



SEA-BIRD ELECTRONICS, INC.

1808 136th Place N.E., Bellevue, Washington 98005 USA

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SBE P/N 801479

DATE	REV	REVISION RECORD	AUTH	DR	CHK
5/04	A	Warning that must use Electrochem	DHB		
2/7/05	B	Updated for new plates	JJB		

3DD (10.8V / 30 AH) Lithium Battery Pack Kit

KIT CONTENTS

SBE P/N	Description	Primary SBE Application	QTY
41310A	PCB, Lithium battery pack top plate assembly	Battery pack top plate	1
233101	Lithium battery pack bottom battery plate	Battery pack bottom plate	1
801490	Rod, 6-32, full threaded, plated, 12.6 cm (4.95 inches) long	Secures battery pack	3
30362	Nut, 6-32 nylon stop (thin), SS	For 801490 rods	6

Warnings

- Lithium batteries can explode under extreme heat and/or pressure. Use extreme caution when soldering wires on the battery tabs.
- DO NOT touch any part of the soldering iron to the battery.

The use of lithium cells other than the specified Electrochem cells may cause mechanical or electrical incompatibility with instruments for which this battery pack was designed. Sea-Bird will bear no responsibility for substitution of non-specified cells.

Supplies and Equipment Required

Lithium DD Cell Batteries (3) – Electrochem BCX85DD/3B76-ST

Wire cutters, strippers	Solder station
Rosin Core Solder	Dow Corning RTV 734 (flowable, self-leveling silicone sealant) or equivalent
#24 Stranded Wire	Needle-nose pliers
Permanent Marker	5/16" nut driver or 5/16" combination wrench
Q-tips	Multimeter
Disposable syringe	

Parent Part Number: 801479

SBE Drawings:

40485F LITHIUM BATTERY PACK, 3 DD CELLS 10.8V / 30AH

32585B Lithium Battery Pack Schematic 3DD, 10.8V 30AH

41398A Lithium D/DD Cell Battery With Tab Orientation

Sea-Bird Electronics Procedure

PROCEDURE NUMBER: 67144

TITLE: **3DD (10.8V / 30 AH) Lithium Battery Pack Kit**

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EFFECTIVE DATE: **2/7/05**

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Battery Pack Assembly

The battery pack consists of a top and bottom plate sandwiching three batteries. The rods and nuts hold the whole assembly together.

A. Prep Wires and Batteries

1. Cut wire lengths:
 - a. 3 long wires, each approximately 23 cm (9 inches) long.
 - b. 3 short wires, each approximately 4 cm (1.5 inches) long.
2. Strip ¼" of insulation off the ends of each wire.
3. Solder wires to the batteries (see battery pack drawing 40485F and schematic 32585B):
 - a. For each battery, solder **long** wire [23 cm (9 inches)] to **lower** contact on battery and solder short wire [4 cm (1.5 inches)] to **upper** contact on battery.

B. Prep plates

1. Place the bottom plate against the flat side of the top battery plate (PN 41310A).
2. Line up the notch in the bottom plate with the mark/notch on the top plate:
 - a. Make sure the rod holes all line up and that the silver contact points on the top plate fall inside the large holes in the bottom plate- if they don't then flip the bottom plate over and line up the notches again.
3. Mark the bottom of the bottom plate before you remove it:
 - a. The bottom side of the plate is the side not touching the top plate.
 - b. Use a permanent marker – any line, design, letter, etc. can be used, this is strictly for reference purposes.
 - c. DO NOT use anything that will gouge the surface of the plate – sharp blade, knife, screwdriver, soldering iron, etc. to make the mark.

C. Installation:

1. Install 1 nut (PN 30362) on the end of each rod (PN 801490), with the nylon side of the nut facing away from the rod.
 - a. Screw the nut onto the rod so that one thread of the rod comes through the nylon side.
 - b. If the nut is difficult to screw on, you can grip the threaded rod with the pliers but do so in the middle section only because the pliers will flatten the threads. If the rod is gripped at the other end other nut will not go on and your assembly will not stay together.
2. Install each rod through the rod holes from the bottom side of the bottom battery plate (PN 233101).
 - a. Slide the plate down the rods until it rests against the nuts.
 - b. The bottom side of the plate is the one marked earlier under 'Prep Plates'.
3. Install the batteries:
 - a. Thread the long wires through the holes directly below the batteries in the bottom plate.
 - b. Settle the batteries on the plate.
4. Install the top battery plate (PN 41310A).
 - a. Match up the notch on the middle plate with the mark/notch on the top plate.

