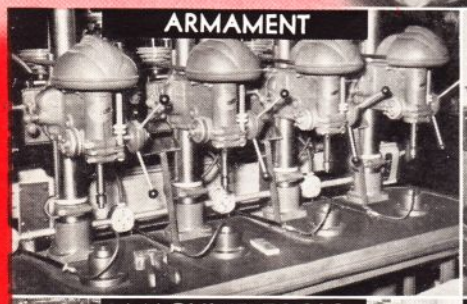
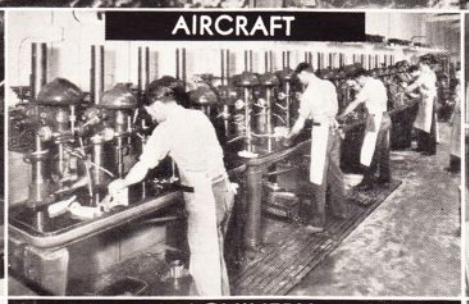
DELTA
MILWAUKEE

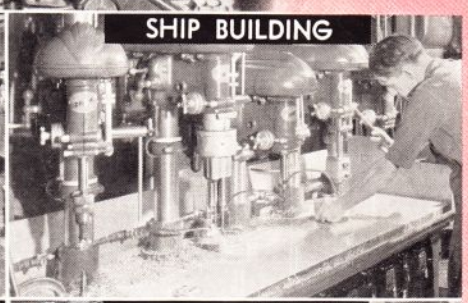
INDUSTRIAL
CATALOG 11
April 1st
1943

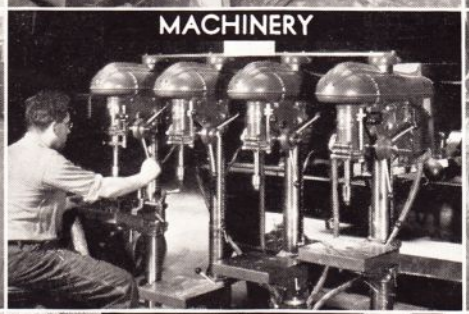
PRODUCTION MACHINE TOOLS

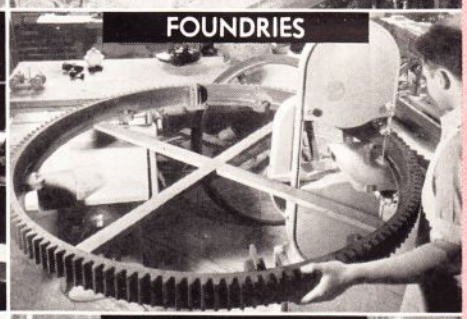
DELTA TOOLS ARE THE MACHINE GUNS OF PRODUCTION IN THESE ESSENTIAL INDUSTRIES

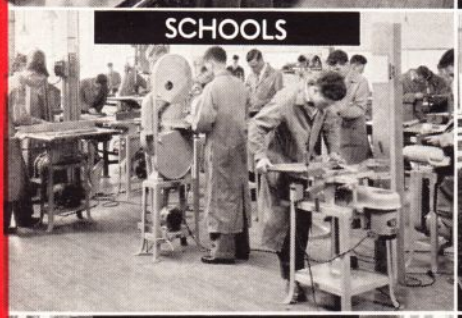


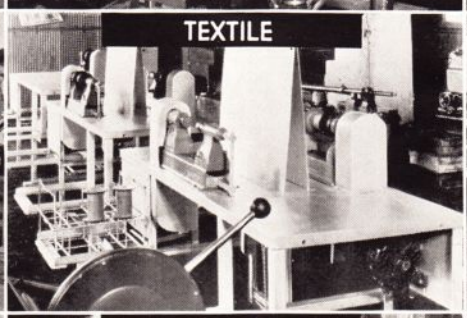


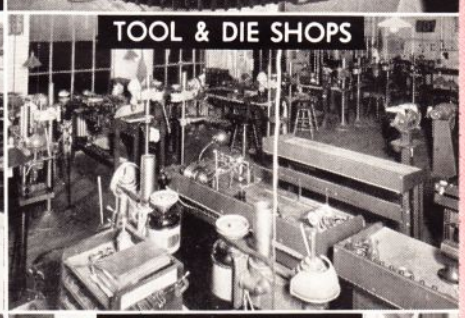


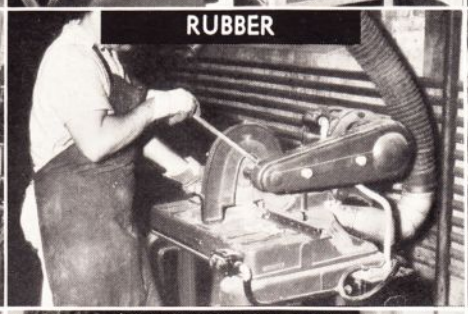


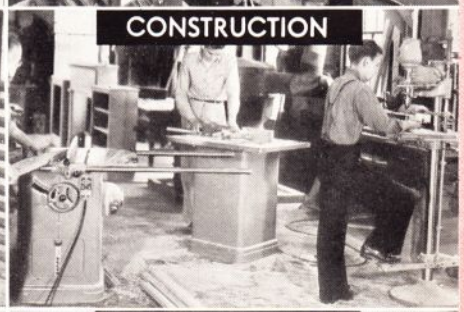


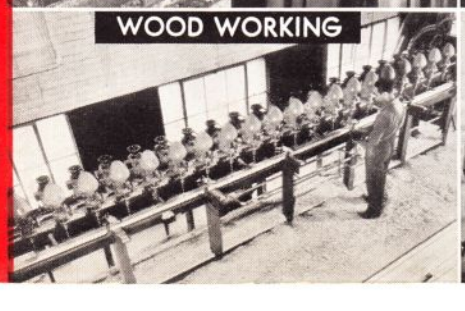


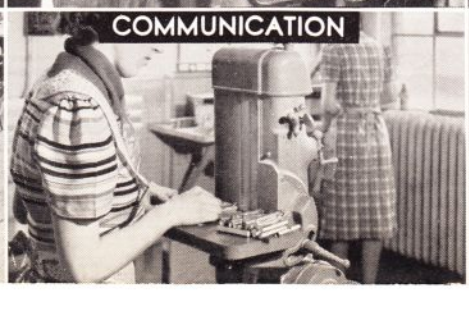


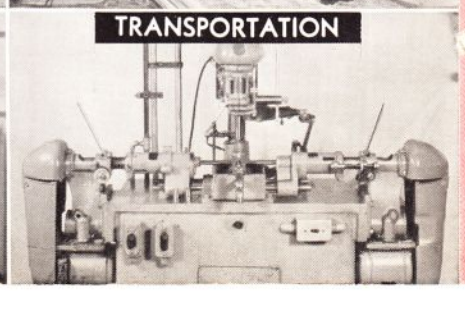












WHY DELTA MACHINE TOOLS INCREASE PRODUCTION FOR INDUSTRIAL USERS

Adaptability: Where changes in production requirements must be made quickly, the portability and flexibility of Delta machine 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.

Flexibility: Due to the low cost of the standard parts of Delta 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 Delta machine 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.

Low First Cost: Manufactured under modern production conditions with the finest of high-production equipment—like the modern automobile—these machines cost less for the same production value than heavier machines made up either in small lots or on special order. While we do not claim that modern light machine tools will replace heavier machines on every type of work, still there are many cases in which they will actually outperform 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 ⅓ to ¾ H. P.—rarely over 1½ 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 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 machines are so portable and adaptable, in many cases it is possible to set one of these machines alongside another machine on which the operation is slow and time-consuming. The operator may then perform one or several operations on the Delta machine while waiting for the completion of the cut or other operation on the other machine. And these additional operations are obtained *at no additional labor cost.*

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.

1,697,669	1,930,022	1,969,827	2,025,834	2,085,235	2,232,149	Des. 98,280	Canadian Patents
1,790,288	1,938,548	1,975,562	2,032,233	2,085,236	2,240,426	Des. 99,614	340,751—1934
1,830,813	1,938,549	1,984,500	2,038,810	2,099,321	2,265,335	Des. 102,402	314,585—1931
1,877,705	1,947,885	1,992,726	2,040,718	2,108,086	2,265,406	Des. 105,429	346,174—1934
1,894,010	1,959,199	2,004,678	2,041,578	2,122,966	2,265,407	Des. 105,621	346,175—1934
1,896,924	1,963,688	2,007,887	2,045,422	2,168,282	2,265,408	Des. 107,805	351,531—1935
1,902,270	1,964,651	2,016,843	2,069,395	2,193,946	Des. 85,847	Des. 109,628	354,273—1935
1,906,190	1,964,652	2,020,219	2,073,430	2,202,878	Des. 89,818	Des. 117,460	354,274—1935
1,910,651	1,967,791	2,020,222	2,085,131	2,210,135	Des. 94,788	Des. 117,461	365,682—1937
							370,828—1937

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

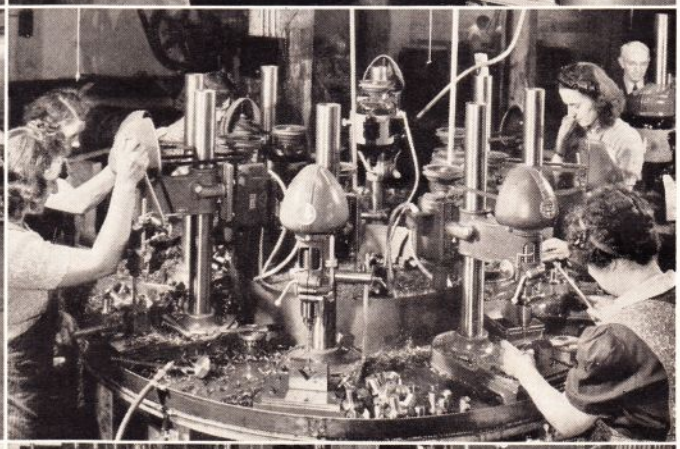
Export Department, 38 Pearl St., New York, N. Y. (Address All Canadian Communications to Milwaukee Office.)

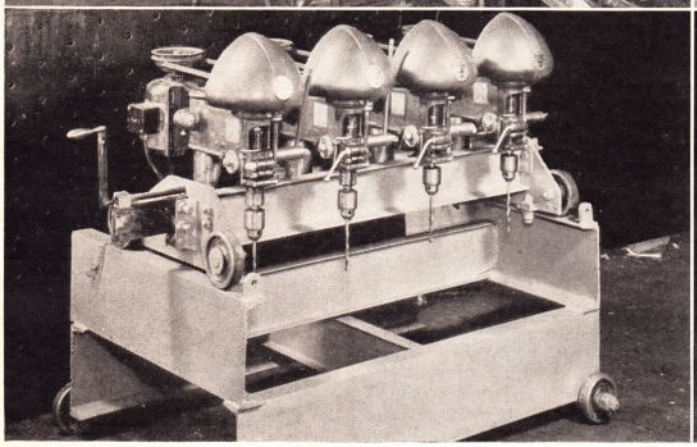
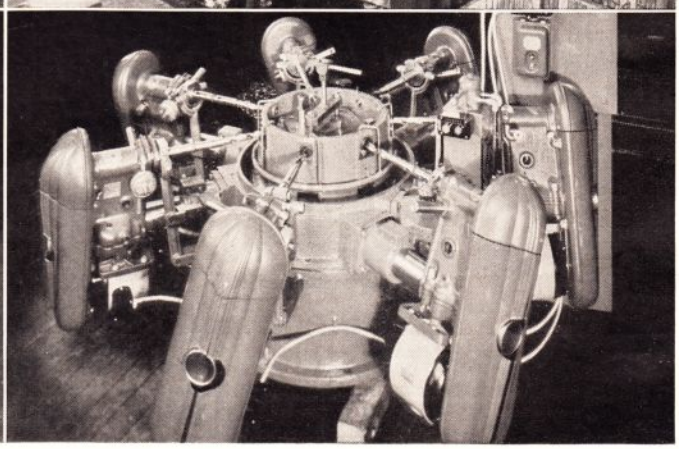
All prices F. O. B. factory, Milwaukee. Prices shown in the latest price sheet supersede all prices previously quoted. All prices subject to change without notice. The right is reserved to make changes in design or equipment at any time, without incurring any obligation to install these on machines previously sold, and to discontinue models of machines, motors or accessories at any time without notice. Any sales tax imposed subsequent to the publication of this catalog will be added to the quoted prices.

DRILL PRESSES

BOTH AS STANDARD UNITS AND SPECIAL PURPOSE MACHINES HELP INCREASE OUTPUT IN THESE BUSY PRODUCTION SHOPS



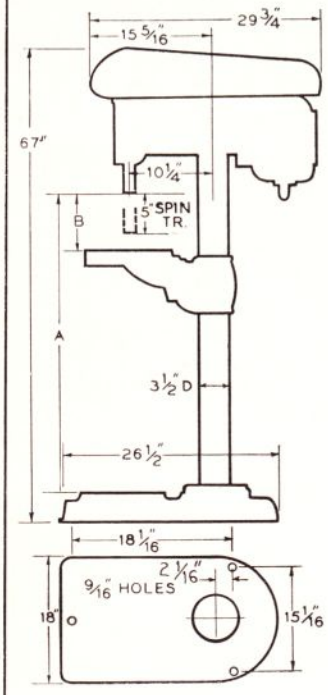



THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.

17-inch Floor Type, Single Spindle Drill Presses

DELTA MILWAUKEE



No. 17-205
Shown with
Motor

No. 17-210
Shown with
Motor

No. 17-215
Shown with
Motor

Type	Standard Tilting Table		Production Table		Prod. Table and Foot Feed	
Model	Slo-Speed	High Speed	Slo-Speed	High Speed	Slo-Speed	High Speed
WITH NO. 2 MORSE TAPER SPINDLE						
Machine No.	17-205	17-206	17-210	17-211	17-215	17-216
Old No.	1370	1370 H	1382	1382-H	1386	1386-H
Table Working Surface	11" x 12"	11" x 12"	12½" x 17"	12½" x 17"	12½" x 17"	12½" x 17"
Spin. to Table (B) Max.	33 7/8"	33 7/8"	32 1/8"	32 1/8"	21 7/8"	21 7/8"
Spin. to Base (A) Max.	44 13/16"	44 13/16"	43 15/16"	43 1/16"	42 15/16"	42 15/16"
Ship. Wt. Lbs.	340	340	380	380	414	414
Code Word	DRILA	DRIAA	DRILM	DRIAJ	DRILQ	DRIAK
Cat. No. of Coolant Piping	None	None	17-805	17-805	17-805	17-805
Type of Coolant Pump Required	None	None	Model No. 1	Model No 1	Model No. 1	Model No. 1
WITH 1/2" JACOBS CHUCK SPINDLE						
Machine No	17-207	17-208	17-212	17-213	17-217	17-218
Old No.	1376	1376-H	1383	1383-H	1387	1387-H
Table Working Surface	11" x 12"	11" x 12"	12½" x 17"	12½" x 17"	12½" x 17"	12½" x 17"
Spin to Table (B) Max	33¾"	33¾"	32¼"	32¼"	22"	22"
Spin. to Base (A) Max	45 5/16"	45 5/16"	44 1/16"	44 1/16"	43 1/16"	43 1/16"
Ship. Wt. Lbs.	340	340	380	380	414	414
Code Word	DRILG	DRIAG	DRILN	DRIAM	DRILR	DRIAN
Cat. No of Coolant Piping	None	None	17-805	17-805	17-805	17-805
Type of Coolant Pump Required	None	None	Model No. 1	Model No 1	Model No. 1	Model No 1

MOTORS, SWITCHES, COOLANT PUMP AND PIPING NOT INCLUDED WITH MACHINE, MUST BE ORDERED SEPARATELY

These 17 inch drill presses are supplied in twelve standard machines as listed and illustrated above.

Capacity: ¾" in cast iron.

Machines include:

- Table raising mechanism.
- Streamlined belt guard.
- Built-in depth gauge.
- Depth scale on spindle return spring housing.
- Quill has 5 inch stroke or travel.
- High speed models have speeds of 700, 1150, 1750, 2750 and 4750 RPM and include No. 501 V-belt and No. 1312 motor pulley.
- Slo speed models have speeds of 385, 600, 935, 1450 and 2240 RPM and include No. 520 V-belt and No. 1311 motor pulley.

Order Jacobs spindle models where straight shank drills only are to be used.

Order No. 2 Morse taper spindles where taper shank drills only are to be used.

Where both straight and taper shank drills are to be used, order models with No. 2 Morse taper spindle and use the No. 968 chuck listed on page 15.

For individual parts for special set-ups and for accessories, see pages 14–17

For coolant piping and pump see page 16.

Motors recommended:

Light Duty: 84 510 ½ H.P., R.I. A.C. 110/220 V. 60 Cy.
86 520 ½ H.P., 3 Ph. A.C. 220/440 V. 50/60 Cy.

Medium Duty: 84 710 ¾ H.P., R.I. A.C. 110/220 V. 60 Cy.
86 720 ¾ H.P., 3 Ph. A.C. 220/440 V. 50/60 Cy.

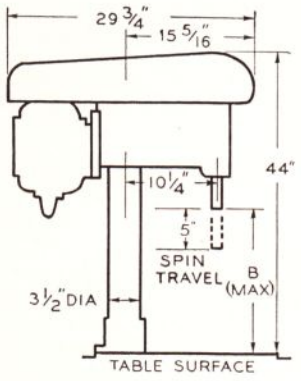
Heavy Duty: 84 910 1 H.P., R.I. A.C. 110/220 V. 60 Cy.
86 920 1 H.P., 3 Ph. A.C. 220/440 V. 50/60 Cy.

For 3 Ph. motors use No. 1320 or No. 1329 3 Ph. starters with No. 1322 mounting parts. Use No. 1332 switch rod for single phase motors.

See Pages 18 to 19 for Motors and Switch Parts.

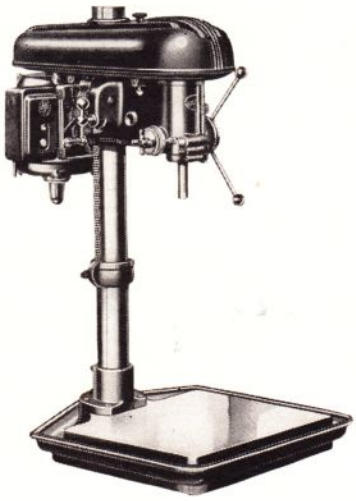
For Prices See Attached Price List.

17-inch 1, 2 and 4 Spindle Drill Presses. One Piece Tables



Single Spindle Machines are Bench Type only.

Two and Four Spindle Floor Type only. Working surface is 32" from floor.



No. 17-305
Shown with Motor

No. 17-410
Shown with Motors

Type	1 Spin. Bench Type		2 Spin. Floor Type		4 Spin. Floor Type	
Model	Slo Speed	High Speed	Slo Speed	High Speed	Slo Speed	High Speed
WITH NO. 2 MORSE TAPER SPINDLE						
Machine No.	17-305	17-306	17-405	17-406	17-410	17-411
Old No.	1375	1375-H	1545	1547	1555	1557
Table Working Surface	16" x 18"	16" x 18"	17½" x 36"	17½" x 36"	17½" x 77"	17½" x 77"
Spin. to Table (B) Max.	26"	26"	26"	26"	26"	26"
Spindle Spacing	.....	.....	18"	18"	18"	18"
Ship. Wt. Lbs.	400	400	860	860	1400	1400
Code Word	DRILF	DRIAF	TWOSF	TWOSH	FOURI	FOURK
Cat. No. Coolant Piping	17-805	17-805	17-806	17-806	17-807	17-807
Type of Coolant Pump Required	Model No. 1	Model No. 1	Model No. 2	Model No. 2	Model No. 2	Model No. 2
WITH 1/2 INCH JACOBS CHUCK SPINDLE						
Machine No.	17-307	17-308	17-407	17-408	17-412	17-413
Old No.	1377	1377-H	1546	1548	1556	1558
Table Working Surface	16" x 18"	16" x 18"	17½" x 36"	17½" x 36"	17½" x 77"	17½" x 77"
Spin. to Table (B) Max.	26½"	26½"	26½"	26½"	26½"	26½"
Spindle Spacing	.....	.....	18"	18"	18"	18"
Ship. Wt. Lbs.	400	400	860	860	1400	1400
Code Word	DRILH	DRIAH	TWOSG	TWOSI	FOURJ	FOURL
Cat. No. of Coolant Piping	17-805	17-805	17-806	17-806	17-807	17-807
Type of Coolant Pump Required	Model No. 1	Model No. 1	Model No. 2	Model No. 2	Model No. 2	Model No. 2

MOTORS, SWITCHES, COOLANT PUMP AND PIPING NOT INCLUDED WITH MACHINE. MUST BE ORDERED SEPARATELY.

These 17 inch drill presses are all furnished with a one-piece table in sizes as shown by the dimensional drawing in the table above. The single spindle machines are available as bench types only—the two and four spindle machines are floor types and are furnished with a set of cast iron legs as illustrated. With these legs, the working surface of the two and four spindle machines is 32" from the floor. The heavy table has a 1½" oil trough all around tapped at rear for ½" drain.

Capacity: ¾" in cast iron.

Machines include: Head raising mechanisms. Streamlined belt guard. Built-in depth gauge. Depth scale on spindle return spring housing. Quill has 5 inch stroke or travel.

High speed models have speeds of 700, 1150, 1750, 2750 and 4750 RPM and include No. 501 V-belt and No. 1312 motor pulley.

Slo speed models have speeds of 385, 600, 935, 1450 and 2240 RPM and include No. 520 V-belt and No. 1311 motor pulley.

Order Jacobs spindle machines where straight shank drills only are to be used.

Order No. 2 Morse taper spindle machines where taper shank drills only are to be used.

Where both straight and taper shank drills are to be used, order machines with No. 2 Morse taper spindle and use the No. 968 chuck listed on page 15.

For individual parts for special set-ups and for accessories, see pages 14–17.

For coolant piping and pump see page 16.

Motors recommended:

Light Duty: 84-510 ½ H.P., R.I. A.C. 110/220 V. 60 Cy.
86-520 ½ H.P., 3 Ph. 220/440 V. 50/60 Cy.

Medium Duty: 84-710 ¾ H.P., R.I. A.C. 110/220 V. 60 Cy.
86-720 ¾ H.P., 3 Ph. A.C. 220/440 V. 50/60 Cy.

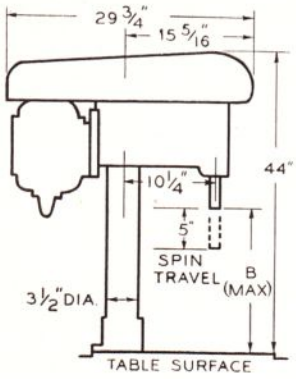
Heavy Duty: 84-910 1 H.P., R.I. A.C. 110/220 V. 60 Cy.
86-920 1 H.P., 3 Ph. A.C. 220/440 V. 50/60 Cy.

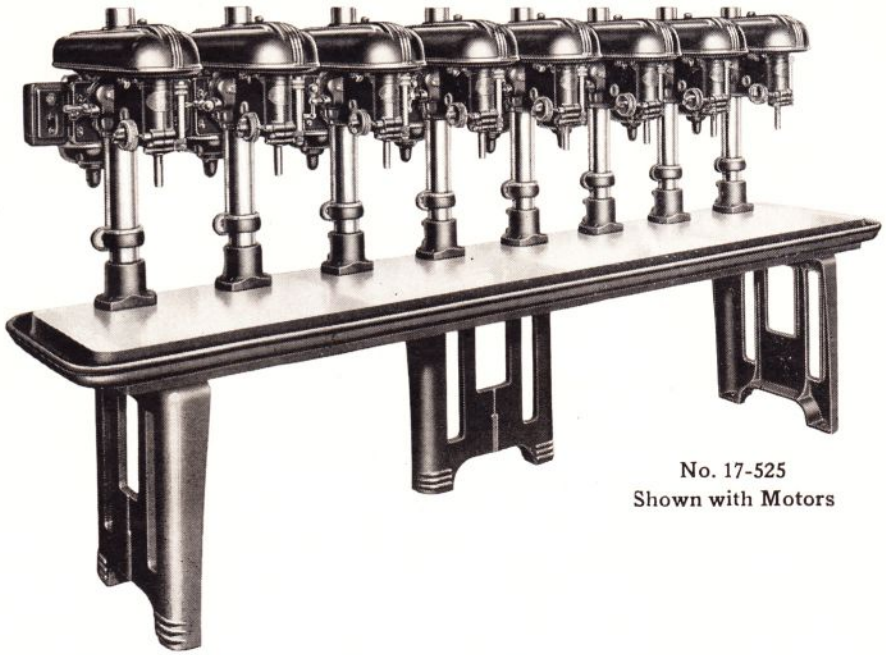
For 3 phase motors use No. 1320 and No. 1329 3 phase starters with No. 1322 mounting parts. Use No. 1332 switch rod for single phase motors.

See Pages 18 to 19 for Motors and Switch Parts.

For Prices See Attached Price List.

17" Floor Type 3, 4, 5, 6 and 8 Spindle Drill Presses. Sectional Tables





No. 17-525
Shown with Motors

Type	3 Spindle		4 Spindle		5 Spindle		6 Spindle		8 Spindle	
Model	Slo-Speed	High Speed	Slo-Speed	High Speed	Slo-Speed	High Speed	Slo-Speed	High-Speed	Slo-Speed	High Speed
WITH NO. 2 MORSE TAPER SPINDLE										
Machine No.	17-505	17-506	17-510	17-511	17-515	17-516	17-520	17-521	17-525	17-526
Table Working Surface	17½" x 65"	17½" x 65'	17½" x 65"	17½" x 65"	17½" x 95"	17½" x 95"	17½" x 95"	17½" x 95'	17½"x125"	17½"x125"
Spin. to Table (B) Max.	26"	26"	26"	26"	26"	26"	26"	26"	26"	26"
Spindle Spacing	18"	18"	15"	15"	18"	18"	15"	15"	15"	15"
Ship. Wt. Lbs.	1570	1570	1750	1750	2370	2370	2540	2540	3250	3250
Code Word	TRISA	TRISB	FOURN	FOURO	PENTA	PENTB	SIXAA	SIXAB	OCTAA	OCTAB
Cat. No. Coolant Piping	17-808	17-808	17-809	17-809	17-811	17-811	17-812	17-812	17-814	17-814
Type of Cool. Pump Req.	Model No. 2	Model No. 2	Model No. 2	Model No. 2	Model No. 3	Model No. 3	Model No. 3	Model No. 3	Model No. 3	Model No. 3
With 1/2 INCH JACOBS CHUCK SPINDLE										
Machine No.	17-507	17-508	17-512	17-513	17-517	17-518	17-522	17-523	17-527	17-528
Table Working Surface	17½" x 65"	17½" x 65"	17½" x 65"	17½" x 65"	17½" x 95"	17½" x 95"	17½" x 95"	17½" x 95'	17½"x125"	17½"x125"
Spin. to Table (B) Max.	26½"	26½"	26½"	26½"	26½"	26½"	26½"	26½"	26½"	26½"
Spindle Spacing	18"	18"	15"	15"	18"	18"	15"	15"	15"	15"
Ship. Wt. Lbs.	1570	1570	1750	1750	2370	2370	2540	2540	3250	3250
Code Word	TRISC	TRISD	FOURP	FOURQ	PENTC	PENTD	SIXAC	SIXAD	OCTAC	OCTAD
Cat. No. Coolant Piping	17-808	17-808	17-809	17-809	17-811	17-811	17-812	17-812	17-814	17-814
Type of Cool. Pump Req.	Model No. 2	Model No. 2	Model No. 2	Model No. 2	Model No. 3	Model No. 3	Model No. 3	Model No. 3	Model No. 3	Model No. 3

MOTORS, SWITCHES, COOLANT PUMP AND PIPING NOT INCLUDED WITH MACHINE. MUST BE ORDERED SEPARATELY.

The 17 inch drill presses listed here are all furnished with sectional tables. These tables are made up of center sections to which end sections are bolted. This arrangement allows for a wide variety of combinations—and altho we show here the most popular production types of machines, many other units are available. The sectional table allows a drill press to be made of any desired length with spindles spaced at any centers desired. The sections have a 1½" trough and the end sections are tapped for a drain. Table of three or more sections have three cast iron legs, other machines have two legs. Working surface is 32" from floor.

Capacity: ¾" in cast iron.

Machines include: Head raising mechanisms. Streamlined belt guard. Built-in depth gauge. Depth scale on spindle return spring housing. Quill has 5 inch stroke or travel.

High speed models have speeds of 700, 1150, 1750, 2750 and 4750 RPM and include No. 501 V-belt and No. 1312 motor pulley.

Slo speed models have speeds of 385, 600, 935, 1450 and 2240 RPM and include No. 520 V-belt and No. 1311 motor pulley.

Order Jacobs spindle machines where straight shank drills only are to be used. Order No. 2 Morse taper spindle machines where taper shank drills only are to be used. Where both straight and taper shank drills are to be used, order machines with No. 2 Morse taper spindle and use the No. 968 chuck listed on page 15.

For individual parts for special set-ups and for accessories, see pages 14–17.

For coolant piping and pump see page 16.

Motors recommended:

Light Duty: 84 510 ½ H.P., R.I. A.C. 110/220 V. 60 Cy.
86 520 ½ H.P., 3 Ph. A.C. 220/440 V. 50/60 Cy.

Medium Duty: 84 710 ¾ H.P., R.I. A.C. 110/220 V. 60 Cy.
86 720 ¾ H.P., 3 Ph. A.C. 220/440 V. 50/60 Cy.

Heavy Duty: 84 910 1 H.P., R.I. A.C. 110/220 V. 60 Cy.
86 920 1 H.P., 3 Ph. A.C. 220/440 V. 50/60 Cy.

For 3 phase motors use No. 1320 and No. 1329 3 phase starters with No. 1322 mounting parts. Use No. 1332 switch rod for single phase motors.

See Pages 18 to 19 for Motors and Switch Parts.

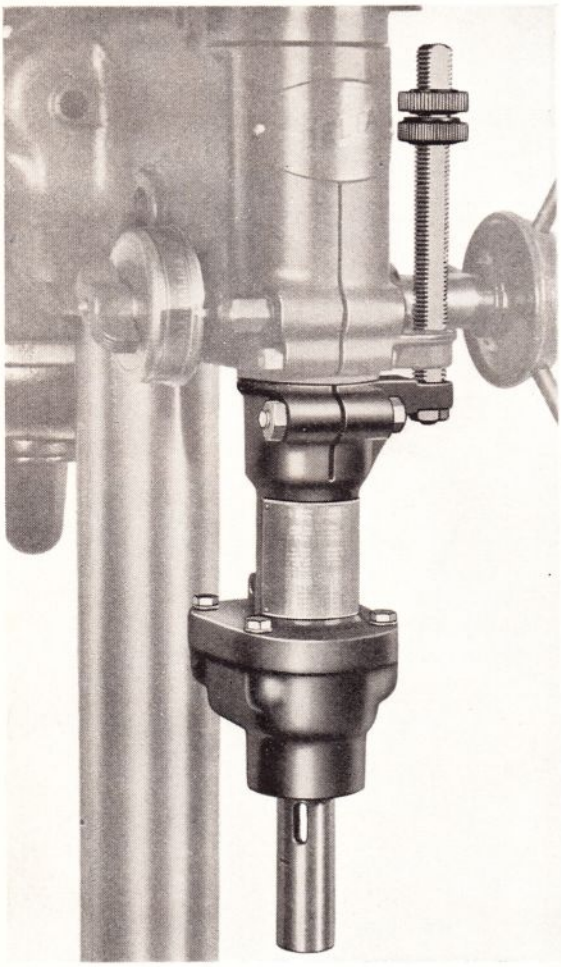
For Prices See Attached Price List.

NEW

DELTA SLO-SPEED ATTACHMENT FOR 17" DRILL PRESS

DELTA MILWAUKEE

USES TRAIN OF ACCURATELY MACHINED, DOUBLE-REDUCTION GEARS WHICH PROVIDE POSITIVE, CHATTER-FREE OPERATION OF SPINDLE

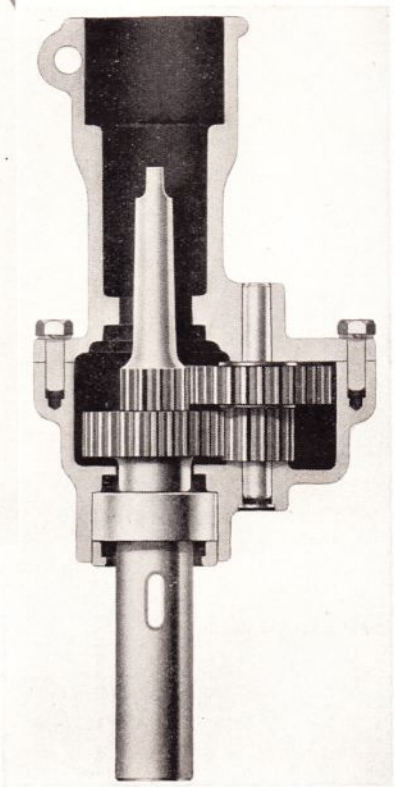


Shop practices often demand extra slow operation of the 17-inch drill press for spot facing, reaming, counterboring, core drilling and drilling of hardened parts.

To meet this request the No. 17-860 Slo-Speed attachment which fits any of our 17-inch drill presses having a No. 2 Morse taper spindle, has been designed and is now available to you.

It has many special design and construction features which you will recognize and admire. A train of accurately machined, double-reduction gears are used to reduce the normal speed of the spindle. The use of gears (in place of belts) eliminates all chatter, giving a positive, smooth rotation of spindle. This, you will recognize, is especially important on slow speed work. In addition to the smooth rotation, the gears provide positive operation—there's no slippage such as encountered with belt-driven units.

The No. 17-860 Slo-Speed attachment fits any 17-inch drill press of our manufacture, either the High-Speed or Slo-Speed models, having a No. 2 Morse taper spindle. It is extremely simple to install or remove which means that the same drill press can be used for its regular speeds or the slow speed. Each machine thus has 10 different speeds which will meet the requirements in all shops. The ratio of input to output is: Input 4½ R.P.M., Output 1 R.P.M.



Good Design and Construction

The unit has a drive pinion which has a No. 2 Morse taper shank and which is first slipped into the spindle of the drill press. With the drive pinion in place, the entire attachment is slipped onto the drill press quill and firmly clamped in place with the clamp bolt. The housing butts against the quill so that no end thrust is put against the pinion or the gears. Anti-friction bearings used throughout.

The gears are heat treated—accurately machined for long wear.

The use of the Slo-Speed attachment on the 17-inch drill press reduces the spindle travel from 5 inches to 4 inches and reduces the distance from the end of the spindle to the table or base 7 1/16 inches. The attachment has a No. 2 Morse taper spindle socket.

(See reverse side for applications)

Catalog Listing and Specifications

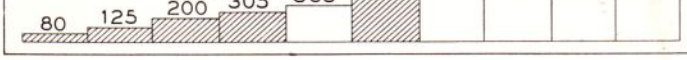
No. 17-860—Slo-Speed Attachment for 17-inch drill Presses having a No. 2 Morse Taper Spindle. Ratio of 4½ to 1. Sh. Wt. 20 lbs. Code SLOSP **$33.80**

Wide Range of Speeds Available

The standard speed of the drill press is reduced 4½ times by the Slo-Speed Attachment. The bar graphs below show the wide range of speeds obtained on both the High-Speed and Slo-Speed Drill Presses when the Slo-Speed Attachment is used. These speeds answer all requirements in the shop. Capacity of drill press is not increased.

SPEEDS ON SLO-SPEED DRILL PRESSES

SHADED BARS SHOW THE SPEEDS OBTAINED BY USING THE NEW SLO-SPEED ATTACHMENT. PLAIN BARS SHOW THE STANDARD SPEEDS OF THE SLO-SPEED DRILL PRESS.

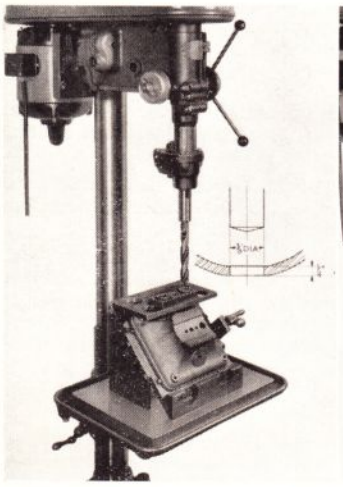


SPEEDS ON HIGH-SPEED DRILL PRESSES

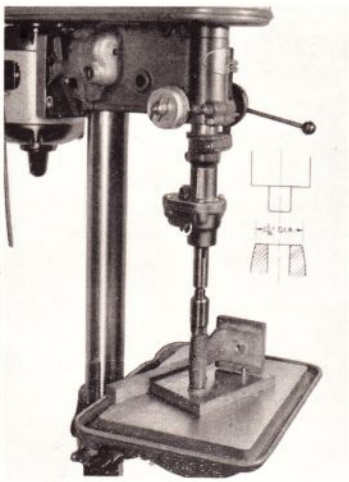
SHADED BARS SHOW THE SPEEDS OBTAINED BY USING THE NEW SLO-SPEED ATTACHMENT. PLAIN BARS SHOW THE STANDARD SPEEDS OF HIGH-SPEED DRILL PRESS.

DELTA MILWAUKEE

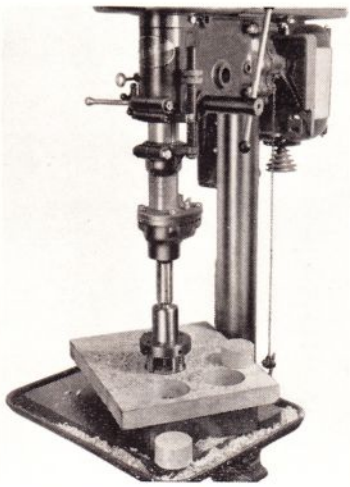
Specifications of Slo-Speed Attachment Operations



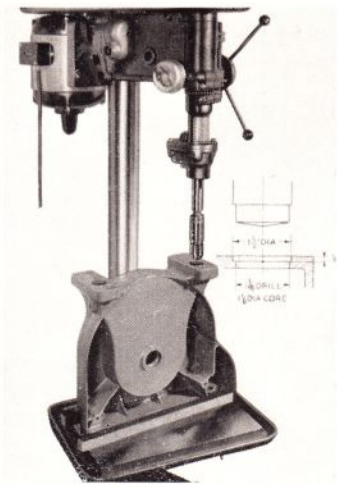
Drilling in cast iron with a high speed drill at 305 R.P.M.



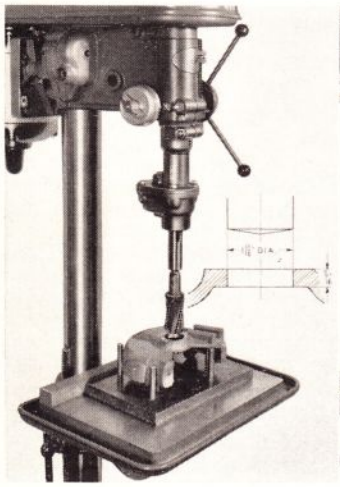
Spot facing in cast iron with carbide tipped tools at 305 R.P.M.



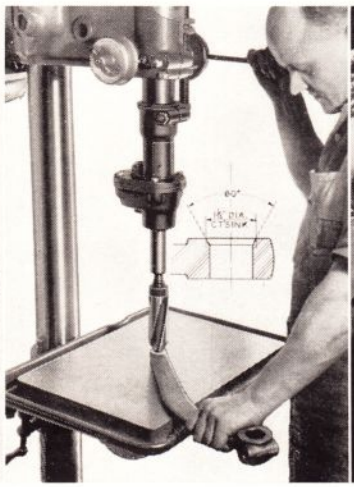
Cutting wood plugs 3 $\frac{3}{16}$" cutter in 1½" white pine at 200 R.P.M., and in 1¼" birch at 125 R.P.M.



Drilling and counterboring for Welsh plug in cast iron with carbide tipped tools at 200 R.P.M.

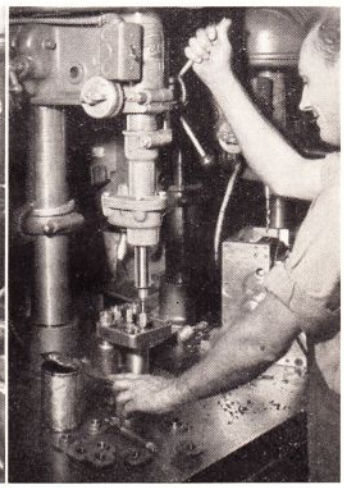


Reaming in cast iron at 125 R.P.M.

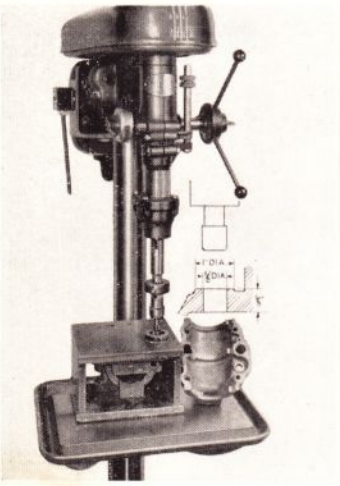


Countersinking in steel casting at 125 R.P.M.

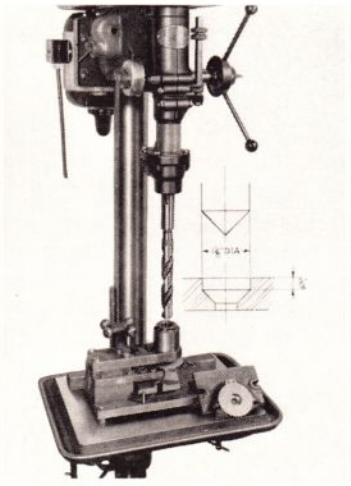
Drilling two $\frac{3}{16}$" diameter holes with high speed drill for ⅜ tap in timing gear. Heat treated alloy steel Rockwell 40-42 C scale hardness. Slow speed attachment at 200 R.P.M.



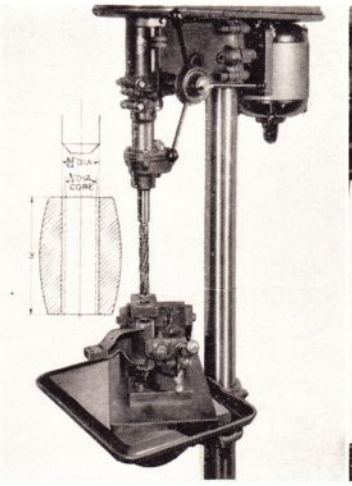
Drilling six ¼" diameter holes with high speed drill in hardened steel washer Rockwell 45-50 C scale at 200 R.P.M., also 1¼" spot facing operation.



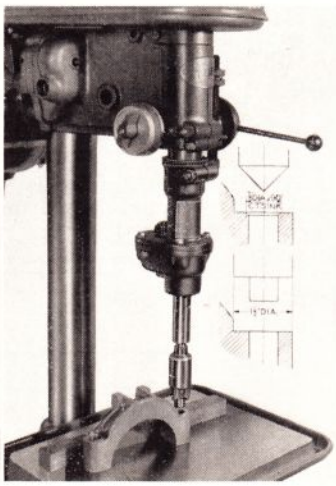
Reaming and spot facing with a combination tool in cast iron at 200 R.P.M.



Counterboring in cast iron with a high speed drill at 200 R.P.M.

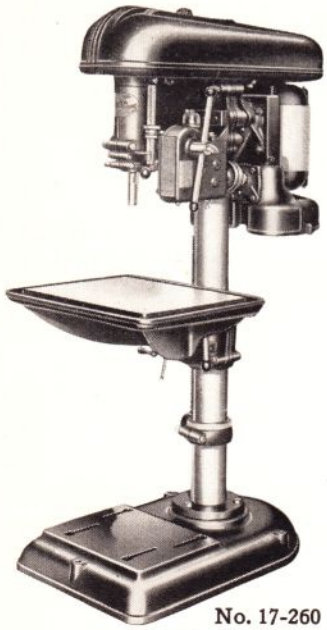


Core drilling in cast iron with a high speed drill at 305 R.P.M.



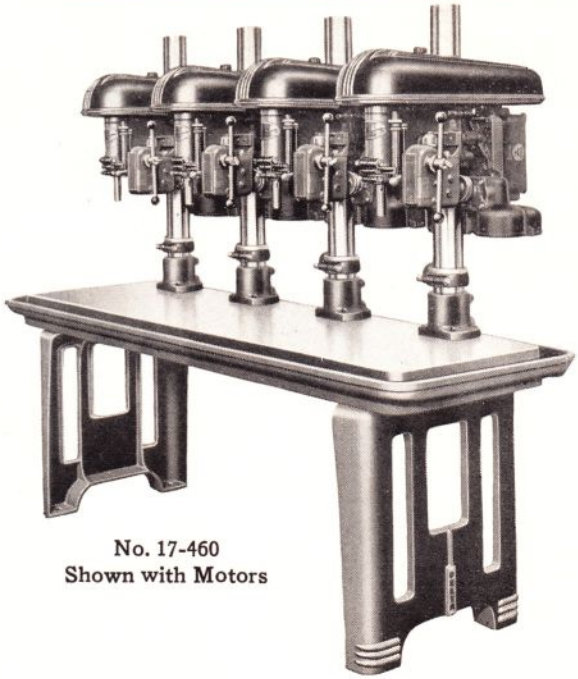
Spot facing and countersinking in malleable cast iron at 125 R.P.M., with carbide tipped tool. Countersink also at 125 R.P.M.

DELTA MILWAUKEE 17-inch 1, 2 and 4 Spindle Power Feed Drill Presses One Piece Tables



No. 17-260
Shown with Motor

No. 17-355
Shown with Motor
Available Only as
a Bench Type Machine



No. 17-460
Shown with Motors

Type	Floor Type Single Spindle		Bench Type Single Spindle		Floor Type Two Spindle		Floor Type Four Spindle	
Model	Slo-Speed	High Speed	Slo-Speed	High Speed	Slo-Speed	High Speed	Slo-Speed	High Speed
	WITH NO. 2 MORSE TAPER SPINDLE							
Machine No.	17-260	17-261	17-355	17-356	17-455	17-456	17-460	17-461
Old No.	P-1382	P-1382-H	P-1375	P-1375-H	P-1545	P-1547	P-1555	P-1557
Table Working Surface	12½" x 17"	12½" x 17"	16" x 18"	16" x 18"	17½" x 36"	17½" x 36"	17½" x 77"	17½" x 77"
Spin. to Base Max.	43 13/16	43 13/16	.....	.....	.....	.....	.....	.....
Spin. to Table Max.	32⅛"	32⅛"	23 5/16"	23 5/16"	23 5/16"	23 5/16"	23 5/16"	23 5/16"
Spindle Spacing	.....	.....	.....	.....	18"	18"	18"	18"
Raising Mechanism	Table	Table	Head	Head	Head	Head	Head	Head
Ship. Wt. Lbs.	435	435	450	450	960	960	1600	1600
Code Word	DRIQB	DRIQF	DRIQI	DRIQK	DRIQM	DRIQQ	DRIQO	DRIQS
Cat. No. Coolant Piping	17-805	17-805	17-805	17-805	17-806	17-806	17-807	17-807
Type of Cool. Pump Req.	Model No. 1	Model No. 1	Model No. 1	Model No. 1	Model No. 2	Model No. 2	Model No. 2	Model No. 2
	WITH 1/2 INCH JACOBS CHUCK SPINDLE							
Machine No.	17-262	17-263	17-357	17-358	17-457	17-458	17-462	17-463
Old No.	P-1383	P-1383-H	P-1377	P-1377-H	P-1546	P-1548	P-1556	P-1558
Table Working Surface	12½" x 17"	12½" x 17"	16" x 18"	16" x 18"	17½" x 36"	17½" x 36"	17½" x 77"	17½" x 77"
Spin. to Base Max.	44 1/16"	44 1/16"	.....	.....	.....	.....	.....	.....
Spin. to Table Max.	32¼"	32¼"	23 13/16"	23 13/16"	23 13/16"	23 13/16"	23 13/16"	23 13/16"
Spindle Spacing	.....	.....	.....	.....	18"	18"	18"	18"
Raising Mechanism	Table	Table	Head	Head	Head	Head	Head	Head
Ship. Wt. Lbs.	435	435	450	450	960	960	1600	1600
Code Word	DRIQD	DRIQH	DRIQJ	DRIQL	DRIQN	DRIQR	DRIQP	DRIQT
Cat. No. Coolant Piping	17-805	17-805	17-805	17-805	17-806	17-806	17-807	17-807
Type of Cool. Pump Req.	Model No. 1	Model No. 1	Model No. 1	Model No. 1	Model No. 2	Model No. 2	Model No. 2	Model No. 2

MOTORS, SWITCHES, COOLANT PUMP AND PIPING NOT INCLUDED WITH MACHINE. MUST BE ORDERED SEPARATELY.

These power feed 17 inch drill presses are of advanced design, incorporating all good features of machines of this type. They can be both manually and power operated. The operator can bring the drill down to the work in one swift motion by hand, and with a flip of the power lever engage the power feed. Upon completion of the operation the drill automatically returns. There are eight rates of feed for each of the 5-spindle speeds—see table opposite.

Furnished as single spindle floor type, single spindle bench type and two and four spindle floor types which have cast iron legs. Tables have 1½" oil trough all around and are tapped for ½" drain.

Machines include: Streamlined belt guard. Built-in depth gauge. Depth scale on spindle return spring housing. Quill has 4½ inch stroke or travel.

High speed models have speeds of 700, 1150, 1750, 2750 and 4750 RPM and include No. 501 V-belt and No. 1312 motor pulley.

Slo speed models have speeds of 385, 600, 935, 1450 and 2240 RPM and include No. 520 V-belt and No. 1311 motor pulley.

Order Jacobs spindle machines where straight shank drills only are to be used. Order No. 2 Morse taper spindle machines where taper shank drills only are to be used. Where both straight and taper shank drills are to be used, order machines with No. 2 Morse taper spindle and use the No. 968 chuck listed on page 15.

The single spindle floor type drill press has a table raising mechanism. All other machines are furnished with head raising mechanisms.

For individual parts for special set-ups and for accessories, see pages 14–17.

For coolant piping and pump see page 16.

Motors recommended:

Light and
Medium Duty: 84 710 ¾ H.P., R.I. A.C. Ball Brg. 110/220 V. 60 Cy.
Heavy Duty: 84 910 1 H.P., R.I. A.C. Ball Brg. 110/220 V. 60 Cy.
86 920 1 H.P., 3 Ph. A.C. Ball Brg. 220/440 V. 50/60 Cy.

For 3 phase motors use No. 1320 3 phase manual starter with No. 1322 Mounting parts. Use No. 1332 switch rod for single phase motors.

See Pages 18 to 19 for Motors. For Prices See Attached Price List.

17-inch Floor Type 3, 4, 5, 6 and 8 Spindle Power Feed Drill Presses

DELTA MILWAUKEE

Sectional Tables

No. 17-570
Shown with Motors

FEED CHART

Shows rate of feed per revolution of spindle on both slo- and high-speed models.

There are eight rates of feed for each spindle speed, which means that the correct rate of feed for your drilling operation is always available. Two cast iron 4-step cone pulleys and a special belt tension release built into guard make speed changes quick and safe.

SLOW SPEED DRILL PRESS

WITH SMALL PULLEY ON LOWER MOTOR SHAFT

R.P.M. SPINDLE	FEED PER REV. OF SPINDLE			
2240	.0027	.0020	.0013	.0010
1450	.0041	.0030	.0020	.0016
935	.0064	.0044	.0031	.0024
600	.0100	.0073	.0048	.0038
385	.0156	.0114	.0075	.0060

WITH SMALL PULLEY ON WORM SHAFT

R.P.M. SPINDLE	FEED PER REV. OF SPINDLE			
2240	.0025	.0034	.0046	.0061
1450	.0038	.0052	.0072	.0093
935	.0059	.0081	.0104	.0135
600	.0092	.0126	.0176	.0225
385	.0146	.0197	.0270	.0350

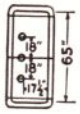
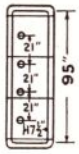
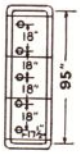
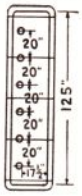
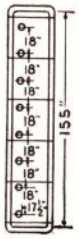
HIGH-SPEED DRILL PRESS

WITH SMALL PULLEY ON LOWER MOTOR SHAFT

R.P.M. SPINDLE	FEED PER REV. OF SPINDLE			
4750	.0013	.0009	.0006	.0005
2750	.0022	.0016	.0010	.0008
1750	.0034	.0025	.0016	.0011
1150	.0040	.0038	.0019	.0015
700	.0086	.0063	.0041	.0033

WITH SMALL PULLEY ON WORM SHAFT

R.P.M. SPINDLE	FEED PER REV. OF SPINDLE			
4750	.0012	.0016	.0022	.0028
2750	.0020	.0027	.0038	.0049
1750	.0031	.0043	.0059	.0077
1150	.0037	.0051	.0069	.0090
700	.0079	.0108	.0148	.0195

Type	3 Spindle		4 Spindle		5 Spindle		6 Spindle		8 Spindle	
										
Model	Slo-Speed	High Speed	Slo-Speed	High Speed	Slo-Speed	High Speed	Slo-Speed	High-Speed	Slo-Speed	High Speed
WITH NO. 2 MORSE TAPER SPINDLE										
Machine No.	17-555	17-556	17-560	17-561	17-565	17-566	17-570	17-571	17-575	17-576
Table Working Surface	17½" x 65"	17½" x 65"	17½" x 95"	17½" x 95"	17½" x 95"	17½" x 95"	17½"x125"	17½"x125"	17½"x155"	17½"x155"
Spin. to Table Max.	23 5/16"	23 5/16"	23 5/16"	23 5/16"	23 5/16"	23 5/16"	23 5/16"	23 5/16"	23 5/16"	23 5/16"
Spindle Spacing	18"	18"	21"	21"	18"	18"	20"	20"	18"	18"
Ship. Wt. Lbs.	1720	1720	1950	1950	2620	2620	2840	2840	3650	3650
Code Word	TRISE	TRISF	FOURR	FOURS	PENTE	PENTF	SIXAE	SIXAF	OCTAE	OCTAF
Cat. No. Coolant Piping	17-808	17-808	17-810	17-810	17-811	17-811	17-813	17-813	17-815	17-815
Type of Cool. Pump Req.	Model No. 2	Model No. 2	Model No. 2	Model No. 2	Model No. 3	Model No. 3	Model No. 3	Model No. 3	Model No. 3	Model No. 3
WITH 1/2 INCH JACOBS CHUCK SPINDLE										
Machine No.	17-557	17-558	17-562	17-563	17-567	17-568	17-572	17-573	17-577	17-578
Table Working Surface	17½" x 65"	17½" x 65"	17½" x 95"	17½" x 95"	17½" x 95"	17½" x 95"	17½"x125"	17½"x125"	17½"x155"	17½"x155"
Spin. to Table Max.	23 13/16"	23 13/16"	23 13/16"	23 13/16"	23 13/16"	23 13/16"	23 13/16"	23 13/16"	23 13/16"	23 13/16"
Spindle Spacing	18"	18"	21"	21"	18"	18"	20"	20"	18"	18"
Ship. Wt. Lbs.	1720	1720	1950	1950	2620	2620	2840	2840	3650	3650
Code Word	TRISG	TRISH	FOURU	FOURV	PENTG	PENTH	SIXAG	SIXAH	OCTAG	OCTAH
Cat. No. Coolant Piping	17-808	17-808	17-810	17-810	17-811	17-811	17-813	17-813	17-815	17-815
Type of Cool. Pump Req.	Model No. 2	Model No. 2	Model No. 2	Model No. 2	Model No. 3	Model No. 3	Model No. 3	Model No. 3	Model No. 3	Model No. 3

MOTORS, SWITCHES, COOLANT PUMP AND PIPING NOT INCLUDED WITH MACHINE. MUST BE ORDERED SEPARATELY.

