

# EC/AC axial fans - HyBlade® Ø 300-450

version 03/2012



The engineer's choice

**ebmpapst**

# The new "little ones": axial fans with HyBlade® technology.

## **The success of our HyBlade® series continues:**

Axial fans with one-of-a-kind HyBlade® technology have been expanded by adding sizes 300 to 450 mm and are now available in all sizes from 300 to 900 mm.

In the process, the one-piece, glass fibre-reinforced plastic impellers have been further optimised in terms of aerodynamics. Thus, the noise behaviour was improved even more and impeller efficiency was increased.

For the drive, you can choose between tried and true AC asynchronous motors and high-efficiency GreenTech EC motors. Furthermore, you can choose between two different control configurations: one with two fixed speed stages or one with the familiar continuous control option via a combined 0-10V/PWM control input.

Here, the 2-stage designs are laid out so that the small stage corresponds to its AC counterpart in terms of air performance. The large stage then offers additional increases in air performance beyond that. This opens entirely new prospects, such as in refrigeration system applications.

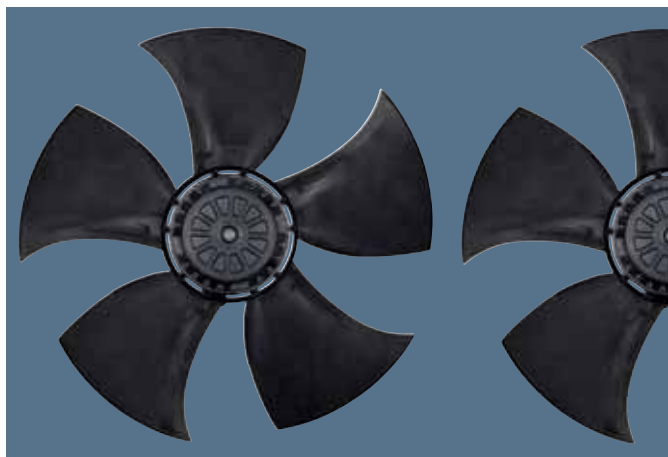
Since the electronics have been completely integrated into the motor, our axial fans using GreenTech EC technology have precisely the same mounting dimension as their AC counterparts and thus are able to replace them without cost-intensive renovations.









## **The advantages at a glance**

- High efficiency due to HyBlade® axial impellers and new GreenTech EC motors
- Reduced noise
- Compact design
- Mechanical compatibility of AC and EC
- GreenTech EC fans alternatively controlled with two speeds or continuous
- Compliance with ErP specifications\* (please note individual designation)

\*ErP: Energy related Product – defined minimum requirements for fans in accordance with the EcoDesign directive for fans with a drive output of 125 W or higher.

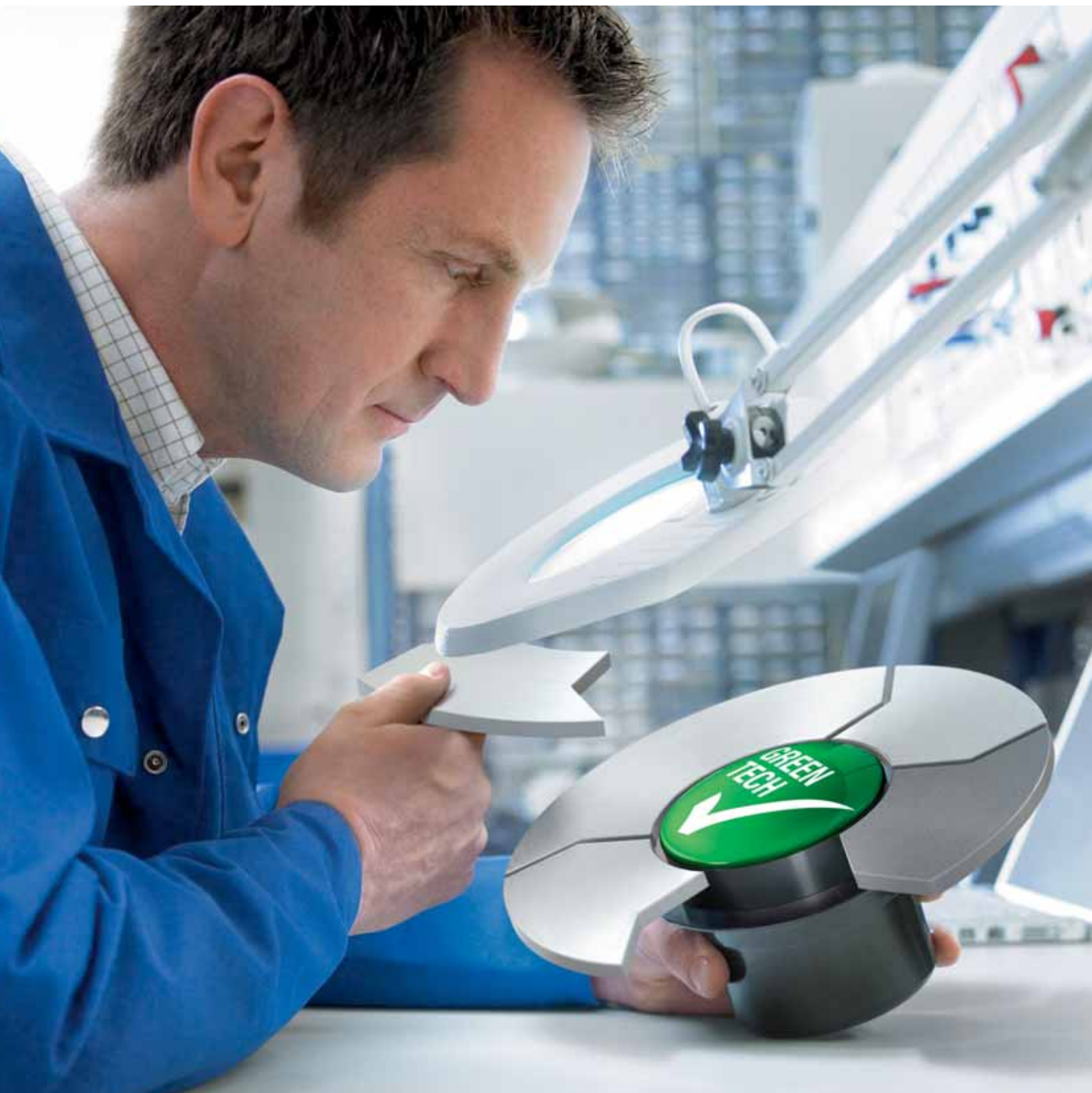
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Sustainability is at the centre of our thoughts and actions. Out of conviction!

*Eco-friendliness and sustainability have always been at the core of our thoughts and actions. For decades, we have worked according to the simple but strict creed of our co-founder Gerhard Sturm: "Each new product we develop has to be better than the last one in terms of economy and ecology." GreenTech is the ultimate expression of our corporate philosophy.*







**GreenTech is pro-active development.**

Even in the design phase, the materials and processes we use are optimised for the greatest possible eco-friendliness, energy balance and – wherever possible – recyclability. We continually improve the material and performance of our products, as well as the flow and noise characteristics. At the same time, we significantly reduce energy consumption. Close co-operation with universities and scientific institutes and the professorship we endow in the area of power engineering and regenerative energies allows us to profit from the latest research findings in these fields – and at the same time ensure highly qualified young academics.

**GreenTech is eco-friendly production.**

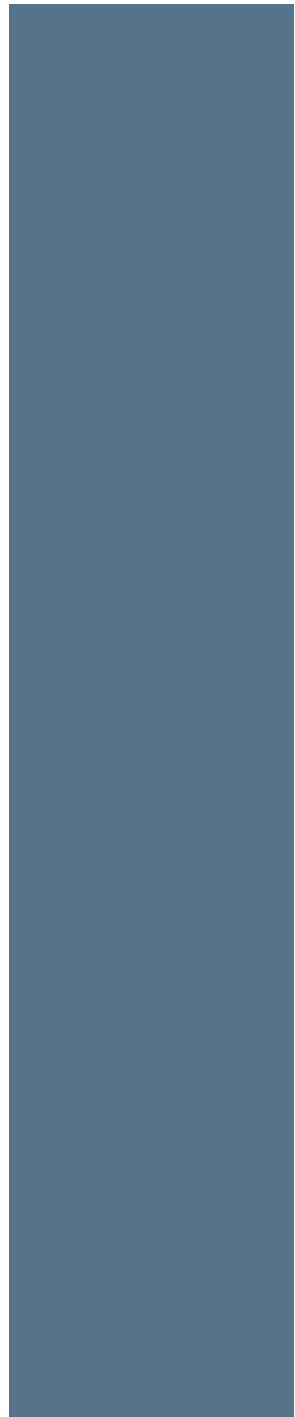
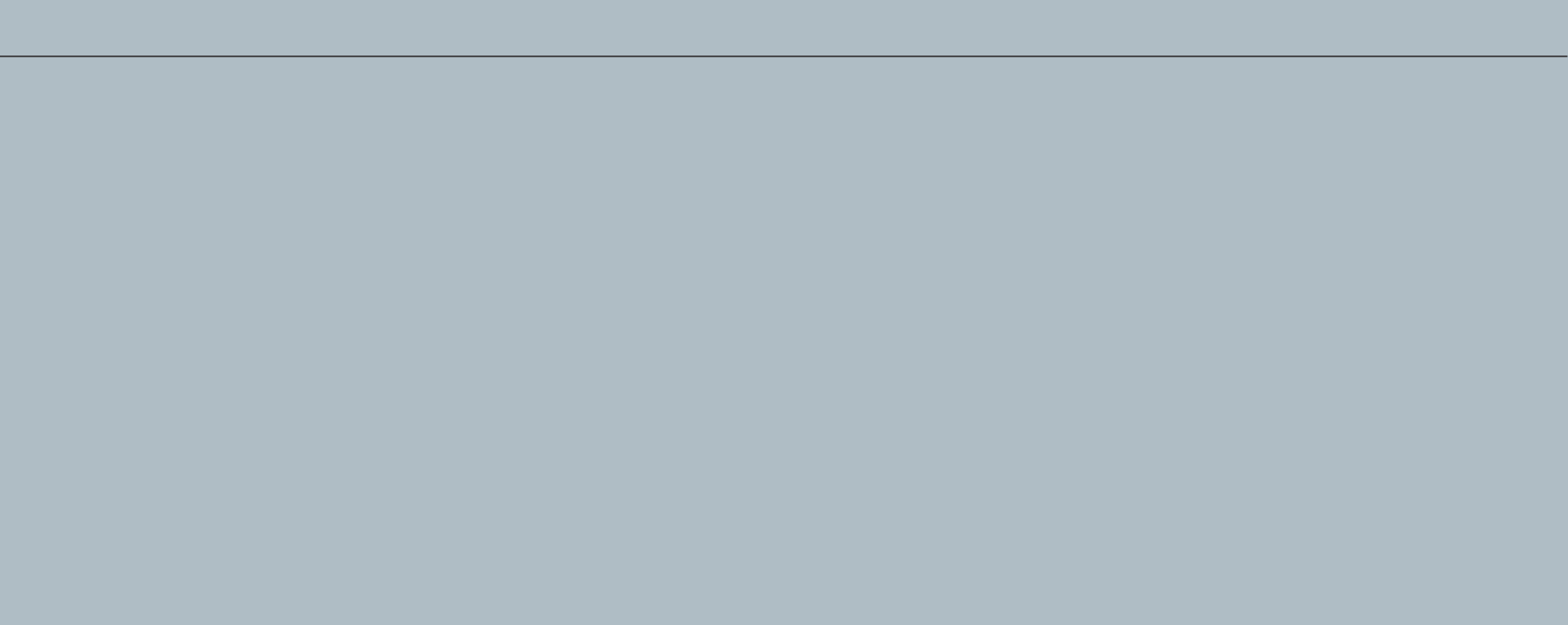
GreenTech also stands for maximum energy efficiency in our production processes. There, the intelligent use of industrial waste heat and ground-water cooling, photovoltaics and, of course, our own cooling and ventilation technology are of the utmost importance. Our most modern plant, for instance, consumes 91% less energy than currently specified and required. In this way, our products contribute to protecting the environment, from their origin to their recyclable packaging.

**GreenTech is acknowledged and certified.**

Every step in our chain of production meets the stringent standards of environmental specialists and the public. The 2008 Environmental Prize of Baden-Wuerttemberg, the Green Award 2009, the Energy Efficiency Award 2009 of the dena – to give just a few examples – testify to this. The environmental advantage gained in the performance of the products developed from our GreenTech philosophy can also be measured in the fulfilment of the most stringent energy and environmental standards. In many instances, our products are already well below the thresholds energy legislation will impose a few years from now – several times over.

**Our customers profit from this every day.**

The heart of GreenTech is future-oriented EC technology from ebmpapst. The EC technology at the core of our most efficient motors and fans allows efficiency of up to 90%, saves energy at a very high level, significantly extends service life and makes our products maintenance-free. These values pay off not only for the environment, but every cent also pays off for the user! All ebmpapst products – even those for which GreenTech EC technology does not (yet) make sense from an application viewpoint – feature the greatest possible connection of economy and ecology.



# EC axial fans - HyBlade® Ø 300-450

EC axial fans HyBlade® Ø 300-450

8



# EC axial fans - HyBlade®

Ø 300



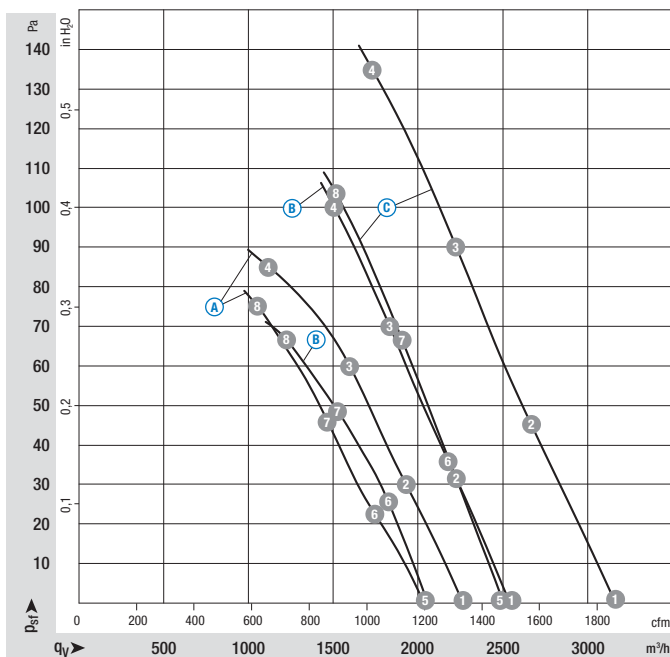
- **Material:** Guard grille: Steel, phosphated and coated in black plastic (RAL9005)  
Wall ring: Sheet steel, pre-galvanised and coated in black plastic (RAL9005)  
Blades: Plastic PP  
Rotor: Surface passivated  
Electronics enclosure: Die-cast aluminium
- **Number of blades:** 5
- **Direction of rotation:** Counter-clockwise, seen on rotor
- **Type of protection:** IP 54
- **Insulation class:** "B"
- **Mounting position:** Any
- **Condensate discharge holes:** None, open rotor
- **Mode of operation:** Continuous operation (S1)
- **Bearings:** Maintenance-free ball bearings

Nominal data		Curve	Nominal voltage range	Frequency	Speed/rpm <sup>(1)</sup>	Max. input power <sup>(1)</sup>	Max. current draw <sup>(1)</sup>	Max. back pressure	Perm. amb. temp.	Mass without attachments	2-stages / 0-10 V	Technical features and electr. connection
Type	Motor		VAC	Hz	rpm	W	A	Pa	°C	kg		
*3G 300	M3G 055-CF	Ⓐ	1~ 200-240	50/60	1500	85	0,74	85	-25..+60	1,30	2 Speed stages	p. 56 / H3)
*3G 300	M3G 055-DF	Ⓑ	1~ 200-240	50/60	1750	120	1,00	100	-25..+40	1,50	2 Speed stages	p. 56 / H3)
*3G 300	M3G 074-CF	Ⓒ	1~ 200-240	50/60	2050	168	1,35	135	-25..+60	1,98	2 Speed stages	p. 56 / H3)
*3G 300	M3G 055-CF	Ⓓ	1~ 200-240	50/60	1500	85	0,74	85	-25..+60	1,35	Speed-controlled	p. 57 / H4)
*3G 300	M3G 055-DF	Ⓔ	1~ 200-240	50/60	1660	98	0,80	80	-25..+60	1,55	Speed-controlled	p. 57 / H4)
*3G 300	M3G 074-CF	Ⓕ	1~ 200-240	50/60	2050	168	1,35	135	-25..+60	1,98	Speed-controlled	p. 57 / H4)

subject to alterations

(1) Nominal data in operating point with maximum load and 230 VAC

## Curves (2 Speed stages)



Air performance measured as per: ISO 5801, Installation category A, in ebm-papst full nozzle and without protection against accidental contact

Suction-side noise levels: L<sub>WA</sub> as per ISO 13347, L<sub>pA</sub> measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 62 ff.

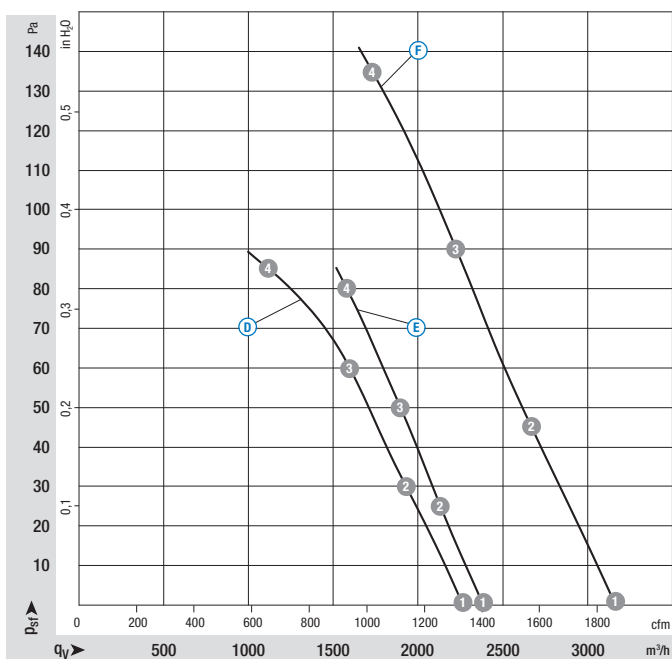
	n rpm	P <sub>e</sub> W	I A	L <sub>WA</sub> dB(A)
Ⓐ 1	1650	72	0,63	63
Ⓐ 2	1600	78	0,67	63
Ⓐ 3	1565	83	0,70	62
Ⓐ 4	1500	85	0,74	64
Ⓐ 5	1485	52	0,48	60
Ⓐ 6	1440	56	0,51	60
Ⓐ 7	1410	59	0,53	60
Ⓐ 8	1365	65	0,59	62
Ⓑ 1	1820	96	0,86	67
Ⓑ 2	1775	105	0,94	67
Ⓑ 3	1750	111	0,98	67
Ⓑ 4	1750	120	1,00	69
Ⓑ 5	1430	45	0,44	63
Ⓑ 6	1415	51	0,51	61
Ⓑ 7	1395	56	0,54	60
Ⓑ 8	1370	60	0,57	61
Ⓒ 1	2390	168	1,30	71
Ⓒ 2	2250	167	1,35	71
Ⓒ 3	2145	168	1,35	69
Ⓒ 4	2050	168	1,35	72
Ⓒ 5	1910	88	0,75	66
Ⓒ 6	1865	97	0,81	66
Ⓒ 7	1830	105	0,86	65
Ⓒ 8	1790	112	0,91	66

- **Technical features:** See electrical connections p. 60 ff.
- **EMC:** Interference immunity acc. to EN 61000-6-2 (industrial environment)  
Harmonics acc. to EN 61000-3-2/3  
Interference emission acc. to EN 61000-6-3 (household environment)  
On account of the installation conditions, ferritic damping in the connection line may be required for the application.
- **Leakage current:** < 3,5 mA acc. to EN 60335-1
- **Cable exit:** Variable
- **Terminal box design:** Electrical connection via terminal strip
- **Protection class:** I
- **Product conforming to standards:** EN 60335-1; CE
- **Approvals:** VDE, cURus on request

Direction of air flow				
	Without attachments	With full round nozzle	With guard grille for short nozzle	With guard grille for short nozzle and mounted terminal box
"V"	A3G 300-AK13 -01	W3G 300-CK13 -30	S3G 300-AK13 -30	S3G 300-AK13 -50*
"V"	A3G 300-AL11 -01	W3G 300-CL11 -30	S3G 300-AL11 -30	S3G 300-AL11 -50*
"V"	A3G 300-AN02 -01	W3G 300-CN02 -30	S3G 300-AN02 -30	S3G 300-AN02 -50*
"V"	A3G 300-AK13 -03	W3G 300-CK13 -32	S3G 300-AK13 -32	S3G 300-AK13 -52*
"V"	A3G 300-AL11 -03	W3G 300-CL11 -32	S3G 300-AL11 -32	S3G 300-AL11 -52*
"V"	A3G 300-AN02 -03	W3G 300-CN02 -32	S3G 300-AN02 -32	S3G 300-AN02 -52*

Direction of air flow "A" on request \*Terminal box design: Electrical connection via terminal strip

### Curves (Speed-controlled)



Air performance measured as per: ISO 5801, Installation category A, in ebm-papst full nozzle and without protection against accidental contact

Suction-side noise levels:  $L_{wA}$  as per ISO 13347,  $L_pA$  measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 62 ff.

	n rpm	$P_e$ W	I A	$L_{wA}$ dB(A)
D 1	1650	72	0,63	63
D 2	1600	78	0,67	63
D 3	1565	83	0,70	62
D 4	1500	85	0,74	64
E 1	1740	81	0,67	66
E 2	1710	88	0,74	66
E 3	1690	93	0,77	66
E 4	1660	98	0,80	66
F 1	2390	168	1,30	71
F 2	2250	167	1,35	71
F 3	2145	168	1,35	69
F 4	2050	168	1,35	72

# EC axial fans - HyBlade®

Ø 300 with motor M3G 055, 2 Speed stages, drawings for direction of air flow "V"

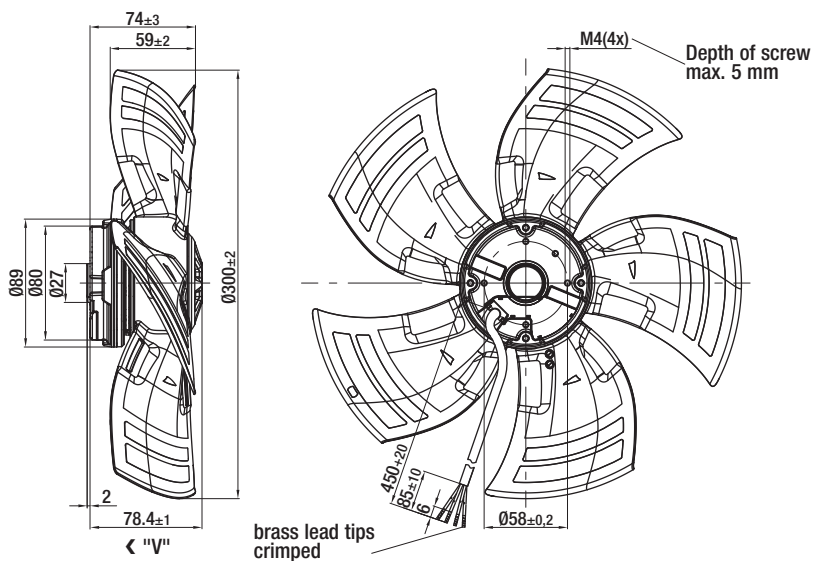


## Without attachments

Type

Mass  
kg

A3G 300-AK13 -01 1,30



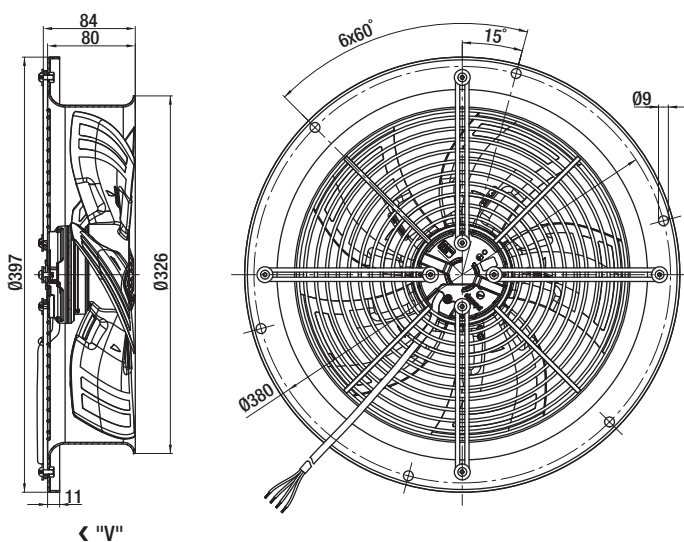
Internal diameter of the wall ring at least 306 mm

## With full round nozzle

Type

Mass  
kg

W3G 300-CK13 -30 3,30



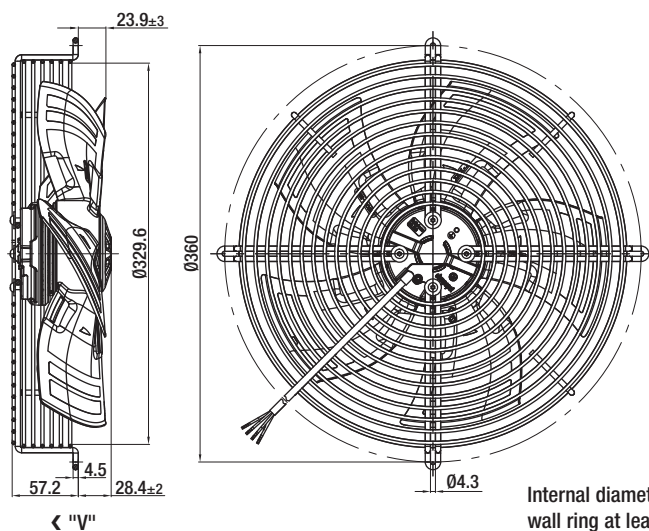
## With guard grille for short nozzle

Type

Mass  
kg

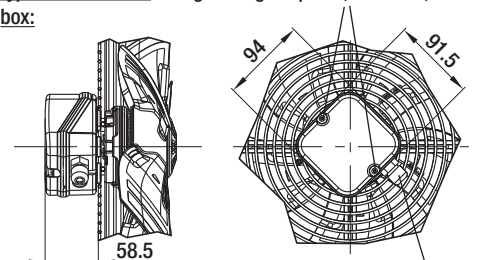
S3G 300-AK13 -30 2,30

S3G 300-AK13 -50\* 2,45



\*Type with terminal box:

Tightening torque: 0,8 Nm ± 0,15 Nm



Cable diameter: 7,5 mm  
Tightening torque: 2,0 Nm ± 0,3 Nm



# EC axial fans - HyBlade®

Ø 300 with motor M3G 055, Speed-controlled, drawings for direction of air flow "V"

