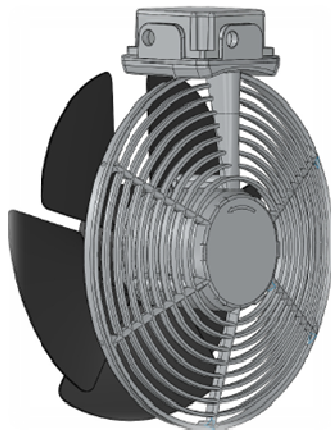


**Comparison of
external fans Size 132 to Size 200
current series with new series
2-pole version**



In the course of the continuous improvement process, WISTRO will replace the successful IL external fan series with the new ILI external fan series from September 2014. In the first step, the Sizes 132 and 160 (and therefore also Size 180 and Size 200) benefit from the improvements which are explained below.

Changes to the product

- Use of the internal intake space is retained. This enables the installation of the external fan directly next to surfaces, whereby a volume flow of about 80% can still be achieved. In addition, this enables very short installation times.
- As with the current IL series, the new ILI series also fulfils the ErP Directive (see Annex, page 15).
- In future, the terminal box will be flush with the rear edge (see Annexes, pages 4, 5, 6). Under certain conditions, this leads to a reduction in overall length. The dimensions of the external fan units remain unchanged, which enables simple replacement of the current series (see Annex, page 6).
- The fan grilles as well as the transition area on the outer edge of the fan flange have been optimised according to aerodynamic criteria, with unchanged noise emissions (see Annexes, pages 7, 11).
- A shorter physical length is guaranteed by the new plug connection version, as in future, the plug connector can be mounted at the position of the terminal box (see Annex, page 4, Fig. 2). With the current series, the plug is installed on the b side bearing cover of the external fan unit.
- Higher efficiency is achieved by the use of the new motor for Size 160, which can now also be used as a single phase, two pole, 60Hz version. This enables a further reduction in the number of variants.
- In future a 400/690V version will be available for Sizes 132 to 160.
- Due to the changed motors, the electrical data differ (see Annexes 8 and 9, 12 and 13).
- In spite of the use of the same fan, the volume flow is slightly increased (see Annexes 10, 14). The reason for this is the better aerodynamic design of the air intake grille.
- The square form of the terminal box enables installation in any required direction.

Conclusion: With the new ILI series, WISTRO ensures the consistent further development of the current IL series with regard to technical and construction aspects, and extends the approach of providing a modular system for all fields of application.

With the introduction of the new fan units, the fan tubes for Sizes 180 and 200 will be changed.

Due to a new production method, the contour will be changed slightly, however without impairing the current dimensions and technical parameters (see Annex, page 6).

In future the tubes will be provided with longer fastening holes in order to facilitate installation.

The new generation of WISTRO external fans –
Annex

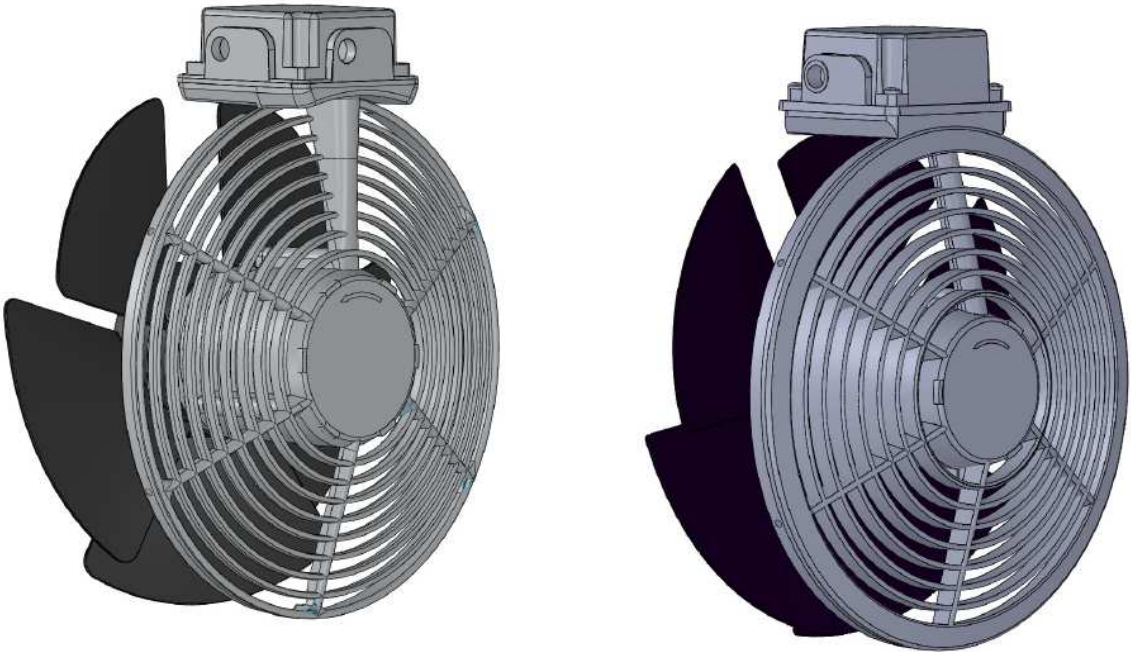


Figure 1: Comparison of the new Size 160 (left) with the current version (right)

