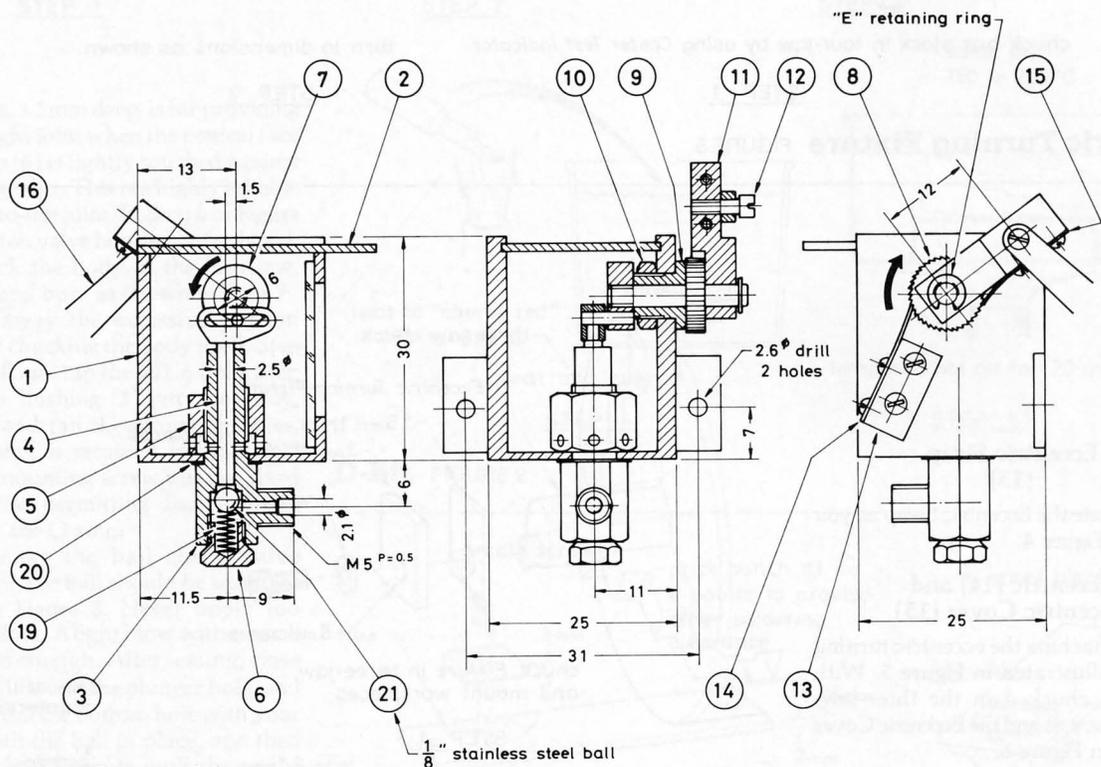


10 Lubricator



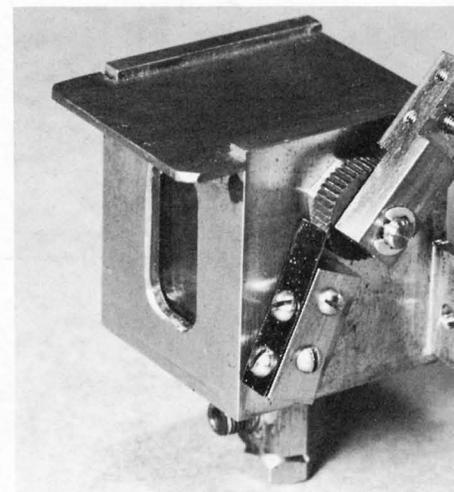
Lubricator Assembly

The Lubricator injects oil into the steam piping, and the oil goes together with the steam to the Steam Chest to lubricate the Slide Valve in the chest and the Piston running in the Cylinder.

