Photo 1

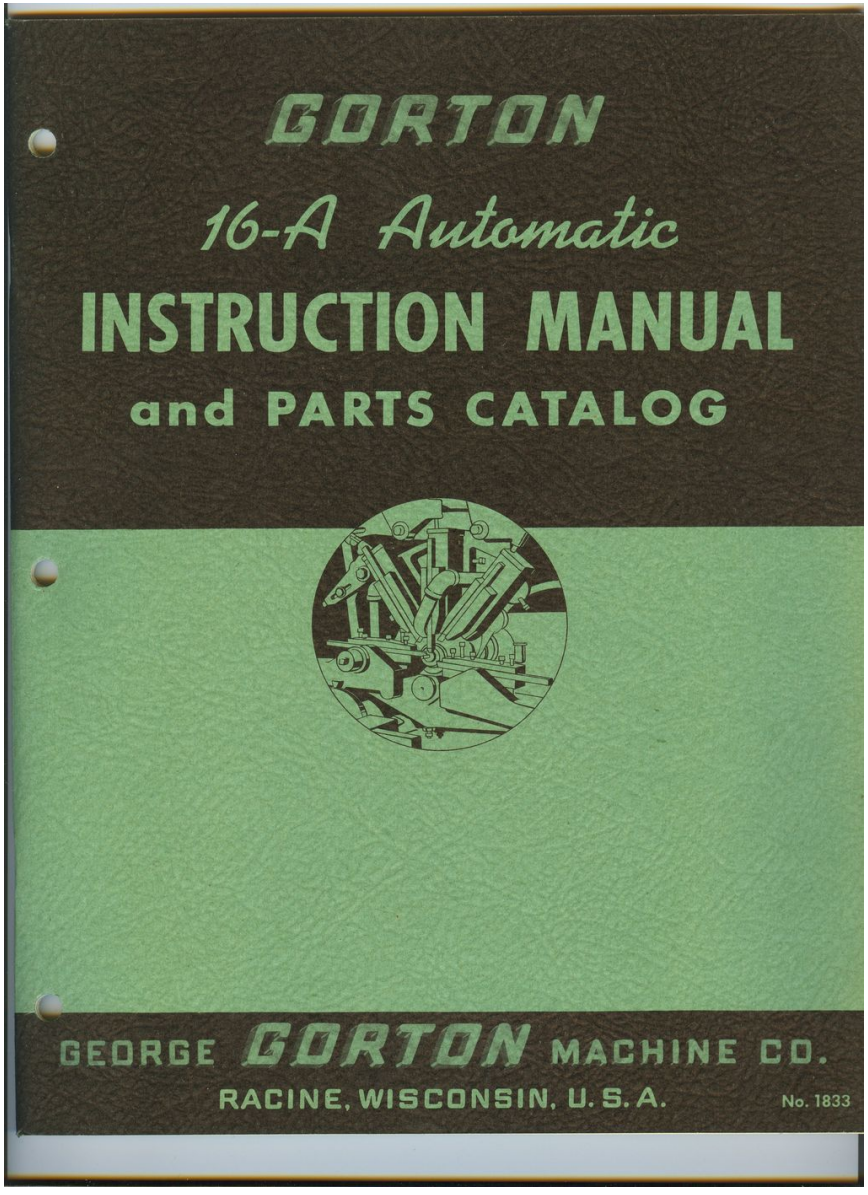

GORTON
16-A Automatic
INSTRUCTION MANUAL
and PARTS CATALOG
GEORGE GORTON MACHINE CO.
RACINE, WISCONSIN, U.S.A.
No. 1833

Photo 2

IMPORTANT

Before unpacking the GORTON 16-A, remember you are now in possession of a very finely balanced mechanism. This machine is rugged in construction, husky enough to stand all the grief that can be imposed on it by natural productive operations. However, the fine balance, the delicate adjusting controls, the precision principles built into the machine must be respected. Exercise judgment and caution when unpacking and cleaning this machine. Give it the same treatment you would accord any fine tool.

Before putting the GORTON 16-A in operation, careful preparations must be made. Oil reservoirs for transmission, chains, etc., have been drained for shipment and must be refilled. All unpainted areas and working parts have been coated with grease. This grease and the accumulation of grit that filters into the machine in transit must be removed.

Before producing any parts, machine must be thoroughly lubricated, then started and allowed to run for a while to make sure no damage has occurred during shipment. The George Gorton Machine Co. has prepared this booklet for the convenience of 16-A users. It is to the advantage of owners, department heads and operators to avail themselves of the information contained in the following pages.

