

# REVERSOMATIC FRESH AIR UNITS

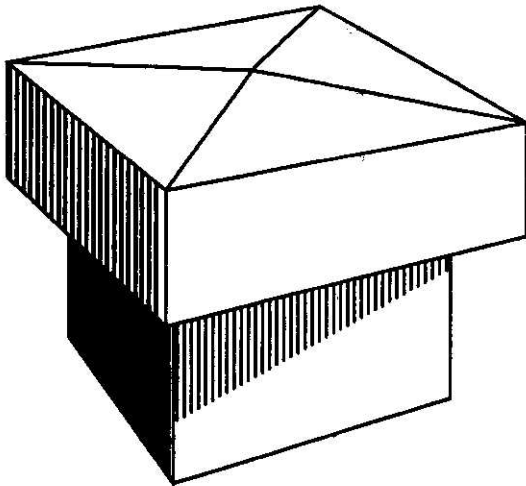


Made in Canada

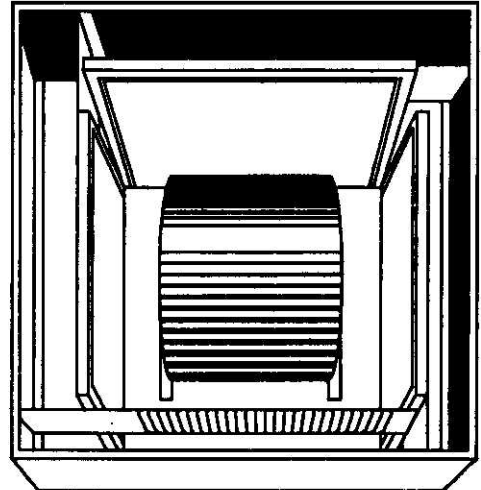
Keep Canada Growing

DESIGNED FOR HIGH RISE APARTMENTS,  
INSTITUTIONAL AND MOST COMMERCIAL-  
INDUSTRIAL APPLICATIONS.

**FA 9, FA 10**  
**FA 12, FA 15, FA 18**



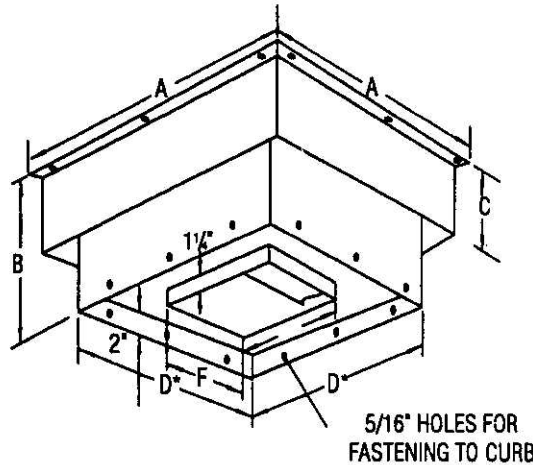
Side View



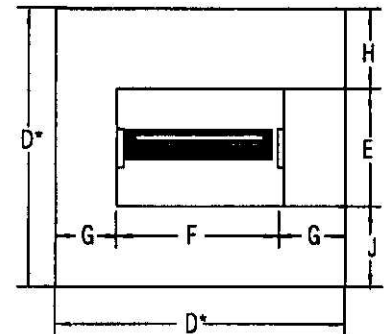
Top View

## A Practical Fan that Moves Fresh Air Efficiently Available in Five Blower Sizes

- Equipped with belt driven centrifugal blowers.
- Blowers equipped with resilient mount and with ball bearings.
- Galvanized construction, paint finish optional.
- Back-draft damper and bird screen included.
- Uses standard size filters
- Recessed bottom for easy installation to curb
- Insulated top.
- Heating and cooling coils could be adapted
- Top cover easily opens to allow access for servicing.
- Unit uses standard shelf motors.



