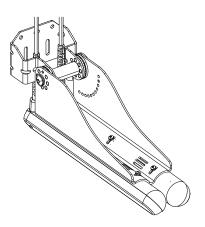
SideVision[™] Transom Transducer CPT-200



Installation instructions

English

Date: 07-2014

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This product is protected by patents, design patents, patents pending, or design patents pending.

Patents pending

Important: This product has patents pending.

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Software updates

Check the website www.raymarine.com for the latest software releases for your product.

Product handbooks

The latest versions of all English and translated handbooks are available to download in PDF format from the website www.raymarine.com.

Please check the website to ensure you have the latest handbooks.

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Document number: 87223-1 Date: 07-2014

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Chapter 1: Important information

Certified Installation

Raymarine recommends certified installation by a Raymarine approved installer. A certified installation qualifies for enhanced product warranty benefits. Contact your Raymarine dealer for further details, and refer to the separate warranty document packed with your product.



Warning: Product installation and operation

This product must be installed and operated in accordance with the instructions provided. Failure to do so could result in personal injury, damage to your vessel and/or poor product performance.



Warning: High voltages

This product contains high voltages. Do NOT remove any covers or otherwise attempt to access internal components, unless specifically instructed in this document.



Warning: Positive ground systems

Do not connect this unit to a system which has positive grounding.



Warning: Switch off power supply

Ensure the vessel's power supply is switched OFF before starting to install this product. Do NOT connect or disconnect equipment with the power switched on, unless instructed in this document.



Warning: Transducer operation

Only test and operate the transducer in the water. Do NOT operate out of water as overheating may occur.

Caution: Power supply protection

When installing this product ensure the power source is adequately protected by means of a suitably-rated fuse or automatic circuit breaker.

Caution: Do not cut transducer cables

- Cutting the transducer cable severely reduces sonar performance. If the cable is cut, it must be replaced, it cannot be repaired.
- Cutting the transducer cable will void the warranty and invalidate the European CE mark.

Caution: Service and maintenance

This product contains no user serviceable components. Please refer all maintenance and repair to authorized Raymarine dealers. Unauthorized repair may affect your warranty.

Transducer cleaning

Growth can collect on the bottom of the transducer, this can reduce performance. To prevent the build up of sea growth, coat the transducer with a thin layer of water based antifouling paint, available from your local marine dealer. Reapply paint every 6 months or at the beginning of each boating season. Certain smart transducers have restrictions on where antifouling paint is applied. Please consult your dealer.

Note: Transducers with a temperature sensor may not work properly if painted.

Note: Never use ketone based paint. Ketones can attack many plastics possibly damaging the sensor.

Note: Never use spray paint on your transducer. Spraying incorporates tiny air bubbles, and a marine transducer cannot transmit properly through air.

Use a soft cloth and mild household detergent to clean the transducer. If the fouling is severe, remove the growth with a green scotch brite™ pad. Be careful to avoid scratching the transducers face. If your transducer has a paddlewheel you can wet sand with fine grade wet/dry paper.

Note: Harsh cleaning solvents such as acetone may damage the transducer.

Water ingress

Water ingress disclaimer

Although the waterproof rating capacity of this product meets the stated IPX standard (refer to the product's *Technical Specification*), water intrusion and subsequent equipment failure may occur if the product is subjected to commercial high-pressure washing. Raymarine will not warrant products subjected to high-pressure washing.

Disclaimer

Raymarine does not warrant that this product is error-free or that it is compatible with products manufactured by any person or entity other than Raymarine.

Raymarine is not responsible for damages or injuries caused by your use or inability to use the product, by the interaction of the product with products manufactured by others, or by errors in information utilized by the product supplied by third parties.

Important information 7

EMC installation guidelines

Raymarine equipment and accessories conform to the appropriate Electromagnetic Compatibility (EMC) regulations, to minimize electromagnetic interference between equipment and minimize the effect such interference could have on the performance of your system

Correct installation is required to ensure that EMC performance is not compromised.

Note: In areas of extreme EMC interference, some slight interference may be noticed on the product. Where this occurs the product and the source of the interference should be separated by a greater distance.

For **optimum** EMC performance we recommend that wherever possible:

- Raymarine equipment and cables connected to it are:
 - At least 1 m (3 ft) from any equipment transmitting or cables carrying radio signals e.g.
 VHF radios, cables and antennas. In the case of SSB radios, the distance should be increased to 7 ft (2 m).
 - More than 2 m (7 ft) from the path of a radar beam. A radar beam can normally be assumed to spread 20 degrees above and below the radiating element.
- The product is supplied from a separate battery from that used for engine start. This is important to prevent erratic behavior and data loss which can occur if the engine start does not have a separate battery.
- · Raymarine specified cables are used.
- Cables are not cut or extended, unless doing so is detailed in the installation manual.

Note: Where constraints on the installation prevent any of the above recommendations, always ensure the maximum possible separation between different items of electrical equipment, to provide the best conditions for EMC performance throughout the installation

Declaration of conformity

Raymarine UK Ltd. declares that this product is compliant with the essential requirements of EMC directive 2004/108/EC.

The original Declaration of Conformity certificate may be viewed on the relevant product page at www.raymarine.com.

Warranty registration

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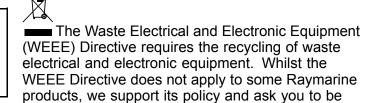
To register your Raymarine product ownership, please visit www.raymarine.com and register online.

It is important that you register your product to receive full warranty benefits. Your unit package includes a bar code label indicating the serial number

of the unit. You will need this serial number when registering your product online. You should retain the label for future reference.

Product disposal

Dispose of this product in accordance with the WEEE Directive.



aware of how to dispose of this product.

