

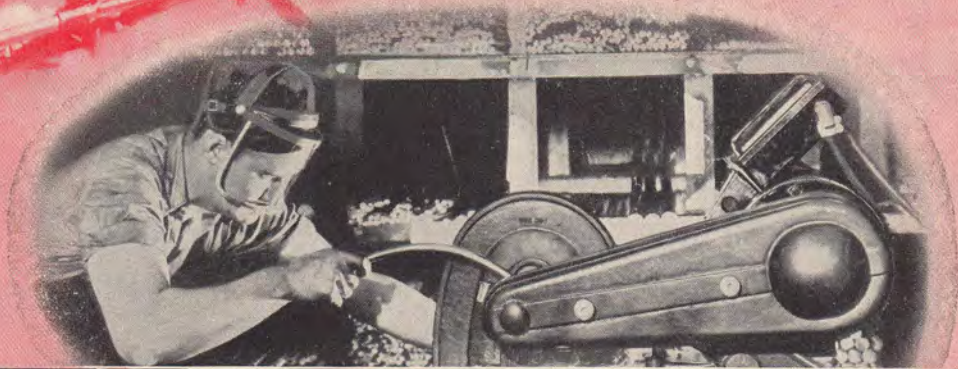
DELTA MILWAUKEE

INDUSTRIAL
CATALOG 13
December
1944

Distributed by
STAR MACHINERY COMPANY
INDUSTRIAL EQUIPMENT DIVISION
1741 1st AVE. SOUTH * SEATTLE 1, WASH.

PRODUCTION MACHINE TOOLS

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



ARMAMENT



AIRCRAFT



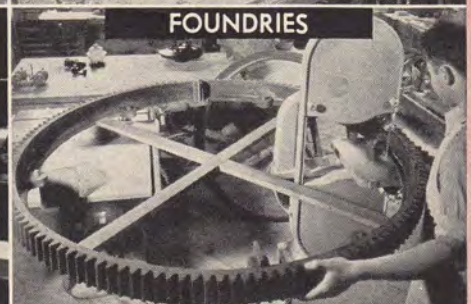
SHIP BUILDING



MACHINE TOOLS



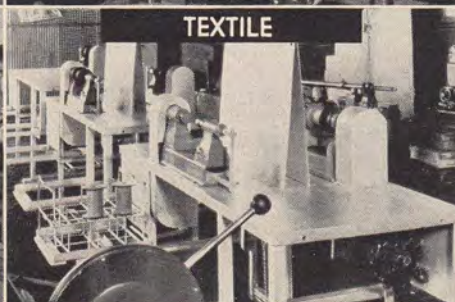
MACHINERY



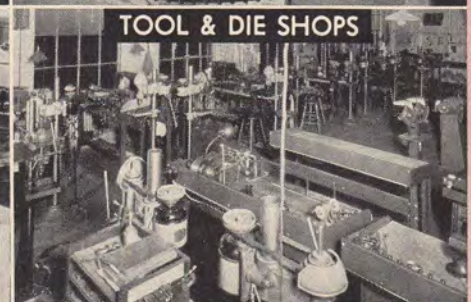
FOUNDRIES



SCHOOLS



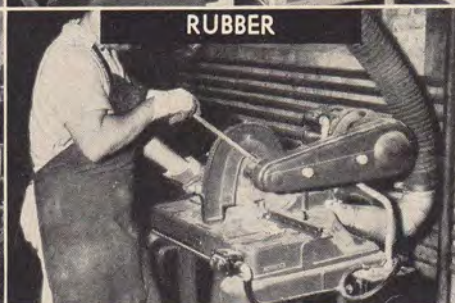
TEXTILE



TOOL & DIE SHOPS



FARM EQUIPMENT



RUBBER



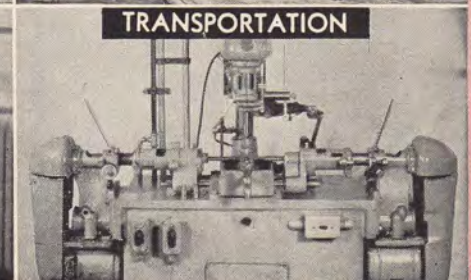
CONSTRUCTION



WOOD WORKING



COMMUNICATION



TRANSPORTATION

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.

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 1, 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

17-inch 5,6,7,8,9
Power Feed 8,9
Multi-Spindle 6,7,8,9,12,13
14-inch 10,11,12,13
Access., Pts. 14,15,16,17,18

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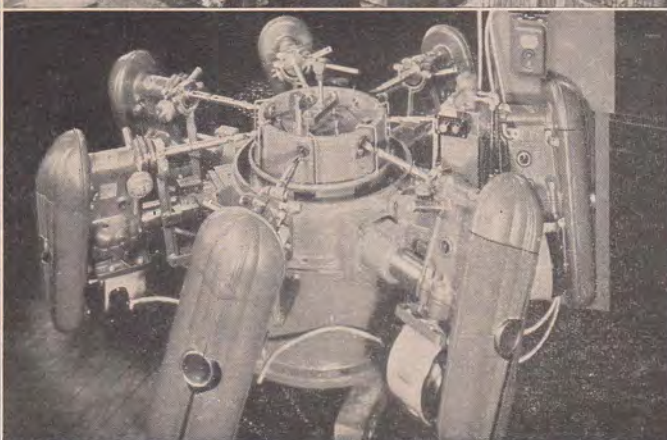
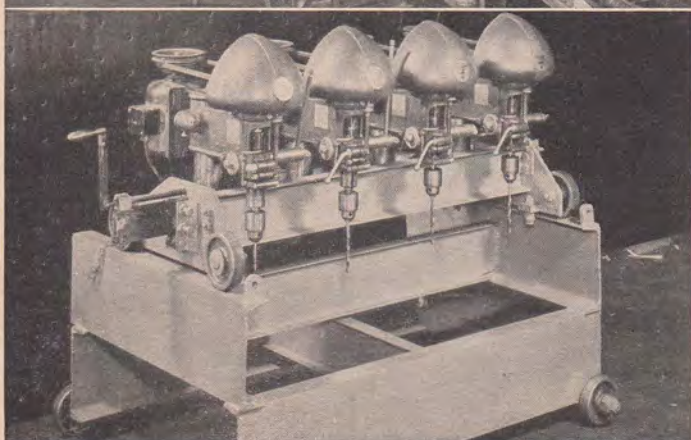
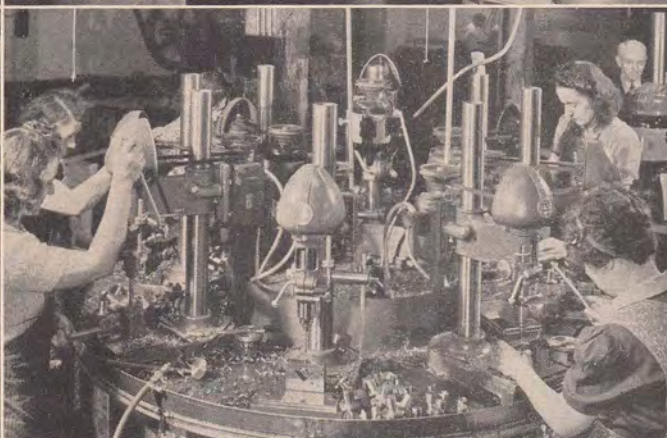
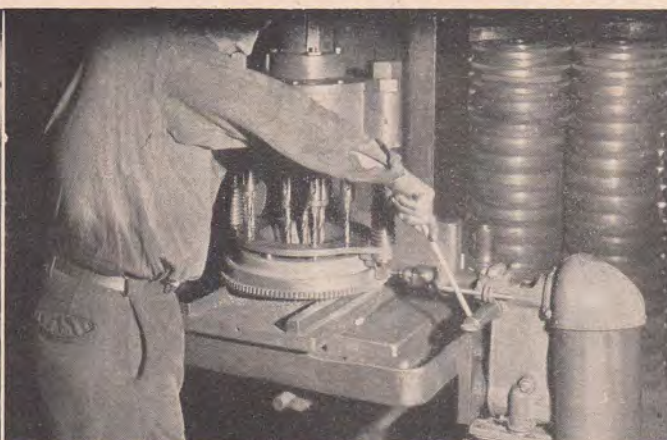
MISC. ACCESSORIES

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Belts, Wrenches 50
Paint, Rust-Go, Stop-Rust 50
Pulleys 50
Abrasive Sleeves 51

50

DRILL PRESSES

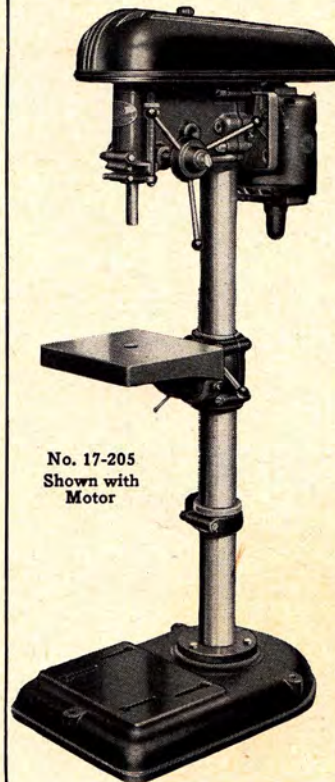
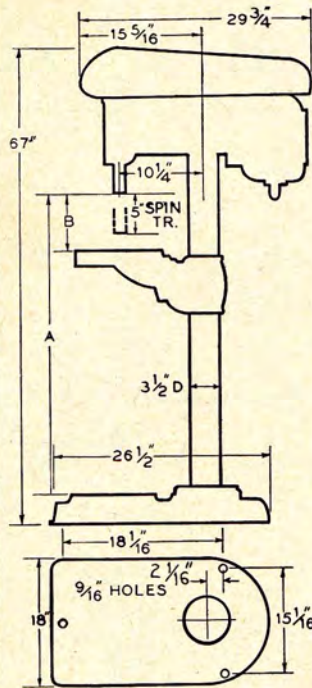
BOTH AS STANDARD UNITS AND SPECIAL PURPOSE MACHINES
HELP INCREASE OUTPUT IN THESE BUSY PRODUCTION SHOPS



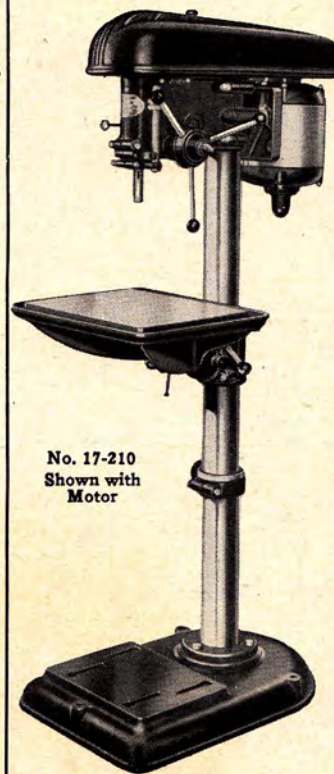
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17-inch Floor Type, Single Spindle Drill Presses

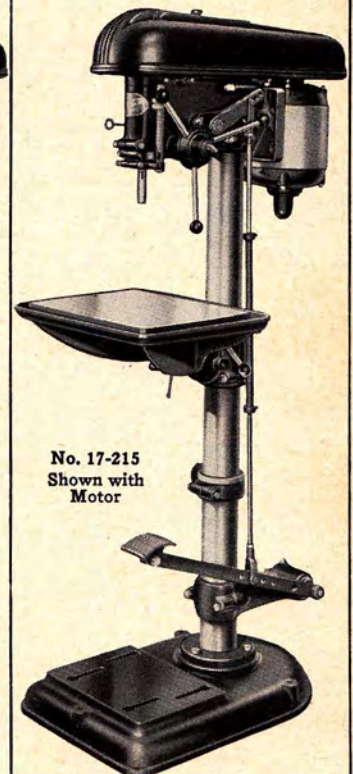
DELTA
MILWAUKEE



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	
	Slo-Speed	High Speed	Slo-Speed	High Speed	Slo-Speed	High Speed
Model						
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"	12 1/2" x 17"	12 1/2" x 17"	12 1/2" x 17"	12 1/2" x 17"
Spin. to Table (B) Max.	33 1/8"	33 1/8"	32 1/8"	32 1/8"	21 1/8"	21 1/8"
Spin. to Base (A) Max.	44 15/16"	44 15/16"	43 15/16"	43 15/16"	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"	12 1/2" x 17"	12 1/2" x 17"	12 1/2" x 17"	12 1/2" x 17"
Spin. to Table (B) Max.	33 3/4"	33 3/4"	32 3/4"	32 3/4"	22"	22"
Spin. to Base (A) Max.	45 1/8"	45 1/8"	44 1/8"	44 1/8"	43 1/8"	43 1/8"
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: 3/4" 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 4250 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 1/4 H.P., R.I. A.C. 110/220 V. 60 Cy.
86 520 1/4 H.P., 3 Ph. A.C. 220/440 V. 50/60 Cy.

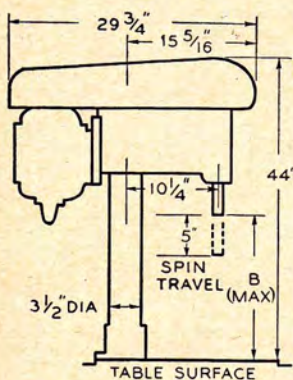
Medium Duty: 84 710 3/4 H.P., R.I. A.C. 110/220 V. 60 Cy.
86 720 3/4 H.P., 3 Ph. A.C. 220/440 V. 50/60 Cy.

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 20 and 21 for Motors and Switch Parts.
For Prices See Attached Price List.

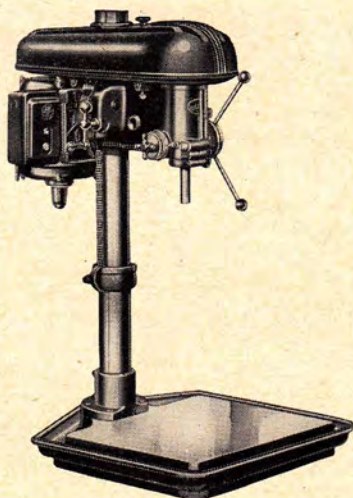
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17-inch 1, 2 and 4 Spindle Drill Presses. One Piece Tables



Single Spindle Machines are Bench Type only.

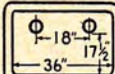
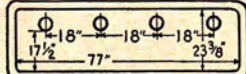
Two and Four Spindle Floor Type only. Working surface is 32" from floor.



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"	17 1/2" x 36"	17 1/2" x 36"	17 1/2" x 77"	17 1/2" x 77"
Spin. to Table (B) Max.	26"	26"	26"	26"	26"	26"
Spindle Spacing	18"	18"	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"	17 1/2" x 36"	17 1/2" x 36"	17 1/2" x 77"	17 1/2" x 77"
Spin. to Table (B) Max.	26 1/2"	26 1/2"	26 1/2"	26 1/2"	26 1/2"	26 1/2"
Spindle Spacing	18"	18"	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 1 1/4" oil trough all around tapped at rear for 1/4" drain.

Capacity: 3/4" 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 4250 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 1/2 H.P., R.I. A.C. 110/220 V. 60 Cy.

86-520 1/2 H.P., 3 Ph. 220/440 V. 50/60 Cy.

Medium Duty: 84-710 3/4 H.P., R.I. A.C. 110/220 V. 60 Cy.

86-720 3/4 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.

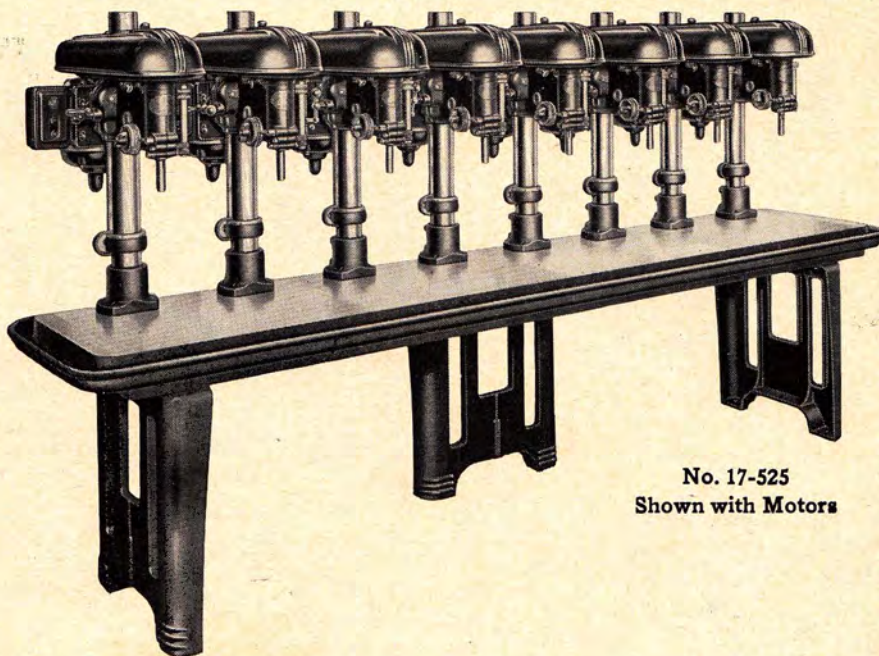
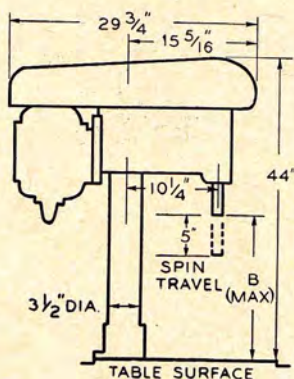
86-920 1 H.P., 3 Ph. A.C. 220/440 V. 50/60 Cy.

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

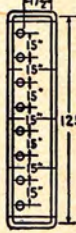
See Pages 20 to 21 for Motors and Switch Parts.

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....	17 1/2" x 65"	17 1/2" x 65"	17 1/2" x 65"	17 1/2" x 65"	17 1/2" x 95"	17 1/2" x 95"	17 1/2" x 95"	17 1/2" x 95"	17 1/2" x 125"	17 1/2" x 125"
Spin. to Table (B) Max....	26"	26"	26"	26"	26"	26"	26"	26"	26"	26"
Spindle Spacing.....	18"	18"	15"	15"	18"	15"	15"	15"	15"	15"
Ship. Wt. Lbs.	1570	1570	1750	1750	2370	2370	2540	2540	3250	3250
Code Word.....	TRISA	TRISE	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....	17 1/2" x 65"	17 1/2" x 65"	17 1/2" x 65"	17 1/2" x 65"	17 1/2" x 95"	17 1/2" x 95"	17 1/2" x 95"	17 1/2" x 95"	17 1/2" x 125"	17 1/2" x 125"
Spin. to Table (B) Max....	26 1/2"	26 1/2"	26 1/2"	26 1/2"	26 1/2"	26 1/2"	26 1/2"	26 1/2"	26 1/2"	26 1/2"
Spindle Spacing.....	18"	18"	15"	15"	18"	15"	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 also 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 1 1/2" 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: 3/4" 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 4250 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:

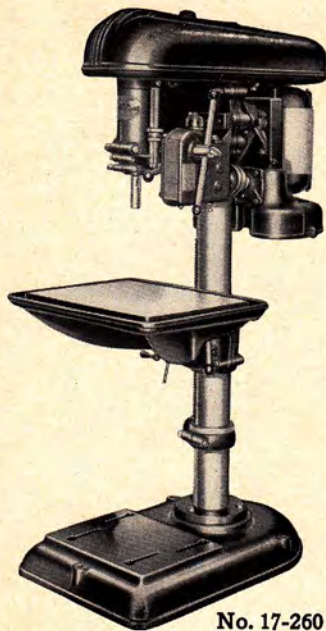
Light Duty: 84 510 1/2 H.P., R.I. A.C. 110/220 V. 60 Cy.
86 520 1/2 H.P., 3 Ph. A.C. 220/440 V. 50/60 Cy.
Medium Duty: 84 710 3/4 H.P., R.I. A.C. 110/220 V. 60 Cy.
86 720 3/4 H.P., 3 Ph. A.C. 220/440 V. 50/60 Cy.
Heavy Duty: 84 910 1 H.P., R.I. A.C. 110/220 V. 60 Cy.
86 920 1 H.P., 3 Ph. A.C. 220/440 V. 50/60 Cy.

For 3 phase motors use No. 1320 or No. 1329 3 phase starters with No. 1322 mounting parts. Use No. 1332 switch rod for single phase motors. See Pages 20 to 21 for Motors and Switch Parts.

For Prices See Attached Price List.

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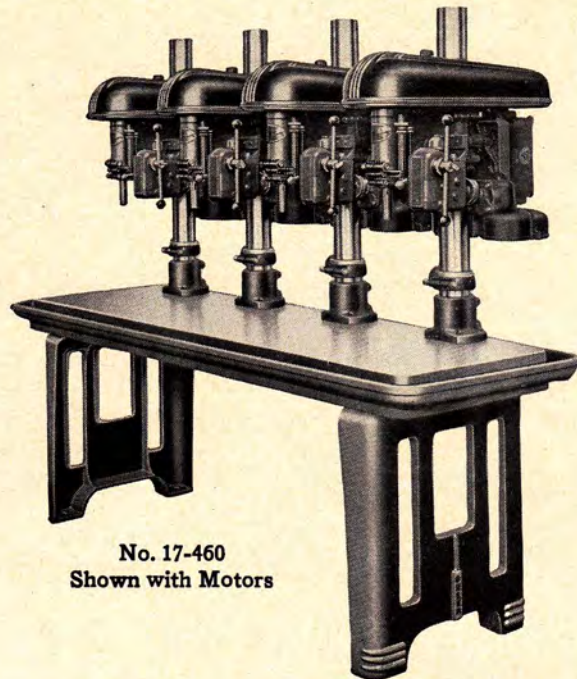
17-inch 1, 2 and 4 Spindle Power Feed Drill Presses One Piece Tables



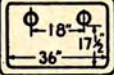
No. 17-260
Shown with Motor



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..	12 1/2" x 17"	12 1/2" x 17"	16" x 18"	16" x 18"	17 1/2" x 36"	17 1/2" x 36"	17 1/2" x 77"	17 1/2" x 77"
Spin. to Base Max.....	43 1/8"	43 1/8"	23 1/8"	23 1/8"	23 1/8"	23 1/8"	23 1/8"	23 1/8"
Spin. to Table Max.....	32 1/8"	32 1/8"	23 1/8"	23 1/8"	18"	18"	18"	18"
Spindle Spacing.....	Table	Table	Head	Head	Head	Head	Head	Head
Raising Mechanism.....	435	435	450	450	960	960	1600	1600
Ship. Wt. Lbs.....	DRIQB	DRIQF	DRIQI	DRIQK	DRIQM	DRIQQ	DRIQO	DRIQS
Code Word.....								
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..	12 1/2" x 17"	12 1/2" x 17"	16" x 18"	16" x 18"	17 1/2" x 36"	17 1/2" x 36"	17 1/2" x 77"	17 1/2" x 77"
Spin. to Base Max.....	44 1/8"	44 1/8"	23 1/8"	23 1/8"	23 1/8"	23 1/8"	23 1/8"	23 1/8"
Spin. to Table Max.....	32 1/4"	32 1/4"	23 1/8"	23 1/8"	18"	18"	18"	18"
Spindle Spacing.....	Table	Table	Head	Head	Head	Head	Head	Head
Raising Mechanism.....	435	435	450	450	960	960	1600	1600
Ship. Wt. Lbs.....	DRIQD	DRIQH	DRIQJ	DRIQL	DRIQN	DRIQR	DRIQP	DRIQT
Code Word.....								
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 1 1/2" oil trough all around and are tapped for 1/2" drain.

Machines include: Streamlined belt guard. Built-in depth gauge. Depth scale on spindle return spring housing. Quill has 4 1/2 inch stroke or travel. High speed models have speeds of 700, 1150, 1750, 2750 and 4250 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 3/4 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 20 to 21 for Motors. For Prices See Attached Price List.

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



Sectional Tables

SLOW SPEED DRILL PRESS			
WITH SMALL PULLEY ON LOWER MOTOR SHAFT			
R.P.M.	SPINDLE	FEED PER REV. OF SPINDLE	
2240	.0027	.0020	.0013
1450	.0041	.0030	.0020
935	.0064	.0044	.0031
600	.0100	.0073	.0048
385	.0156	.0114	.0075
WITH SMALL PULLEY ON WORM SHAFT			
R.P.M.	SPINDLE	FEED PER REV. OF SPINDLE	
2240	.0025	.0034	.0046
1450	.0038	.0052	.0072
935	.0059	.0081	.0104
600	.0092	.0126	.0176
385	.0146	.0197	.0270
HIGH-SPEED DRILL PRESS			
WITH SMALL PULLEY ON LOWER MOTOR SHAFT			
R.P.M.	SPINDLE	FEED PER REV. OF SPINDLE	
4250	.0013	.0009	.0006
2750	.0022	.0016	.0010
1750	.0034	.0025	.0016
1150	.0040	.0038	.0019
700	.0066	.0063	.0041
WITH SMALL PULLEY ON WORM SHAFT			
R.P.M.	SPINDLE	FEED PER REV. OF SPINDLE	
4250	.0012	.0016	.0022
2750	.0020	.0027	.0038
1750	.0031	.0043	.0059
1150	.0037	.0051	.0069
700	.0079	.0108	.0148

FEED CHART

Shows rate of feed per revolution of spindle on both slow 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.



No. 17-570
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.	17-555	17-556	17-560	17-561	17-565	17-566	17-570	17-571	17-575	17-576
Table Working Surface	17 1/2" x 65"	17 1/2" x 65"	17 1/2" x 95"	17 1/2" x 95"	17 1/2" x 95"	17 1/2" x 95"	17 1/2" x 125"	17 1/2" x 125"	17 1/2" x 155"	17 1/2" x 155"
Spin. to Table Max.	23 1/4"	23 1/4"	23 1/4"	23 1/4"	23 1/4"	23 1/4"	23 1/4"	23 1/4"	23 1/4"	23 1/4"
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	TRISH	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	17 1/2" x 65"	17 1/2" x 65"	17 1/2" x 95"	17 1/2" x 95"	17 1/2" x 95"	17 1/2" x 95"	17 1/2" x 125"	17 1/2" x 125"	17 1/2" x 155"	17 1/2" x 155"
Spin. to Table Max.	23 1/4"	23 1/4"	23 1/4"	23 1/4"	23 1/4"	23 1/4"	23 1/4"	23 1/4"	23 1/4"	23 1/4"
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	17-708	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 also we show here the most popular production types of machines, many other units are available. The sections have a 1 1/2" 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: 3/4" in cast iron.

Machines include: Head raising mechanisms. Streamlined belt guard. Built-in depth gauge. Depth scale on spindle return spring housing. Quill has 4 1/2 inch stroke or travel.

High speed models have speeds of 700, 1150, 1750, 2750 and 4250 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 3/4 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.

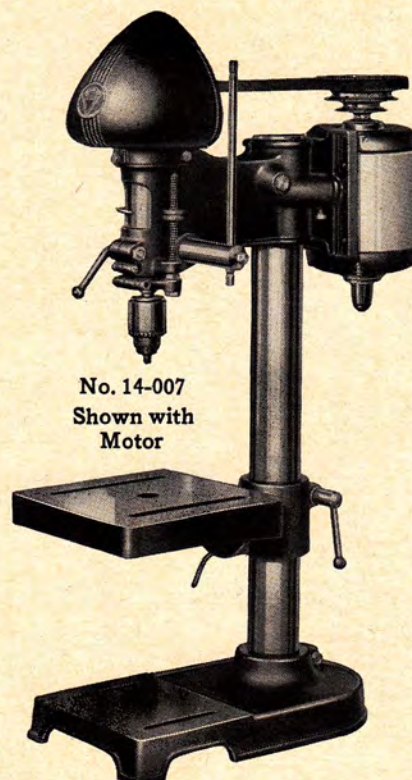
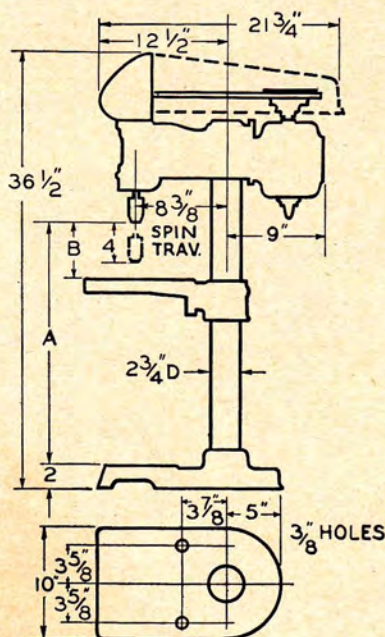
For 3 phase motors use No. 1320 3 phase manual starter with No. 1322 mounting parts. Use No. 1332 switch rod for single phase motors.

See Pages 20 to 21 for Motors.

For Prices See Attached Price List.

THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.

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 $\frac{3}{4}$ " 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 1/4"	15 1/4"
Spin. to Base (A) Max.....	18 3/4"	18 3/4"
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: $\frac{3}{4}$ " 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 $\frac{1}{2}$ ".

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 $\frac{1}{3}$ H.P., Cap. A.C. 110/220 V. 60 Cy.
66 110 $\frac{1}{3}$ H.P., 3 Ph. A.C. 220/440 V. 50/60 Cy.

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

Heavy Duty: 66 320 $\frac{1}{2}$ 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 20 to 21 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.



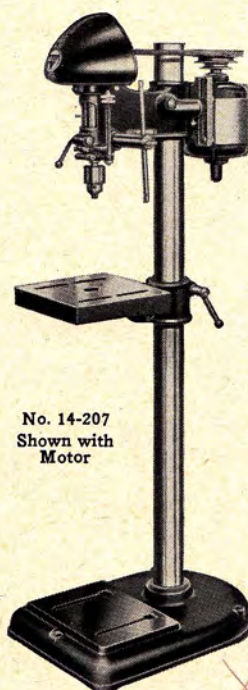
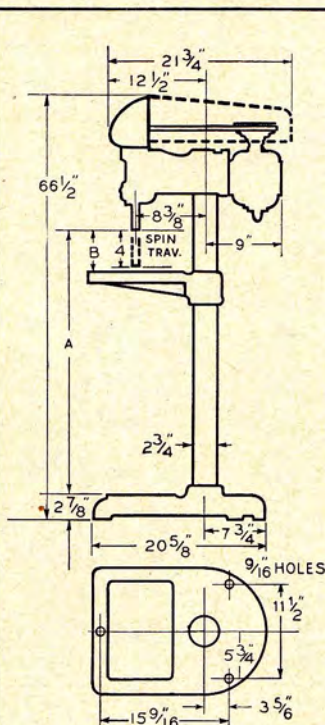
972 973 974 977 991

Cat. No	Description of Spindle	Wt. Lbs.	Code Word
972	Jacobs Chuck—Cap. No. 60— $\frac{1}{2}$ "	3 1/4	NESPB
973	No. 1 Morse Taper	2	NESPC
974	With $\frac{1}{2}$ " Hole for Router Bits	2 1/4	NESPD
977	For Shaper Cutters with 5/16" Hole	2	NESPF
991	For Cup Wheels	2	NESPG

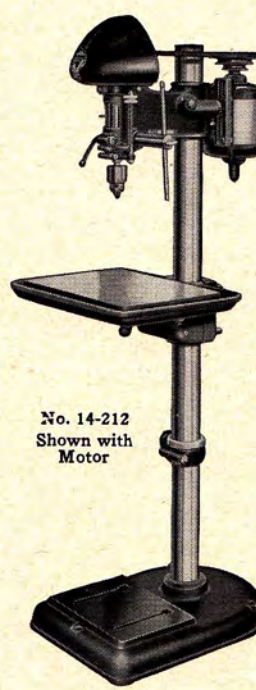
For Prices see Attached Price List.

14-inch Floor Type Single Spindle Drill Presses

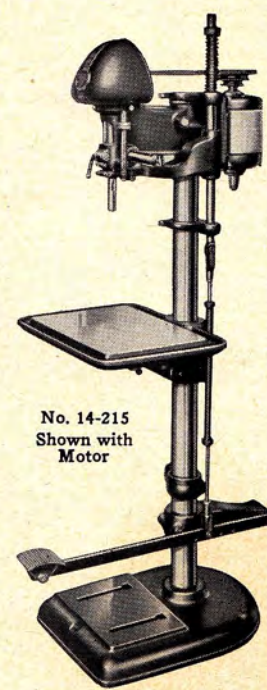
DELTA
MILWAUKEE



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.	41 1/4"	41 1/4"	40 1/4"	40 1/4"	33 1/4"	33 1/4"
Spin. to Base (A) Max.	46 3/4"	46 3/4"	46 3/4"	46 3/4"	44 3/4"	44 3/4"
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.	46 1/2"	46 1/2"	46 1/2"	46 1/2"	44 1/2"	44 1/2"
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 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 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 1/2 H.P., Cap. A.C. 110/220 V. 60 Cy.
66 110 1/2 H.P., 3 Ph. A.C. 200 V. 50/60 Cy.

Medium Duty: 62 110 1/2 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.

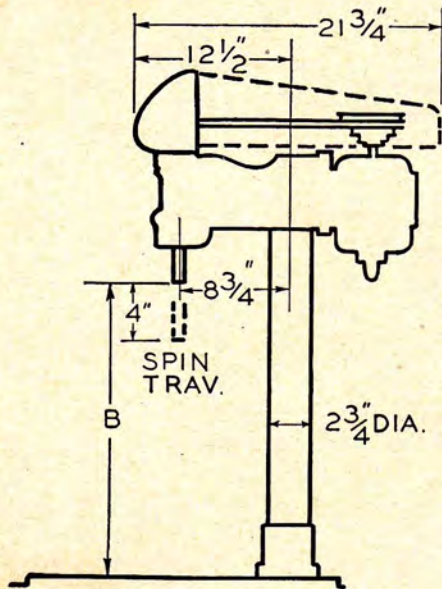
Use No. 1331 Rod for All Single Phase Motors.

See Pages 20 and 21 for Motors and Switch Parts.

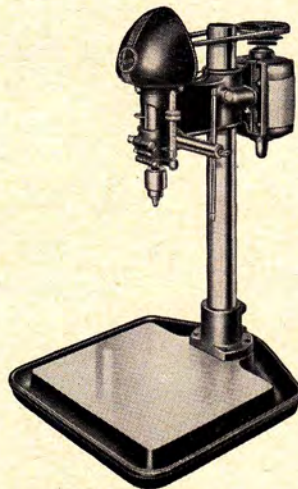
For Prices See Attached Price List.

THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.

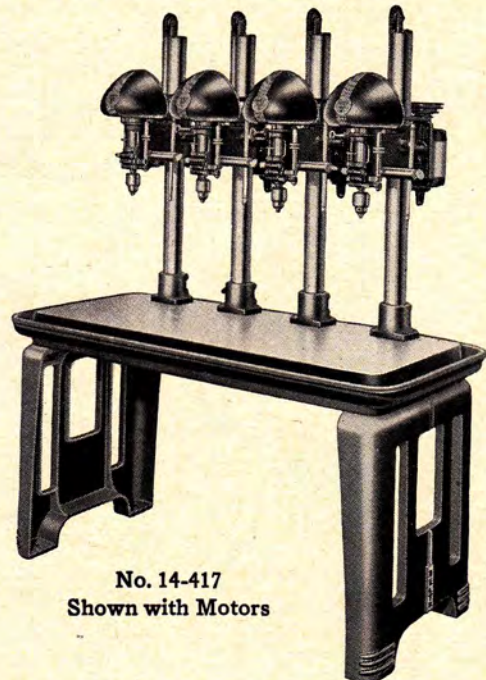
14-inch Bench and Floor Type, 1, 2, 3 and 4 Spindle Drill Presses



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"	14 1/2" x 28"	14 1/2" x 28"	16 1/2" x 51"	16 1/2" x 51"	16 1/2" x 51"	16 1/2" x 51"
Spin. to Table (B) Max..	19 1/8"	19 1/8"	19 1/8"	19 1/8"	19 1/8"	19 1/8"	19 1/8"	19 1/8"
Spindle Spacing.....	12"	12"	12"	12"	15"	15"	11 1/2"	11 1/2"
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"	14 1/2" x 28"	14 1/2" x 28"	16 1/2" x 51"	16 1/2" x 51"	16 1/2" x 51"	16 1/2" x 51"
Spin. to Table (B) Max..	19"	19"	19"	19"	19"	19"	19"	19"
Spindle Spacing.....	12"	12"	12"	12"	15"	15"	11 1/2"	11 1/2"
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 1 1/2" oil trough all around and tapped for 1/4" drain.

Capacity: 3/4" in cast iron.

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

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 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 1/3 H.P., Cap. A.C. 110/220 V. 60 Cy.
66 110 1/3 H.P., 3 Ph. A.C. 220 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.

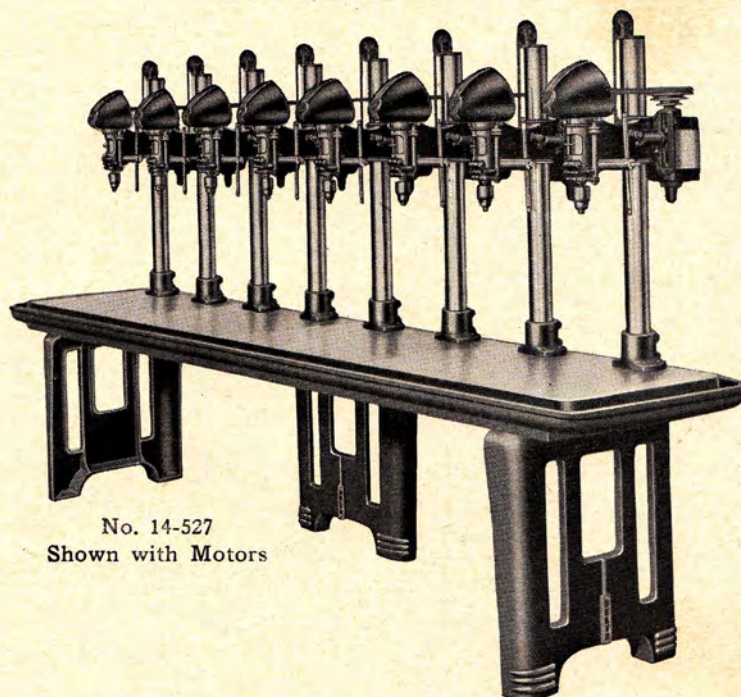
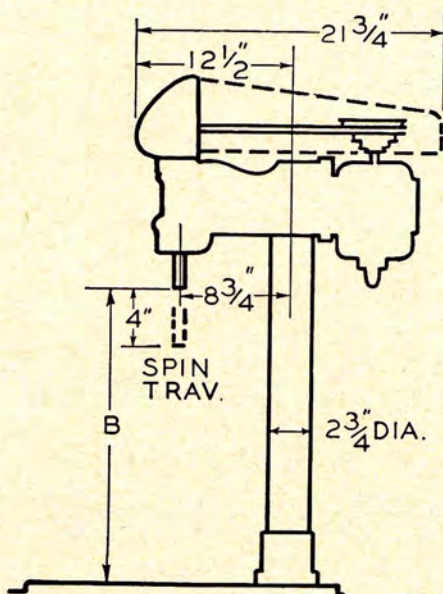
Heavy Duty: 66 320 1/2 H.P., 3 Ph. A.C. 220/440 V. 50/60 Cy.

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 20 to 21 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 1 1/2" 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: 3/8" in cast iron.

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

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 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 1/2 H.P., Cap. A.C. 110/220 V. 60 Cy.
66 110 1/2 H.P., 3 Ph. A.C. 220 V. 50/60 Cy.

Medium Duty: 62 110 1/2 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.

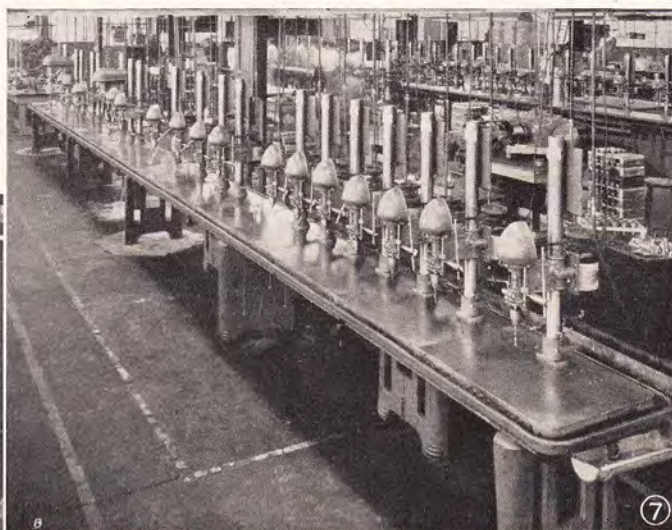
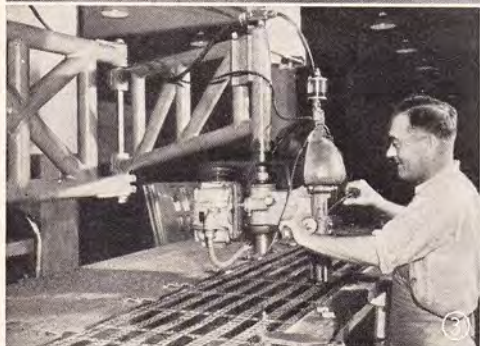
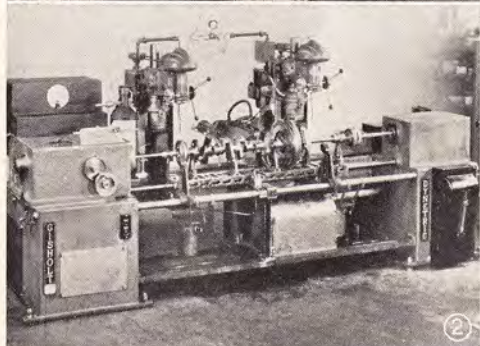
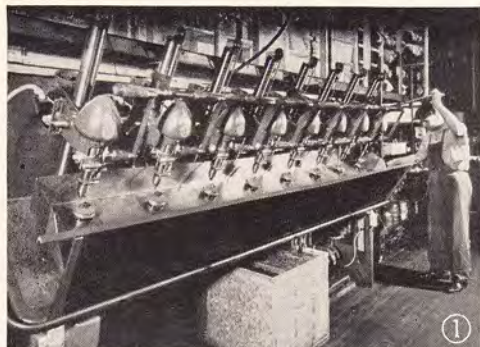
Use No. 1331 Rod for All Single Phase Motors.

