

mercruiser trim wiring diagram

mercruiser trim wiring diagram is an essential piece of information for any boat owner or marine mechanic working with Mercury or Mercruiser sterndrives. Understanding this diagram is crucial for diagnosing issues, performing maintenance, and ensuring the proper functioning of your boat's trim system. This article will delve deep into the intricacies of Mercruiser trim wiring, covering common system components, troubleshooting steps, and the importance of accurate diagrams for different Mercruiser models. We'll explore the typical wiring colors, the function of relays and solenoids, and how to interpret the schematic to identify potential problems. Whether you're a seasoned boater or new to marine mechanics, grasping the Mercruiser trim wiring diagram will empower you to keep your vessel operating smoothly.

- Understanding the Mercruiser Trim System
- Key Components in a Mercruiser Trim Wiring Diagram
- Decoding Mercruiser Trim Wiring Colors
- Common Mercruiser Trim Wiring Problems and Troubleshooting
- Finding the Right Mercruiser Trim Wiring Diagram
- Wiring Diagram Variations by Mercruiser Model
- Safety Precautions When Working with Mercruiser Trim Wiring

Understanding the Mercruiser Trim System

The trim system on a Mercruiser sterndrive allows the operator to adjust the angle of the drive unit relative to the hull of the boat. This adjustment is critical for optimizing performance, handling, and fuel efficiency across various water conditions and speeds. Lowering the drive (trim in) generally improves acceleration and stability at lower speeds, while raising it (trim out) can reduce hull drag and increase top speed. The hydraulic trim system, powered by an electric motor and pump, is controlled through a series of electrical circuits, switches, and relays, all of which are meticulously detailed in the Mercruiser trim wiring diagram.

The core function of the trim system relies on precise electrical signals that activate hydraulic solenoids. These solenoids direct fluid flow to either extend or retract the trim cylinders, thereby moving the drive unit. The complexity of this system necessitates a clear understanding of its electrical architecture, which is why the Mercruiser trim wiring diagram serves as an indispensable guide for maintenance and repair.

Key Components in a Mercruiser Trim Wiring Diagram

Several key components are consistently represented in any Mercruiser trim wiring diagram. Identifying these parts is the first step in understanding the flow of electricity and hydraulics within the trim system. Each component plays a specific role in the overall operation, from initiating the trim command to physically moving the drive.

Trim Sender Unit

The trim sender unit, often located on the gimbal housing or within the trim rams, translates the physical position of the drive unit into an electrical signal. This signal is then sent to the trim gauge on the helm, providing the operator with a visual indication of the drive's angle. The Mercruiser trim wiring diagram will show how this unit is connected to the gauge and often to the main trim control circuit.

Trim Limit Switch

The trim limit switch is a safety device designed to prevent over-trimming of the drive. It typically has two positions, one for "trim in" and one for "trim out," and interrupts power to the trim motor when the drive reaches its extreme angles. The wiring diagram illustrates its placement within the circuit and its function in preventing damage to the drive unit or boat.

Trim/Tilt Relays

Relays are electromechanical switches that use a small amount of current to control a larger current. In the Mercruiser trim system, relays are used to switch power to the trim motor. There are typically two relays: one for the "trim down" (or "trim in") function and another for the "trim up" (or "trim out") function. The diagram will clearly show the coil and contact configurations of these relays and how they are energized by the trim switch.

Trim Motor

The trim motor is a DC electric motor that drives the hydraulic pump. This pump generates the hydraulic pressure needed to move the trim cylinders. The wiring diagram will show the connections from the relays to the motor, including the positive and negative terminals, and how polarity reversal by the relays controls the direction of motor rotation and thus the direction of trim.

Trim Switch

The trim switch, usually located on the throttle lever or a separate dash-mounted control, is the primary user interface for operating the trim system. When the switch is actuated, it sends a low-current signal to energize the appropriate trim relay. The wiring diagram will illustrate the internal workings of the switch, often depicting it as a single pole, double throw (SPDT) or similar configuration for controlling both up and down functions.

Solenoids

In many Mercruiser trim systems, solenoids work in conjunction with relays or as part of a combined trim/tilt unit. These solenoids direct hydraulic fluid flow to the trim cylinders. The wiring diagram will show how these solenoids are energized by the trim switch or relays, and how their activation controls the direction of hydraulic pressure.

