

# Proven in your neighborhood and the world's great road races

We apply extensive ergonomic research to the design of our road components with the purpose of reducing any stresses that the bicycle's control functions impose on the rider. For example, our STI Dual Control Levers let you shift gears quickly and precisely without repositioning your grip on the hoods or drops. Our Dual-Pivot caliper brakes are more powerful, responsive and easier to modulate than conventional brakes. And then there's our HOLLOWTECH II crank technology that actually increases strength and stiffness while reducing weight. The all-new DURA-ACE 7900 series has debuted. Major benefits of 7900 series are

a new stage of precision, the best balance of lightweight and rigidity and newly designed Dual Control Levers for lightweight and improved shifting operation. Shimano 105 series is now available in an additional color option: Slate Black finish. WH-RS80-C24-CL carbon-alloy composite clincher and WH-RS30 30mm aero rim profile are added to the wheelset lineup. The powerful new lineup of Shimano road components will meet diverse rider demands.

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# Evolution of perfection — Dura-Ace 7900 Series Debuts

#### ST-7900 Dual Control Lever

- · Integral shift cable
- Better access to brake lever from upper side with closer pivot
- · Reach adjust mechanism
- PTFE inner cable/ Long lasting smooth shifting and brake performance.
- New FlightDeck compatible wireless speed sensor on the bracket.
- · Smooth bracket shape design
- · Carbon brake lever/ Weight saving
- . Titanium fixing band & bolt/ Weight saving.
- Weight: 378g

#### RD-7900 Rear Derailleur

- Carbon pulley plate/ Weight saving
- Wide gear-ratio compatible/ Gear ratio equivalent to triple without changing to GS rear derailleur.
- Enhanced pulling cable method/ Wider adjustable range for shifting.
- Max. front difference : 16T • Total Capacity : 33T
- Weight: 116g

# FD-7900 Front Derailleur

- No outer trim necessary on the front top/ No need for trimming while riding, up/ down shifting at a stroke. Better concentration on riding.
- Optimum spring tension
- Capacity: 16T
   Weight: 67g (FD-7900-F)

# FC-7900/7950 HOLLOWTECH II Crankset SM-BB7900 BB Cup Unit

- · Thin-walled forged aluminum crank
- · Hollow chainring
- · Improved gear for no chain touching
- New seal design for BB adaptor
- New teeth design for better chain contact
- FC-7900 : 53-42T/ 52-39T/ 53-39T/ 54-42T/

# 55-42T/ 56-44T FC-7950: 50-34T

• Crank arm lengths :

165mm, 167.5mm, 170mm, 172.5mm, 175mm, 177.5mm, 180mm

• Weight: 725g (53-39T, 170mm)

Total weight including BB

# CS-7900 Cassette Sprocket

- · Updated design gear sprocket
- Super lightweight yet rigid aluminum carrier
- · Combinations :

11-12-13-14-15-16- <u>17-18-19-21T</u>
11-12-13-14-15-16- <u>17-19-21-23T</u>
11-12-13-14-15-17- <u>19-21-23-25T</u>
11-12-13-14-15-17- <u>19-21-24-27T</u>
11-12-13-14-15-17- <u>19-21-24-28T</u>
12-13-14-15-16-17- <u>18-19-21-23T</u>
12-13-14-15-16-17- <u>19-21-23-25T</u>
12-13-14-15-16-17- <u>19-21-24-27T</u>
Underlined large sprockets are mad
from titanium

Weight: 163g (11-23T)

#### BR-7900 Dual-Pivot Caliper Brake

- Enhanced brake arch proportion/ Quicker response.
- · Reach adjust (at lever side)
- · Low profile outer cable stopper
- New compound brake shoe/ More stopping power. 210% more in wet conditions, 120% in dry conditions.
- · Spring tension adjuster
- · Titanium screw/ Weight saving.
- Weight: 293g

# HB-7900 Front Hub FH-7900 Rear Freehub

- · 8, 9 & 10-speed compatible
- Super lightweight
- Easy bearing adjust system/ Digital click adjust for better rotation performance.
- · More axial rigidity
- Regular hole : 24/ 28/ 32/ 36H
- Aero spoke hole: 24/ 28H (FH-7900) 18/24/28/32H (HB-7900)
- Weight: 125g (HB-7900), 59g (Front QR)
   254g (FH-7900), 64g (Rear QR)

