

For the installer



Flue installation instructions ecoMAX



Air flue duct for use with ecoMAX

ecoMAX 613/2 E
ecoMAX 618/2 E
ecoMAX 622/2 E
ecoMAX 635 E
ecoMAX 824/2 E
ecoMAX 828/2 E
ecoMAX 835 E
ecoMAX pro 18 E
ecoMAX pro 28 E

PART 1

Pages 4 - 20

**Standard Concentric Systems Ø 60/100
(Aluminium air duct/plastic flue duct)**

PART 2




Pages 21 - 40

**Optional Concentric System Ø 80/125
(Aluminium air duct/plastic flue duct)**

CONTENTS: PART 1 CONCENTRIC 60/100



The air/flue duct must be installed by a suitably qualified service provider, which is responsible for observing the relevant specifications, regulations and standards.

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Regulations and standards to be observed


- ✎ Vaillant ecoMAX boilers are certified as heating boilers with corresponding flue systems according to EC Directive 90/396/EEC on gas-fired devices. This installation manual is covered by this certification and is referred to in the design approval test certificate.
- ✎ These instructions should be read in conjunction with the instructions for installation and servicing supplied with the boiler.
- ✎ Ensure also that all legislation, rules, regulations and directives mentioned in the installation instructions are observed.
- ✎ The installation of the boiler and its flue must be carried out by a competent person who is registered with CORGI (The Council for Registered Gas Installers).
- ✎ The installation of the boiler and flue must be in accordance with the Gas Safety (Installation and Use) Regulations 1998 and the Building Regulations and BS 5440 Part 1.
- ✎ The requirements for flue termination detailed in the boiler installation instructions must be observed.
- ✎ Two types of flue system are available for ecoMAX boilers. The standard concentric flue system (100 mm outside diameter) and a larger diameter concentric system (125 mm outside diameter) which allows longer air/flue duct lengths to be achieved.
- ✎ The air/flue duct operates at very low temperatures therefore no clearance is necessary between the air duct and adjacent services.
- ✎ Ensure while installation work is being carried out that no debris such as swarf, filings or fragments of mortar are allowed to remain in the air/flue duct.












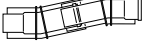


PLANNING THE AIR/FLUE DUCT LAYOUT

Alternative termination accessories available

 **303 900** = Vertical air/flue duct (black)

 **303 930** = Horizontal air/flue duct

Optional connection accessories	Accy. No.	303 930 	303 900 
Air/flue duct extensions, concentric 470 mm - Ø 60/100 	303 902	x	x
Air/flue duct extensions, concentric 970 mm - Ø 60/100 	303 903	x	x
Air/flue duct extensions, concentric 1970 mm - Ø 60/100 	303 905	x	x
Bends (PP), concentric (pack of 2) 45° - Ø 60/100 	303 911	x	x
Elbow, concentric 87° - Ø 60/100 	303 910	x	x
Flue support clips (pack of 5), Ø 100 	303 921	x	x
Sliding sleeve (PP) Ø 60/100 	303 915	x	x
Adjustable roof tiles for pitched roof 	009076 black	x	x
Telescopic extension 440 mm - 690 mm Ø 60/100 	303 906	x	x
Offset section 	303 919		x

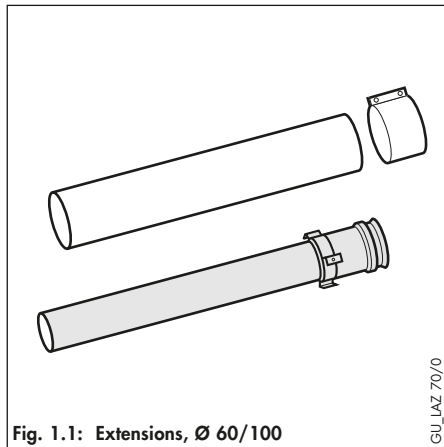


Fig. 1.1: Extensions, Ø 60/100

**Air/flue duct extension 470 mm
Ø 60/100**

Vaillant Accy. No.: 303 902

**Air/flue duct extension 970 mm,
Ø 60/100**

Vaillant Accy. No.: 303 903

**Air/flue duct extension 1970 mm,
Ø 60/100**

Vaillant Accy. No.: 303 905

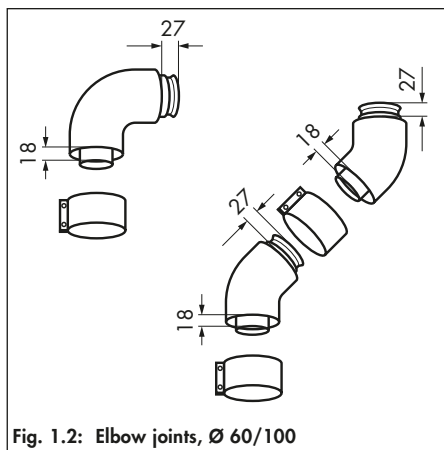


Fig. 1.2: Elbow joints, Ø 60/100

Elbow, 87°, Ø 60/100

Vaillant Accy. No.: 303 910

**Bends, 45° (pack of 2),
Ø 60/100**

Vaillant Accy. No.: 303 911

☞ Use one clip per extension to support the air/flue duct.

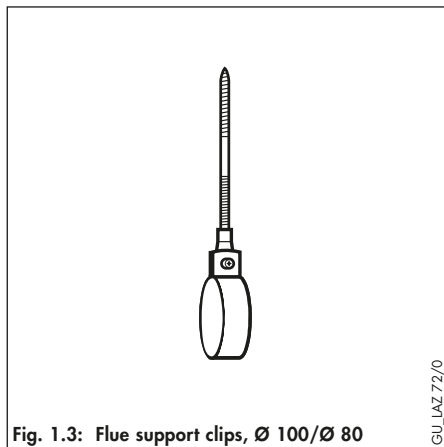


Fig. 1.3: Flue support clips, Ø 100/Ø 80

Flue support clips, Ø 100 (pack of 5)

Vaillant Accy. No.: 303 921

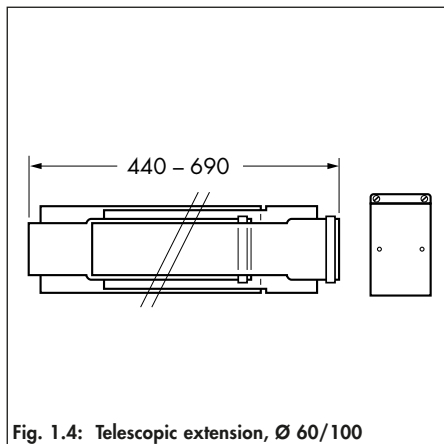


Fig. 1.4: Telescopic extension, Ø 60/100

**Telescopic extension (PP), Ø 60/100
440 mm - 690 mm**

Vaillant Accy. No.: 303 906



PLANNING THE AIR/FLUE DUCT LAYOUT

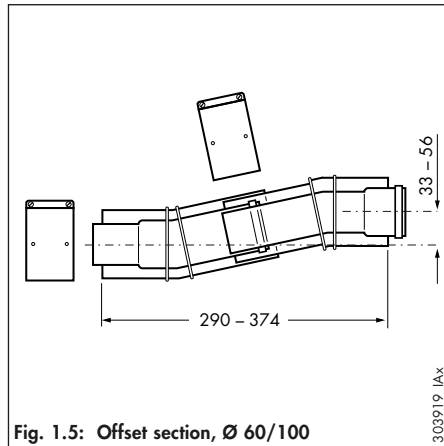


Fig. 1.5: Offset section, Ø 60/100

Offset section, Ø 60/100
Vaillant Accy. No.: 303 919

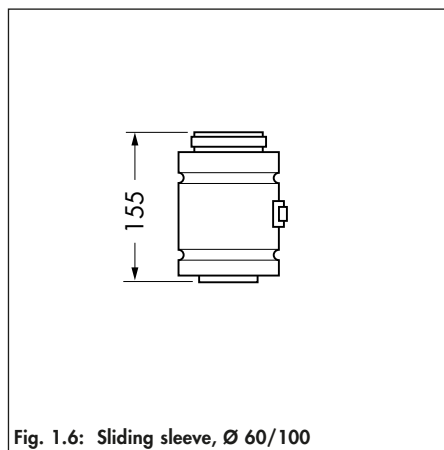


Fig. 1.6: Sliding sleeve, Ø 60/100

Sliding sleeve (PP), Ø 60/100
Vaillant Accy. No.: 303 915

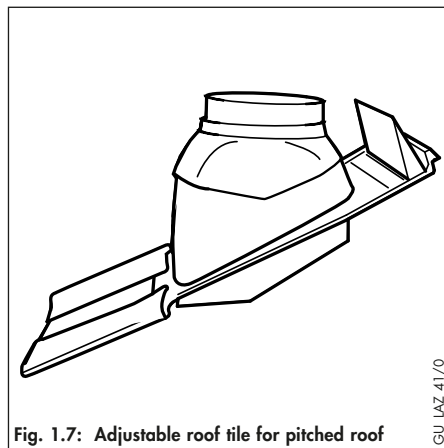


Fig. 1.7: Adjustable roof tile for pitched roof

Adjustable roof tile for pitched roof
Vaillant Accy. No.: 009 076 (black)

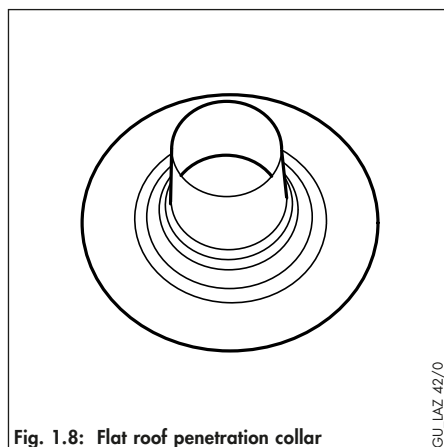


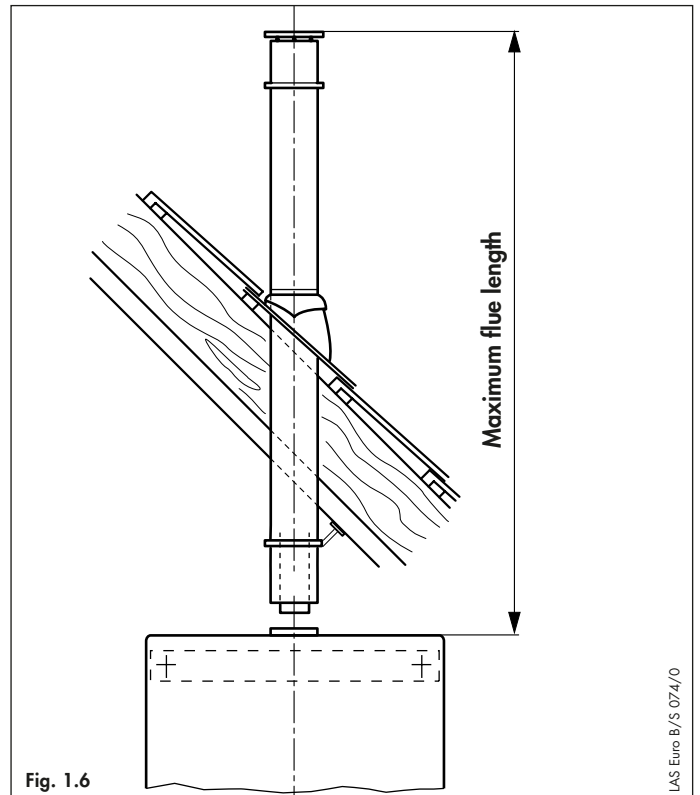
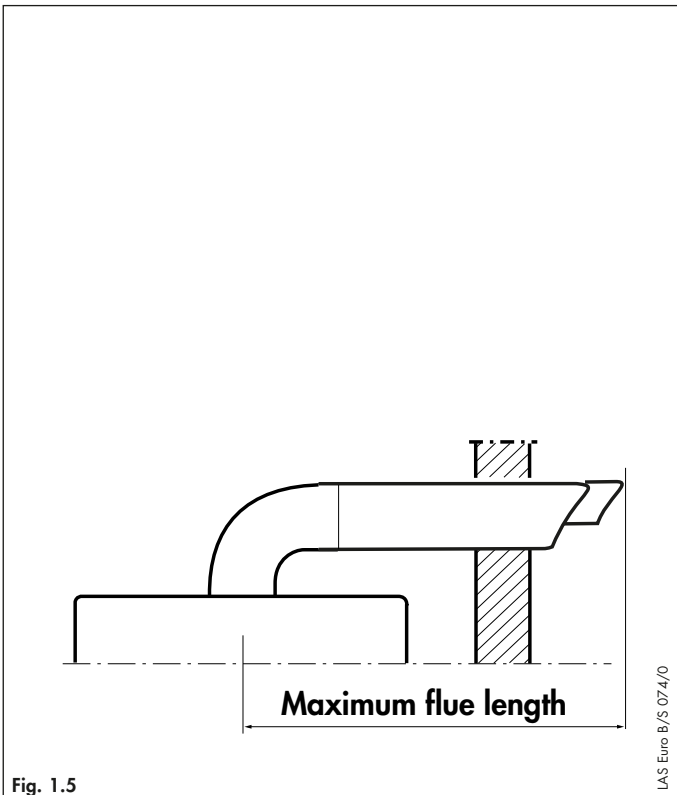
Fig. 1.8: Flat roof penetration collar

Flat roof penetration collar
Vaillant Accy. No.: 009 056



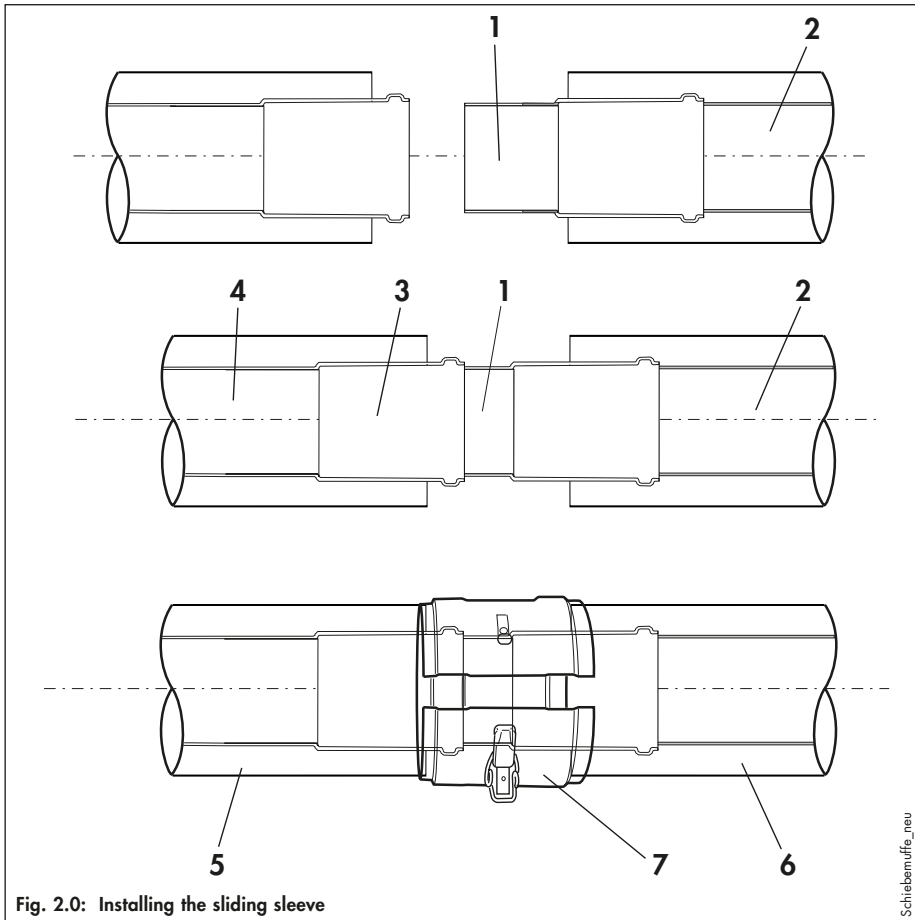
Maximum flue lengths for use with ecoMAX

Accessories	Accy. No.		ecoMAX				
			613/2 E 618/2 E 622/2 E	824/2 E	828/2 E	635 E 835 E	pro 18 E pro 28 E
Horizontal flue systems	303 930	Max. permitted concentric flue length	8.0 m incl. 1 elbow 87°	7.0 m incl. 1 elbow 87°	8.0 m incl. 1 elbow 87°	4.0 m incl. 1 elbow 87°	10.0 m incl. 1 elbow 87°
			of which no more than 5 m lie in exposed position. Maximum length of flue is reduced by 1.0 m for each additional 90° elbow Maximum length of flue is reduced by 0.5 m for each additional 45° elbow				
Vertical flue systems	303 900	Max. permitted concentric flue length	12.0 m	9.0 m	10.0 m	7.0 m	10.0 m
			of which no more than 5 m lie in exposed position. Maximum length of flue is reduced by 1.0 m for each additional 90° elbow Maximum length of flue is reduced by 0.5 m for each additional 45° elbow				





INSTALLING THE AIR/FLUE DUCT SLIDING SLEEVE



INSTALLING THE AIR/FLUE DUCT SLIDING SLEEVE

NOTE:

For installations where there is insufficient movement to allow fitting of the flue into flue outlet, a sliding sleeve (Accy. No. 303 915) is available. When using the sliding sleeve both the air and flue ducts of the last extension must be shortened by a further 95 mm.

