

PLASTIKINIAI VENTILIATORIAI

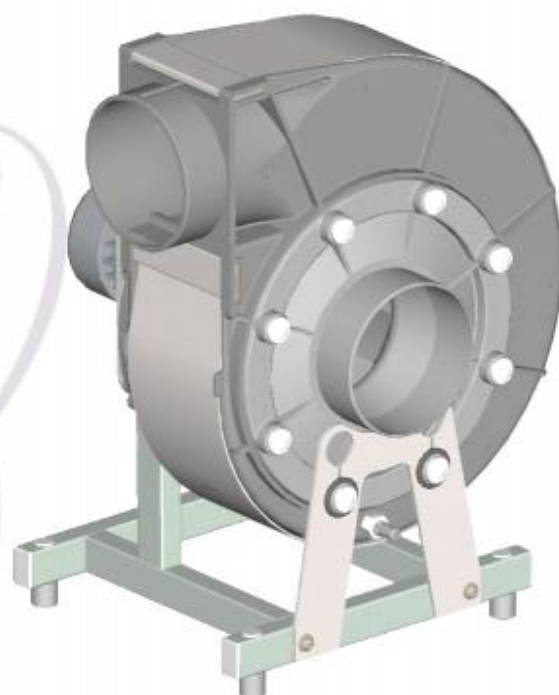
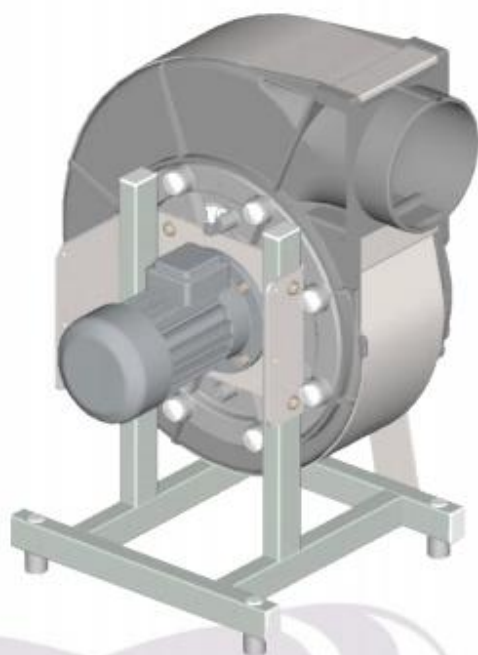




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1. Basic information of used materials

Material name	PVC	PP	PPsEL	PPs	PE	PEEL
Alternative name	PVC-U	PP-C-UV PP-H PP-DWU	PP-EL-S PP-S-EL	PP-s	PE-HD PE-HWU	PE-EL
Temperature range for use [°C]	-10 to +50	-20 to +70	0 to +70	0 to +70	-40 to +70	-40 to +70
Density [g/cm ³]	1,42	0,92	1,17	0,95	0,96	0,99
Length extensibility coefficient [mm/°C]	0,08	0,16	0,16	0,16	0,18	0,18
Electric conductivity	No	No	Yes	No	No	Yes
Surface resistance in accordance with DIN IEC 60093	10 ¹⁵ Ohm	10 ¹⁴ Ohm	<= 10 ⁶ Ohm	10 ¹⁴ Ohm	10 ¹⁴ Ohm	<= 10 ⁶ Ohm
Physiological safety	Yes	Yes	No	No	Yes	No
Approved for food contact in accordance with LFBG and the Commission Directive (EC) 1935/2004	Yes	Yes*	-	-	Yes	No
UV stabilization for the region of Central Europe	Yes	Yes	Yes	No	Yes	Yes
Resistance to acids	Yes	Yes	Yes	Yes	Yes	Yes
Resistance to lyes	Yes	Yes	Yes	Yes	Yes	Yes
Hot-air wire welding	Yes	Yes	Yes	Yes	Yes	Yes
Glue bonding	Yes	No	No	No	No	No
Light transmittance	No	No	No	No	No	No
Flammability	reduced	normal	reduced	reduced	normal	normal
Fire resistance in accordance with DIN 4102	B1 - poorly inflammable	B2 - normally inflammable	B2 - normally inflammable	B1 - poorly inflammable	B2 - normally inflammable	B2 - normally inflammable
Standard color	Light gray (RAL 7035) Dark gray (RAL 7011) White (RAL 9010)	Beige (RAL 7032)	Black (RAL 9011)	Medium gray (RAL 7000)	Black (RAL 9011)	Black (RAL 9011)

* must be consulted before ordering

- not tested for the particular requirements

2. Application examples of given materials

All the materials are preferentially designed for environments with the presence of chemicals or high humidity.

PVC	Machine industry, extraction of chemical plants, charging stations, chlorination plants, WWTP etc.
PP	Food-processing industry, surface finish of metals, chemical industry, industrial washing plants, water treatment plants, laboratories
PPs	Food-processing industry, surface finish of metals, chemical industry, water treatment plants. Plants with increased requirements for fire resistance
PPsEL	Chemical and pharmaceutical industry. Extraction from plants where produced static charge must be removed, where there is an explosion risk (zone 1 and 2 EX environment) as well as a requirement for fire retardant properties of ducts
PE	Food-processing industry, water treatment plants, surface finish of metals, extraction of chemical plants.
PEEL	Food-processing industry, surface finish of metals, extraction of chemical plants. Extraction from plants where produced static charge must be removed and where there is an explosion risk (zone 1 and 2 EX environment)

All the used materials are of full value and premium quality. This is the necessary precondition to guarantee long service life of products, strength of welded joints and chemical resistance to particular environments.

3. Chemical resistance

		PVC		PP			PE		
		20°C	40°C	20°C	40°C	60°C	20°C	40°C	60°C
1,4 - dioxane (technically pure), also 1,4 - dioxacyclohexane, diethylene dioxide, or para-dioxane	$C_4H_8O_2$	3	3	2	2	2	1	1	1
Acetaldehyde 40%, also ethanal	CH_3CHO	2	-	1	1	1	1	2	2
Acetone	CH_3COCH_3	3	3	1	1	1	1	1	1
Acetophenone	$C_6H_5COCH_3$	3	3	1	2	2	1	1	2
Alcoholic beverages	-	1	1	1	1	1	1	1	1
Ammonia (vapours, gas, aqueous solutions of all concentrations)	NH_3	1	2	1	1	1	1	1	1
Liquid, anhydrous ammonia	NH_3	2	2	1	-	-	1	-	-
Amyl alcohol, also pentanol, or pentyl-alcohol	$C_5H_{11}OH$	1	1	1	1	2	1	1	2
Acetic acid anhydride 100%, also acetic anhydride	$C_4H_6O_3$	3	-	1	2	2	1	2	2
Aniline 100%	$NH_2C_6H_5$	3	3	1	1	1	1	1	2
Anisole 100%	$C_6H_5OCH_3$	3	-	2	2	2	2	2	3
Bleaching lye 12% Cl, also sodium hypochlorite	$NaOCl$	1	1-2	1-2	1-2	-	1-2	1-2	-
Benzene 100%	C_6H_6	3	3	2	2	3	2	2	3
Gasoline (boiling point 100 - 140 oC)	-	1	1	2	2-3	3	2	2-3	3
Gasoline without aromatic compounds	-	1	1	2	1	2	2	2-3	3
Gasoline with benzene (mixtures of all ratios)	-	3	3	2	2	3	2	2	2
Benzyl alcohol	$C_6H_5CH_2OH$	3	-	1	1	2	1	1	1
Benzyl chloride	$C_6H_5CH_2Cl$	3	3	3	3	3	3	3	3
Borax (aqueous solution)	$Na_2B_2O_7 \times 10 H_2O$	1	1	1	1	1	1	1	1
Liquid bromine 100%	Br_2	3	3	3	3	3	3	3	3
Gaseous, dry, concentrated bromine	Br_2	2	-	2	-	-	2	3	-
Potassium bromide	KBr	1	1	1	1	1	1	1	1
Sodium bromide, aqueous solutions of all concentrations	$NaBr$	1	1	1	1	1	1	1	1
Butadiene	$CH_2CHCHCH_2$	1	1	2	2	3	2	2	3
Butane - gaseous	C_4H_{10}	1	1	1	1	1	1	1	1
Butyl acetate	$CH_3COOC_4H_9$	3	-	2	3	-	1	2	2
Butyl alcohol	$CH_3(CH_2)_3CH_2OH$	1	1	1	1	2	1	1	1
Butylene glycol	$HO(CH_2)_4OH$	2	3	1	1	1	1	1	1
Butyl phenol	$HOC_6H_4C(CH_3)_3$	3	3	1	-	2	1	1	1
Butyl phtalate	$H_9C_4COOC_6H_4COOC_4H_9$	3	-	1	2	2	1	1	2
Cyclohexane	C_6H_{12}	1	1	1	2	2	1	1	2
Cyclohexanol	$C_6H_{11}OH$	1	1	1	1	2	1	1	1
Cyclohexanone	$C_6H_{10}O$	3	3	2	2	2	1	1	2
Dextrin	$C_{18-32}H_{32-16}O_{16}$	1	1	1	1	1	1	1	1
Dibutyl phtalate	$H_9C_4COOC_6H_4COOC_4H_9$	3	-	1	2	2	1	1	2
Diethylamine 100%	$(C_2H_5)_2NH$	3	-	1	-	-	1	-	-
Diethylene glycol	$HOCH_2CH_2OCH_2CH_2OH$	-	-	1	1	1	1	1	1
Diethyl ether	$H_5C_2OC_2H_5$	3	3	2	2	2	2	2	3
Dichlorobenzene	$C_6H_4Cl_2$	3	-	2	-	-	2	-	3
Dichloroethane	$ClCH_2CH_2Cl$	3	3	2	3	3	2	2	2
Dichlorotoluene	$CH_3C_6H_4Cl_2$	3	-	3	-	-	-	-	-
Dimethylamine	CH_3NHCH_3	3	3	1	2	2	1	1	2
Diocetyl phtalate	$H_{17}C_8COOC_6H_4COOC_8H_{17}$	3	3	1	2	2	1	1	2
Dioxane	$C_4H_8O_2$	3	3	2	2	2	1	1	1
Yeast and molasses (sugar)	-	1	1	1	1	1	1	1	1
Ammonium nitrate, aqueous solutions of all concentrations	NH_4NO_3	1	1	1	1	1	1	1	1
Cupric nitrate, 30% solution	$Cu(NO_3)_2$	1	1	1	1	1	1	1	1
Sodium nitrate, aqueous solutions of all concentrations	$NaNO_3$	1	1	1	1	1	1	1	1
Silver nitrate, saturated aqueous solution	$AgNO_3$	1	1	1	1	1	1	1	1
Zinc nitrate	$Zn(NO_3)_2 \times 6 H_2O$	1	1	1	1	1	1	1	1
Ether	$H_5C_2OC_2H_5$	3	3	2	2	2	2	2	3
Ethane	CH_3CH_3	1	-	1	-	-	1	1	1
Ethanol	CH_3CH_2OH	1	1	1	1	1	1	1	1
Ethylene chloride	CH_2Cl_2	3	3	2	3	3	3	3	3
Ethyl acetate	$CH_3COOC_2H_5$	3	-	1	2	3	1	2	3
Ethyl alcohol 96%	CH_3CH_2OH	1	1	1	1	1	1	1	1

		PVC		PP			PE		
		20°C	40°C	20°C	40°C	60°C	20°C	40°C	60°C
Ethylbenzene	$\text{H}_5\text{C}_2\text{C}_6\text{H}_5$	3	-	2	3	-	2	3	-
Ethylenediamine	$\text{H}_2\text{NCH}_2\text{CH}_2\text{NH}_2$	2	3	1	1	1	1	1	1
Ethylene oxide (gaseous)	$\text{C}_2\text{H}_4\text{O}$	-	-	1	-	-	1	1	1
Ethylene glycol	$\text{HOCH}_2\text{CH}_2\text{OH}$	1	1	1	1	1	1	1	1
Ethylene chloride (1,1-dichloroethane)	CH_3CHCl_2	3	3	2	3	3	3	3	3
Phenol 90%	$\text{C}_6\text{H}_5\text{OH}$	2	2	1	1	2	1	1	2
Varnishes	-	1	1	1	1	1	1	1	1
Fluorine	F_2	2	3	3	-	-	3	3	-
Ammonium fluoride 50%, aqueous solution	NH_4F	1	1	1	1	1	1	1	1
Sodium fluoride	NaF	1	1	1	1	1	1	1	1
Formaldehyde 100%	HCHO	3	3	-	-	-	-	-	-
Formaldehyde, 40% aqueous solution	HCHO	1	1	1	1	1	1	1	1
Sodium phosphate	Na_3PO_4	1	1	1	1	1	1	1	1
Gaseous phosgene 100%	COCl_2	2	2	2	2	2	2	2	2
Glucose, aqueous saturated solution	$\text{C}_6\text{H}_{12}\text{O}_6$	1	1	1	1	1	1	1	1
Glycerol	$\text{C}_3\text{H}_8\text{O}_3$	1	1	1	1	1	1	1	1
Ammonium hydroxide	$\text{NH}_4\text{OH} (\text{NH}_3 + \text{H}_2\text{O})$	1	1	1	1	1	1	1	1
Potassium hydroxide, 2N aqueous solution	KOH	1	1	1	1	1	1	1	1
Potassium hydroxide, 50% solution	KOH	1	1	1	1	1	1	1	1
Sodium hydroxide, 2N aqueous solution	NaOH	1	1	1	1	1	1	1	1
Sodium hydroxide, 52% solution	NaOH	1	1	1	1	1	1	1	1
Liquid chlorine	Cl_2	3	3	3	3	3	3	3	3
Chlorine, gaseous, dry, wet	Cl_2	1	1-2	3	3	3	3	3	3
Chlorobenzene	ClC_6H_5	3	3	2	3	3	2	3	3
Sodium chlorate, aqueous solutions of all concentrations	KClO_3	1	1	2	2	2	2	2	2
Barium chloride	BaCl_2	1	1	1	1	1	1	1	1
Sodium chloride, saturated solution	NaCl	1	1	1	1	1	1	1	1
Sodium chloride, aqueous solutions of all concentrations	NaCl	1	1	1	1	1	1	1	1
Carbon tetrachloride	CCl_4	3	-	3	-	-	3	-	-
Calcium chloride, 50% solution	CaCl_2	1	1	1	1	1	1	1	1
Ferric chloride of all concentrations	FeCl_3	1	1	1	1	1	1	1	1
Sodium hypochlorite, 15% solution	NaOCl	1	2	3	3	3	3	3	3
Sodium hypochlorite with 13% of active chlorine	-	1	2	1	-	-	2	-	-
Calcium hypochlorite (aqueous solution, saturated, cold)	Ca(OCl)_2	1	1	1-2	2	2	1-2	2	2
Chloroform	CHCl_3	3	3	2	3	3	2	2	3
Chloromethane	CH_3Cl	3	-	2	3	-	2	3	-
Hydrochloride, gaseous, dry and wet	HCl	1	1	1	1	2	1	1	2
Sodium hypochlorite	Na_2CrO_4	1	1	1-2	-	-	1-2	-	-
Isopropyl alcohol	$\text{CH}_3\text{CHOHCH}_3$	1	-	1	1	1	1	1	1
Isooctane	$(\text{CH}_3)_7\text{CHCH}_2\text{C}(\text{CH}_3)_3$	1	1	1	2	2	1	2	2
Dry iodine, gaseous	I_2	3	-	3	-	-	3	-	-
Potassium iodide, aqueous solutions of all concentrations	KI	1	1	1	1	1	1	1	1
Sodium iodide	NaI	1	-	1	-	-	1	-	-
Iodine tincture	I or KI in ethanol and water	2	2	1	1	2	1	1	2
Ordinary alum	$\text{KCr(SO}_4)_2 \times 12 \text{H}_2\text{O}$	1	1	1	1	1	1	1	1
Liquid bromine	Br_2	3	3	3	3	3	3	3	3
Ketones	-	3	3	1	1-2	-	1	1-2	-
Cresol up to 90%	$\text{H}_3\text{CC}_6\text{H}_4\text{OH}$	2	2	1	1	1	1	1	1
Sodium silicate	Na_2SiO_3	1	1	1	1	1	1	1	1
Potassium cyanide, saturated solution	KCN	1	1	1	1	1	1	1	1
Benzoic acid, saturated solution	$\text{C}_6\text{H}_5\text{COOH}$	1	1	1	1	1	1	1	1
Boric acid, saturated solution	H_3BO_3	1	1	1	1	1	1	1	1
Hydrobromic acid	HBr	1	1	1	1	1	1	1	1
Citric acid of all concentrations	$\text{C}_3\text{H}_4\text{OH(COOH)}_3$	1	1	1	1	1	1	1	1
Nitric acid 25 %	HNO_3	1	1	1-2	3	-	1-2	1-2	3
Nitric acid, 2N aqueous solution	HNO_3	1	1	1-2	1-2	3	1-2	1-2	2
Nitric acid 98%	HNO_3	3	-	3	-	-	3	-	-

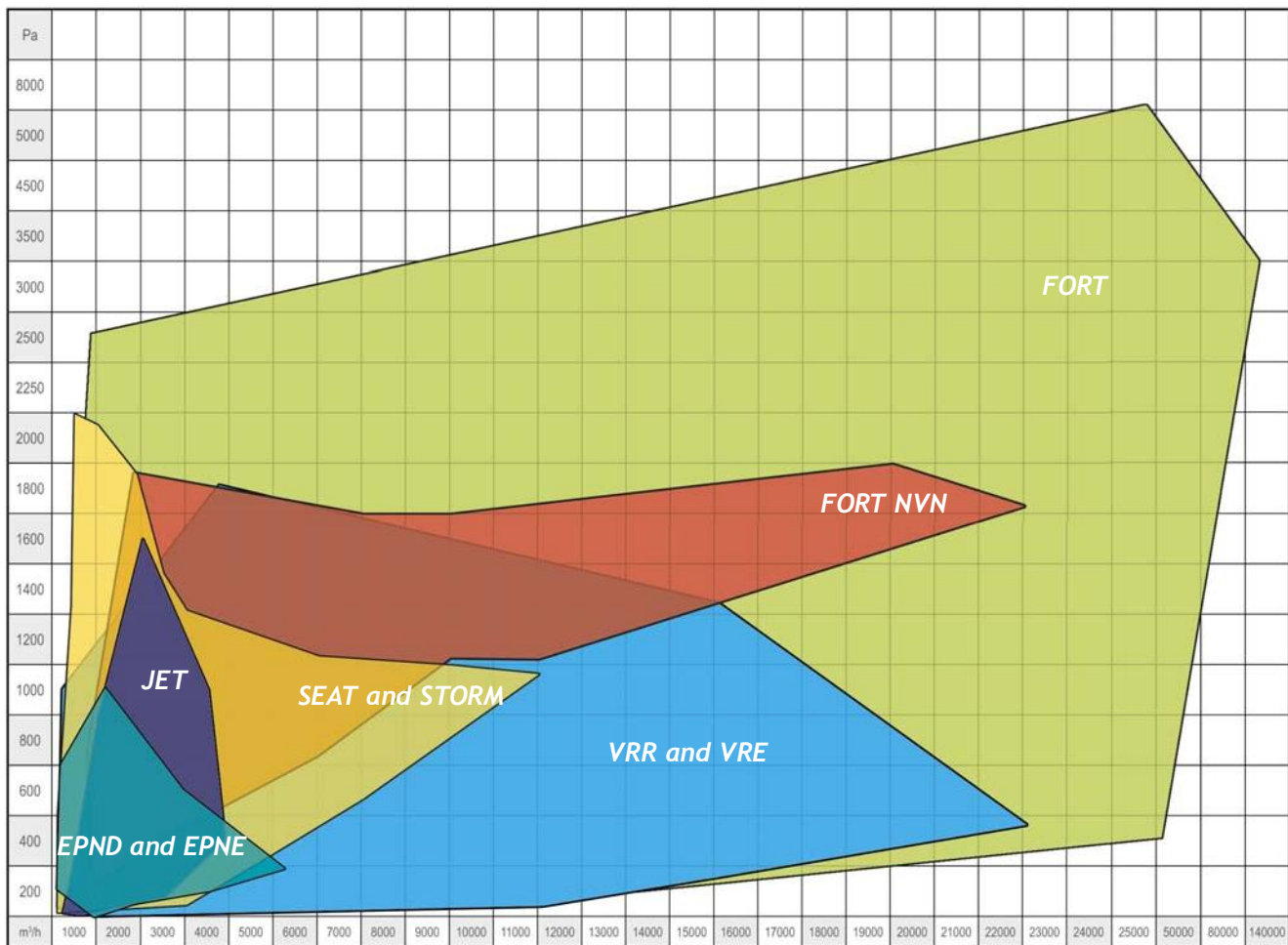
		PVC		PP			PE		
		20°C	40°C	20°C	40°C	60°C	20°C	40°C	60°C
Fuming nitric acid	HNO ₃	3	3	3	3	3	-	-	-
Fluorosilicic acid 32%	H ₂ SiF ₆	1	1	1	1	1	1	1	1
Hydrofluoric acid 40%	HF	2	2	2	2	-	1	1	2
Hydrofluoric acid 70%	HF	2	2	2	-	-	1	1	2
Phosphoric acid of all concentrations	H ₃ PO ₄	1	1	1	1	2	1	1	1
Phtalic acid	C ₆ H ₄ (COOH) ₂	1	2	1	1	-	1	1	-
Glycolic acid, 37% aqueous solution	HOCH ₂ COOH	1	-	1	1	2	1	1	1
Chloric acid, 10% aqueous solution	HClO ₃	1	2	1-2	2	2	1-2	1-2	-
Chloric acid, 20% aqueous solution	HClO ₃	1	2	1-2	3	3	1-2	3	3
Perchloric acid, 2N aqueous solution	HClO ₄	1	1	1	-	-	1-2	1-2	-
Hydrochloric acid 37%	HCl	1	1	1	1	2	1	1	2
Chlorosulfonic acid 37%	HOSO ₂ Cl	2	3	3	3	3	3	3	3
Chromic acid 80 %	H ₂ CrO ₄	1	1	2	2	2	2	3	3
Chromic acid 50 wt. p. and sulphuric acid 15 wt. p. and water 35 wt. p.	-	1	2	3	3	3	3	3	3
Malic acid, saturated solution	HOOCCH ₂ CHOHCOOH	1	1	1	1	1	1	1	1
Succinic acid	HOOC(CH ₂) ₂ COOH	1	1	1	1	1	1	1	1
Silicic acid	H ₂ SiO ₃	1	1	1	1	1	1	1	1
Maleic acid	HOOCCHCHCOOH	1	2	1	1	2	1	1	2
Butyric acid 20%	CH ₃ (CH ₂) ₂ COOH	1	2	1	-	-	1	1	2
Formic acid 50%	HCOOH	1	1	1	1	1	1	1	1
Acetic acid 10%	CH ₃ COOH	1	1	1	1	1	1	1	1
Acetic acid 50%	CH ₃ COOH	1	1	1	1	1	1	1	1
Acetic acid 60%	CH ₃ COOH	1	-	1	1	1	1	1	1
Glacial acetic acid	-	2	3	1	2	2	1	2	2
Oleic acid	H ₃ C(CH ₂) ₇ CHCH(CH ₂) ₇ (COO)	1	1	1	1	2	1	1	2
Sulphuric acid	H ₂ SO ₄	1	1-2	1	1	1	1	1	1
Muriatic acid	-	1	1	1	1	1	-	-	-
Sulphuric acid 98%	H ₂ SO ₄	2	3	2	3	-	2	3	3
Fuming sulphuric acid (oleum)	H ₂ SO ₄ 98,4 % + SO ₃	2	3	3	-	-	3	-	-
Sulphurous acid	H ₂ SO ₃	1	1	1	1	1	1	1	1
Hydrosulphuric acid	H ₂ S	1	1	1	1	1	1	1	1
Stearic acid	CH ₃ (CH ₂) ₁₆ COOH	1	1	1	2	2	1	2	2
Oxalic acid of all concentrations	HOOC-COOH	1	1	1	1	1	1	1	1
Trichloroacetic acid	CCl ₃ COOH	1	-	1	1	-	1	1	2
Tartaric acid, 10% aqueous solution	HOOC(CHOH) ₂ COOH	1	1	1	1	1	1	1	1
Gaseous sulphur dioxide, dry, wet	SO ₂	1	1	1	1	1	1	1	1
Gaseous carbon dioxide, dry, wet	CO ₂	1	1	1	1	1	1	1	1
Oxygen	O ₂	1	1	1	1	1	1	1	2
Spirits	-	1	1	1	1	1	-	-	-
Bleaching lye, 12% act. Cl	NaOCl	1	1-2	1-2	1-2	1-2	1-2	1-2	3
Potassium permanganate 15 %	KMnO ₄	1	2	1	1	1	1-2	2	3
Methane	CH ₄	1	-	1	-	-	1	-	-
Methyl acetate	CH ₃ COOCH ₃	3	-	1	1	1	1	1	2
Methyl alcohol	CH ₃ OH	1-2	2	1	1	1	1	1	1
Methylene chloride (dichloromethane)	CH ₂ Cl ₂	3	3	2	3	3	2	2	2
Methyl hexyl ketone	-	3	-	1	-	-	1	-	-
Milk	-	1	1	1	1	1	1	1	1
Urea (more than 30% aqueous solution)	H ₂ NCONH ₂	1	1	1	1	1	1	1	1
Diesel fuel	-	1	1	2	3	3	1	2	2
Naphtalene	C ₁₀ H ₈	3	-	1	2	3	1	2	2
Antifreeze fluid	-	1	1	1	1	1	1	1	1
Nitrobenzene	C ₆ H ₅ NO ₂	3	-	1	1	2	1	2	2
Nitrotoluene	CH ₃ C ₆ H ₄ NO ₂	3	-	1	2	2	1	2	2
Vinegar	-	1	-	1	-	-	1	-	-
Ammonium acetate	CH ₃ COONH ₄	1	-	1	1	1	1	1	1
Sodium acetate	CH ₃ COONa	1	1	1	1	1	1	1	1
Linseed oil	-	1	2	1	1	1	-	-	-

		PVC		PP			PE		
		20°C	40°C	20°C	40°C	60°C	20°C	40°C	60°C
Engine oil	-	-	-	1	2	2	1	2	2
Oleaginous oil	-	1	1	1	1	2	1	1	2
Transformer oil	-	1	-	1	2	3	1	2	2
Silicon oil	-[O-Si(Alkyl) ₂]-n	-	-	1	1	1	1	1	1
Turpentine oil	-	1	2	3	-	-	2	2	2
Mineral oils	-	1	1	1	1	2	1	1	2
Olive oil	-	1	1	1	1	1	1	1	1
Ozone	O ₃	1	1	3	-	-	3	-	-
p - Xylene	H ₃ CC ₆ H ₄ CH ₃	3	-	2	3	-	2	3	-
Perchloroethylene	Cl ₂ CCl ₂	3	-	2	3	-	2	3	-
Hydrogen peroxide 4 %	H ₂ O ₂	1	1-2	1-2	1-2	1-2	1-2	1-2	1-2
Hydrogen peroxide 30 %	H ₂ O ₂	1	1-2	1-2	2	2	1-2	2	2
Potassium persulphate, aqueous solution of all concentrations	K ₂ S ₂ O ₈	1	1	1	1	1	1	1	1
Kerosene	-	1	1	2	2	2	1	2	2
Petroleum ether	C ₅ H ₁₂ / C ₆ H ₁₄	1	1	1	2	2	1	2	2
Propane	CH ₃ CH ₂ CH ₃	1	-	1	1	-	1	1	-
Crude oil without aromatic compounds	-	1	-	2	2	2	1	2	2
Mercury	Hg	1	1	1	1	1	1	1	1
Sulphur	S	1	2	1	1	1	1	1	1
Ammonium sulphate, saturated solution	(NH ₄) ₂ SO ₄	1	1	1	1	1	1	1	1
Sodium sulphate, aqueous solution of all concentrations	Na ₂ SO ₄	1	1	1	1	1	1	1	1
Ferric sulphate 40 %	Fe ₂ (SO ₄) ₃	1	1	1	1	1	1	1	1
Sodium sulphide	Na ₂ S	1	1	1	1	1	1	1	1
Carbon disulphide	CS ₂	2	3	3	-	-	2	-	-
Hydrogen sulphide	H ₂ S	1	1	1	1	1	1	1	1
Sodium hydrogen sulphite, aqueous solution of all concentrations	Na ₂ SO ₃	1	1	1	1	1	1	1	1
Salt brine	NaCl + Cl ₂	1	1	2	-	-	2	-	-
Fruit juices	-	1	1	1	1	1	1	1	1
Sodium oxalate	Na ₂ C ₂ O ₄	1	-	1	-	-	1	-	-
Turpentine	-	1	2	2	2	3	2	2	2
Tetraethyl lead	C ₈ H ₂₀ Pb	1	2	1	-	-	1	-	-
Tetrahydrofuran	C ₄ H ₈ O	3	-	2	3	-	2	3	-
Tetrachloroethane	Cl ₂ CHCHCl ₂	-	-	2	3	-	3	-	-
Tetralin	C ₁₀ H ₁₂	3	-	3	-	-	2	2	3
Toluene	CH ₃ C ₆ H ₅	3	-	2	3	-	2	3	-
Trichloroethylene	C ₂ HCl ₃	3	-	2	3	-	2	3	-
Triethanolamine	(HOCH ₂ CH ₂) ₃ N	3	-	1	1	2	1	1	2
Trichloroethane	CH ₃ CCl ₃	3	-	2	3	-	2	3	-
Tricresyl phosphate	OP(OC ₆ H ₄ CH ₃) ₃	1	-	1	2	2	1	1	1
Sodium carbonate, aqueous solution of all concentrations	Na ₂ CO ₃	1	1	1	1	1	1	1	1
Vaseline	C ₇₇ H ₁₄₆ / C ₇₃ H ₁₄₈	-	-	1	2	2	2	2	2
Vinyl chloride	CH ₂ CHCl	3	-	3	-	-	3	-	-
Vinyl acetate	CH ₃ COOCHCH ₂	3	-	1	2	2	1	1	2
Water	H ₂ O	1	1	1	1	1	1	1	1
Hydrogen	H ₂	1	1	1	1	1	1	1	1

Chemical resistance of plastic materials to environmental influences is assessed by means of qualitative data:

- 1 - The material is resistant to the influence of the particular environment.
- 2 - The material exhibits limited resistance in the particular environment.
- 3 - The material is not suitable for contact with the particular environment.
- - The material has not been tested for the particular environment.

4. General overview of available fans



5. Fans of the FORT type

Radial fans of the FORT type feature a wide range of outputs accompanied by guaranteed chemical resistance of the used materials at temperatures in the range from -15°C to $+60^{\circ}\text{C}$. These properties make them suitable for a great number of applications in various branches of chemical and industrial production, health care, food processing, farming, pharmaceutical production and many others.

The fans are driven by flange-mounted or foot-mounted electric motors. Impellers with forward- or backward bent blades are mounted right on the electric motor shafts.

Unless otherwise required, the standard housings of the FORT fans are made of PE (polyethylene) and the impellers are made of PP (polypropylene).

Impellers of fans of the FORT - PR type are made of stainless steel (identification example FORT - PR 714). Impellers of the FORT - PR type are made of polypropylene (e.g. FORT - PR 506 pp).

In the standard versions the fans are equipped with single-speed three-phase electric motors for 400 V in the B5 or B3 design, ingress-protection class IP 55, insulation of class F, with 2, 4, 6 or 8 poles.

The fans are also produced in an explosion-proof (Ex) version for zone 2 (SNV 1) and zone 1 (SNV 2). They are designed for extraction of gases and vapors of temperature classes T1 to T3, T4 (according to the manufacturer's documentation) for permanent operation S1.

The fans are not protected from overloading in the standard version. Therefore, on installation and commissioning a suitable thermal protection device should be incorporated in the electric system. Optionally, the fans can be equipped with electric motors with thermo switches or thermistors.

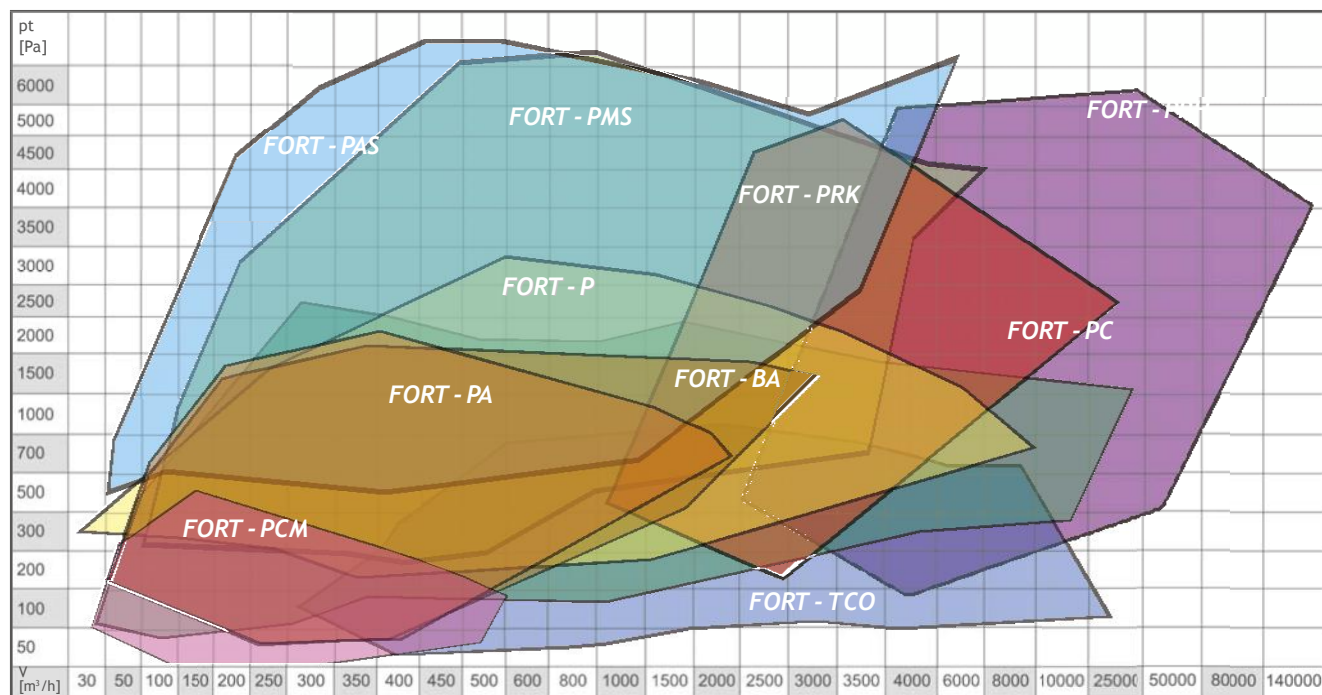
Air ducts and fans are interconnected with flexible connections that prevent transmission of vibrations to the duct. The flexible connections are fixed with stainless steel clamps. To prevent transmission of vibrations to the base (dedicated structure, floor, roof) the fans must be installed on anti-vibration kits. If the suction or discharge orifice of the fan is not connected to a duct, the open end should be fitted with a suitable grille to prevent a foreign object from entering the fan.

Materials used for the production comprise PP, PE, PEEL, PPs, PVC, PVDF, stainless steel or ebonite-coated steel.

The performance values of the fans were measured at 15°C and the media density of 1.225 kg/m^3 .



Application range of fans of the FORT type



You will find the commonly used fans of the FORT type on the following pages. If you do not find the desired fan type, contact us with your specific demand.

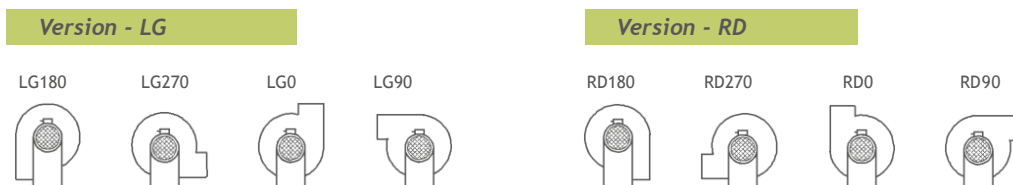
Fan identification:

FORT fan - P				22	2	Ex	230 V	antistat. housing	PTC	LG	90
<u>type designation of the fan</u>				<u>identification of optional accessories of the fan</u>							
(P, PCM, PCK, PCH etc...)				230 V - motor voltage (400 V as standard)							
<u>fan size</u>				antistatic housing (material PEEL, PPsEL)							
<u>number of motor poles</u>				stainless-steel stool - stool design							
2 - single-speed motor (speed 2850 rpm)				OPS Housing protection from splinters							
4 - single-speed motor (speed 1450 rpm)				ICH - anti-vibration kits							
2/4 - double-speed motor				PTC - motor protection (using a PTC thermistor)							
<u>environment</u>				TH - motor protection (thermo switch)							
BNV as standard				LG, RD - housing design (LG - left, RD - right)							
EX - version for zone 1 and 2				90 - housing position (viewed from the motor side)							

Spiral housing positions as viewed from the motor

The fan housing is intended for installation in the left or right version. The design of the impeller makes it suitable for the right or left arrangement. The basic position types are specified below. If the fan outlet is to be directed downwards, the entire fan must be mounted on a special metallic bracket or concrete base. This installation type must be consulted with the supplier in advance.

Spiral housing positions as viewed from the motor side



Warning:

During installation you must fit a condensate drain adapter or at least drill a hole with a diameter of approx. 5 mm at the lowest point of the fan housing. If this measure is omitted, condensate may accumulate, causing damage to the fan (in winter there is a danger of condensate freezing and subsequent damage of the impeller and fan housing).

For installation of a complete system consisting of an air duct and fans you must use flexible connections and anti-vibration kits. For ideal operation and a long service life we further recommend the following optional accessories:

Flexible connections - to prevent transmission of vibrations into the duct.

- **Stainless-steel clamps** - to fix the flexible connections.
- **Anti-vibration kits** - to prevent transmission of vibrations into the supporting structure.
- **Outlet adapter with a grille** - to prevent a foreign object or rainwater from getting into the fan.
- **Cover of the electric motor** - to protect the electric motor of the fan from climatic influences.
- **Maintenance switch** - generally fitted near the fan. It enables quick and safe disconnection of the fan.
- **Frequency inverter**
- **Condensate drain adapter**

Ordering:

In your order you must exactly specify the fan type, position of the spiral housing and the requested options.

Example no. 1	
FORT fan - P 222 Ex, antistat. housing PTC, LG90	1 piece
Flexible connection ø200	2 pieces
Stainless steel clamps ø200	4 pieces
Anti-vibration kits	1 set

Selection and wiring diagram of electric motors

The motor voltage is necessary information for proper motor selection. In the Czech Republic three-phase voltage 3AC 400V with the frequency of 50 Hz and single phase voltage 1AC 230V 50 Hz (formerly 3AC 380V 50Hz and 1AC 220V 50Hz) are used in the public grid.

When choosing between a single-phase or three-phase motor we definitely recommend a three-phase motor. The reasons are quite simple: lower price, lower noise level, lower heating of the motor and higher startup torque.

In the Czech Republic, the following voltages are generally used for three-phase motors:

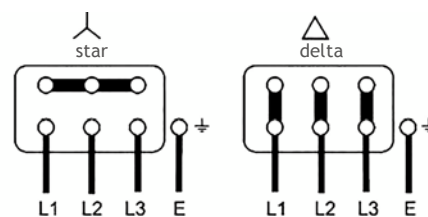
1. For motor outputs up to 3kW (inclusive): 3AC 400VY/230VD 50Hz

This winding is designed for direct starting of the motor and enables supplying of the motor by an inverter with a single-phase input voltage (do not confuse with a single-phase motor).

2. For motor outputs over 3kW: 3AC 400VD/690VY 50Hz

This winding enables both direct motor starting and double starting using a star/delta switch.

Wiring diagram for 400 V

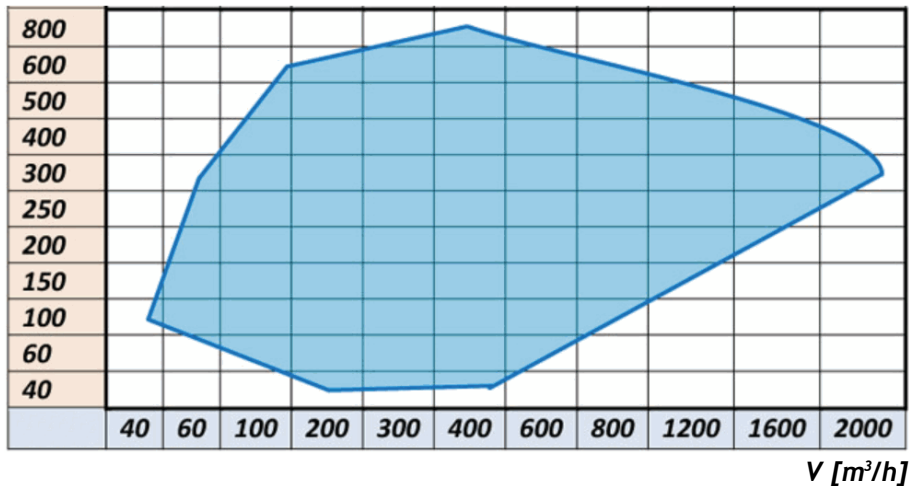


Wiring diagram for 230 V



5.1 Fans of the FORT - PA type

p_t
[Pa]



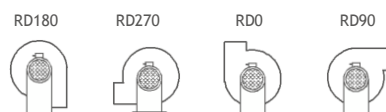
V [m³/h]

Spiral housing positions as viewed from the motor side

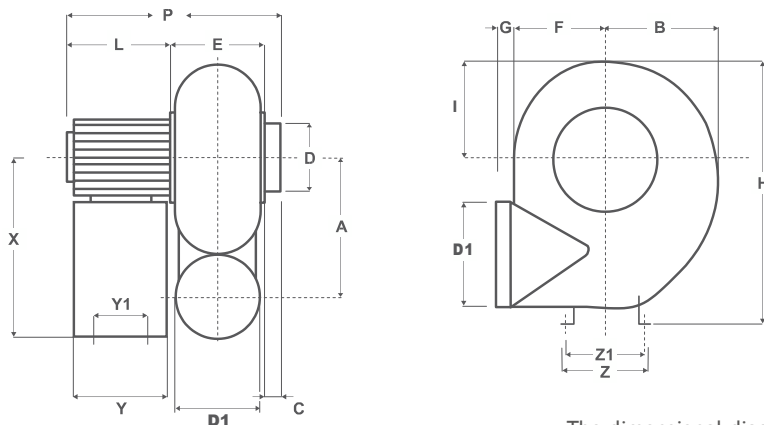
Version - LG



Version - RD



Dimensional diagram of the FORT - PA type

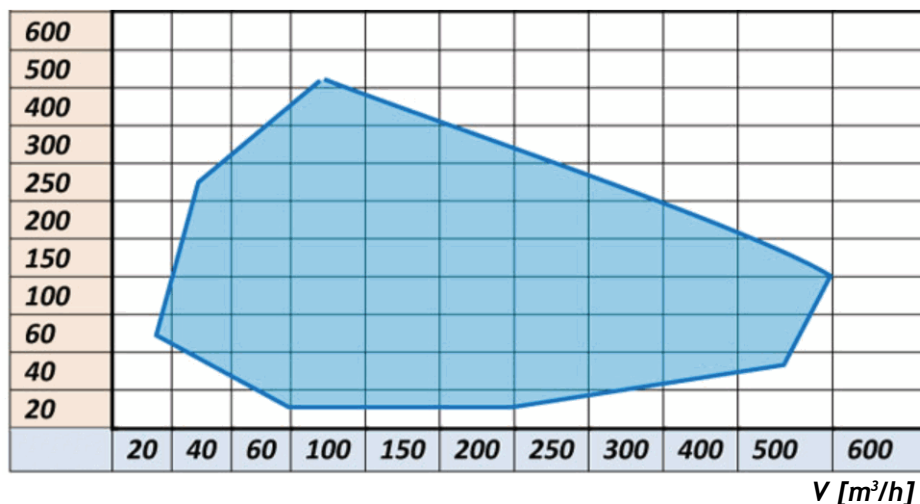


The dimensional diagram is illustrative. The dimensions are specified in [mm].
If you require exact dimensions, please contact us.

TYPE	Motor P [kW]	A	B	C	D	E	F	G	H	I	L	P	X	Y1	Y	Z1	Z
FORT - PA 132	0,18	95	125	20	125	100	110	20	247	77	190	310	170	50	85	210	240
FORT - PA 134	0,12																
FORT - PA 162	0,37	110	140	30	140	120	150	30	295	90	190	340	205	80	120	240	275
FORT - PA 164	0,12										215	365					
FORT - PA 202	1,10	140	180	30	200/160	150	230	30	365	115	195	375	250	100	140	195	225
FORT - PA 204	0,25										250	430					

5.2 Fans of the FORT - PCM type

p_t
[Pa]



Spiral housing positions as viewed from the motor side

Version - LG

LG180



LG270



LG0



LG90



Version - RD

RD180



RD270



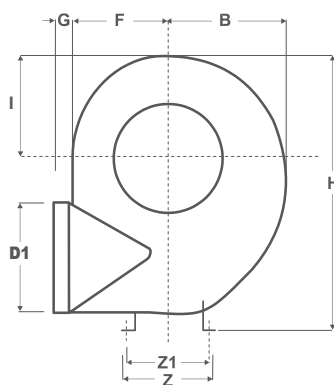
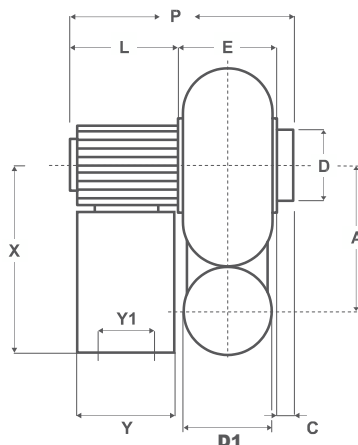
RD0



RD90



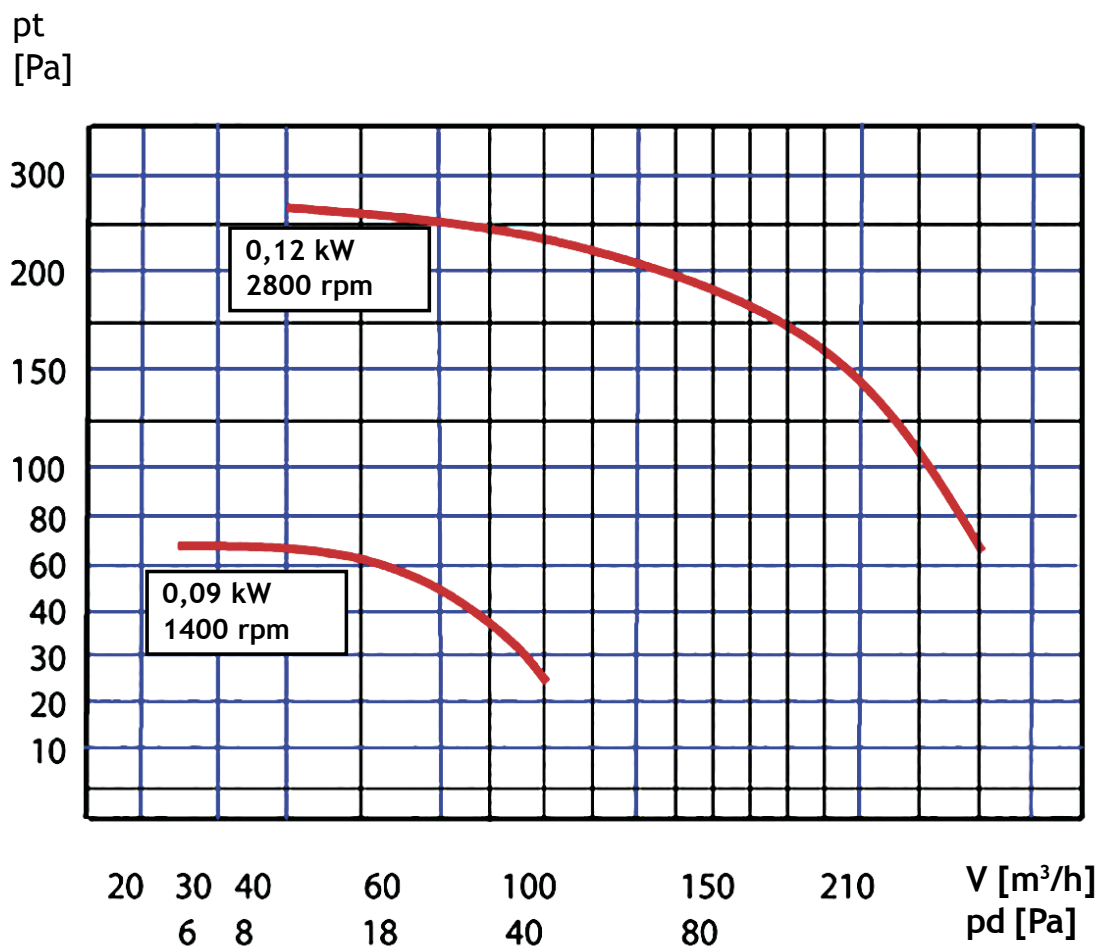
Dimensional diagram of the FORT - PCM type



The dimensional diagram is illustrative. The dimensions are specified in [mm].
If you require exact dimensions, please contact us.

