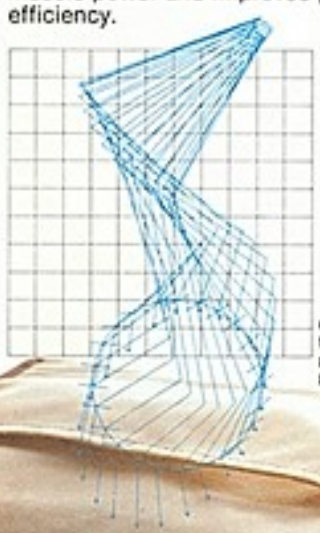
biopace

Computer-Designed Drive System

The New Shape for Pedaling Efficiency— A Computer-Designed Chainring for Better Biomechanics.

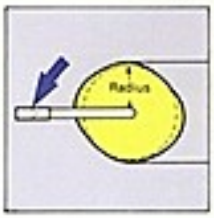
Human leg movement—the power behind any bicycle. Shimano thoroughly analyzed the biomechanics of human pedaling, and finally came up with the efficient connection in the human/bicycle power train: the Shimano Biopace Chainring. Applying computer analysis to the biomechanics of human pedaling, we succeeded in discovering the ideal chainring shape, for greatly rationalized use of the legs' muscle power and improved pedaling efficiency.



Computer Analysis—Motion of legs and power of pushing pedals while pedaling

1 Lighter, More Rhythmical Pedaling

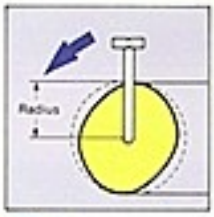
When the crank reaches the horizontal position, the legs turn out the greatest power. With the crank nearly aligned with the major axis of the chainring, the turning radius is smallest when the crank is nearly horizontal. The chainring picks up speed and the burden on the legs is lightened. Because of the lighter load, a better balanced counterforce is given to the body, which means that its sways less. The result is lighter pedaling action and a more rhythmical motion.



With the crank arm at the horizontal position, leg thrust is at peak power. Turning radius of the chainring is minimal, for assured light and quick pedaling.

2 More Efficient Use of Power

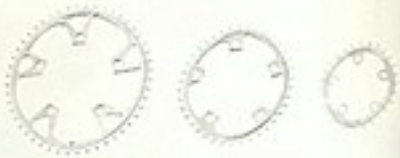
When the crank reaches the vertical position, where one leg is folded at the knee and the other is fully extended, the turning radius of the Biopace Chainring is maximum, with its rotational speed slowed considerably. The slowed rotational speed, in turn, allows the legs to apply more power to the downward thrust of the pedals, instead of merely keeping up with their turning movement. The result is fuller use of the leg muscles and more efficient application of power.



When the crank arm reaches the vertical position, the turning radius is maximum, for slower pedaling action and more efficient application of leg power.

3 Individually Designed Chainrings According to Function

Each of the chainrings has a distinctive function of its own. The outer one is for level and downhill riding. The middle one is for unpaved roads and gentle inclines. And the inner one is for taking on those steep uphills. To get optimum results, shapes differ gear to gear, with the Biopace shape becoming more pronounced as the gear gets smaller.



48T 38T 28T

4 Tooth Height Design for Smoother Shifting

On the outer ring of the Biopace Chainring, the height of the teeth along the major axis is lower than average, while along the minor axis they are slightly raised. This computer aided design minimizes the difference between the Chainring and the Front Derailleur, thereby keeping the chain firmly in position and preventing accidental release.



5 Tooth Alignment Feature for Improved Shifting Performance

The outer, middle and inner gears of the Biopace Chainring have been carefully positioned so as to afford smooth and effortless derailling from one gear to the other. The two points affording the smoothest shift are those where chain tension is maximum.





New Shimano 600EX Triple Front Chainwheel

FC-6206 Biopace (Triple)

BB-6207 (B.B. Parts)

● 24.7 oz. (700g.) (28T.—38T.—48T., 170mm.), 11.6 oz. (330g.) (B.B. Parts) ● Light Alloy-Anodized, Buff Finish ● Crank Length: 6-1/2" (165mm.), 6-3/4"(170mm.), 6-7/8" (175mm.), 7-1/2" (180mm.) ● Crank Thread: BC 9/16" × 20T.P.I. ● Cup Thread: English 1.37" × 24T., French 35 × 1.0, Italian 36 × 24T. ● B.B. Size: 68-T-121.5 (D-3SS), 70-T-124.5 (SS-B) ● Outer 48T., Middle 38T., Inner 28T. ● Computer Aided Design (CAD), Sealed Mechanism ● 50T and 44T are available from April '84



SHIMANO TRIPLE CRANKSET

The New Shimano 600EX Triple Crankset with Biopace is now available for touring and ATB applications. The Computer Aided Design (CAD) of the cold forged crank arms and spider gives optimal rigidity without unnecessary weight. And this model, FC-6206, is the first crankset to come with the revolutionary Biopace chainrings as standard equipment.

The crankset is available in the most popular triple crankset chainring bolt pattern; 110mm outer and middle, and 74mm inner. Crank arm lengths are 165, 170, 175, and 180mm, and are available separately or as a complete set with Biopace. Biopace chainrings are available in 28, 38, 44, 48, and 50 tooth sizes.

For more information contact:

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