CONTENTS

Photo 3

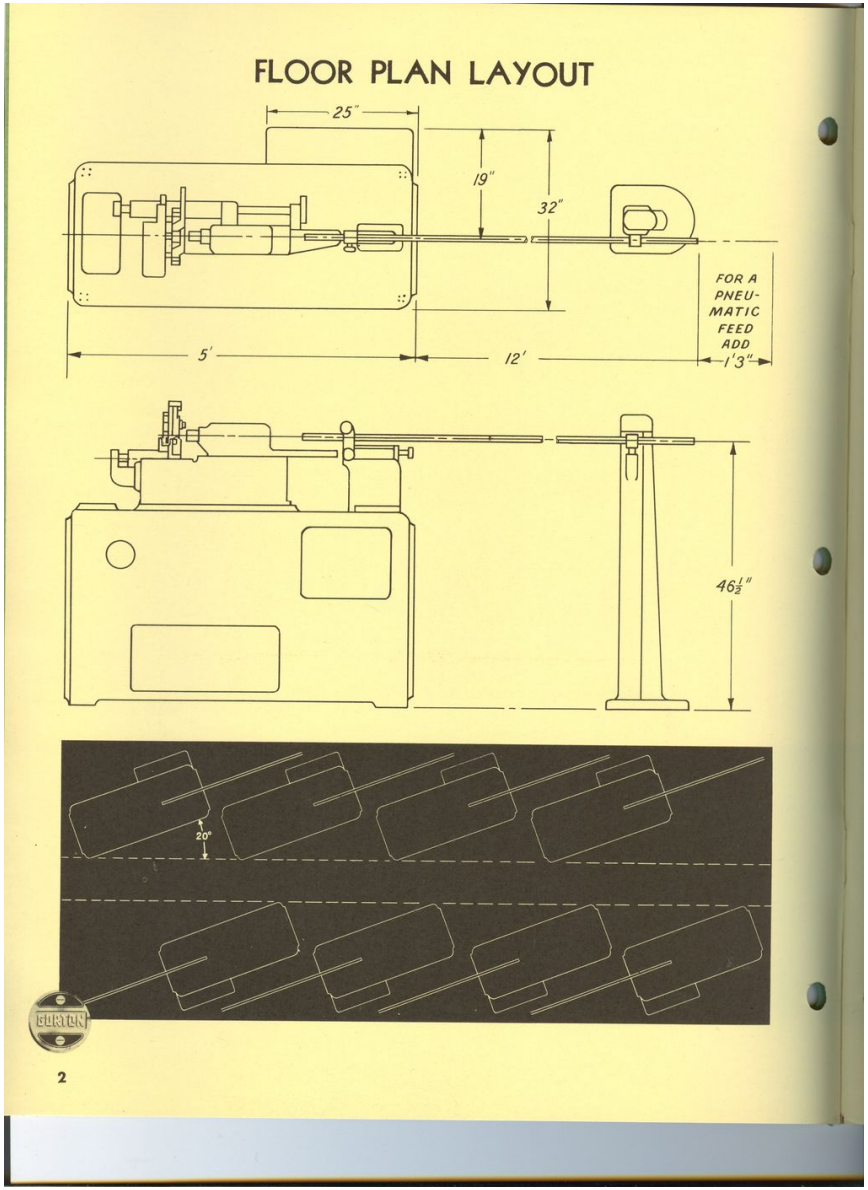
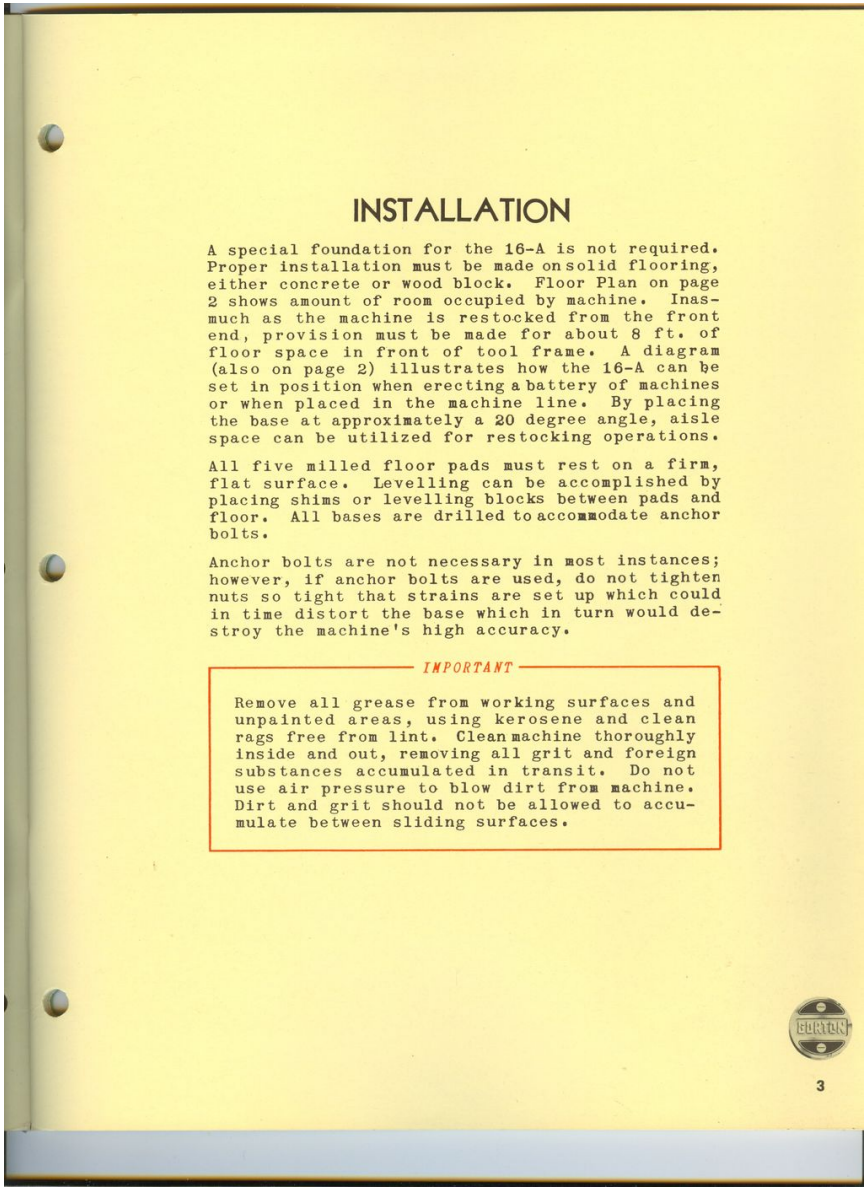

