

Metro and Tunnel Fans

Axial fans for fresh and exhaust air



Systemair Metro and Tunnel Fans

Systemair Tunnel Fans are developed in Germany for a good reason:

With the acquisition of Matthews & Yates in 2007 Systemair Germany began concentrating on ventilation systems for metro, road and train tunnels.

Since then, our factory in Windischbuch has become the Centre of Excellence for the research and development of the axial fans range for the Systemair group.

Highest efficiency, outstanding quality and absolute reliability are the benchmarks that are followed.

To be able to meet these guidelines in the future, we have the most modern laboratory for research and development of axial fans in Europe.

In addition to a test chamber in accordance with ISO 5801 for volumes up to 30.000 m³/h resp. max 1500 Pa we are able to test fans on an AMCA 210-7 test chamber for up to 130.000 m³/h resp. max. 3000Pa.

Axial fans up to size 2.240 mm, can be tested on two inlet tube test rigs according AMCA 210-7. All testing equipment can be used independently of the weather conditions in our research and development center, which was newly built in 2013.

Our large axial fans are specially designed for the use in metro and tunnel ventilation. They are able to push fresh air into the system or suck smoke in emergency ventilation out of contaminated area.

Our production hall for axial fans, also newly built in 2013, has an area of 760 m². The assembly is done by experienced workers who are following the highest quality standards. When assembly is completed, the fans are tested in the final inspection area. This ensures that the fans are fault free and meet the required performance levels. Last but not least it guarantees the reliable operation at site.

Take advantage of decades of knowledge in the M.R.T. business. It would be a pleasure for our engineers to give you support for the fan selection and optimization of your ventilation system. If needed, we are also able to do CFD simulations in house.



R&D Center Windischbuch



Systemair is working in accordance with the following standards:

Quality:

ISO 9001: Quality management system, monitored by TÜV Süd. Certificate on www.systemair.com.

DIN 24166: Technical terms of delivery for fans.

CE marking:

The CE marking is a mandatory conformity mark in the European Economic Area. By affixing the CE marking, the manufacturer asserts that the item meets all the essential requirements of the relevant European Directive(s).

Testing:

ISO 5801: "Industrial fans, performance testing..."

DIN 24163: "Fans, performance testing..."

AMCA 210-99: „Laboratory methods of testing fans for aerodynamic performance rating“

EN 12101-3: „Smoke and heat control systems - powered smoke and heat exhauste..."

ISO 13350: Performance testing of Jet fans

EN certificates on www.systemair.com

- As per EC Machinery Directive 98/37/EEC Annex IIA, fans for ventilation... the following harmonized standards are used:
 - EN 60 204-1: „Safety of machinery - electrical equipment, general requirements“
 - EN 292-1: „Safety of machinery, design“ EN ISO 12100:2011-3



- EN 294: „Safety of machinery, safety distances“ EN ISO 13857:2008-06
- EN 60 034-1: „Rotating electric machinery, ratings and performance“
- As per EC Low Voltage Directive 73/23/EEC and 93/68/EEC the following harmonized standards are used:
 - EN 60 204-1: “Safety of machinery - electrical equipment, general requirements”
 - EN 60 034-5: “Rotating electric machinery, protection classification”
- As per EMC-directive 89/336/EEC and EMC-directive 93/68/EEC the following harmonized standards are used:
 - EN 61000-6-1 and 6-2: Electromagnetic compatibility

Models

Type	Impeller diameter [mm]	-20° to 55°C permanent operation	250°C/120 min.	B 300°C/120 min. ¹⁾	F 400°C/120 min. ²⁾
AXR (K)	1400 - 2240	X	X		
AXR (B)	1400 - 1600	X		X	
AXR (F)	1400 - 1600	X			X
AXR-G (K)	1400 - 2240	X	X		
AXR-G (B)	1400 - 1600	X		X	
AXR-G (F)	1400 - 1600	X			X
AXC (K)	1400 - 2240	X	X		
AXC (B)	1400 - 1600	X		X	
AXC (F)	1400 - 1600	X			X
AXC-G (B)	1400 - 1600	X		X	
AXC-G (F)	1400 - 1600	X			X

