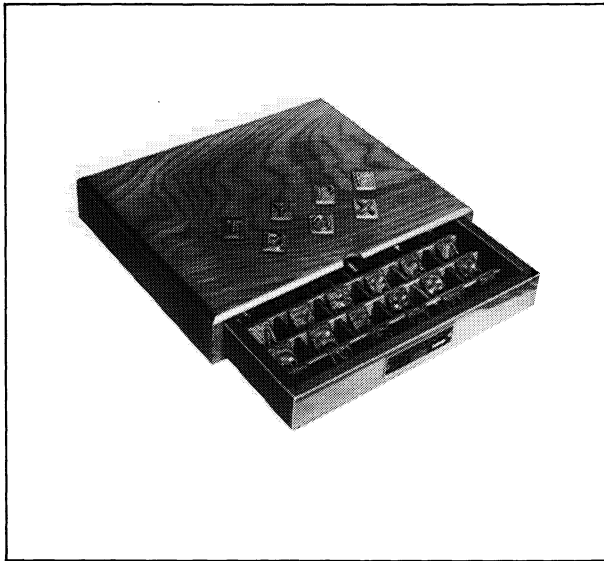
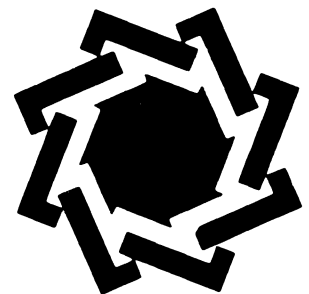
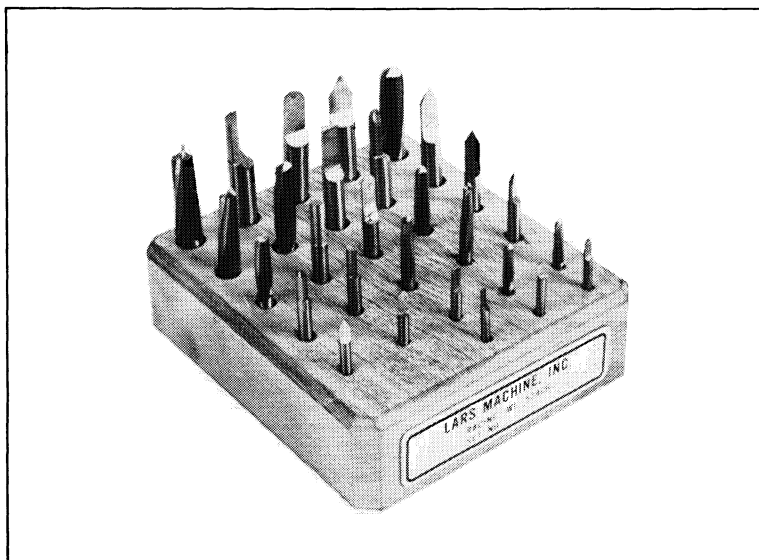
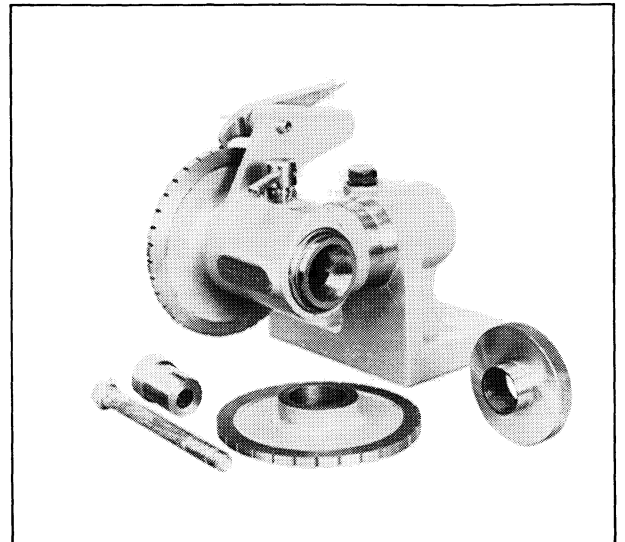


# FAMCO

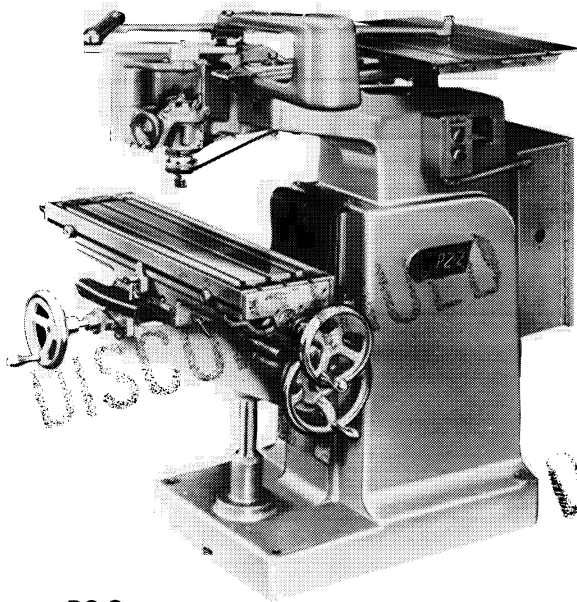
ACCESSORIES



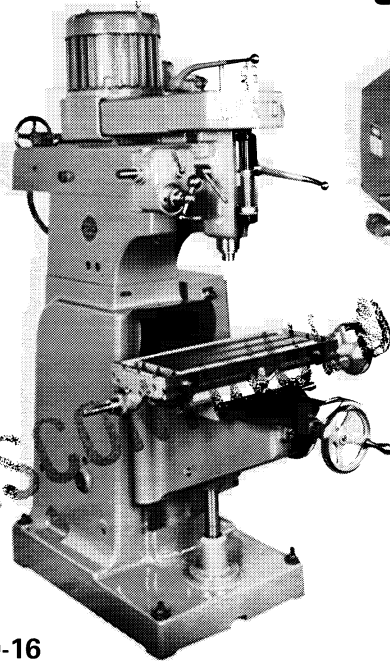
**GORTON LARS**



# Complete Line of LARS/GORTON Cutter Grinders, Mills, and 2 and 3-Dimensional Pantographs



**P2-2**  
2-Dimensional Pantograph

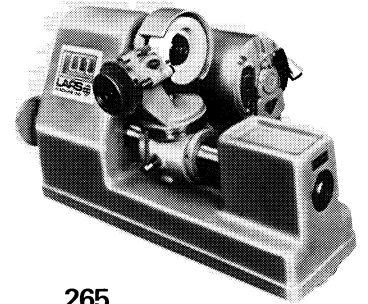


**0-16**  
Precision High Speed Mill

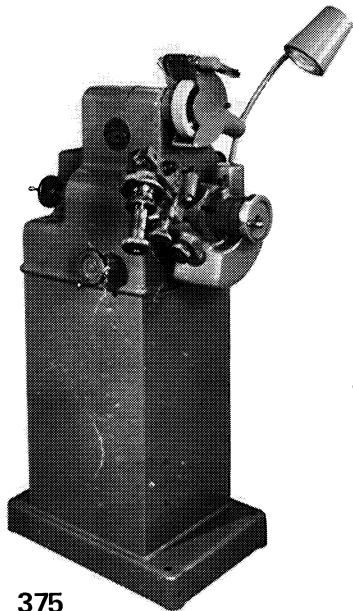


**New**

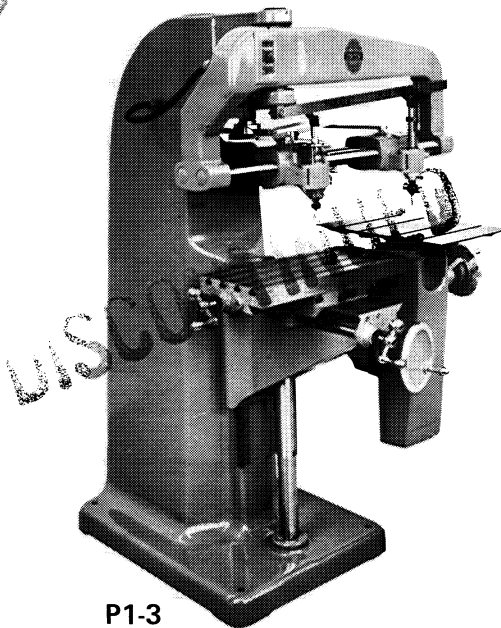
**500**  
Cutter Grinder



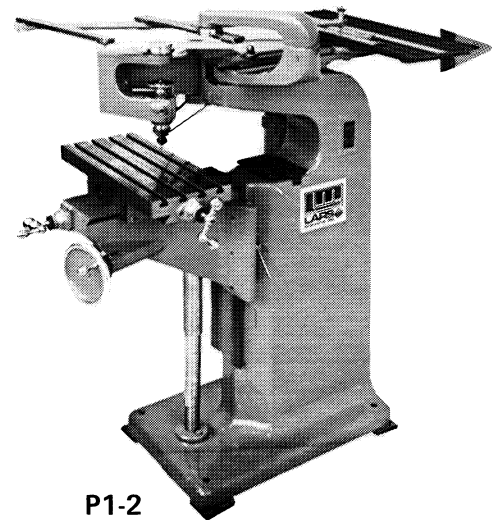
**265**  
Engravers Cutter Grinder



**375**  
Universal Cutter Grinder



**P1-3**  
3-Dimensional Pantograph



**P1-2**  
2-Dimensional Pantograph

## Have Your GORTON Machines Remanufactured to New Machine Tolerance by FAMCO/GORTON

FAMCO MACHINE is equipped and staffed to remanufacture your worn Pantograph/ Engravers, Cutter Grinders and 0-16 Mills, at a cost savings to you. Every remanufactured machine is guaranteed to give satisfactory service. All machine components and parts are carefully inspected. Damaged or excessively worn parts are replaced. Still usable parts are thoroughly reconditioned. After inspection of all critical tolerances to new machine standards, your FAMCO remanufactured machine comes to you looking and performing like new, with many years of hard, dependable service built back into it. Complete remanufactured machine carries a six month warranty.

**PANTOGRAPHS**  
3F – 3U – 3Z – 3L  
P1-2 – P2-2 – P2-3

**CUTTER GRINDERS**  
265 – 375 – 500

**HIGH SPEED MILLS**  
0-16 – 0-16A

**ROLL ATTACHMENTS**  
727 – 750

# LARS/GORTON Small Tools and Accessories

## SERVICE FACTS — HOW TO USE THIS CATALOG

On the next page is a convenient cross index of everything contained in this catalog. When ordering, be sure to give catalog number and name of tool or accessory. All catalog numbers are printed in bold face for better legibility.

24-hour service is given on over 90% of all orders received since it is our policy to stock all items listed except special items or where special orders are involved.

## LARS/GORTON SERVICE

Attachments, accessories, cutters, arbors, and other small tools used in the tool room or on the production line are fully as important as the machines on which they are used. It is for this reason that LARS/GORTON has constantly developed and enlarged its line of small tools and accessories.

In this catalog you will find the result of this long experience in the form of convenient assortments and sets, handy packaging, as well as improved small tool and accessory design. Good tools deserve good care and handling and experience has shown that shop employees, from operators to superintendents, approve our efforts to offer the best, always packaged for safe shipment.

## PRICES

Prices of all items listed in this catalog are contained in a separate small tools and accessories Price List No. 2075, enclosed. All prices are F.O.B. factory and are subject to change without notice. All applicable taxes are payable by the buyer in addition to the price.

## "SPECIAL" ORDERS

Any items not appearing in this catalog will be considered "special". FAMCO/GORTON engineers will modify any of our standard units to meet your requirements, if necessary at additional cost. They will be glad to work with you on special tools, fixturing, masters, copy, indexing units, tracing styles, etc. Submit your requirements either by letter, blueprints, or submit parts to be machined. From this we can quote on tooling requirements together with production estimates.

We are prepared to offer full cooperation in special machine design — single or multiple spindle machines for work of any shape or size. The word "special" should not be considered to mean a high priced item. In many cases, we can draw on our experience with similar work in the past and/or modify a standard unit, thereby saving time and money for you. Quotes will be given promptly on any of your requirements.

## SPECIAL CUTTERS

FAMCO/GORTON maintains engineering and manufacturing facilities to be of service to you with respect to special cutters. Experience has been accumulated over a period of many years on end milling, profiling, and contour work which is available to you. Send us details of your particular requirements and we will be glad to study your problem and give you our recommendations. Firm quotations will be made at your request. This applies to high-speed steel tools as well as carbide. Take advantage of this service — it can save you time and money.

## CUTTER RESHARPENING

This again is a service which offers savings to you. Cutter resharpening orders are processed immediately upon receipt. A group of expert grinders will recondition your cutters to your specifications and, if the material to be cut is specified, the proper grind will be applied, assuring you of good cutting action and long cutting edge life. This includes cutters of stepped design, single or multiple flutes, square nose, ball nose or conical. All work is done at nominal cost.

## CANCELLATIONS

If special order work is undertaken by FAMCO Machine, the right is reserved to impose cancellation charges up to the full price of such "special" work based on prices in force at the time cancellation notice is received and percentage of completion when cancelled.

## RETURN OF CATALOG ITEMS

The return of any item in this catalog for credit must have our prior written permission and restocking charges will be applied. Transportation must be prepaid.

## SHIPMENTS

All shipments are made by United Parcel Service unless size or weight exceeds UPS standards or unless you have instructed us otherwise. Shipments which are too heavy or bulky for UPS are shipped by truck at our discretion unless otherwise instructed.

## DAMAGED OR LOST SHIPMENTS

Our responsibility ends when shipment is delivered to the post office or other responsible carrier, at which time title to the shipment is transferred to the buyer. In case of shipment becoming lost or arriving in a damaged condition, get in touch with the transportation company at once and file your claim. We will do all we can to be of help in cases like these, but we cannot be held responsible for the outcome.

## EMERGENCY SERVICE

If you require faster than ordinary mail service, phone (414) 654-3516 and place your order and give us instructions on how to ship.

## OTHER CATALOGS

Be sure to refer to the facing page which illustrates other FAMCO/GORTON Machines. Bulletins are available to you, without obligation, upon letterhead request.

## PATENT NOTICE

The attachments, accessories, and small tools illustrated and described in this catalog are protected by issued and pending United States and foreign patents.

**IMPORTANT.** FAMCO Machine reserves the right to improve, change, modify, or discontinue any LARS/GORTON machine, attachment, accessory, or small tool illustrated or described herein without obligation to make such improvement, change, or modification on any such item previously sold or on order.

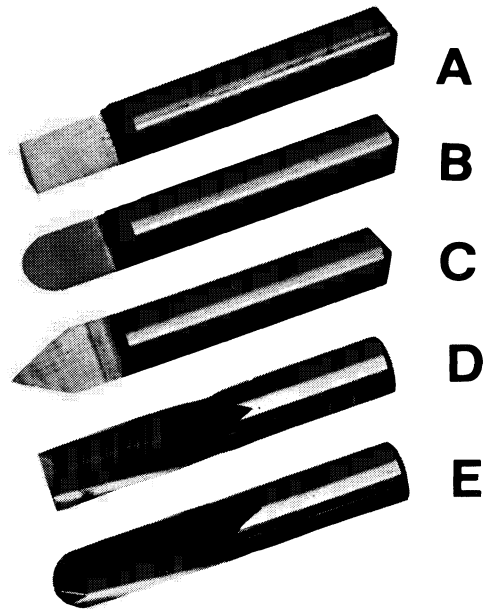
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# LARS/GORTON High-Speed Steel Cutters

## FOR ENGRAVING — DIE & MOLD — PRODUCTION WORK

High speed cutters ground to LARS Engineering specifications, for Die and Mold Engraving, duplicating, profiling and production. Single flute cutters are split to center within  $\pm .002''$ .



Square Nose Cat. No.	Ball Nose Cat. No.	Conical Nose Cat. No.	Dia.	Length of Cut	Whole Length
11817	11826	11835	1/10"	1/8"	1-1/2"
11818	11827	11836	1/8"	3/16"	1-1/2"
11819	11828	11837	5/32"	1/4"	1-3/4"
11820	11829	11838	3/16"	9/16"	2"
11821	11830	11839	1/4"	9/16"	2-1/4"
11822	11831	11840	5/16"	9/16"	2-3/8"
11823	11832	11841	3/8"	9/16"	2-1/2"
11824	11833	11842	7/16"	9/16"	2-1/2"
11825	11834	11843	1/2"	9/16"	2-1/2"

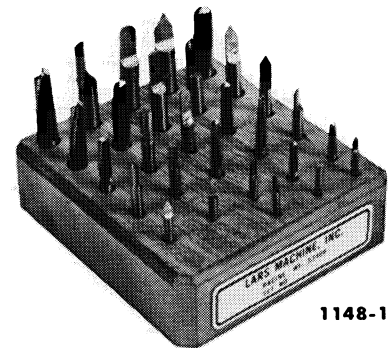
\*Unless otherwise specified, conical cutters will be ground to 60° included angle with proper chip clearance. Any of above can be ground to special requirements at extra cost; give full information. Cost for resharpening single flute cutters is low compared to conventional multi flute cutters.

## TWO FLUTE MILLS

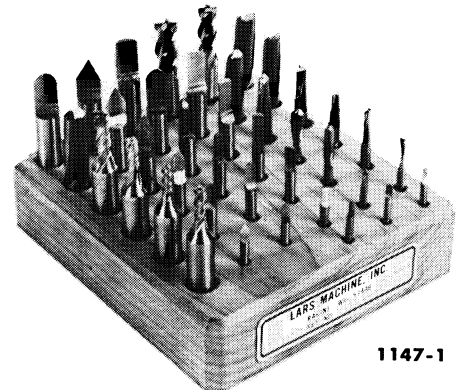
GORTON SUPER - SPEED 2-Flute Short Type Medium Spiral End Mills provide great strength with smooth bottom cut. They are good for roughing, slotting, etc., and are preferred for some types of die and mold work. Experience shows that longer lengths than those listed cause excessive breakage. In ordering, give catalog number and add letter designating style desired.

Square Nose Cat. No.	Ball Nose Cat. No.	Shank and Cutter Dia.	Length of Cut	Whole Length
K-1639	K-1651	1/8"	5/8"	1-1/4"
K-1640	K-1652	5/32"	5/8"	1-3/8"
K-1641	K-1653	3/16"	5/8"	1-1/2"
K-1642	K-1654	1/4"	1"	1-7/8"
K-1643	K-1655	5/16"	1"	1-7/8"
K-1644	K-1656	3/8"	1"	2"
K-1645	K-1657	7/16"	1-1/8"	2-1/8"
K-1646	K-1658	1/2"	1-1/8"	2-1/8"
K-1647	K-1659	5/8"	1-1/8"	2-3/8"
K-1648	K-1660	3/4"	1-1/2"	2-7/8"
K-1649	K-1661	7/8"	1-3/4"	3-3/8"
K-1650	K-1662	1"	2"	3-3/4"

All sizes are right-hand spiral right-hand cut



1148-1



1147-1

## CUTTER SETS

### For Three-Dimensional Pantographs

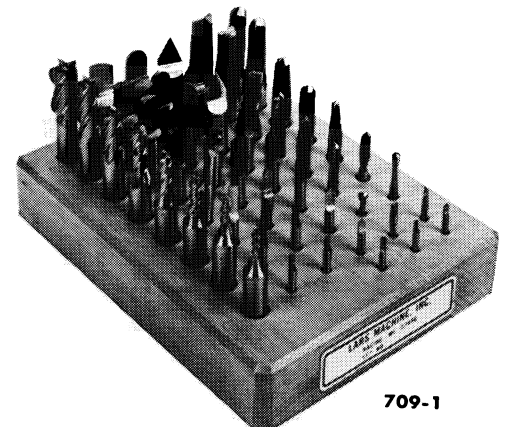
These cutter sets are intended for use with three-dimensional pantograph machines having 5/16" and 3/8" diameter collet type spindles. Each set contains an assortment of cutters selected from our standard line. Equip your three-dimensional pantograph machines with complete cutter sets and avoid costly delay by having the proper cutter for the job to be done. Each set is furnished with a handy wooden rack.

**1148-1.** Set for P1-3 Pantograph Machine, consisting of 28 cutters, ranging in size from 1/10" to 5/16" diameter, including single and two-flute, square, conical, and ball nose types, complete with wooden rack as shown.

**1147-1.** Set for P2-3 and 3-L Pantograph Machines, consisting of 39 straight shank high-speed steel cutters. Included are single, two and four-fluted cutters with square, conical, and ball noses. Sizes range from 1/10" to 3/8" diameter, complete with wooden rack as shown.

## FOR USE WITH ALL DUPLICATORS

**709-1.** Time and money can be saved on die & mold work by purchasing a complete assortment of end mills. This set consists of 51 end mills, single flute, 2 flute and four flute. Square nose, ball nose, and conical nose. Complete with wooden rack.



709-1

# LARS/GORTON Solid Carbide End Mills

## FOR ALL HIGH SPEED ENGRAVING and HIGH SPEED MILLING APPLICATIONS

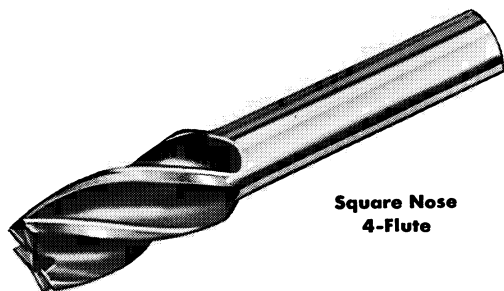
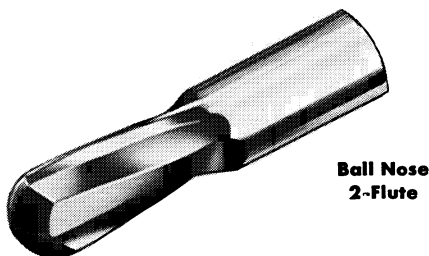
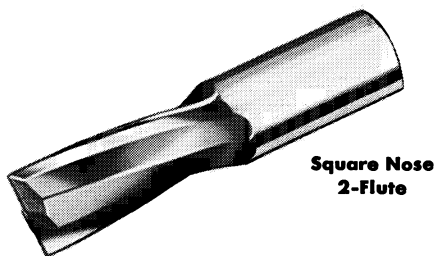
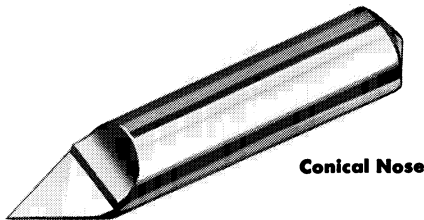
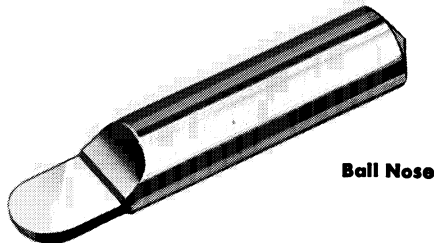
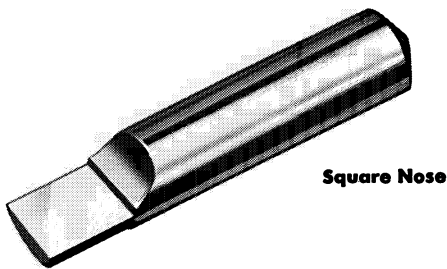
The single flute square nose, ball nose and conical nose end mills can be supplied in either grade C-2 for cast iron and other nonferrous material, or grade C-6 for steel.

