



# Chocks, Chocking and CHOCKFAST®

*- Marine Chock Installation -*

Presented by  
ITW Philadelphia Resins

# Presentation Outline

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- ✓ Basic Chocking Procedure
- ✓ Special Chocking Situations
- ✓ Some Chocking “Do’s & Don’ts”
- ✓ For More Information

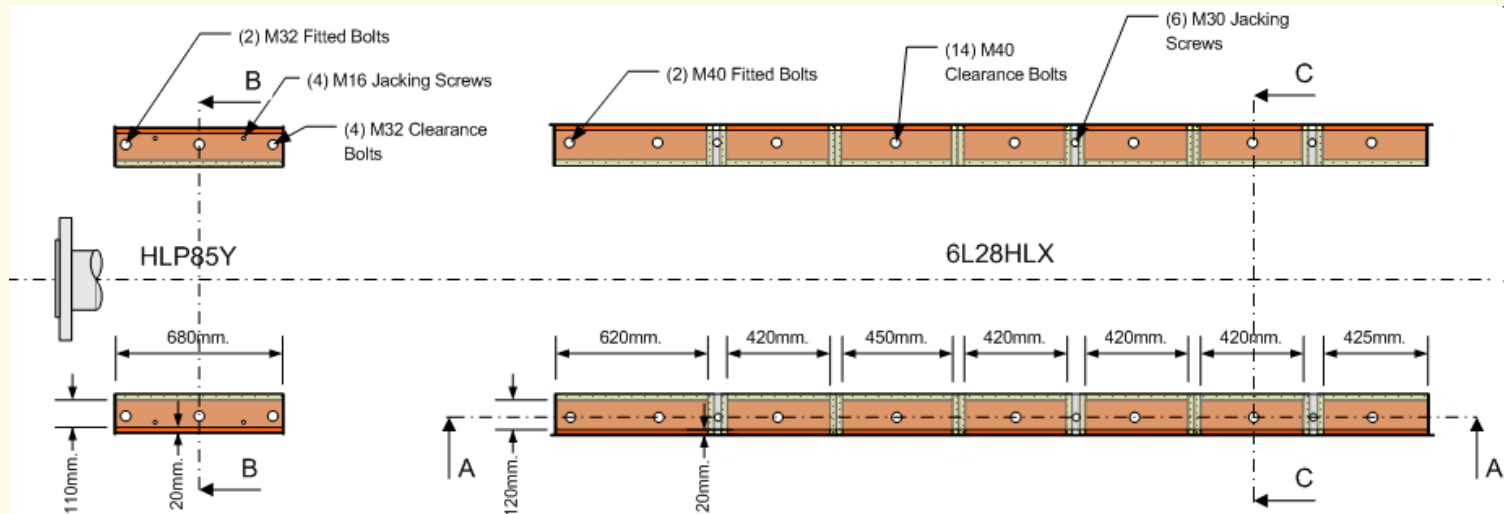


# Basic Chocking Procedure

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.

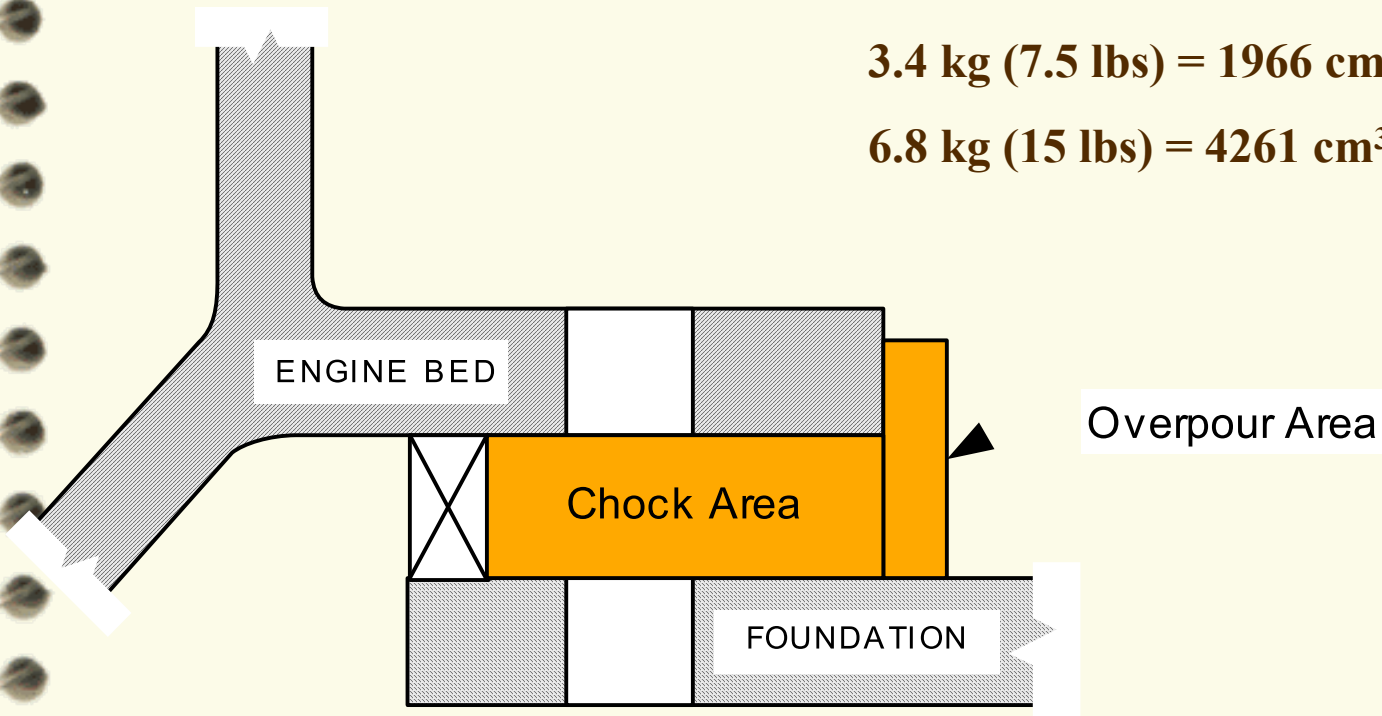


# Order Chockfast Early

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

3.4 kg (7.5 lbs) = 1966 cm<sup>3</sup> (120 in<sup>3</sup>)

6.8 kg (15 lbs) = 4261 cm<sup>3</sup> (260 in<sup>3</sup>)



## 2. Gather Materials

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### ✓ Supplied by ITW PRC

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

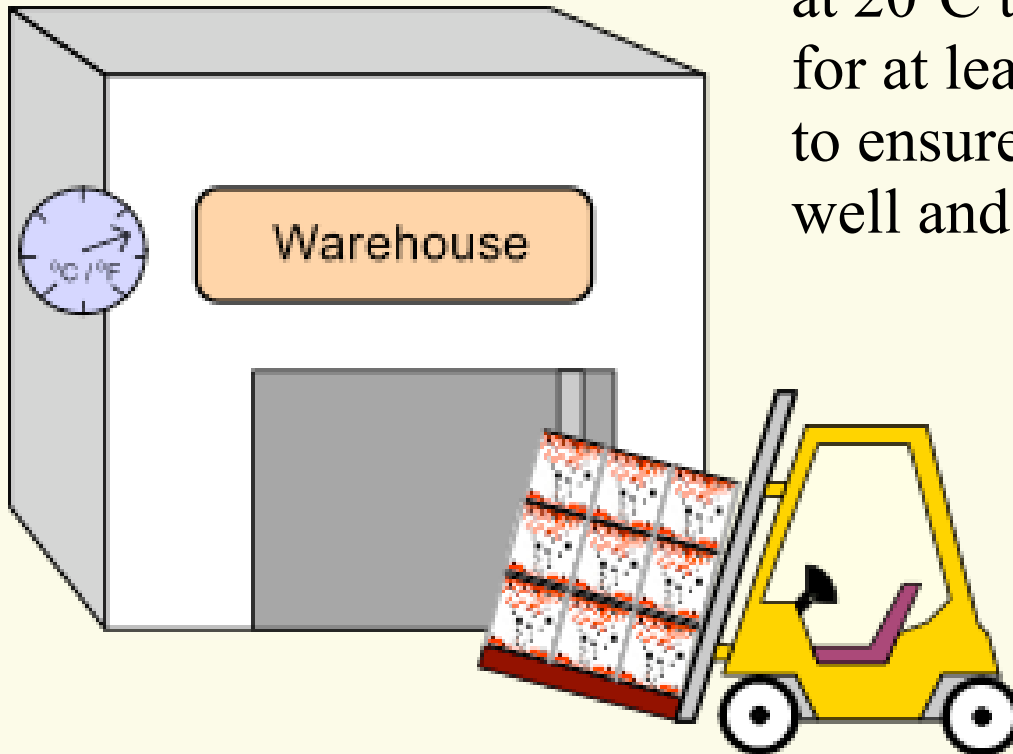
### ✓ Supplied by Shipyard

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

### 3. Pre-condition the Chockfast

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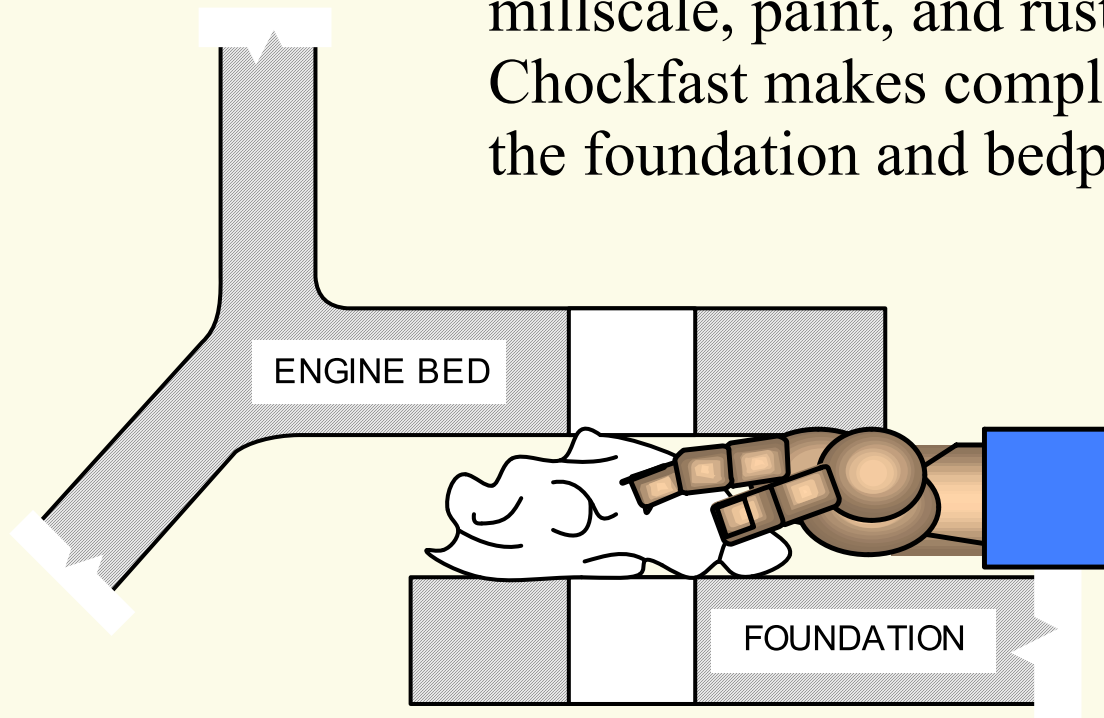
Pre-condition the Chockfast Resin and hardener by storing it at 20°C to 25°C (68°F to 77°F) for at least 12 hours before use to ensure the epoxy will mix well and pour easily.



## 4. Clean Thoroughly

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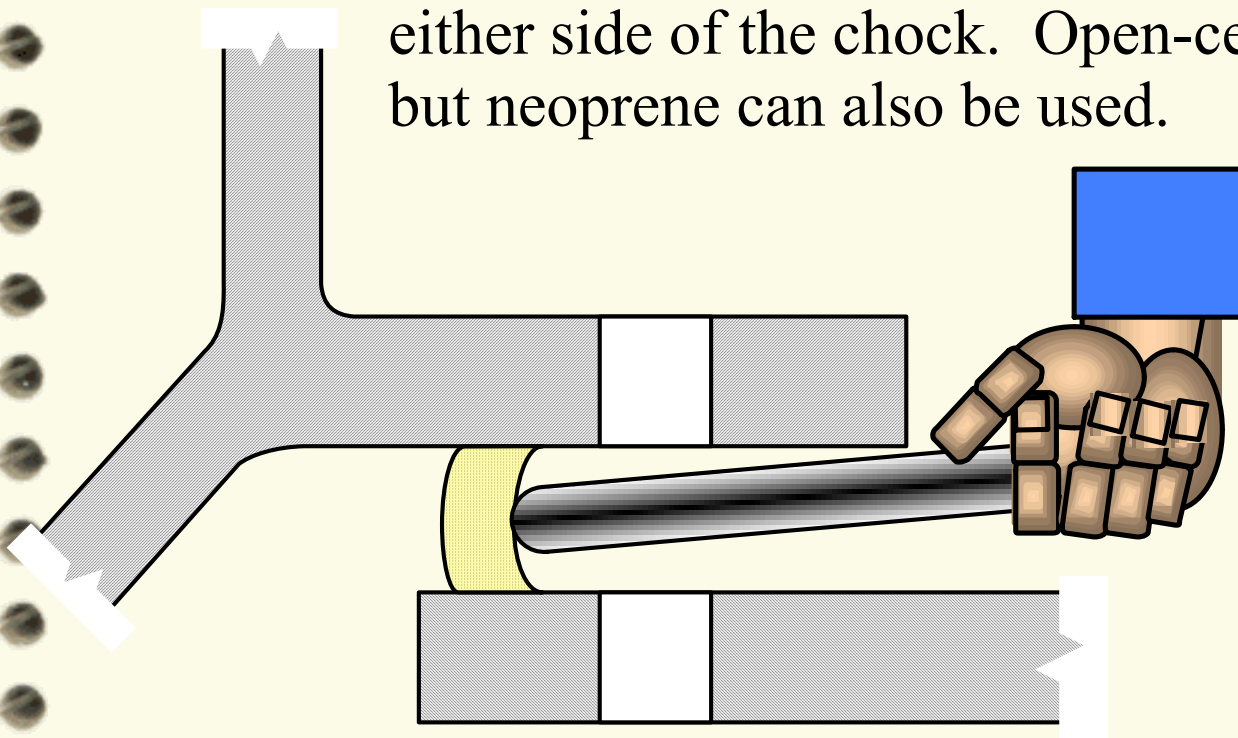
Clean all surfaces of oil, grease, millscale, paint, and rust so that Chockfast makes complete contact with the foundation and bedplate.



