



# **Maintenance Manual for All Standard Radiator Models**

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### III GENERAL MAINTENANCE

Most IEA radiators are nearly maintenance free. Minor maintenance items should be performed to ensure your IEA radiator operates at top performance and to avoid hazards.

#### A.) **Cleaning**

Periodically inspect the radiator core for signs of damage, corrosion, and clogging. Straighten any fins that have become bent or have been flattened. If the radiator core appears to be clogged with debris, it should be cleaned using water

and mild detergent that does not react with copper or aluminum. Clean the cores from the AIR DISCHARGE side of the radiator to avoid pushing the debris further into the core. Clean the outside of the radiator, if dirty, to aid in routine inspection of the cooling system. Take care to keep all sight glasses clean to ease system fluid inspection. **CAUTION:** Fan Bearings and Motors should not be sprayed with water or cleaner. Directly spraying could WASH-OUT the Fan Bearing and/or Motor Bearing grease which can lead to premature bearing failure. After washing the radiator, proper lubrication of Fan and Motor Bearings is always recommended. Refer to the Lubrication Section of the IOM. Repair or replacement of the core should be performed by qualified service personnel. If any air filters are used upstream of the core, inspect and replace as needed.

Periodically test coolant fluid samples to assure it is free of sediment, corrosive products, and/or biological contaminants. If automatic air vents are not used in the cooling system, periodic air venting should be performed to remove accumulated air. **CAUTION** should be exercised when venting the cooling system to avoid injury. High pressure and/or high temperature fluids can cause serious injury. If the core is to be stored during the winter, the coolant should be removed and the system thoroughly dried to avoid system damage due to freezing, unless an anti-freeze agent is used in the cooling system.

## B.) Lubrication

Radiators using bearings require greasing at an interval dependant upon their usage. The table below shows a lubrication maintenance schedule according to service hours. All motor bearings should be greased with Mobil Polyrex EM polyurea base grease or equivalent. All fan bearings should be greased with Certified Labs Premalube Red aluminum complex base grease or equivalent. DO NOT MIX GREASE TYPES. Radiators requiring different lubricant or lubrication methods will be specified on the radiator drawing.

Table 1

<u>SERVICE HOURS</u>	<u>LUBRICATION FREQUENCY</u>
40 Hours per Year	Every Six Months
18 Hours per Day	Twice a Month
18 Hours per Day (Dirty Environment)	Once Each Week
24 Hours per Day	Once Each Week
24 Hours per Day (Dirty Environment)	Daily

When lubricating pillow block bearings, add greases slowly until it shows slightly at the seals. This indicates proper bearing lubrication. The use of excessive pressure when greasing the bearing can pop the bearing seals. Electric motor bearings should always be kept between  $\frac{1}{2}$  and  $\frac{3}{4}$  full. This will ensure proper

lubrication to the motor. Both pillow block and electric motor bearings should be serviced using the maintenance schedule listed above.

## C.) Belt Tension

Radiators using V-belt driven fans should have the belt tensions checked regularly. On remote units, belts and sheaves are installed by IEA. On EC-F type units, belts and sheaves may be supplied by IEA, but are mounted by the customer. IEA recommends periodic checks using a tachometer to ensure compliance of fan speed to specifications.

1. All sheaves MUST be aligned correctly to  $\pm 0.0625$ , or premature belt failure may occur. Use a long level to check sheave alignment (see Fig 31).
2. Install the belts onto the sheaves. Tension the belts on the slack-side of the drive with the idler until the correct belt tension is achieved. Follow the operating instructions of the belt tensioning gage being used to measure belt tension.
3. Recheck the belt tension after 24 hours of operation – after the belts have seated in the sheave grooves.