Order by catalog number according to style, size and grade carbide required. The two and four flute square and ball nose end mills are supplied in grade C-2 only.

Solid carbide end mills have more rigidity than cutters with steel shanks. There are no brazed tips to loosen. Solid one-piece construction permits cutting load to be evenly distributed among the flutes resulting in longer life, smooth cutting and better finish.

### SINGLE FLUTE — 3 STYLES MICRO-GRAIN

Cat. No. Square Nose	Cat. No. Ball Nose	Cat. No. 60° Conical	Cutter Dia.	Length of Cut	Total Length
K-5832	K-5840	K-5848	1/8"	3/16"	1"
K-5833	K-5841	K-5849	5/32"	3/16"	1"
K-5834	K-5842	K-5850	3/16"	1/4"	1-1/8"
K-5835	K-5843	K-5851	1/4"	3/8"	1-1/4"
K-5836	K-5844	K-5852	5/16"	3/8"	1-1/2"
K-5837	K-5845	K-5853	3/8"	1/2"	2"
K-5838	K-5846	K-5854	7/16"	1/2"	2"
K-5839	K-5847	K-5855	1/2"	9/16"	2"



### TWO FLUTE — SQUARE AND BALL NOSE (Grade C-2 only)

Cat. No. Square Nose	Cat. No. Ball Nose	Cutter Dia.	Shank Dia.	Length of Cut	Total Length
K-5856	K-5864	1/8"	1/8"	1/2"	1-1/2"
K-5857	K-5865	5/32"	3/16"	9/16"	2-3/8"
K-5858	K-5866	3/16"	3/16"	5/8"	2-3/8"
K-5859	K-5867	1/4"	1/4"	3/4"	2-1/2"
K-5860	K-5868	5/16"	5/16"	13/16"	2-1/2"
K-5861	K-5869	3/8"	3/8"	7/8"	2-1/2"
K-5862	K-5870	7/16"	7/16"	7/8"	2-1/2"
K-5863	K-5871	1/2"	1/2"	1"	3"

### FOUR FLUTE — SQUARE NOSE SPIRAL (Grade C-2 only)

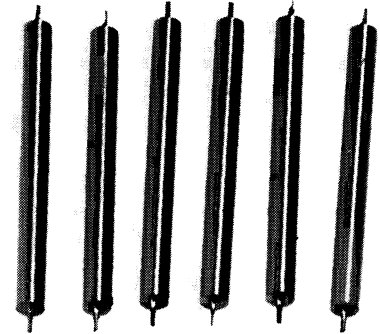
Cat. No.	Cutter Dia.	Shank Dia.	Length of Cut	Total Length
K-5872	1/16"	1/8"	3/16"	1-1/2"
K-5873	3/32"	1/8"	3/8"	1-1/2"
K-5874	1/8"	1/8"	1/2"	1-1/2"
K-5875	5/32"	3/16"	9/16"	2-1/2"
K-5876	3/16"	3/16"	5/8"	2-1/2"
K-5877	1/4"	1/4"	3/4"	2-1/2"
K-5878	5/16"	5/16"	13/16"	2-1/2"
K-5879	3/8"	3/8"	7/8"	2-1/2"
K-5880	7/16"	7/16"	7/8"	2-1/2"
K-5881	1/2"	1/2"	1"	3"

# LARS/GORTON Square Nose and Diamond Point Cutters and Miniature End Mills

## SQUARE NOSE CUTTERS

Made of selected high-speed steel and sharpened at both ends. 1/10" or 1/8" diameter shanks only. Order by catalog number in table below. Will be supplied "assorted" if desired. For odd sizes, write factory.

Cat. No.	Point Dia.	Shank Dia.	Cat. No.	Point Dia.	Shank Dia.
11949	.015"	1/10"	12770	.015"	1/8"
11950	.020"	1/10"	12771	.020"	1/8"
11951	.025"	1/10"	12772	.025"	1/8"
11952	.030"	1/10"	12773	.030"	1/8"
11954	.040"	1/10"	12775	.040"	1/8"
11956	.050"	1/10"	12777	.050"	1/8"
11958	.060"	1/10"	12779	.060"	1/8"
11960	.070"	1/10"	12781	.070"	1/8"
11962	.080"	1/10"	12783	.080"	1/8"
11964	.090"	1/10"	12785	.090"	1/8"
11966	.100"	1/10"	12787	.100"	1/8"



## DIAMOND POINT CUTTERS

**9968** for marking hardened steel, glass, etc. Has standard GORTON Taper Shank. Diamond has six flats; point is 120 degrees included angle. Will take a cut .003" to .005" deep in hardened steel.

**K-3287** — same as 9968 above but with 5/16" diameter straight shank.

**11597** — same size and style as 9968 but with longer, more delicate point. Diamond has three flats. Point is 90 degrees included angle. Specially suited for bakelite and fibrous materials. Must NOT be used on steel.

**K-3288** — same as 11597 above but with 5/16" diameter straight shank.

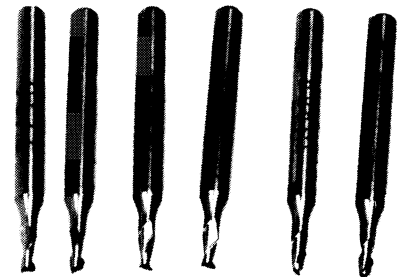


## MINIATURE END MILLS

Miniature End Mills are made from selected high-speed steel properly heat-treated before grinding. They have unusual strength, sharpness, and durability and will do fine, accurate work in all operations such as milling, engraving, routing, and profiling. See table below. Order by number in lefthand columns.

### SQUARE NOSE MINIATURE END MILLS

Cat. No. 2-Flute	Cat. No. 3-Flute	Cat. No. 4-Flute	Cutter Dia.	Shank Dia.	Flute Length	Total Length
K-5761			1/32"	1/8"	3/64"	1-3/64"
K-5762			1/16"	1/8"	3/32"	1-5/32"
K-5763	K-5767	K-5771	3/32"	1/8"	5/32"	1-1/4"
K-5764	K-5768	K-5772	1/8"	1/8"	3/16"	1-11/32"
K-5765	K-5769	K-5773	5/32"	3/16"	7/32"	1-7/16"
K-5766	K-5770	K-5774	3/16"	3/16"	1/4"	1-9/16"



# LARS/GORTON Miniature End and Ball Nose Mills, Graduating Arbor and Saws

## MINIATURE END MILLS

### SQUARE NOSE DOUBLE END MINIATURE END MILLS — STUB FLUTE

Cat. No. 2-Flute	Cat. No. 4-Flute	Cutter Dia.	Shank Dia.	Flute Length	Total Length
K-7437	—	1/32"	1/4"	3/64"	2-3/64"
K-7438	—	1/16"	1/4"	3/32"	2-9/64"
K-7439	K-7622	3/32"	1/4"	5/32"	2-15/64"
K-7440	K-7623	1/8"	1/4"	3/16"	2-21/64"
K-7441	K-7624	5/32"	1/4"	7/32"	2-37/64"
K-7442	K-7625	3/16"	1/4"	1/4"	2-3/4"

### SQUARE NOSE DOUBLE END MINIATURE END MILLS — REG. FLUTE

Cat. No. 2-Flute	Cat. No. 4-Flute	Cutter Dia.	Shank Dia.	Flute Length	Total Length
K-7598	—	1/32"	1/4"	3/32"	2-9/64"
K-7599	—	1/16"	1/4"	3/16"	2-21/64"
K-7600	K-7628	3/32"	1/4"	9/32"	2-33/64"
K-7601	K-7629	1/8"	1/4"	3/8"	2-61/64"
K-7602	K-7630	5/32"	1/4"	7/16"	3-3/32"
K-7603	K-7631	3/16"	1/4"	1/2"	3-1/4"

## MINIATURE BALL NOSE MILLS

### BALL NOSE MINIATURE END MILLS

Cat. No. 2-Flute	Cat. No. 3-Flute	Cutter Dia.	Shank Dia.	Flute Length	Total Length
K-5775	—	1/16"	1/8"	3/32"	1-5/32"
K-5776	K-5782	3/32"	1/8"	5/32"	1-1/4"
K-5777	K-5783	1/8"	1/8"	3/16"	1-11/32"
K-5780	K-5784	5/32"	3/16"	7/32"	1-7/16"
K-5781	K-5785	3/16"	3/16"	1/4"	1-9/16"

## Graduating Arbor

With an arbor as shown, graduating work can be done on any Gorton pantograph equipped with collet type spindle on discs and dials up to 1-1/2" dia. H.S.S. saws for use with described arbor are listed below.

**1415-1, (formerly CP-422) Graduating Arbor Only, 3/16" Dia. Shank, Complete with Collar and Lock Nut**

## GRADUATING SAWS

Cat. No.	Thickness	Saw Dia.	Hole Dia.
14922	.005"	9/16"	5/32"
14923	.006"	9/16"	5/32"
14924	.007"	9/16"	5/32"
14925	.008"	9/16"	5/32"
14927	.010"	9/16"	5/32"
14929	.012"	9/16"	5/32"
14932	.015"	9/16"	5/32"
14937	.020"	9/16"	5/32"
14942	.025"	9/16"	5/32"



# LARS/GORTON Hardened Cutter Blanks

Hardened cutter blanks, both in short and extra long blanks, are very useful for a multitude of different applications. The two smallest diameters .100" and .125" in the short lengths are ideally suited for use with LARS/GORTON midget chucks shown on Page 16. Their use is most economical on small, delicate work and can easily be resharpened to any desired shape.

For work in deep cavities, the long hardened cutter blanks are indispensable. By grinding notches these blanks can be broken off to any desired length.

Because of their accuracy and hardness, these blanks find uses as reamers, drills, cutters, knockout pins, punches, gages, dowel pins, rollers.

Cobalt high speed steel blanks are available in all sizes; for use where conditions require a cutting tool to withstand heavy loads, shock, and excessive heat.

## SHORT LENGTHS

Cobalt Cat. No.	H.S.S. Cat. No.	Blank Dia.	Length
K-6031	K-1621	1/10"	1-1/2"
K-6032	K-1622	1/8"	1-1/2"
K-6033	K-1623	5/32"	1-3/4"
K-6034	K-1700	3/16"	1-3/4"

## 4" LONG BLANKS

Cobalt Cat. No.	H.S.S. Cat. No.	Blank Dia.	Length
K-6035	K-1701	1/10"	4"
K-6036	K-1702	1/8"	4"
K-6037	K-1703	5/32"	4"
K-6038	K-1704	3/16"	4"
K-6039	K-1705	1/4"	4"
K-6040	K-1706	5/16"	4"
K-6041	K-1707	3/8"	4"
K-6042	K-2355	7/16"	4"
K-6043	K-1708	1/2"	4"

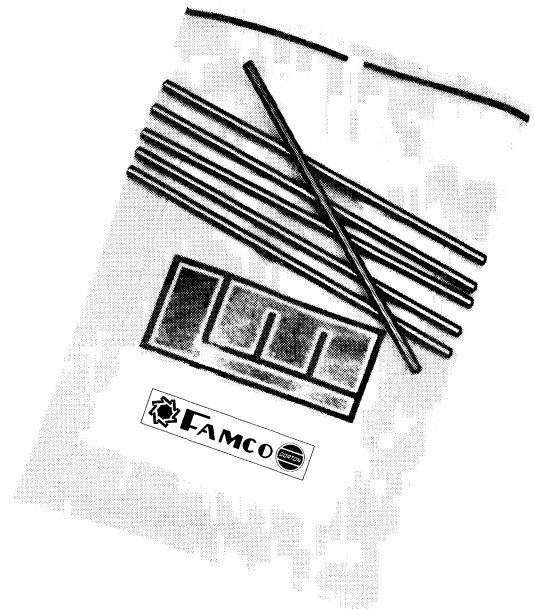
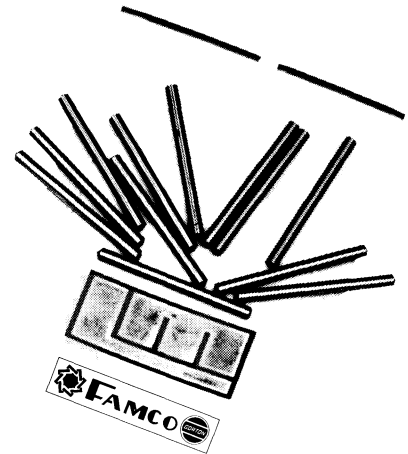
## 6" LONG BLANKS

Cobalt Cat. No.	H.S.S. Cat. No.	Blank Dia.	Length
K-6045	K-5630	1/4"	6"
K-6046	K-5631	5/16"	6"
K-6047	K-5632	3/8"	6"
K-6048	K-5633	1/2"	6"

## SINGLE FLUTE CUTTER BLANKS H.S.S.

These cutter blanks of selected high speed steel with O.D. ground to +.0000", —.0002" offer several advantages—assurance of minimum runout—flats ground to the proper height above center, leaving only the end to be ground to the desired shape required—flute lengths are proportioned to the diameters to assure maximum strength as well as sufficient length for regrinding. This is the most economical way to buy cutting tools.

H.S.S. Cat. No.	Blank Dia.	Flute Length	Overall Length
K-1624	3/16"	9/16"	2"
K-1625	1/4"	9/16"	2-1/4"
K-1626	5/16"	9/16"	2-3/8"
K-1627	3/8"	9/16"	2-1/2"
K-1628	7/16"	9/16"	2-1/2"
K-1629	1/2"	9/16"	2-1/2"



# LARS/GORTON High-Speed Steel Taper Shank Cutters

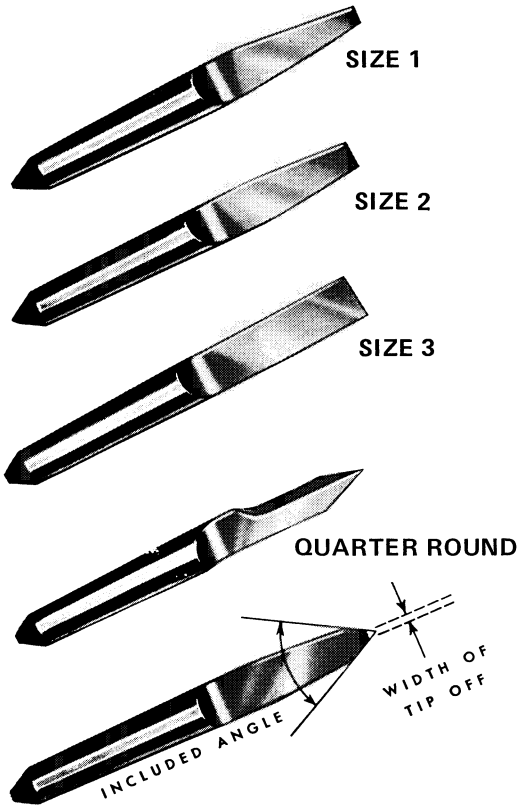
## TAPER SHANK ENGRAVING CUTTERS

(Patent 1,935,555)

Durable and Strong . . . Exceptional Performance . . . Low Cost per Grind. The long flute assures maximum life and its uniform section insures even temperature conditions during heat treatment, reducing the risk of cracks and flaws.

Because there is no shoulder, cutter enters spindle far enough to insure a tight fit even in badly worn spindle. Flats are accurately ground to center, with approximately .002" of stock left above center to insure any amount of clearance desired; taper shank held to limits of +.0005". Points are left blank for grinding to any desired shape.

For grinding Gorton taper shank cutters in collet type tool-holders, use adapter 20368.



Cat. No. Sharpened	Cat. No. Unsharpened	Size No.	Dia. at Points	Length
12788	12680	1	.100"	1-29/32"
12789	12681	2	.150"	1-29/32"
12790	12682	3	.240"	1-29/32"

## QUARTER ROUND TAPER SHANK CUTTERS

These are sometimes referred to as 90-degree cutters. Selected high speed steel.

12791, Sharpened Cutter.

12689, Unsharpened Cutter

## SHARPENED GORTON TAPER SHANK CUTTERS

The above sharpened cutters are furnished with 60° included angle, with standard clearance and no tip off. If other angles are required, state included angle desired, width of tip off if any, and material to be cut. See price list for additional charge.

## ENGRAVERS' CUTTER SETS

**710-1.** This set consists of a complete assortment of cutters and small accessories for use with LARS/Gorton Pantograph Machines having GORTON Taper Shank Spindles. It is highly useful in all engraving work as well as for small work of various kinds.

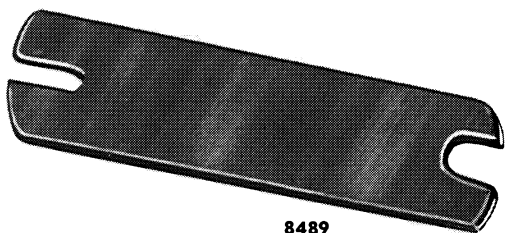
This set consists of six each of GORTON Taper Shank Cutters, sizes 1, 2, and 3 in packages; 18 cutters in all. Twelve each 1/10" and 1/8" diameter high speed steel cutter blanks; 24 blanks in all. One 21-1 Midget Chuck with GORTON Taper Shank, one 21-2 Midget Chuck with GORTON Taper Shank, and one cutter wrench 8489.

**2000-1 Set** for P1-2, 3-U and 3-F pantograph machines having 5/16" collet type spindles. Set consists of one each 1/8", 3/16", 1/4" and 5/16" square nose and ball nose single flute cutters. Six sharpened #1 taper shank cutters. One 21-6 midget chuck having 5/16" straight shank and one 8489 cutter wrench.

**799-1.** This set is the same as 710-1 but with 21-3 and 21-4 Midget Chucks having 3/8" straight shanks to fit any 3/8" collet. Specially useful with all GORTON Duplicators, 3-L, 3-Z, P2-2, P2-3, and P3-2 Pantograph Machines. Also includes Collet Adapter Bushing 6141 with GORTON Taper Hole and 3/8" O.D.

**801-1.** Same as Set 799-1, except Midget Chucks 21-5 and 21-6 and taper collet bushing have 5/16" shanks. For 3-F, 3-U, P1-2, and P1-3 Pantograph Machines having collet type spindle.

**CUTTER WRENCH 8489** is used with all GORTON Taper Shank Cutters. It has opening .27" and 1/8" for these cutters as well as for 21-1 and 21-2 Midget Chucks and Diamond Point Cutters.

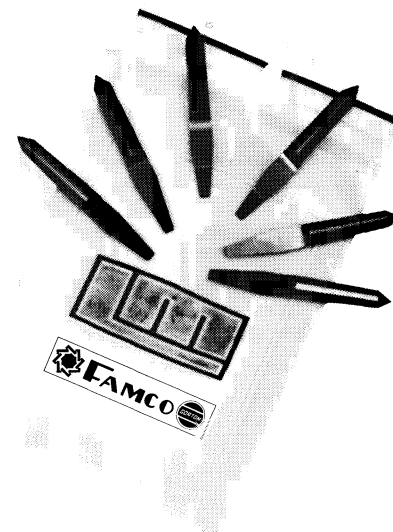


8489

# LARS/GORTON Carbide Tipped Taper Shank Cutters and Carbide Cutters with Blanks

## CARBIDE TIPPED TAPER SHANK CUTTERS

These cutters are identical to those illustrated and described on Page 10 except that a carbide insert has been brazed to the cutting edge for a length of 5/16". Ideal for cutting in abrasive plastics and other materials as well as work in tool steel due to long life of the carbide cutting edge.



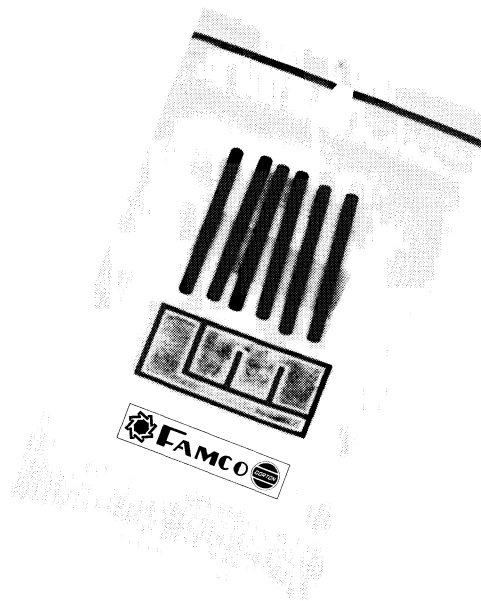
Cat. No. Sharpened	Cat. No. Unsharpened	Size No.	Dia. at Point	Length
19273	19276	1	.100"	1-29/32"
19274	19277	2	.150"	1-29/32"
19275	19278	3	.240"	1-29/32"

## SOLID CARBIDE CUTTER BLANKS

### MICRO-GRAIN

The solid carbide cutter blanks can be supplied in either grade C-2 for cast iron and other nonferrous material

Order by catalog number according to size and grade carbide required. They may be ground to any angle desired with proper width of tip, if any, and the cutting edge diamond lapped. They can be used with any straight hole collet, collet bushing or holder.