See Pages 20 to 21 for Motors and Switch Parts.

For Prices See Attached Price List.

THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.

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.

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 23 3/8" 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.

CATALOG LISTING OF SECTIONS AND LEGS

No. 1504—End section. 72 lbs. Code DRIAD

No. 1505—Center section. 365 lbs. Code DRIAP

IMPORTANT. Give these specifications with your order: (1) number of drill press heads needed, (2) if 14" or 17" heads, (3) spacing between heads, (4) if table is to be completely assembled, (5) if table should be drilled and tapped for the drill press mounting flange.

No. 1506—One only cast iron leg. 110 lbs. Code DRIAQ

No. 1399—Cast iron legs. 1 pair. 175 lbs. Code PRODK

(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.

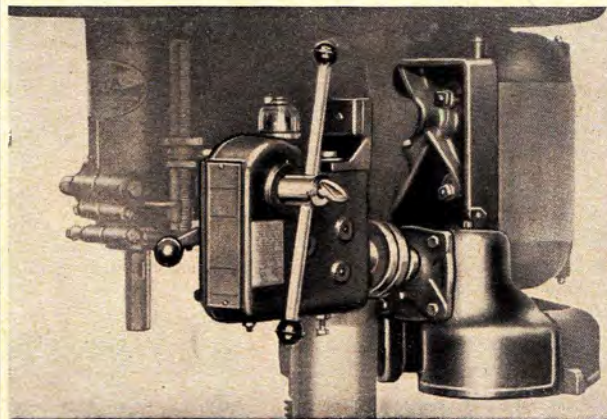
(7) "A Drill Press a Block Long" (right). Thirty-three spindles on one set-up—overall length is 72 feet. An exceptionally fine set-up utilizing the sectional table described above.

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. 17-862—Set of Change-over parts for changing Hi-Speed Drill Press to Slo-Speed, consisting of No. 520 Belt, No. 1311 Motor Pulley and No. DP-644 Spindle Pulley, 17 lbs. Code CHANS
- No. 501 —V-Belt for 17" High-Speed Drill Press, ¾ lb. Code MORUV
- No. 520 —V-Belt for 17" Slo-Speed Drill Press, ¾ lb. Code BELTC
- No. 1311—5-Step Motor Pulley for Slo-Speed, ¾" Bore, 3 lbs. PULOV
- 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. 26½" Out. 28¼", For use with NEMA frame motors up to 16½" overall length, ½ lb. Code BELTZ
- No. 30 103—V-Belt for Power Feed, Cir. In. 26½" Out. 28", For use with Delta Motors, ½ lb. Code BELTI



Power Feed Attachment for 17" Drill Presses

ANY of our standard 17" drill presses can be easily and readily changed into Power Feed Drill Presses by the addition of the Power Feed Unit listed here. No special machining, drilling or fitting need be done. The Unit is perfectly interchangeable and is attached to your present drill press with but little work. It is complete, consisting of gear box, motor pulley, belt guard, gear drive, handle assembly, motor plate, quill pinion shaft, stop rod, V-belt and oiler as illustrated.

Convert your present 17" drill presses to Power Feed Units today. The low cost of the unit will soon pay for itself many times over in increased production.

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

(FOR PRICES SEE ATTACHED PRICE LIST)

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. 1269-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. 14-817—Set of Change-over parts for changing Slo-Speed Drill Press to Hi-Speed, consisting of No. 387 Belt and No. DP-265-S Spindle Pulley, 13 lbs. Code CHANG
- 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 18½" 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.

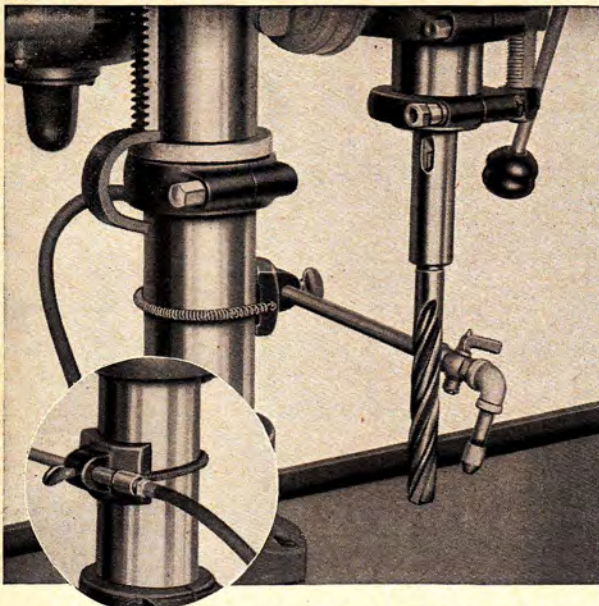
- No. 1029—Multi-Speed Attachment for 14" Slo-Speed Drill Presses including column casting, cone pulley and two belts, speeds of 185 R.P.M. to 1950 R.P.M. Code MULTK

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

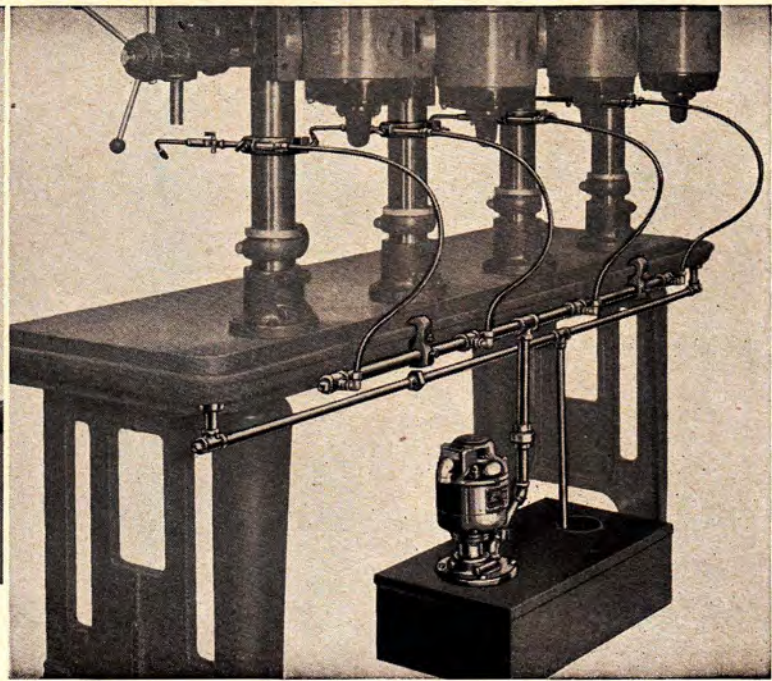
- No. 272 —High Speed Belt for Multi-Speed, ½ lb. Code BELTR

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

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	11 1/2"	1 Piece	31	COLAC
14-808	14"	5	12"	Sectional	44	COLAD
14-809	14"	8	11 1/2"	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. 1/4 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. 1/2 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.

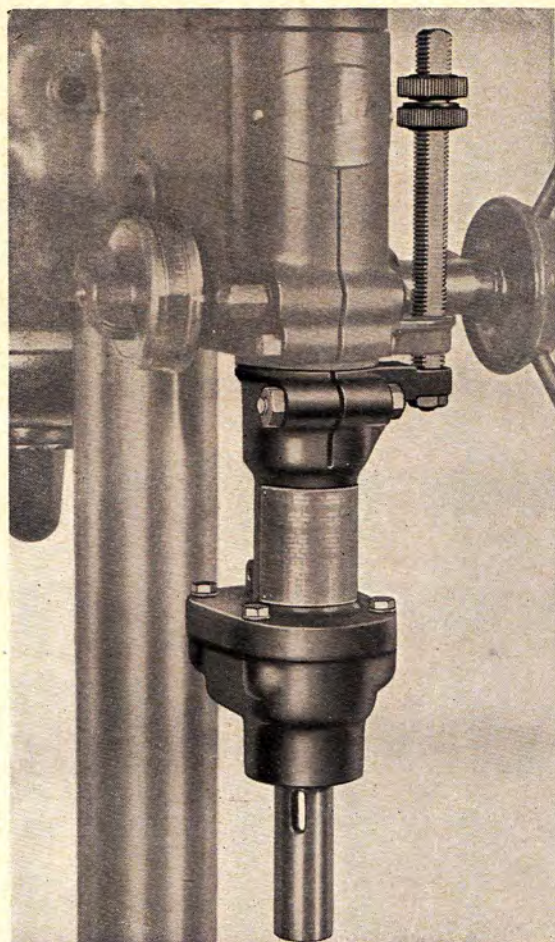
FOR PRICES SEE ATTACHED PRICE LIST

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



Catalog Listing and Specifications

No. 17-860—Slo-Speed Attachment for 17-inch drill Presses having a No. 2 Morse Taper Spindle. Ratio of $4\frac{1}{2}$ to 1. Sh. Wt. 20 lbs. Code SLOSP

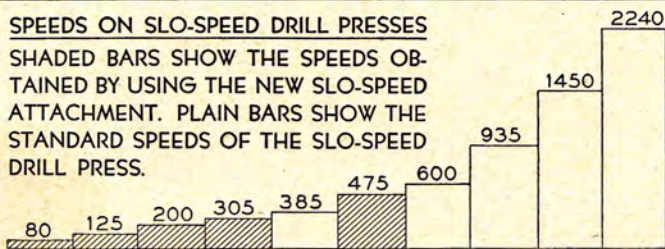
(For Prices See Attached Price List)

Wide Range of Speeds Available

The standard speed of the drill press is reduced $4\frac{1}{2}$ 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.

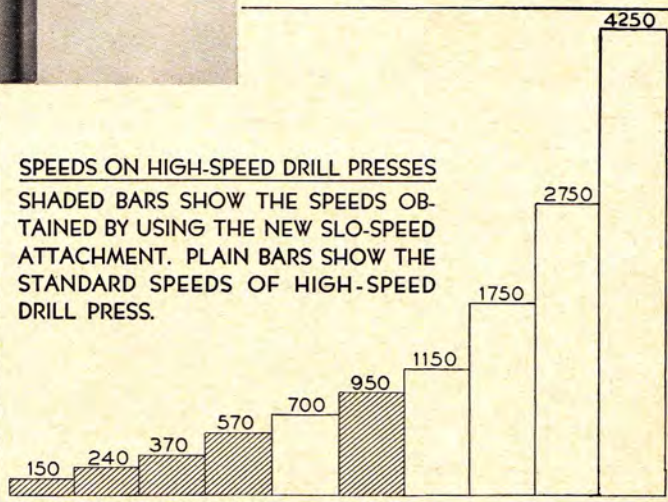
SPEEDS ON SLO-SPEED DRILL PRESSES

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.



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

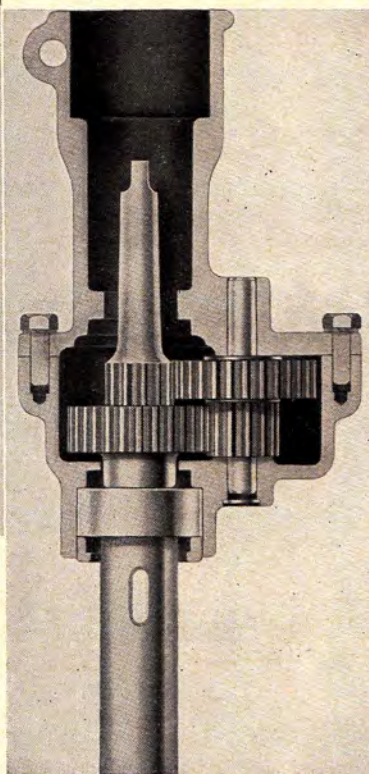
means that the same drill press can be used for its regular speeds or the slow speed. Each machine thus has 10 different speeds which will meet the requirements in all shops. The ratio of input to output is: Input $4\frac{1}{2}$ R.P.M., Output 1 R.P.M.

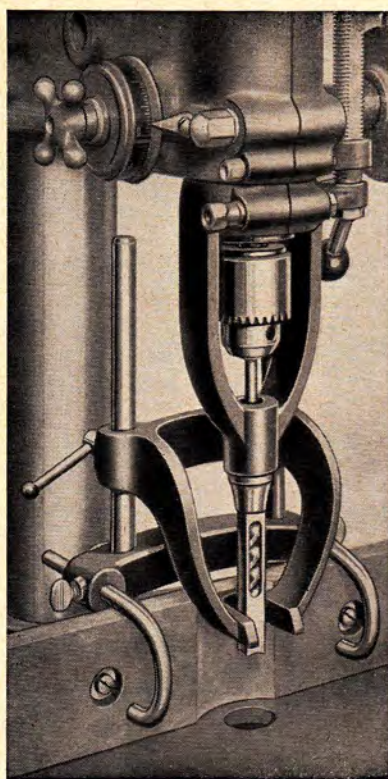
Good Design and Construction

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 $7\frac{1}{8}$ inches. The attachment has a No. 2 Morse taper spindle socket.





For 17" Drill Presses

Capacity under hold-down, 6 1/2" thick. Capacity from ends of hooked rods to fence, 2 1/2" 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

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 11" and 14" Drill Presses

Capacity under hold-down, 4 3/4" thick. Capacity from ends of hooked rods to fence, 2 3/4" 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, 1/2". Shank of chisel, 3/4" x 1 1/2". Weight per set, 1 1/4 lbs.

Cat. No.	Size	Depth of Mortise	Code
504	1/4" x 1/4"	1 7/8"	CHISA
505	3/8" x 3/8"	1 3/8"	CHISB
506	1/2" x 1/2"	2 3/4"	CHISC
508	3/4" x 3/4"	3 1/4"	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	1/4"	3/8"	BITOA
515	3/8"	1/2"	BITOB
516	1/2"	3/4"	BITOC
518	3/4"	1 1/8"	BITOE

Bushings



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

Cat. No.	Size Hole	Code
524	3/8"	BUSHA
525	1/2"	BUSB
526	3/4"	BUSHC

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

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 6 1/4" long overall, and have 1/2" shanks to fit standard 1/2" hole machine chucks, also mortiser spindle and No. 974 drill-press spindle.

No.	Size	Shank	Code
804	1/4"	1/2"	SPURA
805	3/8"	3/8"	SPURB
806	1/2"	1/2"	SPURC
807	3/4"	3/4"	SPURD
808	1"	1"	SPURE
809	1 1/4"	1 1/4"	SPURF
810	1 1/2"	1 1/2"	SPURG
812	2"	2"	SPURK
818	Comp.	Set	SPURL

Router Bits—4 oz. Each



For routing, carving, round-end mortises and grooving work. Shank diameter is 1/2".

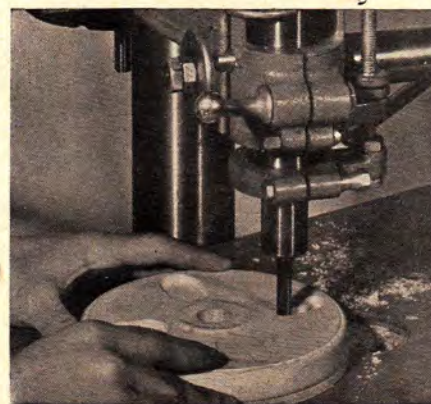
No.	Size	Shank	Code
474	1/4"	1/2" x 1 1/2"	ROUTA
475	3/8"	1/2" x 1 1/2"	ROUTB
476	1/2"	1/2" x 1 1/2"	ROUTC
477	3/4"	1/2" x 1 1/2"	ROUTD
478	1"	1/2" x 1 1/2"	ROUTE
480	Comp.	Set	ROUTO

Plug Cutters—6 oz. Each

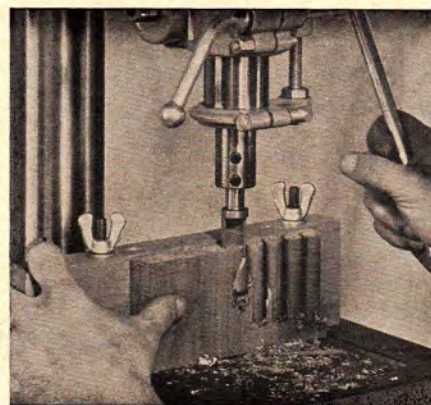


These cutters are used for making wood plugs and dowels and are perfect for the pattern shop or furniture manufacturer.

No.	Size	Shank	Code
814	3/8"	1/2" x 2"	PLUGA
815	1/2"	1/2" x 2"	PLUGB
816	3/4"	1/2" x 2"	PLUGC
817	1"	1/2" x 2"	PLUGD
819	1 1/4"	1/2" x 2"	PLUGE
822	Comp.	Set	PLUGS



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

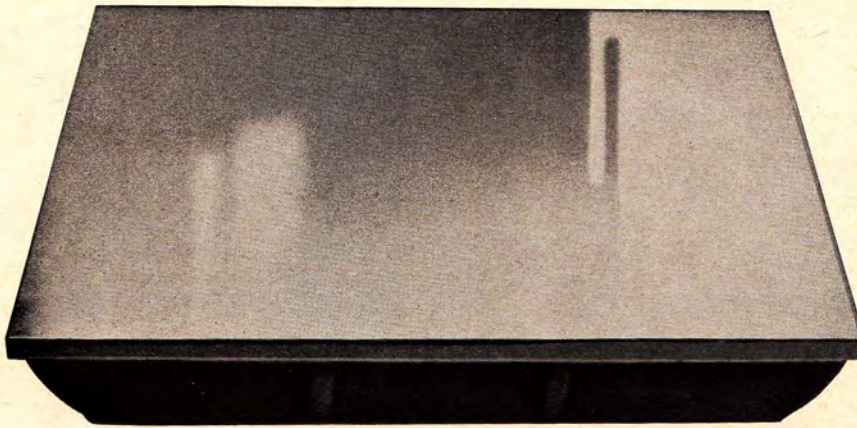


The cutting of wood plugs "with" or "against" the grain is easily done with the plug cutters shown.

(FOR PRICES SEE ATTACHED PRICE LIST)

These Surface Plates Offer Advantages Found Only In High Priced Units

DELTA
MILWAUKEE



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

ACCURATE, CONVENIENT, LOW IN COST

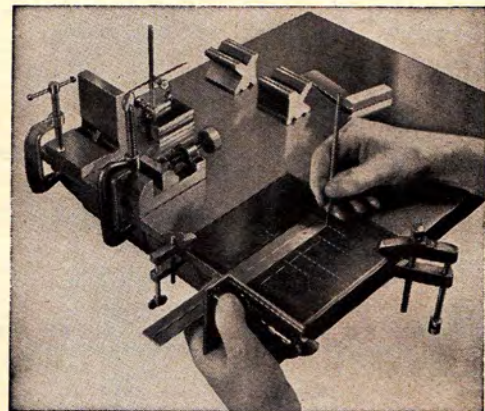
To make a surface plate for layout work 100% useful and convenient, four things are essential. A true surface to start with, a properly ribbed casting to insure that the surface will stay true, ledges at the edges of the plate for clamping purposes and edges that are machined square with each other and with the face. Formerly these advantages could only be obtained in high-priced, hand-scraped precision plates, and the user was forced either to purchase a plate of this type or else buy a plate that was more or less of a make-shift without ledges or squared edges.

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

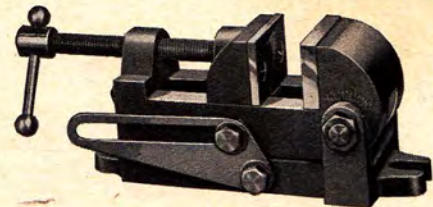
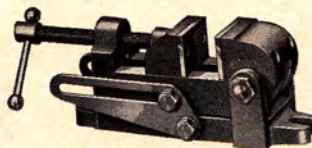
The photo to the right shows how angle plates, vises, etc., can be clamped to the No. 640 surface plate, and how convenient the squared edges are for laying out work clamped to the plate.

CATALOG LISTING

No.	Description	Ship. Wt. Lbs.	Code Word
640	15" x 18" x 3" Surface Plate.....	72	SURFA
641	16" x 22" x 3" Surface Plate.....	82	SURFB



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.

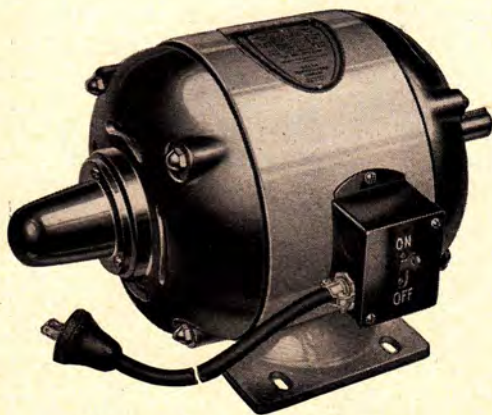
(FOR PRICES SEE ATTACHED PRICE LIST)

No.	Jaw Size	Opening	Lgth.	Ship. Wt. Lbs.	Code Word
*1024	1 1/2"x1"	1 3/8"	4 3/4"	5	WISEA
1025	1 1/2"x1"	1 3/8"	4 3/4"	6 1/2	WISEB
1026	2 1/2"x1 1/8"	2 1/2"	6 1/4"	10	WISEC

*Does not have raising feature.

THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.

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 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. $\frac{1}{3}$ 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, $\frac{1}{2}$ 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 $\frac{1}{3}$ or $\frac{1}{2}$ 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	$\frac{1}{8}$	AC	110	60	1725	$\frac{1}{2}$	31
*60-325		Split Phase	$\frac{1}{8}$	AC	110	50	1425	$\frac{1}{2}$	31
*60-350		Split Phase	$\frac{1}{8}$	AC	110	25	1425	$\frac{1}{2}$	31
62-110		Capacitor	$\frac{1}{8}$	AC	110/220	60	1725	$\frac{1}{2}$	34
*62-120		Capacitor	$\frac{1}{8}$	AC	110/220	50	1425	$\frac{1}{2}$	34
*62-140		Capacitor	$\frac{1}{8}$	AC	110/220	25	1425	$\frac{1}{2}$	34
66-110		3 Phase	$\frac{1}{8}$	AC	220	50/60	1425/1725	$\frac{1}{2}$	31
66-320		3 Phase	$\frac{1}{8}$	AC	220/440	50/60	1425/1725	$\frac{1}{2}$	33
*66-362		3 Phase	$\frac{1}{8}$	AC	220/440	25	1425	$\frac{1}{2}$	33
*66-321		3 Phase	$\frac{1}{8}$	AC	220/440	50/60	2850/3450	$\frac{1}{2}$	33
*68-110		Dir. Cur.	$\frac{1}{8}$	DC	115	.....	1725	$\frac{1}{2}$	30
*68-120		Dir. Cur.	$\frac{1}{8}$	DC	230	.....	1725	$\frac{1}{2}$	30
*68-310		Dir. Cur.	$\frac{1}{8}$	DC	115	.....	3450	$\frac{1}{2}$	38
*68-320		Dir. Cur.	$\frac{1}{8}$	DC	230	.....	3450	$\frac{1}{2}$	38
*62-210		Capacitor	$\frac{1}{8}$	AC	110	60	3450	$\frac{5}{8}$	42
*62-215		Capacitor	$\frac{1}{8}$	AC	110	50	2850	$\frac{5}{8}$	42
62-610		Capacitor	$\frac{1}{8}$	AC	110/220	60	1725	$\frac{1}{2}$	42
*62-620		Capacitor	$\frac{1}{8}$	AC	110/220	50	1425	$\frac{1}{2}$	42

8 1/2 INCH FRAME MOTORS

†82-710	†62-710	Capacitor	$\frac{1}{8}$	AC	110/220	60	1725	$\frac{3}{4}$	68
†82-910	†62-910	Capacitor	$\frac{1}{8}$	AC	110/220	60	1725	$\frac{3}{4}$	80
†83-110	†63-110	Capacitor	1	AC	110/220	60	1725	$\frac{3}{4}$	85
84-510	64-510	Rep. Ind.	$\frac{1}{8}$	AC	110/220	60	1725	$\frac{3}{4}$	68
*84-520	*64-520	Rep. Ind.	$\frac{1}{8}$	AC	110/220	50	1425	$\frac{3}{4}$	68
*84-540	*64-540	Rep. Ind.	$\frac{1}{8}$	AC	110/220	25	1425	$\frac{3}{4}$	68
84-710	64-710	Rep. Ind.	$\frac{3}{8}$	AC	110/220	60	1725	$\frac{3}{4}$	80
*84-720	*64-720	Rep. Ind.	$\frac{3}{8}$	AC	110/220	50	1425	$\frac{3}{4}$	80
*84-712	*64-712	Rep. Ind.	$\frac{3}{8}$	AC	110/220	60	1140	$\frac{3}{4}$	80
84-910	64-910	Rep. Ind.	1	AC	110/220	60	1725	$\frac{3}{4}$	85
*84-920	*64-920	Rep. Ind.	1	AC	110/220	50	1425	$\frac{3}{4}$	85
*84-940	*64-940	Rep. Ind.	1	AC	110/220	25	1425	$\frac{3}{4}$	85
86-520	66-520	3 Phase	$\frac{1}{8}$	AC	220/440	50/60	1425/1725	$\frac{3}{4}$	60
*86-562	*66-562	3 Phase	$\frac{1}{8}$	AC	220/440	25	1425	$\frac{3}{4}$	60
*86-522	*66-522	3 Phase	$\frac{1}{8}$	AC	220/440	50/60	960/1140	$\frac{3}{4}$	60
86-720	66-720	3 Phase	$\frac{3}{8}$	AC	220/440	50/60	1425/1725	$\frac{3}{4}$	80
*86-762	*66-762	3 Phase	$\frac{3}{8}$	AC	220/440	25	1425	$\frac{3}{4}$	80
86-920	66-920	3 Phase	1	AC	220/440	50/60	1425/1725	$\frac{3}{4}$	85
*86-960	*66-960	3 Phase	1	AC	220/440	25	1425	$\frac{3}{4}$	85
86-921	66-921	3 Phase	1	AC	220/440	50/60	2850/3450	$\frac{3}{4}$	66
*86-922	*66-922	3 Phase	1	AC	220/440	50/60	960/1140	$\frac{3}{4}$	86
*87-120	*67-120	3 Phase	1 1/8	AC	220/440	50/60	1425/1725	$\frac{3}{4}$	80
*88-510	*68-510	Dir. Cur.	$\frac{1}{8}$	DC	115	.....	1725	$\frac{3}{4}$	70
*88-520	*68-520	Dir. Cur.	$\frac{1}{8}$	DC	230	.....	1725	$\frac{3}{4}$	70
*88-511	*68-511	Dir. Cur.	$\frac{1}{8}$	DC	115	.....	1140	$\frac{3}{4}$	70
*88-521	*68-521	Dir. Cur.	$\frac{1}{8}$	DC	230	.....	1140	$\frac{3}{4}$	70
*88-710	*68-710	Dir. Cur.	$\frac{3}{8}$	DC	115	.....	1725	$\frac{3}{4}$	82
*88-720	*68-720	Dir. Cur.	$\frac{3}{8}$	DC	230	.....	1725	$\frac{3}{4}$	82
*88-910	*68-910	Dir. Cur.	1	DC	115	.....	1725	$\frac{3}{4}$	90
*88-920	*68-920	Dir. Cur.	1	DC	230	.....	1725	$\frac{3}{4}$	90
*88-912	*68-912	Dir. Cur.	1	DC	115	.....	1140	$\frac{3}{4}$	90
*88-922	*68-922	Dir. Cur.	1	DC	230	.....	1140	$\frac{3}{4}$	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
*497-420	*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

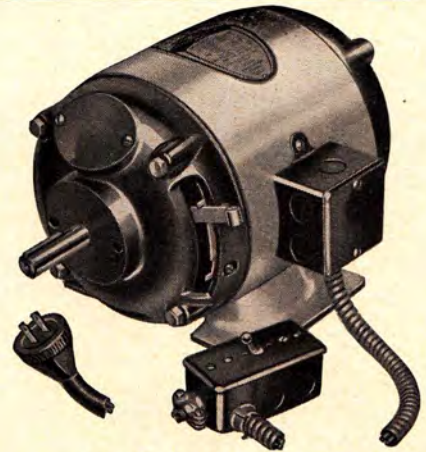
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SHAPER MOTORS

Catalog Number	Re-places No.	Type	HP.	Cur.	Volt.	Cy.	R.P.M.	Shaft Inches	Cat. No. of Switches and Mounting Pts. to Use			Sh. Wt. Lbs.
									On and Off Switch	Mtg. Pts.	Re-versing Switch	
8½" Frame Motors for Shaper												
85-080	65-080	Rep. Ind.	1	AC	110/220	60	3450	¾"	●	....	Fur-nished	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	1327	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. 43-205 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.



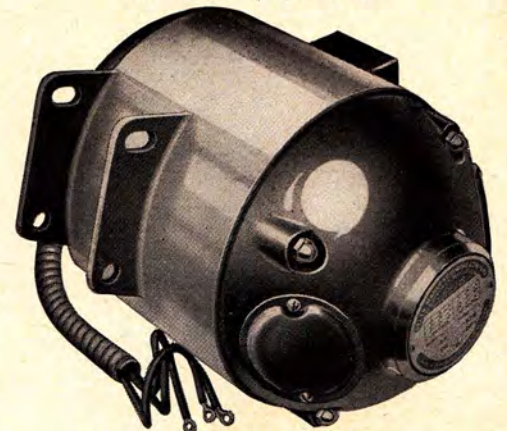
No. 85-080 Shaper Motor

TILTING ARBOR SAW MOTORS

Catalog Number	Re-places No.	Type	H.P.	Cur.	Volt.	Cy.	R.P.M.	Shaft Inches	Cat. No. of Switches and Mounting Pts. to Use			Sh. Wt. Lbs.
									On and Off Switch	Mtg. Pts.	Reversing Switch	
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	70
*87-060	*67-060	3 Phase	1	AC	220/440	25	1425	¾"	1320	1459	70	70
87-210	67-210	3 Phase	1½	AC	220/440	50/60	1425/1725	¾"	1320	1459	80	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



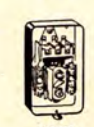
132



1115



1325



1320

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

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

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

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 ½ H.P. Single Phase Motor. Sh. Wt. 1 lb. Code: SCORD

No. 1119 Cord and Plug for ¾, 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

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.

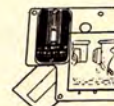
No. 1327 Mounting Plate. Code: SWITB

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

No. 1459 Code Word: TILTK



1459



1327

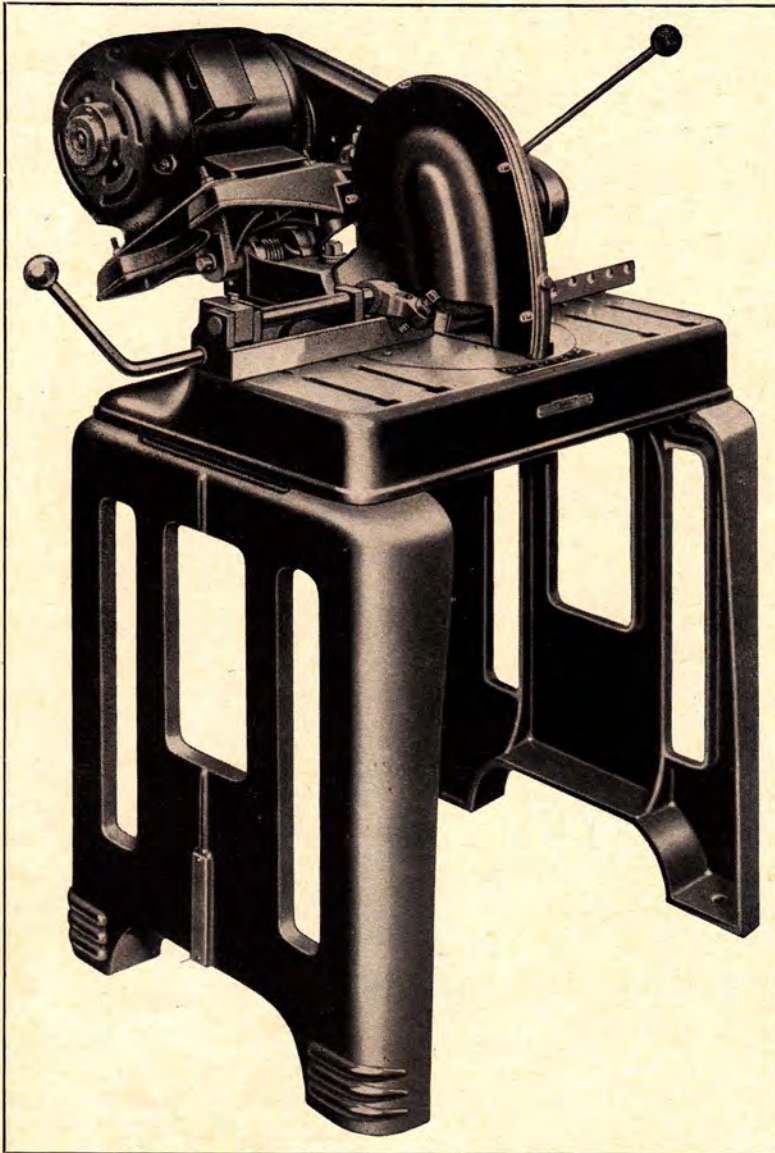
Switch Rods Provide Finger-Tip Control



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	

THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.

Abrasive Cut-Off Machine Offers Accuracy, Convenience and Long Life



- No. 20-210—Complete Abrasive Cut-Off Machine as illustrated for 60 Cy. or D.C. service consisting of cut-off machine with wheel guard, belt guard, collars and fence with stop; pair of cast iron legs, universal clamp fixture; 3 V-belts; motor pulley. Without abrasive wheel, motor or switch. 570 lbs. Code CHOQL
- No. 20-211—Complete Abrasive Cut-Off Machine as above but for 50 or 25 Cy. service. 570 lbs. Code CHOQQ

Accessories

- No. 294 —Replacement V-belt (3 Req.) for 6" motor pulley. ½ lb. Code BELTH
- No. 501 —Replacement V-belt (3 Req.) for 7" motor pulley. ¾ lb. Code MORUV
- No. 1615—Abrasive Wheel for Soft and Hard Steel and Hard Brass; best general purpose wheel. ¾"x 10". ½ lb. Code CHOQC
- No. 1616—Abrasive Wheel same as No. 1615 but only ¼" thick, for use where less burr is permissible. ¾"x 10". ½ lb. Code CHOQD
- No. 1617—Abrasive Wheel for all Steels and Hard Bronze where maximum life of wheel is required, and burr is permissible. ¾"x 10". ¾ lb. Code CHOQE
- No. 1619—Abrasive Wheel for thin Steel Tubing and Molding where little or no burr is permissible. ¾"x 10". ½ lb. Code CHOQF

Motors Recommended

- No. 97-320—3 H.P. 3 Ph. A.C. NEMA FRAME 220/440 V. 50/60 Cy.
- No. 97-360—3 H.P. 3 Ph. A.C. NEMA FRAME 220/440 V. 25 Cy.
- No. 1328—3 Phase Manual Starter for 3 H.P. Motors. 8 lbs. Code SWITC

Specifications

Spindle speed 4000 R.P.M. with surface speed of 10,500 feet per minute. Wheels 10" dia. ¾" Arbor hole. Wheel collars furnished in two sizes, 3½" and 5" dia. Circular table and wheel swing 45° left and right providing full 90° range of cut. Height of table from floor 32". Size: 30" wide, 35" deep, 47" high. For capacity and material to be cut see information at right.

(FOR PRICES SEE ATTACHED PRICE LIST)

This Abrasive Cut-Off Machine has an exceptionally wide range of applications in shops and factories of all kinds where material must be cut to exact length on a production basis.

An abrasive wheel is employed and although we list a few of the most universal types of wheels, a large variety is available. We suggest that the recommendations of the abrasive wheel manufacturer be closely followed to get the best possible cut.

This Abrasive Cut-Off Machine is exceptionally sturdy and incorporates the very best engineering design and construction so that accurate results, low maintenance and long life are assured.

The widely spaced Timken roller bearings, used in the pivot assembly, were chosen because of their accuracy, thus assuring perfect, true wheel travel.

The arbor which travels at 4000 R.P.M. is accurately ground and balanced. It is mounted on lubricated for life and sealed ball bearings that are skillfully preloaded into a diamond bored and completely machined cartridge.

Should it ever become necessary to replace the bearings it can be done by simply loosening two cap screws and inserting a new cartridge unit. The machine will then be restored to its original accuracy.

The arbor cartridge assembly is held in the same main arm casting which holds the Timken roller pivot bearings so that alignment must always be perfect.

Full power is constantly transmitted by means of a 3-belt Texrope drive. It is highly efficient and all vibration is eliminated and maximum power is always transmitted. Pulleys are machined out of solid steel and dynamically balanced to further assure smooth operation.

Capacity and Recommendations

HIGH SPEED STEEL: High speed steel bars and sections up to the equivalent of ¾" solid round stock can be cut with an abrasive wheel.

COLD ROLLED STEEL: Cold rolled steel bars and sections up to the equivalent of ¾" can be accurately and quickly cut using an abrasive wheel.

STEEL TUBING: This material up to 1¼" in diameter up to a wall thickness of approximately ⅝" can be cut fast and clean using an abrasive wheel.

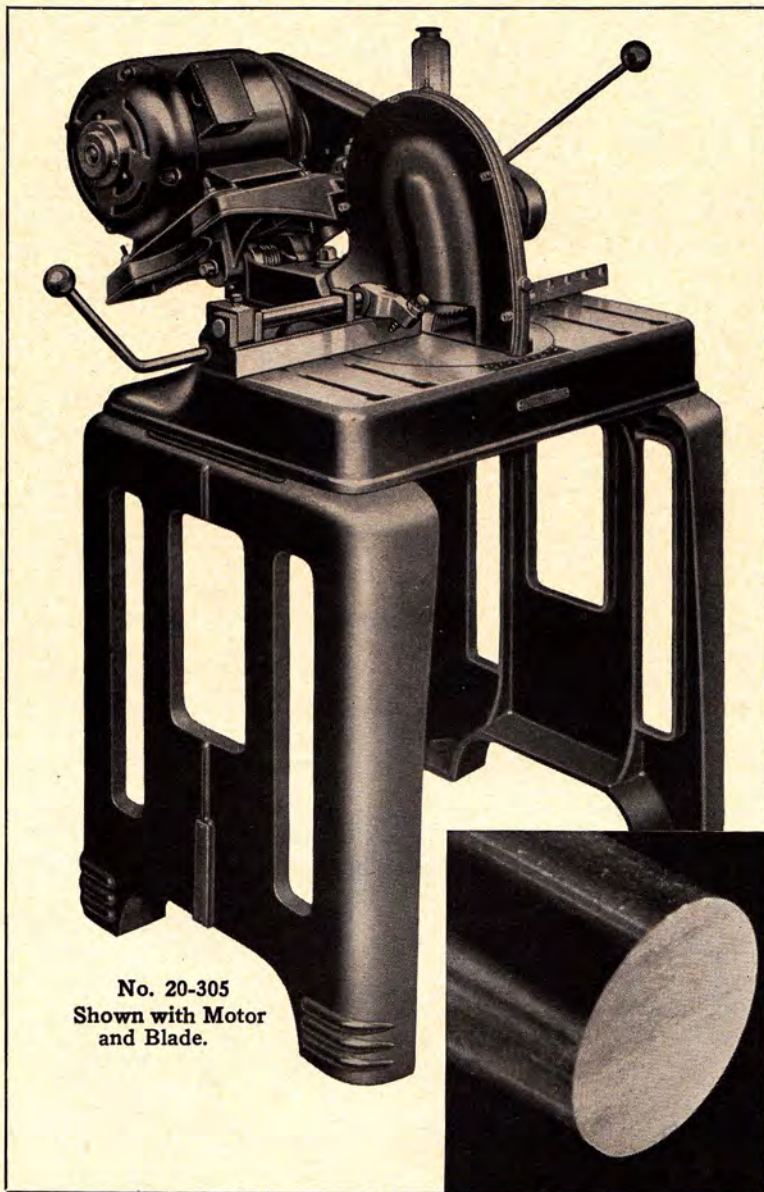
NON-FERROUS METALS: Aluminum, brass and copper sections up to the equivalent of 1¼" round stock are easily and perfectly cut on the No. 20-305 Non-Ferrous Cut-Off Machine listed on page 23. This machine, which uses a specially developed high speed steel blade, does a remarkable job on this material, leaving the cut with an unusual smoothness.

