

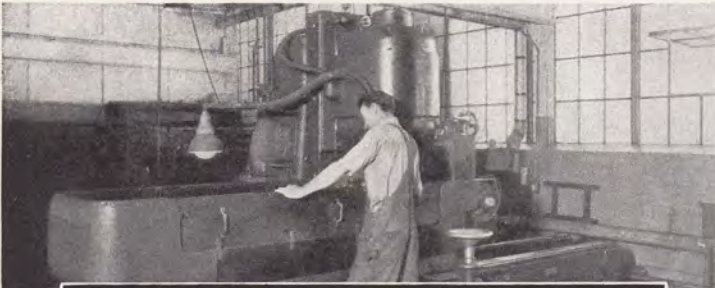
**INDUSTRIAL POWER TOOLS**

**DELTA**

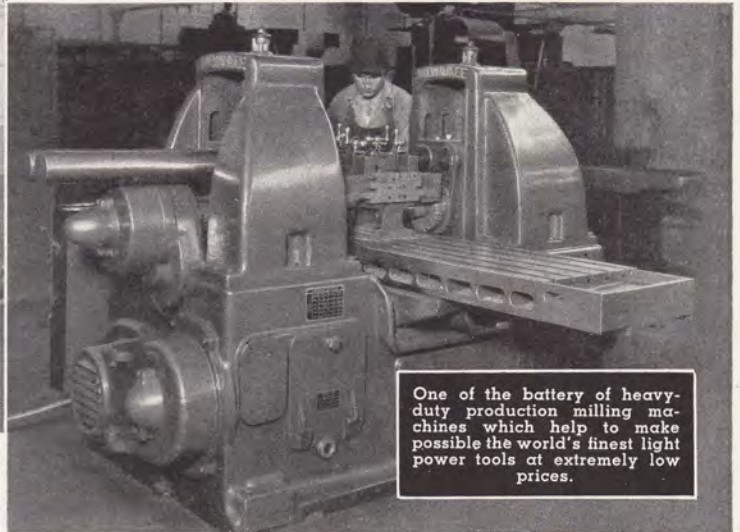
**C. W. METS**

**TOOL METALS MILL SUPPLIES**  
1275 Market St. TEL: 4-4200  
SAN FRANCISCO, CALIF. 94102  
EST. 1912

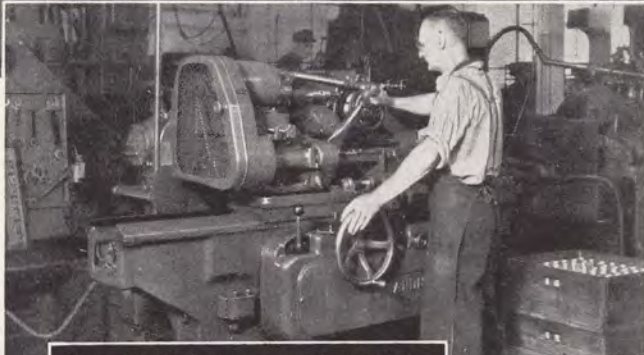
# How DELTA QUALITY POWER TOOLS ARE MANUFACTURED



Powerful, accurate grinding machines insure absolute accuracy of all flat surfaces. All jointer tables are ground twice; once individually in accurate fixtures, then again after assembly with base, to assure precise alignment of finished machine.



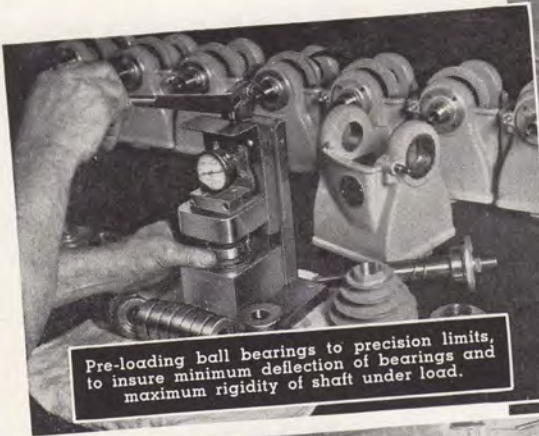
One of the battery of heavy-duty production milling machines which help to make possible the world's finest light power tools at extremely low prices.



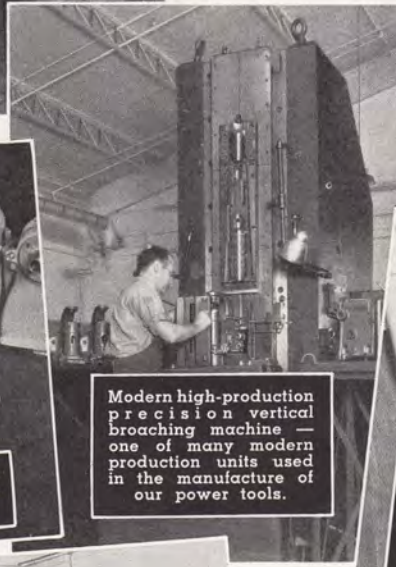
Turned finishes are not good enough for our light power tools. All spindles, arbors, collars, etc., are precision ground to finished sizes on the most modern type of grinding machines such as this.



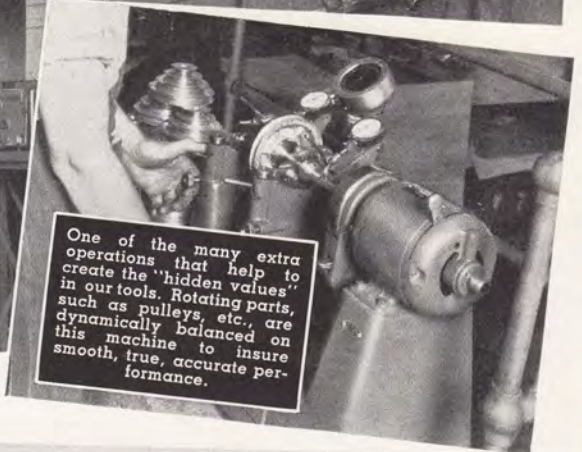
All ball-bearing seats and other bores where precision fits and accurate alignment are essential are "diamond-bored" on precision machines.



Pre-loading ball bearings to precision limits, to insure minimum deflection of bearings and maximum rigidity of shaft under load.



Modern high-production precision vertical broaching machine — one of many modern production units used in the manufacture of our power tools.



One of the many extra operations that help to create the "hidden values" in our tools. Rotating parts, such as pulleys, etc., are dynamically balanced on this machine to insure smooth, true, accurate performance.



Practically every worth-while improvement in light power tools made in recent years has been developed in this modern experimental shop, staffed with expert technicians and supervised by experienced engineers.



The entire facilities of this modern, well-equipped production plant are devoted solely to the manufacture of light power tools.

# WHY DELTA POWER TOOLS CUT COSTS FOR INDUSTRIAL USERS

- Delta power tools have found their way into thousands of industrial and commercial shops all over the world. In some production shops, they form the only equipment. In others, they are used to relieve or supplement larger machines. In all types of shops, they are standing up and making performance records equal to machines that cost many times as much. There are definite reasons why these modern tools are so highly favored for industrial use, and some of these are given below:

**Low First Cost:** Manufactured under modern production conditions with the finest of high-production equipment—like the modern automobile—these tools cost less for the same production value than heavier tools made up either in small lots or on special order. While we do not claim that modern light power tools will replace heavier machines on every type of work, still there are many cases in which they will actually out-perform heavier, more expensive equipment, due to their more modern design, the use of self-sealed ball bearings, etc.

**Economical Operation:** They require relatively smaller motors than those required by heavier, older machinery. In most cases the power required ranges from  $\frac{1}{8}$  to  $\frac{3}{4}$  H. P.—rarely over  $1\frac{1}{2}$  H. P. This means lower power cost.

**Low Maintenance Cost:** Since the cost of the original machine is low, the cost of replacement parts is also low, thus cutting upkeep costs. In addition, our light power machines have shown remarkable stamina under production conditions, and with our use of sealed-for-life bearings, maintenance costs are practically nil.

**Reduced Labor Costs:** Since these tools are so portable and adaptable, in many cases it is possible to set one of these machines alongside a heavier machine on which the operation is slow and time-consuming. The operator may then perform one or several operations on the light machine while waiting for the completion of the cut or other operation on the heavier machine. And these additional operations are obtained at no additional labor cost.

**Flexibility:** Due to the low cost of the standard parts of these machines, they can be used to make up special-purpose machines at a considerable saving in cost. Many of the largest and most progressive shops in the country, for example, use standard Delta drill-press heads in special drilling machines of their own design. These heads cost only a fraction of what it would cost to produce them in the user's own shop. Complete machines, too, can be adapted to special operations by a few inexpensive changes in the user's own shop.

**Portability:** Since in most cases each light power tool is equipped with its own motor, it can be moved instantly to any place in the shop or production line where it will be most effective. This reduces the initial tooling cost in many production shops, and in many plants making a wide variety of products, enables the best layout to be used for any sequence of operations at the lowest possible expense.

**Adaptability:** Where changes in production requirements must be made quickly, the portability and flexibility of light power tools make them indispensable. For example, if a couple of extra spindles are required on a multiple drilling operation, two of our drill presses can be set up, one on each side of the regular multiple drill, and the extra spindles thus obtained at minimum cost. It is also possible to group a number of our drill presses, either temporarily or permanently, to make up a multiple drilling unit for special operations.

THESE ARE ONLY A FEW OF THE REASONS WHY IT PAYS THE INDUSTRIAL USER TO PURCHASE DELTA POWER TOOLS.

**Remember**—Other machines may look like Delta's, on casual inspection, but the hidden value of Delta design, as well as the more obvious advantages of the machines, make Delta machines, dollar for dollar, the best light power tools you can purchase for any purpose.

DELTA MACHINES ARE MANUFACTURED AND SOLD UNDER THE FOLLOWING PATENTS EITHER OWNED BY DELTA OR UNDER WHICH DELTA IS LICENSED. OTHER U. S. AND FOREIGN PATENTS ARE PENDING.

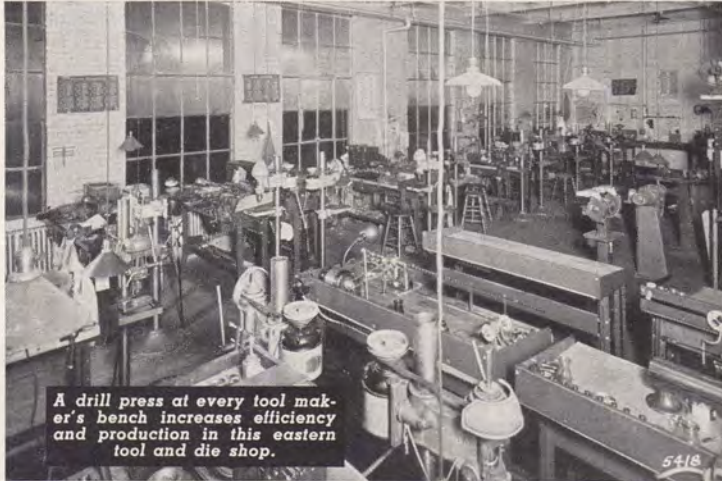
1,790,288	1,910,651	1,963,688	2,004,678	2,069,395	2,122,966	Des. 105,429	340,751—1934
1,830,813	1,925,477	1,964,651	2,007,887	2,073,430	2,168,282	Des. 105,621	346,174—1934
1,839,647	1,930,022	1,964,652	2,020,219	2,085,131	Des. 85,847	Des. 107,805	346,175—1934
1,877,705	1,938,548	1,967,791	2,020,222	2,085,235	Des. 89,818	Des. 109,628	351,531—1935
1,894,010	1,938,549	1,969,827	2,025,834	2,085,236	Des. 94,788		354,273—1935
1,896,924	1,941,417	1,975,562	2,032,233	2,099,321	Des. 98,280	Canadian Patents	354,274—1935
1,902,270	1,947,885	1,984,500	2,040,718	2,106,288	Des. 99,614	314,585—1931	365,682—1937
1,906,190	1,959,199	1,992,726	2,045,422	2,108,086	Des. 102,402	340,750—1934	370,828—1937

**THE DELTA MANUFACTURING COMPANY, 600-634 E. VIENNA AVE., MILWAUKEE, WIS.**

EXPORT DEPARTMENT, 38 PEARL ST., NEW YORK, N. Y. (ADDRESS ALL CANADIAN COMMUNICATIONS TO MILWAUKEE OFFICE.)

All prices F. O. B. Factory, Milwaukee. Prices shown in this catalog supersede those quoted previous to October 1, 1939. All prices subject to change without notice. The right is reserved to make changes in design or equipment at any time, without incurring any obligation to install these on machines previously sold. Any sales tax imposed subsequent to the publication of this catalog will be additional to quoted prices.

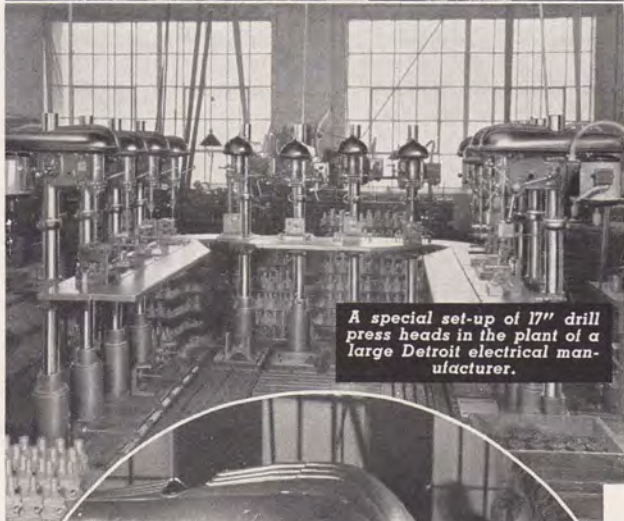
# INDUSTRY RELIES UPON DELTA POWER TOOLS TO PROVIDE ACCURATE AND LOW COST OPERATION ON REGULAR PRODUCTION WORK



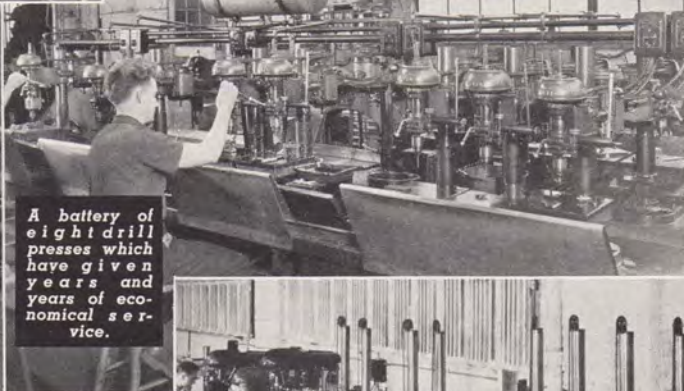
A drill press at every tool maker's bench increases efficiency and production in this eastern tool and die shop.



An eighteen-head multiple drilling machine made up in a large midwestern production shop.



A special set-up of 17" drill press heads in the plant of a large Detroit electrical manufacturer.



A battery of eight drill presses which have given years and years of economical service.



A corner of the production shop of a well known electrical instrument manufacturer.



This picture is duplicated in thousands of production shops where these drill presses are standard production equipment.



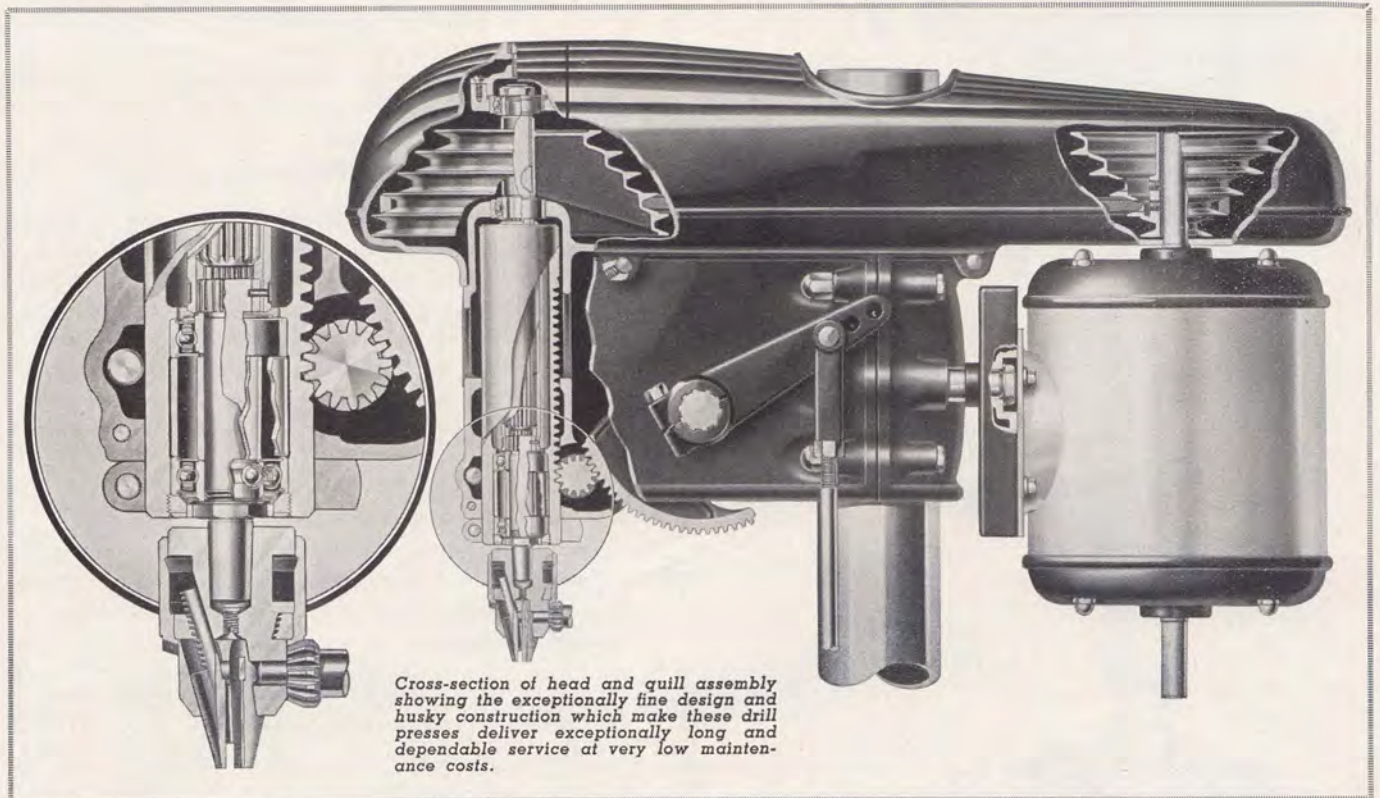
Sawing gates on aluminum castings. The manager of this foundry reports savings of up to 60 percent on his trimming costs.



This 17" head mounted on rails is a special set-up for drilling holes around the circumference of large wooden drums.

THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.

# These Features Make the 17 inch Drill Press the Favorite in Hundreds of Modern Plants!



*Cross-section of head and quill assembly showing the exceptionally fine design and husky construction which make these drill presses deliver exceptionally long and dependable service at very low maintenance costs.*

THE introduction of this 17" drill press marked a long step forward in medium sized drill press design, because it offered entirely new standards of value and operation.

A few of these features are as follows:

## ACCURATE SPINDLE

The lower end of the spindle is machined to form a 16-tooth automobile type spline fitting into a husky sleeve of large diameter, internally splined to fit the spindle. The exceptionally long bearing between sleeve and spindle practically eliminates wear and retains the original accuracy of the fit. In addition it insures very sensitive action of the spindle.

## SEALED-FOR-LIFE BEARINGS

The spindle pulley runs in two sealed-for-life ball bearings and takes all belt pull so that none is transmitted to the spindle. The spindle is also carried in two sealed-for-life ball bearings set close together near the bottom of the quill to assure maximum stiffness and to eliminate spindle whip.

## WELL GUARDED

The spindle does not project through the pulley but is keyed to it as shown above. This permits the inclosure of both belt and pulleys in a built-in guard of exceptionally neat design.

## SPINDLE EASILY CHANGED

The quill has a long bearing in the head and is completely enclosed. The entire spindle assembly may be simply and easily removed by loosening the threaded lock ring. Either the

No. 2 Morse taper spindle or a 1/2" geared Jacobs chuck may be used.

## UNIQUE SPRING HOUSING

The spindle return spring housing is provided with a worm and gear wind to eliminate danger of "fly-back" when adjusting spring tension. The spring housing also has a depth gauge.

## RAISING MECHANISMS

The raising mechanisms for both the head and table are equipped with ball bearings which assure ease of adjustment.

## HUSKY CONSTRUCTION

These drill presses as you can see by the photographs are husky throughout, weighing as high as 400 pounds which shows their heavy construction. Advanced engineering and advanced design have distributed this weight correctly so that it is properly proportioned.

## DOLLAR VALUE

The skill, knowledge and experience which go into the design of these drill presses determines their actual value to you. When compared with other units you will find that you get MORE in these drill presses than in any similar machine of equal capacity.

**THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.**

# 17 inch Industrial Drill Press Offers Entirely New Standards

THIS radically new type of 17" drill press has met with wide and instant acceptance since its introduction a short time ago. The advanced engineering evident throughout the design; the fine, accurate workmanship; the wide adaptability of the machine and its many built-in improvements have led to its adaptation by hundreds of manufacturers as a standard production tool.

Many shops use them in batteries of from five to twenty on straight production work, in addition to using them in the toolroom and general machine shop. They can be installed in a few minutes anywhere they are needed, can be used to supplement multiple-spindle machines where additional spindles are required, can be adapted easily and cheaply for special operations, replacing expensive single-purpose machines—they have so many uses and are so economical in first cost, power consumption and maintenance that no progressive shop can afford to be without them.

## FLOOR TYPE with Table Raising Mechanism

Cat. No.	Type of Spindle	Description	Ship. Wt. Lbs.	Code Word	Price
<b>"SLO-SPEED" MODELS: 385, 600, 935, 1450 and 2240 R. P. M.</b>					
1370	No. 2 Morse	Std. Tilt Table as Illus. ....	340	DRILA	\$ 89.50
1384	No. 2 Morse	Std. Tilt Table and Foot Feed ...	374	DRILO	106.35
1382	No. 2 Morse	1372 Prod. Table ...	380	DRILM	100.35
1386	No. 2 Morse	1372 Prod. Table and Foot Feed	414	DRILQ	117.20
1376	1/2" Jacobs	Std. Tilt Table ...	340	DRILG	94.85
1385	1/2" Jacobs	Std. Tilt Table and Foot Feed ...	374	DRILP	111.70
1383	1/2" Jacobs	1372 Prod. Table ...	380	DRILN	105.70
1387	1/2" Jacobs	1372 Prod. Table and Foot Feed	414	DRILR	122.55

## HIGH SPEED MODELS: 700, 1150, 1750, 2750 and 4750 R. P. M.

1370-H	No. 2 Morse	Std. Tilt Table as Illus. ....	340	DRIAA	89.50
1384-H	No. 2 Morse	Std. Tilt Table and Foot Feed ...	374	DRIAI	106.35
1382-H	No. 2 Morse	1372 Prod. Table ...	380	DRIAJ	100.35
1386-H	No. 2 Morse	1372 Prod. Table and Foot Feed	414	DRIAK	117.20
1376-H	1/2" Jacobs	Std. Tilt Table ...	340	DRIAG	94.85
1385-H	1/2" Jacobs	Std. Tilt Table and Foot Feed ...	374	DRIAL	111.70
1383-H	1/2" Jacobs	1372 Prod. Table ...	380	DRIAM	105.70
1387-H	1/2" Jacobs	1372 Prod. Table and Foot Feed	414	DRIAN	122.55

## BENCH TYPE with Head Raising Mechanism

### "SLO-SPEED" MODELS: 385, 600, 935, 1450 and 2240 R. P. M.

1375	No. 2 Morse	Prod. Style Bench Base ...	400	DRILF	114.50
1377	1/2" Jacobs	Prod. Style Bench Base ...	400	DRILH	119.85

### HIGH SPEED MODELS: 700, 1150, 1750, 2750 and 4750 R. P. M.

1375-H	No. 2 Morse	Prod. Style Bench Base ...	400	DRIAF	114.50
1377-H	1/2" Jacobs	Prod. Style Bench Base ...	400	DRIAH	119.85

All Models Include: Streamlined Belt Guard, Motor Pulley and No. 520 V-Belt.

Above Listings Do Not Include Motor or Switch. See Pages 43 and 44.

No. 968 1/2" Geared Jacobs Chuck with a No. 2 Morse Taper Shank. .... \$6.95  
Ship. Wt. 2 1/2 lbs.—Code Word—CHGEA

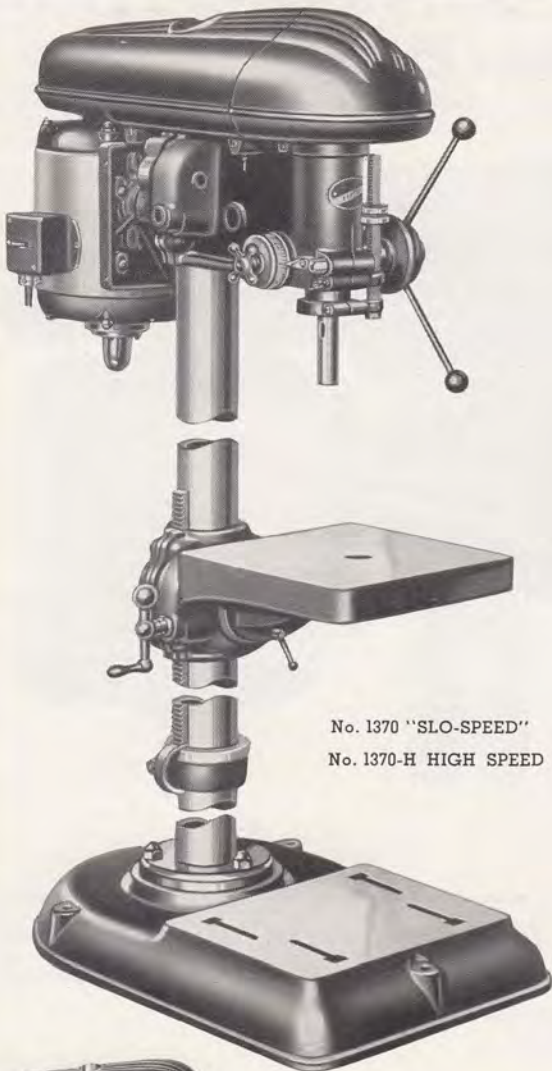
Ask for Bulletin HDP-38 for prices of parts to change standard speed to high speed.

(Note: Order geared-chuck models where straight-shank drills only are to be used. Where taper-shank drills, or both taper and straight-shank drills are to be used, specify the models with No. 2 M. T. spindles. Geared-chuck models have greater capacity under the spindle.)

See Pages 43 and 44 For Motors and Switch Rods.

## SPECIFICATIONS

Floor Model 66" high. Bench Model 42 1/2" high, 18" wide, 27" front to rear. 10"x13 3/4" floor base table surface; 11"x12" tilting table floor model; 16"x18" production table bench model; 23 1/2"x26 3/8" production table overall. 3 1/2"x60" column. Capacity: 34" Spindle to table, floor type, 44 1/2" Spindle to base, floor type; 26 1/2" Spindle to table, bench type. Quill has 5" stroke. Drilling capacity is 3/4" in cast-iron. Built-in depth stop gauge. Depth scale or spindle return spring housing.



No. 1370 "SLO-SPEED"  
No. 1370-H HIGH SPEED



No. 1375 Bench  
Type Drill Press  
with Production  
Style Base.

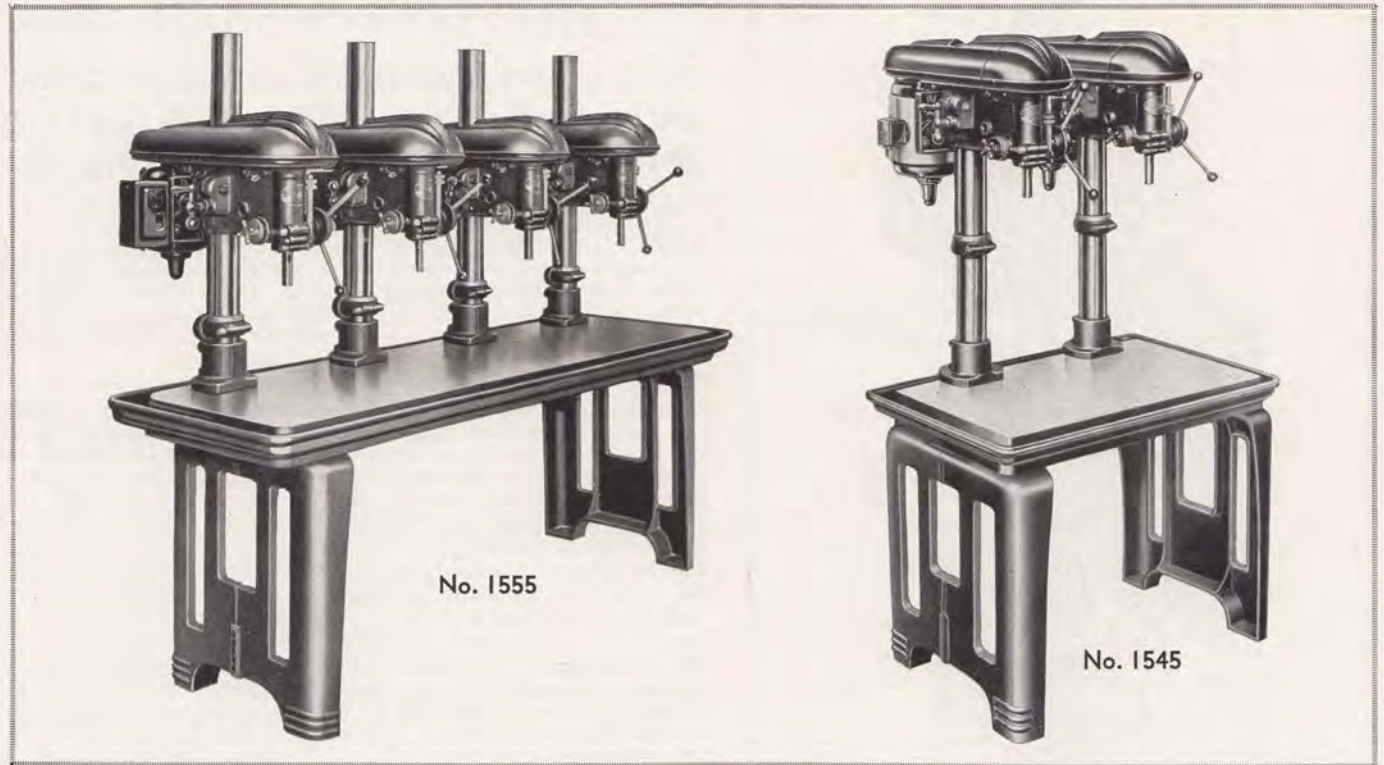


Above: No. 1371—Foot  
feed for floor type 17"  
drill presses.



No. 1372 Production  
Type Table

# MULTIPLE 17" DRILL PRESSES OFFER MANY ADVANTAGES



The unusual value of the standard single-spindle 17" drill presses has led to a demand for a similar machine of the manufacturing type and the multiple spindle drill presses listed below are the result of this demand. Heads and columns are of the same design and have the same features as the standard bench and floor models. Heads are interchangeable, so that either high or low-speed heads may be used together, or heads with either type of spindle.

### Specifications

Same as those listed opposite with exception of base dimensions which are listed here:  
 Two-spindle table 29½" x 41½", surface 23½" x 36", 48½" high.  
 Four-spindle table 28½" x 82½", surface 23½" x 77", 48½" high.  
 Center to center between spindles 18". Column diameter 3½".  
 Maximum distance chuck to table 26". Table has 1½" oil trough drilled and tapped at rear for ½" oil drain pipe.  
 Drilling capacity: ¾" in cast-iron.

Cat. No.	No. of Spindles	Type of Spindle	Ship. Wt. in Lbs.	Code Word	Price
<b>"SLO-SPEED" MODELS: 385, 600, 935, 1450 and 2240 R. P. M.</b>					
1545	2	No. 2 Morse	860	TWOSF	\$291.00
1546	2	½" Jacobs	860	TWOSG	302.00
1555	4	No. 2 Morse	.....	FOURI	On App'l.
1556	4	½" Jacobs	.....	FOURJ	On App'l.
<b>HIGH SPEED MODELS: 700, 1150, 1750, 2750 and 4750 R. P. M.</b>					
1547	2	No. 2 Morse	860	TWOSH	291.00
1548	2	½" Jacobs	860	TWOSI	302.00
1557	4	No. 2 Morse	.....	FOURK	On App'l.
1558	4	½" Jacobs	.....	FOURL	On App'l.

Prices on all Multiple Spindle Drill Presses are F.O.B. Milwaukee.  
 All Models Include: Streamlined Belt Guards, Raising Mechanisms for Heads, V-Belts, V-Pulleys and Cast Iron Production Stand.  
 Above Listings Do Not Include Motor or Switch.  
 For Motors and Switch Rods see pages 43 and 44.

### Drill Press Parts for Special Set-Ups

Heads for the 17" drill press, which can be purchased separately, are ideal for use in special setups and are widely used in production shops. Their low cost makes them more economical than anything for the same purpose that can be made up in toolroom or machine shop, and alert tool engineers and produc-

tion executives have recognized their outstanding advantages. They can be used in any position, vertical, horizontal or angular, as their self-sealed ball-bearing construction eliminates lubrication problems.

Cat. No.	Part	Speed	Spindle & Chuck	Ship. Wt. in Lbs.	Code Word	Price
1378	17" Head	Std.	No. 2 Morse	125	DRILI	\$51.25
1378-H	17" Head	High	No. 2 Morse	125	DRIHI	51.25
1379	17" Head	Std.	½" Jacobs	125	DRILJ	56.60
1379-H	17" Head	High	½" Jacobs	125	DRIHJ	56.60
1366	17" Mounting Flange with Screws....			9	DRILT	6.75
1367	Column for Floor Type 60" Long.....			37	DRILV	6.75
1368	Column for Bench Type 38½" Long.....			25	DRILZ	6.75

### Production-Type Table for 17" Drill Press (Shown Opposite)

Interchangeable with standard tilting table on the new 17" drill press, and fitting the same bracket, this table is intended for use where jigs are used constantly, and where the tilting feature is not desired. The table is a very heavy gray-iron casting, with deep ribs. It is 16" by 20½" overall, with a 12½" by 17" table surface, machined flat and true. It is provided with a 1½" oil trough all around to carry off coolant, and is provided with tapped drain holes at the rear to facilitate piping to pump or tank.

