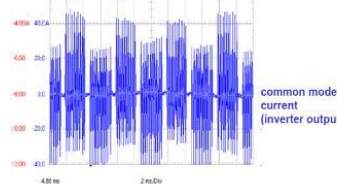


Installation Example – Flat Wire

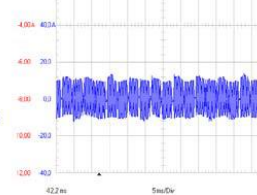


common mode current *(inverter output)*

Without CoolBLUE Cores



With CoolBLUE Cores



Current OEM customers of CoolBLUE[®]

GRUNDFOS

Electrolux

**Rockwell
Automation**

ABB

SIEMENS



BOSCH

Danfoss

**SEW
EURODRIVE**

VACON

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