

Technical
Document 1

High performance fans
for process air technology

Q2M



Plug fan without housing
with mounting plate
or mounting frame,
direct driven,
coated steel or galvanized,
stainless steel 1.4541,
constant temperature up to +500 °C,
thermolock50 insulated

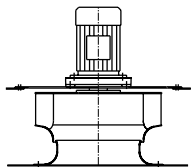
This documentation can also be found online at:
www.gebhardt.de/dokumentation

Our offer

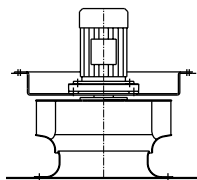
PLT *inpact* is the name of Gebhardt's compact state-of-the-art plug fan. This brochure provides you with a complete overview of the line. An easy selection system ensures direct, speedy and individual choice. Naturally we are at your disposal and can be contacted at any time at:

Your contacts here are experienced system consultants able to see the big picture as well as possessing detailed knowledge of the latest fan technology. Together with you, they will analyse your application and on this basis help choose the optimum solution.

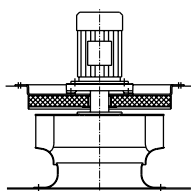
The PLT *inpact* is a multi-purpose plug fan without housing.



with mounting plate
up to 300 °C constant temperature



with mounting frame back plate
up to 300 °C constant temperature



with mounting frame back plate and *thermolock50*-insulation
up to 500 °C constant temperature

The PLT *inpact* works at up to 500 °C using simple standard motors. Expensive and difficult to obtain special motors are now history.

thermolock50

thermolock50

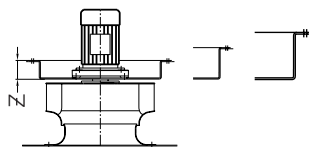
The new highly efficient heat insulator from GebhardtVentilatoren. Reduced heat loss when compared with conventional rockwool insulated plates in excess of 100 mm thick (see page 37 for further information).

Delivery

Modular manufacturing, enables us to guarantee very short delivery schedules.

Individual mounting depths

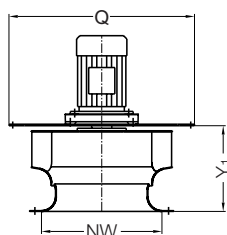
by means of mounting frame variations



Reliable adaptation to your mounting requirement!
Z = 100 mm is standard.
Different mounting depths upon request.

Same main dimensions

for varying pressure – volume flow – characteristics – Benefitting manufacturers of standard devices. If you want your mounting conditions and thus your designs to be standardized thereby reducing your planning costs, then the PLT *inpact* is exactly right.



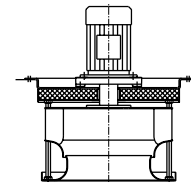
NW	Height		Types		
	Y ₁	see preselection pages 3/4			
250	174	F3	E2	D1	
280	194	G3	F2		
315	209	H3	G2	F1	
355	245	J3	H2	G1	
400	262	K3	J2	H1	
450	283	L3	K2	J1	
500	306	M3	L2	K1	
560	381	N3	M2	L1	
630	476	P3	N2	M1	
710	533	Q3	P2	N1	
800	593	R3	Q2	P1	

Example:

All F3, E2 and D1 types have standardized height Y₁ and NW 250. Even the fitted plate's dimension Q can be standardized if required. We will be happy to advise.

Pre-assembled inlet cone

e.g. design with mounting frame and *thermolock50*



easiest assembly
optimum performance reliability

Power range

Which power range does the PLT *inpact* cover and how can you very easily select your fan? Start on page 5, the rest is child's play.

	M3B2W 45-2	M3B2W 45-2	M3B2W 45-2	M3B2W 45-2																
M5F2T 30-2	M5F2T 30-2	M3F2W 45-2	M3F2W 45-2	M3F2W 45-2	M3B2W 45-2	M3B2W 45-2	M3B2W 45-2													
L3B2T 30-4	L3B2T 30-4	M5F2T 30-2				M3F2W 45-2	M3F2W 45-2	M3B2W 45-2												
L3F2T 30-2	L3F2T 30-2	L3F2T 30-2	L3B2T 30-2	L3B2T 30-2	L2B2T 30-2			M3F2W 45-2	M3B2W 45-2											
L5B2Q 18,5-2	L5B2Q 18,5-2		L3F2T 30-2	L3F2T 30-2	L3B2T 30-4	L2B2T 30-2	R3B4X 55-4	R3B4X 55-4	M3F2W 45-2	R3B4X 55-4										
K3B2P 15-2	K3B2P 15-2	L5B2Q 18,5-2			L3F2T 30-2	L3B2T 30-2	L2B2T 30-2	L1B2W 45-2	R3F4X 55-4	M3F2W 45-2	R3F4X 55-4	R3B4X 55-4	R3B4X 55-4							
K3F2P 15-2	K2B2Q 18,5-2	K3B2P 15-2	K2B2Q 18,5-2			L3F2T 30-2	L3B2T 30-2	L2B2T 30-2	L1B2W 45-2			R3F4X 55-4	R3F4X 55-4	R3B4X 55-4	R2B4Y 75-4					
	K3F2P 15-2	K3F2P 15-2	K3B2P 15-2	K2B2Q 18,5-2	K1B2R 22-2	Q3F4T 30-4	Q3F4T 30-4	Q3B4V 37-4	L2B2T 30-2	L1B2W 45-2	Q2B4W 45-4			R3F4X 55-4	R3B4X 55-4	R2B4Y 75-4	R1B4Z 90-4			
J2B2N 11-2			K3F2P 15-2	K3B2P 15-2	K2B2Q 18,5-2	K1B2R 22-2	L3F2T 30-2	Q3F4T 30-4	Q3F4T 30-4	Q3F4T 30-4	Q3B4V 37-4	Q2B4W 45-4	T3B6Z 55-6	T3B6Z 55-6	R3F4X 55-4	R3B4X 55-4	R2B4Y 75-4	R1B4Z 90-4		
J3B2N 11-2	J2B2N 11-2	J1B2P 15-2	P3B4R 18,5-4	P3B4R 18,5-4	P3B4R 18,5-4	P3B4R 18,5-4	K1B2R 22-2				Q3F4T 30-4	Q3B4V 37-4	Q2B4W 45-4	Q1B4X 55-4	T3B6Z 55-6	T3B6Z 55-6		R2B4Y 75-4	R1B4Z 90-4	
N3B4N 11-4		J2B2N 11-2	J1B2P 15-2	K3F2P 15-2	P3F4R 18,5-4	K2B2Q 18,5-2	P3B4R 18,5-4	P3B4R 18,5-4	P2B4S 22-4	S3B6W 30-6	S3B6W 30-6	Q3F4T 30-4	Q3B4V 37-4	Q2B4W 45-4	Q1B4X 55-4	R3F4X 55-4	T3B6Z 55-6			
J3F2L 7,5-2	J3B2N 11-2	N3B4N 11-4	N3B4N 11-4	J1B2P 15-2			P3F4R 18,5-4	P3F4R 18,5-4	P3B4R 18,5-4	P2B4S 22-4	P1B4T 30-4	S3B6W 30-6	S3B6W 30-6	S2B6X 37-6	Q2B4W 45-4	Q1B4X 55-4	R3B4X 55-4	T3B6Z 55-6		R1B4Z 90-4
H1B2L 7,5-2		N3F4N 11-4	J2B2N 11-2	N3B4N 11-4	N3B4N 11-4	N2B4Q 15-4	R3B6T 18,5-6	R3B6T 18,5-6	P3F4R 18,5-4	P3B4R 18,5-4	P2B4S 22-4	P1B4T 30-4	Q3F4T 30-4	S3B6W 30-6	S2B6X 37-6	S2B6X 37-6			R2B4Y 75-4	
M3B4K 5,5-4	H1B2L 7,5-2				N3F4N 11-4	N3B4N 11-4	N2B4Q 15-4	N1B4Q 15-4	R3B6T 18,5-6	R3B6T 18,5-6	R2B6T 18,5-6	R2B6T 18,5-6	P1B4T 30-4	Q3B4V 37-4	S3B6W 30-6		Q1B4X 55-4	S1B6Y 45-6	T3B6Z 55-6	
H2B2K 5,5-2	M3B4K 5,5-4	M3B4K 5,5-4	M2B4M 7,5-4	Q3B6Q 11-6	Q3B6Q 11-6	N3F4N 11-4		N2B4Q 15-4	N1B4Q 15-4	P3F4R 18,5-4	R3B6T 18,5-6	P2B4S 22-4	R1B6W 30-6		S3F6W 30-6	Q2B4W 45-4	S2B6X 37-6			
	M3F4K 5,5-4	H1B2L 7,5-2	M3B4K 5,5-4	M2B4M 7,5-4		Q3B6Q 11-6	N3B4N 11-4	Q2B6Q 11-6		N1B4Q 15-4	P3B4R 18,5-4	R3B6T 18,5-6	R2B6T 18,5-6	P1B4T 30-4		S3B6W 30-6			S1B6Y 45-6	
		M3F4K 5,5-4			M2B4M 7,5-4	M1B4N 11-4	N3F4N 11-4	Q3B6Q 11-6	N2B4Q 15-4			R3F6S 15-6		R2B6T 18,5-6	R1B6W 30-6			S2B6X 37-6		
L2B4J 4-4	L2B4J 4-4	P3B6M 5,5-6	M3F4K 5,5-4	M3B4K 5,5-4			M1B4N 11-4	N3B4N 11-4	Q3B6Q 11-6	Q2B6Q 11-6	N1B4Q 15-4			P2B4S 22-4			R1B6W 30-6			
L3B4H 3-4	L1B4K 5,5-4	L1B4K 5,5-4	L1B4K 5,5-4	P3B6M 5,5-6	P2B6N 7,5-6	M2B4M 7,5-4					Q2B6Q 11-6	Q1B6S 15-6				R2B6T 18,5-6				
L3F4H 3-4	L3B4H 3-4	L2B4J 4-4		L1B4K 5,5-4	P3B6M 5,5-6		P2B6N 7,5-6	M1B4N 11-4	P1B6N 7,5-6	N2B4Q 15-4			Q1B6S 15-6							
K1B4H 3-4	K1B4H 3-4	N3B6K 3-6	L2B4J 4-4	N2B6L 4-6	M3B4K 5,5-4	P3B6M 5,5-6	M2B4M 7,5-4	P2B6N 7,5-6		P1B6N 7,5-6			Q2B6Q 11-6							
K2B4G 2,2-4			N3B6K 3-6		L1B4K 5,5-4	N1B6L 4-6			P2B6N 7,5-6					Q1B6S 15-6						
M3B6G 1,5-6	M2B6J 2,2-6	K1B4H 3-4	M1B6J 2,2-6	L2B4J 4-4				N1B6L 4-6												
	K2B4G 2,2-4	M2B6J 2,2-6		M1B6J 2,2-6		N2B6L 4-6														
	M3B6G 1,5-6		M2B6J 2,2-6																	

9000	10000	11200	12500	14000	16000	18000	20000	22400	25000	28000	31500	35500	40000	45000	50000	56000	63000	71000	80000	90000
150	167	187	208	233	267	300	333	373	417	467	525	592	667	750	833	933	1050	1183	1333	15
2,5	2,8	3,15	3,55	4	4,5	5	5,6	6,3	7,1	8	9	10	11,2	12,5	14	16	18	20	22,5	25

This is how you reach the desired result quickly

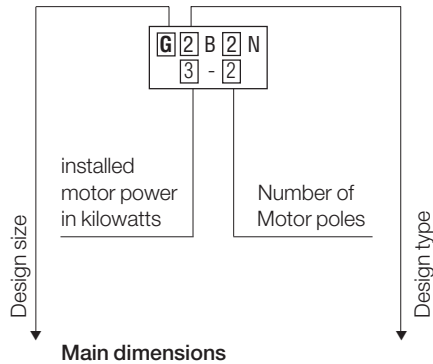
For example:

You require 4000 m³/h and 1400 Pa.

◀ In the preselection you find:

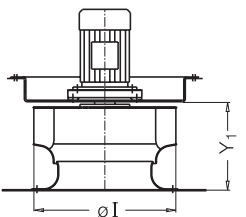
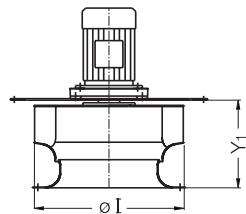
G2B2N
3-2

Important information is held in the selection key



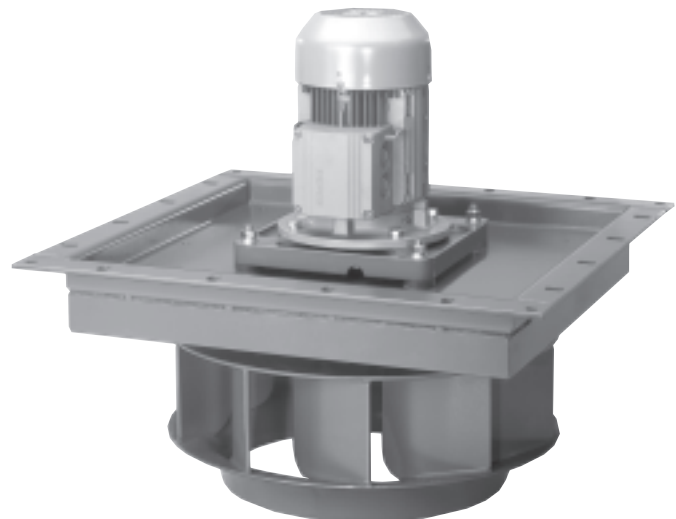
Design size	Size	Size approx. for design type			
	Ø I	1	2	3	5
D	282	180		140	
E	316		180		
F	355	210	200	180	120
G	398	250	210	200	
H	447	270	250	210	150
J	501	290	270	250	170
K	562	310	290	270	180
L	631	390	310	290	210
M	708	430	390	310	220
N	794	480	430	380	
P	891	540	480	430	
Q	1000	600	540	480	
R	1122	670	600	540	
S	1259	750	670	600	
T	1413			670	

Dimensions in mm, subject to change.



Example:

G2B2N – dimensions 398 x 210 mm



Fan order plan

Possible basic models (b) see right page
Please choose only one.

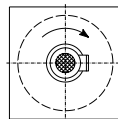
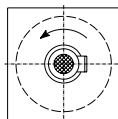
Q2M-(a)____-(b)(c)

(a)	(b)										(c)		(1)		(2)		(3)		
	-N	-P	-Q	-R	-S	-T	-U	-V	-W	-Y	Pn kW	Pwm kW	n 1/min	Run up time for direct start tA s	Weight incl. motor m ca. kg	Noise level at -F,-Q, -R,-S, -T,-N,-P L _{pA2} dB	pressure -J,-Y L _{pA2} dB	Strength limit speed at fan impeller material: steel and constant temp. 100 °C n _{max} 1/min	
-D1B2C										AB	0,75	0,62	2850	4	40	57	-	4038	
-D1B2E										-Y	AB	1,50	0,62	2860	2	50	-	65	3862
-D3B2B											AB	0,55	0,40	2800	5	30	54	-	4978
-D3B2C											AB	0,75	0,42	2850	4	40	57	-	4360
-D3B2E										-Y	AB	1,50	0,42	2860	2	50	-	65	4097
-D3F2B											AB	0,55	0,36	2800	5	30	54	-	4978
-D3F2C											AB	0,75	0,38	2850	4	40	57	-	4360
-D3F2E										-Y	AB	1,50	0,38	2860	2	50	-	65	4097

- (1) Based on Siemens standard norm motor
- (2) LpA2 = noise breakout level through the housing back plate (and cooling disc when fitted) excluding noise generated by the motor, at a distance of 1 m at optimal efficiency under free field conditions – for the same characteristic the higher value applies respectively for the basic model U, V, W.
- (3) Limit rotational speeds n max. at temperatures deviating from 100°C for steel and high-grade steel ... s. p. 40

LG = counter-clockwise rotation

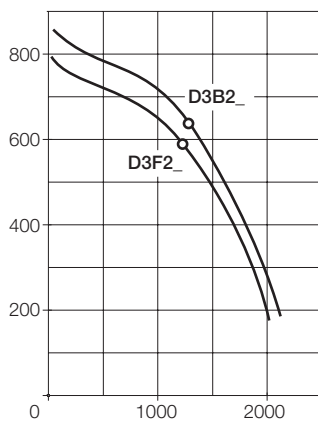
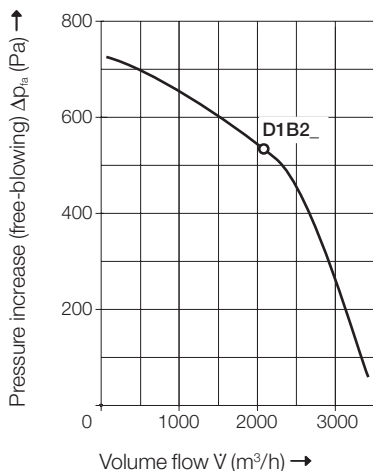
RD = clockwise rotation



Direction of rotation as viewed from the drive side.

Table of measurements to construction size D

	main dimensions					
	D	Y1	Y2	y1	y2	y5
D1	250	174	279	132	237	47
D3	200	141	246	111	216	35



Reference density of the blowing medium

$$\rho_1 = 1,2 \text{ kg/m}^3$$

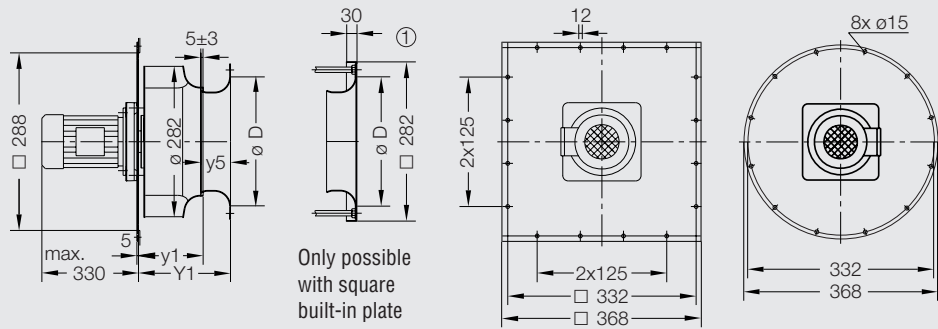
η_{opt} = Optimal efficiency

The technical data refer to air blowing from all sides at a distance of at least 0.5 x the fan impeller outer diameter. A customer-installed

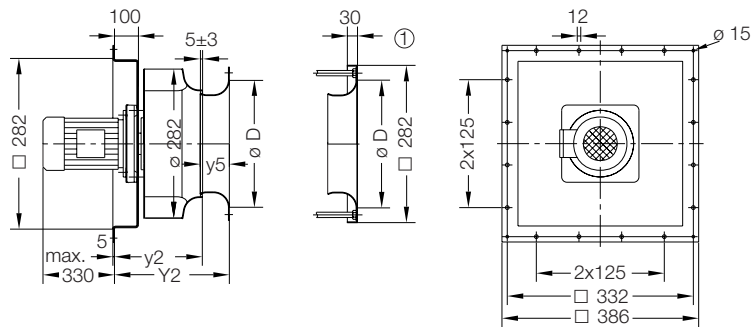
swirl operation considerably changes the data provided here.

Dimensions of the possible basic designs (b)

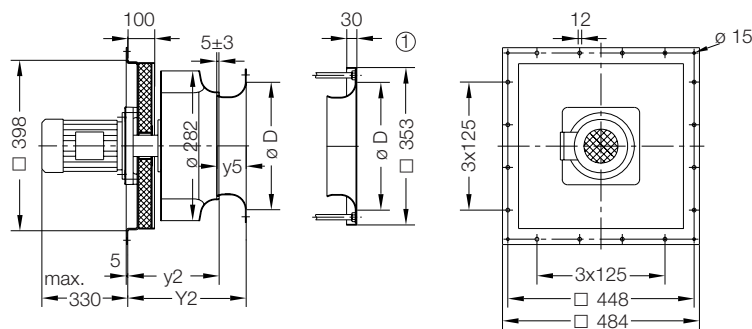
- (b)
- Built-in plate
square/
flat
- | | |
|--------------|--------------|
| t_{max} | t_{max} |
| -S bis 100°C | -R bis 100°C |
| -N bis 250°C | -T bis 250°C |
| -V bis 300°C | -U bis 300°C |



- (b)
- Built-in frame
- | |
|--------------|
| t_{max} |
| -Q bis 100°C |
| -P bis 250°C |
| -W bis 300°C |



- (b)
- Built-in frame
thermolock50 insulation
- | |
|--------------|
| t_{max} |
| -Y bis 500°C |



See page 42 for further dimensional details. Dimensions in mm. Subject to change. ① Cannot be supplied for types D1.

