



## OEM-Pro Installation & Operations Guide



## Installation & Maintenance Guide

### Operation

The OEM-PRO range of Expansion Vessels is specifically designed for Unvented Systems when used as part of an additional piece of technology.

The purpose of these vessels is to accommodate the increased liquid volume which occurs during system heating in an Unvented Circuit. A pressurised membrane allows ingress/egress of the liquid only during periods of heating / cooling.

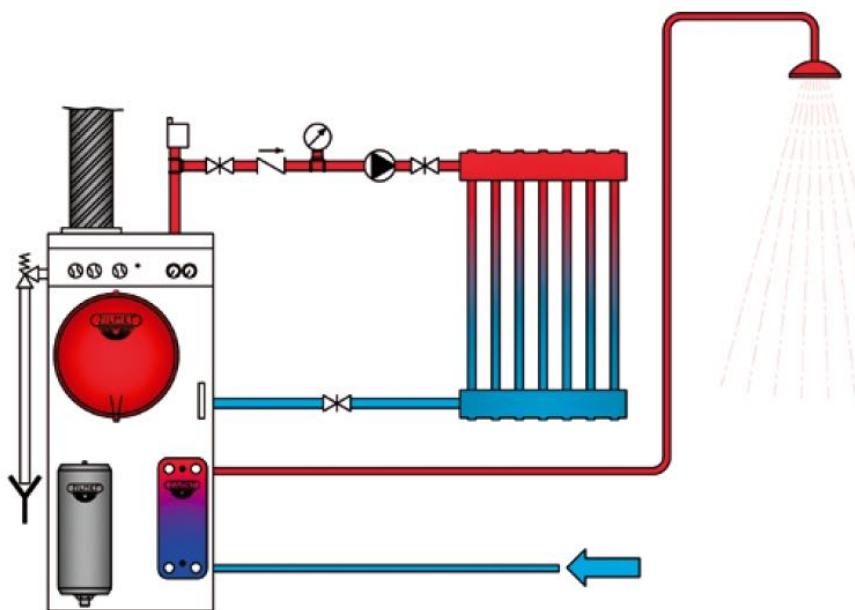
The correct size of vessel must be considered prior to installation and installed by appropriately trained engineers.

### Installation Siting

The Expansion Vessel may be fitted to a very wide range of devices, thanks to the huge range of shapes, capacities and connection types available. A number of potable vessels are also available within the range.

The orientation of the expansion vessels water connection should be considered at the design stage as different options are available on request for connection size, location and type.

Adequate provision for the mounting of the expansion vessel must be made at the design stage.





# Installation & Maintenance Guide

## Sizing

The appropriate sizing of an expansion vessel must be undertaken by qualified or appropriately trained engineers.

$$V = \frac{e \times C}{1 - P_i/P_f}$$

V = Expansion Vessel Size

e = Expansion Co-efficient corresponding to the difference between the cold water system temperature and the maximum working pressure.

In standard plants:-

$$e = 0.04318 (T_{max} 99^{\circ}C - T_{min} = 10^{\circ}C)$$

C = Total Water Capacity of the system in Litres (as a general approximation, C is between 10 & 20 Litres for every 1000kcal/hour of boiler output).

860kcal/hour = 1 Kilowatt

P<sub>i</sub> = Initial charge pressure (Absolute) - this pressure must not be less than the minimum head pressure required by the system OR the Boiler (Whichever is greater).

P<sub>f</sub> = Maximum operating pressure (Absolute) of the Safety Relief Valve, taking into account any differences in height between the vessel and the safety relief valve.