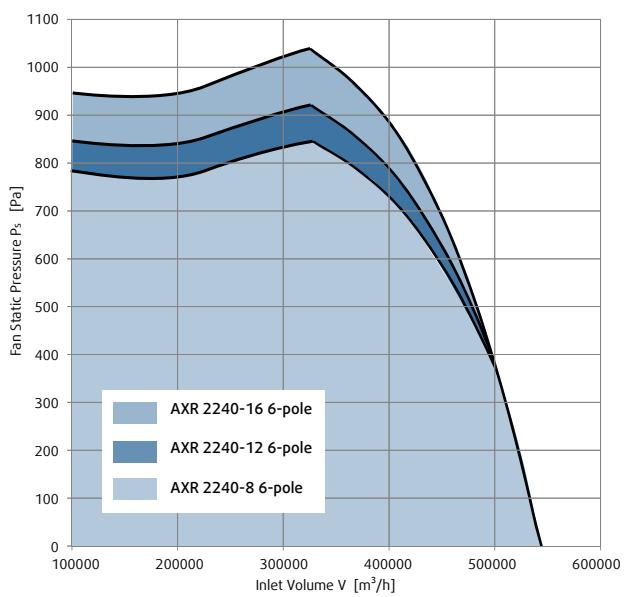
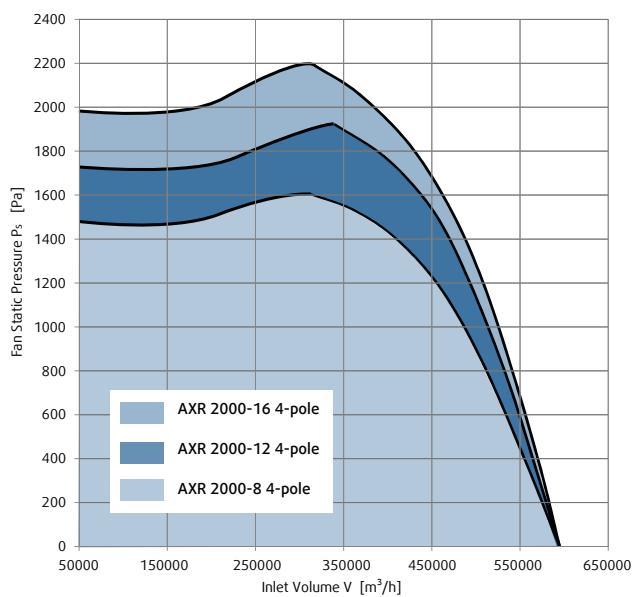
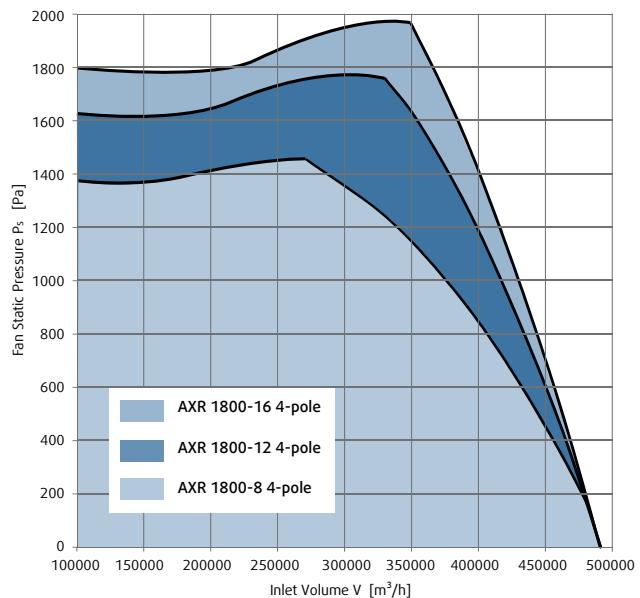
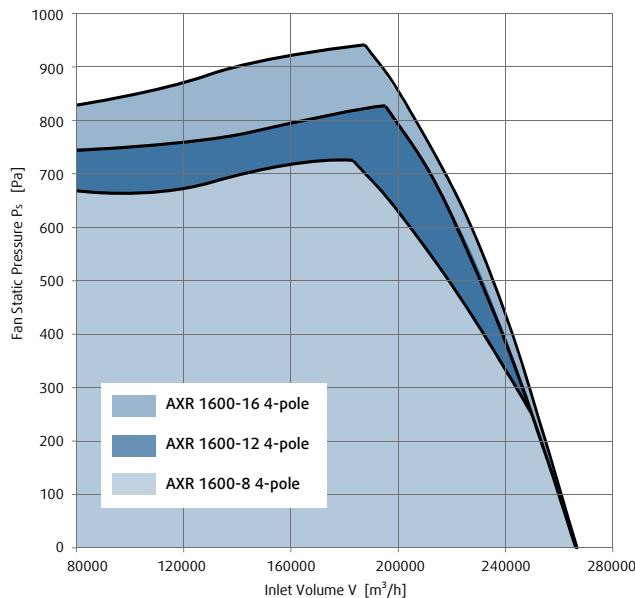
¹⁾ F300 according DIN EN 12 101-3

²⁾ F400 according DIN EN 12 101-3

F200 according DIN EN 12 101-3 on request



Performance Type AXR / AXC *



* Note: AXC approx. 10% increased performance

Models & Specification

Models

- AXR** 100% truly reversible
- AXC** Unidirectional
- AXR-G** Multiple stage 100% truly reversible
- AXC-G** Multiple stage unidirectional

Impellers

- R** 100% reversible; pitch adjustable at stand-still
- C** Unidirectional; pitch adjustable at stand-still

Materials

Impeller

- Blades Made of seawater resistant die casted aluminium
- Hub Size DN 315-1600 mm made of seawater resistant die casted aluminium
Size DN 1800-2240 mm made of galvanized steel

Casing

- Hot dip galvanized steel up to 6 mm thickness and mounting feet (horizontal discharge) or brackets (vertical discharge).
- Stainless steel or painted respectively powder coated versions available on request.