Fan order plan

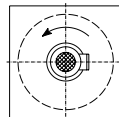
Possible basic models (b) see right page
Please choose only one.

Q2M-(a) _____ -(b)(c)

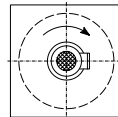
(a)	(b)										(c)		(1)		(2)		(3)		
	-N	-P	-Q	-R	-S	-T	-U	-V	-W	-Y	Pn kW	Pwm kW	n 1/min	Run up time for direct start tA s	Weight incl. motor m ca. kg	Noise level at -F,-Q, -R,-S, -T,-N,-P L _{pA2} dB	pressure -J,-Y L _{pA2} dB	Strength limit speed at fan impeller material: steel and constant temp. 100 °C n _{max} 1/min	
-E2B2D											AB	1,10	0,90	2850	3	40	58	-	3763
-E2B2E											AB	1,50	0,90	2860	2	60	-	65	3606
-E2B4A											AB	0,25	0,10	1330	4	30	43	-	4127
-E2B4C											AB	0,55	0,10	1400	2	40	50	-	3763
-E2B4E											AB	1,10	0,11	1410	1	60	-	51	3606
-E2F2D											AB	1,10	0,80	2850	3	40	58	-	3763
-E2F2E											AB	1,50	0,80	2860	2	60	-	65	3606

- (1) Based on Siemens standard norm motor
- (2) L_{pA2} = noise breakout level through the housing back plate (and cooling disc when fitted) excluding noise generated by the motor, at a distance of 1 m at optimal efficiency under free field conditions – for the same characteristic the higher value applies respectively for the basic model U, V, W.
- (3) Limit rotational speeds n_{max} at temperatures deviating from 100°C for steel and high-grade steel ... s. p. 40

LG = counter-clockwise rotation



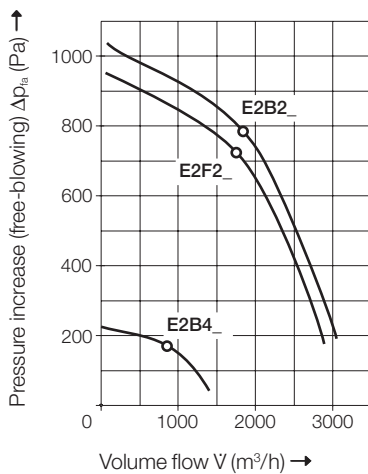
RD = clockwise rotation



Direction of rotation as viewed from the drive side.

Table of measurements to construction size E

	main dimensions					
	D	Y1	Y2	y1	y2	y5
E2	250	174	279	133	238	47



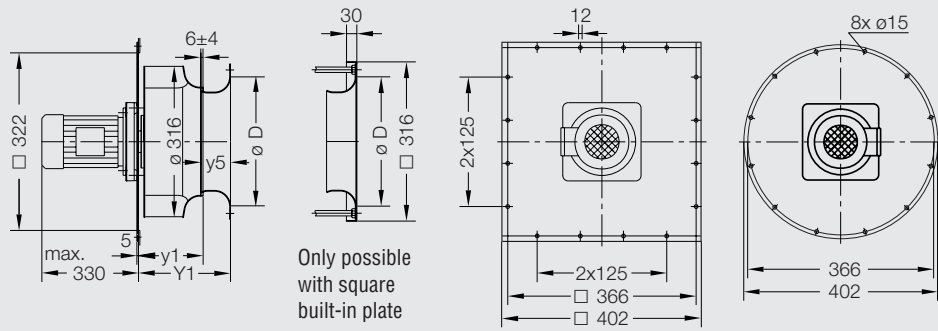
Reference density of the blowing medium
 $\rho_1 = 1,2 \text{ kg/m}^3$
 η_{opt} = Optimal efficiency

The technical data refer to air blowing from all sides at a distance of at least 0.5 x the fan impeller outer diameter. A customer-installed

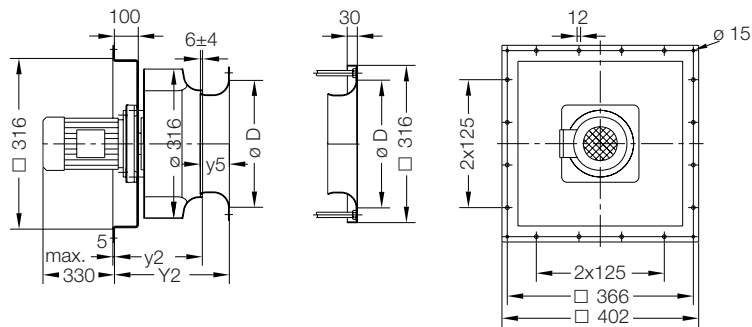
swirl operation considerably changes the data provided here.

Dimensions of the possible basic designs (b)

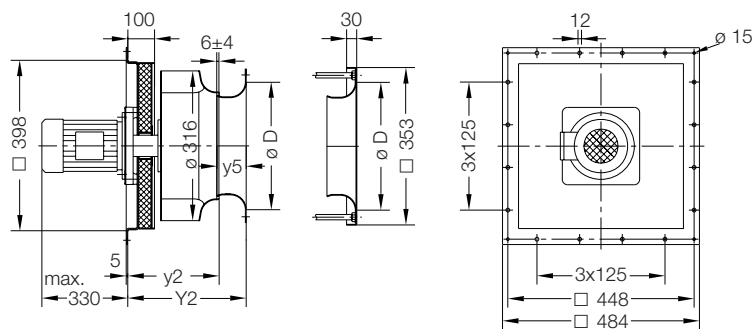
- (b)
- Built-in plate
square/
flat
- | | |
|--------------|--------------|
| t_{max} | t_{max} |
| -S bis 100°C | -R bis 100°C |
| -N bis 250°C | -T bis 250°C |
| -V bis 300°C | -U bis 300°C |



- (b)
- Built-in frame
- | |
|--------------|
| t_{max} |
| -Q bis 100°C |
| -P bis 250°C |
| -W bis 300°C |



- (b)
- Built-in frame
thermolock50 insulation
- | |
|--------------|
| t_{max} |
| -Y bis 500°C |



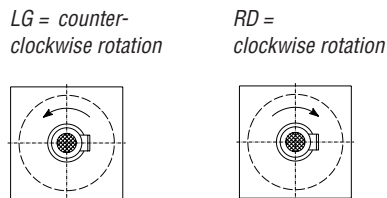
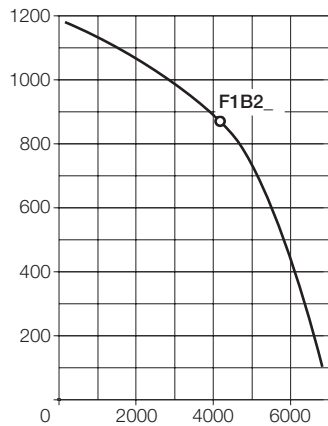
Fan order plan

Possible basic models (b) see right page
Please choose only one.

Q2M-(a) ___ - (b)(c)

(a)	(b)										(c)		(1)		(2)		(3)		
	-N	-P	-Q	-R	-S	-T	-U	-V	-W	-Y	Pn kW	Pwm kW	n 1/min	Run up time for direct start tA s	Weight incl. motor m ca. kg	Noise level at LpA2 dB	pressure level at LpA2 dB	Strength limit speed at fan impeller material: n max 1/min	
-F1B2F	-N	-P	-Q	-R	-S	-T	-U	-V	-W	-Y	AB	2,20	2,00	2860	2	50	62	-	4657
-F1B2H											AB	3,00	2,10	2900	2	70	-	65	3655
-F2B2F	-N	-P	-Q	-R	-S	-T	-U	-V	-W	-Y	AB	2,20	1,60	2860	2	70	63	65	3217
-F2B4A			-Q	-R	-S						AB	0,25	0,16	1330	6	30	43	-	3560
-F2B4C	-N	-P				-T	-U	-V	-W		AB	0,55	0,18	1400	3	40	48	-	3319
-F2B4E										-Y	AB	1,10	0,19	1410	1	60	-	51	3217
-F3B2E	-N	-P	-Q	-R	-S	-T	-U	-V	-W	-Y	AB	1,50	1,30	2860	3	60	62	65	3351
-F3B4A			-Q	-R	-S						AB	0,25	0,13	1330	6	30	43	-	3821
-F3B4C	-N	-P				-T	-U	-V	-W		AB	0,55	0,15	1400	3	40	50	-	3492
-F3B4E										-Y	AB	1,10	0,16	1410	1	60	-	51	3351
-F3F2E	-N	-P	-Q	-R	-S	-T	-U	-V	-W	-Y	AB	1,50	1,20	2860	3	60	62	65	3351
-F5B2D	-N	-P	-Q	-R	-S	-T	-U	-V	-W		AB	1,10	1,00	2850	5	40	57	-	4018
-F5B2E										-Y	AB	1,50	1,00	2860	3	60	-	65	3736
-F5F2D	-N	-P	-Q	-R	-S	-T	-U	-V	-W		AB	1,10	0,90	2850	5	40	57	-	4018
-F5F2E										-Y	AB	1,50	0,90	2860	3	60	-	65	3736

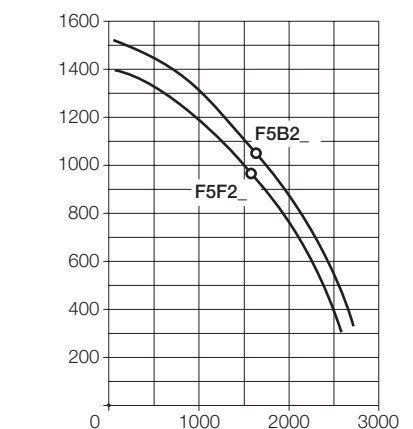
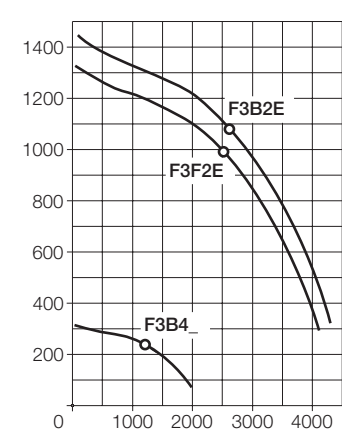
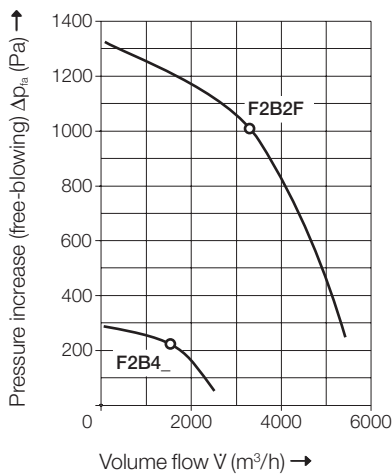
- (1) Based on Siemens standard norm motor
- (2) LpA2 = noise breakout level through the housing back plate (and cooling disc when fitted) excluding noise generated by the motor, at a distance of 1 m at optimal efficiency under free field conditions – for the same characteristic the higher value applies respectively for the basic model U, V, W.
- (3) Limit rotational speeds n max. at temperatures deviating from 100°C for steel and high-grade steel ... s. p. 40



Direction of rotation as viewed from the drive side.

Table of measurements to construction size F

	main dimensions					
	D	Y1	Y2	y1	y2	y5
F1	315	209	314	160	265	55
F2	280	194	299	146	251	54
F3	250	174	279	133	238	47
F5	200	120	225	91	196	35



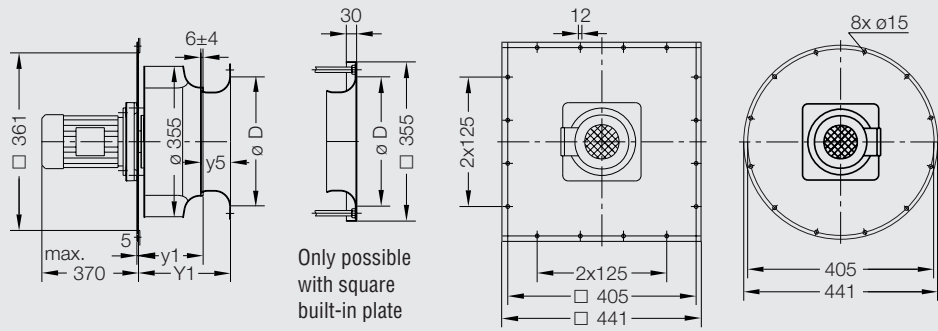
Reference density of the blowing medium
 $\rho_1 = 1,2 \text{ kg/m}^3$
 η_{opt} = Optimal efficiency

The technical data refer to air blowing from all sides at a distance of at least 0.5 x the fan impeller outer diameter. A customer-installed

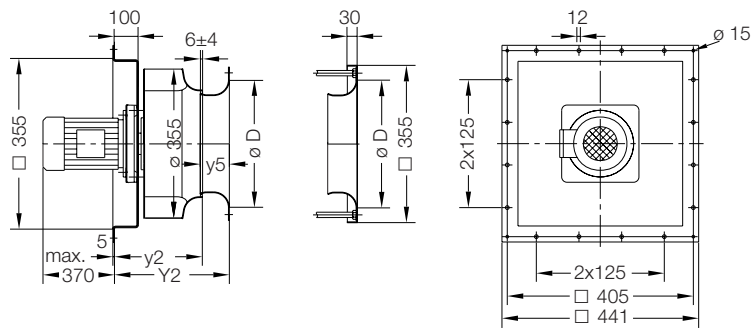
swirl operation considerably changes the data provided here.

Dimensions of the possible basic designs (b)

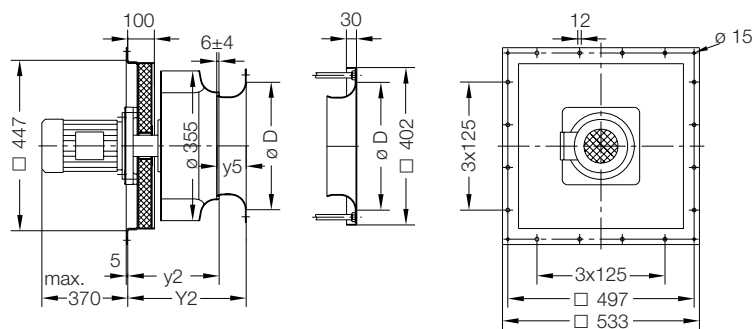
- (b)
- Built-in plate
square/
flat
- | | |
|--------------|--------------|
| t_{max} | t_{max} |
| -S bis 100°C | -R bis 100°C |
| -N bis 250°C | -T bis 250°C |
| -V bis 300°C | -U bis 300°C |



- (b)
- Built-in frame
- | |
|--------------|
| t_{max} |
| -Q bis 100°C |
| -P bis 250°C |
| -W bis 300°C |



- (b)
- Built-in frame
thermolock50 insulation
- | |
|--------------|
| t_{max} |
| -Y bis 500°C |



Fan order plan

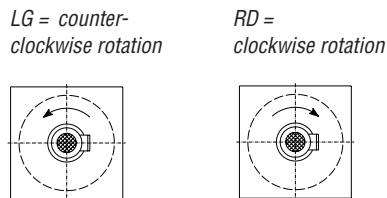
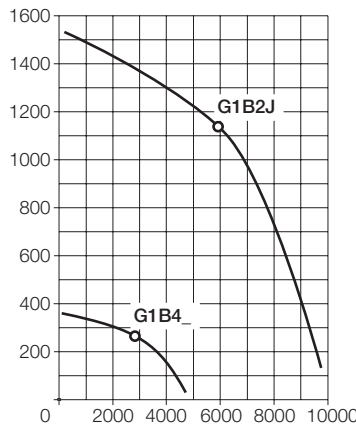
Possible basic models (b) see right page
Please choose only one.

Q2M-(a) ___ - (b)(c)

(a)	(b)										(c)	Power Motor Pn kW	Shaft max. at $\rho=1,2$ kg/m ³ Pwm kW	Speed n 1/min	Run up time for direct start tA s	Weight incl. motor m ca. kg	Noise pressure level at		Strength limit speed at fan impeller material: steel and constant temp. 100 °C n _{max} 1/min
	-N	-P	-Q	-R	-S	-T	-U	-V	-W	-Y							L _{pA2} dB	L _{pA2} dB	
-G1B2J	-N	-P	-Q	-R	-S	-T	-U	-V	-W	-Y	AB	4,00	3,60	2900	2	90	66	70	3258
-G1B4C	-N	-P	-Q	-R	-S	-T	-U	-V	-W		AB	0,55	0,40	1400	4	50	48	-	2513
-G1B4E										-Y	AB	1,10	0,41	1410	2	70	-	51	2490
-G2B2H	-N	-P	-Q	-R	-S	-T	-U	-V	-W	-Y	AB	3,00	2,90	2900	3	80	66	66	3419
-G2B4B			-Q	-R	-S						AB	0,37	0,32	1380	7	40	45	-	2822
-G2B4C	-N	-P				-T	-U	-V	-W		AB	0,55	0,33	1400	4	50	45	-	2675
-G2B4E										-Y	AB	1,10	0,33	1410	2	70	-	51	2616
-G3B2H	-N	-P	-Q	-R	-S	-T	-U	-V	-W	-Y	AB	3,00	2,50	2900	2	80	65	66	3894
-G3B4A			-Q	-R	-S						AB	0,25	0,23	1330	9	30	44	-	3290
-G3B4C	-N	-P				-T	-U	-V	-W		AB	0,55	0,27	1400	4	50	48	-	3073
-G3B4E										-Y	AB	1,10	0,28	1410	2	70	-	51	2980
-G3F2F	-N	-P	-Q	-R	-S	-T	-U	-V	-W	-Y	AB	2,20	2,10	2860	3	70	63	65	2980
-G5B2F	-N	-P	-Q	-R	-S	-T	-U	-V	-W	-Y	AB	2,20	1,70	2860	3	70	62	65	3368
-G5F2E	-N	-P	-Q	-R	-S	-T	-U	-V	-W	-Y	AB	1,50	1,51	2860	5	70	62	65	3368

- ° For the following materials, the constant temperature and/or the rotational speed must be reduced due to strength considerations:
 - ° high-grade steel 1.451
 - °° steel and high-grade steel ... s. p. 40

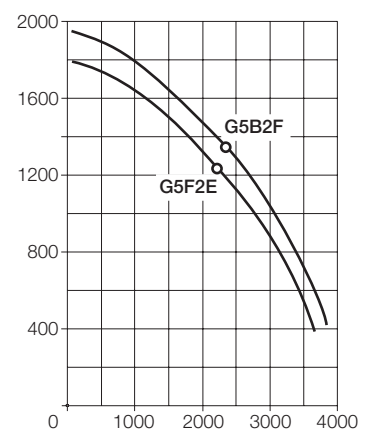
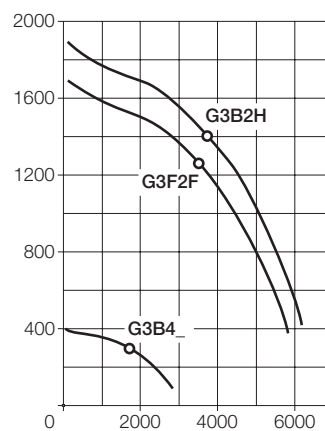
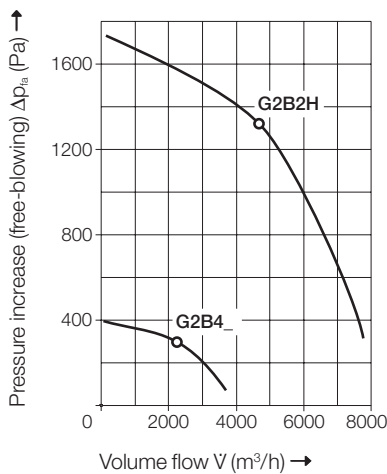
- (1) Based on Siemens standard norm motor
- (2) LpA2 = noise breakout level through the housing back plate (and cooling disc when fitted) excluding noise generated by the motor, at a distance of 1 m at optimal efficiency under free field conditions – for the same characteristic the higher value applies respectively for the basic model U, V, W.
- (3) Limit rotational speeds n max. at temperatures deviating from 100°C for steel and high-grade steel ... s. p. 40



Direction of rotation as viewed from the drive side.