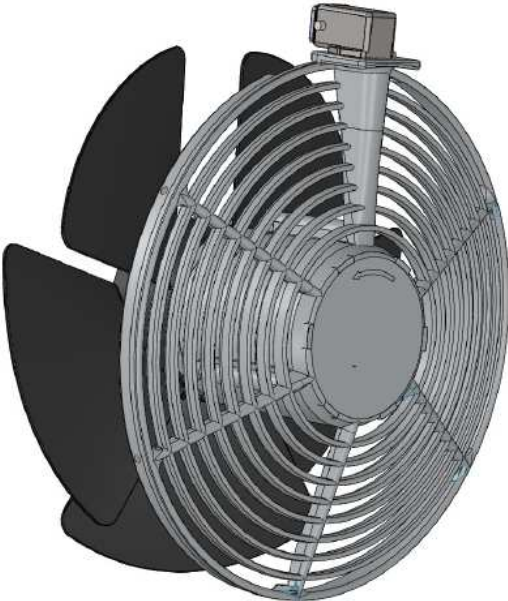
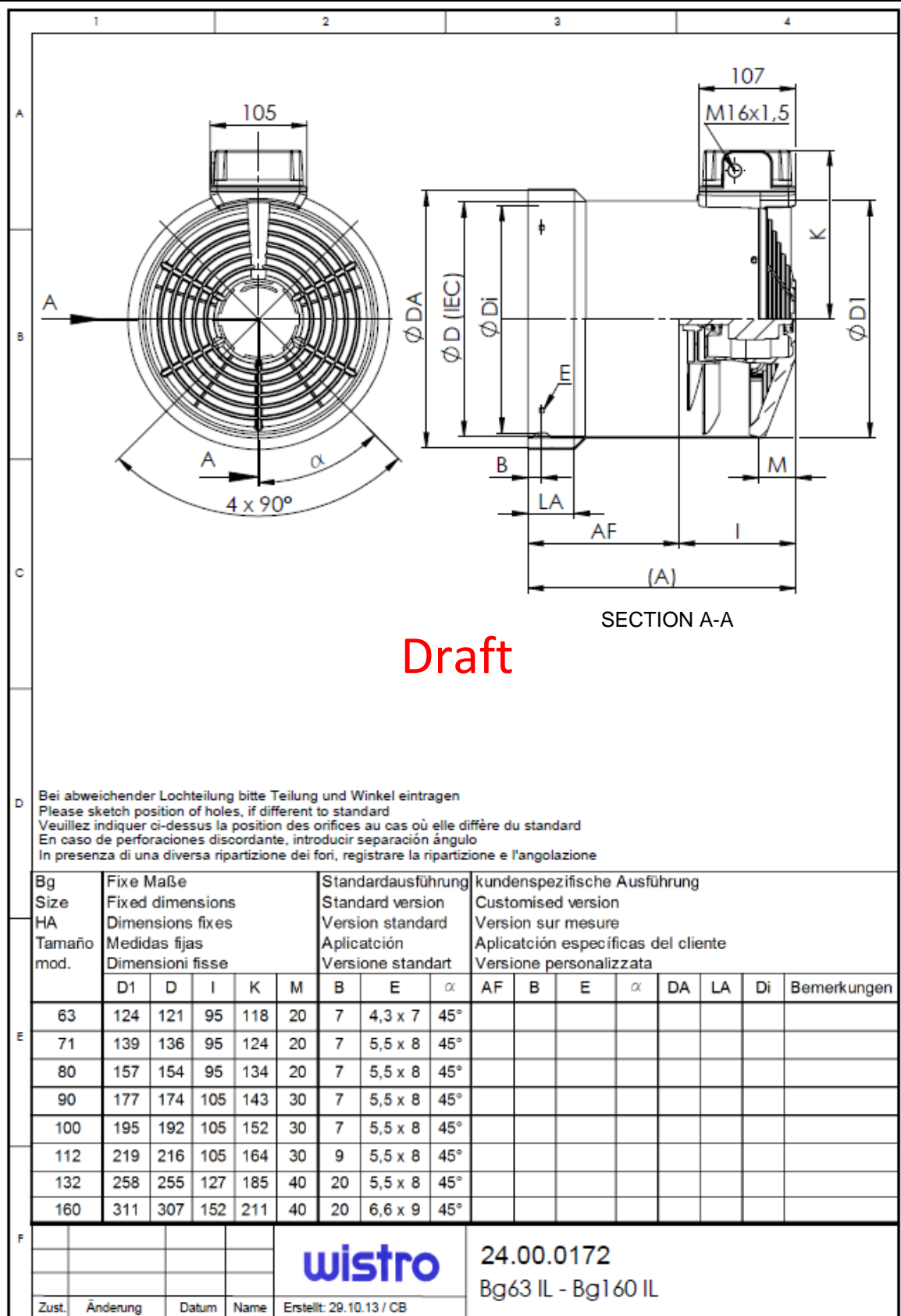
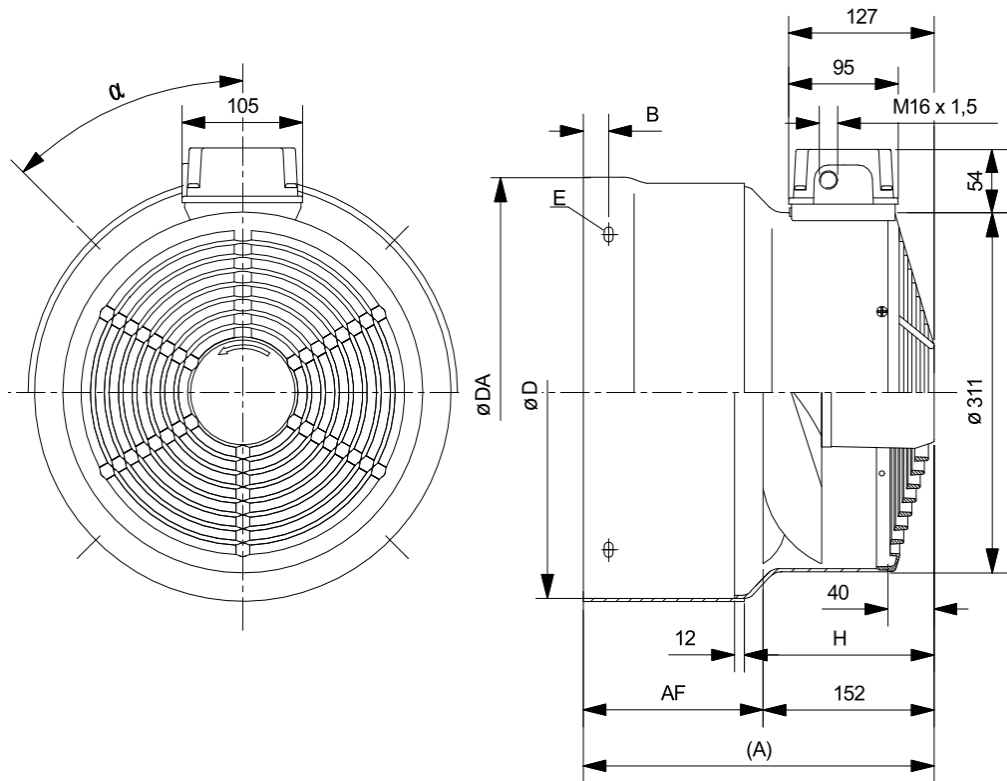


