

### Versatile power entry module

- up to 10A current ratings
- IEC 950-compliant (twin fuse configurations only)
- general-purpose or high-performance filtering
- for one or two fuses (Ø5 x 20 or Ø6.3 x 32mm)
- Nennstrom bis 10A
- IEC 950 konform (nur Konfigurationen mit zwei Sicherungen)
- Universal- oder Hochleistungsfilterung
- Für eine oder zwei Sicherungen (Ø5 x 20mm oder Ø6,3 x 32mm)
- courants de service pouvant atteindre 10A
- conforme à CEI 950 (uniquement pour les configurations à deux fusibles)
- applications universelles ou de hautes performances
- pour un ou deux fusibles (Ø5 x 20mm ou Ø6,3 x 32mm)



#### Filter selection table

Choose the family FN xxx with the required body style and features, and add -?? to determine current rating, and /?? for output connections. Example: FN 394-1/05 is a vertical screw-mounting filter for twin fuses, rated for 1A, with fast-on outputs.

#### Approvals



Family	Current ratings A at 40°C (25°)				Output	Housing	For fuse(s) Nbr.
	1 (1.2)	2.5 (3)	6 (7.2)	10 (12)			
FN 393 -?? /??	-1	-2.5	-6	-	/05 - 11	✓	1
FN 394 -?? /??	-1	-2.5	-6	-	/05 - 11	✓	2

Inductance L mH			
7.5	2	0.45	-

Family	Current ratings A at 40°C (25°)				Output	Housing	For fuse(s) Nbr.
	1 (1.2)	2.5 (3)	6 (7.2)	10 (12)			
FN 1393 -?? /??	-1	-2.5	-6	-10	/05 - 11	✓	1
FN 1394 -?? /??	-1	-2.5	-6	-10	/05 - 11	✓	2

Inductance L mH			
16	8	2.5	0.6

#### Additional specifications

Filter type	Capacitance			Maximum leakage µA/phase	Res. R MΩ	Earth L <sub>E</sub> mH	Weight g	Maximum operating volt.		Operating frequency Hz	Hipot test voltage	
	C <sub>x</sub> nF	C <sub>x1</sub> nF	C <sub>y</sub> nF					VAC	Hz		PN→E VAC	P→N VDC
FN 393/394 types	220	-	3.3	290	1	-	200	250	50/60	50 to 400	2000	1700
FN 393E/394E types	220	-	3.3	290	1	0.4	205	250	50/60	50 to 400	2000	1700
FN 1393/1394 types	220	100	4.7	410	0.47	-	210	250	50/60	50 to 400	2000	1700

MTBF at 40°C, 230V, per Mil-HB-217F: 700,000 hours (FN 39X); 550,000 hours (FN 139X)

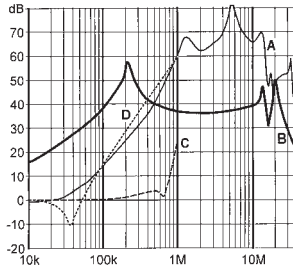
\*For medical versions, please contact your local sales office or representative.

