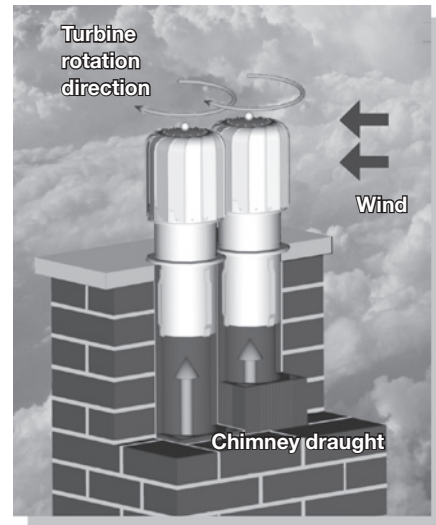


PICTURE



FUNCTION PRINCIPLE



DESCRIPTION

Rotary chimney cowl Turbowent Tulipan is a device, which, in a dynamic way, uses force of the wind to increase chimney draught. The turbine always rotates in the same direction no matter of the wind strength or its direction. It is to be mounted on gravitation based ventilation chimney duct endings. The construction of the cowl allows it to be mounted on chimney ducts which are very close to each other. The patented force-in mounting method allows the cowl to be mounted

without any additional devices needed.

Maximal working temperature: 150 [°C]

Rotating unit: ball bearing system sunk in high-temperature oil

Noise level: 26 dB

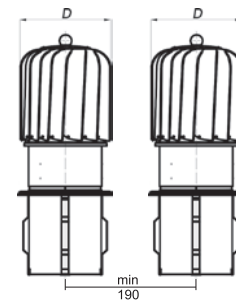
This solution is reserved in the RP Patent Office

DESTINATION

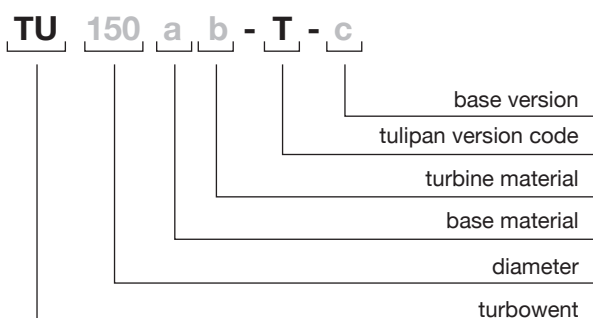
- when there are wind fluctuations on the chimney duct ending, caused by its bad location
- when there is an unfavorable terrain configuration, with strong and frequent winds
- when there is a lack of chimney draught or it is too weak
- in order to improve the natural (gravitation) ventilation

MEASUREMENTS

Diameter	Turbine diameter D
Ø 150	~ 188



DENOTATIONS / PRODUCT CODES

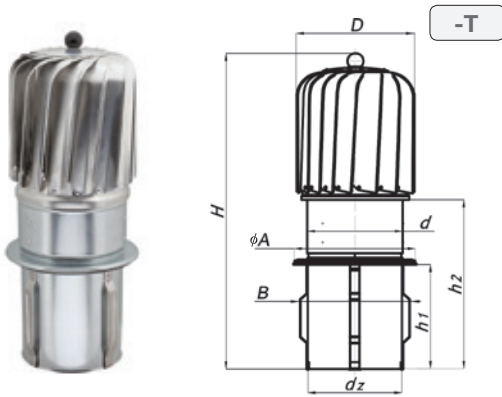


MATERIALS

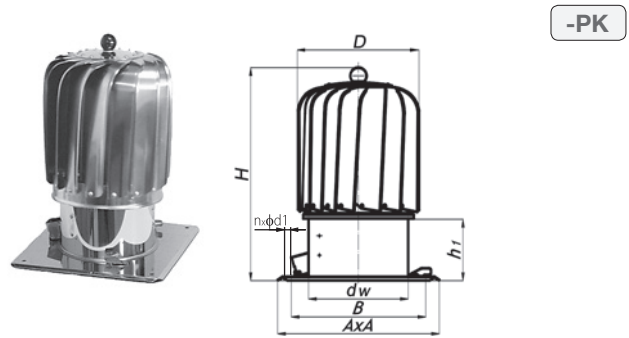
	W	W	W	W	W - ventilation ducts
Destination	-	-	-	-	S - gas and oil exhaust ducts
	-	-	-	-	D - smoke ducts
	-	-	-	-	
Base material	CH	-	CH	-	CH - chrome-nickel sheet 1.4301
	-	OC	-	-	OC - galvanised steel sheet
	-	-	-	-	AL - aluminum
	-	-	-	ML	ML - powder coated
Turbine material	CH	-	-	-	CH - chrome-nickel sheet 1.4301
	-	AL	AL	-	AL - aluminum
	-	-	-	ML	ML - powder coated

