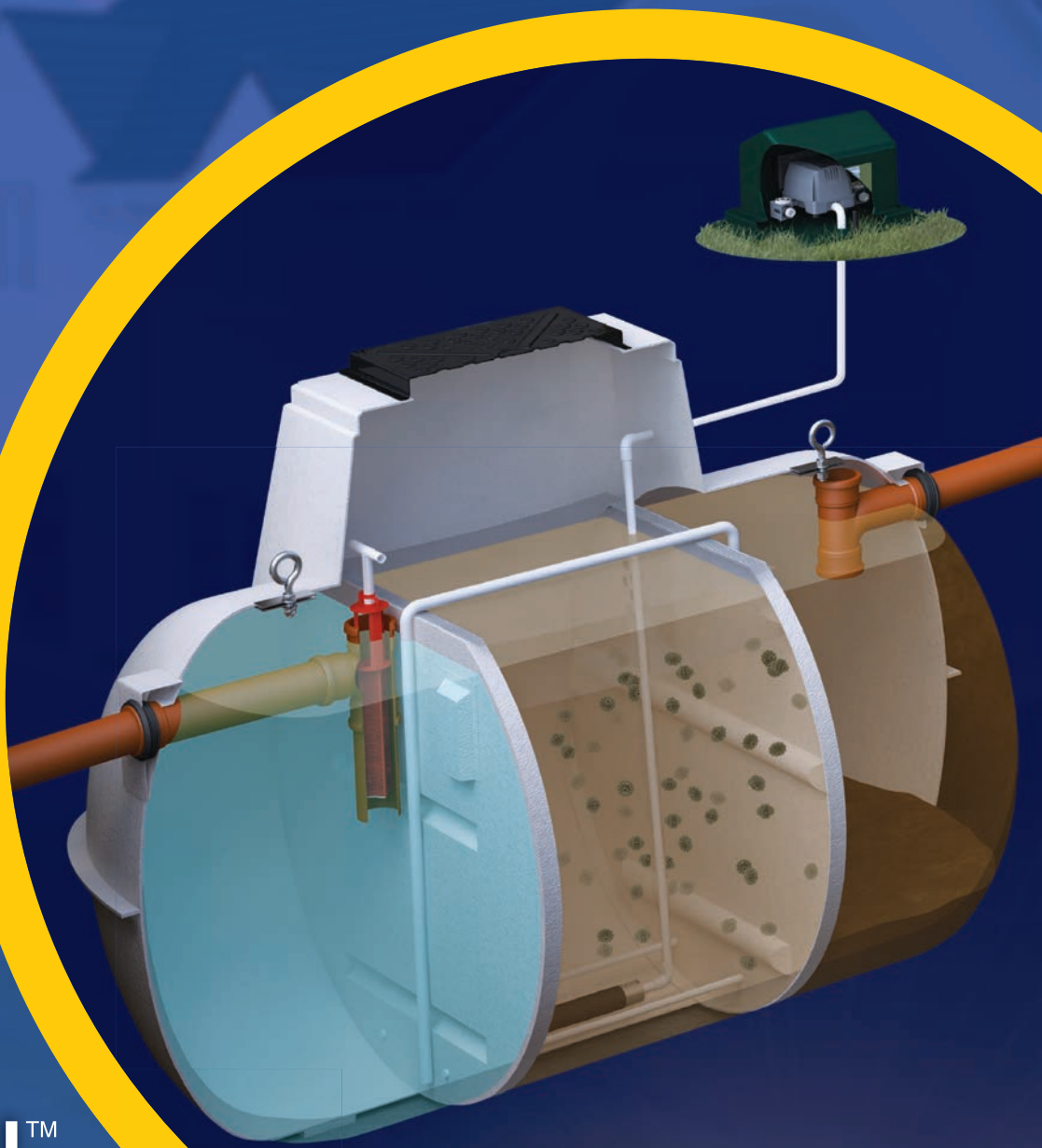


ENSIGN™

DOMESTIC SEWAGE TREATMENT PLANTS

4-50PE

MARSH

QMD Certification ISO9001 Registered

CE

BRITISH WATER

BMF Builders Merchants Federation

Future Water Association
Informing, Innovating, Influencing

MADE IN BRITAIN

ECONOMIC, EFFICIENT, ENVIRONMENTALLY SAFE

Marsh Ensign – Advanced sewage treatment plant

The Marsh Ensign is widely regarded as one of the most efficient, reliable and economical sewage treatment plants on the market.