- Push the sliding sleeve (1) over the cut end of the flue duct (2).
- Place the air duct clamp (7) over the air duct.
- Pull back the sliding sleeve so that it engages into the socket (3) of the boiler (4). Ensure that the sliding sleeve penetrates the socket such that there is at least 20 mm engagement at both ends of the sliding sleeve.
- Fit the air duct clamp over the air ducts (5 and 6) of the extension/terminal and boiler outlet. Close the snap clamp.
- Drill two holes 3 mm diameter through the air duct clamp (the centre of the holes should be 6 mm from the edge of the clamp). Ensure that the drill does not penetrate the inner flue duct. Screw the air duct clamp to the air duct of the sleeve using the screws provided.
- Complete the installation of the flue as detailed in these instructions.

INSTALLATION OF THE HORIZONTAL AIR/FLUE DUCT

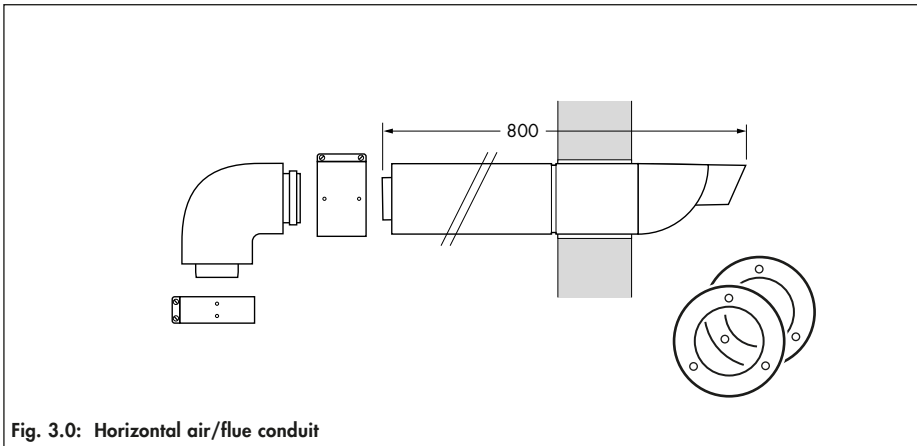
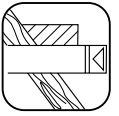


Fig. 3.0: Horizontal air/flue conduit

Horizontal air/flue duct

Vaillant Accy No.: 303 930

Contents of the accessory:

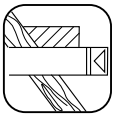
- Horizontal air/flue duct
- 87° elbow
- 1 x 70 mm air duct clamp
- 1 x 40 mm air duct clamp
- Internal trim ring Ø 100
- External wall seal

See page 6 et seq. for details of air/flue duct elements.

Observe the maximum flue lengths as detailed in table on page 9

Important:

The flue hole should be cut with a slight rise to outside of $3^\circ \pm 1^\circ$ (equivalent to 50 mm \pm 20 mm rise per metre length).



INSTALLATION OF THE HORIZONTAL AIR/FLUE DUCT

IMPORTANT:

The flue hole should be cut with a slight rise to outside if $3^\circ \pm 1^\circ$ (equivalent to $50 \text{ mm} \pm 20 \text{ mm}$ rise per metre length).

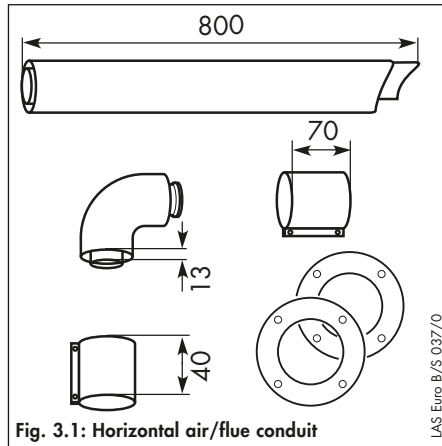


Fig. 3.1: Horizontal air/flue conduit

Horizontal air/flue duct

Accy No.: 303 930
(Length 0.8 m)

Contents of the accessory:

- Horizontal air/flue duct
- 87° elbow
- 2 x 70 mm air duct clamps
- 1 x 40 mm air duct clamp
- Internal trim ring $\varnothing 100$
- External wall seal.

Preparation

- Determine the installation site for the boiler with reference to the installation and servicing instructions supplied with the boiler.
- Ensure that all installation and service clearances are available and that the boiler flue can be installed as detailed in these instructions.
- Fix the paper template, supplied with the boiler, to the wall ensuring that the centreline of the template is vertical using a plumbline or spirit level.

Top outlet flue exiting to rear

- For installations where the air/flue duct is to be installed directly to the rear of the boiler, the installation template details the position of the flue exit hole for horizontal top outlet installation.

Top outlet flue exiting to side

- For installations where the air/flue duct is to be installed to the side, the position of the flue exit hole can be determined by carefully levelling across the wall from the centre line of the air/flue duct hole marked on the template.
- The position of the flue exit hole should allow the flue to be installed with a slight upward slope of about $3^\circ \pm 1^\circ$ (equivalent to $50 \text{ mm} \pm 20 \text{ mm}$ per metre of flue duct). Calculate the required rise according to the flue length and mark the position of the flue exit hole.

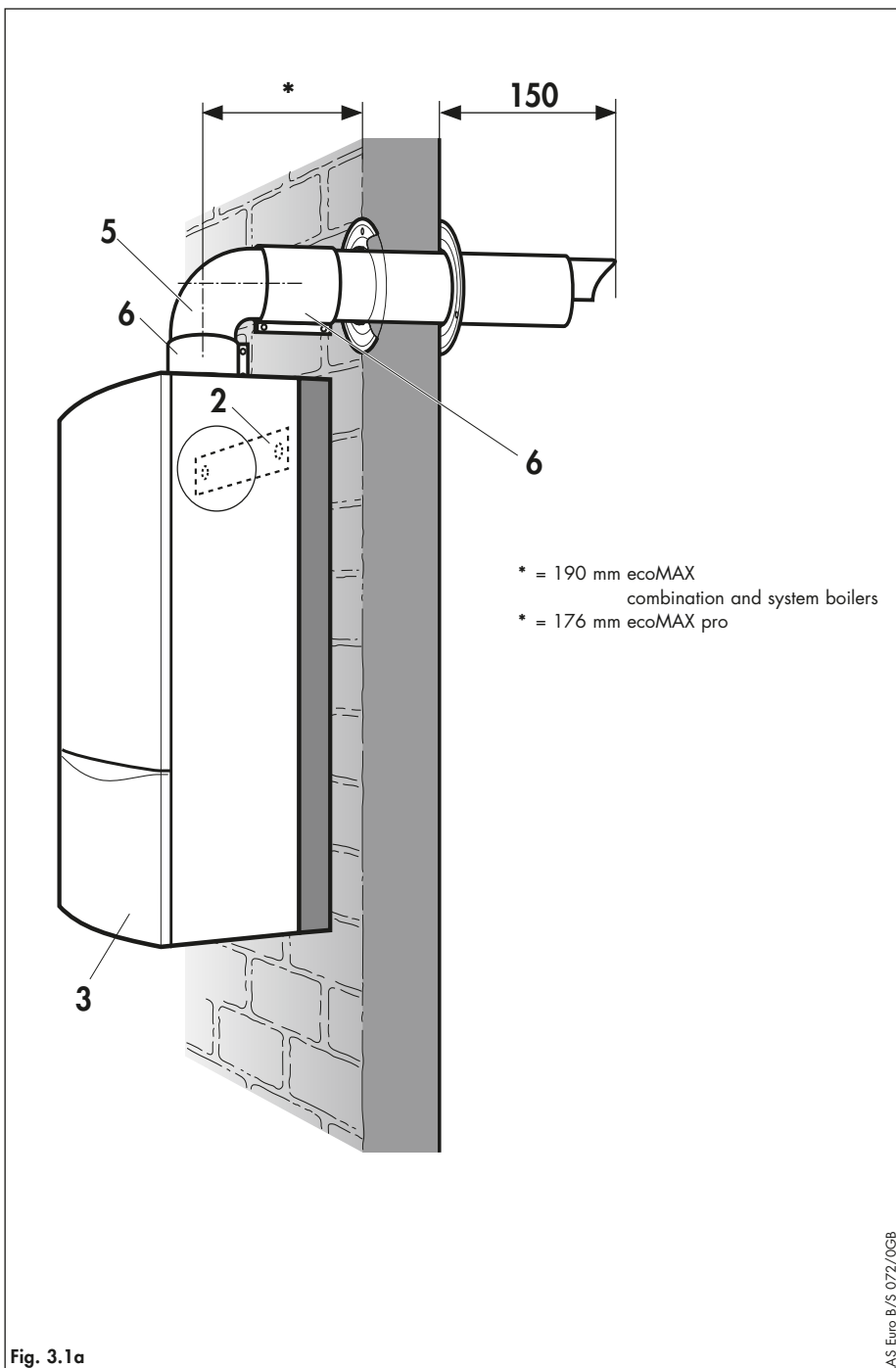
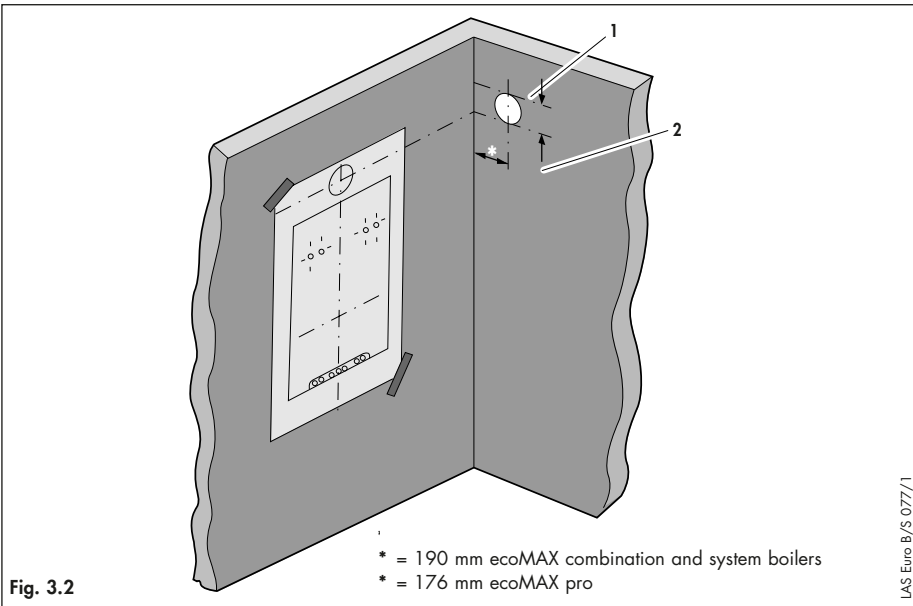
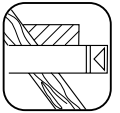


Fig. 3.1a

INSTALLATION OF THE HORIZONTAL AIR/FLUE DUCT (TOP OUTLET)



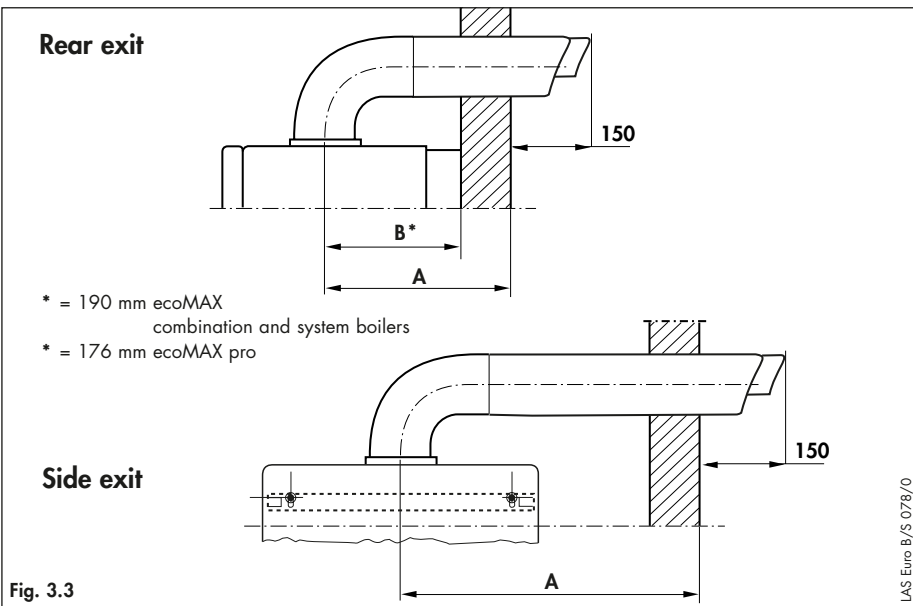
- Once the position of the flue exit hole has been determined, the hole should be cut through the wall using a core drill of 125 mm diameter.

Note: If access can be gained to the proposed flue exit point from outside the dwelling, the hole can be cut with a 107 mm core drill and the flue external wall seal fitted from outside the dwelling.

