



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.

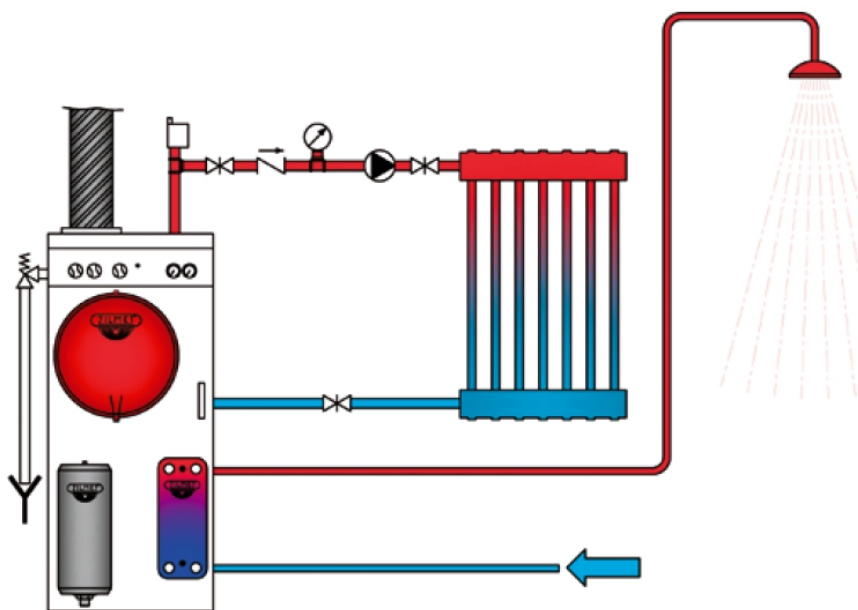
The correct size of vessel must be considered prior to installation and installed by appropriately trained engineers.

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.





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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_i = 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_f = 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_i = 1.5 Bar (2.5 Bar atmospheric)

P_f = 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.

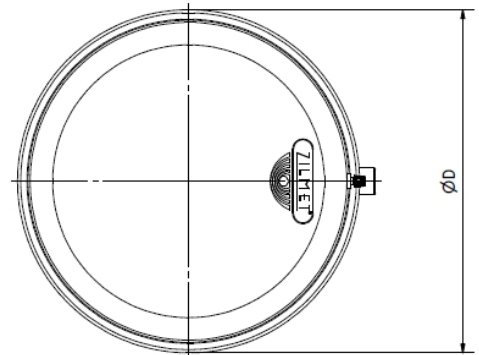
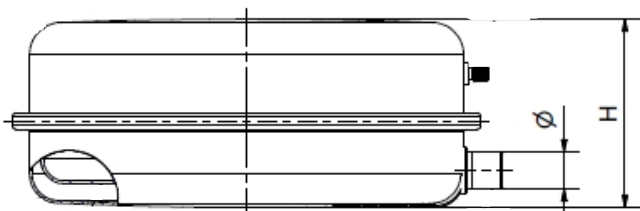
The air pressure may only be inspected when the vessel is either detached completely from the system or when the system itself is de-pressurised to atmospheric pressure.



Installation & Maintenance Guide

Materials

Shell: Carbon Steel
 Water Connections: Carbon Steel
 Membrane: Synthetic Butyl Rubber (SBR)
 Colour: Red
 Drawing Ref: 541/L



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
13A6000803	8	324	130	3	1	1/2"G
13A6000815	8	324	130	3	1	3/4"G
13A0000816	8	324	130	3	1	3/8"G
13A6001000	10	324	140	3	1	3/4"G
13A6001011	10	324	140	3	1	3/4"G
13A6001200	12	324	166	3	1	3/4"G
13A6001212	12	324	166	3	1	3/4"G

