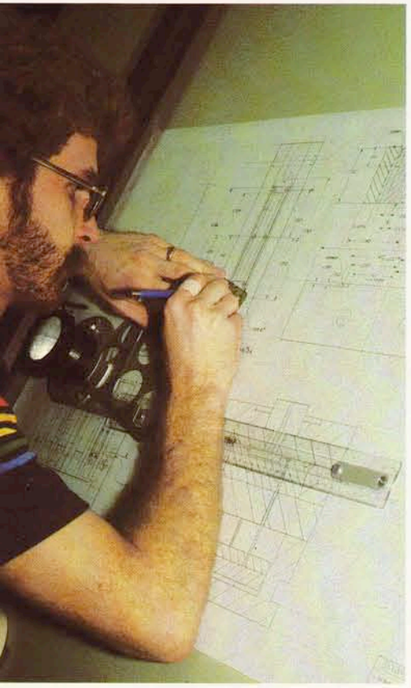
SKYWAY

Scanned and compiled by Philippe D. 2010

SKYWAY



(above) Engineering Department, (above right) Quality Control

SKYWAY—A HISTORY OF QUALITY AND INNOVATION

Skyway has had a long and distinguished history—all of it based on providing the market with innovative, high-quality products offered at a competitive price.

The company began in 1963 when Chuck Raudman established Skyway Machine, Inc. This small Van Nuys, California operation specialized in precision machinery for the aerospace industry. Skyway's reputation began to grow and soon its milling machines and lathes were filled with work that other operators would "no bid" because of its complexity.

By 1967, Skyway Machine had outgrown its initial facilities and moved to a larger plant in San Fernando, California. The new facilities allowed Skyway to expand its industry base; within a short time Skyway was spending at least half of its time building parts that ultimately became part of the hydraulic control systems in Disneyland's animated figures.

Chuck Raudman had a number of outside interests which totally changed the company's direction. On weekends, he was involved in motocross and cross country motorcycle racing. He noticed a need for silencers and spark arrestors which would not cause the motorcycle to sacrifice horsepower. During 1971 the Recreation Products Division was born with the first shipment of the #65 silencer. Over the next few years, the product line of the company expanded rapidly into exhaust pipes, spark arrestors, etc. Among the company's customers were some of the largest original equipment manufacturers in the motorcycle industry: Yamaha, Husqvarna, Kawasaki, Maico and Hodaka.

In 1974, a new sport began to emerge in Southern California—bicycle motocross (BMX). Skyway saw the possibility of making a contribution to this rapidly

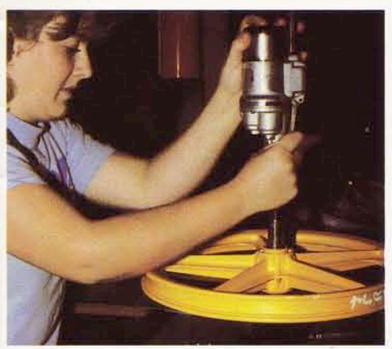
growing market in the form of a new product—a 20 inch nylon "mag type" bicycle wheel. The initial objective was to make a high quality, lightweight, colorable product with a maximum level of durability.

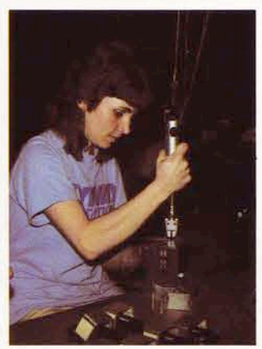
In 1975, TUFF WHEEL I was born. It was the lightest "mag type" wheel available in the marketplace; it soon proved to be the most impact resistant wheel available. To achieve this level of performance, Skyway created a totally new composition (a proprietary blend of Zytel ST and glass reinforced nylon—both from DuPont) which has become the basic raw material for most of the company's wheel products. Also during that year, Skyway developed new injection molding techniques that were found to be essential to the production of Tuff Wheel I and subsequent products.