Regular Length			Extra Long Length		
Cat. No.	Dia.	Length	Cat. No.	Dia.	Length
K-1709	1/8"	1"	K-5882	1/8"	1-1/2"
K-1710	5/32"	1"	K-5883	5/32"	1-1/2"
K-5884	3/16"	1-1/8"	K-5888	3/16"	1-1/2"
K-5885	1/4"	1-1/4"	K-5889	1/4"	2"
K-5886	5/16"	1-1/2"	K-5890	5/16"	2"
K-5887	3/8"	1-1/2"	K-5891	3/8"	2"

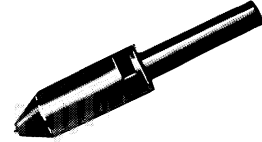
# LARS/GORTON Grinding Wheels

Three types of grinding wheels are available for various LARS/GORTON cutter grinder models, depending on the material to be ground. Our selections are based on results obtained in our own cutter grinding department over a period of years.

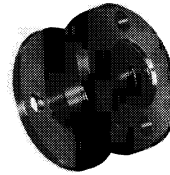
1. Alundum wheels for M-1, H.S.S. in two grit grades – 32-60 M5VBE, medium grain and hardness for general grinding.
2. Alundum 32-80 M5VBE, having the same hardness, but with finer grain for small and delicate cutter points where little stock removal and fine finish are desirable.
3. RAA60L7V grade which has a sharp grit and a bond capable of handling tough cobalt type H.S.S. These wheels will cut fast and produce a good finish where others will load, causing excessive heat and slow grinding action.

Diamond wheels, resinoid-bonded, with special heat dissipating aluminum backs are ideal for fast grinds and finer finishes on tungsten carbide cutters. Tools lapped on these wheels have improved cutting edges resulting in savings through longer cutter life and increased production. For best results, a good quality oil should be applied to the wheel face.

All wheels listed are stocked for immediate shipment. **If there is any doubt as to the model or style of your LARS/GORTON grinder, specify serial number on order.**



7566



1264-1



DIAMOND WHEEL

## GRINDING WHEELS FOR SPECIFIC MODELS

For LARS/Gorton Models	Cat. No.	Grade	Cup Type	Wheel O.D.	Hole Size
265-6, 375-3 with Plain Heads	K-6580	32-60	Straight	4"	7/16"
	K-6276	RAA60L7V	Straight	4"	7/16"
	K-6579	32-80	Straight	4"	7/16"
375-2 with 717-1 Univ. Head and 265-6	K-6583	32-60	Flaring	4"	7/16"
	K-6289	RAA60L7V	Flaring	4"	7/16"
	K-6582	32-80	Flaring	4"	7/16"
265-4 and 265-5	K-6581	32-60	Straight	4"	1-1/2"
	K-6578	32-80	Straight	4"	1-1/2"
375-3	K-6585	32-60	Straight	6"	7/16"
	K-6290	RAA60L7V	Straight	6"	7/16"
	K-6584	32-80	Straight	6"	7/16"
	K-6587	32-60	Flaring	6"	7/16"
	K-6291	RAA60L7V	Flaring	6"	7/16"
	K-6586	32-80	Flaring	6"	7/16"

For LARS/Gorton Models	Cat. No.	Grade	Cup Type	Wheel O.D.	Hole Size	Grinder Model
500	K-20080	32-60	Straight	4"	7/8"	500
	K-20081	32-80	Straight	4"	7/8"	500
375-4, 265-7 and G-2 with Tapered Wheel Adapters	K-6588	32-60	Straight	4"	7/8"	G-2, 265-7
	K-6589	32-80	Straight	4"	7/8"	G-2, 265-7
	K-6134	RAA60L7V	Straight	4"	7/8"	G-2, 265-7, 500
	K-6292	RAA60L7V	Flaring	4"	7/8"	G-2, 265-7, 500
	K-6590	32-60	Straight	6"	7/8"	375-4
	K-6591	32-80	Straight	6"	7/8"	375-4
	K-6592	32-60	Flaring	6"	7/8"	375-4
	K-6593	32-80	Flaring	6"	7/8"	375-4
	K-6139	RAA60L7V	Straight	6"	7/8"	375-4
	K-6140	RAA60L7V	Flaring	6"	7/8"	375-4



## DIAMOND WHEELS

Wheel Type	Cat. No.	Wheel Dia.	Grit	Concentration	Diamond Depth	Hole Size	Grinder Model
Straight Cup	K-617	3"	100	25	1/8"	1-1/2"	265-4, 265-5
	K-616	3"	320	25	1/8"	1-1/2"	265-4, 265-5
	K-618	3"	100	25	1/8"	7/16"	375-3, 265-6
	K-615	3"	320	25	1/8"	7/16"	375-3, 265-6
	K-6141	3"	100	25	1/8"	7/8"	375-4, G-2, 265-7
	K-6142	3"	320	25	1/8"	7/8"	375-4, G-2, 265-7
Flaring Cup	K-4227	3-1/2"	240	100	1/16"	7/16"	375-3, 265-6
	K-4228*	3-3/4"	100	100	1/16"	7/16"	375-3, 265-6
	K-6143	3-1/2"	240	100	1/16"	7/8"	375-4, G-2, 265-7, 500
	K-6144*	3-3/4"	100	100	1/16"	7/8"	375-4, G-2, 265-7, 500
Straight Cup	K-20151	6"	150	100	1/8"	7/8"	375-4
	K-20152	6"	320	100	1/8"	7/8"	375-4

\* DIAMOND GRIT ON WHEEL PERIPHERY

### WHEEL ADAPTER

1264-1, for cutter grinders with tapered spindle and wheels with 7/8" dia. bore.

### WHEEL TRUING DIAMOND

7566, for use with all LARS/GORTON and other makes of cutter grinders. Has standard LARS/GORTON taper shanks and 3/8" straight shank for use with collets.

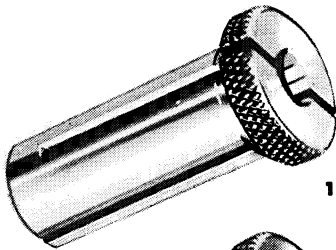
# LARS/GORTON Collets Bushings and Adapters



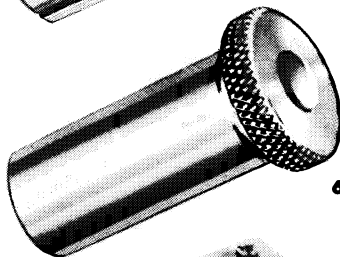
1151-1



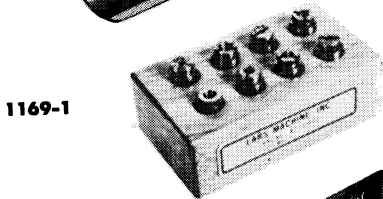
1152-1



14893



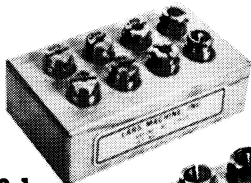
6141



1169-1



1170-1



1190-1

## COLLET BUSHINGS FOR PANTOGRAPH MACHINES

These collet bushings are intended primarily for use with LARS/Gorton Pantograph Machines having collet type spindles but can be used in any spindle using a 5/16" or 3/8" diameter spring collet. Made in 5/16" and 3/8" diameter body sizes; slotted, with straight holes, also with solid body having taper hole for LARS/Gorton taper shank cutters. Accurately finished. For convenience and economy purchase a complete set; furnished in handy wooden rack as shown.

**1151-1** set consists of 8 Collet Bushings with 5/16" diameter body in sizes as listed below, including taper hole bushing 9381, complete with rack.

**1152-1** set consists of 8 Collet Bushings with 3/8" diameter body in sizes as listed below, not including taper hole bushing 6141, but complete with rack.

### INDIVIDUAL COLLET BUSHING DESCRIPTIONS

5/16" or 3/8" diameter body, slotted, with straight holes from 1/10" to 5/16" diameter, for use in 5/16" and 3/8" spindle hole or collet. Sizes from 3/16" to 5/16" are ground O.D. and I.D. Three smallest sizes are ground O.D. and reamed I.D.

Cat. No. 5/16" Shank	Cat. No. 3/8" Shank	Hole Size	Cat. No. 5/16" Shank	Cat. No. 3/8" Shank	Hole Size
14890	14566	1/10"	14894	14570	2/10"
14891	14567	1/8"	14895	14571	7/32"
14892	14568	5/32"	14896	14572	1/4"
14893	14569	3/16"		14573	5/16"

### TAPER SHANK CUTTER ADAPTERS

These adapters are similar to the collet bushings described above except that they are solid with LARS/Gorton taper hole. They are used to hold LARS/Gorton taper shank cutters in collet type spindles. They are also useful in sharpening taper shank cutters in connection with the LARS/Gorton Grinder collets shown on opposite page.

Cat. No.	Shank Diameter
9381	For use with 5/16" dia. collet
6141	For use with 3/8" dia. collet

### PANTO-COLLETS

These panto-collets are for use with panto-collet type spindles. They will hold straight shank cutters rigidly in place. Each panto-collet is slotted at both ends and is clamped in place and later ejected by the panto-collet nut. Furnished in sets as shown below.

Cat. Set No.	For Following Machines	Max. Capacity
1169-1	LARS/Gorton 3-F, 3-U, P1-2, P1-3	5/16"
1170-1	LARS/Gorton 3-X, 3-Z, P2-2, P2-3	3/8"
1190-1	LARS/Gorton P3-2, P2-3, HD	1/2"

### EXTRA NUTS FOR PANTO-COLLET TYPE SPINDLES

**K-5414** 5/16" capacity (3-F, 3-U, P1-2, P1-3)

**K-5425** 3/8" capacity (3-X, 3-Z, P2-2, P2-3)

**K-5627** 1/2" capacity (P3-2, P2-3, H.D.)

### COMPOSITION OF SETS

Cat. No. Set 1169-1	Cat. No. Set 1170-1	Cat. No. Set 1190-1	Hole Size
K-5405	K-5415		1/10"
K-5406	K-5416	K-5643	1/8"
K-5407	K-5417		5/32"
K-5408	K-5418	K-5642	3/16"
K-5409	K-5419		2/10"
K-5410	K-5420		7/32"
K-5411	K-5421	K-5625	1/4"
*K-5412	K-5422	K-5624	5/16"
**9381	*K-5423	K-5623	3/8"
		K-5622	7/16"
		K-5621	1/2"

\*Not included in set; furnished with machine.

\*\*Bushing included in set.

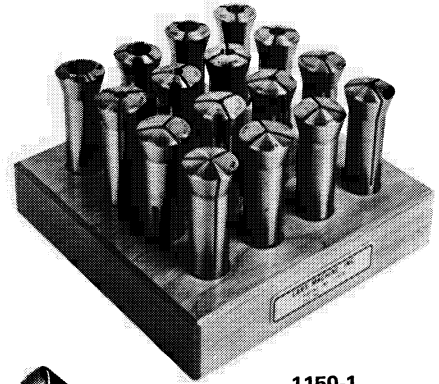
Special sizes available at additional cost. Write factory for prices and delivery.

# LARS/GORTON Collets

## GRINDER COLLETS – Model 265, 375, 256-4, Index Workholder

1150-1, set consists of 16 round hole collets in standard sizes as listed below, complete in wooden rack.

Cat. No.	Hole Size	Cat. No.	Hole Size
K-623	1/16"	K-632	1/4"
K-624	3/32"	K-633	9/32"
K-625	1/10"	K-634	5/16"
K-626	1/8"	K-636	3/8"
K-627	5/32"	K-638	7/16"
K-629	3/16"	K-640	1/2"
K-630	2/10"	K-641	9/16"
K-643	7/32"	K-642	5/8"



1150-1

\*20368 Grinder Collet Adapters for Taper Shank Cutters

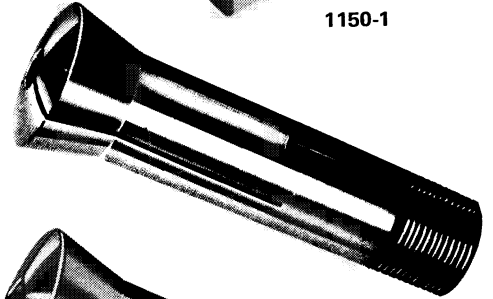
2013-1—Set (4NS) consists of 4 collets 1/8", 3/16", 1/4" & 5/16"

2014-1—Set (4NS) consists of 5 collets 1/8", 3/16", 1/4", 5/16" & 1/2"

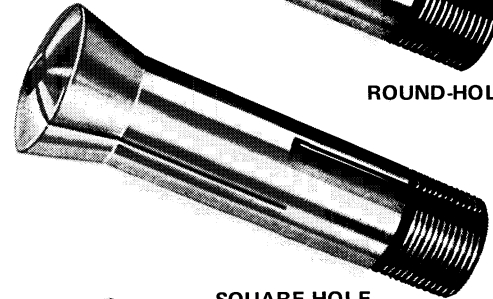
## SQUARE HOLE COLLETS – Model 265, 375

1155-1, set consists of 6 square hole collets as shown below, complete in wooden rack.

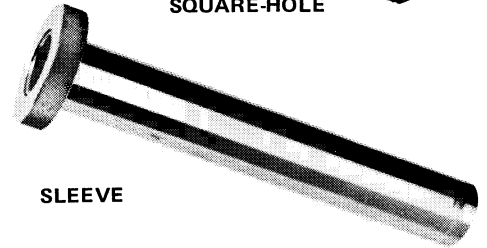
Cat. No.	Hole Size	Cat. No.	Hole Size
K-4935	3/16"	K-3921	3/8"
K-3920	1/4"	K-3922	7/16"
K-3501	5/16"	K-4934	1/2"



ROUND-HOLE



SQUARE-HOLE



SLEEVE

## 375-CUTTER GRINDER SLEEVES

These sleeves replace the collet, sleeve and draw bar and give added capacity to your 375 grinder for holding 3/4", 7/8" and 1" dia. cutters, end mills, etc.

Cat. No.	Hole Size
CP1302	3/4" Hole
CP1301	7/8" Hole
CP1300	1" Hole

Intermediate, metric and special collet sizes available. Write factory for prices and delivery.

## GRINDER COLLETS – Model 500 and G-2

2017-1, set consists of 13 round hole collets in standard sizes as listed below, complete in wooden rack.

Cat. No.	Hole Size	Cat. No.	Hole Size
K-5790	1/16"	K-5797	7/32"
K-5791	3/32"	K-5798	1/4"
K-5792	1/10"	K-5799	9/32"
K-5793	1/8"	K-5800	5/16"
K-5794	5/32"	K-5801**	3/8"
K-5795	3/16"	K-5802	7/16"
K-5796	2/10"	K-5803	1/2"

\*\*3/8" collet is standard equipment and not included in above set.

2017-2 – SET, consists of 5 collets, 1/8", 3/16", 1/4", 5/16", 1/2" DIA.

K6094 Adapter for Taper Shank Cutters

## SPRING COLLETS (Patent 1,889,653)

For use with Model 8-D and 0-16 machines having LARS/GORTON Taper Spindle, also for 8½-D and 9-J Mills and Duplicators having spring collet adapters shown below. For added savings, convenience and increased production, order a complete set and have the correct collet when needed.

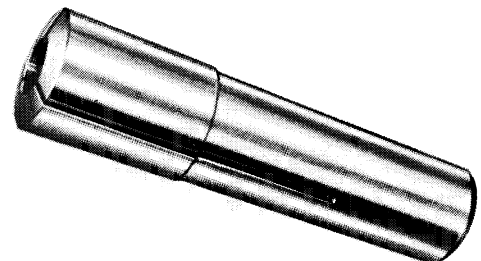
1153-1 set consists of 10 collets, in standard sizes listed below, complete with handy wooden rack.

## NO. 9 COLLETS

1262-1 set (9 B&S) consists of 8 collets listed below, complete with handy wooden rack.



1153-1



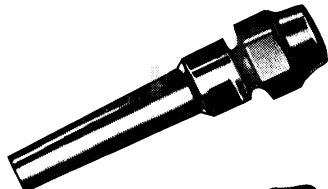
K-6119

Cat. No. Set 1153-1	Cat. No. Set 1262-1	Hole Size
14780		1/16"
14779		1/10"
14770	K-6114	1/8"
14771		5/32"
14772	K-6115	3/16"
14774	K-6116	1/4"
14775	K-6117	5/16"
14776	K-6118	3/8"
14777		7/16"
14778	K-6119	1/2"
	K-6120	5/8"
	K-6121	3/4"

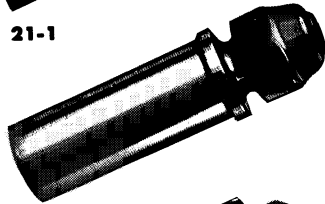
# LARS/GORTON Chucks and Collets

## MIDGET CHUCKS

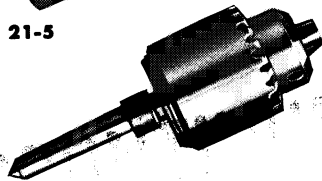
For holding 1/10" and 1/8" dia. cutters and cutter blanks. Blanks must be ground in place in the chuck to secure a perfectly true running cutter. These midget chucks have hardened nut, tempered body, and ground shank. Hole goes all the way through shank. The 5/16" dia. and 3/8" dia. straight shank chucks fit all spring collets and are indispensable for delicate milling and engraving on any machine as they provide sufficient extension for good visibility of work.



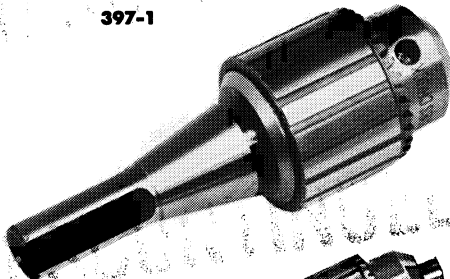
21-1



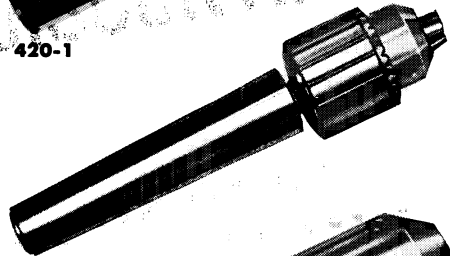
21-5



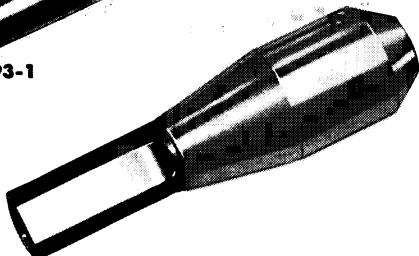
397-1



420-1



793-1



K-5922

Cat. No.	Shank	Hole Dia.	Machines
21-1	LARS/Gorton Taper	1/10"	For all LARS/Gorton Pantograph Machines having LARS/Gorton taper shank spindle hole.
21-2	LARS/Gorton Taper	1/8"	
21-5	5/16" Dia.	1/10"	For all machines having collet type spindles with 5/16" maximum capacity—LARS/Gorton 3-F, 3-U, P1-2, P1-3.
21-6	5/16" Dia.	1/8"	
21-3	3/8" Dia.	1/10"	For all machines having 3/8" dia., collet capacity—LARS/Gorton 3-X, 3-Z, P2-2, P2-3, P3-2.
21-4	3/8" Dia.	1/8"	

## DRILL CHUCKS

### With LARS/Gorton Taper and Straight Shanks

These are useful and convenient for small drills. They can be used with pantograph engraving machines having either taper or collet type spindles. Wrench is furnished with every chuck.

Cat. No.	Capacity	Shank
397-1	0" to 5/32" dia.	LARS/Gorton Taper
999-1	0" to 5/32" dia.	5/16" Dia. Straight
1000-1	0" to 5/32" dia.	3/8" Dia. Straight

## DRILL CHUCKS

### For Vertical and Horizontal Mills and Duplicators

Available in two chuck sizes and three choices of shank. These chucks are fitted with hardened and ground arbors, the LARS/Gorton taper shank being interchangeable with LARS/Gorton spring collets. Wrench furnished with every chuck.

No. Cat.	Capacity	Shank
420-1	0" to 3/8"	LARS/Gorton Shank
694-1	0" to 1/2"	LARS/Gorton Shank
793-1	0" to 1/2"	9 B&S
794-1	0" to 1/2"	10 B&S

## END MILL HOLDERS

For single and double end mills. Set screw rests tightly against flats provided on shanks of end mills, preventing cutters from pulling down. Made to retain original accuracy indefinitely. Alloy steel, hardened and ground inside and out.

LARS/Gorton Taper Cat. No.	Hole Dia.
K-5922	3/16"
K-5923	1/4"
K-5924	5/16"
K-5925	3/8"
K-5926	1/2"

# LARS/GORTON Chuck and Collet Sets

## CHUCK AND COLLET SETS

**Includes 10 collets, chuck, nut and wrench, boxed**

These collet chucks are precision made and embody the latest design features, strongly constructed of alloy steel, hardened and ground throughout, including threads. Chuck has round safety nut with convenient flats for open end wrench and grooves spaced for a spanner wrench. Box is substantial and provides convenient storage when set is not in use. Collets are protected and easily removed from rack shown. Set consists of 10 collets, chuck, nut, and wrench. Collet sizes are shown in second table below. Chucks and nuts available without collets or wrench and wrenches may be ordered separately. See table below. Maximum collet capacity 1" dia.



703-2

Complete Set Cat. No.	Shank Taper No.	Chuck and Nut Only Cat. No.	Wrench Only Cat. No.	
			K-7536	K-12170
703-2	9 B&S	K-1734	K-7536	K-12170
471-2	10 B&S	K-1735	K-7536	K-12170
1278-1	30 N. S.	K-6316	K-7536	K-12170
1055-1	40 N. S.	K-4975	K-7536	K-12170
1224-1	50 N. S.	K-4974	K-7536	K-12170

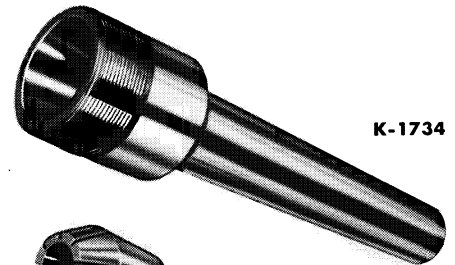
K-1738 (Nut Only)

K-7536 Wrench furnished with set

### COLLETS FOR ABOVE SETS - 703-2, 471-2, 1278-1, 1055-1 & 1244-1

These collets are precision made and are carefully checked to assure minimum of runout. Hardened and ground all over to give long service and accurate performance. Intermediate and metric sizes available, contact factory.

