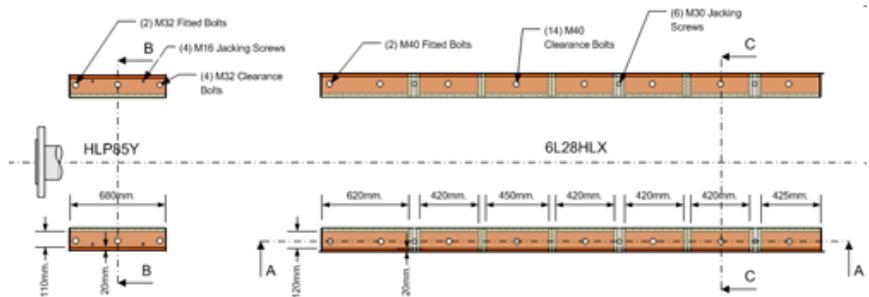

How to Chock a Marine Engine Step-by-Step

1. Determine Chock Volume

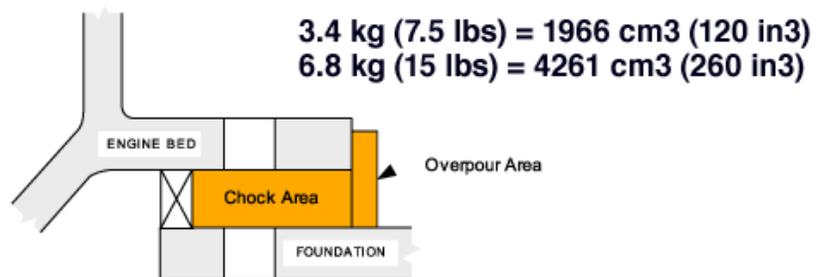
Before the chocking job starts, develop a Chocking Plan.

Determine the total volume of all chocks including the overpour areas and subtracting the volume taken up by the bolts.



Order Chockfast Early

Be sure to have at least 10% more Chockfast Orange than required in case of spills, leaks, etc.



2. Gather Materials



Supplied by ITW PRC

- Chockfast Orange
- Open-cell Foam
- Release Agent
- Jiffy Mixing Blades
- Non-melt Grease
- Strip Caulking / Putty
- PRT-51 Solvent



Supplied by Shipyard

- 1/2" Drill Motor
- Metal Dams
- Safety Glasses
- Disposable Vinyl Gloves
- Surface Thermometer
- Foam-backed Tape

3. Pre-condition the Chockfast

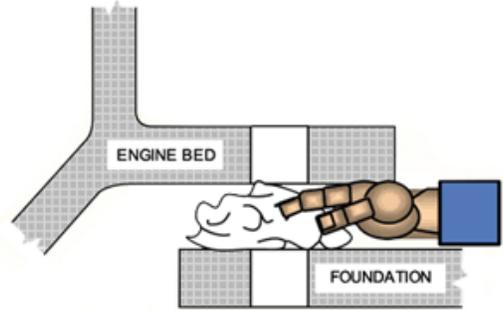
Pre-condition the Chockfast Resin and hardener by storing it at 20°C to 25°C (68°F to 77°F) for at least 12 hours before use to ensure the epoxy will mix well and pour easily.



4. Clean Thoroughly

Clean all surfaces of oil, grease, millscale, paint, and rust so that Chockfast makes complete contact with the foundation and bedplate.

It is also very important to remove all burrs and welding slag.

