Contents

Rectangular ducts and fittings

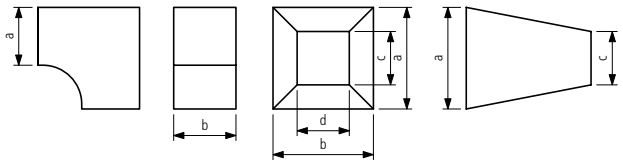
ALNOR reserves the right to modify technical specifications in line with the policy of continuous product improvement.

System description

This is ALNOR's range of rectangular ducts and fittings for ventilation systems.
This catalogue presents the rectangular ducts and fittings sized in accordance with **EN 1505:2001**, "Ventilation for buildings. Sheet metal air ducts and fittings with rectangular cross-section. Dimensions" and reference standards.
The surface area of ventilation ducts and fittings is measured according to **DIN 18379**, "German construction contract procedures – Part C: General technical specifications for building works – Room ventilation systems". Rectangular ducts and fittings are designed for low- and medium-pressure indoor HVAC systems. Rectangular ducts and fittings made from stainless steel or aluminium are available on request if a higher corrosion protection level is required. Alnor also fabricates custom fittings to individual design requirements.

Dimensions

The nominal size is a conventional dimension used to designate and calculate straight ducts and fittings. It is the internal dimension of sides a and b, where side a is exposed to view (see Fig. 1). The length sizes of the sides at a smaller end of an adapter fitting are designated c and d, where side c is exposed to view.
Dimension L is the effective length of a straight duct, which is added to the overall length of the ductwork system.
Dimension l is the effective length of a fitting, which is added to the overall length of the ductwork system.



The standard dimensions of ducts and fittings range between 130 mm and 2500 mm for any side length. The ducts and fittings below and above these sizes are available on request. Measurements of the surface area and the lead time for custom ductwork orders are subject to separate arrangements.

Tightness

Ducts are made in two air tightness classes according to **PN-B-76001**, "Ventilation ducts. Air tightness, requirements and testing" and **EN 1507**, "Ventilation for buildings. Sheet metal air ducts with rectangular section. Requirements for strength and leakage":
Air tightness class A: standard in normal design versions;
Air tightness class B: design versions with improved air tightness.

The air tightness classes are specified in the table below.

Duct air tightness class	*Leakage rate limit value* (f_{max}) $m^3s^{-1}m^{-2}$	*Limit values of static pressure* (p_s) *Pa*			
		Vacuum pressure in each class	*Overpressure in each class*		
			1	*2*	*3*
A	$0.027 \times p_{test}^{0.65} \times 10^{-3}$	200	400		
B	$0.009 \times p_{test}^{0.65} \times 10^{-3}$	500	400	1000	2000
C	$0.003 \times p_{test}^{0.65} \times 10^{-3}$	750	400	1000	2000
D*	$0.001 \times p_{test}^{0.65} \times 10^{-3}$	750	400	1000	2000

Special-purpose ventilation ducts

Design

Rectangular ducts and fittings are fabricated from metal sheets which are hemmed and seamed, pressure-welded, or riveted. The ducts and fittings are available in low- and medium-pressure versions (min. vacuum / max. overpressure):
- class N design (low-pressure design): standard design from -400 Pa to +1000 Pa
- class S design (medium-pressure design): from -1000 Pa to 2500 Pa

The dimensional tolerances and metal sheet thickness are selected according to the following criteria:
- length of the long side of a straight duct,
- the dimension of the longest side of the connection cross-section of the fitting.

Table 1 (see below) provides dimensional tolerances and minimum metal sheet thickness sizes.

Dimension of the long side (mm)	*Dimensional tolerance for the duct side (mm)*	*Class N minimum sheet thickness (mm)*	*Class S minimum sheet thickness (mm)*
100-500	0-4	0.6	0.7
501-1000	0-4	0.8	0.9
1001-2000	0-4	1.0	1.1
2001-4000	0-5	1.1	1.2

Rectangular ducts and fittings can be fabricated from stainless steel sheet or aluminium sheet on request (see Table 2).

Dimension of the long side (mm)	*Stainless steel sheet*	*Aluminium sheet*
100-500	0.6	0.8
501-1000	0.6	0.8
1001-2000	0.8	1.0

SQUER

TECHNICAL INFORMATION

System description

The length L tolerance for straight ducts is ±0.005 L.
The angular tolerance is ±2°.
Deviations from dimensions a, b, c, d, e, and f are 0-4 mm.

Dimensions for ducts, including the corresponding cross-sectional area A_c, hydraulic diameter d_h, equivalent diameter d_e, and surface area of 1-metre long duct A_l are listed in Table 3.

Table 3 (see below)
The dimensions and values applicable to ventilation ducts meet the requirements of EN 1505 "Ventilation for buildings. Sheet metal air ducts and fittings with rectangular cross-section. Dimensions".

Marking

ALNOR products carry the Polish conformity mark B for construction products and product codes as shown in the technical specifications listed in this catalogue.

Rectangular ducts and fittings are certified for compliance with hygiene standards:
a) made from aluminium sheet:
HK/B/1652/03/2007
b) made from galvanized or stainless steel sheet:
HK/B/1652/01/2007

Side length (mm)	*100*	*150*	*200*	*250*	*300*	*400*	*500*	*600*	*800*	*1000*	*1200*	
200	0.02	0.03	0.04									A_c
	133	171	200									d_h
	149	186	218									d_e
	0.6	0.7	0.8									A_l
250	0.025	0.038	0.05	0.063								A_c
	143	188	222	250								d_h
	165	206	241	273								d_e
	0.7	0.8	0.9	1								A_l
300	0.03	0.045	0.06	0.075	0.09							A_c
	150	200	240	273	300							d_h
	180	224	262	296	327							d_e
	0.3	0.9	1	1.1	1.2							A_l
400	0.04	0.06	0.08	0.1	0.12	0.16						A_c
	160	218	267	308	343	400						d_h
	205	255	299	337	373	436						d_e
	1	1.1	1.2	1.3	1.4	1.6						A_l
500		0.075	0.1	0.13	0.15	0.2	0.25					A_c
		231	286	333	375	444	500					d_h
		283	331	374	413	483	545					d_e
		1.3	1.4	1.5	1.6	1.8	2					A_l
600		0.09	0.12	0.15	0.18	0.24	0.3	0.36				A_c
		240	300	353	400	480	545	600				d_h
		307	359	406	448	524	592	654				d_e
		1.5	1.6	1.7	1.8	2	2.2	2.4				A_l
800			0.16	0.2	0.24	0.32	0.4	0.48	0.64			A_c
			320	381	436	533	615	686	800			d_h
			410	463	511	598	675	745	872			d_e
			2	2.1	2.2	2.4	2.6	2.8	3.2			A_l

Tolerances and deviations

Table 3, cont.
Dimensions and values for ducts

Side length (mm)	*100*	*150*	*200*	*250*	*300*	*400*	*500*	*600*	*800*	*1000*	*1200*	
1000				0.25	0.3	0.4	0.5	0.6	0.8	1		A_c
				400	462	571	667	750	889	1000		d_h
				512	566	662	747	825	965	1090		d_e
				2.5	2.6	2.8	3	3.2	3.6	4		A_l
1200					0.36	0.48	0.6	0.72	0.96	1.2	1.44	A_c
					480	600	706	800	960	1091	1200	d_h
					614	719	812	896	1049	1184	1308	d_e
					3	3.2	3.4	3.6	4	4.4	4.8	A_l
1400						0.56	0.7	0.84	1.12	1.4	1.68	A_c
						622	737	840	1018	1167	1292	d_h
						771	871	962	1125	1270	1403	d_e
						3.6	3.8	4	4.4	4.8	5.2	A_l
1600						0.64	0.8	0.96	1.28	1.6	1.92	A_c
						640	762	873	1067	1231	1371	d_h
						819	925	1022	1195	1350	1491	d_e
						4	4.2	4.4	4.8	5.2	5.6	A_l
1800							0.9	1.08	1.44	1.8	2.16	A_c
							783	900	1108	1286	1440	d_h
							976	1078	1261	1424	1573	d_e
							4.6	4.8	5.2	5.6	6	A_l
2000							1	1.2	1.6	2	2.4	A_c
							800	923	1143	1333	1500	d_h
							1024	1131	1323	1494	1650	d_e
							5	5.2	5.6	6	6.4	A_l

The cross sectional area is the length of side a multiplied by the length of side b.
The duct surface area is the the inner circumference multiplied by the length of the duct.
Hydraulic diameter: for a rectangular duct - diameter of a round duct which has the same pressure loss as the rectangular duct at the same air flow rate and coefficient of friction.

Formula: $d_h = 2 \times a \times b/a + b$.

Equivalent diameter: for a rectangular duct - diameter of a round duct which has the same pressure loss as the rectangular duct at the same air flow rate and coefficient of friction.

Rigidity

Rectangular ducts and fittings are braced by transverse embossing of the metal sheet.
The ducts are additionally braced with galvanized baffle/strut tubes as shown in Fig. 2.

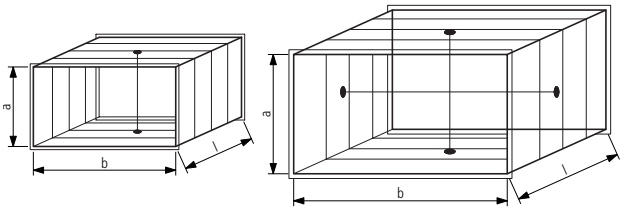


Fig. 2.

See Table 4 for the rules of bracing ventilation ducts.

Table 4
Rules for bracing ventilation ducts with tubes

A (mm)	*B (mm)*	*L (mm)*	*Number of braces*
<1000	<1000	<1000	0
<1000	>1000	<1000	1
<1000	1000-1500	<1000	2
<1000	1500-2000	1500-2000	4
1000-1500	1000-1500	<1000	1 cross brace
1000-1500	1000-1500	1000-1500	2 cross braces

Bends and elbows are braced with vanes according to **EN 1505**, "Ventilation for buildings. Sheet metal air ducts and fittings with rectangular cross-section. Dimensions".
Elbows are recommended for low air velocity and/or low-pressure ventilation systems and smaller sizes of side a ≤ 400 mm.
Bends and elbows set at ≤ 45° require no vanes.
The vane alignment is shown in Table 7 and Fig. 3.