FLOOR PLAN LAYOUT
25"
19"
32"
FOR A PNEU-MATIC FEED ADD 1'3"
5'
12'
46½"
20"
BURTON
2

Photo 4



INSTALLATION

A special foundation for the 16-A is not required. Proper installation must be made on solid flooring, either concrete or wood block. Floor Plan on page 2 shows amount of room occupied by machine. Inasmuch as the machine is restocked from the front end, provision must be made for about 8 ft. of floor space in front of tool frame. A diagram (also on page 2) illustrates how the 16-A can be set in position when erecting a battery of machines or when placed in the machine line. By placing the base at approximately a 20 degree angle, aisle space can be utilized for restocking operations.

All five milled floor pads must rest on a firm, flat surface. Levelling can be accomplished by placing shims or levelling blocks between pads and floor. All bases are drilled to accommodate anchor bolts.

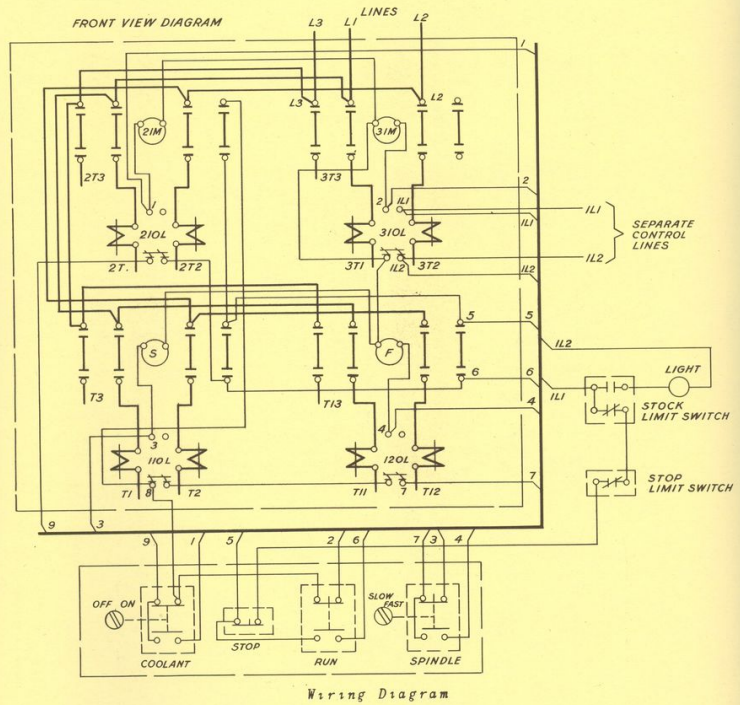
Anchor bolts are not necessary in most instances; however, if anchor bolts are used, do not tighten nuts so tight that strains are set up which could in time distort the base which in turn would destroy the machine's high accuracy.

IMPORTANT

Remove all grease from working surfaces and unpainted areas, using kerosene and clean rags free from lint. Clean machine thoroughly inside and out, removing all grit and foreign substances accumulated in transit. Do not use air pressure to blow dirt from machine. Dirt and grit should not be allowed to accumulate between sliding surfaces.

Photo 5

WIRING DIAGRAM*



Wiring Diagram

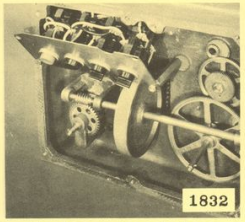
The above print is a complete layout of all of the electrical equipment on GORTON 16-A. All motors, relay switches and control buttons are clearly outlined in their relative positions.

*All wires, switches, controls, etc., are heavily insulated with Glyptol insulation.

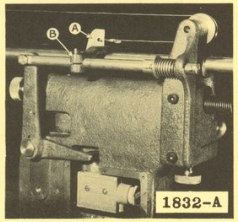
Electrical equipment is fully protected from oil by being placed in positions where oil can't possibly reach it; however, as an extra precaution, oil-proof Glyptol insulation is provided and all wires are housed in conduit. In addition, all wires are colored to make tracing of leads easy.

Photo 6

CONTROL SWITCHES



Control Panel Box



Bar Feed Stop Switch

Fused Transformer

CONTROL PANEL BOX

Oil-proof switches are provided on the control panel and eliminate any possibility of power leakage which could cause injury to the operator.

BAR FEED STOP SWITCH

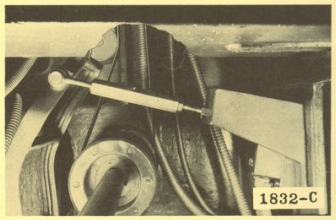
When material has been exhausted, blade on stock pusher (A) trips lever (B) which operates stop switch, machine stops and red signal light flashes on, warning operator that machine needs restocking.

FUSED TRANSFORMER

Fused transformer steps the current down to 110 volts. All switches, lights and controls are on this 110 volt circuit. Motors, relays and heater coils operate on higher voltage circuits.

EMERGENCY STOP SWITCH

The emergency stop switch is operated by an adjustable belt tightener. If belt breaks, idler pulley bracket drops toward switch. Turnbuckle that regulates tension of tightener on belt is connected to bracket that houses switch. When belt breaks, turnbuckle slides through bracket and operates button on switch, opening all circuits and stopping all motors. Switch is permanently adjusted at factory but sometimes gets out of adjustment. If screw machine stops without reason when increasing spindle speed, the fault could be in the adjustment of this safety switch. An adjusting screw will be found recessed in the base between the two lower covers on the control side. Moving the adjusting screw out widens the distance



Emergency Stop Switch

possible for the belt to whip without operating the switch. Turning the adjusting screw in shortens the distance possible for the belt to whip before operating switch. Adjustment of the switch could possibly be the remedy for the aforementioned stoppage of motors without apparent reason.