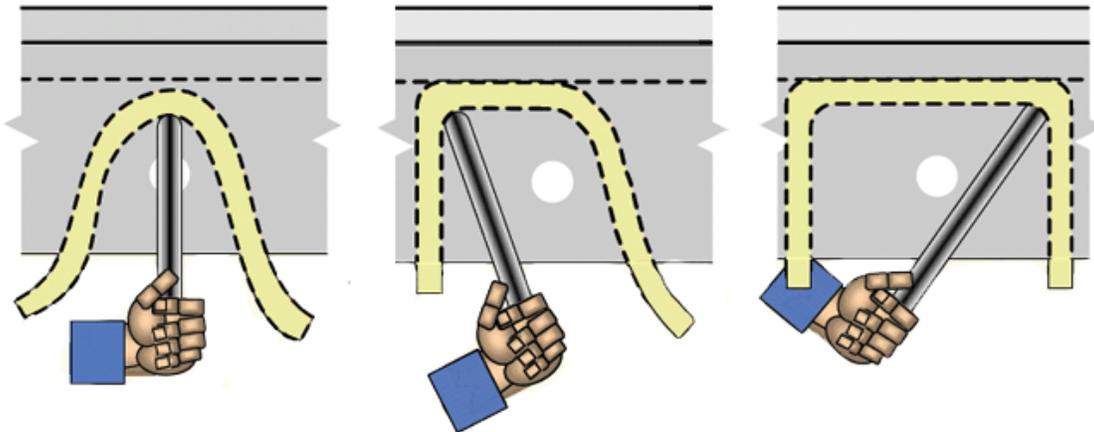
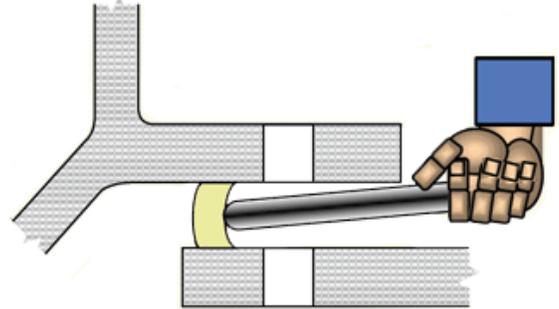


5. Insert Foam Dam

Insert flexible damming along the back and on either side of the chock. Open-cell foam is best but neoprene can also be used.

Open-cell foam allows air to escape through it.

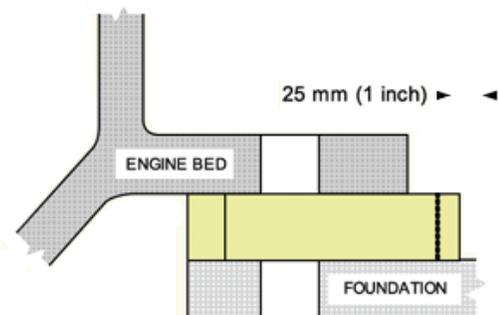
A wood stick is a good tool for inserting foam. Be careful not to tear the foam. The foam should fit tightly between the steel to prevent the Chockfast from leaking.



A 6 mm (1/4 inch) press fit on the foam work best on soft foam.

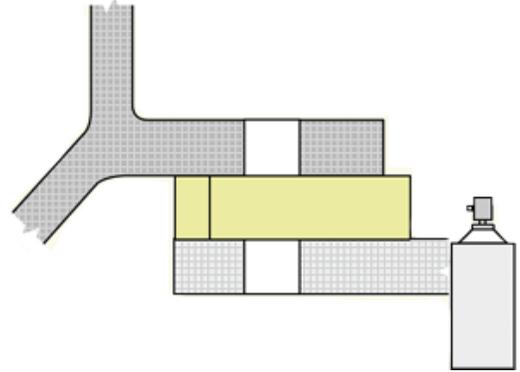
6. Trim Ends of Foam

Check to ensure that the damming is not twisted and is firmly in place. Cut off the protruding ends 25 mm (1 inch) from the engine bed plate.



