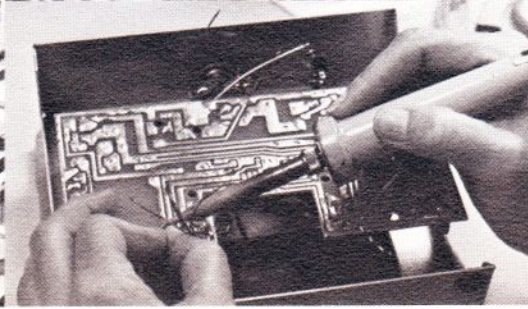
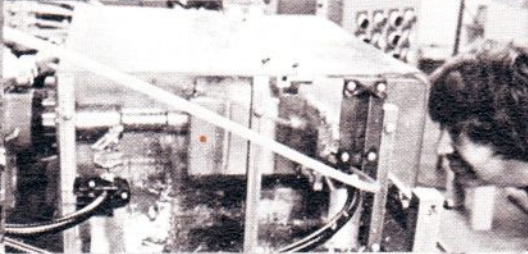
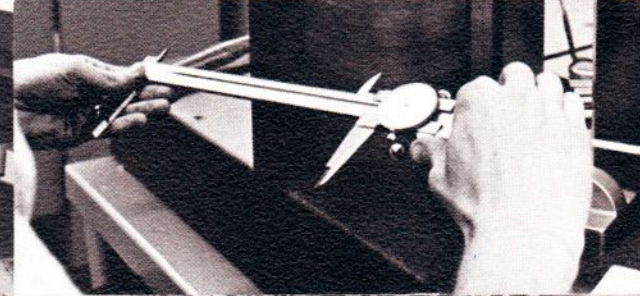
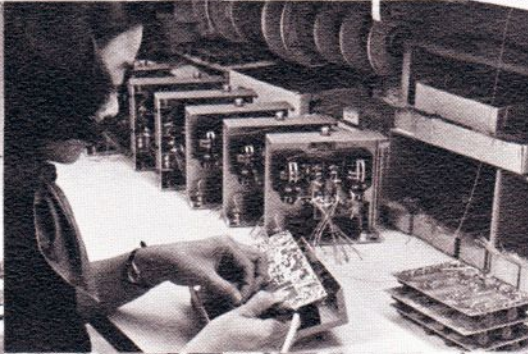
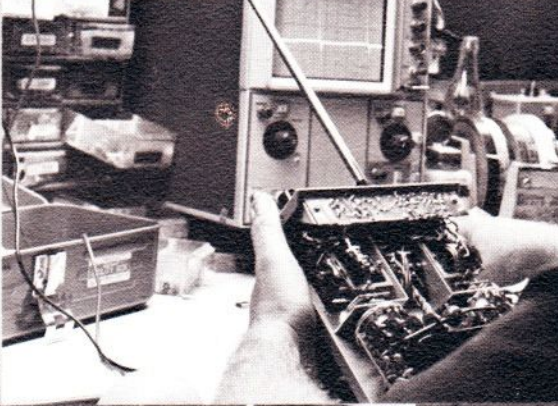


KRAFT SYSTEMS, INC.

SPORT SERIES SIGNATURE SERIES SERIES SEVENTY-SEVEN



KRAFT SYSTEMS, INC.



Phil Kraft, President, former World Radio Control Champion and twice National Champion.

The aircraft pictured are Super Fli's. The larger one is campaigned extensively in unlimited competition and air shows, often in conjunction with the smaller radio controlled version. Designed by Phil Kraft and built by enthusiasts at Kraft Systems, it incorporates aerodynamic ideas gained from radio control model experience. These aircraft demonstrate the close relationship between radio control models and their full scale counterparts.

THE RECORD



Since their introduction, Kraft proportional sets have won more major contests than all competition combined. While contest wins should not be the primary reason for selecting a particular radio control system, they do demonstrate performance and dependability. Contests are the proving ground in the development of superior systems which give greater utility and pleasure to the average user as well as the serious contestant.



Kraft Systems, Inc., has 40,000 square feet of plant and office area in three buildings. These house an integrated manufacturing complex devoted almost exclusively to radio control products for hobby and sport use.

The majority of our radio control systems' mechanical components are produced in-house. This provides us with a degree of design superiority, flexibility, and quality control that could not be obtained in any other way.

Many of the leading radio control equipment manufacturers have select-

ed our servos, control sticks, connectors, and other components for incorporation in their systems. In addition, our components are used extensively in industry and by the military. This wide recognition of Kraft components is an indication of the superiority of our products.

In addition to mechanical component production for our radio control systems, we manufacture a broad and expanding line of R/C model accessories such as wheels, engine mounts, blow molded tanks, retractable landing gears, and glow plug testers.

RADIO CONTROL YESTERDAY AND TODAY

Those who did not start radio control during its early stages cannot appreciate its progress. Today our control systems approach perfection in control accuracy and response, and with capable pilots, our aircraft last for years. These compact, lightweight, and versatile systems permit projects of a scope limited only by our imaginations.

The first commercial radio control equipment produced in the early 1950's was by today's standards unbelievably crude. One, or sometimes two, tubes were employed to give a modest current change to a heavy relay. The relay switched a clock type escapement driven by tightly wound rubber bands which provided a sequential type of control. One blip gave right rudder, two blips left. If the last command position was forgotten, one had to guess at what control came next.

A pound or more of batteries were required and since they were not rechargeable, flying was expensive. The simple receivers were relatively non-selective and, therefore, subject to a variety of interference. A great flying session was one where we succeeded in making a few turns in some way similar to our commands and returned with a repairable aircraft.



In the late 1950's resonant reed equipment had been developed to a fairly high degree of reliability in the hands of a skilled mechanic. Four control functions were available and although control was not proportional, a skilled pilot could "blip-blip" his way around the sky through surprisingly good maneuvers. Equipment was still very heavy and required extensive maintenance.

Early attempts at proportional control in the '50's used rapidly wagging con-

trols and were called "pulse-proportional." Only two proportional control functions were available and operation was very unreliable.

In March 1959, the first Kraft radio was introduced and soon became the most popular unit of its kind.

By the early 1960's, reed type equipment had been developed to a high degree of reliability and relative miniaturization. Some of this equipment is still in use today.

In 1964 the Kraft KP-4 introduced the modern era of radio control with a reliable, lightweight, and accurate proportional system.

From the beginning, the Kraft name has stood for quality, reliability, performance, advanced design, and dedication to customer satisfaction. As a result, the company has grown to become the world's largest manufacturer of radio control equipment. Your purchase of a Kraft product is protected by the sound business judgment, integrity, and financial stability of the company behind it. Radio control manufacturers may come and go, but we will be here tomorrow to service the product we sell today.



Some of our employees who are R/C enthusiasts.

A BUSINESS IS PEOPLE

Equally important to product is the attitude of personnel in all phases of the company. We recognize that customer service is a primary essential to business success. When you call or visit Kraft Systems, the person who greets you will not only be pleasant and courteous, but is sincerely interested in helping you in anyway possible. Your complete satisfaction is our primary objective.

Most of us at Kraft Systems are active radio control modelers. As a consequence, we appreciate the requirements of our customers and better understand their problems.

OFFICE STAFF



TECHNICIANS

Each set has a tag that is endorsed with the technician's number and he is personally responsible for its performance and quality. We constantly emphasize our dedication to our customers.

ENGINEERING STAFF

Since 1959, Kraft engineers have contributed most of the technology which has made possible radio control as we know it today. You have the assurance with a Kraft product that it is the most advanced in its field and is backed by the most experienced staff in the industry.



QUALITY AND SERVICE

A constant emphasis on quality is a key characteristic of our production departments. Incoming components are inspected and selected where necessary. The leads of parts that are inserted in printed circuit boards are crimped to insure integrity of connections, and circuit boards are machine wave soldered to eliminate the variables of hand soldering, to assure uniformity, and to minimize component heating. All printed circuit board assemblies are carefully examined with a 50 power microscope.

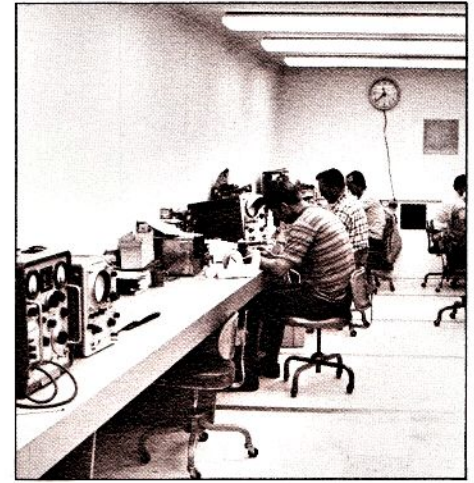
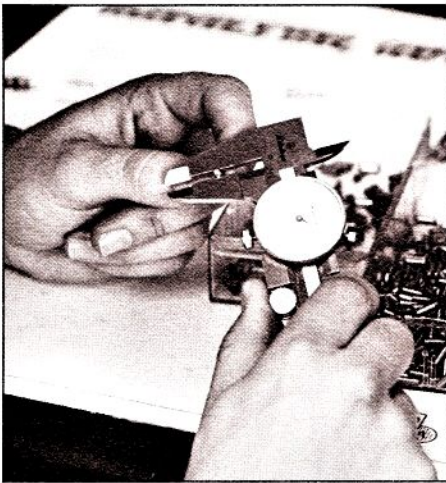
The Series '77 line is modular in concept permitting plug-in testing of the electronic subassemblies. Specially programmed test fixtures examine operating characteristics through all

parameters. As an example, they are analyzed at voltages much lower than would be encountered in normal use. After testing, subassemblies are plugged into their mechanical assemblies, rechecked operationally, and cycled at least 15,000 times to provide an accelerated aging process to seek out defective components.

The cycling process reduces the probability of component failure to a minimum. The completed unit is then final checked by a senior technician who signs it off as meeting all operational requirements. It then becomes his personal responsibility. Finally, the quality control department performs routine random inspections by an inspector responsible only to top man-

agement. Each set is completely gone through and examined for mechanical integrity, smoothness of servo operation, control stick feel, response, and general appearance. A complete operational range check is performed and transmitter output is reevaluated. In addition, equipment is taken at random from the final shipping area and test flown.

The complexity of electronic systems with the thousands of purchased components precludes perfection, but not because we don't try. New testing and production methods are constantly being explored to achieve the highest possible standard of reliability. Our reputation for quality is not accidental.



◀ REPAIR STAFF

If we had perfect pilots, perfect flying sites, perfect airplanes, perfect weather, perfect collision avoidance systems, and perfect radio control equipment, we might never require service. However, we live in a real world and sooner or later radio control equipment is going to require some sort of service. In fact, no other factor is more important to continue to enjoy radio control than service. Kraft Systems recognized this in the beginning and has established a reputation unique in the radio control industry.

Perhaps because we are enthusiasts ourselves, we better appreciate the needs of our customers. Therefore, we emphasize speed, fairness, and quality in all of our service dealings.

In recent years, we have established a worldwide network of service stations and you may consult your favorite radio control magazines or write to the factory for current listings.

CONCEPT '77

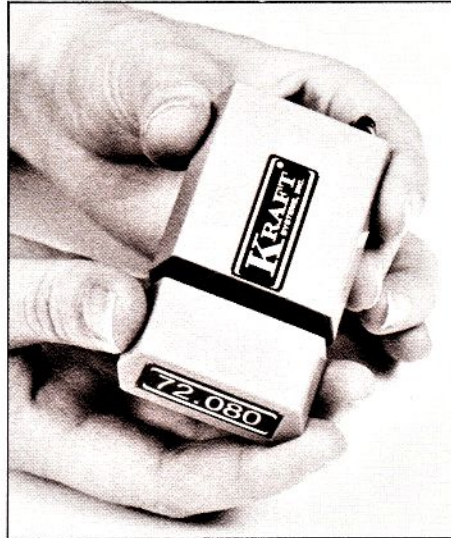
The Series '77 line is the finest and most advanced line of radio control equipment available. It is what you would expect from the engineering group who pioneered the concept of digital proportional control and subsequently created the innovations responsible for the level of R/C performance accepted as standard today.

