

Air Conveying Corporation

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Air Conveying Corporation Material Handling Fan Operation and Maintenance Manual

For Models:

M9, M12, M15, M17, M19, M21, M24 & M33



Air Conveying Corporation

OPERATION AND MAINTENANCE MANUAL DISCLAIMER

While it is the intent of this manual to provide the customer with sound, general documentation on the Air Conveying Corporation supplied equipment, it must also be understood that each order is custom designed, manufactured and installed per our customers' specific application and requirements. Therefore, some of the information contained herein may differ from the actual equipment you may have.

It is Air Conveying Corporation's policy to provide a general manual containing standard parts descriptions and operation guidelines. Should there be any questions or concerns that are not addressed in this manual, please do not hesitate to contact us for further specific information.

Thank you,

Air Conveying Corporation



Air Conveying Corporation

SAFETY RULES AND GUIDELINES

Safety is a very important concern for Air Conveying Corporation. It is a matter of fact that we strive to provide a safe work environment for the installation crews during installation and safe equipment for our customers use. We have found this policy to be very effective and trust that your company has similar policies and practices to ensure the safety of your personnel as well as ours.

Installation:

It is Air Conveying Corporation's policy to provide general safety practices as it relates to the installation of our equipment. This policy is designed to supplement our customers' safety policy. Since safety policies vary dramatically from customer to customer, our installation crews are continuously instructed to adhere to our customers' specific safety policy primarily. Our crews are required to complete our customers' safety orientation, if applicable, before any work is begun.

Our crews are provided with standard personnel protective equipment. We ask that our customers provide any specific equipment required by their safety policy.

Equipment:

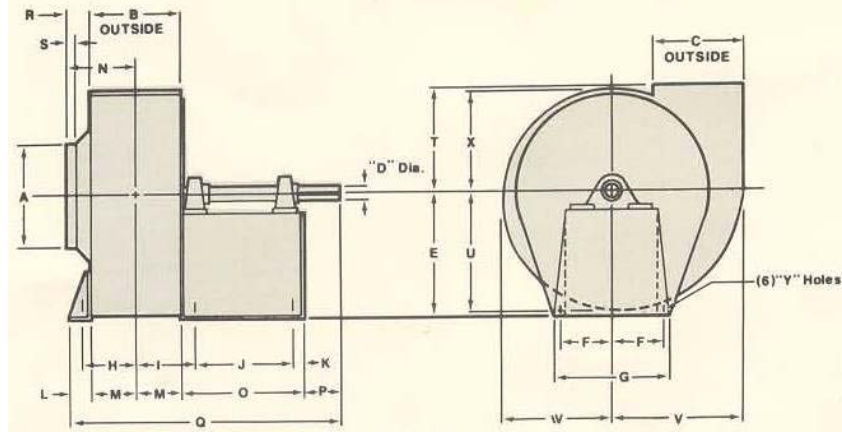
All Air Conveying Corporation manufactured equipment is delivered with safety devices to stop the equipment and related equipment upon the opening of access covers, which could present a hazard. We strongly recommend that all interlocks be wired and maintained correctly. We strongly recommend that only authorized personnel using correct lock out tag out and other safety practices be allowed to work on the equipment.

All Air Conveying Corporation collectors and filters are provided with 1" NPT nipples to be used to connect to the plant fire system. We strongly recommend that the fire system be connected immediately after installation of the unit.

All Air Conveying Corporation equipment have multiple labels attached which warn of rotation, electrical shock, pinch points, automatic starting and other areas where safety should be at a premium. These labels should not be removed or defaced.