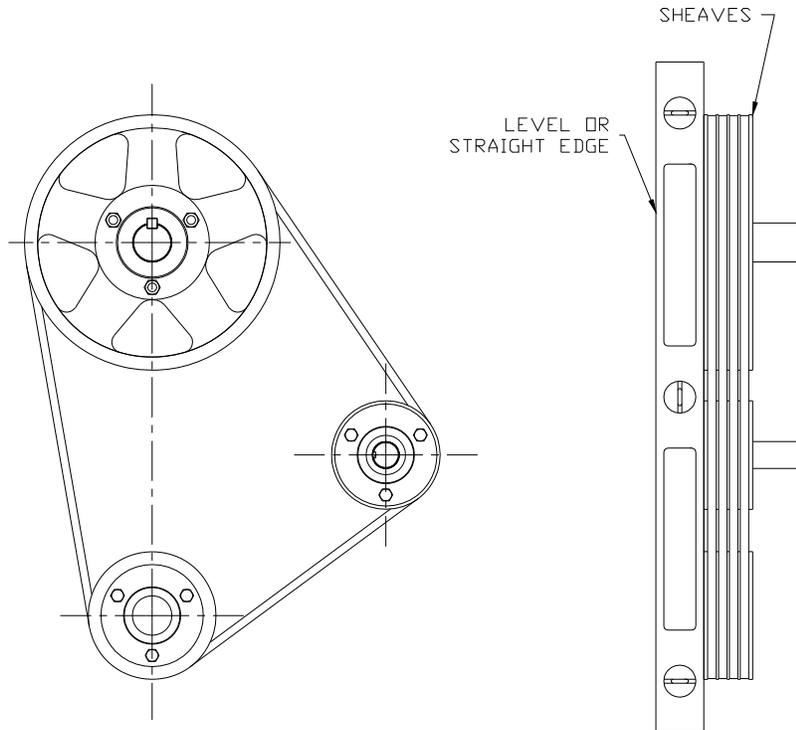


FIG 31

#### D.) Idler Adjustment (Old Style - Fig 32)

##### Tightening Belts:

1. Loosen the four 5/8" nuts (A) on the top of the idler assembly.
2. Turn the idler screws (B & C) clockwise, alternating tightening every two turns.

**DO NOT** use an air impact wrench on the adjustment screws.

Notice the outside belts cause the idler shaft to misalign. This reduces the tension on the inner belts, and should be corrected. To correct this situation, turn the inside idler screw (C) counter-clockwise until the idler shaft is correctly aligned.

3. Repeat step two if necessary to achieve correct belt tension.
4. Tighten the four 5/8" nuts (A) to the correct torque.

Note:

1. It is very important for the sheaves to be in alignment to ensure proper belt wear.
2. DO NOT loosen the four bolts (D) holding the upper bearings to the tapped plate (E). This assembly is independent of the 5/8" nuts (A).
3. Check the torque on the bearing set screw (F). Proper torque is 19 ft. lbs.
4. Check the torque of the four bolts (G).
5. Periodically grease the idler adjustment screws (H) to ensure belt adjustment ease.

## Loosening Belts:

1. Loosen the four 5/8" nuts (A) on the top of the idler assembly.
2. Turn the idler screws (B & C) counter-clockwise, alternating tightening every two turns.

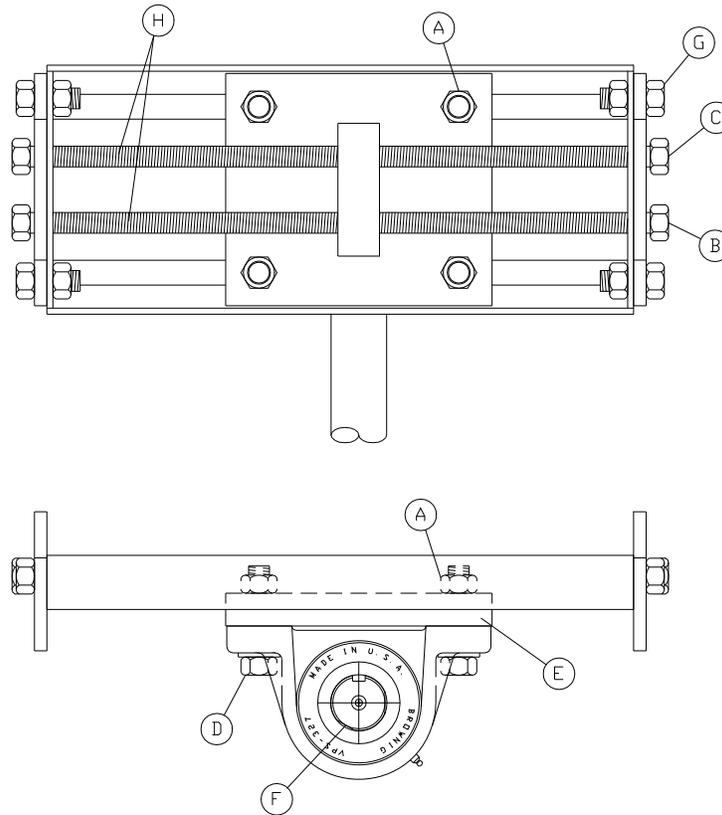


FIG 32

## E.) Idler Adjustment (New Style - Fig 33)

### Tightening Belts:

1. Loosen the two 3/4" bolts (A) on the back of the idler assembly.
2. Loosen the jamb nut (C) on the idler adjustment screw.
3. Turn the idler adjustment nut (B) clockwise.
4. Repeat step three if necessary to achieve correct belt tension.
5. Tighten the two 3/4" bolts (A) to the correct torque.