Table of measurements to construction size G

	main dimensions					
	D	Y1	Y2	y1	y2	y5
G1	355	245	350	177	282	75
G2	315	209	314	161	266	55
G3	280	193	298	146	251	54



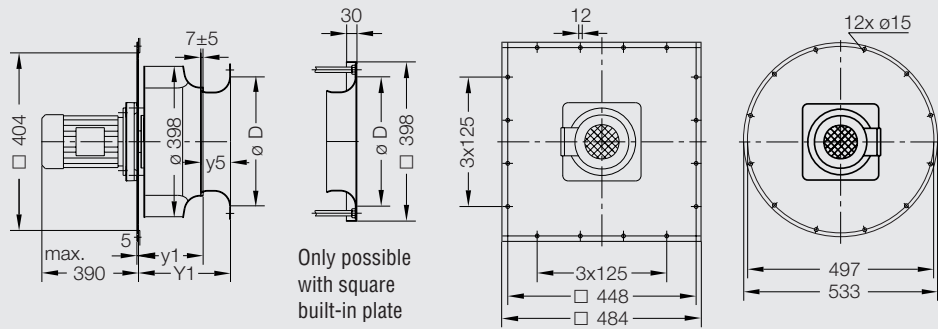
Reference density of the blowing medium
 $\rho_1 = 1,2 \text{ kg/m}^3$
° η_{opt} = Optimal efficiency

The technical data refer to air blowing from all sides at a distance of at least 0.5 x the fan impeller outer diameter. A customer-installed

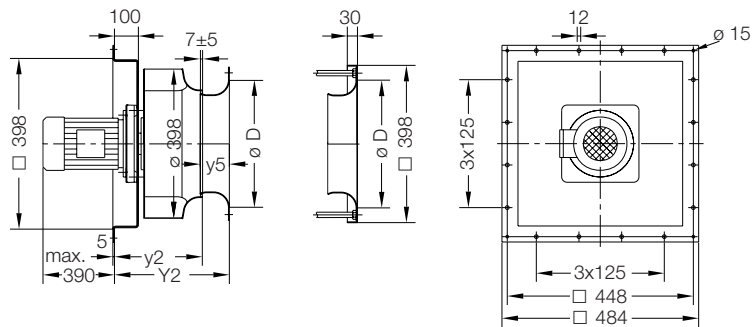
swirl operation considerably changes the data provided here.

Dimensions of the possible basic designs (b)

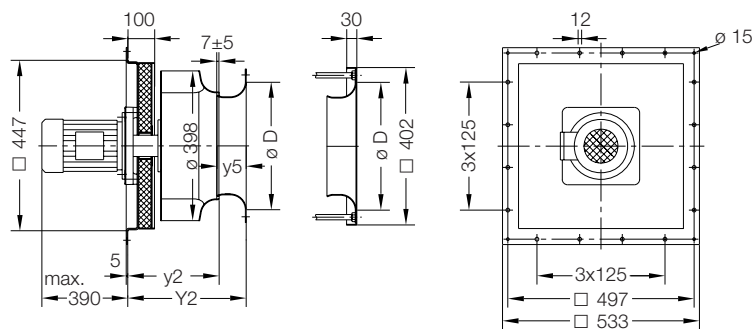
- (b)
- Built-in plate
square/
flat
- | | |
|--------------|--------------|
| t_{max} | t_{max} |
| -S bis 100°C | -R bis 100°C |
| -N bis 250°C | -T bis 250°C |
| -V bis 300°C | -U bis 300°C |



- (b)
- Built-in frame
- | |
|--------------|
| t_{max} |
| -Q bis 100°C |
| -P bis 250°C |
| -W bis 300°C |



- (b)
- Built-in frame
thermolock50 insulation
- | |
|--------------|
| t_{max} |
| -Y bis 500°C |



Fan order plan

Possible basic models (b) see right page
Please choose only one.

Q2M-(a)____-(b)(c)

(a)	(b)										(c)	Power Motor Pn kW	Shaft max. at $\rho=1,2$ kg/m ³ Pwm kW	Speed n 1/min	(1) Run up time for direct start tA s	(2) Weight incl. motor m ca. kg	Noise level at -F,-Q, -R,-S, -T,-N,-P LpA2 dB	pressure -J,-Y LpA2 dB	(3) Strength limit speed at fan impeller material: steel and constant temp. 100 °C n max 1/min
	-N°	-P°	-Q°	-R°	-S°	-T°	-U°	-V°	-W°	-Y°									
-H1B2L	-N°	-P°	-Q°	-R°	-S°	-T°	-U°	-V°	-W°	-Y°	AB	7,50	6,50	2910	2	130	70	72	3320
-H1B4D	-N	-P	-Q	-R	-S	-T	-U	-V	-W		AB	0,75	0,72	1400	5	60	49	-	2181
-H1B4E									-Y		AB	1,10	0,73	1410	4	80	-	51	2196
-H2B2K	-N	-P	-Q	-R	-S	-T	-U°	-V°	-W°	-Y°	AB	5,50	5,20	2910	2	120	71	72	3890
-H2B4D	-N	-P	-Q	-R	-S	-T	-U	-V	-W		AB	0,75	0,60	1400	6	80	50	-	2340
-H2B4E									-Y		AB	1,10	0,60	1410	3	80	-	51	2321
-H3B2K	-N	-P	-Q	-R	-S	-T	-U	-V	-W	-Y	AB	5,50	4,40	2910	2	120	70	72	4270
-H3B4C	-N	-P	-Q	-R	-S	-T	-U	-V	-W		AB	0,55	0,50	1400	7	60	49	-	2488
-H3B4E									-Y		AB	1,10	0,50	1410	3	80	-	51	2434
-H3F2J	-N	-P	-Q	-R	-S	-T	-U	-V	-W	-Y	AB	4,00	3,90	2900	3	100	67	70	3182
-H5B2H	-N	-P	-Q	-R	-S	-T	-U	-V	-W	-Y	AB	3,00	3,05	2900	4	90	65	66	3781
-H5F2H	-N	-P	-Q	-R	-S	-T	-U	-V	-W	-Y	AB	3,00	2,80	2900	4	90	64	66	3781

- ° For the following materials, the constant temperature and/or the rotational speed must be reduced due to strength considerations:
 - ° high-grade steel 1.451
 - °° steel and high-grade steel ... s. p. 40

- (1) Based on Siemens standard norm motor
- (2) LpA2 = noise breakout level through the housing back plate (and cooling disc when fitted) excluding noise generated by the motor, at a distance of 1 m at optimal efficiency under free field conditions – for the same characteristic the higher value applies respectively for the basic model U, V, W.
- (3) Limit rotational speeds n max. at temperatures deviating from 100°C for steel and high-grade steel ... s. p. 40

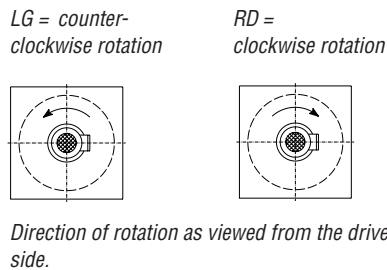
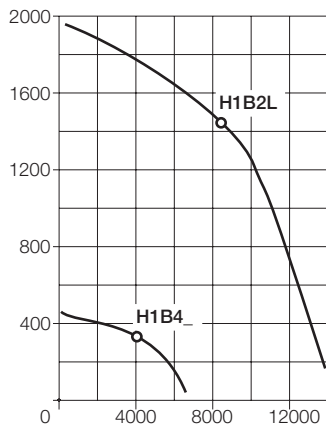
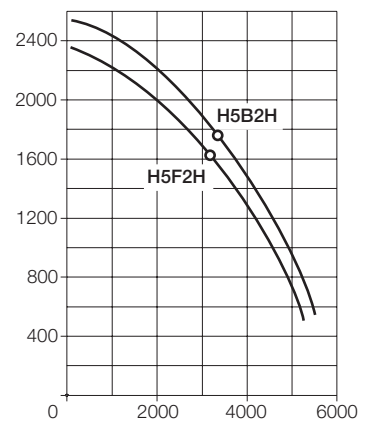
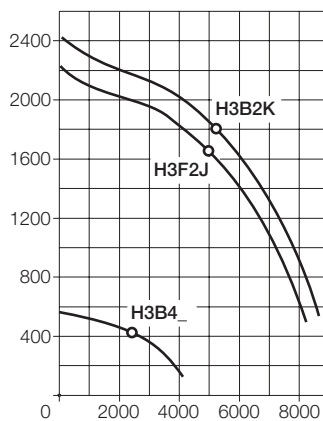
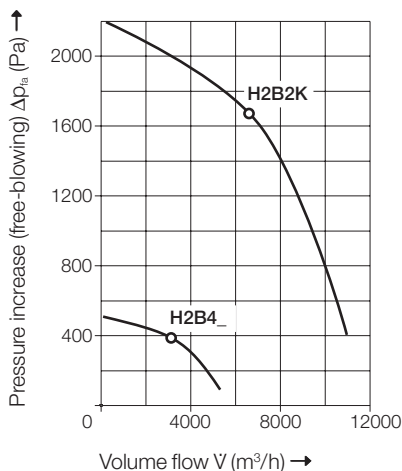


Table of measurements to construction size H

	main dimensions					
	D	Y1	Y2	y1	y2	y5
H1	400	263	368	195	300	75
H2	355	245	350	177	282	75
H3	315	209	314	161	266	55
H5	250	148	253	108	213	47



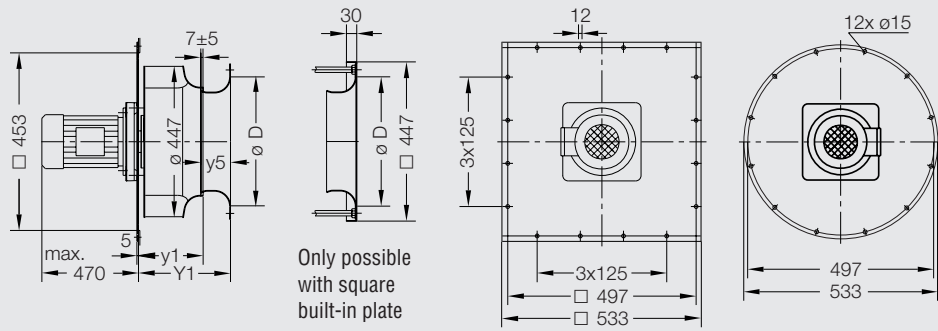
Reference density of the blowing medium
 $\rho_1 = 1,2 \text{ kg/m}^3$
 η_{opt} = Optimal efficiency

The technical data refer to air blowing from all sides at a distance of at least 0.5 x the fan impeller outer diameter. A customer-installed

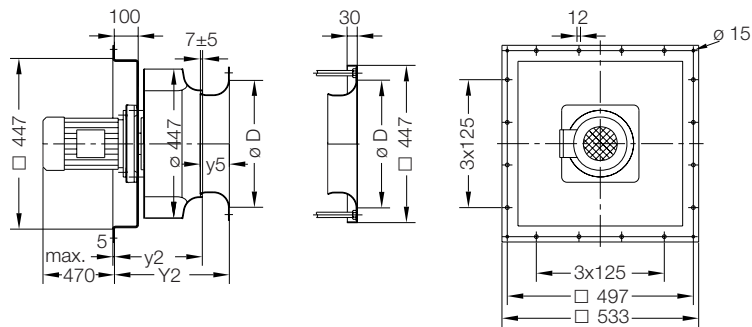
swirl operation considerably changes the data provided here.

Dimensions of the possible basic designs (b)

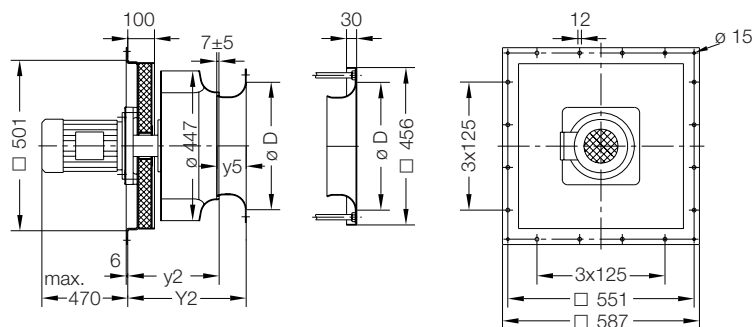
- (b)
- Built-in plate
square/
flat
- | | |
|--------------|--------------|
| t_{max} | t_{max} |
| -S bis 100°C | -R bis 100°C |
| -N bis 250°C | -T bis 250°C |
| -V bis 300°C | -U bis 300°C |



- (b)
- Built-in frame
- | |
|--------------|
| t_{max} |
| -Q bis 100°C |
| -P bis 250°C |
| -W bis 300°C |



- (b)
- Built-in frame
thermolock50 insulation
- | |
|--------------|
| t_{max} |
| -Y bis 500°C |



Fan order plan

Possible basic models (b) see right page
Please choose only one.

Q2M-(a) ___ - (b)(c)

(a)	(b)										(c)	Power Motor Pn kW	Shaft max. at Pwm kW	Speed n 1/min	Run up time for direct start tA s	Weight incl. motor m ca. kg	Noise level at -F,-Q,-R,-S,-T,-N,-P LpA2 dB	pressure -J,-Y LpA2 dB	Strength limit speed at fan impeller material: steel and constant temp. 100 °C n max 1/min
	-N	-P	-Q	-R	-S	-T	-U	-V	-W	-Y									
-J1B2P											AB	15,00	11,60	2920	1	180	72	72	2793
-J1B4F	-N	-P	-Q	-R	-S	-T	-U	-V	-W	-Y	AB	1,50	1,30	1410	4	100	51	51	1791
-J2B2N	-N°	-P°	-Q°	-R°	-S°	-T°	-U°	-V°	-W°	-Y°	AB	11,00	9,30	2920	2	170	72	72	3273
-J2B4E	-N	-P	-Q	-R	-S	-T	-U	-V	-W	-Y	AB	1,10	1,05	1410	6	100	51	51	1882
-J3B2N	-N	-P	-Q	-R	-S	-T	-U	-V	-W	-Y	AB	11,00	7,70	2920	2	170	72	72	3806
-J3B4E	-N	-P	-Q	-R	-S	-T	-U	-V	-W	-Y	AB	1,10	0,90	1410	5	100	51	51	1963
-J3F2L	-N	-P	-Q	-R	-S	-T	-U	-V	-W	-Y	AB	7,50	6,90	2910	3	150	70	71	3806
-J5B2K	-N	-P	-Q	-R	-S	-T	-U	-V	-W	-Y	AB	5,50	5,50	2910	4	140	69	71	4117
-J5F2K	-N	-P	-Q	-R	-S	-T	-U	-V	-W	-Y	AB	5,50	5,00	2910	4	140	69	71	4117

- ° For the following materials, the constant temperature and/or the rotational speed must be reduced due to strength considerations:
 - ° high-grade steel 1.451
 - °° steel and high-grade steel ... s. p. 40

- Constant temperature and/or speed must be reduced, critical bending rotational speed of the motor shaft must be calculated. Please inquire with specification of t max and n max.

- (1) Based on Siemens standard norm motor
- (2) LpA2 = noise breakout level through the housing back plate (and cooling disc when fitted) excluding noise generated by the motor, at a distance of 1 m at optimal efficiency under free field conditions – for the same characteristic the higher value applies respectively for the basic model U, V, W.
- (3) Limit rotational speeds n max. at temperatures deviating from 100°C for steel and high-grade steel ... s. p. 40

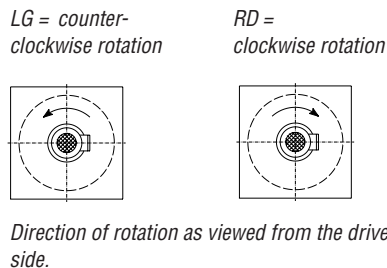
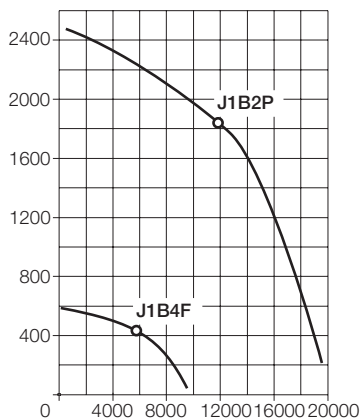
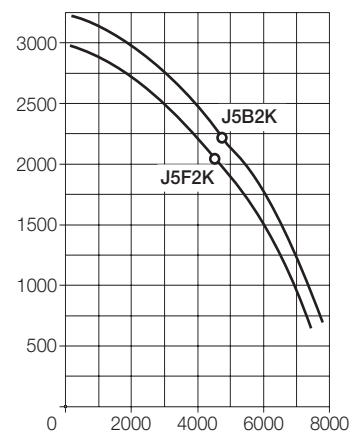
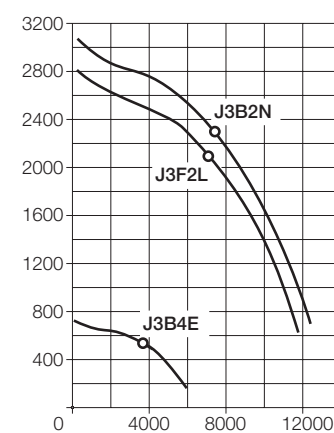
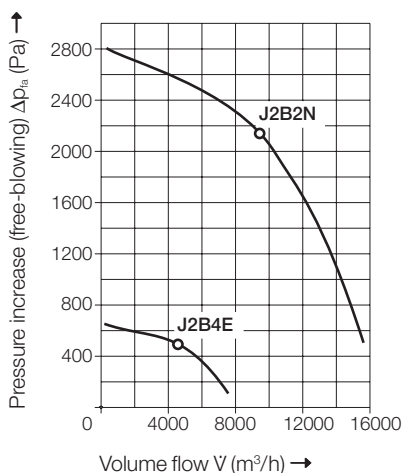


Table of measurements to construction size J

	main dimensions					
	D	Y1	Y2	y1	y2	y5
J1	450	282	388	215	321	75
J2	400	262	368	195	301	75
J3	355	243	349	176	282	75
J5	280	163	269	117	223	54



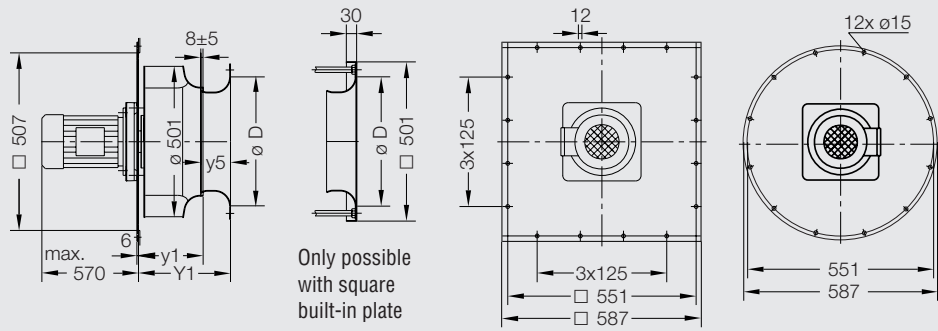
Reference density of the blowing medium
ρ₁ = 1,2 kg/m³
η_{opt} = Optimal efficiency

The technical data refer to air blowing from all sides at a distance of at least 0.5 x the fan impeller outer diameter. A customer-installed

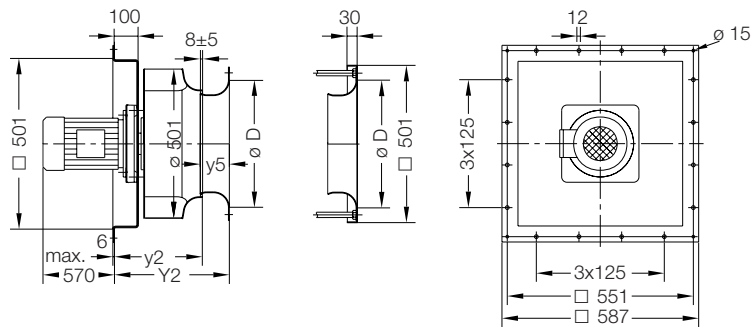
swirl operation considerably changes the data provided here.

