

## Medical Gas Terminal Unit - Gem Shield BS 5682

### SPECIFICATION

#### Medical Terminal Unit (Gem Shield)

The Medical terminal units are located at the final delivery points in medical gas piping systems to provide quick connection to the system. Terminal units provide for single handed insertion and removal of the medical gas probe.

The medical gas terminal units shall conform to BS EN ISO 9170-1 and accept probes to BS5682. Terminal units shall be capable of single-handed insertion and removal of the medical gas probe. The anaesthetic gas scavenging (AGS) terminal unit shall conform to BS6834.

Medical gas terminal units consist of two parts:

First fix – the wall mounted assembly consists of brass pipeline termination block with copper stub pipe secured between a back plate and a gas specific plate to allow 130 degrees radial movement of the copper stub to align with the pipeline.

The second fix plastic components shall be manufactured with the pin index permanently moulded into the gas specific socket. The socket assembly shall retain a capsule assembly, containing the check valve and probe 'O' ring seals. Second fix terminal units shall be supplied with the anti-rotation pin loose and bagged to be fitted as required.

The socket is fixed to the base block with a design that insure profile is always in the correct position.

Probes are gas specific connectors that couple to the medical gas terminal unit sockets to provide access to gas systems.

The replaceable capsule assembly shall enable all working parts subject to wear through usage to be replaced as a factory tested assembly, thereby reducing maintenance time. Each termination block assembly shall be pressure tested by the pressure decay method.

#### Gas Specificity

Terminal units shall be gas specific and only accept the correct medical gas probe. Gas specific components shall be pin-indexed to ensure that a correct gas specific assembly is achieved so that in normal course of dismantling for repair or maintenance, parts from other gases cannot inadvertently be used. Wall mounted and bedhead terminal units shall incorporate an anti-rotation pin to engage with connected downstream medical equipment ensuring correct orientation.

#### Materials

All screws, probe roller pins, locking springs and the anti-rotation pin shall be manufactured from stainless steel. The second fix assembly shall incorporate three injection moulded parts in Polypropylene. All wetted parts (except seals) shall be brass or copper. Copper stubs pipes shall be manufactured from phosphorous de-oxidised non-arsenical copper to BS EN 1412 grade CW024A, manufactured to metric outside diameters in accordance with BS EN 13348 R250 (half hard). All elastomeric seals shall be manufactured from EPDM & Fluorocarbon.

#### Antimicrobial Additive

All user accessible parts, 2nd fix, gas ID ring, plaster box, trim plate and inks shall include Biomaster silver ion antimicrobial additive for inherent antimicrobial protection. Verimaster additive shall also be included to enable the end user to verify the product is a genuine BeaconMedaes product.

\* Biomaster and Verimaster are registered products of Addmaster (UK).

Sample	Species	Reduction
Gas ID Ring	E coli	≥ 99.77%
Gas ID Ring	MRSA	≥ 99.82%
Trim Plate	E coli	≥ 99.92%
Trim Plate	MRSA	≥ 99.93%
Plaster Box	E coli	≥ 99.94%
Plaster Box	MRSA	≥ 99.35%

\* Determination of antimicrobial activity using test based on ISO 22196 Plastics - Measurement of anti bacterial activity on plastics surfaces.

#### Pipeline Connections

Terminal units installed in walls, bedhead trunking, headwalls or fixed pendants shall be connected to the pipeline with a copper stub pipe. Pressure gases and vacuum shall incorporate a 12mm O/D copper stub pipe. Terminal units for anaesthetic gas scavenging shall incorporate a 15mm O/D copper stub pipe.

Terminal units installed in booms or moveable pendants shall be attached to their respective flexible gas hose by a gas specific non-interchangeable screw thread (NIST) fitting to BS EN ISO 5359. Terminal units shall be fitted with a male NIST and nut for connection to hoses with a female NIST connection.

#### Performance

Pressure drops across the terminal unit shall comply with clause 4.4.11 of BS EN ISO 9170-1. The flow/pressure drop characteristics for the Gem terminal unit are shown below with the maximum allowable value.