Accessories

- Safety guard
- Bellmouth
- Counterflange
- Flexible connection
- Damper
- Vibration control
- Spring vibration isolators
- Regreasing
- Differential pressure measuring system (anti-stall)
- Base frame
- Circular silencer + baffle silencer
- Diffusors, transition pieces etc. on request
- Frequency converter

Mounting

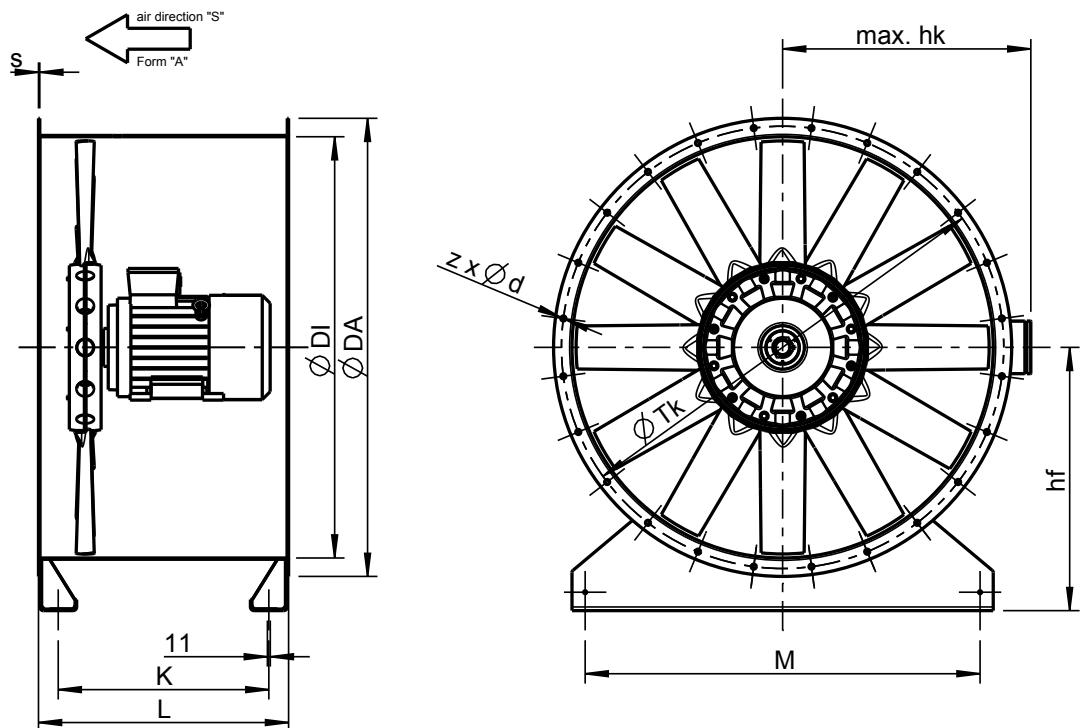
Vertical and horizontal discharge possible

For further information about MRT division, please visit:
www.systemair.com/Global/Solutions/Tunnel-and-Metro/

Dimensions

AXC, (K), (B), (F) - horizontal discharge

Uni-directional



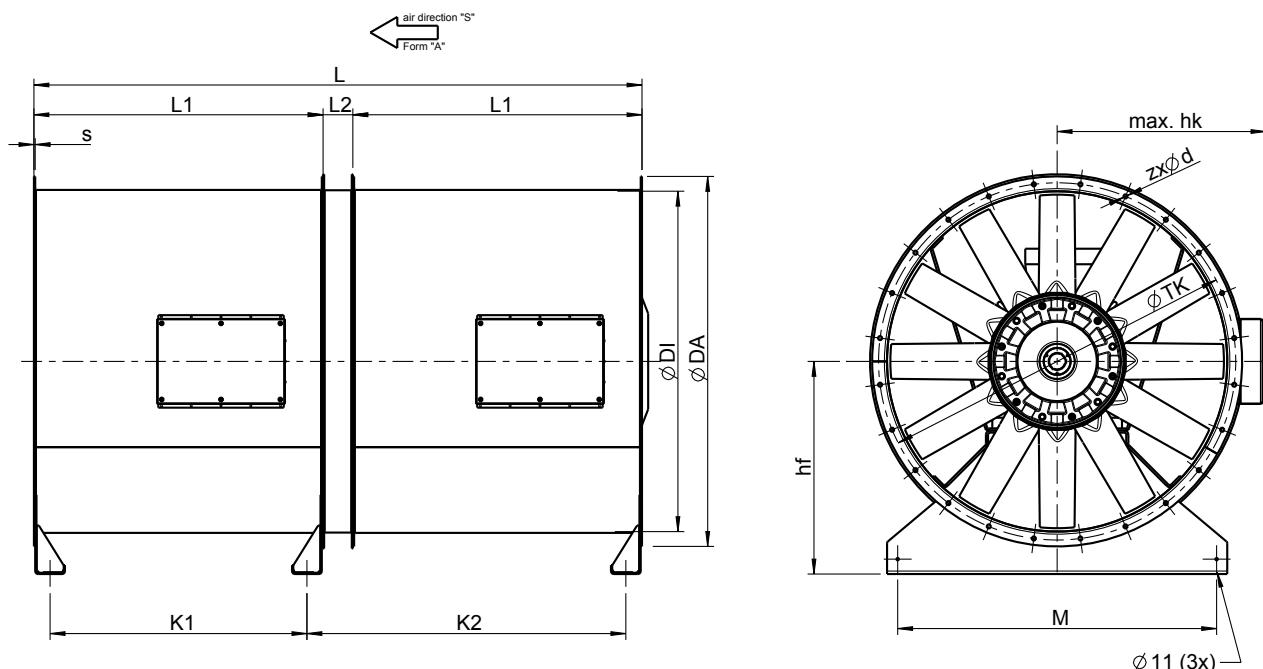
\varnothing DI [mm]	\varnothing DA [mm]	Motor size IEC	L [mm]	K [mm]	M [mm]	\varnothing TK [mm]	z x Ød [mm]	s [mm]	hk [mm]	hf [mm]	Max. Fan weight [kg]
1400	1540	160	950	820	1300	1470	20 x 15	5	840	900	620
1400	1540	180	950	820	1300	1470	20 x 15	5	840	900	590
1400	1540	200	950	820	1300	1470	20 x 15	5	840	900	640
1400	1540	225	950	820	1300	1470	20 x 15	5	840	900	710
1400	1540	250	1360	1228	1300	1470	20 x 15	6	840	900	960
1400	1540	280	1360	1228	1300	1470	20 x 15	6	840	900	1170
1400	1540	315	1360	1228	1300	1470	20 x 15	6	840	900	1830
1600	1760	160	950	820	1500	1680	24 x 19	5	940	1000	620
1600	1760	180	950	820	1500	1680	24 x 19	5	940	1000	680
1600	1760	200	950	820	1500	1680	24 x 19	5	940	1000	720
1600	1760	225	950	820	1500	1680	24 x 19	5	940	1000	790
1600	1760	250	1360	1228	1500	1680	24 x 19	6	940	1000	1060
1600	1760	280	1360	1228	1500	1680	24 x 19	6	940	1000	1270
1600	1760	315	1360	1228	1500	1680	24 x 19	6	940	1000	1917