Photo 7

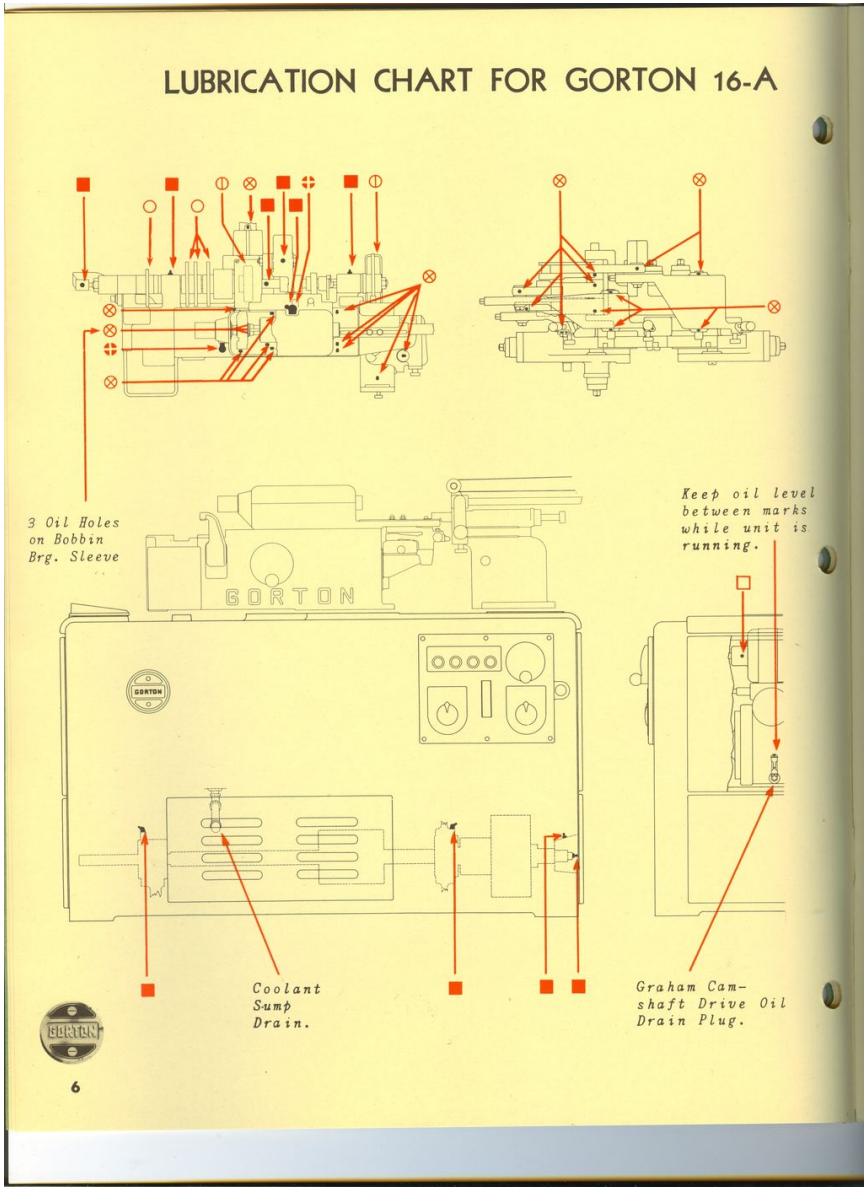
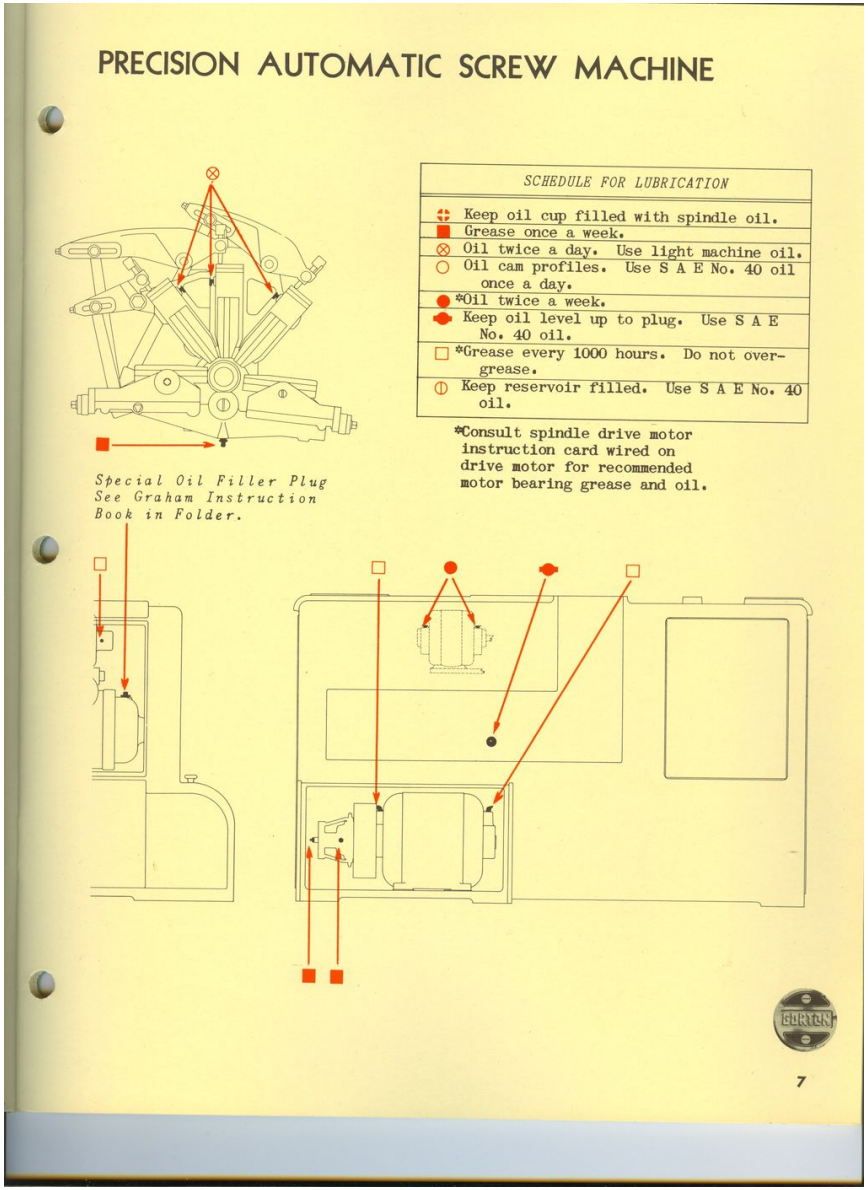

