

Ball Bearing Installation Instructions Set Screw, Skwezloc®

These instructions cover the set screw and Skwezloc style ball bearings. It is important that they be read in their entirety before attempting installation or removal. The procedures indicated should be carefully followed. Failure to do so can result in incorrect installation, which could cause bearing performance problems as well as serious personal injury.

Bearings in Bolt-on Housings (Units)

- Check area** - clean and organize bearing installation area, keep well lighted. Be sure mounting surfaces are clean and flat.
- Check shaft** - shaft should be within tolerance range shown in Table #1, clean and free of nicks and burrs. Mount bearing on unused section of shafting or repair/replace shafting as required.

Table #1

| Shafting | | | |
|---------------------|---------------|------------------|-------------------|
| Shaft Dia. | | Shaft Tolerance | |
| 1/2 - 1 15/16 in. | (12 - 49 mm) | +0 to -.0005 in. | (+0 to -.0125 mm) |
| 2 - 3 3/16 in. | (50 - 80 mm) | +0 to -.0010 in. | (+0 to -.025 mm) |
| 3 1/4 - 4 15/16 in. | (82 - 125 mm) | +0 to -.0015 in. | (+0 to -.040 mm) |

- Install unit** - slide unit onto shaft. If it is difficult to mount bearing on shaft, use a piece of emery cloth to reduce any high spots on shaft. **Do not hammer on any component of the bearing.**
 - Fasten unit in place** - install housing mounting bolts, check and align bearing and tighten mounting bolts to recommended fastener torques. Exercising extreme caution and safety, rotate shaft slowly to center bearing.
- 5.1 Set screw inserts**
- Set screws in a multiple bearing application should be aligned.
 - Torque first set screw to one half recommended torque in Table #2. Torque second set screw to full torque. Torque first set screw to full torque.
- 5.2 Double lock set screw inserts**
- Set screws in a multiple bearing application should be aligned.
 - On one end of the inner ring, torque first set screw to one half the recommended torque in Table #2. Torque second set screw to full torque. Torque first set screw to full torque.
 - Repeat step 5b on opposite end of inner ring.

Table #2

| Set Screw Tightening | | | | |
|----------------------|-----------|-------------|------------|-----------|
| Screw Size | Hex. Size | Torque | | |
| | | (in.-lbs.) | (ft.-lbs.) | (N-m) |
| 1/4-28 | 1/8 | 65 - 85 | - | 7 - 10 |
| 5/16-24 | 5/32 | 125 - 165 | - | 15 - 18 |
| 3/8-24 | 3/16 | 230 - 300 | - | 25 - 34 |
| 7/16-20 | 7/32 | 350 - 450 | 30 - 40 | 40 - 55 |
| 1/2-20 | 1/4 | 500 - 650 | 40 - 55 | 55 - 75 |
| 5/8-18 | 5/16 | 1100 - 1440 | 90 - 120 | 120 - 165 |

- 5.3 Skwezloc inserts**
- Be sure that the Skwezloc collar is fitted square and snug against the shoulder on the inner ring.
 - Torque the Skwezloc collar cap screw to torque recommended in Table #3.

Table #3

| Skwezloc Collar Tightening | | | |
|----------------------------|----------|------------|---------|
| English Screw Size | Hex Size | Torque | |
| | | (in.-lbs.) | (N-m) |
| #8-32 | T-25 | 65 - 70 | 7 - 8 |
| #10-24 | T-27 | 90 - 100 | 10 - 11 |
| 1/4-20 | T-30 | 220 - 240 | 25 - 27 |
| 5/16-18 | T-45 | 450 - 495 | 51 - 56 |



- Monitor installed bearing** - after bearing has been run for several minutes, and again after several hours, check bearing for excessive noise or vibration. Shutdown machine and check housing temp: typical applications operate at 100°F - 150°F (38°C - 66°C) (similar feel to household hot tap water temp). Tighten all locking devices after 500 hours or 3 months, whichever comes first.

Cylindrical OD Inserts and Inserts in Cylindrical OD Housings

Install insert - be sure housing bore is clean and free of debris. Press bearing into housing by applying force to face of outer ring. **Do not hammer on any component of the bearing or apply force to inner ring.** Proceed with Step #1-6 above. For recommended housing bore tolerance, consult Sealmaster® catalog or phone Sealmaster Application Engineering.

