

OM-7835
OPERATING MANUAL
TYPE 7835-000-01 / 02 / 03 TRANSPONDER
ISSUE A
REVISION 1

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AMENDMENT RECORD

All amendments and additions will be issued with a new copy of this sheet,
recording the history of amendments.

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SECTION 1

1. INTRODUCTION

- 1.1 The type 7835 transponder has been designed for deep water, long and short term marking and relocation applications.
- 1.2 The transponder allows any subsea device, seabed instrumentation package or string, to be uniquely acoustically marked for up to four and half years duration.
- 1.3 The type 7835 transponder operates on the Sonardyne HF frequency band from 35 to 50kHz.
- 1.4 There are 10 interrogation addresses 0-9 and 9 reply frequencies 1-9. The transponder is acoustically programmable for address and reply frequency, allowing 90 individual transponder identities.
- 1.5 The transponders small size and light weight enables it to be easily fixed to any platform, or suspended by a small floatation collar.
- 1.6 Long term galvanic corrosion is minimised by incorporated zinc anodes.
- 1.7 Operational water depth is limited to 4000 metres of seawater.
- 1.8 The transponder is easy to maintain. All major parts including, transducer, electronics and battery pack are field replaceable.
- 1.9 The Alkaline battery pack has a maximum listening life of 2 years. The Standard-Lithium battery pack has a maximum listening life of 3 years. The Long-Life Lithium battery pack has a maximum listening life of 4.5 years. Replacement battery packs are available from Sonardyne.