TULIPAN - VERSIONS OF BASES

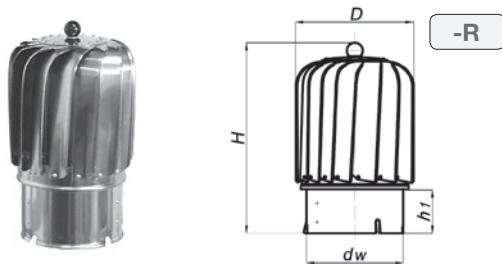
1. FORCE-IN MOUNTING BASE



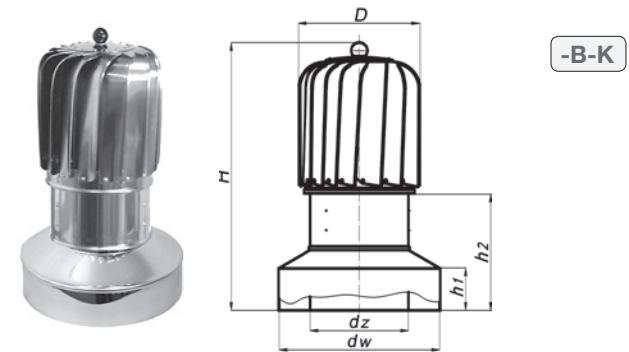
2. SQUARE BASE



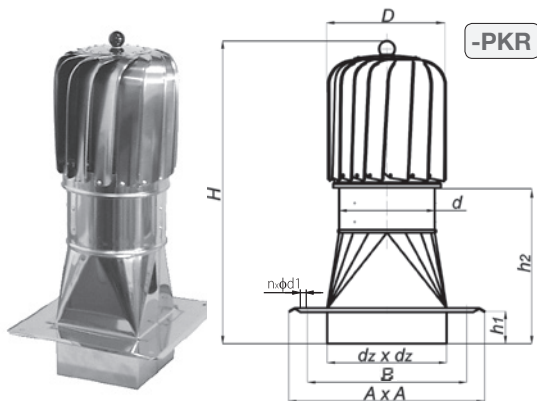
3. DISMOUNTABLE BASE



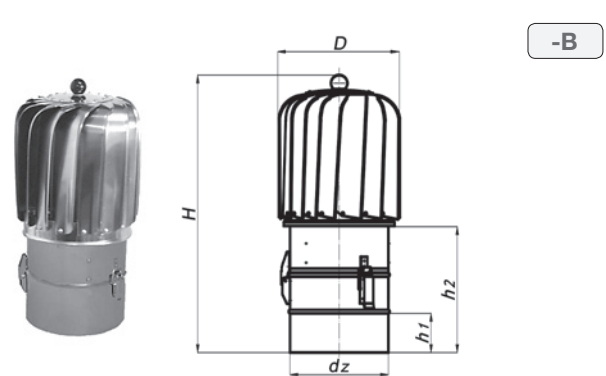
4. BASE WITH INSULATION CLOSING



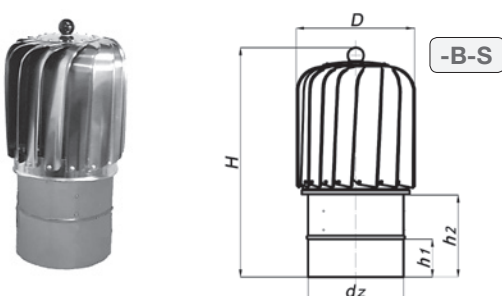
5. PKR - TYPE REDUCING BASE



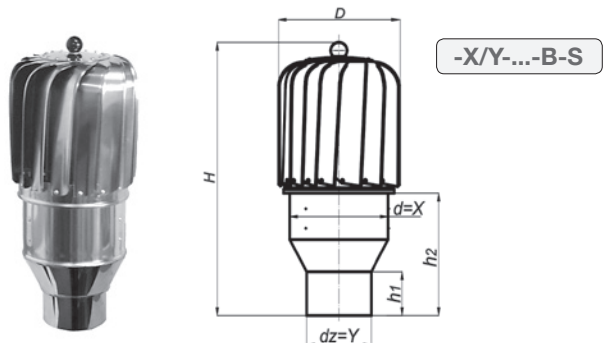
6. INLET PIPE OPENABLE



7. INLET PIPE NOT OPENABLE

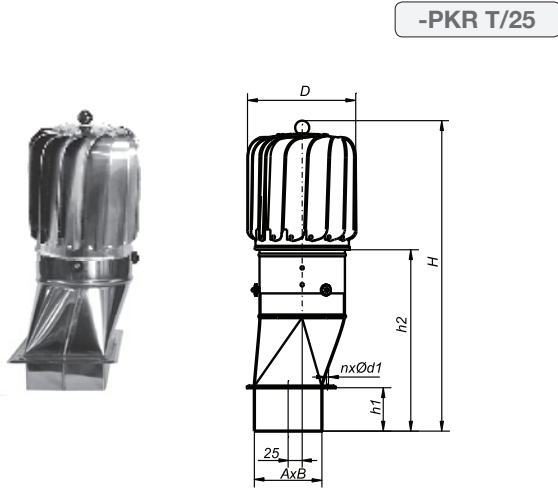


8. INLET PIPE REDUCED

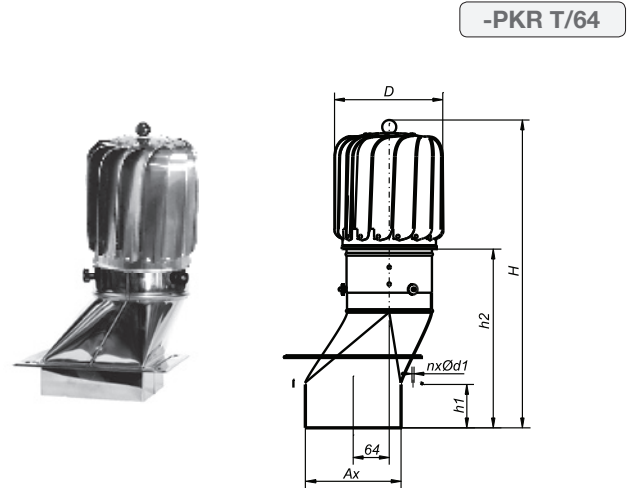


TULIPAN - VERSIONS OF BASES

