Building & Industry

NOVENCO

SCHAKO Group

NOVENCO® Car park jet fans

Standard and Hot smoke

above ErP compliance

EN 12101-3:2015 certified

Product facts

Product

NOVENCO® car park jet fans are available in unidirectional (AUO, AUT, AUZ, AZT and CGF) and reversible (ARO, ARP, ART) versions.

- AUO/ARO – ultra-low sound, oval design, NovAx™ base, silencers
- ARP – very-low sound, oval design, NovAx™ base, silencers
- AUZ – cost-performance optimised, oval design, ZerAx® base, silencers
- AUT/ART – basic-tube design, long-cased NovAx™ base
- AZT – basic-tube design, ZerAx® base, adjustable outlet cones
- CGF – low height, centrifugal impellers

Applications

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

Range

NOVENCO jet fans are available in the following sizes.

	øD [mm]
AUO/ARO	ø290, ø380, ø500
ARP	ø340
AUT/ART	ø400
AUZ	ø340
AZT	ø280, ø355, ø450
CGF	ø500

Internal duct diameters

Construction

The jet fans all employ the impulse principle for movement of air, where the fans suck in a small quantity of air and eject it at high velocity to create thrust, which draws the surrounding air in the same direction.
The AUO, ARO, ARP and AUZ are long units with oval silencers mounted on both sides of the fan casings. To complete the shape, the AUO/ARO fan casings have oval outer casings as well.
The AUT-ART and AZT are circular short units with low noise levels.
The CGF are flat fans with centrifugal impellers.
The AUO and AUZ have wire guards on the inlet sides and deflectors on the outlets.
The reversible units ARO and ARP have 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 AZT has a wire guard on the inlet and an adjustable outlet cone.
The CGF has deflectors in the outlet and wire guards in the inlet.
All the jet fans are for ceiling or wall installation, except the AZT and CGF fans which are for ceiling installation. The fans are delivered with suspension brackets. The AZT fans have base plates instead of brackets.

Motors

Voltage: Two-speed motors
All: 3x400 V, 50 Hz
AZT 280: Also 3x440 V, 60 Hz
Protection: Min. IP55 in accordance with IEC 34-5
Insulation class: F or H depending on temperature protection
Mounting standards: B14 for flanges and B30 for pad mounts
Mount:
ARO-AUO, ART-AUT, ARP, AUZ and AZT: Flange mounted
CGF: Pad mounted

Electric connections

ARP, AUO-ARO, AUZ, AUT-ART and AZT: External terminal boxes
CGF: Internal terminal box

Rotors

The motors are directly coupled to the rotors on the jet fans. The AUO, ARO, ARP, AUT and ART have NOVENCO NovAx™ fans with rotors consisting of two hub discs with cavities, in which the blades are mounted in pre-calculated positions.
The AUZ and AZT have NOVENCO ZerAx® fans with rotor blades mounted in pre-calculated positions.
The CGF fans have NOVENCO centrifugal impellers with direct-coupled motors.

Silencing

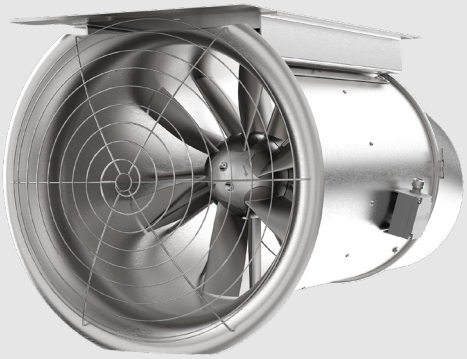
The silencers on AUO, ARO, ARP and AUZ have minimum pressure loss and optimal sound attenuation. Noise generated by the fan and moving air is effectively removed through the use of perforated plate and sound absorbing insulation material.
The AUT, ART, AZT and CGF are low-noise fans without silencers or insulating material.

Materials

See the list of materials on page 4.