5/16" HOLES FOR  
FASTENING TO CURB



BOTTOM VIEW

Model	Dimensions										FILTERS
	A	B	C	D*	E	F	G	H	J		
FA 9	32.38	26.12	10.25	24.35	10.25	11.81	6.28	7.06	7.06	4 - 10x20	
FA 10	38.50	30.00	12.25	28.38	11.38	13.12	7.62	8.50	8.50	4 - 12x24	
FA 12	42.62	33.12	16.50	32.38	13.44	15.62	8.38	9.47	9.47	4 - 16x25	
FA 15	42.62	33.12	16.50	32.38	15.88	18.62	6.88	10.25	6.25	4 - 16x25	
FA 18	45.31	40.25	20.75	36.38	18.88	21.88	7.25	11.00	6.50	4 - 20x28.50	

\* Curb size to be smaller than inside cabinet size to allow for flashing and roofing.

REVISED JUNE 1999

**Reversomatic Manufacturing Ltd.**

790 ROWNTREE DAIRY ROAD • WOODBRIDGE, ONTARIO, CANADA L4L 5V3 • PHONE: 905-851-6701 FAX: (905) 851-8376

# FRESH AIR UNITS

## PERFORMANCE DATA

## FA9 TO FA18

Capacity Model	CFM		FPM Outlet Velocity		0" SP		1/8" SP		1/4" SP		3/8" SP		1/2" SP		5/8" SP		3/4" SP		1" SP		1 1/2" SP	
	RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP
<b>FA 9</b>	500	598	241	.008	442	.023	599	.041	730	.063	841	.085	939	.109	1026	.133	1180	.185	1434	.296		
Tip Speed (FPM)	600	717	290	.014	464	.031	608	.051	733	.074	844	.100	942	.126	1031	.154	1186	.211	1445	.334		
2.49 x RPM	700	837	338	.022	493	.041	624	.063	742	.088	848	.116	944	.145	1033	.175	1190	.239	1451	.374		
Std. Drive Range	800	956	387	.033	526	.055	645	.078	754	.104	855	.134	949	.165	1035	.198	1193	.268	1458	.415		
580-790 RPM	1000	1196	483	.065	600	.092	701	.119	795	.145	884	.180	968	.215	1049	.252	1199	.330	1461	.500		
Max. HP	1200	1435	580	.113	680	.146	768	.177	851	.210	929	.244	1005	.282	1078	.321	1217	.406				
1/2 HP	1400	1674	677	.179	765	.219	843	.255	918	.291	987	.328	1055	.370	1121	.412	1247	.502				
	1600	1913	774	.268	852	.313	922	.355	989	.396	1052	.438	1114	.482	1174							
<b>FA 10</b>	800	764	254	.020	397	.040	517	.063	624	.090	721	.120	807	.151	887	.185	1027	.255	1257	.407		
tip Speed (FPM)	1000	980	318	.039	437	.063	540	.090	634	.119	723	.152	806	.167	882	.225	1021	.303	1256	.475		
2.78 x RPM	1200	1176	381	.067	485	.096	574	.126	657	.159	737	.194	812	.232	885	.273	1018	.369	1253	.549		
Std. Drive Range	1400	1372	445	.106	536	.139	618	.174	690	.210	761	.249	830	.290	898	.333	1022	.425	1248	.629		
500-700 RPM	1600	1568	509	.159	589	.196	662	.235	729	.275	794	.317	857	.361	917	.407	1033	.505	1248	.721		
Max. HP	1800	1764	572	.226	645	.268	711	.311	773	.368	833	.402	890	.449	945	.498	1053	.602				
3/4 HP	2000	1960	636	.310	702	.357	763	.404	820	.453	875	.503	928	.554	980	.607	1080	.716				
	2200	2156	699	.413	760	.464	817	.515	870	.569	921	.623	971	.678	1019	.735						
	2400	2352	763	.536	819	.592	871	.648	922	.706	970	.784	1016									
<b>FA 12</b>	1600	1111	323	.085	412	.121	492	.162	569	.209	641	.261	708	.315	771	.372	885	.492	1077	.745		
tip Speed (FPM)	1800	1250	363	.121	443	.161	517	.208	587	.255	653	.310	717	.368	778	.428	889	.557				
3.31 x RPM	2000	1383	404	.166	476	.210	544	.258	606	.310	670	.367	730	.429	787	.493	895	.629				
Std. Drive Range	2200	1527	444	.221	511	.269	573	.320	632	.376	690	.436	746	.500	800	.567	903	.710				
450-600 RPM	2400	1686	484	.287	546	.339	604	.394	659	.453	713	.516	766	.582	816	.652	914					
