



# Three-Phase + Neutral Line Filters FN 3280

## High-end Three-phase and Neutral Line Filter for Industrial Machinery/Equipment

**SCHAFFNER**  
energy efficiency and reliability



- Now available up to 600A
- Compact, space-saving design, optimized for industrial machinery
- Combines exceptional attenuation with low leakage current
- Suitable for machines in mixed/domestic environments (Class A/B)
- Increases also the immunity if operated directly on the mains input

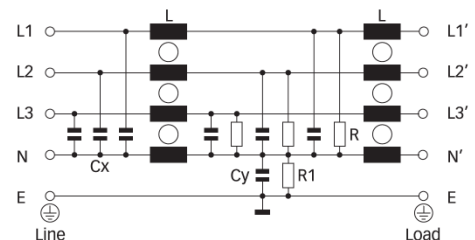
### Approvals



### Technical specifications

|                                             |                                                                                  |
|---------------------------------------------|----------------------------------------------------------------------------------|
| Design corresponding to :                   | UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939                                       |
| Flammability corresponding to:              | UL 94V-2 or better                                                               |
| High potential test voltage :               | P → E 2750VDC for 2 sec<br>P → P 2250VDC for 2 sec                               |
| Maximum continuous operating voltage :      | 3x 520/300VAC (480VAC + 10% possible)                                            |
| MTBF @ 50 °C/400V (Mil-HB-217F) :           | >360,000 hours                                                                   |
| Operating frequency:                        | dc to 60Hz                                                                       |
| Overload capability :                       | 4x rated current at switch on,<br>1.5x rated current for 1 minute, once per hour |
| Protection category :                       | IP20 (8 to 200A types)<br>IP00 (300 to 600A types)                               |
| Rated currents :                            | 8 to 600 A @ 50 °C                                                               |
| Temperature range (operation and storage) : | -25 °C to +100 °C (25/100/21)                                                    |

### Typical electrical schematic



### Features and benefits

- A compact and light weight filter design with a „cubic“ shape, requiring minimum mounting space and thus taking the constructional conditions on the mains input of machinery into account.
- Simple and time-saving installation with good accessibility for automatic and hand tools.
- Solid, touch-safe terminal blocks (8 to 200A types) offering sufficient contacting cross section according to the EN 60204-1 installation standard, which is very common in industrial applications.
- As a mains input filter for three phases and neutral line, FN 3280 provides enough performance to ensure EMC compliance of machinery in mixed (Class A) or even domestic (Class B) environments. Further, its use will also increase the immunity of the entire installation significantly.
- FN 3280 provides the attenuation performance needed to meet the requirements of various machine tools with up to 12 driving axes and ~10 to 20m of motor cable each.
- For easy selection and application, the filter current ratings are aligned with common fuse values.

### Typical applications

Mainly industrial equipment, machinery, machine tools and diverse process automation systems with three-phase and neutral electricity supply. Due to the outstanding attenuation performance, FN 3280 is also the first choice for noisy power supplies, renewable energy applications, highpower office equipment and further three-phase and neutral devices. Because of the relatively low leakage current, FN 3280 may even be used for some medical devices.

## Filter selection table

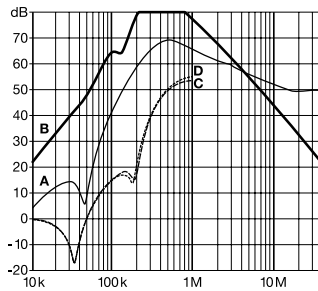
| Filter          | Rated current<br>@ 50°C (40°C) | Leakage current*<br>@ 480VAC/50Hz | Power loss<br>@ 25°C/50Hz | Input/Output<br>connections                                                         |                                                                                     | Weight |
|-----------------|--------------------------------|-----------------------------------|---------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------|
|                 | [A]                            | [mA]                              | [W]                       |  |  | [kg]   |
| FN 3280H-8-29   | 8 (8.8)                        | <1                                | 2.7                       | -29                                                                                 |                                                                                     | 0.8    |
| FN 3280H-16-29  | 16 (17.5)                      | <1                                | 6.0                       | -29                                                                                 |                                                                                     | 0.8    |
| FN 3280H-25-33  | 25 (27)                        | <1                                | 11.6                      | -33                                                                                 |                                                                                     | 1.3    |
| FN 3280H-36-33  | 36 (39)                        | <1                                | 14.8                      | -33                                                                                 |                                                                                     | 1.6    |
| FN 3280H-64-34  | 64 (70)                        | <1                                | 18.4                      | -34                                                                                 |                                                                                     | 2.7    |
| FN 3280H-80-35  | 80 (88)                        | <1                                | 18.9                      | -35                                                                                 |                                                                                     | 4.1    |
| FN 3280H-120-35 | 120 (131)                      | <1                                | 28.5                      | -35                                                                                 |                                                                                     | 5.9    |
| FN 3280H-160-40 | 160 (175)                      | <1                                | 30.7                      | -40                                                                                 |                                                                                     | 7.9    |
| FN 3280H-200-40 | 200 (219)                      | <1                                | 46.8                      | -40                                                                                 |                                                                                     | 8.5    |
| FN 3280H-300-99 | 300 (328)                      | <1                                | 20.3                      |                                                                                     | -99                                                                                 | 10.0   |
| FN 3280H-400-99 | 400 (438)                      | <1                                | 36.0                      |                                                                                     | -99                                                                                 | 10.0   |
| FN 3280H-600-99 | 600 (657)                      | <1                                | 64.8                      |                                                                                     | -99                                                                                 | 11.0   |