Because the ceramic lattice filter I.F. receivers do not have to be tuned to their transmitters, complete interchangeability is obtained and component rather than system merchandising is made possible.

To utilize this advantage, components have been priced so that there is no price penalty in purchasing individual components over the system price. For convenience, components are individually packaged and the purchaser may select items to custom tailor a system to his preference.

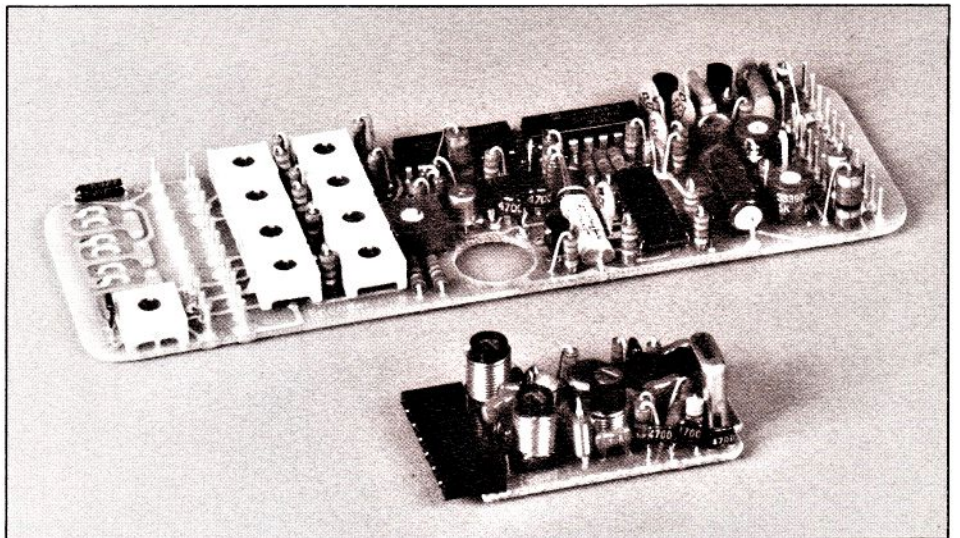
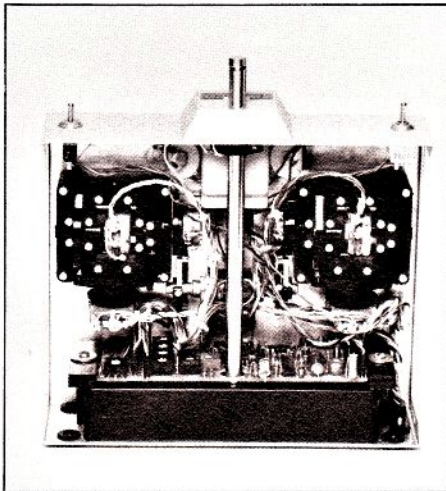
Frequency changing through plug-in R.F. modules permits not only frequency changing in the same band, but switching to all frequencies in other bands as well. These modules are complete R.F. sections with components matched and tuned to eliminate performance losses and to insure reliability and uniformity. This method should not be confused with unreliable crystal plug-in frequency changing.

All systems incorporate quick change heavy-duty, vibration resistant, nickel-cadmium battery packs for reliability, convenience, and long term economy. Dry battery operation, often advertised for reasons of initial low price, is not offered and is not recommended.



Frequency changing modules protect against obsolescence by permitting

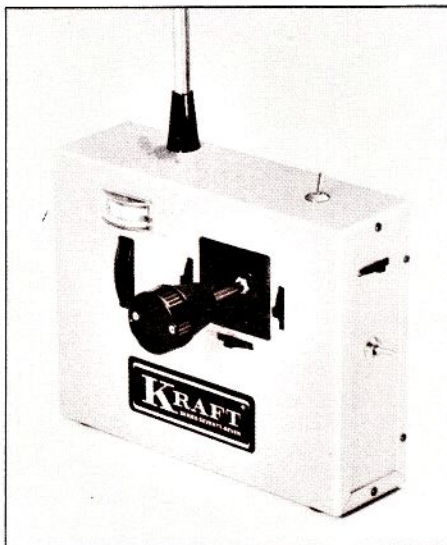
conversion to any future FCC frequency allocations.



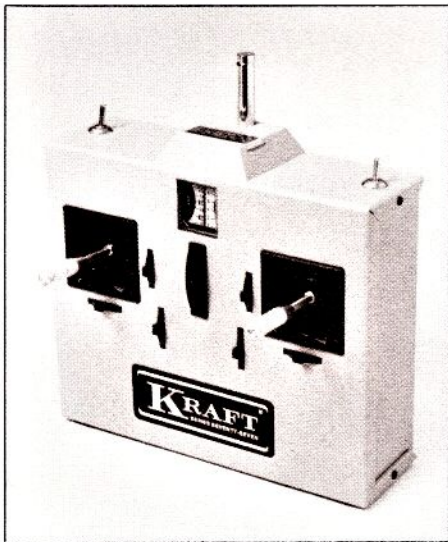
TRANSMITTERS



KPT-5C



KPT-5CS



KPT-7C

Control Stick Modes

Specify Mode I or Mode II when ordering KPT-7C or KPT-5C transmitters:

Mode I Right Stick Throttle-Aileron
Left Stick Elevator-Rudder

Mode II Right Stick Elevator-Aileron
Left Stick Throttle-Rudder

Trainer System

The Series '77 seven channel transmitters incorporate a training system originated by us. (Trainer system is optional on 5 channel transmitters.) This gives the beginner a chance to learn without the discouragement and expense of crashes. For training purposes, two transmitters are connected together by a cable which is plugged into the same receptacle used for battery charging. Transmitters need not



KPT-7CS

be on the same frequency, and the system is interchangeable between Mode II and single stick. During operation, the instructor retains control until he presses the spring loaded toggle switch toward the front of the transmitter, which transfers control to the student "slave" transmitter. As long as the instructor holds the switch in this position, the student has full control. If the student gets into trouble, the instructor releases the switch and assumes control. By simply reversing the plug-in trainer cable, either transmitter may be used by the "trainer" or by the "trainee". This feature is unique in the industry.

The trainer interconnecting cable and the conversion kit for the 5 channel transmitter are not supplied with systems but are available separately as an option.

The nucleus of an R.C. system is formed by its transmitter. To it are added receiver, servo, and battery combinations to suit the individual's requirements.

The Series '77 transmitters have been carefully engineered to provide proper balance and control feel. Transmitter cases are formed from rugged vinyl covered aluminum for strength, durability, and greater R.F. efficiency.

Precision open gimbal control sticks absolutely eliminate centering "slop" and provide much greater control accuracy. The closed gimbal style of control stick used on many radios cannot compare with an open gimbal for accuracy or feel. This is because the closed gimbal must operate through mechanical linkage to the control potentiometer, whereas the open gimbal sticks drive directly on a potentiometer eliminating the mechanical play inherent with the other method.

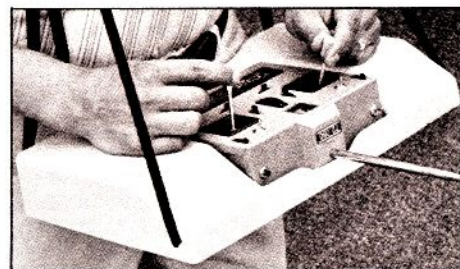
Series '77 transmitters feature identical plug-in R.F. sections. These are an efficient new type design with the highest R.F. output of any transmitter we have tested.

Dual rate switches, spin buttons, and roll buttons are optional on all transmitter models at extra cost. Dual rate switches permit the flier to select two degrees of control sensitivity by varying the percentage of servo movement obtained for a given degree of control stick movement. Dual rate is normally applied to either aileron or elevator controls or both. The roll button gives a preselected degree of aileron movement to provide a fixed roll rate on command.

Series '77 transmitters feature plug-in modular encoder boards for improved quality and ease of service.

Transmitter modules are available on all standard R/C frequencies.

TRANSMITTER TRAY

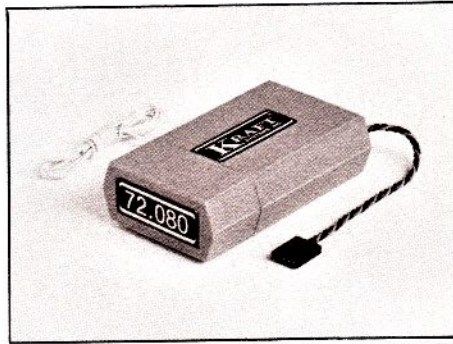


This tray is of the type used for many years by top European fliers. It is designed to be used with long sticks (P/N 200-145) thereby providing great smoothness and control accuracy. The tray is vacuum formed out of rugged Royalite® plastic.

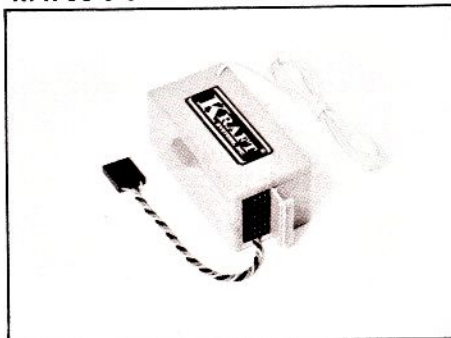
RECEIVERS



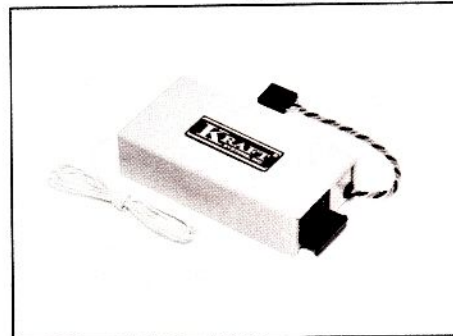
KPR-5C 5 CHANNEL



KPR-7C 7 CHANNEL



KPR-7L 7 CHANNEL



KPR-7D 7 CHANNEL

For 1977, three receiver types are optionally available for use with any Series, '77 transmitter. The KPR-7C, KPR-5C, and KPR-7L all have identical circuitry featuring two 4-pole ceramic I.F. filters which allow complete interchangeability without the necessity of retuning or matching to a specific transmitter. All have double tuned R.F. sections to minimize harmonic type interference and all have special noise rejection circuitry permitting their operation even under the most adverse conditions.

The KPR-7C has a plug-in R.F. section for instant conversion to any of the available frequencies. The KPR-7L is a subminiature version of the KPR-7C and the KPR-5C is a low cost receiver. These two do not have plug-in R.F. sections.

In addition to the above, the KPR-7D is supplied as standard with the Signature Series and is optionally available matched to any of the other transmitters. This is a very advanced dual conversion receiver with a conventional I.F. strip to minimize space requirements. By eliminating the image response common to all single conversion receivers, it may perform reliably in some areas where the single conversion receivers may not.

The convenient direct servo controller may be used with all four receivers.

KPR-5C, KPR-7C, and KPR-7L RECEIVER SPECIFICATIONS

I.F. Frequency 455 KHz
Current Drain 8 mA

Usable Sensitivity3uV
Selectivity ± 3.5 KHz at 6 db
 ± 9 KHz at -60 db
Image Rejection -3 db
Spurious and Harmonic Rejection ... -60 db min.
Noise Limiting: Series clipper and pulse integration provide high immunity to shot and ignition noise.