For best results with the abrasive cut-off machine follow the recommendations of the wheel manufacturer.



Cut-Off Machine Cuts Non-Ferrous Metals with "Polished Smoothness"

DELTA
MILWAUKEE



No. 20-305
Shown with Motor
and Blade.

No. 20-305—Complete Non-Ferrous Cut-Off Machine as illustrated consisting of Cut-Off Machine with wheel guard, belt guard, chip guard, collars and fence with stop; oiler and flange; pair of cast iron legs; universal clamp fixture; 3 V-belts; motor pulley (specify if for 60, 50 or 25 cy. or D.C.). Without saw blade, motor or switch. 550 lbs. Code CHOQK

ACCESSORIES

No. 289—Replacement V-belt (3 req.). $\frac{1}{2}$ lb. Code BELTJ
No. 1626—10" Saw Blade. $\frac{3}{8}$ " thick. 80 teeth. 2 lbs. Code CHOPS
No. 20-810—8" Saw Blade. $\frac{1}{8}$ " thick. 100 teeth. 2 lbs. Code CHOQG
No. 20-811—8" Saw Blade. .045" thick. 144 teeth. 2 lbs. Code CHOQH
No. 20-812—10" Saw Blade. $\frac{1}{4}$ " thick. 132 teeth. 2 lbs. Code CHOQI

MOTORS RECOMMENDED

No. 97-320—3 H.P. 3 Phase A.C. NEMA FRAME 220/440 V. 50/60 Cy.
No. 97-360—3 H.P. 3 Phase A.C. NEMA FRAME 220/440 V. 25 Cy.
No. 1328—3 Phase Manual Starter for 3 H.P. Motors. 8 lbs. Code SWITC

SPECIFICATIONS

Spindle speed 2000 R.P.M. with Surface Speed of 5250 feet per minute. Blade 10" dia., $\frac{5}{8}$ " arbor hole. Circular table and blade swing 45° left and right providing full 90° range of cut. Height of table from floor 32". Size 30" wide, 35" deep, 47" high. For capacity and material to be cut see information at right.

(FOR PRICES SEE ATTACHED PRICE LIST)

The success of this unit lies in the design of the high speed metal cutting blades used. In all—five blades have been developed which meet all of the requirements for the cutting of non-ferrous materials such as aluminum, copper and brass. An oiling device is also used.

ELIMINATES EXPENSIVE FINISHING OPERATIONS

Because these blades do an amazingly fine job, cutting sharp and clean and leaving the cut with practically a polished-like surface, they eliminate the expense of additional polishing and burring operations.

HUSKY, LONG-LIVED ARBOR BEARINGS

The arbor which travels at 2000 R.P.M. is accurately ground and balanced. It is mounted on lubricated for life and sealed ball bearings that are skillfully preloaded into a diamond bored and completely machined cartridge.

Should it ever become necessary to replace the bearings it can be done by simply loosening two cap screws and inserting a new cartridge unit. The machine will then be restored to its original accuracy.

The arbor cartridge assembly is held in the same main arm casting which holds the Timken roller pivot bearings so that alignment must always be perfect.

UNIVERSAL CLAMP

The No. 1610 Universal Clamp will hold securely all shapes and sizes of material. It is dual acting, rugged, positive and easily operated and does not interfere with loading and unloading.

HAS PERFECT GUARDING

The cut-off machine has a heavy blade guard, belt guard, as well as a chip guard so that maximum protection is assured.

Capacity

Here is a list of recommendations as to the type of material to be cut and the capacity of the machine on these materials:

SOLID SECTIONS

Soft Brass—up to $1\frac{1}{2}$ " diameter
Half-Hard Brass—up to $1\frac{1}{4}$ " diameter
Aluminum—up to $1\frac{1}{2}$ " diameter
Alum. Extruded Sections—up to equivalent of 2 sq. in.
Copper—up to $1\frac{1}{2}$ " diameter, or equivalent of 2 sq. in.
Magnesium (Dow Metal)—up to $1\frac{1}{4}$ " diameter
Micarta and similar rods—up to $1\frac{1}{2}$ " diameter.

TUBULAR SECTIONS—Soft Brass, Hard Brass, Aluminum, Copper, Dow Metal, Micarta and similar Tubing—up to 2" diameter.

Very hard non-ferrous metals, such as Duralumin Tobin Bronze, Navy Bronze, etc., should not be cut with the saw blade. For this work the abrasive cut-off machine using abrasive wheels as listed on page 20 is recommended.

The Right Blade for the Job

The following blades have been very carefully engineered so that they will produce a rapid, polished cut on any job listed in the above capacity chart. They all have the same general tooth shape and clearance angles which have been especially developed to cut aluminum without loading of the tooth gullets and at the same time they are extremely free cutting on the various brasses and copper. Their main difference is in the size of the cutting tooth which has been designed for the particular size of material specified.

The 10" diameter blades have 5" diameter flange collars and the 8" diameter blades have $3\frac{1}{2}$ " flange collars.

Blade No. 1626

This is a 10" diameter x $\frac{3}{8}$ " thick blade having 80 teeth. It is the most versatile of all blades, in fact it might be called a general purpose blade. The No. 1626 Blade should always be used where a wide variety of non-ferrous metals and plastics are to be cut on the same machine without changing blades. It is especially suitable for steady production on the following sizes of material: (1) Large solid bars and rods up to the maximum capacity listed. (2) Large diameter heavy walled tubing. (3) Extruded or irregular sections having heavy walls.

Blade No. 20-812

This is a 10" diameter x $\frac{1}{8}$ " thick blade having 132 teeth. It is a new type of blade recently developed for the following sized material: (1) Medium sized solid bars and rods up to approximately $\frac{3}{4}$ " diameter. (2) Large diameter tubing having a wall thickness up to $\frac{1}{8}$ ". (3) Large extruded or irregular shaped sections having walls up to $\frac{1}{8}$ " thick.

Blade No. 20-810

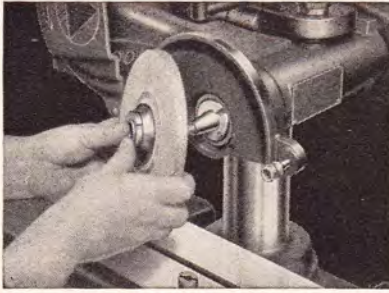
This is an 8" diameter x $\frac{1}{8}$ " thick blade having 100 teeth. The No. 20-810 Blade is especially suitable for: (1) Small solid bars and rods up to $\frac{3}{4}$ " diameter. (2) Small heavy walled tubing up to 1" outside diameter x $\frac{1}{8}$ " wall thickness. (3) Small extruded or irregular shaped sections having walls up to $\frac{1}{8}$ ".

Blade No. 20-811

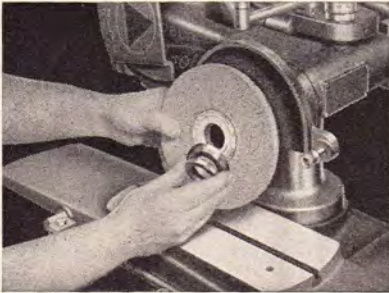
This is an 8" diameter by .045" thick blade having 144 teeth. The No. 20-811 Blade is especially suitable for: (1) Very small solid bars and rods up to $\frac{3}{8}$ " diameter. (2) Small thin walled tubing up to 1" outside diameter x $\frac{1}{16}$ " wall thickness. (3) Small extruded or irregular shaped sections having walls up to $\frac{1}{16}$ ".

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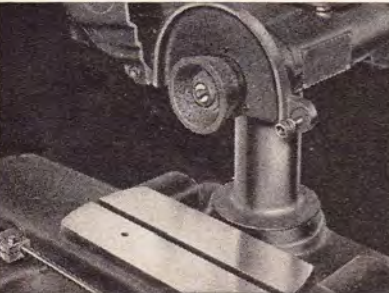
Toolmaker Grinders Combine Accuracy..Economy..Operating Advantages



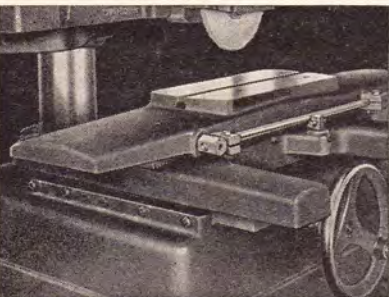
The wheel, after it is trued, together with adapter may be easily removed. This saves redressing. Saves time also.



By loosening large nut wheel alone is removed. Adapter stays on spindle.



Cup wheels can be used. Min. diameter $3\frac{1}{2}$ " x $1\frac{1}{2}$ " wide.



Note take-up quos. The $6\frac{1}{2}$ " traverse adjustment is actuated by an Acme screw.

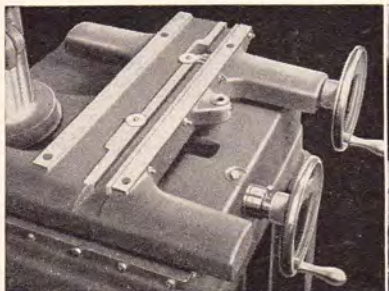
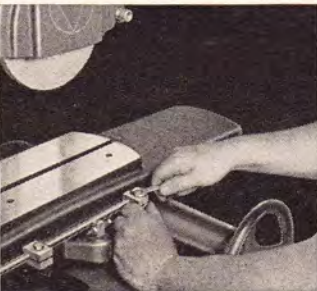
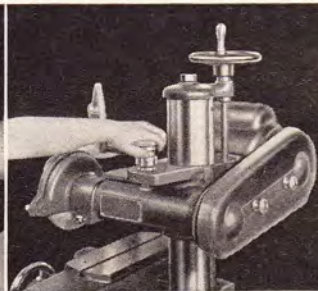


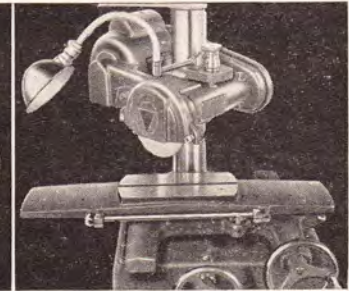
Table rides solidly on ways. Note oil wicks and heavy solid construction of table.



Longitudinal table travel accurately set by clamp blocks. Travel: $13\frac{1}{2}$ ". Table removable.



Fast "coarse" adjustment made by hand wheel. Fine adjustment made by micrometer hand knob.



Column made of hi-tensile cast iron, accurately machined. Can be rotated 360 degrees.

These three new husky Toolmaker Grinders described on the following pages have big capacity, wide application and yet are exceptionally low in cost. There are three units: the Toolmaker Surface Grinder, the Toolmaker Chip-Breaker Grinder, and the Toolmaker Tool and Cutter Grinder. Most of the general features are the same.

THE SPINDLE: The spindle shaft itself is designed to preserve its initial accuracy. It is precision ground to extremely close tolerances. The bearing at the wheel end is a large precision taper bearing of the type only found in much more expensive grinders. It runs in a continuous bath of oil. The other bearing is a sealed-for-life ball bearing which requires no lubrication, and is held in a precision bored seat. The two bearings are widely spaced to provide permanent, true alignment — a take-up eliminates all play.

THE WHEEL ADAPTER: The mounting of the wheel on the spindle is unique in that the grinding wheel itself mounts into a two-piece adapter. The wheel is clamped into the adapter by means of a large nut. The adapter itself is held to a ground taper seat on the spindle by means of a small nut. Thus the wheel itself may be removed by loosening the large nut, or if desired, the wheel together with the adapter can be removed. The advantage of this is that when a wheel has once been trued up, by removing it with the adapter, it can be replaced and will run true without any further dressing.

VERTICAL ADJUSTMENT: Rapid vertical adjustment of the wheel to the work is effected by means of an Acme thread

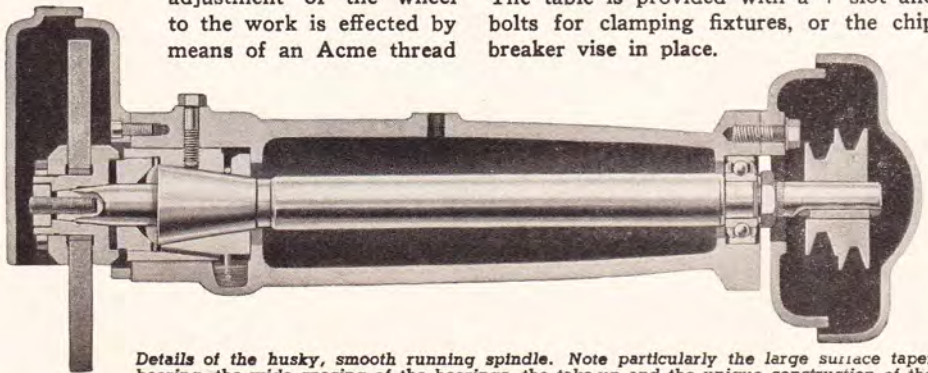
screw and large handwheel at the top of the column. When close to the work, final fine adjustment is made by a micrometer screw, the micrometer having wide graduations for close settings. The bracket is clamped to the column by means of a strong, positive hand clamp.

THE COLUMN: The column, too, has many special features. It is of one piece construction, cast of hi-tensile iron, accurately ground to close tolerances. A steel gib guides the bracket yoke so that it is always in perfect alignment. Single nut clamps the column in place.

THE TABLE: The table is smooth operating with convenient control wheels. It has long ways so that it always rides solidly. Gibs are provided so wear can be eliminated.

Longitudinal table travel is effected with a rack and pinion — maximum travel is $13\frac{1}{2}$ ". Convenient adjustable stops limit the table travel. Traverse adjustment is made with an Acme thread screw. A micrometer collar on the traverse, with wide graduations, permits accurate settings.

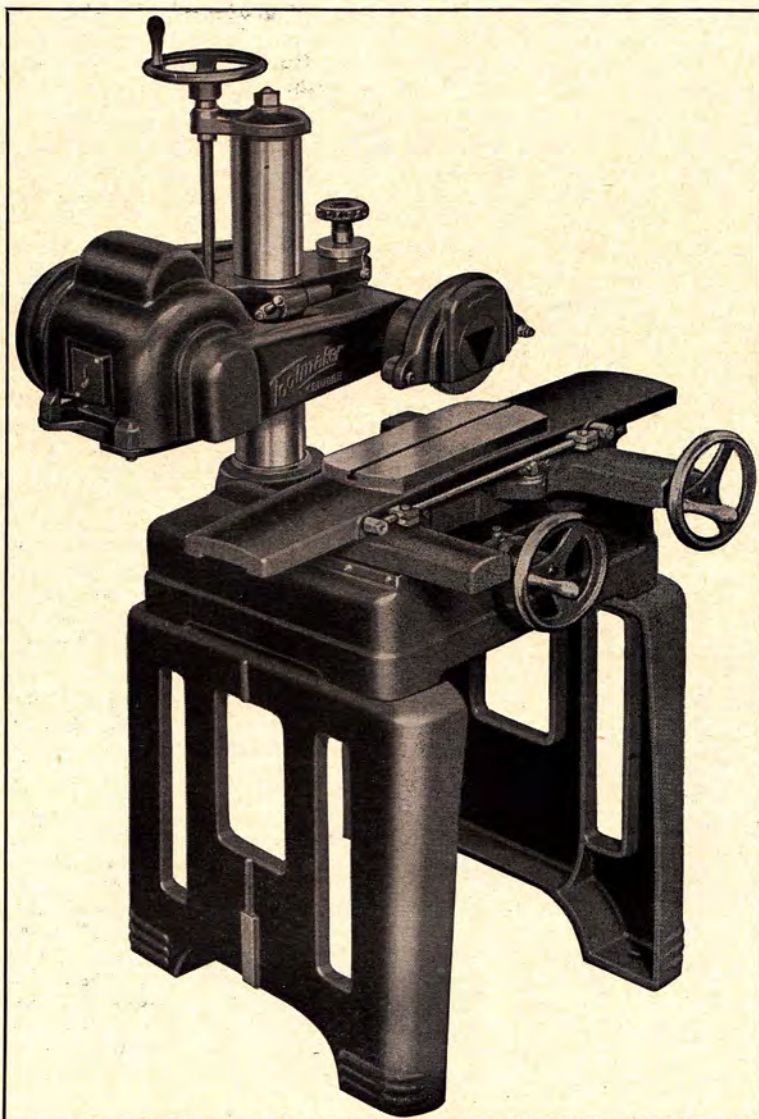
The table is provided with a T slot and bolts for clamping fixtures, or the chip breaker vise in place.



Details of the husky, smooth running spindle. Note particularly the large surface taper bearing, the wide spacing of the bearings, the take-up and the unique construction of the wheel adapter. Two-step V-pulley arranged for 50 and 60 cycle service.

Toolmaker Surface Grinder Combines Accuracy with Unusually Low Cost

DELTA
MILWAUKEE



THE Toolmaker Surface Grinder is a big machine, standing over 6 feet high and weighing close to 700 lbs. It has the "beef" needed for a machine of this kind, where massiveness and solidity help to produce accurate work.

The details of its design and construction are shown and described on the preceding page but your attention is called to the photograph on this page which shows, better than words can tell, the exceptionally fine machine you have here.

For every type of surface grinding, in the tool room or in the production shop you cannot find a better machine in this price range. Its large capacity, ease of operation, its fine adjustment and micro-settings are a few of its better points.

The controls are convenient, the column can be rotated a full 360 degrees—the unique design of the wheel adapter which can be removed with the wheel thus saving "trueing-up" operations are features that are appreciated in the production shops and belie its low price.

Specifications of Toolmaker Surface Grinder

Maximum length that can be ground $13\frac{1}{2}$ ". Maximum width that can be ground 6". Maximum space under 7" wheel to table, $11\frac{1}{2}$ ". Maximum space under 7" wheel to Brown and Sharpe No. 510 Magnetic Chuck, 6". Minimum diameter of cup wheel with standard guard in place, $3\frac{1}{2}$ ". Maximum diameter of wheel 7". Wheels must have $1\frac{1}{4}$ " hole. Wheel, diamond wheel dresser or light attachment not furnished with machine. The No. 510 Brown and Sharpe Magnetic Chuck is not carried in stock and should be obtained direct from manufacturer or his distributors. Table surface, $5\frac{3}{4}$ " x 13". Traverse feed, one graduation is .001". Maximum vertical adjustment of wheel by means of micrometer is $\frac{3}{8}$ ", each graduation is .0005".

CATALOG LISTING

The Toolmaker Surface Grinder

No. 24-105—Toolmaker Surface Grinder (for 1425 and 1725 R.P.M. Motors) with cast iron legs, wheel adapter, holder for wheel dresser, one No. 49-115 V-belt and two-step motor pulley (for 50 or 60 cycle service) with $\frac{1}{2}$ " bore. Without Wheel, Motor or Switch. Shipping Weight 670 lbs. Code SURGR

Accessories and Motors

For the Toolmaker Surface Grinder and the Toolmaker Chip-Breaker Grinder (shown on page 24)

No. 24-805—Diamond Wheel Dresser for Toolmaker Grinder. Shipping Weight $\frac{1}{2}$ lb. Code SURGD

No. 24-807—7" diameter x $\frac{1}{2}$ " face wheel for soft material. Bore $1\frac{1}{4}$ ". Shipping Weight 2 lbs. Code SURGW

No. 24-808—7" diameter x $\frac{1}{2}$ " face wheel for hard material. Bore $1\frac{1}{4}$ ". Shipping Weight 2 lbs. Code SURGV

No. 24-815—Light Attachment complete for attaching to separate 115V single phase line. Shipping Weight. 8 lbs. Code SURGL

No. 24-816—Extra Wheel Adapter for $1\frac{1}{4}$ " bore wheels. Arranged to fit on tapered spindle for holding up to $\frac{1}{2}$ " wide wheels and arranged with extra washers so a $3\frac{1}{2}$ " x $1\frac{1}{2}$ " cup wheel may be used Shipping Weight 2 lbs. Code SURGA

No. 49-115—Replacement V-Belt. $\frac{1}{2}$ lb. Code BELTV

Motors Recommended for Surface and Chip-Breaker Grinders

The cast iron motor cover furnished with machine will cover any 6" motor of our make, and most other 6" to 7" frame motors.

The motor bracket is arranged with holes for fastening any 6" motor of our make, but ample pads are provided so holes can be drilled to suit other makes. When it is necessary to use larger motors of other makes the motor cover can be omitted without affecting other parts of the machine or its efficiency.

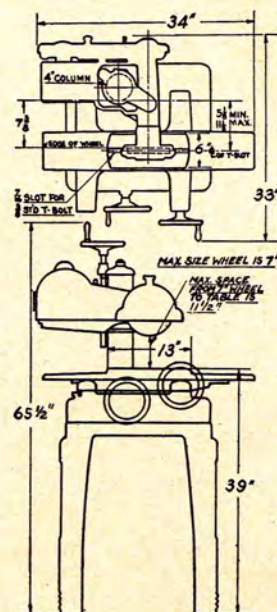
62-610— $\frac{1}{2}$ H.P. CAP. A.C. 1725 R.P.M. 110/220 V. 60 Cy.

62-620— $\frac{1}{2}$ H.P. CAP. A.C. 1425 R.P.M. 110/220 V. 50 Cy.

66-320— $\frac{1}{2}$ H.P. 3 PH. A.C. 1425-1725 R.P.M. 220/440 V. 50/60 Cy.

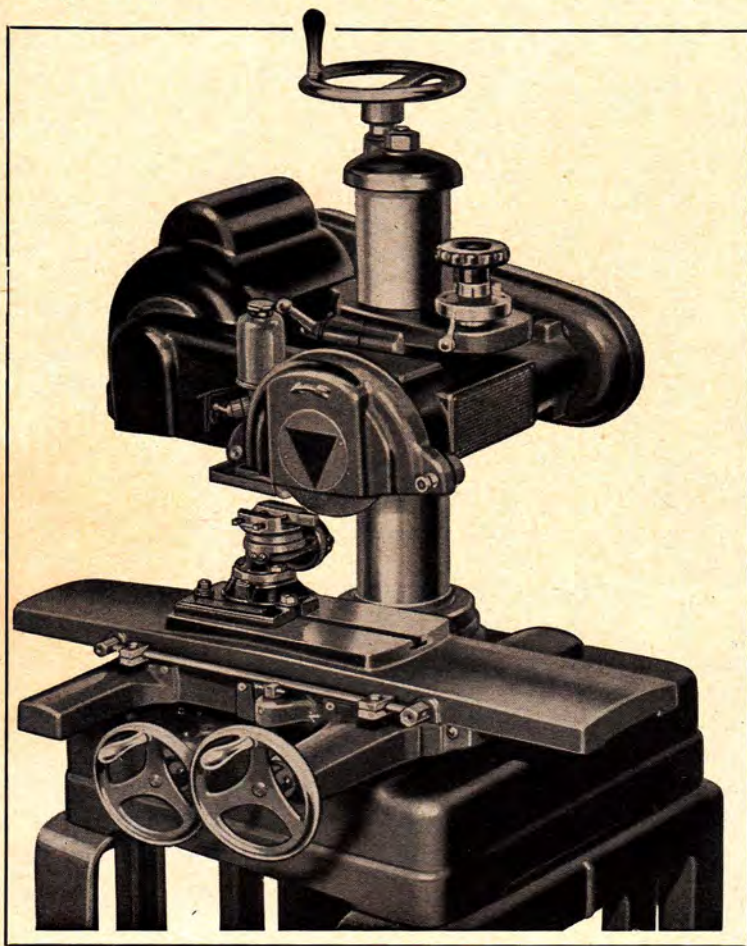
For 3 phase motors use No. 1320 Manual or No. 1329 Magnetic starter. See Pages 20 and 21 for Motors and Switch Parts.

(FOR PRICES SEE ATTACHED PRICE LIST)



THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.

Toolmaker Chip-Breaker Grinder Sets New Standards of Performance



CATALOG LISTING

The Toolmaker Chip-Breaker Grinder

No. 24-205—Toolmaker Chip-Breaker Grinder (for 1425 and 1725 R.P.M. Motors) with Cast Iron Legs, wheel adapter, holder for wheel dresser, No. 49-115 V-belt, two-step motor pulley with $\frac{3}{8}$ " bore, Univise and coolant attachment. Without Wheel, Motor or Switch. 690 lbs. Code CHIPA
 See Page 25 for Accessories.

ALL of the best features of good grinder design are incorporated in this NEW Chip-Breaker Grinder plus many exclusive, improved features not found in units costing many times as much.

Its general points of excellence are detailed on page 22. To these have been added the features of the truly universal Univise—a unit which has never been available before. It is described in detail below. A coolant attachment provides just the proper amount of liquid to the wheel at the point of grinding.

The Chip-Breaker Grinder is a precision machine designed for the grinding of the Chip-Breaker groove in carbide tipped tools. It also is used for grinding form tools, thread chasers and other units which must be accurately ground. The Univise holds the tool AT ANY CONCEIVABLE ANGLE and through its unique construction it can be accurately reset at a moment's notice so that the tool or part may be re-ground at precisely the same angles as originally set. This saves time, wheel wear, eliminates bothersome and often inaccurate measurements. By simply removing the Univise and the coolant attachment, the grinder may be used as a regular surface grinder which thus increases the usefulness of this machine in both the large and small shop. This machine also is heavy and big. Its weight of 700 pounds gives it solidity which helps in producing accurate work.

Study the features of this remarkable Chip-Breaker Grinder—compare it with any similar machine, and you will be surprised at its performance and remarkably low price.

Specifications of the Toolmaker Chip-Breaker Grinder
 Maximum length that can be ground $13\frac{1}{2}$ ". Maximum width that can be ground 6". Maximum space under 7" wheel to table, $9\frac{1}{2}$ ". Minimum diameter of cup wheel with standard guard in place, $3\frac{1}{2}$ ". Maximum diameter of wheel, 7". Wheels must have $1\frac{1}{4}$ " hole. Wheel, diamond wheel dresser or light attachment not furnished with machine. Table surface, $5\frac{3}{4}$ " x 13". Traverse feed, one graduation is .001". Maximum vertical adjustment of wheel by means of micrometer is $\frac{3}{8}$ ", each graduation is .0005". For dimensions and specifications of Univise see below.

THE UNIVISE — The First Truly Universal Vise for Grinding, Drilling and Milling

The Univise is a heavy, rigid, massive vise completely universal so that it can be set at ANY angle desired. It is composed of four separate parts, each of which can be rotated and independently set so that there are four separate distinct planes of adjustment. This means that ANY angle desired can be easily and readily obtained. It means, also, that for duplicate grinding that the vise can be returned EXACTLY to its original setting. There is no guess-work, no trial and error method of getting the proper angle or setting. You can be sure, even with green help, that the settings are going to be correct.

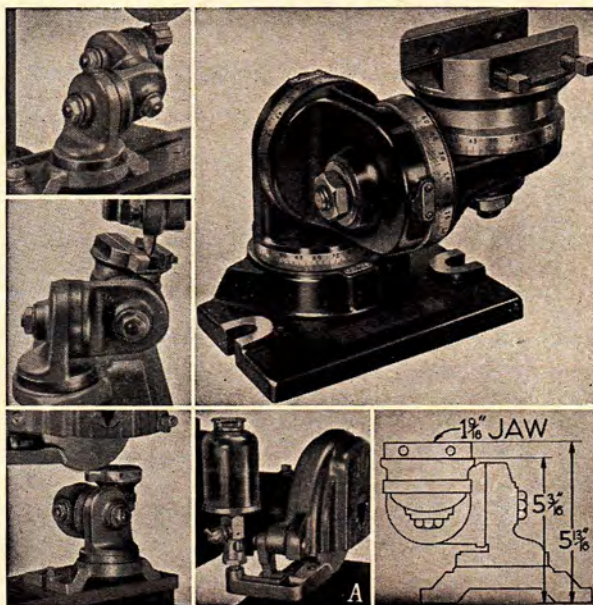
Each part has a circular scale of 360 degrees. Each station is marked so that by making a record of the setting of each scale it is impossible to make an error. Thus settings can be made direct from the blueprint without fuss or bother. Two of the parts rotate a full 360 degrees. It is $5\frac{1}{8}$ " high, 6" wide and $7\frac{1}{4}$ " long. Jaws take up to $1\frac{1}{2}$ " tools. Fits any surface or tool grinder. Has detachable keys on base which can be removed to permit use on drill press or other machine without table slots, or on a magnetic chuck.

No. 24-902—Complete Univise as illustrated. 14 lbs. Code CHIPV

Efficient Coolant Attachment (A)

The coolant attachment is an added feature. Resinoid bonded diamond wheels used for chip-breaker grinding must be cool while grinding to prolong wheel life and efficiency. The coolant attachment provides just the proper amount of coolant for this purpose. The drop-feed is adjustable to regulate the amount of coolant which is brought to the wheel by means of a wick. This wick also helps keep the wheel clean. The attachment is easily adjusted to different size wheels and can be easily and quickly removed if necessary.

No. 24-906—Complete coolant attachment as illustrated. 5 lbs. Code CHIPC
 (FOR PRICES SEE ATTACHED PRICE LIST)



THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.

NEW

Toolmaker Tool and Cutter Grinder Has Many Features

**DELTA
MILWAUKEE**

★ This new machine is the latest development in Tool and Cutter Grinder design and incorporates all the best features of units of this kind

The grinding, that is, sharpening and re-sharpening of tools and cutters used in various metal cutting machines is of major importance for maximum production and accurate results.

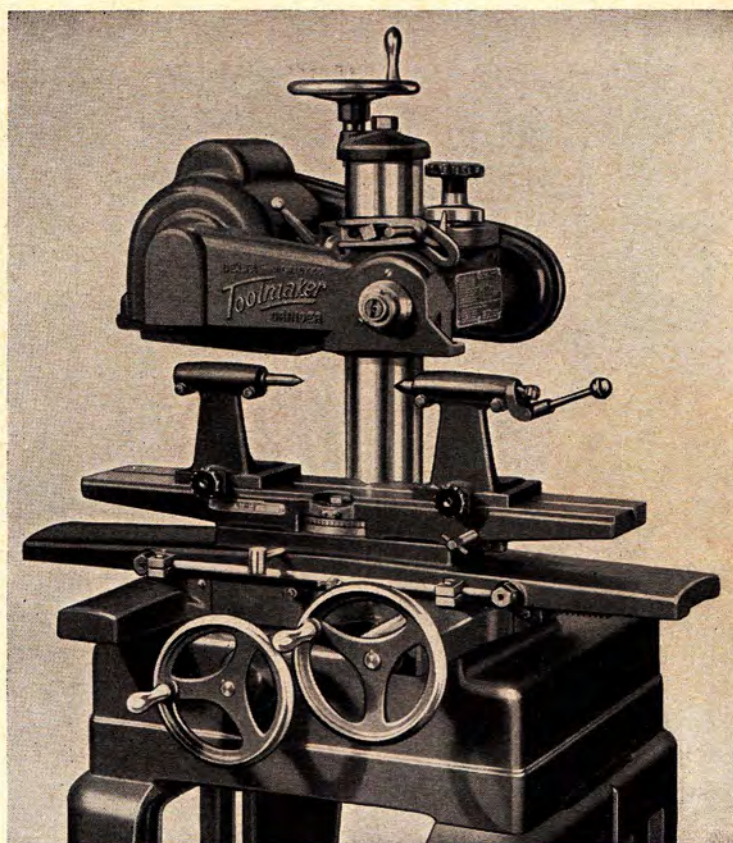
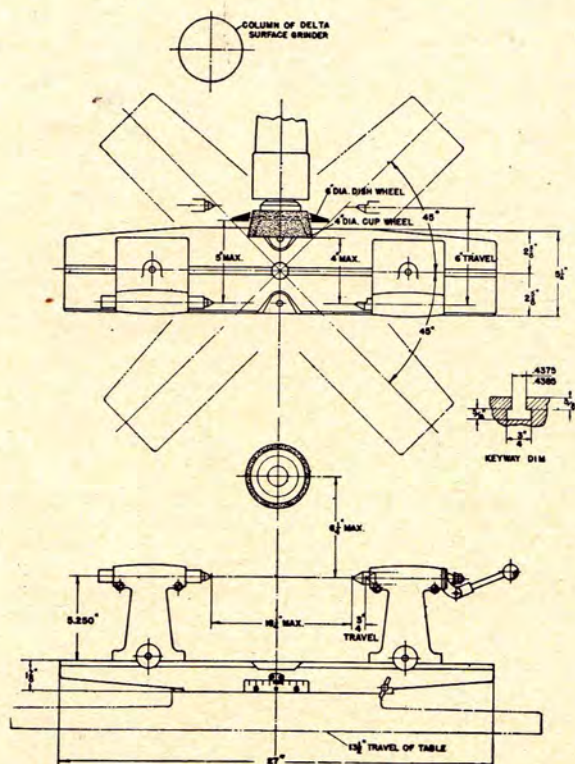
To make the sharpening operations easy, simple and extremely accurate, this new Tool and Cutter Grinder has been developed. It is, basically, our famous Toolmaker Surface Grinder to which the well designed Tool and Cutter Grinder Attachment has been added.

Almost every conceivable angle can be accurately and easily ground. Table swivels a full 90 degrees with a graduated scale and positive lock—the centers have a maximum spacing of 16 $\frac{1}{4}$ ", distance from table to centers is 5.250" (see line sketch below for all dimensions).

By simply removing the Tool and Grinder Attachment, the grinder may be used as a regular surface grinder, which thus increases the usefulness of this machine in both the large and small shop.

Specifications

Wheels must have 1 $\frac{1}{4}$ " hole. Wheel, diamond wheel dresser or light attachment not furnished with machine. Table surface 5 $\frac{3}{4}$ x13". Traverse feed, one graduation is .001". Maximum vertical adjustment of wheel by means of micrometer is $\frac{3}{8}$ ", each graduation is .0005". A 1750 R.P.M. Motor with a 7" wheel produces a surface speed of 5600 Feet Per Minute. Spindle has two-step pulley—with a 60-cycle motor it provides speeds of 3200 or 4200 R.P.M. With a 50-cycle motor it provides speeds of 2700 or 3500 R.P.M.

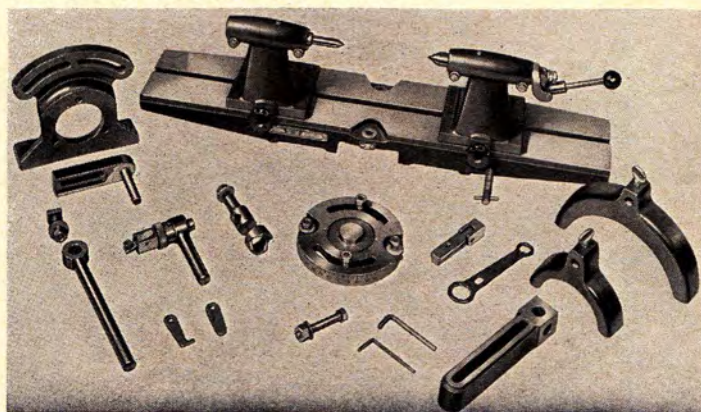


CATALOG LISTING

No. 24-305—Toolmaker Tool and Cutter Grinder (for 1425 and 1725 R.P.M. motors). With cast iron legs, wheel adapter, holder for wheel dresser, No. 49-115 V-belt, two-step motor pulley, with $\frac{1}{2}$ " bore (for 50 and 60 cycle service), No. 24-952 grinding attachment with swivel table, head and tail stocks and tooth stop unit, 2 wheel guards and support bracket. Without wheels, motor or switch. Shipping Weight 750 lbs. Code SURTA
See Page 23 for Listing of Motors.
See Page 25 for Listing of Motors.

ACCESSORIES

No. 24-973—Type 12 standard dish wheel, 6" diameter x $\frac{1}{2}$ "- $\frac{1}{8}$ " with 1 $\frac{1}{4}$ " hole. Shipping Weight 5 lbs. Code SURTO
No. 24-974—Type 11 standard cup wheel 4" diameter x 1 $\frac{1}{2}$ " with 1 $\frac{1}{4}$ " hole. Shipping weight 5 lbs. Code SURTP
See Page 23 for Other Accessories.
See Page 25 for Other Accessories.

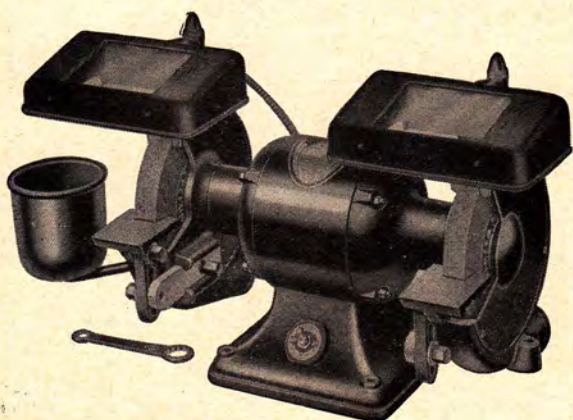
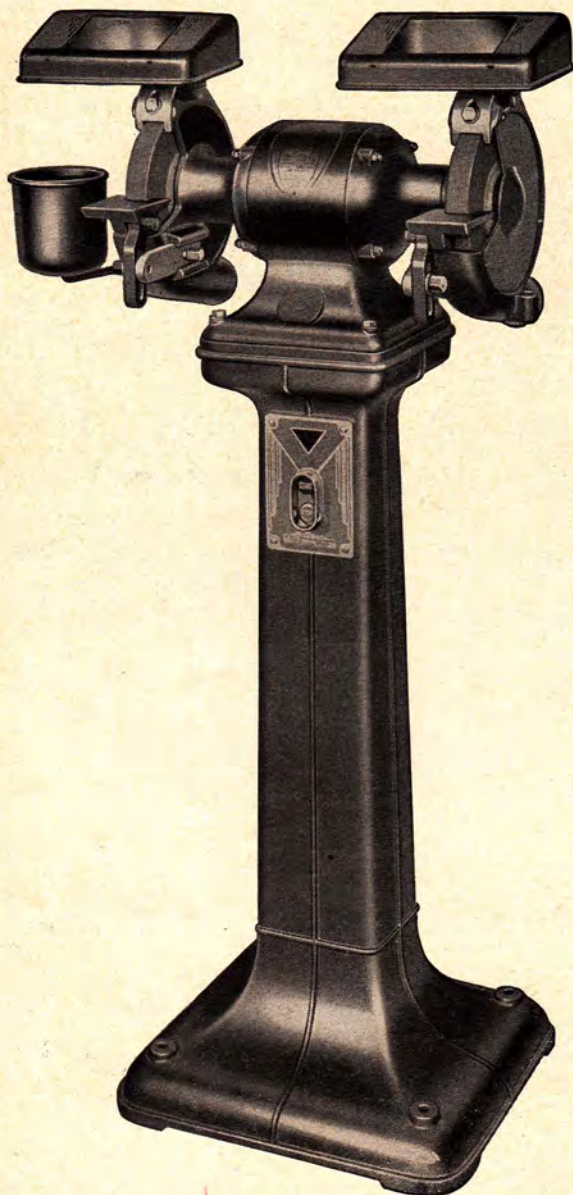


GRINDER ATTACHMENT

No. 24-952—Toolmaker Tool and Cutter Grinding attachment consisting of swivel table (for application to table No. 24-105 Toolmaker Surface Grinder) with head and tail stocks, and tooth stop unit. Shipping Weight 70 lbs. Code SURTB
(FOR PRICES SEE ATTACHED PRICE LIST)

THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.

Industrial Grinders "That Cannot Forget Their Goggles"



These perfected tool grinders are the most accurate, finest and safest grinders made—regardless of price!

From the double sealed-for-life ball bearings to the Twin-Lite Safety Shields these grinders offer the utmost in efficiency, convenience and safety and set new standards because they contain additional features not found in competitive makes.

The price belies the quality. The Twin-Lite Safety Shields flood both sides and face of the wheel making the grinder independent of the shop lighting system.

Fully MACHINED tool rests—efficient guards—wheels balanced to 1/10 inch ounce—these are only a few of the outstanding features of these remarkable grinders.

Size: Heavy, well proportioned, cast iron housing. Pedestal model has heavy base, 14½" by 15½"—tool rests are 39" from floor. Has one 4" water pot.

Motor: Available with a wide variety of motors as listed opposite. For units with other motors, write for prices and specifications.

Wheels: Balanced to 1/10 inch ounce 60N and 46M Aluminous oxide wheels, 1" face by 7" diameter, 5/8" hole. Absolutely true and vibrationless to permit accurate tool grinding.

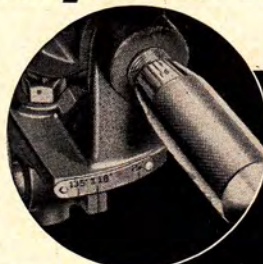
Tool Rests: Fully machined—not rough castings. Are fully adjustable vertically and horizontally—designed so that full advantage can be taken of sides of wheels. Easily detached.

