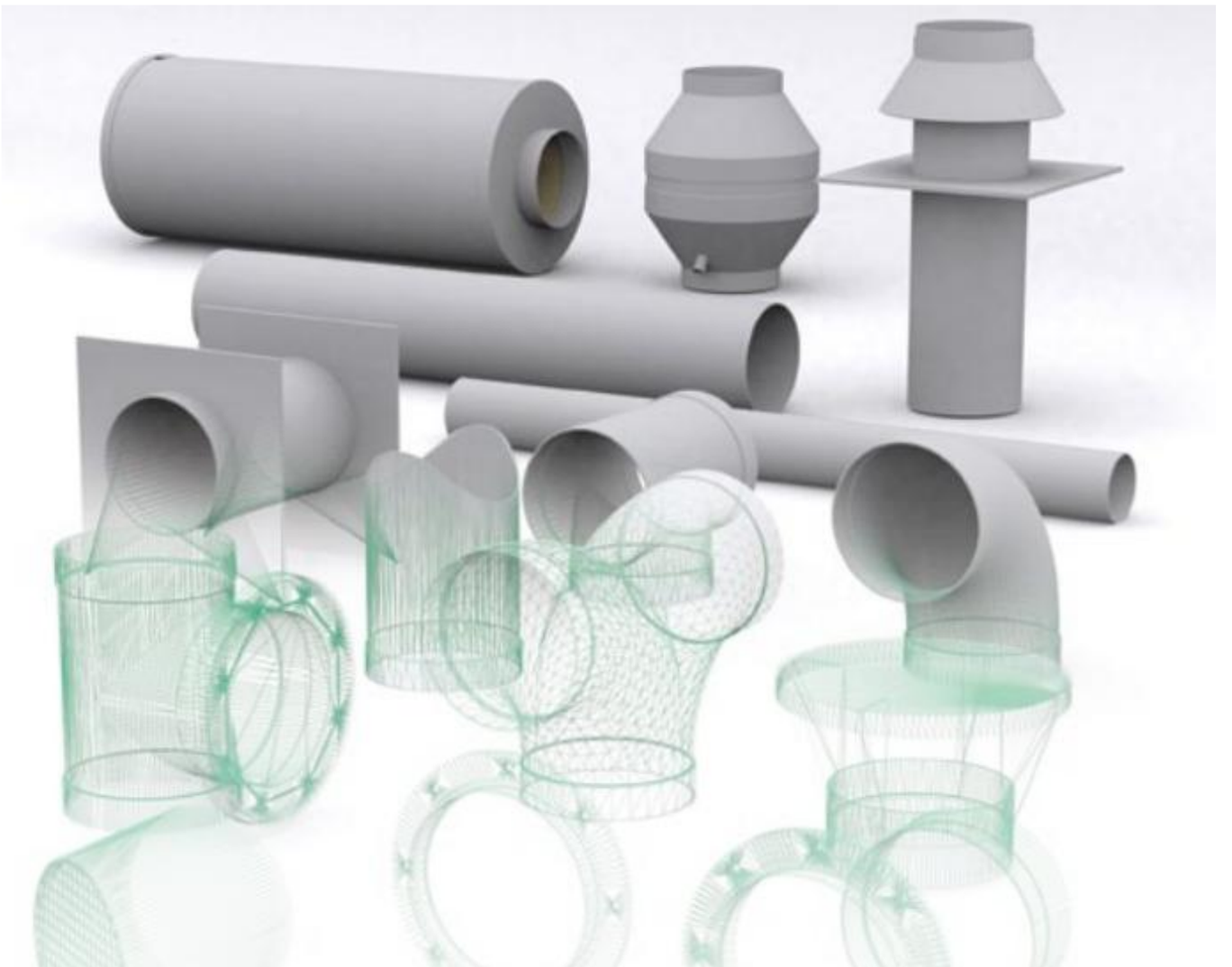
AQUATERA

PLASTIKINĖS VENTILIACIJOS SISTEMOS



2014

AQUATERA

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1. List of used abbreviations

Name	Abbreviation
Drop Eliminator with Circular Connection	EKK
Drop Eliminator with Square Connection	EKH
Filter Box for Pocket Filters	FBKA
Filter Box for Frame Filters	FBRA
Filter Boxes for Compact Filters	FBKO
Filter Boxes for Cartridges with Active Carbon	FBAU
Filter Boxes for Absolute Filters	FBAB
Filter Bushings	PF
Filter Plates	FD
Modular Filter Boxes for Pocket Filters	FBSKA
Square Orifice	HrH
Circular Orifice	HrK
Y-Piece, Square	KKH
Y-Piece, Round	KKK
Square Control Flap, Single-Bladed	KLRHJ
Square Control Flap, Single-Bladed with enhanced Leakproofness	KLRHT
Square Control Flap, Multi-Bladed	KLRHV
Round Control Flap	KLRK
Round Control Flap, Single-Bladed with enhanced Leakproofness	KLRKT
Horizontal Non-Return Flap, Square	KLZHH
Horizontal Non-Return Flap, Round	KLZHK
Vertical Non-Return Flap, Square	KLZVH
Vertical Non-Return Flap, Round	KLZVK
Elbow	KO
Hamburg Elbow	KOH
Sharp Elbow	KOO
Sharp Reducing Elbow	KOOP
Sharp Elbow with Radius	KOOR
Sharp Elbow with Radius, Reducing	KOORP
Reducing Elbow	KOP
Exhaust Elbow	KOV
Noise Silencer Plate	KU
Stainless-Steel Clamp	Stainless-Steel Clamp
Square Adapter for Square Duct	NHH
Square Adapter for Square Duct with Radius	NHHR
Square Adapter for Round Duct	NHK
Round Adapter for Round Duct	NKH
Round Adapter for Round Duct	NKK
Square Branch Pipe	OBH
Square Branch Pipe, Reducing	OBHP

Name	Abbreviation
Square Branch Pipe, Oblique	OBHS
Round Branch Pipe	OBK
Square Offset Bend	ODH
Square Offset Bend, Straight	ODHP
Round Offset Bend	ODK
Round Offset Bend	OL
Round Exhaust Bend	OLV
Extraction Joint Cover, Square	OZHS
Extraction Joint Cover, Round	OZKS
Rectangle Circle Reducing Piece, Asymmetrical	PRA
Square Reducing Piece, Asymmetrical	PRAH
Round Reducing Piece, Asymmetrical	PRAK
Square Flange	PrH
Round Flange	PrK
Rectangle Circle Reducing Piece, Axial	PRO
Axial Reducing Piece, Square	PROH
Axial Reducing Piece, Round	PROK
Roof Duct, Square	Duct H
Roof Duct, Round	Duct K
Square Branch Piece	RBH
Square Branch Piece, Reducing	RBHP
Round Branch Piece	RBK
Square Slide Valve	SKH
Round Slide Valve	SKK
Rain Roof	STR
Square Noise Silencer	THH
Round Noise Silencer	THK
Square Pipe	TRH
Round Pipe	TRK
Flexible Connection, Square	TVH
Flexible Connection, Round	TVK
Exhaust Head, CAGI	VHC
Exhaust Head, Square	VHH
Exhaust Head, Round	VHK
Exhaust Adapter, Square	VNH
Exhaust Adapter, Round	VNK
Plastic Louver FP - custom production	Outlet FP
Plastic Outlet, Standard	Outlet PH
Gravity Louver Flap	ZK
Suctioning Louver	ZN
Rain Louver	ZP

2. 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/cm³]	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

3. 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.

4. 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)	$Na_2B_2O7 \times 10\ H_2O$	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_4H10	1	1	1	1	1	1	1	1
Butyl acetate	$CH_3COOC_4H_9$	3	-	2	3	-	1	2	2
Butyl alcohol	$CH_3(CH_2)_2CH_2OH$	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	$C_{18}H_{32}O_{16}$	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	$CH_3C_6H_3Cl_2$	3	-	3	-	-	-	-	-
Dimethylamine	CH_3NHCH_3	3	3	1	2	2	1	1	2
Dioctyl 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_2CCl_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	$H_5C_2C_6H_5$	3	-	2	3	-	2	3	-
Ethylenediamine	$H_2NCH_2CH_2NH_2$	2	3	1	1	1	1	1	1
Ethylene oxide (gaseous)	C_2H_4O	-	-	1	-	-	1	1	1
Ethylene glycol	$HOCH_2CH_2OH$	1	1	1	1	1	1	1	1
Ethylene chloride (1,1-dichloroethane)	CH_2CCl_2	3	3	2	3	3	3	3	3
Phenol 90%	C_6H_5OH	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	$C_6H_{12}O_6$	1	1	1	1	1	1	1	1
Glycerol	$C_3H_5(OH)_3$	1	1	1	1	1	1	1	1
Ammonium hydroxide	NH_4OH (NH_3+H_2O)	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	$CH_3CHOHCH_3$	1	-	1	1	1	1	1	1
Isooctane	$(CH_3)_2CHCH_2C(CH_3)_3$	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	$KCr(SO_4)_2 \times 12\ H_2O$	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%	$H_3CC_6H_4OH$	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	C_6H_5COOH	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	$C_3H_4OH(COOH)_3$	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_2SiF_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_3PO_4	1	1	1	1	2	1	1	1
Phtalic acid	$C_6H_4(COOH)_2$	1	2	1	1	-	1	1	-
Glycolic acid, 37% aqueous solution	$HOCH_2COOH$	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%	$HOSO_2Cl$	2	3	3	3	3	3	3	3
Chromic acid 80 %	H_2CrO_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	$HOOCCH_2CHOHCOOH$	1	1	1	1	1	1	1	1
Succinic acid	$HOOC(CH_2)_2COOH$	1	1	1	1	1	1	1	1
Silicic acid	H_2SiO_3	1	1	1	1	1	1	1	1
Maleic acid	HOOCCHCHCOOH	1	2	1	1	2	1	1	2
Butyric acid 20%	$CH_3(CH_2)_2COOH$	1	2	1	-	-	1	1	2
Formic acid 50%	HCOOH	1	1	1	1	1	1	1	1
Acetic acid 10%	CH_3COOH	1	1	1	1	1	1	1	1
Acetic acid 50%	CH_3COOH	1	1	1	1	1	1	1	1
Acetic acid 60%	CH_3COOH	1	-	1	1	1	1	1	1
Glacial acetic acid	-	2	3	1	2	2	1	2	2
Oleic acid	$H_3C(CH_2)CHCH(CH_2)_7(COO)$	1	1	1	1	2	1	1	2
Sulphuric acid	H_2SO_4	1	1-2	1	1	1	1	1	1
Muriatic acid	-	1	1	1	1	1	-	-	-
Sulphuric acid 98%	H_2SO_4	2	3	2	3	-	2	3	3
Fuming sulphuric acid (oleum)	H_2SO_4 98,4 % + SO_3	2	3	3	-	-	3	-	-
Sulphurous acid	H_2SO_3	1	1	1	1	1	1	1	1
Hydrosulphuric acid	H_2S	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	HOOCCOOH	1	1	1	1	1	1	1	1
Trichloroacetic acid	CCl_3COOH	1	-	1	1	-	1	1	2
Tartaric acid, 10% aqueous solution	$HOOC(CHOH)_2COOH$	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_3COOCH_3	3	-	1	1	1	1	1	2
Methyl alcohol	CH_3OH	1-2	2	1	1	1	1	1	1
Methylene chloride (dichloromethane)	CH_2Cl_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_2NCONH_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	$C_6H_5NO_2$	3	-	1	1	2	1	2	2
Nitrotoluene	$CH_3C_6H_4NO_2$	3	-	1	2	2	1	2	2
Vinegar		1	-	1	-	-	1	-	-
Ammonium acetate	CH_3COONH_4	1	-	1	1	1	1	1	1
Sodium acetate	CH_3COONa	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	$H_3CC_6H_4CH_3$	3	-	2	3	-	2	3	-
Perchloroethylene	Cl_2CCCl_2	3	-	2	3	-	2	3	-
Hydrogen peroxide 4 %	H_2O_2	1	1-2	1-2	1-2	1-2	1-2	1-2	1-2
Hydrogen peroxide 30 %	H_2O_2	1	1-2	1-2	2	2	1-2	2	2
Potassium persulphate, aqueous solution of all concentrations	$K_2S_2O_8$	1	1	1	1	1	1	1	1
Kerosene	-	1	1	2	2	2	1	2	2
Petroleum ether	C_5H_{12} / C_6H_{14}	1	1	1	2	2	1	2	2
Propane	$CH_3CH_2CH_3$	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	$(NH_4)_2SO_4$	1	1	1	1	1	1	1	1
Sodium sulphate, aqueous solution of all concentrations	Na_2SO_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_2S	1	1	1	1	1	1	1	1
Carbon disulphide	CS_2	2	3	3	-	-	2	-	-
Hydrogen sulphide	H_2S	1	1	1	1	1	1	1	1
Sodium hydrogen sulphite, aqueous solution of all concentrations	Na_2SO_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	$Na_2C_2O_4$	1	-	1	-	-	1	-	-
Turpentine	-	1	2	2	2	3	2	2	2
Tetraethyl lead	$C_8H_{20}Pb$	1	2	1	-	-	1	-	-
Tetrahydrofuran	C_4H_8O	3	-	2	3	-	2	3	-
Tetrachloroethane	$Cl_2CHCHCl_2$	-	-	2	3	-	3	-	-
Tetralin	$C_{10}H_{12}$	3	-	3	-	-	2	2	3
Toluene	$CH_3C_6H_5$	3	-	2	3	-	2	3	-
Trichloroethylene	C_2HCl_3	3	-	2	3	-	2	3	-
Triethanolamine	$(HOCH_2CH_2)_3N$	3	-	1	1	2	1	1	2
Trichloroethane	CH_3CCl_3	3	-	2	3	-	2	3	-
Tricresyl phosphate	$OP(OC_6H_4CH_3)_3$	1	-	1	2	2	1	1	1
Sodium carbonate, aqueous solution of all concentrations	Na_2CO_3	1	1	1	1	1	1	1	1
Vaseline	$C_{27}H_{46}$ / $C_{73}H_{48}$	-	-	1	2	2	2	2	2
Vinyl chloride	CH_2CHCl	3	-	3	-	-	3	-	-
Vinyl acetate	$CH_3COOCHCH_2$	3	-	1	2	2	1	1	2
Water	H_2O	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.

5. Air ducts and accessories

General technical information

Thanks to their properties plastic air ducts are increasingly used in all areas of industrial production.

Their main benefits comprise a long service life, guaranteed chemical resistance to all common acids and lyes, aggressive vapors and air containing moisture.

The commonly used materials are PVC, PP, PPs, PE, PEEL, PPsEL.

Smooth inner surface of all ducts enables laminar flow of air even at higher operation speeds. Compared to metallic ducts plastic air ducts offer a generally lower resistance and reduced noise without any risk of vibrations.
The ducts are mounted on metallic suspensions that must be designed in such a way so as not to hinder longitudinal movement of the duct due to temperature changes. At normal temperatures we recommend the spacing of individual suspensions be 1.5 to 2 m. The type of assembly material should be selected individually with regard to the particular project conditions.
In plants with high temperature differences heat expansion compensators should be inserted in the ducts. Deliveries of ventilation pipes contain fastening and sealing material (depending on the joining method) required for the assembly. Straight parts are made in the standard length of up to 2000 mm. On request, pipes of different lengths can also be produced. The presented dimensions of all duct parts are understood as the dimensions of the outer shell of the duct.

The ducts are sized for the maximum pressure / air flow rate:	
circular (round) cross-sections	- 2000 Pa to + 3000 Pa / up to 20 m/s
rectangular (square) cross-sections	- 1000 Pa to + 2000 Pa / up to 20 m/s

Limit values must be consulted in advance
Circular duct parts are commonly produced from ø75 to ø1250 mm mainly of plate by means of the hot forming and hot gas welding technology. Bigger diameters must be consulted in advance.

Round pipes are made of materials with thicknesses depending on the material type:		
PVC	ø75 to ø1250	3 - 6 mm
PP, PE	ø75 to ø1250	2 - 6 mm

Rectangular duct parts of the rated dimensions A (B) vary in the ranges from 100 to 2000 mm. However, on agreement pipes of different dimensions can also be produced. But the ratio of the cross-section sides should not exceed 1:5. To prevent resonance and vibrations ducts of larger dimensions are fitted with reinforcement.