TYPE	Motor P [kW]	A	B	C	D	D1	E	F	G	H	I	L	P	X	Y	Y1	Z	Z1
FORT - PCM 125/75	0,09 0,12	75	98	35	75	75	132	73	85	218	88	170	337	130	130	100	200	170
FORT - PCM 150/90	0,09 0,12	96	122	35	90	110	172	90	85	280	110	170	377	170	130	100	200	170
FORT - PCM 150/110	0,09 0,12	85	122	35	110	110	172	90	85	280	110	183	390	170	130	100	200	170

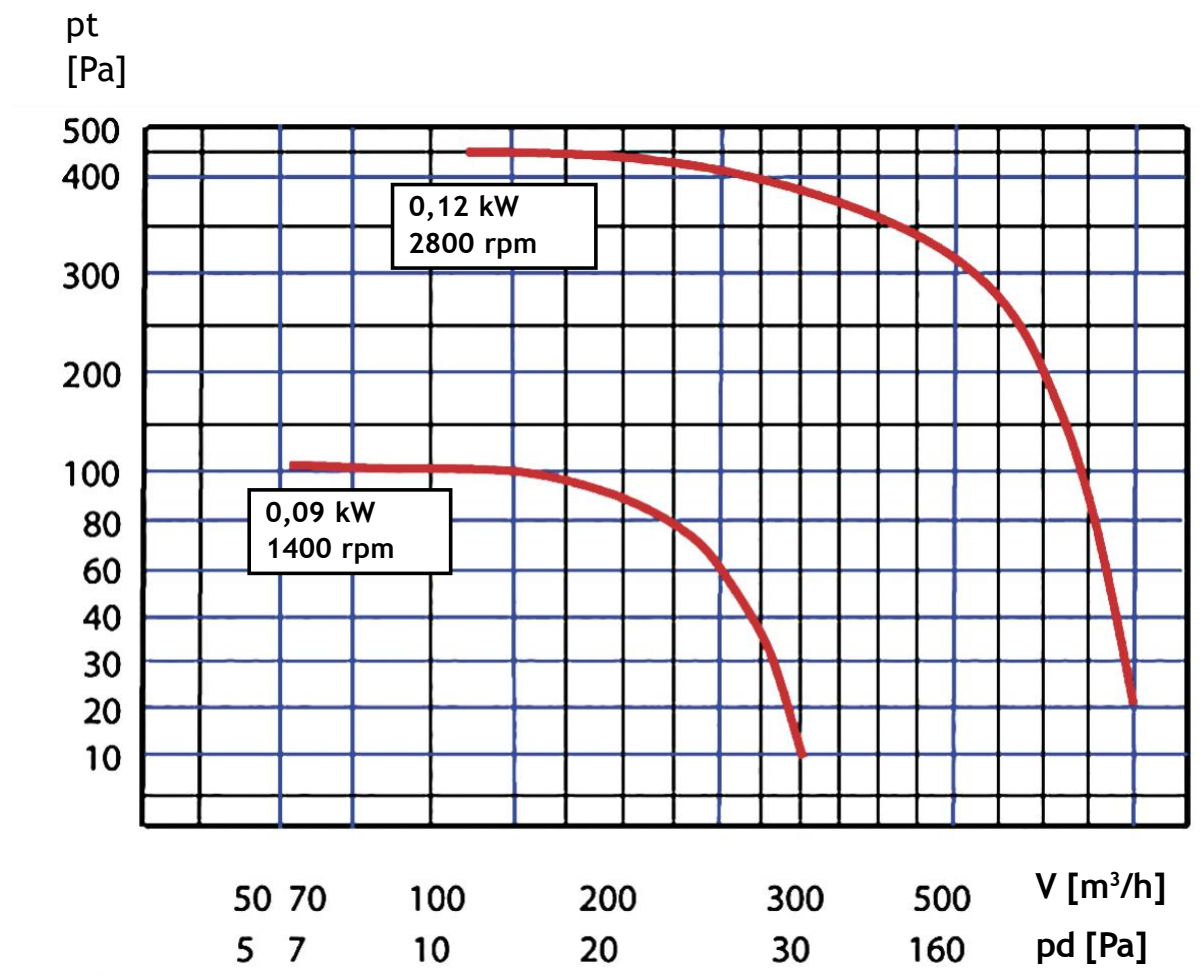
FORT - PCM 125/75



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
FORT - PCM 125/75	BNV Zone 2 / Zone 1	0,09	1400	4	0,3	0,3	5,5	75	75
	BNV Zone 2 / Zone 1	0,12	2800	2	0,38	0,38	5,5		

** the values may differ depending on the electric motor type

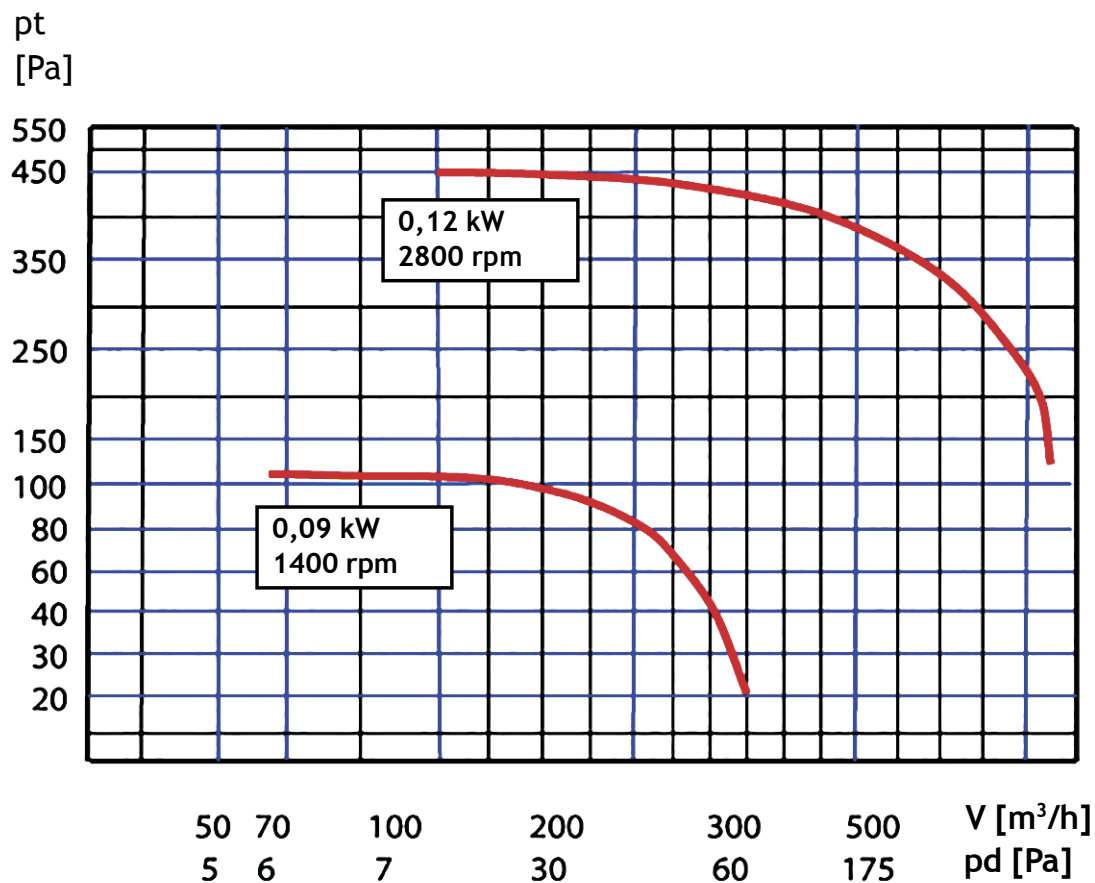
FORT - PCM 150/90



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
FORT - PCM 150/90	BNV Zone 2 / Zone 1	0,09	1400	4	0,3	0,3	6,8	90	110
	BNV Zone 2 / Zone 1	0,12	2800	2	0,38	0,38	6,8		

** the values may differ depending on the electric motor type

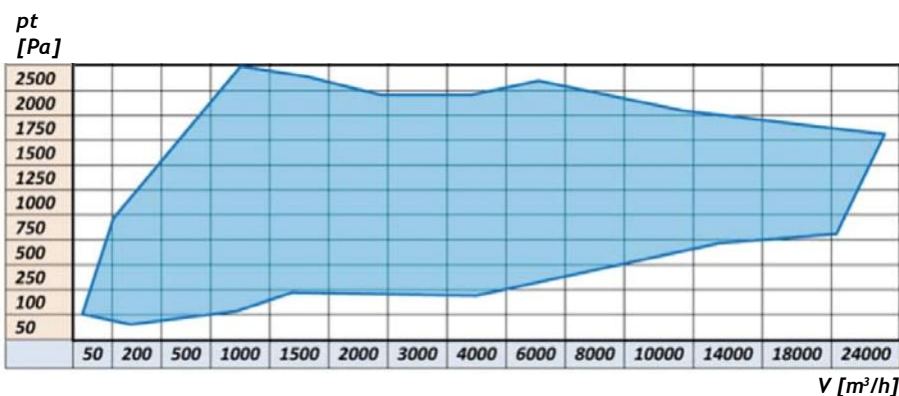
FORT - PCM 150/110



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
FORT - PCM 150/110	BNV Zone 2 / Zone 1	0,09	1400	4	0,3	0,3	7,7	110	110
	BNV Zone 2 / Zone 1	0,12	2800	2	0,38	0,38	7,7		

** the values may differ depending on the electric motor type

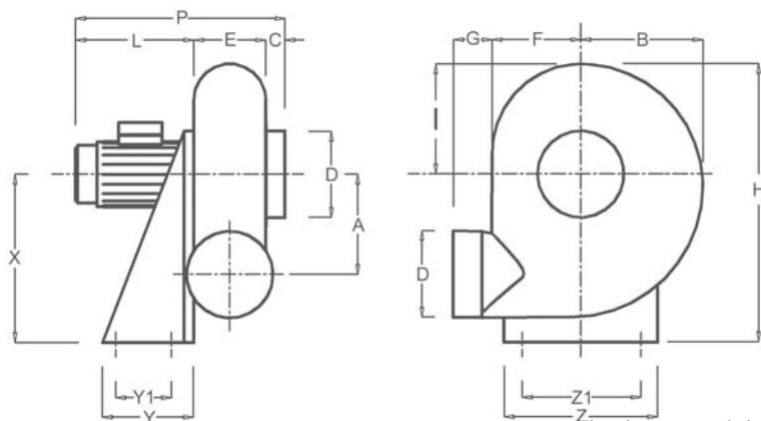
5.3 Fans of the FORT - PCK type



Spiral housing positions as viewed from the motor side



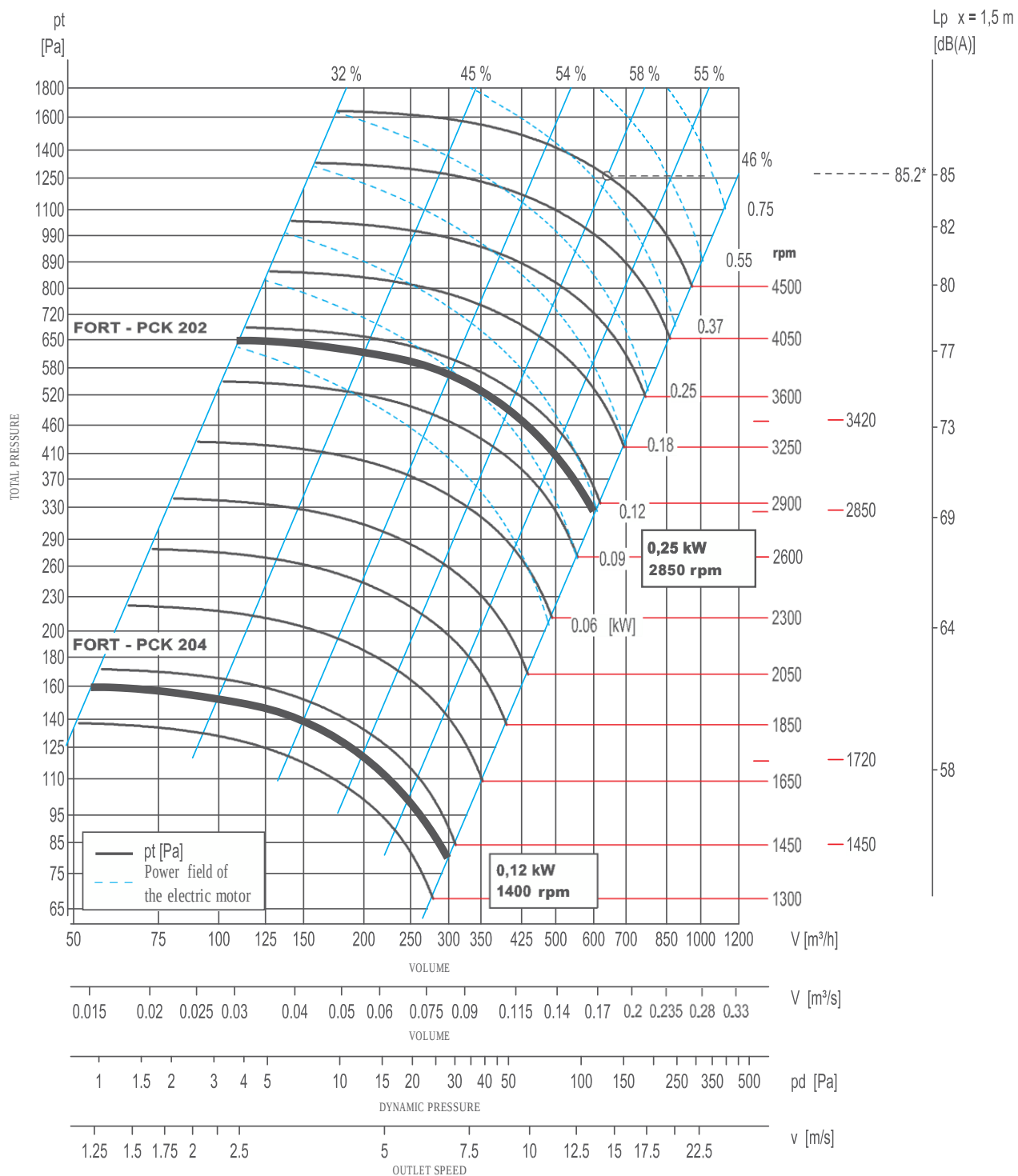
Dimensional diagram of the FORT - PCK type



The dimensional diagram is illustrative. The dimensions are specified in [mm].
If you require exact dimensions, please contact us.

TYPE	Motor		A	B	C	D	E	F	G	H	I	L	P	X	Y1	Y	Z1	Z
	kW	rpm																
FORT - PCK 204	0,12	1400	142	187	40	125	108	150	60	415	165	183	331	250	100	140	200	235
FORT - PCK 202	0,25	2850																
FORT - PCK 254	0,18	1400	183	225	40	160	140	170	80	520	210	183	363	310	100	140	255	290
FORT - PCK 252	0,75	2850										225	405					
FORT - PCK 284	0,18	1450	208	255	40	180	150	185	80	580	230	183	373	350	120	190	277	320
FORT - PCK 282	1,1	2850										225	415					
FORT - PCK 316	0,12	900										183	380					
FORT - PCK 314	0,25	1400	240	275	40	200	155	205	80	655	245	205	400	410	150	230	320	355
FORT - PCK 312	1,5	2850										260	455					
FORT - PCK 406	0,25	930										205	430					
FORT - PCK 404	0,75	1450	290	380	40	250	185	260	80	825	330	225	450	495	170	250	330	370
FORT - PCK 402	4	2850										325	550					

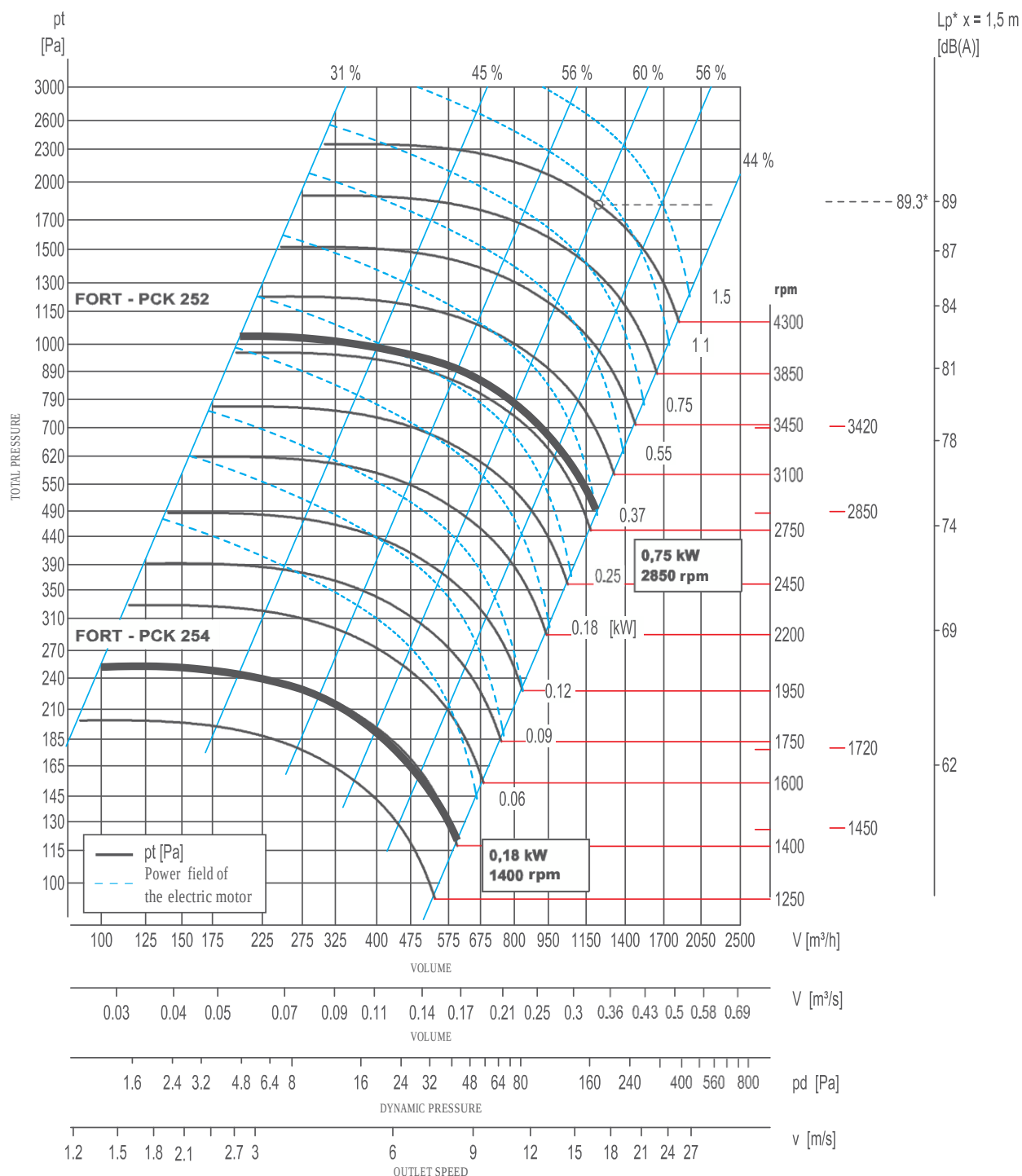
FORT - PCK 20



Fan type	Environment	Motor			Rated current** [A]	Thermal protection ** max. [-]	Weight ** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
FORT - PCK 202	BNV Zone 2 / Zone 1	0,25	2850	2	0,86	0,86	18	125	125
FORT - PCK 204	BNV Zone 2 / Zone 1	0,12	1400	4	0,48	0,48	17	125	125

** the values may differ depending on the electric motor type

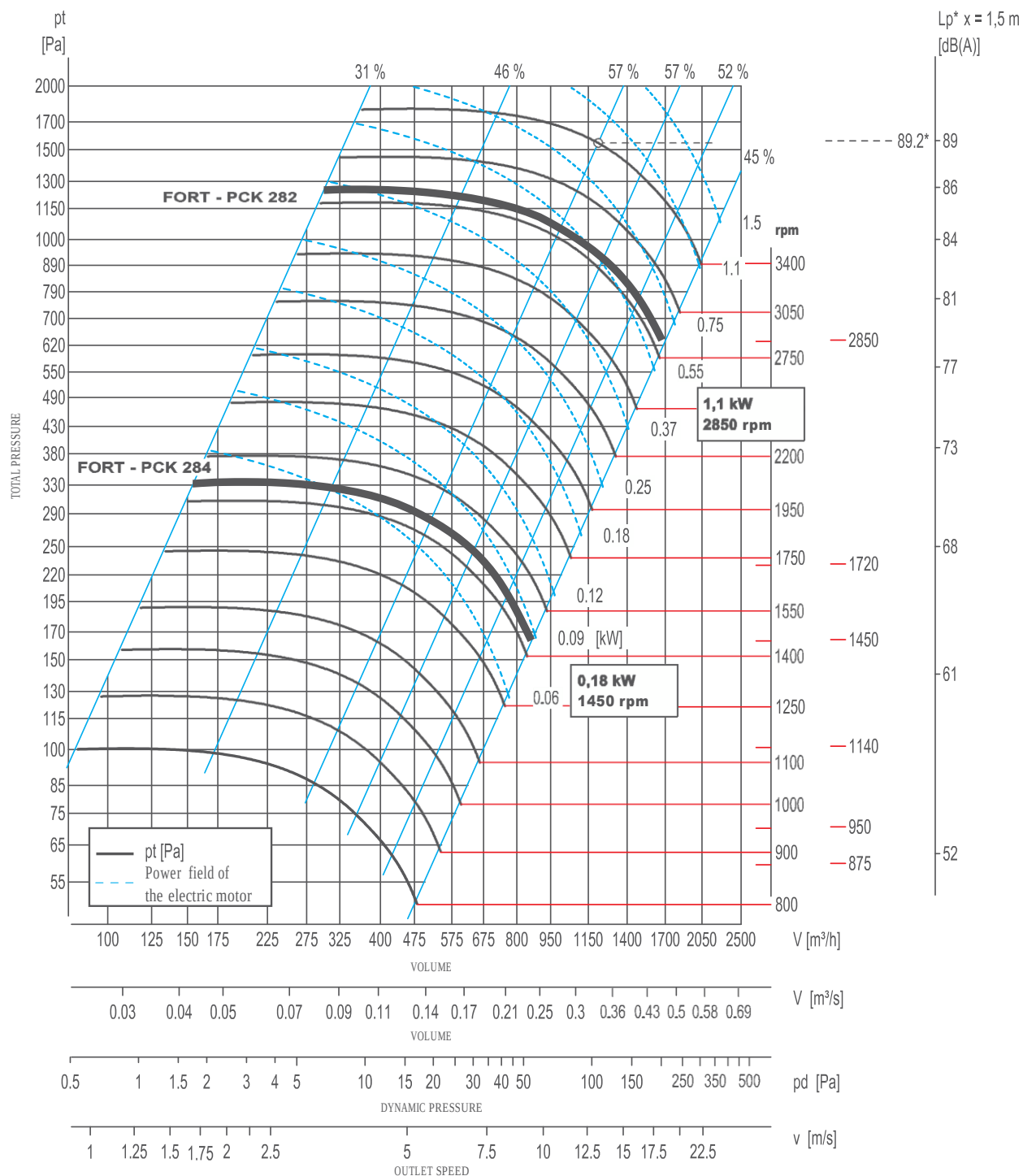
FORT - PCK 25



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]

** the values may differ depending on the electric motor type

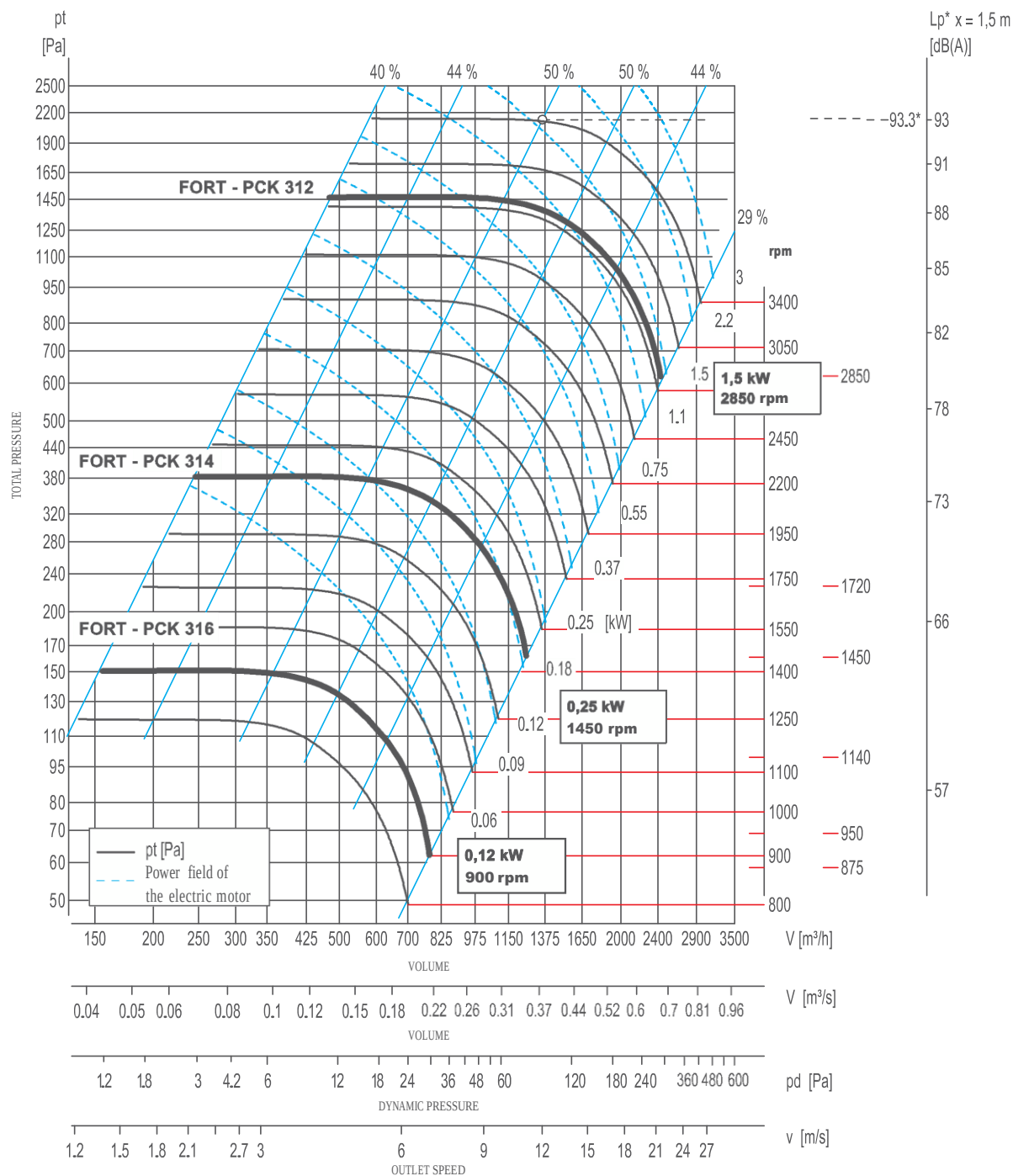
FORT - PCK 28



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]

** the values may differ depending on the electric motor type

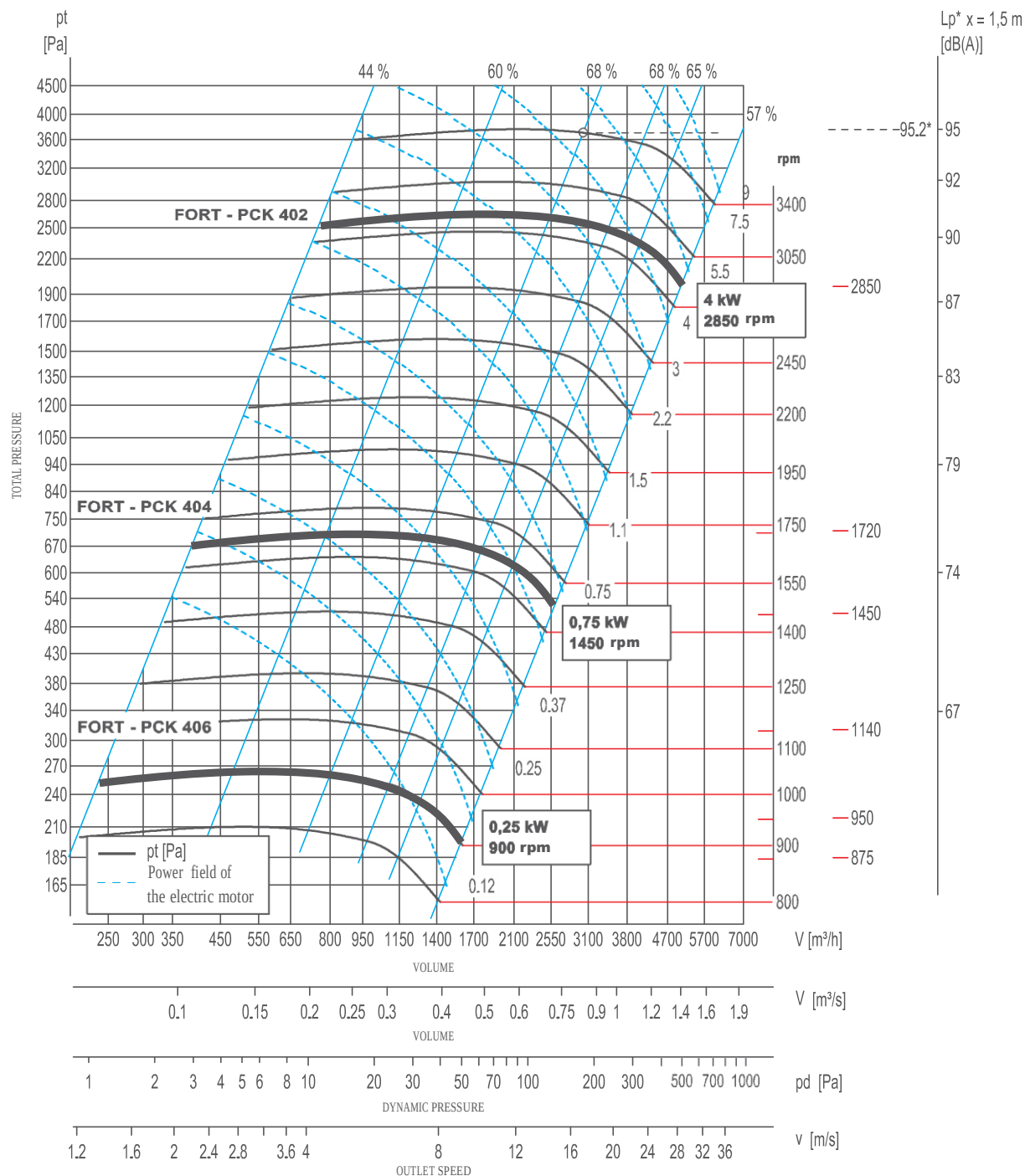
FORT - PCK 31



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
FORT - PCK 312	BNV Zone 2 / Zone 1	1,5	2850	2	3,37	3,37	44	200	200

** the values may differ depending on the electric motor type

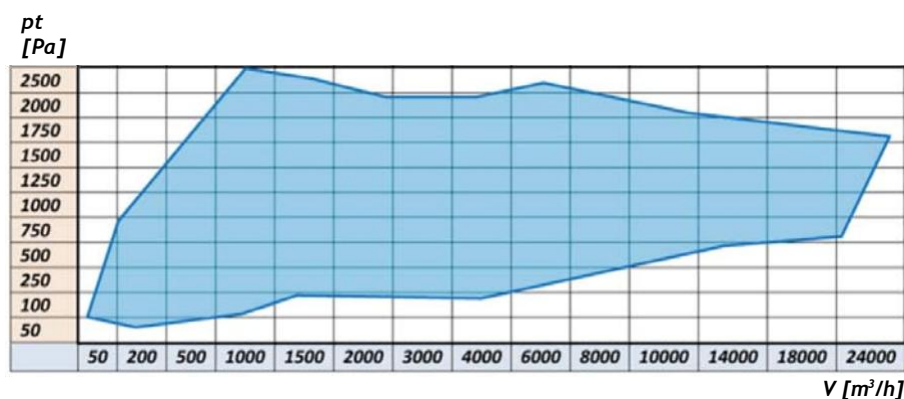
FORT - PCK 40



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
FORT - PCK 402	BNV Zone 2 / Zone 1	4	2850	2	8,57	8,57	63	250	250

** the values may differ depending on the electric motor type

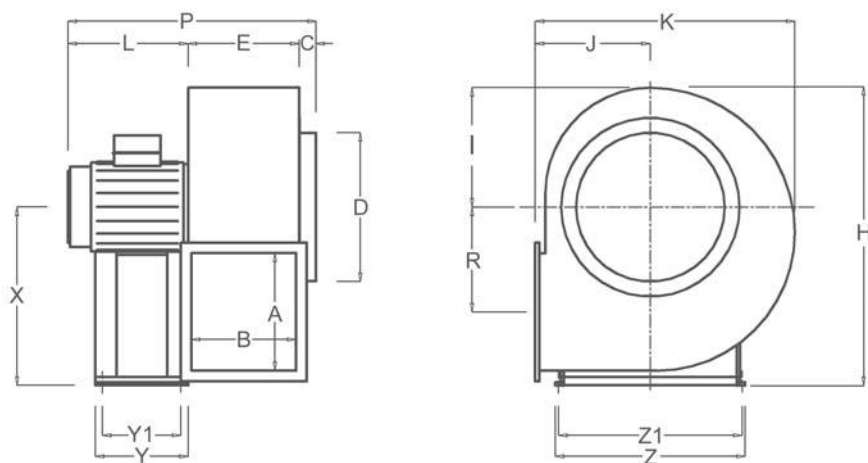
5.4 Fans of the FORT - PCH type



Spiral housing positions as viewed from the motor side



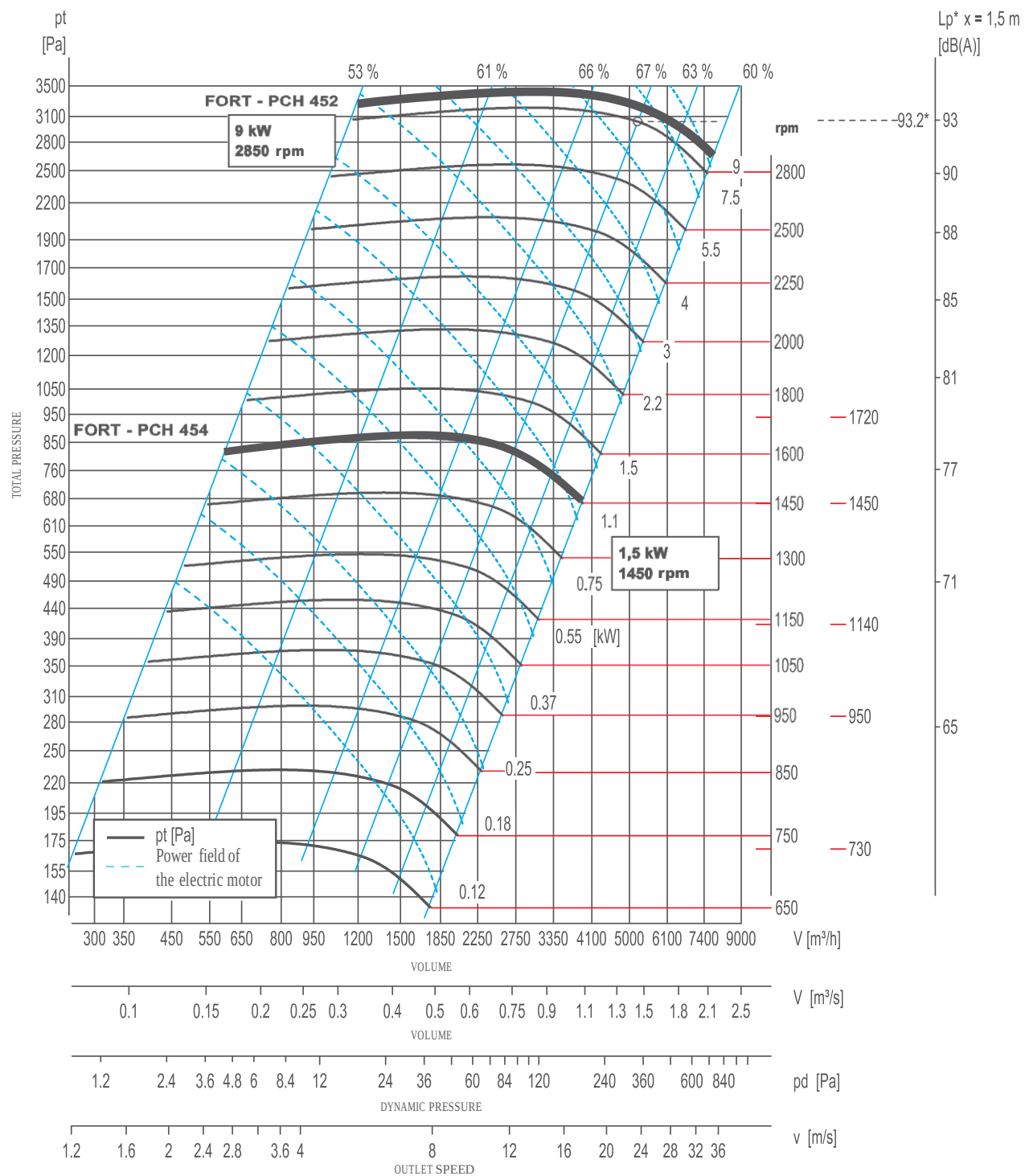
Dimensional diagram of the FORT - PCH type



The dimensional diagram is illustrative. The dimensions are specified in [mm].
If you require exact dimensions, please contact us.

TYPE	Motor		A	B	C	D	E	H	I	J	K	L	P	R	X	Y1	Y	Z1	Z
	kW	rpm																	
FORT - PCH 452	9	2850										480							
FORT - PCH 454	1,5	1450	300	200	50	280	220	900	350	340	722	260	722	292	550	250	270	370	410
FORT - PCH 506	0,75	900										355							
FORT - PCH 564	5,5	1450	366	250	50	315	270	1025	395	400	890	320	890	377	630	197	275	290	340
FORT - PCH 566	2,2	900										480							
FORT - PCH 566	2,2	900	466	300	50	400	320	1155	445	438	998	380	998	416	710	237	445	289	340

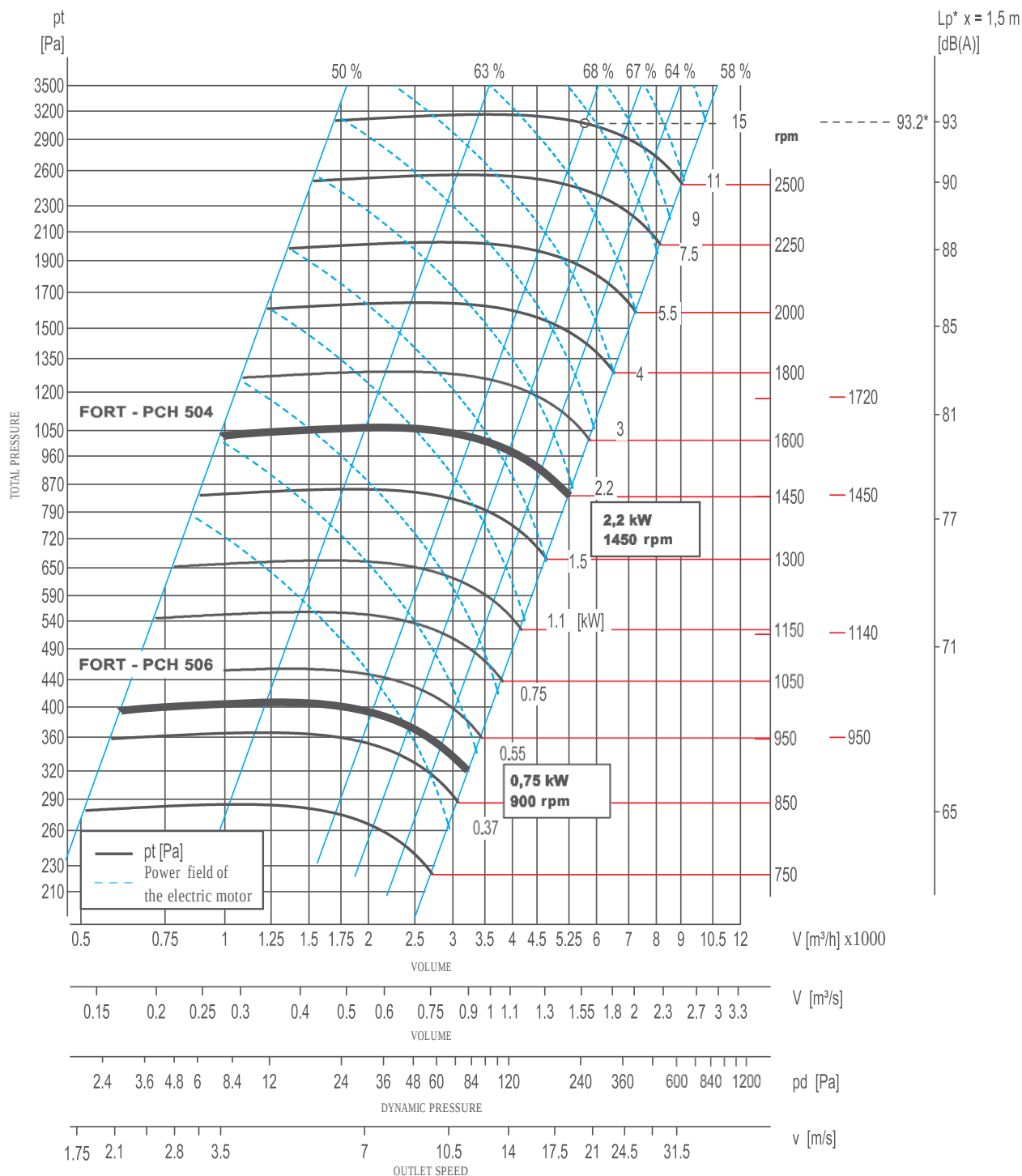
FORT - PCH 45



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ax B [mm]
FORT - PCH 452	BNV	9	2850	2	16,7	16,7	65	280	300×200

** the values may differ depending on the electric motor type

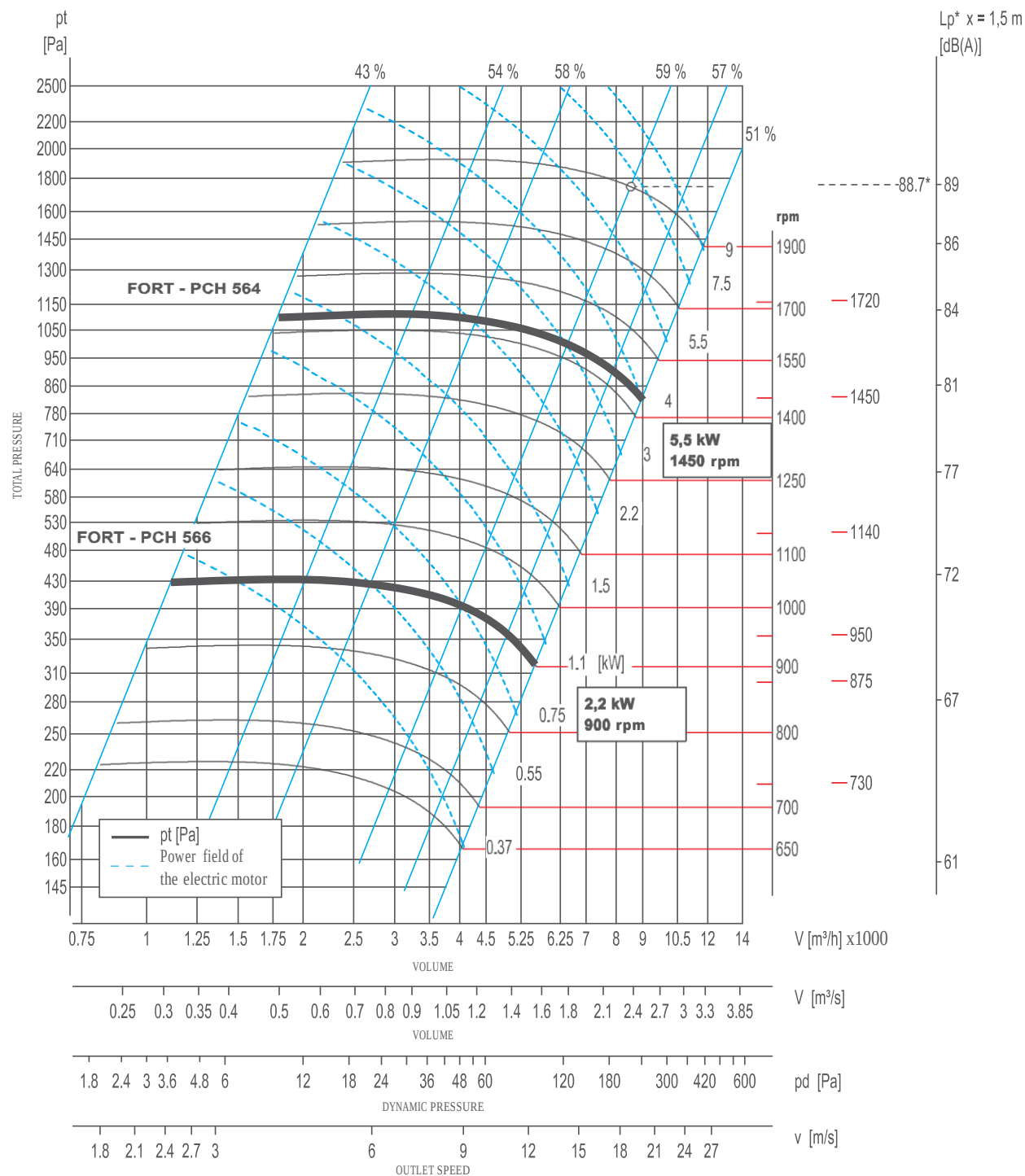
FORT - PCH 50



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet AxB [mm]
FORT - PCH 504	BNV Zone 2 / Zone 1	2,2	1450	4	4,79	4,79	100	315	366×250
FORT - PCH 506	BNV Zone 2 / Zone 1	0,75	900	6	2,9	2,9	90	315	366×250

** the values may differ depending on the electric motor type

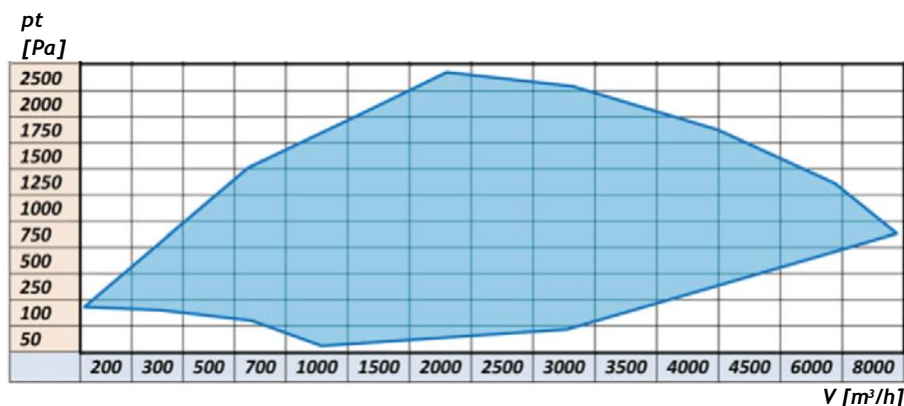
FORT - PCH 56



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
FORT - PCH 564	BNV	5,5	1450	4	11,3	11,3	115	400	466×300

** the values may differ depending on the electric motor type

5.5 Fans of the FORT - P type



Spiral housing positions as viewed from the motor side

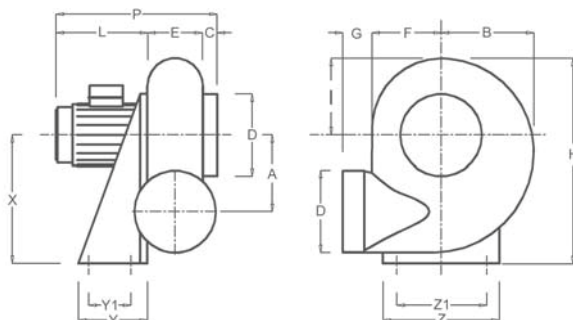
Version - LG



Version - RD



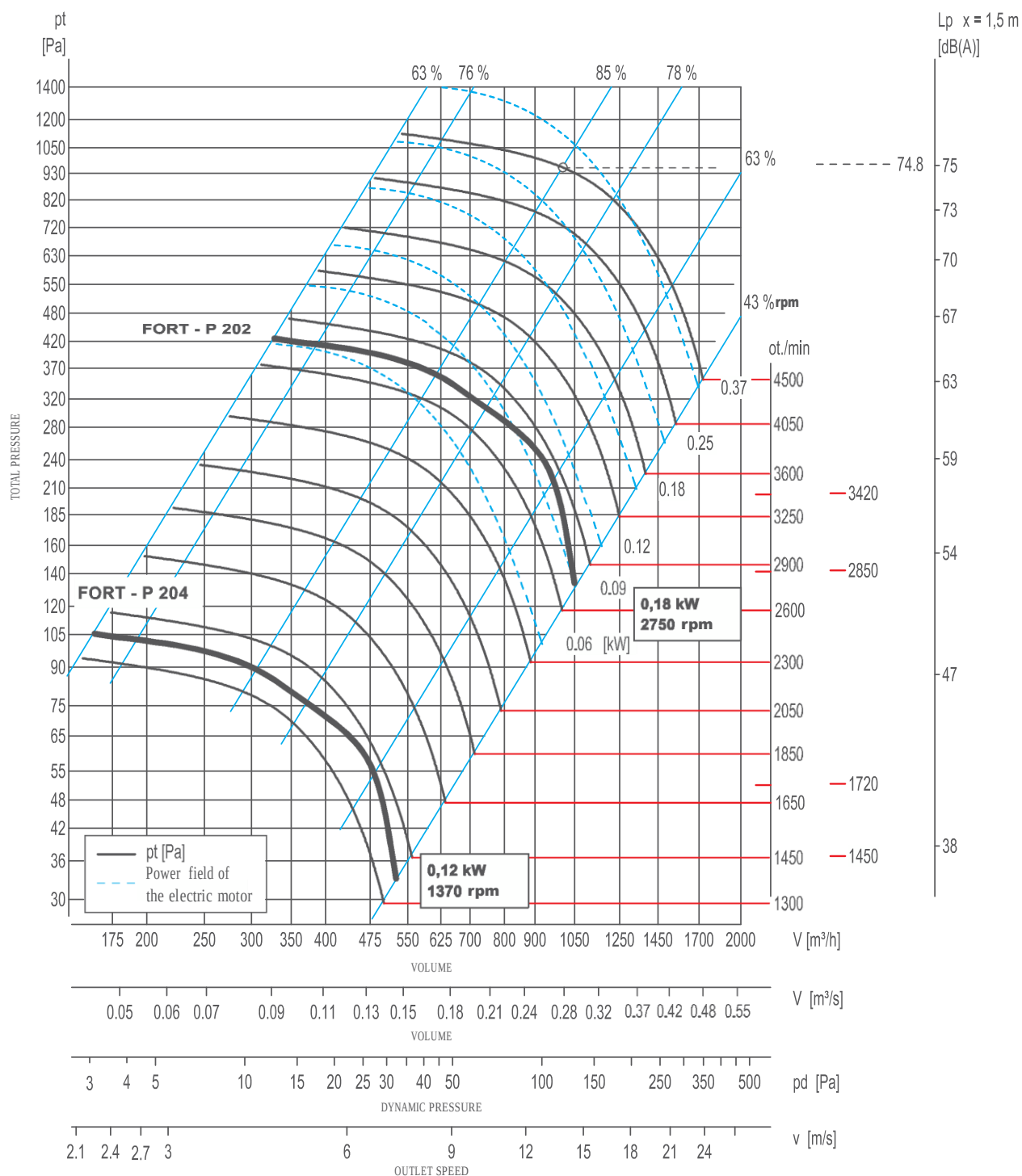
Dimensional diagram of the FORT - P type



The dimensional diagram is illustrative. The dimensions are specified in [mm].
If you require exact dimensions, please contact us.