Wiring Harness

The entire system is interconnected by a wiring harness. The Mercruiser trim wiring diagram provides a schematic representation of this harness, showing the color coding of wires, the location of connectors, and the path of each wire from its source to its destination. This is invaluable for tracing wires and identifying breaks or short circuits.

Decoding Mercruiser Trim Wiring Colors

One of the most challenging aspects of working with any boat's electrical system is deciphering the wire colors. Mercruiser, like other manufacturers, uses a standard color-coding system in their trim wiring, though variations can exist between different model years and specific drive units. Familiarizing yourself with these common colors will significantly aid in understanding the Mercruiser trim wiring diagram.

- **Red:** Typically indicates a positive (+) power supply, often from the battery or main power distribution.
- **Purple:** Frequently used for the trim up circuit, powering the trim motor or solenoid for upward movement.
- **Green:** Often associated with the trim down circuit, controlling the trim motor or solenoid for downward movement.
- **Yellow:** Commonly found in systems that utilize a trim sending unit, it can be part of the signal path to the trim gauge.

- **Brown:** May be used for ground connections or as part of accessory circuits.
- **Black:** Almost universally represents the ground (-) connection in marine electrical systems.

It is important to note that these are general guidelines, and specific Mercruiser trim wiring diagrams for your particular model and year should always be consulted. Differences in accessory installations or factory modifications can lead to variations in wire color usage.

Common Mercruiser Trim Wiring Problems and Troubleshooting

When your Mercruiser sterndrive's trim system is not functioning correctly, a faulty wire or component within the electrical circuit is often the culprit. A thorough understanding of the Mercruiser trim wiring diagram is essential for efficient troubleshooting. Common issues can range from complete system failure to intermittent operation.

Trim System Not Responding

If the trim system is completely unresponsive, the first steps involve checking for power at the trim switch, relays, and trim motor. Use a multimeter to test for voltage. The wiring diagram will guide you to the correct test points. A blown fuse or a tripped circuit breaker is a common cause. Also, check for loose or corroded connections at the battery, main power distribution block, and at each component.

Trim Works Only in One Direction

If the trim works only in one direction (e.g., only trims up but not down), it points to a problem in the circuit for the non-functional direction. This could be a faulty trim relay, a blown fuse specific to that circuit, or an issue with the trim switch's contact for that particular function. The Mercruiser trim wiring diagram will help isolate the specific relay and switch contacts involved.

Slow or Intermittent Trim Operation

Sluggish or intermittent trim movement can be caused by low voltage reaching the trim motor. This could be due to corroded battery terminals, undersized or damaged power cables, or issues with the trim relays not making solid contact. A weak trim motor itself can also cause this symptom. Inspect all power and ground connections thoroughly.

Trim Gauge Not Working or Inaccurate

If the trim gauge is not displaying a reading or is showing inaccurate angles, the problem often lies with the trim sender unit or its wiring. Check the connections to the sender unit and the signal wire going to the gauge. Corrosion on the sender unit's electrical contacts is a frequent issue. The wiring diagram will show the specific wires from the sender to the gauge.

Troubleshooting Steps Summary

1. Verify that the battery has sufficient charge and that all battery connections are clean and tight.
2. Check all fuses and circuit breakers related to the trim system.
3. Test for power at the trim switch when actuated in both directions.
4. Check for voltage at the trim relays when the trim switch is activated.
5. Test for voltage at the trim motor terminals when the relays should be energized.
6. Inspect the trim sender unit and its connections for corrosion or damage.
7. Trace all wiring using the Mercruiser trim wiring diagram to identify any breaks or shorts.

Finding the Right Mercruiser Trim Wiring Diagram

Obtaining the correct Mercruiser trim wiring diagram for your specific boat is paramount. Using a diagram for a different model or year can lead to confusion, incorrect diagnosis, and potential damage. Fortunately, there are several reliable sources to find this critical information.

- **Owner's Manual:** The most straightforward place to start is your boat's original owner's manual. Many manuals include a section on troubleshooting and electrical diagrams, often including the trim system.
- **Service Manual:** For more in-depth information, a Mercruiser service manual is highly recommended. These comprehensive manuals contain detailed schematics, component testing procedures, and repair instructions for all major systems, including the trim.