SECTION 2

2. BATTERY REPLACEMENT

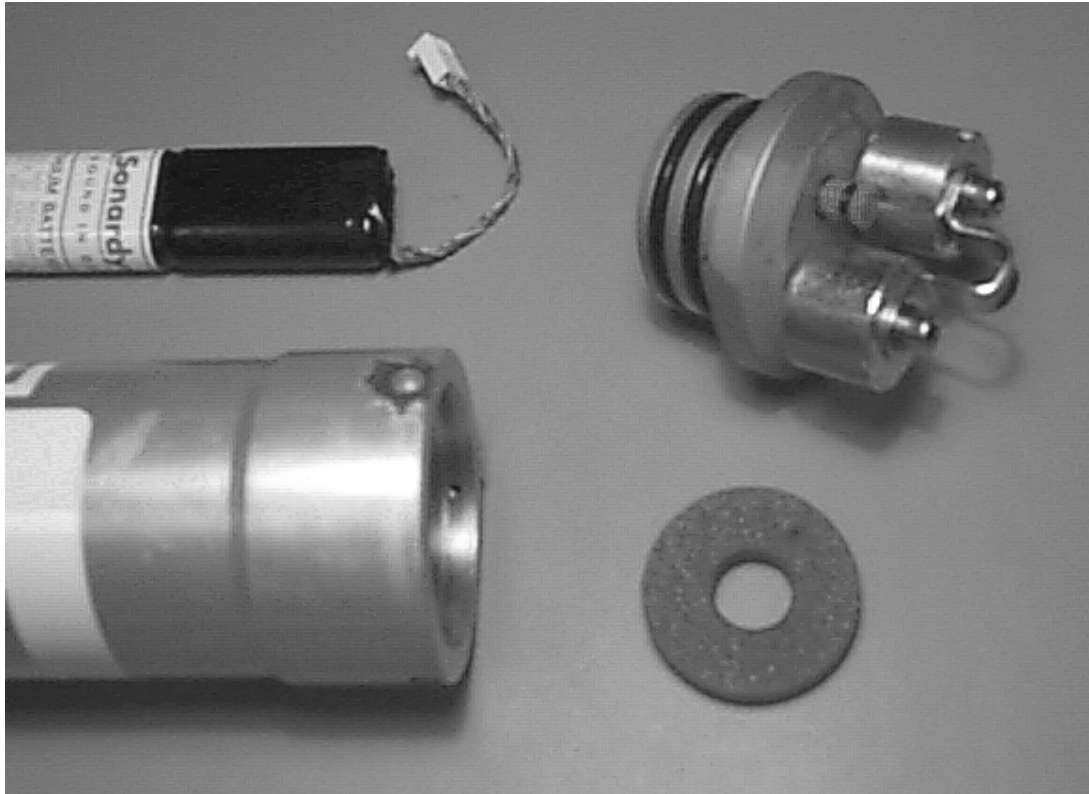


Fig 2 Battery pack, housing, foam ring and endcap with pressure relief valve out

- 2.1 The battery packs fitted are manufactured by Sonardyne. The Lithium battery packs are complex packs with multiple stages and in-line protection devices to ensure that the pack still operates if one or two cells fail. Battery packs fitted must be manufactured by Sonardyne.
- 2.2 The transponder can take 3 types of battery pack. The type number on the label identifies the type of battery pack originally fitted when shipped. Alkaline - 7835-000-01, Long-Life Lithium - 7835-000-02 and Standard Lithium -7835-000-03.
- 2.3 Unscrew the 3 x M3 cap-head screws in the bottom endcap - the endcap with the zinc anodes attached. Pull-out the endcap, be careful not to damage the sealing surfaces. Remove the small foam ring inside the housing.
- 2.4 Looking into the housing, orientate the unit so that the electronics PCB is at the top of the tube. On the left hand-side of the PCB are the blue, red and orange (lithium only) wires of the battery pack connected to a white Molex connector. Remove the connector by pulling on the wires and slowly pull out the battery pack from the chassis.
- 2.5 Replace with a NEW battery pack and re-connect the connector. A pair of long-nosed pliers is useful for this. Replace the foam ring. Ensure that the o-ring seal surface is free from dirt, then grease with Vaseline.

- 2.6 Ensure that the endcap and o-rings are free from dirt and damage, clean and grease with Vaseline. If any o-rings are damaged then replace - replacement o-rings are Dowty International Inch range 0.139 inch cross sectional diameter (Dowty Number = 200-223-5560).
- 2.7 Now push out the pressure-relief value from the inside using a pen or such like.
- 2.8 Insert endcap into the housing. Grease fixing screws with underwater grease and insert. Push home the red pressure relief value.
- 2.9 Re-label the unit with the new battery type and battery start date. Now test the transponder - refer to Section 5.

SECTION 3

3. MAINTENANCE

- 3.1 Ensure that the housing and the transducer are visibly undamaged.
- 3.2 Ensure that the transducer (black end of the transponder), is free from mud and grease. If greasy then carefully clean with mild detergent. NOTE - Oil and grease on the transducer will reduce the coupling to the water and therefore seriously effect the acoustic performance.
- 3.3 Wash down the unit with fresh water prior to storage.
- 3.4 To maximise battery life, the battery pack can be disconnected prior to long periods in storage.
- 3.5 If complete failure of the transponder occurs, then component parts, transducer, electronics and battery pack are field replaceable.
 - 3.5.1 Battery Replacement - Covered in Section 2.
 - 3.5.2 Electronics Replacement