The general specifications of these Power Feed drill presses are shown in the first paragraph on the opposite page.

The machines listed here are all floor type machines and have sectional tables. These tables are made up of center sections to which end sections are bolted. This arrangement allows for a wide variety of combinations—and altho we show here the most popular production types of machines, many other units are available. The sections have a 1½" trough and the end sections are tapped for a drain. Tables of three or more sections have three cast iron legs, other machines have two legs. Working surface is 32" from floor.

Capacity: ¾" in cast iron.

Machines include: Head raising mechanisms. Streamlined belt guard. Built-in depth gauge. Depth scale on spindle return spring housing. Quill has 4½ inch stroke or travel.

High speed models have speeds of 700, 1150, 1750, 2750 and 4750 RPM and include No. 501 V-belt and No. 1312 motor pulley.

Slo speed models have speeds of 385, 600, 935, 1450 and 2240 RPM and include No. 520 V-belt and No. 1311 motor pulley.

Order Jacobs spindle machines where straight shank drills only are to be used. Order No. 2 Morse taper spindle machines where taper shank drills only are to be used. Where both straight and taper shank drills are to be used, order machines with No. 2 Morse taper spindle and use the No. 968 chuck listed on page 15.

For individual parts for special set-ups and for accessories, see pages 14–17.

For coolant piping and pump see page 16.

Motors recommended:

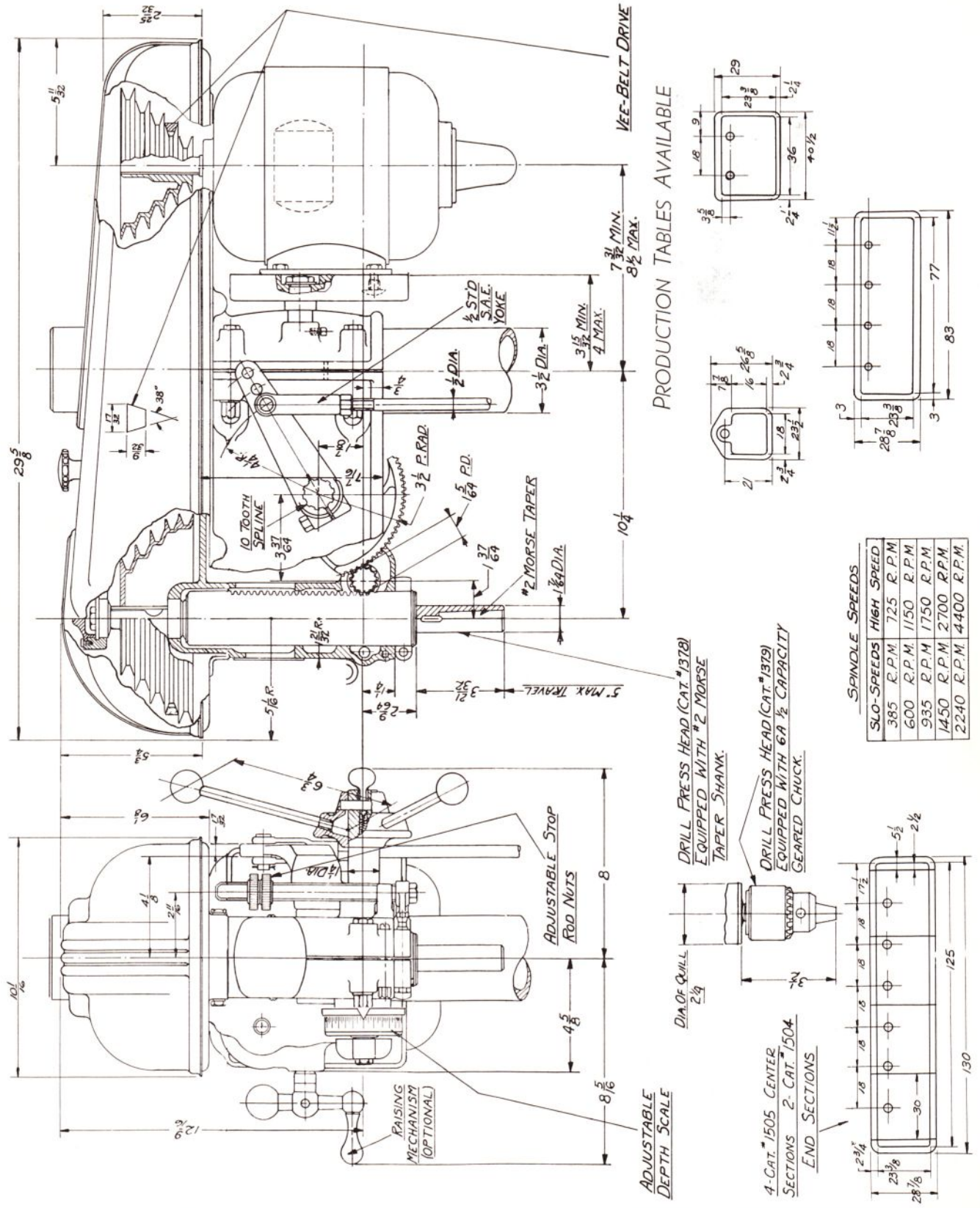
Light and
Medium Duty: 84 710 ¾ H.P., R.I. A.C. Ball Brg. 110/220 V. 60 Cy.
Heavy Duty: 84 910 1 H.P., R.I. A.C. Ball Brg. 110/220 V. 60 Cy.
86 920 1 H.P., 3 Ph. A.C. Ball Brg. 220/440 V. 50/60 Cy.

For 3 phase motors use No. 1320 3 phase manual starter with No. 1322 mounting parts. Use No. 1332 switch rod for single phase motors.

See Pages 18 to 19 for Motors.

For Prices See Attached Price List.

17" DRILL PRESS



SPINDLE SPEEDS

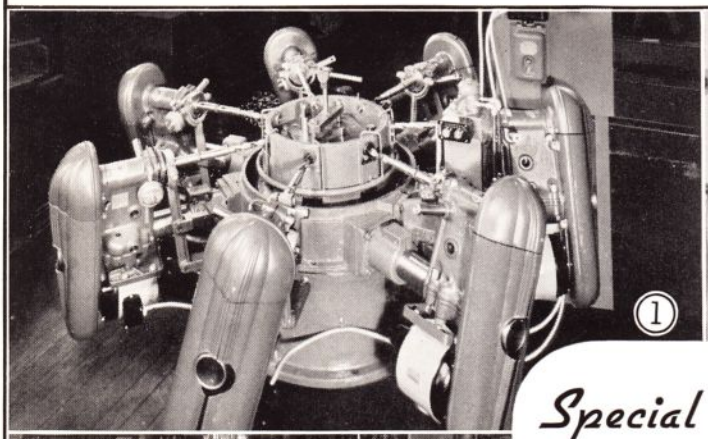
SLO-SPEEDS	HIGH SPEED
385 R.P.M.	725 R.P.M.
600 R.P.M.	1150 R.P.M.
935 R.P.M.	1750 R.P.M.
1450 R.P.M.	2700 R.P.M.
2240 R.P.M.	4400 R.P.M.

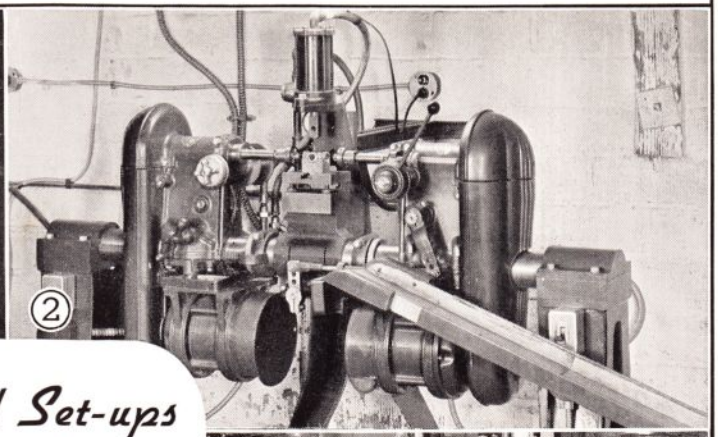
MANUFACTURED BY

THE DELTA MANUFACTURING COMPANY

MILWAUKEE, WISCONSIN

17″ DRILL PRESS





Special Set-ups

The heads, columns, flanges, etc. of DELTA-Milwaukee drill presses may be obtained as separate units so that special set-ups can be made. The heads can be used in any position — vertical, horizontal or angular — because their self-sealed ball bearing construction eliminates necessity for lubrication.

(1) This unit uses DELTA-Milwaukee standard 17" heads for drilling, chamfering and reaming valve tappet holes on seven cylinder radial aircraft engine crankcases. Heads are cam operated. Two groups of seven holes are drilled in each chamfering at one setting. The groups are at different positions radially and on a different plane, which necessitates indexing the inner portion of the fixture as well as raising and lowering position of fixture.

(2) Two standard 17" DELTA-Milwaukee Drill Press heads used horizontally in a special machine for seating and facing bronze valve bodies.

(3) Machine built for facing, drilling and tapping equalizer beams, used for rear-axle assemblies on trucks. Accommodates beams of five different sizes. Four 17" drill heads used. The two upright heads drill ½" holes automatically. Horizontal heads hand fed.

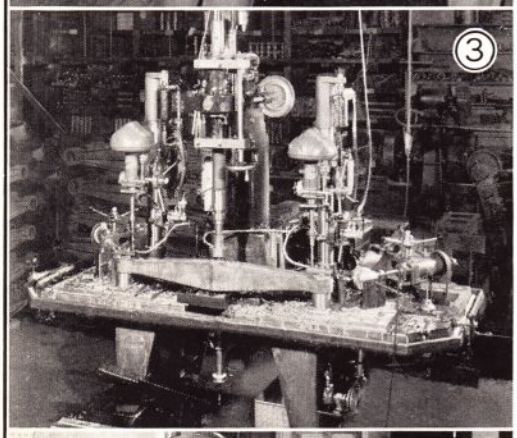
(4) A special set up using two 17" drill press heads for drilling and tapping operations on aircraft-engine crankcases. Jig is indexed in both the horizontal and vertical plane and also slides longitudinally so that the crankcases can be brought under the drilling and tapping heads.

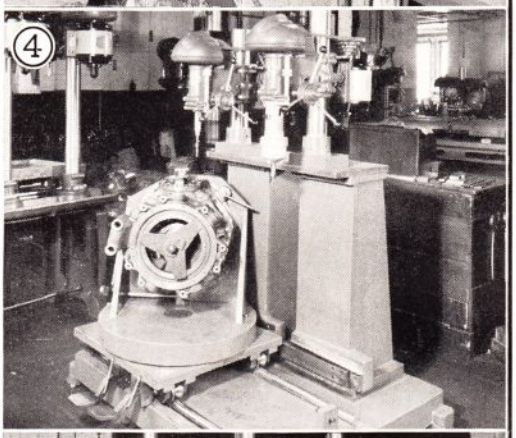
(5) Two Delta Drill Press heads are used for drilling and spotfacing aircraft engine crankcase parts in this set-up.

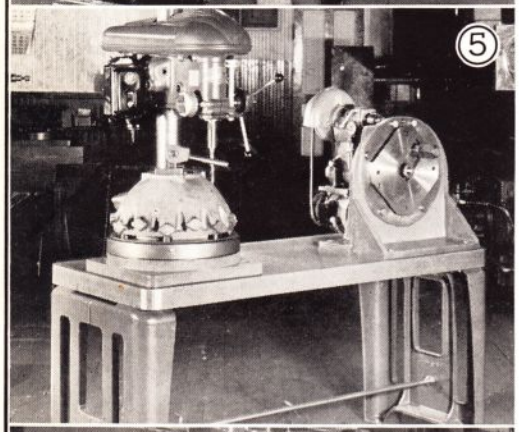
(6) Here is a special machine made up of three standard Delta Drill Press heads on extra long columns mounted on a standard Delta table set exceptionally low. The jig rides across the table on two bars set into slots cut along the table surface.

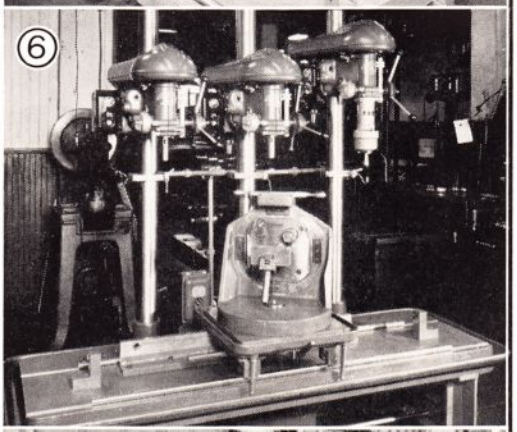
(7) This self-contained drilling fixture core drills two 1" holes simultaneously. Machine consists of two Delta Drill Press heads mounted on a single column, one head above the table and the other in an inverted position below the table.

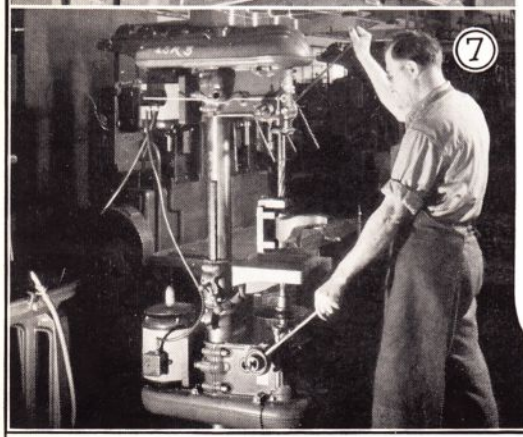
(8) Mounted horizontally in a special frame, this Delta drill press head is used for flaring ends of aluminum alloy tubes. The work is held by an air clamp against the flaring cone.

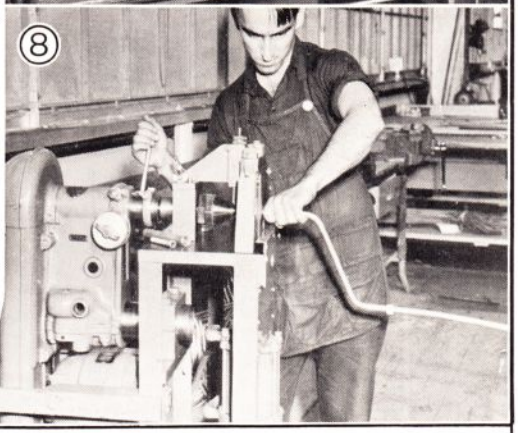












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THE DELTA MANUFACTURING COMPANY

MILWAUKEE, WISCONSIN

P.M. No. 1519
DATE 7-1-43
REPLACES: NONE
INDEX: 120-1-A

DELTA MILWAUKEE

THE DELTA MFG. CO., MILWAUKEE, WIS.

SERIES 17

17" DRILL PRESS

OPERATING AND MAINTENANCE INSTRUCTIONS
For 17" Drill Press

The 17" drill press of either the bench or floor type reaches you completely assembled. All that is necessary is to raise the head to the operating position desired. On floor-type drills without raising mechanism in the head, loosen clamp nuts DP-828, raise head to position by sliding upward on the column, then re-tighten clamp nuts. On drills with raising mechanism in head, loosen clamp bolt on thrust collar below rack and operate ball-crank handle DDL-160-C to feed rack up through head. When rack is through head as far as necessary, re-tighten collar clamp bolt, then loosen the head clamp nuts and operate ball-crank handle to move head upward on the column. By alternately feeding the rack through the head and the head up and down on the column in this manner, the head and the rack can be set in the most convenient manner for the job. It is not necessary to move the rack, once set, except for extreme movements of the head.

POWER REQUIRED

For light shop work up to ½" in cast iron, a ½-H.P. motor of the type of our No. 82-710 or No. 84-510 motor may be used. For medium duty work a ¾-H.P. motor is recommended. Use only a ball-bearing motor. preferably one with sealed ball bearings. For work up to ¾" in cast iron, and for heavy continuous work a 1 H.P. motor is recommended. The motor should turn in a clockwise direction, viewed from the top of the motor, when installed. Our motors with built-in switches should be installed so that the switch is at the left-hand side as you face the machine. If motor turns the wrong way, reverse its rotation in accordance with the instructions accompanying the motor.

Install the motor pulley with the largest step at the top, and align it carefully with the spindle pulley to avoid undue wear on the sides of the belt. The motor bracket is adjustable back and forward for correct belt tension. Longer belt life will be obtained if the tension is not too great.

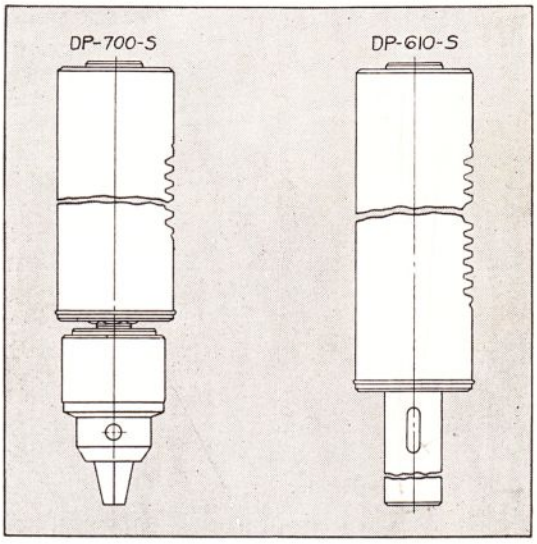
OPERATING DRILL PRESSES IN GANGS

When a number of drill presses are to be used in gangs, as for production work, they should be provided with three-phase motors for the following reasons: Three-phase motors will save from 20 to 30 percent of the current required by ordinary single-phase motors, besides delivering more power. Since they have no brushes, commutators, starting switches or short-circuit switches they are practically trouble-free, thus reducing upkeep cost. They are installed on a power line and thus do not flicker lights. A number of drill presses should not be operated with single-phase motors, taking the current from the lighting circuit; in fact, this practice is prohibited by many lighting companies.

Three-phase motors, being wound for 220 volts, must be operated from a power line. They should be wired by a licensed electrician and provided with three-phase switches, as they have no built-in switches or extension cords.

INSTALLING PRODUCTION TABLE

Production table No. 1372 may be installed on the floor-type machine instead of the regular tilting table. To install, remove index pin DP-666-S and clamp nut and washer SP-1027 and SP-1707, then remove the regular table. Install production table and replace clamp nut and washer and index pin. The production table has a 12½" x 17" table surface and is provided with a 1½" oil trough; it is especially suitable for the handling of jigs in regular production work. Oil troughs are tapped for ½" drain pipe at the rear.



Illustrations above show two styles of quill assembly (see parts list) for 17" drill presses.

CHANGING SPINDLES

Drill presses fitted with No. 2 Morse-taper sockets may be changed to ½" capacity Jacobs-chuck equipment, or vice versa. It is best to exchange the complete quill assembly, so as to avoid disturbing the preloading of the bearings, and to avoid damage to the bearings that might be caused if the attempt is made to withdraw the bearings without proper equipment.

To remove the quill, remove the head knob NJ-220 holding the return spring housing on the left of the head. Loosen the screw holding the depth indicator pointer and turn the pointer down out of the way.

Remove the spring housing, carrying the depth scale, the plate covering the spring and the washer inside the plate. Now release the tension on the spindle return spring by turning the worm screw DP-621 (Fig. 3). This will be found in the head at the rear of the spring housing and is turned with a screwdriver. Back the worm screw completely out, when the entire spring in its case may be withdrawn. Quill-pinion shaft DP-618 (Fig. 3) may then be withdrawn with one hand while holding the quill with the other. Run off the knurled stop nuts DP-629 and withdraw the quill and spindle assembly.

To re-install, insert the quill assembly from the bottom of the head and install the pinion shaft. Install stop-rod bracket, then slip the spring and its casing into the head. Insert the worm screw, and screw up until the proper spring-return tension is obtained. This should be just sufficient to return the quill to the top position; do not make this tension too strong. Replace the spring-housing washer, plate, cover, star wheel and spring, and set the indicator pointer at zero when the spindle is at the top position.

INSTALLING RAISING MECHANISM

The following instructions apply to the installation of the raising gear in the table bracket of the floor-type machine, as indicated in the cross-sections, Figs. 6 and 7. The parts shown by the reference numbers, and the method of installation, are exactly the same when the mechanism is installed in the drill-press head as shown in cross-section Fig. 3. When installing in the head, the motor and bracket should first be removed.

Referring to Figs. 6 and 7, loosen the clamp bolts holding table bracket to column and remove bracket. Remove table from bracket and place bracket, flat side down, on the bench. Slip ball-bearing 407-22 into counterbore in bracket and fasten with spanner nut DP-638, setting nut down firmly. Slide worm-shaft DP-636 through bearing, keeping the flats to the outside. Slip collar DP-637 onto shaft, next to bearing, then slip on worm DP-635, with hub away from bearing. (WORM HUB AND SHAFT ARE CENTER-PUNCHED TO INDICATE LARGE END OF TAPER-PIN HOLE. CENTER-PUNCH MARK ON SHAFT SHOULD BE FILED OFF TO INSURE WORM GOING ON EASILY. BE SURE TO FIT TAPER PIN INTO HOLES CORRECTLY). Push shaft through opposite plain bearing, putting a drop of oil on it first. Put collar DP-639 on shaft outside of spanner nut and fasten in place with taper pin. Put taper pin in place in worm hub. Fasten ball-crank handle in place, and, if shaft turns freely, drive the taper pins home.

Set compound gear assembly DP-640-F in place to mesh with worm DP-635, and slide shaft DP-642 through worm gear and collar into the bearing, and place fiber washer NCS-43 over shaft on top of pinion. Place table bracket in position against column, put clamp cap in place, replace clamp bolts and tighten Allen setscrew SP-207 against worm shaft DP-642. Loosen thrust collar DP-678, slip safety hook of DP-641-S over clamp collar and thrust bearing as in Fig. 9, then slide rack DP-641 through bracket from below. Tighten thrust collar on column.

To remove mechanism, reverse these instructions, removing rack, clamp cap, bracket, worm gear and shaft, worm and shaft in the order named. To install mechanism in head, follow the same instructions, first removing head from column and sliding thrust collar and bearing over the end of the column.

INSTALLING FOOT FEED

Slip gear quadrant DP-687 up through opening in bottom of drill-press head, then slip the splined shaft DP-688 (See horizontal cross-section) through the bearings and quadrant, from the right-hand side of the machine. The shouldered end of the splined shaft goes through the left-hand side of the head as shown in the cross-sectional view. Tighten the clamp screw holding the quadrent to the shaft.

Slip lever DP-686 over the outer splined end of the shaft, in approximately the position shown in the side view of the head, and with the quadrant positioned as indicated. Pulling down on the lever should now move the drill-press quill down. Tighten lever DP-686 on shaft, and assemble one clevis DP-693 to the lever as shown, with stud DP-694 and cotter pin SP-2108.

Assemble lower bracket DP-685 to the column, about 2 inches up from the bottom, and tighten temporarily in this position. Assemble foot lever DP-692 to stud DP-690, but do not tighten the nut that holds the lever to the stud as yet. Assemble lower clevis and reach rod to the foot lever, then slip the connecting tube DP-696 over the rods, set the foot lever approximately level, the upper feed lever DP-686 in the position shown in the side view, and tighten the setscrews SP-302 on the connecting tube, centering the tube between upper and lower reach rods.

To tension the foot-lever spring, have the nut SP-1027 loose, as instructed above, put a wrench on the flats of the stud DP-690, and turn the stud forward (toward the column) about half a turn. Tighten nut SP-1027 and, if tension is not enough, loosen nut again and turn stud further.

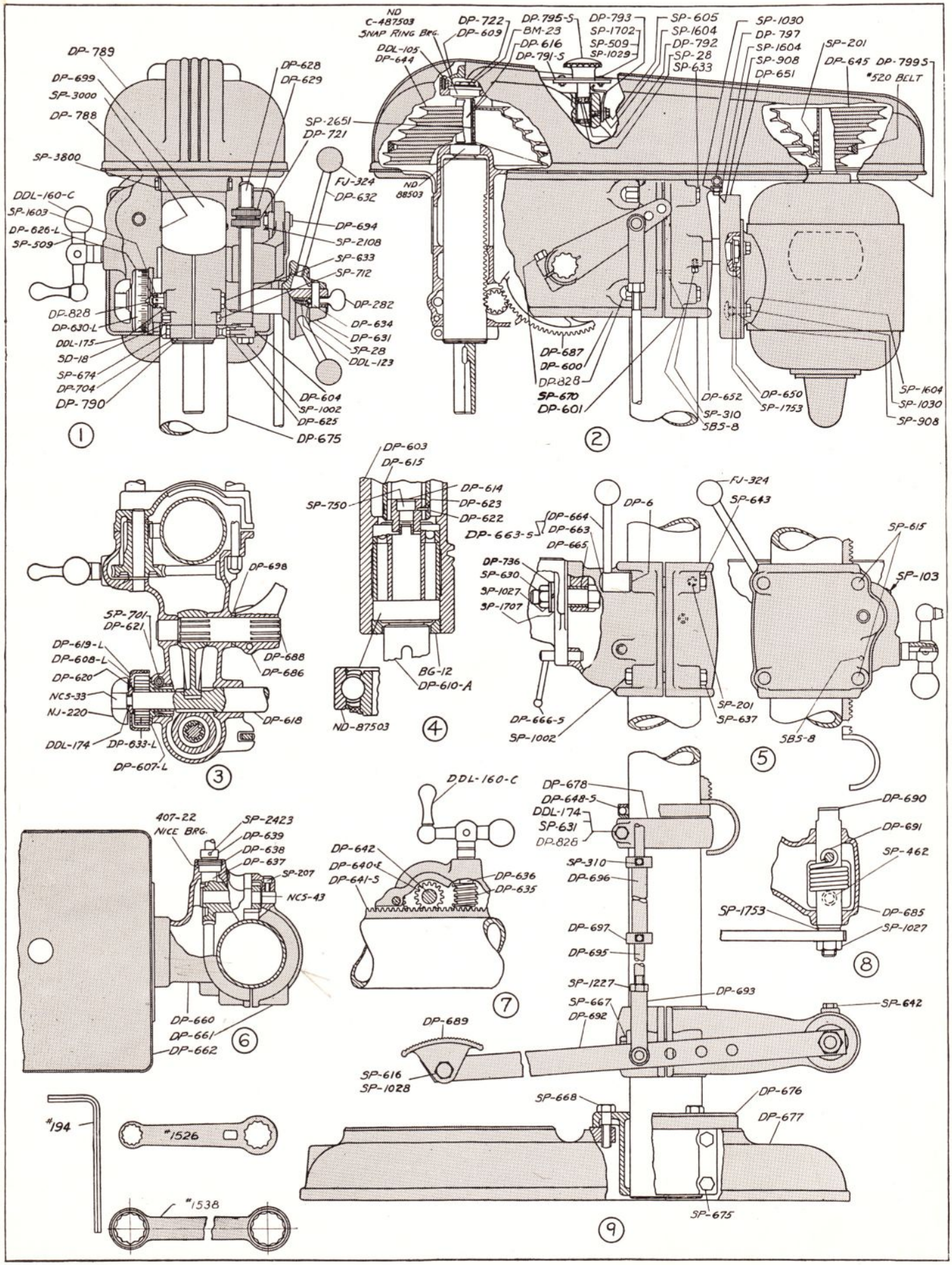
Height of the foot-feed lever can be adjusted both by the position of the bracket on the column and the holes into which the lower clevis is placed. Altering the adjustment of the clevises in the holes in upper lever and foot lever also permits a wide range of stroke adjustment for the quill.

LUBRICATION

The self-sealed ball bearings in the quill and spindle-pulley are packed at the factory with enough lubricant for the life of the bearings, and require no attention. A drop of oil may occasionally be placed on the pinion shaft and quill rack and on the raising-mechanism shafts, as well as on the pivots of the foot-feed mechanism. No other lubrication is necessary.

IMPORTANT

On drill presses having racks without the safety hook DP-659, never attempt to raise or lower table or head without first loosening clamp cap—on the head by means of the clamp bolts; on the table by means of ball-end clamp lever. If the ball-crank lever is operated to lower table or head without first loosening the clamp the rack will be fed upward away from the thrust bearing. Then if the clamp is loosened the whole head or table will drop against the bearing and will strip the pinion or damage the bearing. This, of course, cannot happen with the safety hook on the rack.


DP-789
DP-699
SP-3000
DP-788
SP-3800
DDL-160-C
SP-1603
DP-626-L
SP-509
DP-828
DP-630-L
DDL-175
SD-18
SP-674
DP-704
DP-790
DP-628
DP-629
SP-2651
DP-721
FJ-324
DP-632
DP-694
SP-2108
SP-633
SP-712
DP-282
DP-634
DP-631
SP-28
DDL-123
DP-604
SP-1002
DP-625
DP-675
1
ND C-487503 SNAP RING BRG.
DP-722
DP-609
DP-795-S
BM-23
DP-616
DP-791-S
DP-793
SP-1702
SP-509
SP-1029
SP-605
SP-1604
DP-792
SP-28
SP-633
SP-1030
DP-797
SP-1604
SP-908
DP-651
SP-201
DP-645
DP-799-S
#520 BELT
DDL-105
DP-644
ND 88503
DP-687
DP-600
DP-828
SP-670
DP-601
DP-652
SP-310
SBS-8
DP-650
SP-1753
SP-1604
SP-1030
SP-908
2
DP-603
DP-615
SP-750
DP-614
DP-623
DP-622
BG-12
DP-610-A
ND-87503
4
DP-698
SP-701
DP-621
DP-619-L
DP-608-L
DP-620
NC5-33
NJ-220
DDL-174
DP-633-L
DP-607-L
DP-688
DP-686
DP-618
3
DP-6
FJ-324
SP-643
DP-664
DP-663
DP-663-5
DP-665
DP-736
SP-630
SP-1027
SP-1707
DP-666-5
SP-1002
SP-201
SP-637
SP-615
SP-103
SBS-8
5
DDL-160-C
DP-642
DP-640-L
DP-641-S
DP-636
DP-635
7
DP-678
DP-648-5
DDL-174
SP-631
DP-828
SP-310
DP-696
DP-697
DP-695
SP-1227
SP-667
DP-692
DP-689
SP-616
SP-1028
DP-693
SP-642
SP-668
DP-676
DP-677
SP-675
9
DP-690
DP-691
SP-462
SP-1753
DP-685
SP-1027
8
407-22 NICE BRG.
SP-2423
DP-639
DP-638
DP-637
SP-207
NC5-43
DP-660
DP-661
DP-662
6
#194
#1526
#1538

REPLACEMENT PARTS

IMPORTANT: To avoid possible errors be sure to include the serial number of the machine when ordering parts for repair or replacement.

Part No.	Description	No. Req.	Price Each
	HEAD PARTS		
DP-600-R	Head Casting with matching cap....	1	$10.15
DP-601	Clamp Cap for head casting	1	2.10
DP-609	Cap for spline shaft bearing.....	1	.25
DP-626-L	Indicator Pointer	1	.10
DP-699	Name Plate	1	.20
DP-828	7/16-14 Special Clamp Nut	3	.10
DDL-175	29/64" Steel Washer	1	.10
SBS-8	Dowel Pin	1	.10
SD-18	1/4-20 Special Nut	1	.10
SP-309	5/16-18x5/8" Sq. Hd. Set Screw.....	2	.10
SP-509	1/4-20x1/2" Rd. Hd. Machine Screw....	1	.10
SP-615	7/16-1/4 x 1 3/4 Hx. Hd. Cap Screw	2	.10
SP-633	7/16-14 x 3 1/4" Hx. Hd. Cap Screw....	3	.10
SP-712	1/4-20 x 2 3/4" Fil. Hd. Cap Screw....	1	.10
SP-1603	1/4" Washer	1	.10
SP-3000	No. 6 Rd. Hd. Self-tapping Screw..	2	.10
	TABLE PARTS		
DP-6	1 x 33/64 x 3/16 Steel Washers.....	1	.10
DP-660	Table Bracket	1	3.10
DP-660-S	Table Bracket complete with cap gears	1	12.50
DP-661	Table Bracket Clamp Cap.....	1	1.50
DP-662	Table only	1	5.50
DP-663-S	Clamp Handle for table bracket.....	1	.60
DP-666-S	Index Pin for table.....	1	.35
DP-736	Washer	1	.10
FJ-324	Ball for table clamp handle	1	.15
SBS-8	Dowel Pin	1	.10
SP-201	7/16-18 x 5/16 Allen Setscrew	1	.10
SP-615	7/16-14 x 1 3/4" Hx. Hd. Cap Screw....	2	.10
SP-638	3/4-10 x 2 1/2 Hx. Hd. Setscrew	1	.20
SP-643	1/2-13 x 4 Hx. Hd. Cap Screw.....	1	.15
SP-1002	7/16-14 Hx. Nut	1	.10
SP-1027	3/4-10 Hx. Nut	1	.10
SP-1707	3/4 Lock Washer	1	.10
	BASE PARTS		
DP-676	Base Flange	1	2.60
DP-677	Floor-type Base	1	10.00
SP-675	7/8-20 x 3 Hx. Hd. Cap Screw.....	2	.10
SP-668	1/2-20 x 1 3/4 Hx. Hd. Cap Screw.....	3	.10
#1367	3 1/2" x 60" Column	1	
#1368	3 1/2" x 38 1/2" Column for bench mach.	1	
	QUILL AND PINION PARTS		
DP-282	Thumb Screw	1	.10
DP-603	Quill only	1	3.00
DP-607-L	Return Spring Housing	1	.75
DP-607-S	Return Spring Housing, with Pinion Shaft Return Spring.....	1	1 35
DP-608-S	Return Spring Housing Cover, with depth scale.....	1	.70
DP-618	Pinion Shaft	1	1.55
DP-619-L	Spacer Disk	1	.10
DP-620	Fiber Washer for spring housing....	1	.10
DP-621	Spring-adjusting Screw	1	.10
DP-630-L	Depth Scale for spring housing.....	1	.15
DP-631	Hub for pilot wheel	1	.85
DP-631-S	Pilot Wheel complete	1	2.10
DP-632	Pilot Wheel Lever	3	.15
DP-633-L	Pinion-shaft Return Spring	1	.55

Part No.	Description	No. Req.	Price Each
	QUILL AND PINION PARTS (Continued)		
DP-634	Pilot-wheel Hub Pin	1	$ .10
DP-704	Garter Spring	1	.10
FJ-324	Pilot-wheel Handle Ball.....	3	.15
DDL-123	Coil Spring	1	.10
DDL-174	29/64 x 1/8" Special Washer.....	1	.10
BG-12	Bearing Closure Nut.....	1	.20
ND-87503	Quill Ball Bearing	2	1.90
NJ-220	Hand Knob	1	.20
NCS-33	Star Wheel Spring	1	.10
SP-28	1/4" Steel Ball	1	.10
SP-701	1/4"-20x3/4" Fillister Head Cap Screw	1	.10
	SPINDLE PARTS		
DP-42	Jacobs Chuck with key.....	1	6.75
DP-610-S	No. 2 Morse-taper Socket Assembly, Bearings, Quill & Spindle Sleeve	1	12 50
DP-615	Spindle Sleeve	1	1.10
DP-616	Spindle only	1	1.75
DP-623	Drive-pinion Key	1	.10
DP-700-S	Jacobs Chuck Assembly, with Shank, Bearing, Quill and Sleeve.....	1	19.75
DP-722	Lockwasher 1 3/16 x 13/32 x 1/32	1	.10
BM-23	Special Nut .679"-28 thr.	1	.10
ND-88503	Special Sealed Ball Bearing.....	1	2.00
ND-C-487503	Special Snap Ring Bearing.....	1	2.00
SP-29	1/4" Steel Ball	1	.10
SP-750	5/16-18 x 1 Allen Hd. Cap Screw.....	1	.10
	GUARD AND PULLEY PARTS		
DP-644	Spindle Pulley (slo-speed).....	1	3.00
DP-709-S	Spindle Pulley (high-speed).....	1	3 35
DP-788	Belt Guard (front lower half).....	1	1.35
DP-789	Upper Belt Guard	1	4.15
DP-791-S	Mounting Plate with Support Rod and Garter Spring for Guard....	1	.85
DP-793	Snap-Spring for guard support rod..	1	.10
DP-795-S	Guard Support Rod with knob.....	1	.60
DP-797	Pin for Belt Guard	1	.30
DP-799-S	Belt Guard (rear lower half) with clips	1	1.65
SP-28	1/4" Steel Ball	2	.10
SP-509	1/4"-20 x 1/2" Rd. Head. Mach Screws	4	.10
SP-605	5/16"-18 x 1/2" Hex. Head Cap Screw..	1	.10
SP-908	5/16" x 1" Round Head Stove Bolt....	2	.10
SP-1029	1/4"-20 Hex. Nut	4	.10
SP-1030	5/16"-18 Hex. Nut	2	.10
SP-1604	Steel Washer 3/4" O.D. x 5/16" I.D x 1/16" Thick	3	.10
SP-1702	Lock Washer 7/16" O.D. x 1/4" I.D. x 1/16" Thick	4	.10
SP-2651	3/16" x 3/16" x 2 1/8" Key	1	.10
SP-3800	5/16"-18 x 7/8" Trimmed Hex. Head External Washer	1	.10
#1311	Motor Pulley (slo-speed).....	1	
#1312	Motor Pulley (high-speed).....	1	
	STOP PARTS		
DP-604	Yoke	1	.60
DP-625	Special Nut for stop yoke.....	1	.10
DP-628	Stop Rod	1	.55
DP-629	Knurled Nut for Stop rod.....	2	.20
DP-721	Stop Nut Washer	1	.10
SP-674	5/16-18 x 2 3/4 Hx. Hd. Cap Screw.....	1	.10
SP-1002	7/16-14 x 9/32 Hex. Nut	1	.10

Replacement Parts (Continued on Next Page)

REPLACEMENT PARTS (Continued)

Part No.	Description	No. Req.	Price Each
	MOTOR BRACKET PARTS		
DP-650	3/4-16 Hx. Nut for motor-plate pin	2	$ .10
DP-651	Motor Plate	1	1 25
DP-651-S	Motor Plate Assembly	1	1.95
DP-652	Motor Plate Pin	2	.35
SP-908	5/16"x1" Round Head Stove Bolt	4	.10
SP-1030	5/16" Hex. Nut	4	.10
SP-1604	5/16 Washer	4	.10
SP-1753	3/4 Shakeproof Washer	2	.10
	RAISING MECHANISM		
DP-613	7/16-14 Special Nut	1	.15
DP-636-S	Worm-shaft Assembly	1	1.40
DP-638	Bearing-closure Spanner Nut	1	.10
DP-640-F	Compound Gear Assembly	1	2.25
DP-641-S	Rack with Hook	1	2.35
DP-642	Compound-gear Shaft	1	.15
DP-648-S	Rack Thrust Bearing Assembly	1	1.30
DP-678	Collar for rack thrust bearing	1	.90
NCS-43	Fiber Washer	1	.10
DDL-160-C	Ball Crank Handle	1	.65
DDL-174	Steel Washer 1" x 29/64" x 1/8"	1	.10
407-22	Ball Bearing for worm shaft	1	.60
SP-207	5/16-18 x 1/2 Allen Setscrew	1	.10
SP-631	7/16"-14 x 4" Hx. Hd. Cap Screw	1	.15
SP-710	1/4-20 x 7/8 Fill. Hd. Cap Screw	1	.10
SP-2423	Taper Pin for worm and collar	2	.10
	FOOT-FEED PARTS		
DP-685	Column Bracket only	1	2.50
DP-686	Spline-shaft Lever	1	1.90
DP-687	Gear Sector	1	1.90

Part No.	Description	No. Req.	Price Each
	FOOT FEED PARTS (Continued)		
DP-688	Spline Shaft	1	$1.25
DP-689	Treadle Pad	1	.35
DP-690	Shaft for treadle lever	1	.90
DP-691	Treadle-lever Return Spring	1	.20
DP-692	Treadle Lever	1	1.60
DP 693	Clevis	2	.40
DP-694	Clevis Pin	2	.10
DP-695	Reach Rod	2	.40
DP-696	Connecting Tube only	1	.80
DP-696-S	Connecting Tube, with collars	1	1.40
DP-697	Tube Collar	2	.15
DP-698	Fiber Washer	1	.10
SP-310	3/8-16 x 3/8 Sq. Hd. Set Screw	2	.10
SP-462	3/8-24 x 2 Flat Hd. Mach. Screw	1	.10
SP-616	1/2-13 x 1 1/2 Hex. Hd. Cap Screw	1	.10
SP-667	1/2-20 x 2 1/2 Hex. Hd. Cap Screw	2	.10
SP-642	3/8-16 x 1 Hex. Hd. Cap Screw	1	.10
SP-670	3/8-24 x 1 3/4 Hex. Hd. Cap Screw	2	.10
SP-1027	3/4-10 Hex. Nut	1	.10
SP-1028	1/2-13 Hex. Nut	1	.10
SP-1207	3/8 Hex. Nut	1	.10
SP-1227	1/2-20 Hex. Jam Nut	2	.10
SP-1707	3/4 Lock Washer	1	.10
SP-2108	1/8 x 1 Cotter Pin	2	.10
	MISCELLANEOUS		
#194	5/16 Allen Wrench (old SP-2)	1	
#501	V-Belt Cir. in. 49 7/8", out. 51 11/16"	1	
#520	V-Belt Cir. in. 52 1/4", out. 54 1/8"	1	
#1526	Double End Wrench 7/16" and 9/16" openings	1	
#1538	Double End Wrench, 5/8" and 3/4" openings	1	

Prices Subject To Change Without Notice.

NOTE: Prices in this list apply only to parts ordered for repair and replacement. They cannot be used for computing allowance values when a machine is ordered "less" certain parts. Ask for quotations on such special machines.

DELTA
MILWAUKEE

P.M. No. 1522
DATE: 2-1-44 Revise
REPLACES 5-1-43
INDEX: 120-1-B

DELTA MILWAUKEE

THE DELTA MFG. CO., MILWAUKEE, WIS.

SERIES 17

17" DRILL PRESS

OPERATING AND MAINTENANCE INSTRUCTIONS
For Part No. 1380 Raising Mechanism

The following instructions apply to the installation of the raising gear in the table bracket of the floor-type machine, as indicated in the cross-sections, Figs. 6 and 7. The parts shown by the reference numbers, and the method of installation, are exactly the same when the mechanism is installed in the drill press head as shown in cross-section Fig. 3. When installing in the head, the motor and bracket should first be removed.

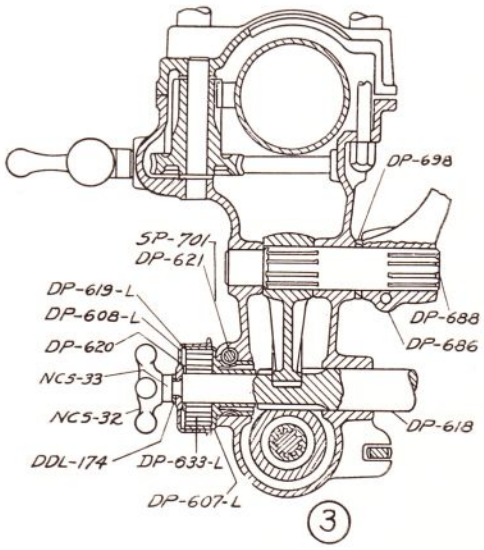
Referring to Figs. 6 and 7, loosen the clamp bolts holding table bracket to column and remove bracket. Remove table from bracket and place bracket, flat side down, on the bench. Slip ball-bearing 407-22 into counterbore in bracket and fasten with spanner nut DP-638, setting nut down firmly. Slide worm-shaft DP-636 through bearing, keeping the flats to the outside. Slip collar DP-637 onto shaft, next to bearing, then slip on worm DP-635, with hub away from bearing. (WORM HUB AND SHAFT ARE CENTER-PUNCHED TO INDICATE LARGE END OF TAPER-PIN HOLE. CENTER-PUNCH MARK ON THE SHAFT SHOULD BE FILED OFF TO INSURE WORM GOING ON EASILY. BE SURE TO FIT TAPER PIN INTO HOLES CORRECTLY) Put a drop of oil on the shaft, then push shaft through opposite plain bearing. Put collar DP-639 on shaft outside of spanner nut and fasten in place with taper pin. Put taper pin in place in worm hub. Fasten ball-crank handle in place, and, if shaft turns freely, drive the taper pins home.

Set compound gear assembly DP-640-F in place to mesh with worm DP-635, and slide shaft DP-642 through worm gear and collar into the bearing, and place fiber washer NCS-43 over shaft on top of pinion. Place table bracket in position against column, put clamp cap in place, replace clamp bolts and tighten Allen setscrew SP-207 against worm shaft DP-642. Loosen thrust collar DP-678, slip safety hook of DP-641-S over clamp collar and thrust bearing as in Fig. 9, on following page then slide rack DP-641-S through bracket from below. Tighten thrust collar on column.

* * * *

To remove mechanism, reverse these instructions, removing rack, clamp cap, bracket, worm gear and shaft, worm and shaft in the order named. To install mechanism in head, follow the same instructions, first removing head from column and sliding thrust collar and bearing over the end of the column.

(OVER)



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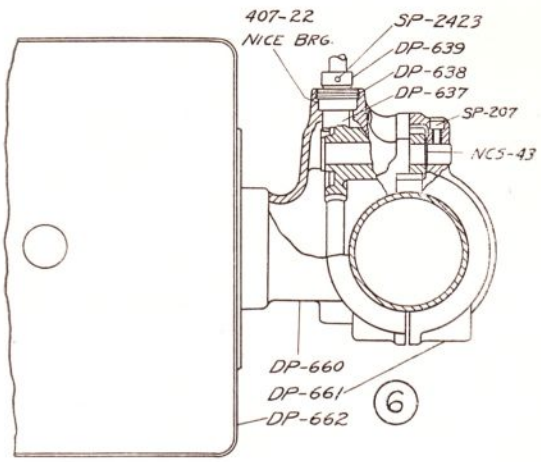

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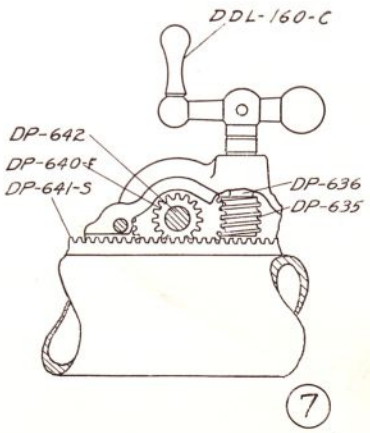


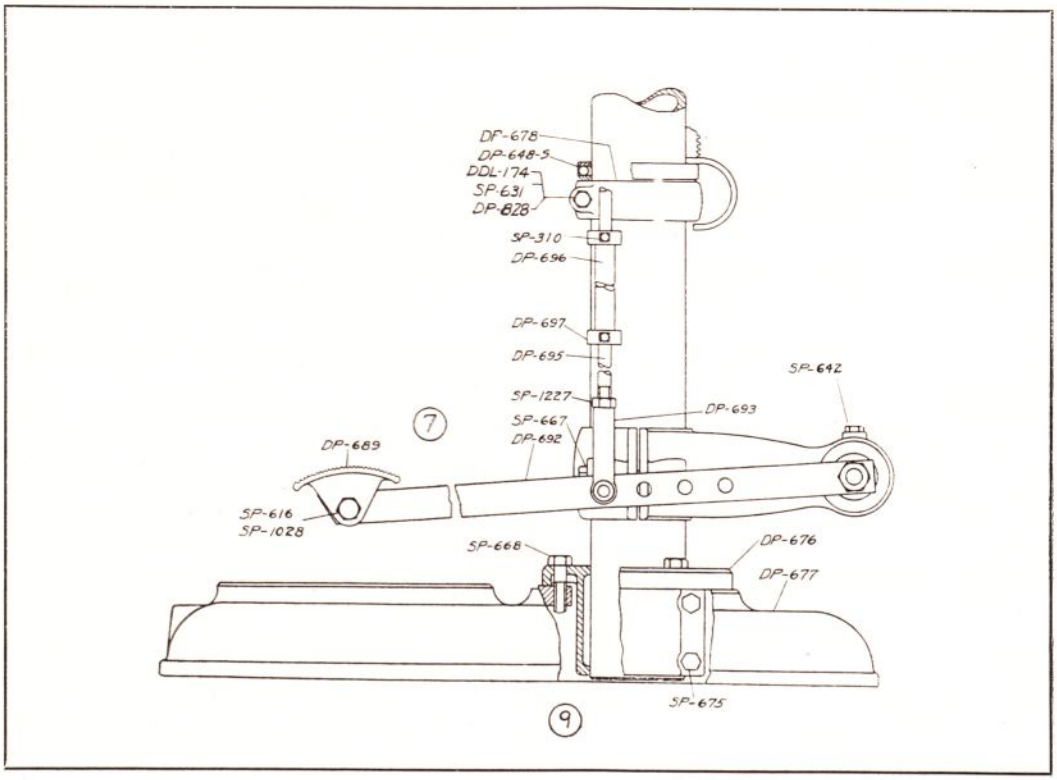
7

IMPORTANT

On drill presses having racks without the safety hook DP-659, never attempt to raise or lower table or head without first loosening clamp cap—on the head by means of the clamp bolts; on the table by means of ball-end clamp lever. If the ball-crank lever is operated to lower table or head without first loosening the clamp the rack will be fed upward away from the thrust bearing. Then if the clamp is loosened the whole head or table will drop against the bearing and will strip the pinion or damage the gearing. This, of course, cannot happen with the safety hook on the rack.

RAISING MECHANISM REPLACEMENT PARTS

Part No.	Description	No. Req.	Price Each
DP-828	7/16-14 Special Nut	1	$ .10
DP-635-S	Worm-shaft Assembly	1	1.40
DP-638	Bearing-closure Spanner Nut	1	.10
DP-640-F	Compound Gear Assembly	1	2.25
DP-641-S	Rack with Hook	1	2 35
DP-642	Compound-gear Shaft	1	.15
DP-648-S	Rack Thrust Bearing Assembly	1	1.30
DP-678	Collar for rack thrust bearing	1	.90
NCS-43	Fiber Washer	1	.10
DDL-160-C	Ball Crank Handle	1	.65
DDL-174	Steel Washer 1" x 29/64" x 1/8"	1	.10
407-22	Ball Bearing for worm shaft	1	.60
SP-207	5/16-18 x 1/2 Allen Setscrew	1	.10
SP-631	7/16"-14 x 4" Hx. Hd. Cap Screw	1	.15
SP-2423	Taper Pin for worm and collar	2	.10



P.M. 1642
DATE: 10-1-43 REVISE
REPLACES: 8-15-43
INDEX: 120-1-D

DELTA MILWAUKEE

THE DELTA MFG. CO., MILWAUKEE 1, WIS.

SERIES 17 DRILL PRESS

OPERATING AND MAINTENANCE INSTRUCTIONS
For No. 17-860 17" Drill Press Slow Speed Attachment

PURPOSE OF ATTACHMENT

The primary purpose of this attachment is to provide a range of lower speeds to any Slo-Speed 17" Delta Drill Press with a No. 2 Morse taper spindle already in the field, and to make it possible to easily and quickly apply and remove the attachment from the machine when needed for short production runs. The unit can be used on the High-Speed machines but is not recommended for them, especially at the two highest speeds.

The important feature in this unit is that it permits a high input belt speed to drive through double reduction gears and provides a positive chatter-free rotation to the output spindle, thus eliminating the usual chatter always resulting from a slow speed spindle driven directly by a belt.

It is generally recommended for hand feed, and it may be used in connection with the foot feed attachment. It is not recommended for use with the power feed attachment, however, since the Power Feed does not provide low enough rates of feed for these lower spindle speeds.

The speeds available through the use of this attachment range from 80 R.P.M. to 475 R.P.M., as shown on the chart on Page 6.

APPLYING TO DRILL PRESS

This unit reaches you completely assembled except for the stop rod which has been removed for convenience in packing. A wood plug is fitted into the upper end of the case to keep out dirt and also to provide a means of keeping the drive pinion with its needle bearing in a dirt-free position when the unit is removed from the machine. Therefore the wood plug should not be thrown away.

The attachment is made to apply only to machines with a No. 2 Morse taper spindle and if the spindle nose of the machine has been abused so it runs out in excess of .006, it should be corrected before the unit is applied.

After the spindle has been found true, lower the quill about 3 inches and lock in position by means of the clamp screw. Remove the garter spring and stop rod assembly from the quill. Now remove the drive pinion from the wood plug and insert securely into the spindle nose. ***(Caution:—Do not attempt to assemble the gear case to the spindle with the No. 2 Morse taper shank drive pinion in the gear case.)***

After fastening the new stop rod loosely in place, slip the leather washer on the quill and slide the attachment over the pinion and quill so that the shoulder in the gear case strikes the end of the quill, and tighten clamp bolt. ***(Caution:—The clamp bolt for holding the attachment to the quill can be clamped securely but should not be excessively tightened, as this may injure the spindle bearings.)***

Release the quill clamp screw and after drawing up the stop rod nut, raise and lower the quill a few times to be sure the stop rod is properly aligned and is not rubbing or binding against the sides of the stop rod, stop and guide.

The quill spring should now be adjusted to counterbalance the additional weight on the quill. It is important to note that the return spring cannot be expected to rapidly return this attachment with heavy cutters in place, so that in most cases, it is necessary to "feed" and "return" by hand. Therefore, the spring should not be adjusted to its maxium tension, since this would reduce its life span.

CAPACITY AND TYPES OF WORK

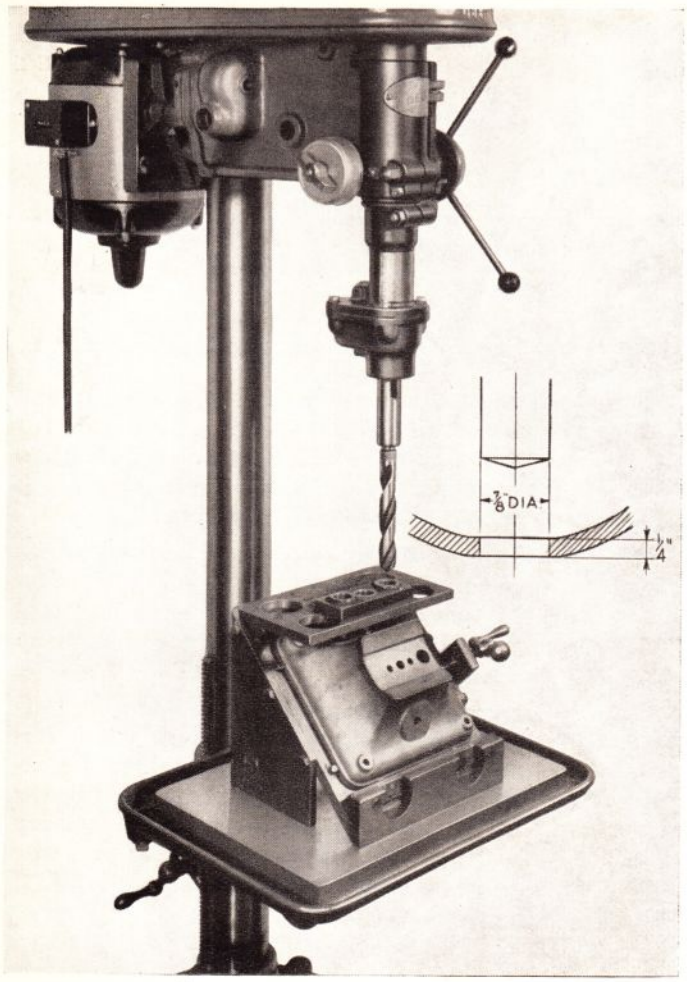
The maximum quill travel with this attachment in position is 4".

