

# MEMTECH GROUND GAS PROTECTION SYSTEMS ANCILLARY PRODUCTS



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# OVERVIEW

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The MemTech gas protection range provides a comprehensive spectrum of gas protection products and ancillaries to protect buildings and structures from ground gases such as Radon, Methane Carbon Dioxide and VOC's conforming to the requirements of BS 8485:2015+A1:20019, for both above and below ground applications.

Toxic, asphyxiating or explosive gases can leak from the ground and accumulate in buildings, posing risk to health.

MemTech Membranes offer solutions to properties, construction sites and land which is affected by contamination. Our ground gas protection ventilation products are suitable for a variety of construction methods. Gas venting systems such as the Pro Void Vent 25 range will safely release harmful ground gases from beneath structures into the atmosphere.

Design considerations to producing a robust ground gas protection system should incorporate the point scoring systems from BS8485:2015, BS8485:2015+A1:2019 and CIRIA C716.

We endeavour to offer you everything you need to complete a safe and robust installation.

As every project is unique in terms of size, construction type and ground gas protection system. It is recommended that every design team incorporate a Ground Gas Protection System Design Specialist at the earliest phase of the project in order that an integrated solution is created.

Some below ground construction projects require protection from both water ingress and gas contamination. With innovations of new products, it's now possible to produce a waterproofing design which incorporates both a waterproof and gas proof protection system, however these types of projects require a different strategy and methodology to what would be classed as a typical waterproofing design.

Please consult our technical team for further information.

## ✓ BENEFITS

- Controls ground gases
- Tough, durable design
- Quick & easy application
- A point score of up to 2.5
- Exceptional chemical resistance
- Lightweight, flexible membrane
- High gas flow capacity
- Creates a de-pressurisation zone for collection of ground gases



A full range of data sheets and installation guides are available on all our products.

# MEMTECH PRO VOID VENT 25

MemTech Pro Void Vent 25 offers a passive venting solution which facilitates the dispersal and dilution of dangerous gases. MemTech's Pro Void Vent 25 has been specially designed to provide for high levels of air and/or gas flow.

MemTech Pro Void Vent 25 is a cusped HDPE (High Density Polyethylene) Membrane with a geotextile filter/separator. Void Vent 25 has been designed to be installed with the geotextile filter side of the product to be in contact with the ground to allow for air and/or gas flow. Void Vent 25 is available in either a 25mm or 40mm depth. MemTech PRO Void Vent 25 complies with the latest codes of practice (BRE, CIRIA and NHBC).



## SPECIFICATION

- Complies with BRE211:2015 and BS8485:2015
- Exceptional chemical resistance
- Lightweight, flexible membrane to ease installation on site
- High gas flow capacity
- Creates a de-pressurisation zone for collection of ground gases
- Gas resistant
- Independently tested by UKAS
- High resistance to puncturing
- Suitable for new and existing structures
- Also acts as a Damp Proof Membrane

## ANCILLARIES

- MemTech Pro Rectangular Vent Unit
- MemTech Pro Circular Vent
- MemTech Pro Gas Vent Mat Connector to Periscope
- MemTech Pro Adjustable Periscope Vent
- MemTech Pro Vent Bollard
- MemTech Pro Solid Connector Pipe

## TECHNICAL DATA

Material:	HDPE Core & Bonded Geotextile Filter
Roll Size:	900mm x 50m
Compressive Strength*	300 kPa
Gas Flow Capacity (composite)	0.024 m <sup>3</sup> /s
Depth**	25mm

\* EN ISO 25619-2

\*\* 40mm depth available on request

MemTech Pro Void Vent 25 provides a means of ventilation system when used in conjunction with:

- MemTech Pro Liquid Gas Barrier
- MemTech Pro M1
- MemTech Pro R1

## INSTALLATION

MemTech PRO Void Vent is laid on sand or concrete blinding layer under the ground floor slab below the MemTech gas barrier membrane to provide passive ventilation in accordance with BS 8485:2015. MemTech PRO Void Vent can be laid in strips at 6m centres or across the entire footprint of the building depending on CS classification and dimensions of the building to provide the appropriate level of ventilation in accordance with BS 8485:2015.

