SIGMA

TOP OUTLET FLUE
UPGRADE INSTRUCTIONS

These instructions will apply to old model of Sigma boilers, without top outlet flue connection. These instructions are intended for allowing conversion of old boiler to new boiler with top outlet flue connection.

Appr. Nr. B 98.06 A - 0461 AT 0344

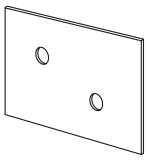
cod. 3543566/0 - 01/01

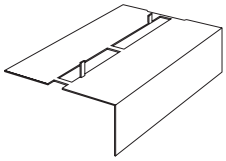
WARNING

To make boiler upgrade it is first necessary to order following kits:

- 3941076/0 for Sigma 30/40
- 3941077/0 for Sigma 50/60

Each kits contains:

Kit for Sigma 30/40	Description	Code
	Plate	3291440/0
	Plugs	3500615/0
	Restrictor Ø36 mm	3401205/0
	Restrictor Ø39 mm	3401203/0

Kit for Sigma 50/60	Description	Code
	Baffle	3291439/0
	Restrictor Ø41 mm	3401206/0
	Restrictor Ø46 mm	3401204/0

Follow carefully instructions at next pages for top outlet flue conversion and for determining correct restrictor, depending on flue pipe configuration and flue pipe lenght on installation.

1.0 Top outlet flue conversion

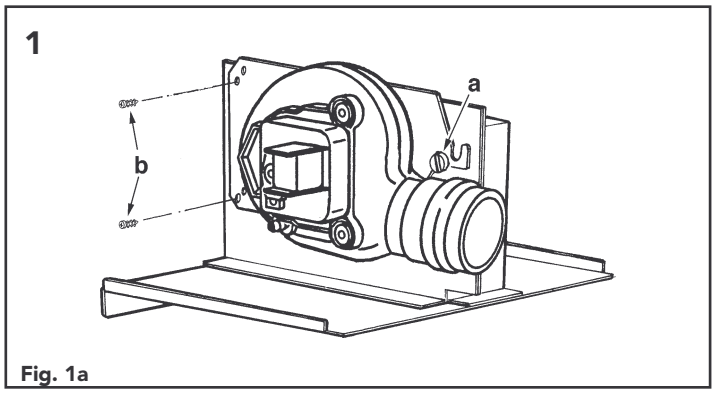


Fig. 1a

Remove fan by pulling off electrical connections. Pull off air pressure switch tubes from the air pressure switch.
Remove the two screws **"b"** and rotate the fan upward to disengage it from the securing pin **"a"**.

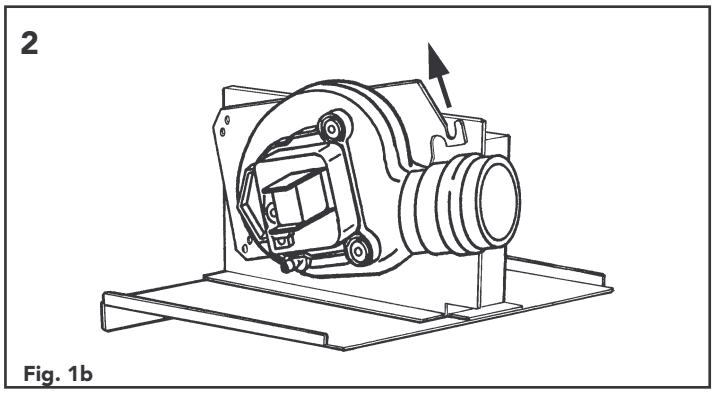


Fig. 1b

Rotate the fan upward to disengage it from the securing pin **"a"**. Remove the securing screw that locates the fan nozzle extension to the fan and remove the nozzle

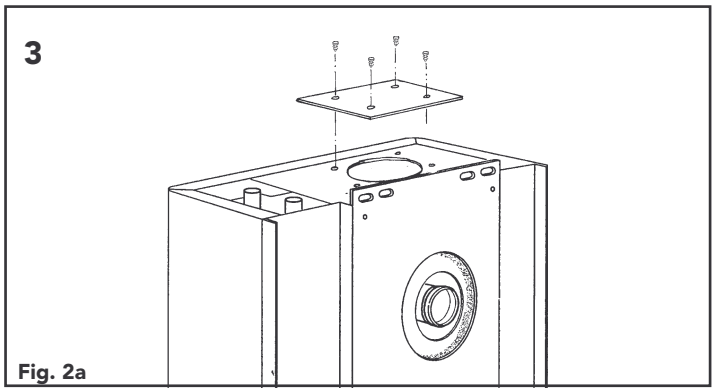


Fig. 2a

Take off the four screws which fix the top sealed chamber cover, remove the cover and gasket.