E types are optional

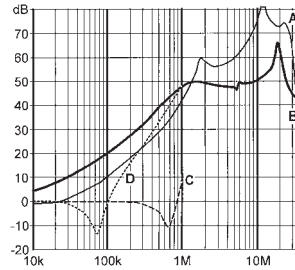
## FN 390 insertion loss

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

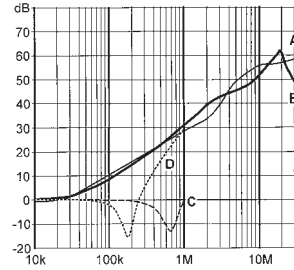
### 1 amp FN 39X types



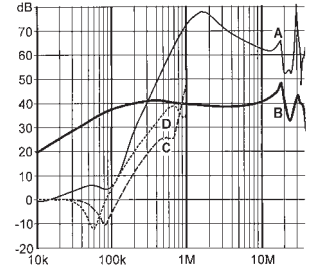
### 2.5 amp FN 39X types



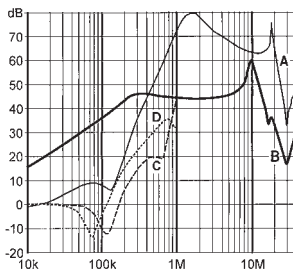
### 6 amp FN 39X types



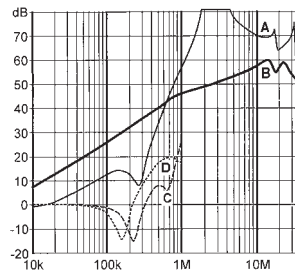
### 1 amp FN 139X types



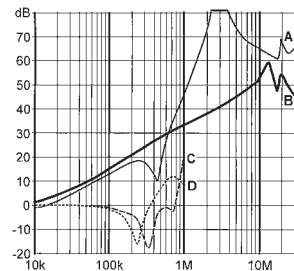
### 2.5 amp FN 139X types



### 6 amp FN 139X types

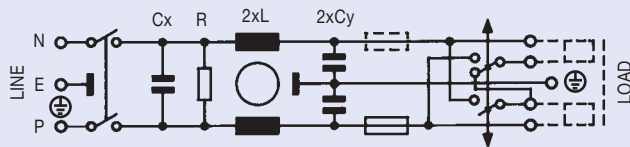


### 10 amp FN 139X types

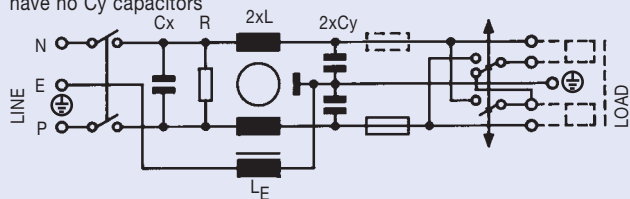


## Electrical schematics

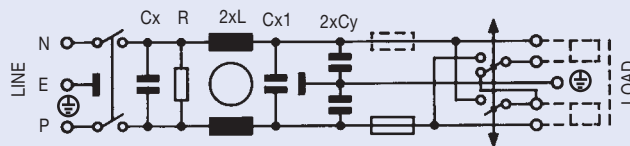
FN 393, FN 394 (have second fuse - shown dotted), medical\* types have no Cy capacitors



FN 393E, FN 394E (have second fuse - shown dotted), medical\* types have no Cy capacitors



FN 1393, FN 1394 (have second fuse - shown dotted), medical\* types have no Cy capacitors

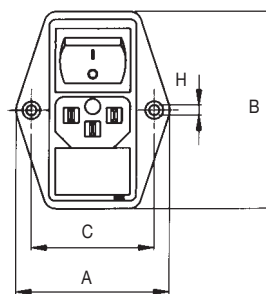


See tables for component values

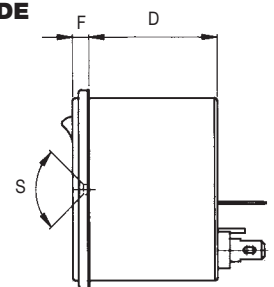
## Mechanical data

		Tol. mm
<b>A</b>	50	± 0.3
<b>B</b>	65	± 0.3
<b>C</b>	40	± 0.1
<b>D</b>	69.5	± 0.3
<b>F</b>	5.5	± 0.3
<b>H</b>	≤ 3.3	-
<b>M</b>	R ≤ 2.5	-
<b>N</b>	60.8	± 0.7
<b>P</b>	29.3	± 0.2
<b>R</b>	M3	-
<b>S</b>	90°	-

