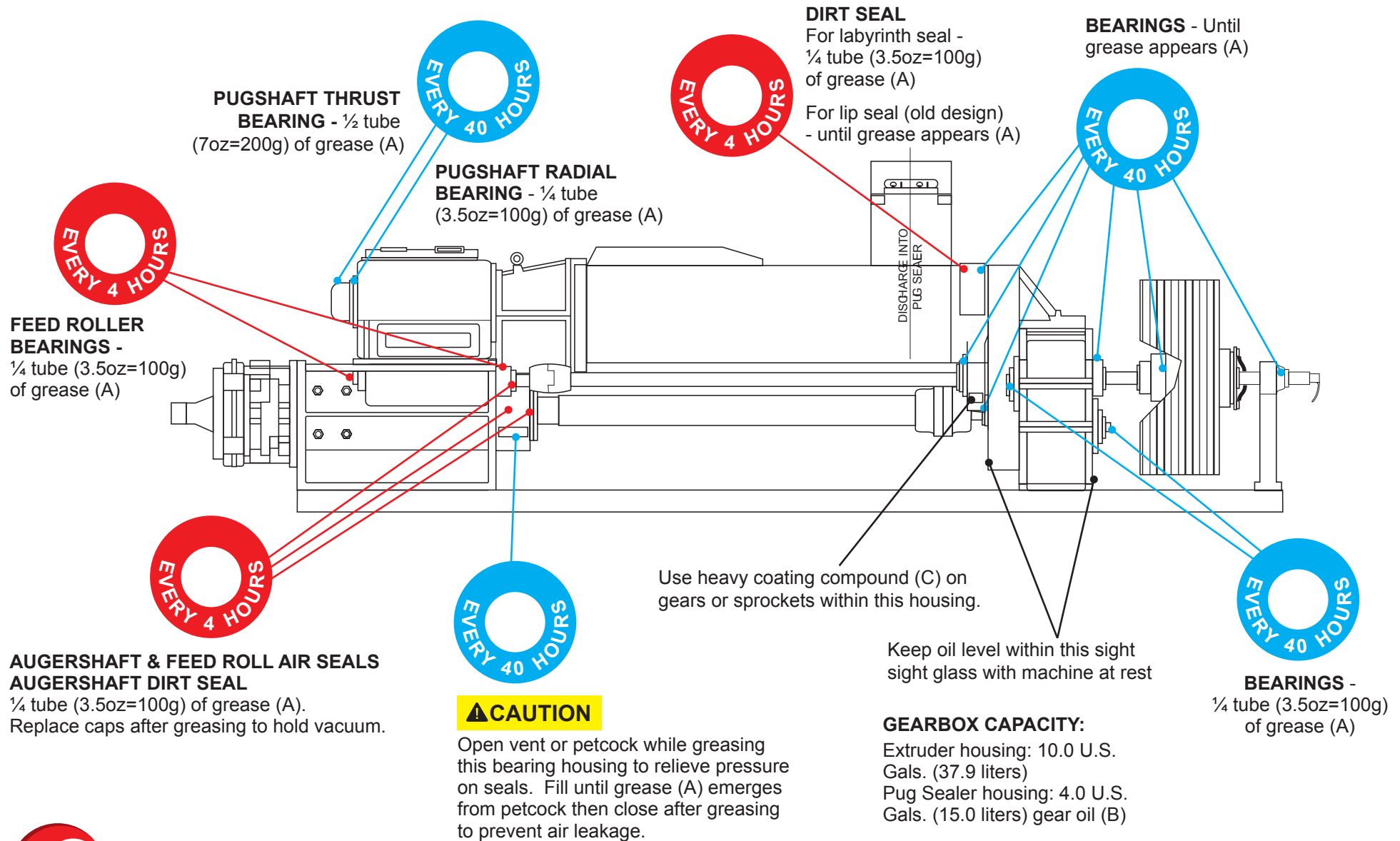


40F Combined



9 - LUBRICATION INSTRUCTIONS

OIL CHANGE INTERVALS

LOCATION	FREQUENCY
Extruder & Pug Sealer Thrust Bearing Assembly (Oil-Filled)	Change after first 100 hours (break-in period of new assembly). Change every 1,000 hours of operation after break-in period.
Extruder & Pug Sealer Main Gearbox (Oil-Filled)	Change after first 100 hours (break-in period of new assembly) Change every 1,000 hours of operation after that. More frequent oil changes may be required for especially harsh, dirty conditions.