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

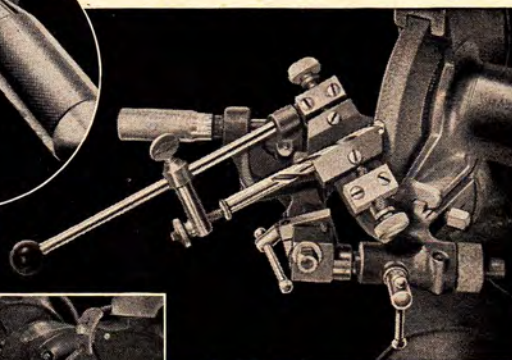
Safety Shields: Patented Twin-Lite standard on all models. Double thickness shatter-proof glass. Included with each shield are two lamps which flood both sides and face of wheels independent of shop lighting system. No glare in operator's eyes.

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

Improved DRILL GRINDING ATTACHMENT



In circle—accurate scale to set attachment to the drill angle you need for the job.



Above—No. 1296 Drill Grinding Attachment.

Left—Holder for Wheel Dresser. Wheel Dresser not included. See opposite page for description.

This improved drill grinding attachment which uses the face of the wheel—the natural way—is a precision built unit so accurately made—so easy and simple to operate that anyone can now do a perfect drill sharpening job. Micrometer settings insure evenly ground lips so that drills run true. The amount of lip clearance on the drill is just right with enough of the heel cut away to provide enough clearance without weakening the cutting edge.

An additional feature of this new attachment is that you can adjust it so that you can grind the drill to fit your own job—with lip clearance and angles at any degree you need them. Capacity: 1/8" to 5/8" drills. Compared point by point with any other device of this kind, this new unit is by far the better unit. No. 1296—Drill grinding attachment as illustrated with holder for wheel dresser. 10 lbs. Code GRIMJ

(FOR PRICES SEE ATTACHED PRICE LIST)

The Finest, Safest and Most Accurate Grinders Made

DELTA
MILWAUKEE

Mach. No.	Replaces No.	Motor Description	Speed R.P.M.	H. P.	Type of Switch	Safety Shields	Lamp Bulbs	Wheel Guards	Wheels	Ship. Wt. Lbs.	Code Word
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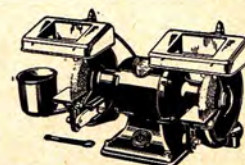
BENCH TYPE MOTOR DRIVEN GRINDERS

23-105	1240	110 V. 60 Cy. Single Phase	3450	1/2	Toggle	2	4	2	2	95	GRINA
23-109	1272	110 V. 50 Cy. Single Phase	2850	1/2	Toggle	2	4	2	2	95	GRIFA
23-111	1271	220 V. 60 Cy. Single Phase	3450	1/2	Toggle	2	4	2	2	95	BENDC
23-112	1277	220 V. 50 Cy. Single Phase	2850	1/2	Toggle	2	4	2	2	95	GRIFE
23-115	1244	220 V. 50/60 Cy. 3 Phase	2850/3450	1/2	None	2	4	2	2	95	GRINF
23-118	1287	440 V. 50/60 Cy. 3 Phase	2850/3450	1/2	None	2	4	2	2	95	GRINW
23-120	1304	115 V. D. C.	3450	1/2	Toggle	2	4	2	2	95	GRIFJ
23-121	1307	230 V. D. C.	3450	1/2	Toggle	2	4	2	2	95	GRIFM

PEDESTAL TYPE MOTOR DRIVEN GRINDERS

23-405	1242	110 V. 60 Cy. Single Phase	3450	1/2	Toggle	2	4	2	2	170	GRINC
23-407	1268	110 V. 60 Cy. Single Phase	3450	1/2	Relay	2	4	2	2	170	GRINT
23-409	1274	110 V. 50 Cy. Single Phase	2850	1/2	Toggle	2	4	2	2	170	GRIFB
23-410	1275	110 V. 50 Cy. Single Phase	2850	1/2	Relay	2	4	2	2	170	GRIFC
23-411	1273	220 V. 60 Cy. Single Phase	3450	1/2	Toggle	2	4	2	2	170	GRIFI
23-412	1278	220 V. 50 Cy. Single Phase	2850	1/2	Toggle	2	4	2	2	170	GRIFF
23-415	1246	220 V. 50/60 Cy. 3 Phase	2850/3450	1/2	Relay	2	4	2	2	170	GRING
23-418	1285	440 V. 50/60 Cy. 3 Phase	2850/3450	1/2	Relay	2	4	2	2	170	GRINV
23-420	1305	115 V. D. C.	3450	1/2	Toggle	2	4	2	2	170	GRIFK
23-421	1308	230 V. D. C.	3450	1/2	Toggle	2	4	2	2	170	GRIFO

Specifications, Prices and Delivery Dates of Grinders with other Motors and Speeds sent upon request.



MOTOR DRIVEN BUFFING MACHINES

No. 23-255 (Old No. 1283)—Bench Type, 110 V., 60 Cy., Single Phase, 3450 R.P.M. with Toggle Switch. Without Safety Shields, Lamp Bulbs, Wheels or Wheel Guards. Ship. Wt. 80 Lbs. Code GRIBS

No. 23-475 (Old No. 1284)—Pedestal Type 110 V., 60 Cy., Single Phase, 3450 R.P.M. with Toggle Switch. Without Safety Shields, Lamp Bulbs, Wheels or Wheel Guards. Ship. Wt. 155 lbs. Code GRIBT

3450 R.P.M. = 6500 Ft. per Minute — 2850 R.P.M. = 5370 Ft. per Minute.

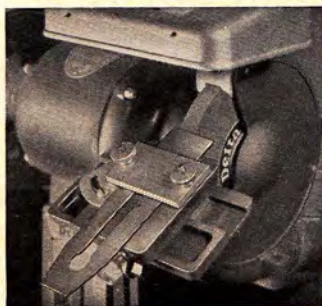
PLANE BIT GRINDING ATTACHMENT

Here is a Plane Bit Grinding attachment that has all of the best features of existing designs yet has additional advantages that increase its usefulness in the shop. The carriage table is readily clamped to the adjustable arm on the grinder. The table tilts so that the desired angle is obtained. This table is fully machined and on it rides the plane bit holder and clamp.

The plane bit is clamped as shown — an adjustable quadrant is located on the left side which permits the accurate grinding of angle knives as well as assuring an accurate right angle position for straight knives. The knurled nut below gives hair-like adjustment for the amount of the "cut" when grinding. The entire carriage and clamp may be lifted off the table thus providing a convenient and accurate table for other grinding without the necessity of replacing the regular tool rest.

Distance between clamp screws is $3\frac{3}{16}$ " affording ample space for wide knives as well as scrapers.

Diamond Pointed Wheel Dresser No. 3121 may be clamped into holder alongside the angle quadrant for wheel dressing.



No. 1294—Plane Bit Grinding attachment as illustrated. Ship. Wt. 6 lbs. Code GRIMA

ACCESSORIES

Cat. No.	Description	Wt. Lbs.	Code Word
*1245	3/4" x 7" Aluminous Oxide Wheel, 60 Grit, Grade N, 3/8" Hole	2	GRINJ
*1247	3/4" x 7" Aluminous Oxide Wheel, 46 Grit, Grade M, 3/8" Hole	2	GRINK
1267	3/8" x 7" Vit. Al. Oxide Wheel, 46 Grit, 3/8" Hole	2	GRISL
1250	Twin-Lite Shield (One Only) No Bulbs	3	GRILT
1236	Fine-knotted Wire Brush, 3/8" Hole, 6" Dia.	1	WIRRA
1237	Medium-knotted Wire Brush, 3/8" Hole, 6" Dia.	1	WIRRC
1238	Coarse-knotted Wire Brush, 3/8" Hole, 6" Dia.	1	WIRRE
*23-815	1" x 7" Al. Oxide Wheel, 60 Grit, Grade N, 3/8" Hole	3	GRIDE
*23-816	1" x 7" Al. Oxide Wheel, 46 Grit, Grade M, 3/8" Hole	3	GRIDF

*Grinders prior to Serial No. 18-1403 take No. 1245 and No. 1247 grinding wheels. Subsequent grinders take No. 23-815 and No. 23-816. When ordering replacement wheels, be sure to specify correct catalog numbers.

Diamond Pointed Wheel Dresser



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

No. 3121—Dressing Tool. Ship. Wt. 1 lb. Code GRIAO

Dust Collector for Grinder

This practical and efficient dust collector is self-contained and need not be connected to the shop blower system. No additional power is required. Grinder is completely portable. Efficient filters virtually trap all of the fine dust.

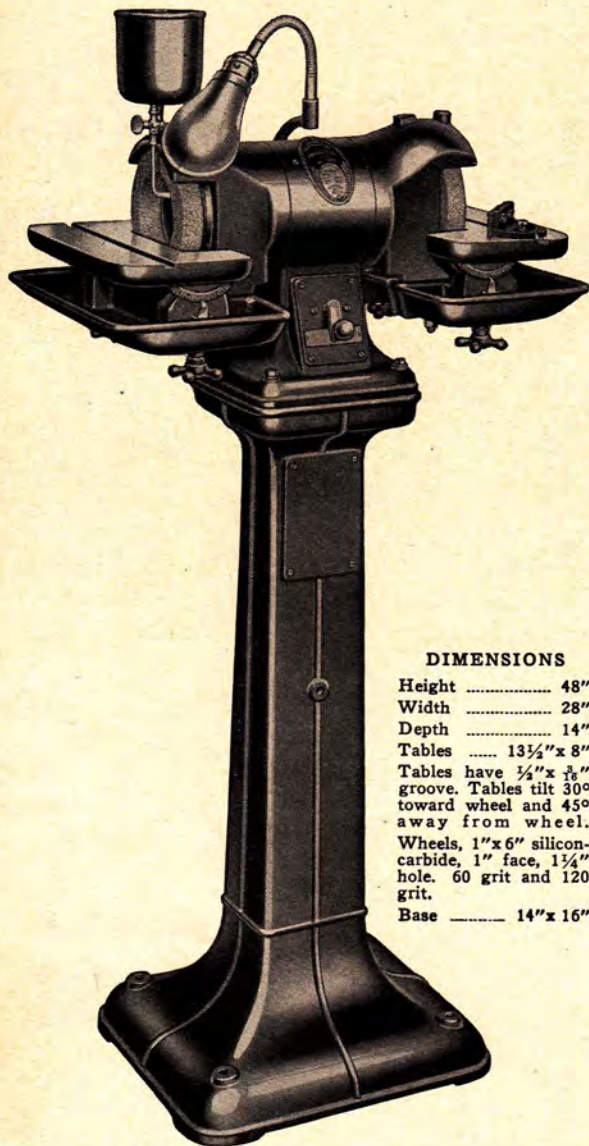
No. 1292—Dust Collector unit for pedestal grinder with filter, brackets, screws. 40 lbs. Code DUSTO

No. 1293—Replaceable filter for above. Ship. Wt. 10 lbs. Code DUSTY



THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.

Carbide Tool Grinder Unequalled for General Utility and Convenience



DIMENSIONS

Height	48"
Width	28"
Depth	14"
Tables	13½" x 8"
Tables have ½" x ⅜" groove. Tables tilt 30° toward wheel and 45° away from wheel.	
Wheels, 1" x 6" silicon-carbide, 1" face, 1¼" hole. 60 grit and 120 grit.	
Base	14" x 16"

Because the use of tungsten-carbide tools is spreading so rapidly in the machine shops, this carbide tool grinder has been developed which for accuracy, sturdiness, adaptability, general convenience and low cost cannot be duplicated by any other unit available.

It is another outstanding achievement — incorporating the best principles of design which insure accuracy and long life. Manufactured by modern precision methods in a modern plant, its cost is so low that it can be used in any shop, large or small. This grinder together with the regular tool grinders shown on the preceding page makes a perfect set-up because on most carbide tools a coarse grit vitrified wheel is used for hogging down the shank steel of the tools which can be done on the regular grinder whereas the carbide grinder is used for sharpening the carbide tips of tools.

It is made in chiefly two styles — a bench and pedestal model with a wide range of motors as listed.

The motor with self-sealed ball bearings, which require no lubrication for their entire life, is contained in the head and is of the reversing type because the rotation of the wheels must be down against the cutting edge. The reversing switch is built into the base and is convenient. Manual operated brakes on each wheel permit the grinder to be slowed down and stopped immediately for reversing.

Two 1" x 6" steel backed silicon-carbide wheels with a 1" face, and a 1¼" hole, are furnished — one of 60 grit and one 120 grit. These are mounted directly onto the motor shaft. The speed is 3450 R.P.M. which gives a surface speed of the wheel of 5200 feet per minute. The grinder will take standard diamond wheels which we suggest should be obtained from your regular wheel source.

A heavy cast iron water pot with stop cock and copper tube is furnished for bringing water to the grinding surface on diamond wheels.

The heavy, accurately ground tables are 13½" wide and 8" deep and tilt 30 degrees toward the wheel and 45 degrees away from the wheel as illustrated — accurate indicators and scale plates show the angle of the tables. The tables have a ½" x ⅜" groove for fixtures and jigs. A sliding gage with a tilting head is furnished standard with grinder.

The grinding of the carbide tool and the use of water results in a large amount of rusty sludge which collects in the water tray in the sub-base. With other grinders this is difficult to remove. With this new grinder this is a simple procedure. By simply loosening two bolts the entire sub-base can be removed from the grinder and the sludge scraped out and washed clean — thus you have a clean machine for accurate grinding at all times.

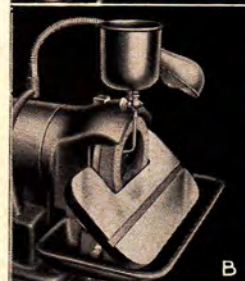
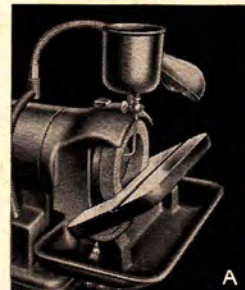
The adjustable light is another feature built into this grinder for your convenience. It swings from one side to the other but has a definite stop so that the wires cannot become twisted in the conduit. It provides light when you need it, where you need it, independent of general shop lighting.

So well is this machine built — so accurate is the machining that it runs absolutely true and free from vibration so that accurate, delicate grinding can be done.

(A) This photo shows detail of table tilted 30 degrees towards the wheel. Note indicator and accurate scale plates below table which shows table angle. Note also convenient arrangement of water pot and copper tube so that water can be brought to the wheel just where it is needed.

(B) This shows detail of table tilted 45 degrees away from wheel. Note hand brake blocks protruding from top of wheel housing. Note also how light can be swung around to give perfect illumination for accurate grinding.

(C) This shows detail of reversing switch conveniently located at front of grinder. It is of the six pole type and completely wired into the unit. This switch opens both sides of line.



Mach. No.	Old Cat. No.	Motor Description	Speed R.P.M.	Ship. Wt. Lbs.	Code Word
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BENCH TYPE MACHINES HORSE POWER OF MOTOR IS ½ H.P.

23-505	1650	110 V. 60 Cy. Single Phase ..	3450	125	GRIMB
23-506	1651	110 V. 50 Cy. Single Phase ..	2850	125	GRIMC
23-507	1652	220 V. 60 Cy. Single Phase ..	3450	125	GRIMD
23-508	1653	220 V. 50 Cy. Single Phase ..	2850	125	GRIME
23-510	1656	220/440 V. 50/60 Cy. 3 Phase	2850/3450	125	GRIMH
23-515	1654	115 V. D. C.	3450	125	GRIMF
23-516	1655	230 V. D. C.	3450	125	GRIMG

PEDESTAL TYPE MACHINES HORSE POWER OF MOTOR IS ½ H.P.

23-555	1670	110 V. 60 Cy. Single Phase ..	3450	205	GRIMS
23-556	1671	110 V. 50 Cy. Single Phase ..	2850	205	GRIMT
23-557	1672	220 V. 60 Cy. Single Phase ..	3450	205	GRIMU
23-558	1673	220 V. 50 Cy. Single Phase ..	2850	205	GRIMV
23-560	1676	220/440 V. 50/60 Cy. 3 Phase	2850/3450	205	GRIMW
23-565	1674	115 V. D. C.	3450	205	GRIMW
23-566	1675	230 V. D. C.	3450	205	GRIMX

All models have 1 lamp attachment, 1 water pot and 2 wheels. When manual starter with overload protection is desired for 3 phase or D.C. motors, use No. 1320 manual starter—see pages 20 and 21.

(FOR PRICES SEE ATTACHED PRICE LIST)

Accessories for Carbide Tool Grinder

Cat. No.	Description	Ship. Wt. Lbs.	Code Word
1661	1" x 6" Sil. Carb. Wh. 60 G., 1" Face, 1¼" Hole...	10	GRIML
1662	1" x 6" Sil. Carb. Wh. 120 G., 1" Face, 1¼" Hole...	10	GRIMM
1663	One Water Pot with Faucet.....	5	GRIMN
1664	Holder for Diamond Wheel Dresser.....	1	GRIMO

Abrasive Belt Finishing Machine Has Many Industrial Applications

DELTA
MILWAUKEE

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

Adapted for Many Industrial Finishing Operations

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

Used Vertically or Horizontally

This machine may be set horizontally, as shown at right below, and equipped with a wood fence for edge or face sanding, if required. Or it may be used vertically, in connection with the $7\frac{1}{2} \times 14\frac{3}{4}$ " tilting table as shown at top of page, for a wide variety of operations in both wood and metal.

Specifications

Completely ball-bearing equipped. Double-seal bearings, lubricated at the factory for life. Completely enclosed and guarded in accordance with all safety requirements. Exceptionally heavy main drive shaft, carrying large diameter drum ($5\frac{1}{2}$ "). Large driving pulley to transmit power. No rubber covering required on drums, thus eliminating one source of replacement expense. Adjustable deflector on drum hood catches practically all sawdust. Hood is provided with suction spout. Machine operates vertically as well as horizontally. Cloth-backed belt, 6" wide by 48 $\frac{1}{8}$ " long. Aluminum-oxide belts for metal finishing. Tilting table $7\frac{1}{2} \times 14\frac{3}{4}$ ", with $\frac{3}{8} \times \frac{3}{4}$ " groove for miter gage, is available for use in vertical position. Adjustable fence for edge sanding and adjustable back stop for flat sanding are available for use in horizontal position.

No. 31-505—Complete Abrasive Belt Finishing Machine on steel stand consisting of: Abrasive Belt Finishing Machine with No. 1414 Aluminous Oxide belt; tilting table; steel stand; belt guard; V-belt and motor pulley. Without motor or switch. 124 lbs. Code SANDR

See Page 42 for an Abrasive Disk Type Finishing Machine.

ACCESSORIES

No. 560 —Replacement V-belt. 1 lb. Code EICUB
No. 595 —Replacement V-belt. 1 lb. Code EICVB
No. 1414—6" Al. Oxide Belt for Metal, 100 grit. Fine. 1 lb. Code SANDP
No. 1415—6" Al. Oxide Belt for Metal, 50 grit. Coarse. 1 lb. Code SANDQ
No. 1403—Backstop complete with Bracket. 4 lbs. Code SANDD
No. 1410—Wood Fence ($3\frac{1}{4} \times 17\frac{1}{2}$ ") with Brackets. 7 lbs. Code SANDL
No. 1412—6" Garnet Belt for Wood, 80 grit. Fine. 1 lb. Code SANDN
No. 1413—6" Garnet Belt, 40 grit. Coarse. 1 lb. Code SANDO
No. 864 —Miter Gage. $4\frac{1}{2}$ lbs. Code NECMI

MOTORS RECOMMENDED:

LIGHT DUTY: 84-510— $\frac{1}{2}$ H.P. R.I. A.C. 110/220 V. 60 Cy.
86-520— $\frac{1}{2}$ H.P. 3 Ph. A.C. 220/440 V. 50/60 Cy.
MEDIUM DUTY: 84-710— $\frac{3}{4}$ H.P. R.I. A.C. 110/220 V. 60 Cy.
86-720— $\frac{3}{4}$ 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.
87-120—1 $\frac{1}{2}$ H.P. 3 Ph. A.C. 220/440 V. 50/60 Cy.

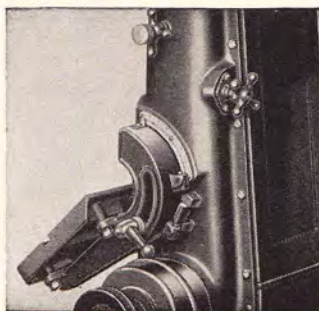
For 3 Phase Motor on Steel Stand use No. 1320 or No. 1329 Manual Starter and No. 1322 Mounting Parts. No Mounting Parts are required on Cast Iron Stand.

For Single Phase Motor on Steel Stand use No. 1334 Switch Rod. For Cast Iron Stand use No. 132 Switch Box.

See pages 20-21 for Motors and Switches.



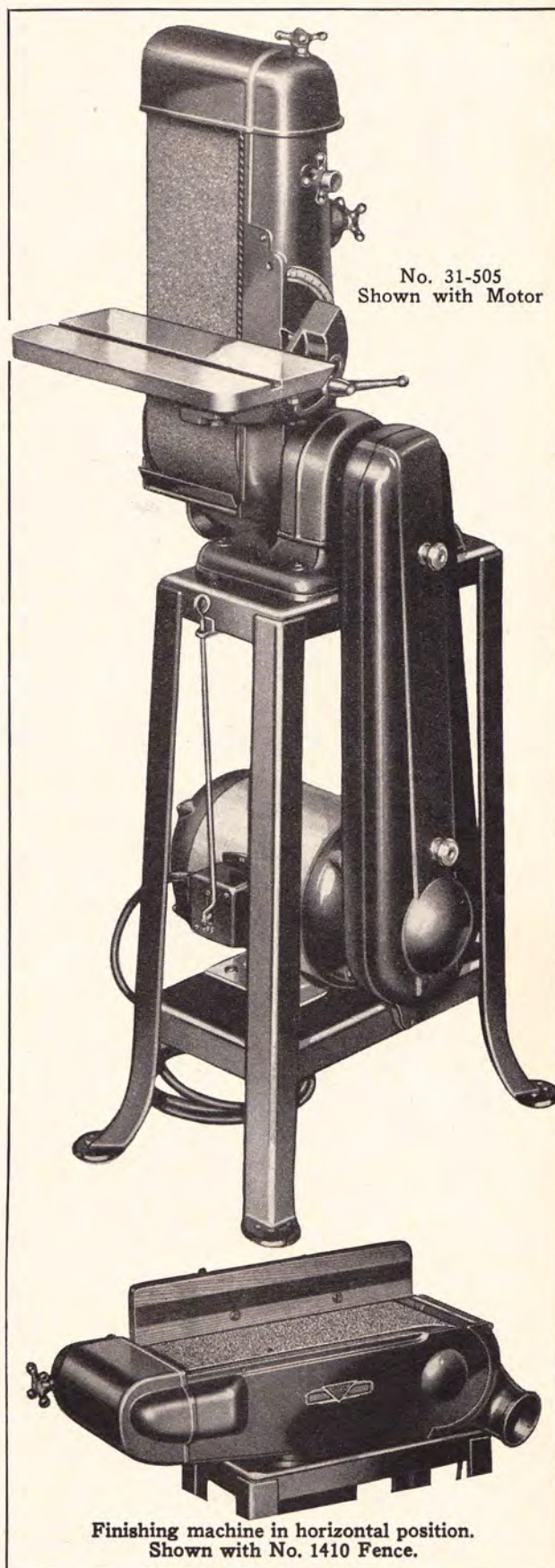
Above. View from rear, showing adjustable back stop and its bracket. This is available for use in sanding flat work, to prevent it from being carried along with the belt.



Right. A close-up view of the heavy trunnion that carries the

tilting table, showing the swinging stop link and adjustable stop screws. A tilting scale and adjustable pointer are also provided.

(FOR PRICES SEE ATTACHED PRICE LIST)

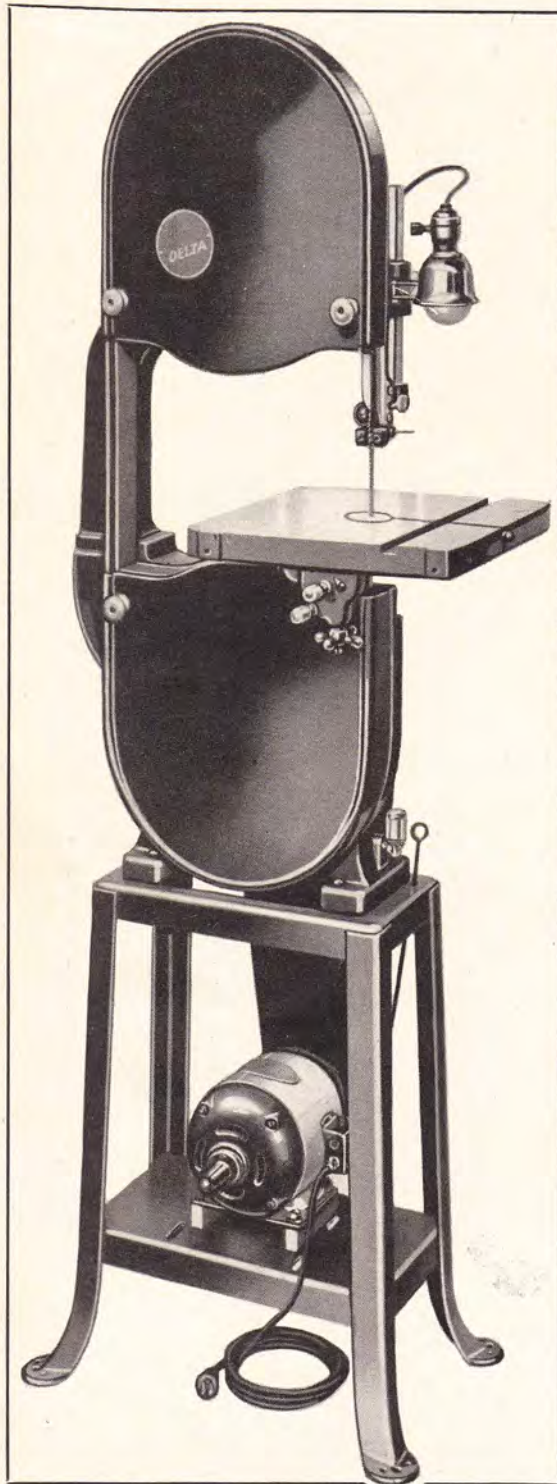


No. 31-505
Shown with Motor

Finishing machine in horizontal position.
Shown with No. 1410 Fence.

THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.

14" Metal Cutting Band Saw Ideal for Cutting Wide Range of Materials



There seems to be no limit for the uses of this economical, low-cost, high-quality band saw around the general tool and machine shop. It is used for cutting everything from carbon tool steel to asbestos with hundreds of other applications. It has four metal-cutting speeds and one wood-cutting speed which makes it ideal for the pattern shop.

BEARINGS: All wheels and shafts in this machine are carried on New Departure self-sealed ball bearings. The use of ten of these bearings insures trouble-free performance for the entire life of the bearings.

GEAR UNIT: Gear unit self-contained. Spiral drive pinion and intermediate gear, final drive spur gear and pinion.

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

TABLE: Massive table, 14"x14", swinging smoothly on double trunnions. Makes very rigid table mounting, and permits removal of blade without disturbing rip-gage bars. Table tilts 45 degrees to right and 10 degrees to left with positive stops. 3/8"x3/4" groove for miter-gage.

GUIDES: Finest type of guide ever offered. Each adjustment independent of others, and each made with micrometer accuracy. Guide pins can be set to blade teeth without disturbing the setting of the blade support, and blade support can be set without altering adjustment of guide pins. High-grade reversible double-seal ball bearing blade supports. Lower guide of same construction as upper one, with added safety feature that all controls are brought out to front of table. Guide comes within 3/4" of table top.

WHEELS: Heavy cast iron safety type wheels rimmed to make tire renewal easy; no cement required.

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

Catalog Listing of 14" Metal Cutting Band Saw

No. 28-307—Complete 14" Metal Cutting Band Saw unit (not illustrated) on steel stand consisting of one 14" metal cutting band saw with wheel guard, 8" arbor pulley for wood, 4-step arbor pulley for metal, No. 1062 metal cutting blade; steel stand; belt guard; V-belt for metal drive; V-belt for wood drive; 4-step motor pulley (specify bore). Without motor or switch. 250 lbs. Code LABMI
(See page 43 for a 14 Inch Wood Cutting Band Saw)

ACCESSORIES

No. 882—Lamp attachment. 1 1/2 lbs. Code LAMPA
No. 387—Replacement V-belt for metal drive. 1 lb. Code FORDP
No. 568—Replacement V-belt for wood drive. 1 lb. Code FORVD

MOTORS RECOMMENDED

No. 84-510—1/2 H.P. R.I. A.C. 110/220 V. 60 Cy.
No. 86-720—3/4 H.P. 3 Ph. A.C. 220/440 V. 50/60 Cy.
No. 88-510—1/2 H.P. D.C. 115 V.

The slowest rate of travel of the saw blade using a 1725 R.P.M. motor is 120 feet per minute.

Use No. 1320 Manual or No. 1329 Magnetic 3 Phase Starter for 3 Phase Motors. This Starter can be bolted direct to the cast iron stand but when the steel stand is used No. 1322 mounting parts must also be used.

With Single Phase Motors the No. 132 switch box can be mounted direct to the cast iron stand, but when the steel stand is used the No. 1334 switch rod is recommended.

See Pages 20 to 21 for Motors and Switch Parts.

Specifications

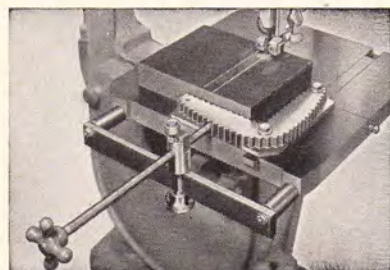
CAPACITY: Blade to frame is 14". Capacity under guide is 6"; with No. 894 Height Attachment it is 12 1/4". **SPEEDS:** With 1725 R.P.M. motor, 125, 175, 250 and 340 feet per min. With 1140 R.P.M. motor, 80, 114, 160 and 220 feet per min. For Woodworking there is one speed only of 2200 feet per min. using a 1725 R.P.M. motor. **TABLE:** 14"x14", tilts 45° to right and 10° to left. Table from floor is 42 3/4". **OVERALL HEIGHT:** 65 1/2". Width 16 1/4", front to back 24 3/4". Blades 93" long are used.

Metal Cutting Band Saw Blades

93 1/2 INCHES LONG
Made of high grade electric furnace steel, accurately set, spaced and jointed. These blades will stand up under hard work. These are hard-edge blades for cutting all metals.

Cat. No.	Width	Teeth Per Inch	Ship. Wt. Lbs.	Code Word
1060	3/4"	14	1	BLMET
1062	3/4"	18	1	BLMEU
1064	3/4"	24	1	BLMEX

(FOR PRICES SEE ATTACHED PRICE LIST)



NEW SCREW FEED ATTACHMENT FOR METAL CUTTING BAND SAW

An added convenience for the tool room is this new Screw Feed attachment for the 14" Metal Cutting Band Saw. The toothed segment clamps to the guide bar by means of two screws as illustrated or it may be inverted so that long bars may be cut. Removing it entirely from the guide bar permits the cutting of round or oval shapes. The threaded clamping post holding the feed screw may be clamped at various positions along the front extension bar so that the proper leverage can always be applied to the segment when cutting. The top screw in the clamping screw allows the feed screw to be disengaged for rapid adjustment. A labor saver which helps produce accurate work.

No. 28-852—Complete Screw Feed Attachment as shown for 14" Band Saw. 12 lbs. Code LABML

NEW

Electric Butt Welder for Band Saw Blades

A handy, portable unit that makes a clean, perfect weld—is fast in operation.

**DELTA
MILWAUKEE**

HERE is a new electric welding unit for butt welding band saw blades which has so many advantages, is so well engineered and constructed and does such a fine welding job that it is the favorite in all shops where it is used.

It is simple to operate—anyone without previous experience can make a clean, perfect weld—it is almost fool-proof. The saw clamps are of an entirely new design. They grip the saw blade firmly and give a positive and accurate line-up of the blade so that full electrical contact is obtained for a good weld. Only the flat portion of the blade is clamped—the saw teeth are free. All thicknesses of blade can be clamped. By turning the Tension Indicator handle to the "Weld" position and turning on the electrical switch, the weld is automatically made. It then can be properly annealed—the heat being accurately controlled by means of a convenient trigger switch. The convenient, built-in bakelite grinding wheel allows the operator to remove all welding flash so that the blade makes a clean smooth cut.

These operations are simple and direct. There is no "guess work"—even the most inexperienced operator can do a perfect job. Instructions are so simple that they are all contained on the metal nameplate on the front of the unit.

LEFT — Note complete, simple instructions on nameplate, clamping levers, indicator and switches. RIGHT — Complete, compact unit is portable to be moved where needed. Stand is sturdy and heavy.

Saves Time and Money

There is a tremendous saving in time and money by using this new Butt Welder. In addition, it is so low in cost that it soon pays for itself.

Being entirely portable (mounted on the stand as shown) it can be used for several machines; thus it will take care of an entire battery of metalcutting band saws.

☆☆☆

These are but a few of the most prominent advantages of this new Butt Welder, but they are important enough to you to show you that you should have this unit in your shop. Additional features are of added value to you. At this low cost any type of shop can afford one or more units. Order yours today.

SPECIFICATIONS

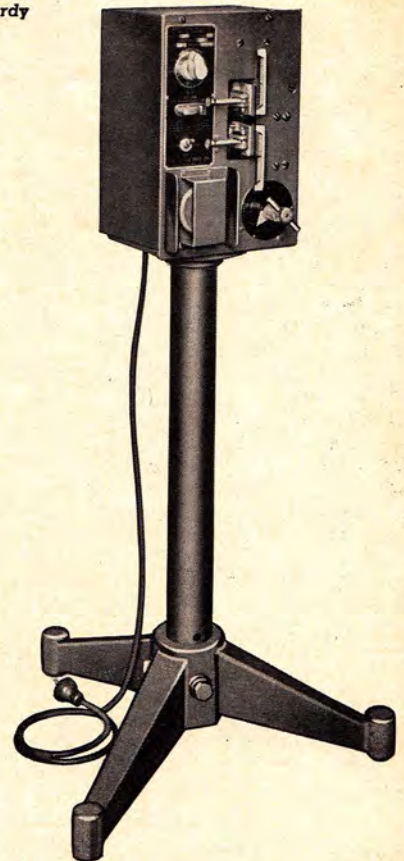
Size (unit) 12" high, on stand 42", 8" wide, 8 $\frac{1}{4}$ " deep. Available for 110 or 220 volt service only. Has snap acting switch. Grinder is built-in with ball bearing motor. One Bakelite 46 grit grinding wheel furnished.

No. 28-905—Complete Butt Welder as illustrated for $\frac{1}{8}$ " to $\frac{1}{2}$ " blades with grinding wheel, mounted on stand. For 110 volt, 50 or 60 cycle AC single phase service. Shipping Wt. 102 lbs.....Code WELDA

No. 28-907—Complete Butt Welder as illustrated for $\frac{1}{8}$ " to $\frac{1}{2}$ " blades with grinding wheel, mounted on stand. For 220 volt, 50 or 60 cycle AC single phase service. Shipping Wt. 102 lbs.....Code WELDS

No. 28-908—Complete Butt Welder as illustrated for $\frac{1}{8}$ " to $\frac{3}{4}$ " blades with grinding wheel, mounted on stand. For 220 volt, 50 or 60 cycle AC single phase service. Shipping Wt. 102 lbs.....Code WELDR

No. 28-910—Extra grinding wheel for Butt Welder. 46 grit. 2 $\frac{1}{2}$ x 3 $\frac{3}{8}$ " with $\frac{1}{8}$ " hole. Shipping Wt. 4 lbs.....Code WELDW
(FOR PRICES SEE ATTACHED PRICE LIST)



THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.

The 10-inch Tilting Arbor Circular Saw Is Ideal for Production Work



A Typical Application is shown here in which the Unisaw is used to cut metal shapes and forms in the construction of Consolidated flying boats and bombers. Dozens of other companies are using these versatile saws for cutting sheet, rod and tube stock of duralumin and other material, as alert shop men have realized their usefulness and low cost.

Thousands of Shops use the Unisaw for Production Work

The Unisaw, the first saw to incorporate all of the best features of saw design, is the best saw value on the market. So well did it meet modern production requirements that it was an immediate success with the result that it is being used by thousands of shops where its accuracy, power and all around convenience is almost unbelievable in the light of its low price. It is completely self contained, motor and driving mechanism being enclosed in a handsome, modern, tremendously strong steel cabinet.

Saw blade tilts 45 degrees to right, operation being effected by a large convenient hand wheel. Blade is raised and lowered by another hand wheel at front of machine. Dado heads, moulding cutters and many other attachments may be used. The carriage swings on exceptionally heavy trunnions which in turn are mounted in an ingenious manner on the heavy gusset plate at the top of the extremely rigid and strong steel cabinet. These trunnions are exceptionally large, heavy and strong and are completely machined.

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

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

Ball-Bearing Arbor Bracket

The saw-arbor bracket in the Unisaw is a very heavy casting, with accurately machined teeth to fit the raising and lowering

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

The shaft is carried in two sealed-for-life bearings, mounted in diamond-bored seats, and since it oscillates only slightly within these bearings, there is practically nothing to wear out.

Specifications

10" Saw blade, rips full $3\frac{1}{8}$ " stock. Table is 20"x 27" (with wings as illustrated 36"x 27"), will handle work up to 50" wide. Guide bars allow fence to be moved 24" to right of blade and 15" to left of blade. Blade tilts 45 degrees to right. Table has two $3\frac{1}{8}$ " x $3\frac{1}{4}$ " grooves for miter gage. Rip fence locks at both ends. Special motors used, see listing opposite.

Dimensions: Top with wings including guide bars 30 $\frac{1}{4}$ " x 45 $\frac{1}{2}$ ", height 34".

Catalog Listing

No. 34-405—Complete Unisaw as illustrated for 60 cycle service consisting of: 10" Tilting Arbor Saw with Side Extension Wings (table surface 27"x 36"), micro set rip fence, combination blade, auto-set miter gage, extension rip-fence, graduated guide bars, motor pulley, 3 V-belts and super-safe guard. Without motor or switch. 334 lbs. Code TILTO

No. 34-407—Complete Unisaw as described above but for 25 and 50 cycle service. Without motor or switch. 334 lbs. Code TILT

Accessories

No. 291 —V-belt for 60 cy. Unisaw Motors (3 req.). 12 oz. Code BELTW
 No. 281 —V-belt for 50 cy. Unisaw Motors (3 req.). 12 oz. Code BELTX
 No. 1452—Dado Head Table Insert. 1 $\frac{3}{4}$ lbs. Code TILTC
 No. 1453—Moulding Cutter Table Insert. 1 $\frac{3}{4}$ lbs. Code TILTD

(FOR PRICES SEE ATTACHED PRICE LIST)

Super-Safe Guard—Rugged Motors Add to Dependability of the Unisaw

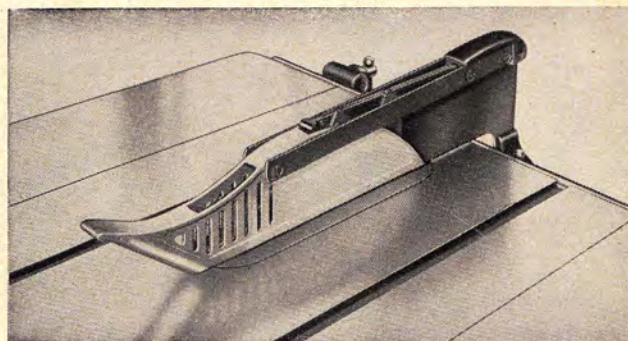


PROVIDES PERFECT PROTECTION FOR THE UNISAW

Provides maximum protection because it combines basket, splitter and kick-back fingers in one unit. The No. 1471 "Super-Safe" splitter-mounted guard shown at right is anchored directly to the arbor bracket so that when the saw is tilted the guard follows the saw—thus complete protection is always assured no matter at what angle the saw is set.

The basket is held rigidly in place but is free to pivot up and down to accommodate the work, of any thickness, within the range of the saw, yet covering the saw at all times.

The splitter prevents wedging of the sawed wood against the blade. The kick-back fingers prevent the work being kicked back against the operator if the wood pinches on the saw blades.



