

# CoolBLUE® & NALA®

## Product Overview

CoolBLUE® toroids made from the nanocrystalline material NANOPERM® are being used increasingly to reduce damaging motor bearing currents in modern high power inverter systems operating at high switching frequencies. As a result of these unwanted currents, the bearings corrugate, leading to electrical breakdown in the lubrication and finally to a standstill of the entire motor.

The use of CoolBLUE® cores not only significantly reduces the over voltage peaks at the motor terminals, but also suppresses the asymmetrical EMI currents which are generated by the parasitic capacities of the motor itself together with the motor cable. In order to achieve an efficient reduction in these destructive effects, one or more CoolBLUE® cores of suitable geometry have to be placed together over the connector cables in the DC-link as well as at the inverter output. In this configuration, the cores operate as a common-mode choke.



### Part Numbering For Individual Pieces

**CBO**   **43**   **HP**   **1/4-50**   **A4**  
 1            2            3            4            5

| NO. | DESCRIPTION                       | DETAILED CONTENT  |
|-----|-----------------------------------|---|
| 1   | Series                            | <b>CBO</b> - CoolBLUE Oval Shaped<br><b>CBR</b> - CoolBLUE Round Shaped |
| 2   | Internal Diameter (mm)            | --  |
| 3   | Horsepower                        | --  |
| 4   | 1/4-50 HP Rated VFD/Motor         | --  |
| 5   | Saturation Current Rating, 4 Amps | --  |

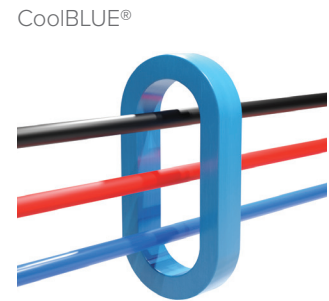
### Part Numbering For Kits

**OKIT**   **.0-1HP**   **150**  
 1            2            3

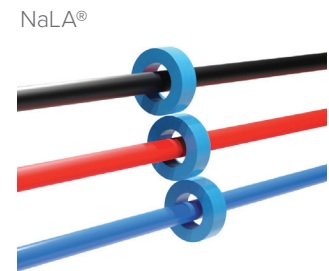
| NO. | DESCRIPTION                    | DETAILED CONTENT      |
|-----|--------------------------------|-----------------------|
| 1   | Oval Coolblue/ Nala Kit        | --                    |
| 2   | Application Horsepower Range   | --                    |
| 3   | Cable Length From VFD To Motor | Measured in Feet (FT) |

# CoolBLUE® & NaLA® Individual Piece Purchasing Data

| CoolBLUE®           |       |            | NUMBER OF CORES REQUIRED PER MOTOR |                   |            |            |            |
|---------------------|-------|------------|------------------------------------|-------------------|------------|------------|------------|
| PIECE MODEL #       | SHAPE | LIST PRICE | VFD HP RANGE                       | CABLE LENGTH (FT) |            |            |            |
|                     |       |            |                                    | 1-150 FT          | 151-300 FT | 301-450 FT | 451-900 FT |
| CBO43HP1/4-50A4     | OVAL  | \$ 95      | 1/4 to 10                          | 2                 | 4          | 6          | 8          |
| CBR37HP1/4-50A5     | ROUND | \$119      |                                    | 2                 | 4          | 6          | 8          |
| CBO43HP1/4-50A4     | OVAL  | \$ 95      | 11 to 50                           | 4                 | 4          | 6          | 8          |
| CBR37HP1/4-50A5     | ROUND | \$119      |                                    | 4                 | 4          | 6          | 8          |
| CBO68HP51-100A6     | OVAL  | \$ 260     | 51 to 100                          | 4                 | 4          | 6          | 8          |
| CBO155HP101-428A12  | OVAL  | \$ 745     | 101 to 428                         | 4                 | 4          | 6          | 8          |
| CBR166HP429-1631A16 | ROUND | \$ 1,666   | 429 to 1631                        | 4                 | 4          | 6          | 8          |
| CBO326HP1632+A23    | OVAL  | \$ 3,645   | 1632 and over                      | 4                 | 4          | 6          | 8          |



