

## Centrifugal fan with highly efficient EC drive motor



simple and safe application  
and installation

## Why HLU?

90 years of experience in the  
plastics processing market

More than 10.000 m<sup>2</sup> production  
in Germany

Worldwide partner network

Large performance spectrum  
in air technology

Over 200 qualified employees

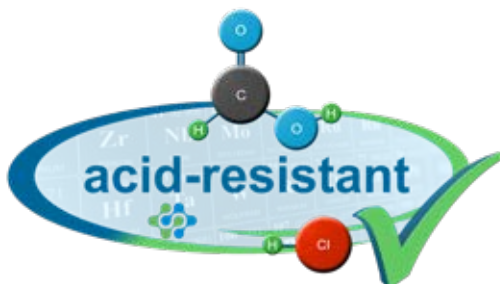
[www.hlu.eu](http://www.hlu.eu)





## Thermoplastic centrifugal fans with EC drive motor

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HF R 160 (DS1) EC	20
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HF - centrifugal fans with direct drive | EC motor  
- complies with ErP 2021



## Advantages

- Simple and safe application and installation
- Easy connection (Plug & Play)
- High efficiency
- Low power consumption
- Optimal integrated monitoring function
- Infinitely variable speed
- Compact design
- No additional parts required

## Design

- Concept based on the tried and tested series HF R ... 15 / 17 D
- EC drive motor outside of the airflow
- Speed controller and repair switch completely wired
- Electronics and engine perfectly coordinated with each other
- Analog control possible
- Single-phase AC operation

## Application

- Movement of air and corrosive gases
- Movement of air of explosive atmospheres from Ex Zone 2
- Energy sensitive applications
- Plant upgrade work

## Accessories:



Shaft seal  
felt ring  
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Shaft seal  
Viton/Hastelloy  
P. 38



Protective grid  
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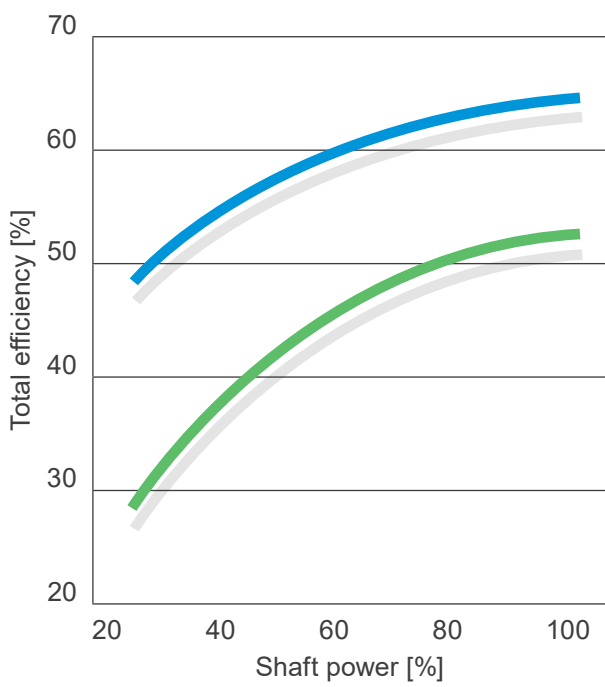
Motor cover  
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# Thermoplastic centrifugal fans with EC drive motor

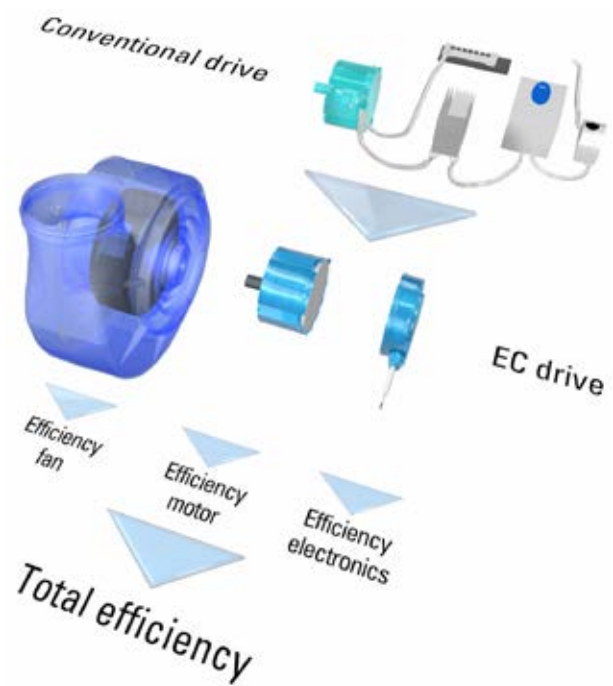


HF - centrifugal fans with direct drive | EC motor - complies with ErP 2021

## Comparison of efficiencies



■ HF R 180-15 D with EC motor   
 ■ HF R 180-15 D with DS-motor and freq. inverter



Flange connection  
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Sound enclosure  
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Fans optionally available for exhaust air from Ex-Zone 2!  
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## Specification

HF - centrifugal fan with direct drive

- complies with the [European Ecodesign Directive ErP 2021](#)

Corrosion resistant plastic centrifugal fan with UV-resistant PE-FR housing, RAL 7036, sintered, single inlet, inlet nozzle with seal as inspection opening, easy removal, condensate pipe at lowest point of the housing, splinter protection according to accident prevention rules as plastic coated wire mesh. Impeller with backward curved blades, statically and dynamically balanced, quality of balancing at least to G 6.3 (DIN ISO 21940-11), mounted with taper lock-bush on motor shaft. Fan frame in strong, welded steel construction, galvanized, with motor support plate. Fan frame suitable for mounting the housing with impeller and the driving unit. Driving unit consisting of highly efficient EC-motor, potentiometer for speed setting and lockable safety switch.

Manufacturer	: HLU	
Type	: HF R ... - .. D (DS1) EC	
Housing material	: PEs	
Impeller material	: PPs	
Housing position	: GR ...	
Inlet diameter	: ...	mm
Medium	: exhaust air	
Volume flow	: ...	m <sup>3</sup> /h
Total pressure difference	: ...	Pa
Static pressure difference	: ...	Pa
Sound pressure level Lp2A (1 m)	: ...	dB(A)
SFP (specific fan power)	: ...	W/(m <sup>3</sup> /s)
Motor power	: ...	kW
Voltage	: 230	V
Frequency	: 50	Hz
Rated current	: ...	A
Enclosure/motor protection	: IP 55 / motor integrated	

Accessories for each fan:

-----  
1 piece potentiometer IP67, fitted, wired, with adjusting scale 1 - 10 for steplessly speed setting, factory-set to the operating point

1 piece repair switch IP66, fitted, wired, with two auxiliary contacts (1x NO, 1x NC)

1 set sleeve and vibration dampers made of rubber



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## Potentiometer

The simplest and fastest way to change speed and adjust the operating data.

The manual speed adjuster is mounted on the fan at the factory and set at the desired operating point.



## Modbus RTU

Motors are available with the tried and tested Modbus interface RS485, for the full integration into networked system controls. All tasks such as measuring, controlling, switching and monitoring can be carried out according to individual requirements via this bus system.



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## Wiring diagram for EC-motors with alternating current / single-phase motors | Manufacturer Techtop ADDA

### Power and control cable connection

+ Control cable			
Item	Fuction	Wire color	Note
1	Speed output	White	3 puls per rev
2	Start/Stop	Red	Start: Red+Yellow
3	DC 12V output	Yellow	
4	DC 0-10V input	Blue	Speed control
5	COM	Black	
6	CW/CCW	Brown	Brown (not connected) = CW; Brown + Yellow + Red = CCW
7	RS485 B	Gray	
8	RS485 A	Green	

+ Power cable		
Item	Fuction	Wire color
9	L	Brown
10	N	Blue
11	PE	Yellow/Green

1. Connection only by trained and qualified electrician.
2. Before installation, check motor and motor connecting cable for damage.
3. Tighten the cable glands firmly, withdrawal of the cable must not be possible.
4. Connect the conductors to the repair switch according to the pin allocation table, [note the information given on the motor type label](#).
5. The conductors must be put on correctly without squeezing or distortion in the repair switch.
6. The maximum cable length between potentiometer and EC motor is approximately 15 m.
7. The motor can be connected either via the control cable or via Modbus.

### Accessories:



Shaft seal  
felt ring  
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Shaft seal  
Viton/Hastelloy  
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Protective grid  
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HF - centrifugal fans with direct drive | EC motor - complies with ErP 2021

## Wiring diagram for EC-motors with alternating current / single-phase motors | Manufacturer Techtop WEG

Signal type	Condition	Resulting rotation speed value	Wire	
			1	2
DC voltage	Lower than 2 V DC	Zero (motor turned off)	Blue	Black
	From 2 to 10 V DC	$((3000-500)/8) \times (\text{Input voltage [V]} - 2) + 500$		
Direct current	Lower than 4 mA DC	Zero (motor turned off)	Red	
	From 4 to 20 mA DC	$((3000-500)/16) \times (\text{Input current [mA]} - 4) + 500$		
Frequency	Lower than 10 %	Zero (motor turned off)	Brown	
	From 10 to 95 %	$((3000-500)/85) \times (\text{Frequency [%]} - 10) + 500$		

Power cable	
Function	Wire Color
L	Brown
N	Blue
PE	Green/Yellow

1. Connection only by trained and qualified electrician.
2. Before installation, check motor and motor connecting cable for damage.
3. Tighten the cable glands firmly, withdrawal of the cable must not be possible.
4. Connect the conductors to the repair switch according to the pin allocation table, **note the information given on the motor type label.**
5. The conductors must be put on correctly without squeezing or distortion in the repair switch.
6. The maximum cable length between potentiometer and EC motor is approximately 15 m.
7. The motor can be controlled via the control cable by 0-10 V, 4-20 mA or via a PWM source.



Flange connection  
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Sound enclosure  
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Fans optionally available for exhaust air from Ex-Zone 2!  
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## Differences EC motors: ebm-papst | Techtop ADDA | WEG

Supplier	Article-no.	kW	Motor size	Flange	Shaft	Motor protection	Control input	Motor stop over control input (motor stops at 0 V)
ebm	002-989-27R001	1,1	84	Lkr. Ø115	19	Temperature sensor internally wired	0 - 10 VDC / PWM	Yes
Adda	002-989-05R004	1,5	90	B5 Lkr. Ø165	24	Thermistor internally wired	0 - 10 VDC / PWM	No
WEG	002-032-28R021	1,1	80	B5 Lkr. Ø165	19	Electronic protection: Overload, excess temperature and blocked rotor.	DC voltage (external): 2 - 10 V DC // 4 - 20 mA DC // PWM (external): 10 - 95 %	Yes
ebm	002-989-27R000	0,37	84	Lkr. Ø115	14	Temperature sensor internally wired	0 - 10 VDC / PWM	Yes
Adda	002-989-05R000	0,45	71	B5 Lkr. Ø130	14	Thermistor internally wired	0 - 10 VDC / PWM	No
WEG	002-032-28R020	0,37	80	B14 Lkr. Ø100	19	Electronic protection: Overload, excess temperature and blocked rotor.	DC voltage (external): 2 - 10 V DC // 4 - 20 mA DC // PWM (external): 10 - 95 %	Yes

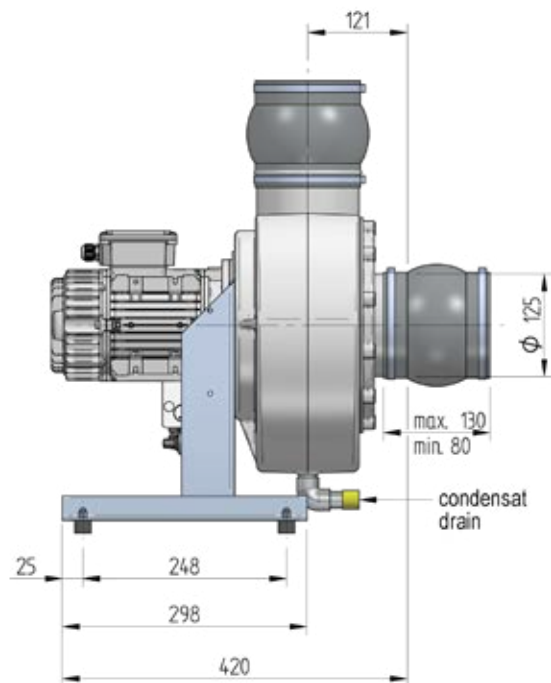
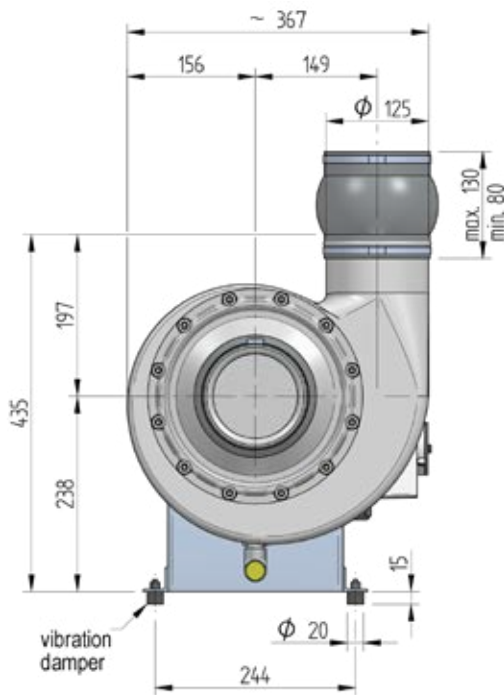
# Thermoplastic centrifugal fans with EC-Motor



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	Torque [Nm]	Torque monitoring	Rated current [A]	Min. speed[1/min]	Max. speed[1/min]	Modbus	Programmed for Modbus	Direction of rotation	Voltage [V AC]	Motor start release	Potential free status signaling contacts
	3,5	Not included	5,8		3000	RS485	Yes	For clockwise rotating impellers	200-277	Yes	Yes
	4,8	Not included	13,0	600	3000	RS485	Not necessary. Motor expects Modbus; if it does not get it, 0 - 10 V will be automatically issued.	Selectable	200-277	Yes	No
	3,5	Included	8,7	250	3000	Without	/	Selectable	220-277	No	No
	1,18	Not included	2,2		3000	Without	Yes	For clockwise rotating impellers	200-277	No	Yes
	1,20	Not included	3,6	600	3600	RS485	Not necessary. Motor expects Modbus; if it does not get it, 0 - 10 V will be automatically issued.	Selectable	200-277	Yes	No
	1,18	Included	3,3	140	3000	Without	/	Selectable	220-277	No	No

