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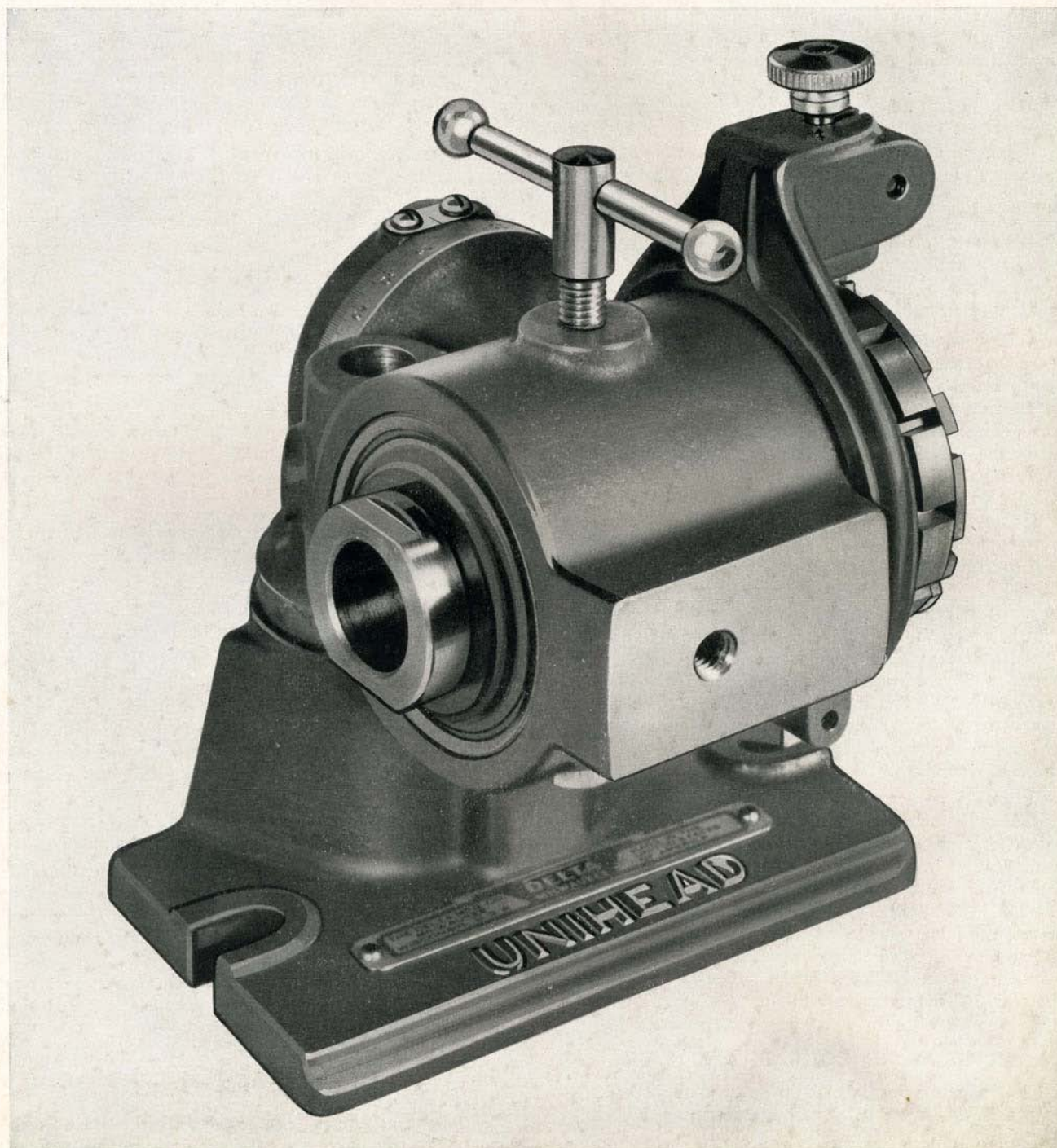


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SERIES
24
GRINDERS

OPERATING AND MAINTENANCE INSTRUCTIONS

For No. 24-955 Delta Unihead



THE DELTA UNIHEAD

(CATALOG NO. 24-955)

INTRODUCTION

The Delta Unihead is a universally adjustable work head, designed for use in connection with the Toolmaker Cutter Grinder. It will also be found very useful on other makes of machines, especially if the Delta #24-970 Tooth Stop Unit (Figure 1) is used in connection with it.