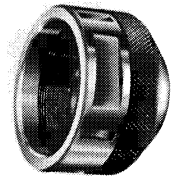
Collet Cat. No.	Hole Dia.	Collet Cat. No.	Hole Dia.
K-1799	1/8"	K-1804	1/2"
K-1800	1/4"	K-1805	5/8"
K-1801	5/16"	K-1806	3/4"
K-1802	3/8"	K-1807	7/8"
K-1803	7/16"	K-1808	1"



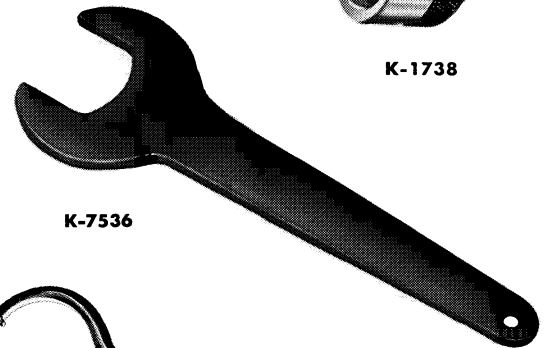
K-1734



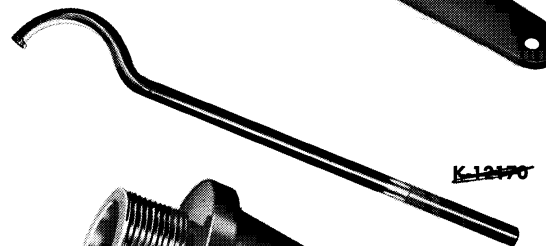
K-1799



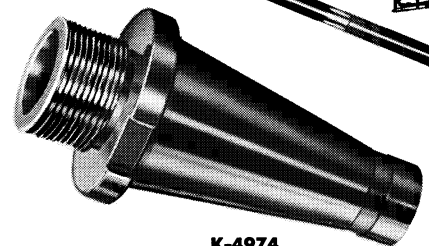
K-1738



K-7536



K-12170



K-4974

**Includes 8 collets, chuck, nut and wrench, boxed**

The design features of the following sets are similar to those described above but proportionally smaller. Maximum capacity of collets in these sets is 3/4" dia. Set complete is boxed as shown in top illustration. Chucks and nuts available without collets or wrench and wrenches may be ordered separately. See table below.

Complete Set Cat. No.	Shank Taper No.	Chuck and Nut Only Cat. No.	Wrench Only Cat. No.	
			K-5635	K-12198
1648-1	R-8	K-12197	K-5635	K-12198
1162-1	30 N. S.	K-4190	K-5635	K-12198

K-1739 (Nut Only)

K-5635 Wrench furnished with set

### COLLETS FOR ABOVE SETS #1648-1 and #1162-1

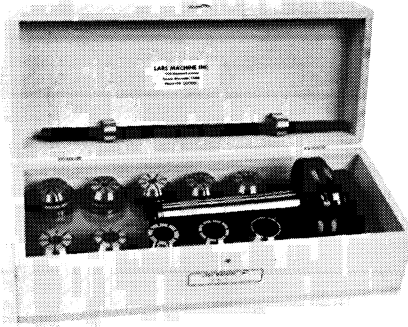
These collets are made to the same precision standards and are subject to the same rigid inspection as the larger series described above. Capacity is 3/4" dia. maximum and can be used only with the two adapter chucks listed immediately above. Intermediate and metric sizes available, contact factory.

Collet Cat. No.	Hole Dia.	Collet Cat. No.	Hole Dia.
K-3944	1/8"	K-1842	7/16"
K-1839	1/4"	K-1843	1/2"
K-1840	5/16"	K-1844	5/8"
K-1841	3/8"	K-1845	3/4"

**NOTE**  
See Page 17  
for quick change  
holders

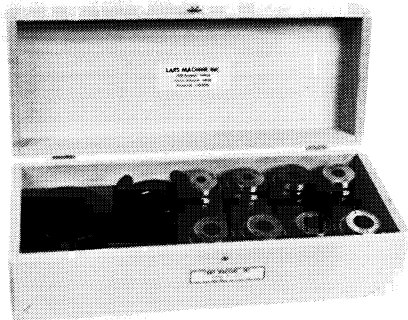


# LARS/GORTON Quick Change Chucks



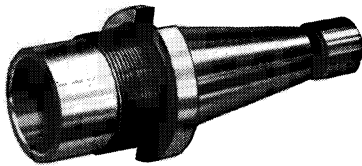
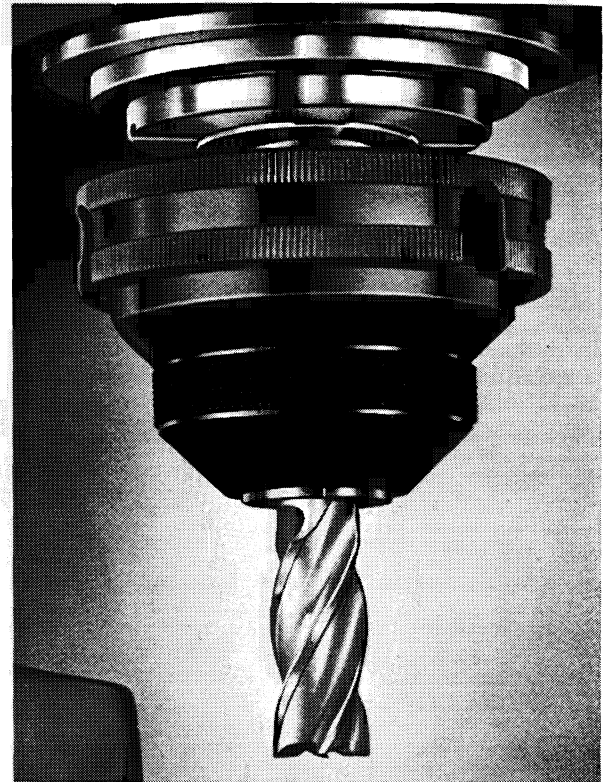
## QUICK CHANGE COLLET SET

Includes—Quick Change Assembly, Wrench, ten Collets 1/8" to 1" and Sturdy Hardwood Box.



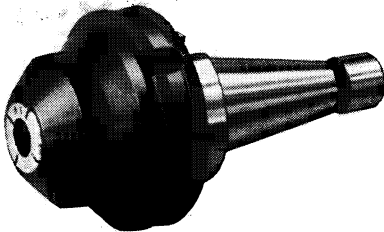
## PRESET COLLET QUICK CHANGE ASSEMBLY SET

Includes—Setting Gage, Adapter Cage, eight Preset Collets (2 each 3/8", 1/2", 5/8", 3/4") and Sturdy Hardwood Box.



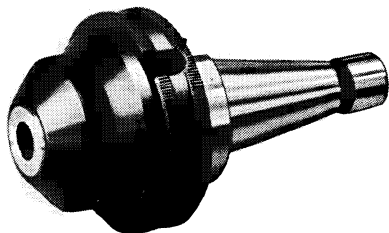
## QUICK CHANGE HOLDER

Includes Holder only—for use with both Spring and Preset Collets.



## QUICK CHANGE ASSEMBLY

Includes—Holder, Lock Ring, Collet Cage and Wrench.



## PRESET COLLET QUICK CHANGE ASSEMBLY

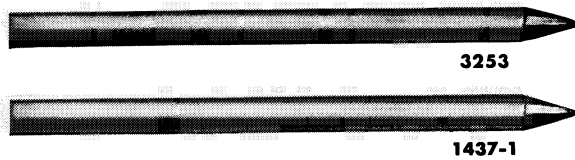
Includes—Holder, Lock Ring, Adapter Cage and Wrench.

LARS/Gorton's Quick Change Chucks are real time and money savers. They allow you to change cutting tools without removing collets in less than 5 seconds by a simple 30 degree rotation of the patented locking device—a quick reverse rotation and you're back in business. Only 10 seconds are required for a complete collet or adapter change. One simple adapter accepts collets, end mill holders, saw arbors and shell mill adapters without any additional extension. This minimizes the number of adapters required, thus decreasing purchase and maintenance costs.

The Quick Change Chuck has lock wrench drop-out, a safety feature and a positive release device eliminating the need for draw bars, large wrenches, or spindle hammering to remove collets or adapters. Add these features up and you have a high production tool for dollar savings.

Quick Change Collet Set	Quick Change Assembly	Quick Change Holder	Collet Capacity	Shank Taper	Preset Collet Quick Change Assembly	Preset Collet Quick Change Set
Cat. No.	Cat. No.	Cat. No.			Cat. No.	Cat. No.
1439-2	K-8424	K-7220	1/8 to 1"	R-8	K-8430	
1441-2	K-8425	K-7222	1/8 to 1"	9 B&S	K-8431	
1442-2	K-8426	K-7223	1/8 to 1"	10 B&S	K-8432	1450-2
1444-2	K-8427	K-7225	1/8 to 1"	30 NS	K-8433	
1445-2	K-8428	K-7226	1/8 to 1"	40 NS	K-8434	
1446-2	K-8429	K-7227	1/8 to 1"	50 NS	K-8435	

# LARS/GORTON Precision Tracing Styles for 2 and 3-Dimensional Work



## FOR PANTOGRAPHS AND DUPLICATORS V-GROOVE TRACING STYLES

**3253** for use with V-groove copy on all pantograph machines. 2/10" dia., by 3-1/8" long; 90° included point. Hardened and ground all over.

**1437-1** (formerly K-5679). Same as above but with carbide tip, giving longer life without regrinding.

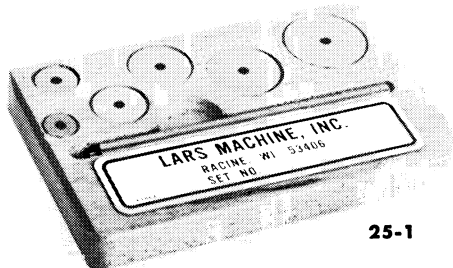


## SQUARE NOSE TRACING STYLE SET

**795-1** set for use with square bottom groove or relief copy on all pantographs. Hardened and ground all over; both ends marked with dia., in steps of .005". 17 styles in sizes from .035" to .200". 3 conical point styles 3253 included. All styles have .200" shanks. Boxed with plate showing sizes for most efficient use. (See price list for individual prices.)

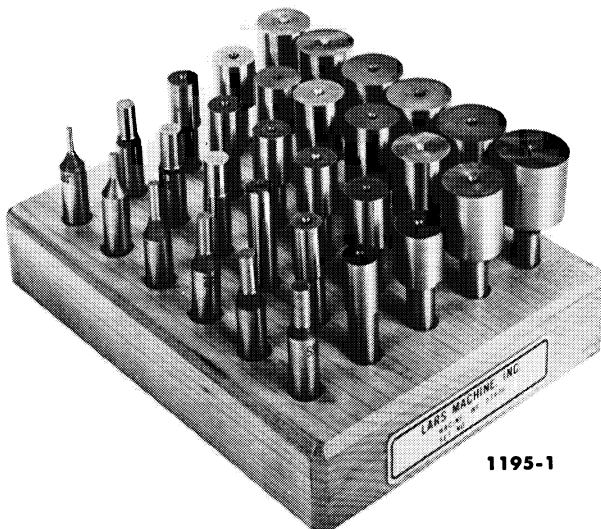
### Individual Styles

Style No.	Dia. at Ends	Style No.	Dia. at Ends
<b>12521</b>	.035"-.040"	<b>12530</b>	.125"-.130"
<b>12522</b>	.045"-.050"	<b>12531</b>	.135"-.140"
<b>12523</b>	.055"-.060"	<b>12532</b>	.145"-.150"
<b>12524</b>	.065"-.070"	<b>12533</b>	.155"-.160"
<b>12525</b>	.075"-.080"	<b>12534</b>	.165"-.170"
<b>12526</b>	.085"-.090"	<b>12535</b>	.175"-.180"
<b>12527</b>	.095"-.100"	<b>12536</b>	.185"-.190"
<b>12528</b>	.105"-.110"	<b>12537</b>	.195"-.200"
<b>12529</b>	.115"-.120"		



## ROLLER TRACING STYLE SET

**25-1** set consists of one set of rollers and style complete as shown at left. For use with square bottom groove and relief copy on all pantographs. Style is .200" dia., with .100" end to fit holes in rollers which have outside dia. of .3, .4, .5, .6, .7 and .8" as marked. Each piece hardened and ground all over, furnished in convenient box.



## SQUARE NOSE TRACING STYLE SET

**1195-1.** This set consisting of 30 square nosed styles is for use with the LARS/Gorton P1-3, P2-3 and P3-2 pantograph machines as well as for certain duplicator work. All are accurately gauged and marked for size and are hardened and ground all over. Each style is .005" oversize to correspond with new end mills which always cut oversize. All styles have 3/8" dia. shank and working ends start at .100" and go up to 1" according to tabular list on opposite page. Set is furnished in wooden rack as shown at left.

# LARS/GORTON Precision Tracing Styles for 2 and 3-Dimensional Work

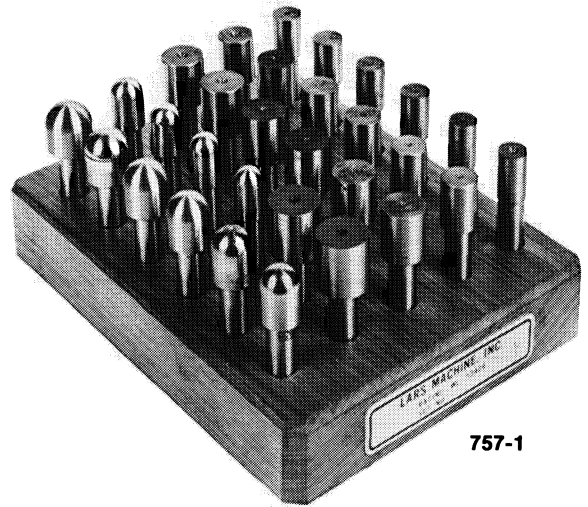
## COMBINATION TRACING STYLE SETS FOR PANTOGRAPHS AND DUPLICATORS

Accuracy in die and mold duplication depends upon accurate cutters and tracing styles. LARS/Gorton styles are precision ground after hardening and are accurately gauged and marked for size. Each style has a 3/8" dia. shank. Each set, including wood block holder, costs less than when styles are purchased separately.



680-1

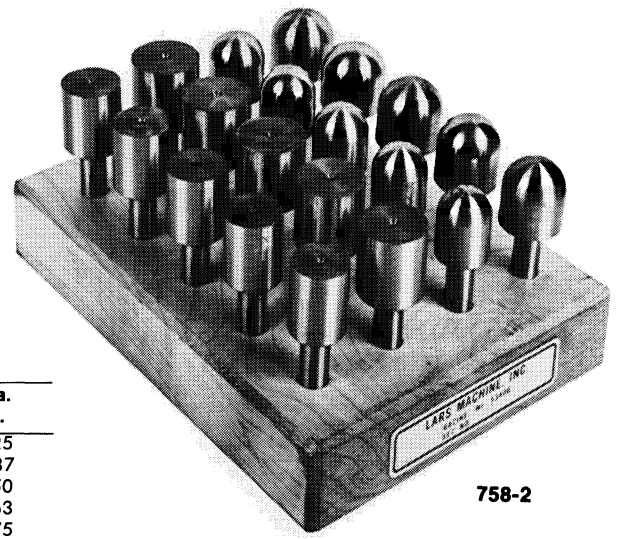
**680-1.** Set of 30 styles .005" over cutter dia. consisting of 2 each of the square nose sizes and one each of the ball nose—from .100" dia. to 3/8" in 1/32" steps.



757-1

**757-1.** Set of 30 styles .005" over cutter dia. consisting of 2 each of the square nose sizes and one each of the ball nose—from 13/32" to 11/16" in 1/32" steps.

**758-2.** Set of 20 styles .005" over cutter dia. consisting of one each of square nose and ball nose styles—from 23/32" to 1" in 1/32" steps.



758-2

### .005" Over Cutter Size

Square Nose No.	Ball Nose No.	Dia. In.	Square Nose No.	Ball Nose No.	Dia. In.
11869	11879	.10	12807	12817	.5625
11870	11880	.125	12808	12818	.5937
11871	11881	.156	12809	12819	.6250
11872	11882	.1875	12810	12820	.6563
11873	11883	.2187	12811	12821	.6875
11874	11884	.25	12500	12510	.7188
11875	11885	.281	12501	12511	.7500
11876	11886	.3125	12502	12512	.7813
11877	11887	.3437	12503	12513	.8125
11878	11888	.375	12504	12514	.8438
12802	12812	.406	12505	12515	.8750
12803	12813	.4375	12506	12516	.9063
12804	12814	.4687	12507	12517	.9375
12805	12815	.50	12508	12518	.9688
12806	12816	.531	12509	12519	1.0000

# LARS/GORTON Master Copy Type

## WHAT IS MASTER COPY TYPE?

MASTER COPY is the name given to the templates or patterns from which designs or characters are reproduced on the Pantograph Machine. By using the variable settings on the Pantograph Machine the MASTER COPY can be reproduced from full size down to 1/10th or even 1/100th, depending on the type of machine used.

## TYPE IS FURNISHED IN SETS

A set consists of Alphabets and Numerals, Special Characters and Punctuation Marks, each engraved on its individual brass block or body. The size of the Set is designated by stating the number of A's the Set contains. The number of the other characters varies according to the frequency of their use in the language.

## CAPITALS

The 4-A Set shown on Page 22 consists of 75 Capitals, 30 Numerals, a sufficient number of punctuation marks, special characters and assorted spacers. Approximately 185 pieces. The 2-A Set (not shown) consists of 44 Capitals, 30 Numerals, a sufficient number of punctuation marks, special characters and assorted spacers. Approximately 135 pieces.

The 1-A Set (not shown) comprises one each of all characters as shown in the specimen plate of the Type Face selected (exclusive of mottoes). Number of pieces will vary from 15 per set in the case of Fractions to 111 per Set in the Egyptian Typewriter. In some instances, where the type is not strictly self-spacing, a number of assorted spacers is included.

## LOWER CASE

Lower case Type is furnished, dependent on the type size, in 5-a Sets on page 22 consisting of 102 characters—or in 4-a Sets of 80 characters, or 1-a Sets of one each of the characters as shown in the type specimens on succeeding pages:

## HOW TO ORDER

Carefully read the information on these two pages — note the forms and uses of MASTER COPY TYPE. Then do these 4 simple things —

**FIRST** — Select **STYLE** of Type from specimens shown on following pages — Gorton Normal, Gothic, Century, etc.

**SECOND** — Select **FORM** of Type required — SUNK V-GROOVE, or SUNK SQUARE BOTTOM GROOVE, or RELIEF.

**THIRD** — Choose between PLAIN or REVERSED Type. Note: the Pantograph does NOT reverse the characters:

Note: GORTON reproduces GORTON and MOPYO reproduces MOPYO

**FOURTH** — Determine **SIZE** of Type Face and Body. Order by catalog number at left in the proper table under the style desired.

## SPECIAL COPY TYPE AND MASTERS

We specialize in the making of special masters, copy type, patterns and designs. Our background and experience enable us to produce them to your specifications at tremendous savings because we are fully equipped mechanically and have the required skilled workmen. Our engineering service is on call to make recommendations to help you solve your problems.

## SELECTING THE RIGHT TYPE

On the following pages are specimens of type. In each a complete set of characters is shown for your convenience in comparing individual letters and numerals. Simple characters having a single line and few corners, such as Gorton face, can be cut faster than more complicated faces such as Engravers Old English, and are preferable for legibility. They also lend themselves more readily to producing both heavy and light line lettering, and are the least expensive. The MASTER COPY TYPE most commonly used is the 3/4" face on the 1-1/4" body. For larger work, or where extreme accuracy is essential, the 1-1/2" or 3" faces are recommended.

## TYPE SPECIFICATIONS

All of the MASTER COPY TYPES listed in this catalog are engraved on bodies of a special hard brass, known as Engravers' Brass, which is long wearing. MASTER COPY TYPE bodies are beveled on both top and bottom to fit grooves in the standard typeholders. Sunk V-groove type bodies in all sizes are 1/16" thick. Relief type bodies are 1/8" thick including the height of the raised character, which stands 1/16" above the top of the body. All bodies having characters in the exact center, vertically, are marked "TOP" to prevent the user from setting them in an inverted position in the typeholder. The overall height of the type body varies with the various type face sizes, as will be noted in the type tables on the succeeding pages.

## TYPEHOLDERS

These MASTER COPY TYPES may be set up in a Copy Holder similar to printer's type to form and desired combination. See Page 22. The proper copy holder to use with any given type is determined by the body size of the type, the number of lines to be run at one set-up, and the total length of the longest line of type. For complete assortment of copyholders see Page 23.

For example - To order Gorton Normal Capitals, SUNK V-GROOVE, plain -3/4" on 1-1/4" Body-order the Catalog Number 10-1. (To be found on Page 24 under "Gorton Normal" in the Table, like this):

### SUNK V-GROOVE — plain

Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.
832-1	Caps	3/8"	1-1/4"	4-A	3 lbs.
833-1	Lower	3/8"	1-1/4"	5-a	2 lbs.
10-1	Caps	3/4"	1-1/4"	4-A	3 lbs.
11-1	Lower	3/4"	1-1/4"	5-a	2 lbs.

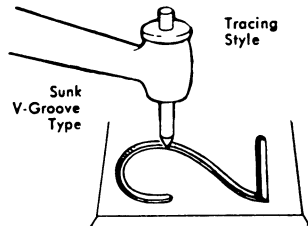
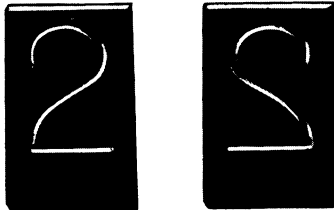
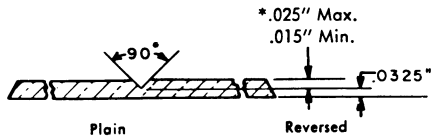
**NOTE**—Some copy sets as listed on 1-1/4" size blanks are standard. All larger sizes are made up special to order and cannot be returned for credit. All standard type sets on standard 1-1/4" bodies are shipped in boxes designed as racks to keep the type separated for convenience of the operator.

