

## General Performance IEC Inlet Filter



- | Rated currents up to 20 A
- | Excellent performance/size ratio
- | Optional medical versions (B type) according to IEC/EN 60601-1
- | Snap-in versions (S and S1 type)
- | Hot inlet versions (HI type)
- | Optional overvoltage protection (Z type)



### Performance indicators

Attenuation performance



Rated current [A]



### Technical specifications

|                                                  |                                                                                                                                                                                                                                                    |
|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Maximum continuous operating voltage</b>      | 250 VAC, 50/60 Hz                                                                                                                                                                                                                                  |
| <b>Operating frequency</b>                       | dc to 400 Hz                                                                                                                                                                                                                                       |
| <b>Rated currents</b>                            | 1 to 20 A @ 50 °C                                                                                                                                                                                                                                  |
| <b>Approvals by rated current</b>                | 1 to 10 A (ENEC, CQC)<br>16 A (ENEC, CQC) for 16 and 20 A types<br>1 to 20 A (UL, CSA)                                                                                                                                                             |
| <b>High potential test voltage</b>               | P → PE 2000 VAC for 2 sec (standard types)<br>P → N 1100 VDC for 2 sec (16 and 20 A types, not Z types)<br>P → N 250 VAC for 2 sec (all Z types)<br>P → N 1000 VAC for 2 sec (1 to 10 A types, not Z types)<br>P → PE 2500 VAC for 2 sec (B types) |
| <b>Protection category</b>                       | IP40 according to IEC 60529                                                                                                                                                                                                                        |
| <b>Temperature range (operation and storage)</b> | -25 °C to +85 °C (25/85/21)                                                                                                                                                                                                                        |
| <b>Design corresponding to</b>                   | UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939 (X to XX A, not Z types)                                                                                                                                                                                |
| <b>Flammability corresponding to</b>             | UL 94 V-2 or better                                                                                                                                                                                                                                |
| <b>Surge pulse protection (optional)</b>         | 2 kV, IEC 61000-4-5                                                                                                                                                                                                                                |
| <b>MTBF @ 40°C/230V (Mil-HB-217F)</b>            | ≤15 A: 3,040,000 hours<br>≥16 A: 2,256,000 hours                                                                                                                                                                                                   |

### Approvals



### RoHS

(CQC except HI-types)

The FN 9222 IEC inlet filter combines an IEC inlet and mains filter with excellent filter attenuation in a small form factor. Choosing the FN 9222 product line brings you the rapid availability of a standard filter associated with the necessary safety acceptances. Standard IEC connector filters are a practical solution helping you to pass EMI system approval in a short time. A wide selection on amperage ratings, output connections, mounting possibilities and filters for medical applications are designed to offer you the desired solution.

### Features and benefits

- | Exceptional conducted attenuation performance, based on chokes with high saturation resistance and excellent thermal behavior
- | Rear/front or snap-in mounting
- | Wide mounting flanges available
- | Optional medical versions (B type) comply with the requirements of IEC/EN 60601-1 for creepage and clearance, leakage current and high potential testing
- | 12 and 15 A types with hot inlet available
- | Optional surge pulse protection
- | Different output connections offering maximum flexibility for assembly
- | Custom-specific versions are available on request

### Typical applications

- | Portable electrical and electronic equipment
- | Small to medium-sized machines and household equipment
- | Single-phase power supplies, switch-mode power supplies
- | Test and measurement equipment
- | Medical equipment
- | Rack mounting equipment

