Photo by S. Compoint / Sygma

SBE 32 Carousel Water Sampler - An innovative design free of the reliability problems associated with motor-driven types. The Carousel has no moving-shaft seals that can bind up at low temperatures or under pressure because each bottle position has its own magnetically-activated lanyard release latch. Only the magnetic field - not a moving part - links the Carousel's lanyard release mechanism with the pylon control electronics.

Sea-Bird's Carousel has been extensively deployed throughout the world's oceans, where it has built a reputation for reliability and ease of use. The Carousel has rapidly become *the* standard for oceanographic water sampling.

- **Reliable - no motors or oil-filled seals**
- **Drop-in replacement for existing pylons**
- **Variety of sizes and configurations**
- **Compatible with most CTDs**

- **No interruption of CTD data or power**
- **Easy one-handed lanyard attachment**
- **Fire bottles in any order**
- **Programmable autonomous operation**

SYSTEM ENGINEERED - PERFORMANCE PROVEN - TIME TESTED

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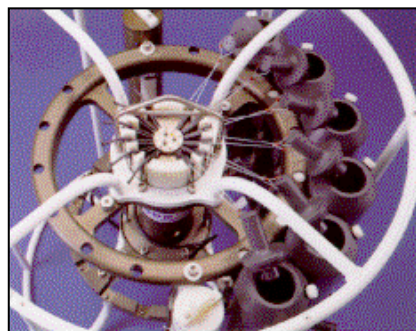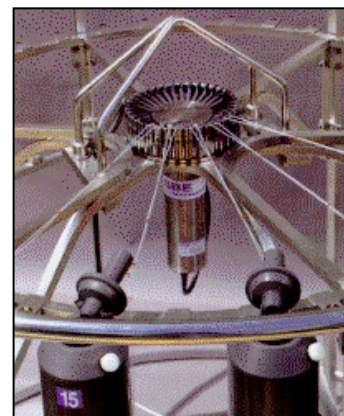Fax: +1 425-643-9954

The heart of every Carousel is the magnetically-actuated lanyard release (at right). A pressure-proof electromagnet at each bottle position is energized on command to release the latch holding the bottle lanyard. Titanium, acetal plastic, and other corrosion-resistant materials are used in the latch and magnet assembly. The latch array's modular construction makes servicing easy.

SBE 32 (FULL SIZE) CAROUSEL

The Carousel's electronics/release assembly and mounting hub are standard components of all 12- and 24-position systems, and are available separately. When the electronics/release assembly is bolted into the mounting hub, a drop-in replacement is created for the *pylon* assembly commonly found in many existing water samplers, allowing reuse of existing bottle mount stands and adapter plates when upgrading to the more reliable and convenient Carousel design.

36-position Carousels typically require a custom design suited to the intended bottle size, and are built to meet specific application requirements for size, weight, and materials. One example of a 36-position electronics/release assembly is shown at right, installed in a custom 36-position stainless steel frame for 12-liter bottles.
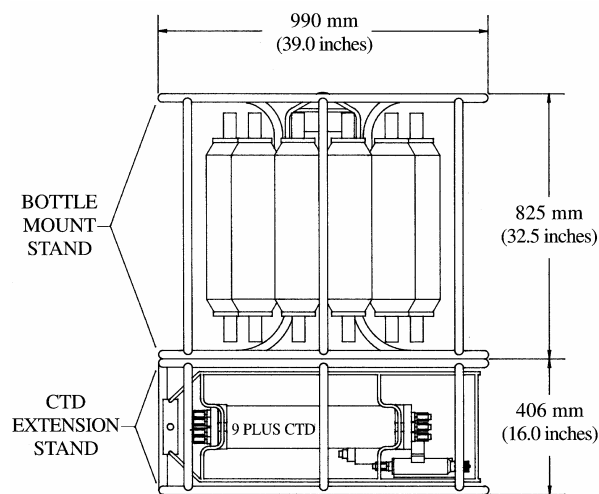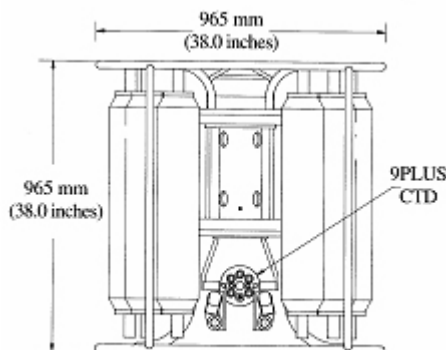
SBE 32C COMPACT CAROUSEL