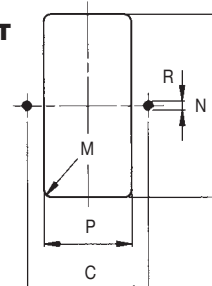
### FRONT



### SIDE

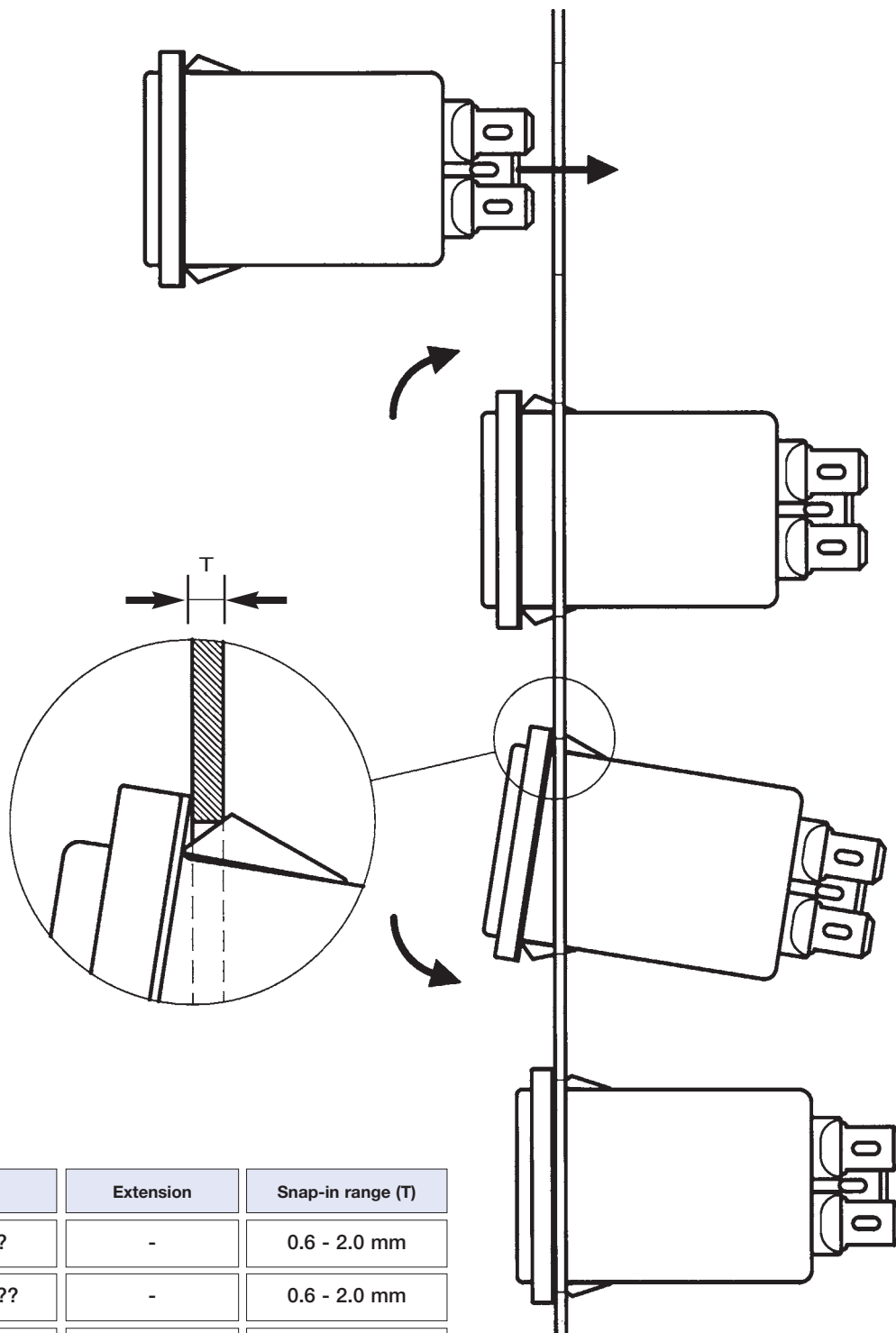


### PANEL CUT-OUT



All dimensions in mm; 1 inch = 25.4mm

## Installation instructions snap-in FN 9222S/FN 9222S1/FN 261S/FN 9260S

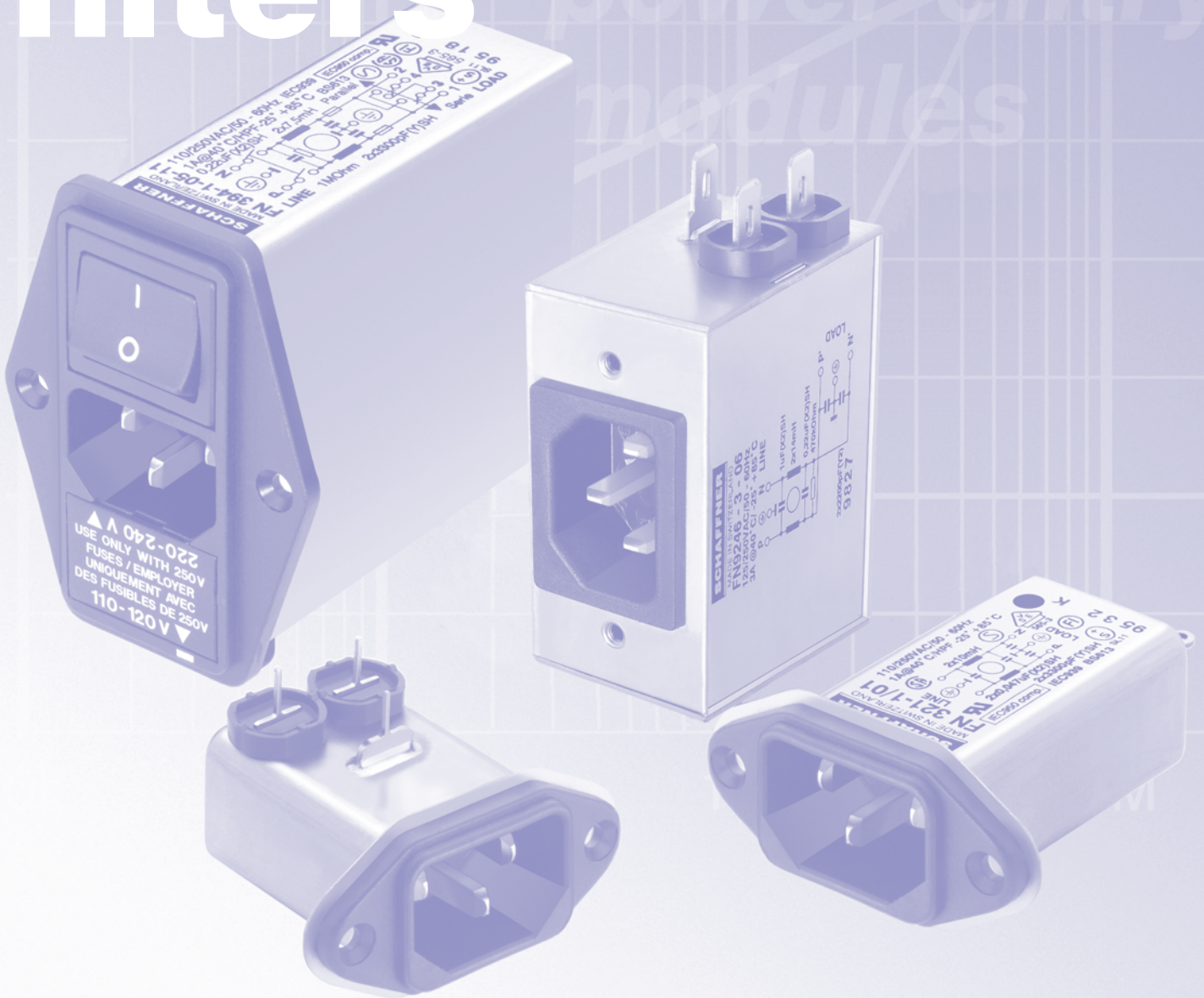


Filter type	Extension	Snap-in range (T)
FN 9222S-??/??	-	0.6 - 2.0 mm
FN 9222S1-??/??	-	0.6 - 2.0 mm
FN 261S-??/??	-10	0.6 - 1.5 mm
FN 9260S-??/??	-20	1.6 - 2.5 mm
	-30	2.6 - 3.5 mm

(This typical installation drawing refers to FN 9222S-types)

# IEC-inlet filters

power entry  
modules



# IEC-inlet filters

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# IEC-inlet filters

## Time-to-Market

The most important reasons for choosing a catalog product lies in the rapid availability and the associated safety acceptances. Filter circuits with discrete components at the mains input can, of course, be built but do not necessarily represent the best solution particularly in products with a compressed development cycle such as in the PC field.