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## Accessories:



Shaft seal  
felt ring  
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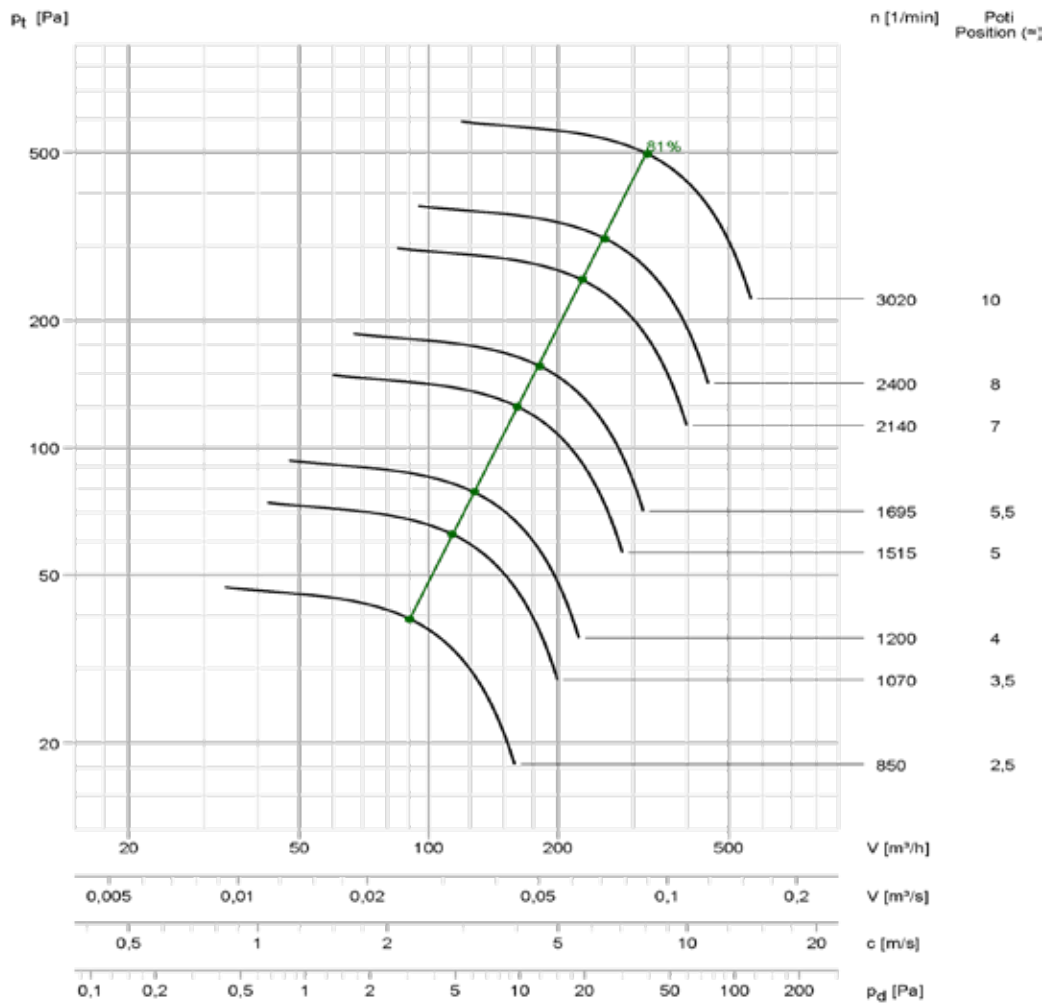
Shaft seal  
Viton/Hastelloy  
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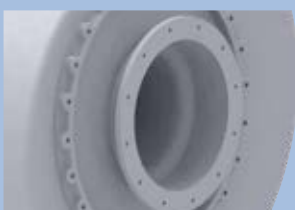
Protective grid  
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Motor cover  
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Acoustic level according to VDI 3731									
Speed [1/min]	inlet level / outlet level of the duct sound level non-valuated; Lw3 = Lw4 [dB]								Lp2A (1 m) [dB(A)]
	63	125	250	500	1000	2000	4000	8000	
3020	73	72	80	67	62	55	47	38	58
2400	69	67	75	61	55	48	40	30	52
2140	66	65	72	58	52	45	36	26	49
1695	59	68	54	50	43	36	27	16	39
1515	57	65	51	46	40	32	23	12	36
1200	52	60	46	40	33	25	15	4	31
1070	50	57	43	37	30	21	11	0	28



Flange connection  
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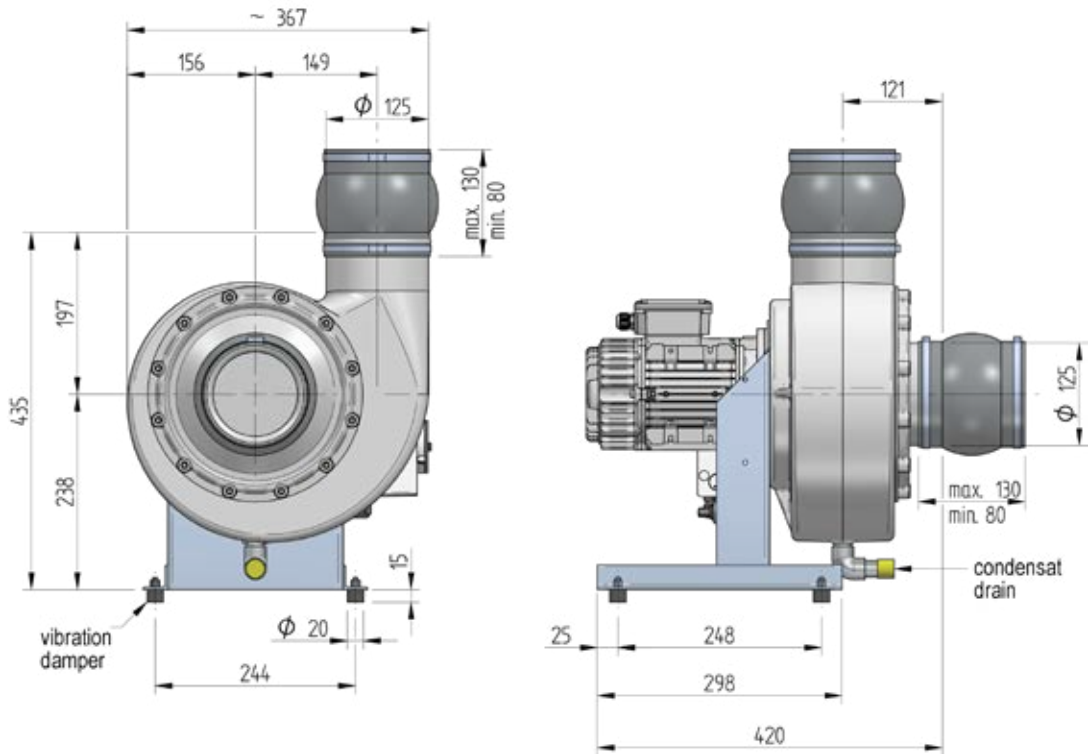


Sound enclosure  
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Fans optionally available for exhaust air from Ex-Zone 2!  
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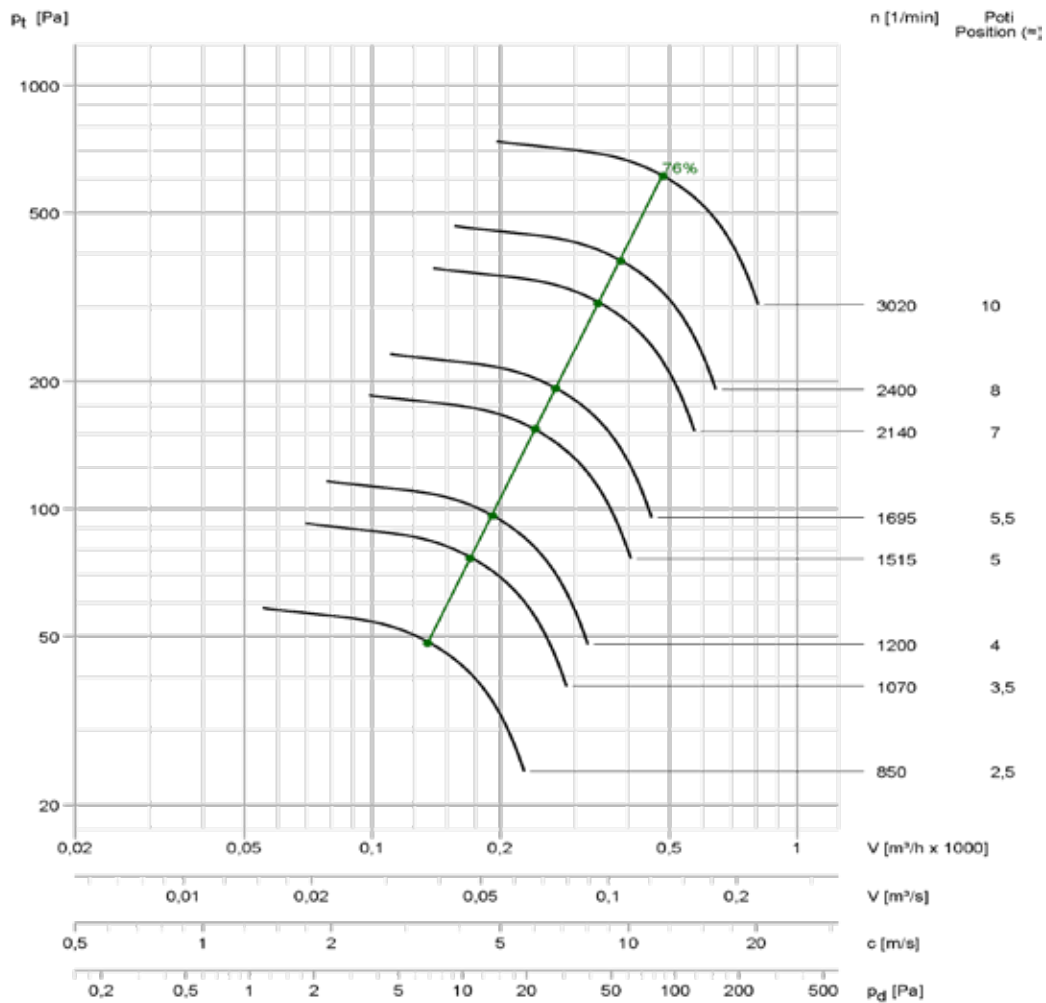
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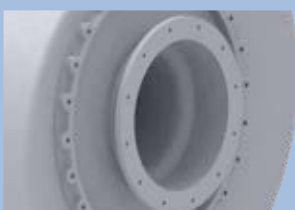
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Motor cover  
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Acoustic level according to VDI 3731									
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	63	125	250	500	1000	2000	4000	8000	
3020	83	83	92	79	76	72	67	61	69
2400	78	78	86	74	70	66	60	54	64
2140	76	75	83	71	67	62	57	51	61
1695	69	78	66	63	59	54	49	42	51
1515	67	76	63	60	56	51	45	39	48
1200	62	70	57	54	50	44	38	31	42
1070	59	67	54	51	46	41	35	28	39
850	62	50	47	43	38	33	26	19	30



Flange connection  
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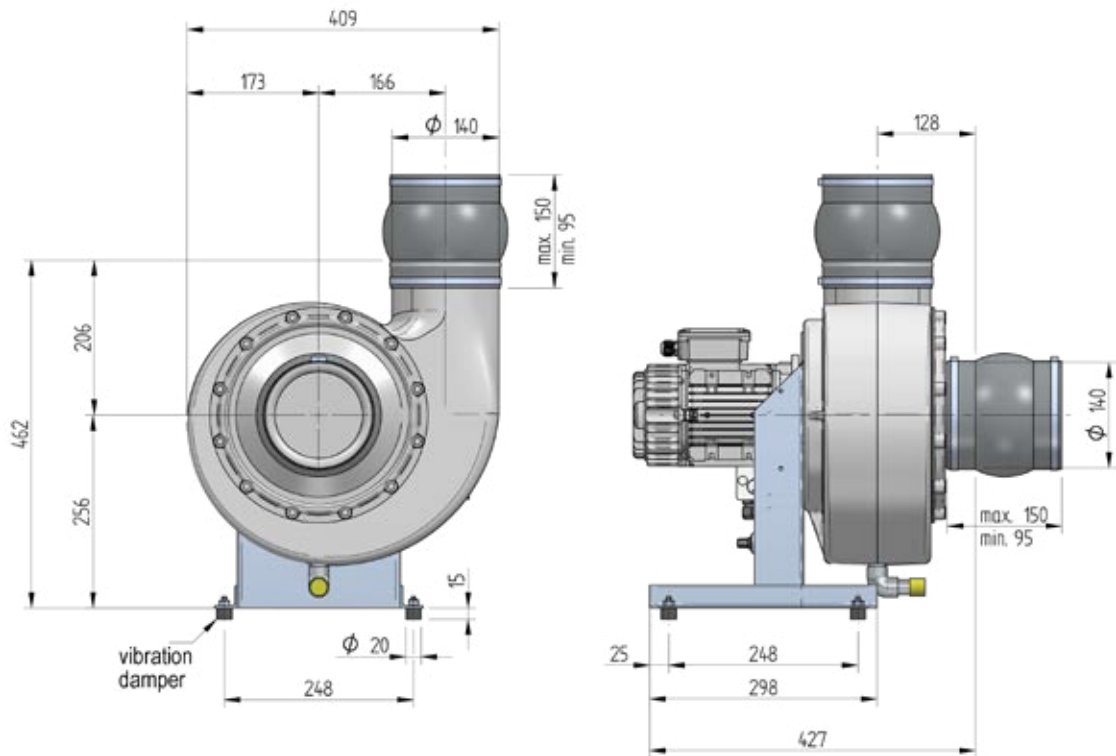