Dimensions

AXC-G, (K), (B), (F) - horizontal discharge

Two stage unit, uni-directional

Vertical versions on request!

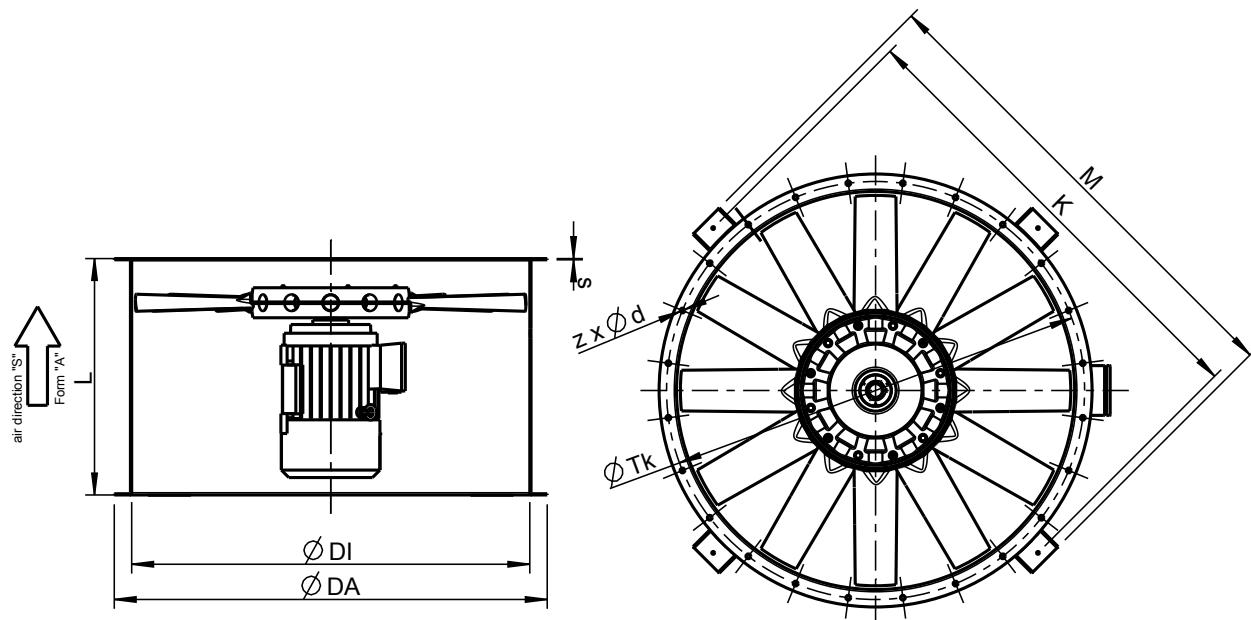


\varnothing DI [mm]	\varnothing DA [mm]	Motor size IEC	L [mm]	L1 [mm]	L2 [mm]	K1 [mm]	K2 [mm]	M [mm]	\varnothing TK [mm]	z x \varnothing d [mm]	s [mm]	hf [mm]	hk [mm]	Max. Fan weight [kg]
1400	1540	160	1900	950	-	820	-	1300	1470	20 x 15	5	900	840	1240
1400	1540	180	1900	950	-	820	-	1300	1470	20 x 15	5	900	840	1180
1400	1540	200	1900	950	-	820	-	1300	1470	20 x 15	5	900	840	1280
1400	1540	225	1900	950	-	820	-	1300	1470	20 x 15	5	900	840	1420
1400	1540	250	2720	1360	-	1228	1500	1300	1470	20 x 15	6	900	840	1920
1400	1540	280	2720	1360	-	1228	1500	1300	1470	20 x 15	6	900	840	2340
1400	1540	315	2860	1360	140 ⁽¹⁾	1228	1640	1300	1470	20 x 15	6	900	840	3700
1600	1760	160	1900	950	-	820	-	1500	1680	24 x 19	5	1000	940	1240
1600	1760	180	1900	950	-	820	-	1500	1680	24 x 19	5	1000	940	1360
1600	1760	200	1900	950	-	820	-	1500	1680	24 x 19	5	1000	940	1440
1600	1760	225	1900	950	-	820	-	1500	1680	24 x 19	5	1000	940	1580
1600	1760	250	2720	1360	-	1208	1500	1500	1680	24 x 19	6	1000	940	2120