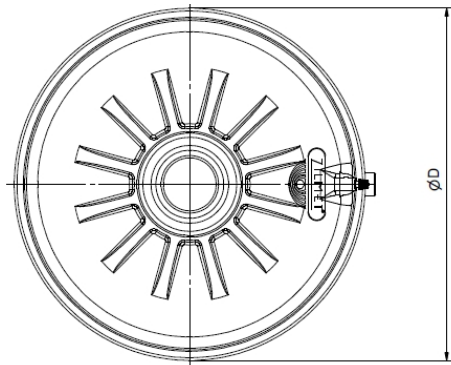
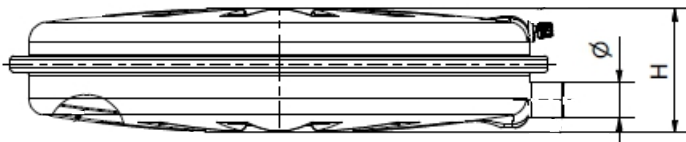
Pmax (Bar)	Tmax (°C)	Factory Pre charge	Colour
3	90	1 +/-20%	Red



Installation & Maintenance Guide

Materials

Shell: Carbon Steel
 Water Connections: Carbon Steel
 Membrane: Synthetic Butyl Rubber (SBR)
 Colour: Red
 Drawing Ref: 531/L



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	138	3	1	3/4"G
13B6001208	12	387	138	3	1	3/4"G
13B6001407	14	387	150	3	1	3/4"G
13B6001800	18	387	197	3	1	3/4"G
13B0001805	18	387	197	3	1	3/4"G

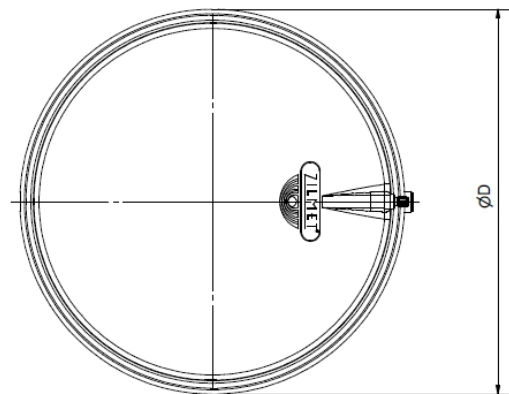
Pmax (Bar)	Tmax (°C)	Factory Pre charge	Colour
3	90	1 +/-20%	Red / Silver



Installation & Maintenance Guide

Materials

Shell: Carbon Steel
 Water Connections: Carbon Steel
 Membrane: Synthetic Butyl Rubber (SBR)
 Colour: Red
 Drawing Ref: 521/XL



Dimensions

Code	Capacity (Litres)	Diameter (mm)	Height (mm)	Pmax (Bar)	Pre charge (Bar)	Connection (BSP)
13C0000603	6	392	61	3	1	3/8"G
13C0000607	6	392	61	3	1	3/8"G
13C0000826	8	392	72	3	1	3/8"G
13C6001000	10	392	90	3	1	3/8"G
13E6001000	10					
13E6001003	10	389	92	3	1	1/2"G

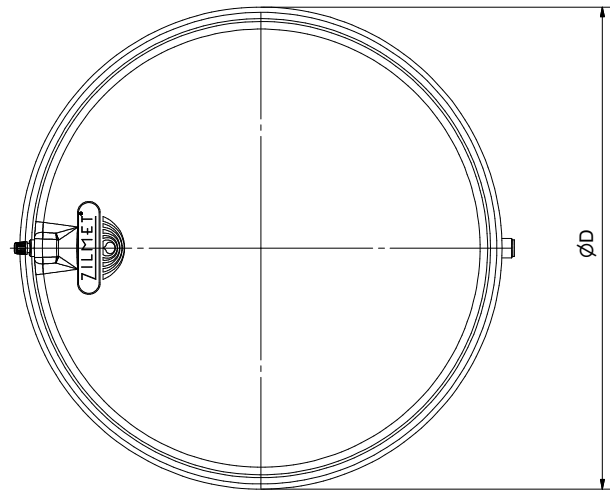
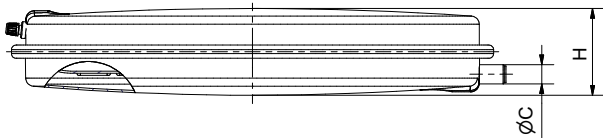
Pmax (Bar)	Tmax (°C)	Factory Pre charge	Colour
3	90	1 +/-20%	Red



