

## Calculation examples to find the correct initial micrometer setting.

To determine the initial micrometer setting for a desired weight. (assuming specific gravity = 1)

Initially refer to the chart 'Technical data for Hibar Precision Metering Pumps' to find the displacement per thou for the size of pump being used.

**Example 1:** Target weight **0.95 grams** with pump size 7  
Pump 1B size 7 Stroke length 0.5" (500 thou.)  
Max displacement 1.229ml. **Displacement per thou : 0.002458ml.**

Divide the target weight (0.95g) by the amount displaced per division in ml. (0.002458ml)

Calculation 1  **$0.95 \div 0.002458 = \text{Initial micrometer calculation } 386.49.$  Set scale to 387**

Temperature, pump type and speed will affect the precise amount dispensed and after weighing a single shot, fine tuning by a few thou. may be necessary.

**Example 2:** Target weight - **130.00 grams** with pump size 174  
Pump 4F3 size 174 Stroke Length 3" (3000 thou.)  
Max displacement 174.354ml. **Displacement per thou : 0.058118ml.**

Calculation 2  **$130.00 \div 0.058118\text{ml} = \text{Initial micrometer calculation } 2,236.82.$**   
Set micrometer to **2,237** - weigh a single shot and fine tune as necessary.

### Example 3:

For products lighter or heavier than water where the SG (specific gravity) is unknown, it is first necessary to calculate the **weight** of product dispensed per division of the micrometer (per thou).

The calculation is made in the same way as examples 1 & 2 then the result is used to make a re-calculation to give the **weight** of product dispensed per division of the micrometer (per thou).

**Target weight - 50 grams** with pump size 65  
Pump 4F2 size 65 Stroke length 2" (2000 thou.)  
Max displacement 67.972ml. **Displacement per thou: 0.033986ml**

Calculation 3  **$50.00 \div 0.033986 = \text{initial micrometer calculation } 1,471.19$**  - On weighing, the shot dispensed is found to weigh - say 57g. indicating a product heavier than water. It is now necessary to re-calculate to find the correct micrometer setting to provide a shot of 50g. with this heavier product.

By dividing the weight of the shot produced (57g) by the initial micrometer setting. (1,471) the amount of product displaced per thou can be found.

**$57.00 \div 1471 = \text{Reading for this heavier product } 0.03874\text{g per thou.}$**

NOW, re-calculate example 3

Calculation 3a **Divide the target weight of 50g by 0.03874 = new initial micrometer setting 1,290.65** which you round up to **1,291**. The result, as would be expected for a heavier product, is a shorter pump stroke. Fine tune if necessary.