SECOND LOOK SERIES

KYOSHO OPTIMA

Faster than a speeding bullet—
Able to leap the roughest terrain in a single bound—
The Optima has it all!

THE KYOSHO LINE of R/C kits, distributed by Great Planes Model Distributors*, includes everything from planes to cars and boats. Their car line has something to suit everyone's taste from the four-wheel-drive .21 gas-powered Integra Vanning to the four-wheel-drive electric off-road Optima. The Optima was designed to be competitive on the racing circuit straight out of the box, but with the addition of the optional ball bearing kit and a hopped-up motor, championship performance can be expected.

THE KIT. The Optima comes attractively packaged

A

photos by Louis DeFrancesco, Jr.

by DAVID TROST, M.D.

in a large box covered with many full-color pictures of the car from various angles. All parts are well packed to prevent damage during shipping. The 31-page assembly manual is very complete and it contains all the information needed to build the car and much more. It has a table which explains the pros and cons of each of the different Kyosho chargers, it tells about the optional Kyosho LeMans motors, and it gives a good description of the recommended front and rear end adjustments. The radio installation section of the manual contains specific installation instructions by manufacturer and servo model for the most commonly used radios.

CONSTRUCTION. The assembly of the Optima is organized into 44 nicely illustrated steps which are explained in the manual. There is no need for me to comment about specific assembly steps, because the building instructions are so good and all parts fit very well.

The Optima's main chassis consists of eight aluminum pieces. These parts bolt together to form cages in the front and rear which enclose the gear boxes and are connected by two aluminum bars. The gear boxes are molded of fiber-filled nylon and house the differential in the front and the differential and some of the drive gears in the rear. The differential housings are also made of fiber-filled nylon and contain metal gears. Each differential is supported by two ball bearings. Power is transmitted to the front differential by a fully enclosed chain-drive system, which works well and is not subject to the wear that would occur with an open system. Two different differential gear ratios are provided so that the builder can vary the relative speeds of the front and rear wheels. I set up my car so that the front and rear wheels rotate at the same rate.

The front and rear suspension systems are constructed largely of fiber-filled nylon for strength and lightness. Both consist of extra-long double wishbones for handling uneven terrain with minimal effects on steering. Dampening is provided by coil-over oil-filled shocks on all four wheels. Both the front and rear suspensions have adjustable camber and ground clearance. Each of the front and rear axles are supported by two plastic bushings. Kyosho offers ball bearings as an option. The four tires are of a spiked design similar to those on most R/C off-road cars.

The radio control is mounted on a fiberglass plate, which also serves to stiffen the main chassis and hold the motor battery. Parts are provided to mount just about any of the common standard or mini servos. The resistor type speed controller provides three forward, one braking, and two reverse speeds. The controller also has a voltage step-down circuit so that the radio control can run

SECOND-LOOK SERIES BUYER'S GUIDE

An impressive flood of after-market parts has followed the great success of the Kyosho Optima and many of these parts may be used to address the inherent weaknesses of this off-roader. Whether you need tires, suspension components, drive-train accessories or bodies, your choices seem endless. Here are some of the parts you might want to consider.

KYOSHO

OPTIMA

Type ..... 4WD buggy
Scale 1/10
Sug. Retail Price $239.95

DIMENSIONS:
Overall Length ..... 15 3/4 inches
Width ..... 9 1/2 inches
Wheelbase ..... 10 5/8 inches
Front Track ..... 9 1/4 inches
Rear Track ..... 9 3/8 inches

WEIGHT:
Gross (w/bat.) ..... 3 pounds, 10 ounces

BODY:
Type ..... Off-road buggy
Material ..... Lexan

CHASSIS:
Type ..... Aluminum ladder-rail
Material ..... Aluminum

DRIVE TRAIN:
Type (pri./sec.) ..... Pinion-spur/chain
Differential ..... Planetary gear
Bushings Type ..... Plastic

