

# Big in Japan

Shimano introduces revamped Dura-Ace 7900 group

by Matt Pacocha



Now it gets interesting — the component race, that is.

All three major component manufacturers have new flagship component groups for 2009, though SRAM's Red is now a year old. That means there's no better time to be in the market for a high-end component group.

Among the most ballyhooed is Shimano's redesigned Dura-Ace group, also referred to as 7900. Shimano will also introduce its first electronic group next year, adding yet another option to this exceedingly crowded marketplace.

We're not ready yet to tell you which is our favorite (look for detailed findings in the annual *VeloNews* "Buyer's Guide," due out February 2009), but in the meantime, we'll outline what each group has to offer based on initial rides, experiences and questioning of each manufacturer's advocates. Here we examine Shimano's Dura-Ace 7900 group.

## HIGHS

Shimano is the king of forging. It also knows how to design exceptional drivetrain components, like chainrings, chains and cassettes, not to mention great brakes. For 2009, none of the above changes. The drivetrain components are stunning and there is new technology incorporated; namely the two-piece, hollow, large chainring and asymmetrical chain.

Shimano has also improved the Dura-Ace brakes. They feature a new geometry to work better with today's frame designs and provide an even higher-level of performance in terms of power and modulation. This is due to Servo-Wave cable pull technology and a new brake pad compound.

## LOWS

There's only one place that's suspect — the shifters. Shimano openly states that it believes external shifter cables



work better than those routed under the handlebar tape, yet the new 7900 shifters adopt the latter style. That required a completely new design for the cable winding mechanism. The new design makes the shifter more susceptible to possible mechanism contamination. The system has reach adjustment, which is great, but it too opens the system to the possibility of contamination. If nothing else, it offers an unfinished aesthetic because when the lever moves in, a gap opens between it and the shifter body.

Though Shimano makes real improvements to the shifter body and lever ergonomics, the shift action remains decidedly similar to the previous version in terms of feel and action. This is despite Shimano's claims of improvement. In a regressive move, due to the new shift mechanism, when downshifting to lower gears only two can be reached in a single shift, where the previous shifter allowed three at a time.

## **CRANKSET**

One of the best features of the new group is the Dura-Ace crankset, which has a hollow outer chainring. Due to this new ring design and further refinement of its hollow forging process for crank arms, Shimano claims the crankset is 20-percent stiffer and 15 grams lighter than the 7800 system. Other changes include redesigned chainring teeth that improve chain interface and power transfer, as well as improved bottom bracket seals that further reduce friction. The new crankset does not adopt Shimano's 970 XTR non-drive crank arm attachment. Instead, it retains the pinch-bolt style design of the old HollowTech 2 Dura-Ace crank, allowing it to retain a narrower stance width. After a long wait, Shimano will also carry a Dura-Ace branded compact crankset (34/50) with the 7900 series group. The initial release of 7900 does not include a triple crank. Shimano reasons that the range of the compact crank paired with the new



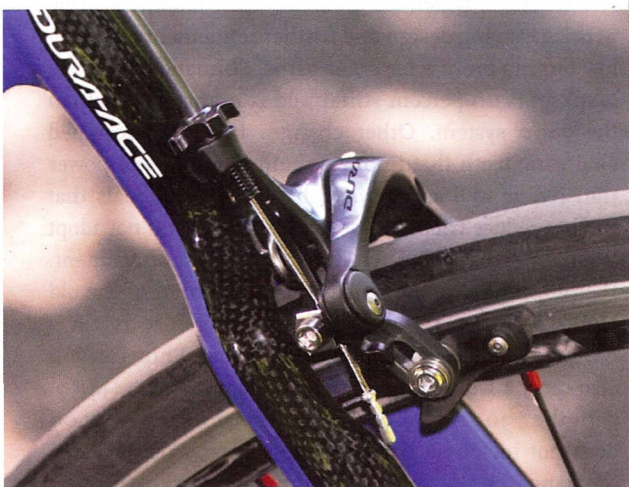
11-28-tooth cassette is comparable to the range of the triple with a 30/25 low gear.

### DUAL-CONTROL LEVERS

The new STI Dual Control levers offer a refined ergonomic shape and are claimed to be 40-grams lighter. Dura-Ace 7900 will become known as the group in which Shimano fully embraced carbon fiber. The new STI brake levers feature unidirectional carbon fiber blades. Shimano also tucked both the brake and shifter cables under the handlebar tape putting it in line with its competitors. The shifters are held to bars via titanium clamps and bolts. The revised internal mechanism of the shifter along with a new PTFE lined casing keep the action as light as previous designs.