Temp	e Value
0	0.00013
10	0.00025
20	0.00174
30	0.00426
40	0.00782
50	0.01207
55	0.01450
60	0.01704
65	0.01980
70	0.02269
75	0.02580
80	0.02899
85	0.03240
90	0.03590
95	0.03960
100	0.04343

## Example

C = 500 Litres

P<sub>i</sub> = 1.5 Bar (2.5 Bar atmospheric)

P<sub>f</sub> = 3 Bar (4 Bar Atmospheric)

$$V = \frac{0.04326 \times 500}{1 - (2.5 / 4)}$$

$$V = 57.57$$

Nearest vessel size with this capacity = 80 Litres

## Maintenance

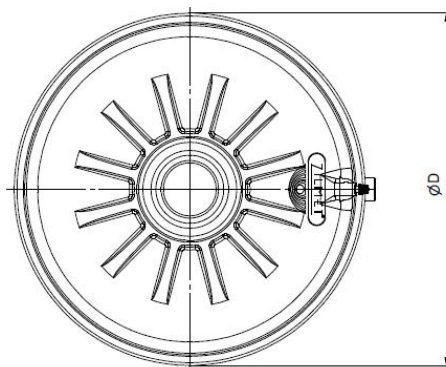
The vessel requires inspection at least once a year (or as and when a drop in performance is noted from the system). The vessel must be visibly inspected for pinholes in the metal body of the vessel and the air pressure must be checked against the required pre-charge. Some pressure loss is to be expected and should be rectified to within 20% accuracy but a significant drop in air pressure may signify that the vessel is nearing the end of its life span and may require replacement. Some provision should be made within a wider piece of equipment for access and inspection.

The air pressure may only be inspected when the vessel is either detached completely from the system or when the system itself is de-pressurised to atmospheric pressure.

## Installation & Maintenance Guide

### Materials

Shell: Carbon Steel  
 Water Connections: Carbon Steel  
 Membrane: Synthetic Butyl Rubber (SBR)  
 Colour: Red



### Dimensions

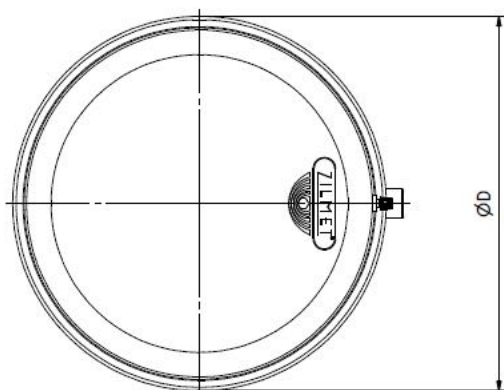
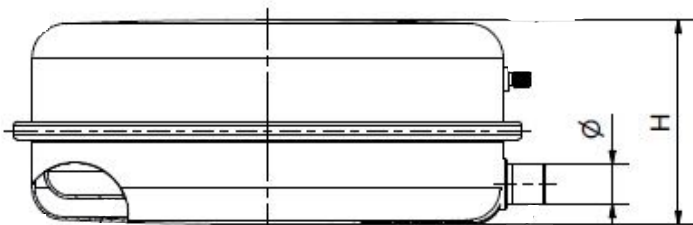
Code	Capacity (Litres)	Diameter (mm)	Height (mm)	Pmax (Bar)	Pre charge (Bar)	Connection (BSP)
13B6000713	7	387	90	3	1	3/8"G
13B6000802	8	387	100	3	1	3/8"G
13B6001000	10	387	110	3	1	3/4"G
13B6001200	12	387	140	3	1	3/4"G
13B6001400	14	387	150	3	1	3/4"G
13B6001800	18	387	200	3	1	3/4"G

Pmax (Bar)	Tmax (°C)	Factory Pre charge	Colour
3	90	1 +/-20%	Red / Silver

## Installation & Maintenance Guide

### Materials

Shell: Carbon Steel  
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 Colour: Red



### Dimensions

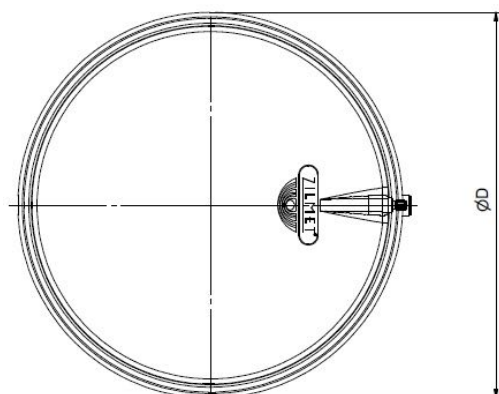
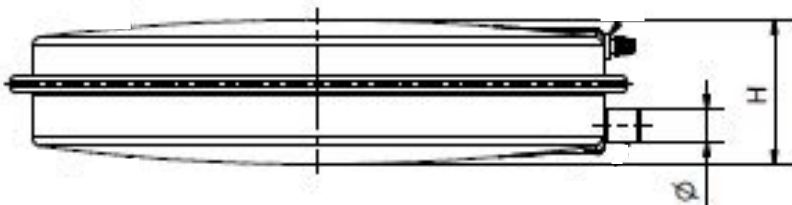
Code	Capacity (Litres)	Diameter (mm)	Height (mm)	Pmax (Bar)	Pre charge (Bar)	Connection (BSP)
13A6000600	6	324	103	3	1	3/4"G
13A6000800	8	324	130	3	1	3/4"G
13A6001000	10	324	140	3	1	3/4"G
13A6001200	12	324	170	3	1	3/4"G

