Sprung loaded Seabed Sampler (In the style of Shipek®)

General Introduction

Grabs are supplied for the purpose of collecting medium size relatively undisturbed sample of the surface sea-bed layer.

The grab (See Figs. 1 & 2) consists of two concentric half cylinders. The inner half cylinder or sampling bucket, is held open against a pair of powerful springs by a trigger catch arm or pawl. On striking the seabed, the top sliding weight trips the pawl and allows the inner bucket to rotate through 180deg. under the torque of the axial springs, scooping an undisturbed sample from the seabed as it rotates. The bucket is then kept in the closed position during recovery, by the residual spring torque.

Figure 1.

Figure 2.
Complete package including optional stand.

Safety Notice and Disclaimer

This instrument can be dangerous if not used correctly and with care. Do not attempt to operate this grab before reading this instruction booklet. If there is something you do not understand contact, your local supplier for clarification.

The suppliers and manufacturers of this sampler cannot be responsible for injury, damage or death howsoever caused when working with this instrument .

Assembly

Do not attempt to operate this device until you have read and fully understand this section

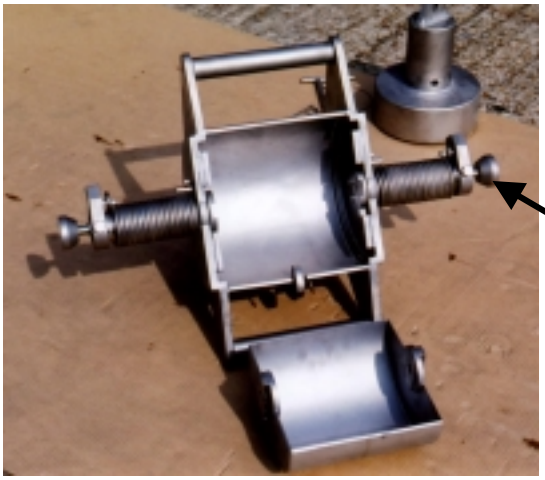
The upper sliding weight and the inner sampling bucket are both removable.

To arm the grab ready for deployment, start by removing the top weight. (See instructions below for removal of weight). The arming operation cannot be carried out, whilst the sliding weight is resting on the pawl.

The grab is armed before use, by means of a cocking lever.

<u>To fit the Sampling Bucket</u>

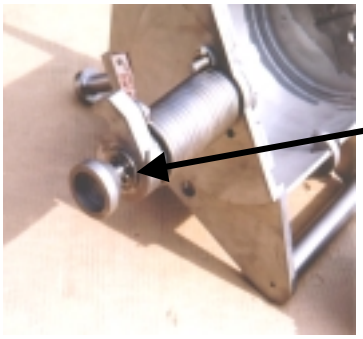
The bucket is inserted in the main body of the instrument, by withdrawing the spring loaded knobs at each side of the drum axis. (See Fig 3) This operation must always be carried out with the bucket in the closed position (See Fig.6).



Please note that once you have pulled out the axial knobs, their position can be maintained by turning the knob so that a small cross pin engages with the housing. (See Fig. 4)

Sprung loaded knobs

Fig 3.



Cross pin pressing against housing, to retain the position of the axial knob.

Fig 4

Once both axial knobs are pulled out and secured, then the inner sampling bucket can be slid into position.

Fig 5.

Fig.6.

The side knobs are then twisted and released, to hold the bucket in position

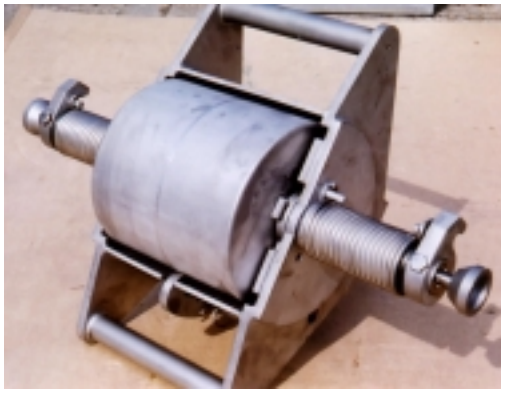


Fig. 6.

Similarly, on recovery, the bucket containing its sample can be removed for examination, by withdrawing the spring loaded pins and following the reverse procedure.

Arming the grab

Do not attempt to operate this device until you have read and fully understand this section.