If our catalog does not list the style or size of master or copy type you are in need of, send us a dimensioned sketch giving complete details and we will gladly send you price and delivery information. Any of the material shown in this catalog can also be made special to suit your needs. We are in a position to furnish promptly and economically almost any style of special copy type masters or templates you require.

# LARS/GORTON Master Copy Type

## the three basic forms

### SUNK V-GROOVE (90°)

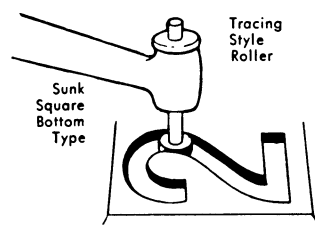
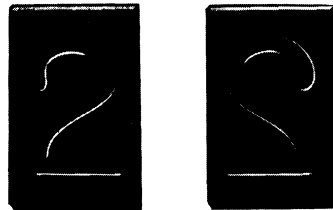


**SUNK V-GROOVE TYPE** — Principal uses: (1) to engrave reading matter on label plates, instruments, tools, etc.

(2) to cut sunken lettering in dies and molds, the most common use.

Different widths of face are made by varying width of cutter used or by varying depth of cut taken with conical shaped cutter.

### SUNK SQUARE BOTTOM GROOVE

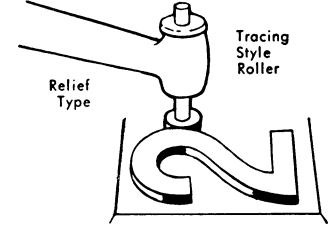
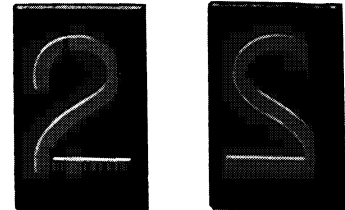


**SUNK SQUARE BOTTOM GROOVE TYPE** — Principal uses: (1) to produce sunken shaded lettering, as in Century, Roman, or Old English.

(2) to produce unshaded lettering wherever square corners are required, as in Chamfer Gothic.

Tracing styles used are cylindrical with square ends.

### RELIEF (Raised)

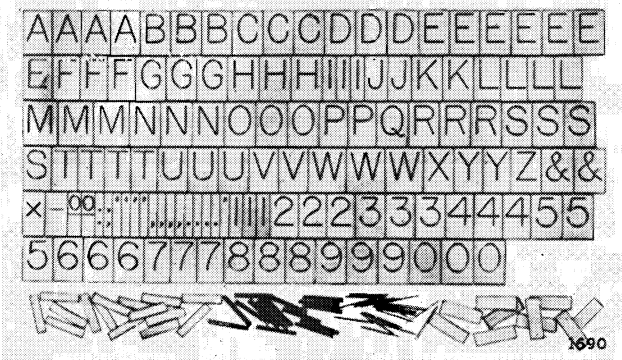


**RELIEF (Raised) TYPE** — Principal use: to produce raised or relief characters on molds, dies, brass, and steel stamps, etc. Tracing styles used are cylindrical with square ends.

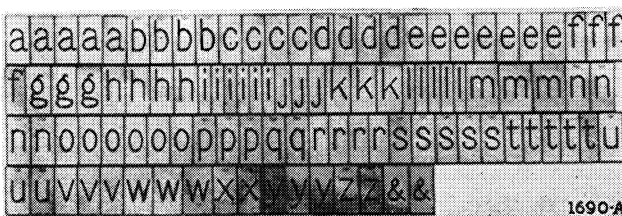
**THREE DIMENSIONAL RELIEF (Raised) TYPE** — Principal use: to produce raised steel letters on stamps and dies. Tracing styles used are conical shaped according to side wall angle required. See page 35 for complete description.

\* Depth varies depending on copy size and style.

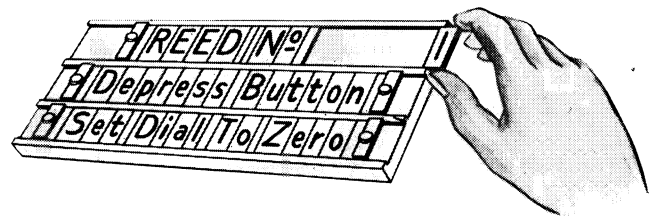
### 4-A SET OF TYPE — capitals



### 5-A SET OF TYPE — lower case



### COPY HOLDER

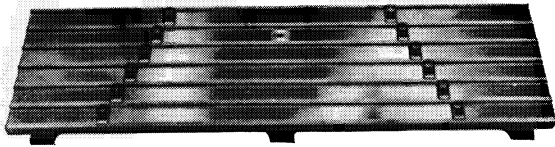


### IMPORTANT

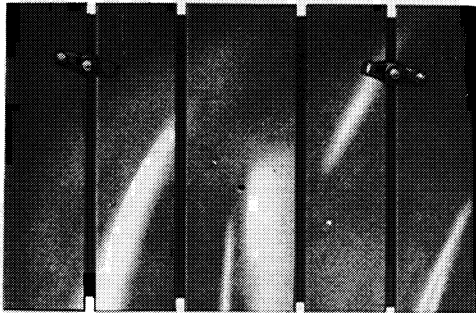
For your information the height and width of letters have the following relationships:  
**EXTRA EXTENDED** — width is approximately 50 per cent greater than the height;  
**EXTENDED** — width and height are the same;  
**NORMAL** — width is 2/3 of height;  
**CONDENSED** — width is 1/2 of height;  
**EXTRA CONDENSED** — width is 1/3 of height.

# LARS/GORTON Copy Type Holders

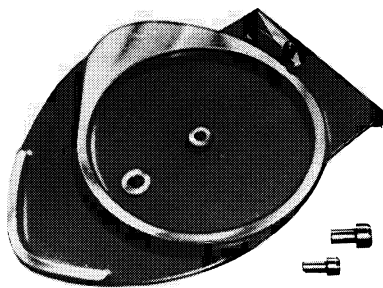
## BEVELED GROOVE HOLDERS FOR STANDARD COPY TYPE



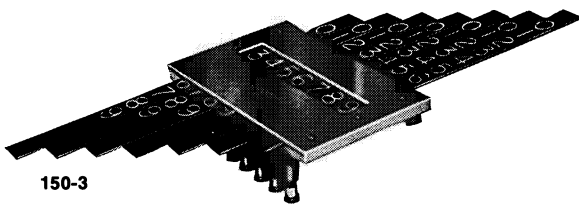
337-1



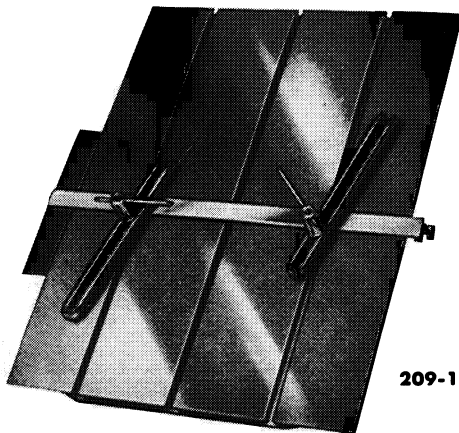
8-2



1107-1



150-3



209-1

Copy Holder No.	Grooves for Beveled Blanks	No. of Grooves	Total Width of Copy Holders	Total Length	Shipping Weight
337-1	1-1/4"	6	8-13/16"	24"	30 lbs.
684-1	2-1/4"	3	8-13/16"	24"	30 lbs.
5-1	3-1/2"	1	8-13/16"	24"	30 lbs.
6-1	4-1/2"	1	8-13/16"	24"	30 lbs.

Two stops are supplied for each groove in all copy holders listed above, as shown in illustration, but no copy. Made of nickel semisteel castings with beveled grooves or T-slots machined from the solid. Carefully gauged to size.

**EXTRA COPY STOPS** for copy holders in all of the groove sizes listed above are carried in stock.

**CP-412** for 1-1/4" groove

**CP-407** for 2-1/4" groove

**CP-406** for 3-1/2" groove

**CP-405** for 4-1/2" groove

## FLAT PLATE COPY HOLDERS

**8-2**—10-1/2" wide x 16" long with four 3/8" T-slots milled from the solid. Complete with two 22-1 Table Dogs as shown above. Shipping Wt. 23 lbs.

**19164** Flat Copy Holder for Gorton P3-2 and 3-S Pantographs; size 16"x 24". No grooves or T-slots. Shipping Wt. Approx. 60 lbs.

**316-1**—Flat Copy Holder for Gorton P1-2 and P2-2 pantographs; size 18"x 24", three 3/8" T-slots and two 22-3 Table Dogs. Shipping Wt. 50 lbs.

**316-2**—Flat Copy Holder for Gorton P2-3 pantograph; size 18"x 24", three 3/8" T-slots and two 22-3 Table Dogs. Shipping Wt. 90 lbs.

## COPY DIAL HOLDER

**1107-1**, for all 10" and 16-1/4" copy dials, as shown on Page 33. Complete as shown with indexing pawl. Approx. Shipping Wt. 22 lbs.

## SERIAL NUMBERING HOLDERS AND COPY STRIPS

**150-3**, complete as shown with 7 copy strips 7/8" wide. Each strip has ten index holes and an indexing plunger on holder engages same. Unless otherwise specified, each strip will be engraved 0 to 9 with GORTON face, 10-1 sunk V-groove numerals 3/4" high. Any other face can be used in the same height provided it does not exceed the width of 10-1 numerals. GORTON condensed inclined Gothic or square Gothic may be used. Extra strips may be obtained at any time with any style numerals engraved thereon. Shipping Wt. 15 lbs.

## Auxiliary Table 209-1

(Not a Copy Holder)

Specify machine model and serial number when ordering this Auxiliary Table.

Ideal for adapting standard machine tables to hold large, flat plates, signs, instrument panels, etc., from 20" wide or less and any length.

Work is quickly adjusted along T-square and clamped. The T-square is adjustable to any part of plate for squaring up work. Fits LARS/GORTON and all other Pantograph machines.

*Dimensions:* Complete as shown, being 18" wide x 24" long, with three 3/8" T-slots milled from the solid, one T-square, two work clamps, and four bolts and nuts. Net weight 85 lbs.; boxed 115 lbs.

*Note:* Sometimes additional clamps are desired for this table, or for use on 8-2 Copy Holder. For one clamp only, as shown with table, complete with T-slot nut, Order **CP743**. Shipping weight 2 lbs. See price list.

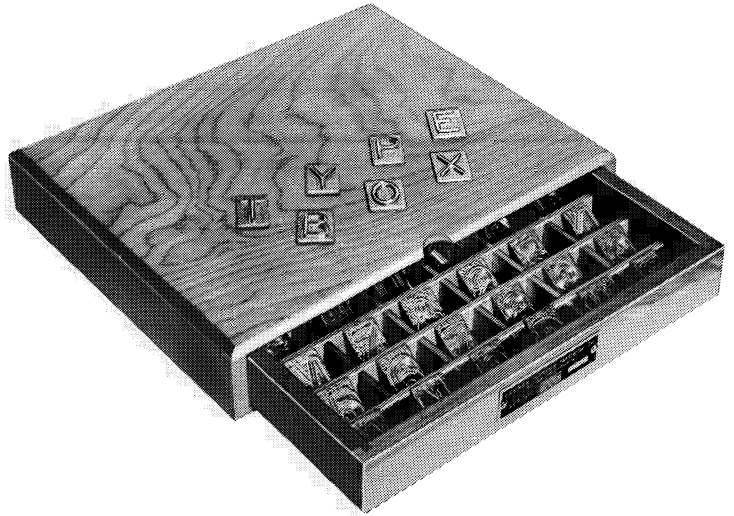
**209-1** For 3-F and 3-U

**209-3** For P1-2

**209-4** For 3-Z, P2-2 and P2-3

# LARS/GORTON Master Copy Type

Convenience — Protection — All Standard Type Sets on standard 1-1/4" bodies are shipped in box as shown. These boxes are fitted with easy sliding drawer with compartments for individual letters, spacers, etc. They can be "stacked" on top of each other in a minimum space with each drawer easily identified by type number metal plate on the front. Box also prevents accidental marring and protects accurately beveled edges. Price of type set includes complete box.



**K-5250** for medium, condensed, and extended 1-1/4" bodies; box only, see price list.

ABCDEFGHIJKLMNOPQRSTUVWXYZ & .,:;"'×-° 1234567890  
abcdefghijklmnopqrstuvwxyz &

## GORTON NORMAL — capitals with matching lower case sets

Our most popular type face — universally accepted as standard — perfect proportions and simplicity make this the most used of all type faces. A minimum of sharp corners for rapid tracing with a smooth stroke . . . most adaptable to many uses.

Gorton lower case is especially designed for use with Gorton Normal Capitals but can also be used with either Gorton Extended or Gorton Condensed. All characters have identical center lines when of the same size. Height is measured from center line to center line on face of character. Matching Sets of Capitals and lower case are paired together as shown in the table. However, any Set listed, either Capitals or lower case, may be purchased singly.

Important - All lower case copy on Pages 24, 25, and 27 is interchangeable with Capitals as indicated by repetition of Cat. No. Sets bearing the same Cat. No. are identical.

Where master copy type is subject to constant use on production work, we recommend the purchase of the brass type Sets, hard chromium plated; or steel type Sets, case hardened. Steel type on bodies larger than 1-1/4" cannot be produced successfully due to warpage in heat treating.

**HARD CHROMIUM PLATED** Brass Master Copy Type Sets, and **STEEL, CASE HARDENED** Master Copy Type Sets are available — write factory for prices. **INDIVIDUAL PIECES** and **SPECIAL MASTERS** also can be furnished — prices quoted on request.

Plain						SUNK V-GROOVE						Reversed					
Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.	Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.	Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.
832-1	Caps	3/8"	1-1/4"	4-A	6 lbs.	835-1	Caps	3/8"	1-1/4"	4-A	6 lbs.	832-1	Lower	3/8"	1-1/4"	5-a	5 lbs.
833-1	Lower	3/8"	1-1/4"	5-a	5 lbs.	836-1	Lower	3/8"	1-1/4"	5-a	5 lbs.	833-1	Caps	3/4"	1-1/4"	4-A	6 lbs.
10-1	Caps	3/4"	1-1/4"	4-A	6 lbs.	70-1	Caps	3/4"	1-1/4"	4-A	6 lbs.	11-1	Lower	3/4"	1-1/4"	5-a	5 lbs.
11-1	Lower	3/4"	1-1/4"	5-a	5 lbs.	77-1	Lower	3/4"	1-1/4"	5-a	5 lbs.	834-1	Caps	1"	1-1/4"	4-A	6 lbs.
834-1	Caps	1"	1-1/4"	4-A	6 lbs.	837-1	Caps	1"	1-1/4"	4-A	6 lbs.	16-1	Caps	1-1/2"	2-1/4"	2-A	9 lbs.
16-1	Caps	1-1/2"	2-1/4"	2-A	9 lbs.	71-1	Caps	1-1/2"	2-1/4"	2-A	9 lbs.	17-1	Lower	1-1/2"	2-1/4"	4-a	8 lbs.
17-1	Lower	1-1/2"	2-1/4"	4-a	8 lbs.	74-1	Lower	1-1/2"	2-1/4"	4-a	8 lbs.	13-1	Caps	3"	3-1/2"	1-A	12 lbs.
13-1	Caps	3"	3-1/2"	1-A	12 lbs.	73-1	Caps	3"	3-1/2"	1-A	12 lbs.	15-1	Caps	3"	4-1/2"	1-A	13 lbs.
15-1	Caps	3"	4-1/2"	1-A	13 lbs.	72-1	Caps	3"	4-1/2"	1-A	13 lbs.	404-1	Lower	3"	4-1/2"	1-a	9 lbs.
404-1	Lower	3"	4-1/2"	1-a	9 lbs.	403-1	Lower	3"	4-1/2"	1-a	9 lbs.						

Plain						SUNK SQUARE BOTTOM GROOVE						Reversed					
Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.	Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.	Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.
543-1	Caps	3/4"	1-1/4"	1-A	5 lbs.	544-1	Caps	3/4"	1-1/4"	1-A	5 lbs.						

Plain						RELIEF						Reversed					
Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.	Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.	Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.
262-1	Caps	3/4"	1-1/4"	1-A	5 lbs.	261-1	Caps	3/4"	1-1/4"	1-A	5 lbs.	262-1	Lower	3/4"	1-1/4"	4-A	10 lbs.
868-1	Lower	3/4"	1-1/4"	4-A	10 lbs.	871-1	Lower	3/4"	1-1/4"	4-A	10 lbs.						

ABCDEFGHIJKLMNOPQRSTUVWXYZ& .,:;" ' x - ° 1234567890

**GORTON CONDENSED – capitals and lower case**

For general engraving. Next to Gorton Normal this type face is most widely used. Can be used in combination with Gorton Extended Capitals, Gorton Normal Capitals or Gorton lower case. The Gorton lower case Sets are listed in the tables below with the matching Gorton Condensed Sets. All characters

have identical center lines when of the same size. Height is measured from center line to center line on face of character. Matching Sets of Capitals and lower case are paired together in the tables below. However, any Set listed, either Capitals or lower case, may be purchased singly.

Plain

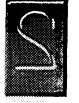
SUNK V-GROOVE

Reversed



Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.
839-1	Caps	3/8"	1-1/4"	4-A	6 lbs.
833-1	Lower	3/8"	1-1/4"	5-a	5 lbs.
12-1	Caps	3/4"	1-1/4"	4-A	6 lbs.
11-1	Lower	3/4"	1-1/4"	5-a	5 lbs.
841-1	Caps	1"	1-1/4"	4-A	6 lbs.
18-1	Caps	1-1/2"	2-1/4"	2-A	9 lbs.
17-1	Lower	1-1/2"	2-1/4"	4-a	8 lbs.
14-1	Caps	3"	3-1/2"	1-A	11 lbs.
874-1	Caps	3"	4-1/2"	1-A	13 lbs.
404-1	Lower	3"	4-1/2"	1-a	9 lbs.

Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.
843-1	Caps	3/8"	1-1/4"	4-A	6 lbs.
836-1	Lower	3/8"	1-1/4"	5-a	5 lbs.
78-1	Caps	3/4"	1-1/4"	4-A	6 lbs.
77-1	Lower	3/4"	1-1/4"	5-a	5 lbs.
845-1	Caps	1"	1-1/4"	4-A	6 lbs.
75-1	Caps	1-1/2"	2-1/4"	2-A	9 lbs.
74-1	Lower	1-1/2"	2-1/4"	4-a	8 lbs.
76-1	Caps	3"	3-1/2"	1-A	11 lbs.
875-1	Caps	3"	4-1/2"	1-A	13 lbs.
403-1	Lower	3"	4-1/2"	1-a	9 lbs.



Plain

RELIEF

Reversed



Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.
264-1	Caps	3/4"	1-1/4"	1-A	5 lbs.
876-1	Caps	3/4"	1-1/4"	4-A	11 lbs.

Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.
263-1	Caps	3/4"	1-1/4"	1-A	5 lbs.
879-1	Caps	3/4"	1-1/4"	4-A	11 lbs.



ABCDEFGHIJKLMNOPQRSTUVWXYZ& .,:;" ' x - ° 1234567890

**EXTRA CONDENSED GOTHIC – capitals only**

This type face is third in popularity, being next to Gorton Condensed. Very narrow but quite legible. Suitable for engraving on the periphery of rollers, discs, numeral wheels, etc.

All characters have identical center lines when of the same size. Height is measured from center line to center line on face of character.

Plain

SUNK V-GROOVE

Reversed



Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.
848-1	Caps	3/8"	1-1/4"	4-A	6 lbs.
91-1	Caps	3/4"	1-1/4"	4-A	6 lbs.
90-1	Caps	1-1/2"	2-1/4"	2-A	7 lbs.
89-1	Caps	3"	4-1/2"	1-A	11 lbs.

Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.
852-1	Caps	3/8"	1-1/4"	4-A	6 lbs.
94-1	Caps	3/4"	1-1/4"	4-A	6 lbs.
93-1	Caps	1-1/2"	2-1/4"	2-A	7 lbs.
92-1	Caps	3"	4-1/2"	1-A	11 lbs.



Plain

RELIEF

Reversed



Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.
97-1	Caps	3/4"	1-1/4"	1-A	5 lbs.

Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.
100-1	Caps	3/4"	1-1/4"	1-A	5 lbs.



ABCDEFGHIJKLMNOPQRSTUVWXYZ& .,:;" ' ?-!\$ 1234567890

**INCLINED GOTHIC – capitals only**

For any use requiring a face similar to Gorton Normal, but inclined. This is inclined 15 degrees. All characters have identical

center lines when of the same size. Height is measured from center line to center line on face of character.

Plain

SUNK V-GROOVE

Reversed



Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.
291-1	Caps	3/4"	1-1/4"	4-A	6 lbs.

Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.
302-1	Caps	3/4"	1-1/4"	4-A	6 lbs.





ABCDEFGHIJKLMNOPQRSTUVWXYZ & .,:;"' x - 9  
1234567890

**GORTON EXTENDED – capitals and lower case**

Same style as Gorton Normal. Suitable for general engraving wherever greater width of character is required, otherwise Gorton Normal is preferable. Gorton lower case, see Page 25, is designed especially for use with Gorton Normal, but may be used with Gorton Extended. Therefore, it is listed here.

All characters have identical center lines when of the same size. Height is measured from center line to center line on face of character. Matching Sets of Capitals and lower case are paired together in the tables below. However, any Set listed, either Capitals or lower case, may be purchased singly.

Plain SUNK V-GROOVE Reversed

Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.		Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.
293-1	Caps	3/4"	1-1/4"	4-A	6 lbs.		305-1	Caps	3/4"	1-1/4"	4-A	6 lbs.
11-1	Lower	3/4"	1-1/4"	5-a	5 lbs.		77-1	Lower	3/4"	1-1/4"	5-a	5 lbs.
292-1	Caps	1-1/2"	2-1/4"	2-A	11 lbs.		304-1	Caps	1-1/2"	2-1/4"	2-A	11 lbs.
17-1	Lower	1-1/2"	2-1/4"	4-a	8 lbs.		74-1	Lower	1-1/2"	2-1/4"	4-a	8 lbs.

Plain RELIEF Reversed

Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.		Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.
319-1	Caps	3/4"	1-1/4"	1-A	6 lbs.		325-1	Caps	3/4"	1-1/4"	1-A	6 lbs.
889-1	Caps	3/4"	2-1/4"	1-A	6 lbs.		893-1	Caps	3/4"	2-1/4"	1-A	6 lbs.
398-1	Lower	3/4"	2-1/4"	1-a	5 lbs.		399-1	Lower	3/4"	2-1/4"	1-a	5 lbs.