Duct surface area

The surface area of rectangular ducts is measured according to **DIN 18379**, "German construction contract procedures – Part C: General technical specifications for building works – Room ventilation systems".
The ducts with a surface area < 1.0 m² are calculated as 1.0 m² fittings.
The fittings with a surface area < 1.0 m² are calculated as 1.0 m² fittings.

of connection

The ventilation duct connections are fabricated in accordance with **PN-B-76002** "Ventilation. Connections of ventilation equipment, ducts and fittings made of metal sheets".
Rectangular ducts are connected to ventilation equipment using frames made of sheet angles and corner straps.
The sheet angle size depends on the side length of the rectangular duct.
The rules for using sheet angle frames in rectangular ducts and fittings are shown in Table 5.

Table 5
Rules for using sheet angle frames in ventilation rectangular ducts and fittings in the standard version with galvanized steel sheet

Side length (mm)	≤ 1000	> 1000	> 2500
Sheet angle size (mm)	P20	P30	P40

Corner straps and sheet angles are made air-tight using sealants.

Stainless steel sheet angles and corner straps are the standard accessories for stainless steel ducts and fittings. Aluminium angles and corner straps are the standard accessories for aluminium ducts and fittings.
The rules for using sheet angle frames in rectangular ducts and fittings are shown in Table 6.

Table 6
Rules for using sheet angle frames in standard ventilation rectangular ducts and fittings made from stainless steel or aluminium sheet

Side length (mm)	≤ 1000	> 1000	> 2500
Sheet angle size (mm)	PQ20	PQ30	PQ30

Table 7
The vane alignment is according to **EN 1505**, "Ventilation for buildings. Sheet metal air ducts and fittings with rectangular cross-section. Dimensions".

Duct width a (mm)	*Number of vanes*	*L (mm)*	*Vane spacing (mm)*		
			a_1	a_1	a_1
> 400 ≤ 800	1	a/3			
> 800 ≤ 1600	2	a/4	a/2		
> 1600 ≤ 2000	3	a/8	a/3	a/2	

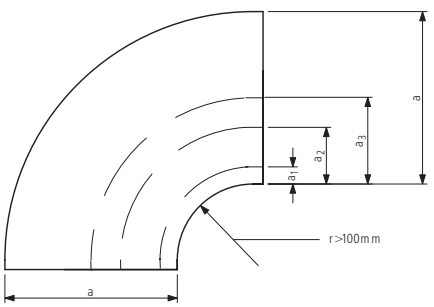


Fig. 3.

TECHNICAL INFORMATION

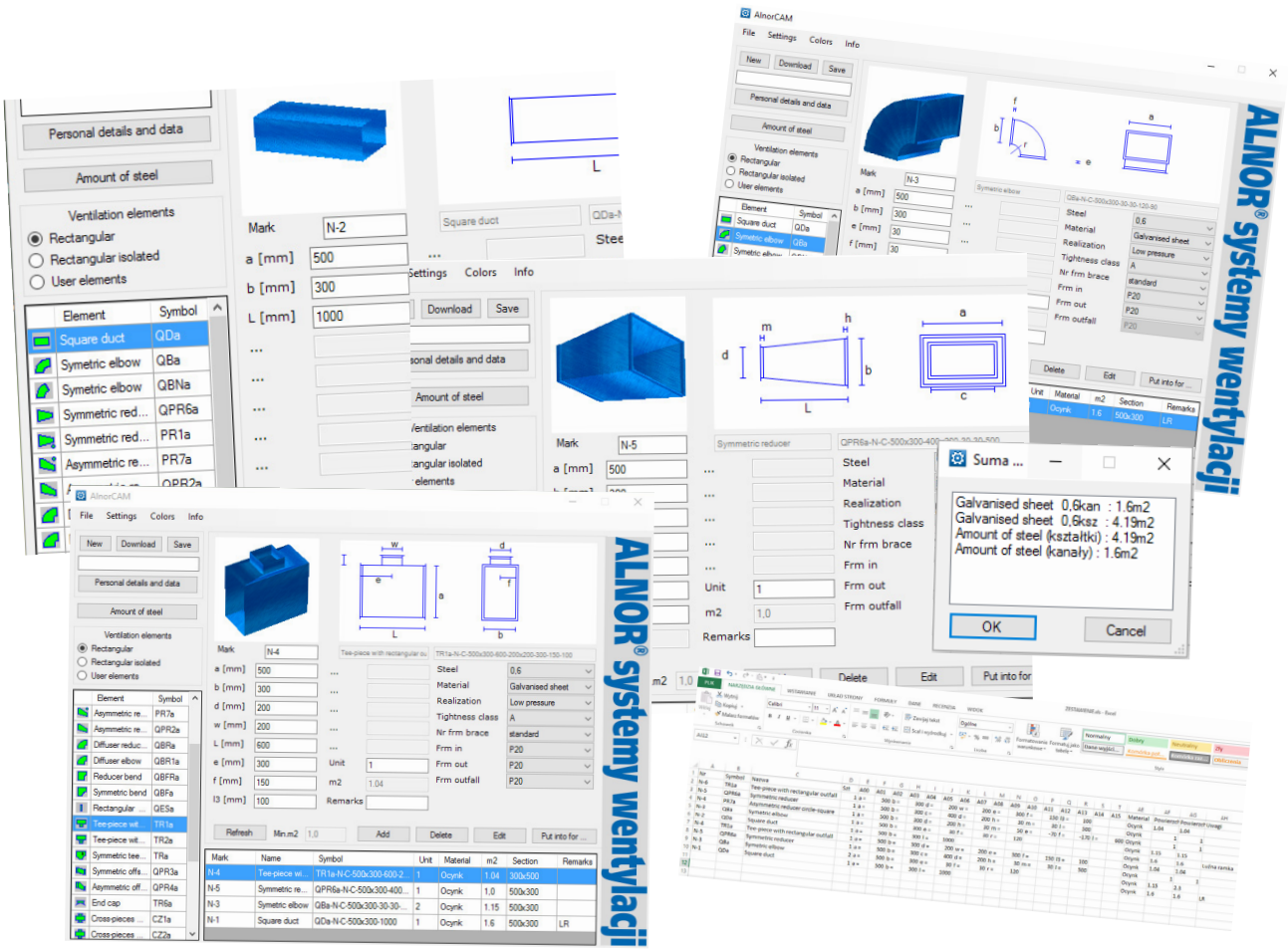
Design

AlnorCAM is a software suite designed for selecting rectangular components for ventilation ductwork.
AlnorCAM provides a full summary of selected ventilation ductwork components, including the number of ducts and fittings to be ordered plus their surface areas in square metres and fabrication models. The programme reduces the time to fabricate a ready-to-use ventilation ductwork system and helps eliminate errors due to inaccurate dimensioning. Ducts and fittings plotted in AlnorCAM are displayed in the form of 3D models and engineering drawings. The programme automatically calculates the surface areas of ducts and fittings, including the required quantity of thermal insulation if included in the design. The automatically generated summary saves time and makes normal designing and calculation work much easier.
An extensive product database includes insulated and pre-insulated ductwork components. The programme also calculates the required quantity of mineral wool for insulated ducts and fittings. Three thermal insulation thickness sizes are available: 30, 50 and 100 mm.
Additionally, the cladding and inner ducts can be made from different materials as required (galvanized steel sheet, aluminium sheet, or stainless steel sheet).

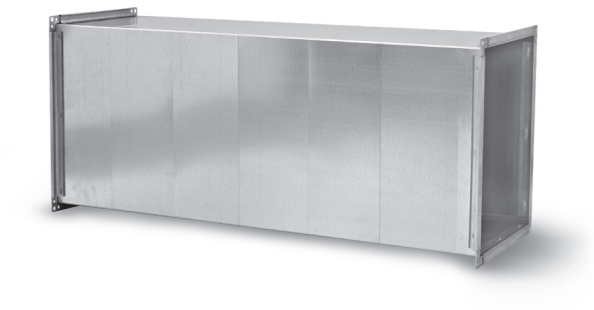
Benefits of AlnorCAM

- minimizes errors in the processing of engineering documentation,
- significantly reduces fabrication lead times while maintaining competitive pricing and quality,
- precision, reliability and flexibility: you always know how many metres of ductwork are needed, which helps to avoid confusion on site,
- maximum benefits when AlnorCAM is used for B2B ordering
- AlnorCAM is a freeware design suite.
- Available in Polish and English

Download and install AlnorCAM



Rectangular ducts
QDN



Description

All rectangular ducts are fitted with flange frames made of sheet angles and braced by cross-wise ribbing. Larger ducts are additionally braced with galvanized tubes (baffles). The ducts are manufactured in the following standard sections to standardize the fabrication, shipping and installation procedure:
If a or b ≤ 500, then L = 1250 mm
If a or b > 500, then L = 1500 mm

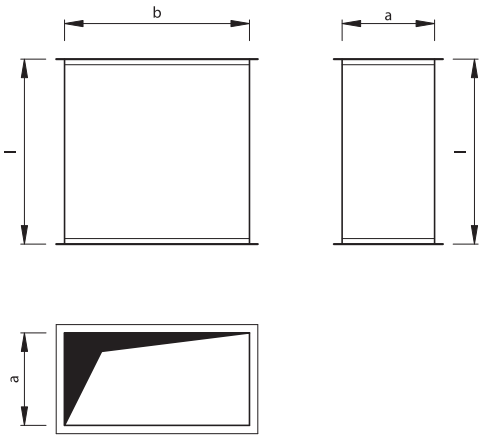
If rectangular duct ends should be finished otherwise than with flange frames, use the following designations to indicate the required option:
LR — separate frame
BR — no frame (bare end)
Z — blind end

Product code example
Product code: **QD - N - OCY - 500 x 300 - 1500**

type
N
S
OCY
KWS
ALU
a
b
l

N — low-pressure version
S — medium-pressure version
C — galvanized steel
K — stainless steel
A — aluminium
a — width
b — height
l — length

Dimensions



Angle rectangular ducts spigot plates
QD1

Description

The angle rectangular duct spigot plates are tipped with sheet angles at one end. The other end features a spigot plate similar to a roof kerb, the size of which can be chosen according to individual requirements. The duct angle to the plate can be anywhere between 10 and 90 degrees according to individual requirements.

