

# JET FANS

## FANS FOR CAR PARK VENTILATION

AU0 / ARO / AUP / ARP

AUZ / AUT / ART / CGF



# PRODUCT FACTS

## PRODUCT

Novenco jet fans are produced in unidirectional (AU\_ and CGF) and reversible (AR\_) versions.

- AUO/ARO – oval design jet fans (Novax)
- AUP / ARP – pad-mounted motor jet fans (Novax)
- AUZ – cost-performance balanced jet fans (ZerAx®)
- AUT/ART – circular basic jet fans (Novax)
- CGF – flat jet fans

## APPLICATION

The jet fans are used for ventilation of car parks and other large spaces where polluted air needs to be removed effectively. They are an ideal supplement for concepts for fire fighting and hot smoke removal.

The operating temperature range is as standard -20 to +40 °C.

Max. temperature range is +40 to +120 °C. Hot smoke versions withstand 400 °C for up to two hours.

## PRODUCT RANGE

Novenco jet fans are manufactured in the following sizes.

Rotor diameters [mm]	
AUO/ARO	Ø290, Ø380, Ø500
AUP/ARP	Ø340
AUT/ART	Ø400
AUZ	Ø340
CGF	Ø500

## ROTOR DIAMETERS

## CONSTRUCTION

The impulse principle of moving air is employed in all jet fans.

The AUO, ARO, AUP, ARP and AUZ are long units with oval silencers mounted on both sides of the fan casings. The AUO-ARO fans are fitted with oval outer fan casings to complete the oval shape. The AUT-ART are short units with silencing as part of the design.

The CGF are flat fans with rotors mounted centrally and perpendicular to the inlet.

The AUO, AUP and AUZ have wire guards on the inlet sides and deflectors on the outlets. The reversible units ARO and ARP are fitted with deflectors on inlets and outlets.

The AUT and ART have wire guards on inlets and outlets with aerodynamically integrated deflectors as part of the design.

The CGF has deflectors in the outlet and wire guards in the inlet.

All fans are delivered with suspension brackets for mounting to ceilings or onto walls. The CGF is intended for ceiling mounting only.

## MOTORS

The motors are two-speed 3x400 V, 50 Hz or 3x380 V, 60 Hz

Motor protection: Min. IP55 in accordance with IEC 34-5

Insulation class: F or H depending on temperature protection

Motor flanges: B14 in accordance with IEC 34-7; B30 for CGF

Motor mount (AU\_ / AR\_ / CGF): Socket with guide vanes

Motor mount (AUP / ARP): Stiffeners

## ELECTRIC SWITCHES

The AUO-ARO have electric isolating switches integrated in the fan casing or internal terminal boxes.

The AUP-ARP, AUZ AND AUT-ART have external terminal boxes.

The CGF has an internal terminal box.

## ROTORS

On all Novenco jet fans the motors are direct-coupled to the rotors. The AUO, ARO, AUP, ARP, AUT and ART have Novenco Novax rotors consisting of two hub discs with cavities, in which the blades are mounted in pre-calculated positions.

The AUZ fans have Novenco ZerAx®

rotors with blades mounted in pre-calculated positions.

The CGF fans have Novenco centrifugal wheels with direct coupled motors.

## SILENCING

The silencers on AUO, ARO, AUP, ARP and AUZ have minimum pressure loss and optimal sound attenuation. Noise generated by the fan and moving air is effectively removed through the use of perforated plate and sound absorbing insulation material.

The AUT, ART and CGF have sound attenuation as part of the design, but without insulating material.

## MATERIALS

See the list of materials on page 4.





# PRODUCT DESCRIPTIONS

## FAN TYPES

Jet fans from Novenco are made in unidirectional (AU\_ and CGF) and reversible (AR\_) versions. All designs are fitted with silencers or have silencing technology as part of the design.

Design jet fans fitted with silencers include AUO, ARO, AUP, ARP and AUZ with rotor diameters ranging from Ø290 to Ø500 mm.

Basic jet fans types AUT and ART with silencing technology are available with rotor diameter Ø400.

The CGF jet fans are characterised by the low built-in height and low sound levels. They are made with rotor diameter Ø500.

## FAN CASINGS

The fan casings for the AU\_ and AR\_ jet fans are rolled and welded steel tubes in 3 mm sheet. The AUO and ARO have furthermore external oval outer casings in AluZink sheet.

The CGF fan casings are in 2 mm sheet in AluZink and assembled with pop rivets.

## MOTORS

The motors are energy efficient, frequency regulated and with direct start for 3x400 V, 50 Hz or 3x380 V, 60 Hz. The motor protection is IP 55 in accordance

with IEC 34-5. Insulation is class F or H depending on temperature protection.