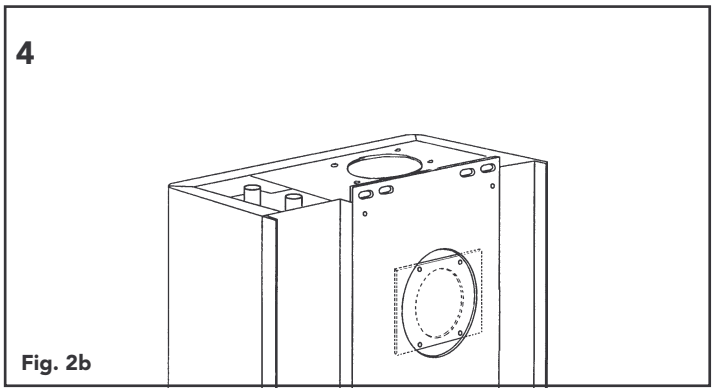


Fig. 2b

Rotate the cover and gasket through 90° and fit it to the rear of the boiler to cover the original flue outlet. Secure them both in place with the four screws removed

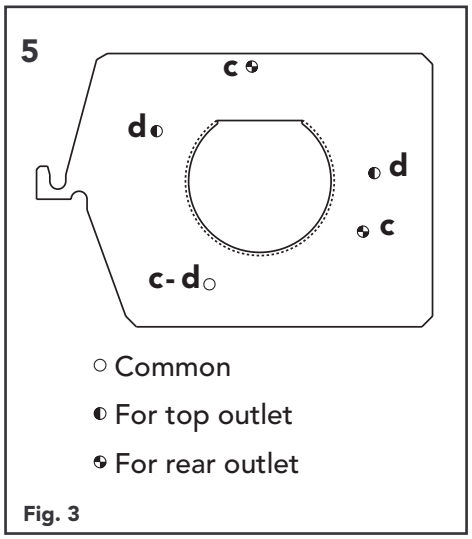


Fig. 3

Remove fan mounting plate by undoing the three fixing screws **"c"**.

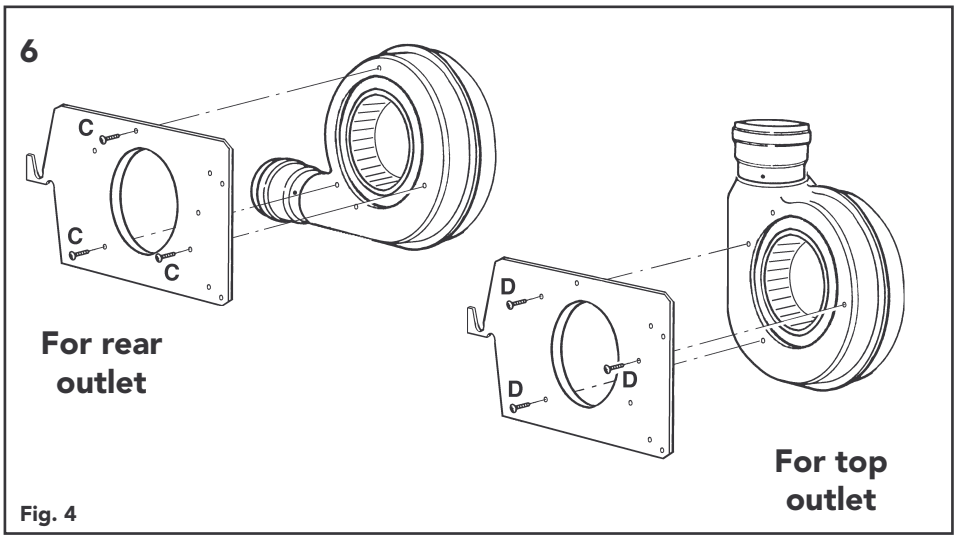


Fig. 4

Rotate the fan through 90° so that the fan nozzle points upward. Secure the fan to the plate in the new position using screws in position **"d"**.

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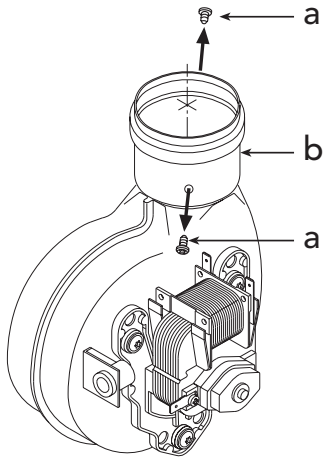


Fig. 5

Remove the two screws **"a"** from pipe connection **"b"**.

8

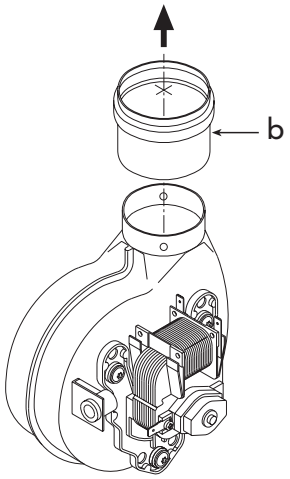


Fig. 6

Remove pipe connections **"b"**.