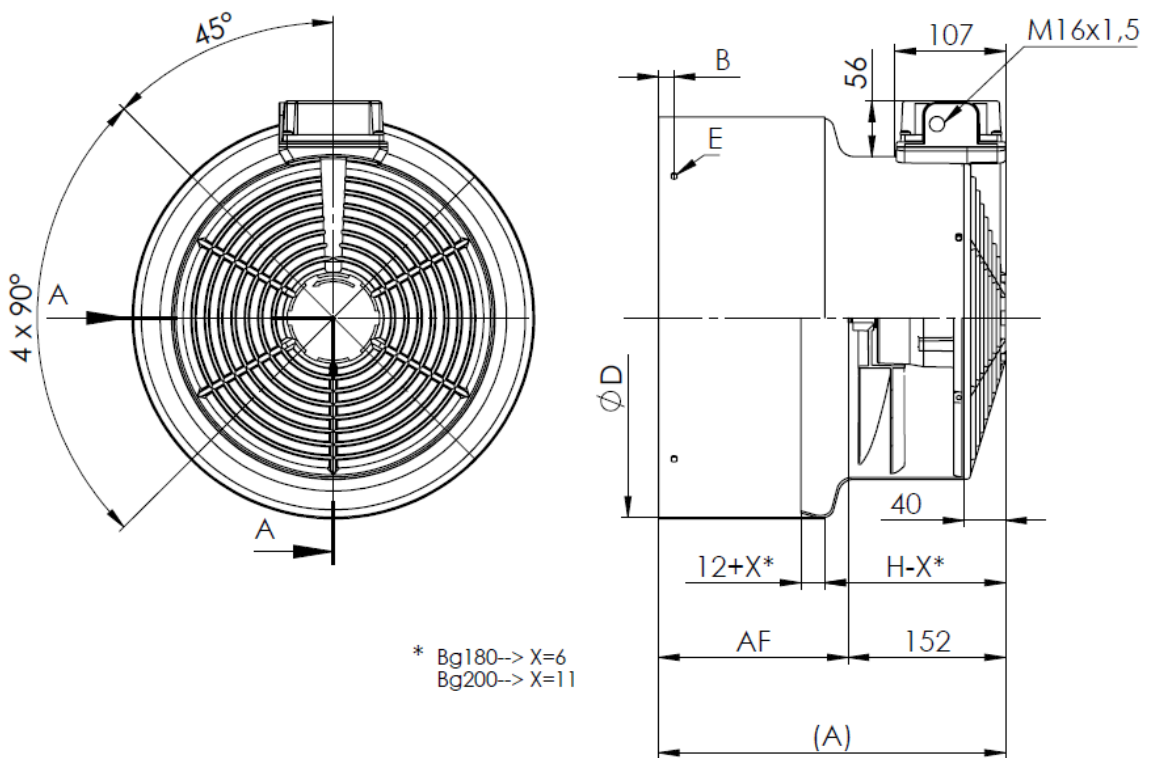
Figure 2: Size 160 plug connector version



Current version



New version



Sound power and sound pressure level for the current and new flange version Size 132, 2-pole

	Operating mode	Sound power level [dB(A)]	Sound pressure level [dB(A)]	Speed [rpm]
Size 132 New version	400V 50Hz	83.6	67.3	2800
	460V 60Hz	87.6	71.3	3280
Size 132 Current version	400V 50Hz	84.0	67.7	2820
	460V 60Hz	85.7	69.4	3303

- The data were measured with a reference bearing cover attached.
- The measurement was made with 10 measuring points with an envelope area of 42.6m³ (3m x 3m x 2.8m).