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

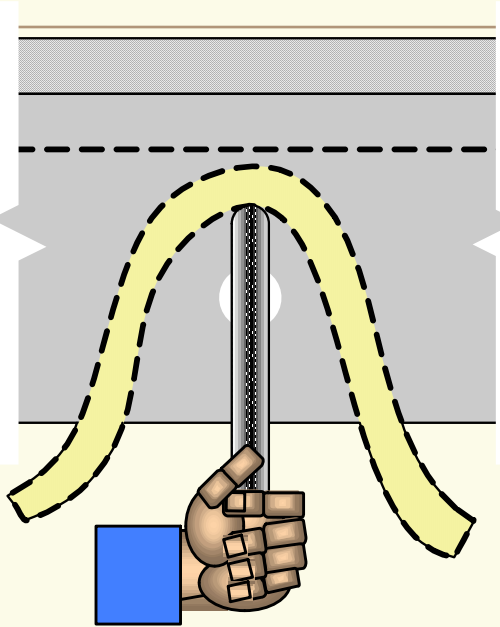
## 5. Insert Foam Dam

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



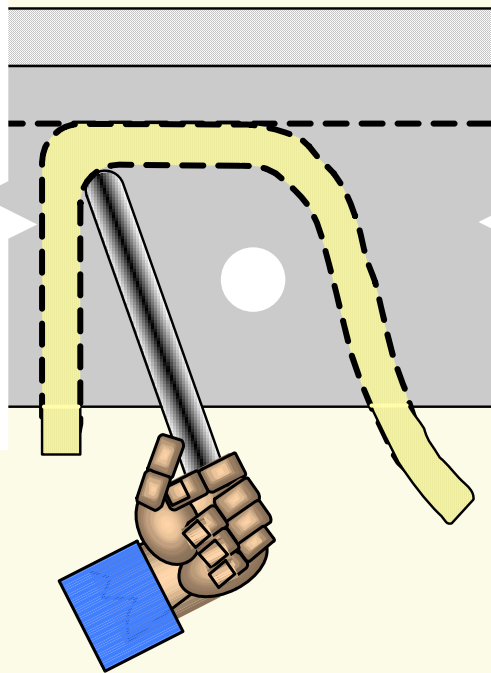
Open-cell foam allows air to escape through it.

# Insert Foam Dam

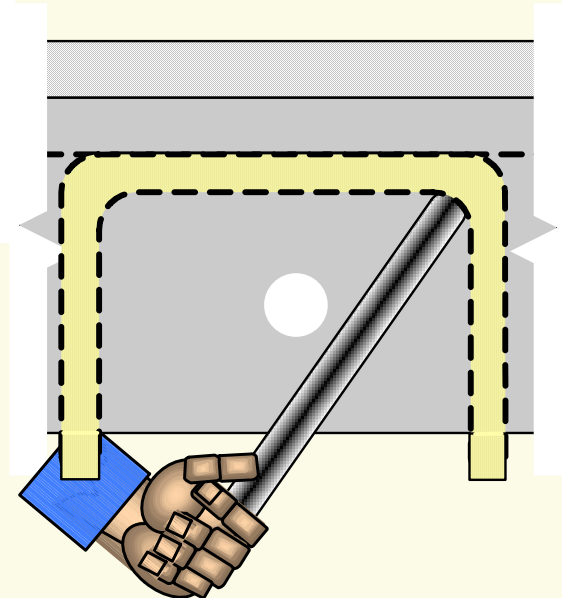


A 6 mm (1/4 inch) press fit on the foam work best on soft foam.

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

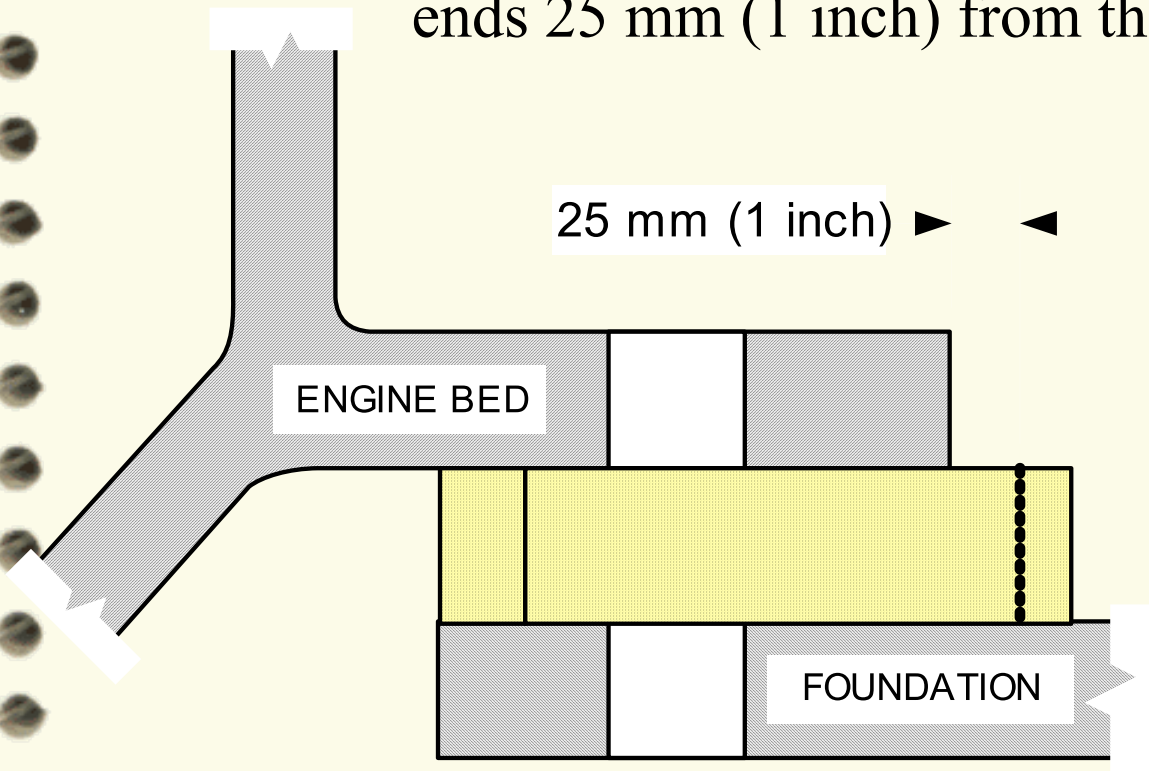


steel to prevent the Chockfast from leaking.



## 6. Trim Ends of Foam

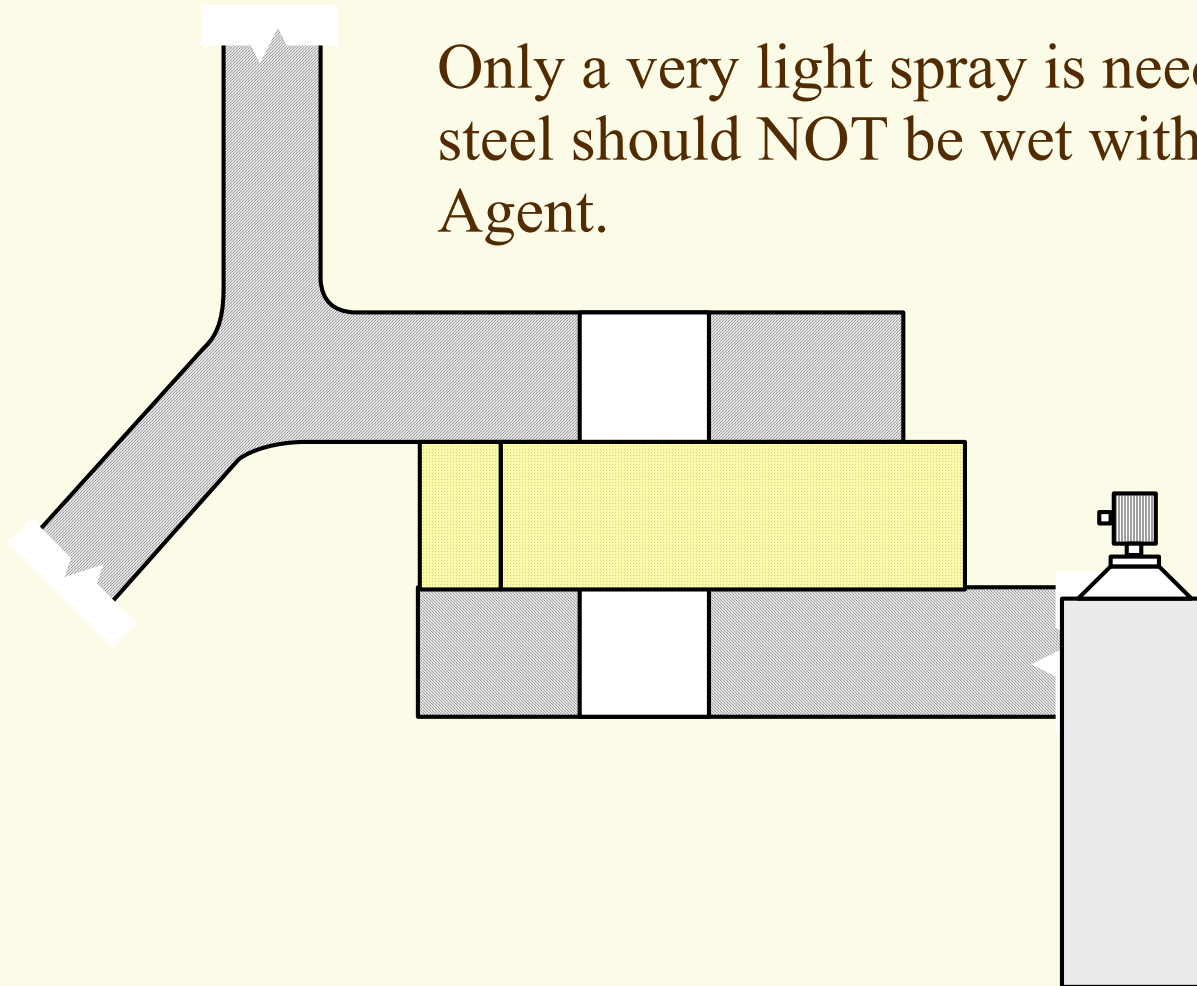
Check to ensure that the damming is not twisted and is firmly in place. Cut off the protruding ends 25 mm (1 inch) from the engine bed plate.



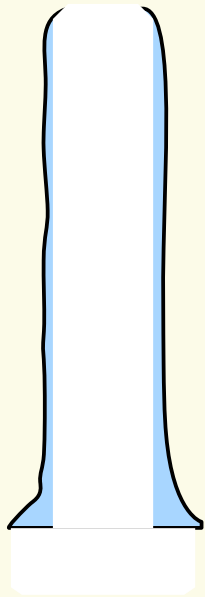
# 7. Spray With Release Agent

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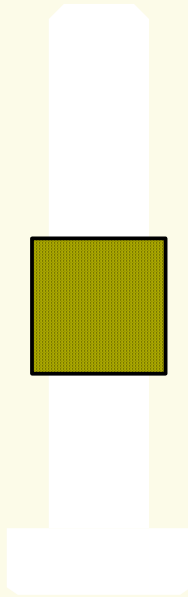
Only a very light spray is needed. The steel should NOT be wet with Release Agent.