No. 1372 Production Table for 17" Drill Press, to fit Standard Bracket on Floor Machine..... \$13.85  
 Shipping Weight 70 Lbs., Code Word—DRILC

### Raising Mechanism for Head or Table (Shown Opposite)

The raising mechanism for the 17" drill press can be supplied separately. Easily installed in any of our 17" drill-press heads when required.

No. 1380 Raising Mechanism for 17" Drill Press. Consists of Worm Shaft, Worm Gear and Pinion, Ball Handle, Rack, Ball-Thrust Bearing and Collar for Column..... \$7.75  
 Shipping Weight 9 Lbs. Code Word—DRILK

### Foot Feed for 17" Floor Models (Shown Opposite)

Quickly and easily installed on floor models of the 17" drill press, the No. 1371 foot feed will be found a great time saver on production work. A finely designed, well built mechanism.

No. 1371—Foot Feed for 17" Floor-Model Drill Press, including Splined Shaft, gear Segment and Lever, Connecting Rods, Foot Lever and Bracket, Studs, and Bolt..... \$16.85  
 Shipping Weight 34 Lbs. Code Word—DRILB.

## Features of the 11 inch and 14 inch Models

*Before you purchase any drill press, make sure it has BOTH a self-aligning drive and a free-floating spindle.*

Only Our Patented Design Gives You BOTH of These Features!

WITH the latest and most modern machine equipment, including "diamond-boring" machines as used in our shops, it is an easy matter to bore drill-press bearing housings, quill seats, etc., to close tolerances. But the design of a high-speed telescoping drill-press spindle drive requires more than precision machining—it requires a design that will stay in alignment. And there are a number of factors which make this problem more difficult than it looks.

First, the comparatively long range of telescoping of the spindle and quill; second, the high speed at which the spindle rotates; third, the fact that the quill and spindle must be locked or clamped in various locations; fourth, the fact that the spindle is often subjected to severe side thrusts, and so on. When all these factors are considered, it is obvious that the slightest variation in alignment is likely to produce difficulties.

The mis-alignment encountered in service may be small—perhaps not more than .002"—but we consider that even this slight amount is sufficient to cause trouble in highspeed spindles, and it is this trouble that our patented type of drive is designed to prevent.

In a four-bearing drill press similar to our now obsolete No. 620 machine, you may have a so-called "free-floating" design, in which the belt pull is not transmitted to the spindle. But you do NOT have the self-aligning features of our improved drive (designed to overcome the troubles of the four-bearing type) because these features are patented.

### The Spindle Drive STAYS Aligned!

FROM the outside, our driving pulley looks like any other simple pulley. But, as the photos show, it is actually radically different. The pulley itself is carried on a huge sealed-for-life ball bearing, of special deep-groove tight-fitting design, with enormous reserve capacity above that required to take the belt pull, and requiring no lubrication or other attention. This bearing is mounted by means of a special extension of the inner race so that it cannot be sprung. This is very important.

The actual drive of the pulley is transmitted to the spindle through a floating sleeve, with spur-gear teeth cut around its hub. These teeth mesh with an internal gear in the pulley so that the sleeve can "float" in all directions except the driving direction. This floating sleeve drives the spindle through splines fully 3/4" long. The underside of the pulley is covered with a heavy pressed-steel plate, which not only secures the bearing in the pulley, but which also covers the pulley ribs and prevents power-wasting "fan action" and keeps out dirt when the drill head is operated upside-down.

Study the action of the floating sleeve and you will see that you not only get a true "free-floating" drive, but that you also get complete freedom from misalignment troubles due to wear or any other service conditions. This drive stays aligned!

### Construction and Assembly of the Drive Pulley

A. Shows the drive pulley with its internal gear, the floating sleeve with its spur gear, the huge ball bearing that carries the pulley and the lower cover plate.

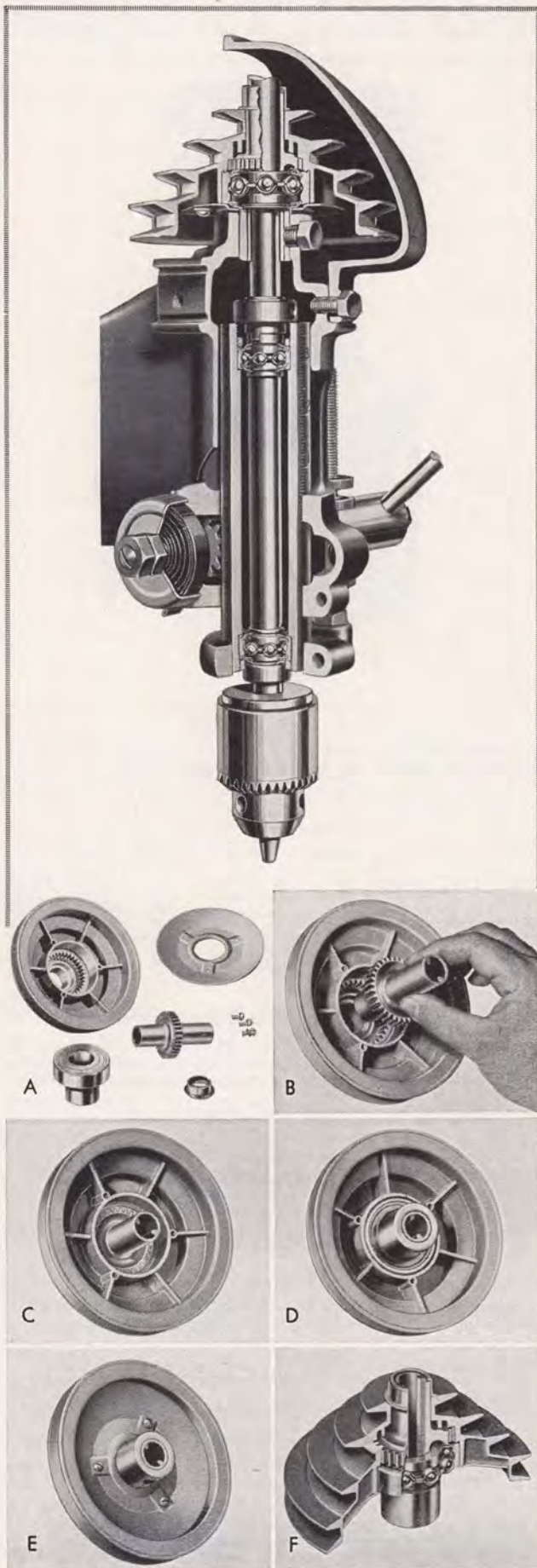
B. How the floating sleeve is engaged with the internal gear in the pulley is shown here. This forms a clutch which permits the sleeve to float in all directions but one.

C. The floating sleeve engaged with the pulley. This forms a positive driving medium for the spindle, but at the same time takes up any minute variations in alignment that may occur in service.

D. The pulley is carried on a large sealed-for-life ball bearing, requiring no lubrication, and with a load capacity far in excess of any pull ever placed on it by the belt.

E. There is no power-wasting fan action in this pulley, because the plate that secures the bearing in place also completely covers the pulley ribs—the final detail of a high-grade design.

F. This photo shows a section through the complete drive and quill assembly.



# This 14 inch Drill Press Will Save Time and Cut Costs

THERE are many reasons why this drill press is the one that you should buy because the experience gained during our development of drill presses of this type for industrial purposes insures that it is the finest machine of its kind you can buy.

For industrial use, the advantages of low initial investment, plus very low maintenance and power cost, are so obvious that thousands of industrial shops use these tools for these reasons alone. But there are additional advantages that make them the ideal machines for production use. They are completely portable, so that they require no installation expense and can be set anywhere in the shop to suit changing production conditions. They can be used to supply additional spindles on multi-spindle machines. They can be set up alongside other machines so as to employ the operator's idle time. They can be used to make up complete, self-contained drilling units which actually cost less than conventional jigs. The heads can be used to make up special drilling units at a fraction of the cost of special machines for the same job.

The readily interchangeable spindles mean that a wide variety of work can be done on these drill presses.

## "SEALED-FOR-LIFE" Bearings Eliminate Lubrication

No lubrication is ever required on these drill presses because the New Departure bearings used throughout are lubricated and sealed at the factory and need no further attention during their entire life.

### Specifications

68" high 2 3/4" column diameter    47" chuck to base  
 43" table travel    10" x 10" table size  
 4" spindle travel    Drilling capacity: 1/2" in cast-iron.  
 4 1/4" spindle to table    Drills to center of 14" circle.

Furnished with different spindles as listed—other spindles available—see page 8. The Jacobs geared chuck has full No. 60 to 1/2" capacity. These should not be confused with lighter chucks of from 1/8" to 1/2" capacity. All chucks are balanced for high-speed work. Spindles have deep double splines, which insure proper balance and long wear due to their wide area of contact.

### 14" Floor Type Drill Presses

Cat. No.	Type of Spindle	Description	Ship. Wt. Lbs.	Code Word	Price
<b>HIGH SPEED MODELS OF 590, 1275, 2450 and 5000 R. P. M.</b>					
970	Keyless	Std. Tilt Table	145	NEWDP	\$ 38.35
1570	Keyless	Std. Tilt Table and Foot Feed	175	NEWAA	53.35
1571	Keyless	1006 Production Table	145	NEWAB	57.35
1572	Keyless	1006 Prod. Table and Foot Feed	175	NEWAC	72.35
986	No. 1 Morse	Std. Tilt Table	140	NEWMT	38.35
1586	No. 1 Morse	Std. Tilt Table and Foot Feed	170	NEWAD	53.35
1587	No. 1 Morse	1006 Prod. Table	140	NEWAE	57.35
1588	No. 1 Morse	1006 Prod. Table & Foot Feed	170	NEWAF	72.35
989	1/2" Jacobs	Std. Tilt Table	145	NEWJC	41.85
1589	1/2" Jacobs	Std. Tilt Table and Foot Feed	175	NEWAG	56.85
1590	1/2" Jacobs	1006 Prod. Table	145	NEWAH	60.85
1591	1/2" Jacobs	1006 Prod. Table and Foot Feed	175	NEWAJ	75.85
<b>"SLO-SPEED" MODELS OF 390, 745, 1280 and 2050 R. P. M.</b>					
1270	Keyless	Std. Tilt Table	149	SLOFA	40.05
1870	Keyless	Std. Tilt Table and Foot Feed	179	SLOBA	55.05
1871	Keyless	1006 Prod. Table	149	SLOBB	59.05
1872	Keyless	1006 Prod. Table and Foot Feed	179	SLOBC	74.05
1286	No. 1 Morse	Std. Tilt Table	147	SLOFB	40.05
1886	No. 1 Morse	Std. Tilt Table and Foot Feed	177	SLOBD	55.05
1887	No. 1 Morse	1006 Prod. Table	147	SLOBH	59.05
1888	No. 1 Morse	1006 Prod. Table and Foot Feed	177	SLOBI	74.05
1289	1/2" Jacobs	Std. Tilt Table	149	SLOFC	43.55
1889	1/2" Jacobs	Std. Tilt Table and Foot Feed	179	SLOBJ	58.55
1890	1/2" Jacobs	1006 Prod. Table	149	SLOBK	62.55
1891	1/2" Jacobs	1006 Prod. Table and Foot Feed	179	SLOBL	77.55

All Models Include: No. 387 V-Belt and No. 985 Motor Pulley.  
 Above Listings Do Not Include Motor or Switch.  
 For Motors and Switch Rods See Pages 43-44

### PRODUCTION TABLE for 14-inch Drill Presses

Table surface 11" x 14". Has 1 1/2" drain trough, tapped for drain piping. Rack and ball-thrust bearing fitted with safety hook, prevents accidental dropping of table.

**No. 1006 Production Table Assembly, Complete with Raising Mechanism, Rack, Safety Hook, Thrust Bearing and Collar**.....\$22.00  
 Shipping Weight 70 Lbs. Code Word—NEWPT.

### FOOT FEED for 14-inch Models

Thoroughly engineered. Pressure applied to quill parallel to spindle axis—eliminates side thrusts. Speeds up production on drilling or tapping.

**No. 1007 Foot Feed For 14" Drill Press Only, consisting of Foot Lever and Bracket, Connecting Rods and Tube, Two Column Brackets, Shifter Bracket, Shifter Shaft Two Springs and Adjusting Collar**.....\$15.00  
 Shipping Weight 30 Lbs. Code Word—NEWFF



No. 989

Above — No. 1006 Production Table.

Right — No. 1007 14" Foot Feed.

# Bench Type 14" Drill Presses Are Used in Thousands of Industrial Shops!

These bench type drill presses have all of the same outstanding features as the floor type units as described on page 7. The head and table are identical to the floor type model except that a shorter column and a lighter base are supplied.

Spindles are readily interchangeable—bearings need never be lubricated because they are lubricated and sealed for life at the factory. The fine design, accurate construction and maximum versatility of these bench type drill presses made them the favorite with all men who know good tools.

### Specifications

- 36½" high
- 2¾" column diameter
- 11½" table travel
- 4" spindle travel
- 11½" spindle to table
- 17" chuck to base
- 10" x 10" table size
- Drilling capacity: ½" in cast-iron
- Drills to center of 14" circle

Furnished with different spindles as listed—other spindles available as listed below.



No. 1011 Bench type drill press with production type base.

### Bench Type 14" Drill Presses

Cat. No.	Type of Spindle	Description	Ship. Wt. Lbs.	Code Word	Price
<b>HIGH SPEED MODELS OF 590, 1275, 2450 and 5000 R. P. M.</b>					
995	Keyless	Std. Tilt Table.....	110	NEWBE	\$32.45
1000	No. 1 Morse	Std. Tilt Table.....	110	BENMT	32.45
999	½" Jacobs	Std. Tilt Table.....	110	BENJC	35.95
1011	½" Jacobs	Production Type Base.....	215	PRODA	59.85
1013	No. 1 Morse	Production Type Base.....	215	PRODC	56.35
<b>"SLO-SPEED" MODELS OF 390, 745, 1280 and 2050 R. P. M.</b>					
1295	Keyless	Std. Tilt Table.....	102	SLOBE	34.15
1300	No. 1 Morse	Std. Tilt Table.....	102	SLOBF	34.15
1302	½" Jacobs	Std. Tilt Table.....	102	SLOBG	38.55
1012	½" Jacobs	Production Type Base.....	210	PRODB	61.55
1014	No. 1 Morse	Production Type Base.....	210	PRODD	58.05

All Models Include: No. 387 V-Belt and No. 985 Motor Pulley.  
Above Listings Do Not Include Motor or Switch.  
For Motors and Switch Rods see pages 43-44.

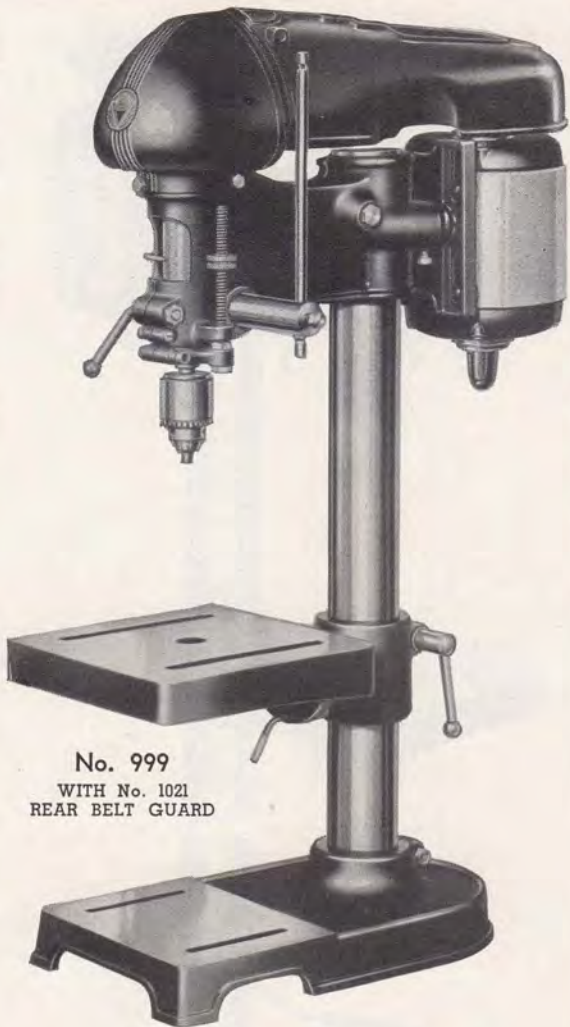
### Interchangeable Spindles for 14" Drill Presses

One of the many outstanding advantages of the 14" drill press is the fact that the spindles are readily interchangeable. This means that the same machine, either floor type or bench type can be used for a multiple of uses and the application of the machine in your shop, therefore, is increased many times.

The machines are listed complete with three different types of spindles. The ½" geared Jacobs chucks have a full No. 60 to ½" capacity. These should not be confused with lighter chucks of from ⅛" to ½" capacity.

All chucks are balanced for high-speed work. Spindles have deep splines which insure proper balance and long wear due to their wide area of contact.

Cat. No.	Description of Spindle	Ship. Wt. Lbs.	Code Word	Price
971	Keyless Chuck—Cap. O—17/32"	3½	NESPA	3.45
972	Jacobs Chuck—Cap. No. 60—½"	3½	NESPB	6.95
973	No. 1 Morse Taper.....	2	NESPC	3.45
974	With ½" Hole for Router Bits.....	2½	NESPD	2.20
977	With 5/16" Hole for Shaper Cutters.....	2	NESPF	1.95
991	For Cup Wheels.....	2	NESPG	2.20



No. 999  
WITH No. 1021  
REAR BELT GUARD

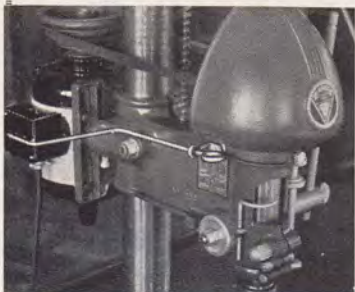
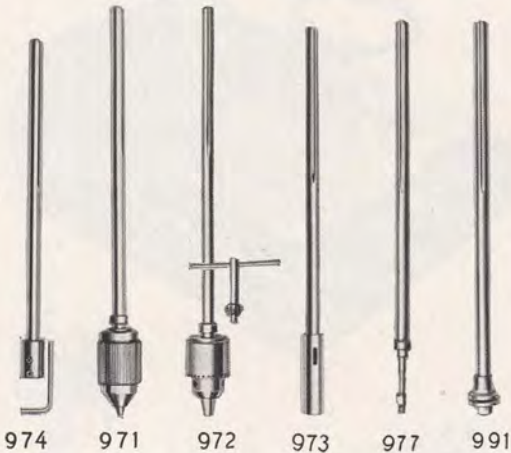


Photo at left shows how switch rod brings control of machine to finger tips of operator. This makes a very neat and simple method of motor control, without extra wiring and with minimum installation expense. There are no hanging loops of wire.

# Multiple 14" Drill Presses Are All Economical Units for Production Work

The two and four-spindle 14" drill presses are used in many high-production shops, where they offer many outstanding advantages for drilling and tapping operations. They are economical in first cost as compared to larger multi-spindle machines for the same work. They are very economical in power consumption and in maintenance—in fact, there is practically no maintenance required.

They are identical in design and construction with the standard 14" single-spindle bench models described on the preceding pages, with the exception of the base and the mounting of the columns.

## Specifications

45" high  
4" spindle travel  
25½" chuck to table  
16½" x 28" table surface—2 spindle  
20¼" x 51" table surface—4 spindle  
Drills to center of 14" circle  
Drilling capacity ½" in cast-iron

Furnished with No. 1 Morse taper spindle or with ½" geared Jacobs chuck. Other spindles available as listed on page 8.

Spindle carried in New Departure "sealed-for-life" ball bearings, lubricated for life of bearings; no further lubrication necessary. Spindle pulleys of full "free floating" design; takes all belt pull so that none is transmitted to spindle, and automatically compensates for service mis-alignments. Double-spined spindles, with large radial spline faces for long wear and sensitive action.

Interchangeable spindles. Graduated quills with adjustable depth pointers. Threaded stop rods with knurled nuts. Straight feed lever standard equipment. Heads counterweighted for fast, easy adjustment.

## 14" MULTIPLE SPINDLE DRILL PRESSES

Cat. No.	No. of Spindles	Spindle Centers	Type of Spindle	Ship. Wt. in Lbs.	Code Word	Price
<b>HIGH SPEED MODELS OF 590, 1275, 2450 and 5000 R. P. M.</b>						
1540	2	12"	½" Jacobs	662	TWOSA	\$174 00
1541	2	12"	No. 1 Morse	657	TWOSB	166 20
1550	4	11½"	½" Jacobs	1185	FOURE	On
1551	4	11½"	No. 1 Morse	1185	FOURF	App'l.
<b>"SLO-SPEED" MODELS OF 390, 745, 1280 and 2050 R. P. M.</b>						
1542	2	12"	½" Jacobs	667	TWOSC	178 20
1543	2	12"	No. 1 Morse	662	TWOSD	156.85
1552	4	11½"	½" Jacobs	1185	FOURG	On
1553	4	11½"	No. 1 Morse	1185	FOURH	App'l.

Prices on all Multiple Drill Presses are F.O.B. Milwaukee.

All Models Include: Complete No. 1005 Counterweight Assembly, V-Belts, V-Pulleys and Cast Iron Production Stand.

Above Listings Do Not Include Motors or Switch Rods.

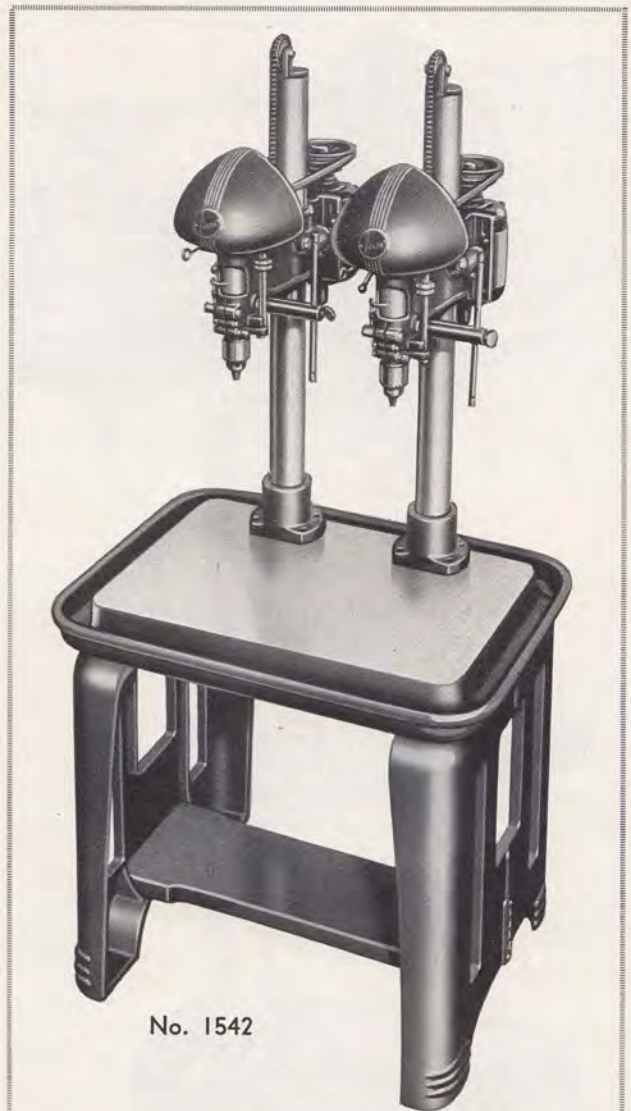
For Motors and Switch Rods see Pages 43 and 44.

## Assembly Parts for 14" Drill Presses

Alert production executives and tool engineers have recognized the advantages of the 14" drill press and have used standard heads, columns and other parts to make their own special set-up. Since these units can be used in any position and since their cost is so low they are ideal for this purpose. To help you make your own set-up the individual parts of the 14" drill presses are listed below.

### ASSEMBLY PARTS

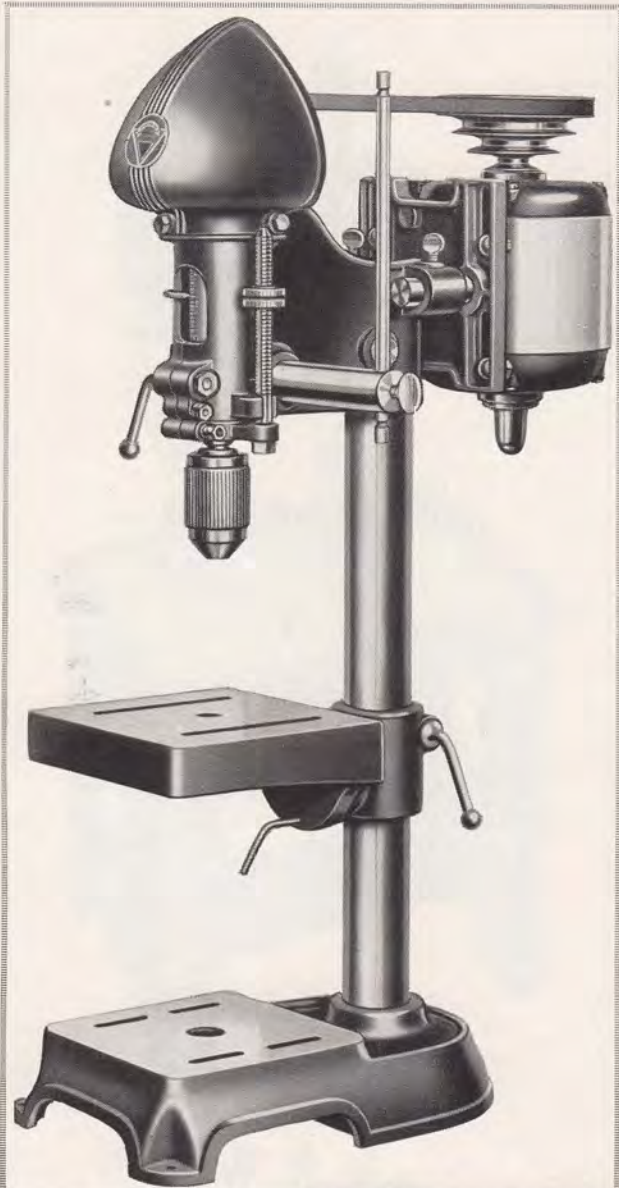
<b>No. 387</b> —V-Belt For 14" Drill Press.....	\$ .85
Ship. Wt. 1 Lb. Code Word—FORDP	
<b>No. 1331</b> —Switch Rod with Loop for All 11" and 14" Drill Presses.....	.45
Ship. Wt. 1½ Lbs. Code Word—RODNB	
<b>No. 969</b> —Pilot Wheel for 14" and 11" Drill Presses.....	1.25
Ship. Wt. 4 Lbs. Code Word—NEWFE	
<b>No. 970-B</b> —High Speed 14" Head with ½" Geared Jacobs Chuck, 387 V-Belt and 985 Motor Pulley.....	29.50
Ship. Wt. 57 Lbs. Code Word—HEADH	
<b>No. 1289-A</b> —Slo-Speed 14" Head with ½" Jacobs Chuck, 387 V-Belt and 985 Motor Pulley.....	31.85
Ship. Wt. 60 Lbs. Code Word—HEADL	
<b>No. 970-C</b> —High Speed 14" Head with No. 1 Morse Taper Spindle, 387 V-Belt and 985 Motor Pulley.....	26.00
Ship. Wt. 57 Lbs. Code Word—HEADI	
<b>No. 1286-A</b> —Slo-Speed 14" Head with No. 1 Morse Taper Spindle, 387 V-Belt and 985 Motor Pulley.....	28.15
Ship. Wt. 60 Lbs. Code Word—HEADK	
<b>No. 985</b> —Motor Pulley ½" Bore.....	1.30
Ship. Wt. 2½ Lbs. Code Word—NEWPU	
<b>No. 1005</b> —Counterweight Assembly with Chain, Column Top Casting with Roller and Lead Weight and Fastening Screws.....	17.50
Ship. Wt. 80 lbs. Code Word—TWOSW	
<b>No. 1023</b> —Counterweight Assembly Same as 1005 without Lead Weight.....	3.05
Ship. Wt. 15 Lbs. Code Word—TWOSE	
<b>No. 1010</b> —Collar For 14" Drill Press Column.....	.60
Ship. Wt. 1 Lb. Code Word—NESCC	
<b>No. 1019</b> —Flange For Mounting 14" Column with Screws.....	3.50
Ship. Wt. 7 Lbs. Code Word—PRODE	
<b>No. 1020</b> —Column For 14" Drill Press 36¼ Inches Long.....	2.25
Ship. Wt. 21 Lbs. Code Word—PRODF	
<b>No. 1021</b> —Cast Aluminum Guard for 14" High Speed Drill Press.....	8.75
Ship. Wt. 13 Lbs. Code Word—PRODG	
<b>No. 1022</b> —Cast Aluminum Guard for 14" Slo-Speed Drill Press.....	9.75
Ship. Wt. 17 Lbs. Code Word—PRODH	
<b>No. 1399</b> —Cast Iron Legs for Production Stand for All 14" and 17" Drill Presses, Without Lower Wood Shelf. Per Pair.....	28.50
Ship. Wt. 195 Lbs. Code Word—PRODK	



No. 1542



No. 1552



# This 11" Bench Type Industrial Drill Press Has Many Applications in the Production Shop

The owner of the small shop who does not require the capacity of a large machine, yet who wants the highest quality in his tools will find in the No. 645 drill press the answer to all his requirements.

It will, of course, perform all the drilling in metal that is to be done around the shop—and it takes drills up to 17/32" in diameter. In addition to this, it will take all standard wood bits with 1/2" shanks, and can be used for boring holes up to 2" in diameter with standard multi-spur bits.

With the addition of the No. 976 mortising attachment, it becomes an efficient mortising machine, making square end mortises from 1/4" to 1/2" width, and of any length, with ease and speed.

Standard router bits with 1/2" shanks are held in the No. 974 router spindle, and permit much intricate work to be done which would otherwise take hours of tedious hand labor.

Sanding, too, is done with the utmost facility, using the No. 835 or 840 drum sanders, preferably held in the No. 974 spindle. These sanders smooth the edges of straight and curved work with a quickness and sureness that is a revelation to those accustomed only to the tediousness of hand finishing.

All of the spindles used for the 14 inch drill press may be used on this machine also. The standard machine is fitted with a high-grade keyless chuck of our own design.

Study the features of this machine. Its massive design, its precision construction, the tilting table with its locating pin, the graduated quill and adjustable pointer for depth boring and drilling, the stop rod and nuts for repetition drilling. Study the floating spindle pulley (originally developed by us) that eliminates belt pull and strain on the spindle — the self-sealed New Departure ball bearings used throughout, and which require no lubrication for their entire life, and you will see why we say that this is the ideal machine for the small shop.

### Specifications

34 1/2" high	14" chuck to base
11 3/4" wide	8" x 8" table surface
19" front to back	6 1/4" x 7 1/2" table surface on base
1 7/8" column diameter table travel	17/32" chuck capacity
4" spindle travel	Drilling capacity: 3/8" in cast-iron
10 1/8" chuck to table	Drills to center of 11" circle

Full-floating, automatically aligned spindle pulley. "Sealed-for-life" ball bearings throughout; lubricated for life of bearings.

Graduated quill. Adjustable depth pointer. Stop rod and knurled nuts. Tilting table with index pin.

All interchangeable spindles for 14" drill press can be used on this machine.

Cat. No.	Type of Spindle	Ship. Wt. in Lbs.	Code Word	Price
<b>BENCH TYPE-SPEEDS: 590, 1275, 2450 and 5000 R. P. M.</b>				
645	Keyless	83	PRENU	25.95
647	1/2" Jacobs	83	PRENJ	29.45

All Models Include: No. 340 V-Belt and No. 985 V-Pulley.

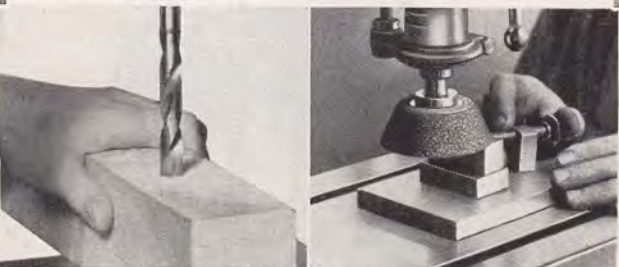
Above Listings Do Not Include Motor.

For Motors and Switch Rods see Pages 43 and 44.

### EXTRA PARTS

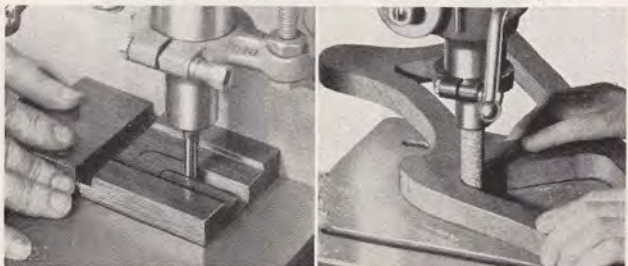
No. 340 V-Belt for 11" Drill Press.....	\$0.80
Ship. Wt. 1/2 Lb. Code Word—BELUX	
No. 992 Cup Wheel, 3 1/2" x 1 1/2" For Use on 991 Spindle .....	\$2.25
Ship. Wt. 1 1/2 Lbs. Code Word—NEWCU	

Below: manufacturers find this drill press a time and money saver, as shown by this special 12-head setup in the plant of the Master Electric Company at Dayton, Ohio, where the famous "Master" electric motors are manufactured. These machines are built for the hardest work—but priced for the smallest shop.



Boring in wood with spur bits is practical because of the standard high speeds.

Surface grinding is one of the unusual jobs for which this modern tool is adapted.



The routing of all kinds of grooves is made simple, using standard router bits.

Sanding the edges of carved work with the sanding drum saves hours of tedious labor.





## Attachments Convert Drill Press Into Efficient Mortiser

Using this simple, easily installed attachment, the 14" and 17" drill presses may be converted into accurate mortising machines and anyone, even without previous experience, can make straight, true square-end mortises in all kinds of wood and of practically any width in a fraction of the time necessary by hand methods.

Woodworkers of all kinds—cabinet makers, contractors, repair men, instructors in school shops—everyone who has to make mortise and tenon joints has found this economical tool to be a time and labor saver.