Data sheet:		Size132		Mu 1752					
Motor type:		C36 IL-2-2		Fan impeller: Ø250					
Operating mode	f (Hz)	U (V)	I (A)	S(VA)/P (W)	cos Phi	n (1/min)	C (µF)		
1-1 (Δ)	50	190	0,446	84,4 84,1	0,996	2610	6,0		
		200	0,429	85,8 85,6	0,997	2700	6,0		
		220	0,418	91,9 91,3	0,993	2750	6,0		
		230	0,418	96,3 95,2	0,988	2780	6,0		
		240	0,419	100,4 98,3	0,979	2800	6,0		
		254	0,436	110,9 106,5	0,96	2820	6,0		
		265	0,457	121,1 114,2	0,943	2825	6,0		
		277	0,488	135,4 124,8	0,922	2830	6,0		
		290	0,523	151,6 136,6	0,901	2840	6,0		
		303	0,569	172,7 152,3	0,882	2840	6,0		
		320	0,631	262,1 175,1	0,866	2845	6,0		
		1-1 (Δ)	60	190	0,618	117,9 116,1	0,985	2360	6,0
200	0,621			124,2 122,9	0,989	2550	6,0		
220	0,614			134,9 134,4	0,997	2910	6,0		
230	0,609			139,9 139,6	0,998	3020	6,0		
240	0,605			145,3 145,1	0,999	3100	6,0		
254	0,596			151,7 151,5	0,999	3180	6,0		
265	0,588			156,4 156,1	0,998	3240	6,0		
277	0,587			162,9 162,6	0,998	3280	6,0		
290	0,585			170 169,7	0,998	3320	6,0		
303	0,586			177,4 176,9	0,997	3335	6,0		
320	0,597			191,4 189,9	0,993	3350	6,0		
3-Δ	50			329	0,165	94,2 77,80	0,83	2700	
		346	0,169	102,3 81,00	0,79	2730			
		381	0,183	121,6 87,30	0,72	2780			
		400	0,192	133,1 90,70	0,68	2800			
		416	0,207	150,0 95,90	0,64	2810			
		460	0,248	197,5 113,40	0,57	2830			
		480	0,271	227,2 125,10	0,55	2840			
		500	0,300	261,6 140,20	0,54	2850			
		525	0,331	303,7 160,20	0,53	2850			
		554	0,369	355,7 188,30	0,53	2850			
		3-Δ	60	329	0,215	122,9 113,4	0,92	2980	
				346	0,211	127,2 116,2	0,91	3040	
381	0,207			137,4 122,4	0,89	3150			
400	0,203			141,9 123,9	0,88	3190			
416	0,204			148,8 126,8	0,85	3230			
460	0,212			169,5 134,4	0,79	3300			
480	0,220			183,8 139,1	0,76	3330			
500	0,233			204,9 148,4	0,72	3340			
525	0,245			224,4 154,1	0,69	3350			
554	0,268			260,7 167,2	0,64	3360			
575	0,288			290,4 180,0	0,62	3390			
604	0,316			334,8 196,7	0,59	3400			
3-Δ	50	190	0,285	94,2 77,80	0,83	2700			
		200	0,293	102,3 81,00	0,79	2730			
		220	0,317	121,6 87,30	0,72	2780			
		230	0,333	133,1 90,70	0,68	2800			
		240	0,358	150 95,90	0,64	2810			
		265	0,430	197,5 113,40	0,57	2830			
		277	0,470	227,2 125,10	0,55	2840			
		290	0,519	261,6 140,20	0,54	2850			
		303	0,573	303,7 160,20	0,53	2850			
		320	0,639	355,7 188,30	0,53	2850			
		3-Δ	60	190	0,373	122,9 113,4	0,92	2980	
				200	0,365	127,2 116,2	0,91	3040	
220	0,359			137,4 122,4	0,89	3150			
230	0,351			141,9 123,9	0,88	3190			
240	0,353			148,8 126,8	0,85	3230			
265	0,367			169,5 134,4	0,79	3300			
277	0,381			183,8 139,1	0,76	3330			
290	0,403			204,9 148,4	0,72	3340			
303	0,424			224,4 154,1	0,69	3350			
320	0,465			260,7 167,2	0,64	3360			
332	0,498			290,4 180,0	0,62	3390			
349	0,548			334,8 196,7	0,59	3400			

Measured with reference bearing cover / Values for the mode of operation Δ were calculated 21.03.2014, LM