Nominal pressure (kPa)	Test pressure (kPa)	Flow (l/min)	EN 9170-1 limit (kPa)	Gem shield (kPa)
400-500	320	40	15	2
400-500	320	200	70	35
700-10000	560	350	100	70
Vacuum	*40	25	15	7

\* Absolute pressure

#### CE Marking

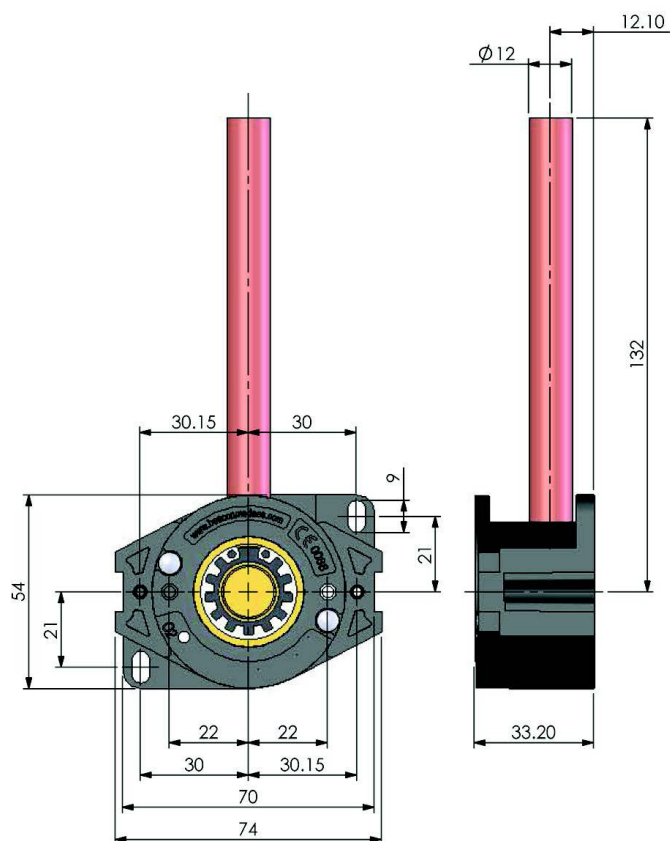
The standard range of BeaconMedaes Gem Medical Gas Terminal Units and Gem Conversions are 'CE' marked with approval from a notified body (more detailed information available on request).

#### Warranty

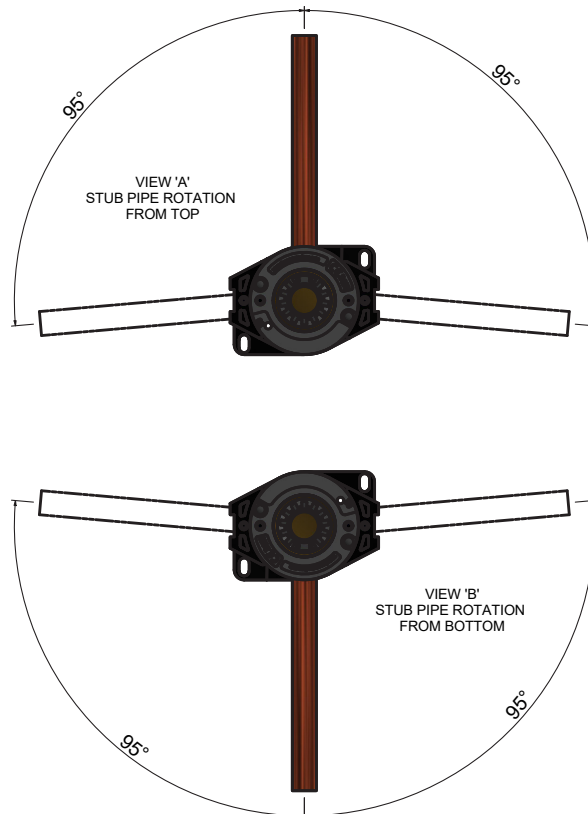
The terminal units shall have a three-year warranty, subject to the recommended minimum routine maintenance operations being carried out by correctly competent persons.