\* Maximum leakage under normal operating conditions, based on the assumption that all three phases and the neutral conductor are connected to the supply and the consumer. In this case, the current will mainly return through the neutral line, not as earth leakage.

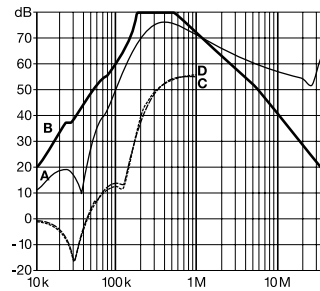
## Typical filter attenuation

Per CISPR 17; A = 50Ω/50Ω sym; B = 50Ω/50Ω asym; C = 0.1Ω/100Ω sym; D = 100Ω/0.1Ω sym

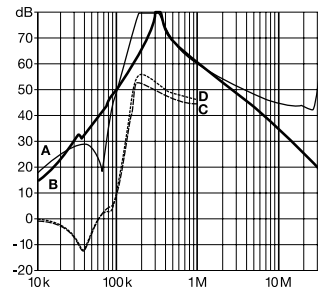
8 and 16A types



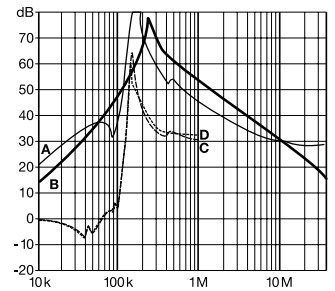
25 and 36A types



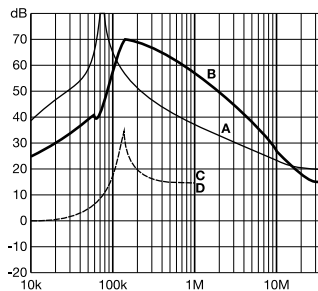
64 to 120A types



160 and 200A types

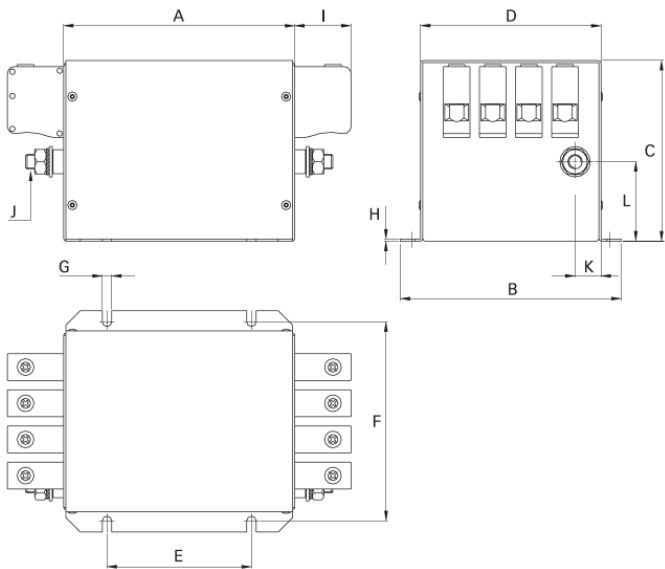


300 to 600A types

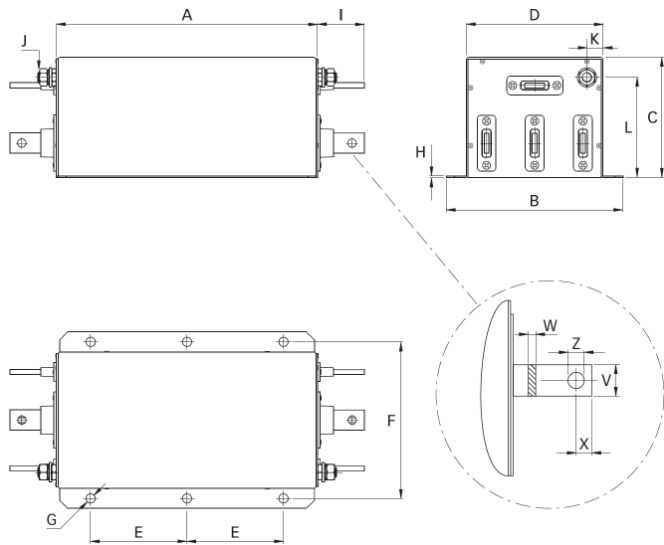


Mechanical data

8 to 200A types



300 to 600A types



Dimensions

|   | 8A    | 16A   | 25A   | 36A   | 64A   | 80A   | 120A  | 160A  | 200A  | 300A  | 400A  | 600A  |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| A | 120   | 120   | 130   | 130   | 160   | 230   | 250   | 280   | 280   | 325   | 325   | 325   |
| B | 143   | 143   | 153   | 153   | 153   | 163   | 170   | 170   | 170   | 220   | 220   | 220   |
| C | 80    | 80    | 115   | 115   | 125   | 125   | 140   | 170   | 170   | 150   | 150   | 150   |
| D | 115   | 115   | 125   | 125   | 125   | 135   | 140   | 140   | 140   | 170   | 170   | 170   |
| E | 80    | 80    | 90    | 90    | 100   | 120   | 200   | 230   | 230   | 120   | 120   | 120   |
| F | 127.5 | 127.5 | 137.5 | 137.5 | 137.5 | 147.5 | 153.5 | 153.5 | 153.5 | 195   | 195   | 195   |
| G | 6.5   | 6.5   | 6.5   | 6.5   | 6.5   | 6.5   | 6.5   | 6.5   | 6.5   | 12    | 12    | 12    |
| H | 1     | 1     | 1     | 1     | 1.5   | 1.5   | 1.5   | 1.5   | 1.5   | 2     | 2     | 2     |