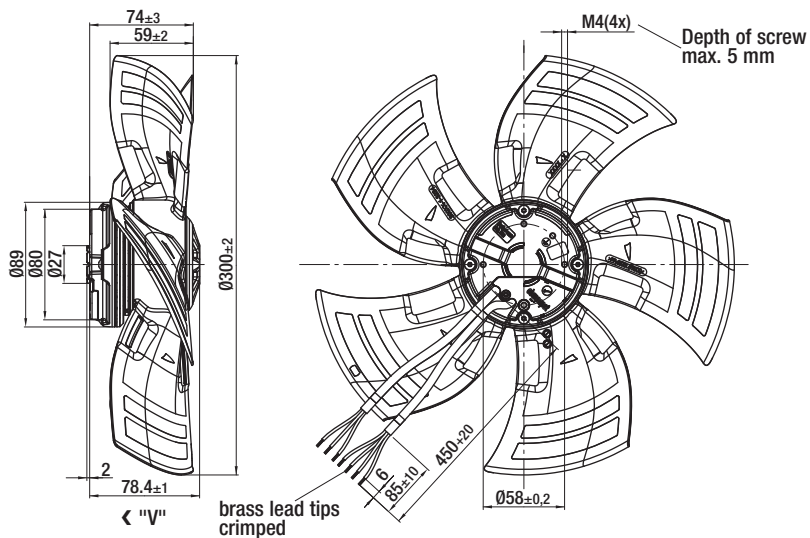


## Without attachments

Type

Mass  
kg

A3G 300-AK13 -03 1,35



Internal diameter of the wall ring at least 306 mm

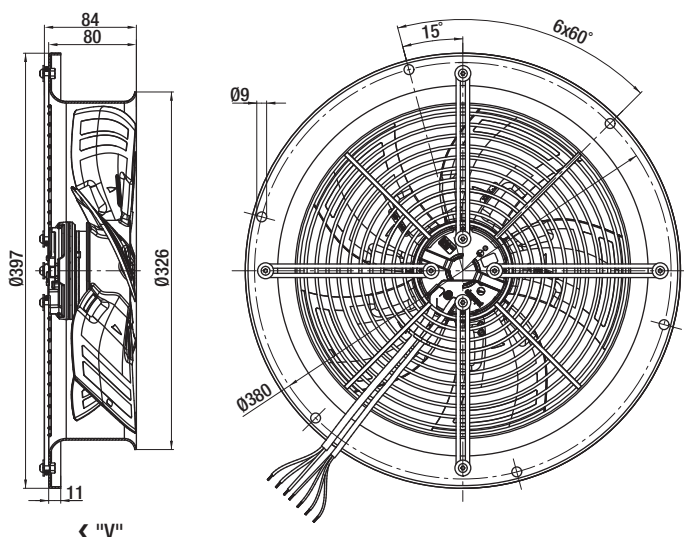


## With full round nozzle

Type

Mass  
kg

W3G 300-CK13 -32 3,35

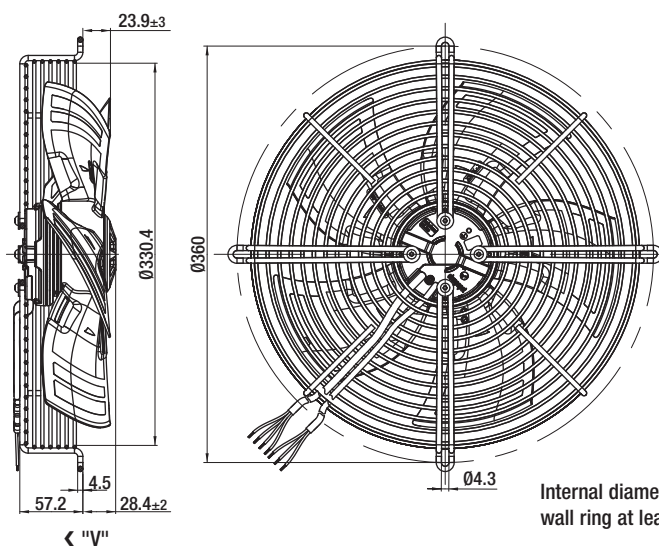


## With guard grille for short nozzle

Type

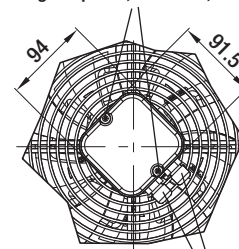
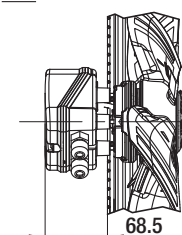
Mass  
kg

S3G 300-AK13 -32 2,35  
S3G 300-AK13 -52\* 2,50



\*Type with terminal box:

Tightening torque: 0,8 Nm ± 0,15 Nm



Cable diameter: 7,5 mm  
Tightening torque: 2,0 Nm ± 0,3 Nm

# EC axial fans - HyBlade®

Ø 300 with motor M3G 055, 2 Speed stages, drawings for direction of air flow "V"

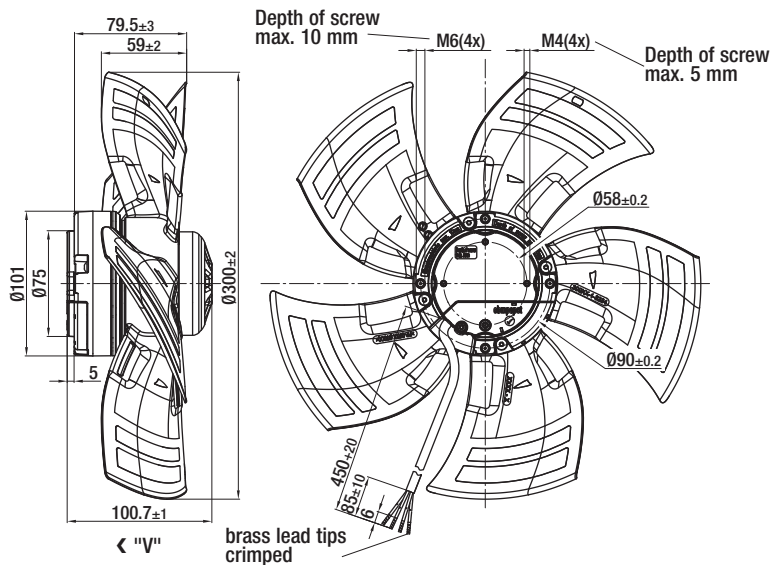


## Without attachments

Type

Mass  
kg

A3G 300-AL11 -01 1,50



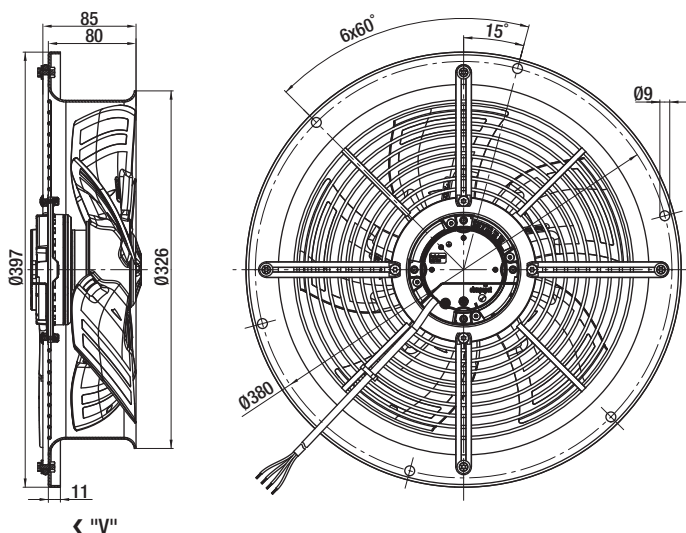
Internal diameter of the wall ring at least 306 mm

## With full round nozzle

Type

Mass  
kg

W3G 300-CL11 -30 3,55



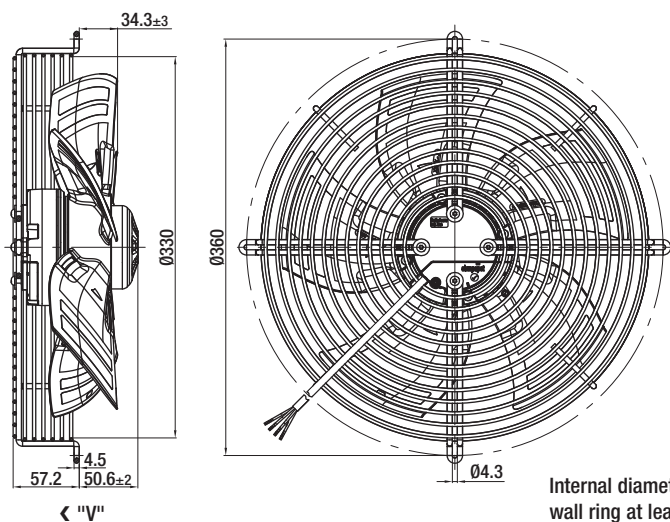
## With guard grille for short nozzle

Type

Mass  
kg

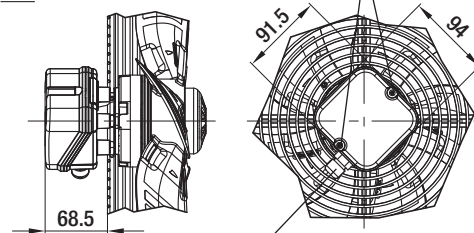
S3G 300-AL11 -30 2,50

S3G 300-AL11 -50\* 2,65



Internal diameter of the wall ring at least 306 mm

\*Type with terminal box: Tightening torque: 0,8 Nm ± 0,15 Nm



Cable diameter: 7,5 mm  
Tightening torque: 2,0 Nm ± 0,3 Nm

# EC axial fans - HyBlade®

Ø 300 with motor M3G 055, Speed-controlled, drawings for direction of air flow "V"

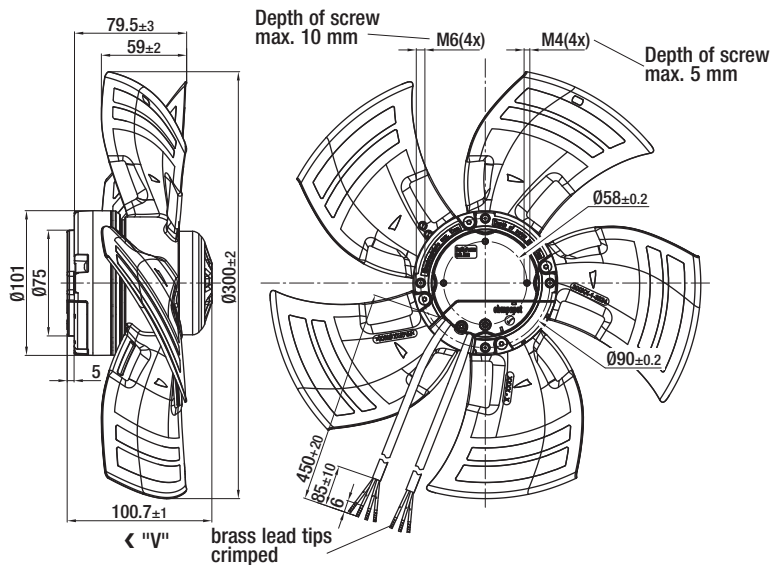


## Without attachments

Type

Mass  
kg

A3G 300-AL11 -03 1,55



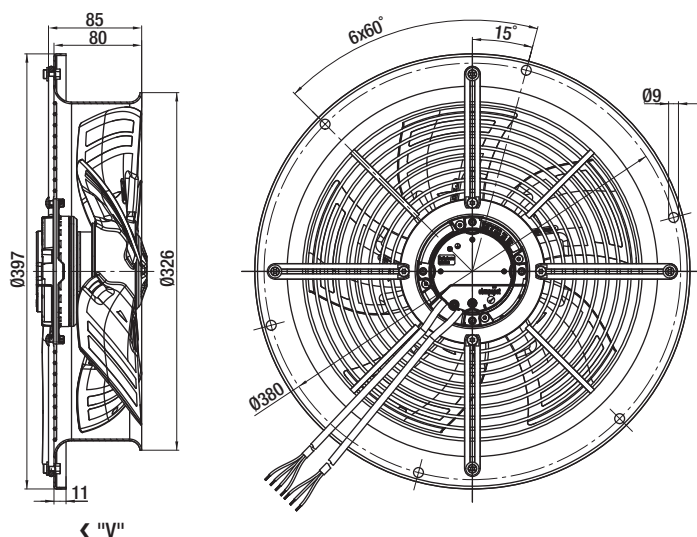
Internal diameter of the wall ring at least 306 mm

## With full round nozzle

Type

Mass  
kg

W3G 300-CL11 -32 3,60

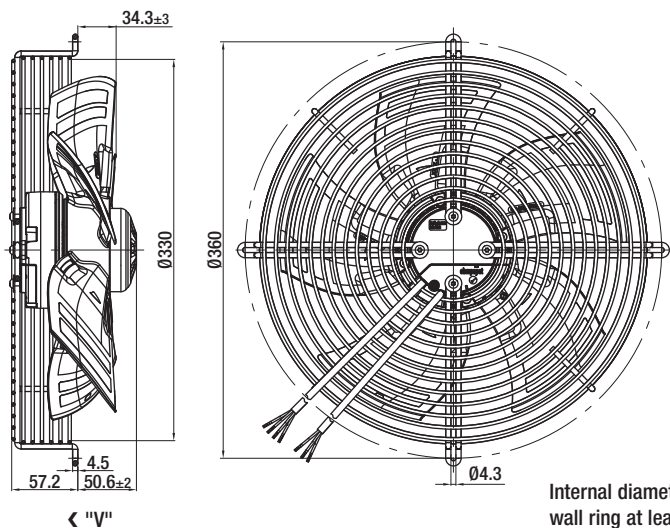


## With guard grille for short nozzle

Type

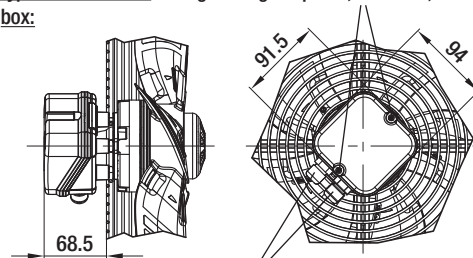
Mass  
kg

S3G 300-AL11 -32 2,55  
S3G 300-AL11 -52\* 2,70



\*Type with terminal box:

Tightening torque: 0,8 Nm ± 0,15 Nm



Cable diameter: 7,5 mm  
Tightening torque: 2,0 Nm ± 0,3 Nm



# EC axial fans - HyBlade®

Ø 300 with motor M3G 074, 2 Speed stages, drawings for direction of air flow "V"

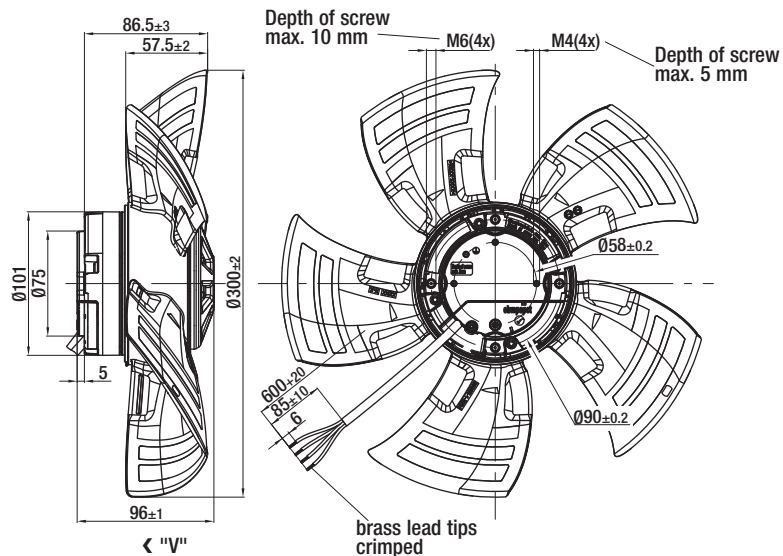


## Without attachments

Type

Mass  
kg

A3G 300-AN02 -01 1,98



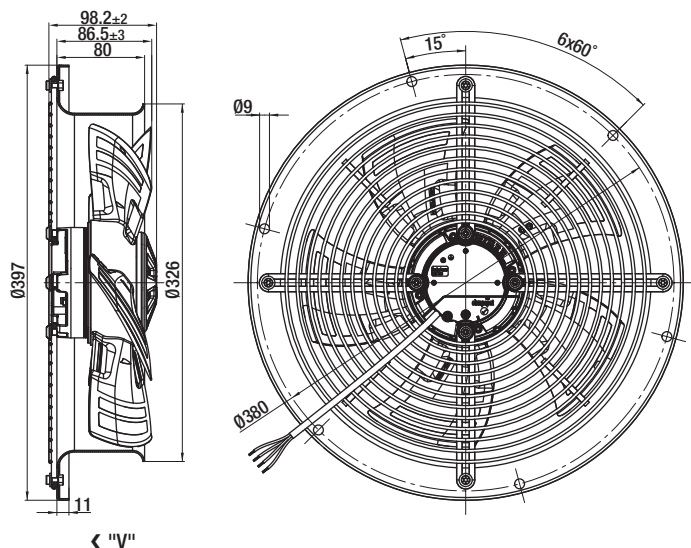
Internal diameter of the wall ring at least 306 mm

## With full round nozzle

Type

Mass  
kg

W3G 300-CN02 -30 4,00



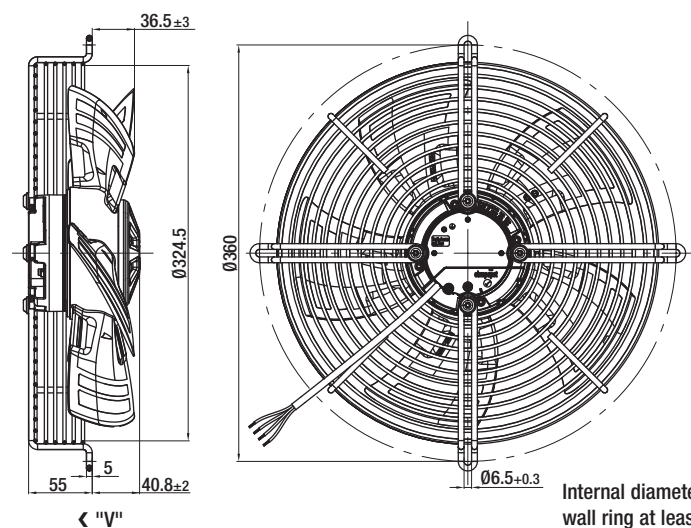
## With guard grille for short nozzle

Type

Mass  
kg

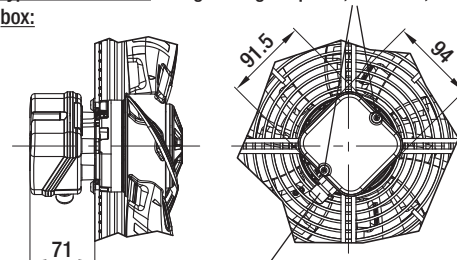
S3G 300-AN02 -30 2,93

S3G 300-AN02 -50\* 3,08



\*Type with terminal box:

Tightening torque: 0,8 Nm ± 0,15 Nm



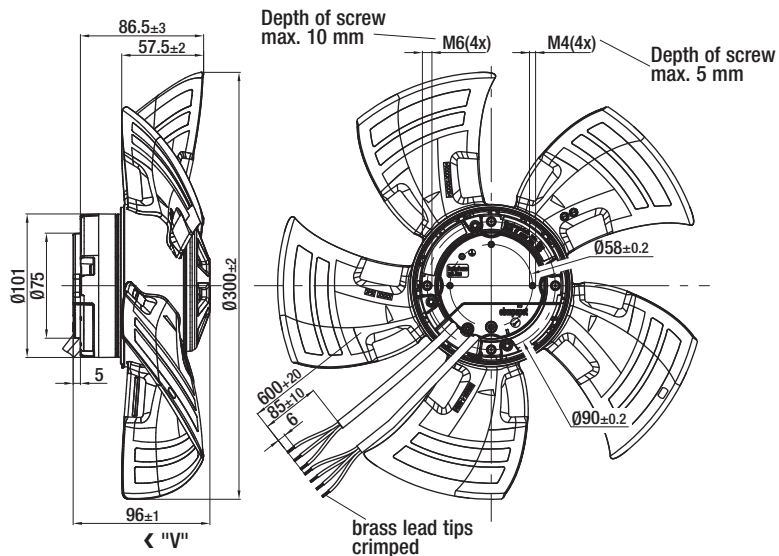
Cable diameter: 7,5 mm  
Tightening torque: 2,0 Nm ± 0,3 Nm

# EC axial fans - HyBlade®

Ø 300 with motor M3G 074, Speed-controlled, drawings for direction of air flow "V"



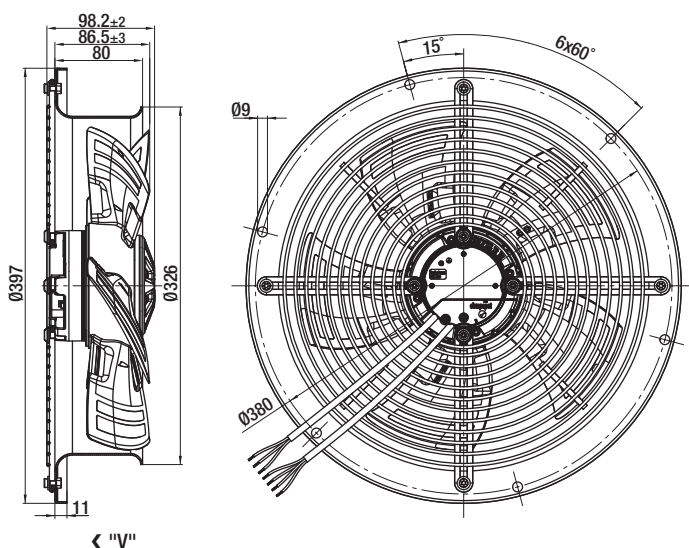
## Without attachments



Type	Mass kg
A3G 300-AN02 -03	1,98

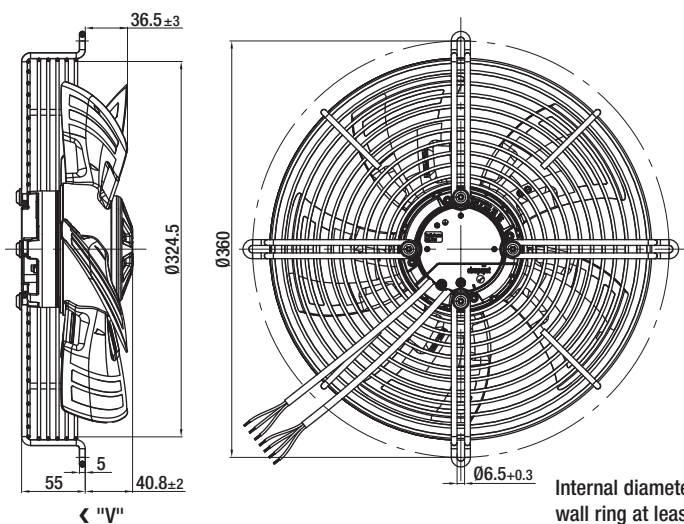
Internal diameter of the wall ring at least 306 mm

## With full round nozzle



Type	Mass kg
W3G 300-CN02 -32	4,00

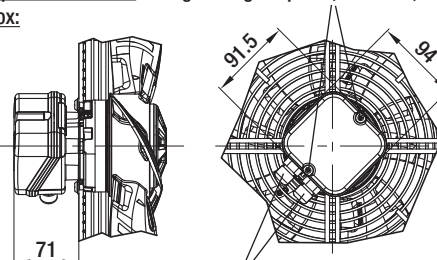
## With guard grille for short nozzle



Type	Mass kg
S3G 300-AN02 -32	2,93
S3G 300-AN02 -52*	3,08

\*Type with terminal box:

Tightening torque: 0,8 Nm ± 0,15 Nm



Cable diameter: 7,5 mm  
Tightening torque: 2,0 Nm ± 0,3 Nm

# EC axial fans - HyBlade®

Ø 350



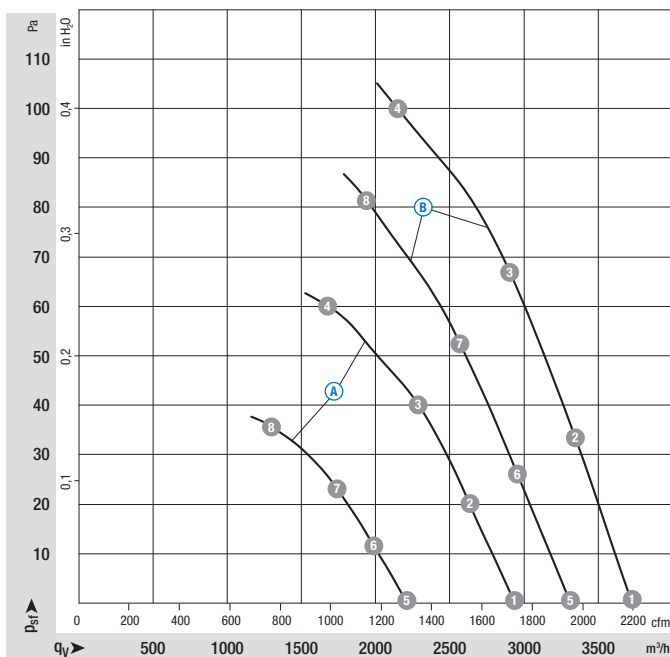
- **Material:** Guard grille: Steel, phosphated and coated in black plastic (RAL9005)  
Wall ring: Sheet steel, pre-galvanised and coated in black plastic (RAL9005)  
Blades: Plastic PP  
Rotor: Surface passivated  
Electronics enclosure: Die-cast aluminium
- **Number of blades:** 5
- **Direction of rotation:** Counter-clockwise, seen on rotor
- **Type of protection:** IP 54
- **Insulation class:** "B"
- **Mounting position:** Any
- **Condensate discharge holes:** None, open rotor
- **Mode of operation:** Continuous operation (S1)
- **Bearings:** Maintenance-free ball bearings

Nominal data		Curve	Nominal voltage range	Frequency	Speed/rpm <sup>(1)</sup>	Max. input power <sup>(1)</sup>	Max. current draw <sup>(1)</sup>	Max. back pressure	Perm. amb. temp.	Mass without attachments	2-stages / 0-10 V	Technical features and electr. connection
Type	Motor	VAC	Hz	rpm	W	A	Pa	°C	kg			
*3G 350	M3G 055-DF	Ⓐ	1~ 200-240	50/60	1115	85	0,73	60	-25..+60	1,63	2 Speed stages	p. 56 / H3)
*3G 350	M3G 074-CF	Ⓑ	1~ 200-240	50/60	1480	165	1,35	100	-25..+60	2,20	2 Speed stages	p. 56 / H3)
*3G 350	M3G 055-DF	Ⓒ	1~ 200-240	50/60	1115	85	0,73	60	-25..+60	1,63	Speed-controlled	p. 57 / H4)
*3G 350	M3G 074-CF	Ⓓ	1~ 200-240	50/60	1480	165	1,35	100	-25..+60	2,20	Speed-controlled	p. 57 / H4)

subject to alterations

(1) Nominal data in operating point with maximum load and 230 VAC

## Curves (2 Speed stages)



Air performance measured as per: ISO 5801, Installation category A, in ebm-papst full nozzle and without protection against accidental contact

Suction-side noise levels: L<sub>WA</sub> as per ISO 13347, L<sub>pA</sub> measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 62 ff.

	n rpm	P <sub>e</sub> W	I A	L <sub>WA</sub> dB(A)
Ⓐ 1	1215	74	0,63	65
Ⓐ 2	1190	80	0,67	63
Ⓐ 3	1160	84	0,70	60
Ⓐ 4	1115	85	0,73	58
Ⓐ 5	915	34	0,33	57
Ⓐ 6	895	36	0,34	55
Ⓐ 7	880	39	0,37	54
Ⓐ 8	860	41	0,40	52
Ⓑ 1	1575	141	1,15	71
Ⓑ 2	1555	152	1,23	69
Ⓑ 3	1530	161	1,31	66
Ⓑ 4	1480	165	1,35	67
Ⓑ 5	1395	98	0,82	68
Ⓑ 6	1375	106	0,88	66
Ⓑ 7	1355	114	0,96	64
Ⓑ 8	1340	122	1,03	64

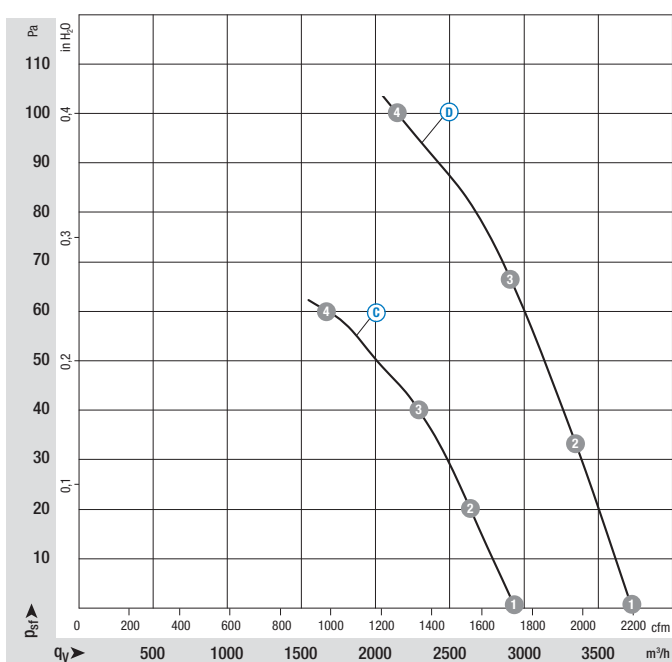


- **Technical features:** See electrical connections p. 60 ff.
- **EMC:** Interference immunity acc. to EN 61000-6-2 (industrial environment)  
Harmonics acc. to EN 61000-3-2/3  
Interference emission acc. to EN 61000-6-3 (household environment)  
On account of the installation conditions, ferritic damping in the connection line may be required for the application.
- **Leakage current:** < 3,5 mA acc. to EN 60335-1
- **Cable exit:** Variable
- **Terminal box design:** Electrical connection via terminal strip
- **Protection class:** I
- **Product conforming to standards:** EN 60335-1; CE
- **Approvals:** VDE, cURus on request

Direction of air flow	Direction of air flow			
	Without attachments	With full round nozzle	With guard grille for short nozzle	With guard grille for short nozzle and mounted terminal box
"V"	A3G 350-AG03 -01	W3G 350-CG03 -30	S3G 350-AG03 -30	S3G 350-AG03 -50*
"V"	A3G 350-AN01 -01	W3G 350-CN01 -30	S3G 350-AN01 -30	S3G 350-AN01 -50*
"V"	A3G 350-AG03 -03	W3G 350-CG03 -32	S3G 350-AG03 -32	S3G 350-AG03 -52*
"V"	A3G 350-AN01 -03	W3G 350-CN01 -32	S3G 350-AN01 -32	S3G 350-AN01 -52*

Direction of air flow "A" on request \*Terminal box design: Electrical connection via terminal strip

### Curves (Speed-controlled)



Air performance measured as per: ISO 5801, Installation category A, in ebm-papst full nozzle and without protection against accidental contact