LUBRICATION CHART FOR GORTON 16-A
3 Oil Holes on Bobbin Brg. Sleeve
Keep oil level between marks while unit is running.
GORTON
Coolant Sump Drain.
Graham Cam-shaft Drive Oil Drain Plug.
6

Photo 8



PRECISION AUTOMATIC SCREW MACHINE

Special Oil Filler Plug See Graham Instruction Book in Folder.

SCHEDULE FOR LUBRICATION
Keep oil cup filled with spindle oil.
Grease once a week.
Oil twice a day. Use light machine oil.
Oil cam profiles. Use S A E No. 40 oil once a day.
*Oil twice a week.
Keep oil level up to plug. Use S A E No. 40 oil.
*Grease every 1000 hours. Do not over-grease.
Keep reservoir filled. Use S A E No. 40 oil.

*Consult spindle drive motor instruction card wired on drive motor for recommended motor bearing grease and oil.

Photo 9

STARTING

Main Disconnect Switch

Control Panel

C A U T I O N - BEFORE STARTING

Do not attempt to start screw machine without lubricating according to chart on pages 6 and 7. Check wiring diagram on page 4 for proper power line hookup. (Also see the electrical instructions in folder found in rear of book.)

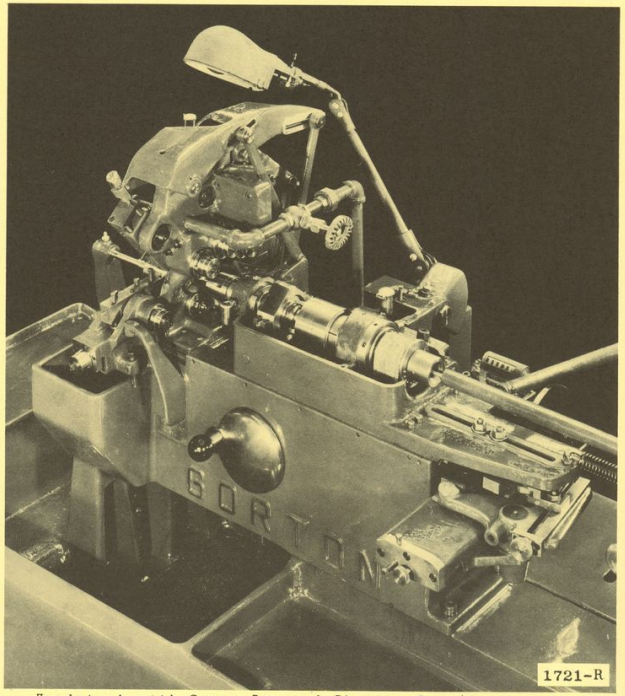
Care should be exercised when starting the 16-A the first time. After installation is completed and the screw machine is ready to be put into production, a preliminary run-in period should be made before trying to produce any pieces. Engage the master disconnect switch, then start the spindle motor by pressing the button on the control panel marked "RUN." Run the spindle for a short time, 5 or 10 minutes, at its lowest speed as indicated on the dial; this can be accomplished by turning the manual control of the spindle speed counter-clockwise so that the calibrated dial pointer registers at 1100 r.p.m. The spindle switch for "High" and "Low" speeds must be set in the low speed position. The spindle will not start in "High" speed position. Next engage the camshaft drive by pulling out the manual control located on the bed. Engage the coolant pump motor by turning on the coolant pump switch. The coolant pump is self-priming, therefore coolant should circulate immediately.

Check all moving parts, pay particular attention to bearings on spindle, motors, camshaft, etc. Gradually increase the spindle speed to its highest r.p.m. of 10,000. Maintain this 10,000 r.p.m. on the spindle for at least 10 minutes, watching the bearings carefully. Some heat will be generated in the bearings, about 130° Fahrenheit to about 160° Fahrenheit, or about the temperature it is possible to hold a hand on the bearing housings without danger of burning the skin. Any heat greater than this is excessive and should be investigated. This trial run is a precaution necessary when starting a machine of the High Precision quality incorporated in the GORTON 16-A. Its principal purpose is to determine

Photo 10

whether or not any damage has occurred to the machine while in transit.

