



# BEARING MAINTENANCE GUIDE

All fans have bearings and proper lubrication of the bearings helps ensure maximum life. Direct drive and belt driven fans have bearings in the motors. For motor lubrication requirements, please follow the manufacturer’s recommendation. This document is intended as a quick reference to address the general bearing maintenance requirements of drive bearings on belt driven fans.

All Twin City Fan fans are equipped with decals indicating relubrication intervals for normal operating conditions. (See the tables on the following page for typical lubrication data.) However, every installation is different and the frequency of relubrication should be adjusted accordingly. On high moisture applications, the lubrication frequency may need to be doubled or tripled to adequately protect the bearings. Double the relubrication frequency on fans with vertical shafts. Observation of the conditions of the grease expelled from the bearings at the time of relubrication is the best guide as to whether the

regreasing intervals and the amount of grease added should be altered. Greases are made with different bases. There are synthetic base greases, lithium base, sodium base, etc. Avoid mixing greases with different bases, because they could be incompatible and result in rapid deterioration or breakdown of the grease. The lubrication sticker identifies a list of acceptable lubricants for bearings with lithium-based grease. Most bearings are filled with a lithium-based grease before leaving the factory, unless another grease was requested. When the fans are started, the bearings may discharge excess grease through the seals for a short period of time. Do not replace the initial discharge because leakage will cease when the excess grease has worked out. Sometimes the bearings tend to run hotter during this period. There is no reason for alarm unless it lasts over 48 hours or gets very hot (over 200°F). When relubricating, use enough grease to purge the seals. Rotate bearings by hand during relubrication.

## BEARING LIFE OVERVIEW

### BEARING LIFE

Under laboratory conditions with controlled loads and proper lubrication, bearings fail due to fatigue. Bearing life is a statistical calculation of when a percentage of a population of bearings will fail based on bearing geometry, bearing load and speed. All bearings have a finite life and will eventually fail.

### L-10 LIFE

A statistical estimate of hours that 10% of a population of bearings at a given speed and loading condition will fail.

### L-50 LIFE OR AVERAGE LIFE

- Occasionally, the term “average life” or L-50 is used. A statistical estimate of hours 50% of a population of bearings at a given speed and loading condition will fail.
- It is calculated by multiplying the L-10 life by five. For example, a bearing with an L-10 life of 40,000 hours has an L-50 life of 200,000 hours.

### BEARING LIFE STANDARDS

(The examples below depict life in years based on these calculations.)

- Most Twin City Fan fan models offer a bearing life of L-10–40,000 hours.
- Some models are offered at L-10–20,000, L-10–40,000, L-10–60,000, L-10–80,000 and L-10–100,000 hours.
- See the product catalogs for the bearing life specifications by model.



Example 1		24 Hours / Day 7 Days / Week	24 Hours / Day 5 Days / Week	16 Hours / Day 5 Days / Week	8 Hours / Day 5 Days / Week	2 Hours / Day 5 Days / Week
L-10	40,000 Hours	4.6 years	6.4 years	9.6 years	19 years	77 years
L-50	200,000 Hours	22.8 years	32 years	48 years	96 years	385 years

Example 2		24 Hours / Day 7 Days / Week	24 Hours / Day 5 Days / Week	16 Hours / Day 5 Days / Week	8 Hours / Day 5 Days / Week	2 Hours / Day 5 Days / Week
L-10	20,000 Hours	2.3 years	3.2 years	4.8 years	9.6 years	39 years
L-50	100,000 Hours	11.5 years	16 years	24 years	48 years	193 years



# WARNING

1. This equipment must not be operated without proper guarding of all moving parts. While performing maintenance be sure remote power switches are locked off. See installation manual for recommended safety practices.
2. Before starting: Check all setscrews for tightness and rotate impeller by hand to make sure it has not moved in transit.

## Fans with Unit Roller Bearings

Relubrication Schedule (Weeks)*									
Spherical Roller Bearing - Solid Pillow Blocks									
Shaft DIA	Speed (RPM)								
	500	1000	1500	2000	2500	3000	3500	4000	4500
1/2" thru 1 1/16" (13 - 35)	6	4	4	2	1	1	1	1	0.5
1 11/16" thru 2 3/16" (40 - 55)	4	2	1.5	1	0.5	0.5	0.5	0.5	0.5
2 1/16" thru 3 7/16" (60 - 85)	3	1.5	1	0.5	0.5	0.25	0.5	-	-
3 15/16" thru 4 15/16" (100 - 125)	2.5	1	0.5	0.25	-	-	-	-	-

\*Suggested lubrication interval under continuous operation in adverse loading or with elevated temperatures. For operation less than 24 hours per day or under ideal conditions, lubrication frequency may be reduced. 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.