Max. HP	2600	1805	525	.365	582	.421	636	.480	688	.542	738	.608	787	.677	836	.750	925					
3/4 HP	2800	1944	568	.456	619	.516	669	.587	718	.644	765	.713	811	.785								
	3000	2083	606	.561	656	.684	703	.691	749	.761	794											
	3200	2222	646	.680	693	.748																
<b>FA 15</b>	3000	1492	405	.328	460	.403	510	.470	558	.541	605	.617	651	.700	698	.791	782	.988	940	1.432		
Tip Speed (FPM)	3200	1592	432	.397	484	.479	531	.551	577	.626	621	.703	664	.788	707	.879	791	1.080	944	1.535		
3.93 x RPM	3400	1691	459	.477	509	.564	553	.641	598	.718	638	.800	680	.886	721	.979	800	1.182	950	1.647		
Std. Drive Range	3600	1791	486	.556	533	.659	576	.742	617	.823	657	.907	696	.995	735	1.080	811	1.295	956	1.787		
400-550 RPM	3800	1890	513	.666	558	.765	599	.853	638	.938	676	1.026	714	1.116	751	1.213	824	1.421	963	1.900		
Max. HP	4000	1990	540	.776	583	.882	622	.976	660	1.065	696	1.156	732	1.250	767	1.348	837	1.580	972	2.043		
3 HP	4200	2089	567	.899	608	1.011	646	1.109	682	1.204	717	1.288	751	1.395	785	1.498	852	1.712	982	2.201		
	4400	2189	594	1.033	634	1.151	670	1.256	705	1.355	738	1.454	771	1.554	804	1.658	868	1.878	993	2.372		
	4600	2288	621	1.181	659	1.305	694	1.416	728	1.520	760	1.623	792	1.727	823	1.833	885	2.056	1005	2.559		
	4800	2388	648	1.342	686	1.472	716	1.588	751	1.698	782	1.808	813	1.913	843	2.024	902	2.253	1019	2.780		
	5000	2487	675	1.516	710	1.653	743	1.775	774	1.890	805	2.003	834	2.115	863	2.228	921	2.463	1033	2.978		
<b>FA 18</b>	3000	1045	259	.177	324	.256	382	.340	434	.428	483	.521	527	.620	570	.723	647	.943	779	1.418		
Tip Speed (FPM)	3500	1219	302	.262	359	.373	410	.468	458	.557	503	.670	545	.778	585	.891	659	1.128	788	1.645		
4.75 x RPM	4000	1393	345	.421	395	.524	442	.632	486	.742	527	.858	566	.974	604	1.096	674	1.351	799	1.905		
Max. HP	4500	1567	389	.599	433	.715	476	.835	516	.957	554	1.082	591	1.211	626	1.342	693	1.617	813	2.207		
3 HP	5000	1742	432	.822	472	.949	511	1.082	546	1.217	584	1.354	618	1.493	651	1.636	714	1.930	829	2.557		
	5500	1916	475	1.094	512	1.233	547	1.378	582	1.528	615	1.675	647	1.826	678	1.980	735	2.295	845	2.980		
	6000	2090	518	1.420	552	1.571	585	1.729	617	1.889	648	2.051	678	2.214	708	2.379	764	2.717	869	3.422		
	6500	2264	562	1.805	593	1.968	623	2.138	653	2.311	682	2.485	711	2.661	738	2.839	792	3.199				
	7000	2439	605	2.255	634	2.430	662	2.612	690	2.797	718	2.984	744	3.172	771	3.362						
	7500	2613	648	2.773	675	2.959	702	3.155	728	3.352												

Tested in accordance with AMCA standard 210.  
H.P. does not include belt drive losses.

CONTRACTOR		FRESH AIR UNITS			
ARCHITECT					DATE
ENGINEER		DATE SUBMITTED			REVERSOMATIC MANUFACTURING LTD. Toronto, Ontario



**REVERSOMATIC**  
MANUFACTURING LIMITED

## **INSTALLATION & MAINTENANCE GUIDE**

General Instructions

**REGULAR MAINTENANCE / LUBRICATION OF THIS UNIT IS REQUIRED TO MAINTAIN THE MANUFACTURER'S WARRANTY.**

**FOR MOTORS LARGER THAN 7 ½ HP, AN ELECTRONIC "SOFT START" CONTROL IS RECOMMENDED FOR LONGER BELT LIFE.**

### **C A U T I O N**

IT IS STRONGLY RECOMMENDED THAT BEFORE STARTING UP THE FAN THE FOLLOWING INSPECTIONS ARE PERFORMED.