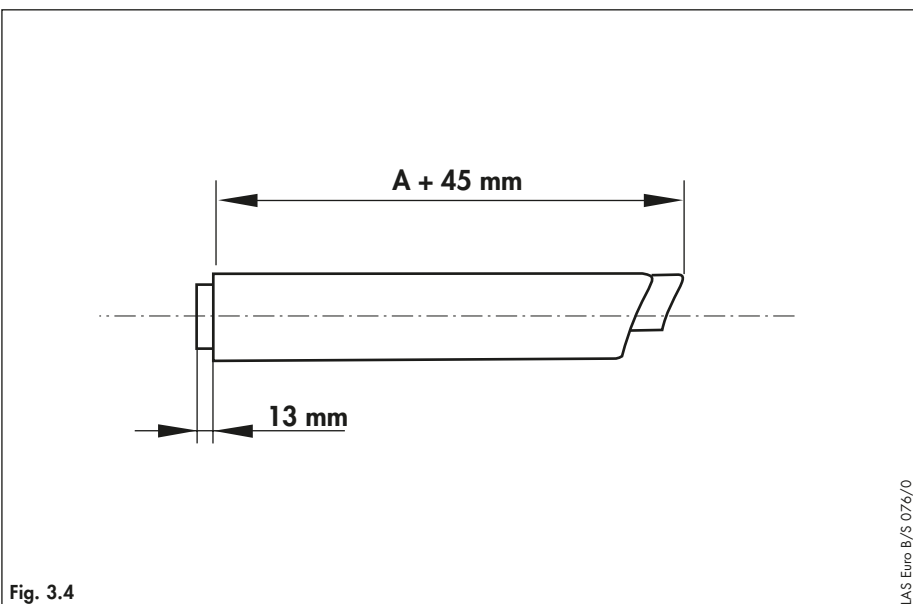
- Measure the distance from the outside face of the wall to the centre of the fan outlet on the boiler.

This is dimension A.

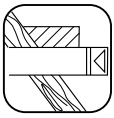
- Cut the air duct and flue duct to the lengths shown in figure 3.4.



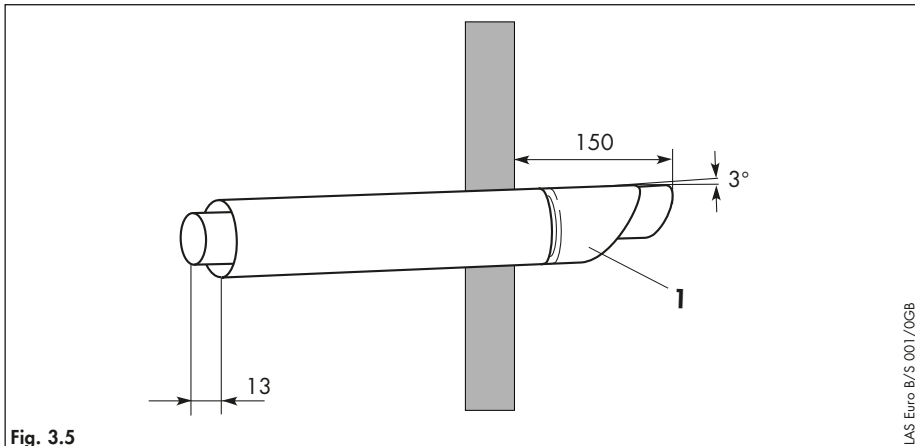
- All flue sockets should point towards the terminal.
- When cutting the air and flue ducts it is important to remove any burrs with a file, this ensures easy fitting of the ducts and prevents any rough edges from damaging the flue seals. Care should be taken not to scratch the white surface of the air duct.
- If the installation requires the use of air/flue duct extensions, additional bends or elbows refer to the sections on pages 18 – 20.



- Secure the air duct sections together by drilling a 3 mm diameter hole through the location hole in the end of the outer air duct. (Ensure that the drill does not pierce the inner flue duct). Secure the air ducts together using the screw provided.

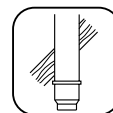


INSTALLATION OF THE HORIZONTAL AIR/FLUE DUCT (TOP OUTLET)



- Push the air/flue duct assembly (1) including the flexible external seal through the wall until the seal clears the outside face of the wall and pull air/flue duct back towards the boiler until the external seal touches the outside wall.
- Ensure that the air/flue duct (1) is centred in the hole and the terminal is correctly positioned with the inlet grille at the bottom.
- Slide the internal trim ring over the air duct until it is flush with the wall.
- At this stage it is necessary to prepare and fit the boiler onto the hanging bracket – refer to the boiler installation instructions.
- Fit the elbow to the boiler by inserting the spigot of the flue elbow into the flue socket on the boiler and secure using the air duct clamp provided.
- Pull the air/flue duct back through the wall such that the flue duct fully engages into the flue elbow socket.
- Fit the air duct clamp ensuring that it is positioned centrally.
- Drill two holes 3 mm Ø through the air duct of both the elbow/flue and elbow/boiler clamps at the most convenient holes on the air duct clamps. (Ensure that the drill does not penetrate the inner flue duct). Screw the clamps to the air ducts of the flue assembly, the elbow and boiler using the screws supplied.
- Slide the internal trim ring back to the wall, securing in position with a small amount of sealant if required.

INSTALLATION OF THE VERTICAL AIR/FLUE DUCT



Observe the maximum flue lengths as detailed in table on page 9

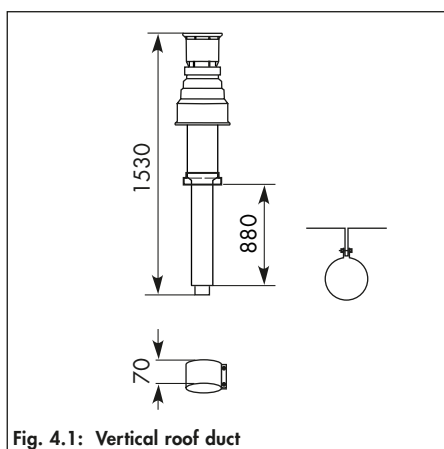


Fig. 4.1: Vertical roof duct

Vertical air/flue duct

Accy. Vaillant Part No.: 303 900 (black)

Contents of the accessory:

- Vertical air/flue duct and terminal assembly
- 70 mm air duct clamp
- Fixing bracket

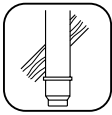
See page 6 et seq. for details of air/flue duct elements.

The air/flue duct assembly may be connected directly to the flue outlet on top of the boiler.

In addition to the vertical air/flue duct and terminal accessory, air/flue duct extensions can be added to increase the length of the flue.

Preparation

- Determine the installation site for the boiler with reference to the installation and servicing instructions supplied with the boiler.
 - Ensure that all installation and service clearances are available and that the boiler flue can be installed as detailed in these instructions.
 - Determine the point where the vertical air/flue duct and terminal assembly will penetrate the roof.
- Please note: The vertical air/flue duct and terminal accessory (Accy. No. 303 900) may be shortened. The outer 'white' duct should be shortened first, then the inner flue duct cut so that it protrudes 13 mm out of the air duct. In case of installation directly to the boiler without elbows or bends, it is essential that the roof tile/collar is vertically aligned with the air/flue duct of the boiler.



INSTALLATION OF THE VERTICAL AIR/FLUE DUCT

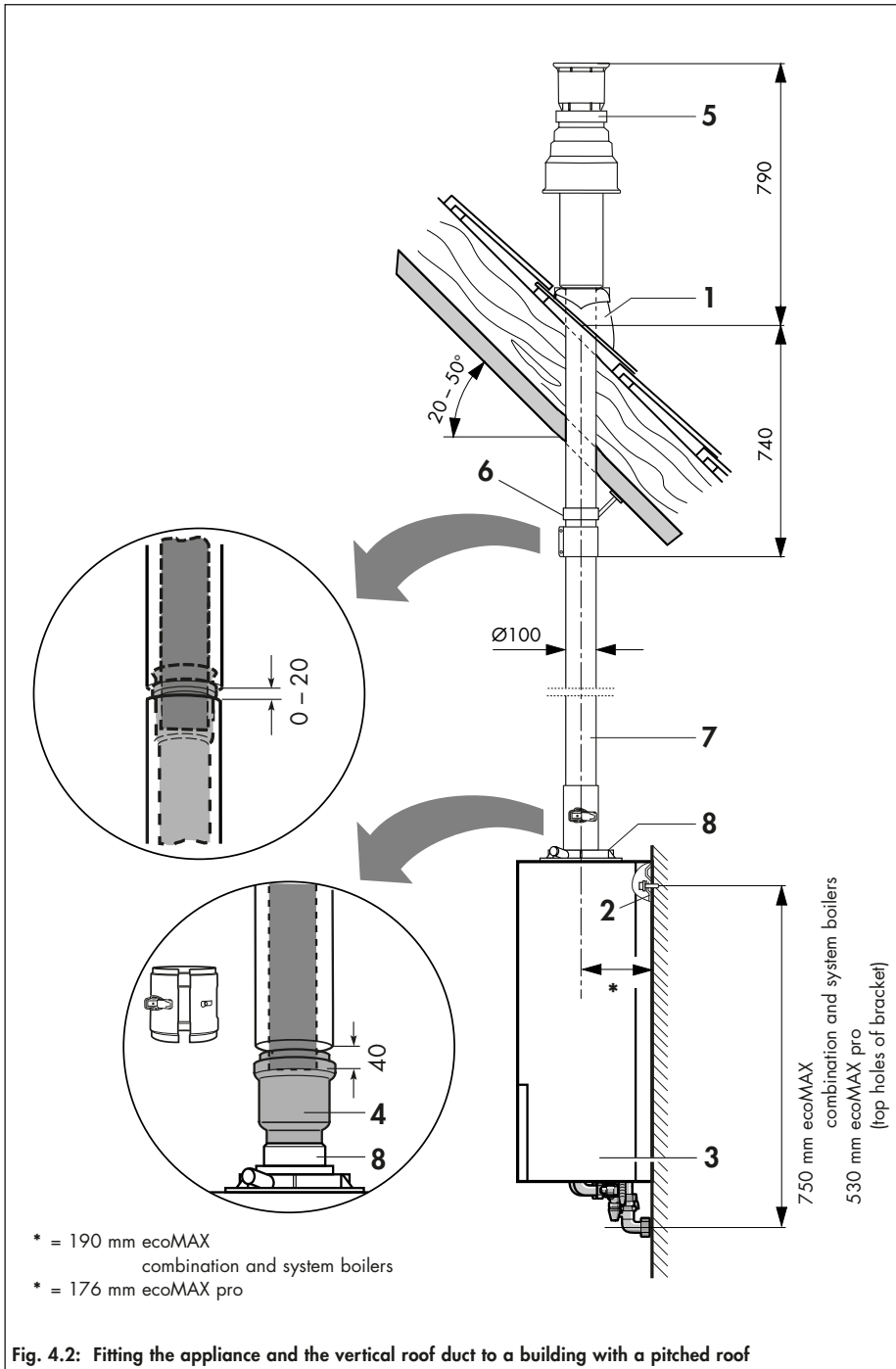


Fig. 4.2: Fitting the appliance and the vertical roof duct to a building with a pitched roof

Pitched roof installation

- Determine the point where the vertical air/flue duct and terminal assembly will penetrate the roof.
 - Fit the adjustable pitched roof tile (1).
 - Working from above, insert the vertical roof duct (5) through the roofing tile and push it firmly into place.
 - Vertically align the roof duct and attach it to the roof structure with the fixing bracket (6) supplied.
 - Fit the boiler hanging bracket (2).
 - Install the appliance (3) with reference to the installation and servicing instructions supplied with the boiler.
- 📖 See pages 18 et seq. for further details on the installation of extensions and elbows.
- Push the sliding sleeve (4) firmly into place on the extension.
 - Join the vertical roof duct (5) to the extension (7).
 - Join the sliding sleeve (4) to the appliance's connection piece (8). This permits easy separation between the air/flue duct and the appliance.
 - Drill two holes 3 mm Ø through the air duct of the flue/boiler clamp at the most convenient holes on the air duct clamp. (Ensure that the drill does not penetrate the inner flue duct). Screw the clamp to the air ducts of the flue assembly and the boiler using the screws supplied.
 - Ensure that any air duct clamps used are positioned centrally and fixed to the air duct using the self tapping screws supplied.
 - **Note:** The air/duct clamp must not be screwed to the bottom of the vertical air/flue duct and terminal accessory to allow for any slight movement in the roof structure.
 - Ensure that at least one pipe clamp supports the air/flue duct at each extension fitted.

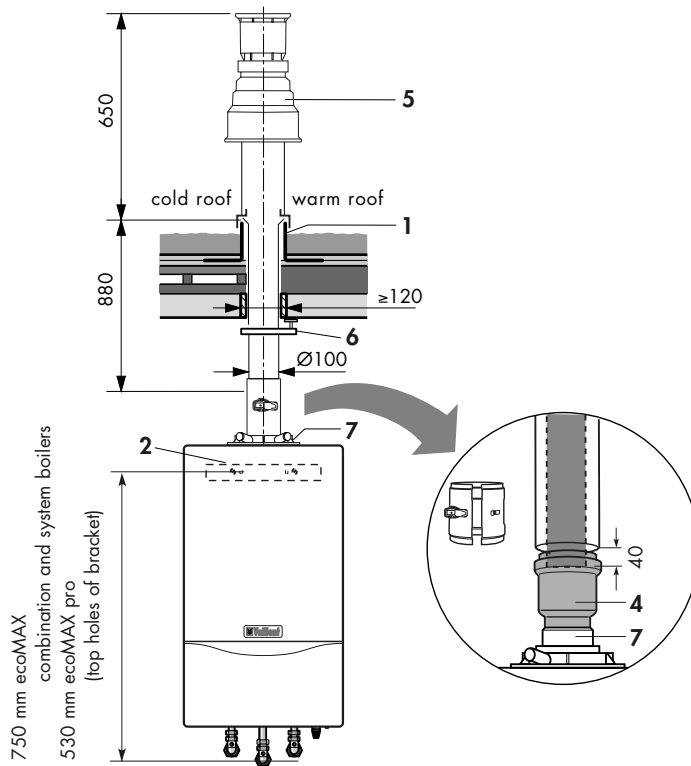
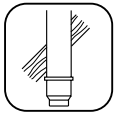


Fig. 4.4: Fitting the appliance and vertical flue duct to a building with a flat roof

Flat-roof installation

- Determine the point where the vertical air/flue duct and terminal assembly will penetrate the roof.
 - Fit the flat roof penetration collar (1).
 - Stick the flat roof penetration collar firmly into place with adhesive in accordance with the codes of practice for flat roofs (CP 144) to ensure a watertight seal.
 - Working from above, insert the vertical roof duct (5) through the flat roof collar and push it firmly into place.
 - Vertically align the roof duct and attach it to the roof structure with the fixing bracket (6) supplied.
 - Fit the boiler hanging bracket (2).
 - Install the appliance (3) with reference to the installation and servicing instructions supplied with the boiler.
- ☞ See pages 18 et seq. for further details on the installation of extensions and elbows.
- Push the sliding sleeve (4) firmly into place on the extension.
 - Join the vertical roof duct (5) to the extension (7).
 - Join the sliding sleeve (4) to the appliance's connection piece (8). This permits easy separation between the air/flue duct and the appliance.
 - Drill two holes 3 mm Ø through the air duct of the flue/boiler clamp at the most convenient holes on the air duct clamp. (Ensure that the drill does not penetrate the inner flue duct). Screw the clamp to the air ducts of the flue assembly and the boiler using the screws supplied.
 - Ensure that any air duct clamps used are positioned centrally and fixed to the air duct using the self tapping screws supplied.
 - **Note:** The air/duct clamp must not be screwed to the bottom of the vertical air/flue duct and terminal accessory to allow for any slight movement in the roof structure.
 - Ensure that at least one pipe clamp supports the air/flue duct at each extension fitted.



FITTING AIR/FLUE DUCT EXTENSIONS

How to add extensions

Use a saw, tin-snips, etc. to cut tubes to size.

- No tools are required when separating extensions for cutting to size air and flue tubes separately. When doing so, the flue conduit should be twisted into a position where the shoulders on the plastic tube can be pushed through the spacer-piece. After cutting to size, refit the flue conduit and secure it to the air conduit.

