

**PIC Design Educational Kits** are ideal for instruction in the use and application of precision industrial components. Standard stainless steel and aluminum parts are used throughout. These parts meet the same high quality standards as the rest of the parts in the PIC product line. No-Mar set screws allow repeated assembly and disassembly of components without marring of shafts.

All components contained in PIC Educational Kits are standard and available from PIC. Kits are supplied in rugged carrying cases designed to fully protect the precision instrument parts.

Select the Educational Kit that is best suited to teaching the principles of the electro-mechanical world around us.

## EDUCATIONAL KIT KE-120 SERIES

PIC Design Educational Gear Kits enable dynamic demonstrations in the classroom on such subjects as: Torque, Gear Trains, Gear Terminology and Mechanical Efficiency and Advantage. In addition Force Transmission and Loads in systems such as beams, bearings, machine members, and fasteners utilizing standard gears, shafts, bearings and pillow blocks can be demonstrated.

All Kits use superior quality mechanical components complete with bread-board mounting plate, legs and feet. A comprehensive easy-to-understand Instructors Manual provides step-by-step instructions for classroom tested demonstrations. Color-coded component illustrations in the instruction manual are ideal for projection in lecture halls to large classes. These demonstrations have proven their usefulness in such courses as: Physics, Machine Design, Mechanical Drawing, Design Drafting, Strength of Materials, Mechanics, Mechanisms and Kinematics.

Educational Kits come in polished wood carrying cases. These cases feature cabinet-maker precision detailing with a removable compartment tray used to store the precision mechanical components.

Series 120 Kits cover the complete range from The Starter Kit to Electro-Mechanical Systems.

### STARTER KIT KE-120

The basic starter kit employs spur gears and is used as an introduction to the fundamentals of gearing. The kit also aids in the students ability to clearly understand various technical concepts by hands-on demonstrations. This kit contains 113 components along with an instructor's manual to conduct 14 demonstrations.

### UPGRADE KIT KE-120A

This upgrade kit is a secondary kit in the 120 Series and introduces the student to various types of gearing, such as worm and worm gears, bevel (miter) gears, helical and herringbone gears, and a spiroid gear system. This kit utilizes the components of the KE-120 and should be used in conjunction with the KE-120. This kit contains 18 components along with an instructor's manual to conduct 10 demonstrations.

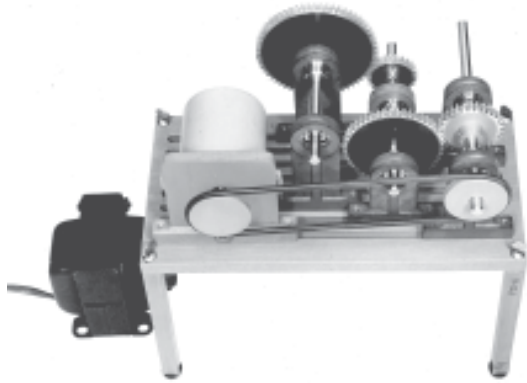
KE-120A components fit into the KE-120 wooden carrying case.



### COMBINATION KIT KE-121

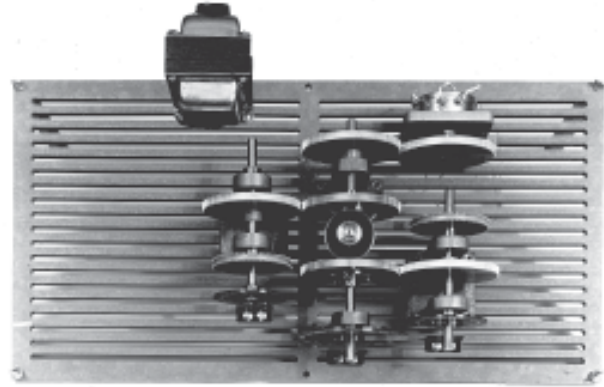
The KE-121 is a combination of Kits KE-120 and KE-120A. The kit utilizes the demonstrations in spur gears, worm and worm gears, bevel (miter) gears, helical and herringbone gears and a spiroid gear system. This kit contains 131 components, along with instructors' manuals to conduct 24 demonstrations.