### CN-7900 Chain

- New shaped outer plate/ Less chain suck.
- New designed outer and inner plates for improved contact with gear teeth.
- Hollow pins & Perforated plates/ Weight saving.
- Enhanced parts size around pin. Less flexure to affect shifting by enhanced press-in method.
- Weight: 252g (114 links)

# SC-7900 FlightDeck Cycle Computer

- Heart rate monitor/ Safe and effective training
- Wireless monitoring by encoding of sensor data transmit
- · Altitude and inclination data
- Wireless connection with PC

# PD-7810 SPD-SL Pedal

- · Low profile and stable platform design
- Pedals: 278g / Cleats: 70g

### **DURA-ACE WH-7850 Wheelsets**

 WH-7850-C50-TU/WH-7850-C50-CL/ WH-7850-C24-TU/WH-7850-C24-CL/ WH-7850-SL are lined up. (See page P14-15)



10-SPEED

2×10-speed

WH-7850-C24-CL



# Spirit of the sport

Ultegra components are available in an additional color option (Ice Grey Finish). Ultegra's ice grey finish is not only a cosmetic addition, but also features a weight saving of over 90 grams compared to the regular Ultegra package. Furthermore an Ultegra branded compact crankset is available.

#### ST-6600-G/6603-G Dual Control Lever

- Lighter weight design : 43g lighter than ST-6600-S/6603-S
- Ergonomic design
- · Robust internal mechanism
- Effortless shifting
- · Short stroke shifting
- Weight: 447g (ST-6600-G, pair), 200g (ST-6603-G, for front)

#### RD-6600-G-SS/GS Rear Derailleur

- Lighter weight design: 9g lighter than RD-6600-S
- · Wide link design
- 9 & 10-speed compatible
- Max. front difference : 16T (SS), 22T (GS)
- Total capacity : 29T (SS), 37T (GS)
- Weight: 200g (SS), 210g (GS)

# FC-6601-G/6604-G

Crankset with Integrated Bottom Bracket

#### FC-6650-G

Compact Crankset with Integrated Bottom Bracket Crankset with BB cup unit (SM-FC6601) also available

- HOLLOWTECH II crankset /
  Optimum balance of lightweight and rigidity
- FC-6601-G: 35g lighter than FC-6600
- 2 tone color chainrings
- **Gearings**: 53-39T / 52-39T (FC-6601-G), 52-39-30T (FC-6604-G) 50-34T (FC-6650-G)
- Crank arm length variations:
   165mm, 170mm, 172.5mm, 175mm
- Weight:
   788g (FC-6601-G, 53-39T, 170mm integrated BB)
   893g (FC-6604-G, 170mm integrated BB)
   808g (FC-6650-G, 170mm integrated BB)

# FD-6600-G/6603-G Front Derailleur

- Wide link design / 20% increased rigidity
- · Pivot locations for less cage deflection
- Light action spring
- Capacity: 16T (FD-6600-G), 22T (FD-6603-G)
- Weight: 89g (FD-6600-G-F), 113g (FD-6603-G-F)

### CS-6600 Cassette Sprocket

- Wide range of sprocket combinations
   16-speed freehub compatible
- Usable with Super Narrow Chain for 10-speed
- Combinations :

Standard model: 11-23T,12-23T,12-25T,12-27T Junior model: 13-25T,14-25T,15-25T,16-27T Note1: Junior models that have 13-16T top gears might interfere with the chain stays or the seat stays of specific frames. Make sure it can be mounted on your frame properly before you actually use it. Junior models that have 13-16T top gears cannot be used with the WH-6600/WH-R601.

**Note2**: C\$\overline{S}-6600 (14-25, 15-25, 16-27) cannot work with triple front drive system. If combine, bad shifting performance could be happened.