No. 1471 Super-Safe Guard

These guards protect operator

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

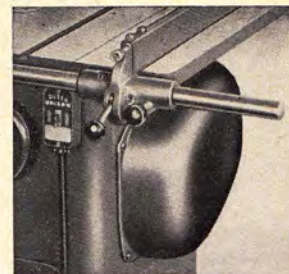
No. 1471—"Super-Safe" splitter mounted guard. 11 lbs. TILGB

Motor Housing

No. 1454—Motor cover for housing of No. 1450 Unisaw. With screws. 25 lbs. Code TILTE

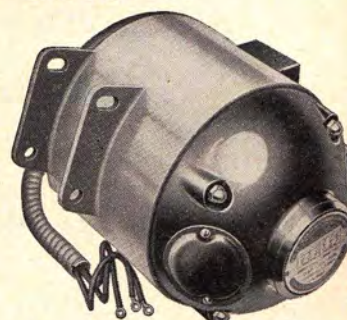
MOTOR HOUSING

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



RUGGED POWERFUL MOTORS FOR THE UNISAW

Catalog Number	Replaces Number	Type	H.P.	Cur.	Volt.	Cy.	R.P.M.	Shaft Inches	Cat. No. of Switches and Mounting Pts. to Use		Sh. Wt. Lbs.
									On and Off Switches	Mtg. Pts.	
85 010	65 010	Rep. Ind	1	AC	110/220	60	1725	3/4	▲	....	85
*85 015	*65 015	Rep. Ind.	1	AC	110/220	50	1425	3/4	▲	....	85
87 010	67 010	3 Phase	1	AC	220/440	50/60	1425/1725	3/4	1320	1459	70
*87 060	*67 060	3 Phase	1	AC	220/440	25	1425	3/4	1320	1459	70
87 210	67 210	3 Phase	1 1/2	AC	220/440	0/60	1425/1725	3/4	1320	1459	80
*89 010	*69 010	Dir. Cur.	1	DC	115	....	1725	3/4	▲	....	85
*89 011	*69 011	Dir. Cur.	1	DC	230	....	1725	3/4	▲	....	85



Type of motor used on the Unisaw. See table for description of switch furnished.

On and Off Switch supplied with Motor. *These are special and delivery requires 10 to 16 weeks after receipt of order

Unisaw motors are (1) fully enclosed to exclude dust and dirt (2) have very high reserve power (3) dependable even under abuse and (4) provide economical performance over a long life. Have large size 8 1/2" frame with ball bearings—standard speed 1725 R.P.M.—3/4" shaft.

REPULSION INDUCTION motors are supplied with a double pole switch, completely wired—with cord and plug.

THREE PHASE motors are supplied with a large conduit box—wire leads for either 220 or 440 volts. Do not have switch, cord or plug. 1 1/2 H.P. motor not fully enclosed.

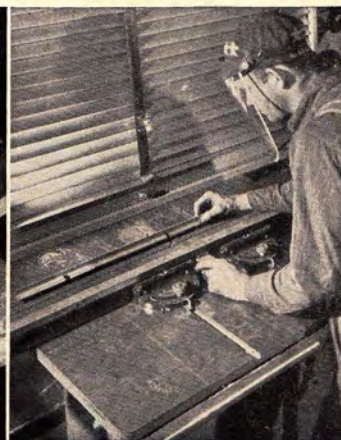
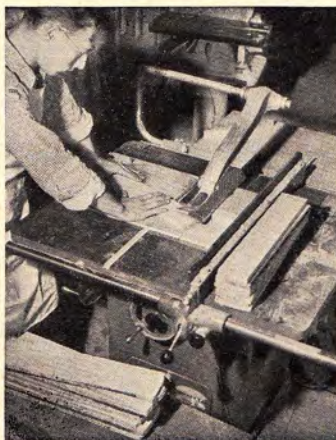
DIRECT CURRENT motors are supplied with a double pole switch completely wired—with cord and plug.

Switch Equipment for 3-Phase Motors

No. 1320—Three phase manual starter up to 2 H.P. Specify motor number for which it is to be used when ordering. 6 lbs. Code SWIPH

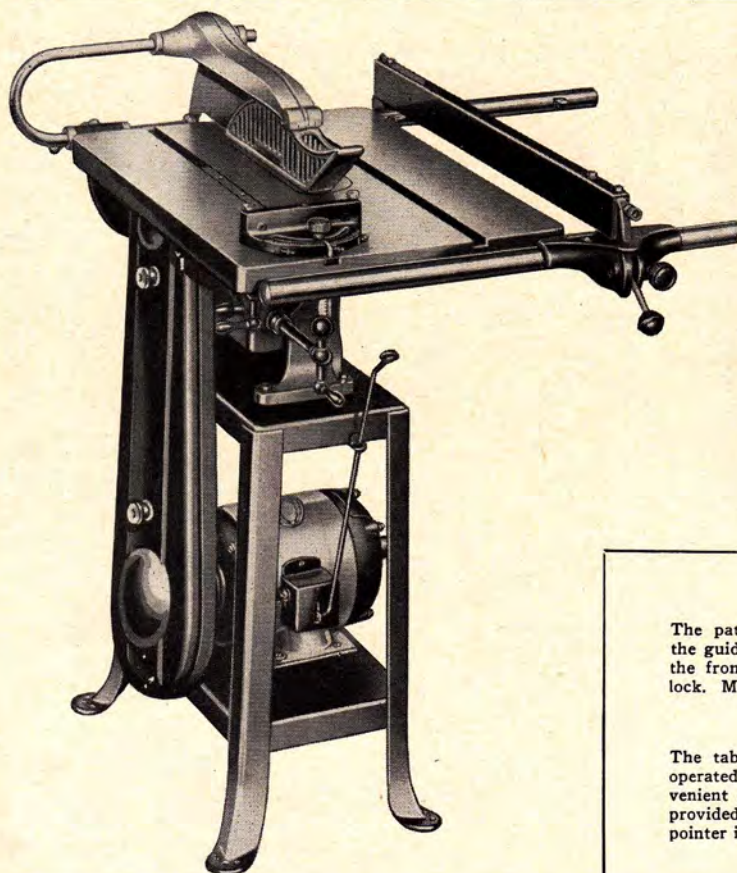
No. 1329—Three phase magnetic starter up to 2 H.P. Specify motor number for which it is to be used when ordering. 6 lbs. Code SWITD

No. 1459—Parts for mounting No. 1320 or No. 1329 switch on tilting arbor saw cabinet. 2 lbs. Code TILTK



THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.

10-inch Tilting Table Saw Has Many Operating Advantages



Rear Rip Fence Lock

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

Worm-Gear Tilting

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

Raising Mechanism

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

These are but a few of the features that mean more satisfaction for you. Consider the "hidden values"—the extra machining for accuracy, the "diamond-boring" of the ball bearing seats, the convenient controls, the scales, the "Auto-Set" miter gage and you will realize why this is the best saw available today.

Specifications

10" saw blade, will rip $3\frac{1}{4}$ " stock, cross cut 12" wide and rip to center of 50" panel. Table 20"x 27"—tilts 45° to right. Has two $\frac{3}{8}$ "x $\frac{3}{4}$ " grooves for miter gage. Removable table insert. Guide bars $1\frac{1}{2}$ " diameter, tubes are graduated. Rip fence locks in front and back. Carbon-steel arbor carried on "sealed-for-life" ball bearings. Arbor $\frac{5}{8}$ " diameter. Dado Head, Moulding Cutter Head or Abrasive Wheels can be used. Over-all dimensions on stand: height 38", width 37 $\frac{1}{4}$ ", depth 36 $\frac{1}{2}$ ".

No. 34-307—Complete 10" Tilting Table Circular Saw as illustrated on steel stand consisting of: 10" tilting table saw with auto-set miter gage, combination blade, micro-set rip fence, graduated front rip fence guide bar, plain rear guide bar, steel stand, belt guard, swing guard, splitter attachment, V-belt and motor pulley. Without motor or switch. 280 lbs. Code TENSZ

No. 530—Replacement V-belt. 1 lb. Code BELTD

Motors Recommended

LIGHT DUTY: No. 84-510— $\frac{1}{2}$ H.P. R.I. A.C. 110/220 V. 60 Cy.
 No. 86-520— $\frac{1}{2}$ H.P. 3 Ph. A.C. 220/440 V. 50/60 Cy.

MEDIUM DUTY: No. 84-710— $\frac{3}{4}$ H.P. R.I. A.C. 110/220 V. 60 Cy.
 No. 86-720— $\frac{3}{4}$ H.P. 3 Ph. A.C. 220/440 V. 50/60 Cy.

HEAVY DUTY: No. 84-910—1 H.P. R.I. A.C. 110/220 V. 60 Cy.
 No. 86-920—1 H.P. 3 Ph. A.C. 220/440 V. 50/60 Cy.

For 3 Phase Motor on Steel Stand use No. 1330 or No. 1329 Manual Starter and No. 1322 Mounting Parts. No Mounting Parts are required on Cast Iron Stand.

For Single Phase Motor on Steel Stand use No. 1330 Switch Rod. For Cast Iron Stand use No. 132 Switch Box.

See Pages 20 and 21 for Motors and Switches.

(FOR PRICES SEE ATTACHED PRICE LIST)

LARGE CAPACITY, ACCURACY, CONVENIENCE MAKE THIS THE BEST SAW AVAILABLE TODAY

This 10" Tilting Table Circular Saw was built with just one thought in mind: To produce a saw that would offer more accuracy, more capacity, more convenience, more built-in value than any similar circular saw on the market, regardless of price.

That this objective has been reached is testified by the thousands of saws that are being used today in production plants from the smallest to the largest. And although originally designed for cutting of wood only it is now found with abrasive wheels or special high speed steel blades cutting materials of almost every type and description. Its use and application is extremely wide, but wherever used enthusiastic operators praise its accuracy, rigidity, power and ease of operation.

Has Advanced Design

It is almost impossible, due to lack of space, to discuss the care and thought that has gone into the design and construction of this saw. From its rigid, accurate and husky arbor so important to perfect operation to the convenience of its controls, each detail has been worked out to give utmost satisfaction to the user.

Capacity

The large capacity of this unit has made it a favorite. It will rip through a $3\frac{1}{4}$ " plank. The table is 20"x 27" with a 12 $\frac{1}{2}$ " "Zone of Service" in front of the blade so it cross cuts a 12" board. And there is ample surface—5"—in back of the blade also. With the standard guide bars the saw will rip to the center of a 50" panel.

Rip Fence is Marvel of Convenience

The Micro-Set Rip Fence is a marvel of convenience and strength. The massive casting riding on the graduated front bar carries the fence itself, and in it is housed the "Micro-Set" pinion, which snaps into or out of engagement with the rack on the underside of the bar at a touch of the finger. The pinion carries on its outer end a large knob for the fine adjustment.

Observe the convenient cam and lever lock, with its comfortable Bakelite knob. A flip of the finger and the fence is unlocked. A light pressure of the hand and it is reclamped—and SELF-ALIGNED.

Fine Arbor Design — Approved Guards Contribute To General Excellence

DELTA
MILWAUKEE

HUSKY ARBOR INSURES ACCURATE WORK

THE ACCURACY of any Circular Saw depends upon its spindle design and construction and that is why special attention has been given the spindle of the 10" Tilting Table Saw.

It is husky, accurately machined out of carbon-steel to extremely close tolerances. It is carried on widely spaced sealed-for-life ball bearings as illustrated. These bearings need no lubrication for their entire life, thus lubrication problems are eliminated. The bearing seats in the arbor housing are "diamond-bored" so that perfect alignment is assured with the ball bearings securely held. The $\frac{5}{8}$ " arbor has acme threads. Flanges grip the blade firmly.

Approved Guards for No. 34-305 Saw (Photo A)

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

No. 1165—Swing Guard for No. 34-305 Circular Saw, photo A, with bracket support arm, pivot bracket, basket, collars and screws. 19 lbs. Code TENSX

A Splitter to Suit the Saw Kerf

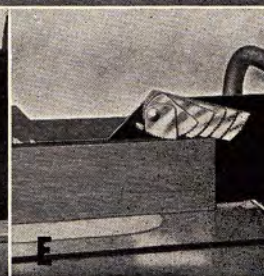
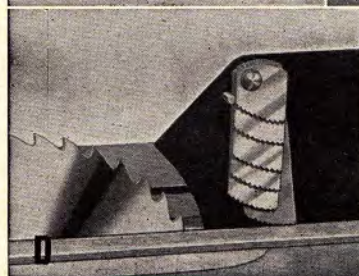
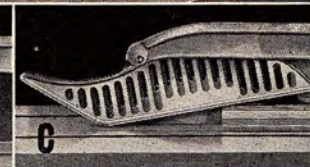
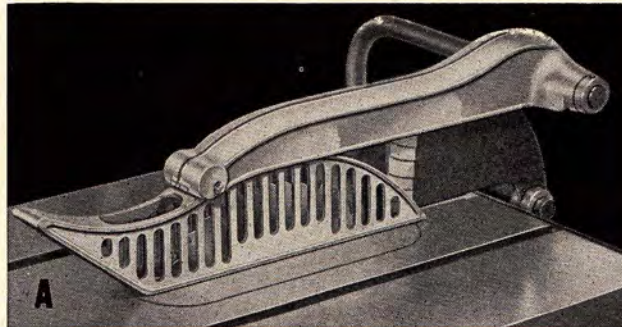
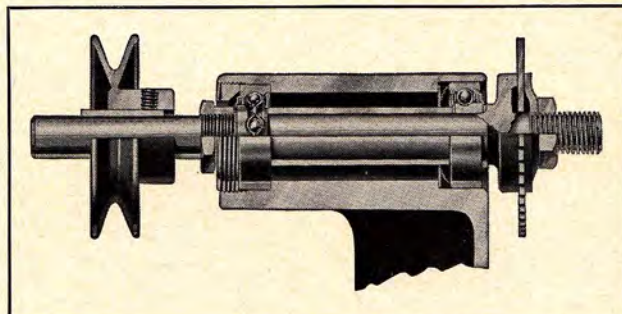
The splitter shown, photo D, is the only practical type. It comes in three thicknesses to suit saws of different sets. It may be used either with or without the basket, and it floats to accommodate itself to the kerf.

"Anti-Kickback" Adjusts Itself to Work

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

No. 1166—Splitter Attachment, photo D, for No. 34-305 Circular Saw, consisting of three splitters, anti-kickback and collars for support arm. 5 lbs. Code TENS1

(FOR PRICES SEE ATTACHED PRICE SHEET)



THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.

Accessories for 10" Circular Saws Increase Utility of These Machines

CIRCULAR SAW BLADES



No. 1015



No. 1016

DADO HEADS



Saw Blades

- No. 1017—10" Special Rip Blade for No. 34-305 or 34-405 Circular Saw. 2 lbs. Code TENSS
 No. 1018—10" Special Crosscut Blade for 34-305 or 34-405 Circular Saw. 2 lbs. Code TENST

Combination Blades

Our Combination Saw Blade is a double-purpose blade, which rips and cross-cuts equally well. Teeth have proper set for free cutting.

Made of high grade steel, properly tempered and tensioned.

- No. 1015—10" Combination Rip and Cross-cut Blade for No. 34-305 or 34-405 Circular Saw. $\frac{5}{8}$ " arbor hole. 2 lbs. Code TENSF

Hollow Ground Blades

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

- No. 1016—10" Hollow-Ground Blade, for No. 34-305 or 34-405 Saw. $\frac{5}{8}$ " hole. 2 lbs. Code TENSF

Dado Head and Inserts

For cutting of grooves varying in width from $\frac{1}{8}$ " to $\frac{13}{16}$ " and up to $\frac{1}{4}$ " deep, either with or across the grain. Made of the finest steel, carefully hardened and tempered. Includes $\frac{1}{16}$ " special inside cutter. Fits 860, 20-200, 34-305 and 34-405 saws.

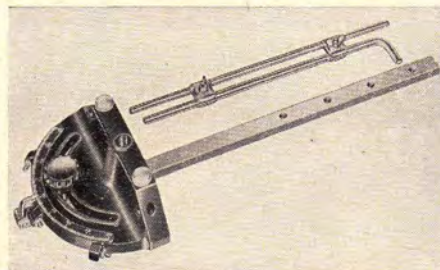
- No. 333—6" Dado Head, consisting of two outer blades, $\frac{1}{8}$ " thick, two inside cutters $\frac{1}{8}$ " thick, one inside cutter $\frac{1}{4}$ " thick and one $\frac{1}{16}$ " thick. To cut grooves from $\frac{1}{8}$ " to $\frac{13}{16}$ ", advancing by $\frac{1}{16}$ ". With $\frac{5}{8}$ " holes to fit No. 860, 34-305 and 34-405 Circular Saw. $3\frac{1}{2}$ lbs. Code EICDA

- No. 1161—Insert for No. 34-305 Saw. $1\frac{1}{2}$ lbs. Code TENSF

- No. 1452—Insert for No. 34-405 Saw. $1\frac{1}{4}$ lbs. Code TILTC

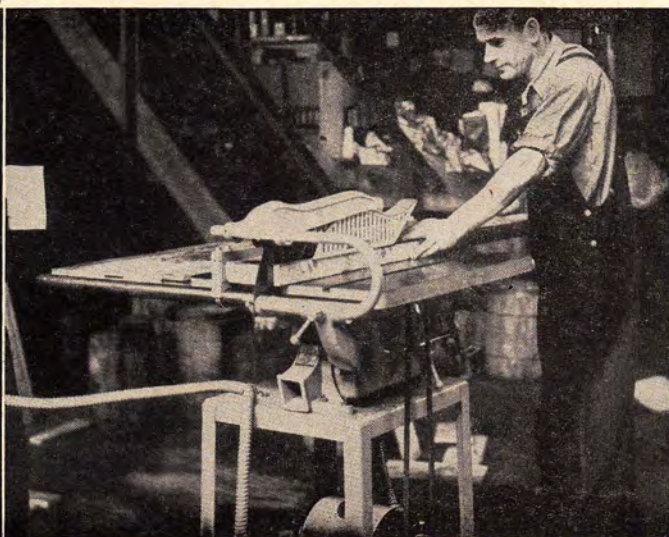


Miter Gage for Saw and Other Machines



An added convenience for saw work. Has individually adjustable index stops—tapered pivot insures accuracy—massive, heavy body gives full support, will not spring—heavy $\frac{5}{8}$ " x $\frac{3}{4}$ " bar, very rigid, 17" long—full $\frac{1}{8}$ " diameter stop rods with two heavy clamps.

- No. 864—Miter Gage Ship. Wt. $4\frac{1}{2}$ lbs. Code NECMI



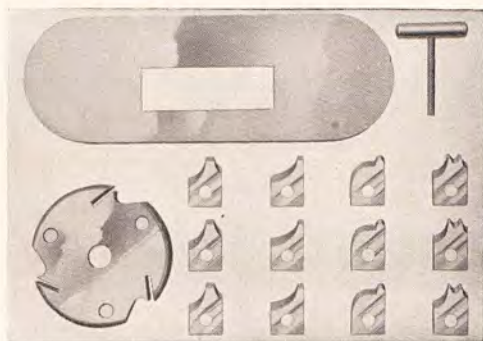
Low Cost Attachment Makes Hundreds of Mouldings on Circular Saw



DOES MARVELOUS WORK—This unique attachment is the only practical tool of its kind. It consists of a strong, well-designed steel head. A set of three interchangeable knives is locked into the head so that they are completely safe in operation. The head may be used either on the 34-305, 34-307 or 34-405 Circular Saw, or on most other saws provided with a double-face fence.

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

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



SETS

- No. 1158—Heavy Duty Moulding Cutter Set for the No. 34-305 or 34-307 Circular Saw with heavy-duty steel cutter head, 4 sets of high speed knives, style A, B, C, and D, oval table insert, wrench. 10 lbs. Code MOUHM
- No. 1458—Heavy Duty Moulding Cutter Set for the No. 34-405 Circular Saw with heavy-duty steel cutter head, four sets of high speed knives style A, B, C, and D, oval table insert, wrench. 10 lbs. Code TILTJ

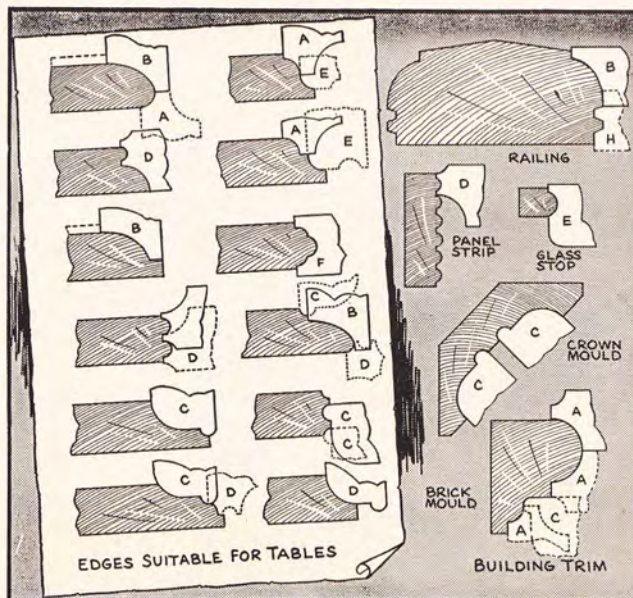
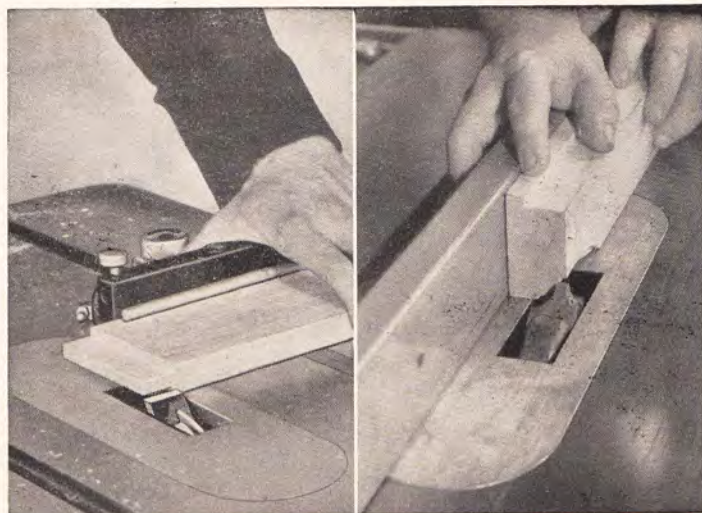
HEAD

- No. 265 —Heavy Duty solid steel head only, to fit $\frac{5}{8}$ " arbor. Without wrench or cutter. Not furnished in $\frac{1}{2}$ " bore. 3 lbs. Code MOUST

TABLE INSERTS

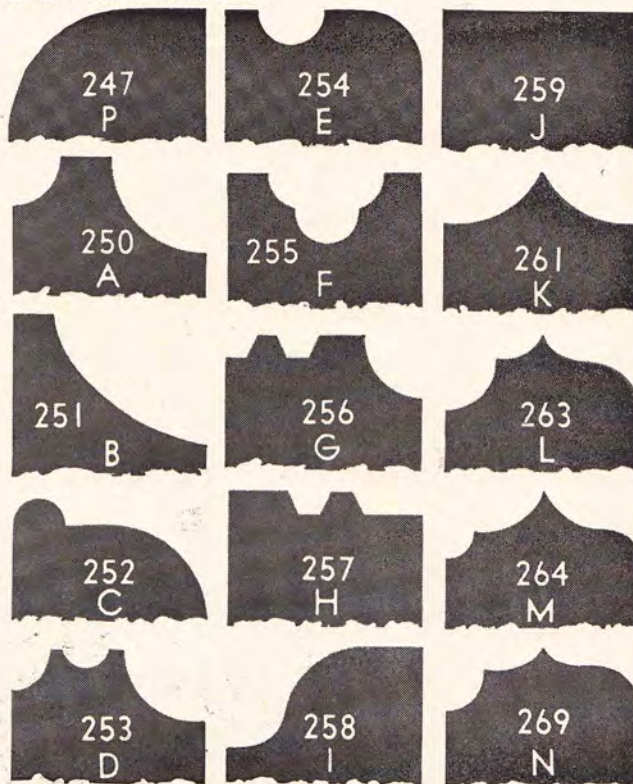
- No. 1162—Moulding cutter table insert for 34-305, 34-307 saws. $1\frac{1}{2}$ lbs. TENSJ
- No. 1453—Moulding cutter table insert for 34-405 saw. $1\frac{1}{2}$ lbs. Code TILTD
- No. 1521—Wrench. 6 ozs. Code WRENB
- Wood Facings are used on standard fence of the saw when moulding cutter is used.

(FOR PRICES SEE ATTACHED PRICE SHEET)



Extra Sets of Cutter Blades

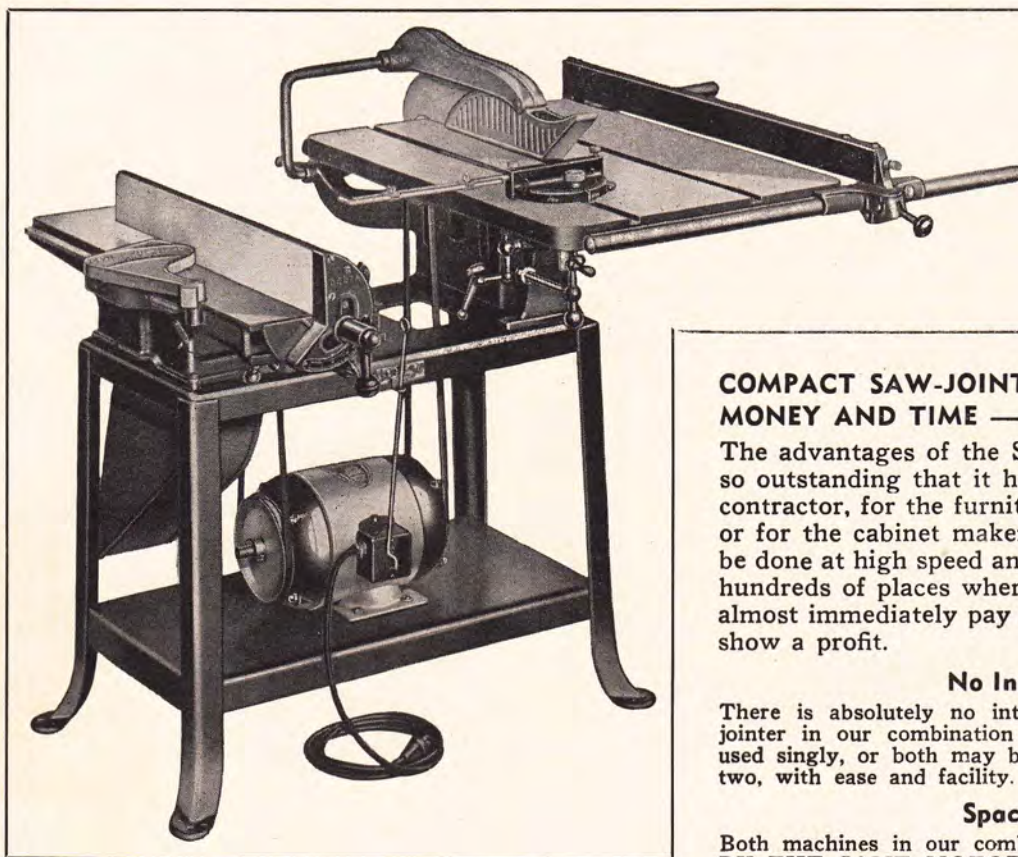
Cutters come in sets of three matched blades. Being made of high-speed steel (not carbon steel) they will cut thousands of feet of moulding before dulling. All these knives may be used with shaper cutter head No. 1343 listed on page 47. Blades shown actual size.



No.	Description	Code	No.	Description	Code
247	Cove	MOULP	258	O-G Curve	MOULI
250	Bead	MOULA	259	Straight	MOULJ
251	Bead	MOULB	261	Flute Bead	MOULK
252	Crown Mould	MOULC	263	Flute & Cove	MOULL
253	Panel Strip	MOULD	264	Flute & Cove	MOULM
254	Glass Stop	MOULE	269	Flute & Cove	MOULN
255	Screen Mould	MOULF		Comb.	MOULN
256	Drawer Joint	MOULG			
257	Glue Joint	MOULH			

THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.

Saw-Jointer Combination Unit Offers Many Advantages



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

The advantages of the Saw-Jointer Combination are so outstanding that it has become a favorite for the contractor, for the furniture or novelty manufacturer or for the cabinet maker where accurate work must be done at high speed and low cost. In fact, there are hundreds of places where this versatile machine will almost immediately pay for itself and will constantly show a profit.

No Interference

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

Space-Saving

Both machines in our combinations are driven from below BY THE SAME MOTOR.

Low Power Cost

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

Portability

In spite of their large capacity, our combination units are so compact that they are used as portable power units for many outside jobs, as well as being used anywhere in the shop where they will best suit the job. Many contractors load them on a truck and take them right to the job.

The convenience of this Saw-Jointer Combination is immediately apparent. Hundreds of installations testify to its practicality and value.

This Saw-Jointer Combination is made up of the 10" Saw described on page 36 and the 6" Jointer described on page 41.

(FOR PRICES SEE ATTACHED PRICE LIST)

No. 37-595—Saw-Jointer Combination consisting of 10" Circular Saw, 6" Jointer, Steel Stand, V-Belts for Saw and Jointer, Motor Pulleys for Saw and Jointer, Swing Guard and Splitter for Saw. Without Motor or Switch Rod. 364 lbs. Code COMBC

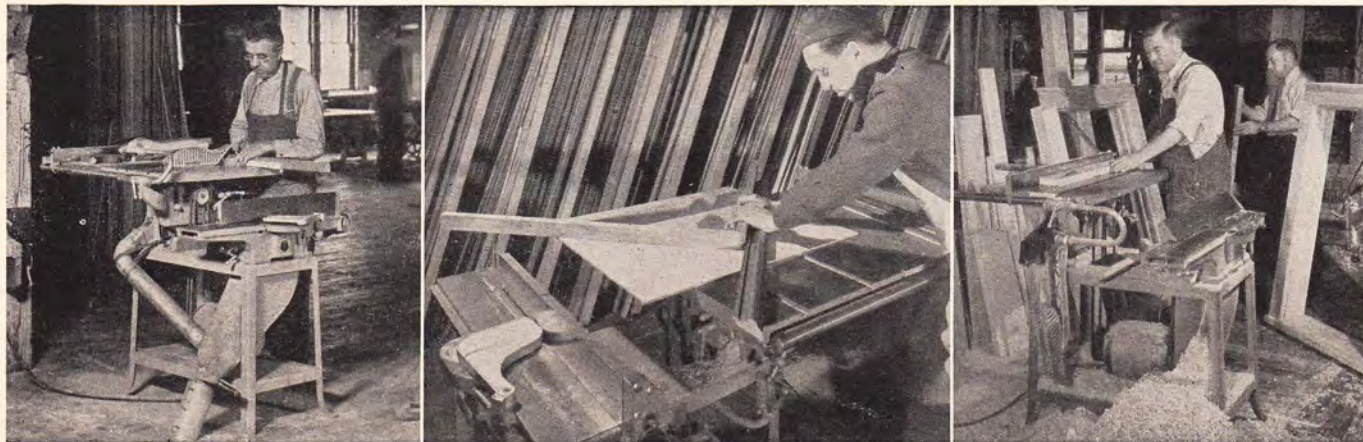
Accessories

No. 1176—Belt Guard for Circular Saw. 12 lbs. Code TENSV
No. 1177—Belt Guard for Jointer. 11 lbs. Code TENSW
No. 662—Rear Knife Guard for Jointer. 2 lbs. Code SIXRE
No. 560—Replacement V-Belt for Saw. 1 lb. Code EICVB
No. 510—Replacement V-Belt for Jointer. 1 lb. Code JOIVB

Motors Recommended

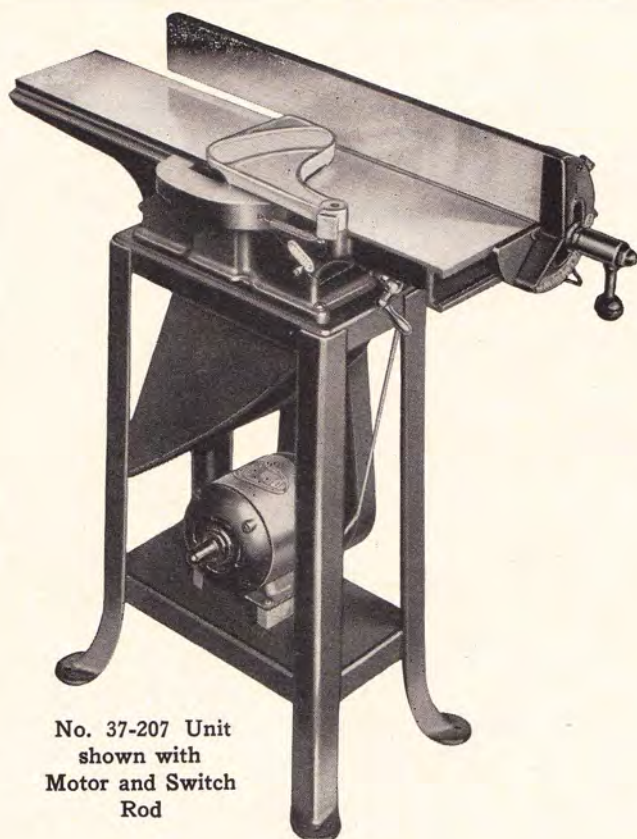
LIGHT DUTY: No. 84-510— $\frac{1}{2}$ H.P. R.I. A.C. 110/220 V. 60 Cy.
No. 86-720— $\frac{3}{4}$ H.P. 3 Ph. A.C. 220/440 V. 50/60 Cy.
MEDIUM DUTY: No. 84-710— $\frac{3}{4}$ H.P. R.I. A.C. 110/220 V. 60 Cy.
No. 86-920—1 H.P. 3 Ph. A.C. 220/440 V. 50/60 Cy.
HEAVY DUTY: No. 84-910—1 H.P. R.I. A.C. 110/220 V. 60 Cy.
No. 86-920—1 H.P. 3 Ph. A.C. 220/440 V. 50/60 Cy.

Use No. 1320 or No. 1329 3 Ph. Starters and 1322 Mounting Parts. Use No. 1334 Switch Rod for Single Phase Motors. See Pages 20 to 21 for Motors and Switch Parts.



These 6-inch Jointers are Efficient and Low Cost Production Units

DELTA
MILWAUKEE



No. 37-207 Unit
shown with
Motor and Switch
Rod



EVERY type of woodworking shop has use for a number of these efficient Jointers. Heavy, rugged and extremely accurate, they yet are light enough to be portable so that they can be moved to where needed at a moment's notice. Pattern shops especially have found that a Jointer for each or every two patternmakers saves waiting time and cuts costs.

The Jointer is an exceptionally heavy, rigid unit, cast of close grained iron and accurately machined to close tolerances. The tables are not only ground flat and true individually but also after being assembled on the base so that there is no chance of mis-alignment. Front and rear tables are individually controlled by readily accessible control handles and gibs are provided on the dovetailed ways to take up wear.

The fence, also ground, is rigid and its double tilting adjustable stops at 45, 90 and 135 degree angles insure the fence returned to its originally accurate setting. The dual control handle is an exceptionally convenient feature. Slid out, it engages the bracket lock nut which when loosened allows the fence to be moved across the table. Slid in, it engages the tilting lock nut allowing fence to be tilted to any angle. When not in use it swings free out of the way.

Convenient scales on the table and fence permit accurate settings. The front knife guard provides protection.

This fine Jointer is available on either a cast iron or steel stand as illustrated. Both stands have built-in chutes to carry off shavings.

Specifications

Capacity: Table width will surface boards 6" wide. Will cut rabbet $\frac{1}{2}$ " deep. Fence tilts 45 degrees toward knives and 45 degrees away from knives. Adjustable stops at 45, 90 and 135 degrees. Cutter head has three knives. Has sealed-for-life ball bearings which require no lubrication and assure maximum accuracy.

Dim.: On steel stand, height 39 $\frac{1}{4}$ ", width 14", length 37 $\frac{1}{2}$ ".
On cast iron stand, height 36 $\frac{1}{2}$ ", width 15", length 37 $\frac{1}{2}$ ".

No. 37-207—Complete 6" Jointer Unit on Steel Stand as illustrated consisting of 6" Jointer with 3 High-Speed Steel knives, 2-Way Fence and Dual Control, 2 $\frac{3}{4}$ " Arbor Pulley, Front Safety Guard, V-Belt, 7" Motor Pulley, Belt Guard and Steel Stand. Without Motor or Switch Rod. 190 lbs. Code SIXJU

Accessories

No. 560—Replacement V-Belt. 1 lb. Code EICVB

No. 659—Replacement Set of 3 High Speed Steel Knives.
 $\frac{1}{2}$ lb. Code SIXKI

No. 132—Switch Box, Power Cord and Plug and Motor Lead Wire for all Single Phase Motors. Used only on Cast Iron Stand. 1 $\frac{1}{2}$ lbs. Code SPESB

No. 1522—Double End $\frac{5}{8}$ " Open Wrench for knife screws.
 $\frac{1}{8}$ lb. Code WRENC

Motors Recommended

LIGHT DUTY: 62-110 $\frac{1}{8}$ H.P. Cap. A.C. 110/220 V. 60 Cy.
66-110 $\frac{1}{8}$ H.P. 3 Ph. A.C. 220 V. 50/60 Cy.

MEDIUM DUTY: 62-110 $\frac{1}{8}$ H.P. Cap. A.C. 110/220 V. 60 Cy.
66-320 $\frac{1}{4}$ H.P. 3 Ph. A.C. 220/440 V. 50/60 Cy.

HEAVY DUTY: 66-320 $\frac{1}{2}$ H.P. 3 Ph. A.C. 220/440 V. 50/60 Cy.

For 3 Ph. Motors use No. 1320 or No. 1329 3 Ph. Manual Starters and 1322 Mounting Parts.

Use No. 1334 Switch Rod for Single Phase Motor and Steel Stand.
See Pages 20 and 21 for Motors and Switches.

(FOR PRICES SEE ATTACHED PRICE LIST)

THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.

The Abrasive Disk Finishing Machine That Meets Every Requirement



No. 31-105
Shown with Motor

A HIGH GRADE UNIT FOR FINISHING, MITERING, SQUARING, GRINDING. HAS MANY APPLICATIONS

DESIGNED to meet every requirement for accurate finishing, this abrasive disk finishing machine is a high grade machine tool for equally high grade work. From its completely machined, true-running 12" disk to its large surface table and its husky spindle, carried on self-sealed ball bearings, it is designed for long life, low power consumption and accurate, dependable results.

The machine can be used with any of our standard ½ H.P. ball bearing motors in 8½" frames. The disk in this model fits directly onto the end of the motor shaft, and makes the unit completely self contained.

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

Abrasive disks can be renewed every few minutes if necessary.

Specifications

Dimensions: Floor Model on steel stand, 16½" wide, 45" high, 22¾" front to rear. Table is 9¾" x 16¼". Has a polished surface with a ⅜" x ¾" groove for the No. 864 miter gage. Table tilts 45° to front and 20° to back. Tilt gage on front trunnion. Table carried on rigid, well designed trunnions with large, convenient trunnion—lock knobs. Disk is 12" in diameter.

No. 31-105—Complete Direct Motor Driven Abrasive Disk Finishing Machine as illustrated consisting of: Abrasive Disk Finishing Machine (with tilting table and one aluminous oxide disk), and steel stand. Without motor. 123 lbs. Code DISKD

No. 149 —"Distic" for Applying Disk. Per Stick, 1 lb. Code DISIC

No. 864 —Miter Gage for ⅜" x ¾" groove. 4½ lbs. Code NECMI

No. 1427—12" Garnet Disk for Wood. Medium grit. 6 per pkg. 3 lbs. Code DISKR

No. 1428—12" diameter Aluminous Oxide Disk for Metal, Medium. 6 per pkg. 3 lbs. Code DISKS

See Page 31 for an Abrasive Belt Type Finishing Machine.

Motors Recommended

LIGHT DUTY: No. 84-510—½ H.P. R.I. A.C. 110/220 V. 60 Cy.
No. 86-520—½ H.P. 3 Ph. A.C. 220/440 V. 50/60 Cy.

MEDIUM DUTY: No. 84-710—¾ H.P. R.I. A.C. 110/220 V. 60 Cy.
No. 86-720—¾ H.P. 3 Ph. A.C. 220/440 V. 50/60 Cy.

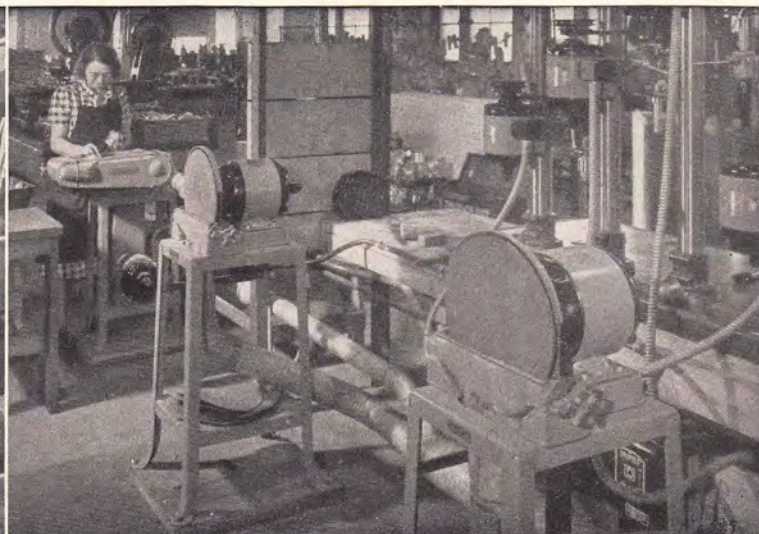
HEAVY DUTY: No. 84-910—1 H.P. R.I. A.C. 110/220 V. 60 Cy.
No. 86-920—1 H.P. 3 Ph. A.C. 220/440 V. 50/60 Cy.