## Filter selection table

| Filter            | Rated current<br>@ 50 °C (25 °C) | Leakage current*<br>@ 250 VAC/50 Hz | Inductance<br>L | Capacitance |            | Resistance<br>R | Output connections                                                                  |                                                                                     | Weight |
|-------------------|----------------------------------|-------------------------------------|-----------------|-------------|------------|-----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------|
|                   | [A]                              | [μA]                                | [mH]            | Cx<br>[μF]  | Cy<br>[nF] | [kΩ]            |  |  | [g]    |
| FN 9222x-1-..     | 1 (1.2)                          | 373                                 | 12              | 0.1         | 2.2        |                 | -06                                                                                 | -07                                                                                 | 40     |
| FN 9222x-3-..     | 3 (3.5)                          | 373                                 | 2.5             | 0.1         | 2.2        |                 | -06                                                                                 | -07                                                                                 | 40     |
| FN 9222x-6-..     | 6 (7.2)                          | 373                                 | 0.78            | 0.1         | 2.2        |                 | -06                                                                                 | -07                                                                                 | 40     |
| FN 9222x-8-..     | 8 (10.6)                         | 373                                 | 0.5             | 0.1         | 2.2        |                 | -06                                                                                 | -07                                                                                 | 40     |
| FN 9222x-10-..    | 10 (11.6)                        | 373                                 | 0.225           | 0.1         | 2.2        |                 | -06                                                                                 | -07                                                                                 | 40     |
| FN 9222x-12-..    | 12 (12)                          | 373                                 | 0.11            | 0.1         | 2.2        |                 | -06                                                                                 | -07                                                                                 | 40     |
| FN 9222x-15-..    | 15 (15)                          | 373                                 | 0.075           | 0.1         | 2.2        |                 | -06                                                                                 | -07                                                                                 | 40     |
| FN 9222x-12-..HI  | 12 (12)                          | 373                                 | 0.11            | 0.1         | 2.2        |                 | -06                                                                                 | -07                                                                                 | 40     |
| FN 9222x-15-..HI  | 15 (15)                          | 373                                 | 0.075           | 0.1         | 2.2        |                 | -06                                                                                 | -07                                                                                 | 40     |
| FN 9222xR-1-..    | 1 (1.2)                          | 373                                 | 12              | 0.1         | 2.2        | 1000            | -06                                                                                 | -07                                                                                 | 40     |
| FN 9222xR-3-..    | 3 (3.5)                          | 373                                 | 2.5             | 0.1         | 2.2        | 1000            | -06                                                                                 | -07                                                                                 | 40     |
| FN 9222xR-6-..    | 6 (7.2)                          | 373                                 | 0.78            | 0.1         | 2.2        | 1000            | -06                                                                                 | -07                                                                                 | 40     |
| FN 9222xR-8-..    | 8 (10.6)                         | 373                                 | 0.5             | 0.1         | 2.2        | 1000            | -06                                                                                 | -07                                                                                 | 40     |
| FN 9222xR-10-..   | 10 (11.6)                        | 373                                 | 0.225           | 0.1         | 2.2        | 1000            | -06                                                                                 | -07                                                                                 | 40     |
| FN 9222xR-12-..   | 12 (12)                          | 373                                 | 0.11            | 0.1         | 2.2        | 1000            | -06                                                                                 | -07                                                                                 | 40     |
| FN 9222xR-15-..   | 15 (15)                          | 373                                 | 0.075           | 0.1         | 2.2        | 1000            | -06                                                                                 | -07                                                                                 | 40     |
| FN 9222R-16-06    | 16 (18.5)                        | 373                                 | 0.54            | 0.33        | 2.2        | 1000            | -06                                                                                 |                                                                                     | 100    |
| FN 9222R-20-06    | 20 (23)                          | 373                                 | 0.4             | 0.33        | 2.2        | 1000            | -06                                                                                 |                                                                                     | 100    |
| FN 9222xR-12-..HI | 12 (12)                          | 373                                 | 0.11            | 0.1         | 2.2        | 1000            | -06                                                                                 | -07                                                                                 | 40     |
| FN 9222xR-15-..HI | 15 (15)                          | 373                                 | 0.075           | 0.1         | 2.2        | 1000            | -06                                                                                 | -07                                                                                 | 40     |
| FN 9222xB-1-..    | 1 (1.2)                          | 2                                   | 12              | 0.1         |            | 1000            | -06                                                                                 | -07                                                                                 | 40     |
| FN 9222xB-3-..    | 3 (3.5)                          | 2                                   | 2.5             | 0.1         |            | 1000            | -06                                                                                 | -07                                                                                 | 40     |
| FN 9222xB-6-..    | 6 (7.2)                          | 2                                   | 0.78            | 0.1         |            | 1000            | -06                                                                                 | -07                                                                                 | 40     |
| FN 9222xB-8-..    | 8 (10.6)                         | 2                                   | 0.5             | 0.1         |            | 1000            | -06                                                                                 | -07                                                                                 | 40     |
| FN 9222xB-10-..   | 10 (11.6)                        | 2                                   | 0.225           | 0.1         |            | 1000            | -06                                                                                 | -07                                                                                 | 40     |
| FN 9222xB-12-..   | 12 (12)                          | 2                                   | 0.11            | 0.1         |            | 1000            | -06                                                                                 | -07                                                                                 | 40     |
| FN 9222xB-15-..   | 15 (15)                          | 2                                   | 0.075           | 0.1         |            | 1000            | -06                                                                                 | -07                                                                                 | 40     |
| FN 9222RB-16-06   | 16 (18.5)                        | 2                                   | 0.54            | 0.33        |            | 1000            | -06                                                                                 |                                                                                     | 100    |
| FN 9222RB-20-06   | 20 (23)                          | 2                                   | 0.4             | 0.33        |            | 1000            | -06                                                                                 |                                                                                     | 100    |
| FN 9222xB-12-..HI | 12 (12)                          | 2                                   | 0.11            | 0.1         |            | 1000            | -06                                                                                 | -07                                                                                 | 40     |
| FN 9222xB-15-..HI | 15 (15)                          | 2                                   | 0.075           | 0.1         |            | 1000            | -06                                                                                 | -07                                                                                 | 40     |
| FN 9222UZ-1-06    | 1 (1.2)                          | 373                                 | 12              | 0.1         | 2.2        |                 | -06                                                                                 |                                                                                     | 43     |
| FN 9222UZ-3-06    | 3 (3.5)                          | 373                                 | 2.5             | 0.1         | 2.2        |                 | -06                                                                                 |                                                                                     | 43     |
| FN 9222UZ-6-06    | 6 (7.2)                          | 373                                 | 0.78            | 0.1         | 2.2        |                 | -06                                                                                 |                                                                                     | 43     |
| FN 9222UZ-8-06    | 8 (10.6)                         | 373                                 | 0.5             | 0.1         | 2.2        |                 | -06                                                                                 |                                                                                     | 43     |
| FN 9222UZ-10-06   | 10 (11.6)                        | 373                                 | 0.225           | 0.1         | 2.2        |                 | -06                                                                                 |                                                                                     | 43     |
| FN 9222UZ-12-06   | 12 (12)                          | 373                                 | 0.11            | 0.1         | 2.2        |                 | -06                                                                                 |                                                                                     | 43     |
| FN 9222UZ-15-06   | 15 (15)                          | 373                                 | 0.075           | 0.1         | 2.2        |                 | -06                                                                                 |                                                                                     | 43     |

