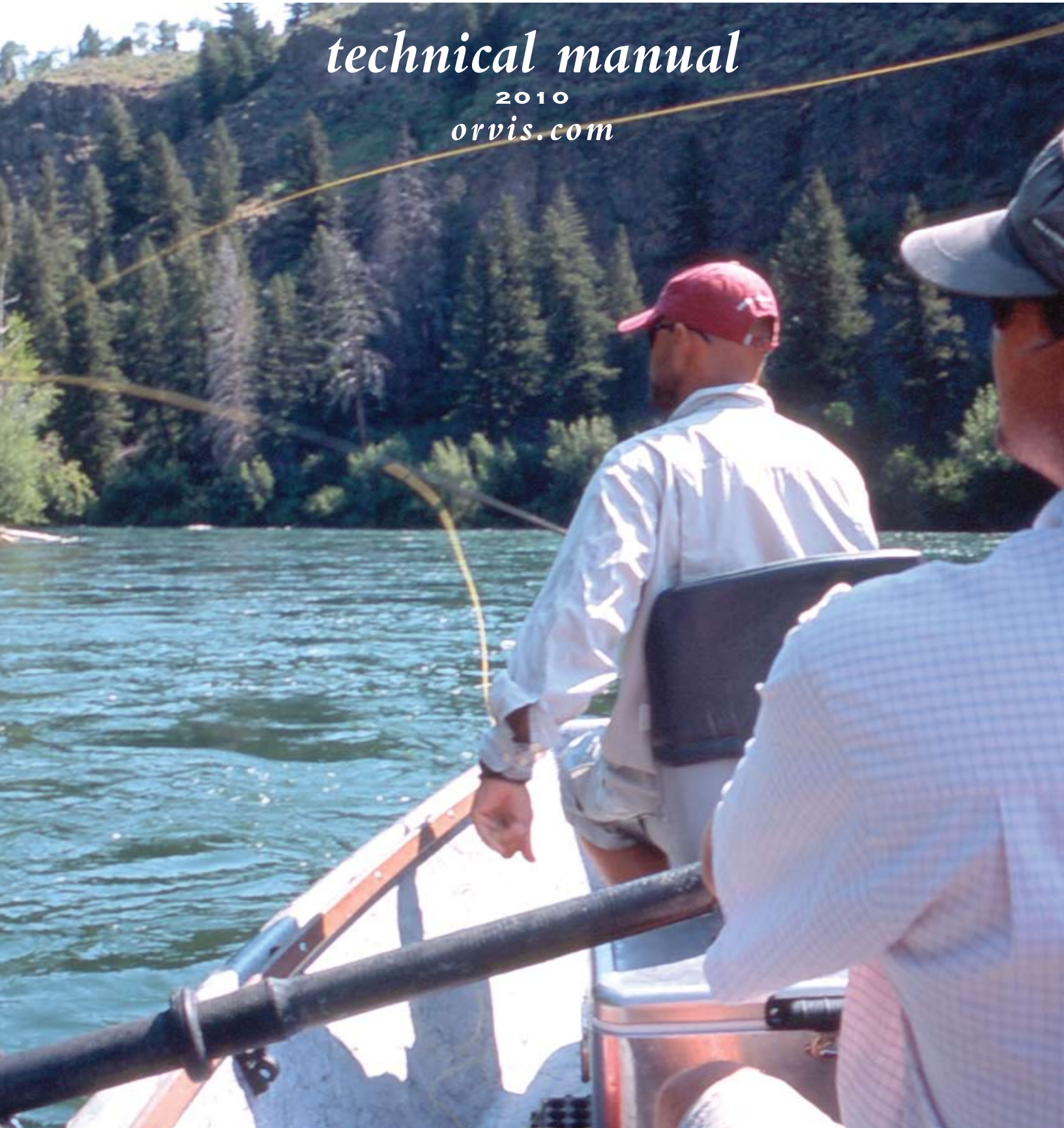




technical manual

2010

orvis.com



ZG Helios Switch Rods

Tech Information

Orvis Helios Switch Rods are the world's lightest.

Switch rods are a new type of fly rod that is lighter and shorter than traditional two-handed rods, and thus can be used in places where delicacy and accuracy are paramount, while still employing the advantages of two-handed rods. They can be used with a traditional overhead casting style, where their length allows longer casts and much greater line control on the water, yet can also be used with Spey casting styles where lack of back cast room, wind, or just a tired angler makes two-handed casting more desirable.