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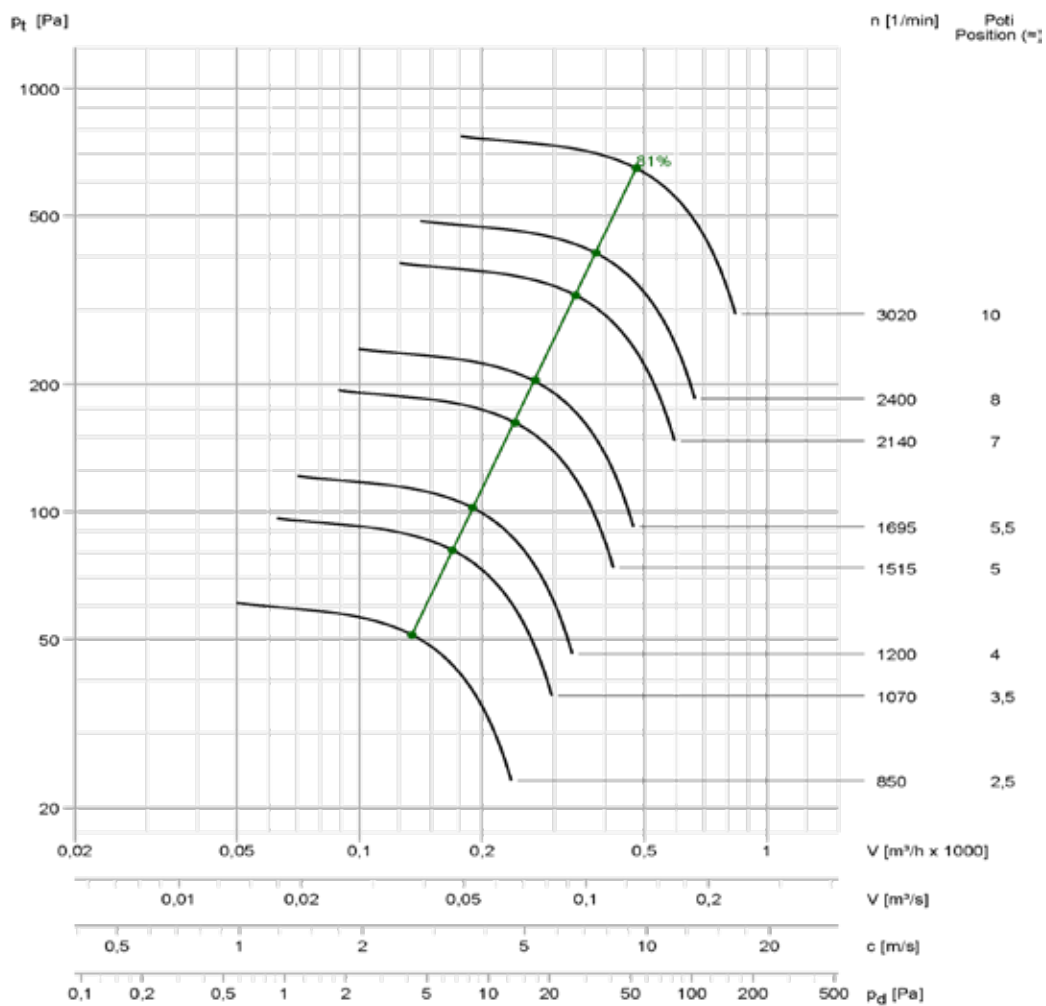
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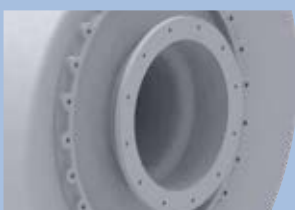
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Motor cover  
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	63	125	250	500	1000	2000	4000	8000	
3020	77	77	84	71	66	59	52	42	62
2400	73	72	79	65	59	53	44	34	56
2140	70	69	76	62	56	49	40	30	53
1695	64	72	58	54	47	40	31	20	43
1515	61	69	56	51	44	36	27	16	40
1200	56	64	50	44	37	29	19	8	35
1070	54	61	47	41	34	25	15	4	32



Flange connection  
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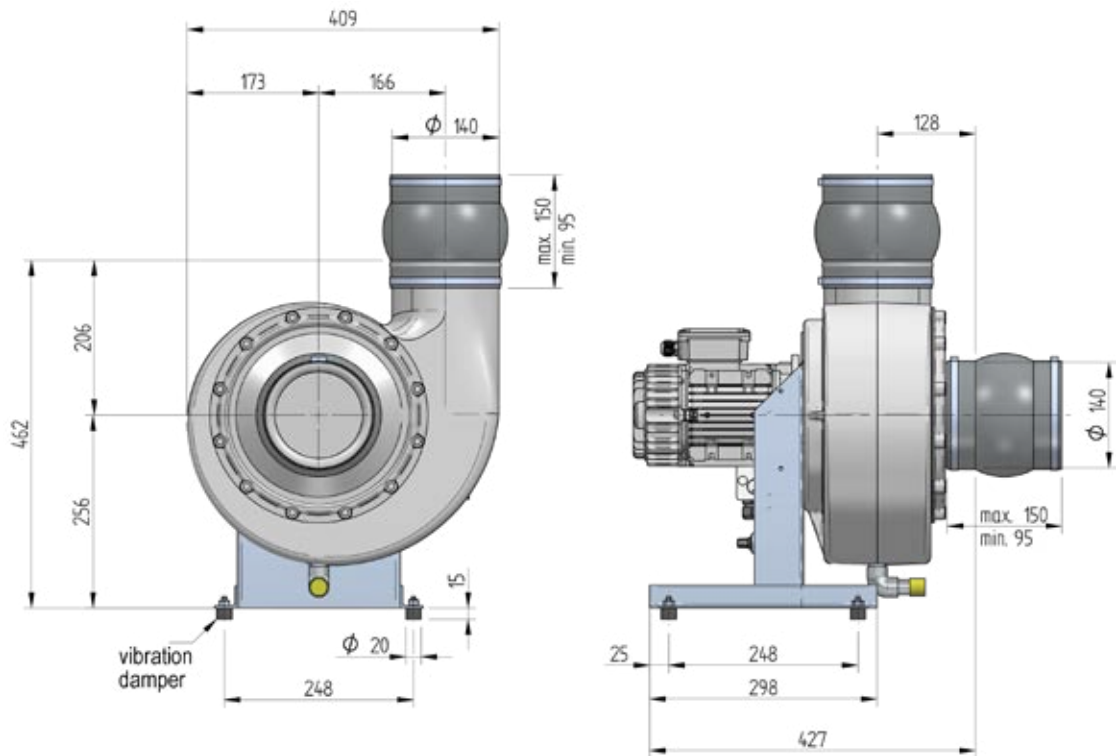


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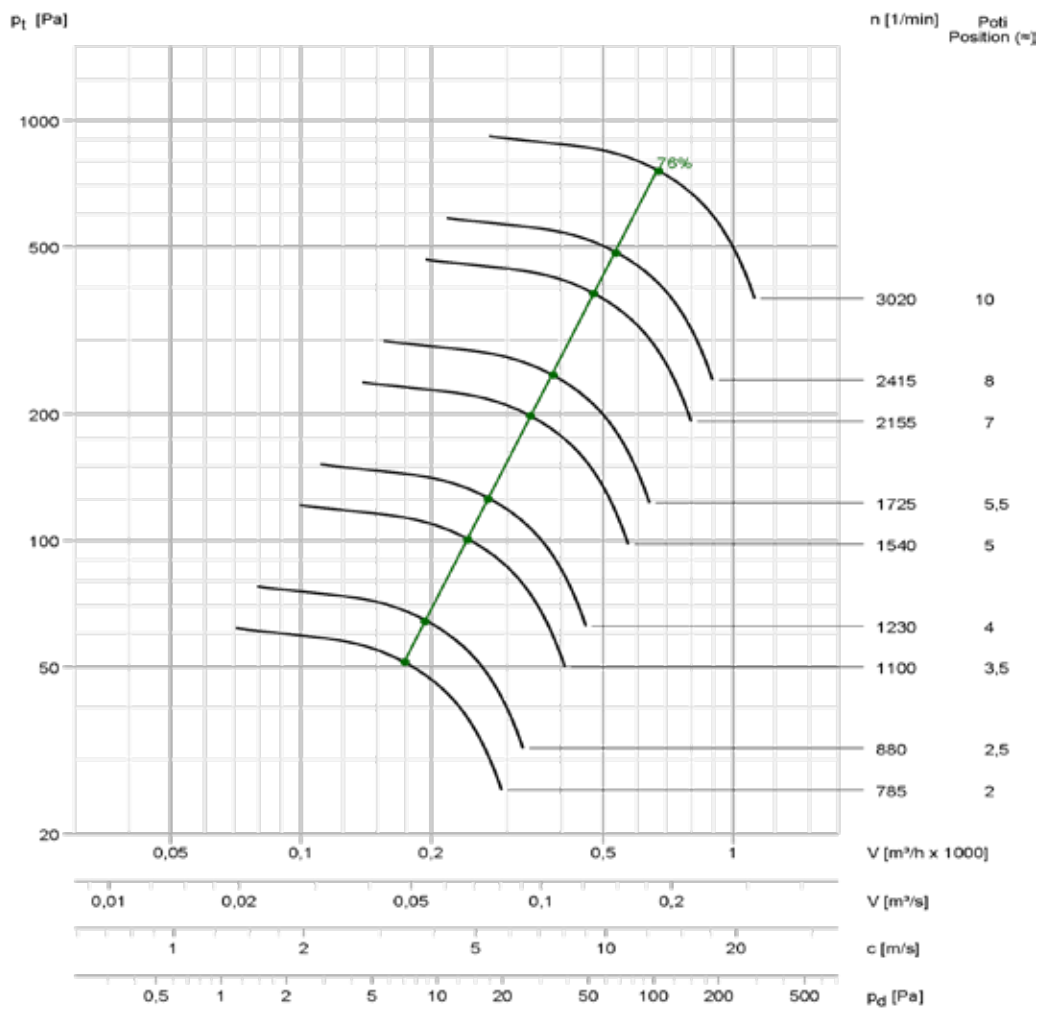
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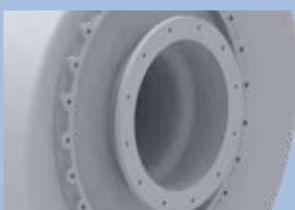
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Motor cover  
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	63	125	250	500	1000	2000	4000	8000	
3020	87	87	95	83	80	76	71	65	73
2415	82	81	90	77	74	69	64	58	67
2155	80	79	87	74	71	66	61	55	64
1725	73	82	70	67	63	59	53	46	55
1540	71	79	67	64	60	55	49	43	52
1230	66	74	62	58	54	49	43	36	46
1100	63	71	59	55	51	45	39	32	43
880	66	54	52	48	43	37	31	23	34
785	64	52	49	45	40	34	27	20	31



Flange connection  
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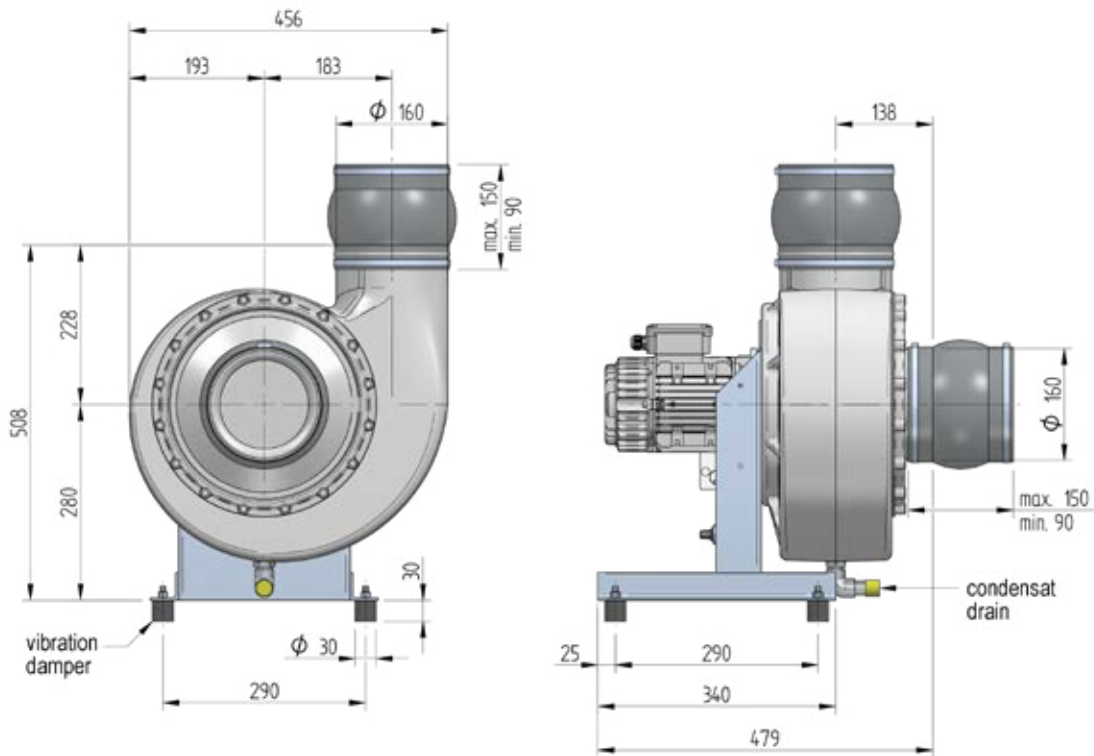