Weight: 235g (12-23T)

# BR-6600-G Dual-Pivot Caliper Brake

- Lighter weight design:
   10g lighter than BR-6600-S
- Convex washer adjustable brake shoe
- 100% improved brake shoe durability under wet condition (compared to BR-6500)
- Compact & lightweight Dual-Pivot design
- Weight: 320g

### HB/FH-6600 Hub Set

- Both 10-speed and 9-speed cassette sprockets compatible
- Front hub radial lacing compatible
- DUAL SIS front index shifting
- Smooth rolling
  - Internal Grease Sleeve
- Weight: 140g (HB-6600), 60g (QR) 347g (FH-6600), 64g (QR)

### CN-6600 Chain

- Super Narrow Chain for 10-speed
- Not compatible with 9-speed system
- Weight: 280g (116 links)

#### PD-6620-G SPD-SL Pedal

- · Low profile and stable platform design
- Pedals: 317g / Cleats: 70g

### WH-6600-G Wheelset

- 10-speed compatible only
- Balanced combination of 16 front and 20 rear bladed & butted spokes
- Weight: 1729g pair (clincher)



10-SPEE

2/3×10-speed





ULTEGRA (Silver color) is also available.

# Sports and fitness — Shimano 105.

The Shimano 105 is lighter and more efficient, and makes "pro-level" technology more accessible to part time racers and fitness enthusiasts. The Shimano 105 design concept of "Smooth, Round and Natural" is consistently demonstrated in every component, giving it's user a sense of satisfaction and pleasure and fulfillment. Now, optional Slate Black finish is available for more choice.



# ST-5600 Dual Control Lever

- Ergonomic design
- Robust internal mechanism
- · Front double/ triple compatible design
- · Effortless shifting
- Short stroke shifting / Inward shift stroke distance is reduced by 10mm.
- 10-speed compatible
- FLIGHT DECK cycle computer compatible
- SIS-SP41 cable housing
- Weight: 500g (pair)

# RD-5600-SS/GS Rear Derailleur

- Wide link design / Wide outer link design increases rigidity.
- 9/10-speed compatible
- Max. front difference: 16T (SS), 22T (GS)
- Total capacity : 29T (SS), 37T (GS)
- Weight: 221q (SS), 232q (GS)

### FD-5600/5603 Front Derailleur

- Wide link design / 20% increased rigidity
- · Pivot locations for less cage deflection
- Capacity: FD-5600: 16T, FD-5603: 20T (specially-designed for FC-5603)
- Weight: 95g (FD-5600-F), 112g (FD-5603-F)



Shimano 105 (Silver color) is also available.

### FC-5600/5603

Crankset with Integrated Bottom Bracket

### FC-5650

Compact Crankset with Integrated Bottom Bracket
Crankset with BB cup unit (SM-FC5600) also available

- HOLLOWTECH II crankset /
- Optimum balance of lightweight and rigidity
- Q-factor remains the same as FC-5502 / 5505 / BB-5500.
- Smoother rolling
- Sleek design / Special surface treatment for the Shimano 105 chainring.
- **Gearings**: 53-39T / 52-39T / 50-39T (FC-5600), 50-39-30T (FC-5603) 50-34T (FC-5650)
- Crank arm length variations: 165mm, 170mm, 172.5mm, 175mm
- Weight: 836g (FC-5600, 52-39T, 170mm)
   922g (FC-5603, 50-39-30T, 170mm)

### CS-5600 Cassette Sprocket

- 10-speed cassette sprocket
- Alloy sprocket carrier
- Combinations: 11-23T,11-25T,12-25T,12-27T
- Weight: 219q (11-23T)

### CN-5600 Chain

- Super Narrow 10-speed HG Chain
- Not compatible with 9-speed system
- Weight: 280g (116 links)

# BR-5600 Dual-Pivot Caliper Brake

- Convex washer adjustable brake shoe / Adjusting toe-in makes braking smoother and more controllable.
- 100% improved brake shoe durability under wet condition (compare to BR-5500)
- · Compact & lightweight Dual-Pivot design
- Weight: 359g

# FH-5600 Rear Freehub

# HB-5600 Front Hub

- 9/10-speed compatibility
- Front hub radial lacing compatible
- Smooth rolling
- Internal Grease Sleeve
- Weight: 150g (HB-5600), 60g (QR) 353g (FH-5600), 64g (QR)

# PD-5610 SPD SL Pedal

- · Wide and stable body
- Matches the color of the 105 groupset.
- **Pedals**: 322g / **Cleats**: 70g



10-SPEED DRIVE TRAIN

2/3×10-speed



# Advanced functions for sport and fitness riders

Tiagra has been completely reengineered and remastered with a more refined, more ergonomic design. Tiagra shares our top groups' engineering lineage but has its own unique identity, offering greatly enhanced feel and sleek design that's backed by a new level of performance.



