



## APPLICATION NOTE NO. 66

Revised April 2013

### **Routine Maintenance for the SBE 32 Carousel Water Sampler**

This Application Note reviews corrosion precautions and routine maintenance for the SBE 32 Carousel Water Sampler. The reliability of the Carousel is sustained by establishing proper handling practices.

Note: Also see *Application Note 88: Frame Coating Repair for the SBE 32 Carousel Water Sampler*.

#### **Corrosion Precautions/Cleaning**

##### *Rinsing and Cleaning*

###### **After Every Cast**

- Rinse the **entire** Carousel, including the frame, with **fresh** water after each cast.
- The Carousel's trigger mechanism is made of titanium. The titanium is coated with Tiodizing; this product is similar to anodizing aluminum. **The Tiodized surface is water lubricating and should never be oiled with petroleum or silicon-based products (such as WD-40)**. Rinse the trigger mechanism thoroughly with **fresh** water after each cast.
- Rinse the inside and outside of all the bottles with fresh water, to prevent salt deposits on the tubing that close the bottles.

###### **If it will be More than 24 Hours Until the Next Cast**

To prevent salt buildup on the latches (which can cause *sticky* latches), Sea-Bird recommends the following:

1. Remove the 3 socket hex head screws holding the latch assembly to the pylon [Photo 1 in *Removing / Replacing Latch Assembly*]. Soak the whole latch assembly in a bucket of **fresh** water until the next cast.
2. With the latch assembly removed, thoroughly rinse the top of the pylon, including the magnets, with **fresh** water [Photo 5 in *Removing / Replacing Latch Assembly*]. The photo at right illustrates the salt deposits and corrosion that result from **not** rinsing these surfaces with **fresh** water!



###### **Periodically, and if experiencing *Sticky* Latches**

1. Remove the 3 socket hex head screws holding the latch assembly to the pylon [Photo 1 in *Removing / Replacing Latch Assembly*]. Soak the whole latch assembly in a bucket of warm, soapy, **fresh** water; rinse with **fresh** water after soaking.
2. If latches stick after this cleaning:
  - A. Open (unlock) all of the latches.
  - B. Place the latch assembly *upside down* on the top rack of a residential or commercial dishwasher. Run the dishwasher with regular dishwasher soap, and a **no-heat dry cycle** (air dry only!).

## ***Anodes***

Large zinc anodes provide corrosion protection:

- SBE 32C and 32SC - 2 each in lower adapter plate, lower guard ring, upper adapter plate, upper guard ring; 1 on pylon/hub assembly
- SBE 32 (standard)  
12-bottle size - 3 each on lower guard ring and upper guard ring; 2 on lower adapter plate; 1 on pylon/hub assembly  
24-bottle size - 3 each in lower adapter plate, lower guard ring, upper adapter plate, upper guard ring; 1 on pylon/hub assembly
- CTD extension stand (if used) - 2

Check the anodes occasionally to verify that they are securely fastened and have not eroded.

## ***Screws***

All screws exposed to seawater have been generously lubricated with Bostik's Never-Seez Blue Moly anti-seize compound (available from marine hardware stores). When disassembling/reassembling the Carousel, re-lubricate these screws with Blue Moly or equivalent. Blue Moly is electrically conductive, so be careful not to get it on circuit boards.

**Note:** Blue Moly is molybdenum disulfide and pure nickel flake in pressure-resistant premium grade grease, formulated *without* graphite, lead, or copper. See Bostik's website (<http://www.bostik-us.com/sites/default/files/NSBlueMoly.pdf>) for the most up-to-date specification; a copy of their current data sheet is included in this Application Note for your convenience.

## **Storage**

Store the Carousel with the bottles closed to preserve the tension of the tubing that closes the bottles.

If the Carousel is stored on deck, we recommend covering it to keep off salt spray and protect the plastic parts from UV rays. At a minimum, a cover for the latch assembly is a good investment.

## **Tubing / Spring Maintenance**

As described above in *Corrosion Precautions / Cleaning*, rinse the inside and outside of each bottle with fresh water after every cast to prevent salt deposits on the tubing that closes each bottle. Periodically inspect the tubing for tears and to insure the proper amount of tension. Replace the tubing if it becomes torn or damaged from salt deposits, or is overstretched.

