General

You will find the standard range of Arex radial fans presented in this catalogue. For non-standard products, please contact us to discuss your requirements.

Arex fans are designed for the conveyance of corrosive and/or explosive air or other forms of gas-flow.

SI system

The SI international system of units of measurement is used throughout this catalogue.

Key to terms

q = gas-flow, m^3/s
Pt = total increase in pressure, Pa
n = rotation speed of fan, rpm
Pe = power requirements according to graph W
L = operating curve
Material 0 = PVC (polyvinyl chloride)
Material 1 = GRP (glassfibre-reinforced polyester)
Material 2 = PP (polypropylene)
Material 3 = Various materials
Material 4 = PPS-EL (copolymer propylene, anti-static and self-extinguishing)

Symbols


B impeller, backward-curved blades


P impeller, true backward-inclined blades


T impeller, straight radial blades

Balanced fans

All fans manufactured by Arex are dynamically balanced. This is of particular importance, especially as the rotation speed of the fans is high and some of the fans are quite large.

AREX fans are dynamically balanced by machine on two parallel balancing planes, in accordance with standard Q 6.3.

Fan graph

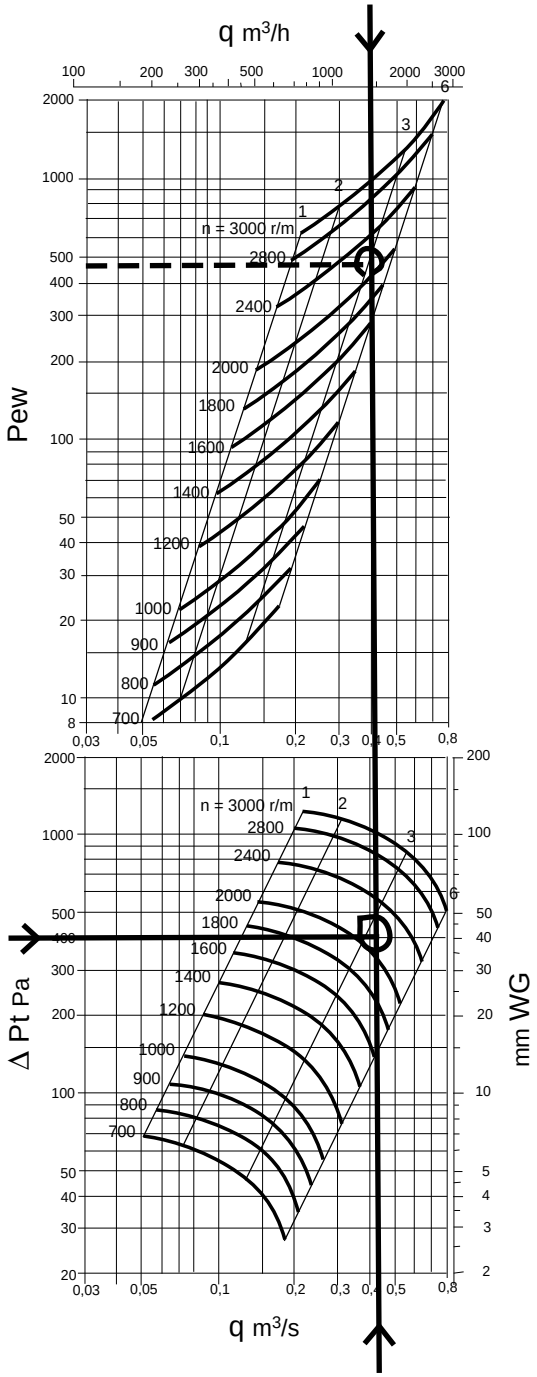
The graph shows the total increase in pressure as a function of the gas-flow at certain fan rotation speeds, and the power requirements and operating curves providing the best working range. The fan graph applies to air with a density of 1.2 kg/m^3. With belt drive, the power requirements Pe are increased by 10% to compensate for loss in transmission.

Performance examples for LCP-A-B-R-S

Performance required q = 0.4 m^3/s Pt = 400 Pa. From the graph, it can be seen that the fan rotation speed obtainable is approximately n = 2100 rpm and in the top graph the net power requirement obtainable (excluding transmission loss) is Pe = 430 W (n = 2100 rpm is within the recommended rotation speed range).

LCPA 025

Material 1 ⩽2900 r/m
Material 0,2,3,4 ⩽2900 r/m



Applications

Arex plastic fans are designed for the conveyance of air or gas which is corrosive or dust-polluted. The fans are principally used on the exhaust side in the following industries and industrial processes:
- plating industries
- electro-polishing
- electro-plating
- battery industries
- cellulose industries
- fertiliser industries
- manufacture of printed circuits
- laboratories
- photo laboratories
- dyeing industries
- impregnating processes
- etching
- anodising
- chromium-plating

General specifications

- Arex fans are manufactured in a wide range of plastic materials
- manufactured for flows of up to approximately 30 m^3/s
- the fans are available with direct drive or belt drive
- available fitted with two-speed motors
- in other respects, fans can largely be equipped according to the customer's requirements

Standard materials

Arex fans are manufactured in plastic and are available, as standard, in the following types of materials:

PVC — polyvinyl chloride
PPS-EL — copolymer propylene, anti-static and self-extinguishing
PP — polypropylene
GRP — glassfibre-reinforced polyester

All the above materials have excellent properties as construction materials.
The choice of plastic materials is determined by various factors including:
- chemical resistance requirements
- heat resistance requirements
- mechanical strength requirements

Thermoplastics are the most commonly used materials, while GRP is chiefly used for its high mechanical strength and heat-resistance.

Heat resistance

PVC, PP and PP SEL are thermoplastic materials that soften at high temperatures. GRP is a hard plastic which decomposes and becomes charred at high temperatures.

Maximum operating temperatures for fans made of:

PVC	+55°C
PP	+70°C
PPS-EL	+70°C
GRP	+90°C

PP can be shock-loaded for short periods of time up to a temperature of 120°C without being damaged. Heat loads over longer periods will also cause PP to soften. GRP is a composite material of glassfibre and vinylester, the properties of which can vary within broad limits. The value stated above refers to polyester of the vinylester type. At the customer's request, we can supply GRP fans for operating temperatures of up to +120°C.

Chemical resistance

Generally speaking, plastics show excellent resistance to many aggressive agents which affect steel. To assess resistance in each individual case, manufacturers of the materials have conducted a series of tests which have been collated in extensive resistance tables. We would refer you, initially, to these tables. If in doubt, please contact us.