- 1. FAN BELT (IF USED) TIGHTNESS AND ALIGNMENT.**
- 2. FAN BLADE CENTERING AND ROTATION.**
- 3. FAN BLADE MOUNTING BOLT TIGHTNESS.**
- 4. MOTOR MOUNTING PLATE BOLT TIGHTNESS.**
- 5. BEARING LUBRICATION.**

### **WARNINGS AND SAFETY INSTRUCTIONS**

1. Do not operate the fan excess of maximum limit.
2. Do not permit any object to enter the fan inlets or outlets; provide a screen covering.
3. Do not operate the fan without adequate guards over rotating parts; provide drive belt, coupling and shaft guards.
4. Provide a disconnect switch with a padlock to prevent fan switch use during maintenance.
5. Locate a disconnect switch at the fan for use of personnel working on the fan.
6. Provide vibration limiting switches to detect sudden changes in the operation of the fan, especially when operating a fan under high temperatures or in an extremely corrosive atmosphere such as fly ash.
7. Lubricate and service bearings regularly. see lubrication schedule.

**Reversomatic Manufacturing Ltd.**

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# INSTALLATION & MAINTENANCE GUIDE

## Performance Problems:

**CFM too low** - These are some common sources of this problem:

**Fan** - forward curved impeller installed backwards, fan running backwards, cutoff missing or improperly installed, impeller not centered with inlet collars, fan speed too slow.

**System** - more resistant to flow than expected, dampers or registers closed, leaks in supply ducts, insulating duct liner loose, clogged filters or coils.

**Fan Inlets** - leaks around fan inlets, elbows near the inlet, cabinet walls too close. Inlet obstructions cause more restrictive systems but do not cause increased negative pressure readings near the fan inlets. Fan speed may be increased to counteract the effect of restricted fan inlet, but check the maximum RPM for the wheel construction before increasing the speed.

**Fan Outlet** - most centrifugal fans are used in ducted systems and have been tested with a length of straight duct at the fan outlet, If there is no straight duct at the fan outlet, decreased fan performance will result. If it is not practical to install a straight section of duct at the fan outlet, the fan speed may be increased to overcome this pressure loss. Other sources affecting fan outlet may be sharp elbow nearby, improperly designed turning vanes or other obstructions near the outlet.

**Noise** - may be caused by:

- Impeller hitting the inlet of the fan or cutoff plate, loose impeller.
- Drives can cause noise if sheaves are not tight on the shaft, belts are too loose or too tight, wrong belt cross section, or mis-matched belts, also worn belts, oily belts or mis-aligned sheaves.
- If couplings are used they may be source of noise by being unbalanced, misaligned, loose or dry of lubricant.
- Bad bearings are a common source of noise when defective, dry of lubricant, loose on the bearing support, loose on the shaft, seals mis-aligned, dirty lubricant, fretting corrosion between inner race and shaft, etc. See separate section on bearing care.
- There can be an electrical source of noise such as AC hum in motor or relay, starting relay chatter, noisy motor bearings, single phasing a 3 phase motor, etc.
- A bent or undersized shaft may be a noise source. **IF MORE THAN TWO BEARINGS ARE ON THE SAME SHAFT, THEY MUST BE CAREFULLY ALIGNED.**
- There may be other noise sources such as obstruction in high velocity air stream causing rattle or pure tone whistle, fan operating at undesirable design point, causing pulsation, cracks or holes in duct work, or whistles in fan housing.

## LUBRICATION

### RELUBRICATION SCHEDULE (MONTHS)\* Ball Bearing Pillow Blocks

SHAFT DIAMETER	Operating Speed (RPM)									
	500	1000	1500	2000	2500	3000	3500	4000	4500	5000
5/8" thru 1"	6	6	6	6	4	4	4	4	2	2
1 1/8" thru 1 1/2"	6	6	6	4	4	4	2	2	2	1
1 5/8" thru 1 15/16"	6	6	6	4	4	2	2	1	1	-
2" thru 2 1/2"	6	6	4	4	2	1	1	-	-	-
2 11/16" thru 3 3/16"	6	4	2	2	1	1	1/2	-	-	-

\*Suggested initial greasing interval - relubricate while running, if safety permits, until some purging occurs at seals. Adjust lubrication frequency depending on condition of purged grease. Hours of operation, temperature, and surrounding conditions will affect the relubrication frequency required.

