



OPERATION & MAINTENANCE

TURN OVER PILLOW BLOCK

Pillow blocks are designed for horizontal shafts, not for shafts at various angles, such as those found on turnover pulleys, i.e. 45 and 90 degrees. While nothing can overcome a horizontal designed pillow block bearing running in a non-horizontal position, several things can be done to improve the performance of the pillow block bearings in these applications. PPI is providing these instructions as a service to our customers, based on years of experience in the conveyor industry. PPI cannot be held responsible for performance of pillow block bearings on non-horizontal shafts.

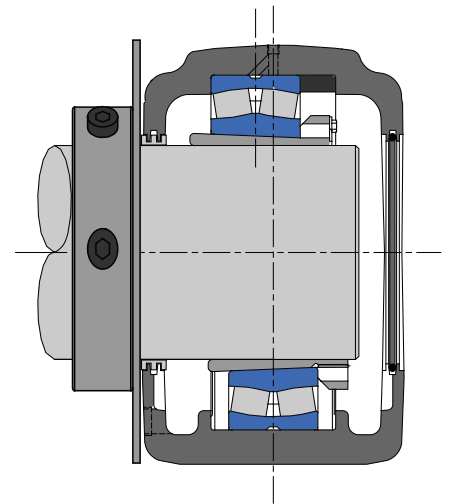
PROCEDURE FOR SHOP ASSEMBLED PILLOW BLOCKS

To increase the service life of turnover pillow block bearings, PPI recommends the following:

- 1) Use adapter mount bearings (SAF).
- 2) Use a minimum of 12 gauge steel end covers when the shaft terminates at the pillow block.
- 3) Grease daily to weekly.
- 4) Install lube lines to all turnover bearings to facilitate regular greasing.
- 5) Install flingers or shields next to the bearing and on the shaft on the upper side of the pillow block (as shown in the sketch to the right).
- 6) Do NOT install flingers or shields on the shaft on the lower side of the pillow block.

CAUSE AND EFFECT

- 1) The reason that setscrew mounted pillow block bearings are used for turnover pulleys is to make it easier to replace these bearings as they will fail more often than other pillow block bearings. However, the use of setscrew mounted bearings on turnover pulleys is not recommended. SAF (adapter mount bearings) are recommended, as the adapter holds the shaft more securely and by the nature of the SAF block, has a larger grease reservoir.
- 2) End Covers must be steel and seal the end of the pillow block. Non-horizontal shafts will expose the end cover to falling material, some which could be sizeable and damage an end cover that is not steel or too thin.
- 3) The reason to grease often is to help remove contaminants and to lubricate the bearing, which can lose lubrication when at an angle.
- 4) Since turnovers are often not in an easy location to get to the pillow blocks, the bearings will get grease more often if there is a convenient location to lubricate the bearing.
- 5) Non-horizontal shaft will expose the Pillow Block seal to contaminants. By installing a flinger on the shaft on the uphill side of the bearing, more of this material will be deflected before it gets to the seal.
- 6) The reason that flingers are not installed on the downhill side of the housing is gravity. A flinger would hold dirt next to the seal, allowing entrance into the bearing. But, leaving this exposed, allows the dirt to fall away.



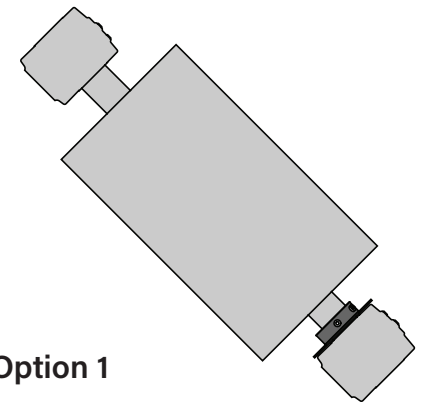
SAF Cutaway with flinger

INSTALLATION (Option 1)

The sketch to the right shows a typical turnover pulley with steel end covers. A flinger (dark grey in the illustrations) is installed on the shaft on the upper side of the lower pillow block bearing. The flinger is installed within 1/16" of the triple labyrinth seal.

The flinger is on the bearing that is subject to the highest failure rate. This is caused by material falling off the belt onto the pillow block.

During installation of the turnover pulley into the conveyor, the shaft is rotated and the flinger is checked to be sure that the flinger does not contact or rub any stationary parts, i.e. so that the flinger does not impede the rotation of the pulley. Apply a bead of sealant to seal the 2 halves of the split flinger together.



Option 1

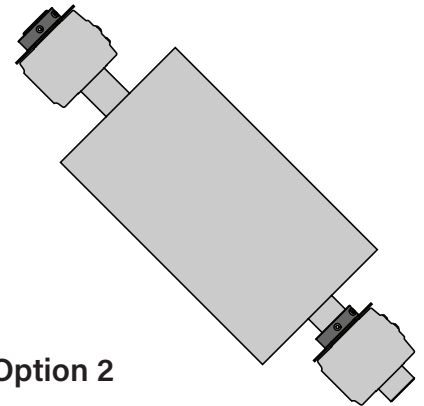
INSTALLATION (Option 2)

The sketch below shows the installation of 2 flingers, one on the upper side of each pillow block. This option is used when steel covers are not available or there is a need for a shaft extension on the upper pillow block.