SUSPENSION:
Type (f/r) ..... A-arm
Dampening (f/r) ..... Coil-over shocks

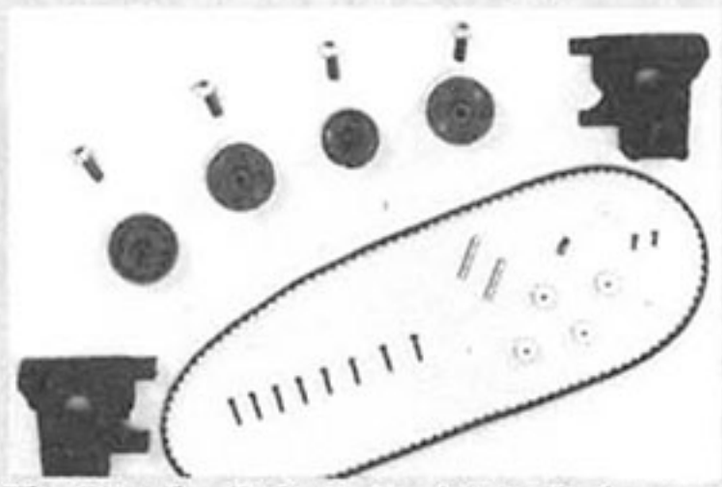
WHEELS:
Type (f/r) ..... One-piece plastic
Dimensions (f/r) (DxW) ..... 2x1.25 inches

TIRES:
Front ..... Pin-spike
Rear ..... Pin-spike

ELECTRICS:
Motor RS-540S
Battery Required ..... 7.2V to 8.4V
Speed Controller ... Mechanical 3-step

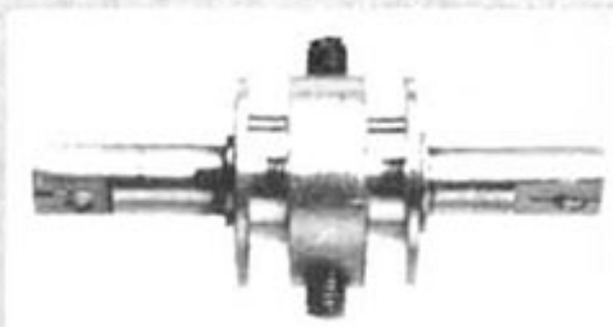
OPTIONS AS TESTED:
JR Circus 4-channel radio, LeMans 480G motor.

COMMENTS:
A solid performer and the first of a very successful line. The 3-step speed control was a major weak spot. Unfortunately, the original rear-engine Optima series is no longer being produced, but some deals should be available on the remaining cars in stock.



The Kyosho Belt-Drive kit includes everything you need to convert your Optima to belt drive. The belt conversion has a steel-reinforced belt and new differentials with metal bevel gears. You can even buy optional ball differentials for optimum performance.

From heavy-duty Gold and Platinum shocks to lightweight wheels for low-profile tires, the Kyosho Option House accessories can meet the needs of your Optima.

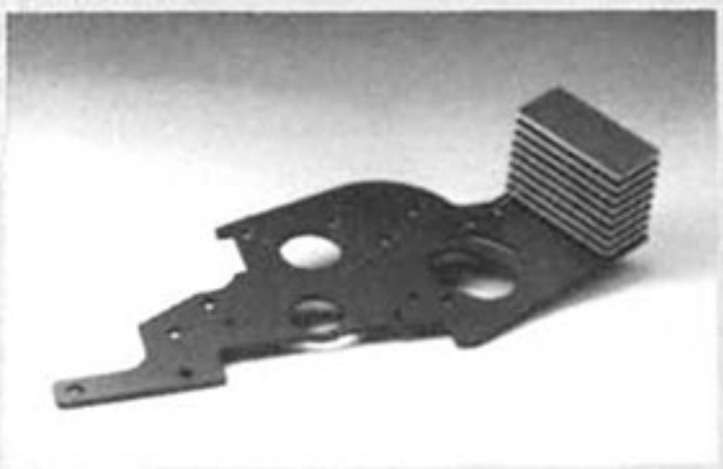


Parma's positive-lock differential replaces the original bevel gears (eliminating a breakage point) and uses one-way clutch bearings to give more positive steering response.