1600	1760	280	2720	1360	-	1208	1500	1500	1680	24 x 19	6	1000	940	2540
1600	1760	345	2860	1360	140 ⁽¹⁾	1208	1640	1500	1680	24 x 19	6	1000	940	3900

Dimensions

AXC, (K), (B), (F) - vertical discharge

Uni-directional



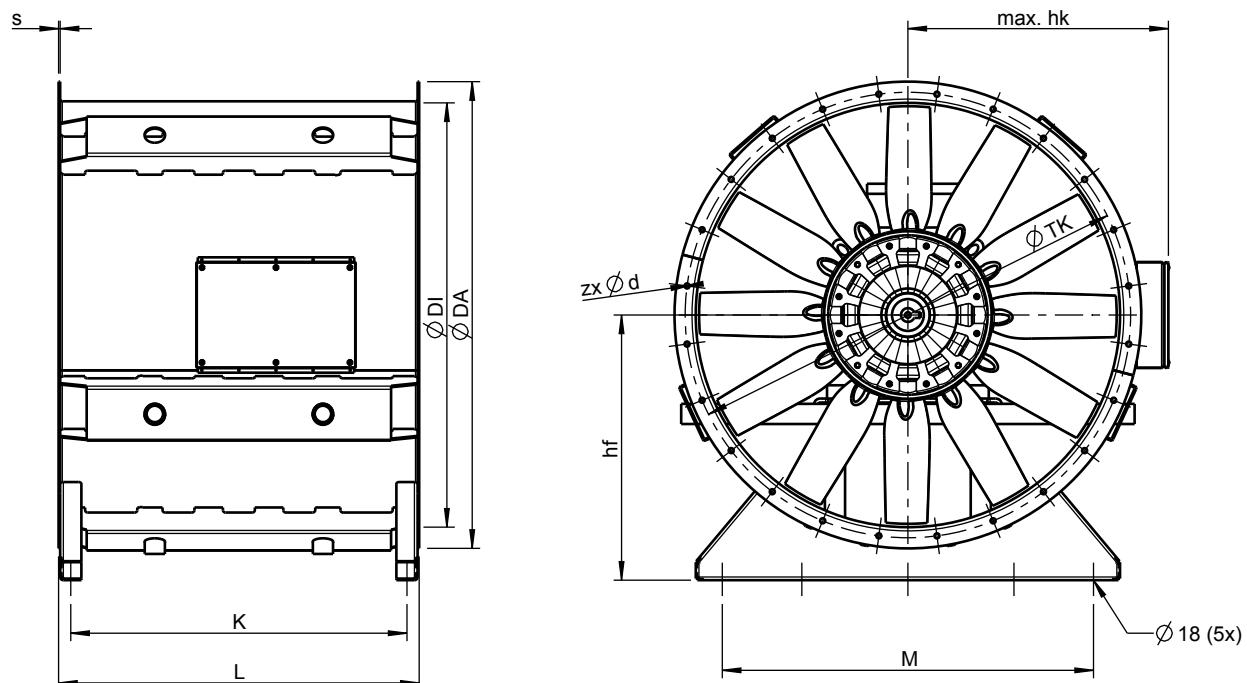
\varnothing DI [mm]	\varnothing DA [mm]	Motor size IEC	L [mm]	K [mm]	M [mm]	\varnothing TK [mm]	$z \times \varnothing d$ [mm]	s [mm]	Max. Fan weight [kg]
1400	1540	160	950	1646	1726	1470	20 x 15	5	620
1400	1540	180	950	1646	1726	1470	20 x 15	5	590
1400	1540	200	950	1646	1726	1470	20 x 15	5	640
1400	1540	225	950	1646	1726	1470	20 x 15	5	710
1400	1540	250	1360	1646	1726	1470	20 x 15	6	960
1400	1540	280	1360	1646	1726	1470	20 x 15	6	1170
1400	1540	315	1360	1646	1726	1470	20 x 15	6	1830
1600	1760	160	950	1929	1680	1680	24 x 19	5	620
1600	1760	180	950	1929	1680	1680	24 x 19	5	680
1600	1760	200	950	1929	1680	1680	24 x 19	5	720
1600	1760	225	950	1929	1680	1680	24 x 19	5	790
1600	1760	250	1360	1929	1680	1680	24 x 19	6	1060
1600	1760	280	1360	1929	1680	1680	24 x 19	6	1270
1600	1760	315	1360	1929	1680	1680	24 x 19	6	1917

Dimensions

AXR, (K), (B), (F) - horizontal discharge

Truly reversible.