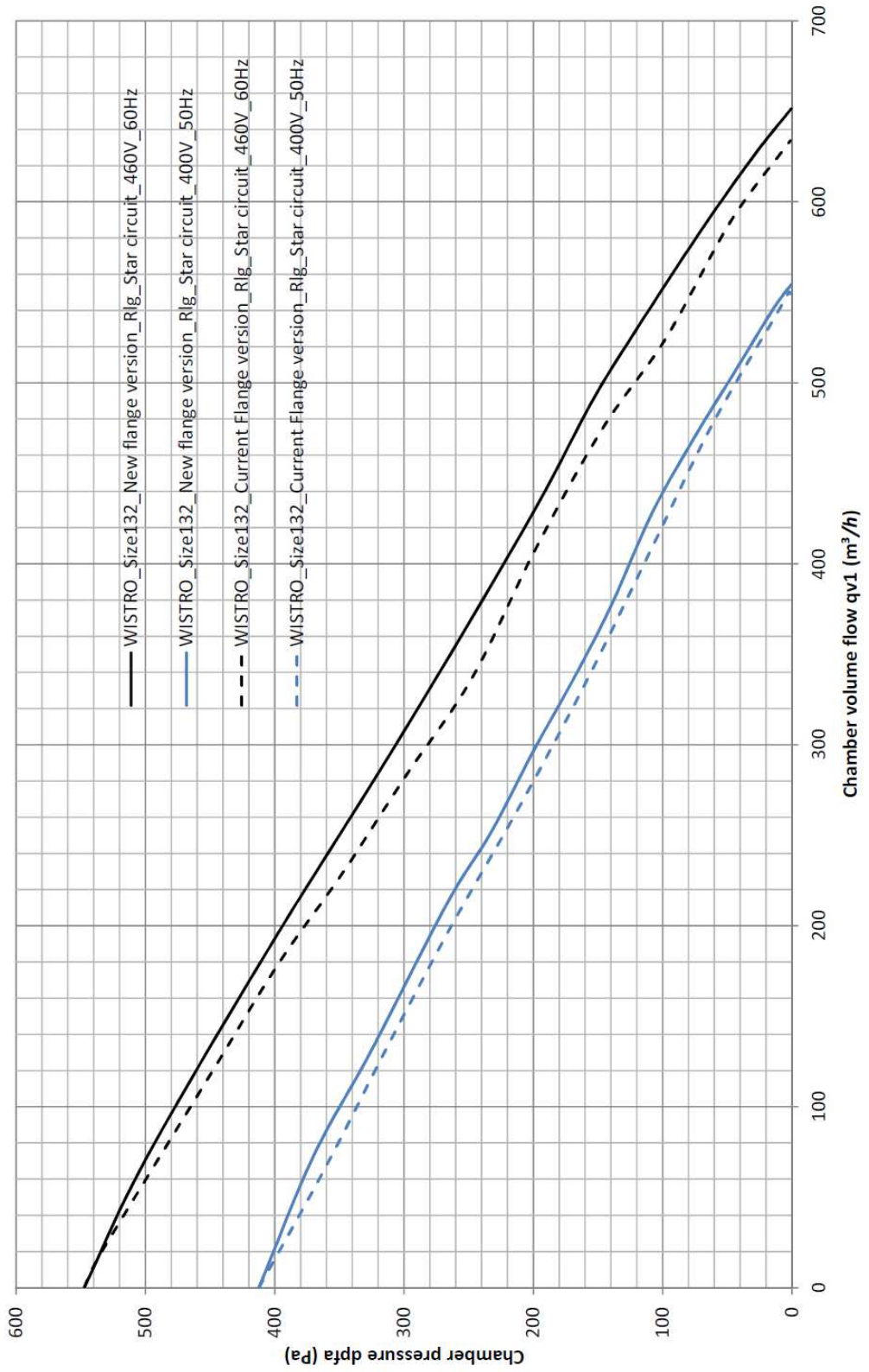
Data sheet:		Size132	Be Mu 1399 ATAS		CURRENT SERIES					
Motor type:		C35 IL -2-2	Fan impeller: Ø250							
Operating mode	f (Hz)	U (V)	I (A)	S(VA)/P (W)	cos Phi	n (1/min)	Volume flow (m³/h)	C (μF)		
1-Δ (Δ)	50	190	0,411	78/76	0,97	2702		5,0		
		200	0,395	79/77	0,97	2755		5,0		
		220	0,370	82/79	0,97	2812		5,0		
		230	0,367	84/81	0,97	2826		5,0		
		240	0,363	87/84	0,96	2848		5,0		
		265	0,381	101/92	0,91	2870		5,0		
		277	0,402	112/98	0,88	2880		5,0		
Operating mode	f (Hz)	U (V)	I (A)	S(VA)/P (W)	cos Phi	n (1/min)	Volume flow (m³/h)	C (μF)		
1-Δ (Δ)	60	200	0,702	141/133	0,95	2321		5,0		
		220	0,640	141/138	0,98	2873		5,0		
		230	0,603	142/138	0,98	3025		5,0		
		240	0,585	141/139	0,99	3135		5,0		
		254	0,565	144/143	0,99	3225		5,0		
		265	0,549	146/145	1,00	3278		5,0		
		277	0,539	149/149	1,00	3315		5,0		
Operating mode	f (Hz)	U (V)	I (A)	S(VA)/P (W)	cos Phi	n (1/min)	Volume flow (m³/h)			
3-λ	50	346	0,171	103/76	0,74	2770				
		380	0,176	116/79	0,68	2804				
		400	0,181	126/81	0,64	2825				
		415	0,187	135/84	0,63	2832				
		420	0,189	138/84	0,61	2837				
		440	0,199	152/88	0,58	2855				
		460	0,212	169/92	0,54	2864				
		480	0,228	190/97	0,51	2874				
		500	0,250	216/105	0,49	2884				
		525*	0,286	263/124	0,47	2885				
		550*	0,326	314/142	0,45	2888				
		Operating mode	f (Hz)	U (V)	I (A)	S(VA)/P (W)	cos Phi	n (1/min)	Volume flow (m³/h)	
3-λ	60	346	0,231	138/121	0,87	3049				
		380	0,221	145/124	0,86	3161				
		400	0,215	149/126	0,84	3205				
		415	0,212	152/126	0,83	3231				
		420	0,212	155/127	0,82	3246				
		440	0,208	159/127	0,8	3277				
		460	0,208	168/131	0,78	3303				
		480	0,208	173/130	0,75	3330				
		500	0,211	183/133	0,73	3347				
		575	0,236	235/145	0,61	3404				
		Operating mode	f (Hz)	U (V)	I (A)	S(VA)/P (W)	cos Phi	n (1/min)	Volume flow (m³/h)	
		3-Δ	50	200	0,295	102/76	0,74	2759		
220	0,306			117/80	0,68	2804				
230	0,316			126/82	0,66	2820				
240	0,327			136/83	0,61	2833				
265	0,372			171/91	0,53	2860				
275	0,399			190/97	0,51	2873				
290	0,451			227/106	0,47	2885				
303*	0,501			262/122	0,47	2885				
320*	0,580			321/145	0,45	2888				
Operating mode	f (Hz)			U (V)	I (A)	S(VA)/P (W)	cos Phi	n (1/min)	Volume flow (m³/h)	
3-Δ	60	200	0,397	138/120	0,87	3037				
		220	0,378	144/123	0,85	3145				
		230	0,368	147/123	0,84	3195				
		240	0,369	154/126	0,82	3224				
		265	0,361	155/128	0,77	3303				
		275	0,366	175/132	0,75	3315				
		290	0,373	188/134	0,71	3352				
		332	0,415	239/146	0,61	3403				