The standard Ensign has been adapted to improve reliability and the Ensign:Ultra now brings unique enhancements to further improve noise level, treatment efficiency and final effluent quality.

Class leading performance

Tested and approved to BSEN12566-3/A1:2009 all Ensign units provide treatment well within national consent requirements. Published test results of 11.5:19.2:8.4mg/ltr (BOD:suspended solids:ammonia), with influent concentrations on test higher than those chosen by most competitor plants, effectively equates to 97% pollutant removal.

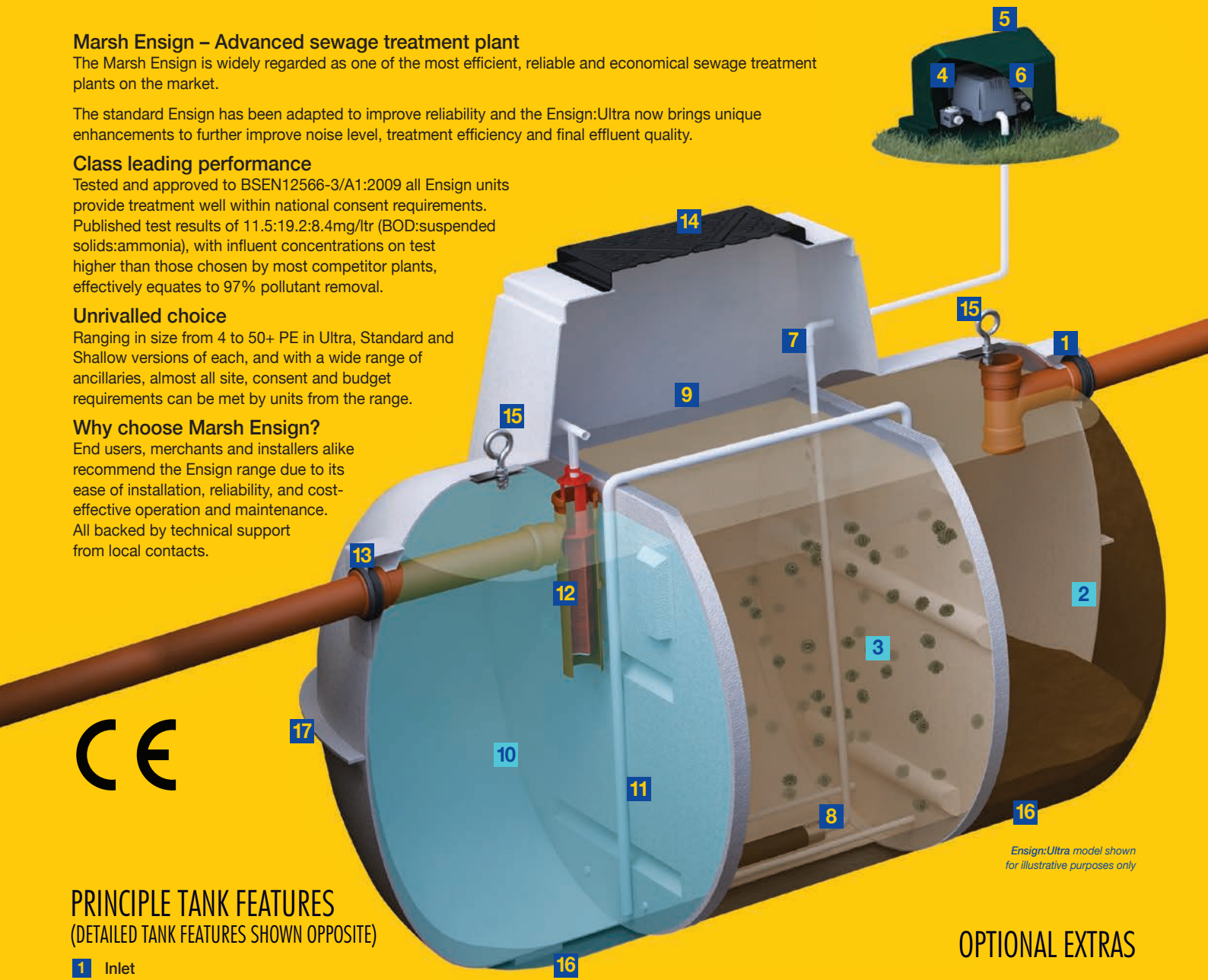
Unrivalled choice

Ranging in size from 4 to 50+ PE in Ultra, Standard and Shallow versions of each, and with a wide range of ancillaries, almost all site, consent and budget requirements can be met by units from the range.

Why choose Marsh Ensign?

End users, merchants and installers alike recommend the Ensign range due to its ease of installation, reliability, and cost-effective operation and maintenance. All backed by technical support from local contacts.

CE



Ensign:Ultra model shown for illustrative purposes only

PRINCIPLE TANK FEATURES
(DETAILED TANK FEATURES SHOWN OPPOSITE)

1. Inlet
2. Primary settlement chamber
3. Aeration chamber
4. Compressor with alarm
5. Compressor housing (External or internal options)
6. RCD / Electrical connection
7. PVC pressure pipe for diffuser(s)
8. Bio-media
9. Stainless steel mesh
10. Final settlement chamber
11. Sludge return
12. Unique Polylok tertiary filter (Ensign:Ultra units)
13. Outlet
14. Access lid
15. Integral lifting eyes
16. Stabilising feet
17. Unique 'keying-in' lip

OPTIONAL EXTRAS

Carbon vents/covers

Elevated compressor housings

Anti-flood valves

GRP kiosks

TANK FEATURES

ENSIGN:ULTRA

SHALLOW ENSIGN:ULTRA

1 **Inlet with 'Forsheda seal'**
Forsheda seal provides flexibility in the joint for easier installation.