TYPE	Motor		A	B	C	D	E	F	G	H	I	L	P	X	Y1	Y	Z1	Z
	kW	rpm																
FORT - P 204	0,12	1370	140	180	40	160	150	138	60	400	150	190	380	250	100	140	200	235
FORT - P 202	0,18	2750										195	385					
FORT - P 224	0,12	1370	183	228	40	200	180	170	80	500	190	190	410	310	100	140	255	290
FORT - P 222	0,25	2800										210	430					
FORT - P 254	0,12	1370	183	228	40	200	180	170	80	500	190	190	410	310	100	140	255	290
FORT - P 252	0,37	2800										210	430					
FORT - P 284	0,18	1370	208	255	40	225	190	190	80	560	210	190	420	350	120	190	277	320
FORT - P 282	0,75	2850										230	460					
FORT - P 316	0,18	930	240	280	40	250	200	210	80	640	230	210	450	410	150	230	320	355
FORT - P 314	0,25	1400										210	450					
FORT - P 312	1,5	2850										245	485					
FORT - P 356	0,18	930										210	470					
FORT - P 354	0,37	1400	260	312	40	280	220	230	80	715	270	210	470	445	150	230	350	385
FORT - P 352	2,2	2870										270	530					
FORT - P 406	0,25	920	290	352	40	315	240	264	80	790	295	210	490	495	170	250	330	370
FORT - P 404	0,55	1410										230	510					
FORT - P 456	0,37	920	324	392	40	355	265	290	80	880	330	230	535	550	170	250	370	410
FORT - P 454	1,1	1410										245	550					

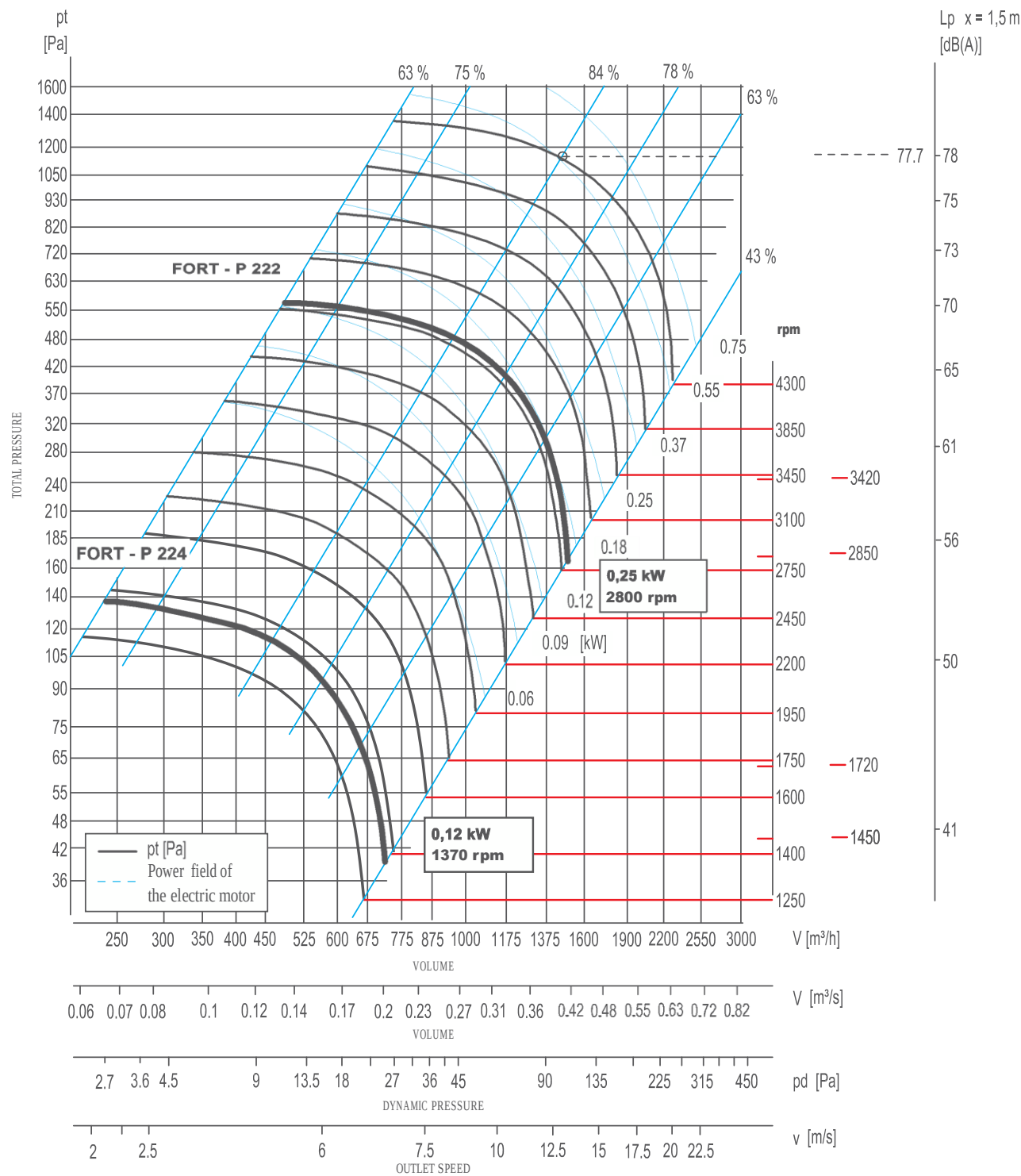
FORT - P 20



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
FORT - P 202	BNV Zone 2 / Zone 1	0,18	2750	2	0,58	0,58	9	160	160
FORT - P 204	BNV Zone 2 / Zone 1	0,12	1370	4	0,48	0,48	9	160	160

** the values may differ depending on the electric motor type

FORT - P 22

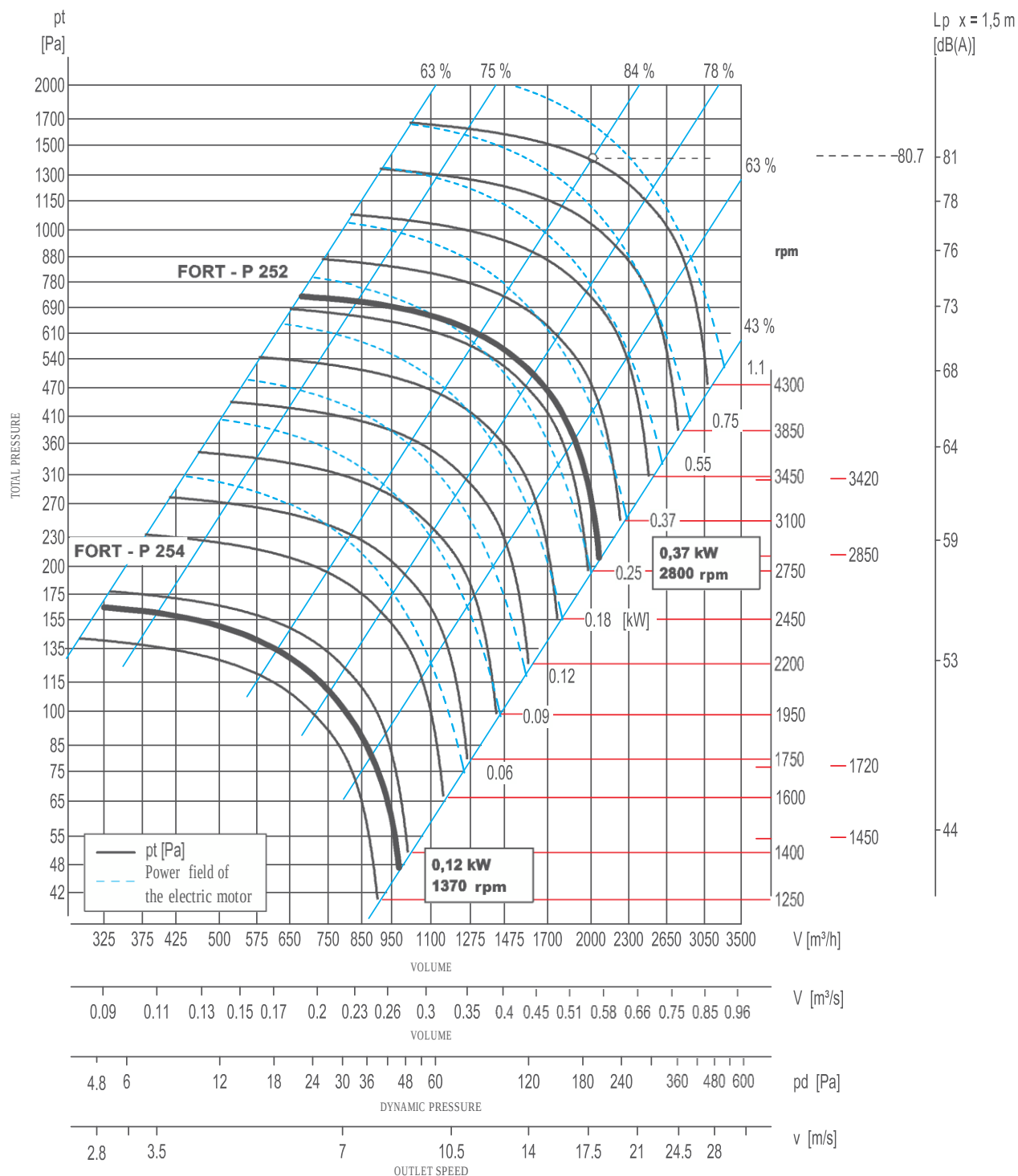


Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
FORT - P 222	BNV / Zone 1 Zone 2	0,25	2800	2	0,86	0,86	13	200	200
FORT - P 224	BNV / Zone 1 Zone 2	0,12	1370	4	0,48	0,48	10	200	200

** the values may differ depending on the electric motor type

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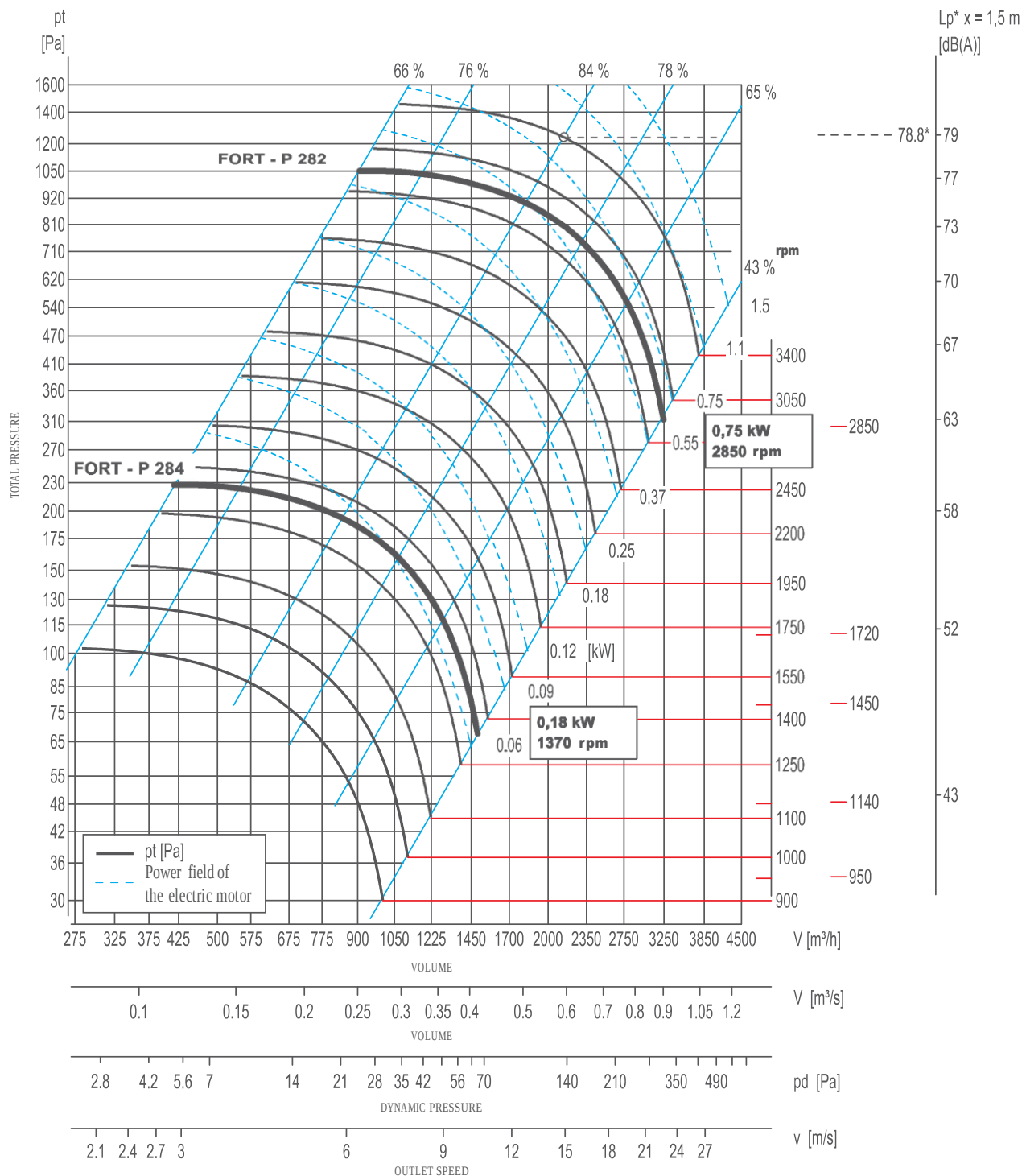
FORT - P 25



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
FORT - P 252	BNV Zone 2 / Zone 1	0,37	2800	2	1,11	1,11	13	200	200
FORT - P 254	BNV	0,12	1370	4	0,48	0,48	10	200	200

** the values may differ depending on the electric motor type

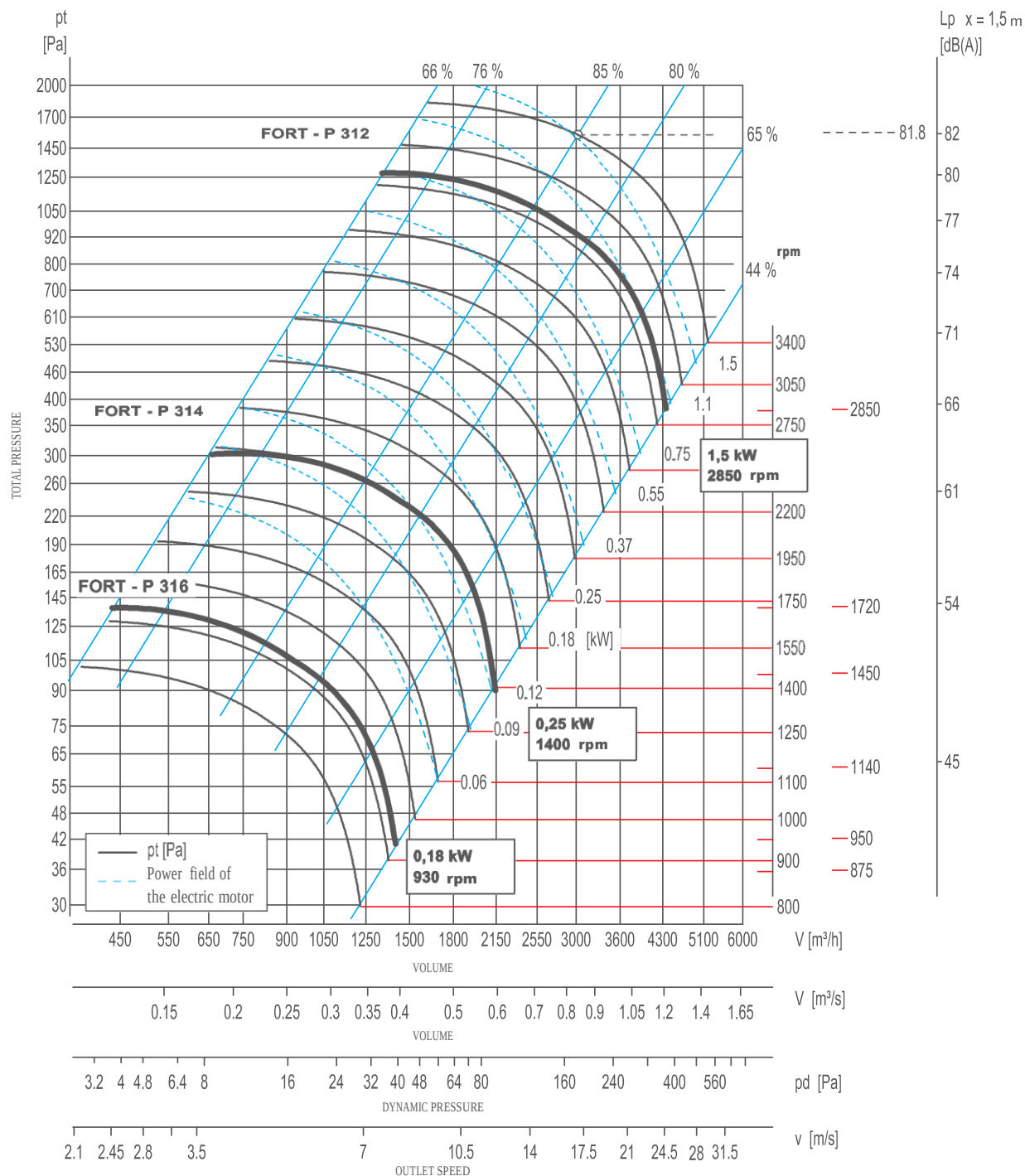
FORT - P 28



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
FORT - P 282	BNV	0,75	2850	2	1,92	1,92	19	225	225

** the values may differ depending on the electric motor type

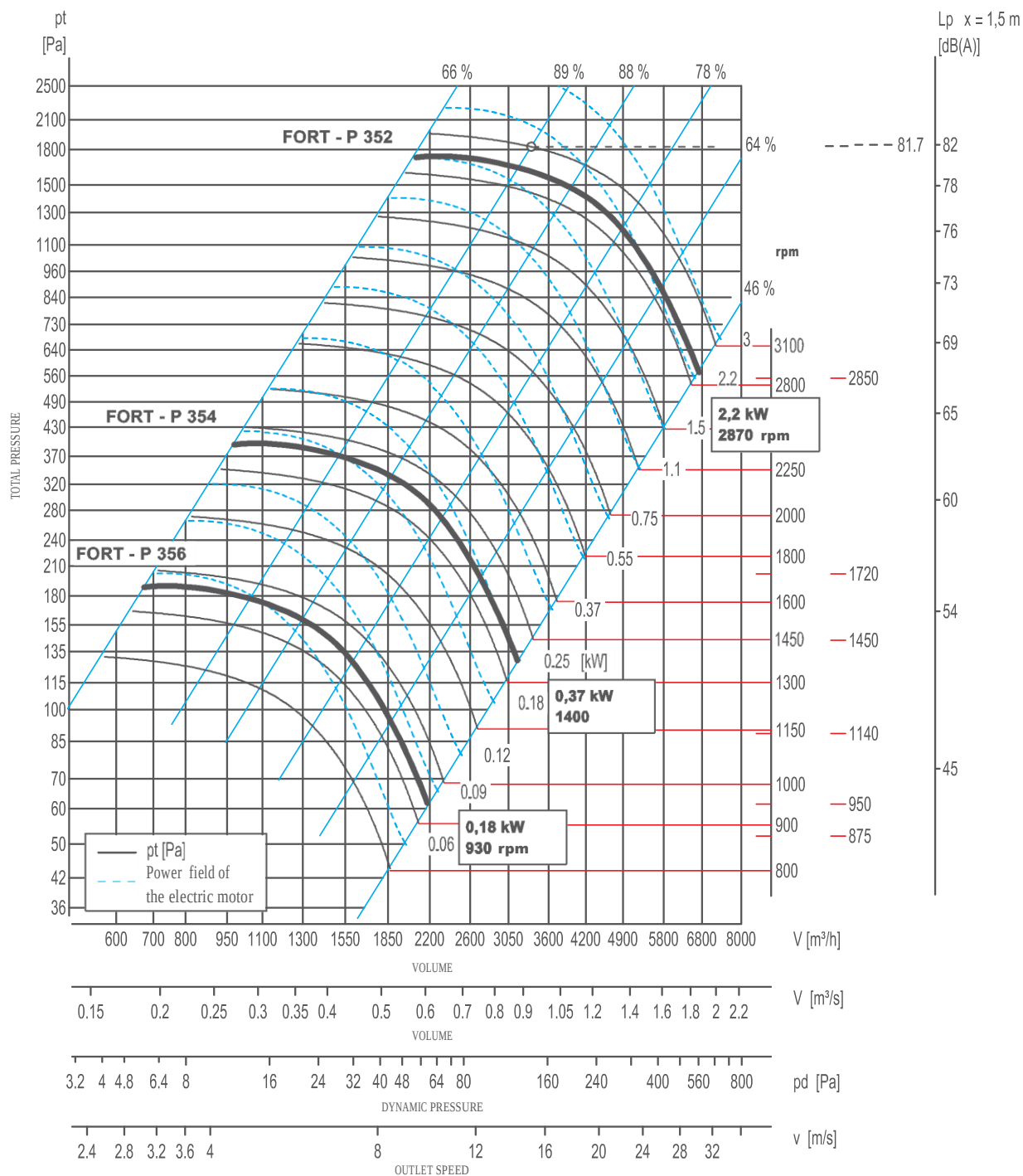
FORT - P 31



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
FORT - P 312	BNV Zone 2 / Zone 1	1,5	2850	2	3,37	3,37	26	250	250

** the values may differ depending on the electric motor type

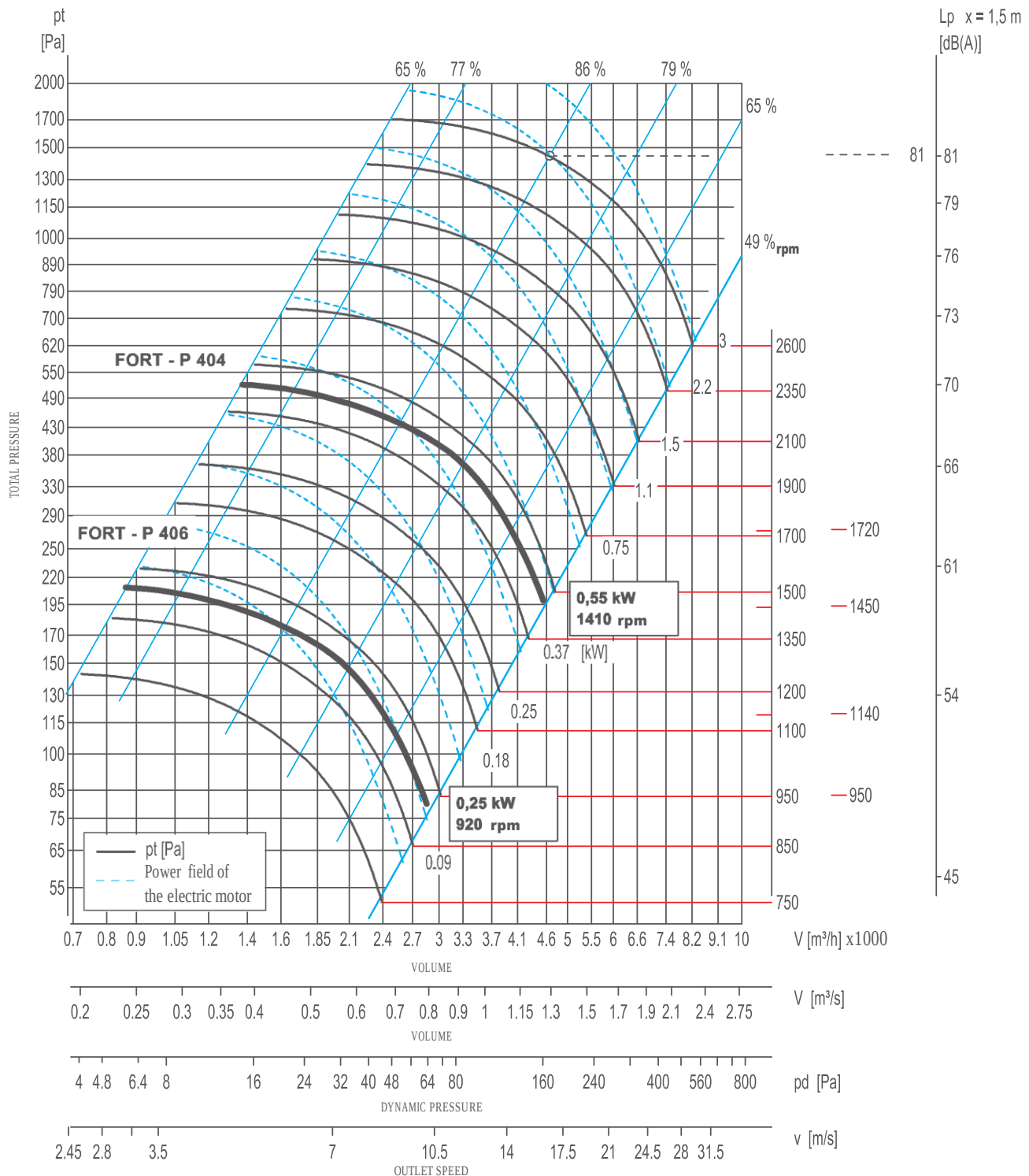
FORT - P 35



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
FORT - P 352	BNV Zone 2 / Zone 1	2,2	2870	2	4,96	4,96	32	280	280

** the values may differ depending on the electric motor type

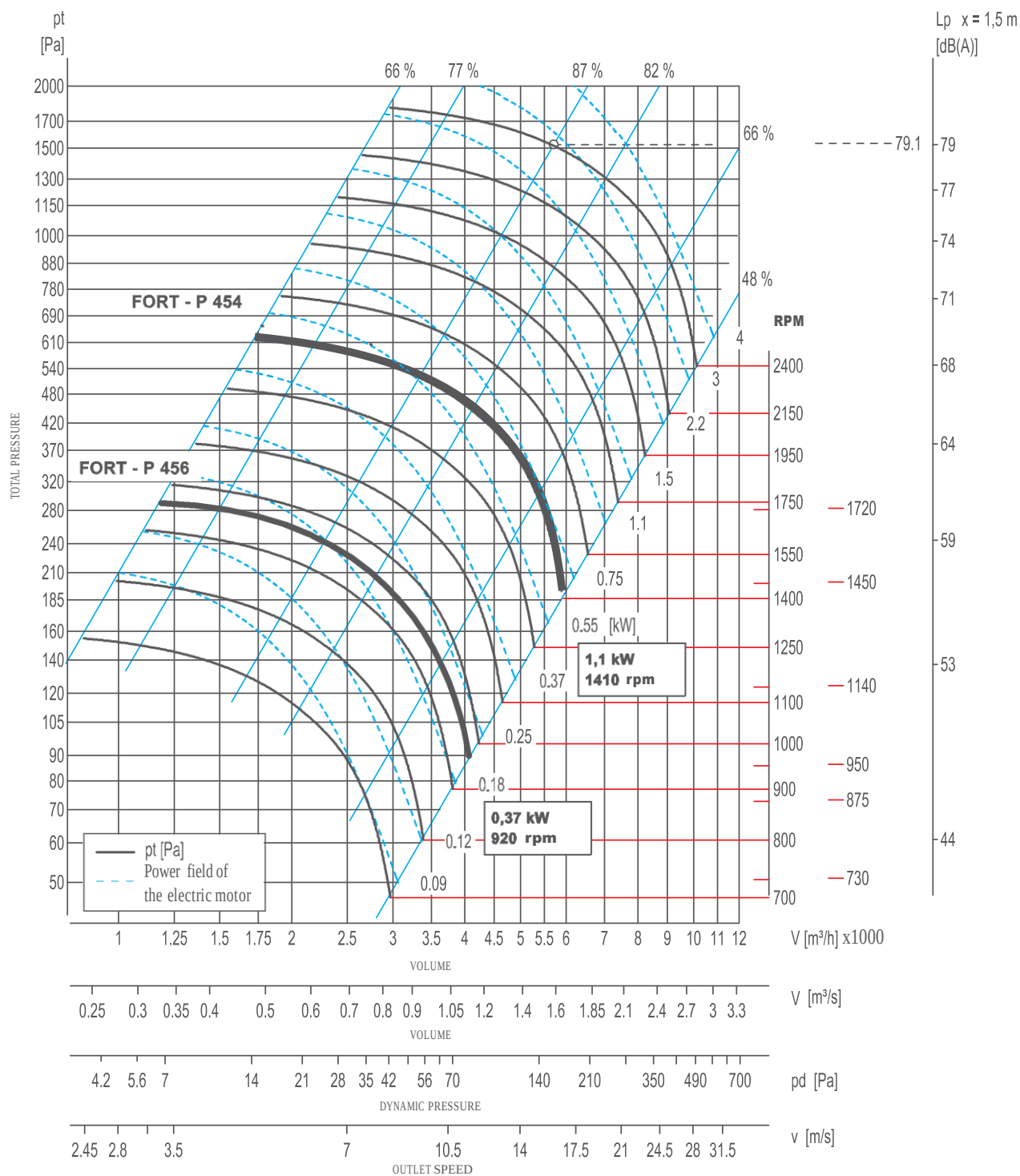
FORT - P 40



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]

** the values may differ depending on the electric motor type

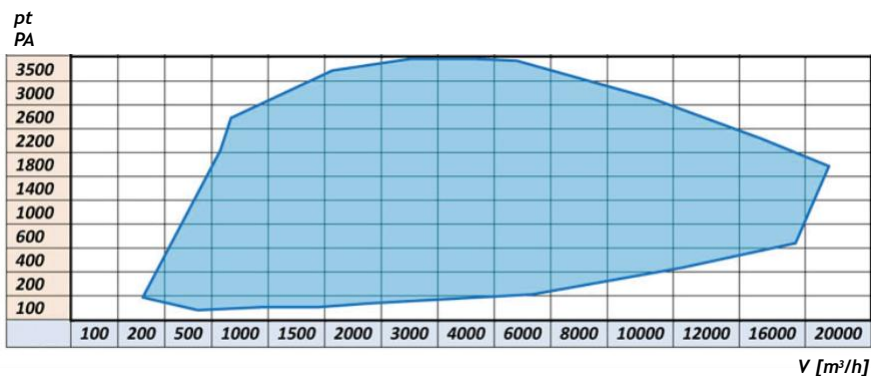
FORT - P 45



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]

** the values may differ depending on the electric motor type

5.6 Fans of the FORT - PQ type

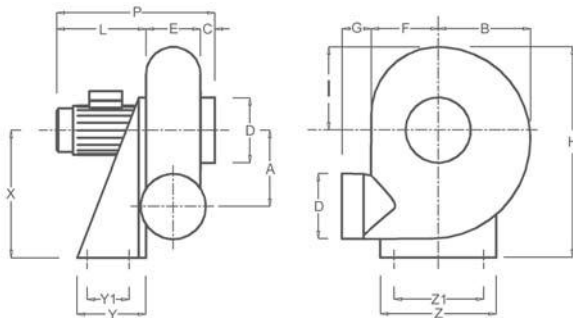


Spiral housing positions as viewed from the motor side

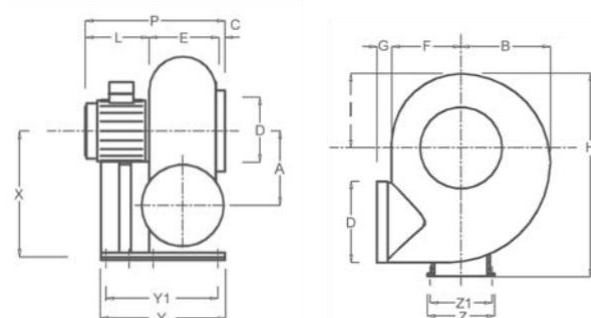


Dimensional diagram of the FORT - PQ type

For the FORT - PQ 282-452 types



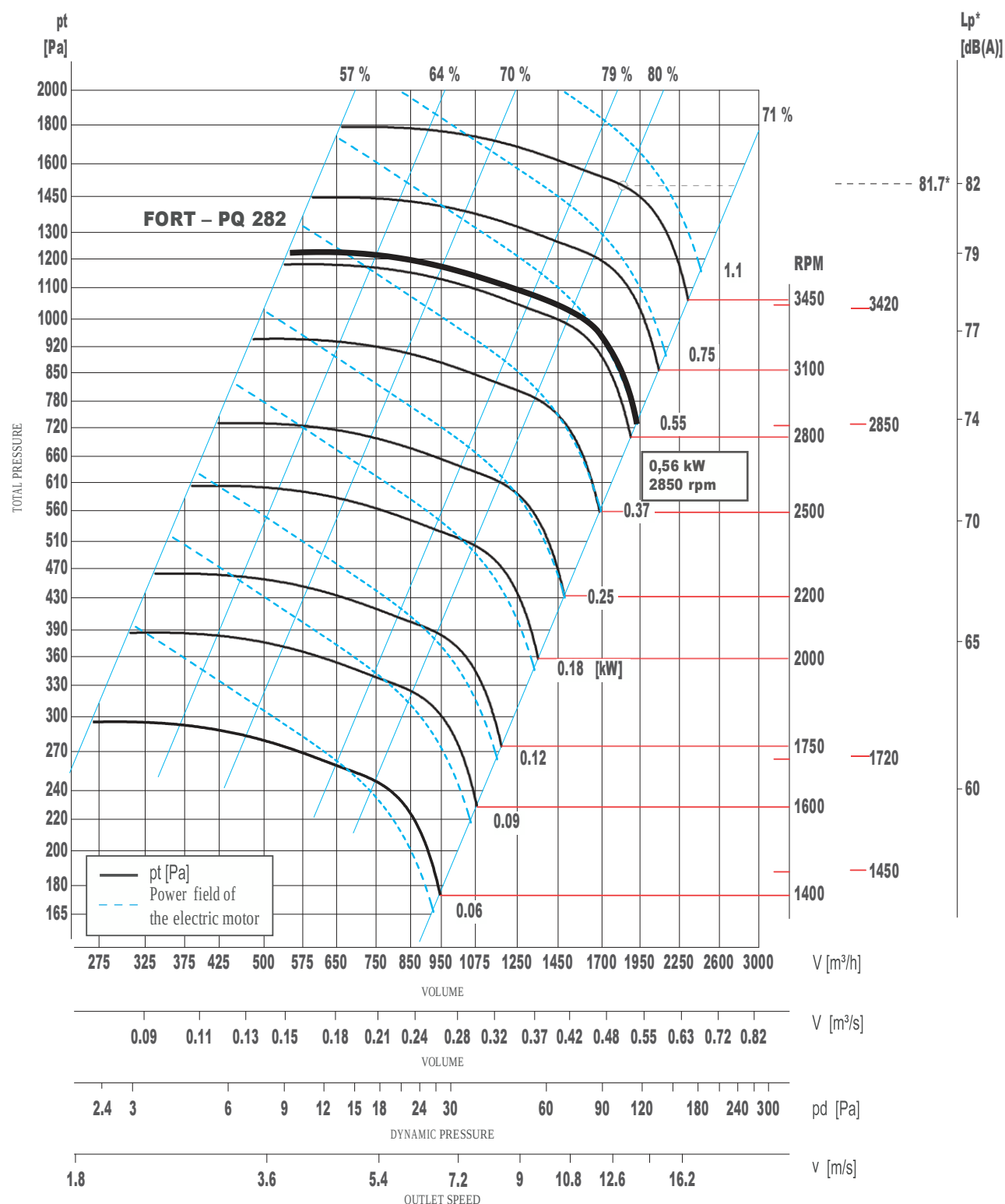
For the FORT - PQ 502-634 types



The dimensional diagram is illustrative. The dimensions are specified in [mm].
If you require exact dimensions, please contact us.

TYPE	kW	rpm	A	B	C	D	E	F	G	H	I	L	P	X	Y1	Y	Z1	Z
FORT - PQ 282	0,56	2850	208	255	40	225	190	190	80	560	210	180	410	350	120	190	277	320
FORT - PQ 312	1,1	2850	240	280	40	250	200	210	80	640	230	230	470	410	150	230	320	355
FORT - PQ 352	2,2	2850	260	312	40	280	220	230	80	715	270	270	530	445	150	230	350	385
FORT - PQ 402	4	2850	290	352	40	315	240	264	80	790	295	330	610	495	170	310	325	357
FORT - PQ 452	7,5	2850	324	392	40	355	265	290	80	880	330	400	705	550	170	340	370	420
FORT - PQ 502	11	2850	360	460	50	400	355	355	80	1025	395	550	955	630	440/290	490/340	818/635	740
FORT - PQ 504	1,5	1450										300	705					
FORT - PQ 564	2,2	1450	410	490	50	450	365	380	80	1120	410	330	745	710	290	340	695	740
FORT - PQ 634	4	1450	445	610	50	500	415	420	80	1305	505	350	815	800	337	387	740	740

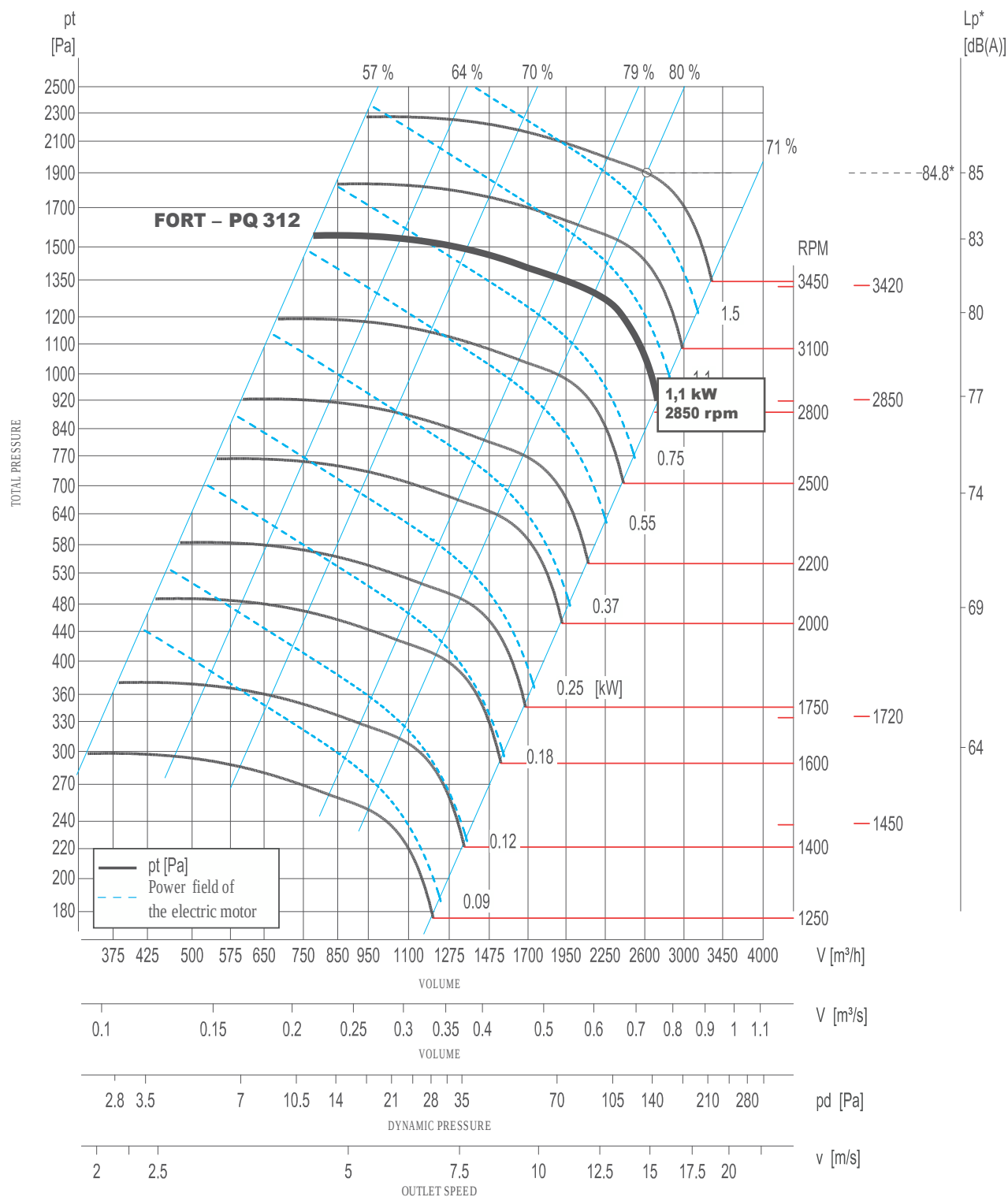
FORT - PQ 28



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
FORT - PQ 282	BNV Zone 2 / Zone 1	0,56	2850	2	1,59	1,59	38	225	280

** the values may differ depending on the electric motor type

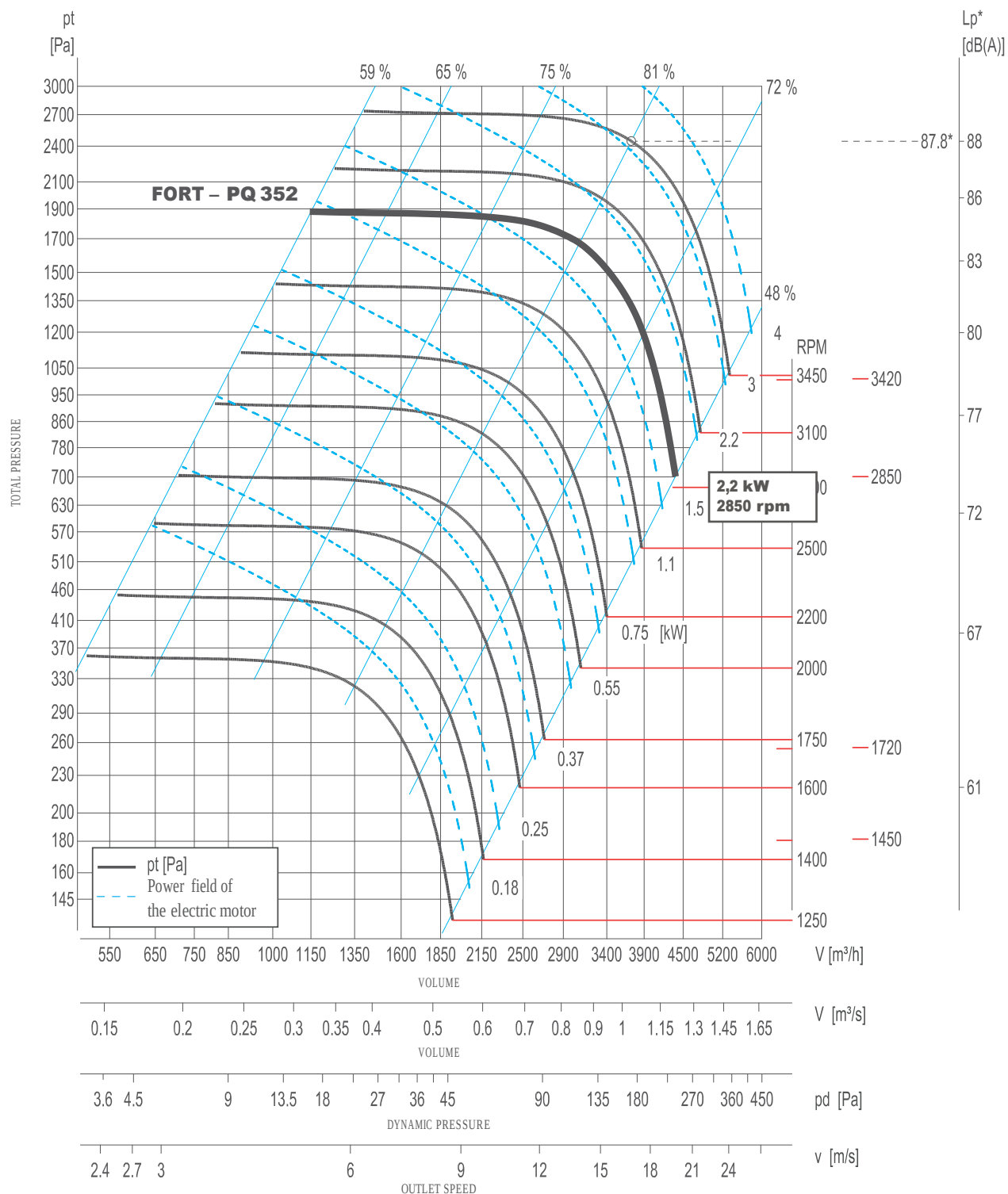
FORT - PQ 31



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
FORT - PQ 312	BNV Zone 2 / Zone 1	1,1	2850	2	2,7	2,7	52	250	250

** the values may differ depending on the electric motor type

FORT - PQ 35

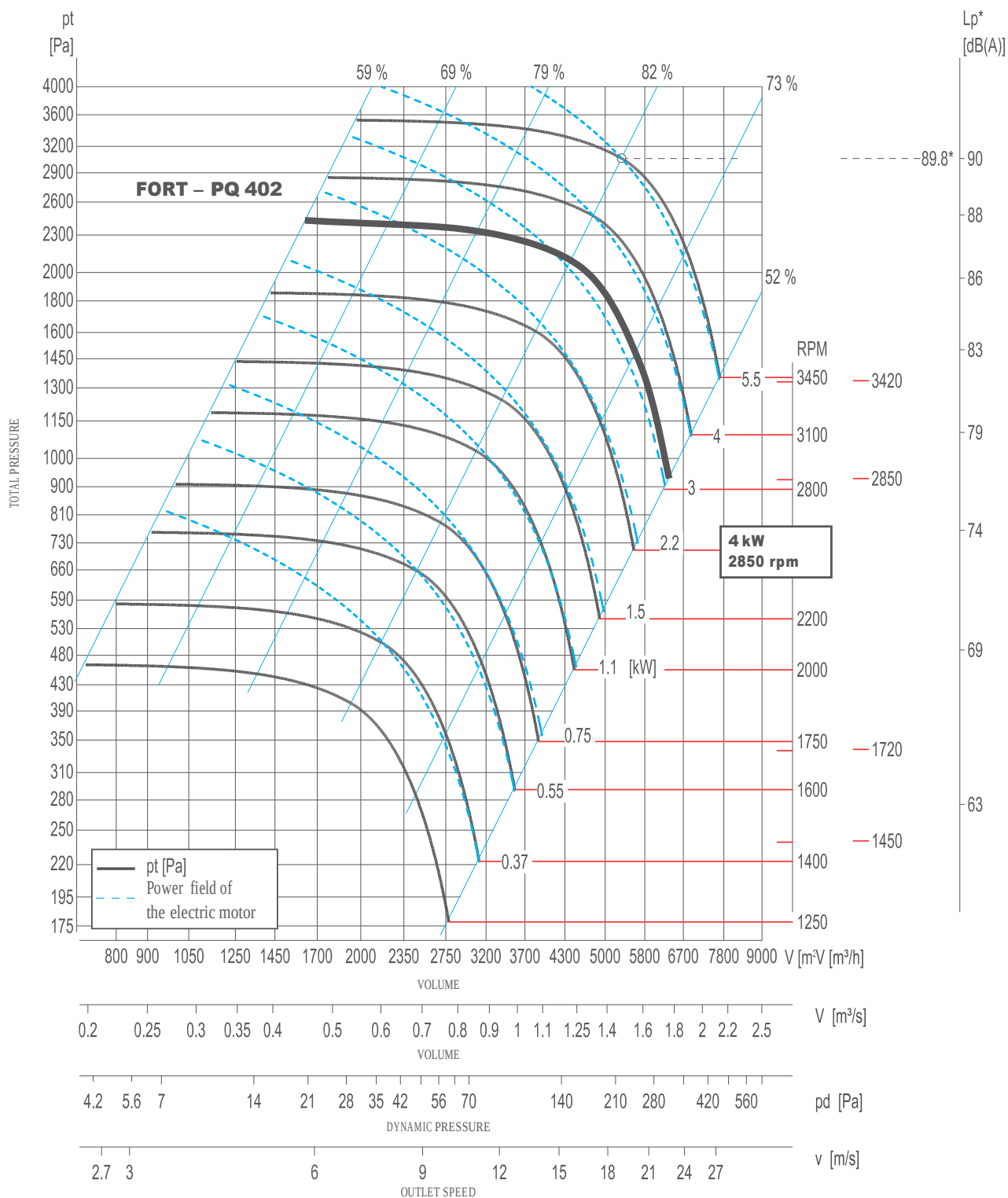


Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
FORT - PQ 352	BNV Zone 2 / Zone 1	2,2	2850	2	4,96	4,96	60	280	280