9. REDUCING BASE T/25 +TULIPAN WITH DISMOUNTABLE BASE -R



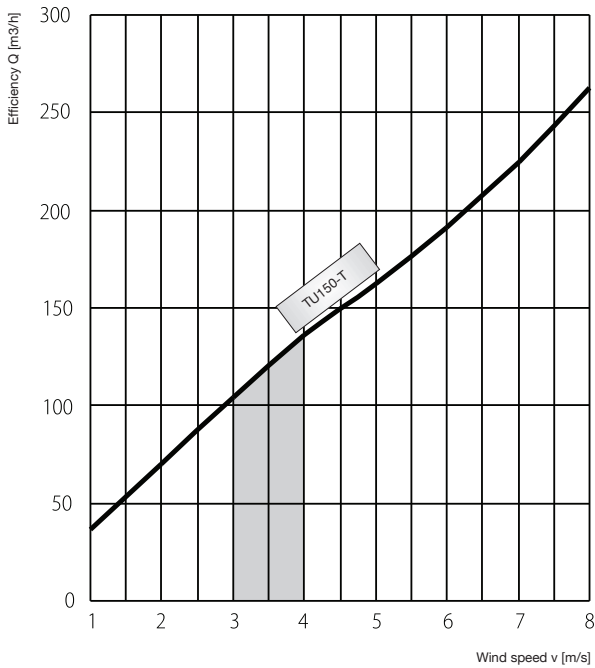
10. REDUCING BASE T/64 +TULIPAN WITH DISMOUNTABLE BASE -R



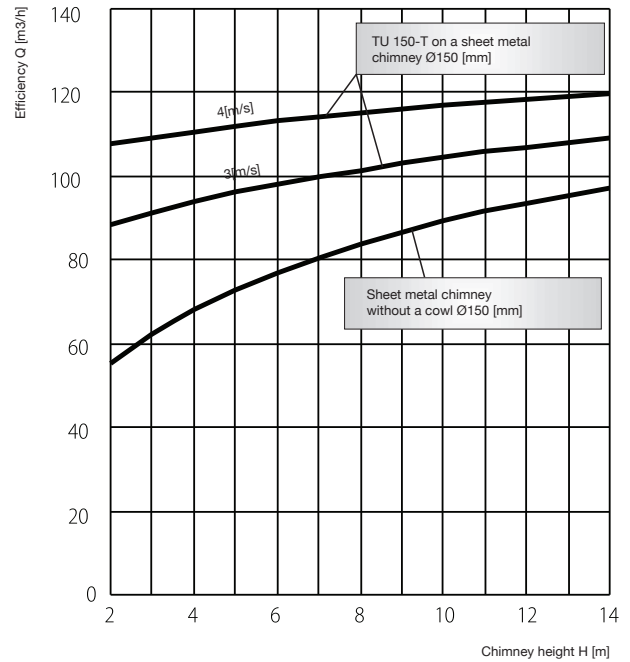
MEASUREMENTS TABLE FOR VARIOUS INLET DIAMETERS

Ø 150	Dimensions [mm]										Weight [kg]			
	Base version	D	dw	dz	H	h1	h2	A	B	d1	Amount n	OCAL	CHAL	ML
-T	~188	-	144.0	475	155	240	187	158	6.2	-	1.30	1.40	1.40	1.60
-PK	~188	149.0	-	330	95	-	250	208	6.2	4	1.05	1.15	1.15	1.35
-R	~188	150.4	-	345	110	-	-	-	-	-	0.95	1.00	1.00	1.20
-B-K	~188	253.3	151.7	425	70	190	-	-	-	-	1.55	1.70	1.70	1.90