Classifications

Environment: For operation in unheated, low-corrosive environments according to EN 12944-2
Corrosion category: C3
Temperature range, standard:
-20 to +40 °C
AZT: -20 to +55 °C
Temperature ranges, hot smoke:
F200120, F30060 and F400120 certified according to EN 12101-3. Fans were tested for 2 hours at 300 °C and 400 °C.
Balancing of rotor unit: According to ISO 21940-11, balance quality grade G 6.3
Technical capacities: ISO 21940-11; ISO 21940-14; EN 5801
Sound: ANSI/AMCA 300-14



AZT jet fan

Product description

Fan types

The NOVENCO car park jet fans are made in unidirectional (AUO, AUT, AUZ, AZT and CGF) and reversible (ARO, ARP, ART) versions.
All fans are fitted with silencers or have silencing technology.
Jet fans fitted with silencers include AUO, ARO, ARP and AUZ with rotor diameters ranging from ø290 to ø500 mm.
Basic jet fan types AUT, ART and AZT with silencing technology are available with rotor diameters ø400 (AUT and ART) and ø280, ø355 and ø450 mm (AZT).
The CGF jet fans have low built-in height, low sound levels and impeller diameters of ø500 mm.

Fan casing

The fan casings for the ARO, AUO, ART, AUT, AUZ and AZT jet fans are rolled and welded steel tubes in 3 mm sheet. The AUO and ARO have oval outer casings in metallic coated steel sheet.
The AZT fan casings are of metallic coated steel sheet.
The CGF fan casings are 2 in mm metallic coated steel sheet and assembled with pop rivets.

Motors

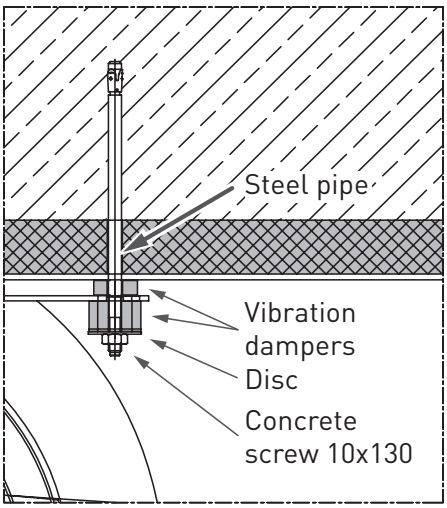
The motors are two-speed, energy-efficient and with direct start.
The motor protection is IP55 in accordance with IEC 34-5.
Insulation is class F for standard temperature and H for high temperature fans.

Electrical connections

The ARP, AUO-ARO, AUT, ART, AUZ and AZT have external terminal boxes. The CGF has an internal terminal box integrated in the fan casings.

Mounting

The fans are fitted with brackets for ceiling or wall mounting. The AZT fan has a base plate instead of brackets. Fan types AZT and CGF are for ceiling installation only.
Distance requirements to beams and to 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. The bottom of the jet fans must equal to or lower than the bottom of the beams.
Optimal performance and comfort is best achieved by installation of optional vibration dampers between fan suspension points and ceiling. The AZT and CGF have mounting frames with vibration mounts as standard.



Use of vibration dampers

Classifications

The fans are intended for operation in unheated and low corrosive environments at standard temperatures between -20 and +40 °C. The AZT is intended for standard temperatures between -20 and +55 °C.

The fans are certified according to sizes and motor specifications for operation at high temperatures. All fans are tested for 120 min. of operation in different temperature classes.

	$F_{200}120$ and $F_{300}60$	$F_{400}120$
Passed for	300 °C / 120 min.	400 °C / 120 min.

High temperature class tests

Product	Motor	$F_{200}120$	$F_{300}60$	$Ff_{300}120$ [1]	$F_{400}120$
AUO-ARO 290- 380- 500	400 V, 50 Hz	x	x	x	x
AUT-ART 400	400 V, 50 Hz	x	x	x	x
ARP-AUZ 340	400 V, 50 Hz	x	x	x	x
AZT 280, 355, 450	400 V, 50 Hz	x	x	x	-
	440 V, 60 Hz [2]	x	x	x	-
CGF 500	400 V, 50 Hz	x	x	x	-

Certified products according to temperature classes

1 $Ff_{300}120$ is the free manufacturer class according to EN 12101-3.
2 Only the AZT 280 is available with this motor.