Installation & Maintenance Guide

Materials

Shell: Carbon Steel
 Water Connections: Carbon Steel
 Membrane: Synthetic Butyl Rubber (SBR)
 Colour: Red
 Drawing Ref: 522/L



Dimensions

Code	Capacity (Litres)	Diameter (mm)	Height (mm)	Pmax (Bar)	Pre charge (Bar)	Connection (BSP)
13D0000800	8	416	75	3	1	3/8"G

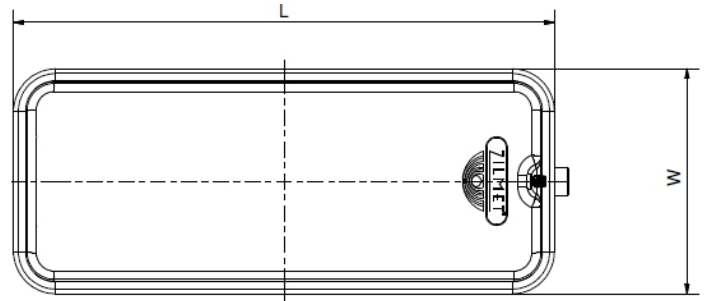
Pmax (Bar)	Tmax (°C)	Factory Pre charge	Colour
3	90	1 +/-20%	Red



Installation & Maintenance Guide

Materials

Shell: Carbon Steel
 Water Connections: Carbon Steel
 Membrane: Synthetic Butyl Rubber (SBR)
 Colour: Red
 Drawing Ref: 537/L



Dimensions

Code	Capacity (Litres)	Dimension (mm)	Height (mm)	Pmax (Bar)	Pre charge (Bar)	Connection (BSP)
13N6000600	6	492 x 203	105	3	1	3/8"G
13N600FG00	7.5	492 x 203	118	3	1	3/8"G
13N6001000	10	492 x 203	150	3	1	3/4"G
13N6001200	12	492 x 203	170	3	1	3/4"G

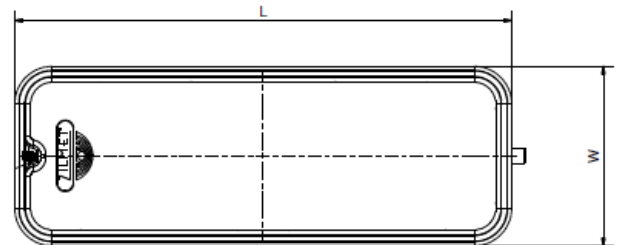
Pmax (Bar)	Tmax (°C)	Factory Pre charge	Colour
3	90	1 +/-20%	Red



Installation & Maintenance Guide

Materials

Shell: Carbon Steel
 Water Connections: Carbon Steel
 Membrane: Synthetic Butyl Rubber (SBR)
 Colour: Silver
 Drawing Ref: 537/L



Dimensions

Code	Capacity (Litres)	Dimension (mm)	Height (mm)	Pmax (Bar)	Pre charge (Bar)	Connection (BSP)
13N6000809	8	492 x 203		3	1	3/4"G
13N0001001	10	492 x 203	150	3	1	3/4"G

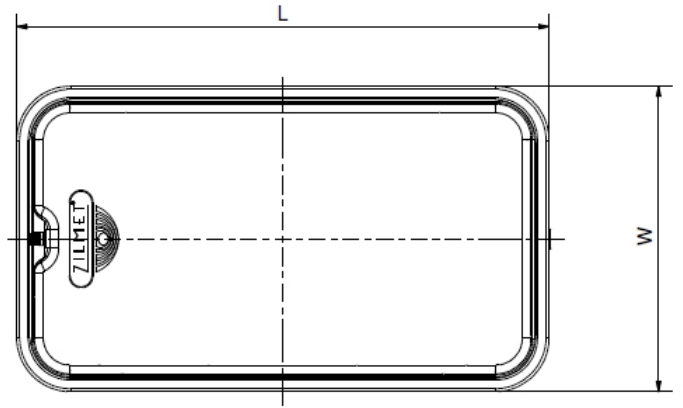
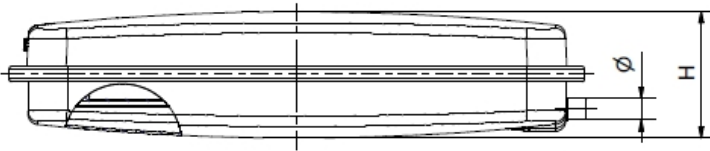
Pmax (Bar)	Tmax (°C)	Factory Pre charge	Colour
3	90	1 +/-20%	Silver