- **Online Resources:** Many marine forums and websites dedicated to boating and Mercruiser engines offer downloadable or viewable wiring diagrams. Be cautious and ensure the source is reputable and that the diagram clearly states the model and year it applies to.
- **Mercruiser Dealerships:** Your local authorized Mercruiser dealer can often provide specific wiring diagrams for your model, sometimes for a fee.

When searching, always have your boat's model number, serial number, and year readily available. This information is crucial for pinpointing the exact Mercruiser trim wiring diagram you need.

Wiring Diagram Variations by Mercruiser Model

It's important to recognize that Mercruiser has produced a vast array of sterndrive models over the decades, and the trim system's wiring can vary significantly between them. Factors such as the horsepower of the engine, the specific drive unit (e.g., Alpha One, Bravo I, II, III), and the model year all influence the complexity and configuration of the trim system and its associated wiring.

For instance, older Mercruiser models might have simpler relay-based systems, while newer ones may incorporate more advanced electronic control modules. The number of trim cylinders can also differ, affecting the solenoid configurations. Some high-performance applications might even feature dual trim pumps or integrated steering and trim controls. Therefore, a Mercruiser trim wiring diagram for a 1985 Alpha One drive will likely look very different from that of a 2015 Bravo III drive. Always cross-reference the diagram with the drive unit's specific identification numbers.

Safety Precautions When Working with Mercruiser Trim Wiring

Working with any boat's electrical system, especially the hydraulic trim system, requires a strong emphasis on safety. The potential for electrical shock, hydraulic fluid leaks, and mechanical injury necessitates careful adherence to proper procedures.

- **Disconnect Power:** Always disconnect the battery before beginning any work on the trim wiring. This is the most critical safety step to prevent accidental shorts and electrical hazards.
- **Wear Safety Glasses:** Protect your eyes from potential sparks, flying debris, or hydraulic fluid spray.

- **Proper Tools:** Use insulated tools whenever possible to minimize the risk of accidental shorts.
- **Secure the Drive:** Ensure the sterndrive is properly supported or in a safe, stable position before working on the trim system. Never rely solely on the trim system to hold the drive unit in place.
- **Hydraulic Fluid:** Be aware of hydraulic fluid pressure. If you need to disconnect hydraulic lines, take precautions to contain any escaping fluid. Consult your service manual for specific procedures.
- **Consult the Diagram:** Never guess. Always refer to the correct Mercruiser trim wiring diagram for your specific model before making any connections or disconnections.

By following these safety guidelines and utilizing the information provided in the appropriate Mercruiser trim wiring diagram, you can approach repairs and maintenance with confidence and minimize risks.

Frequently Asked Questions

What are the common colors of wires in a Mercruiser trim wiring diagram?

Common wire colors in Mercruiser trim systems include red for power (often +12V), blue for trim up, green for trim down, and black for ground. However, variations can exist depending on the specific model and year, so always consult your service manual.

Where can I find a reliable Mercruiser trim wiring diagram for my boat?

Reliable diagrams are typically found in the official Mercruiser service manual for your specific engine and drive model. You can also find them on enthusiast forums, reputable marine parts websites, or by contacting a Mercruiser dealer.

What is the role of the trim relay in a Mercruiser trim system?

The trim relay acts as a high-current switch. It's controlled by the low-current signal from the trim switch and energizes the trim pump motor, which is what actually moves the trim cylinders.

My Mercruiser trim is not working. What's the first thing I should check using the wiring diagram?

Start by checking for power at the trim switch and at the trim relay. Use your multimeter and consult the diagram to verify +12V is present at the appropriate terminals. Also, check for a good ground connection.

How do I troubleshoot a Mercruiser trim that only trims up but not down (or vice-versa)?

This often indicates an issue with the trim switch or the wiring to one of the trim solenoids. Using the diagram, trace the wiring for the non-working direction to ensure continuity and proper connection at the switch and solenoids.

What is the function of the trim sending unit in the wiring diagram?

The trim sending unit (or sender) provides a signal to your boat's trim gauge on the dashboard, indicating the current position of your sterndrive or outdrive. The wiring diagram will show how it's connected to the gauge and the trim system's power.

Can I use a generic wiring diagram for Mercruiser trim, or do I need a specific one?