### Gem Shield Terminal Unit Installation Dimensions BS EN ISO-9170-1

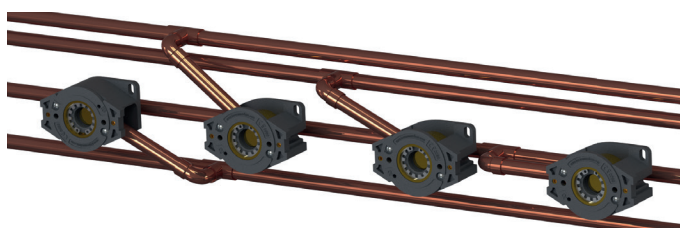
First fix "Revolve"



First fix "Revolve"



Gas	1 <sup>st</sup> fix Mod/Wall
O <sub>2</sub>	8102340210
N <sub>2</sub> O	8102340211
N <sub>2</sub> O/O <sub>2</sub>	8102340212
MA	8102340213
SA	8102340214
VAC	8102340215
N <sub>2</sub>	8102340216
CO <sub>2</sub>	8102340217
AGSS	8102340218



Typical example of pipe arrangement for trunking systems

#### Notes:

1. Backplate includes two slotted fixing holes (bottom) in order to provide adjustment of the terminal within the bedhead unit.
2. Gem Shield 2nd fix does not require disassembling during installation due to the fastener access points.

### Second Fix Gem Shield Terminal Unit (with Antimicrobial Protection)



Gas	2 <sup>nd</sup> fix
O <sub>2</sub>	8102371350
N <sub>2</sub> O	8102371351
N <sub>2</sub> O/O <sub>2</sub>	8102371352
MA	8102371353
SA	8102371354
VAC	8102371355

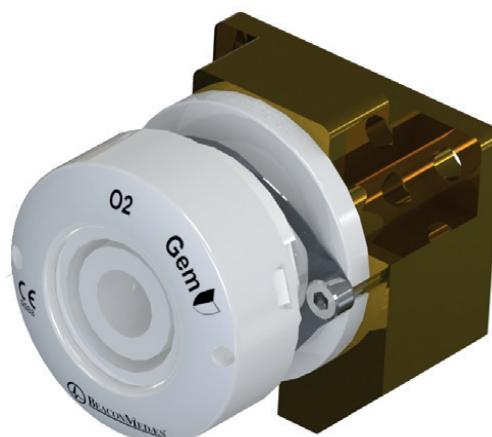
### Second Fix Gem Shield Stainless steel. Thread Connection

Gas	2 <sup>nd</sup> fix
AGSS <sup>1</sup>	8102340208
N <sub>2</sub>	8102340206
CO <sub>2</sub>	8102340207



### Second Fix Gem Conversions

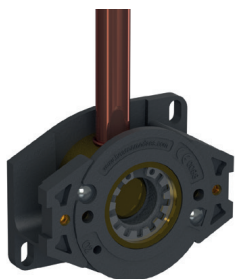
Gas	MK3/MGI to GEM Shield	MK4 to GEM Shield
O <sub>2</sub>	8102371441	8102371447
N <sub>2</sub> O	8102371442	8102371448
N <sub>2</sub> O/O <sub>2</sub>	8102371443	8102371449
MA	8102371444	8102371450
SA	8102371445	8102371451
VAC	8102371446	8102371452



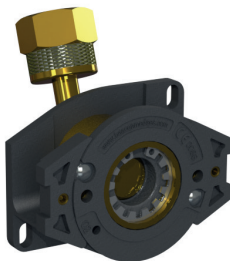
### Range of First fixes

There are many possible terminal unit configurations types available on request to suit almost any applications.

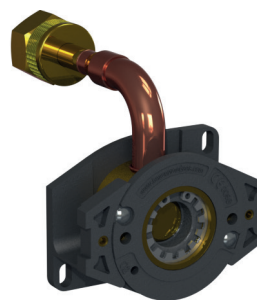
Gas	Mod/Wall, 150 mm	Pendant Rear NIST	Retractable Pendant	Flexible Pendant <sup>1</sup>
O <sub>2</sub>	8102340210	8102369860	8102369870	8102340280
N <sub>2</sub> O	8102340211	8102369861	8102369871	8102340281
N <sub>2</sub> O/O <sub>2</sub>	8102340212	8102369862	8102369872	8102340282
MA	8102340213	8102369863	8102369873	8102340283
SA	8102344210	8102369864	8102369874	8102340284
VAC	8102340215	8102369865	8102369875	8102340285
N <sub>2</sub>	8102340216	8102369866	8102369876	8102340286
CO <sub>2</sub>	8102340217	8102369867	8102369877	8102340287
AGSS <sup>2</sup>	8102340218	8102369868	8102369878	n/a