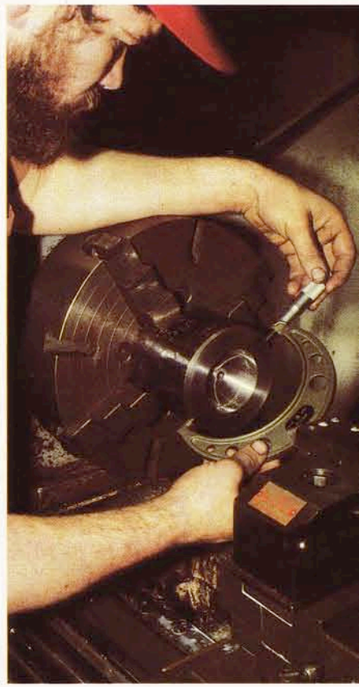
During 1976 other products were added to the BMX line. Among these were goggles and face masks.

The year 1977 found Skyway on the move again—this time to a new 36,000 square foot facility in Redding, California. This beautiful area, located at the northern end of the Sacramento Valley, proved to be a fitting site for continued growth and innovation.

With 1978 came the visualization of a second generation of the very popular TUFF WHEEL. TUFF WHEEL II utilized







technology discovered and developed during the introduction and growth of Tuff Wheel I. Significant changes included a thinner rim and a new concept for the hub area. The "Kool Hub" eliminates the need for a molded-in insert and creates an insulating air gap between the nylon wheel and the metal hub.

In the spring of 1979 came the introduction of Tuff Wheel II. The market readily accepted the new wheel. It was lighter in weight and had better impact resistance than the already successful Tuff Wheel I. In addition, the "Kool Hub" design made possible the insertion of other unit hubs, such as the long desired freewheel. In conjunction with the freewheel development, TUFF PADS™ were created—the first caliper brake pads specifically designed for efficient braking on a nylon rim surface.

From the standpoint of new market development, 1980 was an exciting year for Skyway. Skyway Recreation International was formed to serve the international BMX market that was growing rapidly in countries outside of North America. In addition, the durability of Tuff Wheels made a significant contribution to a growing young industry, ultralight aircraft.

In 1981, Skyway introduced four new products. TUFF WHEEL '16,' a 16 inch "mini" version of Tuff Wheel I, was introduced at the winter trade shows. TUFF PEDALS™, extremely light graphite reinforced rebuildable pedals, made their debut in the summer. Also added were TUFF PAD™-Pro Model, an upgraded version of the original Tuff Pad, and "BMX Racing Fever," an instructional book and cassette on all aspects of BMX.

Early 1982 will see the second generation of Tuff Wheel II. The new product will be lighter in weight than the existing model and will offer hubs with replaceable bearing cups. It will also see Tuff Wheels performing successfully in yet another industry—lawn and garden—as several manufacturers of high wheel lawnmowers use the Skyway product as original equipment.

Throughout its history, Skyway has owed its growth and market acceptance to two major factors: quality and innovation. Since its beginning, the company has recognized market needs and engineered new concepts aimed at satisfying them. Internationally respected companies such as Schwinn, Chain Bike and Raleigh have all chosen Skyway products to be part of their top of the line bicycles. Our charter remains unchanged; in the future, you can continue to look to Skyway for well-engineered, high performance innovations in the BMX and other markets.

(top left) TUFF WHEEL II Assembly, (lower left) TUFF WHEEL I & '16' Assembly, TUFF PEDAL Assembly, TUFF WHEEL II Molding, (above) Machine / Prototype Shop

TUFF WHEEL® I

TUFF WHEEL I, Skyway's first bicycle product, has a performance proven record that began with its market introduction in 1976. This 20'' wheel is made of a special glass reinforced nylon (based on Zytel® Super Tough from DuPont) that was designed for maximum impact resistance with optimum stiffness. This material, coupled with Skyway's special molding techniques, has yielded a product that is known worldwide for its quality and durability.