Installation & Maintenance Guide

Materials

Shell: Carbon Steel
 Water Connections: Carbon Steel
 Membrane: Synthetic Butyl Rubber (SBR)
 Colour: Silver / Red
 Drawing Ref: 539/L



Dimensions

Code	Capacity (Litres)	Dimension (mm)	Height (mm)	Pmax (Bar)	Pre charge (Bar)	Connection (BSP)
13S0000803	8	438 x 250	95	3	1	3/8"G
13S0000804	8	438 x 250	95	3	1	3/8"G
13S0000832	8	437 x 250	92	3	1	3/8"G
13S6001010	10	438 x 250	104	3	1	1/2"G

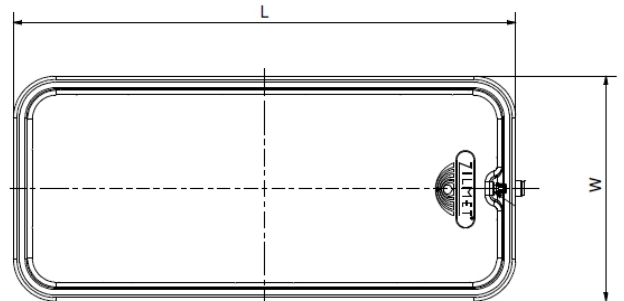
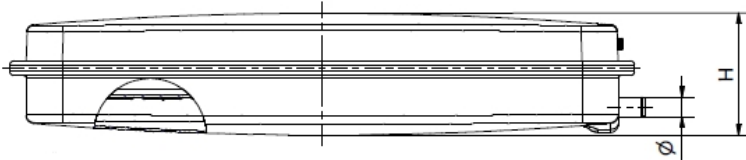
Pmax (Bar)	Tmax (°C)	Factory Pre charge	Colour
3	90	1 +/-20%	Silver / Red



Installation & Maintenance Guide

Materials

Shell: Carbon Steel
 Water Connections: Carbon Steel
 Membrane: Synthetic Butyl Rubber (SBR)
 Colour: Silver
 Drawing Ref: 518



Dimensions

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

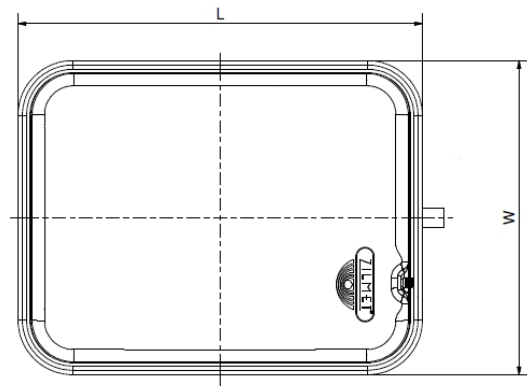
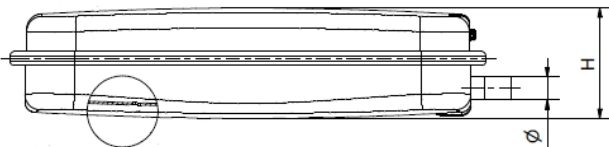
Pmax (Bar)	Tmax (°C)	Factory Pre charge	Colour
3	90	1 +/-20%	Silver



Installation & Maintenance Guide

Materials

Shell: Carbon Steel
 Water Connections: Carbon Steel
 Membrane: Synthetic Butyl Rubber (SBR)
 Colour: Silver
 Drawing Ref: P637/L