9

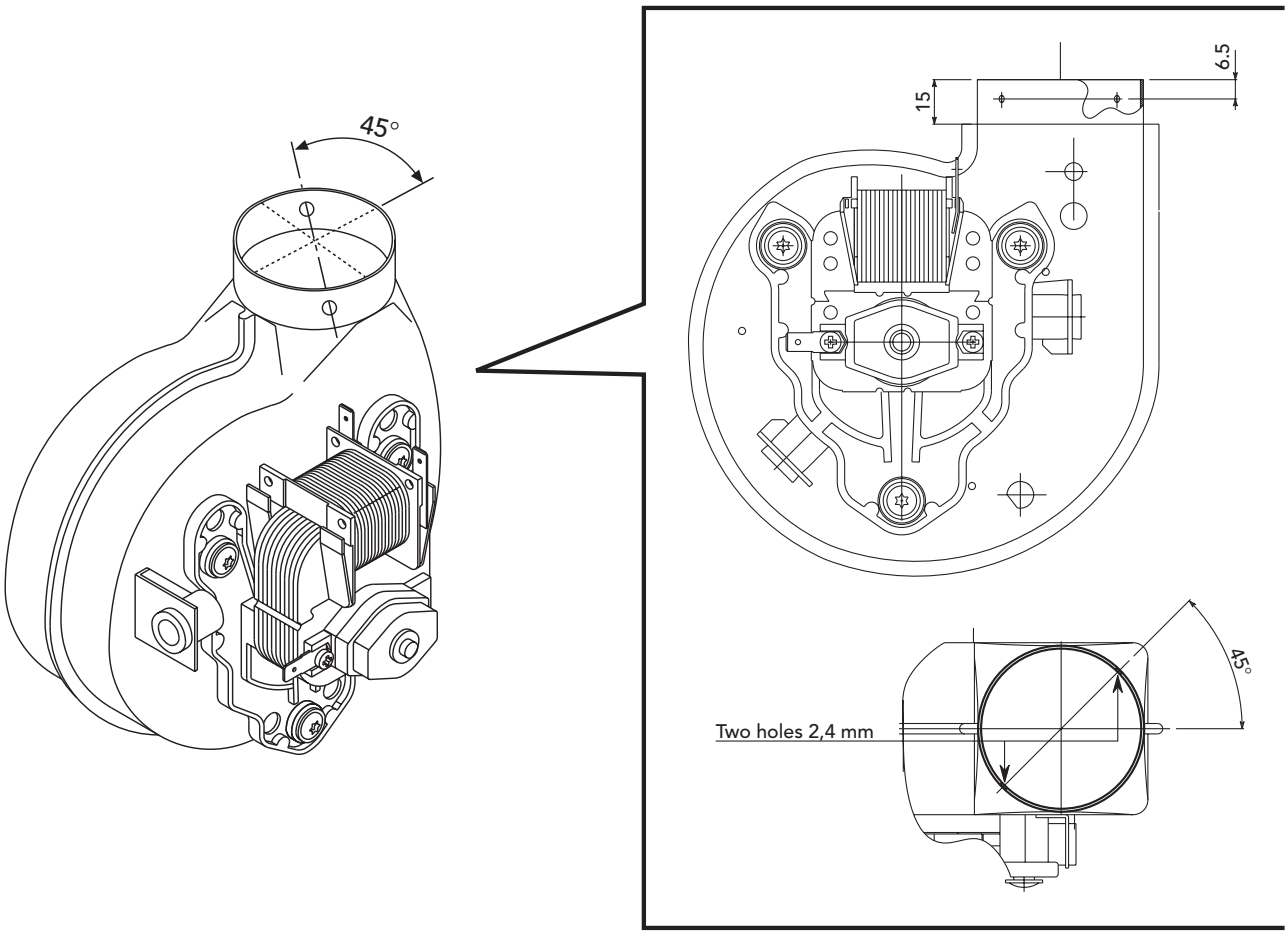


Fig. 7

Fan in old boiler has two holes at 6,5 mm from fan top connection.