Sound levels data

Where these are not shown in the fan graphs, please contact AREX.

LCPA

with straight radial blades

Description
Applications

Low-pressure radial fan designed for the conveyance of minimal air or gas-flow which is corrosive, dust-polluted or explosive.

General specifications

- LCPA is fitted with circular inlet and outlet connectors
- manufactured in PVC, GRP, PP or PPS-EL
- fitted with true radial blades, T impeller
- operates within a range of flow of up to 2.2 m^3/s and range of pressure of up to approximately 2000 Pa
- suitable for indoor and outdoor installation
- manufactured in nine different sizes
- can be supplied with direct or belt drive, or fitted with a two-speed motor
- fan and motor are fitted to a joint stand made of galvanized steel with painted surface finish in accordance with VVS-AMA 83, environmental standard M4 A.

Standard sizes

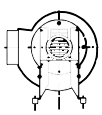
LCPA fans are manufactured in nine different sizes: 012, 016, 020, 025, 028, 031, 035, 040, 045. The designations refer to the inlet and outlet dimensions in centimetres.

Program text

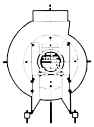
Radial fan, Arex model LCPA, with impeller fitted with true radial blades. The impeller and casing shall be manufactured in PVC, GRP, PP or PPS-EL (i.e. electro-conductive, self-extinguishing polypropylene).

Outlet position

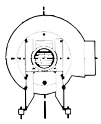
The illustrations below show the fans from the drive side.
LCPA is only available in RD, i.e. right-handed layout.



RD 270 = 1



RD 0 = 2



RD 90 = 3

Specifications

LCPA -XXX-XX-X-X-X

Sizes 012, 016, 020
025, 031, 035
040, 045

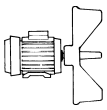
Drive Type
11= Belt drive
20= Direct drive 2800 rpm
40= 1400 rpm
60= 900 rpm
80= 700 rpm
24= 2800/1400 rpm
46= 1400/900 rpm
48= 1400/700 rpm

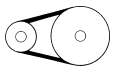
Outlet position
1, 2, 3
See illustration below

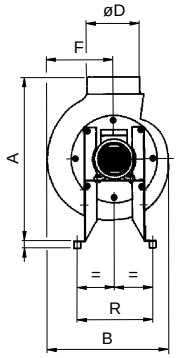
Materials, casing
0=PVC, 1=GRP, 2=PP
3=Various materials, 4=PPS-EL

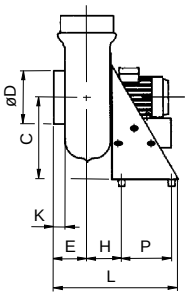
Materials, impeller
See materials, casing