** the values may differ depending on the electric motor type

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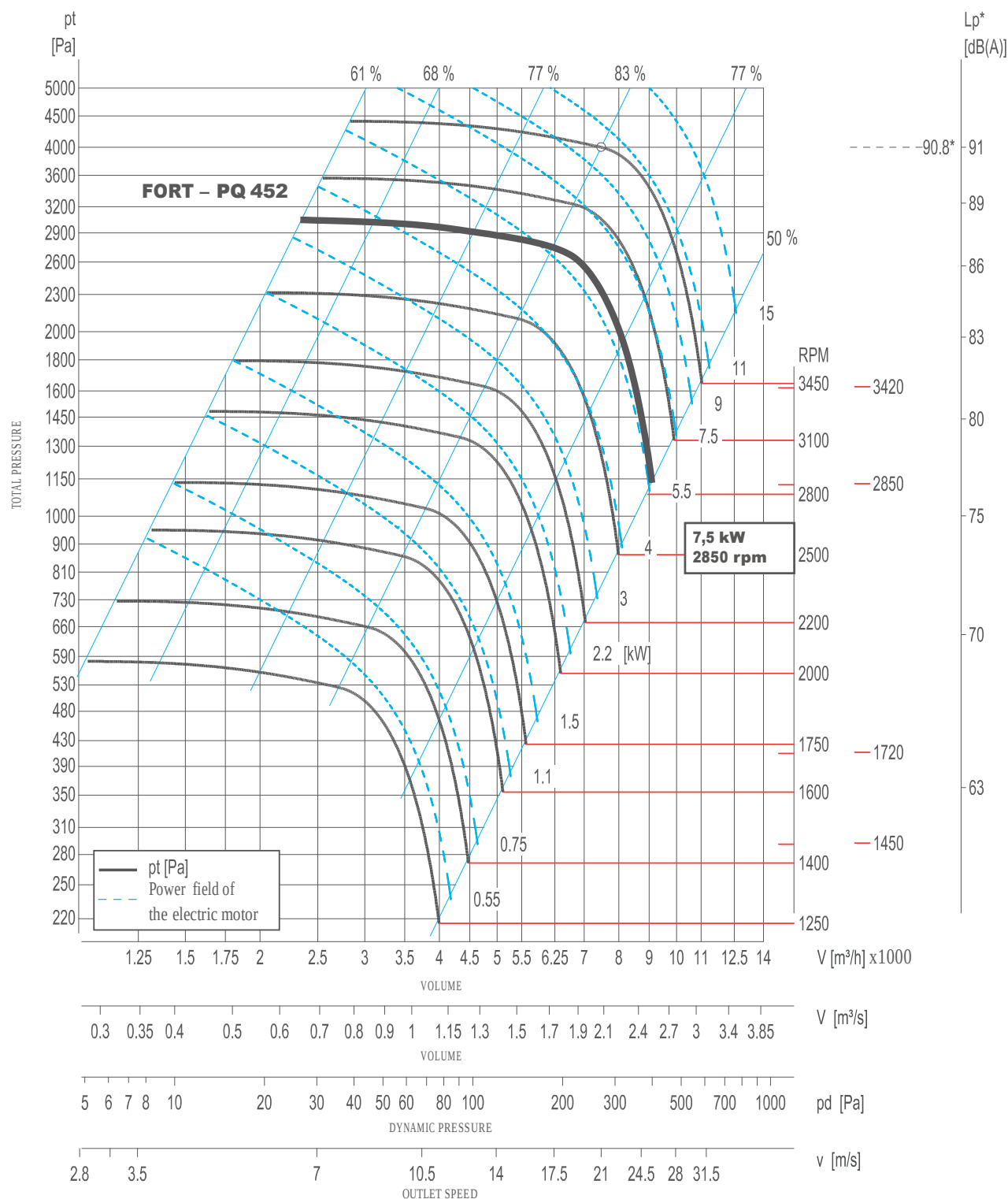
FORT - PQ 40



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
FORT - PQ 402	BNV	4	2850	2	8,57	8,57	105	315	315

** the values may differ depending on the electric motor type

FORT - PQ 45

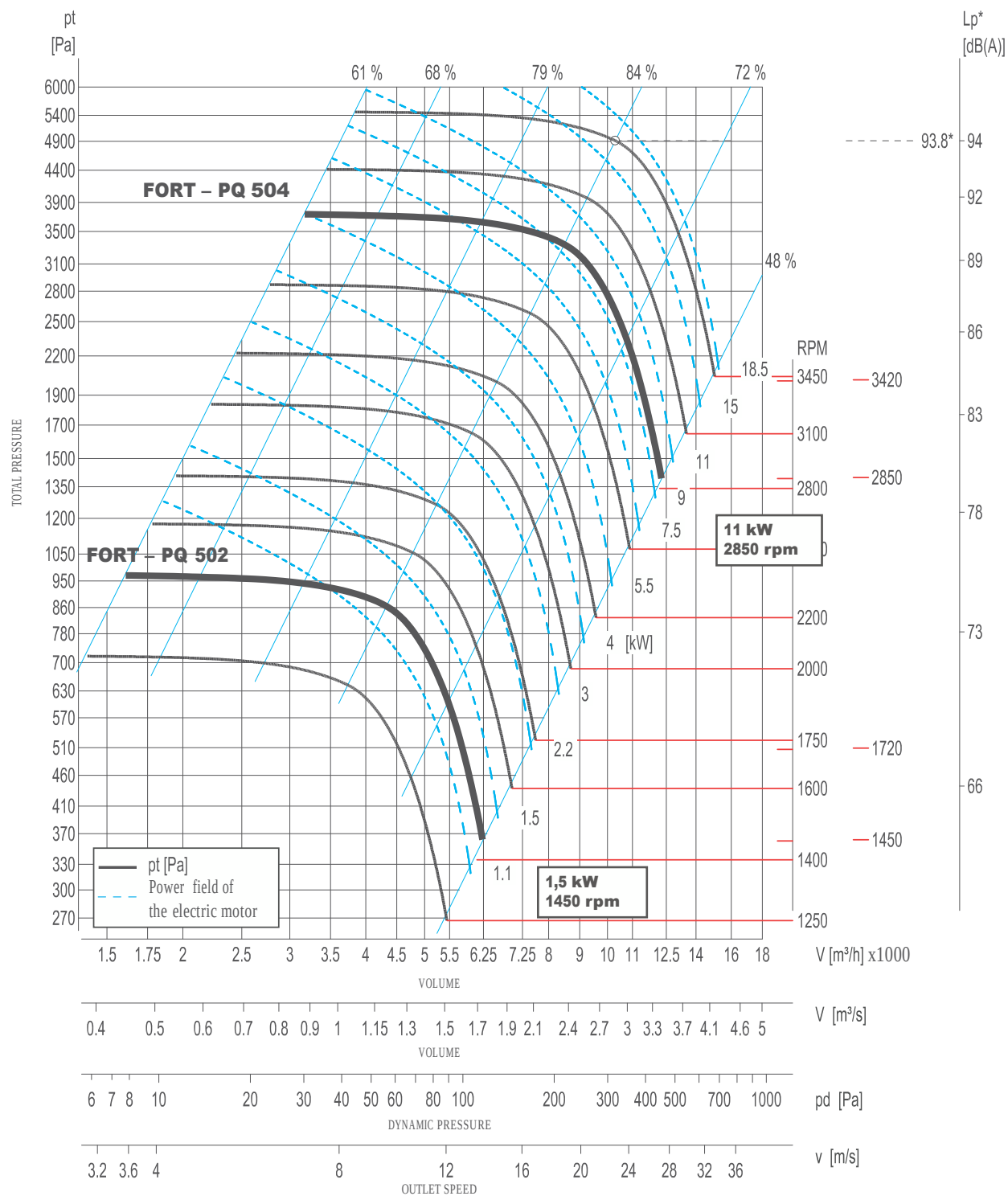


Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
FORT - PQ 452	BNV Zone 2 / Zone 1	7,5	2850	2	15,47	15,47	128	355	355

** the values may differ depending on the electric motor type

Plastikiniai ventiliatoriai

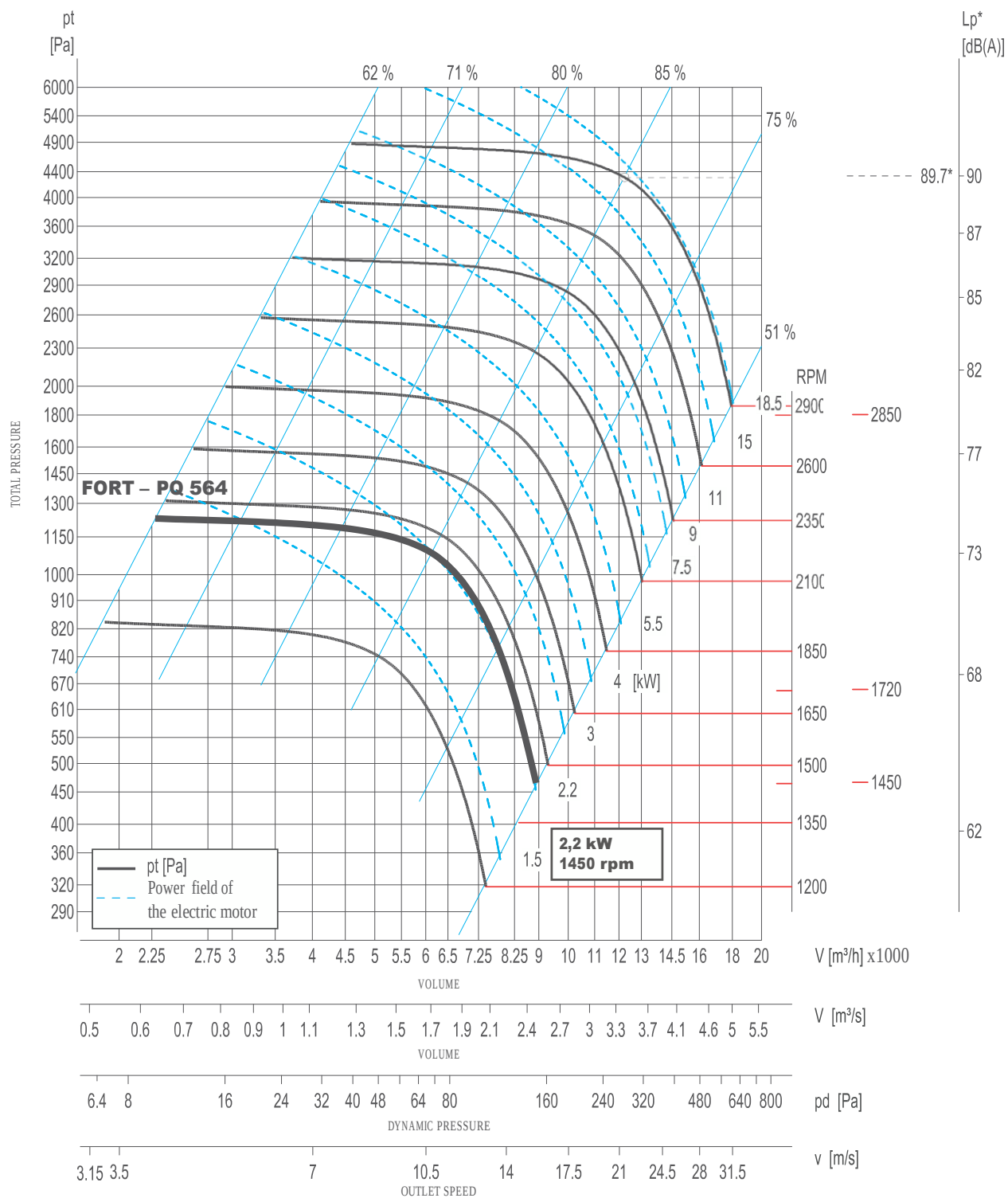
FORT - PQ 50



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
FORT - PQ 502	BNV Zone 2 / Zone 1	11	2850	2	22,4	22,4	220	400	400
FORT - PQ 504	BNV	1,5	1450	4	3,37	3,37	130		

** the values may differ depending on the electric motor type

FORT - PQ 56

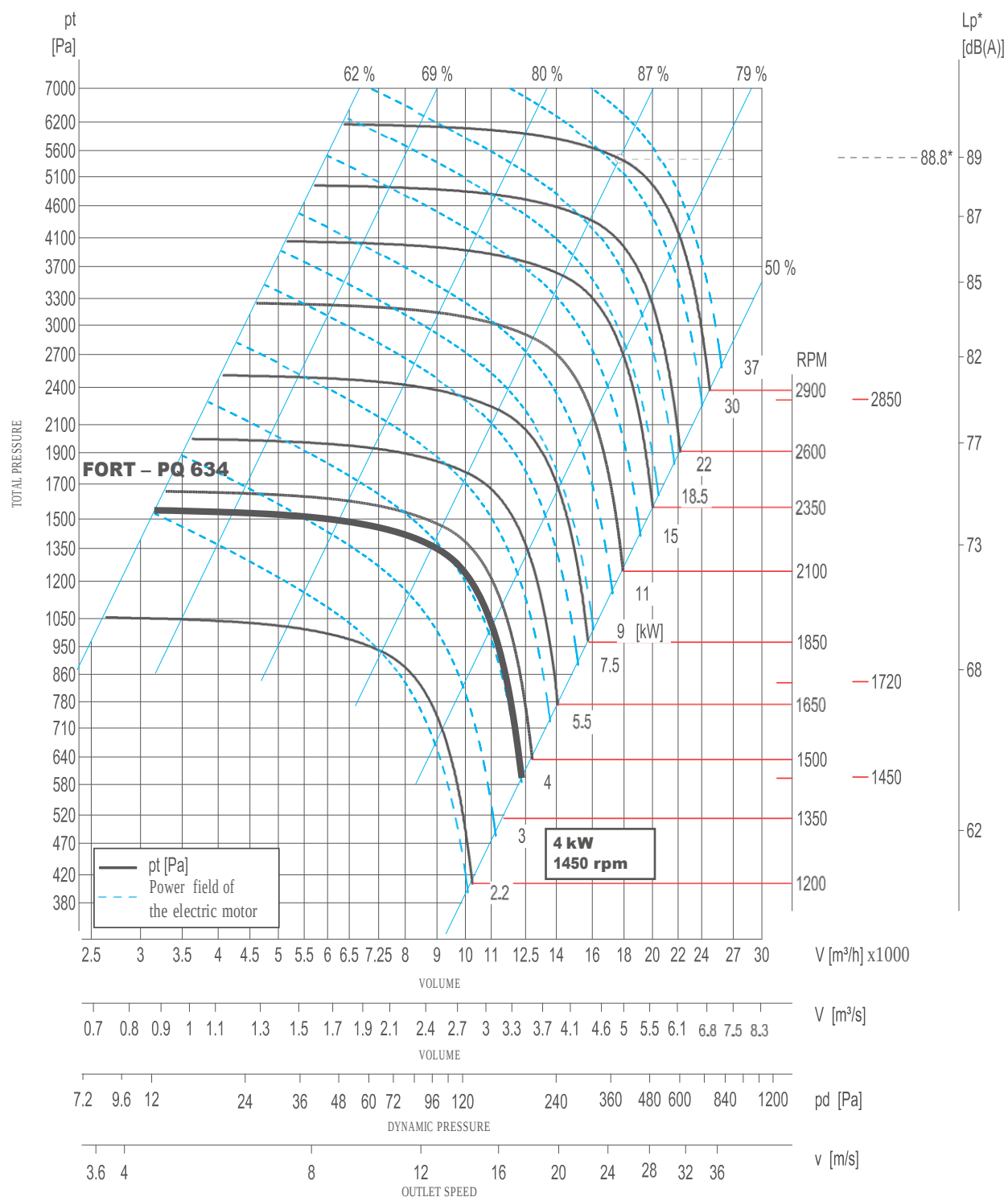


Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
FORT - PQ 564	BNV Zone 2 / Zone 1	2,2	1450	4	4,96	4,96	145	450	450

** the values may differ depending on the electric motor type

Plastikiniai ventiliatoriai

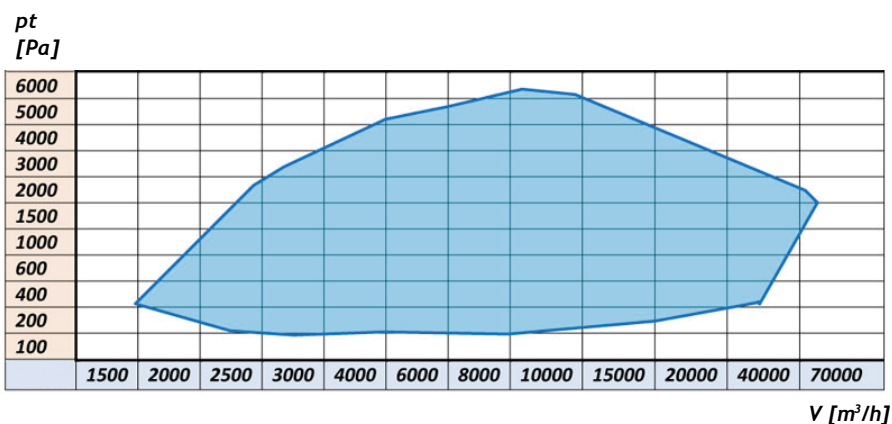
FORT - PQ 63



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
FORT - PQ 634	BNV	4	1450	4	8,57	8,57	180	500	500

** the values may differ depending on the electric motor type

5.7 Fans of the FORT - PRK type



Spiral housing positions as viewed from the motor side

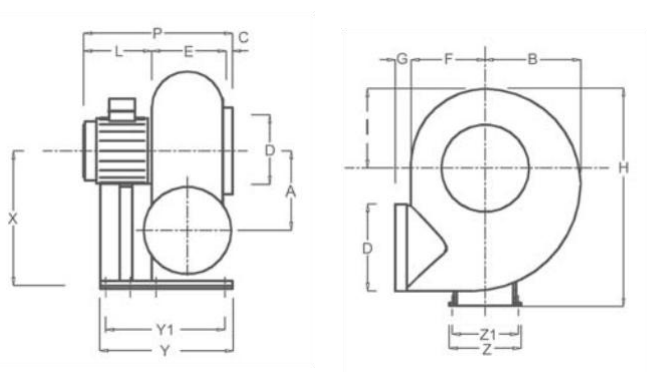
Version - LG



Version - RD



Dimensional diagram of the FORT - PRK type



The fans (PRK 50, 56, 63) are available with the impeller material option - stainless steel / PP (polypropylene).

Identification example:

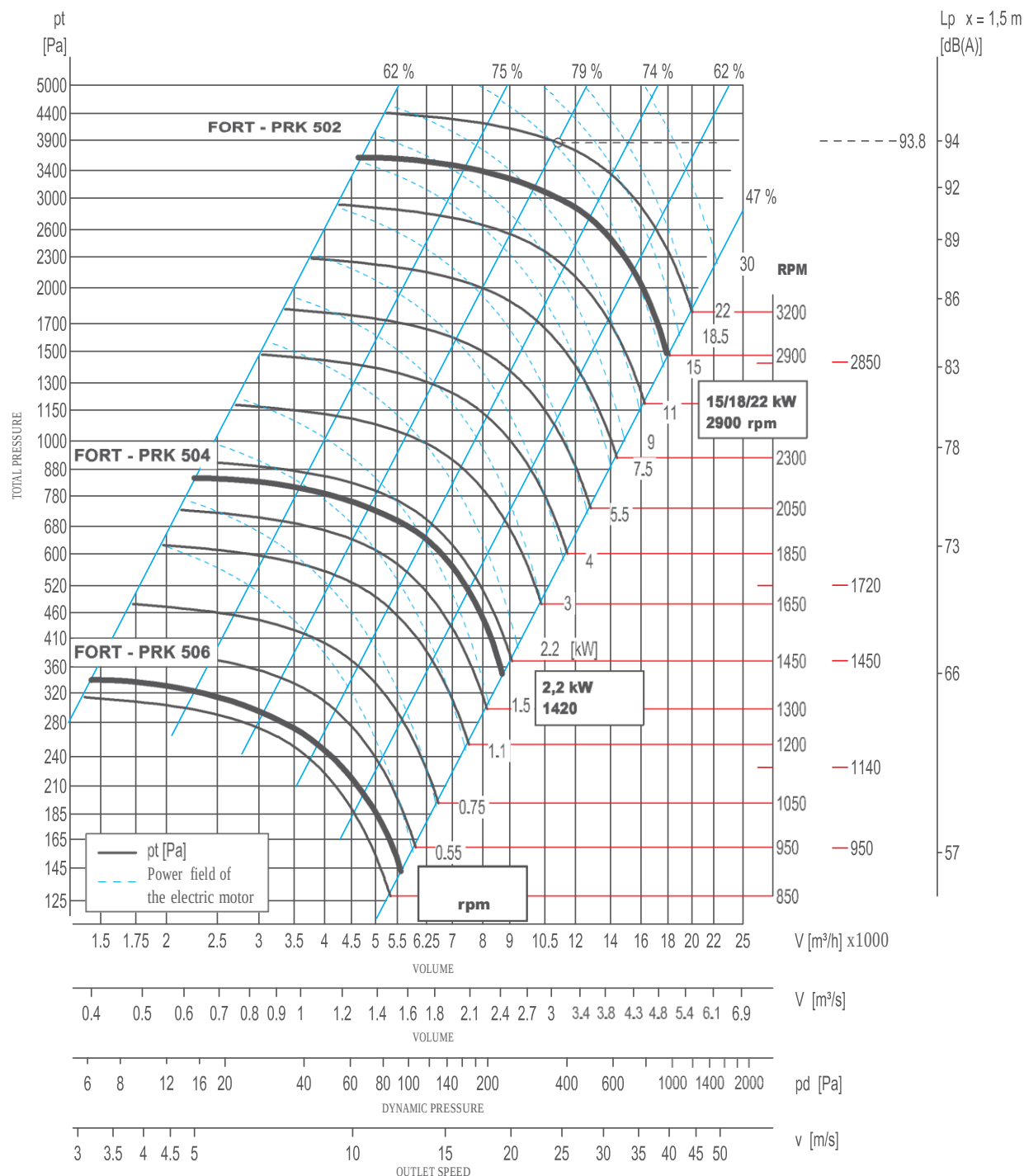
FORT-PRK 502 - stainless-steel impeller

FORT-PRK 502 pp - PP impeller

The dimensional diagram is illustrative. The dimensions are specified in [mm].
If you require exact dimensions, please contact us.

Type	Motor		A	B	C	D	E	F	G	H	X	I	L	P	Y1	Y	Z1	Z
	kW	rpm																
FORT-PRK 502	15/18	2900	360	460	50	400	355	355	80	1025	630	395	550	955	733	783	385	435
	22												600	1005	768	818	440	490
FORT-PRK 504	2,2	1420	360	460	50	400	355	355	80				325	730	585	635	290	340
FORT-PRK 506	0,55	880	360	460	50	400	355	355	80				240	645	585	635	440	490
FORT-PRK 562	18,5	2920	410	490	50	450	365	380	80	1120	710	410	550	965	788	838	440	490
	22												600	1015	858	908		
	30												640	1055	928	978		
FORT-PRK 564	4	1430	410	490	50	450	365	380	80				330	745	645	695	289	340
FORT-PRK 566	1,1	880	410	490	50	450	365	380	80				290	705	645	695	289	340
FORT-PRK 632	22	2920	445	610	50	500	415	420	80							600	1065	903
	30/37									640	1105	973				1023	540	590
FORT-PRK 634	5,5	1450	445	610	50	500	415	420	80	400	865	690				740	337	387
FORT-PRK 636	2,2	950	445	610	50	500	415	420	80	330	795	690				740	337	387
FORT-PRK 804	22	1450	665	820	80	700	590	590	100	600	1270	813				893	862	942
FORT-PRK 806	7,5	955	665	820	80	700	590	590	100	510	1180	690				770	862	942

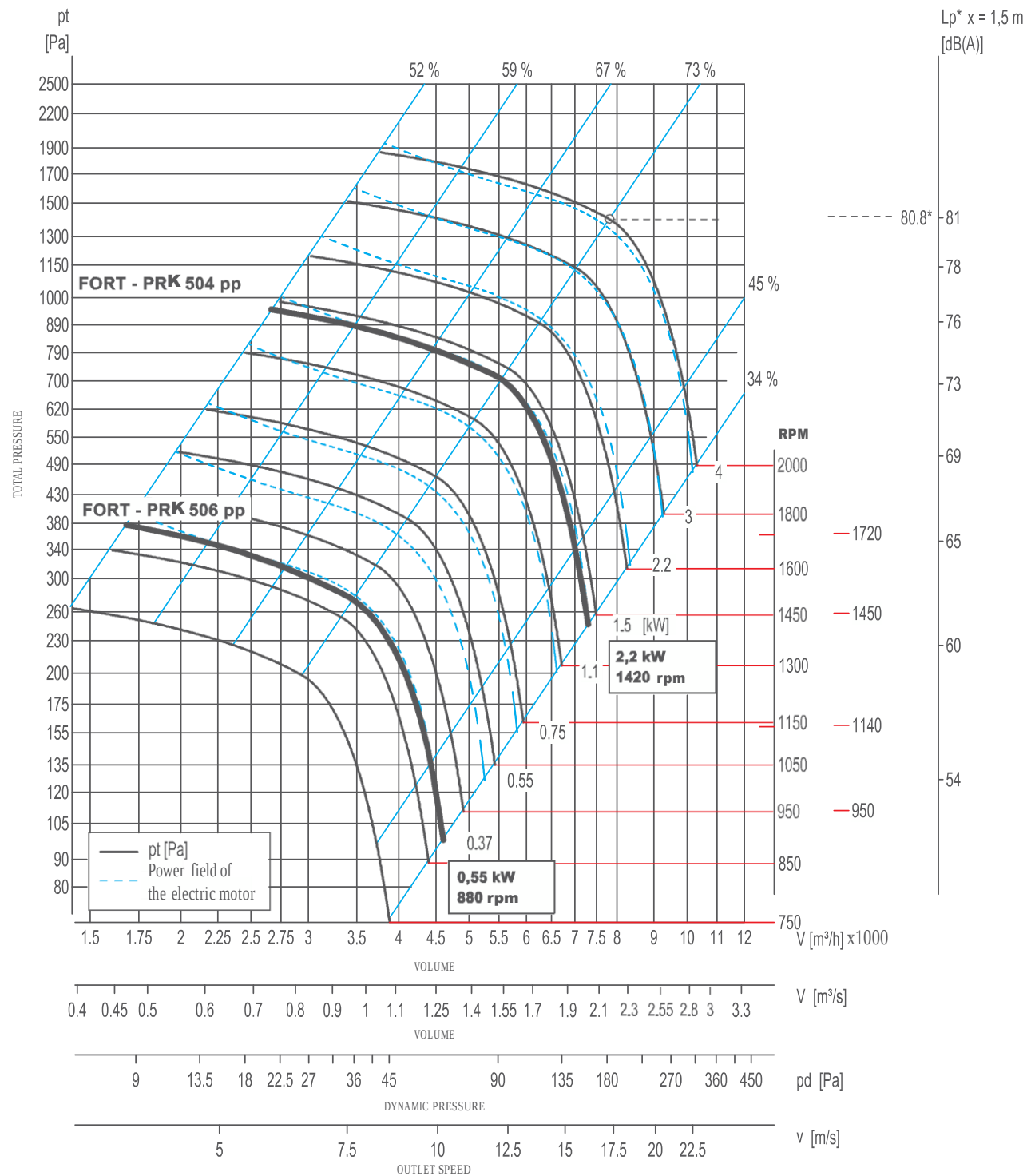
FORT - PRK 50



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
FORT - PRK 502	BNV Zone 2 / Zone 1	15 / 18 22	2900	2	29,8 / 36,1 40,7	29,8 / 36,1 40,7	250/275	400	400
FORT - PRK 504	BNV Zone 2 / Zone 1	2,2	1420	4	4,79	4,79	120	400	400
FORT - PRK 506	BNV	0,55	880	6	1,7	1,7	110	400	400

** the values may differ depending on the electric motor type

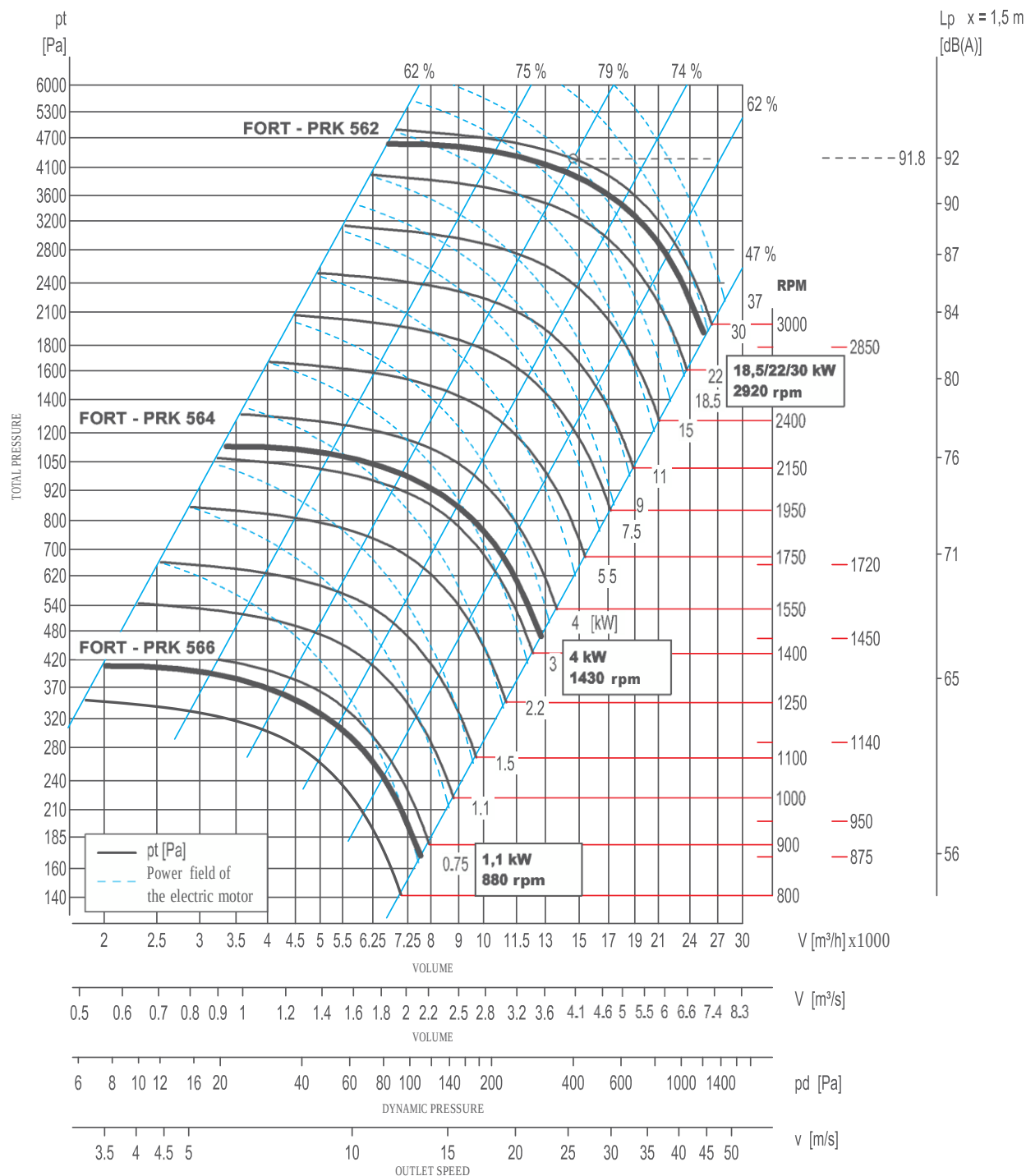
FORT - PRK 50 pp



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
FORT - PRK 504 pp	BNV Zone 2 / Zone 1	2,20	1420	4	4,79	4,79	110	400	400
FORT - PRK 506 pp	BNV Zone 2 / Zone 1	0,55	880	6	1,7	1,7	100	400	400

** the values may differ depending on the electric motor type

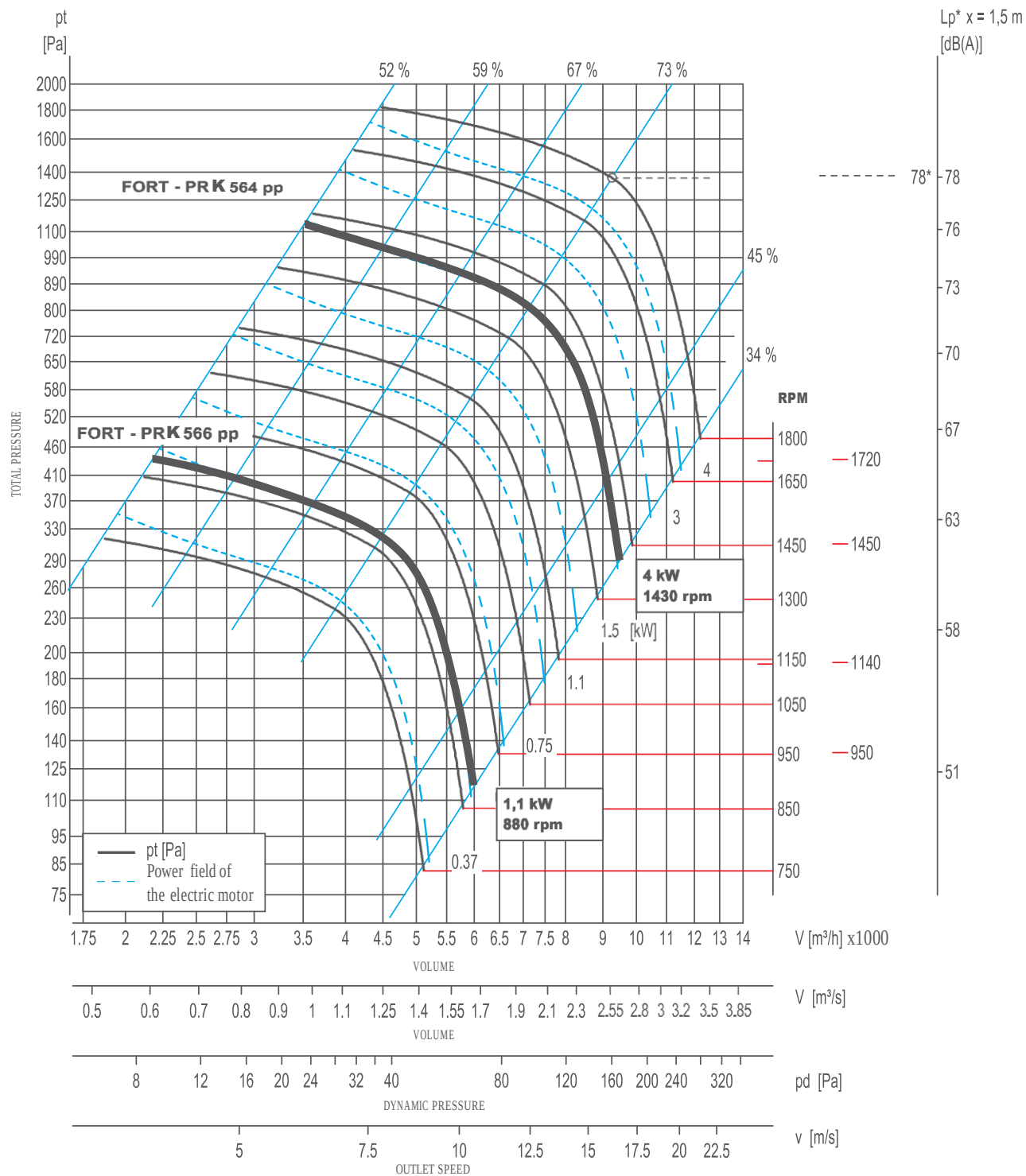
FORT - PRK 56



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
FORT - PRK 562	BNV Zone 2 / Zone 1	18,5 / 22 30	2920	2	36,1 / 40,7 57	36,1 / 40,7 57	240 / 270 320	450	450
FORT - PRK 564	BNV Zone 2 / Zone 1	4	1430	4	8,44	8,44	140	450	450
FORT - PRK 566	BNV Zone 2 / Zone 1	1,1	880	6	3,41	3,41	120	450	450

** the values may differ depending on the electric motor type

FORT - PRK 56 pp

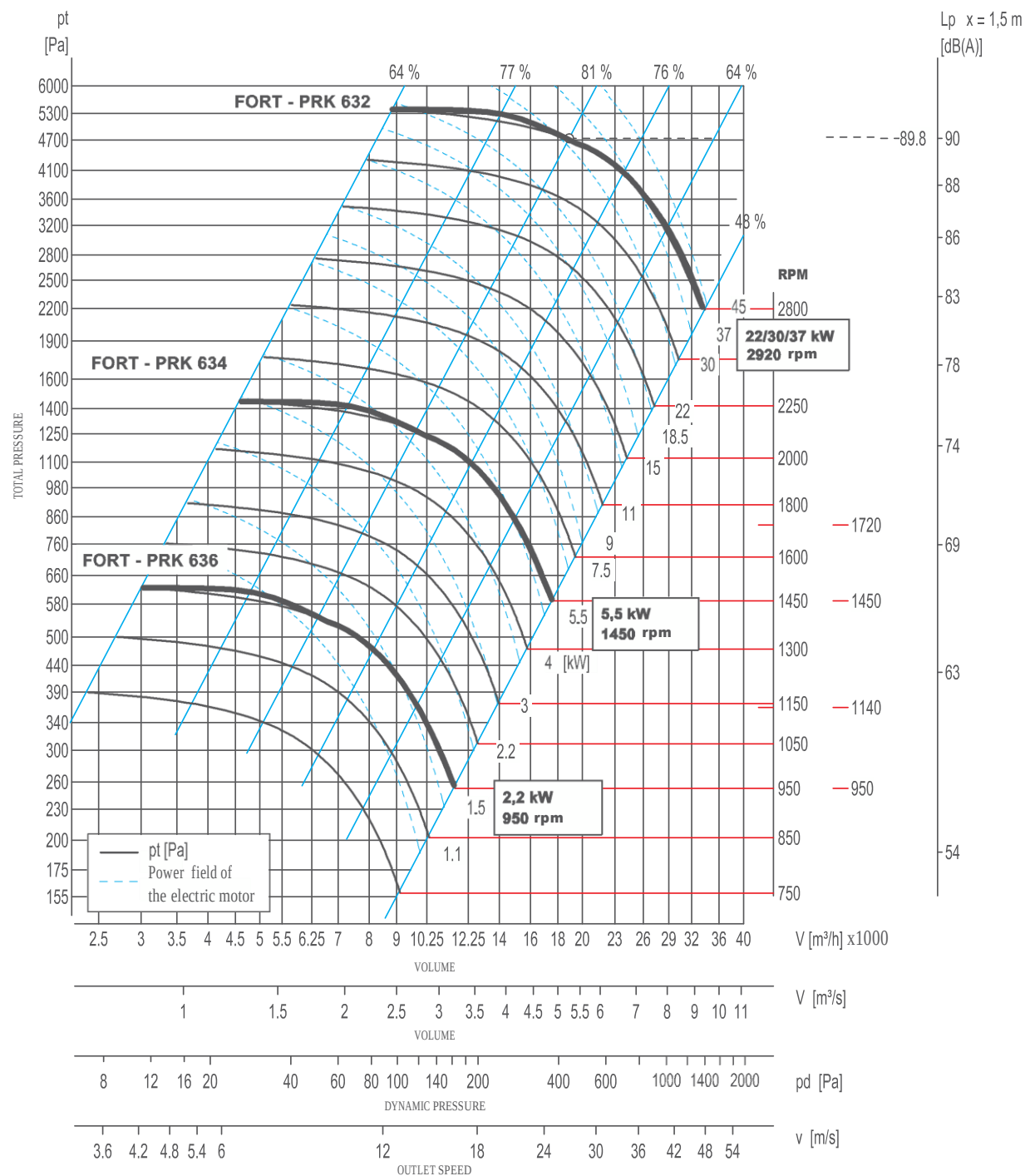


Fan type	Environment	Motor			Rated current** [A]	Thermal protection ** max. [-]	Weight ** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
FORT - PRK 564 pp	BNV Zone 2 / Zone 1	4	1430	4	8,44	8,44	140	450	450
FORT - PRK 566 pp	BNV Zone 2 / Zone 1	1,10	880	6	3,41	3,41	120	450	450

** the values may differ depending on the electric motor type

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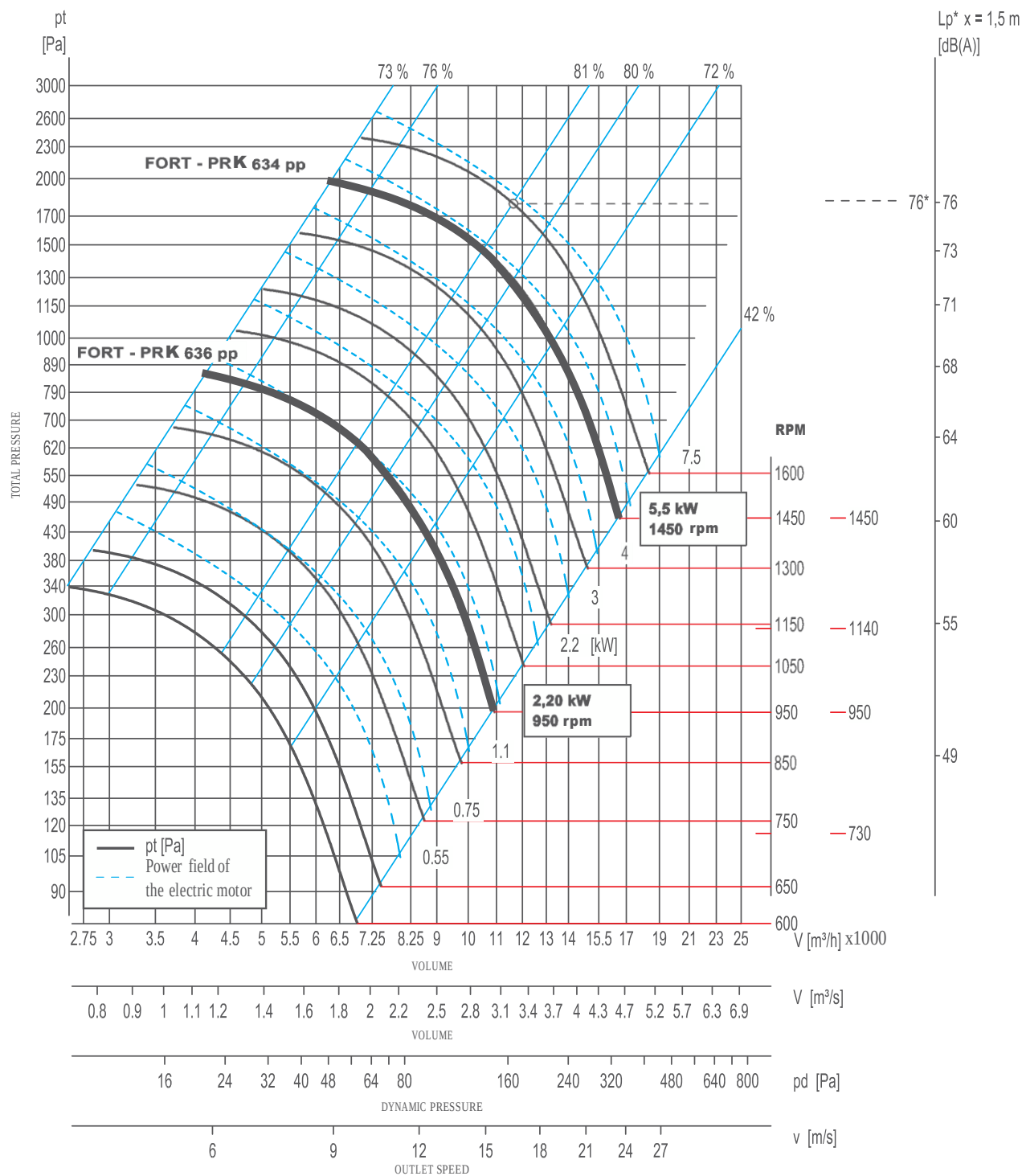
FORT - PRK 63



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
FORT - PRK 632	BNV Zone 2 / Zone 1	22 30 / 37	2920	2	40,7 57 / 69,9	40,7 57 / 69,9	290 350	500	500
FORT - PRK 634	BNV	5,5	1450	4	11,3	11,3	180	500	500

** the values may differ depending on the electric motor type

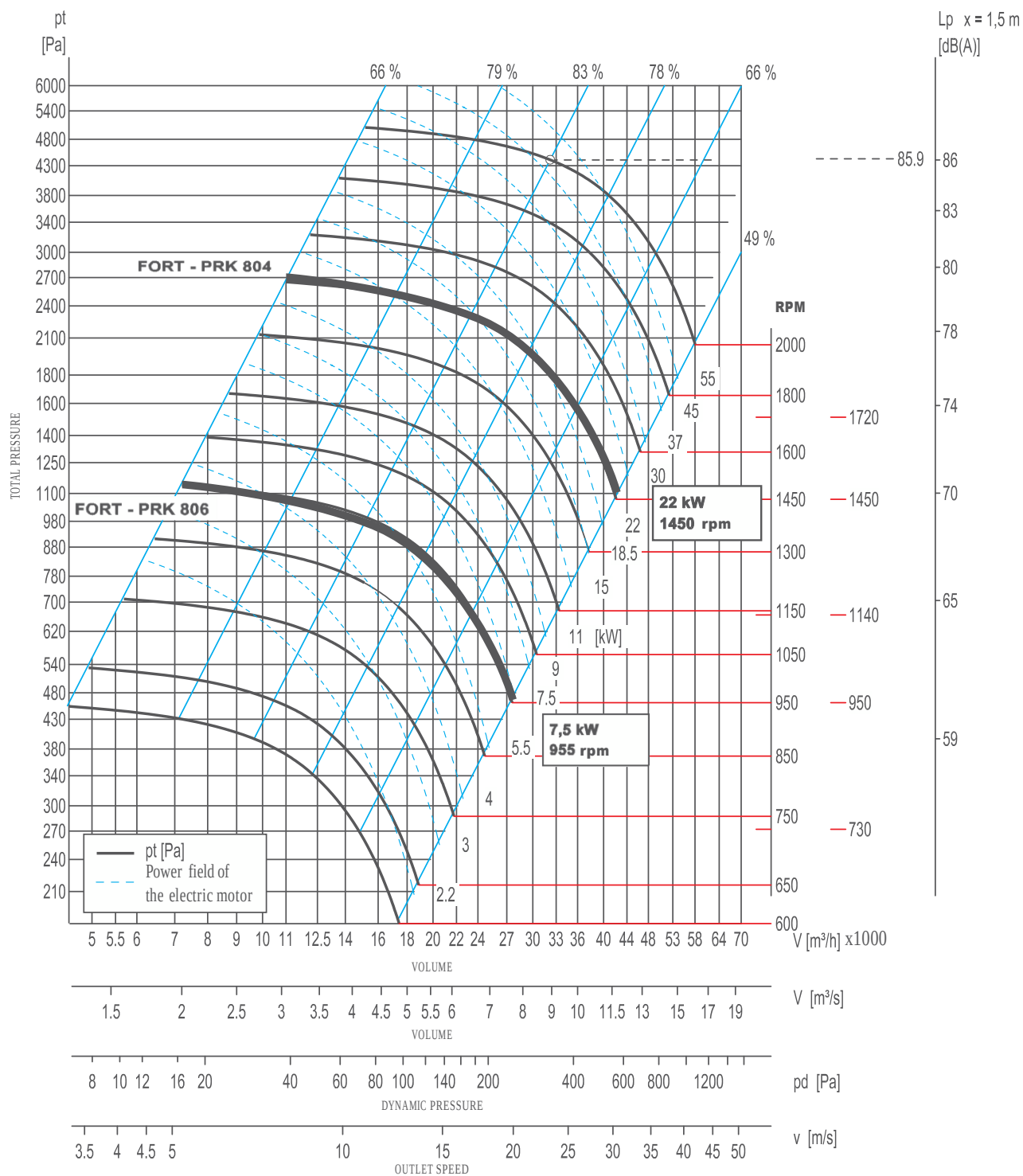
FORT - PRK 63 pp



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
FORT - PRK 634 pp	BNV Zone 2 / Zone 1	5,50	1450	4	11,3	11,3	180	500	500
FORT - PRK 636 pp	BNV Zone 2 / Zone 1	2,20	950	6	5,31	5,31	165	500	500

** the values may differ depending on the electric motor type

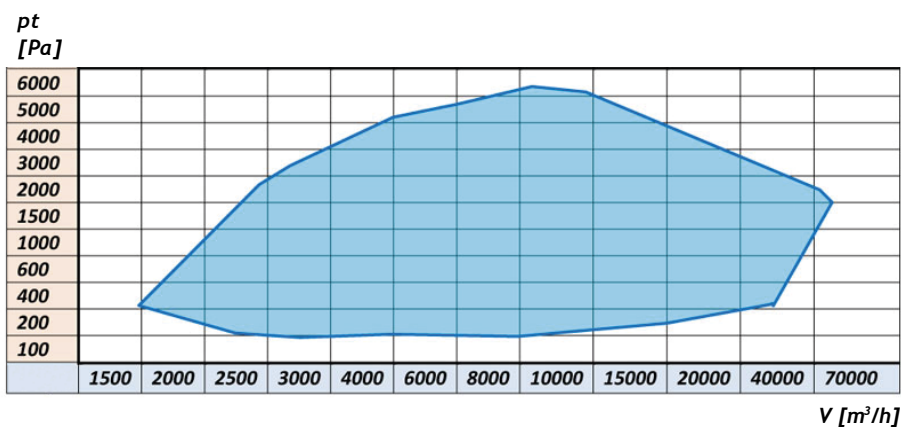
FORT - PRK 80



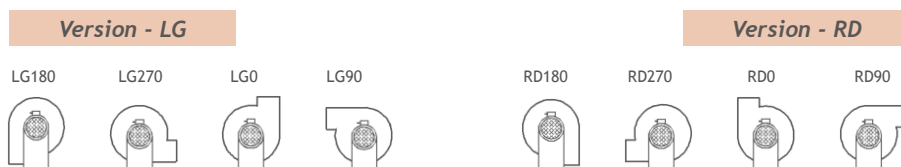
Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
FORT - PRK 804	BNV	22	1450	4	43,7	43,7	430	700	700

** the values may differ depending on the electric motor type

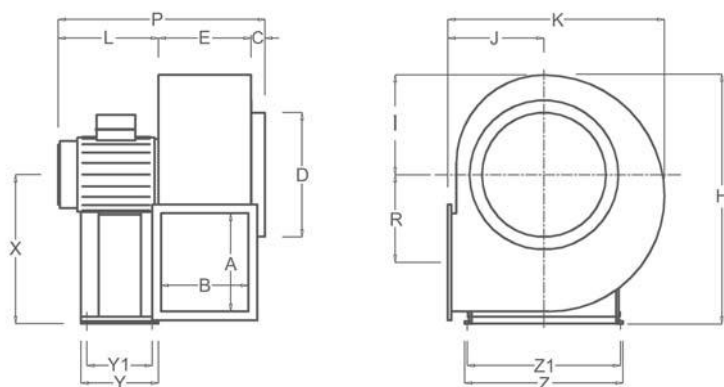
5.8 Fans of the FORT - PRH type



Spiral housing positions as viewed from the motor side



Dimensional diagram of the FORT - PRH type

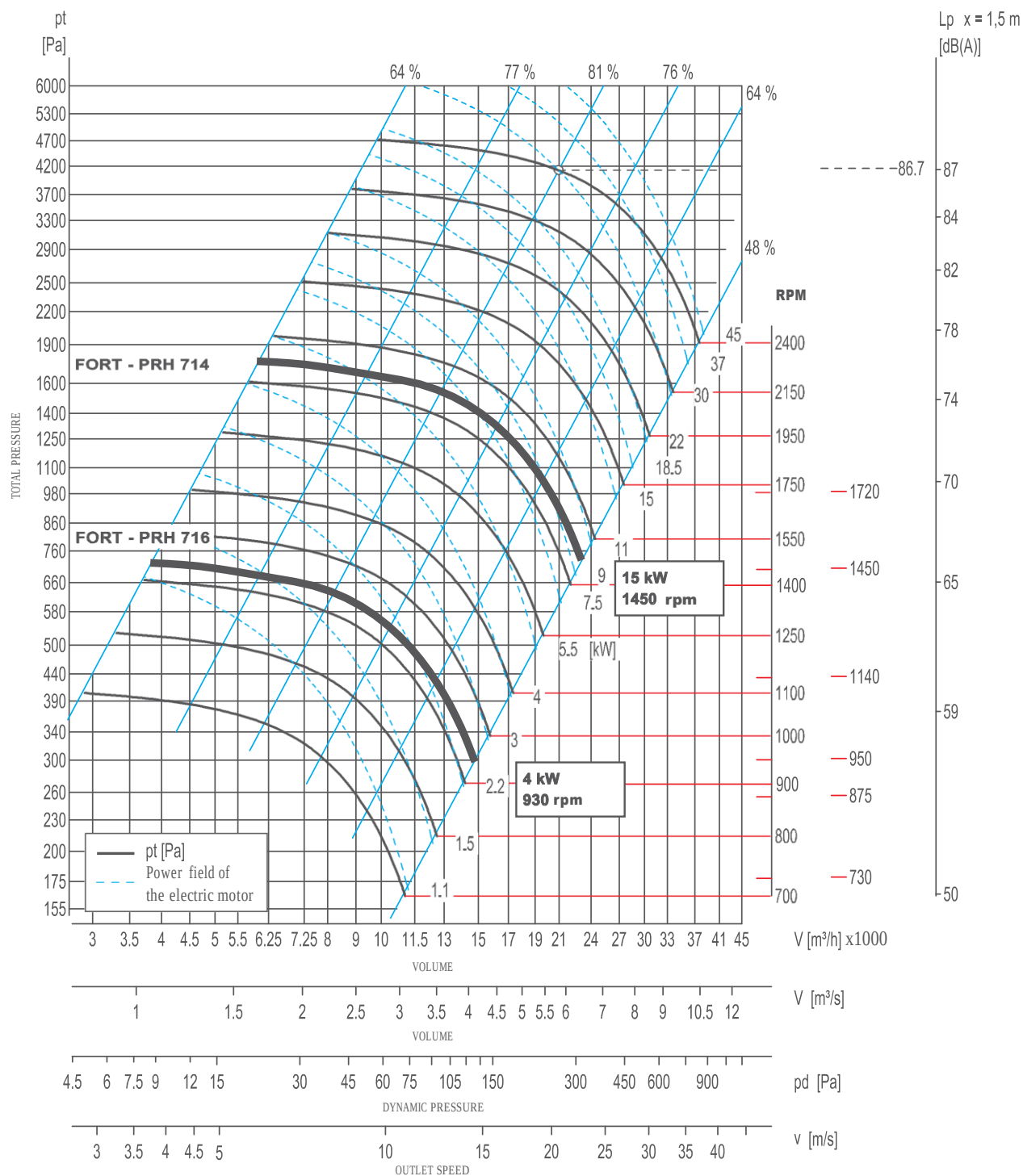


The dimensional diagram is illustrative. The dimensions are specified in [mm].
If you require exact dimensions, please contact us.