The Oil Tank (1) housing the oil pump is mounted on the front wall of the Crankshaft Frame. The pump is driven with the Eccentric Rod (16) extending from the Eccentric (17) to the Lever (11). By the up-and-down motion of the Lever, the Ratchet Wheel (8) is revolved tooth-by-tooth with the Spring Pawl (15). As the Ratchet wheel has forty teeth, it revolves one full turn with forty revolutions of the Crankshaft. Another Spring Pawl (14) prevents the Ratchet Wheel from being revolved in reverse by the oil pressure developed by the pump. Attached on the other end of the Ratchet is the Crank (7) which drives the

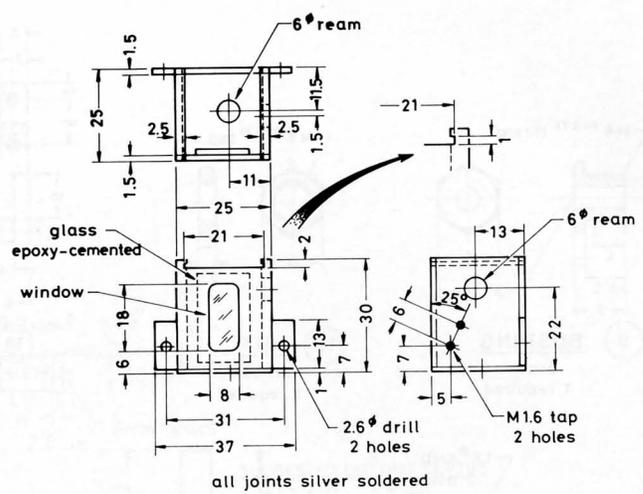
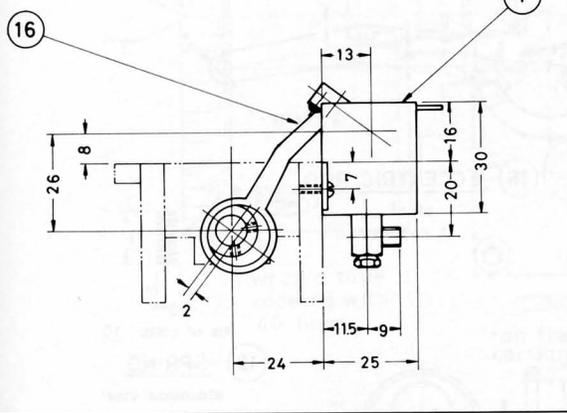
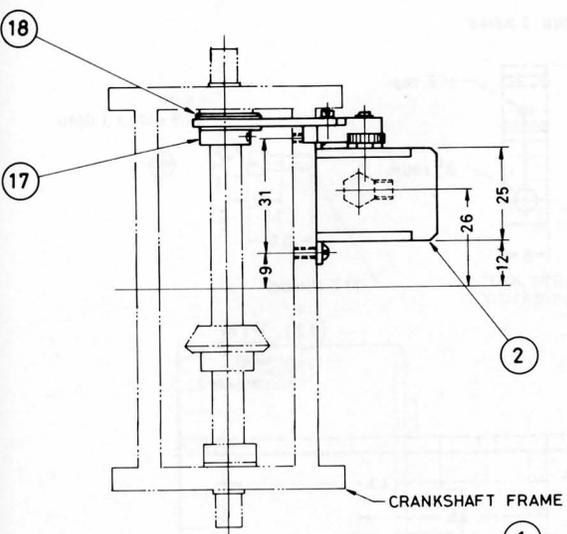
Plunger (4) in the Pump Body (3). As the Plunger is moved upward, the space between the Plunger and the Ball (21) becomes a vacuum. At the moment when the Plunger has uncovered the oil holes in the Pump Body, the oil in the tank is sucked into the Pump Body. And when the Plunger is forced down below the oil holes, the oil is pushed out through the ball check valve. The viscosity of the oil keeps it from leaking through the radial clearance between the Plunger and the pump bore. This type of lubricator, having the simplest construction with the fewest number of parts, can develop a pressure higher than 15 kg/cm². The slot in the plunger head is offset by 1.5mm to minimize the off-center effect during the downward stroke.