For instance, an Orvis 8-weight Spey rod is 13½ feet long and weighs 8¾ ounces. An 11-foot 8-weight Helios switch rod weighs 5½ ounces. Over the course of 200 casts that is close to 50 pounds less weight you have to swing through the air.

Switch rods are excellent for nymph fishing with or without an indicator, long-line dry-fly fishing, stillwater fishing, and salmon and steelhead fishing during low water conditions. They are very useful in the surf to get long casts over the last wave without false casts. In fact, so many people asked about using them in the surf that Orvis has added two new models, a 9-weight and a 10-weight, that will be unveiled in July of 2010.

The main drawback to conventional switch rods is they are heavy, and when constantly mending line or high-stick nymphing the caster's arm can get very tired holding a rod that weighs almost 6 ounces high above the water all day long. With Helios technology, our exclusive aerospace-derived graphite resin systems allow us to build switch rods lighter than any other. The current lineup of Orvis Switch rods includes 5, 6, 7, and 8-weight models, all 11 feet long. 9 and 10 weight models will be available in July 2010.



Switch rod weight comparison, all rods 11-foot 7-weight		
Brand	Actual Weight	Levered Weight*
Orvis	4.75 oz.	169
Brand L	5.50 oz.	204
Brand S	5.38 oz.	218
Brand T	7.08 oz.	242

* Levered weight in grams is measured as the load on the butt section when the rod is balanced at the point on the grip where the casting hand would be placed (all rods are measured at the exact same point) and gives a comparison of how light the rod feels during casting.



ZG Helios Switch Rods

Tech Information cont.

Helios Switch load range in grains							
Item #	Rod Model	Rod weight	Load Range	Sweet Spot	New Orvis Switch Line*	Beulah Line	Rio Line
1C16-5157	115-4	4 ⁵ / ₈ oz	240-325	295	5 - 295 gr	Beulah Elixr 5/6 - 295 gr.	Rio AFS 4/5 - 300 gr.
1C17-5157	116-4	4 ³ / ₄ oz	280-375	335	6 - 335 gr	Beulah Elixr 6/7 - 335 gr.	Beulah Elixr 5/6 - 340 gr.
0H46-5157	117-4	4 ⁷ / ₈ oz	320-425	380	7 - 380 gr	Beulah Elixr 7/8 - 380 gr.	Beulah Elixr 6/7 - 400 gr.
1C19-5157	118-4	5 ¹ / ₈ oz	360-485	420	8 - 420 gr	Beulah Elixr 8/9 - 420 gr.	Beulah Elixr 7/8 - 460 gr.

* Note: In April 2010 we will have the Orvis Wonderline Switch lines available. This will be single line size designations (in other words, a 7-weight goes on the 7-weight rod and no confusion as to whether the correct line is a 6/7 or a 7/8.) These lines will load Orvis Switch rods at the perfect sweet spot, and are the best choice for both overhead casting and switch casting.

GUIDES AND TESTERS ON THE NEW HELIOS SWITCH RODS

I think anyone will be a better caster with this rod and a little time on the water.

-Mike Schultz, Michigan steelhead guide and tester

I have cast the Sage Z-Axis rods and I think that the 11' 8wt Helios is a better rod. Not only is it lighter, better action, but the top and bottom handles are much better than the Sage switch rods that I cast. This rod is going to be incredible for those who want to use switch rods for trout. They can have the best of both worlds and have an awesome high stick or indicator rod, or swing flies with two hands.

-Doug Duncan, tournament Spey caster (in 2007 and 2008 he placed second at the International Spey Competition in San Francisco) and manager of the Orvis Retail Store in Rosedale (Sacramento), California

In all my 27 years of fly fishing, no other fly rod has offered the versatility and performance of the Orvis Helios Switch Rods. In a league of their own, the Helios Switch Rods emerge as a true one- or two-handed fly rod. Its superior lightweight design allows me to cast single-handed to rising rainbows during a stonefly hatch. After the hatch is over and the fish go back down, I use Spey casting to launch streamers to the other side of the river. When I use them to teach casting lessons, my students prove... not all rods are created equal. They learn faster and perform better.

Thanks, Orvis for making my job easier.

-Jeff Putnam, one of the finest Spey casting teachers in North America

I think it is exceptional, my clients are going to love the rod because it won't intimidate them. When I put a longer and heavier rod in their hands many clients don't like the idea of learning to Spey cast. This Helios can be fished one handed and still provide the advantages of an 11 foot length.