TUFF WHEEL I is available either unassembled or assembled.

Note: The assembled rear contains a Bendix coaster brake. The assembled front contains a 3/8'' heavy duty axle.

Colors: Black, yellow, red or blue

WEIGHTS:

FRONT: 1335 g. ASSEMBLED; 1150 g. UNASSEMBLED
REAR: 1880 g. ASSEMBLED; 1350 g. UNASSEMBLED

SKYWAY TUFF WHEELS

TUFF WHEEL® '16'

TUFF WHEEL 16 is a 1981 addition to Skyway's wheel goods line. It is a smaller version of the TUFF WHEEL I and contains a Bendix coaster brake and 3/8'' heavy duty Skyway front axle. It is also available unassembled.

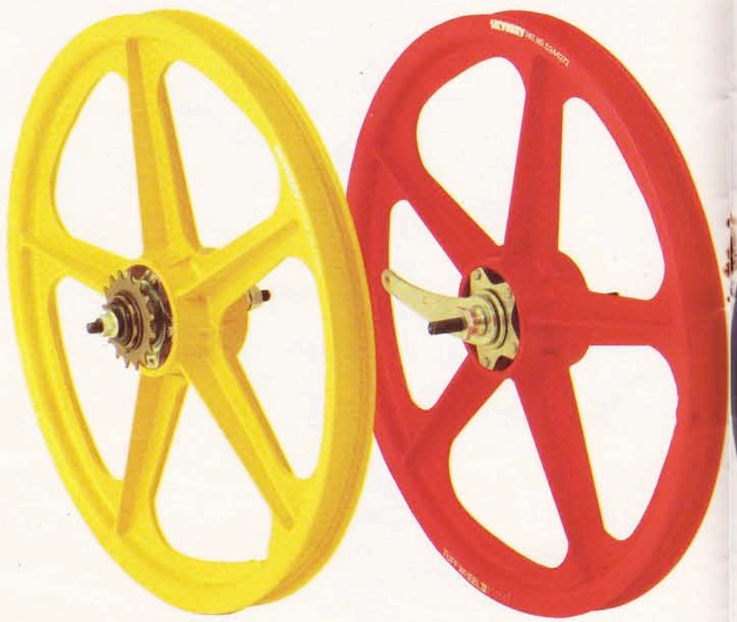
TUFF WHEEL 16 has been so well accepted that it has been specified as original equipment on ''pit bikes'' manufactured by several large manufacturers.

Colors: Black, yellow, red and blue.

WEIGHTS:

FRONT: 855 g. ASSEMBLED; 690 g. UNASSEMBLED
REAR: 1398 g. ASSEMBLED; 885 g. UNASSEMBLED

TUFF WHEEL® II



TUFF WHEEL II, introduced in 1979, is truly an evolutionary product. It utilizes the same time-tested glass reinforced nylon material and processing technology developed for TUFF WHEEL I.

This second generation 20" wheel is lighter in weight because the material is now used more efficiently (material has been removed from the rim, thus making the bicycle easier to pedal). This weight reduction has not come at a sacrifice in durability; TUFF WHEEL II will absorb a 30% higher impact load than the very successful TUFF WHEEL I.

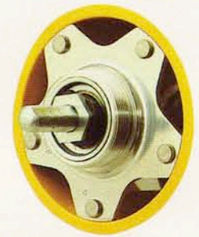
TUFF WHEEL II incorporates a patented concept known as the "Kool Hub." This provides a heat insulating air gap between the metal hub insert and the nylon wheel. The hub is secured to the wheel with five stainless steel rivets.

TUFF WHEEL II is continuing to evolve! Our 1979 product contained stamped steel front wheel flanges. Beginning in 1982, TUFF WHEEL II fronts will contain lightweight forged aluminum alloy flanges which will accept "pressed-in" bearing cups. The 1982 line will also include a new rear wheel containing a threaded flange (1.375"x24 TPI) compatible with screw-on freewheel cassettes. TUFF WHEEL II will continue to be available with Suntour coaster brakes or Suntour unit hub freewheels.

