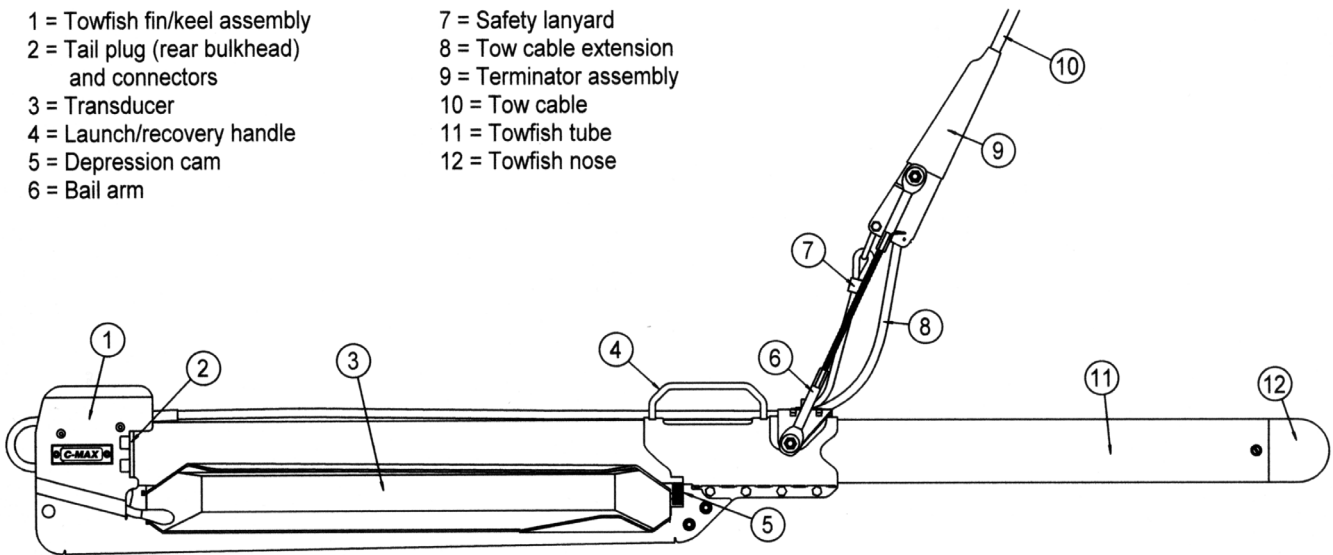


**CM2 SIDESCAN SONAR, TOWFISH SPECIFICATIONS**  
**Issue 5, February '07**

**1. GENERAL**

The CM2 digital towfish is the instrument that acquires the data from which the sonar image is derived. It is towed, and provided with power and digital telemetry services, by a tow cable that is terminated by a specially-designed towing bail. CM2 towfish are available in single- and dual-frequency versions, all interoperable with all CM2 data acquisition subsystems.

- |  |                         |
|--|-------------------------|
| 1 = Towfish fin/keel assembly                | 7 = Safety lanyard      |
| 2 = Tail plug (rear bulkhead) and connectors | 8 = Tow cable extension |
| 3 = Transducer                               | 9 = Terminator assembly |
| 4 = Launch/recovery handle                   | 10 = Tow cable          |
| 5 = Depression cam                           | 11 = Towfish tube       |
| 6 = Bail arm                                 | 12 = Towfish nose       |



CM2 Towfish and Towing Bail

**2. ACOUSTICS**

Acoustic frequencies

- DF type: 100/325kHz dual frequency
- EDF type: 325/780kHz dual frequency
- LF type: 100kHz-only
- HF type: 325kHz-only

Ranges (port and starboard)

- 100m, 150m, 200m, 300m, 400m, 500m at 100kHz
- 25m, 50m, 75m, 100m, 150m at 325kHz
- 12.5m, 25m, 37.5m, 50m at 780kHz

Acoustic pulse rates, pings per second (at range)

- 780kHz: 24.7(12.5m); 13.5(25m); 18.0(37.5m); 13.0(50m)
- 325kHz: 13.5(25m); 13.0(50m); 9.1(75m); 7.0(100m); 4.8(150m)
- 100kHz: 6.9(100m); 4.8(150m); 3.6(200m); 2.4(300m); 1.83(400m); 1.46(500m)

Pulse power and length

217dB re 1 micropascal @ 1m  
range-dependent length, e.g. 53microseconds @ 50m

Array length and beamwidths (2-way 3dB points)

0.41m at 325kHz & 100kHz; 0.3m at 780kHz  
0.3° horiz., 40° vert. asymmetric at 325kHz  
1.0° horiz., 50° vert. at 100kHz  
0.2° horiz., 50° vert. at 780kHz

Lateral resolution

39mm at 780kHz and 25m range at 325kHz, 78mm at 325kHz (not 25m range), 156mm at 100kHz

Beam depression (of maximum sensitivity axis)

10° or 20°, adjustable without tools

### **3. OTHER MEASUREMENTS**

Towfish altitude, from integral echo sounder, 78mm resolution

Water temperature

Heading (option)

### **4. COMMANDS AND STATUS MESSAGES**

Consult C-MAX for detail of standard commands to the towfish and status messages from the towfish.

### **5. SAFETY FEATURES**

Weak link, breaks to give tail-first towing if tow force exceeds a nominal 750N (75kg)

### **6. ENVIRONMENT**

Operating depth

0-2500m standard; deeper to order

Operating speed

1-8 knots (but note that the physical limitations of cable drag and trailback may limit operating speed)

Maximum towing speed

12 knots

### **7. MECHANICAL**

Construction

stainless steel (no aluminium)

Towfish dimensions and weights

1.24m length

DF, LF and HF types: 18.0kg in air, 12.2kg in seawater

EDF type: 17.1kg in air, 11.3kg in seawater

Towfish temperature range

-10 to +45°C operating

-20 to +50°C non-operating

The above specifications may be changed without notice.

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