Dimensions of the possible basic designs (b)

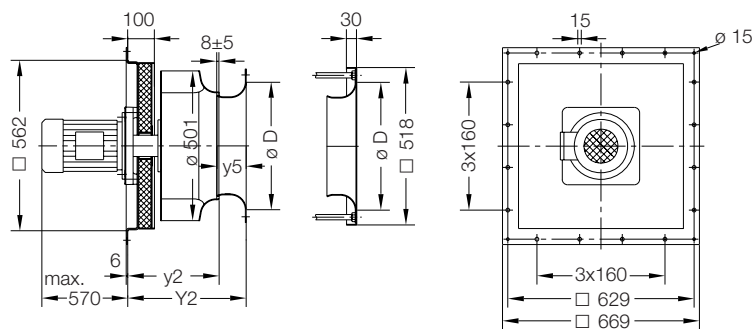
- (b)**
- Built-in plate
square/
flat
- | | |
|--------------|--------------|
| t_{max} | t_{max} |
| -S bis 100°C | -R bis 100°C |
| -N bis 250°C | -T bis 250°C |
| -V bis 300°C | -U bis 300°C |



- (b)**
- Built-in frame
- | |
|--------------|
| t_{max} |
| -Q bis 100°C |
| -P bis 250°C |
| -W bis 300°C |



- (b)**
- Built-in frame
thermolock50 insulation
- | |
|--------------|
| t_{max} |
| -Y bis 500°C |



Fan order plan

Possible basic models (b) see right page
Please choose only one.

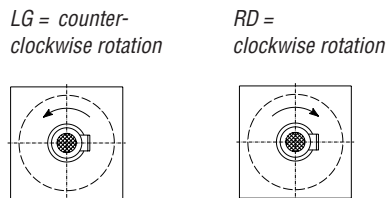
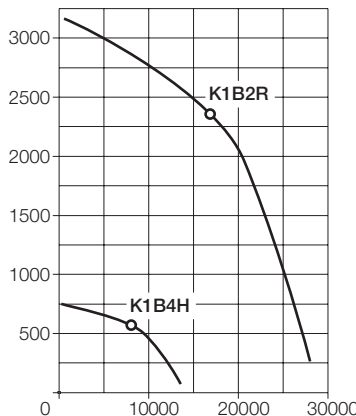
Q2M-(a) ___ - (b)(c)

(a)	(b)	(c)				(1)	(2)	(3)		
			Pn kW	Pwm kW	n 1/min	Run up time for direct start tA s	Weight incl. motor m ca. kg	Noise level at -F,-Q,-R,-S,-T,-N,-P LpA2 dB	noise pressure level at -J,-Y LpA2 dB	Strength limit speed at fan impeller material: steel and constant temp. 100 °C n max 1/min
-K1B2R	-Q° -R° -S°	AV	22,00	20,8	2940	2	290	74	77	3022
-K1B4H	-N -P -Q -R -S -T -U -V -W -Y	AV	3,00	2,4	1430	4	140	54	53	1815
-K2B2Q	-Q° -R° -S°	AC	18,50	16,7	2930	2	220	74	73	3180
-K2B4G	-N -P -Q -R -S -T -U -V -W -Y	AC	2,20	1,9	1420	5	130	54	53	2007
-K2B6D	-N -P -Q -R -S -T -U -V -W	AC	0,55	0,5	900	8	70	42	-	1545
-K2B6E		-Y AC	0,75	0,5	900	6	90	-	43	1534
-K3B2P	-N° -P° -Q° -R° -S° -T°	-Y° AB	15,00	13,7	2920	2	200	73	73	3264
-K3B4G	-N -P -Q -R -S -T -U -V -W -Y	AB	2,20	1,6	1420	4	130	54	53	2243
-K3B6D	-N -P -Q -R -S -T -U -V -W	AB	0,55	0,4	900	8	70	42	-	1754
-K3B6E		-Y AB	0,75	0,4	900	6	90	-	43	1716
-K3F2P	-N° -P° -Q° -R° -S° -T°	-Y° AB	15,00	12,3	2920	2	200	73	73	3264
-K3F4F	-N -P -Q -R -S -T -U -V -W -Y	AB	1,50	1,4	1410	6	120	52	51	1716
-K5B2N	-N -P -Q -R -S -T -U -V -W -Y	AB	11,00	9,8	2920	3	180	71	72	3669
-K5F2N	-N -P -Q -R -S -T -U -V -W -Y	AB	11,00	9,0	2920	3	180	71	72	3669

- ° For the following materials, the constant temperature and/or the rotational speed must be reduced due to strength considerations:
 - ° high-grade steel 1.451
 - °° steel and high-grade steel ... s. p. 40

- Constant temperature and/or speed must be reduced, critical bending rotational speed of the motor shaft must be calculated. Please inquire with specification of t max and n max.

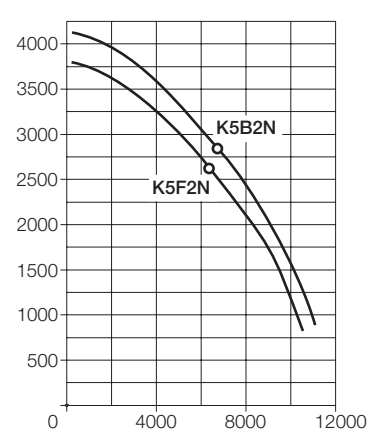
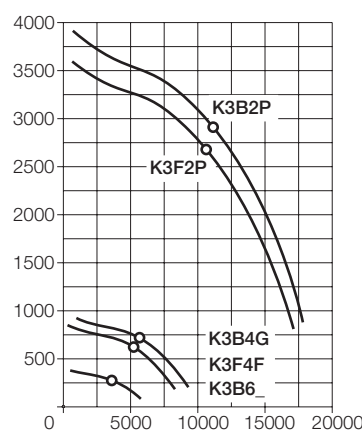
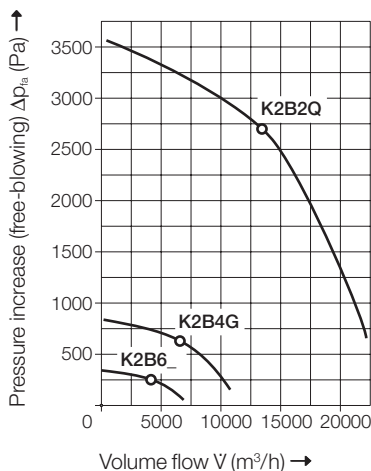
- (1) Based on Siemens standard norm motor
- (2) LpA2 = noise breakout level through the housing back plate (and cooling disc when fitted) excluding noise generated by the motor, at a distance of 1 m at optimal efficiency under free field conditions – for the same characteristic the higher value applies respectively for the basic model U, V, W.
- (3) Limit rotational speeds n max. at temperatures deviating from 100°C for steel and high-grade steel ... s. p. 40



Direction of rotation as viewed from the drive side.

Table of measurements to construction size K

	main dimensions					
	D	Y1	Y2	y1	y2	y5
K1	500	305	411	239	345	75
K2	450	283	389	217	323	75
K3	400	262	368	196	302	75
K5	315	174	280	128	234	55



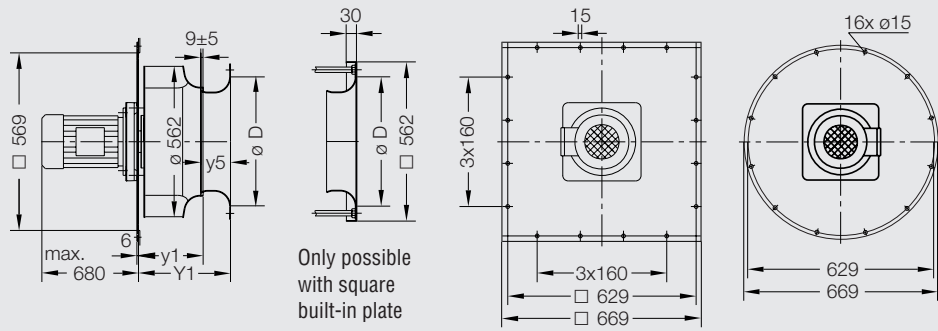
Reference density of the blowing medium
 $\rho_1 = 1,2 \text{ kg/m}^3$
 η_{opt} = Optimal efficiency

The technical data refer to air blowing from all sides at a distance of at least 0.5 x the fan impeller outer diameter. A customer-installed

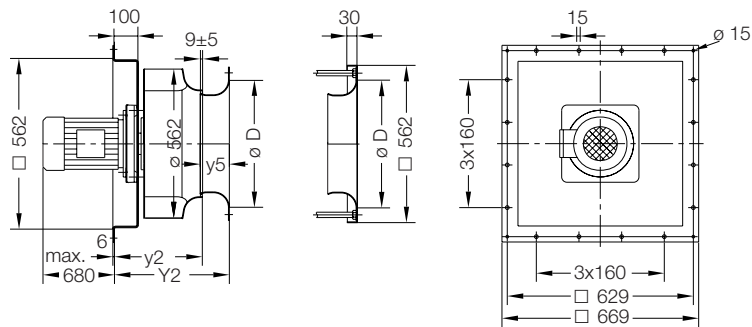
swirl operation considerably changes the data provided here.

Dimensions of the possible basic designs (b)

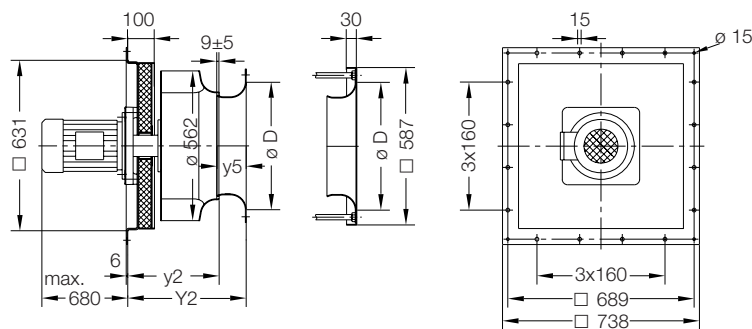
- (b)
- Built-in plate
square/
flat
- | | |
|--------------|--------------|
| t_{max} | t_{max} |
| -S bis 100°C | -R bis 100°C |
| -N bis 250°C | -T bis 250°C |
| -V bis 300°C | -U bis 300°C |



- (b)
- Built-in frame
- | |
|--------------|
| t_{max} |
| -Q bis 100°C |
| -P bis 250°C |
| -W bis 300°C |



- (b)
- Built-in frame
thermolock50 insulation
- | |
|--------------|
| t_{max} |
| -Y bis 500°C |



Fan order plan

Possible basic models (b) see right page
Please choose only one.

Q2M-(a) _____ -(b)(c)

(a)	(b)	(c)	Power		Speed	Run up	Weight	Noise pressure		Strength limit
			Motor	Shaft max. at $\rho=1,2 \text{ kg/m}^3$	n	time for direct start	incl. motor	level at -F,-Q, -R,-S, -T,-N,-P	-J,-Y	speed at fan impeller material: steel and constant temp. 100 °C
			Pn kW	Pwm kW	n 1/min	tA s	m ca. kg	L _{pA2} dB	L _{pA2} dB	n _{max} 1/min
-L1B2W	-F°°	AV	45,00	37,80	2960	3	470	76	82	2933
-L1B4K	-N -P -Q -R -S -T -U -V -W -Y	AV	5,50	4,50	1450	3	180	60	60	2532
-L2B2T	-F°°	AV	30,00	30,00	2950	3	370	77	78	2865
-L2B4J	-N -P -Q -R -S -T -U -V -W -Y	AB	4,00	3,50	1440	3	150	58	56	1897
-L2B6F	-N -P -Q -R -S -T -U -V -W -Y	AB	1,10	0,85	900	6	140	45	44	1448
-L3B2T	-F°° -J°°	AV	30,00	25,10	2950	2	360	76	77	3023
-L3B4H	-N -P -Q -R -S -T -U -V -W -Y	AB	3,00	2,90	1430	4	150	56	54	1997
-L3B6E	-N -P -Q -R -S -T -U -V -W -Y	AB	0,75	0,71	900	9	110	45	44	1526
-L3F2T	-F°° -J°°	AV	30,00	22,60	2950	2	360	76	77	3023
-L3F4H	-N -P -Q -R -S -T -U -V -W -Y	AB	3,00	2,60	1430	4	150	56	53	1997
-L5B2Q	-N°°-P°°-Q -R -S -T°°	-Y°° AB	18,50	17,40	2930	3	230	73	73	3188
-L5F2Q	-N°°-P°°-Q -R -S -T°°	-Y°° AB	18,50	15,90	2930	3	230	72	73	3188

° For the following materials, the constant temperature and/or the rotational speed must be reduced due to strength considerations:
° high-grade steel 1.451
°° steel and high-grade steel ... s. p. 40

□ Constant temperature and/or speed must be reduced, critical bending rotational speed of the motor shaft must be calculated. Please inquire with specification of t max and n max.

(1) Based on Siemens standard norm motor
(2) LpA2 = noise breakout level through the housing back plate (and cooling disc when fitted) excluding noise generated by the motor, at a distance of 1 m at optimal efficiency under free field conditions – for the same characteristic the higher value applies respectively for the basic model U, V, W.
(3) Limit rotational speeds n max. at temperatures deviating from 100°C for steel and high-grade steel ... s. p. 40

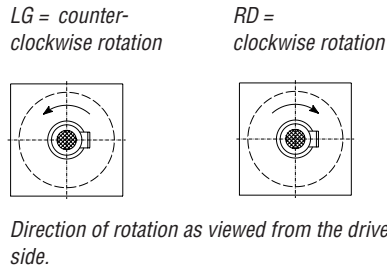
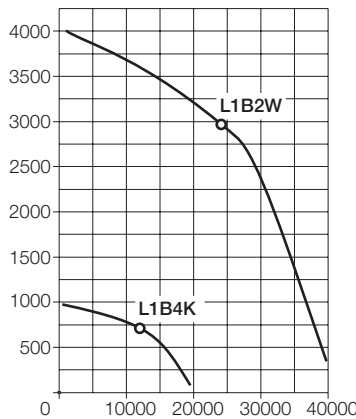
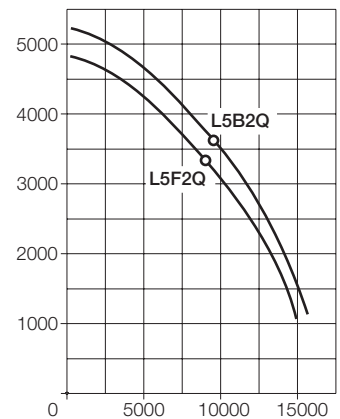
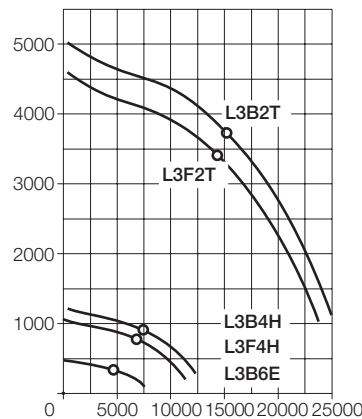
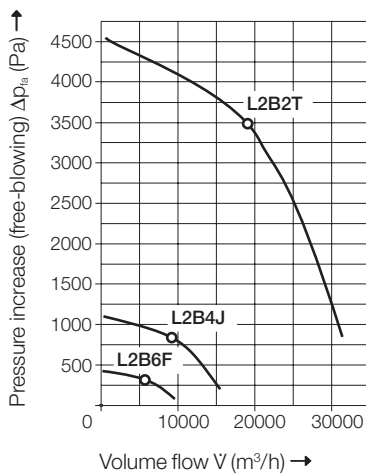


Table of measurements to construction size L

	main dimensions					
	D	Y1	Y2	y1	y2	y5
L1	560	381	487	265	371	125
L2	500	306	412	240	346	75
L3	450	283	389	217	323	75
L5	355	208	314	142	248	75

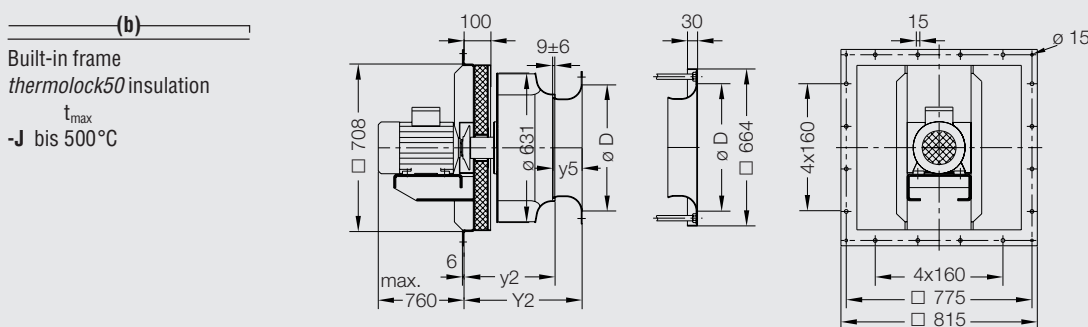
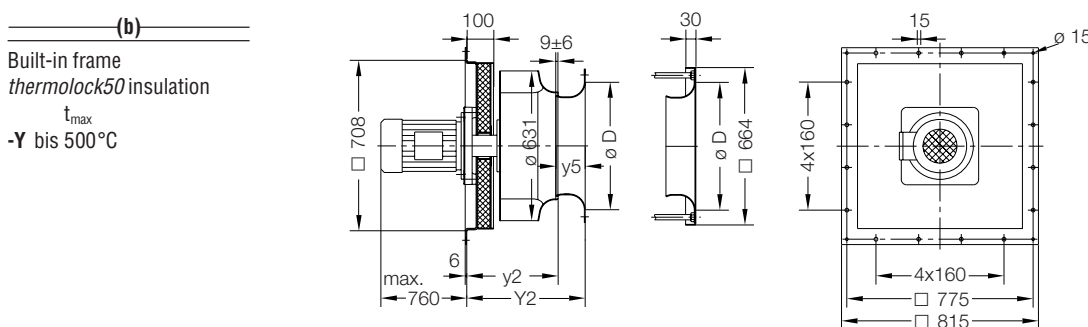
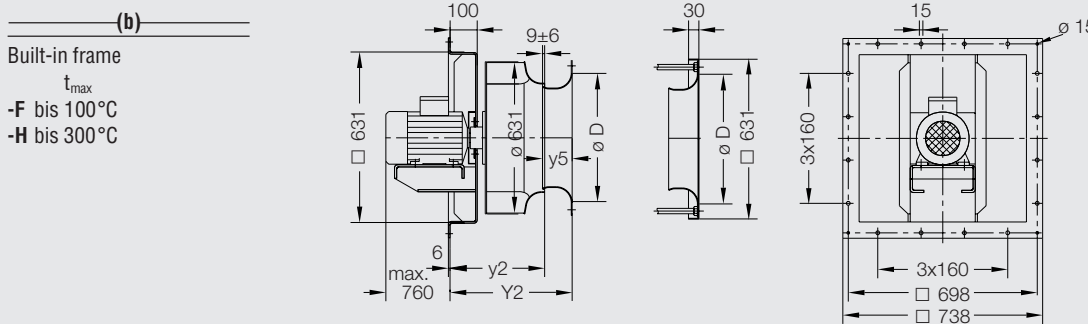
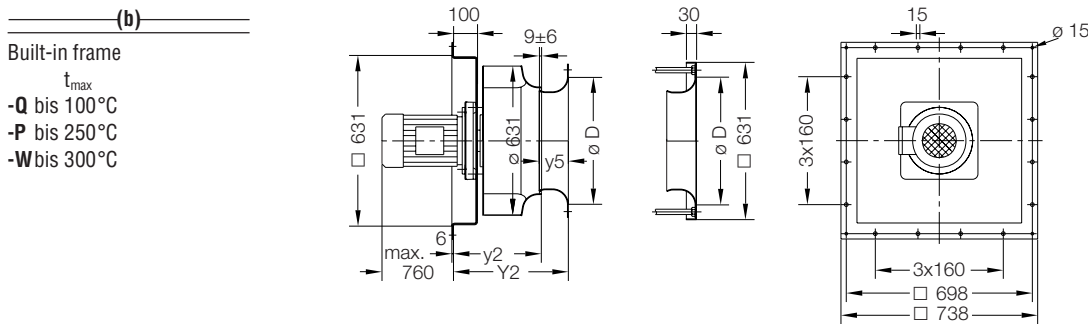
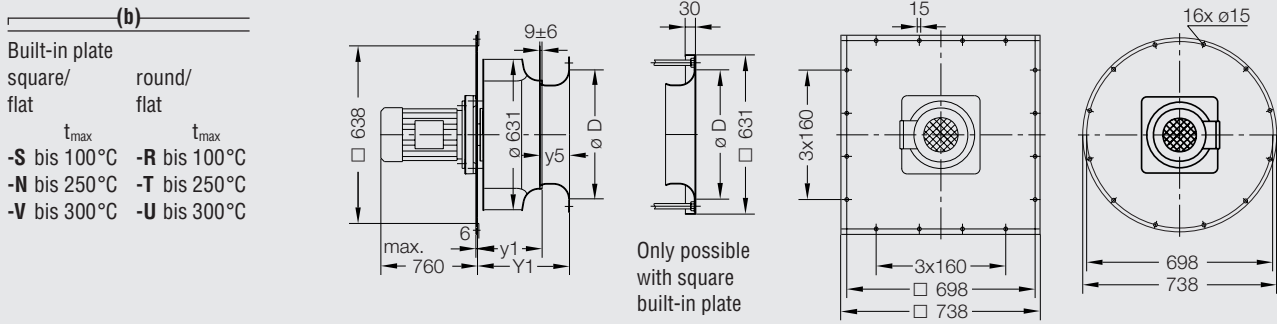


Reference density of the blowing medium
 $\rho_1 = 1,2 \text{ kg/m}^3$
□ η_{opt} = Optimal efficiency

The technical data refer to air blowing from all sides at a distance of at least 0.5 x the fan impeller outer diameter. A customer-installed

swirl operation considerably changes the data provided here.

