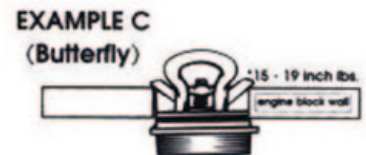
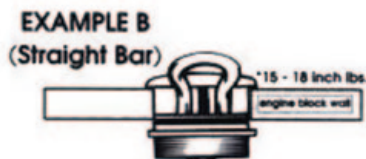
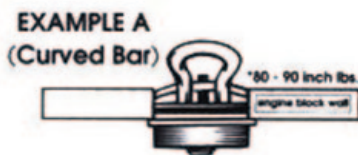


# **TECHNICAL BULLETIN**

## ***Frost Plug Engine Block Heater Installation Instructions***

1. Drain the cooling system, flush radiator & block.
2. Remove correct frost plug, check listing for location.
3. Remove any burrs, sharp edges, paint or compound from the machined surfaces of the hole.
4. Lubricate O-ring and machined surface of the hole with grease to facilitate installation and prevent O-ring damage.
5. Back off heater nut as far as possible, insert heating element in proper direction, center heater in hole, and press in tight. Tighten bolt to recommended torque (see below), making sure shoulder of adapter is against block.
6. Route the cord to any convenient point and tie cord down. Keep cord away from hot surfaces and moving parts.
7. Refill the coolant system. Check manufacturer's instruction on mixture of antifreeze. Do not use more than 60% antifreeze. Use of non-distilled water could result in lime or calcium build up on elements and cause premature burn out of heater. Run engine until internal thermostat opens and continue running for 20 minutes to eliminate air pockets. **CHECK FOR LEAKS**
8. Plug heater into power supply and test for proper operation. The block should get hot near the heater.



### ***TORQUE PROPERLY***

### ***WARNING!***

**DO NOT** plug in heater if heating element is not immersed in coolant. If not immersed, element sheath may burst and could result in personal injury.

***SEE REVERSE***

# TECHNICAL BULLETIN

## ***Engine Heater Common Failure Caused from Installation or Operator Error and How to Prevent Them.***

**1. Engine heater plugged in while engine is running** – The heating element **Should Not** be energized while starting the engine. The vibrations in conjunction with the added engine heat will cause the element to burn out or rupture. It is also advisable to wait a minimum of 1 minute after unplugging heater before starting engine. Additionally, if the heater is being used on a generator or other stand-by equipment an oil pressure switch for automatic cut-off may be required.

**2. Air not bled from system (Burned in Air Failure)** - Upon installation of a new heater it is important to ensure that all air pockets are removed from the engine before energizing the heater. Coolant levels should be checked to ensure it is properly filled. Run engine until internal thermostat opens and continue running for 20 minutes until maximum system pressure is reached, thereby eliminating air pockets. Then check for leaks before plugging the heater in for the first time. Failure to do this upon the initial installation could cause the element to burn out due to air exposure. Warning: Do not plug in heater if heating element is not immersed in coolant. If not immersed, element sheath may burst and could result in personal injury.

**3. Heater Failure due to lime or calcium buildup.** – After installation, refill the coolant system. Check manufacturer's instruction on mixture of antifreeze. Do not use more than 60% antifreeze. Use of non-distilled water could result in lime or calcium buildup on elements and cause premature burn out of heater. Depending upon the amount of lime or calcium in the water, this can occur in as little as a few days.

**4. Heater element touching engine cavity wall.** – When installing your new heater, make sure to turn the element in the proper direction as indicated in the Kats Application Guide. Should any part of the heater element come into contact with a cavity wall, it will cause the element to burn out prematurely. It is advisable to remove the O-ring on the heater prior to installation, and then drop the heater into place to feel for contact between the element and engine walls. Removing the o-ring should allow any contact to be felt. Once it has been determined that the element will not make contact with the cavity wall, replace the o-ring and install the heater as instructed.

**5. Tank style heater installed in the wrong physical location or not connected in the right locations.** – To ensure proper operation, the tank style heaters must be installed exactly as indicated in the instructions provided. The proper location and connection is necessary for the heaters operation, and failure to follow instructions could cause the unit to fail.

**SEE REVERSE**