IMO and SOLAS

The equipment described within this document is intended for use on leisure marine boats and workboats NOT covered by International Maritime Organization (IMO) and Safety of Life at Sea (SOLAS) Carriage Regulations.

Technical accuracy

To the best of our knowledge, the information in this document was correct at the time it was produced. However, Raymarine cannot accept liability for any inaccuracies or omissions it may contain. In addition, our policy of continuous product improvement may change specifications without notice. As a result, Raymarine cannot accept liability for any differences between the product and this document. Please check the Raymarine website (www.raymarine.com) to ensure you have the most up-to-date version(s) of the documentation for your product.

Chapter 2: Document and product information

Chapter contents

- 2.1 Document information on page 10
- 2.2 CHIRP **SideVision™** overview on page 11
- 2.3 Interpreting **SideVision™** images on page 12

Document and product information

2.1 Document information

This document contains important information related to the installation of your Raymarine product.

The document includes information to help you:

- plan your installation and ensure you have all the necessary equipment;
- install and connect your product as part of a wider system of connected marine electronics;
- troubleshoot problems and obtain technical support if required.

This and other Raymarine product documents are available to download in PDF format from www.raymarine.com.

Applicable products

This document is applicable to the following products:

Part	Description	Mounting	Construc-
number		Type	tion
A80281	CPT-200 SideVision™ transducer	Transom	Marine- grade stainless steel; plastic

Document illustrations

Your product may differ slightly from that shown in the illustrations in this document, depending on product variant and date of manufacture.

All images are provided for illustration purposes only.

Product documentation

The following documentation is applicable to your product:

Description	Part number
CPT-200 Transom mount transducer Installation instructions Installation of a CPT-200 transducer and connection to a sonar module.	87223 / 88037
CPT-200 Transom mount transducer mounting template Mounting template for a CPT-200 SideVision transom transducer.	87222
a Series, c Series, e Series Installation and operation instructions Details the operation of the fishfinder application (including SideVision operation) for a Series, c Series, e Series multifunction displays.	81337
gS Series Installation and operation instructions Details the operation of the fishfinder application (including SideVision operation) for gS Series multifunction displays.	81344
CP100 / CP200 Installation instructions Installation of a CP100 or CP200 unit and connection to a wider system of marine electronics.	87216 / 88030

Operation instructions

For detailed operation instructions for your product, refer to the documentation that accompanies your display.

Sonar module installation instructions

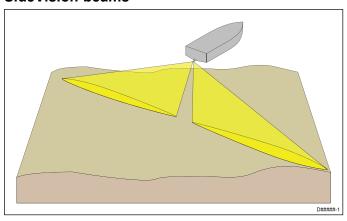
This document includes installation instructions for the transducer only. For installation instructions for connecting a sonar module, please refer to the documentation that accompanies the sonar module.

2.2 CHIRP SideVision™ overview

SideVision™ interprets signals from a pair of side-looking transducers and builds up a detailed underwater view as your vessel moves forward. The transducers send pulses of sound waves into the water on each side of your vessel, and record the sound waves that reflect off the bottom, and off objects on the bottom or suspended in the water column. The received echoes are affected by the bottom material (for example mud, gravel or rock), and by any other objects in their path (for example cables on the sea floor, bridge piers, wrecks, shoals or fish).

SideVision™ produces two wide–angle side-to-side beams, each with a thin fore-to-aft beam. The coverage of the **SideVision™** beams is a swath on each side of the vessel.

SideVision beams



SideVision™ is effective at lower vessel speeds. The wide, thin beams produce clear target returns. As your vessel moves forward, subsequent returns build up to provide an image of the sea floor on each side of your vessel.

The use of CHIRP processing and a high operating frequency provide a detailed image, making it easier to identify bottom structures around which fish may reside. The narrow angle the beams make with the bottom at longer ranges can reveal the shadows of structures that protrude from the bottom.

CHIRP SideVision™ screen example



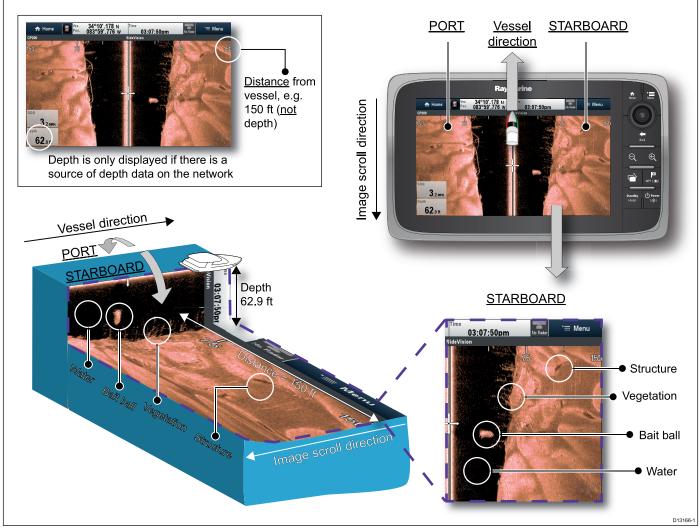
Note: The "Depth" figure shown in the illustration above assumes that you have a device in your system that provides depth data. Please be aware that not all transducers and / or sonar modules support depth sensing. For more information, refer to the latest specifications and documentation available for your particular products on the Raymarine website (www.raymarine.com).

Document and product information

2.3 Interpreting SideVision™ images

The following illustration shows how **SideVision™** images on your multifunction display are related to the water column and sea floor to the sides of your vessel.

Interpreting SideVision images



SideVision™ images are constructed line-by-line, similar to the way a television picture is composed of many horizontal lines. Each successive ping from the **SideVision™** transducer adds a new line of image data to the top of your display. Each new line shows sonar returns from both the port and starboard sides of your vessel.