-Chuck Hawkins, Hawkins Outfitters, Michigan

The rod just loves to mend line, never have I mended with such a sweet stick.

-Tommy Lynch, steelhead and trout guide, Michigan

WOW! Those rods are unbelievable.

-Dave Hise, Caster's Fly Shop, North Carolina

What a great Nymphing rod! And the really good thing was, at the end of the day, my tendonitis in my right arm was not flaring up.....the Helios is so much lighter than the Z-axis switch rod!

-Steve Gossage, Angler's Covey, Colorado

ZG Helios

Tech Information

Award Winning IN SHORT

- Helios rods are the lightest fly rods in the world today.
- A new unidirectional graphite scrim with thermoplastic resins improves upon the technology used in all other high-end fly rods.
- A new Power Taper gives the rods a steeper profile, resulting in a lively, quick feel without sacrificing power.
- Ferrule engagement is very secure because of the Power Taper. Sections are less likely to loosen during extensive casting.
- The rods are beautiful to look at, with elegant but lightweight new cosmetics, and polished graphite rod tubes.
- Available in everything from a delicate 3-weight to a big-game 14-weight



Rod Weight comparisons

Rod Model	Helios Weight	Sage Z Axis	Winston Boron IIX	Scott	St Croix Legend Elite	Temple Fork Lefty Kreh
865-4 Mid	2.13	3.13	2.63	S4 2.80	2.80	3.70
905-4 Tip	2.38	3.38	2.75	S4 2.90	2.90	3.80
908-4 Mid	3.00	4.00	3.50	X2s 4.1	4.10	5.20

Taper

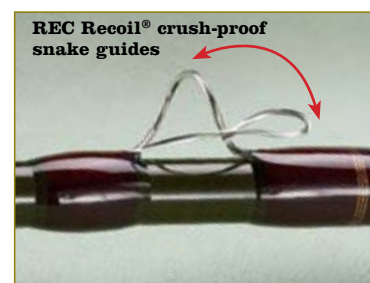
The new steeper Power Taper of the Helios rods moves weight away from the tip of the rod, giving it a quicker taper, but without the feeling of stiffness you get with other “fast” rods.

Is this new taper better? It’s trickier to produce and thus more expensive. These rods translate the energy of your hand to the rod and line in a way that is noticeably more direct, balanced, and smooth. Anglers who have preferred rods built by other manufacturers tell us we’ve finally made a rod they love, and many diehard fans of other rods have told us this is the best rod Orvis has ever made—and many have told us it’s the best-casting rod on the market.

But Will It Break?

No matter how good the Helios casts, we would never have brought this rod to the market if it broke more readily than other Orvis rods. The new thermoplastic scrim lets us maintain the same strength as our other rods because it provides just as much strength with less material. Less material means a slimmer, lighter rod.

Another advantage of the new taper is that you get more secure ferrule engagement. Helios rod sections are less likely to twist out of alignment after a day of hard casting in the wind



ZG Helios

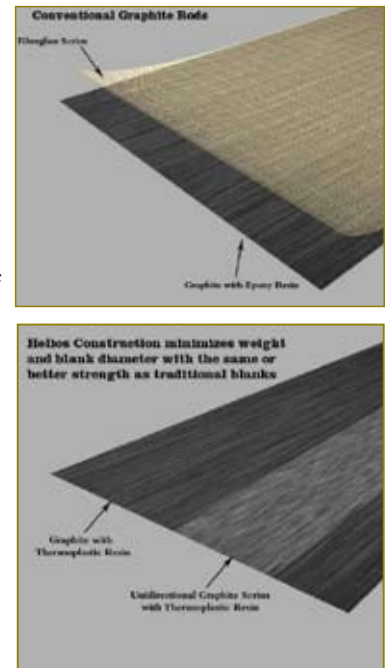
Tech Information cont.

Construction

Helios rods are lighter and feel different from any other rod, because their materials and construction methods are different. For the first time, the scrim used to augment hoop strength in a fly rod is made from a unidirectional carbon fiber and held together with a thermoplastic resin. Why is this different and why should it matter to the fly fisher?

