

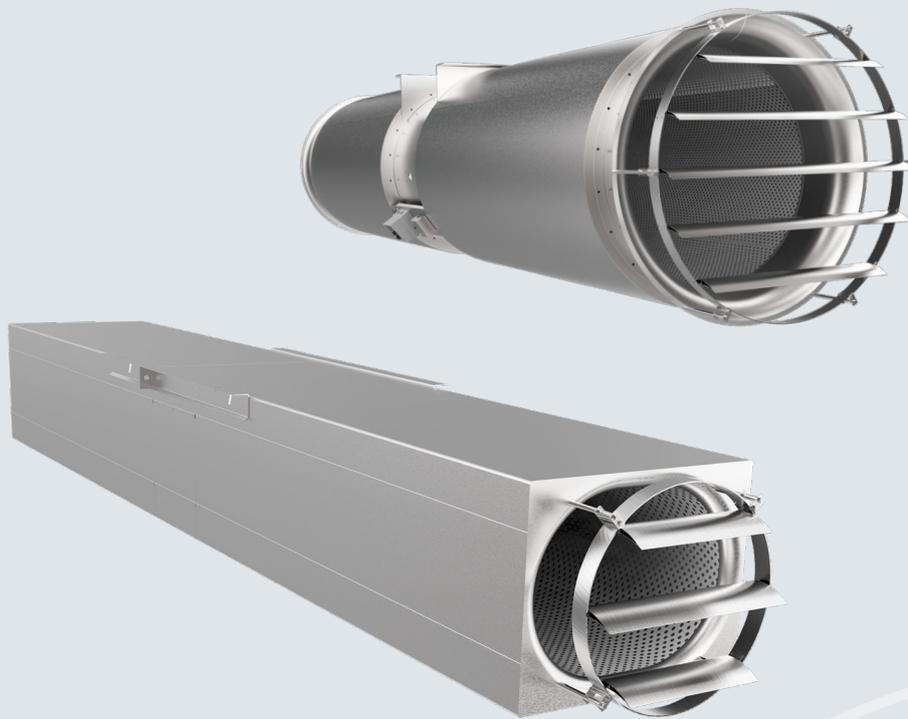
Pure competence in air.

NOVENCO® TUNNEL JET FANS HOT SMOKE

Building & Industry

NOVENCO 

SCHAKO Group



PRODUCT FACTS

PRODUCTS

Novenco® tunnel jet fan types are available in unidirectional (AUC and AUR) and reversible (ARC and ARR) versions.

- AUC/ARC- rectangular with silencers and Novenco NovAx™ fans
- AUR/ARR- round with silencers and Novenco NovAx fans

APPLICATIONS

The fans are for ventilation of tunnels with harsh environments such as road and train tunnels, where they provide an effective way of handling polluted air and smoke.

RANGES

The Novenco tunnel jet fans are available in the following sizes.

	ØD [mm]
AUC/ARC	Ø630, Ø710, Ø800
AUR/ARR	Ø630, Ø710, Ø800, Ø1000, Ø1120, Ø1250, Ø1400, Ø1600

Internal duct diameters

CONSTRUCTION

The tunnel jet fans are tube constructions with fan casings in the middle. Silencers are mounted on both the inlet and outlet sides. The fan casing material is 3 to 4 mm thick.

All fans include suspension brackets for direct mounting to straight ceilings.

MOTORS

Dimension standard: IEC 60034

Efficiency classes: IE3

Electrical standard: IEC 60034

Enclosure: Min. IP55 in accordance with IEC 34-5 — increased protection classes available on request

Insulation: Class H

Motor flanges: B5 (standard) or B14 in accordance to IEC 34-7

Mounting: Flange

Speed control: Direct on line (DOL)

Terminal boxes: Steel boxes mounted on outside of fan casings

Terminal boxes, enclosure: IP66

Voltages: 3x400 V, 50 Hz — other voltages and frequencies available on request

NOVENCO NOVAX ROTORS

The motors are direct-coupled to the rotors, which each consist of two hub discs with cavities, in which the blades are mounted in pre-calculated angles.