As new lines are added with each successive ping, older data gradually scrolls down the display, building up a detailed image of the water column and sea floor to the sides of your vessel. If your vessel maintains the same bearing and speed for a period of time, you can interpret the image as a plan of the sea floor along your vessel's course.

The illustration also identifies examples of features that may be visible in **SideVision™** images:

- Water: close to your vessel, the SideVision™ sonar beams may not interact with any solid objects in the water column until they hit the sea floor. The water column close to your vessel is displayed as a dark band in the image. The abrupt change to a lighter section in the image indicates where the sea floor is first detected with each ping.
- Bait ball: objects in the water column close to your vessel may be detected before the SideVision™ beams hit the sea floor. In this example, a bait ball

is shown within the water column, at a distance of approximately 30 feet from the vessel.

- Vegetation: objects in contact with the sea floor that are close to your vessel may be clearly visible in the image at the point where the SideVision™ beams hit the sea floor. In this example, the shapes in the image indicate vegetation attached to the sea floor.
- Structure: the lighter regions of the SideVision™ image represent the sea floor. It may be possible to detect differences in the bottom material (for example, where an area of mud meets an area of gravel) as well as solid structures such as pipelines and piers. Larger solid structures, and sea floor relief, may reveal an area of shadow directed away from your vessel.

Note: Unlike **DownVision[™]**, **SideVision[™]** does not provide direct depth readings. The scale shown across the top of the image indicates the **distance** of features from your vessel.

Chapter 3: Planning the installation

Chapter contents

- 3.1 Installation checklist on page 14
- 3.2 Parts supplied CPT-200 Transducer on page 14
- 3.3 Required additional components on page 15
- 3.4 Compatible **SideVision™** products on page 15
- 3.5 Tools required on page 16
- 3.6 Warnings and cautions on page 16
- 3.7 Selecting a location for the transducer on page 17
- 3.8 Using the **SideVision™** transducer with an optional **DownVision™** transducer on page 18
- 3.9 Transducer dimensions on page 19

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3.1 Installation checklist

Installation includes the following activities:

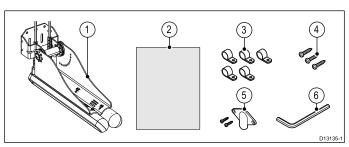
	Installation Task
1	Plan your system.
2	Obtain all required equipment and tools.
3	Site all equipment.
4	Route all cables.
5	Drill cable and mounting holes.
6	Make all connections into equipment.
7	Secure all equipment in place.
8	Power on and test the system.

Schematic diagram

A schematic diagram is an essential part of planning any installation. It is also useful for any future additions or maintenance of the system. The diagram should include:

- Location of all components.
- · Connectors, cable types, routes and lengths.

3.2 Parts supplied — CPT-200 Transducer



Item	Description	Quantity
1	Transducer. Includes 10 m (32.8 ft) transducer cable with integral cable splitter.	1
2	Documentation pack.	1
3	P-clips and screws. (Screws = Ø4.2 x 13 mm pozidrive pan head).	5
4	Transducer bracket mounting screws (Screws = Ø4.2 x 19 mm pozidrive pan head).	3
5	Escutcheon and 2 mounting screws (for through-transom cable installation). (Screws = Ø4.2 x 13 mm pozidrive pan head).	1
6	2 mm ball-ended Allen key	1

3.3 Required additional components

This product forms part of a system of electronics and requires the following additional components for full operation.

- Compatible SideVision™ Sonar Module. Refer to 3.4 Compatible SideVision™ products, for a list of compatible products.
- Transducer extension cables. Refer to Chapter 4
 Cables and connections, for suitable cables.

3.4 Compatible SideVision™ products

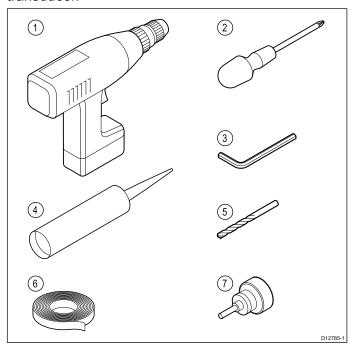
The transducer can be connected directly to the following **SideVision™** sonar modules.

	Description	Part number
Raymarine	CP200	E70256

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3.5 Tools required

The following tools are required to install the transducer.



- 1. Power drill.
- 2. Pozidrive screwdriver.
- Two Allen keys that fit the transducer pivot bolt. Optionally, a 2 mm Allen key to adjust the tilt angle of the individual **SideVision** transducer elements.
- 4. Marine grade sealant.
- 5. Suitable sized drill bit.
- 6. Adhesive tape.
- 7. 18 mm (23/32") Hole saw (only required if you are routing the cable through the transom).

3.6 Warnings and cautions

Important: Before proceeding, ensure that you have read and understood the warnings and cautions provided in the Chapter 1 Important information section of this document.

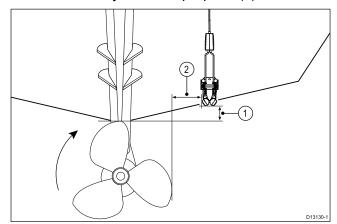
3.7 Selecting a location for the transducer

The guidelines below should be followed when selecting a location for the transom mount transducer.

Note: The transducer is not suitable for mounting on vessels where the transom is aft of the propeller(s).

For best performance the transducer must be installed in a location with the least turbulence and aeration. The most effective way to determine this is by checking the water flow around the transom whilst underway. The transducer must also be installed in a location that minimizes wake and acoustic interference from the propeller(s).