ST-4500 Dual Control Lever

- Integrated Optical Gear Display
- Ergonomic and smaller bracket shape
- Reach adjustable through shims (4 or 8 degree spacers)
- SLR for linear response

RD-4500-SS/GS Rear Derailleur

- Improved surface treatment
- 9-speed compatible
- Lighter weight
- Wide link design
- SS model compatible with compact cranksets
- Total capacity: 31T(SS), 37T(GS)

SHIMANO TIAGRA FC-4500 Double Crankset

FC-4550 Compact Double Crankset

FC-4503 Triple Crankset

- · Iconic Shimano cap-free design
- 2-piece crankset with integrated BB design
- · 2 alloy chainrings for double and triple
- Anodized surface treatment
- Hyperdrive SG-X chainrings
- Gearing: 52-39T (FC-4500) 50-34T (FC-4550)
- 50-39-30T (FC-4503)
   Crank arm length variations :

• Crank arm length variations : 165mm, 170mm, 175mm

BR-4500 Dual-Pivot Caliper Brake

- Shimano exclusive Super SLR system
- Anodized surface
- Adjustable shoe
- Functional, durable quick release

FD-4500 Front Derailleur (for double crank)
FD-4503 Front Derailleur (for triple crank)

- Improved surface treatment
- Wide link design
- 9-speed compatible
- Multi clamp: 28.6, 31.8mm, 34.9mm (28.6mm: 31.8 w/ adapter)
- Capacity: 16T(FD-4500), 20T(FD-4503)

HB-4500 Front Hub

FH-4500 Rear Freehub

- Anodized surface
- · Internal grease sleeve for longer durability
- · Angular contact bearings
- Spoke holes: 36/32H



9-SPEED

2/3×9-speed



Triple version

# **High-quality road components**

# **50-34T Compact Crankset**

FC-R700 (for 10-speed)

FC-R600 (for 10-speed)
Crankset with Integrated Bottom Bracket

# **Dual Control Lever**

ST-R700 (10-speed, Double/Triple)

ST-R600 (9-speed, Double/Triple)

ST-R500 (8-speed, Double/Triple)

Adjustable lever reach (ST-R700/R600)

# **Brake Lever**

BL-R600 Brake Lever

- Aerodynamic lever design
- Super SLR (Shimano Linear Response)
- · Compatible with all Dual-Pivot brakes

# Brakes

# BR-R650

57mm reach type Dual-Pivot Caliper Brake

- Dual-Pivot design
- · Cartridge shoe holder
- Shimano Super SLR system

### BR-R550 Cantilever Brake for road levers

- Road STI lever compatible
- BL-R440 brake lever compatible
- Not compatible with V-BRAKE lever
- Not compatible with v-BKAKE lever
- For cyclocross and flat handlebar bikes with wide tires

# **Disc Brake System**

# **BR-R505**

Mechanical Disc Brake for road levers

# FH/HB-R505

Hub Set for Disc Brake

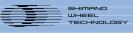
· Center Lock rotor mount system







# **Road wheel systems**



# **DURA-ACE WH-7850 wheel systems**

With a focus on speed, the new rim profiles yield a substantial reduction in weight while maintaining the aerodynamic shape of the rim and its race-tested advantages (less subject to crosswinds and enhanced precise steering). The WH-7850 series make use of the most advanced rim designs and materials; super-light carbon fiber composites and Scandium alloy.

# WH-7850-C50-TU Carbon hi-profile tubular

- 8, 9 & 10-speed\* compatible
- . The choice of Pro-Tour Sprinters and TT specialists
- · Proprietary Shimano carbon construction
- Aerodynamic 50mm deep section rims
- Straight spokes and 2-cross lace for increased torsional rigidity and spoke life
- · Titanium freehub body w/quick engagement
- · Shimano quality proven angular contact bearings with oversize 7075 alloy axles
- · Weight: 1485g pair
- \* 10-speed : Use with a 1mm spacer





WH-7850-C50-TU



WH-7850-C50-CL

#### WH-7850-C50-CL

Carbon-alloy composite hi-profile clincher

- 8, 9 & 10-speed\* compatible
- · Proprietary Shimano carbon/ aluminum construction
- · Aerodynamic 50mm deep section rims
- Straight spokes and 2-cross lace
- · Titanium freehub body w/quick engagement
- · Shimano quality proven angular contact bearings with oversize 7075 alloy axles
- Weight: 1632g pair
- \* 10-speed : Use with a 1mm spacer