Measured with reference bearing cover

*Added Mar 25.11.2010

Produced:Marconi_Rlg_14.01.10

The volume flow measurement was performed with the Wistro reference bearing cover



Sound power and sound pressure level for the current and new flange version Size 160, 2-pole

	Operating mode	Sound power level [dB(A)]	Sound pressure level [dB(A)]	Speed [rpm]
Size 160 New version	400V 50Hz	88.9	72.6	2780
	460V 60Hz	93.2	76.9	3250
Size 160 Current version	400V 50Hz	88.2	71.9	2720
	460V 60Hz	90.0	73.7	3047

- The data were measured with a reference bearing cover attached.
- The measurement was made with 10 measuring points with an envelope area of 42.6m³ (3m x 3m x 2.8m).

Data sheet:		Size160		Mu 1748						
Motor type:		C62 IL-2-2		Fan impeller: Ø300						
Operating mode	f (Hz)	U (V)	I (A)	S(VA)/P (W)	cos Phi	n (1/min)	C (µF)			
1~L (Δ)	50	190	1,117	212,3	211,5	0,996	2580	12,0		
		200	1,066	212,6	212,2	0,998	2630	12,0		
		220	0,999	218,6	218,3	0,998	2730	12,0		
		230	0,968	223,5	223,1	0,998	2760	12,0		
		240	0,949	228	227,1	0,996	2780	12,0		
		265	0,953	252,8	246,1	0,973	2810	12,0		
		290	1,049	305,1	281,2	0,922	2830	12,0		
		303	1,125	340,6	304,9	0,895	2840	12,0		
1~L (Δ)	60	190	1,464	282,3	275,9	0,978	2120	12,0		
		200	1,501	301,1	295,6	0,982	2290	12,0		
		220	1,517	334,5	331,6	0,991	2660	12,0		
		230	1,502	345,6	343,9	0,995	2820	12,0		
		240	1,492	358,5	357,7	0,998	2950	12,0		
		254	1,454	369,1	368,7	0,999	3080	12,0		
		265	1,435	379,8	379,1	0,998	3150	12,0		
		277	1,409	390,5	389,5	0,997	3220	12,0		
		290	1,365	396,4	395,2	0,997	3260	12,0		
		303	1,356	410,4	409,4	0,997	3300	12,0		
		3~Λ	50	329	0,379	218,5	194,5	0,890	2690	
346	0,375			227,9	197,7	0,867	2720			
381	0,381			255,5	206,6	0,808	2750			
400	0,393			275,5	212,7	0,772	2780			
416	0,408			298,6	219,3	0,734	2800			
460	0,473			379,2	241,4	0,637	2820			
476	0,512			427,9	256,9	0,601	2830			
500	0,578			510,7	285,7	0,559	2840			
525	0,641			587,3	313,6	0,533	2850			
550	0,736			716,2	368,9	0,515	2850			
3~Λ	60			329	0,535	309	290,3	0,939	2900	
				346	0,521	317,1	296,9	0,936	2970	
				381	0,496	335,1	310,3	0,926	3100	
		400	0,488	341,8	313,8	0,918	3140			
		416	0,485	353,8	321,9	0,910	3180			
		460	0,471	379,2	329,8	0,869	3250			
		480	0,475	399,7	337,8	0,845	3290			
		500	0,484	426,5	346,6	0,813	3320			
		525	0,499	461,7	356,6	0,773	3340			
		575	0,566	572,1	391,3	0,684	3360			
		600	0,622	660,6	424,8	0,643	3380			
		3~Δ	50	190	0,657	218,5	194,5	0,890	2690	
				200	0,649	227,9	197,7	0,867	2720	
220	0,660			255,5	206,6	0,808	2750			
230	0,680			275,5	212,7	0,772	2780			
240	0,706			298,6	219,3	0,734	2800			
265	0,820			379,2	241,4	0,637	2820			
275	0,887			427,9	256,9	0,601	2830			
290	1,001			510,7	285,7	0,559	2840			
303	1,110			587,3	313,6	0,533	2850			
320	1,275			716,2	368,9	0,515	2850			
3~Δ	60			190	0,927	309	290,3	0,939	2900	
				200	0,902	317,1	296,9	0,936	2970	
				220	0,859	335,1	310,3	0,926	3100	
		230	0,845	341,8	313,8	0,918	3140			
		240	0,840	353,8	321,9	0,910	3180			
		265	0,816	379,2	329,8	0,869	3250			
		277	0,822	399,7	337,8	0,845	3290			
		290	0,839	426,5	346,6	0,813	3320			
		305	0,864	461,7	356,6	0,773	3340			
		332	0,981	572,1	391,3	0,684	3360			
		349	1,078	660,6	424,8	0,643	3380			