Available materials — Product code examples

QD1-...-...-... — galvanized steel sheet

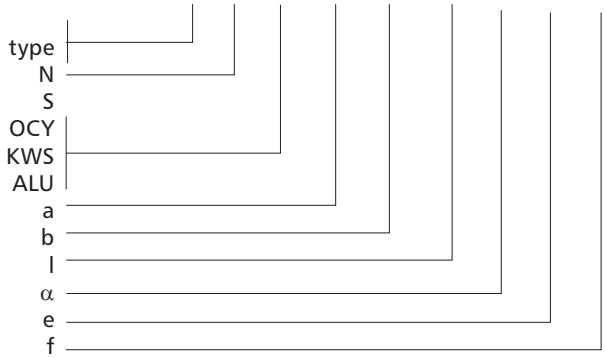
QD1-K-...-...-... — 1.4301/304 stainless steel sheet

QD1-K-...-...-...-316L — 1.4404/316L stainless steel sheet

QD1-A-...-...-... — AW-1050A H24 aluminium sheet

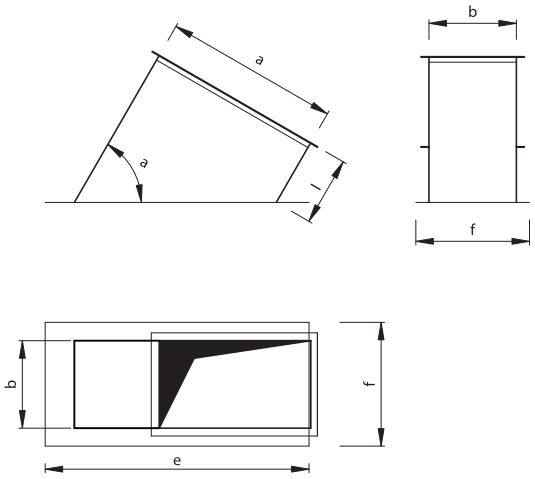
Product code example

Product code: **QD1 - N - OCY - 500x300 - 1500 - 45 - 800x500**



N — low-pressure version
S — medium-pressure version
OCY — galvanized steel
KWS — stainless steel
ALU — aluminium
a — width
b — height
l — length
α — angle
e — base dimension a
f — base dimension b

Dimensions



Rectangular elbows

QBF

Description

The 90° elbows are fitted with sheet angles, and the entire product is braced by cross-wise ribbing.
The elbows are recommended for low air velocity and/or low-pressure ventilation systems and smaller sizes of side b ≤ 400 mm. The standard radius is r = 120 mm.
Typical applications of the elbows include rerouting the ductwork by 90 degrees with the same clear cross-section.

Available materials — Product code examples

QBF-...-...-...-... — galvanized steel sheet

QBF-...-K-...-...-... — 1.4301/304 stainless steel sheet

QBF-...-K-...-...-...-316L — 1.4404/316L stainless steel sheet

QBF-...-A-...-...-... — AW-1050A H24 aluminium sheet

Product code example

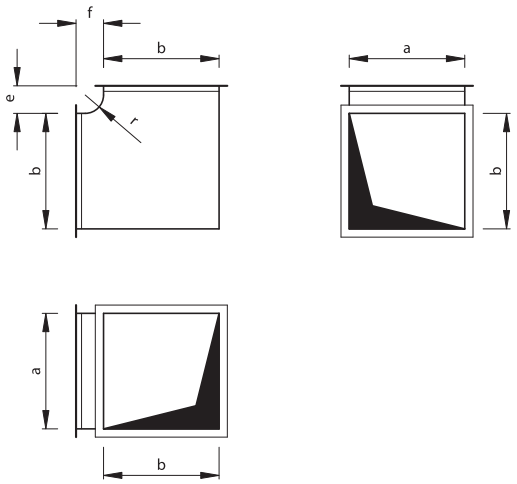
Product code: **QBF - N - OCY - 500x300 - 30 - 30 - 120**

type
- N
- S

OCY
KWS
ALU

- a
- b
- e
- f
- r

Dimensions



N — low-pressure version
S — medium-pressure version
OCY — galvanized steel
KWS — stainless steel
ALU — aluminium
a — width
b — height
e — extension (default e = 150 mm)
f — extension (default f = 150 mm)
r — radius (default r = 120 mm)

The elbows are available at 90° *only.* The standard versions are made in default dimension sizes which do not have to be specified.

Variable clearance elbows

QBFR

Description

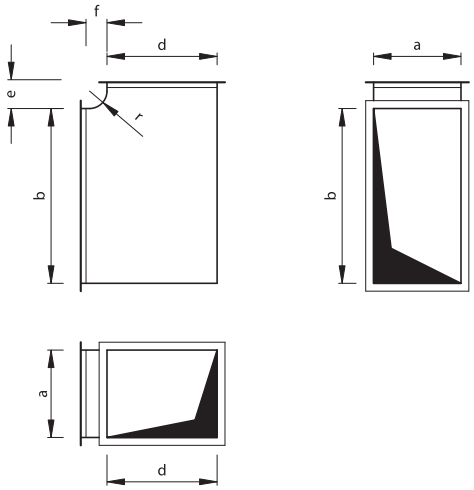
The 90° elbows are fitted with sheet angles, and the entire product is braced by cross-wise ribbing.
The elbows are recommended for low air velocity and/or low-pressure ventilation systems and smaller sizes of side b ≤ 400 mm.
The standard radius is r = 120 mm.
Typical applications of the elbows include rerouting the ductwork by 90 degrees with the inner clearance varying along the elbow path.

Available materials — Product code examples
QBFR-...-...-...-... — galvanized steel sheet
QBFR-...-K-...-...-... — 1.4301/304 stainless steel sheet
QBFR-...-K-...-...-...-316L — 1.4404/316L stainless steel sheet
QBFR-...-A-...-...-... — AW-1050A H24 aluminium sheet

Product code example
Product code: **QBFR - N - OCY - 500x300 - 400 - 30 - 30 - 120**

type
N
S
OCY
KWS
ALU
a
b
d
e
f
r

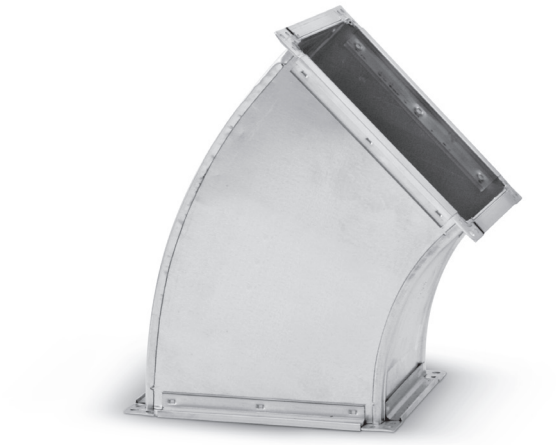
Dimensions



N — low-pressure version
S — medium-pressure version
OCY — galvanized steel
KWS — stainless steel
ALU — aluminium
a — width
b — height
d — outlet height
e — extension (default e = 150 mm)
f — extension (default f = 150 mm)
r — radius (default r = 120 mm)

The elbows are available at 90° *only.* The standard versions are made in default dimension sizes which do not have to be specified.

Rectangular bends
QB



Description

The standard 90° bends are fitted with sheet angles, have an inner and outer rounding, and the entire product is braced by cross-wise ribbing.
The bends are recommended for high air velocity and/or higher pressure ventilation systems and greater sizes of side b > 400 mm.
The standard radius is r = 120 mm. The standard angle is a = 90°.
Typical applications of the bends include rerouting the ductwork by 90° with the same clear cross-section.

Available materials — Product code examples

QB-...-...-...-... — galvanized steel sheet

QB-...-K-...-...-... — 1.4301/304 stainless steel sheet

QB-...-K-...-...-...-316L — 1.4404/316L stainless steel sheet

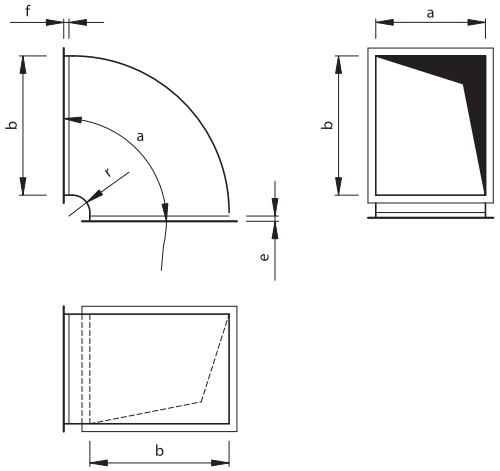
QB-...-A-...-...-... — AW-1050A H24 aluminium sheet

Product code example

Product code: **QB - N - OCY - 500x300 - 30 - 30 - 120 - 90**

type
- N
- S
- OCY
- KWS
- ALU
- a
- b
- e
- f
- r
- α

Dimensions



N — low-pressure version
S — medium-pressure version
OCY — galvanized steel
KWS — stainless steel
ALU — aluminium
a — width
b — height
e — extension (default e = 30 mm)
f — extension (default f = 30 mm)
r — radius (default r = 120 mm)
α — angle (default α = 90°)

Variable clearance bends
QBR

Description

The standard 90° bends are fitted with sheet angles, have an inner and outer rounding, and the entire product is braced by cross-wise ribbing. The bends are recommended for high air velocity and/or higher pressure ventilation systems and greater sizes of side b > 400 mm. The standard radius is r = 120 mm. The standard angle is a = 90°. Typical applications of the elbows include rerouting the ductwork by 90 degrees with the inner clearance varying along the elbow path.

Available materials — Product code examples

QBR-...-...-...-... — galvanized steel sheet

QBR-...-K-...-...-... — 1.4301/304 stainless steel sheet

QBR-...-K-...-...-...-316L — 1.4404/316L stainless steel sheet

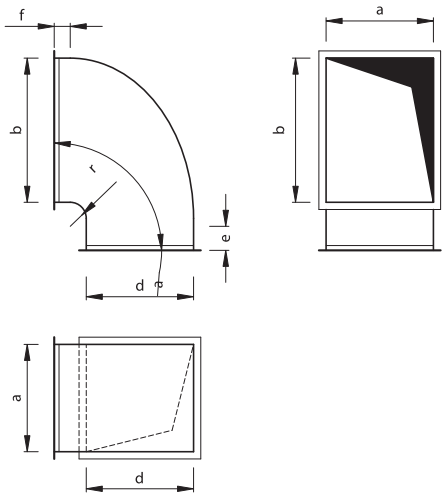
QBR-...-A-...-...-... — AW-1050A H24 aluminium sheet

Product code example

Product code: **QBR - N - OCY - 500x300 - 400 - 30 - 30 - 120-90**

type
N
S
OCY
KWS
ALU
a
b
d
e
f
r
α

Dimensions



N — low-pressure version
S — medium-pressure version
OCY — galvanized steel
KWS — stainless steel
ALU — aluminium
a — width
b — height
d — outlet height
e — extension (default e = 30 mm)
f — extension (default f = 30 mm)
r — radius (default r = 120 mm)
α — angle (default α = 90°)

The standard versions are made in default dimension sizes which do not have to be specified.