### WH-7850-C24-TU Carbon tubular

- 8, 9 & 10-speed\* compatible
- Special Shimano construction for a high level of carbon-rim strength/weight
- Performance specific rim profiles-28mm aero front & 24mm asymmetric rear
- Straight spokes and 2-cross lace
- Titanium freehub body w/quick engagement
- · Wider flange hub and offset rim for rigidity and increased power transmission
- · Shimano quality proven angular contact bearings with oversize 7075 alloy axles
- Weight: 1255g pair
- \* 10-speed : Use with a 1mm spacer

# WH-7850-C24-CL

Carbon-alloy composite clincher

- 8, 9 & 10-speed\* compatible
- Patent Pending Shimano construction for a new level of carbon-alloy strength/weight
- Straight spokes and 2-cross lace
- Titanium freehub body w/quick engagement
- · Wider flange hub and offset rim
- · Shimano quality proven angular contact bearings with oversize 7075 alloy axles
- Weight: 1394g pair
- \* 10-speed : Use with a 1mm spacer







WH-7850-C24-TU

# WH-7850-SL Scandium Road Tubeless

- 8, 9 & 10-speed\* compatible
- · The road clincher & tubeless tire compatible wheels
- · Ultra thin wall extrusion reinforced at spoke hole
- Patent Pending light, strong & durable Scandium
- Straight spokes and 2-cross lace
- Titanium freehub body w/ quick engagement
- · Wider flange hub and offset rim
- · Shimano quality proven angular contact bearings with oversize 7075 alloy axles
- Weight: 1532g pair
- \* 10-speed : Use with a 1mm spacer



WH-7850-SI

**Rim Tape** 

High-pressure rim tape for

700C/ 650C rims except tubeless compatible type rims

# WH-RS80-C24-CL

Carbon-alloy composite clincher

- 8,9,10-speed\* compatible
- · Carbon-alloy composite 380g clincher rims
- Patent pending Shimano construction for a new level of carbon-alloy strength/weight.
- New wider flange hub and offset rim for rigidity and increased power transmission
- Shimano quality proven angular contact bearings with oversize 7075 alloy axles
- Weight: 1516g pair
- \* 10-speed : Use with a 1mm spacer



# WH-6600-S

Ultegra wheels featuring DURA-ACE technology WH-6600-G Ice-Grey color option

- 10-speed compatible only
- Clincher tire compatible
- Silver aerodynamic 24mm profile 6061 alloy rims (WH-6600-S)
- Offset rear rim designed to increase rear wheel rigidity
- Balanced combination of 16 front and 20 rear bladed & butted spokes
- Aluminum rear axle and ultra-light aluminum Shimano quality freehub body
- Wide flange design and offset rim increases rear wheel rigidity
- Weight: 1729g pair



WH-RS80-C24-CL

### WH-R601

- 10-speed compatible only
- Clincher tire compatible
- Black anodized rim
- Balanced combination of 16 front and 20 rear bladed & butted spokes
- Aluminum rear axle and ultra-light aluminum Shimano quality freehub body
- Wide flange design and offset rim
- Weight: 1729g pair

WH-R601



SHIMANO
ULTEGRA

WH-6600-G

# WH-RS30 (NEW)

Value Focused Wheels for 30mm aero rim profile

- 8, 9 & 10-speed\* compatible
- New mid-level price point, styled-driven wheels
- Black and Silver alloy rims with double butted aero spokes
- · Smooth high polish finish hub shells
- Straight spokes and 2-cross lace
- 16-spoke front, 20-spoke rear butted bladed spokes
- · Wider flange hub and offset rim
- Weight: 1952g pair
- \* 10-speed : Use with a 1mm spacer

# WH-RS20-L/S Mid-level price point wheels

- 8, 9 & 10-speed\* compatible
- Black or Silver options alloy rims and hubs with double butted aero spokes
- Smooth high polish finish hub shells
- Straight spokes and 2-cross lace
- 16-spoke front, 20-spoke rear butted bladed spokes
- · Wider flange hub and offset rim
- Weight: 1869g pair
- \* 10-speed : Use with a 1mm spacer