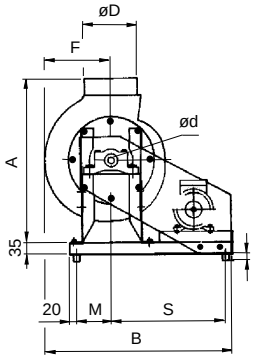
LCPA

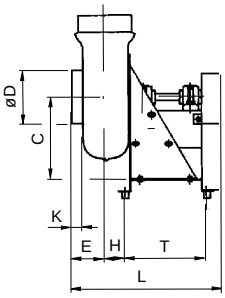








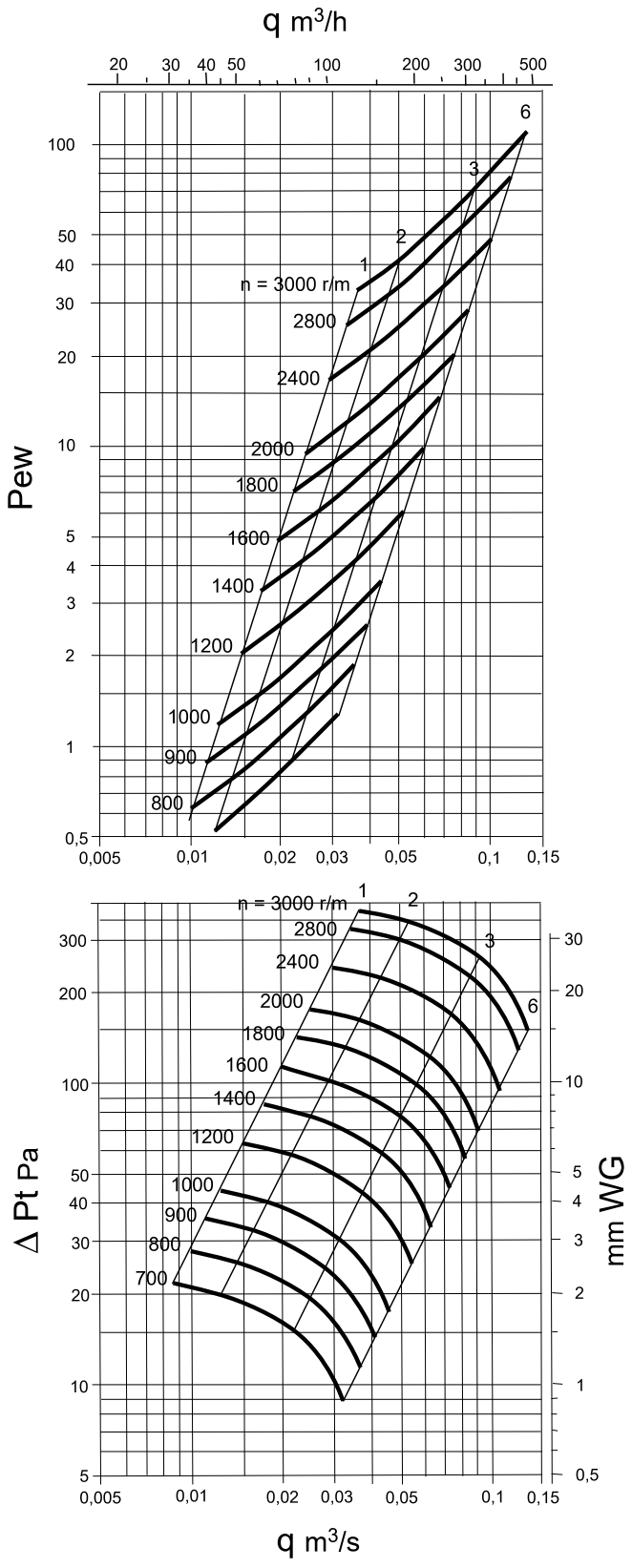




LCPA	A	B	ØD	E	F	H	K	L	P	R	S	T	kg
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	ca
012 MT63	460	295	125	90	165	85	35	345	150	214			6
012 MT71	460	295	125	90	165	85	35	345	150	214			6
012	460	525	125	90	165	35	35	425			342	245	20
016 MT63	495	375	160	100	205	100	35	370	150	214			6
016 MT71	495	375	160	100	205	100	35	370	150	214			6
016	495	565	160	100	205	55	35	445			342	245	20
020 MT63	605	465	200	120	260	120	35	425	150	214			7
020 MT71	605	465	200	120	260	120	35	425	150	214			7
020 MT80	605	465	200	120	260	120	35	425	150	214			7
020	605	620	200	120	260	75	35	485			342	245	20
025 MT63	620	510	250	120	285	130	35	440	150	214			8
025 MT71	620	510	250	120	285	130	35	440	150	214			8
025 MT80	620	510	250	120	285	130	35	440	150	214			8
025	620	645	250	120	285	85	35	500			342	245	20
028 MT71	760	565	280	155	315	150	50	560	230	280			15
028 MT80	760	565	280	155	315	150	50	560	230	280			15
028 MT90	760	565	280	155	315	150	50	560	230	280			15
028	760	805	280	155	315	90	50	635			475	330	35
031 MT71	775	615	315	170	350	170	50	595	230	280			15
031 MT80	775	615	315	170	350	170	50	595	230	280			15
031 MT100	775	615	315	170	350	170	50	595	230	280			15
031	775	850	315	170	350	110	50	675			475	330	35
035 MT71	830	680	355	180	390	185	50	620	230	280			15
035 MT80	830	680	355	180	390	185	50	620	230	280			15
035 MT90	830	680	355	180	390	185	50	620	230	280			15
035	830	885	355	180	390	125	50	705			475	330	35
040 MT80	1050	810	400	210	460	210	50	675	230	380			20
040 MT90	1050	810	400	210	460	210	50	675	230	380			20
040	1050	1015	400	210	460	155	50	755			525	330	45
045 MT90	1120	895	450	210	510	215	50	680	230	380			20
045 MT100	1120	895	450	210	510	215	50	680	230	380			20
045 MBT112	1120	895	450	210	510	215	50	680	230	380			20
045	1120	1060	450	210	510	155	50	760			525	330	45

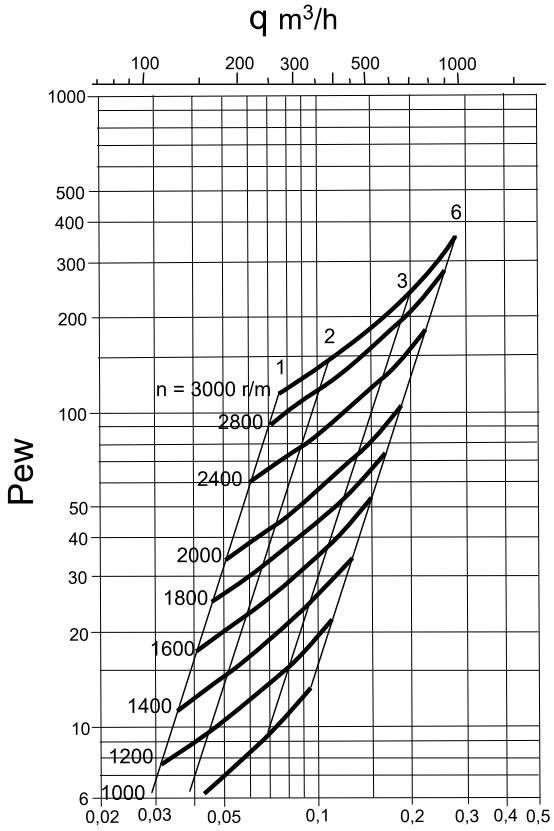
LCPA 012

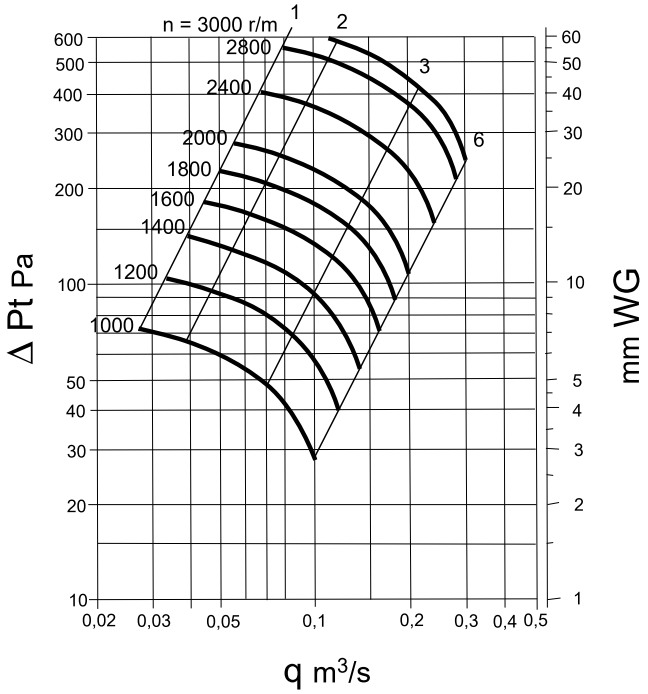
Mtrl 1 ⩽ 2900 r/m
Mtrl 0,2,3,4 ⩽ 2900 r/m