Rectangular pipes are made of materials with the following thicknesses:		
PVC	from 100 to 2000 mm	3 - 6 mm
PP, PE	from 100 to 2000 mm	4 - 6 mm

In case of elevated pressures or other individual influences the pipe wall can be made of a stronger material or reinforced. This design must be consulted in advance.
Ducts laid under a filling or concrete layer (air supply lines of underground tunnel spaces, underground garages etc.) are assessed individually. Before concreting the pipes should be anchored in a suitable way to ensure the required stability. Concrete or the filling material must not contain sharp particles that might damage the duct. On request the ducts can be produced as double-jacketed or with heat insulation.

The supplied ventilation system may also comprise drop eliminators, filter boxes, plastic hoses, all-plastic outlets and other elements included in this catalog. The company also produces and offers a wide range of plastic fans of a radial, axial or roof-mounted design, which are included in a separate catalog.

Joining methods

Socket joint - this is a non-dismountable joint used mainly for smaller dimensions or round and square pipes or in cases when enhanced leakproofness is required.

Sealant is applied inside the socket (fig. 1). Then, the two mating pieces are inserted into each other (fig. 2) and finally the entire joint is welded with welding wire along its perimeter (fig. 3).

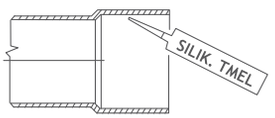


fig. 1

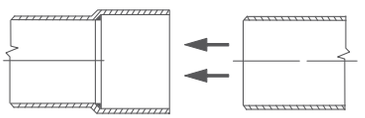


fig. 2

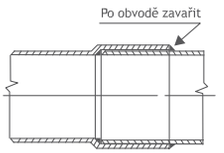


fig. 3

Flange joint - this is a dismountable joint used mainly for bigger dimensions of round and square pipes. Depending on the size the flanges are made in the thicknesses from 8 to 20 mm.

Depending on the joint type the fastening and sealing material is as follows:

Joining method	Fastening material	Sealing material
Socket joint	Welding wire	Clear silicon sealant
Flange joint	Welding wire for welding of free flanges Screws, nuts and washers (M6 or M8 – galvanized in standard, stainless steel A2 on request)	Self-adhesive rubber sealing with chemical resistance

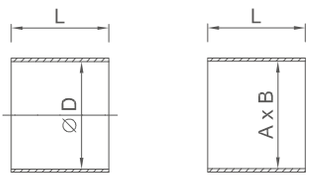
Sockets, flanges

Round sockets

HrK ø250 PP7032

Diameter D

Material, color



Rectangular (square) sockets

HrH 400x200 PP7032

Dimension A

Dimension B

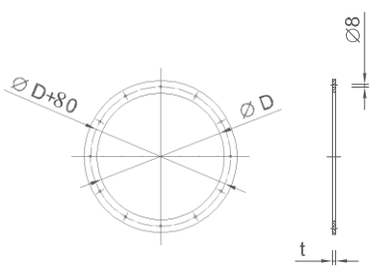
Material, color

Socket design variants:

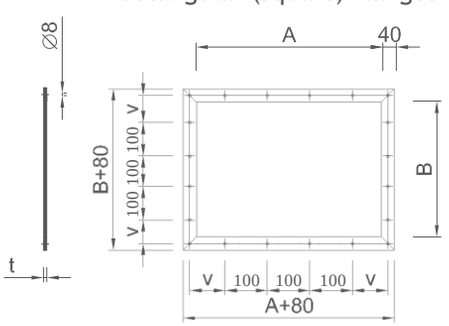
Hr...Z - Blinding socket
Hr...V - Free socket

Example HrK ø250 Z PP7032

Round flanges



Rectangular (square) flanges



PrK ø250 PP7032

Diameter D

Material, color

Flange design variants:

Pr...V - Drilled flange
Pr...N - Not drilled flange
Pr...Z - Blinding flange

Example PrH 400x200 N PP7032

PrH 400x200 PP7032

Dimension A

Dimension B

Material, color

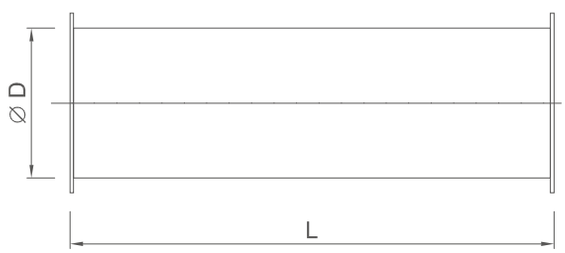
Air ducts

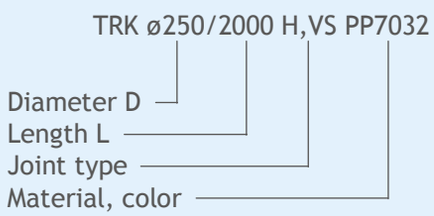
Flanges or sockets are used for the joining. The standard length of a pipe is up to 2000 mm. Based on the designer's indication some pipes are made with a free connection and they are shortened and joints welded during the assembly as required by local conditions.

Note:

The indication "**VP**" (free flange) or "**VH**" (free socket) means that one flange (socket) is not fully welded to the given part, but just spot welded. During the assembly the part is shortened to the required dimension and the flange (socket) is fully welded. Welding wire for this joint type is included in the delivery.
The "VP**V**" indication means that the flange has drilled openings for connecting screws.
The "VPN" indication means that the flange does not have any drilled openings for screws. The openings are only pre-drilled during the assembly depending on the spacing and size of the openings of the connected part.
The "**VS**" (free joint) indication in the pipe identification means that one end of the pipe is without a flange or socket.
The "**H**" (socket joint) indication in the pipe identification means that one end of the pipe is fitted with a socket.
"**PV**" (drilled flange) means that a flange is welded at both the ends of the pipe.

Round



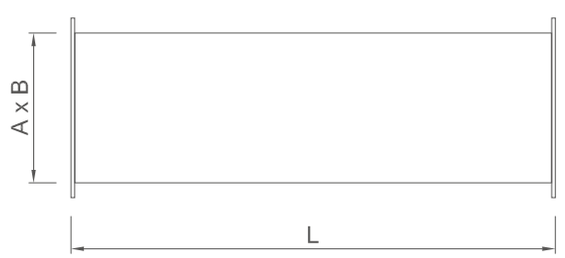


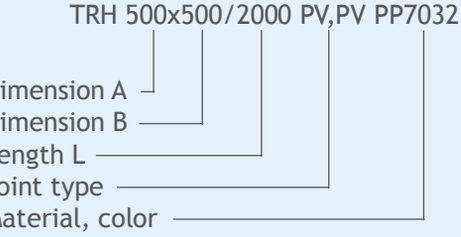
The dimensions of round and square pipes are based on the ČSN EN 12220 standard.

On agreement, different dimensions can also be produced.

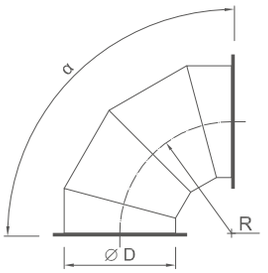
øD [mm]	øD [mm]	øD [mm]	øD [mm]
75	180	355	710
90	200	400	800
110	225	450	900
125	250	500	1 000
140	280	560	1 120
160	315	630	1 250

Rectangular (square)





Bends



OL ø200/90°,R=300 H,VS PP7032

- Diameter D
- Angle α
- Radius R
- Joint type
- Material, color

øD [mm]	R = 1,5 D [mm]	øD [mm]	R = 1,5 D [mm]
75	113	315	473
90	135	400	600
110	165	450	675
125	188	500	750
140	210	560	840
160	240	630	945
180	270	710	1 065
200	300	800	1 200
225	338	900	1 350
250	375	1 000	1 500
280	420	1 120	1 680

Available in the following angles:

α = 15°, 30°, 45°, 60°, 75°, 90°

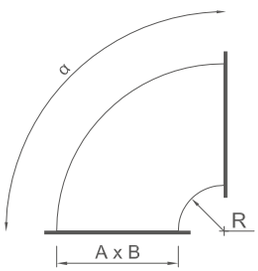
R = D as standard
on agreement
1 to 3D possible

Elbows

Elbows are available in the following angles:

α = 15°, 30°, 45°, 60°, 75°, 90°

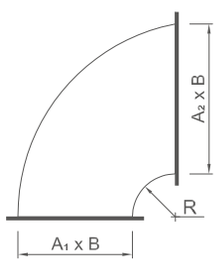
Inner curvature radius	
up to A (B) = 355 mm	R = 100 mm
A (B) = 400 to 710 mm	R = 150 mm
A (B) = 800 mm	R = 200 mm



KO 400x200/90°,R=150 PV,PV PP7032

- Dimension A
- Dimension B
- Angle α
- Radius R
- Joint type
- Material, color

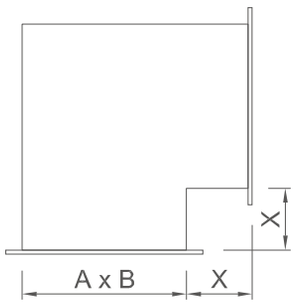
Reducing elbows



KOP 200x200-400x200/90°,R=150 PV,PV PP7032

- Dimension A_1
- Dimension B
- Dimension A_2
- Dimension B
- Angle α
- Radius R
- Joint type
- Material, color

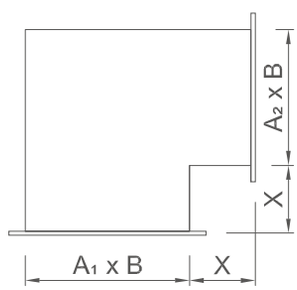
Sharp elbows



KOO 400x200/90°,X=150 PV,PV PP7032

- Dimension A
- Dimension B
- Angle α
- Dimension X
- Joint type
- Material, color

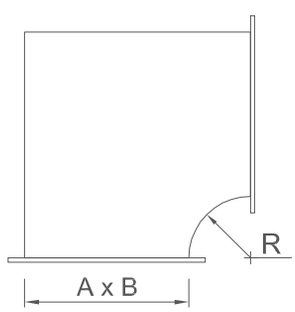
Sharp reducing elbows



KOOP 200x200-400x200/90°,X=150 PV,PV PP7032

- Dimension A_1
- Dimension B
- Dimension A_2
- Dimension B
- Angle α
- Dimension X
- Joint type
- Material, color

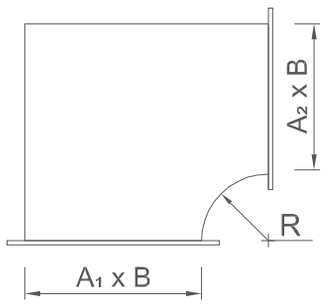
Sharp elbows with radius



KOOR 400x200/90°,R=150 PV,PV PP7032

- Dimension A
- Dimension B
- Angle α
- Radius R
- Joint type
- Material, color

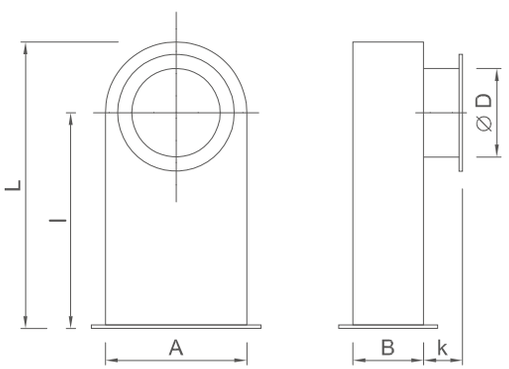
Sharp reducing elbows with radius



KOORP 200x200-400x200/90°,R=150 PV,PV PP7032

- Dimension A_1
- Dimension B
- Dimension A_2
- Dimension B
- Angle α
- Radius R
- Joint type
- Material, color

Hamburg elbows



KOH 400x200-ø200/600,l=400,k=150 PV,PN PP7032

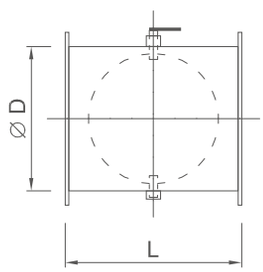
- Dimension A
- Dimension B
- Diameter D
- Length L
- Angle α
- Radius R
- Joint type
- Material, color

Flaps

a) Control flaps

The control flaps are not gas-tight. They are designed for control and closing of the flowing air. Flaps of smaller dimensions are fitted with one blades, square flaps of bigger dimensions are designed as multi-bladed. The position of the blade is secured with a plastic nut positioned in the flap axes or with a lever fixed by a wing nut. Blades of rectangular flaps may be controlled separately or interconnected as a whole and controlled by a servo drive.

Round

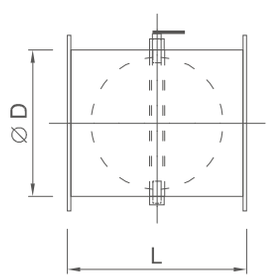


KLRK ø250/270 for servo H,VS PP7032

- Diameter D
- Length L
- Control
- Joint type
- Material, color

øD [mm]	L [mm]
110	130
125	145
140	160
160	180
180	200
200	220
225	245
250	270
280	300
315	335
355	375
400	420
450	470
500	520
560	580
630	650
710	730
800	820
900	920
1 000	1 020

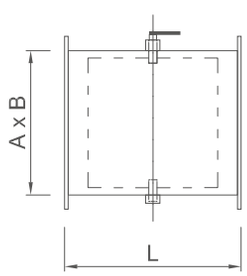
Round with enhanced leakproofness



KLRKT ø250/270 for servo H,VS PP7032

- Diameter D
- Length L
- Control
- Joint type
- Material, color

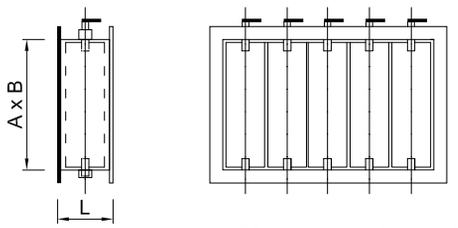
Rectangular (square), single-bladed



KLRHJ 300x200/300 for servo PV,PV PP7032

- Dimension A
- Dimension B
- Length L
- Control
- Joint type
- Material, color

Rectangular (square), multi-bladed



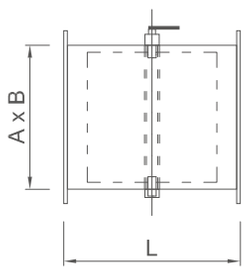
L= min. 150 mm - manual control
L= min. 200 mm - servo control

KLRHV 500x500/200 manual independent PV,PV PP7032

- Dimension A
- Dimension B
- Length L
- Control
- Joint type
- Material, color

The blades can also be controlled together by a servo drive.

Rectangular (square), with enhanced leakproofness

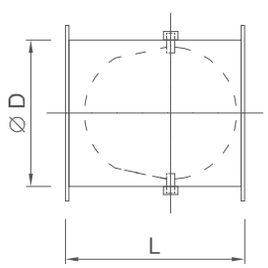


KLRHT 200x300/400 for servo PV,PV PP7032

- Dimension A
- Dimension B
- Length L
- Control
- Joint type
- Material, color

b) Non-return

Round horizontal

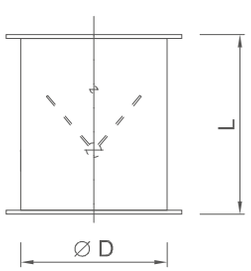


KLZHK ø200/220 H,VS PP7032

- Diameter D
- Length L ~~Joint~~ type Mater~~ial,~~ color

øD [mm]	L [mm]
110	130
125	145
140	160
160	180
180	200
200	220
225	245
250	270
280	300
315	335
355	375
400	420
450	470
500	520
560	580
630	650
710	730

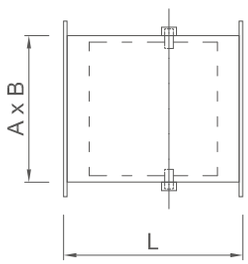
Round vertical



KLZVK ø200/220 H,VS PP7032

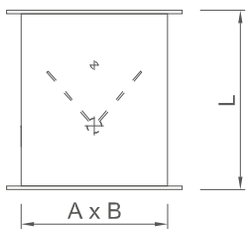
- Diameter D
- Length L
- Joint type
- Material, color

Rectangular (square), horizontal



KLZHH 200x250/350 PV,PV PP7032
- Dimension A
- Dimension B
- Length L
- Joint type
- Material, color

Rectangular (square), vertical

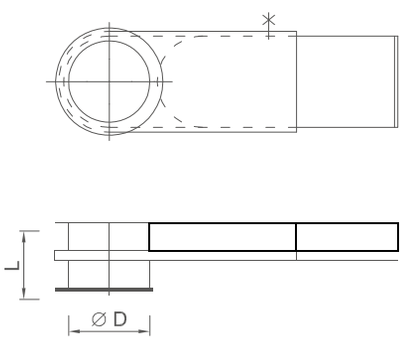


KLZVH 200x200/300 PV,PV PP7032
- Dimension A
- Dimension B
- Length L
- Joint type
- Material, color

Slide valves

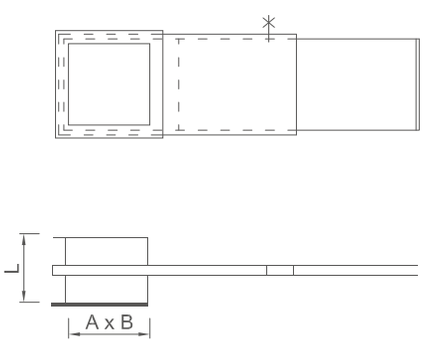
The slide valves are not gas tight; they are suitable for closing or control of the air flow.