AUT 400 jet fan

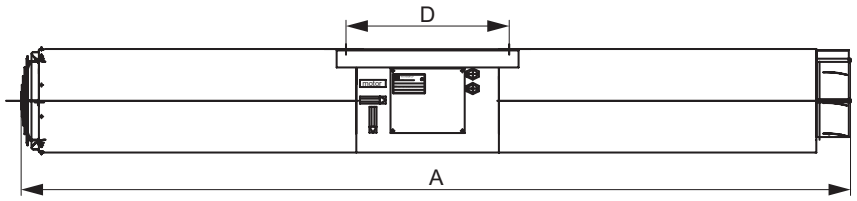
CGF 500 flat fan

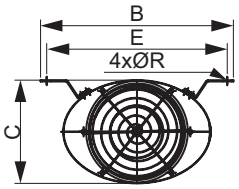
	AUO / ARO	ARP	AUZ	AUT / ART	AZT	CGF
Blades	Aluminium alloy					
Hub	Galv. steel sheet		Aluminium	Galv. steel sheet	Aluminium	-
Hub shells	Steel sheet		-	Steel sheet	-	-
Hub cap	-	-	Aluminium	-	Aluminium	-
Guide vanes	-	-	Aluminium	-	Aluminium	-
Motor mount	Steel sheet		Aluminium	Steel sheet	Aluminium	-
Exterior						
Fan casing	Rolled steel tube in 3 mm sheet				2 mm metallic coated steel sheet	
Outer fan casing	0.75 mm metallic coated steel sheet	-	-	-	-	-
Wire guards	Stainless steel					
Deflectors	Aluminium				Metallic coated steel	
Suspension	4 mm metallic coated steel sheet				2 mm metallic coated steel sheet	4 mm metallic coated steel sheet
Silencers						
Inside tube	Perforated metallic coated steel sheet			-	-	-
Sound attenuating material	Fireproof and moisture resistant			-	-	-
Outer casing	0.75 mm metallic coated steel sheet			-	-	-
Cones	Metallic coated steel			-	-	Black iron, painted green or in any standard RAL colour
Paint (outer casing)						
NCS	Optional: Powder coating in any colour, film thickness 80 µm					
RAL	Optional: Powder coating in any colour, film thickness 80 µm					

Materials

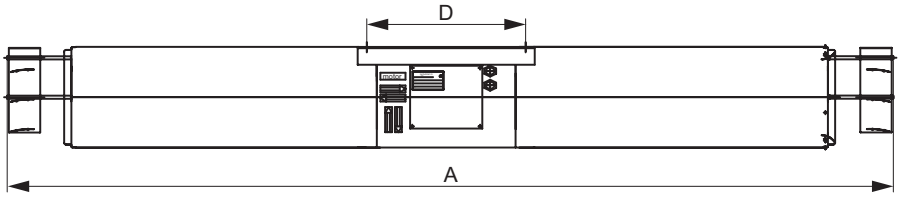
Dimensions

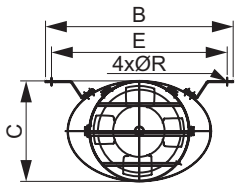
AUO





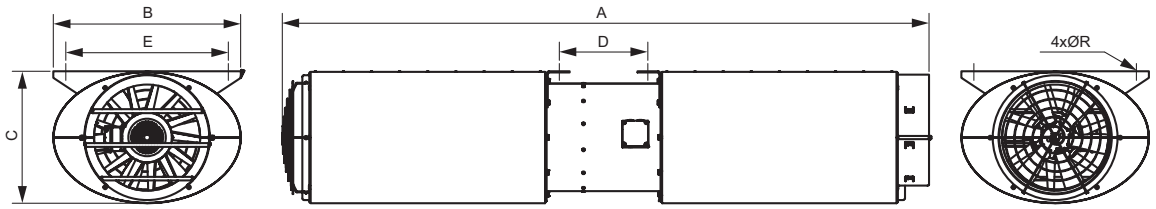
ARO



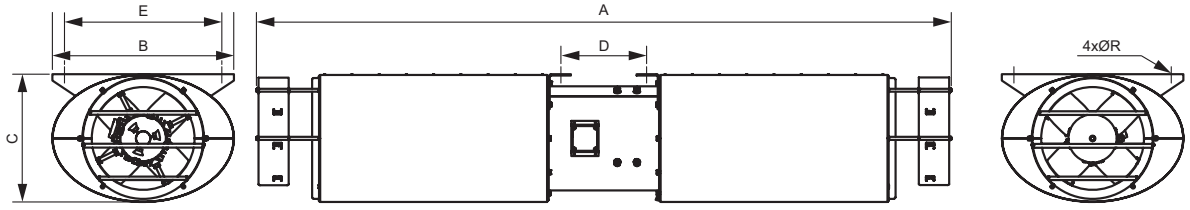


	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	ØR	Item no. [1]	Total weight [kg]
AUO 290	2570	598	320	506	560	14	30050866 30050867 30050868	80
AUO 380	2672	758	420	506	720	14	30050869 30050870 30050871	110
AUO 500	2606	870	540	600	830	14	-	160
ARO 290	2823	598	320	506	560	14	30050872 30050873 30050874	80
ARO 380	2918	758	420	506	720	14	30050875 30050876 30050877	110
ARO 500	2854	870	540	600	830	14	- 30043743 -	160