# PRO VOID VENT 25

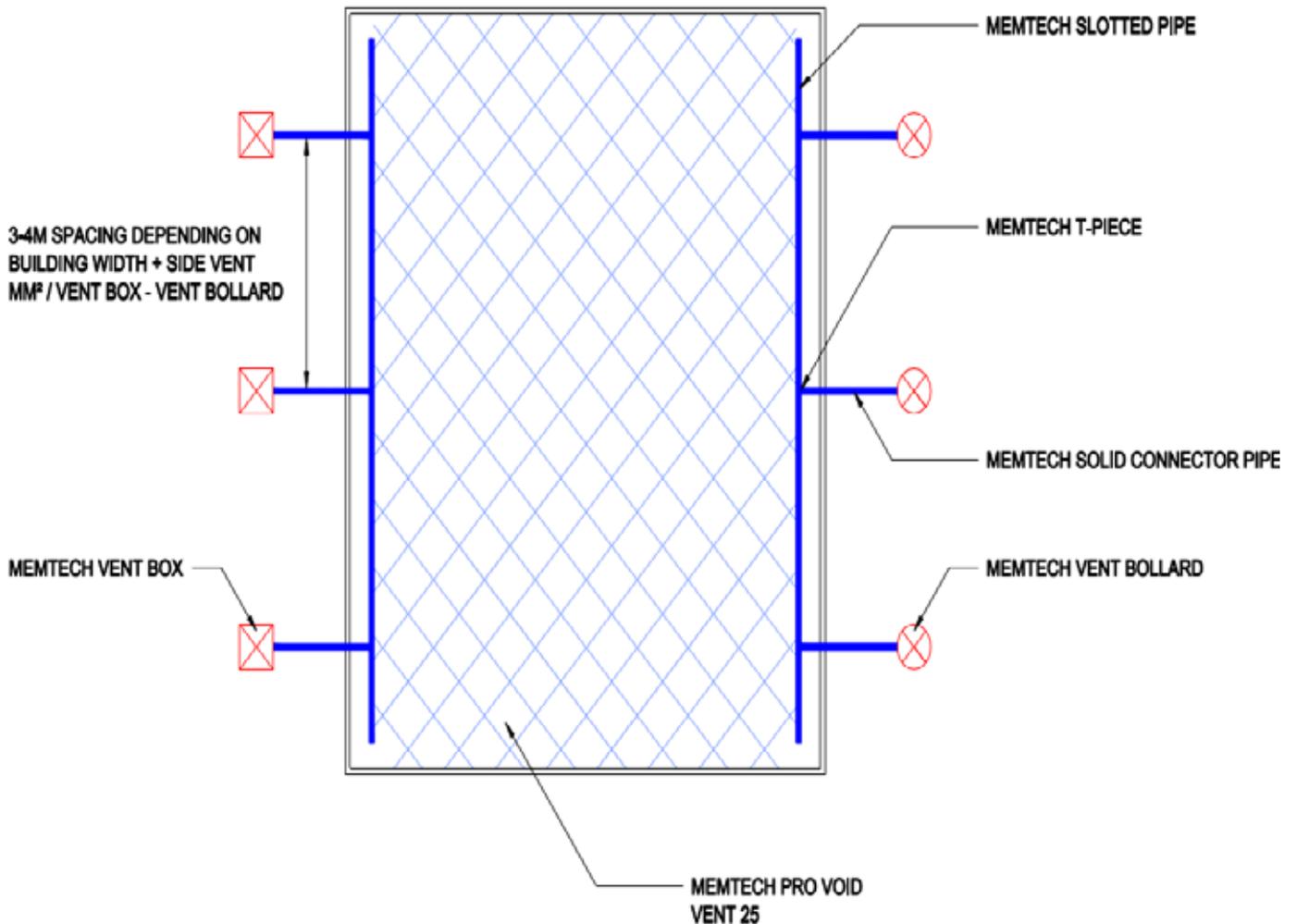
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Gas protection is a technical solution to prevent or to control gas penetration into properties. The control of gas migration is normally achieved by blocking the pathway or removing the source of gas generation.

A passive ventilation system when connected to air inlets and outlets allows for passive venting solution to facilitate safe dilution and dispersal of dangerous ground gases allowing for maximum flexibility to design.

A Ground Gas Protection System Design Specialist will be able to interpret the requirements of BS8485:2015+A1:2019 to produce a design which incorporates a suitable gas protection system.

MemTech Pro Void Vent 25 systems can be designed, supplied and installed by our highly skilled Registered Installers.