TYPE	Motor		A	B	C	D	E	H	I	J	K	L	P	X	Y1	Y	Z1	Z
	kW	rpm																
FORT-PRH 714	15	1450	560	500	80	710	530	1270	570	500	1190	553	1083	700	316	396	772	826
FORT-PRH 716	4	930										415	930					
FORT-PRH 804	22	1460	630	560	80	800	600	1420	640	560	1350	600	1200	780	360	440	862	926
FORT-PRH 806	7,5	960										500	1100					
FORT-PRH 904	45	1470	710	630	80	900	730	1590	720	630	1500	710	1380	870	440	520	962	1026
FORT-PRH 906	15	960										600	1270					

FORT - PRH fans of higher outputs are not included in this catalog. They are always individually agreed with the customer.

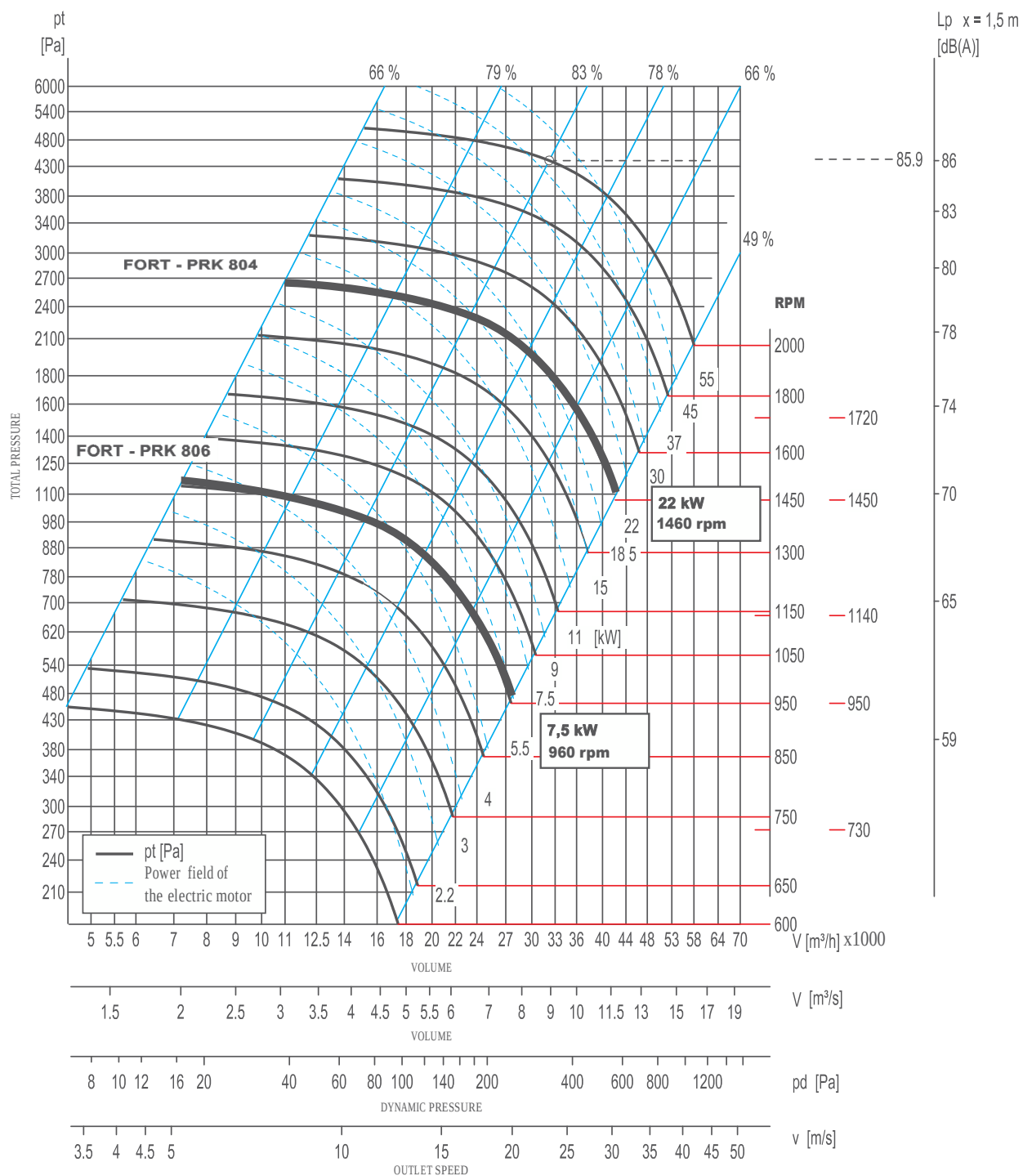
FORT - PRH 71



Fan type	Environment	Motor			Rated current** [A]	Thermal protection ** max. [-]	Weight ** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet AxB [mm]
FORT - PRH 714	BNV Zone 2 / Zone 1	15	1450	4	30,5	30,5	340	710	560×500
FORT - PRH 716	BNV Zone 2 / Zone 1	4	930	6	9,21	9,21	290	710	560×500

** the values may differ depending on the electric motor type

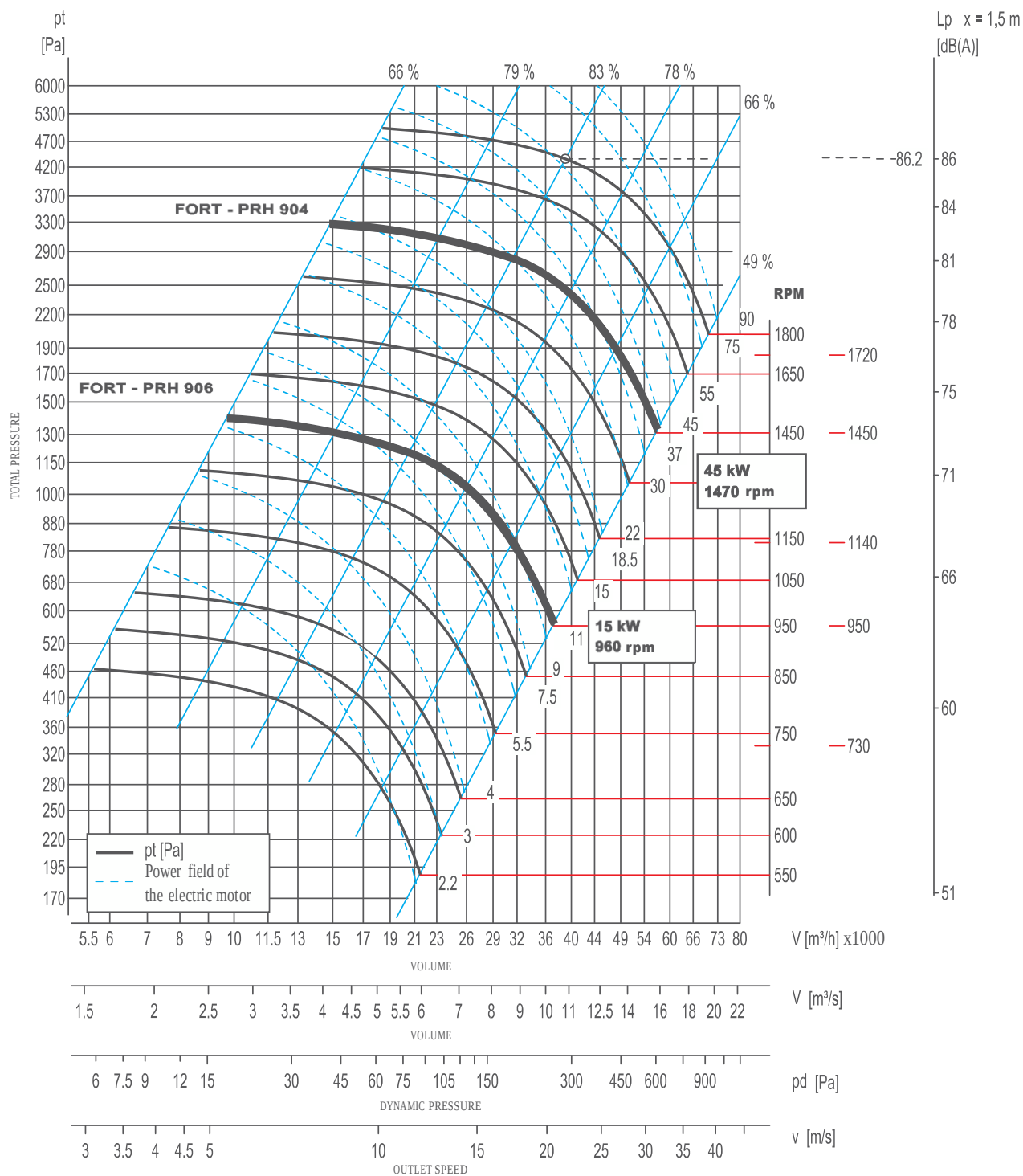
FORT - PRH 80



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet AxB [mm]
FORT - PRH 804	BNV Zone 2 / Zone 1	22	1460	4	43,7	43,7	430	800	630×560
FORT - PRH 806	BNV Zone 2 / Zone 1	7,5	960	6	16,75	16,75	390	800	630×560

** the values may differ depending on the electric motor type

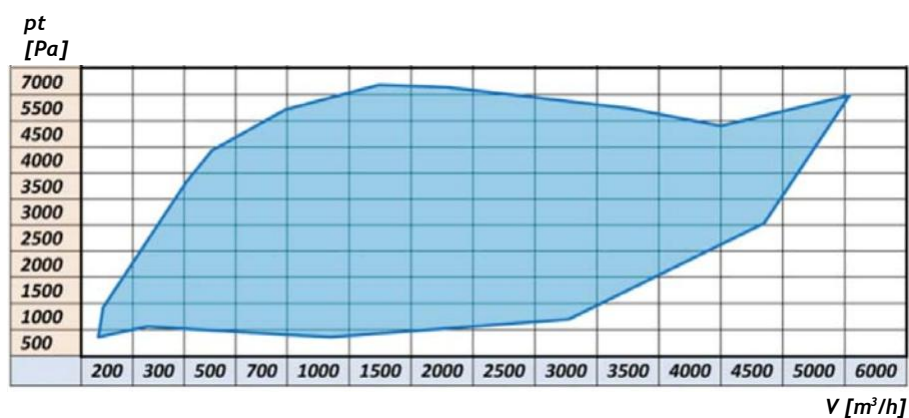
FORT - PRH 90



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet AxB [mm]
FORT - PRH 904	BNV Zone 2 / Zone 1	45	1470	4	82	82	680	900	710×630
FORT - PRH 906	BNV Zone 2 / Zone 1	15	960	6	32,1	32,1	540	900	710×630

** the values may differ depending on the electric motor type

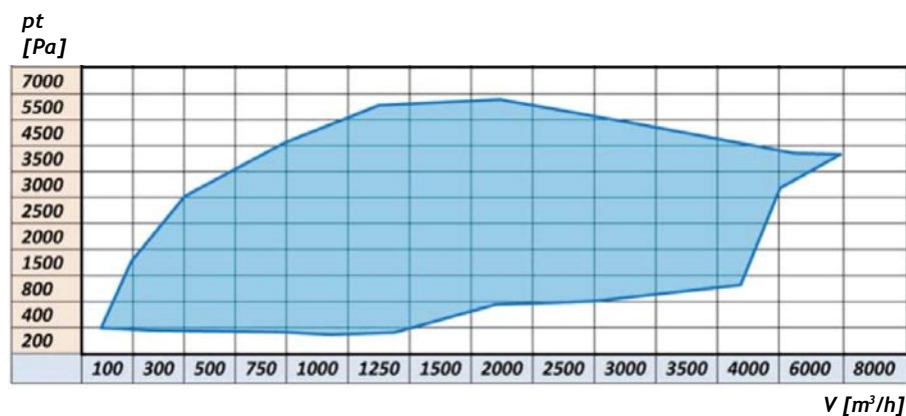
5.9 Fans of the FORT - PAS type



Spiral housing positions as viewed from the motor side



5.10 Fans of the FORT - PMS type



Spiral housing positions as viewed from the motor side



6. Fans of the **FORT NVN** type

Fans of the FORT NVN type are radial low-pressure fans. Their housings and impellers are made of PVC. The fans are designed to extract vapors of aggressive liquids as acids and lyes at a temperature of 0°C to 40°C from an environment without the risk of explosion. At temperatures below 0°C PVC gets brittle and can be easily damaged. For this reason mechanical damage must be avoided. If the fan is exposed to climatic influences, the electric motor should be protected with a cover. The fans are equipped with single-speed three-phase asynchronous squirrel-cage electric motors for 400 V, insulation class F, ingress protection class IP 55 and permanent load S1.

The fans cannot be used for extraction of air containing impurities (as e.g. fiber dist or crystallizing vapor) that would sediment on the impeller or fan housing. If vapors of chromosulphuric acid are extracted, the service life of the plastic part is limited to 2,000 operation hours. The service life can be extended by installation of a suitable vapor separator upstream of the fan.

The fan consists of a housing, impeller, flexible connections, electric motor, stool and anti-vibration kits. It is connected to the air duct with the use of flanges. Only if the suction or discharge orifice of the fan is not connected to an air duct, the free end should be fitted with a grille to prevent a foreign object from entering the fan.

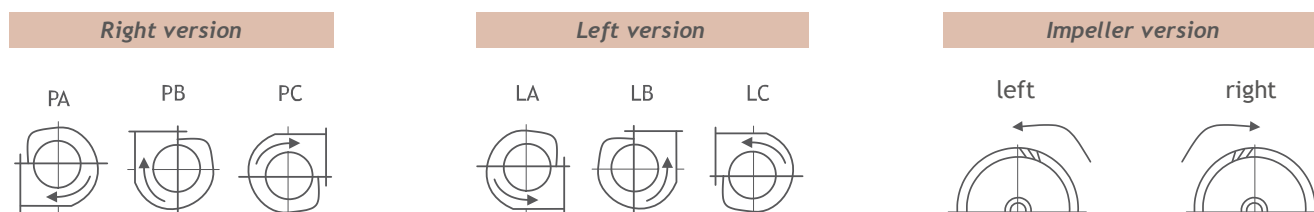
Warning:

During installation you must fit a condensate drain adapter or at least drill a hole with a diameter of approx. 5 mm at the lowest point of the fan housing. If this measure is omitted, condensate may accumulate, causing damage to the fan (in winter there is a danger of condensate freezing and subsequent damage of the impeller and fan housing).

The fans are not protected from overloading in the standard version. Therefore, before installation a suitable thermal protection device should be incorporated in the electric system.

The fan housing is intended for installation in the left or right version. The design of the impeller makes it suitable for the left or right version. The housing is mounted on the stool as required in position A, B or C.

Spiral housing positions as viewed from the suction side



Ordering

In your order you must exactly specify the fan type, position of the spiral housing and the requested options.

Example no. 1	
FORT NVN 315V - PA fan	1 piece
Thermo switches on the electric motor	1 piece
Electric motor cover	1 piece
Spare part - impeller for the fan FORT NVN 630M	
	1 piece

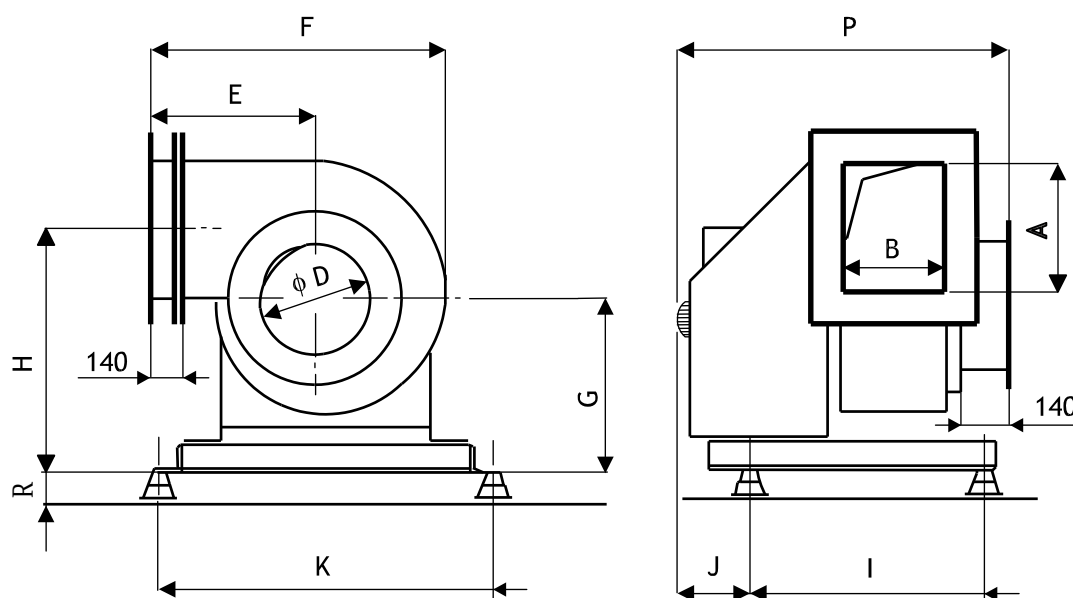


Fan type	Motor			Volume * V [m³/h]	Pressure * Δp_t [Pa]	Rated current** [A]	Thermal protection ** max. [-]	Weight ** [kg]
	P [kW]	n [min⁻¹]	Number of poles					
FORT NVN 250M	0,25	850	6	1 225	200	0,67	0,67	44
FORT NVN 250V	0,55	1 395	4	1 480	455	1,42	1,42	46
FORT NVN 315M	0,55	910	6	2 270	380	1,52	1,52	55
FORT NVN 315V	1,5	1 400	4	3 060	845	6,00	6,00	60
FORT NVN 400M	2,2	955	6	4 500	660	9,70	9,70	119
FORT NVN 400V	5,5	1 440	4	5 940	1 460	10,80	10,80	114
FORT NVN 500	5,5	960	6	8 390	1 000	12,00	12,00	122
FORT NVN 630M	15	975	6	15 260	1 675	30,00	30,00	415
FORT NVN 630V	18,5	1 000	6	17 930	1 840	37,50	37,50	440

* the values of air volume and pressure are determined as approximate in the point of highest efficiency of the fan

** the values may differ depending on the electric motor type

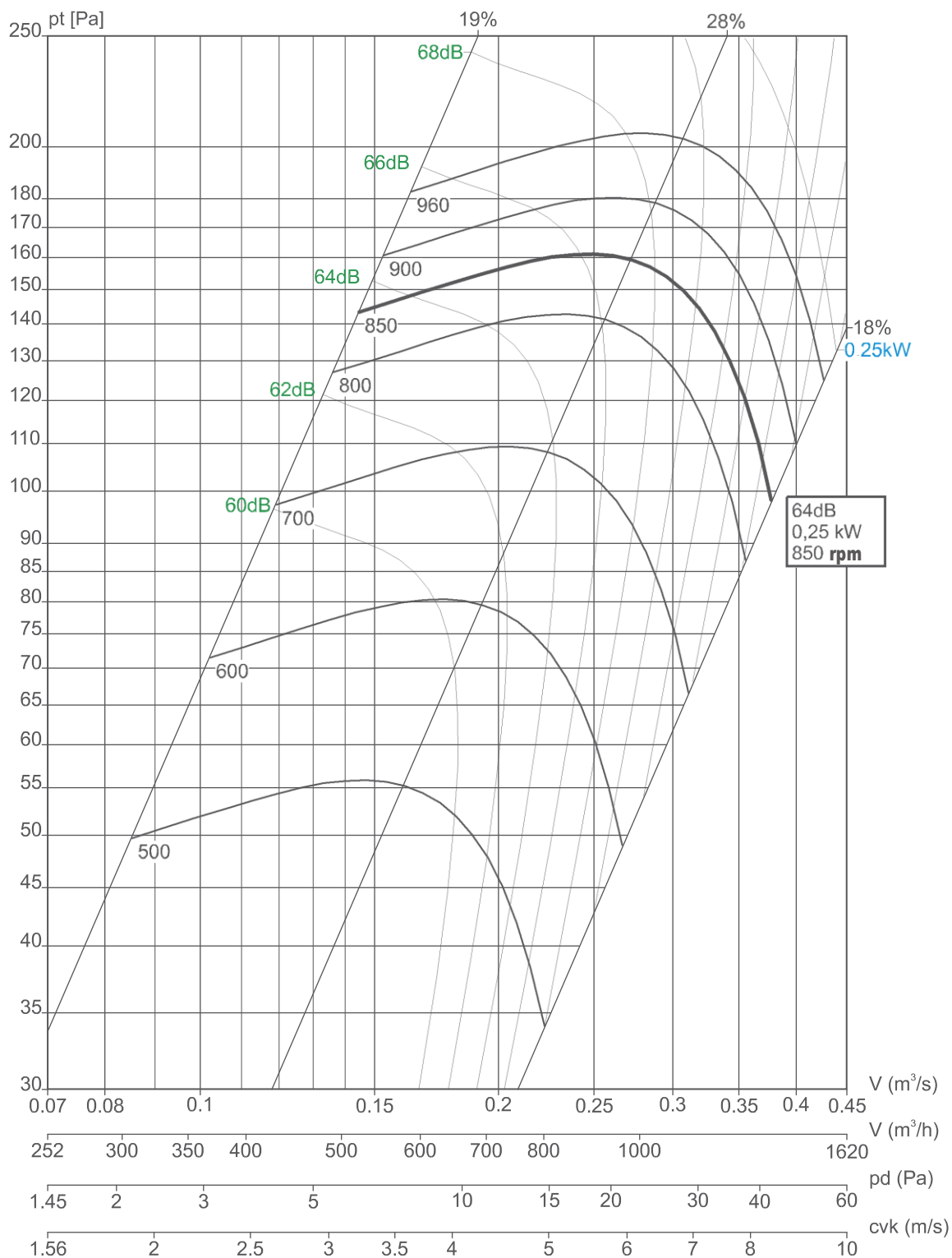
Dimensional diagram of the FORT - NVN type



The dimensional diagram is illustrative. The dimensions are specified in [mm].
If you require exact dimensions, please contact us.

Fan type	Dimensions [mm]											
	A	B	D	E	F	G	H	I	J	K	P	R
FORT NVN 250M	250	180	250	355	600	360	610	340	30	368	575	40
FORT NVN 250V									38		595	
FORT NVN 315M	315	225	315	395	695	435	751	400	30	438	645	
FORT NVN 315V									108		680	
FORT NVN 400M	400	280	400	460	820	520	920	420	110	548	810	73
FORT NVN 400V									113		830	
FORT NVN 500	500	355	500	520	1007	620	1120	600	40	672	970	
FORT NVN 630M	630	450	630	620	1203	760	1083	740	107	832	1240	94
FORT NVN 630V									100			90

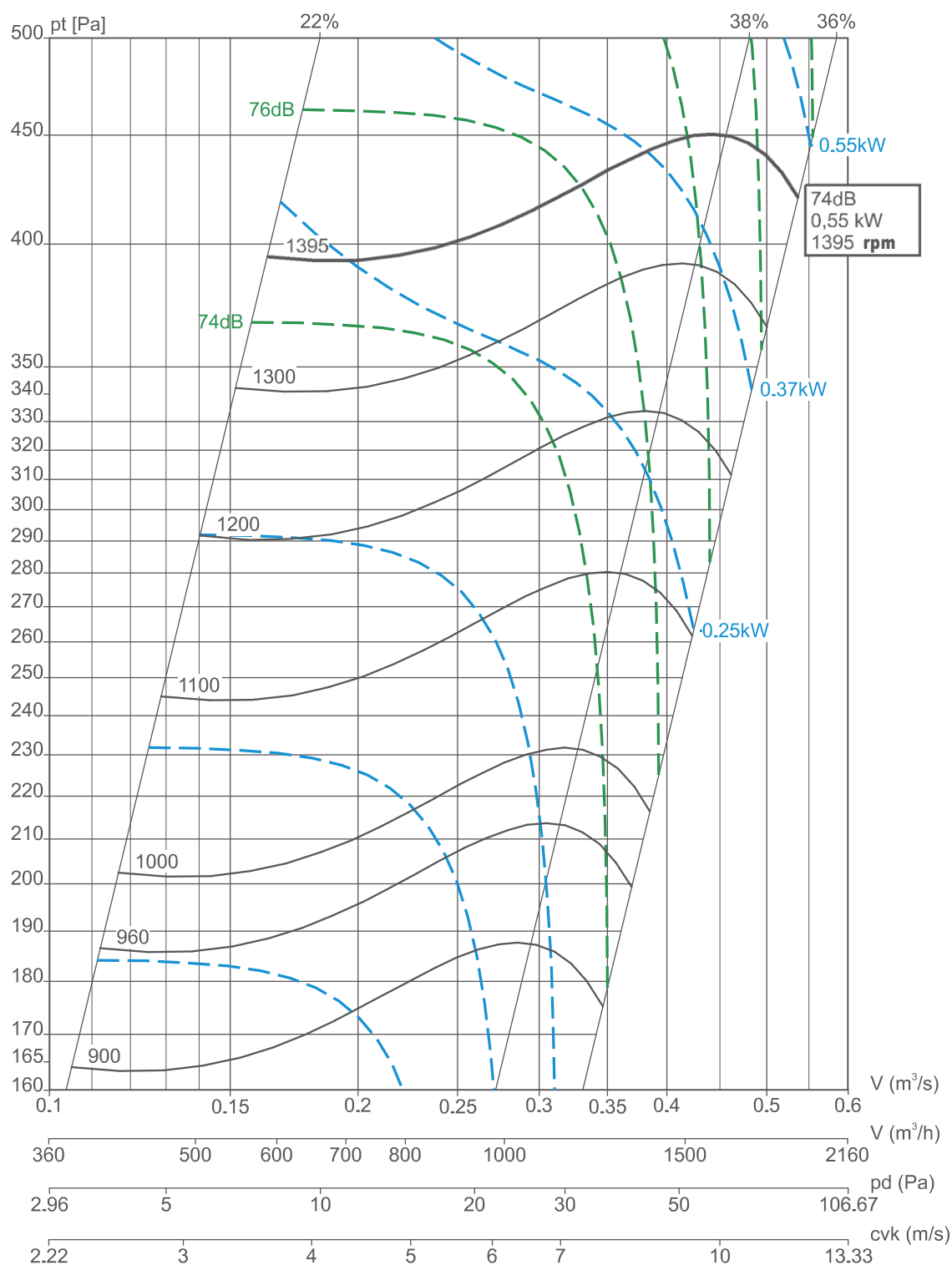
FORT NVN 250M



Type Fan	Environment	Motor			Rated current** [A]	Thermal protection ** max. [-]	Weight ** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet AxB [mm]

** the values may differ depending on the electric motor type

FORT NVN 250V

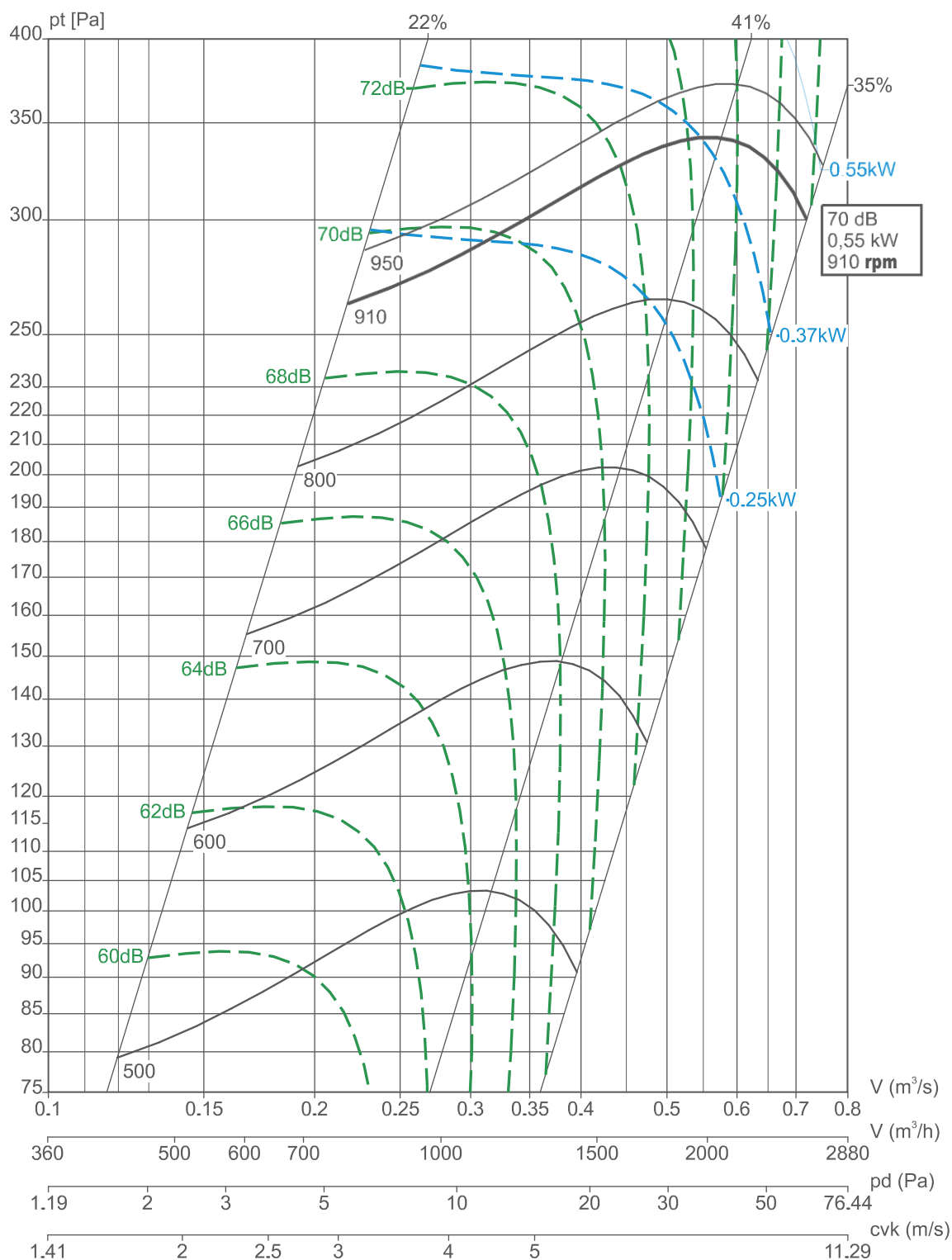


Type Fan	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet AxB [mm]
FORT NVN 250V	BNV	0,55	1395	4	1,42	1,42	46	250	250x180

** the values may differ depending on the electric motor type

Plastikiniai ventiliatoriai

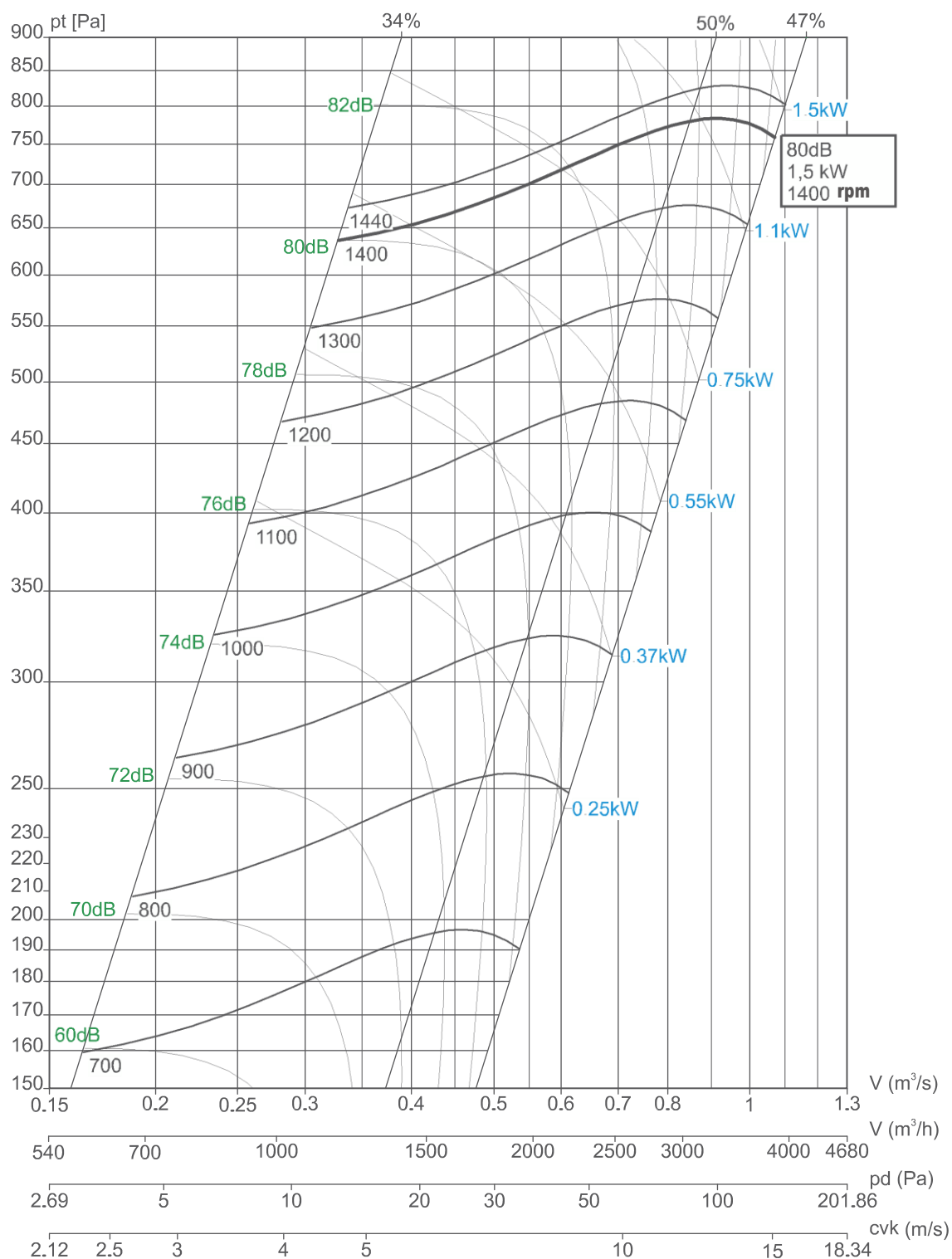
FORT NVN 315M



Type Fan	Environment	Motor			Rated current** [A]	Thermal protection ** max. [-]	Weight ** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet AxB [mm]

** the values may differ depending on the electric motor type

FORT NVN 315V

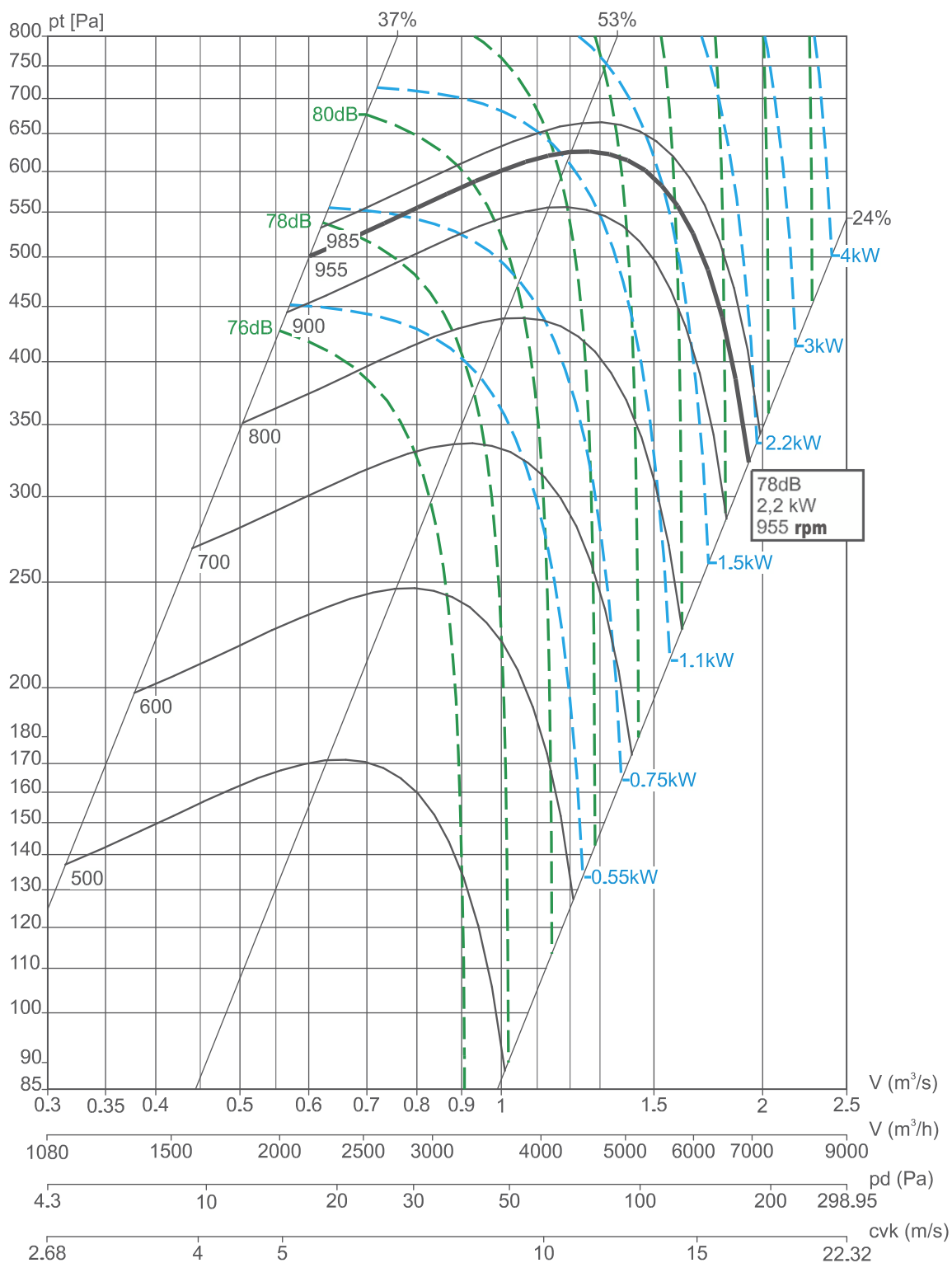


Type Fan	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet AxB [mm]
FORT NVN 315V	BNV	1,5	1400	4	6,00	6,00	60	315	315x225

** the values may differ depending on the electric motor type

Plastikiniai ventiliatoriai

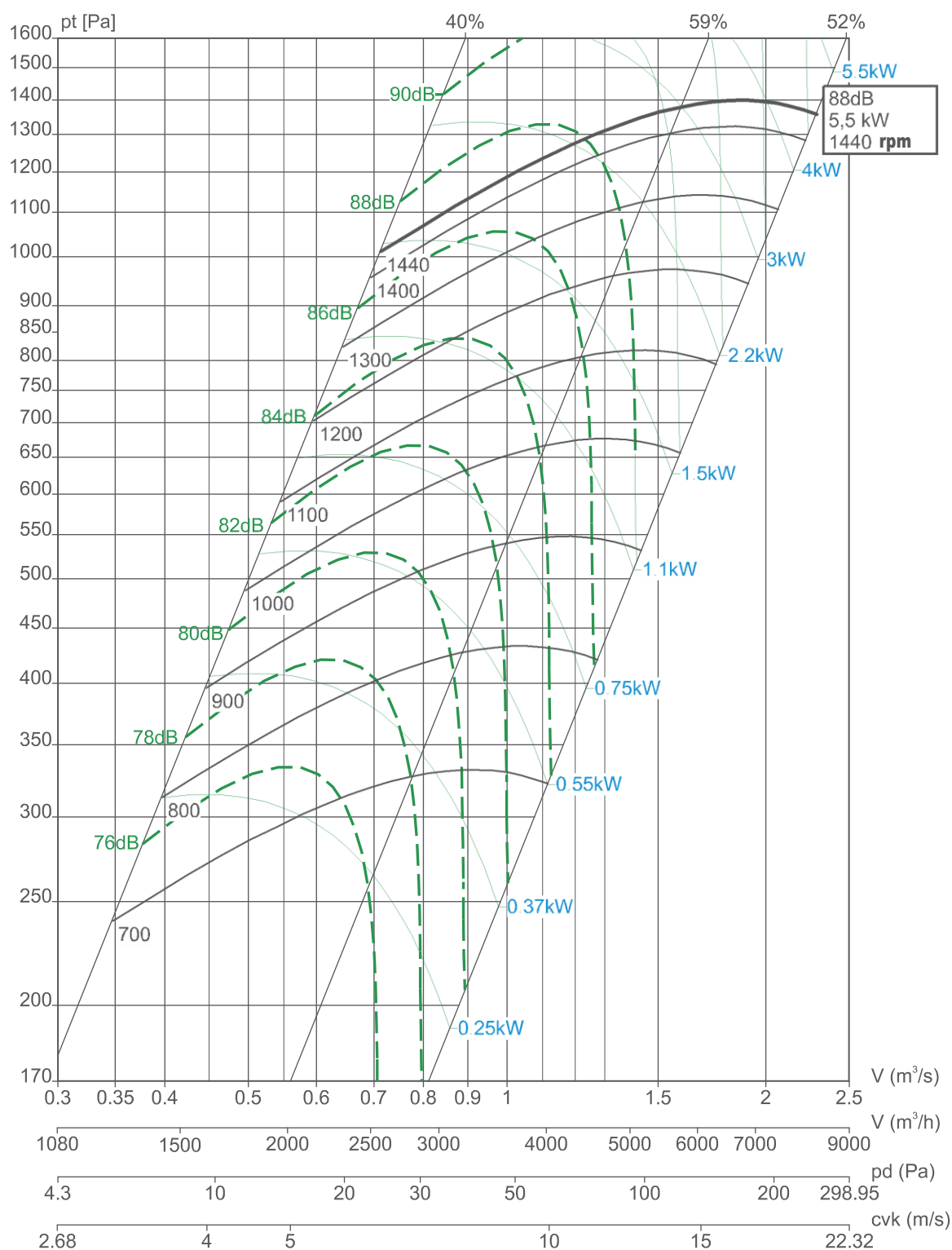
FORT NVN 400M



Type Fan	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet AxB [mm]