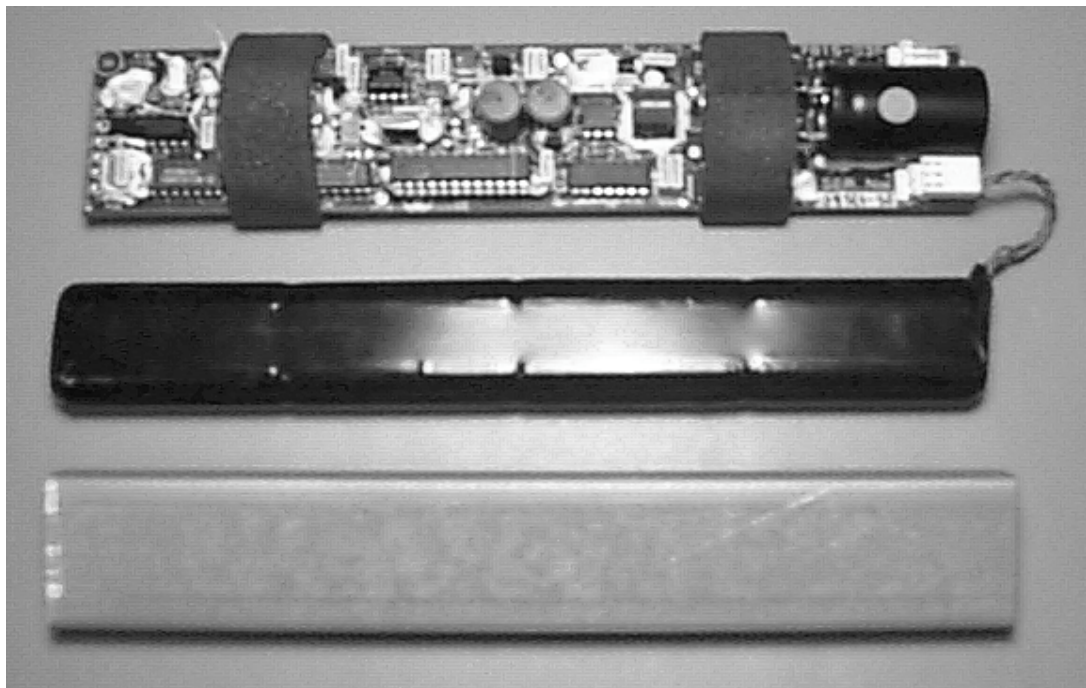


Fig 3 Electronics PCB, Battery Pack and Chassis (not on latest design)

Follow the instruction given in Section 2 to remove the bottom endcap and battery pack.

Now remove the other remaining Molex transducer connector from the PCB. Grip the metal chassis assembly with a pair of long-nosed pliers and carefully extract chassis and PCB.

Slide the NEW foam packed PCB assembly into the inner metal housing. Push home until the PCB is tight against inner foam ring at the end of the housing. Ensure that the grey transducer lead up against one side of the metal housing so that the battery pack can slide in.

Reconnect the transducer connector - this is the right hand-side connector, as you look into the housing with the PCB at the top.

Complete the assembly as described in Section 2.

If the PCB has not already been programmed to the correct identity then do so.

SECTION 4

4. PROGRAMMING

4.1 EQUIPMENT REQUIRED

- PC
- Type 7009-410 Test / Programming Box
- Inductive Loop OR Transducer
- 7835PRG1.EXE PC Software (OR LATER VERSION)