Vertical version on request!



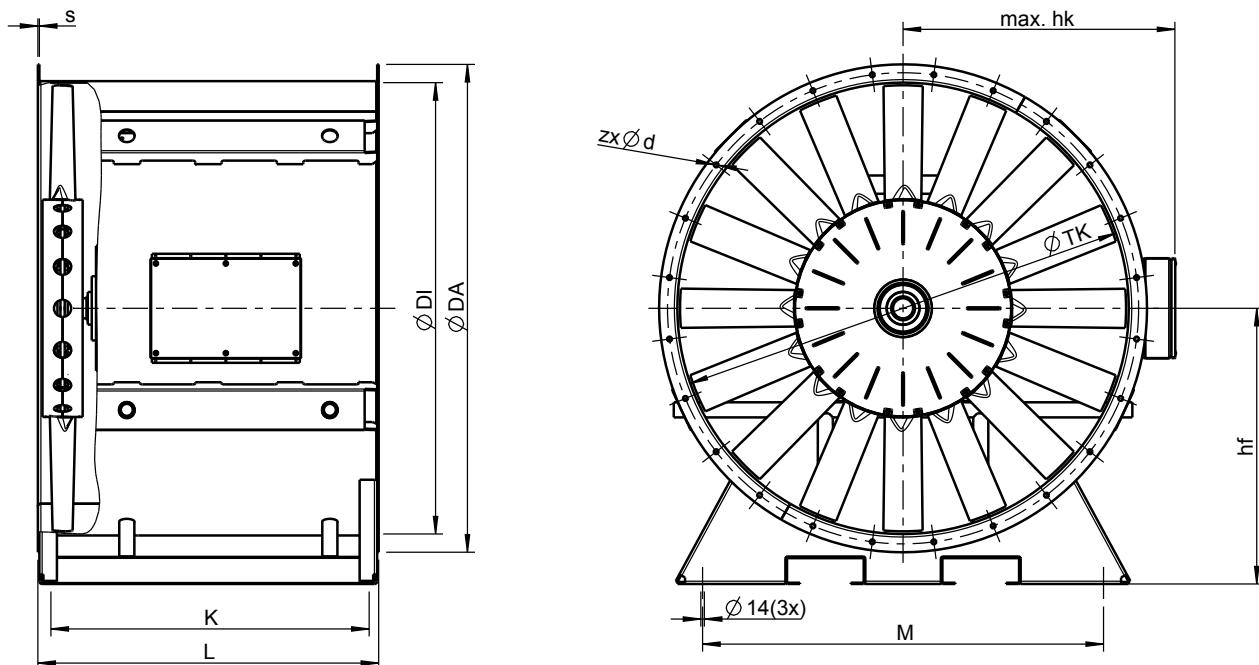
Ø DI [mm]	Ø DA [mm]	Motor size IEC	L [mm]	K [mm]	M [mm]	Ø TK [mm]	zx Ød [mm]	s [mm]	hk [mm]	hf [mm]	Max. Fan weight [kg]
1400	1540	225									
1400	1540	250									on request
1400	1540	280	1360	1268	1200	1470	20 x 15	6	840	900	1330
1400	1540	315	1360	1268	1200	1470	20 x 15	6	840	900	1900
1600	1760	225	1100	1008	1400	1680	24 x 19	6	940	1000	1045
1600	1760	250	1100	1008	1400	1680	24 x 19	6	940	1000	1070
1600	1760	280	1360	1208	1400	1680	24 x 19	6	940	1000	1440
1600	1760	315	1360	1208	1400	1680	24 x 19	5	940	1000	1990

Dimensions

AXR (K) - horizontal discharge

Truly reversible.

Vertical version on request!



Ø DI [mm]	Ø DA [mm]	Motor size IEC	L [mm]	K [mm]	M [mm]	Ø TK [mm]	zxØd [mm]	s [mm]	hk [mm]	hf [mm]	Max. Fan weight [kg]
1800	1960	250	1100	1010	1600	1880	24 x 19	6	840	1100	1350
1800	1960	280	1100	1010	1600	1880	24 x 19	6	840	1100	1530
1800	1960	315	1360	1268	1600	1880	24 x 19	6	840	1100	2280
1800	1960	355	1360	1268	1600	1880	24 x 19	6	840	1100	2960
2000	2160	250				2080	24 x 19	6	940	1000	-
2000	2160	280	on request			2080	24 x 19	6	940	1000	-
2000	2160	315	1360	1208	1840	2080	24 x 19	6	940	1000	2580
2000	2160	355	1360	1208	1840	2080	24 x 19	6	940	1000	3250