MATERIALS

Blades: Aluminium alloy

Casings and motor suspension: Welded steel plate, metallic coated

Cones: Metallic coated steel sheet

Deflectors: Aerodynamic shaped aluminium wings in steel brackets

Hubs: Metallic coated steel sheet, optionally epoxy coated

Inside tube for silencers: Perforated stainless steel plate

Silencers: Metallic coated steel sheet

Sound attenuating material: Fire-proof and moisture resistant

Suspension brackets: Metallic coated steel sheet

Wire guards: Stainless steel

Other materials: Available on request, f.x. stainless steel

CLASSIFICATIONS

Balancing of rotor unit: VDI 2060, DS/ISO 21940-11:2016, balance quality grade G 6.3

Corrosion category: C3, C4 or C5

Environment: Meets the requirements for operation in industrial and coastal areas with moderate salinity according to DS/EN ISO 12944-2

Fan aerodynamic performance: DS/EN ISO 13350:2015

Flange standards: Eurovent 1/2

High temperature approvals:

Certified as F₃₀₀60, F₃₀₀120 or F₄₀₀120 class fans according to EN 12101-3 and tested for two hours at 300 or 400 °C, respectively.

Sound performance: ANSI/AMCA 300-14

Technical capacities: DS/ISO 21940-11:2016; DS/ISO 21940-14:2012; EN ISO 5801:2017

Temperature range: -20 to +60 °C

ACCESSORIES

- Adjustable deflectors on outlets
- Painted- inside, outside or both
- Safety chains
- Temperature sensors on bearings
- Temperature sensors on motor windings
- Vibration dampers
- Vibration sensors
- Wire guards on inlets



Tunnel jet fan type ARR

NOVENCO TUNNEL JET FANS

The high performance and high temperature resistant tunnel jet fans from Novenco are suitable for normal ventilation and smoke control systems in both railway and road traffic tunnels.

Novenco tunnel jet fans ventilate tunnels around the world. Here they provide energy-savings, ensure low sound levels and improve system efficiencies.

Tunnel jet fan characteristics

- Compact construction
- High efficiency
- High temperature resistance
- Low installation height
- Low sound

DESIGN

The round and rectangular designs of the tunnel jet fans are in fact very efficient shapes that consume a minimum of materials and offer optimal characteristics.

The compact designs and low installation heights are throughout the size range.

MATERIALS

The environments and harsh conditions the tunnel jet fans must work in, put high demands on the strength and quality of the fan materials. For these reasons, Novenco tunnel jet fans are mostly made of metallic coated or stainless steel sheets, and with aluminium for only the blades and deflectors. Attenuating material in the silencers is fire-proof and moisture resistant.

UNQUESTIONABLE PERFORMANCE

The thrusts and efficiencies of Novenco tunnel jet fans are designed for normal operation and with sufficient capacities to control smoke in case of a fire. The exact capacities and sizes depend on the tunnel layout as well as the standards and regulations that apply to the specific cases.

Novenco's experience with tunnel jet fan design, system layouts and calculations is long and from a wide range of projects.

RENOWNED NOVAX FAN QUALITY

All Novenco tunnel jet fans use the renowned NovAx fan design introduced by Novenco in the 1980s. This durable design is kept up to date through optimisations of the components and materials. In the 2020-update of the NovAx-based tunnel jet fans, the motors have been revised, and the silencers updated to match market requirements for performance and sound.

APPROVED FOR HIGH TEMPERATURES

The tunnel jet fans have been tested and performances confirmed in accordance to legislative requirements and standards. The fans are tested and certified for operation as EN 12101-3 hot smoke fans.

PRODUCT DESCRIPTION

FAN TYPES

The tunnel jet fans are manufactured in round (AUR/ ARR) and space-saving rectangular (AUC/ARC) designs. The designs are made in either unidirectional or reversible versions.

The impellers range in diameter from Ø630 to Ø1600 mm for round designs (AUR-ARR) and from Ø630 to Ø800 mm for rectangular designs (AUC-ARC).

FAN CASINGS

The fan casings are welded steel constructions in 3 or 4 mm metallic coated steel sheet depending on size. Alternatively, the casings can be made in stainless steel.

MOTORS

These are as standard IEC motors for 50 or 60 Hz in efficiency class IE3. Minimum protection class is IP55 with increased protection classes available on request.

ELECTRICAL CONNECTIONS

All fan designs have terminal boxes and disconnect switches on the outside of the fan casings.