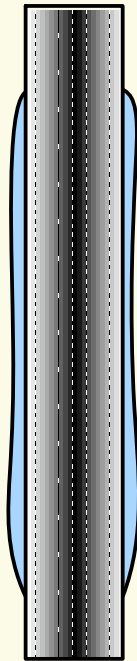
# 8. Prepare to Plug The Bolt Hole



**Bolt covered with grease**



**Foam or tape wrapped bolt**



**Grease covered wood dowel**



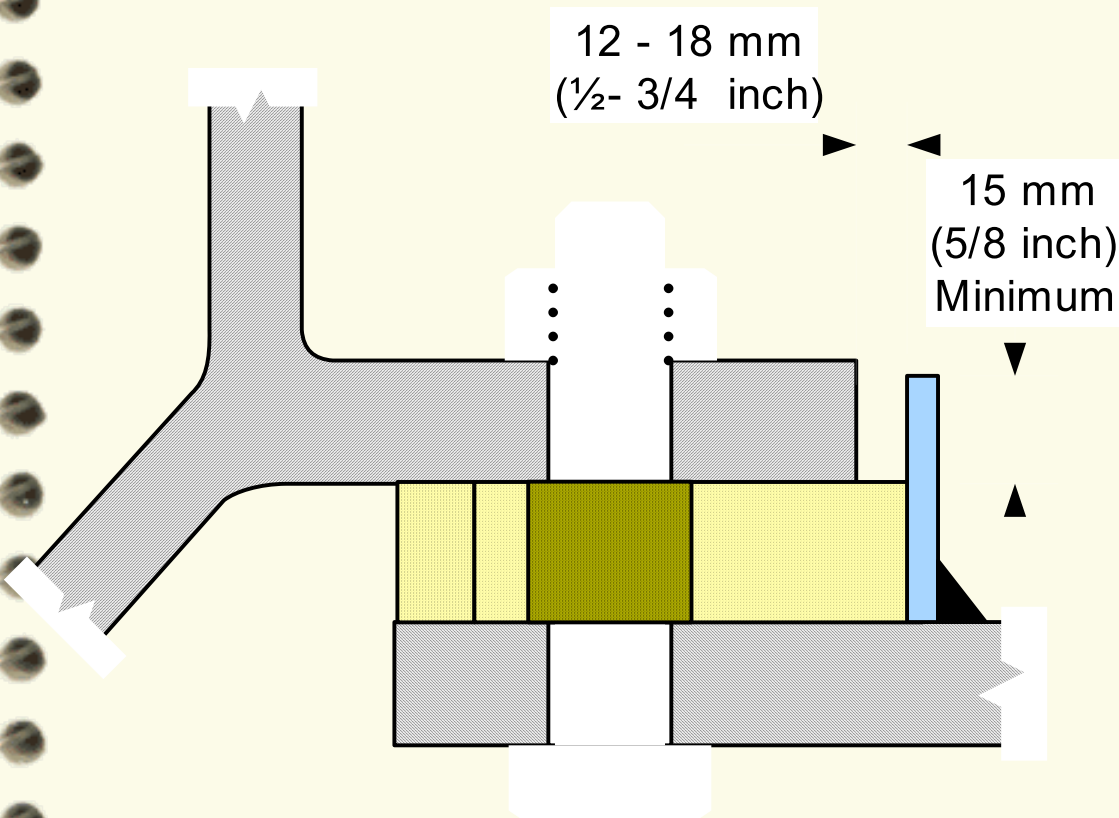
**Foam covered wood dowel**

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.**



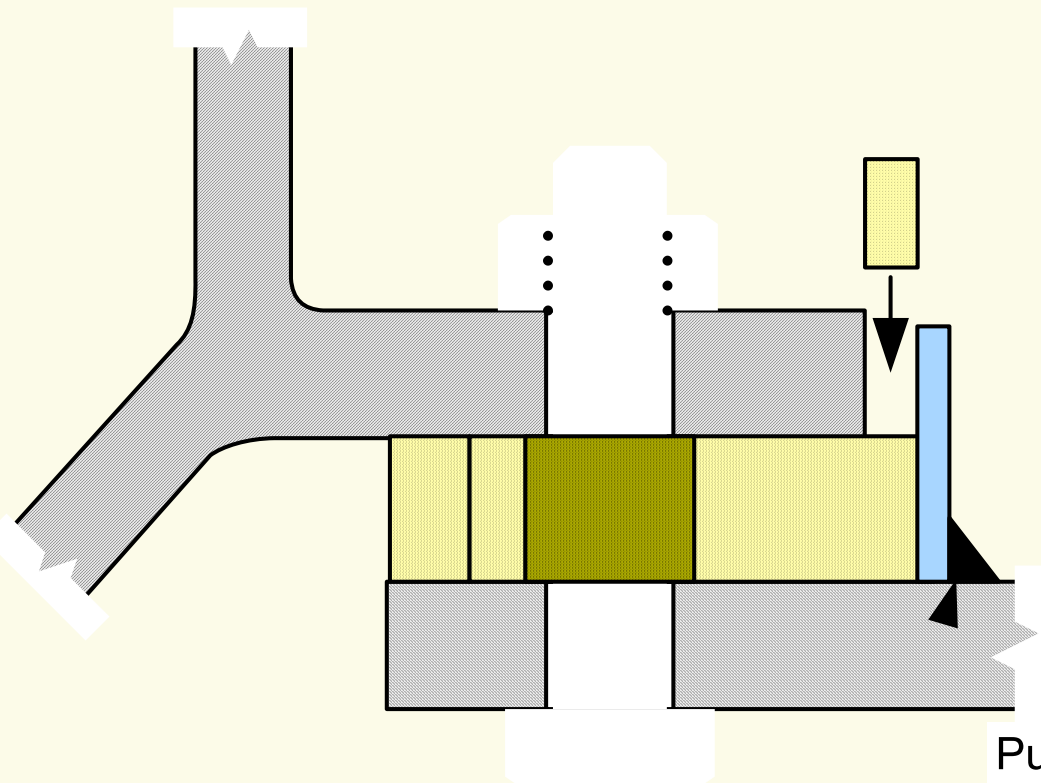
# 10. Install the Front Dam



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



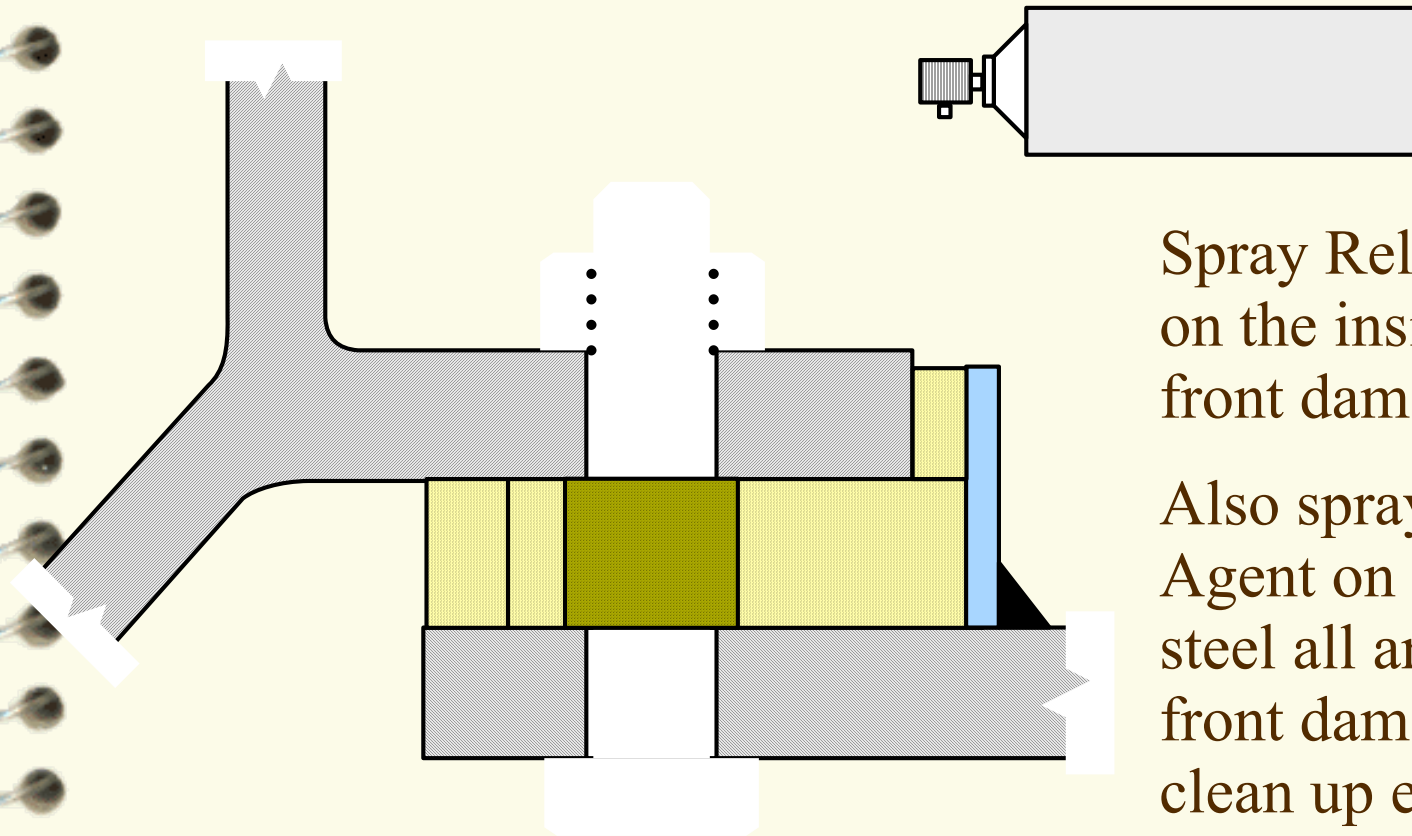
Insert a piece of foam damming material at the front corners to prevent the Chockfast from overflowing. The foam can be press-fit into place or glued using contact cement.

Putty, caulk or Silicone sealant

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

## 12. Spray the Front Dam

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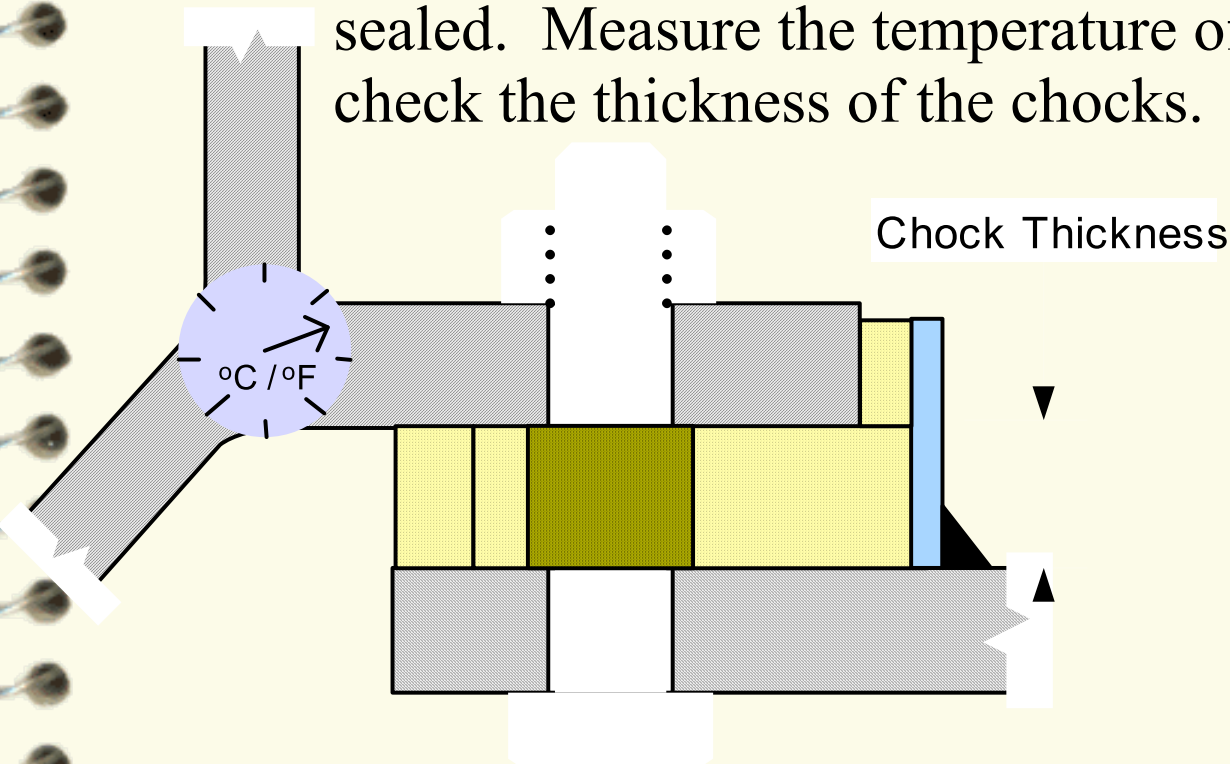


Spray Release Agent on the inside of the front dam.

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

# 13. Final Check

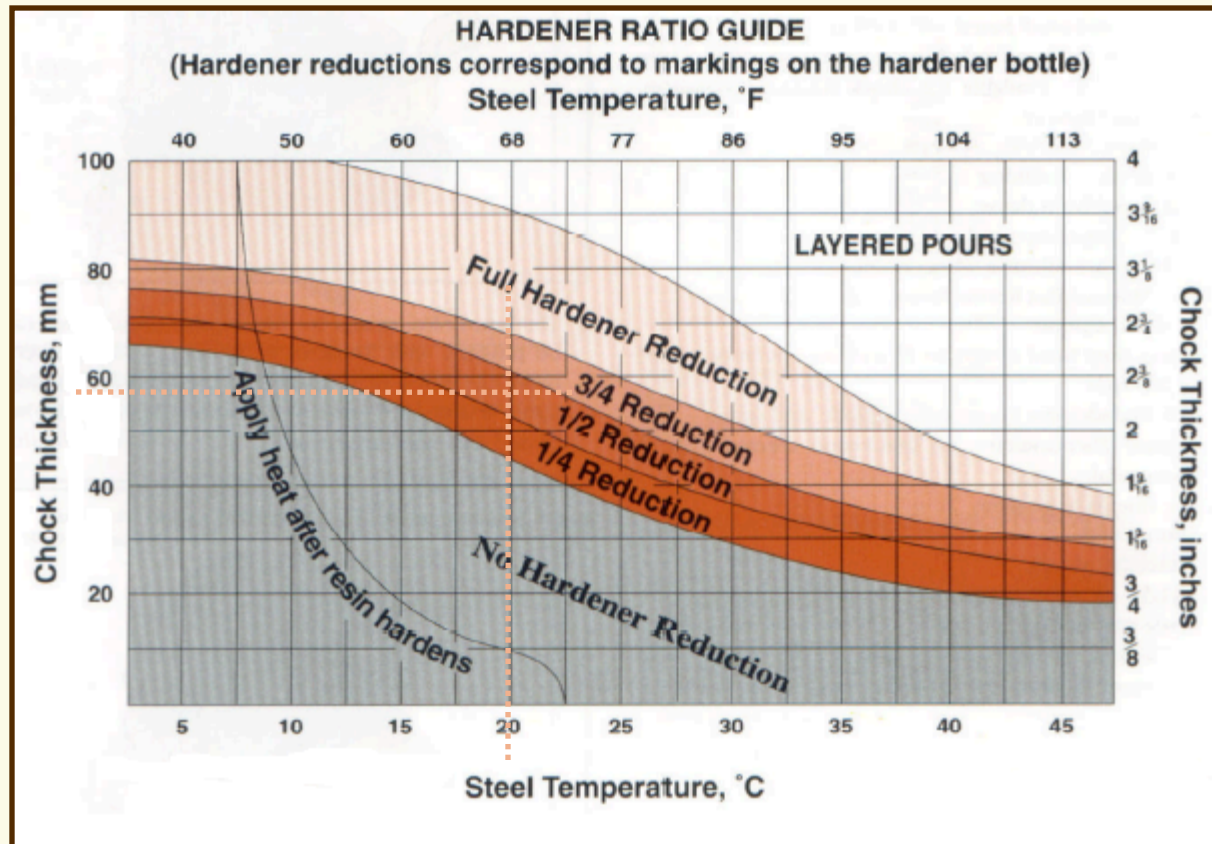
Inspect all dams to ensure they are complete and well sealed. Measure the temperature of the steel and check the thickness of the chocks.



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

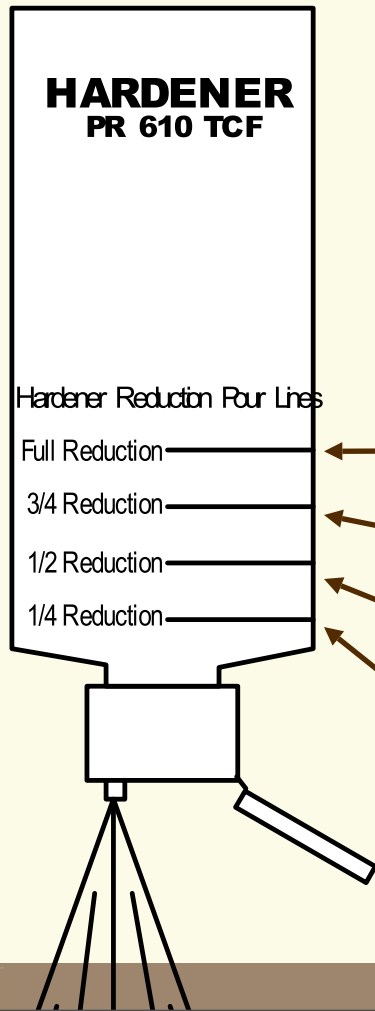


Using the Hardener Ratio Guide determine the correct amount of hardener to add to the resin.