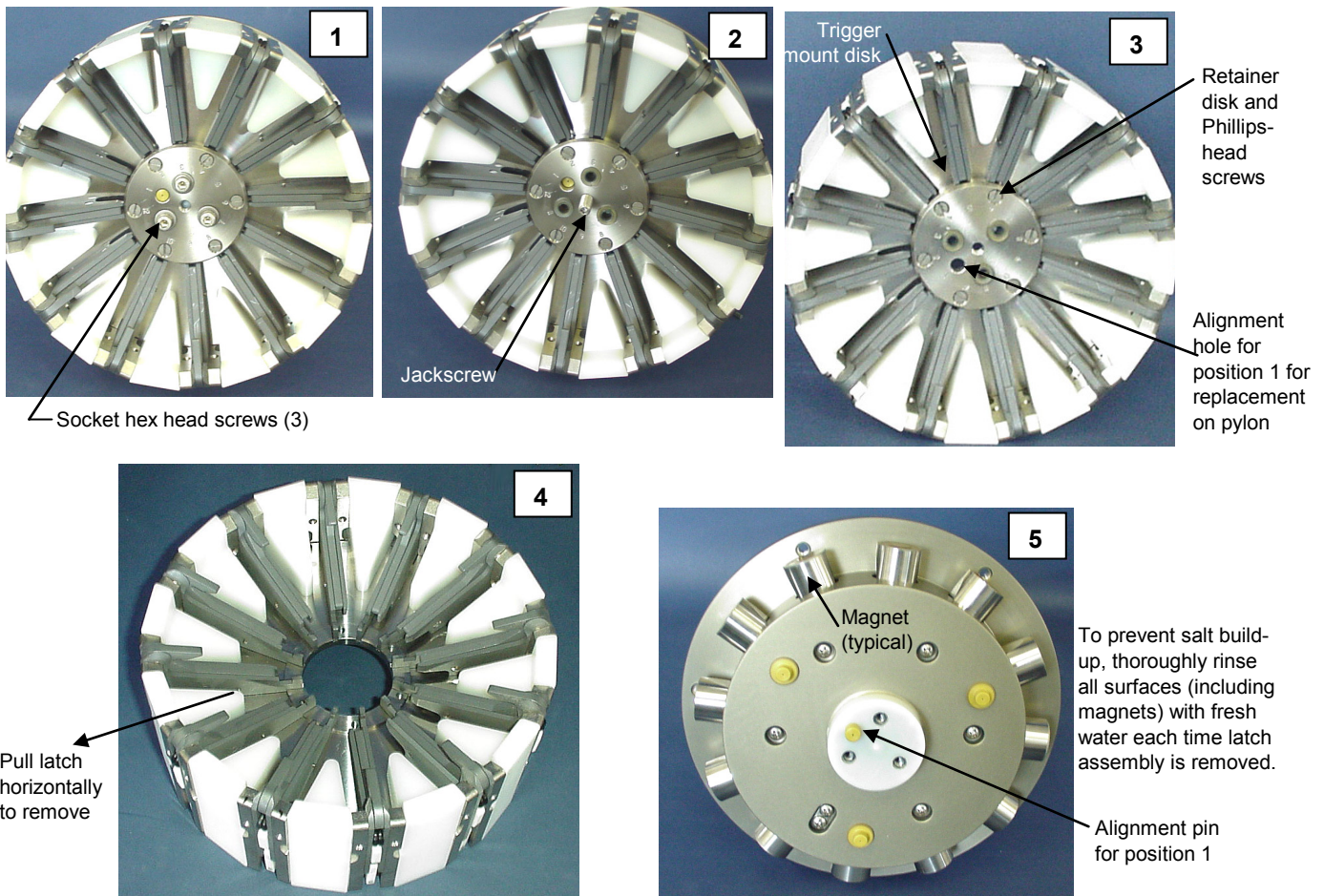
## Removing/Replacing Latch Assembly

### Removing Latch Assembly

1. Remove the three socket hex head screws, lock washers, and flat washers from the top of the latch assembly. [Photo 1]
2. (For Carousels built in 2006 and later) Insert a jackscrew (jackscrew kit is provided with the Carousel) in the center hole. As you turn the jackscrew, the latch assembly will push away from the pylon. [Photo 2]
3. Lift the latch assembly off the pylon.
4. Remove individual latches if desired:
  - A. Mark the location of latch 1 (from the retainer disk) on the trigger mount disk to aid in reassembly.
  - B. Remove the Phillips-head screws (eight for 32C and 32SC, six for full-size 32). Lift the retainer disk from the top of the latch assembly. [Photo 3]
  - C. Pull the desired latch(es) horizontally from the trigger mount disk. Mark the latch(es) to aid in reassembly. [Photo 4]

### Replacing Latch Assembly

1. Replace the latches on the trigger mount disk.
2. Place the retainer disk on the latches, aligning the mark you made for latch 1 on the trigger mount disk with latch 1 on the retainer disk. Verify that the latches are properly seated in the grooves and that the disk is flat. Reinstall the Phillips-head screws loosely. Tighten the screws, working in a diagonal pattern to ensure the disk remains properly seated.
3. Line up the latch assembly alignment hole with the pylon alignment pin. [Photos 3 and 5] Seat the latch assembly on the pylon. Reinstall the three socket hex head screws, lock washers, and flat washers.