10

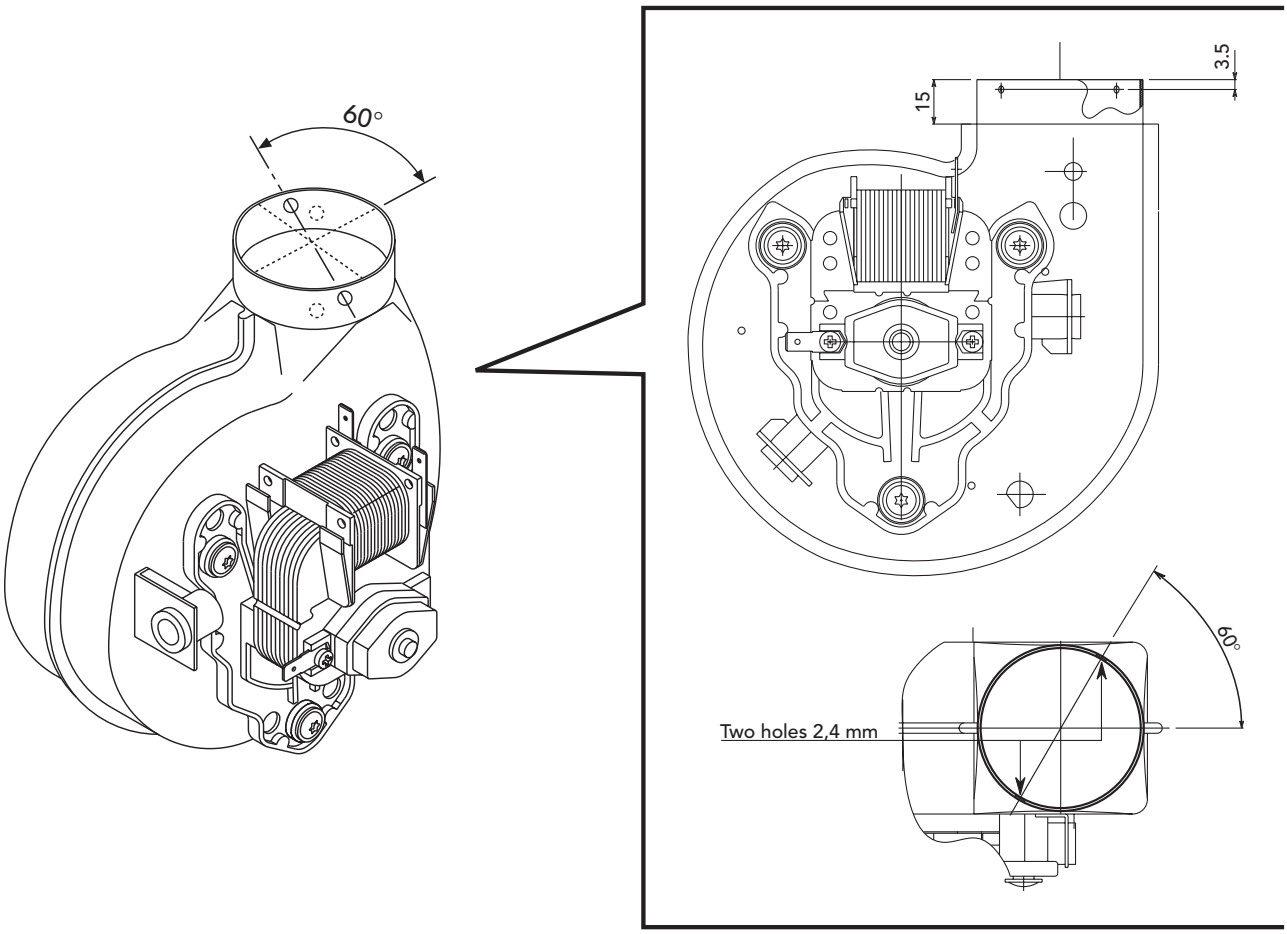


Fig. 8

It is necessary to drill two 2.4 mm holes, different than original, at 3,5 mm from top fan connection, as

11

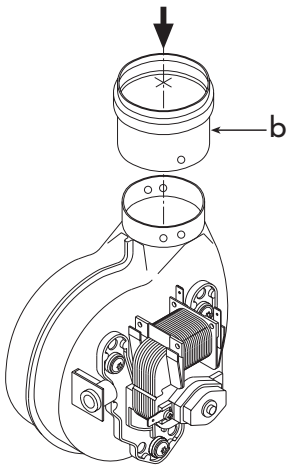


Fig. 9

Insert the pipe connection **"b"**.

12

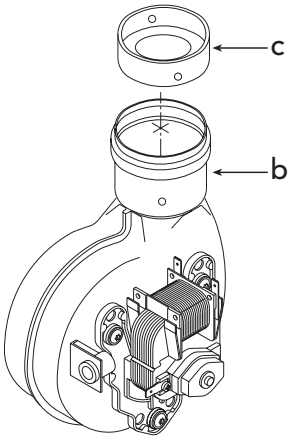


Fig. 10

Insert the corret restrictor **"c"** inside the pipe connection **"b"**.

13

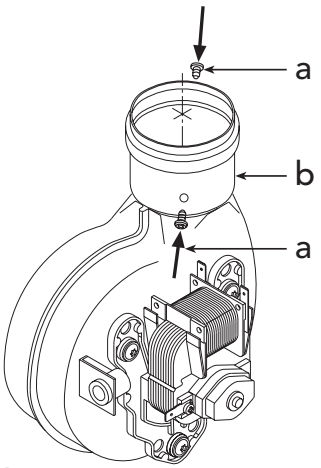


Fig. 11

Using the two new holes you drilled fix both restrictor and pipe connection **"b"** to the fan.

14

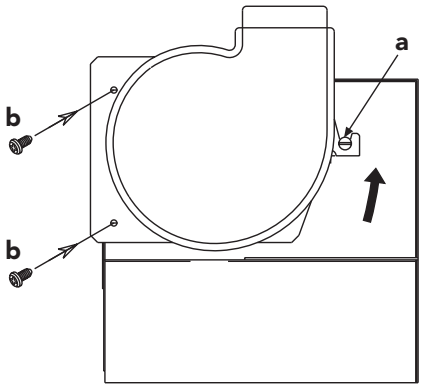


Fig. 12

Refit wiring connections to fan and air pressure switch tubes ensuring correct orientation. I.E. red tube to air pressure switch connection with red dot (+) and clear tube to air pressure switch connection with no paint marking (-).
Fit the fan into the boiler rotating the front upwards to engage with the pin **"a"**.
Secure with the screws **"b"**.

