

**Installation, Operating & Commissioning Manual**

# **Radiant Heating Accessories**

## **Ball Guard, Under-shield & Wall Bracket**

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**Warnings**

Nortek Global HVAC (UK) Limited equipment must be installed and maintained in accordance with the requirements of the Codes of Practice or rules in force. All external wiring MUST comply with the codes of practice or rules in force in the country of installation.

Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death.

Read instructions before installing or servicing this equipment. Gas-fired appliances are not designed for use in hazardous atmospheres containing flammable vapours or combustible dust, containing chlorinated or halogenated hydrocarbons, or in applications with airborne silicone substances.

**Manual Part No. D301158 Issue A**

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### IMPORTANT NOTICE TO INSTALLERS

Installers should satisfy themselves that the gas pipework installation is carried out in accordance with all current legislation, Codes of Practice and recommendations.

Additionally it may be necessary to protect the gas valves which form part of the heater or burner assembly from potential pipe contamination particularly, but not exclusively, where copper gas pipework is used.

In instances where copper pipework is to be used for all or part of a gas pipework installation, including short length final connections then we advise that installers consult with gas supplier or provider and satisfy themselves what additional precautions may be necessary.

Please read this manual carefully before operating this product.

With the aim of constantly improving its products, the manufacturer reserves the right to change the contents without prior notice.

Any reference made to Laws, Standards, Directives, Codes of Practice or other recommendations governing the application and installation of heating appliances and which may be referred to in Brochures, Specifications, Quotations, and Installation, Operation and Maintenance manuals is done so for information and guidance purposes only and should only be considered valid at the time of the publication.

The Manufacturer cannot be held responsible from any matters arising from the revision to or introduction of new Laws, Standards, Directives, Codes of Practice or other recommendations.



WARNING

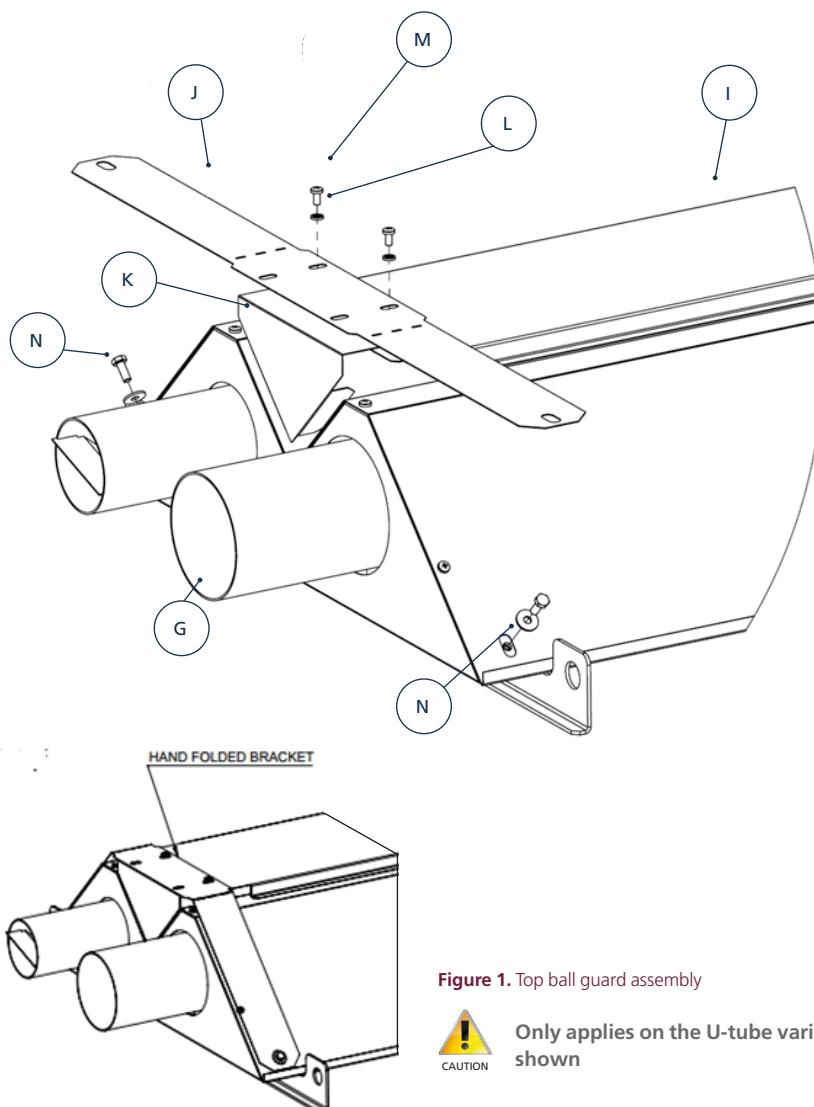


CAUTION

**Failure to comply with the information given with these symbols will result in severe personal injury or death and/or property damage.**

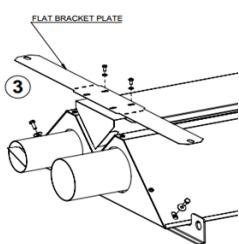


**CAUTION** The top ball guard must be assembled first.

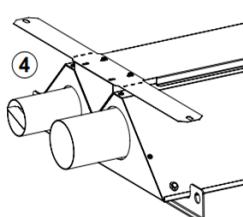


Starting from the burner end, remove the two sets of reflector fasteners (N) from either side and position the top panel (I) on top of the heater, approx. 40mm from the end.