# WH-RS10-L/S Mid-level price point wheels

- 8, 9 & 10-speed\* compatible
- Black or Silver options alloy rims and hubs with aero spokes
- · Matte finish on hub shells
- Straight spokes and 2-cross lace
- 16-spoke front, 20-spoke rear bladed spokes
- Wider flange hub and offset rim
- Weight: 1902g pair
- \* 10-speed : Use with a 1mm spacer

# WH-R500/R500-A

- Entry-level price point wheels

   8, 9 & 10-speed\* compatible
- Clincher tire compatible
- All black alloy rims and hubs with anodized steel spokes

WH-RS30

WH-RS10-S (silver)

- 20 spoke front, 24 spoke rear spokes
- · Radial lace front, cross-lace rear
- Rim wear indicator allows safe detection of worn rim

- WH-RS10-L (black)Weight: 1944g pair
- \* 10-speed : Use with a 1mm spacer

**Note:** Weight does not include quick release or rim tape and it is average weight.

WH-RS20-S (silver)



WH-RS20-L (black)



# Flat handlebar components

Shifters are available for 8, 9 and 10-speed road-sport bikes with flat handlebars. 10-speed shifters can be used with ULTEGRA and 105 derailleurs. 9-speed shifters are for TIAGRA and SORA derailleurs.

# For 10-speed

SL-R770 10-speed Shift Lever FD-R770 Front Derailleur (double crankset/for use with SI-R770 shift lever)

FD-R773-2/0 Front Derailleur (triple crankset/for use with SL-R770 shift lever)

- · Double or triple cranks compatible
- RAPIDFIRE Plus shifter

# BL-R770 Brake Lever

- Compatible with road calipers. canti and road disc brake
- · 2.5-finger lever
- · SLR system for linear response



# \*Compatibility

FD-R770: For FC-7800/6600/5600

FD-R773-2: For FC-7803/6603 (52T top chainring) FD-R773-0: For FC-5603 (50T top chainring)



# For 9-speed

SL-R660 9-speed Shift Lever (SL-R661 left lever)

SL-R440 9-speed Shift Lever (SL-R441 left lever)

FD-R440 Front Derailleur for 52T top (double crankset/for use with SL-R441 shift lever)

FD-R443 Front Derailleur for 50T top (triple crankset/for use with SL-R441 shift lever)

FD-R453 Front Derailleur (triple crankset)

Wide pivot link

,	SG-X chainrings compatible	
,	DUAL SIS front index shifting	ı

Color options: Black, silver (SL-R440)

#### BL-R550 Brake Lever

- Compatible with road calipers. canti and road disc brake
- 2.5-finger lever
- SLR system for linear response
- Color options : Black, silver

2x9-speed system	SL-R661	FD-R440
3x9-speed system	SL-R441 BL-R550	FD-R443* FD-R453*

# \*Compatibility

FD-R443: For FC-4500 (52T top chainring) FD-R453: For FC-4503 (50T top chainring)

Note: SL-R661/ R441 shift lever must be used with FD-R440, FD-R443 or FD-R453 front derailleur.



# For 8-speed

SL-R440-8 8-speed Shift Lever (SL-R441 left lever)

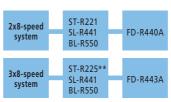
FD-R440A Front Derailleur (double crankset / for use with SL-R441 / ST-R221 shift ever)

FD-R443A Front Derailleur (triple crankset / for use with SL-R441 / ST-R225 shift lever)

- Wide pivot link
- SG-X chainrings compatible
- . DUAL SIS front index shifting
- · Color options : Black.silver (FD-R440A/R443A/SL-R440-8)

# ST-R221/R225 EZ FIRE Shift / Brake Lever

- Upgraded appearance, black or silver
- Compatible with V-BRAKE/ caliners/ canti and disc brakes
- · 4-finger lever
- ST-R225: Left hand shifter for triple ST-R221: Left / double, Right / 8-speed
- Color options: Black, silver



\*\*ST-R221 for rear

Note: SL-R441 shift lever must be used with FD-R440A or FD-R443A front derailleur.





