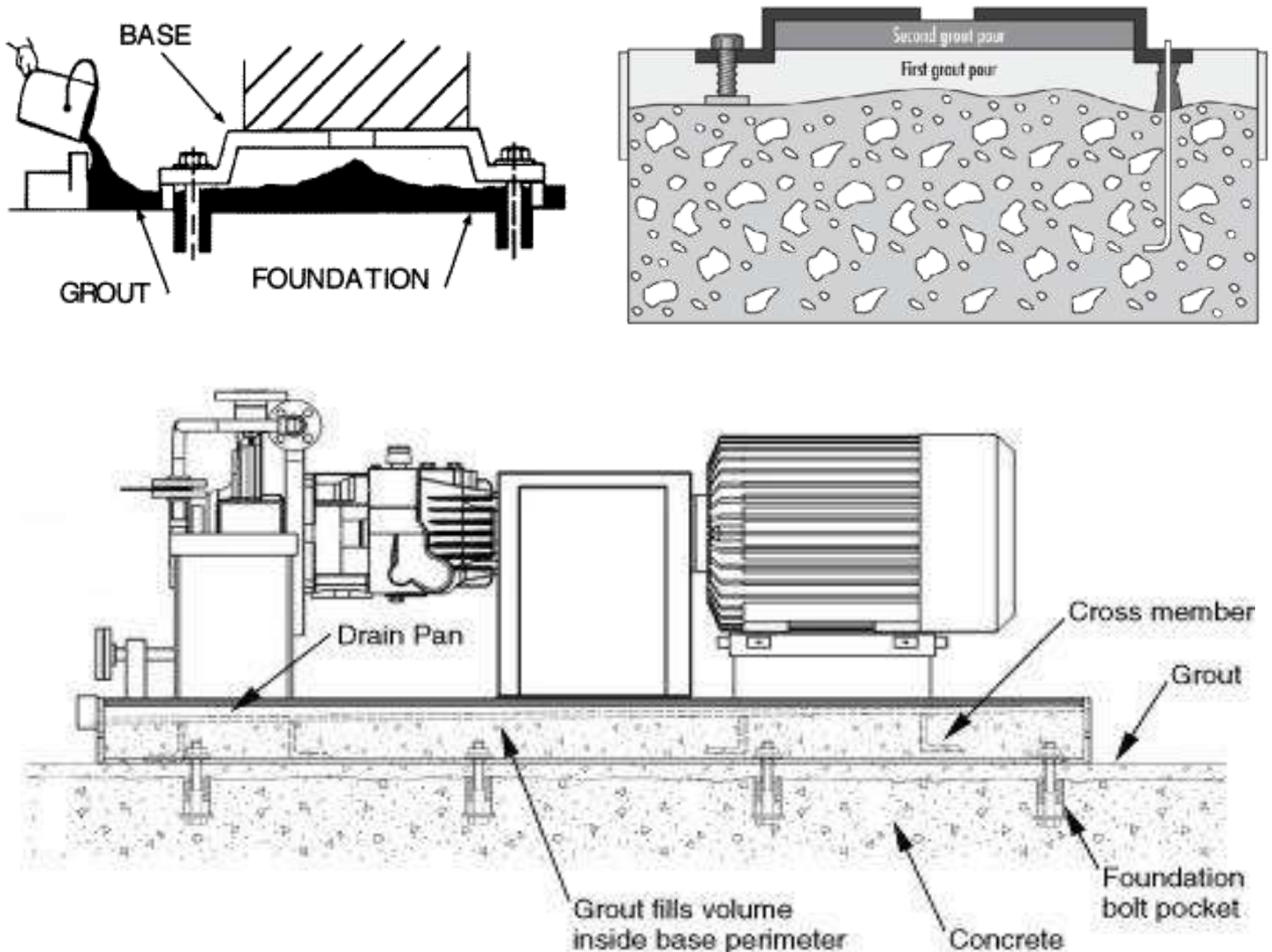


Centrifugal Pump Grouting:



SUBJECT: Attaching the pump and motor base plate to the foundation. The Grout

The forces and vibrations present in our rotating equipment must be absorbed by the base foundation or they will be transmitted to the mechanical seal and pump bearings, causing higher stresses and premature failure of one or both of these components. In another paper labeled "[Centrifugal Pump Vibration Readings PumpLetters](#)" we learned several rules about this foundation including the one that states, "the foundation must be at least five times the mass of the hardware attached to it". You can refer to this paper for additional information



The grout, in conjunction with the anchor bolts and shims will act as the connector between the pump base and the foundation ensuring that the forces and vibrations will be absorbed and dampened as much as possible. This grout can be installed before, during or after the installation.

In the past, iron filled and gas expansive inorganic grouts were employed, causing frequent replacement. Modern grouts, when properly installed can last for ten or fifteen years, or the expected life of most pump and motor combinations. In the following paragraphs we will be looking at some of these modern grouts to help you in making your final selection.

Regardless of the brand you select you are going to have to consider the "pour ability" of the grout to avoid air pockets and voids that can become trapped between the pump base and the foundation it will rest upon. Shrinkage is another consideration along with chemical compatibility and resistance to "creep".

You should also consider that in many process plants the floors are constantly wet from pump and valve leakage, steam leaks and wash down hoses. Be sure the grout you select will not be damaged by this additional moisture.

The U.S. Army Corps Of Engineers Specification CRD-C-621-89 describes various levels of "pour ability" for non shrinking grout:

- FLUID. Like tomato soup. It can easily be pumped or poured.
- FLOWABLE. Like a milkshake. It can also be pumped or poured.
- PLASTIC. Like molasses. Too viscous to pump, but can be poured. These grouts are usually "troweled" in place.
- DAMP PACK. Can be formed into a ball.

Most of the modern grouts fall into two categories:

Type 1: Cement plus a natural or metallic aggregate.

- Significantly lower in cost than the epoxy type. In many cases it is only one third of the cost.
- They can easily be mixed at the installation site.
- By changing the amount of water you can easily change the "pour ability".
- Curing takes longer than the epoxy type and this can be an important consideration in many applications.
- Chemicals can be added to the mixture to generate heat and accelerate the curing time, but the proper amounts are often hard to calculate.
- Pouring forms are needed, but waxing of the forms is seldom needed.
- The foundation surface must be clean and saturated with water at least twenty four (24) hours prior to the grouting application.

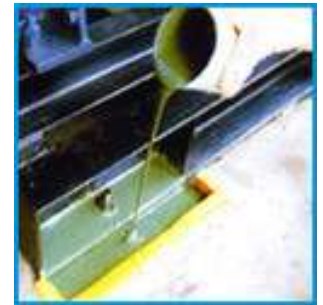
- Chemical resistance of these grouts is rated poor to fair.
- Replacement is simplified because the grout does not bond to metal.

Type 2: Epoxy grout, consisting of 3 parts: a resin, a hardener, and an aggregate.

- All of the parts are usually pre measured so it is hard to make a mistake.
- The cost can be high. As much as three times as much as the cement types, and waste is always a problem.
- It sets in about twelve hours so you can get "on line" a whole lot faster.
- Because it is so hard it can be very difficult to replace.
- This type is often your best choice for aggressive chemicals.
- Excellent for high electrical resistance. This helps if the welder is using the pump for a ground and he is about to weld the bearings to the shaft in the process.
- Pouring forms must be waxed or wrapped in polyethylene to make removal easier.



Cement Grout



Epoxy Grout

We look forward to being of assistance in your process equipment requirements

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