This head consists of a heat treated sleeve, arranged with a #9 Browne & Sharpe taper and accurately mounted in pre-loaded, sealed and lubricated-for-life ball bearings that need no further attention. Another feature of this work head is the adjustable index stop collar and dog that can be disengaged or 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, 6, or 12 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 or Catalog 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 $\frac{1}{2}$ " 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, for obtaining certain compound angles similar to those obtainable on the Delta Univise (Catalog #24-902). The base is arranged with keys that engage the table and these keys are removable so they can easily be changed if this head is used on other makes 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 #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 plate slot.

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, the selector plate must be removed.

If other indexing collars are ordered as offered in our Catalog, Nos. 24-957 to 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 wrench furnished, while turning out.

IMPORTANT: Under no circumstances should the adapters be driven out with hammer or drive pin since this may damage bearings and ruin accuracy of head.

For similar reasons, the dog should never be engaged in the index plate or used to hold sleeve, while Push Out Nut is being turned.

After adapter is out, turn back Push-out Nut far enough so that when next adapter is applied it will securely seat itself the full depth of the taper.

The Push-out Nut is bored out, and a $\frac{1}{2}$ "-13 Cap screw is included with adapter for drawing in. 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.

If the Draw-in Screw is used, the adapter should be seated by hand, the Push-out Nut turned in until it just touches the end of the adapter and then backed out 3 or 4 threads. By following this procedure, the end of the Push-out Nut will not interfere with the end of the adapter when it is drawn to the maximum depth.

Care should be exercised in tightening the Draw-in Screw, to avoid stripping the threads of either the screw, the adapter, or the Push-out Nut.

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.

TOOTH STOP UNIT

The Unihead uses the same tooth stop unit as is regularly furnished with the Tool and Cutter Grinder Attachment, Catalog #24-952. If the Unihead is to be used on another make of machine, it may be advisable to obtain the #24-970 Tooth Stop unit (Figure 1). A pad provided at front of the Unihead on which the tooth stop bracket can be applied. A $\frac{5}{8}$ " hole is also provided for application of tooth stop rods.