15a (For Sigma 30/40)

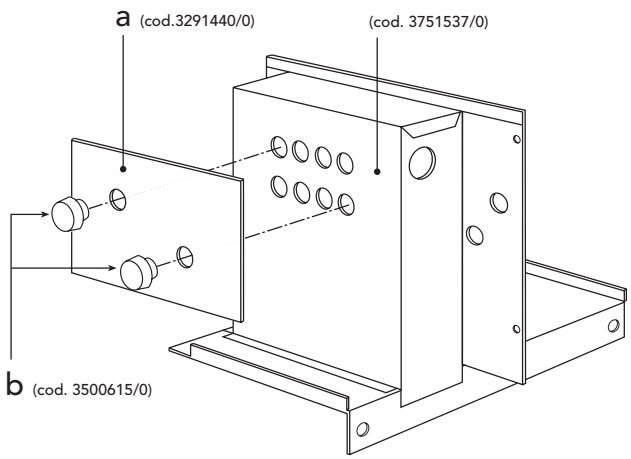


Fig. 13a

With plate **"a"** close the 8 bypass holes fixing with two plugs **"b"**

15b (For Sigma 50/60)

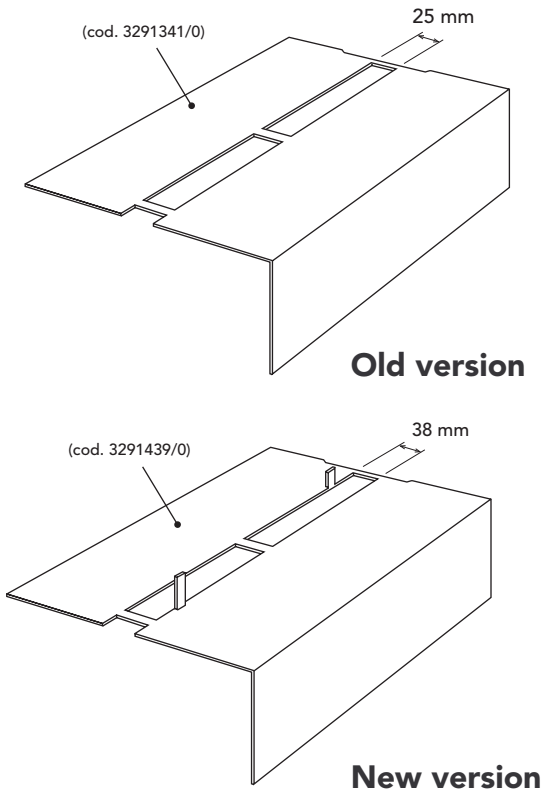
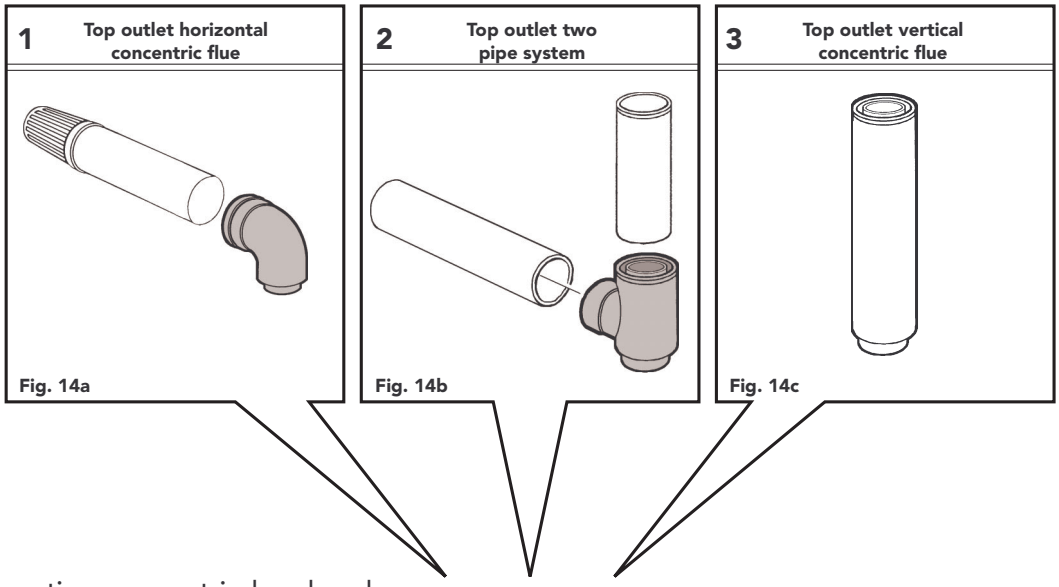


Fig. 13b

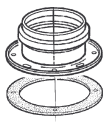
Substitute the deflector.

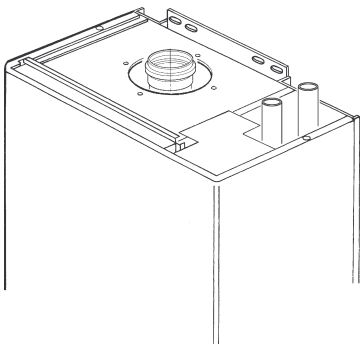
2.0 Top outlet Flue Connection

Three different connection are available from top of the boiler, using accessories as reported on fig. 14a, b e c and on examples a next page.



Vertical Connection, concentric bend and two pipe separator can be supplied on request.