Dimensions of the possible basic designs (b)



See page 42 for further dimensional details. Dimensions in mm. Subject to change. Ⓞ Cannot be supplied for types D1.

Fan order plan

Possible basic models (b) see right page
Please choose only one.

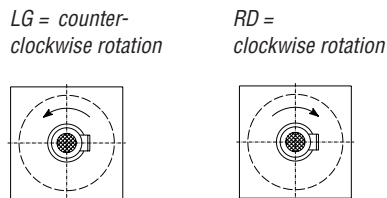
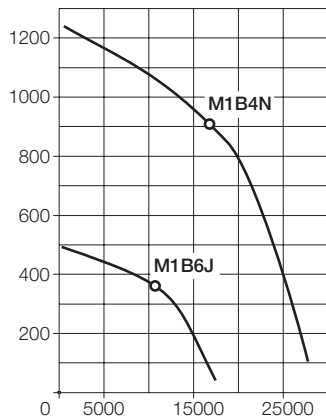
Q2M-(a)____-(b)(c)

(a)	(b)	(c)	(1)			(2)		(3)		
			Power Motor	Speed	Run up time for direct start	Weight incl. motor	Noise level at -F,-Q,-R,-S,-T,-N,-P	pressure level at -J,-Y	Strength limit speed at fan impeller material: steel and constant temp. 100 °C	
			Pn kW	Pwm kW	n 1/min	tA s	m ca. kg	L _{pA2} dB	L _{pA2} dB	n _{max} 1/min
-M1B4N	-N° -P° -Q -R -S -T° -U°° -V°° -W°° -Y°°	AB	11,00	8,10	1460	3	240	64	64	1664
-M1B6J	-N -P -Q -R -S -T -U -V -W -Y	AB	2,20	2,10	920	6	150	53	53	1421
-M2B4M	-N -P -Q -R -S -T -U° -V° -W° -Y°	AB	7,50	6,40	1450	3	220	63	61	1950
-M2B6J	-N -P -Q -R -S -T -U -V -W -Y	AB	2,20	1,70	920	6	180	53	53	1530
-M3B2W-F° -H°° -J°°		AV	45,00	44,70	2960	3	500	80	82	3222
-M3B4K	-N -P -Q -R -S -T -U -V -W -Y	AB	5,50	5,30	1450	4	200	62	60	2311
-M3B6G	-N -P -Q -R -S -T -U -V -W -Y	AB	1,50	1,40	920	9	140	50	48	1718
-M3F2W-F° -H°° -J°°		AV	45,00	40,10	2960	2	490	78	82	3222
-M3F4K	-N -P -Q -R -S -T -U -V -W -Y	AB	5,50	4,80	1450	5	190	61	60	2311
-M5F2T -F°°		AB	30,00	28,80	2950	3	360	76	-	2841

- ° For the following materials, the constant temperature and/or the rotational speed must be reduced due to strength considerations:
 - ° high-grade steel 1.451
 - °° steel and high-grade steel ... s. p. 40

- Constant temperature and/or speed must be reduced, critical bending rotational speed of the motor shaft must be calculated. Please inquire with specification of t max and n max.

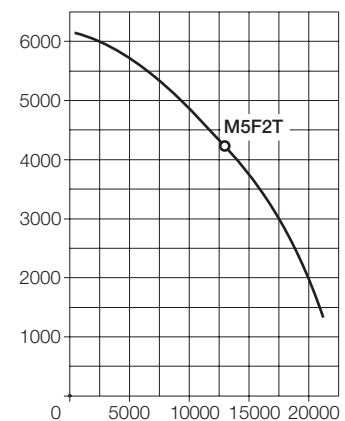
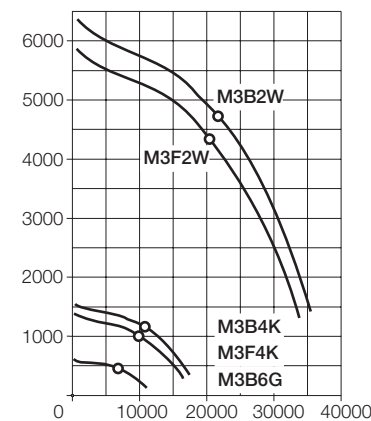
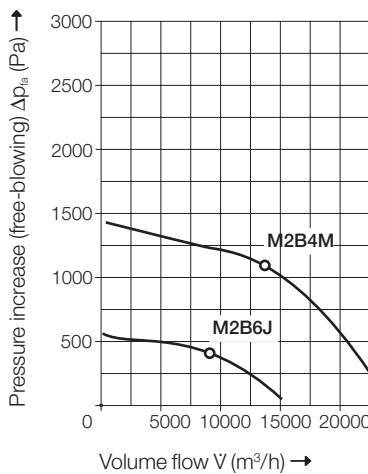
- (1) Based on Siemens standard norm motor
- (2) LpA2 = noise breakout level through the housing back plate (and cooling disc when fitted) excluding noise generated by the motor, at a distance of 1 m at optimal efficiency under free field conditions – for the same characteristic the higher value applies respectively for the basic model U, V, W.
- (3) Limit rotational speeds n max. at temperatures deviating from 100°C for steel and high-grade steel ... s. p. 40



Direction of rotation as viewed from the drive side.

Table of measurements to construction size M

	main dimensions					
	D	Y1	Y2	y1	y2	y5
M1	630	425	531	295	401	140
M2	560	382	488	267	373	125
M3	500	306	412	241	347	75
M5	400	221	327	156	262	75



Reference density of the blowing medium
 $\rho_1 = 1,2 \text{ kg/m}^3$
☞ η_{opt} = Optimal efficiency

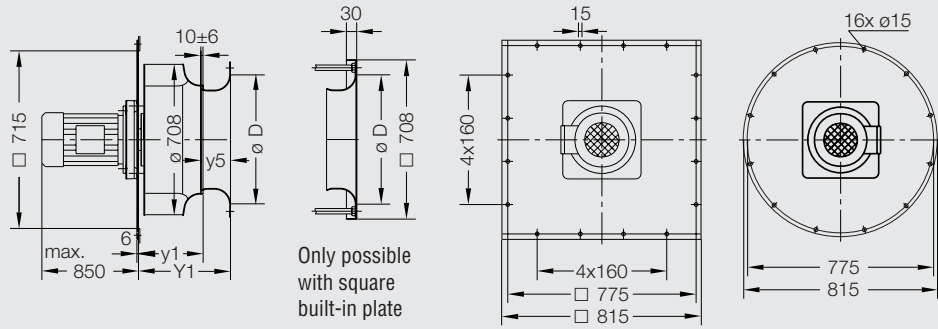
The technical data refer to air blowing from all sides at a distance of at least 0.5 x the fan impeller outer diameter. A customer-installed

swirl operation considerably changes the data provided here.

Dimensions of the possible basic designs (b)

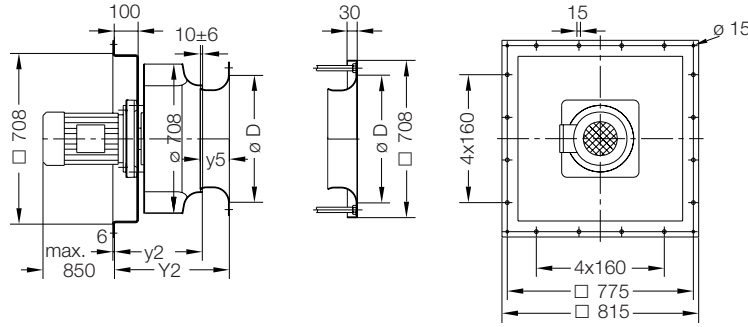
(b)
 Built-in plate
 square/
 flat

t_{max}	t_{max}
-S bis 100°C	-R bis 100°C
-N bis 250°C	-T bis 250°C
-V bis 300°C	-U bis 300°C



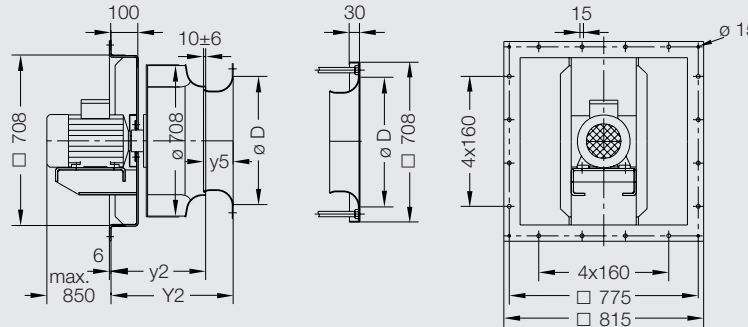
(b)
 Built-in frame

t_{max}
-Q bis 100°C
-P bis 250°C
-W bis 300°C



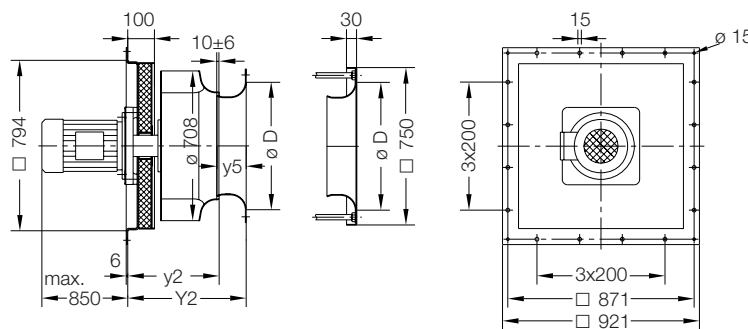
(b)
 Built-in frame

t_{max}
-F bis 100°C
-H bis 300°C



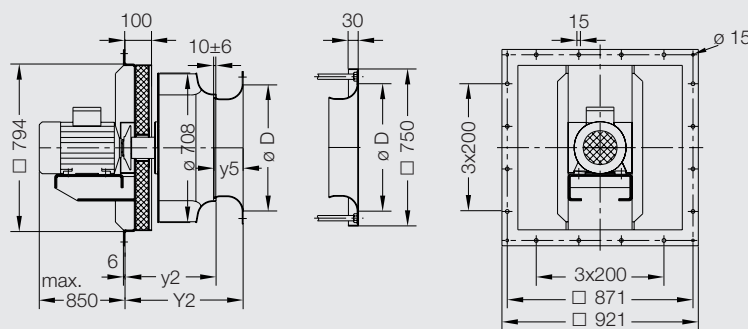
(b)
 Built-in frame
thermolock50 insulation

t_{max}
-Y bis 500°C



(b)
 Built-in frame
thermolock50 insulation

t_{max}
-J bis 500°C



See page 42 for further dimensional details. Dimensions in mm. Subject to change. Ⓞ Cannot be supplied for types D1.

Fan order plan

Possible basic models (b) see right page
Please choose only one.

Q2M-(a) _____ -(b)(c)

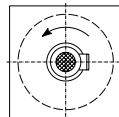
(a)	(b)										(c)	Pn kW	Pwm kW	n 1/min	Run up time for direct start tA s	Weight incl. motor m ca. kg	Noise pressure level at		Strength limit speed at fan impeller material: steel and constant temp. 100 °C n _{max} 1/min
	-N	-P	-Q	-R	-S	-T	-U°	-V°	-W°	-Y°°							L _{pA2} dB	L _{pA2} dB	
-N1B4Q	-N	-P	-Q	-R	-S	-T	-U°	-V°	-W°	-Y°°	AV	15,00	14,20	1460	4	300	65	64	1940
-N1B6L	-N	-P	-Q	-R	-S	-T	-U	-V	-W	-Y	AV	4,00	3,80	940	7	220	59	58	1706
-N2B4Q	-N°	-P°	-Q°	-R°	-S°	-T°	-U°°	-V°°	-W°°	-Y°°°	AB	15,00	11,50	1460	3	280	66	64	1640
-N2B6L	-N	-P	-Q	-R	-S	-T	-U	-V	-W	-Y	AB	4,00	3,10	940	5	230	59	58	1640
-N3B4N	-N	-P	-Q	-R	-S	-T	-U°	-V°	-W°	-Y°°	AB	11,00	9,60	1460	3	260	66	64	1944
-N3B6K	-N	-P	-Q	-R	-S	-T	-U	-V	-W	-Y	AB	3,00	2,60	940	7	180	59	58	1944
-N3F4N	-N	-P	-Q	-R	-S	-T	-U°	-V°	-W°	-Y°°	AB	11,00	8,60	1460	3	260	65	64	1944

° For the following materials, the constant temperature and/or the rotational speed must be reduced due to strength considerations:
° high-grade steel 1.451
°° steel and high-grade steel ... s. p. 40

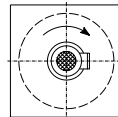
□ Constant temperature and/or speed must be reduced, critical bending rotational speed of the motor shaft must be calculated. Please inquire with specification of t max and n max.

(1) Based on Siemens standard norm motor
(2) LpA2 = noise breakout level through the housing back plate (and cooling disc when fitted) excluding noise generated by the motor, at a distance of 1 m at optimal efficiency under free field conditions – for the same characteristic the higher value applies respectively for the basic model U, V, W.
(3) Limit rotational speeds n max. at temperatures deviating from 100°C for steel and high-grade steel ... s. p. 40

LG = counter-clockwise rotation



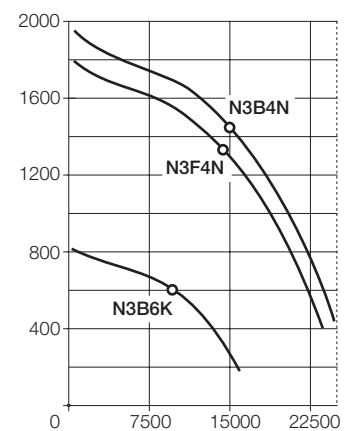
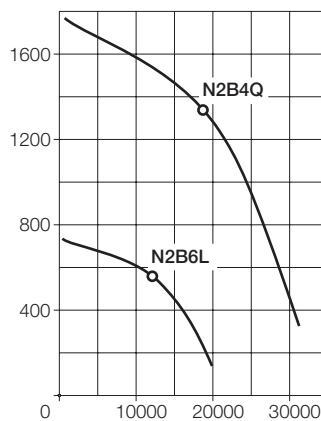
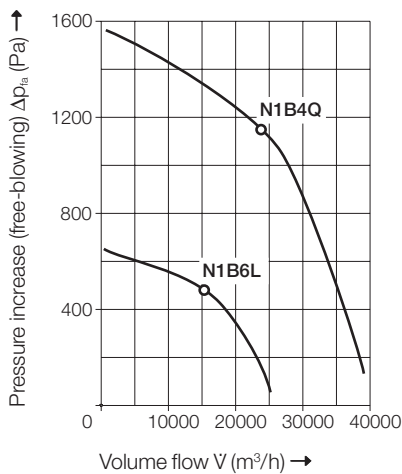
RD = clockwise rotation



Direction of rotation as viewed from the drive side.

Table of measurements to construction size N

	main dimensions					
	D	Y1	Y2	y1	y2	y5
N1	710	476	584	327	435	160
N2	630	424	532	295	403	140
N3	560	379	487	265	373	125



Reference density of the blowing medium
ρ₁ = 1,2 kg/m³
η_{opt} = Optimal efficiency

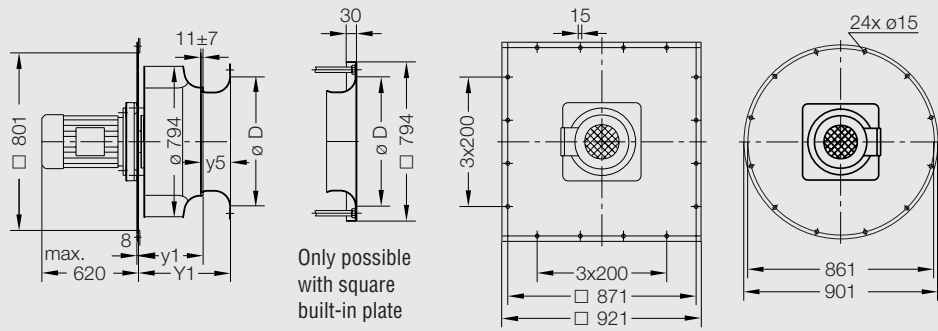
The technical data refer to air blowing from all sides at a distance of at least 0.5 x the fan impeller outer diameter. A customer-installed

swirl operation considerably changes the data provided here.

Dimensions of the possible basic designs (b)

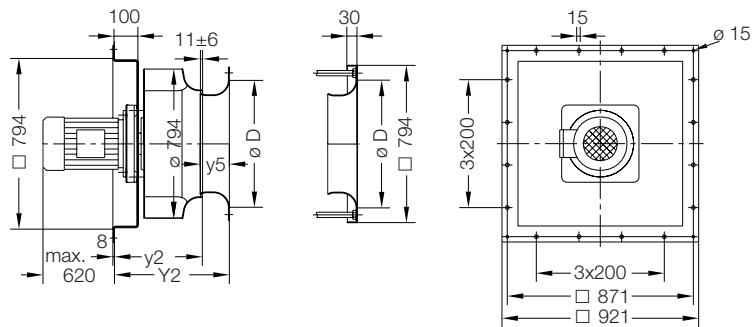
(b)
 Built-in plate
 square/
 flat

t_{max}	t_{max}
-S bis 100°C	-R bis 100°C
-N bis 250°C	-T bis 250°C
-V bis 300°C	-U bis 300°C



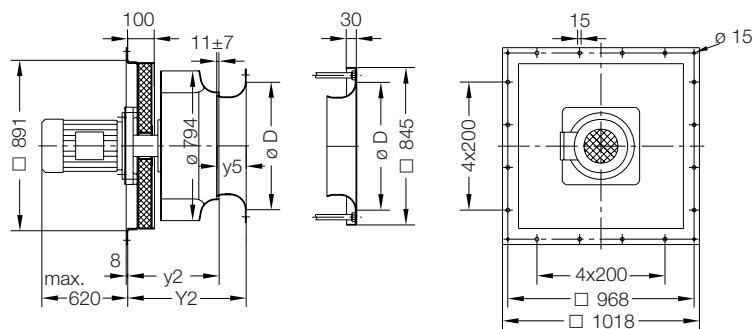
(b)
 Built-in frame

t_{max}
-Q bis 100°C
-P bis 250°C
-W bis 300°C



(b)
 Built-in frame
thermolock50 insulation

t_{max}
-Y bis 500°C



See page 42 for further dimensional details. Dimensions in mm. Subject to change. ① Cannot be supplied for types D1.