A preliminary run-in of all cams with plenty of lubrication and without work load is good practice. In a short time the cam profile assumes a glaze that forms a perfect bearing for the cam toes, rollers and followers. Cam life can be greatly increased by a proper run-in period.

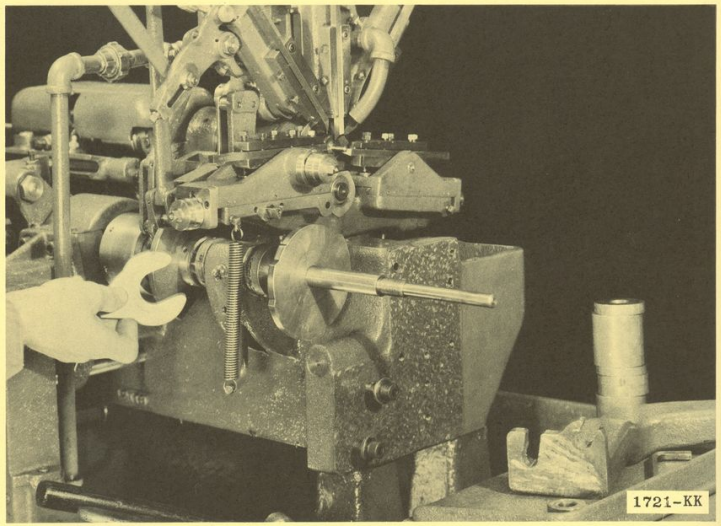


Headstock with Cover Removed, Showing Spindle Assembly.

Check all tool slides for freedom of movement. Watch spindle bearings closely. Too much oil on all moving parts and rubbing surfaces is better than not enough. Do not allow spindle belt to become oil soaked. Belt should be adjusted by a belt tightener in base to point where belt functions properly on pulleys without excess lateral whip. Too much belt tension will ruin spindle bearings.

Photo 11

SET-UP



Camshaft With Front Bracket Removed

Illustration shows camshaft with front bracket removed for installation of rocker cam. Place cam toe on profile of cam directly in line with figure "0" stamped in cam face with markings facing end of camshaft.

Slide cam spacers and nut in front of cam but do not tighten nut until support bracket has been secured in position.

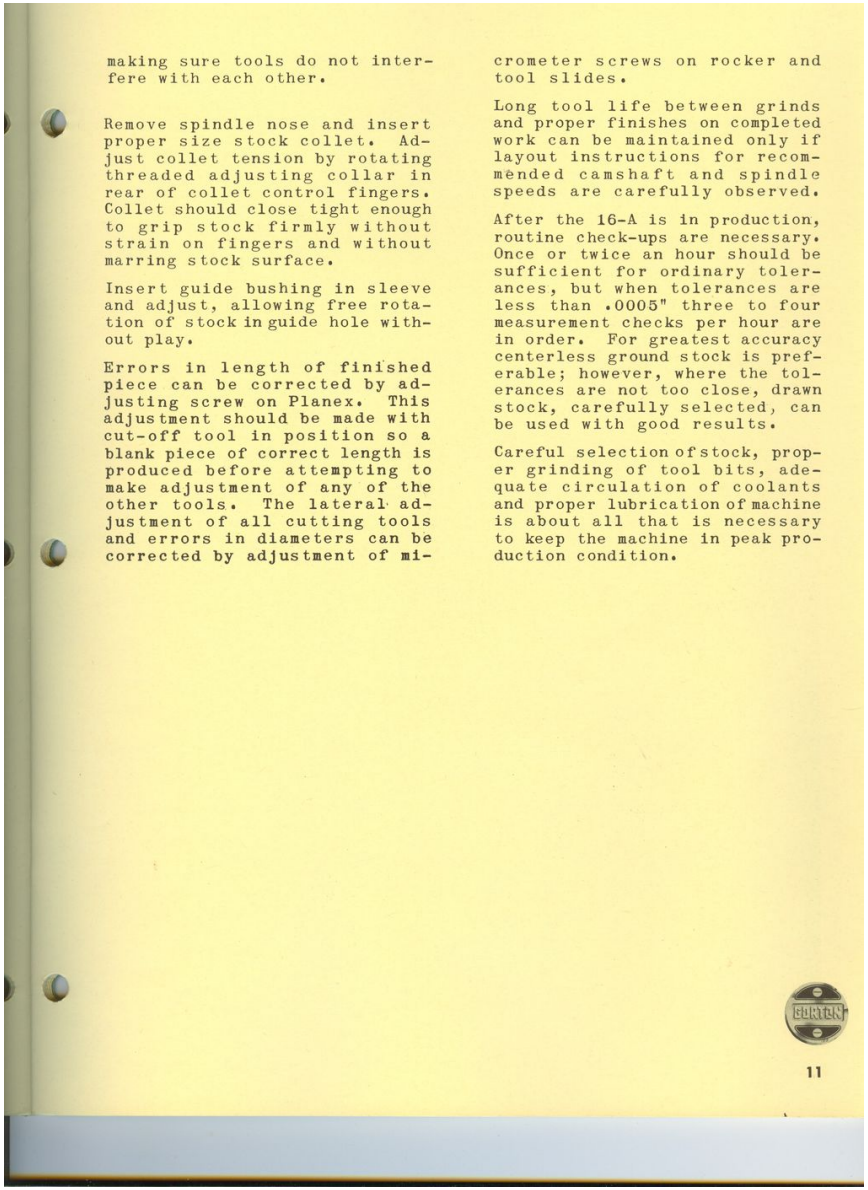
Remove nut and spacers from opposite end of camshaft (not shown). Fit Planex cam in position with figure "0" facing out, and in line with cam follower. Replace spacers and nut; tighten nut, clamping cam securely in position.