Round



SKK ø125/150 H,VS PP7032
- Diameter D
- Length L
- Joint type
- Material, color

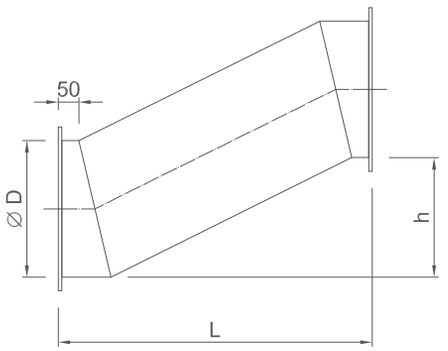
Rectangular (square)



SKH 200x200/150 PV,PV PP7032
- Dimension A
- Dimension B
- Length L
- Joint type
- Material, color

Offset bends

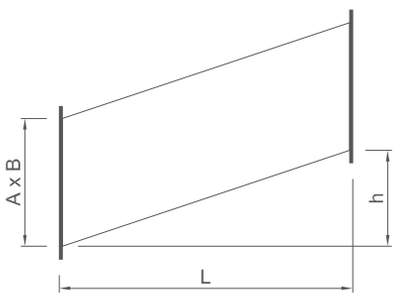
Round



ODK ø250/400,h=100 H,VS PP7032

- Diameter D
- Length L
- Offset h
- Joint type
- Material, color

Rectangular (square), straight

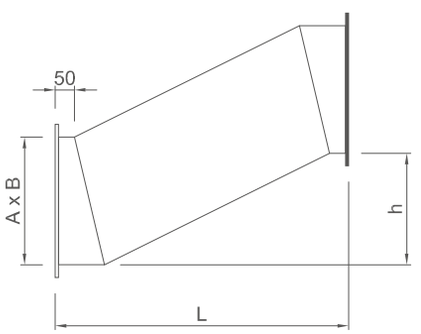


ODHP 400x200/600,h=450 PV,PV PE9011

- Dimension A
- Dimension B
- Length L
- Offset h
- Joint type
- Material, color

Straight offset bends are only used in cases when the offset h is small and the flow area of the duct does not get narrower or throttled.

Rectangular (square)

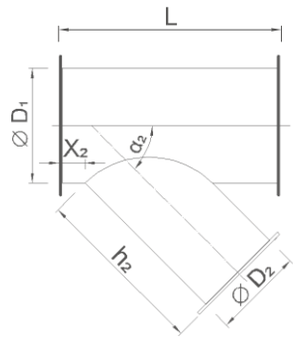


ODH 400x200/600,h=100 PV,PV PP7032

- Dimension A
- Dimension B
- Length L
- Offset h
- Joint type
- Material, color

Branch pipes

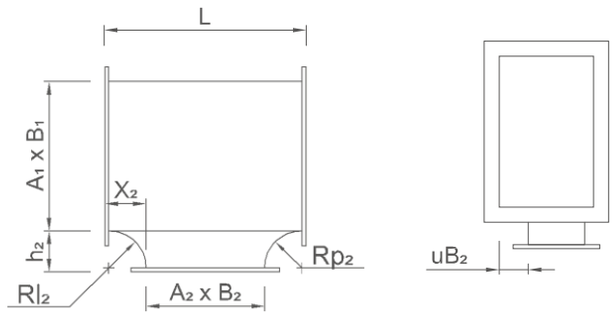
Round



OBK 90° ø250-ø200/400,h_2=300, X_2=150 H,PV,PN PP7032

- Angle α_2
- Diameter D_1
- Diameter D_2
- Length L
- Height h_2
- Distance X_2
- Joint type
- Material, color

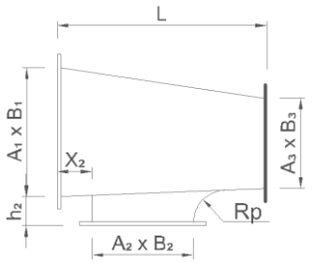
Rectangular (square)

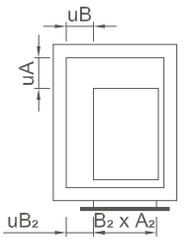


OBH 400x400-200x200/500,X_2=150,h_2=150,Rl_2=150,Rp_2=150 PV,PN,PV PP7032

- Dimension A_1
- Dimension B_1
- Dimension A_2
- Dimension B_2
- Length L
- Distance X_2
- Height h_2
- Left radius
- Right radius
- Joint type
- Material, color

Rectangular (square), reducing

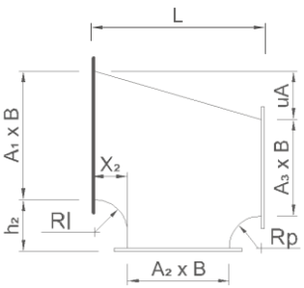




OBHP 400x300-200x200-350x200/500,75,200,0,0,150,0 PV,PV,PV PP7032

- Dimension A_1
- Dimension B_1
- Dimension A_2
- Dimension B_2
- Dimension A_3
- Dimension B_3
- Length L
- Distance X_2
- Height h_2
- Distance uA
- Distance uB
- Right radius Rp
- Distance uB_2
- Joint type
- Material, color

Rectangular (square), oblique

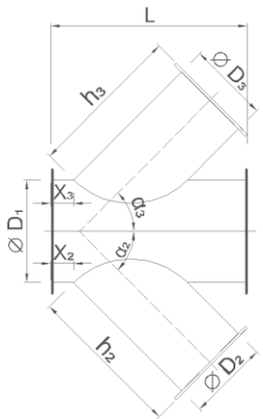


OBHS 400x200-200x200-200x200/600,X_2=250,h_2=150,Rl_2=150,Rp_2=150 PV,PV,PV PP7032

- Dimension A_1
- Dimension B
- Dimension A_2
- Dimension B
- Dimension A_3
- Dimension B
- Length L
- Distance X_2
- Height h_2
- Left radius Rl
- Right radius Rp
- Joint type
- Material, color

Branch pieces

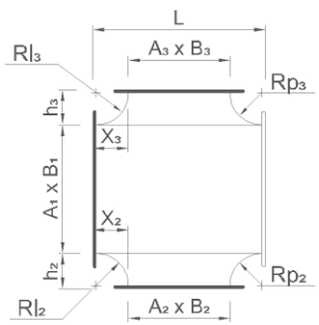
Round

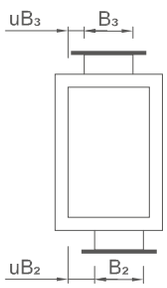


RBK 45°/90° Ø315-Ø200-Ø160/400,h 2=300,h 3=150,X 2=50,X 3=60 H,VS,VS,VS PP7032

- Angle α_2
- Angle α_3
- Diameter D_1
- Diameter D_2
- Diameter D_3
- Length L
- Height h_2
- Height h_3
- Distance X_2
- Distance X_3
- Joint type
- Material, color

Rectangular (square)

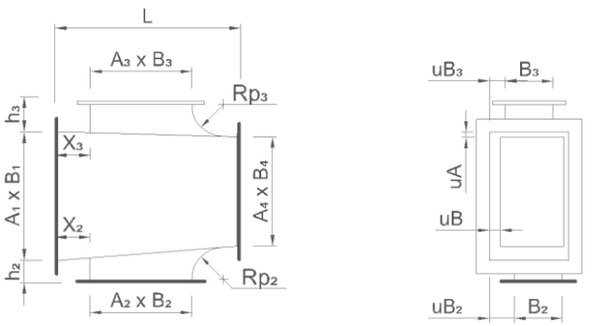




RBH 400x250-200x200-250x250/550,175,150,150,150,150,150,150,150,0,0 PV,PV,PV,PV PP7032

- Dimension A_1
- Dimension B_1
- Dimension A_2
- Dimension B_2
- Dimension A_3
- Dimension B_3
- Length L
- Distance X_2
- Height h_2
- Left radius$_2$, Rl_2
- Right radius2, Rp_2
- Distance X_3
- Height h_3
- Left radius$_3$, Rl_3
- Right radius$_3$, Rp_3
- Distance uB_2
- Distance uB_3
- Joint type
- Material, color

Rectangular (square), reducing



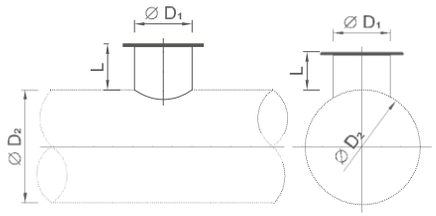
RBHP 400x400-200x200-200x200-300x300/700,0,0,175,150,150,175,160,150,0,0 PV,PV,PV,PV PP7032

- Dimension A_1
- Dimension B_1
- Dimension A_2
- Dimension B_2
- Dimension A_3
- Dimension B_3
- Dimension A_4
- Dimension B_4
- Length L
- Distance uA
- Distance uB
- Distance X_2
- Height h_2
- Right radius, Rp_2
- Distance X_3
- Height h_3
- Right radius, Rp_3
- Distance uB_2
- Distance uB_3
- Joint type
- Material, color

Adapters

a) For round ducts

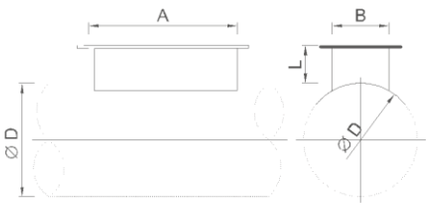
Round



NKK Ø160/150-Ø200 H PP7032

- Diameter D_1
- Length L
- Diameter D_2
- Joint type
- Material, color

Rectangular (square)

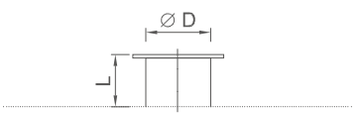


NHK 400x200/150-Ø200 PV PP7032

- Dimension A
- Dimension B
- Length L
- Diameter D
- Joint types
- Material, color

b) For rectangular (round) ducts

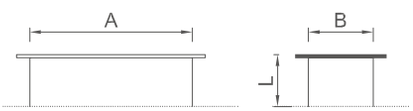
Round



NKH Ø200/150 H PP7032

- Diameter D
- Length L
- Joint types
- Material, color

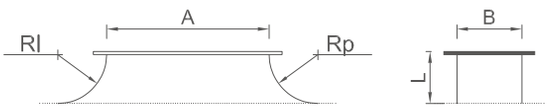
Rectangular (square)



NHH 400x200/150 PV PP7032

- Dimension A
- Dimension B
- Length L
- Joint types
- Material, color

Rectangular (square) with radius

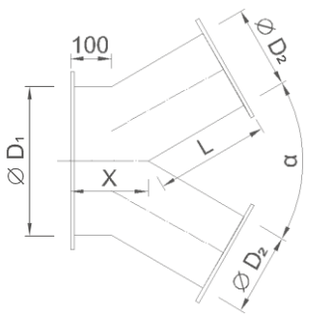


NHHR 400x200/150,Rl=150,Rp=150 PV PP7032

- Dimension A
- Dimension B
- Length L
- Left radius
- Right radius
- Joint types
- Material, color

Y-pieces

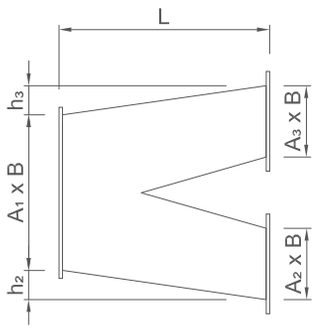
Round



KKK 60° ø250-ø125-ø125/X=200,L=200 H,VS,VS PP7032

- Angle α
- Diameter D_1
- Diameter D_2
- Diameter D_2
- Distance X
- Length L
- Joint type
- Material, color

Rectangular (square)

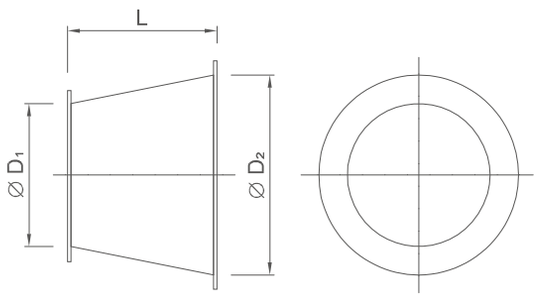


KKH 500x200-250x200-250x200/1000,h_2=90,h_3=90 PV,PV,PV PP7032

- Dimension A_1
- Dimension B
- Dimension A_2
- Dimension B
- Dimension A_3
- Dimension B
- Length L
- Distance h_2
- Distance h_3
- Joint type
- Material, color

Circle – circle reducing pieces

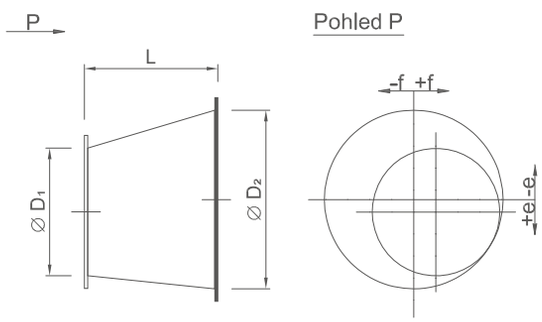
Axial



PROK ø250-ø125/250 H,VS PP7032

- Diameter D_1
- Diameter D_2
- Length L
- Joint type
- Material, color

Asymmetrical

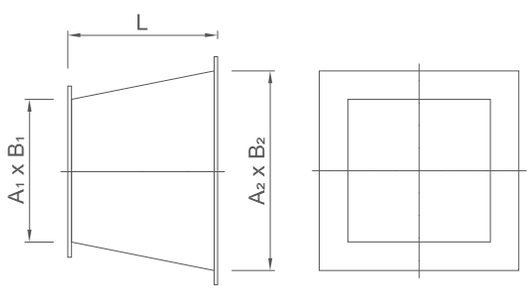


PRAK ø250-ø315/300,e=0,f=32.5 H,VS PP7032

- Diameter D_1
- Diameter D_2
- Length L
- Distance e
- Distance f
- Joint type
- Material, color

Rectangle - rectangle reducing pieces

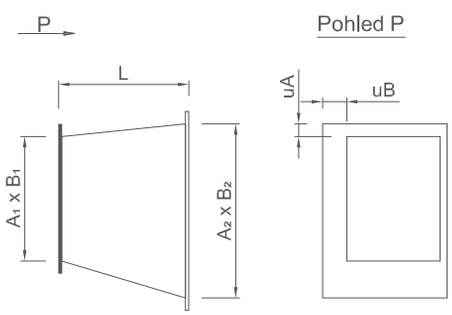
Axial



PROH 400x250-200x200/250 PV,PV PP7032

- Dimension A_1
- Dimension B_1
- Dimension A_2
- Dimension B_2
- Length L
- Joint type
- Material, color

Asymmetrical

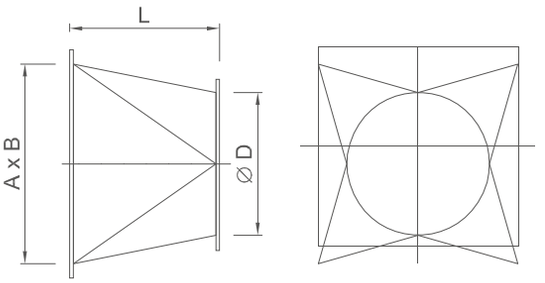


PRAH 400x200-200x100/300,uA=200,uB=100 PV,PV PP7032

- Dimension A_1
- Dimension B_1
- Dimension A_2
- Dimension B_2
- Length L
- Offset uH
- Offset uB
- Joint type
- Material, color

Rectangle - circle reducing pieces

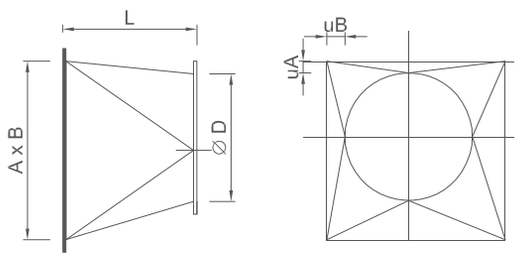
Axial (square - round)



PRO 400x200-ø315/500 PV,H PP7032

- Dimension A
- Dimension B
- Diameter D
- Length L
- Joint type
- Material, color

Asymmetrical (square - round)



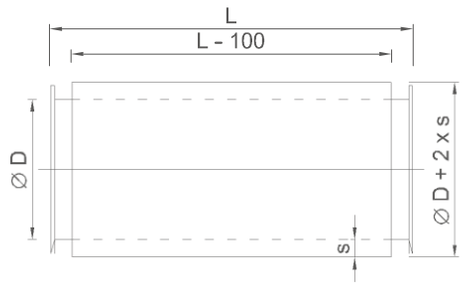
PRA 400x200-ø200/400,uA=100,uB=0 PV,H PP7032

- Dimension A
- Dimension B
- Diameter D
- Length L
- Distance uA
- Distance uB
- Joint type
- Material, color

Noise silencers

The silencers are used to reduce noise spreading through the duct from fans or from other ventilation equipment. Silencer attenuation means insertion loss, i.e. reduction of noise passing through it, measured after the noise silencer. It is expressed by the difference of the acoustic output levels in octave bands with the frequencies of 63 to 8000 Hz [dB].