Standard IEC connector filters are a practical single-source solution. Thanks to their compact dimensions and supplementary options they offer numerous advantages to the user.

The following summary provides a simple and rapid means for making a filter pre-selection. Detailed information concerning the individual filters is given on the subsequent pages. Variants having an earth choke are designated by the letter "E" (e.g. FN 393E) and filters for medical applications by the letter "B" (e.g. FN 385B).

## General technical information

### Insertion loss

The insertion loss characteristics of the filters are measured in accordance with the CISPR 17 standard. Two test conditions are specified in Section 4.2 of the CISPR 17 standard namely input and output impedances of 50/50K and 0.1/100K. In general, the IEC inlet filters perform the same in the face of differential interference as in the 50K insertion loss test. In order to show the performance under realistic conditions, Schaffner also shows the attenuation curves obtained from the 0.1/100K test which are more meaningful for common mode interference. The inductance of the chokes used in the filters can change under load because of a saturation effect which can also affect the insertion loss.

### Voltage ratings

The use of capacitors in accordance with IEC 384-14 means that Schaffner filters can be operated at voltages up to 10% over the nominal voltage rating.

### Leakage current

The figure quoted for the leakage current to ground indicates the maximum value per phase at 230V/50Hz.

## Switches

The switches used in the filters listed in this catalog have an in-rush current rating of up to 51A as defined in UL 1045, TV3.

## Flammability classification

All the filters in this catalog comply with the requirements of UL 94V2 or UL 94V0.

## Climatic classification

The filters made by Schaffner comply with the climatic classification 25/085/21 according to DIN IEC 68 Part 1 (ambient temperature -25°C to +85°C).

## Component tolerances

	-Tol.	+Tol.	Test
Inductance	30%	50%	1kHz
Capacitance	20%	20%	1kHz
Resistance	10%	10%	DC

## Current ratings

The nominal currents stated refer to an ambient temperature of 40°C. The maximum operating current at any other ambient temperature can be calculated by means of the following formula:

$$I = I_N \sqrt{M_{35} - \Delta/45}$$

## Schaffner filters with IEC inlets

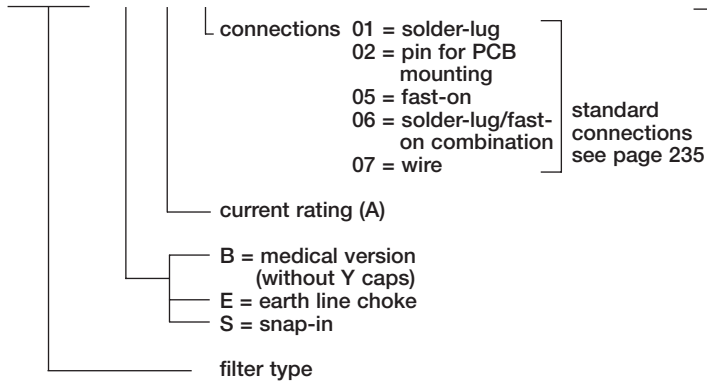
It is easy to determine which family of filters would be suitable for your particular application on the basis of the current range and insertion loss values together with the more important remarks shown at the right. Detailed technical information concerning each filter family can be found on the following pages.

Family	1 2 3 4 5 6 7 8 9 10 11 12 13 14														with earth line choke	for fuse(s)	with switch	with voltage selector	for switch mode power suppl.	for medical equipment	IEC 950-compliant	for PCB mounting	snap-in version	catalog page
	<div style="display: flex; justify-content: space-between;"> <div style="width: 100%; text-align: center;"> <p>█ Current rating [A]</p> <p>█ Insertion loss</p> </div> </div>																							
	<div style="display: flex; justify-content: space-between;"> <div style="width: 100%; text-align: center;"> <p>1 ← standard → ← medium → ← high → ← very high → 9</p> </div> </div>																							
FN 321	[Current rating: 1-10, Insertion loss: 7-11]																		✓	✓				64
FN 329	[Current rating: 1-6, Insertion loss: 8-9]														✓					✓				66
FN 9222	[Current rating: 1-14, Insertion loss: 7-11]																		✓	✓	✓	✓		68
FN 9226	[Current rating: 1-10, Insertion loss: 5-11]																			✓	✓	✓		72
FN 9246	[Current rating: 1-14, Insertion loss: 6-11]																		✓	✓	✓			74
FN 9260	[Current rating: 1-10, Insertion loss: 6-8]														✓					✓	✓		✓	78
FN 280	[Current rating: 1-10, Insertion loss: 6-9]														✓	✓				✓	✓		✓	82
FN 370	[Current rating: 2-6, Insertion loss: 4-6]														✓		✓			✓	✓		✓	84
FN 380	[Current rating: 2-6, Insertion loss: 4-6]														✓	✓				✓	✓		✓	87
FN 390	[Current rating: 2-6, Insertion loss: 6-9]														✓	✓	✓	✓		✓	✓			90
FN 1390	[Current rating: 1-10, Insertion loss: 7-11]														✓	✓	✓	✓		✓	✓			90