The grab is cocked before use by means of a cocking lever.

The arming operation cannot be carried out, whilst the sliding weight is resting on the pawl. If the top sliding weight is fitted please see section below on fitting/removal.

To engage the cocking arm, the pins of the cocking arm need to be fitted into the recesses of the protruding lugs at end of the axial springs (See Fig.7)

Fig.7

Fig.8.

Then turn the cocking arm through 180 degrees, (Fig.8.) until the pawl clicks in place, thus retaining the bucket in the armed open position (See Fig 9).

This is at its most dangerous condition - KEEP AWAY FROM THE OPEN GRAB MOUTH

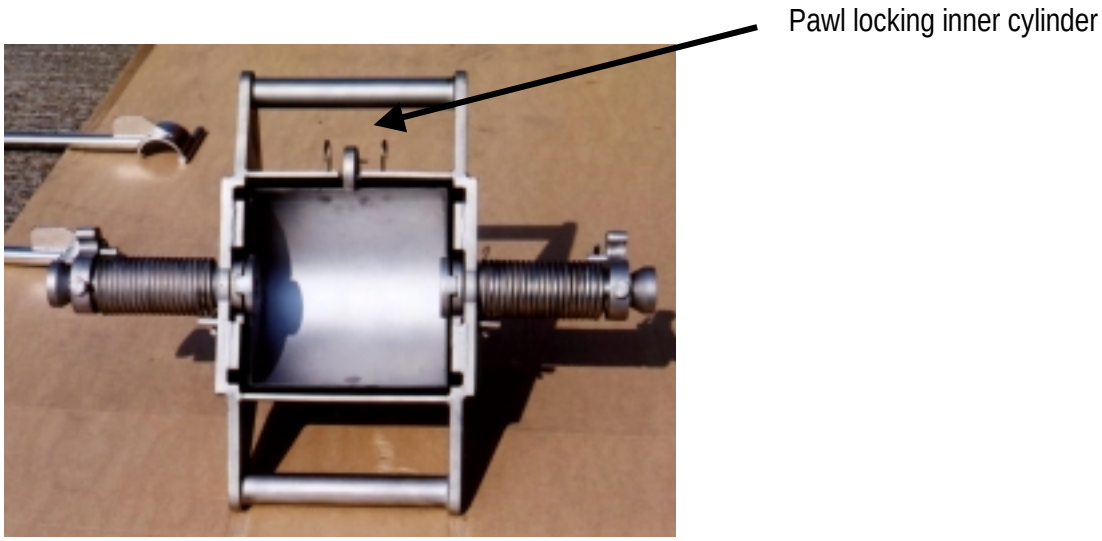


Fig.9.

Once in the armed position, the locking safety lever **must** be pushed into position. This will stoop the instrument firing when the sliding weight is refitted.

Safety Lock on Trigger Pawl

You will also see that there is a safety lock built into the pawl (Fig.10). To move the safety catch from the Un-Locked into the Locked position, it is necessary to pull the catch away from the pawl, in the direction marked on the instrument. See Fig. 9

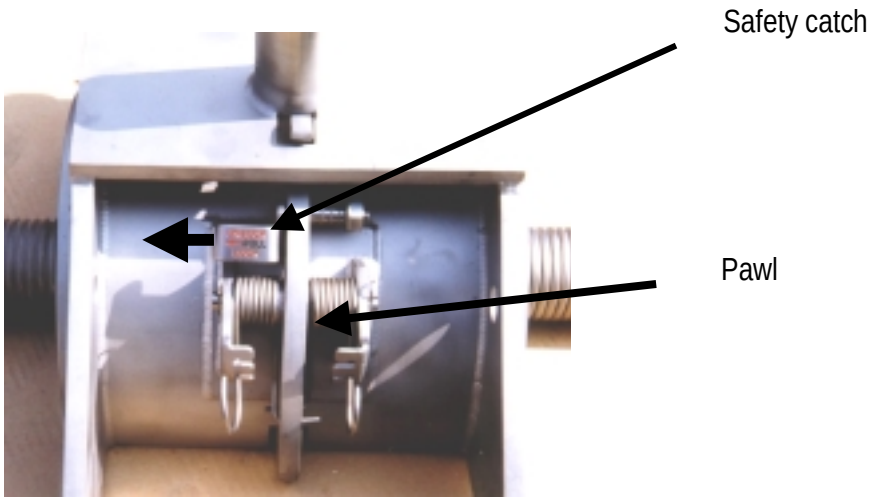


Fig.10

When the catch is pulled to the left, then depressed and released so that the pin of the catch resides underneath the pawl, then the safety catch is in the locked position and grab cannot be fired.