The maximum capacity of the 17" Drill Press is generally considered as capable of drilling a deep ¾" hole into solid cast iron, and in bringing out this attachment it has not been our intention to increase this capacity but rather to extend the usefulness of the press by enabling the user to spot face, ream, countersink, and core drill where slower than normal speeds are generally required. It is therefore important that consideration be given to the proper speed when setting up a job so that undue strains in the machine, and a rough finish, will be avoided. In general, the output speed should be as low as possible, depending on the material being cut and the type of cutter used. For best results all work should be securely held in a fixture or by other means. The photographs show typical types of work that can be accomplished.

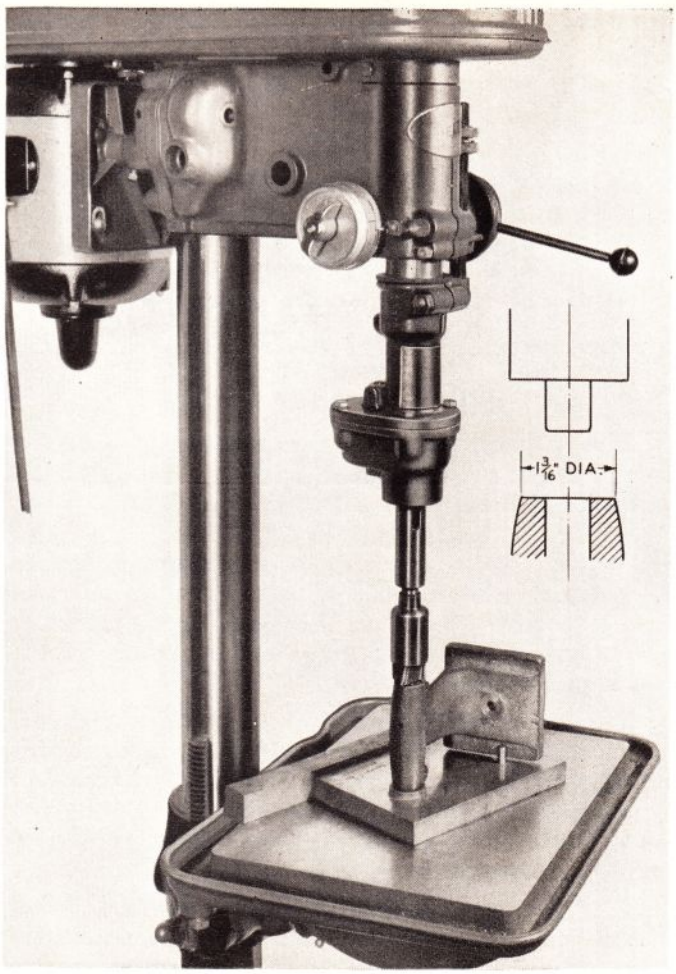
LUBRICATION

The single grease fitting supplies lubricant to the entire unit. An overflow plug is provided at the side and when filling it is advisable to remove the plug and let excess grease run out. This will avoid excessive heating.

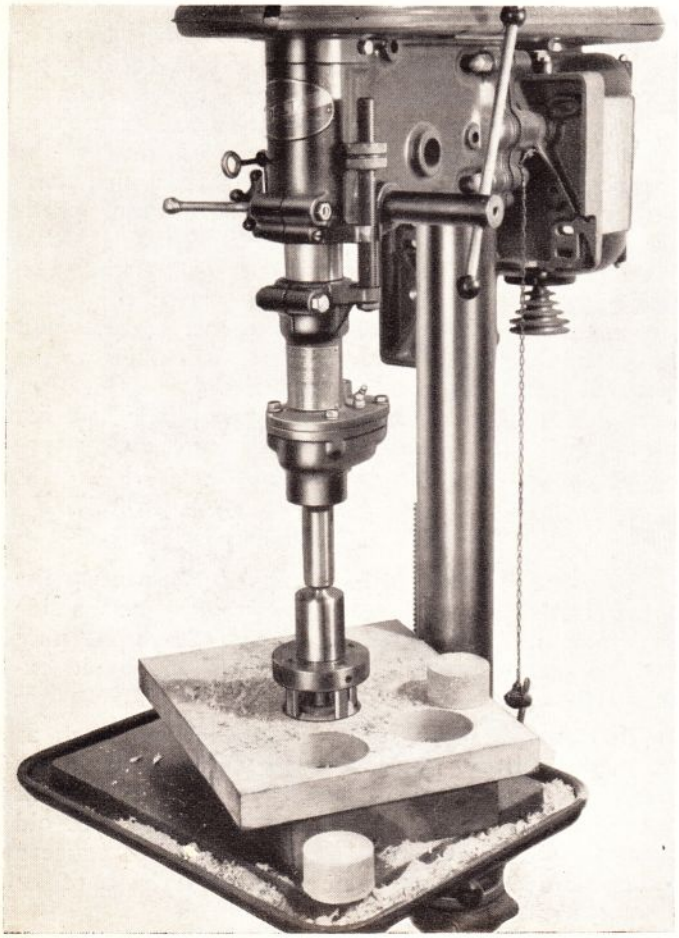
Use only a good grade of light grease, such as Gargoyle Sovarex No. 1 or its equivalent. Maintain grease level at all times, and after every 2000 work hours the unit should be opened and cleaned of old grease. At this time it is also advisable to squeeze additional grease through the shields at the sides of the double row ball bearing.



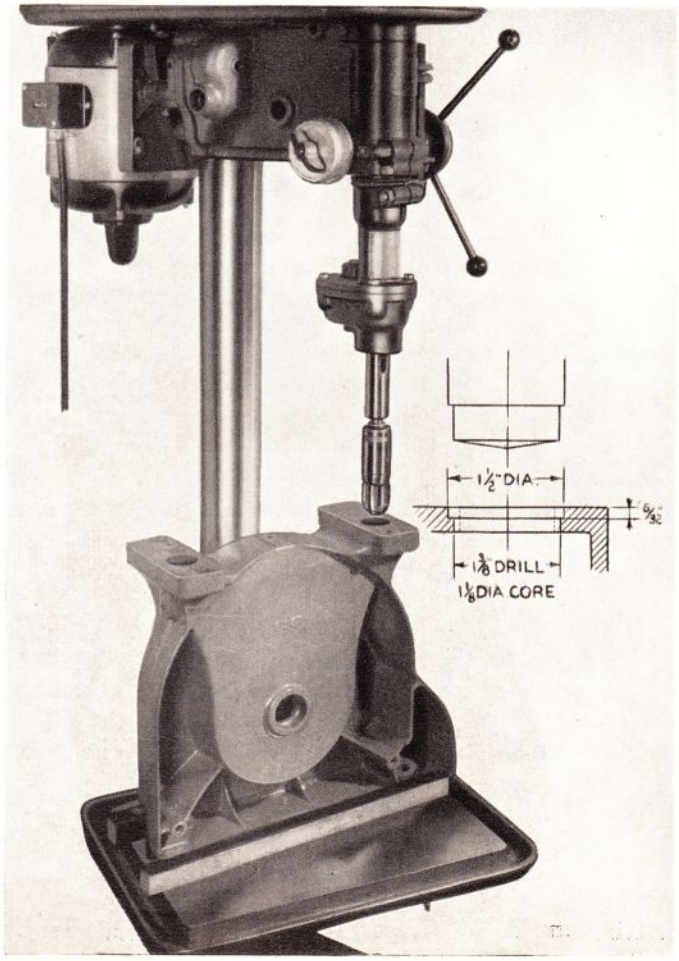
DRILLING
In cast iron with a high speed drill at 305 R.P.M.



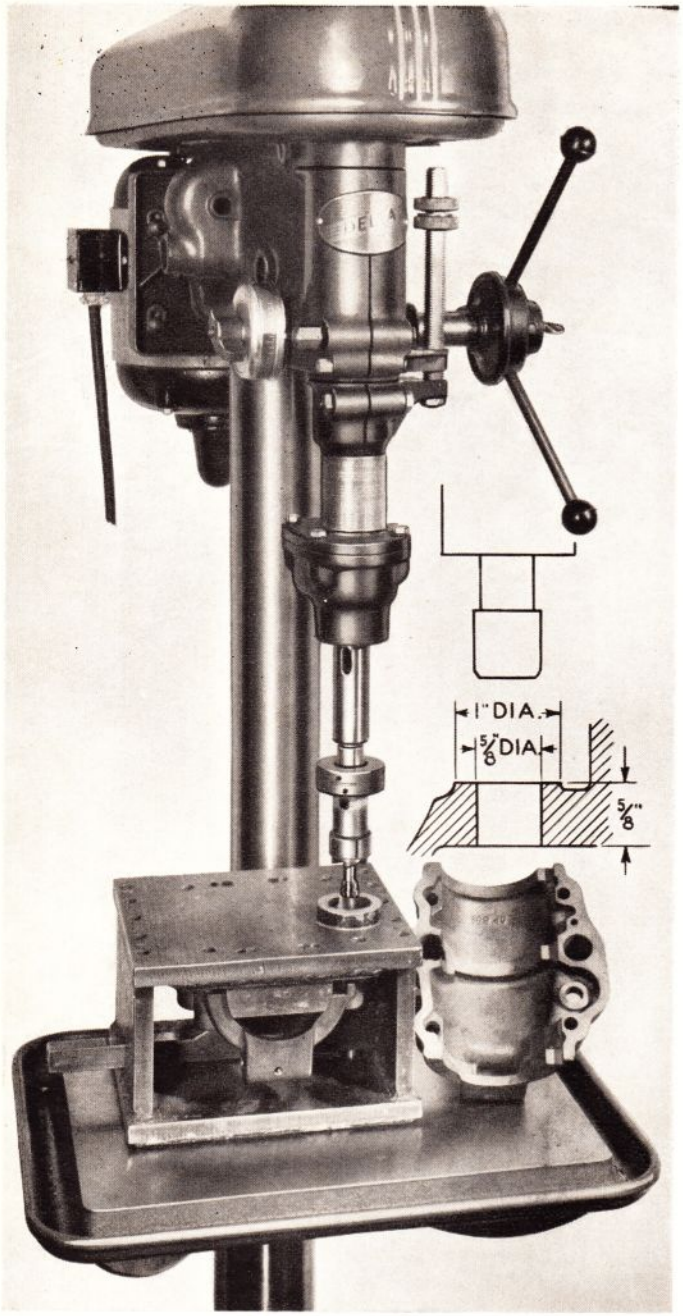
SPOT FACING
In cast iron with carbide tipped tools at 305 R.P.M.



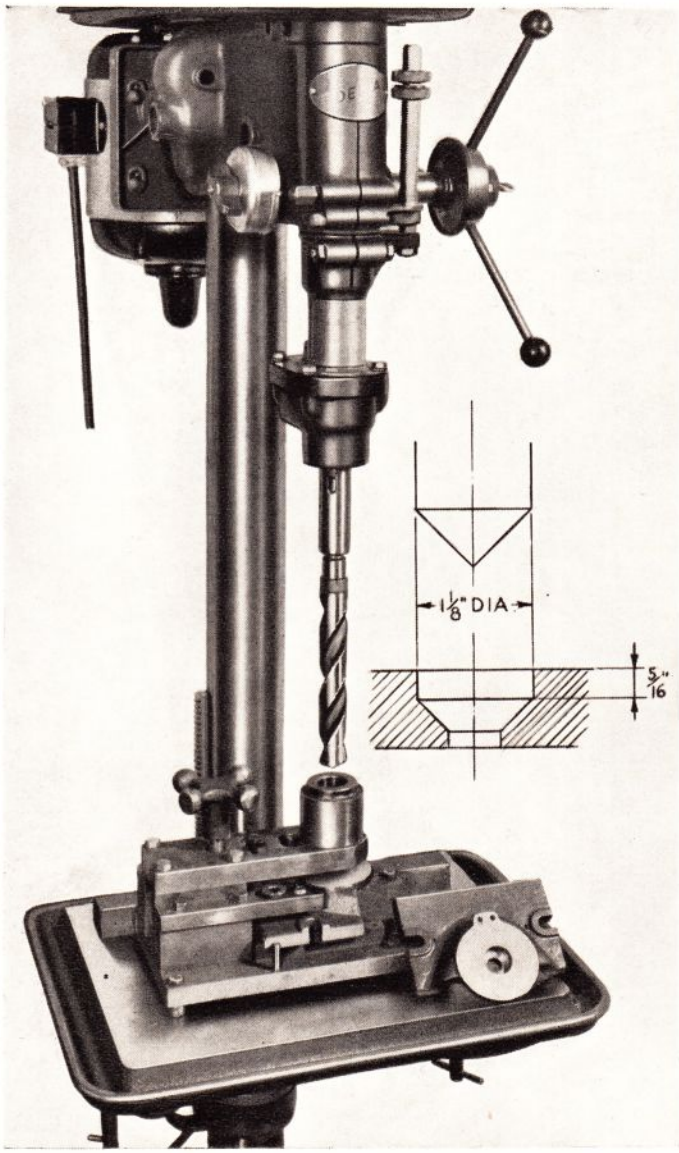
CUTTING WOOD PLUGS
3 3/16" cutter in 1½" white pine at 200 r.p.m., and in 1¼" Birch at 125 r.p.m.



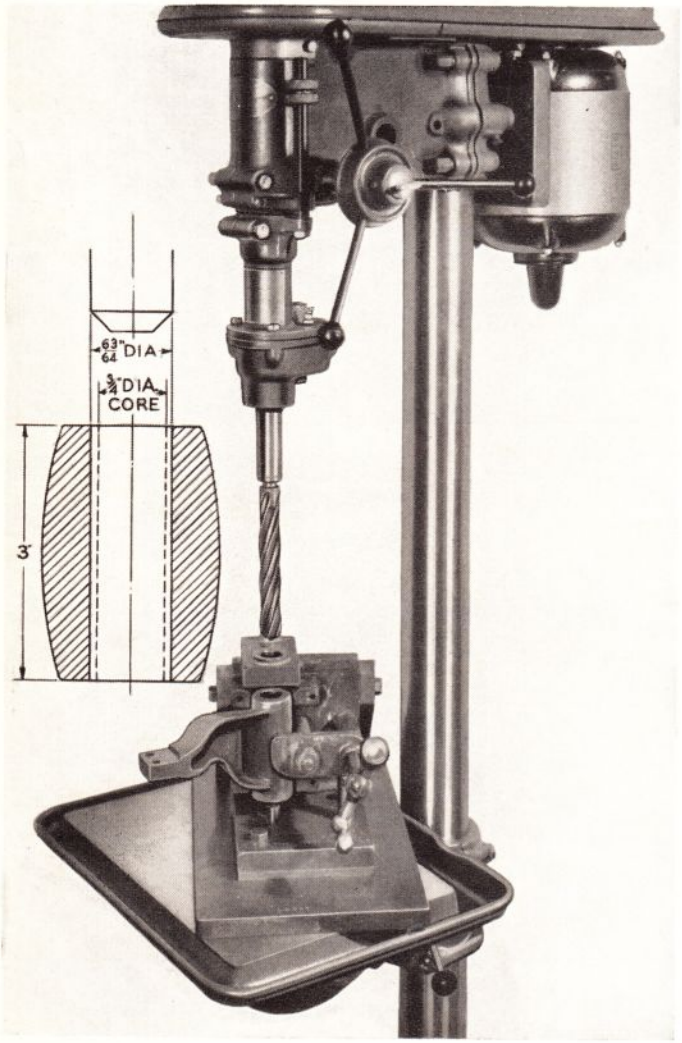
DRILLING AND COUNTERBORING FOR WELSH PLUG
In cast iron with carbide tipped tools at 200 R.P.M.



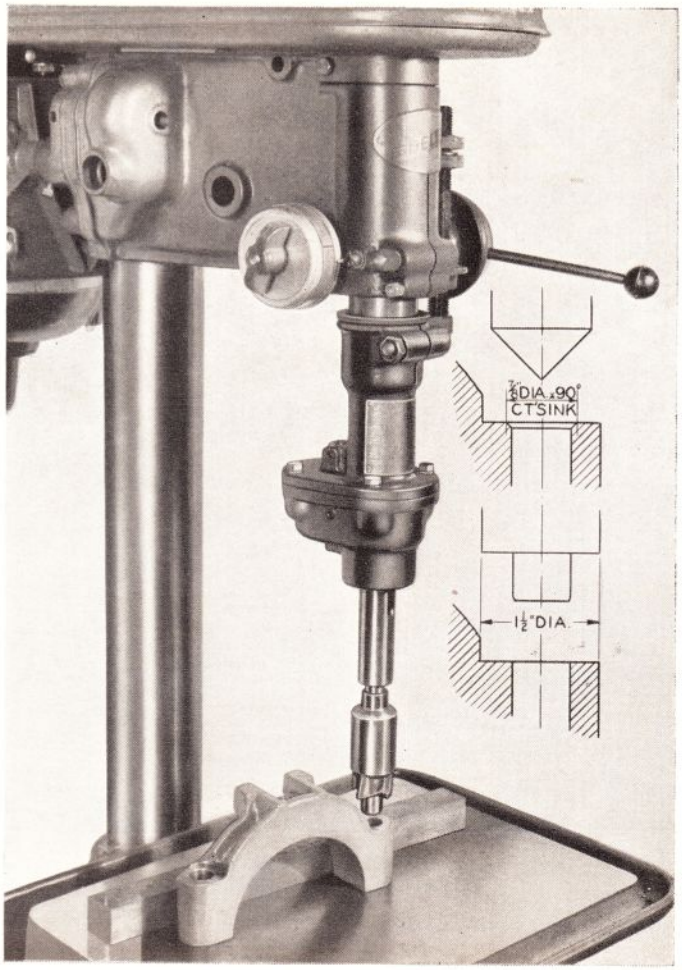
REAMING AND SPOT FACING
With a combination tool in cast iron at 200 R.P.M.



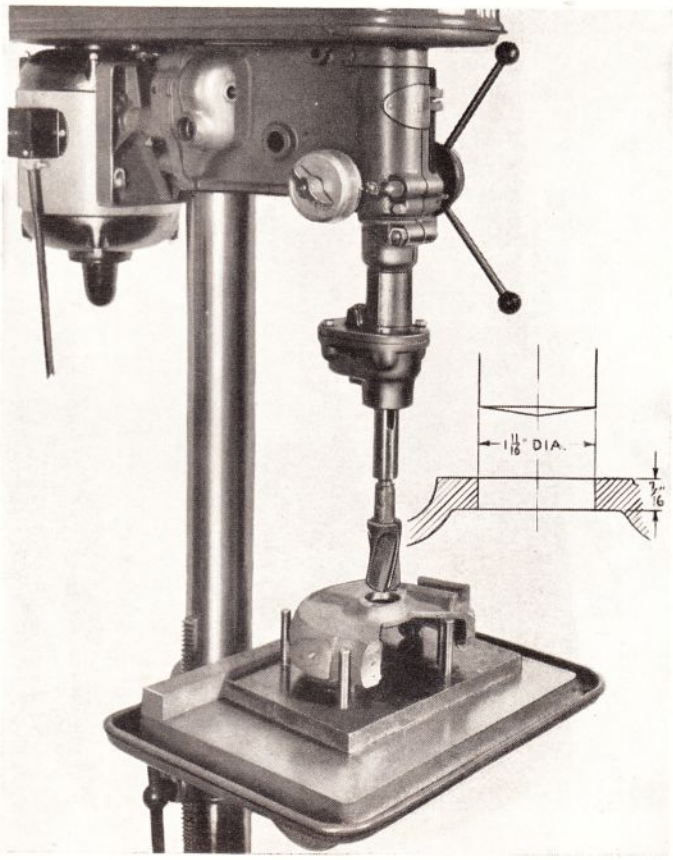
COUNTERBORING
In cast iron with a high speed drill at 200 R.P.M.



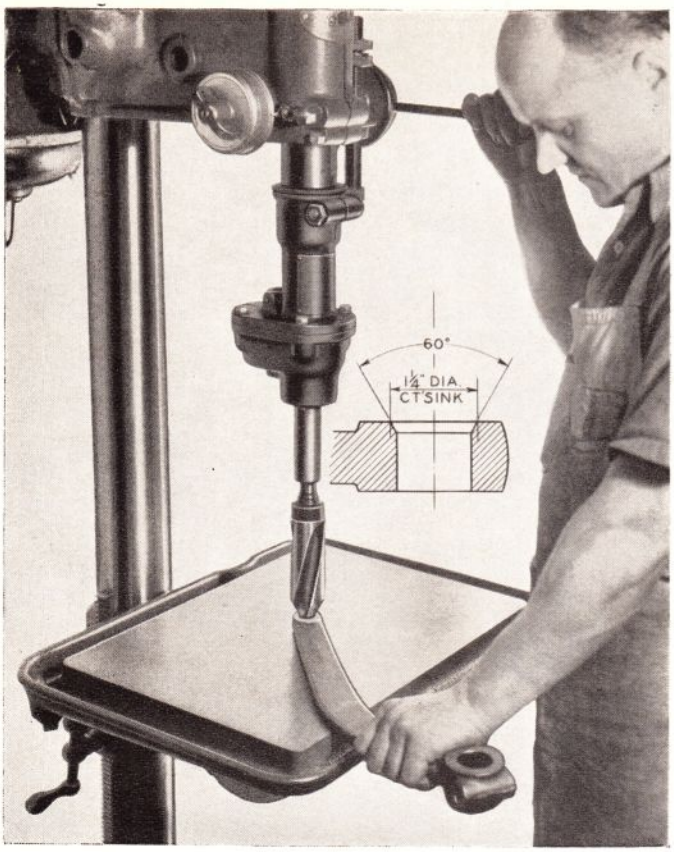
CORE DRILLING
In cast iron with a high speed drill at 305 R.P.M.



SPOT FACING AND COUNTERSINKING
In malleable cast iron at 125 R.P.M., with carbide tipped tool. Countersink also at 125 R.P.M.

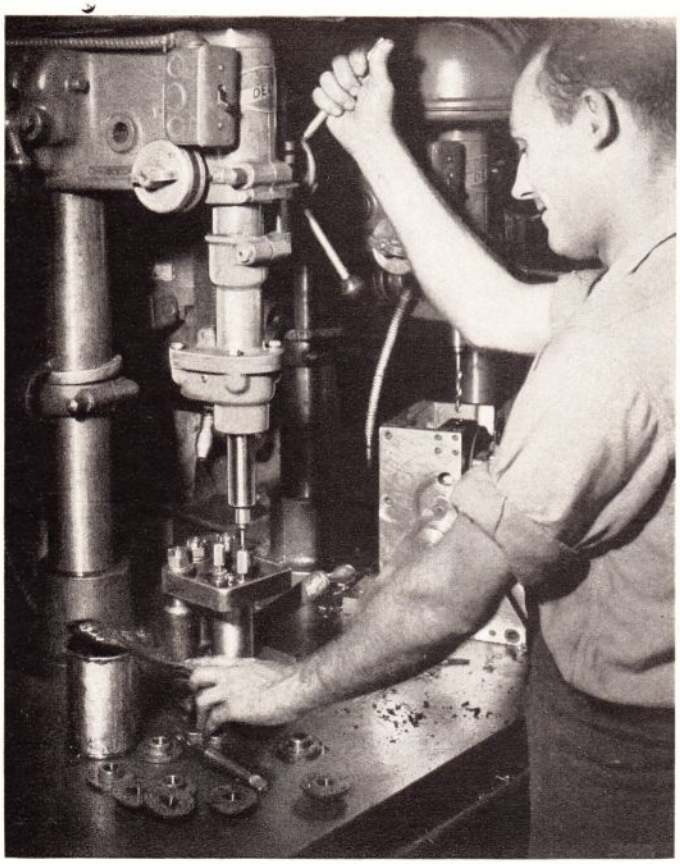


REAMING
In cast iron at 80 R.P.M.

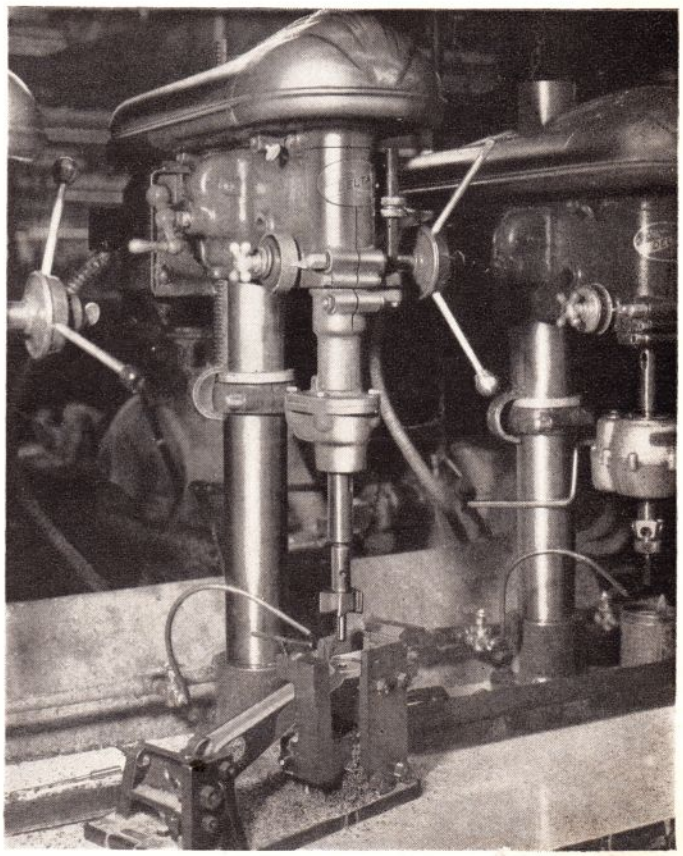


COUNTERSINKING
In steel casting at 125 R.P.M.

Drilling two $\frac{5}{16}$" diameter holes with high speed drill for $\frac{3}{8}$ tap in timing Gear. Heat treated alloy steel Rockwell 40-42 C scale hardness. Slow speed attachment at 200 R.P.M.



Drilling six ¼" diameter holes with high speed drill in hardened steel washer Rockwell 45-50 C scale at 200 R.P.M., also 1¼" spot facing operation.



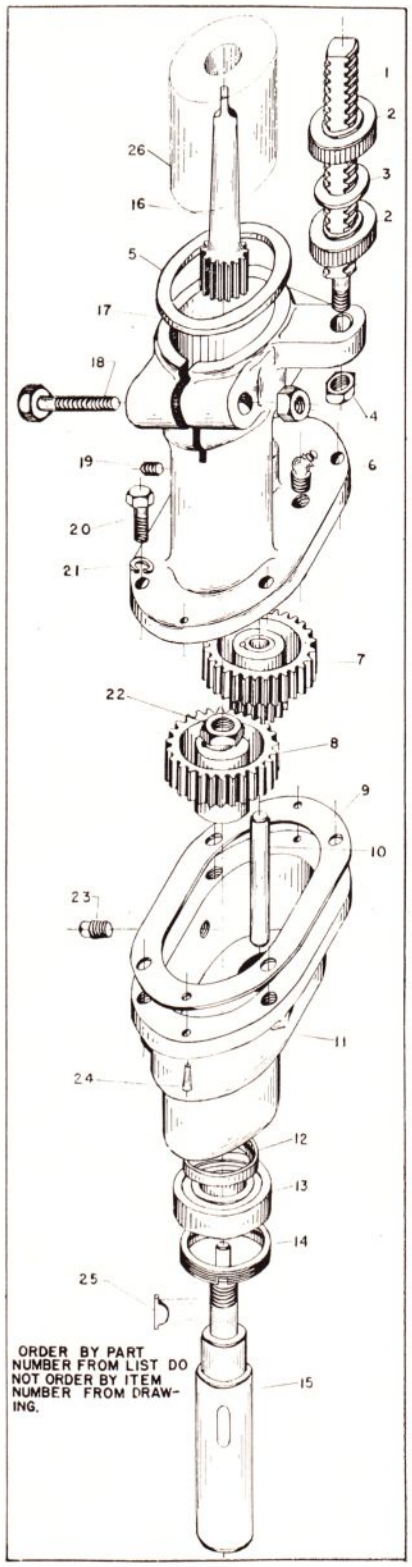
2" diameter spot facer High Speed Gairing Cutter in malleable cast iron at 125 R.P.M. Increased cutter life and eliminated chatter marks.

REPLACEMENT PARTS

ORDER BY PART NUMBER FROM LIST. DO NOT ORDER BY ITEM NUMBER FROM DRAWING.

Item No	Part No.	Description	No. Req.	Price Each
1	DP-628	Stop Rod	1	.55
2	DP-629	Knurled Nut	2	.20
3	DP-721	Stop Washer	1	.10
4	SP-1002	3/8-14 Hexagon Nut	2	.10
5	DP-790	Cushioning Ring	1	.10
6	SP-2516	1/8 x 45° Grease Fitting	1	25
7*	DP-817-S	Rear Intermediate Pinion with Gear Lock Screw and Needle Bearings	1	6.40
8	DP-820	Front Intermediate Gear	1	2 80
9	DP-816	Gasket	1	.10
10	DP-819	Shaft for DP-817-S Pinion Assembly	1	.50
11*	DP-814-S	Lower Housing with Welch Plug and Oil Seal	1	3.40
12	40328	National Oil Seal	1	.35
13	ND-55505	Ball Bearing	1	3 85
14*	DP-821-S	Bearing Closure Nut and Seal	1	1.30
15	DP-822	#2 Morse Taper Socket	1	3.60
16*	DP-815-S	#2 Morse Taper Shank Quill Pinion with Needle Bearing	1	3.95
17	DP-813	Upper Housing	1	3.75
18	SP-632	3/8-14x2 3/4 Hexagon Hd. Cap Sc.	1	.10
19	SP-203	1/4-20x3/8 Soc. Head Set Screw	1	.10
20	SP-608	5/16-18x7/8 Hexagon Head Cap Sc.	4	.10
21	SP-1703	5/16 Lock Washer	4	.10
22	BG-24	Bearing Nut	1	.10
23	SP-2505	1/8 Pipe Plug	1	.10
24	SP-2421	#0x3/4 Taper Pin	2	.10
25	SP-2605	#505 Hi-Pro Key	1	.10
26	DP-830	Wood Plug	1	.55
	DP-824	Instruction Plate	1	.20
	SP-2252	#2x3/16 Parker Kalon Drive Screw	4	.10

*Furnished only as a unit



R.P.M. CHART FOR 60 CYCLE MOTOR			
Slo-Speed Drill Press		Hi-Speed Drill Press	
Spindle	Output	Spindle	Output
385	80	700	150
600	125	1150	240
935	200	1750	370
1450	305	2700	570
2240	475	4550	950

NOTE — This unit is not recommended for use with the two highest speeds on high speed machines as outlined with the heavy lines.

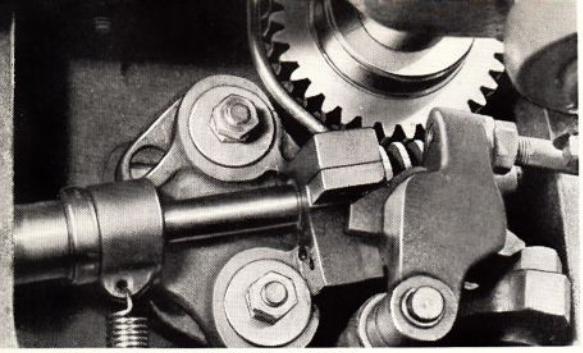
NOTE: Prices in this list apply only to parts ordered for repair and replacement. They cannot be used for computing allowance values when a machine is ordered "less" certain parts. Ask for quotations on such special machines.

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

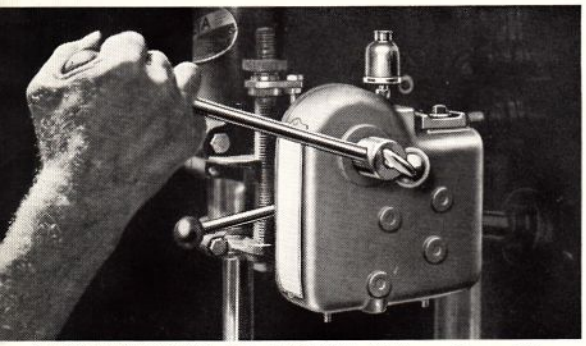
NEW

DELTA
MILWAUKEE

POWER FEED 17-INCH DRILL PRESSES

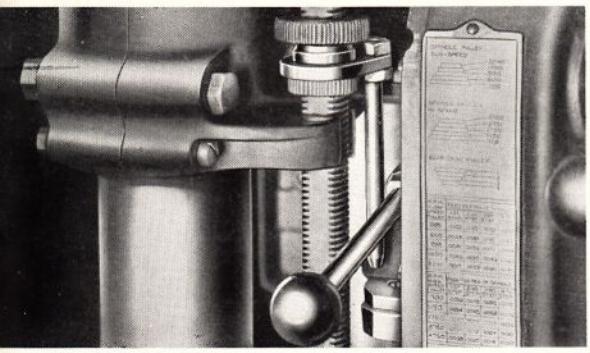


HUSKY BRONZE WORM WHEEL . . . and hardened and polished Worm Gear insure long life and satisfying service.

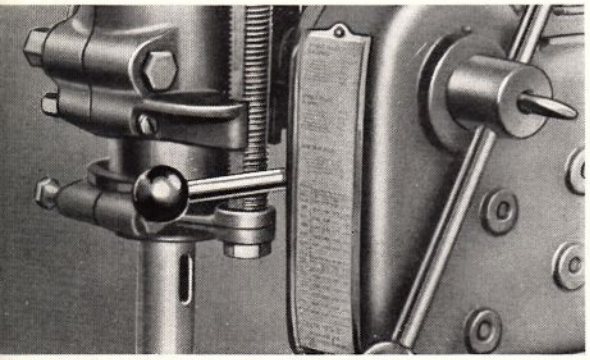


RAPID TRAVERSE OF HANDLE. Drill can be quickly brought down from the normal position to the point of operation by hand. A big time saver.

MANUAL FEED OR POWER FEED. No changed parts! Nothing to remove! Machine can be used for either hand or power feed drilling operations.



AUTOMATIC STOP AND RETURN. Adjustable to any job. Automatically stops and returns spindle to original position upon completion of drilling operation.



OPERATING POWER FEED HANDLE is conveniently located. Feed is snapped into or out of engagement easily and quickly, providing utmost convenience and safety with speed of operation.

NEW

DELTA
MILWAUKEE

POWER FEED DRILL PRESSES

SPEED UP PRODUCTION

JUMP that production schedule 'way-up . . . Delta-Milwaukee Power Feed Drill Presses will save you hours of time, doing more work at less cost.

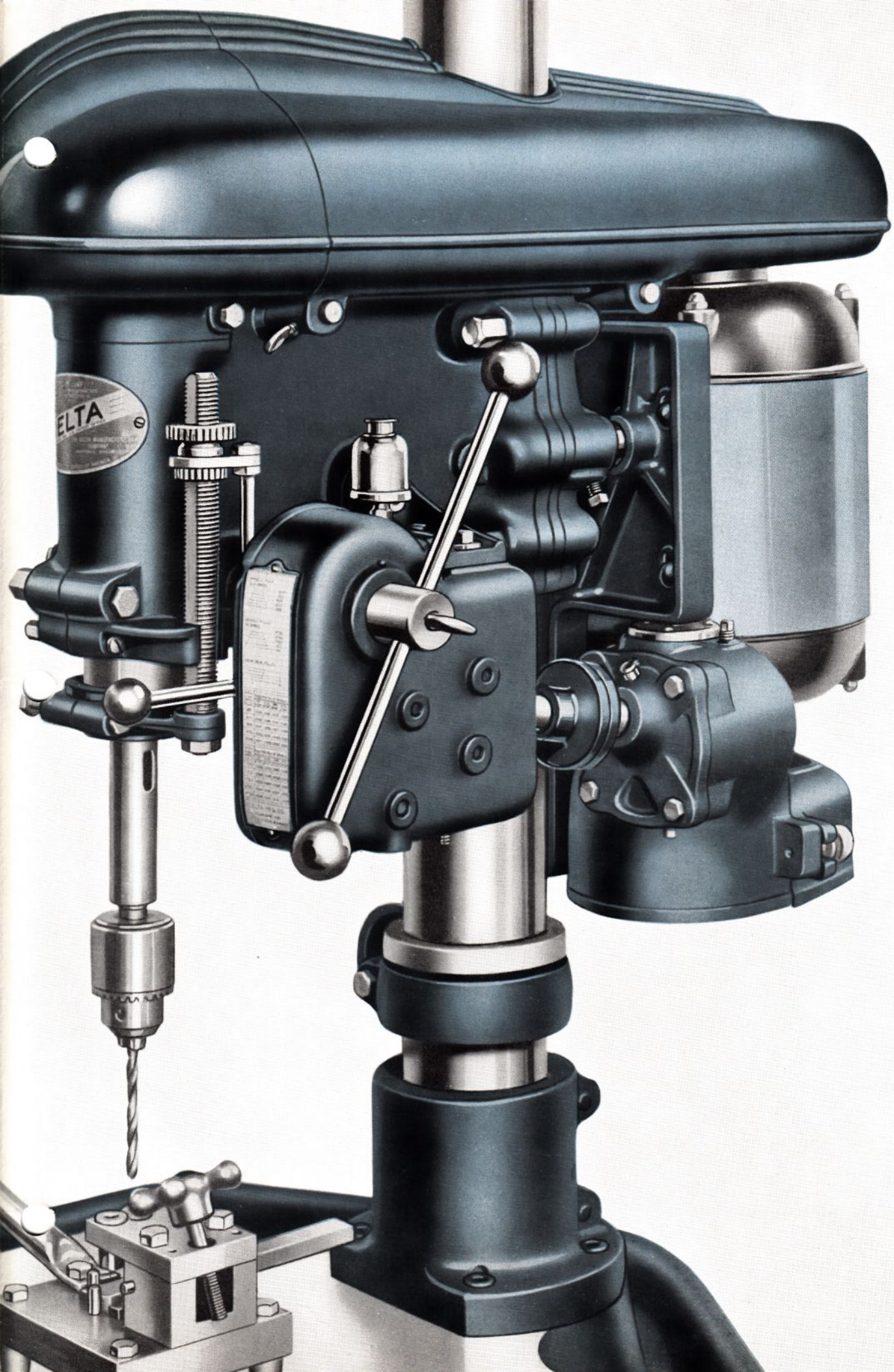
Carefully engineered, these drill presses employ a husky worm driven mechanical power feed, driven directly from the motor. Special hardening and polishing of the worm gear provides additional strength—insures long, satisfying service.

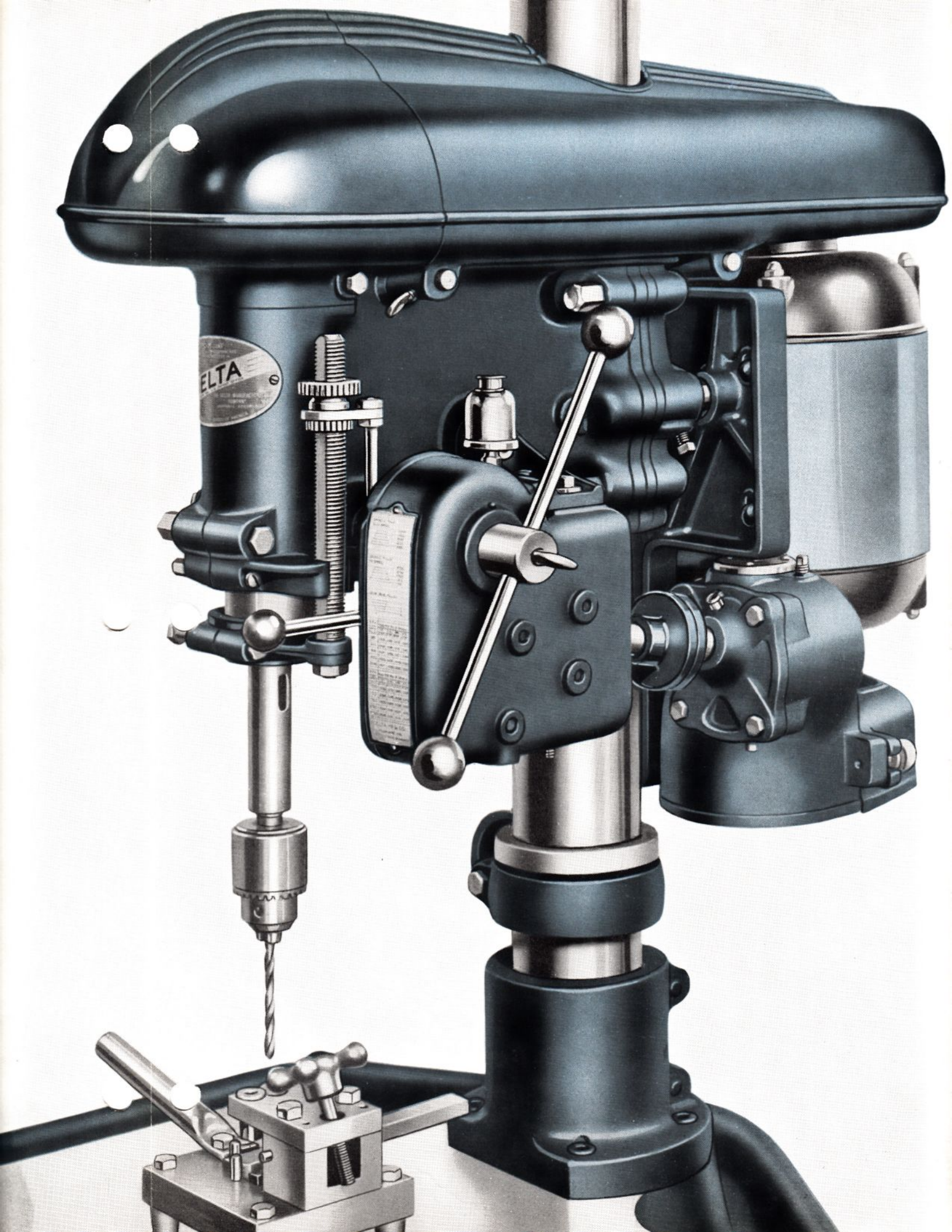
As a time saver, these NEW DELTA POWER FEED DRILL PRESSES are tops. The operator can bring the drill down to the work in one swift motion, by hand, and with a flip of the power lever set the machine for the power feed. Then, while the drill press completes the drilling cycle, he can pass to another operation, loading another jig or working on another spindle. Upon completion of the drilling operation the drill automatically returns to its original position. The automatic stop assures uniform depth of holes to close tolerance.

There are eight rates of feed for each spindle speed, which means that the correct rate of feed for your drilling operation is always available. Two cast iron 4-step cone pulleys and a special belt tension release built into the guard make speed changes quick and safe.

Sensitive hand drilling and heavy power feed drilling operations are handled with equal ease and accuracy. A flip of the power lever and the machine is set for the power feed; another flip of the lever and it is back on hand feed. Speedy . . . simple . . . and safe.

Available in either single or multiple spindle units, these New Delta-Milwaukee Power Feed Drill Preses can be powered with either Delta or standard NEMA frame motors. Their low cost and long life coupled with their speed of operation and the savings they permit in manufacturing costs, make them the machines you'll want to help you increase your production. See them! Compare them! . . . and you'll buy them!


ELTA

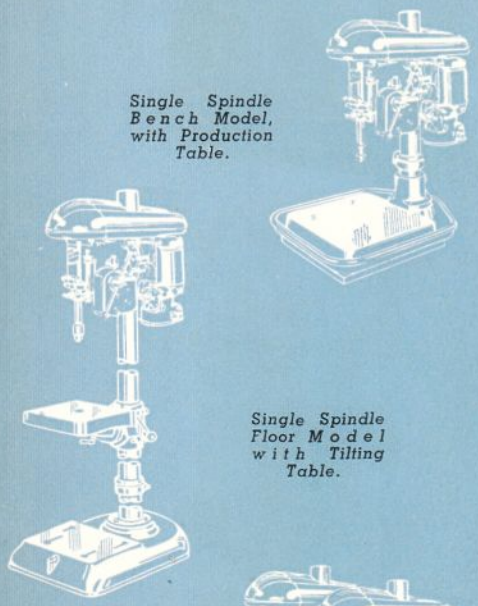

ELTA

Remember . . . in a Delta-Milwaukee

POWER FEED DRILL PRESS

You Get All These Features:

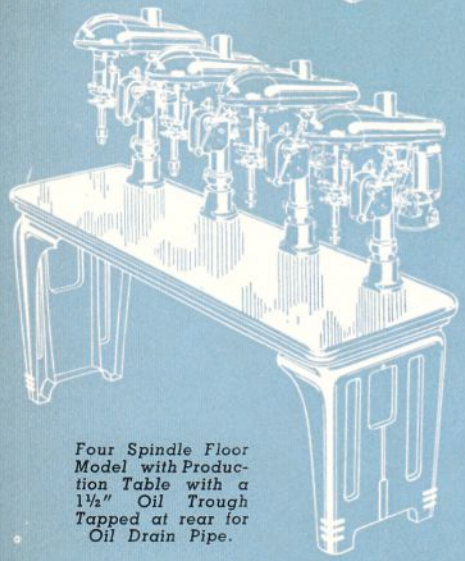
1. **Husky worm drive—hardened and polished for long life.**
2. **Automatic stop and return, adjustable to any job.**
3. **Hand or power feed selected instantly.**
4. **Eight rates of feed for each spindle speed.**
5. **Special power feed belt tension release built into guard.**
6. **Automatic stop assures uniform depth of holes to close tolerance.**
7. **Completely guarded.**
8. **Available in single and multiple spindle units (any number of spindles).**
9. **Powered with either Delta or NEMA frame motors.**
10. **. . . plus low cost, low upkeep and all of the other outstanding features found in Delta Drill Presses.**



Single Spindle Bench Model, with Production Table.

Single Spindle Floor Model with Tilting Table.

Two Spindle Floor Model with Production Table with a 1½" Oil Trough Tapped at rear for Oil Drain Pipe.



Four Spindle Floor Model with Production Table with a 1½" Oil Trough Tapped at rear for Oil Drain Pipe.

Power Feed Floor Type Drill Press with Table Raising Mechanism

Catalog Number	Type of Spindle	Description	Ship. Wt. Lbs.	Code Word	Price
		"SLO-SPEED" MODELS: 385, 600, 935, 1450 and 2240 R. P. M.			
P-1370	No. 2 Morse	Std. Tilt Table		DRIQA	$177.00
P-1382	No. 2 Morse	1372 Prod. Table		DRIQB	188.00
P-1376	½" Jacobs	Std. Tilt Table		DRIQC	183.00
P-1383	½" Jacobs	1372 Prod. Table		DRIQD	194.00
		"HIGH SPEED" MODELS: 725, 1150, 1750, 2700 and 4400 R. P. M.			
P-1370-H	No. 2 Morse	Std. Tilt Table		DRIQE	$177.00
P-1382-H	No. 2 Morse	1372 Prod. Table		DRIQF	188.00
P-1376-H	½" Jacobs	Std. Tilt Table		DRIQG	183.00
P-1383-H	½" Jacobs	1372 Prod. Table		DRIQH	194.00

Power Feed Bench Type Drill Press with Head Raising Mechanism

		"SLO-SPEED" MODELS: 385, 600, 935, 1450 and 2240 R. P. M.			
P-1375	No. 2 Morse	Prod. Style Bench Base		DRIQI	$203.00
P-1377	½" Jacobs	Prod. Style Bench Base		DRIQJ	217.00
		"HIGH SPEED" MODELS: 725, 1150, 1750, 2700 and 4400 R. P. M.			
P-1375-H	No. 2 Morse	Prod. Style Bench Base		DRIQK	$203.00
P-1377-H	½" Jacobs	Prod. Style Bench Base		DRIQL	217.00

All models include streamlined belt guard. Slo-Speed models include No. 520 V-belt and No. 1311 motor pulley. High-speed models include No. 501 V-belt and No. 1312 motor pulley. Above listings do not include motor or switch.

Power Feed, Multiple Spindle Type Drill Press with Head Raising Mechanism

Catalog Number	No. of Spindles	Type of Spindle	Ship. Wt. Lbs.	Code Word	Price
		"SLO-SPEED" MODELS: 385, 600, 935, 1450 and 2240 R. P. M.			
P-1545	2	No 2 Morse Taper		DRIQM	$530.00
P-1546	2	½" Jacobs		DRIQN	542.00
P-1555	4	No. 2 Morse Taper		DRIQO	1010.00
P-1556	4	½" Jacobs		DRIQP	1034.00
		"HIGH-SPEED" MODELS: 725, 1150, 1750, 2700 and 4400 R. P. M.			
P-1547	2	No. 2 Morse Taper		DRIQQ	$530.00
P-1548	2	½" Jacobs		DRIQR	542.00
P-1557	4	No. 2 Morse Taper		DRIQS	1010.00
P-1558	4	½" Jacobs		DRIQT	1034.00

All models include streamlined belt guard and cast iron legs No. 1399. "Slo-Speed" models include No. 520 V-belt and No. 1311 motor pulley. High speed models include No. 501 V-belt and No. 1312 motor pulley. Above listings do not include motor or switch.

Power Feed Type 17" Drill Press Heads

Cat. No.	PART	Speed	Spindle and Chuck	Wt. Lbs.	Code Wd.	Price
P-1378	17" Head	Slo	No. 2 Morse		DRIQU	$129.50
P-1378-H	17" Head	High	No. 2 Morse		DRIQV	129.50
P-1379	17" Head	Slo	½" Jacobs		DRIQW	135.50
P-1379-H	17" Head	High	½" Jacobs		DRIQX	135.50

MOTORS FOR LIGHT DUTY

64 510 ½ H.P., R.-I., A.C. Ball Brg., 110/220 V., 60 Cy..... **$36.50**
68 510 ½ H.P., D.C., 115 V..... **45.75**

MOTORS FOR MEDIUM DUTY

64 710 ¾ H.P., R.-I., A.C. Ball Brg., 110/220 V., 60 Cy..... **43.25**
68 710 ¾ H.P., D.C., 115 V..... **55.50**

MOTORS FOR HEAVY DUTY

64 910 1 H.P., R.-I., A.C., Ball Brg., 110/220 V., 60 Cy..... **$49.75**
66 920 1 H.P., 3 Ph., A. C., Ball Brg., 220/440 V., 50/60 Cy.. **49.50**
68 910 1 H.P., D.C., 115 V..... **75.00**

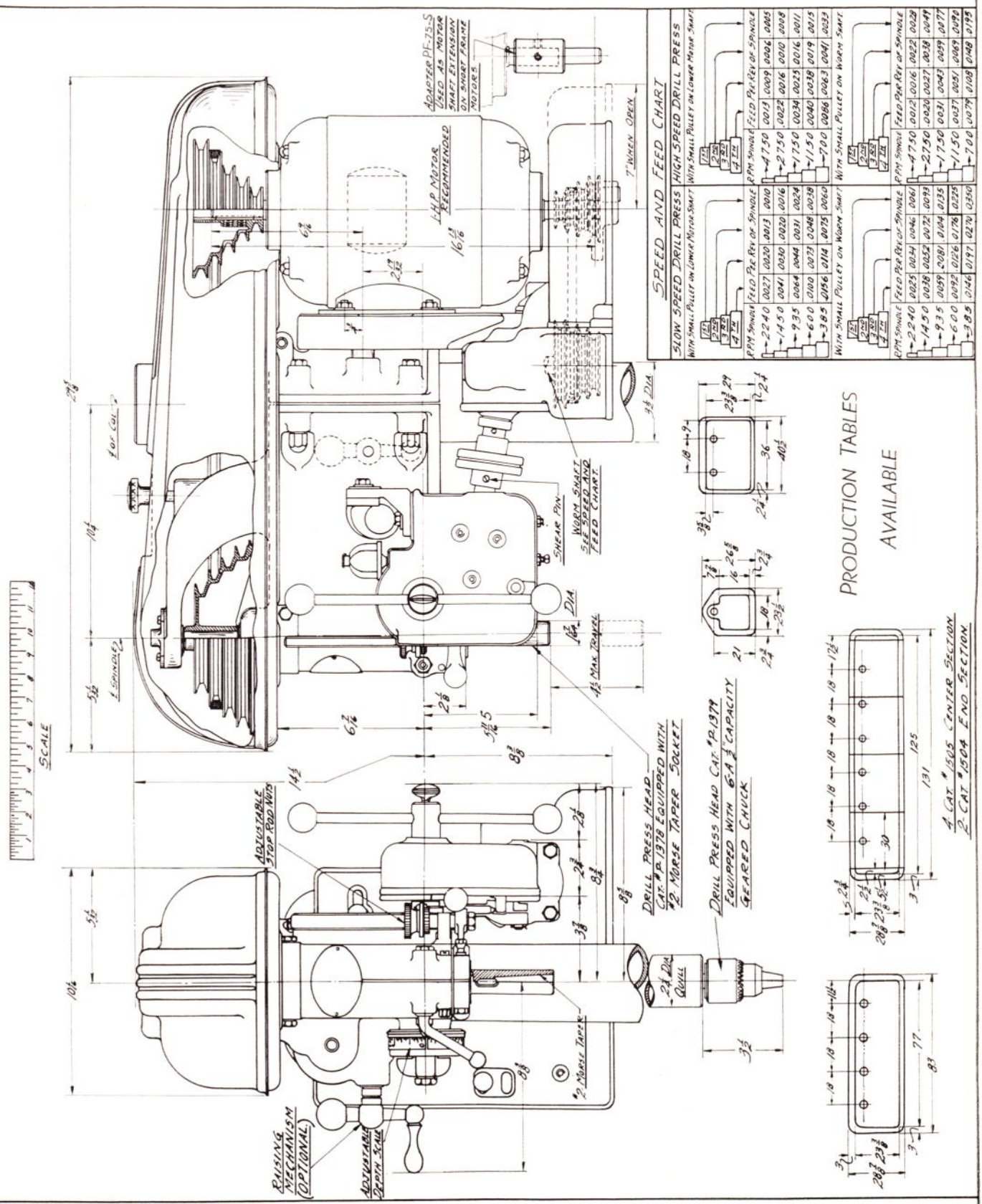
For 3 Phase Motors use No. 1320 3 Phase Manual Starter with No. 1322 Mounting Parts. Use No. 1332 Switch Rod for Single Phase Motors.

SPECIFICATIONS

SINGLE SPINDLE FLOOR AND BENCH MODELS—Floor Model 66" high. Bench Model 42½" high, 18" wide, 27" front to rear. 10"x13¾" floor base table surface; 11"x12" tilting table floor model; 16"x18" production table bench model; 23½"x26⅝" production table overall. 3½"x60" column. Capacity: 34" Spindle to table, floor type, 44½" Spindle to base, floor type; 26½" Spindle to table, bench type. Quill has 5" stroke. Drilling capacity is ¾" in cast-iron. Built-in depth stop gauge. Depth scale or spindle return spring housing. Mechanical Power Feed. Automatic Stop and Return.

TWO AND FOUR SPINDLE MODELS—Two-spindle table 29½"x41½", surface 23½"x36". 32" high. Four-spindle table 28½x82½", surface 23½"x77", 32" high. Overall height 66". Front to Rear 27". Center to center between spindles 18". Column diameter 3½". Maximum distance chuck to table 26½". Table has 1½" oil trough and tapped at rear for ½" oil drain pipe. Quill has a 5" stroke. Drilling capacity: ¾" in cast-iron. Built in depth gauge. Depth scale or spindle return housing. Mechanical Power Feed. Automatic Stop and Return.