**MEMTECH TYPICAL VOID VENT MATT LAYOUT  
- OPTION 1**

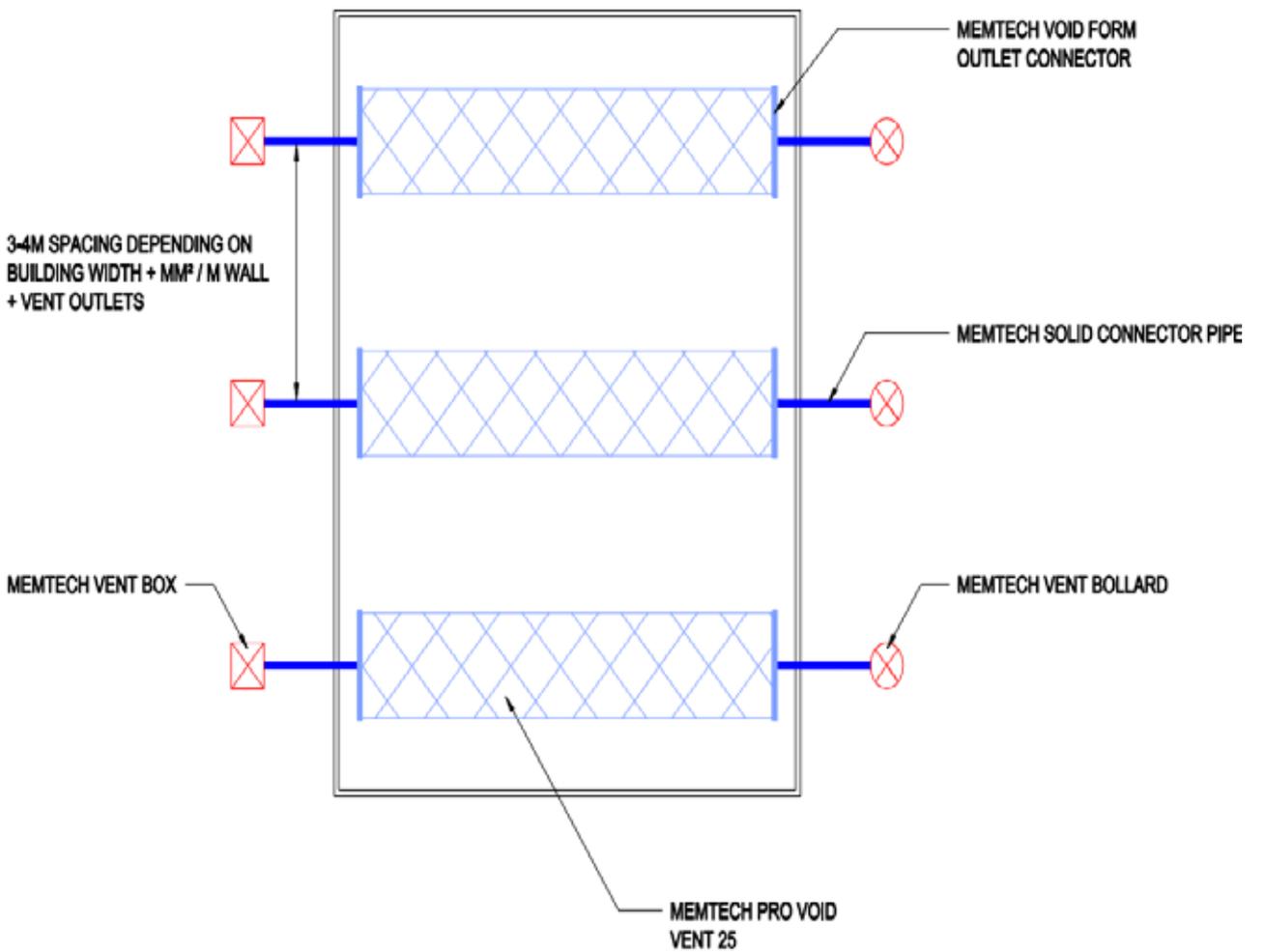
# MEMTECH PRO VOID VENT 25

MemTech Pro Void Vent 25 complies with the latest codes of practice (BRE, CIRIA and NHBC). Current guidance emphasises the importance of under slab ventilation systems to safely dilute and disperse dangerous ground gases.

If a site has been identified with a gas contamination it will have been given a Characteristic Situation Score. The Characteristic Situation Score is defined according to how severe the gas flow from the ground is.

All sites which have been characterised with a gas situation score will require a gas protection system and where identified an additional waterproof protection barrier.

Ground gas protection systems can be installed standalone or combined with a waterproofing system when a twin system is required, this rapid cost-effective installation is compatible with all types of construction.



**MEMTECH TYPICAL VOID VENT LAYOUT - OPTION 2**

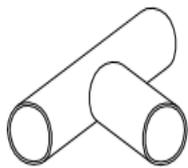
# SYSTEM COMPONENTS

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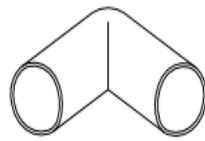
MemTech Pro Void Vent 25 has an extensive range of robust ventilation components which consists of 90-degree bends, straight couplings, end caps and T fittings. MemTech 90-degree bends can be used at a junction when a change of direction is required. MemTech 90-degree bends are suitable to fit on both internal and external corner sections.

MemTech Straight Connectors connect pipes together which run in a straight line. MemTech End Cap are fitted at the end of a MemTech pipe creating a 'dead end' for fluid traveling through the pipe.

MemTech T Fitting, also known as "Tee Connectors", is a fitting that facilitates 3 crossing pipes together. MemTech T fittings characteristics is the shape of a letter 'T' with inputs or outputs at 90-degree angles.



**T FITTING**



**90° BEND**



**COUPLING**



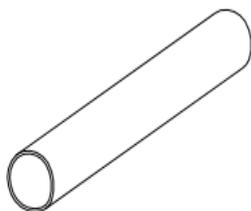
**END CAP**

MemTech offers various connectors and fittings which connect the Pro Void Vent 25 ensuring any ground gas is effectively and efficiently disperse from beneath a structure.

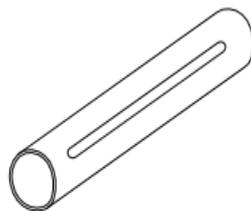
MemTech Solid Pipes are a strong, robust pipe, with a ribbed outer layer. The ribbed outer layer highly increases MemTech Solid Pipes strength, enabling the pipe to withstand larger forces.