Colors: Black, Yellow, Red, Blue.

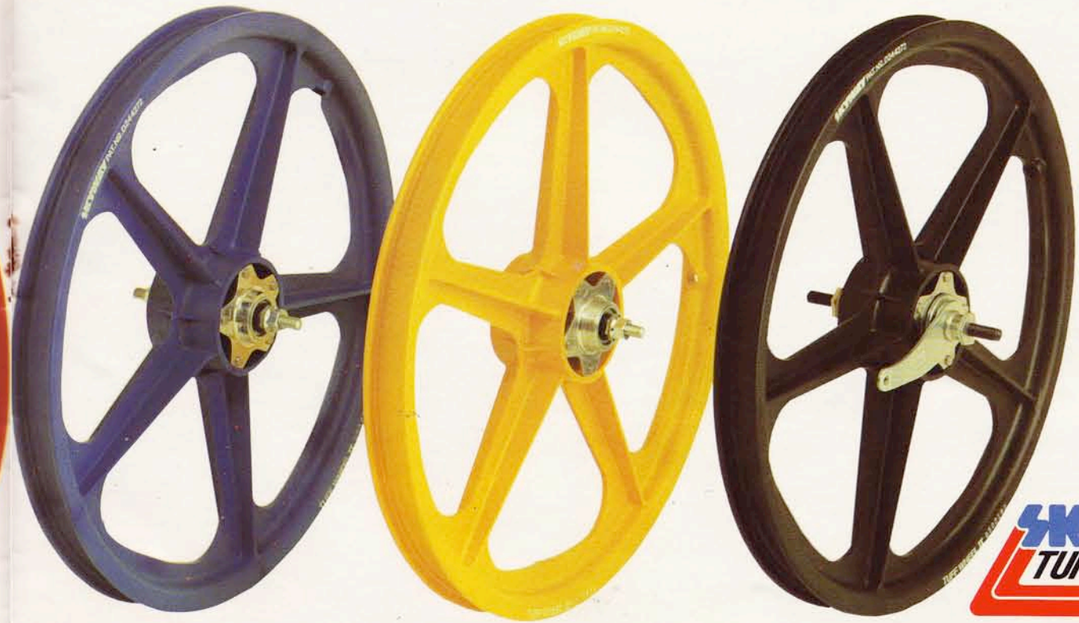
Since traditional caliper brake pads do not stop effectively on the "slippery" nylon rims, it was necessary to develop a braking system that would be compatible with the TUFF WHEEL II freewheel. TUFF PAD™ and TUFF PAD-Pro Model (with replaceable pads) are specially designed and compounded for Skyway to meet the rigid CPSC braking specifications. Note: both front and rear brakes required. They are available in black, yellow, red and blue.

Configuration	Weights
Front	1199 g.
Rear w/ Skyway threaded alloy flange	1227 g.
Rear w/ Suntour unit hub	1473 g.
Rear w/ Suntour coaster	1870 g.