For 3 Ph. Motors use No. 1320 3 Ph. Manual or No. 1329 Magnetic Starter and No. 1322 Mounting Parts.

For Motors and Switches, see Pages 20 and 21.

(FOR PRICES SEE ATTACHED PRICE SHEET)

TYPICAL INSTALLATIONS. Photo below shows battery of Disk and Belt Finishing Machines in Die Casting Plant. Photo to left shows operator finishing brass valve bodies on Abrasive Disk Finishing Machine in brass foundry.



THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.

14" Wood Cutting Band Saw for All-'Round Adaptability



The constant use of thousands of these 14" Band Saws in Wood-working Shops of all types is proof of the quality and all-around adaptability of this unit for production work. Cabinet shops, furniture factories, pattern shops, in fact any shop where accurate cutting must be done easily and economically find this saw doing a remarkable job.

Maintenance departments, too, make good use of this tool. Then there are countless other installations for special duty such as cutting paper, slicing corrugated boards and dozens of other applications.

A few of the outstanding features of this unit are: Castings are heavy and solid and accurately machined, table is heavy, accurately ground, has slot for $\frac{3}{8}$ " x $\frac{3}{4}$ " miter gage bar, table swings smoothly on double trunnions, tilts 45° to right, 10° to left, wheels heavy cast iron carried on sealed-for-life ball bearings which require no lubrication, upper wheel adjustable for blade tension and blade travel, guides provide perfect adjustment, each adjustment is independent of the others. Guide pins can be set without disturbing blade support; all controls for guides brought to front of table.

These are but a few of the more important and more obvious points of superiority of these 14" Wood Cutting Band Saws. For safety, accuracy, dependability and convenience you cannot find a better Band Saw.

No. 28-207—Complete 14" Woodworking Band Saw as illustrated on Steel Stand consisting of: 14" Band Saw with Wheel Guards, 8" Arbor Pulley and one No. 1034 $\frac{1}{4}$ " Wood Cutting Blade; Steel Stand; Cast Iron Belt Guard; V-Belt and Motor Pulley. Without Motor or Switch. 293 lbs. Code LABMK

No. 882 —Lamp Attachment. 1½ lbs. Code LAMPA

No. 568 —Replacement V-Belt. 1 lb. Code FORVD

See Page 32 for Metal Cutting Band Saw.

See Page 33 for Butt Welder for Band Saw Blades.

Motors Recommended

LIGHT DUTY: No. 60-310—½ H.P. Sp. Ph. 110 V. 60 Cy. A.C.

MEDIUM DUTY: No. 62-110—½ H.P. Cap. 110/220 V. 60 Cy. A.C.

No. 66-110—½ H.P. 3 Ph. 220 V. 50/60 Cy. A.C.

HEAVY DUTY: No. 66-320—½ H.P. 3 Ph. 220/440 V. 50/60 Cy. A.C.

Use No. 1320 or No. 1329 3 phase manual starter for 3 phase motors. These starters can be bolted direct to the cast iron stand but when the steel stand is used No. 1322 mounting parts must also be used.

With single phase motors the No. 132 switch box can be mounted direct to the cast iron stand, but when the steel stand is used the No. 1334 switch rod is recommended.

See Pages 20 and 21 for Motors and Switch Parts.

Band Saw Blades for 14" Band Saws

93½ INCHES LONG

Cat. No.	Width	Cut Radius	Code
1033	$\frac{3}{16}$ "	$\frac{1}{8}$ "	BLABB
1034	$\frac{1}{4}$ "	$\frac{3}{8}$ "	BLABC
1036	$\frac{3}{8}$ "	1"	BLABD
1038	$\frac{1}{2}$ "	1¼"	BLABE

Shipping Weight 15 oz. Each.

*105 INCHES LONG

Cat. No.	Width	Cut Radius	Code
1045	$\frac{1}{8}$ "	$\frac{1}{8}$ "	BLABJ
1046	$\frac{3}{16}$ "	$\frac{1}{8}$ "	BLABK
1047	$\frac{1}{4}$ "	$\frac{3}{8}$ "	BLABL
1048	$\frac{3}{8}$ "	1"	BLABM
1050	$\frac{1}{2}$ "	1¼"	BLABO

Shipping Weight 18 oz. Each.

*Used with No. 894 Height Attachment

Height Attachment Increases Capacity of Saw

This simple attachment increases the capacity of the 14" band saw from 6" under the guide to 12¼". Can be added any time—105" blades are used.

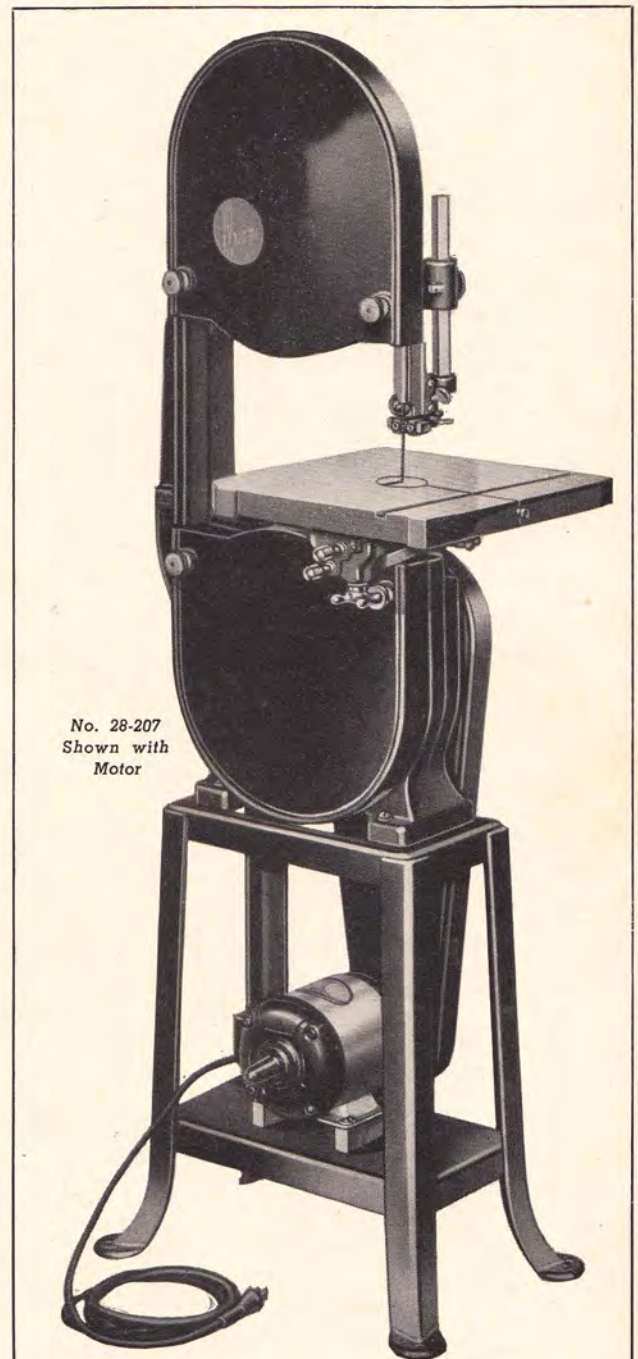
No. 894—Height Attachment on all 14" Band Saws, with Cast Block, Dowels, Bolt, Extension Front Blade Guard and Wood Back Blade Guard. 14 lbs. Code LABHA

Band Saw Blades

		78" Long for 12" Saw		66" Long for No. 785 Saw		74" Long for No. 768 Saw	
Width	Rad.	No.	Code	No.	Code	No.	Code
$\frac{1}{8}$	$\frac{1}{4}$	532	BABLA	732	BABLK	770	BANDC
$\frac{3}{16}$	$\frac{3}{8}$	533	BABLB	733	BABLL	771	BANDE
$\frac{1}{4}$	$\frac{3}{4}$	534	BABLC	734	BABLM	772	BANDG
$\frac{3}{8}$	1	536	BABLE	736	BABLP	773	BANDH
$\frac{1}{2}$	$\frac{3}{4}$	*381	BAMET	*781	BAMEU	*774	BANDI

*For cutting soft metals.

(FOR PRICES SEE ATTACHED PRICE LIST)



No. 28-207
Shown with
Motor

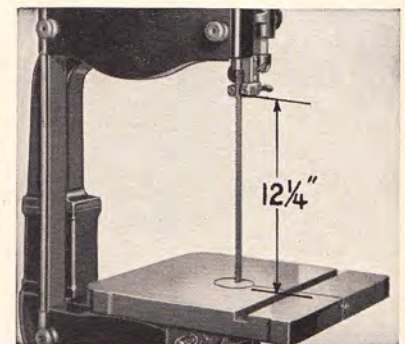
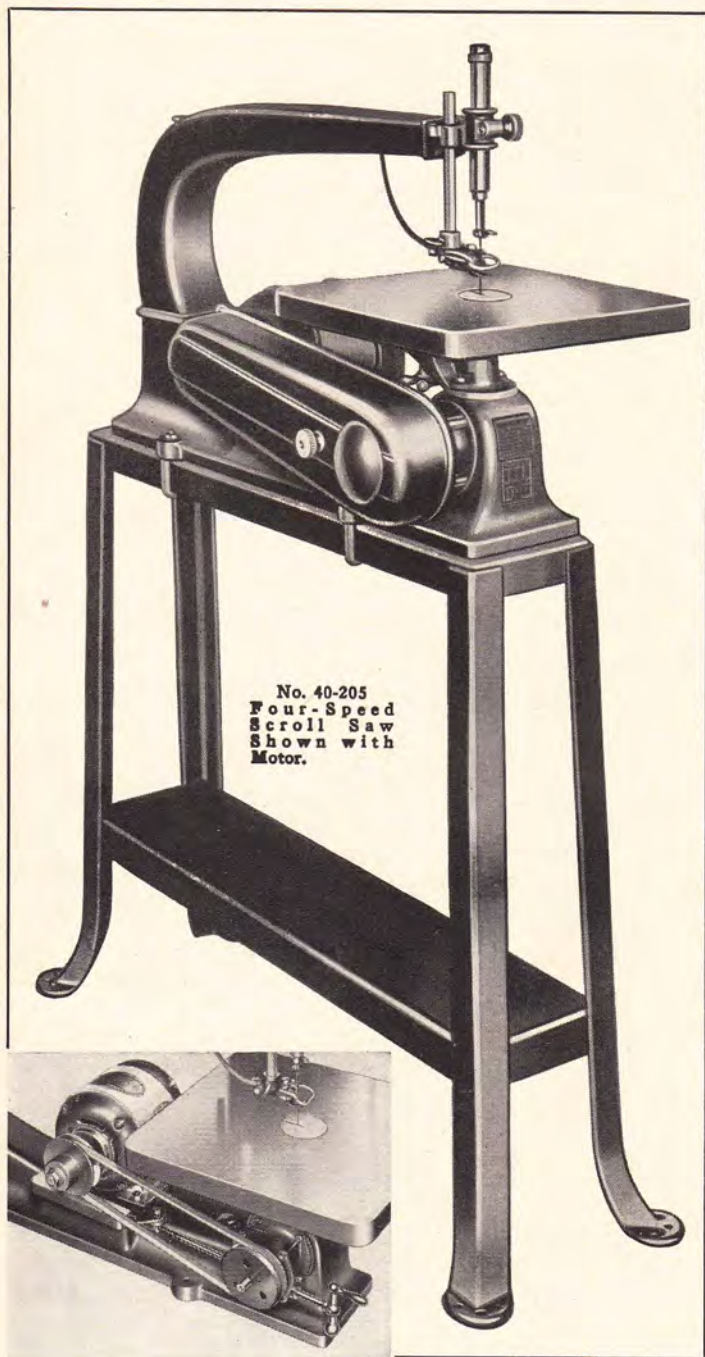


Photo to right shows how height attachment increases capacity of saw to 12¼" below the guide.

This Sturdy Scroll Saw is Fast and Accurate



No. 40-205
 Four-Speed
 Scroll Saw
 Shown with
 Motor.

THESE FEATURES INSURE LONG LIFE BETTER PERFORMANCE, FASTER OUTPUT

EXPERIENCED scroll saw users know that there are several features essential in a good scroll saw: (1) it must be capable of using all types of blades, (2) it must operate with a minimum of blade breakage, (3) it must be solid and sturdy and have a minimum of vibration at all speeds, and (4) it must have a selection of speeds for various types of work.

The scroll saws, shown here, not only meet all these requirements but have added features which make them the "finest scroll saws ever made."

The patented chucks are completely universal, taking jeweler's blades, pin blades, saber blades, round shank files up to 1/4" without any extra parts.

The blade is perfectly guided, thus eliminating blade breakage. Operation is smooth and positive. The heavy castings in the base, table and overarm give rigidity and "weight." Vibration is held to an absolute minimum so that accurate delicate work can be done.

Available in two models: a standard 4-speed model, and a multi-speed model—there is a type of saw and speed for every possible job.

In addition to these "must" features which are so well covered in these scroll saws there are these other advantages: The heavy cast table not only tilts to the right and left, but by rotating the table bracket 90 degrees and the chucks so that the blade cuts sideways, the table tilts to the front to cut stock of any length. The crankshaft has Timken bearings chosen for their long life and accuracy. The blower pump is driven by the crankshaft which makes air available even for saber blades. The blade is properly supported and has a convenient tension adjustment. The hold-down can be tilted so that it holds the work down evenly when the table is tilted. The crankshaft is splash lubricated.

These are but a few of the outstanding features of these fine scroll saws but all of them contribute toward accurate and convenient operation and long life.

AVAILABLE IN TWO POPULAR MODELS

THE STANDARD 4-SPEED MODEL

This model is illustrated to the left. It is equipped with a 4-step motor pulley and a 4-step arbor pulley and with a 1725 R.P.M. motor has speeds of 650, 1000, 1300 and 1750 R.P.M. For average work this range has been found to be quite satisfactory and thousands of these units are being used today in plants of all kinds.

No. 40-205—Complete Four Speed Scroll Saw Unit is illustrated on steel stand consisting of: Scroll Saw, 4-step Cone Pulley on Arbor, Puzzle Jaw for Upper Chuck; 4-step Cone Pulley for Motor; V-Belt; Belt and Pulley Guard and Steel Stand. Without Motor or Switch. 194 lbs. Code LUXSD

No. 340—Replacement V-Belt. 1/2 lb. Code BELUX

THE MULTI-SPEED MODEL

This scroll saw provides the highest degree of convenience and performance because it has a **Thousand Speeds at the Touch of Your Finger!** Two or four speed saws have limited speed range—too slow for some materials—too fast for others. With the Multi-Speed Scroll Saw you can select ANY speed from 650 to 1700 R.P.M. controlling the speed within 1 or 2 R.P.M. if necessary. High speed for fast, fine work—low speed for heavy work—and ANY speed in between. Speed controlled by conveniently located ball crank. In general appearances this unit is the same as the one illustrated except that the ball-crank handle projects out of the front of the belt guard as shown by the small photo.

No. 40-305—Complete Multi-Speed Scroll Saw Unit consisting of: Scroll Saw with Puzzle Jaw for upper chuck; Variable Speed Motor pulley; Motor Base with Bracket; V-Belt; Arbor Pulley; Belt and Pulley Guard; and Steel Stand. Without Motor or Switch, 197 lbs. Code MULTM

No. 331—Replacement V-Belt for Multi-Speed Scroll Saw. 1/2 lb. Code MULTG

MOTORS RECOMMENDED

Light and Medium Duty: 60-310—1/3 H.P. Sp. Ph. A.C. 110 V. 60 Cy.

Heavy Duty: 62-110—1/3 H.P. CAP. A.C. 110 V. 60 Cy.
 66-110—1/3 H.P. 3 Ph. A.C. 220 V. 50/60 Cy.

For 3 Ph. Motors use No. 1320 or No. 1329 3 Ph. Manual Starters and No. 1322 Mounting Parts.

See Pages 20 and 21 for Motors and Switch Parts.

SPECIFICATIONS OF BOTH SAWS

35" long, 14" wide, 43" high on stand, 14"x14" cast iron table, capacity 1 3/4" thick, 24" reach.

(FOR PRICES SEE ATTACHED PRICE LIST)

Saber Blades for Wood

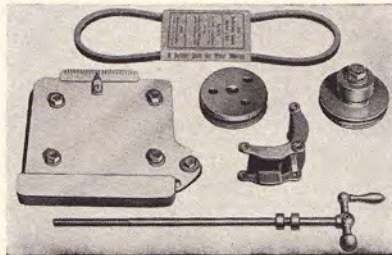
Made of best steel, accurately hardened and set. Are 5" long overall.



No. of Blade	Thickness and Width	Teeth Per In.	Code Word
703	.025"x.187"	9	SABLA
704	.035"x.250"	7	SABLB

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

Multi-Speed Attachment

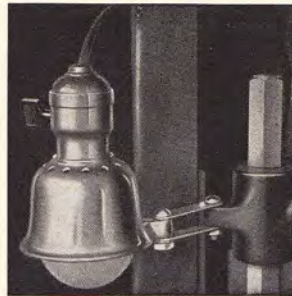


Any standard four-speed 24" Scroll Saw of our manufacture may be easily converted into a Multi-Speed Model by use of the No. 1444 Accessory Group shown above. It consists of the variable-speed motor pulley, motor base with bracket screw and handles, special V-belt, and special arbor pulley. With this accessory group any speed from 650 to 1700 R.P.M. may be obtained using a 1725 R.P.M. motor.

No. 1444—Standard Accessory group as described and illustrated above. 12 lbs.
.....Code MULTE

No. 1442—Belt and Pulley Guard for 1444 group. 7 lbs.....Code MULTC

Lamp Attachment



There is nothing quite the equal to the No. 882 lamp attachment to bring plenty of light to your work just where it is needed in volume enough for accuracy in following layouts, yet not bright enough to glare.

Can be swung on the brackets of the scroll saw, drill press or band saw or can be easily and quickly attached to any other machine. Can be swung out of the way by a touch of the finger. It furnishes every machine with its own illumination independently of the shop lighting system. Uses 15 or 25 Watt Bulbs.

No. 882—Lamp Attachment. 1½ lbs.
.....LAMPA

(For Prices See Attached Price Sheet)

Scroll-Saw Blades For All Types of Material

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

These blades are the finest obtainable, 5" long with accurately spaced teeth—properly set and hardened. Ends of blade have 5/8" blank for fastening into chuck. Packed 12 to a package.

Cat. No. & Size	No. Teeth	Per Dos.	Per Gross	ACTUAL SIZE
Fret saw blades with wide spaced teeth (not set—not tempered for metal) for sawing wood where extremely thin cut is required—very fast cutting.				
No. 81 010x.070	14			
No. 82 010x.085	16			
No. 83 010x.045	18			
No. 84 008x.035	20			

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

No. 85 020x.085	15			
No. 86 020x.065	12			
No. 87 020x.070	7			
No. 88 020x.110	7			

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

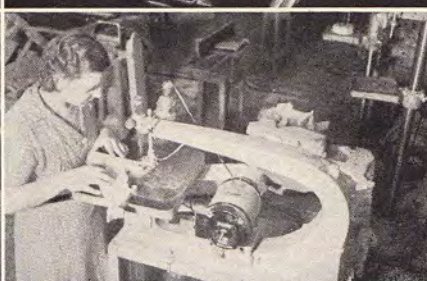
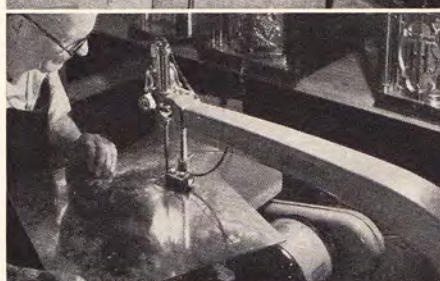
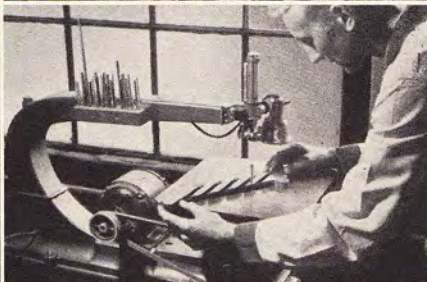
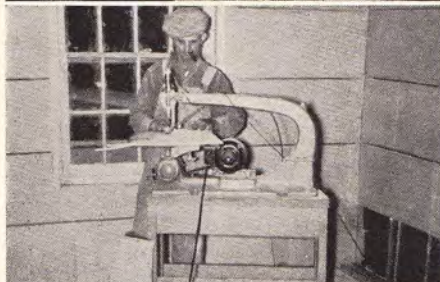
No. 91 020x.110	18			
No. 92 020x.110	10			
No. 93 028x.187	10			
No. 94 028x.250	7			

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

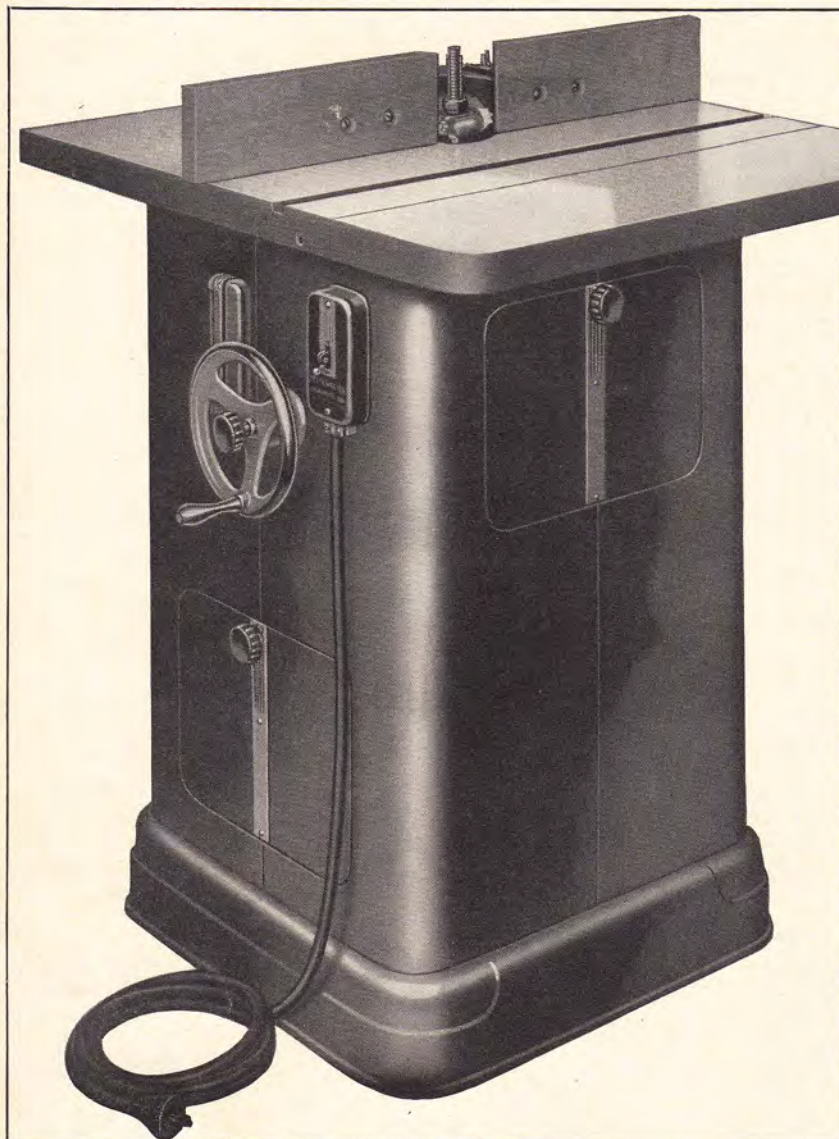
No. 95 016x.054	30			
No. 96 016x.054	20			
No. 97 020x.070	15			
No. 98 020x.085	12			

Scroll saw blades with set teeth hardened and tempered for sawing metals. Used extensively for sawing templates, light and heavy metal craft, electrotpe metals, etc. Nos. 58, 59, 60, and 61 also good wood cutters.

No. 58 020x.070	32			
No. 59 020x.070	20			
No. 60 020x.070	15			
No. 61 020x.085	15			
No. 64 020x.110	20			
No. 65 Heavy Duty Hack saw blade 028x.250	20			



This Husky Shaper Has The Operating Features You Want



HERE is the machine you have been waiting for—the No. 43-205 shaper built to the same exacting standards that characterize all our machines. Designed and built to handle heavy, fast cuts, it is ideal for the cabinet shop, furniture factory, specialty shop, sash and door company; as a matter of fact, any shop where accurate production shaping must be done at low cost.

Massive Table Correctly Designed

The big table 27"x28" can be increased to 27"x36" with the addition of a back wing. Bolt-ing two shapers back to back gives you a two-spindle machine at a fraction of the cost you usually pay. Table will not warp or spring—has 3/8"x3/4" groove for miter gage or jigs.

Spindle is Big and Husky

Spindle is 3/4"x3 3/4" under the nut with a full 3" travel. Carried in specially selected New-De-parture sealed-for-life ball bearings which require no lubrication for their entire life. Spindle accurately ground—bearing seats are diamond-bored to three ten-thousandths, insuring absolute accuracy. Spindle and bearings carried in easily replaceable cartridge which may be removed without disturbing the preload on the bearings.

Spindles Are Interchangeable

Standard 3/4" diameter spindle may be easily replaced by 1/2" or 5/8" spindle using 3 lip formed cutters or by 1/2" stub spindle for cope cutters.

Main Bearing Housing Is Massive

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

Controls Are Convenient

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

Ring Guard Protects Operator

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

Fence Fully Adjustable

Each half of the large fence is fully adjustable and absolutely independent of the other half so that all types of adjustments may be readily and quickly made.

Strong, Sturdy Cabinet

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

Specifications

Height of table from floor, 34"; Table size, 27"x28"; Table size with back wings, 27"x36"; Spindle diameter, 3/4"; Capacity of spindle (under nut), 3 3/4"; Spindle travel, 3"; Spindle speed, 10,000 R.P.M.; Largest cutting circle recommended, 3 1/2"; Motor drive up to 1 1/2 H.P., 3-phase; Spindles are interchangeable; Size of fence, each side, 3 3/4"x12 3/8"x1 1/8".

CATALOG LISTING

No. 43-205—Complete unit as illustrated consisting of: Shaper with Fence, 3/4" Spindle, Table Insert, Starting Pin, Wrenches and Spindle Pulley; Rear Table Extension (making Table 27"x36"); V-Belt; and Motor Pulley. Without Motor, Switch, Reversing Switch or Cutters. 340 lbs. Code SHANP

ACCESSORIES

No. 287—Replacement Belt. 30" Out. Cir. 1/2 lb. Code BELTG
No. 1345—Stub Spindle for 3 Lip Cutters with 1/2" Hole. 1 lb. Code SHANF
No. 1347—1/2" Spindle for 3 Lip Cutters with 1/2" Hole. 1 lb. Code SHANH
No. 1348—Safety Ring Guard. 8 lbs. Code SHANI
No. 1346—5/8" Spindle for 3 Lip Cutters with 5/8" Hole. 1 lb. Code SHANG

MOTORS AND SWITCHES FOR USE ON SHAPER

Cat. No.	Type	HP	Cur.	Rating	RPM	Switches and Mounting Parts to Use		
						On & Off Switch	Mtg. Pts.	Reversing Switch
85-080	R.I.	1	A.C.	110/220 V. 60 Cy.	3450	132	....	Furnished
*85-085	R.I.	1	A.C.	110/220 V. 50 Cy.	2850	132	....	1325
86-921	3 Ph.	1	A.C.	220/440 V. 50/60 Cy.	2850/3450	1320	1327	1325
87-121	3 Ph.	1 1/2	A.C.	220/440 V. 50/60 Cy.	2850/3450	1320	1327	1325
89-111	D.C.	1	D.C.	115 V.	3450	1320	1327	1325
89-121	D.C.	1	D.C.	230 V.	3450	1320	1327	1325

All Motors have 8 1/2" Frame, 3/4" Shaft, Shipping Weight of 85 lbs.

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. 132—"On and Off" Switch consisting of Switch Box, Power Cord and Plug and Motor Lead Wire. 1 1/2 lbs. Code SPESB

No. 1320—Three Phase "On and Off" Manual Starter for 3 Phase Motors. Specify Motor when ordering. 6 lbs. Code SWIPH

No. 1329—3 Ph. Magnetic Starter. 8 lbs. Code SWITD

No. 1325—Reversing Drum Sw. (2 H.P. 440 V. Max.) for 3 Ph. or D.C. Motors (C-H 9441-H37). 4 lbs. Code SWITA

No. 1327—Mtg. Parts for Mounting No. 1320 Starter only or the No. 1320 Starter with the No. 1325 Reversing Switch on the Shaper Cabinet. 2 lbs. Code SWITB

(FOR PRICES SEE ATTACHED PRICE SHEET)

Three Lip Shaper Cutters and Safety Cutter Heads

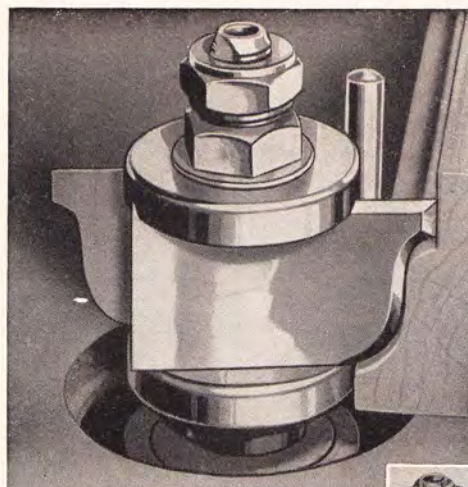
DELTA
MILWAUKEE

Safety Cutter Head with Blank Knives

Special mouldings that cannot be made with the standard shaper cutters, special cope cuts—all the work that the experienced shaper operator wants to do can be done with the No. 1192 Cutter Head and blank knives. The head is an innovation. It is accurately machined so as to eliminate vibration; grooves are carefully milled to close tolerances to insure both knives being clamped with the same pressure and a spherical equalizing washer is used under the head. When a setup has been made it can be kept for future use, as the whole head may be removed from the machine. Head is bored for $\frac{1}{2}$ " or $\frac{3}{4}$ " spindle as listed.

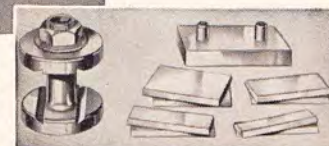
Blank knives are $2\frac{1}{2}$ " long, self-hardening and sandblasted so that cutter design may be drawn directly on them.

No. 1342—Cutter Head for $\frac{3}{4}$ " Spindle with Tightening Block. Without Knives. $1\frac{1}{2}$ lbs.	Code SHANC
No. 1192—Cutter Head for $\frac{1}{2}$ " Spindle with Tightening Block. Without Knives. $1\frac{1}{2}$ lbs.	Code SHAPB
No. 1193—Two $\frac{1}{2}$ " Knives. 6 oz.	Code SHAPC
No. 1194—Two $\frac{3}{4}$ " Knives. 6 oz.	Code SHAPD
No. 1195—Two 1" Knives. 6 oz.	Code SHAPF
No. 1196—Two $1\frac{1}{2}$ " Knives. 6 oz.	Code SHAPF



When a setup has been made, it can be kept for future use, as the whole head may be removed from the machine. Blank knives are $2\frac{1}{2}$ " long, self-hardening and sandblasted so that cutter design may be drawn directly on them.

To the right is shown the cutter head, four sets of knives and the tightening block whose pins fit into two holes in the bottom of the head, allowing the clamp-nut to be pulled down tight.



STEEL CUTTER HEAD USES SAW MOULDING KNIVES

The making of mouldings on the circular saws has become a practical and profitable operation for many wood working shops. A large assortment of knives are available which are shown on page 39. Since many shops are well supplied with these knife sets we have increased the usefulness of them by developing this three-knife safety cutter whereby the knives may be used on the shapers also. It has been acclaimed

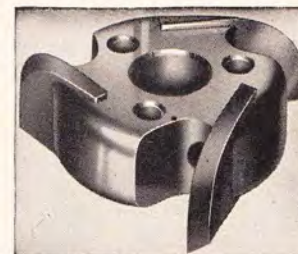
by many users as the freest cutter they have ever used.

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

No. 1343—3-Knife Safety Cutter Head. $\frac{3}{4}$ " bore with $\frac{1}{2}$ " bushings with wrench. Without knives. $1\frac{1}{2}$ lbs.

Code SHAND

(FOR PRICES SEE ATTACHED PRICE LIST)



LEFT—The Shaper is used here for cutting extruded dura metal. The piece is clamped to a sliding jig which in turn rides against the iron bar fence bolted to the table. A high speed 4" diameter milling cutter is used. Spindle is reduced to 4400 R.P.M.

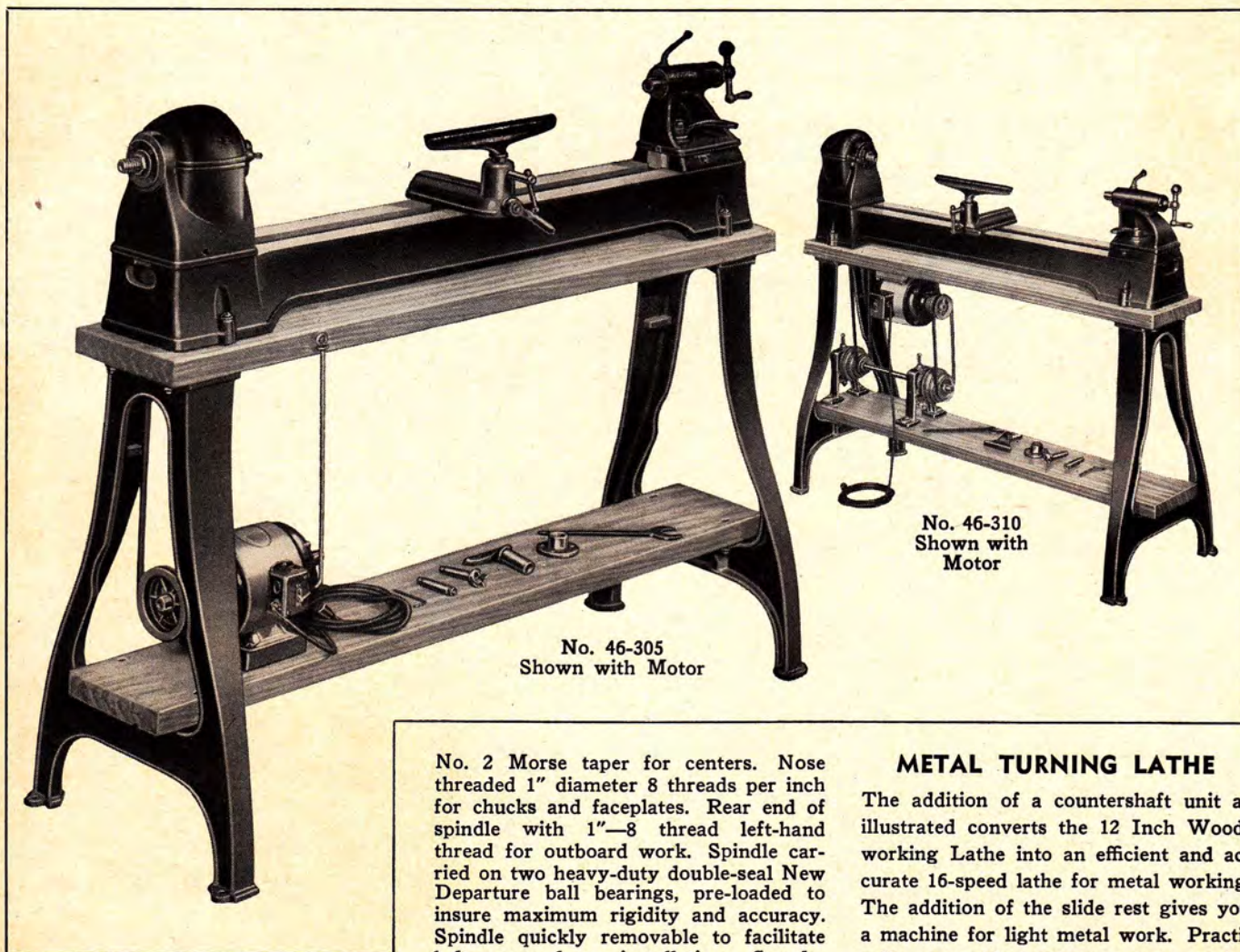
ABOVE, RIGHT—Here two shapers are bolted together. With spindles revolving in opposite directions, a low cost, effective machine is obtained.

RIGHT—Window sash ends are shaped at one time by this novel arrangement of two Delta Shapers. Distance between spindles is adjustable to take any width. Production time is cut in half.



THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.

These Lathes Are Accurate, Rigid and Convenient



No. 46-305
Shown with Motor

No. 46-310
Shown with
Motor

BIG 12-INCH LATHE HAS MANY INDUSTRIAL APPLICATIONS

Here is a production type Woodworking Lathe that is used in hundreds of busy industrial shops where its expert design, massive construction and ease of operation make it a favorite.

BED: Heavy, substantial, fine-grained cast iron, heavily ribbed to provide utmost rigidity and accuracy. 53½" long, 8½" wide, 4⅞" high. Machined and polished ways 2" wide front and back.

HEADSTOCK: Rigid substantial cast-iron body, adapted to take V-belt drive from either bottom or rear. Fitted with belt guard completely covering top of headstock pulley and belt; guard instantly removable to facilitate changing belt on pulley cones. With built-in indexing mechanism having two rows of holes—8 holes and 60 holes—in cone pulley, to provide maximum number of index divisions. Index pin mounted to engage either row of holes.

SPINDLE: Full 1¼" diameter spindle, with ⅝" hole through center to facilitate repetition work. Nose machined

No. 2 Morse taper for centers. Nose threaded 1" diameter 8 threads per inch for chucks and faceplates. Rear end of spindle with 1"—8 thread left-hand thread for outboard work. Spindle carried on two heavy-duty double-seal New Departure ball bearings, pre-loaded to insure maximum rigidity and accuracy. Spindle quickly removable to facilitate belt removal or installation. Speeds: 900, 1400, 2200, 3400 R.P.M.

TAILSTOCK: Substantial, fine-grained cast-iron body, with sub-base and provision for set-over of tailstock for center alignment and taper turning. Tailstock locked to bed with hand lever conveniently located at front. Tailstock sleeve operated with large ball-end crank handle, and locked with ball-end lever actuating lock cams. Sleeve machined for No. 2 Morse-taper centers. Centers self-ejecting.

TOOL REST: Lathe equipped with quick-acting, universal tool-rest base, locked to bed by convenient handle at front of base. 4" and 12" tool rests, adjustable in tool-rest base by means of lock screw with ball-end lever.

SPECIFICATIONS: Speeds 900, 1400, 2200 and 3400 R.P.M. Length 57", Height 46", Depth 20".

No. 46-305—Complete 12 Inch Lathe Unit as illustrated consisting of 12" Ball Bearing Lathe with Belt and Accessories, Lathe Bench with Cast Iron Legs, and Motor Pulley. Without Motor or Switch Rod. 254 lbs.Code CASTW

For Accessories see opposite page.
(For Prices See Attached Price List)

METAL TURNING LATHE

The addition of a countershaft unit as illustrated converts the 12 Inch Woodworking Lathe into an efficient and accurate 16-speed lathe for metal working. The addition of the slide rest gives you a machine for light metal work. Practically everything except screw cutting can be done. Speeds range from 340 to 3400 R.P.M. The slower speeds can be used for large face plate wood turning.

No. 46-310—12 Inch 16-Speed Lathe as illustrated consisting of 12" Ball Bearing Lathe with Belt and Accessories, Lathe Bench with Cast Iron Legs, Motor Pulley and complete countershaft assembly described below. Without Motor or Switch Rod. 260 lbs.CASTX

No. 1464—Countershaft Unit consisting of 2 No. 370 Hangers, 1 No. 378 Shaft, 1 No. 718 Motor Pulley (specify bore), 1 No. 720 Shaft Pulley, ¾" Bore, 1 No. 932 Shaft Pulley, ¾" Bore, 1 No. 284 V-Belt and 2 No. 374 Collars. 20 lbs.Code CASTQ

Motors Recommended

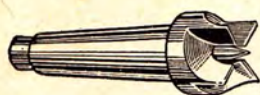
No. 84-510—½ H.P. R.I. A.C. 110-220 V. 60 Cy.
No. 86-720—¾ H.P. 3 Ph. A.C. 220/440 V. 50/60 Cy.

For 3 ph. motors use No. 1320 3 ph. Manual or No. 1329 Magnetic starter with No. 1322 mounting parts. Use No. 1334 switch rod for all single phase motors.

See Pages 20 and 21 for Motors and Switch Parts.