MemTech Slotted Pipe is a durable and robust pipe with a high compressive strength. This lightweight pipe is user friendly and is suitable for shallow installation with high loads. MemTech Slotted Pipes external perimeter ribbed characteristics contribute to the structural stability of the pipe, by reducing the hydrostatic pressure and avoiding clogging of the slots caused by sand and gravel. This pipe has a double permeability compared to smooth like pipes with the same diameter.

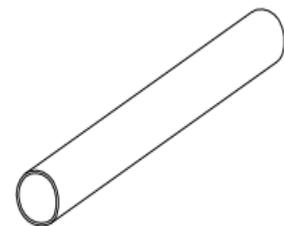
MemTech 50mm Solid Pipe is a strong, robust pipe, with a smooth outer layer. This highly durable pipe is suitable for harsh outdoor applications. MemTech Solid Pipes smooth characteristics allow liquid to flow freely, avoiding pipe blockages.



**SOLID PIPE**

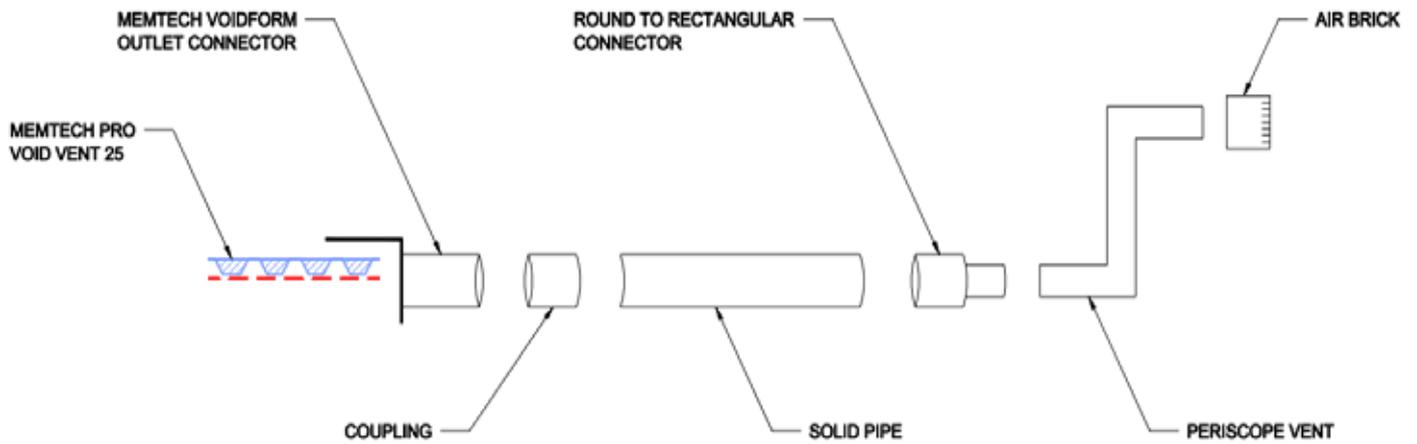


**SLOTTED PIPE 1.2 1m**



**50mm SOLID PIPE**

# VOID FORM CONNECTORS



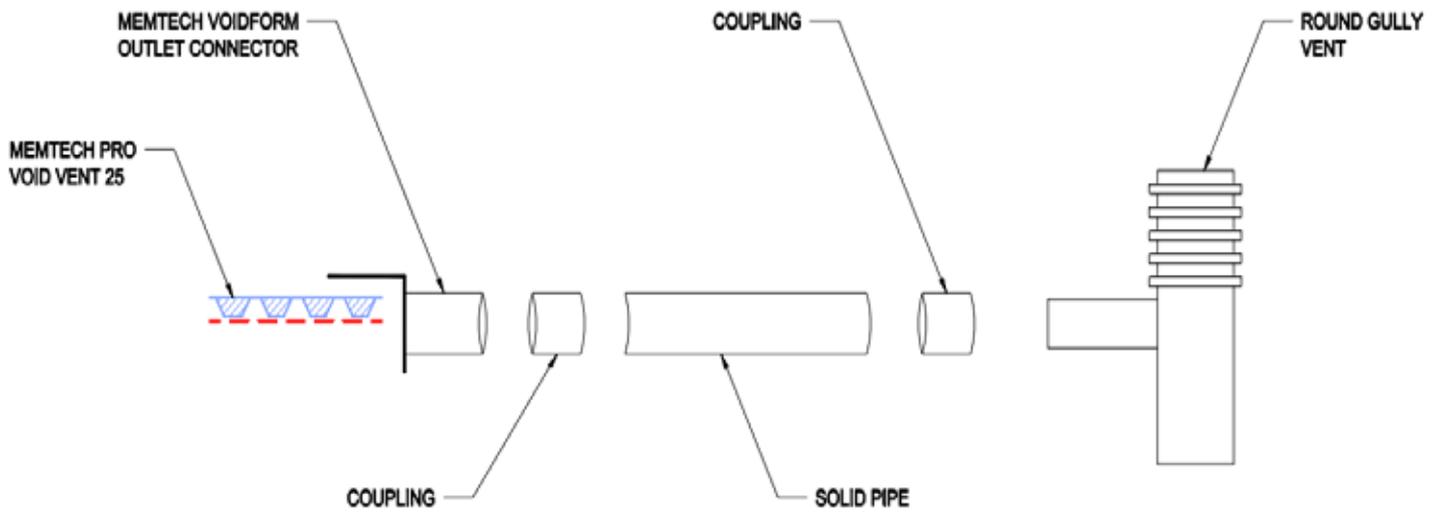
**GROUND GAS SUB FLOOR VENTILATION - OPTION 1**