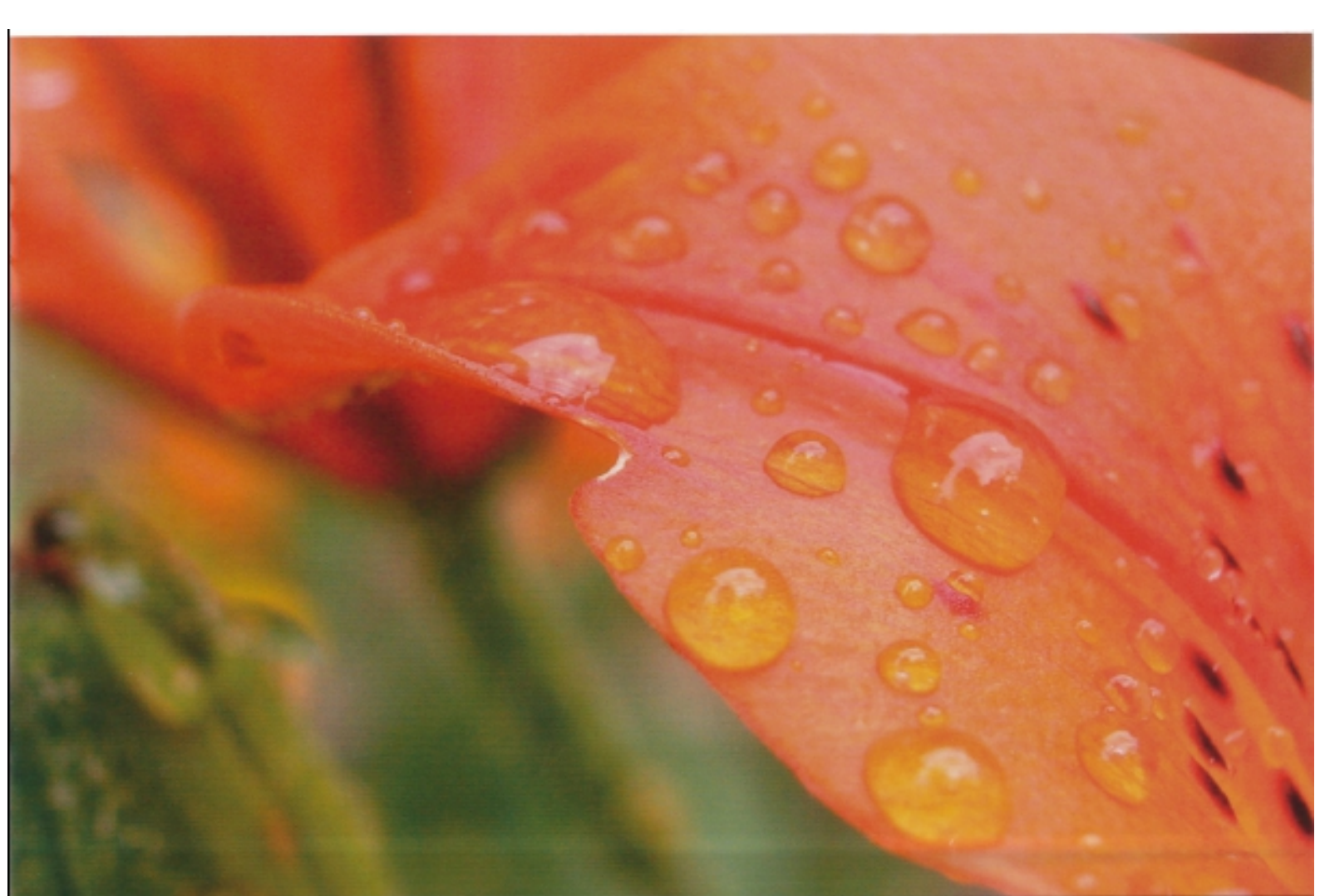
Dimensions

Code	Capacity (Litres)	Dimension (mm)	Height (mm)	Pmax (Bar)	Pre charge (Bar)	Connection (BSP)
13Q0000600	6	435		3	1	1/2"G
13Q2001800	18	445 x 350	158	3	1	3/4"G
13Q2002400	24	445 x 350	178	3	1	3/4"G
13Q2002417	24	445 x 350	178	3	1	

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



Notes



OEM-PRO



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