** the values may differ depending on the electric motor type

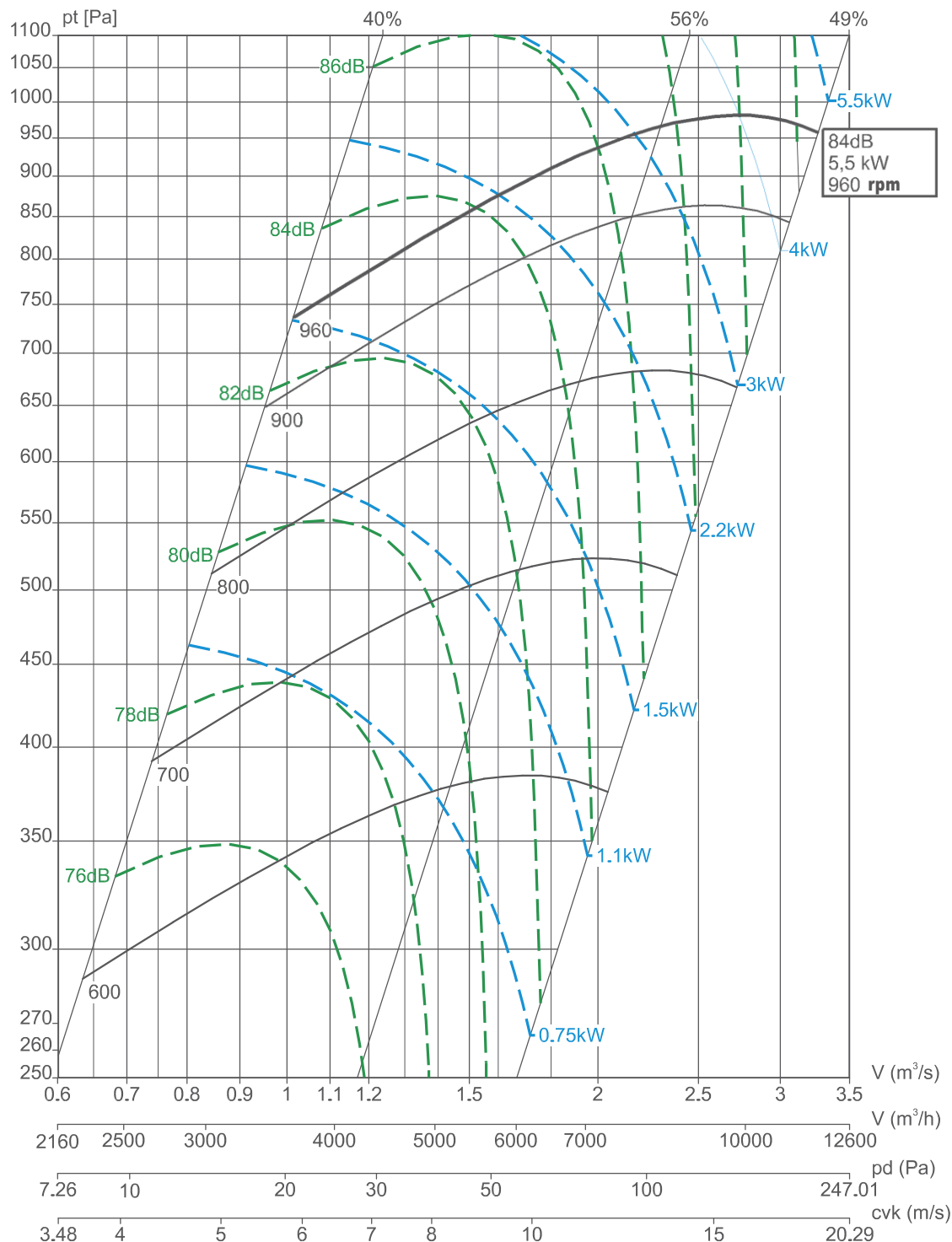
FORT NVN 400V



Type Fan	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet AxB [mm]
FORT NVN 400V	BNV	5,5	1440	4	10,80	10,80	114	400	400x280

** the values may differ depending on the electric motor type

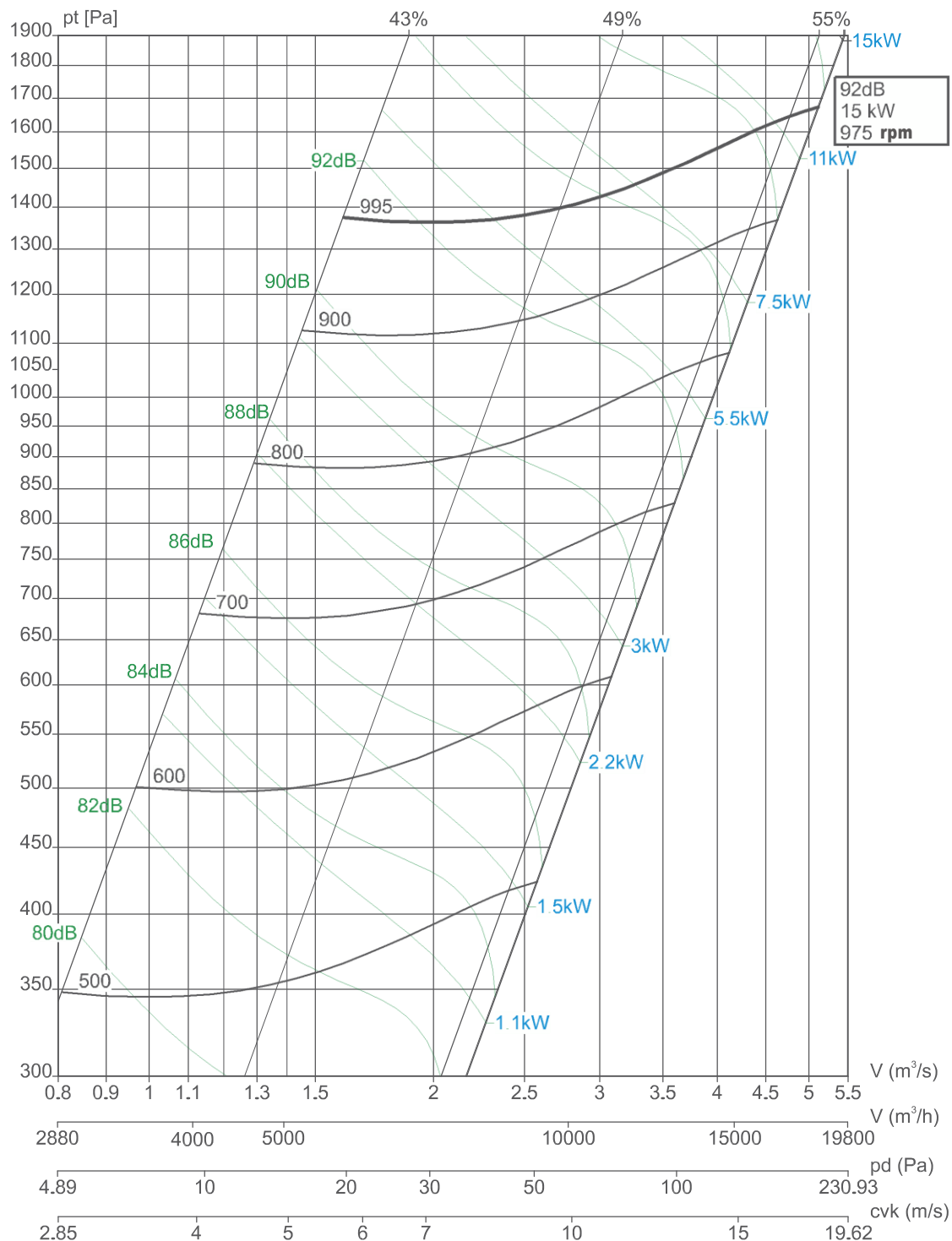
FORT NVN 500



Type Fan	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet AxB [mm]
FORT NVN 500	BNV	5,5	960	6	12,00	12,00	122	500	500x355

** the values may differ depending on the electric motor type

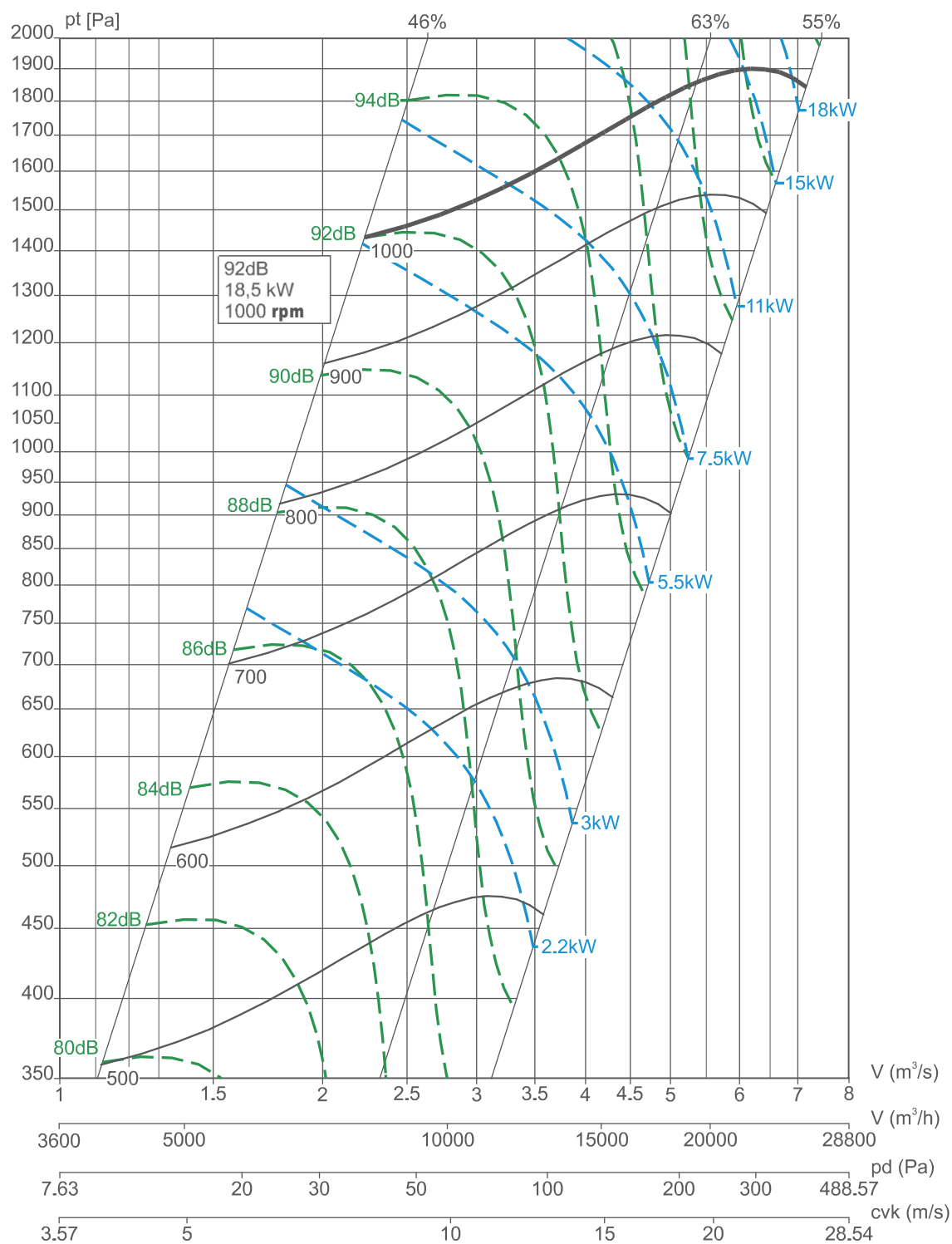
FORT NVN 630M



Type Fan	Environment	Motor			Rated current** [A]	Thermal protection ** max. [-]	Weight ** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet AxB [mm]
FORT NVN 630M	BNV	15	975	6	30,00	30,00	415	630	630x450

** the values may differ depending on the electric motor type

FORT NVN 630V



Type Fan	Environment	Motor			Rated current** [A]	Thermal protection ** max. [-]	Weight ** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet AxB [mm]
FORT NVN 630V	BNV	18,5	1000	6	37,50	37,50	440	630	630x450

** the values may differ depending on the electric motor type

7. Fans of the SEAT and STORM type

Fans of the SEAT and STORM types are designed to extract air containing aggressive substances as acids and lyes, especially from the industrial environment and laboratories at temperatures from -10°C to $+60^{\circ}\text{C}$. Their benefits are easy and quick installation, low weight and good aerodynamic properties. The housings as well as impellers are made of polypropylene. In the standard versions the fans are equipped with a single-speed three-phase squirrel-cage electric motors for 400 V (design B3, ingress-protection class IP 55, insulation of class F, with 2 or 4 poles). The fans are not protected from overloading. Therefore, before installation a suitable thermal protection device should be incorporated in the electric system.

Air ducts and fans are interconnected with flexible connections that prevent transmission of vibrations to the duct. The flexible connections are fixed with stainless steel clamps. The fans must be installed on anti-vibration kits. If the suction or discharge orifice of the fan is not connected to a duct, the open end should be fitted with a suitable grille to prevent a foreign object from entering the fan.

The fan housing is intended for installation in the left or right version. The design of the impeller makes it suitable for the right or left arrangement. The housings of the fan impellers are assembled as required in positions 2 to 8 (left version) or 10 to 16 (right version). The STORM and SEAT 35 fans are only available in the right version in positions 10 to 16.

Spiral housing positions as viewed from the suction side

Left version

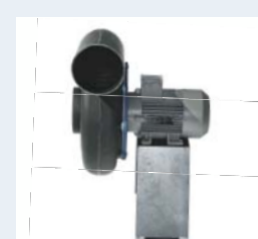


Right version



Warning

During installation you must drill a hole with a diameter of approx. 5 mm at the lowest point of the fan housing to ensure condensate drain. If this step is omitted, in winter months condensate may freeze and subsequently damage the impeller.



Technical parameters

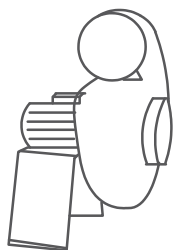
Type Fan	Motor				Volume* [m ³ /h]	Pressure* [Pa _{cv}]	Rated current [A]	Thermal protection max. [-]	Acoustic power [dB]	Weight [kg]
	P [kW]	n [min ⁻¹]	Number of poles	Shaft ø [mm]						
STORM 10	0,25	1400	4	14	50	80	0,76	0,76	51,6	6,3
	0,37	2800	2		100	350	1,00	1,00	69,6	6,5
STORM 12	0,25	1400	4		100	200	0,76	0,76	56,8	6,9
	0,37	2800	2		200	820	1,00	1,00	74	7,1
STORM 14	1,1	2800	2	19	600	1320	2,40	2,40	78	13,5
STORM 16	2,2	2800	2	24	1000	1950	4,55	4,55	93,8	20,1
SEAT 15	0,25	1 450	4	14	300	85	0,76	0,76	49,0	10
	0,37	2 740	2		400	400	1,00	1,00	63,0	10
SEAT 20	0,18	835	6	14	500	90	0,62	0,62	41,0	11
	0,25	1 350	4		800	200	0,76	0,76	51,0	11
	0,75	2 855	2	19	1000	1000	1,73	1,73	66,0	13
	1,1	2 845	2		1700	800	2,40	2,40	72,0	15
SEAT 25	0,18	835	6	14	1000	140	0,62	0,62	43,0	14
	0,37	1 370	4		1500	330	1,03	1,03	53,0	14
	1,5	2 860	2	24	1000	1500	3,25	3,25	68,0	21
	2,2	2 880	2		2000	1500	4,55	4,55	68,0	24
SEAT 30	0,75	910	6	19	1600	220	1,60	1,60	40,0	22
	1,5	1 420	4	24	2500	540	3,40	3,40	49,0	26
SEAT 35	1,5	750	8	28	3000	280	3,9**	3,9**	67,8	24
	2,2	1000	6	28	4000	450	5,2**	5,2**	74,1	27
	5,5	1400	4	38	5000	1080	11,4**/15,2**	11,4**/15,2**	86	42,5/49**

* the values of air volume and pressure are determined as approximate

** depending on the electric motor type

The fans can be installed in several ways.

Installation recommendation:



Metallic stool

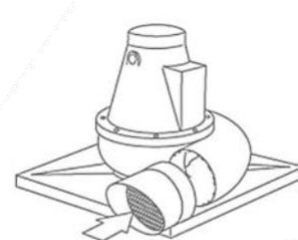
The metallic stool is intended for fans installed in interiors.

The electric motor of the fan is mounted to the top part of the stool.



Plastic stool (PP closed)

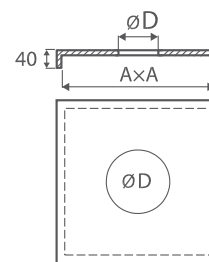
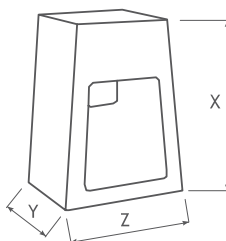
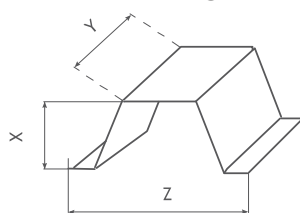
With its design the plastic stool is intended for exterior installation of the fan. The electric motor of the fan is located inside the stool, which protects it from climatic influences.



Roof set

The fan is installed horizontally on the foundation plate. The electric motor is protected from climatic influences by a plastic cover.

Dimensional drawing



metallic stool

plastic stool (PP closed)

foundation plate of a roof set

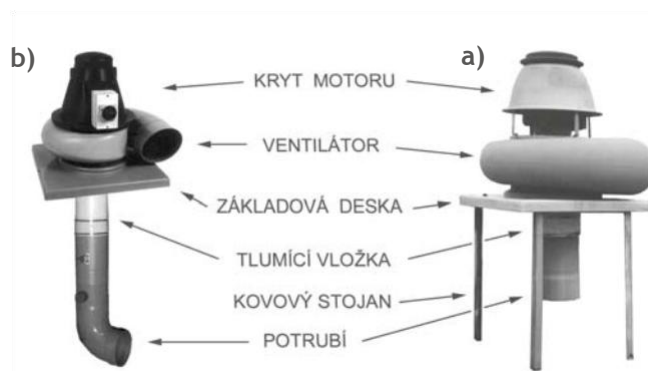
Type Fan	connection Clamp Ø [mm]	Stool type	Dimensions [mm]			Roof set	
			X	Y	Z	A	D
STORM 12	90	Closed H 450	450	340	425		
STORM 14	125		450	340	425		
STORM 16	160		550	340	425		
SEAT 15	125		450	340	425		
SEAT 20	160		450	340	425	560	180
SEAT 25	200		450	340	425	560	225
SEAT 25*, 30	200,250	Closed H 550	550	340	425	565	275
SEAT 35	315	Closed H 700	715	505	585	690	330
STORM 10	75	Metallic					
STORM 12	90						
STORM 14	125						
STORM 16	160						
SEAT 15	125						
SEAT 20	160					560	180
SEAT 25	200					560	225
SEAT 30	250					565	275
SEAT 35	315					690	330

* valid for fans with an electric motor $P_i = 2,2 \text{ kW}$, $n = 2880 \text{ rpm}$

Roof set - installation options:

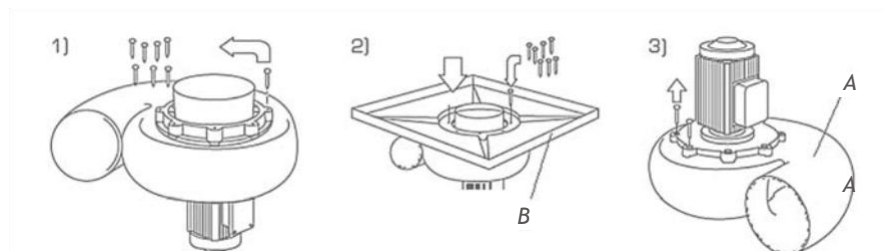
- the roof set consists of a foundation plate, motor cover and an outlet adapter with a grille

- the foundation plate with the fan is attached to a metallic structure. A flexible connection connecting the fan to the duct is fixed to the suction orifice of the fan. In case of a failure or for cleaning purposes the fan can be dismantled easily. The assembly procedure is the same as with the variant b)
- the foundation plate with the fan is anchored to a concrete base. The air duct is firmly connected to the fan and the flexible connection is only placed under the ceiling structure. A disadvantage is difficult connection of the air duct to the fan and possible disassembly.



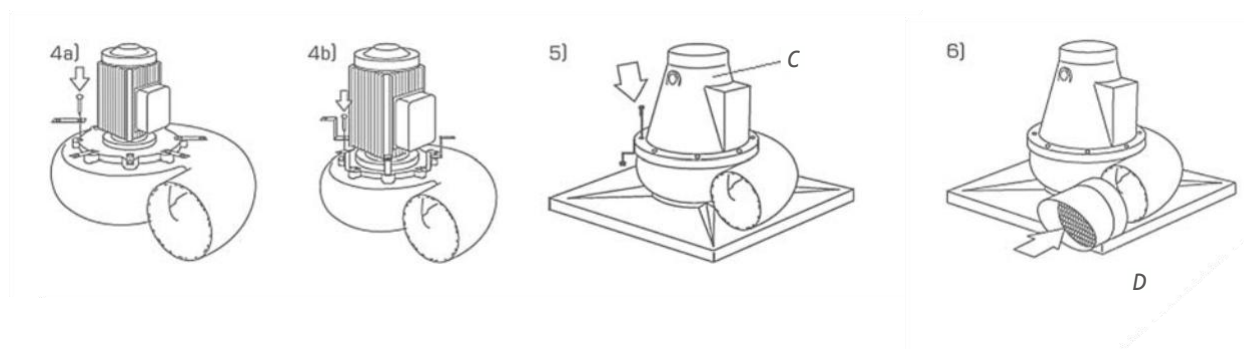
Roof set installation instructions

- 1) Unscrew the stainless-steel screws from the suction collar of the fan
- 2) Place the foundation plate onto the suction side and secure it with screws
- 3) Unscrew the screws on the fixing plate at the motor side in the place where the pads of the motor cover will be fixed
- 4) Install the spacing pads (bands), bend them upwards if necessary and fix them with screws
- 5) Fix the motor cover using screws, nuts and washers (after connecting the electric installation)
- 6) Complete the installation by placing the outlet adapter with a protective grille



The roof set consists of:

- fan [A]
- foundation plate [B]
- motor cover [C]
- outlet adapter with a grille [D]



Ordering

In your order you must exactly specify the fan type, electric motor output, speed, position of the spiral housing or required ventilation parameters and optional accessories.

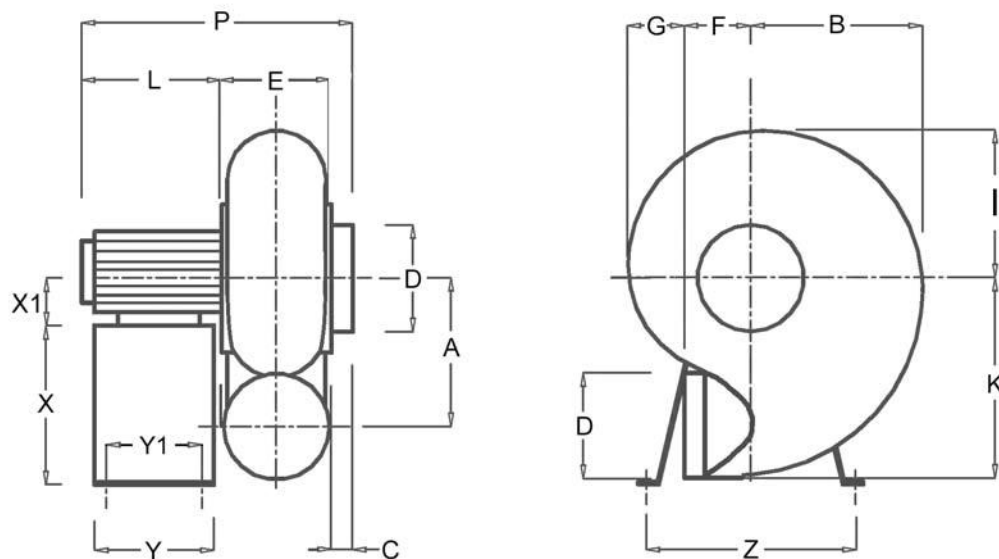
Example no. 1

Fan SEAT 20 - 1,1 kW, position 6	1 piece
Closed stool H 450 (or metallic stool)	1 piece
Flexible connection 160	2 pieces
Stainless-steel clamp 160	4 pieces

Example no. 2

SEAT fan for the parameters $V = 2500 \text{ m}^3/\text{h}$, $\Delta p = 500 \text{ Pa}$	1 piece
SEAT roof set	1 piece
Flexible connection	1 piece
Stainless-steel clamp	2 pieces

Dimensional diagram of the SEAT, STORM types

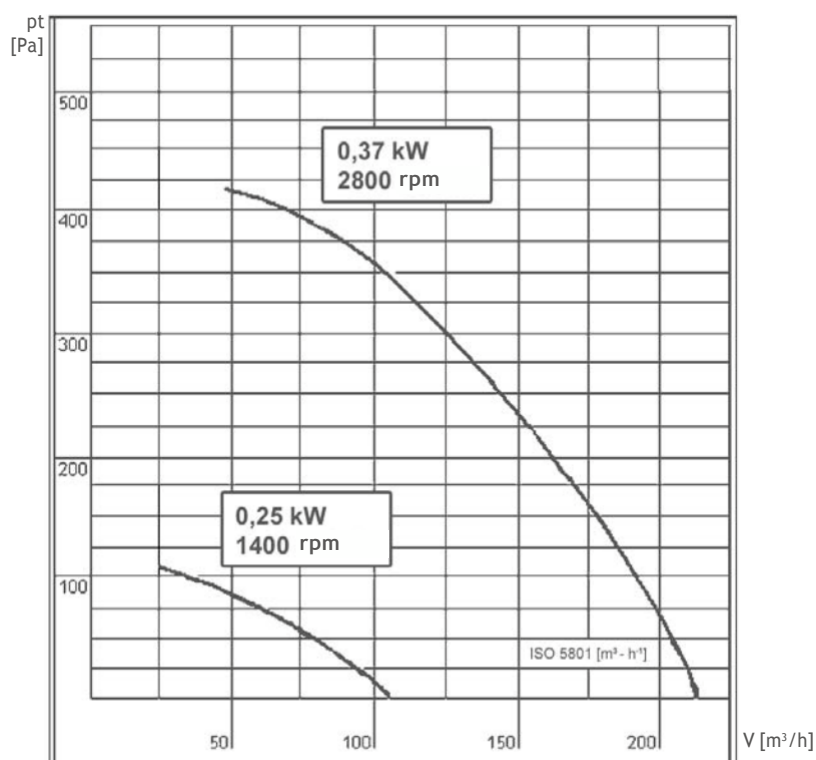


The dimensional diagram is illustrative. The dimensions are specified in [mm].
If you require exact dimensions, please contact us.

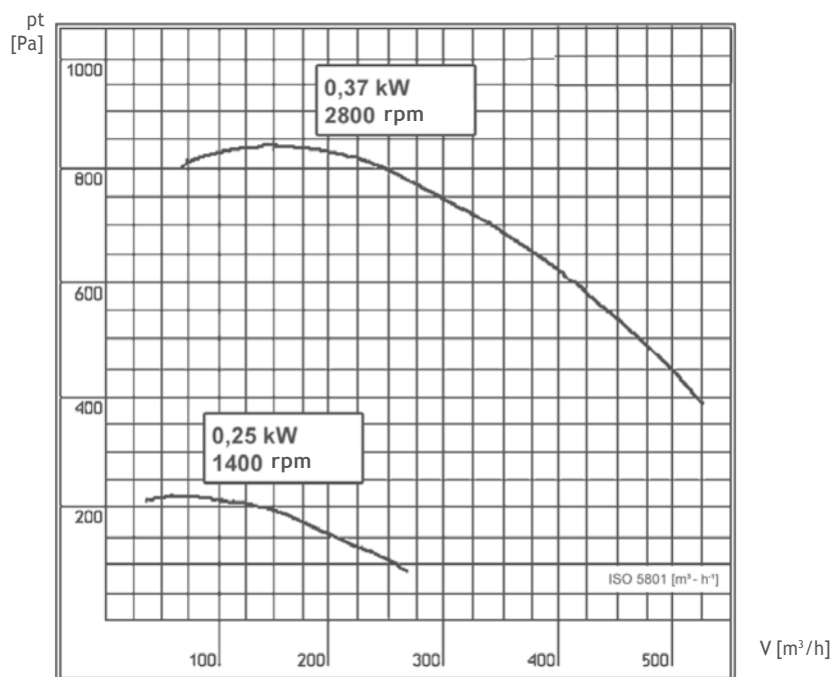
Fan type	DIMENSIONS [mm]															
	A	B	C	D	E	F	G	I	K	L	P	X	X1	Y	Y1	Z
SEAT 15	178	203	30	125	150	100	32	170	240	180	360	240	71	180	160	340
SEAT 20	223	240	32	160	178	100	57	208	303	180	390	240	71	180	160	340
SEAT 25	265	310	35	200	200	103	92	248	365	180	415*	300	71	180	160	420
SEAT 30	323	373	35	250	230	117	112	300	450	245	510	370	80	240	220	460
SEAT 35	413	450	60	315	320	130	170	370	570	344/ 442	724/ 882*	468	112/ 132*	350	314	600
STORM 10	97	127	32	75	105	158	-	115	135	-	-	135	-	-	-	-
STORM 12	130	163	45	90	107	212	-	145	175	198	350	240	71	180	160	340
STORM 14	170	227	55	125	138	218	-	188	232	240	433	240	80	180	160	340
STORM 16	205	278	40	160	157	262	-	235	288	280	477	300	90	240	220	420

* depending on the electric motor type

STORM 10



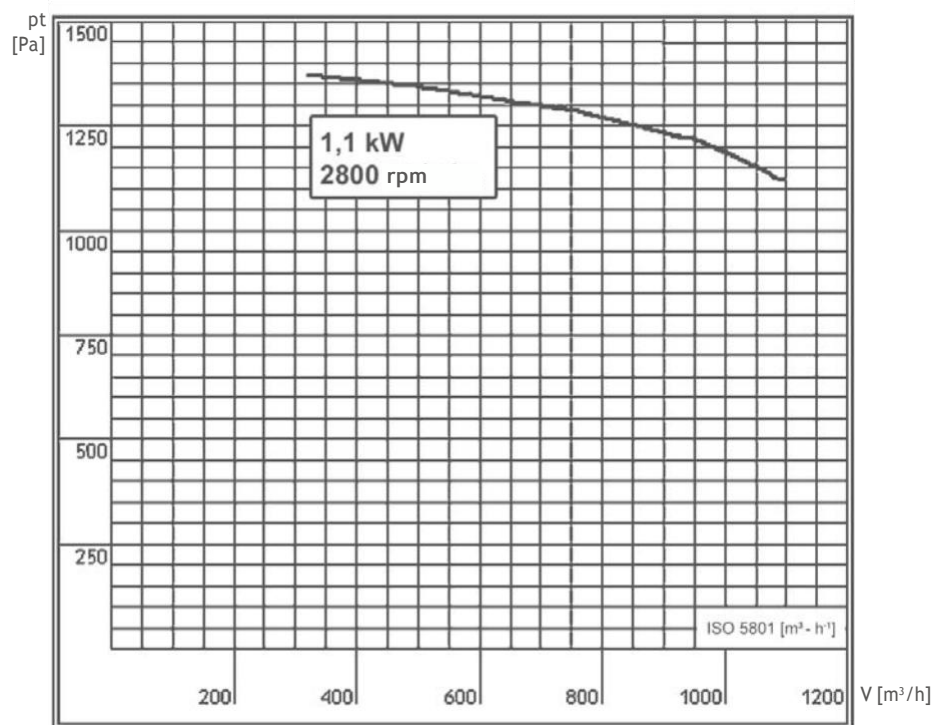
STORM 12



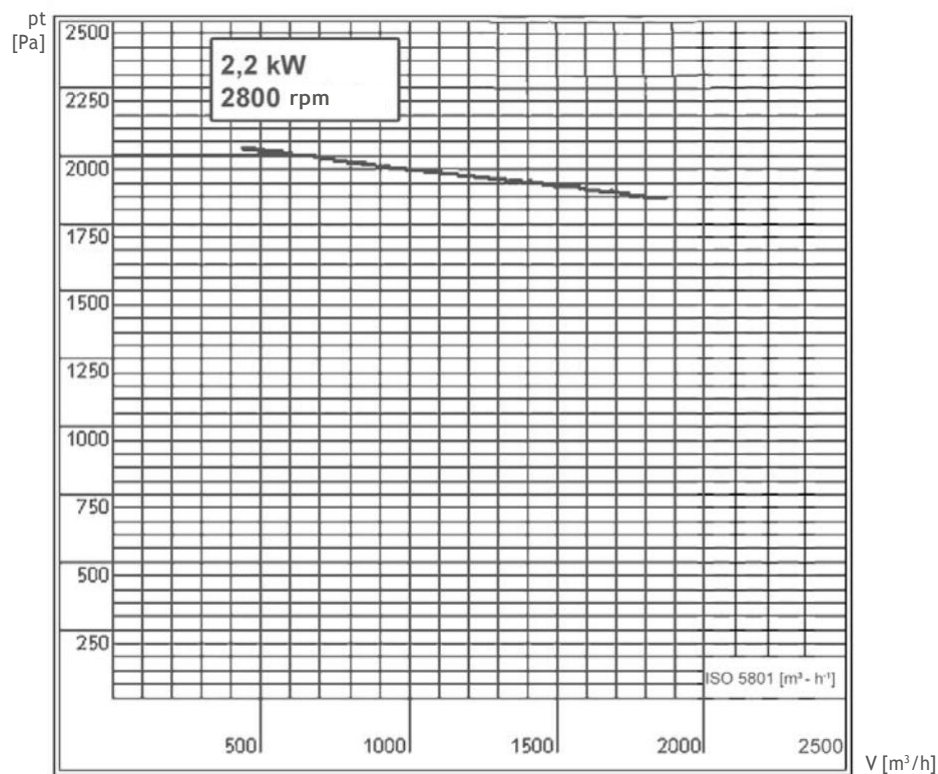
Type Fan	Environment	Motor			Rated current [A]	Thermal protection max. [-]	Weight ** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
STORM 10	BNV	0,25	1400	4	0,76	0,76	6,3	75	75
	BNV	0,37	2800	2	1,00	1,00	6,5		
STORM 12	BNV	0,25	1400	4	0,76	0,76	6,9	90	90
	BNV	0,37	2800	2	1,00	1,00	7,1		

** the values may differ depending on the electric motor type

STORM 14



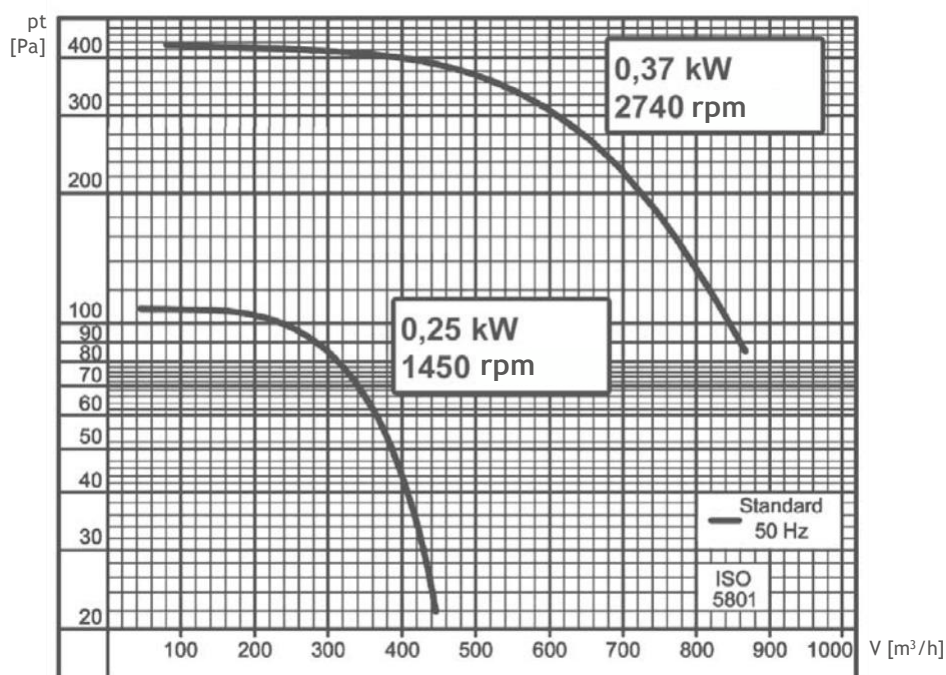
STORM 16



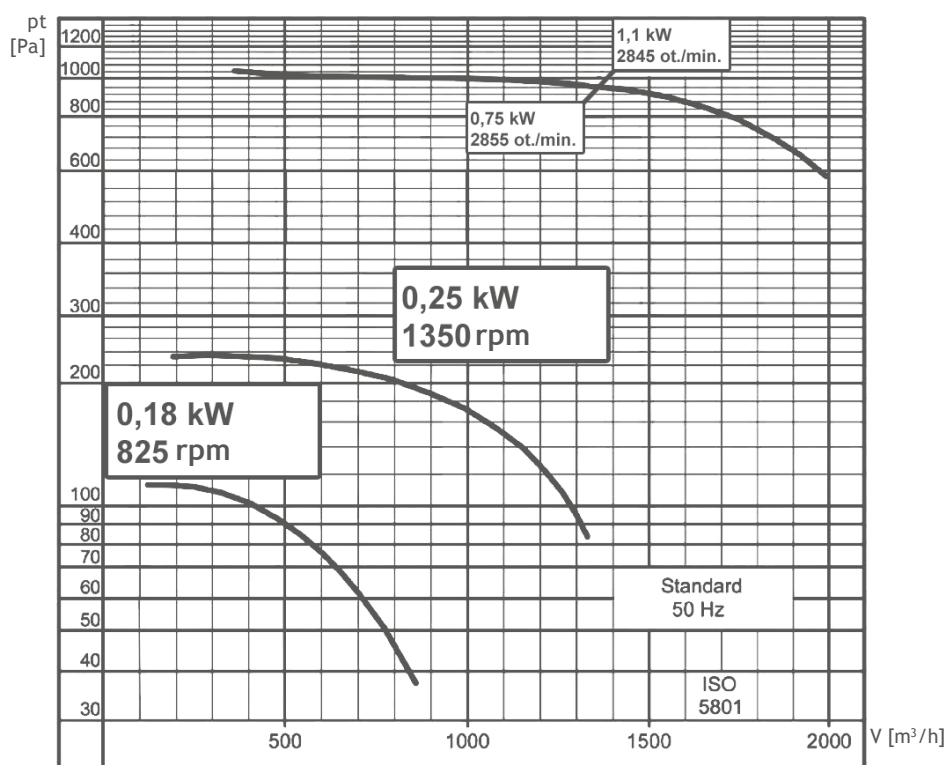
Type Fan	Environment	Motor			Rated current [A]	Thermal protection max. [-]	Weight ** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
STORM 14	BNV	1,1	2800	2	2,4	2,4	13,5	125	125
STORM 16	BNV	2,2	2800	2	4,55	4,55	20,1	160	160

** the values may differ depending on the electric motor type

SEAT 15



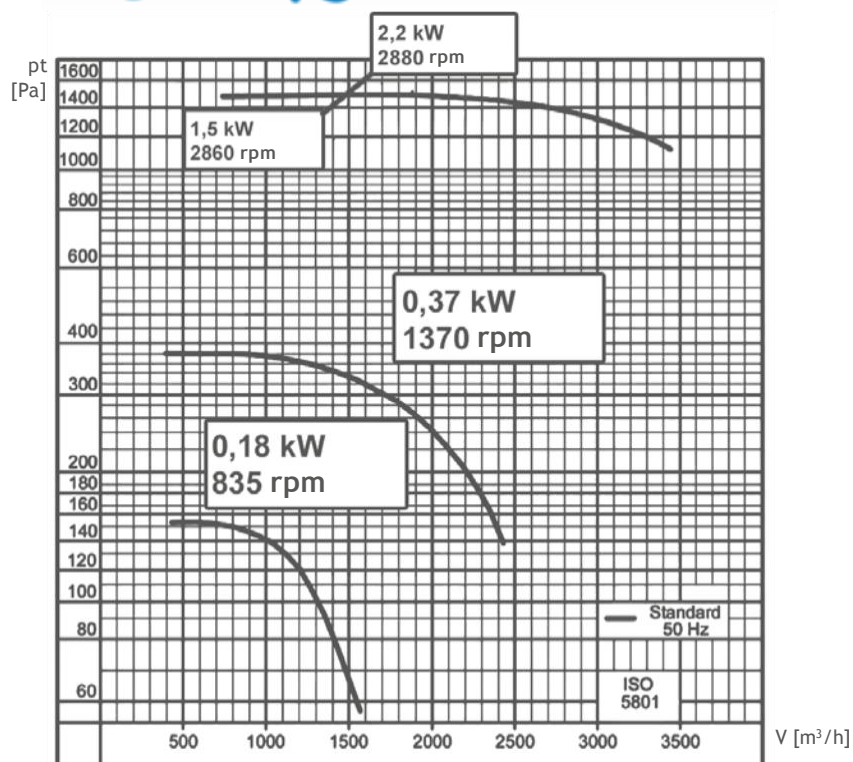
SEAT 20



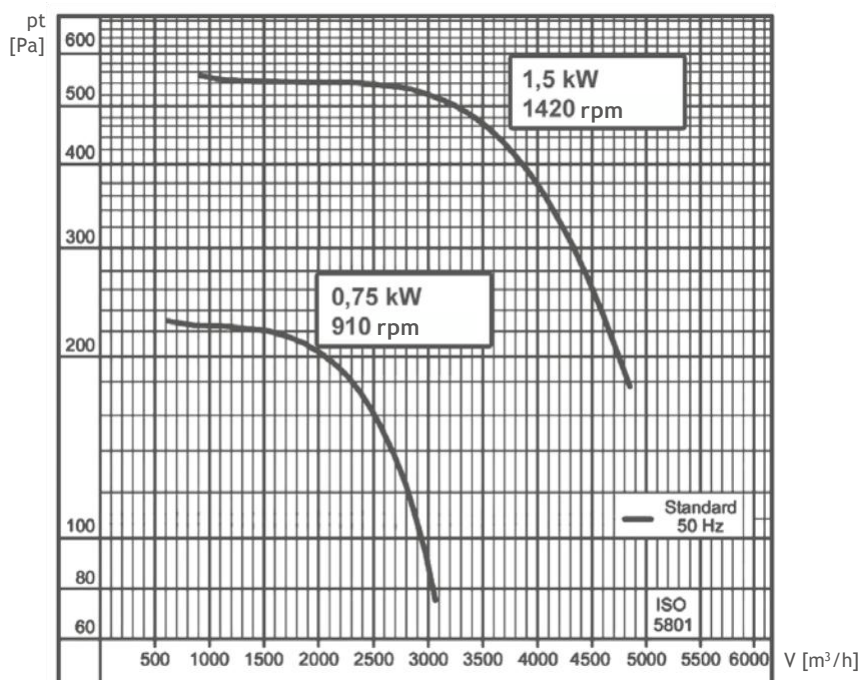
Type Fan	Environment	Motor			Rated current [A]	Thermal protection max. [-]	Weight ** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
SEAT 15	BNV	0,25	1450	4	0,76	0,76	10	125	125
	BNV	0,37	2740	2	1,00	1,00	10		
SEAT 20	BNV	0,18	835	6	0,62	0,62	11	160	160
	BNV	0,25	1350	4	0,76	0,76	11		
	BNV	0,75	2855	2	1,73	1,73	13		
	BNV	1,1	2845	2	2,40	2,40	15		

** the values may differ depending on the electric motor type

SEAT 25



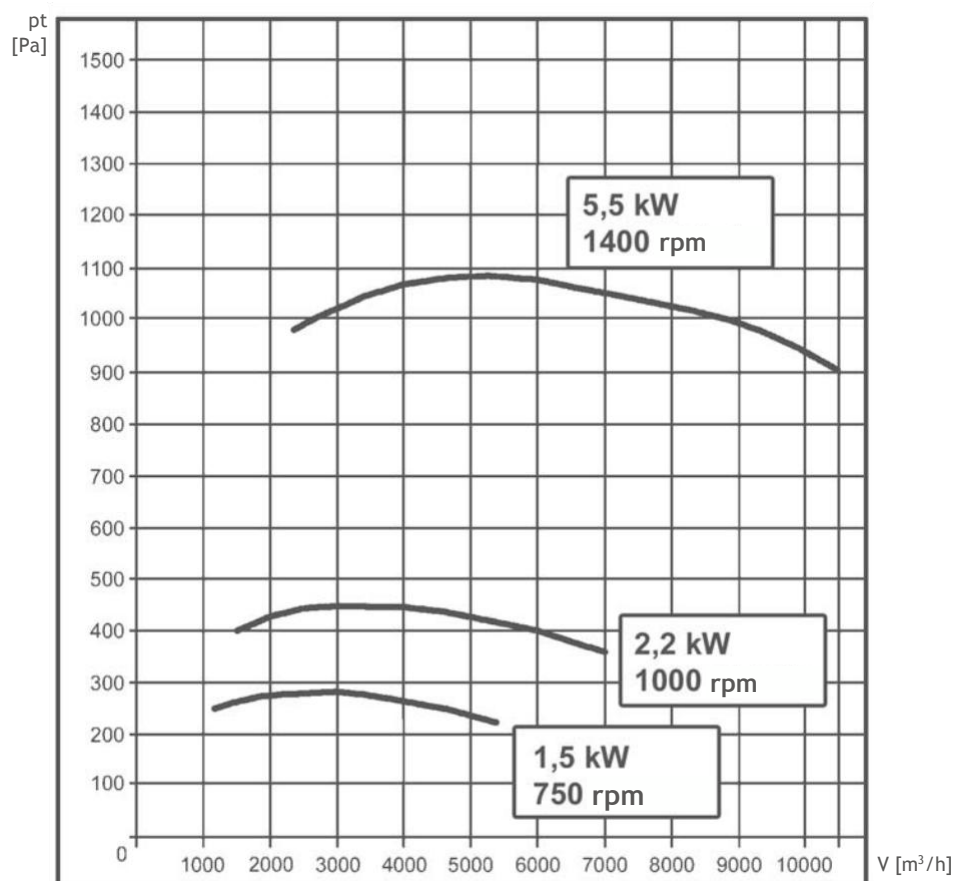
SEAT 30



Type Fan	Environment	Motor			Rated current [A]	Thermal protection max. [-]	Weight ** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
SEAT 25	BNV	0,18	835	6	0,62	0,62	14	200	200
	BNV	0,37	1370	4	1,03	1,03	14		
	BNV	1,5	2860	2	3,25	3,25	21		
	BNV	2,2	2880	2	4,55	4,55	24		
SEAT 30	BNV	0,75	910	6	1,6	1,6	22	250	250
	BNV	1,5	1420	4	3,40	3,40	26		

** the values may differ depending on the electric motor type

SEAT 35



Type Fan	Environment	Motor			Rated current [A]	Thermal protection max. [-]	Weight ** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
SEAT 35	BNV	1,5	750	8	3,9*	3,9*	33	315	315
	BNV	2,2	1000	6	5,2*	5,2*	36		
	BNV	5,5	1400	4	11,4* 15,2*	11,4* 15,2*	58		

* depending on the electric motor type

** the values may differ depending on the electric motor type

8. Radial fans of the VRE type

Radial fans of the VRE type, which work in the range of 50 to 22000 m³/h at 40 to 3500 Pa at the temperatures from -15°C to +40°C (PVC) or +60°C (PPs) are intended for especially demanding and specific environments. These fans are always designed for a particular project.

The radial fans of the VRE type can be applied in all industrial sectors, but also in agriculture and other areas.

The fans are produced in two series, 731 and 734, which are distinguished by the design of the impeller. The radial fans consist of these main parts: impeller, spiral housing, stool and electric motor. The stool is made of steel sheets that a flange-mounted electric motor is attached to. The impeller is directly mounted on the electric motor shaft. The spiral housings as well as impellers are made of PVC or PPs. Other materials can also be optionally selected (PPsEL). The metallic parts are protected from corrosion by plastic coating or they are made of stainless steel, resistant to aggressive environments. As required, the fans can be equipped with cleaning openings, condensate drains in the lowest points of the spiral housing, anti-vibration kits and flexible connections and the suction and outlet sides.

The VRE fans are driven by flange-mounted or foot-mounted electric motors in the B3 design, IP 55 protection class, insulation of class F, with 2 or 4 poles.

Warning

The fans are not protected from overloading in the standard version. Therefore, before installation a suitable thermal protection device should be incorporated in the electric system.

The fans are also available in special versions, e.g.:

- E** - with single-phase electric motors
- DS** - with adjustable speed with the use of a controller
- TS** - with thermal protection of the winding
- P1** - with a double-speed electric motor
- P2** - motor with the possibility of reversing poles to the nearest lower speed
- E3** - boat version (in the E3 design in accordance with the DSRK and GL regulations)
- GD** - gas-tight housing (the fan is equipped with a special sealing ring between the housing and the shaft)
- EX** - motor for an explosive environment



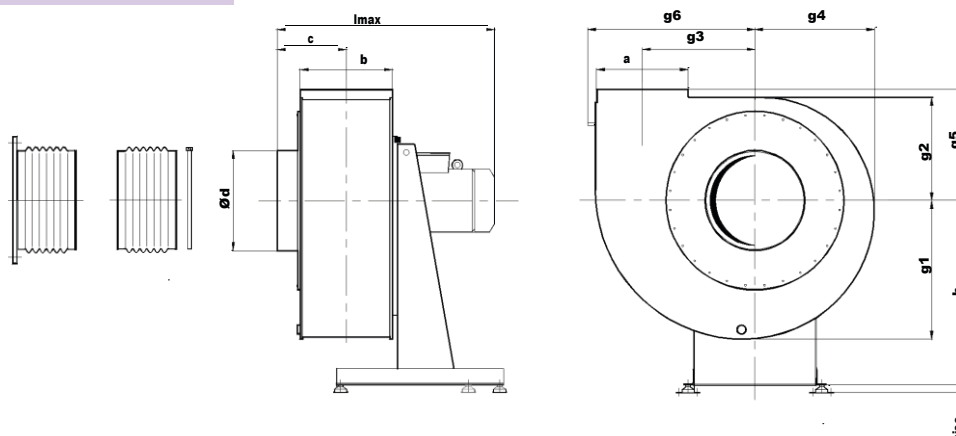
Spiral housing positions as viewed from the suction side



Order example

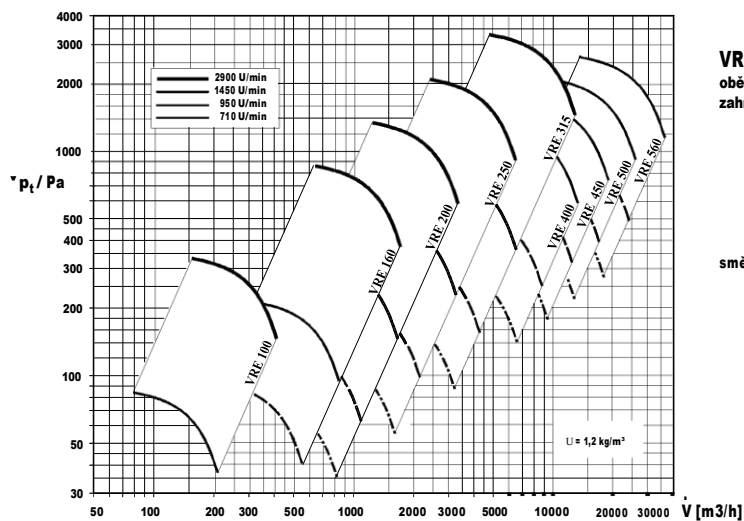
Fan FORT - VRE 160/731 W 950 rpm, PE/PVC, TS, GD, KSS, WS	1 set
Material: housing PE, impeller PVC	
Thermal protection of the motor winding TS	
Gas-tight housing	
Condensate drain opening KSS	
Electric motor cover WS	

Dimensional diagram of the VRE type



The dimensional diagram is illustrative. The dimensions are specified in [mm].
If you require exact dimensions, please contact us.