Historically, even “100% graphite” rods were almost 50% fiberglass. Rod manufacturers were using 100% graphite for the power fibers of the rod, but an equal amount of cross-weave fiberglass scrim was rolled into the blank. (Scrim is necessary for hoop strength, or keeping the hollow rod tube from collapsing under stress as the rod bends.) Was ignoring this fiberglass misleading? No more than ignoring the epoxy and paint on the outside of a rod, or the resin that held the graphite together. A 100% graphite rod would merely be like a hank of loose hair in your hand.

Orvis's first modern breakthrough in graphite rods was the T-3 rod. Heavier, more brittle epoxy resins used to hold the graphite fibers were replaced with lighter, more durable thermoplastic resins, which encased the fibers instead of just sticking to them like epoxy. Next were the Zero Gravity rods, where the cross-weave fiberglass/epoxy scrim was replaced by a unidirectional graphite/epoxy scrim. This made rods lighter and more durable. Finally, the Helios, which replaces the graphite/epoxy scrim with unidirectional graphite/thermoplastic scrim.



GUIDES AND TESTERS ON THE HELIOS RODS

I found the Tip-Flex 9-foot 6-weight remarkably light in the hand, responsive, and powerful. There was a smooth, sensuous pleasure in the cast. The Tip-Flex 8-weight was assertive and powerfully progressive, a casting joy without fatigue. This rod could easily replace my 10-weight. And I bet no angler can cast the Tip-Flex 4-weight without a smile.

—Darryl Martin, *Fly Rod & Reel Magazine*

This beauty is quick, powerful, sensitive, durable – the complete fly rod in sizes 3–10. Perhaps the only question is whether it will deliver sticker shock at \$755.

—Charlie Meyers, *The Denver Post*

But when I tried the Helios side-by-side with a 9-foot Sage TCR, using the same reel and line, I thought the Orvis was noticeably better. The light weight of the Helios trout rods is nice but not all that important. I'm 6-foot-1 and 215 pounds, so a 5-weight rod that's an ounce lighter isn't a big consideration. But an 8- or 10-weight that's 4 ounces lighter is appealing for saltwater, salmon or bass fishing, where you hold it at head level as you make hundreds of casts a day.

—Eric Sharpe, *Detroit Free Press*

Wow! Fished the Helios for everything from Bahamas bones in windy weather to Florida snook deep in heavy current. Super light, and delivers both in the delicacy and the power departments. Orvis' best stick yet.

—Mike Conner, Editor, *Shallow Water Angler Magazine*

I have tried and tested dozens of Orvis and other manufacturer's rods over the years and have always been truthful in my comments good or bad. But the Helios rod is a new breed of cat. Simply the most awesome 4-wt rod I've had in my hand—from any rod company. It casts great, tracks accurately and it's the lightest 4 wt. rod I've ever fished with.

—John Gulley, bass and trout guide, Mountain Home, Arkansas

The Helios rod is the lightest most responsive rod I have ever fished. Whether I am casting streamers, nymphs, or dry flies, the Helios delivers them accurately and effortlessly. I can (and have) literally fished with the Helios all day for many days in a row and never get tired from casting it. This rod is my new favorite fly rod!

—Jim Hickey, Wyoming/Idaho guide and owner of World Cast Anglers

This rod is significantly different—and better. It has an extremely light feel, takes surprisingly little effort to cast, is nicely progressive, and is a true 5 weight.

—Al Kyte, master fly caster and member of the Federation of Fly Fishers Casting Board of Governors

The rod is so powerful yet very light it casts at distance as good or better than any rod I've ever used...

—Conway Bowman, mako shark expert and extreme fly fisher.

Hydros Tech Information

New Orvis Hydros—World's Second Lightest Fly Rod.

Orvis Helios rods have taken the fly-fishing world by storm. It is considered the finest fly rod in the world by many authorities, and is for certain the lightest fly rod series made. High-tech aerospace technology, especially carbon fiber scrim and thermoplastic resins, have give Orvis the edge in fly rod design.

But Helios rods are \$750 to \$795, beyond the reach of some fly fishers. In 2009, Orvis introduced the Hydros line of rods, made with the same patent-pending technology and on the same tapers as Helios rods but at \$495 for trout rods and \$525 for saltwater models. All rods are 4-piece and come with a Cordura-covered plastic case for travel. Twenty-one models are available, from a 3-weight to a 14-weight.



Field & Stream Magazine awarded the Hydros rods its 2010 “Best of the Best” award, saying “The Hydros is a sensitive, responsive rod that puts a fly where you want it and is a pleasure to use all day. We cast it head-to-head with its Helios counterpart, and the testers agreed that performance characteristics were very similar.”