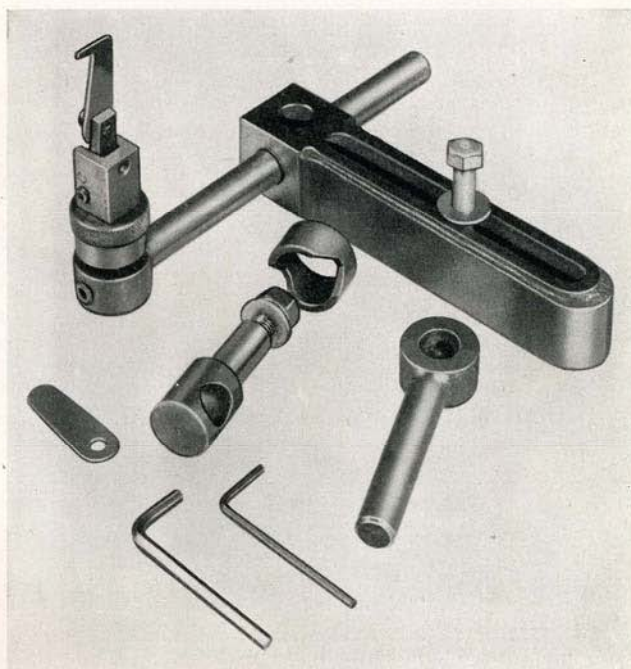
ADAPTERS AND COLLETS

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

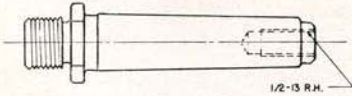
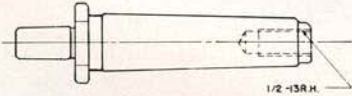
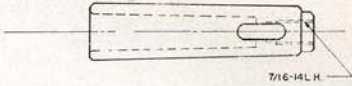
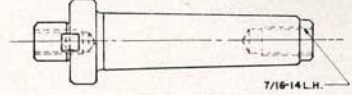
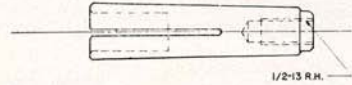
ADAPTERS FOR DELTA UNIHEAD

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. Although there are many others, these few

are given for the customers' convenience in selecting the proper one for the job, and **it should be understood that Delta does not keep them in stock nor has made arrangements with the manufacturers named, to supply them to Delta dealers.**



(FIGURE 1)

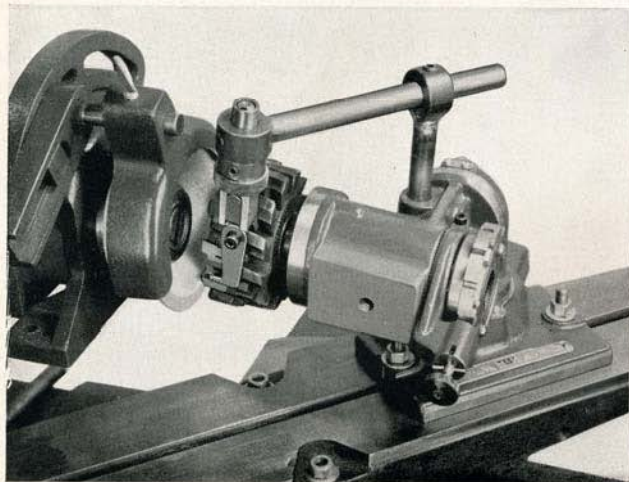
TYPE	DESCRIPTION	REMARKS
	#9 B. & S. Outside taper arranged with threaded end to receive 3 jaw chuck or Delta #937 6" face plate.	This is the only Adapter of this type furnished by Delta Mfg. Co. (Cat. #24-967). Cat. #937-6" Face Plate as shown in Photo Page 18 furnished by Delta. 3 Jawed Chuck as shown in Photo Page 18 NOT furnished by Delta at this time.
	#9 B. & S. Outside taper arranged with #33 Jacobs taper end to take $\frac{1}{2}$ " Jacobs chuck.	This is the only Adapter of this type furnished by Delta Mfg. Co. (Cat. #24-968).
	#9 B. & S. Outside taper. Inside taper can be #5, #7, B. & S. or #1, #2 Morse Tapers.	Style 102 Scully Jones or style #2 Brown & Sharpe. NOT furnished by Delta.
	#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.
	#9 B. & S. outside taper Spring Collet with straight hole of various sizes up to $\frac{3}{4}$ ".	Brown & Sharpe type or equivalent. NOT furnished by Delta.

Gorton Machine Co., Racine Wis. offers a complete set consisting of a collet chuck, with #9 B. & S. shank and 10 spring collets ranging from $\frac{1}{8}$ " to 1". This is known as their Set #703-2.