Position the closing plate (K) over the top panel (I), making sure both are perfectly allied.



Next, fix the flat bracket plate (J) with 2x M5 screws (M) while including the 2x washers (L).



Once the plate is secured by the screws (M), fold the bracket (J) by hand and fasten both sides down to the heater with the existing M6 set pins/washers (N) removed in step one.

## 1. Ball Guard

The ball guard system consists of modules which are supported from the underside of the radiant tube from brackets, alongside a top ball guard for U-tube radiant heaters. The ball guard sections are fitted in tandem along the system. When any assembling, commissioning, installing or servicing is undertaken on radiant tube heaters, due care and attention is required to ensure that working at height regulations are adhered to at the mounting heights specified.

**Note:** Please read the whole of the document prior to installation to familiarise yourself with the components and tools you require at the various stages of assembly.

All dimensions are displayed in mm unless otherwise stated.

### Tools required

The following tools and equipment are advisable to complete the tasks laid out in this manual.



Leather Faced Gloves



Pozidrive Screwdrivers



Spanners 10mm x2



Tape Measure

### Key

G	Radiant Tube	L	Washer
I	Top Ball Guard Panel	M	Screw
J	Top Ball Guard Bracket Plate	N	Existing Set Pins
K	Closing Plate		

## 1.1 Assembly and Installation

### 1.1.1 Top ball guard (U-Tube)

Repeat the principle to the right for placement of the middle and end top plates (I) excluding the closing plate (K), while leaving a 10mm gap between each top plate (I).

Following the instructions to the right should mirror the complete assembly shown in Figure 1

Guidance on length and positioning of radiant tubes brackets are shown in Table 3 and Table 4 on page 5.

### 1.1.2 Bottom ball guard (U-Tube)

Starting at a distance of one-third from the burner end, position two U bolts (C) around the radiant tubes (G) on the inside of the reflector, through the guard bracket (B) and secure using with 4 x washers (L) and 4 x nuts (E).

The VSUTE ball guard assembly should be positioned perfectly square to ensure that the ball guard module lies horizontal when fitted. See side view Figure 9 for guide. Then position the next guard bracket assembly along the tube at the correct distance of two-thirds, using the

same assembly instructions as the first U bolt fixture. The number of ball guard brackets required are dependent on the overall length of the radiant heater however each section must have two fixtures to one ball guard mesh, as shown in Figure 4.

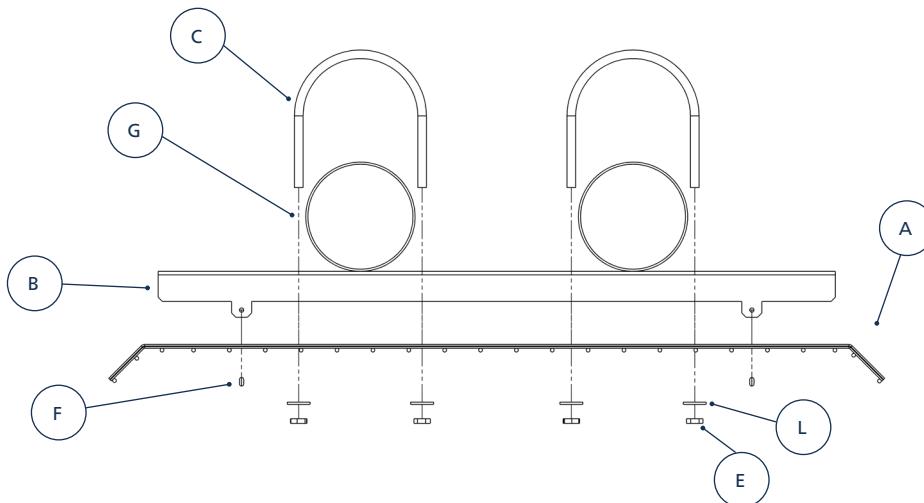
Position the first ball guard (A) to the first fixed bracket (B). Secure in position by inserting the cotter pins (F) through the holes. Position the other end of the ball guard to the second guard bracket with cotter pins (F) shown in Figure 3.

Again noting the length of the next ball guard from the data, position the next guard bracket along the tube at the correct distance.

Continue this method along the radiant tube with further ball guards as specified in Table 1 and Table 2 on page 5.