Diffuser bends

QBR1

Description

The standard 90° bends are fitted with sheet angles, have an inner and outer rounding, and the entire product is braced by cross-wise ribbing. The bends are recommended for high air velocity and/or higher pressure ventilation systems and greater sizes of side a > 400 mm.
The standard radius is r = 120 mm. The standard angle is a = 90°.
Typical applications of the bends include rerouting the ductwork by 90 degrees with the inner clearance varying in two planes along the bend path. A diffuser bend does not require vanes. The product can feature additional bracing with baffles on request.

Available materials — Product code examples

QBR1-...-...-...-... — galvanized steel sheet

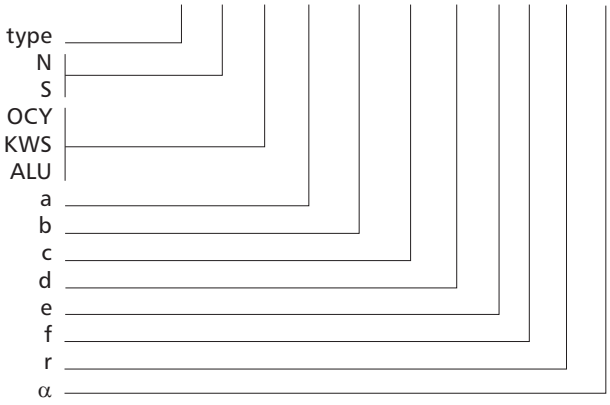
QBR1-...-K-...-...-... — 1.4301/304 stainless steel sheet

QBR1-...-K-...-...-...-316L — 1.4404/316L stainless steel sheet

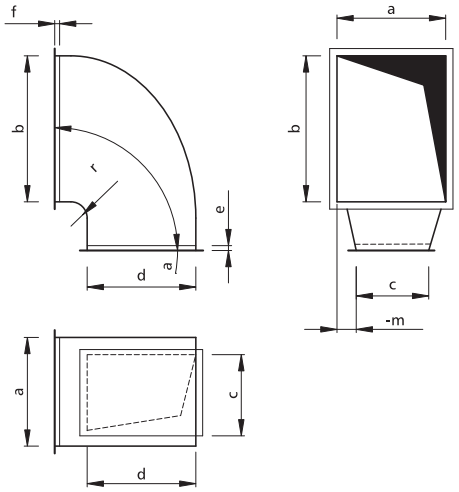
QBR1-...-A-...-...-... — AW-1050A H24 aluminium sheet

Product code example

Product code: **QBR1-N-OCY-500x300x400-200-30-30-120-90**



Dimensions



N — low-pressure version
S — medium-pressure version
OCY — galvanized steel
KWS — stainless steel
ALU — aluminium
a — width
b — height
c — outlet width
d — outlet height
e — extension (default e = 30 mm)
f — extension (default f = 30 mm)
r — radius (default r = 120 mm)
α — angle (default α = 90°)

The standard versions are made in default dimension sizes which do not have to be specified.

Eccentric reducers

QPR2

Description

The eccentric reducers are adapters designed for coupling two rectangular ducts of different sizes.
The ends are fitted with sheet angles, and the entire fitting is braced by cross-wise ribbing.
The eccentric reducers help route the ventilation ductwork with liberal modifications of all duct dimensions and offsetting the centreline by any value in both directions.

Available materials — Product code examples

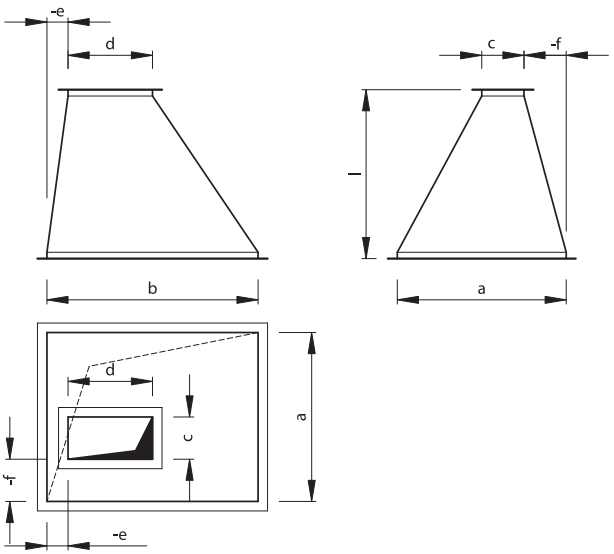
QPR2-...-...-...-... — galvanized steel sheet

QPR2-...-K-...-...-... — 1.4301/304 stainless steel sheet

QPR2-...-K-...-...-...-316L — 1.4404/316L stainless steel sheet

QPR2-...-A-...-...-... — AW-1050A H24 aluminium sheet

Dimensions



Product code example

Product code: **QPR2-N-OCY-500x300-400x200-30-30-300-300-300**

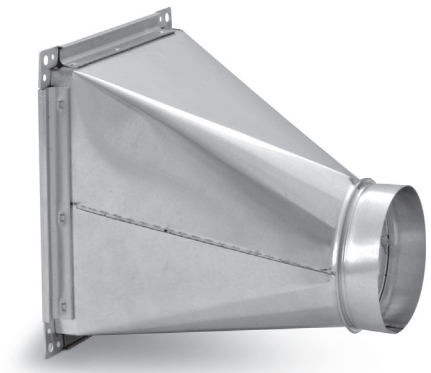
type
N
S
OCY
KWS
ALU
a
b
c
d
e
f
h
m
l

N — low-pressure version
S — medium-pressure version
OCY — galvanized steel
KWS — stainless steel
ALU — aluminium
a — width
b — height
c — outlet width
d — outlet height
e — vertical offset
f — horizontal offset
h — extension (default h = 30 mm)
m — extension (default m = 30 mm)
l — length

The standard versions are made in default dimension sizes which do not have to be specified.

Eccentric square-to-round transitions

PR7/PRL7



Description

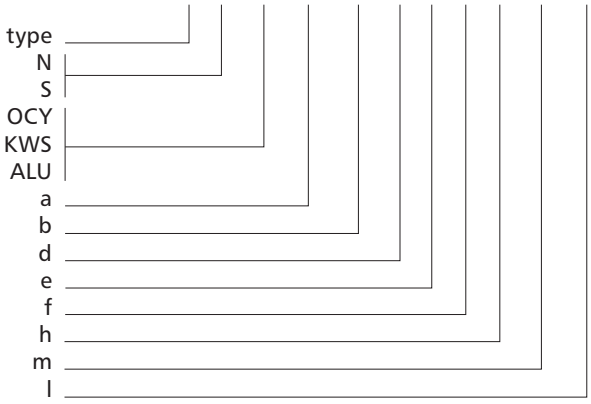
This transition piece changes the ductwork shape from rectangular to round.
The fitting helps route the ventilation ductwork with liberal modifications of all duct dimensions and offsetting the centreline by any value in both directions.
The round connector is male in the standard version. The PRL7 fittings have a male connector fitted with a gasket.

Available materials — Product code examples

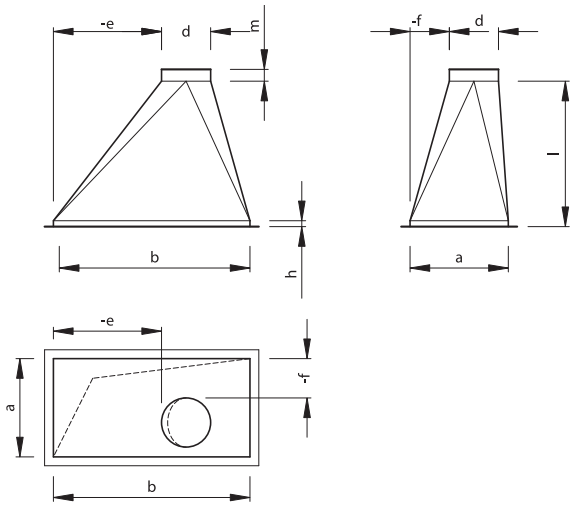
PR7 -...-...-...	— galvanized steel sheet
PR7-...-K-...-...-...	— 1.4301/304 stainless steel sheet
PR7-...-K-...-...-...- 316L	— 1.4404/316L stainless steel sheet
PR7-...-A-...-...-...	— AW-1050A H24 aluminium sheet

Product code example

Product code: **PR7-N-OCY-500x300-50-30-30-50-800-300**



Dimensions



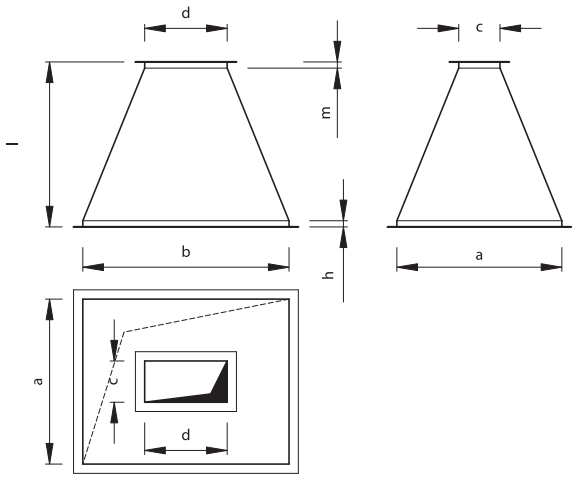
PR7 — type w/o gasket
PRL7 — type w/gasket
N — low-pressure version
S — medium-pressure version
OCY — galvanized steel
KWS — stainless steel
ALU — aluminium
a — width
b — height
d — diameter
e — vertical offset
f — horizontal offset
h — extension (default h = 30 mm)
m — flange length (default m = 50 *mm*)
l — length

The standard versions are made in default dimension sizes which do not have to be specified.

Concentric reducers

QPR6

Dimensions



Description

The reducers are adapters designed for coupling two rectangular ducts of different sizes.
The ends are fitted with sheet angles, and the entire fitting is braced by cross-wise ribbing.
The reducers help in routing ductwork at points where a symmetric cross-section reduction is required. The ducts are kept coaxial at both ends.