Temperature Range 0-140°F
Semiconductors:

- 7 Bipolar Silicon Transistors
- 4 Silicon Diodes
- 2 Integrated Circuits

Dimensions:

KPR-5C 2.36"x2.2"x.8"
(5.9x5.6x2 cm)
KPR-7C 2.92"x1.82"x.8"
(8.3x4.6x2.03 cm)
KPR-7L 1.94"x.96"x1.08"
(4.93x2.44x2.74 cm)

Weight:

KPR-5C 2 oz. (56.7g)
KPR-7C 2.12 oz (60g)
KPR-7L 1.3 oz (36.4g)

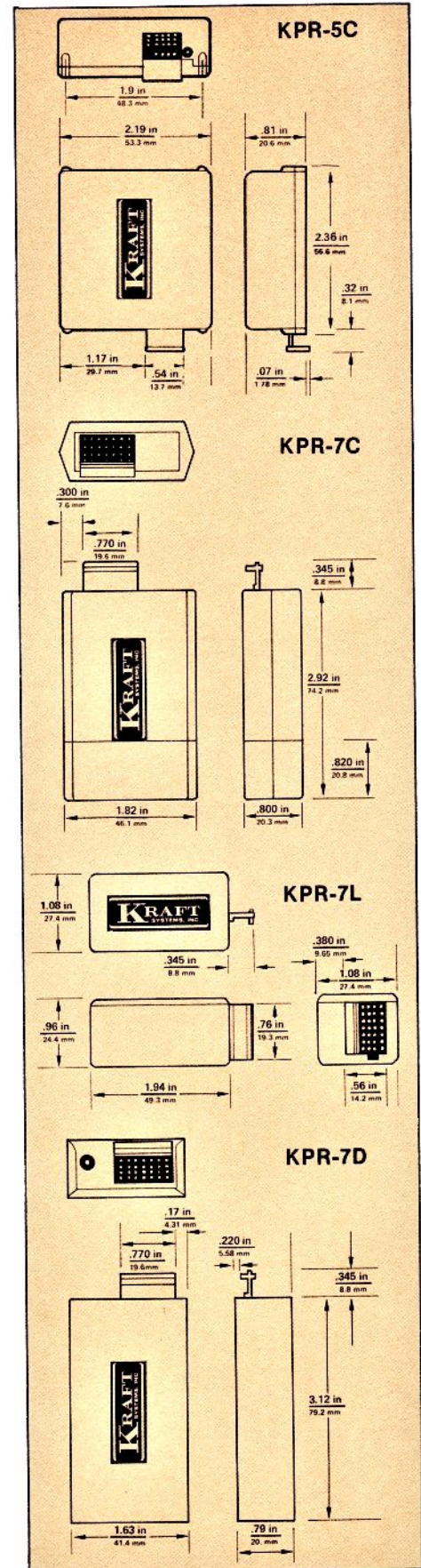
KPR-7D RECEIVER SPECIFICATIONS

I.F. Frequencies 10.7 MHz and 455 KHz
Current Drain9 mA
Usable Sensitivity3.0 uV
Selectivity 3 db down at 3 KHz
60 db down (passband rejection)
Image Rejection -60 db min. (triple tuned front end)
Spurious and Harmonic Rejection -80 db min.
Noise Limiting Parallel clipping and pulse integration provide high immunity to shot and ignition noise.

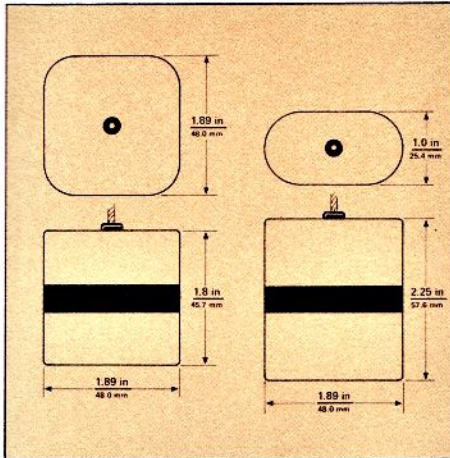
Temperature Range 0-140 °F
Semiconductors :

- 2 Dual Gate MOSFET's
- 1 J FET
- 6 Bipolar Transistors
- 1 Integrated Circuits

Dimensions 3.12 x 1.63 x 0.79"
(7.92 x 4.14 x 2.0 cm)
Weight 2.1 oz. (58.8g)

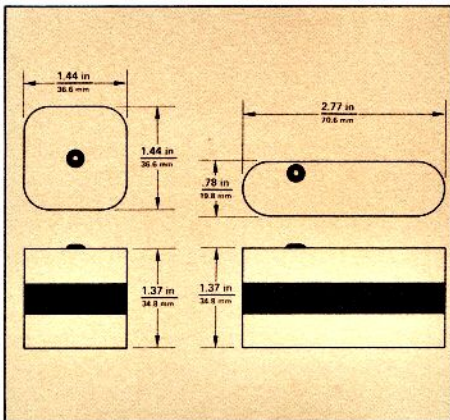


BATTERY PACKS



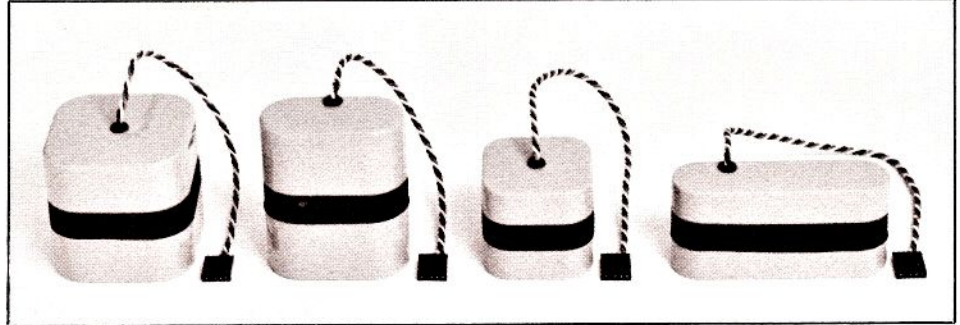
KB-4F

KB-4E



KB-4S

KB-4M



KB-4F

KB-4E

KB-4S

KB-4M

All Kraft battery packs use cells specifically designed to withstand high vibration and shock. These cells also feature a superior seal design and provide outstanding performance and reliability.

The cells are the fast charge type and may be fully charged from total discharge in 6 hours.

The standard pack is the 550 MAH KB-4E. The 1000 MAH KB-4F is offered

for special applications such as long duration gliders and complex stunt and scale aircraft.

Two miniature battery packs, the 450 MAH KB-4M and KB-4S, are intended for use where light weight and small size are important. These packs are not recommended for use in airborne systems utilizing more than five servos or multiple KPS-15H (high power) servos.

SPECIFICATIONS

KB-4F
1000 MAH (milliamphere hours) fast charge
SIZE: 1.89"x1.89"x1.8"
(4.8 cm x 4.8 cm x 4.7 cm)
WEIGHT: 7.1 oz. (201 g)

KB-4E
550 MAH (milliamphere hours) fast charge
SIZE: 2.25"x1.89"x1.8"
(15.72 cm x 4.8 cm x 2.54 cm)
WEIGHT: 4.6 oz. (130 g)

KB-4S
450 MAH (milliamphere hours) fast charge
SIZE: 1.33"x1.435"x1.435"
(3.38 cm x 3.65 cm x 3.65 cm)
WEIGHT: 3.4 oz. (96 g)

KB-4M
450 MAH (milliamphere hours) fast charge
SIZE: 1.33"x.78"x2.76"
(3.38 cm x 1.98 cm x 7.01 cm)
WEIGHT: 3.4 oz. (96 g)

DIRECT SERVO CONTROLLER - BATTERY CHARGER

It is hazardous and inconvenient for modelers at most flying sites to attempt engine adjustments while others are flying. The direct servo controller enables the modeler to operate the desired control functions without interfering with others. Since the receiver need not be switched on when using the direct servo controller, the user will not be interfered with by nearby transmitters.

The KPR-5C, KPR-7C, KPR-7L, and KPR-7D receiver switch harnesses have a special charge receptacle that permits plug-in of the direct servo controller. The slide switch on the controller allows it to be used either as a Mode I or Mode II transmitter. The lever will operate the throttle or elevator depending on the position of the slide switch. The toggle switch will operate the fifth channel for retractable landing gears or other controls.



KBC-B

KBC-A

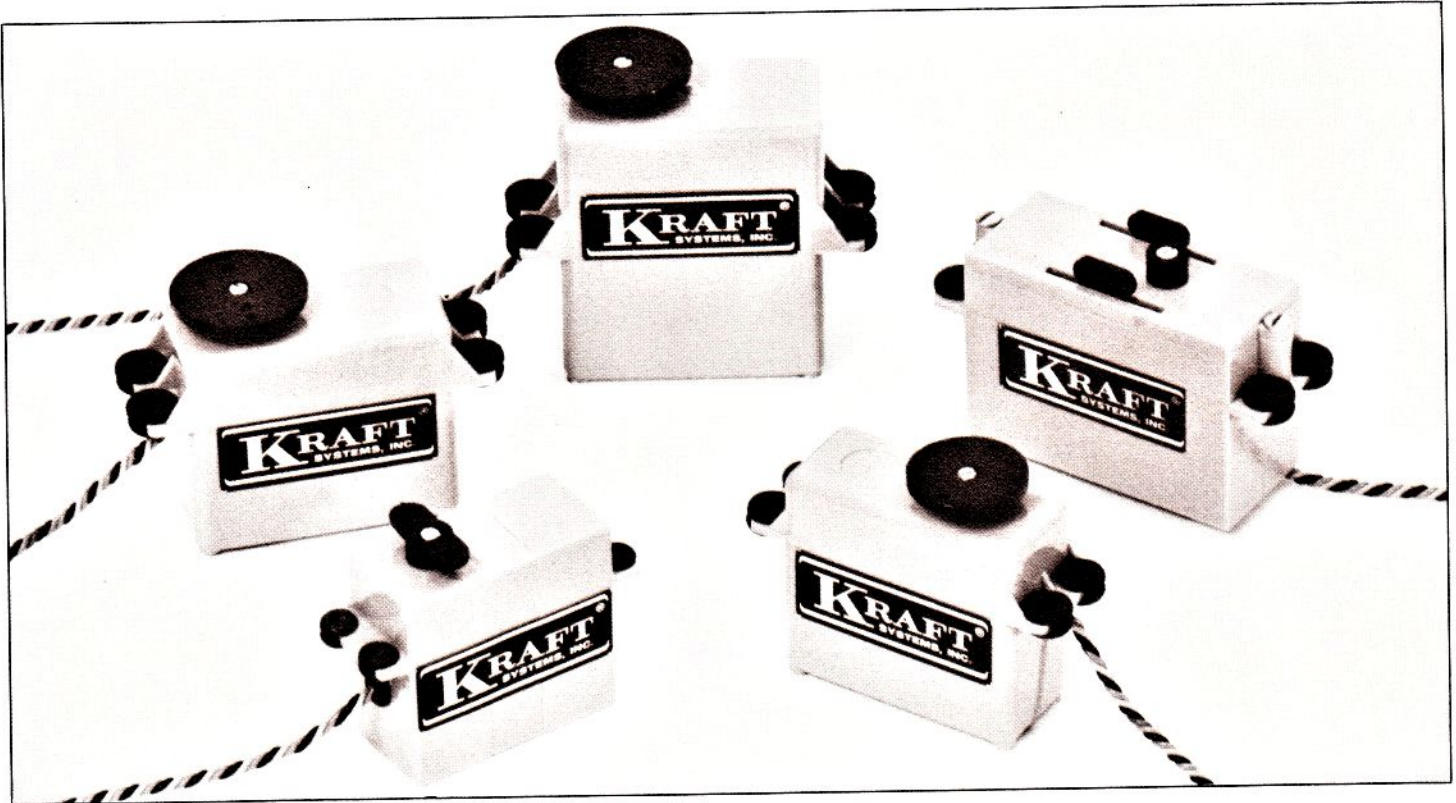


The standard KBC-B charger is a wall-mounted, dual output type, transformer isolated and U.L. Approved for safety. Any Kraft transmitter and receiver battery pack may be charged simultaneously or independently. It is available only in the fast charge rate version for 1972 and later systems.

The KBC-A charger is designed to operate from a 12 volt automobile cigarette lighter. It is transistor regulated for constant current output regardless of variations in the automobile's battery voltage. Transmitter and receiver battery packs may be charged independently or simultaneously. Available for fast or slow charge rates. A 10' cord is included.

A charge adapter (Part No. 200-140) is required when using these chargers with switch harness Part No. 200-029 (identified by 2-pin charge receptacle.)

