DURO ELECTRIC DRILLS







CHUCKS



UTILITY DRILL

A quality tool, not built to a price, but to meet the demand for a sturdy but light drill for close work in hard to get at places. Just the drill for cabinet work, pattern work, radio and airplane assembly and an excellent drill for the home workshop.

Duro Drills represent the finest quality materials and workmanship. Equipped with G. E. Motors; New Departure Ball-Bearings on spindle; Jacob keyed chuck; 10 feet of 3 wire rubber covered safety cord. The G. E. Switch is totally enclosed in the main case for close quarter drilling without handle. Double reduction helical cut gears are made from chrome vanadium steel — quiet and smooth running. Length 111/2"; without handle, 91/4". For 110 volt A.C. or D.C. current, 60 cycles or less. Other voltage prices on request.

No.	Style	Duty	Capacity in Steel	No Load Speed	Shipping Weight
3300	DA	Utility	1/4 in.	2000	5 lbs.



More power per pound has been put into these drills than before thought possible. Duro drills will not stall when used at their maximum capacity, and have ample safety factor beyond that point. Aluminum case ventilated to operate at full load continuously without overheating. Double reduction gears are helical cut chrome vanadium steel - heat treated and ground to give longer life.

Equipped with G. E. Motor; New Departure Ball Bearings; Jacobs keyed chuck; 10 feet of 3 wire safety cord; and Cutler-Hammer totally enclosed double pole trigger switch with lock for continuous running, For 110 Volt AC or DC current, 60 cycles or less. Other voltage prices on request.

No.	Style	Duty	Capacity in Steel	No Load Speed	Shipping Weights
3305	DB	Ex-Heavy	1/4 in.	2000	10 lbs.
3310	DC	Heavy	56 in.	1400	11 lbs.
3315	DD	Special	3/8 in.	1300	12 lbs.

BREAST DRILLS

Duro designed these drills for efficiency and rugged durability to meet production conditions in industry. They are built in three self contained units - motor, gears, and brush mechanism. This construction assures sturdiness, positive alignment, greater efficiency and ease in cleaning.

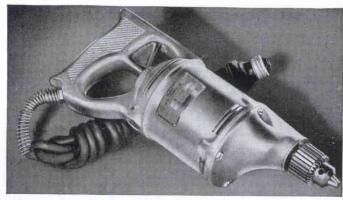
They are equipped with Jacobs Key Chuck, New Departure Ball Bearings and 10 feet of 3 wire safety cord with unbreakable rubber plug. The Cutler Hammer totally enclosed double pole switch has a lock for continuous running. They are fitted with double reduction helical cut gears made from chrome vanadium heat treated steel - ground to give longer life and smooth, quiet operation.

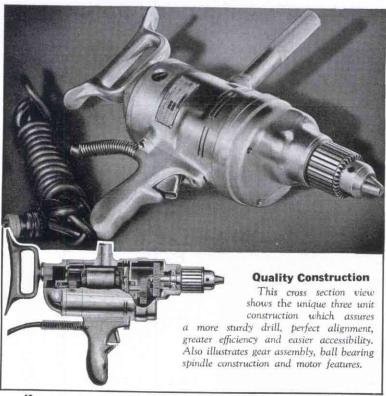
Note that Duro drills are streamlined to give the minimum of offset from the center line of chuck and to allow operator to drill close to wall.

Like all Duro Drills, they are powered with special G. E. Universal Motors that run continuously under maximum load without overheating or stalling. For 110 Volt A.C. or D.C. current, 60 cycles or less. Prices furnished for special voltages on request.

No.	Style	Duty	Capacity in Steel	No Load Speed	Shipping Weights
3320	DF	Ex-Heavy	½ in.	550	21 lbs.
3325	DG	Heavy	5/8 in.	480	22 lbs.
3330	DH	Standard	3/4 in.	425	23 lbs.













Duro offers you the finest Hand Grinder that has ever been built and at a moderate price too! It has everything - Power, Speed, Precision, Compactness, Balance, and Streamline Design.