**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.



**Full Reduction = Squeeze in all BUT this amount of hardener**

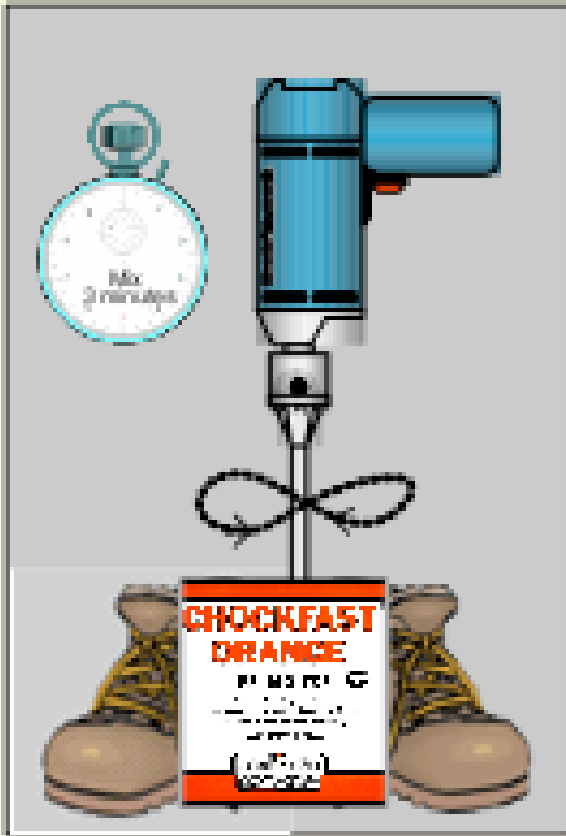
**3/4 Reduction = Squeeze in all BUT this amount of hardener**

**1/2 Reduction = Squeeze in all BUT this amount of hardener**

**1/4 Reduction = Squeeze in all BUT this amount of hardener**

**NO Reduction = Use ALL of the hardener**

# 16. Mix the Resin & Hardener

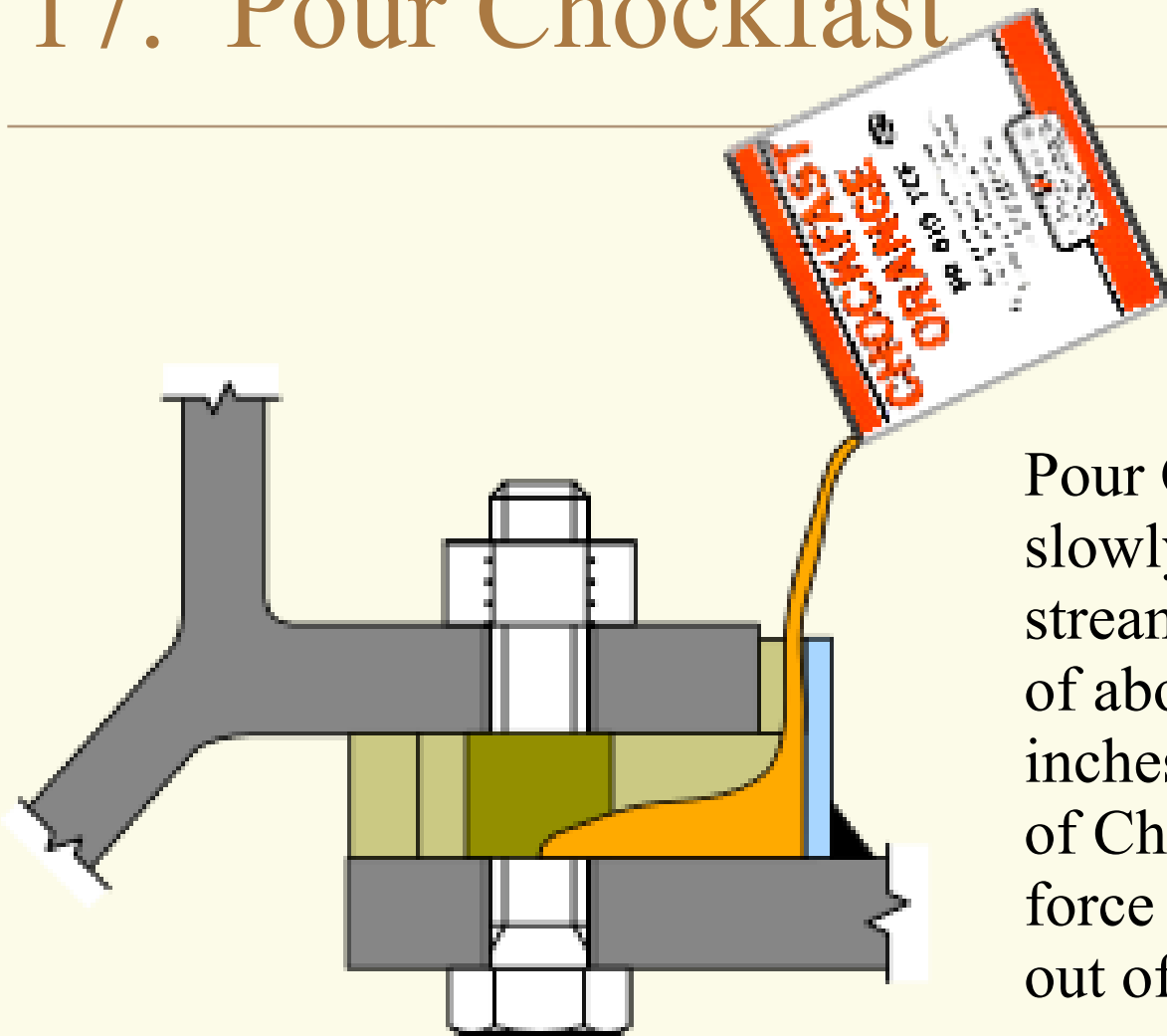


Mix for 3 minutes.

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.

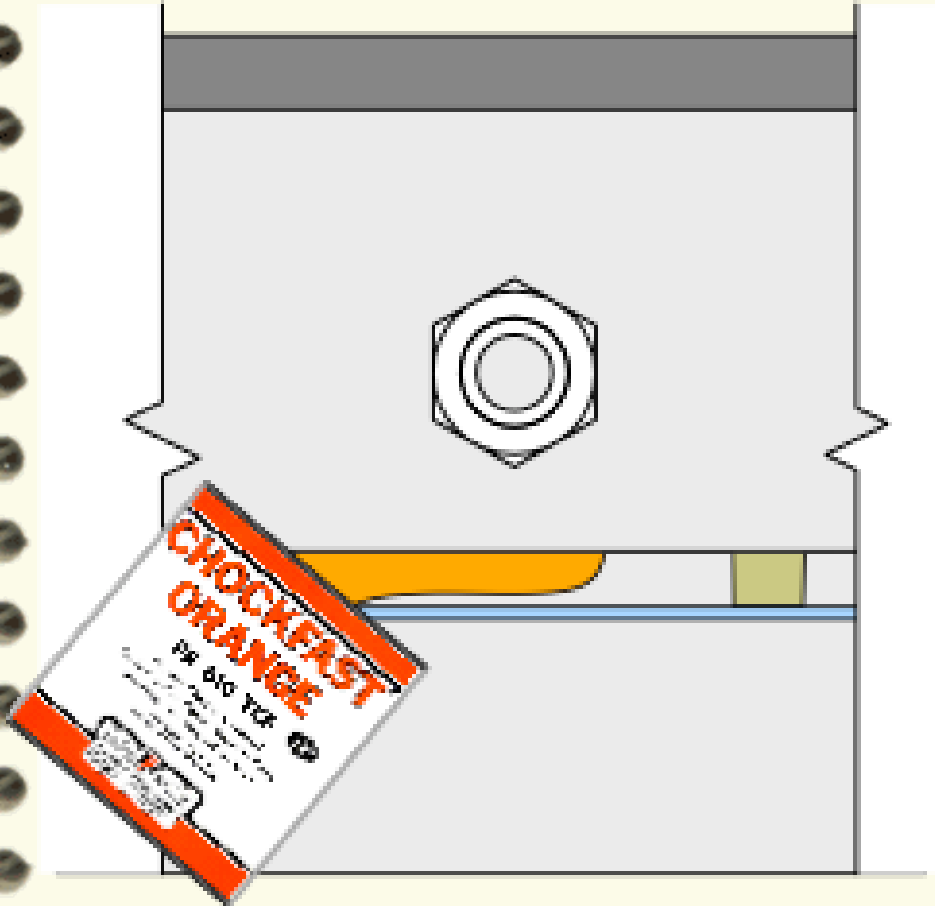


# 17. Pour Chockfast



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.

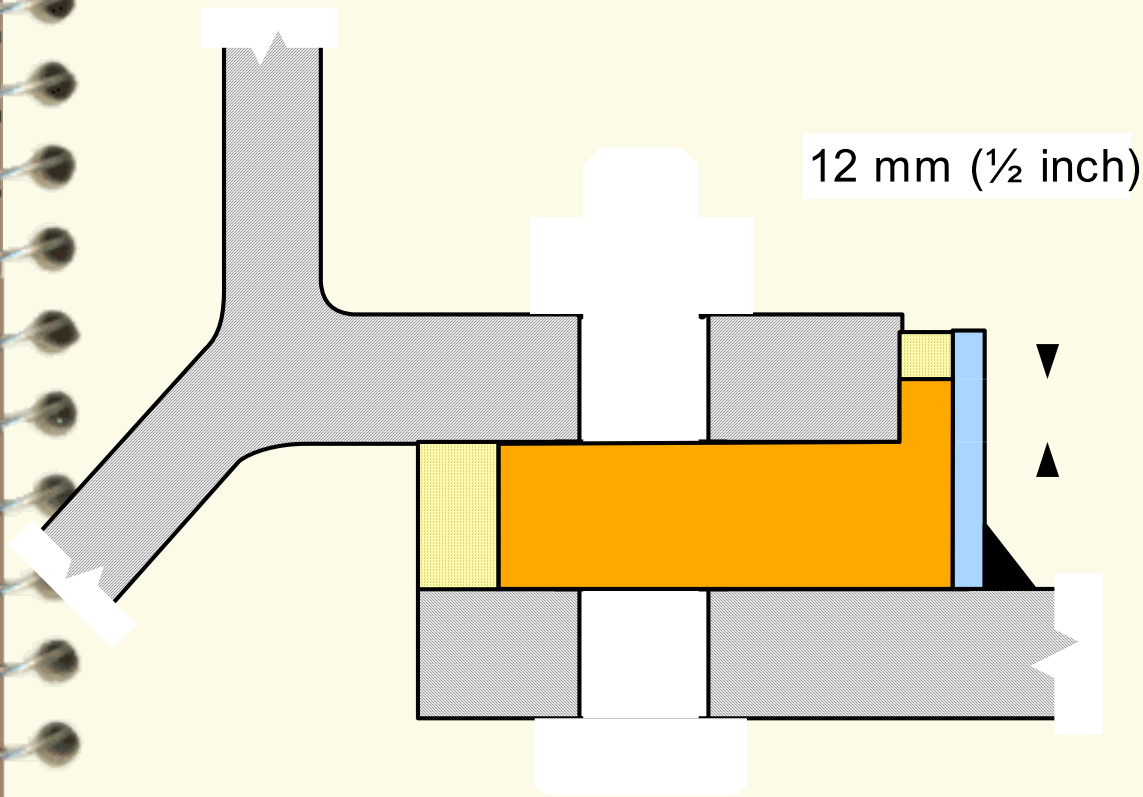
# Pouring Chockfast



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.

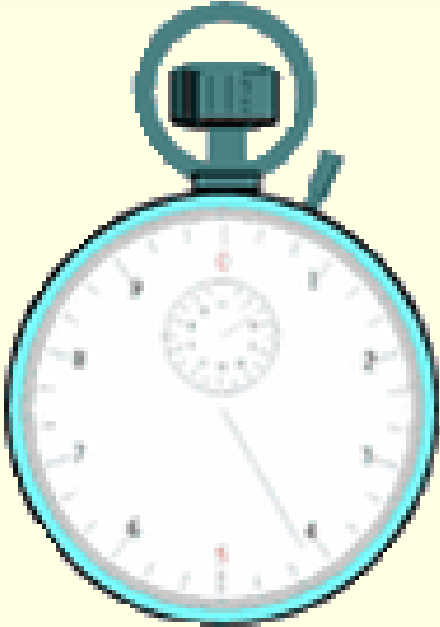
# 18. Fill Chock Molds



Fill the overpour area until the top of the Chockfast is at least 12 mm (1/2 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

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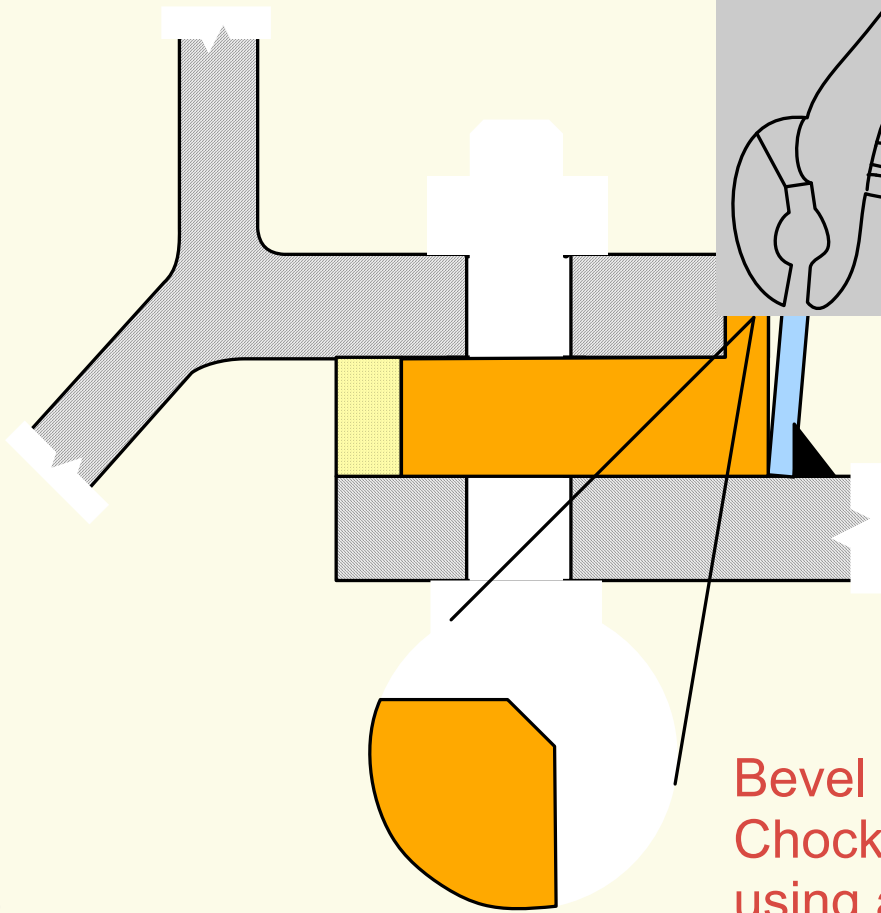
Allow the Chockfast to fully cure. The time required to cure depends on the steel temperature.