Suction-side noise levels: L<sub>WA</sub> as per ISO 13347, L<sub>pA</sub> measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 62 ff.

	n rpm	P <sub>e</sub> W	I A	L <sub>WA</sub> dB(A)
Ⓒ 1	1215	74	0,63	65
Ⓒ 2	1190	80	0,67	63
Ⓒ 3	1160	84	0,70	60
Ⓒ 4	1115	85	0,73	58
Ⓓ 1	1575	141	1,15	71
Ⓓ 2	1555	152	1,23	69
Ⓓ 3	1530	161	1,31	66
Ⓓ 4	1480	165	1,35	67

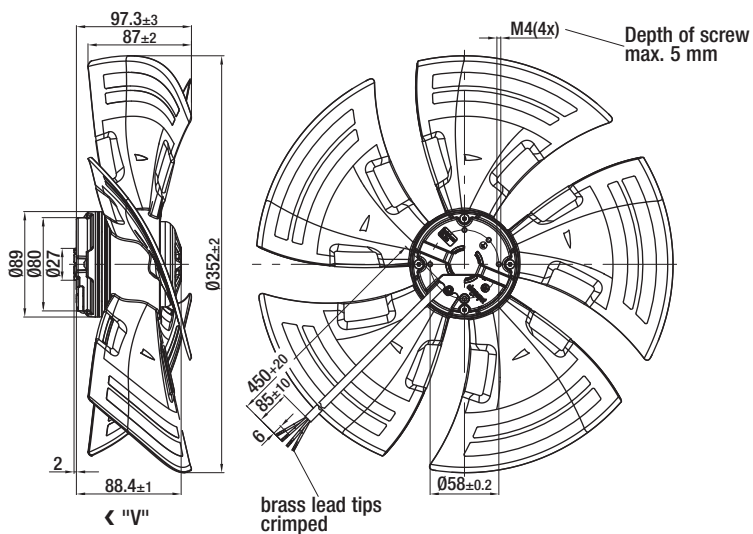
# EC axial fans - HyBlade®

Ø 350 with motor M3G 055, 2 Speed stages, drawings for direction of air flow "V"



## Without attachments

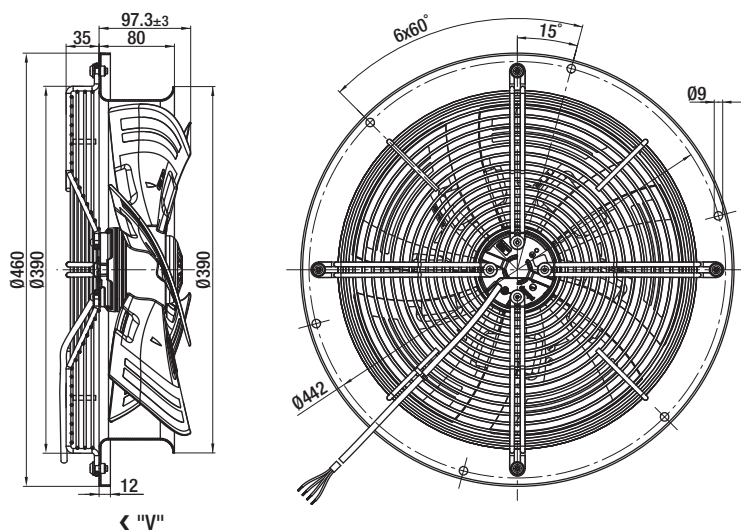
Type	Mass kg
A3G 350-AG03 -01	1,63



Internal diameter of the wall ring at least 358 mm

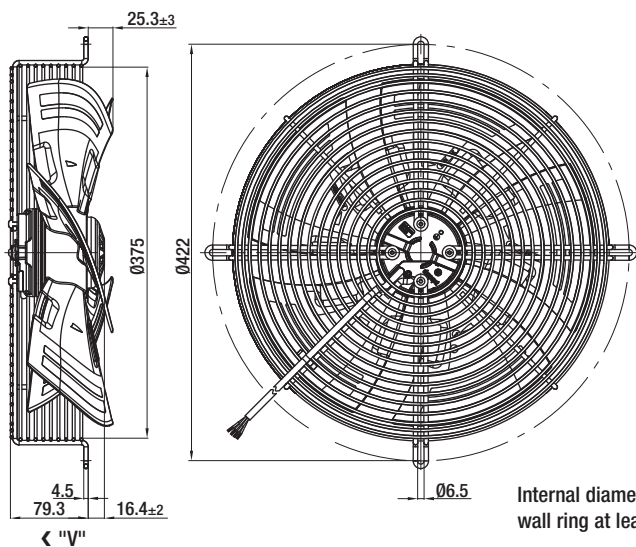
## With full round nozzle

Type	Mass kg
W3G 350-CG03 -30	4,55



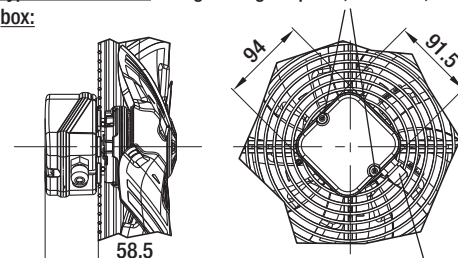
## With guard grille for short nozzle

Type	Mass kg
S3G 350-AG03 -30	3,15
S3G 350-AG03 -50*	3,30



\*Type with terminal box:

Tightening torque: 0,8 Nm ± 0,15 Nm



Cable diameter: 7,5 mm  
Tightening torque: 2,0 Nm ± 0,3 Nm

# EC axial fans - HyBlade®

Ø 350 with motor M3G 055, Speed-controlled, drawings for direction of air flow "V"

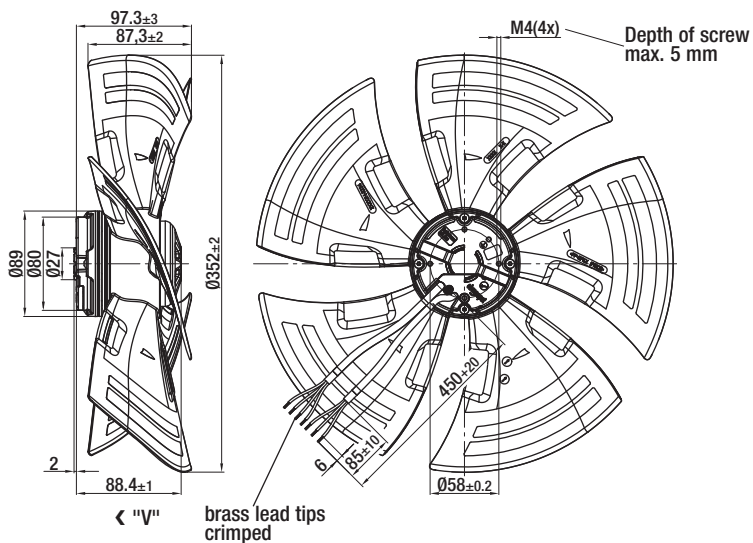


## Without attachments

Type

Mass  
kg

A3G 350-AG03 -03 1,63



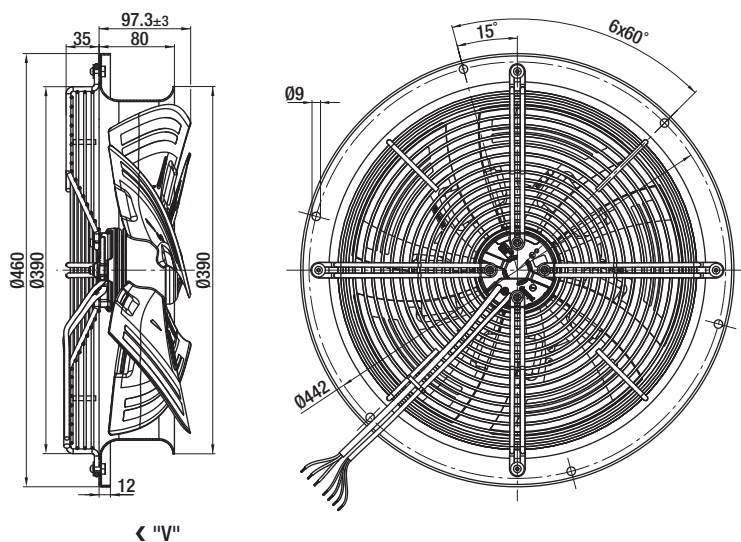
Internal diameter of the wall ring at least 358 mm

## With full round nozzle

Type

Mass  
kg

W3G 350-CG03 -32 4,55

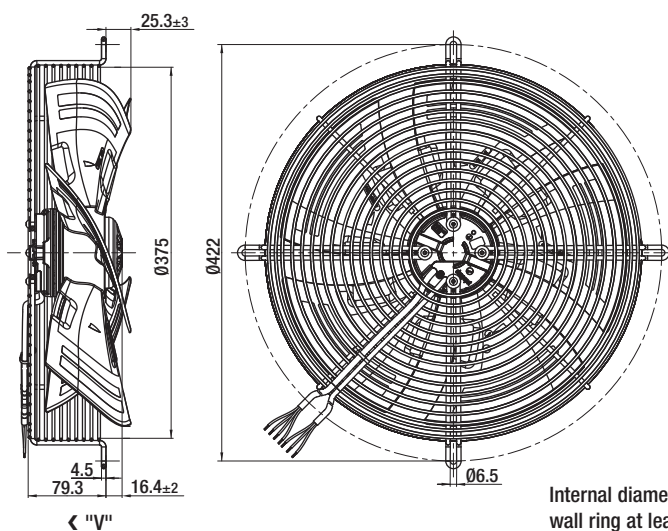


## With guard grille for short nozzle

Type

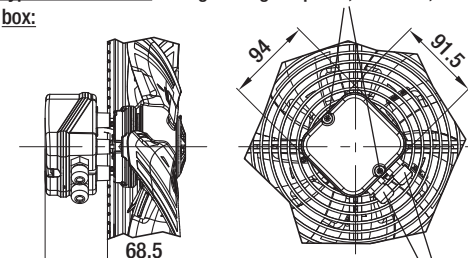
Mass  
kg

S3G 350-AG03 -32 3,15  
S3G 350-AG03 -52\* 3,30



\*Type with terminal box:

Tightening torque: 0,8 Nm ± 0,15 Nm



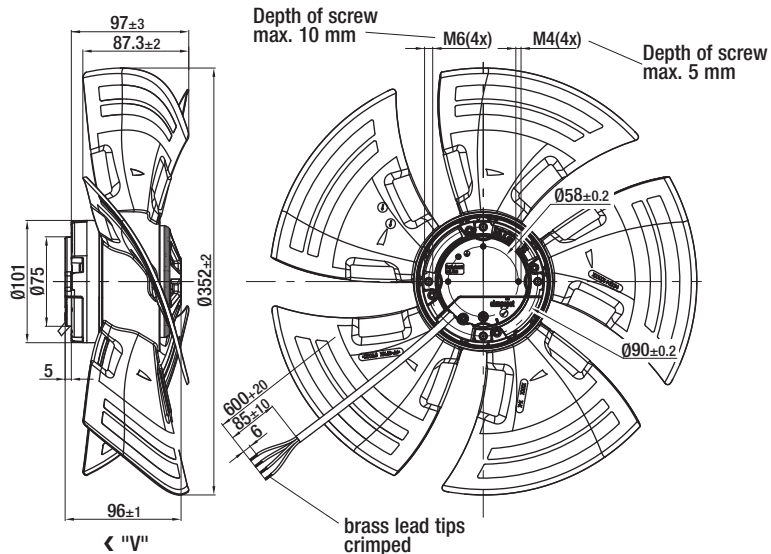
Cable diameter: 7,5 mm  
Tightening torque: 2,0 Nm ± 0,3 Nm

# EC axial fans - HyBlade®

Ø 350 with motor M3G 074, 2 Speed stages, drawings for direction of air flow "V"



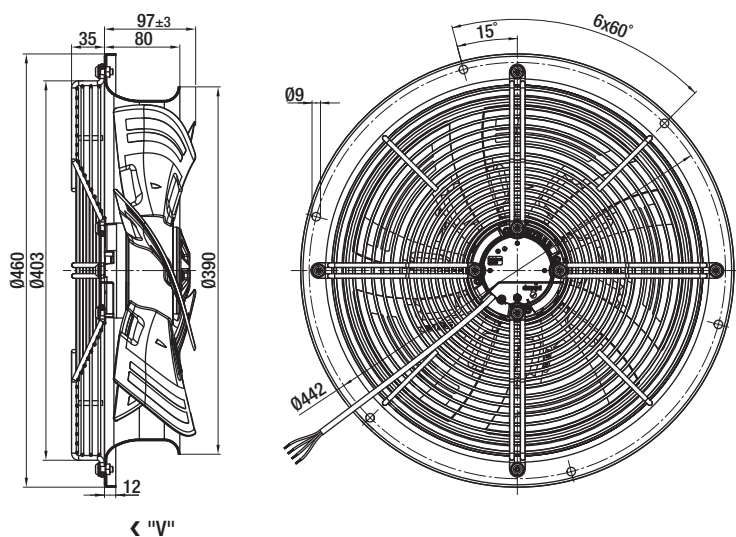
## Without attachments



Type	Mass kg
A3G 350-AN01 -01	2,20

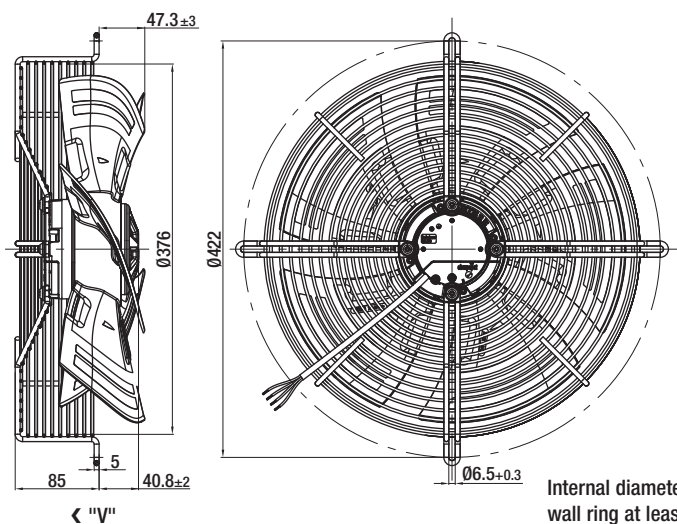
Internal diameter of the wall ring at least 358 mm

## With full round nozzle



Type	Mass kg
W3G 350-CN01 -30	5,10

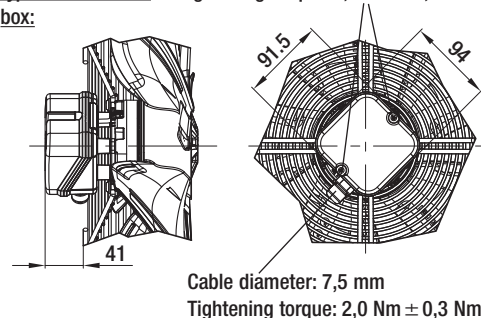
## With guard grille for short nozzle



Type	Mass kg
S3G 350-AN01 -30	3,70
S3G 350-AN01 -50*	3,85

\*Type with terminal box:

Tightening torque: 0,8 Nm ± 0,15 Nm





# EC axial fans - HyBlade®

Ø 350 with motor M3G 074, Speed-controlled, drawings for direction of air flow "V"

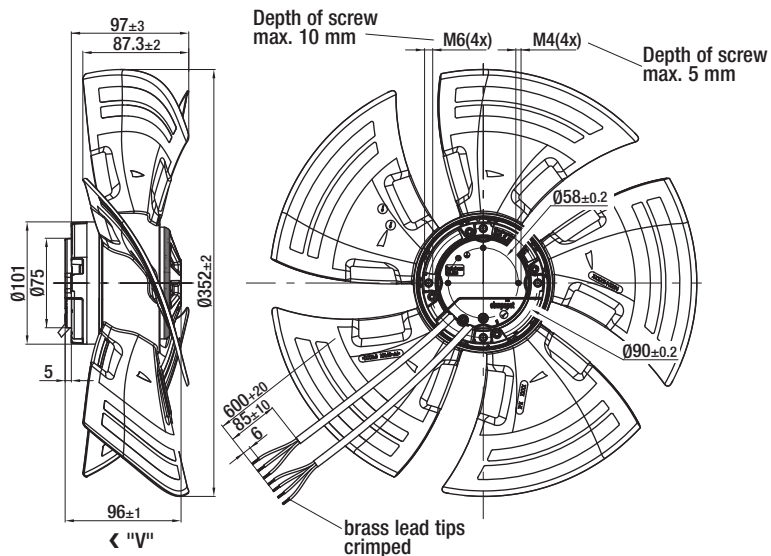


## Without attachments

Type

Mass  
kg

A3G 350-AN01 -03 2,20



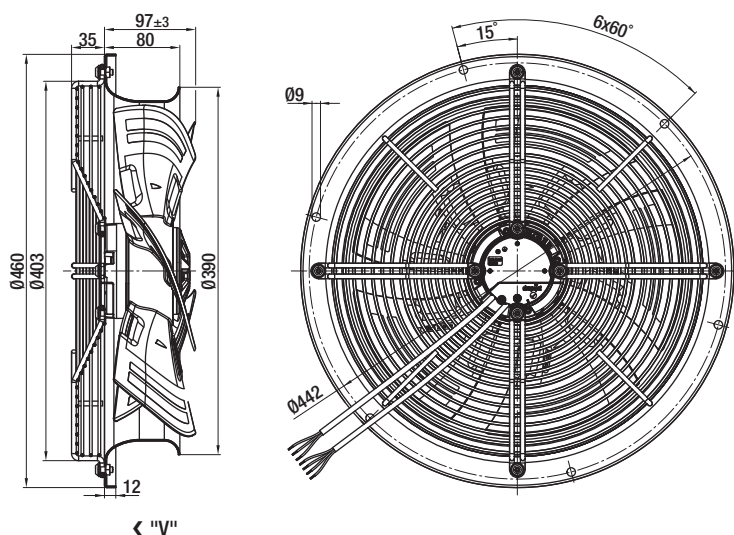
Internal diameter of the wall ring at least 358 mm

## With full round nozzle

Type

Mass  
kg

W3G 350-CN01 -32 5,10



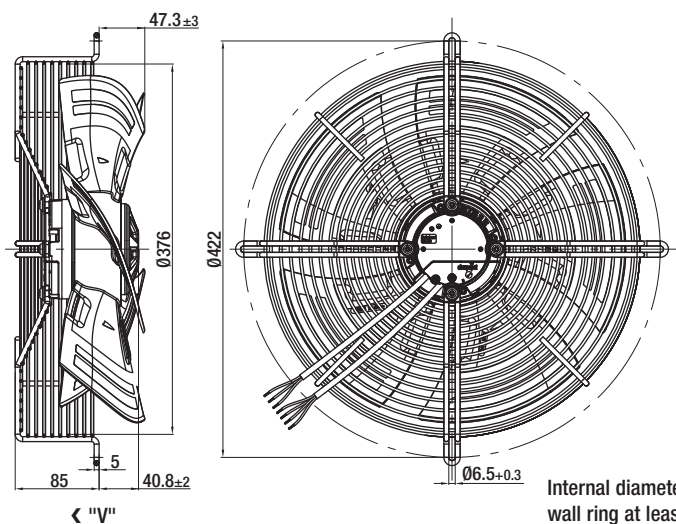
## With guard grille for short nozzle

Type

Mass  
kg

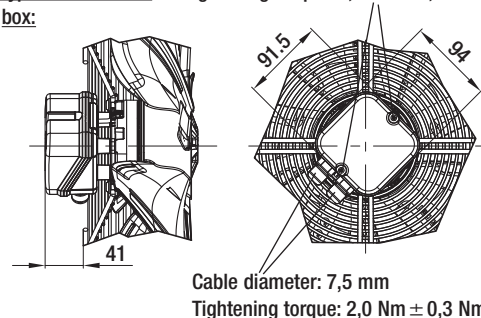
S3G 350-AN01 -32 3,70

S3G 350-AN01 -52\* 3,85



\*Type with terminal box:

Tightening torque: 0,8 Nm ± 0,15 Nm



# EC axial fans - HyBlade®

Ø 400



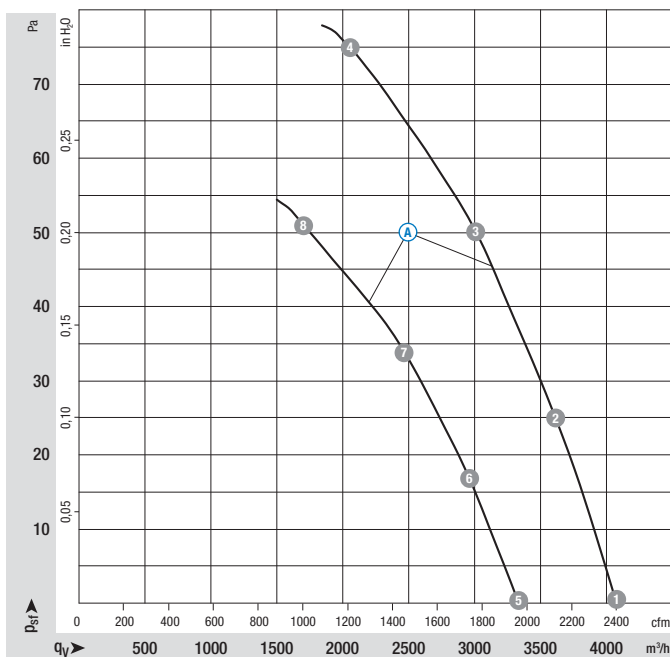
- **Material:** Guard grille: Steel, phosphated and coated in black plastic (RAL9005)  
Wall ring: Sheet steel, pre-galvanised and coated in black plastic (RAL9005)  
Blades: Plastic PP  
Rotor: (A) (B) Surface passivated; (C) Surface coated in black  
Electronics enclosure: Die-cast aluminium
- **Number of blades:** 5
- **Direction of rotation:** Counter-clockwise, seen on rotor
- **Type of protection:** (A) (B) IP 54; (C) IP 54 (acc. to EN 60529)
- **Insulation class:** "B"
- **Mounting position:** (A) (B) Any; (C) Shaft horizontal or rotor on bottom; rotor on top on request
- **Condensate discharge holes:** (A) (B) None, open rotor; (C) Rotor-side
- **Mode of operation:** Continuous operation (S1)
- **Bearings:** Maintenance-free ball bearings

Nominal data		Curve	Nominal voltage range	Frequency	Speed/rpm <sup>(1)</sup>	Max. input power <sup>(1)</sup>	Max. current draw <sup>(1)</sup>	Max. back pressure	Perm. amb. temp.	Mass without attachments	2-stages / 0-10 V	Technical features and electr. connection
Type	Motor	VAC	Hz	rpm	W	A	Pa	°C	kg			
*3G 400	M3G 074-CF	(A)	1~ 200-240	50/60	1080	140	1,15	75	-25..+60	2,3	2 Speed stages	p. 56 / H3)
*3G 400	M3G 074-CF	(B)	1~ 200-240	50/60	1080	140	1,15	75	-25..+60	2,3	Speed-controlled	p. 57 / H4)
*3G 400	M3G 084-FA	(C)	1~ 200-277	50/60	1630	400	2,60	160	-25..+60	4,7	Speed-controlled	p. 58 / K1)

subject to alterations

(1) Nominal data in operating point with maximum load and 230 VAC

## Curves (2 Speed stages)



Air performance measured as per: ISO 5801, Installation category A, in ebm-papst full nozzle and without protection against accidental contact

Suction-side noise levels: L<sub>WA</sub> as per ISO 13347, L<sub>pA</sub> measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 62 ff.

	n rpm	P <sub>e</sub> W	I A	L <sub>WA</sub> dB(A)
(A) 1	1135	116	0,97	69
(A) 2	1115	126	1,05	67
(A) 3	1100	131	1,07	64
(A) 4	1080	140	1,15	67
(A) 5	930	64	0,60	65
(A) 6	915	69	0,61	63
(A) 7	905	73	0,64	59
(A) 8	890	78	0,69	63

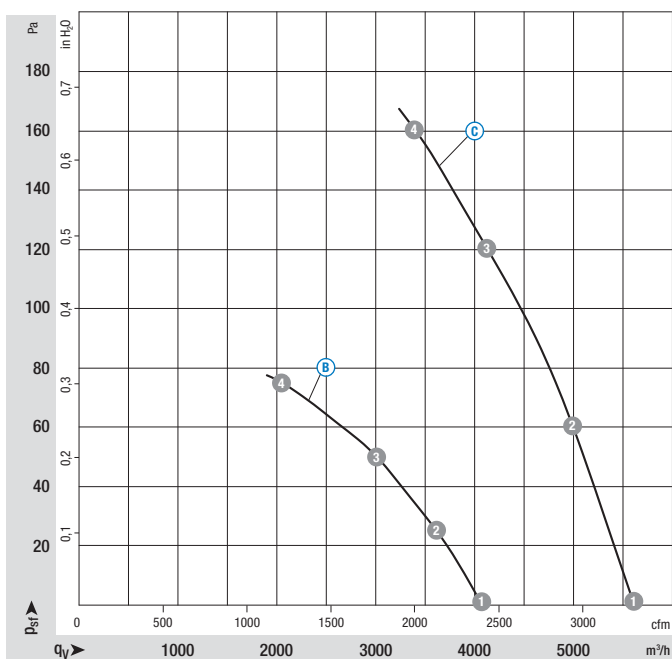


- **Technical features:** See electrical connections p. 60 ff.
- **EMC:** Interference immunity acc. to EN 61000-6-2 (industrial environment)  
Harmonics acc. to EN 61000-3-2/3  
Interference emission acc. to EN 61000-6-3 (household environment)  
On account of the installation conditions, ferritic damping in the connection line may be required for the application.
- **Leakage current:** < 3,5 mA (A) (B) acc. to EN 60335-1; (C) acc. to EN 61800-5-1
- **Cable exit:** Variable
- **Terminal box design:** Electrical connection via terminal strip
- **Protection class:** I; (C) acc. to EN 61800-5-1
- **Product conforming to standards:** (A) (B) EN 60335-1; (C) EN 61800-5-1; CE
- **Approvals:** (A) (B) VDE, cURus on request; (C) CSA; UL

Direction of air flow	Direction of air flow "A" on request			
	Without attachments	With full round nozzle	With guard grille for short nozzle	With guard grille for short nozzle and mounted terminal box
"V"	A3G 400-AN04 -01	W3G 400-CN04 -30	S3G 400-AN04 -30	S3G 400-AN04 -50*
"V"	A3G 400-AN04 -03	W3G 400-CN04 -32	S3G 400-AN04 -32	S3G 400-AN04 -52*
"V"	A3G 400-AC22 -51	W3G 400-CC22 -51	S3G 400-LC22 -51	S3G 400-LC22 -59*

Direction of air flow "A" on request \*Terminal box design: Electrical connection via terminal strip

### Curves (Speed-controlled)



Air performance measured as per: ISO 5801, Installation category A, in ebm-papst full nozzle and without protection against accidental contact

Suction-side noise levels: LwA as per ISO 13347, LpA measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 62 ff.