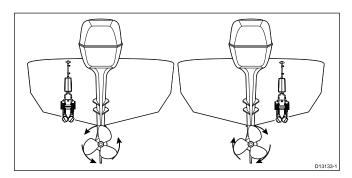
- To ensure that the transducer remains fully submerged when the vessel is turning, mount the transducer close to the keel (centreline) of the vessel.
- To reduce unwanted reflections, do not mount the transducer too far above the propeller(s); the SideVision acoustic beams will reflect off the propeller(s) or other engine parts in the beams' path.
- To avoid wake, mount the transducer a suitable distance laterally from the propeller(s).



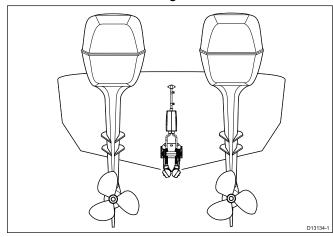
1	To reduce unwanted reflections, minimize the vertical distance between the transducer and the propeller(s)
2	To avoid wake, maintain sufficient distance laterally from the propeller(s)

Note: When the transducer is mounted above the level of the propeller(s), some acoustic reflection is inevitable.

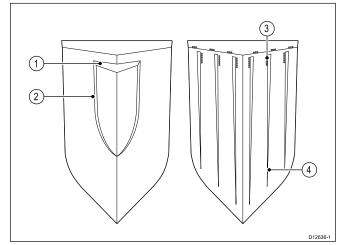
 For clockwise rotating propellers the transducer should be mounted on the starboard side, for anti-clockwise rotating propellers the transducer should be mounted on the port side.



 On a twin engine vessel the transducer should be mounted between the engines.



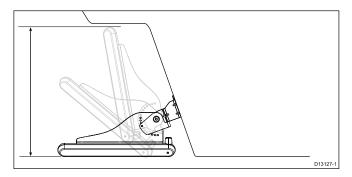
 Turbulence can also be caused by a number of other factors such as steps, ribs, strakes, and rows of rivets. The turbulence appears aft of these locations.



1	Step
2	Rib
3	Row of rivets
4	Strake

- Air trapped under the front of the vessel can travel under the hull and appear as aeration aft.
- If installing on the step of a stepped transom, allow sufficient room above the transducer for transducer kick-up.
- To minimize the possibility of the transducer causing water spray (an effect known as "rooster tails"), Raymarine recommends that the bottom of the transducer is level with the hull at the place of mounting. Depending on the hull profile, it may be necessary to adjust this height to minimize this effect.

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Note: Optimum transducer location will vary depending on vessel type. Optimum transducer height and angle should be obtained by testing the transducer with the vessel in the water before locking the transducer's position.

3.8 Using the SideVision™ transducer with an optional DownVision™ transducer

By installing and operating **SideVision™** and **DownVision™** sonar systems simultaneously, you can achieve a full 180 degree view of the water column directly beneath and to the sides of your vessel.

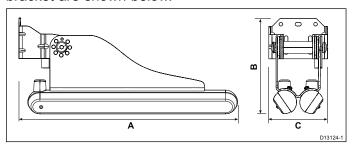
DownVision and SideVision combined beams



Note: When SideVision™ and DownVision™ systems are pinging simultaneously, some interference between the two systems may occur. To minimize interference between the systems, careful consideration must be given to transducer location. Raymarine recommends that you refer to your local dealer for installation advice.

3.9 Transducer dimensions

The transducer's dimensions including the mounting bracket are shown below.



Α	269 mm (10.6 in)
В	120 mm (4.8 in)
С	73 mm (2.9 in)

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Chapter 4: Cables and connections

Chapter contents

- 4.1 General cabling guidance on page 22
- 4.2 Cable routing on page 22
- 4.3 Connections overview on page 23
- 4.4 Transducer cable connection on page 23

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4.1 General cabling guidance

Cable types and length

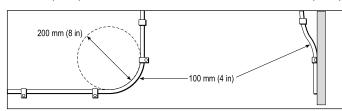
It is important to use cables of the appropriate type and length

- Unless otherwise stated use only standard cables of the correct type, supplied by Raymarine.
- Ensure that any non-Raymarine cables are of the correct quality and gauge. For example, longer power cable runs may require larger wire gauges to minimize voltage drop along the run.

Routing cables

Cables must be routed correctly, to maximize performance and prolong cable life.

 Do NOT bend cables excessively. Wherever possible, ensure a minimum bend diameter of 200 mm (8 in) / minimum bend radius of 100 mm (4 in).



- Protect all cables from physical damage and exposure to heat. Use trunking or conduit where possible. Do NOT run cables through bilges or doorways, or close to moving or hot objects.
- Secure cables in place using tie-wraps or lacing twine. Coil any extra cable and tie it out of the way.
- Where a cable passes through an exposed bulkhead or deckhead, use a suitable watertight feed-through.
- Do NOT run cables near to engines or fluorescent lights.

Always route data cables as far away as possible from:

- other equipment and cables,
- high current carrying ac and dc power lines,
- antennae.

Strain relief

Ensure adequate strain relief is provided. Protect connectors from strain and ensure they will not pull out under extreme sea conditions.

Cable shielding

Ensure that all data cables are properly shielded that the cable shielding is intact (e.g. hasn't been scraped off by being squeezed through a tight area).

4.2 Cable routing

Cable routing requirements for the transducer cable.

Important: To avoid interference, the cable must be routed as far away from VHF radio antenna cables as possible.

- The cable can be routed through or over the transom.
- Check that the cable is long enough to reach the equipment that it will be connected to. An optional 4 m (13.1 ft) extension cable is available if required.
- Ensure there is enough slack in the transducer cable, at the transducer end, to allow the transducer to pivot up and down.
- Secure the cable at regular intervals using the supplied cable clips.
- Fill all transom mounting holes with marine-grade sealant prior to tightening securing screws.
- Fill the transom cable hole with marine-grade sealant after routing the cable (if routing through the transom).
- Use the supplied escutcheon to cover over the transom cable hole (if routing through the transom).
- Any excess cable can be coiled up at a convenient location.