Fan order plan

Possible basic models (b) see right page
Please choose only one.

Q2M-(a) ___ - (b)(c)

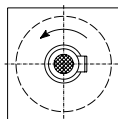
(a)	(b)	(c)	Power		Speed	Run up	Weight	Noise pressure	Strength limit	
			Motor	Shaft max. at $\rho=1,2 \text{ kg/m}^3$	n	time for direct start	incl. motor	level at -F,-Q,-R,-S,-T,-N,-P	speed at fan impeller material: steel and constant temp. 100 °C	
			Pn kW	Pwm kW	n 1/min	tA s	m ca. kg	L_{pA2} dB	L_{pA2} dB	n_{max} 1/min
-P1B4T	-F° -H° -J°	AV	30,00	25,80	1470	3	540	66	64	1666
-P1B6N	-N -P -Q -R -S -T -U -V -W -Y	AV	7,5	7,20	960	6	360	61	60	1655
-P2B4S	-N° -P° -Q° -R° -S° -T°	Y° AC	22,00	20,30	1460	4	450	67	64	1594
-P2B6N	-N -P -Q -R -S -T -U -V -W -Y	AC	7,50	5,80	960	5	340	61	60	1594
-P3B4R	-N° -P° -Q° -R° -S° -T° -U° -V° -W° -Y°	AB	18,50	17,00	1460	4	410	66	64	1636
-P3B6M	-N -P -Q -R -S -T -U -V -W -Y	AB	5,50	4,60	940	5	290	58	57	1636
-P3F4R	-N° -P° -Q° -R° -S° -T° -U° -V° -W° -Y°	AB	18,50	15,20	1460	5	410	65	63	1636

° For the following materials, the constant temperature and/or the rotational speed must be reduced due to strength considerations:
° high-grade steel 1.451
° steel and high-grade steel ... s. p. 40

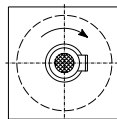
□ Constant temperature and/or speed must be reduced, critical bending rotational speed of the motor shaft must be calculated. Please inquire with specification of t_{max} and n_{max} .

(1) Based on Siemens standard norm motor
(2) L_{pA2} = noise breakout level through the housing back plate (and cooling disc when fitted) excluding noise generated by the motor, at a distance of 1 m at optimal efficiency under free field conditions – for the same characteristic the higher value applies respectively for the basic model U, V, W.
(3) Limit rotational speeds n_{max} . at temperatures deviating from 100°C for steel and high-grade steel ... s. p. 40

LG = counter-clockwise rotation



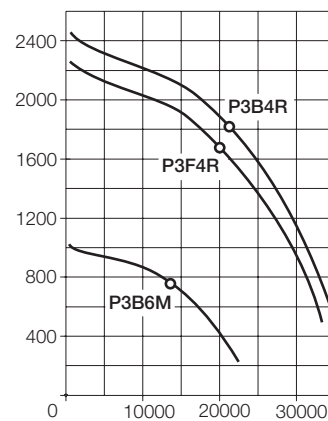
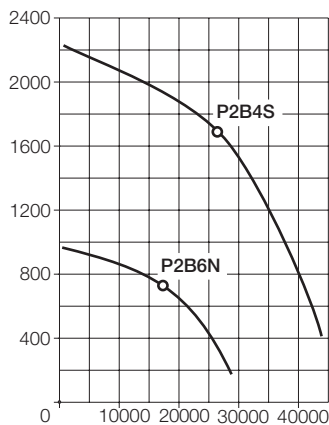
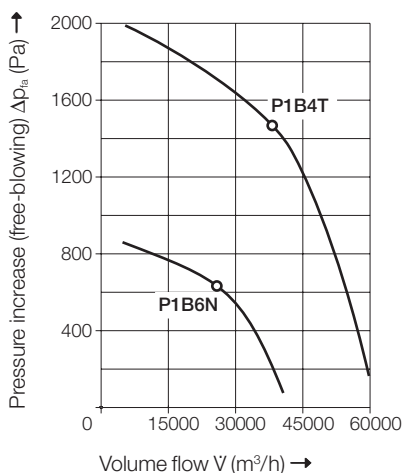
RD = clockwise rotation



Direction of rotation as viewed from the drive side.

Table of measurements to construction size P

	main dimensions					
	D	Y1	Y2	y1	y2	y5
P1	800	532	640	364	472	180
P2	710	476	584	328	436	160
P3	630	423	531	295	403	140



Reference density of the blowing medium
 $\rho_1 = 1,2 \text{ kg/m}^3$
☞ η_{opt} = Optimal efficiency

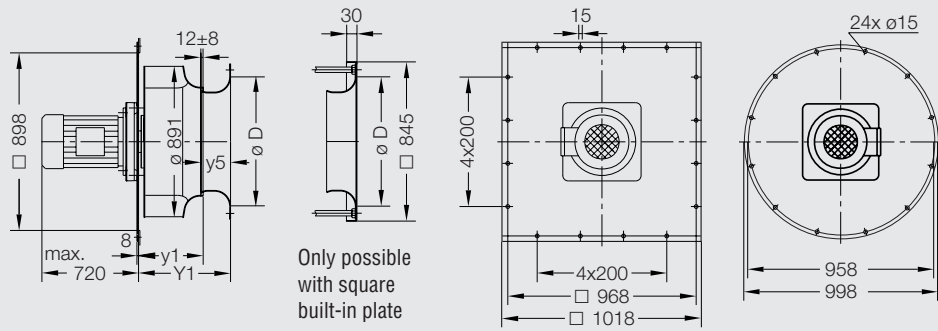
The technical data refer to air blowing from all sides at a distance of at least 0.5 x the fan impeller outer diameter. A customer-installed

swirl operation considerably changes the data provided here.

Dimensions of the possible basic designs (b)

(b)
 Built-in plate
 square/
 flat

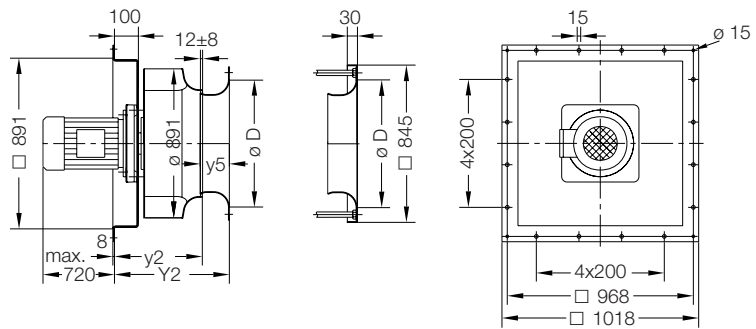
t_{max}	t_{max}
-S bis 100°C	-R bis 100°C
-N bis 250°C	-T bis 250°C
-V bis 300°C	-U bis 300°C



Only possible with square built-in plate

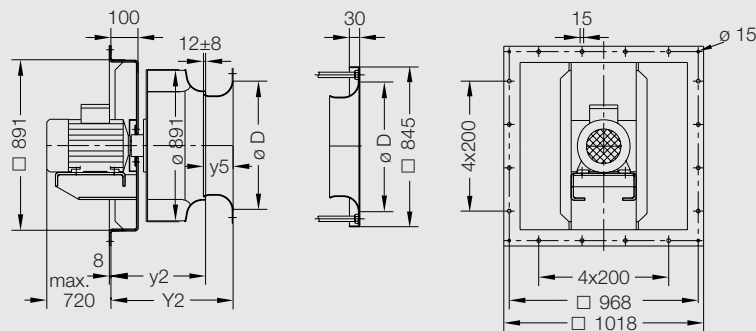
(b)
 Built-in frame

t_{max}
-Q bis 100°C
-P bis 250°C
-W bis 300°C



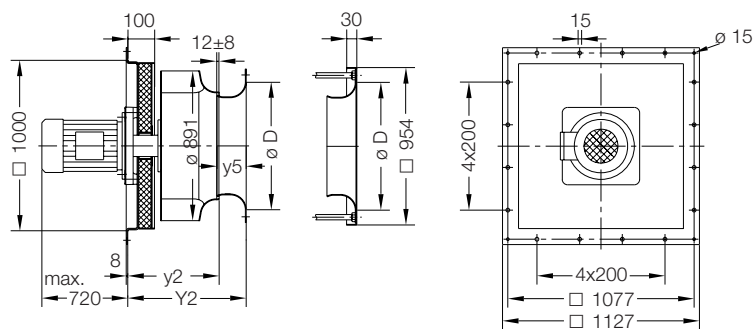
(b)
 Built-in frame

t_{max}
-F bis 100°C
-H bis 300°C



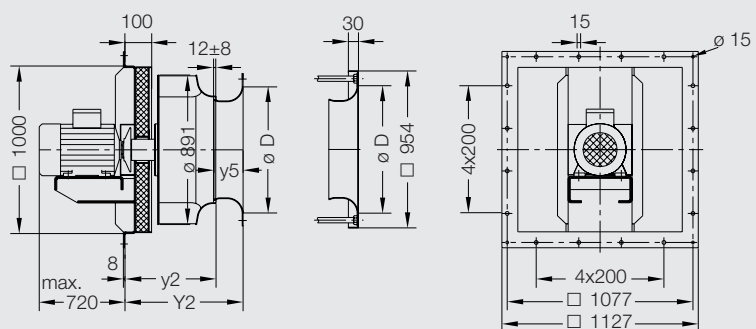
(b)
 Built-in frame
 thermolock50 insulation

t_{max}
-Y bis 500°C



(b)
 Built-in frame
 thermolock50 insulation

t_{max}
-J bis 500°C



See page 42 for further dimensional details. Dimensions in mm. Subject to change. Ⓞ Cannot be supplied for types D1.

Fan order plan

Possible basic models (b) see right page
Please choose only one.

Q2M-(a)____-(b)(c)

(a)	(b)	(c)	Pn kW	Pwm kW	n 1/min	tA s	m ca. kg	L _{pA2} dB	L _{pA2} dB	n _{max} 1/min
-Q1B4X	-F° -H° -J°	AV	55,00	46,70	1480	3	830	70	68	1784
-Q1B6S	-N° -P° -Q -R -S -T° -U* -V* -W* -Y*	AV	15,00	13,20	970	5	560	58	57	1784
-Q2B4W	-F°	AC	45,00	37,40	1480	5	650	70	68	1341
-Q2B6Q	-N -P -Q -R -S -T -U -V -W -Y°	AC	11,00	10,30	960	5	420	62	61	1341
-Q3B4V	-F° -H° -J°	AC	37,00	31,10	1480	5	650	70	68	1777
-Q3B6Q	-N -P -Q -R -S -T -U* -V* -W* -Y*	AC	11,00	8,50	960	6	350	62	60	1673
-Q3F4T	-F -H° -J°	AC	30,00	27,30	1470	6	590	68	65	1777

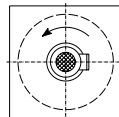
° For the following materials, the constant temperature and/or the rotational speed must be reduced due to strength considerations:
° high-grade steel 1.451
°° steel and high-grade steel ... s. p. 40

□ Constant temperature and/or speed must be reduced, critical bending rotational speed of the motor shaft must be calculated. Please inquire with specification of t max and n max.

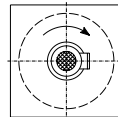
* Motor with reinforced bearings

(1) Based on Siemens standard norm motor
(2) L_{pA2} = noise breakout level through the housing back plate (and cooling disc when fitted) excluding noise generated by the motor, at a distance of 1 m at optimal efficiency under free field conditions – for the same characteristic the higher value applies respectively for the basic model U, V, W.
(3) Limit rotational speeds n max. at temperatures deviating from 100°C for steel and high-grade steel ... s. p. 40

LG = counter-clockwise rotation



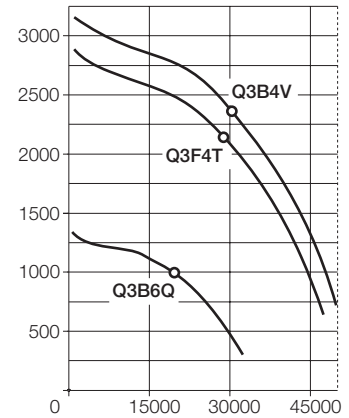
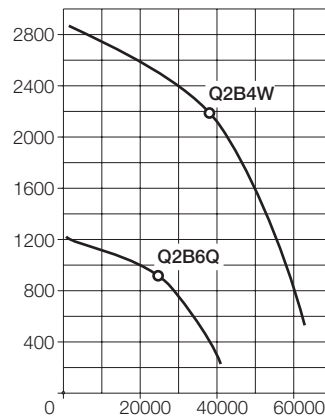
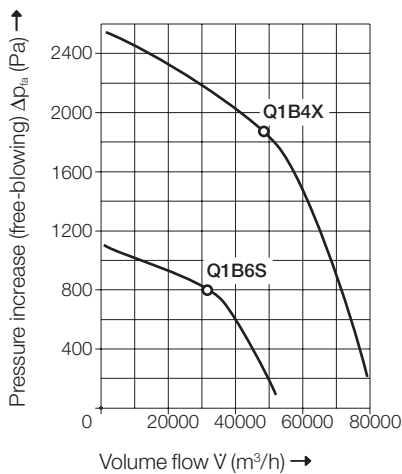
RD = clockwise rotation



Direction of rotation as viewed from the drive side.

Table of measurements to construction size Q

	main dimensions					
	D	Y1	Y2	y1	y2	y5
Q1	900	592	700	406	514	200
Q2	800	534	642	368	476	180
Q3	710	475	583	329	437	160



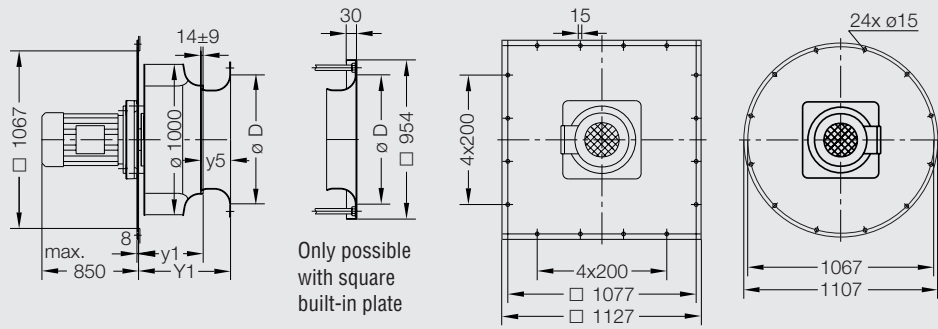
Reference density of the blowing medium
ρ₁ = 1,2 kg/m³
η_{opt} = Optimal efficiency

The technical data refer to air blowing from all sides at a distance of at least 0.5 x the fan impeller outer diameter. A customer-installed

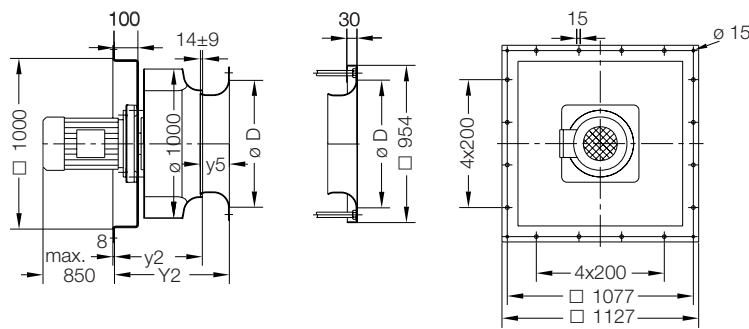
swirl operation considerably changes the data provided here.

Dimensions of the possible basic designs (b)

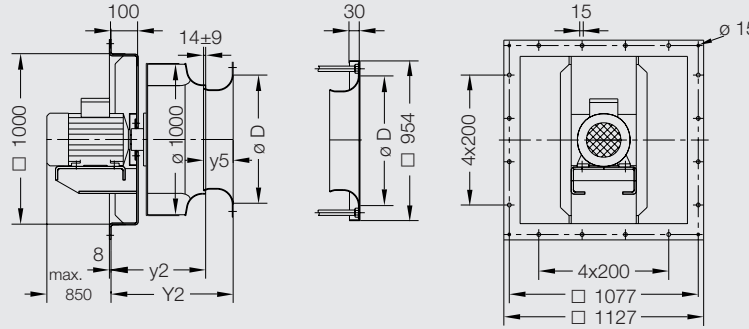
- (b)**
Built-in plate
square/
flat
- | | |
|--------------|--------------|
| t_{max} | t_{max} |
| -S bis 100°C | -R bis 100°C |
| -N bis 250°C | -T bis 250°C |
| -V bis 300°C | -U bis 300°C |



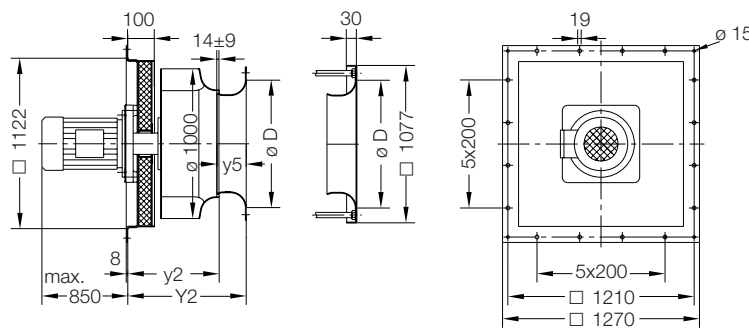
- (b)**
Built-in frame
- | |
|--------------|
| t_{max} |
| -Q bis 100°C |
| -P bis 250°C |
| -W bis 300°C |



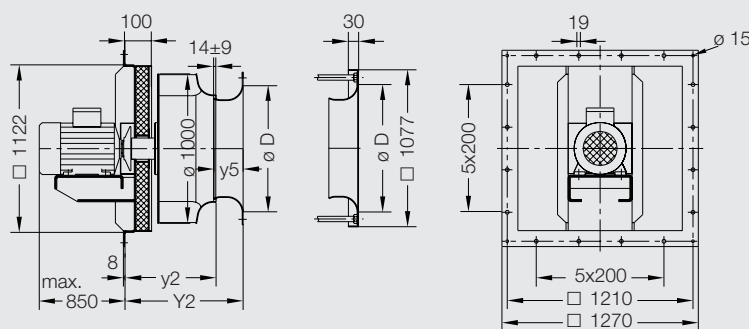
- (b)**
Built-in frame
- | |
|--------------|
| t_{max} |
| -F bis 100°C |
| -H bis 300°C |



- (b)**
Built-in frame
thermolock50 insulation
- | |
|--------------|
| t_{max} |
| -Y bis 500°C |



- (b)**
Built-in frame
thermolock50 insulation
- | |
|--------------|
| t_{max} |
| -J bis 500°C |



See page 42 for further dimensional details. Dimensions in mm. Subject to change. ① Cannot be supplied for types D1.

Fan order plan

Possible basic models (b) see right page
Please choose only one.

Q2M-(a)____-(b)(c)

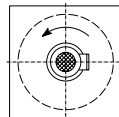
(a)	(b)	(c)	Pn kW	Pwm kW	n 1/min	tA s	m ca. kg	L _{pA2} dB	L _{pA2} dB	n _{max} 1/min
-R1B4Z	-F°	AV	90,00	83,00	1480	3	1120	73	73	1501
-R1B6W	-F° -H° -J°°	AV	30,00	23,40	970	4	730	62	61	1501
-R2B4Y	-F° -H°° -J°°	AV	75,00	66,70	1480	4	1050	74	73	1670
-R2B6T	-F -H° -J°°	AV	18,50	18,70	970	7	670	62	59	1670
-R3B4X	-F° -H°° -J°°	AC	55,00	55,20	1480	5	1040	73	73	1608
-R3B6T	-F -H -J	AC	18,50	15,60	970	7	650	62	58	1608
-R3F4X	-F° -H°° -J°°	AC	55,00	49,60	1480	5	890	72	69	1608
-R3F6S	-N -P -Q -R -S -T -U -V -W -Y	AC	15,00	14,00	970	8	580	61	58	1608

- ° For the following materials, the constant temperature and/or the rotational speed must be reduced due to strength considerations:
 - ° high-grade steel 1.451
 - °° steel and high-grade steel ... s. p. 40

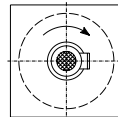
- Constant temperature and/or speed must be reduced, critical bending rotational speed of the motor shaft must be calculated. Please inquire with specification of t max and n max.