-PKR	~188	-	140.0	435	50	200	250	187	6.2	4	2.05	2.30	2.30	2.50
-B	~188	-	152.0	428	60	193	-	-	-	-	1.35	1.40	1.40	1.60
-B-S	~188	-	152.0	375	60	140	-	-	-	-	1.15	1.20	1.20	1.40
X/Y-...-B-S	~188	-	Y	425	60	190	-	-	-	-	1.30	1.35	1.35	1.55
-PKR T/25	~188	-	-	595	80	360	168	118	6.2	4	1.80	2.05	2.05	2.30
-PKR T/64	~188	-	-	595	80	360	168	118	6.2	4	1.95	2.20	2.20	2.40

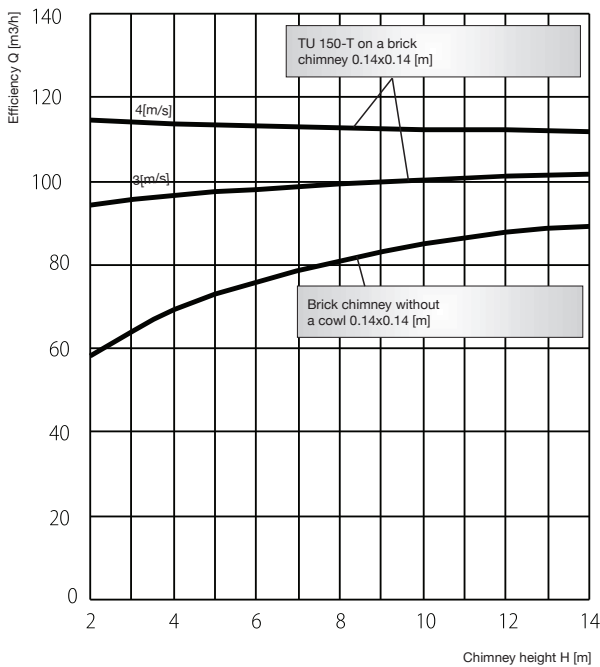
AIRFLOW CHARTS



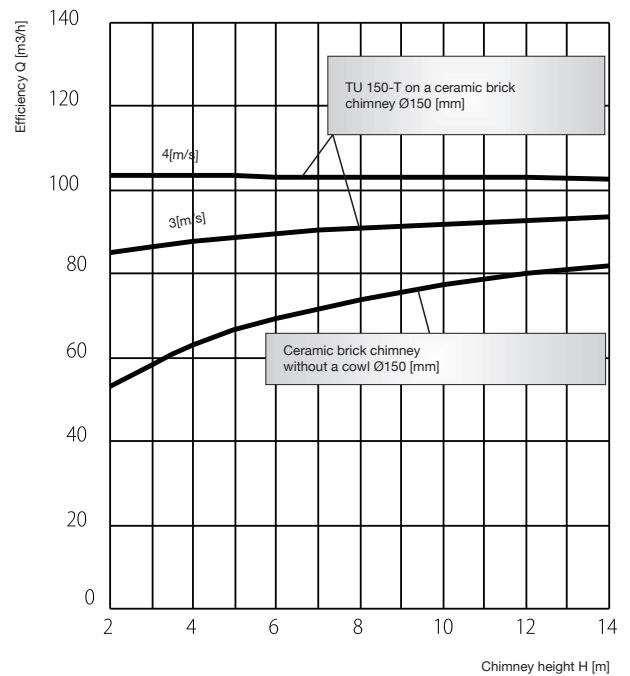
Efficiency chart for Tulipan cowl in a function of wind speed not including the influence of chimney height (*1 [m/s] = 3,6 [km/h])