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- b. Thread the rods through the top battery plate (component side face up).
 - c. Feed the wires from the batteries' upper tabs through the top plate.
 - d. Adjust the plate so that the battery tabs are centered in the large holes.
 - e. Thread on one nut per rod, with the nylon side of the nut facing away from the board.
 - f. Use the nut driver to tighten the nuts (pliers to grip the rod) until they securely hold the batteries and boards together.
5. Solder the wires from the top batteries onto the top battery plate: *see drawing 40485F for the visual locations & more information*
- a. Wire in H1 goes to BT1+
 - b. Wire in H2 goes to BT2+
 - c. Wire in H3 goes to BT3+
 - d. Solder the wires directly to the contact points.
6. Solder the long wires from the bottom of the battery pack to the top plate: *see drawing 40485F for the visual locations & more information*
- a. Thread the long wires from the bottom batteries (the ones that are threaded through the bottom plate) through the grooves next to the base of each battery.
 - b. **DO NOT go through the large round holes in the boards – this will prevent you from installing the battery pack in your sensor.**
 - c. Trim the wires to about 1" above the height of the top board.
 - *you will trim different amount off each wire off*
 - d. Strip ¼" of insulation off the ends of each wire..
 - e. Twist the strands of wire with fingers to tighten their wrap and insert them through their corresponding hole from the bottom of the board – **do not have them go into the holes from the top as this will prevent the battery pack from being installed.**
 - *The wire from the stack under H1 goes to P3.*
 - *The wire from the stack under H2 goes to P1.*
 - *The wire from the stack under H3 goes to P2.*
 - *You may find it easier for you if you thread one wire at a time from the bottom board to the top board, then trim and solder it, this is okay.*
 - *Solder the wire directly to the contact point..*
7. Test the fit of the battery pack in the housing:
- a. Slide the pack into the housing to ensure it will seat fully down in the housing without any difficulty.
 - b. If it will not seat, check the alignment into the housing, then the alignment of the batteries, plates, and rods, and rebuild the pack as needed.

D. Check the electrical output using a multimeter (ensure that the multimeter is not in the *current* position when making voltage measurements):

- a. Measure and record the overall voltage of the battery pack, which should be approximately 11.19 volts.
- b. Connect the multimeter across the current limiting resistor (3 ohm). Measure and record the voltage while connecting a 100 ohm \geq 3W resistor across the battery pack total. Calculate the current by dividing the voltage by the value of the current limiting resistor ($I = V / R = V / 3 \text{ ohms}$). The current should be approximately 108 mA.

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32585B Lithium Battery Pack Schematic 3DD, 10.8V 30AH
41398A Lithium D/DD Cell Battery With Tab Orientation

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- *If the battery pack does not meet all of these criteria, one or more batteries or connections may be bad. Take the battery pack apart, testing the individual components, until you identify and replace the bad component(s).*

E. Secure the battery pack with Dow Corning RTV 734 (flowable, self-leveling sealant) or equivalent:

4. Fill a disposable syringe with RTV 734.
5. Place a very thin bead of RTV as far around the bottom of each battery as you can, securing the batteries to the bottom plate.
6. Fill the open area where the battery wires come through the top plate with RTV. Wait approximately 5 minutes for the RTV to flow into the place, and fill again. Let this set for 15 to 30 minutes.
7. Turn the battery pack over. Repeat Step 5 & 6, securing the batteries to the top plate and filling the holes on the bottom plate. Let this set for 15 to 30 minutes.

NOTE: The RTV requires approximately 24 hours to completely dry. Do not place the battery pack in the housing until the RTV is completely dry.