17" POWER FEED DRILL PRESS



MANUFACTURED BY

THE DELTA MANUFACTURING COMPANY

MILWAUKEE, WISCONSIN

P.M. No.: 1605
DATE: 3-14-44 Revise
REPLACES: 10-1-43
INDEX: 120-1-F

DELTA MILWAUKEE

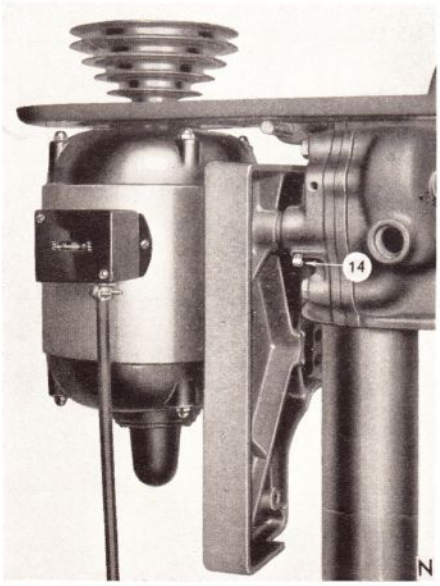
THE DELTA MFG. CO., MILWAUKEE 1, WIS.

HOW TO SET UP THE 17" POWER FEED DRILL PRESS

The Power Feed Drill Press comes to you completely assembled but without the motor. Several adjustments are necessary and a few things must be checked before the unit is ready for operation. Follow the steps outlined here:

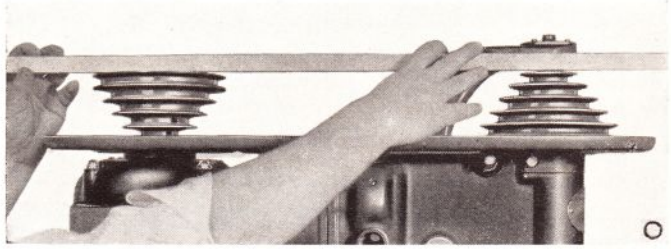
1—Remove the upper belt guard and the rear lower half of the guard so that the motor can be readily installed.

2—Mount motor with switch on right hand side, Photo AX.

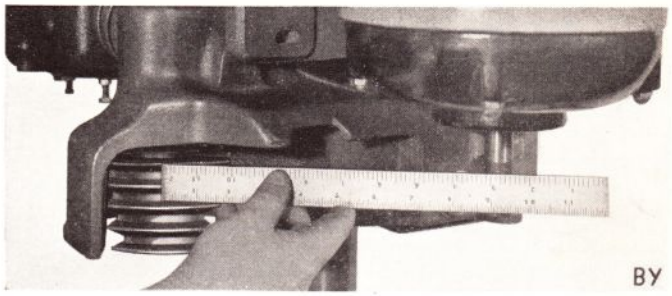


Replace guard and slide motor pulley onto motor shaft, Photo N.

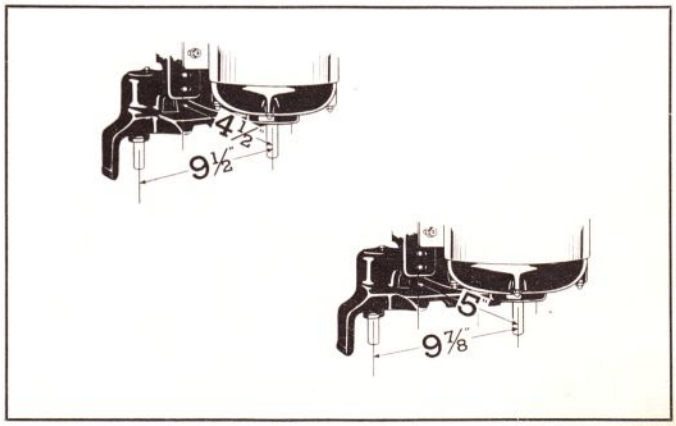
Be sure that the bottom face of pulley contacts shoulder on motor shaft. Put on motor belt and adjust motor plate with motor "in" or "out" for proper belt tension. Lock motor plate in place by square headed screws (14).



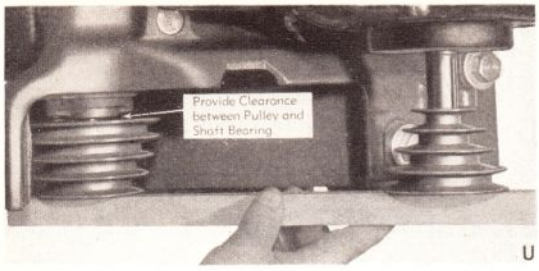
3—Align pulleys by placing straight edge over pulley as shown in Photo O (above) and move motor up and down for proper location.



4—Next check carefully the distance from center to center of shafts as shown by Photo BY. On motors that have a shaft centerline 4½" from the base, this distance should be 9½". On motors having a shaft centerline 5" from the base this distance should be 9⅞".



See sketches above. The proper position is obtained by moving the motor from side to side.



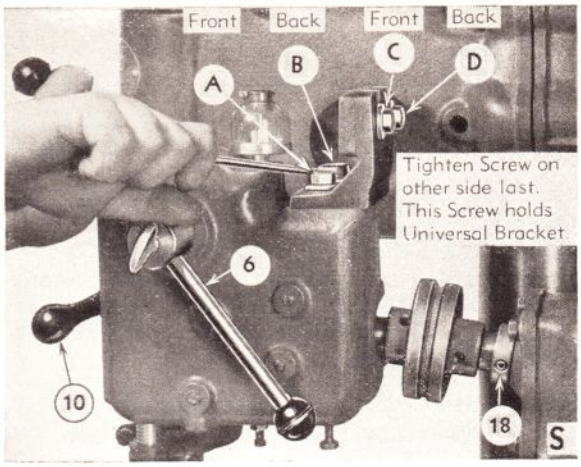
5—Mount pulley on motor shaft, Photo U and line up with straight edge as shown and install belt. On those motors that are less than 15½" from end to end of shafts, it is necessary to use the special shaft extension furnished so that motor pulley aligns with gear housing pulley.

Motors of our manufacture that require the shaft extension are the ¾, 1 and 1½ horse power, 3 phase motors. Their catalog numbers are:

86-720, 86-762, 86-920, 86-960, 86-921, 86-922, 87-120.

The use and application of N.E.M.A. No. 203 motors are limited to those motors which have an overall dimension of less than 16 3/16".

6—If for any reason should it become necessary to obtain freedom of quill movement, proceed as follows: Put lever (10), Photo S in down position. While moving quill up and down by means of feed lever (6) loosen and then tighten screws A, B, C and D on Universal Bracket as shown and the screw on the other side of the Drill Press head holding the Universal Bracket.



IMPORTANT—These screws must be tightened in the proper sequence—starting with A, then B, C and D and ending with the screw on the other side of the head. Tighten each screw a very little at a time. If the quill does not return freely under normal spring pressure, loosen all five screws and repeat.

DO NOT ATTEMPT TO GET THE QUILL TO RETURN BY PUTTING MORE TENSION ON THE RETURN SPRING.

7—Fill oil cup with 40W motor oil. Unit is now ready for operation.

Before operating the Power Feed Drill Press be sure to read and study the Operation Instructions carefully because they contain valuable information which will enable you to obtain the maximum usefulness of this unit.

P.M. No. 1607
DATE: 3-1-44 Revise
REPLACES: 9-1-43
INDEX: 120-1-G

DELTA MILWAUKEE

THE DELTA MFG. CO., MILWAUKEE 1, WIS.

SERIES 17

17" DRILL PRESSES

OPERATING AND MAINTENANCE INSTRUCTIONS
For Power Feed Drill Press

After the Power Feed has been adjusted and the quill operates freely as described in the set up instructions, select the size of the drill desired and be sure it is properly ground and sharpened.

Our improved No. 1296 Drill grinding attachment used with any of our grinders will sharpen your drill perfectly.

If the drill press you are using is equipped with a chuck in place of a No. 2 Morse taper spindle, be certain the drill is securely held. THIS IS IMPORTANT because if the drill is not tightly clamped there is a possibility of its failing to rotate and since the feed is power fed, damage to the drill press will result.

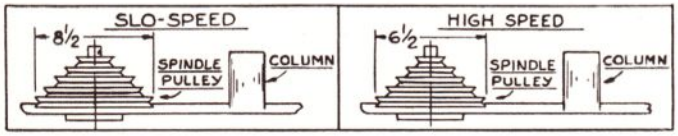
CHOICE OF FEED

The "feed" as downward motion of the drill against the material it is drilling while it is revolving is measured in inches PER REVOLUTION OF THE SPINDLE. The feed, therefore, is a combination of the speed of the drill and the downward motion of the drill.

Refer to the recommendations of the drill manufacturer and determine the speed of the drill in feet per minute which is dependent upon the material to be drilled and then determine what this value is in revolutions per minute based upon the size of the hole to be drilled.

Set the belt on the upper pulleys (from the motor to the spindle) in the proper grooves to obtain this speed.

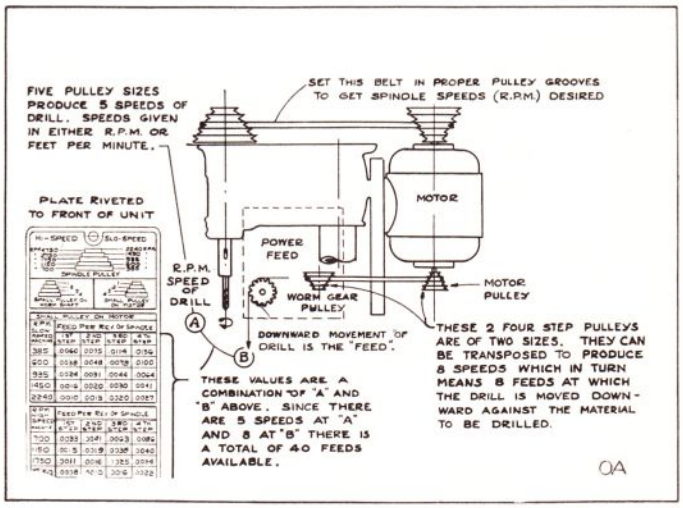
Your drill press is either of the Slo-Speed or High-Speed type. To check the type you have, see sketch below. The Slo-Speed models have a spindle pulley



8½" in diameter—High-Speed models are 6½" in diameter. Each model has five different speeds (R. P. M.) which cover completely the speeds needed for drilling.

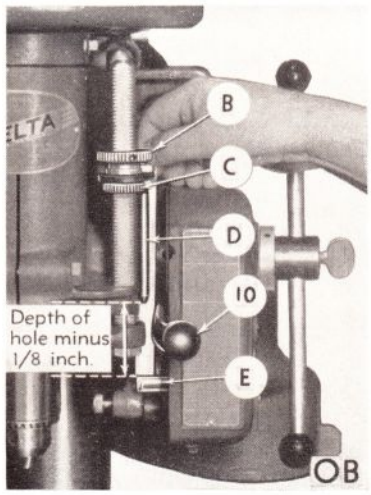
The Power Feed employs two 4-step pulleys, one on the lower shaft of the motor and the other on the worm shaft. These two pulleys produce four different speeds but since they are of different size, large and small, they may be transposed on the shafts so that 8 different speeds are obtained. Referring to the Feed Chart plate riveted to the front of the unit you will see that the small pulley can be put on the motor shaft or on the worm shaft. In addition there are the five different speeds of the drill press itself, as mentioned before, so that 40 different speeds are available for either the Slo- or High-Speed drill presses.

To get the speed and feed desired it is necessary therefore to put the belts on the proper pulleys.



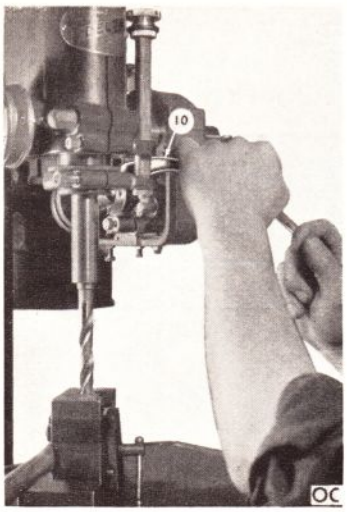
No hard and fast rules can be given for the speed and feed at which a drill should be run. The starting feed is usually governed by the size of the drill and material. The general rule is to use a feed of .001 to .002 inch per revolution of drill smaller than ⅛ inch; .002 to .004 for drills ⅛ to ¼ inch; .004 to .007 for drills ¼ to ½ inch; .007 to .015 for drills ½ to ¾ inch.

DEPTH OF HOLE

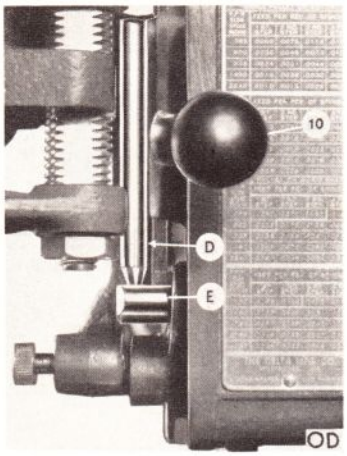


To set the unit for the proper drilling depth put the trip lever 10 in the UP or engaged position. Then loosen nuts B and C photo OB and set trip finger D away from the trip pin E an amount equal to the depth desired minus ⅛ of an inch to compensate for lost motion. As an example: for a hole 1½" deep set D 1⅜" away from E. When set, tighten nuts B and C. Run a few pieces to check setting.

DRILLING OPERATION



Disengage the unit by bringing lever (10) in the down position, photo OC. Bring the drill down by hand until it is almost ready to drill. With quill in this position, bring Power Feed into operation by moving lever (10) into the UP or engaged position.

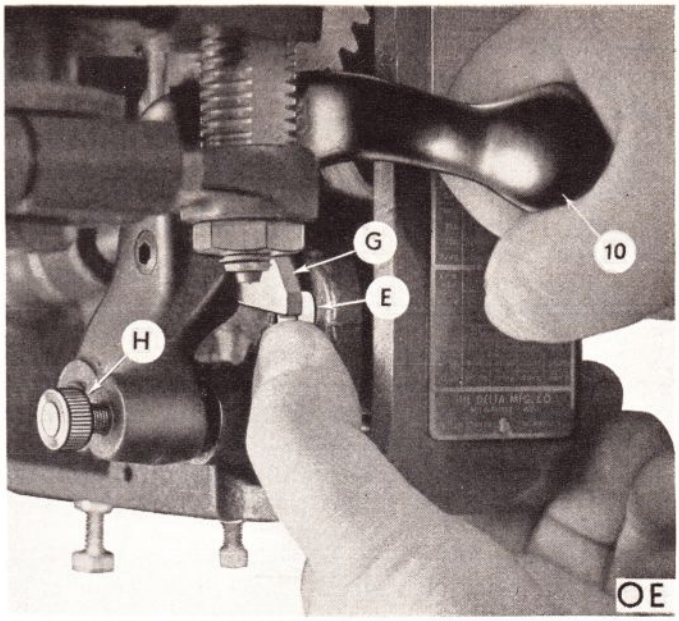


Unit will then drill automatically until the Trip Finger D (Photo OD) pushes against the Trip Pin E which automatically releases the worm, the quill returns upward ready for the next cut.

HAND OPERATION

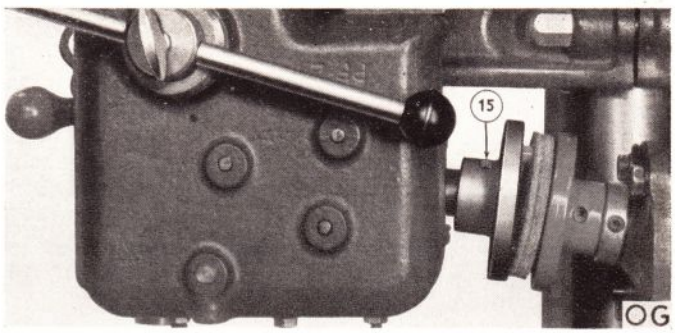
An outstanding feature of this Power Feed is that it may be used for automatic or manual operation. To operate the drill press manually press in Tripping Pin E, Photo OE, and move lever (10) downward so that cam plate G slides over pin E holding it in the depressed position. The Lock Pin H slips into place holding the lever (10) in position. Drill press can now be operated like any ordinary manually operated unit. To return it to the automatic position simply pull out Lock Pin H, and move lever (10) upward so that E is released.

NOTE: All of the photographs show the Power Feed with the inner guard plate removed for convenience of illustration.



THE SHEAR PIN

Referring to photo OG you will find a shear pin (15) which holds the forward half of the flexible coupling on to the worm shaft. This pin is provided as a



safety precaution so that if there is a jam or excessive loading the pin will shear, thus protecting the mechanism. If the pin has sheared, merely back out the slotted head, line up the holes in the coupling and shaft and drive broken portion out on other side. Replace with pin furnished.

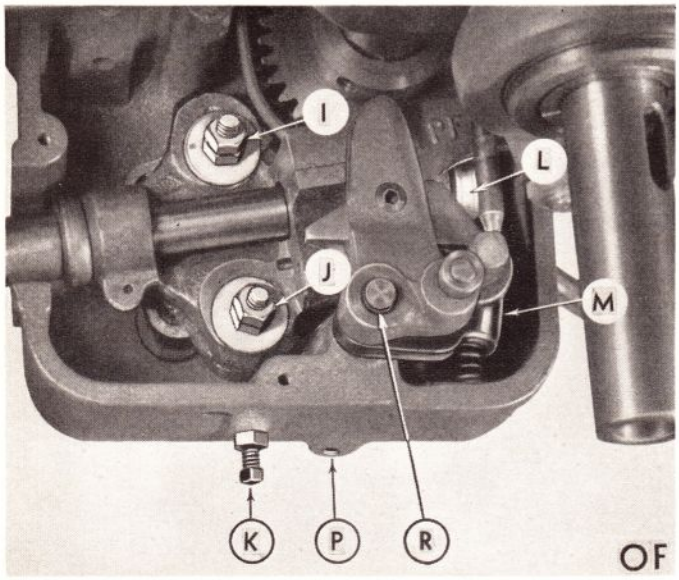
CAUTION: Use only the shear pins furnished. Do not substitute shear pins. Additional pins may be obtained from your dealer or the factory.

OPERATING POWER FEED DRILL PRESS IN INVERTED POSITION

The Oiler should be kept filled with 40W oil and the gear housing with 600W oil. If the drill press head is inverted or used at an angle remove the oiler from the housing and cut off about ½ inch from the end of the tube. Insert oiler and tube in tapped hole on other side of case. Bend tube so that oil drops to rear of rear bearing.

ADJUSTING THE POWER FEED

The Power Feed as it leaves the factory is properly adjusted, but should it get out of adjustment, it is a simple matter to check it so that it operates perfectly.



To properly adjust PF-33-R worm assembly in its guide PF-7-S, tighten nuts I and J in Photo OF to take up any perceptible in and out movement, but allow free vertical movement for engagement of worm and gear. Screw K limits the downward movement of this bracket. It is important that Screw K is carefully set so that the thrust collar L on the end of the worm bearing shaft does not come in contact with the set screw (not shown in this photo) in the trip lever bracket M. Then Screw K is properly set back in place by means of its jam nut.

To disassemble the unit loosen set screw P and withdraw pin R.

RESETTING WORM GEAR

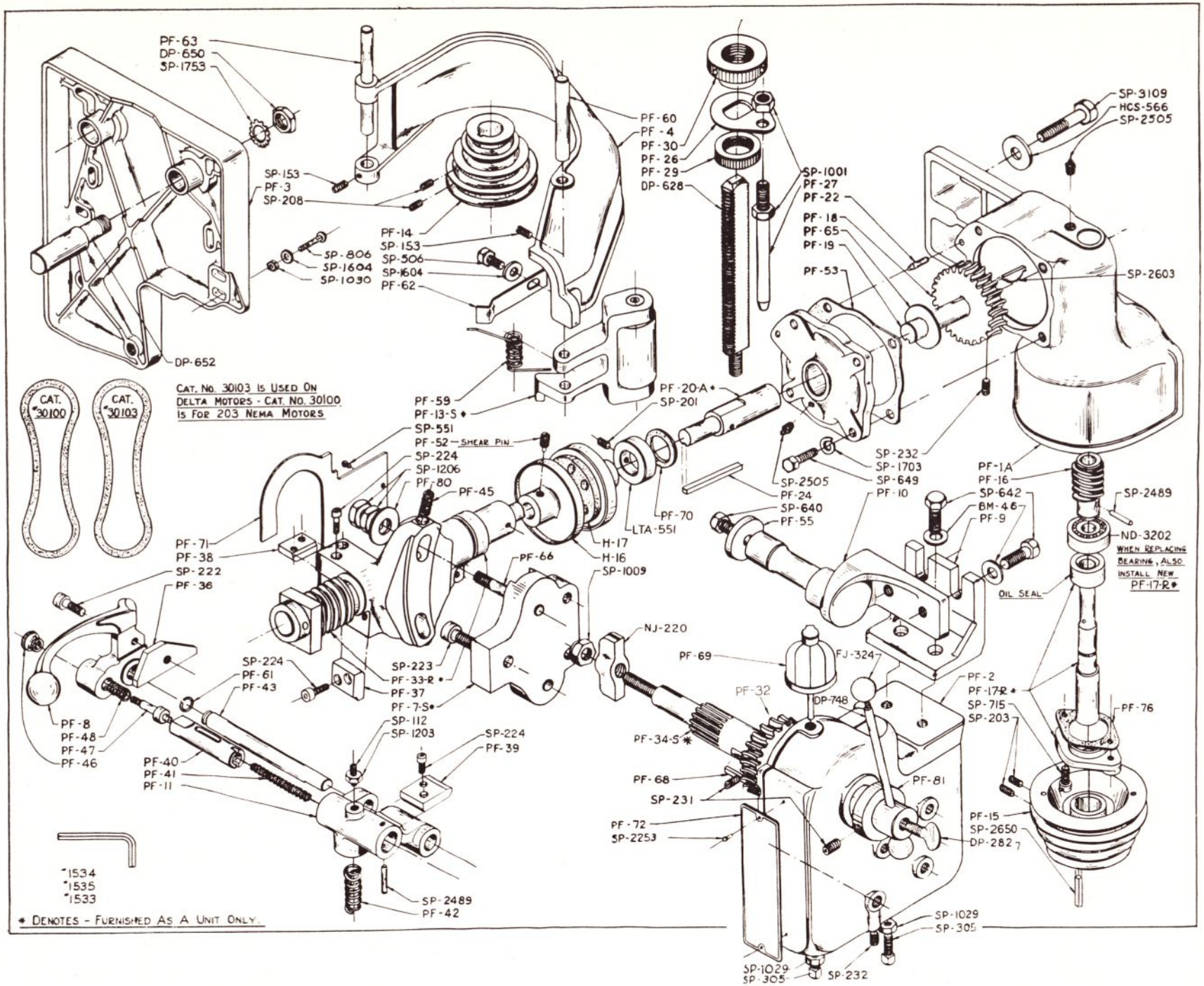
Three Keyways are provided in the bronze gear. PF-32.

When gear becomes worn, loosen the screw and slide the gear from the pinion shaft, then turn the gear so that the next keyway will be engaged by the key.

Replace the gear so that the screw can be tightened against flatted side of pinion shaft.

NOTE:—PF-7-S Bearing Bracket Guide Assembly and PF-33-R Front Drive Shaft Assembly revised March 1, 1944, but is interchangeable with all previous units.

Before operating the Power Feed Drill Press be sure to read and study the Operation Instructions carefully because they contain valuable information which will enable you to obtain the maximum usefulness of this unit.


PF-63
DP-650
SP-1753
SP-153
PF-3
SP-208
SP-806
SP-1604
SP-1030
DP-652
PF-14
SP-153
SP-506
SP-1604
PF-62
PF-60
PF-4
PF-30
PF-26
PF-29
DP-628
SP-1001
PF-27
PF-22
PF-18
PF-65
PF-19
PF-53
SP-3109
HCS-566
SP-2505
SP-2603
CAT. "30100
CAT. "30103
CAT. No. 30103 IS USED ON DELTA MOTORS - CAT. No. 30100 IS FOR 203 NEMA MOTORS
PF-59
PF-13-S ♦
SP-551
PF-52 — SHEAR PIN
SP-224
SP-1206
PF-80
PF-45
PF-20-A ♦
SP-201
PF-70
LTA-551
H-17
H-16
SP-1009
PF-66
SP-232
SP-1703
SP-649
SP-2505
PF-24
SP-640
PF-55
PF-10
PF-1A
PF-16
SP-642
BM-46
PF-9
SP-2489
ND-3202
WHEN REPLACING BEARING, ALSO INSTALL NEW PF-17-R ♦
OIL SEAL
PF-71
PF-38
SP-222
PF-36
NJ-220
PF-69
FJ-324
PF-32
DP-748
PF-2
PF-17-R ♦
SP-715
SP-203
PF-76
SP-224
PF-61
PF-43
SP-223
PF-33-R ♦
PF-37
PF-7-S ♦
PF-8
PF-48
PF-47
PF-46
SP-112
SP-1203
SP-224
PF-39
PF-40
PF-41
PF-11
PF-34-S ✱
PF-68
SP-231
PF-72
SP-2253
PF-81
PF-15
SP-2650
DP-2827
"1534
"1535
"1533
SP-2489
PF-42
SP-1029
SP-305
SP-1029
SP-305
SP-232
♦ DENOTES - FURNISHED AS A UNIT ONLY.

REPLACEMENT PARTS

IMPORTANT: To avoid possible errors, be sure to include the serial number of the machine when ordering parts for repair or replacement.

Part Number	Description	No. Req.	Price Each
	HEAD PARTS		
PF-9	Drive Housing Support	1	$0.90
PF-10	Support Bracket	1	1.50
PF-26	Yoke	1	.15
PF-27	Trip Finger	1	.10
PF-29	Stop Rod Nut	1	.15
PF-30	Yoke Lock Nut	1	.35
PF-32	Worm Gear (Front Drive)	1	4.10
PF-34-S	Pinion Shaft Assembly	1	2.80
PF-55	Steel Washer	1	.10
PF-68	1/4" x 1 1/8" Straight Key	1	.10
PF-81	Collar	1	.45
BM-46	Steel Washer	4	.10
DP-282	Thumbscrew	1	.10
DP-628	Stop Rod	1	.55
DP-748	Stud	1	.30
FJ-324	Ball	2	.15
NJ-220	Hand Knob	1	.20
SP-231	5/16"—18 x 3/8" Allen Set Screw	3	.10
SP-640	3/8"—16 x 3/4" Hex. Head Cap Screw	1	.10
SP-642	3/8"—16 x 1" Hex. Head Cap Screw.	4	.10
SP-1001	5/16"—18 Jam Nut	2	.10
SP-1009	7/16"—14 Unshako Nut	1	.15
	FRONT DRIVE HOUSING PARTS		
PF-2	Front Drive Housing	1	3.45
PF-7-S	Bearing Bracket Guide Assembly	1	.90
PF-8	Trip Lever	1	.95
PF-11	Trip Dog	1	.85
PF-33-R	Front Drive Shaft Assembly	1	6.85
PF-36	Cam Plate	1	1.55
PF-37	Insert	1	.45
PF-38	Insert	1	.30
PF-39	Insert	1	.90
PF-40	Trip Finger Eng. Pin	1	.55
PF-41	Spring	1	.10
PF-42	Spring (For Trip Dog)	1	.10
PF-43	Pin (For Trip Dog)	1	.10
PF-45	Compression Spring	1	.10
PF-46	Thumb Knob	1	.10
PF-47	Lock Pin (Trip Lever)	1	.10
PF-48	Spring (For Lock Pin)	1	.10
PF-52	Shear Pin	1	.10
PF-61	Snap Ring	1	.10
PF-69	Oiler	1	1.80
PF-71	Guard Plate	1	.30
PF-72	Feed Chart Plate	1	.25
PF-80	Special Steel Washer	2	.10
H-16	Coupling Half (5/8" Bore)	2	1.75
H-17	Fiber Washer	1	.35
SP-112	#10—32 x 1/2" Headless Screw (Full Dog)	1	.10
SP-222	1/4"—28 x 5/8" Allen Head Cap Screw	1	.15
SP-223	5/16"—24 x 3/4" Allen Head Cap Screw	3	.20
SP-224	#10—32 x 1/2" Allen Head Cap Screw	8	.15
SP-232	1/4"—20 x 3/8" Unbrako Allen Screw	1	.15
SP-305	1/4"—20 x 1" Square Head Set Screw	2	.10
SP-551	#10—32 x 1/4" Rd. Hd. Machine Screw	3	.10
SP-1029	1/4"—20 Hex. Nut	2	.10
SP-1203	#10—32 Hex. Nut	1	.10
SP-1206	5/16"—24 Hex. Nut	4	.10
SP-2253	#0 x 3/16" Drive Screw	3	.10
SP-2489	#1 Groove Pin 1/8" x 7/8" Long	1	.10

Part Number	Description	No. Req.	Price Each
	REAR DRIVE HOUSING PARTS		
PF-1-A	Rear Drive Housing with Bearing Plate, Bushings, etc., assembled	1	$6.80
PF-15	Worm Shaft Pulley	1	2.70
PF-16	Worm	1	2.15
PF-17-R	Rear Housing Worm Shaft Assembly	1	2.45
PF-18	Worm Gear	1	4.00
PF-19	Worm Gear Shaft	1	.25
PF-20-A	Extension Shaft and Sleeve Assembly	1	1.10
PF-22	Dowel Pin	1	.10
PF-24	Key	1	.10
PF-53	Gasket	1	.10
PF-65	Laminated Washer	1	.10
PF-70	Fiber Washer	1	.10
PF-76	Gasket	1	.10
LTA-551-S	Set Collar with Screw	1	.35
ND-3202	N. D. Ball Bearing	1	1.40
SP-201	5/16"—18 x 5/16" Allen Set Screw	1	.10
SP-203	1/4"—20 x 3/8" Allen Set Screw	2	.10
SP-232	1/4"—20 x 3/8" Unbrako Allen Screw.	1	.15
SP-649	5/16"—18 x 1" Hex. Head Cap Screw	4	.10
SP-715	1/4"—20 x 1/2" Fill. Head Cap Screw.	2	.10
SP-1703	5/16" Lock Washer	4	.10
SP-2489	#1 Groove Pin 1/8" x 7/8" Long	1	.10
SP-2505	1/8" Pipe Plug	2	.10
SP-2603	#705 Hi-Pro Key	1	.10
SP-2650	3/16" x 3/16" x 1 3/8" Straight Key	1	.10
HCS-566	Special Washer	2	.10
	GUARD PARTS		
PF-4	Guard	1	2.15
PF-13-S	Idler Pulley Assembly	1	2.00
PF-59	Idler Bracket Spring	1	.10
PF-60	Idler Bracket Hinge Pin	1	.10
PF-62	Guard Spring Clip	1	.10
PF-63	Guard Hinge Pin	1	.10
SP-153	#10—32 x 1/4" Headless Set Screw	2	.10
SP-506	5/16"—18 x 5/8" Rd. Hd. Mach. Screw	1	.10
SP-1604	5/16" Steel Washer	1	.10
	MOTOR PLATE PARTS		
PF-3	Motor Plate	1	3.80
DP-650	3/4"—16 Hex. Nut	2	.10
DP-652	Motor Plate Pin	2	.35
SP-806	5/16" x 1 1/2" Carriage Bolt	1	.10
SP-1030	5/16" Hex Nut	1	.10
SP-1604	5/16" Steel Washer	1	.10
SP-1753	3/4" Shakeproof Washer	2	.10
SP-3109	1/2"—13 x 2 1/2" Hex. Head Cap Screw	2	.15
	MISCELLANEOUS PARTS		
PF-14-S	Motor Pulley with Screw	1	2.00
PF-75	Adaptor	1	.80
PF-75-S	Motor Shaft Adapter with Set Screws	1	.10
SP-201	5/16"—18 x 5/16" Allen Set Screw	2	.10
SP-208	1/4"—20 x 1/4" Allen Set Screw	2	.10
#1533	7/32" Plain Allen Wrench for 7/16" Set Screw or 5/16" Cap Screw	1	
#1534	1/8" Plain Allen Wrench for 1/4" Set Screw or No. 8 Cap Screw	1	
#1535	3/16" Plain Allen Wrench for 3/8" Set Screw or 1/4" Cap Screw	1	
#30 100	V-Belt Cir.: In. 26 7/8", Out 28 1/4"	1	
#30 103	V-Belt Cir.: In. 26 5/8", Out 28"	1	

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

NOTE: Prices in this list apply only to parts order for repair and replacement. They cannot be used for computing allowance value when a machine is ordered "less" certain parts. Ask for quotations on such special machines.


DELTA
MILWAUKEE

P.M. No. 1606
DATE: 10-15-43 Revise
REPLACES: 9-1-43
INDEX: 120-1-H

DELTA MILWAUKEE

THE DELTA MFG. CO., MILWAUKEE 1, WIS.

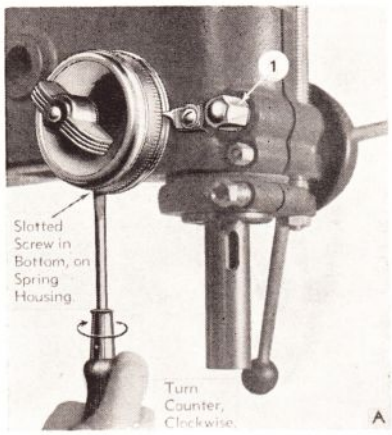
HOW TO INSTALL THE POWER FEED ON A 17 IN. DRILL PRESS

● ● Before operating the Power Feed be sure to read and study the Operation Instructions P.M. No. 1607 for the Power Feed Drill Press carefully because they contain valuable information which will enable you to obtain the maximum usefulness of this unit.

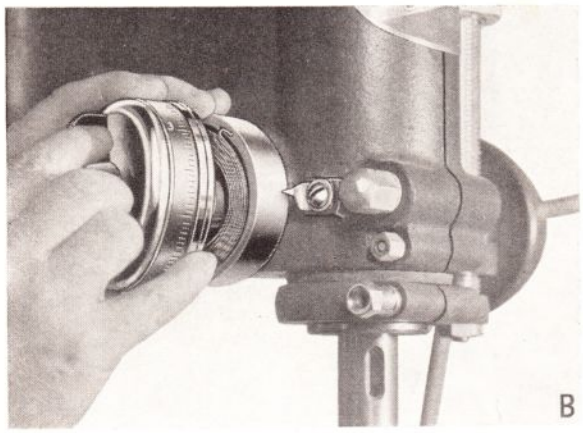
These instructions show by picture and explanation the proper procedure in installing the Power Feed on a 17 inch Drill Press.

READ CAREFULLY — there is nothing complicated about installing the Power Feed, but CERTAIN PRECAUTIONS MUST BE TAKEN AND OPERATIONS MUST BE DONE IN PROPER SEQUENCE as outlined here — otherwise the unit will not operate perfectly.

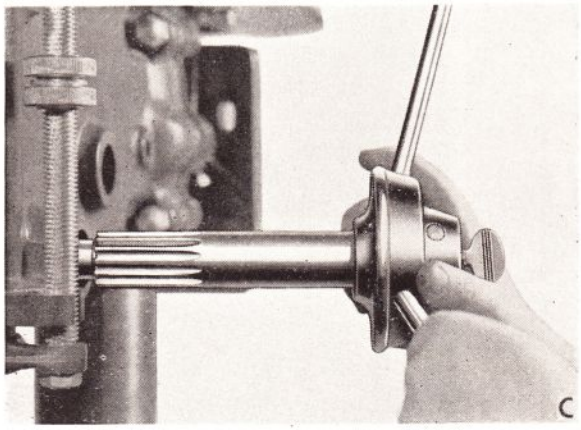
Follow these steps in this sequence:



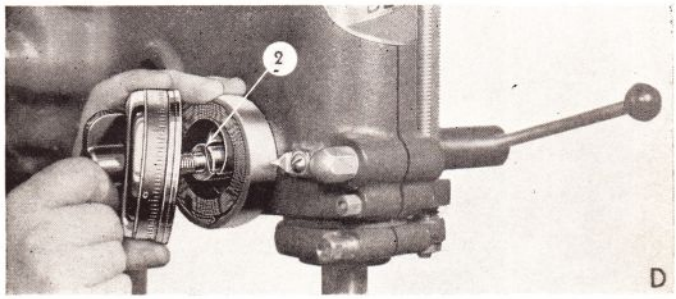
1—Lock the quill in position by tightening nut (1) photo A. Then relieve spring pressure by turning slotted screw in bottom of spring housing counter-clockwise.



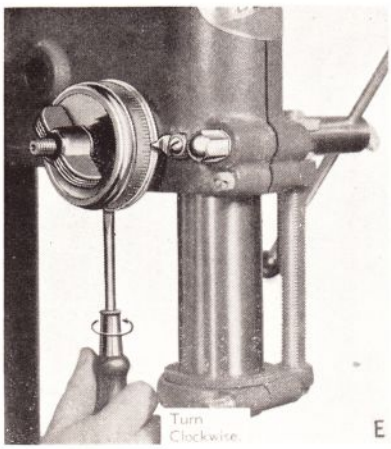
2—Remove wing nut and spring housing cover as shown in photo B, leaving the spring housing and coil spring in place.



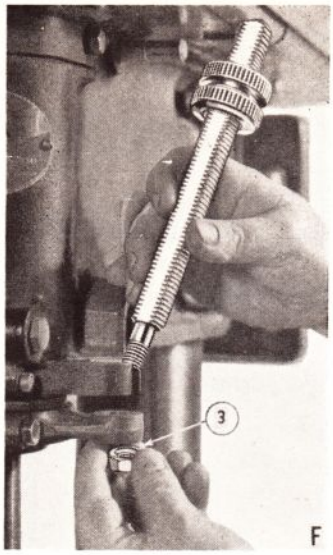
3—Remove quill pinion shaft, photo C.



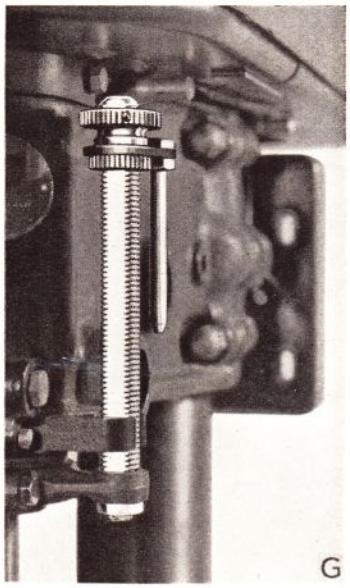
4—Install new pinion shaft, photo D, and slide slot (2) in end of shaft on to flat inner end of spring. Replace spring housing cover and wing nut. If there is sideways play in the pinion shaft remove entire spring housing and insert shims between spring housing and drill press head casting. Replace housing. You will find these shims in a separate envelope packed with the unit.



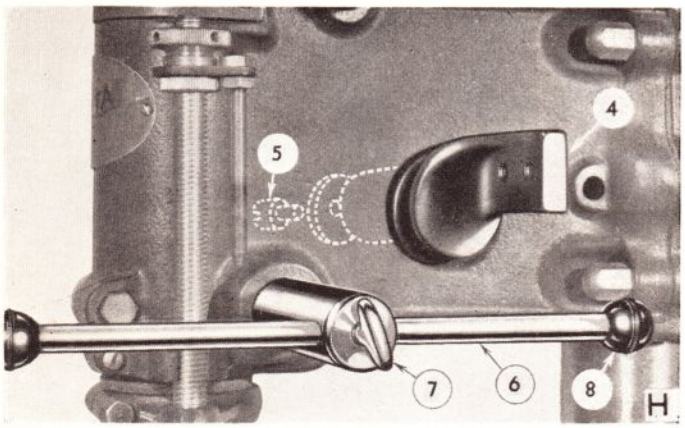
5—With the quill in the down position, photo E, turn slotted screw in bottom of spring housing clockwise to build up pressure in coil spring. Replace nut on threaded portion of shaft extending through handle.



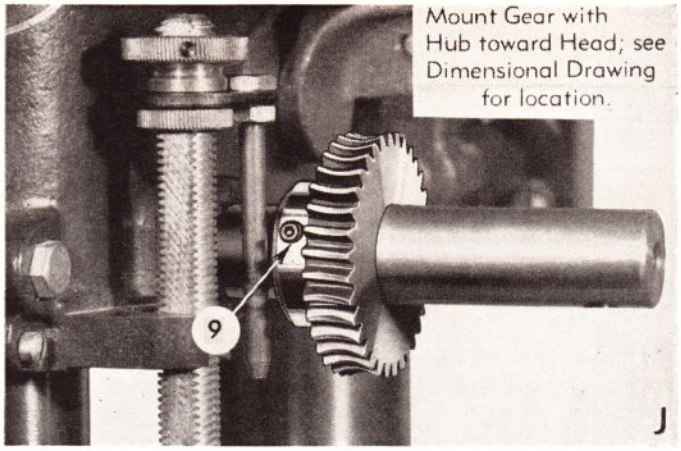
6—Remove stop rod by loosening nut (3) at bottom. photo F.



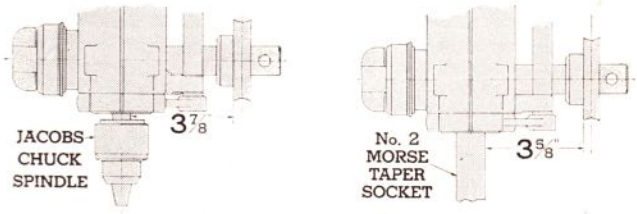
7—Photo G, below. Install new stop rod with trip finger. The trip finger must be toward rear as shown. Be sure trip finger is parallel to threaded stop rod. Align finger in place by tightening nuts at top.



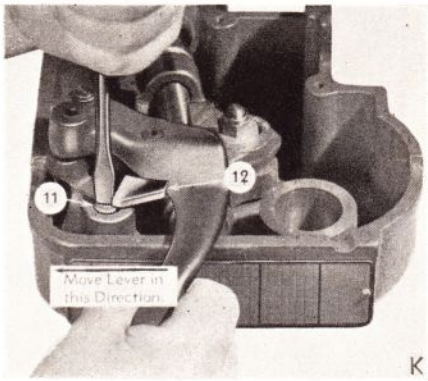
8—Insert universal bracket (4), photo H, in drill press head and hold in place with screw (5) on far side, shown by white dotted lines. Tighten just enough to allow turning by hand. Remove hand lever (6) by loosening screw (7) and removing ball end (8).



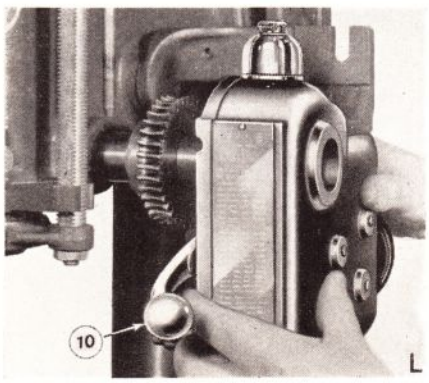
9—Mount worm gear WITH HUB TOWARD HEAD on pinion shaft as shown by photo J.



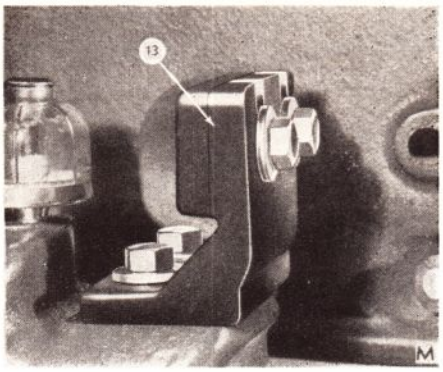
IMPORTANT—This worm gear must be located accurately as shown by the above sketches. Hold in place by firmly tightening the Allen set screw (9).



10—Place housing on bench as shown in photo K. With blunt tool or screw driver, depress pin (11) and move lever in direction as shown until cam (12) slides past end of pin (11).

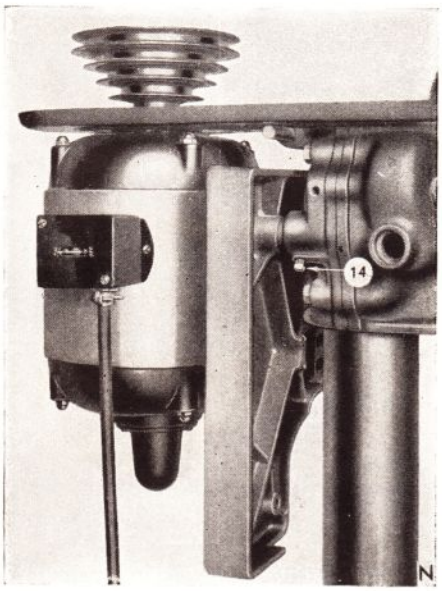


11—Then slide housing onto the pinion shaft, photo L, making certain that it contacts outer face of the worm gear. Then place collar 21 as shown in photo Q and R against boss on case and lock securely in place with set screw. Replace hand lever (6), photo H.

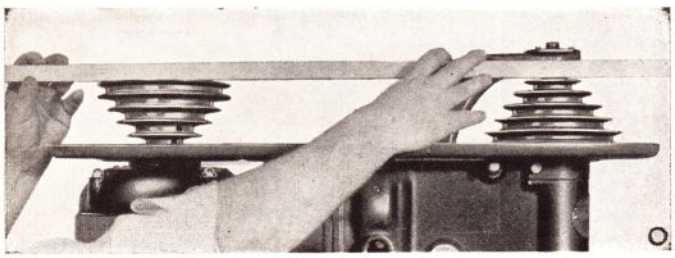


12—Mount bracket (13) on to housing, photo M, loosely so that it may be adjusted later by hand. Also set the two screws in slotted upright leg of bracket as shown.

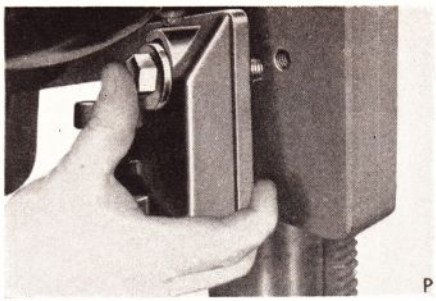
13—Remove old motor bracket and replace by motor bracket furnished.



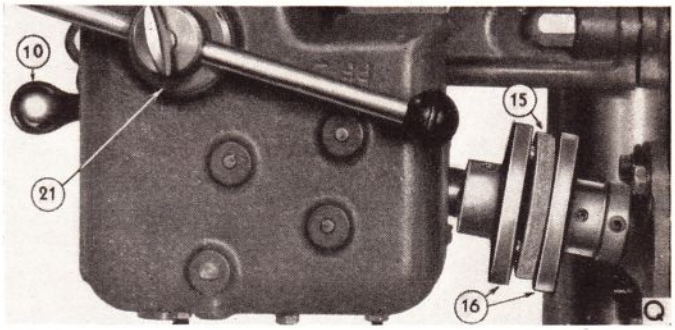
14—Remove rear half of belt guard. Mount motor with switch or outlet box at left, photo N. Replace guard and slide motor pulley onto motor shaft. Be sure that bottom face of pulley contacts shoulder on motor shaft. Put on motor belt and adjust motor plate with motor "in" or "out" for proper belt tension. Lock motor plate in place by square headed screws (14).



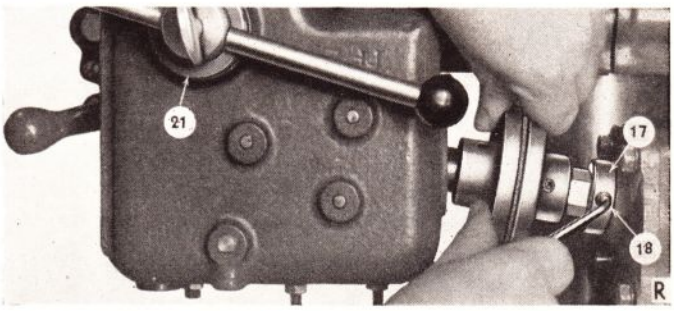
15—Align pulleys by placing straight edge over pulley as shown in photo O and move motor up and down for proper location.



16—With the two hexagonal bolts placed in the slotted holes in the rear gear housing, mount the housing on the lower end of the motor bracket, photo P.



17—Be sure trip lever (10), photo Q, is in the UP position. With the fabric insert (15) in place on the driving lugs on the forward half of the flexible coupling (16), draw rear half of coupling forward to bring the two halves together, photo R, having the edges of the coupling approximately 1/8 of an inch apart. (When the trip lever is in the DOWN position there should be clearance between the lower edges of the two halves of the coupling). When the two halves of coupling are in position as shown, draw down bolts tightly, photo P, holding gear housing firmly in place on motor bracket.

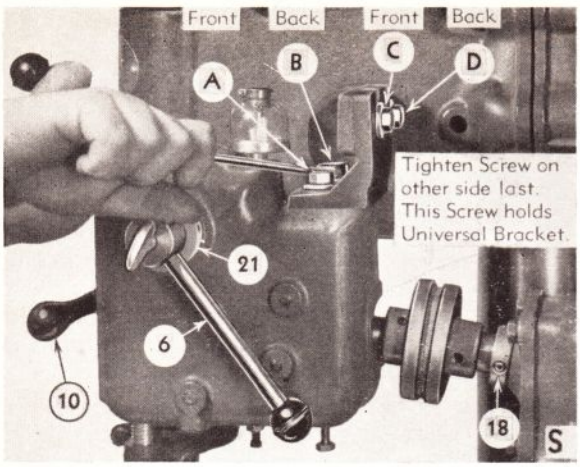


18—Loosen set collar (17), photo R, by means of Allen set screw (18) and then while holding the coupling halves together slide the collar (17) back as far as it will go against cover plate. Then tighten set collar by drawing down Allen set screw (18) being sure it bears against flat surface on shaft.

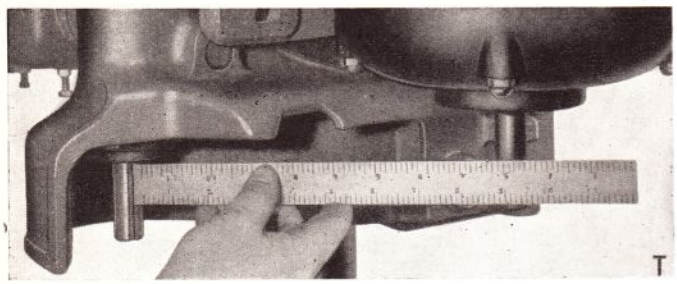
19—To obtain freedom of quill movement, proceed as follows: Put lever (10), photo S, in down position. Then move quill up and down by means of hand feed lever (6) and tighten screws A, B, C and D on the universal bracket as shown and the screw on the other side of the drill press head which holds the universal bracket (refer back to photo H).

IMPORTANT—These screws must be tightened in the proper sequence, starting with A, then B, C and D and ending with screw on the other side of head.

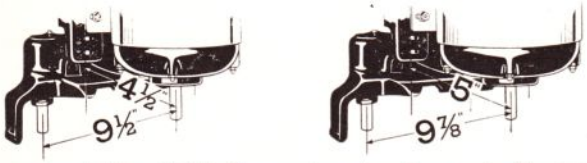
Tighten each screw a very little at a time. If the quill does not return freely under normal spring pressure, loosen all five screws and repeat.

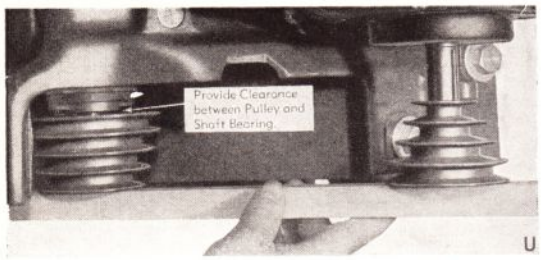


DO NOT ATTEMPT TO GET THE QUILL TO RETURN BY PUTTING MORE TENSION ON THE RETURN SPRING.



20—Next, check carefully this distance from center to center of shafts as shown by photo T. On motors that have a shaft centerline 4½" from the base, this distance should be 9½". On motors having a shaft centerline 5" from the base this distance should be 9⅞". See sketches above.



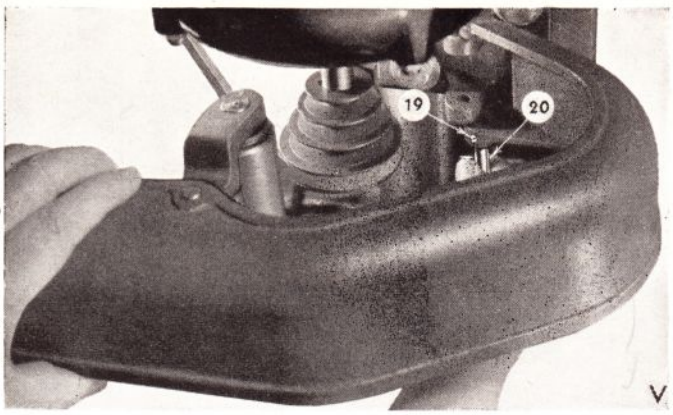


21—Mount pulley on gear housing shaft, photo U. Turn by hand to be certain that inner edge of large step does not come in contact with the shaft bearing. Then install pulley on motor shaft. Line up pulleys with straight edge as shown and install belt. On those motors that are less than 15½" from end to end of shafts, it is necessary to use the special shaft extension furnished so that motor pulley aligns with gear housing pulley.

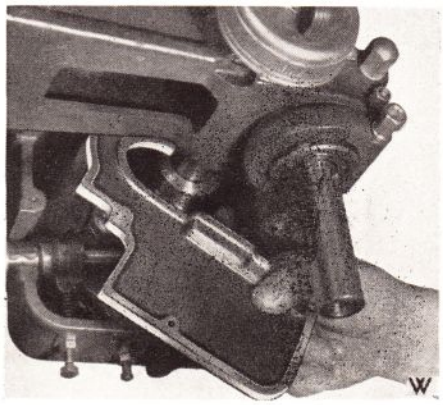
Motors of our manufacture that require the shaft extension are the ¾, 1 and 1½ horsepower, 3 phase motors. Their catalog numbers are:

86720, 86762, 86920, 86960, 86921, 86922, 87120

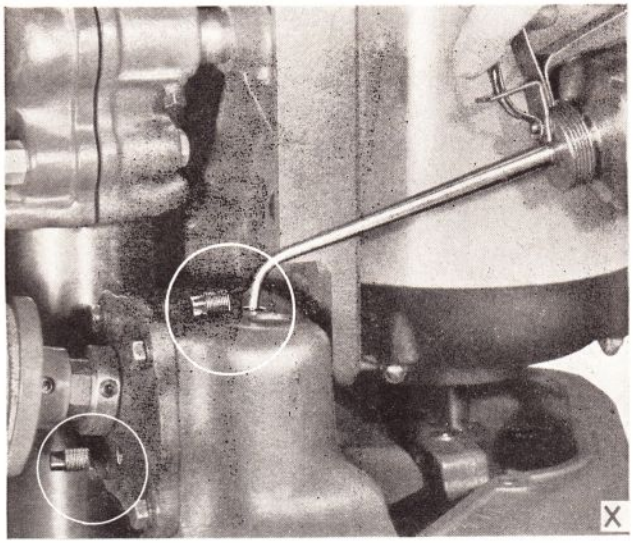
The use and application of NEMA No. 203 motors are limited to motors which have an overall dimension of less than 16-13/16".



22—To mount belt guard below motor, loosen set screw (19) and remove pin (20), photo V. Slip guard in place and replace pin (20) and tighten screw (19). Catch which may be adjusted on end of guard holds guard in place. Be sure to remove packing wire so that idler pulley swings freely.