LCPA 016

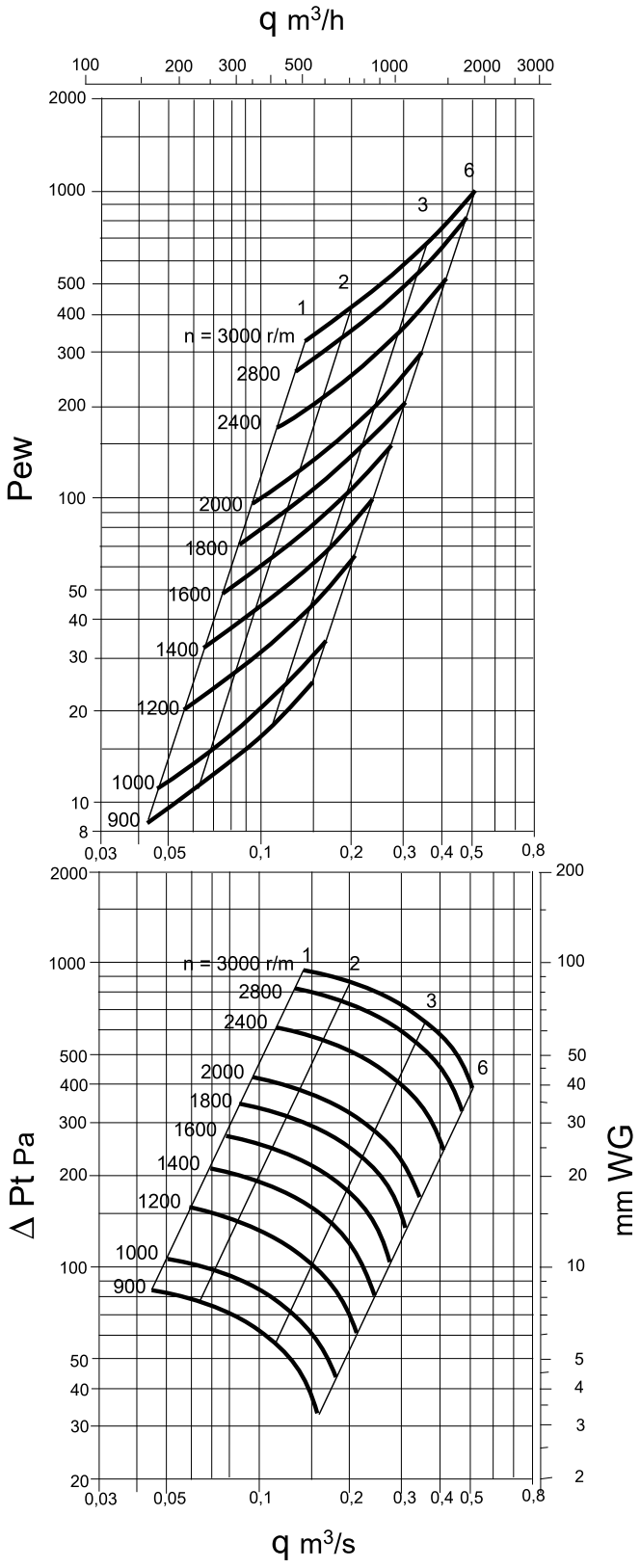
Mtrl 1 ⩽ 2900 r/m
Mtrl 0,2,3,4 ⩽ 2900 r/m