THE ACC HEAVY DUTY FAN



Fan Size	Whl Dia	A		B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	WGT
		ID	OD																									
M12	20"	11 5/8"	12"	10 1/2"	12"	1-11/16"	14"	6 1/2"	15"	6 3/8"	7 9/16"	10"	2"	2"	5 1/4"	7 3/4"	14 5/16"	4"	30 13/16"	2 1/2"	1 1/2"	13 3/8"	13 3/8"	14 1/4"	12 1/2"	11 5/8"	5/8"	375
M14	23 1/2"	13 5/8"	14"	12"	14"	1-15/16"	16 1/2"	7"	16"	7 3/8"	8 5/16"	11"	2"	2 1/2"	6"	8 1/2"	15 5/16"	5"	34 1/16"	2 1/2"	1 1/2"	15 1/2"	15 3/4"	16 3/4"	14 3/4"	13 3/4"	3/4"	475
M15	25"	14 1/2"	15"	14"	14"	2-3/16"	18 1/2"	7 1/2"	17"	8 3/8"	9 5/16"	12"	2"	2 1/2"	7"	10"	16 5/16"	5"	37 13/16"	3"	1 1/2"	16 3/8"	18 1/8"	19 1/2"	16 3/4"	15 3/8"	3/4"	600
M17	28 1/2"	16 1/2"	17"	15"	15"	2-3/16"	20"	8 1/2"	19"	8 3/8"	9 7/8"	16"	2"	2 1/2"	7 1/2"	11 1/2"	20 3/8"	6"	43 7/8"	4"	1 3/4"	17"	19 3/8"	21 1/2"	18"	16 1/4"	3/4"	840
M19	32"	17 1/2"	18"	16"	18"	2-15/16"	23"	9"	20"	9 5/8"	10 3/4"	17"	2"	2 1/2"	8"	12"	21 3/8"	6"	45 7/8"	4"	2"	19 1/8"	22"	24"	20"	18"	3/4"	975
M21	35 1/2"	20 1/2"	21"	18"	20"	2-15/16"	26"	10 1/2"	24"	10 5/8"	12 3/8"	20"	3"	3"	9"	13"	26 3/8"	7"	54 3/8"	4"	2"	21 1/2"	25 1/4"	27 1/2"	23"	20 3/4"	3/4"	1375
M24	40"	23 1/2"	24"	19"	24"	2-15/16"	28"	10 1/2"	24"	11 1/8"	12 7/8"	20"	3"	3"	9 1/2"	13 1/2"	26 3/8"	7"	55 3/8"	4"	2"	24 3/8"	27 1/2"	29 3/4"	25 1/2"	25 1/2"	3/4"	1590