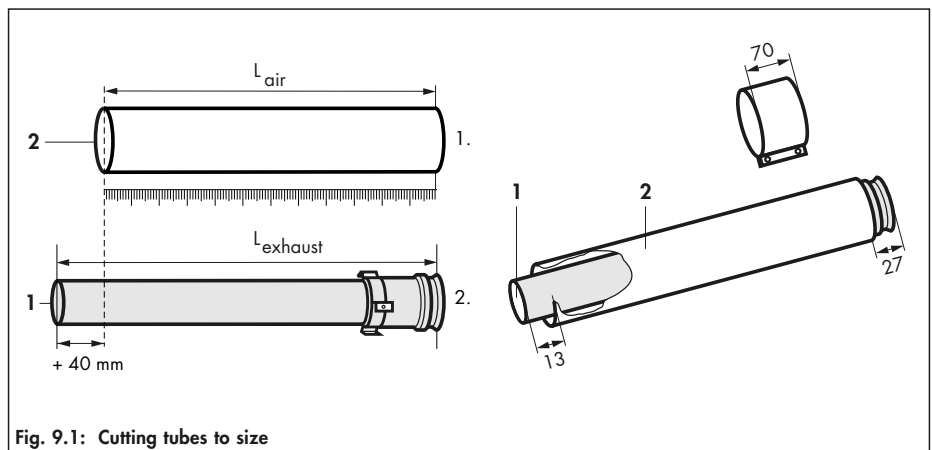


Fig. 9.1: Cutting tubes to size

Tip:

Start by measuring the required length of air conduit* (L_{air}), and then calculate the corresponding length of flue conduit ($L_{exhaust}$) as follows:

$$L_{exhaust} = L_{air} + 40 \text{ mm}$$

$$L_{exhaust} = \text{length of flue conduit}$$

$$L_{air} = \text{length of air conduit}$$

* Minimum length of air-conduit extension: 80 mm.

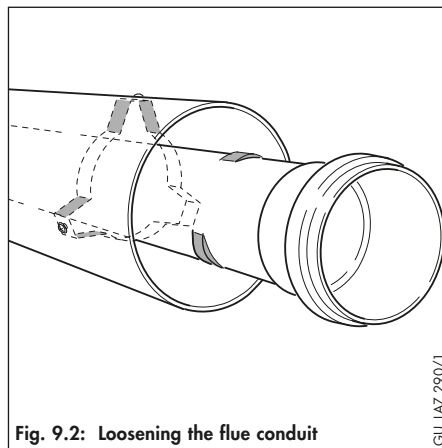


Fig. 9.2: Loosening the flue conduit

- The seals are sensitive to mineral oil-based grease products. For this reason, the seals must not be greased. If the seals need wetting to aid in installation, use water only.
- De-burr and file down any rough edges on the tubes before fitting in order to prevent damage to the seals. Remove all metal filings and other debris.
- Do not use damaged or dented tubes, as they will not form an adequate seal.
- Ensure that the seals remain correctly aligned when installing the tubes. Do not fit damaged seals.
- Secure the exhaust conduit with the fixing device in order to ensure that it is correctly centred relative to the air conduit.



How to install elbows

Example:

An offset of 400 mm is measured. This value is then used, along with the table below, to determine the length of the air conduit (= 190 mm in this case).



Important:

This gives a corresponding exhaust-conduit length of $190 + 40 = 230$ mm.

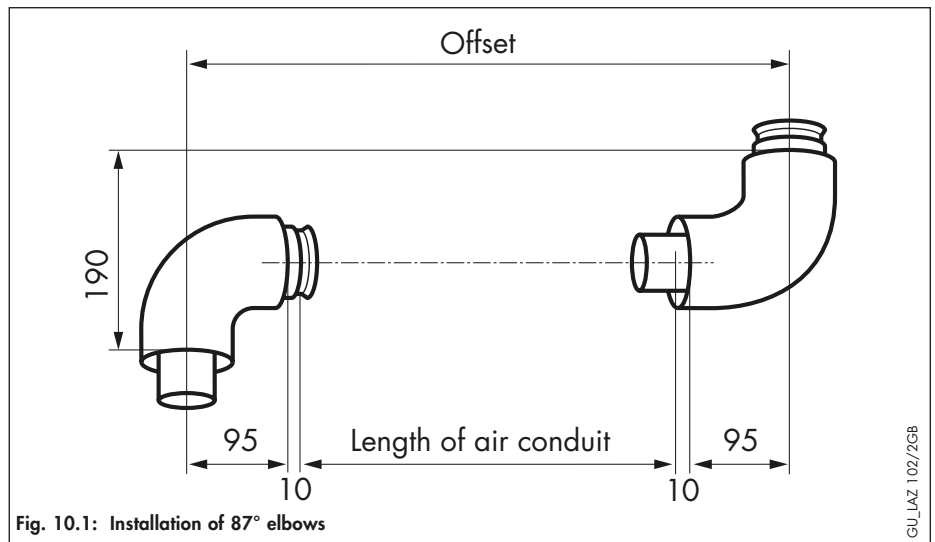


Table 10.1: Length of surplus with 87° elbows

Offset [in mm]	Length of air conduit [in mm]	Offset [in mm]	Length of air conduit [in mm]	Offset [in mm]	Length of air conduit [in mm]
> 190 to < 210 mm	0	470	260	690	480
		475	265	695	485
		480	270	700	490
> 215 to < 265 mm	not possible	485	275	705	495
		490	280	710	500
		495	285	715	505
> 270 to < 290 mm	80	500	290	720	510
		505	295	725	515
		510	300	730	520
295	85	515	305	735	525
300	90	520	310	740	530
305	95	525	315	745	535
310	100	530	320	750	540
315	105	535	325	755	545
320	110	540	330	760	550
325	115	545	335	765	555
330	120	550	340	770	560
335	125	555	345	775	565
340	130	560	350	780	570
345	135	565	355	785	575
350	140	570	360	790	580
355	145	575	365	795	585
360	150	580	370	800	590
365	155	585	375		
370	160	590	380		
375	165	595	385		
380	170	600	390		
385	175	605	395		
390	180	610	400		
395	185	615	405		
400	190	620	410		
405	195	625	415		
410	200	630	420		
415	205	635	425		
420	210	640	430		
425	215	645	435		
430	220	650	440		
435	225	655	445		
440	230	660	450		
445	235	665	455		
450	240	670	460		
455	245	675	465		
460	250	680	470		
465	255	685	475		



FITTING AIR/FLUE DUCT EXTENSIONS

How to install elbows

Example:

An offset of 400 mm is measured. This value is then used, along with the table below, to determine the length of the air conduit (= 284 mm) and the height (= 420 mm).



Important:

This gives a corresponding exhaust-conduit length of $284 + 40 = 324$ mm.

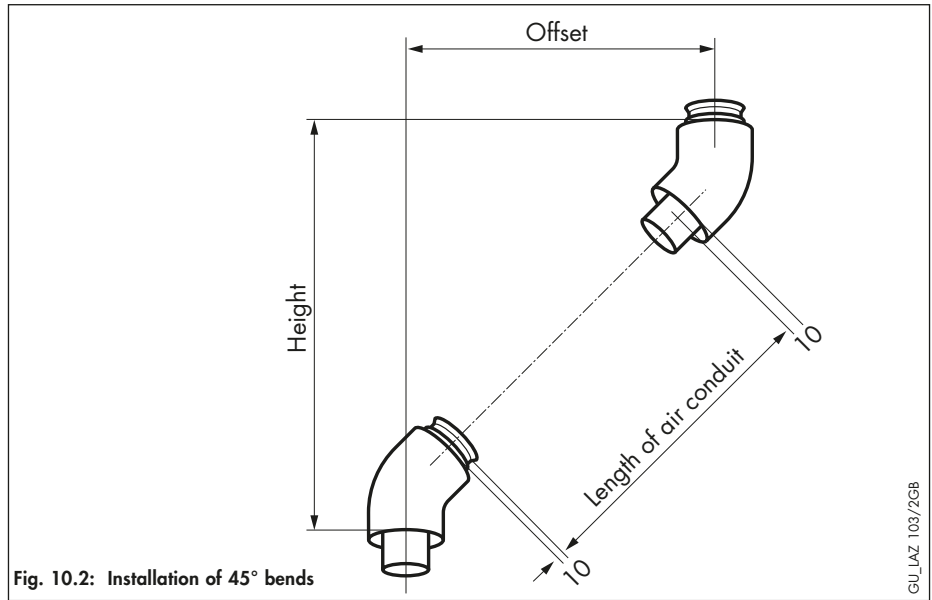


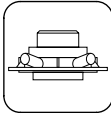

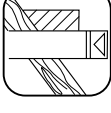
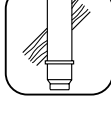



Table 10.2: Length of surplus with 45° bends

Offset [in mm]	Length of air conduit [in mm]	Height [in mm]	Offset [in mm]	Length of air conduit [in mm]	Height [in mm]	Offset [in mm]	Length of air conduit [in mm]	Height [in mm]
90	0	210	325	320	445	525	602	645
95	0	215	330	327	450	530	610	650
100	0	220	335	334	455	535	617	655
> 105 to < 155 mm	not possible	340	341	460	540	624	660	
		345	348	465	545	631	665	
		350	355	470	550	638	670	
		355	362	475	555	645	675	
		360	369	480	560	652	680	
160	86	280	365	376	485	565	659	685
165	93	285	370	383	490	570	666	690
170	100	290	375	390	495	575	673	695
175	107	295	380	397	500	580	680	700
180	115	300	385	404	505	585	687	705
185	122	305	390	412	510	590	694	710
190	129	310	395	419	515	595	701	715
195	136	315	400	426	520	600	709	720
200	143	320	405	433	525	605	716	725
205	150	325	410	440	530	610	723	730
210	157	330	415	447	535	615	730	735
215	164	335	420	454	540	620	737	740
220	171	340	425	461	545	625	744	745
225	178	345	430	468	550	630	751	750
230	185	350	435	475	555	635	758	755
235	192	355	440	482	560	640	765	760
240	199	360	445	489	565	645	772	765
245	206	365	450	496	570	650	779	770
250	214	370	455	503	575	655	786	775
255	221	375	460	511	580	660	793	780
260	228	380	465	518	585	665	800	785
265	235	385	470	525	590	670	808	790
270	242	390	475	532	595	675	815	795
275	249	395	480	539	600	680	822	800
280	256	400	485	546	605			
285	263	405	490	553	610			
290	270	410	495	560	615			
295	277	415	500	567	620			
300	284	420	505	574	625			
305	291	425	510	581	630			
310	298	430	515	588	635			
315	306	435	520	595	640			
320	313	440						



The air/flue duct must be installed by a suitably qualified service provider, which is responsible for observing the relevant specifications, regulations and standards.

		Page
	Requirements	Regulations and standards to be observed 22
	Planning the air/flue duct layout	Alternative termination accessories available 23 Maximum flue lengths 26
	Changing the appliance connection piece	28
	Installation of the sliding sleeve	29
	Installation of the horizontal air/flue duct	30
	Installation of the vertical air/flue duct	35
	Fitting air/flue duct extensions	How to add extensions 38 How to install elbows 39






REQUIREMENTS












Regulations and standards to be observed

- ☞ Vaillant ecoMAX boilers are certified as heating boilers with corresponding flue systems according to EC Directive 90/396/EEC on gas-fired devices. This installation manual is covered by this certification and is referred to in the design approval test certificate.
- ☞ These instructions should be read in conjunction with the instructions for installation and servicing supplied with the boiler.
- ☞ Ensure also that all legislation, rules, regulations and directives mentioned in the installation instructions are observed.
- ☞ The installation of the boiler and its flue must be carried out by a competent person who is registered with CORGI (The Council for Registered Gas Installers).
- ☞ The installation of the boiler and flue must be in accordance with the Gas Safety (Installation and Use) Regulations 1998 and the Building Regulations and BS 5440 Part 1.
- ☞ The requirements for flue termination detailed in the boiler installation instructions must be observed.
- ☞ The air/flue duct operates at very low temperatures therefore no clearance is necessary between the air duct and adjacent services.
- ☞ Ensure while installation work is being carried out that no debris such as swarf, filings or fragments of mortar are allowed to remain in the air/flue duct.



Alternative termination accessories available

-  **303 200** = Vertical air/flue duct (black)
-  **303 209** = Horizontal air/flue duct
-  **303 907** = Appliance connection piece

Optional connection accessories	Accy. No.	303 200	303 209
			
Air/flue duct extensions (PPs), concentric 470 mm - Ø 80/125 	303 202	x	x
Air/flue duct extensions (PPs), concentric 970 mm - Ø 80/125 	303 203	x	x
Air/flue duct extensions (PPs), concentric 1970 mm - Ø 80/125 	303 205	x	x
Bends (PPs), concentric (pack of 2) 45° - Ø 80/125 	303 211	x	x
Elbow (PPs), concentric 87° - Ø 80/125 	303 210	x	x
Flue support clips (pack of 5), Ø 125 	303 616	x	x
Sliding sleeve (PPs) Ø 80/125 	303 215	x	x
Adjustable roof tiles for pitched roof 	009076 black	x	x
Flat roof penetration collar 	009 056	x	x



PLANNING THE AIR/FLUE DUCT LAYOUT

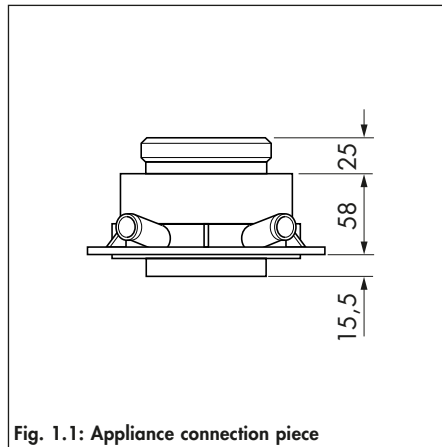


Fig. 1.1: Appliance connection piece

Appliance connection piece Ø 80/125

Vaillant Accy. No.: 303 907
(with 2 measuring apertures)

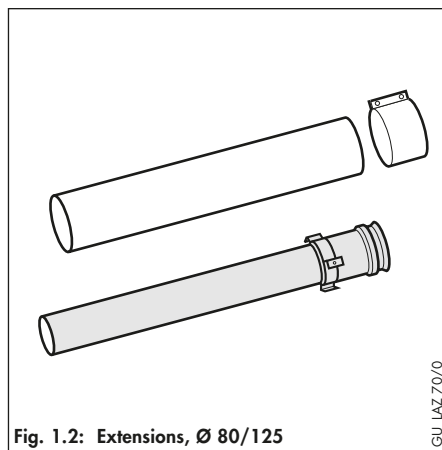


Fig. 1.2: Extensions, Ø 80/125

Air/flue duct extension (PPs) 470 mm, Ø 80/125

Vaillant Accy. No.: 303 202

Air/flue duct extension (PPs) 970 mm, Ø 80/125

Vaillant Accy. No.: 303 203

Air/flue duct extension (PPs) 1970 mm, Ø 80/125

Vaillant Accy. No.: 303 205

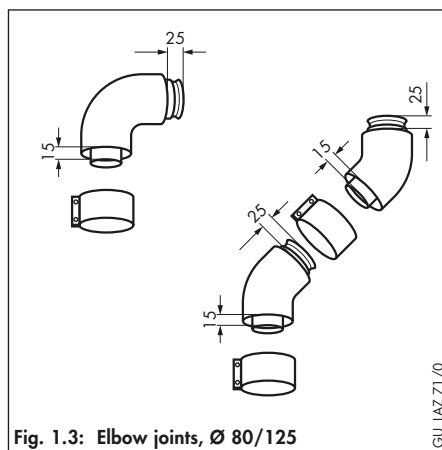


Fig. 1.3: Elbow joints, Ø 80/125

Elbow (PPs), 87°, Ø 80/125

Vaillant Accy. No.: 303 210

Bends (PPs), 45° (pack of 2), Ø 80/125

Vaillant Accy. No.: 303 211

☞ Use one clip per extension to support the air/flue duct.