Oil can be filled by sliding out the Cover (2) while seeing the oil level

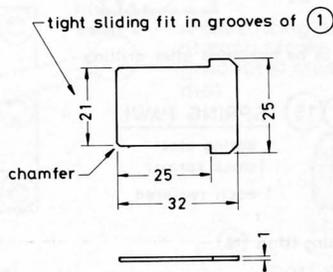


Lubricator

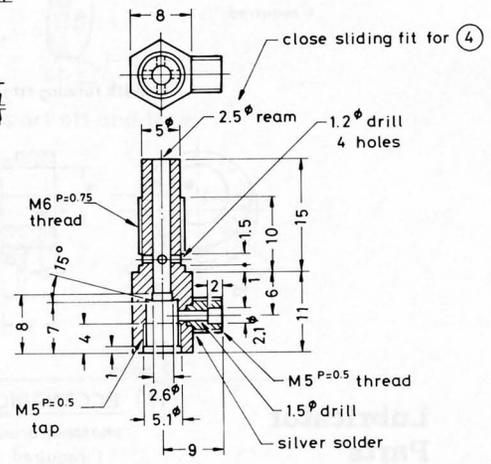
through the glass window of the Oil Tank. **Photo 1** shows the completed Lubricator.



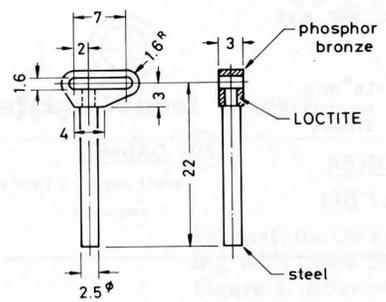
1 OIL TANK
brass
1 required



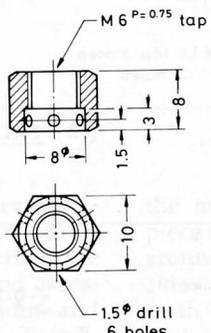
2 COVER
brass
1 required



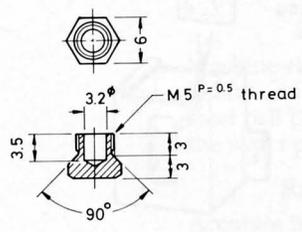
3 PUMP BODY
brass
1 required



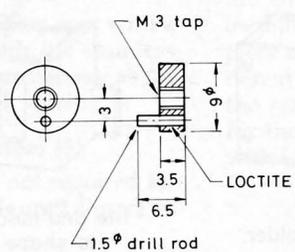
4 PLUNGER
1 required



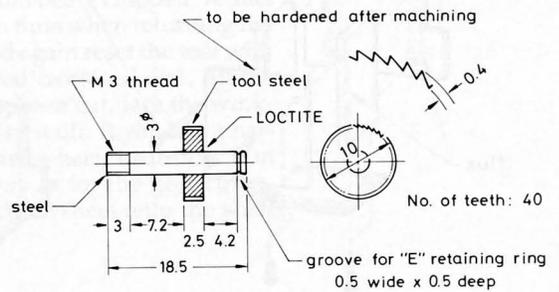
5 NUT
brass
1 required



6 CAP
brass
1 required

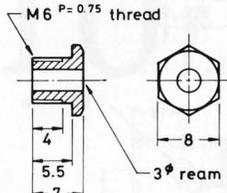


7 CRANK
steel
1 required

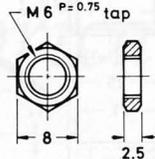