## GAS PROTECTION SYSTEM

DMS Code	Product
DMS404	Pro Void Vent 25 Membrane
DMS452	Voidform Outlet Connector
DMS425	Coupling
DMS436	Solid Pipe
DMS429	Round to Rectangular Converter
DMS432	Periscope Vent
DMS457	Air Brick

Notes:

# VOID FORM CONNECTORS



**GROUND GAS SUB FLOOR VENTILATION - OPTION 3**

GAS PROTECTION SYSTEM	
DMS Code	Product
DMS404	Pro Void Vent 25 Membrane
DMS452	Voidform Outlet Connector
DMS425	Coupling
DMS436	Solid Pipe
DMS456	Round Gully Vent
Notes:	

# VOID FORM CONNECTORS

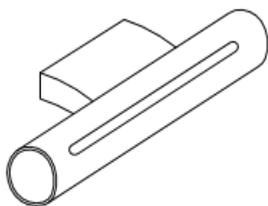
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MemTech Voidform Outlet Connectors are a strong, secure connectors for the Pro Void Vent system. Void Form Connectors are designed to connect the Pro Void Vent 25 membrane to outlets such as bollards or vents.

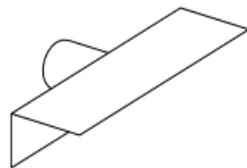
The function of a venting system is to carry harmful ground gases efficiently, safely and quickly from beneath a structure and to disperse of these gases into the atmosphere.

Voidform outlet connectors are an integral part of any ventilation system. The type of venting outlet and fittings to disperse gases is dependent on the structure type and the level of gas flow found at the site.

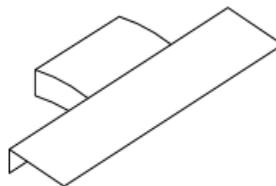
Pro Void Vent 25 is engineered for the geotextile filter side to connect with the ground. MemTech Pro Void Vent is laid on a sand or concrete blinding layer under the ground floor slab below the MemTech gas barrier membrane to provide passive ventilation in accordance with BS 8485:2015 and BS8485:2015+A1:2019. MemTech PRO Void Vent can be laid in strips at 6m centres or across the entire footprint of the building depending on CS classification and dimensions of the building to provide the appropriate level of ventilation in accordance with BS 8485:2015 and BS8485:2015+A1:2019.