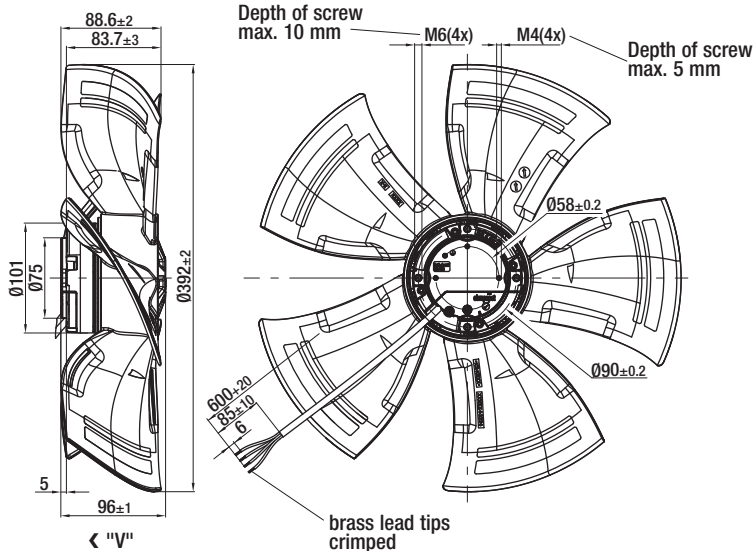
	n rpm	Pe W	I A	LwA dB(A)
(B) 1	1135	116	0,97	69
(B) 2	1115	126	1,05	67
(B) 3	1100	131	1,07	64
(B) 4	1080	140	1,15	67
(C) 1	1660	350	2,24	78
(C) 2	1645	380	2,43	76
(C) 3	1635	391	2,50	72
(C) 4	1630	400	2,60	74

# EC axial fans - HyBlade®

Ø 400 with motor M3G 074, 2 Speed stages, drawings for direction of air flow "V"



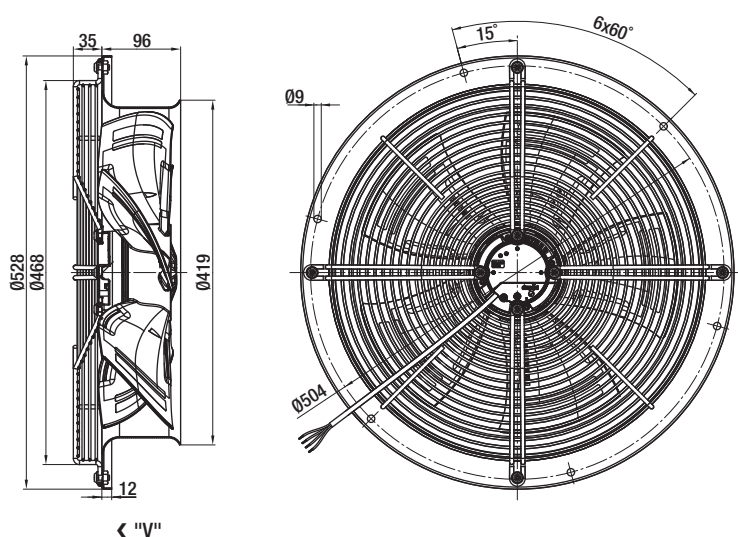
## Without attachments



Type	Mass kg
A3G 400-AN04 -01	2,3

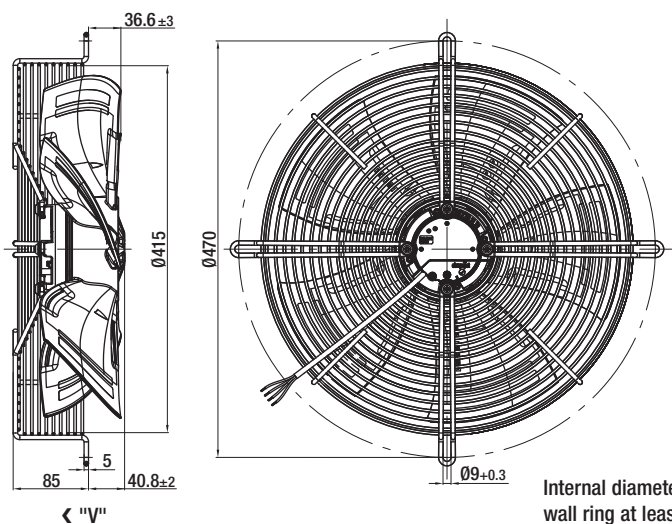
Internal diameter of the wall ring at least 400 mm

## With full round nozzle



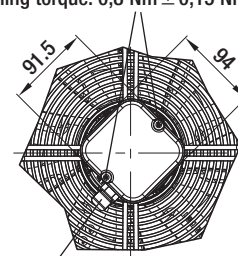
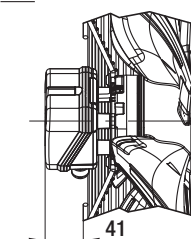
Type	Mass kg
W3G 400-CN04 -30	6,1

## With guard grille for short nozzle



Type	Mass kg
S3G 400-AN04 -30	4,10
S3G 400-AN04 -50*	4,25

\*Type with terminal box: Tightening torque: 0,8 Nm ± 0,15 Nm



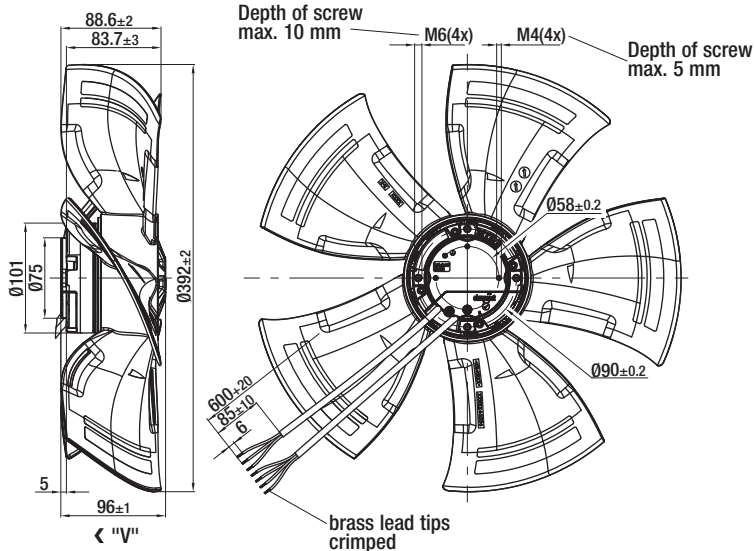
Cable diameter: 7,5 mm  
Tightening torque: 2,0 Nm ± 0,3 Nm

# EC axial fans - HyBlade®

Ø 400 with motor M3G 074, Speed-controlled, drawings for direction of air flow "V"



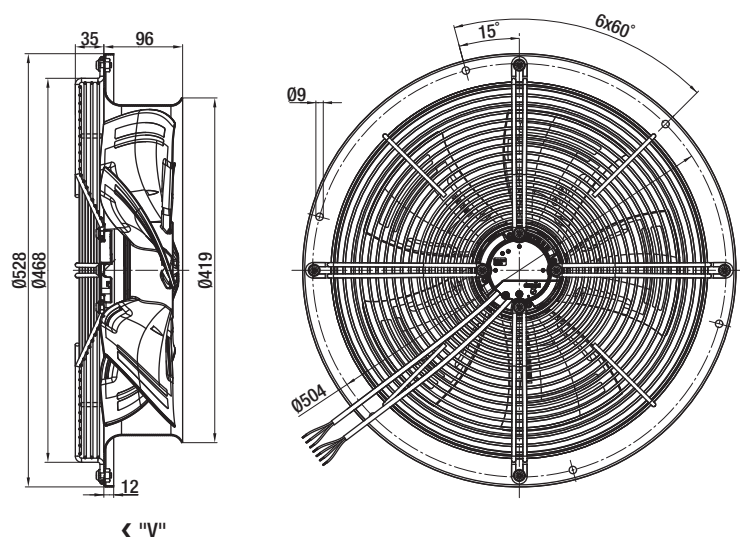
## Without attachments



Type	Mass kg
A3G 400-AN04 -03	2,3

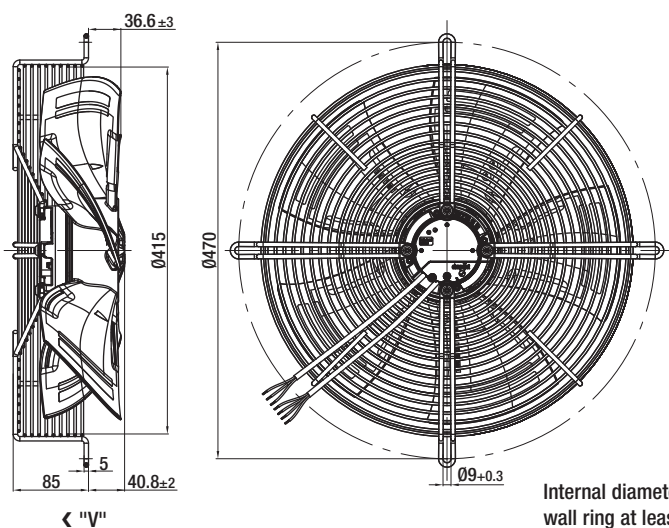
Internal diameter of the wall ring at least 400 mm

## With full round nozzle



Type	Mass kg
W3G 400-CN04 -32	6,1

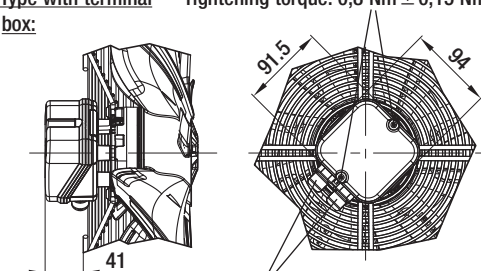
## With guard grille for short nozzle



Type	Mass kg
S3G 400-AN04 -32	4,10
S3G 400-AN04 -52*	4,25

\*Type with terminal box:

Tightening torque: 0,8 Nm ± 0,15 Nm



Cable diameter: 7,5 mm  
Tightening torque: 2,0 Nm ± 0,3 Nm

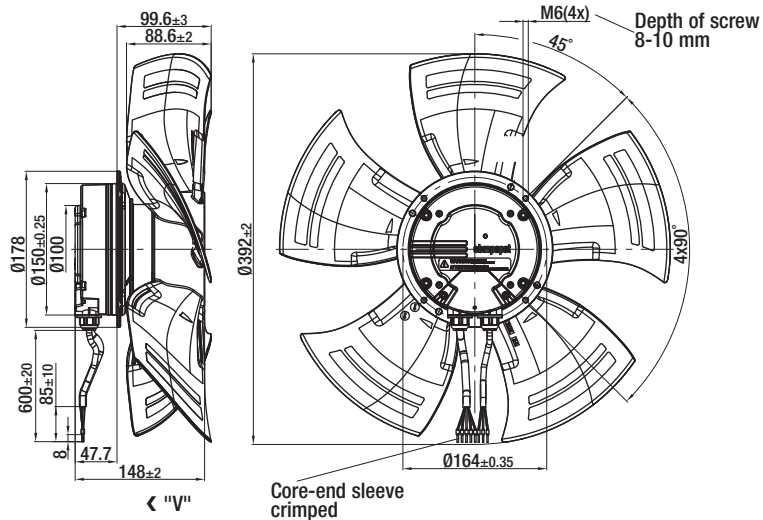
# EC axial fans - HyBlade®

Ø 400 with motor M3G 084, Speed-controlled, drawings for direction of air flow "V"



## Without attachments

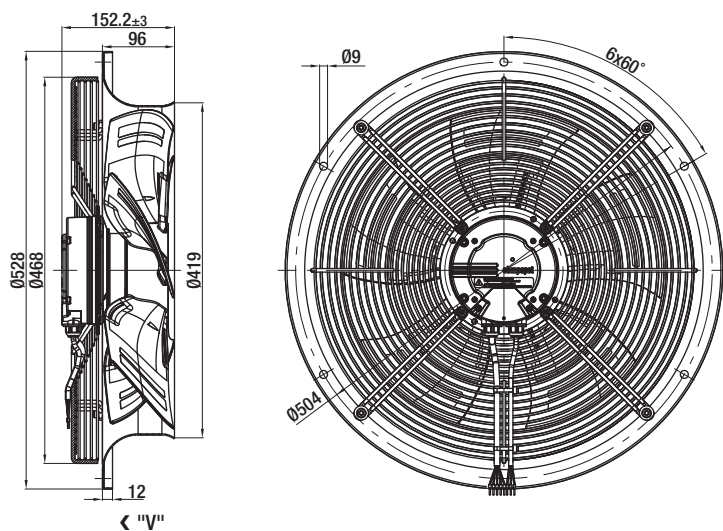
Type	Mass kg
A3G 400-AC22 -51	4,7



Internal diameter of the wall ring at least 400 mm

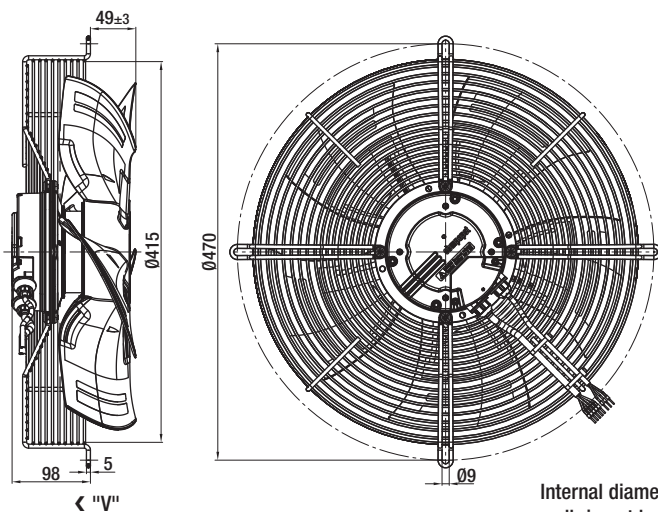
## With full round nozzle

Type	Mass kg
W3G 400-CC22 -51	8,5

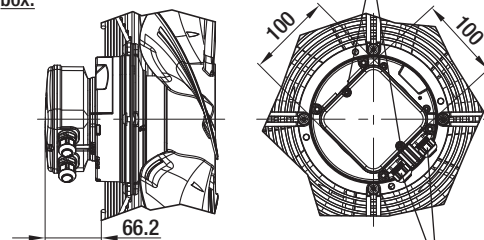


## With guard grille for short nozzle

Type	Mass kg
S3G 400-LC22 -51	6,40
S3G 400-LC22 -59*	6,55



\*Type with terminal box: Tightening torque: 1,5 Nm ± 0,2 Nm



Cable diameter: min. 4 mm, max. 10 mm  
Tightening torque: 2,5 Nm ± 0,4 Nm





# EC axial fans - HyBlade®

Ø 450



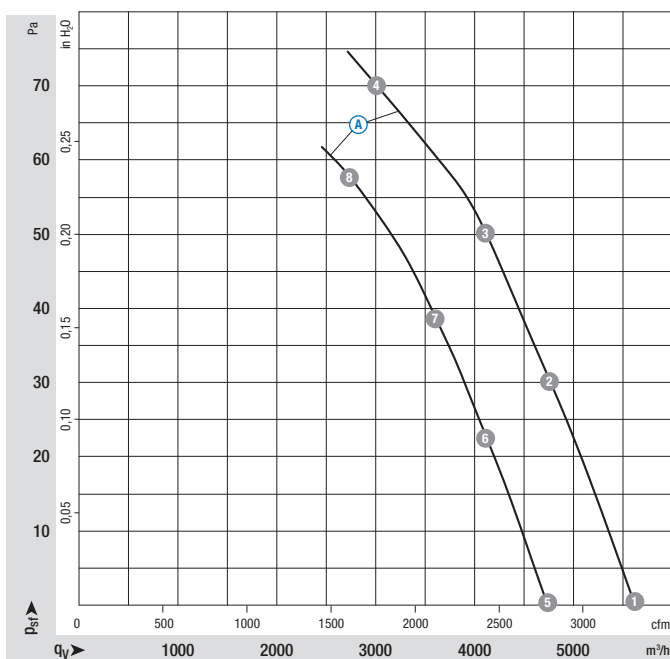
- **Material:** Guard grille: Steel, phosphated and coated in black plastic (RAL9005)  
Wall ring: Sheet steel, pre-galvanised and coated in black plastic (RAL9005)  
Blades: Plastic PP  
Rotor: (A) (B) Surface passivated; (C) Surface coated in black  
Electronics enclosure: Die-cast aluminium
- **Number of blades:** 5
- **Direction of rotation:** Counter-clockwise, seen on rotor
- **Type of protection:** (A) (B) IP 54; (C) IP 54 (acc. to EN 60529)
- **Insulation class:** "B"
- **Mounting position:** (A) (B) Any; (C) Shaft horizontal or rotor on bottom; rotor on top on request
- **Condensate discharge holes:** (A) (B) None, open rotor; (C) Rotor-side
- **Mode of operation:** Continuous operation (S1)
- **Bearings:** Maintenance-free ball bearings

Nominal data		Curve	Nominal voltage range	Frequency	Speed/rpm <sup>(1)</sup>	Max. input power <sup>(1)</sup>	Max. current draw <sup>(1)</sup>	Max. back pressure	Perm. amb. temp.	Mass without attachments	2-stages / 0-10 V	Technical features and electr. connection
Type	Motor		VAC	Hz	rpm	W	A	Pa	°C	kg		
*3G 450	M3G 074-DF	(A)	1~ 200-240	50/60	980	170	1,40	70	-25..+60	2,7	2 Speed stages	p. 56 / H3)
*3G 450	M3G 074-DF	(B)	1~ 200-240	50/60	980	170	1,40	70	-25..+60	2,7	Speed-controlled	p. 57 / H4)
*3G 450	M3G 084-FA	(C)	1~ 200-277	50/60	1300	345	2,20	125	-25..+60	4,8	Speed-controlled	p. 58 / K1)

subject to alterations

(1) Nominal data in operating point with maximum load and 230 VAC

## Curves (2 Speed stages)



Air performance measured as per: ISO 5801, Installation category A, in ebm-papst full nozzle and without protection against accidental contact

Suction-side noise levels: L<sub>WA</sub> as per ISO 13347, L<sub>pA</sub> measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 62 ff.

	n rpm	P <sub>e</sub> W	I A	L <sub>WA</sub> dB(A)
(A) 1	1110	170	1,36	66
(A) 2	1055	170	1,37	63
(A) 3	1030	170	1,38	61
(A) 4	980	170	1,40	60
(A) 5	935	100	0,86	63
(A) 6	915	110	0,93	61
(A) 7	905	115	0,97	59
(A) 8	885	122	1,04	59

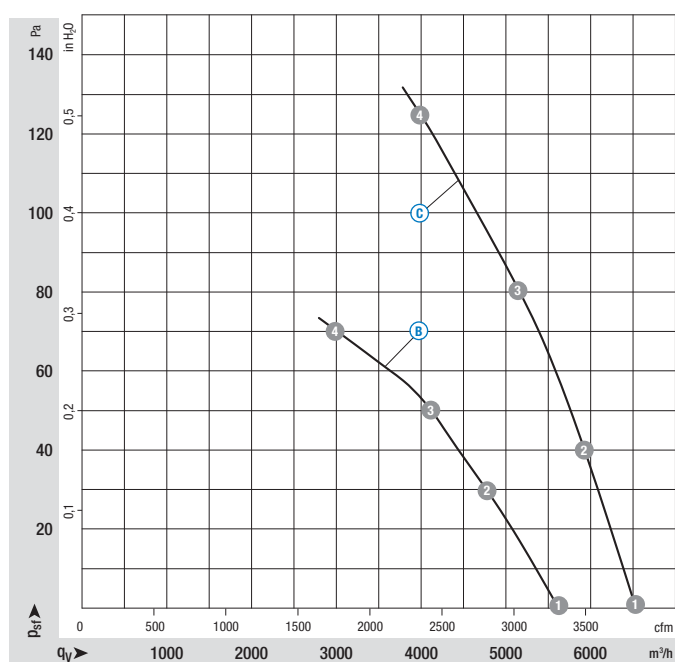


- **Technical features:** See electrical connections p. 60 ff.
- **EMC:** Interference immunity acc. to EN 61000-6-2 (industrial environment)  
Harmonics acc. to EN 61000-3-2/3  
Interference emission acc. to EN 61000-6-3 (household environment)  
On account of the installation conditions, ferritic damping in the connection line may be required for the application.
- **Leakage current:** < 3,5 mA (A) (B) acc. to EN 60335-1; (C) acc. to EN 61800-5-1
- **Cable exit:** Variable
- **Terminal box design:** Electrical connection via terminal strip
- **Protection class:** I; (C) acc. to EN 61800-5-1
- **Product conforming to standards:** (A) (B) EN 60335-1; (C) EN 61800-5-1
- **Approvals:** (A) (B) VDE, cURus on request; (C) CSA; UL

Direction of air flow	Direction of air flow "A" on request			
	Without attachments	With full round nozzle	With guard grille for short nozzle	With guard grille for short nozzle and mounted terminal box
"V"	A3G 450-A002 -01	W3G 450-C002 -30	S3G 450-A002 -30	S3G 450-A002 -50*
"V"	A3G 450-A002 -03	W3G 450-C002 -32	S3G 450-A002 -32	S3G 450-A002 -52*
"V"	A3G 450-AC28 -51	W3G 450-CC28 -51	S3G 450-LC28 -51	S3G 450-LC28 -59*

Direction of air flow "A" on request \*Terminal box design: Electrical connection via terminal strip

### Curves (Speed-controlled)



Air performance measured as per: ISO 5801, Installation category A, in ebm-papst full nozzle and without protection against accidental contact

Suction-side noise levels: L<sub>wA</sub> as per ISO 13347, L<sub>pA</sub> measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 62 ff.

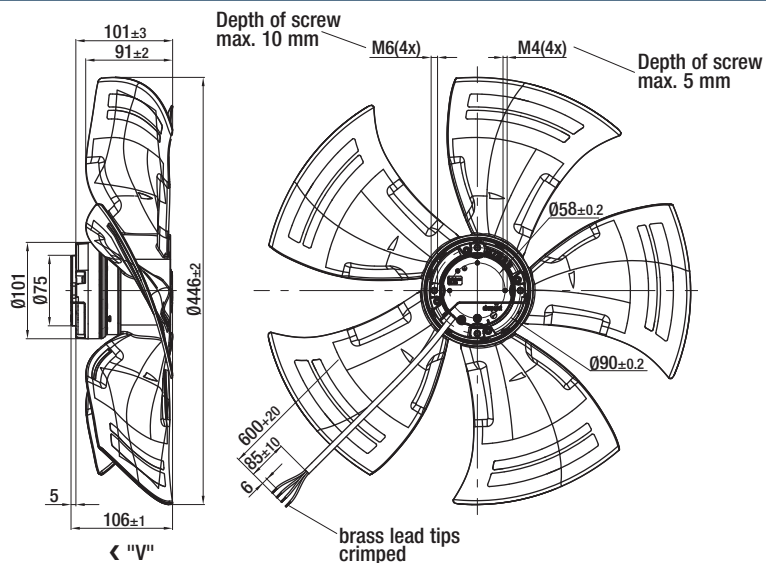
	n	P <sub>e</sub>	I	L <sub>wA</sub>
	rpm	W	A	dB(A)
(B) 1	1110	170	1,36	66
(B) 2	1055	170	1,37	63
(B) 3	1030	170	1,38	61
(B) 4	980	170	1,40	60
(C) 1	1310	270	1,72	71
(C) 2	1300	298	1,91	68
(C) 3	1300	326	2,07	65
(C) 4	1300	345	2,20	67

# EC axial fans - HyBlade®

Ø 450 with motor M3G 074, 2 Speed stages, drawings for direction of air flow "V"



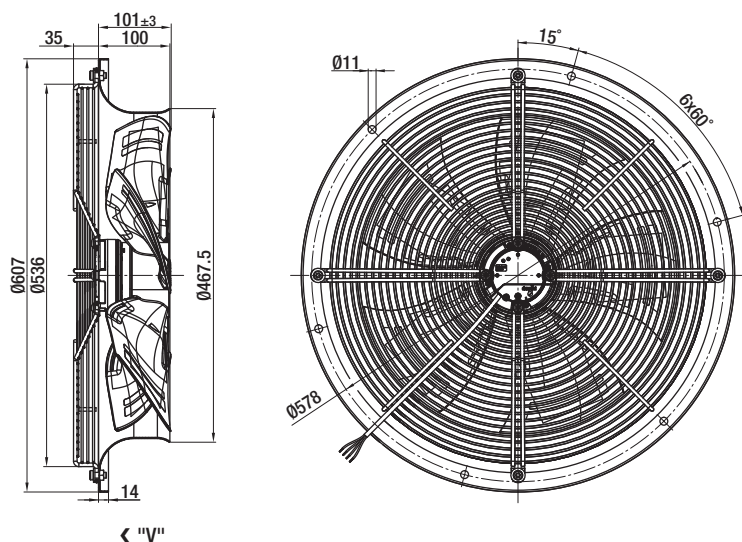
## Without attachments



Type	Mass kg
A3G 450-A002 -01	2,7

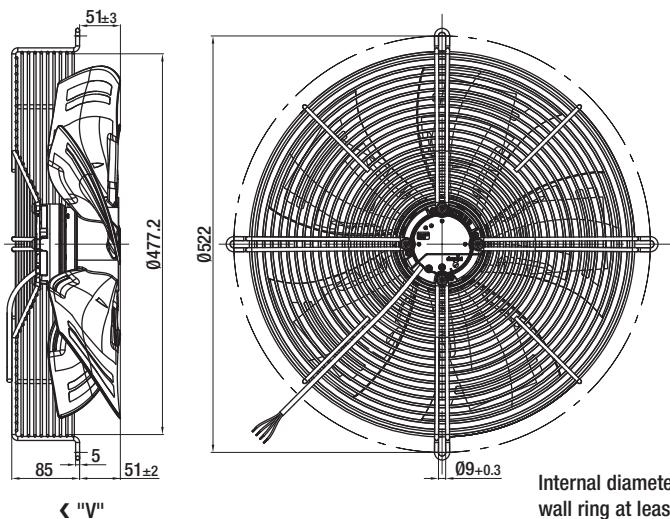
Internal diameter of the wall ring at least 454 mm

## With full round nozzle



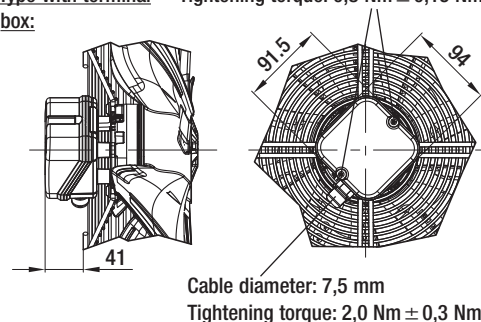
Type	Mass kg
W3G 450-C002 -30	7,4

## With guard grille for short nozzle



Type	Mass kg
S3G 450-A002 -30	4,80
S3G 450-A002 -50*	4,95

\*Type with terminal box: Tightening torque: 0,8 Nm ± 0,15 Nm

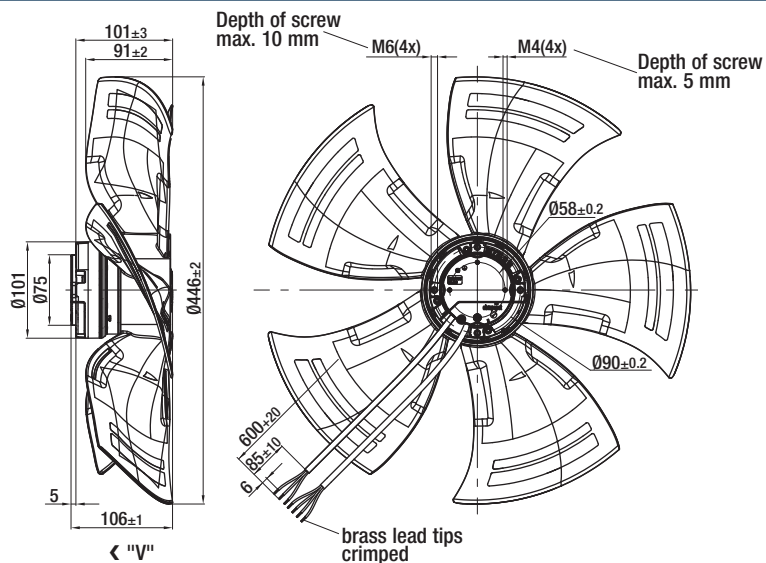


# EC axial fans - HyBlade®

Ø 450 with motor M3G 074, Speed-controlled, drawings for direction of air flow "V"



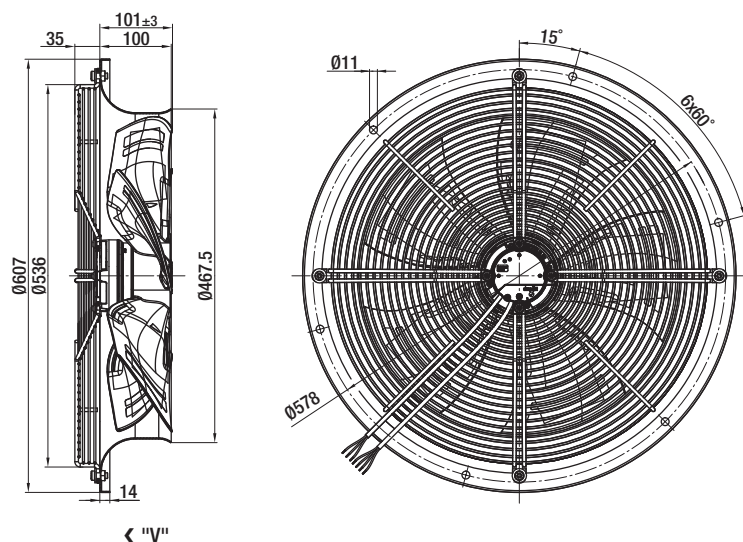
## Without attachments



Type	Mass kg
A3G 450-A002 -03	2,7

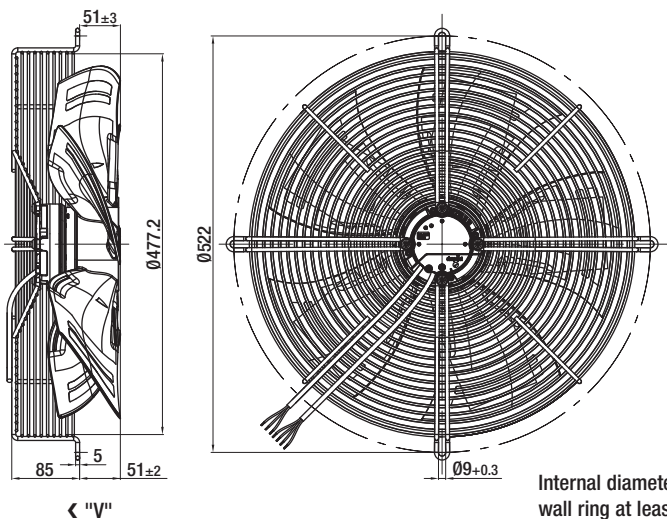
Internal diameter of the wall ring at least 454 mm