7. Spray With Release Agent

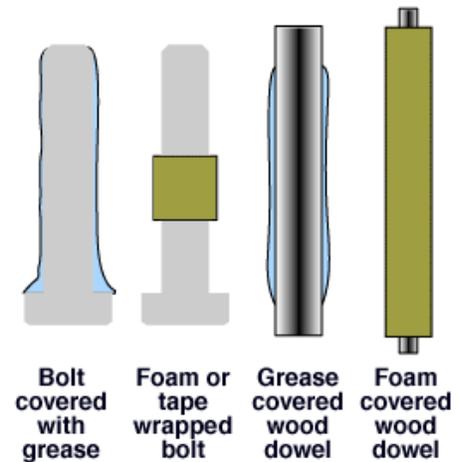
Only a very light spray is needed. The steel should NOT be wet with Release Agent.



8. Prepare to Plug The Bolt Hole

Prepare to plug hole with either a greased bolt, an Armaflex tubing covered bolt, a greased wooden plug or a wooden dowel covered with foam tubing.

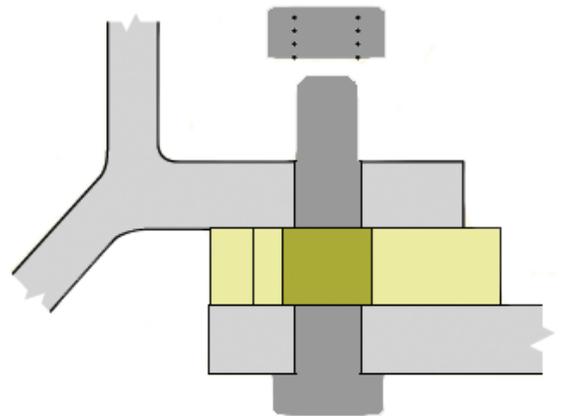
Always use non-melt grease.



9. Insert Plug/Bolt into the Hole

The plug or bolt must prevent the Chockfast from leaking out from around the bolt hole.

If using a bolt, install the nut hand-tight only.



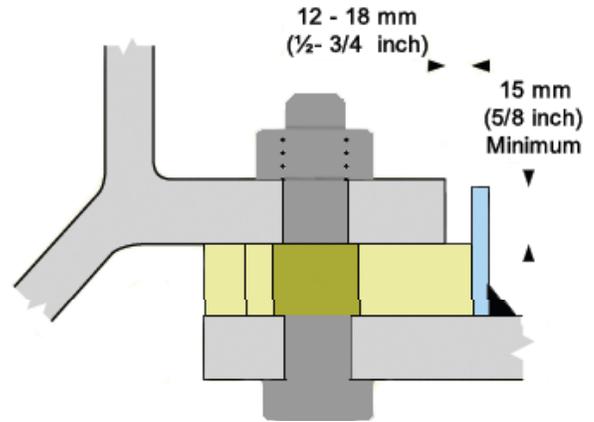
10. Install the Front Dam

Create a front dam by tack welding a 4 - 6 mm thick flat bar or angle iron, 12 to 18 mm from the bedplate. Seal the flat bar with putty or caulking.

The front dam MUST be made of metal.

The flat bar must be high enough to allow the

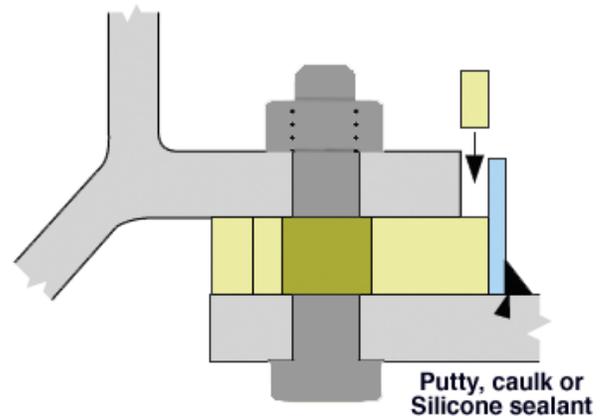
Chockfast to be filled a minimum of 15 mm higher than the bottom of the bedplate.



11. Seal the Chock Mold

Insert a piece of foam damming material at the front corners to prevent the Chockfast from overflowing. The foam can be press-fit into place or glued using contact cement.