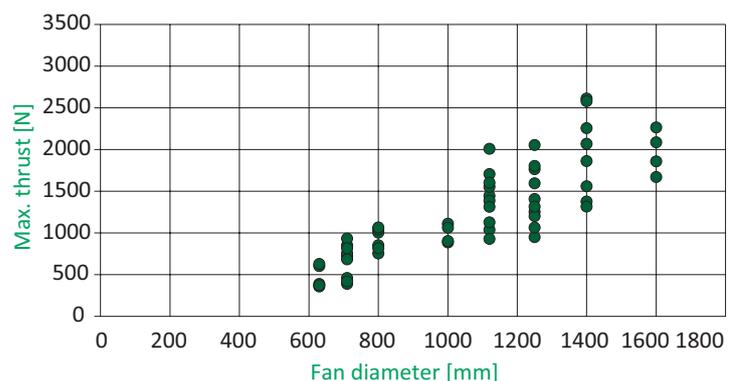
INSTALLATION

The tunnel jet fans are for ceiling installation on straight surfaces. However, brackets for other ceiling profiles are also available on request.

TEMPERATURE RANGES

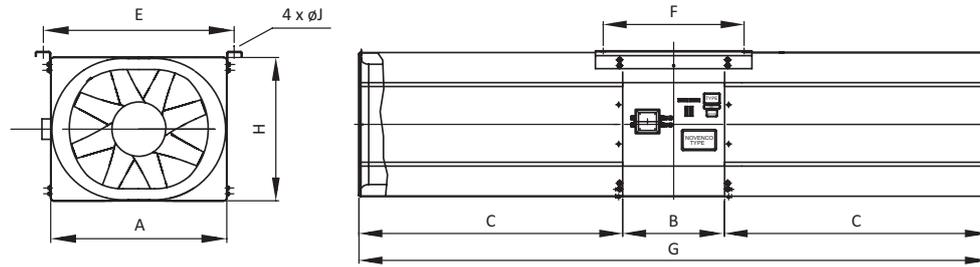
The fans are for continuous operation at -20 to +60 °C and tested and certified for smoke and heat exhaust at either 300 or 400 °C during 2 hours of operation. At 400 °C, some fan sizes operate at reduced speeds.

Tunnel fan comparison chart



Tunnel jet fan comparison chart

DIMENSIONS

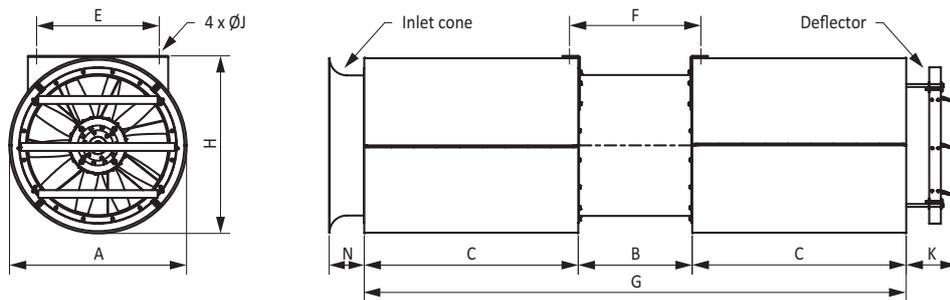


Fan size, ØD [mm]	A [mm]	B [mm]	C [mm]	E [mm]	F [mm]	G [mm]	H ¹ [mm]	ØJ [mm]
630	820	520	1350	895	720	3220	670	24
710	900	520	1350	975	720	3220	750	24
800	990	520	1350	1065	720	3220	840	24

AUC-ARC sizes 630 - 800 – unidirectional and reversible

Shown fan

AUR with optional deflector



Fan size, ØD [mm]	ØA [mm]	B [mm]	C [mm]	E [mm]	F [mm]	G [mm]	H ¹ [mm]	ØJ [mm]	K ² [mm]	N ³ [mm]
630	840	650	1220	700	750	3090	850	24	300	200
710	920	650	1220	700	750	3090	930	24	300	200
800	1010	650	1220	700	750	3090	1020	24	300	200
1000	1210	850	1220	900	950	3290	1220	24	300	200
1120	1330	850	1220	900	950	3290	1340	24	300	200
1250	1460	850	1220	900	950	3290	1470	24	300	200
1400	1610	1120	1220	1300	1220	3560	1620	24	300	200
1600	1810	1120	1220	1300	1220	3560	1820	24	300	200