## With full round nozzle



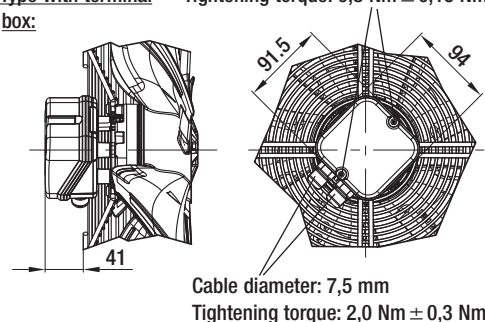
Type	Mass kg
W3G 450-C002 -32	7,4

## With guard grille for short nozzle



Type	Mass kg
S3G 450-A002 -32	4,80
S3G 450-A002 -52*	4,95

\*Type with terminal box: Tightening torque: 0,8 Nm ± 0,15 Nm



Internal diameter of the wall ring at least 454 mm

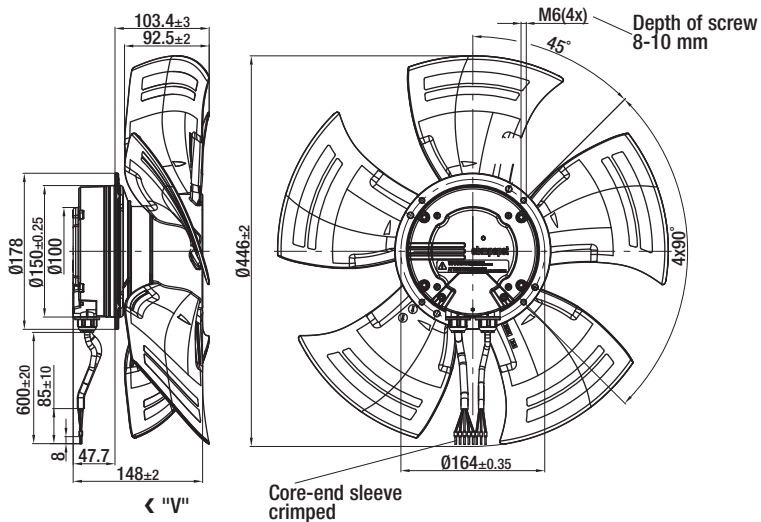
# EC axial fans - HyBlade®

Ø 450 with motor M3G 084, Speed-controlled, drawings for direction of air flow "V"



## Without attachments

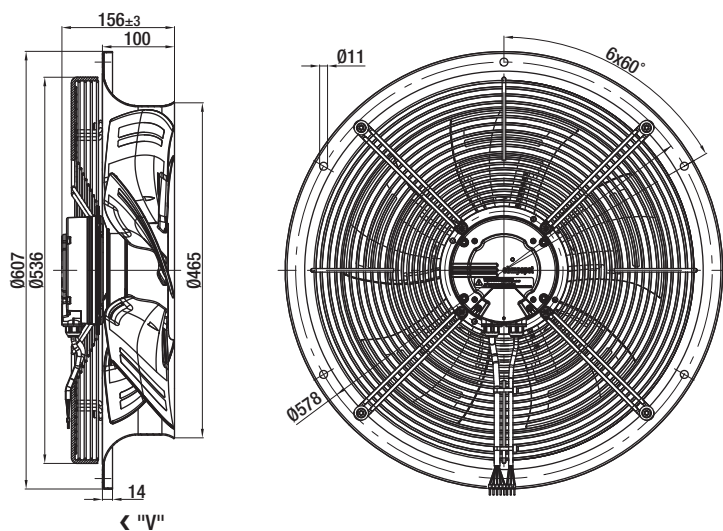
Type	Mass kg
A3G 450-AC28 -51	4,8



Internal diameter of the wall ring at least 454 mm

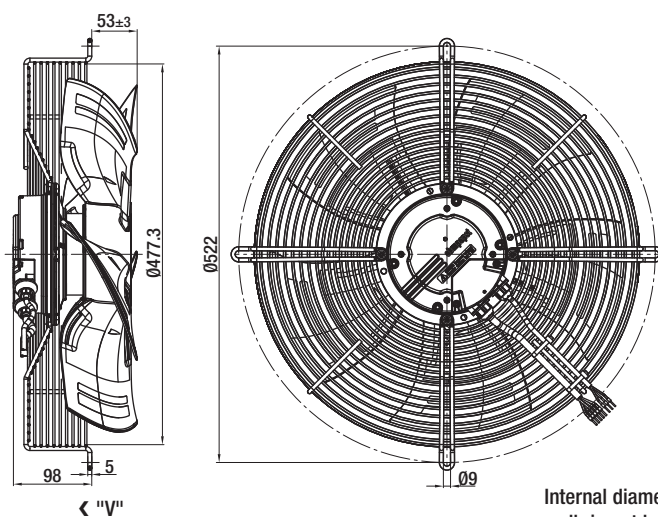
## With full round nozzle

Type	Mass kg
W3G 450-CC28 -51	9,5

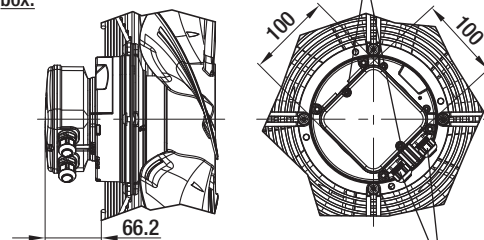


## With guard grille for short nozzle

Type	Mass kg
S3G 450-LC28 -51	6,80
S3G 450-LC28 -59*	6,95



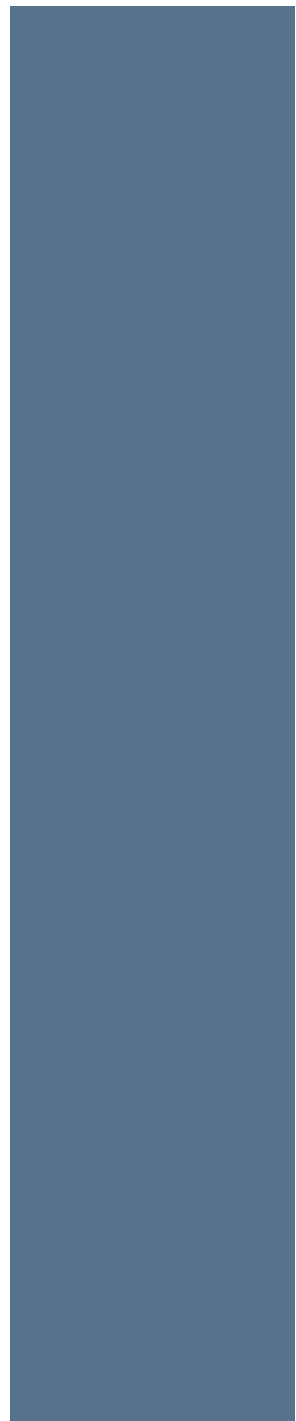
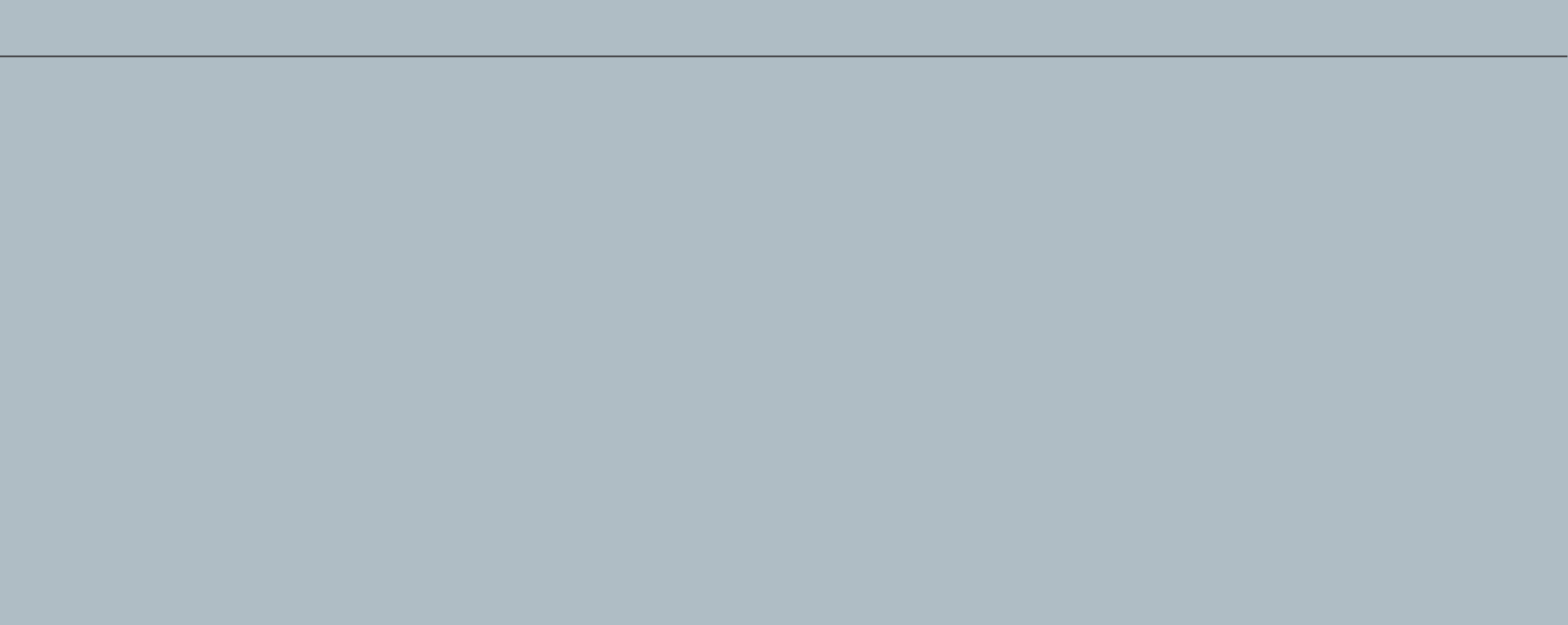
\*Type with terminal box: Tightening torque: 1,5 Nm ± 0,2 Nm



Cable diameter: min. 4 mm, max. 10 mm  
Tightening torque: 2,5 Nm ± 0,4 Nm



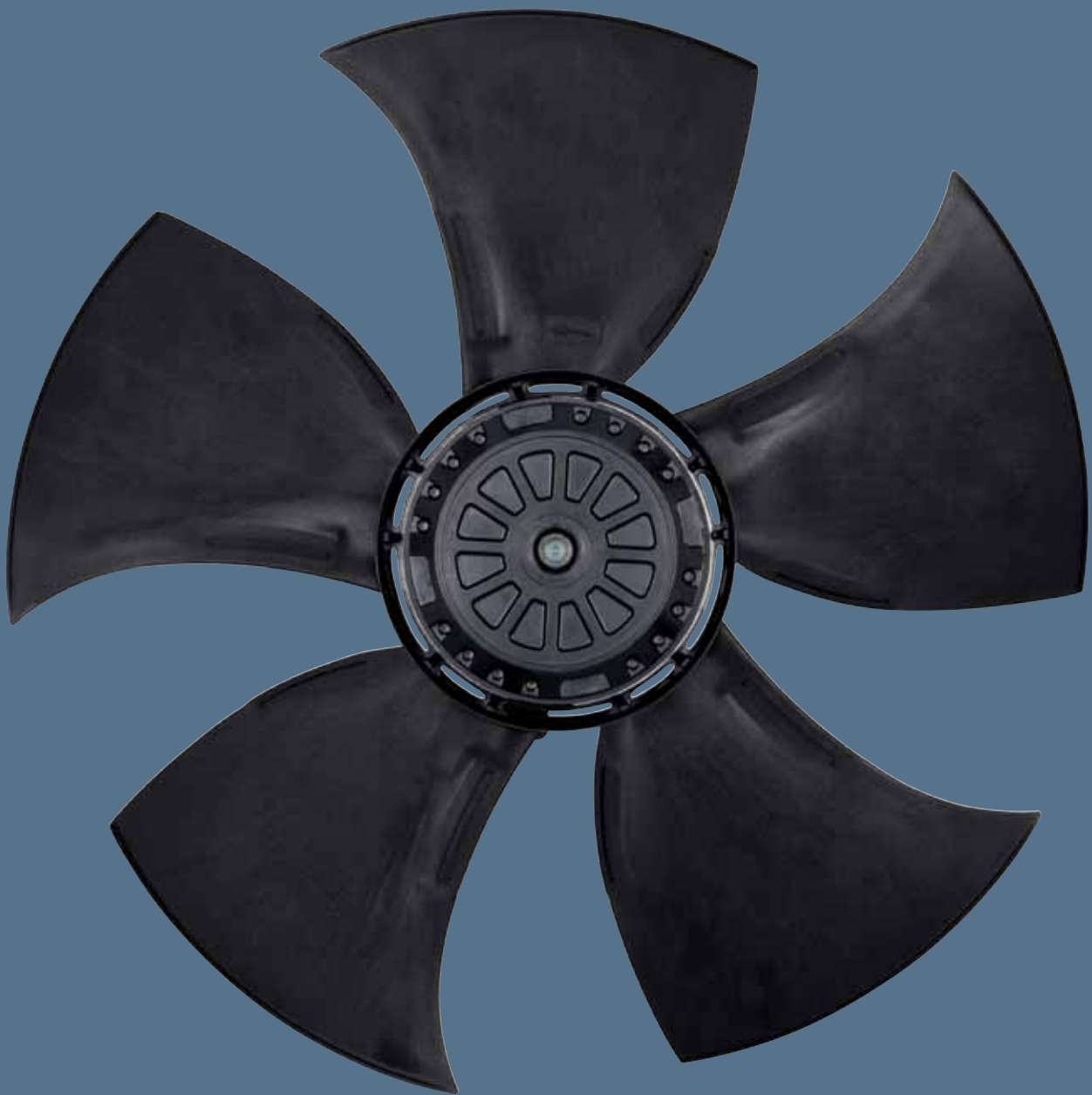




# AC axial fans - HyBlade® Ø 300-450

AC axial fans HyBlade® Ø 300-450

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# AC axial fans - HyBlade®

Ø 300



- **Material:** Guard grille: Steel, phosphated and coated in black plastic (RAL9005)  
Wall ring: Sheet steel, pre-galvanised and coated in black plastic (RAL9005)  
Blades: C D G H Plastic PP; A B E F Sheet steel, coated in black  
Rotor: Surface coated in black
- **Number of blades:** 5
- **Direction of rotation:** Counter-clockwise, seen on rotor
- **Type of protection:** IP 44, depending on installation and position (acc. to EN 60034-5)
- **Insulation class:** A B "F"; C D E F G H "B"
- **Mounting position:** Shaft horizontal or rotor on bottom; rotor on top on request
- **Condensate discharge holes:** Rotor-side
- **Mode of operation:** Continuous operation (S1)
- **Bearings:** Maintenance-free ball bearings

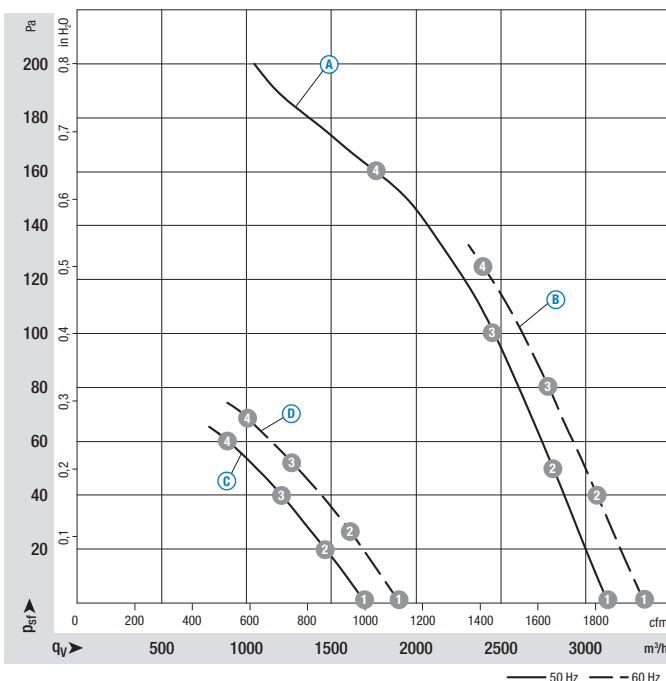
Nominal data		Curve	Nominal voltage	Frequency	Speed/rpm	input power	current draw	Capacitor	Max. back pressure	Perm. amb. temp.	Mass without attachments	Electr. connection
Typ	Motor	VAC	Hz	rpm	W	A	µF/VDB	Pa	°C	kg		
*2D 300 <sup>(2)</sup>	M2D 074-DF	A	3~230/400	50	2580	210	0,62/0,36	---	200	-25...+75	3,1	p. 61 / C1,C2
		B	3~230/400	60	2750	300	0,84/0,48	---	125	-25...+40	3,1	
*4D 300 <sup>(1)(2)</sup>	M4D 068-CF	C	3~230/400	50	1300	68	0,25/0,14	---	60	-25...+60	1,6	p. 61 / C1,C2
		D	3~230/400	60	1400	90	0,26/0,15	---	70	-25...+55	1,6	
*2E 300	M2E 074-DF	E	1~230	50	2700	230	1,10	8,0/400	200	-25...+50	3,1	p. 60 / A1
		F	1~230	60	3000	350	1,55	8,0/400	50	-25...+40	3,1	
*4E 300 <sup>(1)</sup>	M4E 068-CF	G	1~230	50	1320	72	0,32	2,0/400	60	-25...+50	2,7	p. 60 / A1
		H	1~230	60	1500	90	0,40	2,0/400	60	-25...+50	2,7	

subject to alterations

(1) Nominal data in operating point with maximum load and 230 or 400 VAC

(2) 230 VAC Δ / 400 VAC Y

## Curves



Air performance measured as per: ISO 5801, Installation category A, in ebm-papst full nozzle and without protection against accidental contact

Suction-side noise levels: L<sub>WA</sub> as per ISO 13347, L<sub>pA</sub> measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 62 ff.

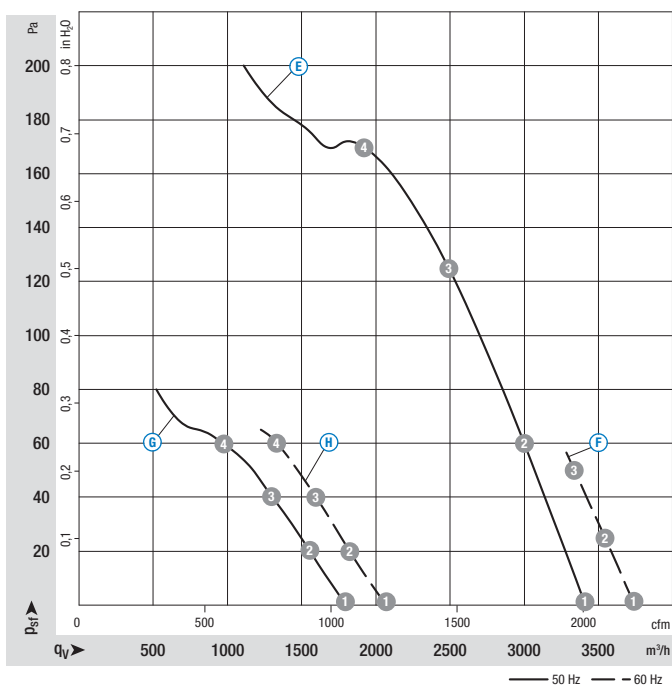
	n rpm	P <sub>e</sub> W	I A	L <sub>WA</sub> dB(A)
A 1	2580	210	0,62/0,36	78
A 2	2540	227	0,62/0,36	78
A 3	2490	244	0,68/0,39	77
A 4	2395	278	0,74/0,43	78
B 1	2750	300	0,84/0,48	80
B 2	2685	316	0,84/0,48	79
B 3	2625	331	0,87/0,50	79
B 4	2550	347	0,90/0,52	78
C 1	1350	55	0,23/0,13	59
C 2	1350	57	0,23/0,13	58
C 3	1335	61	0,23/0,13	58
C 4	1300	68	0,25/0,14	64
D 1	1500	70	0,23/0,13	62
D 2	1495	75	0,24/0,14	61
D 3	1460	80	0,24/0,14	61
D 4	1400	90	0,25/0,15	66

- **Motor protection:** E F G H TOP wired internally
- **Leakage current:** < 0,75 mA acc. to EN 60335-1
- **Cable exit:** Variable
- **Terminal box design:** Electrical connection via terminal strip
- **Protection class:** I
- **Product conforming to standards:** EN 60335-1; CE
- **Approvals:** VDE, cURus on request

Direction of air flow	Direction of air flow "A" on request			
	Without attachments	With full round nozzle	With guard grille for short nozzle	With guard grille for short nozzle and mounted terminal box
"V"	A2D 300-AP02 -01	W2D 300-CP02 -30	S2D 300-AP02 -30	S2D 300-AP02 -50*
"V"	A4D 300-AS34 -01	W4D 300-CS34 -30	S4D 300-AS34 -30	S4D 300-AS34 -50*
"V"	A2E 300-AP02 -01	W2E 300-CP02 -30	S2E 300-AP02 -30	S2E 300-AP02 -50*(3)
"V"	A4E 300-AS72 -01	W4E 300-CS72 -30	S4E 300-AS72 -30	S4E 300-AS72 -50*(3)

Direction of air flow "A" on request    \*Terminal box design: Electrical connection via terminal strip    (3) Device is outfitted with a P0 capacitor. EN 60335-1 is to be observed for the end application!

### Curves



Air performance measured as per: ISO 5801, Installation category A, in ebm-papst full nozzle and without protection against accidental contact

Suction-side noise levels:  $L_{wA}$  as per ISO 13347,  $L_pA$  measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 62 ff.

	n rpm	$P_e$ W	I A	$L_{wA}$ dB(A)
E 1	2700	230	1,10	80
E 2	2680	255	1,12	79
E 3	2600	279	1,22	79
E 4	2520	303	1,32	79
F 1	3000	350	1,55	82
F 2	2940	355	1,58	81
F 3	2885	362	1,60	81
F 4	---	---	---	---
G 1	1380	62	0,28	60
G 2	1370	63	0,28	59
G 3	1355	66	0,29	58
G 4	1320	72	0,32	61
H 1	1590	80	0,36	63
H 2	1560	83	0,36	62
H 3	1535	86	0,37	62
H 4	1500	90	0,40	62

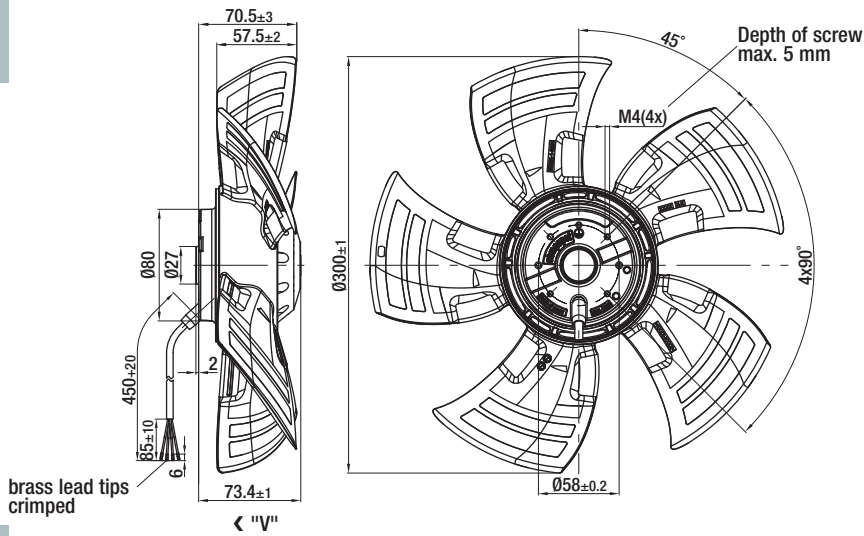
# AC axial fans - HyBlade®

Ø 300 with motor M4\* 068, drawings for direction of air flow "V"



## Without attachments

Typ	Mass kg
A4D 300-AS34 -01	1,6
A4E 300-AS72 -01	2,7

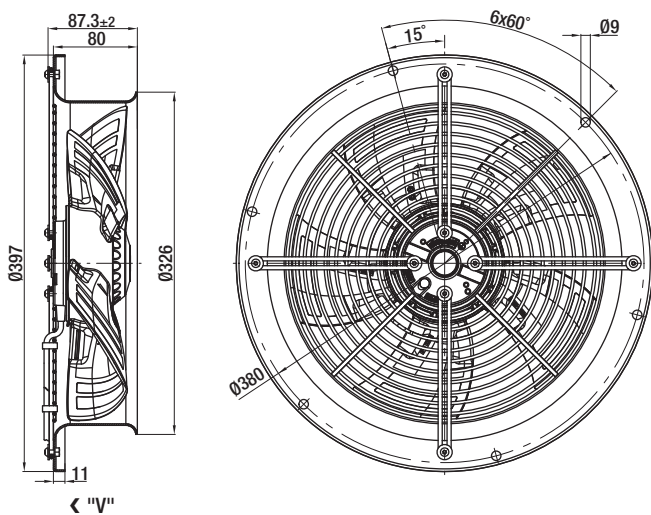


Internal diameter of the wall ring at least 306 mm



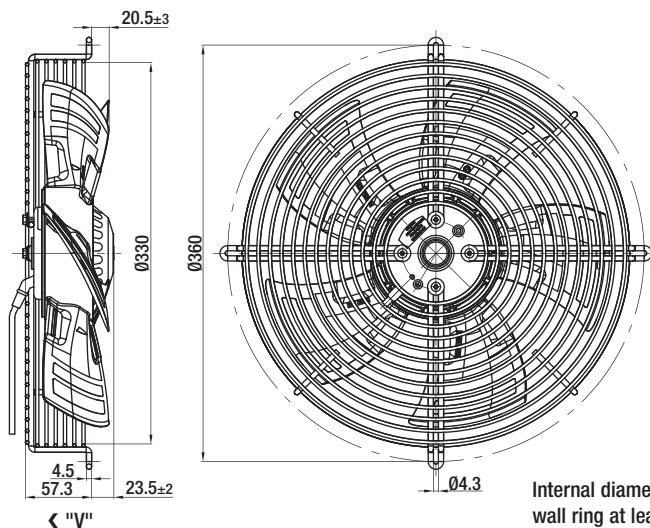
## With full round nozzle

Typ	Mass kg
W4D 300-CS34 -30	3,85
W4E 300-CS72 -30	4,1



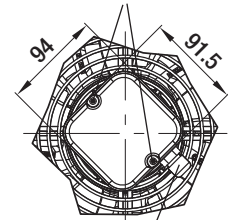
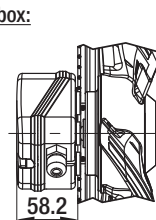
## With guard grille for short nozzle

Typ	Mass kg
S4D 300-AS34 -30	2,60
S4E 300-AS72 -30	2,85
S4D 300-AS34 -50*	2,75
S4E 300-AS72 -50*	3,00



\*Type with terminal box:

Tightening torque: 0,7 Nm ± 0,2 Nm



Cable diameter: max. 7,5 mm  
Tightening torque: 1,3 Nm ± 0,2 Nm

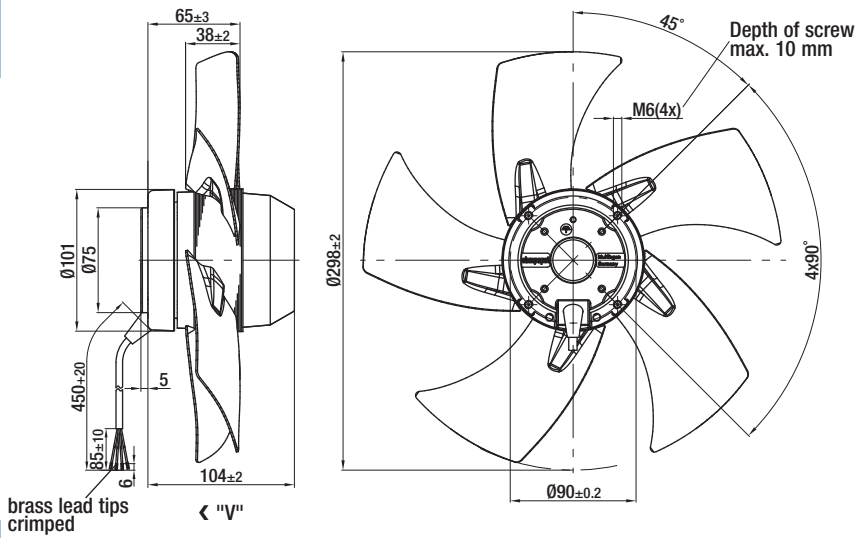


# AC axial fans

Ø 300 with motor M2\* 074, drawings for direction of air flow "V"



