

LEAD LINES AND ECHO SOUNDING

Lead lines

A lead line or a sounding line is usually a length of a cord, or tiller rope of Indian hemp or braided flax or a brass chain with a sounding lead attached to the end. Due to prolonged use, a line of hemp or cotton is liable to get stretched. To graduate such a line, it is necessary to stretch it thoroughly when wet before it is graduated. The line should be kept dry when not in use. It should be soaked in water for about one hour before it is used for taking soundings. The length of the line should be tested frequently with a tape. For regular sounding, a chain of brass, steel or iron is preferred. Lead lines are usually used for depths over about 6 meters.

Sounding lead is a weight (made of lead) attached to the line. The weight is conical in shape and varies from 4 to 12 kg depending upon the depth of water and the strength of the current. The weight should be somewhat streamlined and should have an eye at the top for attaching the cord. It often has cup-shaped cavity at the bottom so that it may be armed with lead or tallow to pick up samples from the bottom. Where the bottom surface is soft, lead-

filled pipe with a board at the top is used with the lead weight. The weight penetrates in the mud and stops where the board strikes the mud surface.

Suggested system of marking poles and lead lines

The U.S. Coast and Geodetic survey recommends the following system of marking the poles and the lead lines :

Poles : Make a small permanent notch at each half foot. Paint the entire pole white and the spaces between the 2- and 3-, the 7- and 8- and the 12- and 13-ft marks black. Paint $\frac{1}{2}$ " red bands at the 5- and 10-ft marks, a $\frac{1}{2}$ " in black band at each of the other foot marks and $\frac{1}{4}$ " bands at the half foot marks. These bands are black where the pole is white and vice versa.

Lead Lines : A lead line is marked in feet as follow :

Feet	Marks
2, 12, 22 etc	Red bunting
4, 14, 24 etc	White bunting
6, 16, 26 etc	Blue bunting
8, 18, 28 etc	Yellow bunting
10, 60, 110 etc	One strip of leather
20, 70, 120 etc	Two strips of leather
30, 80, 130 etc	Leather with two holes
40, 90, 140 etc	Leather with one holes
50	Star-shaped leather
100	Star-shaped leather with one hole

The intermediate odd feet (1,3,5,7,9 etc.) are marked by white seizing.

Sounding Machine

Where much of sounding is to done, a sounding machine as very useful. The sounding machine may either be hand driven or automatic. Fig.4.3. show a typical hand driven Weddele's sounding machine.

The lead weight is carried at the end of a flexible wire cord attached to the barrel and can lowered at any desired rate, the speed of the drum being controlled by means of a break.

The readings are indicated in two dials—the outer dial showing the depth in feet and the inner showing tenths of a foot. A handle is used to raise the level which can be suspended at any height by means of a paul and ratchet. The sounding machine is mounted in a sounding boat and can be used up to a maximum depth of 100 ft.