## Ordering information

FN 280, FN 321, FN 329,  
FN 9222, FN 9226, FN 9246, FN 9260

FN 9222 & - x / y

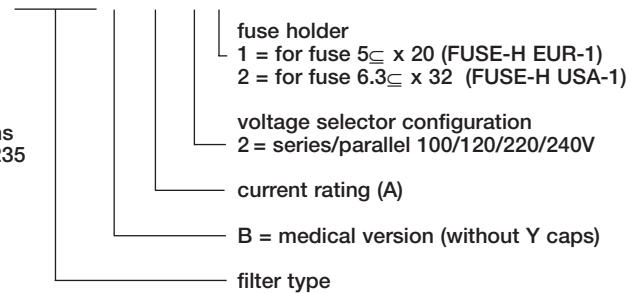


**Examples:**

- FN 282-2/06** Type FN 282; current rating 2A; connection solder-lug/fast-on
- FN 9222B-1/06** Type FN 9222; medical version; current rating 1 A; connection solder-lug/fast-on
- FN 9222-10/07** Type FN 9222; current rating 10A; connection wire

FN 370

FN 379 & - 2 / x y

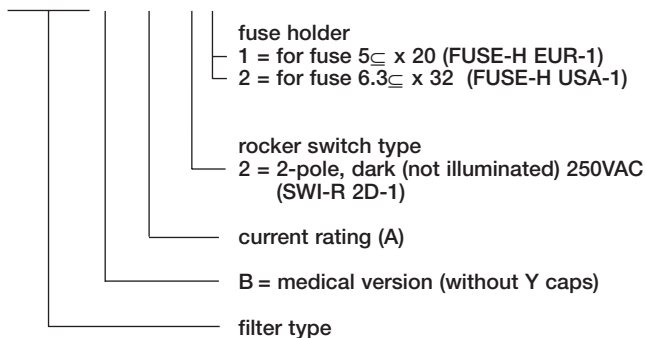


**Examples:**

- FN 370-6/22** Type FN 370; current rating 6A; voltage selector series/parallel; fuse 6.3 x 32
- FN 375B-4/21** Type FN 375; medical version; current rating 4A; voltage selector series/parallel; fuse 5 x 20

FN 380

FN 389 & - 6 / x y

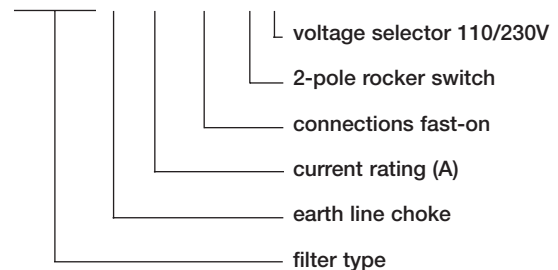


**Examples:**

- FN 380-2/22** Type FN 380; current rating 2A; 2-pole rocker switch; fuse 6.3 x 32
- FN 389B-6/21** Type FN 389; medical version; current rating 6A; 2-pole rocker switch; fuse 5 x 20

FN 390

FN 393 E - 1 - 05 / 1 1



**Example:**

- FN 394E-2.5-05/11** Type FN 394; with earth line choke; current rating 2.5A; connection fast-on; 2-pole rocker switch; voltage selector 110/230V