\* Maximum leakage under normal operating conditions. Note: if the neutral line is interrupted, worst case leakage could reach twice this level.

## Product selector

FN 9222xx-yy-..HI-zz

Snap-in range for S version only

Blank: Snap-in range 0.7 to 1.5mm

20: Snap-in range 1.5 to 2.2mm

Blank: Standard IEC inlet type C14 (1 to 15A types), C20 (16 and 20A types)

HI: Hot IEC inlet type C16 (12 and 15A types only)

06: Faston 6.3 x 0.8mm (spade/soldering)

07: Wire leads

1 to 20: Rated current

Blank: Standard version

R: Bleed resistor

B: Medical version (with bleed resistor and without Y2-capacitor)

Z: Optional surge pulse protection with additional varistor (MOV)

(Z types have longer housings, only available for FN 9222UZ-yy-06)

Blank: Standard housing with mounting flanges

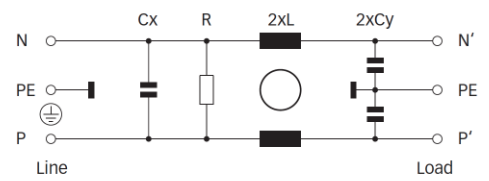
U: Housing with wider mounting flanges

S: Snap-in version, snapper on vertical side (1 to 15A types only)

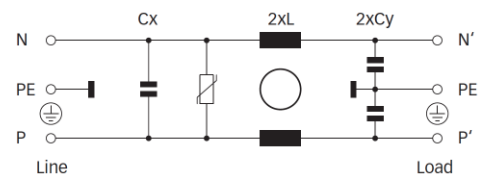
S1: Snap-in version, snapper on horizontal side (1 to 15A types only)