Pmax (Bar)	Tmax (°C)	Factory Pre charge	Colour
3	90	1 +/-20%	Red

## Installation & Maintenance Guide

### Materials

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 Colour: Red



### Dimensions

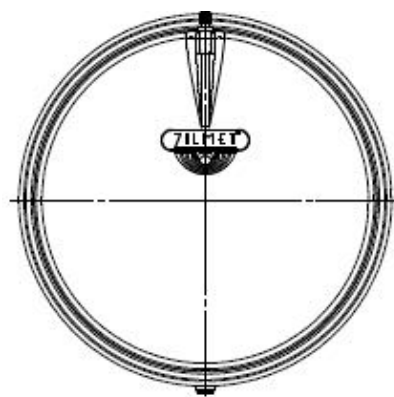
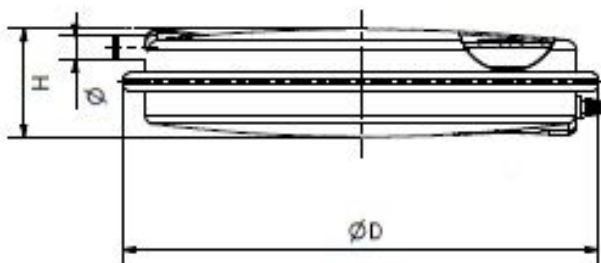
Code	Capacity (Litres)	Diameter (mm)	Height (mm)	Pmax (Bar)	Pre charge (Bar)	Connection (BSP)
13C0000600	6	392	61	3	1	3/8"G
13C0000800	8	392	81	3	1	1/2"G
13E6001000	10	389	92	3	1	1/2"G

Pmax (Bar)	Tmax (°C)	Factory Pre charge	Colour
3	90	1 +/-20%	Red

## Installation & Maintenance Guide

### Materials

Shell: Carbon Steel  
 Water Connections: Carbon Steel  
 Membrane: Synthetic Butyl Rubber (SBR)  
 Colour: Silver



### Dimensions

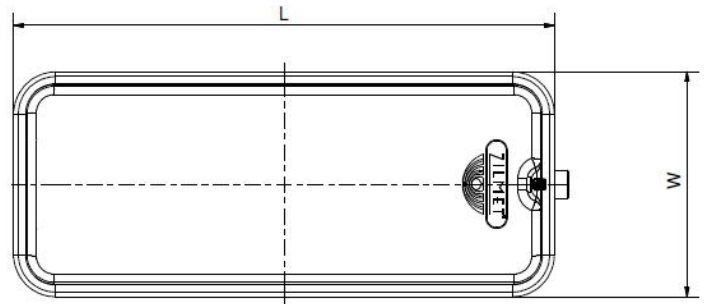
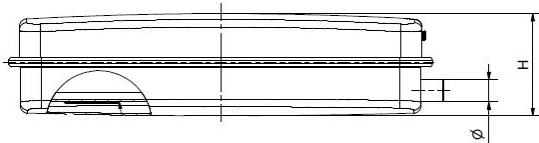
Code	Capacity	Diameter	Height	Pmax	Pre charge	Connection
	(Litres)	(mm)	(mm)	(Bar)	(Bar)	(BSP)
13F0000600	6	337	76	3	1	3/8"G