## SAFETY SWITCHES

The AUO and ARO can be delivered with or without safety switches mounted in the terminal boxes. The boxes are internal and integrated in the fan casing. The AUP, ARP, AUT, ART and AUZ have external terminal boxes.

The CGF fans have internal terminal boxes.

## MOUNTING

All fans are fitted with brackets for ceiling or wall mounting. Fans type CGF are only for mounting in ceilings.

Distance requirements for to beams and the height of these are relatively small. On inlet sides there must be a minimum of 0.5 m to beams and on

outlet sides a minimum of 2.0 m. Maximum beam height is 0.4 m on outlet sides in installations within the minimum requirements.



## CLASSIFICATIONS

The fans meet requirements for operation in unheated, low corrosive environments according to DS/EN ISO 12944-2, corrosion category C3. Standard is -20 to +40 °C.

Fans for fire fighting and hot smoke removal are CE-certified and approved in accordance with EN12101-3.

Fans for 50 Hz are certified in classes F200, F300 and F400, except the CGF which is limited to classes F200 and F300.

Fans for 60 Hz are limited to types AUO-ARO which are certified in classes F200 and F300.

	F200 200 °C	F300 300 °C <sup>1</sup>	F400 400 °C
1 hour	-	x	-
2 hours	x	x	x

### APPROVED TEMPERATURE RANGES

<sup>1</sup>: Jet fans type CGF are approved up to and including F300.

Balancing of rotor units is in accordance with VDI 2060, ISO 1940, 1-1986 class Q 6.3.



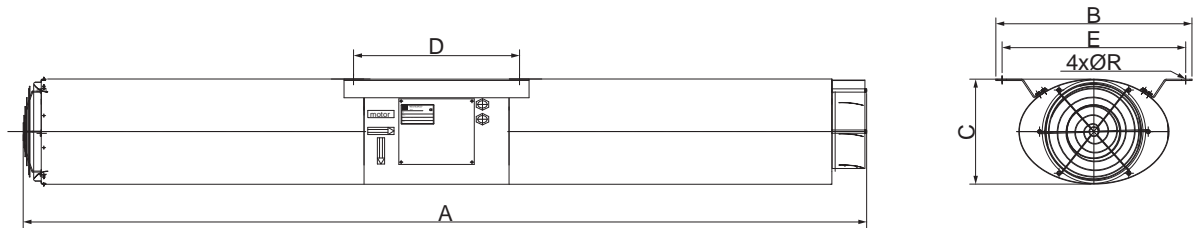
	AUO / ARO	AUP / ARP	AUZ	AUT / ART	CGF
<b>FAN</b>					
Blades			Aluminium alloy		
Hub	Galv. steel sheet		Aluminium	Galv. steel sheet	-
Hub shells	Steel sheet		-	Steel sheet	-
Hub cover	-	-	Aluminium	-	-
Guide vanes	-	-	Aluminium	-	-
Motor mount	Steel sheet		Aluminium	Steel sheet	-
<b>EXTERIOR</b>					
Fan casing		Rolled steel tube in 3 mm sheet			2 mm sheet in AluZink
Fan casing, outer casing	0.75 mm sheet in AluZink	-	-	-	-
Wire guards			Stainless steel		
Deflectors		Galvanised steel and aluminium			Galvanised steel
Suspension			Hot-galvanised 4 mm steel sheet		
<b>SILENCERS</b>					
Inside tube	Perforated pregalvanised steel sheet			-	-
Sound attenuating material	Fireproof and moisture resistant			-	-
Outer casing	0.75 mm sheet in AluZink			-	-
Cones	Galvanised steel			-	-
<b>PAINT, OUTER CASING</b>					
NCS		Optional: Powder coating in any colour, film thickness 80 m			
RAL		Optional: Powder coating in any colour, film thickness 80 m			