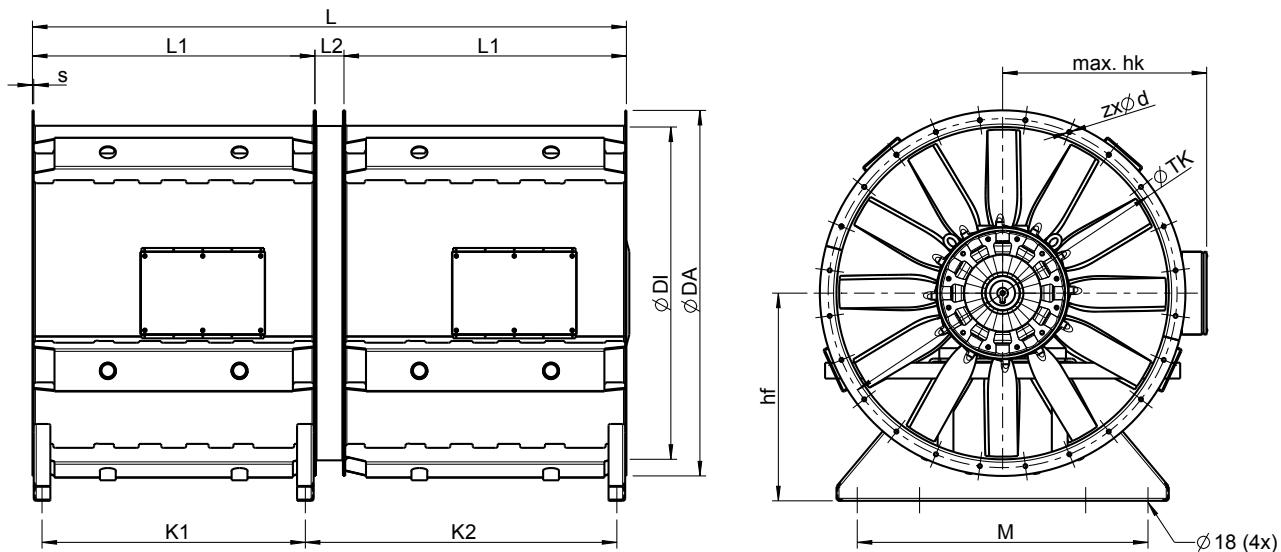
Ø DI 2240 on request!

Dimensions

AXR-G, (K), (B), (F) - horizontal discharge

Two stage unit, truly reversible

Vertical version on request!



Ø DI [mm]	Ø DA [mm]	Motor size IEC	L [mm]	L1 [mm]	L2 [mm]	K1 [mm]	K2 [mm]	M [mm]	Ø TK [mm]	z x Ød [mm]	s [mm]	hk [mm]	hf [mm]	Max. Fan weight [kg]
1400	1540	225												
1400	1540	250												
1400	1540	280	2720	1360	-	1268	1360	1200	1470	20 x 15	6	840	900	2660
1400	1540	315	2860	1360	140 ¹⁾	1268	1500	1200	1470	20 x 15	6	840	900	3800
1600	1760	225	2200	1100	-	1008	1360	1400	1680	24 x 19	6	940	1000	2090
1600	1760	250	2200	1100	-	1008	1360	1400	1680	24 x 19	6	940	1000	2140
1600	1760	280	2720	1360	-	1208	1360	1400	1680	24 x 19	6	940	1000	2880
1600	1760	315	2860	1360	140 ¹⁾	1208	1500	1400	1680	24 x 19	6	940	1000	3980

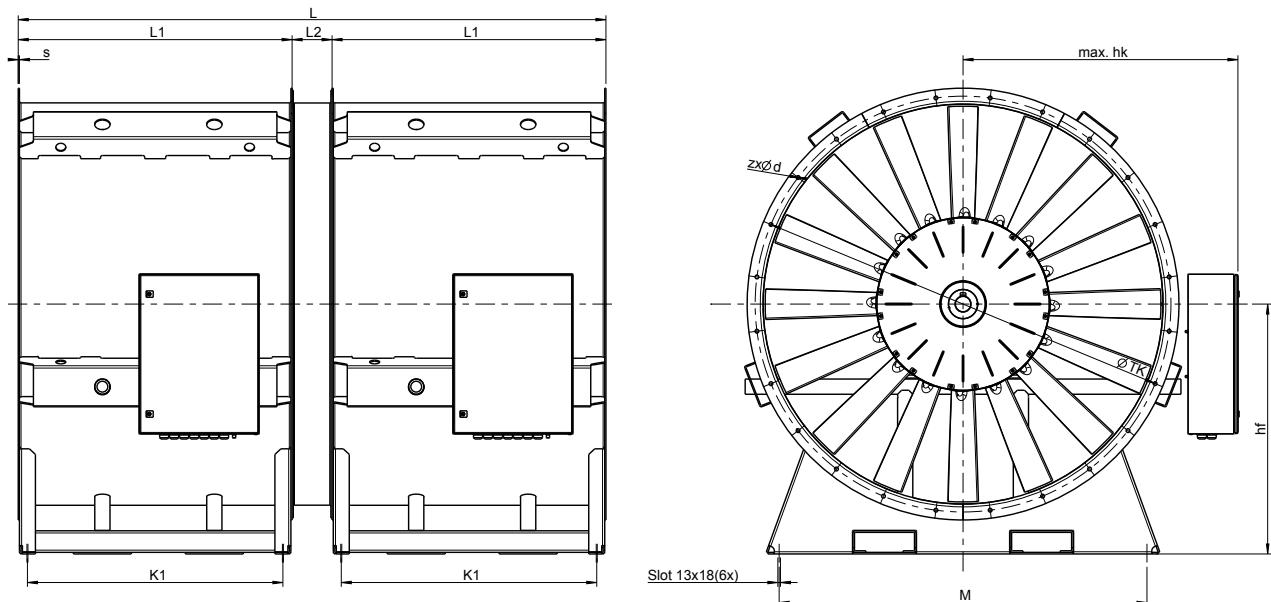
⁽¹⁾ Connecting piece is required for motor size 315!