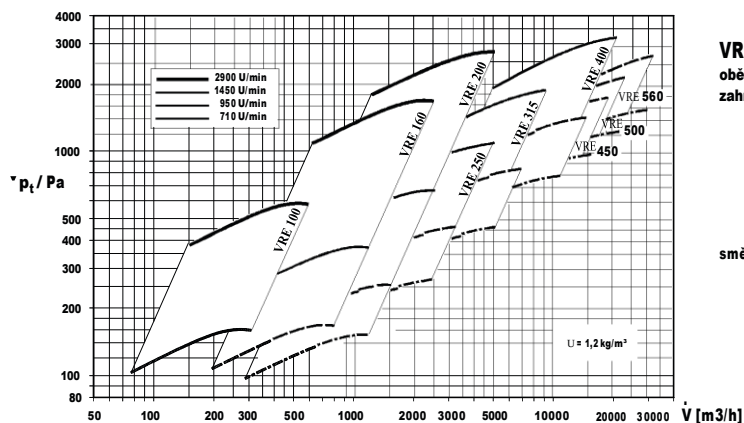
Fan type	d	a	b	c	g1	g2	g3	g4	g5	g6	h	hiso	lmax
VRE 100	110	96	102	105	144	109	119	120	145	178	240	20	510
VRE 160	160	144	152	141	222	168	179	194	190	264	332	20	685
VRE 200	200	180	187	169	278	210	224	240	240	330	395	20	730
VRE 250	250	226	236	203	346	264	280	298	290	412	460	25	890
VRE 315	315	288	300	244	435	324	353	376	354	527	605	25	1030
VRE 400	400	370	370	380	555	412	446	479	442	666	740	40 (33)	1210
VRE 450	450	416	429	329	624	464	503	539	499	751	845	40 (33)	1250
VRE 500	500	455	464	346	691	514	562	596	554	835	920	40 (33)	1310
VRE 560	560	510	517	383	774	576	629	668	626	934	1040	40	1380



VRE 731
oběžné kolo s dozadu
zahnutými lopatkami



směr otáčení - vlevo



VRE 734
oběžné kolo s dopředu
zahnutými lopatkami



směr otáčení - vlevo

9. Fans of the EPND / EPNE type

Fans of the EPND and EPNE types are designed to extract air containing excessive moisture or aggressive substances as acids and lyes, especially from the industrial environment. Their benefits are easy and quick installation, low weight and good aerodynamic properties.

The spiral housings are made of electrically conductive polyethylene. The impellers with backward bent blades are made of polypropylene. The hub of the impeller is protected with a stainless-steel cover and secured with a screw at the suction side. The electric motors are mounted on a stainless-steel stool that forms the back part of the housing and carries the spiral housing. To improve the stability of the entire fan we recommend that the stainless-steel stool be fitted with angle legs. In the standard versions the fans are equipped with single-speed three-phase squirrel-cage electric motors for 400 V (in the B3 design, ingress-protection class IP 55, insulation of class F, with 2 or 4 poles).

The speed of the electric motors can be controlled with voltage, a frequency inverter or reversible poles (the control type must be specified on ordering)

The fans of the EPND type are also available an explosion-proof (Ex) version for zone 2 (SNV 1). The fans are designed for extraction of gases and vapors of temperature classes T1 to T3 for permanent operation S1. Fans in the Ex design cannot be used with a frequency inverter. Special motors with integrated frequency inverters suitable for a zone 2 environment represent an exception (these motors are not in standard and are always offered for a particular project).

The EPND fans are also available in optional multi-speed versions for environments without or with an explosion risks (zone 2).

The fans are also available for the supply voltage of 230 V. Their identification is EPNE. The working characteristics of the fans are the same as those of the fans with the supply voltage of 400 V.

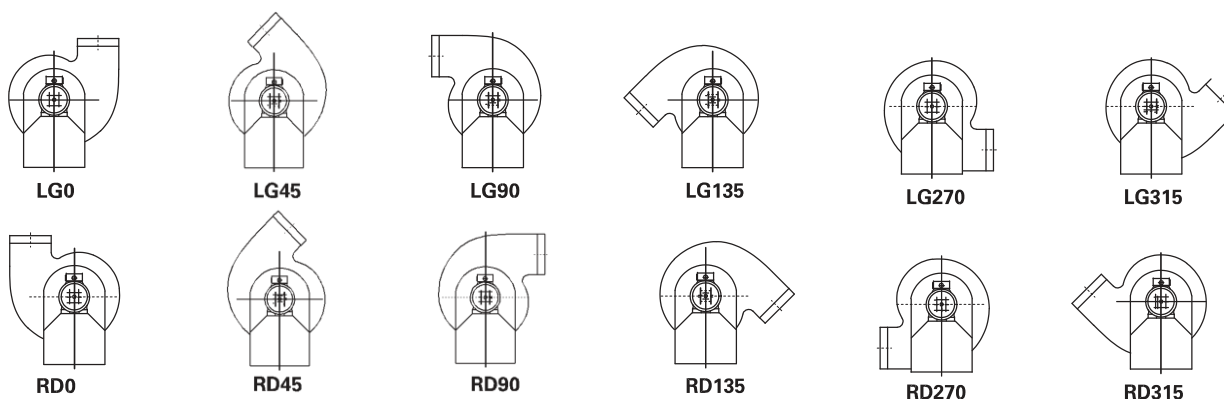
Spiral housing positions as viewed from the motor side

The fan housing is intended for installation in the left or right version. The design of the impeller makes it suitable for the right or left arrangement. The basic position types are specified below. If the fan outlet is to be directed downwards, the entire fan must be mounted on a special metallic bracket or concrete base.

Warning:

During installation you must fit a condensate drain adapter or at least drill a hole with a diameter of approx. 5 mm at the lowest point of the fan housing. If this measure is omitted, condensate may accumulate, causing damage to the fan (in winter there is a danger of condensate freezing and subsequent damage of the impeller and fan housing).

Spiral housing positions as viewed from the motor side



Type Fan	Environment	Motor			Volume* [m ³ /h]	Pressure* pt [Pa]	Rated current [A]	Thermal protection max. [-]	Noise level [dB]	Weight [kg]
		P [kW]	n [min ⁻¹]	Number of poles						
EPND 160-4	BNV	0,09	1300	4	200	80	0,29	0,29	60	8
EPND 160-2	BNV	0,18	2680	2	400	340	0,52	0,52	75	9
EPND 160-4	EX	0,12	1310	4	200	80	0,43	0,43	60	9
EPND 160-2	EX	0,18	2735	2	400	340	0,56	0,56	75	10
EPND 200-4	BNV	0,09	1300	4	400	170	0,29	0,29	67	11,5
EPND 200-2	BNV	0,37	2750	2	1000	500	1,00	1,00	83	13
EPND 200-4	EX	0,12	1310	4	400	170	0,43	0,43	67	12,5
EPND 200-2	EX	0,37	2730	2	1000	500	1,08	1,08	83	14
EPND 225-4	BNV	0,09	1300	4	1000	120	0,29	0,29	70	14
EPND 225-2	BNV	0,75	2850	2	1500	700	1,76	1,76	86	18,5
EPND 225-4	EX	0,12	1310	4	1000	120	0,43	0,43	70	15
EPND 250-4	BNV	0,09	1300	4	1000	170	0,29	0,29	75	14
	EX	0,18	1310	4	1000	170	0,61	0,61	75	15
EPND 280-4	BNV	0,25	1325	4	2000	175	0,81	0,81	76	21,5
	EX	0,25	1325	4	2000	175	0,78	0,78	76	22,5
EPND 315-4	BNV	0,55	1395	4	2000	390	1,42	1,42	77	30
	EX	0,55	1400	4	2000	390	1,47	1,47	78	31
EPND 355-4	BNV	1,1	1410	4	4000	350	2,65	2,65	79	38
	EX	1,35	1405	4	4000	350	3,10	3,10	79	39

* the values of air volume and pressure are determined as approximate
Parameters for fans with a frequency inverter are defined individually

Fan accessories

- **Stainless-steel legs** - to improve installation stability of the fan
- **Flexible connections without flanges** - to prevent transmission of vibrations into the duct. They are fixed with the use of stainless-steel clamps
- **Anti-vibration kits** - to prevent transmission of vibrations into the building structure
- **Outlet adapter with a grille** - to prevent a foreign object and rainwater from getting into the fan.
- **Protection from splinters** - to prevent splinters from spreading outside the fan in case of an accident
- **Motor cover** - to protect the electric motor of the fan from climatic influences.
- **Frequency inverter**
- **Condensate drain adapter**

Ordering

In your order you must exactly specify the fan type, position of the spiral housing or required ventilation parameters and optional accessories.

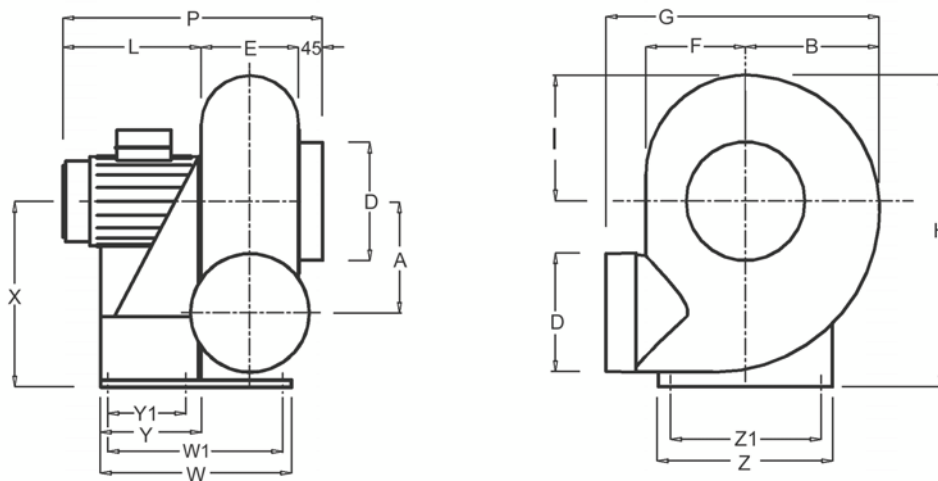
Example no. 1

Fan EPND 315-4 Ex, position LG90	1 piece
Stainless-steel legs	1 pair
Flexible connection 315	2 pieces
Stainless-steel clamps 315	4 pieces
Condensate drain adapter	1 piece

Example no. 2

EPND fan for the parameters V = 2000 m ³ /h, Δp = 200 Pa, position LG180	1 piece
Stainless-steel legs	1 piece
Anti-vibration kits	4 pieces
Flexible connection	1 piece
Stainless steel clamps	2 pieces
Outlet adapter with a grille	1 piece
Motor cover against climatic influences	1 piece

Dimensional diagram of the EPND / EPNE type

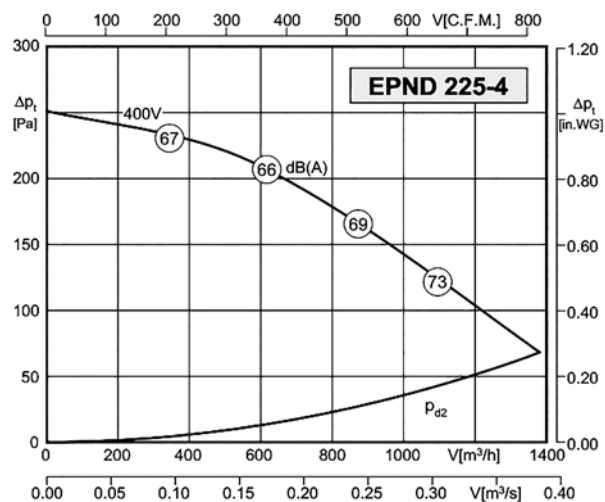
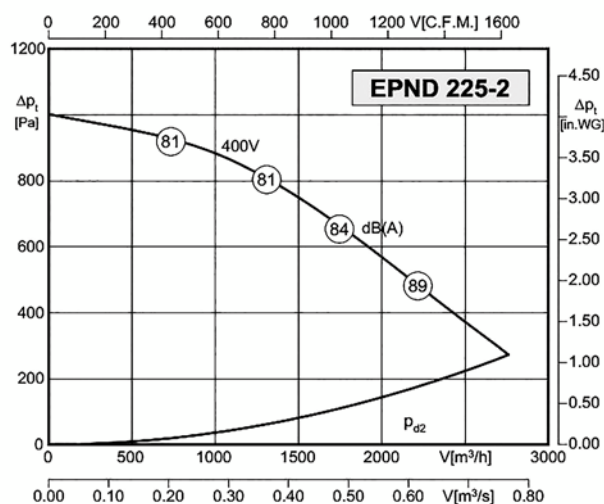
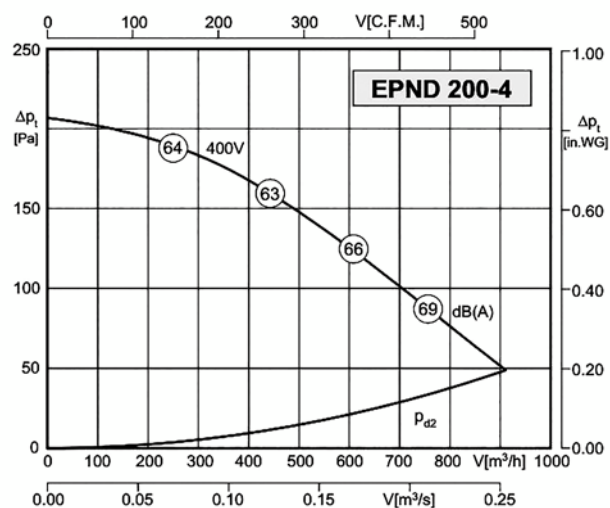
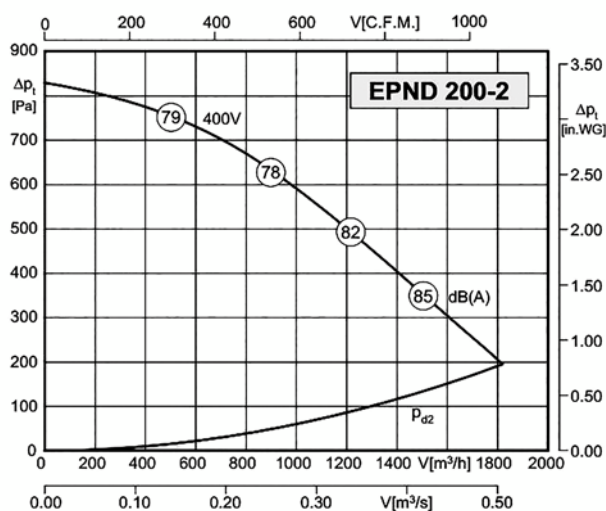
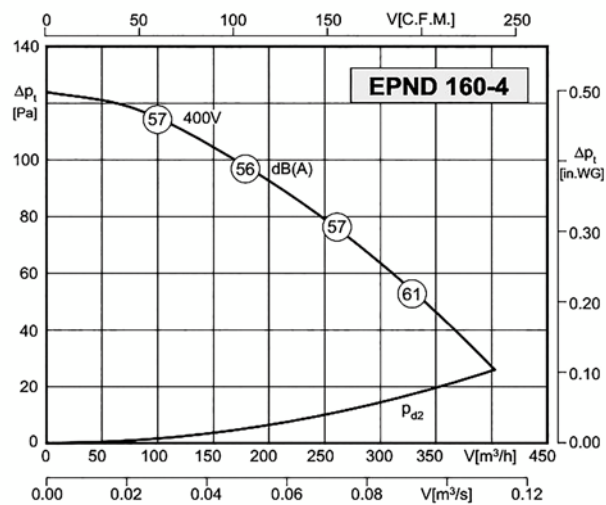
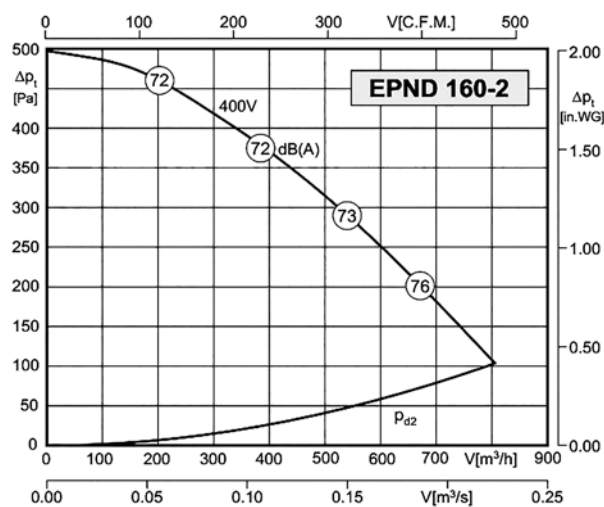


The dimensional diagram is illustrative. The dimensions are specified in [mm].
If you require exact dimensions, please contact us.

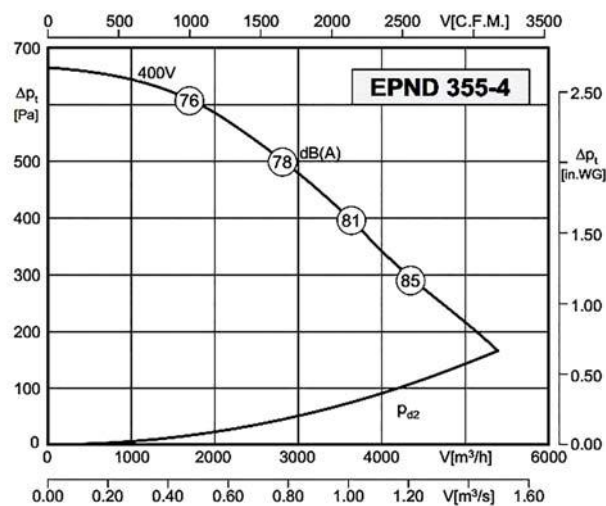
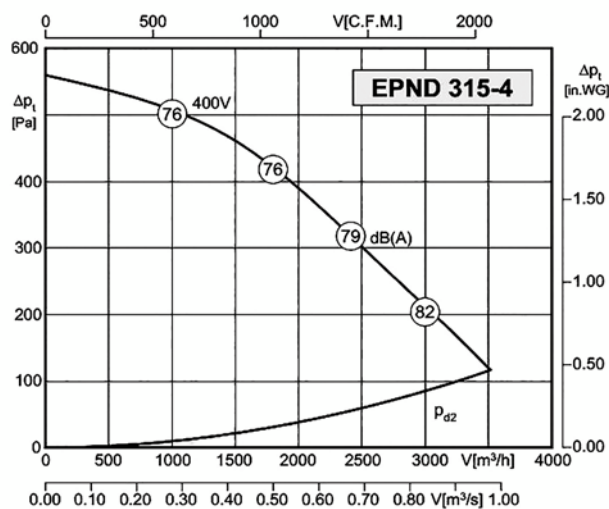
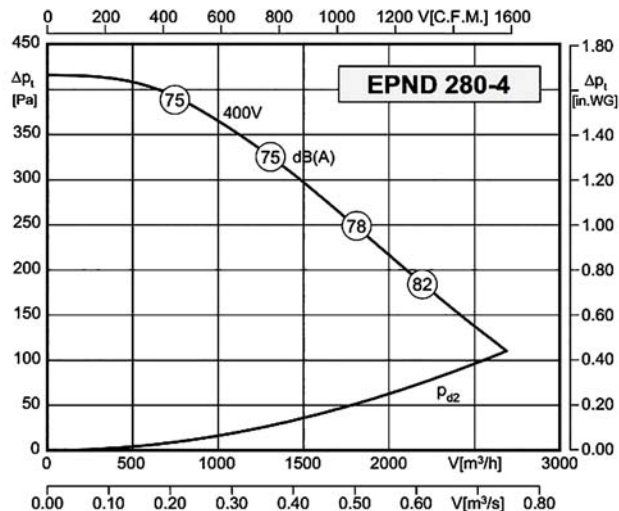
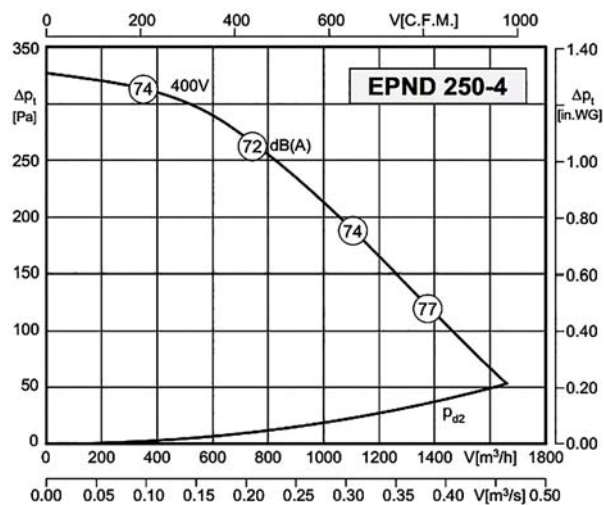
Fan type	DIMENSIONS [mm]																
	A	B	D	E	F	G	H	I	L*	P*	X	Y	Y1	Z	Z1	W	W1
EPND 160	140	180	160	143	136	367	440	180	220	408	260	140	95	242	210	310	280
EPND 200	187	230	200	172	172	477	533	213	220	437	320	165	120	294	262	310	280
EPND 225	210	253	225	184	188	516	588	238	255	484	350	190	140	329	297	310	280
EPND 250	230	280	250	190	209	558	725	315	255	490	410	200	150	297	269	420	390
EPND 280	270	310	280	210	225	600	735	290	255	510	445	220	165	318	290	420	390
EPND 315	290	350	315	230	263	673	838	343	270	545	495	235	180	320	292	420	390
EPND 355	337	390	355	253	260	725	901	356	317	615	545	250	195	430	402	420	390

* in the case of the EPNE fans the dimensions may differ by the electric motor type

Performance charts



Performance charts



10. Fans of the FORT - TCV, TCO type

Fans of the FORT - TCV, TCO types feature a wide range of outputs accompanied by guaranteed chemical resistance of the used materials at temperatures in the range from -15°C to +60°C. These properties make them suitable for a great number of applications in various branches of chemical and industrial production, health care, food processing, farming, pharmaceutical production and many others.

The fans are driven by flange-mounted electric motors. The impellers are directly mounted on the electric motor shafts.

Unless otherwise required, the standard housings of the fans are made of PE (polyethylene) and the impellers are made of PP (polypropylene).

In the standard versions the fans are equipped with single-speed three-phase electric motors for 400 V in the B5 design, ingress-protection class IP 55, insulation of class F, with 2, 4, 6 or 8 poles. The fans are also produced in an explosion-proof (Ex) version for zone 2 (SNV 1) and zone 1 (SNV 2). They are designed for extraction of gases and vapors of temperature classes T1 to T3 for permanent operation S1. The fans are not protected from overloading in the standard version. Therefore, on installation and commissioning a suitable thermal protection device should be incorporated in the electric system.

There are two possible ways of installation of the FORT - TCV fans:

- 1) The fan is located between duct parts and mounted on metallic holders/brackets (duct version)
- 2) The fan is mounted on the roof on a foundation plate and is fixed to a separate structure (roof-mounted version).

The FORT - TCO fans are only suitable for roof installation on a foundation plate.

Optional accessories of the fan

- **Flexible connections** - to prevent transmission of vibrations into the duct. They are fixed with the use of stainless-steel clamps.
- **Maintenance switch** - enables quick and safe disconnection of the fan.
- **Frequency inverter**

Ordering

In your order you must exactly specify the fan type, electric motor power and the requested options.

Example no. 1

Fan FORT - TCV 252 EX	1 piece
Bracket for horizontal mounting	2 pieces
Flexible connection 200	2 pieces
Stainless-steel clamp 200	4 pieces

Example no. 2

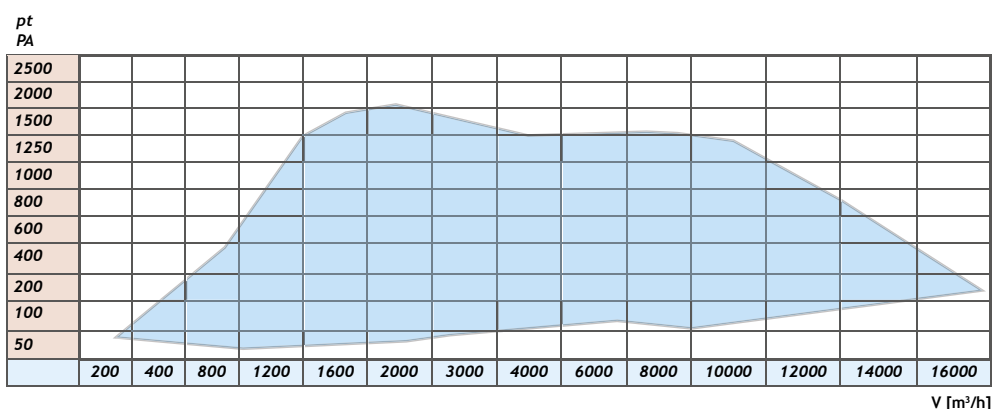
Fan FORT - TCV 224	1 piece
Foundation plate PP	1 piece
Maintenance switch	1 piece

Example no. 3

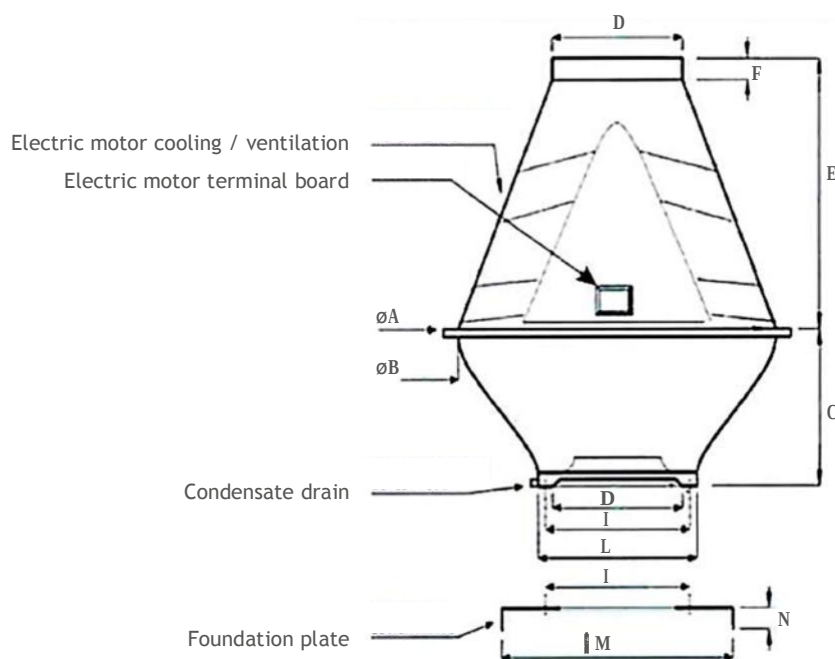
Fan FORT - TCO 224	1 piece
Maintenance switch	1 piece



10.1 Fans of the FORT - TCV type



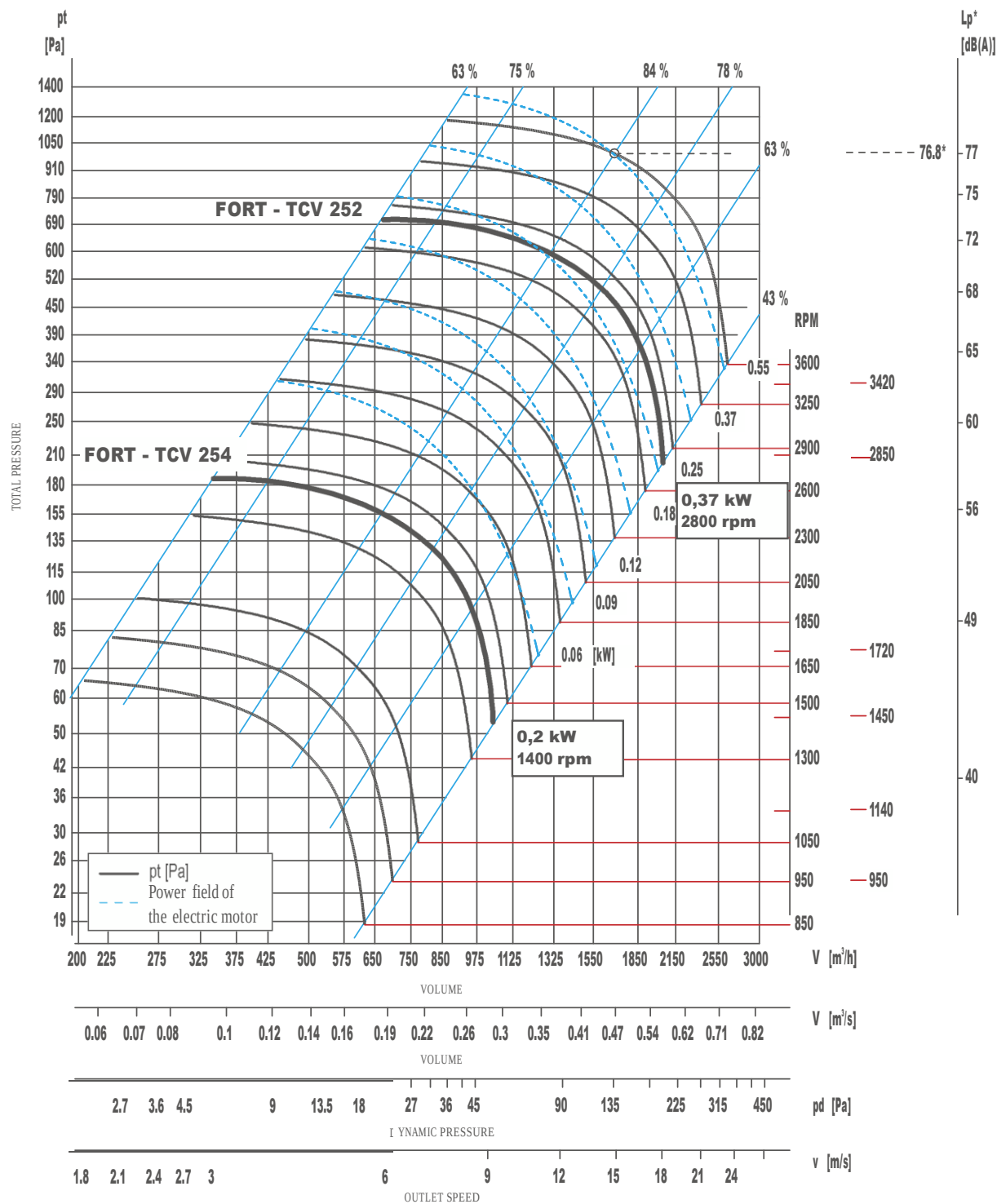
Dimensional diagram of the FORT - TCV type



The dimensional diagram is illustrative. The dimensions are specified in [mm].
If you require exact dimensions, please contact us.

TYPE	Motor		A	B	C	D	E	F	I	N	L	M	N
	kW	rpm											
TCV 254	0,12	1400	500	445	180	200	460	50	230	8	260	500	38
TCV 252	0,37	2800	500	445	180	200	460	50	230	8	260	500	38
TCV 314	0,25	1400	600	540	240	280	620	50	330	8	370	500	38
TCV 312	1,5	2800	600	540	240	280	620	50	330	8	370	500	38
TCV 356	0,18	900	600	540	240	280	620	50	330	8	370	500	38
TCV 354	0,37	1400	600	540	240	280	620	50	330	8	370	500	38
TCV 352	2,20	1800	600	540	240	280	620	50	330	8	370	500	38
TCV 456	0,37	900	800	720	280	355	720	50	405	8	445	600	38
TCV 454	1,10	1400	800	720	280	355	560	50	405	8	445	600	38

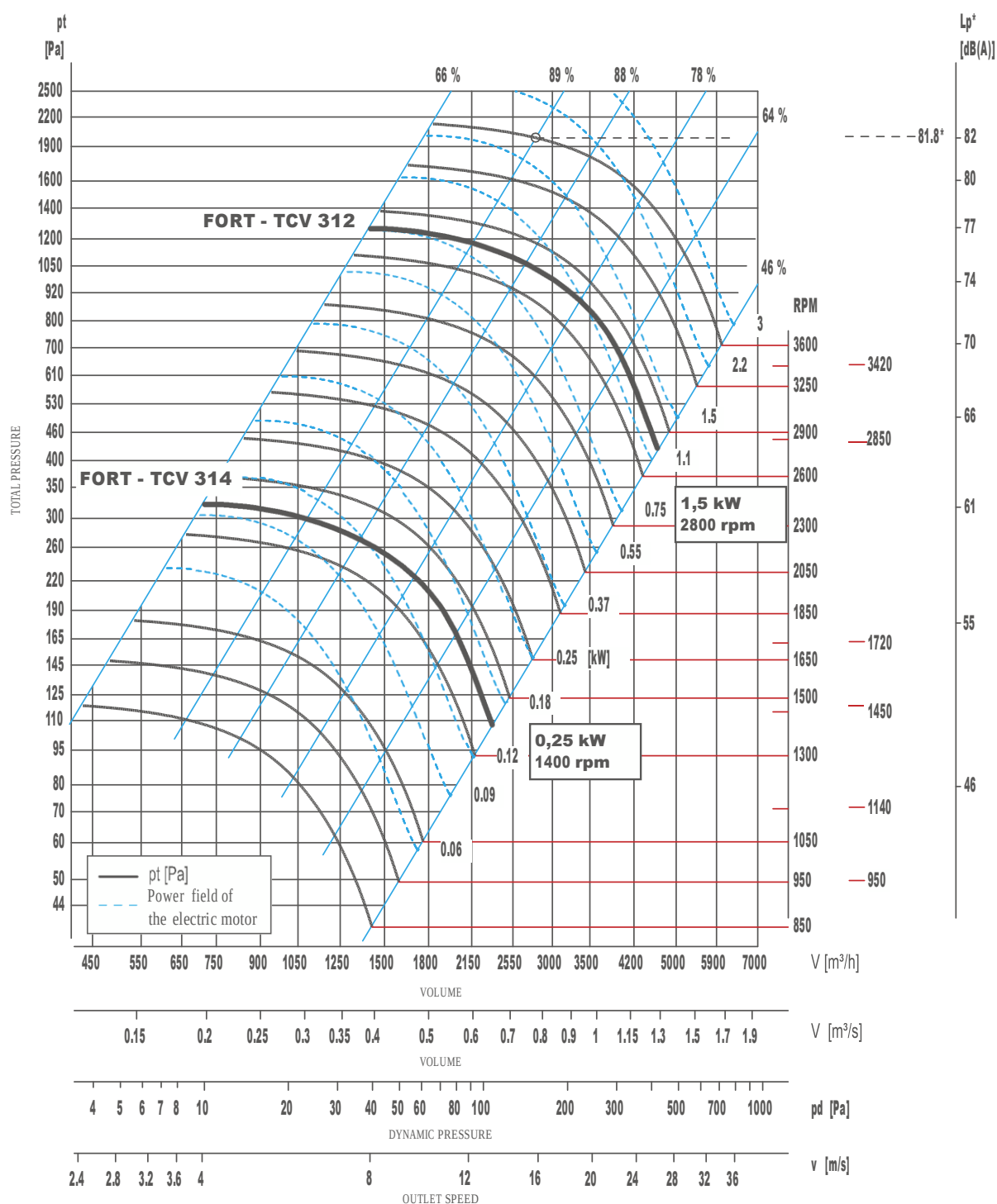
FORT - TCV 25



Fan type	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]

** the values may differ depending on the electric motor type

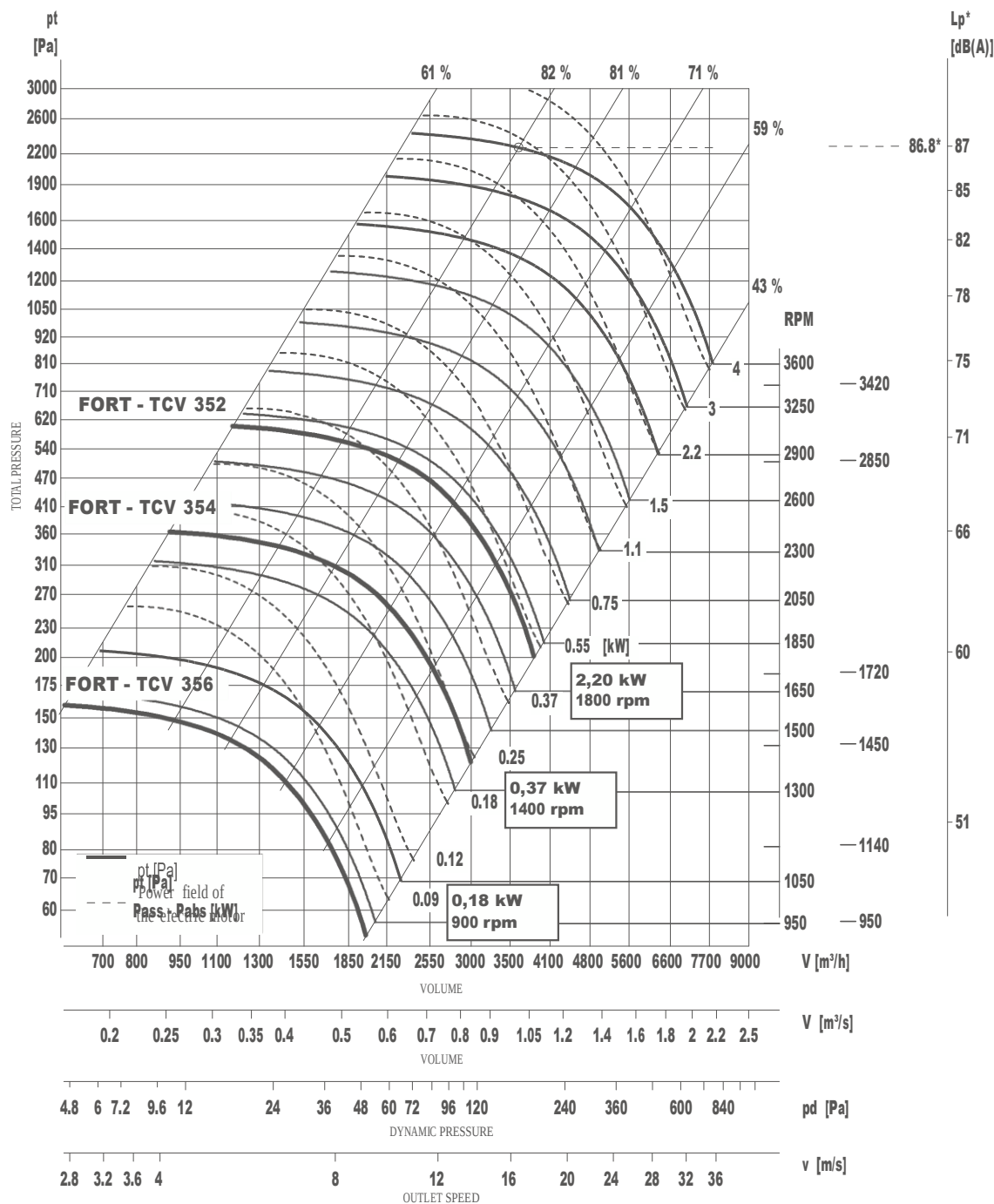
FORT - TCV 31



Type Fan	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
TCV 314	BNV Zone 2 / Zone 1	0,25	1400	4	1,11	1,11	26	280	280
TCV 312	BNV Zone 2 / Zone 1	1,5	2800	2	3,37	3,37	43	280	280

** the values may differ depending on the electric motor type

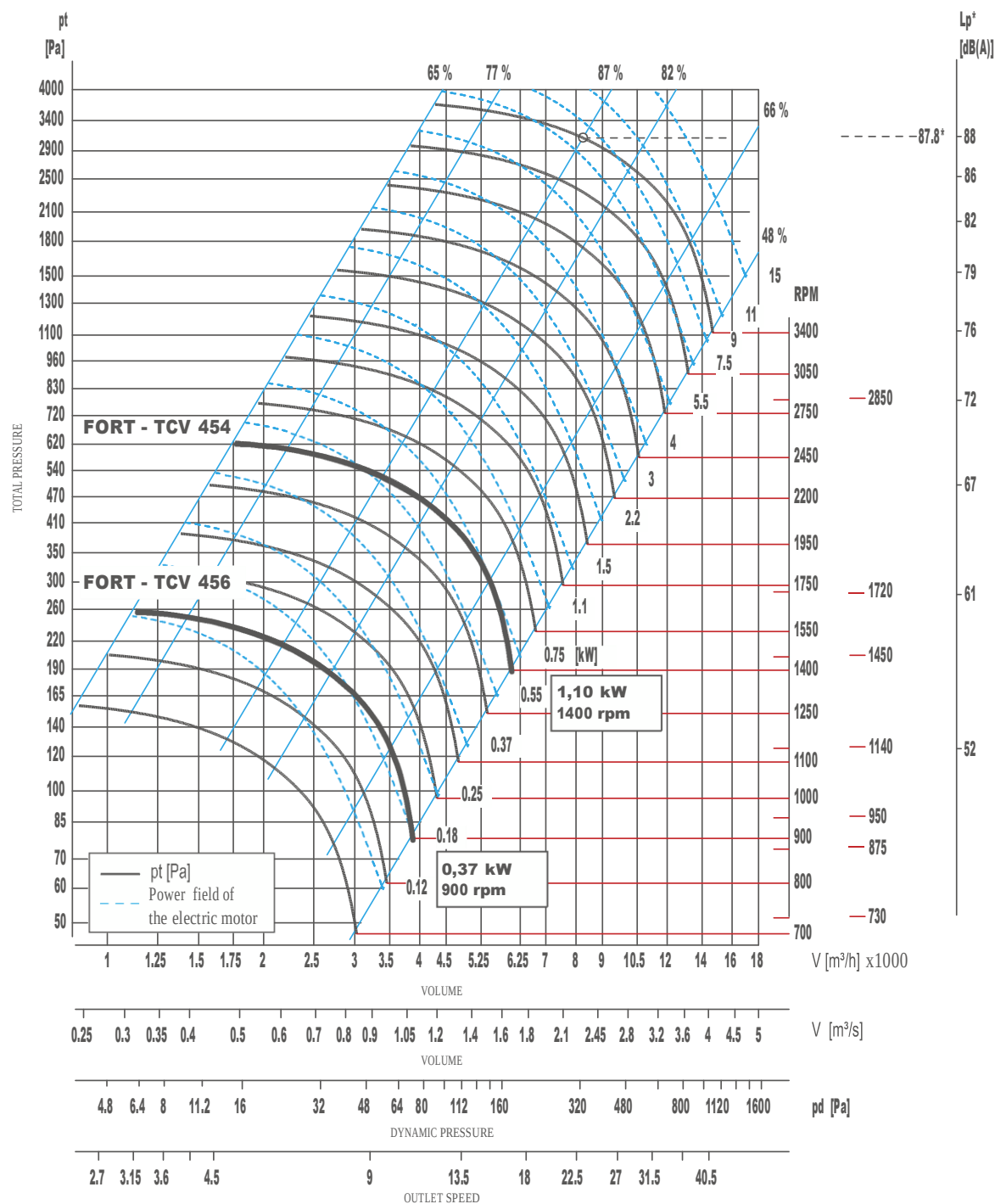
FORT - TCV 35



Type Fan	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
TCV 356	BNV Zone 2 / Zone 1	0,18	900	6	0,58	0,58	26	280	280

** the values may differ depending on the electric motor type

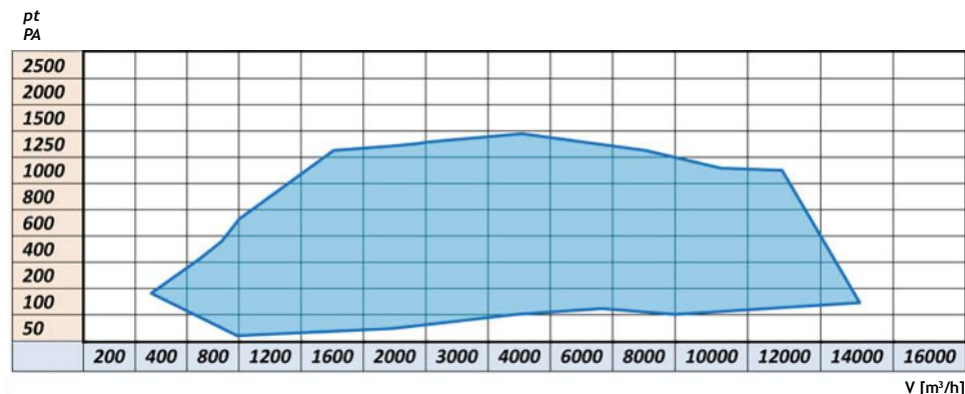
FORT - TCV 45



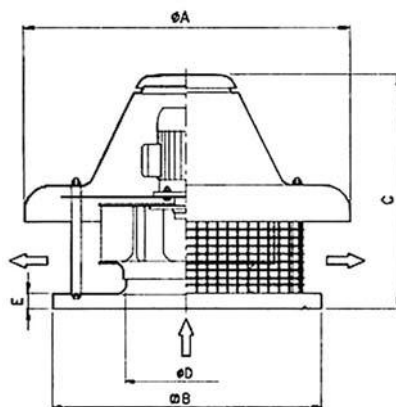
Type Fan	Environment	Motor			Rated current** [A]	Thermal protection** max. [-]	Weight** [kg]	Connection dimension	
		P [kW]	n [min ⁻¹]	Number of poles				Suction inlet Ø [mm]	Outlet Ø [mm]
TCV 456	BNV Zone 2 / Zone 1	0,37	900	6	1,11	1,11	40	355	355
TCV 454	BNV Zone 2 / Zone 1	1,10	1400	4	2,7	2,7	48	355	355

** the values may differ depending on the electric motor type

10.2 Fans of the FORT - TCO type



Dimensional diagram of the FORT - TCO type



The dimensional diagram is illustrative. The dimensions are specified in [mm].
If you require exact dimensions, please contact us.

TYPE	Motor		A	B	C	D	E	kg
	kW	rpm						
TCO 202	0,18	2900	570	350	470	125	40	16
TCO 252	0,37	2900	570	400	470	180	40	16
TCO 254	0,12	1400	570	400	470	180	40	16
TCO 282	0,75	2900	570	400	470	180	40	16
TCO 284	0,18	1400	570	400	470	180	40	16
TCO 312	1,5	2900	570	500	490	200	40	20
TCO 314	0,25	1400	570	500	490	200	40	20
TCO 316	0,18	900	570	500	490	200	40	20
TCO 352	2,2	2900	800	500	550	225	40	22
TCO 354	0,37	1400	800	500	550	225	40	22
TCO 356	0,18	900	800	500	550	225	40	22
TCO 404	0,55	1400	800	600	570	250	40	32
TCO 406	0,25	900	800	600	570	250	40	32
TCO 454	1,1	1450	800	600	600	280	40	38
TCO 456	0,37	900	800	600	600	280	40	38
TCO 504	2,2	1450	1000	750	850	300	60	65
TCO 506	0,55	900	1000	750	850	300	60	65
TCO 564	4	1450	1000	850	1000	340	60	78
TCO 566	1,1	900	1000	850	1000	340	60	78
TCO 634	5,5	1450	1200	950	1050	390	60	95
TCO 636	2,2	900	1200	950	1050	390	60	95

11. Fans of the VRR type

The VRR/702 roof-mounted fans have an all-plastic design with the electric motor positioned outside the flowing air. The extracted medium is axially suctioned and radially discharged all along the perimeter of the housing. The fan impellers is made of polypropylene filled with glass fibers. The impeller is directly mounted on the electric motor shaft. The impeller blades are bent backwards. The motor cover is made of polyurethane. The fans excel with reliability, high-quality workmanship, silent operation and simple installation.

The VRR fans are driven by flange-mounted electric motors for 400V (in the B3 design, IP 55 protection class, insulation of class F, with 2 or 4 poles).

The fans are resistant to corrosion as well as aggressive vapors and gases. They are suitable for extraction from laboratories, pickling shops, workshops, warehouses as well as sports facilities, restaurants, shopping centers etc. The temperature of extracted media can vary in the range from -30°C to +50°C (with VRR 500/702 in the range from -30°C to +40°C), ambient temperature between -30°C and +40°C.