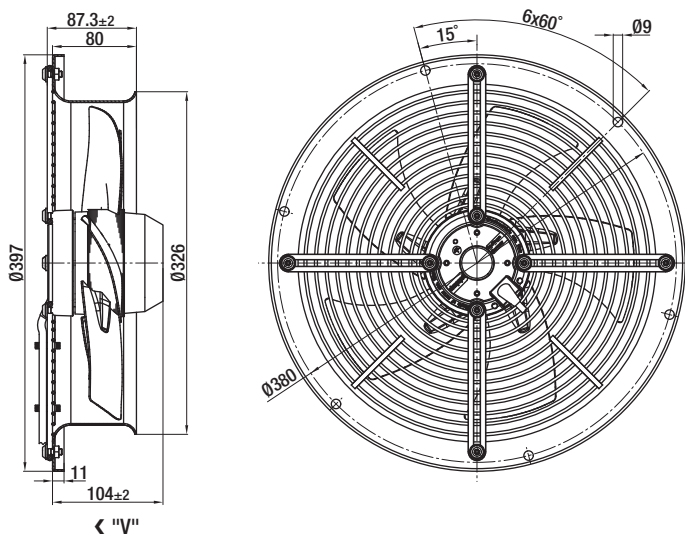
## Without attachments



Typ	Mass kg
A2D 300-AP02 -01	3,1
A2E 300-AP02 -01	3,1

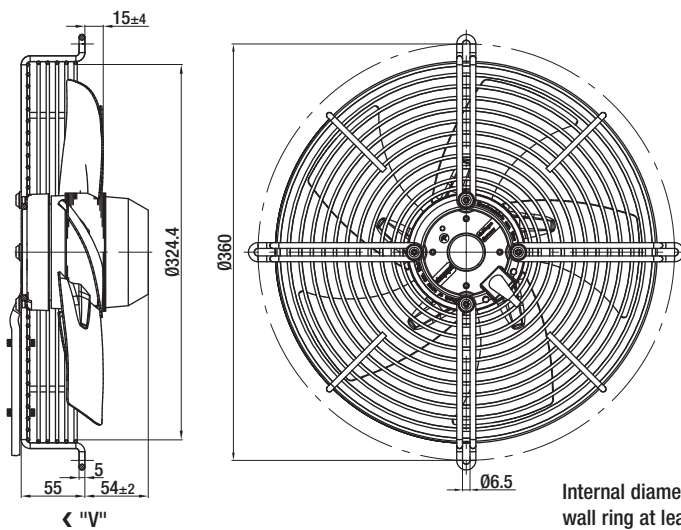
Internal diameter of the wall ring at least 306 mm

## With full round nozzle



Typ	Mass kg
W2D 300-CP02 -30	5,2
W2E 300-CP02 -30	5,2

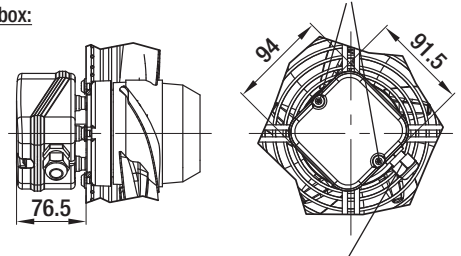
## With guard grille for short nozzle



Typ	Mass kg
S2D 300-AP02 -30	4,10
S2E 300-AP02 -30	4,10
S2D 300-AP02 -50*	4,25
S2E 300-AP02 -50*	4,25

\*Type with terminal box:

Tightening torque: 0,7 Nm ± 0,2 Nm



Cable diameter: max. 7,5 mm  
Tightening torque: 1,3 Nm ± 0,2 Nm

# AC axial fans - HyBlade®

Ø 350



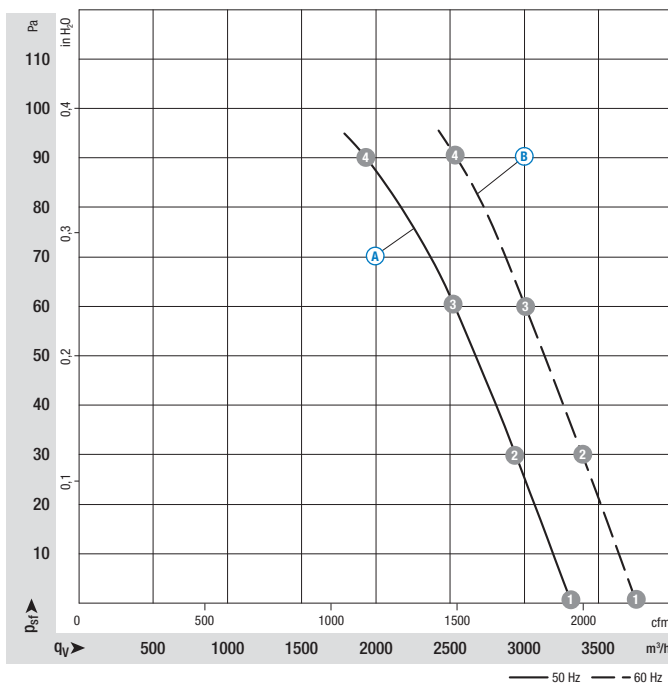
- **Material:** Guard grille: Steel, phosphated and coated in black plastic (RAL9005)  
Wall ring: Sheet steel, pre-galvanised and coated in black plastic (RAL9005)  
Blades: Plastic PP  
Rotor: Surface coated in black
- **Number of blades:** 5
- **Direction of rotation:** Counter-clockwise, seen on rotor
- **Type of protection:** IP 44, depending on installation and position (acc. to EN 60034-5)
- **Insulation class:** A B C "F"; D E "B"
- **Mounting position:** Shaft horizontal or rotor on bottom; rotor on top on request
- **Condensate discharge holes:** Rotor-side
- **Mode of operation:** Continuous operation (S1)
- **Bearings:** Maintenance-free ball bearings

Nominal data		Curve	Nominal voltage	Frequency	Speed/rpm <sup>(1)</sup>	Max. input power <sup>(1)</sup>	Max. current draw <sup>(1)</sup>	Capacitor	Max. back pressure	Perm. amb. temp.	Mass without attachments	Electr. connection
Typ	Motor	VAC	Hz	rpm	W	A	µF/VDB	Pa	°C	kg		
*4D 350 <sup>(2)</sup>	M4D 074-DF	(A)	3~230/400	50	1370	170	0,64/0,37	---	90	-25...+65	3,5	p. 61 / C1,C2
		(B)	3~230/400	60	1520	230	0,70/0,40	---	90	-25...+55	3,5	
*4E 350	M4E 074-DF	(C)	1~230	50	1340	165	0,73	4,0/400	90	-25...+65	3,5	p. 60 / A1)
*6E 350	M6E 074-DF	(D)	1~230	50	910	75	0,35	2,0/400	40	-25...+50	3,5	p. 60 / A1)
		(E)	1~230	60	1020	95	0,42	2,0/400	50	-25...+55	3,5	

subject to alterations

(1) Nominal data in operating point with maximum load and 230 or 400 VAC (2) 230 VAC Δ / 400 VAC Y

## Curves



Air performance measured as per: ISO 5801, Installation category A, in ebm-papst full nozzle and without protection against accidental contact

Suction-side noise levels: L<sub>WA</sub> as per ISO 13347, L<sub>PA</sub> measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 62 ff.

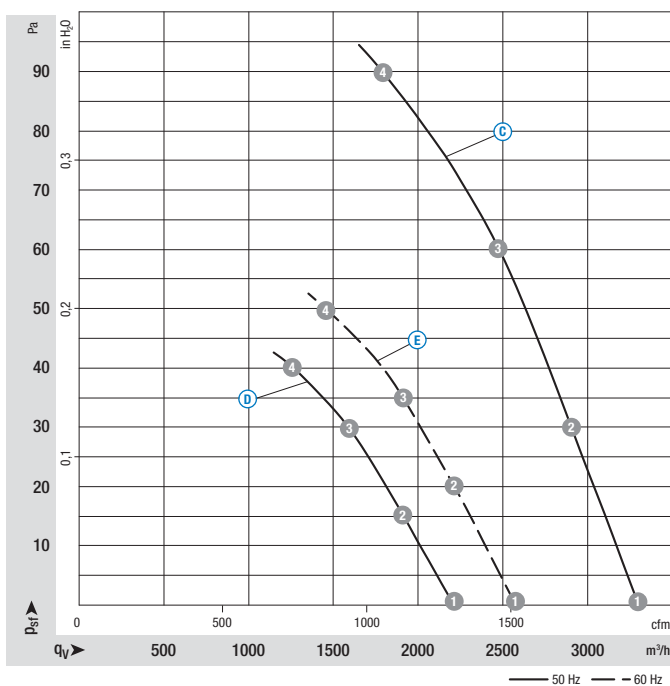
	n rpm	P <sub>e</sub> W	I A	L <sub>WA</sub> dB(A)
(A) 1	1400	140	0,63/0,36	69
(A) 2	1395	147	0,63/0,36	66
(A) 3	1380	157	0,63/0,36	64
(A) 4	1370	170	0,64/0,37	64
(B) 1	1600	185	0,63/0,36	72
(B) 2	1575	200	0,63/0,36	69
(B) 3	1550	214	0,64/0,37	67
(B) 4	1520	230	0,70/0,40	66

- **Motor protection:** ⓐ ⓑ ⓓ ⓔ TOP wired internally
- **Leakage current:** < 0,75 mA acc. to EN 60335-1
- **Cable exit:** Variable
- **Terminal box design:** Electrical connection via terminal strip
- **Protection class:** I
- **Product conforming to standards:** EN 60335-1; CE
- **Approvals:** VDE, cURus on request

Direction of air flow	Direction of air flow			
	Without attachments	With full round nozzle	With guard grille for short nozzle	With guard grille for short nozzle and mounted terminal box
"V"	A4D 350-AN08 -01	W4D 350-CN08 -30	S4D 350-AN08 -30	S4D 350-AN08 -50*
"V"	A4E 350-AN02 -01	W4E 350-CN02 -30	S4E 350-AN02 -30	S4E 350-AN02 -50*(3)
"V"	A6E 350-AN24 -01	W6E 350-CN24 -30	S6E 350-AN24 -30	S6E 350-AN24 -50*(3)

Direction of air flow "A" on request      \*Terminal box design: Electrical connection via terminal strip      (3) Device is outfitted with a P0 capacitor. EN 60335-1 is to be observed for the end application !

### Curves



Air performance measured as per: ISO 5801, Installation category A, in ebm-papst full nozzle and without protection against accidental contact

Suction-side noise levels: LwA as per ISO 13347, LpA measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 62 ff.

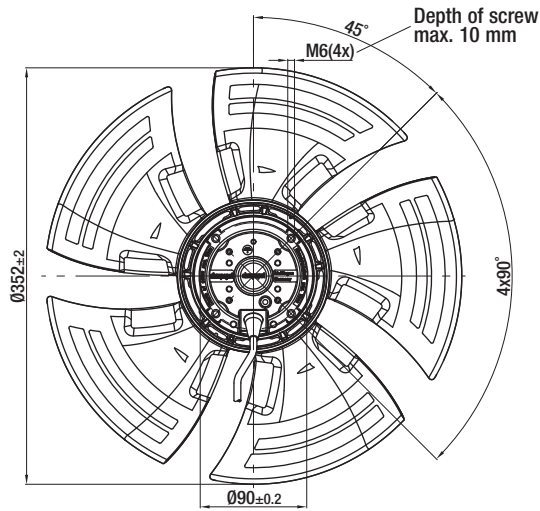
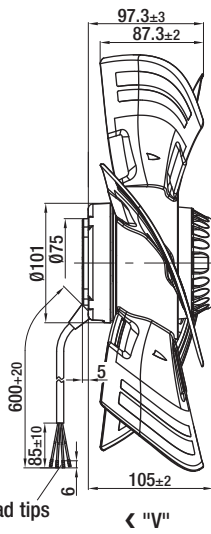
	n rpm	Pe W	I A	LwA dB(A)
ⓐ 1	1400	135	0,60	69
ⓐ 2	1380	145	0,64	66
ⓐ 3	1365	155	0,68	64
ⓐ 4	1340	165	0,73	64
ⓓ 1	930	67	0,32	59
ⓓ 2	925	69	0,33	57
ⓓ 3	915	72	0,34	54
ⓓ 4	910	75	0,35	53
ⓔ 1	1090	83	0,37	62
ⓔ 2	1070	87	0,38	60
ⓔ 3	1050	90	0,39	58
ⓔ 4	1020	95	0,42	56

# AC axial fans - HyBlade®

Ø 350 with motor M\*\* 074, drawings for direction of air flow "V"



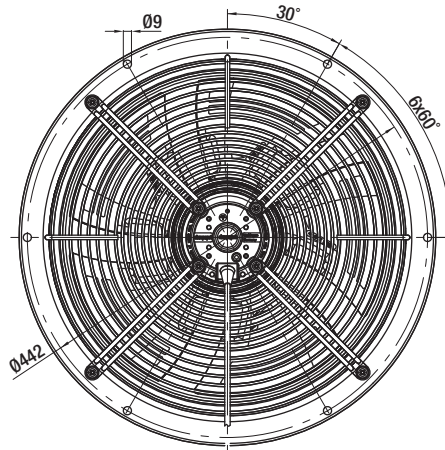
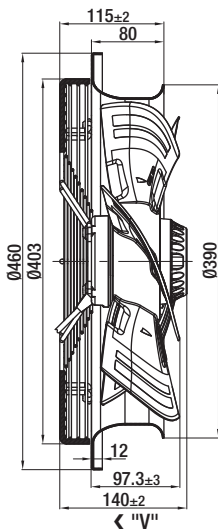
## Without attachments



Typ	Mass kg
A4D 350-AN08 -01	3,5
A4E 350-AN02 -01	3,5
A6E 350-AN24 -01	3,5

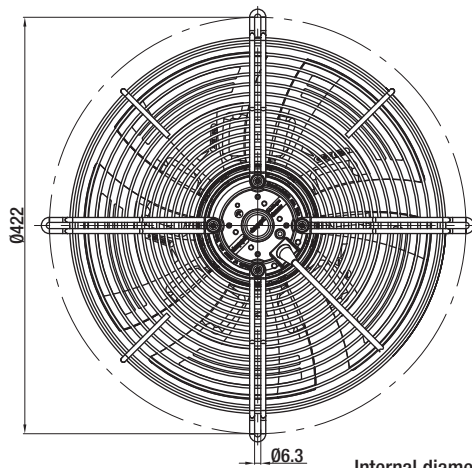
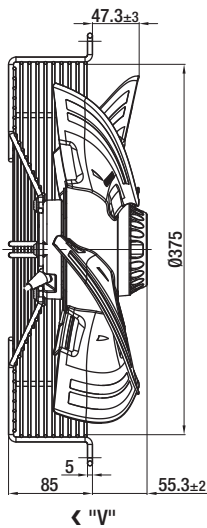
Internal diameter of the wall ring at least 358 mm

## With full round nozzle



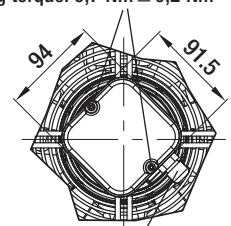
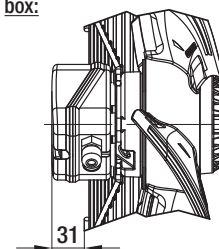
Typ	Mass kg
W4D 350-CN08 -30	6,4
W4E 350-CN02 -30	6,4
W6E 350-CN24 -30	6,5

## With guard grille for short nozzle



Typ	Mass kg
S4D 350-AN08 -30	5,00
S4E 350-AN02 -30	5,00
S6E 350-AN24 -30	5,00
S4D 350-AN08 -50*	5,15
S4E 350-AN02 -50*	5,15
S6E 350-AN24 -50*	5,15

\*Type with terminal box: Tightening torque: 0,7 Nm ± 0,2 Nm



Internal diameter of the wall ring at least 358 mm

Cable diameter: max. 7,5 mm  
Tightening torque: 1,3 Nm ± 0,2 Nm





# AC axial fans - HyBlade®

Ø 400



- **Material:** Guard grille: Steel, phosphated and coated in black plastic (RAL9005)  
Wall ring: Sheet steel, pre-galvanised and coated in black plastic (RAL9005)  
Blades: **E F** Plastic PP; **A B C D** Sheet steel, coated in black  
Rotor: Surface coated in black
- **Number of blades:** 5
- **Direction of rotation:** Counter-clockwise, seen on rotor
- **Type of protection:** IP 44, depending on installation and position (acc. to EN 60034-5)
- **Insulation class:** **E F** "F"; **A B C D** "B"
- **Mounting position:** Shaft horizontal or rotor on bottom; rotor on top on request
- **Condensate discharge holes:** Rotor-side
- **Mode of operation:** Continuous operation (S1)
- **Bearings:** Maintenance-free ball bearings

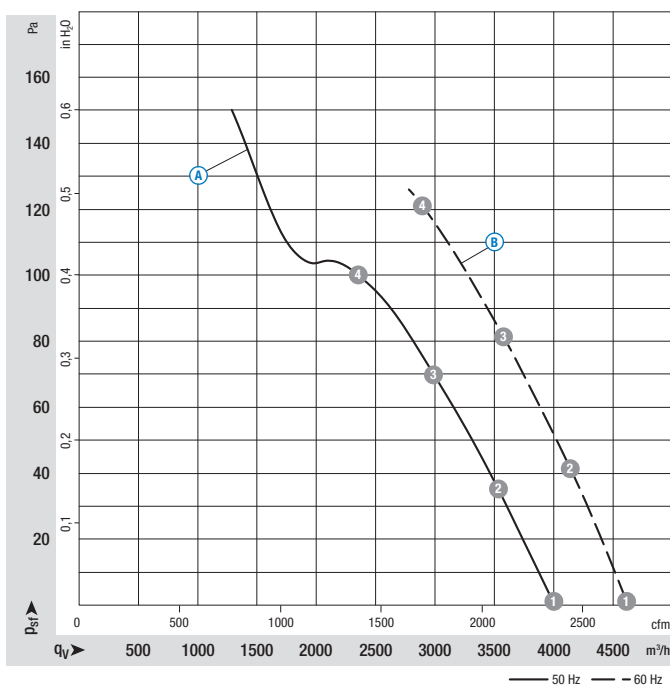
Nominal data		Curve	Nominal voltage	Frequency	Speed/rpm	input power	current draw	Capacitor	Max. back pressure	Perm. amb. temp.	Mass without attachments	Electr. connection
Typ	Motor	VAC	Hz	rpm	W	A	µF/VDB	Pa	°C	kg		
*4D 400 <sup>(2)</sup>	M4D 074-EI	<b>A</b>	3~230/400	50	1450	135	0,76/0,44	---	150	-25..+40	4,2	p. 61 / C1,C2
		<b>B</b>	3~230/400	60	1690	185	0,68/0,39	---	120	-25..+40	4,2	
*4E 400	M4E 074-EI	<b>C</b>	1~230	50	1430	160	0,73	6,0/400	150	-25..+40	4,1	p. 60 / A1)
		<b>D</b>	1~230	50	1700	240	1,06	6,0/400	75	-25..+40	4,1	
*6E 400 <sup>(1)</sup>	M6E 074-DF	<b>E</b>	1~230	50	870	120	0,53	3,0/400	40	-25..+60	3,7	p. 60 / A1)
		<b>F</b>	1~230	60	870	150	0,67	3,0/400	40	-25..+45	3,7	

subject to alterations

(1) Nominal data in operating point with maximum load and 230 VAC

(2) 230 VAC Δ / 400 VAC Y

## Curves



Air performance measured as per: ISO 5801, Installation category A, in ebm-papst full nozzle and without protection against accidental contact

Suction-side noise levels: L<sub>WA</sub> as per ISO 13347, L<sub>pA</sub> measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 62 ff.

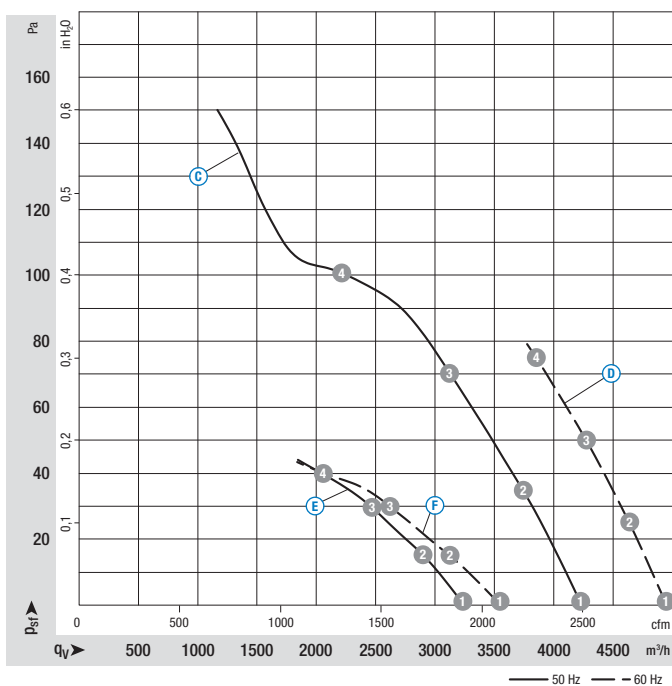
	n rpm	P <sub>e</sub> W	I A	L <sub>WA</sub> dB(A)
<b>A</b> 1	1450	135	0,76/0,44	74
<b>A</b> 2	1435	161	0,81/0,47	73
<b>A</b> 3	1420	182	0,85/0,49	72
<b>A</b> 4	1410	203	0,87/0,50	74
<b>B</b> 1	1690	185	0,68/0,39	76
<b>B</b> 2	1660	223	0,78/0,45	76
<b>B</b> 3	1635	256	0,85/0,49	76
<b>B</b> 4	1605	290	0,94/0,54	76

- **Motor protection:** G U E F TOP wired internally
- **Leakage current:** < 0,75 mA acc. to EN 60335-1
- **Cable exit:** Variable
- **Terminal box design:** Electrical connection via terminal strip
- **Protection class:** I
- **Product conforming to standards:** EN 60335-1; CE
- **Approvals:** VDE, cURus on request

Direction of air flow	Direction of air flow			
	Without attachments	With full round nozzle	With guard grille for short nozzle	With guard grille for short nozzle and mounted terminal box
"V"	A4D 400-AP12 -01	W4D 400-CP12 -30	S4D 400-AP12 -03	S4D 400-AP12 -50*
"V"	A4E 400-AP02 -01	W4E 400-CP02 -30	S4E 400-AP02 -03	S4E 400-AP02 -50*(3)
"V"	A6E 400-AN24 -01	W6E 400-CN24 -30	S6E 400-AN24 -30	S6E 400-AN24 -50*(3)

Direction of air flow "A" on request      \*Terminal box design: Electrical connection via terminal strip      (3) Device is outfitted with a P0 capacitor. EN 60335-1 is to be observed for the end application !

### Curves



Air performance measured as per: ISO 5801, Installation category A, in ebm-papst full nozzle and without protection against accidental contact

Suction-side noise levels: L<sub>WA</sub> as per ISO 13347, L<sub>pA</sub> measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 62 ff.

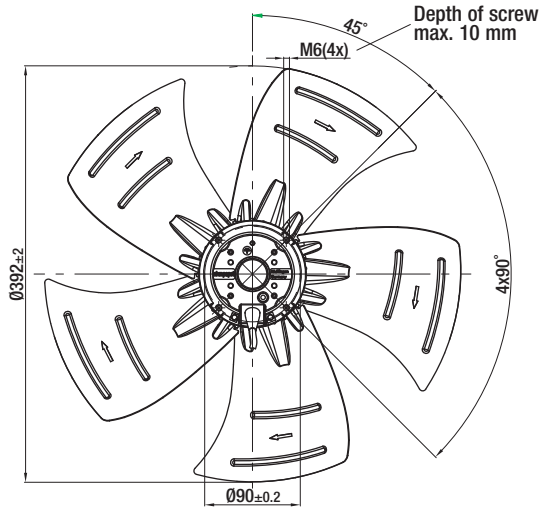
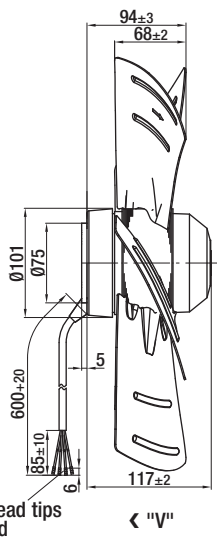
	n rpm	P <sub>e</sub> W	I A	L <sub>WA</sub> dB(A)
C 1	1430	160	0,73	74
C 2	1425	180	0,81	74
C 3	1405	198	0,88	73
C 4	1380	219	0,97	74
D 1	1700	240	1,06	78
D 2	1675	255	1,13	77
D 3	1645	271	1,19	77
D 4	1620	286	1,25	76
E 1	900	110	0,49	63
E 2	900	110	0,49	61
E 3	890	114	0,50	58
E 4	870	120	0,53	59
F 1	990	145	0,64	65
F 2	955	148	0,64	63
F 3	920	149	0,65	59
F 4	870	150	0,67	60

# AC axial fans

Ø 400 with motor M4\* 074, drawings for direction of air flow "V"



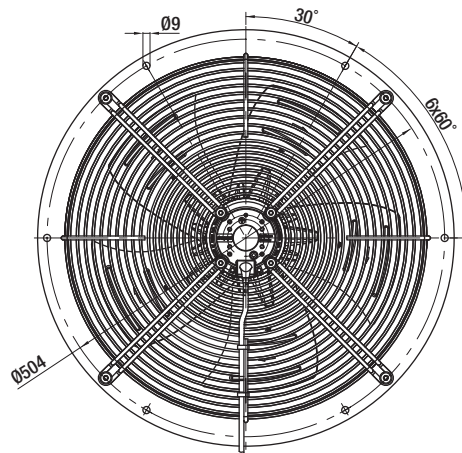
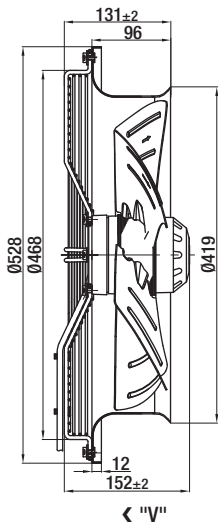
## Without attachments



Typ	Mass kg
A4D 400-AP12 -01	4,2
A4E 400-AP02 -01	4,1

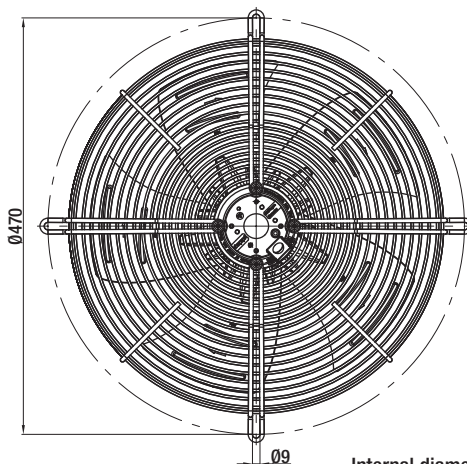
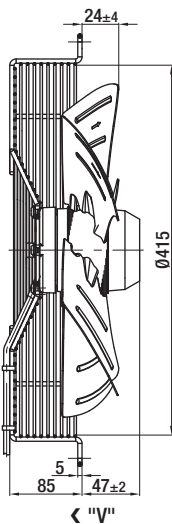
Internal diameter of the wall ring at least 400 mm

## With full round nozzle



Typ	Mass kg
W4D 400-CP12 -30	8,0
W4E 400-CP02 -30	8,0

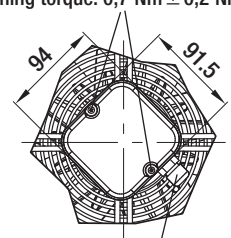
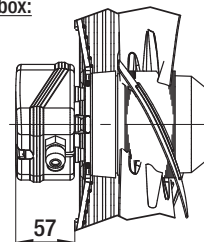
## With guard grille for short nozzle



Internal diameter of the wall ring at least 400 mm

Typ	Mass kg
S4D 400-AP12 -03	5,90
S4E 400-AP02 -03	5,90
S4D 400-AP12 -50*	6,05
S4E 400-AP02 -50*	6,05

\*Type with terminal box: Tightening torque: 0,7 Nm ± 0,2 Nm



Cable diameter: max. 7,5 mm  
Tightening torque: 1,3 Nm ± 0,2 Nm

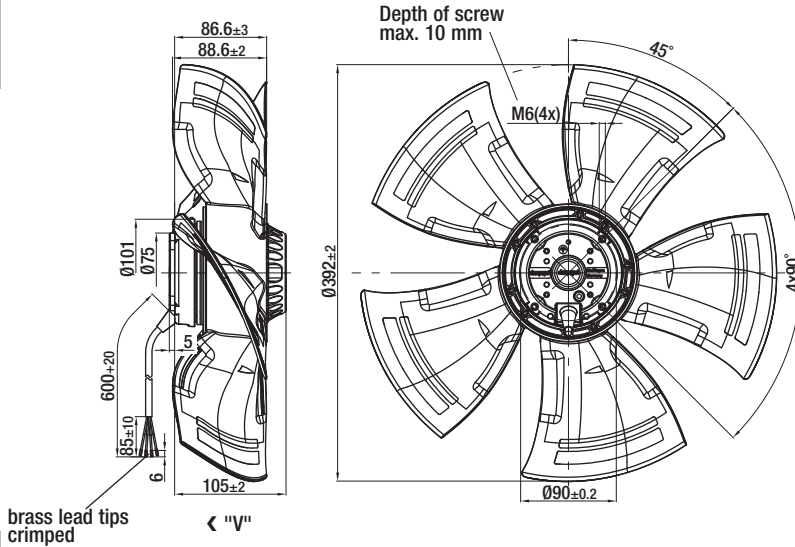
# AC axial fans - HyBlade®

Ø 400 with motor M6E 074, drawings for direction of air flow "V"