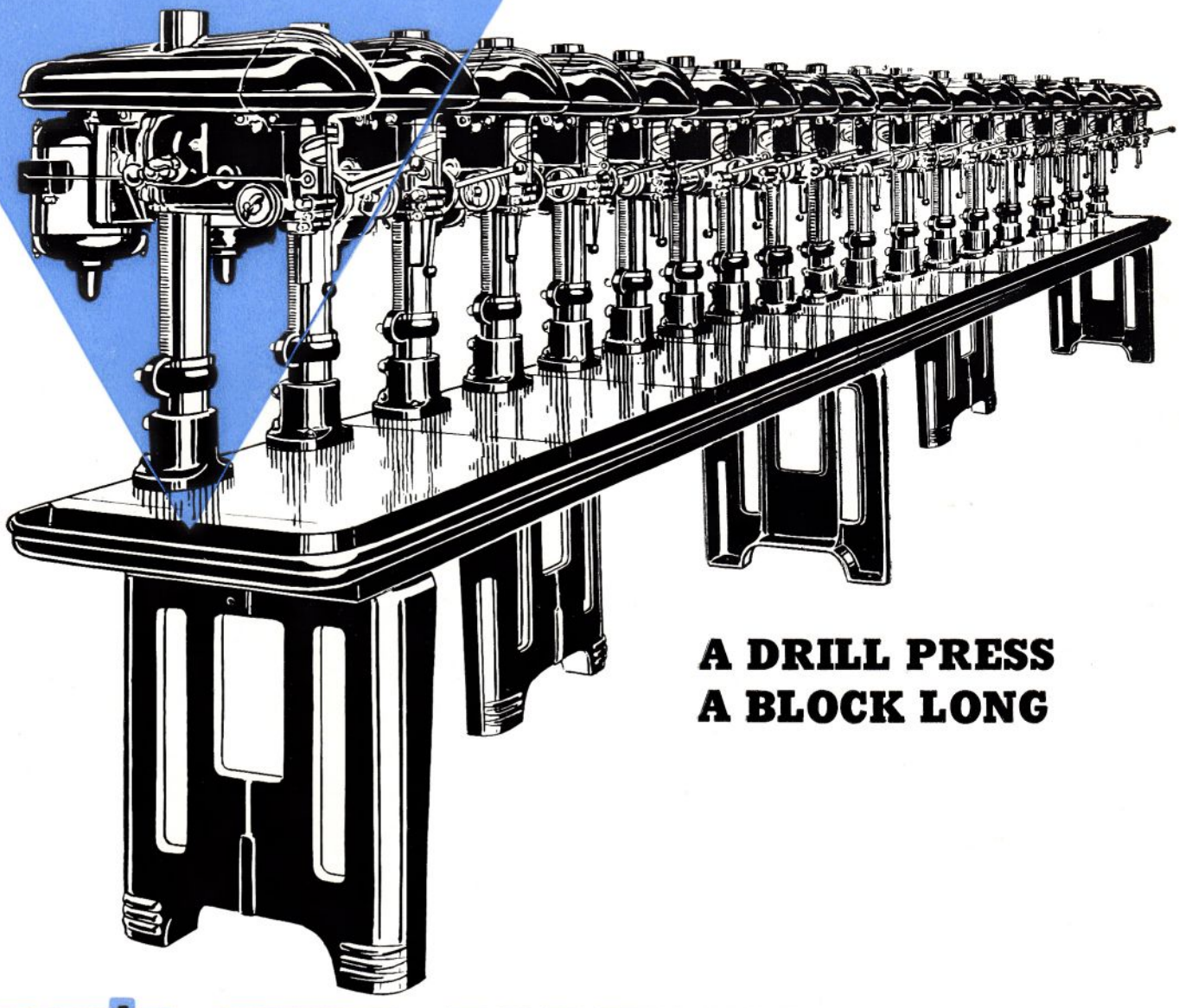
23—To mount front gear housing guard move trip finger, photo G, into extreme top position on stop rod. Then pass upper portion of guard over quill pinion shaft as shown by photo W and fasten in place with two screws.



24—Fill oil cup on top of housing with 40W motor oil. Remove both pipe plugs, photo X, in gear housing and fill housing through top opening with 600W oil until level of lower plug is reached. Replace plugs. Unit is now ready for operation.

WHAT DO YOU NEED?

A SINGLE SPINDLE DRILL PRESS, OR



A DRILL PRESS A BLOCK LONG

HERE'S THE ANSWER

IN A NEW DRILL PRESS DEVELOPED BY DELTA

A SINGLE SPINDLE, OR A DRILL PRESS A BLOCK LONG

THAT is what this NEW Delta Development in Drill Press Design offers you.

NOW, for the first time you can get exactly the machine you need for your individual production problems in your own shop. No longer need you take a "standard" machine with only a definite number of spindles. You can now get a drill press of one spindle, two, three, six or eight or any number you desire—you buy the machine to fit your jobs instead of making the jobs fit the machine.

With this new low cost set-up you can have just the number of spindles you need—and you have them all in one row which speeds production since the piece being drilled or tapped can be started at one end of the machine and run to completion at the other end. This eliminates the costly transferring of materials from one drill press to another—handling, including trucking and inter-operation storage, are eliminated.

In addition, this new drill press provides a maximum of working surface, and if you have an exceptionally large piece to be drilled, the single spindle on the 23⅝" by 35" table provides perfect operating conditions.

The drill press is built up on a sectional table—each table section being 23⅜" by 30" and with the addition of the end sections is increased to 35" long.

On these sections, any type of Delta 17" or 14" head can be easily installed and at centers which meet your individual needs. This means that the maximum amount of flexibility is assured—you can have all 17" or 14" heads on one machine or a combination of both—you can have them spaced at any distance you desire—either close together or far apart.

Because each machine tool is made individually for your applications, there are no so-called "standard" units, although we show in the blueprints to the right, suggested set-ups of a single spindle, a two spindle, a three spindle, six spindle, and eight spindle machine—showing the working space available. These are the most popular combinations although, as stated before, other combinations are easily made up.

Another outstanding feature of this new development is the low cost of the entire assembly. Heretofore, the price of a machine tool of this kind was almost prohibitive but by means of Delta design and production, you can obtain this unit at an exceptionally low figure.

The unit illustrated is an eight spindle machine using 17" drill press heads which have No. 2 Morse taper spindles. Three-quarter horsepower, three-phase motors are recommended.

Table surface of this unit is 23⅜" by 125". Center to center between spindles is 15". Maximum distance chuck to table 26". Quill has 5" stroke. Drilling capacity is ¾" in cast iron. Table has 1½" oil trough drilled and tapped at rear for ½" oil drain pipe.

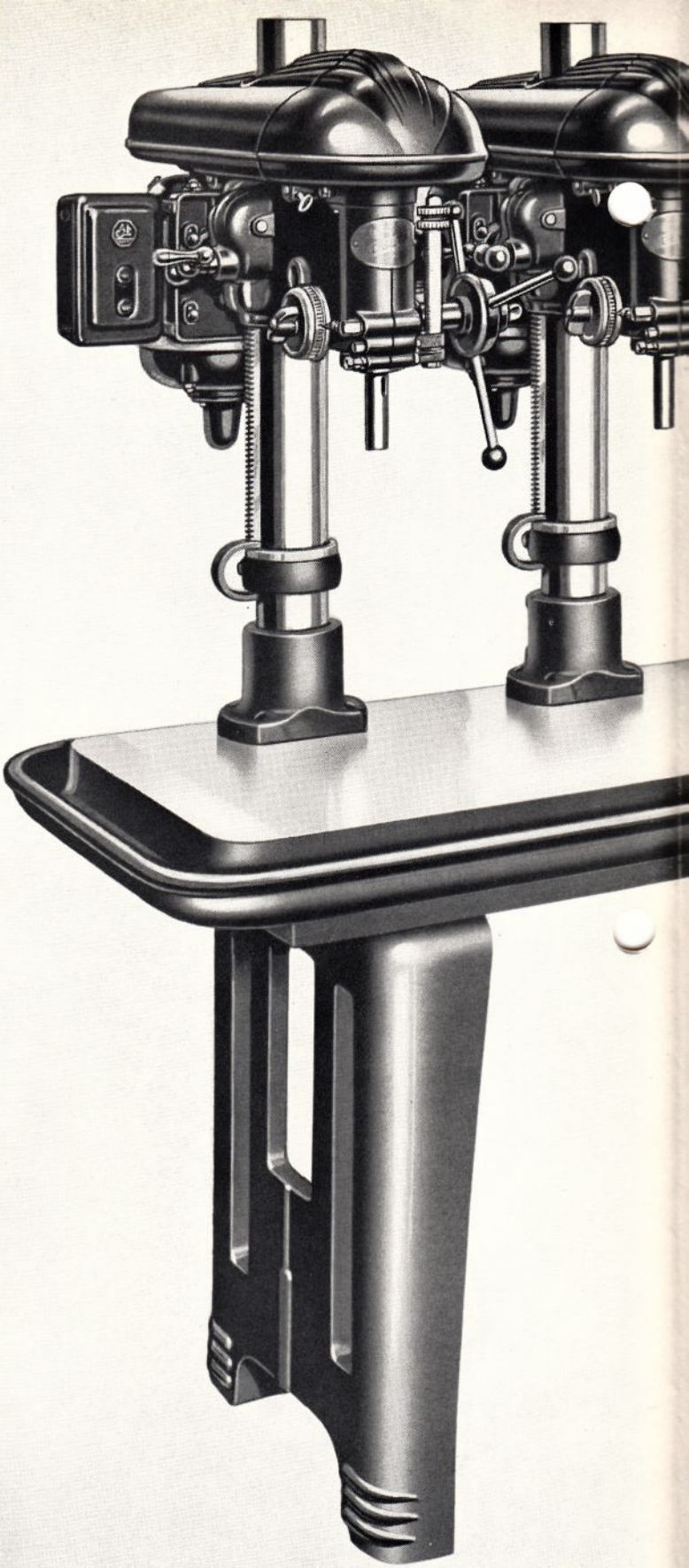
This unit, complete as illustrated with bench legs is $1,068.50 without motors, which is an exceptionally low price compared to the amount of "machine tool" obtained.

The table is accurately ground. The entire unit is rugged and heavy and extremely accurate.

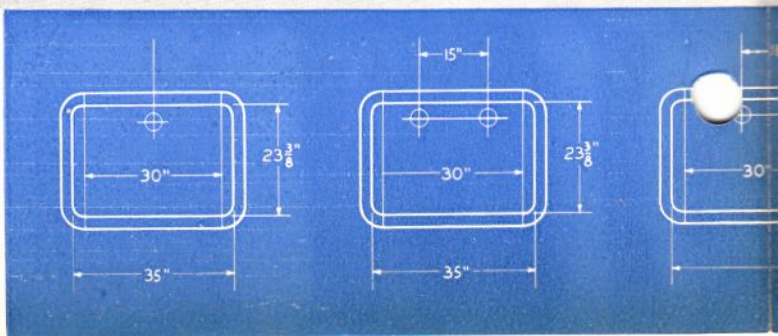
Tell us what your requirements are—how many drill press heads you could use in your set-up like this—whether you need 14" or 17" heads or a combination of both and what distance you want the heads spaced. We will gladly send you complete specifications and prices and any other information you desire. We suggest that you do this today, using the inclosed postage paid envelope for your letter.

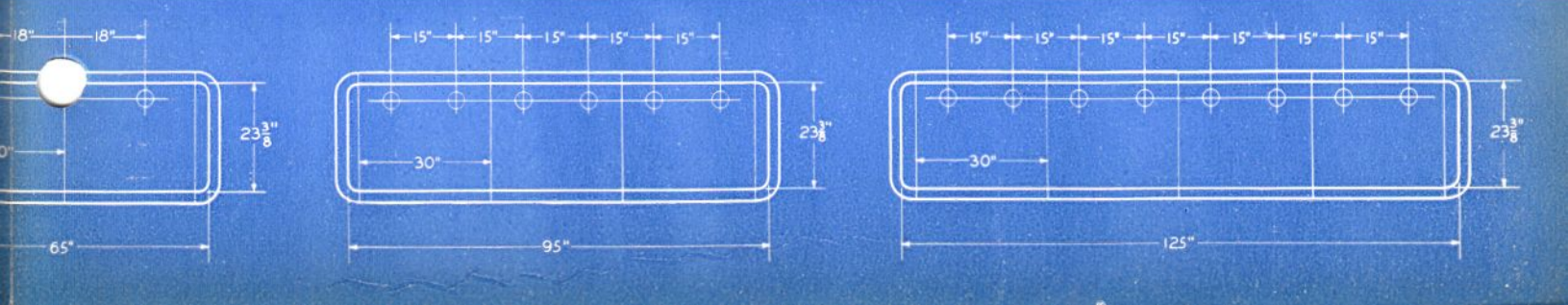
REMEMBER — IF YOU NEED a single spindle drill press or a drill press a block long, you now have the answer for your needs at exceptionally low prices.

THE DELTA MANUFACTURING COMPANY
600-634 EAST VIENNA AVENUE MILWAUKEE, WISCONSIN



USE THE ATTACHED POSTAGE PAID ENVELOPE TO SEND YOUR LETTER TELLING US WHAT YOUR MULTIPLE-SPINDLE DRILLING AND TAPPING REQUIREMENTS ARE. WE WILL SEND YOU COMPLETE DATA AND PRICES ON THE PROPER SET-UP.




18"
18"
23 3/8"
65"
15"
15"
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15"
30"
23 3/8"
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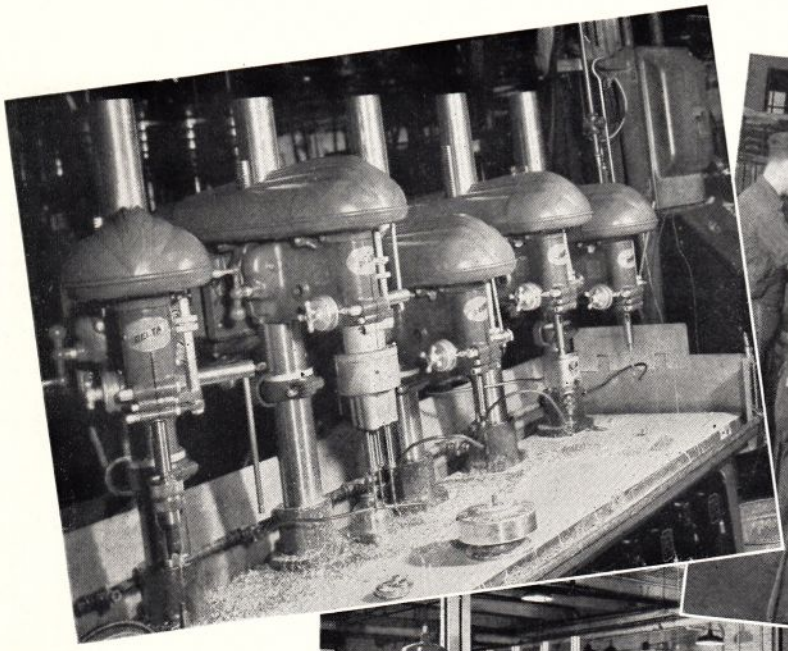
15"
15"
15"
15"
15"
15"
15"
30"
23 3/8"
125"

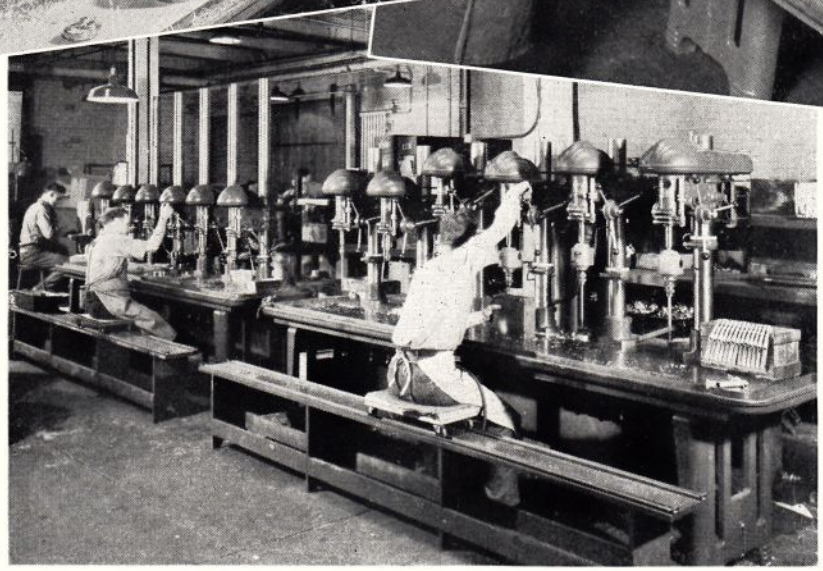
DELTA MULTIPLE SPINDLE INSTALLATIONS

USING THE NEW SECTIONAL TABLE



Above — a 5 spindle Delta 17" drill press setup using the new sectional table in a plant manufacturing outboard motors on which facing, drilling and tapping operations are done.

Above — An 8-spindle setup using Delta 17" drill press heads. This is in a machine shop where accuracy is of prime importance.



Left—Two 6-spindle Delta 17" drill press units again using the sectional table in the plant of a spray equipment manufacturer. Note the roller seat on which the operator travels from end to end of the machine.

THESE PRODUCTION SHOPS, WITH MULTIPLE DRILL PRESS OPERATIONS, CUT COSTS AND INCREASE PRODUCTION WITH THE NEW DELTA UNIT.

Alert production men find that the new Delta Multiple-Spindle Drill Press, on which either 14-inch or 17-inch Delta heads may be mounted, is pulling them out of a jam because they can now have just the number of spindles they need—all in a single row.

This speeds production, eliminates "bottlenecks", because the piece to be drilled or tapped can be started at one end of the machine and run to completion at the other end. Costly transferring of materials from one drill press to another, handling, including trucking and even storage are eliminated.

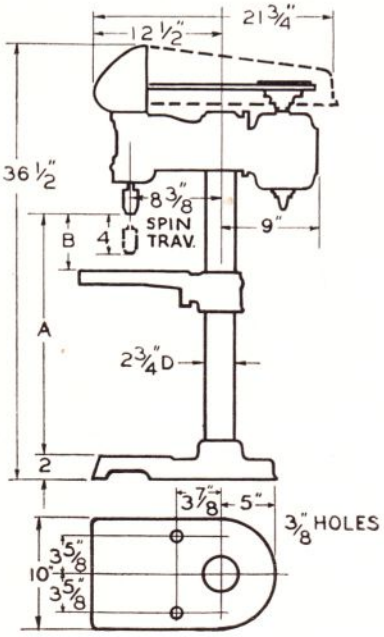
There is a place in your shop where this new machine will help you—and, at its extremely low cost you should investigate its possibilities today. Just send your requirements in the enclosed postage paid envelope—we will send you prices and specifications.

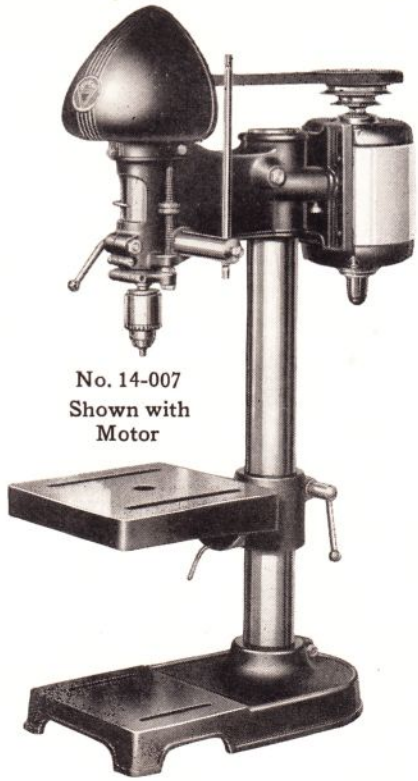
THE DELTA MANUFACTURING CO. 600-634 EAST VIENNA AVENUE MILWAUKEE, WISCONSIN

Form AD 112

Printed in U. S. A.

14-inch Bench Type Single Spindle Drill Presses





No. 14-007
Shown with
Motor

These Drill Presses have become extremely popular in shops where low cost, low maintenance and portability are of importance. Having a capacity of 3/8" in cast iron there are dozen of places where this drill press will quickly pay for itself. Not only does it combine all the best features of drill presses of this kind but it has additional advantages which make it the favorite wherever used. Its self-aligning drive and free-floating spindle, its sturdy quill design and construction, its ease of operation, its sealed-for-life ball bearings—these are but a few of the "plus" values you receive in these fine accurate drill presses.

Type	Standard Tilting Table	
Model	Slo-Speed	High Speed
WITH NO. 1 MORSE TAPER SPINDLE		
Machine No.	14-005	14-006
Old No.	1300	1000
Table Working Surface	10" x 10"	10" x 10"
Spin. to Table (B) Max.	15 1/4"	15 1/4"
Spin. to Base (A) Max.	18 3/4"	18 3/4"
Ship. Wt. Lbs.	110	110
Code Word	SLOBF	BENMT
WITH 1/2 INCH JACOBS CHUCK SPINDLE		
Machine No.	14-007	14-008
Old No.	1302	999
Table Working Surface	10" x 10"	10" x 10"
Spin. to Table (B) Max.	15 1/8"	15 1/8"
Spin. to Base (A) Max.	18 5/8"	18 5/8"
Ship. Wt. Lbs.	110	110
Code Word	SLOBG	BENJC

MOTOR AND SWITCH NOT INCLUDED, MUST BE ORDERED SEPARATELY.

There are four standard machines supplied in this group.

Capacity: 3/8" in cast iron.

Machines include:

Built in depth gage.

Depth scale on quill.

Pulley guard.

Quill has 4 inch stroke or travel.

High speed models have speeds of 680, 1250, 2400 and 4600 RPM and include No. 387 V-belt and No. 985 motor pulley.

Slo-speed models have speeds of 470, 780, 1300 and 1950 RPM and include No. 430 V-belt and No. 985 motor pulley.

Order Jacobs spindle machines where straight shank drills only are to be used. This chuck will take drills from No. 60 to full 1/2".

Order No. 1 Morse taper spindle machines where taper shank drills only are to be used.

Spindles in these machines are easily changed. See complete listing below.

For individual parts for special set-ups and for accessories, see pages 14–17.

Coolant arrangements cannot be used on these machines.

Motors recommended:

Light Duty: 62 110 1/3 H.P., Cap. A.C. 110/220 V. 60 Cy.
66 110 1/3 H.P., 3 Ph. A.C. 220/440 V. 50/60 Cy.

Medium Duty: 62 110 1/3 H.P., Cap. A.C. 110/220 V. 60 Cy.
66 320 1/2 H.P., 3 Ph. A.C. 220/440 V. 50/60 Cy.

Heavy Duty: 66 320 1/2 H.P., 3 Ph. A.C. 220/440 V. 50/60 Cy.

For 3 Ph. motors use No. 1320 3 Phase Manual or No. 1329 Magnetic Starter with No. 1322 Mounting Parts.

Use No. 1331 Rod for All Single Phase Motors.

See Pages 18 to 19 for Motors and Switch Parts.

For Prices See Attached Price List.

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 application of the machine is increased many times. All chucks are balanced for high-speed work. Spindles have deep splines which insure proper balance and long wear.

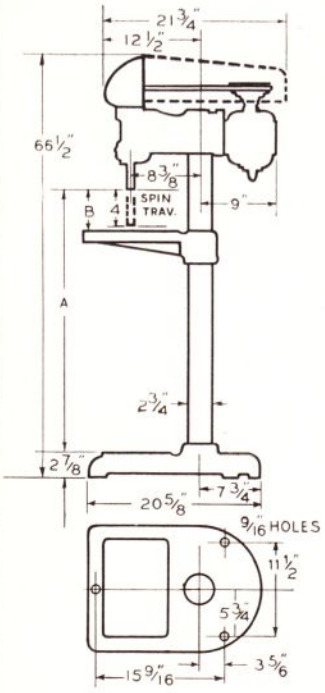
972 973 974 977 991

Cat. No	Description of Spindle	Wt. Lbs.	Code Word
972	Jacobs Chuck—Cap. No. 60—1/2"	3 1/2	NESPB
973	No. 1 Morse Taper	2	NESPC
974	With 1/2" Hole for Router Bits	2 1/2	NESPD
977	For Shaper Cutters with 5/16" Hole	2	NESPF
991	For Cup Wheels	2	NESPG

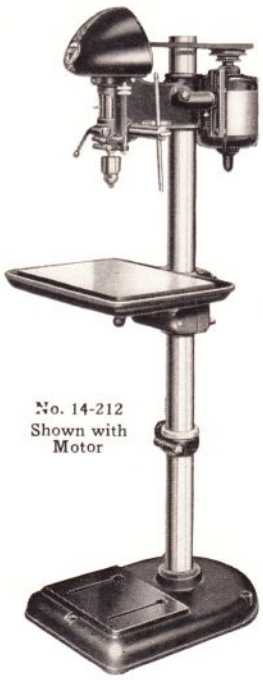
For Prices see Attached Price List.

14-inch Floor Type Single Spindle Drill Presses

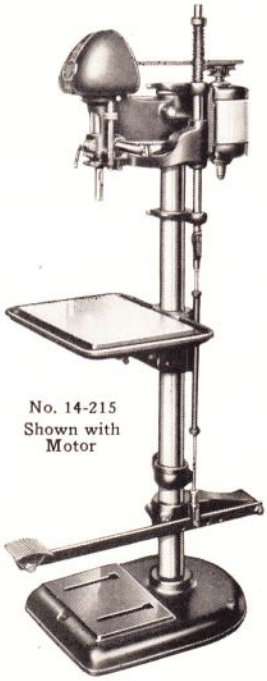
DELTA MILWAUKEE



No. 14-207 Shown with Motor



No. 14-212 Shown with Motor



No. 14-215 Shown with Motor

Type	Standard Tilting Table		Production Table		Prod. Table and Foot Feed	
Model	Slo Speed	High Speed	Slo Speed	High Speed	Slo Speed	High Speed
WITH NO. 1 MORSE TAPER SPINDLE						
Machine No.	14-205	14-206	14-210	14-211	14-215	14-216
Old No.	1286	986	1887	1587	1888	1588
Table Working Surface	10" x 10"	10" x 10"	11" x 16"	11" x 16"	11" x 16"	11" x 16"
Spin. to Table (B) Max.	41¼"	41¼"	40¼"	40¼"	33¼"	33¼"
Spin. to Base (A) Max.	46¾"	46¾"	46¾"	46¾"	44¾"	44¾"
Ship. Wt. Lbs.	145	145	187	187	230	230
Code Word	SLOFB	NEWMT	SLOBH	NEWAE	SLOBI	NEWAF
Cat. No. of Coolant Piping	.....	.....	17-805	17-805	17-805	17-805
Type of Coolant Pump Required	.....	.....	Model No. 1	Model No. 1	Model No. 1	Model No. 1
WITH 1/2 INCH JACOBS CHUCK SPINDLE						
Machine No.	14-207	14-208	14-212	14-213	14-217	14-218
Old No.	1289	989	1890	1590	1891	1591
Table Working Surface	10" x 10"	10" x 10"	11" x 16"	11" x 16"	11" x 16"	11" x 16"
Spin. to Table (B) Max.	41"	41"	40"	40"	33"	33"
Spin. to Base (A) Max.	46½"	46½"	46½"	46½"	44½"	44½"
Ship. Wt. Lbs.	145	145	192	192	230	230
Code Word	SLOFC	NEWJC	SLOBK	NEWAH	SLOBL	NEWAJ
Cat. No. of Coolant Piping	.....	.....	17-805	17-805	17-805	17-805
Type of Coolant Pump Required	.....	.....	Model No. 1	Model No. 1	Model No. 1	Model No. 1

MOTORS, SWITCHES, COOLANT PUMP AND PIPING NOT INCLUDED WITH MACHINE. MUST BE ORDERED SEPARATELY.

These 14 inch drill presses are supplied in twelve standard machines as listed and illustrated above.

Capacity: 3/8" in cast iron.

Machines include:

- Built in depth gage.
- Depth scale on quill.
- Pulley guard.
- Quill has 4 inch stroke or travel.
- High speed models have speeds of 680, 1250, 2400 and 4600 RPM and include No. 387 V-belt and No. 985 motor pulley.
- Slo-speed models have speeds of 470, 780, 1300 and 1950 RPM and include No. 430 V-belt and No. 985 motor pulley.

Order Jacobs spindle machines where straight shank drills only are to be used. This chuck will take drills from No. 60 to full ½".

Order No. 1 Morse taper spindle machines where taper shank drills only are to be used.

Spindles in these machines are easily changed. See complete listing on opposite page.

For individual parts for special set-ups and for accessories, see pages 14–17.

For coolant piping and pump see page 16.

Motors recommended:

Light Duty: 62 110 1/3 H.P., Cap. A.C. 110/220 V. 60 Cy.
66 110 1/3 H.P., 3 Ph. A.C. 220/440 V. 50/60 Cy.

Medium Duty: 62 110 1/3 H.P., Cap. A.C. 110/220 V. 60 Cy.
66 320 1/2 H.P., 3 Ph. A.C. 220/440 V. 50/60 Cy.

Heavy Duty: 66 320 1/2 H.P., 3 Ph. A.C. 220/440 V. 50/60 Cy.

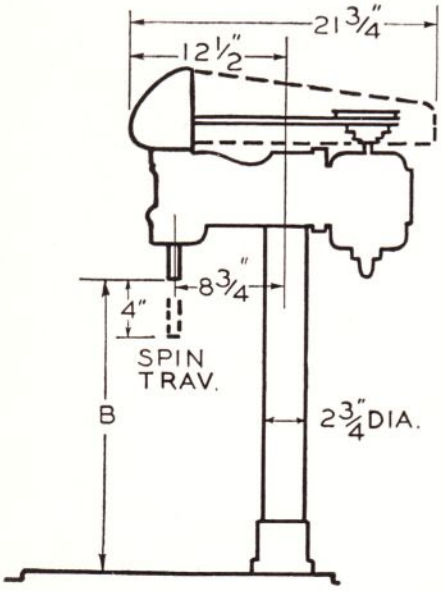
For 3 Ph. motors use No. 1320 3 Phase Manual or No. 1329 Magnetic Starter with No. 1322 Mounting Parts.

Use No. 1331 Rod for All Single Phase Motors.

See Pages 18 to 19 for Motors and Switch Parts.

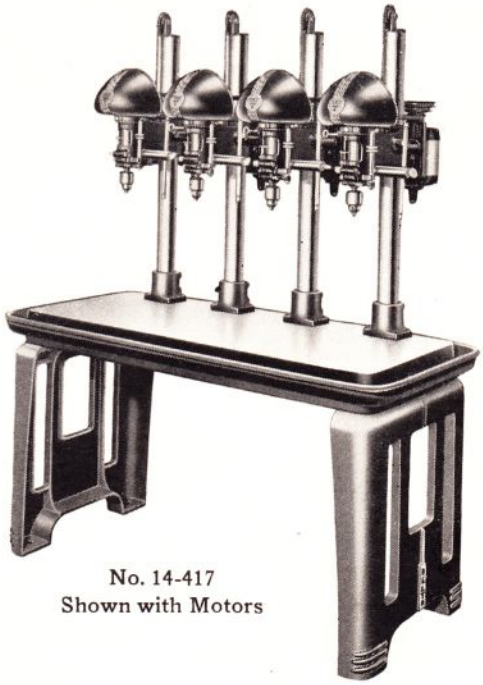
For Prices See Attached Price List.

14-inch Bench and Floor Type, 1, 2, 3 and 4 Spindle Drill Presses

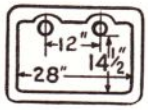
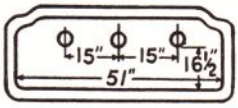
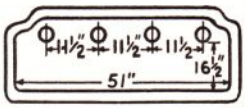


One Piece Tables

No. 14-308
Shown with Motor



No. 14-417
Shown with Motors

Type	1 Spin. Bench Type 		2 Spin. Floor Type 		3 Spin. Floor Type 		4 Spin. Floor Type 	
Model	Slo Speed	High Speed	Slo-Speed	High Speed	Slo-Speed	High Speed	Slo-Speed	High Speed
			WITH NO. 1 MORSE TAPER SPINDLE					
Machine No.	14-305	14-306	14-405	14-406	14-410	14-411	14-415	14-416
Old No.	1014	1013	1543	1541	.....	.....	1553	1551
Table Working Surface	14" x 16"	14" x 16"	14½" x 28"	14½" x 28"	16½" x 51"	16½" x 51"	16½" x 51"	16½" x 51"
Spin. to Table (B) Max.	19⅛"	19⅛"	19⅛"	19⅛"	19⅛"	19⅛"	19⅛"	19⅛"
Spindle Spacing	.....	.....	12"	12"	15"	15"	11½"	11½"
Ship. Wt. Lbs.	215	215	657	657	900	900	1185	1185
Code Word	PRODD	PRODC	TWOSD	TWOSB	TRISI	TRISJ	FOURH	FOURF
Cat. No. Coolant Piping	17-805	17-805	14-805	14-805	14-806	14-806	14-807	14-807
Type of Cool. Pump Req.	Model No. 1	Model No. 1	Model No. 2	Model No. 2	Model No. 2	Model No. 2	Model No. 2	Model No. 2
			WITH 1/2 INCH JACOBS CHUCK SPINDLE					
Machine No.	14-307	14-308	14-407	14-408	14-412	14-413	14-417	14-418
Old No.	1012	1011	1542	1540	.....	.....	1552	1550
Table Working Surface	14" x 16"	14" x 16"	14½" x 28"	14½" x 28"	16½" x 51"	16½" x 51"	16½" x 51"	16½" x 51"
Spin. to Table (B) Max.	19"	19"	19"	19"	19"	19"	19"	19"
Spindle Spacing	.....	.....	12"	12"	15"	15"	11½"	11½"
Ship Wt. Lbs.	210	210	662	662	900	900	1185	1185
Code Word	PRODB	PRODA	TWOSC	TWOSA	TRISK	TRISL	FOURG	FOURE
Cat. No. Coolant Piping	17-805	17-805	14-805	14-805	14-806	14-806	14-807	14-807
Type of Cool. Pump Req.	Model No. 1	Model No. 1	Model No. 2	Model No. 2	Model No. 2	Model No. 2	Model No. 2	Model No. 2

MOTORS, SWITCHES, COOLANT PUMP AND PIPING NOT INCLUDED WITH MACHINE. MUST BE ORDERED SEPARATELY.

These 14 inch drill presses are all furnished with a one-piece table in sizes as shown by the dimensional drawings in the table above. The single spindle machines are available as bench types only—the two, three and four spindle machines are floor types and are furnished with a set of cast iron legs as illustrated. With these legs, the working surface of the machine is 32" from the floor. The table has a 1½" oil trough all around and tapped for ½" drain.

Capacity: ⅜" in cast iron.

Machines include: Built-in depth gauge. Depth scale on quill. Pulley guard. Quill has 4 inch stroke or travel.

High speed models have speeds of 680, 1250, 2400 and 4600 RPM and include No. 387 V-belt and No. 985 motor pulley.

Slo-speed models have speeds of 470, 780, 1300 and 1950 RPM and include No. 430 V-belt and No. 985 motor pulley.

Order Jacobs spindle machines where straight shank drills only are to be used. This chuck will take drills from No. 60 to full ½".

Order No. 1 Morse taper spindle machines where taper shank drills only are to be used.

Spindles in these machines are easily changed. See complete listing on page 10.

For individual parts for special set-ups and for accessories, see pages 14–17.

For coolant piping and pump see page 16.

Motors recommended:

Light Duty: 62 110 ⅓ H.P., Cap. A.C. 110/220 V. 60 Cy.
66 110 ⅓ H.P., 3 Ph. A.C. 200/440 V. 50/60 Cy.

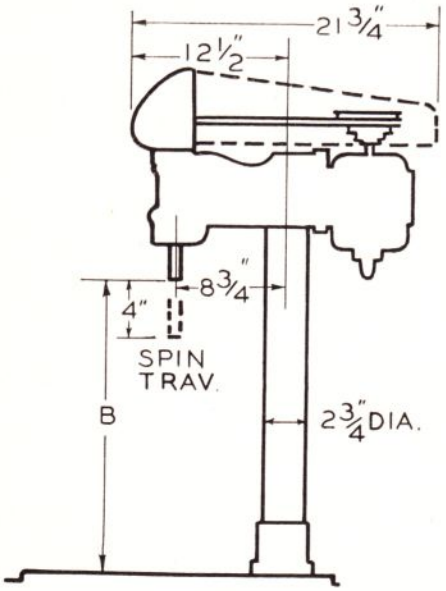
Medium Duty: 62 110 ⅓ H.P., Cap. A.C. 110/220 V. 60 Cy.
66 320 ½ H.P., 3 Ph. A.C. 220/440 V. 50/60 Cy.

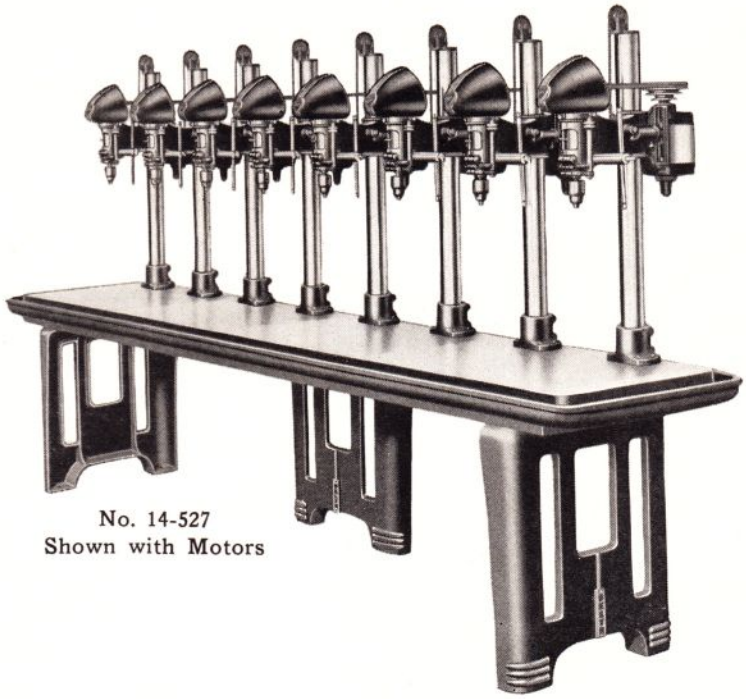
Heavy Duty: 66 320 ½ H.P., 3 Ph. A.C. 220/440 V. 50/60 Cy.

For 3 Ph. motors use No. 1320 3 Phase Manual or No. 1329 Magnetic Starter with No. 1322 Mounting Parts.
Use No. 1331 Rod for All Single Phase Motors.
See Pages 18 to 19 for Motors and Switch Parts.
For Prices See Attached Price List.

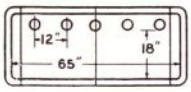
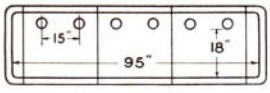
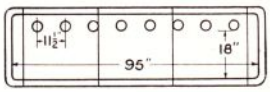
14-inch Floor Type, 5, 6 and 8 Spindle Drill Presses. Sectional Tables

DELTA MILWAUKEE





No. 14-527
Shown with Motors

Type	5 Spindle		6 Spindle		8 Spindle	
						
Model	Slo Speed	High Speed	Slo Speed	High Speed	Slo Speed	High Speed
	WITH NO. 1 MORSE TAPER SPINDLE					
Machine No.	14-515	14-516	14-520	14-521	14-525	14-526
Table Working Surface	18" x 65"	18" x 65"	18" x 95"	18" x 95"	18" x 95"	18" x 95"
Spin. to Table (B) Max.	19 1/8"	19 1/8"	19 1/8"	19 1/8"	19 1/8"	19 1/8"
Spindle Spacing	12"	12"	15"	15"	11 1/2"	11 1/2"
Ship. Wt. Lbs.	1450	1450	1875	1875	2000	2000
Code Word	PENTI	PENTJ	SIXAI	SIXAJ	OCTAI	OCTAJ
Cat. No. Coolant Piping	14-808	14-808	17-812	17-812	14-809	14-809
Type of Coolant Pump Required	Model No. 3	Model No. 3	Model No. 3	Model No. 3	Model No. 3	Model No. 3
	WITH 1/2 INCH JACOBS CHUCK SPINDLE					
Machine No.	14-517	14-518	14-522	14-523	14-527	14-528
Table Working Surface	18" x 65"	18" x 65"	18" x 95"	18" x 95"	18" x 95"	18" x 95"
Spin. to Table (B) Max.	19"	19"	19"	19"	19"	19"
Spindle Spacing	12"	12"	15"	15"	11 1/2"	11 1/2"
Ship. Wt. Lbs.	1450	1450	1875	1875	2000	2000
Code Word	PENTK	PENTL	SIXAK	SIXAL	OCTAK	OCTAL
Cat. No. Coolant Piping	14-808	14-808	17-812	17-812	14-809	14-809
Type of Coolant Pump Required	Model No. 3	Model No. 3	Model No. 3	Model No. 3	Model No. 3	Model No. 3

MOTORS, SWITCHES, COOLANT PUMP AND PIPING NOT INCLUDED WITH MACHINE. MUST BE ORDERED SEPARATELY.

The 14 inch drill presses listed here are all furnished with sectional tables. These tables are made up of center sections to which end sections are bolted. This arrangement allows for a wide variety of combinations—and altho we show here the most popular production types of machines, many other units are available. The sectional table allows a drill press to be made of any desired length with spindles spaced at any centers desired.

The sections have a 1½" trough and the end sections are tapped for a drain. Tables of three sections have three cast iron legs, other machines have two legs. Working surface is 32" from floor.

Capacity: ⅜" in cast iron.

Machines include: Built-in depth gauge. Depth scale on quill. Pulley guard. Quill has 4 inch stroke or travel.

High speed models have speeds of 680, 1250, 2400 and 4600 RPM and include No. 387 V-belt and No. 985 motor pulley.

Slo-speed models have speeds of 470, 780, 1300 and 1950 RPM and include No. 430 V-belt and No. 985 motor pulley.

Order Jacobs spindle machines where straight shank drills only are to be used. This chuck will take drills from No. 60 to full ½'.

Order No. 1 Morse taper spindle machines where taper shank drills only are to be used.

Spindles in these machines are easily changed. See complete listing on page 10.

For individual parts for special set-ups and for accessories, see pages 14–17.

For coolant piping and pump see page 16.

Motors recommended:

Light Duty: 62 110 ⅓ H.P., Cap. A.C. 110/220 V. 60 Cy.
66 110 ⅓ H.P., 3 Ph. A.C. 220/440 V. 50/60 Cy.

Medium Duty: 62 110 ⅓ H.P., Cap. A.C. 110/220 V. 60 Cy.
66 320 ½ H.P., 3 Ph. A.C. 220/440 V. 50/60 Cy.

Heavy Duty: 66 320 ½ H.P., 3 Ph. A.C. 220/440 V. 50/60 Cy.

For 3 Ph. Motors Use No. 1320 3 Phase Manual or No. 1329 Magnetic Starter with No. 1322 Mounting Parts.

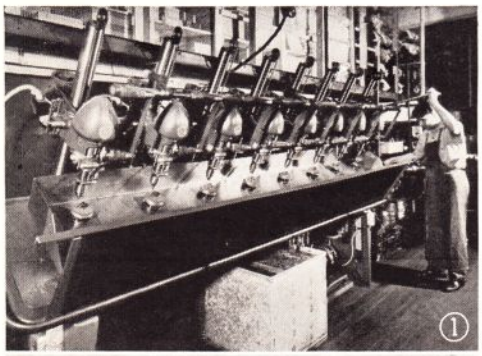
Use No. 1331 Rod for All Single Phase Motors.

See Pages 18 to 19 for Motors and Switch Parts.

For Prices See Attached Price List.

DELTA MILWAUKEE

SPECIAL SET-UPS Made Up Of Standard Interchangeable Parts Allow Many Special Purpose Machines To Be Made At Very Low Cost



AN OUTSTANDING exclusive feature of these Drill Presses is that they are composed of standard interchangeable parts. The heads, columns, flanges, tables —all these parts are self-contained and obtainable as separate units.

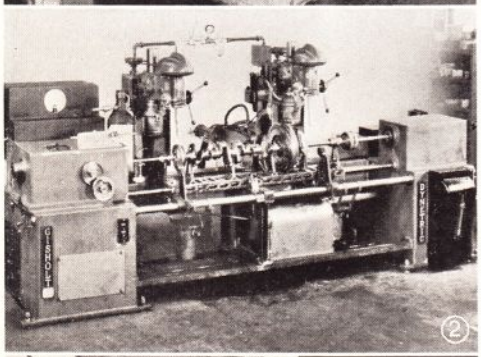
Alert production men appreciate this and have discovered here a means whereby they can lick some of their toughest production problems. By the use of these parts they have been able to construct their own special purpose machines almost overnight—saving a great amount of time, speeding their production and doing it at only one tenth or less the cost of the special machine they otherwise would have to buy.

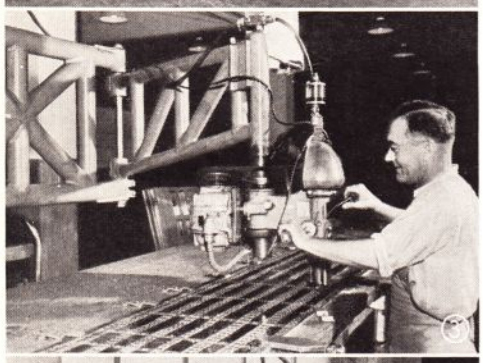
Shown on these pages are just a few of the thousands of high production machines so made. In almost every sizeable shop there is some adoption or modification of the regular drill press to do some special operation or special job.

Opposite you will find a complete list of these individual parts. In addition complete A.S.T.E. data sheets are available by writing to the factory which give you details of the drill press heads.

Below is a description of the exclusive sectional drill press table—an innovation in drill press design which allows a drill press to be made any length desired.

Check into all these possibilities—find out how you can adopt these standard parts to your specific job—you can do it in a hurry and at low cost.





(1) *From one master pattern 8 parts are drilled at one time . . . production greatly increased.*

(2) *Accurate crankshaft balancing machine made by Gisholt uses 17 inch drill press heads.*

(3) *Lockheed Aircraft get a big "reach," mounting a 14 inch head like this.*

(4) *Special purpose machine for the accurate grinding of precision valve parts employs standard parts.*

(5) *Revolving table with fixture speeds production and cuts down set-up time.*

(6) *An extra operation obtained by placing a 14" drill on its side on larger machine.*

(7) *"A Drill Press a Block Long" (right). Thirty-three spindles on one set-up—overall length is 72 feet. An exceptionally fine set-up utilizing the sectional table described above.*

RIGID, SECTIONAL TABLES FOR DRILL PRESSES

A Single Spindle—or a Drill Press a Block Long . . . . That Is What This New Drill Press Offers You!

NOW, for the first time you can get exactly the machine you need for your individual production problems in your own shop. No longer need you take a "standard" machine with only a definite number of spindles. You can now get a drill press of one spindle, two, three, six or eight or any number you desire—you buy the machine to fit your jobs instead of making the jobs fit the machine.

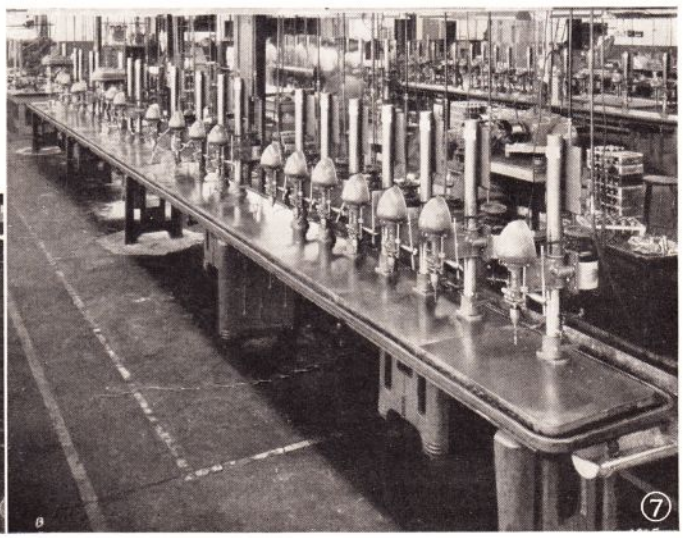
The drill press is built upon a sectional table—each table section being 23¾" by 30" and with the addition of the end sections is increased to 35" long.

On these sections, any type of 17" or 14" head can be easily installed and on centers which meet your individual needs. This means that the maximum amount of flexibility is assured—you can have all 17" or 14" heads on one machine or a combination of both—you can have them spaced at any distance you desire—either close together or far apart.

Tell us what your requirements are—how many drill press heads you could use in your set-up like this—whether you need 14" or 17" heads or a combination of both and what distance you want the heads spaced. We will gladly send you complete specifications and prices and any other information you desire.

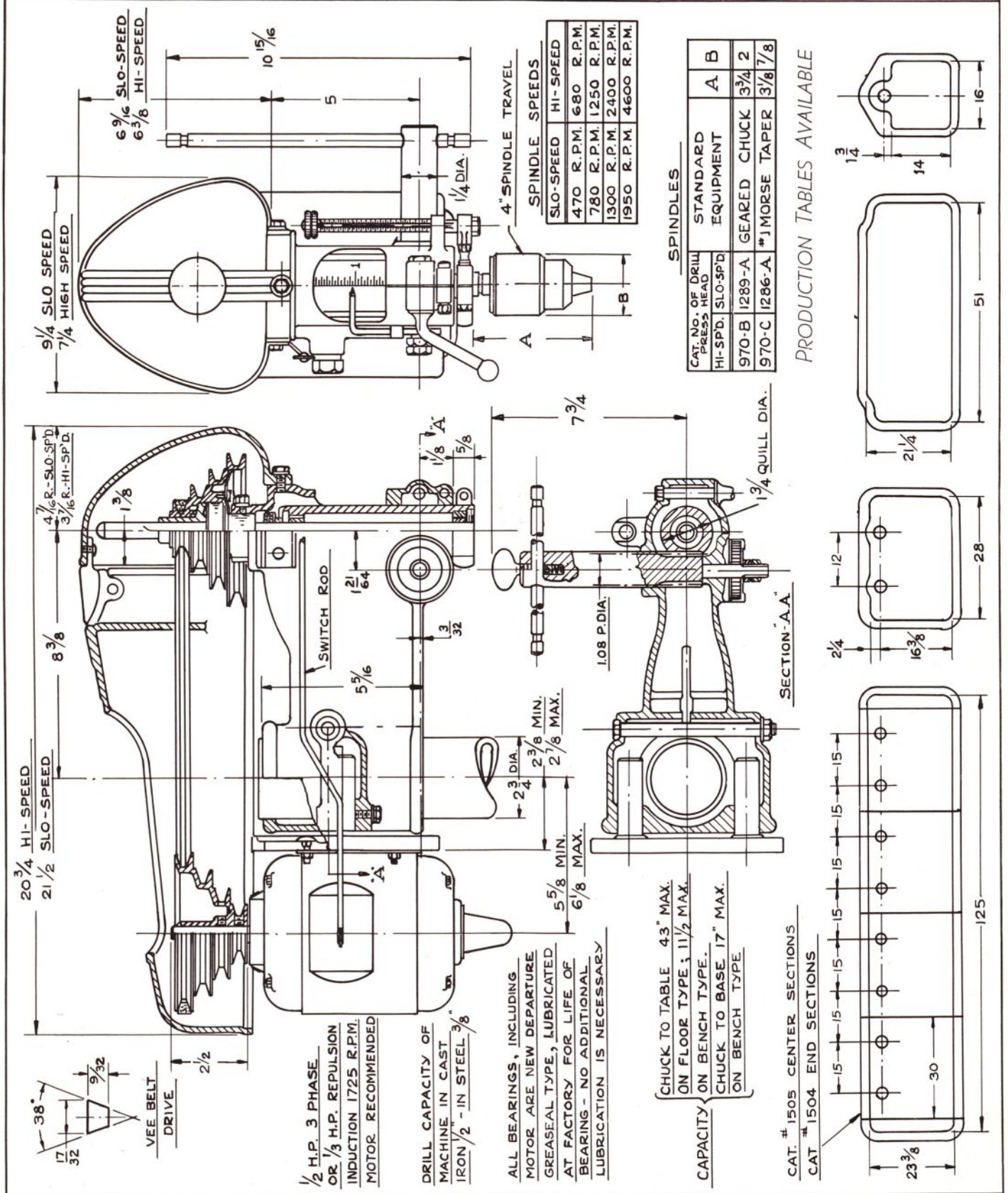
CATALOG LISTING OF SECTIONS AND LEGS

No. 1504—End section. 72 lbs.....Code DRIAD
No. 1505—Center section. 365 lbs.....Code DRIAP
No. 1506—One only cast iron leg. 110 lbs.....Code DRIAQ
No. 1399—Cast iron legs. 1 pair. 175 lbs.....Code PRODK



THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.

14" DRILL PRESS

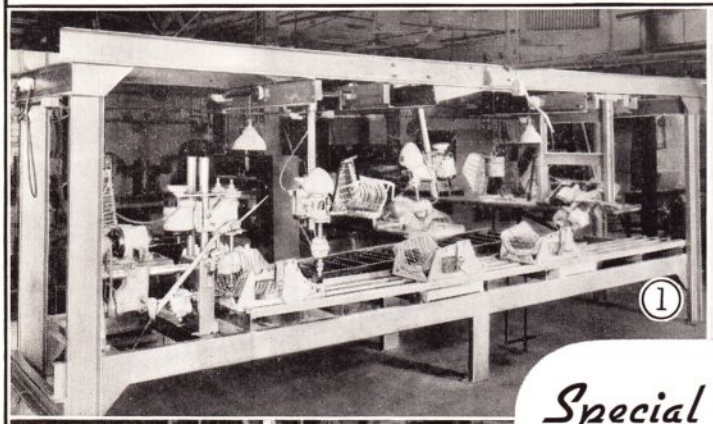


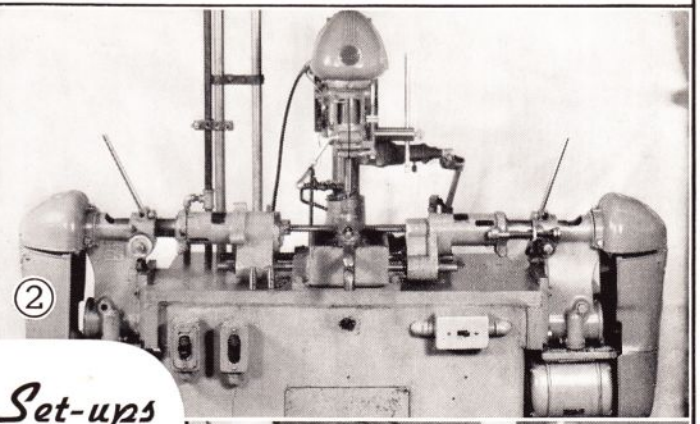
MANUFACTURED BY

THE DELTA MANUFACTURING COMPANY

MILWAUKEE, WISCONSIN

14" DRILL PRESS





Special Set-ups

The heads, columns, flanges, etc. of DELTA-Milwaukee drill presses may be obtained as separate units so that special set-ups can be made. The heads can be used in any position — vertical, horizontal or angular — because their self-sealed ball bearing construction eliminates necessity for lubrication.

(1) Special machine used in machining die cast auto radiator grills using standard DELTA-Milwaukee heads. Four holes are tapped in one operation at the first station. Two studs are driven at the second station. Eight holes are tapped at a slight angle at the third, and six holes are tapped at various angles at the fourth.