AUZ



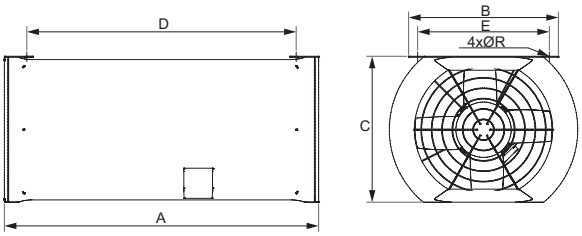
ARP



	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	ØR	Item no. [1]	Total weight [kg]
AUZ 340	2070	599	422	283	520	14	30039579 30039846 30042541	86
ARP 340	2296.6	599	422	283	520	14	30039061 30042574 30039048	100

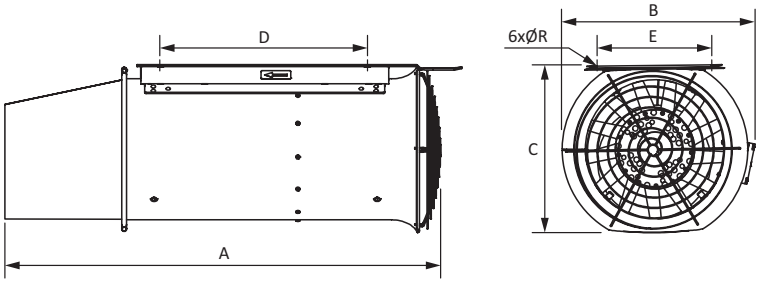
1 Standard (top), F200/F300 (middle) and F400 (bottom) temperatures.

AUT/ART



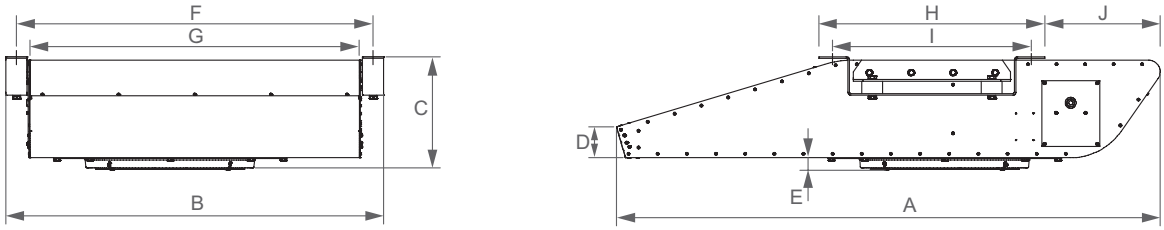
	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	øR	Item no. [1]	Total weight [kg]
AUT 400	854	522	423	779	470	14	635904-0 635905-0 635906-0	63
ART 400	854	522	423	779	470	14	635901-0 635902-0 635903-0	63

AZT



	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	øR	Item no. [2]	Total weight [kg]
AZT 280	879	388	334	417	233	11	30049465	25
AZT 355	989	471	435	500	305	11	30048099	34
AZT 450	1130	601	552	610	364	11	30044769	46

CGF



	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]	J [mm]	Item no. [2]	Total weight [kg]
CGF 500	1297	908	269	73.5	28	858	790	545	509	280	636388-0	81