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

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

18 Hours      Above 21°C (70°F)

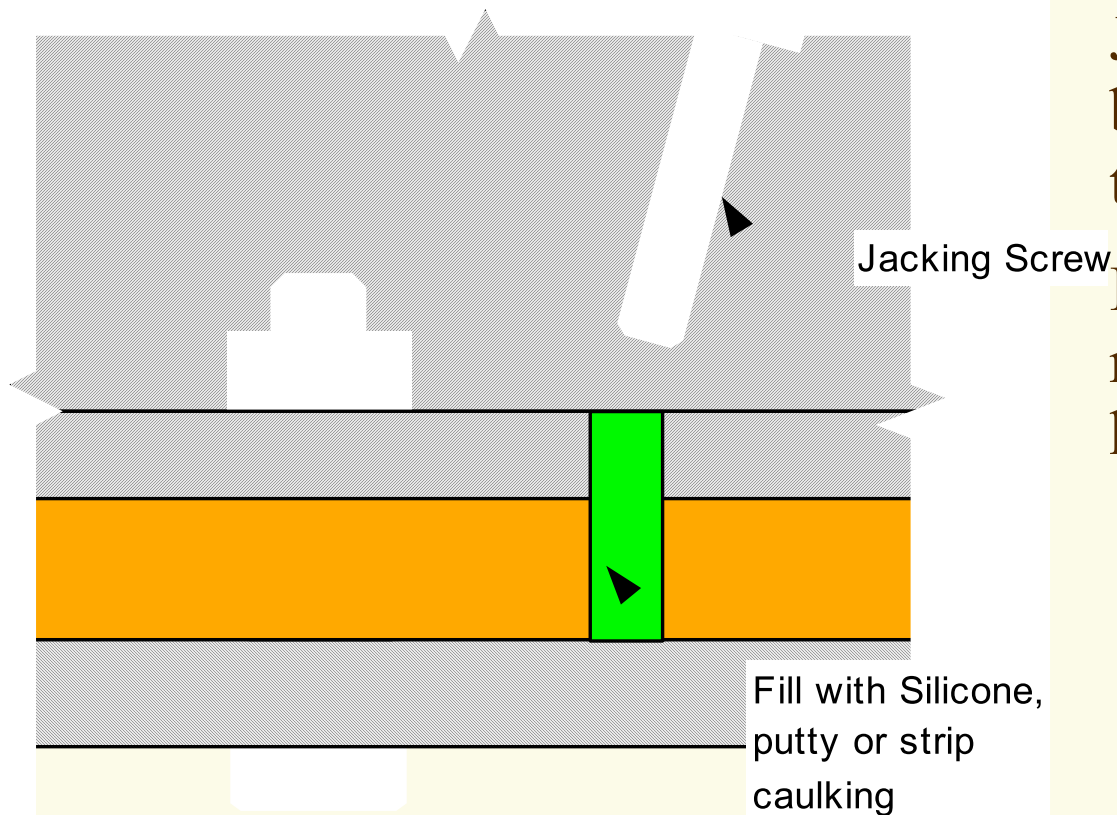
## 20. Clean Up



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.

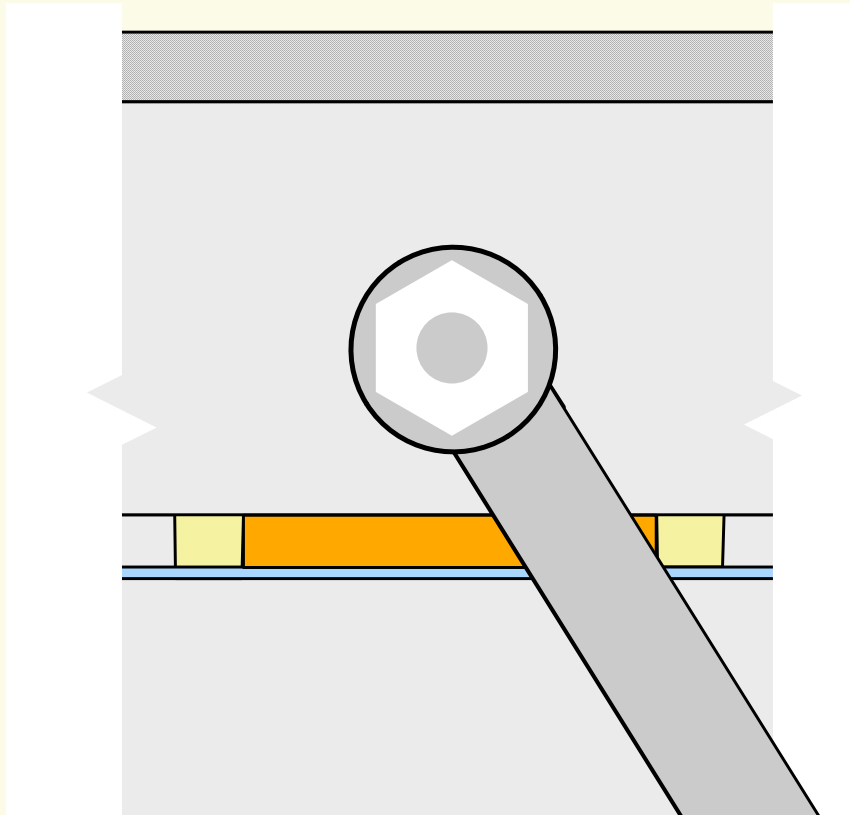
# 21. Back Out All Jacking Screws



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.

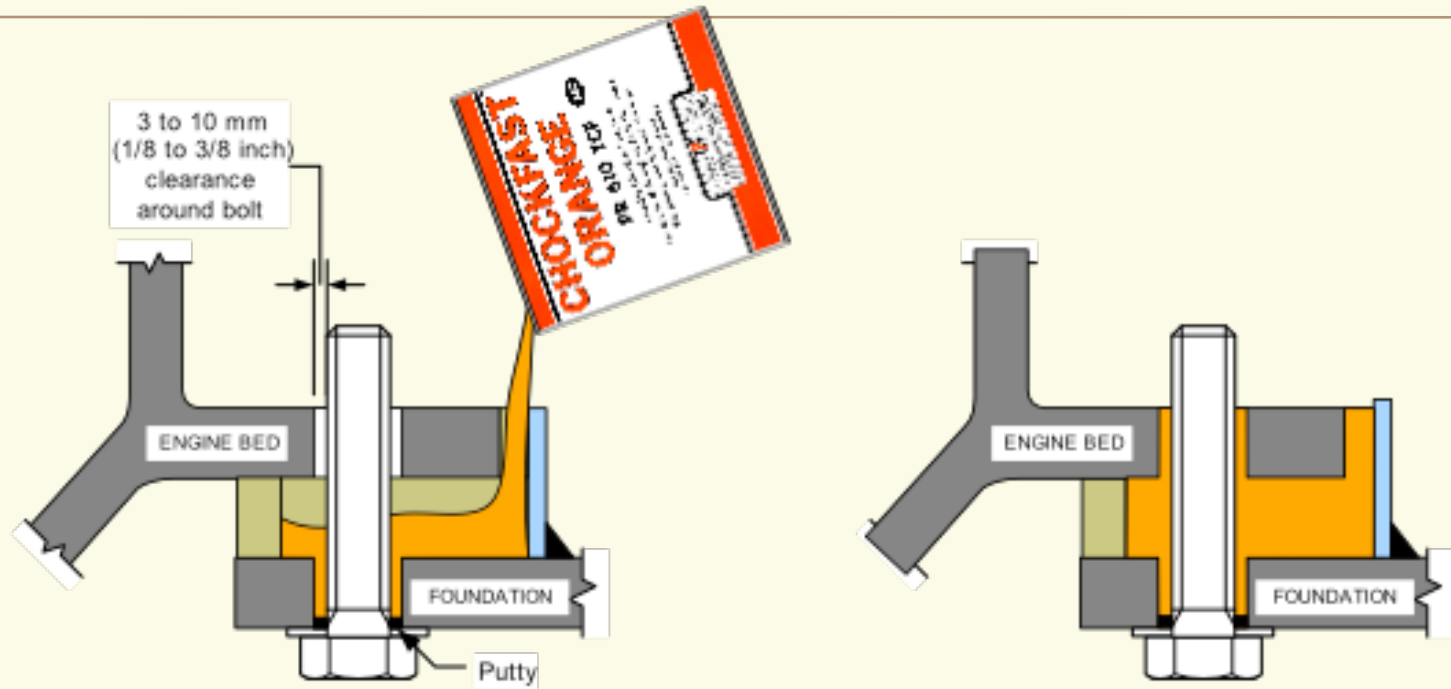
Then torque down all mounting bolts per engine manufacturer's instructions or contact ITW Philadelphia Resins.

A spiral-bound notebook with a light beige, textured cover. The spiral binding is on the left side. The text is centered on the page.

# Special Chocking Situations

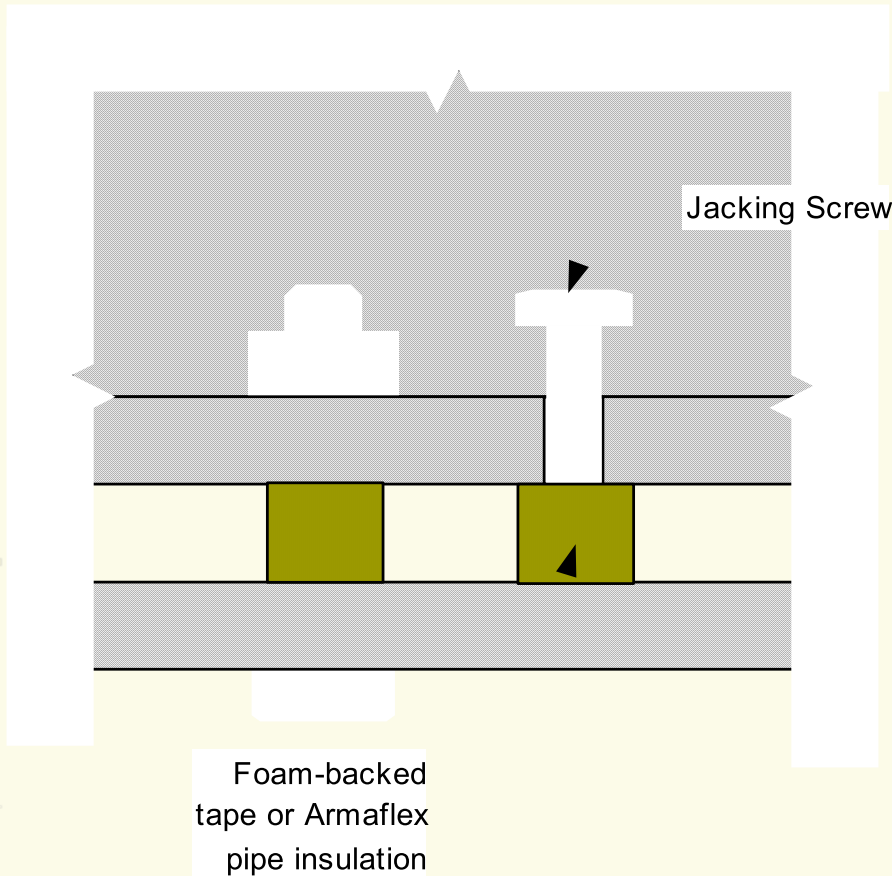
and How to Handle Them

# Creating a Fitted Bolt



Spray the bolt with Release Agent. Seal the bottom of the bolt so it will not leak. Center the bolt in the hole and make sure it has 1/8 to 3/8 inch clearance. Fill chock area with Chockfast up to top of the bolt hole.

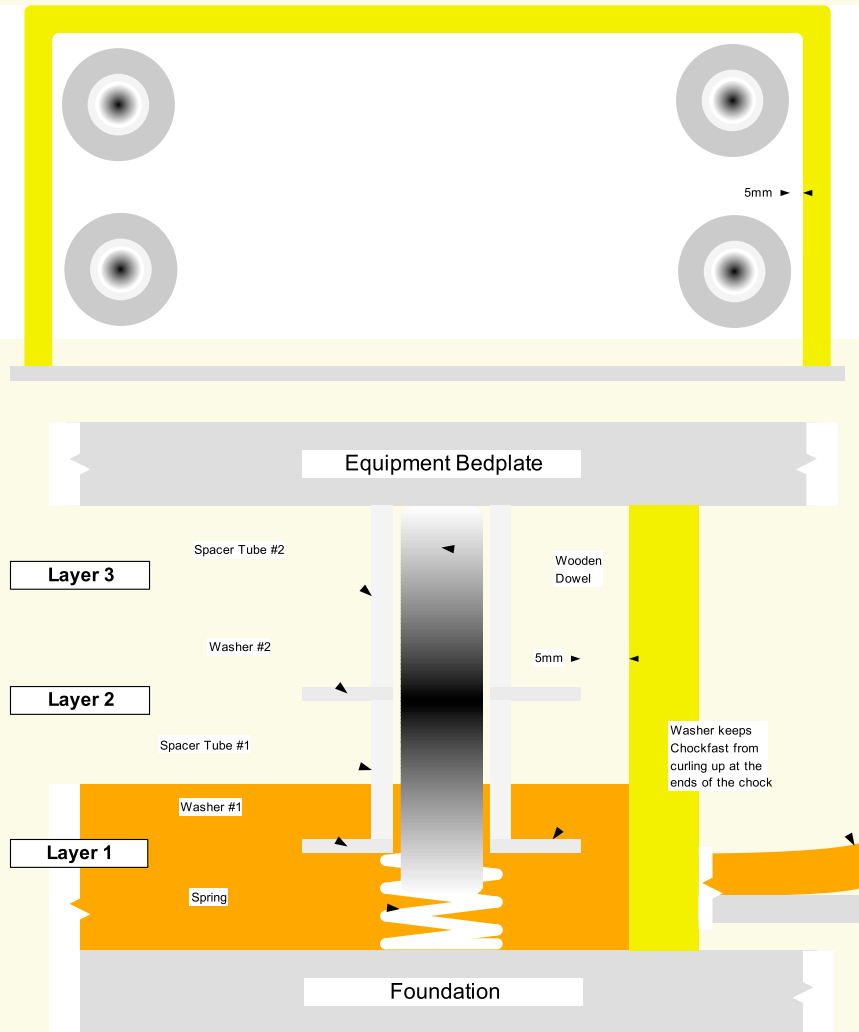
# Jacking Screws



Whenever possible, do not pour Chockfast around a jacking screw.