It is powered by a General Electric Universal Motor dynamically and statically balanced, of the series wound type for maximum performance, developing over 40 watts output and running 24,000 R.P.M. The motor has a standard commutator with machined V grooves, and steel clamping rings such as are used on electric power drills. The brushes ride on the periphery of the commutator — not on the end — giving better performance and longer life. The brushes are the square cartridge type - not round. This design gives maximum seating as the brushes cannot turn in the holders. The toggle type switch is conveniently located at the back end of the housing.

The proper mounting of high speed units is vital. In this case the spindle operates on wide New Departure Precision Ball Bearings, totally sealed to prevent grit getting in or grease leaking out. The extra large bearings and heavy mountings take radial load and end thrust. The propeller type fan such as is used on power drills pulls a large volume of air through and over all working parts to insure a cool running unit. An 8 foot three wire rubber covered cable is used and the tool is grounded to prevent any possibility of electric shock.

There is precision machining throughout. For example the bearing seats are bored to 2/10,000 of an inch. The two housings have machined rabbet fits to assure perfect alignment.

A specially designed threaded type collet chuck with capacity up to 1/8 inch overhangs the housing only 5% of an inch. A patented lock operated by a button slides a pin into a groove on the back of the chuck and locks the shaft so that the chuck may be easily tightened or loosened.

The streamline design fits the operator's hands and has just enough weight for perfect balance. This grinder develops far more power per ounce of weight than any unit on the market. The motor runs on 110 volt, 60 cycle or less AC or DC current. 220 volts can be supplied at a slight additional charge. For burrs, bits and grinding accessories see Pages 47 and 48.

3049—Heavy Duty Grinder with two collets and chuck wrench, Ship. Wt. 3 lbs.

SHAPER-CARVER

SHAPER-CARVER

The illustration at the right shows the Grinder set up as a Spindle Shaper. The high speed — 24,000 R.P.M., the surplus power — over 40 watts output the rigid stand and large 3½ by 5 inch table made of heavy cast iron, with adjustable shaper guide make this machine ideal for clean shaping cuts. One half turn on the knurled knob permits adjusting the tool for cutter height. By using various cutters and burts hundreds of different cuts may be made. With the shaping table and upright removed the unit becomes a regulation bench stand as illustrated below. Tool post adaptor included.

3049-55—As illustrated less

included.
3049-55—As illustrated less
Grinder......Ship. Wt. 7 lbs.
3049-70—Shaping table, post and
guide only.....Ship. Wt. 3 lbs.



ROUTER

For routing the Grinder is mounted in Hand Router Base. It is held in place by clamping blocks that fit into grooves on side of housing and that are tightened by knutled knob. A straight and circular gauge is supplied and is attached with thumb screw adjustments to rods extending from side of base. All types of beading, fluting, veining and routing cuts can be made with this accessory. Set grinder for correct depth cut by adjusting knutled knob. For irregular work, wide opening in base permits following pattern easily. For regular work use the gauge.

the gauge.

3049-30—As illustrated, less Grinder.....Ship, Wt. 2 lbs.



TOOL POST ADAPTOR

Pictured at the left the Grinder is being used as a tool post Grinder. The adaptor holds the tool securely in any tool post holder of any regulation lathe and may be quickly adjusted for all types of internal or ex-ternal grinding. Not necessary to buy tool post adaptor if shaper-catver assembly is purchased as it is included. The Heavy Duty Grinder with the G.E. Motor, New Departure Ball Bearings, precision machining, 24,000 R.P.M. and over 40 watts output assure a real tool post grinder for precision or production work.

3049-45-Tool Post Adaptor only. Shipping weight 2 lbs,



BENCH STAND

Mounted in the Bench Stand as illustrated at the left, the Grinder is used as a carver. The Bench Stand is rigid and solid. It is built up by using the tool post holder with the heavy cast base which may be fastened to the bench. Note the freedom of movement around the cutter this setup permits. Heavy or delicate cuts may be made in wood, plastic or metal. The Bench Stand also permits using both hands to guide the work. To make a Shaper from the Bench Stand add No. 3049-70 Shaping Table, Post and Guard listed above.

3049-60 as illustrated less Grinder.Shipping Weight 4 lbs.