SERVOS

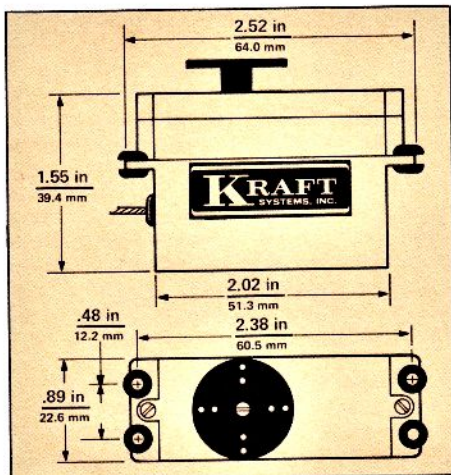


All Kraft servos use an integrated circuit amplifier designed by Kraft Systems. This is the result of over three years of development and represents the ultimate in digital servo amplifier design. It should not be confused with other integrated circuits used by competitive manufacturers. Fifty-seven transistors, five diodes, sixty-three resistors, and two capacitors are housed in the integrated circuit package to produce centering and tracking accuracy better than $\frac{1}{2}\%$, virtually zero drift with changes in temperature and voltage, uniform duty cycle in both directions, smoothness, and excellent damping characteristics. The design

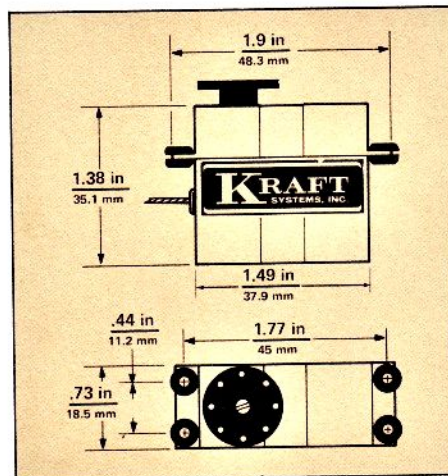
incorporates a bridge type output which means that the servo motor operates on the full battery voltage and that only three wires are required for operation. This permits system operation even though one battery cell may be dead or shorted. Along with this amplifier's outstanding performance, its current requirements are very low. Six different servos are available to suit a variety of applications. Each servo is electronically interchangeable and features the same full throw, instant response, accuracy, and high power which have long made Kraft servos the standard of the industry.

The newcomer to radio control is often confused about the relative merits between the linear output and wheel output servos. The linear rack type has the advantage that the control push rods move in a straight line. However, the wheel output servo is more versatile because the amount of control travel can be easily adjusted and differential control movement may be obtained. Servos with 180° rotation may be special ordered at no extra charge. This can provide a locking action which eliminates servo gear loading in applications such as retractable landing gears.

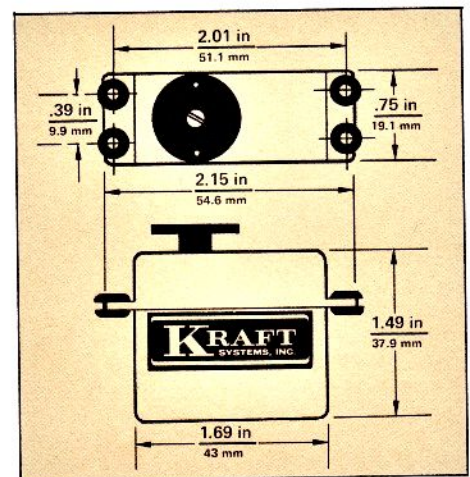
KPS-11



KPS-12



KPS-14II



KPS-11 SERVO

The KPS-11 provides the versatility of both rotary and dual linear outputs with small size and rugged mechanical design.

WEIGHT: 1.9 oz. (54 g)
 STATIC TORQUE: 23.5 oz.-in. (1.69 Kg-cm) with 10 ohm motor
 TRANSIT TIME: .5 seconds for .625" linear travel
 AVAILABLE OUTPUTS: 1 rotary wheel or rotary arm
 2 linear racks

KPS-12 SERVO

This is our smallest, lightest digital proportional servo. Despite its small size, it features full throw and high power, and is suitable for miniature and moderate-duty applications.

WEIGHT: 1.2 oz. (34 g)
 STATIC TORQUE: 18 oz.-in. (1.30 Kg-cm) with miniature 12 ohm motor
 TRANSIT TIME: 0.5 seconds for 100° rotary travel
 AVAILABLE OUTPUTS: 1 rotary wheel or rotary arm

KPS-14 II SERVO

This servo is specifically designed to provide miniaturization with the ruggedness to withstand even unreasonable abuse. It is highly recommended as a general purpose miniature servo.

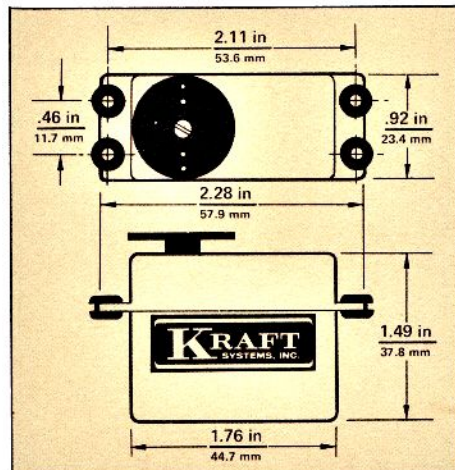
WEIGHT: 1.4 oz. (40 g)
 STATIC TORQUE: 17 oz.-in. (1.22 Kg-cm) with miniature 12 ohm motor
 TRANSIT TIME: 0.5 seconds for 100° rotary travel
 AVAILABLE OUTPUTS: Rotary arm or wheel

KPS-15 II SERVO

This servo is an especially rugged design.

WEIGHT: 1.8 oz. (51 g)
 STATIC TORQUE: 29 oz.-in. (2.09 Kg-cm) with 10 ohm motor
 TRANSIT TIME: 0.5 seconds for 100° rotary travel
 AVAILABLE OUTPUTS: Rotary arm or wheel

KPS-15II



KPS-15HII

KPS-15 H II SERVO

This is a higher powered version of the KPS-15 and is recommended for boats, cars, and retracts. Its extra power is the result of a 6 ohm motor in place of the standard 10 ohm motor.

WEIGHT: 1.8 oz. (51 g)
 STATIC TORQUE: 38 oz.-in. (2.74 Kg-cm) with 6 ohm motor
 TRANSIT TIME: 0.4 seconds for 100° rotary travel
 AVAILABLE OUTPUTS: Rotary arm or wheel

KPS-16 SERVO

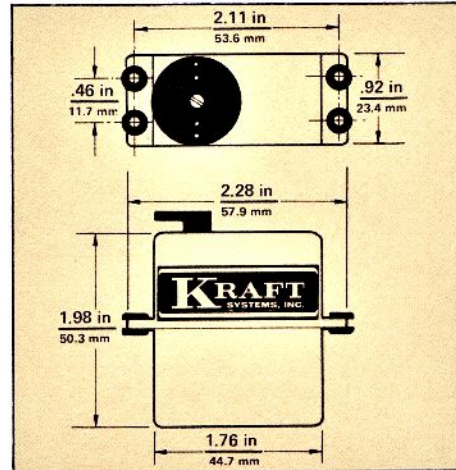
Basically, this servo is the same as the KPS-15 but with additional gearing to provide even greater static thrust. Its tremendous power greatly simplifies mechanical linkages used for such applications as retractable landing gears. Because of the additional gearing, the transit time of the servo is slow, making for greater realism in applications for which it is intended.

WEIGHT: 2.1 oz. (60 g)
 STATIC TORQUE: 66.6 oz.-in. (4.8 Kg-cm) with 10 ohm motor
 TRANSIT TIME: 3 seconds for 180° rotary travel
 AVAILABLE OUTPUTS: Rotary arm or offset arm

Compatibility of Servos

Series '77 integrated circuit servos are compatible with Series '71 and later models. Integrated circuit servos (1972-1977, 3 wire type) and earlier servos should not be mixed in an installation. Early model servos (1967-1971, 4 wire type) are not compatible with 1972 and later receivers.

KPS-16



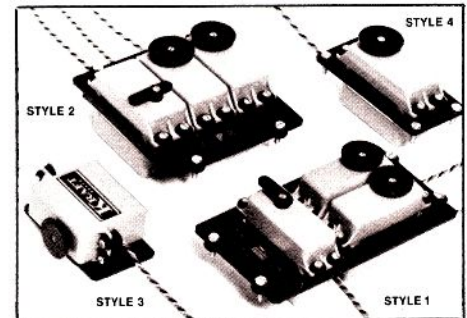
CONNECTORS

The connector block and connectors, designed and built in our factory, have been specifically developed for the demanding requirements of radio control use. Sockets are gold plated beryllium copper, crimp connected to machine cut and stripped wire. The plastic plug body extends over the wiring insulation preventing stress at the junction between the pin and the wire. Not only is this wiring method inherently more reliable than soldered connections, it also insures uniform quality.

The unitized plug system offers light weight, improved reliability, and greater convenience by eliminating the bulky wiring harness. Servo plugs are securely held in place by a locking tab, but will pull loose without damage in the event of a crash.

Jumper cables (P/N 200 036) may be ordered if servos are to be installed a great distance from the receiver.

SERVO TRAYS



SERVO TRAY PART NUMBERS

SERVO	STYLE 1	STYLE 2	STYLE 3	STYLE 4
KPS-9		200-022	200-021	
KPS-10	200-018	200-019	200-017	
KPS-11				
Kps-11A	200-041	200-042	200-040	
KPS-12	200-045	200-046	200-044	
KPS-14				
KPS-14II	200-089	200-088	200-090	200-101
KPS-15				
KPS-15II	200-093	200-092	200-094	200-102
KPS-15H				
KPS-15HII				
KPS-16	200-093	200-092	200-094	200-102

THREE CHANNEL SYSTEM

These units are ideally suited for gliders, boats, three function powered aircraft, and cars. Their utility has been increased by the adoption of a self-neutralizing left-hand control stick that may be rotated to provide either vertical or horizontal movement and may be converted from self-neutralizing operation to positionable control by removing the centering spring and tightening the adjustable brake. At the right hand is our two-axis precision open gimbal stick. It can be adapted for either positionable or self-neutralizing operation of the vertical control axis.

A meter is provided to monitor R.F. output and to give a relative indication of transmitter performance.

The plug-in R.F. section is accessible by removing the transmitter back and operation on any of the standard R/C frequencies may be selected.

The compact KPR-3C receiver consists of two integral servos and a complete receiver section in one package. A connector is provided permitting the addition of an optional third servo. The servos utilize the rugged KPS-14II gear train and our advanced integrated servo amplifier for great servo speed, power, and centering accuracy. An internal reversing plug matches channel output to desired control stick configuration. This is accessible by removing the receiver bottom case.

Note that three channel equipment is sold in matched sets when the KPR-3C model "brick" is used. This is because a standard type receiver is incorporated in the KPR-3C which must be tuned to its transmitter. While plug-in frequency change is not available on the KPR-3C, dual frequency switching is optional at extra cost.

Although primarily intended for use with the three channel "brick" receiver, the low cost five channel receiver may be selected with two or three servos to provide a discrete three channel system at a very competitive price. If plug-in receiver frequency change is desired, the KPR-7C receiver may be selected. If space is a factor, the KPR-7L miniature receiver can be used.

TRANSMITTER SPECIFICATIONS

R.F. Input Power (nominal) 825 mW
 R.F. Output Power (nominal) 650 mW
 Approximate current drain 125 mA
 Temperature Range 0-140°F
 Modulation: Pulse position type 1.4 ms pulse spacing at control neutral. Pulse time stability $\pm 1\%$ 0-140°F and over the useful operating voltage of the power pack. All transmitters use 9.6V 550 MAH high reliability nickel-cadmium battery packs.