Optional risers to increase invert depth are available.

4 **Advanced compressor with alarm**
Near silent compressor ensures minimal running, maintenance and servicing costs. Integral alarm detects low pressure in air line.

5 **Compressor housing (External or internal options)**
The compressor can be housed internally or externally with no difference in cost. *External recommended to increase compressor life, and supplied as standard on 4PE, shallow and pumped outlet versions.*

6 **RCD / Electrical connection**
The RCD box provides easier installation and proveds a higher degree of safety.

7 **PVC pressure pipe / diffuser(s)**
Provides a protective conduit for the air diffuser line. Can be easily removed for maintenance and cleaning.

8 **Bio-media**
High specification bio-media (310m^3 per m^2) and membrane diffusers ensure even circulation to eliminate 'dead spots'. The bio-media is contained by a stainless steel securing mesh to ensure no migration during handling or potential flooding.

9 **Stainless steel mesh**
Retains media in aeration chamber during transportation and handling, and in the event of flooding.

11 **32mm sludge return**
Larger diameter sludge return prevents the possibility of blockages and improves system circulation. Provides higher effluent quality whilst balancing flow over a 24 hour period or periods of intermittent use.

12 **Unique Polylok tertiary filter (Ensign:Ultra unit only)**
The Polylok tertiary filter reduces suspended solids and BOD by a further 40% helping to extend drainage field life.

13 **Outlet with 'Forsheda seal'**
Forsheda seal provides flexibility in the joint for easier installation.
Optional pumped outlets are available.

14 **Impermeable lid**
Heavy duty lid/frame improves strength and durability whilst blending into the surrounding environment.