DURO MODEL MAKERS LATHE



A new field has been opened to the model-maker or craftsman by the lathe attachment illustrated above. Now, those small parts used in model-making that were formerly made by hand or else purchased at high prices can be quickly and economically produced in your own workshop. The Heavy Duty Grinder is clamped in the headstock and is held rigidly in perfect alignment with the tailstock center. The Grinder may be quickly removed from the headstock for free hand work or for use with other attachments. The output of over 40 watts provides ample power for turning wood or plastics. The high speed assures fast cutting and smooth finished work that does

not have to be sanded. Two large New Departure Precision Ball Bearings take up all radial and end thrust load. The distance between centers, 12", provides adequate capacity for turning masts and similar long pieces. Small pulleys, wheels and an unlimited variety of parts can be made with speed and precision. Overall length 24", height 6¼", distance from bed to centers 3". Equipped with 4" tool rest, tool rest holder and driving center. Modelmakers Turning Chisels for use with this lathe are shown on Page 47.

304975—Model Makers Lathe, less grinder. .Shipping weight 12 lbs. 304978— $1\frac{1}{2}$ " Face Plate for above Lathe. . . .Shipping weight $\frac{1}{2}$ lb. .

MODEL MAKERS DRILL PRESS

The range of usefulness of the Heavy Duty Grinder is further increased by this Model Makers Drill Press. This attachment converts the Heavy Duty Grinder into a sensitive type Drill Press for accurate and speedy work. Its extra rigid construction, the precision machining of all parts, its practical design plus the power, speed and balance of the Heavy Duty Grinder makes this an ideal tool for the Model Maker, craftsman or anyone requiring precision operation at high speeds. The two large New Departure Precision Ball Bearings in their heavy mountings efficiently take up all radial and end thrust load insuring longer life and greater accuracy.

With this attachment you can do numerous operations that before, either were impossible or else were accomplished with difficulty. Drilling, routing, veining and many other operations are done quickly, accurately and with ease.

The large gray iron base, with 5x5 inch working surface, and the heavy column assures rigidity at all times. The $4\frac{3}{4}x4\frac{3}{4}$ inch machined and ground table raises, lowers or can be moved out of the way to give the maximum capacity of 11 inches from base to chuck. The large size of the table and base provides adequate support when working up to the capacity of the tool. Slots are provided in both the base and table to permit fastening jigs and fixtures for duplicate work.

The Heavy Duty Grinder is quickly and easily mounted in the head of the Drill Press. Just two wing nuts to tighten and the Grinder is held absolutely rigid and in correct alignment for accurate drilling. The Grinder is just as easily removed for free hand work or for use with any of the other attachments available. The complete head assembly is adjustable on the column and may be raised or lowered to suit the operators convenience. Lever handle actuates raising and lowering of the Grinder for drilling. Tension spring returns the Grinder to the raised position smoothly and without whip. A full 2 inch stroke provides more than ample depth capacity for all types of model making. The distance from column to chuck allows drilling to the center of a $6\frac{3}{4}$ inch circle. The overall height is $19\frac{3}{4}$ inches. Furnished in crackle gray baked enamel. Shipping Weight 14 lbs.



The Duro Grinder Kit displayed here sets a new standard of value in this field for usefulness and genuine economy. This Kit features a most practical combination of the famous No. 3049 Heavy Duty Grinder, the heavy guage steel case and a useful selection of accessories.

The Power, Speed, Precision and Balance of the Heavy Duty Grinder insures surplus power and speed for all types of work. The practical case — made of heavy gauge steel — is designed to withstand the hardest use. Eight generous compartments are furnished for sanding discs, drums, etc., and extra places are provided so you can add other burrs to this set if needed. The case provides an orderly place for keeping hand grinder and accessories together when in the shop, while a heavy luggage type leather handle makes it ideal for taking out on the job. Two automatic catches and a hinged hasp for padlocking give positive assurance the case will not open unexpectedly. Case is handsomely finished in crackle gray baked enamel.

The Kit includes — 3049 Heavy Duty Grinder, Steel Case, 1 each of the following accessories — B44, B66, B123, W144, B173, W185



Mounted Points — 3571A, 3571F, 3571G, 3571H, 3571K, 3571L, 3571M, 3571P, 3571R, 3571S Burrs — 3575A Sanding Drum, 3575C Wire Wheel, 3575D Bristle Brush, 3575E Cup Shape Bristle Brush, 3575F Bristle Brush, 3575G Felt Wheel, 3575T Mandrel for Sanding Discs, 24 each 3575H Sandpaper Coarse, 3575H Sandpaper Fine, 3575I Sandpaper Coarse, 3575I Sandpaper Fine; and 6 each 3575J No-Lap Sanding Sleeves.