Available materials — Product code examples

QPR6 -...-...-... — galvanized steel sheet

QPR6-...-K-...-...-.. . — 1.4301/304 stainless steel sheet

QPR6-...-K-...-...-...-316L — 1.4404/316L stainless steel sheet

QPR6-...-A-...-...-... — AW-1050A H24 aluminium sheet

Product code example

Product code: **QPR6-N-OCY-500x300-400x200-30-30-300**

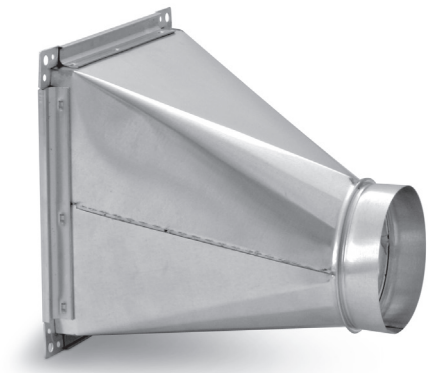
type
N
S
OCY
KWS
ALU
a
b
c
d
h
m
l

N — low-pressure version
S — medium-pressure version
OCY — galvanized steel
KWS — stainless steel
ALU — aluminium
a — width
b — height
c — inlet clear width
d — inlet height
h — extension (default h = 30 mm)
m — extension (default m = 30 mm)
l — length

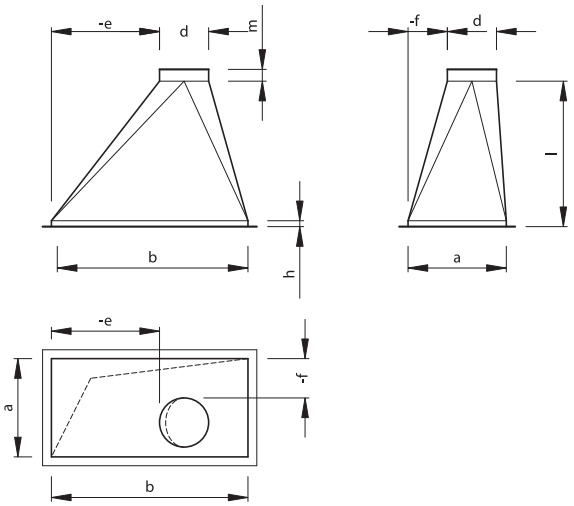
The standard versions are made in default dimension sizes which do not have to be specified.

Concentric square-to-round transitions

PR1/PRL1



Dimensions



Description

This transition piece changes the ductwork shape from square to round.
This fitting helps in routing round and rectangular ducts with the centrelines aligned.
The square connector has a flange frame in the standard version.
The round connector is male in the standard version.
The PRL1 fittings have a male connector fitted with a gasket.

Available materials — Product code examples

QPR1 -...-...-... — galvanized steel sheet

QPR1-...-K-...-...-.. . — 1.4301/304 stainless steel sheet

QPR1-...-K-...-...-... - 316L — 1.4404/316L stainless steel sheet

QPR1-...-A-...-...-... — AW-1050A H24 aluminium sheet

Product code example

Product code: **PR1 - N - OCY - 500x300 - 250 - 30 - 30 - 800**

type
N
S
OCY
KWS
ALU
a
b
d
h
m
l

PR1 — type w/o gasket
PRL1 — type w/gasket
N — low-pressure version
S — medium-pressure version
OCY — galvanized steel
KWS — stainless steel
ALU — aluminium
a — width
b — height
d — diameter
h — extension (default h = 30 mm)
m — flange length (default m = 50 *mm*)
l — length

The standard versions are made in default dimension sizes which do not have to be specified.

Offsets

QPR3

Description

Offsets help bypassing obstacles along the ductwork route, e.g. at intersections of two ducts.
The ends are fitted with sheet angles, and the entire fitting is braced by cross-wise ribbing.
To achieve the required air flow rate, appropriate length sizes l and offset sizes e should be used.

Available materials — Product code examples

QPR3 -...-...-... — galvanized steel sheet

QPR3-...-K-...-...-.. . — 1.4301/304 stainless steel sheet

QPR3-...-K-...-...-... - 316L — 1.4404/316L stainless steel sheet

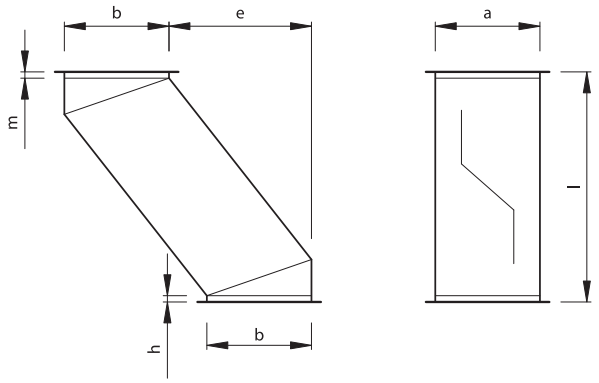
QPR3-...-A-...-...-... — AW-1050A H24 aluminium sheet

Product code example

Product code: **QPR3 - N - OCY - 500 x 300 - 100 - 30 - 30 - 300**

type
N
S
OCY
KWS
ALU
a
b
e
h
m
l

Dimensions



N — low-pressure version
S — medium-pressure version
OCY — galvanized steel
KWS — stainless steel
ALU — aluminium
a — width
b — height
e — offset
h — extension (default h = 30 mm)
m — extension (default m = 30 mm)
l — length

The standard versions are made in default dimension sizes which do not have to be specified.

Offsets

QPR4

Description

Variable diameter offsets facilitate bypassing obstacles along the ductwork route while changing the connected duct height, which helps building intersections of two ducts. The ends are fitted with sheet angles, and the entire fitting is braced by cross-wise ribbing. To achieve the required air flow rate, appropriate length sizes l and offset sizes e should be used.

Available materials — Product code examples

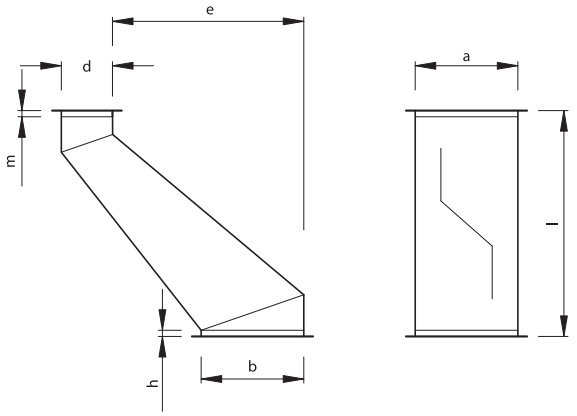
QPR4 -...-...-... — galvanized steel sheet

QPR4-...-K-...-...-.. . — 1.4301/304 stainless steel sheet

QPR4-...-K-...-...-... - 316L — 1.4404/316L stainless steel sheet

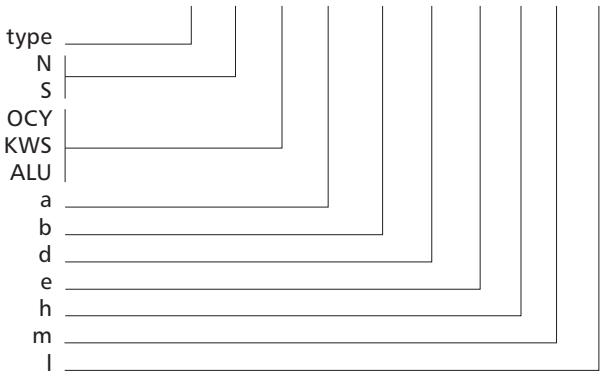
QPR4-...-A-...-...-... — AW-1050A H24 aluminium sheet

Dimensions



Product code example

Product code: **QPR4-N-OCY-500x300-200-100-30-30-800**

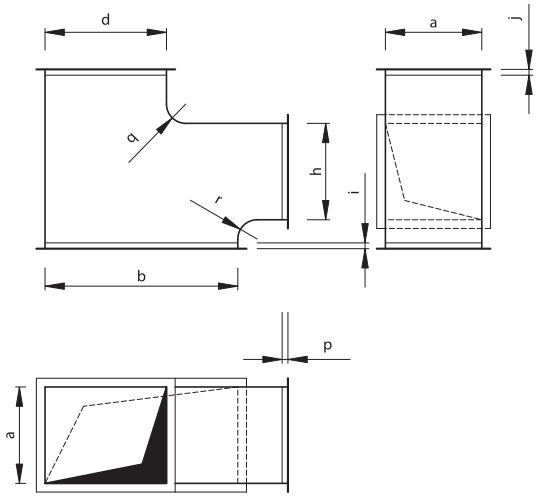


N — low-pressure version
S — medium-pressure version
OCY — galvanized steel
KWS — stainless steel
ALU — aluminium
a — width
b — height
d — outlet height
e — offset
h — extension (default h = 30 mm)
m — flange length (default m = 30 *mm*)
l — length

The standard versions are made in default dimension sizes which do not have to be specified.

Equal T-pieces
TR

Dimensions



Description

The T-piece ends are fitted with sheet angles, and the entire fitting is braced by cross-wise ribbing.
This fitting allows building ductwork with a branch taken off at 90 degrees.
The T-piece height a is fixed.

Available materials — Product code examples

TR -...-...-... -...-...	— galvanized steel sheet
TR-...-K-...-...-.. .-...	— 1.4301/304 stainless steel sheet
TR-...-K-...-...-... -... - 316L	— 1.4404/316L stainless steel sheet
TR-...-A-...-...-...-...	— AW-1050A H24 aluminium sheet

Product code example

Product code **TR - N - OCY - 500x300 - 250 - 200 - 30 - 30 - 30 - 120 - 120**

- type
- N
- S
- OCY
- KWS
- ALU
- a
- b
- d
- h
- i
- j
- p
- q
- r

N — low-pressure version
S — medium-pressure version
OCY — galvanized steel
KWS — stainless steel
ALU — aluminium
a — width
b — height
d — outlet height
h — take-off height
i — extension (default i = 30 mm)
j — extension (default j = 30 mm)
p — extension (default p = 30 mm)
q — radius (default q = 120 mm)
r — radius (default r = 120 mm)

The standard versions are made in default dimension sizes which do not have to be specified.