SPECIFICATIONS

Ensign:Ultra

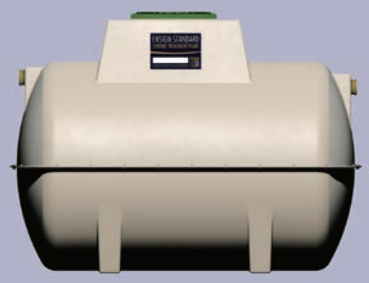
Model (Pop)	Length	Width +/-100mm	Height	Inlet		Outlet	
				Invert	Ø	Invert	Ø
4	1600	1332	1575	540	110	600	110
6	2602	1650	1935	550	110	625	110
8	2602	1650	1935	550	110	625	110
10	2602	1650	1935	550	110	625	110
12	2860	1912	2139	550	110	625	110
16	2860	1912	2284	720	110	800	110
20	3650	1912	2284	720	160	800	160
25	3650	1912	2284	770	160	850	160
30	4200	1912	2284	770	160	850	160
35	4200	1912	2284	770	160	850	160
40	5200	1912	2284	770	160	850	160
45	5200	1912	2284	770	160	850	160
50	5200	1912	2284	770	160	850	160

Shallow Ensign:Ultra

Model (Pop)	Length	Width +/-100mm	Height	Inlet		Outlet	
				Invert	Ø	Invert	Ø
6	2860	1912	1600	500	110	575	110
8	2860	1912	1600	500	110	575	110
10	2860	1912	1600	500	110	575	110
12	2860	1912	1600	500	110	575	110
16	3400	1912	1600	500	110	575	110
20	4200	1912	1600	500	160	575	160
25	4200	1912	1600	500	160	575	160
30	5200	1912	1600	500	160	575	160
35	5200	1912	1600	500	160	575	160

Notes:
> *Larger population sewage treatment plants may be supplied as multiple tank configurations. For precise tank sizes and configurations, please contact Marsh Industries*
> *All dimensions in mm*

TANK FEATURES



ENSIGN:STANDARD

SHALLOW ENSIGN:STANDARD

1 **Inlet with 'Forsheda seal'**
Forsheda seal provides flexibility in the joint for easier installation.
Optional risers to increase invert depth are available.

4 **Compressor with alarm**
Low-energy compressor provides minimal running, maintenance and servicing costs. Integral alarm detects low pressure in air line.

5 **Compressor housing (External or internal options)**
The compressor can be housed internally or externally with no difference in cost. *External recommended to increase compressor life, and supplied as standard on 4PE, shallow and pumped outlet versions.*

6 **Plug / socket connection**
Standard electrical connection

7 **PVC pressure pipe for diffuser(s)**
Provides a protective conduit for the air diffuser line. Can be easily removed for maintenance and cleaning.

8 **Bio-media**
High specification bio-media (310m^3 per m^2) and membrane diffusers ensure even circulation to eliminate 'dead spots'. The bio-media is contained by a stainless steel securing mesh to ensure no migration during handling or potential flooding.

9 **Stainless steel mesh**
Retains media in aeration chamber during transportation and handling, and in the event of flooding.

11 **32mm sludge return**
Larger diameter sludge return prevents the possibility of blockages and improves system circulation. Provides higher effluent quality whilst balancing flow over a 24 hour period or periods of intermittent use.

12 **Polylok tertiary filter NOT supplied on Ensign:Standard range**

13 **Outlet with 'Forsheda seal'**
Forsheda seal provides flexibility in the joint for easier installation.
Optional pumped outlets are available.

14 **Standard lid**
Marsh lid protects inner components whilst blending into the surrounding environment.

SPECIFICATIONS

Ensign:Standard								Shallow Ensign:Standard							
Model	Length	Width	Height	Inlet		Outlet		Model	Length	Width	Height	Inlet		Outlet	
(Pop)		+/-100mm		Invert	Ø	Invert	Ø	(Pop)		+/-100mm		Invert	Ø	Invert	Ø
4	1600	1332	1575	540	110	600	110	6	2860	1912	1600	500	110	575	110
6	2602	1650	1935	550	110	625	110	8	2860	1912	1600	500	110	575	110
8	2602	1650	1935	550	110	625	110	10	2860	1912	1600	500	110	575	110
10	2602	1650	1935	550	110	625	110	12	2860	1912	1600	500	110	575	110
12	2860	1912	2139	550	110	625	110	16	3400	1912	1600	500	110	575	110
16	2860	1912	2284	720	110	800	110	20	4200	1912	1600	500	160	575	160
20	3650	1912	2284	720	160	800	160	25	4200	1912	1600	500	160	575	160
25	3650	1912	2284	770	160	850	160	30	5200	1912	1600	500	160	575	160
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35	4200	1912	2284	770	160	850	160								
40	5200	1912	2284	770	160	850	160								
45	5200	1912	2284	770	160	850	160								
50	5200	1912	2284	770	160	850	160								

