Ducting Rating Guide

General Tips on Heating Air Ducting and Component Ratings

A heater has the biggest heating air throughput when it can operate with the air blowing freely. Heating air ducting components reduce the throughput. To enable you to check whether or not the installation you plan reduces the air throughput to an inadmissable degree, we have calculated a heater rating for each heater and a component rating for each heating air ducting component:

0 = no temperature increase
- = no component rating

The sum of component ratings for the heating air ducting components must not exceed the heater rating, otherwise the outlet temperature will become too high and trigger the safety cutout switch. If the sum of the component ratings exceeds the heater rating, it can be reduced by selecting a larger diameter for the air ducting parts.

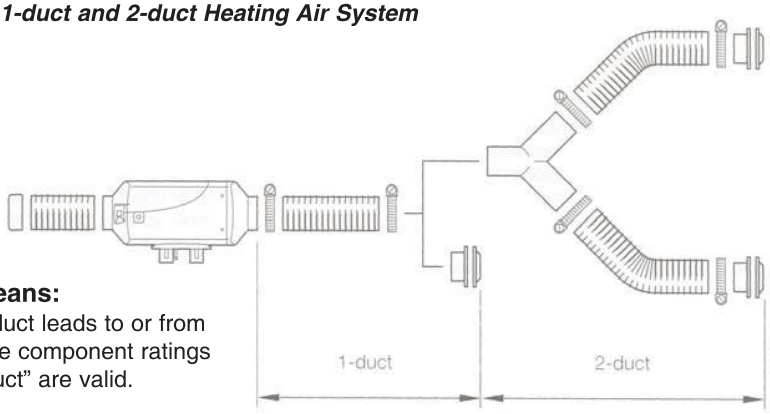
Rule of Thumb:
Double the cross-section or two identical components running parallel = 1/4 of the rating.

Example:
50 diameter hose
A = 19.6 cm², Rrating 1.0

75 diameter hose
A = 44.2 cm², Rrating 0.25

The component rating of smooth welded pipes is only half that of flexible pipe of equal diameter (e.g. double the pipe length).

Main-line Drawing for 1-duct and 2-duct Heating Air System

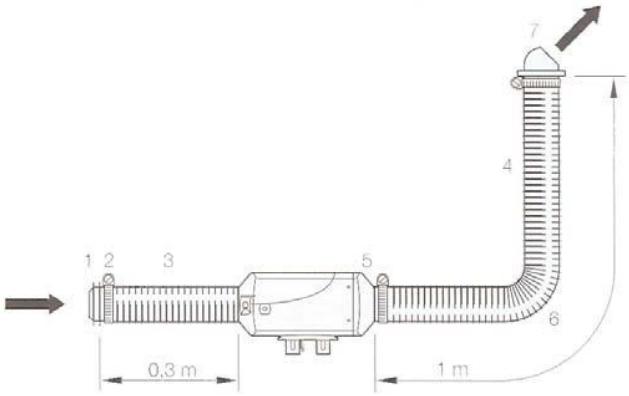


1-duct means:
A heating duct leads to or from heater. The component ratings under "1-duct" are valid.

2-duct means:
The heating air line branches into two ducts after the heater. Up to the branch the component ratings under "1-duct" are valid, after the branch they fall under "2-duct". If an adjustable outlet is used in the 2-duct heating system, one duct must be unclosable. Note: When determining the sum of the component ratings, do not take the closable duct into consideration.

Example of Heating Air Ducting for *AIRTRONIC D2*
Heater Rating = 6

Item	Designation	Component Rating
1	Protective grille	1.7
2	Connection piece 60mm dia.	
3	Flex. pipe, 60mm dia. 0.3m long	0.3
4	Flex. pipe, 60mm dia, 1.0m long	1.0
5	Reduction hood 60mm straight	0
6	1 x 90º bends of flex. pipe	1.2
7	Swivel outlet	1.4
	Total Component Rating	**5.6**