Accessories For Lathes With No. 2 Morse Taper Spindles

DELTA
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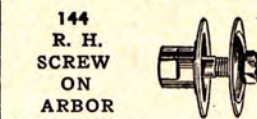
933 DRIVE CENTER
Has replaceable Pin.
¾ lb. DUBLD



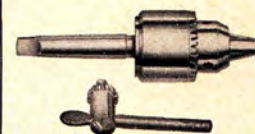
934 CUP CENTER
Has replaceable Pin.
¾ lb. DUBLE



940 SCREW CENTER
Has replaceable 1½" Screw. 1 lb. DUBLJ



144 R. H. SCREW ON ARBOR
1 lb. ARBOS
145 L. H. SCREW ON ARBOR
1 lb. ARBOT



968 GEARED CHUCK
Cap. ½". 2½ lbs. CHGEA



692 12" TOOL REST
3 lbs. TOSUM



690 4" TOOL REST
1¾ lbs. TOSUP



695 RIGHT ANGLE TOOL REST
3 lbs. TOSRA



694 24" TOOL REST
7 lbs. TOSUL



697 FLOOR STAND
For Tool Rests
44 lbs. TOSTA



1461 TOOL REST BASE 12" LATHE
5 lbs. CASTM

No. 1468 STEADY REST
for 12" Lathe with Cast Iron Bed.
10 lbs. CASTU



936 3" FACE PLATE
R. H. Threads
1 lb. DUBLG



937 6" FACE PLATE
R. H. and L. H. Threads
3 lbs. DUBLH



No. 939—60° Plain Center. Hardened and Accurately Ground. 12 oz. Code DUBLO

WOOD TURNING TOOLS



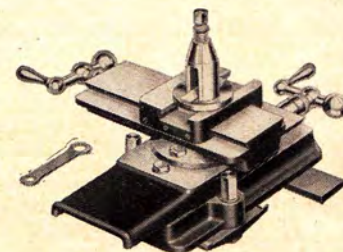
Made of special alloy-steel, they will not lose their edge. Extra long handles, 1¼" x 10½". Shipping weight 1¼ lbs. each.

No. 121—1" Skew Chisel.....Code SKERE
No. 122—¾" Gouge.....Code GOUGU
No. 123—¼" Gouge.....Code GOUSA
No. 124—½" Skew Chisel.....Code SKEWO
No. 125—⅝" Parting Tool.....Code PARTO
No. 126—½" Gouge.....Code GOUGO
No. 127—½" Spear Point.....Code SPEAR
No. 128—½" Round Nose.....Code RONOS
No. 130—Set of above 8 tools. 6 lbs. TOSET

CAST IRON BENCH LEGS

The latest and best in bench legs. Heavy cast iron, strong, make a sturdy, solid bench. All holes ¾". Bracket for shelf at bottom.

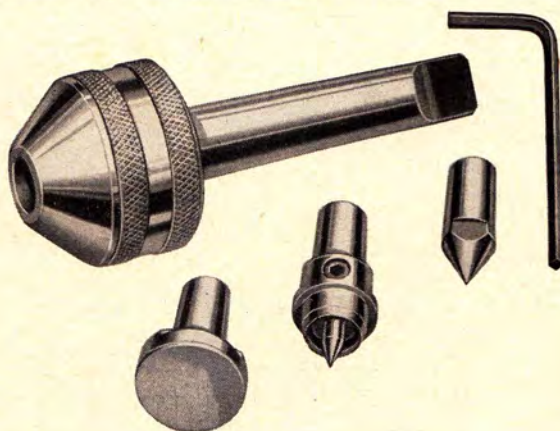
No. 945—Cast iron bench legs. 60 lbs.....DULEG



No. 1462 COMPOUND SLIDE REST

This slide rest is a high grade accessory, heavily and accurately built, with dovetail slides and a graduated compound base rotating through 360 degrees. Feed screws are covered to protect them from dirt and chips, and are fitted with micrometer sleeves, accurately graduated. Alignment bar on front of 11" lathe model can be set for permanent alignment with centers. This is a high-grade slide rest at a reasonable price. Should be used with No. 46-310 Metal Working Lathe shown opposite or any other lathe with 9" or 12" swing and with low enough speeds.

No. 1462—Compound Slide Rest and Sub-base complete for 12" lathe. 32 lbs. CASTO



No. 1490 BALL BEARING CENTER

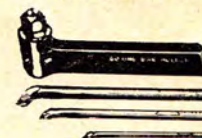
Shop men who have used this new ball-bearing center marvel at its performance. It is used on the lathe, grinder, screw machine, gear hobber and similar machines. Actual tests show that under gruelling applications it has outlasted four similar units. This ability to "take it" is due to its husky and simple construction. It has a double row of sealed-for-life ball bearings which require no lubrication and will take exceptionally heavy radial and thrust loads. It runs perfectly accurate and true because the center socket is drilled and machined after assembly. Supplied with three replaceable centers and wrench. Shank has No. 2 Morse Taper.

Here is the Ball-Bearing Center the shop man has been looking for — a center free of chatter, it is accurate, husky and true running.

No. 1490—Ball-Bearing Center as illustrated. 1½ lbs. Code SPINA

(FOR PRICES SEE ATTACHED PRICE LIST)

BORING BARS AND HOLDER



Holds both bars and square ¼" bits. Two holes in holder facilitate holding of tool. Made of tool steel, case hardened.

No. 962—Holder for Boring Bar with ⅝", ¾" and 1" Bars. 12 oz. DUBBO

No. 966—Set of three Boring Bars, ⅝", ¾" and 1" 8 oz. DUBOR

THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.

Accessories, Attachments and Material Useful In Any Shop

GRAY MACHINE ENAMEL

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

No. 29—1 Qt. Light No. 69—1 Qt. Med.
No. 39—½ Gal. Light No. 79—½ Gal. Med.
No. 101—1 Gal. Light No. 102—1 Gal. Med.
No. 89—1 Qt. Dark
No. 99—½ Gal. Dark
No. 103—1 Gal. Dark

Shipping weights: 1 qt., 5 lbs.; ½ gal., 8 lbs., 1 gal., 14 lbs. NOTE: Paint is not available. Shipment must be made by express or freight.

RUST-GO

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

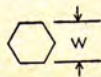
No. 104—½ Pint Bottle Code RUSTP
No. 106—½ Gallon Bottle Code RUSTQ
No. 107—1 Gallon Bottle Code RUSTG

STOP-RUST

A new development. When applied to any clean, polished metal surface it eliminates the formation of rust or oxidation. Is not sticky or oily. Has a hundred and one uses. Sold in 1 pint cans. Is available.

No. 109—1 Pint Can Stop-Rust..... Code RUSTS
No. 110—Case of 12 1 Pint Cans..... Code RUSTG

WRENCHES AND ALLEN KEYS



Cat. No.	Part No.	Size and Description	Code Word
192	L-47-S	Allen Key. W = ½"	AWREN
194	SP-2	Allen Key. W = ½"	AWREP
1520		¾" Closed, 1 ½" Open Ends, ¾" and ½" Holes.....	WRENA
1521	MC-11-S	Allen Key for Moulding Cutter Heads W = ¾"	WRENB
1522		¾" Open Double End Wrench.....	WRENC
1524	SR-242	¾" and 7/8" Closed Ends Wrench.....	WRENE
1525	LTA-430	¾" Closed, 7/8" Open End Wrench.....	WRENF
1526	SBS-47	¾" and 7/8" Closed Ends Wrench.....	WRENG
1527	T-103	¾" Box Wrench.....	WRENH
1528	L-46	¾" Box Wrench.....	WRENI
1529	DSS-41-S	¾" Socket Wrench.....	WRENJ
1530	DSS-44-S	Allen Key. W = ¾"	WRENK
1531	SP-5	Allen Key. W = ¾"	WRENL
1532	SP-6	Allen Key. W = ¾"	WRENM
1533	SP-10	Allen Key. W = ¾"	WRENN
1534	SP-1	Allen Key. W = ¾"	WRENO
1535	SP-3	Allen Key. W = ¾"	WRENP
1536	SP-4	Allen Key. W = ¾"	WRENQ
1538	DP-829	Stamped Steel Closed Double End Wrench ¾" and ¾" Openings.....	WRENS

Abrasive Sleeves for Narrow Sanding Drums

Cat. No.	Size	Type	Grit	Ship. Wt. Lbs.	Code
682	1 ½"x1"	AL. OXIDE	40	¼	SANAD
683	1 ½"x1"	AL. OXIDE	80	¼	SANAE
684	2 ½"x1"	AL. OXIDE	40	¼	SANAF
685	2 ½"x1"	AL. OXIDE	80	¼	SANAG
686	3"x1"	AL. OXIDE	40	½	SANAH
687	3"x1"	AL. OXIDE	80	½	SANAI

Sleeves packed 6 per box. Order as: "1 No. 831" where one package of 6 sleeves is required. Do not order as: "6 No.831" because this means 6 packages.

FOUR-STEP CONE PULLEYS



Made for the same size V-belt as plain pulleys listed opposite. Pulleys may be used in pairs as listed in table below and will provide the speed listed in the third column when used with 1725 R.P.M. motor.

All cone pulleys available in ½", ¾" and ¾" bores. ¾" and ¾" bores have a 3/16" keyway. ½" furnished unless otherwise ordered.

No. 718 Wt. ¾ lb. Code CONPA No. 932 Wt. 2 ½ lbs. Code DUBLG
No. 720 Wt. 1 ¾ lbs. Code CONPB No. 985 Wt. 2 ½ lbs. Code NEWPU

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



V-BELTS

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

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

No.	Size, Inches				Angle Deg.	Code Word
	In. Cir.	Out Cir.	Wd.	Th.		
281	26	28	¾	1/16	40	BELTX
284	28 ½	30 ½	¾	1/16	45	BELTA
289	44 ½	46	¾	1/16	40	BELTJ
291	27 ½	29	¾	1/16	40	BELTW
294	49	51	¾	1/16	40	BELTH
331	33 ½	35 ½	¾	1/16	45	MULTG
340	34 ½	36 ½	¾	1/16	45	BELUX
355	36 ½	38 ½	¾	1/16	45	FORVB
387	37 ½	39 ½	¾	1/16	45	FORDP
410	39 ½	41 ½	¾	1/16	45	BELTB
430	40 ½	42 ½	¾	1/16	45	FORSL
453	45 ½	47 ½	¾	1/16	45	MORBL
501	49 ½	51 ½	¾	1/16	45	MORUV
510	50 ½	52 ½	¾	1/16	45	JOIVB
520	52 ½	54 ½	¾	1/16	45	BELTC
521	61	62 ½	¾	1/16	45	BELTP
530	52 ½	54 ½	¾	1/16	45	BELTD
560	56 ½	58 ½	¾	1/16	45	EICVB
568	57 ½	59 ½	¾	1/16	45	FORVD
583	58 ½	60 ½	¾	1/16	45	FORBL
588	59 ½	61 ½	¾	1/16	45	FORVC
595	59 ½	61 ½	¾	1/16	45	BABEL
618	62 ½	64 ½	¾	1/16	45	BELTL
644	64 ½	65 ½	¾	1/16	45	BELTF
670	67 ½	69	¾	1/16	45	BELTU
*673	72 ½	74 ½	¾	1/16	45	PREBL
750	75 ½	76 ½	¾	1/16	45	JOBAS

*This belt 1/16" wide, for No. 620 drill press.
†Special belt for variable-speed scroll-saw.

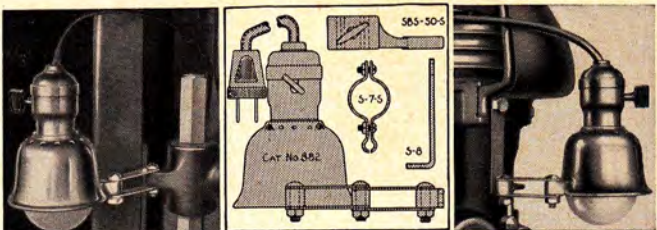
PULLEYS FOR V-BELTS



For belts ½" wide, ½" thick and 45° angle. Safety disc type—no spokes. Perfectly balanced. Have 1/8" hollow head set screw, 5/8" and ¾" bores have a 1/8" keyway. All sizes can be furnished in ½", ¾" and ¾" bores. ½" bore furnished unless otherwise specified. Maximum bore available on Nos. 5200 to 5300 is ¾".

Cat. No.	Outside Diam.	Code Word
5200	2	PULOA
5225	2 ¼"	PULOB
5250	2 ½"	PULOC
5275	2 ¾"	PULOD
5300	3	PULOE
5350	3 ½"	PULOF
5400	4	PULOG
5450	4 ½"	PULOO
5500	5	PULOH
5550	5 ½"	PULOP
5600	6	PULOJ
5650	6 ½"	PULOQ
5700	7	PULOL
*5710	7	PULOR
5800	8	PULOK
6100	10	PULOM
6200	12	PULON

*Has Keyway.



MANY USES FOR LAMP ATTACHMENT

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

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

No. 882—Lamp Attachment with shade, Socket and Cord. Four Flat Links, Three Bolts and Attachment Bracket. 1 ½ lbs.....LAMP A
No. 1134—Extra Support Links, Spacer, Screw, Nut, per pair.....LAMP B
No. 1135—Attachment Bracket for 700 Scroll Saw.....Code LAMP C
No. S-8.....Clamp for 14 Inch Drill Press
No. SBS-50-S.....Bracket for 785, 385 Band Saws

(FOR PRICES SEE ATTACHED PRICE LIST)

SANDING DRUMS

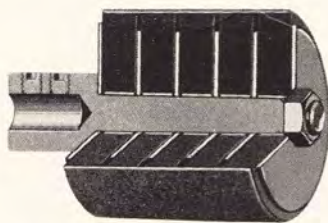
— a Convenience for Any Shop

WIDE DRUMS FOR DRILL PRESSES AND LATHES



THESE rubber-cushioned sanding drums (U. S. Pat. No. 1,906,190) employ a principle that insures every part of the drum being evenly expanded. Many sanding drums expand more at the center than at the ends, which means that perfectly flat work is difficult to produce with them. Others, having fasteners for the sandpaper on their surface, will "bump" every time the fastening passes over the work.

In these drums, each rubber section is separated from its neighbor by non-corrosive bakelite washers, with metal bushings next to the arbor. The disks are expanded perfectly uniformly, produce perfect work and run dead true. No. 840 drum has $\frac{1}{2}$ " diameter stem to fit $\frac{1}{2}$ " hollow spindle or chuck. Others have $\frac{1}{2}$ " bore.



No. 830—3" dia. x 3" Drum, with one sleeve. Fits $\frac{1}{2}$ " dia. shaft. Shipping Wt. 2 lbs. Code SADRA
 No. 831—3"x 3" sleeves, coarse garnet. Code SASLA
 No. 832—3"x 3" sleeves, medium garnet. Code SASLB
 No. 833—3"x 3" sleeves, al. oxide (for metal). SASLC
 Shipping Wt. 3" sleeves, 8 oz. per 6.

No. 835— $1\frac{3}{4}$ " dia. x 2" Drum, with 1 sleeve. Fits $\frac{1}{2}$ " dia. Shaft. Shipping Wt. $1\frac{3}{4}$ lbs. Code SADRB
 No. 836— $1\frac{3}{4}$ " x 2" sleeves, med. garnet. Code SASLE
 No. 837— $1\frac{3}{4}$ " x 2" sleeves, fine garnet. Code SASLF
 No. 838— $1\frac{3}{4}$ " x 2" sleeves, al. oxide (for metal). SASLG
 Shipping Wt. $1\frac{3}{4}$ " sleeves, 4 oz. per 6.

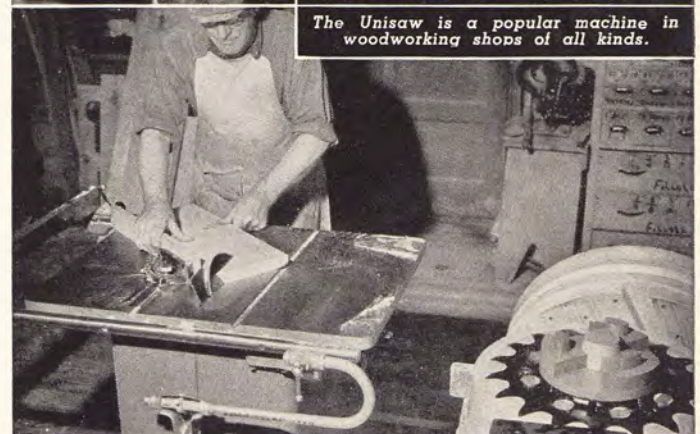
No. 840— $1\frac{1}{8}$ " dia. x $2\frac{1}{2}$ " drum, with one sleeve. With $\frac{1}{2}$ " shank to fit hollow spindle or chuck. Shipping Wt. 8 oz. Code SADRC
 No. 841— $1\frac{1}{8}$ " x $2\frac{1}{2}$ " sleeves, med. garnet. Code SASLK
 No. 842— $1\frac{1}{8}$ " x $2\frac{1}{2}$ " sleeves, fine garnet. Code SASLM
 No. 847— $1\frac{1}{8}$ " x $2\frac{1}{2}$ " sleeves, al. oxide (for metal). SASLO
 Shipping Wt. $1\frac{1}{8}$ " sleeves, 4 oz. per 6.

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

Delta Woodworking Installations



The Abrasive Disk Finishing Machine is used in hundreds of pattern shops.



The Unisaw is a popular machine in woodworking shops of all kinds.



Rigidity and accurate operation make this 12 Inch Lathe ideal for the shop.



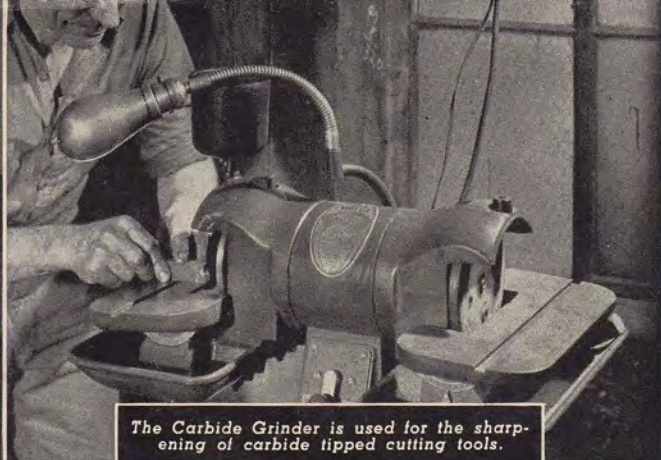
Shops busy with armament parts of wood increase output with the Unisaw.

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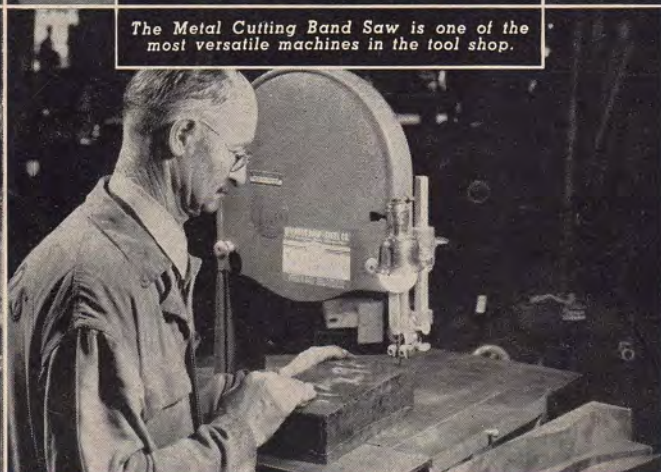


Women operators can operate these machines with ease and precision.

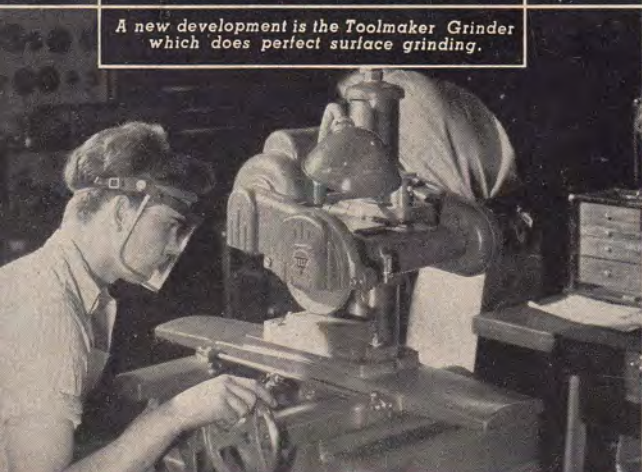
A new development is the Toolmaker Grinder which does perfect surface grinding.



The Carbide Grinder is used for the sharpening of carbide tipped cutting tools.



The Metal Cutting Band Saw is one of the most versatile machines in the tool shop.

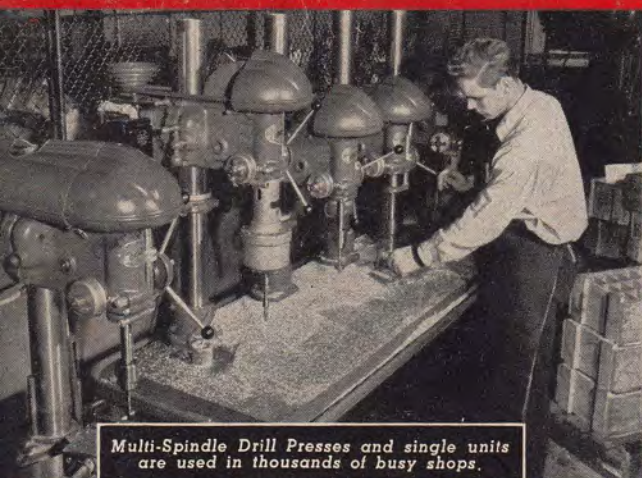


THE DELTA MANUFACTURING COMPANY

600 EAST VIENNA AVENUE

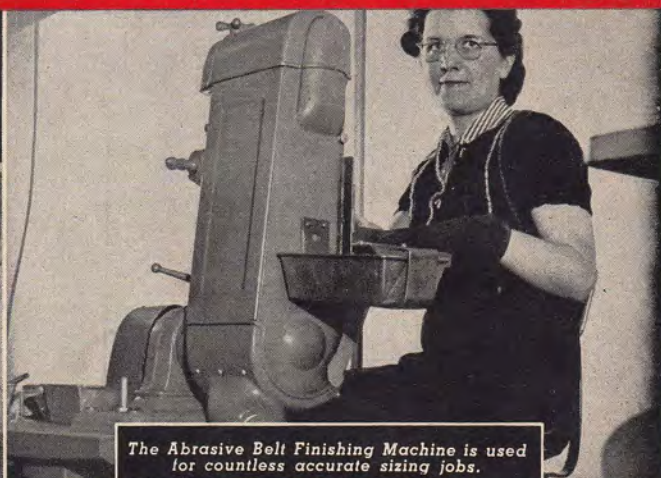
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MILWAUKEE

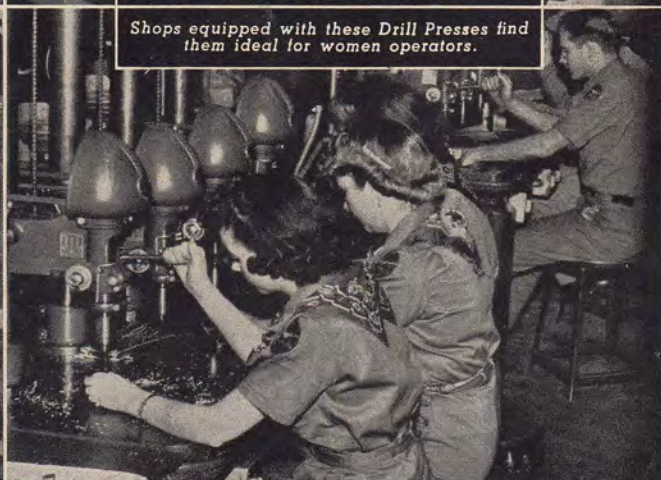


Multi-Spindle Drill Presses and single units are used in thousands of busy shops.

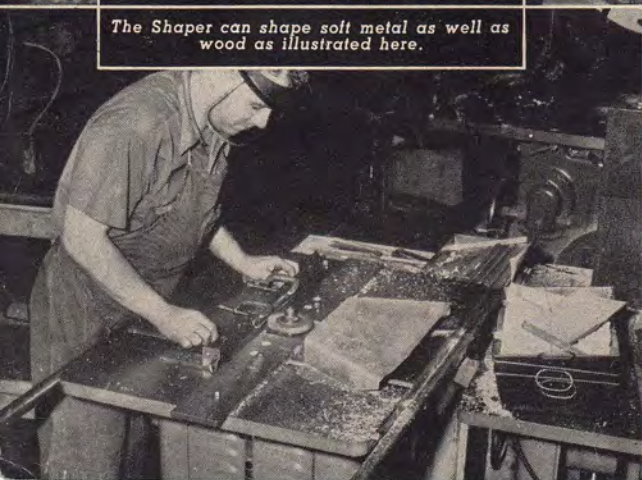
The Shaper can shape soft metal as well as wood as illustrated here.



The Abrasive Belt Finishing Machine is used for countless accurate sizing jobs.



Shops equipped with these Drill Presses find them ideal for women operators.



Priorities Affecting Delta Tools

THE WAR PRODUCTION BOARD has issued many regulations since the country began preparing for the defense program and for the war. These regulations were issued to fulfill requirements for the defense of the United States and they are deemed necessary and appropriate in the public interest and to promote the national defense.

In general, they are designed to alleviate a shortage in the supply of certain critical materials and equipment and in the facilities used to manufacture such war material. They, therefore, define the use to which certain materials can be put and curtail non-essential activities. Others define who may produce, who may sell, or who may consume items of a critical nature.

There are several regulations thus issued that tell us as producers of machine tools and light power-driven tools, the types of material we may use, how much of it may be put into production, and to whom we can make delivery of our products. We therefore operate under the following regulations of the War Production Board:

Priorities Regulations No. 1 and No. 3

CMP Regulations No. 1, No. 2 and No. 5

General Preference Order E-1-b

General Limitation Orders L-123, L-221, L-237, L-298 and L-311

In the main, the first five tell us of the materials we may purchase and by what means we can obtain them. The remainder of these regulations govern sales to our distributors and customers. Thus, a rating of AA-5 must accompany every order placed with us calling for a machine or an electric motor. Machine tools, though, which cost more than \$350 can be purchased without priorities.

Replacement parts and most attachments and accessories can be delivered freely without the restrictions imposed by any of these regulations. Delivery, however, on such non-rated orders is dependent entirely upon our inventory situation, and the amount of rated orders on hand for the same items. Thus, Priorities Regulation No. 1 provides that non-rated orders can be delivered only after all shipments have been made against orders bearing proper preference ratings (priority).

When an order is placed with us it is important that it be accompanied by a certification as required by Priorities Regulation No. 3, CMP Regulations No. 5 or No. 5A, or CMP Regulation No. 7. Such certification must be properly signed and must indicate clearly the preference rating and allotment number or symbol if any applies. It is also important that your required delivery date be indicated on the order.

CMP Regulation No. 5 assigns ratings to everybody engaged in the manufacture of products or in the conduct of many types of business, and it may be the means by which you could purchase Delta-Milwaukee equipment. It is, therefore, suggested that you obtain a copy of this regulation from the district office of the War Production Board located nearest you, and some time be given in studying its provisions. You may be surprised to know that you are entitled to extend a priority, and by its use purchase some equipment that you find necessary. Persons engaged in experimental research and development of new products should take full advantage of Preference Rating Order P-43.

Schools can buy equipment costing \$500 or less with MRO ratings assigned by CMP Reg. 5A.

Since most Delta distributors have a rotating stock, and since Delta machines are only available through these distributors and not direct from Delta, contact the distributor in your locality. Placing an order with him is the best way to obtain quick delivery. Your local distributor of Delta-Milwaukee equipment will serve you without penalty in price and he is in a position to help you to a great extent in choosing the ideal machine for your job. He will, furthermore, help you with the "red tape" of priorities.



SUPPLEMENT TO INDUSTRIAL CATALOG No. 13

★ *THIS* eight page supplement features photographs, descriptions, parts and prices for new additions to the Delta-Milwaukee line of Machine Tools not included in the pages of Industrial Catalog No. 13. Be sure to keep this supplement in the catalog so that you will have the information on these new units instantly available for your use.

Coolant Pan Attachment for Delta Cut-Off Machines

Efficient operation assured for abrasive wheel or steel blade cutting



IMPORTANT—Note Serial Number . . .

The 20-840 Coolant Pan Attachment is complete and ready to install on all Delta Cut-Off Machines carrying the serial number 28-3700 or higher, which have the improved wheel guard Catalog No. 1608 to minimize the splash encountered in wet cutting, and the labyrinth type cartridge assembly COS-382-S to prevent coolant from washing out the bearing lubricant. Earlier models were designed for dry cutting only, and additional changes are necessary to adapt them for wet cutting, as follows:

Serial Numbers 19-5484 to 28-3699 inclusive:

For these machines the cartridge COS-382-S and guard cartridge Catalog No. 1608 should be purchased and installed in place of the original ones.

Serial Numbers below 19-5484

These machines can be changed over only by installing the guard Catalog No. 1608 and the complete motor bracket assembly COS-383-R, which includes the cartridge COS-382-S.

Delta Manufacturing Company offers a new design coolant attachment for use on its cut-off machines (see *serial number listing* at lower left). Developed by Delta engineers, this attachment can be used with equally fine results, whether an abrasive wheel is employed in the cutting operation or, as in the case of non-ferrous metals, where a steel blade is used.

The coolant attachment consists of a pan, which is inserted between the legs and base of the machine. It includes the necessary spray nozzle and splash control accessories ready to attach to the user's pump, tank and supply line. User can easily install his own control valve to regulate coolant stream.

The spray nozzle is adjustable to permit placing its opening parallel to the cutting wheel and swings into position by means of a convenient handle to play the stream on the edge of the wheel and into the groove being cut into the work. A swivel mounting of the supply line permits accurate adjustment for angle cuts. Blank bosses are provided on the sides and front of the wheel guard catalog No. 1608 so that holes may be drilled and tapped for additional spray lines that may be desirable for unusual operations.

Parts for Conversion of Cut-Off Machines with a Serial Number Below 28-3700. See important note to left.

Cat. No. 1608—Guard Assembly for Wet or Dry Cutting.....	\$ 3.75
No. COS-382-S—Cartridge Assembly for Wet or Dry Cutting.....	14.00
No. COS-383-R—Motor Bracket Assembly.....	25.00

RUBBER WHEELS FOR WET CUTTING

Cat. No. 20-815—Manhattan No. 805, 10" dia. x 1/16" thick, for steel tubing	\$2.45
Cat. No. 20-816—Manhattan No. 808, 10" dia. x 3/32" thick, for steel solids	2.45

Number	Description
20-840	Delta Coolant Pan Attachment complete with spray nozzle, splash control accessories, deflector bracket, cap screws and machine bolts. Shipping weight, 145 lbs. Code CHOQR. Price.....



New Metal Dust Collector Has Wide Application In All Shops



CATALOG LISTINGS

Number	Description	Price
49-520	Dust Collector with $\frac{1}{2}$ HP, Single Phase, AC, 3450 RPM, 110/220 V, 60 Cycle Motor. Without attachment fittings. Shipping wt. 140 lbs. Code DUSTB.....	\$ 87.50
49-524	Dust Collector with $\frac{1}{2}$ HP, Single Phase, AC, 2850 RPM, 110/220 V, 50 Cycle Motor. Without attachment fittings. Shipping wt. 140 lbs. Code DUSTM.....	87.50
49-521	Dust Collector with $\frac{1}{2}$ HP, 3 Phase, AC, 3450 RPM, 220/440 V, 50/60 Cycle Motor. Without attachment fittings. Shipping wt. 140 lbs. Code DUSTC.....	87.50
49-522	Dust Collector with $\frac{1}{2}$ HP, DC, 3450 RPM, 115 V Motor. Without attachment fittings. Shipping wt. 140 lbs. Code DUSTD.....	100.00
49-523	Dust Collector with $\frac{1}{2}$ HP, DC, 3450 RPM, 230 V Motor. Without attachment fittings. Shipping wt. 140 lbs. Code DUSTE.....	100.00
49-529	Extra Standard Filter to replace dirty filter while it is being cleaned. Shipping wt. 12 lbs. Code DUSTF.....	6.75
49-530	Special Filter and Channels for "flour fine" dust. Shipping wt. 16 lbs. Code DUSTG.....	2.75

IDEAL for grinding, polishing, buffing, sanding, and other operations where metal dust must be efficiently collected to protect workers' health and keep harmful dust away from expensive machinery. This new Delta-Milwaukee Dust Collector embodies all of the best features of collectors of this kind, and yet has none of the disadvantages usually encountered with this type of unit. It is a self-contained, portable unit which has many applications in both large and small shops. Its cost is so low that it rapidly pays for itself. It protects workers' health and keeps harmful dust away from other machinery. It collects both fine and coarse dust and particles.

It is universal in application with openings so located that it can be attached to all types of abrasive units. In addition to the direct applications to Delta-Milwaukee Machine Tools as shown opposite it can also be used with many other units. Fittings are available for such applications.

How the Dust Collector Works

A powerful fan sucks both fine and heavy dust and small particles through a perfected air filter. The larger particles fall into an easily removed pan at the bottom of the unit. The important feature of the filter is that it is permanent and cleanable, has low air resistance, is completely fire-proof, has longer use without cleaning and does a more effective job of filtering.

An extra low-cost standard filter No. 49-529 should always be kept on hand so that while one is being cleaned the other can be put into the Dust Collector—thus the collector is never idle. When conditions warrant, an additional woven glass filter, Catalog No. 49-350, is available for collecting "flour fine" dust. This type of filter is easily attached to the standard filter.

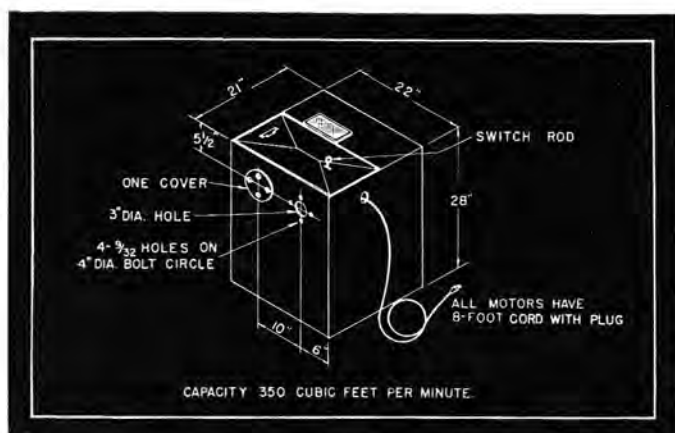
Sturdy, Modern Design Construction

The cabinet is of pressed steel, strong and husky, beautifully finished in the famous Delta-Milwaukee grey. A large door on the back is removable for access to the filter, another at the top allows inspection of the motor.

The fan is a high efficiency unit of the squirrel-cage type and moves 350 cubic feet of air per minute. It develops a static suction of 3 to 4 inches.

A $\frac{1}{2}$ Horse Power motor of 3450 RPM is used with this unit. It has sealed-for-life ball bearings so that there are no lubrication problems in this new Delta Dust Collector. It is located in a separate sealed compartment so that it is kept away from harmful dust, a feature not often found in similar units.

The filter is fire-proof, has high filtering qualities, is cleanable and need not be thrown away, thereby reducing operating costs and allowing the Dust Collector to be kept at high efficiency. From every point of design and construction the very best features have been incorporated into this new Delta-Milwaukee Dust Collector. This construction plus its high efficiency, universal application and its remarkably low price allows you to install these units throughout your entire shop, keeping the air free of harmful dust. Install them in your shop now.



AVAILABLE CONNECTION FITTINGS

FLEXIBLE RUBBER HOSE			CAST IRON FLANGES	HOSE CLAMPS
			Complete with Four $\frac{1}{4}$ " No. 20 Screws, Nozzle fits I.D. of Hose.	Adjustable to 2-5/16" or 3" I.D. of Hose
Ins. Dia.	Length	Part No. & Price		
2-5/16"	20"	49-533 \$2.95		
3"	18"	49-534 \$3.25		
3"	48"	49-535 \$6.85		
			2-5/16" hose Cat. No. 49-538 Price \$.75	Cat. No. 49-541 Price \$.20
			3" hose Cat. No. 49-539 Price \$.85	

NOTE: These are the only standard connection fittings available. Fittings other than those above must be furnished by customer.

An Efficient Delta Unit that Safeguards Health and Machinery

Used with Delta Cut-Off Machine . . .

The large amount of abrasive material and metal dust produced by the large wheel of the Delta Cut-Off machine is thrown into the air and must be collected to protect the operator and machine tools. The Delta Dust Collector is perfectly adapted for this use, confining all this harmful material in the tray and filter of the unit. Order attachment package separately when ordering Dust Collector for the Cut-Off Machine.

No. 20-837—Cut-Off Machine Attachment Package complete as illustrated. Shipping weight 15 lbs. Code DUSTJ\$ 6.00

Used with Delta Tool Grinder . . .

A perfect application for the new Delta Dust Collector is with the standard Delta Tool Grinder. Abrasive dust produced by the grinder, harmful to operator and expensive machinery, is trapped in the Dust Collector. Warm shop air is not forced outside the building thus cooling the shop during cold weather, but instead the warm shop air is circulated after being thoroughly cleaned by the efficient filter. Order attachment package separately.

No. 23-802—Tool Grinder Attachment Package complete as illustrated. Shipping weight 18 lbs. Code DUSTH\$ 6.00

Used with Delta Belt Finisher . . .

The Abrasive Belt Finishing machine is often used for the accurate sizing of expensive material which must be recovered. This new Dust Collector with its cleanable filter, allows every particle of material to be recovered—thus the collector often pays for itself after very short use. An attachment package has been specially developed to connect the collector to the finishing machine. Order it separately.

No. 31-856—Abrasive Belt Finishing Machine Attachment Package complete as illustrated. Shipping weight 10 lbs. Code DUSTK\$ 6.50

Used with Delta Toolmaker Grinder . . .

The Toolmaker Grinder is a precision machine and must be protected from harmful abrasive dust produced by the cutting action of the wheel. The new Dust Collector protects the machine and the worker. Special attachment package is available to connect the Dust Collector to the Toolmaker Grinder. Order separately.

No. 24-819—Toolmaker Attachment Package complete as illustrated. Shipping weight 15 lbs. Code DUSTJ\$12.00

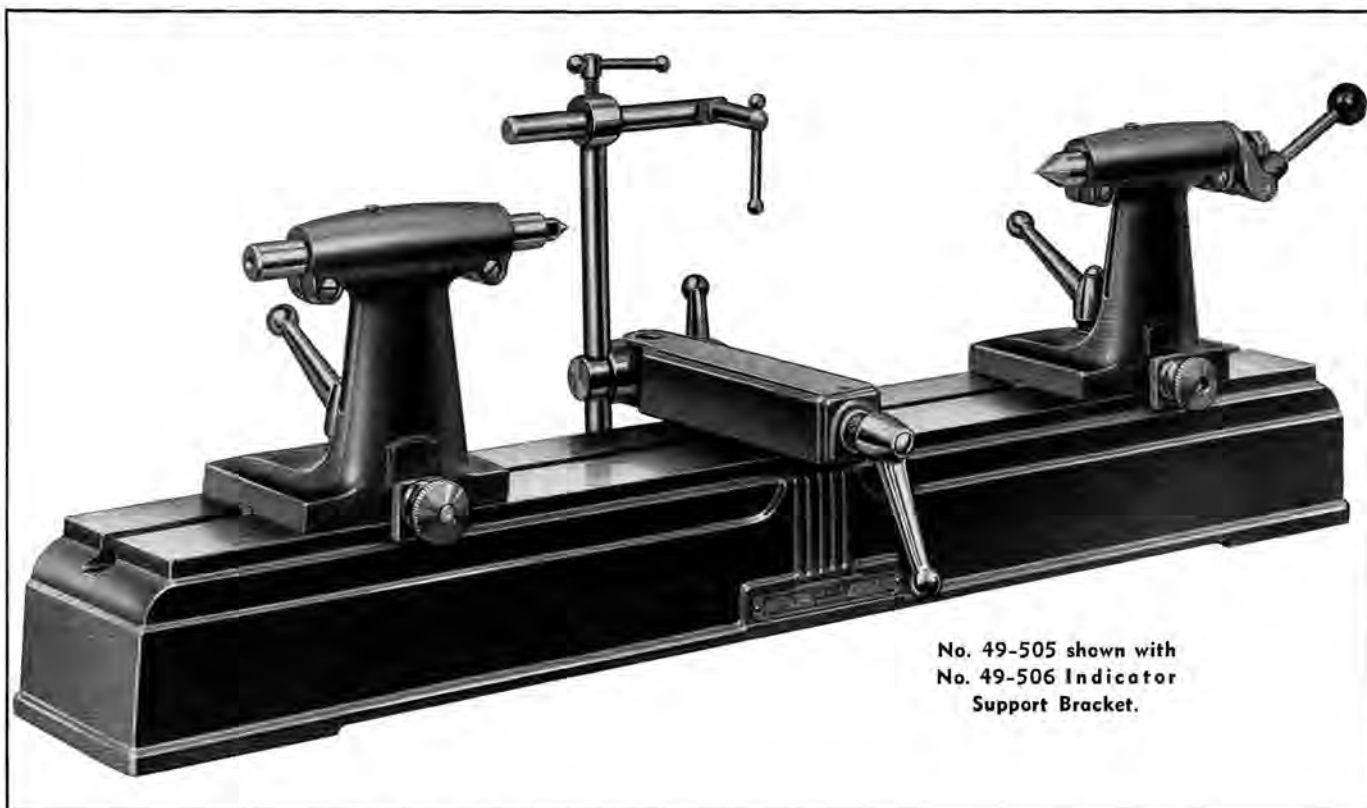
Used with Delta Disc Finisher . . .