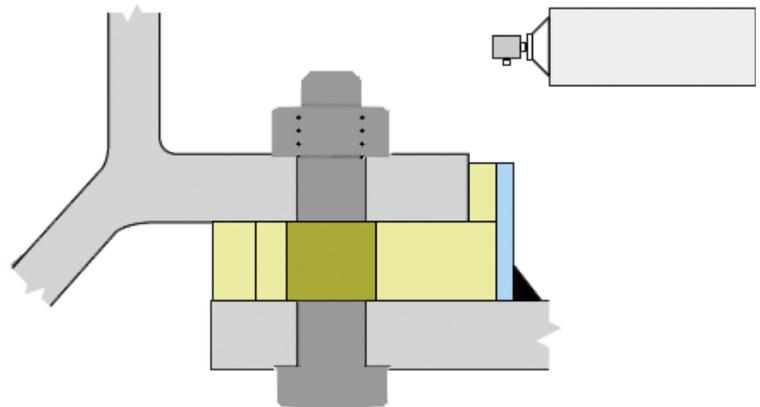
Using putty, caulking or Silicone, seal all potential leak points.



12. Spray the Front Dam

Spray Release Agent on the inside of the front dam.

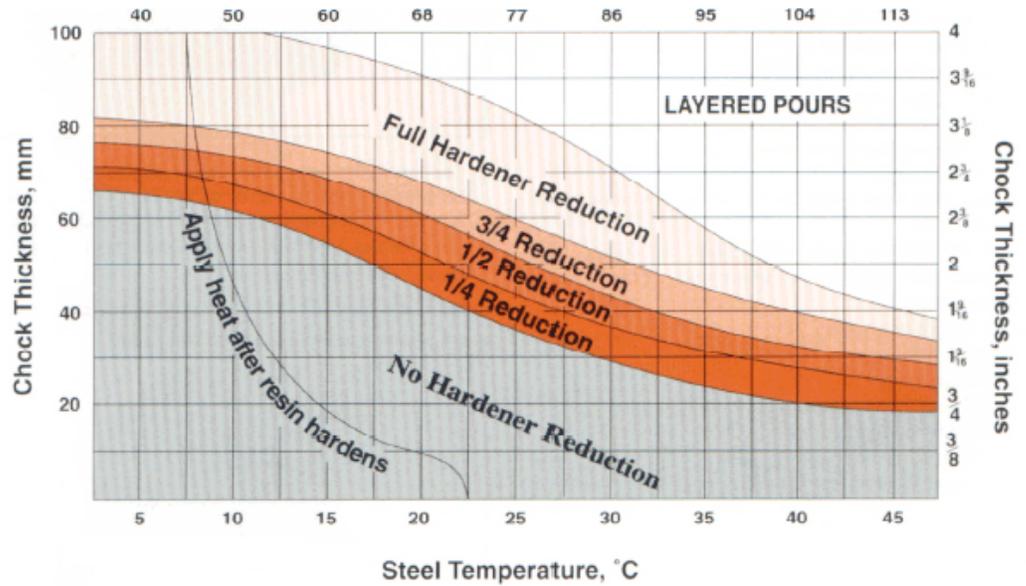
Also spray Release Agent on top of the steel all around the front dam to make clean up easier.



Hardener

Using the Hardener Ratio Guide determine the correct amount of hardener to add to the resin.

Example: 20°C steel
+ 57 mm chock
thickness = 1/2
Hardener Reduction

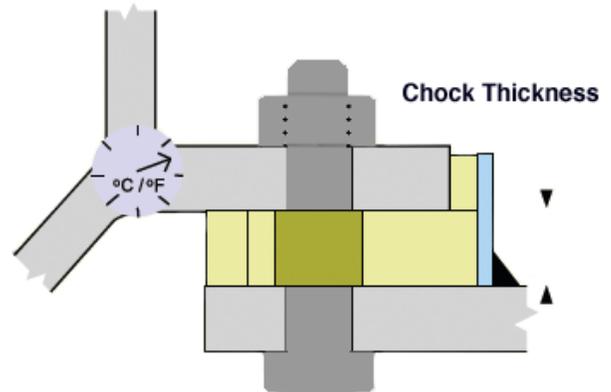


13. Final Check

Inspect all dams to ensure they are complete and well sealed. Measure the temperature of the steel and check the thickness of the chocks.