1 Standard (top), F200/F300 (middle) and F400 (bottom) temperatures.

2 F200/F300 temperatures.

Axel Towers,
Copenhagen, Denmark

Westgate Oxford,
Oxford, UK

Nieuw Hoog Catharijne,
Utrecht, The Netherlands

Technical specifications

Sizes	Fan types	Thrusts [N]	Number of poles	Power supply	Installed motor power [kW] [2]	Nominal current, 400 V, 50 Hz [A]			Nominal current, 440 V, 60 Hz [A]		Sound pressure [dB(A)] [3]
						Std. temp.	F200120 + F30060 + Ff300120	F400120	Std. temp.	F200120 + F30060 + Ff300120	
280	AZT [4]	8 / 32 13 / 50	4 / 2	3x400 V, 50 Hz or 3x440 V, 60 Hz	0.3 / 1.1 0.3 / 1.3	- /-	0.8 / 2.4	- /-	- /-	0.8 / 2.5	50 / 67 56 / 72
290	AUO	5 / 21			0.1 / 0.5	0.7 / 2.2	0.5 / 1.9	0.8 / 2.0	- /-	- /-	38 / 49
	ARO [1]	4 / 15									38 / 50
340	ARP	15 / 50			0.3 / 1.3	1.0 / 3.4	0.8 / 3.2	0.8 / 3.2	- /-	- /-	50 / 64
	AUZ	15 / 50				0.9 / 3.0	0.9 / 2.6	1.1 / 3.2	- /-	- /-	42 / 59
355	AZT	14 / 55			0.3 / 1.3	- /-	1.0 / 3.2	- /-	- /-	- /-	54 / 70
380	AUO	15 / 57			0.3 / 1.1	0.9 / 3.0	1.0 / 2.7	1.0 / 2.7	- /-	- /-	42 / 55
	ARO [1]	15 / 52			0.3 / 1.3	1.0 / 3.4	1.1 / 3.1	1.1 / 3.2	- /-	- /-	45 / 59
400	AUT	14 / 53			0.3 / 1.1	0.9 / 3.0	1.0 / 2.7	1.0 / 2.7	- /-	- /-	54 / 72
	ART [1]	13 / 50			0.3 / 1.3		1.1 / 3.1	1.1 / 3.2		- /-	56 / 75
450	AZT	26 / 100			0.6 / 2.5	- /-	1.9 / 5.8	- /-	- /-	- /-	55 / 74
500	AUO	27 / 105			0.5 / 2.2	1.6 / 5.1	1.6 / 5.1	1.6 / 5.1	- /-	- /-	48 / 62
	ARO [1]	28 / 111									52 / 67
	CGF	12 / 50	8 / 4		0.3 / 1.2	- /-	1.3 / 3.5	- /-	- /-	- /-	61 / 75

1 Data for reversible fans is given for air direction rotor – motor.
2 Performance data is for standard conditions at 20° C, sea level and 50% relative humidity. The values apply to all power supply options.

3 Sound pressure levels are calculated for 50 Hz motors at 3 m / 45° under free field conditions from the fan inlet. The reference sound power level is measured in a laboratory according to the AMCA standard 300-08 “Reverberant room method for sound testing of fans”.
4 Upper values are for 3x400 V, 50 Hz and lower values are for 3x440 V, 60 Hz.

Important

This document is provided ’as is’. Novenco Building & Industry A/S reserves the right to changes without further notice due to continuous product development.

Pictures in the catalogue may show products with accessories fitted.

The fans are designed for continuous operation. The following kinds of operation may cause fatigue break in the impellers and endanger people.

- Operation in stall area, i.e. with counter pressure that pulsates – called pump mode
- Operation with exceedingly starts and stops
- Uneven flow velocity through fan

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

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The Novenco ZerAx processes of manufacture, technologies and designs are patented by Novenco A/S or Novenco Building & Industry A/S.
Pending patents include PCT no. EP2012/064908 and EP2012/064928.
Granted patents include Brazil no. BR-11-2012-008543-3; BR-11-2012-008545-0, BR-11-2012-008607-3, BR-11-2014-002282-8 and BR-11-2014-002426-0; Canada no. 2.777.140, 2.777.141, 2.777.144, 2.832.131 and 2.843.132; China no. ZL2010800458842, ZL2010800460965, ZL2010800464275 and ZL2012800387210; EU no. 2488759, 2488760, 2488761, 2739860 and 2739861; India no. 312464, 360298, 367515, 400863 and 403692; South Korea no. 10-1907239, 10-1933724, 10-1980600, 10-2011515 and 10-2127529; US no. 8.967.983, 9.200.641, 9.273.696 B2, 9.683.577 and 9.926.943 B2.
Granted designs include Brazil no. BR-30-2012-003932-0; Canada no. 146333; China no. 1514732, 1517779, 1515003, 1555664 and 2312963; EU no. 001622945-0001 to 001622945-0009 and 001985391- 0001; India no. 246293; South Korea no. 30-0735804; UK no. 001622945-0001 to 001622945-0009 and 001985391- 0001; US no. D665895S, D683840S, D692119S, D704323S, D712023S, D743018S, D755363S, D756500S, D821560S and D823452S.

Quality and environment

Novenco Building & Industry A/S is certified in accordance with ISO 9001 and 14001.

All Novenco Building & Industry’s products are designed, developed and manufactured in Denmark.

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