3.0 Examples of top flue connection

1 Example of concentric flue Ø 100 with appliance bend use

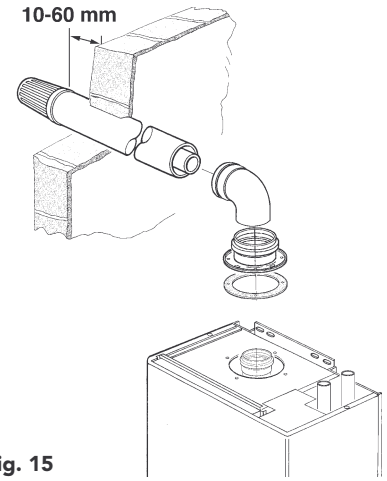


Fig. 15

Note • Bear in mind that the two concentric pipes must slope downwards away from the boiler at a rate of about 3 mm/m to avoid rainwater entering the boiler. Outside, the pipes should protrude from the wall between 10 and 60 mm.
Warning • Back exit with coaxial bend is not possible

2 Example of direct roof flue outlet and wall air inlet with 2 pipe system

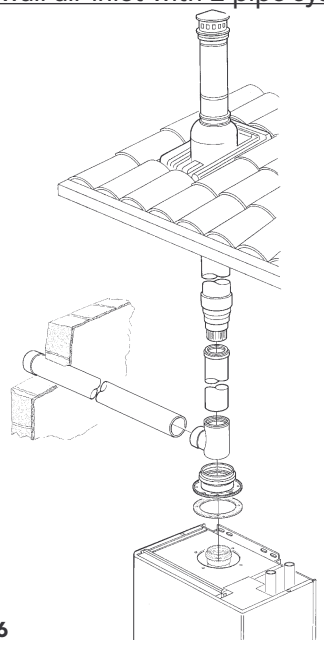


Fig. 16

Warning • Back exit with Air/Flue T separator is not possible

3 Example of concentric flue Ø 100 with vertical outlet flue use.

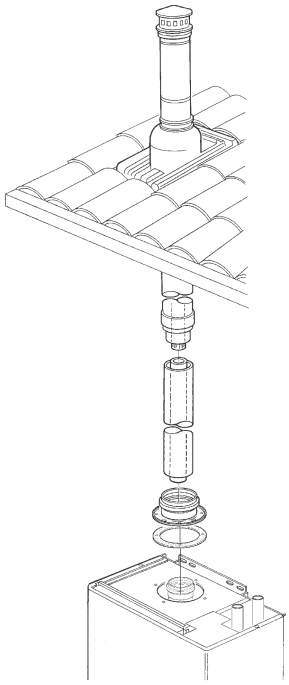


Fig. 17

4.0 Restrictor and max flue length

4.01 Concentric Flue system

First table below shows the maximum flue lengths available for boilers with concentric systems.
For correct calculation remember to include the reduction for bend and flue terminals listed on second table.

Maximum flue lenght permissible	100 mm contentric		125 mm concentric		100 mm concentric back exit
	Vertical	*Horizontal	Vertical	*Horizontal	
Sigma 30-40-50-60	4 m	3 m	5 m	5 m	1 m

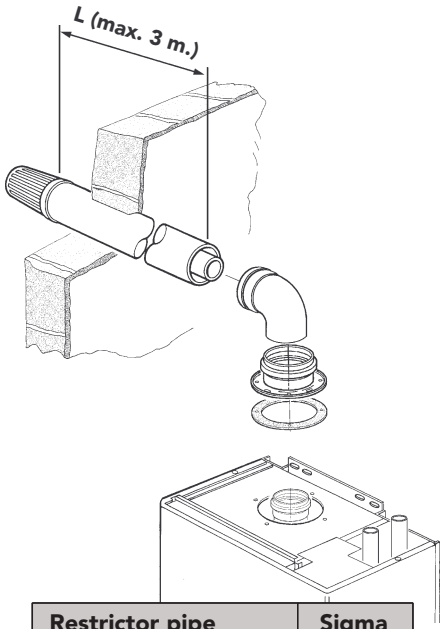
Reduction for bend	
100 mm concentric bend 90°	1 m
100 mm concentric bend 45°	0,5 m
125 mm concentric bend 90°	0,5 m
125 mm concentric bend 45°	0,25 m