AUR-ARR sizes 630 - 1600 – unidirectional and reversible

1. Heights include fans with installation brackets. The optional vibration dampers increase the height by 20 mm.

2. The deflectors are optional. On the reversible ARR the deflectors are mounted on the inlet cones.

3. The inlet cones are standard.

PERFORMANCE DATA AND WEIGHTS

Fan type	Meas. thrust [N]		Motor rating [kW]	Thrust efficiency [N/kW]		Current [A] ³ 400 V, 50 Hz	Outlet velocity [m/s]		Sync. speed [RPM]	Sound pressure level [dB(A)] ¹		Estimated total weight ² [kg]
	F300	F400		F300	F400		F300	F400		F300	F400	
AUC 630/280-8	360	353	12.7	29	29	23	31	31	3000	64	65	430
	609	596	28.0	22	21	50	40	40		68	69	500
AUC 710/280-8	381	373	12.7	31	30	23	28	28	3000	66	67	510
	760	744	28.0	28	27	52	40	40		70	71	580
AUC 710/330-10	859	841	40.0	22	21	72	43	42	3000	72	73	630
AUC 800/280-8	740	-	28.0	27	-	50	35	-	3000	72	-	630
AUC 800/330-10	963	-	40.0	25	-	72	40	-	3000	73	-	680

Uni-directional tunnel jet fans type AUC

Fan type	Meas. thrust [N]		Motor rating [kW]	Thrust efficiency [N/kW]		Current [A] ³ 400 V, 50 Hz	Outlet velocity [m/s]		Sync. speed [RPM]	Sound pressure level [dB(A)] ¹		Estimated total weight ² [kg]
	F300	F400		F300	F400		F300	F400		F300	F400	
AUR 630/280-8	380	372	12.7	31	30	23	32	32	3000	67	68	270
	644	631	28.0	23	23	50	42	41		70	71	340
AUR 710/280-8	450	441	12.7	36	35	23	31	31	3000	69	70	300
	764	748	28.0	28	27	50	40	40		72	73	370
AUR 710/330-10	916	897	40.0	23	23	72	44	44	3000	74	75	390
AUR 800/280-8	816	-	28.0	30	-	50	37	-	3000	74	-	470
AUR 800/330-10	1042	-	40.0	27	-	72	42	-	3000	76	-	520
AUR 1000/403-6	909	890	27.0	34	33	51	31	31	1500	68	69	660
	1139	1115	40.0	30	29	75	35	34		70	71	710
AUR 1120/403-6	1055	1033	27.0	39	39	51	30	30	1500	68	69	1010
	1443	1413	40.0	36	36	75	35	35		70	71	1060
	1568	1535	49.5	32	31	95	36	36		71	72	1150
	1710	1675	60.5	29	28	112	38	38		72	73	1300
AUR 1120/578-10	2016	1974	86.3	24	23	151	41	41	1500	74	75	1400
AUR 1250/403-6	981	960	27.0	38	37	51	26	26	1500	71	72	780
	1260	1234	40.0	32	31	75	29	29		72	73	830
	1596	1563	49.5	33	32	95	33	33		73	74	920
	1790	1753	60.5	30	30	112	35	35		74	75	1070
AUR 1250/578-10	2087	2044	86.3	25	24	151	38	37	1500	76	77	1170
AUR 1400/403-6	1405	1376	40.0	36	35	75	28	27	1500	75	76	980
	1635	1601	49.5	33	33	95	30	29		76	77	1070
	1864	1826	60.5	31	31	112	32	31		77	78	1220
AUR 1400/578-10	2283	2236	86.3	27	27	151	35	35	1500	79	80	1320
	2656	2601	108.0	25	24	193	38	38		80	81	1680
AUR 1600/578-10	1886	1847	51.8	37	36	93	28	28	1000	77	78	1380
	2288	2241	86.3	34	33	161	31	31		79	80	1740

Uni-directional tunnel jet fans type AUR

1. Sound data is calculated for a distance of 10 m from fans and a 45° free field without fan deflectors and wire protection guards. Values are for inlet side.

2. Total weights are estimates and depend on the selected construction and accessories. The weights include fans and motors.