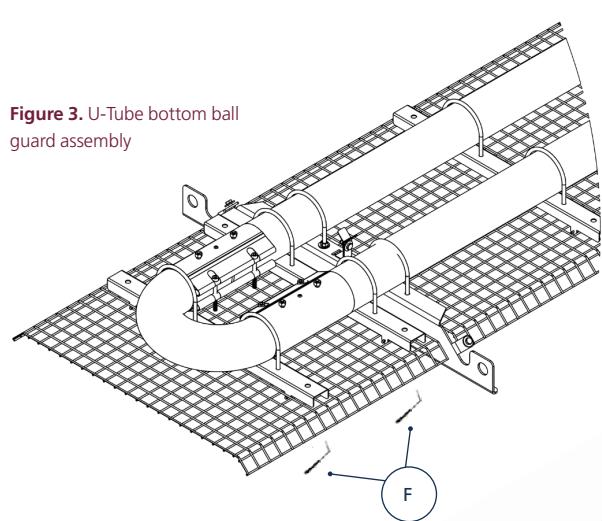


**[2 persons may be required]**  
**Caution when working from heights**

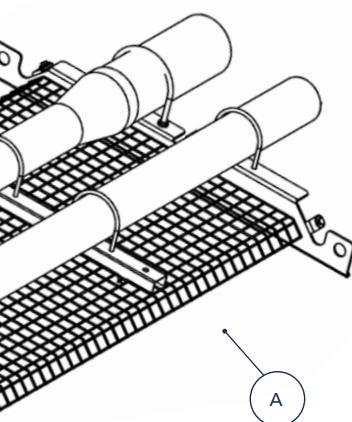


Key	
A	Ball Guard
B	Guard Bracket
C	U-Bolt
E	Nut
F	Cotter Pin
G	Radiant Tube
L	Washer

**Figure 2.** VSUTE front view ball guard assembly

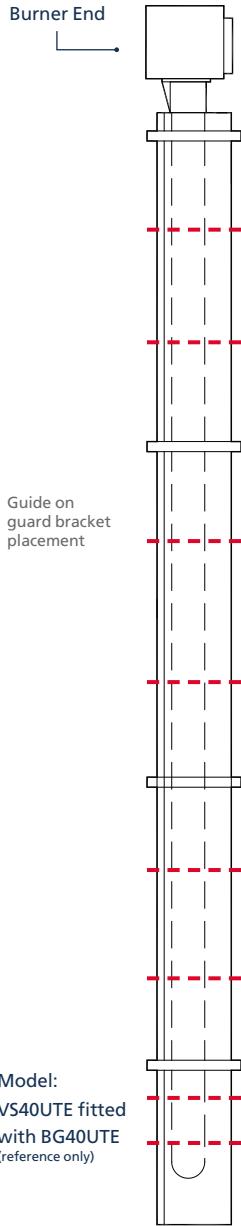


**Figure 3.** U-Tube bottom ball guard assembly



Key	
A	Ball Guard
B	Guard Bracket
C	U-Bolt
E	Nut
F	Cotter Pin
G	Radiant Tube
H	Washer
B	
E	
F	

**Figure 4.** U-Tube bottom ball guard assembly



**Figure 5.** Bottom ball guard (U-Tube)

### 1.1.3 U-Tube Ball Guard Data Tables

Ball Guard Kit (Bottom)	BG15UTE Part No. (Qty)	BG20UTE-25UTE Part No. (Qty)	BG30UTE-35UTE Part No. (Qty)	BG40UTE Part No. (Qty)	BG45UTE-50UTE Part No. (Qty)
BG Bracket	1001718 (x6)	1001718 (x6)	1001718 (x8)	1001718 (x8)	1001718 (x10)
U Bolt	5421-1 (x12)	5421-1 (x12)	1001784 (x16)	1001784 (x16)	1001784 (x20)
Washer	5425 (x24)	5425 (x24)	5461 (x32)	5461 (x32)	5461 (x40)
Nut	5403-1 (x24)	5403-1 (x24)	5454 (x32)	5454 (x32)	5454 (x40)
Cotter Pin	1001782 (x12)	1001782 (x12)	1001782 (x16)	1001782 (x16)	1001782 (x20)
Mesh	1001726 (x2)	1001725 (x2)	1001724 (x3)	1001723 (x3)	1001722 (x4)
Mesh	1001731 (x1)	1001731 (x1)	1001730 (x1)	1001730 (x1)	1001730 (x1)

**Table 1 – Ball guard (U-Tube)**

Model Part No.	Bottom Ball Guard Panel Length			
	1	2	3	4
<b>BG15UTE</b> 1001726, 1001731	1778mm	1778mm	432mm	
<b>BG20UTE-25UTE</b> 1001725, 1001731	2083mm	2083mm	432mm	
<b>BG30UTE-35UTE</b> 1001724, 1001730	2083mm	2083mm	2083mm	788mm
<b>BG40UTE</b> 1001723, 1001730	2363mm	2363mm	2363mm	788mm
<b>BG45UTE-50UTE</b> 1001722, 1001730	1956mm	1956mm	1956mm	1956mm
				788mm