Spherical O.D. and (AR) Expansion Inserts

Important: Replacement Sealmaster bearing inserts are intended for use in Sealmaster housings. Housings should be thoroughly inspected for damage such as cracks, excessive wear or galling of the spherical seat, obstruction of grease port, etc. prior to installation.

Install insert - housing bearing seat should be wiped clean. Check grease port and clean free of debris. Wet housing bearing seat with oil or grease. Secure housing in a vise.

For Spherical OD:

- Place bearing insert into housing load slot, positioning the insert outer race dimple and lube hole in line with the casting lube port.
- Using a bar slipped into the insert bore as a lever, swing insert into place within the casting. Insert should have a snug fit in housing bore. **Do not hammer.** (Note: If insert can be made to swivel by hand in the housing bore, fit is too loose - replace entire unit. If heavy force is required, fit is too tight - replace entire unit).
- Ensure alignment of housing grease port hole and bearing dimple and lube hole.
- Place locking pin into lube port and thread lubrication fitting into threaded lube port hole. Grease fitting adjustment is critical (overtightening or undertightening can result in poor bearing performance), snug fit with wrench, then loosen 1/4 turn. Proceed with steps 1-6 above.

For Expansion Type:

- Slide bearing into housing. **Do not hammer.**
- Ensure alignment of housing grease port hole, brass ring lube hole and bearing dimple.
- Place locking pin into housing grease port hole, brass ring lube hole and bearing dimple. Thread lubrication fitting into threaded housing grease port hole. Grease fitting adjustment is critical (overtightening or undertightening can result in poor bearing performance), snug fitting with wrench, then loosen 1/4 turn. Axial positioning is critical.
- Position bearing insert to maximize axial expansion. Proceed with steps 1-6 above.

Relubrication Instructions

Sealmaster® GoldPlex™-HP has been developed based on the performance characteristics of Sealmaster bearings. Sealmaster bearings are factory filled with GoldPlex-HP and do not need to be greased upon initial installation. GoldPlex-HP is a lithium complex base, petroleum oil, NLGI grade 2 consistency.

Relubrication Instructions (continued)

Relubricatable Sealmaster bearings are supplied with grease fittings or zerks for ease of lubrication with hand or automatic grease guns. Always wipe the fitting and grease nozzle clean. **For safety, stop rotating equipment.** Add one half the recommended amount shown in Table #6. Start bearing, and run for a few minutes.

Stop bearing and add the second half of the recommended amount. A temperature rise, sometimes 30°F, after relubrication is normal. Bearing temperatures should not exceed 250°F (121°C). For any applications that are not in the ranges of the table, contact Sealmaster for suffix modified bearings that can handle temperatures up to 400°F (204°C).

Note: The tables below state general lubrication recommendations based on our experience and are intended as suggested or starting points only. For best results, specific applications should be monitored regularly and lubrication intervals and amounts adjusted accordingly.

Table #4 Lubrication Schedule for Sealmaster GoldPlex-HP

| Contamination Level - Clean to Light | | | |
|--------------------------------------|----------------|-------------------------------------|---|
| Bearing Temperature | 0-500 RPM | 500 RPM to 75% of Max Catalog Speed | 75% of Max Catalog to Max Catalog speed |
| -50°F to -30°F | 12-24 Months | 12-24 Months | 12-18 Months |
| -30°F to 120°F | 12-24 Months | 12-24 Months | 8-18 Months |
| 120°F to 180°F | 8-12 Months | 6-12 Months | 4-8 Months |
| 180°F to 250°F | 4-8 Months | 3-6 Months | 2-4 Months |
| Contamination Level - Medium | | | |
| Bearing Temperature | 0-500 RPM | 500 RPM to 75% of Max Catalog Speed | 75% of Max Catalog to Max Catalog speed |
| -50°F to -30°F | 1 Week-1 Month | 1 Week-1 Month | 1 Week-1 Month |
| -30°F to 120°F | 1 Week-1 Month | 1 Week-1 Month | 1 Week-1 Month |
| 120°F to 180°F | Daily-2 Weeks | Daily-2 Weeks | Daily-2 Weeks |
| 180°F to 250°F | Daily-2 Weeks | Daily-2 Weeks | Daily-2 Weeks |
| Contamination Level - Heavy | | | |
| Bearing Temperature | 0-500 RPM | 500 RPM to 75% of Max Catalog Speed | 75% of Max Catalog to Max Catalog speed |
| -50°F to -30°F | Daily-2 Weeks | Daily-2 Weeks | Daily-2 Weeks |
| -30°F to 120°F | Daily-2 Weeks | Daily-2 Weeks | Daily-2 Weeks |
| 120°F to 180°F | Daily-2 Weeks | Daily-2 Weeks | Daily-2 Weeks |
| 180°F to 250°F | Daily-2 Weeks | Daily-2 Weeks | Daily-2 Weeks |