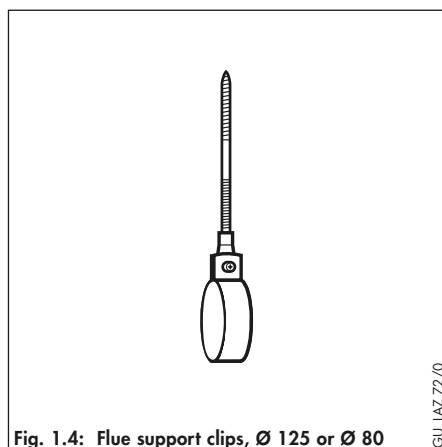
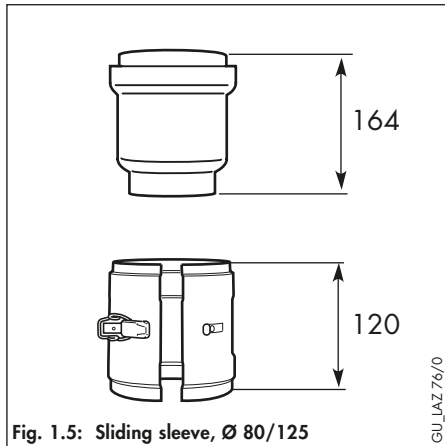


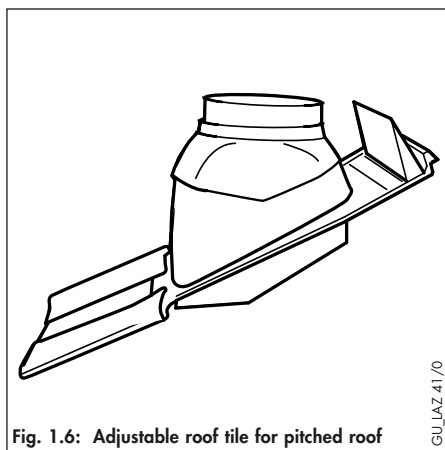
Fig. 1.4: Flue support clips, Ø 125 or Ø 80

Flue support clips, Ø 125 (pack of 5)

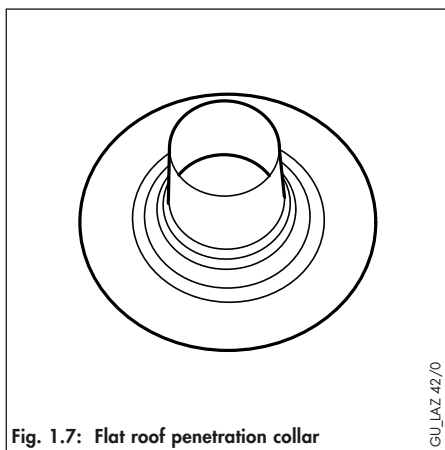
Vaillant Accy. No.: 303 616



Sliding sleeve (PPs), Ø 80/125
Vaillant Accy. No.: 303 215



Adjustable roof tiles for pitched roof
Vaillant Accy. No.: 009 076 (black)



Flat roof penetration collar
Vaillant Accy. No.: 009 056

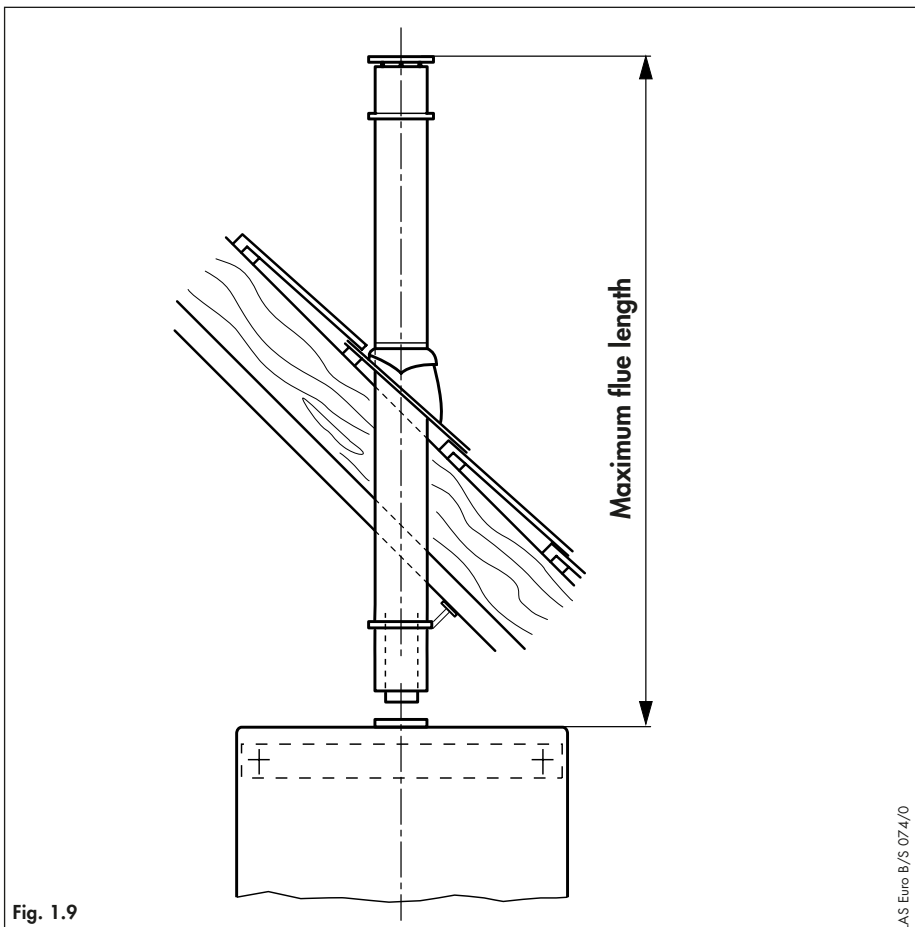
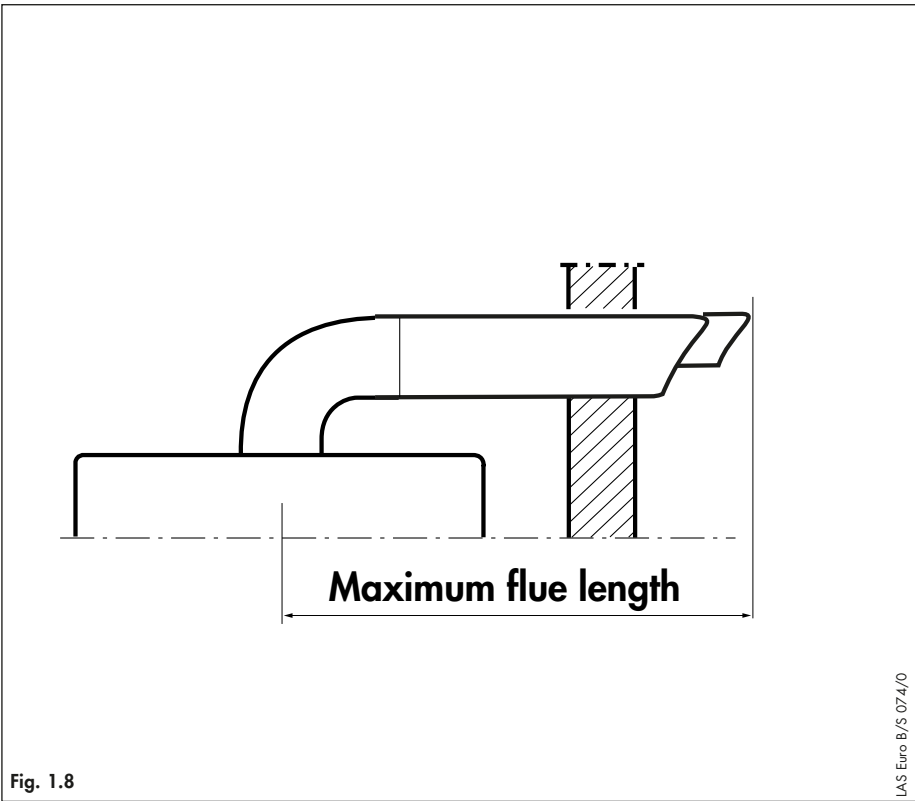


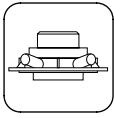
PLANNING THE AIR/FLUE DUCT LAYOUT

Maximum flue lengths for use with ecoMAX

Accessories	Accy. No.		ecoMAX			
			613/2 E	618/2 E	622/2 E	pro 18 E pro 28 E
Horizontal flue systems	303 209	Max. permitted concentric flue length	13.0 m incl. 1 elbow 87°	25.0 m incl. 1 elbow 87°	30.0 m incl. 1 elbow 87°	20.0 m incl. 1 elbow 87°
			<p>of which no more than 5 m lie in exposed position. Maximum length of flue is reduced by 2.5 m for each additional 90° elbow. Maximum length of flue is reduced by 1.0 m for each additional 45° elbow.</p>			
Vertical flue systems	303 200	Max. permitted concentric flue length	14.0 m	27.0 m	31.0 m	20.0 m
			<p>of which no more than 5 m lie in exposed position. Maximum length of flue is reduced by 2.5 m for each additional 90° elbow Maximum length of flue is reduced by 1.0 m for each additional 45° elbow</p>			

Accessories	Accy. No.		ecoMAX			
			824/2 E	828/2 E	635 E 835 E	
Horizontal flue systems	303 209	Max. permitted concentric flue length	25.0 m incl. 1 elbow 87°	30.0 m incl. 1 elbow 87°	21.0 m incl. 1 elbow 87°	
			<p>of which no more than 5 m lie in exposed position. Maximum length of flue is reduced by 2.5 m for each additional 87° elbow. Maximum length of flue is reduced by 1.0 m for each additional 45° elbow.</p>			
Vertical flue systems	303 200	Max. permitted concentric flue length	26.0 m	29.0 m	22.0 m	
			<p>of which no more than 5 m lie in exposed position. Maximum length of flue is reduced by 2.5 m for each additional 90° elbow Maximum length of flue is reduced by 1.0 m for each additional 45° elbow</p>			





CHANGING THE APPLIANCE CONNECTION-PIECE

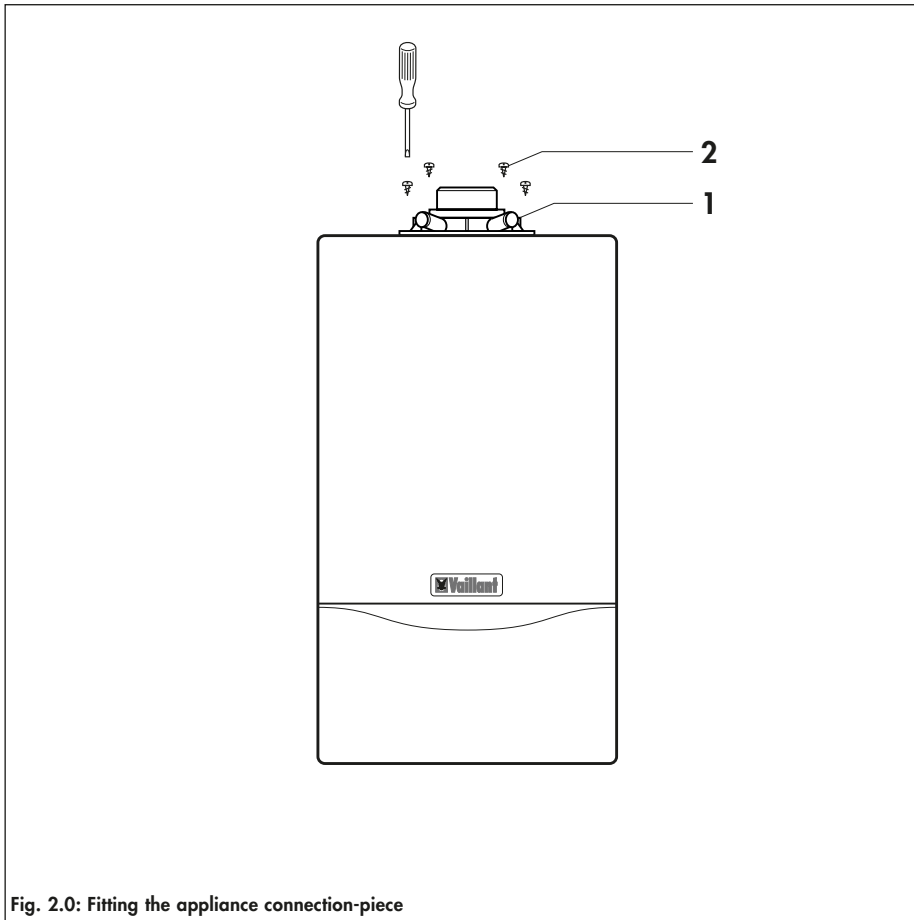


Fig. 2.0: Fitting the appliance connection-piece

Installation

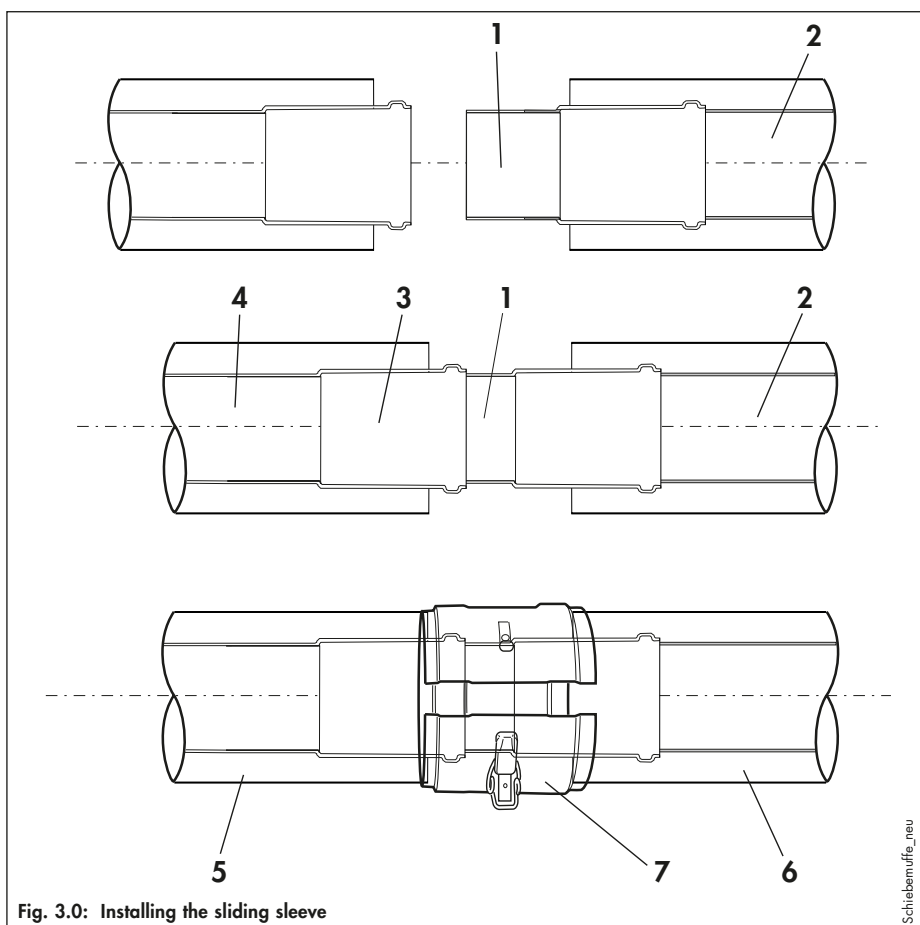
The appliance is supplied ready-fitted with the connection-piece for the 60/100 air/flue duct system.