LUBRICATION BASICS

- Oil in any gearbox or thrust bearing assembly should be changed after the first 100 hours of operation (break-in period). Afterwards, the oil should be changed every 1,000 hours of operation. More frequent oil changes may be needed for especially humid or dirty conditions.
- Never mix brands of oil or grades of oil without flushing the old lubricant out. Mixing of additives from two different brands or different grades of the same brand can be disastrous. Consult the oil manufacturer or distributor for recommended practices. Make sure the machine is not loaded with clay when flushing old lubricant.
- More viscous oils can help with gear wear but hurt bearing lubrication. It is critical that these heavier oils are above the recommended minimum operating temperatures to make sure they will adequately lubricate the bearings and will properly pump. These more viscous oils require significantly more suction from the pump to draw the oil out of the sump. For example, ISO 460 EP gear oil has nearly three times the viscosity at 75°F [24°C] as ISO 220 EP.
- If the machinery is equipped with a lubrication pump, make sure the pump is working properly, filters are in good order, and that all sight glasses show a stream of oil.
- For extruders and pug sealers equipped with a lubrication pump, install the magnetic trap vent plug if the machine is not already equipped with it. This prevents air from being drawn into the pump suction line, yet still allows the sump oil level to be checked.
- Any mineral-base oil (not synthetic oil) should not exceed 165°F (74°C). Above this temperature the oil degrades very quickly and loses many of its designed properties. If the oil in the gearbox is running hotter than 165°F (74°C) the oil should be changed immediately. If the problem persists, consult J.C. Steele for possible causes and corrective actions.
- Synthetic oils can be used, but the viscosity should match the recommended mineral oil viscosity.
- Especially dusty and/or humid environments may require desiccant filter breathers on gearboxes.

WARNING

Do not attempt to add grease to pulleyhubs while the machine is running. Use a remote greasing system to lubricate all other grease-filled bearings and seals while the machine is running. Attempting to manually grease running machinery can result in severe injury or death.

- Always clean grease fittings and grease guns before using.

NOTE: See Page 9-2 for complete listing of lubricants.

TYPE	DESCRIPTION OF LUBRICANT
A	EXTREME PRESSURE (EP) TYPE LITHIUM-BASED GREASE of NLGI consistency No. 2, having a TIMKEN OK load of 40 lbs. [18Kg] or more. DO NOT USE "ALL PURPOSE" OR BALL BEARING GREASES. This quality of grease or a higher quality is recommended. Using the best grease everywhere reduces chances for error.
B	<p>EXTREME-PRESSURE (EP) TYPE GEAR OIL</p> <ul style="list-style-type: none"> • ISO 220 EP (AGMA 5 EP). Use this oil when ambient temperatures are below 100°F (38°C) and when the normal production schedule is below 12 hours per day. Examples of acceptable products are: Chevron EP ISO 220, Shell Omala EP 220, Exxon Spartan EP 220, Mobilgear 630 EP. • ISO 320 EP (AGMA 6 EP). Use this oil when ambient temperatures exceed 100°F (38° C) or when the production schedule consistently exceeds 10 to 12 hours per day. If this oil is used it should be kept above 60°F [16°C] (maximum viscosity 1800 centistokes) to insure it will be thin enough to adequately lubricate the gearbox bearings on cold start-ups and thin enough to pump properly. If needed, use heater strips on the gearbox oil sump but monitor the oil temperature and lubrication system to determine how many heater strips are needed and when the heat should be applied. Examples of acceptable products are: Chevron EP ISO 320, Shell Omala EP 320, Exxon Spartan EP 320, Mobilgear 632 EP. • ISO 460 EP (AGMA 7 EP). This is recommended on a case by case basis for heavily loaded or very hot applications. ISO 460 oil has over twice the viscosity at 100°F [38°C] of ISO 220 oil and nearly three times the viscosity at 75°F [24°C]. If this oil is used it should be heated above 75°F [24°C] so it will be thin enough to adequately lubricate the gearbox bearings and to pump properly. Examples of acceptable products are: Chevron EP ISO 460, Shell Omala EP 460, Exxon Spartan EP 460, Mobilgear 634 EP.
C	HEAVY COATING COMPOUND (OPEN GEAR LUBE), designed for slow running, rough cast gears. This viscous, adhesive lubricant may have a fibrous, stringy consistency. Examples of acceptable products include: Chevron Open Gear Lube, Mobil Mobiltac LL, Shell Malleus® Compound 0.
D	STIFF (OR HEAVY) WATER-REPELLENT GREASE, such as WATER-PUMP GREASE with added graphite if available and molybdenum disulfide or other additives to inhibit dispersal
E	TRANSFORMER (preferred) or SPINDLE OIL, ASTM-60 viscosity grade. The characteristic of oil used in the Double-Tank Cooling/Sealing Assembly of a Rotary Vacuum Pump to be MINIMIZED is its tendency to "foam" or to emulsify with water. Examples of acceptable products are: Shell Diala A or B Transformer Oil, Shell Spindle Oil 10, Texaco Transformer Oil, Texaco Spindura 10, Exxon Univolt N61B, Mobil Velocite No. 6.
F	MOTOR-OIL, SAE 20/40, unless instruction book for proprietary speed reducers directs otherwise.
G	MOTOR OIL ASTM-150 (ISO Grade 32 or SAE-10W) is used in Air Line Lubricators.
H	MACHINE OIL, AGMA 7 (ISO 460) for extruder & pug sealer thrust bearing assemblies (oil-filled). We specifically use the compounded oil Lubriplate 8 in all oil-filled thrust bearing assemblies. AGMA 7 EP gear oil can be used alternatively (see recommendations for B lubricants).