8 RATCHET WHEEL
1 required

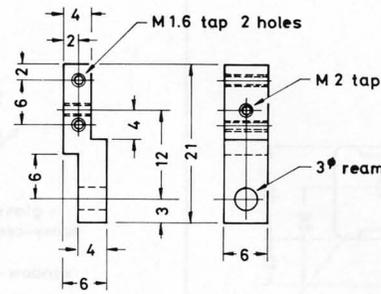
Lubricator Parts



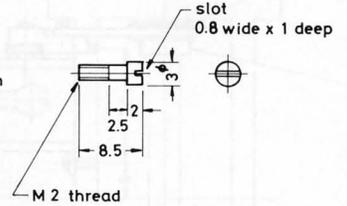
9 **BUSHING**
brass
1 required



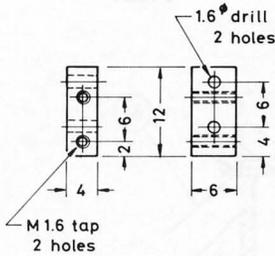
10 **NUT**
brass
1 required



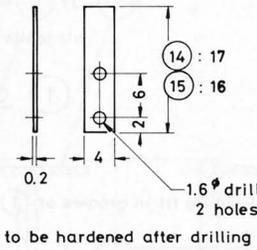
11 **LEVER**
brass
1 required



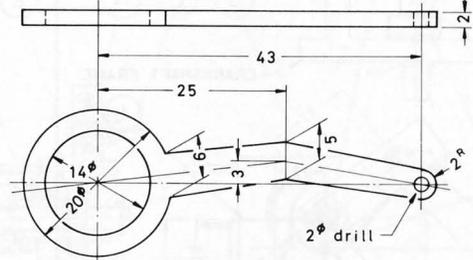
12 **PIN**
steel
1 required



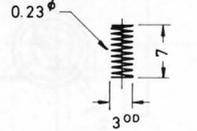
13 **PAWL BRACKET**
brass
1 required



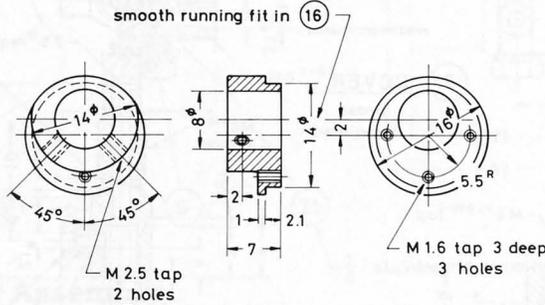
14 15 **SPRING PAWL**
spring steel
(clock spring)
1 each required



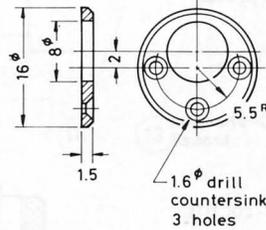
16 **ECCENTRIC ROD**
steel
1 required



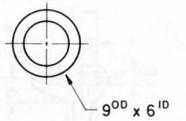
19 **SPRING**
stainless steel
1 required