Round



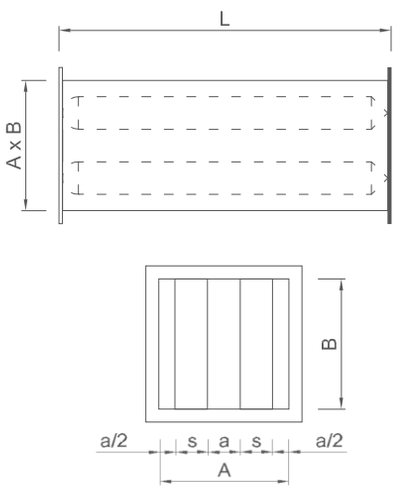
THK ø200/1000,s=50 H,VS PP7032

- Diameter D
- Length L
- Damping material width
- Joint type
- Material, color

Values of insertion loss of noise of a silencer with the length of 1000 mm, damping material width s=50 mm.

Silencer diameter [mm]	Insertion loss of the silencer [dB]						
	125 [Hz]	250 [Hz]	500 [Hz]	1000 [Hz]	2000 [Hz]	4000 [Hz]	8000 [Hz]
ø200	3,7	8,3	22,1	37,4	31,1	19,6	13,4
ø225	4,2	9,0	21,0	35,3	29,9	18,3	13,2
ø250	4,7	6,9	19,9	33,2	28,6	17,0	13,1
ø280	3,3	6,4	17,7	33,4	26,3	15,8	12,0
ø315	1,9	5,9	15,4	33,6	24,0	14,6	11,0
ø350	2,1	5,1	14,7	30,0	20,0	12,8	9,4
ø400	2,2	4,3	13,9	26,4	16,1	11,1	7,8
ø450	2,3	3,9	13,6	23,8	14,4	9,5	7,1
ø500	2,4	3,5	13,2	21,3	12,6	7,9	6,3

Rectangular (square)



THH 600x500/1000/KU 100x492/1000 .01-3ks PV,PV PP7032

- Dimension A
- Dimension B
- Length L
- Plate width
- Plate height
- Plate length
- Plate type
- Number of plates
- Joint type
- Material, color

Plates:

- are the basic parts of a noise silencer. In practice, several plates can be positioned, over, behind and next to each other to form a damping wall. They are designed for noise silencers in horizontal and vertical ducts.
- Plate attenuation depends on their width “s”, spacing “a”, frequency and total length.
- The distance between plates in a duct must be the same all along the length. Their size is defined by the designed in accordance with the required noise loss while the same holds good for their number after each other. The distance between the first plate and the pipe wall must be equal to half the distance between the plates “a/2”.
- The plates are designed for ventilation systems with non-abrasive air matter up to the max. flow rate of 10 m/s. The relative humidity must not exceed the dew point.
- The absorption space of the plates is filled with mineral wool, which is hydrophobized all through the cross-section. The surface is reinforced with non-woven textile that prevents releasing of fibers into the duct.
- The standard plate widths are 100, 200 and 300 mm.

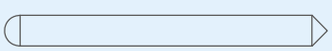
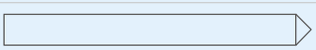
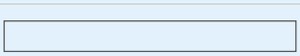
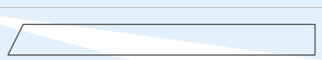
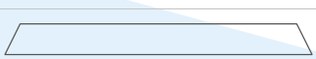
Plates inserted in a duct cause abrupt narrowing, which results in a pressure loss and an additional source of noise. For this reason the noise silencer and adjacent reducing pieces must be designed in such a way to maintain the flow cross-section.

$$\Delta p_z = 1{,}4 . \frac{s}{(s+a)} . w^2 . 0{,}5\rho$$

Δp_z [Pa] - pressure drop
s [m] - width of coulisse
a [m] - the size of the gap between the coulisses
w [m/s] - the air velocity at the inlet to the exhaust
ρ [kg/m^3] - density of air

KU 100x500/1000 .01 PP7032

Width
Height
Length
Plate type
Material, color

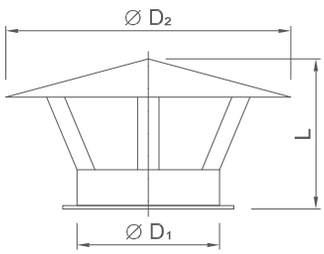
Plate type	Plate diagram	Inlet end	Outlet end
.01		bend onset	finish
.02		bend onset	no finish
.03		no onset	finish
.04		no onset	no finish
.05		oblique onset	no finish
.06		oblique onset	oblique finish

Values of insertion noise loss of plates with the width “s”

Plate width [mm]	Insertion loss of the silencer [dB]						
	125 [Hz]	250 [Hz]	500 [Hz]	1000 [Hz]	2000 [Hz]	4000 [Hz]	8000 [Hz]
s = 100	2,1	10,6	18,9	37,7	40,2	26,4	16,7
s = 200	6,5	12,8	20,0	23,7	17,5	9,5	6,3
s = 300	10,1	18,1	24,6	29,9	27,4	15,1	10,2

Rain roofs

Rain roofs are fitted as an end piece on vertical duct branches. With their structure they prevent rain and snow from getting into the duct. In the case of low flow rates they can also be used for suctioning of fresh air.



STR ø160 PV PP7032

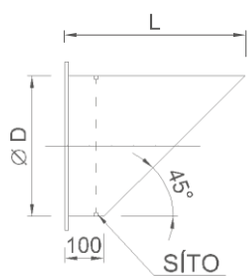
- Diameter D
- Joint type
- Material, color

øD$_1$ [mm]	øD$_2$ [mm]	L min [mm]
75	175	120
90	190	130
110	210	145
125	225	160
140	240	175
160	260	190
180	280	205
200	400	220
225	425	245
250	450	265
280	480	290
315	515	320
355	555	355
400	600	390
450	650	435
500	710	475
560	800	530

Exhaust adapters

The exhaust adapters prevent foreign objects or birds from penetrating into the fan or air duct. On agreement an adapter can be connected to other elements of the system, e.g. a 90° or wider bend. The adapter is equipped with a plastic screen with the mesh size of approx. 10x10 mm as standard.

Round

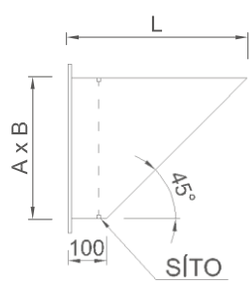


VNK ø250 outer H PP7032

- Diameter D
- Diameter type
- Joint type
- Material, color

øD [mm]	L min [mm]	øD [mm]	L min [mm]
75	175	315	415
90	190	355	455
110	210	400	500
125	225	450	550
140	240	500	600
160	260	560	660
180	280	630	730
200	300	710	810
225	325	800	900
250	350	900	1 000
280	380	1 000	1 100

Rectangular (square)



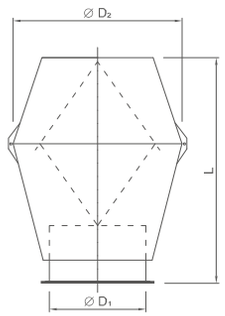
VNH 400x400 PV PP7032

- Dimension A
- Dimension B
- Joint type
- Material, color

Exhaust heads

Exhaust heads are fitted on vertical duct branches as end pieces. With their shape they prevent rain and snow from getting into the air duct.

Round

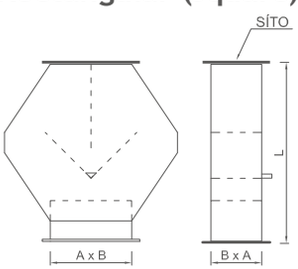


VHK ø560 PV PP7032

Diameter D_1
Joint type
Material, color

øD_1 [mm]	øD_2 [mm]	L [mm]
200	320	520
225	360	540
250	410	618
280	455	665
315	500	710
355	570	808
400	645	920
450	725	970
500	805	1 065
560	900	1 182
630	1 030	1 315
710	1 136	1 515
800	1 290	1 645
900	1 400	1 840
1 000	1 610	2 020

Rectangular (square)



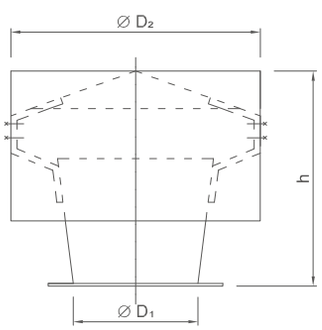
VHH 400x400 PV PP7032

Dimension A
Dimension B
Joint type
Material, color

Rectangular exhaust heads are made from the dimensions 1 (B) = 200 to 1000 mm, at the maximum side ratio of 1:4 (preferentially, the A:B = 1:1 ratio is produced).

Cagi head

The Cagi head is used for automatic ventilation and extraction of air from spaces. Unlike the rain roofs they completely prevent water from penetrating (leaking) inside with their shape. They are connected to the air duct using a flange or socket.



VHC ø315 PV PP7032

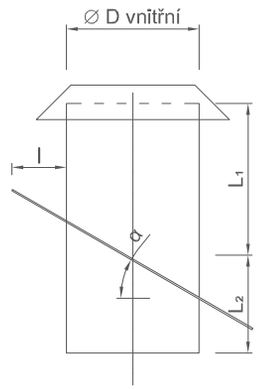
Diameter D
Joint type
Material, color

øD_1 [mm]	øD_2 [mm]	h [mm]
200	400	340
225	450	385
250	500	425
315	630	540
355	710	610
400	800	680
450	900	765
500	1 000	850
560	1 120	950
630	1 250	1 070
710	1 400	1 200
800	1 600	1 360
900	1 800	1 530
1 000	2 000	1 700

Roof ducts

Roof ducts are made in accordance with the particular air duct dimension.

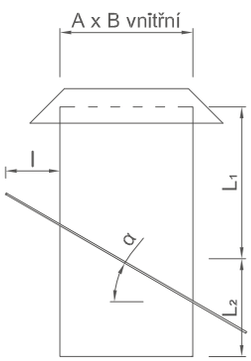
Round



Duct K ø315/L_1=200,L_2=200,l=150,inclination=30° PP7032

- Diameter D
- Length L_1
- Length L_2
- Overlap l
- Angle α
- Material, color

Rectangular (square)



Duct H 400x400/L1=200,L2=200,l=150,inclination=30° PP7032

- Dimension A
- Dimension B
- Length L_1
- Length L_2
- Overlap l
- Angle α
- Material, color

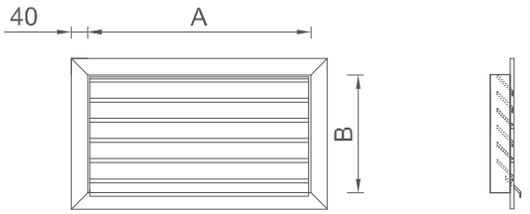
Installation procedure:

- a plain pipe without a flange is inserted through the duct and it stability is ensured
- the joint between the pipe and duct is sealed
- a protective collar and the attached free flange is mounted onto the pipe and welded (unless socket joints are used in the duct)

Louvers

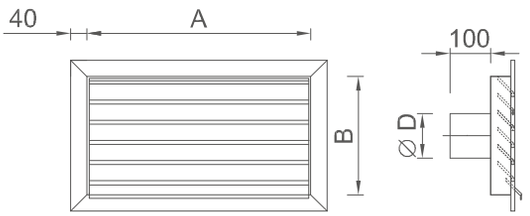
a) Rain type

Rain shutters are generally installed on the external facade of a building. With their shape they enable exhaust of air into the surrounding space, preventing rain or foreign object from penetration into the air duct at the same time. On request the louvers can be equipped with an insect mesh or adapter.



ZP 400x250/50, mesh PVC7035

- Dimension A
- Dimension B
- Louver depth
- Optional access
- Material, color

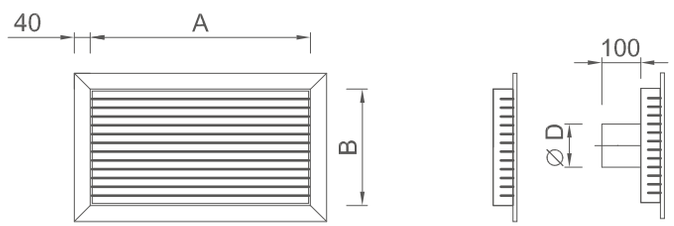


ZP 400x200/50,adapt=ø160 PP7032

- Dimension A
- Dimension B
- Louver depth
- Optional access
- Material, color

b) Suction type

Suction louvers are generally installed in an inner part of a building in a duct that is used to supply fresh air to the building. With their shape they enable supply or circulation of air, preventing foreign objects from getting into the duct. The suction louvers are equipped with blades that are fixed in the frame without the possibility of adjustment. On request the louvers can be equipped with an insect mesh or adapter.

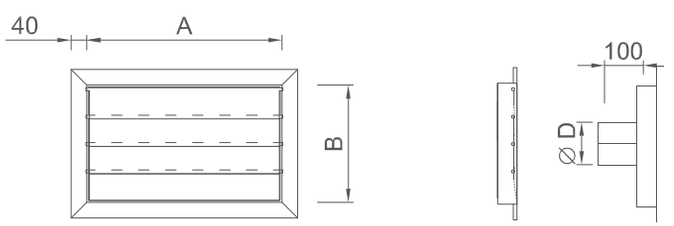


ZN 500x400/50,adapt=ø200 PP7032

- Dimension A
- Dimension B
- Louver depth
- Optional access
- Material, color

c) Gravity type

The louver flaps are installed as an end element in a discharge duct of a building. Their design enables continuous exhaust, preventing re-suctioning of cold air and penetration of a foreign object into the air duct. On agreement the louvers can be fitted with a circular adapter



ZK 400x250/50 PVC7035

- Dimension A
- Dimension B
- Louver depth
- Material, color

8. Filter boxes

The filter boxes make it possible to insert filter elements (filters) in air ducts. The designs of the plastic boxes are adapted for insertion of all common types of filter elements. Depending on the character of the equipment they are made of PVC, PP or PE. Thus, the flowing air only comes in contact with the plastic parts of the box or the integrated stainless-steel elements.