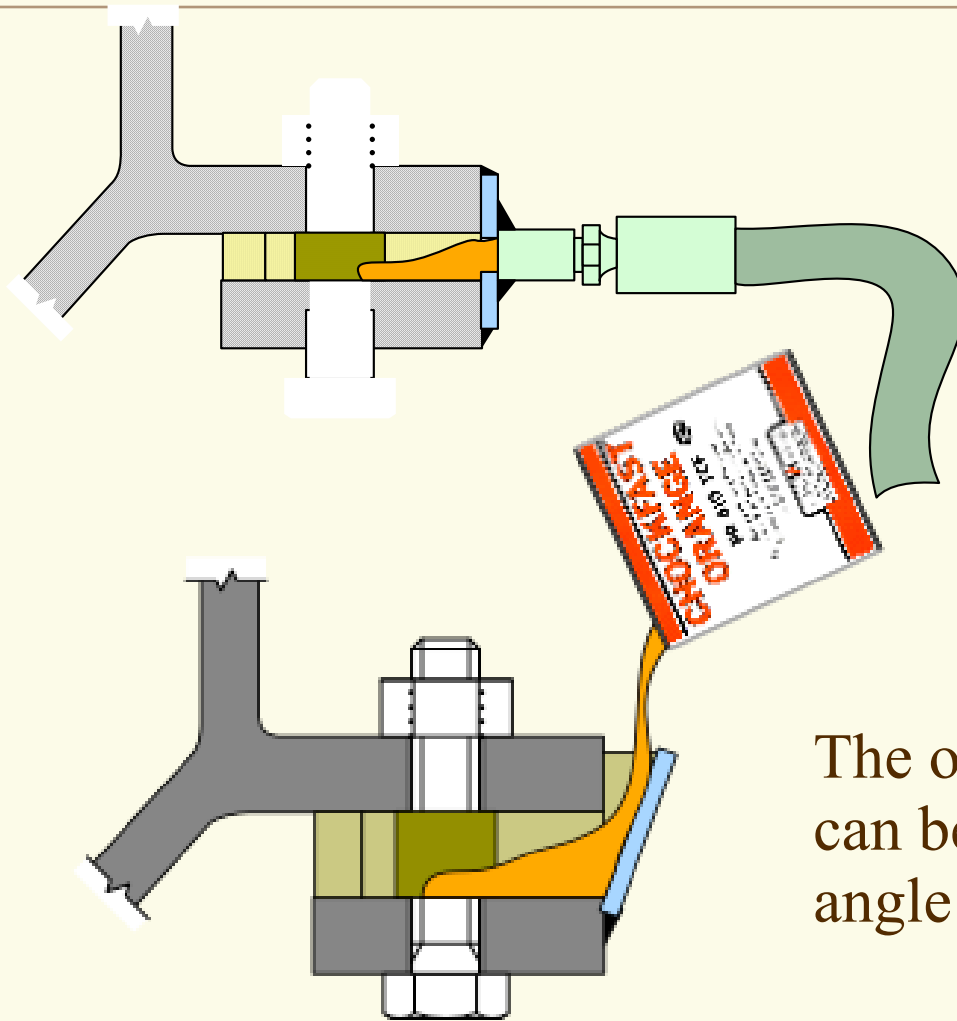
If a jacking screw does fall inside a chock, wrap it with foam-backed tape, cover with Armaflex pipe insulation or coat with non-melt grease

# Chocking In Layers



The Hardener Ratio Guide sometimes calls for making “Layered Pours” of Chockfast because the Chockfast may overheat if poured in a single layer. Use Layer Keys to prevent the edges from curling between pours. Pour successive layers within 4 to 6 hours.

# Chocking with Limited Access



Chockfast Orange can be injected with a grease gun

The outer metal dam can be installed at an angle

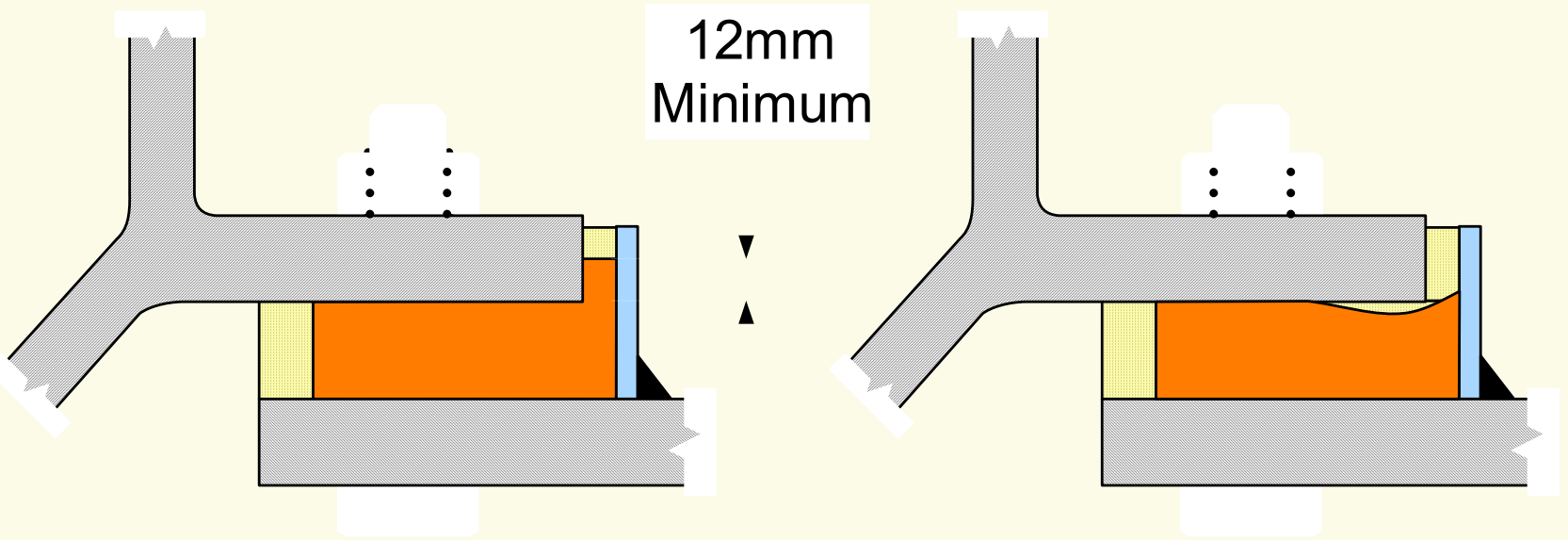
A spiral-bound notebook with a light beige, textured cover. The spiral binding is on the left side. The text is centered on the page.

# Some Chocking Do's & Don'ts

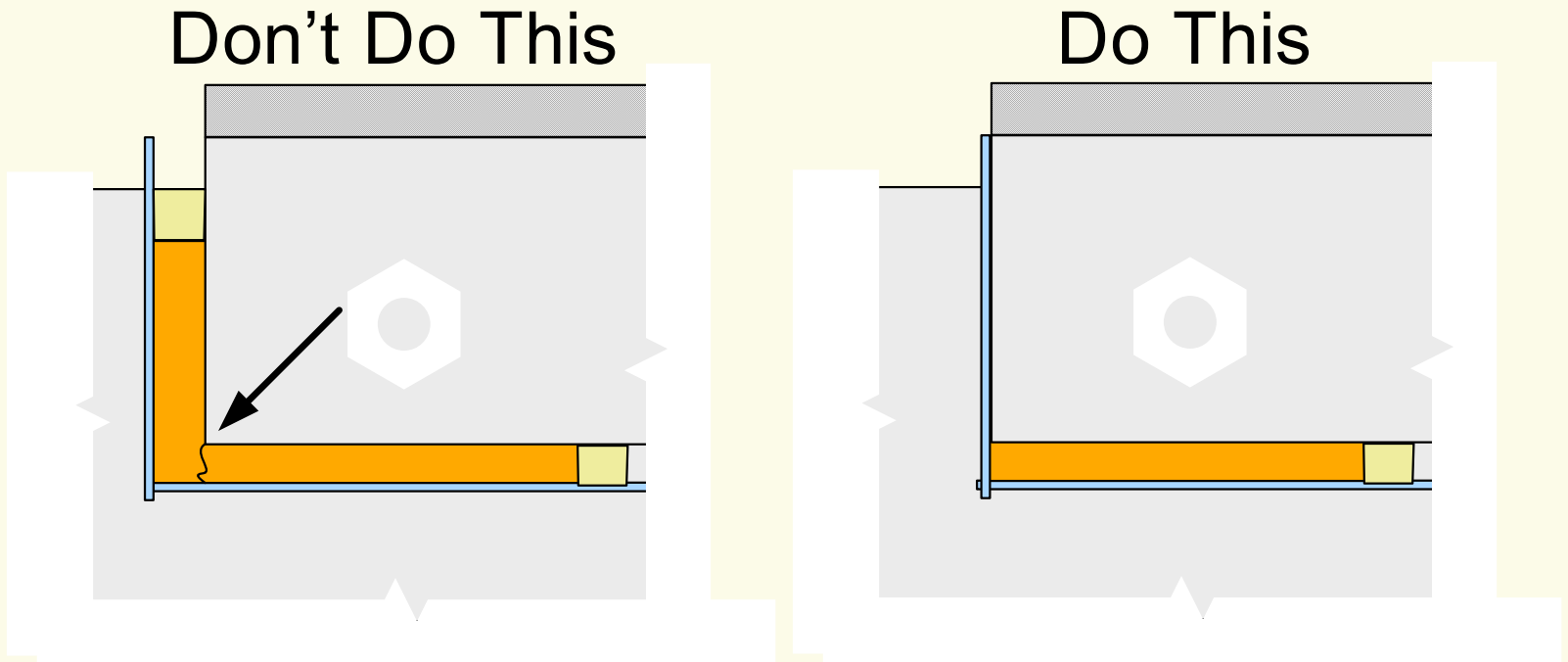
How to be more successful

# DO Fill Up the Overpour 12mm Minimum

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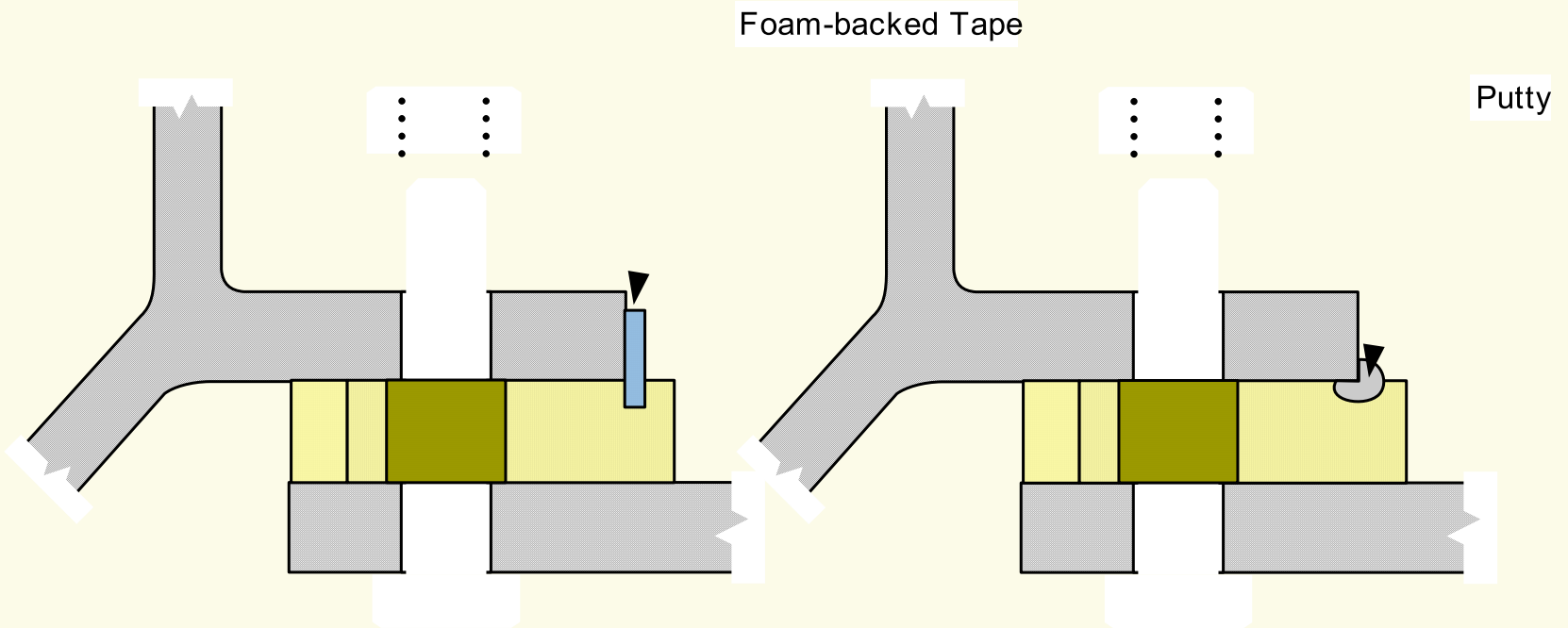


# DON'T Chock Around a Corner



Do NOT pour Chockfast around a corner. It will always lead to cracking because the corner acts like a wedge.