## Typical electrical schematic

## Standard, R and B types



## Z types

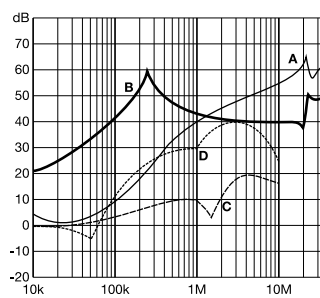


For example: FN 9222E-15-06, FN 9222ES1B-10-06-20, FN 9222ER-12-06HI, FN 9222EUB-8-06-20

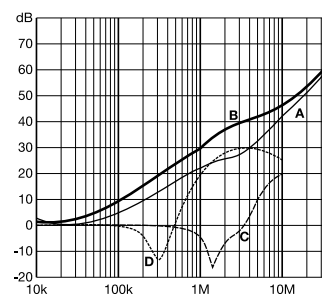
## Typical filter attenuation

Per CISPR 17; A = 50  $\Omega$ /50  $\Omega$  sym; B = 50  $\Omega$ /50  $\Omega$  asym; C = 0.1  $\Omega$ /100  $\Omega$  sym; D = 100  $\Omega$ /0.1  $\Omega$  sym

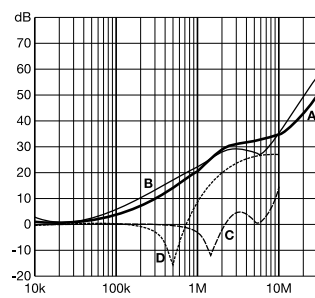
1 and 3 A types



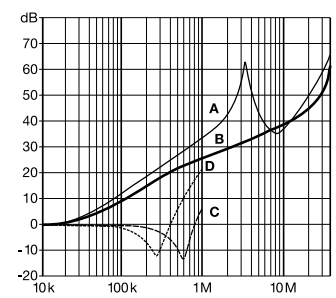
6 to 10 A types



12 and 15A types

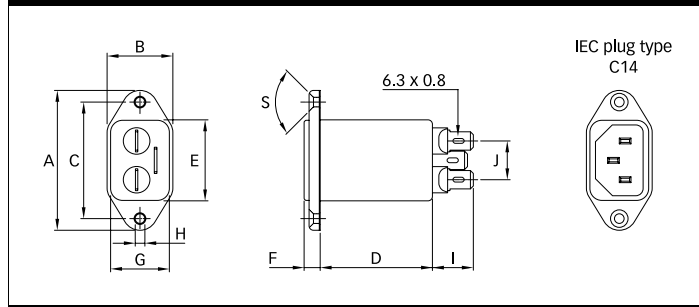


16 and 20 A types

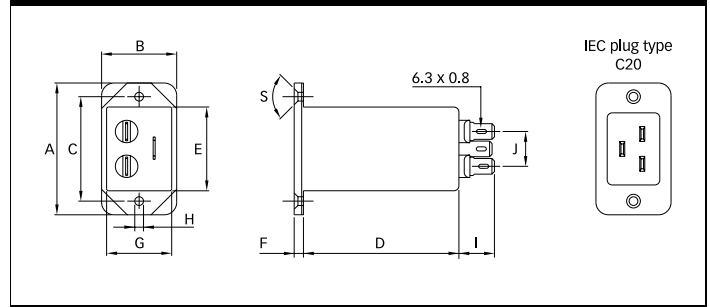


## Mechanical data

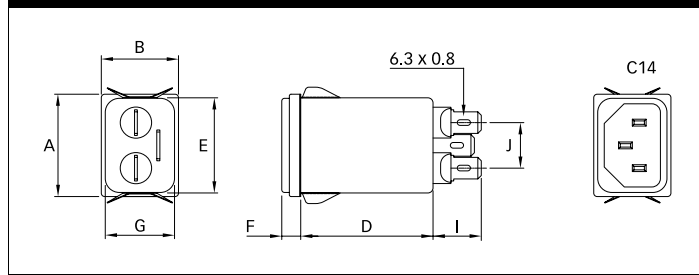
FN 9222 1 to 15 A types



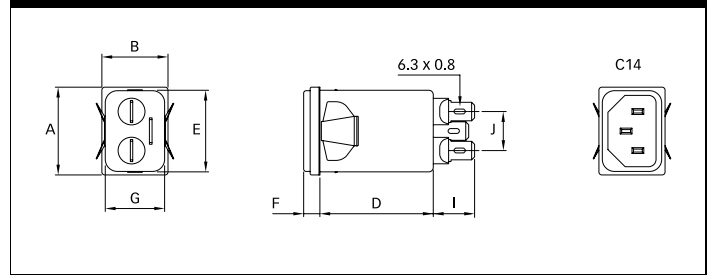
FN 9222, 16 and 20 A types



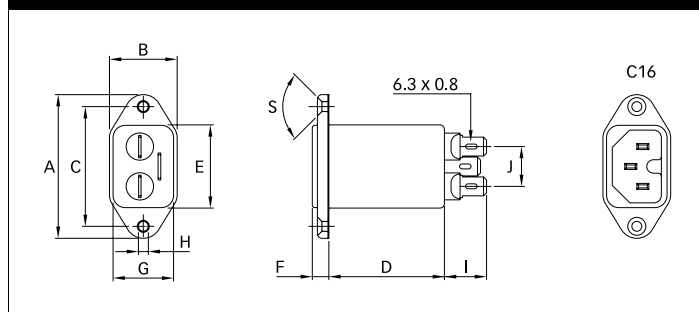
FN 9222S



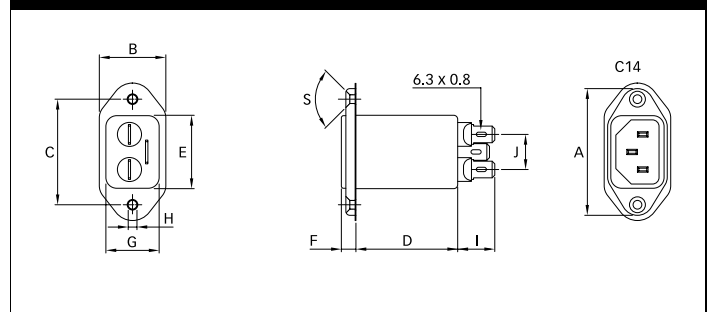
FN 9222S1



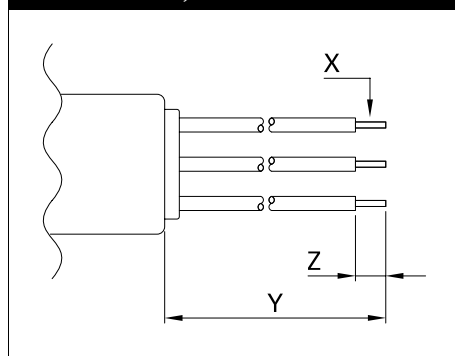
FN 9222-HI



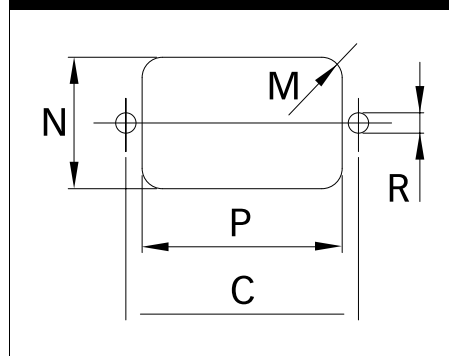
FN 9222 U



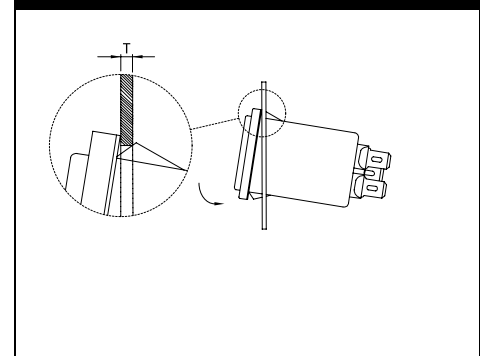
-07 connection style



Panel cut out



Installation



## Dimensions

|           | <b>FN 9222<br/>1 to 8 A</b> | <b>10 to 15 A</b> | <b>16 and 20 A</b> | <b>FN 9222U</b> | <b>FN 9222UZ</b> | <b>FN 9222S<br/>1 to 8 A</b> | <b>10 to 15 A</b> | <b>FN 9222S1<br/>1 to 8 A</b> | <b>10 to 15 A</b> | <b>FN 9222-HI<br/>12 and 15 A</b> |
|-----------|-----------------------------|-------------------|--------------------|-----------------|------------------|------------------------------|-------------------|-------------------------------|-------------------|-----------------------------------|
| <b>A</b>  | 48                          | 48                | 53                 | 51.85           | 51.85            | 29.9                         | 29.9              | 29.9                          | 29.9              | 48                                |
| <b>B</b>  | 22.5                        | 22.5              | 30                 | 25              | 25               | 22.4                         | 22.4              | 22.4                          | 22.4              | 22.5                              |
| <b>C</b>  | 40 ±0.2                     | 40 ±0.2           | 42 ±0.2            | 40 ±0.2         | 40 ±0.2          |                              |                   |                               |                   | 40 ±0.2                           |