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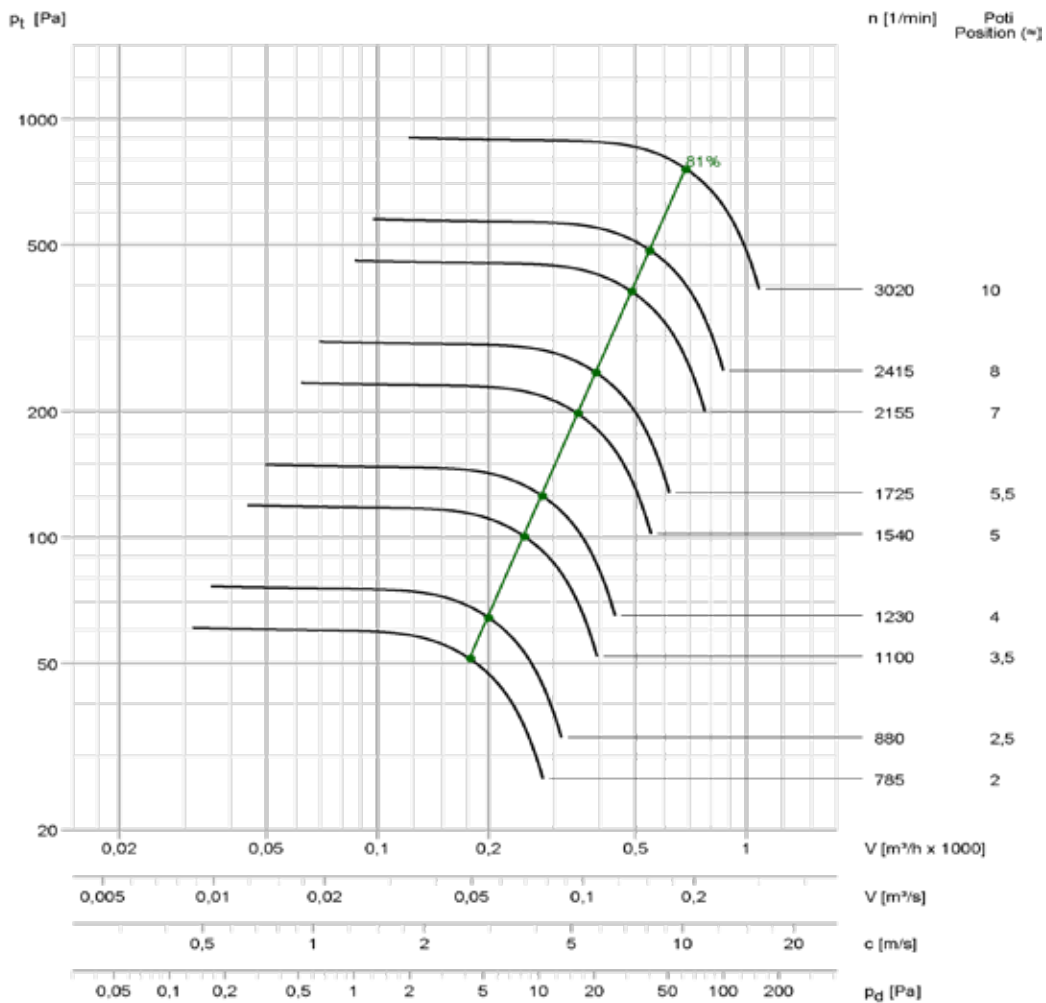
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	63	125	250	500	1000	2000	4000	8000	
3020	85	84	83	78	73	67	59	50	64
2415	80	79	77	72	67	60	52	42	58
2155	78	76	75	69	64	56	48	38	55
1725	73	72	68	63	57	49	40	30	49
1540	70	69	65	60	54	46	36	26	46
1230	66	64	59	54	47	38	29	17	40
1100	63	61	56	51	43	35	25	13	37
880	59	55	50	44	36	27	17	5	31
785	57	52	47	41	33	24	13	1	28



Flange connection  
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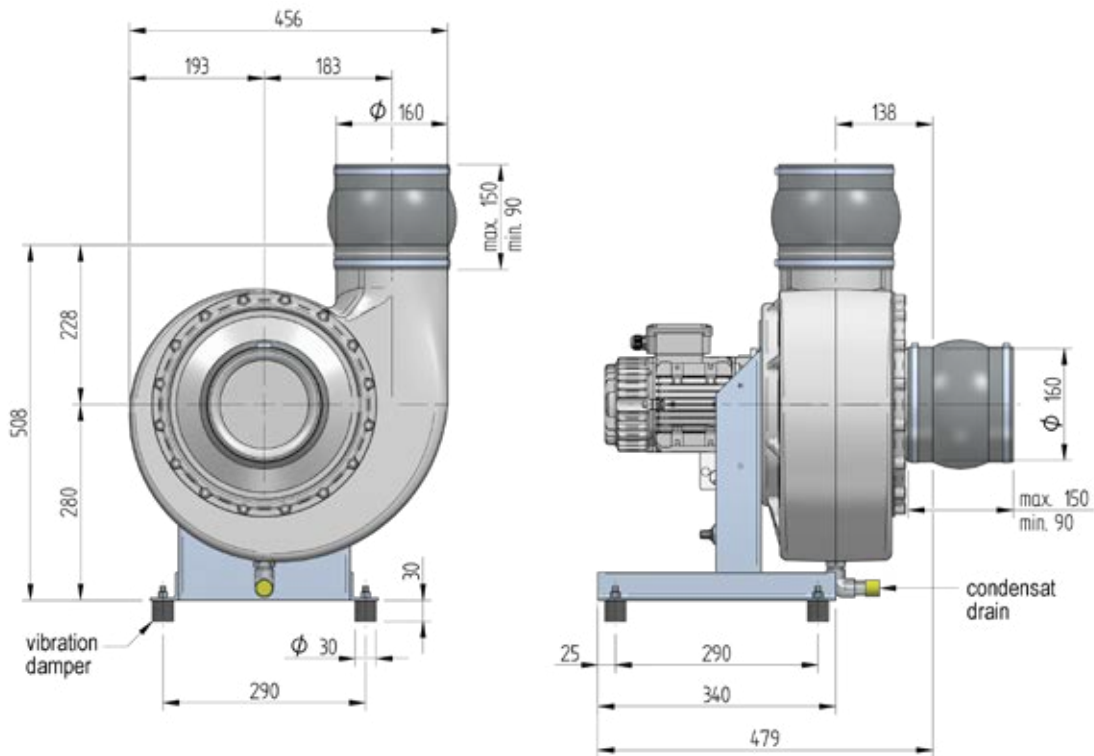


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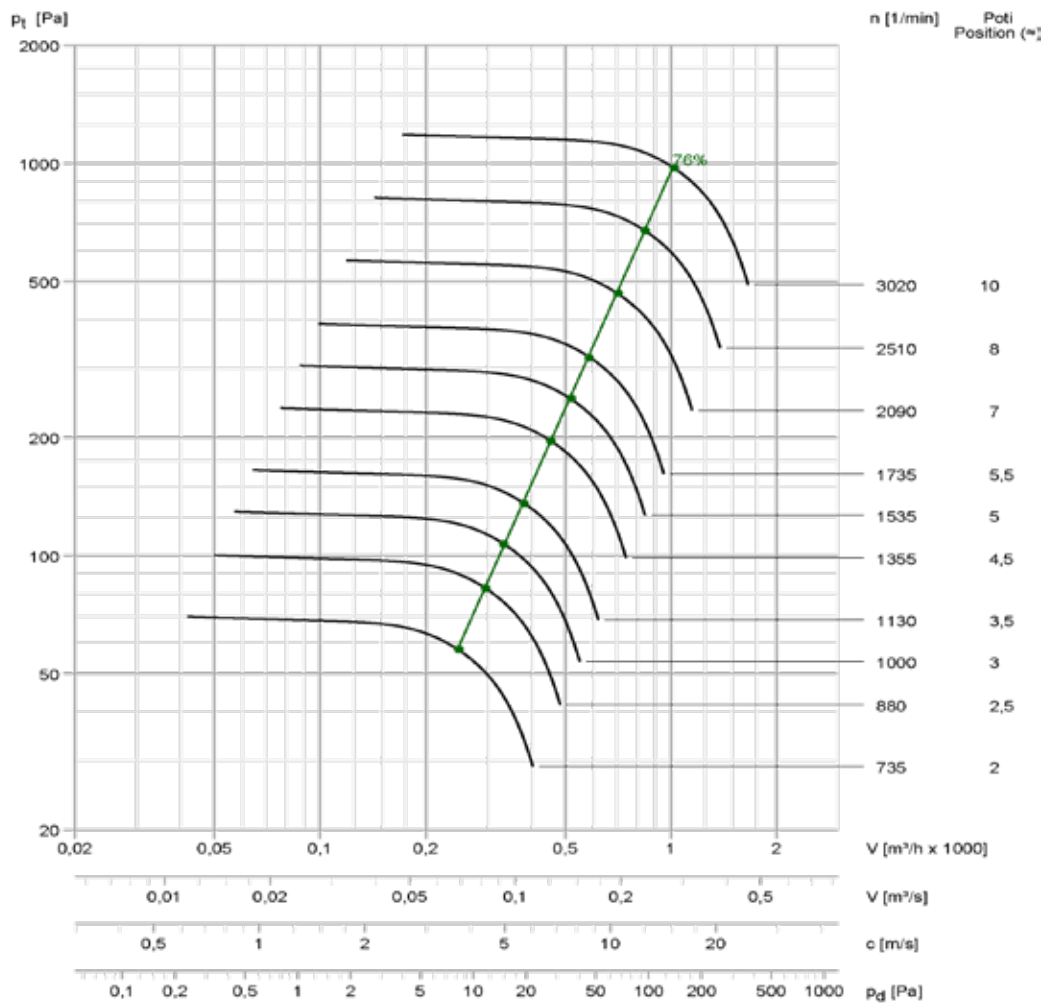
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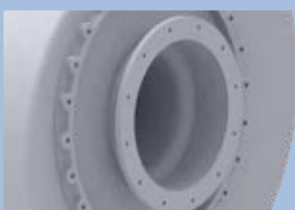
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	63	125	250	500	1000	2000	4000	8000	
3020	96	95	95	92	88	84	80	74	77
2510	91	91	90	87	83	79	74	68	72
2090	87	86	86	82	78	74	68	62	67
1735	83	83	80	77	73	68	63	56	62
1535	80	80	77	74	70	65	59	52	59
1355	78	77	74	70	66	61	55	48	56
1130	73	73	69	66	61	56	50	42	51
1000	71	70	66	62	58	52	46	39	48
880	68	65	63	59	54	48	42	34	44
735	64	61	58	54	49	43	36	29	39



Flange connection  
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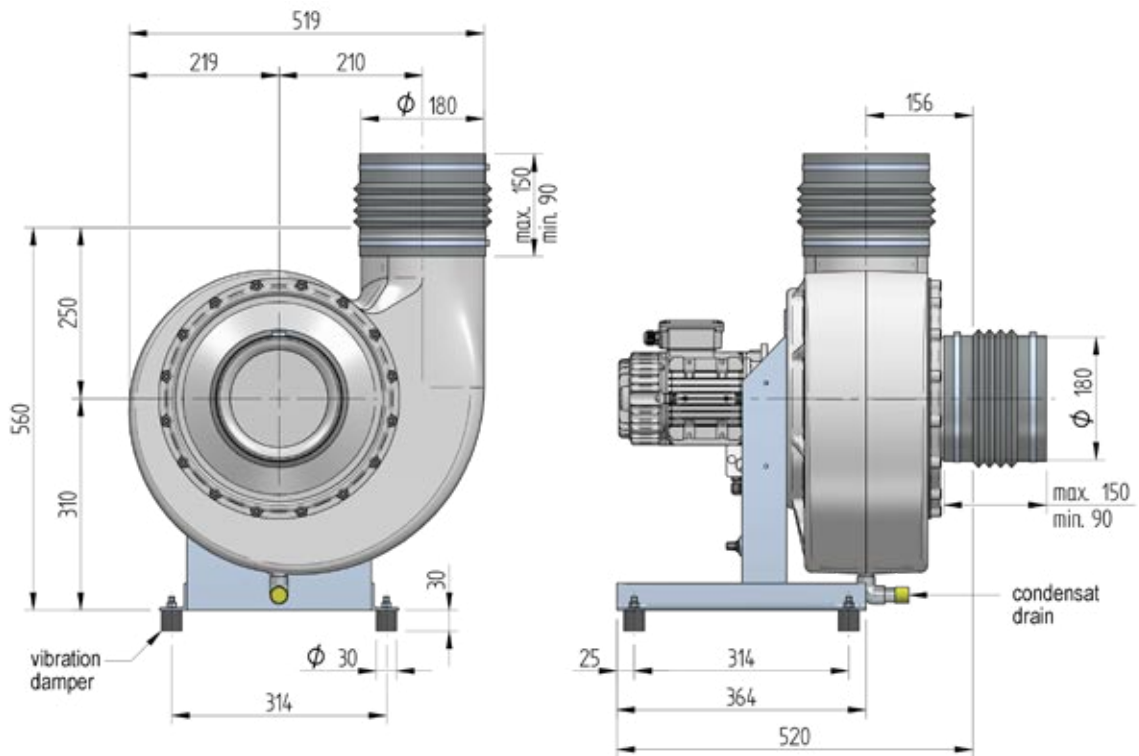