The mortiser consists of a heavy fence bolted to the drill press table. Two hook bolts hold the work against the fence and an adjustable hold-down keeps the work from being raised when the chisel is withdrawn.

The chisel holder replaces the regular stop-rod clamp.

### Hollow Chisels for Mortiser



Selected steel. Bit operates inside of chisel. Order proper bushing for each bit for 14" drill press. Outside of bushing, 1/4". Shank of chisel, 5/8" x 1 1/2". Weight per set, 1 1/4 lbs.

Cat. No.	Size	Depth of Mortise	Code	Price Each
504	1/4" x 1/4"	1 3/8"	CHISA	\$4.30
505	3/16" x 3/16"	1 1/8"	CHISB	4.30
506	3/8" x 3/8"	2 3/8"	CHISC	5.25
508	1/2" x 1/2"	3 1/4"	CHISE	5.95

### Hollow Chisel Bits



Cat. No.	Size	Dia. Shank	Code	Price
514	1/4"	3/16"	BITOA	\$1.45
515	3/16"	1/8"	BITOB	1.45
516	3/8"	19/64"	BITOC	1.45
518	1/2"	19/64"	BITOE	1.45

### Bushings



Cat. No.	Size Hole	Code	Price Each
524	3/16"	BUSHA	.45
525	1/4"	BUSHB	.45
526	19/64"	BUSHC	.45

No. 526 used with Nos. 516 and 518 bits.

### Machine Spur Bits



Of selected steel properly hardened and tempered. Have diamond shaped point and two cutting lips. 6 1/4" long with 1/2" shanks to fit 1/2" machine chuck and 974 spindle.

Cat. No.	Size Hole	Code	Price Each
804	1/4"	SPURA	\$1.10
805	3/16"	SPURB	1.15
806	3/8"	SPURC	1.20
807	1/2"	SPURD	1.40
808	3/4"	SPURE	1.55
809	1"	SPURF	1.75
810	1 1/8"	SPURG	1.95
812	3/4"	SPURK	2.45
818	Complete Set	SPURL	12.30

10 oz. Each. Complete Set 3 Lbs.

### High Grade Router Bits



For routing, carving, round-end mortises. Shank diameter is 1/2". High grade steel, tempered for real production service.

Cat. No.	Size	Shank Dia.	Lgth. of Flute	Code	Price Each
474	1/4"	1/2" x 1 1/2"	1 1/4"	ROUTA	\$1.10
475	3/16"	1/2" x 1 1/2"	1 1/4"	ROUTB	1.10
476	3/8"	1/2" x 1 1/2"	1 1/4"	ROUTC	1.10
477	1/2"	1/2" x 1 1/2"	1 1/4"	ROUTD	1.10
478	3/4"	1/2" x 1 1/2"	1 1/2"	ROUTE	1.10

Shipping Weight 4 oz. Each.

**No. 480** Set of Five Router Bits, Sizes as Above.....\$4.95  
Shipping Wt. 2 Lbs. Code Word—ROUTO

## Tapping Attachments



THESE tapping attachments are constructed with the utmost precision and are very smooth and sensitive in operation. Ball bearings are used for accuracy, rigidity and long life. A balanced, heat-treated gear reversing mechanism distributes the pull among three gears, maintaining strain and wear at the minimum, and eliminating torsion. Attachment idles in "forward" position, thus reducing wear. The cone clutch engages with an extremely smooth action, and is protected so that no oil can reach its surface to interfere with the instant reaction to tapping pressure which is essential for precision.

Housings are of aluminum, designed to clamp around the quill of the drill press, thus eliminating a great deal of the tap breakage encountered with taper-shank drive.

### For 14" Drill Presses

**No. 990** Tapping Attachment to Fit 14" Drill Press with "Tru-Grip" Tap Holder. Capacity No. 2 to 1/4" in Brass and Cast Iron; No. 2 to 3/16" in steel. Complete with Wrench and Four Collets to Take No. 2, 3, 4, 5, 6, 7, 8, 9, 10 and 1/4" Taps.... \$44.85  
Shipping Weight 7 lbs. Code Word NEWTA.

**No. 996** Tapping Attachment to Fit 14" Drill Press with "Tru-Grip" Tap Holder. Capacity No. 8 to 1/2" in Brass; No. 8 to 3/8" in Cast Iron; No. 8 to 5/16" in Steel. With wrench and seven Collets to Fit No. 8, 9, 10, 1/4", 5/16", 3/8", 7/16" and 1/2" Taps \$60.00  
Ship. Wt. 10 lbs. Code NEWTB.

### For 17" Drill Presses

**No. 1362** Tapping Attachment to Fit 17" Drill Press with No. 2 Morse Taper Spindle. With "Tru-Grip" Tap Holder. Capacity No. 8 to 5/16" in Steel; No. 8 to 3/8" in Cast Iron; No. 8 to 1/2" in Brass. With Wrench and Seven Collets to Fit No. 8, 9, 10, 1/4", 5/16", 3/8", 7/16" and 1/2" Taps..... \$65.00  
Shipping Weight 15 Lbs. Code Word DRITA.

**No. 1363** Tapping Attachment to Fit 17" Drill Press with No. 2 Morse Taper Spindle. With Double-Jaw Tap Holder. Capacity 1/4" to 3/8" in Brass and Cast Iron; 1/2" to 1" in Steel. \$90.00  
Ship Wt. 15 lbs. Code DRITB.

### Plug and Dowel Cutters



Dowels 2" long may be cut up to 1" thick. Cut fast and clean. Have 1/2" shanks. 3/8" size used for deck plugs for boats.

Cat. No.	Size	Shank Dia.	Lgth. of Cut	Code	Price Each
814	3/8"	1/2" x 2"	2"	PLUGA	\$3.10
815	1/2"	1/2" x 2"	2"	PLUGB	3.40
816	3/4"	1/2" x 2"	2"	PLUGC	3.95
817	1"	1/2" x 2"	2"	PLUGD	4.35
819	1 1/8"	1/2" x 2"	2"	PLUGE	5.40

Shipping Weight Approximately 6 oz. Each.

**No. 822** Complete Set of Five Plug Cutters, Sizes as Above.... \$19.95  
Shipping Wt. 2 1/2 Lbs. Code Word—PLUGS



# Industrial Pedestal Grinders

## "That Cannot Forget Their Goggles"

This pedestal tool grinder is the most accurate, finest and safest grinder made—regardless of price! From the double-seal ball bearings to the Twin-Lite Safety Shields these new grinders offer the utmost in efficiency, convenience and safety and set new standards because they contain additional features not found in competitive makes.

**SIZE:** Heavy, well proportioned cast-iron base 14½" x 15½", tool tray 12" x 18", two 4" x 4" water pots, tool rests 39" from floor.

**MOTOR:** Either ½ H.P. Single Phase, 110 volt, 60 cycle, A.C., ball bearing or ½ H.P., 3 phase, 220 volt, 60 cycle, 1750 or 3450 R.P.M. Ask for prices on other motors. Single phase motors may have plain toggle switch or push-button overload relay switch. Three phase motors have push-button relay switch but no cord or plug.

**WHEELS:** Balanced to 1/100 inch ounce 60N and 50M Aloxite Wheels, ¾" face by 7" diameter, ⅝" hole. Absolutely true and vibrationless to permit accurate tool grinding.

**TOOL RESTS:** Fully machined—not rough castings. Are fully adjustable vertically and horizontally—designed so that full advantage can be taken of sides of wheels. Easily detached.

**WHEEL GUARDS:** Heavy cast iron with steel side plates. Designed to meet the strict regulations of the Wisconsin Industrial Commission. Only actual grinding section of wheel is exposed. Chute discharges dust to rear. Spark guard adjustable to wear of wheel.

**SAFETY SHIELDS:** Patented (Des. Pat. No. 98,280) Twin-Lite standard on all models. Double thickness shatter-proof glass. Each shield has two bayonet type lamps which flood both sides and face of wheels independent of shop lighting system, as shown below. No glare in operator's eyes. Wired to motor switch so that they go on and off with motor operation.

**BEARINGS:** Precision double-seal New Departure ball bearings. No oiling required for entire life of bearing. No trouble due to entrance of abrasive dust.

Cat. No.	Motor	R.P.M.	Type of Switch	Ship. Wt. Lbs.	Code Word	Price
1268	110/60 ½ H.P. Sin. Phase	3450	Overload	194	GRINT	\$77.85
1242	110/60 ½ H.P. Sin. Phase	3450	Toggle	194	GRINC	69.50
1246	220/60 ½ H.P. 3 Phase..	3450	Overload	194	GRING	83.50
1275	110/50 ½ H.P. Sin. Phase	2850	Overload	195	GRIFC	77.85
1274	110/50 ½ H.P. Sin. Phase	2850	Toggle	195	GRIFB	69.50
1281	220/50 ½ H.P. 3 Phase...	2850	Overload	195	GRIFH	83.50
1306	115 D. C. ½ H.P.....	3450	Overload	194	GRIFL	92.85
1305	115 D. C. ½ H.P.....	3450	Toggle	194	GRIFK	84.50
1309	230 D. C. ½ H.P.....	3450	Overload	194	GRIFP	92.85

3450 R.P.M. = 6500 Ft. per Min. 2850 R.P.M. = 5370 Ft. per Min.

For Other Motors and Switches Write for Specifications and Prices.

### ACCESSORIES for Pedestal and Bench Type Grinders

Cat. No.	Description	Ship. Wt. Lbs.	Code Word	Price
1245	¾" x 7" Aloxite Wheel, 60 Grit, Grade N, ⅝" Hole.....	2	GRINJ	\$3.25
1247	¾" x 7" Aloxite Wheel, 50 Grit, Grade M, ⅝" Hole.....	2	GRINK	3.25
1250	Twin-Lite Shield (One Only) No Bulbs.....	3	GRILT	5.75
1280	One Lamp Bulb for Twin-Lite Shield.....	½	GRILB	.40

### Dust Collector for Grinder

This practical and efficient dust collector is self-contained and need not be connected to the shop blower system. No additional power is required. Grinder is completely portable. Efficient filters virtually trap all of the fine dust that otherwise would be discharged into the air. Silent, neat, compact and inexpensive.

**No. 1292** Dust Collector unit for pedestal grinder with filter, brackets, screws ..... **\$28.75**  
Shipping Weight 50 lbs. Code Word DUSTO.

**No. 1293** Replaceable filter for above ..... **\$2.30**  
Shipping Weight 5 lbs. Code Word DUSTY.



# FINEST, SAFEST AND MOST ACCURATE BENCH GRINDER MADE

## Check These Features:

- Twin-Lite Safety Shields
- Sealed-for-life ball bearings
- Strong wheel and spark guards
- Built-in toggle switch
- Absolute freedom from vibration
- Convenient water pot
- Machined tool rests, fully adjustable
- Wheels balanced to 1/100 inch ounce



No. 1240

## BENCH GRINDER "Can't forget its Goggles"

This efficient motor-driven bench grinder incorporates all of the latest design and construction features which makes it the chosen grinder for the production shop. Its price belies its quality. The Twin-Lite Safety Shields flood both sides and face of the wheel making the grinder independent of the shop lighting system. Sealed-for-life bearings, fully adjustable machined tool rest, efficient guards—these are but a few of the reasons why this is the favorite grinder in most shops.

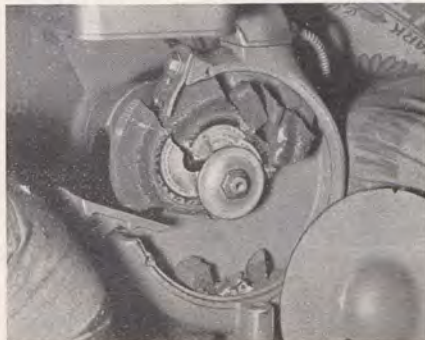
### Catalog Listing of Bench Grinders

Cat. No.	Motor	R. P. M.	Type of Switch	Ship. Wt. Lbs.	Code Word	Price
1240	110/60 1/2 H. P. Sin. Phase	3450	Toggle	88	GRINA	45.90
1291	110/60 1/2 H.P. Sin. Phase	1725	Toggle	88	GRINY	45.90
1272	110/50 1/2 H.P. Sin. Phase	2850	Toggle	88	GRIFA	45.90
1271	220/60 1/2 H.P. Sin. Phase	3450	Toggle	88	BENDC	45.90
1244	220/60 1/2 H.P. 3 Phase...	3450	None	86	GRINF	50.90
1277	220/50 1/2 H.P. Sin. Phase	2850	Toggle	88	GRIFE	45.90
1304	115 D. C. 1/2 H. P.	3450	Toggle	88	GRIFJ	57.90
1307	230 D. C. 1/2 H. P.	3450	Toggle	88	GRIFM	57.90

Above listings include motor, 3/4" x 7" 60 N and 50 M Aloxite wheels, Twin-Lite Safety Shields (without bulbs), Water Pot, Tool Rests, Toggle Switch, Cord and Plug.

3450 R.P.M. = 6500 Ft. per Min. 2850 R.P.M. = 5370 Ft. per Min.

For Grinders with Other Motors and Switches Write for Specifications and Prices



To test the strength and completeness of the guarding of these grinders, a number of wheels were deliberately smashed with a rifle bullet while the grinder was running at speeds from 3400 to 8000 R.P.M. Photo at the right shows one wheel that was smashed at the highest speed—and it can be plainly seen what happened to the guard—nothing! The spark guard was slightly bent, and that was all. That's safety plus!

## Efficient Belt Driven BENCH GRINDER

Especially applicable where the current is not standard and where special motor driven grinders are expensive. It may be driven from below or rear, from any motor or shaft and is therefore 100% flexible.

Housing is designed so that either single or double belt drive may be used. Wheels are 3/4" x 7", 3/8" holes, arbor 7/8" diameter at center. Supplied with patented Twin-Lite Safety Shields—standard machined tool rests.



No. 1248

**No. 1248** Belt Driven Bench Grinder complete as illustrated, without motor pulley and light bulbs **\$28.85**  
Shipping weight 58 lbs. Code Word GRINH.

## Inexpensive Belt Driven BUFFING HEAD

Identical in design with the belt-driven grinder, but with the wheels, light attachments, tool rests and switch omitted, the buffer shown offers superlative value at a moderate price.



No. 1282

**No. 1282** Belt Driven Buffing Head, complete as illustrated, with No. 387 V-Belt **\$11.85**

Shipping Weight 22 lbs.  
Code Word GRIBU.

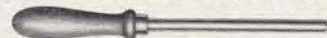
### Accessories for BELT DRIVEN UNITS

**No. 387** V-Belt for above machines..... **\$.85**

**No. 5500** 5" Motor pulley, 1/2" bore ..... **.75**

NOTE: With the above motor pulley a 1750 R.P.M. motor is recommended. Machine should not be run over 3400 R.P.M. Nos. 6300 and 6400 motors are suitable for average work. For heavy work use No. 9000 or 8050 motor and double-belt drive.

### DIAMOND POINTED WHEEL DRESSER



An efficient and inexpensive tool for dressing all type of general grinding wheels. The diamond is securely held—the tool is sturdy, 9 1/4" long and has a comfortable handle.

**No. 3121** Dressing Tool. Ship. Wt. 1 lb., Code Wd. GRIAO... **\$5.00**

# THE IDEAL 14" BAND SAW for Cutting:

Aluminum castings and sheets, hard and soft cast brass, brass sheets and tubing, cast iron, copper, cold rolled steel, carbon tool steel, bronze and manganese, drill rod, high speed steel, monel metal, nickel steel, iron sheets and bars, malleable iron, babbitt, bakelite and other types of molded plastics, asbestos, brake linings, fibre, canvas and metallic hose, mica, hard rubber, slate, transite, pipe and countless other materials too numerous to mention.

THERE is no limit to the number of jobs you can find for this economical low-cost tool around the general tool and machine shop. And the few uses mentioned above scratch only the surface of the machine's adaptability. Die casters find it indispensable for trimming work, and molders of plastics also.

It cuts extruded shapes square, beveled or at any angle for store-front work, and cannot be equalled for fitting light structural shapes. The miter-gage groove in the table makes it easy to fit the machine with fixtures for cutting tubing, etc., on a production basis, and it can be fitted with rip gage for cutting strips from sheet metal. The ornamental bronze and iron shop can find dozens of uses for it; it cuts felt, asbestos, brake lining, transite, Bakelite and similar synthetic sheets, rods and tubes—once the machine is installed, there is no end to the number of jobs that are found for it!

Users are enthusiastic about its economy, versatility, low power consumption and low upkeep cost.

## Ideal for Pattern Shop

THE four metal-cutting speeds and standard 2200 feet per minute speed for wood make this an ideal machine for the pattern shop as well as the foundry. For metal pattern work the standard low speeds are used. To change over for wood work requires only a throw of a lever, a change of a belt and the installation of a wood-cutting blade—the work of a few minutes.

"We have three of your band saws in our foundry" says one plant manager (name on request). "We use them for sawing gates on our brass and aluminum castings. We figure that we save at least 60% on our trimming costs by the use of these machines, due to their low first cost, their low upkeep, their small blade cost and fine blade life. We don't know where we would find a machine that is so useful. It is indispensable!"

## Specifications

SIZE: Height, without stand, 41 $\frac{1}{4}$ " ; with stand, 65 $\frac{1}{4}$ " ;  
Width, 16 $\frac{1}{4}$ " ; front to back, 24 $\frac{3}{4}$ "

SPEEDS: With 1725 r.p.m. motor 125, 175, 250 and 340 ft. per min.  
With 1140 r.p.m. motor 80, 114, 160 and 220 ft. per min.  
One 2200 ft. per min. speed for wood with 1725 R.P.M. motor.

CAPACITY: Blade to frame 14". Capacity under guide 6"; with height attachment 12 $\frac{1}{4}$ ".

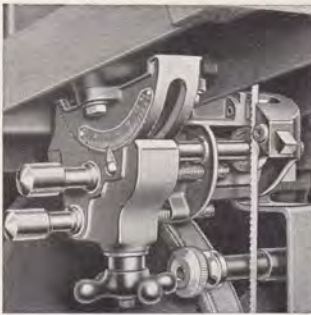
BASE: Heavy hollow-cast base, designed to enclose rear of lower wheel completely. Back designed for easy cleaning. Oil reservoir for gear lubrication, with cup for easy filling.

GEAR UNIT: Gear unit self-contained. Spiral drive pinion and intermediate gear; final drive spur gear and pinion. Shafts carried on self-sealed New Departure ball bearings, requiring no lubrication.

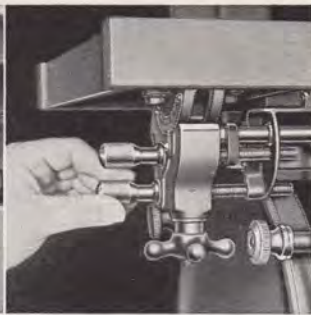
Back gear engaged or disengaged by half-turn of lever. A flip of a lever changes it from a slow-speed metal saw to a high-speed wood saw. Gear drive is simple, foolproof and substantial, and with its helical drive gears and self-sealed ball bearings, is engineered for long, trouble-free service.

UPPER ARM: Hollow-cast upper arm provides great stiffness and strength. Removable from base to permit use of height block of height attachment, which increases capacity of machine to 12 $\frac{1}{4}$ " under the guide.

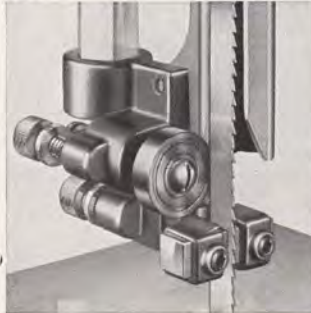
TABLE: Massive table, 14" x 14", swinging smoothly on double trunnions (patented). Makes very rigid table mounting, and permits removal of blade without disturbing rip-gage bars. Table tilts 45 degrees to right and 10 degrees to left with positive stops.  $\frac{3}{8}$ " x  $\frac{1}{4}$ " groove for miter gage.



Showing massive and accurate construction of the lower guide control and front table trunnion (Patent Pending).



Lower guide control adjustment brought to front of table so that operator's hands need not come near blade.



Micrometer adjustments of guides insure proper blade support for accurate work yet allow blade to run free.



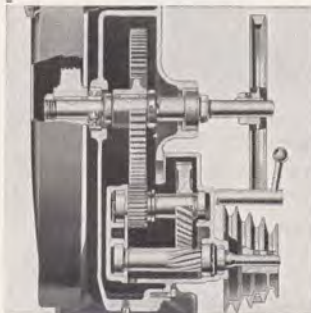
Upper wheel has adjustment for regulating blade tension. Index shows correct tension for various widths of blades.



Two solid, widely spaced trunnions give maximum table rigidity, insure better clamping and insure accuracy.



Adjustable leveling stop pin allows table to be accurately returned to level. Can be removed for a 10 degree left tilt.



Gear drive is simple, foolproof and substantial and with self-sealed ball bearings is engineered for long life.



A flip of a lever changes saw from slow-speed metal working to high speed woodworking.

# Safe — Convenient — Reliable

**WHEELS:** Heavy cast iron safety type wheels rimmed to make tire renewal easy; no cement required. Carried on New Departure double-seal ball bearings. No lubrication required for entire life of bearing. Wheels are practically frictionless, which means minimum power consumption and permanent alignment.

Upper wheel completely enclosed, having rear guard as well as removable front guard, complying with school and industrial requirements.

Lower wheel completely guarded front and rear; mounted on ball bearings sealed on both sides and lubricated for the entire life of the bearing. Neither grit nor improper lubricant can enter these bearings, which increases their life three or four times over old-style bearings.

Removable, non-rattling wheel guards completely enclose wheels and make blade changing easy and fast.

**BLADE TENSION:** Quick index on upper-wheel tension adjustment, to indicate correct tension for various widths of blades.

**GUIDES:** Finest type of guide ever offered. Each adjustment independent of others, and each made with micrometer accuracy. Guide pins can be set to blade teeth without disturbing the setting of the blade support, and blade support can be set without altering adjustment of guide pins. High-grade reversible double-seal ball-bearing blade supports. (Patent pending.)

Lower guide of same construction as upper one, with added safety feature that all controls are brought out to front of table as shown in the photo at right, so that operator's hands never come near blade—an important safety feature (patent applied for). Guide comes within 3/4" of table top.

**MOTOR:** Repulsion-induction or 3-phase motor of 1/2 or 3/4 H. P. are recommended. See listing opposite for motors.

**LIGHT ATTACHMENT:** Light attachment available (extra) which permits machine to be used wherever most convenient for the job in hand and assures plenty of light on the work.

**BEARINGS:** All wheels and shafts in this new machine are carried on New Departure self sealed ball bearings. The use of ten of these bearings—pioneered by us in this field—insures trouble-free performance for the entire life of the bearings. Lubricant is sealed in and dust is sealed out; since neither improper lubricant nor grit can enter the bearings, their life is increased three or four times over old-style bearings.

The use of these high-grade bearings extends to the blade supports, which are double-sealed ball bearings also. These may be reversed to provide a new bearing surface after a long period of use.

## CATALOG LISTING OF 14" METAL CUTTING BAND SAW

Cat. No.	Description	Ship. Wt. Lbs.	Code Word	Price
880	Complete with Wheel Guards, 8" Arbor Pulley for Wood, Cone Pulley for Metal and One Metal Cutting Blade. Without Light Attachment, Belts, Belt Guard, Stand, Motor or Motor Pulley. . . . .	175	LABMA	\$79.50
881	Complete with No. 880 Band Saw, No. 891 Stand, No. 718 Cone Pulley, Nos. 387 and 568 V-Belts, Without Light Attachment, Belt Guard, Motor or Switch Rod. . . . .	210	LABMB	\$88.95

## MOTORS RECOMMENDED For The 14" Metal Cutting Band Saw

Motor No.	H. P. and Type	Current	R.P.M.	†Ft. per Min.	Ship. Wt. Lbs.	Code Word	Price
8050	1/2 H.P. R.I. . . . .	110-220/60	1725	120	65	EACBA	24.85
9050*	1/2 H.P. R.I. . . . .	110-220/60	1140	80	65	NACAL	39.50
6600	1/2 H.P. 3 Phase . . . . .	220/60	1725	120	33	SACHA	23.85
9600	1/2 H.P. D.C. . . . .	115 V. D.C.	1725	120	65	NDCAB	38.50
9610*	1/2 H.P. D.C. . . . .	115 V. D.C.	1140	80	65	NDCAP	45.85
9400	3/4 H.P. 3 Phase . . . . .	220/60	1725	120	78	NACHA	38.85
9452*	3/4 H.P. 3 Phase . . . . .	220/60	1140	80	78	NACIC	43.85

†This gives Slowest Rate of Travel of Saw Blade in Feet per Minute.

\*These motors are considered Special and delivery requires 10 to 16 days after receipt of order. Other motors are carried in stock ready for immediate delivery.

For Other Motors Refer to Pages 43 and 44.

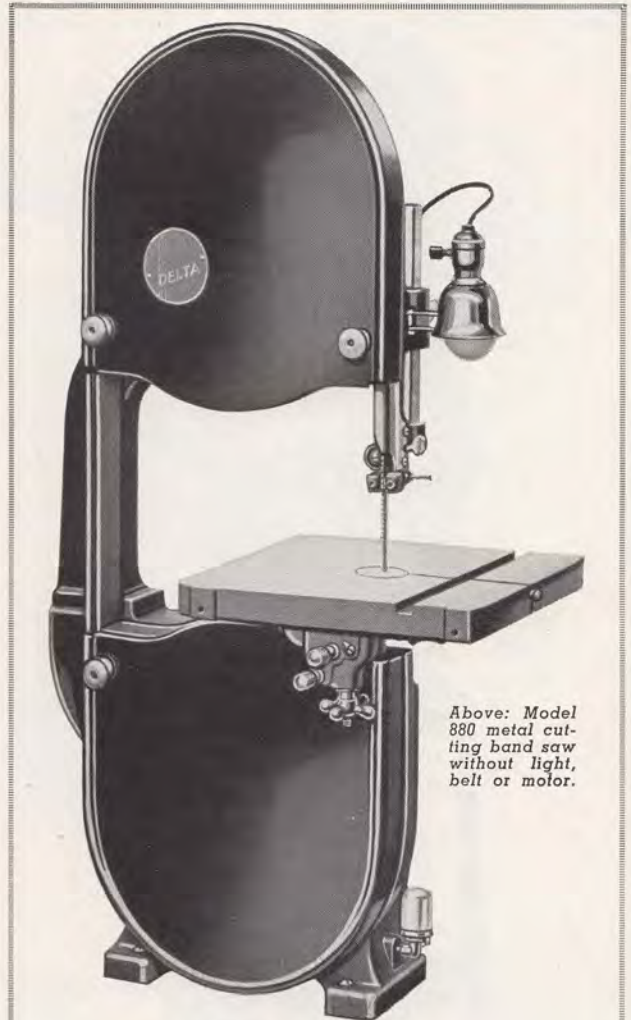
## ACCESSORIES AND PARTS FOR 14" Metal Cutting Band Saw

Cat. No.	Description	Ship. Wt. Lbs.	Code Word	Price
891	Steel Stand, 24" High, 7 1/4" x 15 3/4" Top. . . . .	30	LABST	\$6.85
718	4-Step Motor Pulley (Specify Bore). . . . .	1 1/2	CONPA	.75
387	V-Belt (Metal Cut Drive). . . . .	1	FORDP	.85
568	V-Belt (Wood Cut Drive). . . . .	1	FORVD	1.00
882	Complete Lamp Attachment. . . . .	1 1/2	LAMPA	1.60
883	Belt Guard For No. 881 With Screws. . . . .	30	LABAB	9.60
1334	Switch Rod. . . . .	1 1/2	RODNE	.45

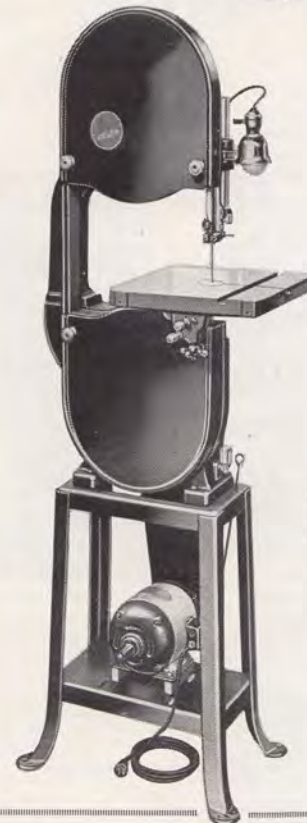
## METAL CUTTING BAND SAW BLADES. 93 Inches Long

Made of High Grade Electric Furnace Steel, Accurately Set, Spaced and Jointed, These Blades Will Stand Up Under Hard Work. These are Hard-Edge Blades for Cutting All Metals.

Cat. No.	Width	Teeth Per Inch	Ship. Wt. Lbs.	Code Word	Price
1060	1 1/2"	14	1 1/2	BLMET	\$1.85
1062	1 3/8"	18	1 1/2	BLMEU	1.85
1064	1 1/2"	24	1 1/2	BLMEX	1.85



Above: Model 880 metal cutting band saw without light, belt or motor.



Left: Model 881 metal cutting band saw without light, belt guard, motor or switch rod.

# 14" Wood Cutting Band Saw

DESIGNED and built with the same fine care and incorporating all of the outstanding features of the band saws described on the two preceding pages, this wood cutting band saw is used in hundreds of production shops. It of course does not have the back-gear mechanism for reducing the speed but the construction of the wheels, blade supports and guides, its sealed-for-life ball bearings, husky smoothly swinging table and other features are the same as the metal cutting unit.

This saw offers every advantage found in larger machines plus a decided saving in first cost, in maintenance cost and in power cost. For safety, accuracy, dependability and convenience you cannot obtain a better saw.

## Catalog Listing of 14" Wood Cutting Band Saw

Cat. No.	Description	Ship. Wt. Lbs.	Code Word	Price
890	Complete with Wheel Guards, 8" Arbor Pulley and one No. 1034 1/4" Wood Sawing Blade. Without Lamp Attachment, Belt, Belt Guard, Stand, Motor or Motor Pulley.....	152	LABAN	\$48.85
892	Complete with 890 Saw, No. 5275 V-Pulley, No. 568 V-Belt and No. 891 Stand. Without Lamp Attachment, Belt Guard, Motor or Switch Rod.....	183	LABUN	57.15
5275	Motor V-Pulley, 2 3/4" Diam. 1/2" Bore.....	11 oz.	PULOD	.45
568	V-Belt, 24 5/8" Center to Center.....	1	FORVD	1.00
891	Steel Stand, Top 7 3/8" x 15 7/8"; 24" High....	30	LABST	6.85

No. 6400 Motor and 1334 Switch Rod Recommended. See Pages 43 and 44.  
No. 9000 Motor and 1334 Switch Rod Recommended for Production Work.

## Band Saw Blades for 14" Band Saws

93 INCHES LONG					*105 INCHES LONG				
Cat. No.	Width	Cut Radius	Code	Price Each	Cat. No.	Width	Cut Radius	Code	Price Each
1032	1/8"	1/4"	BLABA	\$1.25	1045	1/8"	1/4"	BLABJ	\$1.50
1033	3/16"	1/2"	BLABB	1.25	1046	3/16"	1/2"	BLABK	1.50
1034	1/4"	3/4"	BLABC	1.25	1047	1/4"	3/4"	BLABL	1.50
1036	5/16"	1"	BLABD	1.25	1048	5/16"	1"	BLABM	1.50
1038	3/8"	1 1/4"	BLABE	1.50	1050	3/8"	1 1/4"	BLABO	1.75
1040	7/8"	1 3/4"	BLABF	1.50	1052	7/8"	1 3/4"	BLABP	1.75

Shipping Weight 15 oz. Each.

Shipping Weight 18 oz. Each.  
\*Used with No. 894 Height Attachment.

## BAND SAW ACCESSORIES

### Attachment Increases Capacity of Saw

This simple attachment consisting of a 6" extension block, wood guard and telescoping front blade guard with the necessary bolts, etc., increases the capacity of the 14" band saw from 6" under the guide to 12 1/4". Can be added any time—105 inch blades are used.

**No. 894**—Height Attachment for all 14" Band Saws, with Cast Block, Dowels, Bolt, Extension Front Blade Guard and Wood Back Blade Guard .....\$6.00  
Ship. Wt. 14 Lbs. Code Word—LABHA

### Guard Completely Encloses Belt on 14" Saw

Conforming with all safety codes this guard encloses both front and rear of belt and therefore increases safety of the saw. Specially recommended for schools or where inexperienced help operates saw. Made of heavy cast iron—hinged for access to belt—fastened with screws. Fits No. 892 and 881 units.

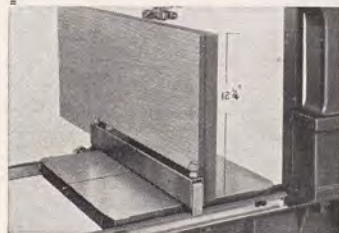
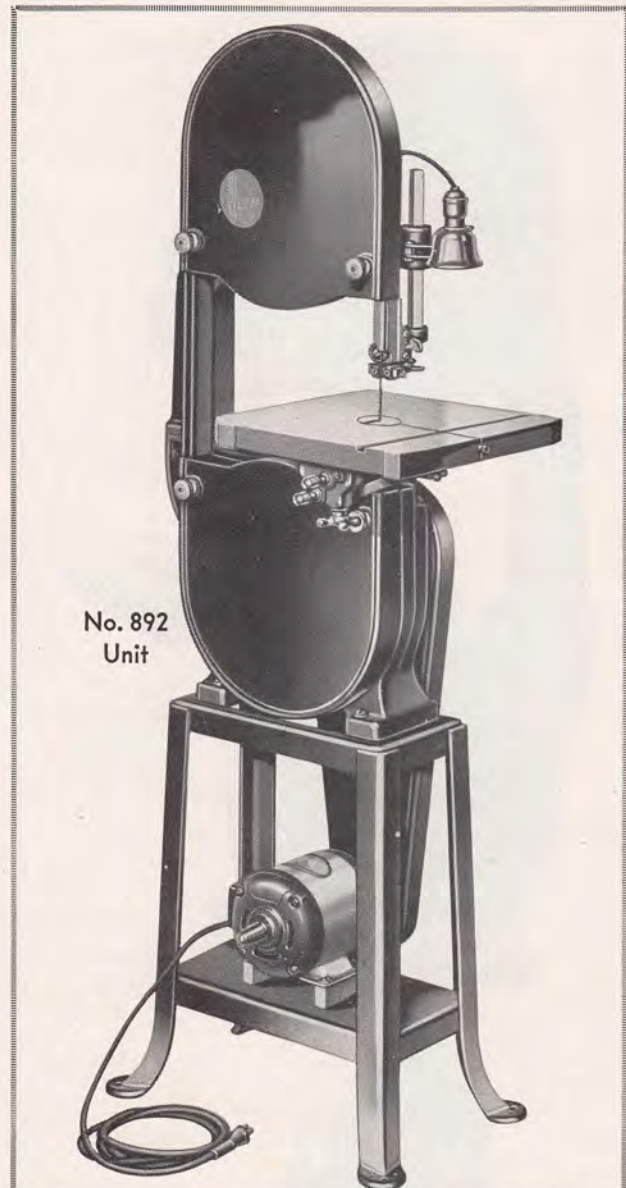
**No. 883**—Belt Guard for 881 and 892 Band-Saw Units, with Screws to Fasten to Stand.....\$9.60  
Ship. Wt. 30 Lbs. Code Word—LABAB

### Rip Gages for 14" Band Saw

Ripping on band saw easily and accurately done with this gage. Fence has "Micro-Set" adjustment. Fits any of our 14" band saws. Complete with screws for fastening.