(2) Three 14" Delta Drill Press heads are mounted so that two heads are horizontal and one vertical. The horizontal heads carry double spindles. This set-up is used on Diesel-engine injector nozzles.

(3) Four Drill Press heads, set horizontally, drill four holes in a burner manifold. Hydraulic feed, with air-clamp fixture.

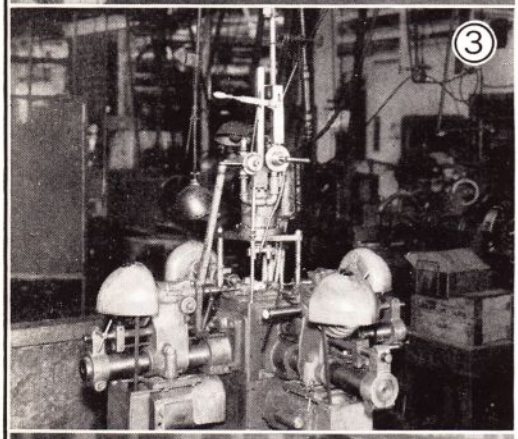
(4) Employing a Delta Drill Press head mounted on a large special overarm, this special set-up is widely used in the airplane industry for template drilling on wing and fuselage coverings.

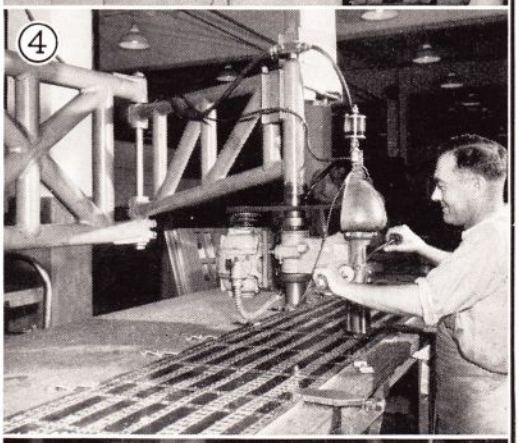
(5) A six-station set-up for drilling and tapping tail-light housings. Seven holes are drilled and five tapped, some at odd angles. One drilling operation is performed with the head inverted making it easier to clamp the work than if the head were above the table.

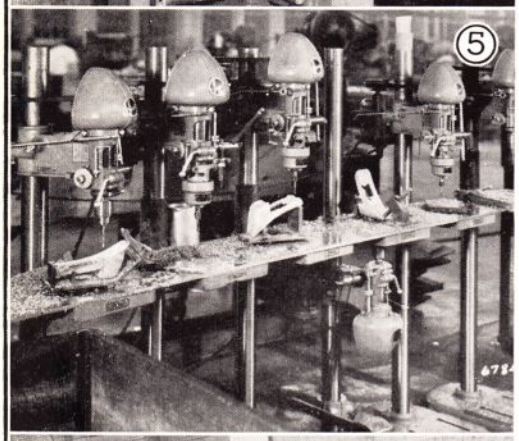
(6) In this four-head drilling and tapping set-up the work is clamped pneumatically in the machine at the right and three holes drilled simultaneously. The operator reloads the machine and transfers the work to the drill at the left where one hole is tapped during the drilling cycle of the first machine.

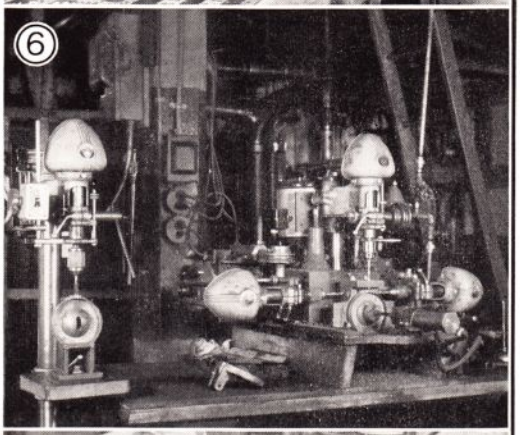
(7) Twenty Drill Press heads mounted in alignment, drill twenty holes for ladder rungs, simultaneously.

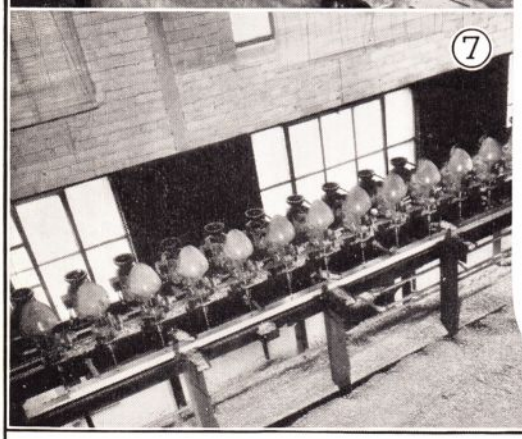
(8) With the use of a Delta Drill Press head on a radial arm, this unit drills widely separated holes in large sheet-metal surfaces.

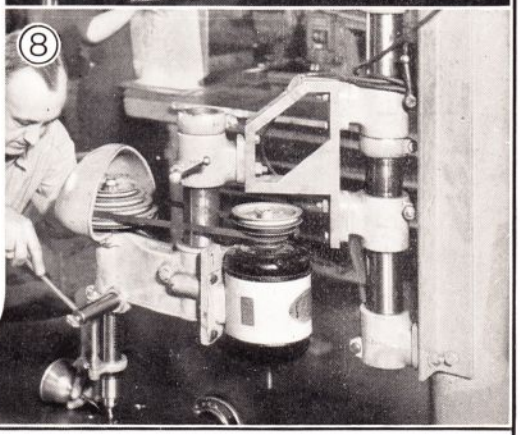












MANUFACTURED BY

THE DELTA MANUFACTURING COMPANY

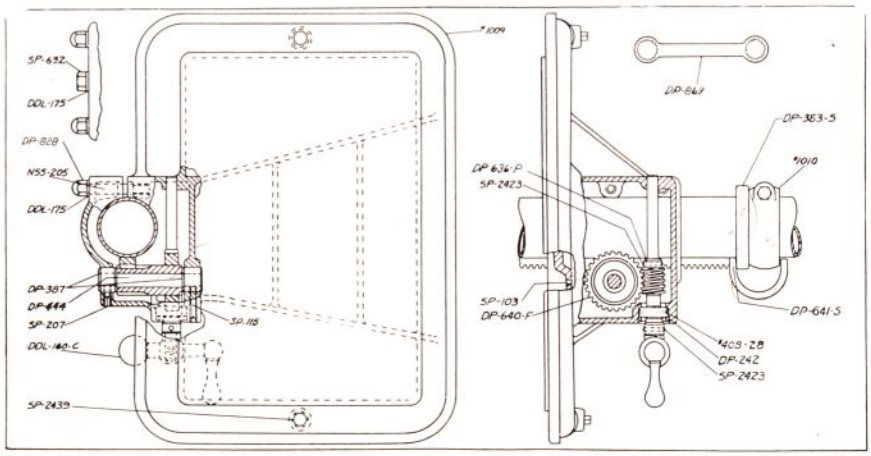
MILWAUKEE, WISCONSIN

P.M. No.: 1527
DATE: 10-1-43
REPLACES: NONE
INDEX: 120-2-C

DELTA MILWAUKEE

THE DELTA MFG. CO., MILWAUKEE 1, WIS.

DRILL PRESS ACCESSORIES
Part No. 1006 Production Table for 14" Drill Press



To install raising mechanism in table slip compound gear DP-640-F through column hole and into position with the large gear toward the table as shown. Push shaft DP-444 through large hole on rear of bracket, through bore of gear into bearing hole on front face. Slip bushing DP-387 over shaft DP-444 and into large hole on the rear face, turning flat on shaft DP-444 and hole in bushing DP-387 in line with Allen set screw SP-207 in housing. Fasten with set screw. Slip worm-shaft assembly through hole in left side of housing to mesh with spiral gear on DP-640-F, then through bearing hole on right side of housing and fasten with spanner nut DP-242, tightening moderately with small punch. It is good practice to oil all wearing parts when assembling.

The table is assembled to the drill press as follows: Loosen head and remove by sliding over top of column. Remove regular table in the same manner. Slip collar No. 1010 over column and fasten with hexagon nut so top of collar is approximately 20" from the floor. Slide ball thrust bearing DP-383-S over column against top of collar No. 1010, being sure that the retainer of the thrust bearing points up and that the exposed ball race is downward against collar.

The table is now put on the column and clamped in a position measuring about 20" from bottom of table housing to top of thrust bearing. Place rack DP-641 with hook DP-659 attached, against the column so the hook straddles the ball thrust bearing and the stop collar No. 1010. Loosen table clamp to allow table to slide down slowly, guiding end of rack DP-641 into slot in table housing. Continue lowering table until rack engages the spur gear in compound gear DP-640-F. Turn ball crank DDL-160-C counterclockwise, when viewing from left hand side, to allow rack to come through the slot at the top of the table. Machine is now ready for work after tightening table clamp screws as follows: The table clamp has one hexagon head cap screw SP-632 in the center which should be set just tightly enough to clamp column very lightly, but allowing table to be raised and lowered with the raising mechanism when the upper and lower clamp nuts DP-828 are loose. After bringing the table to the proper height, tighten upper and lower clamp nuts DP-828 using DP-869 socket wrench. Leave center cap screw as originally set.

The raising mechanism has an 11" range of adjustment which is sufficient for most conditions; however, more can be obtained by raising or lowering the clamp collar No. 1010. Care should be taken that the table clamp is tight before loosening clamp collar No. 1010 to prevent the whole table from dropping.

REPLACEMENT PARTS

Part No.	Description	No. Req.	Price Each
DP-242	Bearing closure nut	1	$ .10
DP-383-S	Rack thrust brg. assem.	1	1.50
DP-387	Bearing collar	1	.20
DP-828	Special nut 7/8-14 thread	2	.15
DP-636-P	Worn shaft (complete) with worm	1	1.65
DP-640-F	Compound gear	1	2.25
DP-641-S	Rack with hook	1	2.35
DP-444	Shaft (for compound gear)	1	.15
DP-869	Double End Wrench 5/8 x 3/4"	1	.15
DDL-160-C	Ball crank assembly	1	.65
DDL-175	Washer 3/4" O.D. x 29/64" I.D. x 1/16" thick	3	.10

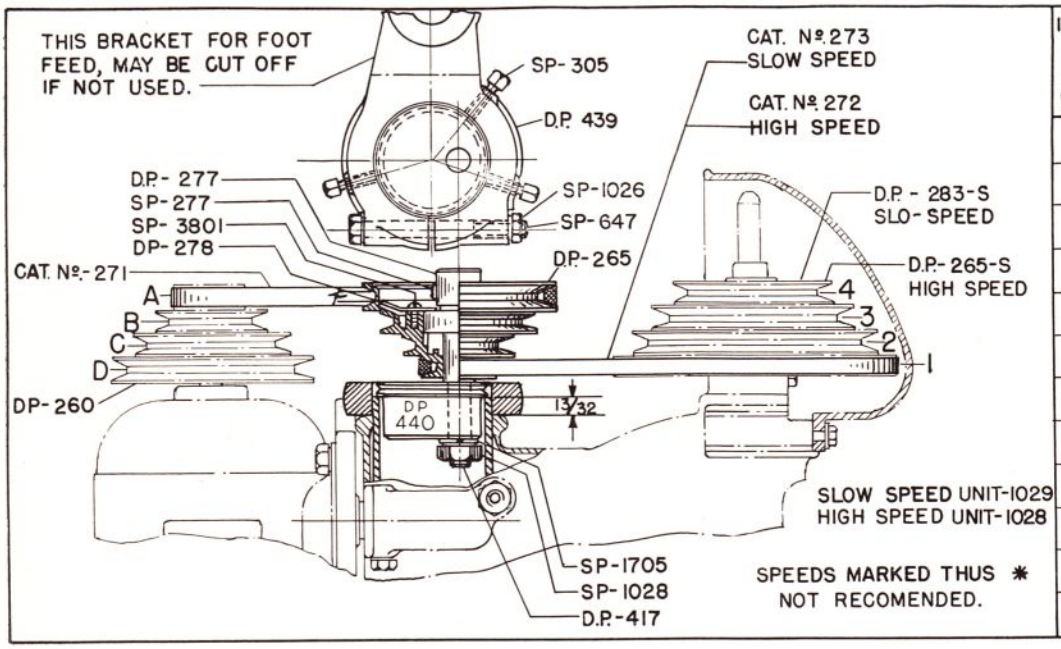
Part No.	Description	No. Req.	Price Each
NSS-205	Stud	2	$ .10
408-28	Nice ball bearing	1	.95
SP-103	5/16-18 x 1/4" headless set screw	1	.10
SP-115	5/16-18 x 1 1/4" cup point headless set screw	1	.10
SP-207	5/16-18 x 1/2" Allen set screw	1	.10
SP-632	7/16-14 x 2 3/4" hex. hd. cap screw	1	.10
SP-2423	#2 x 7/8" taper pin	2	.10
SP-2439	3/8" pipe plug	2	.10
#1008	Table Raising Mechanism only	1	
#1009	Production table only	1	
#1010	Support collar complete	1	

P.M. No. 1563
DATE 8-1-43
REPLACES: NONE
INDEX: 120-2-F

DELTA MILWAUKEE

THE DELTA MFG. CO., MILWAUKEE 1, WIS.

Nos. 1028 and 1029 MULTI-SPEED ATTACHMENTS For 14" Drill Press



1725-R.P.M. MOTOR PULLEY GROOVE	SPINDLE PULLEY GROOVE	SPINDLE R.P.M. 14" SLOW SPEED	SPINDLE R.P.M. 14" HIGH SPEED
A	1	185	270
A	2	305	485
A	3	500	950
B	1	340	490
B	2	565	900
B	4	1380	3180
C	1	650	935
C	3	1750	3300
C	4	2640	6000
D	2	2020	3080
D	3	3220	6050*
D	4	4825	11,000*

INSTALLING THE MULTI-SPEED ATTACHMENT

Raise or lower drill press head to point approximately 13/32" below end of column. Mount bracket DP-439 with arm extending towards right of head, when viewed from front of machine.

Drop plug and pulley assembly into place and mount belts; spindle pulleys first. Align pulleys by adjusting pulley DP-265 and motor upward or downward.

Next adjust motor to properly tension motor pulley belt, and lock plug with set screws SP-305. When changing speeds, loosen set screws slightly, select proper grooves and draw belts together between centers, to allow plug to find its center.

WHERE MULTI-SPEED UNIT CAN BE USED

The multi-speed attachment can be used on all 14" drill press heads either high speed or slow speed and on both the floor and bench models.

When using the multi-speed attachment, the drill press head must remain fixed and at the top of the drill press column, and under no conditions can it be used where the Spring Counter-balance Assembly (or the old counterweight assembly) is required.

Those desiring a guard can use the slow speed belt guard, No. 1022, which will cover the entire unit.

FEATURES OF THE MULTI-SPEED UNIT

The multi-speed unit is quickly removed and easily adjusted. A grease-sealed ball bearing pulley is used in the assembly and insures smooth, even, vibrationless running.

This is an ideal and economical way to acquire lower and higher speeds than could otherwise be obtained. With this attachment you can use a standard 1725 R.P.M. motor, where a special high speed or slow speed motor would ordinarily be required.

A range of 12 speeds is available with the multi-speed attachment through various combinations. The table above lists the combinations and the speeds acquired.

IMPORTANT—

Although speeds of 6050 and 11000 R.P.M. are obtainable (as marked* in the above table) with the high speed head, the drill press should not be run at these excessively high speeds because of the undue wear on the bearings. The development of this attachment is to obtain lower speeds rather than extremely high speeds.

NOTE: Pay special attention to the type of spindle pulley on the machine when ordering the multi-speed attachment in order to receive the proper belts. Also note the speed range for given type of spindle pulley.

REPLACEMENT PARTS

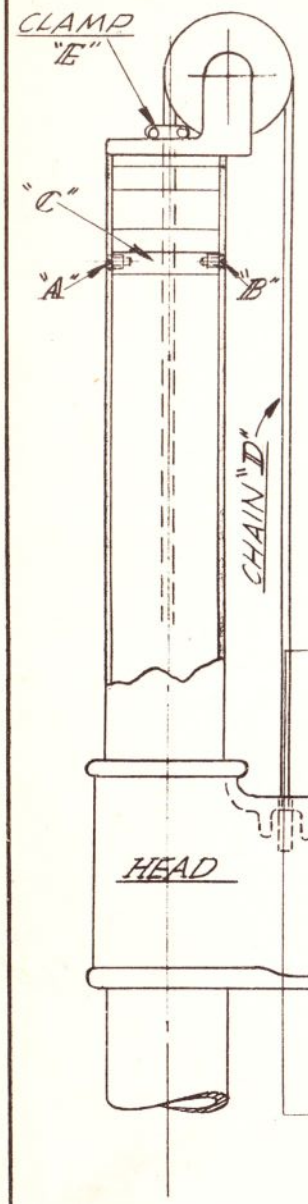
IMPORTANT: To avoid possible errors, be sure to include the serial number of the machine when ordering parts for repair or replacement.

Part No.	Description	No. Req.	Price Each
DP-260	Four Step Motor Pulley, same as catalog No. 985	1	
DP-265	Intermediate Pulley only	1	1.85
DP-265-T	Intermediate Pulley Assembly with Bearing Spindle Sleeve, etc.	1	5.45
DP-277	Special Bearing N.D. 88 106	1	2.55
DP-278	Bearing Retainer	1	.15
DP-283-S	Slo-Speed Pulley Assembly with Bearing Spindle Sleeve, etc.	1	6 75
DP-417	Intermediate Pulley Spindle	1	.30
DP-439	Support Collar	1	
DP-440	Column Cam, M.S. attachment	1	$1.35
SP-277	3/8-24 x 3/8 Flat Point Allen Screw	1	.10
SP-305	1/4-20 x 1" Square Head Set Screw	3	.10
SP-647	3/8-16 x 3 3/4 Hex. Head Cap Screw	1	.10
SP-1026	3/8-16 Hexagon Nut	1	.10
SP-1028	1/2-13 Hexagon Nut	1	.10
SP-1705	1/2 Lock Washer	1	.10
SP-3801	8-32 x 3/8 Sem Lock Screw	1	
No. 271	Motor V-Belt	1	
No. 272	V-Belt for No. 1028 High Speed Unit	1	
No. 273	V-Belt for No. 1029 Slow Speed Unit	1	

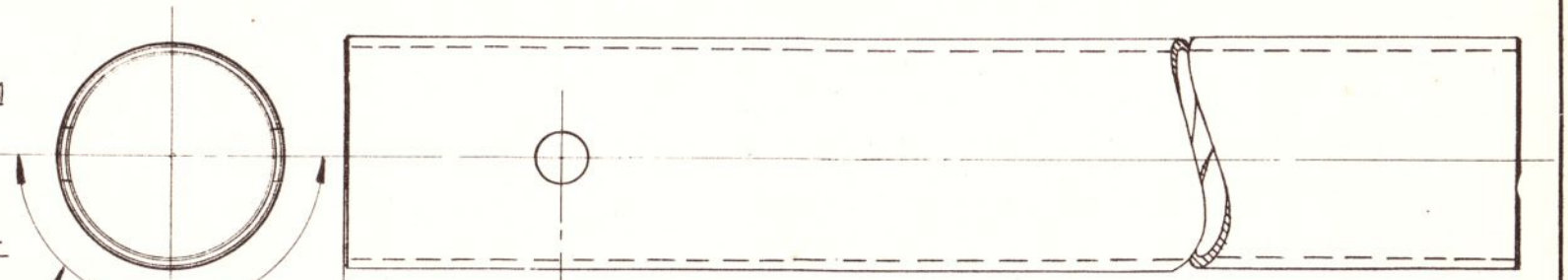
PRICES IN THIS LIST APPLY ONLY TO PARTS ORDERED FOR REPAIR AND REPLACEMENT. THEY CANNOT BE USED FOR COMPUTING ALLOWANCE VALUES WHEN A MACHINE IS ORDERED "LESS" CERTAIN PARTS.

6891-WD

CAUTION—DO NOT REMOVE CLAMP "E" UNTIL CHAIN "D" HAS BEEN FASTENED TO HEAD IN LOW POSITION.



DRILL TWO HOLES IN COLUMN AS SHOWN IN SKETCH BELOW.—— AFTER REMOVING PACKING TUBE ALSO REMOVE LOCK SCREWS "A" & "B" FROM STEEL COLLAR "C" THEN CAREFULLY SLIDE SPRING ASSEMBLY INTO COLUMN UNTIL THE TAP HOLES IN LOCK COLLAR "C" ARE IN LINE WITH THE DRILLED HOLES IN COLUMN. LOCK SCREWS "A" & "B" MAY NOW BE THREADED INTO COLLAR "C" TO ELIMINATE ANY CHANCE OF SPRING BEING RELEASED. AFTER FASTENING CHAIN "D" TO HEAD CASTING, CLAMP IN LOWEST POSITION. (SEE SECTION "AA"). CLAMP "E" MAY NOW BE CAREFULLY REMOVED. HEAD CASTING SHOULD NOW BE SLID UP AND DOWN TO REMOVE ANY TENDENCY OF SPRING TO STICK TO COLUMN.

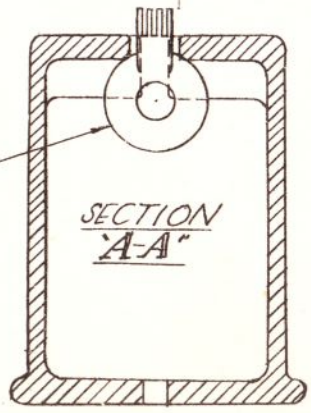


2-9/16 DRILL 180° APART.

2 9/16

DRILL HOLES IN COLUMN AS SHOWN ABOVE

ASSEMBLE CHAIN IN THIS POSITION. RIBS IN HEAD CASTING PREVENT COLLAR FROM TURNING OR SHIFTING.



SECTION "A-A"

3

DELTA MFG. CO. MILWAUKEE, WIS.			
DIRECTIONS FOR MOUNTING COUNTERWEIGT ATTACHMENT ON 14" DRILL PRESS			
DR.	APP'D	DATE	PM-1589
EWS		9/7/42	

3	SECTION ADDED	9/9/42

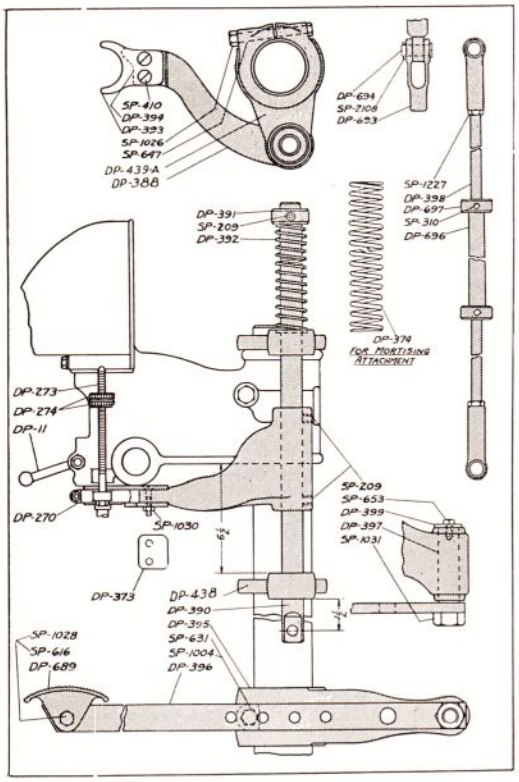
P.M. No.: 1640
DATE: 10-1-43
REPLACES: NONE
INDEX: 120-2-I

DELTA MILWAUKEE

THE DELTA MFG. CO., MILWAUKEE 1, WIS.

DRILL PRESS ACCESSORIES

Part No. 1007 Foot Power Feed for 14" Drill Press



The No. 1007 foot power feed comes packed in small assemblies for convenience. Installation is simple if the following procedure is adopted. Remove the head and table of the drill press by sliding them off the top of the column. Slide treadle lever bracket DP-395 over the column so that about 4" of the column is exposed between this bracket and the base. Clamp with the treadle lever on right hand side parallel with the center line of base casting. Replace table assembly by sliding standard table assembly over column and clamping, or if new No. 1006 production table is used by following instructions on reverse side. Next slip lower slide-rod bracket DP-389-B (without counterbore) over column, with ribs down, and clamp temporarily in position with hole in bracket on right hand side and approximately ½" back of column center line 6½" down from bottom of head as shown.

Replace drill press head and clamp it, leaving ¾" of column exposed above head casting. Slip upper slide rod bracket over column with counterbore up, and clamp temporarily in line with lower bracket.

Shifter bracket DP-388 has a forked steel plate DP-393 on top and a single pronged plate DP-394 at the bottom, where it engages the quill by straddling the quill with one plate above and one plate below the stop rod collar DP-270. The shim plate DP-373 is used only when the foot feed mechanism is used with the No. 990 or No. 996 Tapping Chuck.

Turn stop rod nuts DP-274 to the top of stop rod DP-273, move quill to its lowest position and tighten with quill clamp screw DP-11. Put the quill end of the shifter bracket DP-388 in position, straddling the quill and stop rod collar DP-270, bringing hole on shifter bracket in line with holes in slide rod bracket, DP-389 and DP-389-B. Slide rod DP-390 is passed through the three holes and brought to a position with the clevis pin hole approximately 1½" from bottom of lower bracket. Tighten shifter bracket DP-388 securely on slide rod DP-390 using Allen set screws SP-209.

With slide rod brackets DP-389 and DP-389-B slightly loose tap them lightly at the ends to make the Slide Rod DP-390 perfectly free, in line with column and the Shifter Bracket DP-388 engaging the quill properly. Tighten the Slide Rod Brackets firmly in this position. Slip return spring DP-392 over slide rod extension above head and put collar DP-391 in place.

Make adjustment for spring tension with collar to suit individual job. Spring DP-392, which is the lighter, is to be used for tapping and drilling. The heavier Spring DP-374 is to be used for the mortising attachment where a heavy return pressure is required.

Fasten one yoke DP-693 to bottom of slide rod using clevis pin DP-694. Fasten other tie-rod yoke to one of four small holes in treadle lever. The tie rod is adjustable for length by loosening set screws SP-310 and sliding the end rods DP-398 in and out of the center tube DP-696.

The treadle lever DP-396 has two 49/64" holes at the rear to fit over the pivot pin. This gives two lengths of treadle lever, and, with the four clevis pin holes, gives a variety of lever ratios to cover all types of work. The lower treadle lever bracket DP-395 can be raised or lowered to give a variety of movements for standing or sitting to suit individual operator.

REPLACEMENT PARTS

Part No.	Description	No. Req.	Price Each
DP-373	Shim Plate	1	$ .20
DP-374	Spring (for mortising attach.)	1	.25
DP-388	Shifter Bracket	1	1.60
DP-439-A	Support Collar (Upper)	1	1.45
DP-438	Support Collar (Lower)	1	1.30
DP-390	Rod	1	1.10
DP-391	Set Collar Complete	1	.40
DP-392	Spring	1	.15
DP-393	Shift Bracket Plate (Upper)	1	.50
DP-394	Shift Bracket Plate (Lower)	1	.40
DP-395	Lower Bracket	1	2.00
DP-396	Treadle Lever	1	1.10
DP-397	Treadle Lever Shaft	1	.40
DP-398	Connecting Rod	2	.30
DP-399	Special Washer	1	.10
DP-689	Treadle Pad	1	.35
DP-693	Clevis	2	.40
DP-694	Clevis Pin	2	$ .10
DP-696-S	Connect. Tube & Collar Assem.	1	1.40
SP-3	3/8" Allen Wrench	1	.10
SP-209	3/8-16 x 3/8" Allen Set Screw	3	.10
SP-310	3/8-16 x 5/8" Sq. Hd. Set Screw	2	.10
SP-410	5/16-18 x 1 1/2" Flat Hd. Mach. Screw.	2	.10
SP-616	1/2-13 x 1 1/2" Hex. Hd. Cap Screw	1	.10
SP-631	7/16-14 x 4" Hex. Hd. Cap Screw	1	.15
SP-647	3/8-16 x 3 3/4" Hex. Hd. Cap Screw	2	.10
SP-653	3/8-24 x 5/8" Hex. Hd. Cap Screw	1	.10
SP-1004	7/16-14 Hex. Nut	1	.10
SP-1026	3/8-16 Hex. Nut	2	.10
SP-1028	1/2-13 Hex. Nut	1	.10
SP-1030	5/16-18 Hex. Nut	2	.10
SP-1031	3/4-16 Hex. Nut	1	.10
SP-1227	1/2-20 Hex. Nut	2	.10
SP-2108	1/8 x 1" Cotter Pin	2	.10

Listings and Descriptions of Drill Press Parts for Special Set-Ups

DELTA MILWAUKEE

17 INCH DRILL PRESS PARTS

No. 1378—17" Slo-Speed Drill Press Head with No. 2 Morse Taper Spindle, No. 520 Belt and No. 1311 Motor Pulley, 125 lbs. Code DRILI

No. 1378-H—17" High-Speed Drill Press Head with No. 2 Morse Taper Spindle, No. 501 Belt and No. 1312 Motor Pulley, 125 lbs. DRIHI

No. 1379—17" Slo-Speed Drill Press Head with ½" Jacobs Chuck Spindle, No. 520 Belt and No. 1311 Motor Pulley. 125 lbs. Code DRILJ

No. 1379-H—17" High-Speed Drill Press Head with ½" Jacobs Chuck Spindle, No. 501 Belt and No. 1312 Motor Pulley. 125 lbs. DRIHJ

No. 1391—Set of Change-over parts consisting of High Speed Pulleys and No. 501 Belt for Changing Slo-Speed Drill Press into High Speed. 7 lbs. Code DRILY

No. 501 —V-Belt for 17" High-Speed Drill Press. ⅜ lb. Code MORUV

No. 520 —V-Belt for 17" Slo-Speed Drill Press. ⅜ lb. Code BELTC

No. 1311—5-Step Motor Pulley for Slo-Speed. ¾" Bore. 3 lbs. PULOW

No. 1312—5-Step Motor Pulley for High-Speed. ¾" Bore. 3 lbs. PULOX

No. 1366—Mounting Flange and screws for 17" Drill Press Column. 9 lbs. Code DRILT

No. 1367—Column for Floor Type 17" Drill Press. 60" long and 3½" diameter. 37 lbs. Code DRILV

No. 1368—Column for Bench Type 17" Drill Press. 38½" long and 3½" diameter. 25 lbs. Code DRILZ

No. 1372—Production Table to fit Standard Bracket on Floor Type 17" Drill Press. 70 lbs. Code DRILC

No. 1513—2 Spindle One Piece Table. Working Surface of 17½" x 36" for 17" Drill Press Heads. 300 lbs. Code DRIAR

No. 1515—4 Spindle One Piece Table. Working Surface of 17½" x 77" for 17" Drill Press Heads. 890 lbs. Code DRIAU

No. 1514—Single Spindle One Piece Table. Working Surface of 16" x 18" for 17" Drill Press Head. (This table cannot be mounted on the No. 1399 Cast Iron legs.) 150 lbs. Code DRIAS

No. 1399—Cast Iron Legs (one pair) for mounting One Piece Tables Nos. 1513 and 1515 and all other multiple spindle Drill Presses. 175 lbs. Code PRODK

No. 1380—Raising Mechanism for 17" Drill Press with Worm Shaft, Worm Gear and Pinion, Ball Handle, Rack, Ball Thrust Bearing and Collar for Column. 9 lbs. Code DRILK

No. 1371—Foot Feed for Floor Type 17" Drill Press. 34 lbs. DRILB

No. 968 —½" geared Jacobs Chuck with a No. 2 Morse Taper Shank. To be used where straight shank drills are used in a Drill Press that has a No. 2 Morse Taper Spindle. 2½ lbs. Code CHGEA

17 INCH POWER FEED DRILL PRESS PARTS

No. P-1378—17" Slo-Speed Power Feed Drill Press Head with No. 2 Morse Taper Spindle, No. 520 Belt and No. 1311 Motor Pulley. 175 lbs. Code DRIQU

No. P-1378-H—17" High Speed Power Feed Drill Press Head with No. 2 Morse Taper Spindle, No. 501 Belt and No. 1312 Motor Pulley. 175 lbs. Code DRIQV

No. P-1379—17" Slo-Speed Power Feed Drill Press Head with ½" Jacobs Chuck Spindle, No. 520 Belt and No. 1311 Motor Pulley. 175 lbs. Code DRIQW

No. P-1379-H—17" High Speed Power Feed Drill Press Head with ½" Jacobs Chuck Spindle, No. 501 Belt and No. 1312 Motor Pulley. 175 lbs. Code DRIQX

No. 17-857—Power Feed Unit. 84 lbs. Code POWFD

No. 30 100—V-Belt for Power Feed. Cir. In. 26⅞" Out. 28¼". For use with NEMA frame motors up to 16⅛" overall length. ½ lb. Code BELTZ

No. 30 103—V-Belt for Power Feed. Cir. In. 26⅝" Out. 28". For use with Delta Motors. ½ lb. Code BELTI

14 INCH DRILL PRESS PARTS

No. 970-B—14" High Speed Drill Press Head with ½" Jacobs Chuck Spindle, No. 387 Belt and No. 985 Motor Pulley. 42 lbs. HEADH

No. 1289-A—14" Slo-Speed Drill Press Head with ½" Jacobs Chuck Spindle, No. 430 Belt and No. 985 Motor Pulley. 59 lbs. HEADL

No. 970-C—14" High Speed Drill Press Head with No. 1 Morse Taper Spindle, No. 387 Belt and No. 985 Motor Pulley. 42 lbs. HEADI

No. 1286-A—14" Slo-Speed Drill Press Head with No. 1 Morse Taper Spindle, No. 430 Belt and No. 985 Motor Pulley. 59 lbs. HEADK

No. 1290—Set of Change-over Parts consisting of a 4-Step Pulley (DP-283-S) and No. 430 Belt for changing High Speed Drill Press into Slo-Speed. 13 lbs. Code SLOPU

No. 387 —V-Belt for 14" High Speed Drill Press. 1 lb. Code FORDP

No. 430 —V-Belt for 14" Slo-Speed Drill Press. 1 lb. Code FORSL

No. 985 —4-Step Motor Pulley for 14" Drill Press. ½" bore. 2½ lbs. Code NEWPU

No. 1022—Rear Belt and Front Pulley Guard for 14" Drill Press. 17 lbs. Code PRODH

No. 14-803—Rear Belt Guard. 11 lbs. Code PRODL

No. 1010—Safety Collar for Column of 14" Drill Press. 2 lbs. NESCC

No. 1019—Mounting Flange and Screws for 14" Drill Press Column. 10 lbs. Code PRODE

No. 1020—Column for 14" Drill Press. 36¾" long. 13 lbs. Code PRODF

No. 1006—Production Table for 14" Single Spindle Floor Type Drill Press complete with Rack, Raising Mechanism, Collar and Bearing. 58 lbs. Code NEWPT

No. 1516—Single Spindle One Piece Table. Working Surface of 15¾" x 16" for 14" Drill Press Head. (This table cannot be mounted on the No. 1399 Cast Iron legs.) 100 lbs. Code DRIAV

No. 1517—2 Spindle One Piece Table. Working Surface of 18⅝" x 28" for 14" Drill Press Heads. 215 lbs. Code DRIAW

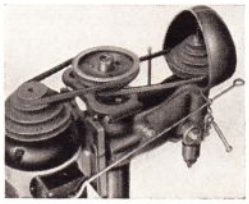
No. 1519—4 Spindle One Piece Table. Working Surface of 21¼" x 51" for 14" Drill Press Heads. 500 lbs. Code DRIAY

No. 1399—Cast Iron Legs (One Pair) for mounting One Piece Tables Nos. 1517 and 1519 and all other multiple Spindle Drill Presses. 175 lbs. Code PRODK

No. 1030—Spring Counterbalance Assembly for 14" Drill Presses. Consisting of Spring, Chain, Column Top Casting with Ball Bearing Roller and Screws. 9¾ lbs. Code TWOSR

No. 1007—Foot Feed for Floor Type 14" Drill Press. 38 lbs. NEWFF

MULTI-SPEED ATTACHMENT FOR 14 INCH DRILL PRESS



This new attachment for 14" Drill Presses only, provides a wide range of speeds on both the Slo and High-Speed models. It consists of a heavy casting, which mounts in the drill press column together with a cone pulley and two belts. Belt slack is taken up by turning casting so proper tension is always assured.

No. 1028—Multi-Speed attach. for 14" High Speed Drill Presses including column casting, cone pulley and two belts. Speeds of 270 R.P.M. to 4600 R.P.M. Code MULTJ

The 11,000 R.P.M. speed should be used only for occasional work due to the excessive wear on the bearings which are designed for 5000 R.P.M.

No. 1029—Multi-Speed Attachment for 14" Slo-Speed Drill Presses including column casting, cone pulley and two belts, speeds of 185 R.P.M. to 1950 R.P.M. Code MULTK

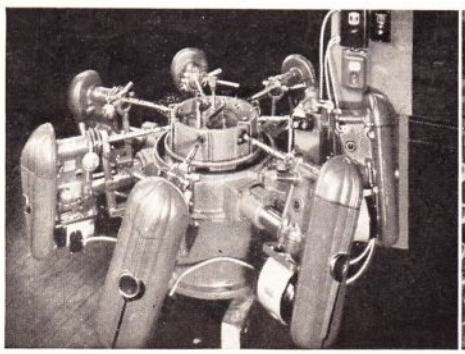
No. 271 —Motor Belt for Multi Speed. ½ lb. Code BELTQ

No. 272 —High Speed Belt for Multi-Speed. ½ lb. Code BELTR

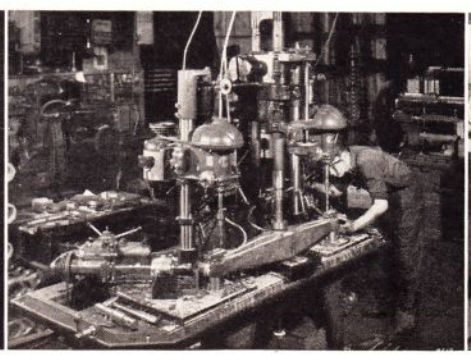
No. 273 —Slo-Speed Belt for Multi-Speed. ½ lb. Code BELTS

(FOR PRICES SEE ATTACHED PRICE LIST)

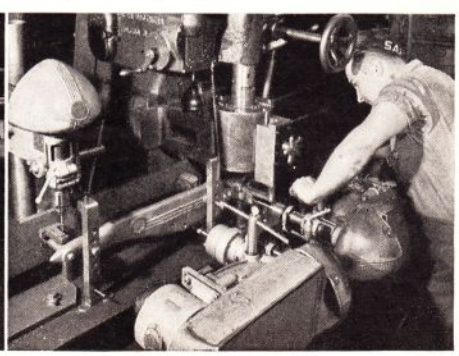
A special purpose machine for drilling aeroplane crank case housings made of standard Delta 17 inch drill press heads.



Heavy tank and truck axles are drilled and tapped on this machine. Delta 17 inch drill press parts are used.



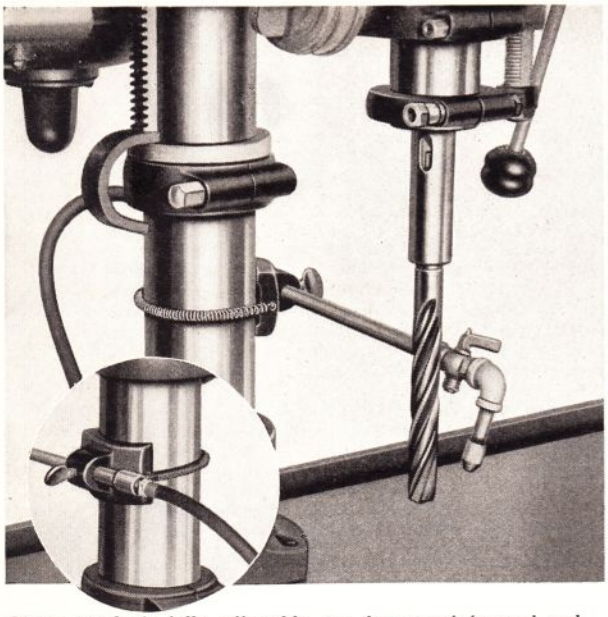
Drill press heads in front are mounted on rails for drilling and tapping operations. Production greatly increased — costs cut.

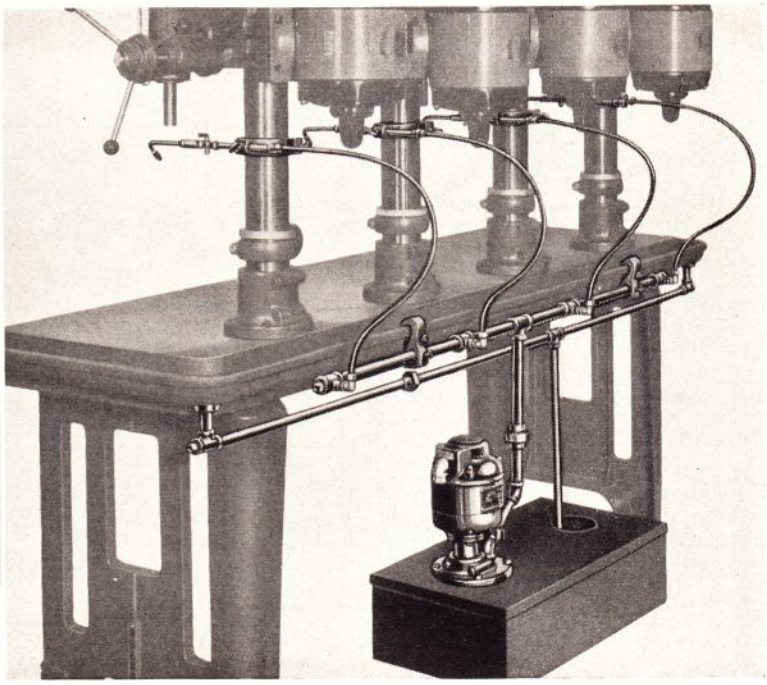


THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.

DELTA MILWAUKEE

New Coolant Equipment for 14-inch and 17-inch Drill Presses





Above nozzle is fully adjustable, can be moved forward and back and rotated as desired. In circle, detail of column clamp — easily removed and replaced. Right, complete installation, note pump and tank.

EMBODIES BEST FEATURES TO INSURE CONVENIENCE AND INCREASED PRODUCTION

This new coolant equipment for 14" and 17" Drill Presses overcomes all of the shortcomings usually found in an attachment of this kind. Its use and application has been carefully studied under all kinds of shop conditions and the unit here offered was found to be the best for all purposes.

The complete coolant system is made up of two parts. The first part consists of the coolant piping. The second consists of the pump with motor and tank. Each will be separately described.

The Coolant Piping

The coolant piping consists of a nozzle, valve, column mounting clamp and flexible hose assembly for each spindle; a complete drain pipe assembly and a complete header pipe assembly with brackets for attaching. Nozzle brackets attach to columns without removal of drill press heads, and pipe header brackets clamp to oil trough rim without necessity for drilling or tapping. Piping, tubing, etc., is ready for installation, but shipped knocked down, as it is not practical to ship it assembled on the machine.

CATALOG, LISTING, AND SPECIFICATIONS OF COMPLETE COOLANT PIPING

Cat. No.	Description of Drill Press				Ship. Wt. Lbs.	Code Word
	Size of Drill Press	No. of Spindles	Spindle Spacing	Type of Table		
14-805	14"	2	12"	1 Piece	21	COLAA
14-806	14"	3	15"	1 Piece	26	COLAB
14-807	14"	4	11½"	1 Piece	31	COLAC
14-808	14"	5	12"	Sectional	44	COLAD
14-809	14"	8	11½"	Sectional	60	COLAE
17-805	14" and 17"	All Single Spindle	....	Production	13	COLAK
17-806	17"	2	18"	1 Piece	21	COLAL
17-807	17"	4	18"	1 Piece	36	COLAM
17-808	17"	3	18"	Sectional	33	COLAN
17-809	17"	4	15"	Sectional	38	COLAO
17-810	17"	4	21"	Sectional	45	COLAP
17-811	17"	5	18"	Sectional	47	COLAQ
17-812	14" and 17"	6	15"	Sectional	50	COLAR
17-813	17"	6	20"	Sectional	51	COLAS
17-814	17"	8	15"	Sectional	64	COLAT
17-815	17"	8	18"	Sectional	70	COLAU

The coolant is applied just where it is wanted and at just the proper flow. The nozzle is fully adjustable. The clamp holding the nozzle may be moved up or down on the drill press to bring the flow of the coolant to the point of the drill. By loosening a convenient spring the clamp and nozzle may be entirely removed without a moment's delay. It can be returned just as easily. The nozzle may be revolved so the flow of coolant hits the work at the proper angle. The jet cock permits just the proper flow and if desired may be closed entirely without affecting motor or pump.

The Pump and Tank

The pump is a centrifugal submerged type pump and is mounted integral with the tank so that no piping is required from the pump to the tank. The motor is mounted directly to the pump shaft as illustrated. Three models are available, each made up of the pump with motor and tank. Motors of different electrical characteristics are available as listed.

MODEL No. 1 delivers 10 gal. per minute at 5' head. The tank has a 4 gal. capacity. This unit should be used for all single spindle drill presses. 1/10 H.P. motor.

No. 17-830 complete unit with 110 v. 60 cy. single phase motor.....PUMPA
No. 17-831 complete unit with 110 v. 50 cy. single phase motor.....PUMPB
No. 17-832 complete unit with 220 v. 60 cy. three phase motor.....PUMPC
No. 17-833 complete unit with 220 v. 50 cy. three phase motor.....PUMPD

MODEL No. 2 delivers 15 gal. per minute at 5' head. The tank has an 11 gal. capacity. This unit should be used for all 2, 3 and 4 spindle drill presses. ¼ H.P. motor.

No. 17-840 complete unit with 110 v. 60 cy. single phase motor.....PUMPG
No. 17-841 complete unit with 110 v. 50 cy. single phase motor.....PUMPH
No. 17-842 complete unit with 220/440 v. 60 cy. 3 phase motor.....PUMPI
No. 17-843 complete unit with 220/440 v. 50 cy. 3 phase motor.....PUMPJ

MODEL No. 3 delivers 25 gal. per minute at 5' head. The tank has a 32 gal. capacity. This unit should be used for all 5, 6 and 8 spindle drill presses. ½ H.P. motor.

No. 17-850 complete unit with 220/440 v. 60 cy. 3 phase motor.....PUMPK
No. 17-851 complete unit with 220/440 v. 50 cy. 3 phase motor.....PUMPL

NOTE: Order proper coolant piping from table to left and pump and tank from above listing, using CATALOG NUMBER and not the model number.

FOR PRICES SEE ATTACHED PRICE SHEET

Accurate, Sensitive, High-Speed Tapping Done by These Units

DELTA MILWAUKEE

THESE Tapping Attachments for both the 14" and 17" Drill Presses are constructed with the utmost precision, ruggedness and convenience for smooth, sensitive operation. The sensitive double-cone cork-faced friction clutch engages the conical surfaces of the drive and reverse shells with a smooth "cushioned action." The tap driving power is regulated by the amount of pressure applied to the friction clutch. The clutch is kept dry—no oil reaches the friction surfaces to impair sensitive reaction to tapping pressure, so necessary for high speed precision tapping. The special cork facing was developed to stand up under hard service and is practically indestructible.

Bottom tapping is accomplished as readily as through tapping, since the clutch instantly slips should the tap stick or strike bottom.

The heat treated gear reversing mechanism is of the planetary type which distributes the pull among three gears, thus strain and wear are minimized. Reverse speed is twice the forward speed.

Ball bearings are incorporated for rigidity, accuracy and long life, while the chuck spindle is supported at both ends assuring true operation of the spindle and eliminating any possible wobble or float in the tap.

Steel parts are designed to afford a wide margin of strength with minimum weight. All bearings are adequately lubricated from one oil well.

Although we illustrate and list the collet type tapper we are forced sometimes to supply a chuck type tapper in order to speed delivery. Both types are high grade production units, well made and of the same capacity.

Each collet is stamped for the size of tap accommodated and each set of collets is furnished in a compact container.

FOR 14" DRILL PRESSES

These Tapping Attachments clamp to the drill press quill as shown and have a special built-in spindle which is part of the Tapping Attachment and which replaces the spindle in the 14" drill press.

No. 990—Tapping Attachment to fit 14" Drill Press. With "Tru-Grip" Tap Holder. Capacity No. 2 to ¼" in Brass and Cast Iron. No. 2 to 5/16" in steel. Complete with Wrench and Four Collets to take No. 2, 3, 4, 5, 6, 7, 8, 9, 10 and ¼" Taps. 6 lbs. ..... Code NEWTA

No. 996—Tapping Attachment to fit 14" Drill Press. With "Tru-Grip" Tap Holder. Capacity No. 8 to ½" in Brass; No. 8 to ⅜" in Cast Iron, No. 8 to 5/16" in Steel. With Wrench and Seven Collets to fit No. 8, 9, 10, ¼", 5/16", ⅜", 7/16" and ½" taps. 10 lbs. Code NEWTB

FOR 17" DRILL PRESSES

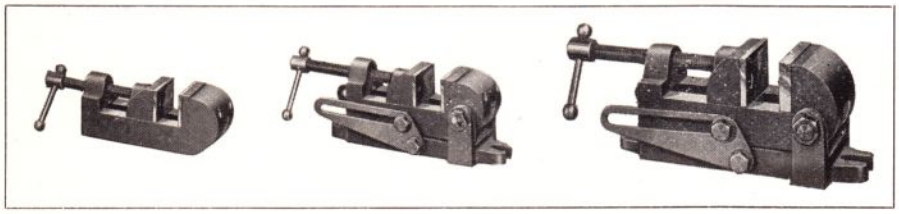
These Tapping Attachments also clamp to the Drill Press quill but have a longer top casting. They can only be used on our 17" machines with No. 2 Morse Taper spindles. A shank inside the unit slips into the Morse socket of the spindle.

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 ⅜" in Cast Iron; No. 8 to ½" in Brass. With Wrench and Seven Collets to fit No. 8, 9, 10, ¼", 5/16", ⅜", 7/16" and ½" Taps. 7 lbs. ..... Code DRITA

No. 1363—Tapping Attachment to fit 17" Drill Press with No. 2 Morse Taper Spindle. With "Tru-Grip" Tap Holder. Capacity ¼" to 5/8" in Brass and Cast Iron; ¼" to ½" in Steel. With Collets to fit ⅜", 7/16", ½" and 5/8" Taps. Collets also available to fit ¼", 5/16", 9/16", 11/16", ¾" Taps and ⅛" and ¼" (Large Shank) Pipe Taps. 10 lbs. ..... Code DRITB

Reverse speed at tap is double forward speed.

HUSKY VISES USED FOR PRODUCTION WORK



The latest additions to the line are these vises which essentially are a Drill Press, Milling Machine, Grinder and Bench Vise all in one. They can be used in the tool room—in the shop for bench and production work.

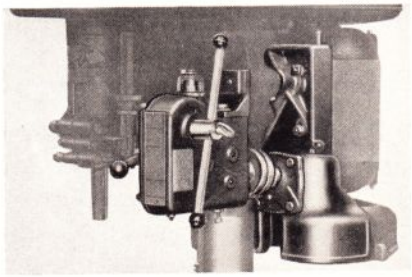
Merely raise the vise to the position desired. It may be locked by tightening the clamp screws. The side of the vise is accurately graduated for angle work.

These vises are accurately machined. The base, body and sliding jaws are of semi-steel; clamping jaws of hardened steel. The clamping screw has a fine pitch thread and a long bearing in the vise body.

No.	Jaw Size	Opening	Lgth.	Ship. Wt. Lbs.	Code Word
1024	1½"x1"	1⅝"	4⅝"	5	VISEA
1025	1½"x1"	1⅝"	4⅝"	6½	VISEB
1026	2½"x1 7/16"	2½"	6¼"	10	VISEC

(FOR PRICES SEE ATTACHED PRICE SHEET)

Power Feed Attachment



Any of our standard 17" drill presses can be easily and readily changed into Power Feed machines by the addition of the Power Feed Unit. The unit is complete with gear box, motor pulley, belt guard, gear drive, handle assembly, motor plate, quill pinion shaft, stop rod, V-belt, and oiler as illustrated.

This Power Feed Unit will soon pay for itself in increased production.

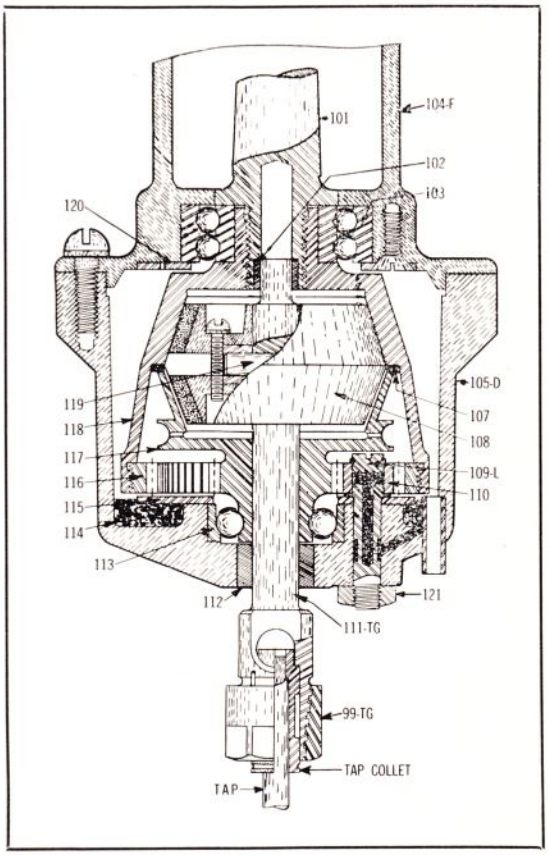
No. 17-857—Power Feed Attachment complete to fit all 17" drill presses. 84 lbs. POWFD

The Delta-Milwaukee Tapping Attachments

Replacement Parts for Nos. 1362 and 1363

Number	Name of Part	No. Req.	No. 1362 Price Each	No. 1363 Price Each
98-TG	Tru-Grip wrenches (pair)	1	**1.10**	**1.65**
99-TG	Tru-Grip nut	1	**.75**	**1.10**
101	#2 Morse taper shank	1	**3.00**	**4.15**
102	Shank bushing	1	**.25**	**.40**
103	Cover ball bearing	1	**4.50**	**6.00**
104-F	Cover	1	**13.50**	**15.40**
105-D	Body	1	**6.05**	**14.30**
107	Separator ring	1	**.30**	**.45**
108	Clutch	1	**4.40**	**6.60**
109-L	Stud	3	**1.40**	**1.65**
110	Pinion gear	3	**1.60**	**1.95**
111-TG	Tru-Grip chuck spindle	1	**4.95**	**9.10**
112	Body bushing	1	**.50**	**.65**
113	Body ball bearing	1	**2.40**	**3.00**
114	Oil retaining felt	1	**.30**	**.50**
115	Stud plate	1	**.40**	**.80**
116	Internal ring gear	1	**4.15**	**6.60**
117	Reverse shell assembly	1	**7.50**	**11.50**
118	Drive shell	1	**7.15**	**11.00**
119	Clutch pin	1	**.15**	**.25**
120	Cover bearing retainer	1	**.40**	**.75**
121	Stud nut	3	**.10**	**.10**
122	$\frac{5}{16}$"-18 x 2" socket head cap screw	1	**.10**	**.10**

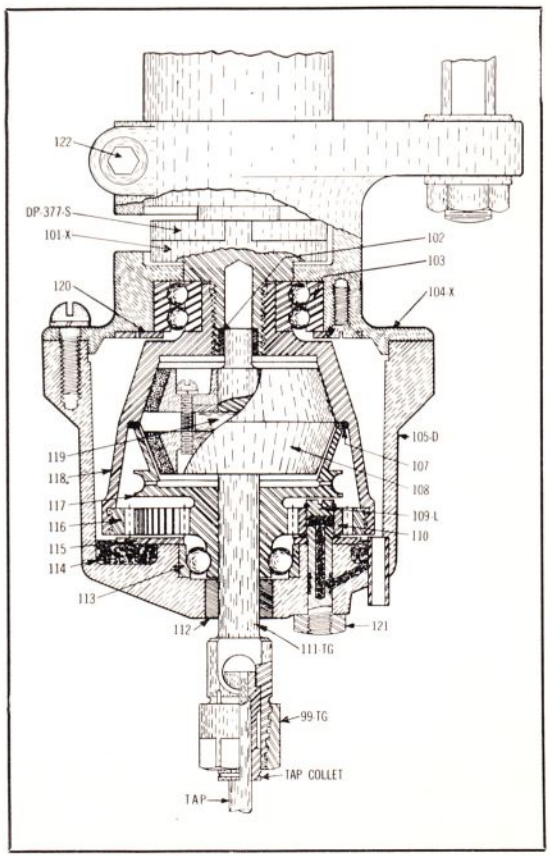
Specify Part Number and Tapping Head Number



Replacement Parts for No. 990 and No. 996

Number	Name of Part	No. Req.	No. 990 Price Each	No. 996 Price Each
DP-377-S	Spindle complete with coupling flange	1	**1.45**	**1.45**
98-TG	Tru-Grip wrenches (pair)	1	**.65**	**1.10**
99-TG	Tru-Grip nut	1	**.60**	**.75**
101	Driver shank	1	**2.50**	**2.75**
102	Shank bushing	1	**.15**	**.25**
103	Cover ball bearing	1	**3.10**	**4.50**
104-X	Cover	1	**4.40**	**6.60**
105-D	Body	1	**4.95**	**6.05**
107	Separator Ring	1	**.15**	**.30**
108	Clutch	1	**3.60**	**4.40**
109-L	Stud	3	**1.30**	**1.40**
110	Pinion gear	3	**1.20**	**1.60**
111-TG	Tru-Grip chuck spindle	1	**3.30**	**4.95**
112	Body bushing	1	**.40**	**.50**
113	Body ball bearing	1	**2.00**	**2.40**
114	Oil retaining felt	1	**.20**	**.30**
115	Stud plate	1	**.30**	**.40**
116	Internal ring gear	1	**2.75**	**4.15**
117	Reverse shell assembly	1	**6.00**	**7.50**
118	Drive shell	1	**6.00**	**7.15**
119	Clutch pin	1	**.10**	**.15**
120	Cover bearing retainer	1	**.30**	**.40**
121	Stud nut	3	**.10**	**.10**
122	$\frac{5}{16}$"-18 x 1¾ socket hd. cap. screws	1	**.10**	**.10**

Specify Part Number and Tapping Head Number



Lubrication

Lubricate heads with a light grade of machine oil (SAE No. 10 or 20 viscosity). Ten to twelve drops of oil for eight hours running is sufficient. If the unit becomes sluggish or loses its pulling power, too much oil has been used. To remedy this, the clutch should be removed and cleaned with a cloth dampened with gasoline or naptha. This will restore the cork surfaces to their original condition.