T-pieces with square take-off
TR1

Description

The T-piece ends are fitted with sheet angles, and the entire fitting is braced by cross-wise ribbing.
The T-piece helps building ductwork with a take-off branch at 90 degrees and a reduced size. The inlet and outlet sizes are the same.

Available materials — Product code examples

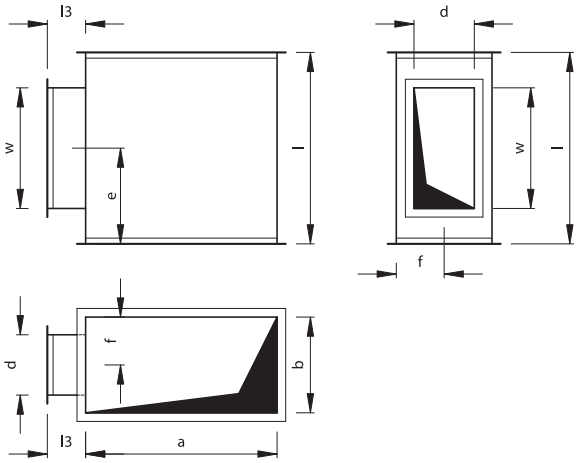
TR1 -...-...-...-...-... — galvanized steel sheet

TR1-...-K-...-...-...-... — 1.4301/304 stainless steel sheet

TR1-...-K-...-...-...-...- 316L — 1.4404/316L stainless steel sheet

TR1-...-A-...-...-...-... — AW-1050A H24 aluminium sheet

Dimensions



Product code example

Product code: **TR1 - N - OCY - 500x300 - 600 - 450x250 - 20 - 20 - 100**

type
- N
- S

OCY
KWS
ALU

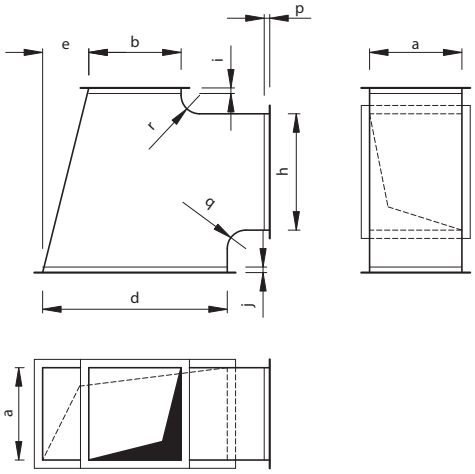
- a
- b
- l
- w
- d
- e
- f
- l_3

N — low-pressure version
S — medium-pressure version
OCY — galvanized steel
KWS — stainless steel
ALU — aluminium
a — width
b — height
l — length
w — take-off length
d — take-off width
e — take-off offset in length
f — take-off offset in width
l_3 — take-off length (default I3 = 100 mm)

The standard versions are made in default dimension sizes which do not have to be specified.

Reducing T-pieces
TR7

Dimensions



Description

The T-piece ends are fitted with sheet angles, and the entire fitting is braced by cross-wise ribbing.
The T-piece helps building ductwork with a take-off branch at 90 degrees, reduction of the main duct clear passage and an offset by any value of size m.

Available materials — Product code examples

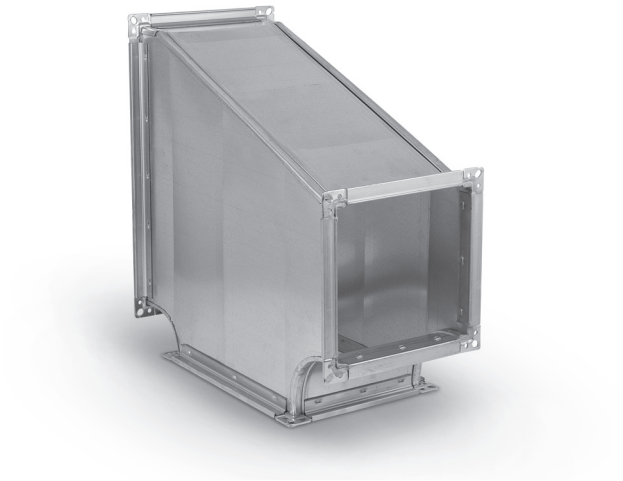
TR7 -...-...-...-...-...	— galvanized steel sheet
TR7-...-K-...-...-...-...	— 1.4301/304 stainless steel sheet
TR7-...-K-...-...-...-...- 316L	— 1.4404/316L stainless steel sheet
TR-...-A-...-...-...-...	— AW-1050A H24 aluminium sheet

Product code example
Product code: **TR7-N-OCY-500x200-300-450-30-30-30-120-120-120**

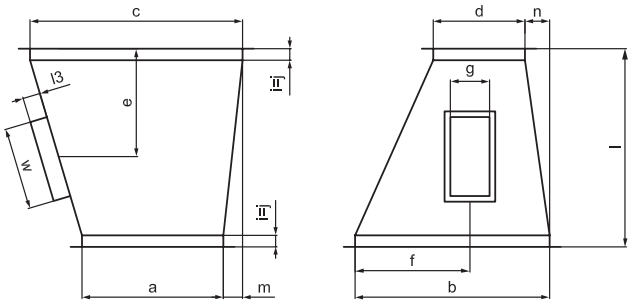
type	
N	— low-pressure version
S	— medium-pressure version
OCY	— galvanized steel
KWS	— stainless steel
ALU	— aluminium
a	— width
b	— height
d	— outlet height
h	— take-off height
i	— extension (default i = 30 mm)
j	— extension (default j = 30 mm)
p	— extension (default p = 30 mm)
q	— radius (default q = 120 mm)
r	— radius (default r = 120 mm)
e	— offset

The standard versions are made in default dimension sizes which do not have to be specified.

Concentric reducing T-pieces
TR8



Dimensions



Description

The T-piece ends are fitted with sheet angles, and the entire fitting is braced by cross-wise ribbing.
The T-piece helps building ductwork with a take-off branch at 90 degrees, reduction of the main duct clear passage and an offset by any value of size m.
The take-off can be fabricated with height other than that of the T-piece.

Available materials — Product code examples

TR8 -...-...-...-...-... — galvanized steel sheet

TR8-...-K-...-...-...-... — 1.4301/304 stainless steel sheet

TR8-...-K-...-...-...-...- 316L — 1.4404/316L stainless steel sheet

TR8-...-A-...-...-...-... — AW-1050A H24 aluminium sheet

Product code example

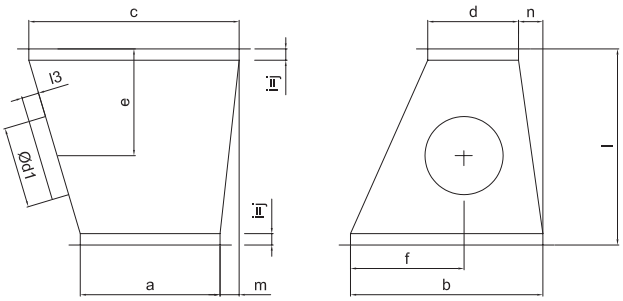
Product code: **TR8-N-OCY-300x500-400x200-600-400x150-100-50-50-80-90-30-30**

type	
N	— low-pressure version
S	— medium-pressure version
OCY	— galvanized steel
KWS	— stainless steel
ALU	— aluminium
a	— width
b	— height
c	— outlet width
d	— outlet height
l	— length
w	— take-off length
g	— take-off width
l_3	— take-off length (default l_3 = 100 mm)
m	— vertical offset
n	— horizontal offset
e	— take-off offset in length
f	— take-off offset in width
i	— extension (default i = 30 mm)
j	— extension (default j = 30 mm)

The standard versions are made in default dimension sizes which do not have to be specified.

Concentric reducing T-pieces
TR9

Dimensions



Description

The concentric reducing T-piece ends are fitted with sheet angles, and the entire fitting is braced by cross-wise ribbing. The round take-off connector is male and located symmetrically in the side wall.
This fitting helps building ductwork with a round take-off at an angle; the angle value depends on the wall slope at the take-off side.

Available materials — Product code examples

TR9 -...-...-...-...-... — galvanized steel sheet

TR9-...-K-...-...-...-... — 1.4301/304 stainless steel sheet

TR9-...-K-...-...-...-...- 316L — 1.4404/316L stainless steel sheet

TR9-...-A-...-...-...-... — AW-1050A H24 aluminium sheet

Product code example

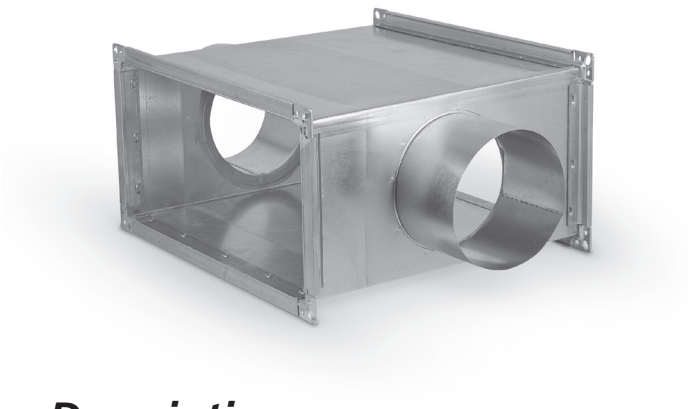
Product code: **TR9-N-OCY-300x500-400x200-600-125-100- 50-50-80-90- 30-30**

type
N
S
OCY
KWS
ALU
a
b
c
d
l
d_1
l_3
m
n
e
f
i
j

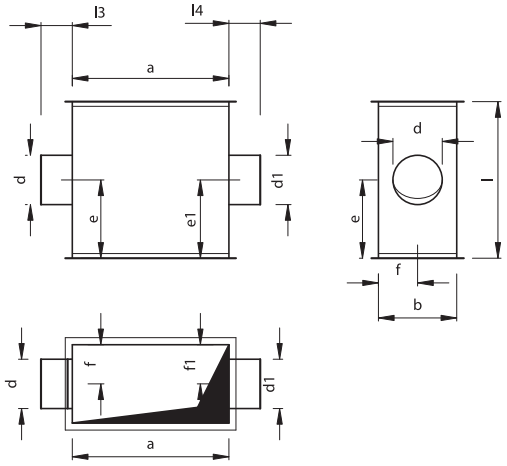
N — low-pressure version
S — medium-pressure version
OCY — galvanized steel
KWS — stainless steel
ALU — aluminium
a — width
b — height
c — outlet height
d — take-off height
l — extension (default l = 30 mm)
d_1 — take-off diameter
l_3 — take-off length (default l_3 = 30 mm)
m — vertical offset
n — horizontal offset
e — take-off offset in length
f — take-off offset in width
i — extension (default i = 30 mm)
j — extension (default j = 30 mm)

The standard versions are made in default dimension sizes which do not have to be specified.