It's highly recommended to use a specific wiring diagram for your exact Mercruiser model and year. Systems can vary significantly, and using a generic diagram can lead to misdiagnosis and further damage.

What does the 'trim limit switch' do, and how is it wired according to the diagram?

The trim limit switch is a safety feature that prevents over-trimming. It interrupts power to the trim motor when the drive reaches its upper or lower travel limit. The diagram will show its connection in series with the trim motor circuit.

What are the potential issues if my Mercruiser trim system is slow or hesitant?

Slow or hesitant trim can be caused by low hydraulic fluid, a failing trim pump motor, voltage drop due to corroded connections or undersized wiring, or a partially clogged trim system. The wiring diagram helps identify power and ground points for voltage drop testing.

How do I check the trim solenoids using the wiring

diagram?

Consult the diagram to identify the solenoid terminals. You can test for continuity across the coil terminals when the trim switch is activated. Also, check for voltage at the solenoid's control terminals to ensure it's receiving the signal from the switch.

Additional Resources

Here are 9 book titles related to Mercruiser trim wiring diagrams, with short descriptions:

1. Understanding Your Mercruiser Trim System: A Visual Guide

This book serves as an introductory text for boat owners and technicians looking to grasp the fundamentals of Mercruiser trim systems. It emphasizes clear, annotated diagrams of the wiring, explaining the function of each component. The goal is to demystify the electrical pathways responsible for trim operation, making troubleshooting more accessible.

2. Mercruiser Trim Wiring: Diagnosis and Repair Techniques

Designed for those encountering issues with their Mercruiser trim, this guide focuses on practical diagnostic and repair strategies. It delves into common failure points within the trim wiring harness and electrical components. Readers will learn systematic approaches to identifying problems and implementing effective solutions, supported by detailed wiring schematics.

3. The Complete Mercruiser Trim Electrical Handbook

This comprehensive handbook offers an in-depth exploration of Mercruiser trim wiring for various engine models and years. It includes extensive wiring diagrams, component identification, and step-by-step repair procedures. The book aims to be a go-to resource for both amateur mechanics and seasoned marine technicians needing detailed electrical information.

4. Wiring Secrets of Mercruiser Trim Systems

This title suggests a focus on less obvious but crucial aspects of Mercruiser trim wiring. It might uncover common pitfalls, best practices for modifications, or advanced troubleshooting tips that aren't immediately apparent from standard diagrams. The book aims to provide insights that can save time and prevent further damage during repairs.

5. Troubleshooting Mercruiser Trim with Wiring Diagrams

This book centers on the practical application of wiring diagrams for diagnosing and fixing Mercruiser trim problems. It walks readers through interpreting schematics, tracing circuits, and using diagnostic tools in conjunction with the diagrams. The emphasis is on empowering owners to confidently tackle trim system malfunctions.

6. Mercruiser Trim & Tilt: Electrical Schematics and Analysis

This resource provides a deep dive into the electrical schematics specifically for Mercruiser trim and tilt systems. It not only presents the diagrams but also offers analysis of how different circuits interact and function. The book is ideal for understanding the intricate electrical flow that governs the movement of the drive.

7. Advanced Mercruiser Trim Wiring Solutions

Catering to experienced individuals, this book explores more complex Mercruiser trim

wiring scenarios and solutions. It might cover older or less common systems, custom installations, or advanced troubleshooting techniques that go beyond basic repairs. The focus is on providing in-depth knowledge for challenging electrical issues.

8. Your Mercruiser Trim: A Wiring Diagram Companion

This book acts as a direct companion to understanding the wiring diagrams of a Mercruiser trim system. It breaks down the diagrams into manageable sections, explaining each symbol, wire color, and connection point. The goal is to demystify the visual representation of the trim system's electrical layout.

9. Mercruiser Trim Electrical Systems: From Basics to Mastery

This title implies a progressive learning curve, taking the reader from foundational knowledge of Mercruiser trim wiring to a high level of proficiency. It starts with basic concepts and gradually introduces more complex wiring scenarios and troubleshooting methods. The book aims to build confidence and competence in managing trim electrical systems.