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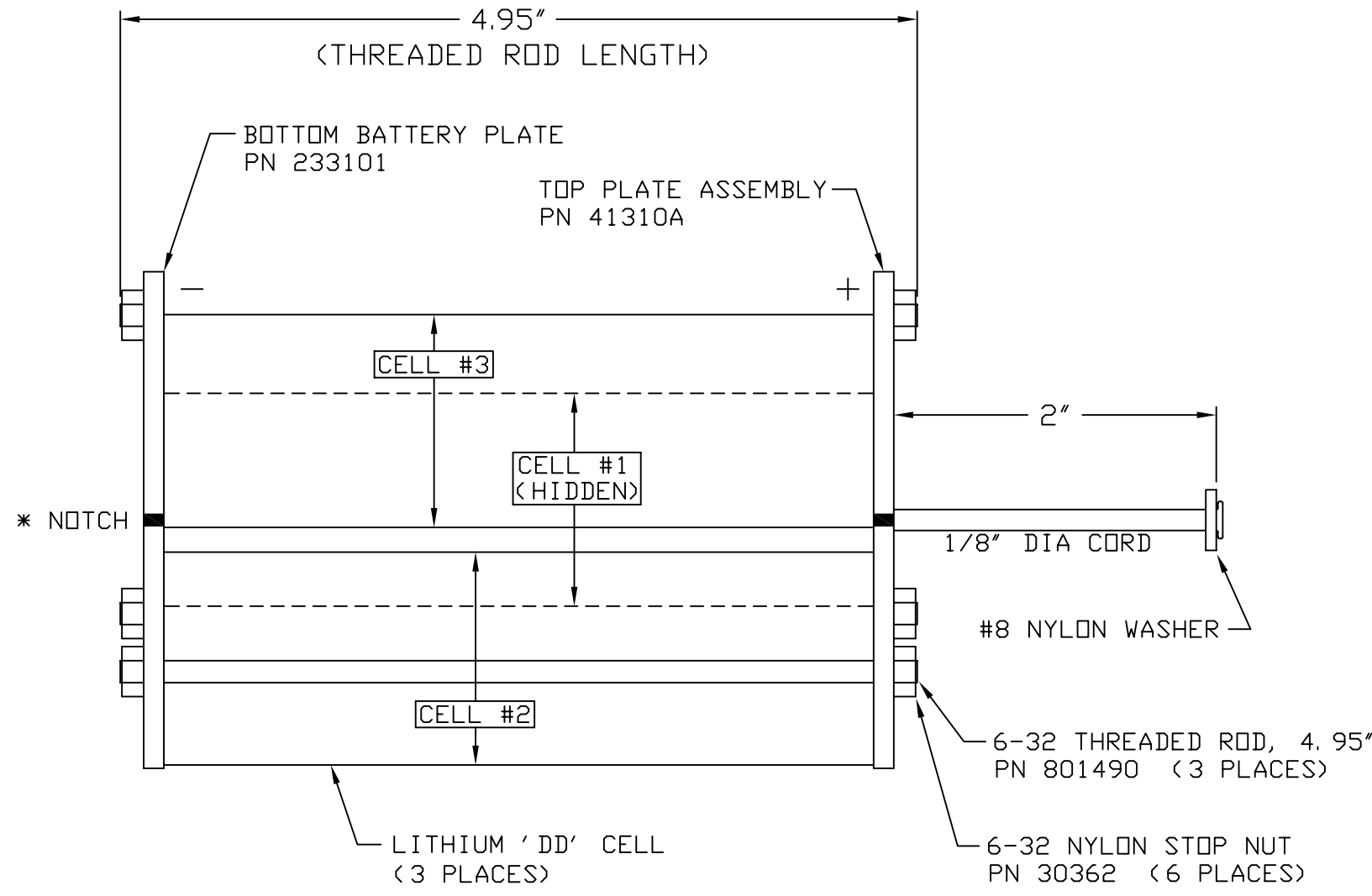
TITLE: **3DD (10.8V / 30 AH) Lithium Battery Pack Kit**

REVISION: **B**

EFFECTIVE DATE: **2/7/05**

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DATE	SYM	REVISION RECORD	AUTH.	DR.	CK.
9/93	B	NEW COVER PLATE	KL	BMc	
4/6/99	C	ECN623: NEW BOTTOM PLATE		DG	
9/14/01	D	ECN704: 10125A, REDRAWN		DG	
3/31/04	E	ECN778: BATTERY PN, JP1	CB	DG	
2/3/05	F	ECN821: REV ALL PLATES, NOTCH		DG	