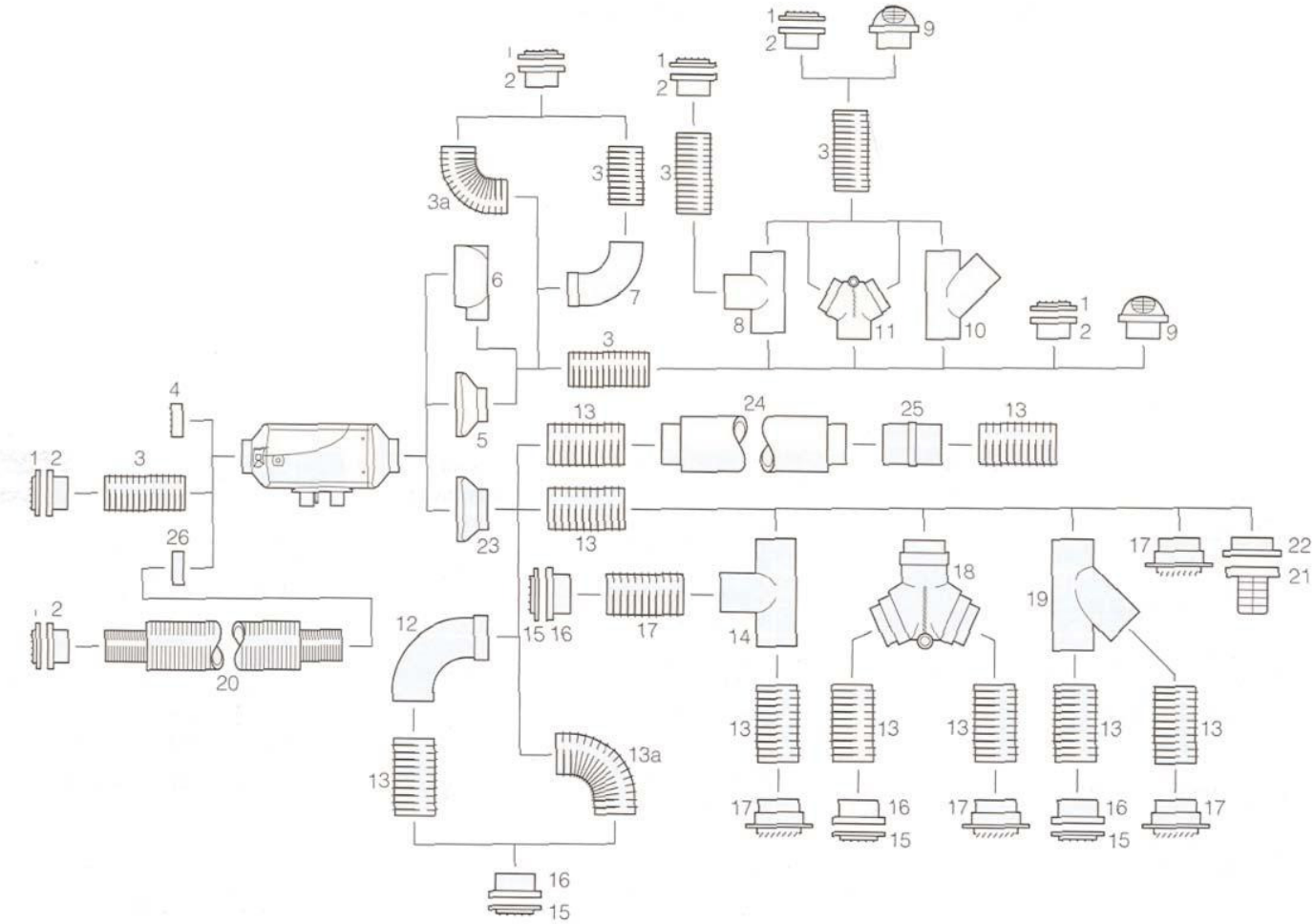


Rating sum = 5.6 and does not exceed the heater rating of 6. The installation is permissable.

Ducting Rating Guide for *AIRTRONIC D2*

Heater Rating 6 - applies with a 60mm dia. outlet hood.
Heater Rating 12 - applies with a 75mm dia. outlet hood

The sketch shows how the most important air ducting parts that can be used. They are not intended as examples of installation.