Measured with reference bearing cover / Values for the mode of operation Λ were calculated

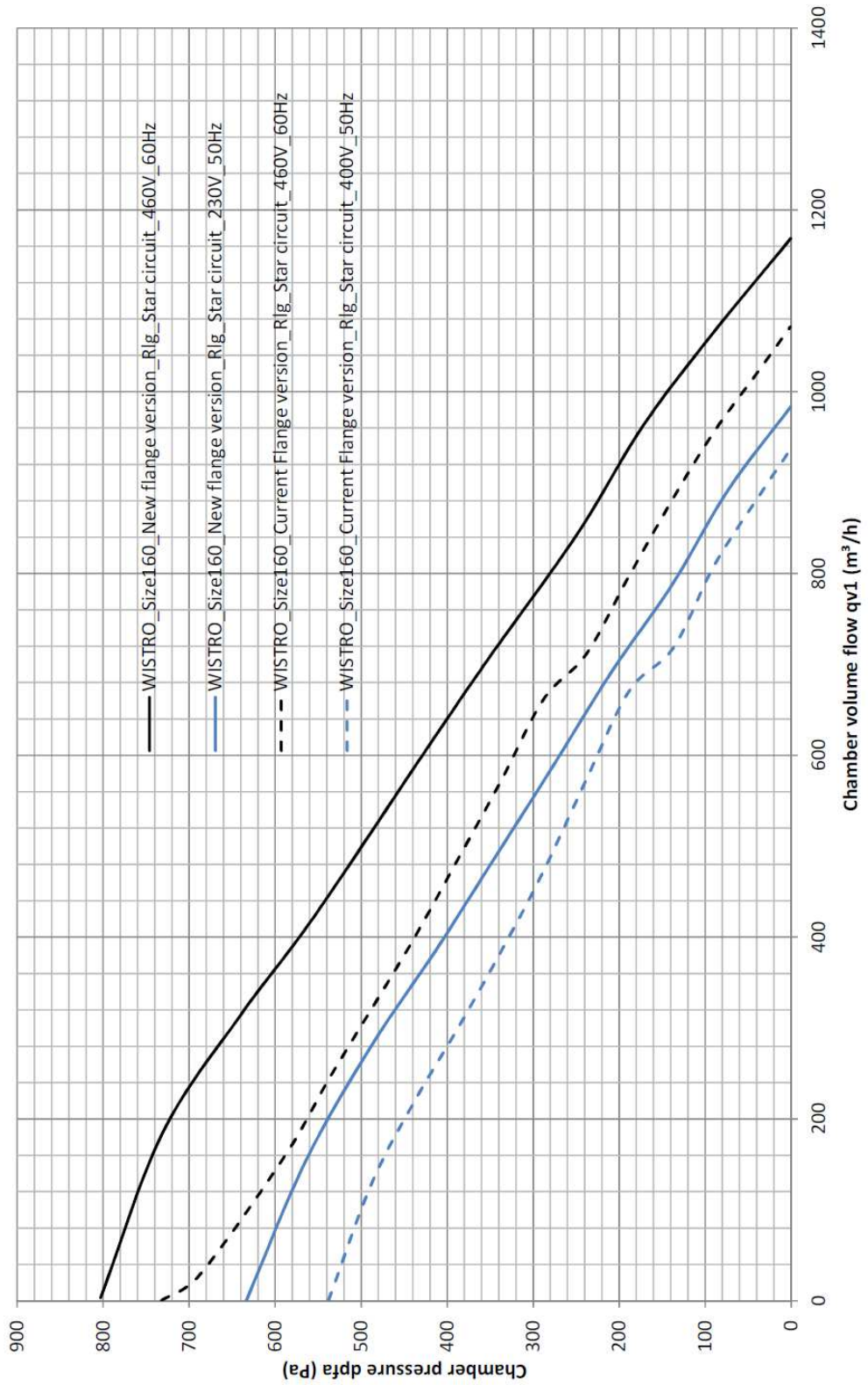
28.03.2014, LM

Data sheet:		Size160	Be Mu 1397 ATAS		CURRENT SERIES					
Motor type:		C60 IL-2-2	Fan Impeller: Ø300							
Operating mode	f (Hz)	U (V)	I (A)	S(VA)/P (W)	cos Phi	n (1/min)	Volume flow (m3/h)	C (µF)		
1-Δ (Δ)	50	200	1,050	210/208	0,99	2500		12		
		210	1,010	212/210	0,99	2580		12		
		220	0,970	214/213	1,00	2650		12		
		230	0,960	221/220	1,00	2700		12		
		240	0,940	225/225	1,00	2725		12		
		265	0,910	241/240	1,00	2780		12		
		277	0,900	249/248	0,99	2805		12		
		289	0,900	261/258	0,99	2810		12		
Operating mode	f (Hz)	U (V)	I (A)	S(VA)/P (W)	cos Phi	n (1/min)	Volume flow (m3/h)	C (µF)		
1-Δ (Δ)	60	200*								
		220*								
		230*								
		240*								
		254*								
		277*								
Operating mode	f (Hz)	U (V)	I (A)	S(VA)/P (W)	cos Phi	n (1/min)	Volume flow (m3/h)			
3-Δ	50	329	0,383	219/189	0,87	2580				
		346	0,375	225/192	0,86	2630				
		380	0,367	242/199	0,82	2700				
		400	0,365	253/201	0,80	2720				
		415	0,365	263/204	0,78	2750				
		420	0,366	267/206	0,77	2755				
		440	0,372	263/209	0,74	2780				
		460	0,379	302/214	0,71	2798				
		480	0,392	326/220	0,68	2810				
		500	0,412	356/226	0,63	2823				
		525	0,443	402/238	0,59	2840				
Operating mode	f (Hz)	U (V)	I (A)	S(VA)/P (W)	cos Phi	n (1/min)	Volume flow (m3/h)			
3-Δ	60	329	0,567	323/290	0,90	2492				
		346	0,558	335/302	0,90	2584				
		380	0,536	353/319	0,90	2764				
		400	0,522	362/327	0,90	2849				
		415	0,508	366/329	0,90	2907				
		420	0,507	370/332	0,90	2914				
		440	0,492	375/334	0,89	2990				
		460	0,485	386/342	0,89	3047				
		480	0,475	396/345	0,87	3093				
		500	0,466	403/347	0,86	3142				
		525	0,462	420/354	0,84	3190				
		575	0,457	455/360	0,79	3262				
		Operating mode	f (Hz)	U (V)	I (A)	S(VA)/P (W)	cos Phi	n (1/min)	Volume flow (m3/h)	
3-Δ	50	190	0,648	213/186	0,87	2550				
		200	0,638	221/190	0,86	2600				
		220	0,629	240/197	0,82	2678				
		230	0,628	251/200	0,80	2710				
		240	0,633	263/204	0,78	2738				
		265	0,660	303/216	0,71	2788				