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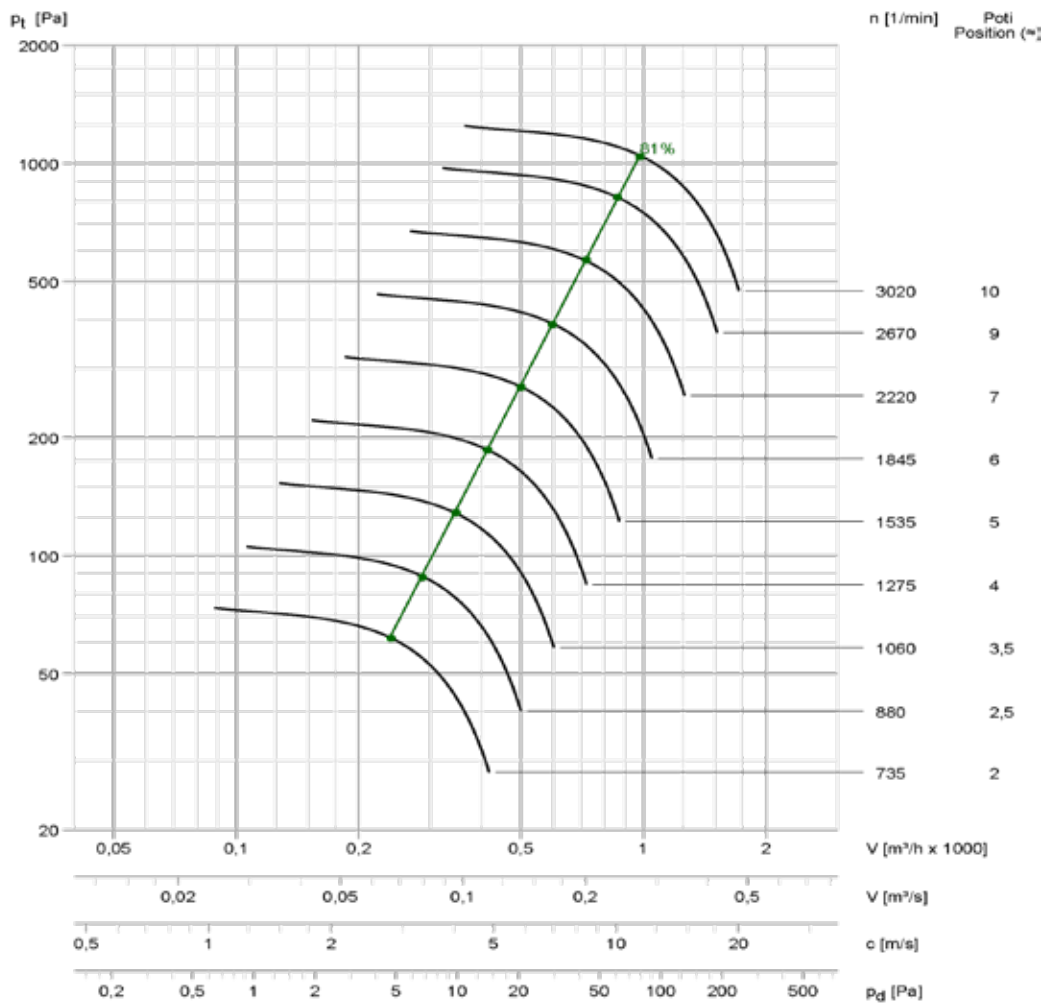
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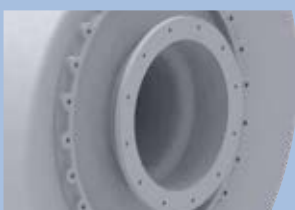
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Acoustic level according to VDI 3731									
Speed [1/min]	inlet level / outlet level of the duct sound level non-valuated; $L_{w3} = L_{w4}$ [dB]								$L_{p2A}$ (1 m) [dB(A)]
	63	125	250	500	1000	2000	4000	8000	
3020	85	84	92	79	74	67	59	50	69
2670	82	82	89	75	70	63	55	46	66
2220	79	77	85	71	65	58	49	39	61
1845	75	73	80	66	60	52	43	33	57
1535	69	77	64	59	52	44	35	24	48
1275	65	73	59	54	47	38	29	18	43
1060	61	69	54	48	41	33	23	11	39
880	65	52	47	41	33	24	14	2	29



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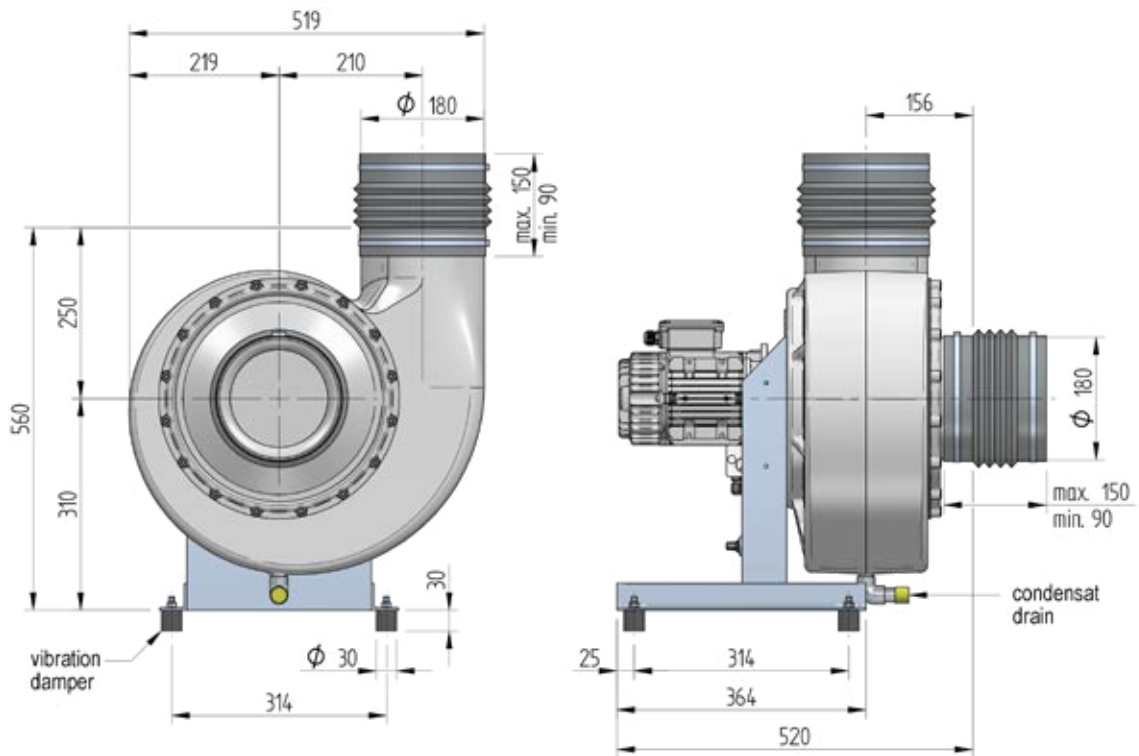


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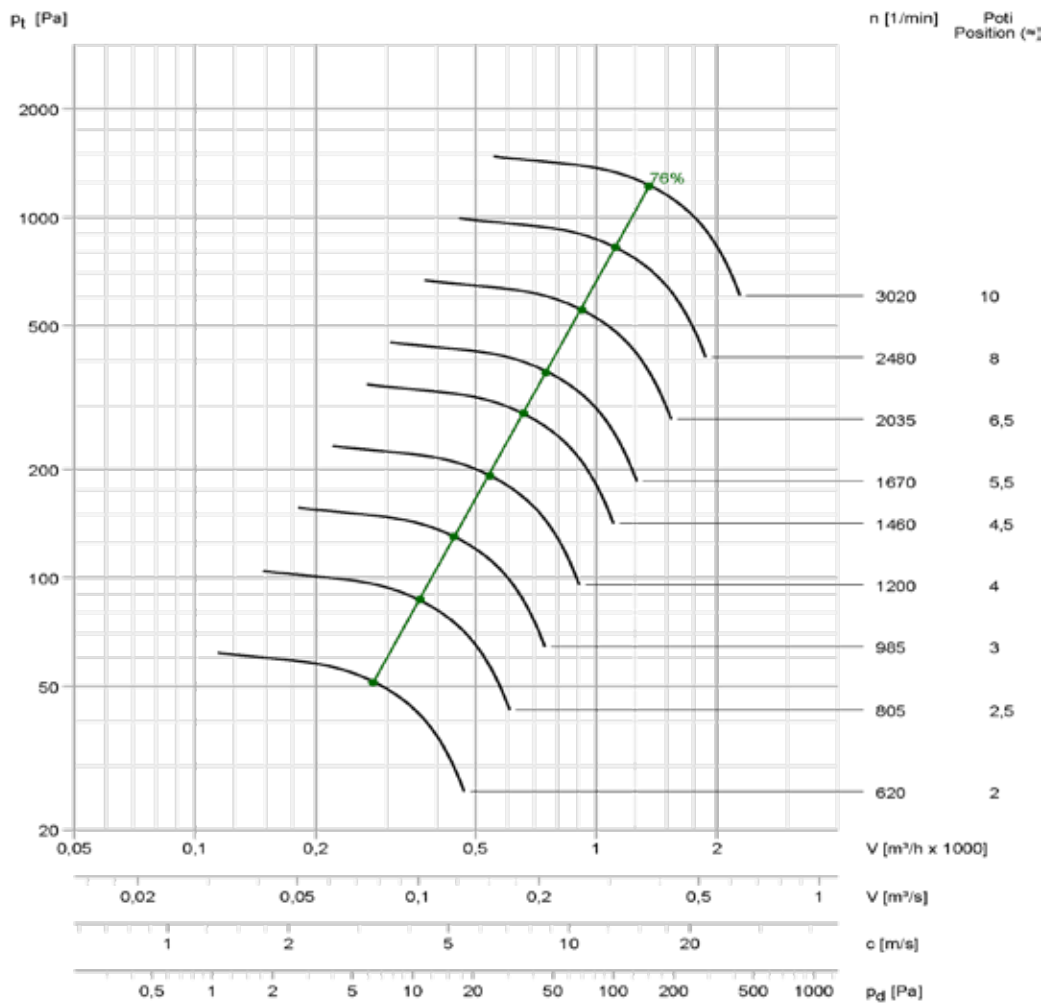
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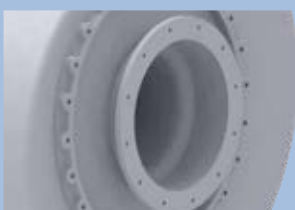
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Speed [1/min]	inlet level / outlet level of the duct sound level non-valuated; Lw3 = Lw4 [dB]								Lp2A (1 m) [dB(A)]
	63	125	250	500	1000	2000	4000	8000	
3020	95	94	103	91	88	84	79	73	80
2480	90	90	98	86	82	78	73	67	75
2035	86	85	93	81	77	72	67	61	70
1670	80	89	77	74	70	65	60	53	61
1460	77	86	74	71	66	61	56	49	58
1200	73	81	69	65	61	56	50	42	53
985	68	76	64	60	55	50	44	36	48
805	72	60	57	53	48	42	36	28	39
620	66	53	50	46	41	34	27	19	32