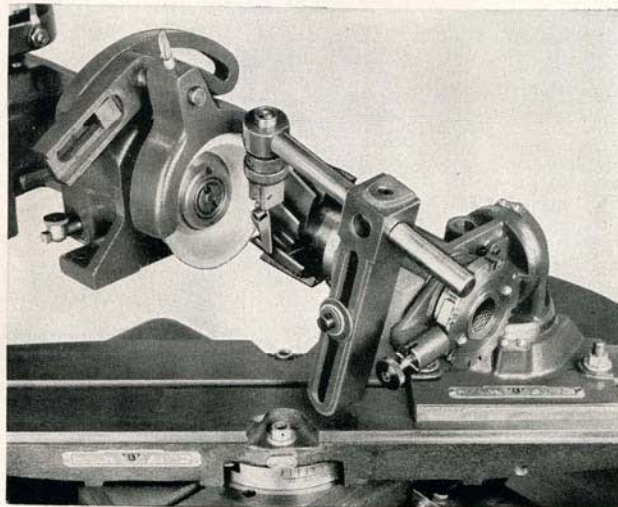
Erickson Steel Co., Cleveland, Ohio, also makes a set similar to the above. These sets are not furnished by Delta Manufacturing Company, and above manufacturers' catalogs should be checked for additional information.

The following photographs show the Unihead setups which are most generally used. They give a general idea of what can be accomplished in everyday tool and cutter grinding. The titles and notes under

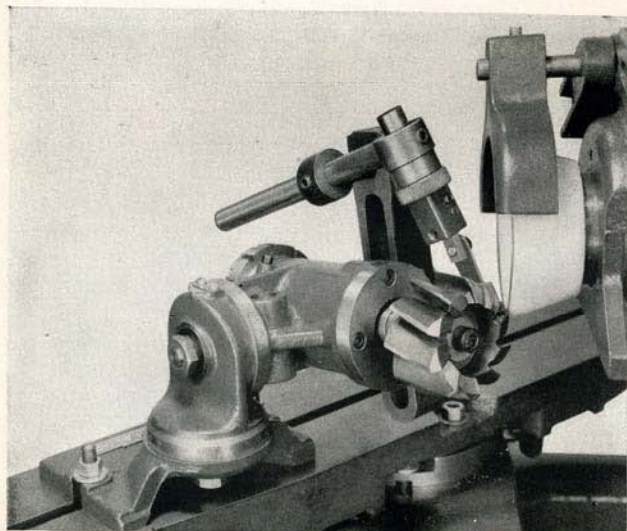
the photographs, together with the instructions as given throughout the instruction sheet covering the complete Tool and Cutter Grinder Attachment, should be adequate to set up the Unihead for general purposes.



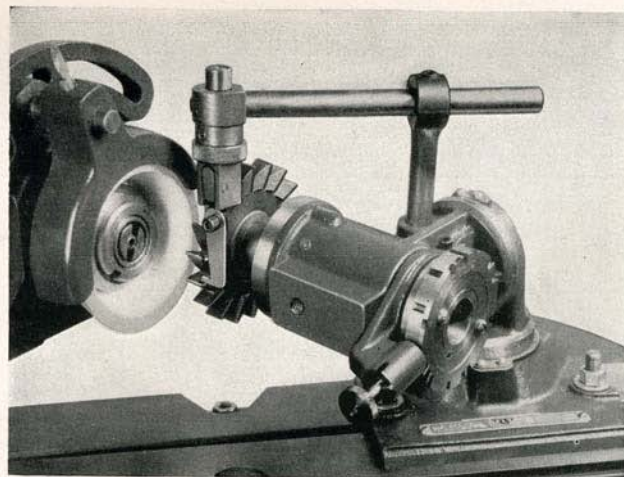
Grinding the teeth of an Inserted Tooth Face Mill
(Tooth Stop mounted in $\frac{5}{8}$ Hole)