Dimensions

AXR-G (K) - horizontal discharge

Two stage unit, truly reversible

Vertical version on request!



\varnothing DI [mm]	\varnothing DA [mm]	Motor size [mm]	L [mm]	L1 [mm]	L2 [mm]	K1 [mm]	M [mm]	\varnothing TK [mm]	$z \times \varnothing d$ [mm]	s [mm]	hk [mm]	hf [mm]	Max. Fan weight [kg]
1800	1960	250	2200	1100	-	1010	1600	1880	24 x 19	6	840	900	2700
1800	1960	280	220	1100	-	1010	1600	1880	24 x 19	6	840	900	3060
1800	1960	315	2920	1360	200 ⁽¹⁾	1268	1600	1880	24 x 19	6	840	900	4650
1800	1960	355	2920	1360	200 ⁽¹⁾	1268	1600	1880	24 x 19	6	840	900	6010
2000	2160	250	on request					2080	24 x 19	6	940	1000	-
2000	2160	280	on request					2080	24 x 19	6	940	1000	-
2000	2160	280	2920	1360	200 ⁽¹⁾	1208	1840	2080	24 x 19	6	940	1000	5260
2000	2160	315	2920	1360	200 ⁽¹⁾	1208	1840	2080	24 x 19	6	940	1000	6600

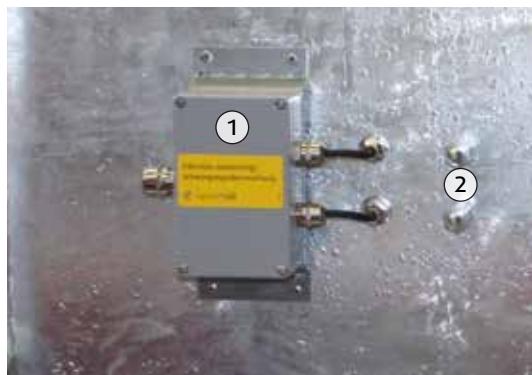
\varnothing DI 2240 on request!

⁽¹⁾ Connecting piece is required for motor size 315!

Accessories



Circular silencer (3)



Terminal box for vibration control (1), motor regreasing points (2) on the outside of fan casing.



Vibration sensor (4), regreasing pipework (5) to DE + NDE bearings.



Safety guard (6), bellmouth (7)



Base frame (8), spring vibration isolators (9)



Flexible connection (10)



Baffle silencer (11)



Rectangular silencer (12)



Frequency converter (13)

Other accessories available on request!

References

Metro and Railway Tunnel

Patamonas
 Metro Catania
 Metro Paterno
 TAV Barbarolo
 LRT Linie 2 Manila
 Metro Taipei Xian
 Kaoshing MRT
 MRT 348 Taipei
 Metro Istanbul
 Metro Copenhagen

Greece
 Italy
 Italy
 Italy
 Philippines
 Taiwan
 Taiwan
 Taiwan
 Turkey
 Denmark

Mecca Inner Ring Road
 Taif Conference Palace Underpass

Saudi Arabia
 Saudi Arabia

Riva del Garda
 Monte Cuneo

Italy
 Italy

A32
 Pédelombarda Section A

Italy
 Italy

Quinta Grande, Ribeira Brava
 Lorong Kuda, Kuala Lumpur

Madeira
 Malaysia

Hårdangerbrua
 Vagsbyporten

Norway
 Norway

E6 Eidsvoll
 Marienburg

Norway
 Austria

Lainberg
 Passuer

Austria
 Austria

Lissabon
 Amoreiras-Marques

Portugal
 Portugal

Madeira
 Achzu, Krasnodar

Portugal
 Russia

Melide
 Marj Al Haman - Jabal Arafat

Switzerland
 Syria

Häm Boa
 Golden Mountain II

Taiwan
 Taiwan

Mahmutbey, Istanbul
 Wadi Muddiq

Turkey
 United Arab Emirates

Road Tunnel

Adelaide Crafters
 Leopold II, Brüssel
 Stara Trazevic
 Taarnby
 Airport Dubai
 Dartford Crossing
 A38 Saltash
 Koumaria-S2
 Egnatia Route
 Cheung Ching

Australia
 Belgium
 Bosnia-Herzegovina
 Denmark
 Dubai
 England
 England
 Greece
 Greece
 Hong Kong



www.systemair.com