Shimano's claim that shift stroke for the rear derailleur has been reduced by 20 percent is not noticeable while riding. A built-in reach adjuster allows one centimeter of adjustment so that the levers better fit riders with smaller hands.

The shifters offer integrated controls for a new Flight-Deck computer (SC-7900), which has been updated to include heart rate, altitude, grade, cadence, gear position, and is directly downloadable data via a wireless connection. The new SC-7900 computer is wireless and operates via the use of a coded 2.4GHz frequency. The computer is currently only PC compatible. Shimano representatives hinted to the possibility of incorporating its own GPS and power measuring functions in the near future.



### CHAIN

The new Dura-Ace chain is asymmetric — the inner and outer plates are sculpted to better shift up onto a larger cog or ring. The profiles differ slightly because the cogset and chainrings use different types of aids to move the chain. The rear uses Hyperglide ramping and the front uses more pronounced pins and ramps. Shimano also claims greater durability with less noise and smoother function. The new chain uses hollow pins and its weight drops by more than 18 grams.

One of the most significant improvements, though not represented on initial test bikes, is the addition of a removable master link. The master link marks a welcome departure from Shimano's traditional Hyperglide connection pin; the SM-CN79 Quicklink provides a reusable connection and removal point for the chain. Even better, the Quicklink can be used on any Shimano 10-speed chain, while the new chain can also be assembled with a traditional Hyperglide 10-speed connection pin.

### REAR DERAILLEUR

The rear derailleur further illustrates Shimano's use of carbon fiber with its carbon fiber pulley cage. The long-term performance of the new cage needs to be proven, however, one initial impression was that it was too flexible. The rear derailleur is 16 grams lighter. The new mechanism is compatible with wider range cogsets and can accommodate up to a 28-tooth cog.

### FRONT DERAILLEUR

Shimano's new Dura-Ace front derailleur cage design eliminates the need to manually trim the front shifting, therefore the extra detents have been eliminated. This was something that worked exceptionally well in our few test rides on the new group. The redesigned front derailleur linkage is wider and the spring is refined to reduce the effort required at the shift lever. This, paired with the new large chainring design, produces possibly the best front shifting action in the industry.

### BRAKES

Shimano's new Dura-Ace brakes claim "increased linear response, improved braking power and reduced weight." I agree that the new brakes are improved over the old, even though the previous version provided the industry benchmark. In addition, the company claims that its new brake pad compound doubles wet condition performance, while improving dry power by 20 percent. There was no chance to test this claim during the initial introduction. If this proves true, however, Shimano will have a brake that's untouchable in terms of power; the current version still serves as the industry's benchmark.

The "increased linear response" is spawned from a redesigned caliper arch and Servo-Wave cam in the lever. The brake arm's cable stop is lower in profile, creating smoother cable routing on compact frames, which ultimately reduces cable friction due to cleaner cable routing. The brakes feature a spring tension adjuster and adjustable toe for the pads, while dropping nearly 30 grams between the front and rear caliper.

## HUBS

Both the front hub and freehub bodies have new designs that are said to improve rigidity for efficient power transfer and sharp handling. The bearings have been updated with a tool-free bearing adjuster, which is simple and slick. These may become the best value and most durable high-end hubs for a training wheelset, and of course, handbuilt cyclocross wheels. The freehub retains its titanium shell and quick engagement internals.

## CASSETTE

Shimano claims further shifting improvements by creating a stiffer and lighter aluminum carrier along with re-engineered tooth profiles. Unlike SRAM's 1090 Red cassette where the added stiffness noticeably improves shifting, I did not notice a drastic difference with Shimano's new offering. The largest four cogs are titanium. Shimano claims the weight reduction is 10 grams. But the best upgrade comes in the form of a vastly expanded range of gear combinations. The 7900 Dura-Ace cassette will be available in: 11-21, 11-23, 11-25, 11-27, 11-28, 12-23, 12-25 and 12-27.

## NOTES ON COMPATIBILITY

The only serious issue of compatibility is with the brake system. Due to their revised geometry and leverage ratio, the new calipers should not be used with the old 7800 levers. The new calipers also require a lever that pulls more cable, so the old lever may bottom out, making the system dangerous. The new levers will work with the old brake calipers, but the feel is firmer and the power is lower, so, while not particularly dangerous, it's not recommended.

Likewise, the chain, front chainring and front derailleur cross compatibility is not recommended because the components are designed to work as a system. Mixing and matching yields a lower level of performance. That said, the drivetrain parts will function together, though Shimano recommends that, at the very least, you use new shifters with a new front derailleur, or old shifters with an old front derailleur. This is due to the lack of trim detents in the new shifter and the new front derailleur geometry.