3585—Grinder Kit Complete......Shipping Weight 8 lbs.



The Duro Streamline Grinder is a fitting companion to the Heavy Duty Grinder. Check the Streamline with any other Grinder in its price field — compare its many advantages — the abundance of power developed — its greater speed — its light weight and ease of handling, by actual tests. The Duro Streamline is an outstanding value.

The Streamline is powered by a full universal General Electric Motor of the same type that has made the famous Heavy Duty Grinder so outstanding.—Conventional series wound motor, standard commutator with machined V-grooves, steel clamping rings, square replaceable brushes, improved cooling and light weight. The Streamline design, precision construction, power and speed are combined into a single unit to give you the finest grinder it is possible to produce in this price field.

The Streamline Grinder delivers 17 watts output at the spindle meaning surplus power with which you can accomplish difficult jobs faster and easier. The high speed, approximately 24,000 R.P.M., gives a smooth, finished cut on all types of work. Its light weight—only 12 ounces—plus its Streamline design makes it ideal for fine single hand work. It is only 63% inches in length. Its small size makes it invaluable for grinding, drilling, polishing, etc., in extremely hard to get at places.

The motor is enclosed in a moulded shock-proof case. The dy-

namically and statically balanced armature is mounted on highest quality, self-aligned sleeve bearings of oil retaining bronze to insure accuracy and vibrationless operation. Oil wicks, provided as an added safety factor, insure continuous lubrication for long, trouble free service. An improved propeller type fan produces the necessary volume of air to maintain efficient cooling - grinder can be run continuously without overheating. Square, replaceable brushes, ride on the periphery of the commutator — not on the end — assuring proper commutation. The square cartridge type brushes have the additional advantage that they cannot turn in their holders, thereby giving maximum seating capacity. Push button switch is mounted flush with housing near the back of the tool and is conveniently located for instant starting and stopping. Specially designed collet chucks hold 32" and 1/8" shanks. An opening at front of housing is provided for chuck holder to lock the shaft when tightening or loosening chuck. The motor runs on 110 volt, DC or AC current, 60 cycles or less. Equipped with 6 foot rubber covered cord.

Again we say, "Check the Duro Streamline with any other Grinder in its price field, point for point, feature for feature. You'll find the Streamline sets an entirely new standard of value for Grinders in this price class."

3046-Streamline Grinder, 2 collets, chuck holder. Ship. Wt. 2½ lbs.

NOTE: We state the watts output of all Duro Grinders. Do not confuse watts output with watts input. Watts input is the amount of current consumed and does not indicate the power developed. Only watts output can tell you how much power is delivered at the spindle. Inefficient motors consume a large amount of current (which is watts input) but deliver a small number of watts output. Ask before you buy — "What is the watt output of this Grinder?"



DRILLING ATTACHMENT

Don't miss this value — TWO TOOLS IN ONE — a Drilling Attachment for the Scroll Saw and a Hand Grinder with plenty of power. Use it on your Scroll Saw and drill your work right on Scroll Saw Table. On inside work, simply press the plunger and drill the hole for inserting the blade. On relief or inlay work where the cut must be made at an angle, the table may be set at the proper angle and when holes are drilled for inside work they will be at correct angle. Spring automatically returns unit to original position.

Easily attached to either side of practically any Scroll Saw. As bracket has a double joint it may be moved to almost any position over the work. By loosening one set screw motor may be removed from bracket and used as a Hand Grinder. The standard universal motor is fan cooled, with speed of over 10,000 R.P.M. Complete with 2 collets for drills and accessories from 0 to ½ inches, chuck guard for grinding, 6 ft. rubber covered cable, plug and switch.

3351-Drilling Attachment.... Shipping Weight 4 lbs.



FILTERETTE

Designed to eliminate objectionable radio interference from small high speed universal motors such as hand grinders, drilling attachments, electric shavers, etc. Plug Filterette into the wall socket and then plug cord of machine causing the interference into the Filterette. A simple efficient device costing nothing to operate, that will save annoyance and trouble.