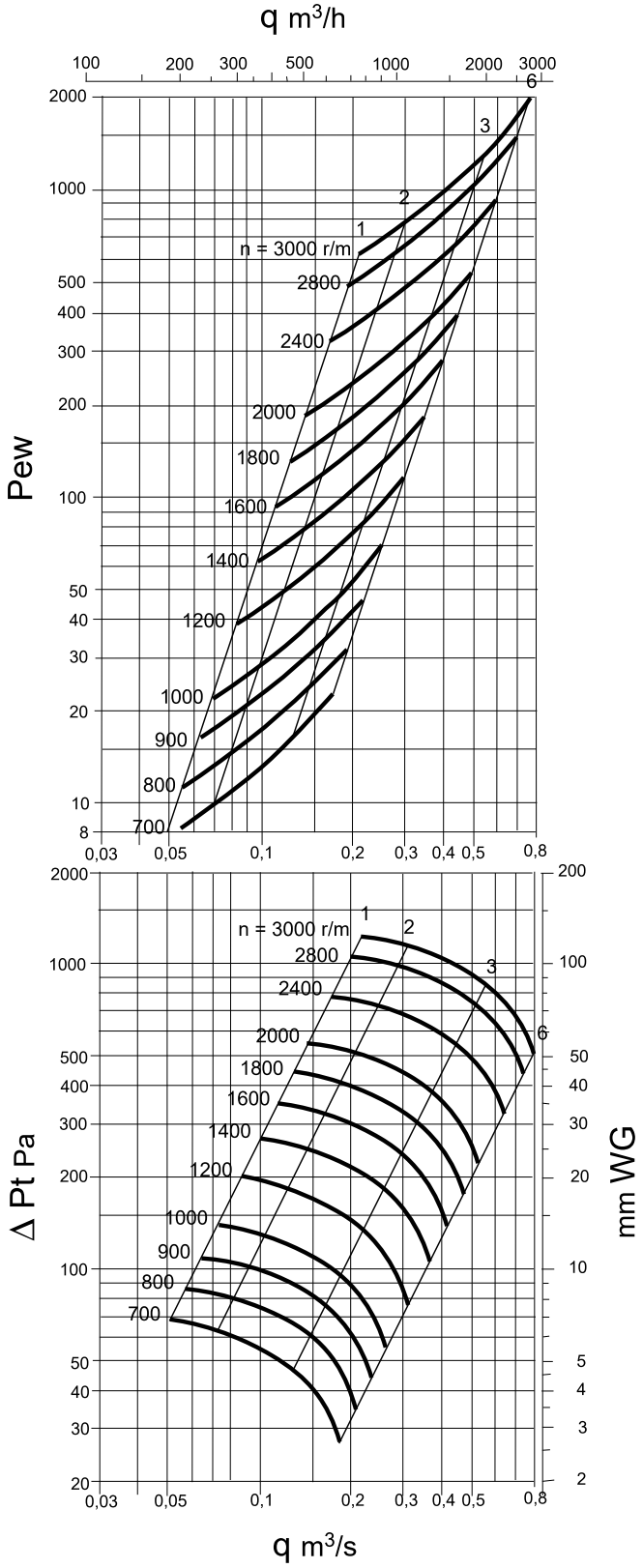
LCPA 020

Mtrl 1 ⩽2900 r/m
Mtrl 0,2,3,4 ⩽2900 r/m



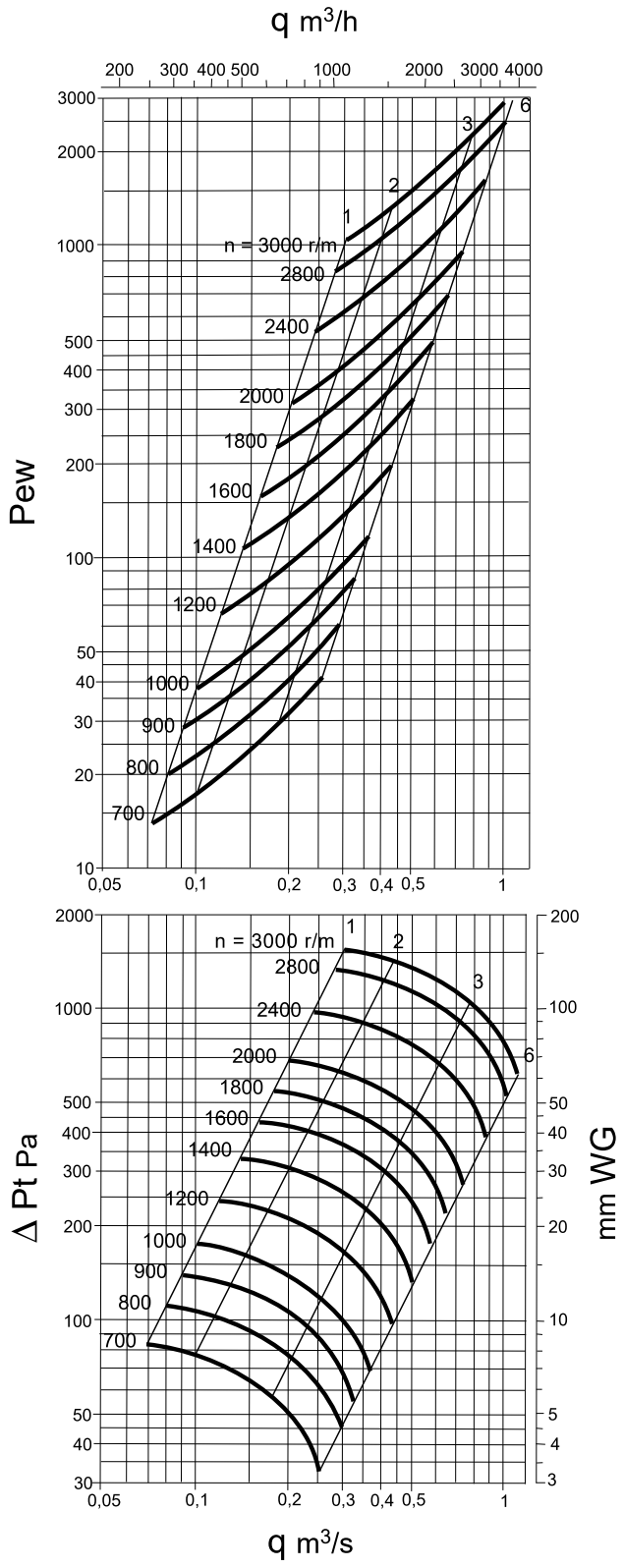
LCPA 025

Mtrl 1 ⩽ 2900 r/m
Mtrl 0,2,3,4 ⩽ 2900 r/m



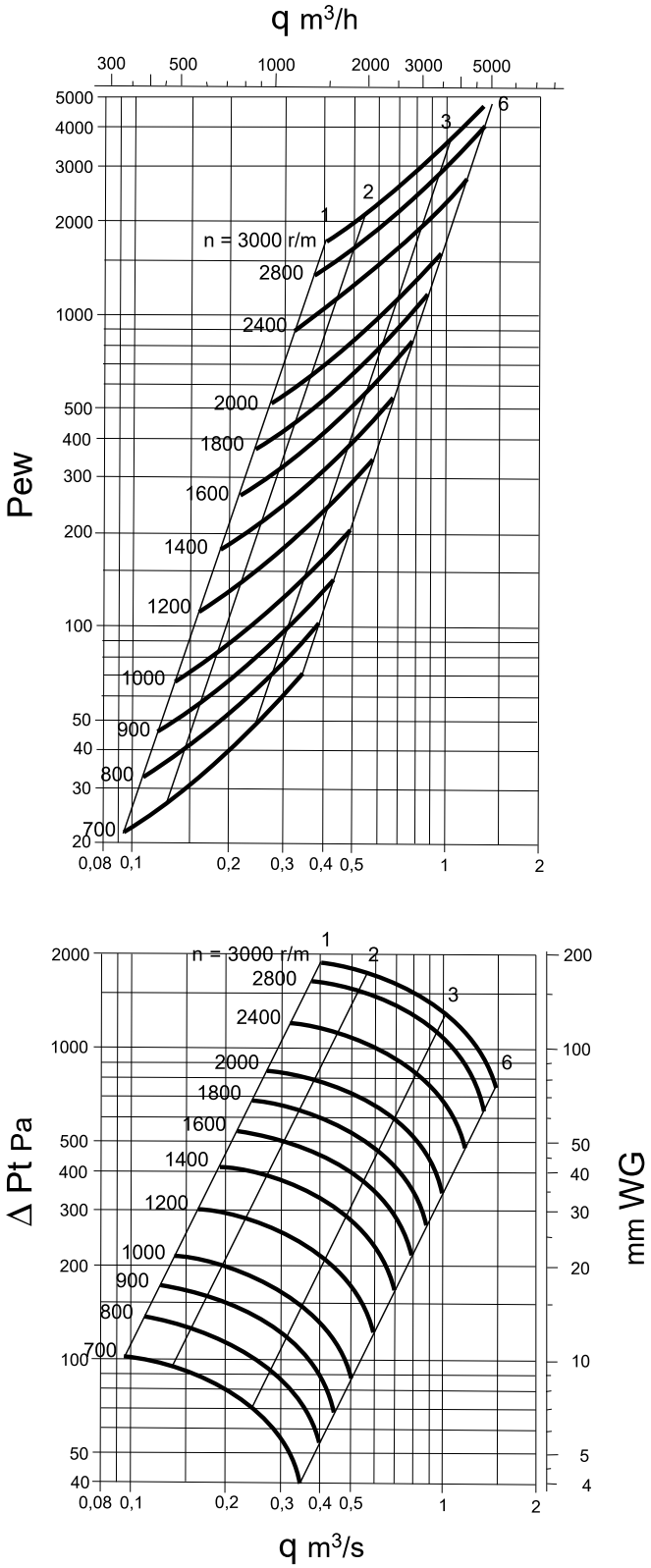
LCPA 028

Mtrl 1 ⩽ 2900 r/m