## Without attachments

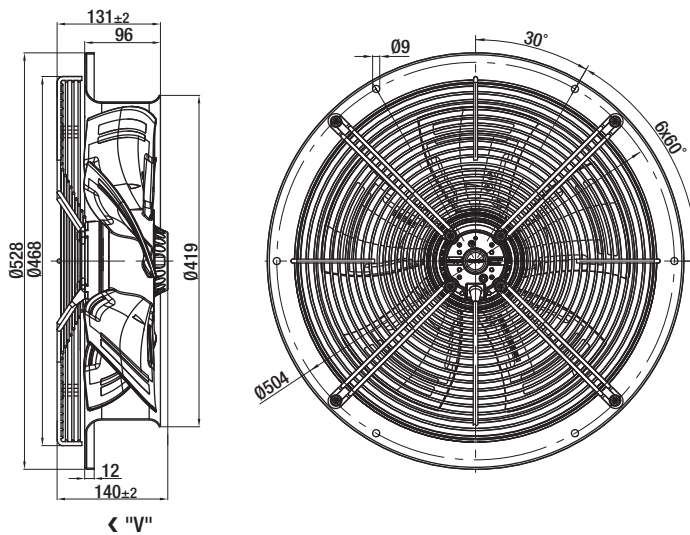
Typ	Mass kg
A6E 400-AN24 -01	3,7



Internal diameter of the wall ring at least 400 mm

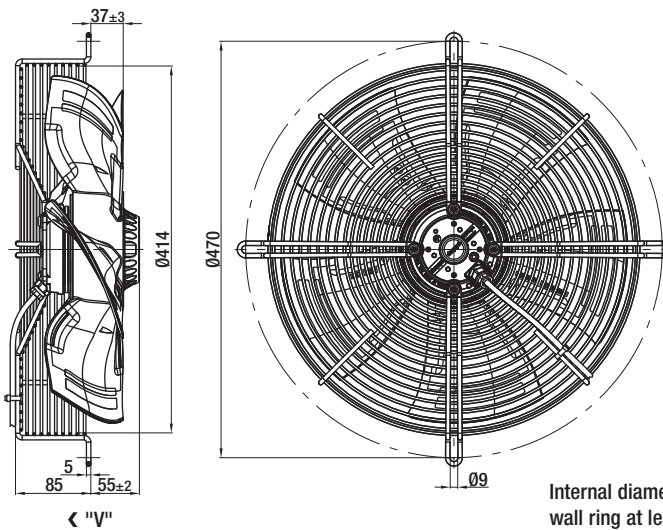
## With full round nozzle

Typ	Mass kg
W6E 400-CN24 -30	7,6



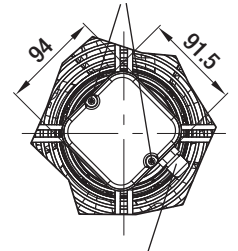
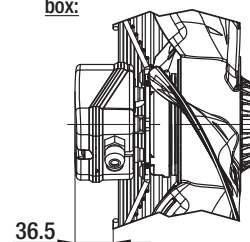
## With guard grille for short nozzle

Typ	Mass kg
S6E 400-AN24 -30	5,40
S6E 400-AN24 -50*	5,55



\*Type with terminal box:

Tightening torque: 0,7 Nm ± 0,2 Nm



Cable diameter: max. 7,5 mm  
Tightening torque: 1,3 Nm ± 0,2 Nm

# AC axial fans - HyBlade®

Ø 450



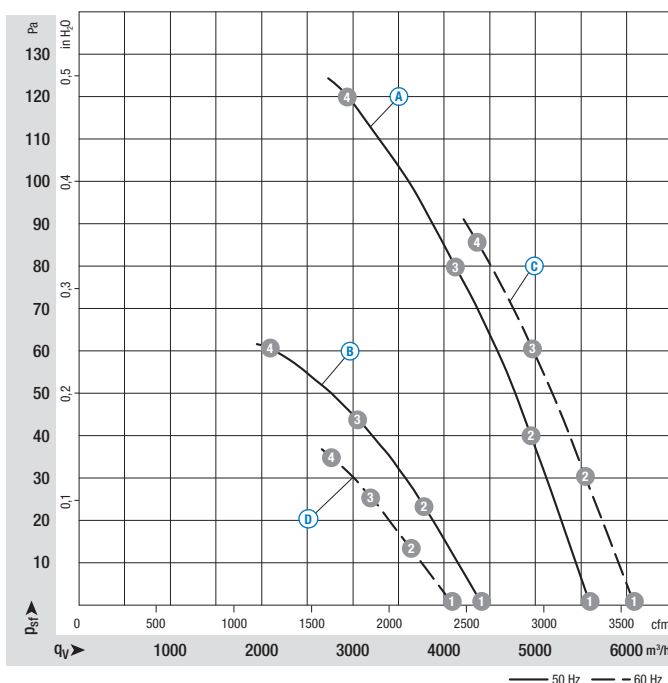
- **Material:** Guard grille: Steel, phosphated and coated in black plastic (RAL9005)  
Wall ring: Sheet steel, pre-galvanised and coated in black plastic (RAL9005)  
Blades: Plastic PP  
Rotor: Surface coated in black  
Terminal box: Plastic ABS
- **Number of blades:** 5
- **Direction of rotation:** Counter-clockwise, seen on rotor
- **Type of protection:** IP 54 (acc. to EN 60529)
- **Insulation class:** "F"
- **Mounting position:** Shaft horizontal or rotor on bottom; rotor on top on request
- **Condensate discharge holes:** Rotor-side
- **Mode of operation:** Continuous operation (S1)
- **Bearings:** Maintenance-free ball bearings

Nominal data		Curve	Nominal voltage	Frequency	Speed/rpm <sup>(1)</sup>	Max. input power <sup>(1)</sup>	Max. current draw <sup>(1)</sup>	Capacitor	Max. back pressure	Perm. amb. temp.	Mass without attachments	Electr. connection
Typ	Motor	VAC	Hz	rpm	W	A	µF/VDB	Pa	°C	kg		
*4D 450	M4D 094-EA	(A) 3~400 Δ	50	1250	340	0,61	---	120	-25..+60	4,9	p. 61 / F1b,F2b)	
		(B) 3~400 Y	50	875	200	0,33	---	60	-25..+60	4,9		
		(C) 3~400 Δ	60	1360	415	0,70	---	85	-25..+50	4,9		
		(D) 3~400 Y	60	860	205	0,35	---	35	-25..+50	4,9		
*4D 450	M4D 094-HA	(E) 3~400 Δ	50	1360	480	0,98	---	140	-25..+65	7,5	p. 61 / F1b.F2b)	
		(F) 3~400 Y	50	1110	340	0,58	---	90	-25..+65	7,5		
		(G) 3~400 Δ	60	1510	690	1,20	---	145	-25..+50	7,5		
		(H) 3~400 Y	60	1060	400	0,72	---	70	-25..+50	7,5		

subject to alterations

(1) Nominal data in operating point with maximum load and 400 VAC

## Curves



Air performance measured as per: ISO 5801, Installation category A, in ebm-papst full nozzle and without protection against accidental contact

Suction-side noise levels: L<sub>wA</sub> as per ISO 13347, L<sub>pA</sub> measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 62 ff.

	n rpm	P <sub>e</sub> W	I A	L <sub>wA</sub> dB(A)
(A) 1	1350	231	0,49	73
(A) 2	1320	262	0,52	74
(A) 3	1300	289	0,55	72
(A) 4	1250	340	0,61	72
(B) 1	1070	160	0,27	67
(B) 2	1015	172	0,29	66
(B) 3	970	182	0,31	65
(B) 4	875	200	0,33	65
(C) 1	1455	334	0,57	75
(C) 2	1415	359	0,61	75
(C) 3	1380	381	0,64	75
(C) 4	1360	415	0,70	73
(D) 1	990	187	0,31	65
(D) 2	940	192	0,32	64
(D) 3	900	197	0,33	63
(D) 4	860	205	0,35	62

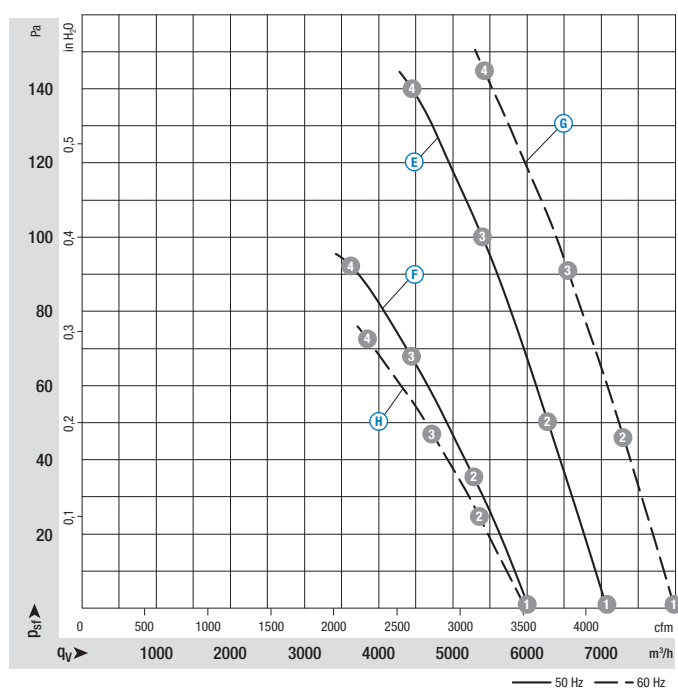


- **Motor protection:** Design with thermal overload protector
- **Leakage current:** < 3,5 mA acc. to EN 61800-5-1
- **Electrical connection:** Via terminal box
- **Protection class:** I acc. to EN 61800-5-1
- **Product conforming to standards:** EN 60034-1; CE
- **Approvals:** CCC

Direction of air flow			
	Without attachments	With full round nozzle	With guard grille for short nozzle
"V"	A4D 450-AU01 -01	W4D 450-CU01 -01	S4D 450-AU01 -01
"V"	A4D 450-A014 -01	W4D 450-C014 -01	S4D 450-A014 -01

Direction of air flow "A" on request

### Curves



Air performance measured as per: ISO 5801, Installation category A, in ebm-papst full nozzle and without protection against accidental contact

Suction-side noise levels: L<sub>wA</sub> as per ISO 13347, L<sub>pA</sub> measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 62 ff.

	n rpm	P <sub>e</sub> W	I A	L <sub>wA</sub> dB(A)
	1400	386	0,88	71
	1385	422	0,91	68
	1370	453	0,95	68
	1360	480	0,98	68
	1195	285	0,49	68
	1160	308	0,52	65
	1130	326	0,55	64
	1110	340	0,58	64
	1575	580	1,02	73
	1550	620	1,09	71
	1530	657	1,15	70
	1510	690	1,20	70
	1175	375	0,65	67
	1130	388	0,68	64
	1095	398	0,70	63
	1060	400	0,72	62

# AC axial fans - HyBlade®

Ø 450



- **Material:** Guard grille: Steel, phosphated and coated in black plastic (RAL9005)  
Wall ring: Sheet steel, pre-galvanised and coated in black plastic (RAL9005)  
Blades: Plastic PP  
Rotor: Surface coated in black  
Terminal box: Plastic ABS
- **Number of blades:** 5
- **Direction of rotation:** Counter-clockwise, seen on rotor
- **Type of protection:** IP 54 (acc. to EN 60529)
- **Insulation class:** "F"
- **Mounting position:** Shaft horizontal or rotor on bottom; rotor on top on request
- **Condensate discharge holes:** Rotor-side
- **Mode of operation:** Continuous operation (S1)
- **Bearings:** Maintenance-free ball bearings

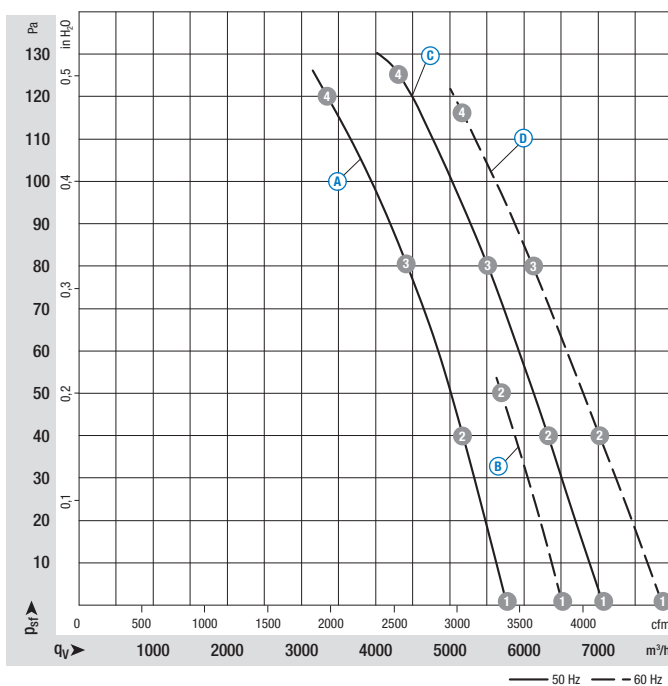
Nominal data		Curve	Nominal voltage	Frequency	Speed/rpm <sup>(1)</sup>	Max. input power <sup>(1)</sup>	Max. current draw <sup>(1)</sup>	Capacitor	Max. back pressure	Perm. amb. temp.	Mass without attachments	Electr. connection
Typ	Motor	VAC	Hz	rpm	W	A	µF/VDB	Pa	°C	kg		
*4E 450	M4E 094-EA	(A) 1~230	50	1300	350	1,55	8,0/400	120	-25..+55	4,9	p. 60 / A2c)	
		(B) 1~230	60	1490	425	1,87	8,0/400	50	-25..+45	4,9		
*4E 450	M4E 094-HA	(C) 1~230	50	1310	490	2,36	10,0/400	125	-25..+65	7,5	p. 60 / A2b)	
		(D) 1~230	60	1390	650	2,96	10,0/400	115	-25..+55	7,5		
*6E 450 <sup>(2)</sup>	M6E 094-EA	(E) 1~230	50	900	190	0,86	5,0/450	60	-25..+65	4,9	p. 60 / A2c)	
		(F) 1~230	60	990	260	1,16	5,0/450	75	-25..+65	4,9		

subject to alterations

(1) Nominal data in operating point with maximum load and 230 VAC

(2) ErP2013

## Curves



Air performance measured as per: ISO 5801, Installation category A, in ebm-papst full nozzle and without protection against accidental contact

Suction-side noise levels: L<sub>wA</sub> as per ISO 13347, L<sub>pA</sub> measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 62 ff.

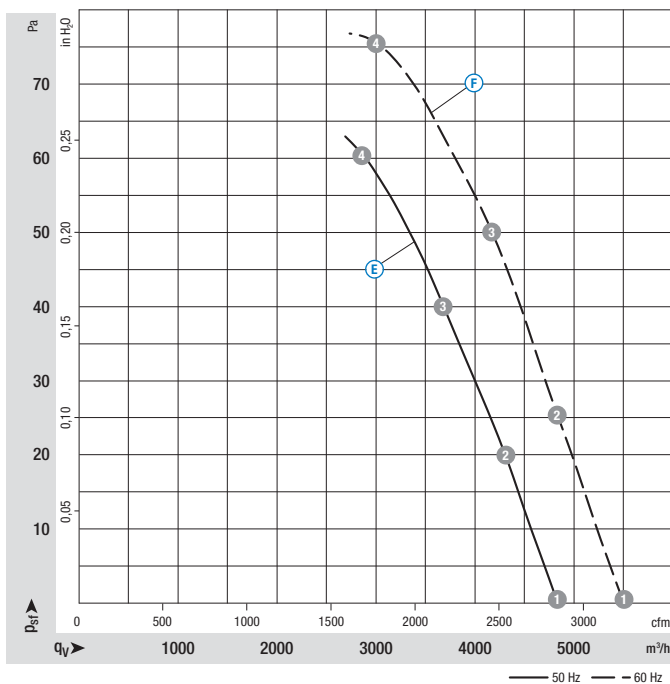
	n rpm	P <sub>e</sub> W	I A	L <sub>wA</sub> dB(A)
(A) 1	1380	272	1,20	74
(A) 2	1355	299	1,31	74
(A) 3	1340	321	1,40	73
(A) 4	1300	350	1,55	73
(B) 1	1545	396	1,74	76
(B) 2	1490	425	1,87	77
(B) 3	---	---	---	---
(B) 4	---	---	---	---
(C) 1	1350	430	2,10	69
(C) 2	1340	447	2,16	68
(C) 3	1325	470	2,26	68
(C) 4	1310	490	2,36	68
(D) 1	1480	600	2,70	72
(D) 2	1455	615	2,76	70
(D) 3	1415	637	2,87	70
(D) 4	1390	650	2,96	69

- **Motor protection:** A B E F TOP wired internally  
C D Design with thermal overload protector
- **Leakage current:** < 3,5 mA acc. to EN 61800-5-1
- **Electrical connection:** Via terminal box, capacitor integrated and connected
- **Protection class:** I acc. to EN 61800-5-1
- **Product conforming to standards:** EN 60034-1; CE
- **Approvals:** CCC

Direction of air flow	Direction of air flow		
	Without attachments	With full round nozzle	With guard grille for short nozzle
"V"	A4E 450-AU03 -01	W4E 450-CU03 -01	S4E 450-AU03 -01
"V"	A4E 450-A009 -01	W4E 450-C009 -01	S4E 450-A009 -01
"V"	A6E 450-AU04 -01	W6E 450-CU04 -01	S6E 450-AU04 -01

Direction of air flow "A" on request

### Curves



Air performance measured as per: ISO 5801, Installation category A, in ebm-papst full nozzle and without protection against accidental contact

Suction-side noise levels: L<sub>WA</sub> as per ISO 13347, L<sub>PA</sub> measured at 1 m distance to fan axis

The acoustic values given are only valid under the measurement conditions listed and may vary depending on the installation situation.

With any deviation to the standard setup, the specific values have to be checked and reviewed once installed or fitted!

For detailed information see page 62 ff.

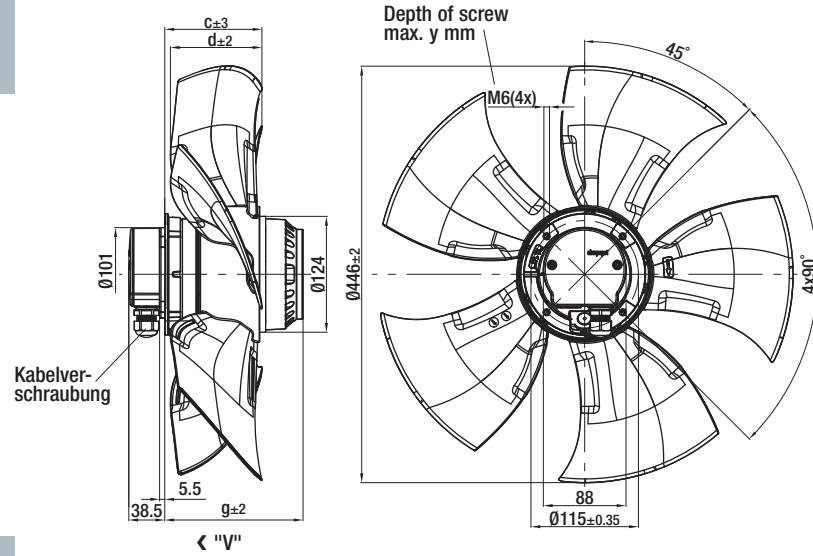
	n rpm	P <sub>e</sub> W	I A	L <sub>WA</sub> dB(A)
E 1	925	171	0,79	61
E 2	915	180	0,82	60
E 3	905	186	0,84	59
E 4	900	190	0,86	59
F 1	1060	241	1,05	64
F 2	1035	251	1,09	63
F 3	1015	260	1,13	62
F 4	990	260	1,16	62

# AC axial fans - HyBlade®

Ø 450 with motor M\*\* 094, drawings for direction of air flow "V"



## Without attachments



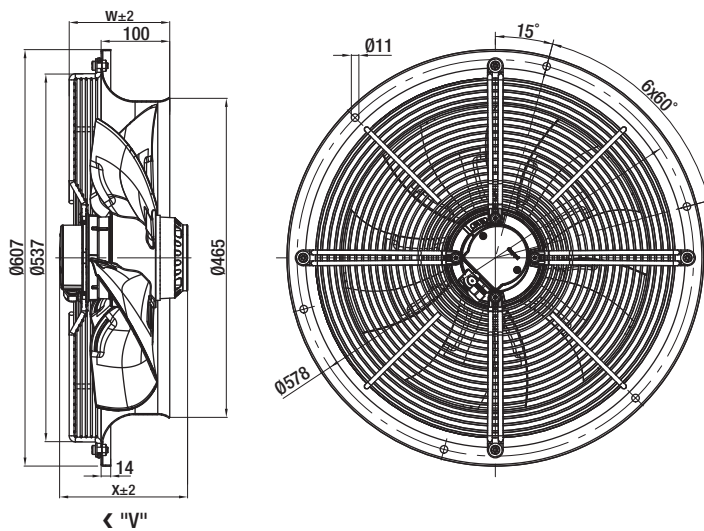
Kabelver-  
schraubung

Typ	Mass kg	c	d	g	y
A4D 450-AU01 -01	4,9	77	76,5	107	10
A4D 450-A014 -01	7,5	104	98	148	12

Internal diameter of the  
wall ring at least 454 mm



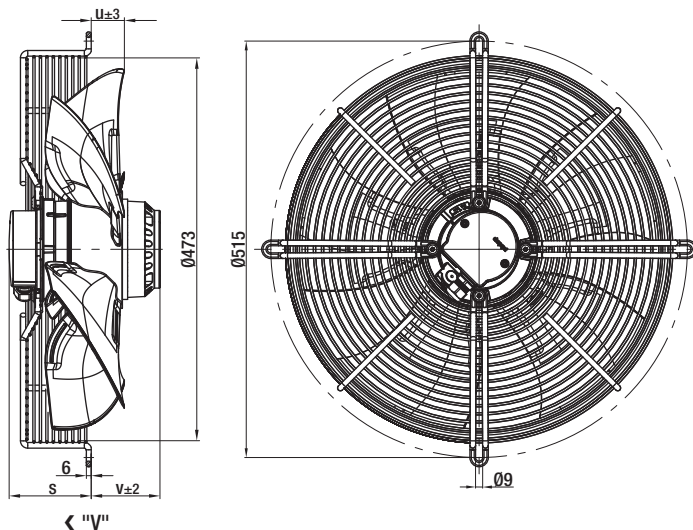
## With full round nozzle



Typ	Mass kg	w	x
W4D 450-CU01 -01	9,6	135	145,5
W4D 450-C014 -01	12,5	146,5	186,5



## With guard grille for short nozzle



Typ	Mass kg	u	s	v
S4D 450-AU01 -01	7,2	26,5	88,5	57
S4D 450-A014 -01	10,0	41	101	85

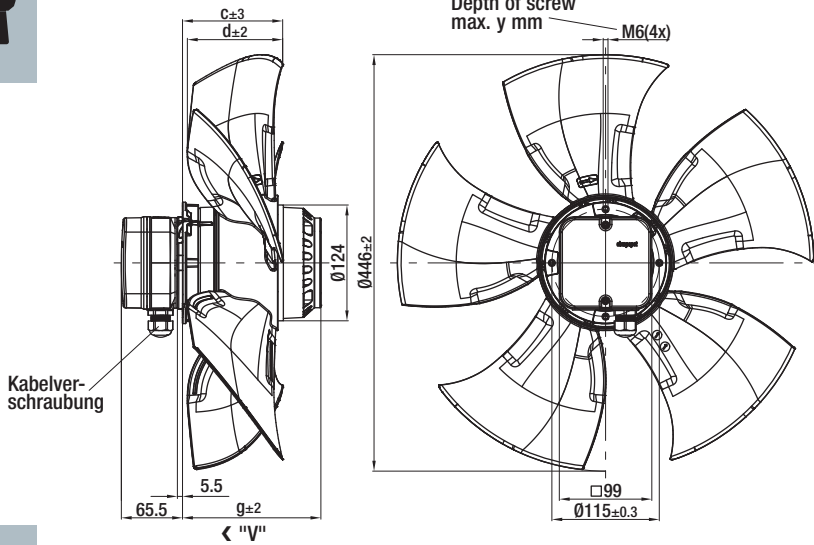
Internal diameter of the  
wall ring at least 454 mm

# AC axial fans - HyBlade®

Ø 450 with motor M4\* 094, drawings for direction of air flow "V"



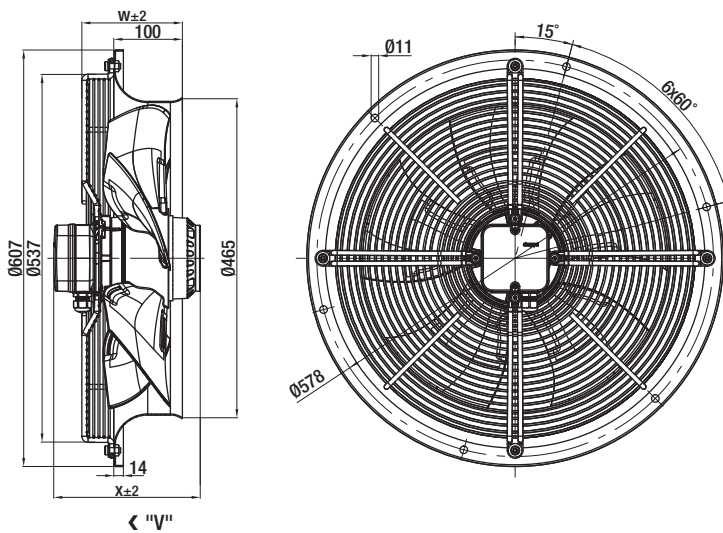
## Without attachments



Typ	Mass kg	c	d	g	y
A4E 450-A009 -01	7,5	104	98	148	12
A4E 450-AU03 -01	4,9	77	76,5	107	10
A6E 450-AU04 -01	4,9	98	98	107	10

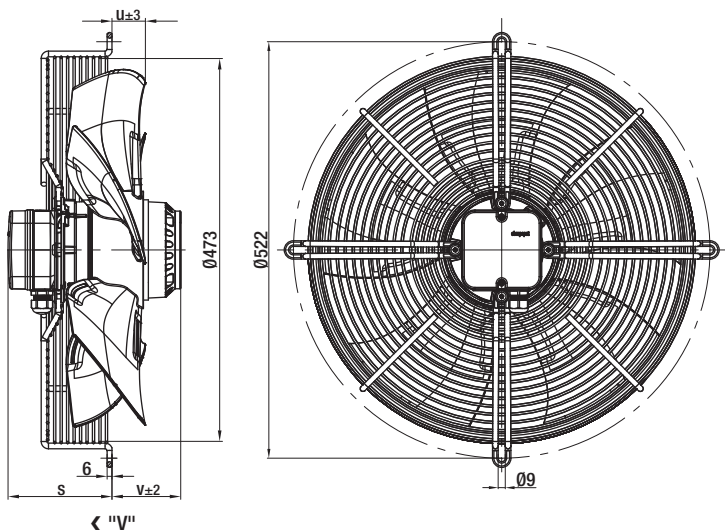
Internal diameter of the wall ring at least 454 mm

## With full round nozzle



Typ	Mass kg	w	x
W4E 450-C009 -01	12,7	146,5	213,5
W4E 450-CU03 -01	9,6	135	172,5
W6E 450-CU04 -01	9,6	135	172,5

## With guard grille for short nozzle

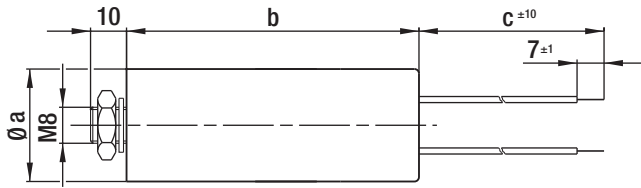


Typ	Mass kg	u	s	v
S4E 450-A009 -01	10,0	41	128,5	85
S4E 450-AU03 -01	7,5	24	115,5	57
S6E 450-AU04 -01	7,0	49	116	57

Internal diameter of the wall ring at least 454 mm



# Capacitors



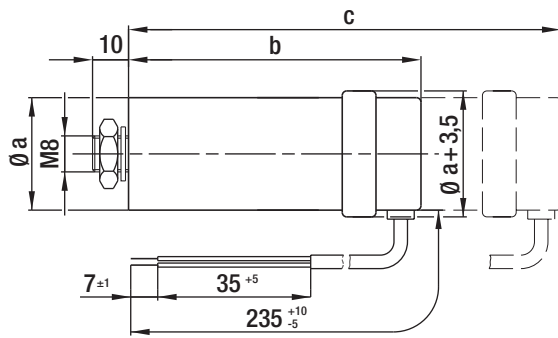
- **Material:** Housing made of thermoplastic resin
- **Connection line:** Multi-lead  
PVC cable 0.5 mm<sup>2</sup> with brass lead tips
- **Approval:** VDE according to DIN EN 60252 (VDE 0560/8)
- **Calculated life time:**  
400 V; -25 to +85°C; 30,000 hrs; class A  
450 V; -25 to +85°C; 10,000 hrs; class B

## MKP motor capacitors P0 (without fuse)

Part no.	Capacity	a	b (max.)	c
99283-4-7320	2,0 µF	25-28	58,0	235,0
68462-4-7320	3,0 µF	25-28	70,0	235,0
99284-4-7320	4,0 µF	28-32	58,0	235,0
02101-4-7320	5,0 µF	30-36	70,0	235,0
99285-4-7320	6,0 µF	30-36	70,0	235,0
99286-4-7320	8,0 µF	35-40	72,0	235,0
99287-4-7320	10,0 µF	35-40	72,0	200,0

subject to alterations

# Capacitors

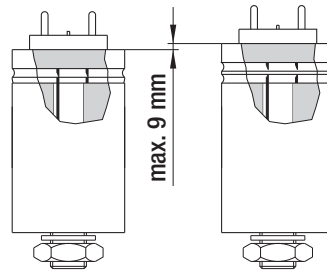


- **Material:** Plastic cap, aluminium cup
- **Designation:** FPU or P2 according to IEC 252 (non-flammable, non-explosive, circuit-breaking)
- **Approval:** VDE according to DIN EN 60252 (VDE 0560/8)
- **Calculated life time:**  
 420 V; -25 to +85°C; 30,000 hrs; class A  
 470 V; -25 to +85°C; 10,000 hrs; class B  
 500 V; -25 to +85°C; 3,000 hrs; class C

## MKP motor capacitors FPU or P2 (with fuse)

Part no.	Capacity	a	b (max.)	c (max.)
02156-4-7320	2,0 µF	25,0	77,0	92,0
02160-4-7320	3,0 µF	30,0	71,0	92,0
02161-4-7320	4,0 µF	25-30	104,0	135,0
02162-4-7320	5,0 µF	25-30	104,0	113,0
02163-4-7320	6,0 µF	30,0	101,0	110,0
02165-4-7320	8,0 µF	30-35	102,0	111,0
02166-4-7320	10,0 µF	35,0	96,0	110,0

subject to alterations



- **Pull-off protector:** The housing expands by max. 9 mm. The protector responds to overload by the generated excess pressure snapping off the internal lead in a predetermined breaking point.
- **Mounting:** c is the overall dimension of the capacitor which has to be taken into account when mounting the part. The capacitor design, however, depends on the manufacturer. The expansion (9 mm) is either added to dimension b, or it is already integrated in the capacitor.