IN SHORT

The differences between the two rods are:

- Hydros rods have a slightly heavier (but very attractive) brushed aluminum reel seat
- Hydros blanks are a deep blue color.
- Hydros rods have hard chrome snake guides instead of the lightweight Recoil guides used on Helios rods. The guides add a slight amount of weight and they also make the rods just a fraction crisper as they are not as flexible as the Recoil guides.
- Hydros rods come in a canvas-covered plastic case instead of the very expensive carbon fiber case.
- Male ferrules are not painted. This is merely cosmetic. It saves cost and labor, but does not affect the performance of the ferrules.
- The blank top coat finish is a slightly different composition, resulting in a difference in thickness of 2 microns and just a slight increase in weight.

Hydros rods are still as light as or lighter than the premium rods sold by other manufacturers at \$100 to \$200 less

Comparison of 9-foot 8-weight 4-piece rods

Brand	Model	Weight (oz)	Price
Sage	Z-Axis	4.0	\$700
Thomas & Thomas	Horizon II	4.8	\$695
Winston	B2MX	3.8	\$685
Loomis	Crosscurrent GLX	4.7	\$680
Scott	S3S	4.2	\$675
Sage	X12	4.1	\$660
Loomis	Native Run GLX	4.6	\$650
St Croix	Legend Elite	3.8	\$560
Orvis	Hydros	3.8	\$525

Comparison of materials used in Orvis Fly Rods

Tech Information

Customers often ask about the fiber composition of Orvis rods. Except for our thermoplastic resins systems used on high-end rods, the materials used in the rods are fairly standard throughout the rod-making industry. The real key to a rod's performance is in how the materials are used to create a unique taper, and the way the materials are put together using heat and pressure.

The exact processes used to combine these materials are trade secrets and are not easily reverse-engineered by competitors, which is why Orvis has maintained the edge in using thermoplastic resins to create lighter, stronger rods with pleasing and efficient tapers.

Rod Series	Graphite Fiber	Scrim Fiber	Scrim Resin	Graphite Resin
Streamline	Intermediediate modulus	Fiberglass	Epoxy	Epoxy
Frequent Flyer	Intermediediate modulus	Fiberglass	Epoxy	Epoxy
Clearwater	Intermediediate modulus	Graphite	Epoxy	Epoxy
Superfine	Intermediediate and standard modulus	Fiberglass	Epoxy	Epoxy
TLS Power Matrix	Intermediediate and high modulus	Fiberglass	Epoxy	Thermoplastic
Hydros	Intermediediate and high modulus	Unidirectional Graphite	Thermoplastic	Thermoplastic
Helios	Intermediediate and high modulus	Unidirectional Graphite	Thermoplastic	Thermoplastic

GLOSSARY

Epoxy resin. A very strong adhesive used to keep graphite and fiberglass fibers together as a solid unit after being cured under heat and pressure.

Fiberglass. A silica fiber with a lower modulus of elasticity than graphite. It is heavier than graphite fiber, but more elastic so it makes a good scrim.

Graphite (also known as carbon fiber). A fine filament made by heating a polymer fiber under controlled heat and pressure.

Modulus. Technically the “modulus of elasticity” or stiffness (resistance to bending) of a fiber. Standard modulus bends easier than intermediate modulus which beds easier than high modulus. Most rod makers use a combination of fibers with different modulus of elasticity, often one for the butt and another for the tip, to get the correct stiffness profile for a rod.

Scrim. Material added to the hollow tube construction of a fly rod to increase hoop (crush) strength.

Thermoplastic resin. A very strong adhesive added to epoxy resins to increase strength and flexibility. Allows a rod maker to use less graphite and scrim because of its strength, resulting in a thinner, lighter rod with equal strength. Orvis uses a proprietary patent-pending thermoplastic system on Helios and Hydros rods.

Unidirectional. In rod making, unidirectional fibers run parallel to the long axis of a rod blank.

Mirage Reels

Tech Information

Orvis Mirage reel offers massive fish-stopping power in a maintenance-free reel.

The new Orvis Mirage reel offers a maintenance-free sealed drag that offers up to 15 pounds of dead pull stopping power (typical fighting drag for tarpon is 5 pounds), a handsome and lightweight design machined from solid aluminum bar stock, and true large-arbor performance—at a price that is hundreds of dollars less than reels with the same performance qualities. The reel offers the perfect balance of light weight, high drag range that adjusts from light to very heavy, and drag smoothness. It is the perfect complement to super lightweight rods like the Helios and Hydros.

