

Sine Wave Filter FN 5040, FN 5045, FN 5040 HV and customized FS- sine wave filter

## Mounting and Installation Guidelines

Sine wave filter series are for use with power conversion equipment only (e.g. AC drives).

Please read and follow the following mounting and installation notes.


### Filter placement

Lift the IP20-filter of series FN 5045 with appropriate crane using lifting eye bolts – smaller types may be lifted manually by two persons (no lifting eye bolt applicable).

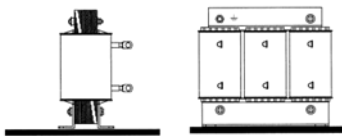
Never attempt to handle the filter with a fork lift!

Maximum Surrounding Air Temperature according the label of the filter.

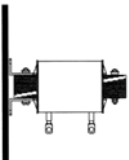
For Use in a Pollution Degree 2 and Overvoltage Category III environments only.

	<p>The sine wave filter or the inductance unit (with separate capacitor bank) shall in principle be mounted horizontally in order to respect a proper heat dissipation flow. To ensure an optimum ventilation and thermal radiation, it is recommended to leave enough space towards surrounding equipment, walls or components in all directions. A minimum free space below and above the filter of &gt;150 mm and &gt;50 mm aside is required. The separate capacitor bank can be mounted aside the inductance with a minimum air distance of 50 mm. Due to the heat dissipation of the inductance it is not recommended to mount the capacitor bank above or on top of the inductance.</p>
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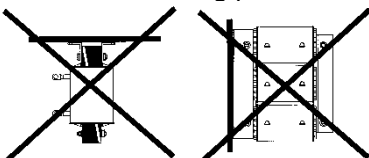
Recommended mounting positions:



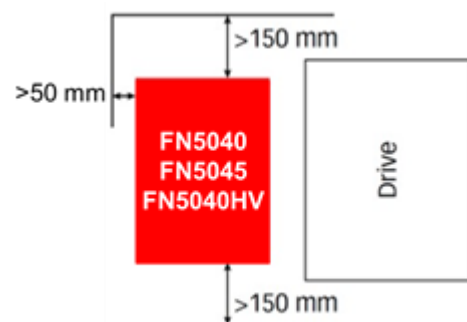
Permitted mounting positions:



Prohibited mounting positions:



FN5040, FN5045 and FN5040HV:



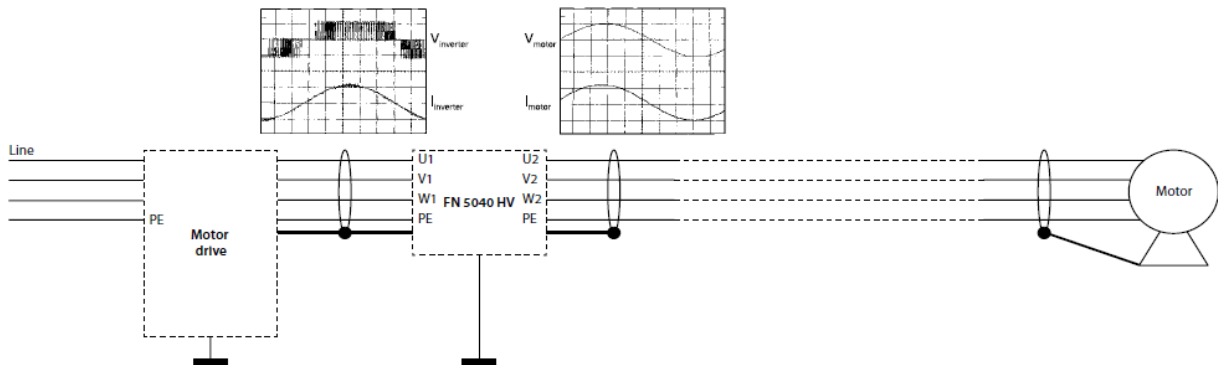
The pictures above show permitted and prohibited mounting positions. The mounting on a vertical plate (top left picture) is limited to IP00 products with a maximum weight of 25 kg or for IP20 products of FN 5045 series (far right picture) up to 115 A. Use all available mounting holes and select the correct screws and washers in order to ensure a reliable mounting and to do justice to the weight of these products. Apply torques appropriate for the strength class of the screws and washers you are using. Specifications can be obtained from the supplier of the screws and washers.

