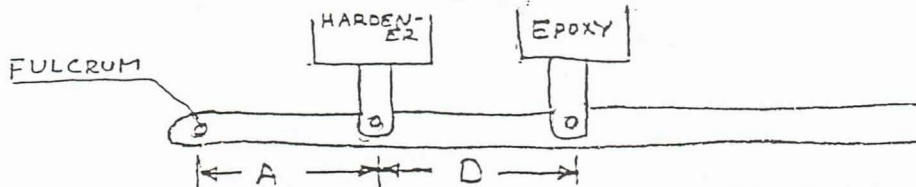# EPOXY MIXTURE RATIO

For optimum strength the mixture ratio of epoxy should be as specified by the manufacturer. Mixture ratio is the ratio of epoxy to hardener by <u>weight.</u>

$$\text{Mixture ratio} = MR = \frac{\text{Weight of epoxy}}{\text{Weight of hardener}}$$

Weighing each batch of epoxy is the best way to assure correct MR, however many builders use a pump and assume it's OK. This may not be the case. Below is a crude sketch of a pump to illustrate the dimensions "A" and "D" which we will use in determining MR.

To determine the mixture ratio your pump is giving you, use formula (1) below:

$$MR = \left(\frac{D}{A} + 1\right)\frac{S_E}{S_H} \qquad (1)$$

Where: S_E = Specific gravity of epoxy

S_H = Specific gravity of hardener

It's the <u>ratio</u> of S_E/S_H that's important, so if you do not know the specific gravity, weigh a cupful of epoxy and a cupful of hardener and use that ratio. Don't forget to subtract the tare!

If you determine that your MR should be corrected, do it by altering dimension "A". Remove the pump handle, turn it end-for-end and drill three new holes keeping "D" the same.
To determine what "A" should be to get the correct MR, use formula (2) below, using the MR desired.

$$A = \frac{D}{MR \times \frac{S_H}{S_E} - 1} \qquad (2)$$

N.B.! The specific-gravity ratio in eq. (2) is inverted from the ratio used in eq. (1)

There is some "cosine" effect in the pump linkages which will cause a variation from these formulae. The variation, however, may be within the manufacturer's tolerance on MR. If you want to iterate your correction you will want to observe that decreasing "A" increases MR.

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