# **Shimano Original Functions**

Thanks to the constant challenge to the evolution of bicycle and its functions, the bicycle has become faster, safer, and more comfortable. At Shimano, we have continued to pursue basic performances and advanced functions of bicycle components from the viewpoint of understanding the bicycle as an integrated system. Sometimes we have developed unique functions that were way beyond the bounds of common sense. At other times we have created new functions by analyzing the psychology of cyclists including the professional racers under stress. And now we are working on the further futuristic development themes such as originating products that are easy and more comfortable for everyone and also good for the ecology. The development themes are "Best Shifting Performance" and "Best Braking Performance". We have created all of Shimano original functions introduced here in search of better relationship between bicycles and people.

# **Best Shifting Performance**

# **New Dura-Ace DCL**

The ST-7900 Dual Control Lever has a completely new structure with new features that include the lighter weight pivot section in the near side of shifting unit and the integral shifting cable for lighter steering. Its many component parts are made so compact and precise to achieve unprecedented high-speed performance.

The new DCL is literally the pivot component of the new dimension Dura-Ace series.

# **Dual Control Lever**

Ergonomic innovation is probably more critical to the higher standard of DURA-ACE/ ULTEGRA/ 105/ TIAGRA performance than the added gearing. The shift internals borrow the robustness from our MTB technology and are so smooth and effortless that one finger shifts front and rear are possible. Indeed, shifting DURA-ACE/ ULTEGRA/ 105/ TIAGRA is the ultimate act of Shimano Total Integration, and simply has to be experienced to be understood.



ST-6600-G



# **Wide Link Front and Rear Derailleur**

(DURA-ACE/ ULTEGRA/ Shimano 105/ TIAGRA)

The wide pivot link design boosts strength and rigidity. Flex is suppressed, creating sharp, precise shifts that are faster and smoother, even from low to high gears, off the saddle.





FD-7900

RD-7900

# **DUAL SIS Front and Rear Index Shifting**

The SIS Rear Index Shifting System, which has been noted for its accurate, precise and smooth shifting system, was adopted to the front. The front with the index system makes shifting operation easier and more comfortable.

# SIS-SP41

(DURA-ACE/ ULTEGRA/ Shimano 105/ TIAGRA)

Special silicon-base grease is injected into the shifting outer casing to significantly decrease cable resistance. Combined with the wide link derailleur designs (RD-7900/ 6600/ 5600/ 4500) adds key advantages:

crisp, instantaneous shifts that are 10% more efficient from lever to rear derailleur.



# **Advanced Light Action Rear Derailleur**

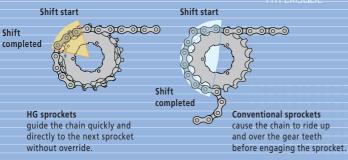
Low-friction link pivots and the use of a low-tension extension spring significantly lower the effort needed to shift the derailleur regardless of gear position.





# **HG Sprockets**

Special designed HYPERGLIDE sprockets incorporate specifically positioned shift ramps and tooth profiles for improved chain control during shifting. Fast and responsive indexed shifting is the result.



# **Optical Gear Display**

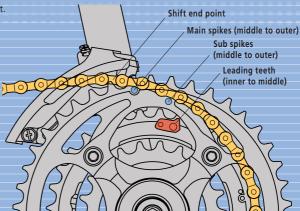
The Optical Gear Display tells you which gear position is selected while riding your bike. You can see how many gears you can select either on low side or top side, which makes shifting control easier.



ST-4500

# **Hyperdrive Front Drive System**

With Hyperglide, Shimano pioneered the use of a variety of gear profiles and shift ramps to improve shifting performance. Front drivetrain components are engineered as a system, working together towards a single goal: Provide quiet, easy and trouble free shifting. The leading teeth, the spike pins of the SG-X chainrings, the super rigid Wide-link front derailleur and the special profiles of the HYPERGLIDE chain links are combined to create a smooth, quiet and precise shifting system, even under load.



# Trimming Free Front Shifting System (DURA-ACE)

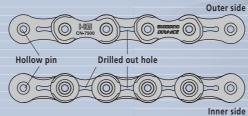
The new design DURA-ACE front derailleur does not need trimming. The trimming operation is unavoidable for the conventional front shifting especially when chain is on outer chainring.

FD-7900 realizes the trimming-free shifting for the outer chainring in just the right combination with ST-7900 shifting lever, FC-7900 crankset and CN-7900 chain. This will be a big advantage for the riders to concentrate on riding without sacrificing shifting response.