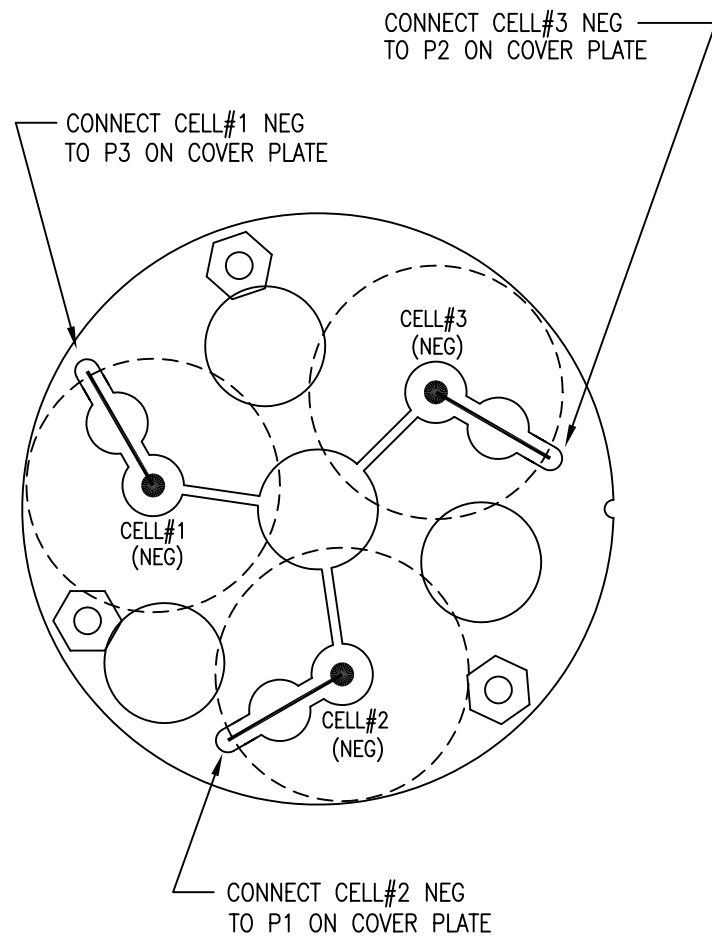


USE #24 STRANDED WIRE WITH BLUE TEFLON INSULATION ON ALL BATTERY CONNECTIONS

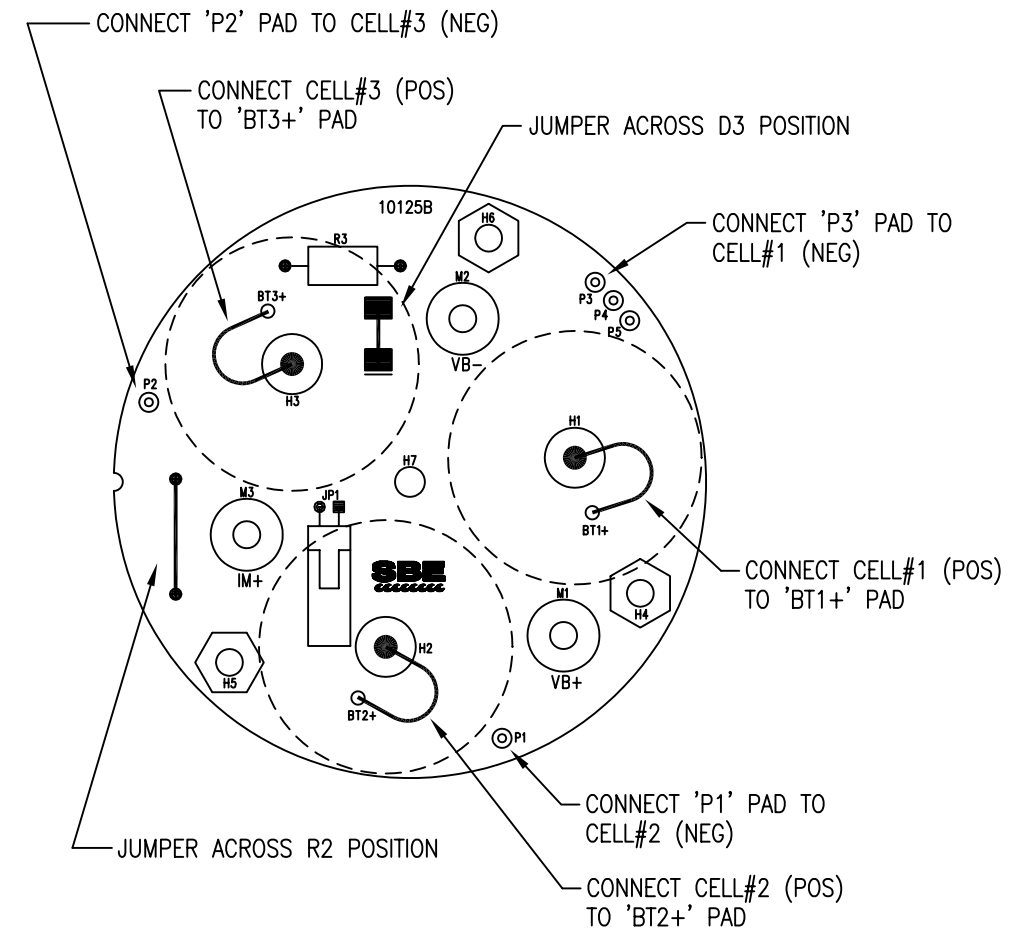
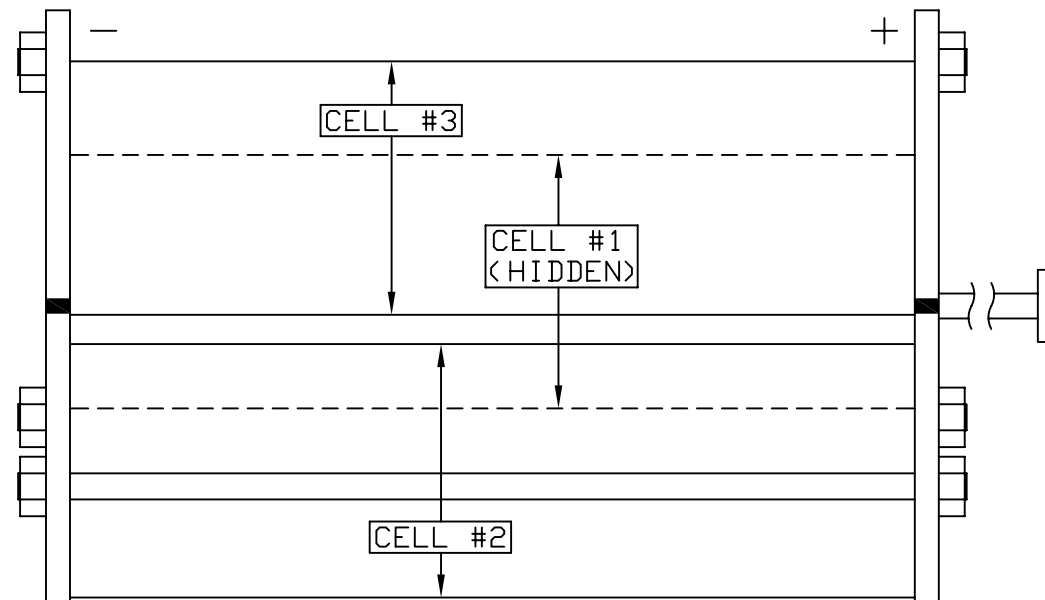
* LINE UP NOTCH ON ALL BOARDS AS SHOWN.

PART #	DESCRIPTION
80540	ASSEMBLED
801479	PARTS KIT

SEA-BIRD ELECTRONICS, INC			
PART NO.	SEE TABLE	BD SCALE	1.00
DRWN BY	BMc/DG	PL SCALE	1.00
TITLE LITHIUM BATTERY PACK 3 DD CELLS, 10.8V / 30AH			
DATE	3/3/92	DWG NO.	SH 1 OF 2 40485
REV	F		