[Mercruiser Trim Wiring Diagram](#)

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Understanding MerCruiser Trim Wiring Diagrams: A Comprehensive Guide to Troubleshooting and Repair

This ebook provides a detailed exploration of MerCruiser trim system wiring diagrams, covering their importance in diagnosing and resolving trim-related issues, along with practical guidance for boat owners and mechanics. It emphasizes the intricacies of the electrical systems involved, offering readers the knowledge to safely and effectively tackle troubleshooting and repairs.

Ebook Title: Mastering MerCruiser Trim Systems: A Wiring Diagram Deep Dive

Outline:

Introduction: The importance of understanding MerCruiser trim systems and wiring diagrams. The benefits of preventative maintenance.

Chapter 1: Deciphering MerCruiser Trim System Components: A detailed overview of the hydraulic trim system, its components (pump, rams, sender unit, switch assembly), and their functions within the overall system. We'll examine different MerCruiser models and their variations.

Chapter 2: Reading and Interpreting Wiring Diagrams: A step-by-step guide to understanding the

symbols, notations, and color-coding used in MerCruiser trim wiring diagrams. We will cover different diagram types and their interpretations.

Chapter 3: Common Trim System Problems and Troubleshooting: Identifying common MerCruiser trim problems (e.g., slow trim, no trim, trim pump failure, leaks). Using wiring diagrams to isolate faulty components.

Chapter 4: Testing and Diagnosing Electrical Components: Practical, step-by-step instructions on testing the trim pump, sender unit, switches, fuses, and wiring harnesses using multimeters and other diagnostic tools. Safety precautions will be emphasized.

Chapter 5: Repairing and Replacing Components: Guidance on replacing faulty components, including the trim pump, sender unit, switches, and fuses. We'll highlight the importance of using genuine MerCruiser parts.

Chapter 6: Preventative Maintenance: Best practices for maintaining the MerCruiser trim system to extend its lifespan and prevent future problems. Regular checks and lubrication techniques will be addressed.

Conclusion: Recap of key concepts and resources for further learning. Emphasis on safe boating practices.

Detailed Explanation of Outline Points:

Introduction: This section establishes the context and importance of understanding MerCruiser trim systems, emphasizing their role in safe and efficient boat operation and highlighting the financial and safety benefits of proactive maintenance and repair.

Chapter 1: Deciphering MerCruiser Trim System Components: This chapter will delve into the specifics of the MerCruiser trim system, providing a comprehensive overview of each component – pump, rams, sender unit, switches – explaining their individual roles and how they interact to control the boat's trim. It will also address variations across different MerCruiser engine models and years.

Chapter 2: Reading and Interpreting Wiring Diagrams: This crucial chapter will equip readers with the necessary skills to understand MerCruiser trim wiring diagrams. It will cover the standardized symbols, color codes, and other notations, translating complex diagrams into easily understandable visual representations of the electrical system.

Chapter 3: Common Trim System Problems and Troubleshooting: This section will address the most frequently encountered problems with MerCruiser trim systems, from slow trimming to complete failure. It will provide a systematic troubleshooting approach, guiding readers through the process of using the wiring diagram to pinpoint the source of the malfunction.

Chapter 4: Testing and Diagnosing Electrical Components: This chapter will focus on the practical aspects of testing individual components using common tools like multimeters. It will provide clear, step-by-step instructions, emphasizing safety and proper testing techniques to avoid damage to components or injury.

Chapter 5: Repairing and Replacing Components: This chapter provides instructions on how to repair or replace faulty components. It stresses the importance of using OEM (Original Equipment Manufacturer) parts to maintain system integrity and warranty compliance. Illustrated guides will accompany the instructions.

Chapter 6: Preventative Maintenance: This chapter will detail a regular maintenance schedule, including inspection, lubrication, and cleaning procedures to prevent common problems and extend

the life of the trim system.

Conclusion: This section summarizes the key takeaways from the ebook, reinforcing the importance of understanding MerCruiser trim systems and offering additional resources for continued learning and troubleshooting.

SEO Optimized Headings and Content (Example - this would continue for all chapters):

Understanding MerCruiser Trim System Wiring Diagrams

Introduction: Why Understanding Your Trim System is Crucial

A malfunctioning trim system can significantly impact your boating experience, leading to reduced performance, handling difficulties, and even safety hazards. Understanding your MerCruiser trim system's wiring diagram is essential for both preventative maintenance and effective troubleshooting. Regular inspection and understanding the electrical system can save you significant time and money in repairs. This ebook will equip you with the knowledge to diagnose and resolve common issues, maximizing your boating enjoyment and ensuring safe operation. Recent research highlights the increasing frequency of trim system failures due to corrosion and neglect, emphasizing the importance of preventative maintenance.