Efficiency chart for Turbowent Tulipan in a function of chimney height on a sheet metal chimney (for two wind speeds: 3 and 4 [m/s])



Efficiency chart for Turbowent Tulipan in a function of chimney height on a brick chimney (for two wind speeds: 3 and 4 [m/s])

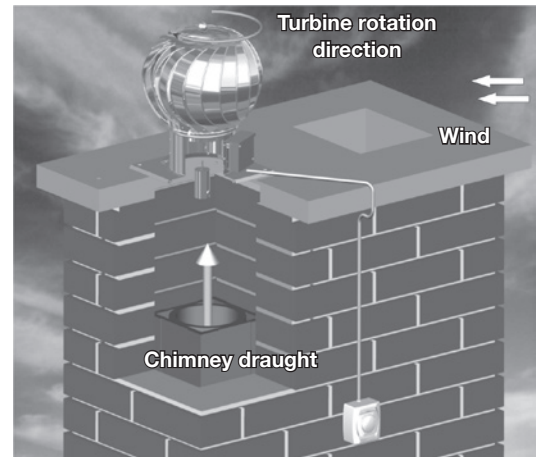


Efficiency chart for Turbowent Tulipan in a function of chimney height on a round ceramic chimney (for two wind speeds: 3 and 4 [m/s])

PICTURE



FUNCTION PRINCIPLE



DESCRIPTION

Hybrid Turbowent chimney cowls are devices, which, in a dynamic way, use force of the wind to increase chimney draught. They are also equipped with a low power brushless electric motor. When the wind speed is too small to achieve the desired efficiency, electric motor speeds the turbine up, when it is too strong it slows the turbine down.

When the wind speed is strong enough to achieve the rotation speed set on the steering device, motor does not work, and cowl works just like the ordinary Turbowent.

This solution is reserved in the RP Patent Office

Speed controller voltage

Rotating unit

Maximal power consumption

Average power consumption

Average input power

Adjusting range:

Recommended power supply

Ambient temperature

24VDC

ball bearing system

0,3A

~0,13A

3W

90-300 rev/min

24VDC, 1A

from -30 °C to +70 °C

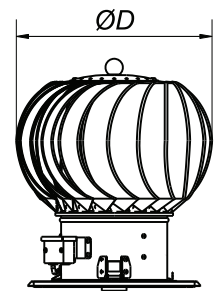
Sound pressure level A at a distance of 4 m from cowl (for rotation speed n)			Sound pressure level LWA (for min. rotation speed) acc. to PN-EN ISO 3741:2003	
Diameter	L _{pAmin} for n=90	L _{pAmax} for n=270	Diameter	L _{WA}
Ø150	8 dB	15 dB	Ø150	26 dB
Ø200	7 dB	14 dB	Ø200	25 dB

DESTINATION

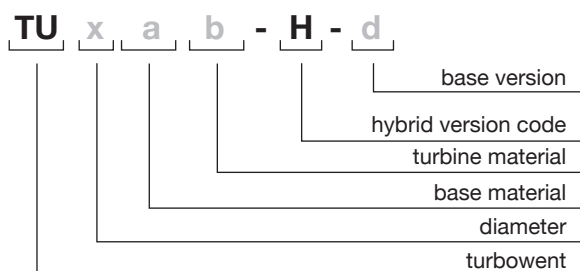
- when there are wind fluctuations on the chimney duct ending, caused by its bad location
- when there is an unfavorable terrain configuration, with strong and frequent winds
- when there is a lack of chimney draught or it is too weak
- in order to improve the natural (gravitation) ventilation.
- creating hybrid ventilation systems

MEASUREMENTS

Diameter	Turbine diameter D [mm]
Ø150	~ 260
Ø200	~ 320



DENOTATIONS / PRODUCT CODES



MATERIALS

Destination	W	W	W	W - ventilation ducts
	-	-	-	S - gas and oil exhaust ducts
	-	-	-	D - smoke ducts
Base material	CH	CH	-	CH - chrome-nickel sheet 1.4301
	-	-	-	OC - galvanised steel sheet
	-	-	ML	ML - chrome-nickel powder coated
Turbine material	-	CH	-	CH - chrome-nickel sheet 1.4301
	-	-	ML	ML - powder coated
	AL	-	-	AL - aluminum