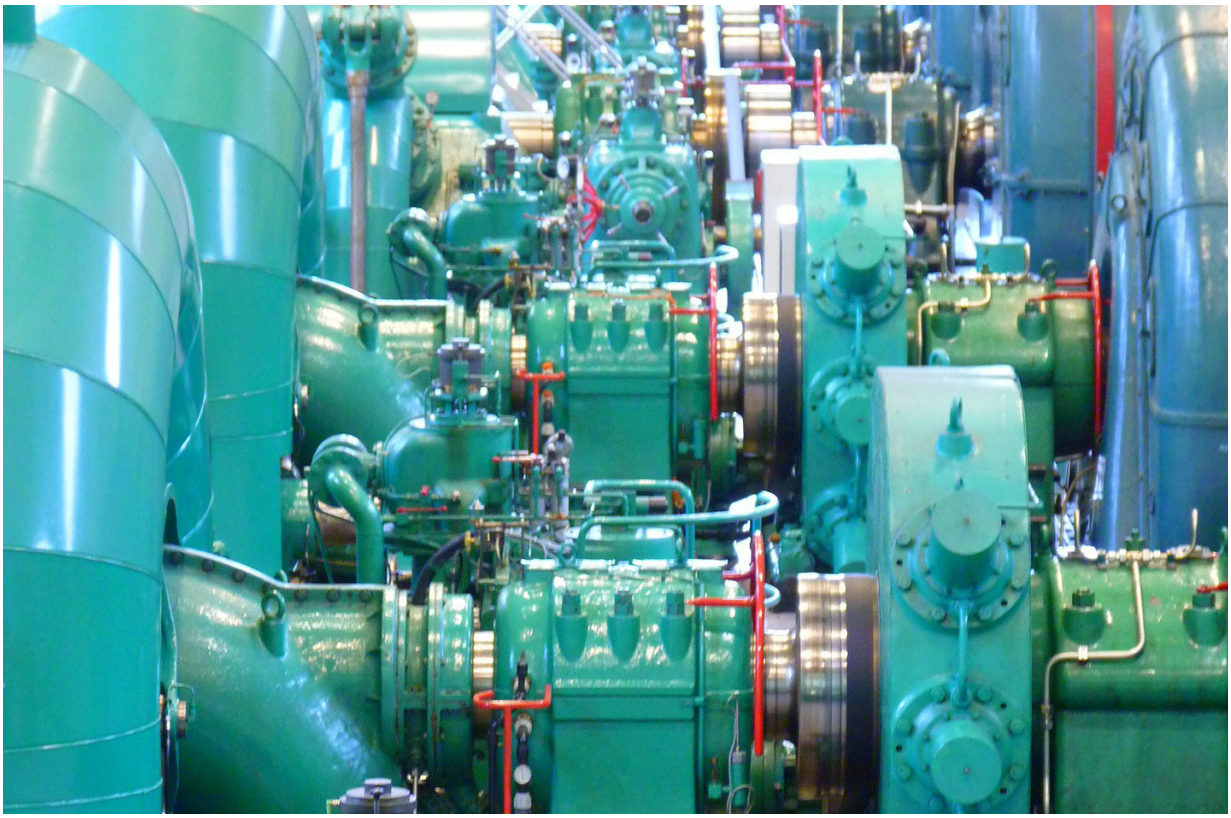
PROXIMITY PROBE MOUNTING

THRUST MEASUREMENTS



WHEN RELIABILITY MATTERS
CONNECT TO CONFIDENCE

One of the issues for reliability professionals in the current era is how to effectively and reliably monitor thrust bearing wear in critical applications. Axial monitoring of plain or journal bearings on assets such as turbines can increase reliability and safety.

The axial or thrust position is one of the most critical measurements in rotating machinery. If a thrust bearing should fail, axial movement and forces of the shaft are no longer constrained and must instead be translated to some other part of the machine.

When this is allowed to occur, the uncontrolled axial forces can put strain on parts not designed to take them or the movement will quickly allow rotating and non-rotating elements to come in contact, resulting in disastrous consequences. Such regrettable occurrences are financially devastating for the asset and can also be a serious safety risk to plant personnel.

Preparing for Installation

Several important measurement techniques must be decided upon prior to installation and calibration of the system. The determined techniques should be used consistently throughout the entire plant.

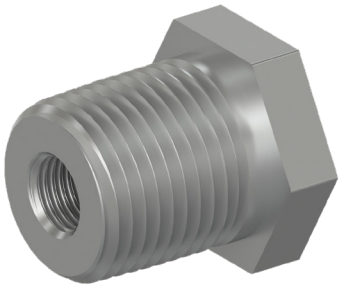
The most common thrust position full scale range selected is usually +40 to -40 mils (which falls within the CTC PRO Line 8mm proximity probe systems normal range of 90 mils).

The most common recommendation is that proximity probes used to monitor thrust position should be placed within two shaft diameters of the thrust bearing. For example, on a four-inch diameter shaft, the probes should be mounted no further than eight inches from the thrust collar. This assures that the proximity probe system is not adversely affected by shaft thermal growth. In some cases this is not possible, and the analysts need to be aware of the thermal growth expected and plan accordingly.

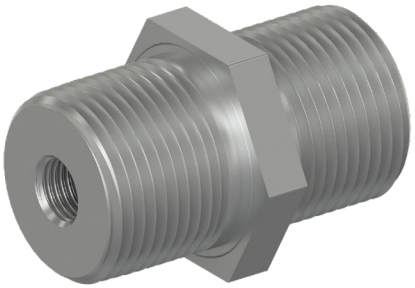
Two thrust probes should be used for redundancy to ensure reliable machine protection. Sometimes three are required for compliance with standards such as SIL 3.

Installation Process

Special brackets or housings may be required to achieve correct probe positioning and adjustment. However, probes may often be mounted through the bearing casing using CTC PRO Line **DM901** and **DM903** series probe mounting adapters.



DM901-1A
MOUNTING ADAPTER BUSHING



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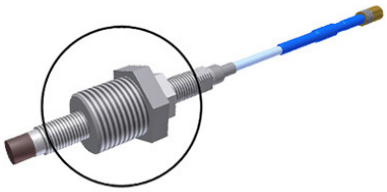
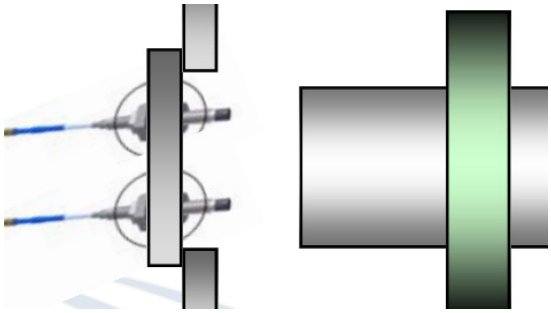


Where proximity probes cannot be mounted directly monitoring the shaft, they may sometimes be mounted to observe the thrust collar or some other integral axial shaft surface.

Once the proximity probes are installed correctly, they must then be properly gapped. Extreme care must be taken when this step is performed. Improper gapping will result in the permissible range of the thrust bearing falling outside of the probe's linear measurement range.



dual axial probes mounted with DM901-1A Bushings

In order to properly gap the proximity probe, the shaft is mechanically barred against the active thrust shoe or other known position. The proximity probe may then be gapped and the DC voltage documented.

In order to ensure the proper placement of the proximity probe, a worksheet incorporating the allowable shaft wear, float zone, and probe parameters should be developed. This will help determine the optimum gap and ensure that all alarms fall within the proximity probes' measurement range.