**Table 2 – Bottom ball guard lengths**

Ball Guard Kit (Top)	BG15UTE Part No.(Qty)	BG20UTE-25UTE Part No. (Qty)	BG30UTE-35UTE Part No. (Qty)	BG40UTE Part No. (Qty)	BG45UTE-50UTE Part No. (Qty)
Top Ball Guard Bracket	1001791 (x3)	1001791 (x3)	1001792 (x4)	1001792 (x4)	1001792 (x5)
Top Ball Guard Panel	1001826 (x2)	1001828 (x2)	1001828 (x3)	1001830 (x3)	1001831 (x4)
Washer	5092 (x8)	5092 (x8)	5092 (x12)	5092 (x12)	5092 (x16)
Screw	5369 (x8)	5369 (x8)	5369 (x12)	5369 (x12)	5369 (x16)
Closing Plate	1001813 (x1)	1001813 (x1)	1001812 (x1)	1001812 (x1)	1001812 (x1)

**Table 3 – Top ball guard kit amounts**

Model Part No.	Top Ball Guard Panel Length			
	1	2	3	4
<b>BG15UTE</b> 1001826	1802mm	1802mm		
<b>BG20UTE-25UTE</b> 1001828	2115mm	2115mm		
<b>BG30UTE-35UTE</b> 1001828	2115mm	2115mm	2115mm	
<b>BG40UTE</b> 1001830	2404mm	2404mm	2404mm	
<b>BG45UTE-50UTE</b> 1001831	1998mm	1998mm	1998mm	1998mm

**Table 4 – Top ball guard lengths**

#### 1.1.4 Bottom ball guard (Linear)

Starting at the burner end, position a U-bolt (C) around the radiant tube on the inside of the reflector, through the guard bracket (B) and secure using with 2 x nuts (E) and 2 x washers (L).

The placement of the first U-bolt assembly should be placed one third from the start of each suspension bracket.

Next position the following U-bolt assembly along the tube at the correct distance of two-thirds from each suspension bracket.

The amount of ball guard brackets required are dependent on the overall length of the radiant heater however each section must have two fixtures to one ball guard mesh, shown in Figure 7.

The U-bolt assembly should be positioned perfectly square to ensure that the ball guard module lies horizontal when fitted, see Figure 9 for guide.

Offer the first ball guard (A) to the first fixed bracket (B). Secure in position by inserting the cotter pins (F) through the holes. Position the other end of the ball guard to the second guard bracket with cotter pins (F), shown in Figure 6.

Again noting the length of the next ball guard from the data, position the next guard bracket along the tube at the correct distance. Continue this method along the radiant tube with further ball guards as necessary.

Guidance on length and positioning of radiant tubes brackets are shown in Table 5 and Table 6 on page 7.