- Loosen the four screws (2) and pull the appliance connection-piece (1) upwards to remove it.
- Push the appliance connection-piece with the selected connection diameter down from above, inserting the push-in end onto the sleeve of the flue collecting chamber. Now push the appliance connection-piece downwards until the flange comes into contact with the low-pressure chamber.
- Refit the fixing screws (2).



The seals are sensitive to mineral oil-based grease products.

For this reason, the seals must not be greased. If the seals need wetting to aid in installation, use water only.

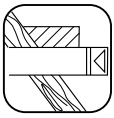


INSTALLING THE AIR/FLUE DUCT SLIDING SLEEVE

NOTE:

For installations where there is insufficient movement to allow fitting of the flue into flue outlet, a sliding sleeve (Accy. No. 303 215) is available. When using the sliding sleeve both the air and flue ducts of the last extension must be shortened by a further 85 mm.

- Push the sliding sleeve (1) over the cut end of the flue duct (2).
- Place the air duct clamp (7) over the air duct.
- Pull back the sliding sleeve so that it engages into the socket (3) of the boiler (4). Ensure that the sliding sleeve penetrates the socket such that there is at least 20 mm engagement at both ends of the sliding sleeve.
- Fit the air duct clamp over the air ducts (5 and 6) of the extension/terminal and boiler outlet. Close the snap clamp.
- Drill two holes 3 mm diameter through the air duct clamp (the centre of the holes should be 6 mm from the edge of the clamp). Ensure that the drill does not penetrate the inner flue duct. Screw the air duct clamp to the air duct of the sleeve using the screws provided.
- Complete the installation of the flue as detailed in these instructions.

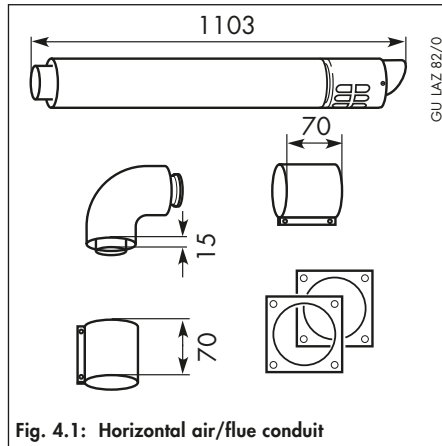


INSTALLATION OF THE HORIZONTAL AIR/FLUE DUCT

☞ Observe the maximum flue lengths as detailed in table on page 26.

Important:

The flue hole should be cut with a slight rise to outside of $3^\circ \pm 1^\circ$ (equivalent to $50 \text{ mm} \pm 20 \text{ mm}$ rise per metre length).



Horizontal air/flue duct

Vaillant Accy No.: 303 209

Contents of the accessory:

- Horizontal air/flue duct
- 87° elbow
- 2 x 70 mm air duct clamps
- 2 x internal trim rings $\varnothing 125$

☞ See page 24 et seq. for details of air/flue duct elements.

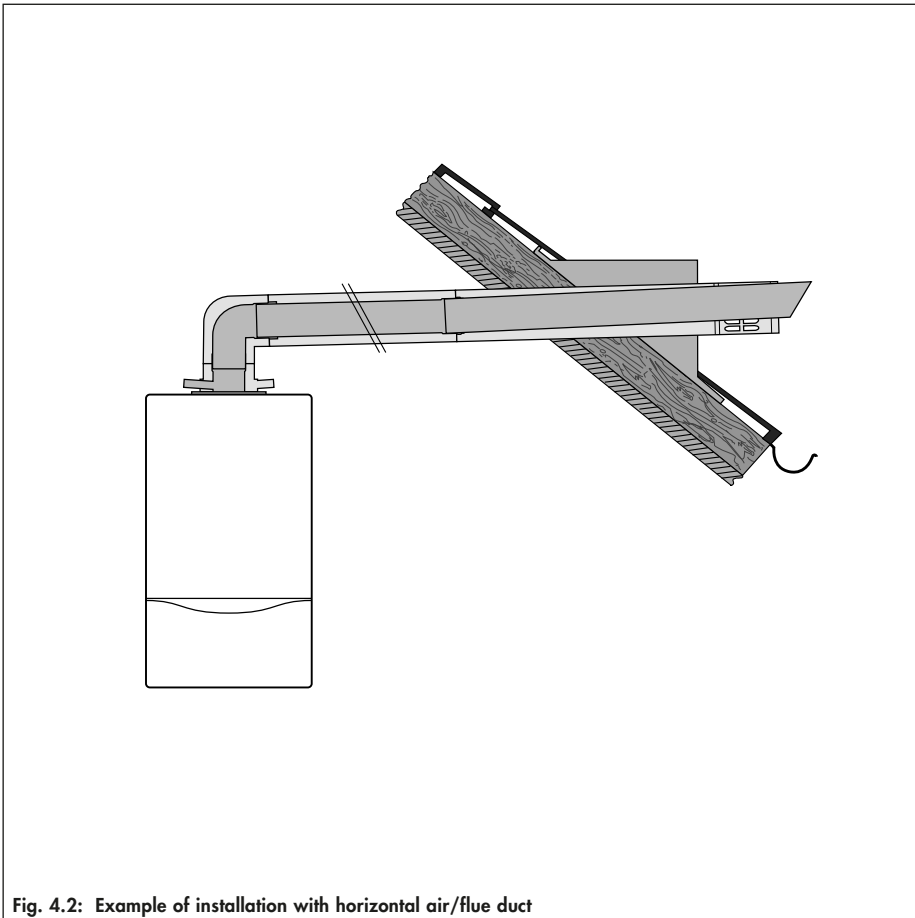
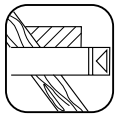


Fig. 4.2: Example of installation with horizontal air/flue duct

INSTALLATION OF THE HORIZONTAL AIR/FLUE DUCT Ø 80/125 WITH EXTENSIONS



IMPORTANT:

The flue hole should be cut with a slight rise to outside of $3^\circ \pm 1^\circ$ (equivalent to $50 \text{ mm} \pm 20 \text{ mm}$ rise per metre length).

Preparation

- Determine the installation site for the boiler with reference to the installation and servicing instructions supplied with the boiler.
- Ensure that all installation and service clearances are available and that the boiler flue can be installed as detailed in these instructions.
- Fix the paper template, supplied with the boiler, to the wall ensuring that the centreline of the template is vertical using a plumbline or spirit level.

Side flue installations

- For installations where the air/flue duct is to be installed to the side, the position of the flue exit hole can be determined as follows:
- Identify the correct measurement as shown in fig. 4.3, carefully measure the distance from the bottom centre of the boiler hanging bracket (centreline of the two lower hanging bracket fixing holes). This gives the position of the centreline of the 127 mm flue elbow and adaptor when installed.
- The position of the flue exit hole can be determined by carefully levelling across the wall from this mark.
- The position of the flue exit hole should allow the flue to be installed with an upwards slope towards the terminal of approximately $3^\circ \pm 1^\circ$, equivalent to $50 \text{ mm} \pm 20 \text{ mm}$ rise per metre of flue length. Calculate the required rise according to the flue length and mark the position of the flue exit hole.

Note: Due to the long lengths of flue possible and the slope required, it may be necessary to adjust the location of the boiler installation template. Please check that both the boiler installation site and flue termination are in accordance with these instructions prior to drilling any holes for the boiler hanging bracket.

- Once the position of the flue exit hole has been determined, the hole should be cut through the wall using a core drill of 127 mm diameter. The flue exit hole should be cut with a rise towards outside of 3° .
- Measure the distance from the outside face of the wall to the centre of the fan outlet on the boiler (fig. 4.5). **This is dimension A.**
- For installations where the measured distance dimension A (fig. 4.5) is greater than 960 mm, an air/flue extension accessory will be required. The number of air/flue duct extensions which can be used depends on the boiler.

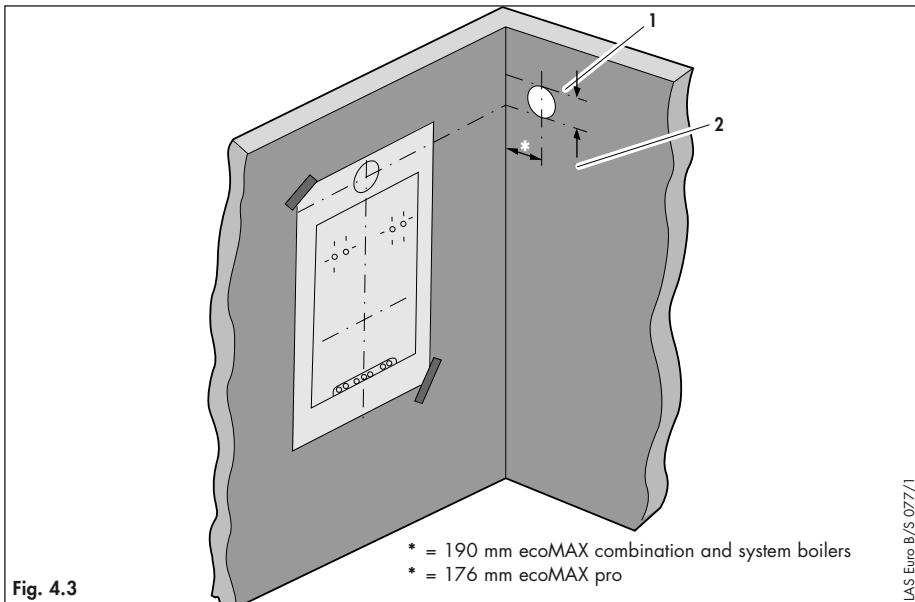


Fig. 4.3

LAS Euro B/S 077/1

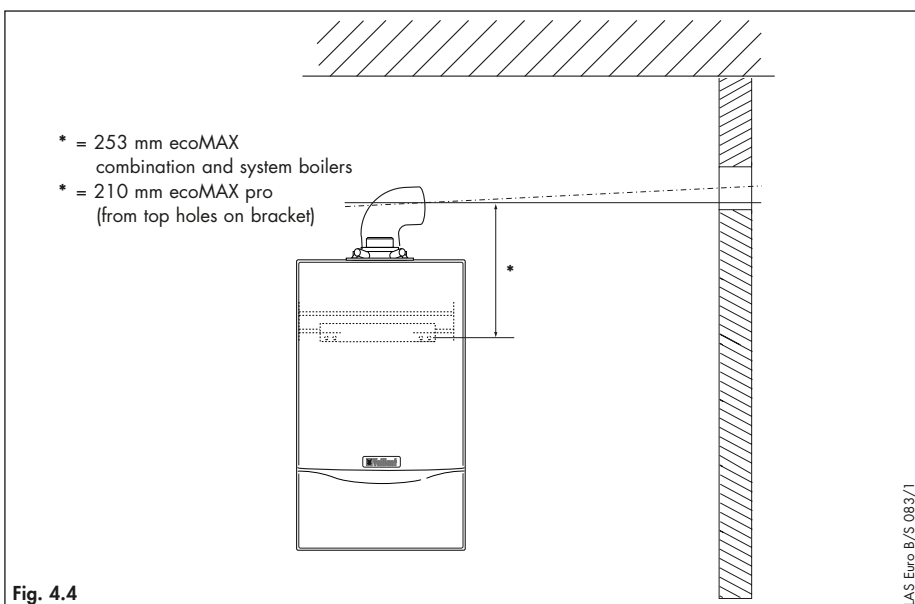
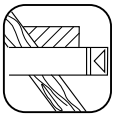


Fig. 4.4

LAS Euro B/S 083/1



INSTALLATION OF THE HORIZONTAL AIR/FLUE DUCT Ø 80/125 WITH EXTENSIONS

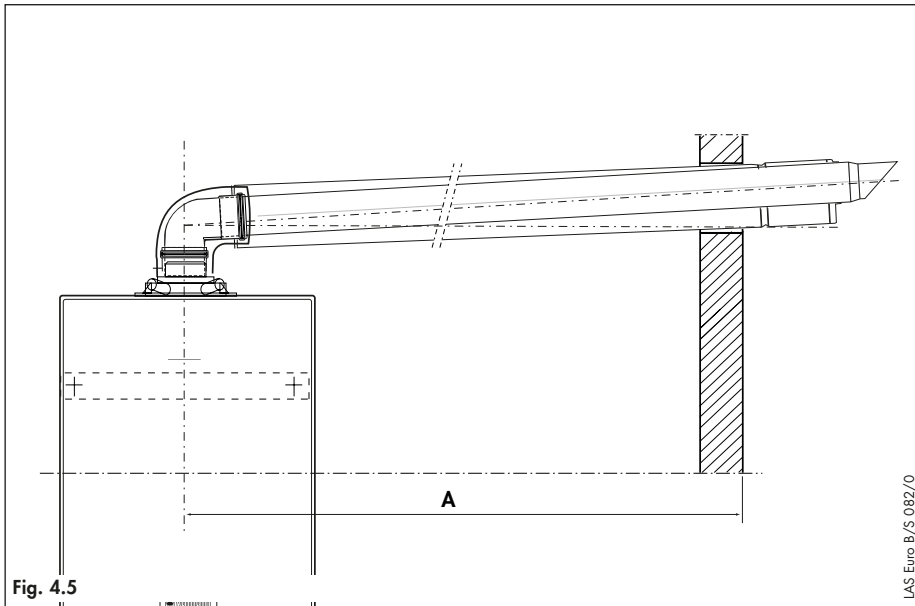


Fig. 4.5

LAS Euro B/S 082/0

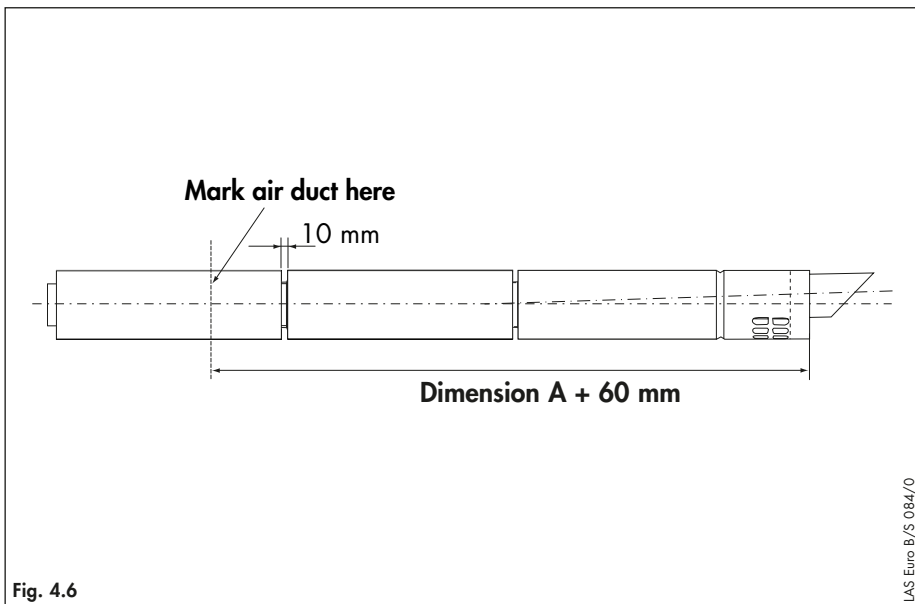


Fig. 4.6

LAS Euro B/S 084/0

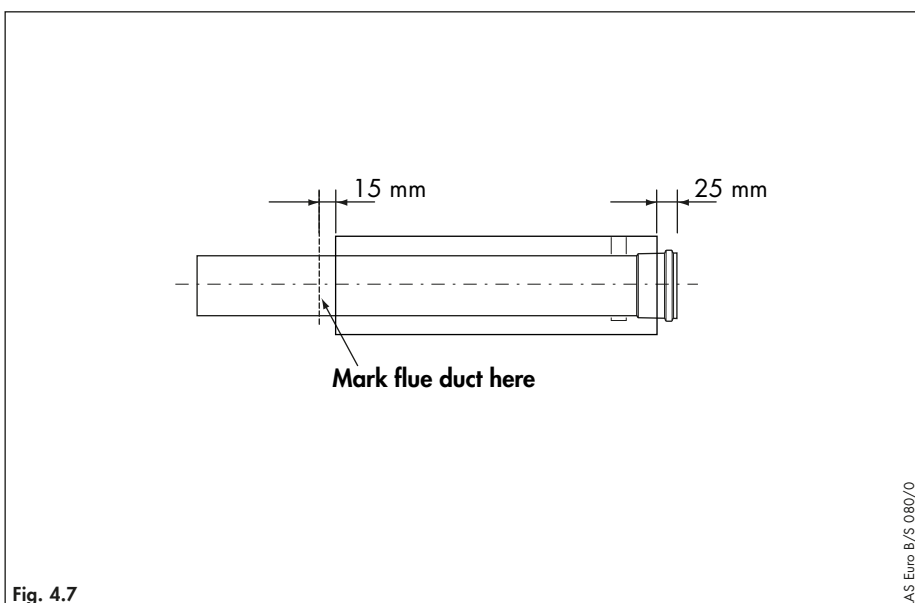


Fig. 4.7

LAS Euro B/S 080/0

- Taking each extension to be used, fit the flue duct into the air duct and secure using the 3 screws provided.
- For ease of measuring and marking the air/flue duct extensions, assemble them loosely together with the air/flue duct and terminal assembly as shown (fig. 4.6).