Modular/Wall. Straight stub



Pendant Rear NIST

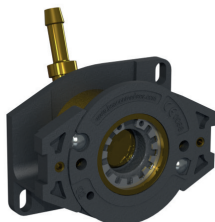


Retractable Pendant

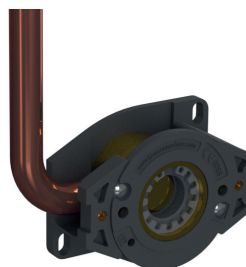


Flexible Pendant

Gas	Hose Barb <sup>2</sup>	Curved, 150mm
O <sub>2</sub>	8102369890	8102340230
N <sub>2</sub> O	8102369891	8102340231
N <sub>2</sub> O/O <sub>2</sub>	8102369892	8102340232
MA	8102369893	8102340233
SA	8102369894	8102340234
VAC	8102369895	8102340235
N <sub>2</sub>	8102369896	8102340236
CO <sub>2</sub>	8102369897	8102340237
AGSS <sup>2</sup>	n/a	8102340238



Hose Barb



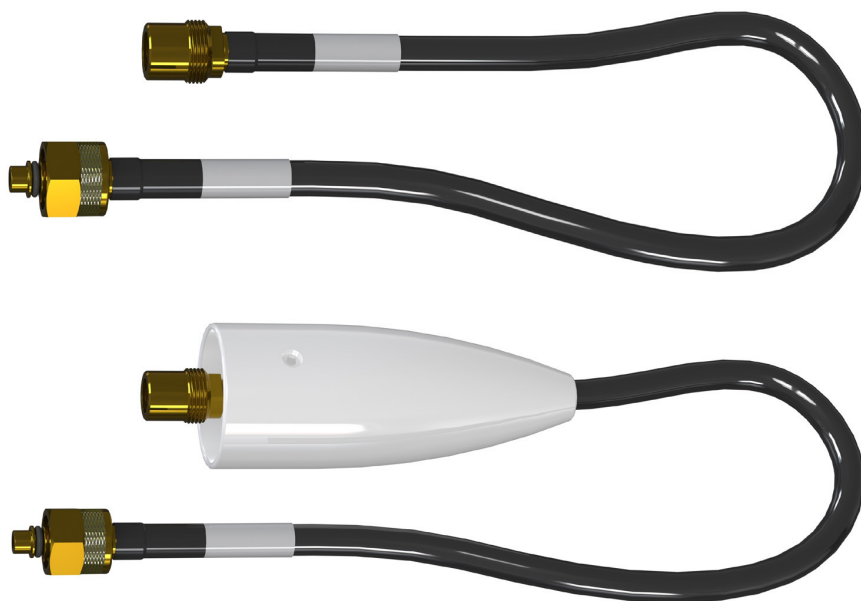
Curved

#### Notes:

1. Flexible pendant supplied complete: first+second fix. Shroud supplied with hose assembly.
2. Terminal units with a barb connection are not recommended for UK market.
3. There are many possible terminal unit configurations types available on request to suit almost any application. Typical examples are barbed hose connection, DISS connection, vertical NIST.

## Hose assemblies to suit GEM pendant outlets

Gas	BS 5682: NIST hose assembly (Male/Female)
O <sub>2</sub>	42331120xx
N <sub>2</sub> O	42331121xx
N <sub>2</sub> O/O <sub>2</sub>	42331122xx
MA	42331123xx
SA	42331124xx
VAC	42331125xx
AGS	42331126xx
N <sub>2</sub>	42331128xx
CO <sub>2</sub>	42331129xx
Gas	BS 5682: NIST hose assembly (Male/Female) Complete with Shroud
O <sub>2</sub>	42331170xx
N <sub>2</sub> O	42331171xx
N <sub>2</sub> O/O <sub>2</sub>	42331172xx
MA	42331173xx
SA	42331174xx
VAC	42331175xx

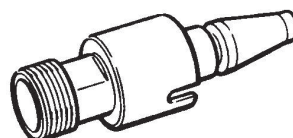


**Note:** The final 2 digits shown as 'xx' in the tables above denote the hose length in meters. i.e. a 1.5 meter long O<sub>2</sub> hose would be 4233112015.