Disassembly for Cleaning & Part Replacement

To disassemble the tapping head, proceed as follows: Remove the cover screws and pull the upper section from the body. Then, remove the screws or pins in top of clutch. Hold head in a horizontal position with clutch pin perpendicular. Apply enough pressure on clutch to overcome spring pressure at opposite side of clutch. The clutch pin No. 119, should then drop out. Wipe the inside of both drive shell No. 118 and reverse shell No. 117, perfectly dry. Do not dip the head in cleaning fluid, as this washes dirt into the ball bearings and causes wear.

Be sure that the clutch spring, as well as the separater ring No. 109, are in their proper place when reassembling the tool. The clutch pin lock screws must have lock washers under the screwhead, pulled down tight, to prevent their coming loose and destroying both clutch and drive shells.

Left Hand Tapping

Left hand tapping heads will tap both right and left hand, but they must be ordered special. Left hand tapping cannot be accomplished with the standard unit.

Do not use these tappers in an up-side down position. .Horizontal use is satisfactory, provided a slight change is made in the oil hole.

Collet Prices and Tap Dimensions

Tap Collet Size	O. D. of Collet	MACHINE SCREW TAPS					Stove Bolt	FRACTIONAL SIZE TAPS											PIPE TAPS			NUT TAPS					PULLEY TAPS	
		#0-6	#7-8	#9-10	#12	#14	3/16"	1/4"	9/32"	5/16"	3/8"	3/8"	7/16"	1/2"	9/16"	5/8"	11/16"	3/4"	1/8"	1/8"	1/4"	1/4"	5/16"	3/8"	7/16"	1/2"	7/16"	1/2"
1	3/8"	K-1 1.65	K-2 1.65	K-3 1.65	K-4 1.65	K-5 1.65	K-6 1.65	K-7 1.65																				
2	1/2"		L-2 2.20	L-3 2.20	L-4 2.20	L-5 2.20	L-6 2.20	L-7 2.20	L-8 4.40	L-9 2.20	L-10 2.20	L-11 2.75	L-12 2.20	L-13 2.20						L-19 2.20		L-21 2.75	L-22 2.75	L-23 2.75	L-24 2.75			
3	3.4"							M-7 3.30		M-9 3.30	M-10 3.30	M-11 4.00	M-12 3.30	M-13 3.30	M-14 3.30	M-15 3.30	M-16 3.30	M-17 3.30	M-18 3.30	M-19 4.00	M-20 3.30	M-21 4.00	M-22 4.00	M-23 4.00	M-24 4.00	M-25 4.00	M-26 4.00	M-27 4.00
tap shank round		.141	.168	.194	.220	.247	.201	.255	.286	.318	.381	.275	.323	.367	.429	.480	.542	.590	.4375	.3125	.5625	.185	.240	.294	.345	.400	.444	.507
tap shank square		.110	.131	.152	.165	.185	.151	.191	.214	.238	.286	.206	.242	.275	.322	.360	.406	.442	.328	.234	.421	.139	.180	.220	.259	.300	.333	.380

CHART NO. 1

Tapping Recommendations

Chart No. 1 specifies standard hand tap dimensions, and squares. Shank diameters may be minus .004, plus .000 from standard shank dimensions given.

For through tapping in steel or any metal which produces a ribbon chip, spiral pointed or gun taps are recommended. For blind holes, use three or four flute, plug taps, with a liberal amount of hook on the cutting edge of the flute.

For cast iron, brass or similar material which produces a broken chip, it is best to use a standard three or four flute plug tap, three flute preferably, as there is then more room for chips.

When tapping in steel or cast iron a high grade sulpher base coolant should be used; for copper, lard oil or milk is best. The coolant should flow directly onto the tap. The brush method should be eliminated entirely.

NOTE: For best results use High Speed Ground thread taps only. Do not tap above the rated capacity of the tapping head.

THE DELTA MANUFACTURING CO. DELTA MILWAUKEE **600-634 E. Vienna Ave., Milwaukee, Wis.**

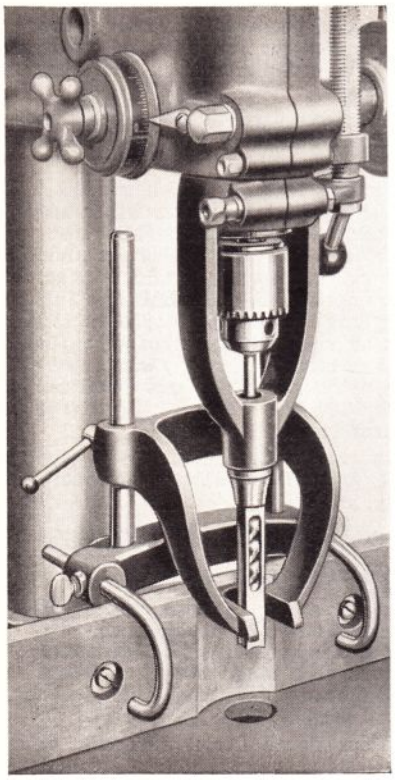
Made in U. S. A.

Form I.S. 150—9-41

P.M.-1596

Drill Press Is An Efficient Woodworking Unit With These Accessories

DELTA MILWAUKEE



Attachment Converts Drill Press Into An Efficient Mortiser

Using this simple, easily installed attachment, the 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.

For 17" Drill Presses

Capacity under hold-down, 6½" thick. Capacity from ends of hooked rods to fence, 2½" thick. Mortising bit is held in regular geared chuck. This mortising attachment cannot be used with drill presses with Morse taper spindle.

No. 1381—Mortising Attachment for 17" Drill Press. Complete with Base, Fence, Hold-Down, Curved Arm Bracket, Curved Arms, Chisel Holder and Bolts, without Bit or Chisel. 15 lbs. ..... Code DRILL

For 11" and 14" Drill Presses

Capacity under hold-down, 4¾" thick. Capacity from ends of hooked rods to fence, 2¾" thick. Must be used with No. 974 spindle on 14" and old No. 645 11" drill presses and No. 10-801 spindle for the No. 10-050 11" drill press.

No. 976—Mortising Attachment for 11" and 14" Drill Presses, Complete with Fence, Hold-Down Bracket, Hold-Down and Rod, Chisel Holder, Curved Arms and Bolts. Without Spindle. 7 lbs. ..... Code NEMOR

Hollow Chisels

Selected steel. Bit operates inside of chisel. Order proper bushing for each bit for 14" drill press. Outside of bushing, ½". Shank of chisel, ⅝"x 1½". Weight per set, 1¼ lbs.

Cat. No.	Size	Depth of Mortise	Code
504	¼"x ¼"	1 7/8"	CHISA
505	5/16"x 5/16"	1 7/8"	CHISB
506	⅜"x ⅜"	2 ¾"	CHISC
508	½"x ½"	3 ¼"	CHISE

Bits for Mortising

High grade bits for production work. For use with mortising attachment. Be sure to order proper sized bushing listed below.

Cat. No.	Size	Dia. Shank	Code
514	¼"	3/16"	BITOA
515	5/16"	¼"	BITOB
516	⅜"	19/64"	BITOC
518	½"	19/64"	BITOE

Bushings

These bushings are used to hold bit in drill press spindle.

Cat. No.	Size Hole	Code
524	3/16"	BUSHA
525	¼"	BUSHB
526	19/64"	BUSHC

No. 526 used with Nos. 516 and 518 bits. Bushings not required with the No. 1381 mortiser used on the 17" drill press.

Pattern shops use the router bits in the drill press as shown here for many accurate routing jobs.

Machine Spur Bits—10 oz. Each

Made of selected steel, properly hardened and tempered for keen cutting qualities and long life. They have a diamond point and two cutting lips which sever the fibers of the wood, produce clean holes. All are approximately 6¼" long overall, and have ½" shanks to fit standard ½" hole machine chucks, also mortiser spindle and No. 974 drill-press spindle.

No.	Size	Shank	Code
804	¼"	½"	SPURA
805	5/16"	½"	SPURB
806	⅜"	½"	SPURC
807	7/16"	½"	SPURD
808	½"	½"	SPURE
809	9/16"	½"	SPURF
810	⅝"	½"	SPURG
812	¾"	½"	SPURK
818	Comp.	Set	SPURL

Router Bits—4 oz. Each

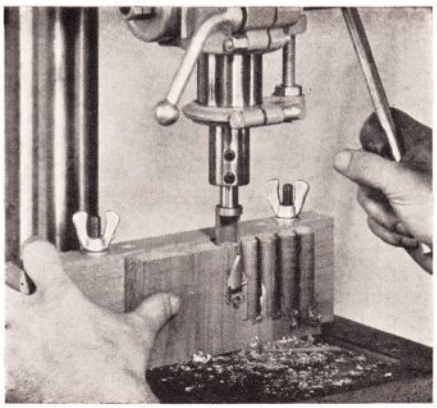
For routing, carving, round-end mortises and grooving work. Shank diameter is ½".

No.	Size	Shank	Code
474	¼"	½"x1 ½"	ROUTA
475	5/16"	½"x1 ½"	ROUTB
476	⅜"	½"x1 ½"	ROUTC
477	7/16"	½"x1 ½"	ROUTD
478	½"	½"x1 ½"	ROUTE
480	Comp.	Set	ROUTO

Plug Cutters—6 oz. Each

These cutters are used for making wood plugs and dowels and are perfect for the pattern shop or furniture manufacturer.

No.	Size	Shank	Code
814	½"	½"x2"	PLUGA
815	½"	½"x2"	PLUGB
816	⅝"	½"x2"	PLUGC
817	¾"	½"x2"	PLUGD
819	1"	½"x2"	PLUGE
822	Comp.	Set	PLUGS



The cutting of wood plugs "with" or "against" the grain is easily done with the plug cutters shown.

(FOR PRICES SEE ATTACHED PRICE LIST)

THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.

Shaping on the Drill Press

Shaper cutters Series D-1 to D-80, with $\frac{5}{16}$" hole, may be used on either Drill Press No. 620 or 970. Larger cutters, with $\frac{1}{2}$" hole, are not recommended for use on the No. 620 drill press. In all cases the cutters should either be held on our No. 977 spindle, or else on the adapter spindles used in the No. 624 and 974 spindles. The adapters should not be held in the regular drill-press chuck, as this makes the overhang too great, and increases the risk of chatter in the cut. The cutter should at all times be operated as close to the lower quill bearings as possible.

Speed

For most work the highest speed on the No. 970 drill press, 5,000 r.p.m. and the highest on the No. 620 model, 3150 r.p.m. will be found amply high. At 5,000 r.p.m. very smooth, clean work it produced on the No. 970 drill press. If a higher speed is required, 8,000 r.p.m. may be obtained on the No. 970 drill press by using an 8" pulley on the motor shaft, and a No. 453 V-belt from this to the smallest step on the spindle pulley. No speed higher than this will ever be found necessary.

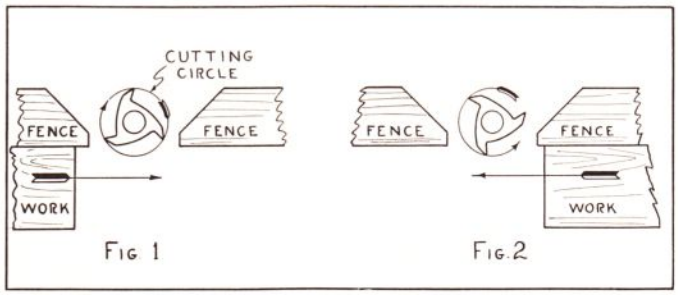


Fig. 1 Fig. 2

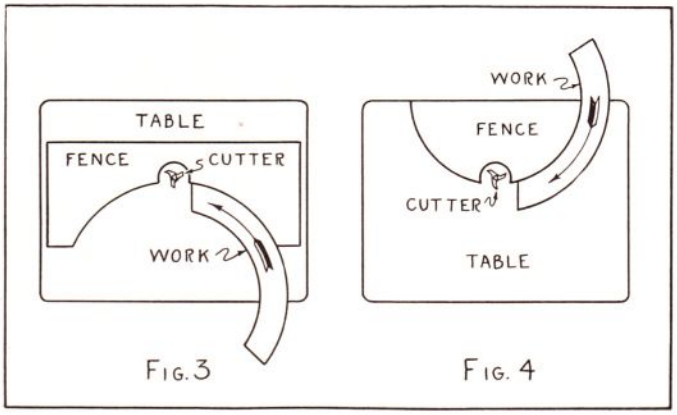


Fig. 3 Fig. 4

Rotation and Feed

It is essential that the cutters be properly placed on the spindle. If they are to be used on the drill press with the head in the natural position as in drilling, they should be slipped on the spindle or adapter so that the cutting lips face to the left as shown in Fig. 1, which is a plan view. If the drill press is used with the head reversed, then the cutters should be placed on the spindle with the cutting lips facing right, and the work should be fed from right to left. The work is always fed against the direction of rotation of the cutters; if fed in the opposite direction it is apt to be seized by the cutter and plucked out of the hand. It may sometimes be found convenient, if the drill press is fitted with a motor that can be reversed easily, such as the No. 900 repulsion-induction, to reverse the motor when the drill press is used in the natural position, set the cutter to face the right, and feed the work from right to left as in Fig. 2. This is a matter of choice.

Methods of Shaping

Most shaping is done by one of three methods:

1. Advancing the work into the cutter while holding it against a guide fence to limit the depth of cut and guide the work.
2. By using depth collars on the spindle, which permit the cutters to cut into the work to a certain depth only, the work being fed against the collars "freehand"; that is, without the use of a guide fence.
3. By using depth or guide collars as above, but using an outline pattern or template that carries the work and runs against the guide collars. Mostly used for repetition work.

Method 1 is used for flat straight-sided work, like making straight mouldings. This method is the simplest and safest, and should always be used wherever possible. The use of the guide fence is shown in Figs. 1, 2 and 8. The No. 987 fence is particularly safe because the wood facings can be adjusted inward or outward so that only the very small portion of the cutter actually in use projects beyond the front line of the fence, and the opening between the two halves of the fence can be made very small.

Circular guide fences can be used to good advantage on certain types of curved work, as shown in Figs. 3 and 4. Guide fences of this type can be sawed from a piece of board or thick plywood, the center of the form or guide being cut away to fit over the cutter. It will be noticed that two fences are necessary for work that is to be shaped on both inside and outside curves.

Method 2 is used for shaping the edges of curved and irregular-shaped pieces. A collar of the proper diameter is placed on the spindle, either above or below the cutter, depending on the character of the work. This collar prevents the cutter from taking more than a certain difinite cut, as shown in Fig. 6. It must be observed that only a portion of the edge of the work can be cut away when this method is used; as the side view in Fig. 6 shows, a portion of the original edge of the work must be left to bear against the collar. In other words, it is impossible to shape the ***whole*** edge of a piece by this method, for if this is attempted the work will be drawn into the cutter.

In shaping by this method the original edge of the piece to be shaped should be made smooth and accurate in profile, because any irregularity will be reproduced in the finished cut.

Use of Guide Pin

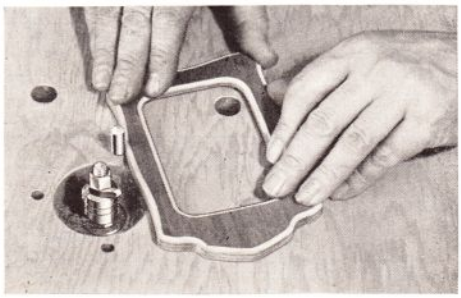
If, when feeding irregular work into the cutter, using the collar method, the attempt is made to advance the work directly against the revolving teeth, great care must be exercised in order to prevent the work from being seized and thrown out of the hand. To prevent this, a starting pin or guide pin should always be used. As shown in Fig. 7, this consists simply of a steel pin $\frac{5}{16}$" in diameter, set into the table a little to one side of the cutters. When starting the cut, the work is set against the pin, and then, keeping it pressed against the pin, it is swung slowly in the direction of the arrow so as to bring it gently into the cutter, using the pin as a pivot. Once the cutter has sunk to the full depth and the work is firmly against the

depth collar, it is then swung away from the pin and fed forward in the regular way. The "pin" need not assume the form shown, but may merely be a block clamped to the table to one side of the cutter; anything that will give a pivot for the work while it is being swung into the cutter for the initial cut will serve the purpose, but some form of starting pin should always be used for safety's sake. Never try to keep the work against both the pin and the collar after the cut has been started; swing it away so that it bears against the collar only.

Safety Pointers

In shaping freehand against the collars, which requires more care and skill than any other method of shaping, always observe the following rules:

1. Do no attempt to shape pieces that are too small or frail to be handled safely.
2. Do not attempt to cut away too much of the edge; leave enough uncut to give adequate bearing against the collar or collars.
3. Cut the outline of the piece to net size and see that it is smooth and regular before shaping.
4. Always use a starting pin or some form of steady rest when advancing the work into the cut.
5. If thin or narrow mouldings must be shaped, shape them on the edges of a wide or substantial board, and rip or cut them off the board after shaping.



Using the starting or guide pin in shaping an irregular contour against the collars. The work is first held against the pin, then swung slowly into the cutters until against the collars, then swung clear of the pin.

Method 3 is similar to 2, in that the shaping is done freehand against the collar; the only difference is that instead of the work itself riding against the collars, the work is carried by a hardwood template and the template is run against the collars. This method is used where a number of duplicate pieces are to be made, because then only the template need be made smooth and accurate in outline. It is also used where all of the edge of a moulding is to be shaped, because, since it is the template that rides against the collar, practically all of the edge of the work may be shaped away without trouble.

Shaping End Grain

In cases where end grain must be shaped, as in the case of table tops, etc., it is always best to run the first cut across the end grain as indicated in Fig. 8, and proceed from this around the top, taking each side and end in turn. When this is done, any slight tearing at the end of the first cut is cut away when the second cut is made, and the last cut is made in the direction of the grain, which will eliminate danger of splintering or tearing at the end of the cut.

Take light cuts on end grain to prevent making a rough job or splintering the edge at the end of the cut.

Wherever possible, the spindle and table should be so adjusted that the shaping is done on the lower edge of the work, as in this way the cutters are covered up and the whole operation is safer. Most of the illustrations show the work

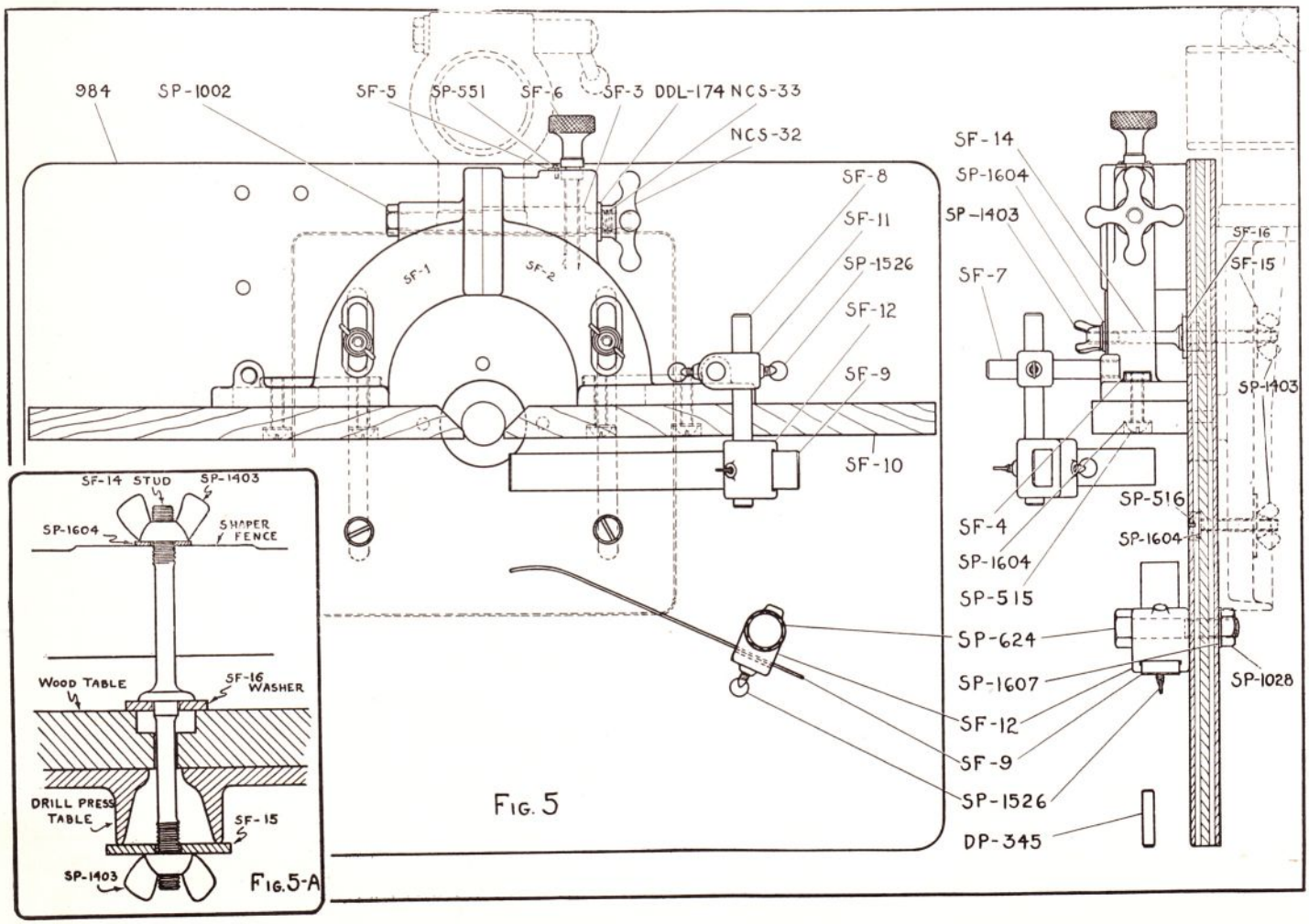


FIG. 5

FIG. 5-A

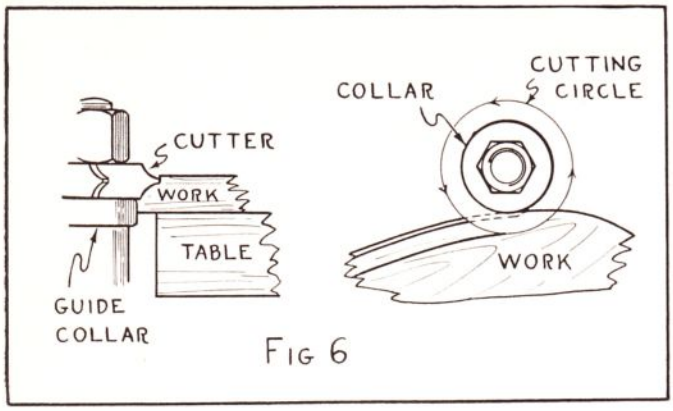


FIG 6

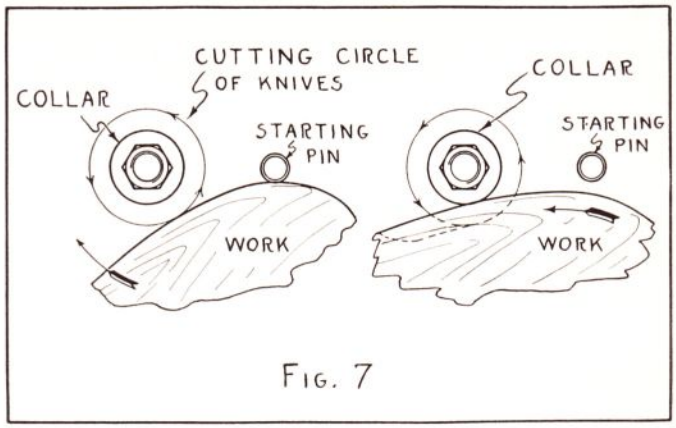


FIG. 7

being shaped on the upper edge, for the sake of clearness, but it is safer to shape the under edge wherever possible.

Jointing

The construction of No. 987 Universal Guide Fence shown in Fig. 5 permits work to be edge jointed with as much facility as on a jointer. For ordinary shaping work, where all of the edge is not cut away, the two faces of the guide fence are set exactly in line. In jointing, however, all of the edge is cut away, and it is necessary that one face of the fence be further forward than the other, to support the cut edge of the work after it leaves the knives. Wingnut BM-20 holding one half of the fence is loosened, star wheel NCS-32 loosened also, and then, by turning adjusting nut SF-6, one half of the fence may be set forward or back. The half that moves depends upon which wingnut is loosened. It is perhaps simpler to set the left-hand side of the fence in the same manner as the rear table of the jointer; that is, the working surface of the wood facing should be exactly in line with the knives. The righthand side of the fence is then set for the depth of cut, just like the front table of the jointer.

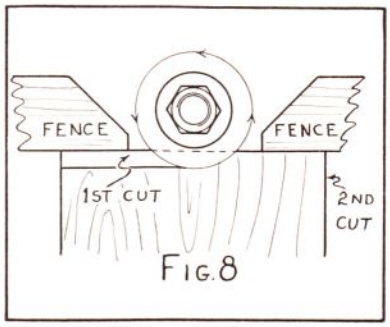


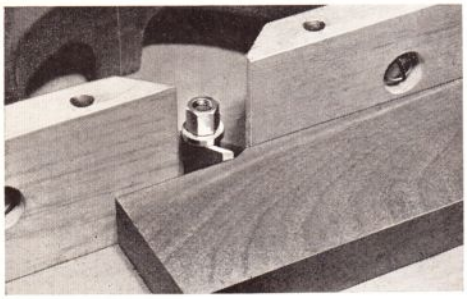
FIG.8

For jointing work, use straight cutter D-69.

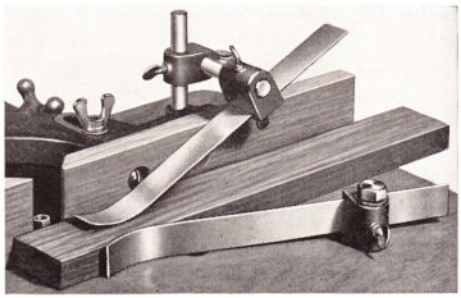
It will be obvious that, with an adjustable fence of this kind, all of the edge of straight work can be shaped, the rear half of the fence being set, as in jointing, to support the cut face of the work after leaving the cutter. This cannot be done with a non-adjustable fence.

Hold-Downs

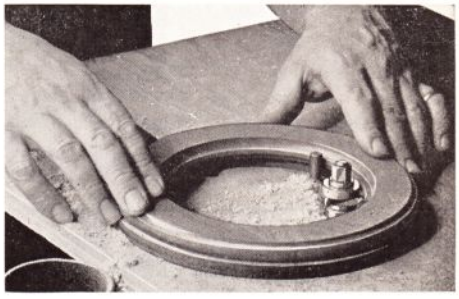
Spring hold-downs, shown in Fig. 5, are employed to hold the work down against the table and against the fence. The springs and brackets should be so set that the work will be pressed firmly against both table and fence, but not so tightly that it will be difficult to move past the cutter with a smooth and even motion.



How the shaper may be used for jointing the edges of boards with the No. 987 Guide Fence. This can only be done with a fence that is adjustable for depth of cut, in the same manner as a jointer table.



How the spring hold-downs are used not only to keep the work pressed against the table, but also to keep it pressed against the guide fence. They are adjustable for thickness and width of work.



How circular work is shaped against the guide collars. Note that in this case a collar is used above and below the cutter; this is not essential in this instance, although sometimes preferable.

Replacement Parts

Part No.	Part Name	No. Req.	Price Each
SF-1	Main Casting (left side)	1	$1.65
SF-2	Main Casting (right side)	1	1.65
SF-3	Clamp Stud (7/16"-14)	1	.25
SF-4	Lock Plate	2	.35
SF-5	Adjusting-Screw Link	1	.10
SF-6	Adjusting Screw (3/8"-16)	1	.30
SF-10	Wood Facing (Birch)	2	.40
SF-14-S	Special Stud	2	.25
SF-15	Special Washer	2	.10
SF-16	Special Washer	2	.10
NCS-32	Star Wheel (7/16"-14)	1	.25
NCS-33	Spec. Spring	1	.10
DDL-174	7/16" Special Washer	1	.10
SP-515	5/16"-18 x 1 1/4" Rd. Hd. Mach. Bolt	4	.10
SP-551	10-32 x 1/4 Rd. Hd. Mach. Screw	1	.10
SP-1002	7/16"-14 Hex. Jam Nut	1	.10
SP-1403	5/16"-18 Wing Nut	4	.10
SP-1604	5/16" Steel Washer	6	2 for .10
982	Shaper Fence (complete)	1	7.50

Hold-Down Parts

Part No.	Part Name	No. Req.	Price Each
SF-7	Hold-down Stud (7/16"-14)	1	$ .25
SF-8	Hold-down Pin (1/2" x 5")	1	.10
SF-9	Hold-down Spring	2	.40
SF-11	Hold-down Stud Bracket	1	.40
SF-12	Hold-down Spring Bracket	2	.40
SP-624	1/2"-13 x 2 3/4 Hex. Cap Screw	1	.10
SP-1028	1/2"-13 Hex. Nut	1	.10
SP-1526	5/16"-18 Thumb Screw	6	.10
SP-1607	1/2" Steel Washer	2	.10
983	Hold-down Attachments, Comp.		2.00

Table Parts

Part No.	Part Name	No. Req.	Price Each
DP-345	Starting Pin (1/32" x 1 1/2)	1	.10
DP-346	Shaper Table Only (3/4" x 18" x 24")	1	2.00
SP-516	5/16"-18 x 2 Rd. Hd. Screw	4	.10
SP-1403	5/16"-18 Wing Nut	4	.10
SP-1604	5/16" Steel Washer	4	2 for .10
SF-15	Special Washer	4	.10
984	Table Complete with Bolts* and Starting Pin		2.75
SBS-47	Wrench		.25

*(While we list this table for the convenience of those who desire to purchase it, the average craftsman can make his own table of 3/4" 5-ply panelling cheaper than it can be furnished. To the cost of the panel alone we must add the cost of cutting, shaping, sanding, boring, finishing, packing and shipping, all of which make the price seem out of proportion to the cost of the panel alone.)

Getting The Most Out of Your Drill Press

This instruction folder is intended to give briefly, enough information for you to do shaping on your drill press. Very complete and explicit directions for shaping on the drill press are given in our authoritative handbook "Getting The Most Out Of Your Drill Press", price $ .25. This work written from the practical rather than the theoretical viewpoint, may be understood by the beginner in woodworking, yet will be equally valued by the professional for its instructions in all regular shop uses for the drill press.

Besides shaping, other operations described and fully illustrated are: laying out the work, sharpening twist drills, how to drill, routing, mortising, dowel and plug cutting, and various other uses of the drill press.

The Delta Manufacturing Company

600-634 E. Vienna Ave. Milwaukee, Wisconsin

Form SF-982—4-40

Printed in U. S. A.

No. 645 Triple-Duty 11" Drill Press

ONLY a sealed ball-bearing motor should be used on this drill press, because the shaft stands vertically. If a plain-bearing motor is used it will be impossible to keep it lubricated, and the bearings will wear out in a short time. Use only a constant-speed motor, as motors of the universal type are not satisfactory.

For ordinary work in the small shop our one-third H. P. motors Nos. 6300 and 6400 will be found very satisfactory. No. 6300 is a split-phase type and No. 6400 a repulsion-induction type. Both have ball bearings, double shafts and built-in switch.

The motor should turn in a clockwise direction (see Fig. 4), viewed from the top of the motor when installed. Our motors should be bolted to the bracket so that the switch is at the top, on the left-hand side as you face the drill press. See Fig. 1. If you use another motor and it runs the wrong way, either turn it around or reverse its rotation.

The four-step motor pulley is installed with the largest step at the top. Align it with the pulley on the drill-press spindle by means of a straightedge placed across both pulley edges, before tightening the setscrews. The slots in the motor bracket enable the motor to be raised or lowered to align the pulleys perfectly, which is important for smooth, vibrationless operation of the machine.

Operating Drill Presses in Gangs

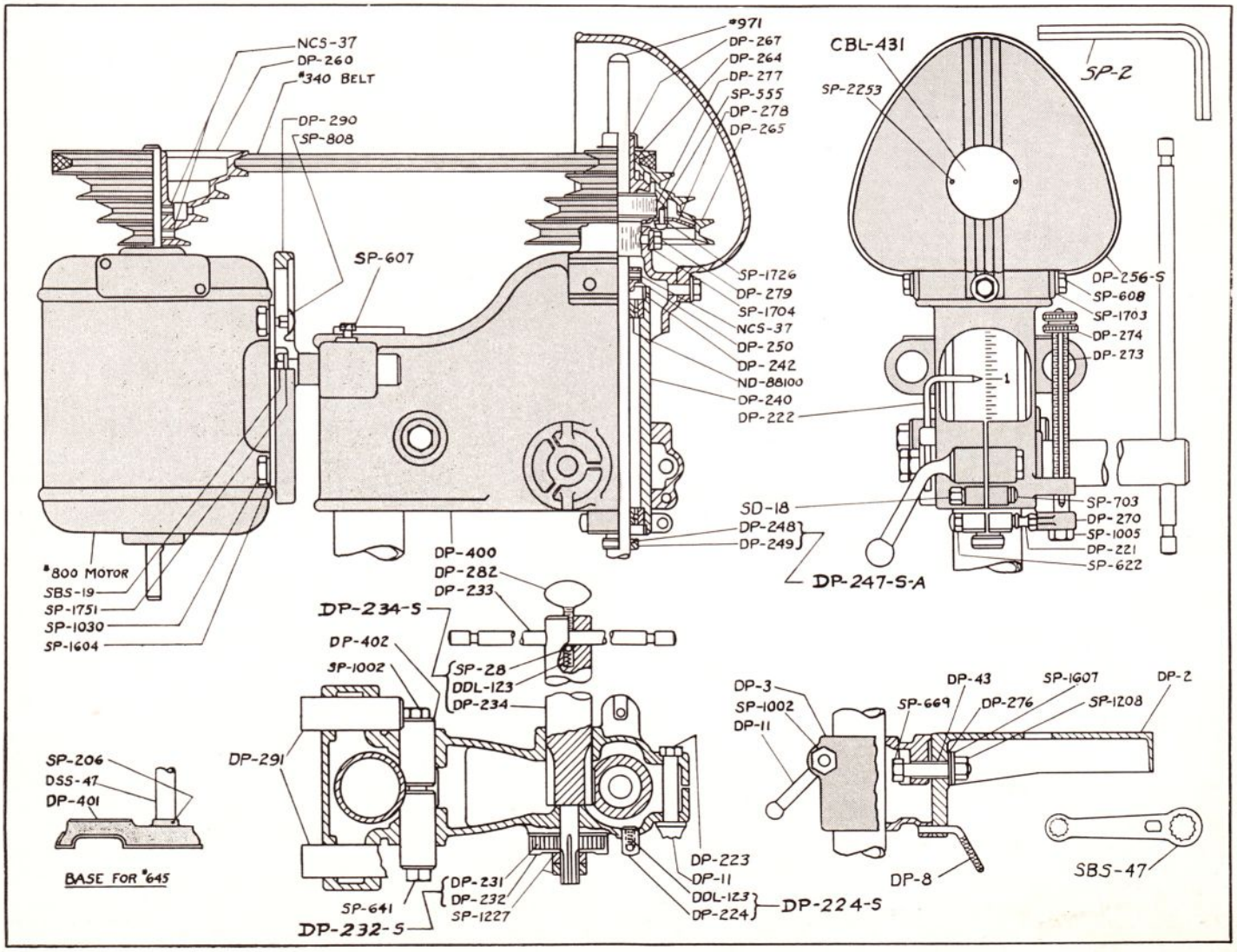
When a number of drill presses are to be used in a gang, as for production work, they should be provided with ½ H. P. three-phase motors, for the following reasons: Three-phase motors will save from 30 to 40 per cent of the power consumed by ordinary split-phase motors, besides delivering much more power. Since they have no brushes, commutators, delicate starting switches or starting windings, they are practically trouble-free, and this reduces upkeep cost. They are installed on a power line, and will not flicker the lights. They are particularly adapted for high-speed work.

A large gang of drill presses should never be operated with split-phase motors, taking their current from the lighting circuit. In many localities the lighting companies prohibit this, as the use of a large number of motors of this type unbalances the phase and overheats the transformer.

Three-Phase Motors

Three-phase motors cannot be operated from the lighting circuit. They are usually built for 220 volts, and this is the voltage of the ordinary power line, which is stepped down to 110 for lighting purposes. Three-phase motors should be wired by a regular electrician and provided with a regular switch, as they have no built-in switches.

Our Three-Phase ½ H. P. Motor No. 6600 is particularly well suited to the No. 645 Drill Press, as it is interchangeable with the regular No. 6300 motor. It is a ball-bearing, double shaft motor. Note that the speed of this motor is 1725 r.p.m. Do not confuse it with high-speed Motor No. 6530.



Occasional High-Speed Work

The amateur and the small-shop man who has only occasional use for high speeds will find that the standard high speed of 5,000 r.p.m. is quite satisfactory for the largest majority of routing, shaping and similar work. On the few occasions where it is necessary to use a higher speed we recommend the method of obtaining this shown in Fig. 4.

In this, the regular cone pulley is removed from the motor shaft, and a standard 8-inch V-pulley used instead. A No. 387 V-belt is used from this pulley to the smallest step on the drill-press cone pulley. The motor is moved up to align the pulleys and back to tighten the belt, but note that **the belt must not be too tight**; there must be a certain amount of slack in it, so that it will "bow out" on the slack side as indicated in Fig. 4. A belt that is too tight will cause excessive heating and vibration.

This arrangement gives a speed of 8,000 r.p.m., which is fast enough for all operations in the small shop. It should be remembered that the higher the speed the more power is required to operate the machine. Practically nothing is gained by attempting to use speeds above 8,000 r.p.m., and although the No. 645 drill press is designed for higher speeds than this, it is done as a factor of safety, and not because these higher speeeds are recommended for ordinary work.

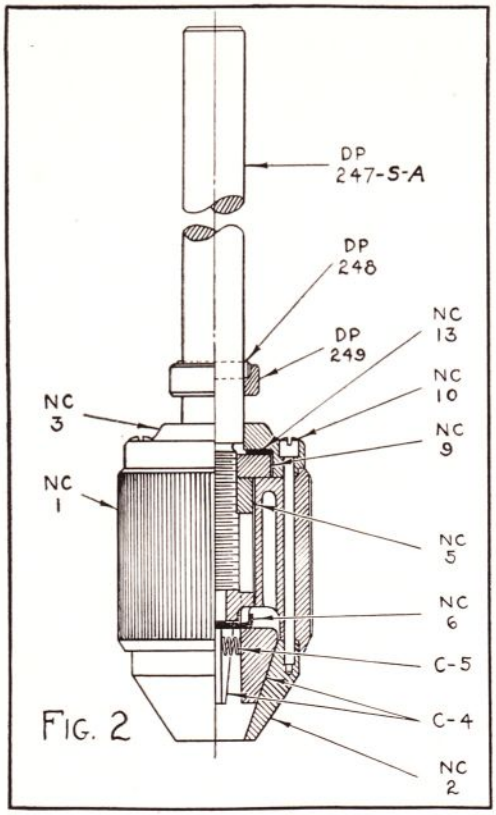


FIG. 2

Caution

No standard chuck is designed for a speed of over 5,000 r.p.m. If used at greater speeds than this a standard chuck will cause undue vibration and wear in the spindle. If the drill press is to be used for metal drilling at high speed it is necessary to use a specially balanced drill chuck.

Our special spindle No. 974 permits the use of standard machine bits with ½ inch shanks at high speeds without undue vibration and wear, due to its inherent balance and its short overhang. Don't use machine bits in an ordinary chuck.

Standard Speeds

The standard speeds obtained on this machine when using a 1,750 r.p.m. motor are 590, 1,275, 2,450 and 5,000 r.p.m. The highest speed is obtained when the belt is on the largest cone on the motor pulley and on the smallest cone on the spindle pulley, and vice versa.

Table Adjustments

To adjust the table up or down, loosen the ball-end lever on the table bracket. Hold the table while doing so.

To tilt the table to the right or left loosen the pivot nut (SP-1208) under the table, remove the pin DP-8 and tilt the table to the required angle. To set the table accurately vertical, insert the pin through the hole in the table flange into the hole in the table bracket, then tighten the pivot nut. To return the table to the horizontal position, loosen the nut, withdraw the pin, set the table approximately level, then re-insert the pin through its holes and tighten the nut, when the table will be located accurately level.

Spindle Adjustments

The spindle is raised and lowered by hand lever DP-233, which operates pinion shaft DP-234-S, and this, in turn, meshes with the rack on the quill DP-240. The quill can be locked at any desired point in its travel by tightening the ball-end lever DP-11. This is an especially desirable feature for router and shaper work. The adjusting screw and nut SP-703 and SD-18 are set at the factory to give the quill the proper clearance and this adjustment should not be disturbed.

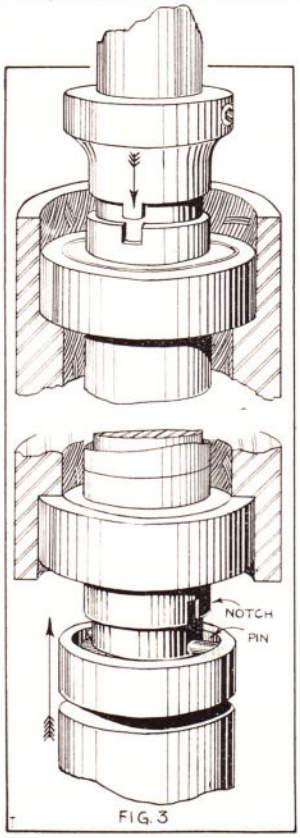


FIG. 3

Drilling Holes to Depth

The depth pointer on the head is a very convenient feature when drilling to exact depths is done. To use this, run the drill down until it just touches the surface of the work. Then set the pointer to an even graduation on the quill and feed the drill into the work. The pointer will indicate when the proper depth has been reached.

Where a number of holes are to be drilled to exactly the same depth the stop nuts DP-274 on the threaded stop rod DP-273 are used instead of the pointer. After the first hole has been drilled to depth by means of the scale and pointer, the lower stop nut is set against the lug on the head through which the stop rod passes. It is then locked with the upper nut, and all subsequent holes will be drilled to exactly the same depth without reference to the scale.

Adjusting Spindle-Return Spring

For the purpose of automatically returning the spindle upward after a hole has been drilled, a coil spring, DP-231, is enclosed in the case DP-232. This spring is properly adjusted at the factory, and this adjustment should not be disturbed unless absolutely necessary. If at any time it is necessary to readjust it, proceed as follows:

Loosen the locknuts SP-1227 only about ¼ inch; grip the cap tightly so as to prevent it from flying around, pull it out toward you so that the notches in the case clear the bosses on the head. Still holding the cap tightly, turn it clockwise to loosen the spring, or counter-clockwise to tighten it. Push it on the cap while turning so that the notches will slip over the bosses as soon as they are opposite. Tighten the locknuts—not too tight—and test the strength of the spring by pulling down the feed lever. Be sure the quill-lock ball-end lever is loose while testing. When the quill is up, one-half turn of the case gives the proper tension on the spring.

If the cap should accidentally be pulled out too far so that the spring end slips out of its slit in the rim of the cap, see that the hooked end of the spring is properly set in this slit again before attempting to adjust the spring.

How to Change Spindles

One of the unique features of the No. 645 Drill Press is the ease with which special spindles may

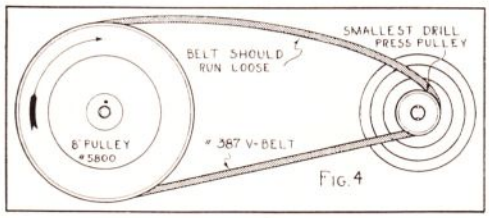
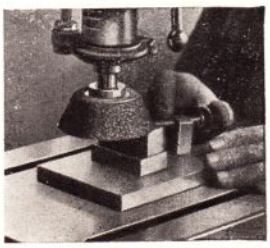
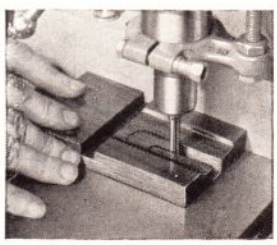
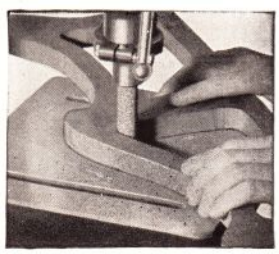


FIG. 4


Surface grinding on the drill press, using a cup wheel on the No. 991 spindle.


Routing against a guide fence, using the No. 974 spindle with ½-inch hole.


Sanding the edges of curved work with No. 840 sanding drum in No. 974 spindle.

be used. The operation of changing the spindle is a simple one if instructions are followed closely.

To remove the spindle that is in the machine, simply move the quill downward to expose the Allen Screw NCS-37 in collar DP 250, tighten the quill lock, loosen this setscrew and pull the spindle right out from the bottom, swinging the table out of the way before doing so.

To insert the new spindle, insert it at the botom of the quill and push it up through the collar DP-250 and through the drive pulley. Turn the spindle while doing this so that the keys in the drive pulley will enter the keyways in the spindle. Tighten Allen Screw NCS-37 to hold the spindle temporarily. Now swing the table under the spindle again and run it up until the lower end of the chuck rests on the table. Loosen the Allen setscrew again and turn the spindle, pushing up on it at the same time, until you are sure that the pin DP-248 in the spindle collar has entered the notches in the lower bearing, Fig. 3. **This is very important.** As soon as the pin has entered the notches, pull down on the lever so as to hold the chuck end of the spindle tightly against the table, then lock the quill to hold the spindle in this position. Push down collar DP-250 against its bearing, making sure that the lugs on the end of the collar enter the notches in the inner race of the bearing, then tighten the Allen setscrew again. Do not tighten the setscrew too much, or you will mar the spindle and make withdrawal difficult.

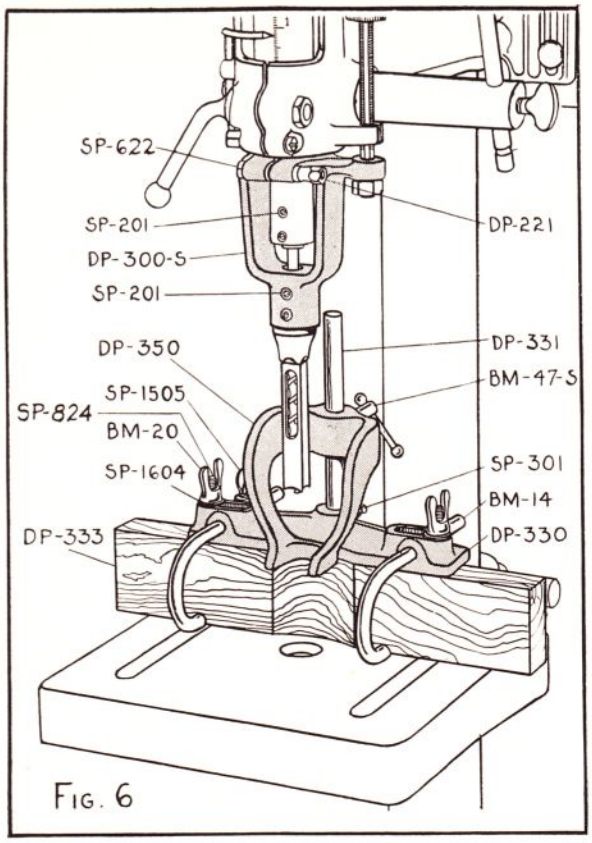


FIG. 6

Caution

We have gone into this matter of changing spindles very thoroughly because it is important that it be done properly. The job is much simpler than it seems from the description, but there are two things to bear in mind. First, the pin in the collar just above the spindle chuck **must enter the notches in the lower bearing.** Similarly, the lugs on the lower end of collar DP-250 must enter the notches of the upper bearing. See Fig. 3. If this is properly attended to there will be absolutely no shake in the spindle. If there is the slightest end play in the spindle after installation then the above directions have not been followed.

Routing Work

While router bits and standard machine bits may, if absolutely necessary, be used in the Keyless and Jacobs chucks, we strongly recommend the use of spindle No. 974 for all work where woodworking bits with ½ inch shanks are used. This may be used for bits with ½ inch shanks only.

When using router bits, with a guide fence fastened on the rear of the table as shown in Fig. 5, always feel the work from the left to right.

Mortising Attachment

To attach mortising attachment No. 976, insert special spindle No. 974 in place of the regular spindle. This spindle is the only one that can be used with this attachment. Remove the stop-rod collar DP-270 from the end of the quill by loosening the nut on its clamp stud, and removing the lower nut that fastens the stop rod to the collar. Now attach the hollow chisel holder DP-300-S in place of the stop collar, slipping the rod end through the hole in the lug, replacing the lower nut and tighten the chisel holder with the clamp nut DP-221. Do not clamp too tightly.

To install the chisel and bit, insert the bit through the hole in the chisel from the cutting end, place the proper bushing over the end of the bit; then insert the whole assembly through the hollow-chisel holder. Push up until the shoulder of the chisel butts against the holder, then tighten the setscrews to hold the chisel. Push the bushing into place in the spindle chuck, and adjust the bit **so that the spurs are about 1/16 inch away from the lower end of the chisel. This is very important.** Tighten the setscrews in the spindle chuck to hold the bushing and bit. The chuck setscrews should bear on the flat on the bushing.

Turn the spindle by hand to see that the bit runs clear and without undue noise in the chisel. Do not make the mistake of setting the bit spurs too close to the end of the chisel, or else they will rub, and ruin both bit and chisel in a short time. On the other hand, do not let the bit extend too far, as the chips may then clog in the chisel and break the bit.

Adjusting Guide Fence

Fasten the guide fence to the table with the bolts provided for the purpose, with the wing nuts on top of the fence. See that the hold-down arms are attached as shown in Fig. 6.

If very long pieces are to be bored or mortised, a long guide fence may be made from a piece of hard-regular fence, and the hold-downs transferred to it. Two short boards may be screwed to the under-side of wood of the same dimensions as the this extension fence to support the ends of the work.

Operating Hollow-Chisel Mortiser

Place the stock in position on the table so the cut will start at the end of the mortise. Start the machine and pull down on the feed lever. On the first cut all four sides of the chisel are cutting and this cut will naturally take a trifle more pressure than the following cuts. On hard woods lift the chisel frequently so as to clear the chips and permit the tool to cool. Neglect of this precaution

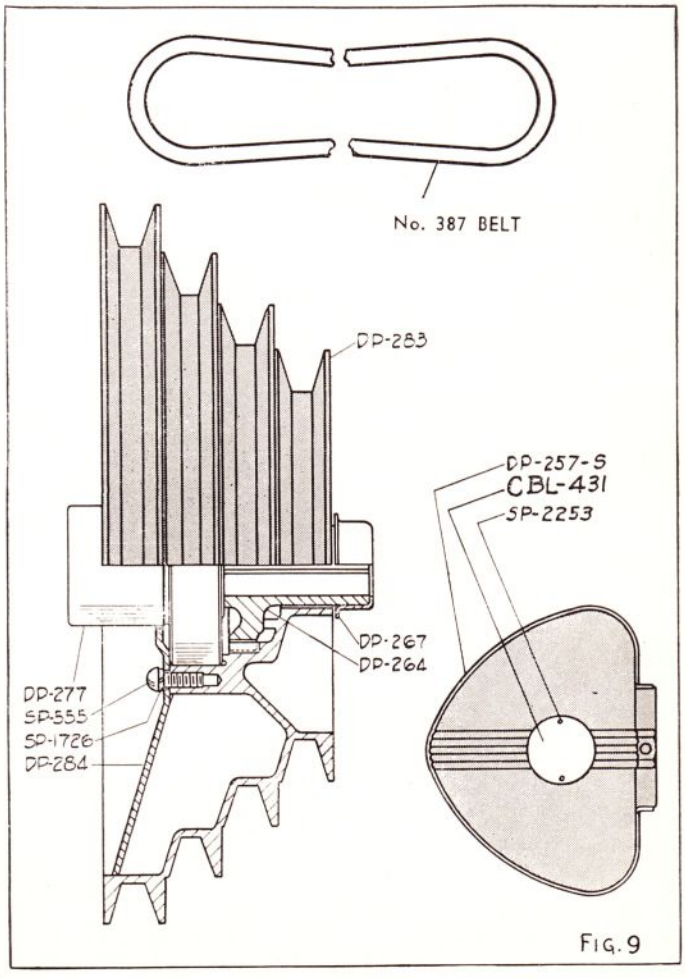


FIG. 9

will take the temper out of bit and chisel. Move the stock sidewise a distance equal to about three-quarters of the chisel width, press it down again and repeat this operation until the mortise is completed. Speed recommended for mortising is 2,250 r.p.m.