304920—Filterette.



GRINDER

The Duro Super-Value Grinder is the ideal tool for the craftsman or model maker who wants the very latest in design, the greatest amount of speed and the most power that it is possible to buy for a given investment.

We have run comparative tests on other make grinders and have only been able to find a competitive unit in the next higher price bracket, that has

the combined power and speed that this unit possesses.

Compare this Grinder with any other unit up to the \$10.00 price range and you will find that it has a great deal more power than any competitive unit on the market at the present time.

An outstanding feature is the cool operation of the motor. It has a large propeller type fan to pull air over and through the working parts with the result that it can be run for hours and will not overheat.

The motor operates at approximately 18,000 R.P.M. and 8 watts output. The latest type of self-lubricating, self aligning bushings are used to assure frictionless operation. Square cartridge type brushes—not round—set firmly in the brush holders without turning, assuring maximum performance from good commutation. The motor is turned on and off by means of a toggle switch located near the top

of the housing. A collet chuck with two collets is provided to hold all accessories with $\frac{3}{32}''$ or $\frac{1}{8}''$ diameter shanks. The housing is black Bakelite. The Grinder measures $5\frac{1}{2}$ inches

In housing is black Bakelite. The Grinder measures 5½ inches long overall and is equipped with a 6 foot rubber covered cord. A removable guard is available that fits over the chuck which permits holding the Grinder close to the bits for accurate guiding in delicate work.

The Grinder operates on 110 volt, AC or DC current, 60 cycles or less. This Hand Grinder has a wide variety of uses, will perform the work of any Grinder in this price field and because of its greater power will do a better, smoother and faster job.

3048—Super-Value Hand Grinder less Guard . Shipping Weight 2 lbs. 304830—Guard for 3048 Grinder Shipping Weight 2 ozs.



FOOT OPERATED SPEED REGULATOR

The Speed Regulator is used with any Duro Hand Grinder or with any 110 volt AC or DC motor drawing up to 75 watts, to control the speed and power developed. Many operations in factory and shop require varying speeds or require frequent stopping and starting of the machine while both hands are engaged. Ideal for many operations on Modelmakers Lathe and Drill Press (see page 45).

The speed regulator is essentially a rheostat connected in series with the machine it controls. The electric plug of the speed regulator

is first inserted in the electrical outlet or source of power. Then the plug of the machine is inserted in back of the speed regulator plug — easy to connect or disconnect in a few seconds.

With the foot off the regulator, the current is off. The farther the regulator pedal is depressed, the faster the speed of the machine, up to full speed when fully depressed.

The speed regulator measures 33% inches wide by 5½ inches long, is finished in black japan and has a 5 foot rubber cord with plug. 304927—Speed Regulator....Ship. Wt. 2 lbs.



MODEL MAKERS DRILLS

Made of high grade Tungsten steel. Designed for high speed drilling of shallow holes in woods, plastics and soft metals. Essential for fine modelmaking. Made in U.S.A.

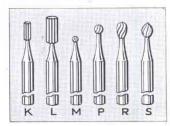
3579A	.035	Diam.	3579F	.055	Diam.
3579B	.037	22	3579G	.065	22
3579C	.040	33	3579H	.070	3.5
3579D	.045	33	35791	.080	33
3579E	.050	23	3579K	.090	33



DRESSING STONES

Keep abrasive points sharp and true. Indispensable for cleaning and removing glaze. Made of high quality Silicon Carbide bonded for hardness.

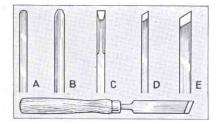
3575W — Dressing Stone.



FINISHING BURRS

Made of Tungsten Steel Correctly designed, hardened. For finishing cuts in woods, plastics, soft metals. 1/8" shafts.

3571K	Diam.	16"	Length	32
3571L	***	1/8"	33	1/4"
3571M	21	16"	33	16"
3571P	33	1/8"	33	1/8"
3571R	33	1/8"	22	3/10"
3571S	**	1/8"	33	11"
47				



MODEL MAKERS TURNING CHISELS

Made from crucible steel — especially designed for high speed work. Carefully hardened and tempered. Chisels with hardwood handles are 9" overall.

with har	dwoo	d handles are	9" 0	verall.
320201	(D)	1/4" Skew.		
320202	(E)	1/2" Skew.		
320203		1/2" Gouge.		
320204	(A)	Round Nose		
		Cut-off Tool		
3202 Set	of 5	Chisels. Ship.	Wt.	2 lbs.