* For horizontal flueing the reduction for the appliance bend is already

4.01.01 Flue pipe configuration

Sigma 30-40

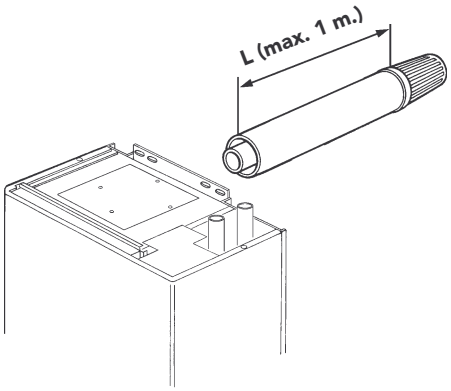
A Horizontal concentric



Restrictor pipe configuration		Sigma 30-40
A	L ⩽ 1m	Ø36
	1m < L ⩽ 3m	Ø39

Fig. 18

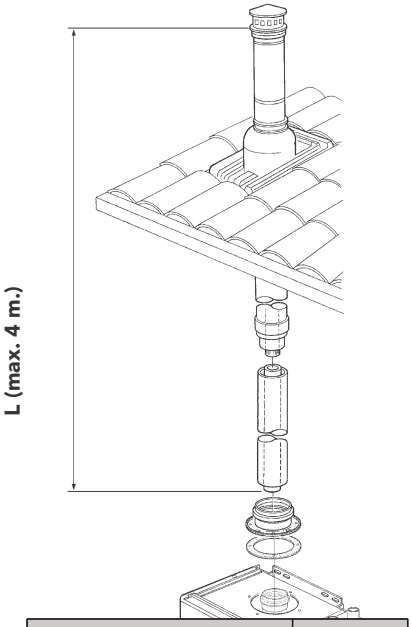
B Back concentric



Restrictor pipe configuration		Sigma 30-40
B	L ⩽ 1m	Ø36

Fig. 19

C Vertical concentric

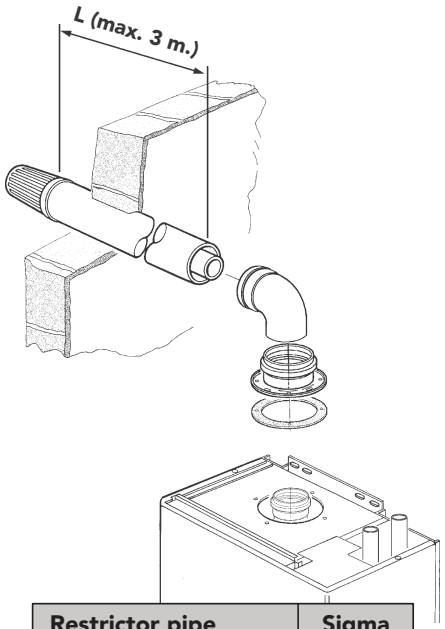


Restrictor pipe configuration		Sigma 30-40
C	L ⩽ 2m	Ø36
	L > 2m	Ø39

Fig. 20

Sigma 50-60

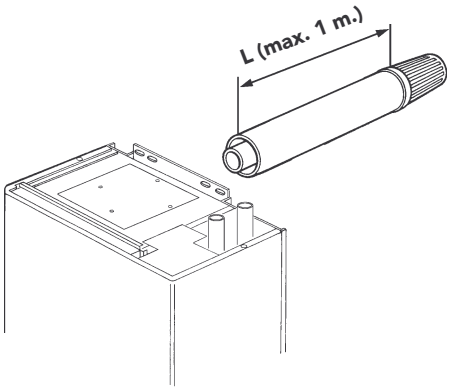
A Horizontal concentric



Restrictor pipe configuration		Sigma 50-60
A	L ⩽ 1m	Ø41
	1m < L ⩽ 3m	Ø46

Fig. 21

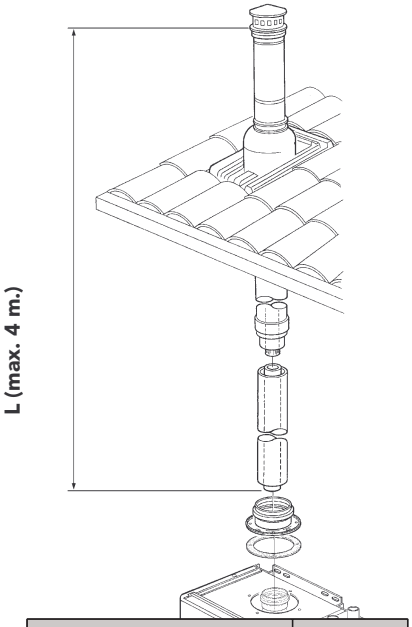
B Back concentric



Restrictor pipe configuration		Sigma 50-60
B	L ⩽ 1m	Ø46

Fig. 22

C Vertical concentric



Restrictor pipe configuration		Sigma 50-60
C	L ⩽ 2m	Ø41
	L > 2m	Ø46

Fig. 23

4.02 Two pipe flue system

1. Utilise the pipes and fittings flows resistance tables on the following pages and calculate the total flow resistance in metres-air, by adding the flow resistances of the components in the whole air-flue system, based on their position (vertical or horizontal, air inlet or flue outlet).
   Please note that the same fitting, identified by a one code (i.e. 1 pipe diameter 80, code KWMA83A), can offer different flow resistances if positioned as air inlet or flue outlet, if placed vertically or horizontally.
   The flow resistance of the special two pipe flue-air adapters do not have to be included in the calculation as they are already included in the maximum length calculation.

IMPORTANT: the pipes and fittings flow resistance (reduction) have been summarised on the following page. The flow resistance values written refer only to Ferroli pipes and fittings.

2. Verify that the total flow resistance calculated is less or equal to 50 metre for Sigma 30 and 50 and 40 metre for Sigma 40 and 60.
3. Choose the more suitable restrictor from table below.

Tab. 1

Total flow resistance	Use restrictor:			
	Sigma 30	Sigma 40	Sigma 50	Sigma 60
0 - 20 metres	Ø36	Ø36	Ø41	Ø41
20 - 30 metres	Ø36	Ø39	Ø41	Ø46
30 - 40 metres	Ø39	Ø39	Ø46	Ø46
40 - 50 metres	Ø39	not possible	Ø46	not possible

Example of calculation for wall inlet/outlet with 2 pipe system maximum total flue length: 40 metres

Tab. 2

Ref.	Description			N° of pieces	Length reduction
1	Connection for concentric pipe cod. KWMR52A			1	/
2	Air/Flue T separator cod. KWMA90U			1	already included
3	Male - Female flue Ø 80 mm	Air	Horizontal	1	1
			Vertical	/	/
4		Flue	Horizontal	1	2
			Vertical	5	5
5	Flue bend 80 mm			1	2,5
6	Air wall terminal outlet flue Ø80			1	5
7	Air wall terminal air Ø80			1	2
				Total	17,5