Shaping

A full line of shaper cutters, fences and other shaping attachments is available for this drill press. Cutters are of the formed type, fitting over the end of shaper spindle No. 977. The threaded end of this spindle will take cutters with a $\frac{5}{16}$ inch hole. Users who have cutters with this size hole on hand can use them on the No. 645 Drill Press.

For complete directions for shaping, ask for instruction sheet, "Shaping on the Drill Press," which accompanies each set of shaper cutters.

Caution

Do not attempt to use the No. 249 Moulding Cutter or any similar tool, ror shaping on the drill press. The moulding cutter is a very safe tool when used in the way for which it is designed, on the circular saw, but a very dangerous one when used on the drill press.

Lubrication

The ball bearings in the quill and spindle pulley are packed at the factory with enough lubricant to last for the entire life of the bearings. The pinion shaft and quill rack should be given a drop of oil occasionally. No further attention is required.

Do not take the pulley or quill assembly apart, as there is danger that you cannot put it together again properly, due to lack of special tools. Also, you may get dirt in the bearings, which will ruin them in a short time.

REPLACEMENT PARTS

IMPORTANT: To avoid possible errors, be sure to include the serial number of the machine when ordering parts for repair or replacement.

No.	Name of Part	No. Reqd.	Price Each
DP-11	Ball End Lever	1	$ .25
DP-222	Index Pointer	1	.10
DP-223	$\frac{5}{16}$"-14 Special Hex. Nut	1	.10
DP-224-S	Index Pointer Housing with Spring	1	.15
DP-400	Head Casting only	1	3.25
DP-402	Clamp Sleeve	2	.25
SD-18	$\frac{1}{4}$-20 Special Nut	1	.10
SP-2	$\frac{5}{32}$ Allen Wrench	1	.10
SP-607	$\frac{5}{16}$-18 x $\frac{3}{4}$ Hex. Hd. Cap. Screw	2	.10
SP-641	$\frac{5}{16}$-14 x 3$\frac{1}{2}$ Hex. Hd. Cap. Screw	1	.10
SP-703	$\frac{1}{4}$-20 x 1$\frac{3}{4}$ Fill. Hd. Cap. Screw	1	.10
SP-1002	$\frac{5}{16}$-14 Hex. Nut	1	.10
#645-A	Head Assembly, complete with Quill and No. 971 Spindle	1	24.50
#1526	Wrench	1	.10
	TABLE PARTS		
DP-2	Table 8" x 8"	1	2.35
DP-3-R	Table Clamp with Sleeve, Clamp Screw and Nut	1	1.75
DP-3-S	Table Assembly	1	4.70
DP-8	Index Pin	1	.10
DP-11	Ball Crank Clamp Screw	1	.25
DP-43	Table Clamp Sleeve	1	.10
DP-276	Table Clamp Spring Washer	1	.10
SP-669	$\frac{1}{2}$-20 x 2$\frac{1}{4}$ Hex. Hd. Cap. Screw	1	.10
SP-1002	Hex. Jam Nut	1	.10
SP-1208	$\frac{1}{2}$-20 Hex Nut	1	.10
SP-1607	1$\frac{1}{4}$ O. D. x $\frac{1}{2}$ Hole 15/64 Thk. Washer	1	.10
	BASE PARTS		
DP-401	Base	1	2.85
DDS-47	1$\frac{7}{8}$ x 25$\frac{1}{2}$ Column	1	2.10
SP-206	$\frac{5}{16}$-18 x $\frac{5}{16}$ Allen Set Screw Cup Point	2	.10
	PINION PARTS WITH BALL AND SPRING		
DP-232-S	Spring Case with Spindle Return Spring	1	.30
DP-233	Feed Handle	1	.20
DP-234-S	Pinion Shaft with Ball and Spring	1	1.25
DP-282	$\frac{3}{8}$-24 x 1$\frac{3}{8}$ Thumb Screw	1	.10
DDL-123	Spring for Index Pin	1	.10
SP-28	$\frac{1}{4}$" Steel Ball	1	.10
SP-1227	$\frac{1}{2}$-20 Hex. Jam Nut	1	.10
	QUILL PARTS		
DP-240	Quill Only	1	1.35
DP-240-S	Quill Assembly with Bearings	1	4.60
DP-242	Bearing Retainer Nut	1	.10
ND-88100	Special Bearing	2	1.65
	SPINDLE AND CHUCK PARTS		
DP-247-S-A	Spindle Assembly with Collar and Drive Pin for Keyless Chuck	1	1.35
DP-248	Drill Rod Pin	1	.10
DP-249	Pin Cover	1	.10
DP-250	Upper Bearing Drive Collar	1	.20
DP-255-S-A	Spindle Assembly with Collar and Drive Pin for Jacobs Chuck	1	1.00
C-4	Chuck Jaws	3	.15
C-5	Chuck Springs	3	.10
NC-1	Chuck Body	1	.70
NC-2	Chuck Nose	1	.85
NC-3	Chuck Cap	1	.20
NC-5	Chuck Plunger	1	.30
NC-6	Plunger Cap	1	.10
NC-9	Chuck Cap Nut	1	.25
NC-10	Special Fillister Hd. Screw	4	.10
NC-13	Bronze Washer	4	.10
SP-201	$\frac{5}{16}$-18 x $\frac{5}{16}$ Fl. Pt. Allen Set Screw	1	.10
	PULLEY PARTS		
DP-264	Spindle Sleeve	1	.45
DP-265	Spindle Pulley Only	1	1.25
DP-265-S	Pulley Assembly Complete with Spindle Sleeve, Bearing, etc.	1	4.50
DP-267	Spindle Sleeve Cover	1	.10
DP-277	Spindle Bearing, ND-88106	1	$ 2.35
DP-278	Bearing Retainer	1	.15
DP-279	$\frac{3}{8}$-24 x $\frac{5}{8}$ Spec. Hex. Hd. Screw	1	.10
SP-555	No. 8-32 x $\frac{3}{8}$ Rd. Hd. Mach. Screw	3	.10
SP-1709	$\frac{3}{8}$ Lock Washer	1	.10
SP-1726	No. 8 Lock Washer	3	.10
#340	V-Belt Cir. In. 34$\frac{5}{8}$", Out. 36$\frac{1}{2}$"	1	.85
	GUARD PARTS		
DP-256-S	High Speed Pulley Guard	1	1.10
CBL-431	Name Plate	1	.10
SP-608	$\frac{5}{16}$"-18 x $\frac{7}{8}$" Hex. Hd. Cap. Screw	3	.10
SP-1703	$\frac{5}{16}$" Lock Washer	3	.10
SP-2253	No. 0 x $\frac{3}{8}$" Parker Kalon	2	.10
	SLO-SPEED PULLEY PARTS		
DP-257-S	Large Guard	1	1.35
DP-264	Spindle Sleeve	1	.45
DP-267	Spindle Sleeve Cover	1	.10
DP-277	Special Bearing ND-88106	1	2.35
DP-283	Spindle Pulley Only	1	2.35
DP-283-S	Pulley Assembly Complete with Spindle Sleeve, Bearing, etc.	1	5.50
DP-284	Bearing Retainer	1	.20
SP-555	No. 8-32 x $\frac{3}{8}$ Rd. Hd. Mach. Screw	3	.10
SP-1726	No. 8 Lockwasher	3	.10
#387	V-Belt Cir.: In. 37$\frac{5}{8}$", Out. 39$\frac{1}{2}$"	1	.90
	STOP ROD PARTS		
DP-221	Spec. $\frac{1}{4}$-20 Hex. Nut	1	.10
DP-270	Stop Collar Casting Only	1	.40
DP-273	$\frac{1}{2}$-16 x 6$\frac{3}{4}$ Threaded Stop Rod only	1	.35
DP-273-S	Stop Rod Assembly, with Collar, etc.	1	1.05
DP-274	$\frac{1}{2}$-16 Knurled Stop Nut	2	.10
DP-318	Stop Nut Washer	1	.10
SP-622	$\frac{1}{4}$-20 x 2 Hex. Hd. Cap. Screw	1	.10
SP-1005	$\frac{1}{8}$-16 Hex. Jam Nut	1	.10
	MOTOR-BRACKET PARTS		
DP-290	Motor Plate	1	.65
DP-290-S	Motor Plate Assembly	1	1.20
DP-291	Sliding Stud	2	.20
SBS-19	$\frac{5}{8}$-18 Spec. Hex. Nut	2	.10
SP-808	$\frac{5}{16}$-18 x 1 Carriage Bolt	4	.10
SP-1030	$\frac{5}{16}$-18 Hex. Nut	4	.10
SP-1604	$\frac{5}{16}$ Wrought Washer	4	.10
SP-1751	$\frac{5}{8}$ Shake Proof Washer	2	.10
	MORTISING ATTACHMENT PARTS		
DP-221	Special $\frac{1}{4}$-20 Hex. Nut	1	.10
DP-300	Chisel Holder Casting Only	1	.90
DP-300-S	Chisel Holder Casting Complete with Clamp Screw Nut and Set Screws	1	1.10
DP-330	Hold-Down Casting only	1	60
DP-330-S	Mortising Fence Assembly	1	2.25
DP-331	Hold-Down Support Rod	1	.20
DP-333	Mortising Fence Only	1	.35
DP-350	Hold Down Arm Only	1	.50
BM-14	Curved Hold Down	2	.15
BM-20	Special Wing Nut	2	.10
BM-46	Washer	2	.10
BM-47-S	Lock Bolt	1	.15
SP-201	$\frac{5}{16}$-18 x $\frac{5}{16}$ Allen Set Screw	4	.10
SP-301	$\frac{1}{4}$-20 x $\frac{1}{2}$ Sq. Hd. Set Screw	1	.10
SP-622	$\frac{1}{4}$-20 x 2 Hex. Hd. Cap Screw	1	.10
SP-824	$\frac{5}{16}$ x 4$\frac{1}{4}$ Carriage Bolt	2	.10
SP-1505	$\frac{1}{4}$-20 x $\frac{1}{2}$ Thumb Screw	2	.10
SP-1604	$\frac{5}{16}$ Washer	2	.10
	MISCELLANEOUS		
#971	Standard Spindle with Keyless Chuck	1	3.95
#972	Special Spindle with Jacob's Chuck	1	6.95
#973	Special Spindle with No. 1 Morse Taper Hole	1	3.95
#974	Special Spindle with $\frac{1}{2}$ Hole for Mach. Bits	1	2.20
#977	Special Spindle for $\frac{5}{16}$ Hole Shaper Cutter	1	2 20
#985	4-Step Motor Pulley ($\frac{1}{2}$" Bore)	1	1.45
#991	Special Spindle for Cup Wheel	1	2.20

Prices in this list apply only to parts ordered for repair and replacement. They cannot be used for computing allowance values when a machine is ordered "less" certain parts. Ask for quotations on such special machines.

THE DELTA MANUFACTURING CO., — 600-634 E. Vienna Avenue, Milwaukee, Wis.

Form I.S.-146—4-41 Printed in the United States of America P.M..-1530

No. 10 050 High Speed 11-in. Drill Press

ONLY a sealed ball-bearing motor should be used on this drill press, because the shaft stands vertically. If a plain-bearing motor is used it will be impossible to keep it lubricated, and the bearings will wear out in a short time. Use only a constant-speed motor, as motors of the universal type are not satisfactory.

For ordinary work in the small shop our one-third H.P. motors Nos. 60 310 and 62 110 will be found very satisfactory. No. 60 310 is a split-phase type and No. 62 110 a capacitor type. Both have ball bearings, double shafts and built-in switch.

The motor should turn in a clockwise direction viewed from the top of the motor when installed. Our motors should be bolted to the bracket so that the switch is at the top, on the left-hand side as you face the drill press. If you use another motor and it runs the wrong way, either turn it around or reverse its rotation.

The four-step motor pulley is installed with the largest step at the top. Align it with the pulley on the drill-press spindle by means of a straightedge placed across both pulley edges, before tightening the setscrews. The slots in the motor bracket enable the motor to be raised or lowered to align the pulleys perfectly, which is important for smooth, vibrationless operation of the machine.

Three-Phase Motors

Three-phase motors cannot be operated from the lighting circuit. They are usually built for 220 volts, and this is the voltage of the ordinary power line, which is stepped down to 110 for lighting purposes. Three-phase motors should be wired by a regular electrician and provided with a regular switch, as they have no built-in switches.

Our Three-Phase ½ H. P. Motor No. 66 320 is particularly well suited to the No. 10 050 Drill Press, as it is interchangeable with the regular No. 60 310 motor. It is a ball-bearing, double shaft motor. Note that the speed of this motor is 1725 r.p.m.

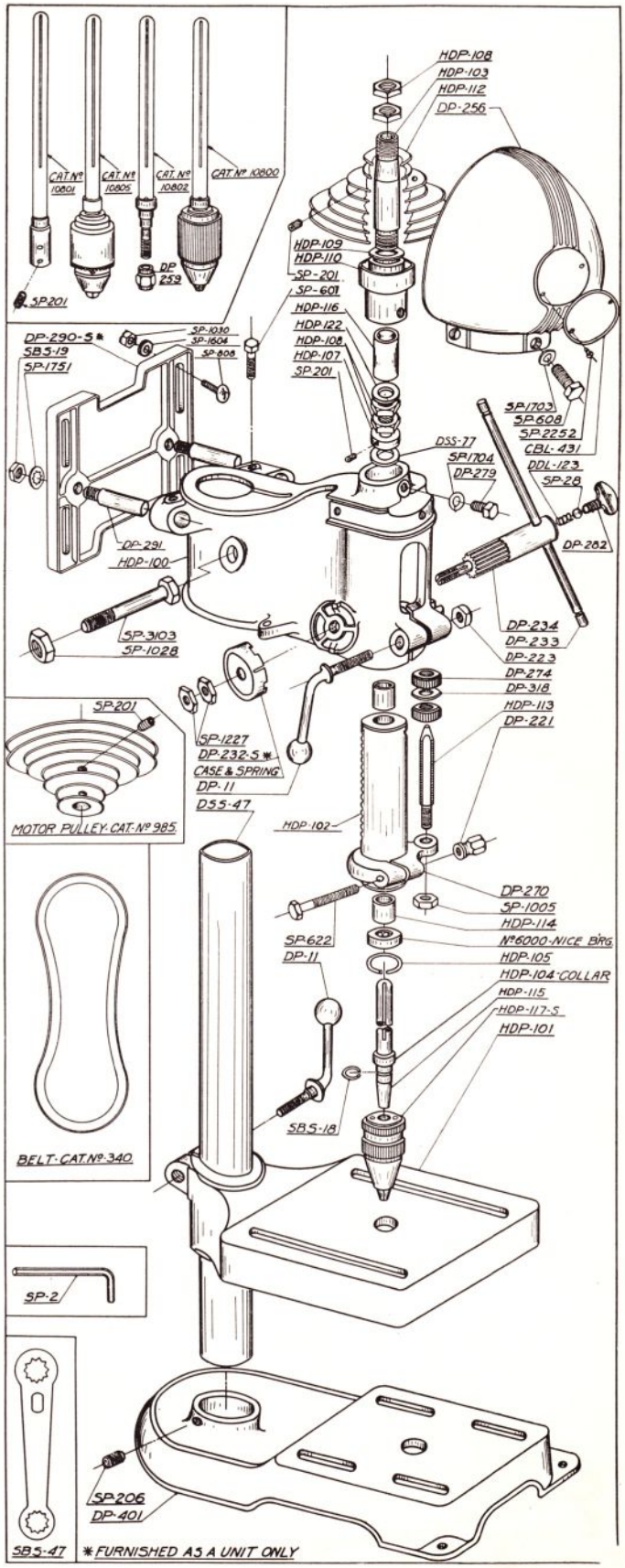
Standard Speeds

The standard speeds obtained on this machine when using a 1725 r.p.m. motor are 680, 1250, 2400, and 4600 r.p.m. The highest speed is obtained when the belt is on the largest cone on the motor pulley and on the smallest cone on the spindle pulley, and vice versa.

The amateur and the small-shop man who has only occasional use for high speeds will find that the standard high speed of 4600 r.p.m. is quite satisfactory for the largest majority of routing, shaping and similar work. It should be remembered, moreover, that this is a bronze bearing machine, and was not designed for speeds above the standard high speed of 4600 r.p.m. Any excessive speed tends to put an undue strain on the bearings and may easily burn them out.

Caution

The standard chuck is designed for a speed of not over 4,600 r.p.m. If used at greater speeds than this a standard chuck will cause undue vibration and wear in the spindle. If the drill press is to be used for metal drilling at high speed it is necessary to use a specially balanced drill chuck.



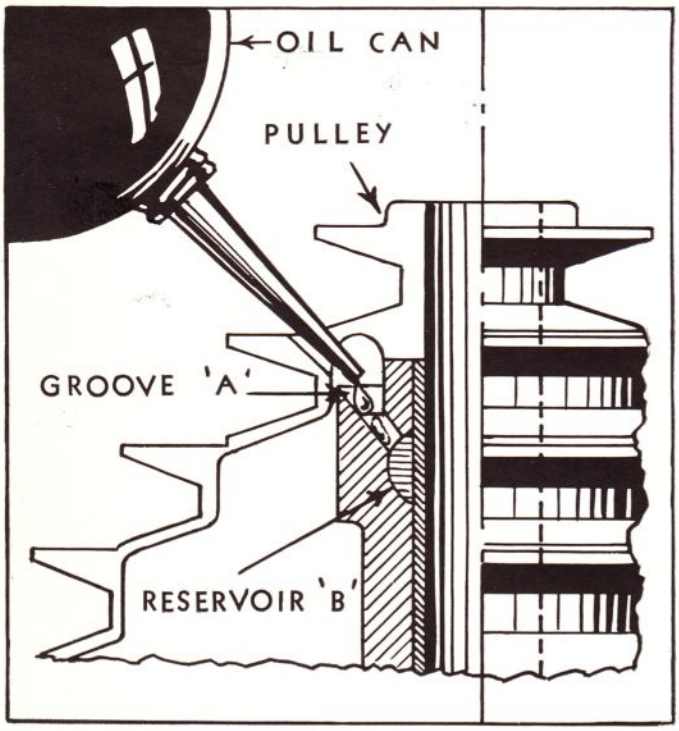
Our special spindle No. 10 801 permits the use of standard machine bits with ½ inch shanks at high speeds without undue vibration and wear, due to its inherent balance and its short overhang. Don't use machine bits in an ordinary chuck.

Table Adjustments

To adjust the table up or down, loosen the DP-11 ball-end lever on the table bracket. Hold the table while doing so.

Spindle Adjustments

The spindle is raised and lowered by hand lever DP-233, which operates pinion shaft DP-234-S, and this, in turn, meshes with the rack on the quill HDP-102. The quill can be locked at any desired point in its travel by tightening the ball-end lever DP-11. This is an especially desirable feature for router and shaper work.



Lubrication

The spindle of this Drill Press is mounted on three porous bronze bearings, each of which is provided with a reservoir that must be kept filled with a good grade of light oil. It is not necessary to remove any parts to oil the pulley bearing; to do this merely insert the oil can spout through the hole in the pulley as shown, and drop oil into Groove "A" to fill reservoir "B". About 50 drops of oil will fill this reservoir.

Reservoirs for upper and lower quill bearings are filled through holes in the quill. If the machine has stood idle for a long time, fill all reservoirs before using, to insure lubrication. Be sure that pulley grooves are in line and that belt tension is not excessive, especially when operating at high speed.

NOTE: Should the spindle pulley become loose or noisy, tighten the two bearing nuts HDP-108 below the pulley assembly. This will take up any play in the assembly, and remove vibration.

Do not take the pulley or quill assembly apart, as there is danger that you cannot put it together again properly, due to lack of special tools. Also, you may get dirt in the bearings, which will ruin them in a short time.

Drilling Holes to Depth

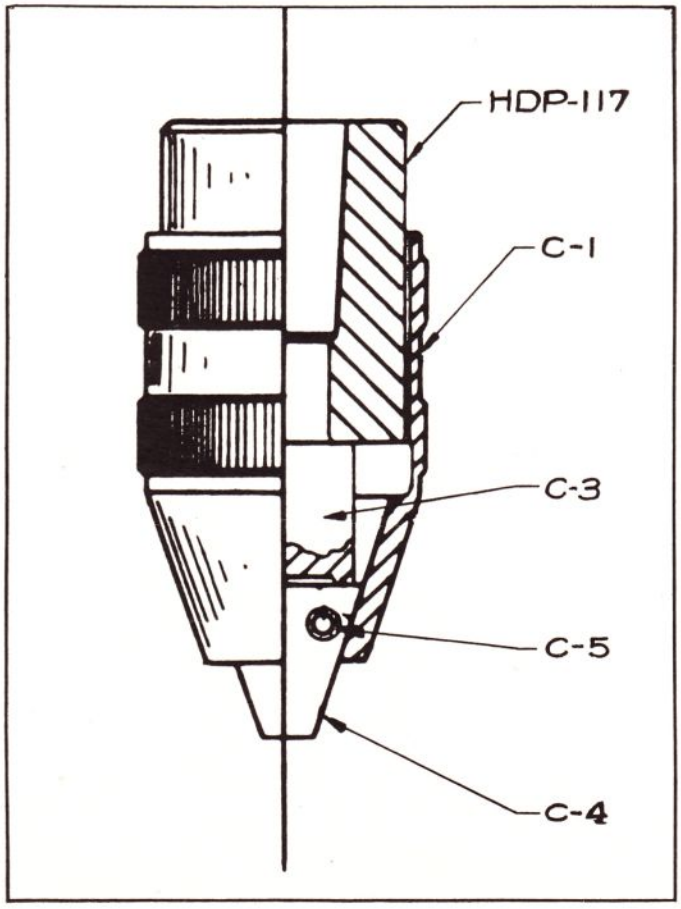
Where a number of holes are to be drilled to exactly the same depth the stop nuts DP-274 on the threaded stop rod HDP-113 are used. After the first hole has been drilled to the proper depth, the lower stop nut is set against the lug on the head through which the stop rod passes. It is then locked with the upper nut, and all subsequent holes will be drilled to exactly the same depth.

Adjusting Spindle-Return Spring

For the purpose of automatically returning the spindle upward after a hole has been drilled, a coil spring, DP-231, is enclosed in the case DP-232. This spring is properly adjusted at the factory, and this adjustment should not be disturbed unless absolutely necessary. If at any time it is necessary to readjust it, proceed as follows:

Loosen the locknuts SP-1227 only about ¼ inch; grip the cap tightly so as to prevent it from flying around, pull it out toward you so that the notches in the case clear the bosses on the head. Still holding the cap tightly, turn it clockwise to loosen the spring, or counterclockwise to tighten it. Push it on the cap while turning so that the notches will slip over the bosses as soon as they are opposite. Tighten the locknuts—not too tight—and test the strength of the spring by pulling down the feed lever. Be sure the quill-lock ball-end lever is loose while testing. When the quill is up, one-half turn of the case gives the proper tension on the spring.

If the cap should accidentally be pulled out too far so that the spring end slips out of its slit in the rim of the cap, see that the hooked end of the spring is properly set in this slit again before attempting to adjust the spring.



How to Change Spindles

One of the unique features of the No. 10 050 Drill Press is the ease with which special spindles may be used. The operation of changing the spindle is a simple one if instructions are followed closely.

To remove the spindle that is in the machine, simply move the quill downward to expose the Allen Screw SP-201 in collar HDP-107, tighten the quill lock DP-11, loosen this setscrew and pull the spindle right out from the bottom, swinging the table out of the way before doing so.

To insert the new spindle, insert it at the bottom of the quill and push it up through the collar HDP-107 and through the drive pulley. Turn the spindle while doing this so that the keys in the drive pulley will enter the keyways in the spindle. Then tighten the Allen Screw SP-201 to hold the spindle. Do not tighten the setscrew too much, or you will mar spindle and make withdrawal difficult.

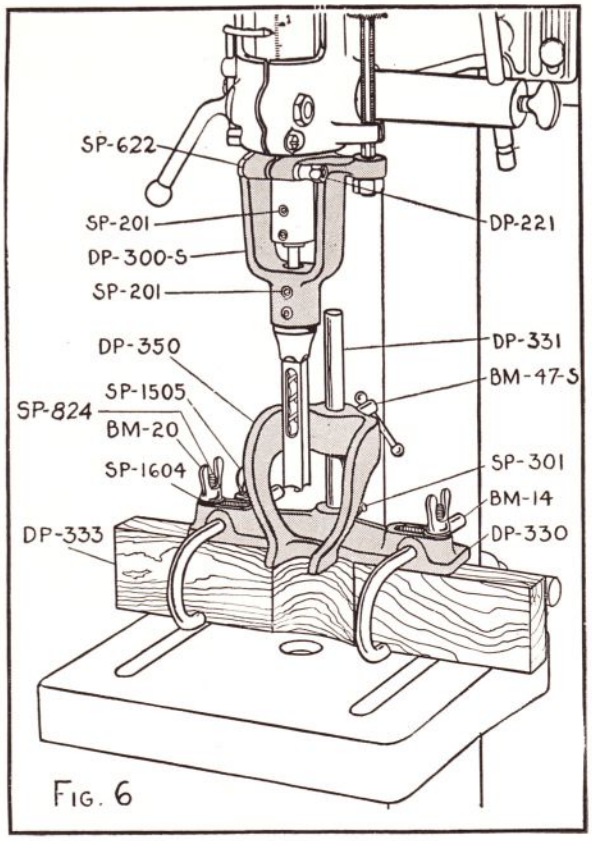


FIG. 6

Routing Work

While router bits and standard machine bits may, if absolutely necessary, be used in the Keyless and Jacobs chucks, we strongly recommend the use of spindle No. 10 801 for all work where woodworking bits with ½ inch shanks are used. This may be used for bits with ½ inch shanks only.

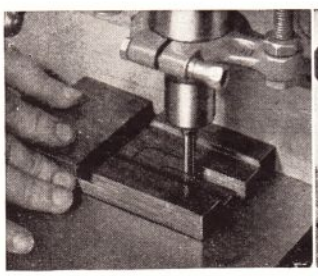
When using router bits, with a guide fence fastened on the rear of the table as shown, always feed the work from the left to right.

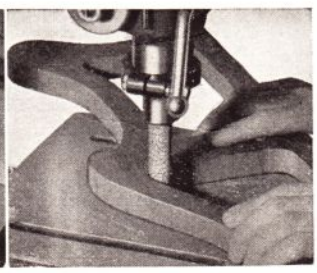
Mortising Attachment

To attach mortising attachment No. 976, insert special spindle No. 10 801 in place of the regular spindle. This spindle is the only one that can be used with this attachment. Remove the stop-rod collar DP-270 from the end of the quill by loosening the nut on its clamp stud, and removing the lower nut SP-1005 which fastens the stop rod to the collar. Now attach the hollow chisel holder DP-300-S in place of the stop collar, slipping the rod end through the hole in the lug, replacing the lower nut and tighten the chisel holder with the clamp nut DP-221. Do not clamp too tightly.

To install the chisel and bit, insert the bit through the hole in the chisel from the cutting end, place the proper bushing over the end of the bit; then insert the whole assembly through the hollow-chisel holder. Push up until the shoulder of the chisel butts against the holder, then tighten the setscrews to hold the chisel. Push the bushing into place in the spindle chuck, and adjust the bit **so that the spurs are about 1/16 inch away from the lower end of the chisel. This is very important.** Tighten the setscrews in the spindle chuck to hold the bushing and bit. The chuck setscrews should bear on the flat on the bushing.

Turn the spindle by hand to see that the bit runs clear and without undue noise in the chisel. Do not make the mistake of setting the bit spurs too close to the end of the chisel, or else they will rub, and ruin both bit and chisel in a short time. On the other hand, do not let the bit extend too far, as the chips may then clog in the chisel and break the bit.


Routing against a guide fence, using the No. 10 801 spindle with ½-inch hole.


Sanding the edges of curved work with No. 840 sanding drum in No. 10 801 spindle.

Adjusting Guide Fence

Fasten the guide fence to the table with the bolts provided for the purpose, with the wing nuts on top of the fence. See that the hold-down arms are attached as shown in Fig. 6.

If very long pieces are to be bored or mortised, a long guide fence may be made from a piece of hard, regular wood, and the hold-downs transferred to it. Two short boards may be screwed to the under side of wood of the same dimensions as this extension fence to support the ends of the work.

Operating Hollow-Chisel Mortiser

Place the stock in position on the table so the cut will start at the end of the mortise. Start the machine and pull down on the feed lever. On the first cut all four sides of the chisel are cutting and this cut will naturally take a trifle more pressure than the following cuts. On hard woods lift the chisel frequently so as to clear the chips and permit the tool to cool. Neglect of this precaution will take the temper out of bit and chisel. Move the stock sidewise a distance equal to about three-quarters of the chisel width, press it down again and repeat this operation until the mortise is completed. Maximum speed recommended for mortising, 2,400 r.p.m.

Shaping

A full line of shaper cutters, fences and other shaping attachments is available for this drill press. Cutters are of the formed type, fitting over the end of shaper spindle No. 10 802. The threaded end of this spindle will take cutters with a $\frac{5}{16}$ inch hole. Users who have cutters with this size hole on hand can use them on the No. 10 050 Drill Press.

For complete directions for shaping, ask for instruction sheet, "Shaping on the Drill Press," which accompanies each set of shaper cutters.

Caution

Do not attempt to use the Circular Saw Moulding Cutter Head or any similar tool, for shaping on the drill press. The moulding cutter is a very safe tool when used in the way for which it is designed, on the circular saw, but a very dangerous one when used on the drill press.

REPLACEMENT PARTS

IMPORTANT: To avoid possible errors, be sure to include the serial number of the machine when ordering parts for repair or replacement.

No.	Name of Part	No. Reqd.	Price Each
	HEAD PARTS		
HDP-100	Head Casting	1	$3.55
DP-11	Ball Crank	1	.25
DP-223	Special 7/16-14 Thr. Nut	1	.10
DP-279	3/8-24 x 5/8 Hex. Hd. Cap Screw	1	.10
SP-607	5/16-18 x 3/4 Hex. Hd. Cap Screw	2	.10
SP-1028	1/2-13 Hex. Nut	1	.10
SP-1704	3/8 Lockwasher 3/32" Thk.	1	.10
SP-3103	1/2-13 x 3 1/4 Hex. Hd. Cap Screw	1	.10
	TABLE PARTS		
HDP-101	Table	1	2.30
DP-11	Ball Crank	1	.25
	BASE PARTS		
DP-401	Base	1	3.60
DSS-47	Column	1	2.40
SP-206	5/16-18 x 5/16 Allen Screw	2	.10
	PINION PARTS		
DDL-123	Index Pin Spring	1	.10
DP-232-S	Clock Spring and Case	1	.40
DP-233	Pinion Handle	1	.25
DP-234-S	Pinion Shaft with Ball and Spring	1	1.75
DP-282	3/8-24 x 5/8 Thumbscrew	1	.10
SP-28	1/4 Dia. Steel Ball	1	.10
SP-1227	1/2-20 Hex Nut	2	.10
	QUILL PARTS		
HDP-102	Quill	1	1.70
HDP-105	Brg. Retainer Spring	1	.10
HDP-107	Bearing Collar	1	.45
HDP-114	Oilless Bushing	2	.10
DSS-77	Fiber Washer	1	.10
6000	Nice Bearing	1	.65
SP-201	5/16-18 x 5/16 Allen Set Screw	1	.10
	SPINDLE AND CHUCK PARTS		
HDP-104	Spindle Collar	1	.40
HDP-115	Spindle	1	.80
HDP-117-S	Complete Keyless Chuck Assembly	1	2.25
C-1	Chuck Sleeve	1	.85
C-3	Plunger	1	.15
C-4	Jaw	3	.45
C-5	Spring	3	.10
DP-259	Spindle Nut	1	.10
SBS-18	Spindle Hog Ring	1	.10
SP-201	5/16-18 x 5/16 Allen Set Screw	2	.10
#10 800	1/2" Keyless Chuck and Spindle	1	
#10 801	Spindle with 1/2" Hole for Router Bits, etc.	1	
#10 802	Spindle for Shaper Cutters with 5/16" Hole	1	
#10 805	1/2" Jacobs Chuck and Spindle. (Cap. No. 60 to 1/2)	1	
	PULLEY PARTS		
HDP-103	Pulley Sleeve	1	1.10
HDP-108	Hex. Nut	4	.10
HDP-109	Fiber Washer	2	.10
HDP-110	Bearing Sleeve	1	$ .55
HDP-112	Hi-Speed Pulley	1	1.90
HDP-116	Oilless Bushing	1	.25
HDP-122	Fiber Washer	1	.10
SP-201	5/16-18 x 5/16 Allen Set Screw	2	.10
#985	Motor Pulley 1/2" Bore	1	
	GUARD PARTS		
CBL-431	Nameplate	1	.10
DP-256	Hi-Speed Guard	1	1.20
SP-608	5/16-18 x 7/8 Hex. Hd. Cap Screw	3	.10
SP-1703	5/16 Lock Washer	3	.10
SP-2252	#2 x 3/16 Drive Screw	2	.10
	STOP ROD PARTS		
HDP-113	Stop Rod	1	.30
DP-221	Spec. Hex. Nut	1	.10
DP-270	Stop Collar	1	.45
DP-274	Stop Nut	2	.10
DP-318	Washer	1	.10
SP-622	1/4-20 x 2 Hex. Hd. Cap Screw	1	.10
SP-1005	3/8-16 Hex. Nut	1	.10
	MOTOR BRACKET PARTS		
DP-290-S	Motor Bracket Assembly with DP-291, SP-1751, SBS-19	1	1.20
DP-291	Sliding Stud	2	.15
SBS-19	5/8-18 Spec. Nut	2	.10
SP-808	5/16-18 x 1 Carriage Bolt	4	.10
SP-1030	5/16-18 Hex. Nut	4	.10
SP-1604	5/16 Washer	4	.10
SP-1751	5/8 Shakeproof Washer	2	.10
	MISCELLANEOUS		
#194	5/16 Allen Wrench	1	
#1526	Box Wrench	1	
#340	V-Belt Cir.: In. 34 5/8", Out. 36 1/2"	1	
	MORTISING ATTACHMENT PARTS		
BM-14	Curved Hold Down	2	.15
BM-20	Special Wing Nut	2	.10
BM-46	Washer	2	.10
BM-47-S	Lock Bolt	1	.15
DP-221	Special 1/4-20 Hex. Nut	1	.10
DP-300	Chisel Holder Casting only	1	2.00
DP-300-S	Chisel Holder Casting complete with Clamp Screw Nut and Set Screws	1	2.40
DP-330	Hold Down Casting only	1	1.00
DP-331	Hold Down Support Rod	1	.25
DP-333	Mortising Fence only	1	.50
DP-350	Hold Down Arm only	1	.75
SP-201	5/16-18 x 5/16 Allen Set Screw	4	.10
SP-301	1/4-20 x 1/2 Sq. Hd. Set Screw	1	.10
SP-622	1/4-20 x 2 Hex. Hd. Cap Screw	1	.10
SP-824	5/16 x 4 1/4 Carriage Bolt	2	.10
SP-1505	1/4-20 x 1/4 Thumb Screw	2	.10
SP-1604	5/16 Washer	2	.10

Prices in this list apply only to parts ordered for repair and replacement. They cannot be used for computing allowance values when a machine is ordered "less" certain parts. Ask for quotations on such special machines.

THE DELTA MANUFACTURING CO., DELTA MILWAUKEE **600-634 E. Vienna Ave., Milwaukee, Wis.**

Form I.S. 153 Printed in the United States of America P.M.—1594

We have been experiencing an increasing demand for coolant equipment for multi-spindle drill presses, and have supplied a number on special order. We have now standardized this equipment and can supply it for any drill press in the line, to enable you to offer an additional service to your customers.

Note the following information carefully:

Equipment consists of flexible tubing, nozzles and brackets for drill-press columns, all piping and fittings from nozzles to coolant pump and tank, with brackets for header pipe. Nozzle brackets attach to columns without removal of drill-press head, and pipe-header brackets clamp to oil trough rim without necessity for drilling or tapping. Piping, tubing, etc., ready for installation, but shipped knocked down, as it is not practical to ship it assembled on the machine. Pump and tank can be supplied, but will be shipped from manufacturer's stock.

Prices of piping, nozzles, brackets, etc., knocked down, but ready for installation, are as follows:

	Sell. Price per Spindle	Net Price per Spindle
For all models, 14" or 17" drill presses, single or multi-spindle	$ 15.00	$ 13.50

Above prices are for nozzles, piping, brackets, etc., only, and do not include pump and tank.

Blueprints will be furnished with each set of piping giving details of installation.

Pump and Tank

The pump furnished when required is a centrifugal type "gusher" pump, one model with capacity 15 gal. per minute at 5-ft. head or a model with 25 gal. per minute at 5-ft. head, with a 1725 R.P.M. motor. Prices on pumps will be quoted on request.

The pump is mounted integral with an 11 gal. tank, so that no piping is required from pump to tank. The pump can be supplied in the following voltages and frequencies only:

Volts	Phase	Frequencies		Available
110	1	60	50	25
220	1	60	50	25
380	1	--	50	--
400	1	--	50	--
440	1	60	50	--
220	3	60	50	25
220/440	3	60	50	--
220/380	3	--	50	--
380	3	--	50	--
400	3	--	50	--
440	3	60	50	25
550	3	60	50	25
220	2	60	50	--
220/440	2	60	--	--
440	2	60	50	--
550	2	60	50	--
115	D.C.			
230	D.C.			

When Ordering, or Requesting Quotations

Specify catalog number of drill press for which piping equipment, pump and tank are required. On a multi-spindle sectional table machine, give number of spindles. Specify current, phase, voltage and frequency of pump motor.

The attached illustration shows a typical installation on a four-spindle drill press. It will be noted that this equipment provides a neat, workmanlike, efficient job, which can be installed by your customer with the minimum of effort, and which will also save you time and trouble where you are required to furnish the machine complete with coolant equipment.

Sharpening Machine Spur Bits

The design of Delta-Milwaukee Machine Spur Bits is such that they will give long and satisfactory service, if kept in proper condition. The margin or raised section of the edge of the twist is of the same width as the stock in the outlining spurs, and this means that the bit can be filed back more than half its length, as there is always sufficient stock for the formation of new spurs. This is not possible on spur bits which have a narrow margin, as after the original spurs are worn away, most of the life of the tool is gone.

Two files, a 4-inch half-round and a 6-inch knife pattern, No. 0 cut, are required to properly sharpen sizes 1/4 inch to 3/4 inch. The half-round file should be used for filing through the throat of the bit, and the knife file should be used for the top of the cutting edges and the insides of the outlining spurs. A new tool should be used as a guide. The filer should be careful not to change the pitch of the top of the cutting edges...to file only on the insides of the spurs...and to keep the point in exact center. For general boring requirements, the spurs should be 1/32 to 1/16 inch in height, and the point approximately 1/8 inch in length.

Sharpening Hollow Chisels

For sharpening hollow chisels we recommend the filing method.

To do the work properly, 4-inch half round and square files, No. 0 or No. 1 cut, are necessary. The best way to go about this is to use a new tool as a guide, being certain to maintain the curved cutting edges and to preserve the inner double angle of the edges. The half-round file can be used for shaping the curved edge, and the square file for forming the double inner angle and for grooving the four corners.

This is a much more suitable method for sharpening tools of this kind than is the use of a cone grinding stone. While the cone grinding stone operation is much faster it leaves a thin single-angle edge which does not have sufficient body of metal to give proper service for any length of time.

Sharpening Hollow Chisel Bits

The hollow chisel bit does most of the work in mortising and for best results this tool should always be in first class condition. Cutting edges must be sharp and of proper shape. To service tools of this kind only the hand filing method should be used. Hollow chisel bits can best be sharpened with half-round or taper warding files, four or five inches long, either No. 0 or No. 1 cut.

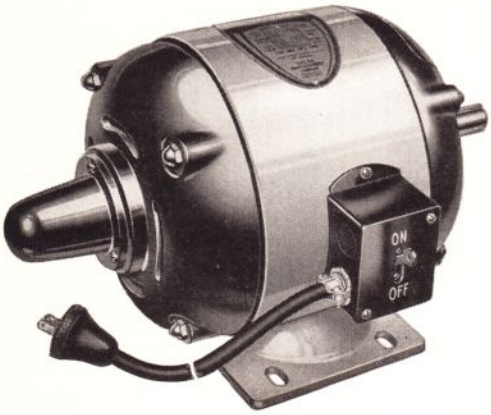
The cutting edges should be sharpened with the flat side of either the half round or the taper warding file, stroking through the throat. The spurs should be filed on the inside only with the taper warding pattern, their height should be equal and they should be evenly lined up with the cutting edges. A new tool should always be used as a guide.

A hollow chisel bit, when new, will

overcut the hollow chisel to a certain extent. When the bit head has worn down in size so that it is not doing its full share of the work, it should be discarded. An undersized bit will shorten the life of the hollow chisel which is by far the more expensive of the two tools.

DELTA MILWAUKEE

Specifications of General Purpose Motors



These Powerful Motors Guarantee Dependable Service

These powerful motors are designed and built in accordance with the best practice in motor construction. Casings are of heavy welded steel, accurately balanced rotor insures smooth operation, Sealed-for-life ball bearings require no lubrication, unusually generous frame design gives adequate mechanical and electrical clearance with oversize air passages, field winding are of highest grade enamel wire insulated and tested, powerful fan, oversize conduit box. These are but a few of the outstanding features which make these motors deliver dependable, long service.

EQUIPMENT FURNISHED

Split Phase Motors

Equipped with heavy duty rubber covered cord and soft rubber plug together with double pole switch. ⅓ H.P. motors have Sealed-for-life New Departure Ball Bearings which need no lubrication. Double shafts.

Capacitor and 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.

Direct Current Motors

Equipped with heavy duty rubber covered cord and soft rubber plug together with double pole switch. Have double shafts—Sealed-for-life New Departure Ball Bearings which need no lubrication.

Three Phase 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. ½ H. P. 3 phase motors in 6 inch frame cannot be used on 17 inch drill press.

For motor recommendations see listing of individual machines. Only ⅓ or ½ H.P. motors in 6 inch frame should be specified for use on 14 inch drill presses.

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.

Cat. No.	Replaces No.	Type	H.P.	Cur.	Voltage	Cycles	R.P.M.	Shaft Inches	Sh. Wt. Lbs.
6 INCH FRAME MOTORS									
60-310	.....	Split Phase	⅓	AC	110	60	1725	½	31
*60-325	.....	Split Phase	⅓	AC	110	50	1425	½	31
*60-350	.....	Split Phase	⅓	AC	110	25	1425	½	31
62-110	.....	Capacitor	⅓	AC	110/220	60	1725	½	34
*62-120	.....	Capacitor	⅓	AC	110/220	50	1425	½	34
*62-140	.....	Capacitor	⅓	AC	110/220	25	1425	½	34
66-110	.....	3 Phase	⅓	AC	220	50/60	1425/1725	½	31
66-320	.....	3 Phase	½	AC	220/440	50/60	1425/1725	½	33
*66-362	.....	3 Phase	½	AC	220/440	25	1425	½	33
*66-321	.....	3 Phase	½	AC	220/440	50/60	2850/3450	½	33
*68-110	.....	Dir. Cur.	⅓	DC	115	.....	1725	½	30
*68-120	.....	Dir. Cur.	⅓	DC	230	.....	1725	½	30
*68-310	.....	Dir. Cur.	½	DC	115	.....	3450	½	38
*68-320	.....	Dir. Cur.	½	DC	230	.....	3450	½	38
*62-210	.....	Capacitor	½	AC	110	60	3450	⅝	42
*62-215	.....	Capacitor	½	AC	110	50	2850	⅝	42
62-610	.....	Capacitor	½	AC	110/220	60	1725	½	42
*62-620	.....	Capacitor	½	AC	110/220	50	1425	½	42
8½ INCH FRAME MOTORS									
†82-710	†62-710	Capacitor	½	AC	110/220	60	1725	¾	68
†82-910	†62-910	Capacitor	¾	AC	110/220	60	1725	¾	80
†83-110	†63-110	Capacitor	1	AC	110/220	60	1725	¾	85
84-510	64-510	Rep. Ind.	½	AC	110/220	60	1725	¾	68
*84-520	*64-520	Rep. Ind.	½	AC	110/220	50	1425	¾	68
*84-540	*64-540	Rep. Ind.	½	AC	110/220	25	1425	¾	68
84-710	64-710	Rep. Ind.	¾	AC	110/220	60	1725	¾	80
*84-720	*64-720	Rep. Ind.	¾	AC	110/220	50	1425	¾	80
*84-712	*64-712	Rep. Ind.	¾	AC	110/220	60	1140	¾	80
84-910	64-910	Rep. Ind.	1	AC	110/220	60	1725	¾	85
*84-920	*64-920	Rep. Ind.	1	AC	110/220	50	1425	¾	85
*84-940	*64-940	Rep. Ind.	1	AC	110/220	25	1425	¾	85
86-520	66-520	3 Phase	½	AC	220/440	50/60	1425/1725	¾	60
*86-562	*66-562	3 Phase	½	AC	220/440	25	1425	¾	60
*86-522	*66-522	3 Phase	½	AC	220/440	50/60	960/1140	¾	60
86-720	66-720	3 Phase	¾	AC	220/440	50/60	1425/1725	¾	80
*86-762	*66-762	3 Phase	¾	AC	220/440	25	1425	¾	80
86-920	66-920	3 Phase	1	AC	220/440	50/60	1425/1725	¾	85
*86-960	*66-960	3 Phase	1	AC	220/440	25	1425	¾	85
86-921	66-921	3 Phase	1	AC	220/440	50/60	2850/3450	¾	66
*86-922	*66-922	3 Phase	1	AC	220/440	50/60	960/1140	¾	86
*87-120	*67-120	3 Phase	1½	AC	220/440	50/60	1425/1725	¾	80
*88-510	*68-510	Dir. Cur.	½	DC	115	.....	1725	¾	70
*88-520	*68-520	Dir. Cur.	½	DC	230	.....	1725	¾	70
*88-511	*68-511	Dir. Cur.	½	DC	115	.....	1140	¾	70
*88-521	*68-521	Dir. Cur.	½	DC	230	.....	1140	¾	70
*88-710	*68-710	Dir. Cur.	¾	DC	115	.....	1725	¾	82
*88-720	*68-720	Dir. Cur.	¾	DC	230	.....	1725	¾	82
*88-910	*68-910	Dir. Cur.	1	DC	115	.....	1725	¾	90
*88-920	*68-920	Dir. Cur.	1	DC	230	.....	1725	¾	90
*88-912	*68-912	Dir. Cur.	1	DC	115	.....	1140	¾	90
*88-922	*68-922	Dir. Cur.	1	DC	230	.....	1140	¾	90

†These motors are the equivalent of Nos. 84-510, 84-710 and 84-910. We reserve the right to substitute capacitor motors for Rep-Ind. motors, or vice-versa, on orders for these motors.

NO. 225 NEMA FRAME MOTORS

97-320	67-320	3 Phase	3	AC	220/440	50/60	1425/1725	1	133
*▲97-420	*67-420	3 Phase	3	AC	220/440	50/60	1425/1725	1	133
*97-360	*67-360	3 Phase	3	AC	220/440	25	1425	1	133

*Motors not carried in stock. Delivery requires 8 to 12 weeks after receipt of order. Motors not listed are special, requiring 10 to 16 weeks.
▲97-420 fully enclosed motor.

Specifications of Special Purpose Motors

DELTA MILWAUKEE

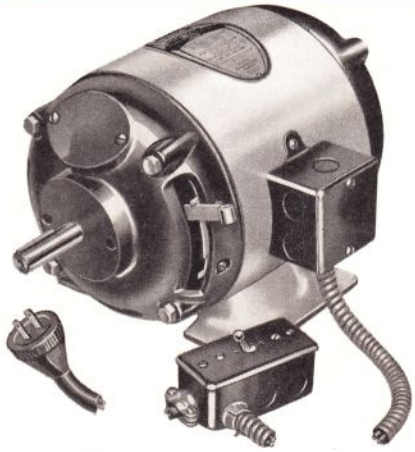
SHAPER MOTORS

Catalog Number	Replaces No.	Type	HP.	Cur.	Volt.	Cy.	R.P.M.	Shaft Inches	Cat. No. of Switches and Mounting Pts. to Use: On and Off Switch	Mtg. Pts.	Reversing Switch	Sh. Wt. Lbs.
8½" Frame Motors for Shaper												
85-080	65-080	Rep. Ind.	1	AC	110/220	60	3450	¾	●	....	Furnished	85
*85-085	*65-085	Rep. Ind.	1	AC	110/220	50	2850	¾	●	....		85
86-921	66-921	3 Phase	1	AC	220/440	50/60	2850/3450	¾	1320	▲	1325	85
87-121	67-121	3 Phase	1½	AC	220/440	50/60	2850/3450	¾	1320	1327	1325	85
*89-111	*69-111	Dir. Cir.	1	DC	115	...	3450	¾	1320	1327	1325	85
*89-121	*69-121	Dir. Cir.	1	DC	230	...	3450	¾	1320	1327	1325	85

●Order No. 132 Switch for No. 1340 Shaper

▲Order No. 1327 Mtg. parts for No. 1340 Shaper.

Important! Be sure to order the proper "On and Off" Switch and its mounting parts as listed. If Reversing Action of Shaper is Required, order the proper Reversing Switch as listed.



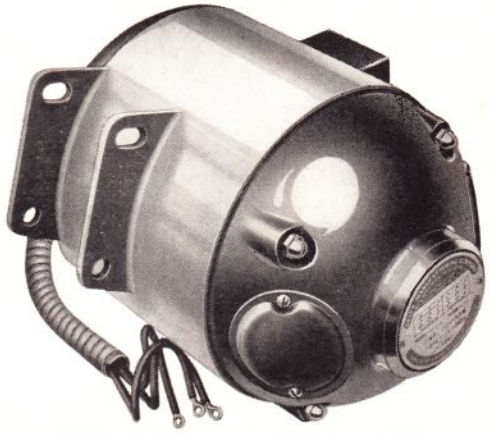
No. 85-080 Shaper Motor

TILTING ARBOR SAW MOTORS

Catalog Number	Replaces No.	Type	H.P.	Cur.	Volt.	Cy.	R.P.M.	Shaft Inches	Cat. No. of Switches and Mounting Pts. to Use: On and Off Switch.	Mtg. Pts.	Sh. Wt. Lbs.
85-010	65-010	Rep. Ind.	1	AC	110/220	60	1725	¾	●	....	85
*85-015	*65-015	Rep. Ind.	1	AC	110/220	50	1425	¾	●	.....	85
87-010	67-010	3 Phase	1	AC	220/440	50/60	1425/1725	¾	1320	1459	70
*87-060	*67-060	3 Phase	1	AC	220/440	25	1425	¾	1320	1459	70
87-210	67-210	3 Phase	1½	AC	220/440	50/60	1425/1725	¾	1320	1459	80
*89-010	*69-010	Dir. Cur.	1	DC	115	...	1725	¾	●	....	85
*89-011	*69-011	Dir. Cur.	1	DC	230	...	1725	¾	●	....	85

●On and Off Switch supplied with Motor.

*These Motors are special and delivery requires 10 to 16 weeks after receipt of order.



3-Phase Tilting Arbor Saw Motor

THESE SWITCHES AND ACCESSORIES PROVIDE PERFECT MOTOR CONTROL — SIMPLE TO INSTALL

132

SWITCH FOR SINGLE PHASE MOTORS

This control unit consists of a toggle switch mounted in a heavy case which is complete with mounting screws, lead in wire and clamp but without cover because the units it is used on, such as the Unisaw, Jointer or cast iron base or the No. 1340 Shaper are equipped with the cover plate which is merely removed from the stand, the No. 132 switch installed—the plate being then screwed upon the switch. Lugs permit switch to be locked in position by means of padlock.

No. 132 Switch box and motor lead wire without cover plate for all single phase motors. Sh. Wt. 1½ lbs. Code: SPESB

1115

TOGGLE SWITCH FOR SINGLE PHASE MOTORS

This toggle switch made by a nationally known switch manufacturer is for use on single phase motors only. Breaks both sides of the line.

No. 1115 Toggle Sw. Sh. Wt. ½ lb. Code: SWIMO

1116

1325

REVERSING SWITCHES

These reversing switches are chiefly used on the shapers where the spindle must rotate in both directions.

No. 1116 Reversing Switch with connected 4 wire cord for any std. split phase motor. Sh. Wt. 2 lbs. Code: SWREV .....

No. 1325 Reversing drum switch (rated 2 H.P. 440 V. max.) for 3 phase or D.C. motors. Sh. Wt. 4 lbs. Code: SWITA .....

1320

3-PHASE MANUAL STARTERS

These 3 phase manual starters are made by a well known switch manufacturer and are fully Underwriter's approved. Are compact, simple, rugged. Provide accurate overload protection. Have silver alloy contacts—double break. White interior with ample wiring space.

No. 1320 3 phase manual starter for 1½ H.P. A.C. motors. Sh. Wt. 6 lbs. Code Word SWIPH .....

No. 1328 3 phase manual starter for 3 H.P. A.C. motors. Sh. Wt. 8 lbs. Code Word SWITC .....

MAGNETIC STARTER

This magnetic starter is of the approved type. It has the start and stop button in the cover as well as the reset button.

No. 1329 Three Phase Across-the-Line Magnetic Starter with overload and underload protection, rating 2 H. P. 220 V. 60 Cy. only

No. 1321 Same as No. 1329 but for 440 V. 60 cy. only, SWITF

On the above starters, specify H.P. of motor and voltage and frequency of line.

1117

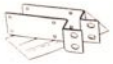
1119

MOTOR CORDS

These two-wire motor cords are heavy and well insulated with new flexible rubber and fully approved. Are 8 feet long. Supplied with soft rubber plug.

No. 1117 Cord and plug for ¼ and ⅓ H.P. Single Phase Motor. Sh. Wt. 1 lb. Code: SCORD

No. 1119 Cord and Plug for ½, ¾ and 1 H.P. Single Phase Motors with Terminal Loops. Ship. Wt. 1¼ lbs. Code: SCORF .....



MOUNTING PARTS

No. 1322 mounting brackets together with screws are used to mount the No. 1320 manual starter on all drill presses (except the No. 620) and all the steel stands.

No. 1322 Mtg. Parts. Sh. Wt. 2 lbs. Code Word: SWIDR

1327

No. 1327 is used to mount the No. 1320 starter on the No. 1340 Shaper or the No. 1320 starter with the No. 1325 reversing switch on the No. 1340 Shaper, complete with screws, etc.

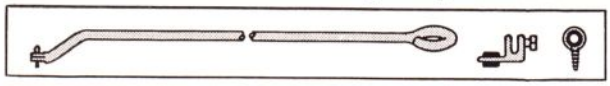
No. 1327 Mounting Plate. Code: SWITB

No. 1459 plate is used to mount the No. 1320 starter on the No. 1450 Unisaw.

No. 1459 Code Word: TILTK .....

1459

Switch Rods Provide Finger-Tip Control



No.	For Use on These Units:	Wt.	Code	Price
1330	878, 950, 1175	1½	RODNA	
1331	All 11" and 14" Drill Presses	1½	RODNB	
1332	All 17" Drill Presses	1½	RODNC	
1333	292 and 660	1½	RODND	
1334	368, 714, 777, 881, 892, 1164, 1350, 1402, 1432, 1465, and all our Benches with Wood Tops	1½	RODNE	