Pmax (Bar)	Tmax (°C)	Factory Pre charge	Colour
3	90	1 +/-20%	Silver

## Installation & Maintenance Guide

### Materials

Shell: Carbon Steel  
 Water Connections: Carbon Steel  
 Membrane: Synthetic Butyl Rubber (SBR)  
 Colour: Red



### Dimensions

Code	Capacity (Litres)	Dimension (mm)	Height (mm)	Pmax (Bar)	Pre charge (Bar)	Connection (BSP)
13N6000600	6	492 x 203	105	3	1	3/4"G
13N600FG00	7.5	492 x 203	118	3	1	3/4"G
13N6001000	10	492 x 203	150	3	1	3/4"G
13N6001200	12	492 x 203	170	3	1	3/4"G

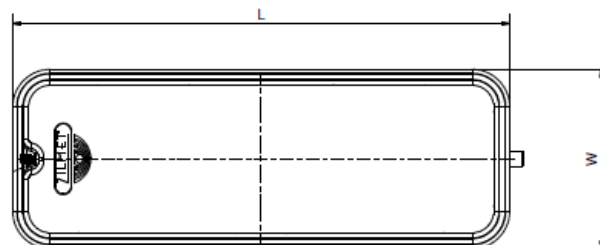
Pmax (Bar)	Tmax (°C)	Factory Pre charge	Colour
3	90	1 +/-20%	Red



## Installation & Maintenance Guide

### Materials

Shell: Carbon Steel  
 Water Connections: Carbon Steel  
 Membrane: Synthetic Butyl Rubber (SBR)  
 Colour: Silver



### Dimensions

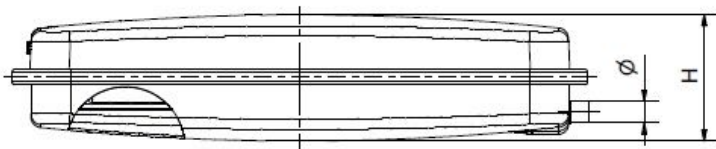
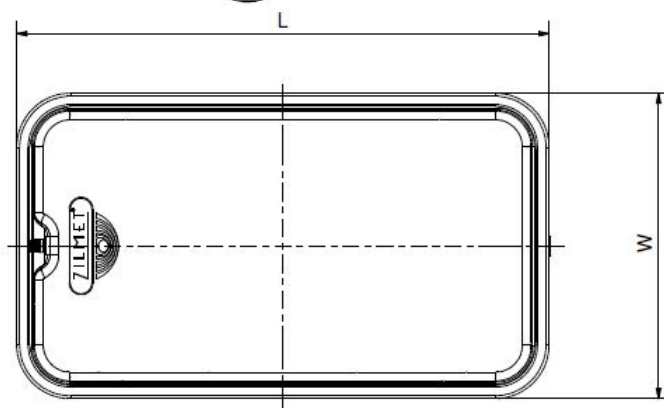
Code	Capacity (Litres)	Dimension (mm)	Height (mm)	Pmax (Bar)	Pre charge (Bar)	Connection (BSP)
13N6000810	8	561 x 203	80	3	1	3/8"G
13N0001001	10	561 x 203	90	3	1	3/8"G

Pmax (Bar)	Tmax (°C)	Factory Pre charge	Colour
3	90	1 +/-20%	Silver

## Installation & Maintenance Guide

### Materials

Shell: Carbon Steel  
 Water Connections: Carbon Steel  
 Membrane: Synthetic Butyl Rubber (SBR)  
 Colour: Silver / Red



### Dimensions

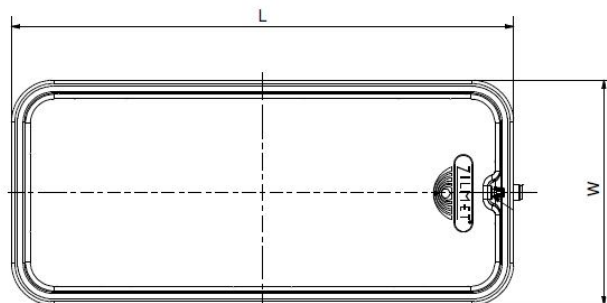
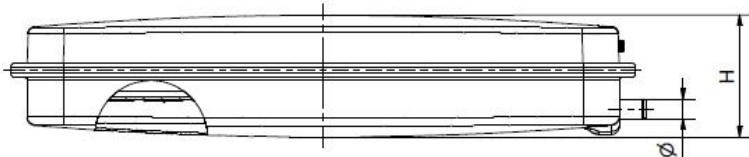
Code	Capacity (Litres)	Dimension (mm)	Height (mm)	Pmax (Bar)	Pre charge (Bar)	Connection (BSP)
13S0000804	8	438 x 250	95	3	1	3/8"G