**No. 893**—Rip-Gage with 18" Guide Bars.....\$4.25  
Ship. Wt. 10 Lbs. Code Word—LABGA  
**No. 895**—Rip-Gage with 32" Guide Bars.....\$4.95  
Ship. Wt. 12 Lbs. Code Word—LABGB

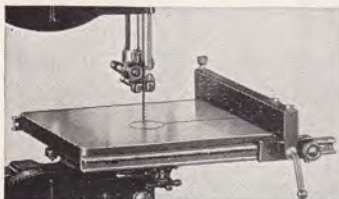
No. 892 Unit



No. 894 Height Attachment for all 14 Inch Band Saws.

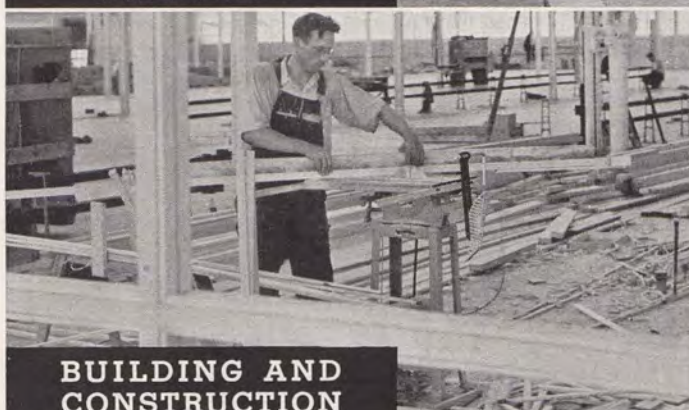
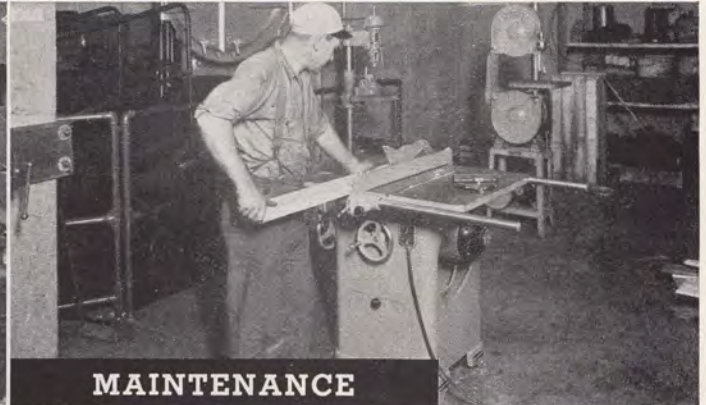


Above—No. 883 Belt Guard for 14 Inch Band Saw Units.



Left — No. 893 Rip Gages for 14 Inch Band Saws.

**DELTA INDUSTRIAL WOODWORKING TOOLS ARE FOUND IN HUNDREDS OF SHOPS WHERE, DAY AFTER DAY, THEY PROVIDE DEPENDABLE AND ECONOMICAL OPERATION**



**THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.**

# A PERFECTED 10-INCH TILTING ARBOR SAW



Rigid, scientifically designed housing. . . No useless weight . . . Highly efficient "Texrope" drive . . . Powerful, fully enclosed motor . . . Perfected raising, lowering and tilting . . . Double-face, double-lock rip fence . . . Exclusive precision auto-set miter gage . . . Patented

tubular ripping extensions . . . Solid forged alloy-steel saw arbor . . . "Sealed-for-Life" Ball bearings . . . Full 50 inch ripping capacity . . . Sawdust receptacle located in base . . . "Point of use" controls . . . No twisted belts . . . No gears . . . No noise.

No. 1450 SAW  
WITH No. 1455 SIDE WINGS

## The Result of Seven Years' Study, Experiment and Research . . . . .

THE UNISAW is the result of many years experience in producing circular saws of high quality and it therefore embodies all of the best features of operation, accuracy and convenience. It is completely self contained, motor and driving mechanism being enclosed in a handsome, modern, tremendously strong steel cabinet. The saw table is 20" x 27" (with wings 27" x 36") and will handle work up to 50" wide and 3 1/8" thick. Guide bars allow fence to be moved 24" to right of blade and 15" left of blade.

Saw blade tilts 45 degrees to right, operation being affected by a large convenient hand wheel. Blade is raised and lowered by another hand wheel at front of machine. Dado heads, moulding cutters and many other convenient attachments may be used.

Our engineers spent an unusual amount of time and thought in designing the tilting saw carriage which would not have any

of the drawbacks of other designs. The carriage swings on exceptionally heavy trunnions which in turn are mounted in an ingenious manner on the heavy gusset plate at the top of the extremely rigid and strong steel casing. These trunnions are exceptionally large, heavy and strong and are completely machined.

The front trunnion carries the oilless bushing for the tilting shaft and is provided with finely machined teeth to engage the tilting worm, as well as with adjustable stops for accurate setting at 90 and 45 degrees.

Front and rear carriage members, which swing on the trunnions, carry oilless bronze bushings for the raising and lowering worm shaft. These eliminate an annoying lubrication problem for the user.

### Ball-Bearing Arbor Bracket

The saw-arbor bracket in the Unisaw is a very heavy casting, with accurately machined teeth to fit the raising and lowering worm, and with accurate stop surfaces co-operating with the worm itself, to limit up and down travel. The casting itself is mounted on a very heavy keyed shaft, upon which it can be adjusted and locked to bring the saw-arbor flange into exact alignment.

The shaft is carried in two sealed-for-life ball bearings, mounted in diamond-bored seats, and since it oscillates only slightly within these bearings, there is practically nothing to wear out. Not only that, but with this construction, all the other troubles of the slide construction are eliminated. There is no trouble due to rust; no trouble due to deposits on the slides—the construction is foolproof and trouble-free!

Cat. No.	Description	Wt. Lbs.	Code	Price
1450	10" Tilting Arbor Unisaw, with 20" x 27" Table, Micro-set Rip Fence, Auto-Set Miter Gage, Extension rip-Fence Guide Bars, Motor Pulley and Belts. Without Motor, Switch or Table Side Wings. . . . .	302	TILTA	\$89.50
1455	Side Extension Wings to Make 27" x 36" Table. Per Pair. . . . .	59	TILTF	11.00
291	Extra V-Belt for 1450 Saw (3 Required) Each. . . . .	12 Oz.	BELTW	0.75

THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.

CLOSE inspection of the table reveals that it is scientifically ribbed and designed to prevent warping and springing.

Controls are conveniently located at proper height. The substantial hand wheels, with plenty of room insure no skinned knuckles. Locked in position by large knob at center.

The bar is of heavy steel, formed, braced and welded into one solid, rigid unit, which will not warp. The gage is carried by a new and very large, husky bracket riding on the front bar, and equipped with quick-acting cam lock and micrometer adjustment. The micrometer adjustment is of the rack-and-pinion type, and can be snapped into or out of engagement at will.

The rip-fence bar extends clear over the rear edge of the table—many inches past the rear of the saw blade. This is an important safety feature, as many operators regard a short fence as extremely dangerous. The fence is locked to both front and rear guide bars, (patented) the rear lock being operated from the front of the gage. The fence can be used on both sides of the blade.

**These guards protect operator.**

No. 1471 "Super safe" guard is splitter mounted and tilts with the saw. May be easily removed for dado or grooving. Supplied with splitter and kick-back fingers.

**No. 1471 "Super safe" splitter mounted guard. . . . . \$12.75**  
Shipping weight 8½ Lbs. Code Word TILGB.

No. 1472 "Swing back" guard does not tilt with saw but is free to swing out of way. Splitter and kick-back fingers mounted on saw arbor.

**No. 1472 "Swing-back" guard for No. 1450 Unisaw with bracket, basket and arm less splitter and kick-back fingers. Ship. wt. 18 Lbs. Code word TILGC. . . . . \$12.85**

**No. 1473 Splitter and kick-back fingers for No. 1472 Guard. . . . . \$1.10**  
Shipping weight 1 Lb. Code Word TILGD.

No. 1457 Splitter type guard may be easily removed by loosening only one screw to allow for dadoing and grooving work. Has kick-back fingers. Splitter can be used without basket.

**No. 1457 Splitter mounted guard for No. 1450 Unisaw with basket and kick-back fingers. Shipping weight 2¾ Lbs. Code word TILTH. . . . . \$2.90**

**MOTORS FOR THE UNISAW**

Unisaw motors are (1) fully enclosed to exclude dust and dirt (2) have very high reserve power (3) dependable even under abuse and (4) provide economical performance over a long life. Have large size 8½" frame with ball bearings—standard speed 1725 R.P.M.—¾" shaft.

**Repulsion-Induction Motors**

Supplied with a double pole C-H switch, completely wired—cord and plug.

Cat. No.	H. P.	R.P.M.	Current	Volts	Cycles	Price	Code	Ship. Wt. Lbs.
8200	½	1725	A. C.	110/220	60	\$32.75	EACEA	95
8210	½	1425	A. C.	110/220	50	32.75	EACEI	95
8250	¾	1725	A. C.	110/220	60	38.75	EACHA	100
8260	¾	1425	A. C.	110/220	50	38.75	EACHI	100
8300	1	1725	A. C.	110/220	60	44.75	EACIA	110
8310	1	1425	A. C.	110/220	50	44.75	EACIU	110

**Three-Phase Motors**

Supplied with large conduit box—wire leads for either 220 or 440 volts. Do not have switch, cord, plug. 1½ H.P. not fully enclosed.

Cat. No.	H. P.	R.P.M.	Current	Volts	Cycles	Price	Code	Ship. Wt. Lbs.
8400	¾	1725	A. C.	220/440	60	43.75	EICLA	90
8410	¾	1425	A. C.	220/440	50	43.75	EICLO	90
8450	1	1725	A. C.	220/440	60	48.75	EACMA	95
8460	1	1425	A. C.	220/440	50	48.75	EACMO	95
8500	1½	1725	A. C.	220/440	60	51.75	EACHA	100
8510	1½	1425	A. C.	220/440	50	51.75	EACRO	100

**Switch equipment for 3 Phase motors.**

**No. 1459** Parts for mounting No. 1320 switch on tilting arbor saw cabinet. . . . . \$2.00  
Shipping weight 2 lbs. Code word TILTK.

**No. 1320** Three phase manual starter. Specify motor number for which it is to be used when ordering. . . . . \$8.20  
Shipping weight 6 Lbs. Code word SWIPH.

**Direct Current motor for Unisaw. Cord, plug and C-H switch.**

Cat. No.	H. P.	R.P.M.	Current	Volts	Cycles	Price	Code	Ship. Wt. Lbs.
8600	½	1725	D. C.	115	....	\$48.75	EDCAB	88
8601	½	1725	D. C.	230	....	48.75	EDCAR	88
8650	¾	1725	D. C.	115	....	55.75	EDCEE	90
8651	¾	1725	D. C.	230	....	55.75	EDCEE	90
8700	1	1725	D. C.	115	....	63.75	EDCOB	100
8701	1	1725	D. C.	230	....	63.75	EDCOP	100



Above — Details of trunnions, operating mechanism.



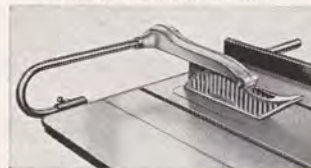
Cross-section of Rip Fence.



Controls are convenient.



No. 1457 Splitter type guard.



No. 1472 Swing-back guard.



No. 1471 Super safe guard.



Above—3 phase motor

Left — Repulsion Induction and D.C. Motors—have cord, switch and plug.



STD. Switch may be locked.



Right—Nos. 1320 and 1459

**MOTOR HOUSING**

This cast iron cover completely encloses the opening in which the motor swings, and provides an additional safety factor for the machine when used as school equipment. The cover is readily attached to the housing.

**No. 1454** Motor cover for housing of No. 1450 Unisaw. With screws Each. . . . . \$5.35  
Shipping weight 25 Lbs. Code word TILTE.



# THE BEST 10-INCH TILTING TABLE SAW MADE



NO. 1175 UNIT  
(SAW, PULLEY, BELT AND STAND)

NO. 1160 SAW  
WITH NO. 1165  
GUARD

## RIPS TO CENTER OF 50-INCH PANEL — CUTS STOCK 3¼ INCHES THICK

THIS FINE SAW is a real man-size machine, with its husky 20" x 27" table, its sturdy tubular rip-fence guide bars—and all the features that have won such a reputation for the 8" saw—plus greater capacity and added conveniences.

Designed for craftsmen who need and demand the best there is in workshop equipment, this 10" circular saw was built with just one thought in mind: To produce a saw that would offer more accuracy, more capacity, more conveniences, more built-in value than any similar saw on the market, regardless of price.

That this objective has been achieved will be recognized by every mechanic and craftsman as soon as the No. 1160 circular saw is examined with care. From the heavy-walled tubes that form the rip-fence guide bars—a full 1½ inch in diameter, and stronger to resist bending and torsional stresses than any other section of equal weight—to the hidden but important solid-forged alloy-steel arbor with its self-sealed New Departure ball bearings, every detail has been worked out to give the utmost satisfaction to the user.

The "Micro-Set" rip fence is carried on a heavy casting at the front, locked to the front guide bar by a neat cam lever with a Bakelite ball handle. The rear lock is operated from the front also, so that the hands, never need be near the blade when locking the fence. And it is impossible for this fence to move or spring. The miter gage is the famous "Auto-Set" miter gage, with individual adjustments for 45 and 90 degree settings.

### Crosscuts Stock 12 Inches Wide

From the saw blade to the front edge of the table surface measures 12½" wide, so that stock a full 12" wide and 3¼" thick can be cut easily, with full bearing on the table surface for both the work and the miter gage. And in providing adequate surface in front of the blade, this has not been done at the expense of the rear surface, for there are 5" of table behind the blade to support the work as it leaves the saw.

### Many Features That Mean More Satisfaction For You!

Consider the "Auto-Set" miter gage, widely imitated by others, but the only miter gage offering you individually adjustable stops, to assure you of absolute accuracy in setting. And the adjusting screws in the table insert, which enable you to set

the insert exactly level with the table. Consider the "hidden values"—the extra machining for accuracy (like the machining of the table-insert opening, instead of leaving this just rough) and the diamond-boring of the ball bearing seats for absolute accuracy.

Consider the extra convenience of the controls—like our adjustable clamp handles and our graceful, large size operating cranks. Consider the advantage of being able to mount our tilting-table saws on a neat, compact stand together with a jointer and to be able to run them both from below with one motor.

Contrast the details of design shown above and on the following pages with those you will find in any similar saw anywhere. We believe you will then realize the extra value built into these saws!

**No. 1160** 10" Ball-bearing Circular Saw, with "Auto-Set" Miter Gage. "Micro-Set" Rip Gage, graduated front rip-gage guide bar, and plain rear guide bar, without motor, belt, motor pulley or saw guard.....**\$55.85**  
Shipping Weight 190 lbs. Code Word TENSE.

**No. 1175** 10" Circular Saw Unit, consisting of No. 1160 Circular Saw, No. 530 V-belt, No. 5500 V-pulley and No. 891 Steel Stand, without motor, switch rod or saw guard....**\$64.45**  
Shipping weight 250 Lbs. Code word TENSQ.  
For Motors and Switch Rods see Pages 43 and 44.

### ACCESSORY PARTS

**No. 560** V-belt (56" inside circumference).....**\$1.00**  
Shipping weight 1 Lb. Code word EICVB.

**No. 5500** 5" V-pulley for motor, specify ¾" bore.....**\$0.75**  
Shipping weight 1½ Lbs. Code word PULOH.

**No. 891** Steel stand (Top 7⅞" x 15⅞" x 24" high)....**\$6.85**  
Shipping weight 30 Lbs. Code word LABST.

**No. 530** V-belt (53⅞" inside circumference).....**\$1.00**  
Shipping weight 1 Lb. Code word BELTD. (Note: No. 530 belt must be used with 10" saw on No. 891 stand. No. 560 belt is used with 10" saw on No. 1168 stand.)

**No. 1173** Belt Guard for No. 1160 saw on No. 891 stand...**\$7.85**  
Shipping weight 36 Lbs. Code word TENBG.

See Page 24 for Saw Guards

# MOULDINGS In Hundreds Of Different Shapes Made On Your Saw By Means Of This Inexpensive Attachment

## DOES MARVELOUS WORK!

This unique attachment (U. S. Pat. No. 1,830,813) is the only practical tool of its kind. It consists of a strong, well-designed head, which may be had either in light-duty or heavy-duty type. A set of three interchangeable knives is locked into the head so that they are completely safe in operation. The head may be used either on the 860, 1160 or 1450 circular saw, or on most other saws provided with a double-face fence.

A perfect moulding may be produced with one pass over the knives, or, if the cut is a deep one, in two or more passes. The attachment is such a practical one that it is used in hundreds of production shops, yet it is priced within the reach of every small shop. A special solid-steel head

is available for production or heavy-duty work.

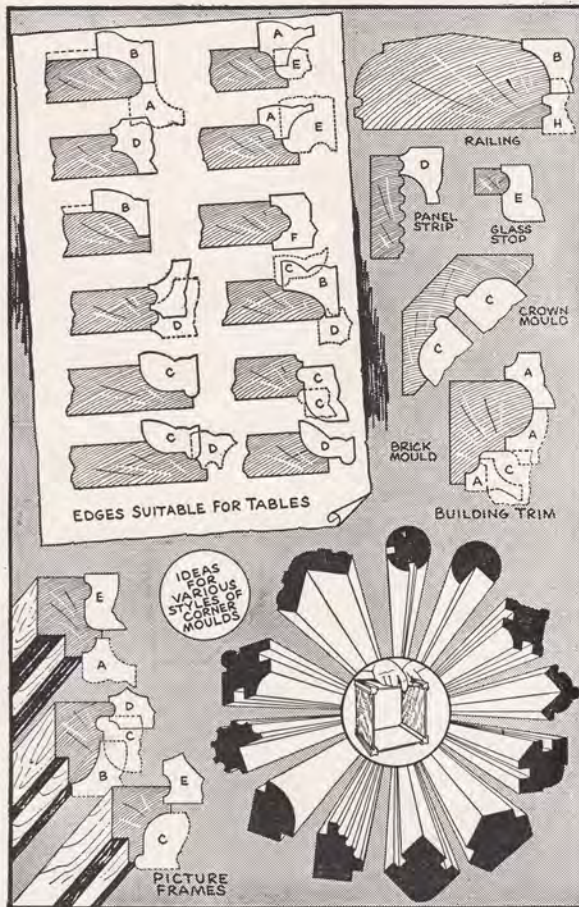
There is nothing to get out of order in this tool, and it is extremely safe in operation because only the actual cutting edges of the knives are exposed, and even this is covered when the work is being run. Enthusiastic users tell us that it makes their saws into first-class moulding machines!

As seen at the right, the knives may be used singly or in combination to produce almost any type of exterior, interior or cabinet mouldings. This illustration shows only a few of the hundreds of moulding shapes that have been produced with this wonderful tool.



The new Heavy-Duty Steel Cutter Head is shown above. This type of head should always be used for heavy work and for production use, in preference to the lighter head designed for home-workshop use.

The knife shapes (originated by us) are so designed that hundreds of shapes can be made with only four sets of knives, as shown to the right. Additional knives are available as below.



IDEAS FOR VARIOUS STYLES OF CORNICE MOULDS

### Light-Duty Moulding Cutter Sets

**No. 858** Moulding Cutter Set, to fit  $\frac{5}{8}$ " arbor of No. 860 circular saw. Complete with four sets of high-speed cutters, styles A, B, C and D, oval table insert, micro-guide fence, collar, wrench and complete instructions ..... **\$15.55**  
Ship. Weight 10 lbs. Code Word MOLDY.

**No. 262** Moulding Cutter Set for other makes of circular saws with arbor up to  $\frac{7}{8}$ " diameter. Price includes boring up to  $\frac{1}{2}$ ",  $\frac{5}{8}$ ",  $\frac{3}{4}$ " or  $\frac{7}{8}$ " diameter. Does not include table insert or guide fence. Specify bore wanted ..... **\$11.90**  
Ship. Weight. 3 lbs. Code Word MOUJH.

**No. 1169** Moulding cutter set for No. 1160 Circular Saws. Same as No. 858, but without fence (wood facings are used on standard fences of these saws when moulding cutter is used) ..... **\$12.50**  
Ship. Weight 8 lbs. Code Word TENMC.

**No. 1456** Light-duty Moulding Cutter Set for No. 1450 Circular Saw, with light-duty head, 4 sets of cutters, table insert, collar and wrench ..... **\$12.60**  
Ship. Weight 8 lbs. Code Word TILTG.

**No. 868** Moulding Cutter Fence, 20 $\frac{1}{4}$ " long, complete as shown above for No. 860 saw. . . . **\$3.50**  
Ship. Weight 7 lbs. Code Word NECFE.

### Heavy-Duty Moulding Cutter Sets

**No. 859** Heavy-Duty Moulding Cutter Set for No. 860 Circular Saw. Same as No. 858,  $\frac{5}{8}$ " bore, but with heavy-duty steel cutter head, without collar ..... **\$17.30**  
Ship. Weight 12 lbs. Code Word MOUHL.

**No. 267** Heavy Duty Moulding Cutter Set. Same as No. 262, but with heavy-duty steel cutter head, without collar ..... **\$13.65**  
Ship. Weight 5 lbs. Code Word MOUHK.

**No. 1158** Heavy-Duty Moulding Cutter Set No. 1160. Same as No. 1169, but with heavy-duty steel cutter head, without collar. . . . **\$14.25**  
Ship. Weight 10 lbs. Code Word MOUHM.

**No. 1458** Heavy-Duty Moulding Cutter Set for No. 1450 Circular Saw. Same as No. 1456, but with heavy-duty head; without collar ..... **\$14.35**  
Ship. Weight 10 lbs. Code Word TILTJ.

All heavy-duty heads  $\frac{5}{8}$ " bore. Extra for  $\frac{3}{4}$ " or  $\frac{7}{8}$ " ..... .75

### Extra Cutter Heads and Inserts

**No. 249** Moulding Cutter Head only, with screws, to fit  $\frac{5}{8}$ " arbor. with collar. Does not include wrench or cutters. . . . **\$2.10**  
Extra for boring  $\frac{1}{2}$ ",  $\frac{3}{4}$ " or  $\frac{7}{8}$ "... .75  
Ship. Weight 18 oz. Code Word MOUHA.

**No. 265** Heavy-Duty solid-steel head only, to fit  $\frac{5}{8}$ " arbor. With-out wrench or cutter. . . . **\$3.85**  
Not furnished in  $\frac{1}{2}$ " bore  
Extra for boring  $\frac{3}{4}$ " or  $\frac{7}{8}$ " ..... .75  
Ship. Weight 3 lbs. Code Word MOUST.

**No. 872** Moulding Cutter Insert only, to fit No. 860 circular saw ..... **\$.95**  
Ship. Weight 1 $\frac{1}{2}$  lbs. Code Word NECIO.

**No. 1162** Moulding Cutter Insert for No. 1160 saw ..... **\$1.10**  
Ship. Weight 1 $\frac{1}{2}$  lbs. Code Word TENSG.

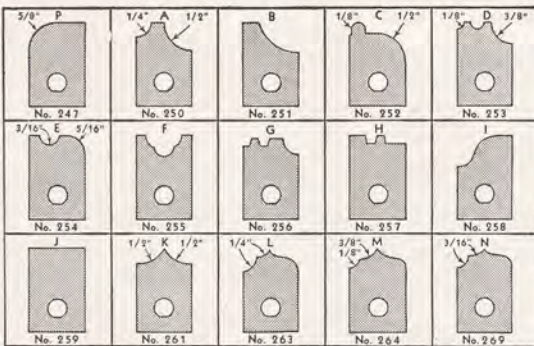
**No. 1453** Moulding Cutter Insert for No. 1450 saw ..... **\$1.20**  
Ship. Weight 1 $\frac{1}{2}$  lbs. Code Word TILTD.

**No. 1521** Wrench ..... **\$.15**  
Sh. Wt. 6 oz. WRENB.

**No. 245** Collar ..... **\$.15**  
Sh. Wt. 6 oz. COLLA.

### Extra Sets of Cutter Blades

Cutters come in sets of three matched blades. Being made of high-speed steel (not carbon steel) they will cut thousands of feet of moulding before dulling. All these knives may be used with shaper cutter head No. 1343 listed on Page 33.



No.	Style	Description	Code	Price Set
247	P	Cove	MOULP	\$2.25
250	A	Bead	MOULA	2.25
251	B	Bead	MOULB	2.25
252	C	Crown Mould.	MOULC	2.25
253	D	Panel Strip	MOULD	2.25
254	E	Glass Stop	MOULE	2.25
255	F	Screen Mould	MOULF	2.25
256	G	Drawer Joint	MOULG	2.25
257	H	Glue Joint	MOULH	2.25
258	I	O-G Curve	MOULI	2.25
259	J	Straight	MOULJ	2.25
261	K	Flute Bead	MOULK	2.25
263	L	Flute & Cove Comb.	MOULL	2.25
264	M	Flute & Cove Comb.	MOULM	2.25
269	N	Flute & Cove Comb.	MOULN	2.25

# Design Advantages As Found Only In This Remarkable Saw

## Solid Forged Steel Arbor

The entire arbor of this saw including the flange, is machined out of a solid alloy steel forging. This not only prevents any possible loosening of the flange, but insures proper bearing mountings, true running saws and enormous strength.

The solid alloy-steel arbor is carried in "Sealed for Life" New Departure ball bearings (not merely shielded bearings). There are no lubrication problems with these ball bearings, and they require no attention whatever during their entire life. All our bearings are mounted in accordance with the best ball-bearing practice—not merely mounted in the cheapest possible way, which sometimes injures the accuracy of the bearings even before they are used.

## Rips to Center of 50" Panel

Most saw tables—even in 10" size—are too small. So in designing this saw we produced a 20" x 27" table surface for the standard machine. In front of the blade—the "Zone of Service" where surface is most needed, there is 12½" of table space, so that a 12" board to be crosscut is supported in its whole width by the table, and the miter gage also has ample bearing on the table. And there is ample surface—5"—in back of the blade also!

## Table itself is an exceptionally heavy, strongly ribbed casting

The rip-fence guide bars are a typical improvement. They are heavy walled tubes, 1⅜" diameter, chosen because tubes, as every mechanic knows, resist bending and torsional stresses better than any bar section of equal weight. They therefore hold the fence rigid and in perfect alignment under all circumstances. And, with the STANDARD guide bars, the saw will rip to the center of a 50" panel without the necessity of changing guide bars.

## Cross Cuts 12" wide — 3¼" deep (Photos A and B)

Brackets are furnished with the machine so that an auxiliary wood table may be added between the bars if desired, thus making the actual table surface 27" x 34".

As photos A and B show, the saw will rip through a 3¼" plank with ease, and it will crosscut 3¼" x 12" lumber equally well. This extra capacity is one of the many superior features of this machine, which make it the best value ever offered at such a low price.

## Rip Fence is marvel of convenience (Photos C and D)

The Micro-Set Rip Fence, Photo C, is a marvel of convenience and strength. The massive casting riding on the graduated front bar carries the fence itself, and in it is housed the "Micro-Set" pinion, which snaps into or out of engagement with the rack on the underside of the bar at a touch of the finger. The pinion carries on its outer end a large knob for fine adjustment. Observe the convenient cam and lever lock, with its comfortable Bakelite knob. A flip of the finger and the fence is unlocked. A light pressure of the hand and it is reclamped—and SELF ALIGNED. Photo D shows the underside of the Rip Fence block, with its heavy cam lock and accurate rack.

## Rear Rip-Fence Lock. (Photo E)

The patented construction not only provides a rigid rip fence, locked to the guide bars at front and rear, but in this saw all the fence controls are at the front—no reaching over the saw blade to loosen or tighten the rear lock. More convenience and safety!

## Worm-Gear Tilting. (Photo F)

The table is positively tilted by means of a worm and rack, the worm operated by means of another comfortable ball crank. Accurate and convenient etched scales are provided for height and tilting adjustments, each provide with an adjustable pointer for accuracy. The adjustable height pointer is especially useful for dado and similar work.

## Quick-Acting Inserts. (Photo G)

Table inserts are fitted in machined openings in the table—not rough cast holes. They are instantly snapped in or out with a touch of the finger—no screws to loosen. And (U. S. Pat. No. 2,020,222) they are provided with adjusting screws so they may be made to lie exactly flush with the table.

## Machined Ways. (Photo H)

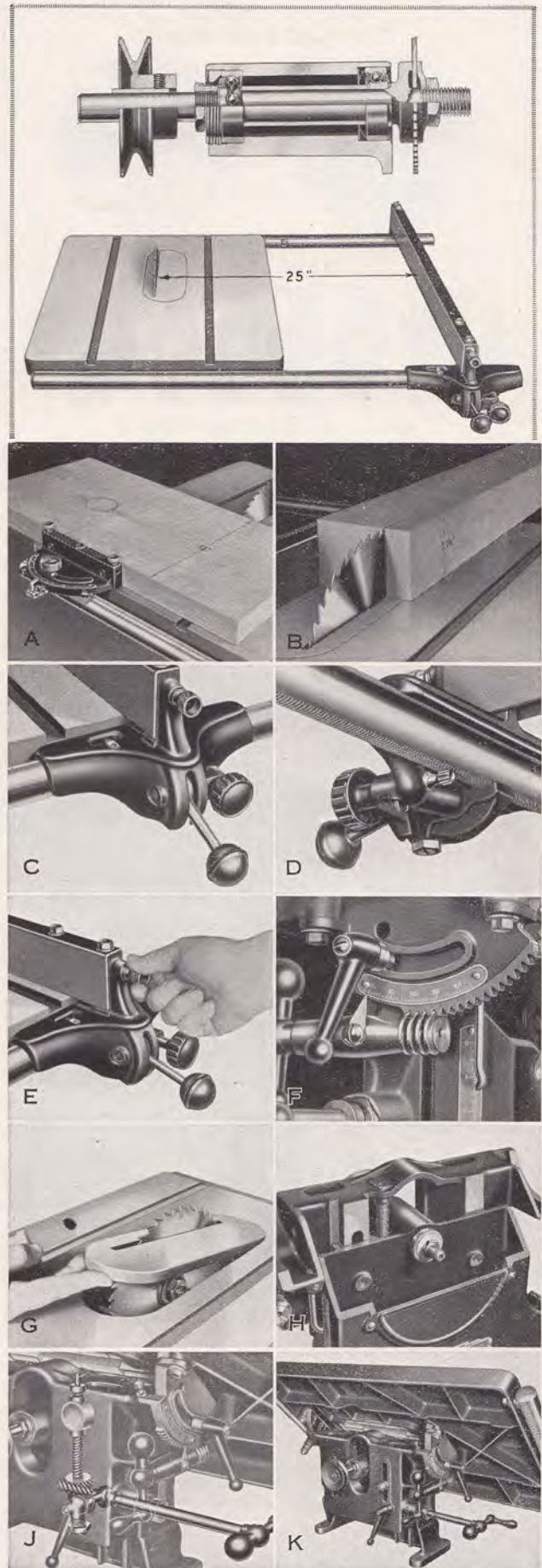
There are cheaper ways of fitting the table to the blade than that employed on this saw, but none of these was thought satisfactory enough for a good machine . . . so the table is elevated and lowered on machined ways, the front one being gibbed for adjustment if this should ever be necessary.

## Raising Mechanism. (Photo J)

Table raising and lowering is done by means of a helical gear on a shaft operated by a comfortable, free-handle ball crank. The gear meshes with another running on the ball-bearing raising screw, elevating or lowering the table with ease and speed. The pitch of the screws is chosen to provide a fast movement, while at the same time it is fine enough for close adjustment of depth.

## Massive Construction. (Photo K)

Photo K at right shows the table tilted to 45 degrees. Notice the scientifically ribbed and very heavy table, swinging on massive trunnions. This is a more expensive construction, but is the only one that permits the safety of a very narrow opening around the saw blade, since the table tilts in the plane of the table surface.



### CIRCULAR SAW BLADES



No. 1015

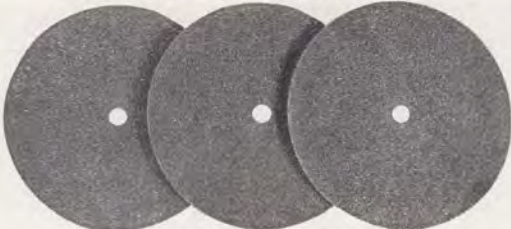


No. 1016

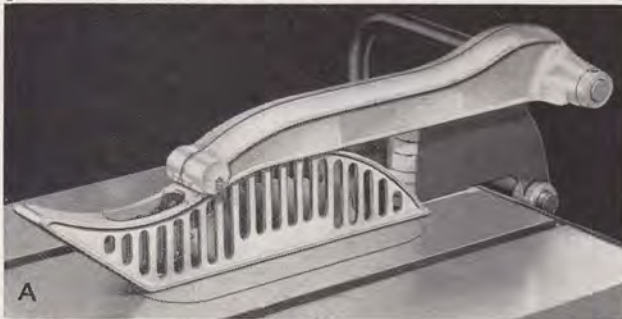
### DADO HEADS



### ABRASIVE CUTTING WHEELS



### SAW GUARDS AND SPLITTERS



A



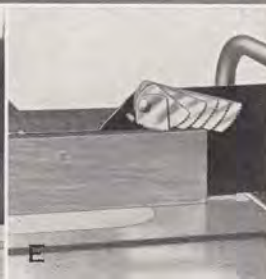
B



C



D



E



F

Left: Photo F, This illustrates the cast iron guard, arm and bracket used when abrasive wheels, listed above, are used with the circular saws. Strong, rigid and heavy, these guards offer complete protection to the operator when cutting tile, metal, brick, etc.