Tecnacraft offers Show and Go quality aluminum wheels for the Optima. These wheels don't require special adapters or hubs, and they accept stock tires without glue.

The addition of ball bearings, e.g., the DuraTrax pictured here, should be the first step in hopping-up your Optima. You can make your car go faster and run longer with stainless-steel bearings that are built to last.

The RCRC quick-disconnect battery holder eliminates the usual struggle with time-consuming tie-wraps that always get lost or break.



With more than 15 square inches of heat-exchange surface area, the Litesink motor mount lowers motor-operating temperatures .

The aerodynamic shape of Dahm's racing body slices through the air while creating enough downforce to help hold your car on the track at high speeds. The Warrior is designed to fit the Optima with no modifications.

OPTIMA UPDATE

WE FEATURED the Kyosho* Optima in the Spring '86 issue of *Radio Control Car Action* , so it's now time to take another look at this 4WD off-roader. What has happened to it during the last three years? Since its introduction, the Optima has gained acceptance as the standard against which other off-road vehicles can be measured. It quickly dominated every racing event in which it made an appearance, but, as usual, innovative racers couldn't wait to improve the original design in an attempt to make their winning edge as wide as possible.

Optimizing the Optima

Racers wanted to upgrade the Optima's handling: They found that the dampening could be improved by adding a heavier set of shocks and that traction could be greatly improved by using a lower-profile tire that would eliminate excessive chassis roll in the corners.

These improvements were quickly copied by Kyosho and incorporated in its Turbo Optima, which then provided consumers with these upgrades as part of the standard Turbo kit. But where did that leave the thousands of original Optima owners? Kyosho rewarded *them* with an innovative after-market parts line called Option House. After that, all the improvements that had been made to the Turbo Optima could be added to the standard Optima—right down to the 16 precision ball bearings and the rich-looking gold chassis components.

As the Optima persistently outperformed the rest in its class, other manufacturers soon followed Kyosho with an array of after-market components that ensure the big O's continued success. Hot Trick Racing* introduced the TriDirComp chassis to help the Optima loose some weight; Trinity* introduced a graphite chassis. To provide better control when cornering, the differentials have been made more efficient with one-way bearing systems for the front gearbox, and the standard gear differentials can be replaced with ball differentials. The Optima's basic drive system is a chain that drives the front and rear differentials. Many thought that this was a problem because it could stretch and break, and consumer demand for a belt-drive system soon led to its introduction.

Almost before we realized what was happening, the Optima started showing up on ovals as well as on off-road circuits, and within a relatively short time, oval conversions were available from just about every R/C manufacturer.

Next, the Optima showed up as a heavy-metal contender—a hot, off-road truck—and, sure enough, the after-market conversions followed with kits for racing or just for monster-truck fun. On the subject of conversions: Some innovative companies even started making it possible for you to mount the Optima's engines amidship. As you all know by now, Kyosho has taken this idea seriously, and it's now available through the family of Optima Mids. Once again, the after-market suppliers are in hot pursuit!

Overall, the Optima's performance has proven to be more flexible than Kyosho probably ever expected it to be. With appropriate after-market support, it has shown its adaptability to almost any type of racing, and Kyosho has even made it possible for you to acquire a version that suits you best.

The Optima's record speaks for itself and makes a clear winning statement on most tracks.