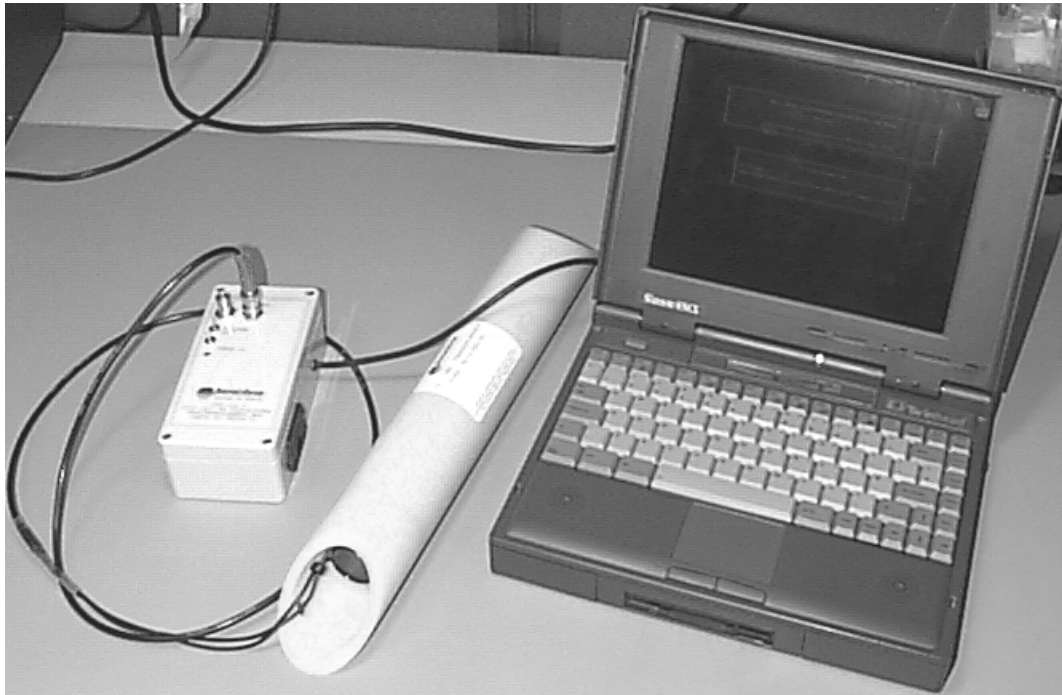


Fig 4 Programming/Test box connected to transponders transducer and PC

Note - Picture shows Type 7815 shallow water version transponder.

- 4.2 Copy the executable program from the floppy disk to a suitable directory on the PC's hard disk. Run the executable program.
- 4.3 The software will ask you to input how many comm ports your PC has.
- 4.4 The software will now display the software operating instructions:-
 - 4.4.1 Plug the comms cable of the programming box into comm port 1.
 - 4.4.2 Connect the inductive loop OR transducer to the BNC connector marked LOOP / TDR on the programming box. Loop the 'loop end' of the cable around the black potting of the transponders transducer (inside of the yellow housing preferably), pull the loop tight to get a good couple to the transducer.
 - 4.4.3 Switch the programming box to ON.
 - 4.4.4 Switch the programming box to PROGRAM.

- 4.5 The software will now ask you to select Program or Test Mode. Hit 1 to select program mode.
- 4.6 The software will now ask you to input the intended transponder identity, reply channel (1-9), then address (0-9). E.g. 10. Enter the transponder identity. The transponder will then be programmed, this takes approximately 1 second. To verify that the transponder has been programmed, the transponder will emit 3 pings, separated by 1 second. This verification, although quiet, is audible if the transducer is held close to the ear.
- 4.7 Re-label transponder with NEW identity.

SECTION 5

5. TESTING

There are 2 methods to test the transponder:-

5.1 USING THE SYSTEM TRANSCEIVER

The system transceiver can be used to interrogate any transponder in order to evaluate its performance. See system manual.