# EDUCATIONAL KITS



## ELECTROMECHANICAL KIT KE-122

Precision mechanical trainer Kit KE-122 is an electromechanical kit designed for laboratory use by electromechanical and mechanical technology and engineering students. The DC motor and power supply enable the instructor to perform electromechanical systems experiments. Electromechanical systems such as belt and gear drives utilizing various types of gearing, including spur, worm, bevel, helical and herringbone demonstrates the basic concepts to the thrust generated from a set of helical and herringbone gears with the motor energized. This kit contains 152 components, along with an instructor's manual, to conduct 16 experiments.



## ELECTROMECHANICAL KIT KE-140

Kit KE-140 is a motorized trainer that enables the student to measure and observe the effects of: transducer input and output, feedback, proportional control, motor speed characteristics, response time, lead lag, gear ratios, loading and analog control. Each experiment is designed to be performed slowly, so that it can be observed easily by the student. Each experiment builds upon the previous one, advancing from basic to simple and then to complex systems. The mechanisms used in this kit are typical of those used in the control industry. This permits the student to work directly with precision industrial components and to make modifications in the system and immediately observe the results. This kit contains 178 components, along with instructors' manuals to conduct 9 experiments.

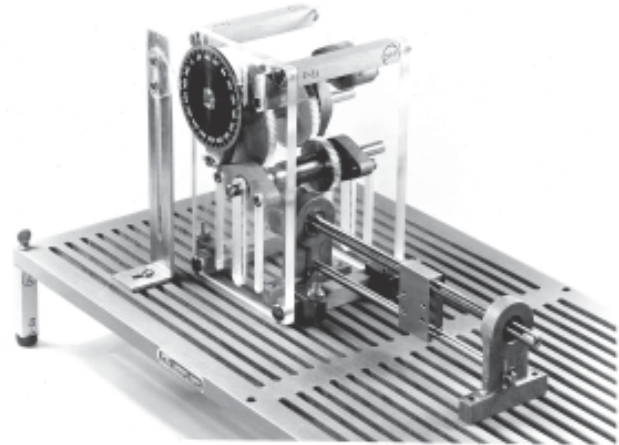


## LINKAGE KIT KE-130

The linkage kit KE-130 is designed to contain all components needed to create a working model of any classical linkage mechanism. Unique design features encourage creative exploration of new and better ways to solve linkage problems. Design and build any basic linkage mechanism including: 4-bar, toggle, differential, slider crank, quick return, analog, pantograph, scotch yoke, and computational. This kit permits infinite variations of linkage lengths and positions, so that the effects of various parameter changes can be instantly observed and measured.

This kit contains 171 components, along with instructor's manual to conduct 16 demonstrations.

KE-130 kits come in a convenient attache-type carrying case. In addition to the instruction manual, a comprehensive 143 page book, "Applied Linkage Synthesis" by D. C. Tao is supplied. This book serves as a practical reference for engineers and provides students of kinematics with a problems textbook on the dimensional synthesis of linkage mechanisms. Emphasis is placed on the design of such mechanisms as those used in computers, data processing equipment, teaching and navigation devices, control mechanisms in missiles, and electromechanical control components. In order to aid students in blending theory into practical engineering designs, the book contains basic graphic problem solving techniques for quick and accurate results.



## PRECISION MECHANICAL TRAINER KE-150

The KE-150 motorized kit is designed to provide the student with the opportunity to gain first hand experience in the building, testing and analyzing of mechanical mechanisms and drives which contain components that are used in the computer, control and aerospace industries. The student will gain a working knowledge of gears (all types), belts, chains, sprockets, cams, pulleys, screws, pillow blocks, universals, bearings, mechanisms and mechanical drivetrains that are commonly used in industries.

The KE-150 is designed to be used in conjunction with the action-oriented Lab-Text manual and instructor's guide which was developed and tested by TERC (Technical Education Research Center) Electromechanical Technology Curriculum Development group at Oklahoma State University under a federal grant. This kit contains 296 components along with the Drives manual to conduct 30 demonstrations.

# PRECISION BREADBOARD KITS

These practical, low cost complete kits of laboratory precision instrument components consist of gears, shafts, differentials, breadboard plates, hangers, bearings, etc. These kits can be used for Military Engineering or Development Contracts, Universities, Laboratories, Educational Institutions and other mechanical and electronic applications. The kit is contained in an attractive leather carrying case which is felt lined to protect the precision instrument components, along with the tools to assemble and disassemble. All components are for a 1/4" shaft size and are available in the following kits:

Kit No. "G" - 657 Parts    Kit No. "N" - 515 Parts    Kit No. "R" - 425 Parts

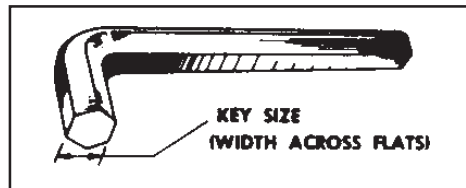


## PARTS LIST— "G", "N", & "R" KITS

Name	Part No.	Quantity			Name	Part No.	Quantity			Name	Part No.	Quantity					
		"G"	"N"	"R"			"G"	"N"	"R"			"G"	"N"	"R"			
Shafting	A3-20	3	3	2	Cleats	L2-1	6	4	2	Bellows Coupling	T1-3	1	1	1			
	A3-40	3	3	2		L2-2	6	4	2			Oldham Coupling	T2-3	1			
	A3-60	3	3	2		L2-3	6	4	2					Differential End Gears	V7	1	
	A3-80	3	3	2		L2-4	3	2	2		V8-1					1	
	A3-100	3	3	2	*M1-9	1	1		V9-1					1			
	Laminated Shims	B1-3	12	12	6	*M1-16	1	1			1			V8-2	1		
		B2-3	12	12	6	*M2-7	1	1	1		V9-2				1		
	Stainless Shims	B3-11 to 15				K2-5 Hub	3	3	2					V8-6	1		
		6 or 3 each	30	30	15	*Assem. with Bevel Gears	N3-1	1 Pr.			V9-6	1					
	Aluminum Spacers	B8-1 to 15					N3-2	1 Pr.				T5-3	1				
4 or 2 each		60	60	30	N3-3		1 Pr.		L1-3	2							
Collars	C1-3	12	6	4	Coupling Dial Hanger	N4-3	1 Pr.			W1-3	1	1	1				
	D1-3	4	2	1		A0-1T	1	1			Y2-4-T	2	2	2			
Ball Brg. Gears	E1-9	16	12	8	P1-3	1	1	1	Y6-4	2		2	2				
	Pin Hub Type	G3-60	2	1		Anti-Backlash Gears	P4-1-80	1		1	1	W2-1	1	1	1		
G4-60		2	1	1	P4-1-132		1			AU-9	1		3				
Gears	G3-72	2	1		Index	M3-1	2	1	1		Y1-6-X	25	25	25			
	G4-72	2	1	1		M3-2	2	1	1	Y1-8-X		50	50	50			
	G3-85	2	1		Worm Gears	Q1-9	1	1	1		Y6-6	25	25	25			
	G4-85	2	1	1		Q1-12	1			Y6-8		50	50	50			
	G3-100	2	1		Q2-3	1	1	1	Z1-3		12	10	12				
	G4-100	2	1	1	Worm Shaft Hangers	R1-9	4	4		2	Z2-3	12	10	12			
	Split Hub Type	H1-21	2	1			R1-10	4	4	2		Z3-3	12	10	12		
		H2-21	2	1	1	R1-11	4	4	2	Breadboard Plate	BB2		2	1	1		
	H1-22	2	1	1	R1-12	4			F2-4			6	6	6			
	H2-22	2	1		Dial Hanger Slip Clutch Component Hangers	AN-3T	1	1			F2-6	6					
H1-30	2	1		S1-1		1			BB5	12		6	6				
H2-30	2	1	1	S1-2	1			Y1-8-U		12	6	6					
H1-36	2	1		S1-3	1	1	1		BB3	14	6	6					
H2-36	2	1	1	S1-4	1	1	1	BB4		50	30	20					
H1-44	2	1		S1-5	1	1			Y7-6	50	30	50					
H2-44	2	1	1	S1-6	1	1		Washers Tools Case		8	8	8					
Hubless Gears	J1-60	1	1		S1-7	1	1		1								
	J1-72	1	1	1	S1-8	1	1		1	1	1						
J1-90	1	1		S1-9	1	1	1										
Clamps	L1-3	18	12	7	S1-10	1	1	1									

# PRECISION TOOLS

## SOCKET HEAD KEYS & SETS



Material: Alloy Steel (Black Finish)

For a set of hex socket head keys containing 8 keys from .035 to 3/16" key size — in case.

Order CS-50

Set Screw Size	Cap Screw Size	Key Size	Part Number
#2		0.035	CS-40
#4		0.05	CS-41
#6		1/16	CS-42
#8	#2	5/64	CS-43
#10	#4	3/32	CS-44
1/4		1/8	CS-45
5/16	#10	5/32	CS-46
3/8	1/4	3/16	CS-47