Flange connection  
P. 37

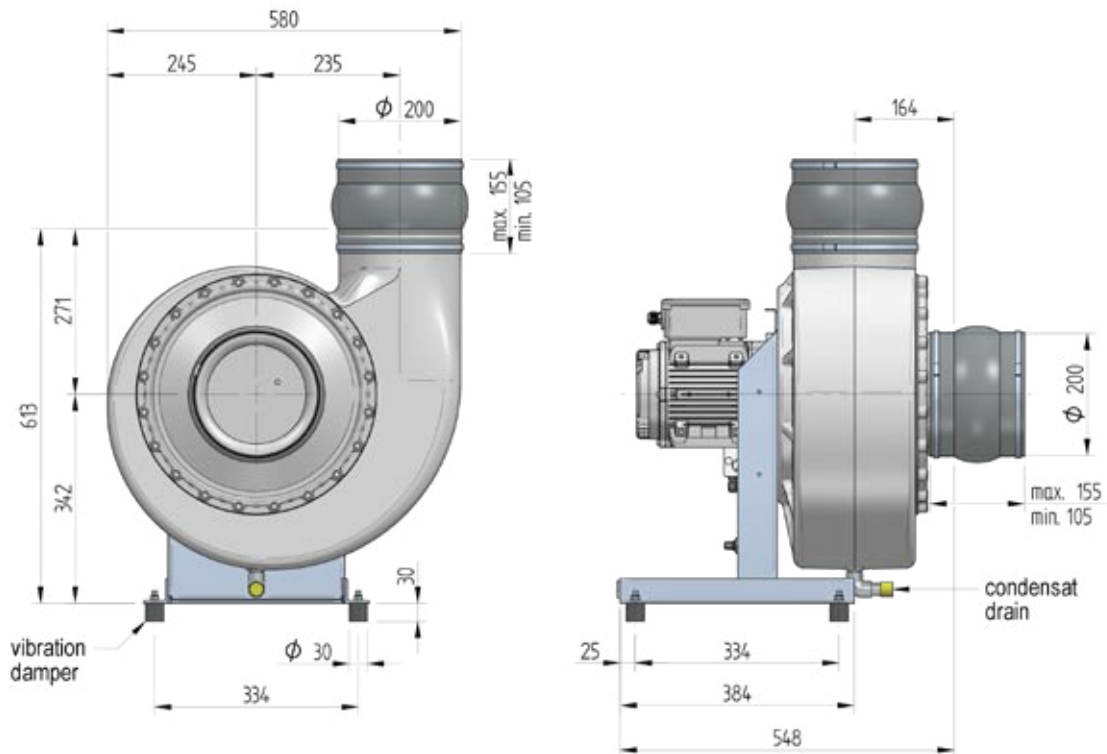


Sound enclosure  
P. 40



Fans optionally available for exhaust air from Ex-Zone 2!  
P. 44

HF - centrifugal fans with direct drive | EC motor  
- complies with ErP 2021



### Accessories:



Shaft seal  
felt ring  
P. 38



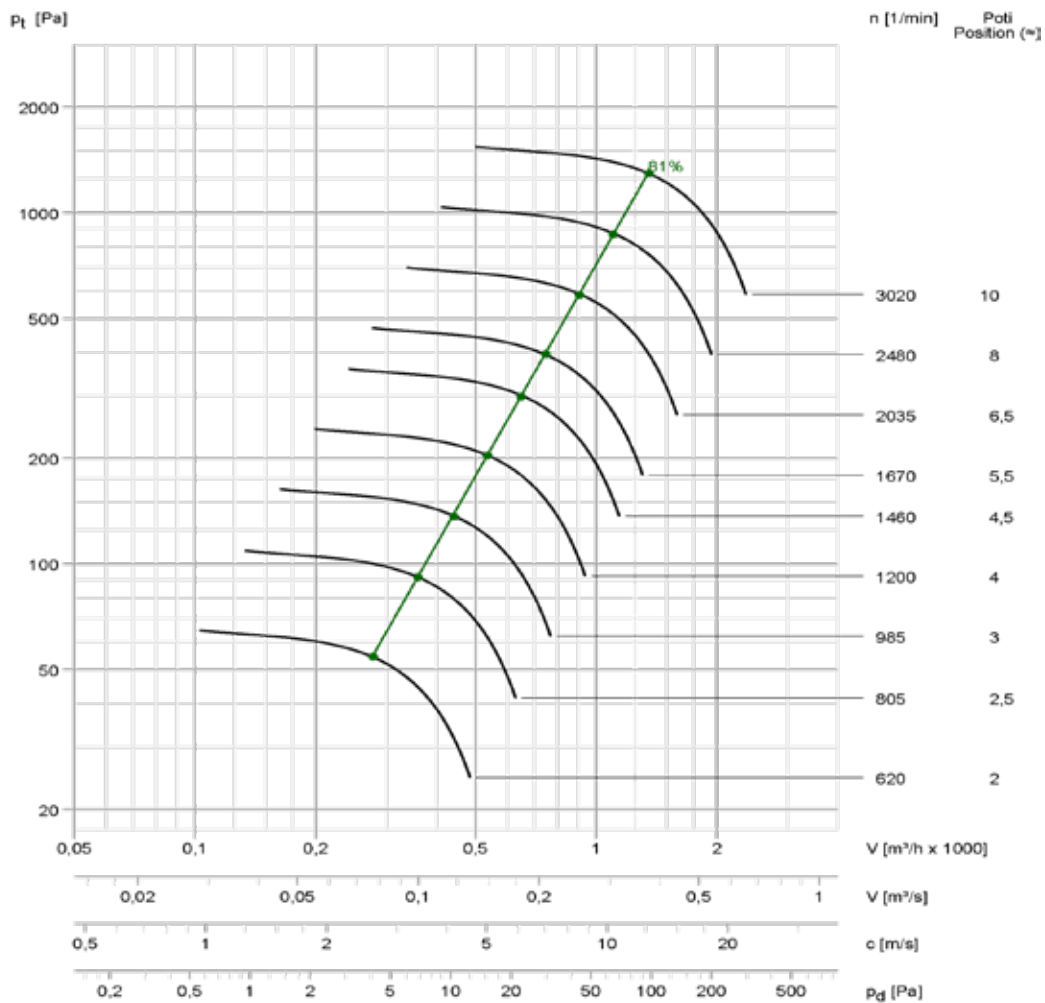
Shaft seal  
Viton/Hastelloy  
P. 38



Protective grid  
P. 38



Motor cover  
P. 39



Acoustic level according to VDI 3731									
Speed [1/min]	inlet level / outlet level of the duct sound level non-valuated; $L_{w3} = L_{w4}$ [dB]								$L_{p2A}$ (1 m) [dB(A)]
	63	125	250	500	1000	2000	4000	8000	
3020	88	88	95	82	77	70	62	53	72
2480	84	83	91	77	71	64	56	46	67
2035	80	79	86	72	66	59	50	40	62
1670	74	82	69	64	58	50	41	31	53
1460	71	79	66	61	54	46	37	26	50
1200	67	75	61	55	48	40	30	19	45
985	63	70	56	50	42	34	23	12	40
805	66	53	48	42	34	25	14	2	30



Flange connection  
P. 37

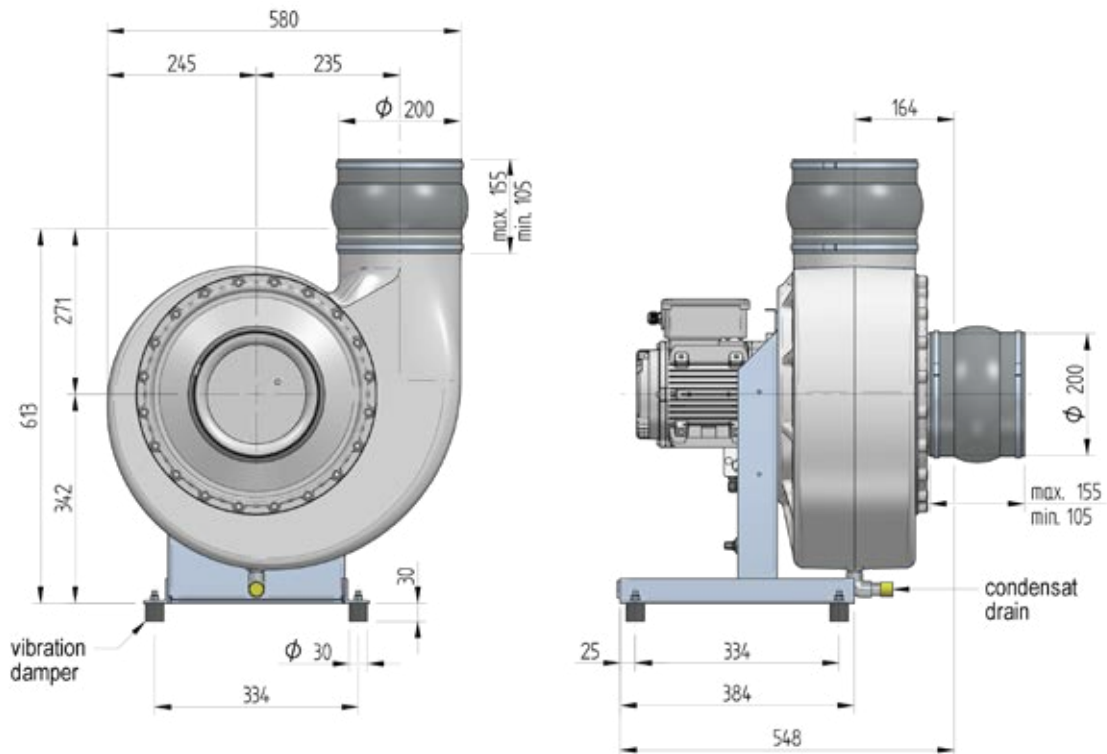


Sound enclosure  
P. 40



Fans optionally available for exhaust air from Ex-Zone 2!  
P. 44

HF - centrifugal fans with direct drive | EC motor  
- complies with ErP 2021



## Accessories:



Shaft seal  
felt ring  
P. 38



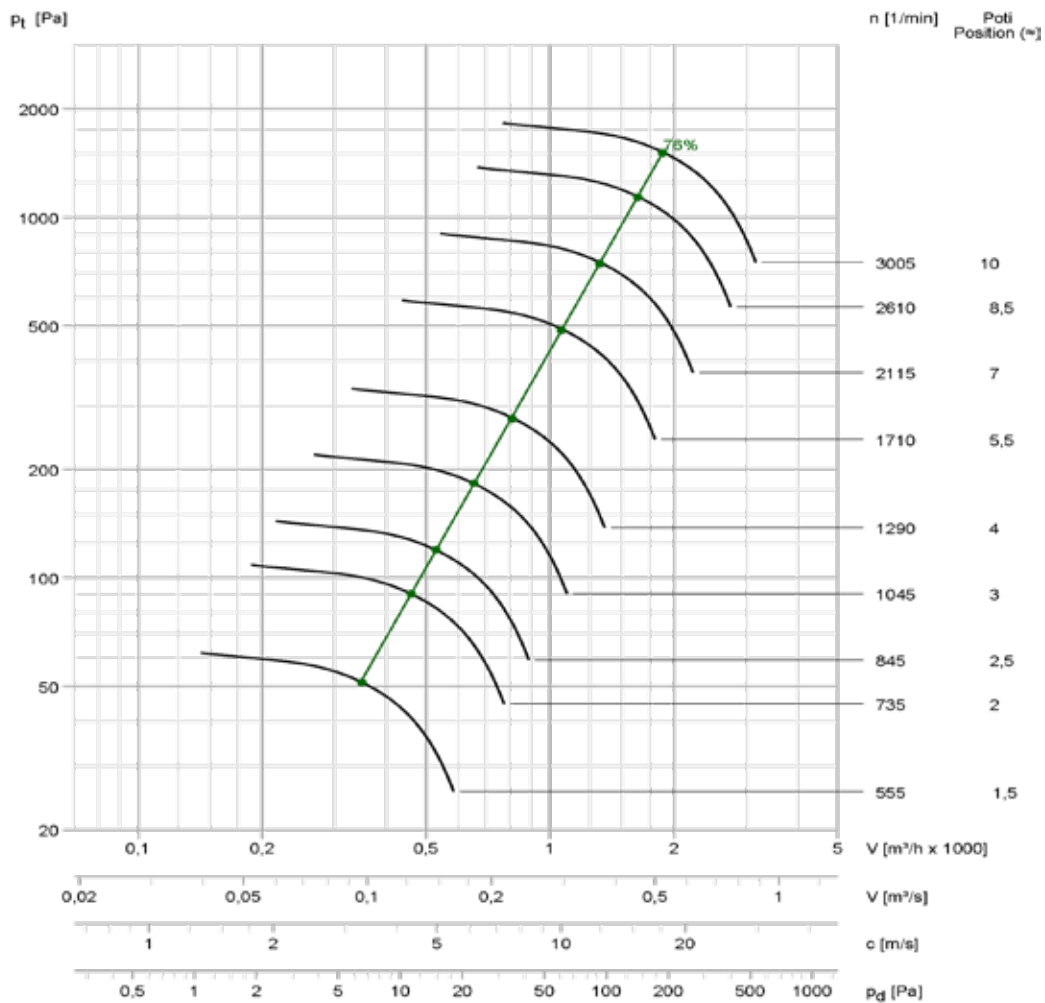
Shaft seal  
Viton/Hastelloy  
P. 38



Protective grid  
P. 38



Motor cover  
P. 39



Acoustic level according to VDI 3731									
Speed [1/min]	inlet level / outlet level of the duct sound level non-validated; Lw3 = Lw4 [dB]								Lp2A (1 m) [dB(A)]
	63	125	250	500	1000	2000	4000	8000	
3005	98	98	106	94	91	87	82	76	83
2610	95	95	103	91	87	83	78	72	80
2115	91	90	98	85	82	77	72	65	75
1710	85	93	81	78	74	70	64	57	65
1290	78	87	74	71	67	61	55	48	58
1045	73	82	69	65	61	55	49	42	53
845	77	65	62	58	53	47	41	33	44
735	74	61	58	54	49	43	36	29	40
555	67	54	51	46	41	35	28	19	32