Only when everything is ready should the Chockfast be brought out of storage and taken to the job site.

If the steel temperature is below 13°C (55°F), use heaters to raise the temperature of the steel above 21°C (70°F) after the Chockfast has gelled for 24 hours.

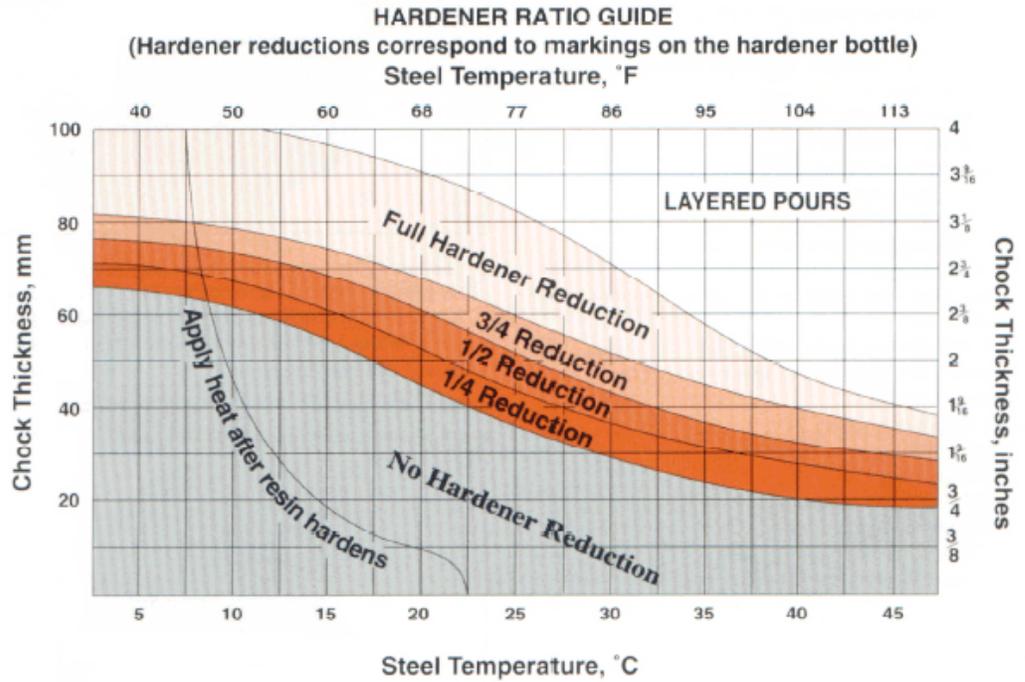


14. Determine Required Hardener

Hardener

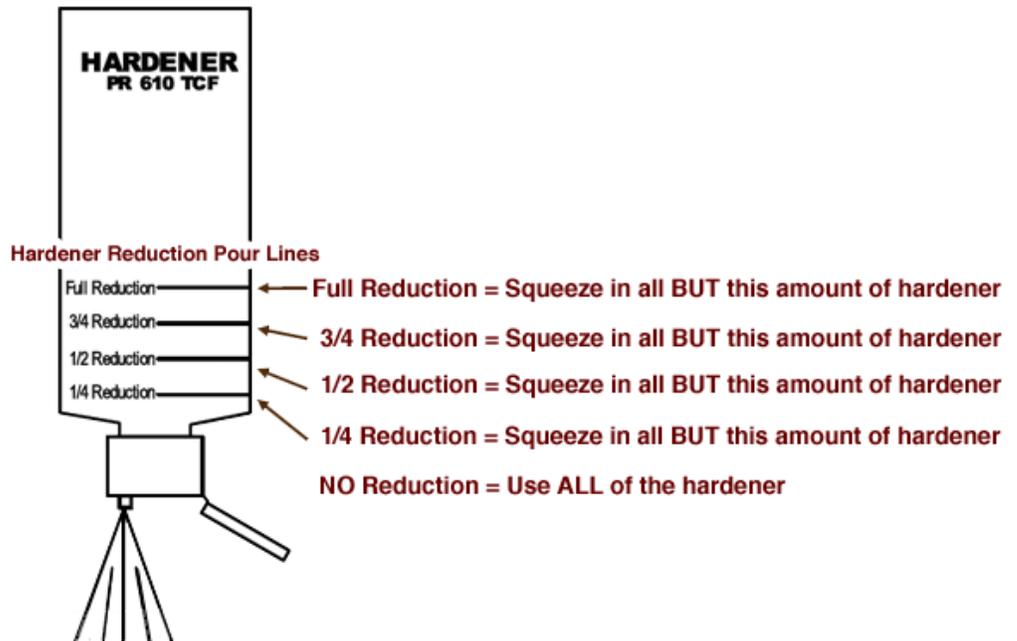
Using the Hardener Ratio Guide determine the correct amount of hardener to add to the resin.

Example: 20°C steel + 57 mm chock thickness = 1/2 Hardener Reduction



15. Squeeze Hardener into Resin

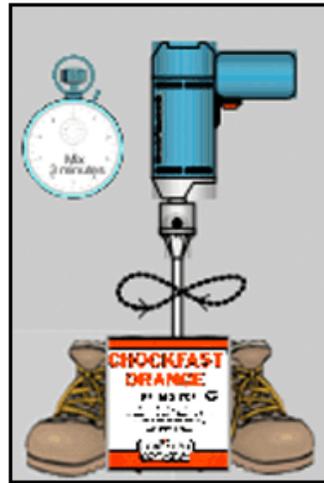
Put on rubber gloves and eye protection. Puncture the paper seal under the bottle cap on the hardener. Turn the bottle of Hardener upside down and squeeze the amount of hardener called for in the Hardener Ratio Guide into the resin.