Mtrl 0,2,3,4 ⩽ 2400 r/m



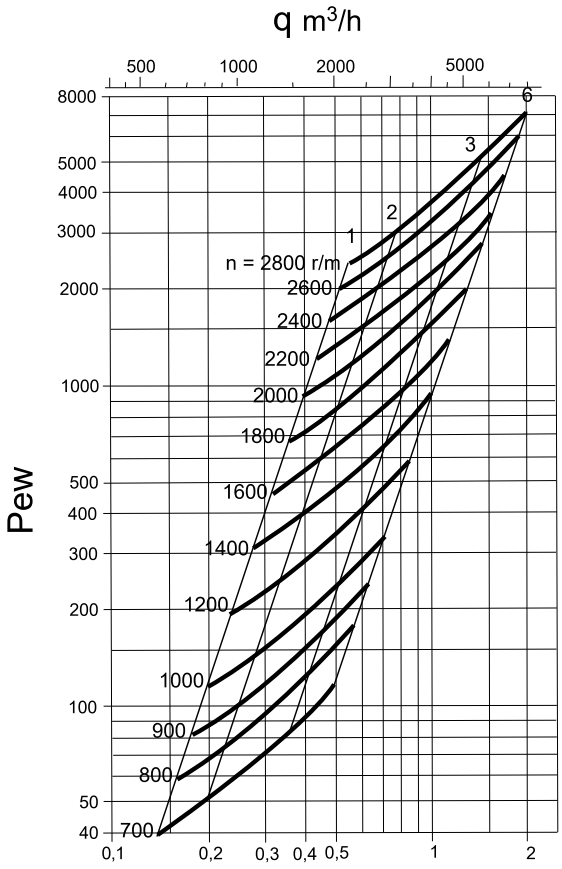
LCPA 031

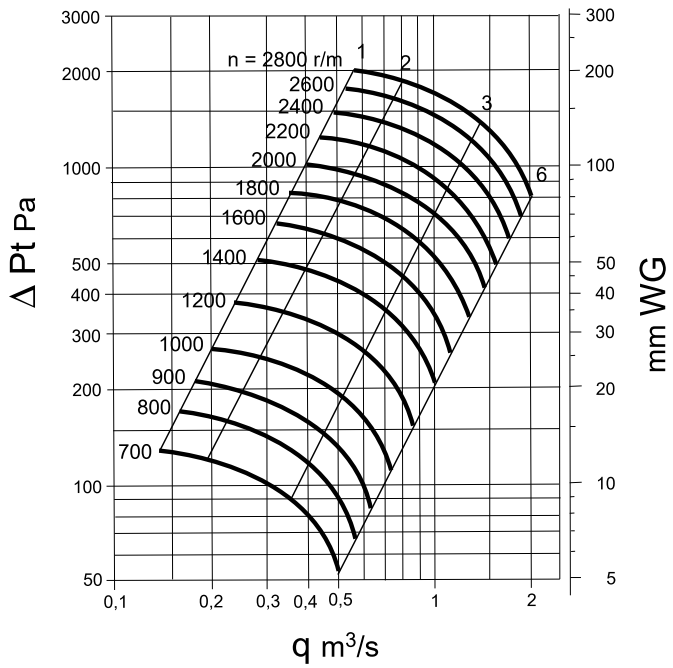
Mtrl 1 ⩽2800 r/m
Mtrl 0,2,3,4 ⩽2100 r/m



LCPA 035

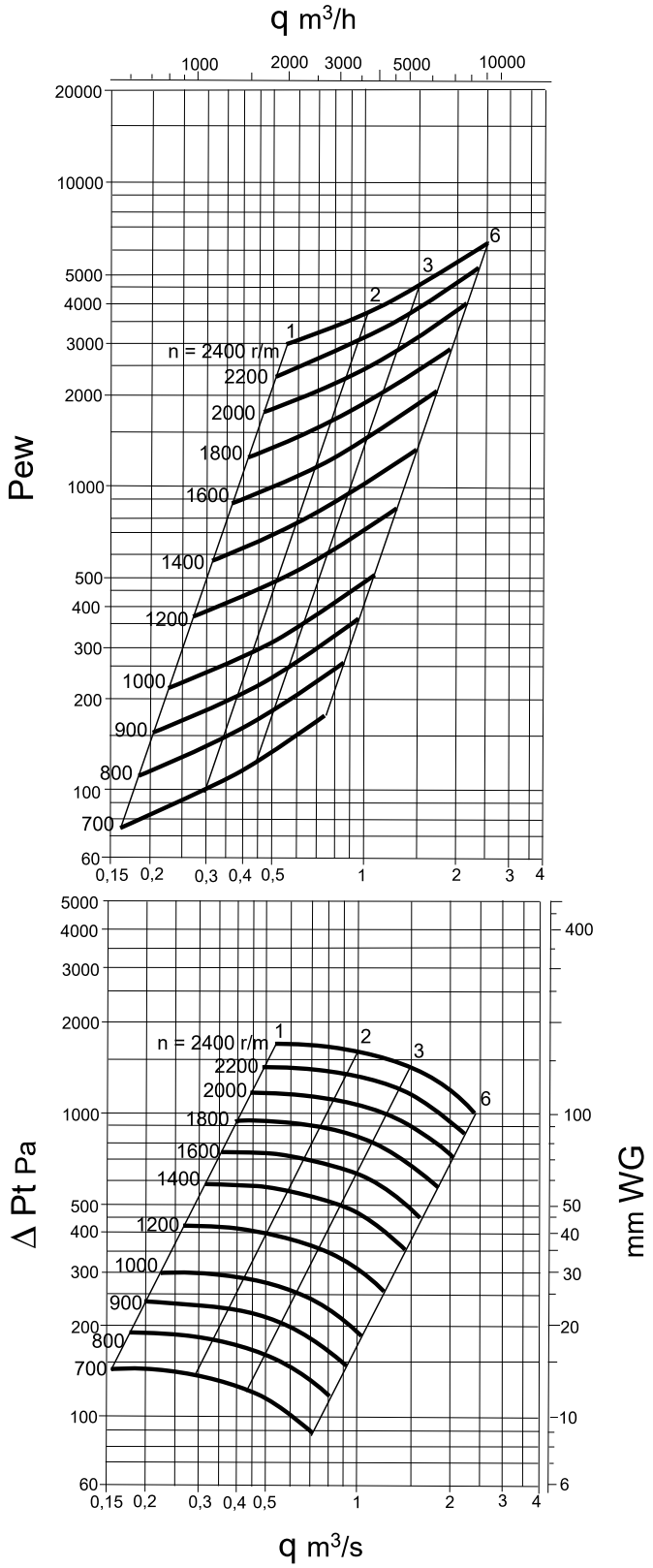
Mtrl 1 ⩽ 2800 r/m
Mtrl 0,2,3,4 ⩽ 1900 r/m