Total flow resistance 17,5 m:
use restrictor Ø41

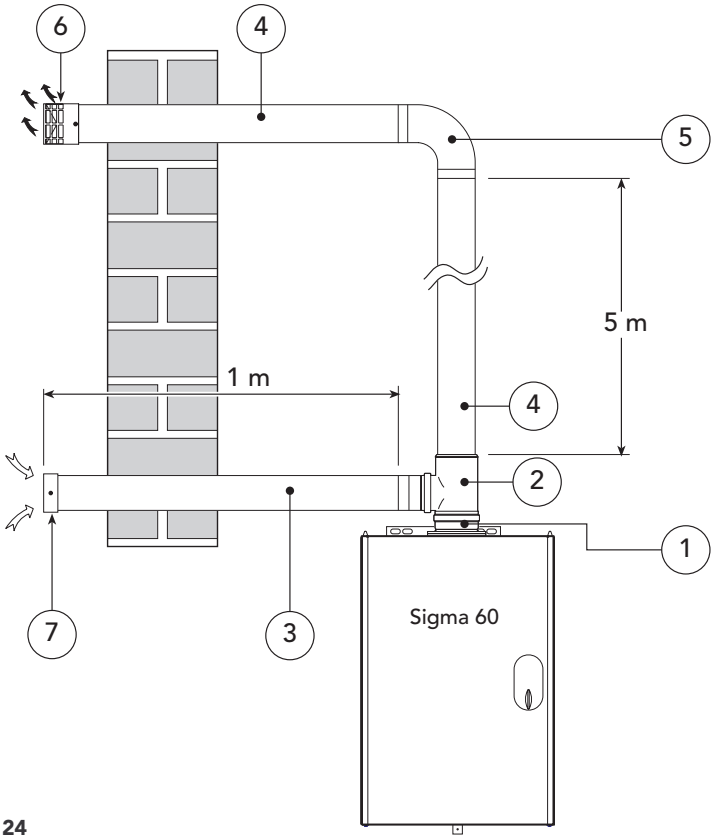
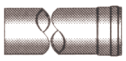
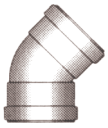
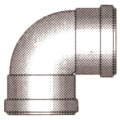
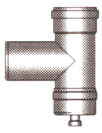
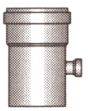
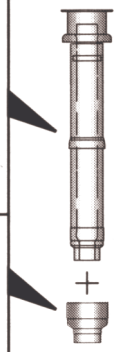
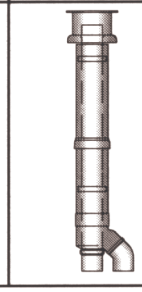
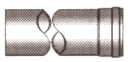
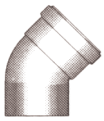


Fig. 24

Pipe and fittings reduction table

Accessories Ø 80	Description		Reduction Air Vertical	Reduction Air Horizontal	Reduction Flue Vertical	Reduction Flue Horizontal
	Male-female flue Ø80		1	1	1	2
	Female-female bend 45° Ø80		1,2		2,2	
	Female-female bend 90° Ø80		1,5		2,5	
	Male-female bend 90° Ø80		1,5		2,5	
	Pipe fitting M/M/F Ø80 with inspecting plug+trap for condensate drainage system				7	
	Condensate flue outlet				3	
	Spigot and socket reduction Ø80/100		0			
	Airwall terminal products of combustion Ø80					5
	Air terminal of inlet protection Ø80			2		

Accessories Ø 80	Description		Reduction Air Vertical	Reduction Air Horizontal	Reduction Flue Vertical	Reduction Flue Horizontal
	Outlet flue air inlet for concentric system Ø80					
	Pipe fitting for outlet flue Ø80				4	
	Outlet flue air inlet for connection with split end Ø80		12			

Accessories Ø 100	Description		Reduction Air Vertical	Reduction Air Horizontal	Reduction Flue Vertical	Reduction Flue Horizontal
	Male-female flue Ø100		0,4	0,4	0,4	0,8
	Male-female bend 45° Ø100		0,6		1	
	Male-female bend 90° Ø100		0,8		1,3	
	Air wall terminal products of combustion Ø100					3
	Air terminal of outlet protection Ø100			1,5		
	Spigot and socket reduction Ø 80/100		1,5		3	

Should you require help with any difficulties call our Technical Service Helpline on

08707 282 885

Phone numbers:

Installer _____

Service Engineer _____

BECAUSE OF OUR CONSTANT ENDEAVOUR FOR IMPROVEMENT DETAILS MAY VARY SLIGHTLY FROM THOSE QUOTED IN THESE INSTRUCTIONS.

FERROLI S.p.A.

ALL SPECIFICATIONS SUBJECT TO CHANGE

Please note - to avoid incurring unnecessary expense, in the event of a boiler shut down, check this in not caused by lack of electricity supply, gas supply or low water pressure before calling our Customer Service Helpline.

Lichfield Road, Branston Industrial Estate, Burton Upon Trent, Staffordshire DE14 3HD
Tel. 08707 282 885 - Fax 08707 282 886