- (1) Based on Siemens standard norm motor
- (2) LpA2 = noise breakout level through the housing back plate (and cooling disc when fitted) excluding noise generated by the motor, at a distance of 1 m at optimal efficiency under free field conditions – for the same characteristic the higher value applies respectively for the basic model U, V, W.
- (3) Limit rotational speeds n max. at temperatures deviating from 100°C for steel and high-grade steel ... s. p. 40

LG = counter-clockwise rotation



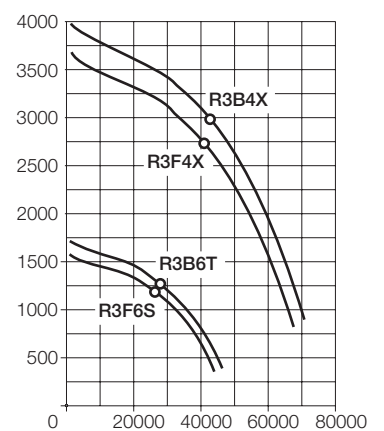
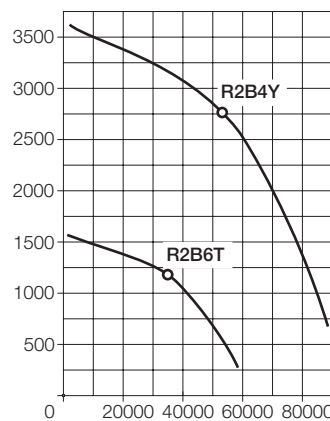
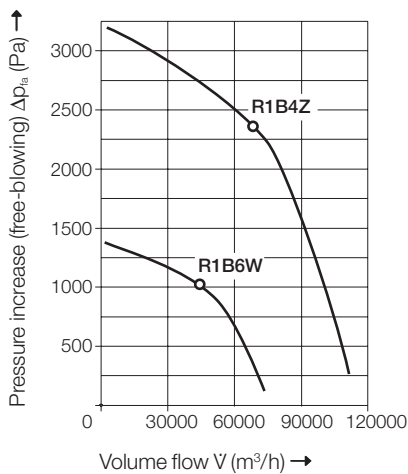
RD = clockwise rotation



Direction of rotation as viewed from the drive side.

Table of measurements to construction size R

	main dimensions					
	D	Y1	Y2	y1	y2	y5
R1	1000	668	776	454	562	230
R2	900	594	702	410	518	200
R3	800	532	640	368	476	180



Reference density of the blowing medium
 $\rho_1 = 1,2 \text{ kg/m}^3$
 η_{opt} = Optimal efficiency

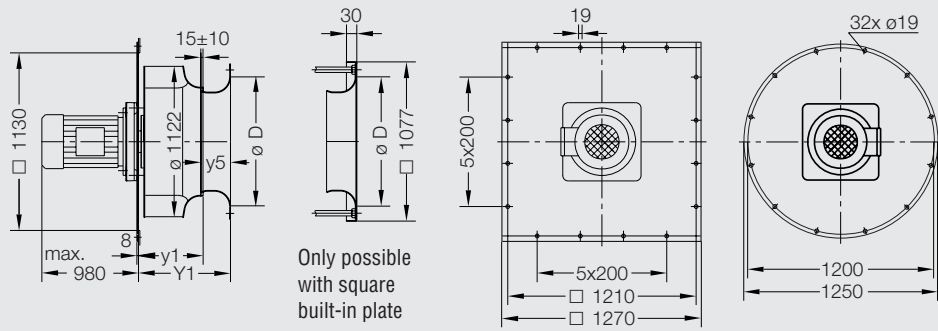
The technical data refer to air blowing from all sides at a distance of at least 0.5 x the fan impeller outer diameter. A customer-installed

swirl operation considerably changes the data provided here.

Dimensions of the possible basic designs (b)

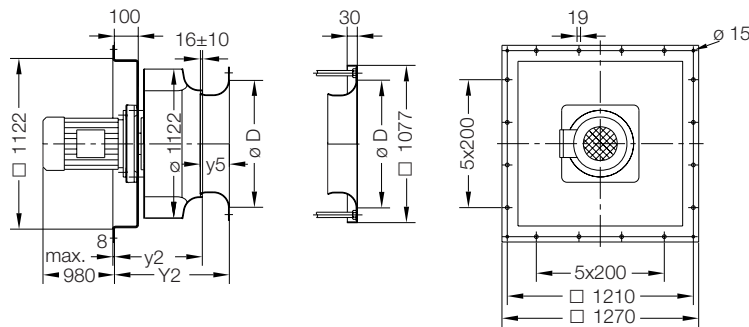
(b)
 Built-in plate
 square/
 flat

t_{max}	t_{max}
-S bis 100°C	-R bis 100°C
-N bis 250°C	-T bis 250°C
-V bis 300°C	-U bis 300°C



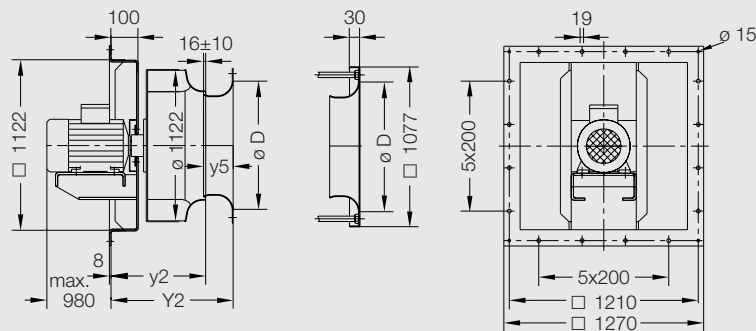
(b)
 Built-in frame

t_{max}
-Q bis 100°C
-P bis 250°C
-W bis 300°C



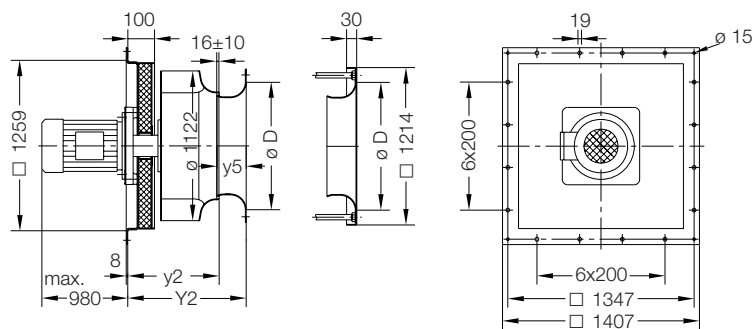
(b)
 Built-in frame

t_{max}
-F bis 100°C
-H bis 300°C



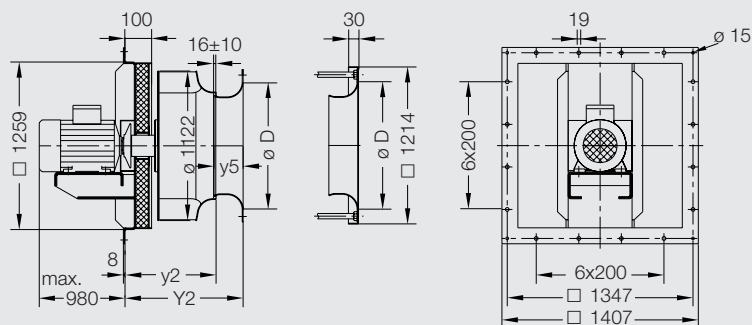
(b)
 Built-in frame
thermolock50 insulation

t_{max}
-Y bis 500°C



(b)
 Built-in frame
thermolock50 insulation

t_{max}
-J bis 500°C



See page 42 for further dimensional details. Dimensions in mm. Subject to change. Ⓞ Cannot be supplied for types D1.

Fan order plan

Possible basic models (b) see right page
Please choose only one.

Q2M-(a)____-(b)(c)

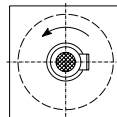
(a)	(b)	(c)	Power		Speed	Run up	Weight	Noise pressure		Strength limit
			Motor	Shaft max. at $\rho=1,2$ kg/m^3	n	time for direct start	incl. motor	level at -F,-Q, -R,-S, -T,-N,-P	-J,-Y	speed at fan impeller material: steel and constant temp. 100 °C
			Pn kW	Pwm kW	n 1/min	tA s	m ca. kg	L _{pA2} dB	L _{pA2} dB	n _{max} 1/min
S1B6Y- F°		AC	45,00	42,90	980	6	1070	65	64	992
S2B6X- F H° J°°		AV	37,00	34,50	980	6	930	66	62	1061
S3B6W- F H J°°		AV	30,00	27,70	970	7	820	65	62	1378
S3F6W- F H J°°		AV	30,00	24,90	970	7	820	64	61	1378

- ° For the following materials, the constant temperature and/or the rotational speed must be reduced due to strength considerations:
 - ° high-grade steel 1.451
 - °° steel and high-grade steel ... s. p. 40

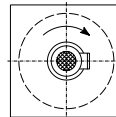
Constant temperature and/or speed must be reduced, critical bending rotational speed of the motor shaft must be calculated. Please inquire with specification of t max and n max.

- (1) Based on Siemens standard norm motor
- (2) L_{pA2} = noise breakout level through the housing back plate (and cooling disc when fitted) excluding noise generated by the motor, at a distance of 1 m at optimal efficiency under free field conditions – for the same characteristic the higher value applies respectively for the basic model U, V, W.
- (3) Limit rotational speeds n max. at temperatures deviating from 100°C for steel and high-grade steel ... s. p. 40

LG = counter-clockwise rotation



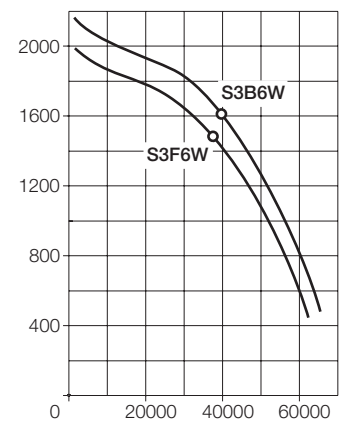
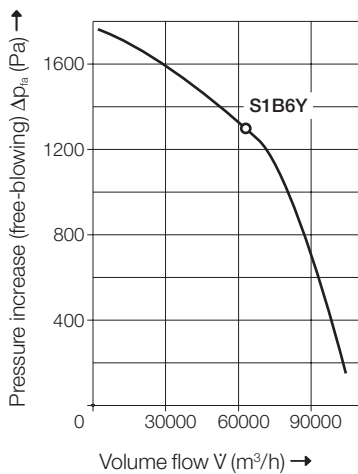
RD = clockwise rotation



Direction of rotation as viewed from the drive side.

Table of measurements to construction size S

	main dimensions					
	D	Y1	Y2	y1	y2	y5
S1	1120	743	851	507	615	254
S2	1000	670	778	458	566	230
S3	900	592	700	410	518	200



Reference density of the blowing medium

$\rho_1 = 1,2 \text{ kg/m}^3$

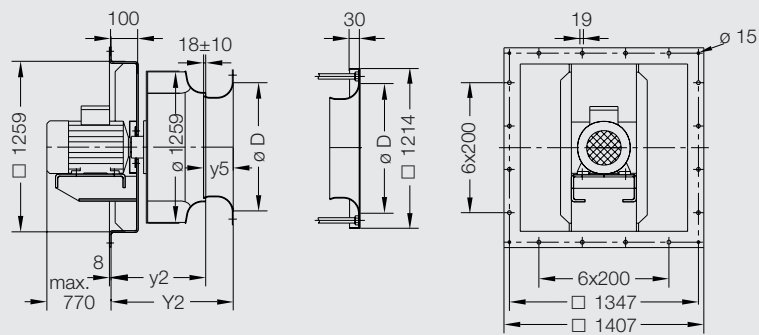
η_{opt} = Optimal efficiency

The technical data refer to air blowing from all sides at a distance of at least 0.5 x the fan impeller outer diameter. A customer-installed

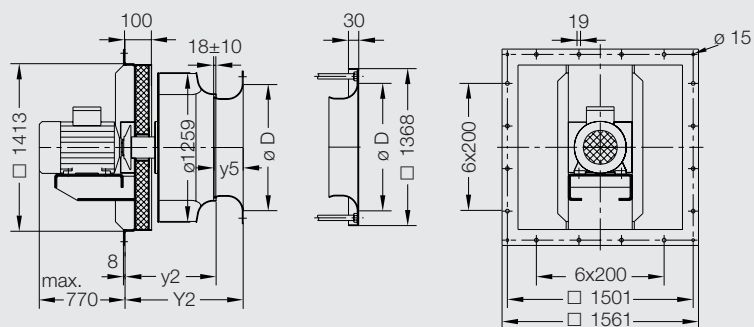
swirl operation considerably changes the data provided here.

Dimensions of the possible basic designs (b)

(b)
 Built-in frame
 t_{max}
 -F bis 100°C
 -H bis 300°C



(b)
 Built-in frame
thermolock50 insulation
 t_{max}
 -J bis 500°C



See page 42 for further dimensional details. Dimensions in mm. Subject to change. Ⓞ Cannot be supplied for types D1.

Fan order plan

Possible basic models (b) see right page
Please choose only one.

Q2M-(a) _____ -(b)(c)

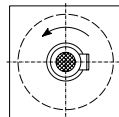
(a)	(b)	(c)	Pn kW	Pwm kW	n 1/min	tA s	m ca. kg	L _{pA2} dB	L _{pA2} dB	n _{max} 1/min
-T3B6Z	-F -H° -J°°	AC	55,00	50,70	980	7	1270	68	65	1159

- ° For the following materials, the constant temperature and/or the rotational speed must be reduced due to strength considerations:
 - ° high-grade steel 1.451
 - °° steel and high-grade steel ... s. p. 40

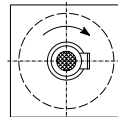
- Constant temperature and/or speed must be reduced, critical bending rotational speed of the motor shaft must be calculated. Please inquire with specification of t max and n max.
- * Motor with reinforced bearings

- (1) Based on Siemens standard norm motor
- (2) L_{pA2} = noise breakout level through the housing back plate (and cooling disc when fitted) excluding noise generated by the motor, at a distance of 1 m at optimal efficiency under free field conditions – for the same characteristic the higher value applies respectively for the basic model U, V, W.
- (3) Limit rotational speeds n max. at temperatures deviating from 100°C for steel and high-grade steel ... s. p. 40

LG = counter-clockwise rotation



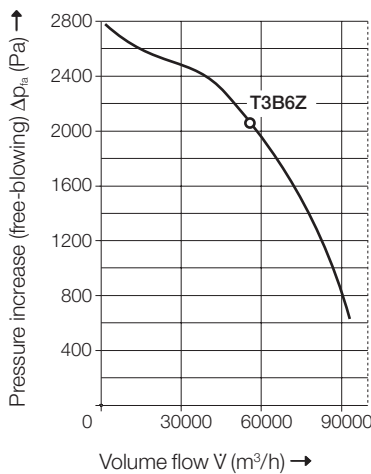
RD = clockwise rotation



Direction of rotation as viewed from the drive side.

Table of measurements to construction size T

	main dimensions					
	D	Y1	Y2	y1	y2	y5
T3	1000	668	776	458	566	230



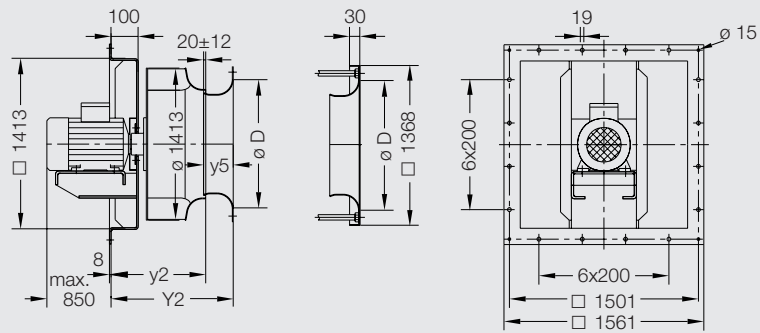
Reference density of the blowing medium
 $\rho_1 = 1,2 \text{ kg/m}^3$
 η_{opt} = Optimal efficiency

The technical data refer to air blowing from all sides at a distance of at least 0.5 x the fan impeller outer diameter. A customer-installed

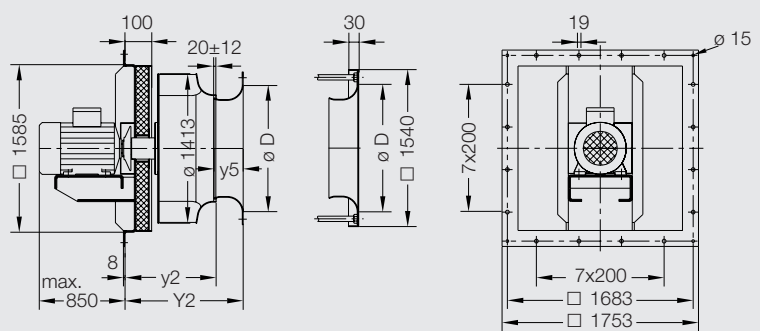
swirl operation considerably changes the data provided here.

Dimensions of the possible basic designs (b)

(b)
Built-in frame
 t_{max}
-F bis 100°C
-H bis 300°C



(b)
Built-in frame
thermolock50 insulation
 t_{max}
-J bis 500°C



See page 42 for further dimensional details. Dimensions in mm. Subject to change. ① Cannot be supplied for types D1.

Basic design

Process air – plug fan, without housing, single inlet, impeller mounted directly on the motor shaft, with plate / mounting frame and loose inlet cone. Radial impeller of robust welded design, backward curved, with dust repellent blades, statically and dynamically balanced to balance grade G6.3 to DIN ISO 1940, performance data based on DIN 24163, accuracy class 2 to DIN 24166.

Motor IP 55, temperature class F, 50 Hz, European voltage, standard specification.

Material Steel. Design -J and -Y impellers for temperatures above 400 °C made of stainless steel 1.4541.

Surface protection contact parts – steel s for constant temperatures up to 100 °C, powder coated, epoxy – polyester based, RAL 7039.

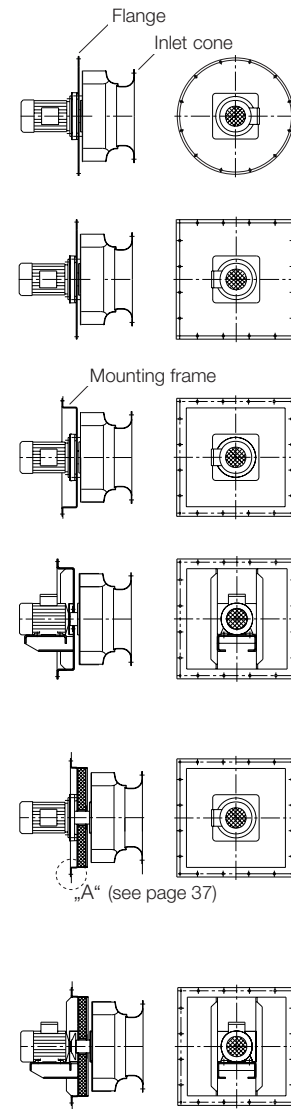
For design size M and larger, parts / components are wet laquered. Polyacrylic based undercoat, polyurethane based 2K coating, RAL 7039.

For constant temperatures between 100 °C and 600 °C silicon resin based heat resistant single-layered varnish, RAL7004:

Labyrinth seals are standard on all designs for constant pumping medium temperatures above 100 °C.