4.3 Connections overview

Use the following information to help you identify the connections on your product.

Connector	Connector type	Connects to:
	CPT-200 Transducer	Sonar module.

4.4 Transducer cable connection

The transducer can be connected directly to a **SideVision** sonar module.

Follow the *Cables and Connections* chapter of the manual that accompanied your sonar module to make the appropriate connections.

Making connections

Follow the steps below to connect the cable(s) to your product.

- 1. Ensure that the vessel's power supply is switched off.
- 2. Ensure that the device being connected to the unit has been installed in accordance with the installation instructions supplied with that device.
- 3. Ensuring correct orientation, push the cable connector fully onto the corresponding connector on the unit.
- 4. Turn the locking collar clockwise to secure the cable.

Transducer cable extension

For some installations it may be necessary to extend the transducer cable.

- Refer to Chapter 11 Spares and accessories for a list of suitable transducer extension cables.
- Raymarine recommends a maximum of one cable extension for any single transducer cable.
- For best performance, keep all cable lengths to a minimum.

Cables and connections 23

Chapter 5: Pre-installation test

Chapter contents

5.1 Pre-installation transducer testing on page 26

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5.1 Pre-installation transducer testing

Transducer operation should be checked before installation.

- 1. Connect the transducer to the sonar module's transducer connection.
- 2. Fully submerge the transducer in water.
- 3. Power up the sonar module and the multifunction display connected to it.
- 4. Open a Fishfinder application page on your multifunction display.
- 5. Check that accurate depth, range and temperature readings are displayed in the Fishfinder application.
- 6. If you experience difficulties obtaining readings then contact Raymarine Technical Support.

Note: Not all transducers and / or sonar modules support the detection of depth, range and temperature. For more information, refer to the latest specifications and documentation available for your particular products on the Raymarine website (www.raymarine.com).



Warning: Transducer operation

Only test and operate the transducer in the water. Do NOT operate out of water as overheating may occur.

Chapter 6: Mounting

Chapter contents

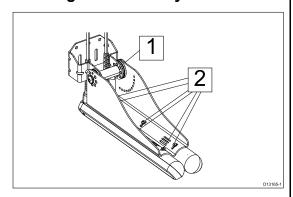
- 6.1 Important information on page 28
- 6.2 Mounting the transducer on page 28
- 6.3 Post-installation transducer testing on page 30
- 6.4 Finishing the transducer mounting on page 30
- 6.5 Adjusting the SideVision tilt angle on page 31

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6.1 Important information



Warning: Do NOT fully disassemble



This product contains a compressed spring and should NOT be fully disassembled. Doing so may damage the product and / or invalidate the product warranty. The product contains no user-serviceable parts. For all servicing and repairs, refer to your local dealer or the Raymarine service department.

The screws fitted to the product may be loosened to perform the following adjustments, but the screws should NOT be fully removed at any time.

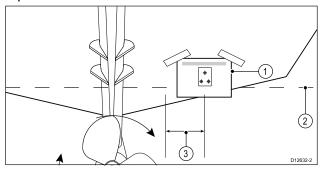
- The pivot bolt indicated by item 1 in the drawing above may be loosened for the purposes of adjusting the back-stop plate angle only. Refer to the 6.2 Mounting the transducer section of the manual for more information.
- The 6 Allen key screws indicated by item 2 in the drawing above may be loosened for the purposes of adjusting the element tilt angle only. Refer to 6.5 Adjusting the SideVision tilt angle for more information.

6.2 Mounting the transducer

The transducer must be mounted on the transom using the mounting bracket provided. The steps below describe the initial mounting steps required in order to test your transducer's performance. After testing the transducer you must finish the mounting following the instructions in the *Finishing the transducer mounting* section.

Important: Before proceeding, ensure that you have read and understood the information about locating the transducer in section 3.7 Selecting a location for the transducer of this document.

1. Fix the transducer mounting template to the selected location, using masking or self-adhesive tape.

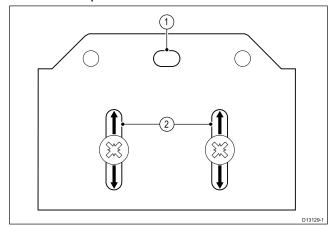


1	Transducer mounting template	
2	Waterline	
3	Mounting away from propeller	

- 2. Ensure the template is parallel to the waterline.
- 3. Drill 2 x holes for the adjustment slot screws as indicated on the template.

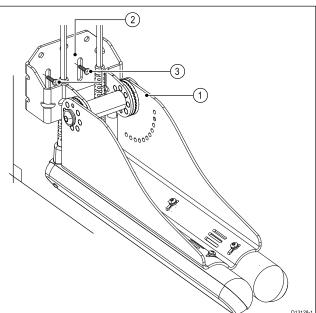
Note: Do NOT drill the third mounting hole at this stage.

- Fill the 2 holes with marine grade sealant.
- 5. Using the screws provided, temporarily secure the mounting bracket using the adjustment slots on the back plate.



1	Locking hole
2	Adjustment slots

Note: For best access to the adjustment slots, keep the transducer carrier at 90 degrees to the mounting bracket while fitting the screws.

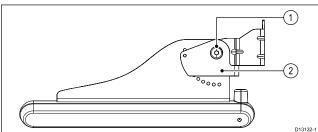


Note: The third locking screw is not used until the

transducer has been successfully tested.

1 Transducer carrier
2 Mounting bracket
3 Screws

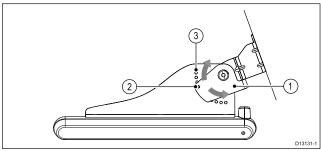
 Use an Allen key to loosen the transducer pivot bolt adjacent to the back-stop plate by approximately 3 turns. Use a second Allen key to hold the pivot bolt on the opposite side of the transducer in place.