For use with limited vertical clearance, the SBE 32C is a 12-position sampler without CTD extension stand. It supports bottles up to 8 liters, and accommodates a 9*plus* CTD mounted horizontally inside the bottle circle. Bottle positions are closely spaced into 2 arcs, leaving spaces between the arc ends to provide unobstructed flow to the 9*plus* or to allow mounting an SBE 19, 19*plus*, 19*plus* V2, or 25 CTD (or SBE 49 CTD for real-time operation only) and/or other instruments vertically, using an accessory mounting fixture.
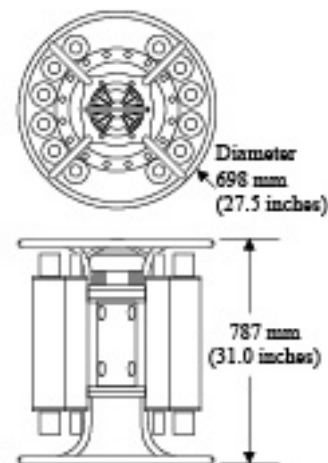
SBE 32SC SUB-COMPACT CAROUSEL

The 12-position SBE 32SC is sized for 1.7 or 2.5 liter bottles. When used with an SBE 19, 19*plus*, 19*plus* V2, or 25 CTD (or SBE 49 CTD for real-time operation only), it offers a small yet full-featured system, well suited to operation from small boats.

Full Size Carousel (12-bottle, 5-liter shown)

990 mm (39.0 inches)
BOTTLE MOUNT STAND
825 mm (32.5 inches)
CTD EXTENSION STAND
9 PLUS CTD
406 mm (16.0 inches)

Compact Carousel with 9plus

965 mm (38.0 inches)
965 mm (38.0 inches)
9PLUS CTD

Subcompact Carousel, 1.7-liter bottles

Diameter 698 mm (27.5 inches)
787 mm (31.0 inches)

CAROUSEL CONTROL

The Carousel can be controlled in several ways:

- Real-time data acquisition and control -
  - SBE 11*plus* Deck Unit for SBE 9*plus* CTD
  - SBE 33 Carousel Deck Unit for SBE 19, 19*plus*, 19*plus* V2, 25, or 49 CTD; no CTD; or Neil Brown Mk III CTD
- Autonomous data acquisition and control (no conducting wire required)
  - SBE 17*plus* V2 SEARAM for SBE 9plus CTD
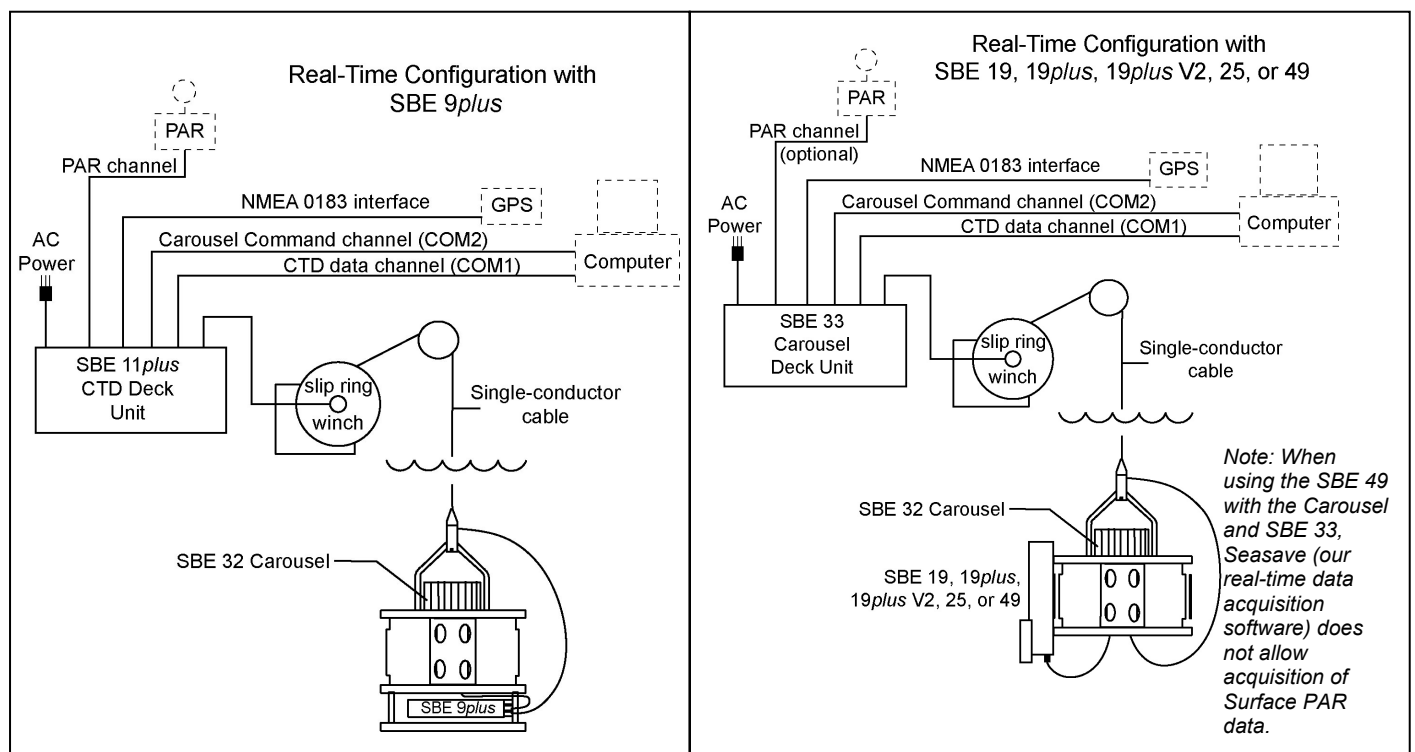 - Auto Fire Module (AFM) for SBE 19, 19*plus*, 19*plus* V2, or 25 CTD; or no CTD

Each of these is described briefly below; see the applicable specification sheet for more details.

SBE 11plus Deck Unit

The Carousel is designed to be connected to the SBE 9*plus* CTD and SBE 11*plus* Deck Unit, and controlled via the SBE 911*plus* modem channel.