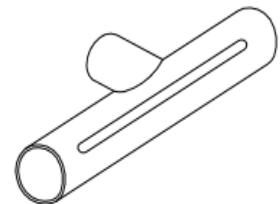
**VOIDFORM OUTLET CONNECTOR**



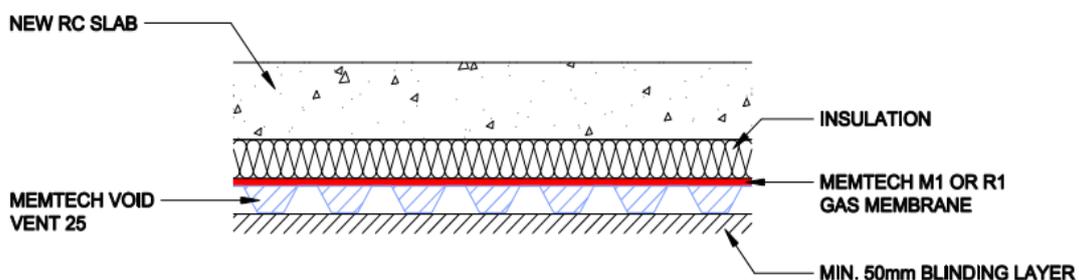
**50mm VOIDFORM CONNECTOR**



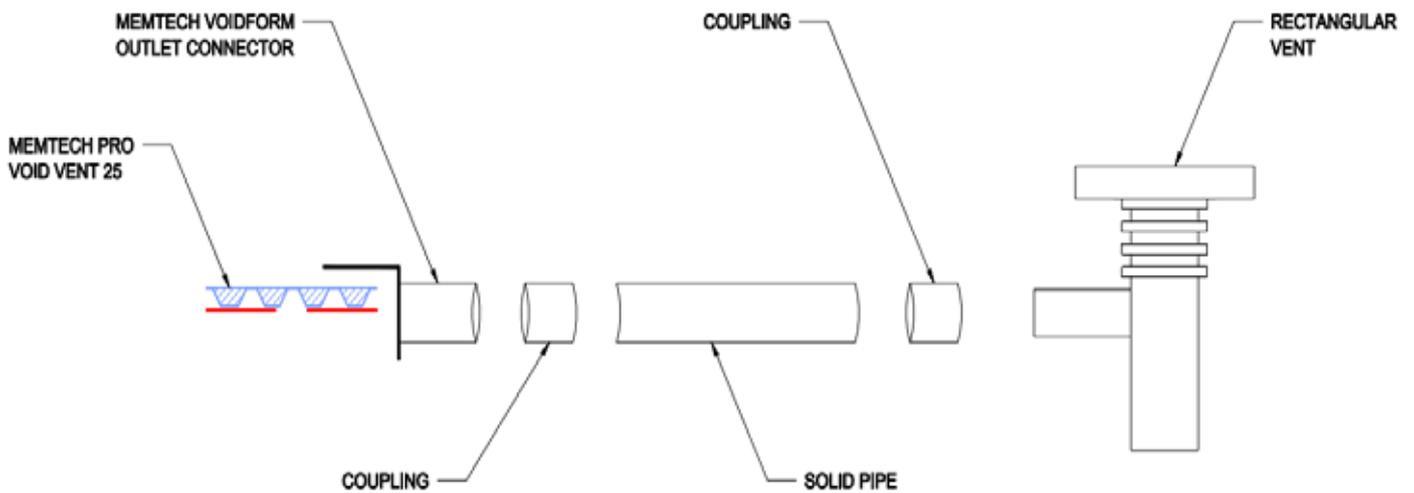
**VOIDFORM OUTLET CONNECTOR**



**VOIDFORM OUTLET CONNECTOR**



# SYSTEM COMPONENTS



**GROUND GAS SUB FLOOR VENTILATION - OPTION 4**

GAS PROTECTION SYSTEM	
DMS Code	Product
DMS404	Pro Void Vent 25 Membrane
DMS452	Voidform Outlet Connector
DMS425	Coupling
DMS436	Solid Pipe
DMS421	Rectangular Vent
Notes:	

# VENTS/VENT BOXES

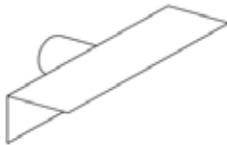
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BS8485:2015+A1:2019 (Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings) is the British Standard which addresses the control, methods of prevention and how they are implemented with regards to gas contamination in below ground projects.

Voidform vent bollards provide an efficient and economical method for venting ground gases from beneath a building/structure when connected to a suitable venting system.

For projects where alternative venting methods are required or if there is a higher level of free air flow required, Vent Bollards are installed.

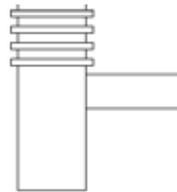
MemTech Square Ventbox are installed to supply a practical venting method for removing ground gases from underneath structures into the external atmosphere. MemTech vent boxes are recommended when alternative vent options have been minimised due to external wall construction.