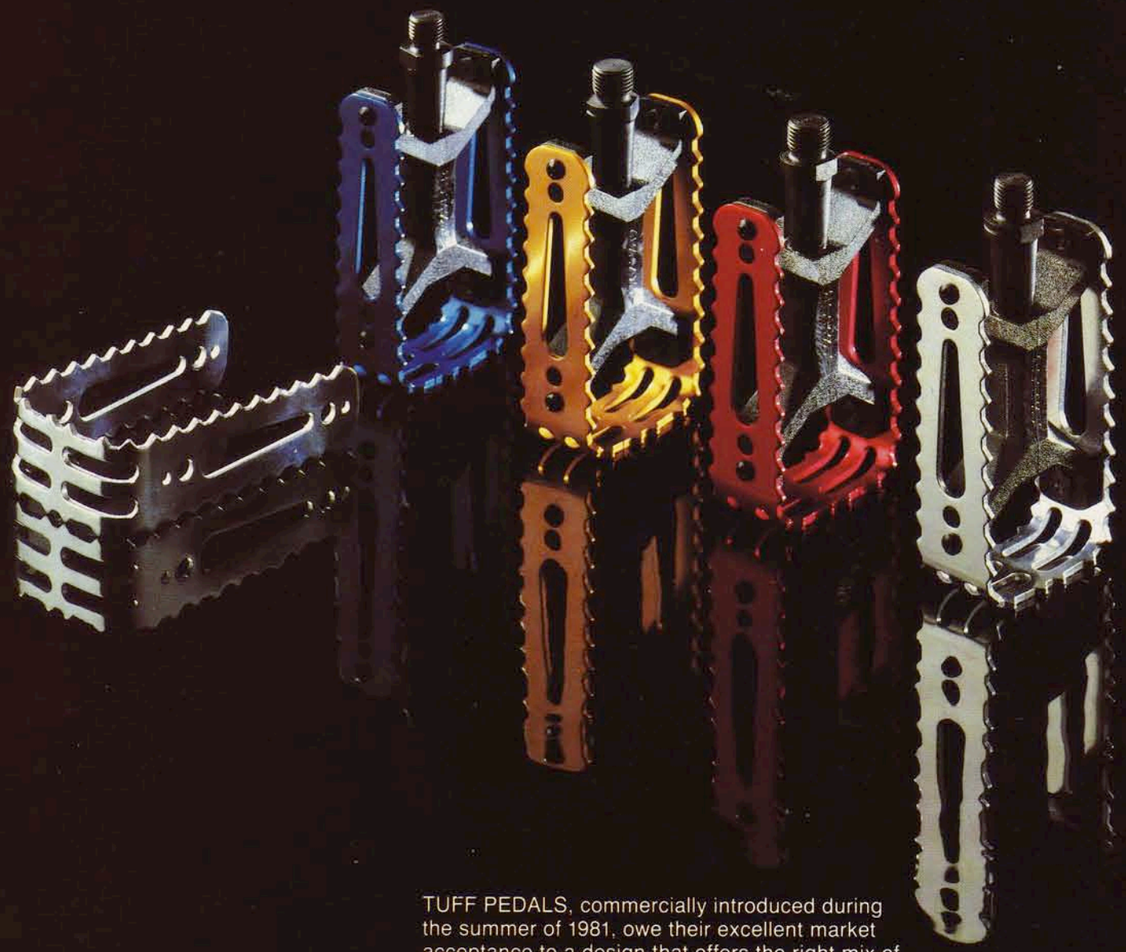
PATENTED
"KOOL HUB"
DESIGN

TUFF PADS
Specially compounded for efficient braking on the nylon surface of TUFF WHEEL® II.



SKYWAY TUFF WHEELS

TUFF PEDALS™



TUFF PEDALS, commercially introduced during the summer of 1981, owe their excellent market acceptance to a design that offers the right mix of product features at a moderate price.

Many of the TUFF PEDAL features listed below had previously been available only on much higher priced pedals.

The body is made of a high technology, graphite reinforced engineering thermoplastic. This specially formulated material contributes to an extremely light yet durable product. As well as contributing strength and stiffness, the graphite additive allows the TUFF PEDAL to have a continuously dry lubricated sleeve bearing for easy roll and minimum dust adhesion.

The spindle, machined and ground to precise dimensions, is made of heat treated chrome-moly steel. This material was selected because of its optimum balance of strength, toughness and weight.

The replaceable cage, made of high tensile heat treated aluminum alloy, has an ascending ramp angle and incorporates a custom tooth design for maximum gripping power and minimum foot slippage.

TUFF PEDALS come with a black body and either 1/2" or 9/16" spindles. Cage colors are red, gold, blue or silver.

WEIGHT: 298 g. per pair

SKYWAY TUFF PEDALS

ACCESSORIES

"BMX RACING FEVER," distributed exclusively by Skyway, was created for beginning and intermediate racers that want to become experts. This book and cassette, written in BMX language, provide the information racers want most about BMX racing.