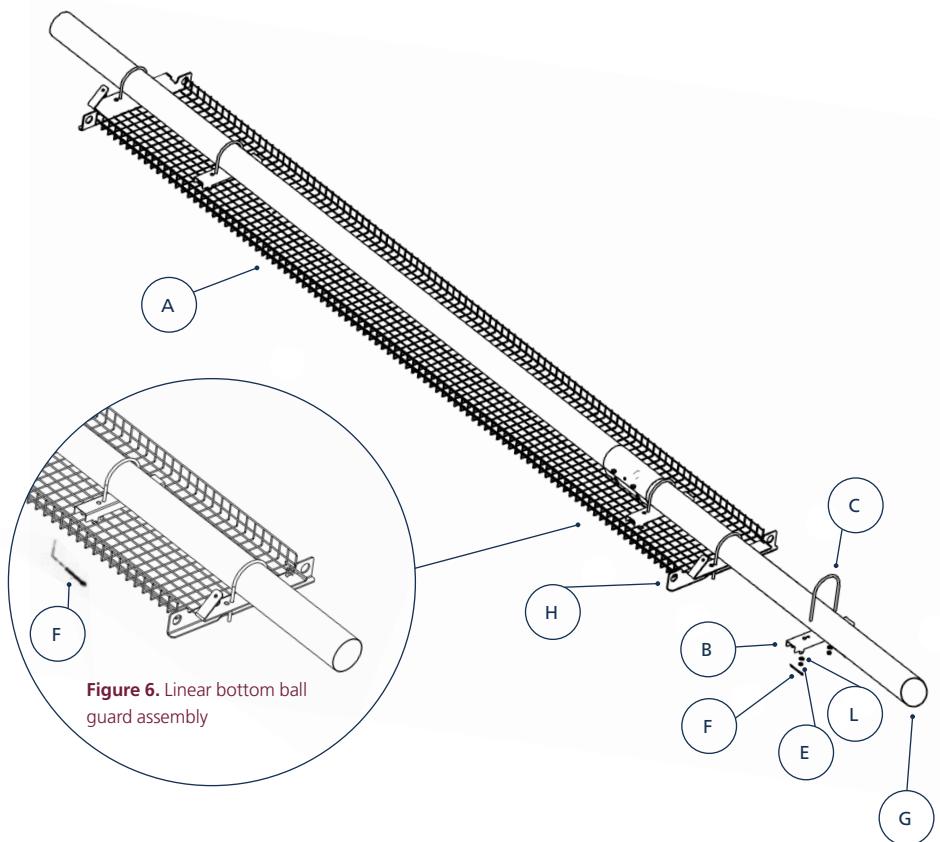


Figure 6. Linear bottom ball guard assembly

Figure 7. Linear bottom ball guard assembly

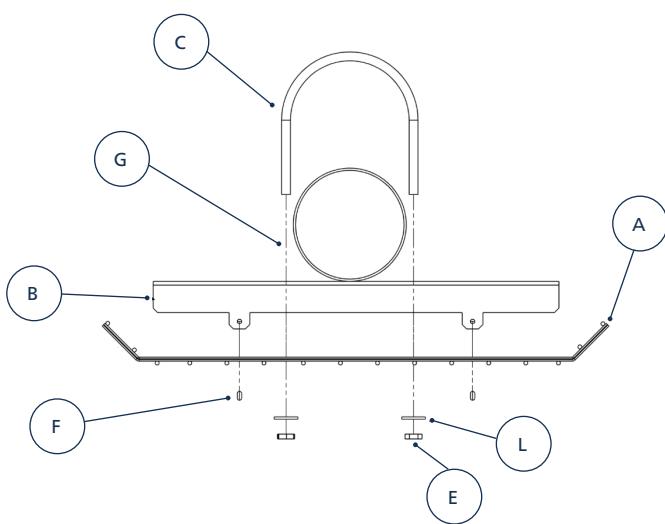


Figure 8. VSLIE front view ball guard assembly

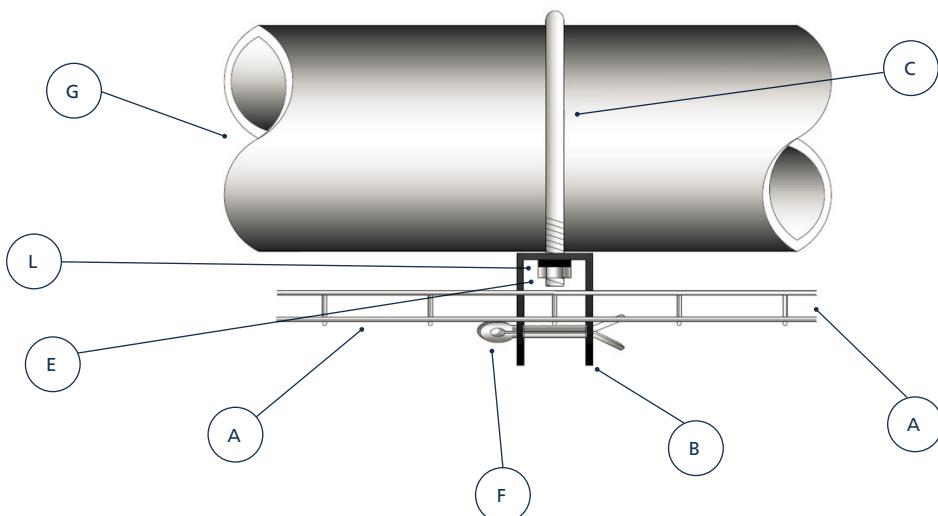
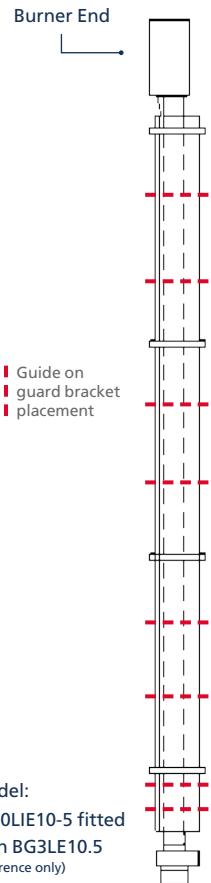


Figure 9. Side view

### 1.1.5 Linear Ball Guard Data Tables



Ball Guard Kit Bottom	BG3LE8 Part No. (Qty)	BG3LE10.5 Part No. (Qty)	BG4LE10.5 Part No. (Qty)	BGLE13.5 Part No. (Qty)	BG4LE16 Part No. (Qty)
BG Bracket	1001728 (x6)	1001728 (x8)	1001728 (x8)	1001728 (x10)	1001728 (x12)
U Bolt	5421-1 (x6)	5421-1 (x8)	1001784 (x8)	1001784 (x10)	1001784 (x12)
Washer	5425 (x12)	5425 (x16)	5461 (x16)	5461 (x20)	5461 (x24)
Nut	5403-1 (x12)	5403-1 (x16)	5454 (x16)	5454 (x20)	5454 (x24)
Cotter Pin	1001782 (x12)	1001782 (x16)	1001782 (x16)	1001782 (x20)	1001782 (x24)
Mesh	1001739 (x2)	1001738 (x3)	1001734 (x3)	1001734 (x3)	1001734 (x5)
Mesh	1001740 (x1)	1001739 (x1)	1001735 (x1)	1001737 (x1)	1001735 (x1)
Mesh	-	-	-	1001736 (x1)	-