M SERIES MATERIAL HANDLING FANS CAPACITY GUIDE TABLE

BASED ON DRY AIR
AT 70°F, AT 29.92 H.G.,
AT .075 LBS./FT³

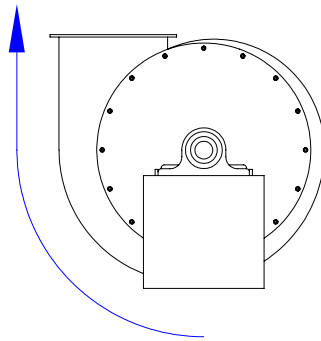
FAN SIZE	STATIC PRESSURE							
	CFM BHP RPM	CFM BHP RPM	CFM BHP RPM	CFM BHP RPM	CFM BHP RPM	CFM BHP RPM	CFM BHP RPM	CFM BHP RPM
	6"	7"	8"	9"	10"	12"	14"	16"
M-12	2500 4.3 1780	2200 4.0 1820	2200 4.8 1950	2100 4.9 2040	2300 6.2 2175	2600 8.0 2300	2600 9.0 2425	2600 10.0 2650
	2875 5.2 1840	2500 4.6 1865	2600 5.9 2015	2800 7.0 2130	2800 7.7 2265	3300 11.6 2475	2800 10.6 2560	2800 12.9 2775
	3275 6.2 1920	3000 5.8 1960	3250 8.0 2120	3300 8.5 2210	3200 9.7 2310	3600 13.0 2540	3200 13.5 2650	3200 16.5 2875
	3800 7.8 1990	3800 9.0 2100	3700 9.5 2200	3600 10.3 2290	3600 11.0 2400	4000 15.0 2600	3600 16.0 2700	
	4200 9.0 2090	4000 10.0 2150	4000 10.4 2250	4000 12.1 2375	4000 12.9 2450			
M-14	2800 4.7 1475	2800 5.0 1520	3250 7.1 1685	3400 8.0 1790	3300 8.8 1925	3600 11.7 2075	3700 14.1 2180	4350 22.5 2440
	3400 5.8 1550	3400 6.5 1610	3750 8.7 1740	4000 9.4 1825	3800 11.1 1980	4400 15.4 2200	4400 18.1 2300	4900 25.0 2520
	3800 6.6 1570	4000 7.8 1665	4400 10.8 1820	4600 12.0 1900	4400 13.2 2025	5000 18.6 2230	5000 21.6 2385	5400 29.9 2600
	4400 8.4 1640	4400 9.5 1730	4800 12.9 1860	4850 14.2 1940	5000 15.0 2050	5400 20.8 2385	5400 25.0 2450	
	5000 10.2 1700	5000 11.6 1800	5300 14.5 1900	5400 16.8 2000	5400 17.9 2095			
M-15	3400 5.9 1460	3300 5.7 1440	3600 7.8 1550	3900 9.2 1650	4000 10.7 1800	4400 15.0 1960	4400 16.9 2100	4900 26.5 2275
	4000 7.3 1520	3900 7.0 1510	4400 10.6 1635	4400 11.0 1695	4600 13.2 1865	4900 16.8 2000	5000 21.0 2150	5600 32.0 2330
	4600 9.3 1570	4600 9.1 1585	5000 12.4 1690	5100 13.0 1750	5200 15.2 1920	5600 20.5 2050	5600 26.0 2200	6200 38.0 2420
	5600 13.5 1675	5600 13.5 1675	5600 14.7 1750	5600 16.4 1810	5800 17.0 1940	6250 25.0 2110	6250 30.9 2260	
	6300 16.0 1750	6300 15.9 1750	6250 17.1 1800	6250 19.3 1900	6250 20.8 1990			
M-17	3600 6.0 1190	4000 7.0 1260	4000 8.0 1340	4200 9.8 1420	4800 12.9 1575	5600 18.8 1725	5600 21.0 1825	6400 30.0 1975
	4100 6.9 1225	4800 9.2 1310	4900 10.8 1400	5000 11.5 1460	5650 16.1 1630	7000 26.0 1810	6500 26.7 1880	7200 34.0 2020
	4800 8.0 1250	5600 11.0 1360	5800 14.2 1460	5900 13.5 1500	6500 21.1 1685	8000 30.0 1875	7300 30.1 1935	8000 40.0 2080
	5600 10.1 1300	6500 14.0 1430	6500 15.7 1480	6800 17.8 1575	7200 22.2 1700	9100 33.2 1935	8000 35.2 1990	
	7300 15.1 1400	7500 16.3 1475	8000 21.1 1590	8000 24.0 1650	8000 25.0 1755			
M-19	5200 8.5 1080	5200 10.0 1145	6000 12.5 1260	6000 14.9 1320	7200 20.0 1440	6200 23.9 1525	7000 26.8 1610	8000 36.0 1775
	6100 10.7 1125	6000 11.5 1180	7000 16.0 1285	7200 18.0 1355	8200 26.0 1500	7200 25.2 1560	8200 32.0 1700	9000 43.0 1810
	7000 12.6 1160	7100 14.4 1235	8000 20.0 1340	8000 21.0 1390	9000 27.0 1530	8200 28.0 1590	9000 38.0 1725	10000 47.5 1855
	8200 15.3 1225	8200 18.0 1275	9000 24.0 1390	9000 26.2 1440	10000 33.0 1580	10000 38.0 1670	10000 42.0 1775	
	9000 18.0 1260	9000 21.0 1330	10000 27.2 1425	10000 30.0 1480	11000 38.9 1610			
M-21	6200 10.6 985	6200 11.0 1030	7000 16.0 1100	7500 17.0 1180	8600 25.2 1300	8600 19.9 1395	8600 31.0 1460	9800 46.1 1625
	7500 13.0 1030	7500 14.1 1070	8600 20.5 1170	8600 20.9 1200	9800 31.0 1350	9800 35.0 1430	9800 40.9 1510	11000 52.5 1665
	8500 15.6 1060	8600 17.0 1100	9800 23.0 1200	9800 26.0 1250	11000 35.0 1375	11000 42.1 1480	11200 48.5 1575	12200 62.8 1700
	9800 19.0 1085	9850 22.0 1160	11000 29.2 1240	11000 31.5 1300	12000 40.0 1415	12500 49.0 1500	12200 57.0 1610	
	11100 22.5 1140	11000 27.0 1195	12000 33.0 1275	12000 36.9 1340				
M-24	8000 13.0 850	8000 14.5 890	9500 21.5 980	9800 25.0 1060	11000 31.0 1125	12500 44.8 1230	12500 51.0 1310	12800 59.5 1410
	9800 17.1 890	9800 18.6 940	11000 26.0 1010	11500 30.0 1095	13000 40.0 1180	14500 53.0 1290	13000 54.0 1325	14500 69.8 1455
	11000 20.6 920	11500 23.9 980	12500 31.9 1040	13000 36.0 1110	14500 46.5 1210	16500 63.0 1315	14500 61.0 1370	16000 78.9 1510
	12800 25.0 950	12800 28.5 1000	14500 38.5 1085	14500 43.5 1150	16000 53.0 1240	17000 65.0 1335	16200 71.0 1415	
	14500 31.0 995	14500 35.0 1050	16000 44.0 1130	16000 50.0 1175	17500 60.0 1250			