* How to get started as a racer
* What features to look for in a good racing bike
* How to keep a bike in top racing shape
* How to prepare for a standarad pre-race safety inspection
* How to use expert racing techniques to cross the finish line first
* Names and addresses of leading inter national BMX sanctioning organizations

LIGHTWEIGHT FOAM FIT GOGGLES AND MASKS are constructed with tough nylon frames and flexible reticulated foam cores. These durable products fit comfortably (even over eyeglasses) and snugly when mounted directly to a helmet with pressure sensitive Velcro material. The foam liner surrounding the lens traps dust and dirt and absorbs perspiration while allowing filtered air to pass through and eliminate fogging.

WEIGHT: Goggles 33 g.; Masks 54 g.

The lower portion of foam in the face mask is easily removable for cleaning.

Foam Fit Goggles and Masks are available in red, white, blue, yellow and black. Each pair comes with two clear lenses which meet VESC-8. Smoke and polarized lenses are available separately.

SKYWAY LOGO SAFETY PADS
These attractive red, white and blue pads are available in a variety of sizes and configurations to cover frames, handlebars and goosenecks.

SKYWAY LOGO PRODUCTS include various items of racing and daily apparel. Racing Jerseys and T-shirts are available in Boys' sizes 6/8, 10/12, 14/16, and Men's sizes Small, Medium, Large and Extra Large. Baseball caps are adjustable and one size fits all. Not pictured but also available are patches, jackets, helmet bags, and bike bags.

NON-BICYCLE APPLICATIONS

A number of manufacturers in other industries have capitalized on the non-corrosive and durable feaures of TUFF WHEELS® to solve troublesome wheel-related problems. In addition to the lawn and garden, ultralight aircraft and ice cream cart applications shown, TUFF WHEELS are currently being used on garden carts, wheel chairs, agricultural equipment, carpet cleaning machines, industrial carts in corrosive plants, horse racing training sulkies and other areas where a long term maintenance-free wheel is required.

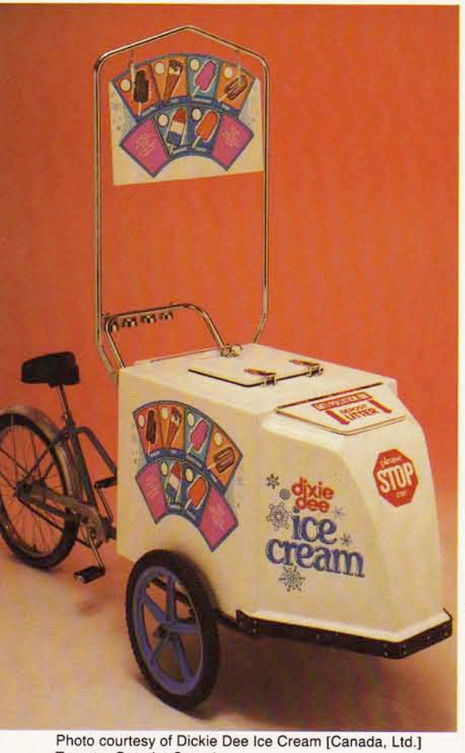


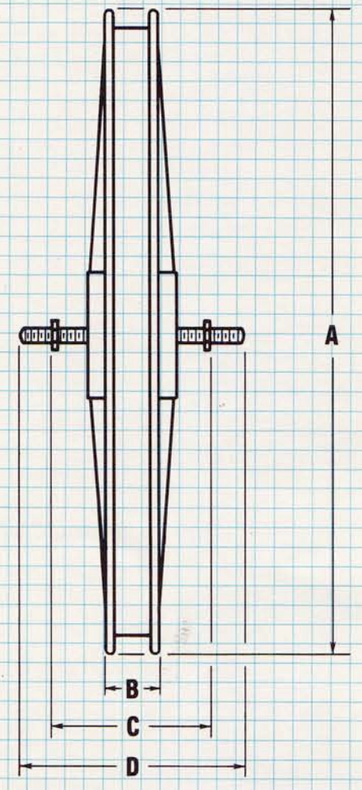
Photo courtesy of Dickie Dee Ice Cream [Canada, Ltd.]
Toronto, Ontario, Canada

