

## Specification

### CM2 TOWFISH SPECIFICATION

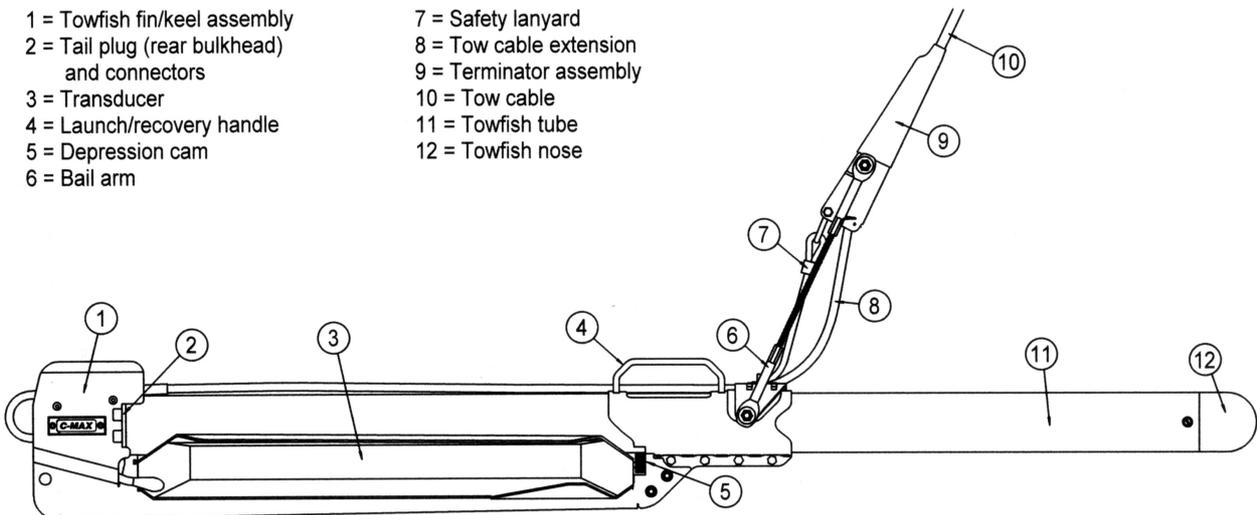
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#### 1. GENERAL

The CM2 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 reinforced or armoured 2-conductor tow cable. CM2 towfish are available in two different dual-frequency versions, both inter-operable with all CM2 data acquisition subsystems. A DeepTow version is also available (see CM2 DeepTow Specification).



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|--|-------------------------|
| 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       |



#### 2. ACOUSTICS

##### Acoustic frequencies

DF type: 100/325kHz dual frequency (CHIRP)

EDF type: 325/780kHz dual frequency (CHIRP)

##### Ranges (left and right)

100m, 200m, 300m, 400m, 500m at 100kHz

25m, 50m, 75m, 100m, 150m, 200m at 325kHz

12.5m, 25m, 37.5m, 50m at 780kHz

##### Acoustic pulse rates, pings per second (at range)

780kHz: 25.4(12.5m); 25.4(25m); 17.8(37.5m); 13.8(50m)

325kHz: 25.4(25m); 13.8(50m); 9.4(75m); 7.2(100m); 4.8(150m); 3.7 (200m)

100kHz: 7.2(100m); 3.7(200m); 2.45(300m); 1.85(400m); 1.49(500m)

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

0.41m at 325kHz & 100kHz; 0.3m at 780kHz

horizontal 0.3° at 325kHz; 1.0° at 100kHz; 0.2° at 780kHz

vertical, full coverage -5° left through -90° to -5° right

##### Lateral resolution

18mm at 780kHz; 39mm at 325kHz (18mm at 25m range); 78mm at 100kHz

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Beam depression (of maximum sensitivity axis)  
10° or 20°, adjustable without tools

### 3. OTHER SENSORS

Towfish altitude, from integral echo sounder, 78mm resolution  
Water temperature  
Heading (option)  
Depth (option)

### 4. MAGNETOMETER INTERFACE

Optional interface to Marine Magnetics Explorer and SeaSpy magnetometers, allowing the magnetometer towfish to be powered from the CM2 towfish and utilise the CM2 tow cable telemetry; this avoids the need for the magnetometer to use a separate tow cable.

### 5. WING DEPRESSOR

Optional CM2 Wing Depressor can be fitted to increase towing depth by up to 50% for the same cable length and towing speed.

### 6. SAFETY FEATURES

Breakaway mechanism, using standard C-MAX breakable washers, releases to give tail-first towing if tow force exceeds a nominal 0.75kN (75kg)

### 7. ENVIRONMENT

Operating depth  
0-2000m  
Operating speed  
1-8 knots (but note that the physical limitations of cable drag and layback may limit operating speed)  
Maximum towing speed  
12 knots

### 8. MECHANICAL

Construction  
stainless steel (no aluminium)  
Towfish dimensions and weights  
1.24m length  
DF type: 18.0kg in air, 12.2kg in seawater  
EDF type: 17.1kg in air, 11.3kg in seawater  
Towfish temperature range  
-5 to +45°C operating  
-30 to +80°C non-operating

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