The reel series is designed for bigger game—steelhead, salmon, tarpon, marlin, sailfish, permit, and bonefish—but is also offered in smaller sizes for trout. Available in size II (3-5 line sizes), III (5-7 line sizes), IV (7-9 weight lines), a size V (9-11 weight lines), a size VI (11-13 weight lines) and a size VII (12-15- weight lines). Prices range from \$425 to \$495.

IN SHORT

The size VII has two different spool configurations:

- a wide spool that retrieves nearly a foot of line per handle revolution yet holds a 12-weight line and 325 yards of 30 pound Dacron backing—the ultimate tarpon reel.
- A deeper spool holds a 14-weight line plus 500 yards of 50-pound gel-spun backing—perfect for tuna, sailfish, marlin, and mako sharks.

The sealed drag was two years in development. Unlike other stacked drag designs which “key” carbon or Rulon discs to the spool or frame, the Mirage design uses floating carbon discs. The advantage to this design is that there is no potential for the keyed edges of the carbon plates to warp or round off at the edges so the drag system is more stable and secure. This is the same technology used on fighter jet brakes.

- Mirage VI and VII have 8 carbon discs and 16 interrelating carbon and stainless surfaces. They will pull up to 15# of drag.
- Mirage IV and V have 8 carbon discs and 16 interrelating carbon and stainless surfaces. They will pull up to 8# of drag.
- Mirage II and III have 4 carbon discs and 8 interrelating carbon and stainless surfaces. They will pull up to 5# of drag.

Mirage reels are lighter than many competitive models with the same or lower stopping power and cost as much as \$400 less. They also boast a quick-release spool, quick change from right- to left-hand retrieve, low-profile drag knob with secure knurling and positive detents for accurate drag adjustments, a unique handle that prevents line from catching, and a heavily ventilated spool for light weight and heat dissipation.



Mirage Reels

Tech Information cont.

Mirage vs the competition							
Reel	Diameter (in)	Weight (oz)	Capacity	Drag Type	More than 2 drag surfaces	Drag Range	Price
Orvis Mirage VI	4.50	10.0	WF 12F 325 yards 30# dacron	Sealed carbon to stainless	Y	High	\$475
Sage 6012	4.70	9.6	WF 12F 300 yards 30# dacron	Sealed carbon to stainless	Y	Medium	\$775
Tibor Gulfstream	4.38	12.0	WF 12F 300 yards 30# dacron	Cork/ Aluminum not sealed	N	High	\$840
Hatch 9 Plus	4.25	11.0	WF 12F 350 yards 30# dacron	Sealed Rulon/ Stainless	Y	Medium	\$725
Abel Super 12	4.45	10.7	WF 12F 325 yards 30# dacron	Cork/ Aluminum not sealed	N	Medium	\$880
Van Staal 11/12	4.20	9.6	WF 12F 350 yards 30# dacron	Sealed Rulon/ Stainless	Y	Medium	\$779
Charlton Marko 900B	5.0	15.2	WF 12F 350 yards 30# dacron	Sealed Carbon/ Aluminum	Y	High	\$1,190
Nautilus 12T	4.5	12.4	WF 12F 350 yards 30# dacron	Cork/ Aluminum not sealed	N	Medium	\$575

GUIDES AND TESTERS ON THE MIRAGE

Three days...twenty five Mako sharks...I'm tired. But my Mirage is still going strong.

—Conway Bowman, shark-fishing guide and extreme fly fisher

Many of my tarpon clients helped put the prototype through its paces, we fished with straight 60lb .test and buckled the drag down far past what would be considered "normal drag pressure". Fish after fish the reel put-up with the abuse, we either stopped the fish or broke them off, but the reel was never the weak-link in the system, it never skipped a beat!

—David Mangum, renowned tarpon guide

I've tested the drag on tuna and sailfish and many big bull dorado. It's brutally strong, smooth, sealed, and faultless.

—Capt. Michael Augat, pursuer of over 75 species of sport fish

Hooked lots of tarpon in the 150-pound range. One of the smoothest drags I've ever used.