1/16 1/8 3/16 1/4 5/16 3/8 7/16 1/2 9/16 5/8 11/16 3/4 13/16 7/8 15/16

**GORTON FRACTIONS – sixteenths**

Specially designed for use with Gorton Normal but can be used with any of the Gorton faces. All characters have identical center lines when of the same size. Height is measured from

the top center line on the face of the upper characters to the bottom center line on the face of the lower characters.

Plain SUNK V-GROOVE Reversed

Cat. No.	Type Size	Body Size	Set Size	Ship. Wt.		Cat. No.	Type Size	Body Size	Set Size	Ship. Wt.
860-1	3/8"	1-1/4"	1 ea.	4 lbs.		862-1	3/8"	1-1/4"	1 ea.	4 lbs.
458-1	3/4"	1-1/4"	1 ea.	4 lbs.		497-1	3/4"	1-1/4"	1 ea.	4 lbs.

1/32 3/32 5/32 7/32 9/32 11/32 13/32 15/32 17/32 19/32 21/32 23/32  
25/32 27/32 29/32 31/32

**GORTON FRACTIONS – thirty-seconds**

Plain SUNK V-GROOVE Reversed

Cat. No.	Type Size	Body Size	Set Size	Ship. Wt.		Cat. No.	Type Size	Body Size	Set Size	Ship. Wt.
864-1	3/8"	1-1/4"	1 ea.	4 lbs.		866-1	3/8"	1-1/4"	1 ea.	4 lbs.
457-1	3/4"	1-1/4"	1 ea.	4 lbs.		496-1	3/4"	1-1/4"	1 ea.	4 lbs.

*A B C D E F G H I J K L M N O P Q R S T U V W X Y Z*  
*a b c d e f g h i j k l m n o p q r s t u v w x y z*      1 2 3 4 5 6 7 8 9 0

**SCRIPT – capitals and lower case**

For use wherever the suggestion of handwriting is required, as engraving monograms, initials, signatures, inscribing gifts, etc. The Sets listed in the following table consist of 26 Capitals, 26 lower case, 10 numerals, total 62 pieces. All characters have

identical center lines when of same size. Height is measured from center line to center line on face of character. The capitals or lower case may be ordered separately if desired. Prices on request.

Plain	SUNK V-GROOVE						Reversed
2	Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.	S
	412-1	C & L	1"	2-1/4"	1-A-a	10 lbs.	Not normally stocked. Will be furnished on special order only. Prices on request.
	413-1	C & L	2"	3-1/2"	1-A-a	24 lbs.	

**A B C D E F G H I J K L M N O P Q R S T U V W X Y Z & . , 1 2 3 4 5 6 7 8 9 0**  
*a b c d e f g h i j k l m n o p q r s t u v w x y z*

**CENTURY – capitals and lower case**

Designed for any use requiring type with serifs similar to average printer's type. While the capitals may be used alone as illustrated, the lower case requires the use of capitals. All characters have identical center lines when of the same size.

Height is measured overall on face of character. Matching Sets of Capitals and lower case are paired together in the tables below. However, any Set listed, either Capitals or lower case, may be purchased singly.

Plain	SUNK SQUARE BOTTOM GROOVE						Reversed
2	Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.	S
	297-1	Caps	3/4"	1-1/4"	1-A	5 lbs.	311-1 Caps 3/4" 1-1/4" 1-A 5 lbs.
	299-1	Lower	3/4"	1-1/4"	1-a	5 lbs.	
	296-2	Caps	1-1/2"	2-1/4"	1-A	10 lbs.	310-2 Caps 1-1/2" 2-1/4" 1-A 10 lbs.
	298-2	Lower	1-1/2"	2-1/4"	1-a	9 lbs.	

Plain	RELIEF						Reversed
2	Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.	S
	322-1	Caps	3/4"	1-1/4"	1-A	6 lbs.	328-1 Caps 3/4" 1-1/4" 1-A 6 lbs.
	356-1	Lower	3/4"	1-1/4"	1-a	5 lbs.	
							359-1 Lower 3/4" 1-1/4" 1-a 5 lbs.

**A B C D E F G H I J K L M N O P Q R S T U V W X Y Z &**  
**. - 1 2 3 4 5 6 7 8 9 0**

**ENGRAVERS' OLD ENGLISH – capitals only**

Useful for monograms and initials, especially on jewelry dies for rings, pins, bracelets, etc. All characters have identical

center lines when of the same size. Height is measured overall on face of character.

Plain	SUNK SQUARE BOTTOM GROOVE						Reversed
2	Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.	S
	460-1	Caps	3/4"	1-1/4"	1-A	5 lbs.	463-1 Caps 3/4" 1-1/4" 1-A 5 lbs.
	461-1	Caps	1-1/2"	2-1/4"	1-A	7 lbs.	
							464-1 Caps 1-1/2" 2-1/4" 1-A 7 lbs.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z &  
 \$ % x + - ? ! ( ) . , ; ' ' 1 2 3 4 5 6 7 8 9 0  
 a b c d e f g h i j k l m n o p q r s t u v w x y z

**MODERNE — capitals and lower case**

A modern face of strong, clean design. Possesses extreme legibility. Easy to trace on the Pantograph Machine. Capitals may be used alone, but the lower case requires the use of Capitals. All characters have identical center lines when of the same

size. Height is measured from center line to center line on face of character. Matching Sets of Capitals and lower case are paired together in the tables below. However, any Set listed, either Capitals or lower case, may be purchased singly.

Plain

SUNK V-GROOVE

Reversed



Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.
910-1	Caps	3/4"	1-1/4"	4-A	6 lbs.
911-1	Lower	3/4"	1-1/4"	5-a	5 lbs.
915-1	Caps	3"	4-1/2"	1-A	13 lbs.
916-1	Lower	3"	4-1/2"	1-a	9 lbs.

Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.
921-1	Caps	3/4"	1-1/4"	4-A	6 lbs.
922-1	Lower	3/4"	1-1/4"	5-a	5 lbs.
926-1	Caps	3"	4-1/2"	1-A	13 lbs.
927-1	Lower	3"	4-1/2"	1-a	9 lbs.



A B C D E F G H I J K L M N O P Q R S T U V W X Y Z . , \$ % x + - ? ! ' ' 1 2 3 4 5 6 7 8 9 0

**HIMALAYA — capitals only**

Engrave much in a little space with a modern touch. Himalaya has ample strength and grace to stand alone or to be used with other faces. All characters have identical center lines when of

the same size. Height is measured from center line to center line on face of character.

Plain

SUNK V-GROOVE

Reversed



Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.
959-1	Caps	3/4"	1-1/4"	4-A	6 lbs.
962-1	Caps	3"	4-1/2"	1-A	11 lbs.

Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.
964-1	Caps	3/4"	1-1/4"	4-A	6 lbs.
967-1	Caps	3"	4-1/2"	1-A	11 lbs.



A B C D E F G H I J K L M N O P Q R S T U V W X Y Z &  
 \$ % x + - ! ( ) ? . , ; ' ' 1 2 3 4 5 6 7 8 9 0  
 a b c d e f g h i j k l m n o p q r s t u v w x y z

**MODERNE CURSIVE — capitals with matching lower case sets**

A beautiful Cursive face. Useful wherever the effect of script is desired. The Capitals cannot be used alone, therefore the Sets contain both Capitals and lower case. The Moderne Cursive

lower case also matches the Moderne Italic. All characters have identical center lines when of the same size. Height is measured from center line to center line on face of character.

Plain

SUNK V-GROOVE

Reversed



Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.
951-1	C & L	3/4"	1-1/4"	2-A/5-a	7 lbs.
952-1	C & L	1-1/2"	2-1/4"	1-A/4-a	11 lbs.
953-1	C & L	3"	4-1/2"	1-A/1-a	19 lbs.

Cat. No.	Case	Type Size	Body Size	Set Size	Ship. Wt.
955-1	C & L	3/4"	1-1/4"	2-A/5-a	7 lbs.
956-1	C & L	1-1/2"	2-1/4"	1-A/4-a	11 lbs.
957-1	C & L	3"	4-1/2"	1-A/1-a	19 lbs.



**SPECIAL TYPE FACES — made to order**

While the Standard Type Faces listed on the preceding pages will be found satisfactory for the majority of general marking, etc., the above list of Special Faces enlarges the selection of styles available. The type styles shown on this page are not carried in stock but can be supplied quickly on order. Following each specimen plate is noted the form, or forms, and maximum size of that particular face. Prices will be quoted promptly on request.

ABCDEFGHIJKLMN**OP**QRST  
UVWXYZ& .,:;' - 1234  
567890

**ANTIQUÉ TYPEWRITER.** Available in Cat. No. 108-1, Sunk V-Groove; No. 119-1 Sunk Square Bottom Groove; and No. 120-1 Relief — Plain; and Reversed. Maximum Size: 3".

ABGDEFGHIJKLMN**OP**QRS  
TUVWXYZ .. 1234567890

**SPENCER.** Cat. No. 142-1, Sunk V-Groove — Plain; and Reversed. Maximum Size: 3".

ABCDEFGHIJKLMN  
OPQRSTUVWXYZ&  
Œ Æ ? - ! \$ .,:;' 1234  
567890

**WEDDING GOTHIC.** Cat. No. 134-1, Sunk V-Groove — Plain; and Reversed. Maximum Size: 3".

ABCDEFGHIJKLMN**OP**QRSTUVWXYZ&  
.,1234567890

**GOTHIC.** Cat. No. 87-1, Relief — Plain; and Reversed. Maximum Size 3".

ABCDEFGHIJKLMN**OP**QRST  
UVWXYZ& .. - 1234  
567890

**SQUARE GOTHIC.** Cat. No. 285-1, Sunk V-Groove — Plain; and Reversed. Maximum Size: 3".

ABCDEFGHIJKLMN**OP**  
RSTUVWXYZ& .,1234  
567890

**CHAMFER GOTHIC EXTENDED.** Cat. No. 168-2, Sunk Square Bottom Groove — Plain; and Reversed. Maximum Size: 3".

ABCDEFGHIJKLMN**OP**QRS  
TUVWXYZ& ., 1234  
567890

**CHAMFER GOTHIC.** Cat. No. 139-2, Sunk Square Bottom Groove — Plain; and Reversed. Maximum Size: 3".

ABCDEFGHIJKLMN**OP**QRST  
UVWXYZ& 1234567890

**CHAMFER GOTHIC.** Cat. No. 149-1, Sunk Square Bottom Groove — Plain; and Reversed. Maximum Size: 3".

ABCDEFGHIJKLMN**OP**  
RSTUVWXYZ .,1234  
567890

**CHAMFER GOTHIC CONDENSED.** Cat. No. 167-2, Sunk Square Bottom Groove — Plain; and Reversed. Maximum Size: 3".

ABCDEFGHIJKLMN**OP**  
RSTUVWXYZ& 1234  
567890

**CHAMFER GOTHIC.** Cat. No. 169-1, Sunk Square Bottom Groove — Plain; and Reversed. Maximum Size: 3".

ABCDEFGHIJKLMN**OP**  
RSTUVWXYZ& - ! 1234  
567890

**GOTHIC.** Cat. No. 182-1, Sunk Square Bottom Groove — Plain; and Reversed. Maximum Size: 3".

ABCDEFGHIJKLMN**OP**  
RSTUVWXYZ& ' - .1234  
567890

**\*STENCIL GOTHIC.** Cat. No. 132-1, Sunk Square Bottom Groove — Plain; and Reversed. Maximum Size: 3".

ABCDEFGHIJKLMN**OP**  
QRSTUVWXYZ& ., 1234  
567890

**ROMAN LEAD PATTERN.** Available in Cat. No. 107-1, Sunk Square Bottom Groove; and No. 110-1 Relief — Plain; and Reversed. Maximum Size: 3".

ABCDEFGHIJK  
LMNOPQRSTU  
VWXYZ

**ROMAN EXTENDED.** Cat. No. 165-1, Sunk Square Bottom Groove — Plain; and Reversed. Maximum Size: 3".

ABCDEFGHIJKLMN**OP**  
QRSTUVWXYZ

**ROMAN.** Cat. No. 166-1, Sunk Square Bottom Groove — Plain; and Reversed. Maximum Size: 3".

ABCDEFGHIJKLMN**OP**QRST  
UVWXYZ& 1234567890

**HELVETICA MEDIUM.** Cat. No. 2022-1 for Caps, Sunk V-Groove — Plain; and Reversed. Maximum Size: 3".

abcdefghijklmnopqrstuvwxy

**HELVETICA MEDIUM.** Cat. No. 2023-1 for Lower Case, Sunk V-Groove — Plain, and Reversed. Maximum Size: 3".

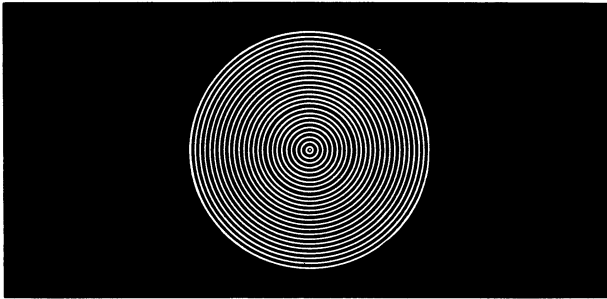
\*Also available are Stencil Copy Sets in Sunk V-Groove, similar to 10-1, 12-1 and 91-1.

When requesting information or ordering, PLEASE STATE: Style, Catalog No., Type and Body Size — Plain or Reversed and Set Size.



# LARS/GORTON Signs, Symbols and Miscellaneous Copy, Engravers Brass, Strips and Sheets

The signs, symbols, and miscellaneous copy illustrated below are stocked only in sizes, and on bodies, as listed. Other sizes can be furnished to special order, on any of the standard strips, dials, sheets, or beveled bodies.



## GRADUATED CIRCLES

**8481.** Outside circle 6" diameter; inside circle 1/4" diameter. Intermediate circles 1/16" apart. Sunk V-Groove. On 7" square sheet brass 1/16" thick. For cutting true radii on letters and designs without the use of a circular table.

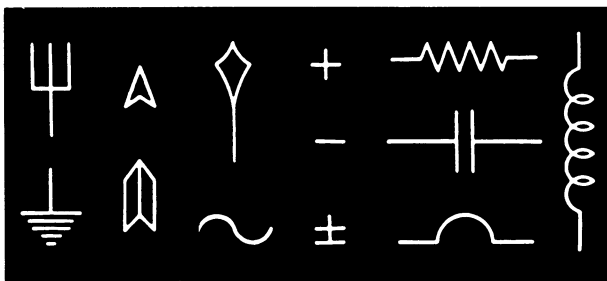


## 3-LINE MONOGRAM COPY

Sunk V-Groove—Plain only. This copy type is ideally suited for engraving initials on gifts such as compacts, lighters, etc. One set consists of 26 capitals only.

**1127-1,** 3/4" on 1-1/4" bodies. Shipping weight 2 lbs. Extra characters, see price list.

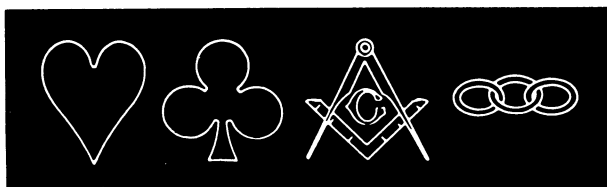
**1128-1,** 1-1/2" on 2-1/4" bodies. Shipping weight 7 lbs. Extra characters, see price list.



## ELECTRICAL SYMBOLS

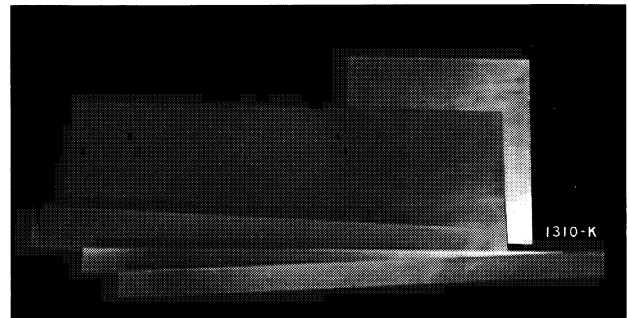
**977-1.** 3/4", Sunk V-Groove—Plain. Each of the symbols is engraved on its individual 1-1/4" beveled body. Height is measured from center line to center line on face of character. Shipping weight 4 lbs.

Any symbol shown above, see price list.



## STANDARD DESIGNS

We can furnish masters for many similar designs and emblems—write factory for prices.



## ENGRAVERS' BRASS — BEVELED STRIPS

These strips are 24" long, with squared ends, and each edge beveled 20 degrees to fit our standard Typeholders. Widths given are overall and are held within .001". Ends are sawed and bevels planed smooth.

Cat. No.	Width	Thickness
14580	1-1/4"	1/16"
14581	1-1/4"	1/8"
14582	2-1/4"	1/16"
14583	2-1/4"	1/8"
14584	3-1/2"	1/16"
14585	3-1/2"	1/8"
14586	4-1/2"	1/16"
14587	4-1/2"	1/8"

## ENGRAVERS' BRASS — SQUARE SHEETS

These sheets are sawed square to within minus 1/32" of square size given.

Cat. No.	Square Size	Thickness
K-3384	16-3/8"	1/10"
K-3385	16-3/8"	3/16"
K-3386	10-1/4"	.080"

## ENGRAVERS' BRASS — PLAIN STRIPS

Strips are all 24" long.

Cat. No.	1/32" Thick		1/16" Thick		1/8" Thick	
	Width	Cat. No.	Width	Cat. No.	Width	Cat. No.
K-3360	8"	K-3364	1-5/16"	K-3379	1-5/16"	
		K-3365	2-5/16"	K-3380	2-5/16"	
		K-3366	3-9/16"	K-3381	3-9/16"	
		K-3367	4-9/16"	K-3382	4-9/16"	
		K-3368	8"			
		K-3370	8"	K-3383	8"	
		K-3373	12"			

# LARS/GORTON Master Copy Dials

Unless otherwise specified, each index notch will be located in line with the center of each character or group of characters, as can be seen on dials shown. Copy dials can be supplied with any desired number of indexing notches; write factory for prices.

**38-1. GORTON NORMAL FACE.** 3/4", Sunk V-Groove — Plain. Height is measured from center line to center line on face of character. One 10" dial, fitting Dial Holder 1107-1, complete with center stud. Shipping Wt. 4 lbs.

**69-1.** Same as No. 38-1 except characters are reversed.

**406-1. GORTON CONDENSED FACE.** 3/4", Sunk V-Groove — Plain. Same as 38-1 except for style of face. Height is measured from center line to center line on face of character. One 10" dial, fitting Dial Holder 1107-1, complete with center stud. Shipping Wt. 4 lbs.

**600-1. EXTRA CONDENSED GOTHIC FACE.** 3/4", Sunk V-Groove — Plain. Same as 38-1 except for style of face. Height is measured from center line to center line on face of character. One 10" dial, fitting Dial Holder 1107-1, complete with center stud. Shipping Wt. 4 lbs.

**968-1.** Used for engraving micrometer dials and similar work. **GORTON CONDENSED FACE Numerals.** 1/2" Sunk V-Groove — Plain. Height is measured from center line to center line on face of character. One 10" dial with numbers on both sides, as illustrated, fitting Dial Holder 1107-1, complete with center stud. Shipping Wt. 4 lbs.

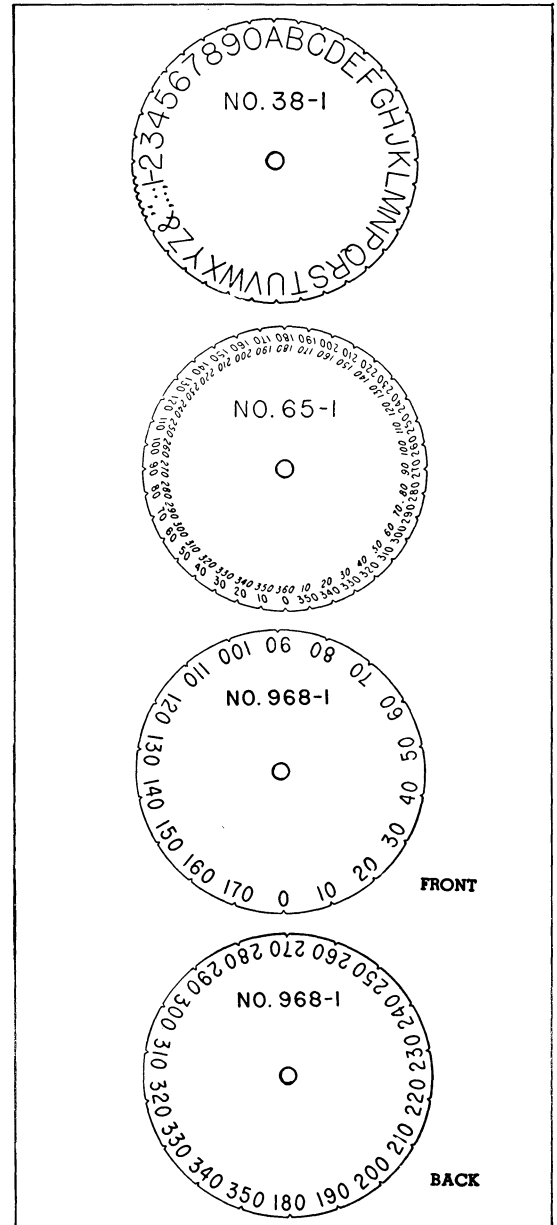
**65-1.** Used for transit limbs and similar instrument work. Numerals only. 1/4", Sunk V-Groove — Plain. Height is measured from center line to center line on face of character. One 10" dial, fitting Dial Holder 1107-1, complete with center stud. Shipping Wt. 4 lbs.

**DIAL SIZES:** Our standard size copy dial is 10" diameter x 5/64" thick and fits Dial Holder 1107-1. See Page 23.

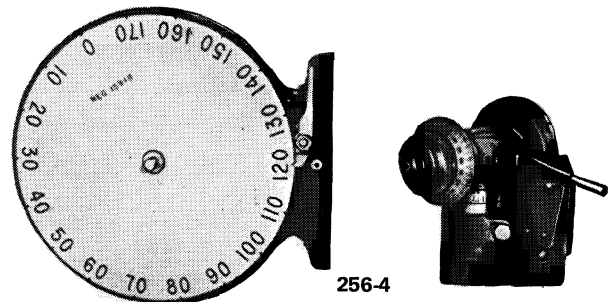
**STANDARD AND SPECIAL DIALS.** Standard dials are engraved with the Standard Type Faces as shown and are carried in stock. Special dials are made with any special characters, numbers, trade marks, or designs required. We have every facility for producing special dials promptly and economically and will be glad to quote on your requirements.