The filter boxes can be ordered including filter elements. The offer of filter covers the range of the filtration classes G1-G4, M5, M6, F7-F9, E10-E12, H13. The material design of the filter element frames corresponds to the character of the boxes – plastic, stainless steel, MDF. To ensure leakproofness of the entire air duct system the box door as well as the filter frame are fitted with sealing. When ordering a filter box, including filter element you should specify the filtration class and volume flow. You can make the order more specific by specifying the required pressure loss of the filter element or characteristic of the operation or extracted air matter. The tables of filter boxes contain an approximate flow value of applicable filter elements.

In the standard version the boxes are fitted with square flanges (w=40 mm). The flanges maintain the same connection dimensions of different types of boxes so that multi-stage filtration can be achieved without the use of reducing pieces. The multi-stage filtration makes the service life of the finest filter of the entire set longer.

The closing lid consists of a blinding flange that bears against a counter-flange with a gasket.

Inside the boxes there is a clamping mechanism that activates the sealing on the filter element to ensure tightness between the box and element.

On agreement filter boxes with customized connection dimensions, various filter dimensions and other special features can be produced.

Overview of filter boxes

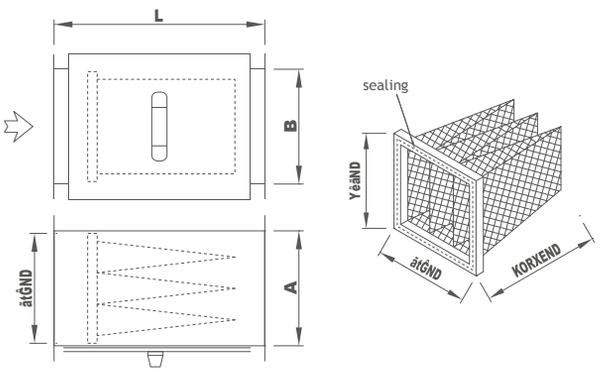
Identification	Name	Filtration class, media
FBKA	Filter Box for Pocket Filters	G3, G4, M5, M6, F7 - F9
FBRA	Filter Box for Frame Filters	G2 - G4, M5, M6, F7 - F9
FBKO	Filter Box for Compact Filters	M6, F7 - F9, active carbon
FBAU	Filter Box for Cartridges with Active Carbon	active carbon
FBAB	Filter Box for Absolute Filters	E10 - E12, H13
PF	Filter bushing	G1 - G4, M5, M6
FD	Filter plate	G1 - G4, M5, M6
FBSKA	Modular Filter Boxes for Pocket Filters	G3, G4, M5, M6, F7 - F9

a) Filter Boxes for Pocket Filters

Filtration classes: G3, G4, M5, M6, F7-F9

The pocket filters (KA) represent the most frequently used filter carriers. Boxes for pocket filters and made in two lengths. Shorter for filter depths up to 375 mm, longer for filter depths up to 650 mm.

During installation you must pay attention to proper alignment of the boxes - individual filter pockets must be arranged next to each other and not lie over each other



FBKA 300x300/550 PV,PV vA PE9011

- Box type
- Dimensional range
- Box length L
- Joint types
- Inlet position (vA/vB)
- Material, color

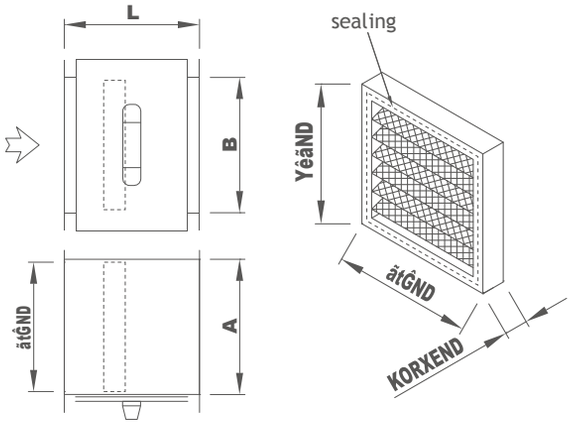
+ Pocket filter, 287x287/360 mm, F7, 900 m³/h
example FBKA 300x300/550 PV,PV vA PE9011
+ KA 287x287/360 mm, F7, 900 m³/h

Box dimensions [mm]			Filter dimensions [mm]			Flow [m³/h]
A	B	L	width	height	max. depth	
300	300	550 / 800	287	287	360 / 635	800 - 1 000
300	605	550 / 800	287	592	360 / 635	1 700 - 2 100
300	910	550 / 800	287	897	360 / 635	3 200
505	505	550 / 800	490	490	360 / 635	2 330
505	605	550 / 800	490	592	360 / 635	2 700 - 3 500
505	910	550 / 800	490	897	360 / 635	5 400
605	300	550 / 800	592	287	360 / 635	1 700
605	415	550 / 800	592	402	360 / 635	2 850
605	505	550 / 800	592	490	360 / 635	2 700 - 2 800
605	605	550 / 800	592	592	360 / 635	3 400 - 4 250
605	910	550 / 800	592	897	360 / 635	6 400

b) Filter Boxes for Frame Filters - FBRA

Filtration classes: G2-G4, M5, M6, F7-F9

Boxes for frame filters (RA) are made in 3 different lengths (280, 300 and 350 mm) depending on the filter element depth (24, 48 and 96 mm).



FBRA 300x300/300 PV,PV vB PVC7035

- Box type
- Dimensional range
- Box length L
- Joint types
- Inlet position (vA/vB)
- Material, color

+ RA 287x287/24 mm, M6, 800 m³/h
or
+ FD 287x287 PVC7035

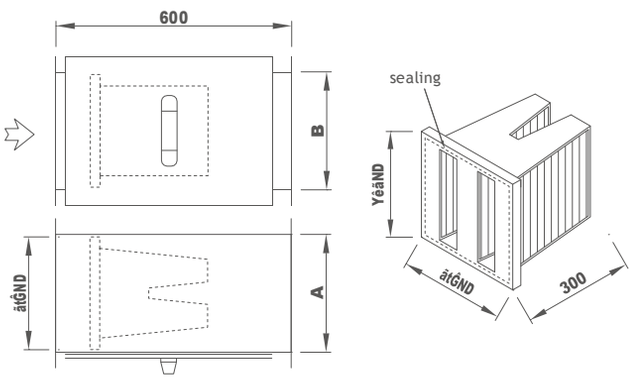
example FBRA 300x300/300 PV,PV vB PVC7035
+ RA 287x287/24 mm, M6, 800 m³/h

Box dimensions [mm]			Filter dimensions [mm]			Flow [m³/h]
A	B	L	width	height	depth	
300	300	280 / 300 / 350	287	287	24 / 48 / 96	800 - 900
505	505	280 / 300 / 350	490	490	24 / 48 / 96	1 200 - 2 200
605	300	280 / 300 / 350	592	287	24 / 48 / 96	1 500 - 1 700
605	415	280 / 300 / 350	592	402	24 / 48 / 96	1 800 - 2 200
605	505	280 / 300 / 350	592	490	24 / 48 / 96	1 200 - 2 200
605	605	280 / 300 / 350	592	592	24 / 48 / 96	3 000 - 3 400

c) Filter Boxes for Compact Filters - FBKO

Filtration classes: M6, F7-F9, active carbon

Compact filter elements (KO) are only produced with the depth of 300 mm. Therefore, the box length is constantly 600 mm. The compact filter can also be supplied with media containing active carbon.



FBKO 300x300 PV,PV vB PP7032

- Box type
- Dimensional range
- Joint types
- Inlet position (vA/vB)
- Material, color

+ KO 287x287 mm, F8, 1 000 m³/h

example FBKO 300x300 PV,PV vB PP7032
+ KO 287x287 mm, F8, 1 000 m³/h

Box dimensions [mm]		Filter dimensions [mm]		Flow [m³/h]
A	B	width	height	
300	300	287	287	1 000
605	300	592	287	1 350 - 2 400
605	415	592	402	2 300 - 3 400
605	505	592	490	2 450 - 4 130
605	605	592	592	3 400 - 5 000

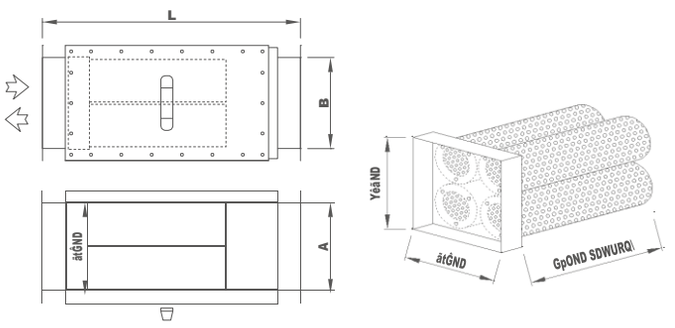
d) Filter Boxes for Cartridges with Active Carbon - FBAU

Inside the filter box a stainless-steel frame is inserted where plastic or stainless-steel filter cartridges with the length of 450 or 600 mm are fitted. Stainless-steel cartridges (PN) are designed for repeated use. Plastic cartridges (PP) are single-use cartridges to be disposed of in an environment-friendly way after use (they are fully incinerable).

The filter boxes with active carbon are designed for elimination of odors or chemicals at lower concentrations contained in the flowing air. For this reason, upstream of these filters filter boxes with other filtration media must be fitted that capture mechanical dirt that would otherwise clog the active carbon filling, making the planned service life considerably shorter. The connection dimensions of the boxes with active carbon correspond to the connection dimensions of the boxes for pocket filters (FBKA).

If active carbon is intended for adsorption of chemicals, it should be consulted before ordering so that carbon can be adapted for the particular chemical.

For easier handling of cartridges the access for filter replacement is always found at the side with the bigger dimensions (B).



FBAU 4x450/850 PV,PV PE9011

Box type
Box length L
Joint types
Material, color

+ PN 450 mm – 4 pieces
or
+ PP 450 mm – 4 pieces

example FBAU 4x450/850 PV,PV PE9011
+ PN 450 mm – 4 pieces

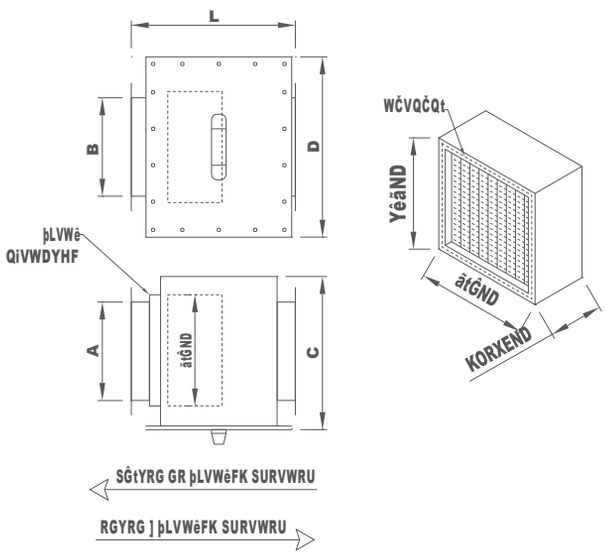
Filter box type	Box dimensions [mm]			Cartridge number	Cartridge length	Approximate weight	Flow [m³/h]
	A	B	L	[pieces]	[mm]	[kg]	
4x450	300	300	850	4	450	36	700
4x600	300	300	1 000	4	600	45	1 200
8x450	300	605	850	8	450	61	1 500
8x600	300	605	1 000	8	600	75	1 750
12x450	505	605	850	12	450	83	2 000
12x600	505	605	1 000	12	600	102	2 400
12x600	605	605	850	16	450	102	3 000
16x450	605	605	1 000	16	600	127	3 400

e) Filter Boxes for Absolute Filters - FBAB

Filtration classes: E10-E12, H13

The filter boxes with absolute (HEPA) filters are used for air filtration in clean rooms. Due to higher demands of the specified filtration classes during the installation and handling of the filters attention must be paid to careful work with the clamping mechanism that ensures thrust of the filter to the clean adapter. For this purpose a 13mm engineer's wrench is used.

For easier handling of absolute filters the access for filter replacement is always found at the side with the bigger dimensions (B).



FBAB 270x270/450 PV,PV PVC7035

Box type
Dimensional range
Box length L
Joint types
Material, color

+ HEPA filter, 305x305/78 mm, H13, 400 m³/h

example FBAB 270x270/450 PV,PV PVC7035
+ HEPA filter 305x305/78 mm, H13, 400 m³/h

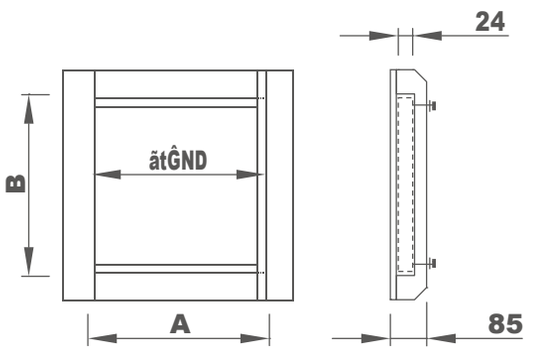
Box dimensions [mm]					Filter dimensions [mm]			Flow [m³/h]
A	B	L	C	D	height	width	depth	
270	270	450	425	495	305	305	56, 78, 149	150 - 420
270	270	600	425	495	305	305	292	500
270	575	500	425	800	305	610	56, 78, 149	290 - 840
270	575	650	425	800	305	610	292	1 000 - 2 000
420	420	450	580	650	457	457	56, 78, 149	330 - 940
420	420	600	580	650	457	457	292	1 130
535	535	500	690	760	570	570	56, 78, 149	510 - 1460
535	535	650	690	760	570	570	292	1 750
575	575	550	730	800	610	610	56, 78, 149	590 - 2 100
575	575	700	730	800	610	610	292	3 000 - 4 000
575	725	550	730	955	610	762	56, 78, 149	740 - 2090
575	725	700	730	955	610	762	292	2510
575	880	550	730	1 105	610	915	56, 78, 149	880 - 2 510
575	880	700	730	1 105	610	915	292	3010
575	1 185	600	730	1 410	610	1 220	56, 78, 149	1 180 - 3 350
575	1 185	750	730	1 410	610	1 220	292	4 020
725	725	550	885	955	762	762	56, 78, 149	920 - 2 610
725	725	700	885	955	762	762	292	3 140
880	880	550	1 035	1 105	915	915	56, 78, 149	1 330 - 3 770
880	880	700	1 035	1 105	915	915	292	4 520

f) Filter Bushings - PF

Filtration classes: G1-G4, M5, M6

The filter bushing is used the attach a filter plate (FD) or frame filter (RA) with the width of 24 mm. They can be installed at the beginning (end) or a duct or a wall of a structure where the filter media captures mechanical dirt in the transported air.

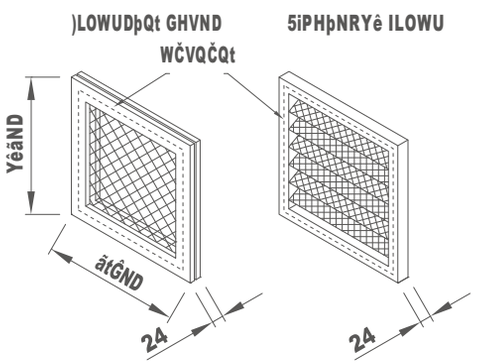
Similarly to the other boxes a filter bushing makes it possible to exert thrust on the sealing of both the insert types.



PF 300x300 PN PE9011

Box type
Dimensional range
Joint types
Material, color

+ RA 287x287/24 mm, M6, 800 m³/h
or
+ FD 287x287 PVC7035
example PF 300x300 PN PE9011 + FD 287x287 PVC7035



Bushing dimensions [mm]	
A	B
300	300
300	910
505	505
505	910
605	300
605	415
605	505
605	605
605	910

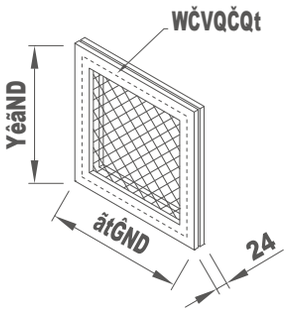
Filter dimensions [mm]		Approximate flow V* [m³/h]
width	height	
287	287	400
287	897	1 350
490	490	1 300
490	897	2 350
592	287	900
592	402	1 250
592	490	1 550
592	592	1 850
592	897	2 850

* the value V is related to the nominal flow of 5400 $m^3.h.m^{-2}$

g) Filter Plates - FD

Filtration classes: G1-G4, M5, M6

A filter plate provides the possibility of easy replacement of clogged filter media while keeping the supporting structure in place. The supporting structure consists of two frames that the filtration media is inserted between. One of the frames is equipped with a plastic mesh for reinforcement of the filter fabric and sealing. After connection with the other frame a compact insert is created that is inserted into the FBRA boxes (type L=280) or into the Filter bushing (PF).