1	Pivot bolt	
2	Back-stop plate	

7. Adjust the angle between the transducer and the mounting bracket by locating the lug on the back-stop plate in one of the eleven holes on the transducer carrier. The transducer should be parallel with the waterline.

The transducer position will be adjusted further during testing (see *Testing the transducer*).



1	Back-stop plate	
2	Lug	
3	Holes	

8. Tighten the transducer pivot bolt.

6.3 Post-installation transducer testing 6.4 Finishing the transducer mounting

Once the initial mounting procedures have been carried out, the transducer must be tested prior to finishing the mounting.

The testing should be carried out with your vessel in the water, with a depth greater than 0.7 m (2.3 ft) but less than the maximum range limit of the system.

- 1. Press and hold the **Power** button until a beep is heard.
- Complete the Start-up wizard settings.
- 3. Use the View switcher to open a view which contains the **SideVision** application.
 - If the unit is operating correctly the bottom should be visible on-screen with range scales displayed.
- 4. Start moving your vessel at a low speed (about 3) knots) and ensure that the bottom is visible and that you have a clear image on-screen.
- Gradually increase the vessel speed up to 8 knots, whilst checking the display. If the image becomes poor then the transducer needs to be adjusted.

Note: SideVision image quality may reduce above 8 knots, even when the transducer is correctly adjusted. Optimum image quality is achieved between 3 and 8 knots.

- 6. Height and angle adjustments should be made in small increments, and re-tested each time until you obtain optimum performance.
- 7. To adjust the angle of the transducer loosen the pivot bolt approximately 3 turns and then adjust the position of the back-stop plate, as described in section 6.2 Mounting the transducer.
- Re-tighten the pivot bolt before re-testing.
- 9. When you achieve optimum performance at the desired vessel speeds you can finish the transducer mounting.

Note: It may be necessary to make several adjustments to the transducer before obtaining optimum performance.

Once you have achieved optimum performance at the desired vessel speeds the transducer must be locked into position to finish the installation.

Note: If the transducer requires repositioning ensure all old holes are filled with marine grade sealant.

- 1. Drill the locking hole location taking care not to damage the mounting bracket.
- 2. Optionally, drill 2 holes in the positions provided either side of the locking hole. Use one Ø4.2 x 19 mm screw (NOT supplied) in each hole. This step is only required if you judge that the transducer needs the extra security provided by the additional screws.
- 3. Fill the locking hole and (if used) the 2 additional holes with marine grade sealant.
- 4. Secure the transducer and bracket by fully tightening all mounting screws.
- 5. If the transducer is kicked-up above its normal horizontal position, push the transducer down until the back-stop plate touches the mounting bracket.
- 6. Optionally, use the supplied P-clips and screws to secure the transducer cable above the cable-splitter box.

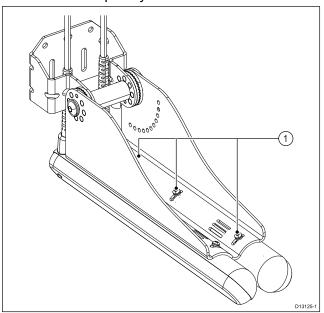
Note: When securing the transducer cable to the transom, leave enough slack cable so that the transducer can kick-up fully on the mounting bracket.

6.5 Adjusting the SideVision tilt angle

The SideVision transducer comprises 2 separate elements that each transmit and receive pulses of sound. One element is directed to the port side of your vessel, and the other element is directed to starboard. You can adjust the tilt angle of these elements, so that they are inclined more towards the sea floor beneath your vessel, or more into the water to each side of your vessel.

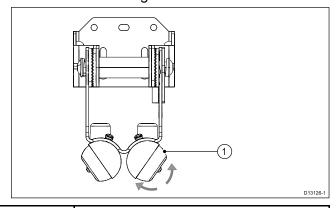
Note: When the transducer is shipped, the tilt angle of each element is set to a position that will be suitable for most users. Do not adjust the tilt angle unless you have a specific need to do so (for example, tilting the elements toward the sea floor to improve sensitivity directly beneath your vessel in deep water, or to reduce interference from surface reflections in very shallow water).

 Using the supplied 2 mm ball-ended Allen key, loosen the 3 screws on one side of the transducer carrier. Loosen the 3 screws enough to allow the element to be moved freely, but do NOT remove the screws completely.



Starboard transducer element tilt-angle screws

2. With the transducer element still attached to the carrier by the loosened screws, carefully rotate it to the desired tilt angle.



Starboard transducer element

1

Note: Three tilt-angle positions are available, visible as slots in the transducer carrier. Ensure that the element is seated in one of these positions before tightening the element in place with the screws.

- 3. Raymarine recommends that an M3-size torque driver is used to tighten each screw to a torque of 100 cNm. If a torque driver is not available, use the supplied 2 mm ball-ended Allen key to re-tighten the 3 screws until the lock washer is fully compressed and then tighten each screw a further quarter-turn to fully secure the transducer element in place.
- 4. Repeat the above steps for the transducer element on the other side of the carrier.

Note: For best results, adjust each transducer element to the same tilt angle.

Chapter 7: System checks and troubleshooting

Chapter contents

- 7.1 Operation instructions on page 34
- 7.2 Troubleshooting on page 35

System checks and troubleshooting 33

7.1 Operation instructions

For detailed operation instructions for your product, refer to the documentation that accompanies your display.

7.2 Troubleshooting

The troubleshooting information provides possible causes and corrective action required for common problems associated with marine electronics installations.

All Raymarine products are, prior to packing and shipping, subjected to comprehensive test and quality assurance programs. However, if you experience problems with the operation of your product this section will help you to diagnose and correct problems in order to restore normal operation.