All above copy dials are available with characters in reverse at a slight additional cost. When ordering dials with reverse characters use number and name and add **"NOTE: characters to be in reverse."**

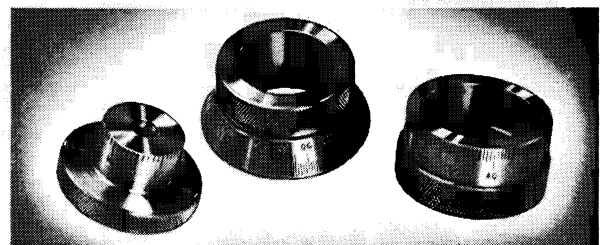
**INDEXING WORK HOLDERS.** For engraving dials, cylinders, and other similar parts, you will need a cylindrical indexing work holder. See Page 35.



All dials shown on this page are standard — carried in stock.



Copy dial with 1107-1 holder & cyl. indexing work holder.



Three samples of work produced on above equipment.

# LARS/GORTON Indexing Work Holder and Chuck

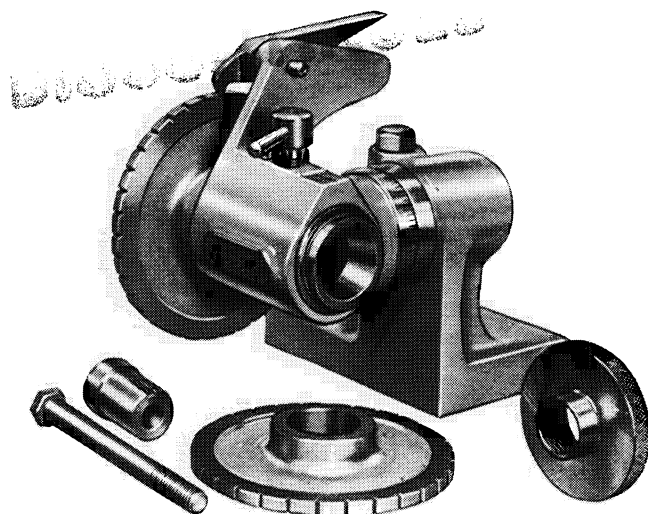
## INDEXING WORK HOLDER

(Collets not included with holder.)

**256-4** for all LARS/GORTON, or other make, Pantograph and Milling Machines. This holder will hold and index for milling or engraving numeral wheels, roll stamps, beveled dials, collars, rings, etc., 1/4" to 6" diameter and any width of face. Work is mounted on simple fitting and held on nose of hollow spindle with drawbar and adapter furnished. Knurled nut is also furnished for use with 1150-1 collets. (See Page 15.) This holder has swivel joint as shown, graduated to 90 degrees, allowing work spindle to swivel and be clamped in any position from vertical to horizontal.

Complete as shown with 4" diameter index dial having 10 notches, unless otherwise ordered. Index dials can be furnished from stock with any desired number of notches, from 1 to 15, at no extra charge. Be sure to specify exact number of notches required. Dials are quickly changed by removing nut. Base has two 3/8" holes for hold-down bolts.

Spindle is hardened and ground and provided with quick clamping lever and indexing pawl as shown. Net weight 11 lbs., boxed 18 lbs.



256-4

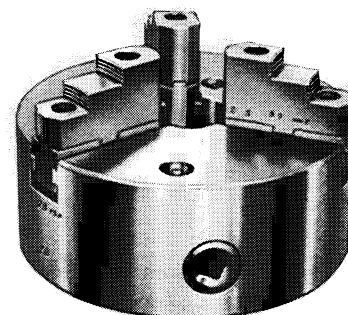
## EXTRA DIALS

Index dials available up to and including 360 notches. For dial prices, see price list under 256-4.

**1216-2**, Three-Jaw Chuck with adapter for use with the 256-4 Indexing Work Holder described above. Capacity 0" to 2-7/8" dia., shipping weight 5 lbs.

## 3 JAW CHUCK

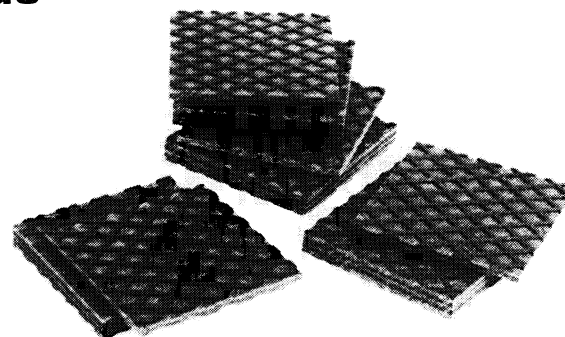
**CHUCK 1022-1**. Ideal for use with 10", 12", and 15" rotary tables. This 8" diameter steel body Universal chuck is easily fastened to the tables with a special centering plug and four bolts furnished with chuck. Three reversible jaws, each with four chucking surfaces, have a maximum capacity of 8-1/4" diameter and a minimum of 5/8". Height of jaws, top to bottom 2-7/16", top to face of chuck 1-7/16". Hole for long stock, 1-3/4" diameter. This chuck is adapted to production and manufacturing work as well as die and stamp cutting on round work and bar stock. Weight boxed 39 lbs.



1022-1

## Vibration Pads

Provide an economical and easy solution to the problems of transmitted vibration and noise. A set of vibration pads consist of 2 pads for each corner of the machine. One 3/16" thick and one 9/16" thick or a total of 4 each 3/16" and 4 each 9/16" pads. If leveling is required a single one piece shim is inserted between the 3/16" and 9/16" vibration pads.



**K-20201**. Set of 4 each (3/16") and 4 each (9/16") vibration pads.



# LARS/GORTON Safe-T-Slot Nut Sets

- 1 *Faster set-ups* because nuts need not be removed from T-slots . . . studs are changed only for work of different heights.
  - 2 *Safety for accurately finished jobs and die-block surfaces*, with smooth, carefully cornered hold-down straps furnished.
  - 3 *Saves you money* because it is unnecessary to purchase assorted length T-slot bolts; you use inexpensive studs only — length adjustable.
  - 4 *Safety for costly precision machines* because long surface on nuts makes it impossible to score or gouge inside of T-slots or permanently distort table tops which frequently happens when old style bolts are pulled too tight.
- Tongues — Rust-resisting finish . . . carefully gauged to size . . . case-hardened straps, washers and hex nuts.

## COMPLETE SETS OF T-SLOT NUTS, STUDS, STRAPS

Each Set consists of 4 T-slot Nuts and 4 Studs (in sizes and lengths listed below), 16 in all; also 4 case-hardened, smooth-finished Straps, 4 Hex Nuts and Washers — complete with Stand.

Set No.	T-Slot Size	Stud Length	Shipping Weight
689-1	3/8"	2"; 3"; 4"; 5"	6 lbs.
1269-1	7/16"	3"; 4"; 5"; 6"	9 lbs.
688-1	1/2"	3"; 4"; 5"; 6"	10 lbs.
796-1	5/8"	3"; 4"; 5"; 6"	12 lbs.
1154-1	11/16"	4"; 5"; 6"; 7"	15 lbs.

## T-SLOT NUTS

Cat. No.	A	B	C	D	E
12597	23/64" for 3/8" Slots	1-1/2"	9/16"	7/32"	5/8"
21996	27/64" for 7/16" Slots	1-1/4"	1/2"	7/32"	3/4"
11897	31/64" for 1/2" Slots	1-3/4"	3/4"	15/64"	7/8"
12617	39/64" for 5/8" Slots	2"	1"	3/8"	1-1/8"
17169	43/64" for 11/16" Slots	2"	1"	7/16"	1-1/8"

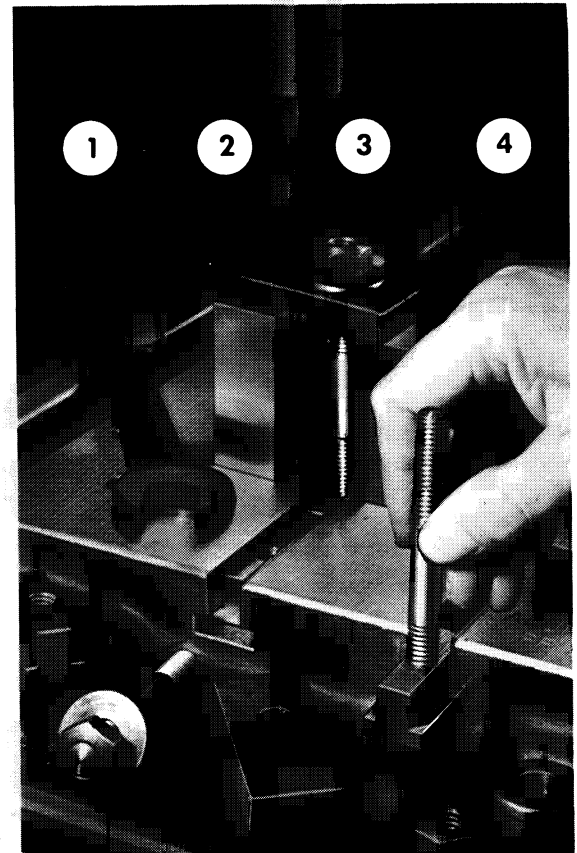
## STRAPS

Cat. No.	F	G	H	Hole Size
12602	2-1/4"	1"	3/8"	5/16" Stud
11902	2-1/2"	1-1/4"	1/2"	3/8" or 7/16" Stud
12622	2-1/2"	1-1/4"	1/2"	1/2" Stud
17174	3"	1-1/2"	5/8"	5/8" Stud

## STUDS

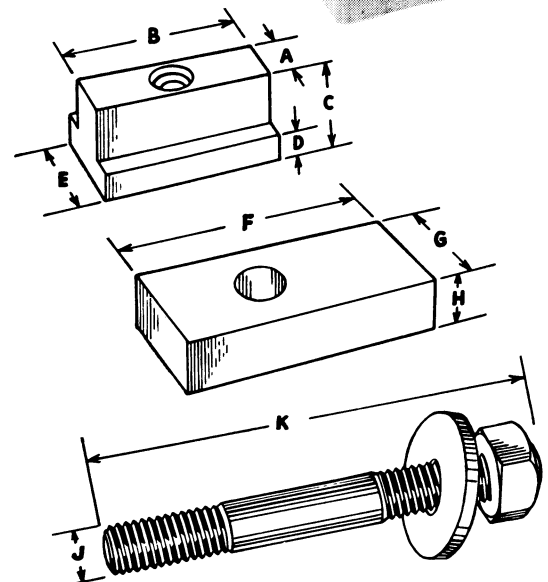
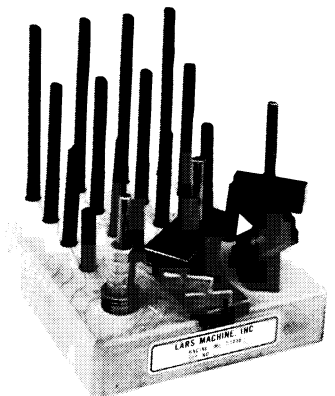
Cat. No.	J	K	Cat. No.	J	K
12598	5/16"	2"	11900	7/16"	5"
12599		3"	11901	1/2"	6"
12600		4"	12618		4"
12601		5"	12619	5"	
22000	3/8"	3"	12620	5/8"	5"
21997		4"	12621		6"
21998		5"	17170		4"
21999	7/16"	6"	17171	5/8"	5"
11898		3"	17172		6"
11899		4"	17173		7"

Hex nut and washer not supplied with above studs. Order them separately.



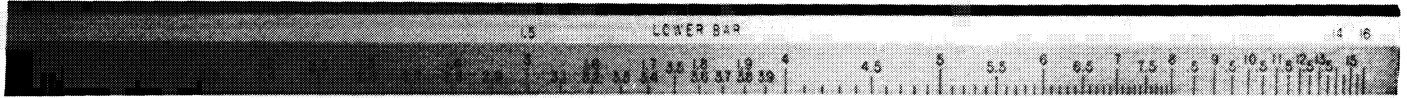
## HANDY STAND

Block & pins furnished with each set to hold parts upright, properly in place, like this —

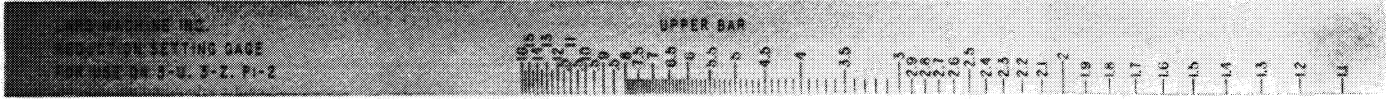


# LARS/GORTON Engraving Scales and Charts

FRONT



BACK

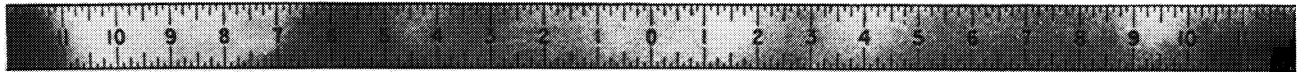


**1436-1.** This gage is a time-saving convenience when setting reduction ratios other than those calibrated on LARS/Gorton Pantograph bars. Designed exclusively for use with LARS/Gorton 3-U, P1-2, 3-Z, and P2-2 Pantomills. There are 84 accurately cut graduations (work is done on a Sip Linear Graduating Machine with guaranteed accuracy of not to exceed .0004" total accumulated error in 40 inches). Scale is

9" long.

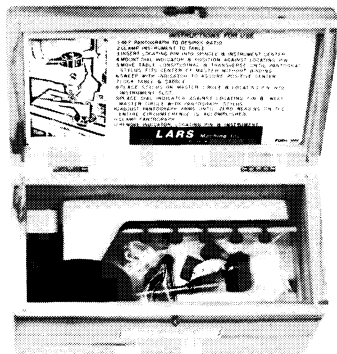
In use, this scale is laid on top of the Pantograph bars with the "O" end at the "2" graduation mark on the pantograph bar. Each edge is beveled so that graduations can easily be matched with the index line on the adjustable slider blocks. Scale is of high quality steel and comes in protective case.

## PANTOGRAPH COPY SPACING SCALE



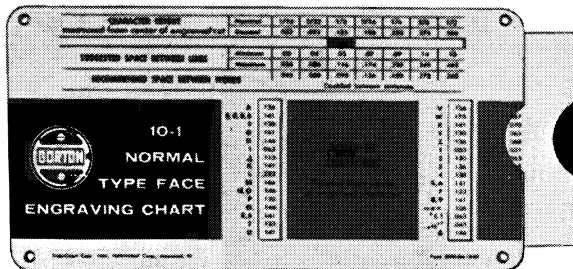
**1485-1.** This handy scale is easily centered in the copy-holder and provides an exact guide for the accurate spacing of copy. It eliminates guesswork and assures quick correct copy placement. Once the copy is properly positioned, the

required ratio setting for reduction can be quickly determined from the scale. For easy reading the top and bottom edges of the scale are graduated. The scale has a satin chrome finish that resists normal wear and assures lifelong accuracy.



## RAPID CIRCLE-SETTING GAGE

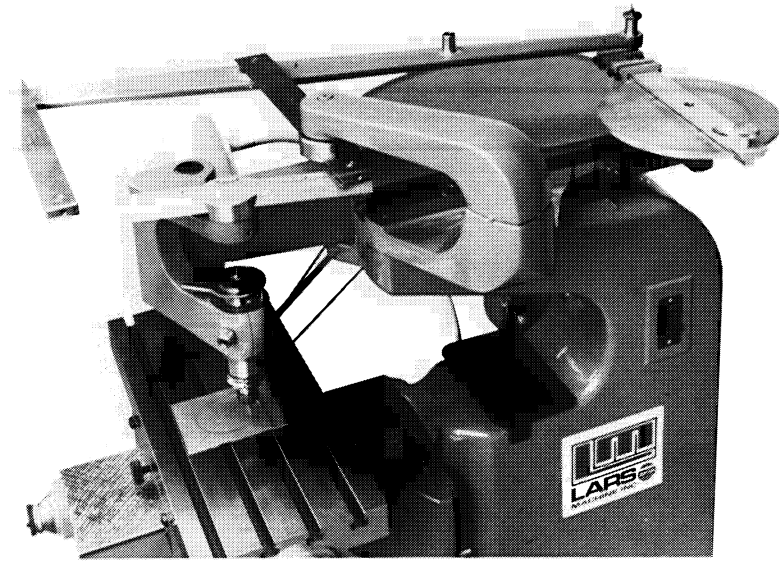
**1460-1.** Here is an instrument that introduces a new high in pantograph accuracy. When tracing a circle master, this gage will quickly pinpoint the setting of the pantograph bars for the most accurate reproduction. It eliminates all trial and error as well as the need for distorted masters. For those intermediate ratio settings difficult to check by eye, this unit is a real time saver. It is ideal for high accuracy reproductions of O.D. and I.D. circles and is designed for use with LARS/Gorton P1-2 and P2-2 Pantographs as well as other makes. Dovetail slide is machined to accept Lufkin Series V32, B&S Series 599 and Federal Series L indicators.



## COPY-TYPE ENGRAVING CHART

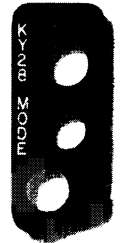
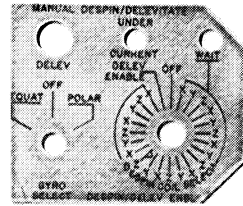
**K-7689.** This slide chart is a speedy helper in predetermining overall space requirements for a given engraving based on using the popular Gorton Normal 10-1 Copy. On the front side (shown above) are tables for character height, suggested space between lines, recommended space between words and average width of characters. Continuing on the reverse side is engraving information indicating width of character cut, depth of character cut, angle of cut and width of flat. This time saver is of convenient shirt pocket size.

# LARS/GORTON Profile Master Maker

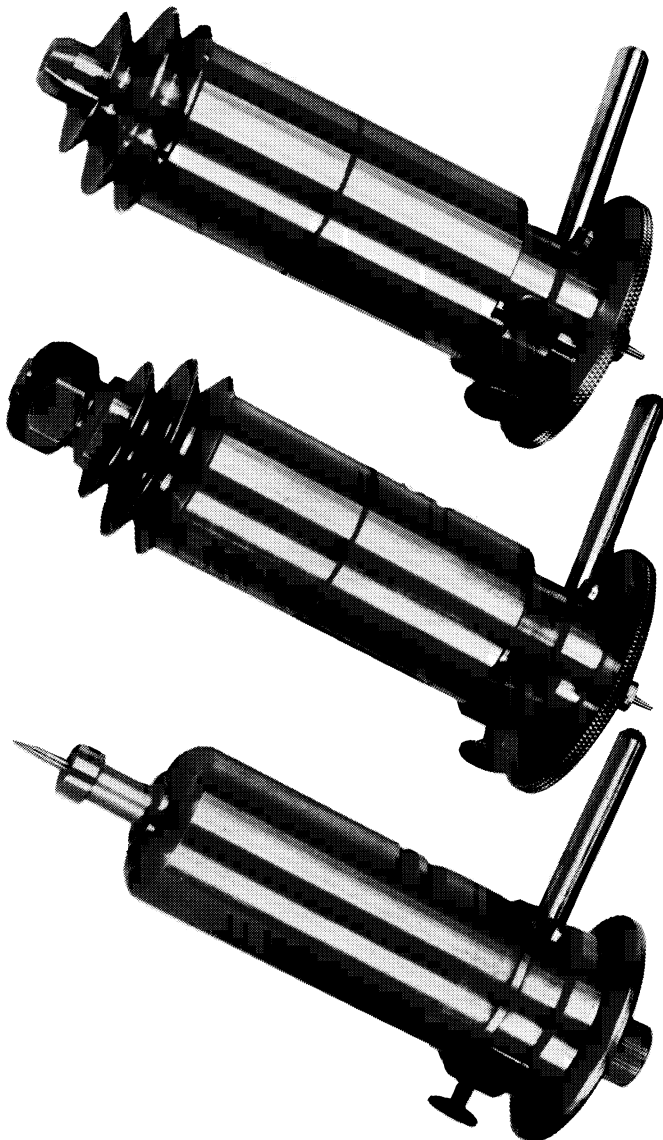


Circles: Inside or outside diameters, any size up to 14" diameter — accurate setting with vernier scale.  
 Radius: Any radius up to 7" with adjustable stops for accurate control in degrees.  
 Angles: Cut angles to 1/2% degree.

The Profile Master will perform many operations and save time on small jobs and patterns for long run jobs. K-20203. Profile Master (includes Gorton letter holder). Will operate on any pantograph engraving machine or profile milling machine.



## LARS/GORTON P1-2 - P1-3 - 3F - 3U Spindles



**1521-1 Taper Shank Spindle.** LARS/Gorton Taper Shank Spindle designed for Gorton Taper Shank Cutters and Midget Chucks (21-1 - 21-2). 1/4" of fast feed and 1/16" of slow feed for penetration into work. Complete with feed works and former pin as shown in photo at left.

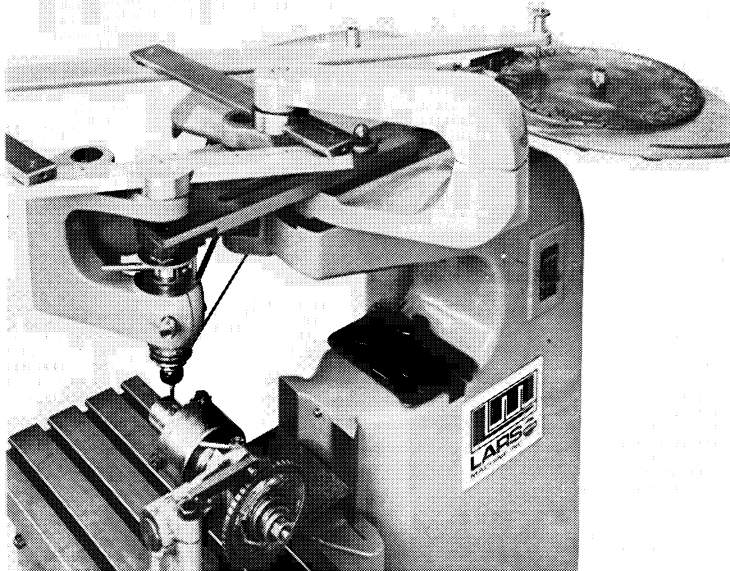
**1522-1 Collet Type Spindle.** LARS/Gorton precision panto collet cutter spindle assembly designed especially for up to 5/16" dia. straight shank cutters and end mills and #21-5 and #21-6 Midget Chucks by using the #1169-1 panto collet set or any of the individual collets from this set. Has same feed as 1521-1 spindle assembly. Complete as shown in photo at left.