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



Grinding corners of a 45° End Mill

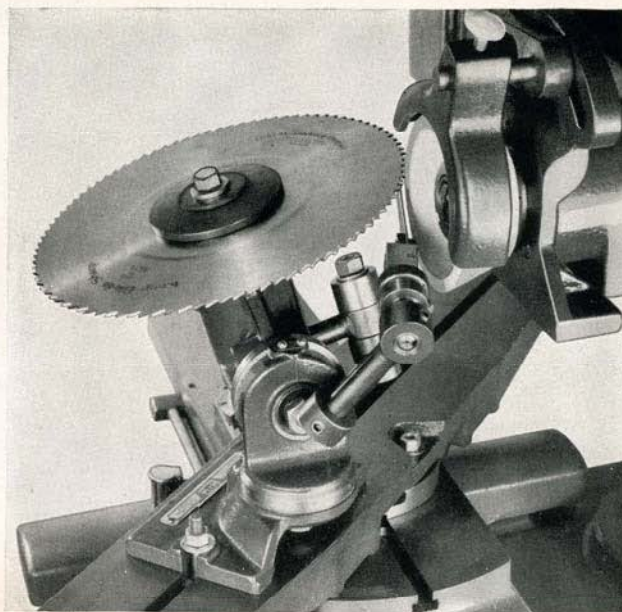


Grinding the sides of a side milling cutter

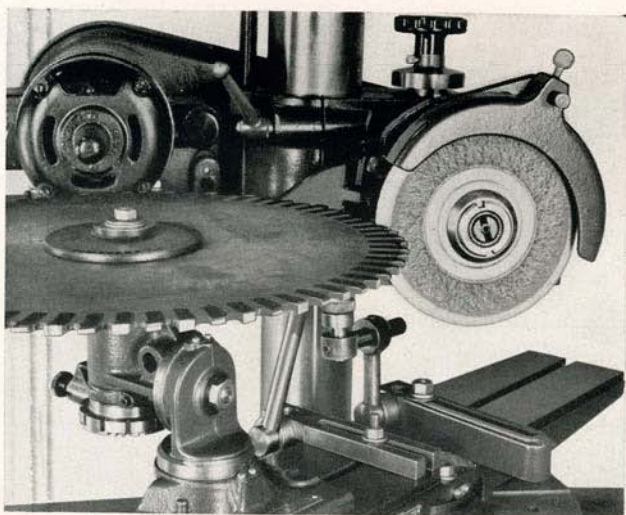
NOTE: Table is set at 45° to gain adequate capacity



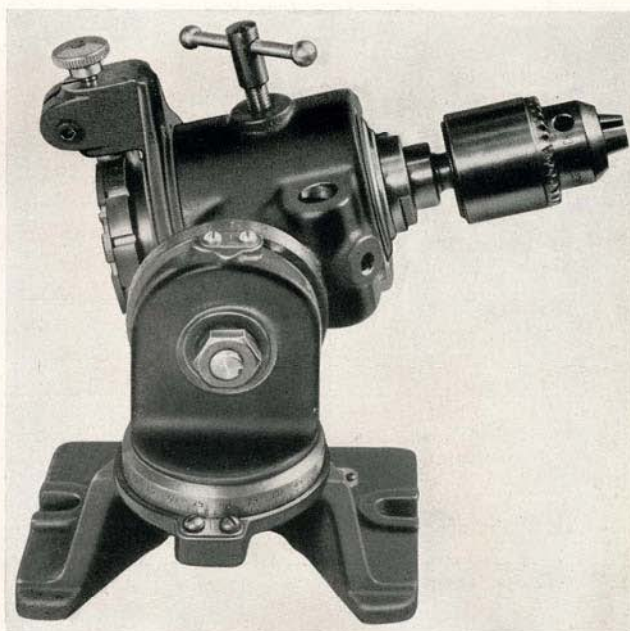
Grinding an (Dovetail) Angular Cutter



Grinding Alternate Beveled Tooth Saw.



Grinding the face of teeth of 16" (Max. Dia.) inserted tooth saw
(NOTE: Additional support bar clamped to table to support outer circumference of saw at tooth being ground.)



Unihead with 1/2" #6A Jacobs chuck in place.