If after referring to this section you are still having problems with your unit, please contact Raymarine Technical Support for further advice.

System checks and troubleshooting 35

Sonar troubleshooting

Problems with the sonar and their possible causes and solutions are described here.

Problem	Possible causes	Possible solutions
Sonar data not available on multifunction display.	Unit power supply fault.	Check the unit power supply and cables.
	Other unit fault.	Refer to the instructions supplied with the unit.
	SeaTalkhs / RayNet network problem.	Check that the unit is correctly connected to a Raymarine network switch. If a crossover coupler or other coupler cable / adapter is used, check all connections (as applicable).
		Check the status of the Raymarine network switch (if applicable).
		Check that SeaTalkhs/ RayNet cables are free from damage.
	Software mismatch between equipment may prevent communication.	Contact Raymarine technical support.
Problematic data readings. Note: Not all transducers	Gain or Frequency settings may be inappropriate for present	Check the sonar presets, gain and frequency settings.
and / or sonar modules	conditions.	
support the detection of depth, range and temperature. For more information, refer to the latest specifications and documentation available for your particular products on the Raymarine website (www.raymarine.com).	Unit power supply fault.	Check the voltage from the power supply, if this is too low it can affect the transmitting power of the unit.
	Unit cable fault.	Ensure that the power, transducer and all other cables to the unit are properly connected and free from damage.
	Transducer fault.	Check that the transducer is mounted correctly and is clean.
		If you have a transom mount transducer, check that the transducer hasn't kicked-up due to hitting an object.
	Other unit fault.	Refer to the instructions supplied with the unit.
	Vessel stationary.	Fish arches are not displayed if the vessel is stationary; fish will appear on the display as straight lines.
	High vessel speed	Turbulence around the transducer may be confusing the unit.
	Scroll speed set to zero	Adjust the scroll speed.

Sonar crosstalk interference

There are 2 types of potential sonar crosstalk interference in a Raymarine sonar system:

- 1. SideVision sonar crosstalk interference
- 2. Multiple sonar crosstalk interference

The types of crosstalk interference that you may experience in your system depend on the combination and type of sonar equipment installed, and the way in which the equipment has been installed.

installed.		
SideVision sonar crosstalk interference	Multiple sonar crosstalk interference	
© 10 2 10 2 10 2 10 2 10 2 10 2 10 2 10		
Due to the high sensitivity of SideVision transducers,	When using multiple sonar modules and transducers	

SideVision sonar crosstalk Multiple sonar crosstalk interference interference you may experience some operating in overlapping minor crosstalk interference frequency ranges, you may between the left and right experience some crosstalk receiving channels in areas interference between the of strong target returns. ranges. This interference is Examples of strong target displayed in the Fishfinder returns include solid objects application as vertical "rain such as underwater bridge drops" throughout the water structure. This interference column. These vertical "rain shows up in the Fishfinder drops" indicate that 2 sonar application as subtle modules are operating in reflections from the right close frequency proximity to sonar image displayed in one another. the left sonar image, or vice versa.

SideVision sonar crosstalk interference

Crosstalk interference is expected behavior in a high sensitivity device such as a **SideVision** transducer, and is not indicative of a fault with your transducer or sonar module.

Reducing multiple sonar crosstalk interference

Crosstalk interference in systems with multiple sonar modules and transducers is the result of a number of factors, including installation, operation, and environment.

- Choose an equipment combination that minimizes overlapping frequencies. Wherever possible, choose to use sonar modules and transducers that operate in different frequency ranges ("Channels"), for example CP100 and CP300 sonar modules and CPT-100 and B744V transducers. This will help to ensure that each component is operating in a distinct relative frequency range – for example, a "high" frequency range for the CP100 and a "low" frequency range for the CP300.
- Only use the sonar channels that you really need. Although it is possible to run multiple sonar modules simultaneously in a Raymarine system, it may not always be necessary to do so. If you are in a scenario that requires only one sonar module to be active at a time, disable any other sonar modules by changing the Fishfinder application pane to a single one which only displays the output from one sonar module. Alternatively, disable the ping for any unused sonar modules by selecting MENU > Channel > Ping > OFF in the Fishfinder application.
- Identify the sonar module and transducer that is causing the interference. To do this, disable the ping or remove the power for one of the sonar modules in your system. If the interference in the Fishfinder application disappears immediately, you now know which device is causing the interference. If the interference doesn't disappear, repeat the exercise again with the other sonar module(s) in your system, one at a time. Once you know which device is causing the interference, proceed with the following methods to reduce the interference from the relevant device.
- Adjust the Interference Rejection Filter. The
 default setting for all Raymarine MFDs is "Auto".
 Changing this setting to "High" might help to
 reduce interference (MENU > Setup > Sounder
 Setup > Interference Rejection). Note that the
 Interference Rejection Filter setting is not available
 for all sonar modules.
- Decrease the power output of the interfering transducer. Adjusting the "Power Mode" in the Sensitivity Settings in the MFD's Fishfinder application can help to minimize the presence of crosstalk interference (MENU > Sensitivity Settings > Power Mode). Note that the Power Mode setting is not available for all transducers.
- Ensure that you have a common RF ground point for all electrical equipment on your vessel. On vessels without an RF ground system,

- ensure all product drain wires (where available) are connected directly to the negative battery terminal. Ineffective RF grounding can cause electrical interference which may in turn result in sonar crosstalk interference.
- Increase the physical distance between your sonar modules. Electrical interference may be occurring between a cable on one sonar module, and a cable on a different sonar module. Ensure that your sonar modules are physically located as far away from each other as possible.
- Increase the physical distance between your sonar transducers. Electrical and / or acoustic interference may be occurring between the different transducers in your system. Ensure that your transducers are physically located as far away from each other as possible.