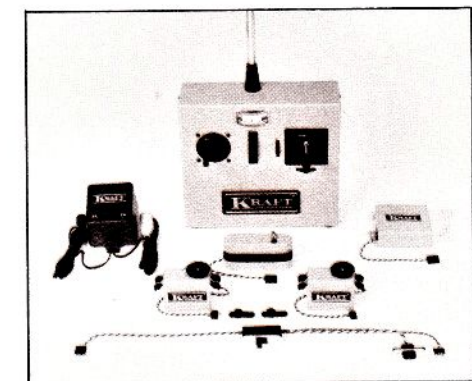
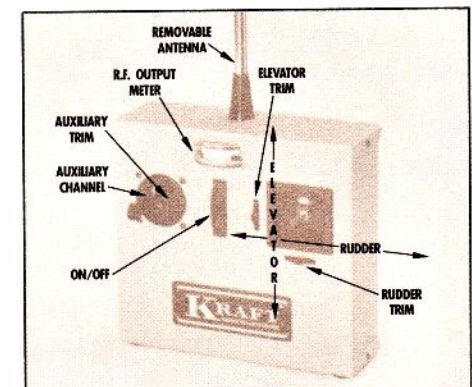
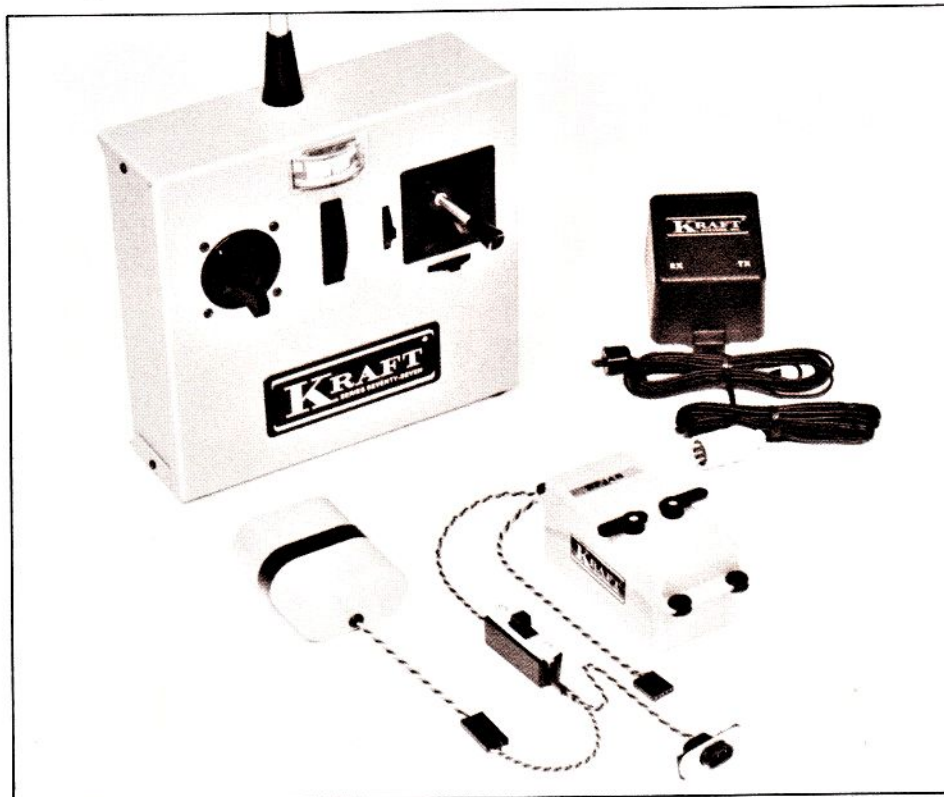
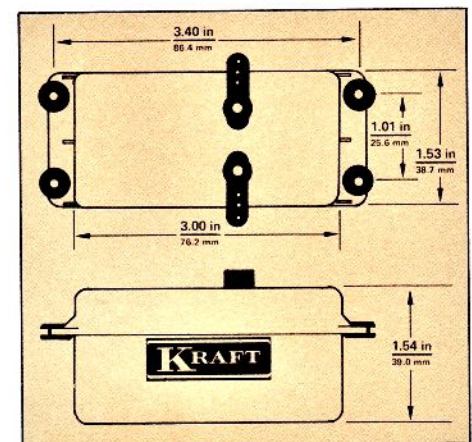
SIZE
 KPT-3C 6.4"x6"x2"
 (16.3cm x 15.2cm x 5.1cm)

WEIGHT (including antenna)
 KPT-3C 1 lb.15 oz. (0.88 Kg)

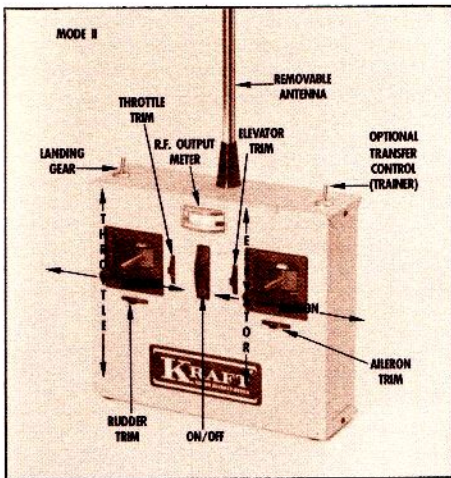
RECEIVER SPECIFICATIONS

I.F. Frequency 455KHz
 Current drain 32mA
 Usable Sensitivity (0.5v detected) 3uV nominal
 Selectivity 3KHz at 3db points
 Image Rejection -2db
 Spurious and Harmonic Rejection -60db min.
 Noise Limiting: Series clipper and pulse integration provides high immunity to shot and ignition noise.
 Temperature Range 0-140°F
 Semiconductors:
 11 Bipolar Transistors
 4 Silicon Diodes
 4 Integrated Circuits

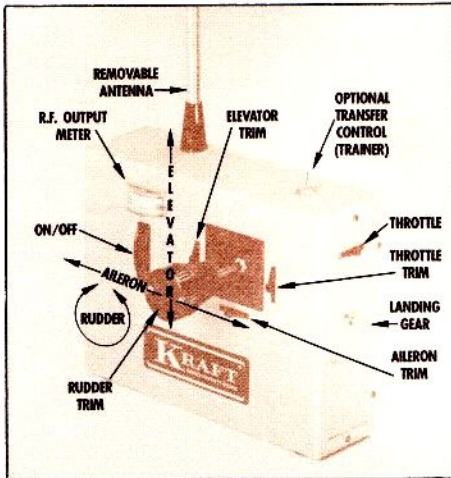
WEIGHT
 KPR-3C 4.75oz. (129g)
 SIZE
 KPR-3C 3.4"x1.54"x1.53"
 (8.64cm x 3.9cm x 3.87 cm)



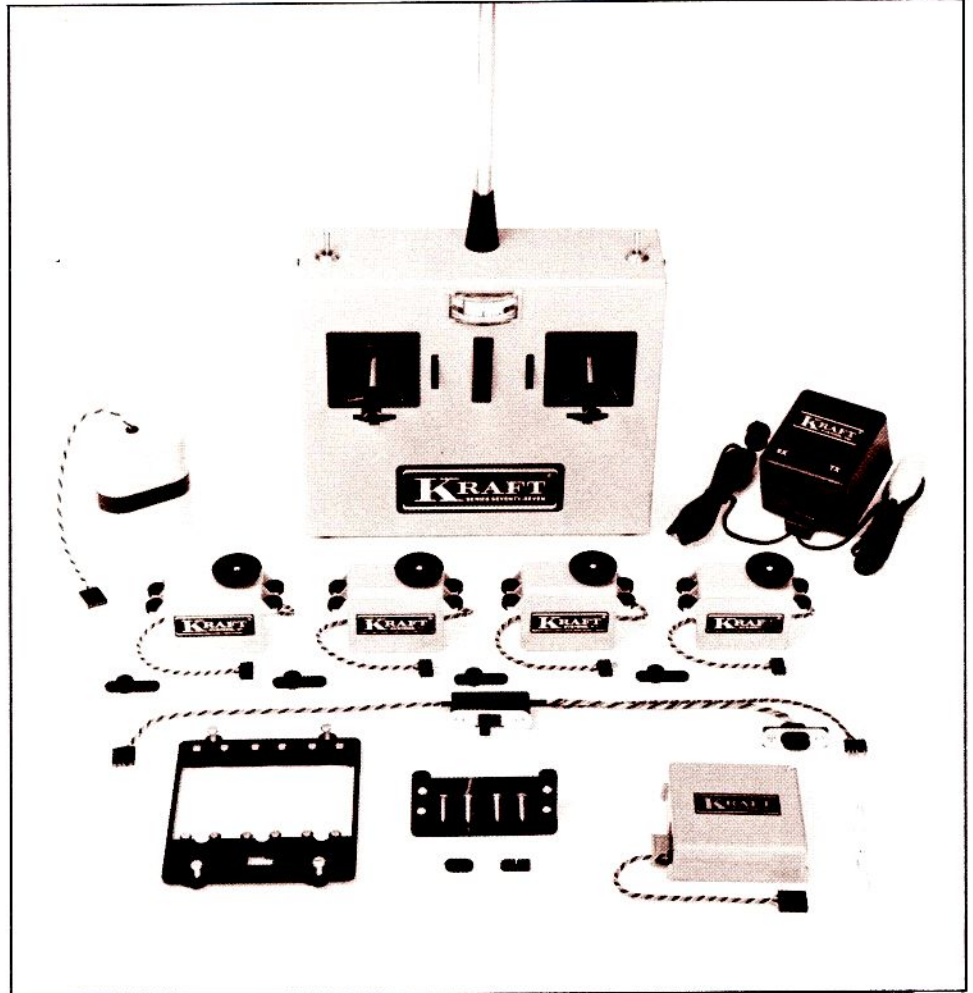
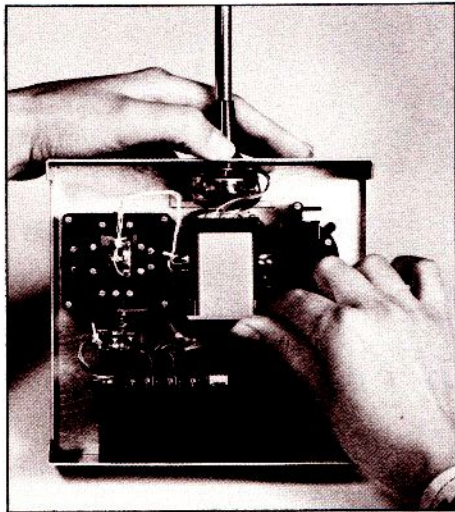
FIVE CHANNEL SYSTEM



KPT-5C



KPT-5CS



The KP-5C and KP-5CS establish an entirely new level in quality and performance in the medium priced field. For sport or competition flying, there is no better five channel set available.

The KPT-5C transmitter features two precision two-axis open gimbal control sticks. The fifth channel is switch actuated for convenient operation of retractable landing gear or flaps. Unless otherwise specified, it is shipped in the Mode II configuration (left-hand positionable control for throttle). However, the KPT-5C can be easily converted to Mode I operation (throttle right).

The KPT-5CS single stick version also features our precision open gimbal control stick assembly adapted to this application by the addition of a rotary control knob that incorporates an integral rudder trim lever.

Plug-in conversion to the optional trainer system can be added easily at any time by the purchaser.

Frequency conversion to any of the standard R/C frequencies can be

accomplished simply by removing the transmitter back and exchanging the plug-in R.F. module.

Although intended primarily for use with the KPR-5C five channel receiver, the set may be purchased with either of our seven channel receivers, the KPR-7C plug-in R.F. frequency model or the KPR-7L miniature receiver.

TRANSMITTER SPECIFICATIONS

R. F. Input Power (nominal) 825mW
 R. F. Output Power (nominal) 650mW
 Approximate current drain 125mA
 Temperature Range 0-140°F
 Modulation: Pulse position type 1.4 ms pulse spacing at control neutral. Pulse time stability $\pm 1\%$ 0-140°F and over the useful operating voltage of the power pack. All transmitters use 9.6V 550 MAH high reliability nickel-cadmium battery packs.