Flange connection  
P. 37

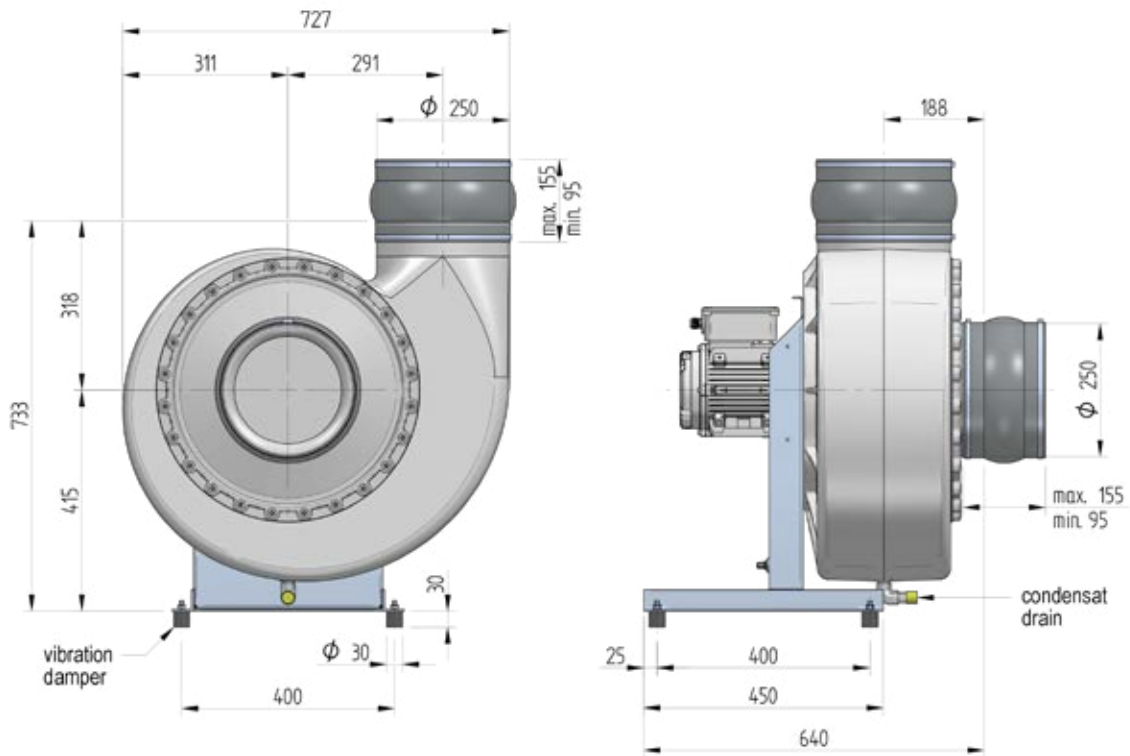


Sound enclosure  
P. 40



Fans optionally available for exhaust air from Ex-Zone 2!  
P. 44

HF - centrifugal fans with direct drive | EC motor  
- complies with ErP 2021



## Accessories:



Shaft seal  
felt ring  
P. 38



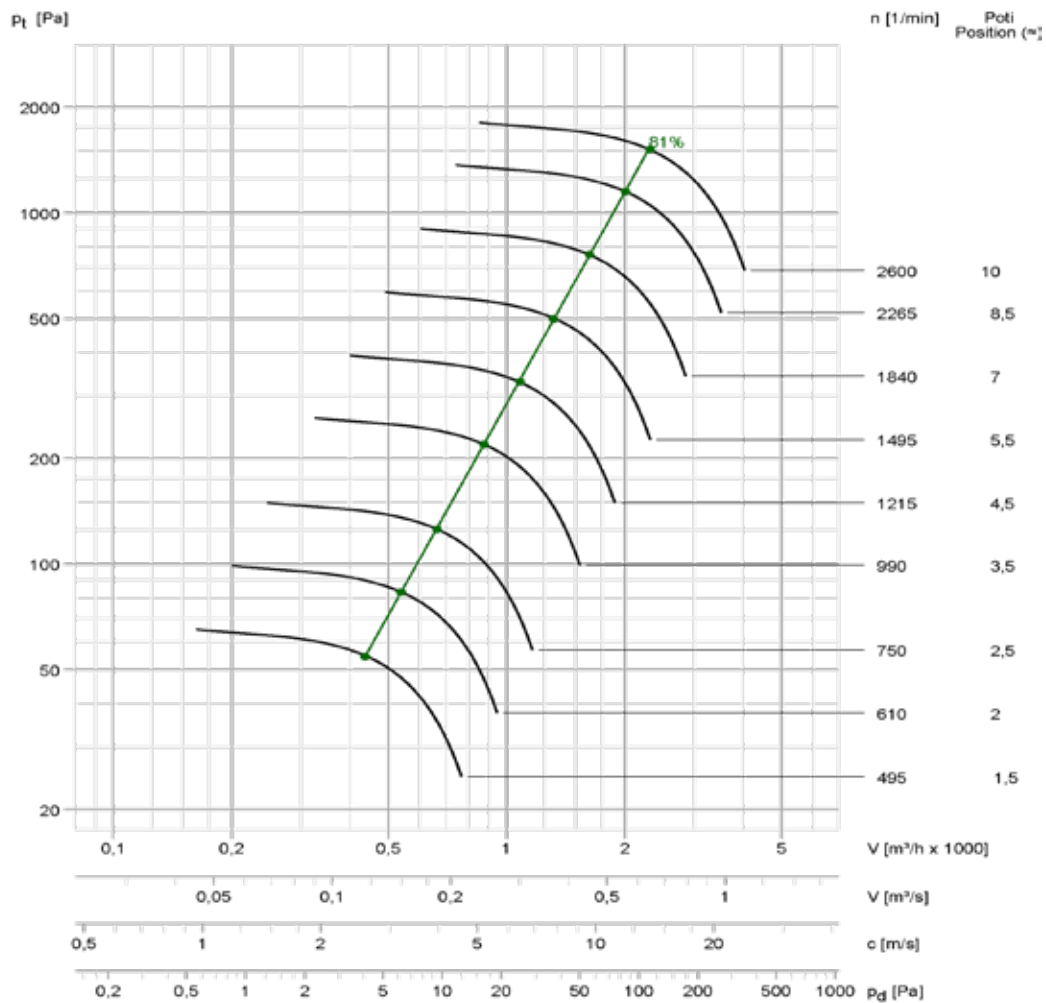
Shaft seal  
Viton/Hastelloy  
P. 38



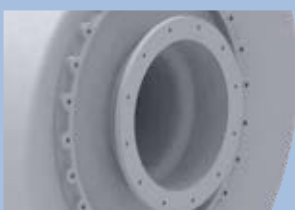
Protective grid  
P. 38



Motor cover  
P. 39



Acoustic level according to VDI 3731									
Speed [1/min]	inlet level / outlet level of the duct sound level non-valuated; $L_{w3} = L_{w4}$ [dB]								$L_{p2A}$ (1 m) [dB(A)]
	63	125	250	500	1000	2000	4000	8000	
2600	93	92	99	85	80	73	65	55	75
2265	90	89	96	82	76	69	60	51	72
1840	86	84	91	76	70	63	54	43	67
1495	79	87	74	68	62	54	45	34	57
1215	75	82	68	63	56	48	38	26	52
990	71	78	63	57	50	41	31	19	47
750	72	58	53	47	39	29	19	6	35



Flange connection  
P. 37

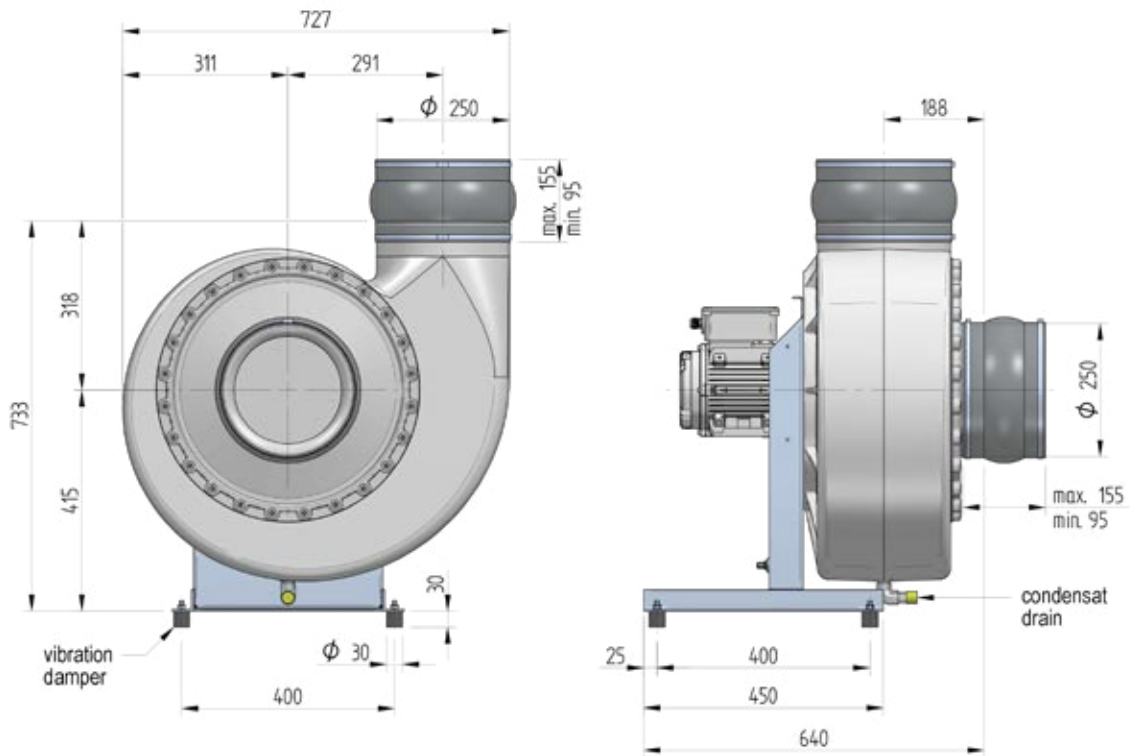


Sound enclosure  
P. 40



Fans optionally available for exhaust air from Ex-Zone 2!  
P. 44

HF - centrifugal fans with direct drive | EC motor  
- complies with ErP 2021



### Accessories:



Shaft seal  
felt ring  
P. 38



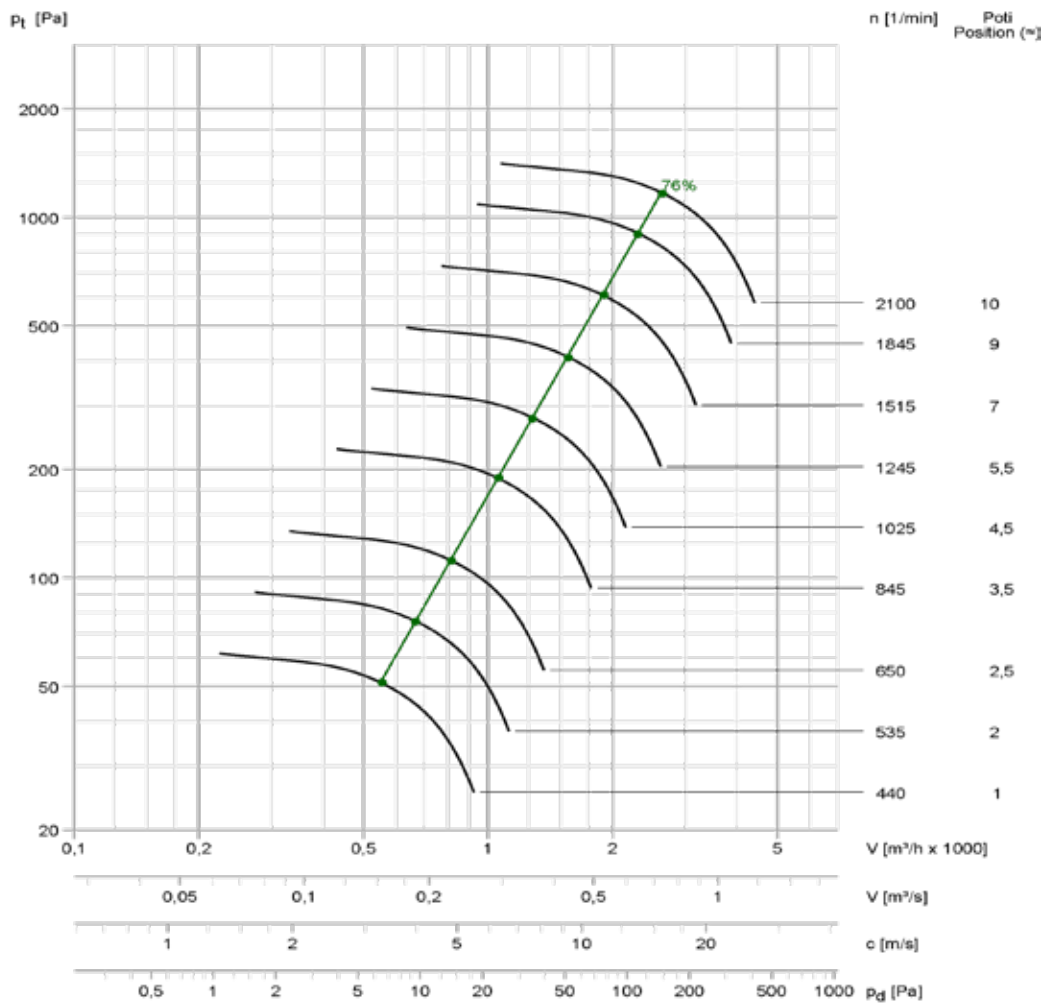
Shaft seal  
Viton/Hastelloy  
P. 38



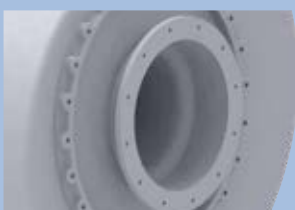
Protective grid  
P. 38



Motor cover  
P. 39



Acoustic level according to VDI 3731									
Speed [1/min]	inlet level / outlet level of the duct sound level non-validated; $L_{w3} = L_{w4}$ [dB]								$L_{p2A}$ (1 m) [dB(A)]
	63	125	250	500	1000	2000	4000	8000	
2100	98	97	105	93	89	84	79	73	81
1845	95	94	102	89	85	81	75	69	78
1515	89	98	86	83	79	74	68	61	69
1245	85	93	81	77	73	68	62	55	64
1025	80	89	76	72	68	62	56	49	59
845	84	72	69	65	61	55	48	41	51
650	78	66	62	58	53	47	40	32	43
535	74	61	57	53	47	41	34	26	38
440	69	56	52	47	42	35	28	19	33



Flange connection  
P. 37



Sound enclosure  
P. 40



Fans optionally available for exhaust air from Ex-Zone 2!  
P. 44

Accessories for  
HF - centrifugal fans with  
direct drive | EC motor



### Vibration dampers

Protect against vibrations



Size	Rubber
Ø	Article no.
125	441-065-000000
140	441-065-000000
160	441-065-000001
180	441-065-000001
200	441-065-000001
250	441-065-000001

### Sleeve with VA tightening straps

For easy flexible connection to duct



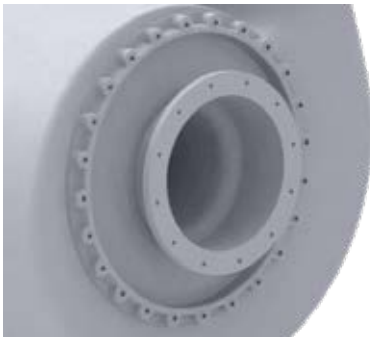
Size	Suction side	Pressure side
Ø	Article no.	Article no.
125	441-063-100000	441-064-100000
140	441-063-100001	441-064-100001
160	441-063-100002	441-064-100002
180	441-063-100003	441-064-100003
200	441-063-100004	441-064-100004
250	441-063-100005	441-064-100005



Accessories for  
HF - centrifugal fans with  
direct drive | EC motor

## Flange connection

Recommended for higher demands on tightness and at higher pressures



Size	Suction side	Pressure side
Ø	Article no.	Article no.
125	441-060-125000	441-061-125000
140	441-060-140000	441-061-140000
160	441-060-160000	441-061-160000
180	441-060-180000	441-061-180000
200	441-060-200000	441-061-200000
250	441-060-250000	441-061-250000

## Sleeve with flanges

For flexible connection with higher demands on tightness and at higher pressures



Size	Suction side	Pressure side
Ø	Article no.	Article no.
125	441-063-000000	441-064-000000
140	441-063-000001	441-064-000001
160	441-063-000002	441-064-000002
180	441-063-000003	441-064-000003
200	441-063-000004	441-064-000004
250	441-063-000005	441-064-000005

Accessories for  
HF - centrifugal fans with  
direct drive | EC motor



## Shaft seal felt ring

Protects against leakage at the shaft passage



Size	Motor power	Felt ring
Ø	kW	Article no.
125	0,37	441-040-000000
140	0,37	441-040-000000
160	0,37	441-040-000000
180	0,37	441-040-000000
180	1,1	441-040-000000
200	1,1	441-040-000000
250	1,1	441-040-000000

## Shaft seal Viton/Hastelloy

Protects against leakage at the shaft passage



Size	Motor power	Viton/Hastelloy
Ø	kW	Article no.
125	0,37	441-041-000000
140	0,37	441-041-000000
160	0,37	441-041-000000
180	0,37	441-041-000005
180	1,1	441-041-000006
200	1,1	441-041-000006
250	1,1	441-041-000006

## Protection grid

Protects against foreign bodies



Size	Suction side	Pressure side
Ø	Article no.	Article no.
125	441-020-125000	441-021-125000
140	441-020-140000	441-021-140000
160	441-020-160000	441-021-160000
180	441-020-180000	441-021-180000
200	441-020-200000	441-021-200000
250	441-020-250000	441-021-250000



Accessories for  
HF - centrifugal fans with  
direct drive | EC motor

## Motor cover

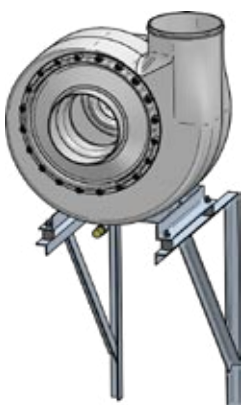
Protects the electric motor from weather influences



Size	Steel, galvanized
Ø	Article no.
125	441-030-125000
140	441-030-140000
160	441-030-160000
180	441-030-180000
200	441-030-200000
250	441-030-250000