HAND GRINDER ACCESSORIES



BURRS FOR WOOD

Burrs are made of exceptionally high-grade Tungsten steel, accurately designed and correctly hardened, for use in cutting and engraving wood, plastics, etc. $\frac{1}{8}$ inch polished shafts. These cutters should not be used for cutting steel. Made in U.S.A.

No.	Diam.	Length	No.	Diam.	Length
3571A	5/6"	5/6"	3571F	1/4"	5/16"
3571B	5/6"	3/6"	3571G	1/4"	7/32"
3571C	1/4"	15/32"	3571H	3/8"	5/32"
3571D	13/64"	13/64"	3571I	1/4"	5/6"
3571E	3/6"	1/4"	3571J	1/4"	5/82"

3570 - Set of Burrs Consists of Nos. A-C-E-G-H-I



MOUNTED ABRASIVE POINTS

Assortment of mounted points illustrated above offers a wide selection suitable for practically all needs. Made by a well known American manufacturer of high quality abrasives correctly bonded. True, properly balanced and guaranteed to stay on shanks. For use on steel dies, moulds and other hard materials. Furnished with $\frac{1}{8}$ " shanks. Light pressure gives maximum efficiency and extra life.

No.	Diam.	Length	No.	Diam.	Length
W160	1/4"	1/4"	B37	5/6"	3/2"
W191	5/8"	1/8"	B123	3/6"	3/6"
W144	1/8"	1/4"	W185	1/2"	1/2"
B98	1/8"	1/4"	B44	7/32"	3/8"
B66	1/4"	1/4"	B173	3/8"	1/8"

SET OF NINE PIECES - ABRASIVE POINTS. **DISCS & MANDREL**



See page 47 for other grinder accessories



Properly designed and correctly hardened for cutting steel such as is used in dies and other metals. Made from extra quality Tungsten steel. Have 1/8 inch polished shafts. Not to be confused with lower

priced burrs made of ordinary steel. Made in U. S. A.

No.	Diam.	Length	No.	Diam.	Length
3573A	5/6"	56"	3573F	5/6"	5/1"
3573B	5/6"	15/9"	3573G	9/2"	5/0"
3573C	15,64"	1/4"	3573H	15,6,1	3,6"
3573D	11/32"	5/2"	3573I	11/9"	76.1
3573E	5/6"	76"	3573I	15/4"	15/64

3572 — Set of 6 Burrs Consists of Nos. A-B-C-D-E-H



Number	Description	Size	Unit
3575A	Sanding Drum	3/8"x1/2"	Each
3575B	Mandrel for Sanding Discs	, , , ,	Each
3575C	Wire Wheel—Double Thickness	11/6" Dia.	Each
3575D	Bristle Brush	5/32" x 1/4"	Each
3575E	Cup Shape Bristle Brush	3/6"	Each
3575F	Bristle Brush	3/4"	Each
3575G	Felt Wheel	5/8"	Each
3575H	Sandpaper disc, Fine or Coarse	5/8"	100
3575I	Sandpaper disc, Fine or Coarse	7/8"	100
3575J	No-Lap Sanding Sleeve for 3575A	1/2 Grit	Dozen
3575K	Saw Blade	3/4"	Each
3575L	Saw Blade	13/6"	Each
3575M	Mandrel for above Saws	184"x1/8"	Each
3575P	Rubber Polishing Wheels	7/8"x1/8"	Dozen
3575R	Carborundum Cutting Discs	7/8"×1/64"	Dozen

HIGH SPEED ROUTER BITS

VEINING BITS	FISH TAIL BITS	STRAIGHT ROUTER
3576A — ½" 3576B — ¾2" 3576C — ½"	3577A — ½" 3577B — ¾"	3578A — ½" 3578B — ¾" 3578C — ½"

Bits made of high speed steel, hardened and tempered. Used for routing, inlaying and molding cuts. Bits have 1/8" shanks. Made in U.S.A.