Grundauführung-Varianten

Q2M-_____-(b)_____	Mounting plate Mounting frame	Permissible constant temperature between 20°C and t_{max} °C	Heat loss from mounted plate approx. (noninsulated \pm 100%)
(b)			
-R	Plate	100°C	100 %
-T	Flat/round	250°C	
-U		300°C	
-S	Plate	100°C	100 %
-N	Flat/square	250°C	
-V		300°C	
-Q	Mounting frame	100°C	100 %
-P	Serial 100 mm	250°C	
-W	mounting depth °	300°C	
-F	Mounting frame	100°C	100 %
-H	Serial 100 mm mounting depth ° B 3-motor **	300°C	
-Y	Mounting frame Serial 100 mm mounting depth ° <i>thermolock50</i> -insulation, At >300 ° only operate with inner sealing (see page 38) „Ceramic fiber seal“ and „Mounting frame“ page 42	500°C ^Δ	30 % from <i>thermolock50</i>
-J	Mounting frame Serial 100 mm mounting depth ° <i>thermolock50</i> -insulation, At >300 ° only operate with inner sealing (see page 38) „Ceramic fiber seal“ and „Mounting frame“ page 42 B 3-motor **	500°C ^Δ	30 % from <i>thermolock50</i>



Thermal break on all designs for constant temperatures above 100 °C

° "Individual mounting depth" see page 38

** From motor size > 180

^Δ Always state maximum constant temperature at enquiry or when ordering

As of 400 °C impeller made of stainless steel 1.4541

thermolock50

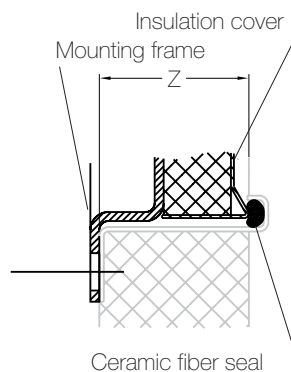
The highly efficient heat insulation from GebhardtVentilatoren

Heat loss is not wanted, it uses expensive energy. The set target, minimizing heat loss, is also applicable for the fans included in the process. Until recently the solution consisted of a thick insulator generally made of rockwool. Fans insulated in this manner are of complicated design and thus expensive. Further to this we now know that often a lot more heat was lost than assumed. By means of extensive test series we have been able to determine the following: How good a fan's thermal insulation is, is not decided by the insulating material's thickness, but by the number and type of thermal bridges.

We designed *thermolock50* based on this knowledge and drastically reduced the thermal bridges.

The result:

Detail A (see page 36)



Reduction of heat loss of PLT *inpack* with *thermolock50* of approx. 70% compared to a non-insulated fan.

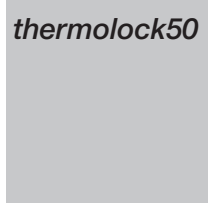
Example:

Fan size K, 300 °C constant flow medium temperature, 20 °C ambient temperature; heat loss only approx. 1 kW/h, measured and confirmed.

This insulator is thus better than 100 mm of rockwool.

Further advantages:

- Fewer thermal bridges in the mounting frame results in an improved contact protection.
- Standard with *thermolock50* is the integrated inner sealing. A rounded seal edge presses against a ceramic fiber seal (see page 38).
- Hot gasses cannot escape into the non-insulated area of the mounting frame and / or the mounting counter-flange. This results in less energy loss and improved contact protection.
- If the flow medium passes below the dewpoint, there will be no breakdown of the insulating material, the insulating effect is constantly preserved.
- Insulating material particles do not penetrate the flow medium.
- The rounded seal edge does not cut into the ceramic fibre seal thus preserving integrity.



Materials, surface protection to inhibit corrosion

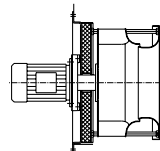
- Zinc coated
Product-contacted steel parts galvanized hot dipped or zinc sprayed, temperature resistant to 200 °C.
Type IBK 61
- Stainless Steel 1.4541, pickled, passivated
- Impeller
Type Impeller 1.4541
Stainless steel 1.4541 is standard for the basic design -J and -Y when temperatures exceed 400 °C, though not pickled or passivated. In this case, order pickling and passivating separately.
- Inlet cone
Type Inlet Cone 1.4541
- Insulation cover of the basic design -J and -Y
Type Insulation cover 1.4541
- Mounting plate
Type Plate 1.4541
- Mounting frame
Type Mounting frame 1.4541

Assembling the inlet cone

For ease of assembly and optimum performance.
Cannot be supplied for the basic designs -R, -T, -U

Example for design -Y:

- Steel
Type ZKD 52 Steel
- Stainless steel
Type ZKD 52 Stainless steel

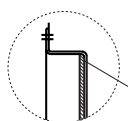
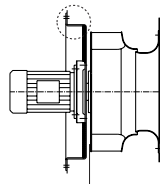


Flange thin-film insulation

Reduces the heat loss through the flange's insulated surfaces by approx. 30%. Cannot be supplied for the basic designs -J and -Y

Example variation P

- Thin-film insulation
Type ZBI 01



Detail A
Thin-film
insulation

Shaft sealing

Aerodynamic shaft sealing by anti fuming bars.

Type ISK 01

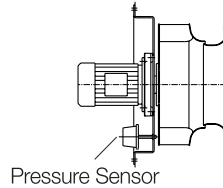
Single row labyrinth sealing is standard for designs when temperatures > 100 °C.

Function monitoring

By means of built-in barometric cell with switching contact.

Example:

Fan basic design P
Type EIP 4_

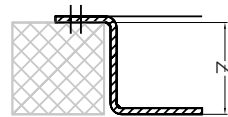


Cannot be supplied for the basic designs -R, -T, -U

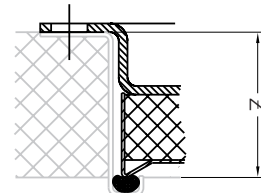
Individual mounting depth

The standard mounting depth for the basic designs -Q, -P, -W, -Y, -F, -H, -J with mounting frame is 100 mm. Different mounting depths can be quoted upon request.

-Q, -P, -W, -F, -H



-Y, -J



Explosion protection

As per VDMA 24169, section 1
Maximum permissible temperature of medium

T1 – T4 60 °C

T1 – T3 135 °C

inner zone 2, outer safe

Type IBX 23

Our scope of service:

- Inlet cone with brass rubbing strip, alternatively made of stainless steel 1.4541 (please indicate when ordering). The extra cost for the respective cone under point "Materials" is not applicable for inlet cone made of stainless steel 1.4541.
- Calculating of bearing/storage life-span, critical speeds and impeller strength.
- To ensure, in the installed position, reliable sealing between flange and environment for the basic designs J and Y, ceramic fibre can be used for the inner seal. Check tightness prior to installation.

Fans for Ex-zone 1 – inner and outer with Ex-protected motors can be quoted upon request.

Please observe the recommendations regarding Ex-protection on page 41.

Motor equipment

- 1 set of PTC-Thermistors
Type MAO 01
- VIK-design reflects the specifications of the "Association of Industrial Power-economy".
Type MAO 10
- Motors, other than those assigned in the basic design, can be quoted upon request.

Contact protection

For square flanges
Type ZSG 20

Ceramic fiber sealing

For inner sealing of the basic designs -J and -Y (see page 37 *thermolock50*)
Type IBD 16

Frequency inverter

Can be quoted upon request:
We supply made-to-measure system solutions to the fans

Please fax to: **Gebhardt**Ventilatoren 07942/101-195

Company

Contact person Telephone

Street

Zip code / City

Fax

Motor

Volume flow V = m^3/h

Pressure increase free discharge at $1,2 \text{ kg}/m^3$ Δp_{fa} = Pa

Constant flow medium temperature t = $^{\circ}C$

Motor power P_N = kW

Speed n = 1/min

Rotational direction/Housing position RD / LG

Fan basic design:

List price

Order-key: Q2M- _____ - _____

Special equipment and accessories at extra cost

Type

- Product-contacted steel parts hot dipped galvanised or zinc sprayed	IBK 61	.....
Stainless steel 1.4541, pickled, passivated		
Impeller 1.4541 .....		.....
Inlet cone 1.4541 .....		.....
Insulation cover 1.4541 .....		.....
Mounting plate 1.4541 .....		.....
Mounting frame 1.4541 .....		.....
- Assembling the inlet cone		
Steel, ZKD 52 .....		.....
Stainless steel 1.4541, ZKD 52 .....		.....
- Flange thin-film insulation	ZBI 01	.....
- Shaft sealing by means of anti-fuming bars	ISK 01	.....
- Function monitoring by means of built-in pressure sensor with switching contact	EIP 4_	.....
- Individual mounting depth Z = mm		.....
- Explosion protection inner zone ,outer zone	IBX __	.....
- Motor equipment		
1 set of PTC-Thermistors	MAO 01	.....
VIK-design	MAO 10	.....
Other motors .....		.....
- Contact protection for flange	ZSG 20	.....
- Ceramic fiber sealing	IBD 16	.....

Process air - fitted fan PLT *in*pac

Without housing, single-inlet, motor shaft mounted impeller, with flange / mounting frame and loose inlet cone. Performance data based on measurements to DIN 24163, accuracy class 2 to DIN 24166

Radial impeller

Robust welded design, backward curved, with dust repellent blades, statically and dynamically balanced. Balance grade G 6.3 to DIN ISO 1940

Drive motor

IP 55, temperature class F, 50 Hz, European voltage, standard specification design. Thermal break for the motor shaft and shaft gap-type seals are standard for constant flow medium temperatures above 100 $^{\circ}C$.

Flange/mounting frame

Optional:

- Flat, round
- Flat, square
- As mounting frame
- With mounting frame and *thermolock50*-insulation

For other designs see pages 36-38, as well as pages 6-35

Details

rpm limits – Temperature limits – Material

The breaking point rpm n_{max} listed in the catalogue is applicable for steel impellers at a pressurising medium breaking point temperature of $t_{max} = 100\text{ °C}$.

For the impeller material steel and alloyed steel 1.4541 the maximum rpm and minimum temperature spanning the range of 20 °C to 500 °C can be determined using the following table and the equation: $n_{max1} = n_{max} \times k_n$

rpm-factor k_n

Maximum temperature $t_{max1}\text{ °C}$	rpm-factor k_n impeller material Steel	1.4541
20	1,178	0,894
40	1,135	0,875
60	1,087	0,858
80	1,043	0,843
100	1,000	0,830
120	0,986	0,820
140	0,976	0,812
160	0,966	0,798
180	0,952	0,788
200	0,940	0,779
220	0,923	0,769
240	0,907	0,760
250	0,897	0,755
260	0,889	0,750
280	0,873	0,740
300	0,854	0,731
320	0,840	0,723
340	0,820	0,714
360	0,800	0,711
380	0,780	0,705
400	0,760	0,699
420		0,695
440		0,690
460		0,687
480		0,685
500		0,683

Determining the Maximum speed

Example:
Selected fan
Q2M-J3B2N-WAB

Maximum rpm
 $n_{max} = 3,806\text{ rpm}$

Impeller material stainless steel 1.4541

Required operating temperature
 $t_{max} = 120\text{ °C}$

Can the fan be operated with a stainless steel impeller at

120 °C with $n = 2,920\text{ rpm}$

Answer:
 $n_{max1} = 3806\text{ rpm} \times 0,820 = 3.121\text{ rpm}$

Determining the maximum temperature

Example:
Up to which maximum temperature t_{max1} can the fan from "Example 1" be operated when $n = 2,920\text{ rpm}$?

Answer:
 $k_n = n/n_{max} = 2,920/3,806 = 0.767$
Thus from the table $t_{max} = 225\text{ °C}$.
Exact value upon request

The constant temperature t_{max} listed in the catalogue signifies:

- The fan is equipped such that t_{max} has no negative influence on the bearing life time.
- The impeller's strength at t_{max} and the listed rpm (n) is ensured for steel as well as stainless steel 1.4541. The t_{max} for fan marked with ° or °° must be reduced due to structural limitations in order to operate the fan at the rpm (n) listed in the catalogue. Further calculations must be made for fan marked with ?. Please contact us referring to t_{max} and n_{max} . We will be happy to recommend ways in which you can optimally use your Q2M *inpact*.

Frequency inverter

Most of the PLT *inpact* impellers have great reserves of strength and thus rpm reserves which you can optimally utilize with a frequency inverter (see determining of maximum rpm, page 40).

In real terms this means that you may be able to select a smaller, less expensive PLT *inpact* and operate it above 50 Hz in order to achieve the required operating point. The rpm reserve can also be regarded as a safety margin if more power is required than was initially planned for.

Please note that the power requirement increases cube-fold of the rising rpm. The installed motor power must be checked. A more powerful motor may be required.

With a frequency inverter it is possible to reduce the PLT *inpact* rpm (n) to approx. 10% of the catalogue's listed rpm. In this case we recommend motors with PTC-Thermistors. The reverse automatic gain control must be limited for flow medium temperatures exceeding 100 °C because the efficiency of the thermal break decreases at slower rpm.

In general attention should be paid to the influence of the rpm on the technical data listed in the catalogue such as, for example, the characteristics or the sound levels.

We also supply the PLT *inpact* complete with suitable power control.

Proportional fan laws

$$n_1/n_2 = V_1/V_2$$

$$(n_1/n_2)^2 = \Delta p_1/\Delta p_2$$

$$(n_1/n_2)^3 = Pw_1/Pw_2$$

Note constant density

The effect of rpm changes on volume flow, pressure and shaft power can be calculated using the fan laws.

Selection principle

- The preselection is based on the following:
- The listed operating points are nominal values.
 - The accurate operating points can be extracted from the characteristics. They generally lie within a range of +/- 6% of the nominal value.
 - The smallest fan will be selected when there are several similar sizes having the least motor power.
 - If you prefer other selection criteria, we will be happy to choose for you.

Catalogue data

We reserve the right to make changes to the dimensions and technical data listed in this catalogue to reflect enhancements.

All specifications reflect the status at time of printing.

Advice regarding explosion protection

Fans operating in potentially explosive areas and /or used to convey potentially explosive mediums must comply with the guide lines of the Chemical Industry Association (Ex-RL) or alternatively the VDMA 24169, section 1. The regulation concerning electrical systems in potentially explosive rooms is applicable for electrical operating resources.

Fans that are to be operated in Zone 1 or 2 are not approval-obliged and thus do not need to be approved by the PTB.

Conformance to the Ex-guide lines and VDMA guide lines is self-regulatory by the manufacturers, vendors and operators. This regulation is justifiable because as per the Ex-RL the effectiveness of ventilation with fans must be tested by a competent person.

In general the following ignition sources should be taken into account with our standard designs:

- Hot surfaces, e.g. from friction t, bearing seizure or from impeller blockage
- Sparks caused by rubbing, grinding and banging, e.g. due to the impeller catching on a fixed component.
- Sparks caused by electrostatic discharge, non-conducting components, e.g. very thick coatings.

The customer must ensure the following (extract):

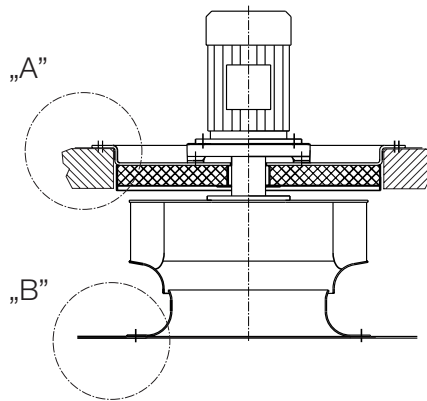
- On the suction side and in the fan surrounding area the temperature limits + 60 °C (T1 – T4) alternatively 135 °C (T1 – T3) and a pressure of 1.1 bar may not be exceeded.
- The fan must be protected from the ingress of foreign bodies.

- The fan must not be subjected to excessive stresses from the ducting.
- The materials of construction must be resistant to the localized mediums.
- Non-conducting components must be bridged with an earth connection.
- If the operating point changes with regard to the purchase order, alternatively the order confirmation, then it must be ensured that there is no temperature rise of the flow medium through the fan.
- Bearings must be regularly checked for irregular noises and temperatures.
- The operating rpm shown on the name plate must not be exceeded.
- Check prior to installation and during maintenance to see if the permissible bearing high frequency vibration values are maintained.
- Check prior to installation and during maintenance that the gap between impeller and housing has not changed due to transport, assembly or operation. It must be set in compliance with the specification.

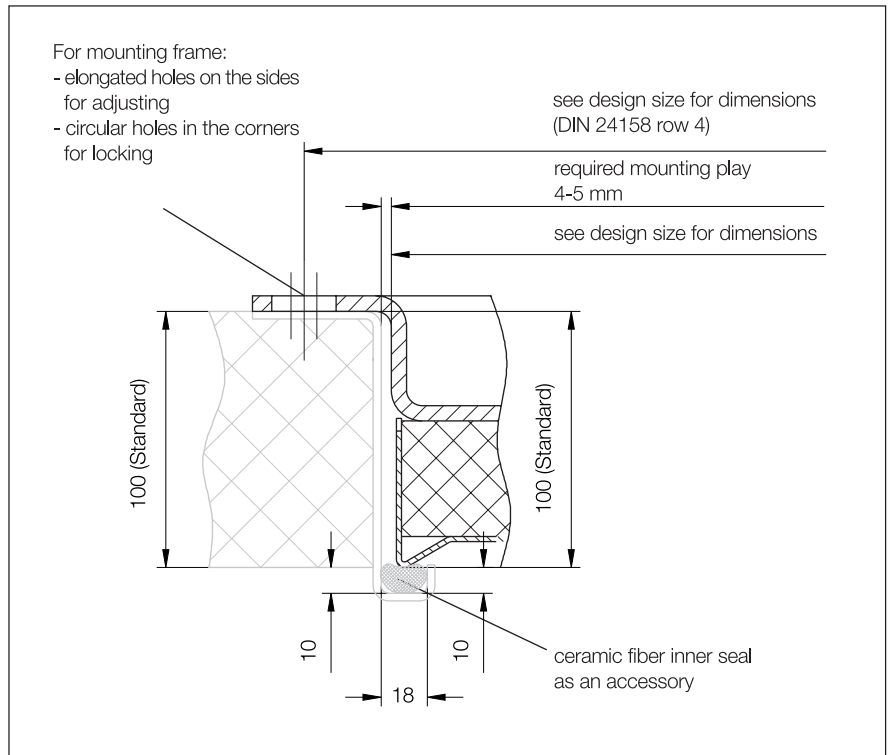
Name plate information and instruction manuals must be followed.

Please read technical publications or visit us on the Internet at www.gehardt.de for any changes to standards and specifications.

Dimensional details for installation

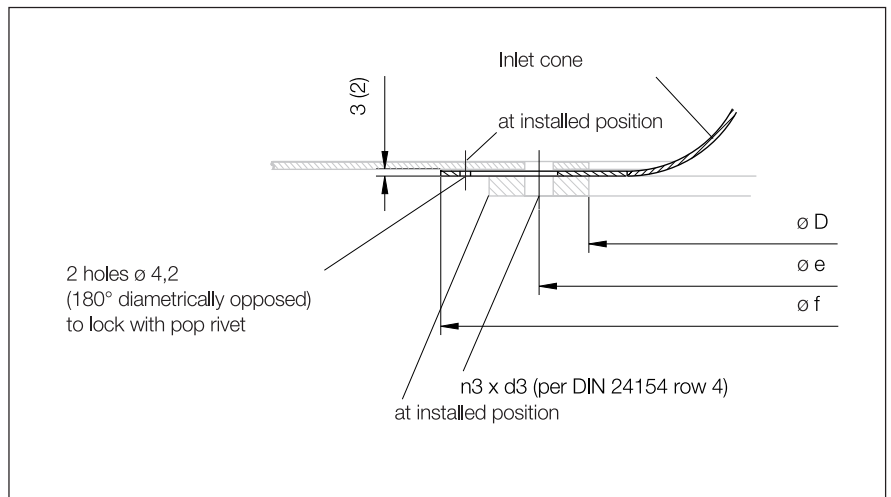


Mounting frame - detail A



Inlet cone - detail B

D	d3	e	f	n3
200	12	241	300	8
225	12	265	330	8
250	12	292	350	8
280	12	332	390	8
315	12	366	430	8
355	12	405	470	8
400	12	448	510	12
450	12	497	570	12
500	12	551	630	12
560	14	629	710	16
630	14	698	780	16
710	14	775	855	16
800	14	861	945	24
900	14	958	1040	24
1000	14	1067	1150	24
1120	18	1200	1290	32



Trademark protection has been applied for *inpact* and *thermolock50*.

Your System-Partner
GebhardtVentilatoren
GmbH & Co.

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Fans You Need