The fans are also available in special versions, e.g.:

- E - with single-phase electric motors
- DS - with adjustable speed with the use of a controller
- TS - with thermal protection of the winding
- P1 - with a double-speed electric motor
- P2 - motor with the possibility of reversing poles to the nearest lower speed
- LAB - laboratory design
- ET - elevated temperature of transported media
- EX - motor for an explosive environment
- FA - flat design with additional equipment
- RAL - color design (you must specify the RAL - number)

Fan accessories

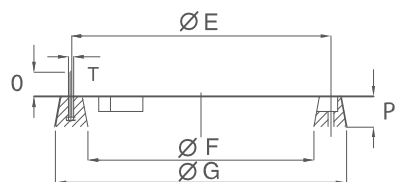
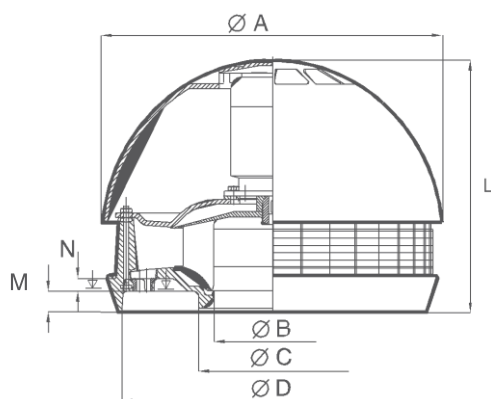
- FU 200** - circular base frame for easier anchoring on flat roofs without a concrete base. The circular base frame is made of polyurethane.
- UR 200** - adapter to change the flow direction upwards
- Flexible connection** - made of softened PVC for connection to the air ducts
- Stainless-steel clamp** - to fix the flexible connection
- Return flap** - vertical, material as agreed
- Protective switch** - protects the electric motor from overloading and at the same time it is used to start the fan; it can be placed in a particular workplace or near the fan



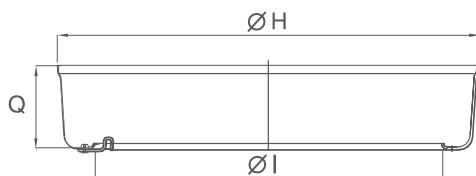
Order example:

Fan VRR 200/702 W, 1450 rpm, 0,25 kW	1 piece
Circular base frame FU 200	1 piece
Flexible connection 250	1 piece
Stainless-steel clamps 250	2 pieces
Protective switch MS 1.0	1 piece

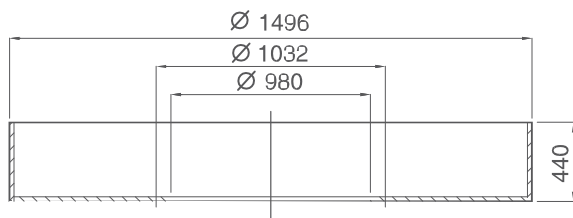
Dimensional diagram of the VRR type



FU - circular base frame



UR - adapter to change the air flow direction
(valid for VRR 200 - 315)



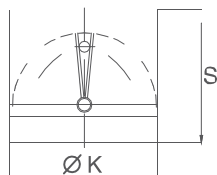
(platí pro VRR 500)



Tlumící vložka



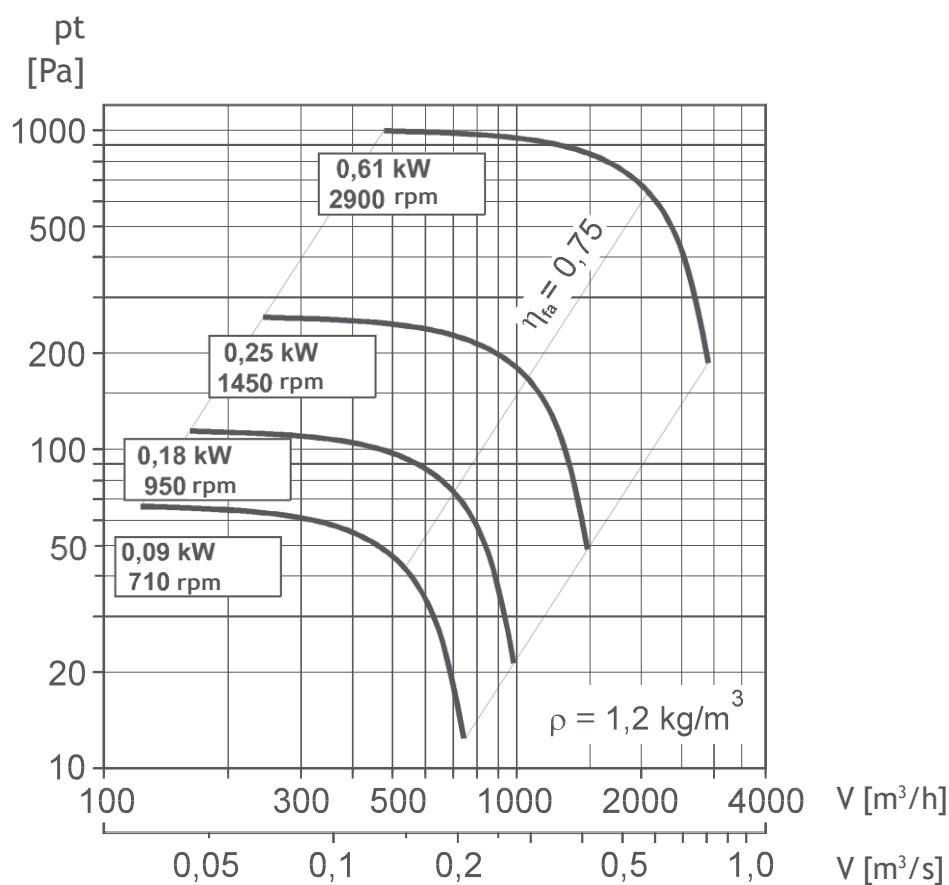
Nerezová spona



Zpětná klapka

Fan type	Dimensions [mm]																			
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
VRR 200/702	574	197	250	509	437	380	490	711	584	250	250	424	35	22	40	50	140	175	220	2xM8
VRR 315/702	800	308	400	735	662	608	728	986	814	400	400	622	50	56,5	72	80	215	250	330	2xM10
VRR 500/702	1206	492	630	1142	1032	980	1135	-	-	630	630	872	63	73	93	100	-	250	450	M10

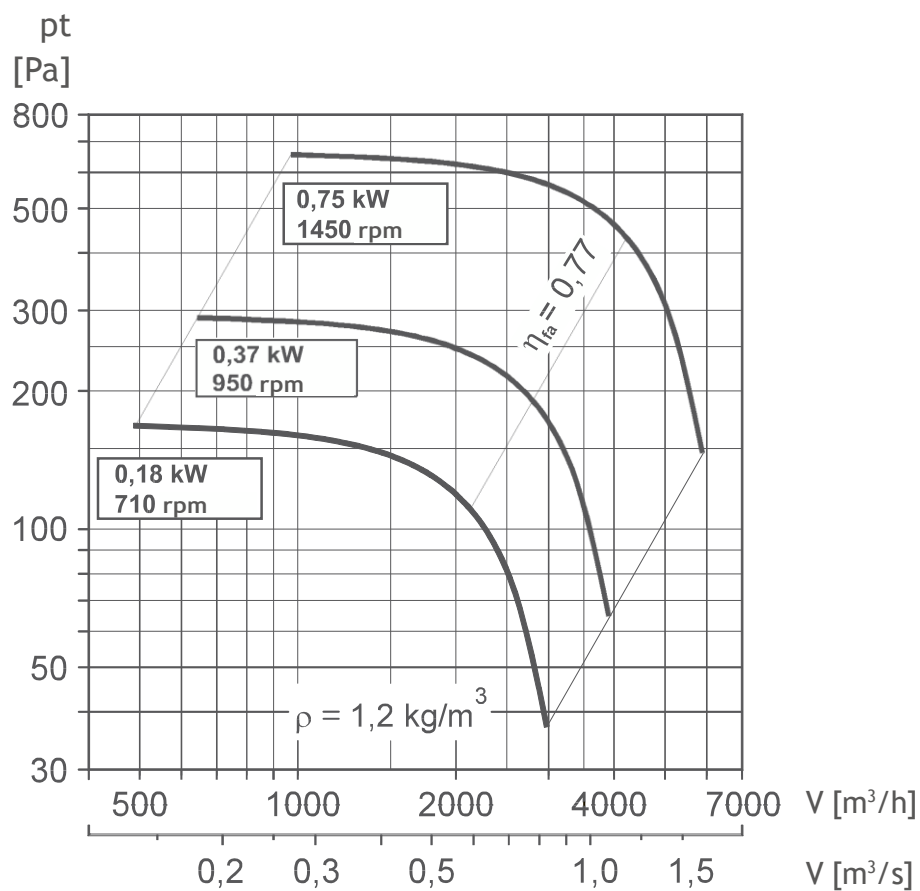
VRR 200/702



Fan type	Speed [rpm]	Required power [kW]	Motor type	Rated output [kW]	Nominal current of the electric motor [A]	Weight, including electric motor [kg]	Protective switch of the electric motor
VRR 200/702 W 710	710	0,012	3×400 V/ 50 Hz IP 55	0,09	0,6	15	MS 1,0
VRR 200/702 W 950	950	0,03		0,18	0,81	15	MS 1,0
VRR 200/702 W 1450	1450	0,1		0,25	0,87	15	MS 1,0
VRR 200/702 W 2900	2900	0,61		0,61	1,72	18	MS 2,5

Rated output [kW]	Speed (revolutions per minute) [rpm]	A _{3m} dB [A]	L _{WA} dB [A]	L _{WA Oct} /dB [Hz]							
				63	125	250	500	1000	2000	4000	8000
0,09	710	39	57	39	46	51	55	48	39	31	27

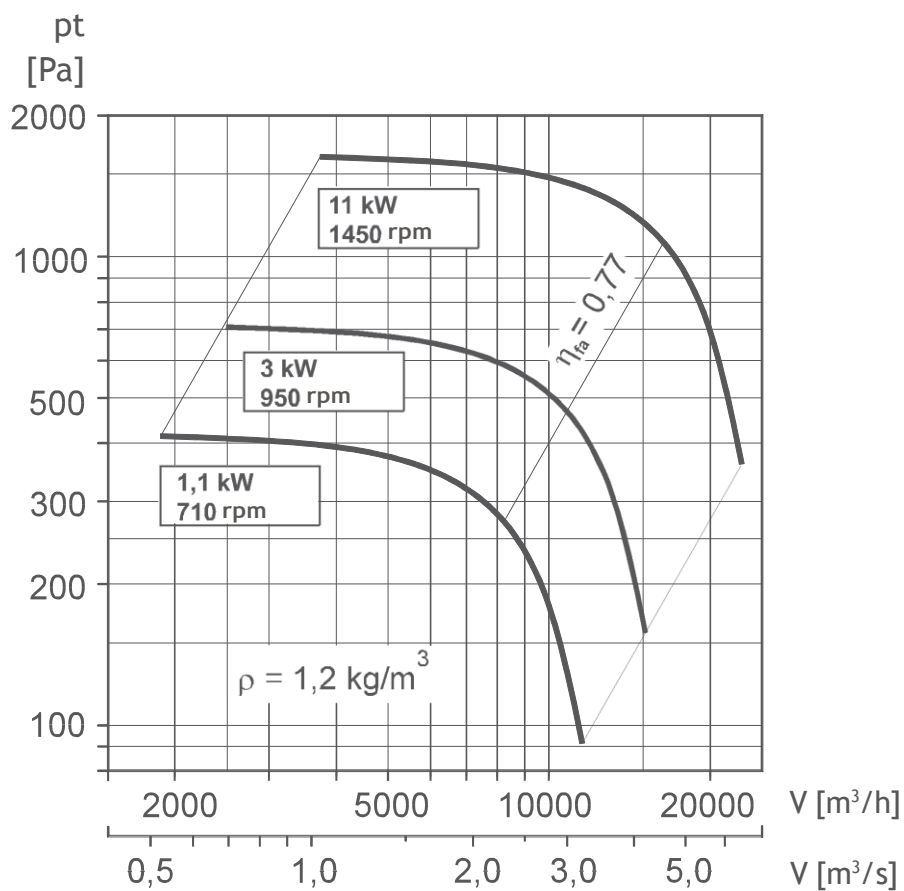
VRR 315/702



Type Fan	Speed [rpm]	Required power [kW]	Motor type	Rated output [kW]	Nominal current of the electric motor [A]	Weight, including electric motor [kg]	Protective switch of the electric motor
VRR 315/702 W 710	710	0,1	3x400 V / 50 Hz IP 55	0,18	0,78	35	MS 1,0
VRR 315/702 W 950	950	0,22		0,37	1,19	35	MS 1,6
VRR 315/702 W 1450	1450	0,75		0,75	1,86	40	MS 2,5

Rated output [kW]	Speed (revolutions per minute) [rpm]	A 3m dB [A]	L _{WA} dB [A]	L _{WA Oc} /dB [Hz]							
				63	125	250	500	1000	2000	4000	8000
0,18	710	48	65	45	52	56	61	60	50	39	30
0,37	950	50	68	49	59	60	61	63	58	50	41
0,75	1450	61	78	64	64	69	70	73	71	62	52

VRR 500/702



Type Fan	Speed [rpm]	Required power [kW]	Motor type	Rated output [kW]	Nominal current of the electric motor [A]	Weight, including electric motor [kg]	Protective switch of the electric motor
VRR 500/702 W 710	710	0,95	3x400 V / 50 Hz IP 55	1,1	2,9	100	MS 4,0
VRR 500/702 W 950	950	2,3		3,0	7,3	120	MS 10,0
VRR 500/702 W 1450	1450	8,3		11,0	21,5	160	MS 25,0

Rated output [kW]	Speed (revolutions per minute) [rpm]	L_{A3m} dB [A]	L_{WA} dB [A]	$L_{WA Oct}$ /dB [Hz]							
				63	125	250	500	1000	2000	4000	8000

12. Fans of the JET type

The fans of the JET type are designed to extract air containing aggressive chemical compounds from laboratories and industrial plants in the temperature range from -10°C to +60°C.

There are two possible ways of their installation:

- 1) The fan is directly inserted in the duct.
- 2) The fan is mounted on the roof on a foundation plate and is fixed to a separate structure.

The fans are generally used in cases where a radial fan with a spiral housing cannot be used due to a confined space.

The single-speed asynchronous squirrel-cage electric fans for 400 V, insulation class F, ingress-protection class IP55 and permanent load S1 are integrated inside the entire set to be protected from climatic influences. The fan housings and impellers are made of polypropylene.

Air ducts and fans are interconnected with flexible connections that prevent transmission of vibrations to the duct. The flexible connections are fixed with stainless steel clamps.

On wet premises we recommend you to only install the fans in vertical positions where the produced condensate is safely drained.

ORDERING:

In your order you must exactly specify the fan type, motor output and accessories.



Example

Fan JET 20 - 0,18 kW	1 piece
Flexible connection ø160	1 piece
Clamp ø160	2 pieces

Type Fan	Motor			Volume* [m³/h]	Pressure* pt [Pa]	Rated current [A]	Thermal protection max. [-]	Noise [dB]	Weight ** [kg]
	P [kW]	n [min⁻¹]	Number of poles						
JET 20	0,18	835	6	440	75	0,62	0,62	60,3	21
	0,25	1350	4	700	165	0,76	0,76	70,3	23
	0,75	2 855	2	1 300	700	1,73	1,73	85,1	24
	1,1	2855	2	1800	350	1,73	1,73	85,1	26
JET 25	0,18	835	6	800	700	0,76	0,76	66,2	28
	0,37	1 370	4	1 500	250	1,03	1,03	76,0	40
	2,2	2 880	2	2 500	1 350	4,55	4,55	90,6	40
JET 30	0,75	915	6	1 750	200	1,60	1,60	73,1	39
	1,5	1420	4	2 750	480	3,40	3,40	82,8	44

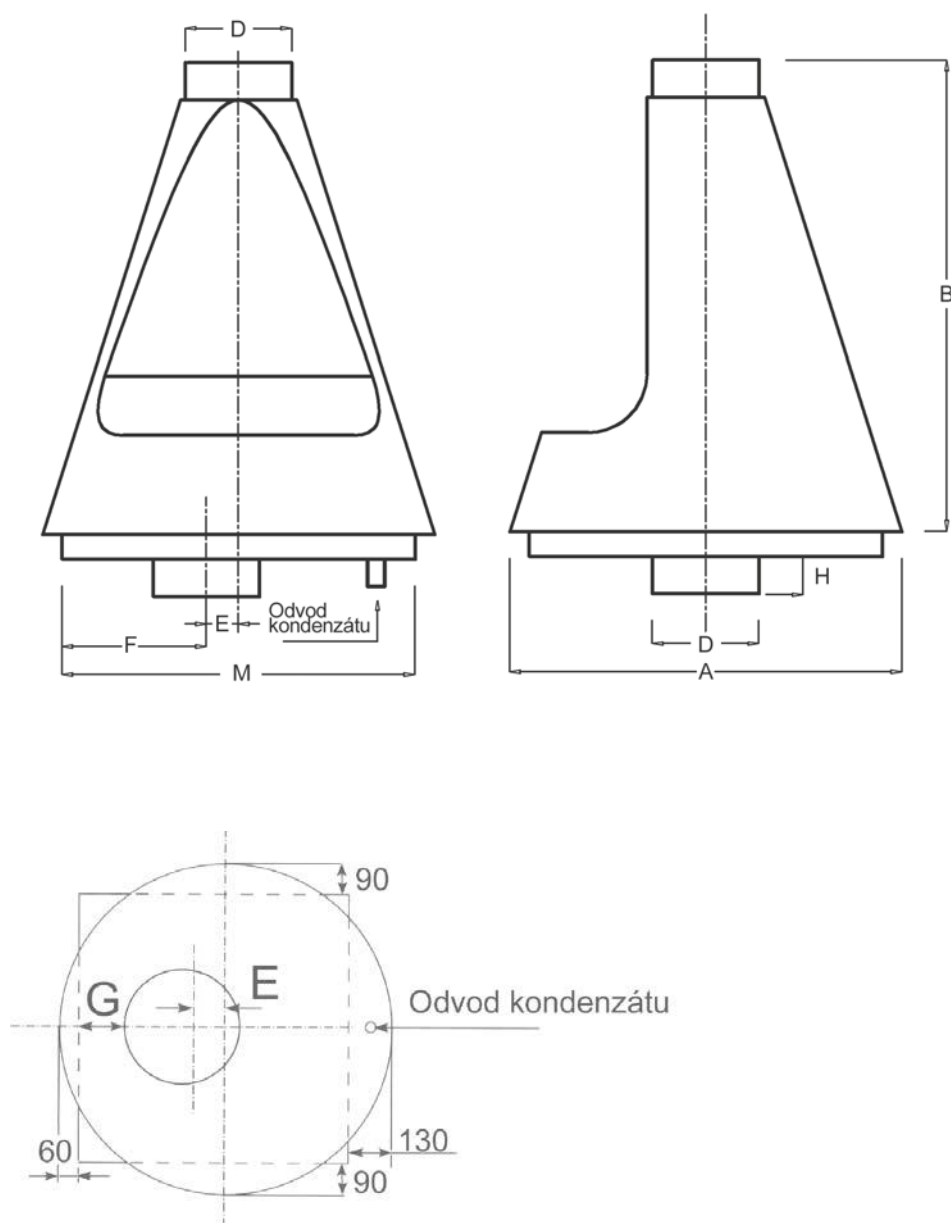
* the values of air volume and pressure are determined as approximate



** the values may differ depending on the electric motor type

1,1	710	60	76	54	65	64	74	67	66	56	41
3,0	950	66	82	58	72	72	78	72	74	68	52
11,0	1450	74	91	65	76	84	86	84	85	78	65

Dimensional diagram of the JET type

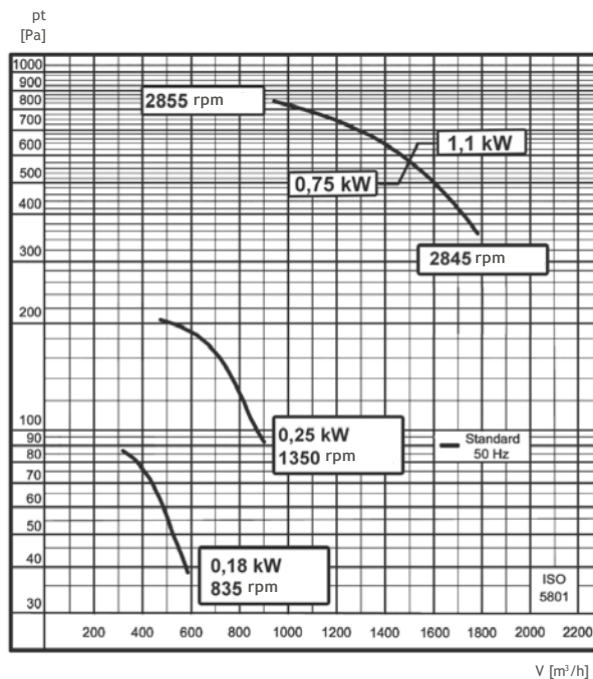


The dimensional diagram is illustrative. The dimensions are specified in [mm].
If you require exact dimensions, please contact us.

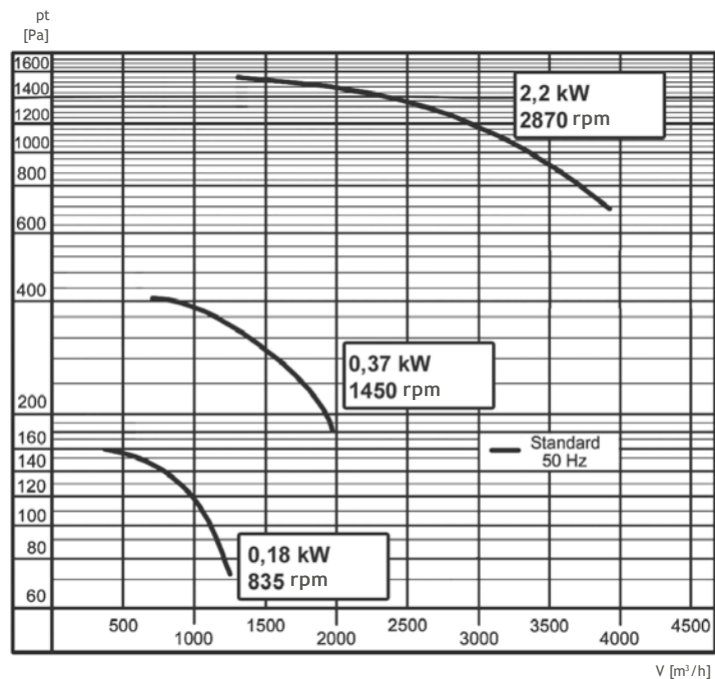
Fan type	Dimensions [mm]							
	A	B	D	E	F	G	H	M (inner)
JET 20	600	800	160	50	250	160	70	540x540
JET 25	735	930	200	60	305	145	70	540x540
JET 30	880	1040	250	70	200	75	70	540x540

Performance characteristics

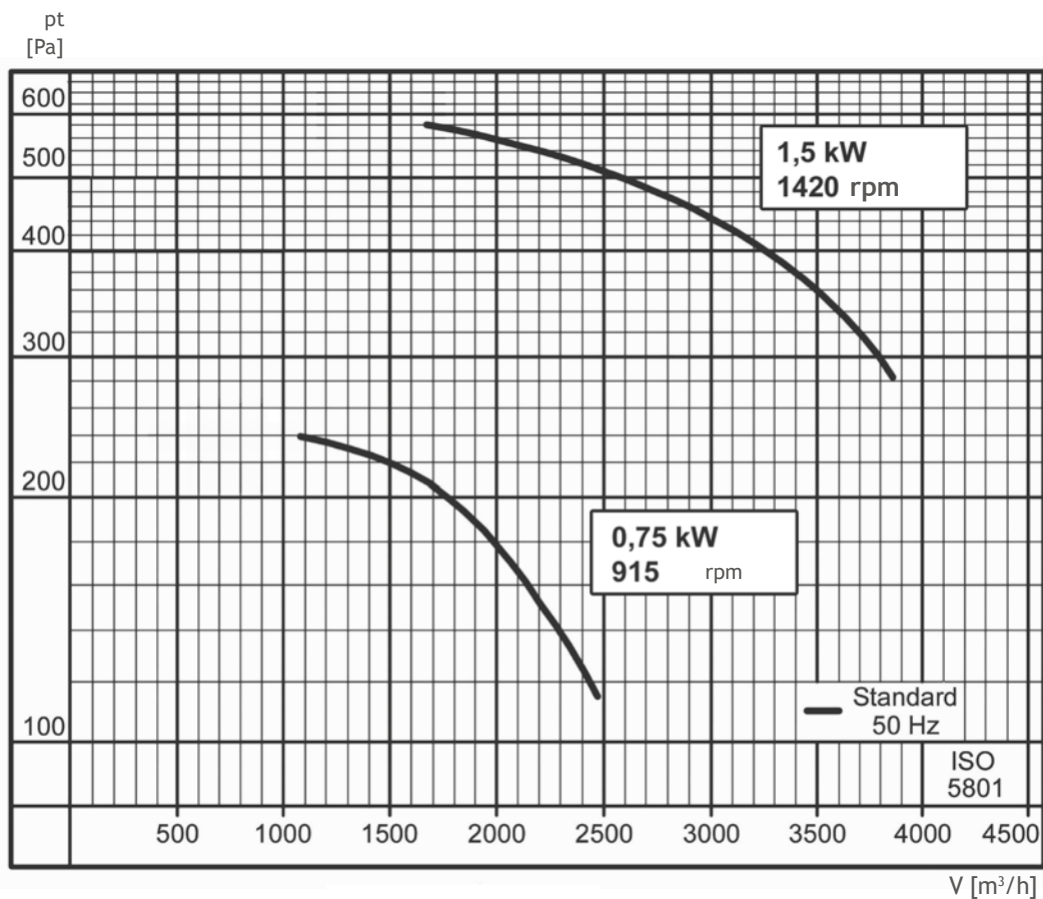
JET 20



JET 25



JET 30

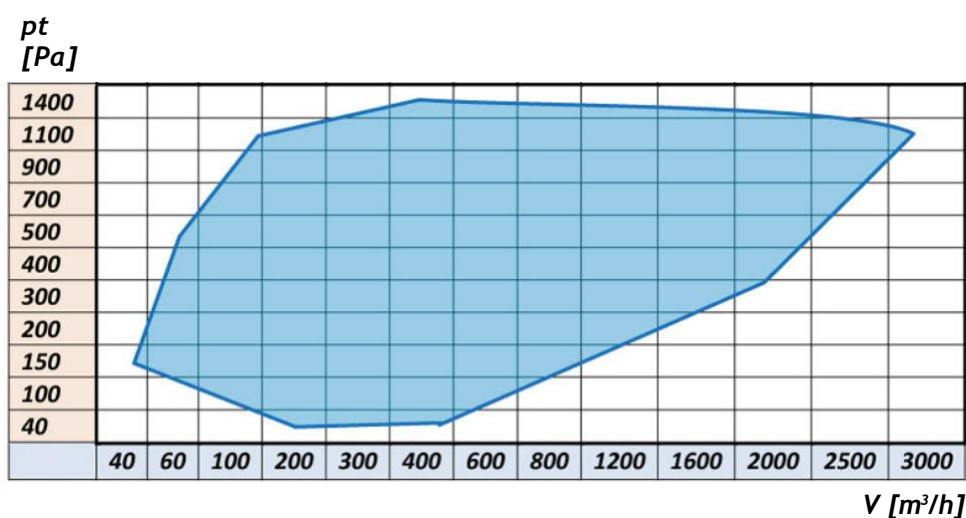


13. Fans of the FORT - BA INOX type

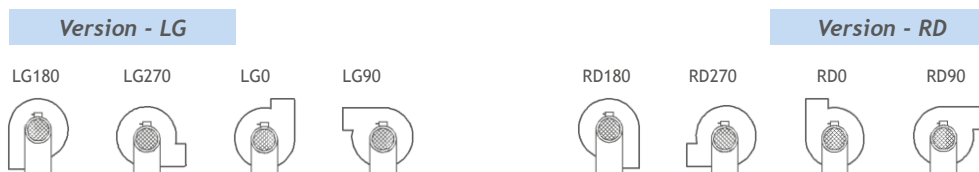
The BA INOX are radial low-pressure, unilaterally suctioning fans with a directly connected motor. The fans are drive by single-phase or three-phase electric motors. In the basic version the electric motor has the IP55 protection class with the insulation class F. The motor is positioned outside the air stream. These fans are intended for an environment without an explosion risk and also for an environment with an explosion risk, zone 2.

The housings and impellers with forward bent blades are made of stainless steel sheets.

The fans are designed for extraction of air without mechanical impurities that would settle on the fan impeller in the temperature range from -15°C to max. $+70^{\circ}\text{C}$ (for special applications up to 150°C - to be specified in advance). A stool is not part of the fan - it is included in optional accessories just as anti-vibration kits, flexible connections, controllers etc.



Spiral housing positions as viewed from the motor side



14. Fans of the VRE-N, VRN-N and VRS-N types.

The VRE-N, VRN-N and VRS-N fans are radial low-pressure, unilaterally suctioning fans with a directly connected motor. The fans are driven by flange-mounted (type VRN-N - sizes 160 and 200) or foot-mounted three-phase electric motors where the fan impeller is mounted on the electric motor shaft in an overhung way. In the basic version the electric motor has the IP55 protection class with the insulation class F, for nominal voltages up to 3kW 230VD/400VY, 50 Hz/460VY, 60 Hz and over 3kW 400VD/690VY, 50 Hz/460VD, 60 Hz for the possibility of starting with a Y-Δ switch; for ambient temperatures from -30 °C up to +40 °C, for altitudes up to 1000m. Other adaptations are possible on agreement. These fans are intended for an environment without an explosion risk and also for an environment with an explosion risk, zone 2, with the identification Z2.

The fans are available in 3 versions:

1) Galvanized (VRE-N, VRN-N, VRS-N)

The fan housing is made of galvanized sheet metal, the stool under the electric motor is made of black sheet metal and class 11 profile with anti-corrosion surface finish. The impeller is galvanized and the suction orifice is made of aluminum. The suction orifice for zone 2 is made of copper.

2) Stainless-steel (VRE-N / VRN-N / VRS-N)

The fan housing, electric motor stool, impeller and suction orifice are made of stainless steel of class 1.4301.

3) Stainless-steel for chemical plants (VRN-N)

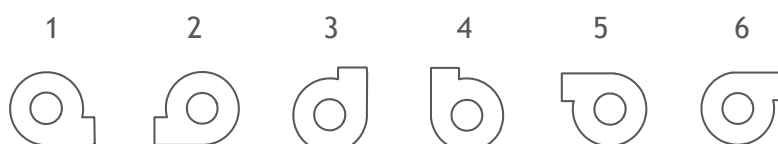
Technically equal to point 2 - between the housing and el. motor the fan has sealing against penetration of chemicals to the motor. The motor has a stainless-steel shaft.

The fans are air-tight and are designed for extraction of air in the temperature range from -20 °C to +70 °C (types VRE-N up to max. +120 °C). The transported air must not contain mechanical sediments that would settle on the fan impeller.

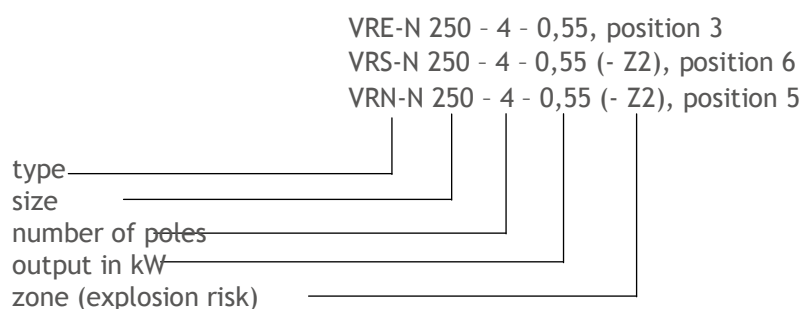
A speed controller can be used with fans designed for an environment without an explosion risk to reduce the speed only to half the rated value of the electric motor at the most. Speed controllers cannot be used with fans of the EX design (Zone 2). Anti-vibration kits are not part of the fan - they can be ordered as optional accessories similarly to the flexible connections.



Spiral housing positions as viewed from the suction side



Fan identification

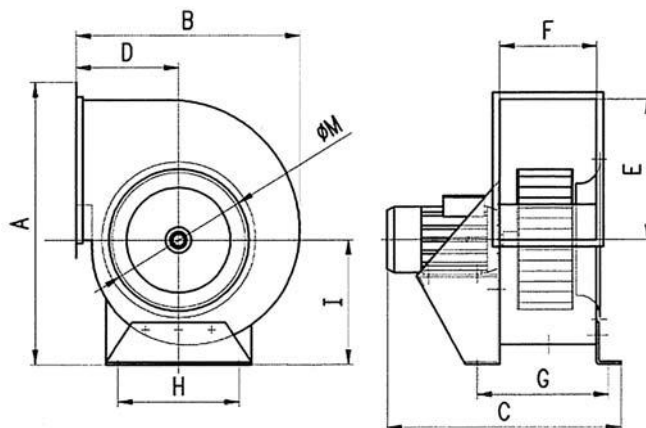


Dimensional diagram of VRE-N

General technical information:

Pressure loss range from 50 to 2000 Pa

Output range from 180 to 56520 m³/h

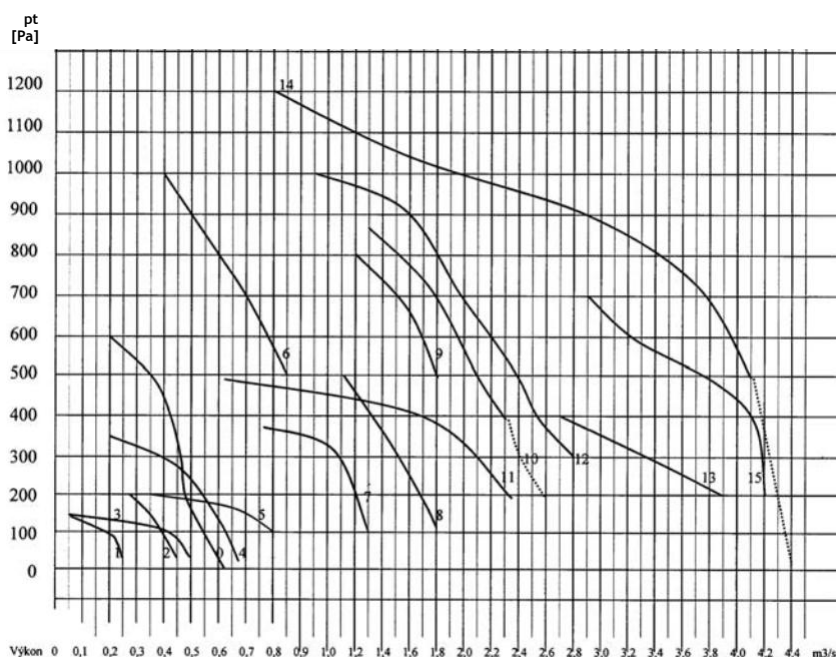


TYPE	Motor		A	B	C	D	E	F	G	H	I	ØM	curve number
	kW	rpm											
VRE 160-2-0,55	0,55	2800	370	305	445	155	160	120	180	160	165	160	0
VRE 160-4-0,25	0,25	1350											1
VRE 200-2-1,5	1,5	2885	400	350	465	175	140	140	310	200	180	200	6
VRE 200-4-0,37	0,37	1370			455								2
VRE 250-4-0,55	0,55	1395	500	425	510	255	250	180	240	250	230	250	4
VRE 250-6-0,37	0,37	920											3
VRE 315-6-0,55	0,55	910			565								5
VRE 315-4-1,5	1,5	1435	615	540	610	255	315	225	405	280	280	315	8
VRE 315-4-2,2-A	2,2	1455			690								9
VRE 335-4-2,2-A	2,2	1455	615	540	690	255	315	225	405	280	280	355	10
VRE 335-6-1,1-A	1,1	935			610								7
VRE 400-6-2,2	2,2	965			775								11
VRE 400-4-5,5	5,5	1465	770	650	825	300	400	280	560	350	350	400	14
VRE 400-4-4-D	4	1460			775								12
VRE 500-8-3	3	710	940	810	1025	370	500	355	540	410	410	500	13
VRE 500-6-5,5	5,5	970							620				15

The table contains commonly used fans. We will offer you other types of the VRE-N fans (up to the size of 800 and volume of 56520 m³/h) if you send us a particular request.

VRE-N performance charts

The performance values of the fans were measured at 15°C and the media density of 1.2 kg/m³

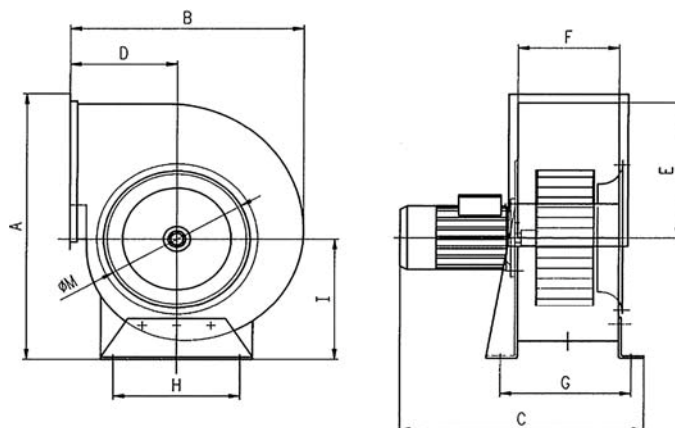


Dimensional diagram of VRN-N

General technical information:

Pressure loss range from 50 to 1200 Pa

Output range from 180 to 41400 m³/h

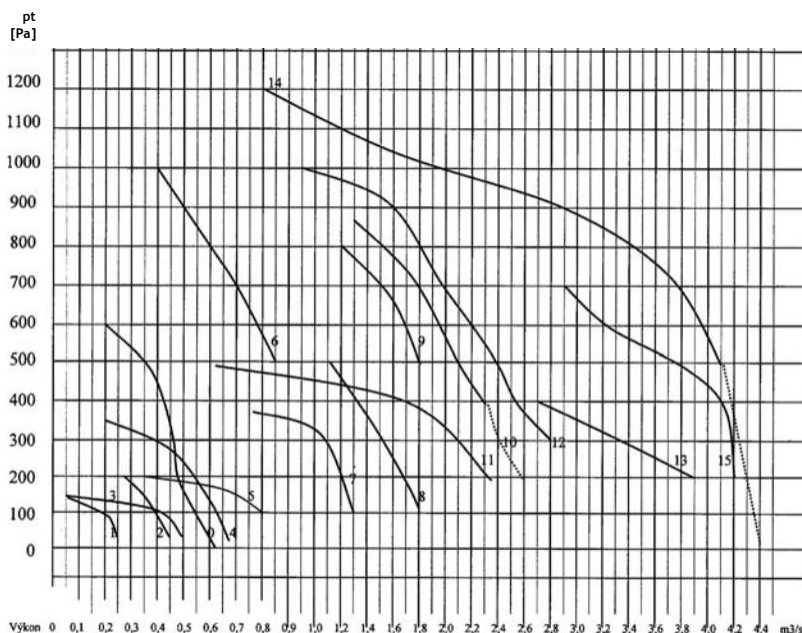


TYPE	Motor		A	B	C	D	E	F	G	H	I	ØM	curve number
	kW	rpm											
VRN 160-2-0,55	0,55	2800	370	305	445	155	160	120	180	160	165	160	0
VRN 160-4-0,25	0,25	1350			455								1
VRN 200-2-1,5	1,5	2885	400	350	465	175	140	140	310	200	180	200	6
VRN 200-4-0,37	0,37	1370			455								2
VRN 250-4-0,55	0,55	1395	500	425	510	255	250	180	240	250	230	250	4
VRN 250-6-0,37	0,37	920			565								3
VRN 315-6-0,55	0,55	910	615	540	610	255	315	225	405	280	280	315	5
VRN 315-4-1,5	1,5	1435			690								8
VRN 315-4-2,2-A	2,2	1455	615	540	690	255	315	225	405	280	280	355	9
VRN 335-4-2,2-A	2,2	1455			610								10
VRN 335-6-1,1-A	1,1	935	775	775	775	300	400	280	560	350	350	400	7
VRN 400-6-2,2	2,2	965			825								11
VRN 400-4-5,5	5,5	1465	770	650	825	300	400	280	560	350	350	400	14
VRN 400-4-4-D	4	1460			775								12
VRN 500-8-3	3	710	940	810	1025	370	500	355	540	410	410	500	13
VRN 500-6-5,5	5,5	970			620				620				15

The table contains commonly used fans. We will offer you other types of the VRN-N fans (up to the size of 800 and volume of 41400 m³/h) if you send us a particular request.

VRN-N performance chart

The performance values of the fans were measured at 15°C and the media density of 1.2 kg/m³

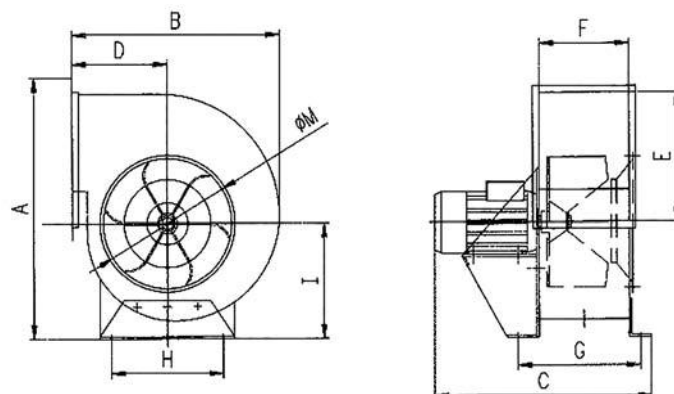


Dimensional diagram of VRS-N

General technical information:

Pressure loss range from 400 to 3000 Pa

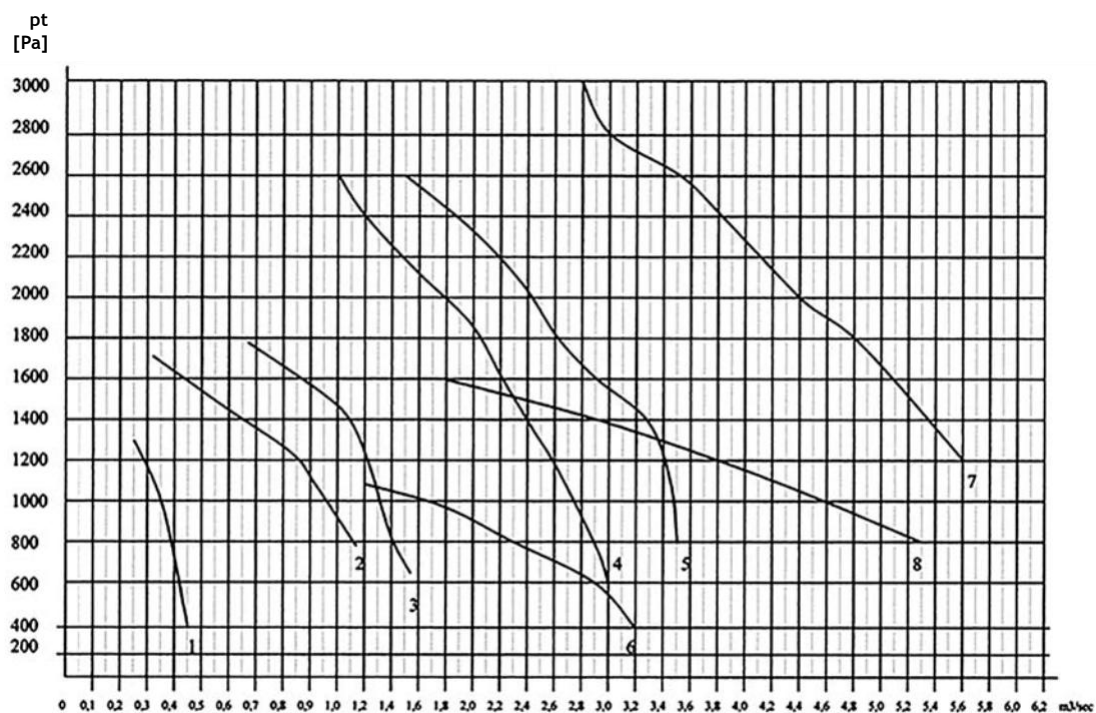
Output range from 900 to 68400 m³/h



TYPE	Motor		A	B	C	D	E	F	G	H	I	ØM	curve number
	kW	rpm											
VRS 250-2-1,5	1,5	2885	500	425	470	255	250	180	240	250	230	250	1
VRS 320-2-2,2	2,2	2890	615	540	525	255	315	225	305	280	280	315	2
VRS 350-2-3	3	2905	615	540	525	255	315	225	305	280	280	355	3
VRS 400-2-5,5	5,5	2950	770	650	695	300	400	280	390	350	350	400	4
VRS 400-2-7,5	7,5	2950	770	650	720	300	400	280	390	350	350	400	5
VRS 500-4-5,5	5,5	1465	940	810	960	370	500	355	480	410	410	500	6
VRS 500-2-15	15	2955	940	810	960	370	500	355	480	410	410	500	7
VRS 630-4-7,5	7,5	1465	1200	1045	1100	485	630	450	530	600	540	630	8

The table contains commonly used fans. We will offer you other types of the VRS-N fans (up to the size of 800 and volume of 68400 m³/h) if you send us a particular request.

VRS-N performance charts



13. Frequency inverters

Frequency inverters are used to continuously control the output of the electric motor of a fan (speed change) by changing the frequency in the range from 10 Hz to 50/60 Hz). In the long term, an electric motor with its own cooling should not be operated below the frequency of 15 Hz. If an electric motor works at a higher frequency than 50 Hz, it has a higher consumption of mains current. The range of 10 Hz to 50 Hz is valid for the application of a fan with a scalar frequency inverter. If a vector inverter and a motor with external cooling is used, the control can start from 0 Hz.

If you need to respond to changing parameters, you can use external software to program any control cycle through a control system from a PLC or PC. The inverter itself does not enable setting of a cycle.



Types of frequency inverters:

- Single-phase - Single-phase powered inverters allow you to control fans with standard 3-phase electric motors even in locations where no 3-phase mains is available. They require a delta connection of the electric motor terminal board. This connection method places high demands on current consumption in one phase. 1x230V is supplied to the inverter input. The output is 3x230 V.
- Three-phase - requiring a star connection (standard connection of the electric motor terminal board). 3x400V is supplied to the inverter input. The output is 3x400 V. Besides the standard inverters with the 1x230 V and 3x400 V power supply there is also the Japanese and American version where the frequency converter is adapted to the voltage of the supply mains.

Calculation of the electric motor speed:

$$n = \frac{120 \cdot f}{p}$$

n - speed of the electric motor
 f - frequency
 p - the number of poles of electric motor

Frequency inverters with the IP 20 protection:

An advantage is a lower purchasing price and smaller dimensions. The inverters may also comprise interference suppression filters of category C1 and category C2 (up to 7.5 kW). A disadvantage is necessity of installation in a switchboard.

Frequency inverters with the IP 54 protection:

An advantage is the possibility of wall installation of the inverter, even in a wet environment (e.g. in the place of operation). The inverters comprise interference suppression filters of class "B" designed for residential and office premises. A disadvantage is a higher purchasing price and larger dimensions.

When connecting a frequency inverter we recommend you to use accessories as a network filter, mains or motor choke to suppress interference. Further, for the connection of the system you should use a shielded cable.

Mains choke - protects the frequency inverter from voltage surges in the mains. The protection class of the choke is IP 00 and it must be installed in a switchboard. On request, a choke with the IP 20 protection is available.

Network filter - prevents interference with radios, TV sets, phones etc. Frequency inverters up to 7.5 kW inclusive have an integrated filter. In the case of higher power ratings and where there are higher requirements for interference suppression you can use an external filter that is placed as close as possible to the frequency inverter, usually under it.

Motor choke - is incorporated in the system if the distance between the inverter and motor is higher than 50 m. To prevent interference caused by using a inverter in the system we recommend you to use a shielded cable.

Icontrol frequency inverters

The Icontrol optimized frequency inverter of the FXDM type has integrated versatile functions for single-motor operation. It is e.g. use in air-conditioning equipment or in special applications. It enable simple selection of the required control function, e.g. volume flow control. It is designed for single- and three-phase motors supplied by 208...480 V, IP 20 (IP54) protection.

Frequency inverters with the IP 20 or IP 54 protection

Optimized frequency inverters for control of one motor with an insulation system and bearings suitable for frequency control, an integrated controller (freely programmable PID) multifunctional LCD display, general motor protection with the use of thermo switches or thermistors and an RS485 (MODBUS) interface or optionally LON® or Ethernet.

Input: 2x analog (0-10 V, 0-20 mA, 4-20 mA, temperature sensor type TF...)

Output: 2x relay, programmable functions: operation monitoring, error indication, external error from the digital input, modulation limitation, ...

Note: with the use of suitable sensors (e.g. TF, DSG, MBG-30I, MAL) you can directly set the required values in the measured quantities (e.g. temperature [°C], pressure [Pa], speed [m/s]).

Types suitable for electric motors with a power input from 1,1 to 18,5 kW

Type	P/kW	Ingress protection class (IP)
FXDM2.6AE	1,1	IP20 (IP54)
FXDM4.2AE	1,5	IP20 (IP54)
FXDM5AE	2,2	IP20 (IP54)
FXDM7.5AE	3,0	IP20 (IP54)
FXDM8.5AE	4,0	IP20 (IP54)
FXDM12AE	5,5	IP20 (IP54)
FXDM17AE	7,5	IP20 (IP54)
FXDM25AE	11,0	IP20 (IP54)
FXDM32AE	15,0	IP20 (IP54)
FXDM39AE	18,5	IP20 (IP54)



Sensors suitable for connection to the FXDM frequency inverter

Temperature sensor TFR (KTY10-6)	Pressure sensor MBG-30 I measurement of liquid substances (coolants)	Pressure difference sensor DSG measurement of non-aggressive gases	Speed measurement sensor MAL measurement of non-aggressive gases
resistance sensor R 20°C = 1,9 kΩ	power supply 8-36 V DC, output 4-20 mA	power supply +24 V, output 0-10 V	power supply 24 V, output from 0 to 10 V
range: from -20 to +60 °C	measurement range: from 0 to 30 bar	measurement range: from 0 to 6000 Pa	range: from 0 to 1 m/s (from 0 to 10 m/s)
protection class IP 54	protection class IP 67	protection class IP 65	protection class IP 40





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