## Loosening Belts:

1. Loosen the two  $\frac{3}{4}$ " bolts (A) on the back of the idler assembly.
2. Loosen the jamb nut (C) on the idler adjustment screw.
3. Turn the idler adjustment nut (B) counter-clockwise.

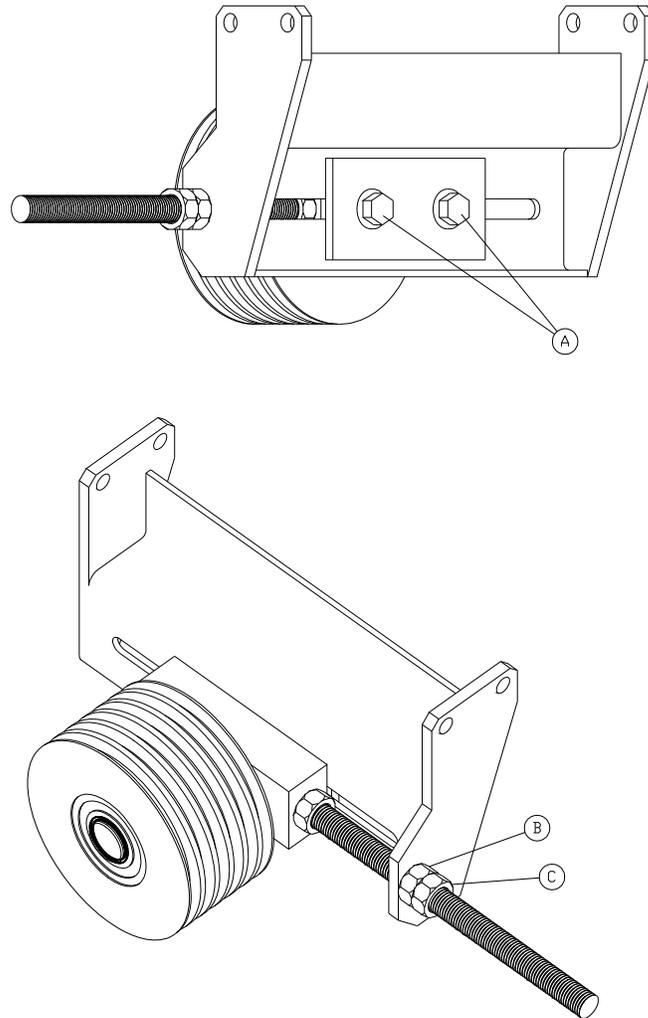


FIG 33

## F.) Bolts

Almost every component on an IEA radiator is bolted for ease of maintenance and service. Bolt torque should be routinely checked to verify all bolts are tight, especially the bolts joining the top tank to the core header. All tank to header bolts should be torqued to 25 ft. lbs., while all other bolts are not to exceed their standard dynamic assembly torque.

**IMPORTANT:** Upon the initial fill of the radiator, slight coolant seepage may appear around the tanks. This is due to drying of the core gaskets during shipment. If this occurs, allow the gaskets to soak over night, then retorquing the tank to header bolts to the specified torque. Loosen the corner reinforcement bolts which bolt to the sidemember. Begin retorquing the head bolts from the center, and move outward to the end of the tank. All header bolts must be retorqued during this procedure - partial retorquing will promote header leakage. Tighten the corner reinforcement bolts.

**TABLE 2: HUB BOLT TORQUE CHART**

		TORQUE	
HUB TYPE	BOLT TYPE	IN. LBS.	FT. LBS.
H	1/4-20 X 5/8	95	8
SH, SDS	1/4-20 X 1 3/8	108	9
SD	1/4-20 X 7/8	108	9
P1, P2, P3	5/16-18 X 1	192	16
SK	5/16-18 X 2	180	15
Q1, Q2, Q3	3/8-16 X 1 1/4	348	29
R1, R2	3/8-16 X 1 3/4	348	29
SF	3/8-16 X 2	360	30
S1, S2	1/2-13 X 2 1/4	840	70
E	1/2-13 X 2 3/4	720	60
F	9/16-12 X 3 5/8	920	75