| <b>D</b>  | 38.4                        | 38.4              | 66                 | 38.25           | 46.8             | 38.4                         | 38.4              | 38.4                          | 38.4              | 38.4                              |
| <b>E</b>  | 27.8                        | 27.8              | 34                 | 27.8            | 27.8             | 27.8                         | 27.8              | 27.8                          | 27.8              | 27.8                              |
| <b>F</b>  | 5.5                         | 5.5               | 4                  | 5.5             | 5.5              | 5.5                          | 5.5               | 5.5                           | 5.5               | 5.5                               |
| <b>G</b>  | 20.1                        | 20.1              | 26.5               | 20.1            | 20.1             | 20.1                         | 20.1              | 20.1                          | 20.1              | 20.1                              |
| <b>H</b>  | Ø 3.3                       | Ø 3.3             | Ø 3.5              | Ø 3.3           | Ø 3.3            |                              |                   |                               |                   | Ø 3.3                             |
| <b>I</b>  | 14                          | 14                | 14                 | 14.1            | 14               | 14                           | 14                | 14                            | 14                | 14                                |
| <b>J</b>  | 13.3                        | 13.3              | 13.3               | 13.3            | 13.3             | 13.3                         | 13.3              | 13.3                          | 13.3              | 13.3                              |
| <b>M</b>  | R ≤ 3                       | R ≤ 3             | R ≤ 3              | R ≤ 3           | R ≤ 3            | R ≤ 1.5                      | R ≤ 1.5           | R ≤ 1.5                       | R ≤ 1.5           | R ≤ 3                             |
| <b>N</b>  | 21.5                        | 21.5              | 27                 | 21.5            | 21.5             | 20.8                         | 20.8              | 21.9                          | 21.9              | 21.5                              |