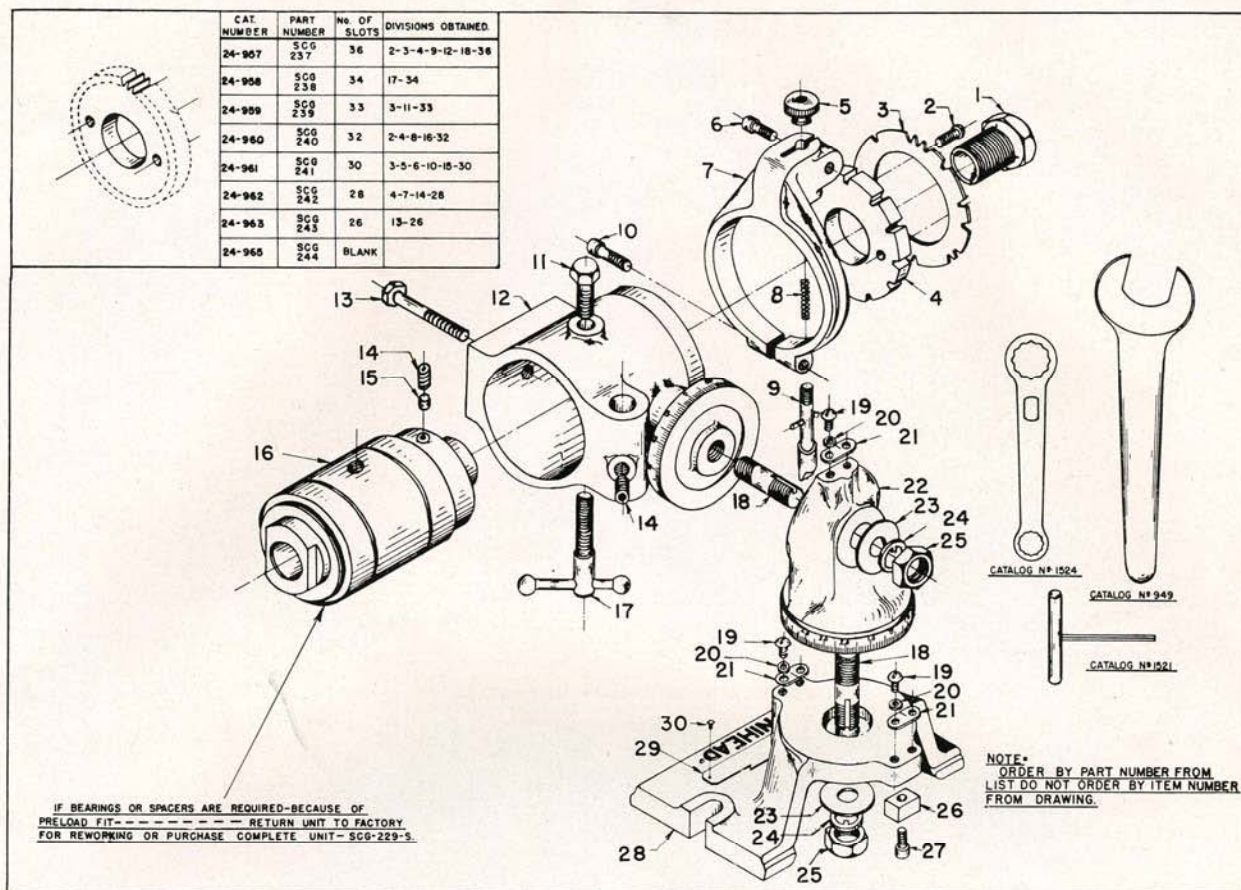
Unihead with Delta Cat. #24-967 Adapter and 4"-3 jaw chuck in place
(Chuck not furnished by Delta Mfg. Co. at this time.)



Unihead with Delta Cat #937-6" face plate in place
Useful for mounting jigs and fixtures.