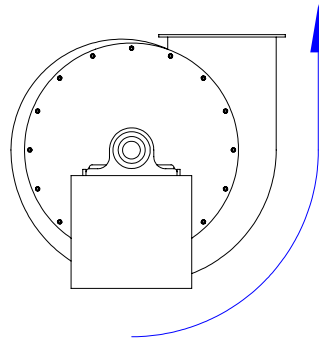
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BLOWER ROTATION CONFIRMATION

We are requesting that you please take a moment to verify the rotation of the blower you have requested. Blower rotation can be confusing and mistakes are sometimes made. The rotation of the blower is determined by viewing the blower from the drive side (back). When ordering a wheel only, the rotation and model is all that is needed. When ordering a complete blower, the model, rotation and discharge location (shown at bottom of page) is required.



CLOCKWISE
ROTATION

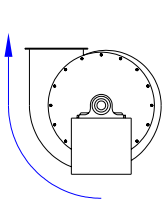


COUNTER-CLOCKWISE
ROTATION

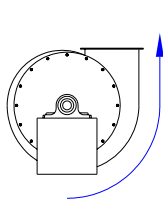
BLOWER MODEL: _____

ROTATION: _____

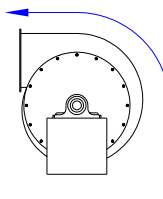
PLEASE CIRCLE THE BLOWER DISCHARGE LOCATION FROM BELOW



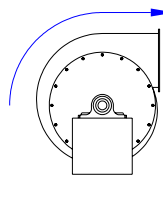
CLOCKWISE
UP BLAST
(CWUP)



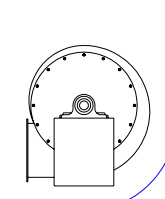
COUNTER-CLOCKWISE
UP BLAST
(CCWUP)



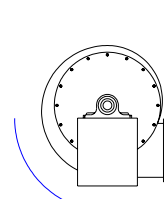
COUNTER-CLOCKWISE
TOP HORIZONTAL
(CCWTH)



CLOCKWISE
TOP HORIZONTAL
(CWTH)