Pmax (Bar)	Tmax (°C)	Factory Pre charge	Colour
3	90	1 +/-20%	Silver / Red

## Installation & Maintenance Guide

### Materials

Shell: Carbon Steel  
 Water Connections: Carbon Steel  
 Membrane: Synthetic Butyl Rubber (SBR)  
 Colour: Silver



### Dimensions

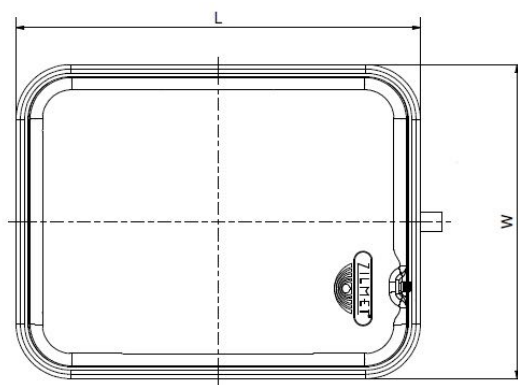
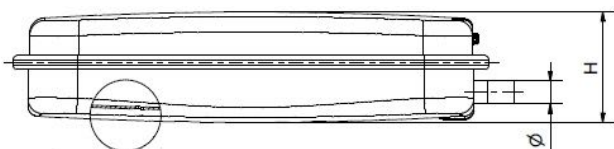
Code	Capacity	Dimension	Height	Pmax	Pre charge	Connection
	(Litres)	(mm)	(mm)	(Bar)	(Bar)	(BSP)
13M0001002	10	518 x 232	100	3	1	3/8"G

Pmax (Bar)	Tmax (°C)	Factory Pre charge	Colour
3	90	1 +/-20%	Silver

## Installation & Maintenance Guide

### Materials

Shell: Carbon Steel  
 Water Connections: Carbon Steel  
 Membrane: Synthetic Butyl Rubber (SBR)  
 Colour: Silver



### Dimensions

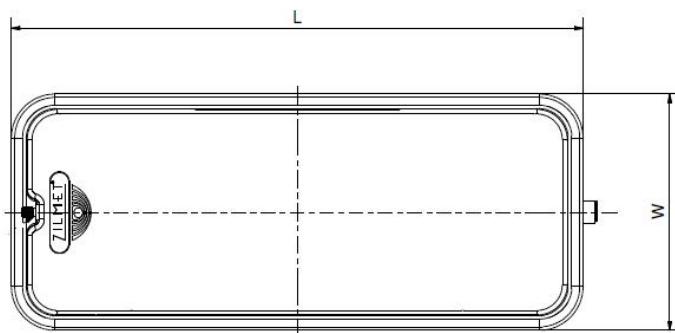
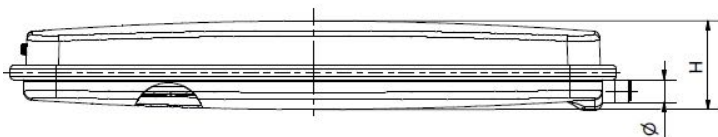
Code	Capacity (Litres)	Dimension (mm)	Height (mm)	Pmax (Bar)	Pre charge (Bar)	Connection (BSP)
13Q6001204	10	535 x 342	100	3	1	3/4"G
13Q2001800	18	445 x 350	158	3.5	1	3/4"G
13Q2002400	24	445 x 350	178	3.5	1	3/4"G

Pmax (Bar)	Tmax (°C)	Factory Pre charge	Colour
3	90	1 +/-20%	Red

## Installation & Maintenance Guide

### Materials

Shell: Carbon Steel  
 Water Connections: Carbon Steel  
 Membrane: Synthetic Butyl Rubber (SBR)  
 Colour: Silver