Four-way pieces with round take-offs
CZ2



Dimensions



Description

All four-way pieces with round take-offs are fitted with flange frames made of sheet angles and braced by cross-wise ribbing. The round take-off ports are coaxial in the standard version. The standard round take-off ports are male; the CZL2 version is available on request with male connectors fitted with gaskets.

Available materials — Product code examples

CZ2-...-...-...-...-... — galvanized steel sheet

CZ2-...-K-...-...-...-... — 1.4301/304 stainless steel sheet

CZ2-...-K-...-...-...-...- 316L — 1.4404/316L stainless steel sheet

CZ2-...-A-...-...-...-... — AW-1050A H24 aluminium sheet

Product code example

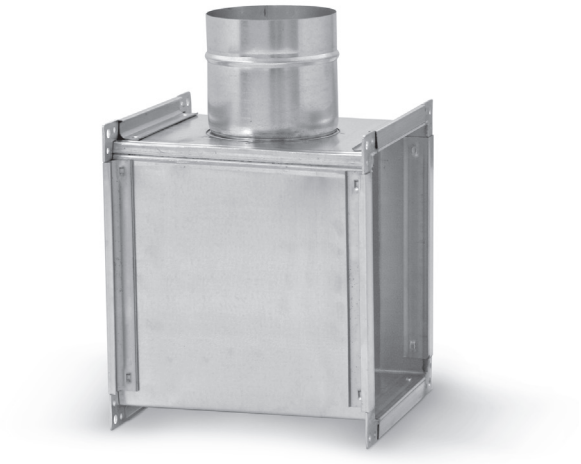
Product code: **CZ2 - N - OCY - 500x300 - 400 - 160 - 50 - 80 - 100 - 150 - 100 - 80 - 100**

type
N
S
OCY
KWS
ALU
a
b
l
d
e
f
l_3
d_1
e_1
f_1
l_4

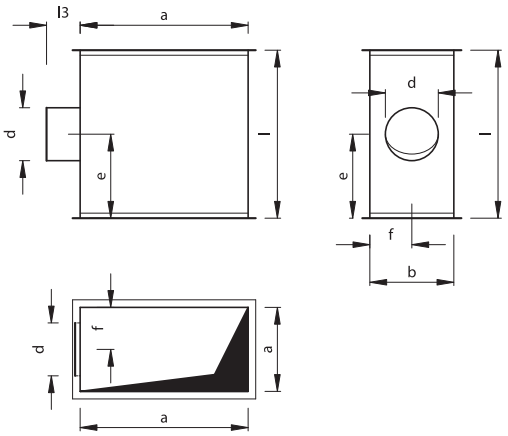
N — low-pressure version
S — medium-pressure version
OCY — galvanized steel
KWS — stainless steel
ALU — aluminium
a — width
b — height
l — length
d — take-off diameter
e — take-off offset in length
f — take-off offset in width
l_3 — take-off height (default l_3 = 100 mm)
d_1 — take-off diameter
e_1 — take-off offset in length
f_1 — take-off offset in width
l_4 — take-off height

If all dimensions of both take-off ports are identical, they are aligned according to the default sizing.

T-pieces with round take-off
TR2



Dimensions



Description

All T-pieces with round take-offs are fitted with flange frames made of sheet angles and braced by cross-wise ribbing.
The round take-off port is coaxial in the standard version.
The standard round take-off port is male; the TRL2 version is available on request with male connector fitted with gaskets.

Available materials — Product code examples
TR2 -...-...-...-...-... — galvanized steel sheet
TR2-...-K-...-...-...-... — 1.4301/304 stainless steel sheet
TR2-...-K-...-...-...-...-316L — 1.4404/316L stainless steel sheet
TR2-...-A-...-...-...-... — AW-1050A H24 aluminium sheet

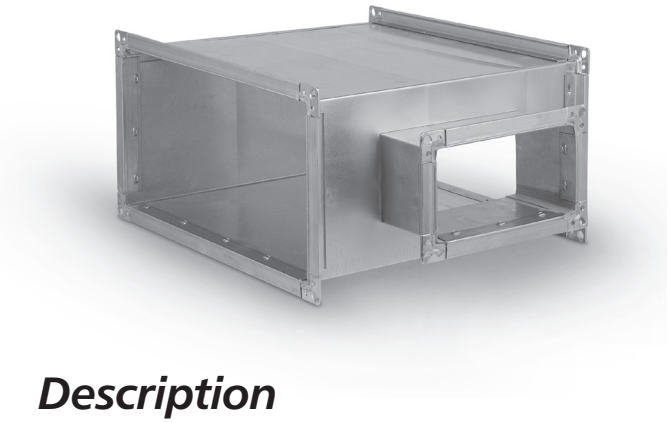
Product code example
Product code: **TR2 - N - OCY - 500x300 - 250 - 160 - 30 - 60 - 100**

type
N
S
OCY
KWS
ALU
a
b
l
d
e
f
l_3

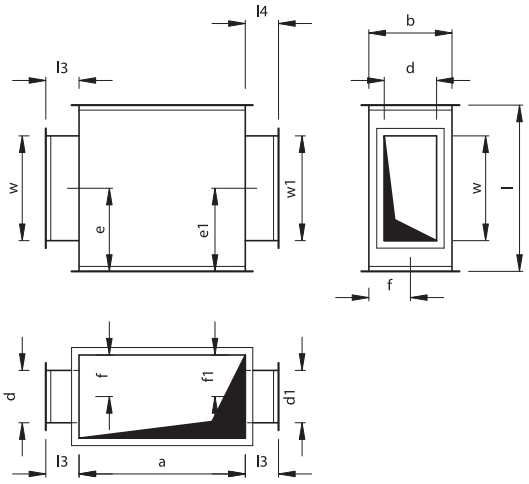
N — low-pressure version
S — medium-pressure version
OCY — galvanized steel
KWS — stainless steel
ALU — aluminium
a — width
b — height
l — length
d — diameter
e — offset in length
f — offset in width
l_3 — take-off length (default l_3 = 100 mm)

The standard versions are made in default dimension sizes which do not have to be specified.

Four-way pieces with square take-offs
CZ1



Dimensions



Description

The four-way piece ends are fitted with sheet angles, and the entire fitting is braced by cross-wise ribbing.

This fitting allows building ductwork with branches taken off at 90 degrees.

Available materials — Product code examples

CZ1-...-...-...-...-... — galvanized steel sheet
CZ1-...-K-...-...-...-... — 1.4301/304 stainless steel sheet
CZ1-...-K-...-...-...-... - 316L — 1.4404/316L stainless steel sheet
CZ1-...-A-...-...-...-... — AW-1050A H24 aluminium sheet

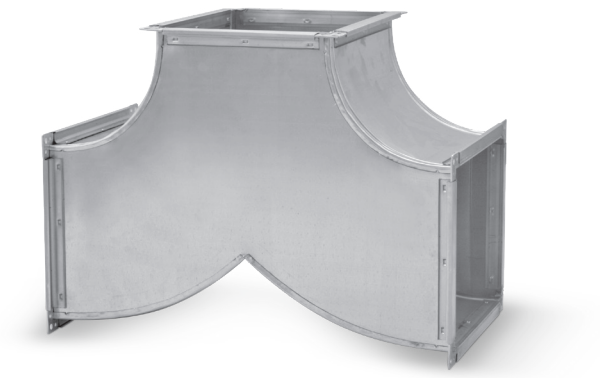
Product code example

Product code: **CZ1-N-OCY-500x300-400-200x150-200-150-100-100-80-60-60-100**

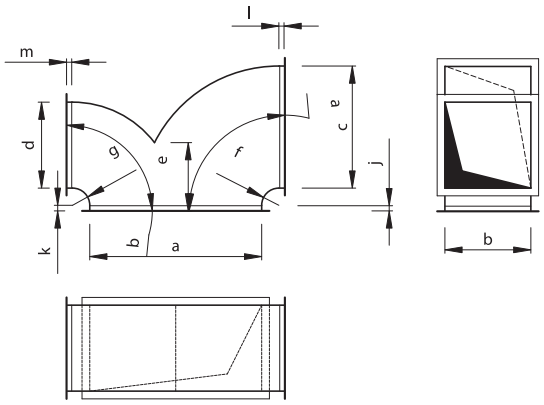
type	
N	— low-pressure version
S	— medium-pressure version
OCY	— galvanized steel
KWS	— stainless steel
ALU	— aluminium
a	— width
b	— height
l	— length
w	— take-off length
d	— take-off width
e	— take-off offset in length
f	— take-off offset in width
l_3	— take-off height (default l_3 = 100 mm)
w_1	— take-off length
d_1	— take-off width
e_1	— take-off offset in length
f_1	— take-off offset in width
l_4	— take-off height (default l_4 = 100 mm)

If all dimensions of both take-off ports are identical, they are aligned according to the default sizing.

Wye tee
TR3



Dimensions



Description

The wye tees are fitted with sheet angles, and the entire fitting is braced by cross-wise ribbing. This fitting allows building the ductwork with two take-offs set at any angle.
The width may vary between the two take-off ports.
Vanes can be installed.

Available materials — Product code examples

TR3-...-...-...-...-... — galvanized steel sheet

TR3-...-K-...-...-...-... — 1.4301/304 stainless steel sheet

TR3-...-K-...-...-...-...-316L — 1.4404/316L stainless steel sheet

TR3-...-A-...-...-...-... — AW-1050A H24 aluminium sheet

Product code example

Product code: **TR3-N-OCY-500x300-300-200-100-120-120-90-90-30-30-30-30**

type
N
S
OCY
KWS
ALU
a
b
c
d
e
f
g
β
α
j
k
l
m

N — low-pressure version
S — medium-pressure version
OCY — galvanized steel
KWS — stainless steel
ALU — aluminium
a — width
b — height
c — take-off 1 height
d — take-off 2 height
e — base length
f — radius (default f = 120 mm)
g — radius (default g = 120 mm)
β — angle (default α = 90°)
α — angle (default α = 90°)
j — extension (default j = 30 mm)
k — extension (default k = 30 mm)
l — extension (default l = 30 mm)
m — extension (default m = 30 mm)

Wye tee

TR5

Description

The wye tee (pant) are fitted with sheet angles, and the entire fitting is braced by cross-wise ribbing.
The wye te divides the air flow between two parallel legs.