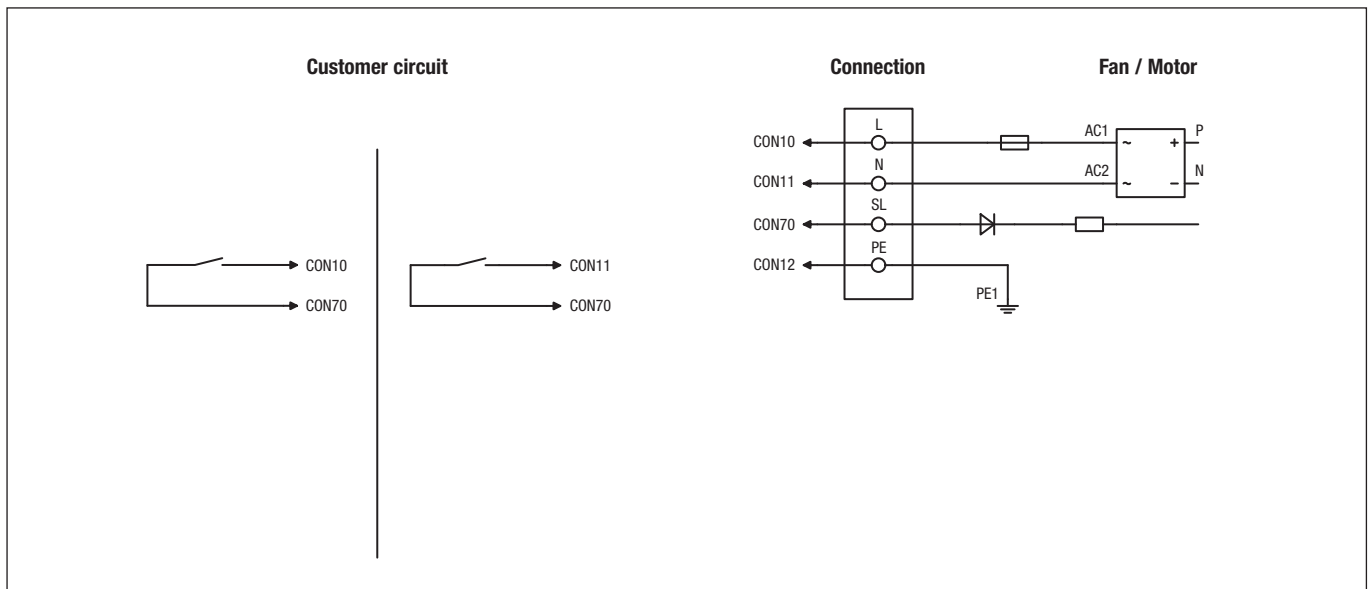
# Electrical connections EC

H3)

**Technical features:**

- Speed adjustment input (230V)
- Electronics / motor overtemperature protection
- Motor current limitation
- Locked rotor protection
- Soft start

**H3) EC motors M3G 055 / M3G 074 (2 Speed stages)**



Line	Connection	Colour	Assignment / function
CON10	L	black	Power supply 230 VAC, 50 - 60 Hz, see type plate for voltage range
CON11	N	blue	Neutral conductor
CON12	PE	green/yellow	Protective earth
CON70	SL	brown	Speed selection: switch open = speed 1; switch closed = speed 2

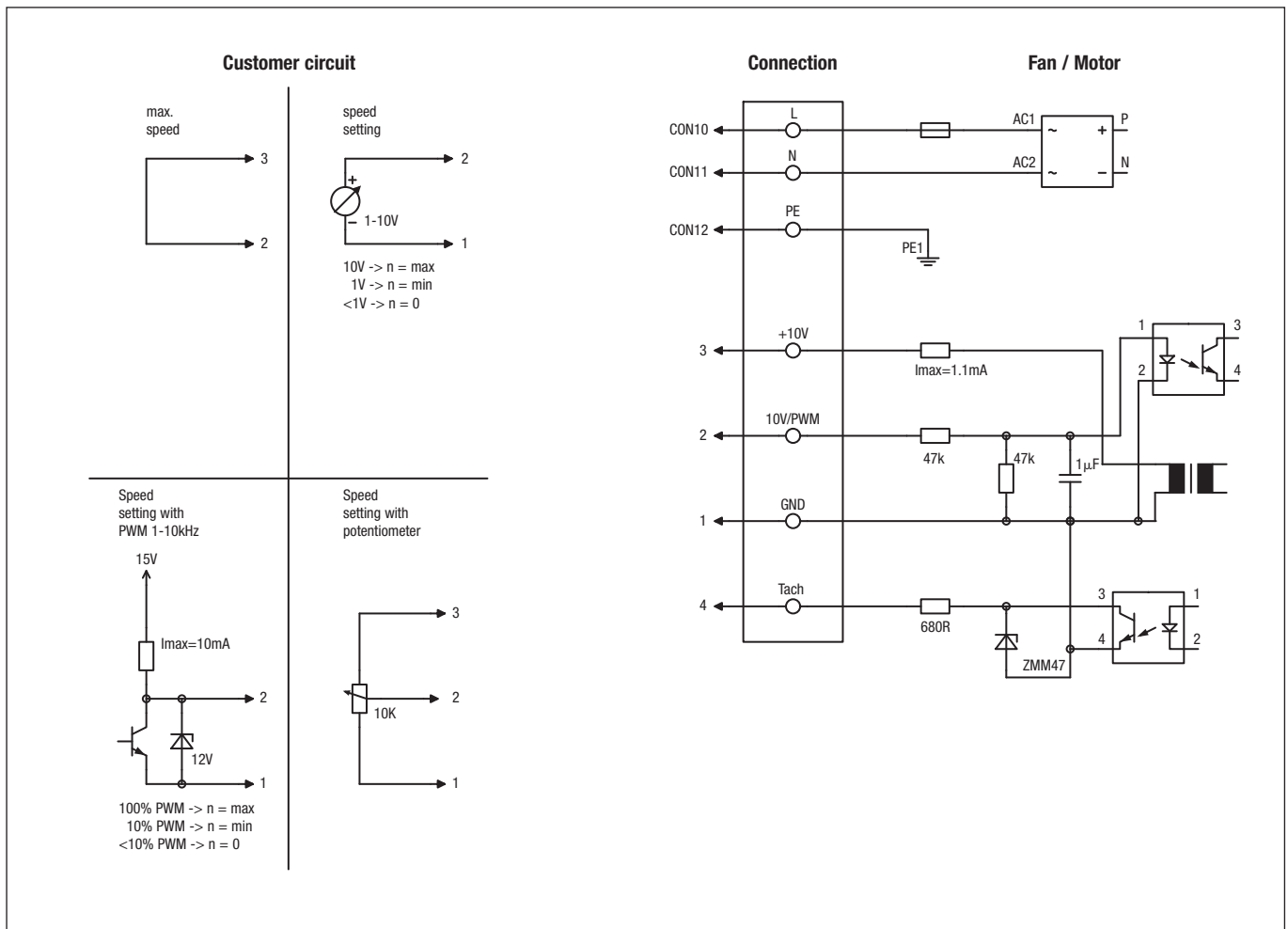
# Electrical connections EC

H4)

## Technical features:

- Control input 0-10 VDC / PWM
- Output 10 VDC max. 1,1 mA
- Tach output
- Electronics / motor overtemperature protection
- Motor current limitation
- Locked rotor protection
- Soft start

## H4) EC motors M3G 055 / M3G 074 (Speed-controlled)



Line	Connection	Colour	Assignment / function
CON10	L	black	Power supply 230 VAC, 50 - 60 Hz, see type plate for voltage range
CON11	N	blue	Neutral conductor
CON12	PE	green/yellow	Protective earth
1	GND	blue	GND - Connection for control interface
2	0-10V PWM	yellow	Control input 0 - 10 V or PWM, electrically isolated
3	10V/max.1.1mA	red	Voltage output 10V / 1.1mA, electrically isolated, not short-circuit-proof
4	Tach	white	Tach output: Open Collector, 1 pulse per revolution, electrically isolated

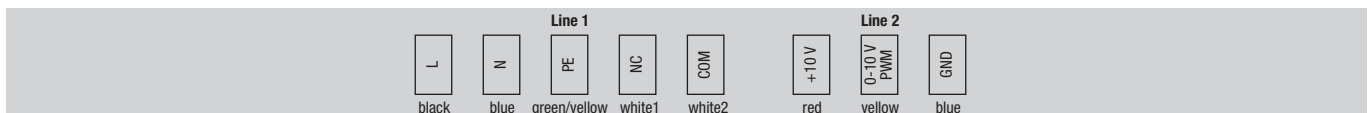
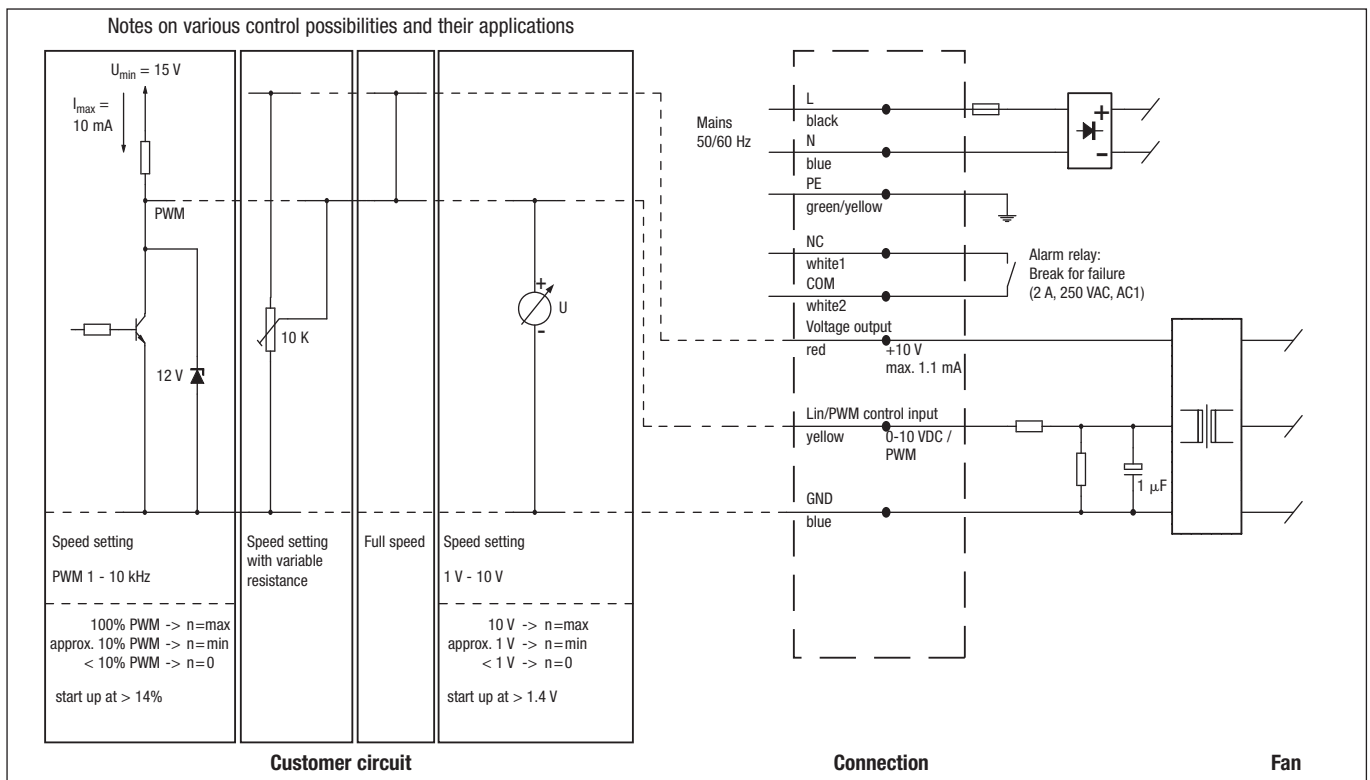
# Electrical connections EC

K1)

## Technical features:

- Control input 0-10 VDC / PWM
- Output 10 VDC max. 1,1 mA
- Alarm relay
- Electronics / motor overtemperature protection
- Line undervoltage detection
- Motor current limitation
- Soft start

## K1) EC motors M3G 084 (Speed-controlled)



Line	Connection	Colour	Assignment / function
1	L	black	Mains 50/60 Hz, phase
	N	blue	Mains 50/60 Hz, neutral
	PE	green/yel	Protective earth
	NC	white1	Alarm relay, break for failure
	COM	white2	Alarm relay, COMMON

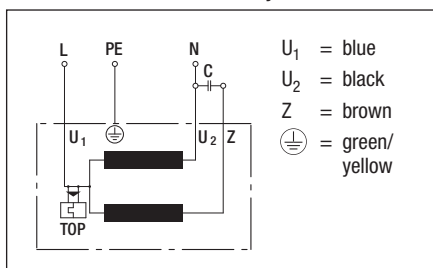
Line	Connection	Colour	Assignment / function
2	+10 V	red	Voltage output +10 V max. 1.1 mA
	0-10 V / PWM	yellow	Control input (Impedance 100 kΩ)
	GND	blue	GND





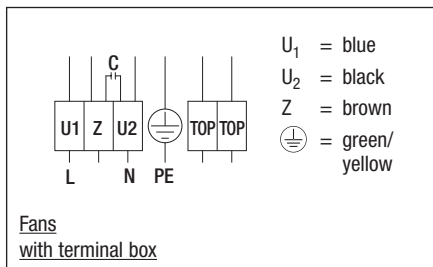
## A1) Single-phase capacitor motor

with TOP wired internally



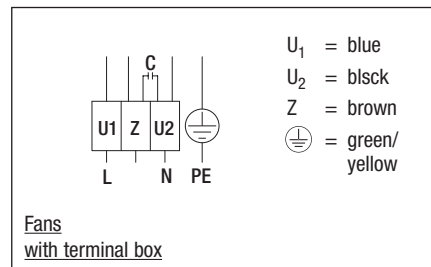
## A2b) Single-phase capacitor motor

with connection for external TOP



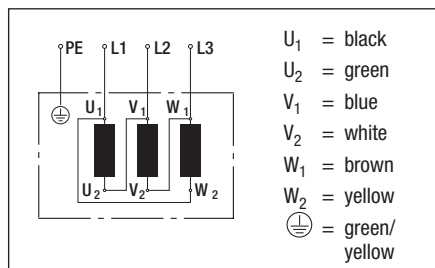
## A2c) Single-phase capacitor motor

without TOP

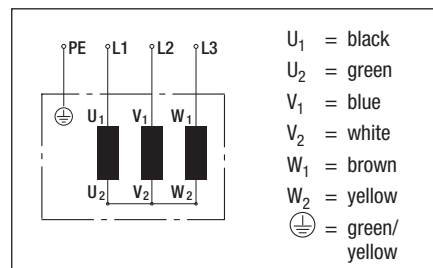


# Electrical connections AC

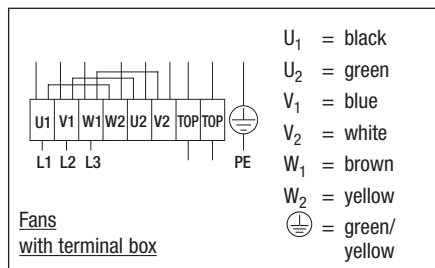
**C1) Delta connection (3~ 230 VAC power line)\***  
without TOP



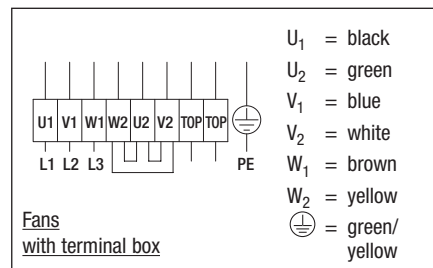
**C2) Star connection (3~ 400 VAC power line)\***  
without TOP



**F1b) Delta connection\***  
with TOP



**F2b) Star connection\***  
with TOP



\*Direction of rotation is reversed by swapping two line phases.

# Technical parameters & scope



## High standards for all ebm-papst products

*Here at ebm-papst, we constantly strive to further improve our products in order to be able to offer you the best possible product for your application. Careful monitoring of the market ensures that technical innovations are reflected in the improvements of our products.*

*Based on the technical parameters listed below and the ambience you want our product to operate in, we here at ebm-papst can always work out the best solution for your specific application.*

## General performance parameters

Any deviations from the technical data and parameters described here are listed on the product-specific data sheet.

### Type of protection

The type of protection is specified in the product-specific data sheets.

### Insulation class

The insulation class is specified in the product-specific data sheets.

### Mounting position

The mounting position is specified in the product-specific data sheets.

### Condensate discharge holes

Information on the condensate discharge holes is provided in the product-specific data sheets.

### Mode of operation

The mode of operation is specified in the product-specific data sheets.

### Protection class

The protection class is specified in the product-specific data sheets.

## Service life

The service life of ebm-papst products depends on two major factors:

- The service life of the insulation system
- The service life of the bearing system

The service life of the insulation system mainly depends on voltage level, temperature and ambient conditions, such as humidity and condensation. The service life of the bearing system depends mainly on the thermal load on the bearing.

The majority of our products use maintenance-free ball bearings for any mounting position possible. As an option, sleeve bearings can be used, which is indicated on the product-specific data sheet wherever applicable.

The service life L10 of the ball bearings can be taken as approx. 40,000 operating hours at an ambient temperature of 40 °C, yet this estimate can vary according to the actual ambient conditions.

We will gladly provide you with a lifetime calculation taking into account your specific operating conditions.

## Motor protection / thermal protection

Information on motor protection and thermal protection is provided in the product-specific data sheets.

Depending on motor type and field of application, the following protective features are realised:

- Thermal overload protection (TOP), either in-circuit or external
- PTC with electronic diagnostics
- Impedance protection
- Thermal overload protection (TOP) with electronic diagnostics
- Current limitation via electronics

If an external TOP is connected, the customer has to make sure to connect a conventional trigger device for switching it off.

Products without fitted TOP and without protection against improper use, a motor protection complying with the valid standards has to be installed.

*Left: Endurance test room  
Middle: Shock test  
Right: Chamber test rig*



### ■ Mechanical strain / performance parameters

All ebm-papst products are subjected to comprehensive tests complying with the normative specifications. In addition to this, the tests also reflect the vast experience and expertise of ebm-papst.

#### **Vibration test**

Vibration tests are carried out in compliance with

- Vibration test in operation according to DIN IEC 68, parts 2-6
- Vibration test at standstill according to DIN IEC 68, parts 2-6

#### **Shock load**

Shock load tests are carried out in compliance with

- Shock load according to DIN IEC 68, parts 2-27

#### **Balancing quality**

Testing the balancing quality is carried out in compliance with

- Residual imbalance according to DIN ISO 1940
- Standard balancing quality level G 6.3

Should you require a higher balancing quality level for your specific application, please let us know and specify this when ordering your product.

### ■ Chemo-physical strain / performance parameters

Should you have questions about chemo-physical strain, please direct them to your ebm-papst contact.

### ■ Fields of application, industries and applications

Our products are used in various industries and applications:

Ventilation, air-conditioning and refrigeration technology, clean room technology, automotive and rail technology, medical and laboratory technology, electronics, computer and office technology, telecommunications, household appliances, heating, machines and plants, drive engineering. Our products are not designed for use in the aviation and aerospace industry!

### ■ Legal and normative directives

The products described in this catalogue are designed, developed and produced in keeping with the standards in place for the relevant product and, if known, the conditions governing the relevant fields of application.

#### **Standards**

Information on standards is provided in the product-specific data sheets.

#### **EMC**

Information on EMC standards is provided in the product-specific data sheets.

Complying with the EMC standards has to be established on the final appliance, as different mounting situations can result in changed EMC properties.

#### **Leakage current**

Information on the leakage current is provided in the product-specific data sheets.

Measuring is according to IEC 60990.

#### **Approvals**

In case you require a specific approval for your ebm-papst product (VDE, UL, GOST, CCC, CSA, etc.) please let us know.

Most of our products can be supplied with the relevant approval.

Information on existing approvals is provided in the product-specific data sheets.

### ■ Air performance measurements

All air performance measurements are carried out on suction side and on chamber test beds conforming to the specifications as per ISO 5801 and DIN 24163. The fans under test are installed in the measuring chamber at free air intake and exhaust (installation category A) and are operated at nominal voltage, with AC also at nominal frequency, and without any additional components such as guard grilles.

As required by the standard, the air performance curves correspond to an air density of 1.2 kg/m<sup>3</sup>.



Room for precision noise measuring



### Measurement conditions for air and noise measurement

ebm-papst products are measured under the following conditions:

- Axial and diagonal fans in direction of rotation “V” in full nozzle and without guard grille
- Backward curved centrifugal fans, free-running and with inlet nozzle
- Forward curved single and dual inlet centrifugal fans with housing

### Noise measurements

All noise measurements are carried out in low-reflective test rooms with reverberant floor. Thus the ebm-papst acoustic test chambers meet the requirements of precision class 1 according to DIN EN ISO 3745. For noise measurement, the fans being tested are placed in a reverberant wall and operated at nominal voltage (for AC, also at nominal frequency) without additional attachments such as the guard grille.

### Sound pressure level and sound level

All acoustic values are established according to ISO 13347, DIN 45635 and ISO 3744/3745 to accuracy class 2 and given in A-rated form.

When the sound pressure level ( $L_p$ ) is measured, the microphone is on the intake side of the fan being tested, usually at a distance of 1 m on the fan axis.

To measure the sound power level ( $L_w$ ), 10 microphones are distributed over an enveloping surface on the intake side of the fan being tested (see graphic). The sound power level measured can be roughly calculated from the sound pressure level by adding 7 dB.

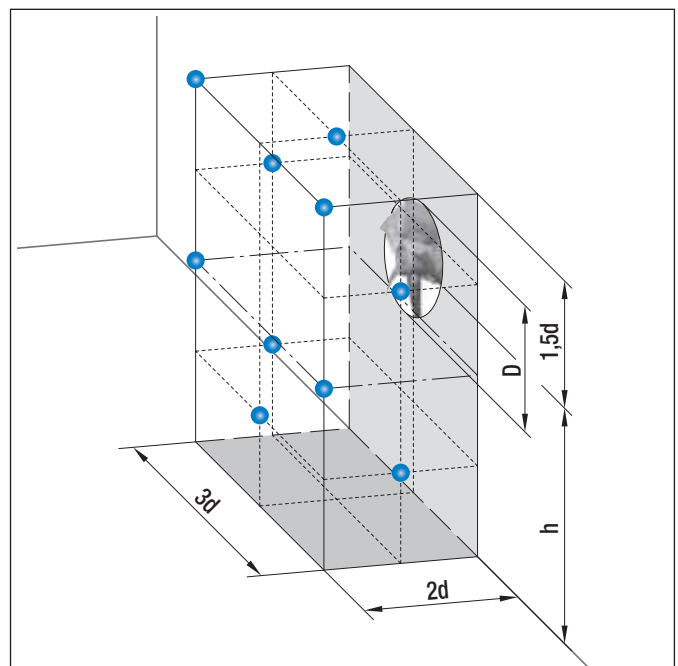
Measuring configuration as per ISO 13347-3 respectively DIN 45635-38:

- 10 measuring points

$$d \geq D$$

$$h = 1,5d \dots 4,5d$$

$$\text{Measurement area } S = 6d^2 + 7d(h + 1,5d)$$

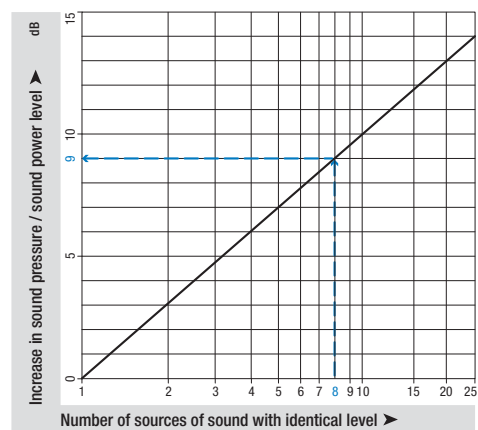


### Adding multiple noise sources with the same level

Adding 2 noise sources with the same volume results in a level increase of approx. 3 dB.

The noise characteristics of multiple identical fans can be determined in advance based on the noise values specified in the data sheet. This is shown in the diagram opposite.

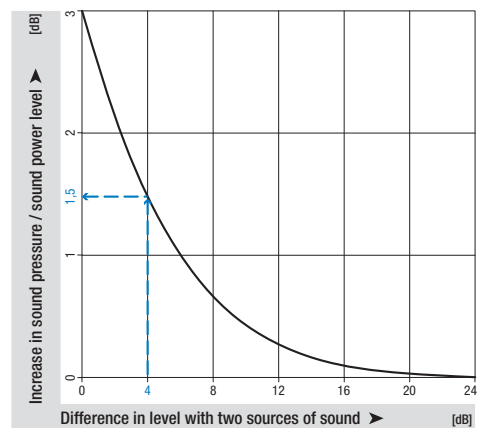
Example: 8 A3G800 axial fans are on a condenser. According to the data sheet, the sound pressure level of a fan is approximately 75 dB(A). The level increase measured from the diagram is 9 dB. Thus the overall sound level of the installation can be expected to be 84 dB(A).



### Adding two noise sources with different levels

The acoustic performance of two different fans can be predetermined based on the sound levels given in the data sheet. This is shown in the diagram opposite.

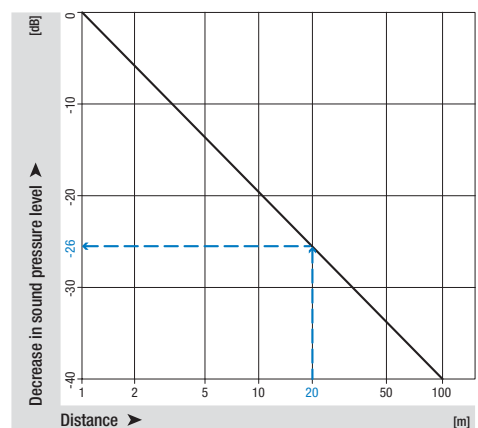
Example: There is an axial fan A3G800 with a sound pressure level of 75 dB(A) at the operating point and an axial fan A3G710 with 71 dB(A) in a ventilation unit. The level difference is 4 dB. The level increase can now be read in the diagram as approx. 1.5 dB. This means that the overall sound level of the unit can be expected to be 76.5 dB(A).







### Distance laws

Sound power level is independent of distance to the sound source. In contrast to this, sound pressure level decreases the further away the noise source is. The adjacent diagram shows the decrease in level under far sound field conditions. Far sound field conditions apply whenever the distance between microphone and fan is big when compared to fan diameter and wavelength to be considered. For more information on far sound field, please consult the relevant literature on this complex topic. Per doubling of distance, the level in the far sound field decreases by 6 dB. In the near field of the fan, other correlations apply and the decrease in levels can be considerably smaller. The following example only applies to far sound field conditions and can vary strongly depending on the installation effects:

With an axial fan A3G300, a sound pressure level of 65 dB(A) was measured at a distance of 1 m. According to the adjacent diagram, at a distance of 20 m we would get a reduction by 26 dB, i.e. a sound pressure level of 39 dB(A).



-  fan agent
-  compact fan agent
-  motor specialist
-  motor agent

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

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
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