LUBRICATION CHART FOR TOOL AND CUTTER GRINDING ATTACHMENT AND UNIHEAD

Parts to be Lubricated	Recommended Oil	Method of Filling	Period of Change
Unihead Sleeve	Pre-sealed		Sealed for life. No further attention is necessary
Unihead Index dog	SAE 10	Few drops on index plunger	Daily
Tailstock	SAE 10	Ball Oil Cup	Daily
Tooth Stop dog	SAE 10	Few drops on movable parts	Daily



UNIHEAD—REPLACEMENT PARTS

Item No.	Part No.	Description	No. Req.	Price Each	Item No.	Part No.	Description	No. Req.	Price Each
1	SCG-230	Spec. Hex. Nut (Push-out Nut)...	1		17*	DDL-61-S	Lock Screw Assembly	1	
2	SP-701	¼-20x¾ Fillister Hd. Mach. Screw	2		18	SCG-104	Stud	2	
3	SCG-235	Selector Plate	1		19	SP-567	#6-32x¼ Round Hd. Mach. Screw	6	
4	SCG-236	12 Tooth Index Disc	1		20	SCG-113	Washer I.D. 9/64; O.D. ¼x1/32..	6	
5	SBS-40	Knob	1		21	SCG-103	Index Plate	3	
6	SP-229	¼-20x½ Socket Hd. Cap Screw..	1		22	SCG-101	Swivel Angle Casting	1	
7	SCG-227	Index Holder Bracket	1		23	DP-276	Spring Washer	2	
8	SCG-245	Spring	1		24	SR-234	Lock Washer	2	
9*	SCG-228-S	Index Dog with Pin	1		25	SCG-112	½-13 (Hardened) Hex. Nut	2	
10	SP-755	¼-20x1½ Socket Hd. Cap Screw..	1		26	SCG-105	Key	2	
11	SP-688	¾-24x¾ Hex. Hd. Cap Screw....	1		27	SP-224	#10-32x½ Socket Head Cap Screw	2	
12	SCG-225	Headstock Casting	1		28	SCG-226	Base Casting	1	
13	SP-646	¾-16x2 Hex. Hd. Cap Screw	1		29	SCG-86	Name Plate	1	
14	SP-209	¾-16x¾ Soc. Head. Set Screw....	2		30	SP-2252	#2x⅞ Drive Screw	2	
15	SCG-246	Brass Plug	1						
16†	SCG-229-S	#9 Browne & Sharpe Sleeve, complete with Ball Bearings, Spacer Sleeves and Retainer Nut, Pre-Load Fit	1						

† NOTE: If bearings or spacers are to be replaced, return the complete sleeve assembly to the factory because of the pre-load of bearings and press fit on sleeve. If desired,

however, the complete unit can be replaced with the pre-loaded assembly SCG-229-S (Item 16).

MISCELLANEOUS PARTS

Cat. #949	1½" Open End Wrench	2
Cat. #1521	⅝" Allen Wrench	1
Cat. #1524	⅝" and ⅞" Closed Ends Wrench..	1

INDEX COLLARS

Cat. #24-957	36 slots for 2, 3, 4, 6, 9, 12, 18 and 36 equal spaces
Cat. #24-958	34 slots for 17 and 34 equal spaces
Cat. #24-959	33 slots for 3, 11, and 33 equal spaces

Cat. #24-960	32 slots for 2, 4, 8, 16, and 32 equal spaces
Cat. #24-961	30 slots for 3, 5, 6, 10, 15, and 30 equal spaces
Cat. #24-962	28 slots for 4, 7, 14, and 28 equal spaces
Cat. #24-963	26 slots for 13 and 26 equal spaces
Cat. #24-965	Blank Collar

NOTE: See page 15 or Catalog for additional Adapters or Accessories for this Unit.

NOTE: Prices in this list apply only to parts ordered for repair and replacement. They cannot be used for computing allowance values if a machine is ordered "less" certain parts.

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