# New Designed Chain (DURA-ACE)

The new designed chain plays a key role in Dura-Ace 7900 group, a new level of high-precision component system. CN-7900 chain is a innovative new high-precision design, developed with lightweight feature realized by the perforation of the plates to hold the pin which is hollow. The newly designed inner outer plate for better contact with gear teeth allows smooth shifting even under high load conditions. In addition, the new chain has achieved 0.6% higher efficiency of pedaling.







# **Best Pedaling Performance**

# Hollow Chainring (DURA-ACE)

DURA-ACE FC-7900 HOLLOWTECH II crankset is featured by the first hollow chainring developed by pursuing the higher level of both lightweight and rigidity. The weight saving hollow chainring maintains the strength and provides 20% more rigidity to allow better power transfer.

# HOLLOWTECH II Crankset (DURA-ACE/ ULTEGRA/ Shimano 105/ FC-R700)

The cranksets of DURA-ACE, ULTEGRA, 105 have adopted the "2-piece crankset with integrated BB design " as well as "race-proven hollow forged crankarm" that was created by Shimano's original technology. Those HOLLOWTECH II cranksets realized the high-level balance between lightweight and rigidity.







# 2-Piece Crankset with Integrated BB Design

Our race proven advanced technology the 2-piece crankset with the integrated bottom bracket. Number of parts is reduced. Weight is reduced. Rigidity and power transfer are radically increased. In addition, it allows the bottom bracket bearings to be spaced wider apart (outboard bearings) and the axle and bearings themselves to be larger. The net result is a more effective load distribution, increased rigidity and stability.

# **OCTALINK BB Mount**

The bottom bracket plays an important role in regard to crank rigidity. The crank arms don't mount to the bottom bracket through the conventional square taper, but use a larger 8-spline interface that connects to a hollow bottom bracket spindle. It's called "OCTALINK". The result is greater strength and rigidity for the entire crankset/bottom bracket assembly.



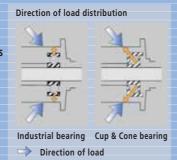


8-spline interface

# **Cup & Cone Bearing Hubs**

Cup & Cone bearings offer greater strength than sealed cartridge industrial bearings due their ability to displace lateral and vertical loads more effectively for super smooth rotation and longer durability.

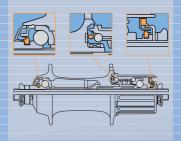
Cup & Cone bearings also allow easier maintenance, adjustability and serviceability.



Direction of load distribution

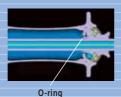
# **Labyrinth and Contact Sealing**

Specifically designed seals inside the hub shutout mud, dust, dirt and moisture and protects the bearing mechanisms, realizing low maintenance as well as longer service life. This maintains the original performance for a longer period of time under unfavorable environmental conditions.



# **Internal Grease Sleeve**

ULTEGRA, 105 and TIAGRA freehubs feature internal o-rings and grease sleeve that help maintain grease levels and increase service life.



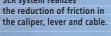
Internal grease sleeve

# **Best Braking Performance**

# **Super SLR Brake System**

SLR stands for Shimano Linear Response. The Super SLR design makes use of friction-reducing mechanism in the caliper, lever and cable that improve response. SLR is the essential factor in the Shimano Dual-Pivot calipers that deliver more braking power than conventional side-pulls.







Outer casing with liner



Coated bush and thrust bearing of pivots reduce friction in the caliper. (DURA-ACE)

# **Compact and Durable Brake System**

The Dual-Pivot design realized a lightweight, compact and durable braking system. Especially the DURA-ACE, ULTEGRA, 105 and TIAGRA brakes have made considerable progress in reduction of tolerance and deflection as well as in durability. They have achieved firm and instantaneous braking response while assuring longer service life. Moreover, the brake pads of DURA-ACE, ULTEGRA and 105 have an improved durability by 100% to help to enjoy the high-response braking over long periods.



Toe-in Adjustable Brake Shoe

(DURA-ACE/ ULTEGRA/ Shimano 105/ TIAGRA)

Optimum braking response is achieved with a slight toe-in (around 0.5mm) of the brake shoe, by integrating a convex washer to the fixing bolt makes adjustment of toe-in much easier.



Convex washer

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