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**ENGINEERING SUPPLEMENT**  
**ES-135**  
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## STAINLESS STEEL ACOUSTAFoil® WHEELS

AcoustaFoil (AcF) wheels are available in 316 and 347 stainless steel construction for the following products:

- GPA Fans
- GP Fans
- Class I - III SWSI Fans
- Class II and III Plug Fans up to 1000°F.
- OEM wheels, Class I - III

Stainless steel AcF wheels are designed with heavier construction, as compared to standard steel wheels, in order to counteract material strength differences and to maximize safe operating speeds. Heavier wheels can also have an effect on the maximum speed capability of the fan shaft, bearings, and/or assembly. This is especially true with regard to Plug Fans. Chart I provides maximum safe speeds for fans with stainless steel AcF wheels operating at 70°F. **In no case should these unit safe speeds be exceeded.** In some cases, these speeds differ from fan unit safe speeds published in the product bulletin due to the different wheel designs for stainless steel.

**CHART I - Fan Unit Safe Speeds [RPM] with SST AcF Wheels at 70°F.**

Size	SWSI AcF			GP	GPA	Class II Plug				Class III Plug			
	Class I	Class II	Class II			450°F.	800°F. 4"	800°F. 5"	1000°F.	450°F.	800°F. 4"	800°F. 5"	1000°F.
18	2305	3005	3600	3005	2100	3005	3005	2900	2600	3600	3600	3440	3150
20	2125	2780	3510	2780	2125	--	--	--	--	--	--	--	--
22	1970	2570	2945	2570	1800	2570	2570	2570	2250	2945	2945	2945	2700
24	1790	2135	2685	2335	1550	2335	2335	2335	2090	2685	2685	2685	2450
27	1540	2010	2430	2010	1300	2010	2010	2010	1850	2430	2430	2380	2200
30	1385	1805	1995	1610	1200	1805	1805	1730	1550	1995	1995	1995	1950
33	1265	1650	1815	1650	--	1650	1550	1440	1350	1815	1815	1815	1800
36	1110	1395	1640	1325	--	1370	1395	1395	1270	1640	1640	1640	1500
40	1005	1265	1490	--	--	1265	1265	1265	1150	1490	1490	1490	1430
44	910	1145	1375	--	--	1145	1145	1145	1120	1285	1285	1285	1285
49	850	1000	1225	--	--	1065	1065	1065	1020	1225	1225	1225	1195
54	750	940	1105	--	--	940	940	940	940	1105	1105	1105	1105
60	675	850	1000	--	--	850	850	850	850	1000	1000	1000	1000
66	615	715	905	--	--	--	--	--	--	--	--	--	--
73	555	700	825	--	--	--	--	--	--	--	--	--	--

Operation at higher temperatures primarily affects the strength of rotating components, which declines as temperature increases. Chart II provides maximum safe speeds for stainless steel AcF wheels at 70°F. As a reference, safe speeds for standard steel wheels have also been included. (Note that the speeds for Size 36 and larger Class II stainless steel wheels, and all Class III stainless steel wheels, are slightly lower than standard steel wheel speeds.) To determine safe speed at higher operating temperatures, multiply the appropriate stainless steel wheel safe speed shown in Chart II by the temperature correction factor given in Chart III. Compare the resulting value to the unit safe speed from Chart I above. The lesser of the two numbers is the fan's actual maximum safe operating speed.

**CHART II - Maximum Safe Wheel Speeds [RPM] at 70°F.**

Size	Standard Steel AcF Wheel			Stainless Steel AcF Wheel		
	Class I	Class II	Class III	Class I	Class II	Class III
18	2305	3005	3790	2305	3005	3600
20	2125	2780	3510	2125	2780	3160
22	1970	2570	3240	1970	2570	2945
24	1790	2335	2940	1790	2335	2685
27	1540	2010	2530	1540	2010	2430
30	1385	1805	2275	1385	1805	1995
33	1265	1650	2080	1265	1650	1815
36	1110	1450	1825	1110	1395	1640
40	1005	1315	1655	1005	1265	1490
44	910	1190	1495	910	1145	1375
49	850	1105	1395	850	1065	1225
54	750	975	1230	750	940	1105
60	675	880	1110	675	850	1000
66	615	800	1010	615	775	905
73	555	725	915	555	700	825

**CHART III - Temperature Correction Factors for Wheel Safe Speeds**

Temp. (°F.)	316 SST	347 SST
-50°	1.00	1.00
70°	1.00	1.00
200°	0.95	0.96
300°	0.91	0.93
400°	0.88	0.91
500°	0.85	0.89
600°	0.83	0.88
650°	0.82	0.87
700°	0.81	0.86
800°	0.80	0.85
900°	0.78	0.83
1000°	0.77	0.82

### CHART IV - SST AcF Wheel Specifications

Size	Class I		Class II		Class III	
	Weight	WR <sup>2</sup>	Weight	WR <sup>2</sup>	Weight	WR <sup>2</sup>
18	32	11	47	13	50	14
20	47	17	57	21	64	26
22	57	24	64	29	74	36
24	62	38	101	55	101	55
27	72	56	116	79	116	79
30	91	88	153	121	153	121
33	119	131	175	174	182	187
36	160	221	263	304	271	319
40	201	324	305	446	313	508
44	261	529	391	755	414	823
49	366	900	621	1251	638	1321
54	455	1344	773	2038	796	2148
60	574	2068	897	2972	926	3136
66	875	3940	1198	4859	1275	5394
73	1113	6187	1475	7718	1552	8259

Weights in lbs. WR2 in lb.-ft.2

Note: When calculating the bare fan weight for a fan with a stainless steel AcF wheel, deduct the standard steel AcF wheel weight from the published bare fan weight, and then add the appropriate stainless steel wheel weight from the above chart.

Form 915 MJW