USE #24 STRANDED WIRE WITH BLUE TEFLON INSULATION ON ALL BATTERY CONNECTIONS



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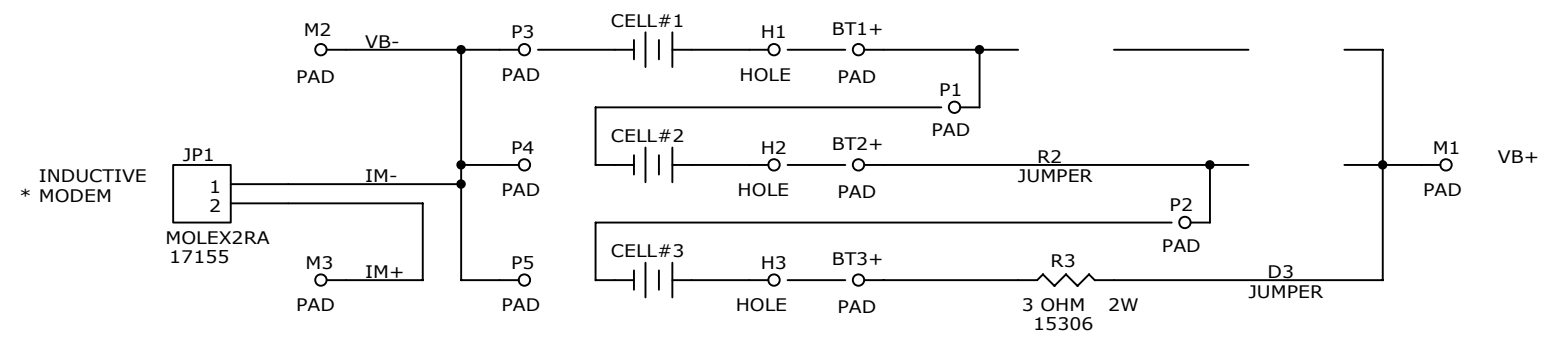
PART. NUMBER.	DESCRIPTION.	QPA.	REF DESIG.
80540	DD LITHIUM BATT PK, 3-CELL, 10.8V/30AH /40485F		
22090	BATTERY, LITHIUM DD CELL BCX85DD/3B76-ST	3.0000	
233101	BOTTOM BATTERY PLATE, LITHIUM PACK	1.0000	
30362	NUT, 6-32 NYLON STOP (THIN), SS	6.0000	H4 H5 H6
41310A	ASSY, LITH PK TOP PLATE, 3DD CELL, 10.8V/30AH	1.0000	
801490	ROD, FULL THREAD 6-32, 4.95" LENGTH	3.0000	H4 H5 H6

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PART. NUMBER.	DESCRIPTION.	QPA.	REF DESIG.
801479	3-CELL, 10.8V/30AH, DD LITH BATT KIT /40485F		
233101	BOTTOM BATTERY PLATE, LITHIUM PACK	1.0000	
30362	NUT, 6-32 NYLON STOP (THIN), SS	6.0000	H4 H5 H6
41310A	ASSY, LITH PK TOP PLATE, 3DD CELL, 10.8V/30AH	1.0000	
67144	LITH PACK KIT CUSTOMER ASSY, 3DD 10.8V/30AH	1.0000	
801490	ROD, FULL THREAD 6-32, 4.95" LENGTH	3.0000	H4 H5 H6

NOTE: KIT ASSEMBLY INSTRUCTIONS MAY BE MORE CURRENT THAN THIS LIST INDICATES.