FD 287x287 PVC7035

Identification
Dimensional range
Material, color

+ filtration media G3 (quantity as agreed)

example FD 287x287 PVC7035 + filtration media G3 - 2 m²

Connection dimensions of the filter boxes FBRA, PF [mm]		Filter plate dimensions [mm]		Approximate flow
A	B	width	height	V* [m³/h]
300	300	287	287	400
300	910	287	897	1 350
505	505	490	490	1 300
505	910	490	897	2 350
605	300	592	287	900
605	415	592	402	1 250
605	505	592	490	1 550
605	605	592	592	1 850
605	910	592	897	2 850

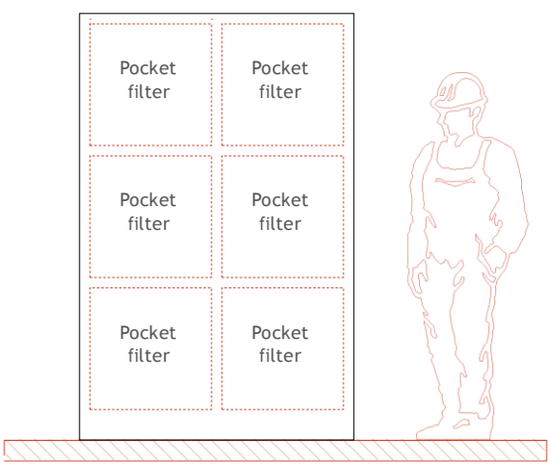
* the value V is related to the nominal flow of 5400 $m^3.h.m^{-2}$

h) Modular Filter Boxes for Pocket Filters - FBSKA

Filtration classes G3, G4, M5, M6, F7-F9

The modular filter boxes make it possible to combine pocket filters (KA) to form bigger groups with a larger filter area. The filters can be arranged and fixed in a flat frame structure in 2-3 rows over or next to each other for a flow of up to 25000 m3/h. An air duct is connected to the inlet and outlet side with the use of flanges. In the case of modular filter boxes of larger dimensions there is a door for operator entrance and filter handling.

The connection and overall dimensions of filter boxes are designed individually for particular projects.



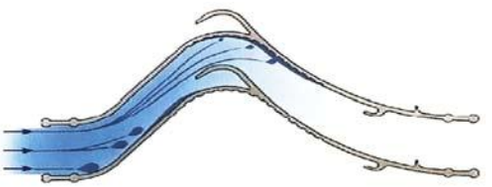
9. Drop eliminators

A drop eliminator is a device used to separate water drops from the flowing air matter. The basic part consists of a rectangular box that is generally connected to the ventilation duct, condensate drain and cleaning opening with the use of reducing pieces. In the box there is a cartridge with plastic profiled fins. In the bottom part the eliminator is equipped with a collection vessel with an inclined bottom where condensate caught by the fins is collected.

The efficiency of the eliminator depends on the flow rate of the air and the size of water drops. A suitable size of the drop eliminator and the type of fins that it should be equipped with is selected by the air matter quantity and flow rate.

Fin	Flow rate [m/s]	Water content in the air [l/m^3]
Type V	3 - 6	up to 1
	6 - 8 *	up to 1.5
Type M	2 - 5	up to 0.5 *

after prior agreement

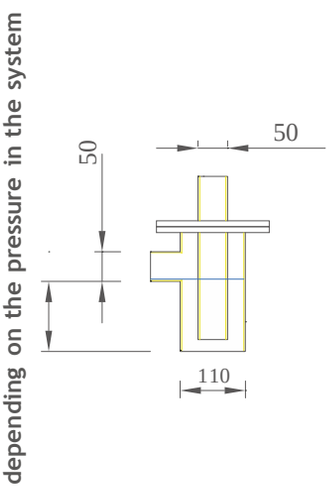


The eliminator comprises:

- **Condensate drain** – can be terminated with a sleeve or screw union for connection to another duct
- **Cleaning opening** - can be terminated with a socket, valve or screw union with a blind flange

Optional accessories:

- **You can connect the siphon** (odor trap) to the drain socket of the eliminator. The height of the water column and thus the siphon height is selected with regard to the system pressure to prevent re-suctioning. There is a general rule that 500 Pa = 50 mm of a water column.

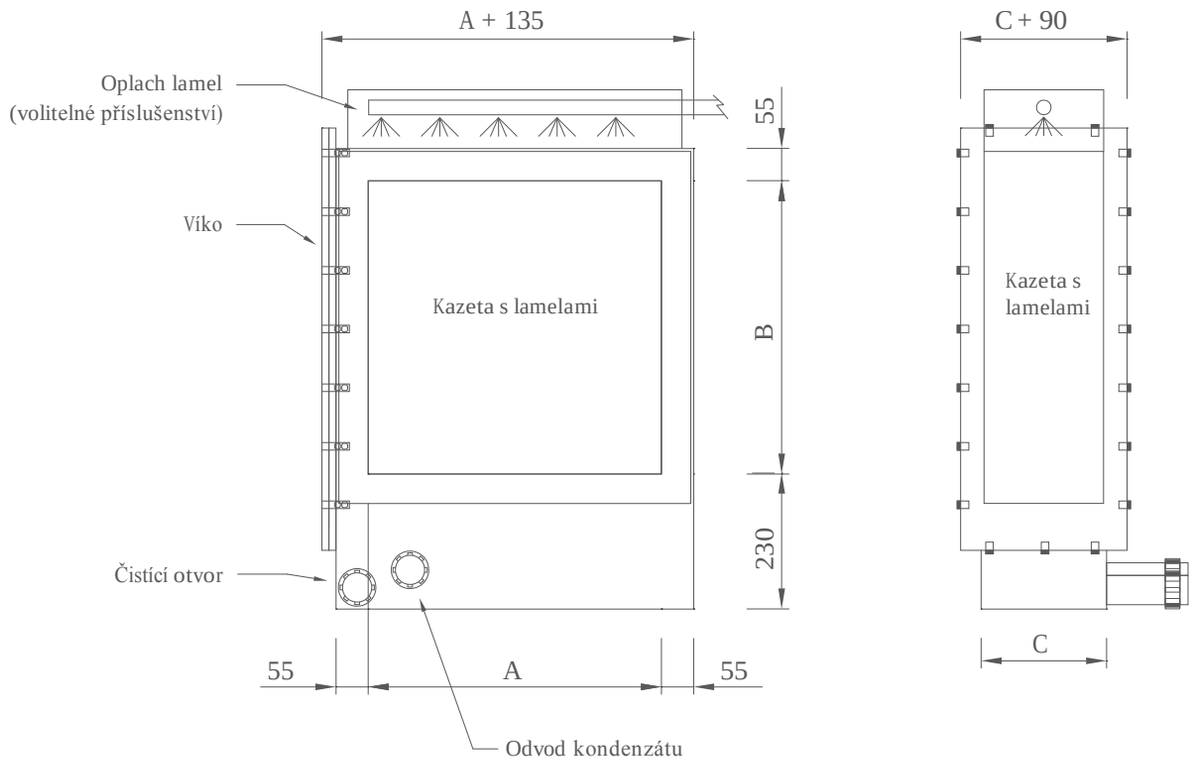


- **Sprinkling -** a sprinkling system can be integrated in the eliminator that may serve several purposes:

- to form mist to ensure supplementary humidification of the flowing air
- to form mist to bind chemicals contained in the flowing air to be subsequently captured by the eliminator fins
- to partly clean the fins of accumulated dirt

- **Rinse -** rinse nozzles are integrated in the eliminator that are used to clean the fins from accumulated dirt.

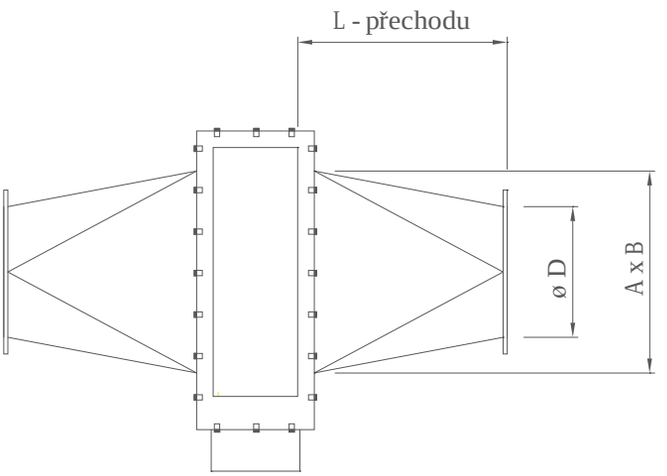
Dimensional drawing



Connection dimensions of the eliminator [mm]		Width of the box C [mm]		Air flows [m³/h]	
A*	B*	type M	type V	fin type M (2 to 5 m/s)	fin type V (3 to 6 m/s)
200	200	150	220	290 - 720	400 - 800
250	250			450 - 1 125	675 - 1 350
315	315			715 - 1 790	1 100 - 2 100
400	400			1 150 - 2 880	1 800 - 3 500
500	500			1 800 - 4 500	2 700 - 5 400
630	630			2 860 - 7 145	4 300 - 8 600
710	710			3 630 - 9 075	5 450 - 10 890
800	800			4 600 - 11 500	6 900 - 13 800
1 000	1 000			7 200 - 18 000	10 800 - 21 600
1 200	1 200			10 400 - 25 900	15 550 - 31 100
1 400	1 400			14 100 - 35 280	21 160 - 42 350
1 600	1 600			18 400 - 46 080	27 700 - 52 300
1 800	1 800			23 300 - 58 300	35 000 - 70 000
2 000	2 000			28 800 - 72 000	43 200 - 86 400

* - The drop eliminators can also be produced with other dimensions than specified in the table

A drop eliminator with a circular connection to the continuous duct



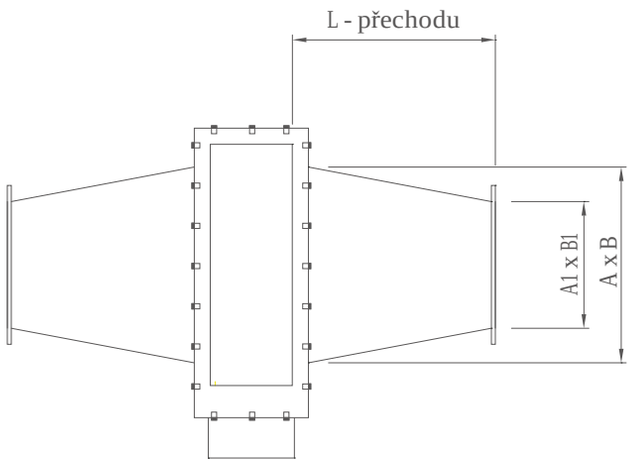
EKK 500x500,V-ø315/400 OK-n, PV,PV PVC7035

Dimension of the eliminator flow area AxB
Type of fins
Diameter of the circular reducing piece connection D
Reducing piece length L
Condensate drain – adapter/screw union (n/š)
Type of reducing piece connection
Material, color

example **EKK 500x500,V-ø315/400 OK-n, PV,PV PVC7035**
(Drop eliminator with a round connection, flow area of the eliminator 630x630 mm 500x500 mm, fin type V, reducing pieces to ø315 mm, reducing piece length 400 mm, condensate drain – socket, joints PV – drilled flanges, material PVC RAL7035)

Fastening material made of zinc or stainless steel A2

A drop eliminator with a rectangular connection to the continuous duct



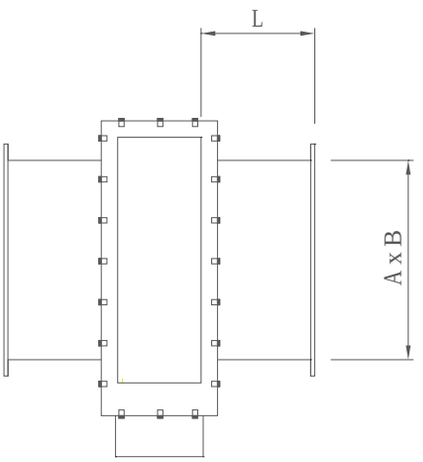
EKH 630x630,M-400x400/350 OK-š, PV,PV PP7032

Dimension of the eliminator flow area AxB
Type of fins
Dimension of the reducing pieces A_1xB$_1$
Reducing piece length L
Condensate drain – adapter/screw union (n/š)
Type of reducing piece connection
Material, color

example **EKH 630x630,M-400x400/350 OK-š, PV,PV PP7032**
(Drop eliminator with a rectangular connection, flow area of the eliminator 630x630 mm, fin type M, reducing piece dimension 400x400 mm, reducing piece length 350 mm, condensate drain – screw union, drilled flanges, material PP RAL 7032)

Fastening material made of zinc or stainless steel A2

Connection to a straight duct



EKH 400x400,M-400x400/L OK-š, PN,PN PP7032

Dimension of the eliminator flow area AxB
Type of fins
Neck dimensions AxB
Neck lengths L
Condensate drain – adapter/screw union (n/š)
Neck connection type
Material, color

example **EKH 400x400,M-400x400/100 OK-š, PN,PN PP7032**
(Drop eliminator with a rectangular connection, flow area of the eliminator 400x400 mm, fin type V, neck dimension 400x400 mm, neck length 100 mm, condensate drain – screw union, non-drilled flanges, material PP RAL 7032)