Photo courtesy of Pro, Inc.
Shreveport, Louisiana

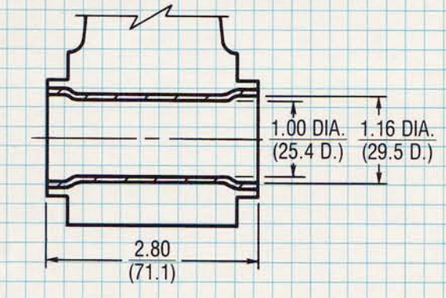
Photo courtesy of Pterodactyl, Ltd., Watsonville, California

WHEEL SPECIFICATIONS

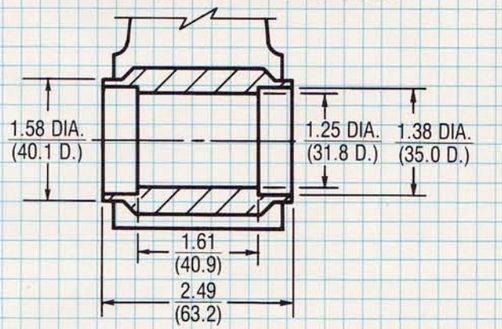
TUFF WHEEL® I, II & '16'



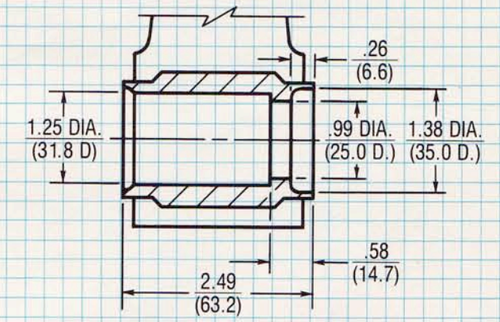
FRONT HUBSHELL UNASSEMBLED



REAR SEALED BEARING HUBSHELL



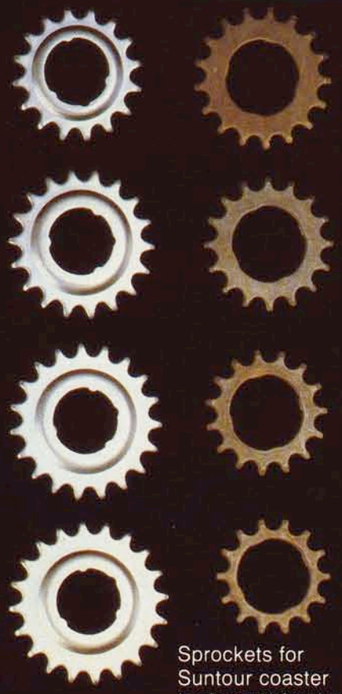
REAR COASTER HUBSHELL



DIMENSIONS: INCHES/(MM) *	A	B	C	D		
	MAXIMUM OUTSIDE DIAMETER	MAXIMUM RIM WIDTH	MAXIMUM OVERALL LOCKNUT TO LOCKNUT	MAXIMUM AXLE LENGTH	THREADS PER INCH	ACCEPTS TIRE SIZES
TUFF WHEEL® I	16.65/(422.9)					20''x1.750
FRONT		1.48/(37.6)	3.29/(83.6)	5.55/(141.0)	24 T.P.I.	20''x2.125
COASTER BRAKE		1.48/37.6)	4.18/(106.2)	6.40/(162.6)	24 T.P.I.	
TUFF WHEEL® II	16.57/(420.9)					20''x1.750
FRONT		1.38/(35.0)	3.58/(90.9)	5.38/(136.7)	24 T.P.I.	20''x 2.125
COASTER BRAKE		1.38/(35.0)	4.33/(110.0)	6.35/(161.3)	24 T.P.I.	
SKYWAY FREE HUB		1.38/(35.0)	4.38/(111.3)	6.00/(152.4)	24 T.P.I.	
SUNTOUR FREE HUB		1.38/(35.0)	4.35/(110.5)	6.00/(152.4)	26 T.P.I.	
TUFF WHEEL® '16'	12.65/(321.3)					16''x1.750
FRONT		1.40/(35.6)	3.29/(83.6)	5.55/(141.0)	24 T.P.I.	16''x 2.125
COASTER BRAKE		1.40/(35.6)	4.18/(106.2)	6.40/(162.6)	24 T.P.I.	