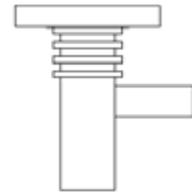
**VOIDFORMER OUTLET CONNECTOR**



**SQUARE VENT BOX**



**ROUND GULLY VENT**



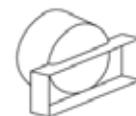
**RECTANGULAR VENT**



**AIR BRICK**



**PERISCOPE VENT**



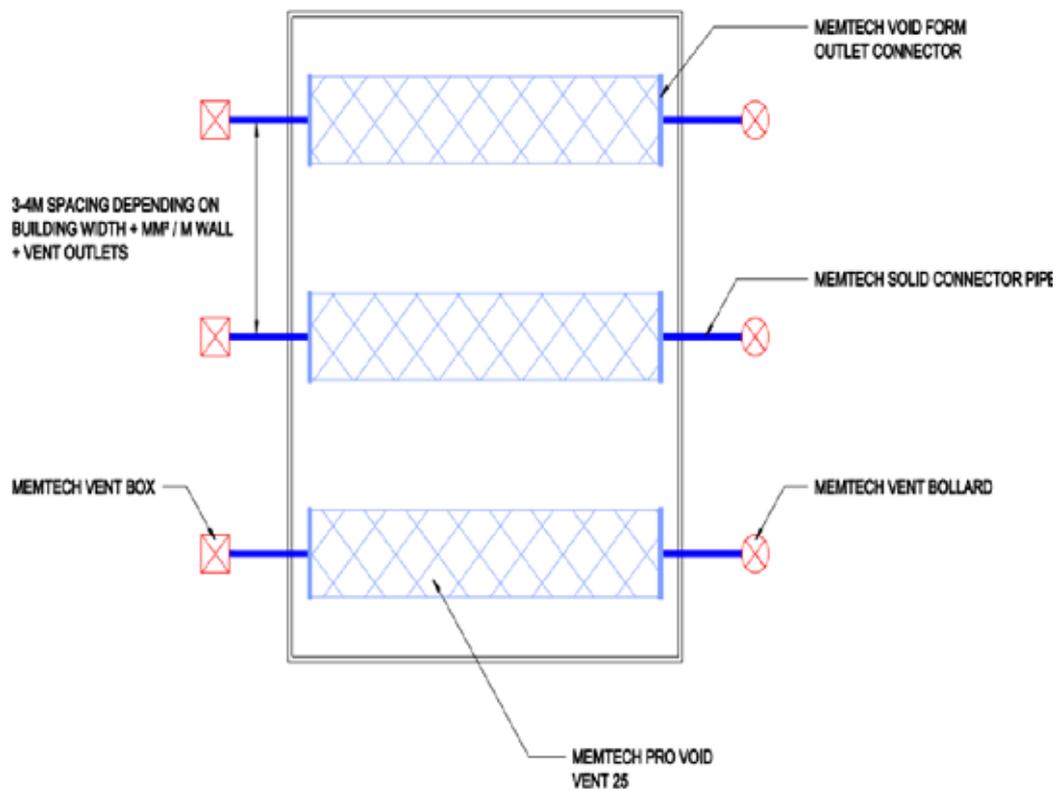
**ROUND TO RECTANGULAR CONVERTER**

## INTERNAL/EXTERNAL CORNERS

Internal and External Corners are designed to provide a complete seal between the vertical and horizontal transition. These corners eliminate the potential of water ingress at difficult and complex junctions. MemTech Corners can be bespoke made.

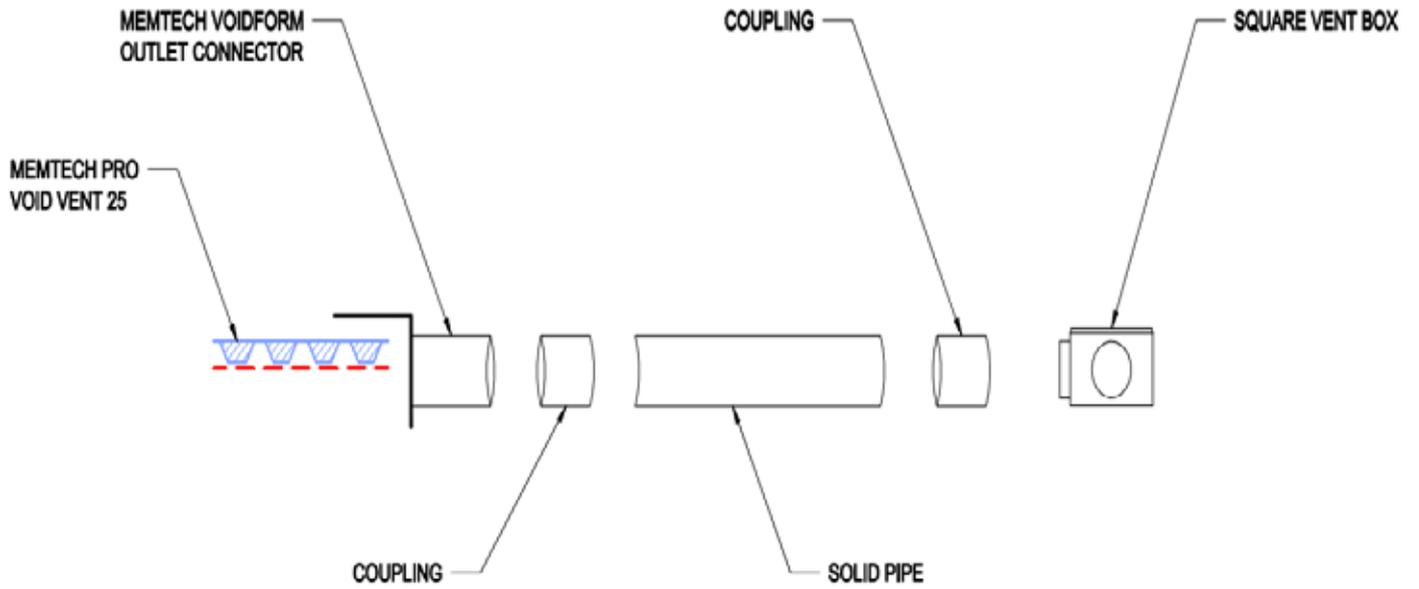
Product Code: Internal - DMS442 / External - DMS443

# SYSTEM LAYOUT



**MEMTECH TYPICAL VOID VENT LAYOUT - OPTION 2**

# SYSTEM LAYOUT

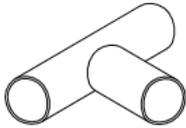


**GROUND GAS SUB FLOOR VENTILATION - OPTION 2**

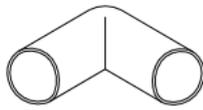
GAS PROTECTION SYSTEM	
DMS Code	Product
DMS404	Pro Void Vent 25 Membrane
DMS452	Voidfform Outlet Connector
DMS425	Coupling
DMS436	Solid Pipe
DMS455	Square Ventbox
Notes:	