Fastening material made of zinc or stainless steel A2

Chart of a type M fin

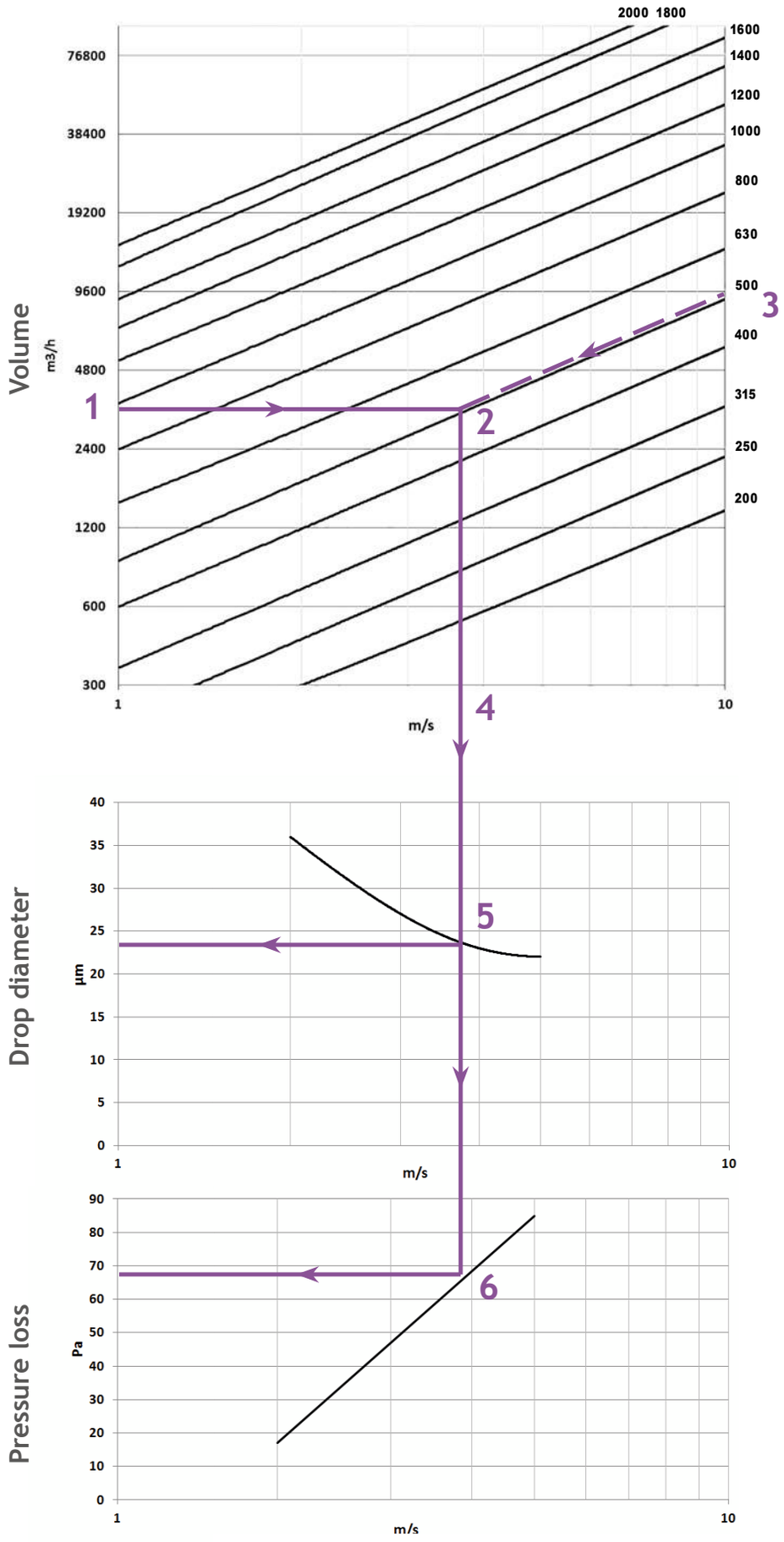
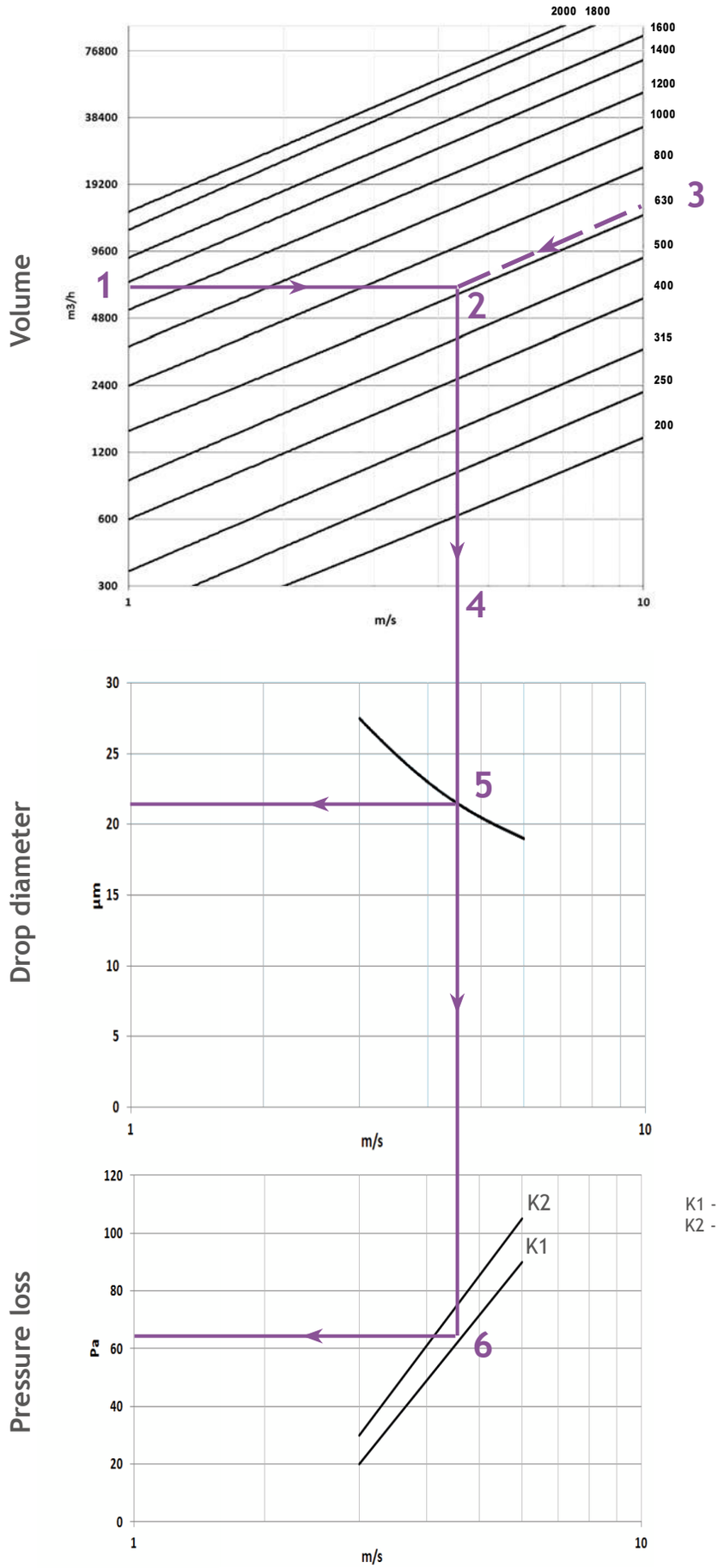


Chart of a type V fin



Flow area size A=B

K1 - curve for flow rates of 3-6 [m/s]
K2 - curve for flow rates of 6-8 [m/s]

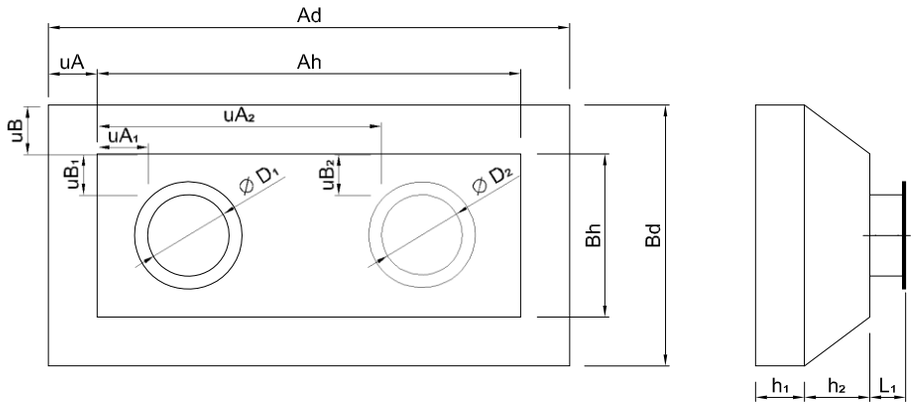
10. Extraction hoods

The extraction hoods are custom-made based on the particular needs and possibilities of the individual facility. Their dimensions, shape and design can be adapted individually. The delivery may comprise an air duct or a fan.

Extraction hoods may be equipped with lighting, several extraction places, a condensate collection channel and other equipment in accordance with particular requirements.

The used material is always selected with regard to the concentrations and temperatures of extracted vapors.

Circular joint

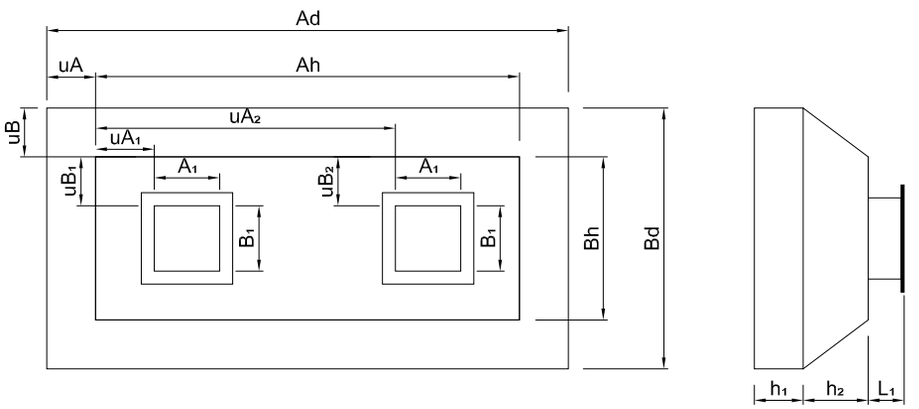


OZKs 1600x800-1300x500/200,300,0,0,ø315/200,0,0 H,ø315/200,0,0 H,n,ž,4 PP7032

- Dimension Ad
- Dimension Bd
- Dimension Ah
- Dimension Bh
- Height h_1
- Height h_2
- Distance uA
- Distance uB
- Diameter D_1
- Length L1
- Distance uA_1
- Distance uB_1
- Joint type
- Diameter D_2
- Length L_2
- Distance uA_2
- Distance uB_2
- Joint type
- Hood type (wall-mounted, axial)
- Eaves gutter (yes/no)
- Number of suspension lugs
- Material, color

With regard to the high quantity of data necessary for the production we recommend you to provide a dimensional drawing.

Rectangular (square) joint



OZHs 1600x800-1300x500/200,300,0,0,250x250/300,0,0 PV,250x250/300,0,0 PV,n,ž,4 PP7032

- Dimension Ad
- Dimension Bd
- Dimension Ah
- Dimension Bh
- Height h_1
- Height h_2
- Distance uA
- Distance uB
- Dimension A_1
- Dimension B_1
- Length L1
- Distance uA_1
- Distance uB_1
- Joint type
- Dimension A_2
- Dimension B_2
- Length L_2
- Distance uA_2
- Distance uB_2
- Joint type
- Hood type (wall-mounted, axial)
- Eaves gutter (yes/no)
- Number of suspension lugs
- Material, color

With regard to the high quantity of data necessary for the production we recommend you to provide a dimensional drawing.

11. Plastic outlets

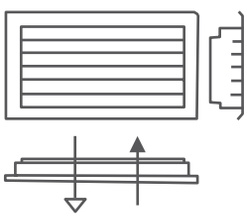
The PH outlet is a functional grille directing the air inlet or outlet from an air duct.

Depending on their type outlets are divided into single-rowed and double rowed. Depending on the air flow control requirement they are further divided into outlets with an inclination blade and without an inclination blade.

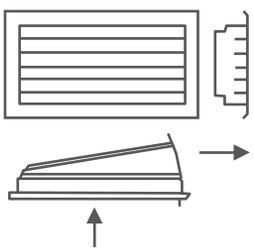
The inclination blade is controlled with an adjustment draw-bar that is slid onto a locking pin after setting in the desired position. The overlapping part of the draw-bar can be shortened.

a) Standardized PH

Profiled self-locking blades are adjusted with the use of special wrenches that are included in the delivery. The blade is set to the desired position with to wrenches that are placed onto the blade as close to both the edges as possible and rotated to set the blade to the required position. The outlets are made of hardened polystyrene (HPS) in light gray color, RAL 7035.



Outlet type
Outlet PH I 200x100 0.H
Outlet PH I 280x140 0.H
Outlet PH I 400x140 0.H
Outlet PH I 400x200 0.H
Outlet PH I 560x200 0.H
Outlet PH I 560x280 0.H



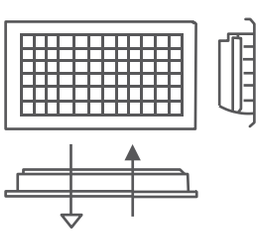
Outlet type
Outlet PH I 200x100 1.H
Outlet PH I 280x140 1.H
Outlet PH I 400x140 1.H
Outlet PH I 400x200 1.H
Outlet PH I 560x200 1.H
Outlet PH I 560x280 1.H

PH I 400x200 1.H HPS7035

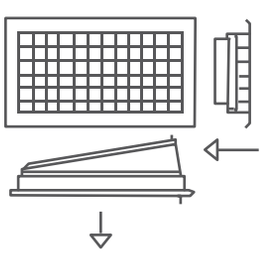
Outlet type
Inclination blade
Material, color

Identification:

PH I - single-rowed
PH II - double-rowed
0.H - without an inclination blade
1.H - with an inclination blade



Outlet type
Outlet PH II 280x140 0.H
Outlet PH II 400x140 0.H
Outlet PH II 400x200 0.H
Outlet PH II 560x200 0.H
Outlet PH II 560x280 0.H

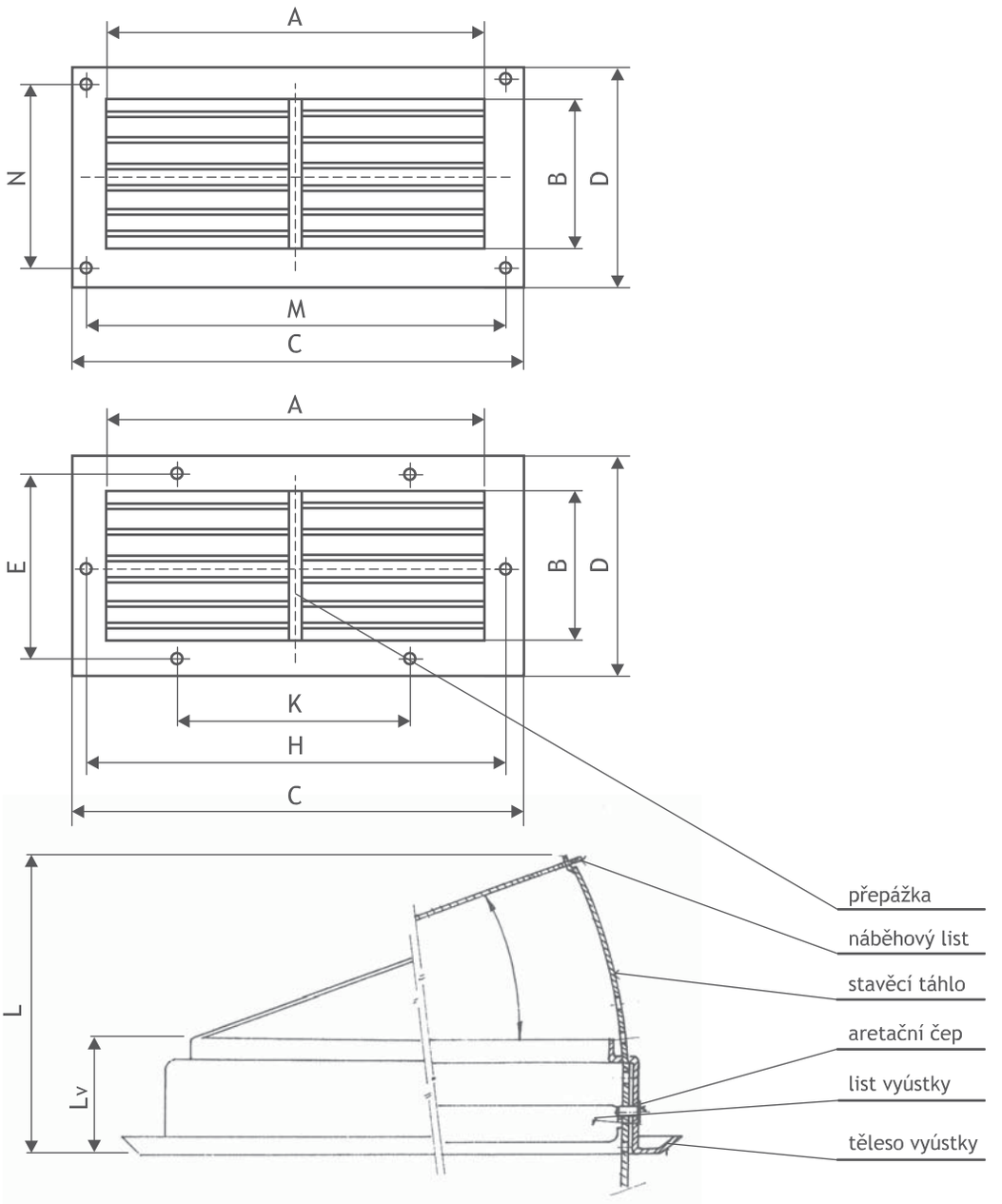


Outlet type
Outlet PH II 280x140 1.H
Outlet PH II 400x140 1.H
Outlet PH II 400x200 1.H
Outlet PH II 560x200 1.H
Outlet PH II 560x280 1.H

Scope of delivery:

- Outlet body with profiled blades
- Sealing and adjustment wrenches
- Fastening screws
- Adjustment draw-bar of the inclination blade (with outlets with an inclination blade only)