Table #5 General Lubrication Schedule

| Contamination Level - Clean to Light | | | |
|--------------------------------------|-----------------|-------------------------------------|---|
| Bearing Temperature | 0-500 RPM | 500 RPM to 75% of Max Catalog Speed | 75% of Max Catalog to Max Catalog speed |
| -50°F to -30°F | Not recommended | Not recommended | Not recommended |
| -30°F to 120°F | 6-12 Months | 6-12 Months | 4-8 Months |
| 120°F to 180°F | 1-3 Months | 1-3 Months | Monthly |
| 180°F to 250°F | Daily-2 Weeks | Daily-2 Weeks | Daily-2 Weeks |
| Contamination Level - Medium | | | |
| Bearing Temperature | 0-500 RPM | 500 RPM to 75% of Max Catalog Speed | 75% of Max Catalog to Max Catalog speed |
| -50°F to -30°F | Not recommended | Not recommended | Not recommended |
| -30°F to 120°F | 1 Week-1 Month | 1 Week-1 Month | 1 Week-1 Month |
| 120°F to 180°F | Daily-2 Weeks | Daily-2 Weeks | Daily-2 Weeks |
| 180°F to 250°F | Daily-2 Weeks | Daily-2 Weeks | Daily-2 Weeks |
| Contamination Level - Heavy | | | |
| Bearing Temperature | 0-500 RPM | 500 RPM to 75% of Max Catalog Speed | 75% of Max Catalog to Max Catalog speed |
| -50°F to -30°F | Not recommended | Not recommended | Not recommended |
| -30°F to 120°F | Daily-2 Weeks | Daily-2 Weeks | Daily-2 Weeks |
| 120°F to 180°F | Daily-2 Weeks | Daily-2 Weeks | Daily-2 Weeks |
| 180°F to 250°F | Daily-2 Weeks | Daily-2 Weeks | Daily-2 Weeks |

Compatibility of grease is critical, therefore, if not using Sealmaster GoldPlex-HP, consult your grease supplier to ensure compatibility. GoldPlex-HP is a lithium complex base grease, petroleum oil, NLGI grade 2 consistency.

Note: Sealmaster bearings with the RM suffix are Reduced Maintenance Bearings (ex. NP-16 RM). Sealmaster Reduced Maintenance Bearings are designed to run with the standard factory fill of GoldPlex-HP grease. Units are designed not to be lubricated.

Application Assistance:

Please contact Sealmaster Engineering at:

Phone: (219) 465-2211

Fax: (219) 465-2263

Email: sealmaster.engineering@emerson-ept.com

Sealmaster ball bearings now incorporate a unique, color-coding system to help identify the type of grease in the bearings. Each relubricatable Sealmaster bearing features a colored fitting cap to help indicate the type of grease used in the individual bearings. Below is a list of the colored fitting caps and the type of grease they represent.

Yellow - yellow grease fitting caps indicate that bearings are filled with Sealmaster GoldPlex-HP high performance mounted bearing grease.

Red - red grease fitting caps indicate that bearings are filled with factory standard high-temperature grease. (Lithium complex base with synthetic hydrocarbon oil).

White - white grease fitting caps indicate that bearings are factory filled with Sealmaster GoldPlex-FG food grade mounted bearing grease (calcium sulfonate with highly refined mineral oil).

Black - black grease fitting caps indicate that bearings are filled with a non-standard grease.

| Table #6 | Recommended Relubrication Grease Charge | | |
|--------------------|---|----------|-------|
| | Shaft Size (in) | oz. | grams |
| 1/2 to 3/4 | 0.03 | 20 | 0.85 |
| 7/8 to 1 3/16 | 0.10 | 25-30 | 2.84 |
| 1 1/4 to 1 1/2 | 0.15 | 35-40 | 4.25 |
| 1 11/16 to 1 15/16 | 0.20 | 45-50 | 5.67 |
| 2 to 2 7/16 | 0.30 | 55-60 | 8.51 |
| 2 1/2 to 2 15/16 | 0.50 | 65-70 | 15.59 |
| 3 to 3 7/16 | 0.85 | 75-80 | 24.10 |
| 3 1/2 to 4 | 1.50 | 85 - 105 | 42.53 |