

1 FAN CHARACTERISTICS

This Section shows the information on the fans used on the various models of Robur gas unit heaters, both with axial fan and centrifugal fan.

1.1 AXIAL FANS AND CENTRIFUGAL FANS

The fans used to move the warm air produced by the gas unit heaters are usually of 2 types:

- axial (also known as helical)
- centrifugal (also known as ductable)

Axial fans are characterized by a high air flow rate and low available pressure, are placed behind the heat exchangers and push the treated air with a clockwise or counterclockwise blade movement. They are usually designed to obtain a good air flow rate but not to duct the treated air. The electrical absorption, due to the latter feature, is reduced.

Axial fans can be either fixed speed or variable speed. The most efficient are those equipped with brushless motors (Next-G EC series).

Centrifugal fans are characterized by medium-high air flow rates, but are designed to obtain a high thrust (head) of the treated air, so that it can be conveyed into a duct.

The available head declared by the manufacturer (i.e. net the pressure drop of the gas unit heater) is actually the pressure that the fan is able to give to the treated air in order to overcome the pressure drops of the duct to be realised.

Some centrifugal fans need to have a minimum resistance on the delivery outlet (minimum pressure drop to be supplied to the fan) because in the absence of this the fan motor could generate an excessive electrical absorption.

All electric fans with a power consumption greater than 125

W must be designed to comply with European Regulation ErP 327/2011.

1.2 FAN CHARACTERISTICS

The following Tables 1.1 p. 1 and 1.2 p. 2 summarize the characteristics useful for the correct sizing of any air ducts (or partial or total room air intake systems), for all models of gas unit heaters.

The air flow rate at maximum available head corresponds to the minimum air flow rate that must be guaranteed to the gas heater if the indicated maximum useful head is fully exploited.

For gas unit heaters with modulating air flow (Next-G EC series) the nominal air flow refers to the condition in which the fan is driven at maximum speed. On the other hand, the minimum air flow indicated on the technical characteristics of the gas unit heaters corresponds to the air flow at minimum fan speed, always without ducting.

It should be remembered that axial gas unit heaters generally must not be ducted, as they have characteristics that do not allow for significant available head at the delivery outlet.



The air flow rate at maximum available head indicated for each model of centrifugal gas unit heater is intended to prevent the gas heater from overheating, and is therefore a limit that cannot be waived under any circumstances.

It should be emphasized that ductable gas unit heaters are specifically designed for air ducting (both in and out of the gas heater), and should therefore be used preferably in all circumstances in which this is to be done.

Table 1.1 Fan characteristics of the axial gas unit heaters

Gas heater	Fan	Number of fans	Air flow nominal (Delta T = 15 °C)	Maximum useful pressure head
			m ³ /h	Pa
G 30	KVNT185	1	2450	10
G 45	KVNT193	1	3450	10
G 60	KVNT194	1	5650	10
G 90	KVNT205	2	9100	10
G 20 EC	KVNT221	1	2300	10
G 30 EC	KVNT206	1	2450	10
G 35 EC	KVNT206	1	2735	10
G 45 EC	KVNT211	1	3450	10
G 60 EC	KVNT211	1	5650	10
G 75 EC	KVNT206	2	5400	10
G 90 EC	KVNT212	2	9100	10
R15	KVNT195	1	2222	5
R20	KVNT185	1	2460	4
R30 R30 V	KVNT185	1	2900	22
R40 R40 V	KVNT186	1	4010	23
R50 R50 V	KVNT224	1	4770	12
R60	KVNT185	2	6470	28
R80	KVNT201	2	8670	16
M20	KVNT150	1	2630	20
M25	KVNT184	1	2550	30
M30	KVNT186	1	3800	38
M35	KVNT186	1	3850	40
M40	KVNT224	1	4500	31
M50	KVNT184	2	5000	20
M60	KVNT186	2	6875	10

Table 1.2 Fan characteristics of the centrifugal gas unit heaters

Gas heater	Fan	Number of fans	Free blowing air flow	Air flow rate at maximum useful head	Maximum useful pressure head	Minimum pressure drop on heat flow delivery
			m ³ /h	m ³ /h	Pa	Pa
G 30 C	VVNT057	1	3550	2500	140	0
G 60 C	VVNT058	1	6500	5400	120	0
R30 C	VVNT056	1	2900	1900	120	0
R40 C	VVNT057	1	4000	3400	120	50
R50 C	VVNT058	1	5350	4700	240	50
R80 C	VVNT057	2	8550	7000	120	50
M20 C	VVNT056	1	2800	1900	110	0
M30 C	VVNT057	1	4000	3100	110	50
M60 C	VVNT057	2	8000	6400	110	30

**Condensate formation**

Be aware that if a Next-R series non-condensing gas unit heater is operated for a long time under conditions of low heat output and high air flow there is a risk of

condensate forming inside the gas heater itself, potentially leading to damage.



Refer to Section C01.07 for further information on air ducting.