PACKAGE SEWAGE TREATMENT PLANTS

Package Sewage Treatment Plant's (or PSTP's) are often a suitable option where groundwater in the surrounding environment is vulnerable, drainage field percolation values are restrictive, or direct discharge to a drainage field/watercourse or surface water sewer is the prefered discharge method.

HOW DO THEY WORK?

In addition to anaerobic digestion taking place in the primary settlement chamber 1 the Ensign:Ultra unit allows the clarified water to pass into a second 'aeration' chamber 2 where it is treated to remove the dissolved constituents. Here aerobic bacteria, supported by diffused air and mobile media, ensures full treatment is achieved before the treated effluent and 'sloughed off' bacteria flows to a final settlement chamber 3. The final effluent is then discharged to the drainage field or watercourse via a Polylok filter.

Notes:

> PSTP's should be sized using the latest version of British Water Flows & Loads which provides detailed information on sewage production figures and sizing calculations

> Regulatory authorities for the control of pollution in the UK normally require treatment plants conforming to BSEN12566:3 to be demonstrated as capable of producing a minimum effluent discharge quality of 20:30:20 (Biochemical Oxygen Demand;Suspended Solids: Ammoniacal Nitrogen in mg/ltr), although in certain areas more stringent site-specific qualities may be required

> No surface water should enter the system as this can reduce the system's capacity and cause solids to be flushed out which may prematurely block drainage field or cause pollution

> As with septic tanks sludge should be removed annually or in line with manufacturers instructions

MARSH INDUSTRIES

Based in Northamptonshire with extended facilities in Somerset, Marsh Industries is a leading manufacturer of off-mains drainage products, oil separators and rainwater harvesting systems for both UK and overseas markets.

Marsh supplies sewage treatment plant and off-mains drainage products for domestic, commercial and industrial applications as well as offering engineering design and technical support.

With one of the largest merchant distributor networks available in Europe, clients ask for Marsh products and services because they know the company delivers from a solid foundation of knowledge, customer support, product quality and proven performance.

Architects, specifiers and installers within the construction sectors seek alliances and partnership with Marsh because its core products and services bring further added value to their own brands.

MATERIALS AND MANUFACTURING

A significant differentiator at Marsh Industries, as a privately owned company, is the ability to invest in continuous research and development programmes. This not only translates into an unrivalled range of innovative products and materials but also the depth of experience available from the company's design engineering team.

The company has also invested heavily in plant and machinery at its Northampton and Bridgwater facilities to ensure its ability to adapt to new market initiatives and trends.

With this in mind Marsh uses only the highest quality parts and materials to provide complete assurance in every aspect of product build quality. All products are fully type-tested and certified to ensure compliance with relevant environmental permitting programmes and Building Regulations.

Tanks and chambers are typically made from the following materials:

Virgin unfilled resin (no 'fillers' such as chalk)
Provides consistent wall thickness to ensure superior structural strength and durability. This also enables the tank to be significantly lighter for on-site handling/positioning and better suited to withstand greater hydrostatic pressures when in use.

ISO gel-coat / flo-coat
Protecting the fibres in the laminates reduces UV degradation whilst improving water and chemical resistance. This inherent integrity allows Marsh to offer an unrivalled 50 year design life, backed by a 25 year structural guarantee.

OTHER PRODUCTS IN THE MARSH RANGE

- Commercial/industrial sewage treatment plants
- Pump chambers
- Septic tanks
- Cesspools
- Grease traps
- Oil separators
- Domestic and commercial rainwater harvesting systems

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MARSH INDUSTRIES UK LEADERS IN OFF-MAINS DRAINAGE AND RAINWATER HARVESTING