## Accessories for Circular Saws

- No. 1017 10" Special Rip Blade for No. 1160 or 1450 Circular Saw.....\$3.75  
Shipping weight 2 Lbs. Code word TENSS.
- No. 1018 10" Special Crosscut Blade for 1160 or 1450 Circular Saw.....\$ 3.75  
Shipping weight 2 lbs. Code word TENST.

### Combination Blades

Our Combination Saw Blade is a double-purpose blade, which rips and cross-cuts equally well. Teeth have proper set for free cutting. Made of high grade steel, properly tempered and tensioned.

- No. 1015 10" Combination Rip and Cross-cut Blade for No. 1160 or 1450 Circular Saw  
 $\frac{5}{8}$ " arbor hole.....\$3.75 Shipping weight 2 Lbs. Code word TENSF.

### Hollow Ground Blades

Ideal for fine and accurate work. The teeth have no set, and the work comes from the saw ready to put together. Intended for fine work only; it is not suitable for rough cutting.

- No. 1016 10" Hollow-Ground Blade, for No. 1160 or 1450 Saw.  $\frac{5}{8}$ " hole.....\$ 6.50  
Shipping weight 2 Lbs. Code word TENSR.

### Dado Head and Inserts

For cutting of grooves varying in width from  $\frac{1}{8}$ " to  $\frac{13}{16}$ " and up to  $\frac{1}{4}$ " deep, either with or across the grain. Made of the finest steel, carefully hardened and tempered. Includes  $\frac{1}{16}$ " special inside cutter. Fits 1160 and 1450 saws.

- No. 333 6" Dado Head, consisting of two outer blades,  $\frac{1}{8}$ " thick, two inside cutters  $\frac{1}{8}$ " thick, one inside cutter  $\frac{1}{4}$ " thick and one  $\frac{1}{16}$ " thick. To cut grooves from  $\frac{1}{8}$ " to  $\frac{13}{16}$ ", advancing by  $\frac{1}{16}$ ". With  $\frac{5}{8}$ " holes to fit No. 1160 and 1450 Circular Saw. Shipping weight  $3\frac{1}{2}$  Lbs. Code Word EICDA.....\$10.75
- No. 1161 Insert for No. 1160 Saw...\$1.10 Ship. Wt.  $1\frac{1}{2}$  Lbs. Code word TENSF.
- No. 1452 Insert for No. 1450 Saw...\$1.25 Ship. Wt.  $1\frac{3}{4}$  Lbs. Code word TILTC.

### Abrasive Cutting Wheels for Metal, Tile, Brick, Etc.

Abrasive Cutting Wheels will cut freely and fast all of the materials listed below, and many other materials. All are  $\frac{3}{32}$ " thick, 8" diameter, and have  $\frac{5}{8}$ " arbor hole only. Bonded with genuine synthetic resin; should not be confounded with shellac-bond wheels.

- No. 223 8" Cutting Wheel,  $\frac{3}{32}$ " thick,  $\frac{5}{8}$ " hole, for cutting vitrified brick, cast iron, sand cores, slate and plain or glazed tile.....\$1.75  
Shipping weight  $1\frac{1}{2}$  Lbs. Code word BAKEC.
- No. 225 8" Cutting Wheel,  $\frac{3}{32}$ " thick,  $\frac{5}{8}$ " hole, for cutting monel metal, steel tubing hardened steel, stellite, stainless steel, aluminum tubes, etc.....\$1.75  
Shipping weight  $1\frac{1}{2}$  Lbs. Code word BAKED.
- No. 227 8" Cutting Wheel,  $\frac{3}{32}$ " thick,  $\frac{5}{8}$ " hole, for cutting porcelain, hard rubber, brass tubing, copper, brass and bronze.....\$1.75  
Shipping weight  $1\frac{1}{2}$  Lbs. Code word BAKEF.
- No. 228 8" Cutting Wheel,  $\frac{3}{32}$ " thick,  $\frac{5}{8}$ " hole, for cutting soft steel and wrought iron.....\$1.75  
Shipping weight  $1\frac{1}{2}$  Lbs. Code word BAKEH.

### Approved Guards Safeguard Operation

These Circular-Saw Guards (U. S. Pat. No. 2,007,877) have been praised by all authorities as the only guards that really protect the saw user, while at the same time they do not interfere with his work. No other guards that we know of offer all the features of these, which meet the very exacting requirements of many Industrial Commissions. The basket pivots as shown by photos B and C, so that the work is covered at all times, while affording a clear view of the cutting line. The basket support swings on the arm to accommodate work of any thickness within the capacity of the saw.

### A Splitter To Suit the Saw Kerf

The splitter shown, Photo D, is the only practical type. It comes in three thicknesses to suit saws of different sets. It may be used either with or without the basket, and it floats to accommodate itself to the kerf.

### "Anti-Kickback" Adjusts Itself To Work

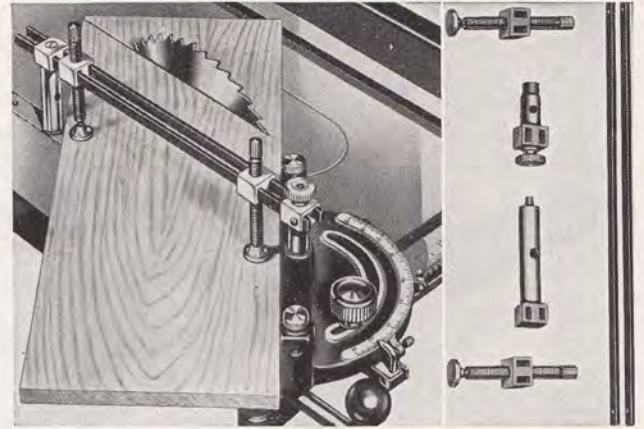
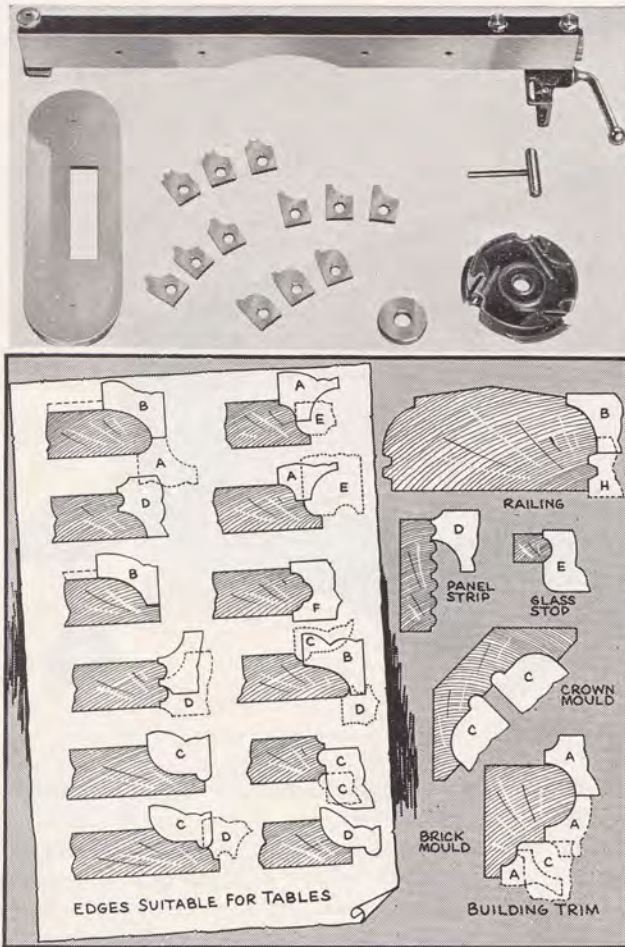
The new "Anti-Kickback" attachment, Photos D and E, an integral part of the splitter for the 10" saw, prevents the work being kicked back against the operator if the kerf pinches on the saw blade. It is invaluable when sawing poorly seasoned or warped wood. The kickback fingers take all work from the thinnest strips up to the full capacity of the blade, and adjust themselves to the work without any attention on the part of the operator.

- No. 1165 Swing Guard for No. 1160 Circular Saw, Photo A, with bracket, support arm, pivot bracket, basket, collars and screws.....\$11.50  
Shipping weight 19 lbs. Code word TENSK.
- No. 1166 Splitter Attachment, Photo D, for No. 1160 Circular Saw, consisting of three splitters, anti-kickback and collars for support arm.....\$3.75  
Shipping weight 5 Lbs. Code word, TENSJ.

### Guards for Abrasive Wheels

- No. 1470 Bent Arm and Bracket to fit No. 1155 Abrasive Wheel Guard to No. 1450 Saw. Shipping weight 14 Lbs. Code word TILGA.....\$6.50
- No. 1156 Bent Arm and Bracket to fit No. 1155 Abrasive Wheel Guard to fit No. 1160 Saw.....\$5.85  
Shipping weight 15 Lbs. Code word TENG B.
- No. 1155 Abrasive Wheel Guard, cast, for No. 1160 Saw or No. 1450 Saw, less arm and bracket.....\$4.50  
Shipping weight 11 lbs. Code word TENGA.

# Attachments Insure Accurate and Safe Saw Operations



## Clamp Attachment Indispensable For Safe and Accurate Work . . .

The clamp attachment, shown above, assures perfect safety in cross cutting and mitering, because the gage, carrying the clamped work, can be slid into the cut with one hand, back of the miter gage or near the blade—and it is only on this gage with clamp attachment that this is true. With every other gage it is necessary to have one hand in front of the gage to hold the work.

**No. 865 Miter Gage Clamp Attachment**, consisting of Clamp Bar, two Sliding Clamp Screws, Front and Rear Posts, to fit No. 864 Miter Gauge only. . . \$1.95  
Shipping weight 2 1/4 Lbs. Code word NECLA.

**No. 873 Extra Clamp Screw and Block for Clamp Attachment** . . . \$0.45  
Shipping weight 4 Ozs. Code word NECCS.

## Make Mouldings on Circular Saw With This Inexpensive Attachment

This unique attachment is the only practical tool of its kind. It consists of a strong, well-designed head, which may be had either in light-duty or heavy-duty types. A set of three interchangeable knives is locked into the head so that they are completely safe in operation. The head may be used either on the 1160 or 1450 Circular Saw, or on most other saws provided with a double-face fence.

A perfect moulding may be produced with one pass over the knives, or, if the cut is a deep one, in two or more passes. The attachment is such a practical one that it is used in hundreds of production shops, yet it is priced within the reach of every small shop. A special solid-steel head is available for production or heavy duty work.

There is nothing to get out of order in this tool, and it is extremely safe in operation because only the actual cutting edges of the knives are exposed, and even this is covered when the work is being run. Enthusiastic users tell us that it makes their saws into first-class moulding machines!

As seen at the right, the knives may be used singly or in combination to produce almost any type of exterior, interior or cabinet moulding. This illustration shows only a few of the hundreds of moulding shapes that are produced with this wonderful tool.

Space does not permit listing all the knives available or the sets. For more complete information write for Bulletin MC-1.



## This Safe Tenoner Makes All Cuts Square and Parallel . . . . .

Every possibility of risk is done away with when using our new Tenoning Attachment. This consists of a massive casting, which may be fastened to the base plate of the No. 1186 Sliding Jig, and this, in turn, is guided by the miter-gage grooves in the saw table. The stock to be tenoned is clamped by means of a quick adjustment against an accurately machined surface so that it is exactly vertical and parallel to the saw blade—no chance for twisted tenons—and the whole attachment is fed to the blade by means of a convenient handle at the rear. The work is fed to the saw with one hand—far removed from the revolving blade.

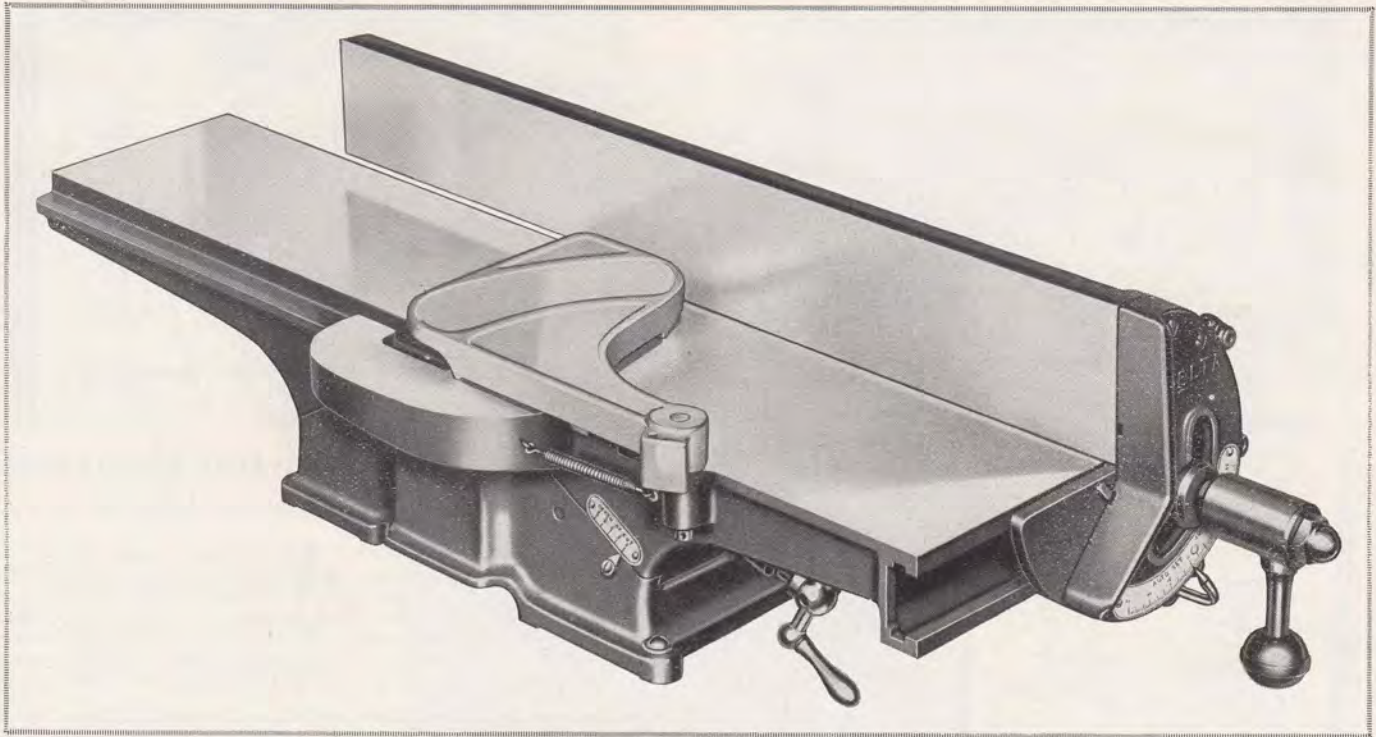
The attachment will take stock up to 2 3/4" thick, any width within the capacity of the saw, and tenons to 2" long on an 8" saw. With the use of No. 1171 spacing collars and an extra saw blade, 1/4" or 3/8" tenons can be cut at one pass.

**No. 1170 Tenoner** for use with the No. 1186 Sliding Jig. Consists of all parts as shown above. . . . . \$7.75  
Shipping weight 20 Lbs. Code word TENJG.

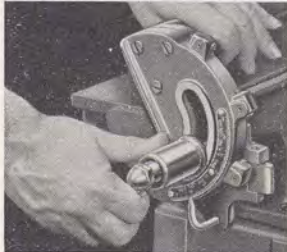
**No. 1172 Tenoner** complete with base plate. . . . . \$11.25  
Shipping weight 32 Lbs. Code word TENBP.

**No. 1171 Spacing collar set** (one 1/4" and one 3/8" collar). . . . . \$0.75  
Shipping weight 10 Oz. Code word TENC0.

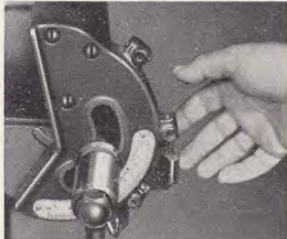
# FINEST VALUE EVER OFFERED IN A 6" JOINTER



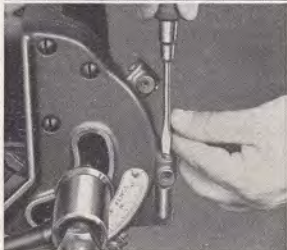
When the dual-control handle is slid out it engages the bracket lock nut, which when loosened (by a twist of the wrist), frees the entire fence so that it can be moved across the table to any position desired. Tightening the nut, clamps the fence firmly and accurately in position.



When the dual-control handle is slid in it engages the tilting lock nut. A twist of the nut loosens the quadrant so that the fence may be tilted to any angle desired. Tightening the nut locks the fence. When the handle is not engaged it swings free, out of the way.



A touch of the finger moves the patented stop links into or out of engagement with the individually adjustable stop set screws enabling the fence to be accurately stopped at 45, 90 or 135 degrees. The fence can be set accurately for other angles by means of large tilt scales.



To insure absolute accuracy when tilting the fence the stop screws are individually adjustable. This is another patented feature which makes the jointers the favorite of the real craftsman and insures that once the stops are set, the fence will always return to its setting.

NOTE the massive construction of this 6-inch Jointer. See the heavy, well ribbed base, which holds the tables in perfect alignment. Note the extremely rigid fence—a fence which cannot possibly spring sidewise as work is fed through. Note the heavy construction of the fence bracket and slide. You will then understand why this jointer produces such accurate work.

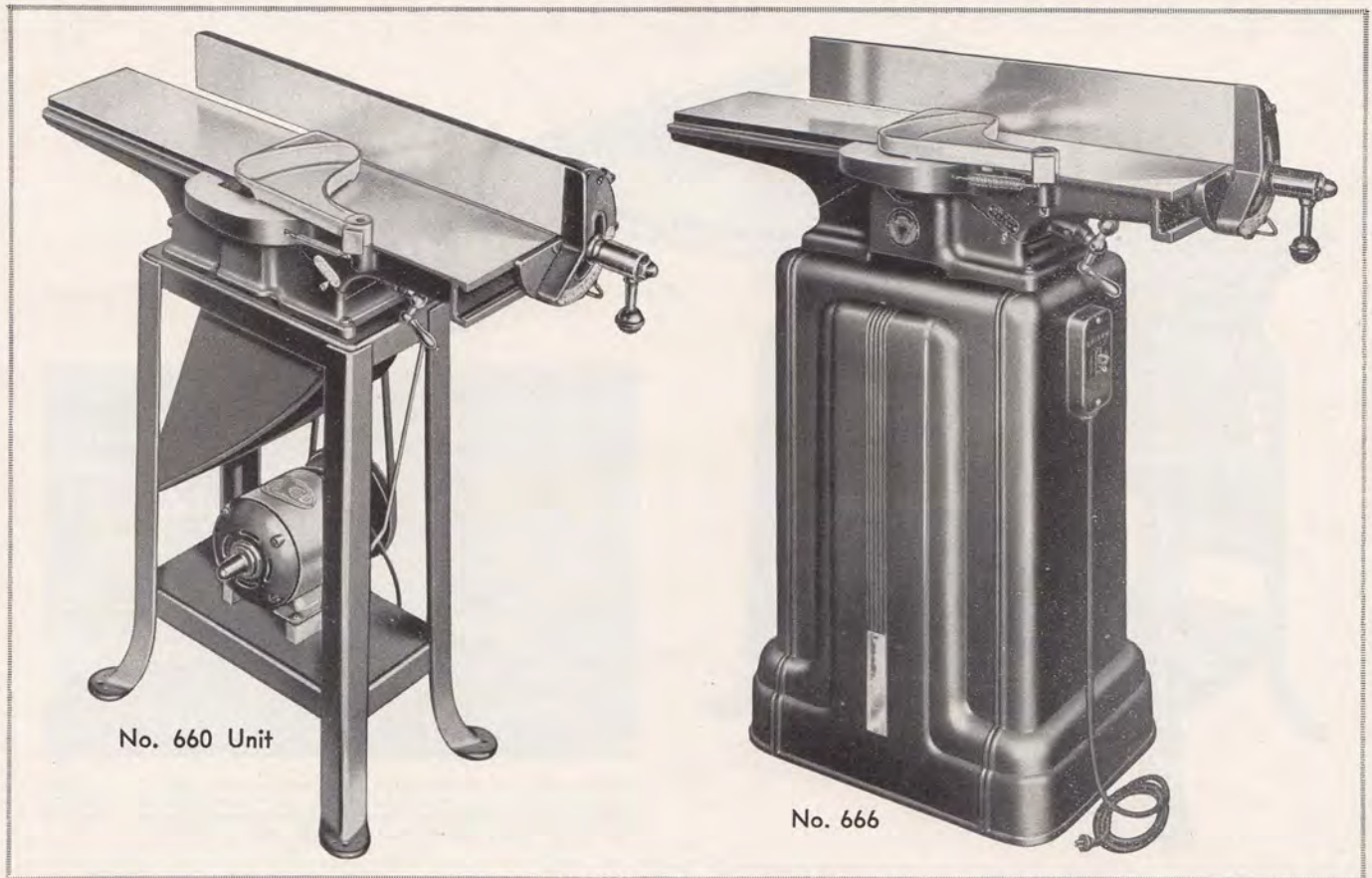
Careful machining, in addition to massive design, aids in producing precision work. The tables are not only ground flat and true individually, but, after assembly, they are ground at the same time on a larger grinder—no chance of any lack of alignment.

The fence tilts on our patented bracket, insuring sure, free action, and unvarying accuracy of the stop settings—something very difficult to achieve in machines without our principle. The swinging stop, with its individually adjustable stop screws at the 45, 90 and 135-degree positions, insures that, once the stop screws are accurately set, the double-tilting fence will invariably return to the same accurate setting after tilting. Once set, the fence is always set for these most frequently used positions.

And the dual-control handle: Slid in, it engages the tilting lock and a twist of the wrist tilts the fence. Slid out, it engages the bracket lock, enabling the whole fence to be moved across the table. In the center, it swings free, completely out of the way of the operator.

Guard for rear knives available when rabbeting—an absolute necessity in the school shop. With the two knife guards and the belt guard this is the safest machine available for school and production work.

# Six-Inch Jointers on Stands — Efficient and Low Cost Production Units



**Steel Stand** is an added convenience. Brings jointer to correct height — makes it completely portable. Heavy built-in steel chute carries off shavings.

**Cast Iron Stand** is extremely rugged — fully encloses motor, belt. Is easy to keep clean—built-in chute carries off shavings. Rear panel removable, allowing easy access to motor.

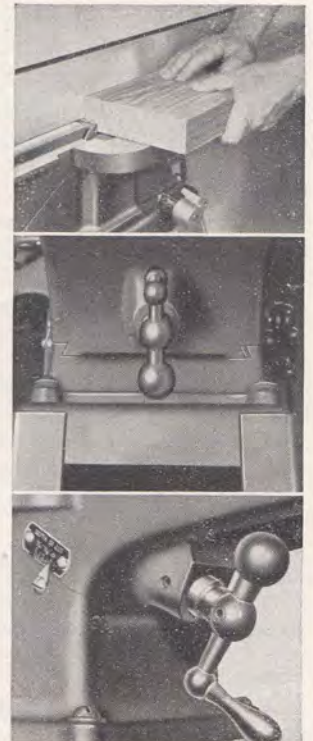
## These Patented Features Insure Accuracy—Long Life—Convenience

*Shown here and on opposite page also—For all jointers*

Rabbet cuts a full  $\frac{1}{2}$ " deep can be cut at one pass of the work. The guard is instantly removed for rabbeting and as quickly replaced. Front and rear flap guards for knives may be locked to prevent unauthorized removal—an important feature.

View of the underside of the table showing the rigid construction of the husky base casting and the dovetailed ways on which the tables move. Notice the gib at the right permits adjustment for wear which means this jointer will always be accurate.

The convenient ball-crank handle allows front table to be raised and lowered in a jiffy. Plenty of room means no skinned knuckles. The scale at the side shows depth of cut which is a maximum of  $\frac{1}{2}$ " on the 6" jointer—ample capacity for all work.



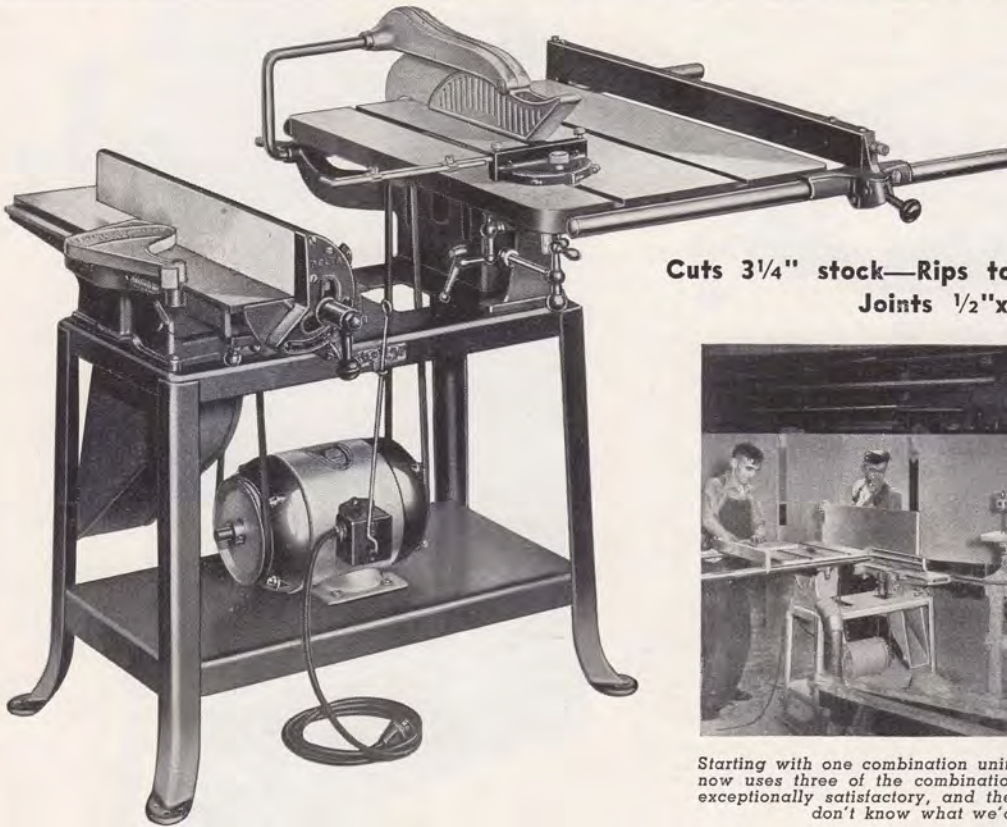
Cat. No.	Description	Wt. Lbs.	Code Word	Price
654	6" Jointer with 3 High-Speed Steel Knives, 2-Way Fence with Dual Control, 2 $\frac{3}{4}$ " Arbor Pulley and Front Safety Guard. Without Motor, Belt, Motor Pulley or Stand.....	120	SIXJO	\$48.85
660	6" Jointer Unit Consisting of No. 654 Jointer, No. 560 V-Belt, No. 5700 7" V-Pulley, No. 556 Stand. Without Motor, Belt Guard or Switch Rod.....	154	SIXUN	57.90
666	6" Jointer Unit Consisting of No. 654 Jointer, No. 560 V-Belt, No. 5700 7" V-Pulley, No. 667 Cast Iron Stand with Motor Plate and Belt Guard, Without Motor or Motor Switch..	248	SIXCB	73.00

### ACCESSORIES

560	V-Belt 22 $\frac{3}{4}$ " Center to Center.....	1	EICVB	1.00
5700	7" V-Pulley $\frac{1}{2}$ " Bore Drives Jointer at Correct Speed, 4200 R.P.M.....	2	PULOL	1.20
659	Set of 3 High Speed Steel Knives.....	6 oz.	SIXKI	3.30
656	Steel Stand, 8" Wide, 15 $\frac{3}{8}$ " Long, 29 $\frac{1}{8}$ " High.....	31	SIXST	6.85
661	Belt Guard for 6" Jointer on No. 656 Steel Stand—with Screws.....	33	SIXGA	7.85
662	Rear Knife Guard with Spring.....	2	SIXRE	3.75
667	Cast Iron Stand for 666 Unit with Motor Plate and Belt Guard.....	125	SIXCC	21.95
132	Switch box, power cord and plug and motor lead wire for all single phase motors.....	1 $\frac{1}{2}$	SPESB	2.60

For Production and School Work use 3-Phase Motor No. 6600. For Average Duty Work use Motor 6400. Use No. 1334 Switch Rod. See Pages 43 and 44 for Prices.

# SAW-JOINTER COMBINATION UNIT OFFERS MANY ADVANTAGES



**Cuts 3/4" stock—Rips to center of 50" panel  
Joints 1/2"x6" wide**



*Starting with one combination unit several years ago, this concern now uses three of the combinations. The machines have proved exceptionally satisfactory, and the superintendent says: "We just don't know what we'd do without them!"*

## COMPACT SAW-JOINTER UNIT SAVES SPACE— MONEY AND TIME — SPEEDS UP PRODUCTION

First introduced by us a number of years ago, the combination saw-and-jointer unit has steadily gained in popularity. The convenience of this combination is so outstanding and its popularity is now so great that others have attempted to make similar combinations. But NONE of these combinations combine all the advantages that have made ours such a favorite.

### No Interference

There is absolutely no interference between the saw and jointer in our combination units. Either machine may be used singly, or both may be used together, by one man or two (see photo at right), with ease and facility.

### Space-Saving

Both machines in our combinations are driven from below BY THE SAME MOTOR. In some other combination units the motor or motors must be mounted behind the machines, which makes a large, awkward stand necessary. This not only reduces portability, but also wastes shop space.

### Low Power Cost

Since both machines are driven from the same motor, not only is the cost of an additional motor saved, but the running cost is generally lower than with two separate motors.

### Portability

In spite of their large capacity, our combination units are so compact that they are used as portable power units for many

outside jobs, as well as being used anywhere in the shop where they will best suit the job. Many contractors load them on a truck and take them right to the job. They are more portable than most old-fashioned "saw rigs", although of larger capacity.

### Maximum Efficiency

The extreme handiness of being able to rip stock to width and then joint it without moving more than a step must be experienced to be appreciated. Users who own these combination units claim that they can perform 80% of all common wood-working operations on their machines, and at savings of from 25% to 50% in time. You must use one of our combination units to understand why they are so popular!

This is the ideal machine for the contractor, for the novelty or furniture shop, for the small cabinet shop—in fact, in practically any type of woodworking shop it will take the place of machines consuming much more power and with but a fraction of its versatility. Hundreds of installations all over the world testify to its practicality and value.

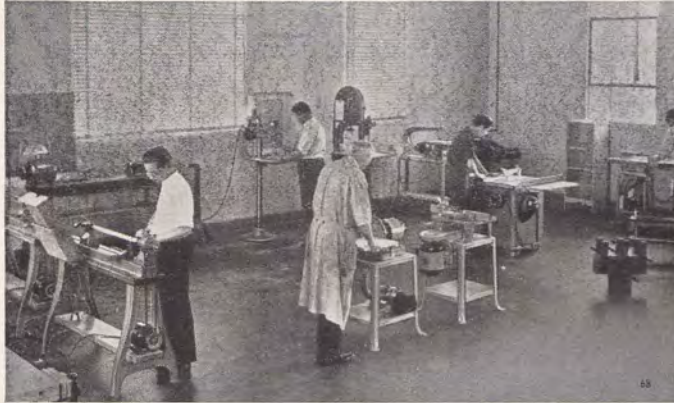
Cat. No.	Description	Ship. Wt. Lbs.	Code	Price
1164	Combination Saw-Jointer unit consisting of: No. 1160 10" Circular Saw, No. 654 6" Jointer, No. 1168 Steel Stand, (16" x 30"—26 3/4" high). No. 510 V-Belt for Jointer, No. 560 V-Belt for Saw, No. 5500 5" V-Pulley for Saw, 3/4" Bore, No. 5700 7" V-Pulley for Jointer, 3/4" Bore. Without Motor, Switch Rod or Circular Saw Guard.....	186	TENSI	\$120.50

Shipping weight of stand only 73 lbs. Code Word—TENSO.

No. 9000 or 8050 motors recommended for this machine for ordinary use. For heavy duty and production use No. 9400, 9100 or 9200 3/4-H. P. and 1 H. P. motors are recommended. Use No. 1334 Switch Rod. See Page 43-44.

**THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.**

**SCHOOLS FIND DELTA POWER TOOLS IDEAL BECAUSE OF THEIR LOW COST AND MAINTENANCE, THEIR ACCURACY AND LONG LIFE, THEIR COMPLETE SAFETY AND BIG CAPACITY**



**THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.**

# THIS *New* SHAPER HAS THE FEATURES YOU WANT

1. Large husky spindle
2. Exceptionally big table
3. Long spindle and spindle travel
4. Large sealed-for-life bearings
5. Powerful V-belt drive
6. Interchangeable spindles
7. Fully adjustable fence
8. Strong, welded cabinet



### Specifications:

Height of table from floor	... 34"
Table size	... 27" x 28"
Table size with back wing	... 27" x 36"
Spindle diameter	... 3/4"
Capacity of Spindle (under nut)	... 3 1/4"
Spindle travel	... 3"
Spindle speed	... 8500 R.P.M.
Largest cutting circle recommended	... 3 1/2"
Motor Drive	up to 1 1/2 H.P., 3-phase
Spindles are interchangeable	
Size of fence, each side:	3 3/4" x 12 3/8" x 15/16"
Rip fence must be used with ad- justable fence.	

HERE is the machine you have been waiting for—the No. 1340 shaper built to the same exacting standards that characterize all our machines. Designed and built to handle heavy, fast cuts, it is ideal for the cabinet shop, furniture factory, specialty shop, sash and door company; as a matter of fact, any shop where accurate production shaping must be done at low cost.

### Massive Table Correctly Designed:

The big table 27" x 28" can be increased to 27" x 36" with the addition of a back wing. Bolting two shapers back to back gives you a two-spindle machine at a fraction of the cost you usually pay. Table will not warp or spring—has 3/8" x 3/4" groove for miter gage or jigs.

### Spindle is Big and Husky:

Spindle is 3/4" x 3 1/4" under the nut with a full 3" travel. Carried in specially selected New-Departure sealed-for-life ball bearings which require no lubrication for their entire life. Spindle accurately ground—bearing seats are diamond-bored to three ten-thousandths, insuring absolute accuracy.