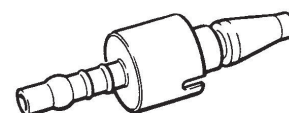
## Probe Connection

Gas	Direct Probe	Remote Probe	TU connector & 1mt open ended hose +
O <sub>2</sub>	2150-002	2150-011	n/a
N <sub>2</sub> O	2150-006	2150-015	n/a
N <sub>2</sub> O/O <sub>2</sub>	2150-007	2150-025	n/a
MA	2150-005	2150-013	n/a
SA	2150-004	2150-012	n/a
VAC	1366415	2150-010	n/a
AGS	T.B.C	231740	n/a
N <sub>2</sub>	n/a	2005489	2005480
CO <sub>2</sub>	n/a	2005488	2005479

**Note:** CO<sub>2</sub> and N<sub>2</sub> outlets include a NIST style connection as there is no defined probe size in the BS standard.



Direct Probe

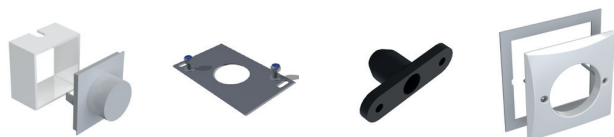


Remote Probe



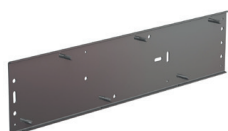
## Accessories

Part Number	Description
8102340127	Gem Plaster Box & Surface Mounting Kit - Gases
	Gem Plaster Box & Surface Mounting Kit - AGS
2006149	Bezel and Trim Plate
8102340179	GEM 1 <sup>st</sup> fix adaptor plate kit
8102369825	Terminal unit anti-rotation pins (10 pcs.)
2212020093	AGS 1 <sup>st</sup> Fix Test Plug

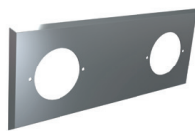


Mounting Box Plaster Shield    Adaptor plate kit    Terminal Unit Plug<sup>2</sup>    Bezel and Trim Plate Kit

Size	Jig Plates	Stainless steel trim plate
1 Gas		1826978
2 Gas (150 mm spacing)	8102340521	
2 Gas (133.5 mm spacing)	8102340520	1826979
3 Gas (133.5 mm spacing)	8102340522	1826980
4 Gas (133.5 mm spacing)	8102340523	1826981
5 Gas (133.5 mm spacing)	8102340524	1827026
6 Gas (133.5 mm spacing)	8102340525	1827027



Jig Plates - for accurate flush wall mounting



Stainless Steel Trim Plate

### Notes:

1. All terminal unit accessories are suitable for use with Gem Shield quick connect or Gem threaded terminal units.
2. Terminal Unit Plug provided with all 1st fix assemblies in order to complete on site 1st fix pipeline carcass testing.

## Terminal Unit Installation Dimension Drawings

Part Number	Description
8102340219	GEM Revolve 1 <sup>st</sup> fix
2006241	GEM Shield BS 2 <sup>nd</sup> fix
2006242	GEM Shield BS Complete
8102340279	GEM Shield BS Pendant. Curved
8102340249	GEM Shield BS O <sub>2</sub> Rear NIST
8102340221	GEM Shield BS CO <sub>2</sub> 2 <sup>nd</sup> fix
8102340220	GEM Shield BS N <sub>2</sub> 2 <sup>nd</sup> fix
8102340222	GEM BS AGS 2 <sup>nd</sup> fix

Drawings detailing different views all dimensional information are available upon request - please refer the table above.

## Other documents

Document Number	Type
8102340210	3D Model 1 <sup>st</sup> fix
8102340200	3D Model O <sub>2</sub> 2 <sup>nd</sup> fix
8102340207	3D Model CO <sub>2</sub> 2 <sup>nd</sup> fix
8102340240	3D Model O <sub>2</sub> NIST complete
1826921	Gem Revolve Installation Manual
1826923	Gem Shield 2 <sup>nd</sup> fix Installation Manual
1826925	Gem - OM Manual

Other 3D images are available upon request - please contact our technical department.

## Parts Including Antimicrobial Additive