# VENTING COMPONENTS

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**T FITTING**



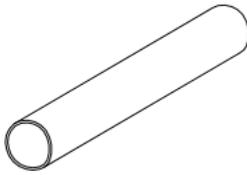
**90° BEND**



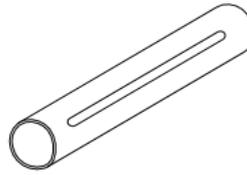
**COUPLING**



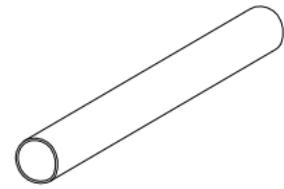
**END CAP**



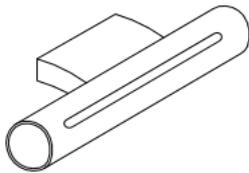
**SOLID PIPE**



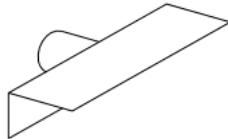
**SLOTTED PIPE 1.2 1m**



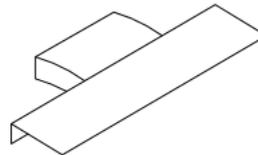
**50mm SOLID PIPE**



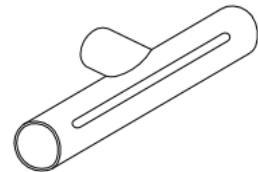
**VOIDFORM OUTLET CONNECTOR**



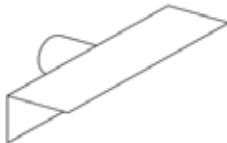
**50mm VOIDFORM CONNECTOR**



**VOIDFORM OUTLET CONNECTOR**



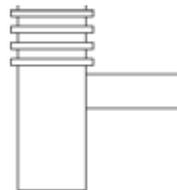
**VOIDFORM OUTLET CONNECTOR**



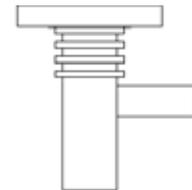
**VOIDFORMER OUTLET CONNECTOR**



**SQUARE VENT BOX**



**ROUND GULLY VENT**



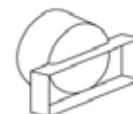
**RECTANGULAR VENT**



**AIR BRICK**



**PERISCOPE VENT**



**ROUND TO RECTANGULAR CONVERTER**

# PRODUCT INDEX

GAS PROTECTION SYSTEM		
DMS Code	Product	Order Quantities
DMS404	Pro Void Vent 25 Membrane	
DMS430	T Fitting	
DMS424	90 Bend	
DMS425	Coupling	
DMS426	End Cap	
DMS436	Solid Pipe	
DMS427	Slotted Pipe 1.2M	
DMS451	50mm Solid Pipe	
DMS452	Voidform Outlet Connector	
DMS453	50mm Voidform Connector	
DMS422	Voidform Vent Bollard	
DMS455	Square Ventbox	
DMS456	Round Gully Vent	
DMS421	Rectangular Vent	
DMS457	Air Brick	
DMS432	Periscope Vent	
DMS429	Round to Rectangular Converter	
DMS414	Pro LGB Joint Tape	
DMS413	Pro 300 Detailing	
DMS412	Pro Gas Overtape	
DMS439	Pro Titan Tape	
DMS411	Pro Gas Tape 50	
DMS440	Pro Titan Bond Ext Tape	
DMS444	Pipe Sleeve (Top Hat)	
DMS442	Internal Corners	
DMS443	External Corners	
Notes:		

# GROUND GASES EXPLAINED



## HYDROCARBONS

Hydrocarbons derive from the petrol chemistry industry and are highly toxic. The majority of Hydrocarbons have the potential to cause cancer.

## METHANE

An odourless flammable gas that is explosive when released into the atmosphere at levels as low as 5% and exposed to a source of ignition. Methane is formed where there is below ground degradation of organic substances e.g. landfill sites, sewage treatment areas, mining operations and peat bogs.

## CARBON DIOXIDE

Carbon Dioxide is a odourless and colourless toxic gas. In high concentrations can result in asphyxiation. The gas is formed by the oxidation of carbon compounds such as that which occurs in landfill sites. When Carbon Dioxide levels reach a concentration of 3%, symptoms of headaches and shortness of breath will occur, becoming severe at 5% between 7-10% will cause suffocation.

## RADON

Radon occurs naturally in the environment, this radioactive gas is, colourless, odourless and tasteless. Radon can migrate into any building that is built over a source. If it accumulates in a building, it increases the risk of lung cancer for occupants. Radon is the cause of 15% of lung cancers worldwide (World Health Organisation 'WHO' 2009).

## VOLATILE ORGANIC COMPOUNDS (VOCs)

Volatile Organic Compounds (VOCs) are organic compounds that easily volatilise under normal atmospheric conditions/environments to become vapours or gases. Along with carbon, they contain elements such as hydrogen, oxygen, fluorine, chlorine, bromine, sulphur or nitrogen. Typical VOCs encountered on brownfield and industrial sites include: Petroleum, benzene, toluene, butylbenzenes, chlorinated ethenes, Nitrogen, sulphur and tetrahydrofuran. VOCs in the air react with oxides of nitrogen in the presence of sunlight to form ozone.