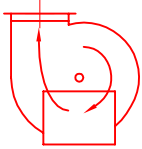
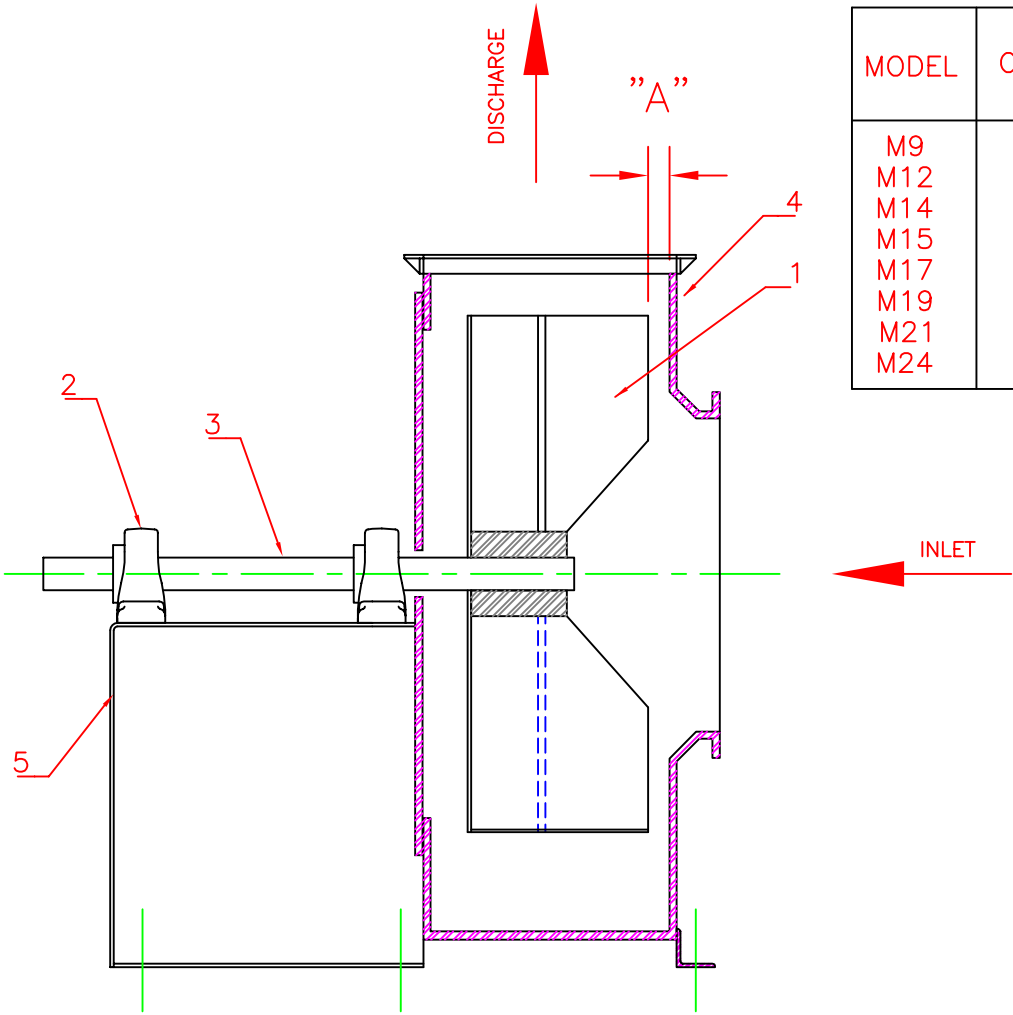
CLOCKWISE
BOTTOM HORIZONTAL
(CWBH)



COUNTER-CLOCKWISE
BOTTOM HORIZONTAL
(CCWBH)

ITEM	# REQD	DESCRIPTION
1	1	WHEEL
2	2	BEARING
3	1	SHAFT
4	1	HOUSING
5	1	BASE

MODEL	WHEEL CLEARANCE "A"	BEARING COLLAR SET SCREW TORQUE VALUES	
M9	1/2"	185	IN. LBS
M12	5/8"	325	" "
M14	5/8"	325	" "
M15	3/4"	460	" "
M17	1"	460	" "
M19	1 1/4"	680	" "
M21	1 1/2"	680	" "
M24	1 3/4"	680	" "



NOTE: WHEN ORDERING REPLACEMENT PARTS, PLEASE PROVIDE NAME OF PART, BLOWER MODEL NUMBER, AND ROTATION. ROTATION IS DETERMINED BY VIEWING THE BLOWER FROM THE DRIVE END OF SHAFT

EXAMPLE: THIS ROTATION IS CLOCKWISE UP



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MEMPHIS, TENNESSEE

BLOWER PARTS DRAWING

REV.	DATE	DESCRIPTION
A	9/8/98	REDRAWN ON CAD

DRAWN	TT	DATE	12/4/69	CHECKED	SCALE	NONE
REF.					DRG. NO.	A264



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CAUTION

Before performing any housekeeping, repair, or maintenance to the equipment, the main electrical disconnect should be de-activated so that it is impossible for the equipment to be started. It is recommended that all safety switches be activated periodically to ensure their working condition.

Only qualified, trained personnel should be allowed to operate the equipment.





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INSTRUCTIONS FOR BLOWER MAINTENANCE

Air Conveying Corporation Blowers have been designed to provide years of trouble-free operation. However, as with any piece of equipment, periodic inspection and maintenance is required.

Before performing any maintenance or inspection, be sure to disable equipment by disconnecting and locking electrical power.

Wheel Balance:

Operation of an unbalanced Blower should be avoided since damage to the wheel, shaft and bearings will result. At the first sign of an unbalanced condition, the bearings, belt drive and mounting bolts should be checked. If the problem is not the result of one of these items, the Blower should be scheduled for shut down. At that time, the wheel should be examined for any cracks or unusual distortion. It is recommended that when replacing a damaged wheel that the shaft be checked for straightness. The removal of the wheel is accomplished by removing the Blower housing. There are three (3) sets of screws on the wheel hub that have to be loosened in order to remove the wheel to assure the proper housing clearance (see Parts Drawing A264 for wheel clearance).

