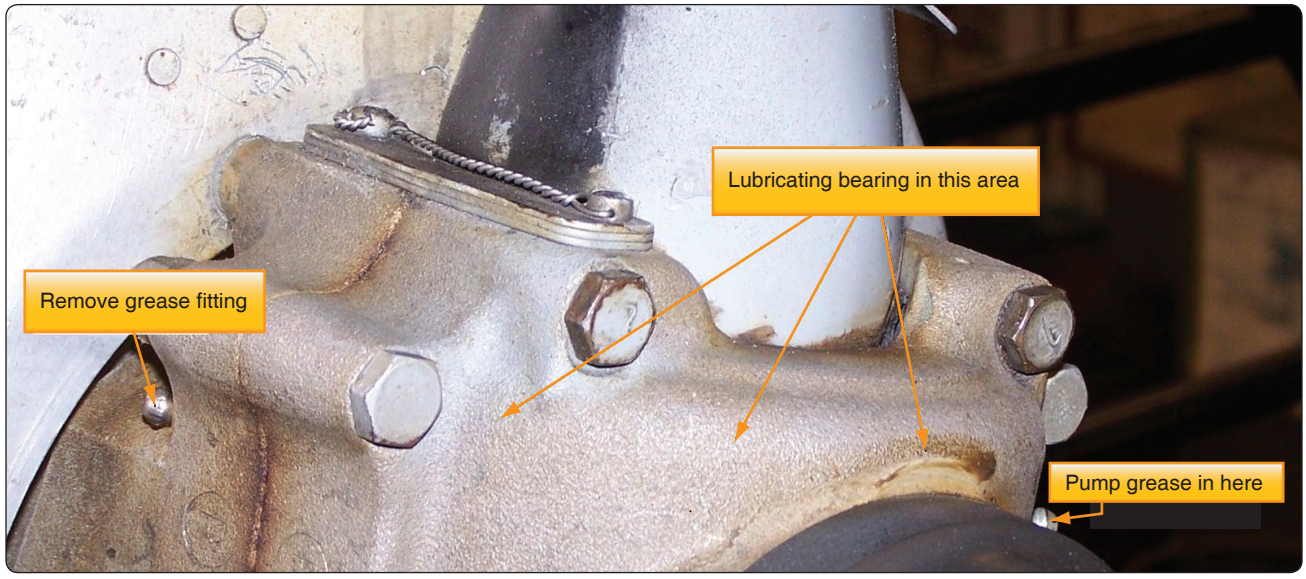

Figure 7-42. *Lubricating propeller bearings.*

Propeller Overhaul

Propeller overhaul should be accomplished at the maximum hours or calendar time limit, whichever occurs first. Upon receipt for overhaul, prepare a document that tracks the propeller components throughout the overhaul process. Research all applicable ADs, current specifications, and manufacturers' SBs for incorporation during the overhaul process. Double check the serial number and make notes on the work order regarding the general condition in which the propeller was received. As you disassemble and clean the unit, perform a preliminary inspection on all related parts. Record those revealing discrepancies requiring rework or replacement in the overhaul record by part number, along with the reason for the required action. Discard all threaded fasteners during disassembly and, with a few exceptions permitted by the manufacturer, replace with new components. Many specialized tools and fixtures are required in the disassembly and proper reassembly of propellers. These tools are generally model specific and range from massive 15-foot torque adapter bars and 100-ton presses down to tiny dowel pin alignment devices. Dimensionally inspect components that are subject to wear to the manufacturer's specifications. After passing inspection, anodize aluminum parts and cadmium plate steel parts for maximum protection against corrosion.

The Hub

Strip nonferrous hubs and components of paint and anodize and inspect for cracks using a liquid penetrant inspection (LPI) procedure. Etch, rinse, dry, and then immerse the parts in a fluorescent penetrant solution. After soaking in the penetrant, rinse them again and blow dry. Then, apply developer, which draws any penetrant caught in cracks or defects to the surface. Under an ultraviolet inspection lamp, the penetrant clearly identifies the flaw. Certain models of hubs are also eddy-current inspected around critical, high-stress areas. Eddy-current testing passes an electrical current through a conductive material that, when disturbed by a crack or other flaw, causes a fluctuation on a meter or CRT display. This method of inspection can detect flaws that are below the surface of the material and not exposed to the eye. Magnetic particle inspection (MPI) is used to locate flaws in steel parts. The steel parts of the propeller are magnetized by passing a strong electrical current through them. A suspension of fluorescent iron oxide powder and solvent is spread over the parts. While magnetized, the particles within the fluid on the parts surface immediately align themselves with the discontinuity. When examined under black light, the crack or fault shows as a bright fluorescent line.

The first step in blade overhaul is the precise measurement of blade width, thickness, face alignment, blade angles, and length. Then, record the measurements on each blade's inspection record and check against the minimum acceptable overhaul specifications established by the manufacturer. Blade overhaul involves surface grinding and repitching, if necessary. Occasionally, blade straightening is also required. The manufacturer's specification dictates certain allowable limits within which a damaged blade may be cold straightened and returned to airworthy condition. Specialized tooling and precision measuring equipment permit pitch changes or corrections of less than one-tenth of one degree. To ensure accuracy, take frequent face alignment and angle measurements during the repair process. Precision hand grind the blade airfoil to remove all corrosion, scratches, and surface flaws. After completely removing all stress risers and faults,