SIZE

KPT-5C 6"x6.75"x2"
 (15.2cm x 17.1cm x 5.1cm)

WEIGHT (including antenna)

KPT-5C 2lb. 3oz. (.99Kg)

SEVEN CHANNEL SYSTEM

For competition or sport flying, the KPT-7C and KPT-7CS are loaded with features and extra controls to suit the requirements of the most complex model. As with our other transmitters, the KPT-7C control sticks are the precision open gimbal type. However, control stick length is adjustable as an added feature. The KPT-7C is shipped in the Mode II (throttle left) configuration but may be easily changed to Mode I (throttle right) by the purchaser.

The single stick version features our precision "zero slop" control stick adapted for this application by the addition of a rotary control knob that also incorporates a built-in rudder trim lever.

For 1977, the seven channel transmitters utilize precision instrument quality control potentiometers for extreme accuracy and smoother actuation.

Frequency changing is simplicity itself with the external plug-in R.F. modules.

The plug-in modular encoder is of our exclusive linear ramp multiplex design for better control linearity.

The antennas retract for ease of transportation.

For convenience, a dual meter is incorporated which normally reads transmitter battery voltage on an electronically expanded scale on the left-hand meter movement, and relative R.F. output on the right-hand meter movement. In addition, a cable is provided which when plugged into the appropriate receptacle on the bottom of the transmitter and receiver charge receptacle, automatically switches to the proper expanded scale for an accurate indication of receiver battery voltage. Both receiver and transmitter battery voltage checks are made under designed-in loads.

As with all Kraft transmitters, roll buttons, spin buttons, and rate switches may be ordered with the transmitter or added later at extra cost.

A trainer system is supplied as standard and now features a spring loaded toggle switch for ease of operation and greater reliability.

TRANSMITTER SPECIFICATIONS

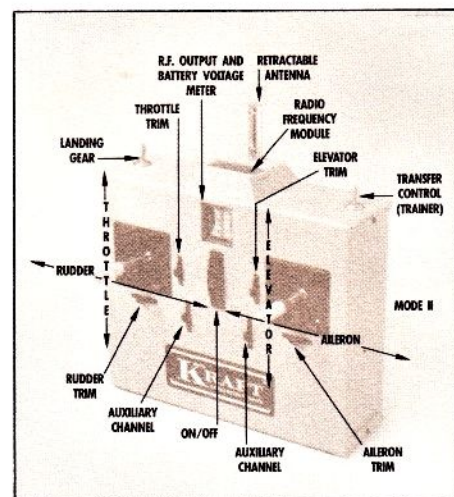
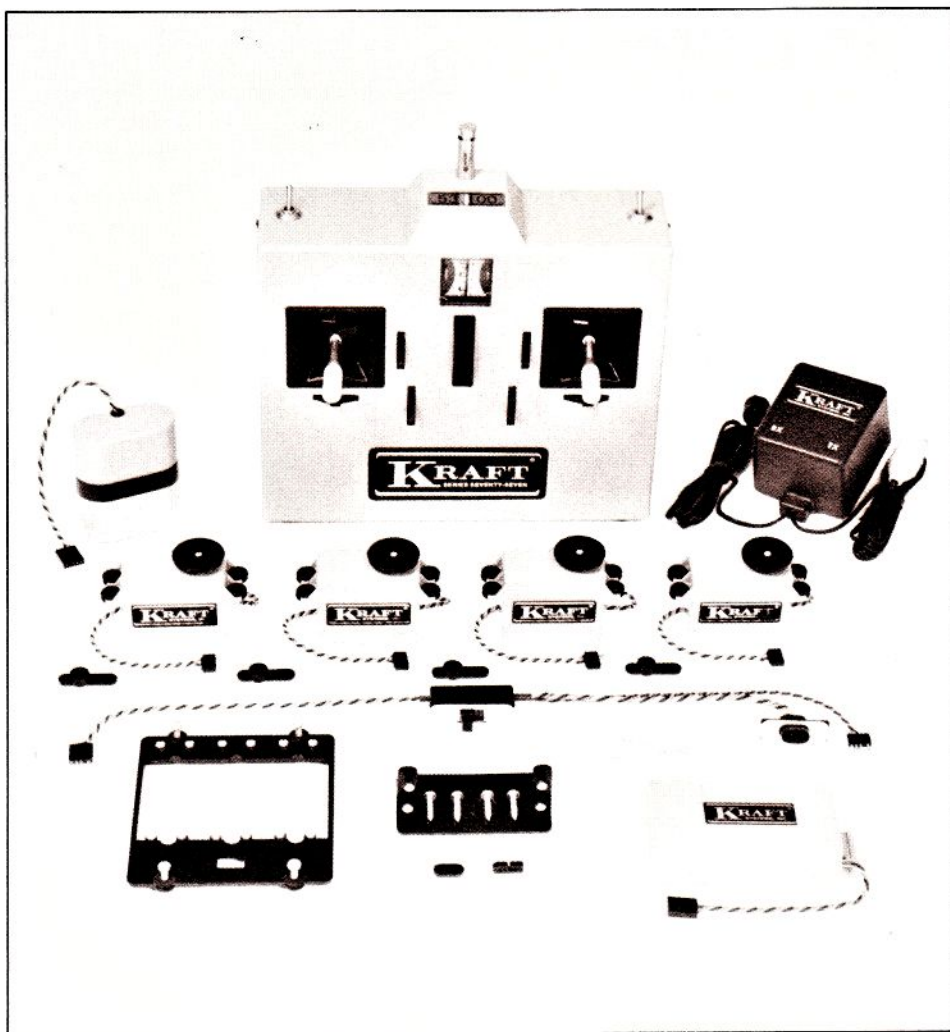
R.F. Input Power (nominal) 825 mW
 R.F. Output Power (nominal) 650 mW
 Approximate current drain 125 mA
 Temperature Range 0-140°F
 Modulation: Pulse position type 1.4 ms pulse spacing at control neutral. Pulse time stability $\pm 1\%$ 0-140°F and over the useful operating voltage of the power pack. All transmitters use 9.6V 550 MAH high reliability nickel-cadmium battery packs.

SIZE

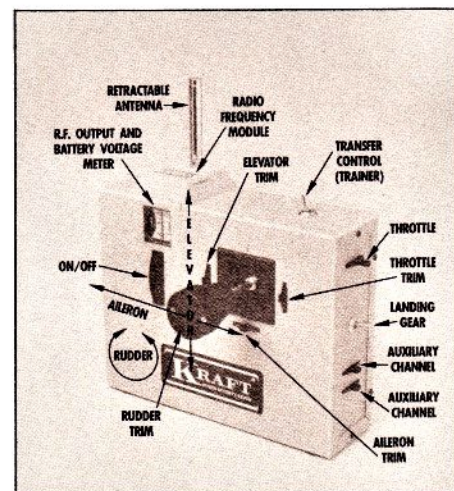
KPT-7C 6"x7.1"x2"
 (15.2 cm x 18.0 cm x 5.1 cm)
 KPT-7CS 5.8"x7.25"x2"
 (14.7 cm x 18.4 cm x 5.1 cm)

WEIGHT (including antenna)

KPT-7C 2 lb. 3 oz. (.99 Kg)
 KPT-7CS 2 lb. 4 oz. (1.02 Kg)



KPT-7C



KPT-7CS

SPORT SERIES SYSTEM

TRANSMITTER SPECIFICATIONS

Model No. KPT-4A - 4 channels
 R.F. Input Power (nominal) 700 mW
 Approximate Current Drain 120 mA
 Temperature Range 0-140°F
 Modulation: On-off carrier, pulse position modulation.
 Dimensions 6.100"x6.750"x1.920"
 (15.5x17.1x4.9 cm)
 Weight (including antenna) ... 1 lb. 12 oz. (.8 Kg)
 Transmitter Battery 6.0V rechargeable nickel-cadmium pack

RECEIVER

Model No. KPR-4A - 4 channels
 I.F. Frequency 455 KHz
 Current Drain 7 mA (no signal)
 Usable Sensitivity 3.0 uV (nominal)
 Selectivity 3 db down at 3 KHz
 Image Rejection -3 db (nominal)
 Spurious and Harmonic Rejection > 60 db
 Noise Limiting: Pulse integration provides high immunity to shot and ignition noise.
 Temperature Range 0-140°F
 Dimensions 2.78"x1.36"x0.83"
 (7.06x3.45x2.11 cm)
 Weight 1.7 ounces (48g)

RECEIVER BATTERY

Model No. KB-4EA 4.8V rechargeable nickel-cadmium pack
 Dimensions 2.25"x1.89"x1"
 (1.72x4.8x2.54 cm)
 Weight 4.6 oz (130g)

CHARGER

Wall plug-in transformer; charger components and charge indicator are located in the transmitter.

SERVO

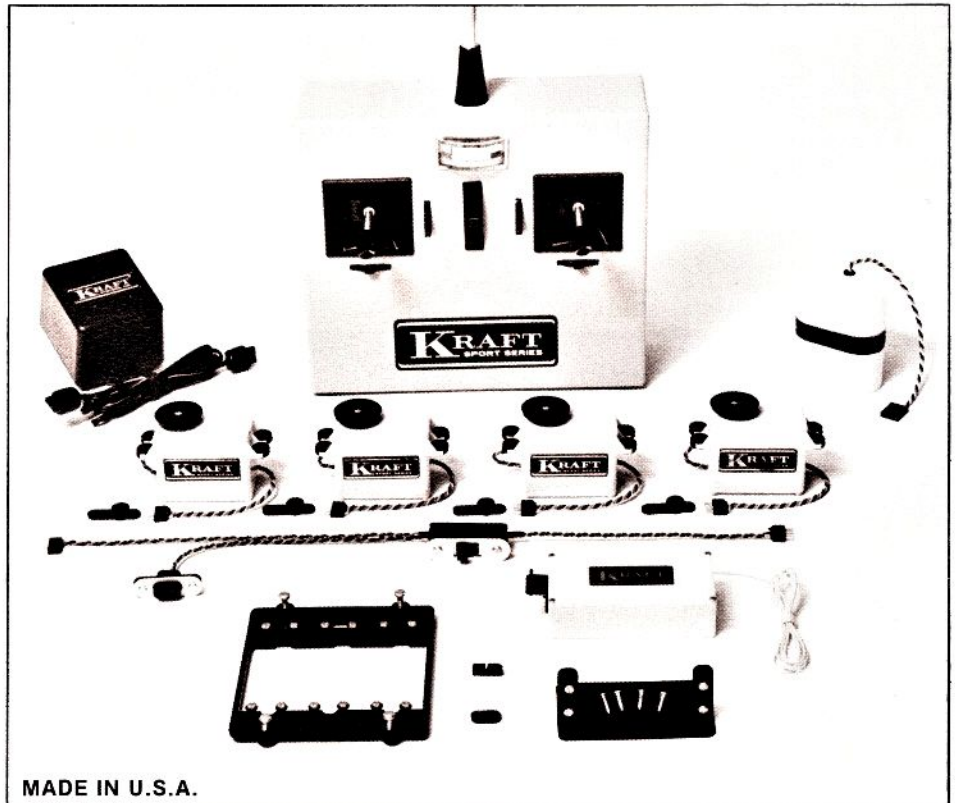
Model No. KPS-14IIA
 Weight 1.4 oz (40g)
 Static Torque 14 oz.-in. (min.) with miniature 12 ohm motor
 Transit Time .. .0.5 seconds for 100° rotary travel
 Available Outputs Rotary arm or wheel
 Centering Accuracy ±1%
 Temperature Range 0-140°F

Model No. KPS-15IIA

Weight 1.8 oz (51g)
 Static Torque 24 oz.-in. (min.) with 10 ohm motor
 Transit Time .. .0.5 seconds for 100° rotary travel
 Available Outputs Rotary arm or wheel
 Centering Accuracy ±1%
 Temperature Range 0-140°F

SWITCH HARNESS

Model No. 200-149



- Modern design is a result of new technology.
- The transmitter and receiver have rechargeable nickel-cadmium battery packs and a charger is included.
- Four proportional control channels are provided and a fifth channel may be added later.
- Contest type open gimbal sticks for smooth control and no centering error are standard.
- A quality all aluminum transmitter case with slim line design enhances control and increases efficiency.
- The miniature receiver incorporates a double tuned R.F. section and exclusive noise and interference rejection circuitry.
- Rugged powerful KPS-14IIA or KPS-15IIA servos are standard.
- Most important of all, the KP-4A is backed by the famous Kraft reputation for service and quality.