A damaged wheel may be repairable. However, it will be necessary to have it rebalanced to assure smooth operation. If continuous operation of the Blower is required, it is recommended that you stock a spare wheel, shaft and bearings.

Belt Drive:

Belts should be checked for tension and wear, and be replaced as necessary. Replacement belts should be matched sets. Sheaves should be in proper alignments at all times. Proper belt tension is necessary to prevent slippage, especially at a start-up. Belt tension should be checked after 24 hours of initial operation and rechecked approximately one week later. All belts will initially stretch.

Proper tension of a 3-V section belt would be approximately $\frac{1}{4}$ " deflection with 5 to 7 pounds of force applied at the center of the belt span. On a 5-V section belt, the deflection should be $\frac{1}{2}$ " with 11 to 16 pounds of force. In obtaining the proper tension on V-belts, it is not necessary to pull them exceedingly taut. They should be tightened only enough to take out slack and undo sag. A good method for checking the proper tension of a V-belt drive is by "striking" the belt with the fist. Slack V-belts feel dead under this test, while properly adjusted V-belts vibrate and feel alive. Another simple test which can be done is to press down firmly on each individual belt in a multi-belt drive. When the top can be depressed so that it is in line with the bottom of other belts on the drive, the correct amount of tension has been applied.



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Belts should be kept clean, free of oil and protected from sunlight as much as possible. Mineral oil is especially destructive. To clean belts, they should be wiped with a dry cloth. The safest way to remove dirt and grime is to wash with soap and water and rinse well. If by accident the belts become grease or oil splattered, remove with rubbing alcohol. Belt dressing should never be used on a V-belt drive. The V-belt should ride in the sheave groove so that the top surface is just about the highest point of the sheave. If the belt rides too high, it loses contact area. A low-riding belt may “bottom” in the sheave groove, reducing the wedging action on the sides and resulting in slipping and burning.

Bearings:

The proper frequency of lubrication with a recommended grade of lubricant is important (see lubrication instructions). During lubrication, the presence of unusual noise or excessive heat should be noted, and replacement of bearings can then be scheduled at the next shut down period.

Bearing collar set screws should be inspected after the first 24 hours of operation. A second inspection should be two weeks later. The third inspection should be done one month later with periodic inspections thereafter. See Parts Drawing A-264 for set screw torque values.

Bearing mounting bolts should be inspected at the same time and be tightened if necessary.

Lubrication Instructions:

Most grease now marketed by the major oil and lubrication companies for use with anti-friction bearings will be found satisfactory for general lubrication for these bearings. The below listed greases are for guidance only and have been selected because of satisfactory performance and national distribution and availability. Any comparable grease should provide satisfactory results.

The greases are among those approved for grease lubricated ball bearings when subject to temperatures between 0 degrees F and 200 degrees F. Bearings are furnished with filled greased cavities. When first run, the bearing temperature may seem unusually high. However, as the excess grease bleeds through the bearing seals the temperatures should reduce to normal. When operating normally, the external temperatures of the bearings should not exceed 200 degrees F.

Frequency of Lubrication:

The frequency of lubrication will vary, depending upon the hours of operation, temperature and surrounding conditions. Please use the following table as a preventative



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maintenance guide. It is sometimes thought that a bearing is defective because it feels hot to the touch. However, a bearing can operate at up to 200 degrees F and still be within operating temperature range. Please note that the threshold of pain caused by heat is 120 degrees F. The average temperature of hot tap water is 140 degrees F. Just because a bearing feels hot, it does not necessarily mean there is a problem.

OPERATING ENVIRONMENT		Bearing Operating Temperature	Greasing Interval
Dirt Exposure	Moisture Exposure		
Slight	None	2°F to 120°F	6 Months
		120°F to 160°F	2-4 Months
		160°F to 200°F	1-2 Months
Moderate		32°F to 160°F	1-4 Weeks
		160°F to 200°F	1 Week
Heavy	Direct splash or exposure to outdoor environment	32°F to 200°F	Daily to 1 week as determined by inspection