—Capt. Steve Horowitz , flats guide, Miami, Florida

After submitting it to over 80 hours of beach fishing I'm totally impressed and not much rocks my boat. I cleaned it for the first time today. It took me about 2 minutes to take the spool off, wash the sand off it, and wipe the body with clean cloth and reassemble it. It's so simple even a fishing guide can do it. There is absolutely no corrosion on the reel and it looks like it just came out of the box.

—Capt. Ed Hurst, Sarasota, Florida

Tailwaters Waterproof Wading Jacket

Tech Information

The Tailwaters Rain Jacket is an old favorite design brought back by popular demand. Its traditional bellows-pocket design has been updated with lighter, stronger fabric.

IN SHORT

- Large bellows pockets for convenient fly box storage.
- Pockets have easy-access magnetic closures on the storm flap for quick access to pockets.
- Bellows pockets have interior mesh divider for keeping fly boxes and gear organized.
- Zinger holder to attach pin-ons prevents holes in the jacket, magnetic tool anchor keeps tools from getting in the way.
- Dolphin Skin Dry Cuffs seal out water in heavy downpours and when releasing fish.
- Hood rolls and stores completely out of the way when not in use.
- Inside zippered pockets on both sides for additional gear.
- Fleece-lined handwarmer pockets.



Differences between this jacket and the Pro Guide Stretch

- Pro Guide Stretch has flat pockets that maintain a slim fit and reduce bulk.
- Pro Guide Stretch has all waterproof zippers, on pockets and front flap.
- Pro Guide Stretch has stretch panels on the shoulder for ease of movement.
- Pro Guide Stretch has snag-free cuff in addition to the Dolphin Skin Dry Cuff to prevent line tangles.
- Pro Guide Stretch has large pocket on back.
- Pro Guide Stretch does not have roll-and-store hood.
- Pro Guide Stretch does not have Zinger attachment.



The magnetic pocket closure on the Tailwaters Rain Jacket allows one-handed instant access to the fly box pockets, but then closes instantly.



Zinger holder eliminates holes in the jacket when using a Zinger, and magnetic catch keeps snips held tightly to the jacket when bending over.

Tailwaters Waterproof Wading Jacket

Tech Information cont.

Comparing Orvis Wading Jackets and Simms G4 Pro Jacket						
Jacket	Fabric	Wt in Size M	Packs down to (in cubic in.)	Best Uses	Features	Prices
9T6G Pro Guide Stretch	3 Layer with 3 layer stretch panels on shoulder and upper arm	1lb 12oz	352in	Heaviest rainfall, all day deluges	<ul style="list-style-type: none"> • Stretch panels on shoulders • All zippers waterproof • Large flat pockets in front • Large back pocket • Snag-free waterproof Dry Cuff • Waterproof, fleece-lined pockets 	\$329
2A1A Tailwaters	3 Layer	1lb 8oz	288	Heaviest rainfall, all day deluges, heavy brush	<ul style="list-style-type: none"> • Large bellows pockets in front • Zinger attachment with magnetic tool anchor • Waterproof Dolphin Skin Dry Cuff • Fleece-lined handwarmer pockets • Conventional front zipper with storm flap • Roll-and-store hood 	\$229
2A17 Sonic Seam	2.5 Layer*	15.6oz	120	Long hikes, occasional heavy showers, all day light rain, saltwater flats, boat fishing	<ul style="list-style-type: none"> • Sonic welded seams are very strong, clean, and light • All waterproof zippers • Roll-and-store hood • Fleece-lined neck • Waterproof, fleece-lined hand-warmer pockets • Elastic cuff (not waterproof) 	\$149
799E Clearwater Packable	2.5 Layer*	14.5oz	168	Occasional heavy showers, all day light rain	<ul style="list-style-type: none"> • Front bellows pockets • Roll-and-store hood • Conventional front zipper with storm flap • Waterproof Dolphin Skin Dry Cuff 	\$119
Simms G4	3 Layer	1lb 10oz	384	Heaviest rainfall, all day deluges, heavy brush	<ul style="list-style-type: none"> • Heavier nylon reinforcing in shoulders • Large bellows chest pockets with additional pockets with waterproof zippers • Pit zips • Hideaway retractor • Fleece-line handwarmer pockets (not waterproof) • Elastic cuffs (not waterproof) • Large back pocket 	\$479

* While technically 2-layer, when a pattern is printed on the membrane it is called a 2.5 layer

Pack and Travel Waders with SonicSeam Technology Tech Information

Pack and Travel waders utilize an entirely new technology in wader construction—sonically welded, waterproof seams—a technology already proven in the extreme outerwear industry. This patented Orvis design incorporates seams that are sonically welded and waterproof even without the final taping, which is added for extra insurance. These seams are 25% stronger than stitched seams and do not pierce the fabric as stitched seams do

IN SHORT THIS CONSTRUCTION GIVES THE WADERS:

- Stronger seams
- No stitch holes in the fabric
- Slimmer profile
- Lighter weight
- Better flexibility

These waders were tested by guides for over a year before they were made available to the public. Given the new seam technology, we wanted to nail it before we put them on the market.