Note: The joints between the flue duct sections are of a push-fit type, with the flue duct spigot inserted into a socket containing a sealing ring. For ease of installation lubricate the seal using soap solution prior to assembling.

- Assemble the flue such that there is a gap of about 10 mm between each air duct, which will ensure the correct flue duct penetration into the flue sockets of 30 mm. All flue sockets should point towards the flue terminal.

- Measure from the flue terminal and mark the air duct to a length of:

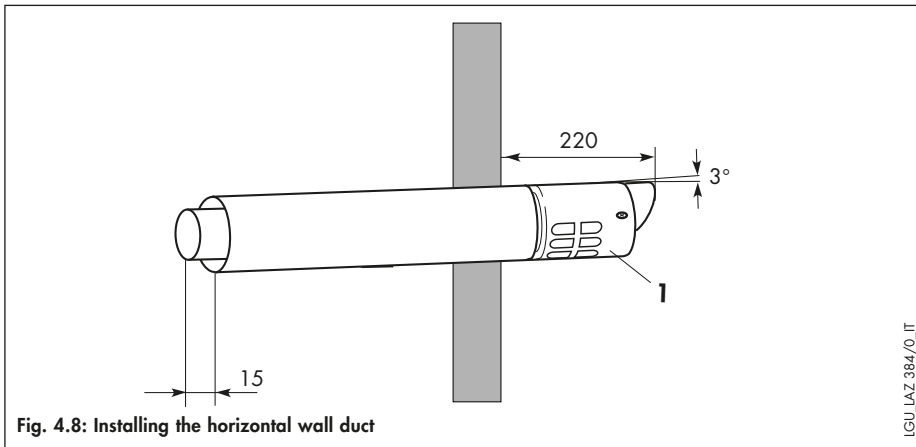
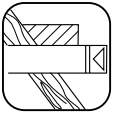
Dimension A + 60 mm

- Take the extension(s) to be shortened and remove the 3 screws. Separate the ducts.

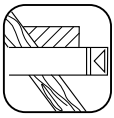
Note: For assembly reasons do not shorten any air duct to a length of less than 100 mm. If necessary shorten two adjacent extensions to achieve the overall required length.

- Cut the air duct square and remove any burrs.
- Refit the flue duct into the air duct and secure using the 3 screws.
- Cut the flue duct as detailed in fig. 4.7.
- When cutting the air and flue ducts it is important to remove any burrs with a file, this ensures easy fitting of the ducts and prevents any rough edges from damaging the flue seals.
- Care should be taken not to scratch the white surface of the air duct.
- If the installation requires the use of air/flue duct extensions, additional bends or elbows refer to the sections on pages 38 - 40.
- At this stage it is necessary to prepare and fit the boiler onto the hanging bracket – refer to the boiler installation instructions.
- Fit the appliance flue outlet adaptor to the boiler.

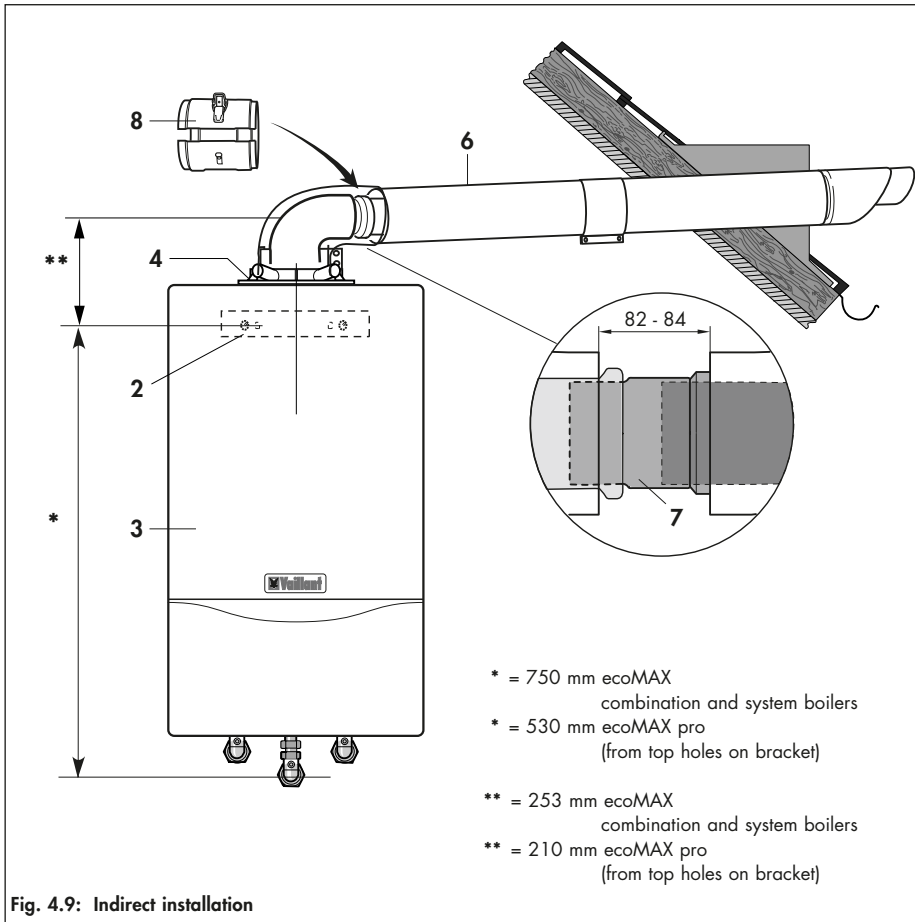
INSTALLATION OF THE HORIZONTAL AIR/FLUE DUCT Ø 80/125 WITH EXTENSIONS



- Push the assembled air/flue duct and terminal assembly through the flue exit hole until it protrudes 220 mm out from the outside wall.
- Ensure that the terminal is correctly positioned with the air inlet grille at the bottom.
- Slide one of the two trim rings over the air duct until it is flush with the internal wall face.



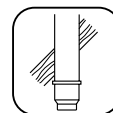
INSTALLATION OF THE HORIZONTAL AIR/FLUE DUCT AND TERMINAL ACCESSORY (80/125 Ø)



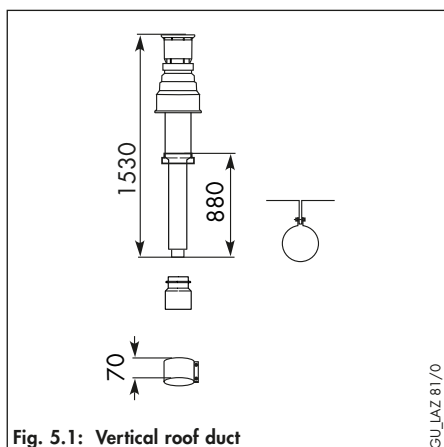
Indirect installation

- Fit the wall mounting (2).
 - Install the appliance (3) with reference to the installation and servicing instructions supplied with the boiler.
 - Change the appliance connection-piece (4) as described on page 28.
 - Join the 87° elbow to the appliance connection piece.
 - Push the sliding sleeve (7) firmly into place on the appropriate extensions (6).
 - Install the extensions and join the clutch sleeve to the 87° elbow.
 - ☞ This section functions subsequently as a separation point.
 - Join all separation points with the air-conduit fixing collars (8).
- ☞ See pages 38 et seq. for further details on the installation of extensions and elbows.

INSTALLATION OF THE VERTICAL AIR/FLUE DUCT



Observe the maximum flue lengths as detailed in table on page 26.



Vertical air/flue duct

Accy. Vaillant Part No.: 303 200 (black)

Contents of the accessory:

- Vertical air/flue duct and terminal assembly
- Adapter (air) for \varnothing 110/125
- 70 mm air duct clamp
- Fixing bracket

See page 24 et seq. for details of air/flue duct elements.

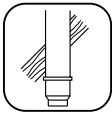
The air/flue duct assembly may be connected directly to the flue outlet on top of the boiler.

In addition to the vertical air/flue duct and terminal accessory, air/flue duct extensions can be added to increase the length of the flue.

Preparation

- Determine the installation site for the boiler with reference to the installation and servicing instructions supplied with the boiler.
- Ensure that all installation and service clearances are available and that the boiler flue can be installed as detailed in these instructions.
- Determine the point where the vertical air/flue duct and terminal assembly will penetrate the roof.

Please note: The vertical air/flue duct and terminal accessory (Accy. No. 303 200) may be shortened. The outer 'white' duct should be shortened first, then the inner flue duct cut so that it protrudes 15 mm out of the air duct. In case of installation directly to the boiler without elbows or bends, it is essential that the roof tile/collar is vertically aligned with the air/flue duct of the boiler.



INSTALLATION OF THE VERTICAL AIR/FLUE DUCT

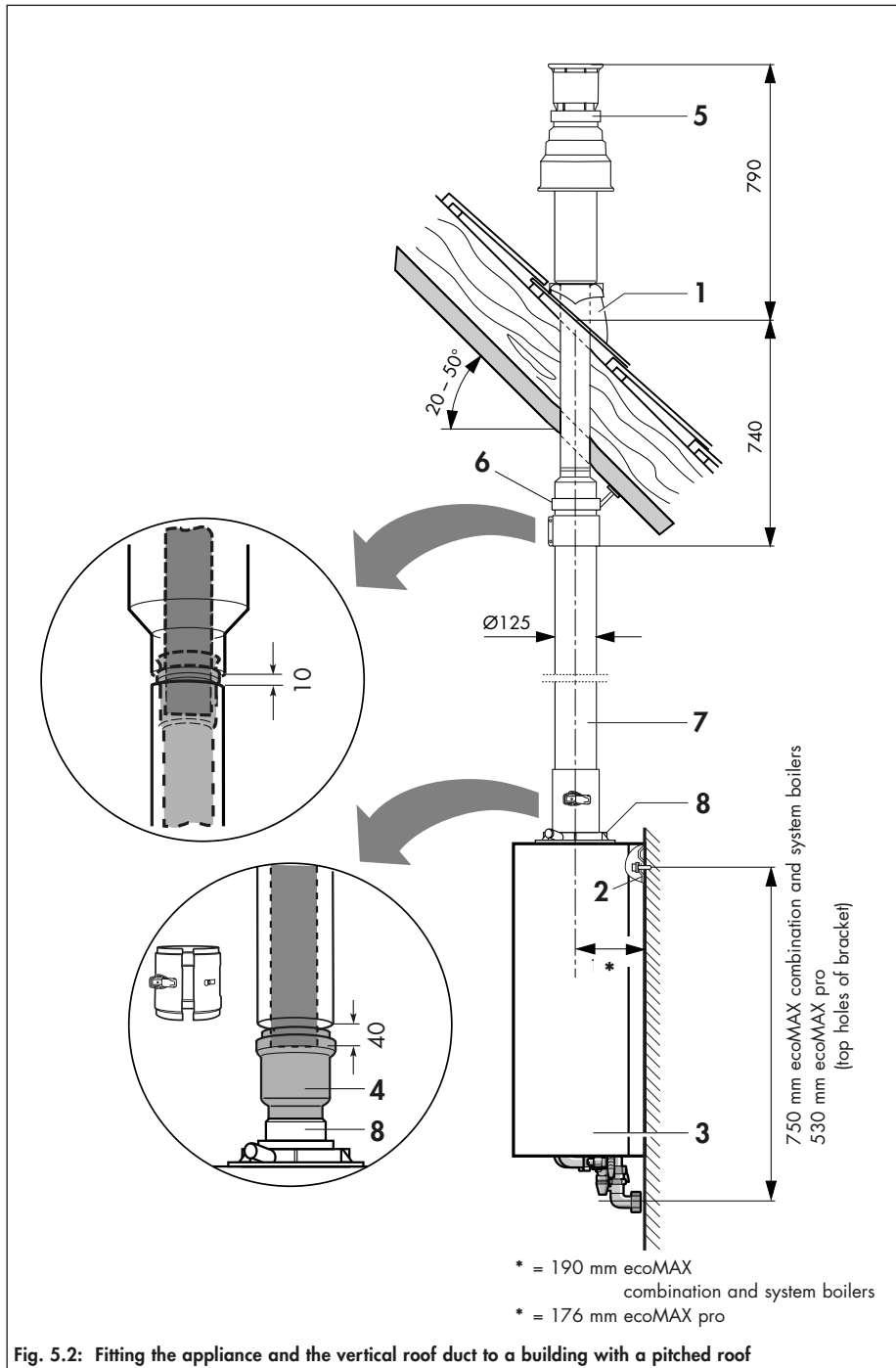


Fig. 5.2: Fitting the appliance and the vertical roof duct to a building with a pitched roof

Pitched roof installation

- Determine the point where the vertical air/flue duct and terminal assembly will penetrate the roof.
 - Fit the adjustable pitched roof tile (1).
 - Working from above, insert the vertical roof duct (5) through the roofing tile and push it firmly into place.
 - Vertically align the roof duct and attach it to the roof structure with the fixing bracket (6) supplied.
 - Fit the boiler hanging bracket (2).
 - Install the appliance (3) with reference to the installation and servicing instructions supplied with the boiler.
- ☞ See pages 38 et seq. for further details on the installation of extensions and elbows.
- Push the sliding sleeve (4) firmly into place on the extension.
 - Join the vertical roof duct (5) to the extension (7).
 - Join the sliding sleeve (4) to the appliance's connection piece (8). This permits easy separation between the air/flue duct and the appliance.
 - Drill two holes 3 mm Ø through the air duct of the flue/boiler clamp at the most convenient holes on the air duct clamp. (Ensure that the drill does not penetrate the inner flue duct). Screw the clamp to the air ducts of the flue assembly and the boiler using the screws supplied.
 - Ensure that any air duct clamps used are positioned centrally and fixed to the air duct using the self tapping screws supplied.
 - **Note:** The air/duct clamp must not be screwed to the bottom of the vertical air/flue duct and terminal accessory to allow for any slight movement in the roof structure.
 - Ensure that at least one pipe clamp supports the air/flue duct at each extension fitted.