## Wiring and connections

The filter rating has to be compatible with the drive rating. All drives manufacturer installation and safety instructions must be fulfilled. The typical block schematic is shown for a motor load, but the load can be also multiple motors or a transformer. Drives and load cable selection/placement should be in accordance with all local electrical standards and regulations.

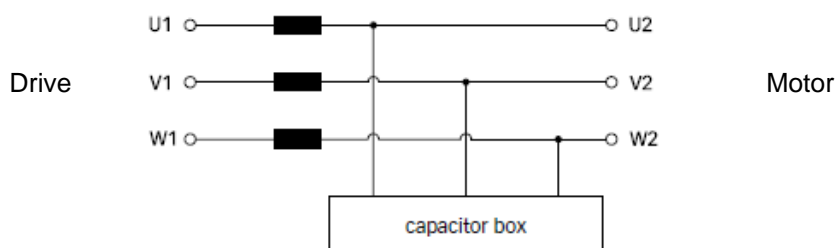
Use 75°C Copper Conductors only.

### Typical block schematic



In many applications a shielded motor cable may not be required when a sine wave filter is applied with a motor drive. Anyhow, due to other possible influences of common mode disturbances Schaffner does recommend to use shielded motor cables. This is to avoid back-coupling of radiated interferences to the mains cable at the frequency range from 1–30 MHz. This EMC measure however can only be considered to be efficient, if the ends of the cable shield of the motor cable are put in proper HF low-impedance contact with the ground of the motor and the frequency converter.

Sine wave filters with separate capacitor bank must be connected as follows:

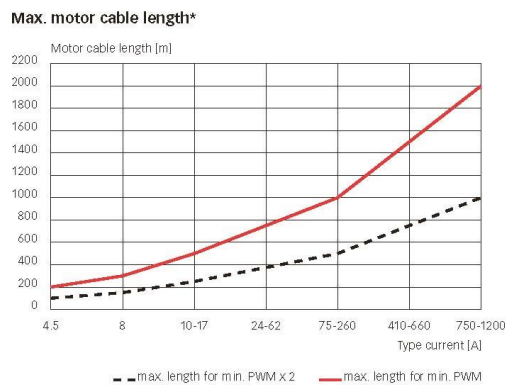


## Required Torque

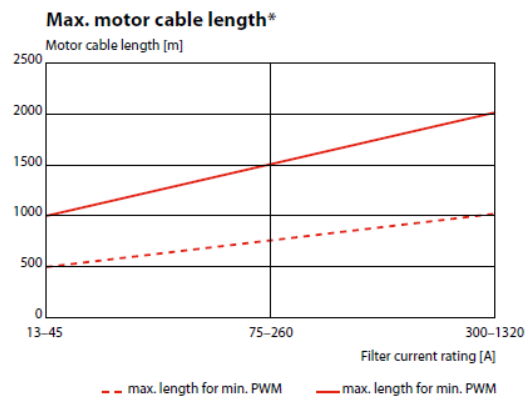
Terminals	Torque Nm (Pound inches)
33 / Safety terminal STB 10	1.5-1.8 (13.2-15.9)
34 / Safety terminal STB 25	4.0-4.5 (35.4-39.8)
35 / Safety terminal STB 50	7.0-8.0 (61.9-70.8)
44 / Safety terminal STB 6	1.0-1.2 (8.5-10.6)
82 / Transfomer TRK 2.5	0.5 (4.4)
83 / Transfomer TRK 4	1.8 (15.9)
84 / Transfomer TRKSD 10	1.5-1.8 (13.2-15.9)
85 / Transfomer UK 16	1.8 (15.9)
86 / Transfomer UK 35	3.7 (32.7)
87 / Transfomer UKH 50	8.0 (70.8)

Please respect following motor cable length and PWM switching frequency dependency:

### FN 5040 / FN 5045



### FN 5040 HV



\*In case a step-up transformer is used, then the length is meant to be between the filter and transformer.

## Required drives settings

Ensure the motor drive switching frequency is set to the required minimum switching frequency (see filter selection table). Higher frequencies are allowed. The mode of operation must be “scalar” (V/Hz). Check the drives manual whether special settings are necessary. For any questions please contact the drives manufacturer.



If the drives settings are not correct, the filter may be damaged!

Last update: JULY 2022