The most efficient of the dust collectors developed for the Abrasive Disc Finishing machine or Sander, the powerful suction of the fan pulls the dust and heavy particles into the filter cabinet keeping the shop clean—important where a large amount of abrasive finishing is done. Order complete attachment package separately.

No. 31-856—Abrasive Disc Finishing Machine Attachment Package complete as illustrated. Shipping weight 12 lbs. Code DUSTL\$ 7.00



New Bench Center Embodies Convenience and Accuracy



No. 49-505 shown with
No. 49-506 Indicator
Support Bracket.

All of the best features of construction, accuracy, and convenience found in the best bench centers of this type are combined in this new unit with additional Delta-Milwaukee developments which make this unit the finest available today. These features combined with the exceptionally low price, allow you to install additional units so that your inspection work is speeded up.

The bed is a heavy casting fully normalized to relieve all strains thus assuring accuracy. It has an accurately ground top surface and a milled T slot for clamping the head and tail stocks and the indicator support bracket. The top surface is flat and the head and tail stocks can be reversed so that the unit may be operated from either side—a distinct advantage.

The head and tail stocks are identical castings, completely interchangeable without any variation in accuracy. Both castings are precision bored so that alignment in any position is true and accurate. The large knurled knob at the front of each locates the stock against the side of the milled T slot in the base thus assuring perfect alignment. They are clamped in place by the large, convenient handles at the rear. Both stocks contain hardened and ground 60° angle centers for holding the piece to be inspected. The tail stock has a spring loaded sliding center operated by the lever to the right.

Perhaps the most outstanding feature of this new bench center is the design, construction and convenient operation of the indicator support bracket. This support bracket is truly universal and its advantages are many and will be appreciated by you. The base of the bracket can be firmly and quickly locked in any position on the bed by merely operating the handle at the front. The part for holding the indicator can be put into any position—vertical or horizontal. Look at the clamp handles provided, they are large and convenient and always there—you don't need a pair of pliers or a wrench to clamp the indicator or any other part in place. This new Delta-Milwaukee Bench Center is a completely self contained unit—no other tools or

parts are needed to operate it, all clamps are hand operated, positive and firm. This is a precision unit and embodies so many fine features of design and construction and is so accurate and so convenient that it is the finest unit of its kind available today. And its remarkably low price makes it available to all shops, either large or small, where inspection work must be done. Investigate this Delta-Milwaukee Bench Center today—install one or more in your inspection department and see how your operators will do better work and more work, and how pleased they will be with its convenient operation.

Specifications and Catalog Listing

Distance between centers, maximum.....	19½"
Diameter of work over bed, maximum.....	10½"
Diameter of work over support bracket base, maximum.....	7⅝"
Overall length of bed.....	32"
Width of bed.....	5½"
Size of ground bed.....	4½" x 30"
Travel of center in tail stock.....	¾"

All parts securely locked in position by convenient, positive hand clamps—no wrenches or pliers are needed—completely self contained.

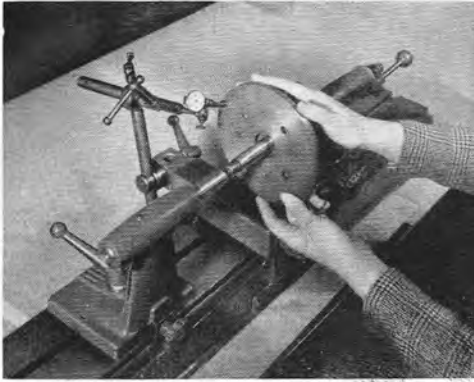
Indicator and part bracket can be put into any position.

No. 49-505—Bench Center without indicator support bracket. Shipping weight 98 lbs. Code BENCO.....\$39.50

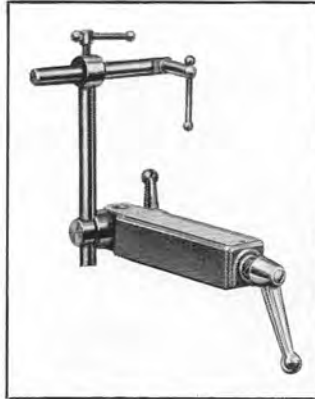
No. 49-506—Indicator Support Bracket as illustrated above. Arranged with ¼" clamp screws for indicator. Shipping weight 9 lbs. Code BENCS.....\$ 9.00

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Handy Indicator Support Bracket for Precision Testing



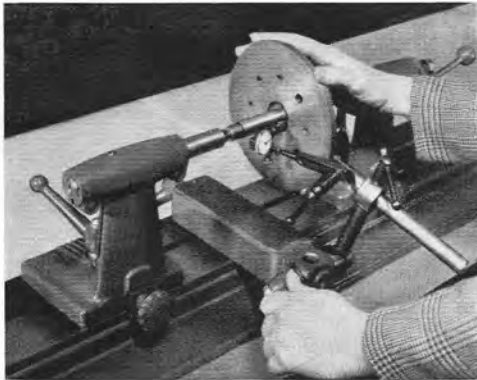
Precision Testing
Illustration shows operator checking the runout of the face of a drive flange.



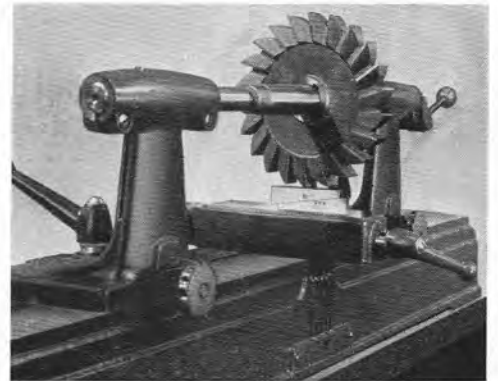
Precision Testing
"Highlight" photograph at left shows No. 49-506 Indicator Support Bracket, a precision unit available at a remarkably low price.



Precision Testing
Operator checking whether outer race of bearing runs true with inner race after bearing is pressed onto the spindle shaft.



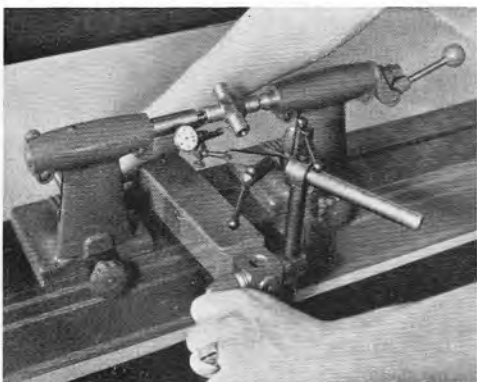
Precision Testing
Photo at left shows operator checking the runout of the inner bore of a drive flange.



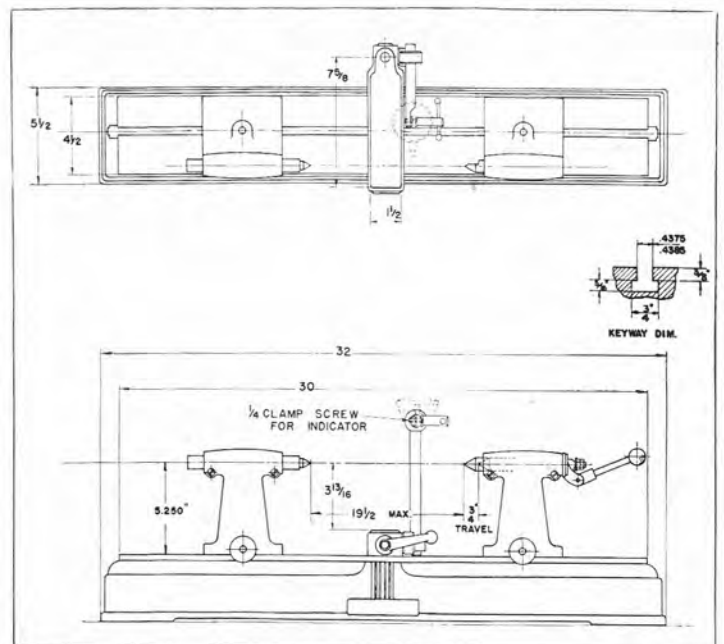
Precision Testing
Illustration shows a set-up for checking the land clearance of a milling machine cutter using adjustable parallel blocks.



Precision Testing
Photograph shows operator checking the taper of a grinder spindle for runout.



Precision Testing
Operator checking if center cross is at right angles and if opposite centers are in same plane.



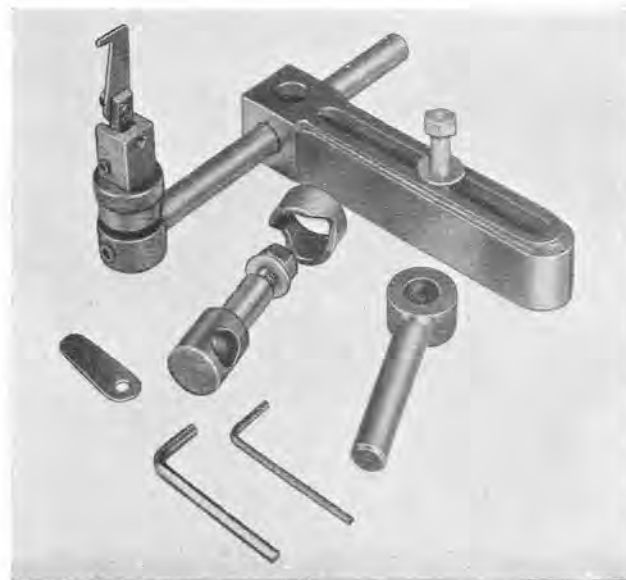
New Unihead Is Universally Adjustable Work Head for Grinders



for obtaining certain compound angles similar to those obtainable on the Delta Univise (Catalog No. 24-902). The base is arranged with keys that engage the table and these keys are removable so they can easily be changed or left off if this head is used on other makes or types of machines. It should be noted that although this head can be used directly on the Delta Surface Grinder table for a limited number of setups its maximum utility is reached when used in connection with the swivel table of the Tool and Cutter Grinding Attachment, Catalog No. 24-952. This table can be swiveled to 45° in any direction, which, when combined with the fact that the Unihead is offset and can be reversed on the table, provides the operator with a range which is the equivalent of a 16" diameter saw blade.

Adjustable Collar and Dog

The indexing dog is held in an adjustable bracket that can be clamped in any convenient position. The dog holder is slotted through, so the adjusting screw, when properly set, will remove all play, thus providing accurate engagement of the dog in the index collar slot.



Tooth Stop Unit

The work head uses the same tooth stop unit regularly furnished with the Tool and Cutter Grinder Attachment, Cat. No. 24-952. If the work head is to be used on another make of machine, it may be advisable to obtain the No. 24-970 Tooth Stop unit. A pad is provided at front of the work head on which the tooth stop bracket can be applied. A 5/8" hole is also provided for application of tooth stop rods.

THE Delta Unihead is a universally adjustable work head, designed for use in connection with the Toolmaker Cutter Grinder. It is also very useful on other makes of machines, especially if the Delta No. 24-970 Tooth Stop Unit is used in connection with it. This head consists of a heat treated sleeve, arranged with a No. 9 Brown and Sharpe taper and accurately mounted in pre-loaded, sealed and lubricated-for-life ball bearings that need no further attention. Another feature of the work head is the adjustable index stop collar and dog that can be disengaged or be set in any position which is most convenient to the operator. It is equipped with a 12-tooth index collar with selector plate, which permits the dog to automatically engage either 2, 3, 4, or 6 selected equal spaces. Other plain collars (without selector plate) are available which provide other equal spacings and can be ordered as required—see Parts List on Page 7 for list of collars and specifications. Additional features include a Push-out Nut arranged at the back of the sleeve for pushing out tightly fitted adapters, thus avoiding possible damage to the unit, resulting when attempting to drive them out. This Push-out Nut is bored out to receive a cap screw for drawing in adapters as required. The sleeve is also arranged with a flat at the front for which a wrench is supplied in order to hold the sleeve while the Push-out Nut or Draw-in Cap Screw is being turned.

Ample provision is made for applying the Tooth Stop Unit. The swivel bracket is arranged with 360 graduations and, although only one of these swivels is furnished with the head, it is possible to use another, in addition,

A Marvel of Efficiency, Convenience and Accuracy

● Index Collar with Selector Plate

The Index Collar has 12 teeth and the selector plate is marked 2, 3, 4, and 6. When any of these spaces are required, merely lock the selector marked with the number required in line with any tooth on the collar and the dog will slide over the outside and only engage the desired notches. If 12 spaces are needed, remove selector plate.

If other indexing collars are ordered as offered in our Catalog Nos. 24-957 through 24-965, it will be noted that these are not offered with the selector plate, and it is therefore necessary that the desired spacing be marked with chalk or in some other manner as desired and the dog engaged in the marked spaces accordingly.

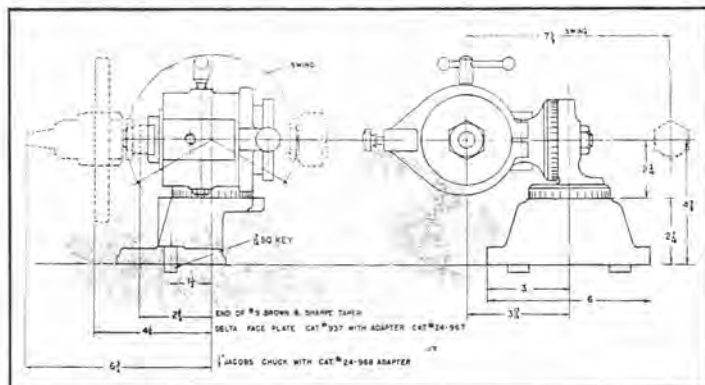
● Push-Out Nut

The back of the Unihead taper sleeve is fitted with a sleeve nut which, when turned, will force out any adapter which is seated tightly in the taper. The front of the sleeve is arranged with flats and can be held with the furnished wrench, while turning out.

The Push-Out Nut is bored out, so a cap screw can be used for drawing in the adapters. Adapters are generally drawn in when heavy work is mounted on the Unihead or when excessive pressure is exerted during the various operations performed on this unit.

● Swivel Index Marks

The small stampings arranged with the index mark attached to the swivels are set correctly at the factory. If, for any reason, they become out of adjustment, it is an easy matter for the operator to square up the head and reset the index marks by means of the two screws holding them.



● Adapters and Collets

The sleeve is arranged with a No. 9 B. & S. taper and will receive any such taper ends with or without a tang. No adapters or collets are furnished. For further information see table below.

● Adapters for Delta Unihead

The Delta Unihead lends itself to an almost endless number of combinations through the use of various types and makes of adapters, with a No. 9 B. & S. shank. Listed below are a few of the most useful types. (Illustrations of some of these appear on the next page). Although there are many others, these few are given for the customers' convenience in making a proper selection. Delta does not keep them in stock nor has it made arrangements with the manufacturers named, to supply them to Delta dealers.

Specifications and Catalog Listings

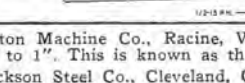
CATALOG No. 24-955—DELTA UNIHEAD arranged with preloaded and sealed-for-life ball bearings and with sleeve for receiving a No. 9 Brown and Sharpe Taper only. Includes one 12-tooth collar arranged with a selector plate which permits dog to automatically engage either of 2, 3, 4, 6, or 12 selected equal spaces. SURTIC.....\$65.00
This tooth stop unit Catalog No. 24-970 is not furnished but should be considered if Unihead is to be used on other makes of machines. (For Adapters, see table.)

The following indexing collars as listed cover a varied range of combination spacing and should be ordered separately as required.

INDEX COLLARS FOR UNIHEAD

CAT. No. 24-957—One 36-tooth plain collar for 2, 3, 4, 6, 9, 12, 18, and 36 equal spaces. SURTD.....\$2.50
CAT. No. 24-958—One 34-tooth plain collar for 17 and 34 equal spaces. SURTE.....\$2.50
CAT. No. 24-959—One 33-tooth plain collar for 3, 11, and 33 equal spaces. SURTF.....\$2.50
CAT. No. 24-960—One 32-tooth plain collar for 2, 4, 8, 16, and 32 equal spaces. SURTG.....\$2.50
CAT. No. 24-961—One 30-tooth plain collar for 3, 5, 6, 10, 15, and 30 equal spaces. SURTH.....\$2.50
CAT. No. 24-962—One 28-tooth plain collar for 4, 7, 14, and 28 equal spaces. SURTI.....\$2.50
CAT. No. 24-963—One 26-tooth plain collar for 13 and 26 equal spaces. SURTJ.....\$2.50

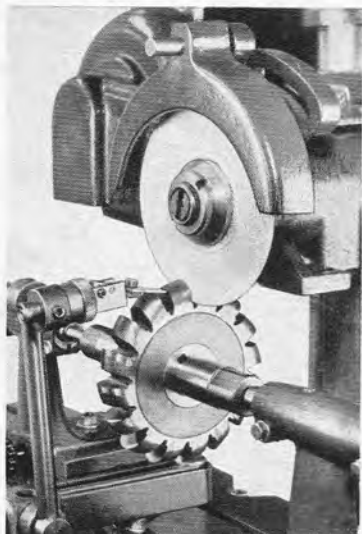
CAT. No. 24-965—One blank collar. SURTK.....\$2.00
CAT. No. 24-967—ADAPTER FOR UNIHEAD with No. 9 Brown and Sharpe outside taper arranged with 1" x R. H. threaded end to receive Delta 6" Face Plate (Cat. No. 937). SURTL.....\$5.00
CAT. No. 24-968—ADAPTER FOR UNIHEAD with No. 9 Brown & Sharpe outside taper arranged with No. 33 Jacobs taper to receive 6A Jacobs Chuck—1/2" capacity. SURTM.....\$5.00
CAT. No. 24-970—TOOTH STOP UNIT consisting of 1 bracket, 2 bars, 1 clamp and tooth stop with 2 fingers. SURTN.....\$15.00
CAT. No. 24-973—Type 12 Std. Dish Wheel 6" Diameter x 1/2 x 5/16 x 1 1/4 hole. SURTO.....\$3.25
CAT. No. 24-974—Type 11 Std. taper cup wheel 4/3 Diameter x 1 1/2 x 1 1/4 hole. SURTP.....\$3.25

TYPE	DESCRIPTION	REMARKS
	No. 9 B. & S. Outside taper arranged with threaded end to receive 3 jaw chuck or Delta No. 937 6" face plate.	This is the only Adapter of this type furnished by Delta Mfg. Co. (Cat. No. 24-967). Cat. No. 937-6" Face Plate as shown in Photo Page 8 furnished by Delta.
	No. 9 B. & S. Outside taper arranged with No. 33 Jacobs taper end to take 1/2" Jacobs chuck.	This is the only Adapter of this type furnished by Delta Mfg. Co. (Cat. No. 24-968).
	No. 9 B. & S. Outside taper. Inside taper can be No. 5, No. 7 B. & S. or No. 1, No. 2 Morse Tapers.	Style 102 Scully Jones or style No. 2 Brown & Sharpe. NOT furnished by Delta.
	No. 9 B. & S. Outside taper shell end mill arbors of various types. When key is removable, these arbors can be used for holding saw blades, etc.	Scully Jones Co. Style B or equivalent. NOT furnished by Delta.
	No. 9 B. & S. outside taper Spring Collet with straight hole of various sizes up to 3/4".	Brown & Sharpe type or equivalent. NOT furnished by Delta.

Gorton Machine Co., Racine, Wis., offers a complete set consisting of a collet chuck, with No. 9 B. & S. shank and 10 spring collets ranging from 3/8" to 1". This is known as their Set No. 703-2.

Erickson Steel Co., Cleveland, Ohio, also makes a set similar to the above. These sets are not furnished by Delta Manufacturing Company, and above manufacturers' catalogs should be checked for additional information.

Many Adapters Available for Use with Delta Unihead



Tooth Stop Unit and No. 24-952
Grinder Attachment



Unihead with Delta Cat. No. 937
6" face plate in place. Useful for
mounting jigs and fixtures

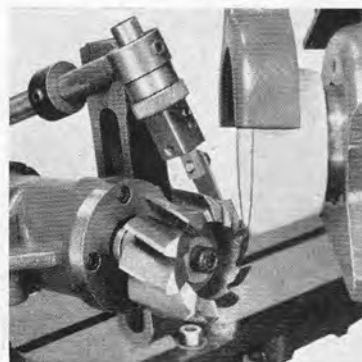


Unihead with Delta Cat. No. 24-967
Adapter and 4" 3 jaw chuck.
(Chuck not furnished by Delta)

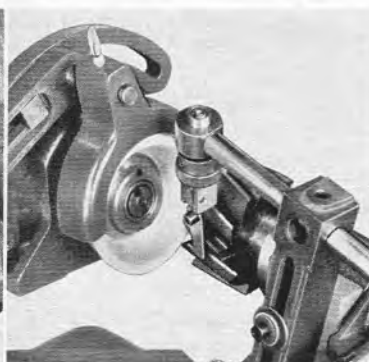


Photo showing Delta Unihead with
1/2" No. 6A Jacobs chuck in place

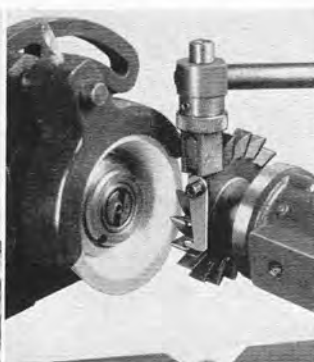
Unihead . . . The new Delta Unihead enables shopmen to make quick set-ups for grinding tools to meet the most exacting requirements.



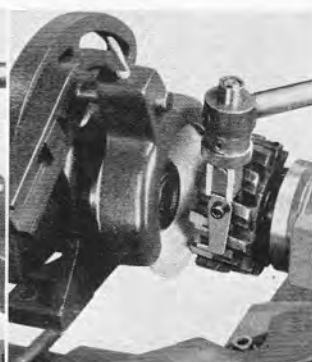
Grinding corners of a 45° End Mill



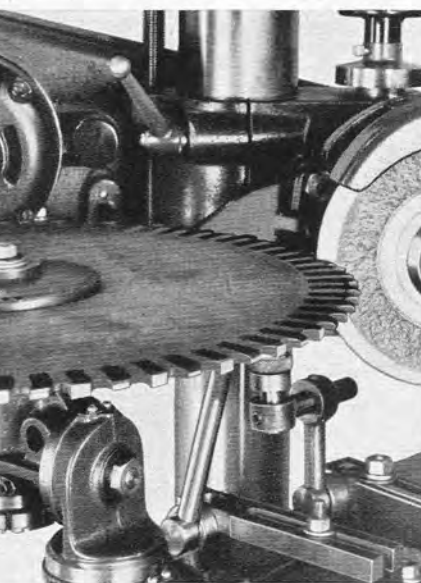
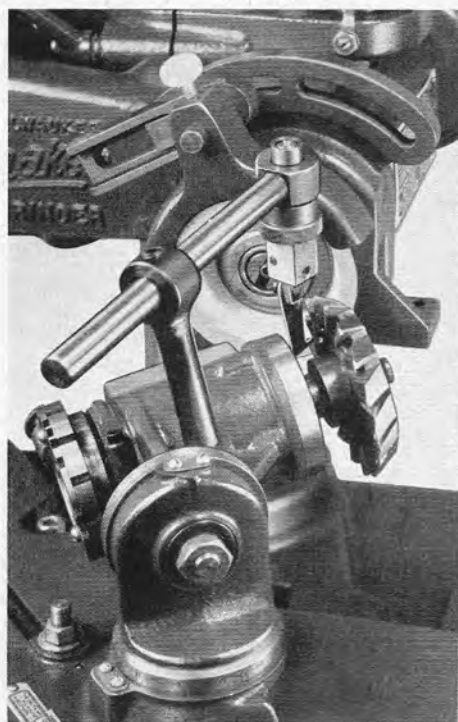
Grinding the face of a Shell End
Mill (Tooth Stop mounted on pad)



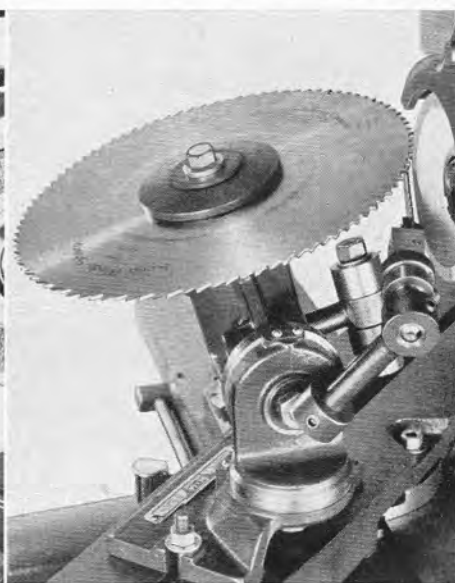
Grinding the sides of a side
milling cutter



Grinding the teeth of an inserted
Tooth Face Mill



Grinding the face of teeth of 16" (Max. Dia.)
inserted tooth saw



Grinding Alternate Beveled Tooth Saw

Photo at left—Grinding a (Dovetail) Angular Cutter

THE DELTA MANUFACTURING COMPANY • MILWAUKEE, WIS.

VICTORY FIRST!

The major job we all have to do now is to produce for the Victory of the United States. We are doing this to the fullest possible extent, and our production of machines is for the needs of the War industries.

This, will eliminate shipment of machines and accessories to customers not engaged in war work. We know you will appreciate the necessity of this, and ask your complete cooperation in expediting the forwarding of preference-rating certificates required, so that we may continue to serve you to the fullest possible extent.

Price List for DELTA-MILWAUKEE INDUSTRIAL CATALOG NO. 13

Effective September 20, 1941

Prices shown in this list supersede those quoted previous to September 20, 1941. All prices subject to change without notice. The right is reserved to make changes in design or equipment at any time, without incurring any obligation to install these on machines previously sold. Any sales tax or other tax imposed subsequent to the publication of this price list will be additional to quoted prices.

Catalog No.	Selling Price	Catalog No.	Selling Price	Catalog No.	Selling Price	Catalog No.	Selling Price
Page 5		Page 7		Page 9		Page 12	
17-205	\$112.00	17-515	\$871.50	17-565	\$1196.50	14-305	76.50
17-206	112.00	17-516	871.50	17-566	1196.50	14-306	74.00
17-207	118.00	17-517	901.50	17-567	1226.50	14-307	80.50
17-208	118.00	17-518	901.50	17-568	1226.50	14-308	78.00
17-210	123.00	17-520	965.00	17-570	1455.00	14-405	222.00
17-211	123.00	17-521	965.00	17-571	1455.00	14-406	217.00
17-212	129.00	17-522	1001.00	17-572	1491.00	14-407	230.00
17-213	129.00	17-523	1001.00	17-573	1491.00	14-408	225.00
17-215	143.00	17-525	1252.00	17-575	1872.00	14-410	\$364.50
17-216	143.00	17-526	1252.00	17-576	1872.00	14-411	357.00
17-217	149.00	17-527	1300.00	17-577	1920.00	14-412	376.50
17-218	149.00	17-528	1300.00	17-578	1920.00	14-413	369.00
Motors:		Motors:		Motors:		14-415	424.00
84-510	\$36.50	84-510	\$36.50	84-710	\$ 43.25	14-416	414.00
86-520	40.00	86-520	40.00	84-910	49.75	14-417	440.00
84-710	43.25	84-710	43.25	86-920	49.50	14-418	430.00
86-720	46.00	86-720	46.00	Page 10		Motors:	
84-910	49.75	84-910	49.75	14-005	47.00	62-110	23.50
86-920	49.50	86-920	49.50	14-006	44.50	66-110	24.00
Page 6		Page 8		14-007	51.00	66-320	29.50
17-305	146.00	17-260	188.00	14-008	48.50	Page 13	
17-306	146.00	17-261	188.00	972	8.00	14-515	583.50
17-307	152.00	17-262	194.00	973	4.00	14-516	571.00
17-308	152.00	17-263	194.00	974	2.25	14-517	603.50
17-405	400.00	17-355	211.00	977	2.25	14-518	591.00
17-406	400.00	17-356	211.00	991	2.25	14-520	761.00
17-407	412.00	17-357	217.00	Motors:		14-521	746.00
17-408	412.00	17-358	217.00	62-110	23.50	14-522	785.00
17-410	750.00	17-455	530.00	66-110	24.00	14-523	770.00
17-411	750.00	17-456	530.00	66-320	29.50	14-525	880.00
17-412	774.00	17-457	542.00	Page 11		14-526	860.00
17-413	774.00	17-458	542.00	14-205	52.50	14-527	912.00
Motors:		17-460	1010.00	14-206	50.00	14-528	892.00
84-510	\$36.50	17-461	1010.00	14-207	56.50	Motors:	
86-520	40.00	17-462	1034.00	14-208	54.00	62-110	23.50
84-710	43.25	17-463	1034.00	14-210	72.00	66-110	24.00
86-720	46.00	Motors:		14-211	69.50	66-320	29.50
84-910	49.75	84-710	\$ 43.25	14-212	76.00	Page 14	
86-920	49.50	84-910	49.75	14-213	73.50	1504	25.00
Page 7		86-920	49.50	14-215	87.75	1505	100.00
17-503	566.50	Page 9		14-216	85.25	1506	18.00
17-506	566.50	17-555	761.50	14-217	91.75	1399	36.00
17-507	584.50	17-556	761.50	14-218	89.25	Page 15	
17-508	584.50	17-557	779.50	Motors:		1378	64.50
17-510	660.00	17-558	779.50	62-110	23.50	1378-H	64.50
17-511	660.00	17-560	1038.00	66-110	24.00	1379	70.50
17-512	684.00	17-561	1038.00	66-320	29.50	1379-H	70.50
17-513	684.00	17-562	1062.00			1391	6.75
		17-563	1062.00				

Catalog No.	Selling Price	Catalog No.	Selling Price	Catalog No.	Selling Price	Catalog No.	Selling Price
Page 15		Page 16		Page 20		Page 21	
17-862.....	\$8.15	17-830.....	\$53.50	66-110.....	\$24.00	132.....	3.00
501.....	1.15	17-831.....	53.50	66-320.....	29.50	1115.....	1.35
520.....	1.15	17-832.....	51.50	66-362.....	40.75	1116.....	4.25
1311.....	3.00	17-833.....	51.50	66-321.....	34.50	1325.....	9.75
1312.....	3.00	17-840.....	67.00	68-110.....	29.75	1320.....	8.25
1366.....	8.50	17-841.....	68.00	68-120.....	30.75	1328.....	12.00
1367.....	9.25	17-842.....	82.50	68-310.....	41.75	1329.....	16.00
1368.....	8.50	17-843.....	82.50	68-320.....	42.75	1321.....	16.00
1372.....	16.50	17-850.....	111.00	62-210.....	29.50	1117.....	.75
1513.....	177.00	17-851.....	111.00	62-215.....	30.50	1119.....	1.35
1514.....	52.50	Page 17		62-610.....	32.00	1322.....	1.25
1515.....	340.00	17-860.....	33.80	62-620.....	33.00	1327.....	1.25
1399.....	36.00	Page 18		82-710.....	36.50	1459.....	1.50
1380.....	12.00	1381.....	7.25	82-910.....	43.25	1330.....	.55
1371.....	20.00	976.....	5.85	83-110.....	49.75	1331.....	.55
968.....	8.00	504.....	5.25	84-510.....	36.50	1332.....	.55
P-1378.....	129.50	505.....	5.25	84-520.....	38.25	1333.....	.55
P-1378-H.....	129.50	506.....	6.35	84-540.....	50.50	1334.....	.55
P-1379.....	135.50	508.....	7.00	84-710.....	43.25	Page 22	
P-1379-H.....	135.50	514.....	1.85	84-720.....	45.00	20-210.....	160.00
17-857.....	65.00	515.....	1.85	84-712.....	59.25	20-211.....	160.95
30-100.....	.90	516.....	1.85	84-910.....	49.75	294.....	1.10
30-103.....	.90	518.....	1.85	84-920.....	51.50	501.....	1.15
970-B.....	37.00	524.....	.50	84-940.....	66.75	1615.....	2.45
1289-A.....	39.50	525.....	.50	86-520.....	40.00	1616.....	2.45
970-C.....	33.00	526.....	.50	86-562.....	55.00	1617.....	2.45
1286-A.....	35.50	804.....	1.25	86-522.....	51.75	1619.....	2.00
14-817.....	6.30	805.....	1.35	86-720.....	46.00	Motors:	
1290.....	8.00	806.....	1.45	86-762.....	62.50	97-320.....	78.50
387.....	1.00	807.....	1.60	86-920.....	49.50	97-360.....	125.00
430.....	1.00	808.....	1.80	86-960.....	65.00	Page 23	
985.....	1.55	809.....	1.95	86-921.....	49.50	20-305.....	167.65
1022.....	6.45	810.....	2.25	86-922.....	59.50	289.....	1.00
14-803.....	4.50	812.....	2.75	87-120.....	61.50	1626.....	19.50
1010.....	.75	818.....	14.40	88-510.....	45.75	20-810.....	11.00
1019.....	4.50	474.....	1.15	88-520.....	47.50	20-811.....	11.00
1020.....	4.50	475.....	1.15	88-511.....	57.75	20-812.....	18.50
1006.....	23.50	476.....	1.15	88-521.....	59.50	1328.....	12.00
1516.....	32.00	477.....	1.15	88-710.....	55.50	Motors:	
1517.....	67.00	478.....	1.25	88-720.....	57.25	97-320.....	78.50
1519.....	150.00	480.....	5.50	88-910.....	75.00	97-360.....	125.00
1399.....	36.00	814.....	3.65	88-920.....	75.00	Page 25	
1030.....	15.00	815.....	3.75	88-912.....	86.00	24-105.....	295.00
1007.....	15.75	816.....	4.35	88-922.....	86.00	24-805.....	3.75
1028.....	6.95	817.....	4.95	97-320.....	78.50	24-807.....	3.25
1029.....	6.95	819.....	6.35	97-420.....	87.00	24-808.....	3.25
271.....	.90	822.....	23.05	97-360.....	125.00	24-815.....	5.50
272.....	.90	Page 19		Page 21		24-816.....	6.00
273.....	.95	640.....	16.00	85-080.....	53.75	49-115.....	1.00
17-857.....	65.00	641.....	23.50	85-085.....	55.50	Motors:	
Page 16		1024.....	3.85	86-921.....	49.50	62-610.....	32.00
14-805.....	28.00	1025.....	5.25	87-121.....	59.50	62-620.....	33.00
14-806.....	38.00	1026.....	8.50	89-111.....	60.00	66-320.....	29.50
14-807.....	49.00	Page 20		89-121.....	61.75	Page 26	
14-808.....	64.00	60-310.....	16.75	85-010.....	53.50	24-205.....	343.50
14-809.....	96.00	60-325.....	17.75	85-015.....	55.25	24-902.....	38.50
17-805.....	15.00	60-350.....	22.75	87-010.....	53.50	24-906.....	10.00
17-806.....	28.00	62-110.....	23.50	87-060.....	\$70.25	Motors:	
17-807.....	52.00	62-120.....	26.50	87-210.....	57.50	62-610.....	32.00
17-808.....	42.00	62-140.....	34.75	89-010.....	75.00	62-620.....	33.00
17-809.....	52.00	Page 21		89-011.....	75.00	66-320.....	29.50
17-810.....	54.00	60-310.....	16.75	Page 22		Page 23	
17-811.....	64.00	60-325.....	17.75	85-080.....	53.75	20-210.....	160.00
17-812.....	74.00	60-350.....	22.75	85-085.....	55.50	20-211.....	160.95
17-813.....	77.00	62-110.....	23.50	86-921.....	49.50	294.....	1.10
17-814.....	100.00	62-120.....	26.50	87-121.....	59.50	501.....	1.15
17-815.....	100.00	62-140.....	34.75	89-111.....	60.00	1615.....	2.45
				89-121.....	61.75	1616.....	2.45
				85-010.....	53.50	1617.....	2.45
				85-015.....	55.25	1619.....	2.00
				87-010.....	53.50	Motors:	
				87-060.....	\$70.25	97-320.....	78.50
				87-210.....	57.50	97-360.....	125.00
				89-010.....	75.00	Page 25	
				89-011.....	75.00	24-105.....	295.00
						24-805.....	3.75
						24-807.....	3.25
						24-808.....	3.25
						24-815.....	5.50
						24-816.....	6.00
						49-115.....	1.00
						Motors:	
						62-610.....	32.00
						62-620.....	33.00
						66-320.....	29.50
						Page 26	
						24-205.....	343.50
						24-902.....	38.50
						24-906.....	10.00
						Motors:	
						62-610.....	32.00
						62-620.....	33.00
						66-320.....	29.50

Catalog No.	Selling Price	Catalog No.	Selling Price	Catalog No.	Selling Price	Catalog No.	Selling Price
Page 45		Page 47		Page 50		Page 50	
	Doz. Gross						
81.....	.60 4.10	1342.....	\$4.50	89.....	1.45	673.....	1.55
82.....	.60 4.10	1192.....	4.50	99.....	2.75	750.....	2.00
83.....	.60 4.10	1193.....	2.95	103.....	5.40		
84.....	.45 3.55	1194.....	2.95			882.....	1.95
		1195.....	3.30	104.....	.50	1134.....	.25
85.....	.60 4.10	1196.....	4.10	106.....	2.40	1135.....	.25
86.....	.60 4.10	1343.....	4.50	107.....	4.50		
87.....	.80 5.50					S-8.....	.15
88.....	.80 5.50	Page 48		109.....	.50	SBS-50-S.....	.55
		46-305.....	87.55	110.....	6.00		
91.....	.55 3.90	46-310.....	97.50			682.....	.60
92.....	.55 3.90	1464.....	11.50	192.....	.25	683.....	.60
93.....	.80 5.50	Motors:		194.....	.10	684.....	.60
94.....	.95 6.60	84-510.....	36.50	1520.....	.35	685.....	.60
		86-720.....	46.00	1521.....	.15	686.....	.85
95.....	.60 4.10	Page 49		1522.....	.25	687.....	.85
96.....	.60 4.10	933.....	1.30	1524.....	.35		
97.....	.55 3.90	934.....	1.30	1525.....	.30	718.....	1.00
98.....	.55 3.90	940.....	1.50	1526.....	.25	720.....	1.35
		144.....	1.45	1527.....	.35	932.....	1.55
58.....	.80 \$5.50	145.....	1.45			985.....	1.55
59.....	.80 5.50	968.....	8.00	1528.....	.15		
60.....	.60 4.10	692.....	1.25	1529.....	.35	5200.....	.50
61.....	.60 4.10	690.....	.85	1530.....	.30	5225.....	.50
64.....	.80 5.50	695.....	1.50	1531.....	.35	5250.....	.55
65.....	1.35 13.25	694.....	2.50	1532.....	.20	5275.....	.55
703 per 1/4 Doz.....	.85	697.....	9.00	1533.....	.15	5300.....	.65
704 per 1/2 Doz.....	.85	1461.....	3.75	1534.....	.10		
		1468.....	5.50	1535.....	.10	5350.....	.65
882.....	1.95	936.....	1.10	1536.....	.25	5400.....	.65
1444.....	9.65	937.....	2.35	1538.....	.15	5450.....	.80
1442.....	4.85	939.....	1.50			5500.....	.90
		121.....	1.75	281.....	.85	5550.....	1.00
Page 46		122.....	1.95	284.....	.90		
43-205.....	116.90	123.....	1.45	289.....	1.00	5600.....	1.10
		124.....	1.45	291.....	.90	5650.....	1.20
287.....	.85	125.....	1.55	294.....	1.10	5700.....	1.30
1345.....	1.85	126.....	1.55			5710.....	2.30
1347.....	2.00	127.....	1.45	331.....	.95	5800.....	1.65
1348.....	3.95	128.....	1.45	340.....	.95		
1346.....	1.85	130.....	12.60	355.....	.95	6100.....	2.30
		945.....	15.25	387.....	1.00	6200.....	3.30
132.....	3.00	1462.....	27.50	410.....	1.00		
1320.....	8.25	1490.....	6.50				
1329.....	16.00			430.....	1.00		
1325.....	9.75	962.....	4.00	453.....	1.00		
1327.....	1.25	966.....	1.65	501.....	1.15		
Motors:		Page 50		510.....	1.15	Page 51	
85-080.....	53.75	29.....	\$1.15	520.....	1.15	830.....	2.85
85-085.....	55.50	39.....	2.10			831.....	1.10
86-921.....	49.50	101.....	4.10	521.....	1.15	832.....	1.10
87-121.....	59.50			530.....	1.15	833.....	1.35
89-111.....	60.00	69.....	1.15	560.....	1.15	835.....	1.80
89-121.....	61.75	79.....	2.10	568.....	1.15	836.....	.90
		102.....	4.10	583.....	1.30	837.....	.90
						838.....	1.00
				588.....	\$1.30	840.....	1.35
				595.....	1.45	841.....	.75
				618.....	1.45	842.....	.75
				644.....	1.50	847.....	.90
				670.....	1.50		

NOTE—Due to the war program it is not always possible to supply the type of motor specified and to fill your orders with the least possible delay we frequently must ship capacitor motors in place of Rep.-Ind. motors, and vice versa.

THE DELTA MANUFACTURING CO.

DELTA
MILWAUKEE

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