Background

- When I got my boat I bought some big, inexpensive spinning outfits that didn’t last
- I’ve been downsizing ever since
- I’ve bought dozens of high quality but less than perfect reels online
- Along the way I’ve learned a lot about reel repair
- Tommy Thompson asked if I could share what I’ve learned
- So here I am
Outline

• Introduction
• Resources for Information
• Reel Design
• Disassembly/Reassembly
• Troubleshooting
• Lubrication/Maintenance
• Summary

Note: There will be several Asides along the way to address specific problems or reel variations
Introduction

- Fishing reels are mechanical devices that are used in unforgiving environments
- Parts break, bend and rust...
- Maintenance and Repair are necessary on occasion
- Tonight I’ll Show you how to do both
Resources

• The most important resource is YOU!
• Reel Schematics available online
  – www.shimano.com
  – www.pennreels.com
  – www.quantumfishing.com
• Reel Parts
  – The Tackle Box
  – Bass Pro Shops, Reel Parts/Repair (417) 873-5274
  – Shimano Customer Service (877)-577-0600
  – VXB Bearings www.vxb.com
Tools Required...
Screw Drivers (Slotted and Phillips) and Pliers
Understanding the functions of a reel allows you to isolate problems when they occur.

Spinning Reel Functions are:
- Drivetrain
- Bail/Bail Trip
- Anti-Reverse
- Line Wrap
- Drag
- Cosmetic

All reel parts support one or more of these functions.

Primary moving parts are contained in the Drivetrain and Line Wrap systems.
Drivetrain

- The drivetrain translates the rotation of the handle into the rotation of the rotor.
- The drivetrain usually consists of:
  - Two gears (main, pinion)
  - Two bearings to support each gear
  - Reel body that supports the bearings
  - Rotor
Configuration of Drivetrain and Line Wrap
Shakesphere Demo
## Relative Complexity

<table>
<thead>
<tr>
<th>Function</th>
<th>Number of Stradic Parts</th>
<th>Number of Sahara Parts</th>
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<tbody>
<tr>
<td>Line Wrap</td>
<td>23</td>
<td>5</td>
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<td>Drivetrain</td>
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<td>19</td>
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<tr>
<td>Bail Trip</td>
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<td>Bail</td>
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<td>8</td>
</tr>
<tr>
<td>Drag</td>
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<tr>
<td>Anti-Reverse</td>
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<tr>
<td>Cosmetic</td>
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With a Basic Understanding of Reel Design and Function

- Need to Isolate Problems
- Disassemble Reel to Access Defective Parts
- Identify and Replace Defective Parts
- Reassemble Reel

In any case you need to be able to take the reel apart and put it back together...Here’s how!
- I’ll use a Shimano Stradic 4000FH
- Typical Complex Line Wrap Reel
- Otherwise Similar to most Spinning Reels
- Will point out some differences with other models
Disassembly of the Reel

Remove Two Screws and Anti-Reverse Lever then
Remove Trim
To Remove the Rotor

Remove spool, pull off spacers, clicker, screw and nut. This exposes the anti-reverse
Aside
Some Models use a Different Scheme to Lock the Pinion Gear Nut
To Remove Anti-Reverse

Remove Bearing, Unscrew Screws,...
Exposes Many Parts
Aside

What to do if the Anti-Reverse Slips

Most often due to oil or grease getting on anti-reverse bearings
To Disassemble Body

Remove Four Screws that hold Reel Body Together,

Separate the two sides and remove the main gear
Rotating Idler Gear Moves Line
Wrap Gear and Main Shaft
To Remove the Idler Gear (Orange)

Remove Pin and Idler Gear

Note: Earlier Models don’t have an Idler Gear
To Remove the Line Wrap System

Start by removing the two screws and backplate exposing the ends of the alignment pins. Then slide out alignment pins.
Remove the pinion gear and the main shaft.
To remove worm shaft

Slide worm shaft towards back pushing out back bushing, then remove front bushing and gear.
To Remove Last Bearing
Push
While Disassembling

- Identify parts that are defective
  - Are parts broken
  - Are parts bent
  - Are parts rusty
  - Are parts grungy
  - Are bearings noisy

- Clean, Repair, Straighten, Replace as necessary
An Aside About Bearings

Bearings Come in a Variety of Sizes
Measurements (mm) Outer Diameter, Inner Diameter and Thickness.
This is a Shielded 14X7X5 Stainless Steel Ball Bearing
# Bearing Dimensions for Shimano Part Numbers

<table>
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<th>Dimensions (mm)</th>
<th>Shimano Part Numbers</th>
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<tr>
<td>5X8X2</td>
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To Reassemble

- Start at the deepest part of the reel and work out
- Some experimentation may be necessary to establish the correct order
- Make sure parts are clean
- Don’t force anything
- Apply lubricants towards the end of assembly
- Hint:
  - Install Outer Main Gear and Bottom Pinion Gear Bearings First
  - If equipped with worm shaft install it with supporting bushings and gear second
To Reassemble: Install Outer and Bottom Bearings and Worm Shaft
Worm Shaft Bushings should be flush with body of reel
Install Main Shaft, Alignment Pins, Rear Plate and Install Retaining Screws
Install Pinion Gear and Main Ball Bearing
Install Idler Gear and Pin
Lubricate and Install Main Gear

- Lubricate Main Gear and Pinion Gear with Reel Grease
- Lubricate Main Shaft, Bearings and Line Wrap with Oil
- Find balance between too much and too little lubricant
Place Trim Nuts in Position, Assemble Body and Secure
Install Anti-Reverse noting Notch for Anti-Reverse Lever
Install Rotor and Related Parts
Install trim and related parts to back of reel
To Service the Bail Bearing

Remove bail screw and remove parts being careful to note order and orientation
To Remove bearing use a punch and push.
Replace parts as necessary and reassemble
To Service Drag Remove Clip and Pull Out Parts, Apply Drag Grease and Reassemble
Common Problems

• Reels smoothly for a time and gets hard briefly and then repeats
• First try to narrow down when the binding occurs
  – Does it occur with the handle always at the same angle
  – Does it occur when the Rotor is always at the same position
  – Does it occur when the Line Wrap is always at the same position
• Handle-Related to main gear
• Rotor-Related to pinion gear or rotor
• Line Wrap-probably a bent main shaft
Common Problems

- Noisy or rough operation
- Lubricating reasonable first step
- Otherwise most commonly due to rusty bearings
  - Disassemble, identify and replace rusty bearings
- Sometimes due to debris in body
  - Disassemble and clean
- More Noisy than rough could be bail ball bearing
  - Disassemble and replace
More Common Problems

- Bail doesn’t open or close properly
  - First try to lubricate at moving joints
  - Otherwise Disassemble and try to isolate problem
Common Problem

Plastic Handle of Stradic FH Series Breaks...
Correct by Removing Broken Plastic and Adding Washers
Simple Line Wrap Reel
Summary

- When it comes to Maintenance and Repair, you are the most important component.
- Get information about your reels.
- Identify problems, disassemble, repair/replace and reassemble.
- Lubricate as necessary.
- Most Important.