Table 5 – Ball guard (Linear)

Model Part No.	Bottom Ball Guard Mesh Length			
	2337mm	2337mm	2261mm	2337mm
<b>BG3LE8</b> 1001739, 1001740				
<b>BG3LE10.5</b> 1001738, 1001739	2388mm	2388mm	2388mm	2337mm
<b>BG4LE10.5</b> 1001735, 1001734	2565mm	2565mm	2565mm	2185mm
<b>BG4LE13.5</b> 1001737, 1001734, 1001736	2565mm	2565mm	2565mm	2489mm
<b>BG4LE16</b> 1001735, 1001734	2565mm	2565mm	2565mm	2565mm
			2261mm	2185mm

Table 6 – Bottom ball guard lengths

## 2. Under-Shield

Before assembly, check that all items listed below are correct.

The Under-Shield deflector is positioned beneath the radiant tube, usually at the first half of the firing leg (nearest the burner), although it can be positioned at any point if being used purely as a heat deflector for clearance purposes.

The oversized munsen rings supplied will allow the Under-Shield deflector to move with the expansion and contraction of the radiant tube.

Each Under-Shield has two slots, 25mm in length at each end of the deflector. These slots are used to position the munsen rings apart. Mark the first point of the deflector on the radiant tube. Use the Under-Shield (or a tape measure if required) to mark the second point.

The munsen rings are supplied assembled. Using a flat head screwdriver remove both screws retaining the two parts together.

Offer one half, then the other onto the radiant tube at the first mark with boss facing downwards.

Replace the screws and tighten. Repeat for the second munsen ring.

Pass an M12 set pin through the slot on the Under-Shield and loosely attach the M12 lock-nuts. Repeat for the second set pin.

Offer the Under-Shield deflector up to the munsen rings. Locate set pins to the boss and tighten. Secure assembly by tightening lock-nuts. Repeat for second munsen.



Figure 10. Munsen Ring

### 2.1 Under-Shield deflector assembly (VSUTE, VSLIE)

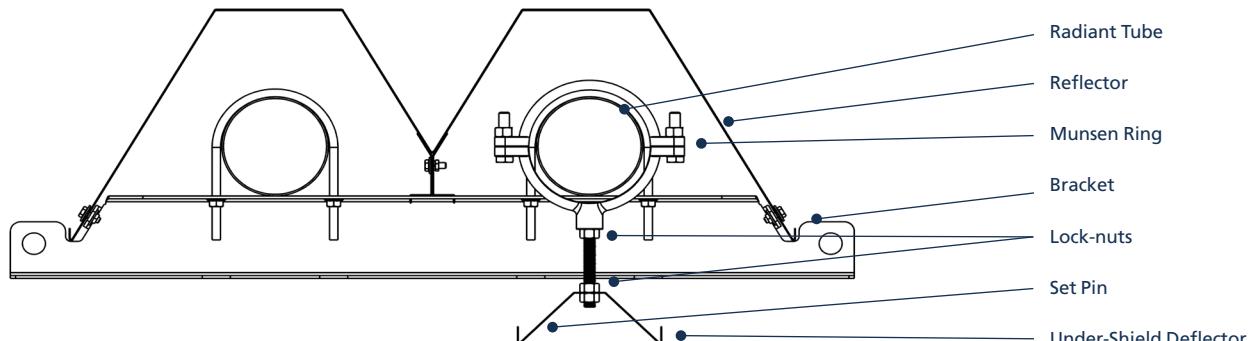


Figure 11. VSUTE

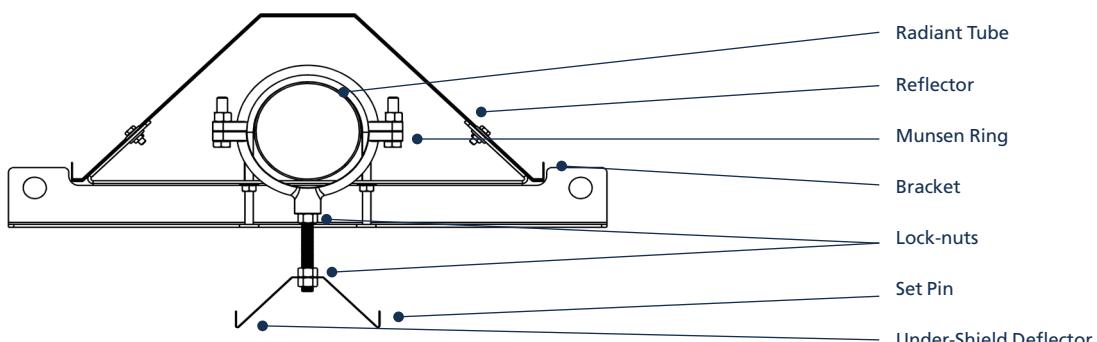


Figure 12. VSLIE

### 3. Wall/Angle Mount Bracket

A wall mounting bracket is a support, of metal, projecting from a wall to bear the weight of an radiant heater.