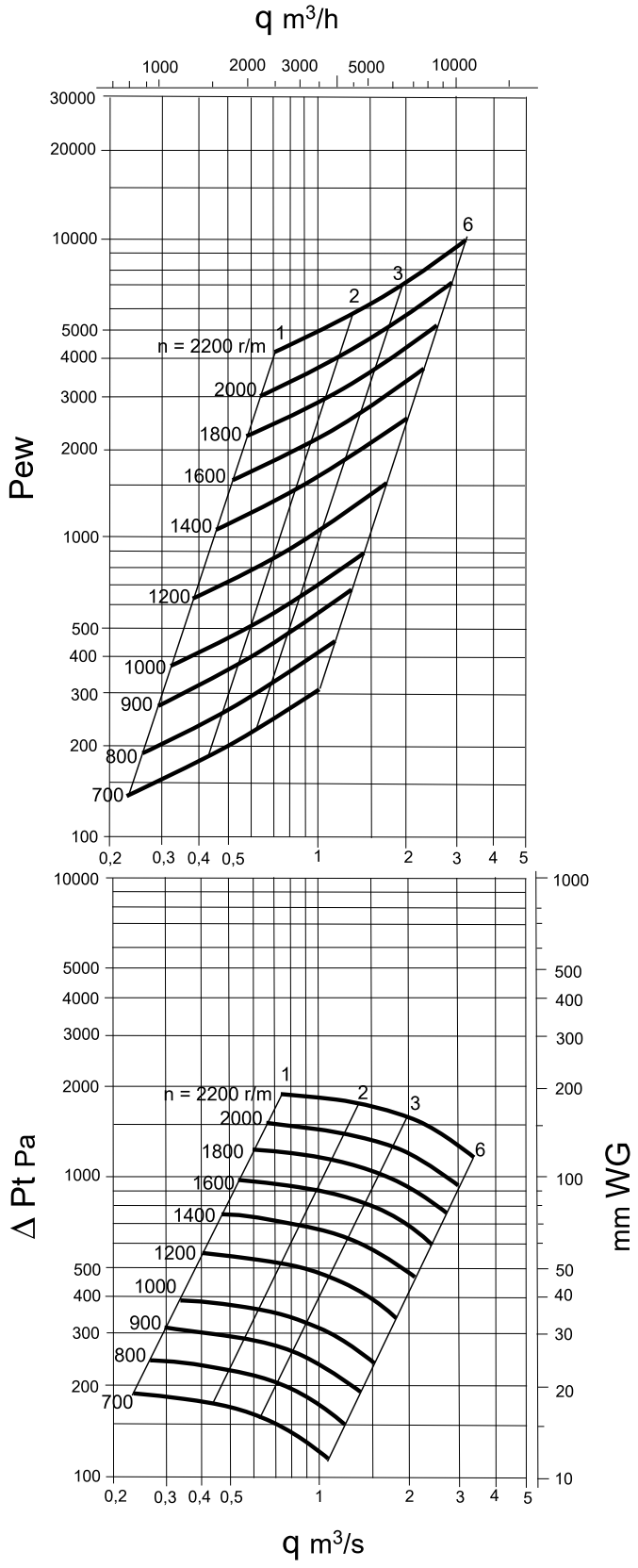
LCPA 040

Mtrl 1 ⩽ 2400 r/m
Mtrl 0,2,3,4 ⩽ 1750 r/m



LCPA 045

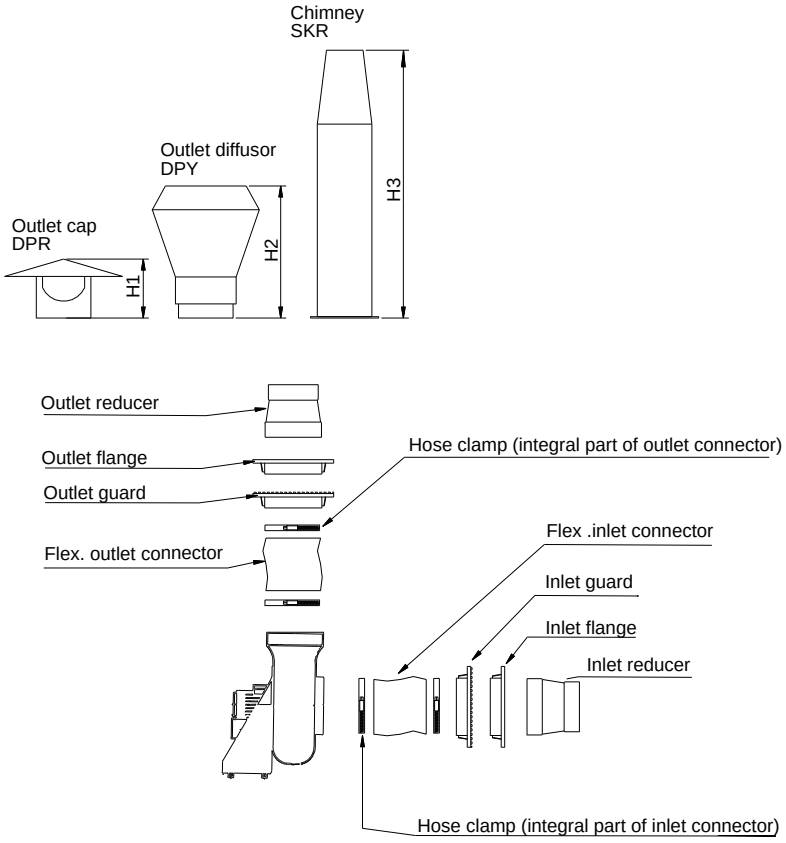
Mtrl 1 ⩽ 2200 r/m
Mtrl 0,2,3,4 ⩽ 1550 r/m



LCPA

Accessories

A wide range of accessories are available for LCPA fans, as shown in the exploded diagrams and specifications below.



Specifications

Drive	Motor, see motor table for LCPA
	PVC weather protection for motor
	Vibration mountings
	Complementary belt drive with belts, pulleys, bushing and belt guard
Other	Drainage stud at lowest point
	Splinter protector

LCPA	DPR	DPY	SKR
	H1	H2	H3
012	135	295	600
016	148	340	600
020	173	435	600
025	190	505	800
028	206	585	800
031	223	615	1000
035	243	695	1000
040	250	740	1200
045	280	920	1200

In an order or program text, a complete fan specification might read as follows:

1 radial fan LCPA 025-11-2-0-1. Motor 0.55 kW 1420 rpm, 400 V, 50 Hz, 3-phase. Belt drive rotation speed 2100 rpm. Inlet connector. Reducer. Outlet diffusor DPY. All inlet and outlet components made of PVC.

Note. Accessories manufactured in same material as fan casing.

INSTALLATION AND MAINTENANCE

Plastic centrifugal fans

List of content *Page*

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INSTALLATION AND MAINTENANCE

1. GENERAL

The radial fans are either direct or belt driven to suit the intended application. The impeller is statically and dynamically balanced.
WARNING! Do not start working on the fan unless the power switch or the lockable main power switch has been switched in the OFF position.