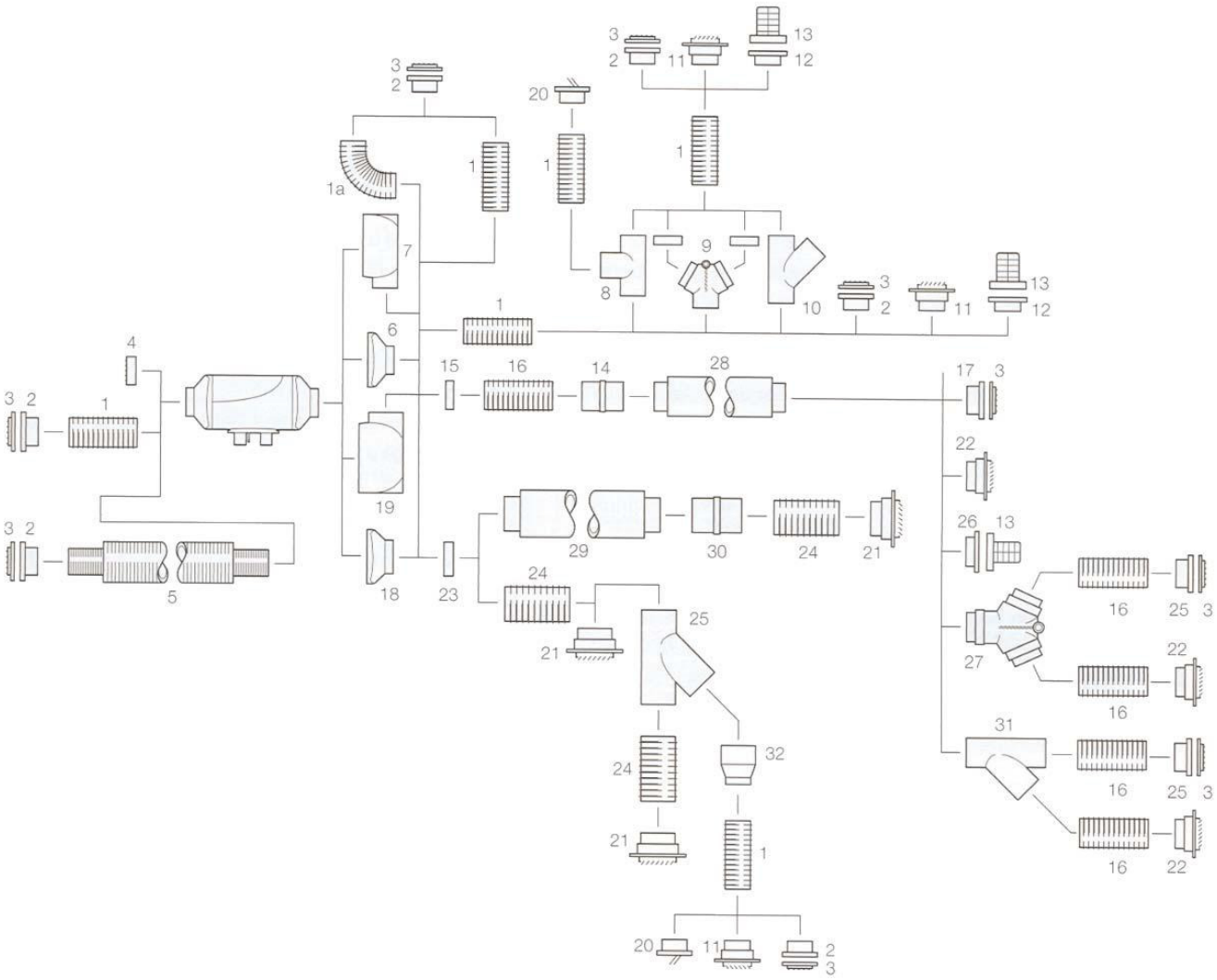
Ducting Rating Guide for *AIRTRONIC D2*

Fig. No.	Designation (measurements in millimeters)	Component Rating 1-duct	 2-duct	See per No. Air Ducting
	Heating air ducting with reduction hood 60 dia. (heater rating 6)			
1 2	Grille with connecting socket, plastic	1.7	0.6	16 25
3	Flexible pipe, 60 dia. per m	1	0.3	1
3a	90° pipe bend of flex. pip, 60 dia.	1.2	0.8	1
4	Protective grille	0	-	18
5	Reduction hood, 60 dia.	0	-	30
6	Spherical reduction hood, 60 dia.	4.5	-	34
7	90° pipe bend	4.1	0	35
8	T-piece	-	0.6	40
9	Exhauster, 60 dia. rotatable	1.4	0	10
10	Y-piece	-	0.3	45
11	Regulating valve 60x60x60 dia. with flap Position “middle” Position “right/left”	 - -	 0 1	41
	Heating air ducting with reduction hood 75 dia. (heater rating 12)			
12	Pipe bend, 75 dia.	3	0.8	35
13	Flexible pipe, 75 dia. per m	1	0.3	1
13a	90° pipe bend of flex. pipe, 75 dia.	1.2	0.5	1
14	T-piece 75x75x75 dia.	-	0.8	40
15	Grille, 75 dia.	-	-	16
16	Connecting socket, metal, 75 dia.	0.5	0	27
17	Exhauster, rotatable	0.4	0	11
18	Regulating valve 75x75x75 dia. with flap Position “middle” Position “right/left”	 	 0.4 1.5	41
19	Y-piece 75x75x75 dia.	-	0.4	45
20	Intake silencer, 75 dia.	0.5	-	4
21 22	Exhauster with Connecting socket, plastic, 75 dia.	0.4	0.4	17 17.2
23	Reduction hood, 75 dia.	0	0	30
24	Silencer, 75 dia.	1	-	3
25	Connector, 75 dia.	0.1	-	46
26	Ring, 60x75 dia.	0	-	36

Ducting Rating Guide for *AIRTRONIC D4*

Heater Rating 3 - applies with a 75mm dia. outlet hood.
Heater Rating 10 - applies with a 90mm dia. outlet hood

The sketch shows how the most important air ducting parts that can be used. They are not intended as examples of installation.



Ducting Rating Guide for *AIRTRONIC D4*