16. Mix the Resin & Hardener

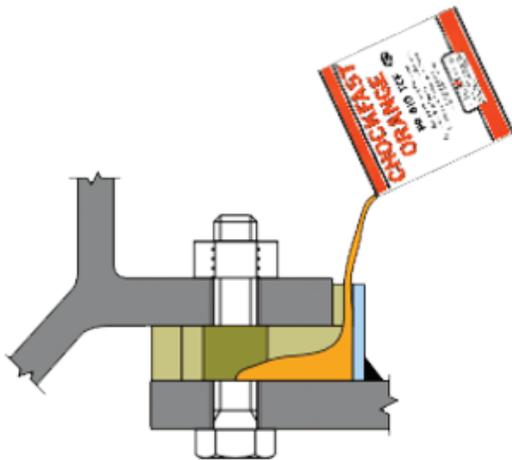
Use a Jiffy Mixing blade or similar type mixing blade and a variable speed drill motor. Hold the can of Chockfast securely between your feet. Place the mixing blade all the way into the Chockfast and keep the blade submerged, traversing the can. Start mixing very slowly. Make sure the bottom of the can is scoured. Gradually increase the speed of the mixing blade but do not exceed 300 RPM.

Mix for 3 minutes.



17. Pour Chockfast

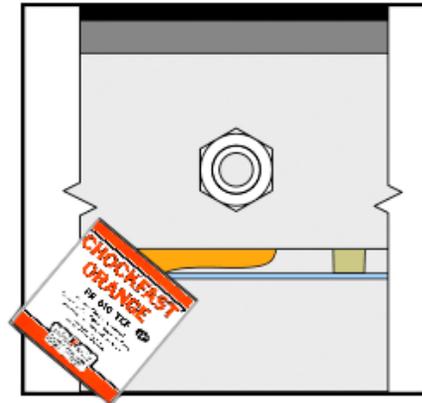
Pour Chockfast slowly, in a thin stream, from a height of about 300 mm (12 inches). A thin stream of Chockfast will force the air bubbles out of the mixture.