Note: Given the effort and potential difficulties involved in relocating sonar equipment, it should only be considered as a last resort when you judge the interference to be a significant problem which cannot be resolved using the methods described above.

Note: Due to physical size and other constraints that vary from vessel to vessel, it may not be possible to completely eliminate crosstalk interference from your system. However, this will not impede your ability to benefit from the full capabilities of your sonar system. Being able to easily identify the way in which interference is displayed in the Fishfinder application can sometimes be the best and easiest route to dealing with it.

Resetting the sonar module

You can use the reset function on a compatible Raymarine multifunction display to restore the sonar module to its factory default settings.

In the fishfinder application:

- Select Menu.
- Select Set-up.
- 3. Select Sounder Set-up.
- Select Sonar Reset.
- 5. Select **Yes** to confirm or **No** to abort the operation, as appropriate.

The unit will now be reset to factory default settings.

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Chapter 8: Maintenance

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- 8.1 Routine checks on page 40
- 8.2 Unit cleaning instructions on page 40

Maintenance 39

8.1 Routine checks

The following periodic checks should be made:

- Examine cables for signs of damage, such as chafing, cuts or nicks.
- Check that the cable connectors are firmly attached and that their locking mechanisms are properly engaged.

Note: Cable checks should be carried out with the power supply switched off.



Warning: High voltage

This product contains high voltage. Adjustments require specialized service procedures and tools only available to qualified service technicians. There are no user serviceable parts or adjustments. The operator should never remove the cover or attempt to service the product.

8.2 Unit cleaning instructions

The unit does not require regular cleaning. However, if you find it necessary to clean the unit, please follow the steps below:

- 1. Ensure power is switched off.
- 2. Wipe unit clean with a damp cloth.
- 3. If necessary, use a mild detergent solution to remove grease marks.

Transducer care and cleaning

Growth can collect on the bottom of the transducer, this can reduce performance. To prevent the build-up of sea growth, coat the transducer with a thin layer of water-based antifouling paint, available from your local marine dealer. Reapply paint every 6 months or at the beginning of each boating season. Certain smart transducers have restrictions on where antifouling paint is applied. Please consult your dealer.

Note: Transducers with a temperature sensor may not work properly if painted.

Note: Never use ketone-based paint. Ketones can attack many plastics, possibly damaging the sensor.

Note: Never use spray paint on your transducer. Spraying incorporates tiny air bubbles, and a marine transducer cannot transmit properly through air.

Use a soft cloth and mild household detergent to clean the transducer. If the fouling is severe, remove the growth with a tough cleaning pad, such as a green Scotch $Brite^{TM}$ pad for example. Be careful to avoid scratching the face of the transducer.

Note: Harsh cleaning solvents such as acetone WILL damage the transducer.

Chapter 9: Technical support

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- 9.1 Raymarine customer support on page 42
- 9.2 Viewing product information on page 42

Technical support 41

9.1 Raymarine customer support

Raymarine provides a comprehensive customer support service. You can contact customer support through the Raymarine website, telephone and e-mail. If you are unable to resolve a problem, please use any of these facilities to obtain additional help.

Web support

Please visit the customer support area of our website at:

www.raymarine.com

This contains Frequently Asked Questions, servicing information, e-mail access to the Raymarine Technical Support Department and details of worldwide Raymarine agents.

Telephone and e-mail support

In the USA:

• Tel: +1 603 324 7900

• Toll Free: +1 800 539 5539

E-mail: support@raymarine.com

In the UK, Europe, and the Middle East:

• Tel: +44 (0)13 2924 6777

• E-mail: ukproduct.support@raymarine.com

In Southeast Asia and Australia:

• Tel: +61 (0)29479 4800

E-mail: aus.support@raymarine.com

Product information

If you need to request service, please have the following information to hand:

- Product name.
- · Product identity.
- · Serial number.
- Software application version.
- · System diagrams.

You can obtain this product information using the menus within your product.

9.2 Viewing product information

You can view information about your unit from the **Diagnostics** menu on a compatible multifunction display. This option displays information such as product serial number and software version.

With the Homescreen displayed:

- 1. Select Set-up.
- Select Maintenance.
- 3. Select Diagnostics.
- Select the Select Device option.
 A list of connected devices is displayed.
- 5. Select the product for which you want to view information. Alternatively, select **Show All Data** to display information for all connected products.

Chapter 10: Technical specification

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10.1 Technical specification

Physical specification — CPT-200 Transducer

Dimensions (including mounting bracket)	Length: 269 mm (10.6 in)Height: 120 mm (4.8 in)Width: 73 mm (2.9 in)		
Cable length	10 m (32.8 ft)		
Weight (including mounting bracket)	1.44 kg (3.1 lbs) including cable		
	1.03 kg (2.3 lbs) not including cable		

Transducer environmental specification

Operating temperature	0 °C to + 40 °C (32 °F to 104 °F)
Storage temperature	–20 °C to + 70 °C (23 °F to 158 °F)
Waterproof rating	IPX6 and IPX7

SideVision specification

Channels	2 x CHIRP		
Beam coverage	Port- and starboard-facing fan beams — wide (port / starboard) and thin (fore / aft) .		
Range	Up to 183 m (600 ft).		
	Note: Range performance is dependent on many factors, including water quality, transducer installation, and reflectivity of targets and structure.		

Conformance specification

-	•
Conformance	• EN 60945:2002
	• IEC 28846:1993
	EMC Directive 2004/108/EC
	Australia and New Zealand: C-Tick, Compliance Level 2

Chapter 11: Spares and accessories

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• 11.1 Spares and accessories on page 46

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11.1 Spares and accessories

Spares

Description	Part number
Bracket ratchet set	R70366

Accessories

Description	Part number	
4 m (13.1 ft.) Transducer extension cable (CPT-200)	A80305	