Fig. No.	Designation (measurements in millimeters)	Component Rating 1-duct		2-duct		See per No. Air Ducting
	Heating air ducting with reduction hood 75 dia. (heater rating 3) **Heating air ducting with reduction hood 90 dia. (heater rating 10)**	**75**	**90**	**75**	**90**	
1	Flexible pipe, 75 dia. per m	1	-	0.2	0.3	1
1a	90° pipe bend of flex. pipe, 75 dia.	1	-	0.2	0.4	1
2	Connecting socket, metal, 75 dia.	1.4	1.4	-	0.5	27
3	Grille	-	-	-	-	16
4	Grille, 75 dia.	-	-	-	-	18
5	Intake silencer, 75 dia.	1	0.8	-	-	4
6	Reduction hood, 75 dia.	0	-	-	-	30
7	Spherical reduction hood, 75 dia.	2	-	-	-	34
8	T-piece 75x75x75 dia.	-	-	0.3	-	40
9	Regulating valve 75x75x75 dia. with flap Position “middle” Position “right/left”	 0 1.3	 - -	-	-	41
10	Branch piece 75x75x75 dia.	-	-	1.8	-	45
11	Exhauster, 75 dia., rotatable	0.6	-	0.5	0.3	11
12	Connector, 75 dia.	-	-	-	-	17.2
13	Exhauster	1	3.3	0.5	0.5	17
14	Connector, 75 dia.	-	0.1	-	-	46
15	Ring, 75x90 dia.	0	0	-	-	36
16	Flexible pipe, 90 dia. per m	-	1	-	-	1
17	Connector socket, 90 dia. with grille	-	1.4	-	0.5	27
18	Reduction hood, 90 dia.	-	0	-	-	30
19	Spherical reduction hood, 90 dia.	-	5	-	-	34
20	Round outlet, 75 dia.	-	-	-	2.1	12
21	Exhauster, 100 dia., rotatable	-	1.4	-	0.5	11
22	Exhauster, 90 dia., rotatable	-	2.4	-	0.3	11
23*	Grille, round, 90x100 dia.	-	0	-	-	18
24	Flexible pipe, 100 dia. per m	-	0.6	-	0.4	1
25	Y-piece 100x100x100 dia.	-	-	-	0.5	45
26	Connector, 90 dia., with exhauster pos. 13	-	3.3	-	-	17.2
27	Regulating valve 90x90x90 dia. Position “middle” Position “right/left”	 - -	 0 1.4	 - -	 - -	41
28	Silencer, 90 dia.	-	1	-	-	3
29	Silencer, 100 dia.	-	1	-	-	3
30	Connector, 100 dia.	-	0.1	-	-	46
31	Y-piece 90x90x90 dia.	-	-	-	0.5	45
32	Reduction piece, 100 dia. - 75 dia.	-	-	-	0.5	47

*Pos. 23 - if used as adapter 90x100 dia., cut out the mesh.