Other features of the waders include:

- 3-layer construction throughout with durable, abrasion-resistant, tightly woven polyester. No stiff extra panels and more breathable in the lower leg than waders with 4-layer or 5-layer lower legs.
- Super lightweight suspenders—all that is needed to hold these up because they are so light.
- No bulky pockets to get in the way—just a small inside pouch with zippered compartment
- The 3-layer construction and welded seams allows a slim, comfortable fit—the slimmest of any wader in our line.
- 2.5 mm neoprene feet in right- and left-foot design.



Sonic weld vs sewn seam for waders. Leg seam from SonicSeam waders (right) and a standard wader with a sewn seam. The Sonic Weld is cleaner and lighter and gives a wader less bulk and more flexibility



Wader comparison chart

Wader	Weight in size M	Pack down to (cubic in)	Seam Technology	Price
Simms Headwater	2lbs 12oz	480	Stitched and taped	\$299.95
Simms Freestone	2lbs 9oz	672	Stitched and taped	\$199.95
Orvis Pack and Travel	2lbs 2oz	324	Waterproof sonic weld and taped	\$229

Orvis Riverguard Wading Shoes Tech Information

With TU's recent call for the voluntary end of felt sole sales and legislation by New Zealand and Alaska, Orvis has spent a lot of field test time and product development efforts toward developing wading shoe and wader soles that are easier to clean and as safe as felt soles.

We have developed a rubber compound and tread pattern in cooperation with Vibram called Eco-TraX, which offers superior traction to any other sole we've tested on gravel, mud, clay, ice, and snow. Our tests also proved to us that no existing rubber compound was equal to felt for safe wading on slippery rocks. Thus, in tandem with our rubber sole development, we engineered a design of tungsten carbide studs called Posi-Grip Studs, which are an Orvis exclusive and far superior to any we've tested. What we also found in our testing and development was that stud placement is critical, and the unique stud placement on every pair of rubber soled wading shoes we sell is designed to place the angler's center of gravity above the studs for maximum safety and support.

We are absolutely convinced that our Eco-TraX sole and Posi-Grip stud combination gives the boot superior performance to felt on mud, sand, clay, wet grass, ice, and snow; and performance that is equal to or better than felt on slippery rocks.

Note that rubber soles do not release an angler from the responsibility to clean, inspect, and dry all wading gear between watersheds. Rubber is much easier to clean and dries quicker than felt, but it is not a panacea.



Wading Boot	River Guard Navigator	River Guard Side-Zip Brogues	River Guard Ultralight
Weight in size 9	3 lb. 4 oz.	4 lb. 6 oz.	3 lb. 8 oz.
Sole construction	Glued and stitched	Goodyear welt	Cemented
Upper construction	Cordura nylon	Ballistic nylon and PU	Synthetic microfiber
Lacing system	D-rings	Delrin with locking speed laces	Twisted D-ring with roller eyelet and locking speed laces
Sizing	Standard—order shoe size, half sizes go to next size up (9 ½ shoe size order size 10)	Standard—order shoe size, half sizes go to next size up (9 ½ shoe size order size 10)	Wide—half sizes order half size down (9 ½ shoe size should order size 9)
Price	\$119	\$179	\$159
Most important features	Most economical, more flexible sole and upper. Best for traveling light.	Side zips make getting foot in and out of boots easier, stiffest sole for added support, most	Our lightest full-support boot with hiking boot looks. Microfiber uppers are extremely



On the right, a Simms Hardbite stud after 4 days and less than 10 miles of walking. On the left, Orvis Posi-Grip studs after 14 days and over 100 miles of walking in New Zealand.



The unique stud placement on every pair of rubber soled wading shoes we sell is designed to place the angler's center of gravity above the studs for maximum safety and support.



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Orvis donates 5% of pre-tax profits annually to organizations that protect fish and wildlife habitat.
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