From the beginning of proportional radio control, the name "Kraft" has been associated with the industry's most advanced and highest quality equipment. With the introduction of the KP-4A, this tradition of excellence is available in a new system designed to complete directly with low priced foreign and domestic radio control systems.

The budget conscious enthusiast may now have the pride of ownership, technological superiority, reliability, and fast service inherent in Kraft products.

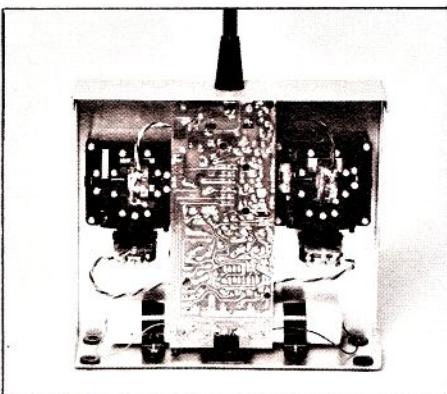
The low price of the KP-4A has not been achieved by reducing quality or performance. Rather it is the result of new design concepts employing the latest in semi-conductor devices to produce a simple and easy to manufacture product of outstanding reliability and performance.

The charger circuitry is incorporated in the transmitter case. A jumper cable is provided to permit simultaneous charging of the transmitter and receiver battery packs. A wall plug-in step-down transformer is provided for safety and convenience.

Although seldom required by the average modeler, a fifth channel may be economically added to the system. This may be accomplished at either the factory or any of our service stations all over the world.

Compatibility

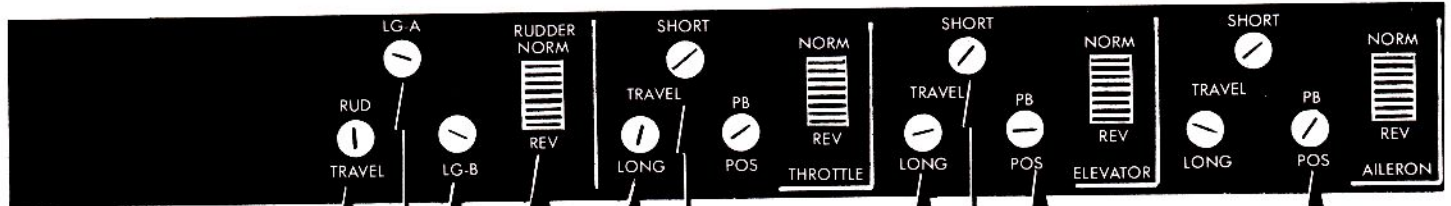
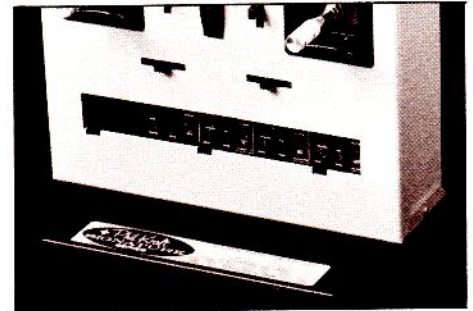
The KP-4A components are not interchangeable or compatible with the other Kraft radio control systems or components.



SIGNATURE SERIES

The Signature Series is the world's first and only radio control system developed exclusively for the serious enthusiast. The areas of design, technical innovation, control flexibility, component quality, and limited cus-

tom production have been coordinated to produce the ultimate product. Although the Signature Series must be used to be fully appreciated, some of its features will be discussed in the following description.



Adjusts travel of rudder servo approximately $\pm 10\%$. Dual rate not available on this channel.

These four switches determine direction of travel for controls specified.

Four turn instrument quality pots provide smooth, precise adjustment.

Adjusts pre-determined control position selected by a push-button control. This could be, for instance, a slow roll switch, a spin button, or low speed throttle button. This control is customer specified. Push-button control selection may be requested as an addition to the dual rate controls. In other words, you may select both control options if desired.

These adjustments control both the direction and amount of travel of the retractable landing gear servo. Since over-all travel can be increased, a special 180° servo is not required to ensure positive locking action.

These adjustments control the amount of servo travel. The "long" or normal position of the dual rate selector switch may be adjusted for a variation of travel of approximately $\pm 10\%$. The short travel position of the dual rate selector switch may be adjusted to select a reduction of up to 50% from the long or normal travel. Servo neutral is not affected by these adjustments.

1 Accurate Battery Voltage and R.F. Output Meters

2 Control sticks are meticulously assembled to exacting tolerances

3 Self centering Top Rudder

4 Throttle

5 Dual Rate Elevator

6 Dual Rate Aileron

7 Retract Switch

8 Rudder Trim

9 Aileron Trim

10 Throttle Trim

11 Elevator Trim

12 Auxiliary 1

13 Auxiliary 2

Panel label is engraved with purchaser's name and date of manufacture

KSST-3

PROGRAMMABLE R/C

TRANSMITTER

To achieve the desired goals of programmability, accuracy, and repeatability, it was first necessary to develop an entirely new encoder concept, the multiplexed linear ramp encoder.

Because of this new encoder, it is now possible to switch select the direction of movement of the primary transmitter control functions. Consequently, servo installation is greatly simplified and the direction of servo rotation becomes unimportant eliminating the need for selection and multiple servo spares.

In today's competitive flying, the finest degree of control response is of extreme importance. To enhance controllability, the amount of control movement and, therefore, sensitivity may be switch selected in the Signature Series transmitter for a higher or lower rate. For violent maneuvers, a high control rate is selected and conversely, when maximum smoothness is required, the lower rate is selected. The low rate control movement may be adjusted in the transmitter to be up to 50% less than the high rate control

movement. The amount of control movement in the high rate position may be adjusted up to $\pm 10\%$. Therefore, the response of the aircraft to control inputs may be fine tuned to perfection even while flying.

Also, as an example of convenience, the need for tedious mechanical adjustment of throttle throw and setting is eliminated as this is now easily accomplished by adjusting the control throw in the transmitter.

To further enhance control predictability, controls may be preprogrammed and adjusted to a push button selected degree of travel. Examples of these controls are slow roll, throttle retard, and spin control buttons.

Even the retractable landing gear channel is adjustable to give the exact amount and direction of throw necessary for mechanical locking.

Because each Signature Series system is custom produced, the purchaser may select the control functions and rate switch and push button locations to his personal preference.

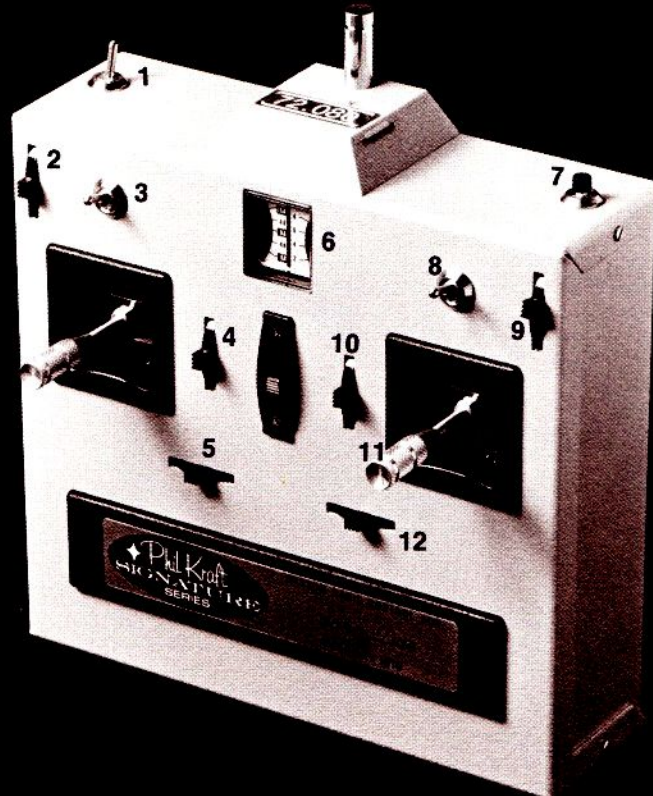
To complement the sophistication of the encoding and control system, a

highly efficient plug-in radio frequency module has been developed. This permits instant frequency changing to any legal R/C frequency on any band. This also assures that the transmitters will not be obsoleted by possible government changes in R/C frequency allocation.

To assure that the inherent electronic system accuracy is maintained, expensive instrument quality control potentiometers are incorporated in a special control stick designed for smoothness of feel and perfect centering.

For convenience and safety, the transmitter features a dual meter which normally reads transmitter battery voltage on an electronically expanded scale on the left-hand meter movement, and relative R.F. output on the right-hand meter movement. In addition, a cable is provided which when plugged into the appropriate receptacle on the bottom of the transmitter and receiver charge receptacle, automatically switches to the proper expanded scale for an accurate indication of receiver battery voltage. Both receiver and transmitter battery voltage checks are made under designed-in loads.

- 1 Retract Landing Gear
- 2 Elevator Trim
- 3 Dual Travel Elevator
- 4 Auxiliary 2
- 5 Rudder Trim



- 6 Accurate Battery Voltage and R.F. Output Meters
- 7 Slow Roll Button
- 8 Dual Travel Aileron
- 9 Throttle Trim
- 10 Auxiliary 1
- 11 Open type control sticks are meticulously assembled to exacting tolerances. Stick lengths are adjustable.
- 12 Aileron Trim
- 13 Panel label is engraved with purchaser's name and date of manufacture.

KSST-2

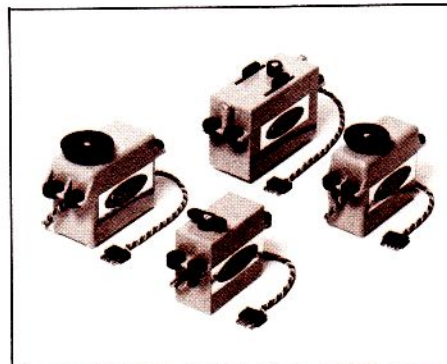
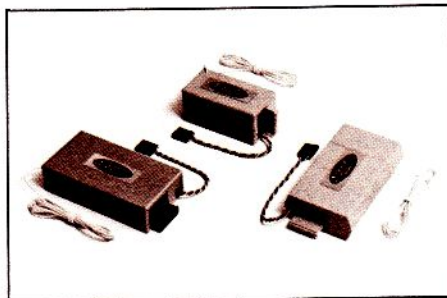
SIGNATURE SERIES

Receivers

Three different receivers are optionally and interchangeably available for use with the Signature Series. Unless otherwise specified, the standard receiver is a highly refined dual conversion unit. The dual conversion design eliminates image frequency responses which are sometimes troublesome in certain areas.

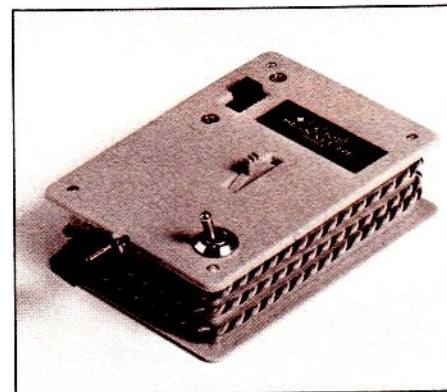
Alternatively, if the plug-in quick change frequency feature is desired, the KPR-7C receiver is available. This is a single conversion receiver featuring two 4-pole ceramic I.F. filters for improved adjacent channel interference rejection and constant bandwidth regardless of signal strength. Note that the frequency change is accomplished by interchanging a complete R.F. section matched and tuned to suit the individual plug-in components and not an unreliable plug-in crystal.

The third optional receiver is our new ultra-miniature lightweight design (the KPR-7L) with the same circuitry as the KPR-7C but without the plug-in R.F. module feature.



