

VLT® High Frequency Common Mode Cores eliminate motor bearing damage

Danfoss VLT® Drives introduces High Frequency Common Mode Core kits for reducing electromagnetic interference and elimination of motor bearing damage.

High-frequency common-mode (HF-CM) cores are special oval-shaped nano-crystalline magnetic cores. They act like a common-mode inductor between the 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.

The most important effect is the reduction of high-frequency currents associated with electrical discharges in the motor currents. These discharges contribute to the premature wear-out and failure of motor bearings. High-frequency common-mode (HF-CM) core kits are one of the mitigation measures to reduce bearing wear. However, they should not be used as the sole mitigation measure. Even when HF-CM cores are used, the correct EMC installation rules should be followed.

By reducing or even eliminating discharges, the wear on the bearings is reduced and the lifetime extended. Thus, maintenance and down-time costs are lowered.



No

electrical discharges

Eliminates potential wear-out and failure of motor bearings due to high-frequency currents

Easy installation

The cores have an oval shape for making the installation easier in restricted places: just pass the three motor phase leads (U, V, W) through the cores. Multiple cores can be stacked, depending on the application.

Only four variants cover the entire VLT® product range.

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 both bearing stress and high-frequency electromagnetic interference from the motor cable.

When installed in the motor terminal box, the HF-CM kit reduces only bearing stress and has no effect on the electromagnetic interference from the motor cable. Two cores are sufficient in most cases, independent of the motor cable length.

Common Mode Filters



High-frequency common-mode (HF-CM) core kits are one way to reduce bearing wear. They should not be used as the sole mitigation technique. The HF-CM cores work by reducing the high-frequency common-mode currents that are associated with the electric discharges in the bearing. The cores also reduce the high-frequency emissions from the motor cable which can be used in applications with unshielded motor cables.

Recommended Number of cores

Cable Length ft (m)	A and B Frame		C frame		D frame		E and F frame	
	T5	T7	T5	T7	T5	T7	T5	T7
165ft (50)	2	4	2	2	2	4	2	2
330ft (100)	4	4	2	4	4	4	2	4
500ft (150)	4	6	4	4	4	4	4	4
985 ft (300)	4	6	4	4	4	6	4	4

VLT Frame Size	Filter dimension (in)					Weight (kg)	Packaging Dimensions (in)	Part Number	List Price
	W	w	H	h	d				
A and B	2.36	1.69	1.57	0.98	0.87	0.25	5.12 x 3.94 x 2.76	130B3257	\$ 110
C	4.02	2.72	2.40	1.10	1.46	1.6	7.48 x 3.94 x 2.76	130B3258	\$ 460
D	7.44	5.63	4.96	3.15	1.46	2.45	9.25 x 7.48 x 5.51	130B3259	\$ 1,125
E and F	12.01	9.80	5.79	3.74	1.46	4.55	11.42 x 10.24 x 4.33	130B3260	\$ 1,825