| <b>P</b>  | 28.5                        | 28.5              | 34.7               | 28.5            | 28.5             | 29.4                         | 29.4              | 28.5                          | 28.5              | 28.5                              |
| <b>R</b>  | M3                          | M3                | M3                 | M3              | M3               |                              |                   |                               |                   | M3                                |
| <b>S</b>  | 90°                         | 90°               | 90°                | 90°             | 90°              |                              |                   |                               |                   | 90°                               |
| <b>T*</b> |                             |                   |                    |                 |                  | 0.7-1.5                      | 0.7-1.5           | 0.7-1.5                       | 0.7-1.5           |                                   |
| <b>T*</b> |                             |                   |                    |                 |                  | 1.5-2.2                      | 1.5-2.2           | 1.5-2.2                       | 1.5-2.2           |                                   |
| <b>X</b>  | AWG 18                      | AWG 16            |                    |                 |                  | AWG 18                       | AWG 16            | AWG 18                        | AWG 16            | AWG 16                            |
| <b>Y</b>  | 160                         | 160               |                    |                 |                  | 160                          | 160               | 160                           | 160               | 160                               |
| <b>Z</b>  | 6                           | 6                 |                    |                 |                  | 6                            | 6                 | 6                             | 6                 | 6                                 |

\* For selecting the panel thickness, please refer to the filter selector table.

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

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



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