Dimensions of the plastic outlets

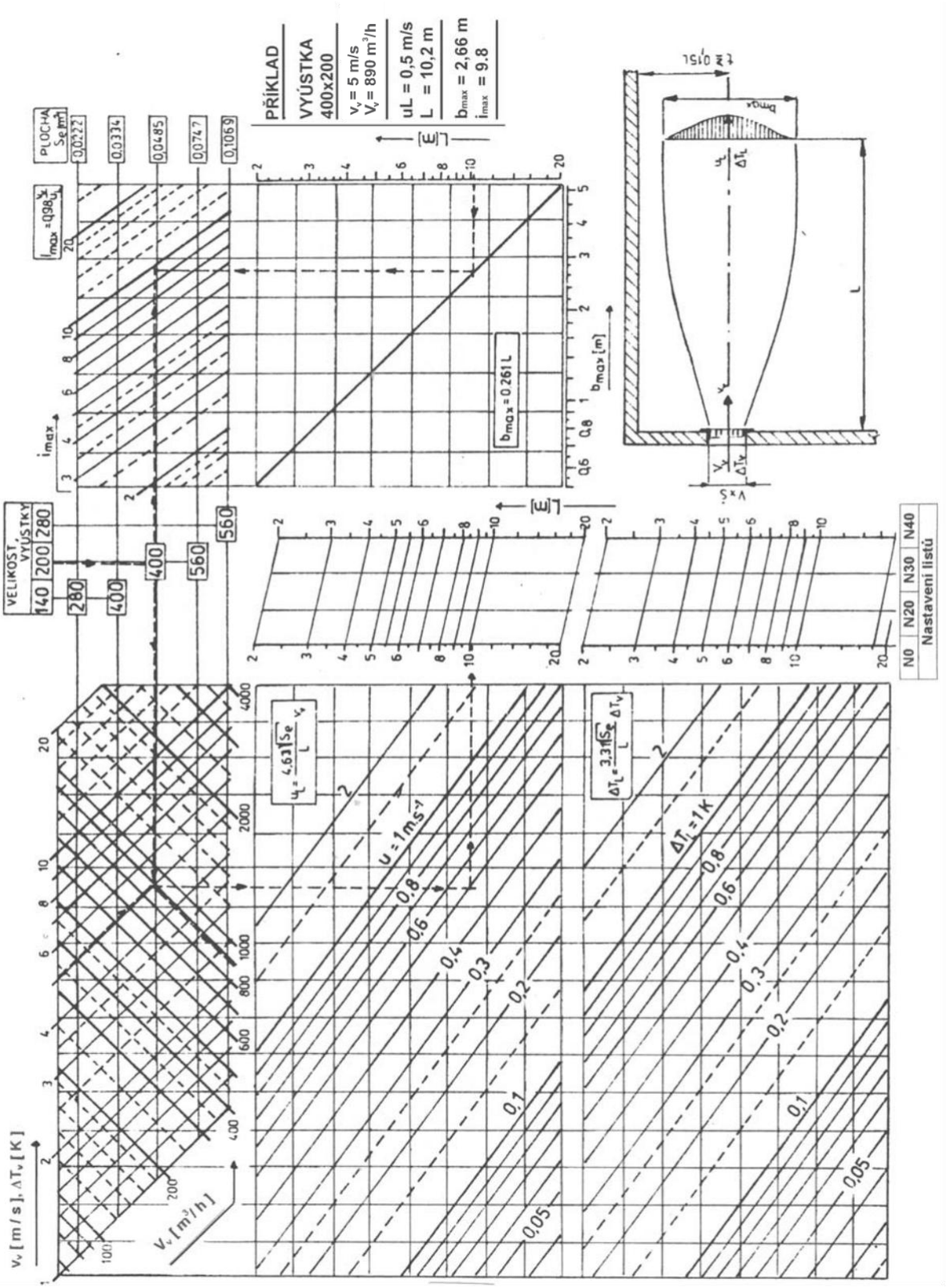


Outlet type	Outlet dinension [mm]											Duct opening
	A	B	C	D	M	N		K	E	L	Lv	
PH 200x100	177	76	245	147	215	113	-	-	-	100	70	185x85
PH 280x140	260	120	320	180	293	153	-	-	-	155	75	265x125
PH 400x140	380	120	440	180	413	153	-	-	-	210	75	385x125
PH 400x200	380	180	440	240	413	213	-	-	-	210	75	385x185
PH 560x200	540	180	600	240	-	-	573	260	213	275	80	550x190
PH 560x280	540	260	600	320	-	-	573	260	213	275	85	550x270

The above mentioned dimensions are approximate.

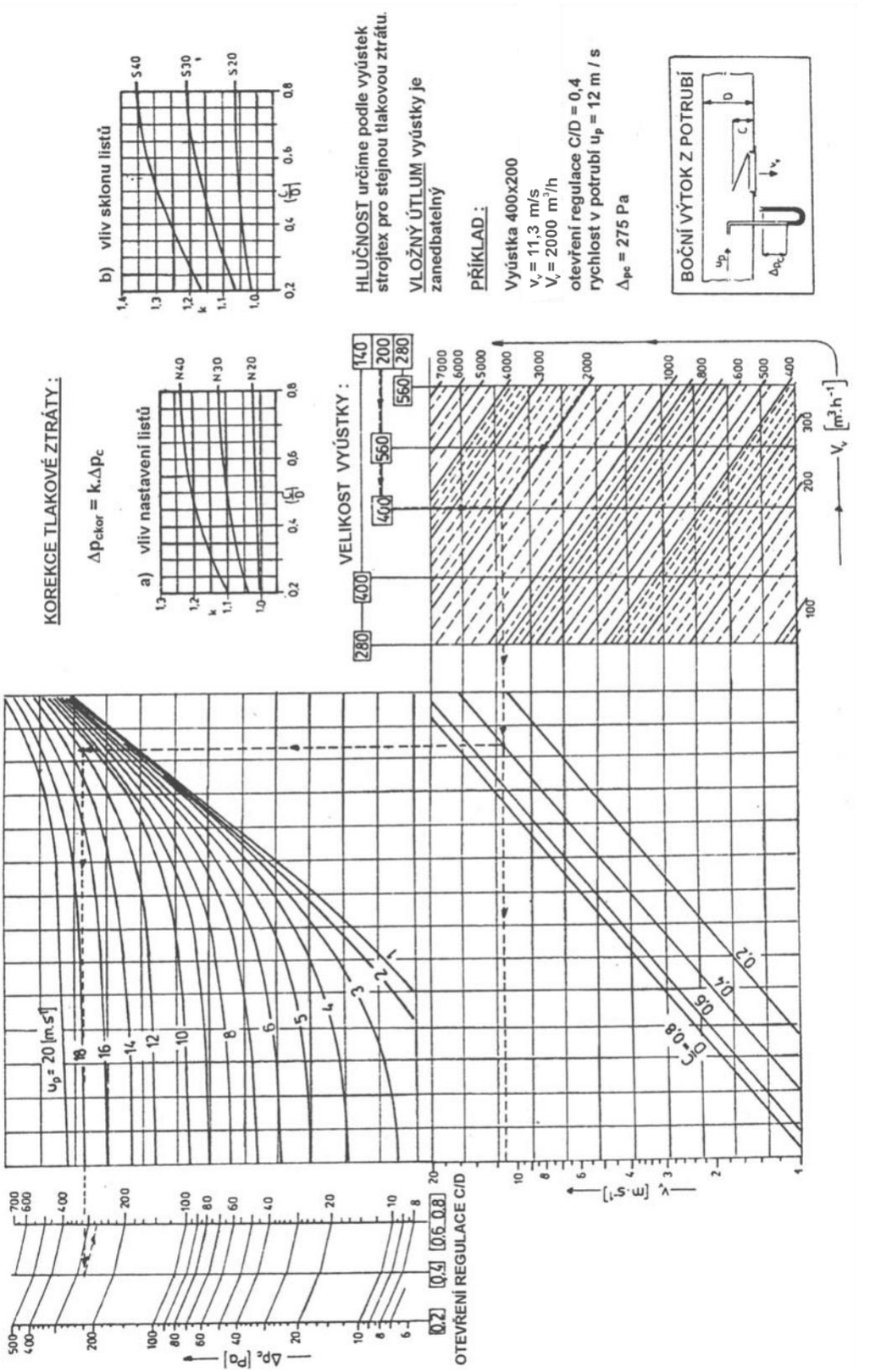
AQUATERA

Flow reach

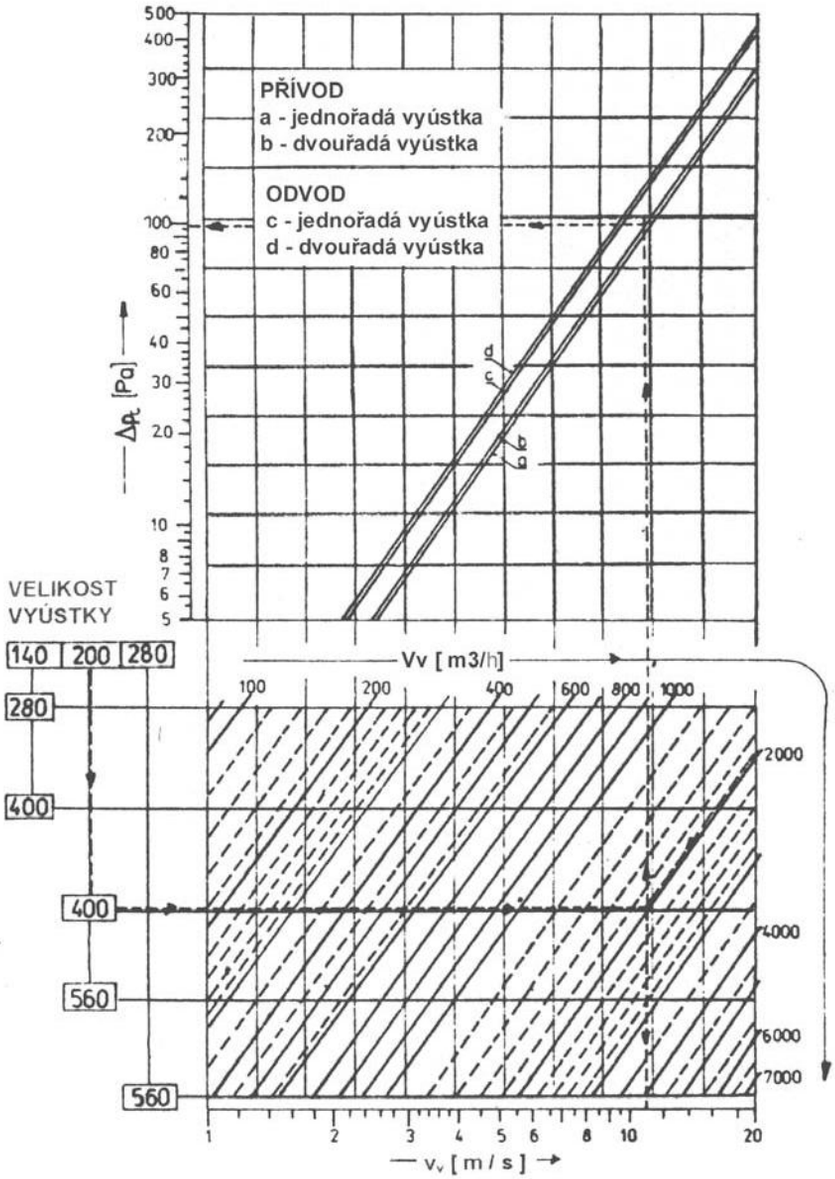


Plastic outlets

Pressure loss of an outlet with control at side outflow from the duct



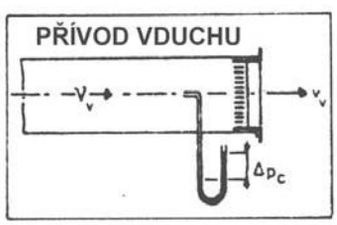
Pressure loss of an outlet without control at inlet and outlet

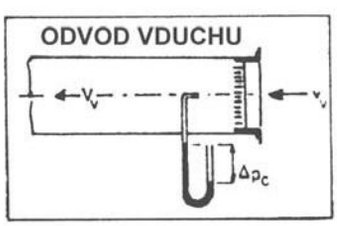


TABULKA HODNOT k PRO KOREKCI TLAKOVÉ ZTRÁTY $\Delta p_{ckor} = k. \Delta p_c$					
PŘÍVOD			ODVOD		
nastavení listů			sklon listů		
N 20	N 30	N 40	S 20	S 30	S 40
1,01	1,04	1,23	1,15	1,3	1,4
sklon listů					
S 20	S 30	S 40			
1,1	1,2	1,3			

HLUČNOST určíme podle vyústek Strojtex pro stejnou tlakovou ztrátu

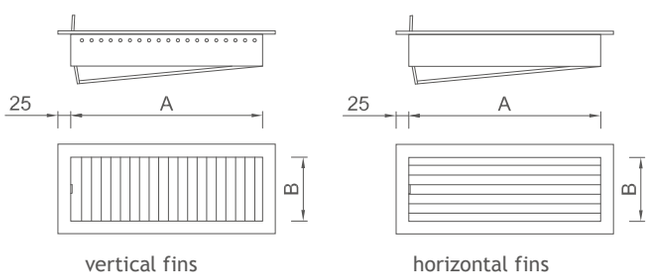
PŘÍKLAD
Přívod dvouřadou vyústkou 400x200
Vv = 2000 m3 / h
Vv = 11,3 m / s
Δp_c = 99.6 Pa





b) Special FP

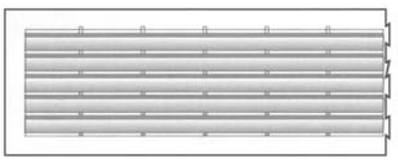
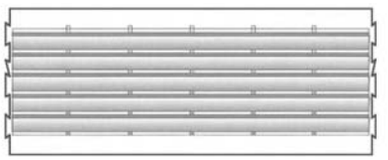
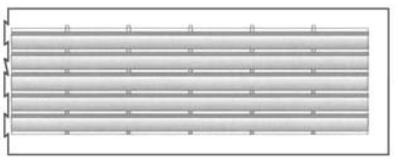
The outlets are always produced on the basis of the required dimensions. Depending on their type they are divided into single-rowed (horizontal or vertical arrangement of the fins) and double-rowed. The structural design of the inclination blades and adjustment draw-bars is the same as that of the standardized PH outlets. The self-locking blades are set manually to the required position.
They can be produced of all commonly used materials.



Outlet FP I 800x125 1.H vert. PE9011

- Outlet type
- Dimension A
- Dimension B
- Inclination blade
- Type of fins
- Material, color

10. Modular grilles

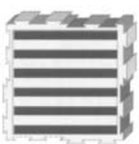
The grilles are available in two variants:

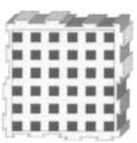
- with an insect mesh
- with mesh closing
- with closing – insect mesh
- in black, white or brown

Dimension [mm]		Code
Grilles	Opening	
355x130	338x96	MODP 1
340x130	340x96	MODP 2
355x130	338x96	MODP 3
360x230	338x187	MODPA 1
340x230	340x187	MODPA 2
360x230	338x187	MODPA 3


MODGB


MODZB

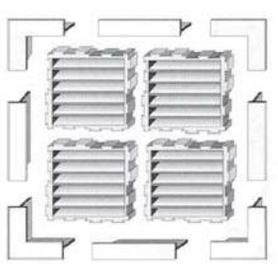

MODHB


MODLB

These grilles consist of more parts. A clear advantage is the possibility to combine groups of any size as necessary. The grille is terminated with an internal or external frame.

Dimension [mm]	Depth [mm]	Active area [cm²]	Code
100x100	17	0,7	MODGB
100x100	17	0,7	MODHB
100x100	17	0,24	MODLB
100x100	17	0,77	MODZB


sestava vnější


sestava vnitřní

The grilles are available in two variants:

- with an insect mesh
- in black, white or brown

11. Hoses, stainless steel clamps

If air ducts are to be connected to hoods, machines, technological lines or other equipment, we offer ventilation hoses with a smooth inner wall. The hoses may be provided with an antistatic design or with a health safety certificate if required. A suitable hose type is selected on the basis of particular requirements.

Hose	Reinforcing spiral Bending material	Inner diameter material	Operation [mm]	Wall thickness temperature [°C]	
PVC	PVC	19 to 300	-10 to +50	2,8 to 8,7	R=1,3 D
PVC	PVC	19 to 250	-25 to +50	2,8 to 9,0	R=3,5 D
PU	PVC	19 to 300	-20 to +80	2,5 to 7,0	R=1,3 D
PU	copper	40 to 406	-40 to +90	1,8 to 3,2	R=0,8 D
PU	copper	40 to 305	-40 to +90	3,1 to 4,4	R=0,8 D

Stainless steel clamps

Designed for attachment of flexible connections or plastic hoses to duct parts. They are produced and available from ø75 to ø1250 mm.

Notes:

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Tel. +370 600 81097
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