- Lubricate with a high quality NLGI No. 2 or No.3 multi purpose ball bearing grease having rust inhibitors and anti-oxidant additives.

**Some grease having these properties are:**

- Shell - *Alvania EP No.2*
- Mobil - *Mobilux Ep2*
- Texaco - *Molytex No.2*
- Gulf - *Gulfcrown No. 2*
- American - *Amolith No. 2*

- Lubricate bearings prior to extended shutdown or storage and rotate shaft monthly to avoid corrosion.

### Spherical Roller Bearings - Solid Pillow Blocks

SHAFT DIAMETER	Operating Speed (RPM)									
	500	1000	1500	2000	2200	2700	3000	3500	4000	4500
3/4" thru 1"	6	6	6	4	4	4	2	2	1	1
1 1/8" thru 1 1/4"	6	6	4	4	2	2	1	1	1	1
1 7/16" thru 1 1/2"	6	4	4	2	2	1	1	1	1	1/2
1 5/8" thru 1 3/4"	6	4	2	2	1	1	1	1	1/2	-
1" 15/16" thru 2"	6	4	2	1	1	1	1	1/2	-	-
2 3/16" thru 2 1/4"	6	4	2	1	1	1	1/2	-	-	-
2 7/16" thru 2 1/2"	4	2	1	1	1	1/2	-	-	-	-
2 11/16" thru 3"	4	2	1	1	1/2	-	-	-	-	-
3 3/16" thru 3 1/2"	4	2	1	1/2	-	-	-	-	-	-

- Lubricate with a multi-purpose roller bearing NLGI grade 2 grease having rust inhibitors, anti-oxidant additives, and a minimum oil viscosity of 500 SSU at 100°F. Some additives.

**Some grease having these properties are:**

- American - *Rykon No.2*
- Mobil - *Mobilgrease 28*
- Texaco - *Molytex Ep2 grease*

- Lubricate bearings prior to extended shutdown or storage and rotate shaft monthly to avoid corrosion.

## RECOMMENDED 'SKF' GREASES FOR 'SKF' BEARINGS

*Fixed Pillow Block* - LGMT2 Fans running below 80°C (176°F)

*Split Pillow Block* - LGMT3 Fans running below 80°C (176°F)

**Fans Running Above 80°C thru 150°C - LGHT3**

## TROUBLESHOOTING LIST

- IMPELLER** . . . . . a. Loose on shaft  
b. Unbalance
- DRIVE** . . . . . a. Sheave not tight on shaft (motor or fan)  
b. Belts hitting belt tube or belt guard  
c. Belts too loose. Adjust for belt stretching after 48 hours of operation.  
d. Belts too tight  
e. Belts wrong cross-section  
f. Belts not "Matched" in length on multi-belt drive  
g. Variable pitch sheaves not adjusted so each groove has same pitch diameter (multi-belt drive)  
h. Misaligned sheaves  
i. Belts worn  
j. Motor, Motor base or fan not securely anchored  
k. Belts oily or dirty  
l. Improper drive selection  
m. loose key  
n. Excessive start-stop cycles
- COUPLING** . . . . . a. Coupling unbalanced, misaligned, loose or may need lubricant  
b. Loose key
- BEARING** . . . . . a. Defective bearing  
b. Needs lubrication  
c. Loose on bearing support  
d. Loose on shaft  
e. Seals misaligned  
f. Foreign material inside bearing  
g. Worn bearing  
h. Fretting corrosion between inner race and shaft  
i. Bearing not sitting on flat surface  
j. Excessive belt tension
- SHAFT** . . . . . a. Bent  
b. Undersized
- MOTOR** . . . . . a. Noisy motor bearings  
b. Single phasing a three phase motor  
c. Low voltage
- LOOSE FASTENERS** . . . . . a. Impeller set screws  
b. Bearing set screws  
c. Drive component set screws  
d. Fan mounting bolts  
e. Bearing bolts  
f. Motor bolts