## Removing Center Pylon

CAUTION: Disconnect cables from the connector end cap before removing center pylon, to avoid damaging instruments.

1. Remove the lifting bail.
  - A. Remove the hardware from underneath the lower guard ring.
  - B. Begin to pull the lifting bail up, until it is above the lower guard ring/adaptor plate/hub assembly connection.
  - C. Remove the hardware from the legs of the lifting bail.
  - D. Pull the lifting bail out of the upper guard ring.

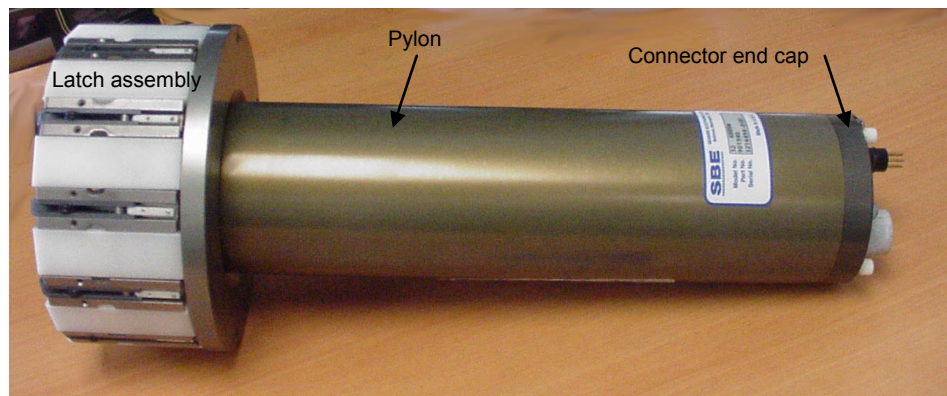
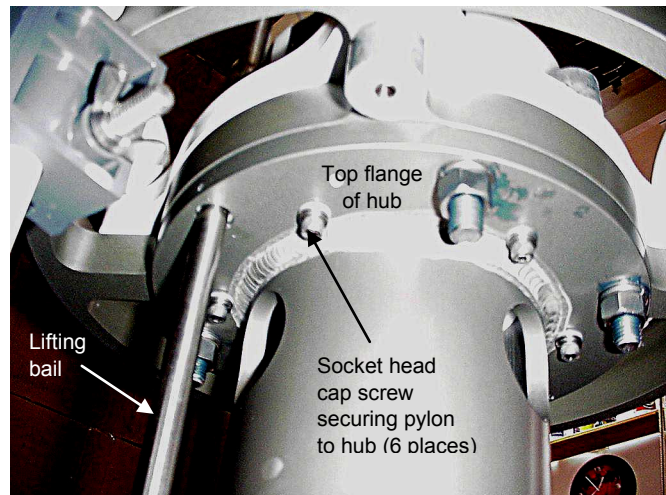
### NOTE:

There are plastic insulators on the underside of the following connections:

- Lower guard ring/adaptor plate/hub assembly - for lifting bail
- Top flange of hub assembly - for pylon

Verify that the insulators have not fallen out before reinstalling the pylon and lifting bail.

2. Remove the 6 socket hex head cap screws and washers from the underside of the top flange of the pylon / hub assembly. Pull the latch assembly with the pylon up and out of the Carousel frame.



# Never-Seez Blue Moly Data Sheet



## TECHNICAL DATA SHEET

# Blue Moly

### Product Description

Never-Seez® Blue Moly is a superior lubricating and anti-seize compound formulated to provide maximum parts protection in a wide range of applications. The exclusive combination of molybdenum disulfide and pure nickel powder suspended in a premium-grade grease provides both excellent lubricity and extreme pressure resistance.

Blue Moly is especially recommended for those applications in which graphite, lead, and copper are prohibited or undesirable. The addition of special corrosion inhibitors allows Blue Moly to be used in harsh environments.