**1522-2 Collet Type Spindle.** Same as above except to be used on Model P1-3 Three Dimensional Pantomill.

**2016-1 Impression Spindle.** LARS/Gorton impression spindle is ideal for marking hardened parts and uneven surfaces. Also can be used for scribing through wax coating on steel or glass in preparation for acid etching and also for layout work for scribing on any surface through layout ink or dye. Spindle feed mechanism is the same as described on standard spindles shown above. Adjustable spring tension is provided to cover wide range of material to be scribed. Will accept 1/8" diameter tools only. Complete as shown in photo at left.

# LARS/GORTON Forming Guides

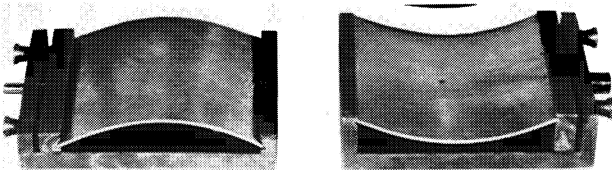
Engrave or Profile on curved angular surfaces having a uniform curvature using flat master copy type, copy dial, or a flat master.



## FORMING GUIDE BLANKS

To be machined by customer to required shape. Square tool steel block drilled and tapped for attachment to forming guide holder on LARS/Gorton P1-2, 3-U, 3-Z or P2-2 Pantographs. **6442** blank only, requiring machining by user.

## ADJUSTABLE FORMING GUIDES



For all LARS/Gorton Pantograph Machines . . . The spring steel plate is curved to any radius, either concave or convex, by means of adjusting screws . . . case hardened body . . . hardened screws 3" long x 2" wide x 3/4" thick. Radii from 1-5/8" to a flat surface are possible with **556-1** and **557-1** below; radii from 4" to a flat surface are obtained with **696-1** below.

**556-1.** Convex Guide 1/2" thick to make use of full vertical spindle movement. Complete with 5 extra plates.

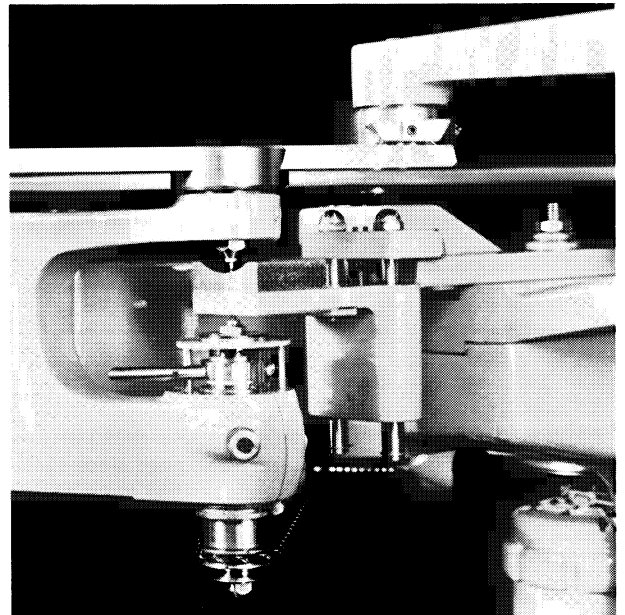
**557-1.** Concave guide 3/4" thick to make full use of vertical spindle movement. Complete with 5 extra plates.

**8410.** Extra Plates for **556-1** or **557-1** available.

**696-1.** One Guide same as **557-1** above except larger, 4 5/8" long x 2 1/2" wide x 1/2" thick.

**9042.** Extra Plates for **696-1**.

## FREE FLOATING FORMING GUIDE



**1245-3.** Floating Forming Guide literally floats, and facilitates working angles up to 60°. Side strain on the cutter spindle is reduced. Floating member imparts only vertical motion to spindle — providing sensitivity and accuracy. Works well on convex and concave surfaces.

For P1-2 Pantograph

Ratio Range 1:1 to 8:1.

# LARS/GORTON Depth Control Attachments

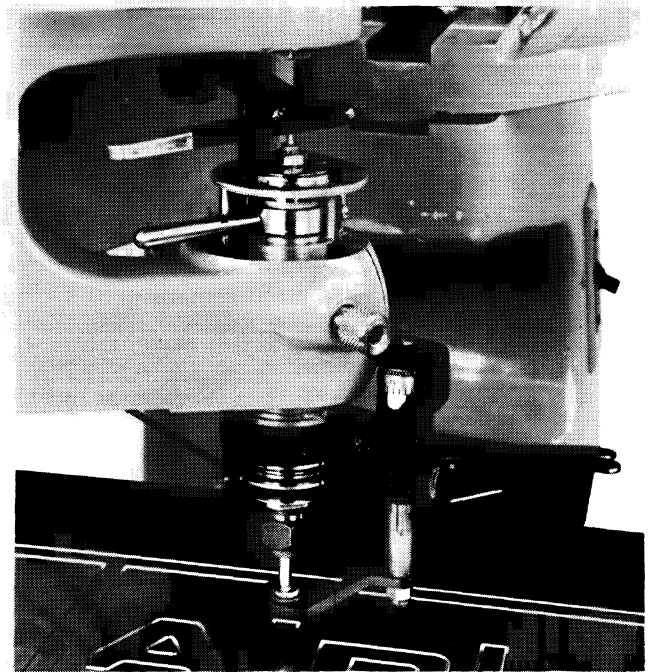
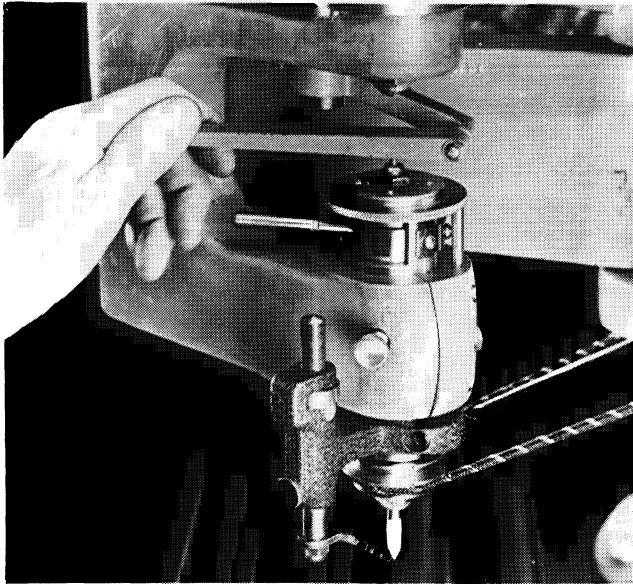
## UNI-BALL DEPTH REGULATOR

Designed for applications requiring uniform depth of cut on irregular surfaces. Depth regulator has micrometer adjustment for accurate depth control.

1243-1. Uni-Ball Model for P1-2

1243-2. For 3-U

1284-1. Uni-Ball Model for P2-2 or 3Z

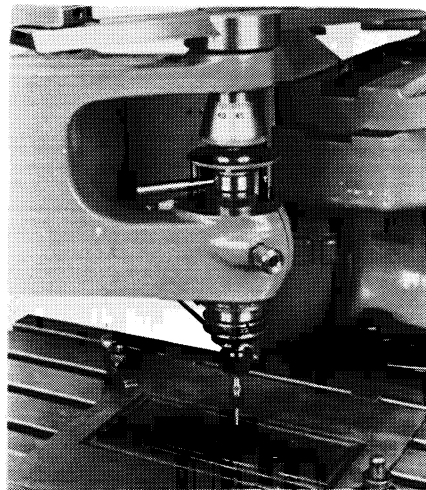


## SINGLE FOOT DEPTH REGULATOR

Micrometer adjusting bracket with single foot rest on top of work close to cutter.

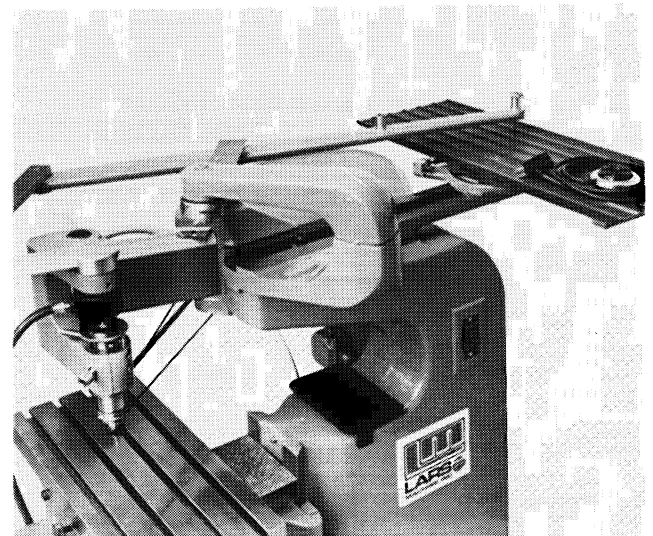
706-4. Single foot Depth Regulator for P1-2 or 3U

992-1. Single foot Model for P2-2 or 3Z



1242-1 For P1-2

1242-2 For 3-U



## MICROMETER DOWN FEED UNIT

Simple to use and install. Fast settings with a conveniently located dial and accurate micrometer screw with .200 vertical movement; graduated to .001. Operation of the spindle quick lift mechanism is not affected. Valuable time is saved in making accurate settings of the cutter depth.

## REMOTE CONTROL DEPTH FEED

Ideal for large panel work, spindle is raised and lowered (at adjustable feed rate) by foot switch, can be operated from side or back of machine. — Speeds up machining cycle.

1244-1. For P1-2

1378-1. For 3-U

Remote control for P2-2 and 3Z Consult Factory.

# Belts for LARS/GORTON Machines

## ENDLESS ROUND FABRIC BELTS FOR PANTOMILLS 2-DIMENSIONAL PANTOMILLS

Cat No.	Motor Drive Belt Size	Cat. No.	Cutter Spindle Belt Size	For These Machines
K-592	1/4"x84"	K-581	3/16"x52"	3A, 3-D, 3-G, 3-J, 3-F, 3-U
K-4298	V-Belt 1/4"x31"	K-6760 K-5640	1/8"x54" 3/16"x54"	P1-2
		K-6256	3/16"x56"	Heavy-Duty P1-2
K-602	*3/8"x79"	K-596 K-595	*5/16"x62" 5/16"x56"	*3-X, *3-R 3-Z uses all three belts
K-602 K-603	3/8"x79" 3/8"x86"	K-596 K-597	5/16"x62" 5/16"x70"	P2-2 Uses all four belts
K-604	3/8"x10'3"	K-598	5/16"x79"	3-S, P3-2 to Serial No. 31131
K-5551	V-Belt 13/32"x52"	K-598	5/16"x79"	P3-2 from Serial No. 31131

## EXTENDED LIFE BELTS (2 - Dimensional)

Extended Lifebelt	Use in Place of	Size
K-20090	(K592)	3/16"x84"
K-20091	(K602)	5/16"x79"
K-20092	(K603)	5/16"x86"
K-20093	(K604)	5/16"x10'3"
K-20094	(K581)	1/8"x52"
K-20095	(K6760)	1/8"x54"
K-20095	(K5640)	1/8"x54"
K-20096	(K6256)	1/8"x56"
K-20097	(K596)	1/4"x62"
K-20098	(K595)	1/4"x56"
K-20099	(K597)	1/4"x70"
K-20091	(K598)	5/16"x79"

## (3 - Dimensional)

K-20102	(K5605)	5/16"x8'-8"
K-20103	(K5378)	5/16"x9'-3"
K-20104	(K7768)	5/16"x11'-3"
K-20105	(K824)	1/8"x108"

## 3-DIMENSIONAL PANTOMILLS

Cat No.	Motor Drive Belt Size	Cat. No.	Cutter Spindle Belt Size	For These Machines
K-4298	1/4"x31"	K-6760 K-5640	1/8"x54" 3/16"x54"	P1-3
K-603	3/8"x86"	K-597	5/16"x70"	3-L to Serial No. 30000
K-5605 K-5378	3/8"x8'8" 3/8"x9'3"	K-597	5/16"x70"	P2-3 to Serial No. 33716
K-5605	3/8"x8'8"	K-597	5/16"x70"	P2-3 from Serial No. 33716
K-604	3/8"x10'3"	K-597	5/16"x70"	For P2-3 from Serial No. 37838
K-5378	3/8"x9'3"	K-597	5/16"x70"	For P2-3 with Pulley giving 13,000 R.P.M.
—	—	K-824	3/16"x108"	For P2-3 Enlarging Spindle
K-7768	3/8"x11'3"	—	—	For P2-3 with 6" Riser Block

## BELTS FOR OLD MODELS

Cat. No.	Belt Size	Machine
K-584	3/16"x 9'9"	1-A, 1-C Pantos.
K-585	3/16"x10'0"	1-G, 1-H Pantos.
K-586	3/16"x10'3"	1-G Matrix
K-587	3/16"x10'6"	1-G Matrix
K-587	3/16"x10'6"	1-D, 1-J Pantos.
K-588	3/16"x10'9"	1-T Panto.
K-577	3/16"x11'0"	1-T Panto.
K-589	3/16"x11'3"	1-T Panto.
K-820	1/4"x56"	687 Graduating

Specify belts required for 16-B Screw Machine, and give Machine Serial No.

## V-BELTS FOR LARS/GORTON CUTTER GRINDERS

Cat. No.	Belt Size	Machine
K-569	1/4" x 24.4"	265-4, -5, -6, -7
K-5935	1/4" x 24"	G-2
K-20082	1/4" x 28.75"	500
*K-570	1/4" x 26.6"	375-1
K-4547	1/4" x 33.5"	375-2
K-4298	1/4" x 31"	375-3, -4

\*NOTE: When grinding carbide on 375-4 grinder, K-570 belt is required. When ordering, specify quantity and Catalog No. of belts required, and be sure to give serial number of machine.

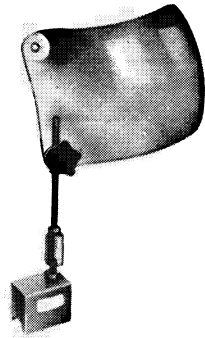
## V-BELTS FOR LARS/GORTON 0-16 MILLS

Cat. No.	Belt Size	Machine
K-689	1/2"x62"	O-16 Vert.
K-4586	13/32"x26"	O-16 Swivel, Univ. and Unimill

# LARS/GORTON Miscellaneous Accessories

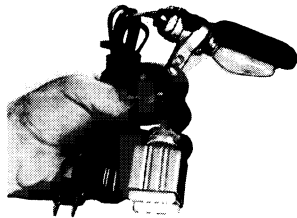
## MAGNETIC BASE SAFETY SHIELD

**K-8475.** This is an 8" x 10" clear, unbreakable shield, concave in shape to deflect chips and coolant downward. Mounted on 80 lb. pull magnetic base. Grips flat or round surfaces. Shield swivels 360° and locks securely in place. For replacement shield only, specify K-8478.

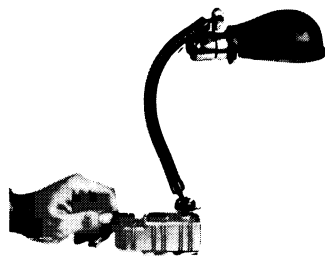


## MAGNETIC BASE LAMPS

**K-8476.** This unit has 65 lb. pull magnetic base. Grips flat or round surfaces. Ideal for close work where pin-point lighting from any angle is required. Accommodates 25 watt intermediate based bulb, one furnished with lamp, together with 6-foot cord.

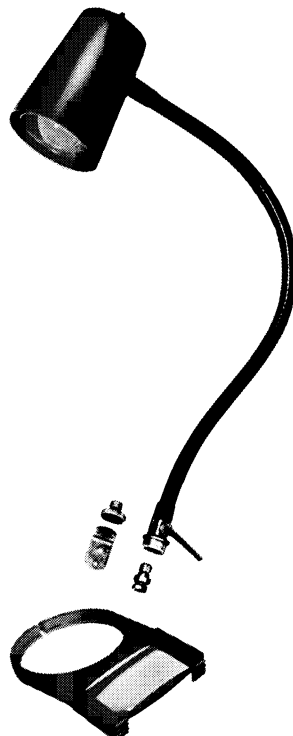


**K-8477.** This heavy-duty lamp has 125 lb. pull magnetic base with ball and socket flexible stem assembly. Grips flat or round surfaces. Has cam-type release and adjusting nut. Accommodates standard bulbs up to 100 watts. (No bulb included.) Furnished with 8-foot cord.



## STANDARD MACHINE LAMP

**K-8000.** Modern styled flexible arm lamp providing maximum work illumination and positioning convenience. Light bulb is recessed within inner shell of cool, non-burning shade. Heavy duty flexible arm, covered by poly vinyl jacket, holds any practical position to which it is bent, yet is easily pivoted over or away from work area. Arm snaps on small mounting button with simple sliding motion of ring sleeve at base of arm, facilitating quick installation or removal of lamp. Lamp swivels 360° on ball bearing base and shade rotates through 340°. Lamp accepts a 100 watt bulb (not included). A right-angle bracket with screws is provided for mounting of the lamp. Lamps have industrial type socket and switch.

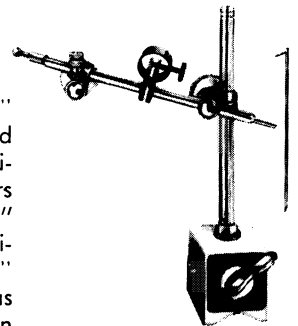


## SHADE MOUNTED MAGNIFIER

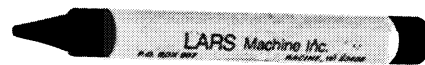
**K20051.** 2 power magnifier for use on above lamp. Ground glass lens measures 4" x 2".

## MAGNETIC BASE INDICATOR HOLDERS

**K-8473.** Unit has simple "on-off" lever. 8" 3-diameter universal rod can be mounted vertically or horizontally. Accommodates indicators requiring 5/16", 7/32" and 3/8" mounting stems. Incorporates precision fine adjustment for "zeroing-in" dial indicators of any make. Has two magnetic mounting surfaces, on bottom and back of base with 70 lb. pull. Centered "V" magnet provides greatest possible grip on round surfaces. Furnished with scribe.



**K-8474.** Precision adjustment permits exact zeroing of indicator. Magnetic pull of 65 lbs. Non-magnetic stem and ball swivel. Nonbreakable plastic base. Features include swivel adapter and universal rod in 7/32", 1/4" and 5/16" diameters.



## ENGRAVERS' CRAYON FILLER

For color filling engravings. Much easier to use than paste or lacquer but not as permanent. Colors are impregnated into a paraffin composition. Available colors as listed below.

Cat. No.	Color	Cat. No.	Color
K-651	*Bronze	K-650	Green
K-648	*Silver	K-655	Yellow
K-654	Black	K-649	Red
K-653	White	K-652	Blue

\* Sold individually.

Others sold in quantities of six only assorted or all one color.

## ENGRAVERS' PASTE FILLER

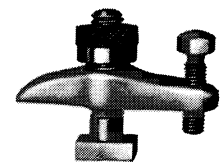
**K-658.** For filling instrument panels, etc., is chalk white and will not fade. Can be rubbed in by hand and hardens in a few hours. Will not flake or chip out. Furnished in 1/4-lb. screw top jar.



## TABLE DOGS

Ideal for securing work or copy on pantographs or duplicators. Comes complete as shown.

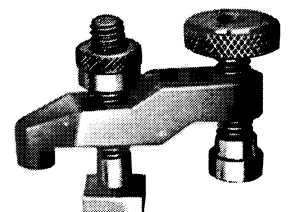
- 22-1 1-9/16" x 3/8" T-Slot Bolt
- 22-2 1-5/8" x 7/16" T-Slot Bolt
- 22-3 1-15/16" x 3/8" T-Slot Bolt



## 1478-1 TABLE DOG (Large)

This husky clamp is ideal for general use with pantographs. Maximum holding is always assured because all clamping action is applied directly to the part and not to the clamp heel. The back-end swivel prevents any marring or indentation of the table bearing surface.

- 1478-1. For No. P1-2
- 1478-2. For No. 3-F and No. 3-U
- 1478-3. For No. 3-L, No. 3-Z, No. P2-2 and No. P2-3

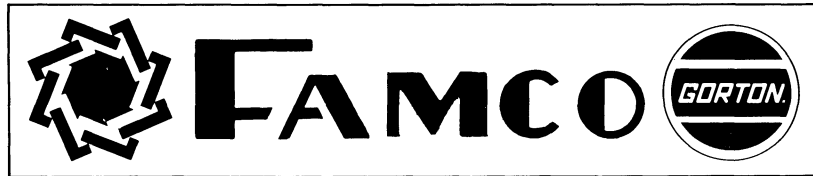


# NOTES



# NOTES

# HAVE YOUR MACHINES REMANUFACTURED TO NEW MACHINE TOLERANCE BY



FAMCO MACHINE is equipped and staffed to remanufacture your worn Pantograph/Engravers, Cutter Grinders and 0-16 Mills, at a cost savings to you. Every remanufactured machine is guaranteed to give satisfactory service. All machine components and parts are carefully inspected. Damaged or excessively worn parts are replaced. Still usable parts are thoroughly reconditioned. After inspection of all critical tolerances to new machine standards, your FAMCO remanufactured machine comes to you looking and performing like new, with many years of hard, dependable service built back into it. Complete remanufactured machine carries a six month warranty.

**PANTOGRAPHS 3F · 3U · 3Z · 3L ·  
P1-2 · P2-2 · P2-3  
CUTTER GRINDERS 265 · 375 · 500  
HIGH SPEED MILLS 0-16 · 0-16A  
ROLL ATTACHMENTS 727 · 750**

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