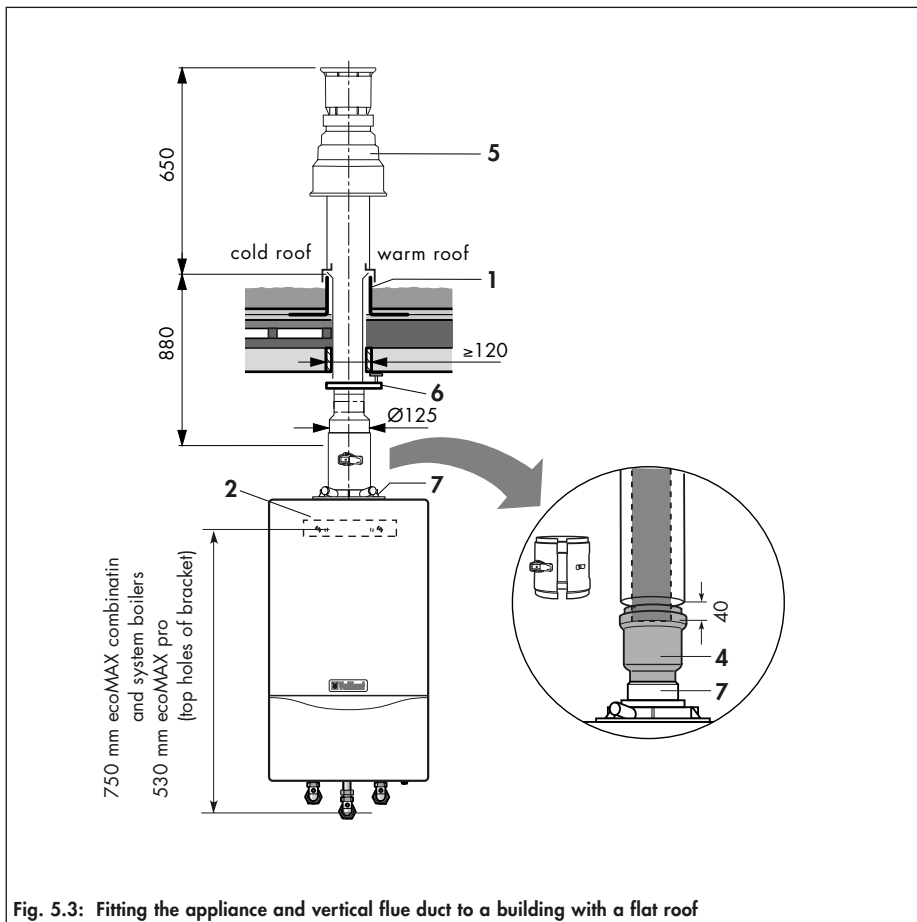
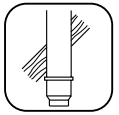


Fig. 5.3: Fitting the appliance and vertical flue duct to a building with a flat roof

Flat-roof installation

- Determine the point where the vertical air/flue duct and terminal assembly will penetrate the roof.
 - Fit the flat roof penetration collar (1).
 - Stick the flat roof penetration collar firmly into place with adhesive in accordance with the codes of practice for flat roofs (CP 144) to ensure a watertight seal.
 - Working from above, insert the vertical roof duct (5) through the flat roof collar and push it firmly into place.
 - Vertically align the roof duct and attach it to the roof structure with the fixing bracket (6) supplied.
 - Fit the boiler hanging bracket (2).
 - Install the appliance (3) with reference to the installation and servicing instructions supplied with the boiler.
- 👉 See pages 38 et seq. for further details on the installation of extensions and elbows.
- Push the sliding sleeve (4) firmly into place on the extension.
 - Join the vertical roof duct (5) to the extension (7).
 - Join the sliding sleeve (4) to the appliance's connection piece (8). This permits easy separation between the air/flue duct and the appliance.
 - Drill two holes 3 mm Ø through the air duct of the flue/boiler clamp at the most convenient holes on the air duct clamp. (Ensure that the drill does not penetrate the inner flue duct). Screw the clamp to the air ducts of the flue assembly and the boiler using the screws supplied.
 - Ensure that any air duct clamps used are positioned centrally and fixed to the air duct using the self tapping screws supplied.
 - **Note:** The air/duct clamp must not be screwed to the bottom of the vertical air/flue duct and terminal accessory to allow for any slight movement in the roof structure.
 - Ensure that at least one pipe clamp supports the air/flue duct at each extension fitted.



FITTING AIR/FLUE DUCT EXTENSIONS

How to add extensions

Use a saw, tin-snips, etc. to cut tubes to size.

- No tools are required when removing previously-fitted extensions for cutting to size air and flue tubes separately. When doing so, the flue conduit should be twisted into a position where the shoulders on the plastic tube can be pushed through the spacer-piece. After cutting to size, refit the flue conduit and secure it to the air conduit.

Tip:

Start by measuring the required length of air conduit* (L_{air}), and then calculate the corresponding length of flue conduit ($L_{exhaust}$) as follows:

$$L_{exhaust} = L_{air} + 40 \text{ mm}$$

$$L_{exhaust} = \text{length of flue conduit}$$

$$L_{air} = \text{length of air conduit}$$

* Minimum length of air-conduit extension: 100 mm.

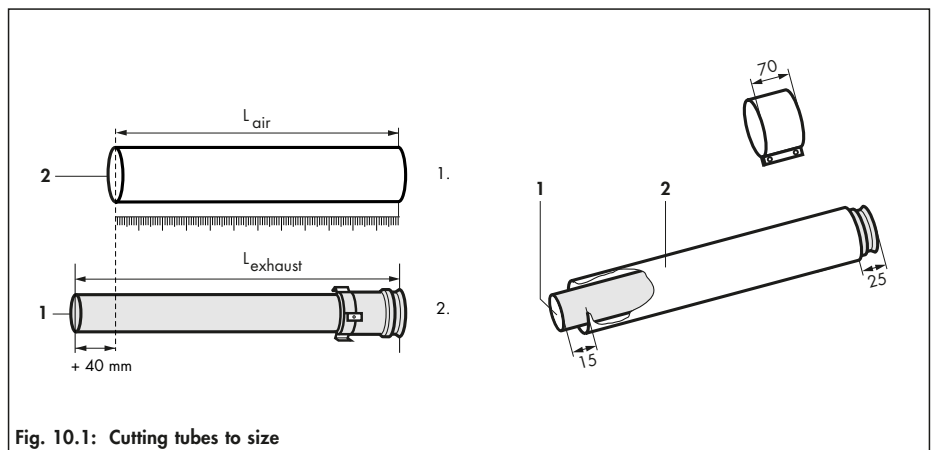


Fig. 10.1: Cutting tubes to size

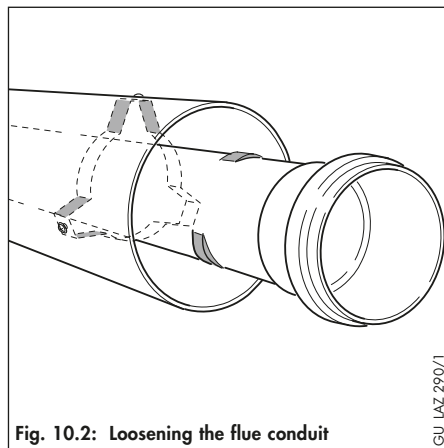


Fig. 10.2: Loosening the flue conduit

- The seals are sensitive to mineral oil-based grease products. For this reason, the seals must not be greased. If the seals need wetting to aid in installation, use water only.
- De-burr and file down any rough edges on the tubes before fitting in order to prevent damage to the seals. Remove all metal filings and other debris.
- Do not use damaged or dented tubes, as they will not form an adequate seal.
- Ensure that the seals remain correctly aligned when installing the tubes. Do not fit damaged seals.
- Secure the exhaust conduit with the fixing device in order to ensure that it is correctly centred relative to the air conduit.



How to install elbows

Example:

An offset of 400 mm is measured. This value is then used, along with the table below, to determine the length of the air conduit (= 190 mm in this case).



Important:

This gives a corresponding exhaust-conduit length of $190 + 40 = 230$ mm.

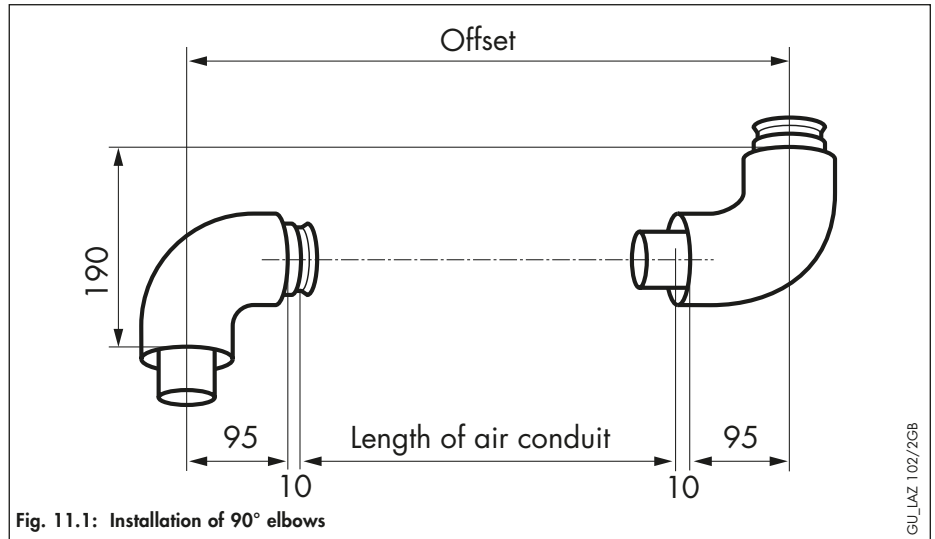


Fig. 11.1: Installation of 90° elbows

GU_LAZ 102/268

Table 11.1: Length of surplus with 90° elbows

Offset [in mm]	Length of air conduit [in mm]	Offset [in mm]	Length of air conduit [in mm]	Offset [in mm]	Length of air conduit [in mm]
200, 205	0	505	295	730	520
210,	0	510	300	735	525
> 210 to	not possible	515	305	740	530
< 310 mm		520	310	745	535
		525	315	750	540
		530	320	755	545
		535	325	760	550
310	100	540	330	765	555
315	105	545	335	770	560
320	110	550	340	775	565
325	115	555	345	780	570
330	120	560	350	785	575
335	125	565	355	790	580
340	130	570	360	795	585
345	135	575	365	800	590
350	140	580	370	805	595
355	145	585	375	810	600
360	150	590	380	815	605
365	155	595	385	820	610
370	160	600	390	825	615
375	165	605	395	830	620
380	170	610	400	835	625
385	175	615	405	840	630
390	180	620	410	845	635
395	185	625	415	850	640
400	190	630	420	855	645
405	195	635	425	860	650
410	200	640	430	865	655
415	205	645	435	870	660
420	210	650	440	875	665
425	215	655	445	880	670
430	220	660	450	885	675
435	225	665	455	890	680
440	230	670	460	895	685
445	235	675	465	900	690
450	240	680	470	905	695
455	245	685	475	910	700
460	250	690	480	915	705
465	255	695	485	920	710
470	260	700	490	925	715
475	265	705	495	930	720
480	270	710	500	935	725
485	275	715	505	940	730
490	280	720	510		
495	285	725	515		
500	290				



FITTING AIR/FLUE DUCT EXTENSIONS

How to install elbows

Example:

An offset of 400 mm is measured. This value is then used, along with the table below, to determine the length of the air conduit (= 284 mm) and the height (= 420 mm).



Important:

This gives a corresponding exhaust-conduit length of $284 + 40 = 324$ mm.

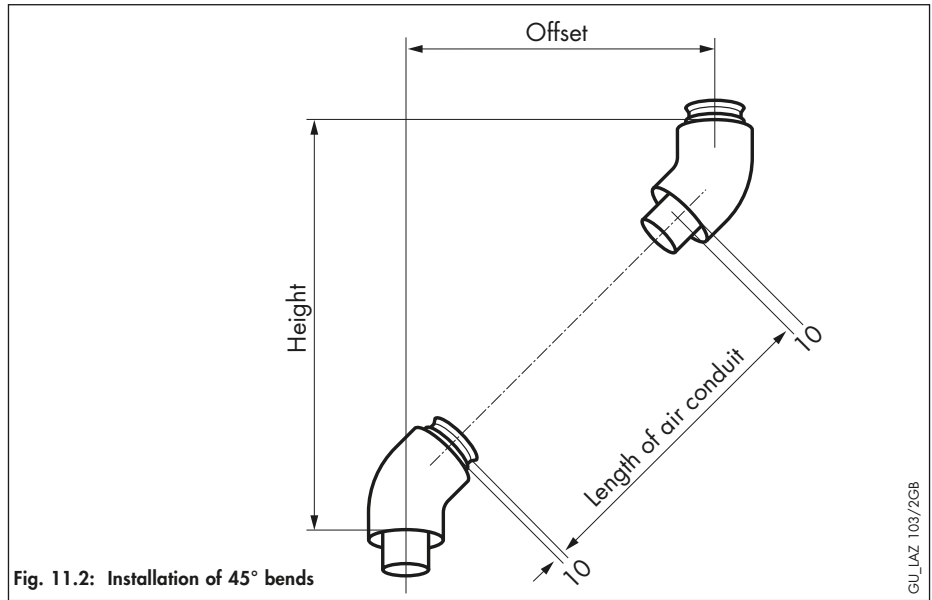


Fig. 11.2: Installation of 45° bends

GU_LAZ 103/2GB

Table 11.2: Length of surplus with 45° bends

Offset [in mm]	Length of air conduit [in mm]	Height [in mm]	Offset [in mm]	Length of air conduit [in mm]	Height [in mm]	Offset [in mm]	Length of air conduit [in mm]	Height [in mm]
90	0	210	335	334	455	535	617	655
95	0	215	340	341	460	540	624	660
100	0	220	345	348	465	545	631	665
> 100 to < 170 mm	not possible	350	355	470	550	638	670	
		355	362	475	555	645	675	
		360	369	480	560	652	680	
		365	376	485	565	659	685	
		370	383	490	570	666	690	
		375	390	495	575	673	695	
170	100	290	380	397	500	580	680	700
175	108	295	385	405	505	585	687	705
180	115	300	390	412	510	590	695	710
185	122	305	395	419	515	595	702	715
190	129	310	400	426	520	600	709	720
195	136	315	405	433	525	605	716	725
200	143	320	410	440	530	610	723	730
205	150	325	415	447	535	615	730	735
210	157	330	420	454	540	620	737	740
215	164	335	425	461	545	625	744	745
220	171	340	430	468	550	630	751	750
225	178	345	435	475	555	635	758	755
230	185	350	440	482	560	640	765	760
235	192	355	445	489	565	645	772	765
240	199	360	450	496	570	650	779	770
245	207	365	455	504	575	655	786	775
250	214	370	460	511	580	660	794	780
255	221	375	465	518	585	665	801	785
260	228	380	470	525	590	670	808	790
265	235	385	475	532	595	675	815	795
270	242	390	480	539	600	680	822	800
275	249	395	485	546	605	685	829	805
280	256	400	490	553	610	690	836	810
285	263	405	495	560	615	695	843	815
290	270	410	500	567	620	700	850	820
295	277	415	505	574	625	705	857	825
300	284	420	510	581	630	710	864	830
305	291	425	515	588	635	715	871	835
310	298	430	520	596	640	720	878	840
315	306	435	525	603	645			
320	313	440	530	610	650			
325	320	445						
330	327	450						

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