| NaLA®         |       |            | NUMBER OF CORES REQUIRED PER PHASE* |                   |            |            |            |
|---------------|-------|------------|-------------------------------------|-------------------|------------|------------|------------|
| PIECE MODEL # | SHAPE | LIST PRICE | VFD HP RANGE                        | CABLE LENGTH (FT) |            |            |            |
|               |       |            |                                     | 1-150 FT          | 151-300 FT | 301-450 FT | 451-900 FT |
| N18HP1/4-10   | ROUND | \$ 23      | 1/4 to 10                           | 2                 | 3          | 4          | 5          |
| N18HP11-40    | ROUND | \$ 51      | 11 to 40                            | 1                 | 2          | 3          | 4          |
| N29HP41-102   | ROUND | \$ 83      | 41 to 100                           | 1                 | 2          | 3          | 4          |
| N57HP103-428  | ROUND | \$ 295     | 101 to 428                          | 1                 | 2          | 3          | 4          |
| N75HP429-1631 | ROUND | \$ 833     | 429 to 1631                         | 1                 | 2          | 3          | 4          |
| N123HP1632+   | ROUND | \$ 1,458   | 1632 and over                       | 1                 | 2          | 3          | 4          |



\*Note that the NaLA pieces are installed per phase. To select the correct quantities **per motor**, you must multiply the numbers above by 3

# CoolBLUE® & NaLA® Kit Purchasing Data

Pre-packaged Kits with Detailed Installation Instructions, Accessories and Stickers.

| HP        | MOTOR CABLE LENGTH (FT) | KIT MODEL #        | DESCRIPTION                               | LIST PRICE |
|-----------|-------------------------|--------------------|---|------------|
| 0-1HP     | 0-150FT                 | OKIT.0-1HP-150     | COOLBLUE KIT 0-1HP 0-150FT OF CABLE       | \$236      |
|           | 151-300FT               | OKIT.0-1HP-300     | COOLBLUE KIT 0-1HP 151-300FT OF CABLE     | \$434      |
|           | 301-450FT               | OKIT.0-1HP-450     | COOLBLUE KIT 0-1HP 301-450FT OF CABLE     | \$509      |
|           | 451FT+                  | OKIT.0-1HP-451+    | COOLBLUE KIT 0-1HP 451FT+ OF CABLE        | \$584      |
| 1.1-10HP  | 0-150FT                 | OKIT1.1-10HP-150   | COOLBLUE KIT 1.1-10HP 0-150FT OF CABLE    | \$399      |
|           | 151-300FT               | OKIT1.1-10HP-300   | COOLBLUE KIT 1.1-10HP 151-300FT OF CABLE  | \$687      |
|           | 301-450FT               | OKIT1.1-10HP-450   | COOLBLUE KIT 1.1-10HP 301-450FT OF CABLE  | \$976      |
|           | 451FT+                  | OKIT1.1-10HP-451+  | COOLBLUE KIT 1.1-10HP 451FT+ OF CABLE     | \$1,193    |
| 11-40HP   | 0-150FT                 | OKIT11-40HP-150    | COOLBLUE KIT 11-40HP 0-150FT OF CABLE     | \$629      |
|           | 151-300FT               | OKIT11-40HP-300    | COOLBLUE KIT 11-40HP 151-300FT OF CABLE   | \$788      |
|           | 301-450FT               | OKIT11-40HP-450    | COOLBLUE KIT 11-40HP 301-450FT OF CABLE   | \$1,163    |
|           | 451FT+                  | OKIT11-40HP-451+   | COOLBLUE KIT 11-40HP 451FT+ OF CABLE      | \$1,538    |
| 41-50HP   | 0-150FT                 | OKIT41-50HP-150    | COOLBLUE KIT 41-50HP 0-150FT OF CABLE     | \$706      |
|           | 151-300FT               | OKIT41-50HP-300    | COOLBLUE KIT 41-50HP 151-300FT OF CABLE   | \$943      |
|           | 301-450FT               | OKIT41-50HP-450    | COOLBLUE KIT 41-50HP 301-450FT OF CABLE   | \$1,395    |
|           | 451FT+                  | OKIT41-50HP-451+   | COOLBLUE KIT 41-50HP 451FT+ OF CABLE      | \$1,847    |
| 51-100HP  | 0-150FT                 | OKIT51-100HP-150   | COOLBLUE KIT 51-100HP 0-150FT OF CABLE    | \$1,564    |
|           | 151-300FT               | OKIT51-100HP-300   | COOLBLUE KIT 51-100HP 151-300FT OF CABLE  | \$1,800    |
|           | 301-450FT               | OKIT51-100HP-450   | COOLBLUE KIT 51-100HP 301-450FT OF CABLE  | \$2,617    |
|           | 451FT+                  | OKIT51-100HP-451+  | COOLBLUE KIT 51-100HP 451FT+ OF CABLE     | \$3,435    |
| 101-428HP | 0-150FT                 | OKIT101-428HP-150  | COOLBLUE KIT 101-428HP 0-150FT OF CABLE   | \$4,097    |
|           | 151-300FT               | OKIT101-428HP-300  | COOLBLUE KIT 101-428HP 151-300FT OF CABLE | \$4,972    |
|           | 301-450FT               | OKIT101-428HP-450  | COOLBLUE KIT 101-428HP 301-450FT OF CABLE | \$7,375    |
|           | 451FT+                  | OKIT101-428HP-451+ | COOLBLUE KIT 101-428HP 451FT+ OF CABLE    | \$9,778    |