5.2 USING THE TYPE 7343 ANT

Additional Equipment Required:-

- Type 7343 ANT
- BNC-BNC cable
- 25-way serial cable from ANT to PC

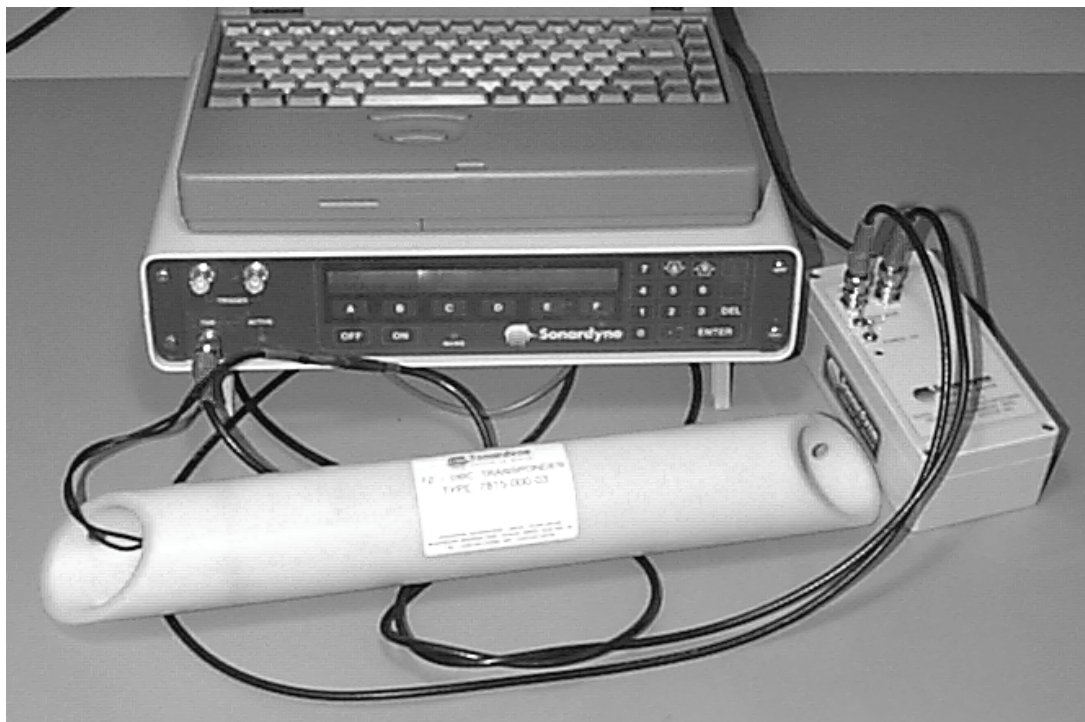


Fig 5 Test and Programming set-up. Type 7343 ANT Beneath PC

The Type 7009-410 Programming/Test Box can be used in conjunction with the Sonardyne Type 7343 ANT (Acoustic Navigation Tester). The ANT is an advanced piece of test equipment that allows any interrogation / reply frequencies and pulse lengths in the Sonardyne frequency bands to be replicated.

- 5.2.1 Connect up the programming equipment as described in Section 4.
- 5.2.2 Now connect a BNC to BNC cable from the ANT socket on the programming box to the TDR socket on the Type 7343 ANT.

- 5.2.3 Connect the 25-way serial cable from the 25-way socket on the back panel of the ANT to comm port 2 of the PC.
- 5.2.4 Follow instructions in Section 4 to program the transponder. After the transponder has been programmed, switch the programming unit to TEST.
- 5.2.5 Select item 2 'TEST' mode on the software. The software will now program the ANT. A 'BEEP' should be heard, indicating the ANT has been programmed successfully and the ANT will display 'DIRECT DATA ACCESS MODE'.
- 5.2.6 Now input the address and reply frequency of the transponder to be tested.
- 5.2.7 The ANT will now interrogate the transponder, the ACTIVE LED on the front panel of the ANT will flash for 1 second duration, showing that the transponder is being interrogated.
- 5.2.8 If the transponder replies on the correct channel, the ACTIVE LED on the ANT will flash quickly, indicating the transponder is fully operational and the software will flash up the Turnaround Time (TAT) and whether the unit has passed or failed.

SECTION 6**6. SPECIFICATION**

Size	2.5"(63mm) Dia x 13.9"(353mm) Long
Weight in air	1.9 kg
Weight in Water	1.2 kg
Depth Rating	4000 metres
Construction Materials	Aluminium Alloys / Stainless Steel.
Frequency Band	35 to 55 kHz
Source Level	183-186 dB
Receiver Sensitivity	105-115 dB re 1uPa @ 1 metre
MAXIMUM Listening Life	2 years - Alkaline - Ver 01 3 years - Standard Lithium - Ver 03 4.5 years - Long-Life Lithium - Ver 02
Switch-on	Continuously listening
Interrogation Mode	Sequential
Reply Frequency	Programmable - 1 to 9
Interrogation Address	Programmable - 1 to10

Fig 6 Specification for Type 7835 Transponder