1. Lubricate with a high quality NLGI No. 2 lithium-base grease having rust inhibitors and antioxidant additives, and a minimum oil viscosity of 500 SUS at 100°F (38°C). Some greases having these properties are:  
 Shell - Gadus S2 V100 2                      Mobil - Ronex MP  
 Mobil - Mobilith SHC100                      Mobil - Mobilith SHC220
2. Lubricate bearings prior to extended shutdown or storage and rotate shaft monthly to aid corrosion protection.
3. Any lubrication requirements noted on the general assembly drawing supersede requirements found here.

## Fans with Ball Bearings

Relubrication Schedule (Weeks)*									
Ball Bearing Pillow Blocks									
Shaft DIA	Speed (RPM)								
	500	1000	1500	2000	2500	3000	3500	4000	4500
1/2" thru 1 11/16" (13 - 45)	6	6	5	3	3	2	2	2	1
1 15/16" thru 2 7/16" (50 - 60)	6	5	4	2	2	1	1	1	1
2 11/16" thru 2 15/16" (65 - 75)	5	4	3	2	1	1	1	-	-
3 7/16" thru 3 15/16" (90 - 100)	4	3	2	1	1	-	-	-	-

\*Suggested lubrication interval under continuous operation in adverse loading or with elevated temperatures. For operation less than 24 hours per day or under ideal conditions, lubrication frequency may be reduced. 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.

1. Lubricate with a high quality NLGI No. 2 lithium-base grease having rust inhibitors and antioxidant additives, and a minimum oil viscosity of 500 SUS at 100°F (38°C). Some greases having these properties are:  
 Shell - Gadus S2 V100 2                      Mobil - Ronex MP  
 Mobil - Mobilith SHC100                      Mobil - Mobilith SHC220
2. Lubricate bearings prior to extended shutdown or storage and rotate shaft monthly to aid corrosion protection.
3. Any lubrication requirements noted on the general assembly drawing supersede requirements found here.

## Fans with Spherical Roller Bearings with Split Pillow Block Housings

Relubrication Schedule (Weeks)*										
Spherical Roller Bearing - Split Pillow Blocks										
Shaft DIA	Speed (RPM)									Grease to be added at each interval
	500	750	1000	1500	2000	2500	3000	3500	4000	
1 7/16" thru 1 15/16" (35 - 50)	6	4.5	4	4	3.5	2.5	2.5	1	1	0.50 oz.
2 3/16" thru 2 13/16" (55 - 70)	5	4.5	4	2.5	2.5	1.5	0.5	0.25	0.25	0.75 oz.
2 15/16" thru 3 15/16" (75 - 100)	4.5	4	3.5	2.5	1.5	1	0.5	-	-	2.00 oz.
4 7/16" thru 4 15/16" (110 - 125)	4	4	2.5	1	0.5	-	-	-	-	4.00 oz.
5 7/16" thru 6 15/16" (140 - 180)	4	2.5	1.5	-	-	-	-	-	-	8.5 oz.

\*Suggested lubrication interval under continuous operation in adverse loading or with elevated temperatures. For operation less than 24 hours per day or under ideal conditions, lubrication frequency may be reduced. 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.

1. Lubricate with a high quality NLGI No. 2 lithium-base grease having rust inhibitors and antioxidant additives, and a minimum oil viscosity of 500 SUS at 100°F (38°C). Some greases having these properties are:  
 Shell - Gadus S2 V100 2                      Mobil - Ronex MP  
 Mobil - Mobilith SHC100                      Mobil - Mobilith SHC220
2. Lubricate bearings prior to extended shutdown or storage and rotate shaft monthly to aid corrosion protection.
3. Purge or remove old grease when changing lubrication brands or types.
4. Any lubrication requirements noted on the general assembly drawing supersede requirements found here.

### Static Oil Lubrication

1. Use only high quality mineral oil with a VG grade indicated on the customer submittal drawing.
2. Static oil level should be at the center of the lower-most roller. (Do not overfill.)
3. Complete lubrication change should be made annually.



If you have additional questions, please contact your local Twin City Fan sales representative. To find your local sales representative, please visit [www.tcf.com](http://www.tcf.com).