Pouring Chockfast

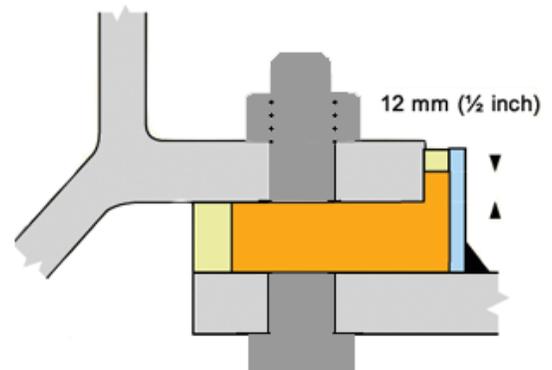
Pour the Chockfast into the lowest corner of the overpour area. Pour it slowly and steadily into this one corner only.

DO NOT scrape residue from the bottom or sides of the can.



18. Fill Chock Molds

Fill the overpour area until the top of the Chockfast is at least 12 mm (½ inch) above the bottom of the engine bed plate. Continually check for leaks. They can appear at any time. Do not leave until the chocks are hard.



19. Curing

Allow the Chockfast to fully cure. The time required to cure depends on the steel temperature.

48 Hours - 13 °C - 18oC (55 °F - 65 °F)

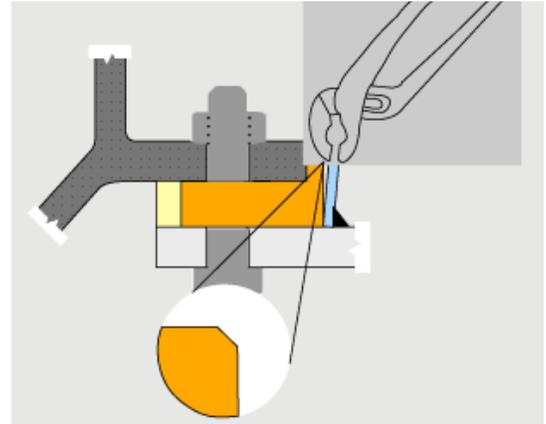
24 Hours - 19 °C - 21oC (66 °F - 70 °F)

18 Hours - Above 21 °C (70 °F)

20. Clean Up

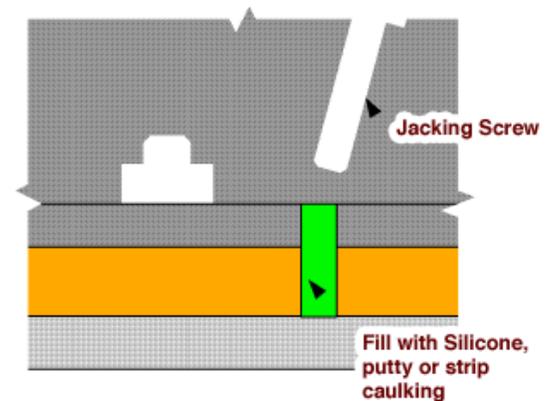
Wait until the Chockfast has completely cured before removing the outer metal dam. Gently pry it away from the Chockfast.

Bevel the outside edge of the Chockfast removing the sharp edge using a grinder or sanding disc.



21. Back Out All Jacking Screws

Remove all Jacking Screws or back them out 4 turns. If screws are removed, fill holes.



22. Torque Down Bolts

First, back out all jacking bolts and remove all alignment devices. Then torque down all mounting bolts per engine manufacturer's instructions or contact ITW Philadelphia Resins.

