



# VLT® Common Mode Filters

High frequency common mode cores reduce electromagnetic interference and eliminate bearing damage by electrical discharge.



High-frequency common-mode (HF-CM) cores are special nanocrystalline magnetic cores which have superior filtering performance compared to regular ferrite cores. They act like a common-mode inductor (between phases and ground).

Installed around the three motor phases (U, V, W), they reduce high-frequency common-mode currents. As a result, high-frequency electromagnetic interference from the motor cable is reduced. However, the core kit should not be used as the sole mitigation measure, and even when the cores are used, the EMC installation rules shall be followed.

## Prevent motor bearing currents

The most important function is to reduce high-frequency currents associated with electrical discharges in the motor currents. These discharges contribute to the premature wear-out and failure of motor bearings. By reducing or even eliminating discharges, the wear-out of the bearings is reduced and the lifetime extended.

Thus, maintenance and down-time costs are lowered.

## Ideal for retrofitting

Bearing current problems are most often discovered after commissioning. Therefore, the cores have an oval shape which makes them ideal for retrofitting and for installation in restricted places.

Only 4 variants cover the entire VLT® product range making it possible to carry these valuable aids in a service tool kit.

## A flexible solution

The cores can be combined with other output filters, and especially in combination with dU/dt filters they offer a low cost solution for protection of both motor bearings and insulation.

## Product range

- Available for all power sizes from 0.18 kW to 1.4 MW
- 4 core sizes cover the entire VLT® power range

# Effective

kit to reduce

– electromagnetic interference

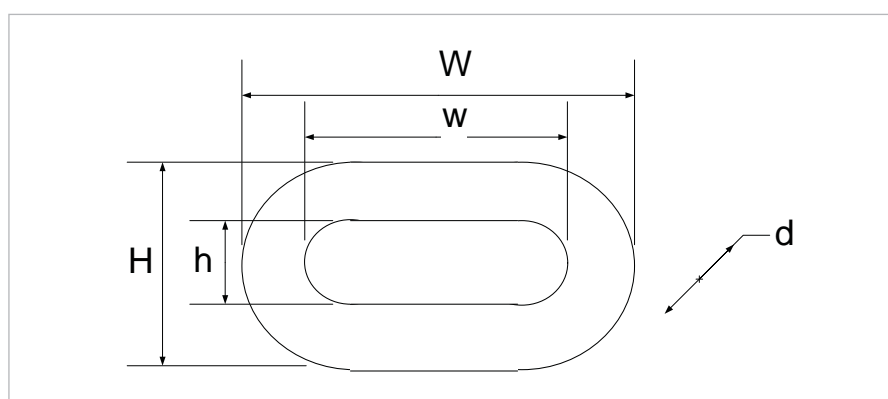
Feature	Benefit
– High-performance nanocrystalline magnetic material	<ul style="list-style-type: none"> <li>– Effective reduction of electrical discharges in the motor bearings</li> <li>– Reduces bearing wear-out, maintenance costs and down-time</li> <li>– Reduces high-frequency electromagnetic interference from the motor cable</li> </ul>
<ul style="list-style-type: none"> <li>– Oval shape</li> <li>– Scalable solution: longer cables handled by stacking more cores</li> </ul>	<ul style="list-style-type: none"> <li>– Easy to install in restricted places such as the VLT® enclosure or the motor terminal box</li> </ul>
– Only 4 core sizes cover the entire VLT® power range	<ul style="list-style-type: none"> <li>– Easy logistics, fast delivery and comprehensible product program</li> <li>– Allows the addition to a service tool-kit</li> </ul>
– Low investment	<ul style="list-style-type: none"> <li>– Cost-effective alternative to, for example, sine-wave filters if the only phenomena to be mitigated is bearing wear-out through electrical discharge</li> </ul>

## HF-CM selector

The cores can be installed at the frequency converter's output terminals (U, V, W) or in the motor terminal box. When installed at the frequency converter's terminals, the HF-CM kit reduces bearing stress and high-frequency electromagnetic interference from the motor cable. The number of cores depends on motor cable length and frequency converter voltage. A selection table is shown to the right.

Cable length [m]	A and B frame		C frame		D frame		E and F frame	
	T5	T7	T5	T7	T5	T7	T5	T7
50	2	4	2	2	2	4	2	2
100	4	4	2	4	4	4	2	4
150	4	6	4	4	4	4	4	4
300*	4	6	4	4	4	6	4	4

\* Longer cable lengths are easily handled by stacking more HF-CM cores.



## Ordering numbers and dimensions

Ordering numbers for the core kits (2 cores per package) are given in the table below.

VLT® Frame Size	Danfoss ordering number	Core dimension [mm]					Weight [kg]	Packaging dimension [mm]
		W	w	H	h	d		
A and B	130B3257	60	43	40	25	22.3	0.25	190 x 100 x 70
C	130B3258	102	69	61	28	37	1.6	190 x 100 x 70
D	130B3259	189	143	126	80	37	2.45	235 x 190 x 140
E and F	130B3260	305	249	147	95	37	4.55	290 x 260 x 110

## Installation