### Spindles Are Interchangeable

Standard 3/4" diameter spindle may be easily replaced by 1/2" or 5/16" spindle using 3 lip formed cutters or

by 1/2" stub spindle for cope cutters. Spindle and bearings carried in easily replaceable cartridge which may be removed without disturbing the preload on the bearings.

### Main Bearing Housing Is Massive:

The heavy, ground tube which carries the large main bearing housing is held by a 3 point suspension in a manner to keep the spindle accurately square with the table. The entire assembly is a unit construction—spindle, housing, motor, raising and lowering mechanism AND THE TABLE are one self-contained unit.

### Controls Are Convenient

Conveniently grouped, the controls are at front of machine. Spindle height indicator covers full 3" travel. Knob at center of hand wheel locks position.

### Ring Guard Protects Operator:

Fully adjustable and easily removed, this ring guard protects the operator and acts as a hold-down. May be purchased as an extra.

### Fence Fully Adjustable

Each half of the large fence is fully adjustable and absolutely independent of the other half so that all types of adjustments may be readily and quickly made. The full advantages must be experienced to be appreciated.

## Rip Fence an Added Convenience:

Enables many difficult operations to be done with ease. Rough edges may be shaped without a previous trim cut. Used as guide for sliding jigs. Eliminates clamping of guides to table. A very worthwhile attachment.

## Shaper Cutter Heads Are Safe:

Using blank knives which may be ground to suit the shape required, these Safety Cutter heads are carefully made and expertly designed so that the knives are firmly held and all vibration eliminated. See page 33.

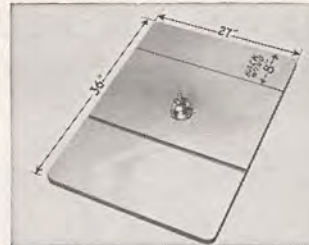
## Strong, Sturdy Cabinet:

Modern, scientifically designed cabinet provides maximum strength with minimum weight. Fully encloses motor and mechanism from chips. Doors for getting at mechanism. Easily cleaned. Shaper heavy enough to "stay put," light enough to be moved to facilitate production.

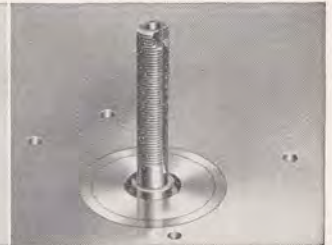
Cat. No.	Description	Wt. Lbs.	Code Word	Price
1340	Shaper complete with fence, $\frac{3}{4}$ " spindle, 27" x 28" table, table insert, starting pin, wrenches and spindle pulley. Without belt, motor, motor pulley, reversing switch or cutters.	300	SHANA	\$89.50
5710	7" Motor pulley (specify $\frac{1}{2}$ ", $\frac{3}{8}$ " or $\frac{3}{4}$ " bore) with keyway for std. 3450 R.P.M. motor	2 $\frac{1}{4}$	PULOR	2.00
287	V-belt for 1340 Shaper. 30" Outside Circ.	$\frac{1}{2}$	BELTG	.65
1344	Rip Fence Attachment-fence, 2 bars, screws	35	SHANE	10.25
1345	Stub spindle for $\frac{1}{2}$ " diam. 3-lip cutters with screw and wrench.	1	SHANF	1.15
1346	$\frac{5}{16}$ " spindle for $\frac{3}{16}$ " diam. 3-lip cutters with nut and washer.	1	SHANG	1.00
1347	$\frac{1}{2}$ " spindle for $\frac{1}{2}$ " diam. 3-lip cutters with nut and washer.	1	SHANH	1.15
1348	Safety Ring guard with bracket, hexagon post, spring bar with guard ring & screws	9 $\frac{1}{2}$	SHANI	3.25
1349	Rear extension table 8" x 27" with screws and washers.	32	SHANJ	6.00

### Motors and Switch Parts for 1340 Shaper

8120	1 H. P.—R. I. 110/220 60 Cy. A. C. Motor 3450 R. P. M. with built-in-reversing mechanism, without cord and plug. Single shaft, $\frac{3}{4}$ " diam.	85	EACCP	48.85
132	Switch for above R. I. motor (No. 8120). Switch box, without cord, plug and motor lead wire for all single phase motors.	1 $\frac{1}{2}$	SPESB	2.60
9532	1 H. P. 3-Phase 220/440 60 Cy. Motor 3450 R. P. M. Not furnished with reversing switch, on and off switch or cord or plug as it should be connected by a licensed electrician. Single shaft $\frac{3}{4}$ " diam.	85	NACKS	42.85
8150	1 $\frac{1}{2}$ H. P. 3-Phase 220/440 60 Cy. Motor 3450 R. P. M. Not furnished with reversing switch, on and off switch or cord or plug as it should be connected by a licensed electrician. Single shaft $\frac{3}{4}$ " diam.	85	EACDA	48.85
8820	1 H. P. 115 Volt D. C. Motor 3450 R. P. M. Not furnished with reversing switch, on and off switch or cord or plug. Single shaft, $\frac{3}{4}$ " diam.	85	NDCUS	55.85
1320	Three phase manual starter, for above motors Nos. 9532, 8150 and 8820. Specify motor number when ordering.	6	SWIPH	8.20
1325	Reversing drum switch (2 H. P.-440 V. Max) for 3 phase or D. C. motors (C-H 9441-H37).	4	SWITA	6.50
1327	Plate and screws only for mounting the following assemblies on the shaper: No. 1320 Manual starter with No. 1325 Reversing drum switch (used with 3 phase or D. C. Motors for double direction spindle). No. 1320 Manual starter only (used with single phase, 3 phase and D. C. motors for single direction spindle).	2	SWITB	1.00



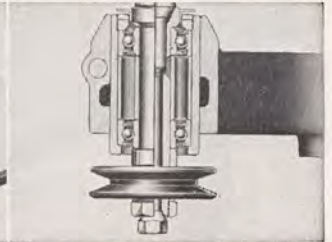
Large table 27" x 28" may be increased to 27" x 36" by addition of back wing. Bolting two shapers together produces a 2-spindle machine with a table 27" x 4'-8".



Exceptionally long  $\frac{3}{4}$ " diameter spindle of manganese steel. Accurately ground with bearing seats diamond-bored to insure perfect accuracy.



Spindles are readily interchangeable permitting use of wide variety of cutters and stub spindles for cope cuts on sash and doors. Note removable throat disc.



Spindle assembly shows rugged design, short, stiff drive spindle, closely spaced bearings, eliminates whip, produces chatterless work.



Entire mechanism is a unit assembled and bolted to bottom of table. Nothing to get out of alignment, insures true running.



Convenient hand wheel adjust spindle height. Lock knob in center. Adjustable scale plate shows height of spindle. All Controls in one group.



Fully adjustable fence with both halves independent of each other. Adjustable end-wise so opening may be small as possible — a good safety feature.



Ring guard not only protects operator from knives but also acts as a hold-down. Does not interfere with shaping operation. A fine accessory.

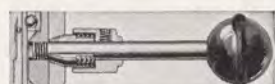
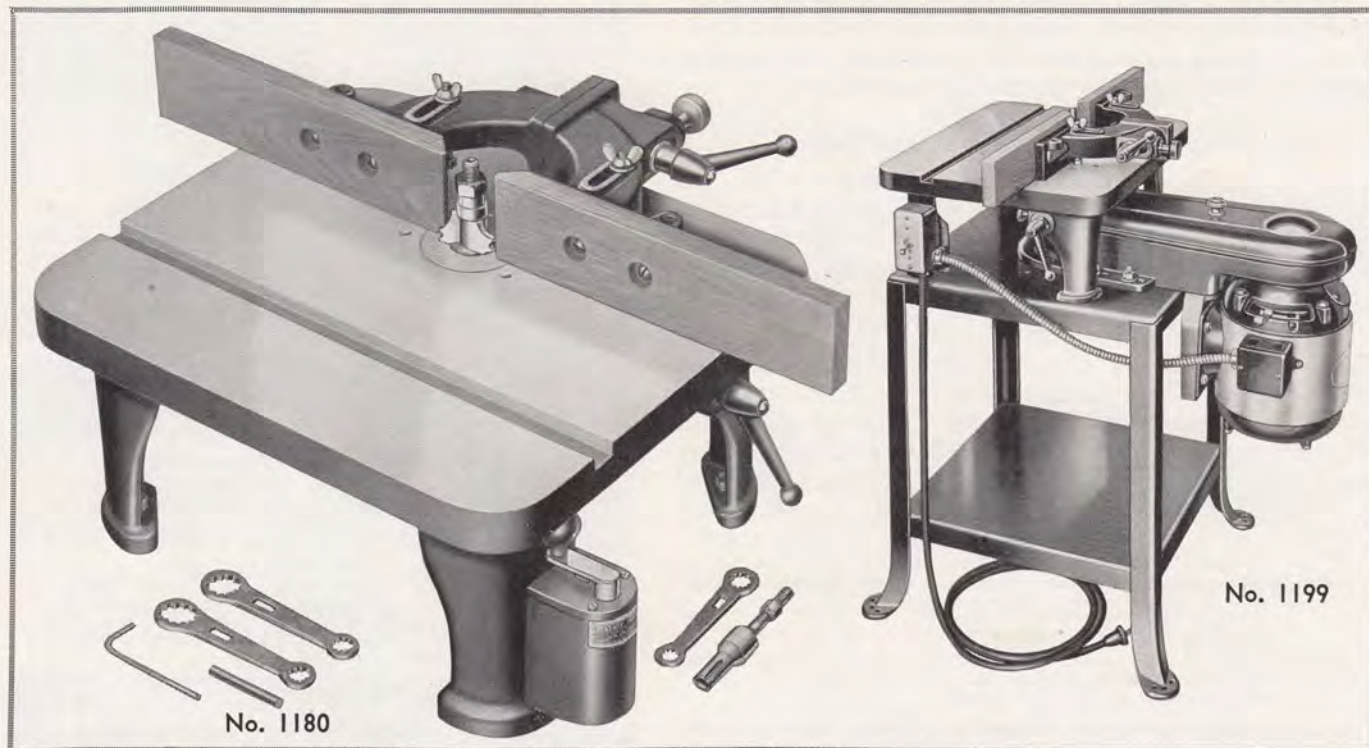


Rip fence is an added convenience. Rough edges may be shaped without a previous trim cut. Must be used with the adjustable fence and depth collar.



Heavy duty Safety cutter heads hold ground knives firmly, produce chatterless work. All special shapes are easily and economically produced.

# THIS SHAPER DOES AN ASTONISHING VARIETY OF WORK



Our spindle height adjustment, with its spring-urged sleeve and tapered helical groove, eliminates backlash and makes accurate adjustment easy.



In our fence, both halves are adjustable through one control, and the fence faces—adjustable endwise—permit the cutter opening to be made as small as possible.



Fence adjustments are exact and simple to make. No "juggling"—no guesswork.



No. 987 Shaper Safety Guard for curved work protects operator from revolving cutters and acts as hold-down.

HUNDREDS of woodworking shops installed this shaper as an auxiliary to their larger shapers and find that an astonishing variety of work can be performed with it.

It will make hundreds of mouldings using either  $\frac{1}{2}$ " hole or  $\frac{5}{16}$ " hole cutters. It will shape, form or mould the edges of almost any form of work that can be handled on a larger shaper; it will handle all of the window, storm and screen sash work of the average shop, and all of the cabinet work as well.

An outstanding feature of all our shapers is the fully adjustable fence. Where, on most shapers, the entire setting must be made over for each adjustment, on our shapers one half of the fence may be individually adjusted without disturbing the other settings. A simple, exact procedure instead of an awkward, inexact one. There is no "juggling"—no guesswork.

For production work No. 8100 1-H.P. motor is recommended. This has a built-in reversing switch, and is provided with a snap-switch for mounting on the shaper leg as shown at left above. Motor has 3450 R.P.M. and drives the spindle from a flat flanged pulley which permits the spindle to be raised or lowered without strain or twist on belt.

Its thorough guarding, its exceptionally low cost, the wide range of cutters available, the wide variety of work it will handle, its long life, its low power consumption—these are a few of the reasons why this shaper is so popular and why the experienced operator and machine buyer have demanded this machine in hundreds of industrial shops.

## Specifications

25" wide,  $10\frac{1}{4}$ " high (bench model),  $36\frac{7}{8}$ " high (floor model),  $15\frac{1}{2}$ " front to back, fence 25" long, speed 10,000 R.P.M.,  $\frac{5}{16}$ " and  $\frac{1}{2}$ " spindles, Double Seal Ball Bearings (Require no lubrication), Spindle travel  $\frac{3}{4}$ ", Spindle height lock,  $\frac{3}{8}$ " x  $\frac{3}{4}$ " table groove for sliding jig, tapered starting pin.

Cat. No.	Description	Ship Wt. Lbs.	Code Word	Price
1180	Reversible Shaper with Fence, $\frac{5}{16}$ " and $\frac{1}{2}$ " Spindles, Table Insert, Starting Pin, Wrenches and Spindle Pulley. Without Belt, Motor, Motor Pulley, Reversing Switch, Cutter or Collars.	57	SHAPR	\$28.85
1199	Unit Consisting of 1180 Shaper, 1181 Stand, 1197 Motor Bracket and Guard, 1185 Pulley and 430 V-Belt. Without Motor, Reversing Switch, Cutters or Collars.	178	SHAPW	46.90
1185	Motor Pulley $5\frac{3}{8}$ " Diam., Specify $\frac{5}{8}$ " or $\frac{3}{4}$ " Bore, for 60 Cycle, 3450 R.P.M. Motor.	$2\frac{1}{2}$	SHAPU	1.55
1187	Motor Pulley $5\frac{7}{8}$ " Diam., Specify $\frac{5}{8}$ " or $\frac{3}{4}$ " Bore, for 50 Cycle, 2850 R.P.M. Motor.	$2\frac{1}{2}$	SHAPI	1.55
430	V-Belt for Use with 1 H.P. Motor and 1197 Bracket.	10 oz.	FORSL	.90
1181	Steel Stand ( $16\frac{1}{4}$ " x $18\frac{1}{4}$ " x $26\frac{7}{8}$ " High).	51	SHAST	8.25
1197	Belt Guard and Motor Bracket for 1 H.P. Motor.	30	SHAPV	7.35
987	Safety Ring Guard with Bracket for Shaper Table, Hexagon Post, Spring Bar with Guard Ring and Screws.	8	NESGA	4.35
1190	Stub Spindle for $\frac{1}{2}$ " Cutters	1	SHASP	1.15

See Pages 43-44 for Special Shaper Motors.

# SHAPER CUTTERS IN A VARIETY OF SHAPES MEET ALL NEEDS

## Safety Cutter Head with Blank Knives

Special mouldings that cannot be made with the standard shaper cutters, special cope cuts—all the work that the experienced shaper operator wants to do can be done with the Cutter Head and blank knives. The head is an innovation. It is accurately machined so as to eliminate vibration; grooves are carefully milled to close tolerances to insure both knives being clamped with the same pressure and a spherical equalizing washer is used under the head.

When a setup has been made, it can be kept for future use, as the whole head may be removed from the machine. Blank knives are 2½" long, self-hardening and sand-blasted so that cutter design may be drawn directly on them.



Cat. No.	Description	Wt. Lbs.	Code Word	Price
1342	Cutter Head for ¾" Spindle with Tightening Block. Without Knives.....	2	SHANC	\$3.95
1192	Cutter Head for ½" Spindle with Tightening Block. Without Knives.....	1½	SHABP	3.95
1193	Two ½" Knives.....	6 oz.	SHAPC	2.30
1194	Two ¾" Knives.....	6 oz.	SHAPD	2.30
1195	Two 1" Knives.....	6 oz.	SHAPE	2.30
1196	Two 1½" Knives.....	6 oz.	SHAPF	3.00



## THREE-LIP CUTTERS FOR SASH, DOORS, CABINET, COVE AND BEAD SHAPES

These 3-lip cutters are a new development in that they offer unlimited possibilities in hundreds of moulding shapes. Cope and reverse mouldings, sash mouldings, door mouldings, doors for cabinet work or buildings, brick moulds, base moulds, back moulding are but a few of the applications where these versatile cutters may be used.

Made of special steel and hardened in oil, these cutters can be re-sharpened again and again merely by grinding across the faces of the cutting lips. Since they have involute relief, the sharpening does not change their shape, and the relief permits a true shaving cut while leaving a strong, well-supported edge on the cutter. Collars for use with these cutters are ground to size, not merely rough-turned, so that they run perfectly true and will not score the work.

Sash cutters are designed for sash using 1/8" to 1/4" stock.

SHAPED CUTTERS		STRAIGHT CUTTERS	
D-100	As Shown.....\$1.10	D-104	1" x 1 1/8" Diam.....\$1.10
D-101	As Shown.....1.10	D-105	1 1/2" x 1 1/8" Diam.....1.50
D-102	As Shown.....1.10	D-107	1 1/2" x 1 3/8" Diam.....1.10
D-103	As Shown.....1.10	D-108	1 1/2" x 1 1/2" Diam......85
D-106	45 Degree.....1.10	D-127	3/8" x 1 1/8" Diam......85
D-109	Round Nose......85	D-129	3/8" x 2 1/8" Diam......85
D-110	Drawer Joint.....1.35	*D-130	3/8" x 1 1/2" Diam.....1.10
D-120	Ogee.....1.10	D-139	1/2" x 2 1/8" Diam......85
D-121	Fem. Sash.....1.10	*For Sash Work.	
D-123	Cab. R. H. Male.....1.10	MISCEL. COLLARS	
D-124	Cab. L. H. Male.....1.10	D-132	3/8" x 1 1/2".....\$.15
D-125	Cab. R. H. Fem.....1.10	D-134	1/2" x 1 1/2"......15
D-126	Cab. L. H. Male.....1.10	D-140	1/2" x 1 3/8"......15
D-128	Male Sash.....1.10	D-141	3/8" x 1 1/8"......15
D-131	Glue Joint.....1.35	D-150	3/8" x 1 3/8"......20
D-135	Cove & Bd. L. H.....1.10	D-151	1/2" x 1 1/8"......20
D-136	Cove & Bd. R. H.....1.10	Collars Have 1/2" Hole	
D-137	Cope R. H.....1.10		
D-138	Cope L. H.....1.10		

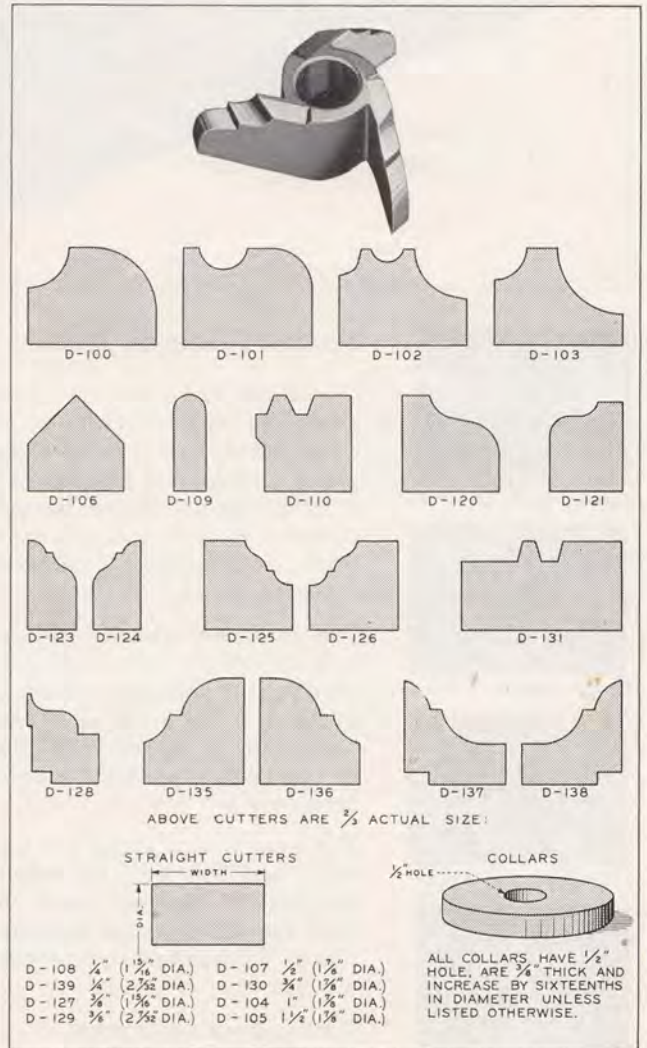
### INDIVIDUAL CUTTERS AND COLLARS — STANDARD SETS

Cat. No.	Description	Ship. Wt.	Code Word	Price
1178	Cove and Bead Set Consisting of Cutter D-129, D-135 to D-139 Incl. D-132 and D-134 Collars with No. 1190 Stub Spindle for 1180 Shaper....	2	SHAPY	\$7.55
1213	Cove and Bead Set, same as No. 1178 but with No. 1345 Stub Spindle for No. 1340 Shaper....	2	SHASB	7.55
1182	Standard Set Consisting of D-100 to D-109 Inclusive and 8 Suitable Collars Ranging From 3/8" to 1 3/4" Diam. Packed in Wood Box.....	3 1/2	SHACU	11.90
1184	Sash and Cabinet Set Consisting of D-108, D-120 and 121, D-123 to D-128 Incl. and D-130. Collars D-140, 141, 150 and 151 with 1190 Stub Spindle for 1180 Shaper. In Wood Box.....	3	SHACB	11.90
1214	Sash and Cabinet Set same as No. 1184 but with No. 1345 Stub Spindle for 1340 Shaper.....	3	SHASD	11.90

### COLLAR SETS

Increased by Sixteenths Inches. 3/8" Thick, 1/2" Hole. Packed in Wood Box.

1210	Seven Collars From 3/4" to 1 1/8" Diam.....	3/4	SHASU	\$1.00
1211	Six Collars From 1 1/8" to 1 1/2" Diam.....	1	SHASV	1.25
1212	Six Collars From 1 1/2" to 1 3/8" Diam.....	1 1/2	SHASW	1.60



## STEEL CUTTER HEAD USES SAW MOULDING KNIVES

The making of mouldings on the circular saw has become a practical and profitable operation for many wood working shops. A large assortment of knives are available a few of which are shown on page 25. Since many shops are well supplied with these knife sets we have increased the usefulness of them by developing this three-knife safety cutter where by the knives may be used on the shapers

also. It has been acclaimed by many users as the freest cutter they have ever used.

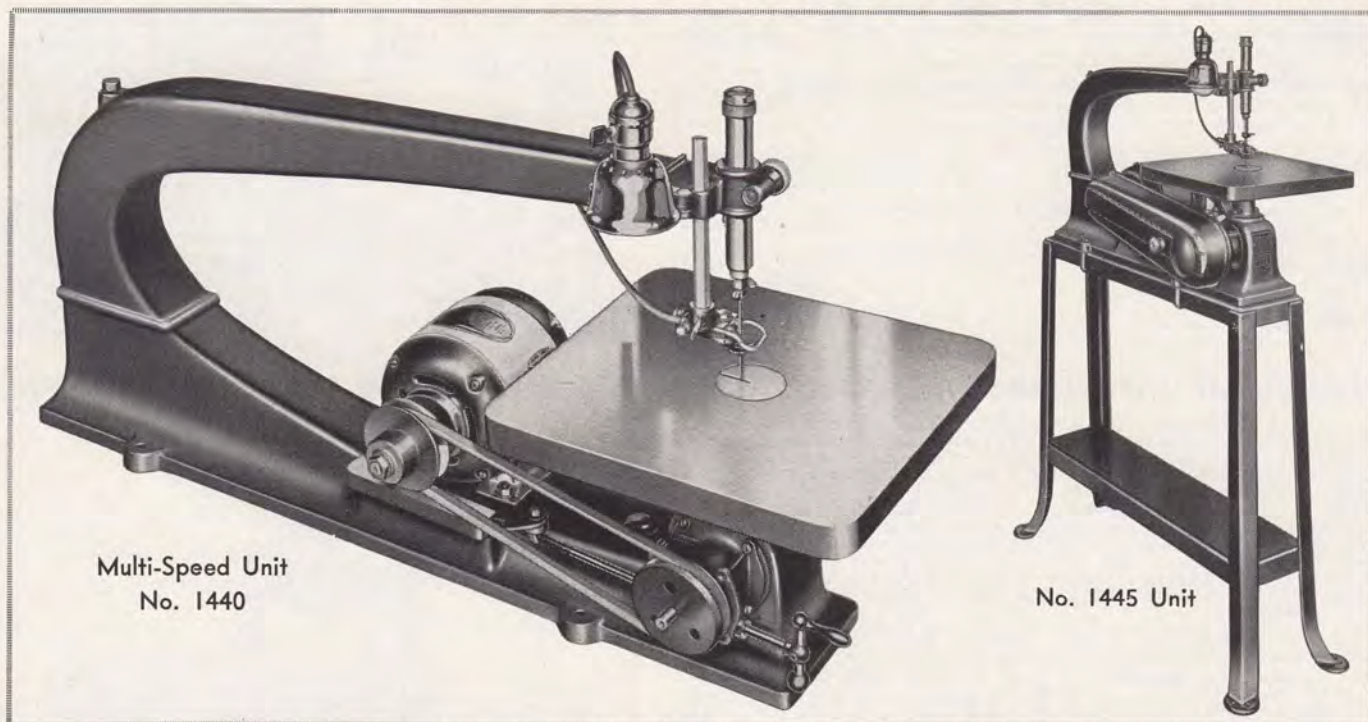
Made of special high speed steel, accurately balanced with the knives securely locked into position. Has 3/4" hole with 1/2" bushing to fit either 1/2" or 3/4" spindles.

No. 1343 3-Knife Safety Cutter Head. 3/4" bore with 1/2" bushings with wrench. Without knives ..... \$3.95  
Shipping Weight 1 1/2 lbs. Code Word SHAND.



SEE BULLETIN MC-1 FOR CUTTER KNIVES

# THESE STURDY SCROLL SAWS ARE FAST AND ACCURATE



Multi-Speed Unit  
No. 1440

No. 1445 Unit

## These Features Insure Long Life, Better Performance, Faster Output

EXPERIENCED scroll saw users know that there are several features essential in a good scroll saw. It must be capable of using all types of blades—it must operate with minimum blade breakage—a minimum of vibration at all speeds and must have a selection of speeds for various types of work.

The patented chucks in our scroll saws are completely universal, taking jeweler's blades, pin blades, saber blades, round shank files up to 1/4"—without any extras. Operation is smooth and free—the blade is properly guided eliminating blade breakage.

The heavy cast table not only tilts to the right and left but, by rotating the table bracket 90 degrees and the chucks so that the blade cuts sideways, the table tilts to the front so that stock of any length can be cut.

Timken-bearing crankshaft . . . shaft-driven blower pump which makes air available even for saber blades . . . universal tilting table, tilting for sidewise cutting as well as for straight cuts . . . the finest completely universal blade guide made . . . high-speed blade support . . . adjustable blade tension . . . splash-lubricated drive . . . tilting spring hold-down . . . these are only a few of the things that make our 24" scroll saws the finest tools of their type ever offered

Made in the Multi-Speed model which gives you any speed, and in a Standard Four-Speed model.

### The Multi-Speed Unit

*A Thousand Speeds at the Touch of Your Finger*—that's what you get with this perfected control of speed. Two or four speed saws have limited speed range—too slow for some materials—too fast for others. With the Multi-Speed Scroll Saw you can select ANY speed from 650 to 1700 R.P.M. controlling the speed within 1 or 2 R.P.M. if necessary. High speed for fast, fine work—low speed for heavy work—and ANY speed in between. Speed controlled by conveniently located ball crank.

### The Standard Four-Speed Unit

Operating at four well-selected speeds, this scroll saw has the same features as the Multi-speed unit shown above. The heavy, rigid over-arm—the heavy 14" x 14" finely finished cast iron table, the design of the chucks, blade support, guide and other features make this the best saw for all purposes. Speeds 650, 1000, 1300 and 1750 R. P. M.

### Specifications of Both Saws

35" long, 14" wide, 43" high on stand, 14" x 14" cast iron table, belt guards available for both machines, capacity 1 3/4" thick, 24" reach.



Lower chuck of steel.



Highly efficient guide.



Self-centering chuck jaw.



Tension of spring can be adjusted.



The spring hold-down functions even when the table is tilted; an important feature.

## CATALOG LISTING OF SCROLL SAWS

Cat. No.	Description	Ship. Wt. Lbs.	Code Word	Price
<b>THE MULTI-SPEED UNIT</b>				
1440	Multi-Speed Scroll Saw with One Saber Blade, 3 Jeweler's Blades, Puzzle Jaw for Upper Chuck and Light Attachment. Without Arbor Pulley, Motor, Motor Pulley, Belt or Belt Guard (As Illustrated).....	116	MULTA	\$28.80
1446	Variable Speed Motor Pulley Only 1/2" Bore.....	2	MULTH	3.75
1447	Motor Base with Bracket, Screw and Handle.....	10	MULTI	3.50
331	Special V-Belt for Variable Speed Pulley Only.....	8 oz.	MULTG	.80
1443	Special Arbor Pulley for Scroll Saw 1/2" Bore.....	1	MULTD	1.00
1444	Standard Accessory Group Consisting of Nos. 1446, 1447, 331 and 1443.....	14	MULTE	9.05
1445	Multi-Speed Scroll Saw Unit Consisting of No. 1440 Scroll Saw, No. 1444 Accessory Group and No. 716 Steel Stand with Hook Bolts. Without Motor or Belt Guard.....	182	MULTF	46.10
1442	Belt and Pulley Guard for No. 1440 Scroll Saw Only.....	7	MULTC	5.90

<b>THE STANDARD FOUR-SPEED UNIT</b>				
1200	Four-Speed Scroll Saw with One Saber Blade, 3 Jeweler's Blades, Four-Speed Cone Pulley on Arbor, Puzzle Blade Jaw and Light Attachment. Without Motor, Motor Pulley, Belt or Belt Guard.....	117	LUXSA	\$29.90
718	Cone Pulley for Motor 1/2" Bore—Provides Speeds of 650, 1000, 1300, 1750 R.P.M.....	18 oz.	CONPA	.75
340	V-Belt, 13" Center to Center.....	8 oz.	BELUX	.80
1207	Standard Accessory Group Consisting of Nos. 718 and 340.....	1 3/4	LUXAC	1.55
1206	Four-Speed Scroll Saw Unit Consisting of No. 1200 Scroll Saw, No. 1207 Accessory Group, No. 716 Steel Stand with Hook Bolts. Without Motor or Belt Guard.....	170	LUXUN	39.70
1203	Belt and Pulley Guard for No. 1200 Scroll Saw Only.....	7	LUXBG	6.85
716	Steel Stand for Both Multi-Speed and Four-Speed Scroll Saws. Top 7" x 33", 31 1/2" High.....	50	LASAS	8.25

Use Motors No. 6300 or 6000 or No. 6600 for 3-Phase Installations. See Pages 43 and 44.

### ADDITIONAL SCROLL SAW ACCESSORIES AND PARTS

#### Individual Guides

Are used in place of regular guide when following line is important. Set consists of 6 hardened-steel guides and one bracket.

**No. 1202** Set of 6 guides and bracket for No. 1200 and 1440 Scroll Saws ..... **\$1.55**  
Shipping Weight 18 oz. Code Word LUXGA.

#### Self-Centering Chuck

Fits lower chuck. Blades are automatically guided to center of chuck and locked securely with thumb screw. Saves time on interior cuts.

**No. 715** Self-centering chuck for No. 1200 and No. 1440 Scroll Saws ..... **\$.75**  
Shipping Weight 5 oz. Code Word LACHU.

#### Lower Saber Blade Guide

Supports saber blade directly beneath table. Enables perfect straight-line work when used in conjunction with upper guide.

**No. 1204** Lower Saber Blade Guide with post, nut and thumb-screw for No. 1200 and No. 1440 scroll saw ..... **\$.85**  
Shipping Weight 10 oz. Code Word LUXLS.

#### Sanding Attachment

Half round sanding drum sands convex, concave, or flat surfaces. Saves hours of time. Knurled knob at top expands body and tightens garnet sleeve securely. 15/16" wide, 1/2" thick, 2 1/2" long, 1/4" shank. Fits lower chuck on 1200 and 1440 Scroll Saws.

**No. 711** Sanding Attachment fits 24" Scroll Saw with 1 Sleeve ..... **\$1.35**  
Shipping Weight 8 oz. Code Word SANAT.

**No. 841** Garnet paper sleeves (medium) 1/2 dozen ..... **\$.60**  
Ship. Wgt. 6 oz. approx. Code Word SASLK.

**No. 842** Garnet paper sleeves (fine) 1/2 dozen ..... **\$.60**  
Ship. Wgt. 8 oz. approx. Code Word SASLM.

#### Saber Blades for Wood

Made of best steel, accurately hardened and set. Are 5" long overall.

No. of Blade	Thickness and Width	Teeth Per In.	Code Word	Price Per 1/2 Doz.
703	.025" x .187"	9	SABLA	\$0.75
704	.035" x .250"	7	SABLB	.75

Ship. Wt. Per Pkg. of Six Approximately 5 oz.

### MACHINE FILES

1/4 Inch Shank, Shipping Weight 4 Oz. Each	
726 Square, FILEA.....	\$0.60
727 Crochet, FILEB.....	.60
728 1/2 Round, FILEC.....	.60
729 Round, FILED.....	.60
730 3 Square, FILEE.....	.60
731 Pillar, FILEF.....	.60
740 Set of Above 6.....	\$3.30
Shipping Weight 8 Oz. Code FILEX	

ROUND 15/64 No. 320	
1/4 Inch Shank, Shipping Weight, 3 Oz. Each	
751 Square, SAFIL.....	\$0.50
752 Crochet, SAFIM.....	.50
753 1/2 Round, SAFIN.....	.50
754 Round, SAFIO.....	.50
755 3 Square, SAFIP.....	.50
756 Pillar, SAFIR.....	.50
757 Lozenge, SAFIS.....	.50
758 Knife, SAFIT.....	.50
760 Set of above 8.....	3.65
Shipping Weight 6 Oz. Code SAFIV	

## NEW Scroll-Saw Blades For All Types of Material

It has always been a problem to be sure that you were buying the right type of saw blade for the material you wanted to saw. Now, with this new complete listing you will find just the type of blade you want.

These blades are the finest obtainable, 5" long with accurately spaced teeth—properly set and hardened. Ends of blade have 5/8" blank for fastening into chuck. The number in parentheses following the catalog number is the number of the old similar blade. Gross price applies only to lots of 1 gross or more of one kind of blade.