Loosen round clamping nuts on camshaft below radial tool push rods. Slide slotted cams in their relative places with the figure "0" in same direction as the "0" on rocker cam. The "0" should be in direct line with the cam rollers. Tighten clamping nuts, locking cams in place.

Refer to layout and adjust rockers for radial tool slides to specified ratio. Rocker for No. 1 and No. 2 tools has fixed ratio of 3 to 1. Set Planex ratio according to layout specifications.

Insert cutting tools in their respective holders according to layout. Rotate camshaft manually one complete revolution,

Photo 12



making sure tools do not interfere with each other.

Remove spindle nose and insert proper size stock collet. Adjust collet tension by rotating threaded adjusting collar in rear of collet control fingers. Collet should close tight enough to grip stock firmly without strain on fingers and without marring stock surface.

Insert guide bushing in sleeve and adjust, allowing free rotation of stock in guide hole without play.

Errors in length of finished piece can be corrected by adjusting screw on Planex. This adjustment should be made with cut-off tool in position so a blank piece of correct length is produced before attempting to make adjustment of any of the other tools. The lateral adjustment of all cutting tools and errors in diameters can be corrected by adjustment of micrometer screws on rocker and tool slides.

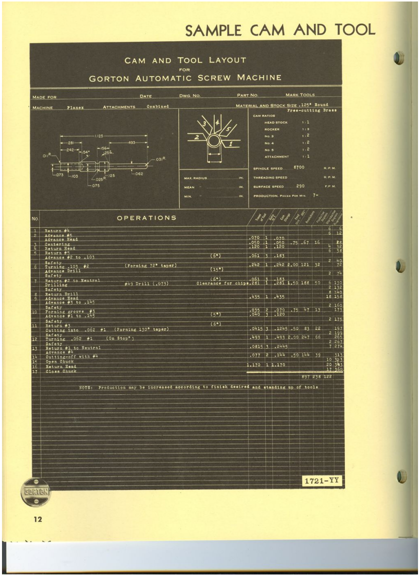
Long tool life between grinds and proper finishes on completed work can be maintained only if layout instructions for recommended camshaft and spindle speeds are carefully observed.

After the 16-A is in production, routine check-ups are necessary. Once or twice an hour should be sufficient for ordinary tolerances, but when tolerances are less than .0005" three to four measurement checks per hour are in order. For greatest accuracy centerless ground stock is preferable; however, where the tolerances are not too close, drawn stock, carefully selected, can be used with good results.

Careful selection of stock, proper grinding of tool bits, adequate circulation of coolants and proper lubrication of machine is about all that is necessary to keep the machine in peak production condition.

BURTON

Photo 13



SAMPLE CAM AND TOOL

CAM AND TOOL LAYOUT
FOR
GORTON AUTOMATIC SCREW MACHINE

MADE FOR | DATE | DWG. NO. | PART NO. | MARK TOOLS

MACHINE Planex | ATTACHMENTS Combined | MATERIAL AND STOCK SIZE .125" Round Free-cutting Brass

CAM RATIOS
HEAD STOCK 1:1
ROCKER 1:3
No. 3 1:2
No. 4 1:2
No. 5 1:2
ATTACHMENT 1:1

SPINDLE SPEED 8700 R.P.M.
THREADING SPEED R.P.M.
SURFACE SPEED 290 F.P.M.
PRODUCTION, PIECES PER MIN. 7-

MAX. RADIUS IN.
MEAN " IN.
MIN. " IN.

No.	OPERATIONS	Travel of Tool	Ratio	Cam Change	Feed	Revolutions	Productive Degrees	Unproductive Degrees	Progressive
1	Return #4							6	6
2	Advance #5							6	12
	Advance Head	.070	1	.070					
3	Centering	.050	1	.050	.75	.67	16		28
4	Return Head	.120	1	.120				4	32
5	Return #5							6	38
	Advance #2 to .103 (6°)	.061	3	.183					
	Safety							2	40
6	Turning .103 #2 (Forming 72° taper)	.242	1	.242	2.00	121	32		72
	Advance Drill (15°)								
	Safety							2	74
7	Return #2 to Neutral (6°)	.061	3	.183					
	Drilling #49 Drill (.073) Clearance for chips	.281	1	.281	1.50	188	50	6	130
	Safety							2	132
8	Return Drill							8	140
9	Advance Head	.435	1	.435				18	158
	Advance #3 to .145								
	Safety							2	160
10	Forming groove #3	.035	2	.070	.75	47	13		173
	Advance #1 to .145 (5°)	.040	3	.120					
	Safety							2	175
11	Return #3 (6°)								
	Cutting into .062 #1 (Forming 130° taper)	.0415	3	.1245	.50	83	22		197
	Safety							2	199
12	Turning .062 #1 (On Stop")	.493	1	.493	2.00	247	66		265
	Safety							2	267
13	Return #1 to Neutral	.0815	3	.2445				7	274
	Advance #4								
14	Cutting-off with #4	.077	2	.144	.50	144	39		313
15	Open Chuck							10	323
16	Return Head	1.170	1	1.170				20	343
17	Close Chuck							17	360
						897	238	122	

NOTE: Production may be increased according to finish desired and standing up of tools