Chapter 1: Key Components of the MerCruiser Trim System

MerCruiser Trim Pump: The Heart of the System

The trim pump is the power source for the hydraulic system. Understanding its operation, common failure points (worn seals, motor burnout), and testing procedures is crucial. [Insert Image of MerCruiser Trim Pump]

Hydraulic Trim Rams: Actuating the Trim

The trim rams are responsible for physically tilting the engine. This section details their construction, potential leaks, and how to assess their condition. [Insert Image of Hydraulic Trim Rams]

...(Continue with other components and chapters following this structure, using relevant keywords throughout the text like "MerCruiser trim repair," "MerCruiser trim troubleshooting," "MerCruiser wiring diagram," "MerCruiser trim pump replacement," "hydraulic trim system," etc.)

FAQs:

1. What tools do I need to diagnose a MerCruiser trim system problem? (Answer would include multimeter, wiring diagrams, etc.)
2. How often should I perform preventative maintenance on my MerCruiser trim system? (Answer would include recommended frequency and procedures)
3. What are the common signs of a failing MerCruiser trim pump? (Answer would list symptoms like slow trim, noise, leaks)
4. Can I repair a MerCruiser trim pump myself? (Answer would discuss feasibility depending on skill level and access to tools/parts)
5. Where can I find a MerCruiser trim wiring diagram for my specific model? (Answer would point to resources like online manuals and dealer websites)
6. What is the role of the trim sender unit? (Answer would explain its function in providing feedback to the control system)
7. How do I interpret the color codes in a MerCruiser trim wiring diagram? (Answer would provide a general explanation of color-coding conventions)
8. What are the safety precautions I should take when working on my MerCruiser trim system? (Answer would include disconnecting battery, avoiding electrical shocks, etc.)
9. What is the cost of replacing a MerCruiser trim pump? (Answer would give a range and factors influencing cost)

Related Articles:

1. MerCruiser Trim Pump Troubleshooting and Repair: A detailed guide to identifying and fixing common trim pump issues.
2. Understanding MerCruiser Trim Sender Units: A deep dive into the function and diagnostics of the sender unit.
3. MerCruiser Trim Switch Replacement Guide: Step-by-step instructions for replacing faulty trim switches.
4. Interpreting MerCruiser Electrical Wiring Diagrams: A comprehensive tutorial on deciphering MerCruiser electrical schematics.
5. Preventative Maintenance for MerCruiser Stern Drives: A broader look at maintaining the entire stern drive system.
6. MerCruiser Trim System Fluid Leaks: Diagnosis and Repair: Focus on identifying and fixing leaks in the hydraulic system.
7. Common MerCruiser Engine Problems and Solutions: A broader overview of MerCruiser engine troubleshooting.

8. How to Test MerCruiser Wiring Harnesses: Techniques for testing the integrity of the wiring harness.
9. Basic Boat Electrical Systems for Beginners: An introductory guide to understanding boat electrical systems for novice boaters.

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instructs and influences readers to help them master the modern world. Whether it's practical DIY home-improvement tips, gadgets and digital technology, information on the newest cars or the latest breakthroughs in science -- PM is the ultimate guide to our high-tech lifestyle.

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frequent question, explains every major system, and helps you keep your boat and its components shipshape. More than 2,500 clear and detailed illustrations guide you step by step through every procedure. Casey's technical virtuosity, his user-friendly explanations, and Peter Compton's diesel engine expertise make even the more complicated repairs and improvements easy to understand. This must-have guide saves you time, money, and grief as you learn the fastest, easiest, most effective ways to: Evaluate the condition of your boat or one you're about to purchase Repair structural damage to your fiberglass sailboat Improve or repair your sailboat's electrical system Troubleshoot, maintain, and repair your boat's diesel engine Put a professional-looking finish on your boat's hull, deck, spars, wood, and trim Make and repair sails, sail covers, dodgers, awnings, sailbags, and bimini tops

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