17 **ECCENTRIC**
phosphor bronze
1 required

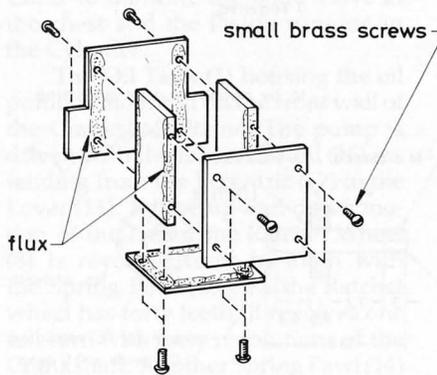


18 **ECCENTRIC COVER**
steel
1 required

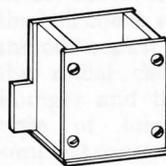


20 **GASKET**
kraft paper 0.1mm thick
1 required

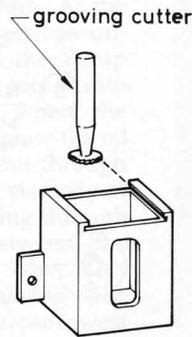
Lubricator Parts



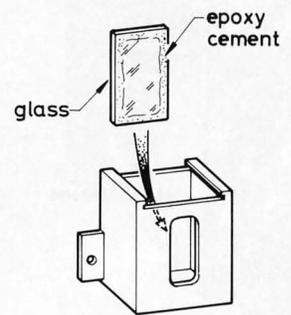
assemble with screws
STEP 1



silver solder
STEP 2

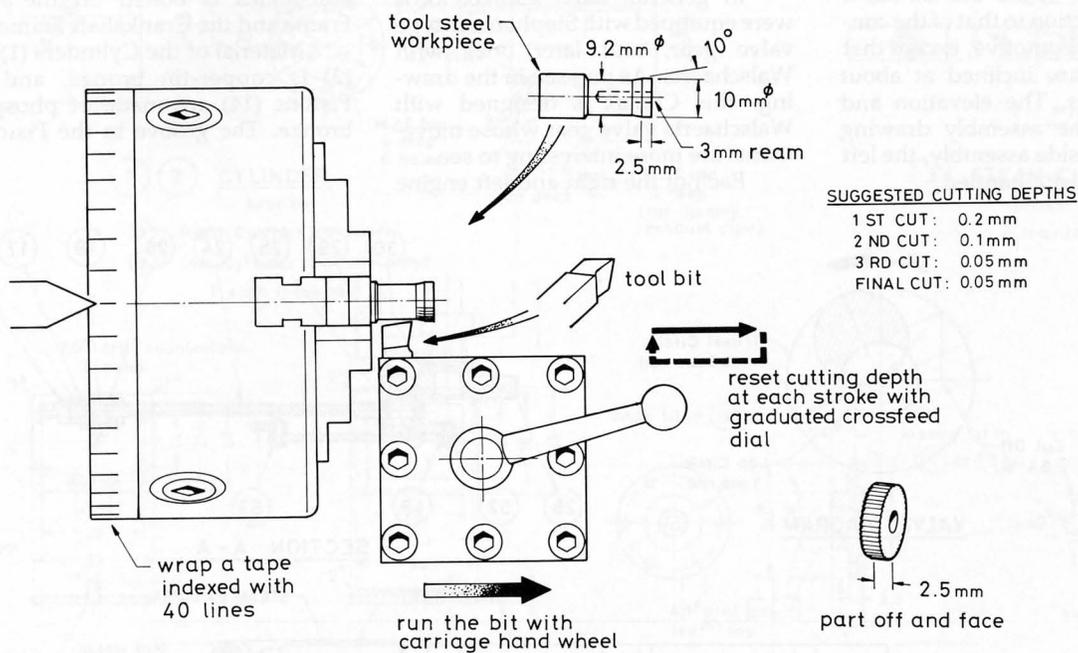


file and machine to shape
STEP 3



cement sight glass
STEP 4

Oil Tank FIGURE 1



Ratchet Wheel FIGURE 2

Oil Tank (1)

Fabricate the Oil Tank by silver soldering with brass plates as you see in **Figure 1**. After silver soldering, file away all the screw heads and excessive metal. Open up the window and machine the top as shown in Step 3. Finally, attach a piece of glass inside the window with epoxy cement.

Pump Body (3)

Machine the check valve seat with a D-bit, and seat it with the stainless steel ball (21) in the same way as for the water pump check valves.

Ratchet Wheel (8)

Accurate indexing is not required for the Ratchet Wheel. **Figure 2** illustrates

the machining method. The workpiece is indexed with a tape wrapped around the chuck. Hold the tool bit sideways in the toolpost, and cut the teeth by feeding the lathe carriage with the handwheel. To prevent the tool edge from being chipped, retract the tool each time when returning the carriage, and again reset the tool with the graduated crossfeed dial. All the teeth having been cut, face the workpiece and part it off. If you like a hardened ratchet wheel, heat-treat it in the same way as for the gear cutter. Fix the Ratchet Wheel onto the shaft with *Loctite*.