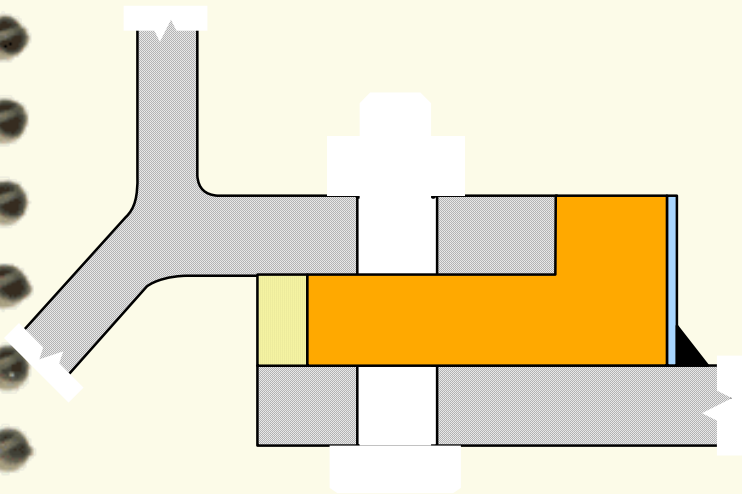
# DO Round All Corners & Edges



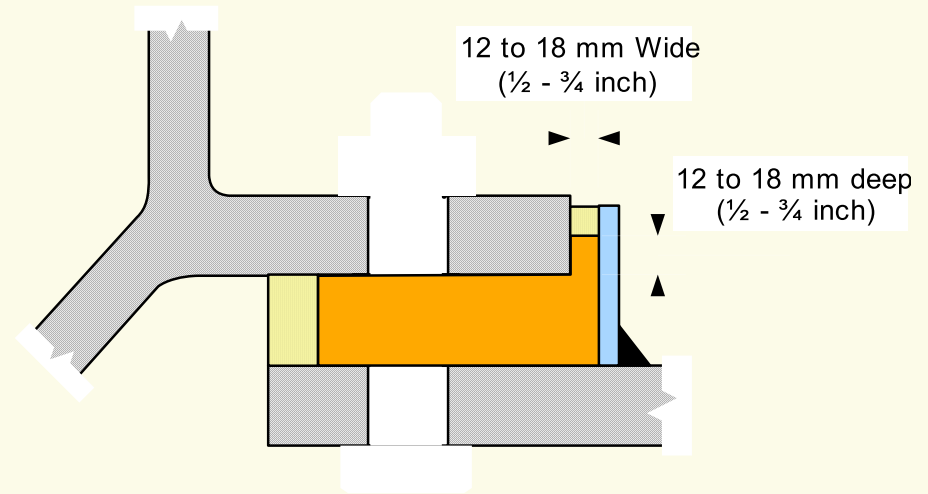
When creating the chock mold, it is a good idea to round all corners and edges that may protrude into the Chockfast. This lessens the chance of cracking.

# DON'T Make the Overpour Too Large

Don't Do This

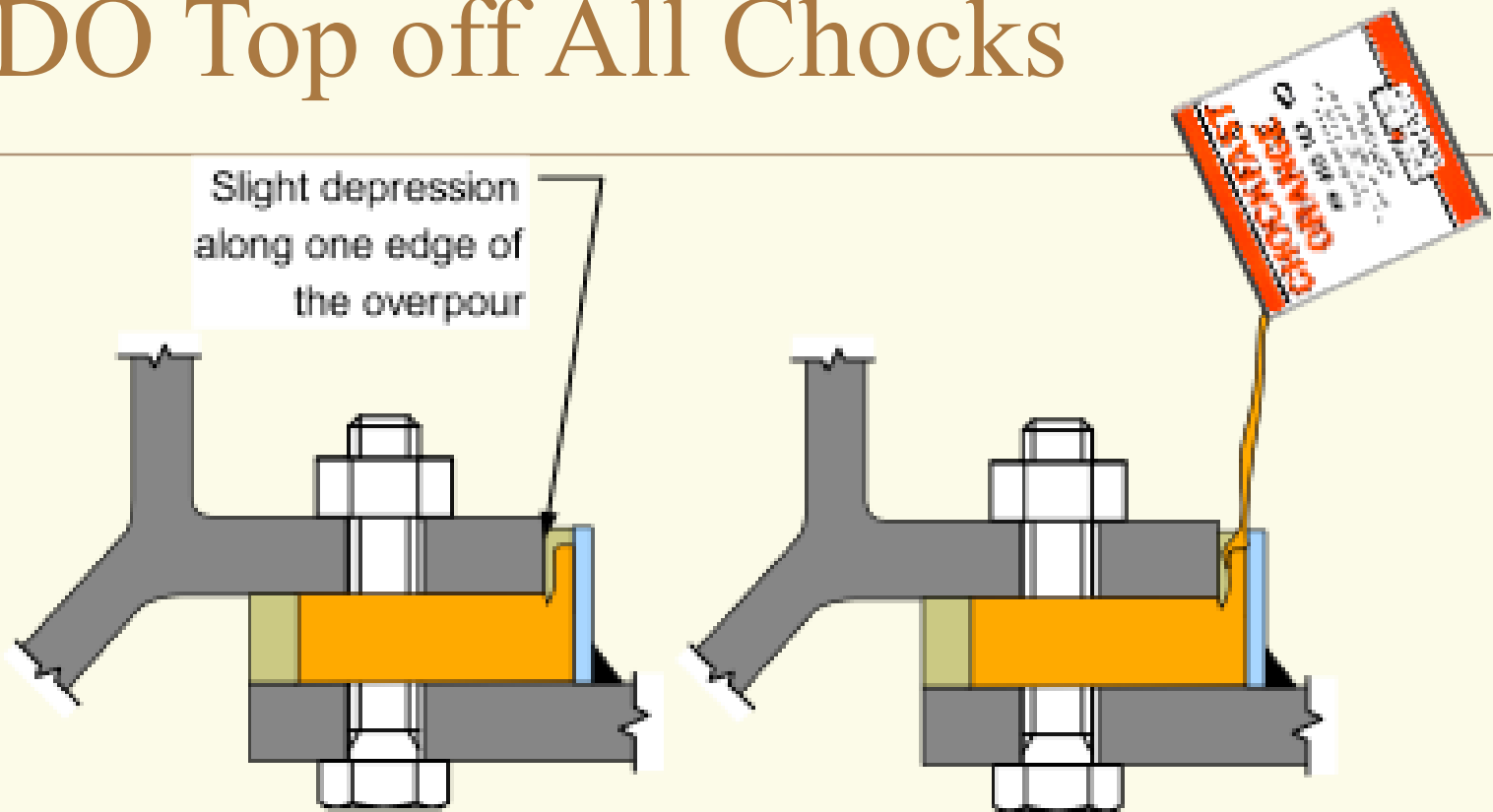


Do This



The Chockfast in the overpour area must remain cool and liquid to feed material back under the engine bed if needed. To do this, the overpour must be small and kept cool with a heavy metal front dam.

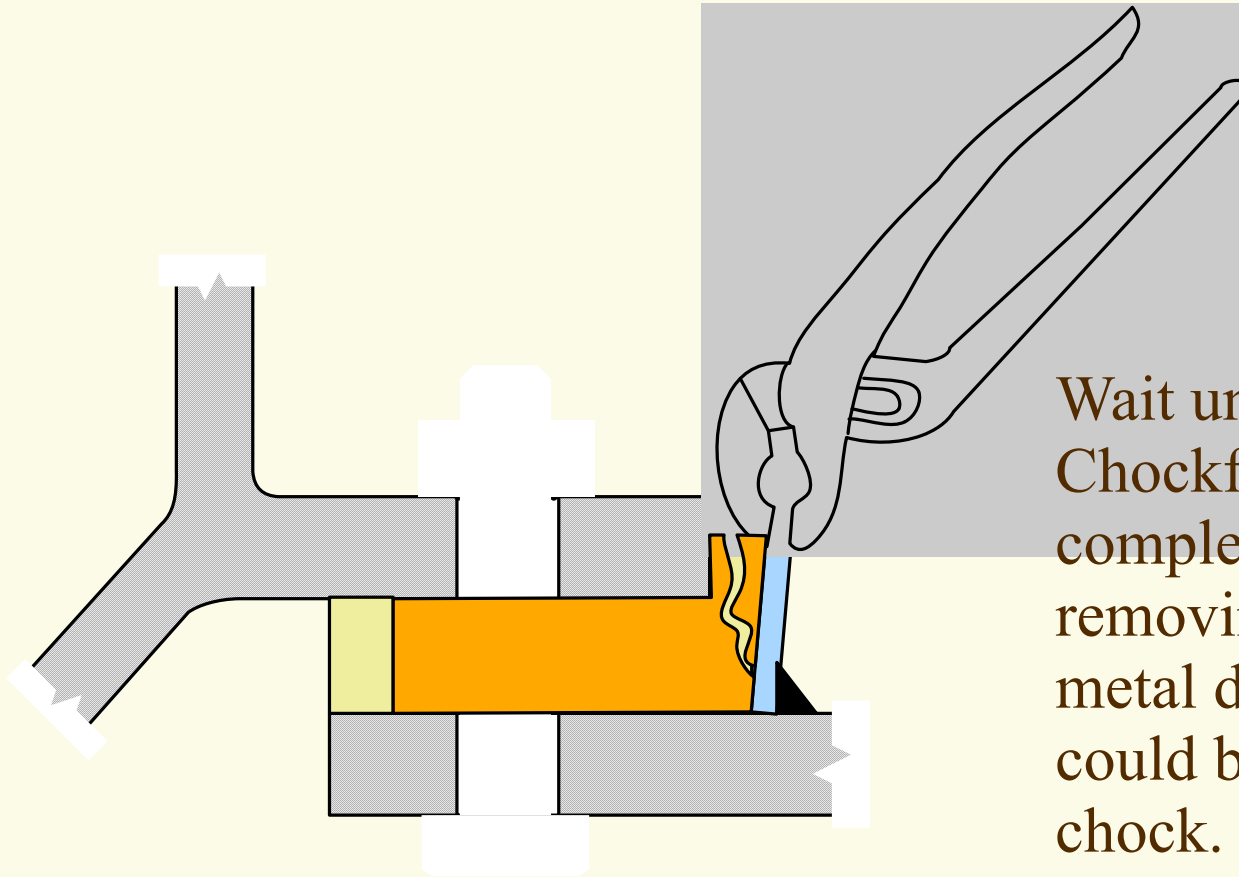
# DO Top off All Chocks



Sometimes the inside edge of the overpour will be drawn down slightly. Do not be concerned about this. Just top off the overpour area with some more Chockfast.

# DON'T Remove the Dams Until the Chockfast Has Fully Cured

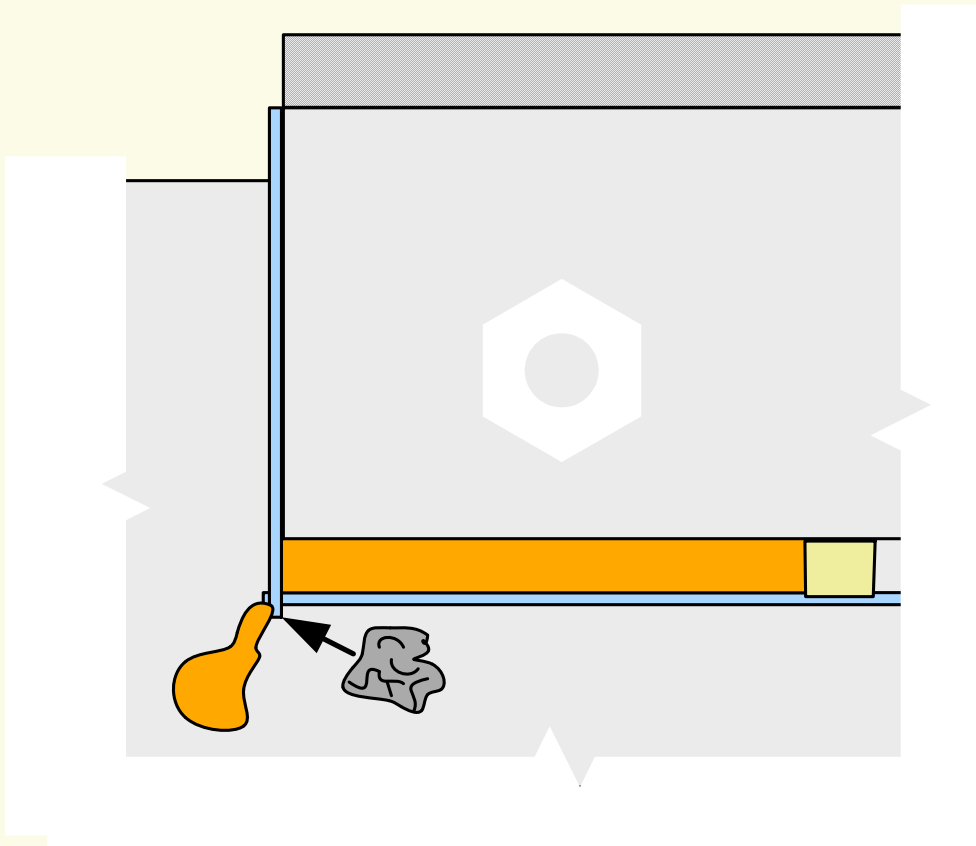
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Wait until the Chockfast has cured completely before removing the front metal dam or you could break the chock.