Servos

All servo types feature our exclusive proprietary integrated servo amplifier. These electronics provide instantaneous servo response with full power even at small control movements. Positioning accuracy is $\pm .25\%$ and they are virtually drift free from 0 to 140°F. The Signature Series servos are specially selected units from general production to a linearity and control movement accuracy of 1%. Thus the contest flier can interchange servos without the necessity of retrimming his aircraft.



Any of the broad line of Kraft battery packs may be optionally selected with the Signature Series. Additionally, as an optional accessory, the automotive type charger is available to permit field recharging from an automobile.

SIGNATURE SERIES SPECIFICATIONS TRANSMITTER

RF Output Frequency Selectable by means of interchangeable plug-in frequency module.

RF Input Power 825 mW (nominal)

RF Output Power 650 mW (nominal)

Battery 9.6 volt rechargeable NiCad

Battery Current Drain 125 mA (typical)

Modulation PPM, 0.9 to 1.9 msec for each channel

Timing Accuracy 1.4 ms (neutral) $\pm .001$ ms (0.07%)

Timing Stability Within .009 ms (0.63%)

over temperature variations from 0° to 140°F and battery voltage variations from 10.5V to 7.0V

Control Linearity Within $\pm 1\%$ over the full pot range

KSST-1 and KSST-2

Size 7-1/16" x 6-7/16" x 2-1/8"

(17.94 x 16.32 x 5.40 cm)

Weight 2 lbs 12 oz (1.24 Kg)

KSST-3

Size (8.3" x 5.8" x 2.75") 21.08 x 14.73 x 6.98 cm

Weight 2 lbs. 14 oz. (1.30 Kg)

RECEIVER

For receiver specifications, please refer to Page 7.

AIRBORNE BATTERY

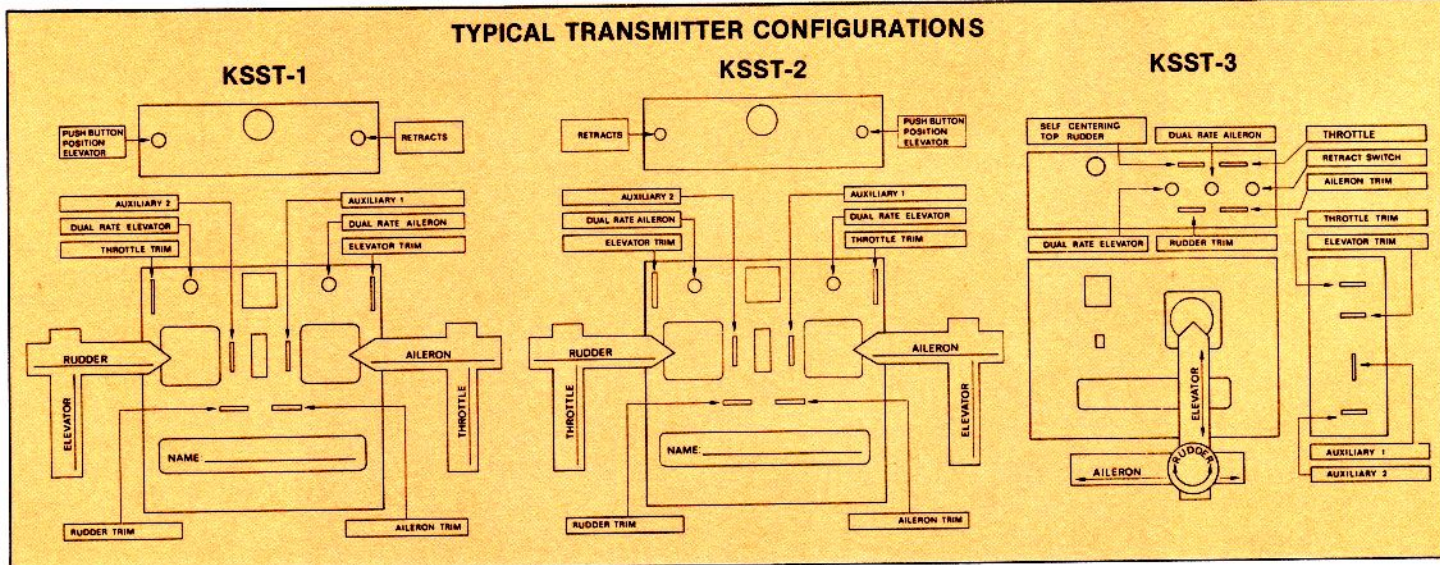
Type KB-4F, 4E, 4S or 4M may be ordered.

SERVO

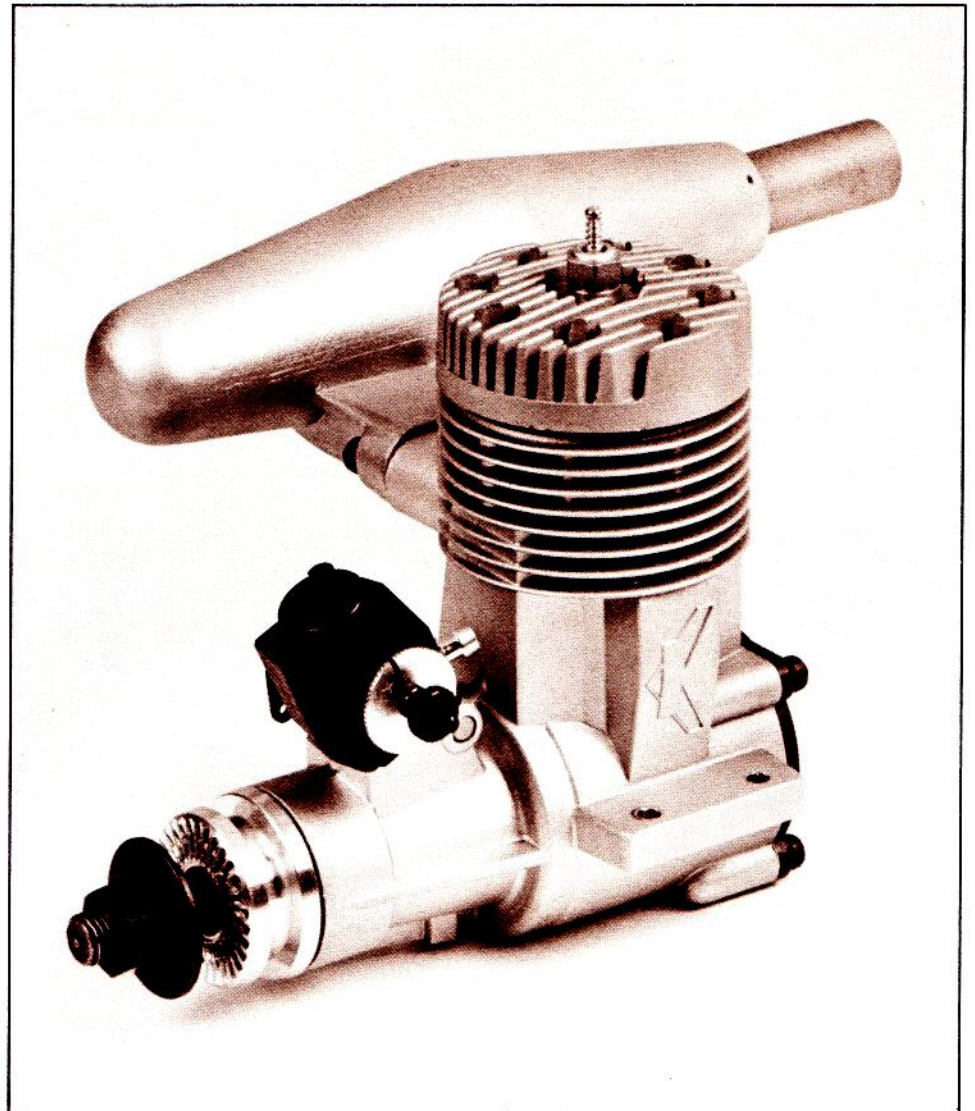
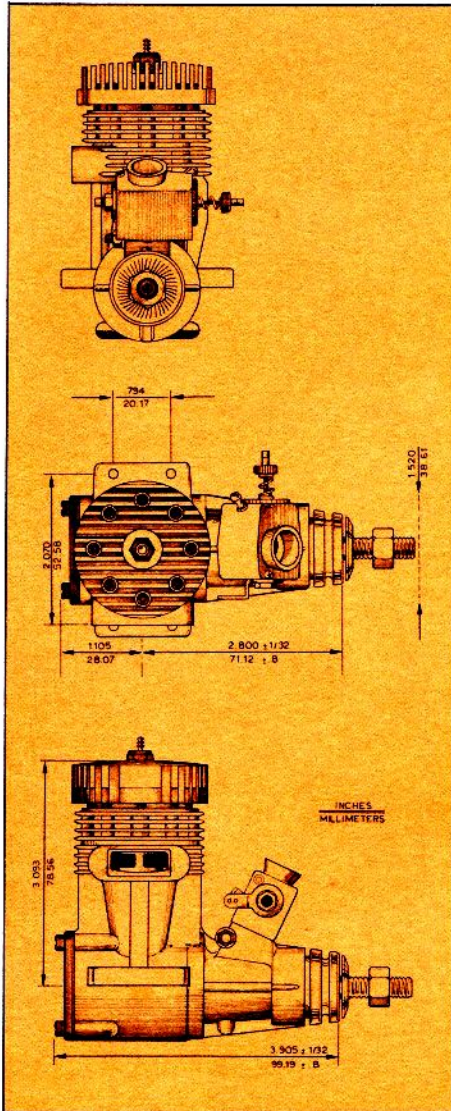
KPS-14II or KPS-15II servos may be ordered. Servos are factory selected for the following requirements:

Non-linearity over the 100° rotary travel Less than $\pm 1\%$
Resolution and centering Better than $\pm 0.25\%$

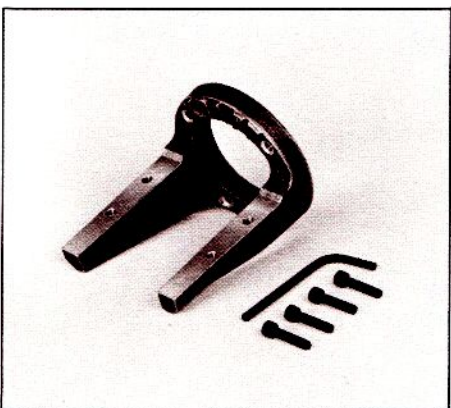
TYPICAL TRANSMITTER CONFIGURATIONS



KRAFT .61 CU. IN. ENGINE



ALUMINUM ENGINE MOUNT



Rugged cast aluminum engine mount, drilled and tapped for Kraft .61 engine. P/N 200-132

The Kraft .61 has the greatest usable horsepower of any R/C .61 engine. This means greater pulling power for effortless, more constant speed aerobatic patterns even with large heavy models.

Reliability in workmanship and materials is what you would expect from Kraft. The crankcase is an expensive investment casting rather than die casting. This results in a much stronger case at the same weight. The massive hardened steel crankshaft rotates on two special ball bearings of which the front is sealed and shielded to eliminate blow-by and dirt contamination. The connecting rod is forged with phosphorous bronze bushings at both ends. The piston is also forged and domed for both power and crown strength. The backplate is sealed by an "O" ring instead of an ordinary paper gasket.

Although introduced less than two years ago, the Kraft .61 has already established itself as the leading .61 contest engine with many victories to its credit.

Contest winning is, of course, an important indicator of engine performance. Perhaps more important to the day-to-day sport flyer is long life, dependability, and ready availability of parts and service. These are assured with the Kraft .61 because it is produced in the U.S.A. by a dedicated group of R/C enthusiasts. We believe it to be the world's best .61 R/C engine.

SPECIFICATIONS

Bore940
Stroke875
Displacement607
Horse power	1.6 at 15,500 RPM
Weight, with muffler	18 oz.
Double ballbearing; Schnuerle-ported with boost port.	



450 WEST CALIFORNIA AVENUE
 P. O. BOX 1268 - VISTA, CALIFORNIA 92083
 MANUFACTURER OF THE WORLD'S FINEST RADIO CONTROL EQUIPMENT