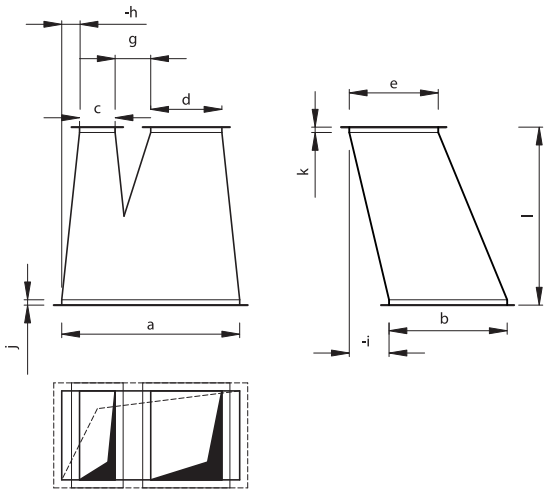
Available materials — Product code examples

TR5-...-...-...-...-... — galvanized steel sheet

TR5-...-K-...-...-...-... — 1.4301/304 stainless steel sheet

TR5-...-K-...-...-...-...-316L — 1.4404/316L stainless steel sheet
TR5-...-A-...-...-...-... — AW-1050A H24 aluminium sheet

Dimensions



Product code example

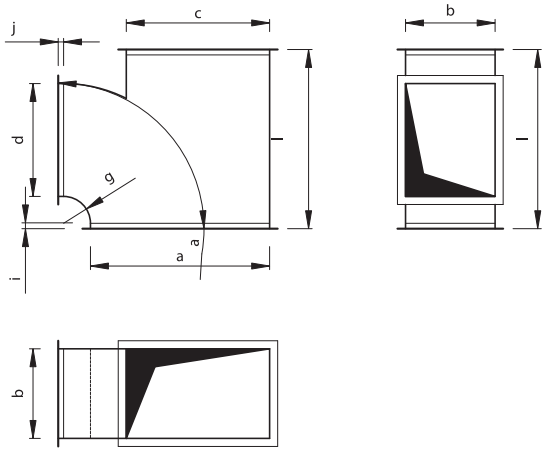
Product code: **TR5 - N - OCY - 500x300 - 100 - 200 - 200 - 600 - 60 - 40 - 60 - 20 - 20**

type	
N	— low-pressure version
S	— medium-pressure version
OCY	— galvanized steel
KWS	— stainless steel
ALU	— aluminium
a	— height
b	— inlet width
c	— left-hand clear height
d	— right-hand clear height
e	— outlet width
l	— length
g	— take-off spacing
h	— horizontal offset
i	— vertical offset
j	— extension (default j = 30 mm)
k	— extension (default k = 30 mm)

T-pieces with take-off bend

TR4

Dimensions



Description

All T-pieces with take-off bends are fitted with flange frames made of sheet angles and braced by cross-wise ribbing.
A take-off bend provides smooth distribution of air without increasing the flow turbulence due to the presence of a vane.

Available materials — Product code examples

TR4-...-...-...-...-... — galvanized steel sheet

TR4-...-K-...-...-...-... — 1.4301/304 stainless steel sheet

TR4-...-K-...-...-...-...-316L — 1.4404/316L stainless steel sheet

TR4-...-A-...-...-...-... — AW-1050A H24 aluminium sheet

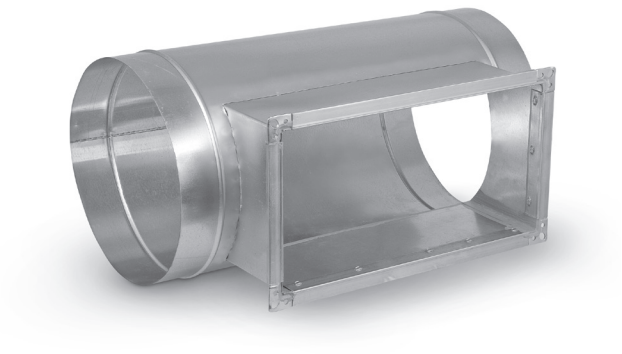
Product code example

Product code: **TR4 - N - OCY - 500x300 - 300 - 200 - 600 - 20 - 90 - 30 - 30**

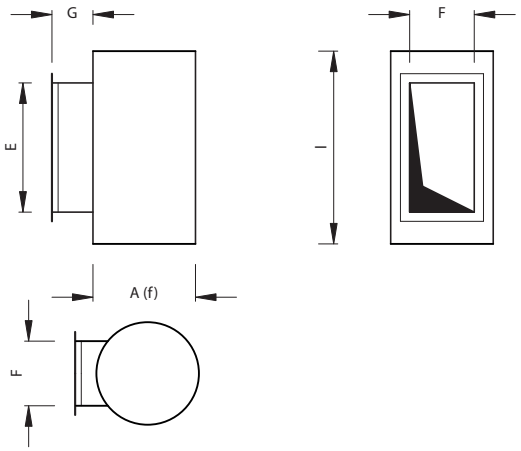
type	
N	— low-pressure version
S	— medium-pressure version
OCY	— galvanized steel
KWS	— stainless steel
ALU	— aluminium
a	— width
b	— height
c	— clear height
d	— take-off height
l	— length
g	— radius (default g = 120 mm)
α	— angle (default α = 90°)
j	— extension (default j = 30 mm)
k	— extension (default k = 30 mm)

Round duct T-connectors

TR6



Dimensions



Description

The T-connectors allow building a T-connection between a round and a square duct. One end features a flange frame of sheet angles or a hemmed flange. The round duct ends are provided with hemming for sheet screws in the standard version.
T-connectors can be fabricated as a fully round T-pieces on request.

Available materials — Product code examples

TR6-...-...-...-...-... — galvanized steel sheet

TR6-...-K-...-...-...-... — 1.4301/304 stainless steel sheet

TR6-...-K-...-...-...-...-316L — 1.4404/316L stainless steel sheet

TR6-...-A-...-...-...-... — AW-1050A H24 aluminium sheet

Product code example

Product code: **TR6 - N - OCY - 630 - 500 - 250x400 - 60**

type
- N
- S

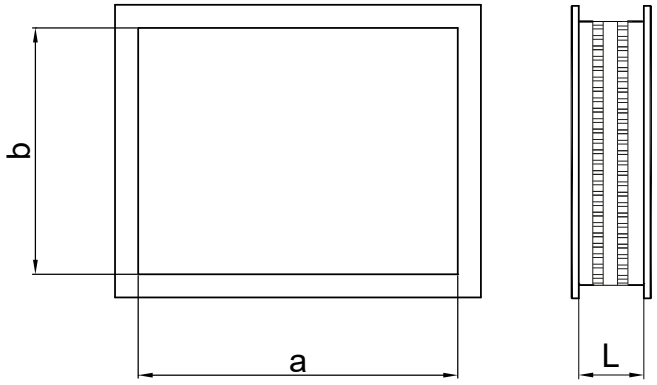
OCY
KWS
ALU
- a
- l
- e
- f
- g

N — low-pressure version
S — medium-pressure version
OCY — galvanized steel
KWS — stainless steel
ALU — aluminium
a — duct diameter
l — round duct length
e — take-off length
f — take-off width
g — take-off height

The standard versions are made in default dimension sizes which do not have to be specified.

Rectangular flexible duct connector
QILA

Dimensions



Max. width a: 2500 mm.
Max. height b: 2500 mm

Standard lengths - L -of the flexible duct connector: 130, 150 or 240 mm
(depending on the AMT flexible connetion used for production)

Description

Flexible duct connector for rectangular ducts and elements. It is made of PQ flange channel and NQ corners interconnected by AMT flexible connection. Rectangular flexible duct connectors can be used to join ventilation ducts but above all it is used to eliminate vibrations caused by air handling units and fans. The design of the AMT flexible duct connector (a joint consisting of a layer of fabric and two strips of sheet metal on both sides)ensures very good airtightness.

Available materials

QILA -…-…-… - galvanized steel sheet, PVC coated fabric
QILA- -HI-T-…-…-… - galvanised steel sheet, silicone coated fabric
QILA-PU-…-…-… - galvanised steel sheet, polyurethane (PU) coated fabric
QILA-K-PU-…-…-… - stainless steel polyurethane (PU) coated
QILA-NEP-…-…-… - galvanised steel sheet, neoprene coated fabric

Example identification

Product code: **QILA-PU - aaa - bbb - ccc**

type
length
width a
height b

Technical Data

	Temperature range	*Characteristics*
PVC	-30 °C / +80 °C	General use, economical choic
Silicone (HI-T)	-30 °C / +260 °C	Resistance to high temperatures , high resistance to aging, weather conditions and chemical substances
Polyurethane (PU)	-30 °C / +180 °C	High abrasion resistance
Neoprene	-30 °C / +180 °C	Synthetic rubber, suitable for outdoor use, High resistance to alkalis and petrol.

AMT flexible connection used for flexible duct connectors' production was tested at 400 °C for 2 hours (PU and HI-T material). None of the tested flexible duct connectors suffered mechanical damage due to the heat treatment.

End caps
QES

Description

The end caps stops square duct ends.
The product is made from galvanized steel sheet.
The flange is made of sheet angles.

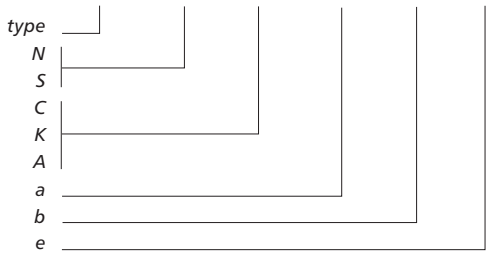
Available materials — Product code examples
QES-...-...-... -...-... — galvanized steel sheet

QES-...-K-...-...-.. .-... — 1.4301/304 stainless steel sheet

QES-...-K-...-...-... -... - 16L — 1.4404/316L stainless steel sheet
QES-...-A-...-...-...-... — AW-1050A H24 aluminium sheet

Product code example

Product code **QES – N – C – 500 × 300 – 30**



N — *low-pressure version*
S — *medium-pressure version*
C — *galvanized steel*
K — *stainless steel*
A — *aluminium*
a — *width*
b — *height*
e — *extension (default e = 30 mm)*

The standard versions are made in default dimension sizes which do not have to be specified.

Dimensions