### Product Benefits

- Excellent protection against extreme pressure
- Excellent temperature protection, up to 1500°F
- Unique blue color allows for easy visual inspection
- Contains no graphite, lead or copper, therefore Blue Moly can be used in applications where these are undesirable or prohibited

### Product Applications

- Metal fittings
- Aircraft components
- Valves
- Stainless steel fasteners and slow moving parts
- Automotive engine bolts and body fasteners
- Stainless steel flange and pump bolts
- Chemical processing machinery
- Gasket dressing
- Assembly of dissimilar metals

### Limitations

- Never-Seez® Blue Moly is not recommended for high speed bearings. Never-Seez® Red Bearing Lubricant is suggested for these applications.
- For temperature resistance to 2400°F (1316°C), use Never-Seez® Pure Nickel Special.

### Other Anti-Seize Lubricants

- Regular Grade
- Nuclear Grade, Nickel Special
- Pure Nickel Special
- High Temp Stainless
- High Temp Stainless, Nuclear Certified
- Black Moly Lubricant
- Red Bearing Lubricant
- White Food Grade with PTFE
- High Temperature Bearing Lubricant
- Pipe Compound with Teflon®
- Mariner's Choice
- Heavy Metal Free
- PetroChem Grade

® Teflon is a Registered Trademark of Dupont.



### Technical Specifications

Color	Blue	
Temperature Range, °F (°C)	-150°F to 1500°F (-101°C to 815°C)	
Thickener Type	Lithium Soap	
Particle Size, mil (microns)	2.0 maximum (50 µ)	
Density (g/cm³)	1.17 to 1.23	
		ASTM Test Method
Flash Point, °F (°C)	475°F (246°C)	D-92
Copper Corrosion Test @ 212°F (100°C), 24 hrs.	No Corrosion	D-130
Worked Penetration, 60 Strokes @ 77°F (25°C)	260-310	D-217
NLGI Grade	1/2	D-217
Dropping Point, °F (°C)	360°F (182°C)	D-566
Water Washout, % loss @ 100°F	<2	D-1264
@ 175°F	<5	
Coefficient of Friction @ 167°F (75°C), Four Ball	0.0824	D-2266
Torque Coefficient, k factor	0.15	
Four Ball EP	Load Wear Index	53.2
	Last Non-seizure Load (scar)	63 kgf (0.38 mm)
	Last Seizure Load (scar)	250 kgf (2.10 mm)
	Weld Load	315 kgf
Fretting Wear @ 73°F (23°C), 22 hrs.	6.2	D-4170

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**Ingredients:** Contains a special, high-quality grease with pure nickel powder, molybdenum sulfide and aluminum.

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**Shelf Life:** Never-Seez® Blue Moly does not deteriorate with age when stored unopened at temperatures below 120°F (49°C). Quality and performance are guaranteed for five years from the date of manufacture on unopened containers.

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**How Never-Seez Blue Moly Affects Torque:**

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Compared to unlubricated fasteners, the use of Never-Seez Blue Moly can be viewed 2 ways:

- (1) It provides up to 19% MORE clamping force when applying the SAME amount of torque!
- (2) It provides the SAME clamping force when applying up to 19% LESS torque!

**IMPORTANT!**

- In order to best represent typical torque reduction values, Bostik references a “K-Factor” for unlubricated carbon steel fasteners of 0.185.
- Proper torque is critical and, if not clearly understood, users may over-torque their fasteners which may lead to costly damage. BOSTIK is not liable for any damages incurred. Refer to the Bostik standard warranty for details.

**Use in accordance with Material Safety Data Sheet.**

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**Ordering Information:**

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NEVER-SEEZ® BLUE MOLY

STOCK NUMBER	DESCRIPTION	SIZE
NBBT-8	Brush Top	8 oz.
NBBT-16	Brush Top	1 lb.
NB-160	Flat Top	1 lb.
NB-42B	Pail	42 lb.
NB-425B	Drum	425lbs.

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## Application Note Revision History

<b>Date</b>	<b>Description</b>
August 2001	Initial release.
June 2006	<ul style="list-style-type: none"><li>• Update Removing/replacing Latch Assembly photos and procedure for new design – add hole for jackscrew, also ad white plastic insulator.</li><li>• Update datasheet for Blue Moly, and update URL for page on Bostik’s website.</li></ul>
October 2007	<ul style="list-style-type: none"><li>• Add more detail on rinsing and cleaning latches and top of pylon.</li><li>• Recommend covering Carousel when on deck.</li><li>• Update datasheet for Blue Moly.</li></ul>
September 2008	<ul style="list-style-type: none"><li>• Add information on inspecting tubing for tears, insuring proper tension. Store bottles closed to preserve tubing or spring.</li><li>• Add reference to app note 88 (frame coating repair).</li></ul>
April 2013	Update blue moly website link and datasheet.