## MATERIALS

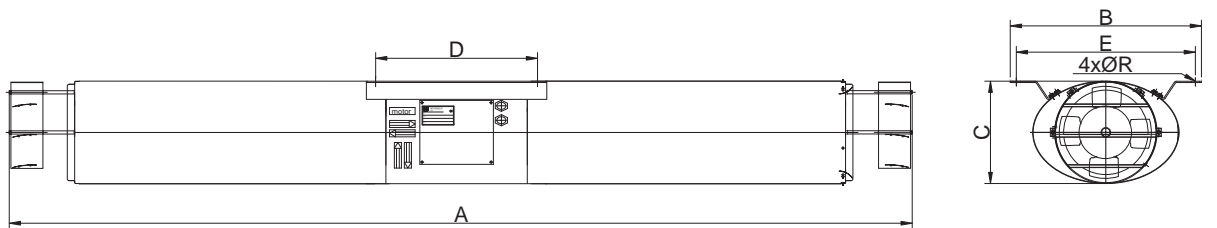
# DIMENSIONS AND TECHNICAL SPECIFICATIONS

## DIMENSIONS

AUO

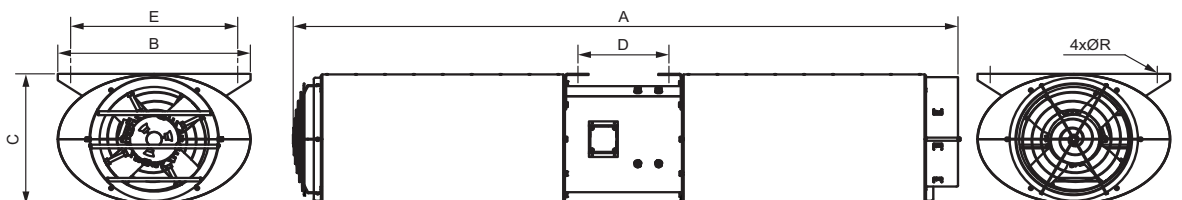


ARO

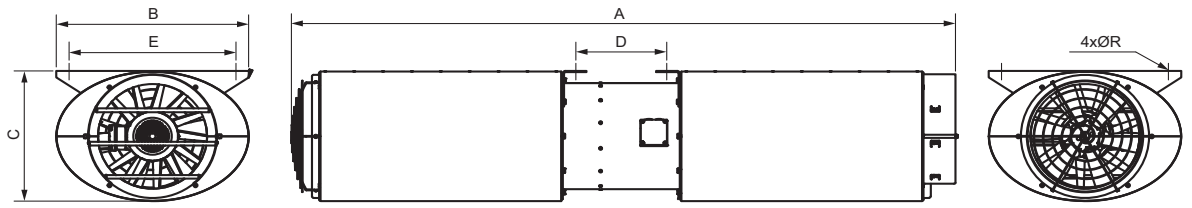


	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	ØR	Total weight [kg]
AUO 290	2570	598	320	506	560	14	80
AUO 380	2672	758	420	506	720	14	110
AUO 500	2606	870	540	600	830	14	160
ARO 290	2823	598	320	506	560	14	80
ARO 380	2918	758	420	506	720	14	110
ARO 500	2854	870	540	600	830	14	160

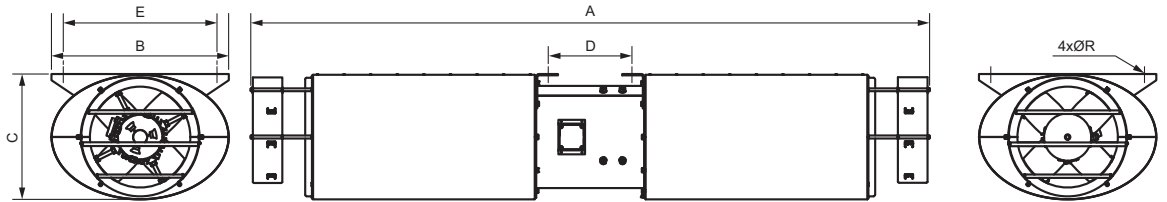
AUP



## AUZ

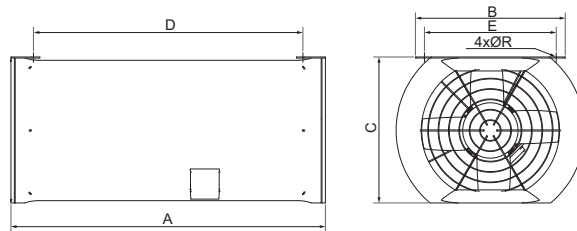


## ARP



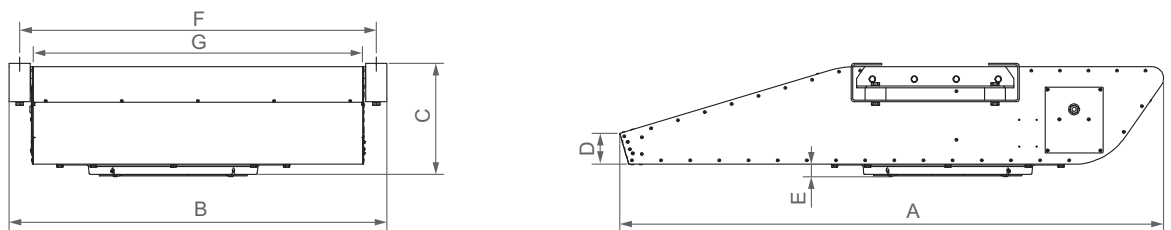
	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	ØR	Total weight [kg]
AUP 340	2070	599	422	283	520	14	100
AUZ 340	2070	599	422	283	520	14	86
ARP 340	2296.6	599	422	283	520	14	100