### Dimensions

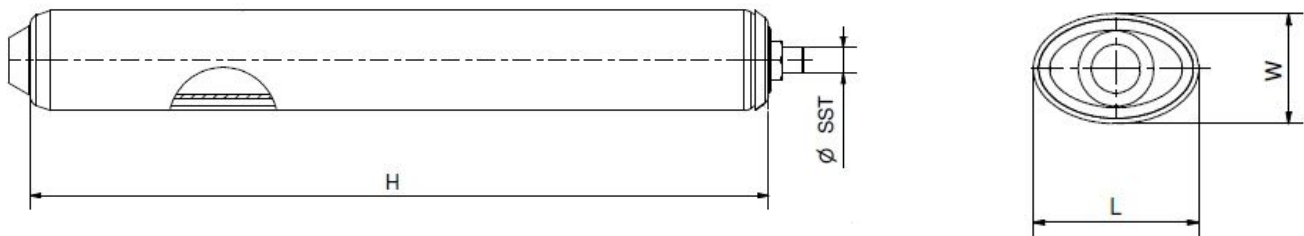
Code	Capacity (Litres)	Dimension (mm)	Height (mm)	Pmax (Bar)	Pre charge (Bar)	Connection (BSP)
13L0000801	8	561 x 232	81	3	1	1/2"G

Pmax (Bar)	Tmax (°C)	Factory Pre charge	Colour
3	90	1 +/-20%	Silver

## Installation & Maintenance Guide

### Materials

Shell: Carbon Steel  
 Water Connections: Stainless Steel  
 Membrane: Synthetic Butyl Rubber (SBR)  
 Colour: Silver



### Dimensions

Code	Capacity (Litres)	Dimension (mm)	Height (mm)	Pmax (Bar)	Pre charge (Bar)	Connection (BSP)
13L0000801	8	561 x 232	81	8	3 +/-20%	1/2"G

Pmax (Bar)	Tmax (°C)	Factory Pre charge	Colour
8	99	1 +/-20%	Silver

## Installation & Maintenance Guide

### Materials

Shell: Carbon Steel Coated  
 Water Connections: Stainless Steel  
 Membrane: Synthetic Butyl Rubber (SBR)  
 Colour: Silver



### Dimensions

Code	Capacity	Diameter	Height	Pmax	Pre charge	Connection
	(Litres)	(mm)	(mm)	(Bar)	(Bar)	(BSP)
15H0000200	2	93	401	10	3.5	1/2"G
15H0000300	3	93	493	10	3.5	1/2"G
15H0000400	4	93	603	10	3.5	1/2"G

Pmax (Bar)	Tmax (°C)	Factory Pre charge	Colour
10	99	1 +/-20%	Silver



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## Installation & Maintenance Guide

### Materials

Shell: Carbon Steel Coated  
Water Connections: Stainless Steel  
Membrane: Synthetic Butyl Rubber (SBR)  
Colour: Silver

### Dimensions

Code	Capacity	Diameter	Height	Pmax	Pre charge	Connection
	(Litres)	(mm)	(mm)	(Bar)	(Bar)	(BSP)
11A0000200	2	142	196	10	3.5	1/2"G
11A0000204	3	125	187	10	3.5	1/2"G
11A0000300	4	125	255	10	3.5	1/2"G

Pmax (Bar)	Tmax (°C)	Factory Pre charge	Colour
10	99	1 +/-20%	Silver





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## Installation & Maintenance Guide

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Shell: Carbon Steel Coated  
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Membrane: Synthetic Butyl Rubber (SBR)  
Colour: Silver

### Dimensions

Code	Capacity	Diameter	Height	Pmax	Pre charge	Connection
	(Litres)	(mm)	(mm)	(Bar)	(Bar)	(BSP)
11A0000200	2	142	196	10	3.5	1/2"G
11A0000204	3	125	187	10	3.5	1/2"G
11A0000300	4	125	255	10	3.5	1/2"G

Pmax (Bar)	Tmax (°C)	Factory Pre charge	Colour
10	99	1 +/-20%	Silver



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## Notes



**OEM-PRO**



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E & OE