SBE 33 Carousel Deck Unit

For stand-alone Carousel use (without a CTD), the SBE 33 provides power and real-time control to the water sampler. When used with an SBE 19, 19*plus*, 19*plus* V2, 25, or 49 CTD, it also provides a real-time data telemetry link and power for the CTD and auxiliary instruments. The SBE 33 includes a NMEA 0183 interface to allow GPS position data to be appended to Sea-Bird CTD data, and an optional auxiliary A/D channel to interface a surface PAR sensor.
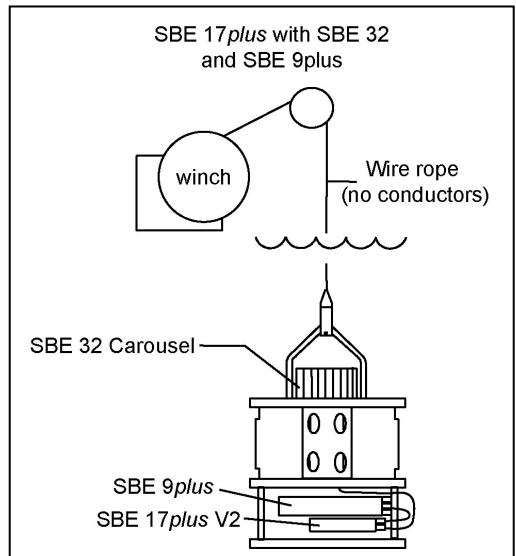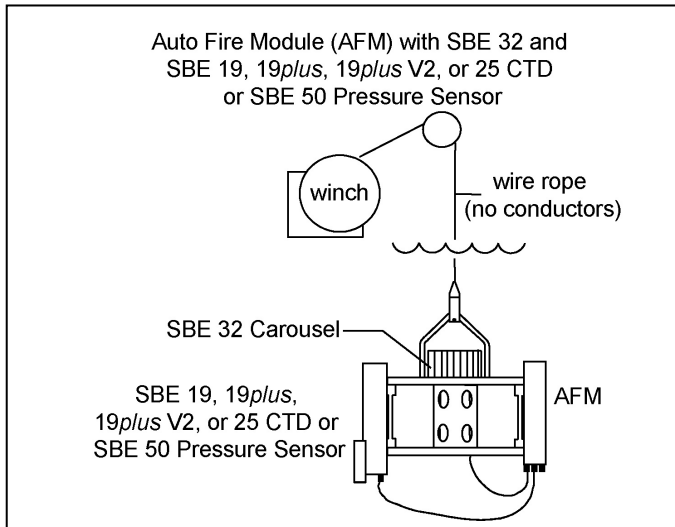

SBE 17plus V2 SEARAM Recorder & Auto Fire Module

The SEARAM allows Carousel operation with an SBE 9*plus* CTD without a conducting seacable. Power is supplied to both CTD and Carousel by the SEARAM's internal battery. Using pressure data received from the SBE 9*plus* and a programmable table of bottle closure pressures, the SEARAM commands the Carousel to close bottles on upcast. Setup, checkout, and data uploading are performed through the provided software.

Auto Fire Module (AFM)

The AFM allows Carousel operation without a conducting sea cable by firing bottles at user-programmed time intervals. Or, when used with SBE 19, 19*plus*, 19*plus* V2, or 25 CTD or SBE 50 Pressure Sensor, the AFM monitors the instrument pressure data and fires bottles at user-programmed depths. The AFM also records bottle number, firing confirmation, and 5 scans of CTD data for each bottle fired. At the end of a cast, data from the CTD and the bottle summary file from the AFM are both uploaded using the provided software. Setup and checkout are also performed (without opening the housing) through the software. Power is supplied to the Carousel by the AFM's internal batteries.
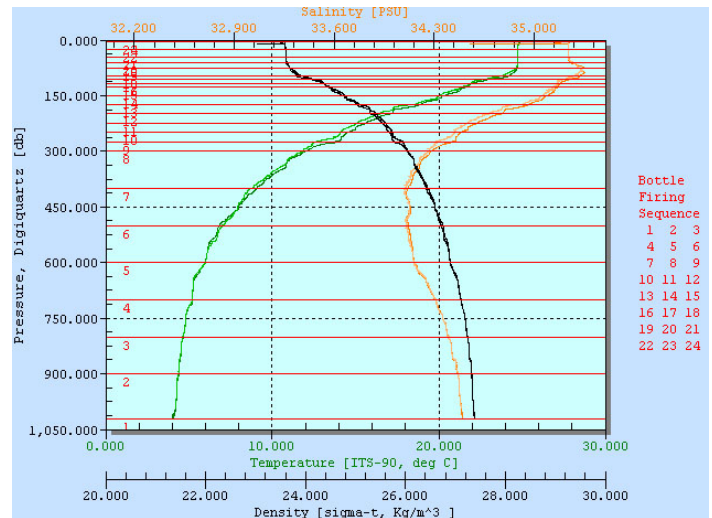
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Auto Fire Module (AFM) with SBE 32 and
SBE 19, 19*plus*, 19*plus* V2, or 25 CTD
or SBE 50 Pressure Sensor