*Specifications subject to change without notice

REPLACEMENT PARTS



Sprockets for Suntour coaster brake and freehubs

Coaster brake repair kit

TUFF PAD™-Pro Model replacement pads

TUFF PAD™-Pro Model metal backing hardware

Reflectors for TUFF WHEEL® I and II

Skyway front axle repair kit
—3/8" heavy duty axle

Coaster brake dust cover kit

Dust covers

Bearing cups

Freewheel trim pack kit

MARKETING SUPPORT

WARRANTY POLICY We are proud of the quality we have designed and built into our products. As such, we back our products with a strong warranty policy which requires minimum dealer or distributor involvement. As an example, all TUFF WHEELS® are warranted for one year against defects in material or workmanship, and for a lifetime against warpage. If a problem should occur, the consumer may return the wheel directly to Skyway for repair or replacement.

PROMOTIONAL SUPPORT Skyway supports its dealer/distributor network with an integrated advertising and promotional program. We maintain a high profile in the BMX industry by sponsoring a team of winning BMX racers. These youngsters travel extensively in the United States and are frequently sent overseas to represent BMX, Skyway and our customers.

The racers' achievements, as well as our products, are advertised in the trade and consumer publications. Thus, many customers are "pre-sold" and go to the dealer asking for Skyway products.

BUSINESS PHILOSOPHY Skyway has been successful because it has followed a sound business philosophy: Supply the world marketplace with a continually expanding line of high quality, innovative and well-promoted products at a competitive price. Our customers have profited from the products resulting from this business approach. We will endeavor to support your business by following this time-tested path.

PACKAGING & SHIPPING

Skyway products are ultimately sold to the retail market in attractive, durable packages. The same products are available in bulk packages. At right, for our export and original equipment customers, is a summary of the maximum quantity of wheels that can be bulk packed in various containers.

TUFF WHEEL® I OR TUFF WHEEL® II
Bulk packaged 8 sets or 16 wheels per box—
55" x 12.5" x 17"

SURFACE—TRUCK FREIGHT
27 foot van—1680 sets 13,250 lbs.*
45 foot van—3024 sets 23,850 lbs.*

RAIL—PIGGYBACK
40 foot van—2688 sets 21,200 lbs.*

SEA—OCEAN VESSEL
20 foot container—1120 sets 9,000 lbs.*
40 foot container—2240 sets 17,900 lbs.*

*All weights are approximate

TUFF WHEEL® '16'
Bulk packaged 10 sets or 20 wheels per box—
55" x 13.25" x 12.75"

SURFACE—TRUCK FREIGHT
27 foot van—2450 sets 14,000 lbs.*
45 foot van—4410 sets 25,000 lbs.*

RAIL—PIGGYBACK
40 foot van—3920 sets 22,100 lbs.*

SEA—OCEAN VESSEL
20 foot container—1680 sets 9,500 lbs.*
40 foot container—3360 sets 19,000 lbs.*

NOTES

Design–Julie Papp
Photography–David Valenzuela

SKYWAY

SKYWAY RECREATION PRODUCTS
SKYWAY RECREATION INTERNATIONAL, INC.
SKYWAY MACHINE, INC.

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