1.1 TRANSPORT AND LIFTING

All handling should be carried out carefully.
Do not fix lifting equipment to plastic components or fan shaft. Lifting equipment should be affixed to a frame or steel foundation.

1.2 DELIVERY CHECK

Check carefully for signs of transport damage and make sure that the impeller rotates easily. In the event of damage to the equipment **make an immediate report to the carriers concerned.** Failure to report damage will result in the invalidity of the transportation insurance.

1.3 STORAGE BEFORE INSTALLATION

The fan shall be storage in a dry and heated up area, to avoid any risk of getting condenses inside the electric motor that could course corrosion as a resulte.

2. INSTALLATION

2.1 FITTING AND SECURING THE FAN

The fan should be bolted (with or without the anti-vibration mountings) to a stable flat surface.

2.2 CONNECTION OF DUCTING

The fan casing should not support the weight of any ducting connected to the fan. Flexible duct sleeves should be used as ducting joints.

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INSTALLATION AND MAINTENANCE

2.3 GUARDS

Industrial safety legislation in most countries specifies that rotating machine components must be provided with reliable guards.
Such instructions must be observed when installing the fan. **If the inlet or outlet of the fan is open it must be provided with a protective grill, which is available as an accessory.**

2.4 ELECTRIC INSTALLATION

(To be carried out by an authorised electrician)
After connecting the fan motor, check that the impeller rotates in the direction shown by the arrow on the end wall of the casing.
The fan should be equipped with a safety-isolating switch (not included in the fan delivery). Before work is started on the fan, the safety-isolating switch must always be in position OFF.

3. TESTING

Before testing the fan check that:

1. The fan and motor have been correctly aligned and bolted down.
2. The belt or belts have been correctly tensioned, where applicable see point 5.3.
3. The bearings have been lubricated, where applicable see point 5.4
4. The anti-vibration mountings have been correctly fitted.
5. The flexible duct joints are tight and the fan casing does not support the weight of ducts.
6. Guards have been fitted and are well secured.
7. No tools or other foreign objects have been left in the casing or ducts.

Start the fan and check that:

1. The fan rotates in the correct direction.
2. There are no abnormal vibrations or noise.
3. The bearing temperatures are normal, where applicable see point 5.4.
4. The belt tension is correct after 24 hours operation, adjust if necessary.

When starting the fan after installing a new or renovated an existing bearing the bearing temperature may rise to a level which is 10-15°C higher then when the fan runs steadily. This condition is normal due to the fact that the bearing has been lubricated. The temperature will return to normal on steady fan operation after about 24 hours running time depending on the amount of grease that are filled in the bearing housing. (An excessive amount of grease is a common cause of high temperature). The above condition may also occur after periodically lubricating the bearing. The temperature generally increases as described above but will generally stabilise after the fan has run for 24 hours.

INSTALLATION AND MAINTENANCE

4. FAN OPERATION

The fan should not be exposed to impact or shocks. Make sure no particles adhere to impeller as this can result in imbalance and a breakdown. If particles can be drawn into the fan inlet must be fitted with a grille, which is available as an accessory. The transported air's temperature must not exceed the values stated below:

Fan material	Maximum temp. °C
PVC	+55 °C
PP	+60 °C
PEH	+70 °C
GRP	+90 °C

(GRP quality withstanding higher temperatures can be supplied on request)

5. MAINTENANCE

5.1 GENERAL INSPECTION

Rotating machine components such as: bearings, motors and belt assemble are subjects to wear. Increased temperatures, high degrees of contamination and high speed increase the level of wear. In some installations ducts, which results in erosion damage to the impeller and fan casing, can occur. In other installations the dust can form a layer of grime on the impeller and fan casing. Layers of grime reduce the fan's output and give rise to imbalance resulting in breakdown.

After 1000 hours running time or when necessary:

1. Check that the impeller rotates easily and that it does not come into contact with the casing.
2. Check that fan does not vibrate or is noisy.
3. Check that the bearing temperature is normal. Noise from bearing can be an indication that lubrication is required.
4. Check all belts and their tension.
5. If necessary clean the fan casing and impeller.

Twice a year or when necessary:

1. Lubricate the bearings
2. Check that the impeller is undamaged and sits securely.
3. Check that the motor's fixture is in good condition and that bolts are tightened.
4. Clean all dirt, dust and oil from motor.

INSTALLATION AND MAINTENANCE

5.2 MOTOR

Follow the manufacturer's instruction regarding lubrication and maintenance.

5.3 BELT DRIVE (if applicable)

Control the belt tension by pressing down the free belt length using the force F. The correct belt tension while applying pressure is equal to 1-1.5% of free belt length. The force F is defined in the table below.

Minimum pulley dia.	F (Newton) Minimum	F (Newton) Maximum
63 – 89	11	16
90 – 114	12	18
115 – 152	13	20

5.4 BEARINGS (if applicable)

Fans driven by V-belts are fitted with two bearings, which are lubricated using grease. The bearings should at least be lubricated 2 times/year, se appendix 1. Increased temperature conditions as well as other loads reduce the time interval between lubrication. Every increase of 15 °C over the 70 °C bearing temperature results in halving of the lubrication interval. The maximum permitted temperature of the grease must not be exceeded. The bearing housing is not usually fitted with a grease nipple. Grease is applied by removing the inner section of the bearing. All old grease should be removed before apply the new grease. The bearing housing should not be fitted completely with grease. Too much grease can cause extreme increase in temperature. After lubrication make sure the bearing runs easily without noise.

6. DISMANTLING THE IMPELLER

1. Remove the rear plate from the fan casing. (If the case is not fitted with a rear plate remove the inlet plate)
2. Dismantle the fan housing.
3. If belt driven, remove the bearing's clamping sleeve from the shaft.
4. Pull out the impeller and shaft.
5. Pull of the impeller from the shaft.

To assemble follow the above instructions in the reverse order.

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Inst.& maint. centifugal fans

DECLARATION OF CONFORMITY

Machine / component should not be taken in use before the machinery or construction which the component will be part of , has been declared in conformity with Council of Ministry directive 89/392/EEC

We **AB AREX**

Box 173

615 24 Valdemarsvik

Declare under our sole responsibility that the product radial fan, type

LCPA

to which this declaration relates is in conformity with the following standard

declared by the Council of Ministry 89/392/EEC.

Valdemarsvik 1996
AB AREX

Jan Mattsson , Managing Director