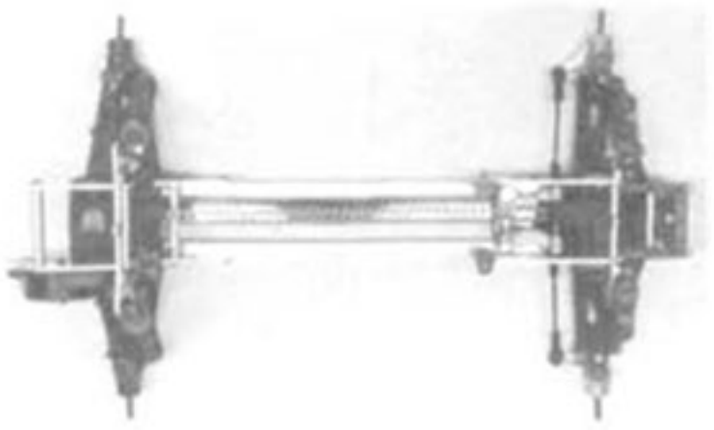
**Here are the addresses of the companies mentioned in this article:*
Kyosho; *distributed by Great Planes Model Distributors, P.O. Box 4021, Champaign, IL 61820.*
Hot Trick Racing Cars, Inc., *1157 Cushman Ave., San Diego, CA 92110.*
Trinity, *1901 E. Linden Ave., #20, Linden, NJ 07036.* ■

the 7.2V motor battery. I used a JR Circus* Hobbies 4-channel radio with two NES-505 servos.

The motor and battery used for this review were the LeMans 480G and the Kyosho* 6-cell, 1200mAh racing battery. The Optima comes with an RS 540 motor, but I wanted to take advantage of one of the other available powerplants.

The Kyosho LeMans motors are modified, high-performance motors, and six are available. The LeMans model numbers are based on the motor's expected run time (in seconds) using a 6-cell, 1200mAh battery pack. All the LeMans-series motors have adjustable timing, diamond-trued commutators and all (except the 600E) have dual ball bearings. The 480G also features a machined-aluminum end bell for durability.

The car is completed by trimming the clear polycarbonate body and driver/radio cover along the lines marked and finishing them on the inside with paint. A nice set of pressure-sensitive decals was provided for the outside, and I used the Tamiya* paint that's specially formulated for polycarbonate bodies.



The main frame of the Optima, Turbo Optima, Salute and Javelin has served many a racer well by bringing home the gold. We're sorry to see that it's being phased out.

A Kyosho Auto Charger was used to get the most out of the battery. This charger operates off a 12V car battery and will charge any 4- to 6-cell, 100 to 4000mAh Ni-Cd battery safely and automatically. You simply hook it up, press a button, set the desired charging current from 0 to 4 amp hours and let the charger do the rest. The built-in ammeter and voltmeter allow constant visual monitoring of charge status. The charger has a delta peak automatic cutoff to ensure safe charges to 100-percent capacity. This charger was very easy to use; it consistently recharged the car battery from dead to full capacity in about 18 minutes.

PERFORMANCE: Running the Optima is when the *real* fun begins. The car comes with two pinion gears (12 teeth and 15 teeth) to vary the car's speed/torque ratio. To get the highest possible speed, I used the 15-tooth gear almost exclusively, and I also advanced the motor timing by 4 degrees. The LeMans 480G motor accelerates the car quickly and gives it a very fast top end. The suspension easily handles rugged terrain and can absorb a

(Continued on page 154)

OPTIMA

(Continued from page 119)

1-foot drop without bouncing. The steering is positive, even over rough ground, and with its low center of gravity, the Optima corners very well with little tendency to roll over.

The Kyosho Optima is an all-purpose R/C electric car. It isn't only great for the fun-loving hobbyist who wants something to play with at the beach, but by adding a LeMans 480G motor and ball bearings, the Optima is also a serious competition machine.

**The following are the addresses of the companies mentioned in this article:*
***Great Planes Model Distributors,** P.O. Box 4021, Champaign, IL 61820.*
***Circus Hobbies,** 3132 S. Highland Dr., Las Vegas, NV 89109.*
***Kyosho;** distributed by Great Planes Model Distributors.*
***Tamiya;** distributed by MRC, 200 Carter Dr., P.O. Box 267, Edison, NJ 08818.* ■