Setting the spring tension

There are two adjacent springs which retain the trigger pawl in position. If required, the tension of these springs can be modified individually by moving the looped ends of the springs up or down into the three retaining slots. (See Fig. 11)

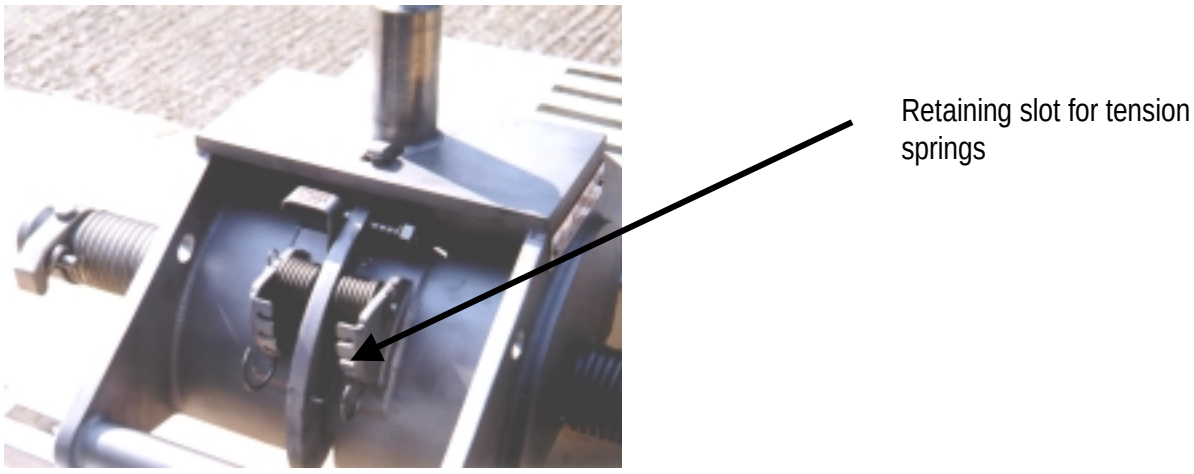


Fig 11

Fitting Sliding Weight

Once the safety catch has been put into position, it is now safe to refit the sliding weight. over the central spigot. (Fig. 12)

Slide the weight down over the spigot and fix in position using the two pronged fork provided. (See Figs 12,13 & 14). Secure the fork in position using the retaining safety pin through the holes provided (See Fig 14). Ensure that the pin arrangement is fastened before deploying the instrument in the sea.

Fig 12

Fig 13

Fig 14

The grab can now be lifted over the side by the top lifting eye.

Just before lowering into the water, the safety catch should be unlocked. Failure to unlock the safety catch at this point, will obviously mean that the grab will not trigger when it reaches the seabed.

Summary of Operations

(1) Lift off sliding weight
(2) Insert the cocking lever in the recesses provided
(3) Turn the lever against the pressure of the axial springs to open the bucket until the pawl engages.
(4) Put on safety lock.
(4) Check that the bucket is clean.
(5) Refit sliding weight.
(6) Connect deployment line.
(5) Hoist outboard on the deployment wire and then unlock safety catch.
(6) Lower carefully through the water surface to prevent tripping the bucket.
(6) Pay out the deployment cable until the wire slackens or the jerk caused by the closure of the bucket is felt on the wire.
(7) Wind in the cable to recover the grab.
(8) When inboard, remove the bucket from the main body of the instrument by withdrawing the spring loaded pins.

Caution

Owing to the very powerful nature of the main body of the instrument, fingers must be kept well clear of the bucket when it is cocked. In this condition the instrument must be handled by the side cylinder axes and NOT by the edge of the bucket.

NOTES

The grab and bucket should be cleaned by a weak water jet, preferably when dismantled (see photo) and not when it is in the cocked position.

The springs should be greased before periods of storage.

In certain circumstances, good samples can still be obtained when the main spring torque settings are lowered. This reduction does not reduce the handling dangers.