SBE 17*plus* with SBE 32
and SBE 9plus

SEA-BIRD SOFTWARE

SEASOFT© V2, our complete Windows 2000/XP software package, is included at no extra charge. SEASOFT's modular programs include:

- SEATERM, SeatermAF, SeatermV2 – terminal programs for setup and data uploading.
- Seasave - real-time data acquisition and simultaneous keyboard control of bottle firing. A typical real-time CTD data plot (at right) shows how the software automatically marks the display with bottle numbers, keeps track of which bottles have been fired, and creates a *bottle data* file during real-time data collection.
- SBE Data Processing – filtering, aligning, averaging, and display of CTD and auxiliary sensor data and derived variables.

DIMENSIONS

Full Size Carousel	Diameter mm [in.]	Overall Height mm [in.] [1]	Dry Weight (no CTD or bottles) kg [lbs]	Full Size Carousel	Diameter mm [in.]	Overall Height mm [in.] [1]	Dry weight (no CTD or bottles) kg [lbs]
12 bottle 1.2 liter [2]	See 2.5 liter	See 2.5 liter	See 2.5 liter	24 bottle 1.2 liter [2]	See 2.5 liter	See 2.5 liter	See 2.5 liter
12 bottle 1.7 liter [2]	991 [39]	1201 [47.3]	68 [150]	24 bottle 1.7 liter [2]	1143 [45]	1214 [47.8]	95 [210]
12 bottle 2.5 liter [2]	991 [39]	1438 [56.6]	79 [174]	24 bottle 2.5 liter [2]	1143 [45]	1417 [55.8]	106 [235]
12 bottle 5 liter [2]	991 [39]	1234 [48.6]	78 [172]	24 bottle 5 liter [3]	1550 [61]	1300 [51.3]	179 [397]
12 bottle 8 liter [2]	991 [39]	1438 [56.6]	79 [174]	24 bottle 8 liter [3]	1550 [61]	1506 [59.3]	185 [410]
12 bottle 10 liter [2]	991 [39]	1603 [63.1]	82 [182]	24 bottle 10 liter [3]	1550 [61]	1659 [65.3]	194 [430]
12 bottle 12 liter [2]	991 [39]	1730 [68.1]	83 [184]	24 bottle 12 liter [3]	1550 [61]	1786 [70.3]	199 [440]
12 bottle 20 liter [3]	1550 [61]	1765 [69.5]	164 [363]				
12 bottle 30 liter [3]	1550 [61]	1765 [69.5]	171 [378]				

Compact Carousel				Sub-Compact Carousel			
12 bottle 1.2-8 liter [2]	966 [38]	973 [38.3]	68 [150]	12 bottle 1.7 liter [2]	699 [27.5]	800 [31.5]	50 [111]
				12 bottle 2.5 liter [2]	699 [27.5]	1003 [39.5]	52 [114]

[1] *Overall height* = bottle mount stand + CTD extension stand (if applicable) + height of lifting bail above bottle mount stand.

[2] *Frame parts: 25.4 mm (1 in.) diameter* for full size SBE 32 12-bottle through 12-liter bottle size & 24-bottle through 2.5-liter bottle size, & all compact SBE 32C & sub-compact SBE 32SC.

[3] *Frame parts: 34.9 mm (1.375 in.) diameter* for full size SBE 32 12-bottle larger than 12-liter bottle size & 24-bottle larger than 2.5-liter bottle size.

SPECIFICATIONS

Depth Rating	6800 meters (7000 and 10,000 meters optional)
Sea Cable Compatibility	Single or multi-core armored cable up to 10,000 meters long with inner core resistance of 0-350 ohms
Carousel Materials	Anodized aluminum, stainless steel, titanium, Delrin, PVC

10/10