

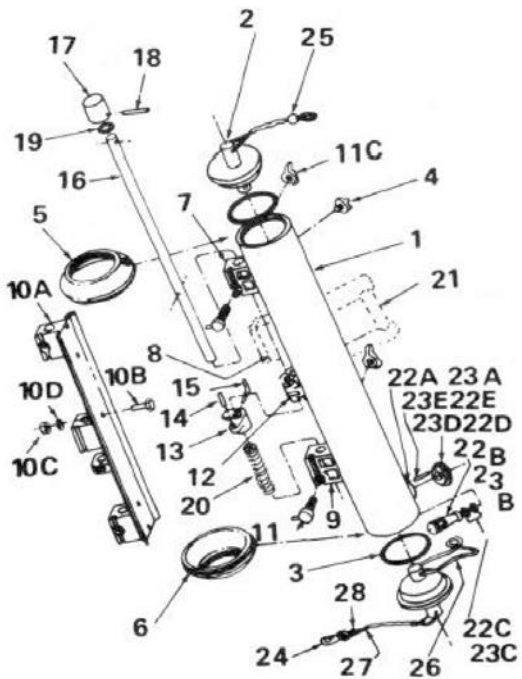
## Niskin bottles Information and Maintenance

The IMOS National Reference Stations are using 5 or 10 litre Niskin bottles with stainless steel spring closures.

*Niskin bottle ready to sample*



*An exploded view of a Niskin bottle showing the components*



| WHEN ORDERING SPECIFY:<br>BOTTLE MODEL, VOLUME,<br>ITEM NO. AND SERIAL NO. |  |     |
|--|--|-----|
| ITEM   | DESCRIPTION  | QT. |
| 1  | BODY   | 1   |
| 2  | END PLUG ASSY  | 2   |
| 3  | BOTTLE "O" RING                                      | 2   |
| 4  | AIR VENT SCREW 10100004                              | 1   |
| 5  | UPPER NOSE CONE                                      | 1   |
| 6  | LOWER NOSE CONE                                      | 1   |
| 7  | UPPER MTG. BLOCK-PVC                                 | 1   |
| 8  | CENTER MTG. BLOCK-PVC<br>(NOT SHOWN - 10 & 12L ONLY) | 1   |
| 9  | LOWER MTG. BLOCK - PVC                               | 1   |
| 10   | MTG. BLOCK ASSY - AL. (20-30L ONLY)                  | 1   |
| 10A  | MTG. BLOCK WELDMENT                                  | 1   |
| 10B  | MTG. BLOCK BOLT                                      | 5   |
| 10C  | MTG. BLOCK NUT                                       | 5   |
| 10D  | MTG. BLOCK WASHER                                    | 5   |
| 11   | WIRE CLAMP BOLT ASSY                                 | 2   |
| 11C  | WING NUT   | 1   |
| 12   | CENTER RELEASE BLOCK                                 | 1   |
| 13   | THUMB BLOCK 101000013                                | 1   |
| 14   | RELEASE PIN "I"                                      | 1   |
| 15   | RELEASE PIN "L"                                      | 1   |
| 16   | PUSH ROD   | 1   |
| 17   | PUSH ROD CAP   | 1   |
| 18   | PUSH ROD ROLL PIN                                    | 1   |
| 19   | PUSH ROD "O" RING 81-0395                            | 1   |
| 20   | PUSH ROD SPRING 86-0131                              | 1   |
| 21   | CARRYING HANDLE ASSY (NOT SHOWN-5-30L)               | 1-2 |
| 21A  | POST   | 2   |
| 21B  | HANDLE BAR   | 1   |
| 21C  | MTG BOLT (20-30L ONLY)                               | 2   |
| 22   | PETCOCK ASSY 0.187 BORE 101000022                    | 1   |
| 22A  | BUSHING 101000022A                                   | 1   |
| 22B  | VALVE BODY 101000022B                                | 1   |
| 22C  | "O" RING 81-0012V                                    | 3   |
| 22D  | PULL DISC 101000022D                                 | 1   |
| 22E  | LOCK PIN 30-0019                                     | 1   |
| 23   | PETCOCK ASSY 0.375 BORE 101000023                    | 1   |
| 23A  | BUSHING 101000023A                                   | 1   |
| 23B  | VALVE BODY 101000023B                                | 1   |
| 23C  | "O" RING 81-0014V                                    | 3   |
| 23D  | PULL DISC 101000023D                                 | 1   |
| 23E  | LOCK PIN 30-0019                                     | 1   |
| 24   | BRASS LANYARD SNAP 85-5000                           | 1   |
| 25   | POLY LANYARD BALL 101000025                          | 1   |
| 26   | LATEX CLOSURE BAND                                   | 1   |
| 27   | NYLON MONOFILAMENT LINE<br>ORDER BY FOOT - 86-6000   | A/R |
| 28   | CRIMP SLEEVE -<br>MINIMUM ORDER OF - 65-6000         | 15  |

### *Using the Niskins to collect samples*

Ensure that the thread on the wire clamp bolts is just slightly “burred” on the end, to avoid the clamping wing nuts from spinning freely off the bolt and over the side into the water.

- When using a sampling wire with a weight on the bottom, attach the deepest Niskin bottle approximately 1.5 to 3 m above the weight.
- When setting the bottles for sampling, check that the top air vent is screwed firmly closed and that the petcock or sample spigot is in the off position - pulled out fully to the “double-click” position.
- When attaching the Niskin to the wire, ensure the wire is fully seated in the mounting blocks and the wing nuts on the bolts are done up tightly. Otherwise the bottle will slide along the wire.
- On all but the bottom bottle, attach a messenger to the Niskin and then snap the messenger (go devil) to the wire. This order of attaching the messenger helps avoid loss of messenger or premature triggering (closing) of the Niskin below.
- If a CTD rosette is used mount the bottles in the order that they are to be sample around the rosette ( checking the air bleeds and sample spigots are firmly in the off position).
- Allow the bottles to soak at sample depth for a minute or so prior to sending a go-devil messenger down the line to trip (close) the first bottle. A 1 – 2 minute soak/flush of the bottle at sample depth on a cable or rosette has been shown to greatly increase the quality of the sample that is taken on many occasions.
- Allow enough time for the subsequent messengers to trip each bottle depth below the first, until the bottom bottle is tripped, before winching the Niskin bottles to the surface. By touching the wire with one hand it is possible to feel a strong “thump” on the wire as each messenger triggers the next bottle. The bronze messengers fall at approximately 60m per minute.
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- Upon retrieval, when each bottle reaches a safe height to handle, remove the now full water sample bottles and messengers from the wire and place them in order in the rack ready for sampling.
- If due to drift, there is a reasonably large “wire angle”, for **safety reasons** it is advisable to fasten a stainless “open hook” to a “comfortable length” of rope tied off to the vessel rails,

which can be easily slipped around the cable below the Niskin to hold the cable close and more upright for the sampler as the bottles are removed.

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- It is critical to note and record if there are any leaks from the bottles upon retrieval – e.g. end-cap not seated correctly, end-cap accidentally knocked open, leak from lower sample spigot, etc. – as this may affect the eventual integrity of the samples from a particular bottle.