		275	0,677	323/220	0,68	2802				
		290	0,728	365/232	0,63	2825				
		305	0,796	420/247	0,59	2837				
		320*	0,869	618/265	0,56	n.e.				
		Operating mode	f (Hz)	U (V)	I (A)	S(VA)/P (W)	cos Phi	n (1/min)	Volume flow (m3/h)	
		3-Δ	60	190	0,949	312/280	0,90	2502		
200	0,931			323/292	0,90	2590				
220	0,910			347/314	0,90	2775				
230	0,887			354/319	0,90	2849				
240	0,874			364/326	0,90	2912				
265	0,835			384/337	0,88	3049				
275	0,821			391/339	0,87	3093				
290	0,809			407/346	0,85	3151				
332	0,800			462/360	0,79	3262				
349	0,816			494/371	0,75	3293				

The measurements were performed with a reference bearing cover

Produced: LM_electrical data 160_Rlg Status 16.09.13

The volume flow measurement was performed with the Wistro reference bearing cover



Target efficiency of Size 160 - 200 (C62 2-2 IL) according to the ERP Directive

The ErP implementation ordinance (327/2011 of the EU dated 30 March 2011) defines specific instructions for the implementation of the ErP Directive in the field of fans. It specifies minimum efficiencies for fans with an electrical input power of 125 W to 500 kW. Unlike the standard IEC 60034-30-2008 which came into effect in June 2011 and which only specifies the minimum efficiency of motors (IE2/IE3), the ErP Directive considers the complete, operational system consisting of the motor and the fan. The second and final stage of the Ordinance comes into effect on 01.01.2015 and affects Size 160 (and therefore also Size 180 and Size 200) Size 160 already complies with the directive which will come into effect from 01.01.2015. Details can be found below.

Nominal data: **Size 160 - 200 Type C62 2-2 IL**

Phase	3~
Rated voltage	400V
Circuit	Y
Frequency	50Hz
Type of data recording	Free-blowing
Power consumption P_e	0.171 kW
Measurement category	A
Efficiency category	Static

Calculation of target efficiency from 1.01.2015:

$$\eta = 2.74 \cdot \ln(0.171) - 6.33 + 40$$

	Actual	Target 2013	Target 2015
Overall efficiency η_{es}	30.6 %	24.8 %	28.8 %
Efficiency class N	41.8	36	40

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