Size, Inches	No. Teeth	Code Word	Per Doz.	Per Gross
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Fret saw blades with wide spaced teeth (not set—not tempered for metal) for sawing wood where extremely thin cut is required—very fast cutting.

<b>No. 81</b>	.010x.070	14	BLACA	\$ .55	\$ 3.75
<b>No. 82</b>	.010x.055	16	BLACB	.55	3.75
<b>No. 83</b>	(10035-21) .010x.045	18	BLACC	.55	3.75
<b>No. 84</b>	(70028-21) 008x.035	20	BLACD	.40	3.00

Fret saw blades, wide spaced teeth approx. .010" thicker than above blades (not set). Tempered for sawing plastics, bone, celluloid, etc. Very fast in wood.

<b>No. 85</b>	(20072-15) .020x.055	15	BLACE	.55	3.75
<b>No. 86</b>	(20085-12) .020x.065	12	BLACF	.55	3.75
<b>No. 87</b>	.020x.070	7	BLACG	.70	5.00
<b>No. 88</b>	.020x.110	7	BLACH	.70	5.00

Fig saw blades, filed and set teeth, oil hardened and of medium temper for sawing wood and other substances—will also saw soft metals.

<b>No. 91</b>	(20125-15) .020x.110	15	BLACI	.50	3.45
<b>No. 92</b>	(20125-10) .020x.110	10	BLACJ	.50	3.45
<b>No. 93</b>	(28187-10) .028x.187	10	BLACK	.70	5.00
<b>No. 94</b>	(28250-7) .028x.250	7	BLACL	.85	6.00

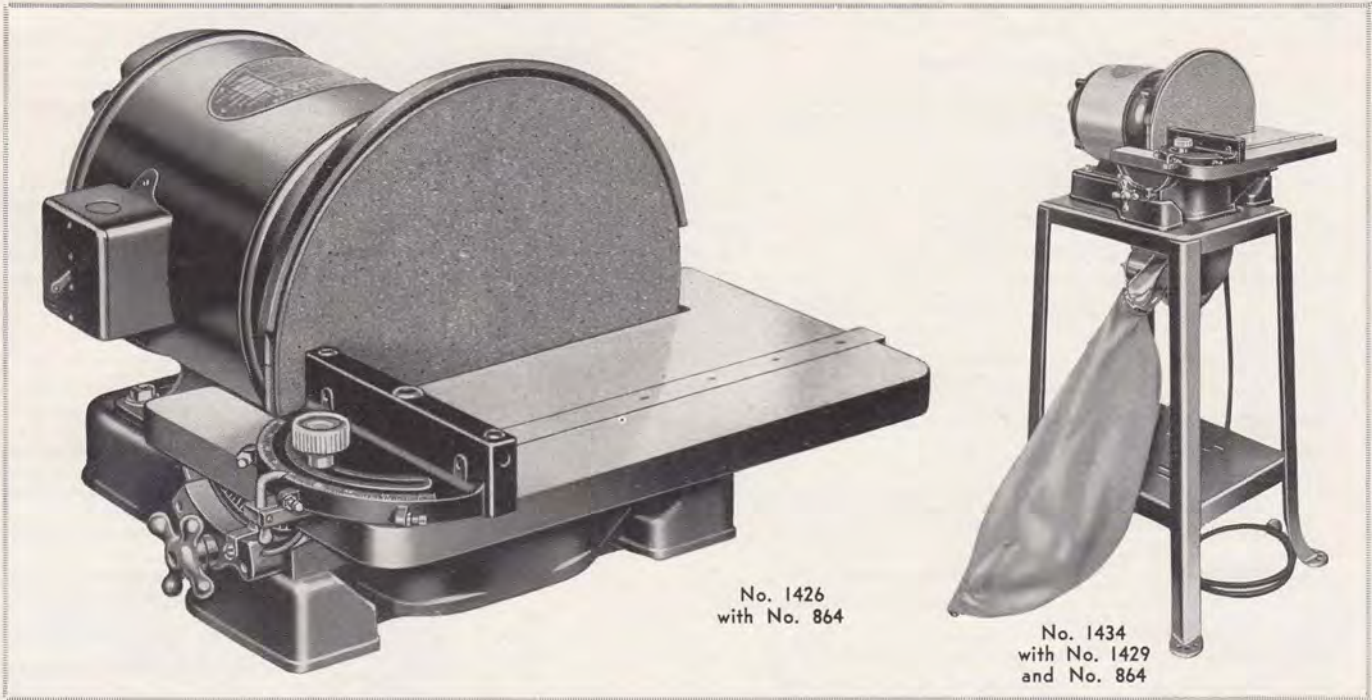
Piercing saw blade (not set) hardened and tempered for scroll sawing metals, bone, pearl, etc. Used most exclusively in fine metal arts. Will discolor wood at high speed because teeth are not set.

<b>No. 95</b>	(16054-30) .016x.054	30	BLACM	.55	3.75
<b>No. 96</b>	(16054-21) .016x.054	20	BLACN	.55	3.75
<b>No. 97</b>	(20125-15) .020x.070	15	BLACO	.50	3.45
<b>No. 98</b>	(20085-12) .020x.085	12	BLACP	.55	3.75

Scroll saw blades with set teeth hardened and tempered for sawing metals. Used extensively for sawing templates, light and heavy metal craft, electrolytic metals, etc. Nos. 55, 56, and 61 also good wood cutters.

<b>No. 58</b>	.020x.070	32	BLACQ	.70	5.00
<b>No. 59</b>	.020x.070	20	BLACR	.70	5.00
<b>No. 60</b>	(20072-15) .020x.070	15	BLACS	.55	3.75
<b>No. 61</b>	(20085-12) .020x.085	15	BLACT	.55	3.75
<b>No. 64</b>	(20125-20) .020x.110	20	BLACU	.70	5.00
<b>No. 65</b>	(28250-20) Heavy Duty Hack Saw Blade .028x.025	20	BLACV	1.70	12.00

# THIS DISK SANDER IS ENGINEERED FOR HIGH-GRADE WORK



No. 1426  
with No. 864

No. 1434  
with No. 1429  
and No. 864

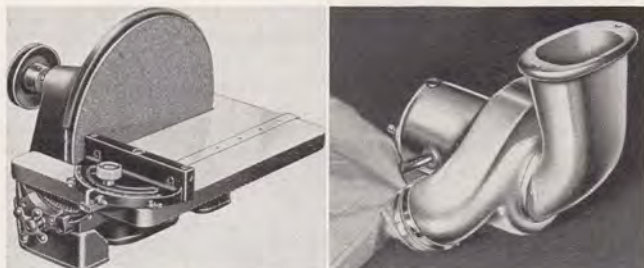
## For FINISHING . . . MITERING . . . SQUARING . . . GRINDING . . .

DESIGNED to meet every requirement for accurate sanding, this new Disk Sander is not just another sander, but a high-grade machine tool for equally high-grade work. From its completely machined, true-running 12" disk to its large surface table and its husky spindle, carried on self-sealed ball bearings, it is designed for long life, low power consumption and accurate, dependable results.

The direct-motor-drive model can be used with any of our standard 1/2 H. P. ball bearing motors in 8 1/2" frame. The disk in this model fits directly onto the end of the motor shaft, and makes the unit completely self-contained. The belt-drive model makes it possible to use any available motor; to use motors built for odd voltages or frequencies, or to vary the speed to suit the job.

Disk is specially machined to insure proper adhesion of abrasive disks, and the use of "Distic" for applying disks adds the last touch of convenience to the machine. There is no need for messy gluing of disks, no removal of the disk from the machine, no waiting overnight for the new abrasive disks to dry. Abrasive disks can be renewed every few minutes if necessary.

From the pattern shop to the production line in the plant, this machine is adaptable to a very wide variety of operations. In addition to its usefulness for accurate sanding, it can be used for fining and finishing plastics, bone, celluloid and similar materials; it is used for light grinding and finishing in the metal shop, or for squaring, plain and compound miters, disk and curved-work finishing—for all work where accurate finishing to a line or layout is important.



No. 1425 Belt Driven Sander with No. 864 Miter Gage

No. 1429 Sawdust Blower is practical and efficient.

### Sawdust Blower is Practical

Owing to the efficient design of the housing in this sander, an exhaust blower for sawdust removal is really practical. No. 1429 blower applied to this sander makes it completely portable, independent of the shop blower system, and removes one of the drawbacks of the ordinary disk sander. The motor of this blower is of the universal type and will operate on 110 volts, A.C. or D.C. Supplied only for 110-volt current.

### Specifications

Overall dimensions: motor-drive bench model, 16 1/4" wide, 13 1/2" high, 22 3/4" front to rear. Belt-drive bench model, 16 1/4" wide, 13 1/2" high, 17" front to rear. Table 9 3/4" x 16 1/4". Polished surface, with 3/8" x 3/4" slot for No. 864 miter gage. Table tilts 45 degrees for front. Carried on rigid, well-designed trunnions, with large, convenient trunnion-lock knobs. Tilt scale on front trunnion.

Cat. No.	Description	Wt. Lbs.	Code Word	Price
<b>DIRECT MOTOR DRIVEN MODELS</b>				
1426	Direct Motor-Driven Disc Sander, with Disk, Base and Table, without Miter Gage Stand or Motor	60	DISKP	18.85
1434	Direct Motor-Driven Unit consisting of No. 1426 Sander, No. 1432 Stand. Without Motor or Miter Gage. Use any 1/2 H. P. Motor in 8 1/2" Frame—See Pages 43 & 44	100	DISKY	27.35
<b>BELT DRIVEN MODELS</b>				
1425	Belt Driven Disc Sander with Disc, Drive Shaft and 4" Arbor Pulley. Without Miter Gage	75	DISKO	24.85
1433	Belt Driven Unit Consisting of No. 1425 Sander, No. 1432 Stand, No. 583 V-Belt, and No. 5450 Pulley, Without Motor, Switch Rod or Miter Gage	120	DISKV	35.10
<b>ACCESSORIES</b>				
1427	12" Garnet Discs, Medium, 6 per Pkg.	3	DISKR	1.40
1428	12" Aluminous-Oxide Discs for Metal, Medium 6 per Pkg.	3	DISKS	1.60
1429	Sawdust Blower and Adapter for Disc Sander complete with Bag, Adapter, Switch, Cord and Plug. For 110 V., A. C. or D. C. Only	15	DISKT	29.90
1432	Steel Stand for Disc Sander. Top 12 1/2" x 16 1/4", 31 1/2" high. Use No. 583 V-Belt for No. 1425 Sander and No. 1334 Switch Rod	40	DISKW	8.50
149	"Distic" for Applying Discs, per Stick	1	DISIC	.70
864	Miter Gage for 3/8" x 3/4" Groove	4 1/2	NECMI	3.50

# BELT SANDER OF UNUSUAL VALUE

HERE is a 6" belt-type sanding machine that is heavy and husky enough to do any of the dozens of sanding, polishing and finishing operations to be found around the average shop—and yet is portable enough to be used just where it is wanted.

Every feature of its design has been studied to overcome the disadvantages usually found in machines of this type. The frame is heavy and substantial, the adjustments are convenient and positive in action, attachments are quickly installed or removed, it may be used either vertically or horizontally as required, it can be adapted for use on wood, metal, plastic and many other materials—it is the ideal type of small all-around finishing machine for the shop.

## Adapted for Many Industrial Finishing Operations

Many machine and manufacturing shops use this machine for polishing and sizing metal parts. Die-casters, also, use it as a finishing and polishing machine, with a great saving in power cost over larger machines. For finishing, fining and surfacing plastic parts, also, it has found wide acceptance. Adaptable for practically any small industrial finishing operation.

## Used Vertically or Horizontally

This machine may be set horizontally, as shown at right below, and equipped with a wood fence for edge or face sanding, if required. Or it may be used vertically, in connection with the 7½" x 14¾" tilting table as shown at top of page, for a wide variety of operations in both wood and metal.

## Completely Enclosed and Thoroughly Guarded

No more completely enclosed or thoroughly guarded sander is available, regardless of size or price. Only the portion of the sanding belt that is being used is open, the ends and bottom of the belt, as well as the drums, being completely covered. The guard covering the end drum may be removed in a moment, for use in finishing long materials, or for sanding curved work. This complete enclosure also increases the efficiency of the dust-removal system.

## Specifications

Completely ball-bearing equipped. Double-seal bearings, lubricated at the factory for life. Completely enclosed and guarded in accordance with all safety requirements. Exceptionally heavy main drive shaft, carrying large diameter drum (5½"). Large driving pulley to transmit power. No rubber covering required on drums, thus eliminating one source of replacement expense. Adjustable deflector on drum hood catches practically all sawdust. Hood is provided with suction spout. Machine operates vertically as well as horizontally. Cloth-backed belts, 6" wide by 48-5/16" long. Aluminum-oxide belts for metal finishing. Tilting table 7½" by 14¾", with ¾" by ¾" groove for miter gage, is available for use in vertical position. Adjustable fence for edge sanding and adjustable back stop for flat sanding are available for use in horizontal position. Welded steel stand available to make machine completely portable. Belt Guard available to complete guarding of machine.

Cat. No.	Description	Ship. Wt. Lbs.	Code Word	Price
1402	Belt Sander Unit Consisting of No. 1400 Sander, No. 560 V-Belt, No. 5500 5" V-Pulley ¾" Bore, and No. 1406 Steel Stand. Without Fence, Backstop or Table, Motor, Belt Guard or Switch Rod.....	144	SANDC	\$41.10
1400	Belt Sander Only as Shown Right with One No. 80 Grit Lapless Garnet Belt. Without Fence, Backstop, Table, Motor, Belt or Motor Pulley....	110	SANDA	32.85
560	V-Belt, 57½" Inside Circum.....	1	EICVB	1.00
5500	Motor Pulley, 5" Diam. ¾" Bore.....	1½	PULOH	.75
1401	Tilting Table for No. 1400 Sander.....	20	SANDB	6.85
1403	Backstop Complete with Bracket.....	4	SANDD	1.85
1410	Wood Fence (3¼" x 17½") with Brackets.....	5	SANDL	2.60
1406	Steel Stand, Top (7½" x 15½") 24¼" High....	30	SANST	6.50
1411	Belt Guard with Screws.....	35	SANDM	8.95
1412	6" Garnet Belt for Wood, 80 Grit (fine).....	1	SANDN	1.10
1413	6" Garnet Belt, 40 Grit (Coarse).....	1	SANDO	1.25
1414	6" Alum. Oxide Belt for Metal, 100 Grit (fine)...	1	SANDP	1.10
1415	6" Alum. Oxide Belt for Metal, 50 Grit (coarse)...	1	SANDQ	1.10
1420	Sawdust Blower with Mounting Adapter, for 1400 Sander, Cloth Bag, Built-In Switch, Cord and Plug 110 V. A. C. or D. C. Only.....	11	SANDV	29.50

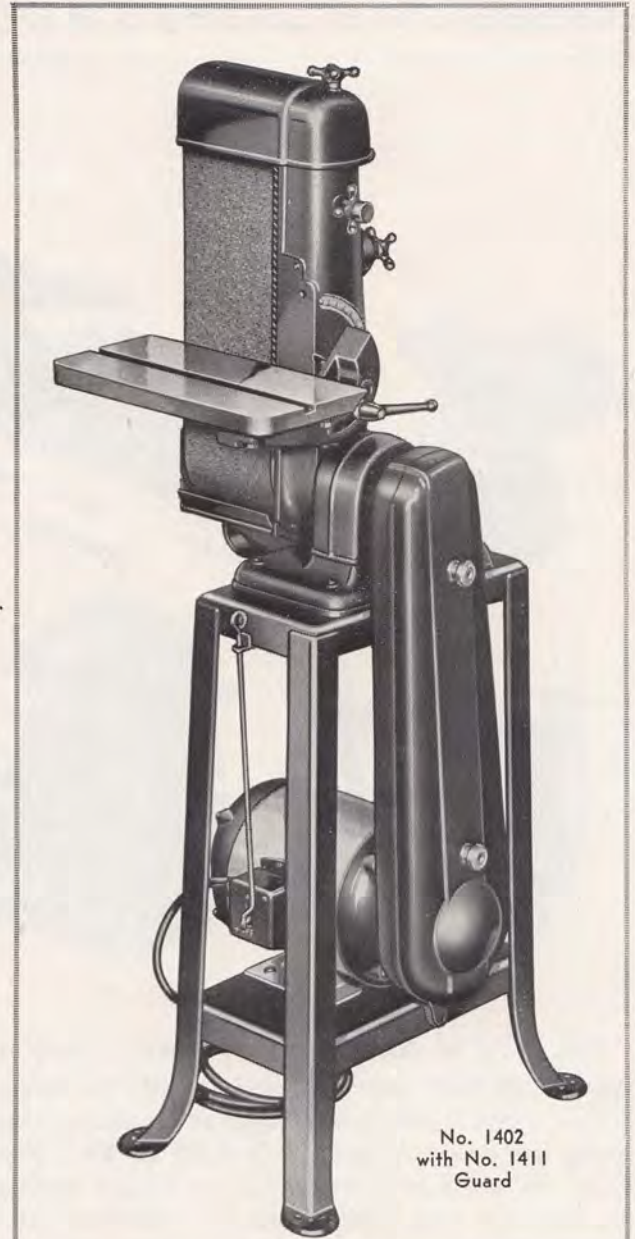
Motors No. 9100 and 9400 Recommended. Use No. 1334 Switch Rod. See Pages 43-44.



Above. A close-up view of the heavy trunnion that carries the tilting table, showing the swinging stop link and adjustable stop screws. A tilting scale and adjustable pointer are also provided. Right. View from rear, showing adjustable back stop and its



bracket. This is available for use in sanding flat work, to prevent it from being carried along with the belt.



No. 1402 with No. 1411 Guard

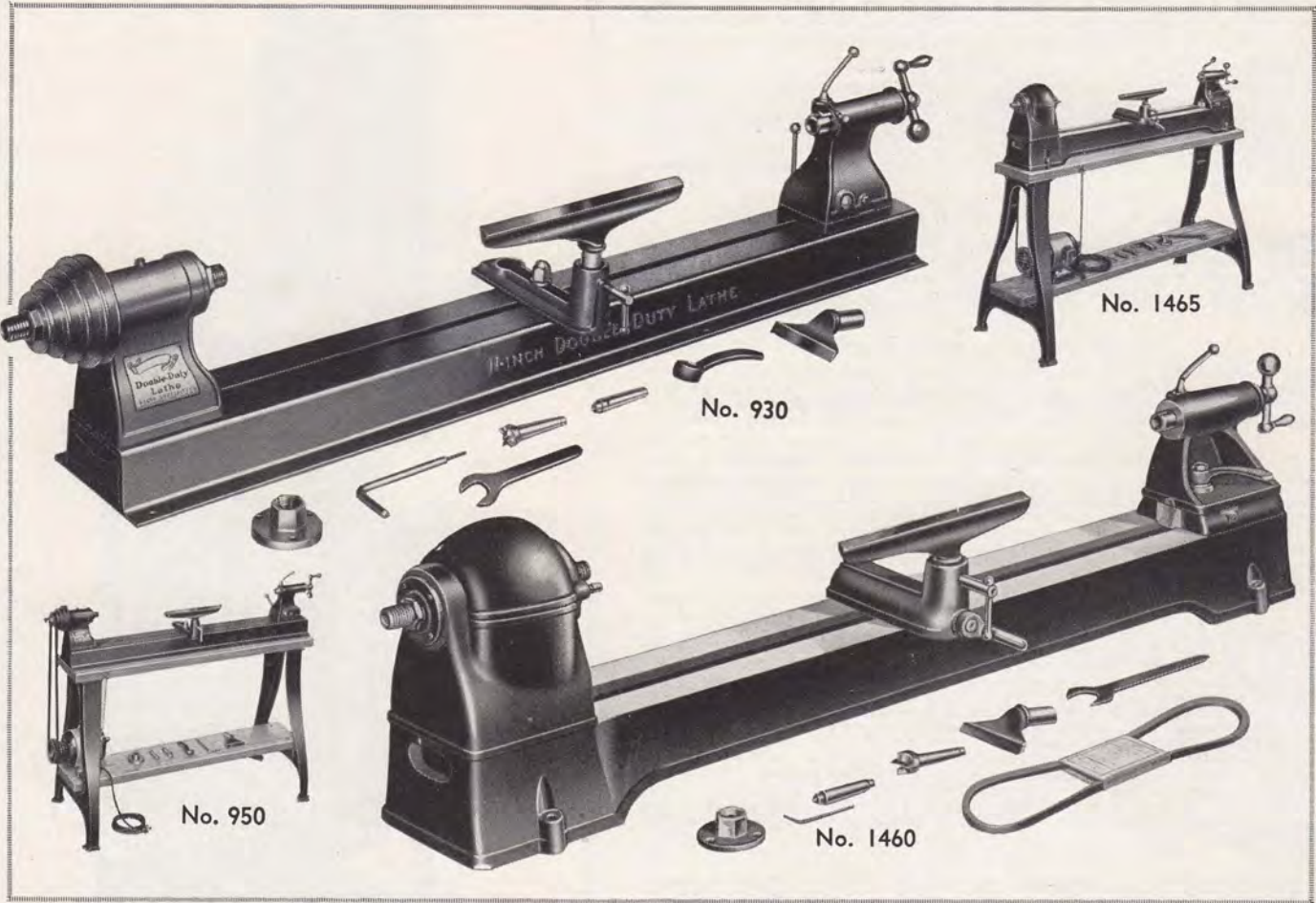


No. 1400 with No. 1410 Fence

No. 1420 Sawdust Blower (right) is of special value to the production and school shop because actual test show that 90% of the saw dust made is drawn into the cloth bag. Universal type motor for 110 V. A. C. or D. C. only.



# THESE TWO LATHES ARE ACCURATE, RIGID AND SAFE



## No. 930 11-Inch Timken Bearing Lathe

The No. 930 Lathe swings 11" and 37" between centers. It has a rigid, strong steel bed, self-indexing headstock, four speeds from 900 to 3400 R.P.M., No. 2 Morse taper centers in head and tail stock, Timken bearings in head for long wear, a full 1 1/4" diameter hollow spindle threaded inboard and outboard (1" diameter, 8 threads per inch) for chuck and face plate work 5/8" hole through center for repetition work. Thousands of these dependable lathes are in daily use in shops all over the world. Its rigidity, accuracy and low price make it a favorite unit.

This lathe was designed with only one purpose in mind:—to provide the biggest amount of lathe for the least amount of money.

No.	Description	Ship. Wt. Lbs.	Code Word	Price
930	11" Lathe with accessories as shown. Without belt, motor or motor pulley.....	82	DUBLA	\$29.90
950	11" Lathe Unit consisting of No. 930 Lathe, No. 1463 Stand, No. 932 Motor pulley and No. 588 V-Belt, Without motor or switch rod.....	190	DUBUN	55.10
932	Four Step Motor Pulley, 1/2" bore.....	2	DUBLC	1.25
588	V Belt, 25 5/16" cent. to cent.....	8 oz.	FORVC	1.10

## No. 1460 12-Inch Ball Bearing Lathe

Here is a lathe that provides the biggest amount of lathe for the least amount of money. Swing 12" by 37" between centers. It has an exceptionally heavy cast iron base machined perfectly true for accuracy. Indexing device on heavy cast iron head stock—complete guarding on belt—full 1 1/4" spindle with 5/8" hole and No. 2 Morse taper for centers—inboard and outboard nose threaded 1" diameter, 8 threads per inch—Spindle carried on two heavy-duty sealed-for-life New Departure ball bearings which require no lubrication—speeds 900 to 3400 R.P.M.—tailstock is heavy, has self ejecting center—these are but few of the reasons why this lathe is the unit you want for YOUR shop.

No.	Description	Ship. Wt. Lbs.	Code Word	Price
1460	12" Ball Bearing Lathe with accessories as shown. Without Motor or Motor Pulley...	135	CASTL	46.85
1465	12" Lathe Unit consisting of No. 1460 Lathe, No. 1463 Stand, No. 932 Motor Pulley. Without Motor or Switch Rod.....	253	CASTR	70.95
932	Four Step Motor Pulley 1/2" Bore.....	2	DUBLC	1.25
1463	Lathe Stand. Legs, Top, Shelf and Bolts..	118	CASTP	22.85

Motor No. 6400 recommended. Use No. 1334 Switch Rod. See Pages 43 & 44.

**THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.**

# Accessories for 11 and 12-Inch Lathes and Lathes with No. 2 Morse Taper

No. 933—Drive center for 11" and 12" lathes. Fits any headstock with No. 2 Morse taper hole. Has replaceable center pin and 4 accurately milled teeth ..... **\$1.00**  
Shipping Weight 10 oz. Code Word DUBLD.



No. 934—Cup center for 11" and 12" lathes. Fits any tailstock with No. 2 Morse taper hole. Has replaceable center pin. Hardened and polished. Ship. Wt. 10 oz. Code Word DUBLE. **\$.90**



No. 935—Adapter for 11" and 12" lathes. Has No. 2 Morse taper shank on one end—other end 1/2" diameter. Enables use of all attachments with 1/2" bore to be used. .... **\$.85**  
Shipping Weight 10 oz. Code Word DUBLF.



No. 940—Screw center for 11" and 12" lathes. Fits any headstock with No. 2 Morse taper hole. Replaceable screw 1 1/2" long. .... **\$1.25**  
Ship. Wt. 14 oz. Code Word DUBLJ.

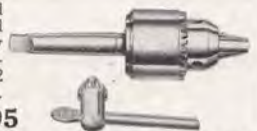


Screw-on arbor for 11" and 12" lathes. Makes grinder or buffer out of lathe.

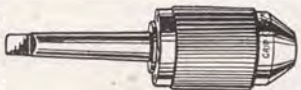
No. 144—Right hand ... **\$1.25**  
Sh. Wt. 1 lb. Code Word ARBOS.  
No. 145—Left Hand. .... **\$1.25**  
Ship. Wt. 1 lb. Code Wd. ARBOT.



No. 968—Geared chuck for 11" and 12" lathes. Fits any headstock or tailstock with No. 2 Morse taper hole. Capacity 1/2" with key. .... **\$6.95**  
Shipping Weight 2 1/2 lbs. Code Word CHGEA.



No. 166—Keyless chuck for 11" and 12" lathes. Fits any headstock or tailstock with No. 2 Morse taper hole. Holds drills up to 1 1/2". Invaluable for drilling **\$3.40**  
Shipping Weight 2 1/2 lbs. Code Word CHTAP.



No. 163—3"x3" Sanding drum for 11" and 12" lathes. Fits any headstock with No. 2 Morse taper hole. See page 41 for sanding sleeves **\$2.65**  
Shipping Weight 2 1/2 lbs. Code Word SATAP.



No. 164—1 3/4"x2" sanding drum for 11" and 12" lathes. Fits any headstock with No. 2 Morse taper hole. See page 41 for sanding sleeves ..... **\$1.95**  
Shipping Weight 1 3/4 lbs. Code Word SATAQ.



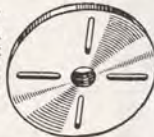
No. 938—5" handwheel for 11" and 12" lathes. Left hand thread only. Used for quick stopping ..... **\$1.95**  
Ship. Wt. 1 1/2 lbs. Code Wd. DUBLI.



No. 936—3" faceplate for 11" and 12" lathes. Faced true, has three screw holes. R. H. thread only ..... **\$1.00**  
Ship. Wt. 1 lb. Code Wd. DUBLG.



No. 937—6" faceplate for 11" and 12" lathes. Has special thread to fit right hand or left hand threaded spindles ..... **\$2.25**  
Shipping Weight 3 lbs. Code Word DUBLH.

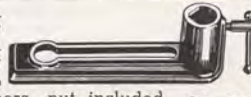


No. 948—Steady Rest for 11" lathe. .... **\$3.50**  
Sh. Wt. 7 lbs. Code Wd. DUBRE.



No. 1468—Steady Rest for 12" lathe. .... **\$3.65**  
Ship. Wt. 7 1/2 lbs. Code CASTU. Capacity 2 1/4" dia. Prevents vibration on long and slender work.

No. 941—Tool Support base for 11" lathe only. V-shaped hole for 1/2" to 1" shank. Clamp plate spring, washers, nut included. 3 1/2" high ..... **\$1.10**  
Shipping Weight 4 1/2 lbs. Code Word DUBLK.



No. 1461—Tool Support base for 12" lathe only. V-shaped hole for 1/2" to 1" shank. Clamp plate spring, washers, nut included. 3 1/2" high ..... **\$3.30**  
Shipping Weight 5 lbs. Code Word CASTM.



No. 692—12" tool rest. 1" dia. shank. Heavy, strong, designed for minimum interference with tools and hands ..... **\$1.10**  
Shipping Weight 3 lbs. Code Word TOSUM.



No. 690—4" tool rest. 1" dia. shank. Very strong and heavy ..... **\$.75**  
Ship. Wt. 1 3/4 lbs. Code TOSUP.



No. 695—Right-angle tool rest. 1" dia. shank. Extremely useful for faceplate work **\$1.50**  
Ship. Wt. 3 lbs. Code Wd. TOSRA



No. 694—24" tool rest for extra long turnings. Has two 1" diameter shanks. This rest requires an extra tool rest base for the lathe on which it is used. .... **\$2.15**  
Shipping Weight 7 lbs. Code Word TOSUL.



No. 697—Heavy rigid floor stand for faceplate work on left of spindle. Tripod legs, pipe support. V-hole for 1/2" to 1" shank. Knocked down ..... **\$8.50**  
Ship. Wt. 44 lbs. Code TOSTA.



No. 951—8 1/2" Sanding disk for 11" lathe only. With one garnet disc. R. H. thread only ..... **\$2.25**  
Shipping Wt. 2 1/4 lbs. Code Word DUBLM.



Sanding table for 11" lathe only. Used with No. 951 Sanding disc. A rigid, solid table which tilts. Has graduated scale, 1/2" groove for miter gage. No. 347—Sanding Table ..... **\$5.25**  
Sh. Wt. 15 lbs. Code DESAT.



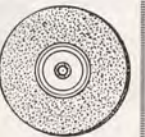
No. 3114—Wire, fine. GRIAH ..... **\$1.45**  
No. 116—Wire, medium WIRRO ..... **1.50**  
No. 3113—Wire, coarse GRIAG ..... **1.15**  
No. 3115—Tampico fibre. GRIAI ..... **1.20**  
Shipping Weight 1 lb. each.



No. 113—6" dia. Two section buffing wheel. 1/2" hole ..... **\$.65**  
Ship. Wt. 8 oz. Code BUFFO.

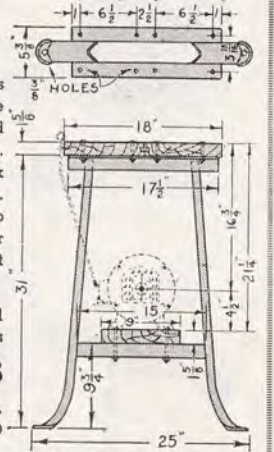


High grade fast cutting emery wheels. 1/2" wide, 1/2" hole. No. 3101—50 Grit. 6" GRIAB ..... **\$1.00**  
No. 3102—60 Grit. 6" GRIAC ..... **\$1.00**  
No. 111—60 Grit. 5" GRIND ..... **\$1.25**  
Shipping Wt. 1 1/4 lbs. each.



## BENCH LEGS

These bench legs are strongly made of welded steel and make a rigid bench. Use planks 2" thick and 9 1/2" wide. Shelf and top heights suit all our standard belt lengths.



No. 344—Steel bench leg only, as shown, Each .... **\$3.25**  
Ship. Wt. 21 1/2 lbs. Code Word LEGSO

## WOOD TURNING TOOLS

Made of special alloy-steel they will not loose their edge. Extra long handles, 1 1/4" x 10 1/2". Shipping weight 1 1/4 lbs. each.

- No. 121—1" Skew Chisel SKERE ..... **\$1.35**
- No. 122—3/8" Gouge GOUGU ..... **1.35**
- No. 123—1/4" Gouge GOUSA ..... **.90**
- No. 124—1/2" Skew Chisel SKEWO ..... **.80**
- No. 125—1/8" Parting Tool PARTO ..... **.80**
- No. 126—1/2" Gouge GOUGO ..... **1.00**
- No. 127—1/2" Spear Point SPEAR ..... **.80**
- No. 128—1/2" Round Nose RONOS ..... **.85**
- No. 130—Set of above 8 Tools TOSET 6 lbs. .... **7.50**

## Metal Turning Lathes and Accessories

The addition of a countershaft unit (as illustrated) to the 11-inch and 12-inch lathes turns these units into efficient and accurate 16-speed lathes for metal working. The slower speeds can be used for large face plate wood turning. The addition of the slide rest gives you a practical machine for light metal work. Practically everything in lathe work with the exception of screw cutting can be done. Speeds range from 350 to 3160 R.P.M. For 11 and 12-inch lathes. Illustration shows 12-inch lathe—11-inch lathe is similar in appearance.

No.	Description	Wt. Lbs.	Code Word	Price
1466	12" 16 Speed Lathe (illustrated) with No. 1460 Lathe, No. 1463 Stand, No. 1464 countershaft. Without Motor or Switch Rod . . . . .	278	CASTS	\$79.85
952-A	11" 16 Speed Lathe with No. 930 Lathe, No. 1464 Countershaft and No. 588 Belt. Without Motor or Switch Rod . . . . .	225	DUBUT	64.00
1464	Countershaft Unit, Consisting of Two No. 370 Hangers, 1 No. 378 Shaft, 1 No. 718 Pulley, 1/2" Bore for Motor, 1 No. 720 Pulley, 3/4" Bore for Shaft, 1 No. 932 Pulley, 3/4" Bore for Shaft, 1 No. 284 V-Belt, 2 No. 374 Collars, Bolts and Nuts . . . . .	25	CASTQ	10.15

## Metal Turning and Spinning Accessories

### NO. 1462 COMPOUND SLIDE REST

This slide rest is a high grade accessory, heavily and accurately built, with dovetail slides and a graduated compound base rotating through 360 degrees. Feed screws are covered to protect them from dirt and chips, and are fitted with micrometer sleeves, accurately graduated. Alignment bar on front of 11" lathe model can be set for permanent alignment with centers. This is a high-grade slide rest at a reasonable price. Should be used only with No. 952-A or No. 1466 sixteen speed units, or other lathes with 9" to 12" swing and with speeds low enough for metal turning.