# Installation Guide



Follow workplace safety policies and procedures applicable to electrical testing, motor diagnosis, motor and electrical repair and any other hazardous potentials. Wear all applicable personal protective equipment required by the applicable law including protective eye glasses, safety shoes and hats if required.

Employees should be informed of the relevant safety rules and employers should enforce compliance. The manufacturer shall not be liable for any injury, loss or damage, direct or consequential arising out of the use, or attempt to use the product or procedures described in this guide.

## Installation Instructions

1. Choose appropriate kit per horsepower of VFD, and cable length.
2. Disconnect the three phases from the drive, carefully identifying the location of each power cable.
3. Place the appropriate type and amount of NaLA® cores around each individual power cable.
4. Place the appropriate type and amount of CoolBLUE® cores around ALL power cables, temp dot visible.
5. Reconnect the power cables appropriately.
6. Temperature dot on CoolBLUE® cores are for monitoring purposes only. If the dot turns black, contact MH&W Engineering.

## Correct Installation of CoolBlue® and NaLA® Cores

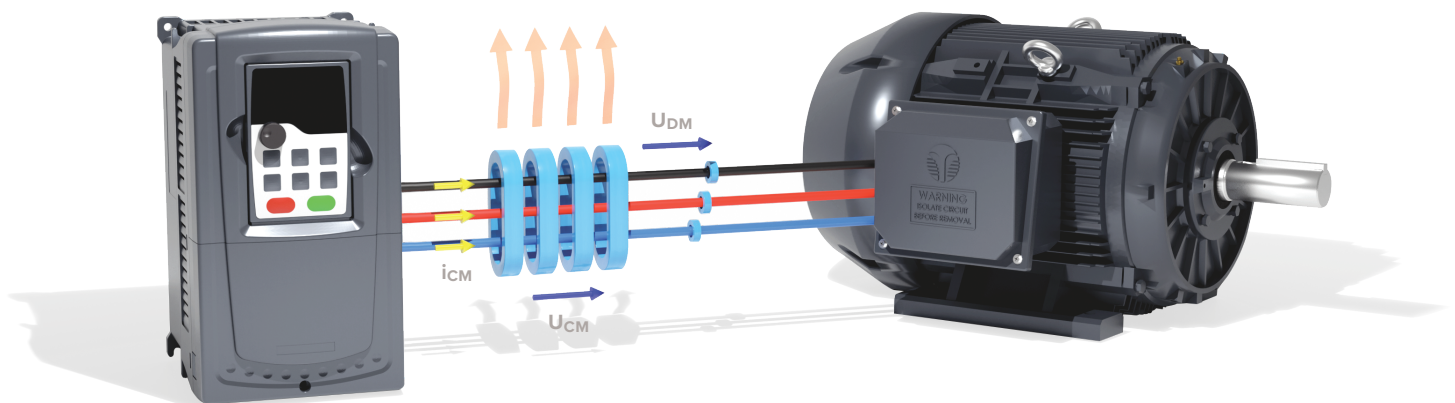
Cores must be installed as close to the VFD as possible, temp dot visible