Attachment to the heater support lugs should be made by a 'speed link', D shackle or in the case of drop rods, a closed formed hook.

A graphic presentation of the complete section is illustrated in Figure 13.

Position 1 on the wall mounting angle bracket should always be fixed when attaching the small chain from the heater whereas, placement of the long chain at positions 6, 8, and 10 vary depending on size/model of heater in addition to meeting the required angle.

When using the wall mounted bracket the heater must be inclined at an angle no greater than 45°.

When Angle mounting a U tube heater, the burner MUST be located on the bottom (lowest) tube (see Figure 14 & Figure 15)



Models 15-25 U-Tube heaters cannot be installed angle mounted.

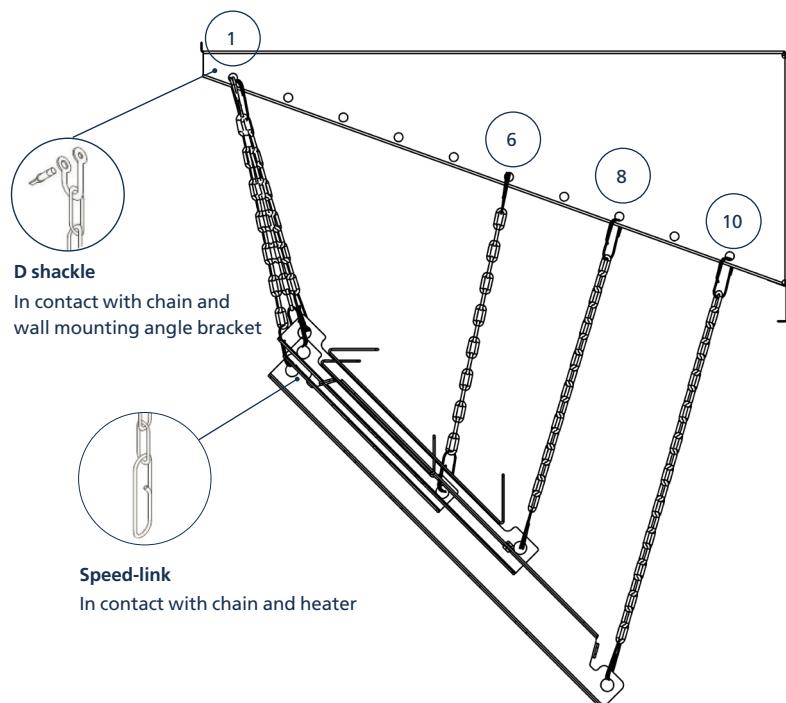


Figure 13. Angle mountings using the wall mounting bracket

**Note:** The burner MUST be positioned on the lowest side of the heater and mounted on a level horizontal plane. This is to ensure the gas valve coils are not installed beyond 90° from the upright position. See Figure 14.

**Note:** The burner and outlet tubes may be reversed on U-Tube models 30-50 to allow more flexibility when angle mounting. See Figure 15.

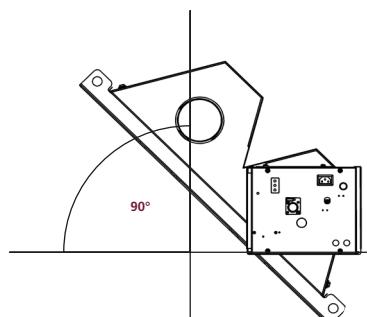


Figure 14.

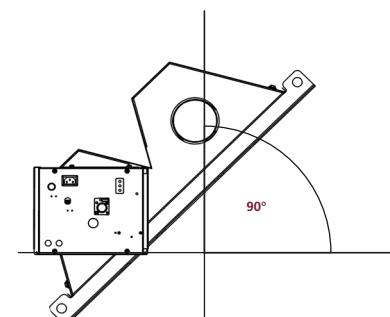


Figure 15.

Wall bracket kit

Description	Part No.	Quantity	Additional Info
Wall Bracket	1001742	1	-
Short Chain	6515	0.4	Required chain length see Table 98
Long Chain	6515	0.7	
D Shackle	6518	2	-
Speed Link	6524	2	-
M6 Set Pin	5416-1	2	-
M6 Nut	5403-1	2	-
M6 Washer	5425	4	-

Table 7 – Complete Kit (1001836)

Each wall mounted bracket has a kit consisting of parts shown in Table 7.

Part 6515 needs to be cut to correct length for each chain. The length of chain needed to suspend a heater from the wall bracket are illustrated in Table 8.