## AUT/ART



	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	ØR	Total weight [kg]
AUT/ART 400	854	522	423	779	470	14	63

## CGF



	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	Total weight [kg]
CGF 500	1296.5	900	262	73.5	29	850	790	75

## SPECIFICATIONS

	Sizes 290		Sizes 340			Sizes 380		Sizes 400		Sizes 500		CGF	
	AUO	ARO <sup>1</sup>	AUP	ARP	AUZ	AUO	ARO <sup>1</sup>	AUT	ART <sup>1</sup>	AUO	ARO <sup>1</sup>		
Thrust [N]	5 / 21	4 / 15	-	15/50	15/50	15 / 57	15 / 52	14 / 53	13 / 50	27 / 105	28 / 111	12 / 50	
Number of poles						4 / 2							8 / 4
Voltage	3x400 V, 50 or 60 Hz												
Rated power [kW] <sup>2</sup>	0.1 / 0.5	0.1 / 0.5	0.3 / 1.1	0.3 / 1.3	-	0.3 / 1.1	0.3 / 1.3	0.3 / 1.1	0.3 / 1.3	0.5 / 2.2	0.5 / 2.2	0.3 / 1.2	
Sound pressure [dB(A)] <sup>3</sup>	35 / 46	35 / 47	47 / 60	50 / 64	-	39 / 52	42 / 56	54 / 72	56 / 75	45 / 59	49 / 64	61 / 75	

1. Data for reversible fans is given for air direction blade – motor.
2. The consumption is given at standard temperatures. Consumption for hot smoke versions in accordance to F200 and F300 is available on request.
3. Calculated sound pressure levels are at 3 m and 45° free field from the fan as measured in a laboratory.

### IMPORTANT

This document is provided 'as is'. Novenco reserves the right to changes without further notice due to continuous product development.

The fans are designed for continuous operation.

The following kinds of operation may cause fatigue break in the impeller and endanger people.

- Operation in stall area
- Operation with pulsating counter pressure – called pump mode
- Operation with repeated starting and stopping

If in doubt, Novenco should be contacted to assess the suitability of the fan.

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### PATENTS AND TRADEMARKS

Novenco® and ZerAx® are registered trademarks of Novenco A/S.

The ZerAx® manufacturing processes, tech-

nologies and designs are patented by Novenco A/S. Pending patents include Brazil no. BR 11 2012 008607-3, BR 11 2012 008543-3, BR 11 2012 008545 0, BR 11 2014 002282 8 and BR 11 2014 002426 0; Canada no. 2,777,140; 2,777,141; 2,777,144; 2,843,131 and 2,843,132; China no. 201080045884.2, 201080046096.5, 201080046427.5, 2012280037965.7 and 201280038721.0; Denmark no. PA 2011 70428; EU no. 10778838.2, 10778839.0, 10778840.8, 12740606.4 and 12740612.2; India no. 4140/CHENP/2012, 4077/CHENP/2012, 4073/CHENP/2012, 821/CHENP/2014 and 825/CHENP/2014; South Korea no. 10-2012-7012252, 10-2012-7012154, 10-2012-7012155, 10-2014-7005746 and 10-2014-7003829; US no. 13/498,741; 13/498,785; 13/498,733; 14/234,654 and 14/234,735; and PCT no. EP2012/064908 and EP2012/064928. Granted patents include Brazil no. BR 30 2012 003932-0; Canada no. 146333; China no. 1514732, 1517779, 1515003, 1555664 and 2312963; EU no. 001622945-0001,

001622945-0002, 001622945-0003, 001622945-0004, 001622945-0005, 001622945-0006, 001622945-0007, 001622945-0008, 001622945-0009 and 001985391-0001; India no. 246293; South Korea no. 30-0735804; and US no. D665895S, D683840S, D692119S, D704323S and D712023S.

The patents for the Novenco Novax Basic jet fans are registered and the property of Novenco A/S.

The designs of the Novenco Novax Basic and Novenco CGF jet fans are registered and the property of Novenco A/S.

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### QUALITY AND ENVIRONMENT

Novenco is certified in accordance with ISO 9001 and 14001.