3 power phases must go through CoolBlue® cores as shown below

No grounding wire or shielding through the cores

In the case of multiple conductors, all power conductors go through CoolBlue® cores

Each power cable must have at least one NaLA® core installed as shown below; even in cases of multiple conductors



**CoolBlue® and NaLA® kitted solutions are used in:**

- Electric vehicle (EV) applications
- Automotive manufacturing
- Agriculture OEM manufacturers of HVAC equipment
- Hospital/commercial/office buildings
- Chillers

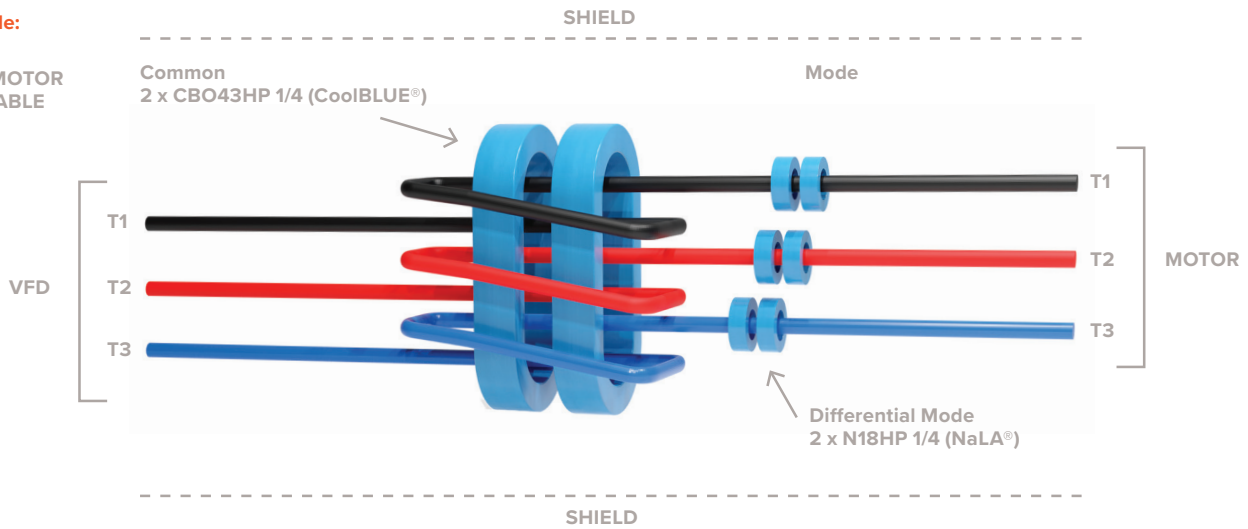
- All International VFD manufacturers
- Wind, solar, other renewable energies
- All types of pumps and fans
- Paper/bottling/food/chemical manufacturing

Applications 10HP and below must have power cables run through CoolBLUE® cores twice (two turns) in order to provide enough inductance to properly suppress common mode peak current. NaLA® is applicable in all applications and only requires one turn per core.

Below is a simple diagram showing two turns through CoolBLUE®, and one pass through NaLA® after CoolBLUE® cores.

**Example:**

10HP MOTOR  
100' CABLE



Because of the size and weight of CoolBLUE® cores, it may be necessary to clamp and mount the cores to the wall of the drive, or other area between drive and motor. This is on a per need basis. It is not required, but does make the system look more esthetic, and provides support for heavier cores. Available are special made brackets, with threaded rod, that can easily clamp and mount the cores to a structure, or customized plastic brackets.

Each kit comes with the appropriate size and amount of CoolBLUE® cores with thermal temp dot and NaLA® cores per horsepower of VFD, and length of power cable between drive and motor. ALL cores must be used according to kit. Kit also includes a set of cable ties.

Power down system according to all applicable guidelines. For safety, insure that all power is off before beginning to work on system.