The amount of kits required for each heater are also presented in Table 9.

Model	Short Length* (No. Links)	Short Length Overall	Long Length* (No. Links)	Long Length Overall
VSUTE 30-50kW	360mm (11)	491mm	612mm (19)	743mm
VSLIE 15-25kW	334.3mm (10)	465mm	400mm (13)	531mm
VSLIE 30-50kW	302mm (9)	433mm	441mm (14)	572mm

\*Length not including speed link & D shackle

Table 8 – Required chain length

Heater	Quantity
VSUTE 30, 35, 40	4
VSLIE 45, 50	5
VSLIE 15-25 (8M)	4
VSLIE 20, 25 (10.5M) - 3 inch	5
VSLIE 30, 35 (10.5M) - 4 inch	5
VSLIE 30-50 (13.5M)	6
VSLIE 35-50 (16M)	7

Table 9 – Kits required per heater

#### 4.1 Assembly of the wall bracket

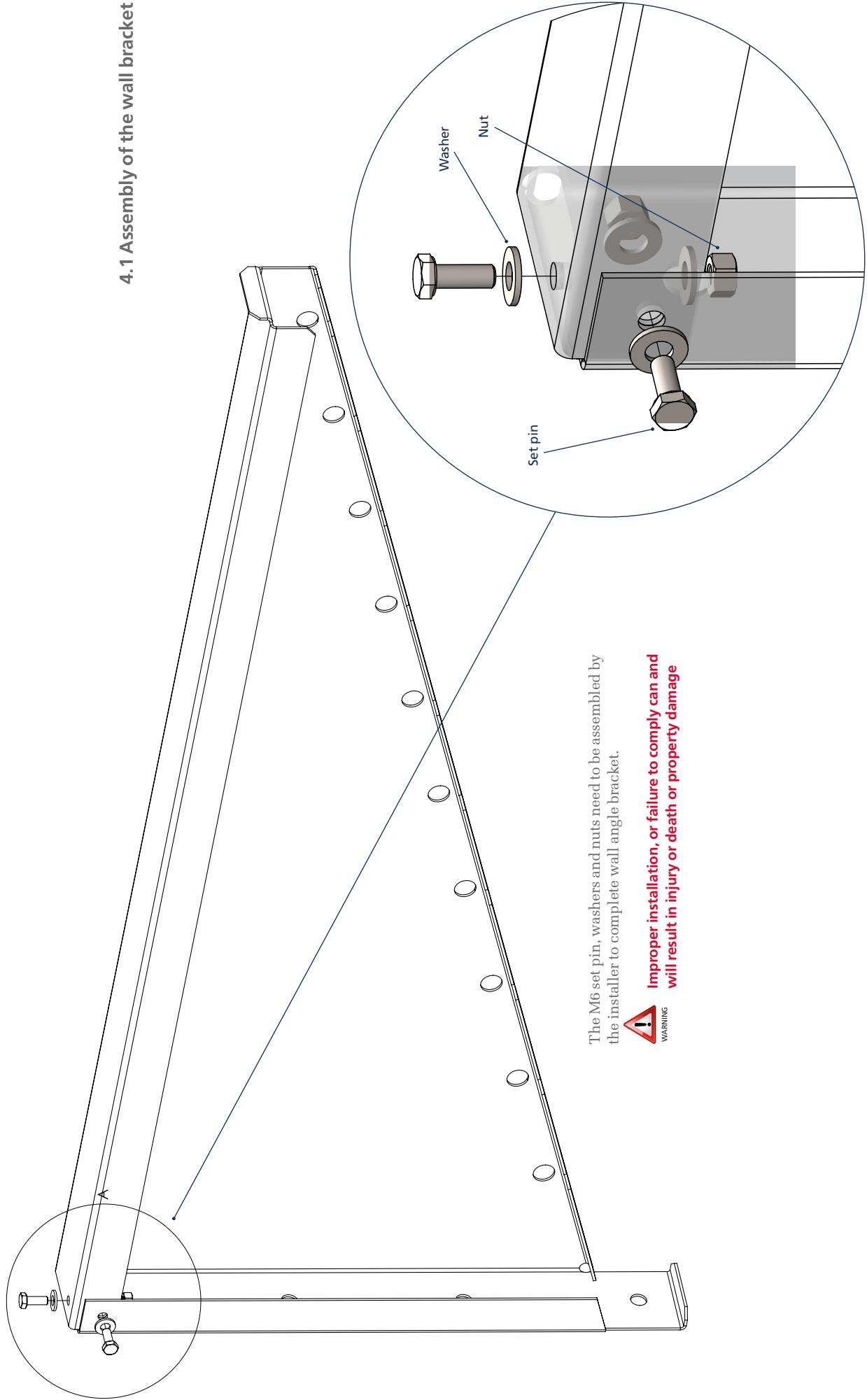


Figure 16. Assembly of wall bracket

## Notes



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