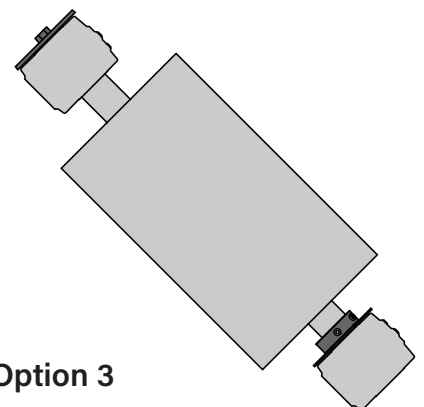
INSTALLATION (Option 3)

The sketch below shows the installation of 1 flinger on the lower bearing and a keeper plate on the upper end. The shaft would need to have the end drilled and tapped for the keeper plate. The keeper plate is usually held in place by 3/4" bolt and the keeper plate is the same OD as the flinger OD for that shaft size, as listed in the chart on the next page.

(Note: The flinger OD has been maximized to better deflect material away from the seal, but the radius is still less than the shaft height, so it will not interfere with the structure that the pillow block is mounted upon.)



Option 2



Option 3

PPI FLINGERS			
PART #	SHAFT DIA	OD	SHAFT EXT.
FLINGERSP115	1 15/16	4 1/4	1
FLINGERSP207	2 7/16	5 1/4	1
FLINGERSP215	2 15/16	6	1 1/8
FLINGERSP307	3 7/16	7	1 1/8
FLINGERSP315	3 15/16	8	1 1/8
FLINGERSP407	4 7/16	9	1 1/8
FLINGERSP415	4 15/16	10	1 1/8
FLINGERSP507	5 7/16	11	1 1/8
FLINGERSP515	5 15/16	12	1 1/8

Note: All PPI Flingers are split. This allows the flinger to be added to the shaft after installation.

Shaft Ext. is the recommended room needed on the inside of the pillow block for clearance with the pulley or shaft journal (if used). It is also the minimum recommended shaft extension for use with Option 2.

GREASE LUBRICATION

Grease lubrication recommendations are in the following chart:

TURNOVER GREASING INTERVALS		
CONDITIONS	0° TO 120°F (-20° TO 50° C)	120° TO 200°F (50° TO 90° C)
Moderate to Dirty	Weekly	Daily
Extremely Dirty	Daily	Every Shift

*For conditions which are not completely covered in the chart consult PPI.

PPI recommends a high quality #2 lithium based grease be used in conveyor pulley applications. This is a general guide. Don't use lubricants of dibasic ester types in bearings having polymeric roller cages without consulting PPI. A reputable lubricant manufacturer should be consulted to confirm the lubricant selection and application.

Check the grease condition for excessive oiliness or dirt, and adjust greasing frequency accordingly. For conditions and/or temperatures outside of this range, consult with a reputable lubricant supplier.

Standard manufacturing practice is to 100% grease fill conveyor pulley SAF Pillow Block Bearings at the factory. As it may be some time until the pulley is put into service, this reduces the possibility of condensation in the housing. This is the preferred method for larger, slower speed bearings, such as those used on pulleys. Therefore, some grease may be purged out during the first "running" of the pulley. This is considered normal. PPI cannot be held responsible for performance of individual batches or grease. Changes in lubricant specifications, performance, and lubricant guarantees are the responsibility of the lubricant manufacturer.

RE-LUBRICATION AFTER RUNNING – Re-lubrication of units in service should be through the fitting in the center of the unit. The amount of grease used should be enough to purge old grease from the bearing only (not the entire pillow block) and form a cushion of grease adjacent to the bearing face

COMPLETE ASSEMBLY – With the mounting bolts snug, check the alignment and freedom of rotation. Visually check the clearance between the shaft and the bore of the seal. Measure the distance between the outside diameter of the seal and the diameter of the housing counter-bore in three places. Be sure that each measurement is taken at 1/4 to 1/3 of the seal circumference (90 to 120 degrees of rotation) between measurements.

All three measurements should be uniform to insure proper alignment. Align by shimming or shifting as necessary. Use large area shims to avoid distorting the housing and pinching the bearing. Appropriate use of stop bars against faces or ends of feet opposite the direction of load or vibration to avoid shifting of the housing is recommended. Finally, tighten or torque mounting bolts securely. Up to SAE Grade 5 mounting bolts can be used, properly torque, to mount cast iron housing. After installation, inspect the turnovers by rotating the shaft and check that the flinger does not contact or rub any stationary parts.



CORPORATE OFFICE • P.O. Box 287 • Pella, IA 50219
800.247.1228 • 641.628.3115 • 641.628.3658 FAX