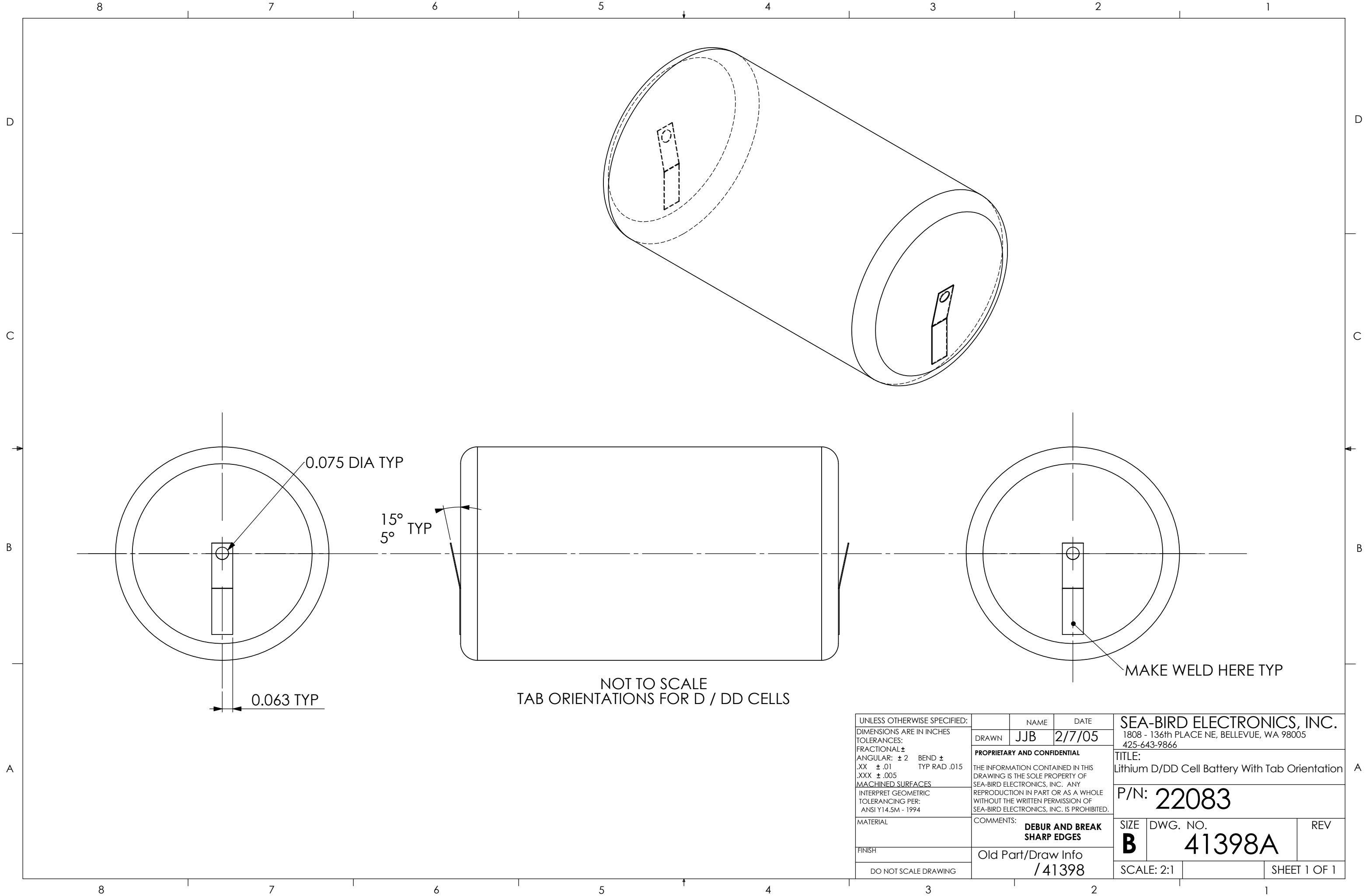
DATE	SYM	REVISION RECORD	AUTH	DR	CK
03/12/04	A	ECN778: BATTERY PN, JP1	CB	DG	
02/01/05	B	ECN821: PCB B, DEL LITHIUM CELL PN		DG	



3 DD CELLS, 10.8V / 30AH

* REQUIRES OPTIONAL ELECTRONICS FOR IM FUNCTIONALITY.

SEA-BIRD ELECTRONICS, INC.		
ASSY: 40485F PN: 80540/801479		
Title LITHIUM BATTERY PACK: 3DD, 10.8V / 30AH		
Size B	Document Number 32585	Rev B
Date: Tuesday, February 01, 2005	Sheet	1 of 1



NOT TO SCALE
TAB ORIENTATIONS FOR D / DD CELLS

UNLESS OTHERWISE SPECIFIED:		NAME	DATE	SEA-BIRD ELECTRONICS, INC.	
DIMENSIONS ARE IN INCHES		DRAWN	JJB	2/7/05	1808 - 136th PLACE NE, BELLEVUE, WA 98005
TOLERANCES:		PROPRIETARY AND CONFIDENTIAL			TITLE:
FRACTIONAL ±		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF SEA-BIRD ELECTRONICS, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF SEA-BIRD ELECTRONICS, INC. IS PROHIBITED.			Lithium D/DD Cell Battery With Tab Orientation
ANGULAR: ± 2 BEND ±		COMMENTS:			P/N: 22083
.XX ± .01 TYP RAD .015		DEBUR AND BREAK SHARP EDGES			SIZE DWG. NO. REV
.XXX ± .005		Old Part/Draw Info /41398			B 41398A
MACHINED SURFACES		DO NOT SCALE DRAWING			SCALE: 2:1 SHEET 1 OF 1
INTERPRET GEOMETRIC TOLERANCING PER: ANSI Y14.5M - 1994					
MATERIAL					
FINISH					

MAKE WELD HERE TYP

0.075 DIA TYP

15° TYP
5° TYP

0.063 TYP