| I | 10.9  | 10.9  | 25    | 25    | 39    | 45    | 45    | 51    | 51    | 58    | 58    | 58    |
| J | M6    | M6    | M6    | M6    | M10   | M10   | M10   | M10   | M10   | M12   | M12   | M12   |
| K | 12    | 12    | 12    | 12    | 18    | 18    | 17.5  | 17.5  | 17.5  | 20    | 20    | 20    |
| L | 33    | 33    | 50    | 50    | 55    | 45    | 55    | 55    | 55    | 125   | 125   | 125   |
| V |       |       |       |       |       |       |       |       |       | 25    | 25    | 25    |
| W |       |       |       |       |       |       |       |       |       | 6     | 6     | 8     |
| X |       |       |       |       |       |       |       |       |       | 15    | 15    | 15    |
| Z |       |       |       |       |       |       |       |       |       | Ø10.5 | Ø10.5 | Ø10.5 |

All dimensions in mm; 1 inch = 25.4mm  
Tolerances according: ISO 2768-m / EN 22768-m Please

Filter input/output connector cross sections

|                    | -29              | -33               | -34               | -35               | -40               |
|--------------------|------------------|-------------------|-------------------|-------------------|-------------------|
| Solid wire         | 6mm <sup>2</sup> | 16mm <sup>2</sup> | 35mm <sup>2</sup> | 50mm <sup>2</sup> | 95mm <sup>2</sup> |
| Flex wire          | 4mm <sup>2</sup> | 10mm <sup>2</sup> | 25mm <sup>2</sup> | 50mm <sup>2</sup> | 95mm <sup>2</sup> |
| AWG type wire      | AWG 10           | AWG 6             | AWG 2             | AWG 1/0           | AWG 4/0           |
| Recommended torque | 0.6 - 0.8Nm      | 1.5 - 1.8Nm       | 4.0 - 4.5Nm       | 7 - 8Nm           | 17 - 20Nm         |

Please visit [www.schaffner.com](http://www.schaffner.com) to find more details on filter connectors.

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