3. Other voltages and frequencies are available on request.

Fan type	Meas. thrust [N]		Motor rating [kW]	Thrust efficiency [N/kW]		Current [A] ³ 400 V, 50 Hz	Outlet velocity [m/s]		Sync. speed [RPM]	Sound pressure level [dB(A)] ¹		Estimated total weight ² [kg]
	F300	F400		F300	F400		F300	F400		F300	F400	
ARC 630/280-8	340	333	12.7	27	26	23	30	30	3000	67	68	430
ARC 630/330-10	550	539	28.0	20	19	50	38	38	3000	70	71	500
ARC 710/280-8	360	353	12.7	28	28	23	28	27	3000	69	70	510
	650	637	28.0	23	23	50	37	37		73	74	580
ARC 710/330-10	750	735	40.0	19	18	72	40	39	3000	75	76	630
ARC 800/280-8	720	-	28.0	26	-	50	35	-	3000	74	-	630
ARC 800/330-10	900	-	40.0	23	-	72	39	-	3000	76	-	680

Reversible tunnel jet fans type ARC

Fan type	Meas. thrust [N]		Motor rating [kW]	Thrust efficiency [N/kW]		Current [A] ³ 400 V, 50 Hz	Outlet velocity [m/s]		Sync. speed [RPM]	Sound pressure level [dB(A)] ¹		Estimated total weight ² [kg]
	F300	F400		F300	F400		F300	F400		F300	F400	
ARR 630/280-8	370	362	12.7	29	29	23	32	31	3000	69	70	270
	550	539	28.0	20	19	50	38	38		71	72	340
ARR 710/280-8	425	416	12.7	34	33	23	30	30	3000	71	72	270
	700	686	28.0	25	25	50	38	38		73	74	340
ARR 710/330-10	800	784	40.0	20	20	72	41	41	3000	75	76	390
ARR 800/280-8	800	-	28.0	29	-	50	36	-	3000	75	-	470
ARR 800/330-10	1000	-	40.0	25	-	74	41	-	3000	77	-	520
ARR 1000/403-6	900	806	27.0	31	30	51	30	29	1500	67	68	660
	1043	-	40.0	26	-	75	33	-		68	-	710
ARR 1120/403-6	931	912	27.0	35	34	51	28	28	1500	69	70	1010
	1140	1080	40.0	29	27	75	31	30		71	72	1060
	1302	-	49.5	26	-	95	33	-		72	-	1150
	1378	-	60.5	23	-	112	34	-		73	-	1300
ARR 1120/578-10	1663	1460	86.3	19	17	151	38	35	1500	75	76	1400
ARR 1250/403-6	1036	1015	27.0	38	38	51	27	26	1500	76	77	780
	1225	1199	40.0	31	30	75	29	29		77	78	830
	1319	1292	49.5	27	26	95	30	30		78	79	920
	1413	1384	60.5	23	23	112	31	31		79	80	1070
ARR 1250/578-10	1790	1753	86.3	21	20	151	35	35	1500	80	81	1170
ARR 1400/403-6	1290	1264	40.0	32	32	78	26	26	1500	79	80	980
	1432	1402	49.5	29	28	93	28	28		79	80	1070
	1584	1552	60.5	26	26	116	29	29		80	81	1220
ARR 1400/578-10	2050	2008	86.3	24	23	151	33	33	1500	83	84	1320
	2330	2282	108.0	22	21	193	36	35		84	85	1680
ARR 1600/578-10	1702	1522	51.8	33	29	93	27	25	1000	78	79	1380
	2116	-	86.3	25	-	161	30	-		80	-	1740

Reversible tunnel jet fans type ARR

1. Sound data is calculated for a distance of 10 m from fans and a 45° free field without fan deflectors and wire protection guards. Values are for inlet side.

2. Total weights are estimates and depend on the selected construction and accessories. The weights include fans and motors.

3. Other voltages and frequencies are available on request.

QUALITY AND SERVICE



REST ASSURED

The NOVENCO tunnel jet fans are produced in accordance with NOVENCO's well-known quality standards. NOVENCO Building & Industry A/S is ISO certified and all fans are inspected and tested.

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
- Operation with pulsating counter pressure – called pump mode
- Operation with exceedingly starts and steps

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

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We offer the fans with optional technical guidance on installation, test of function and training of personnel.

WARRANTY

NOVENCO provides according to law

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a standard 12 months warranty from the product is sent from the factory. The warranty covers materials and manufacturing defects. Wear parts are not covered. Extended warranty can be agreed upon.

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.



Pure competence in air.

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