# DO Prepare for Leaks

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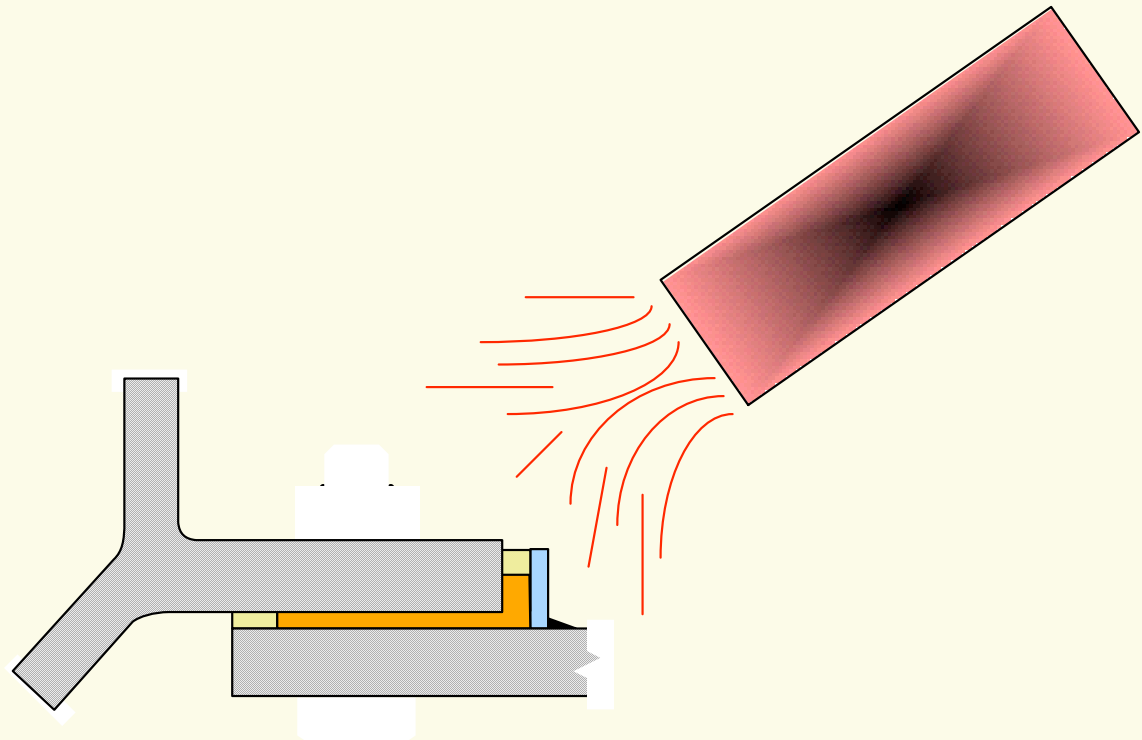


Have non-hardening putty on hand for sealing small leaks that may appear.

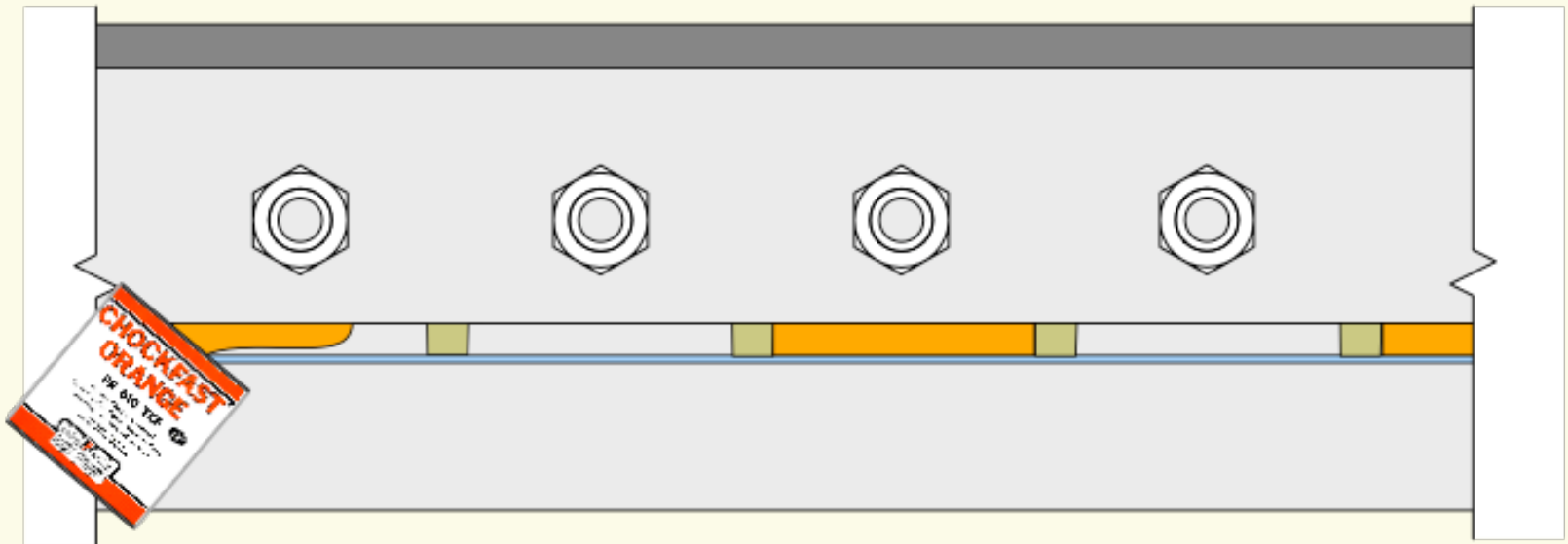
It is also a good idea to spray all areas adjacent to a chock with Release Agent to make clean up easier.

# DON'T Add Heat to A Chock Until the Chockfast Has Gelled

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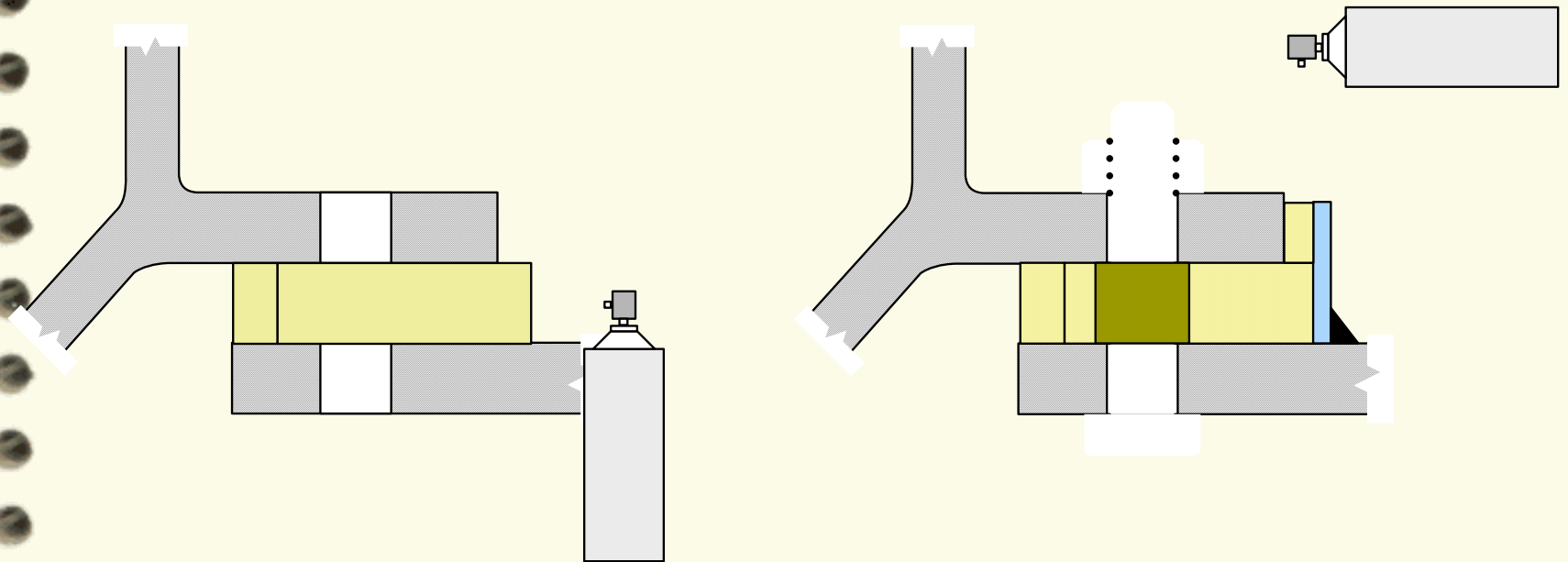
# DO Pour Alternate Chocks



If overheating the Chockfast is a concern, fill every other chock, wait until they are cool then fill the remainder of the chocks.

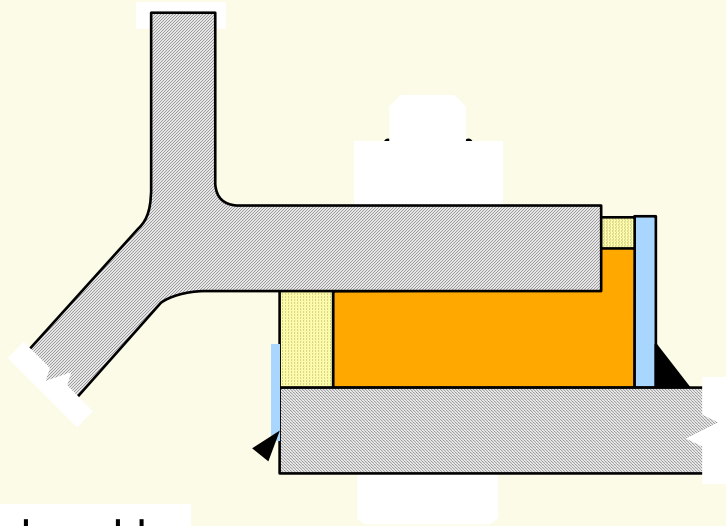
# DON'T Forget the Release Agent

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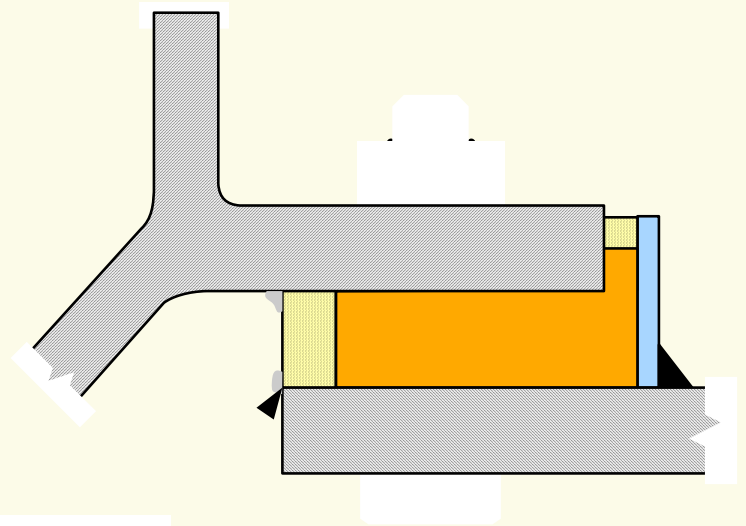


# DO Make Sure the Dams Will Not Move

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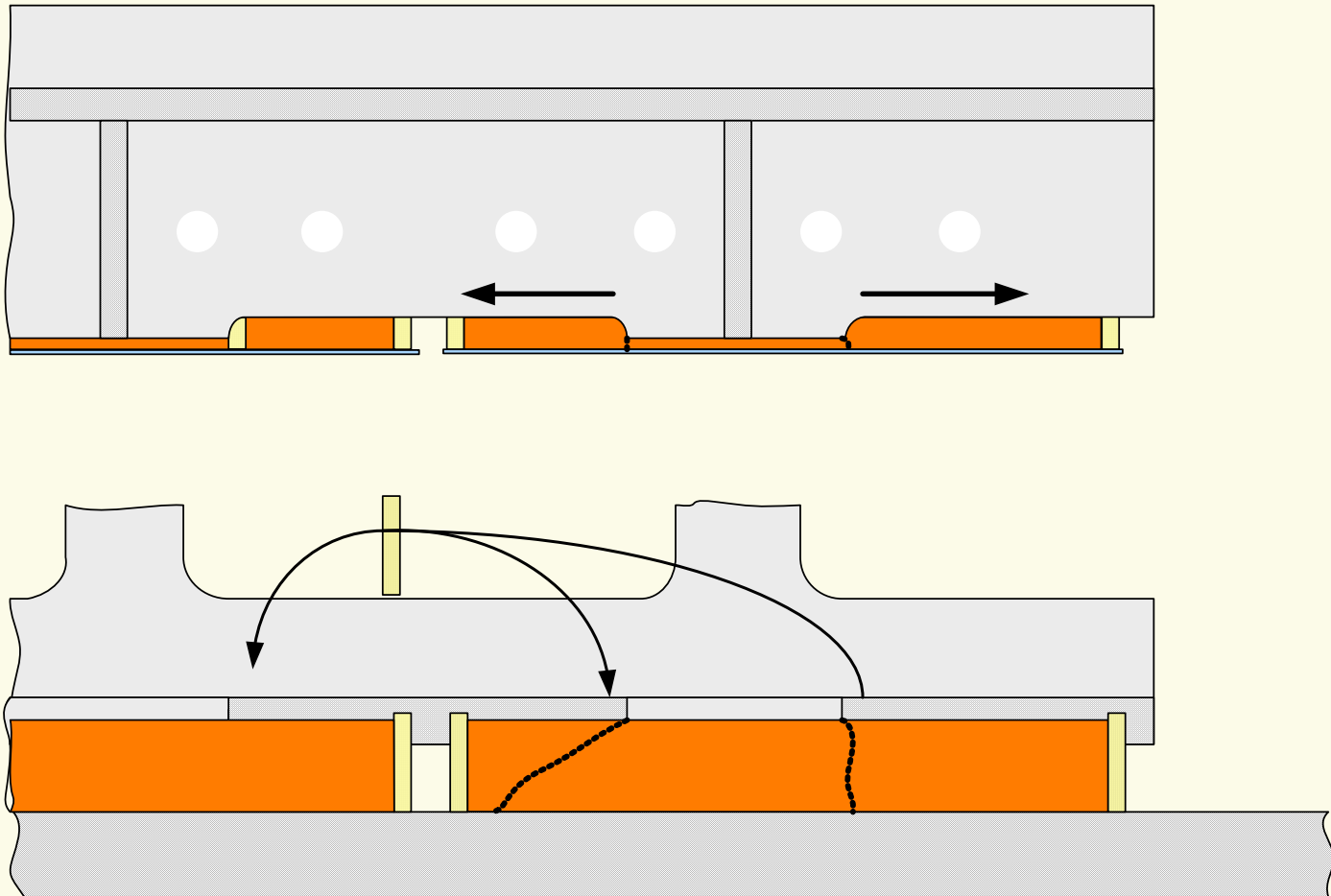


Tack weld a backing plate



Apply strip caulking

# Watch Out For MAN B&W Engines



A spiral-bound notebook with a light beige, textured cover. The spiral binding is on the left side. The text is centered on the cover.

# For More Information

Where to go for help

# Technical Bulletins

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- ✓ TB 692 General Guidelines for Designing Marine Chocks
- ✓ TB 659 Physical Properties of Chockfast Orange
- ✓ TB 656 Physical Properties of Chockfast Gray