## Wall bracket set

For easy wall mounting



Size	Steel, galvanized
Ø	Article no.
125	017-829-102000
140	017-829-102000
160	017-829-104000
180	017-829-104000
200	017-829-106000
250	017-829-106000

Accessories for  
HF - centrifugal fans with  
direct drive | EC motor



## Sound enclosure GR 360°

Reduces the sound emission from the fan



Size	Steel, galvanized	Plastic PP
Ø	Article no.	Article no.
125	440-820-000324	440-023-012500
140	440-820-000325	440-023-014000
160	440-820-000317	440-023-016001
180	440-820-000326	440-023-018000
200	440-820-000327	440-023-020000
250	440-820-000319	440-023-125000

## Why plastic?

- Durable
- Corrosion-resistant
- Resistant to chemicals
- High ductility
- Wide spectrum of materials

[www.hlu.eu](http://www.hlu.eu)



Constant controller of volume flow and pressure for HF - centrifugal fans with EC drive motor



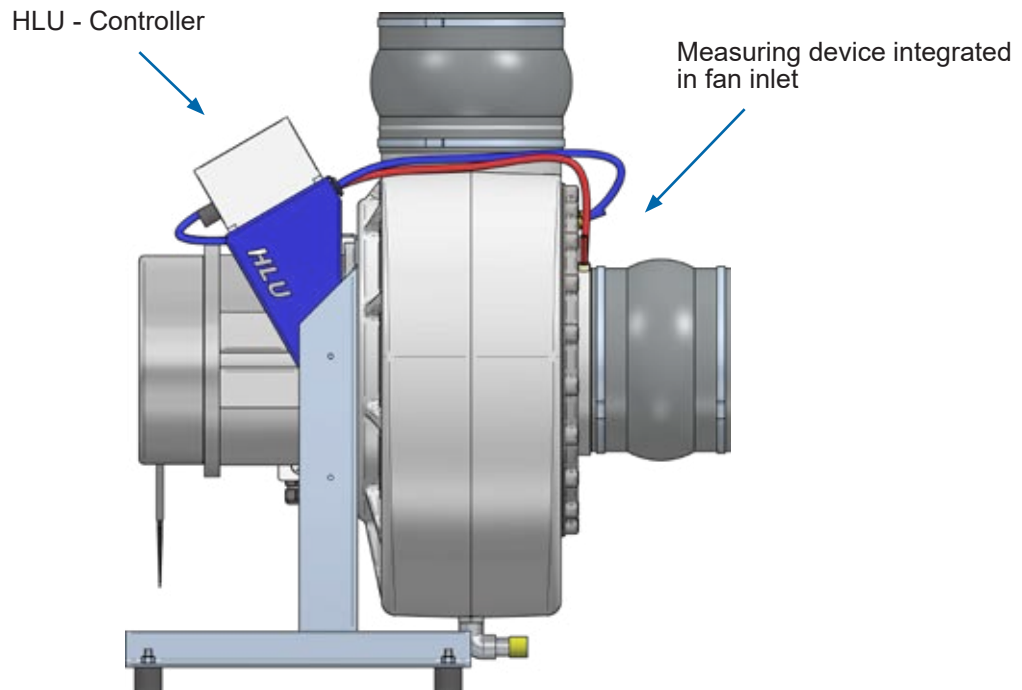
### Constant volume flow controller

Size - Type	KV
Ø	Article no.
125-15	441-071-000012
125-17	441-071-000013
140-15	441-071-000014
140-17	441-071-000015
160-15	441-071-000016
160-17	441-071-000017






Size - Type	KV
Ø	Article no.
180-15	441-071-000018
180-17	441-071-000019
200-15	441-071-000020
200-17	441-071-000021
250-15	441-071-000022
250-17	441-071-000023

### Constant pressure controller

Size	KD
Ø	Article no.
125	441-071-000113
140	441-071-000115
160	441-071-000117
180	441-071-000119
200	441-071-000121
250	441-071-000123





Button assignment HLU - Controller		
	Program key	Access to the configuration menu
	Hand key	Changing the setpoint manually
	Up and down keys	Display of information and dialogue screens
	Bell key	Mute the alarm
	ENTER key	Confirmation of settings

- Stand alone" solution
- No higher-level control device required
- Automatic constant of volume flow or pressure
- Highly efficient due to the combination of state-of-the-art EC technology with sensor technology
- Only 2 x 230 V leads required
- Display showing setpoint and actual value for flow and pressure as well as the possible fan power
- Can be retrofitted; optional with measuring nozzle or by exchange of the housing cover
- Can also be used with frequency converters (performance limits to the fan/motor must be taken into consideration)
- Installation costs are significantly lower compared to systems with frequency converter
- Setpoints for volume flow and pressure can be set at the HLU - controller
- Automatic constant of volume flow with additional display of the pressure differential

Accessories for HF - centrifugal fans with direct drive in efficiency - optimized premium version with EC drive motor according to 2014/34/EU



Protection grid



Shaft seal Viton/Hastelloy



Shaft seal felt ring

The ATEX Directive 2014/34/EU regulates the requirements with regard to placing products on the market that are used in potentially explosive atmospheres. The term ATEX is derived from the French abbreviation "Atmosphère explosible" and is used as a synonym for the two directives of the

European Community in the area of explosion protection, ATEX Directive 2014/34/EU and ATEX Directive 1999/92/EG. The design of fans in the ATEX area is described in detail in the norms DIN EN 14986 and DIN EN ISO 80079.

## HF - centrifugal fan in ATEX version – for Zone 2 inside / no Zone outside:

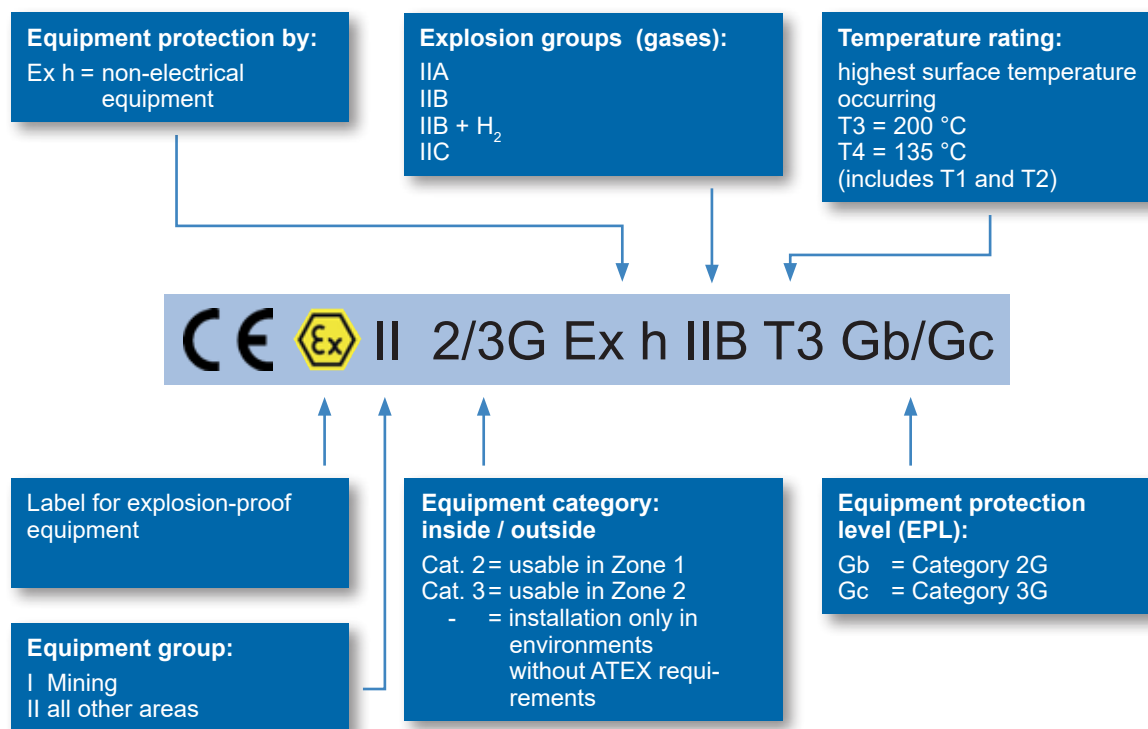


HF - centrifugal fans with EC motor are currently only available for Zone 2 inside / no Zone outside (category 3 inside / no category outside).



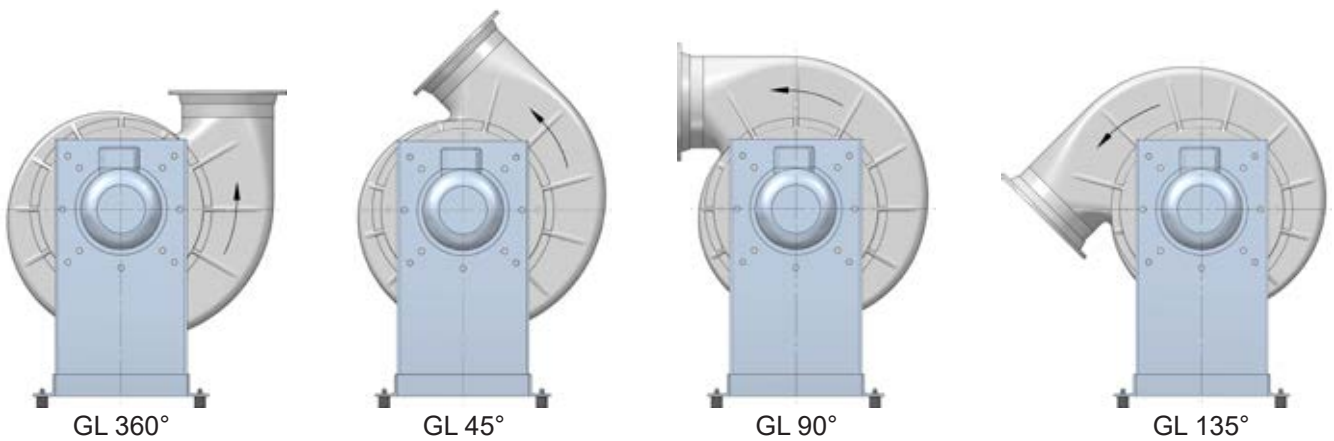
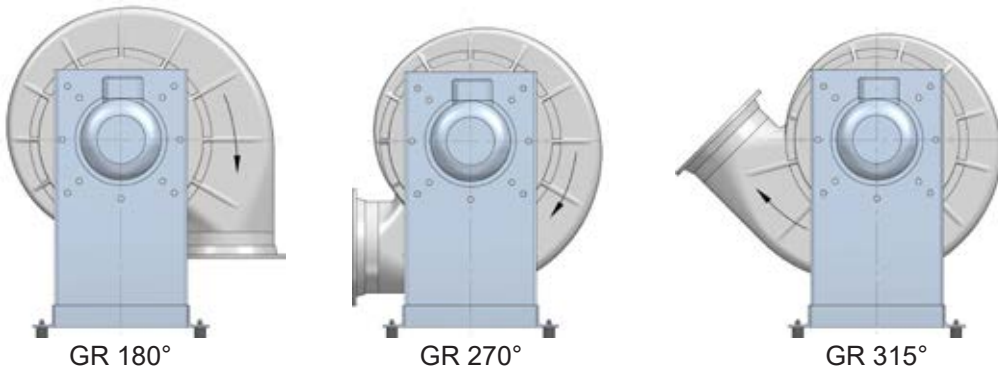
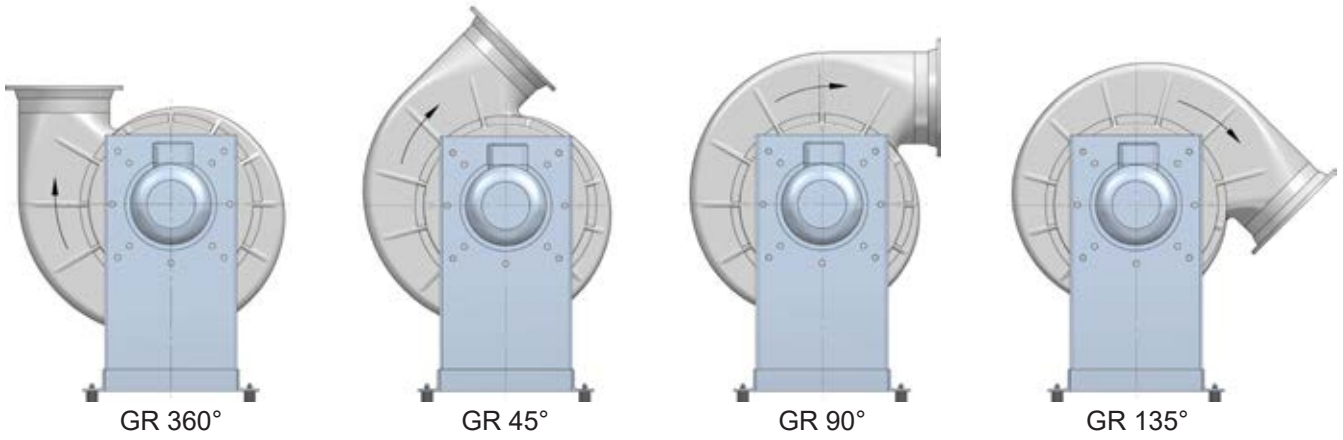
Accessories for HF - centrifugal fans with direct drive in efficiency - optimized premium version with EC drive motor according to 2014/34/EU

You will see on the fan's type plate a permanent identification of the explosion protection. The following illustration explains the labelling of equipment for potentially explosive atmospheres:



The operator of a facility is obligated to conduct a risk assessment. For questions regarding the Zone classification, you can contact various test centres such as for example safety engineers and special consultants. The following tables serve as reference:

An explosive gas atmosphere exists ...	ATEX Ex Zone	ATEX Device category	IEC EPL (International) (Equipment Protection Level)
for more than 30 min. per year, however, less than 50% of the operational period daily	Zone 1	Category 2G	Gb
for a max. of 30 min. in a year	Zone 2	Category 3G	Gc





[www.plasticagroup.co.uk](http://www.plasticagroup.co.uk)

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