965	Compound Slide Rest for 11" Lathe, Without Tool Holder or Tools . . . . .	35	DURST	\$19.50
1462	Compound Slide Rest for 12" Lathe same as 965 but with Sub-Base. Without Alignment Bar . . . . .	38	CASTO	20.85
1467	Sub-Base, Clamp and Bolts only—To Convert No. 965 into No. 1462 . . . . .	5	CASTT	2.30

### NO. 962 BORING BARS AND HOLDER

Holds both bars and square 1/4" bits. Two holes in holder facilitate holding of tool. Tool steel, case hardened.

962	Boring Bar Holder with 1/8", 3/16", 1/4" Bars . . . . .	12 Oz.	DUBBO	\$3.00
966	Set of Three Boring Bars, 1/8", 3/16" and 1/4" . . . . .	8 Oz.	DUBOR	1.15

### NO. 963 UNIVERSAL CHUCK

High grade self-centering universal chuck, with heavy cast iron body and two sets of hardened-steel jaws, adaptable for either 11" or 12" lathes. For use with No. 952-A or 1466 lathes, order chuck with No. 963-A back plate. For use with other lathes order back plate No. 964. Back plates must be turned to fit chuck while mounted on lathe on which they are to be used, in order to insure accuracy. Diameter of chuck, 4". Maximum capacity, 4".

963	3 Jaw Universal Chuck with Inside and Outside Hardened Steel Jaws, and Wrench. Without Back Plate . . . . .	6	CHUNP	\$13.85
963-A	Back Plate for No. 963, Turned and Threaded to Fit Spindle of No. 930 and 1460 Lathes But Not Fitted to Chuck . . . . .	2	CHUPI	1.75
964	Back Plate for No. 963 and 943-A completely Unfinished. For Lathes of Other Make . . . . .	2	CHUPL	.70

### NO. 943-A INDEPENDENT CHUCK

Four-jaw. Very heavy cast iron body with hardened steel jaws. Chuck diameter, 4" Maximum capacity 4 1/2". Each jaw is independently adjustable.

943-A	4-Jaw Chuck. Without Back Plate . . . . .	5	DUCHO	\$7.95
943-B	Back Plate for No. 943-A Chuck, Machined to Fit No. 930 and 1460 Lathes . . . . .	2	DUCHI	1.50

### NO. 1491 METAL SPINNING TOOL REST

Movable pin and holes in top of rest facilitate placing of spinning tool for proper leverage.

1491	Tool Rest for Metal Spinning . . . . .	4	SPINB	2.25
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### NO. 1490 BALL-BEARING CENTER

Fitted with 60° center, cup center (pin may be removed) and flat center. Used for clamping follow block in metal spinning No. 2 Morse taper shank.

1490	Ball-Bearing Center as Illustrated . . . . .	1 1/2	SPINA	5.35
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### NO. 939 PLAIN 60° CENTER

This hardened and accurately ground center has a 60° point and a No. 2 Morse taper

939	60° Plain Center . . . . .	12 Oz.	DUBLO	1.00
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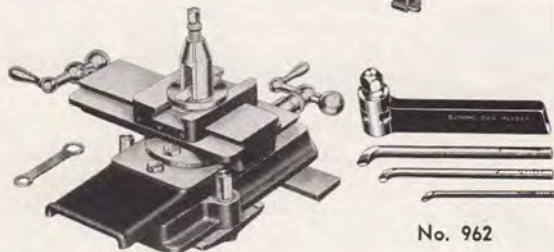
### TOOLS FOR METAL SPINNING

These fine metal spinning tools are heavy and strong so that the spinning metal may be forced over the form with ease and safety. Made in four different styles, each with handle.

1492	Flat Tool with Handle . . . . .	2 1/2	SPINC	2.65
1493	Point Tool with Handle . . . . .	2 1/2	SPIND	2.65
1494	Cut-Off Tool with Handle . . . . .	2 1/2	SPINE	2.65
1495	Beading Tool with Extra Wheel, and Handle . . . . .	2 1/2	SPINF	3.85
1496	Complete Set of Above 4 Tools . . . . .	9	SPING	11.80

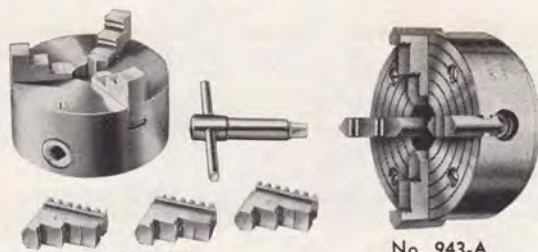


No. 1466



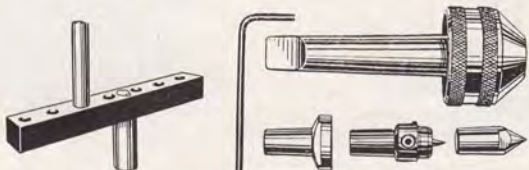
No. 962

No. 1462



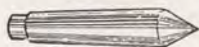
No. 943-A

No. 963

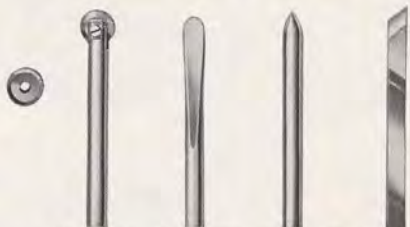


No. 1490

No. 1491



No. 939

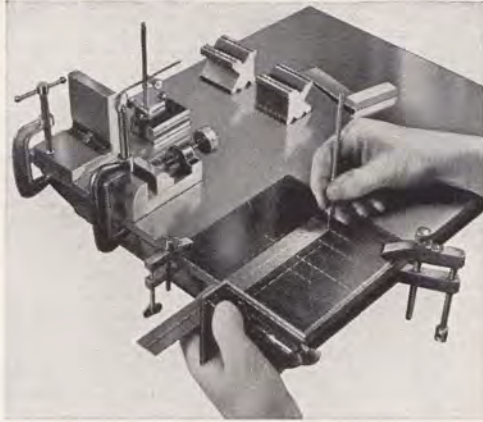


No. 1495 No. 1492 No. 1493 No. 1494



EACH TOOL IS COMPLETE WITH HANDLE

## SURFACE PLATES OFFER FEATURES FOUND ONLY IN HIGH PRICED UNITS



To make a surface plate for layout work 100% useful and convenient, four things are essential. A true surface to start with, a properly ribbed casting to insure that the surface will stay true, ledges at the edges of the plate for clamping purposes and edges that are machined square with each other and with the face.

Formerly these advantages could only be obtained in high-priced, hand-scraped precision plates, and the user was forced either to purchase a plate of this type or else buy a plate that was more or less of a makeshift without ledges or squared edges.

The plates shown here have all of the four points described above. In addition, notice the massive design and heavy ribbing which resists warping. These plates may easily be made into precision plates by simply scraping to a master plate or to each other.

The photo above shows how angle plates, vises, etc., can be clamped to the No. 640 surface plate, and how convenient the squared edges are for laying out work clamped to the plate.

No.	Description	Ship. Wt. Lbs.	Code Word	Price
640	15" x 18" x 3" Surface Plate.....	65	SURFA	\$12.90
641	16" x 22" x 3" Surface Plate.....	95	SURFB	22.50



Underside of surface plate is shown at left. Note the heavy ribbings of this massive plate and the clamping ledge all around the squared sides.

## SANDING DRUMS

Wide Drums for Drill Presses and Lathes

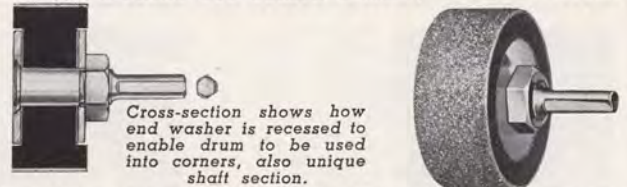


Our patented rubber-cushioned sanding drums employ a principle that insures every part of the drum being evenly expanded. Many sanding drums expand more at the center than at the ends, which means that perfectly flat work is difficult to produce with them. Others, having fasteners for the sandpaper on their surface, will "bump" every time the fastening passes over the work.

In our drum, each rubber section is separated from its neighbor by non-corrosive bakelite washers, with metal bushings next to the arbor. The disks are expanded perfectly uniformly, produce perfect work and run dead true. No. 840 drum has 1/2" diameter stem to fit 1/2" hollow spindle or chuck. Others have 1/2" bore. See page 39 for drums with No. 2 Morse taper shank to fit No. 930 and 1460 lathes.

No.	Description	Ship. Wt. Lbs.	Code Word	Price
830	3" Diam. x 3" Drum with 1 Sleeve, Fits 1/2" Diam. Shaft.....	2	SADRA	\$2.50
831	3" x 3" Coarse Garnet Sleeve, Per 6.....	8 oz.	SASLA	.90
832	3" x 3" Medium Garnet Sleeve, Per 6.....	8 oz.	SASLB	.90
833	3" x 3" Alum. Oxide Sleeve for Metal, Per 6.....	8 oz.	SASLC	1.15
835	1 3/4" x 2" Drum with 1 Sleeve, Fits 1/2" Diam. Shaft.....	1 1/4	SADRB	1.60
836	1 3/4" x 2" Medium Garnet Sleeve, Per 6.....	4 oz.	SASLE	.75
837	1 3/4" x 2" Fine Garnet Sleeves, Per 6.....	4 oz.	SASLF	.75
838	1 3/4" x 2" Alum. Oxide Sleeve for Metal, Per 6.....	4 oz.	SASLG	.90
840	1 1/2" x 2 1/2" Drum with 1 Sleeve. 1/2" Shank for Hollow Spindle.....	8 oz.	SADRC	\$1.25
841	1 1/2" x 2 1/2" Medium Garnet Sleeve, Per 6.....	4 oz.	SASLK	.60
842	1 1/2" x 2 1/2" Fine Garnet Sleeve, Per 6.....	4 oz.	SASLM	.60
847	1 1/2" x 2 1/2" Alum. Oxide Sleeve for Metal, Per 6.....	4 oz.	SASLO	.75

## Narrow Drums for Hand Drills, Flexible Shafts



Painstaking attention to every point that might add to the usefulness of the tool and the convenience of the user is reflected in such details as the recessed mounting of the end washer, as shown in the cross section. This enables the drum to be used right up into the corners, which cannot be done if the outside washer is not recessed.

Another detail is the shape of the shank. This permits the sanding drum to be used in all 5/16" collets, in all 1/2" and 3/8" three-jaw chucks and in most 1/4" three-jaw chucks.

The drums themselves are of live flexible rubber, which is expanded to hold the abrasive sleeves by tightening the spindle nut. Sleeves are of aluminous oxide and cut accurately and fast.

No.	Description	Ship. Wt. Oz.	Code Word	Price
679	1 1/2" x 1" Drum with 1 Sleeve 5/16" Shank.....	6	SANAA	\$.75
682	1 1/2" x 1" No. 40 Grit Sleeve, Per 6.....	4	SANAD	.55
683	1 1/2" x 1" No. 80 Grit Sleeve, Per 6.....	4	SANAE	.55
680	2 5/16" x 1" Drum with 1 Sleeve 5/16" Shank.....	8	SANAB	.85
684	2 5/16" x 1" No. 40 Grit Sleeve, Per 6.....	5	SANAF	.55
685	2 5/16" x 1" No. 80 Grit Sleeve, Per 6.....	5	SANAG	.55
681	3" x 1" Drum with 1 Sleeve, 5/16" Shank.....	12	SANAC	1.10
686	3" x 1" No. 40 Grit Sleeve, Per 6.....	7	SANAH	.70
687	3" x 1" No. 80 Grit Sleeve, Per 6.....	7	SANAI	.70

NOTE: Order sanding sleeves as "1 No. 831" where one package is wanted. Do NOT order "6 No. 831 sleeves," as this means 6 packages.

# ACCESSORIES AND ATTACHMENTS USEFUL IN ANY SHOP

## PULLEYS FOR V-BELTS



For belts 1/2" wide, 3/8" thick and 38° angle. Safety disc type—no spokes—not stamped. Perfectly balanced. Have 3/8" hollow head set screw, 3/8" key-way. Nos. 6100 and 6200 V-pulleys can be furnished in 3/4" bore only. All other sizes can be furnished in 1/2", 3/8" and 3/4" bores. 1/2" bore furnished unless otherwise specified. For boring to other sizes, up to 1" add 25c to catalog price. Maximum bore available on Nos. 5200 to 5300 is 3/4".

Cat. No.	Out-side Diam.	Code Word	Price Each
5200	2"	PULO A	\$ .35
5225	2 1/4"	PULO B	.40
5250	2 1/2"	PULO C	.45
5275	2 3/4"	PULO D	.45
5300	3"	PULO E	.50
5350	3 1/2"	PULO F	.55
5400	4"	PULO G	.55
5450	4 1/2"	PULO O	.65
5500	5"	PULO H	.75
5550	5 1/2"	PULO P	.85
5600	6"	PULO J	.90
5650	6 1/2"	PULO Q	1.10
5700	7"	PULO L	1.20
5800	8"	PULO K	1.50
6100	10"	PULO M	2.00
6200	12"	PULO N	2.75



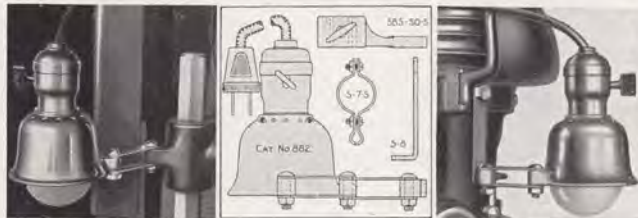
## V-BELTS

Designed to make perfect contact with the sides of the V-groove, these belts will transmit maximum horsepower with minimum slip. Cords are saturated with pure liquid rubber, imbedded in special rubber stock which resists fatigue and carries off heat.

NOTE: When ordering belts for which number is not known, measure around outside diameters of pulleys, then select belt of nearest outside circumference in the table. Do not use inside circumference.

No.	Size, Inches				Angle Deg.	Code Word	Pr. Ea.
	Out. Cir.	Ins. Cir.	Wd.	Th.			
284	30 1/8	29 3/4	1/2	3/8	38	BELTA	.75
†331	35 1/8	33 3/8	1/2	3/8	38	MULTG	.80
340	35 3/8	35	1/2	3/8	38	BELUX	.80
355	38 1/8	37	1/2	3/8	38	FORVP	.80
387	40 1/8	38 3/4	1/2	3/8	38	FORDP	.85
410	41 1/8	41	1/2	3/8	38	BELTE	.85
430	44	42 1/2	1/2	3/8	38	FORSL	.90
453	47 1/8	45 3/4	1/2	3/8	38	MORBL	.90
501	51 3/8	51 1/4	1/2	3/8	38	MORUV	1.00
510	52 1/8	51 3/8	1/2	3/8	38	JOIVB	1.00
520	54 1/4	52 3/4	1/2	3/8	38	BELTC	1.00
530	55	53 3/8	1/2	3/8	38	BELTD	1.00
560	58 3/8	57 1/2	1/2	3/8	38	EICVB	1.00
568	59 1/4	58 3/8	1/2	3/8	38	FORVD	1.00
583	60 3/4	59 3/8	1/2	3/8	38	FORBL	1.10
588	61 3/8	60 1/2	1/2	3/8	38	FORVC	1.10
595	61 3/4	60 3/4	1/2	3/8	38	BABEL	1.25
618	64 7/8	63 1/4	1/2	3/8	38	BELTL	1.25
644	66 1/8	64 1/2	1/2	3/8	38	BELTF	1.25
670	69 3/8	67 7/8	1/2	3/8	38	BELTU	1.30
*673	74 1/8	73 1/2	1/2	3/8	38	PREBL	1.00
750	76 3/4	76 1/4	1/2	3/8	38	JOBAS	1.85

\*This belt 7/8" wide, for No. 620 drill press.  
†Special belt for variable-speed scroll-saw.



## MANY USES FOR LAMP ATTACHMENT

To bring light to your work just where it is needed, in volume enough for accuracy in following layouts, yet not bright enough to glare, there is nothing quite the equal of the No. 882 lamp attachment. Swung on the built-in brackets on drill press, band saw, scroll saw or other machine, it brings the light just where it is needed, yet can be swung out of the way at touch of the finger. It furnishes every machine with its own individual illumination, and makes it independent of the shop lighting system.

It can be used as a workbench light, and provided with additional links to place it wherever wanted over a wide bench. It can be used as a sewing-machine light, as an illuminant for laboratory instruments and other purposes. Uses 15 or 25 W. Bulbs.

No.	Description	Wt. Lbs.	Code	Price Ea.
882	Lamp Attach. with Shade, Socket and Cord, Four Flat Links, Three Bolts and Attachment Bracket.	1 1/2	LAMPA	\$1.60
S-3-S	Extra Support Links, Spacer, Screw, Nut per Pair.	..	..	.15
S-7-S	Attachment Bracket for 700 Scroll Saw.	..	..	.20
S-8	Attachment Clamp for 970 Drill Press.	..	..	.15
SBS-50-S	Attach. Bracket 785 & 385 Band Saws.	..	..	.35



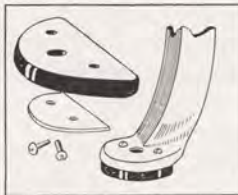
## FOUR-STEP CONE PULLEYS

Made for the same size V-belt as plain pulleys listed opposite. Pulleys may be used in pairs as listed in table below and will provide the speeds listed in the third column when used with 1725 r.p.m. motor.

All cone pulleys available in 1/2", 3/8" and 3/4" bores. 1/2" furnished unless otherwise ordered.

No. 718 Wt. 1 1/2 lbs. Code CONPA \$0.75  
No. 720 Wt. 1 1/4 lbs. Code CONPB 1.10  
No. 932 Wt. 2 1/2 lbs. Code DUBL 1.25  
No. 985 Wt. 2 1/2 lbs. Code NEWPU 1.30

Driver	Driven	Speeds with 1725 r.p.m. motor		
718	718	900	1500	2200 3450
720	720	1200	1545	1980 2575
718	720	650	1000	1300 1725
720	718	1725	2400	3400 5000
932	932	900	1400	2200 3400
985	985	590	1275	2450 5000



## RUBBER FEET FOR STEEL STANDS

Make machines run smoother and quieter. Are of the correct composition to stand hard usage, while having enough flexibility to absorb slight vibrations. Supplied with metal plates to fit in the recesses of our stand feet, and drilled and tapped for machine screws from the top of the feet.

No. 353 Set of rubber feet, with plates and screws. . . . \$ .95  
Shipping Weight 10 oz. Code Word RUBFE.

## HOLD DOWNS FOR SAW AND SHAPER



This attachment consists of a clamp which fits either side of table, and which carries adjustable springs to bear on the work. One spring is adjusted to press the work to the fence and the other to press it down to the table. With this attachment the fingers need never come near the revolving blade or cutter at all.

No. 871 Hold down for 1160 Saw with clamp, bracket and springs. Ship. Wt. 4 1/2 lbs. Code Wd. NECHO \$2.60  
No. 983 Hold down for 1180, 1188 and 1199 Shapers, posts, springs, brackets. . . . . 2.00  
Ship. Wt. 2 lbs. Code Wd. NESHD.



## MITER GAGE

An added convenience for saw work. Has individually adjustable index stops—tapered pivot insures accuracy—massive, heavy body, gives full support, will not spring—heavy 3/8" x 3/4" bar, very rigid, 17" long—full 3/8" diameter stop rods with two heavy

clamps. This gage with its inherent accuracy and rugged construction is a real production unit.

No. 864 Miter Gage Ship. Wt. 4 1/2 lbs. Code NECMI. . . . . \$3.50



## GRAY MACHINE ENAMEL

To have your entire shop match the color of your tools, use this gray machine enamel. It has a hard smooth surface—dries quickly. Carried in three shades.

	No. 101 Light	No. 102 Medium	No. 103 Dark
	PAINA	PAINB	PAINC
1 quart	\$1.15	\$1.15	\$1.45
1/2 gallon	2.10	2.10	2.75
1 gallon	4.10	4.10	5.40

Shipping weights: 1 qt., 5 lbs.; 1/2 gal., 8 lbs.; 1 gal. 14 lbs. NOTE: paint is not mailable. Shipment must be made by express or freight.



## "RUST-GO"

"Rust-Go" is a rust and grease-remover designed to remove instantly all traces of oxidation from the surface of polished iron and steel. It not only leaves a chemically clean surface, but destroys the chlorides which are primarily the cause of rust on tools and machines.

No. 100—1/2 pint \$ .50, 1/2 gallon \$2.40, 1 gallon \$4.50  
"Rust-Go" is not mailable, and is not shipped direct. your local dealer has it in stock and can supply you with the 1/2-pint size.

# OUR POWERFUL MOTORS GUARANTEE DEPENDABLE SERVICE AND LONG LIFE

Cat. No.	H. P.	R.P.M.	Volts	Cyc.	In Inches		Ship. Wt. Lbs.	Code Word	Price
					Frame	Shaft			

### 1/3 TO 1 H. P. BALL-BEARING REPULSION INDUCTION MOTORS

Equipped with heavy-duty rubber-covered cord and soft-rubber plug together with double pole switch. Made for use on either 110 or 220 Volt lines, they are normally supplied connected for 110 volts. Have double shafts—sealed-for-life New Departure Ball Bearings which need no lubrication.

6400	1/3	1725	110/220	60	6	1 1/2	34	SACCA	\$19.95
6410	1/3	1425	110/220	50	6	1 1/2	34	SACCD	19.95
6420	1/3	1425	110/220	25	6	1 1/2	34	SACCF	29.85
9000	1/3	1725	110/220	60	8 1/2	3 3/4	68	NACAA	31.85
9010	1/3	1425	110/220	50	8 1/2	3 3/4	68	NACAC	31.85
9020	1/3	1425	110/220	25	8 1/2	3 3/4	68	NACAE	33.85
9100	1/3	1725	110/220	60	8 1/2	3 3/4	80	NACBA	37.85
9110	1/3	1425	110/220	50	8 1/2	3 3/4	80	NACBC	37.85
9200	1	1725	110/220	60	8 1/2	3 3/4	85	NACDA	43.85
9210	1	1425	110/220	50	8 1/2	3 3/4	85	NACDE	43.85

### 1/4 AND 1/3 H. P. SPLIT-PHASE MOTORS

Equipped with heavy-duty, rubber covered cord and soft rubber plug together with double pole switch. 1/4 H. P. motors have wick-lubrication bronze bearings. 1/3 H. P. motors have Sealed-for-life New Departure Ball Bearings which need no lubrication. Double shafts.

6000	1/4	1725	110	60	6	1 1/2	27	SACAA	8.50
6010	1/4	1425	110	50	6	1 1/2	27	SACAD	8.50
6020	1/4	1425	110	25	6	1 1/2	27	SACAG	12.85
6300	1/3	1725	110	60	6	1 1/2	31	SACBA	13.85
6310	1/3	1425	110	50	6	1 1/2	31	SACBD	13.85
6320	1/3	1425	110	25	6	1 1/2	31	SACBG	19.85

Only 1/3 or 1/2 H. P. motors in 6" frame should be specified for use on 14" drill presses. Do not use 1/4 H. P. motors for this service. Do not use bronze bearing motors in vertical installations.

### 1/3 TO 1 H. P. 3-PHASE HEAVY-DUTY MOTORS

Do not have switch, cord or plug as motor must be connected in conduit by an electrician. Have Sealed-for-Life Ball Bearings which require no lubrication. Double shafts. 1/2 H. P. 3 phase motors in 6 inch frame cannot be used on 17" drill press.

6500	1/3	1725	220	60	6	1 1/2	31	SACDA	18.85
6600	1/3	1725	220	60	6	1 1/2	33	SACHA	23.85
6610	1/3	1425	220	50	6	1 1/2	33	SACHF	23.85
9400	1	1725	220	60	8 1/2	3 3/4	80	NACHA	38.85
9502	1	1725	220/440	60	8 1/2	3 3/4	85	NACKC	44.85

### 1/2 H. P. SLEEVE-BEARING REPULSION INDUCTION MOTORS

Equipped with plain bronze bearings with wick-oiling system. Has 8 foot heavy-duty rubber covered cord, soft rubber plug and double pole switch (switch is not mounted on separate spider in box). Has plain wood shaft protector. Should not be used for vertical installation or with No. 1426 disc sander.

8050	1/2	1725	110/220	60	8 1/2	3/4	65	EACBA	24.85
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### 1/2 AND 1 H. P. HIGH SPEED REVERSIBLE SHAPER MOTORS

No. 6900 1/2 H. P. 3450 R.P.M. ball-bearing Capacitor Motor for 110 V. 60 Cy. A. C. only. With Special 4-Wire Cord, Reversing Switch, 8-Ft. 2 Wire Cord & Plug Connected ready for Use. 3/8" Shaft, Sh. Wt. 42—Code: SACLA.....\$24.85

No. 6910 1/2 H. P. 2850 R.P.M. Ball-Bearing Capacitor Motor for 110 V. 50 Cy. A. C. only with Special 4-Wire Cord, Reversing Switch, 8-Ft. 2 Wire Cord and Plug Connected Ready for Use. 5/8" Shaft, Sh. Wt. 42; Code: SACLI.....\$24.85

No. 6920 1/2 H. P. 3450 R.P.M. Ball-Bearing Capacitor Motor for 110 V. 60 Cy. only with Plain 2-Pole Toggle Switch and 8-Ft. Cord and Plug. Without Reversing Switch or 4-Wire Cord. 3/8" Shaft, Sh. Wt. 41; Code: SACMA.....\$22.75

No. 1116 Reversing Switch only for Use on No. 6920 Motor or with Any Standard Split-Phase Motor with 4 Wire Cord, Connected, Sh. Wt. 2; Code: SWREV...\$3.95

No. 8100 1 H. P. 3450 R.P.M. Ball Bearing Repulsion-Induction Motor for 110/220 V. 60 Cy. A. C. only. With Built-in Reversing Mechanism, On-and-Off Switch Connected to Motor with BX Cable, 9 Ft. Cord and Rubber Plug, Single Shaft 3/4" Diam., Sh. Wt. 85; Code: EACCA.....\$48.85

No. 9532 1 H. P. 3450 R.P.M. Ball-Bearing 3-Phase Motor for 220/440 V. 60 Cy. A. C. only. Not furnished with Reversing Switch, On-and-Off Switch or Cord or Plug as It Should be Connected by an Electrician. Sh. Wt. 85; Code: NACKS.....\$42.85

NOTE: We can supply direct-current and alternating current motors in a wide variety of voltages and frequencies in addition to the standard motors listed here. Write for specifications and prices.

### Switch Rods Provide Finger-Tip Control

No.	For Use On These Units:	Ship. Wt. Lbs.	Code Word	Price
1330	878, 950, 1175.....	1 1/2	RODNA	.45
1331	All 11" and 14" Drill Presses.....	1 1/2	RODNB	.45
1332	All 17" Drill Presses.....	1 1/2	RODNC	.45
1333	292 and 660.....	1 1/2	RODND	.45
1334	368, 714, 777, 881, 892, 1164, 1350, 1402, 1432, 1465, and All Our Benches with Wood Tops.....	1 1/2	RODNE	.45



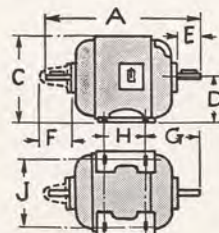
Right — Photo of Ball-bearing repulsion induction motors and Split Phase Motors.

Left — Three Phase heavy-duty motors.

Right — Sleeve-bearing Repulsion induction Motor No. 8050.

Left — No. 6900 Motor. Reversing switch at left is standard on Nos. 6900 and 6910 motors. Can also be used on any standard split-phase motor having both ends of starting winding brought out. Cannot be used on our regular repulsion-induction motors.

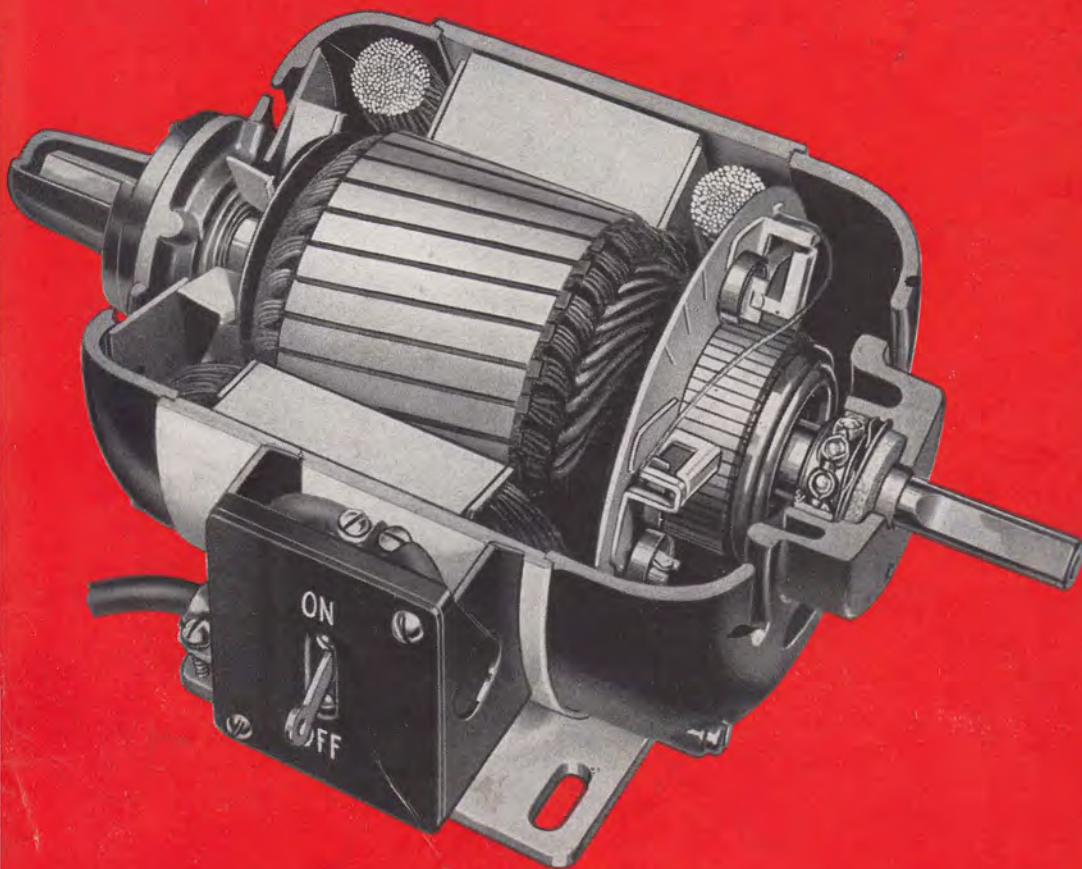
No. 8100 — Reversible High Speed Ball bearing Shaper motor.



DIMENSIONS IN INCHES

Series	A	C	D	E	F	G	H	J	Shaft
6000	10 5/8	6 7/8	3 3/4	1 3/4	2 3/8	4	3 7/8	5	1/2
6300	11 1/8	6 7/8	3 3/4	1 3/4	2 3/8	4	3 7/8	5	1/2
6400	11 1/8	6 7/8	3 3/4	1 3/4	2 3/8	4	3 7/8	5	1/2
6600	11 1/8	6 7/8	3 3/4	1 3/4	2 3/8	4	3 7/8	5	1/2
9000	15 1/8	8 7/8	4 3/4	2 1/2	2 3/4	5 1/2	3 3/4	7 1/8	3/4
9100	16 1/8	8 7/8	4 3/4	2 1/2	2 3/4	5 1/2	3 3/4	7 1/8	3/4
9200	16 1/8	8 7/8	4 3/4	2 1/2	2 3/4	5 1/2	3 3/4	7 1/8	3/4
9400	15 1/8	8 7/8	4 3/4	2 1/2	2 3/4	5 1/2	3 3/4	7 1/8	3/4

**DELTA MOTORS** give you more for your money because they are designed and built for long dependable service



## **BUILT IN ACCORDANCE WITH THE BEST PRACTICE IN MODERN MOTOR DESIGN**

These dependable motors are comparatively low in cost—but they are NOT built down to a price; quality must be maintained in every particular, and we believe that they are the finest motors obtainable at anywhere near their price.

Casings are of heavy welded steel, with steel feet welded on. These cannot be broken off by accidental impact, as may happen with cast-iron feet on cast end brackets.

These motors will deliver more than their full rated horsepower on all machines for which they are specified. Their overload capacity, due to their generous design and fine construction, is far greater than many similar motors—(the overload capacity in most Delta motors being 250% of rated horsepower or over).

Note that our switches are of heavy-duty two-pole construction (Cutler-Hammer) and are mounted on a separate spider in the extra-large-size conduit-box. This switch not only cuts the current completely from the motor when the switch is "off" (which a cheap single-pole switch will not do), but also permits the removal of the conduit box cover for wiring, inspection, etc., without disturbing the switch. This is required by many electrical codes.

Study the features listed to the right. Compare the design and construction of these motors with others and you will realize why they offer such extraordinary value for their comparatively low cost.

**THE DELTA MANUFACTURING COMPANY**  
MILWAUKEE WISCONSIN

## **16 POINTS OF SUPERIORITY**

Check the features listed here. They are a few of the reasons why these motors give you so much for your money—why they are service-free—have an overload capacity of 250%—assure long life, dependable, trouble-free service.

Unusually generous frame of modern design, insures adequate mechanical and electrical clearances. Easy to keep clean.

Heavy, unbreakable welded-steel casing, of original design for heavy-duty service.

Heavy steel feet, welded to frame. Cannot be broken off accidentally like cast-iron feet.

New Departure "sealed-for-life" ball bearings. Require no lubrication or other attention during their entire life.

Field windings of the highest grade enameled wire, carefully wound, insulated and tested.

Finest of enameled, cotton-covered wire and highest grade installation used for rotor windings.

Accurately balanced rotor insures maximum smoothness of operation; prevents destructive vibration.

Genuine "Master" patented centrifugal short-circuiting device for commutator.

Entirely new type of shaft protector covers extra shaft and affords maximum safety.

Oversize air passages throughout motor insure proper cooling, and keep motor power at maximum.

Powerful, well-designed fan and scientific baffling keep motor cool under load.

Large opening over commutator to provide utmost convenience in making connections or renewing brushes.

Heavy-duty Cutler-Hammer two-pole switch. Completely cuts off all current so that there are no "live" leads into motor when the switch is "off".

Switch mounted on separate spider to permit removal of conduit-box cover without disturbing switch.

Heavy-duty 8-foot cord and soft-rubber plug. Cord anchored to conduit box with heavy clamp.

Oversize conduit box. Plenty of room to make connections. Separate spider for switch.