1721-YY

12

Photo 14

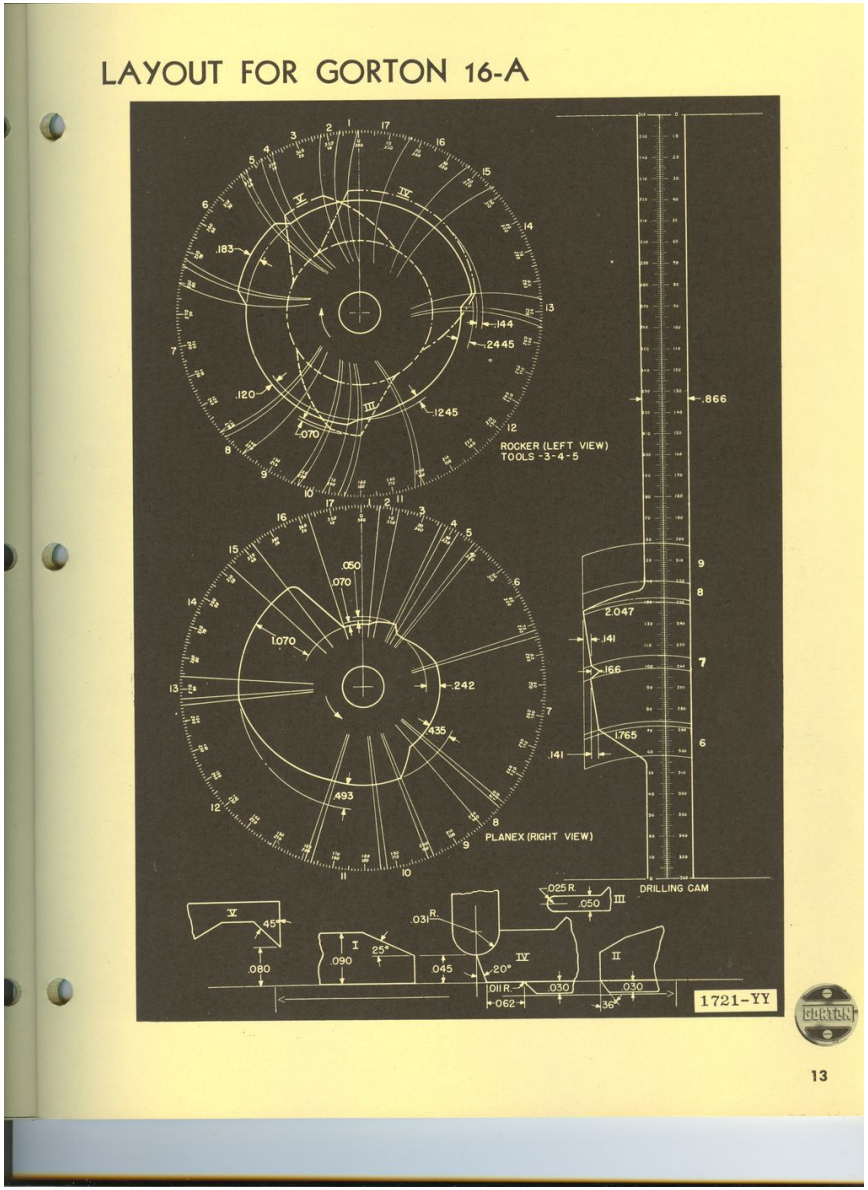

LAYOUT FOR GORTON 16-A
ROCKER (LEFT VIEW)
TOOLS -3-4-5
PLANEX (RIGHT VIEW)
DRILLING CAM
1721-YY
13

Photo 15

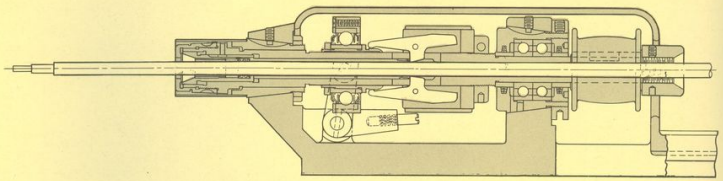
HEADSTOCK AND SPINDLE

Headstock spindle is of nitrided steel operating in a tapered bronze bearing on the front and a double row ball-bearing on the rear. The tapered bronze bearing on the front is adjustable by means of a shim which can be removed from the slot cut lengthwise in the bearing. By reducing the thickness of the shim and replacing it in the slot, it is then possible to close the diameter of the bushing by turning the jamb nut on the rear of the housing, which forces the bearing into the taper, closing it tightly against the now thinner shim, reducing clearance between shaft and bearing (Recommended Clearance .00075").

When removing spindle nose always remember this part uses a left hand thread.

Collet clutch fingers can be removed by removing screw that holds toggle holder sleeve in position. Sleeve now will slide back. This uncovers pins that hold fingers in position. Pins can then be pushed out with a punch.

The rear bearings are ball thrust type radial bearings. These bearings carry all of the radial load from the drive belt; they are preloaded endwise to eliminate all end play in the spindle. Compensation for wear can be made by turning the adjusting nut, on rear of back bearing, clockwise looking from rear of spindle. This operation adds to the preload on the balls and races. When making this adjustment care should be exercised not to create too great a preload, otherwise the bearings will be ruined. Enough adjustment of the adjusting nut to take all end play out of spindle when cold, and creating just a slight drag on the spindle when spindle is turned with thumb and forefinger with drive belt off of pulley, is sufficient. After adjustment is made the bearing should be watched to make sure it does not overheat.



1721-ZZ

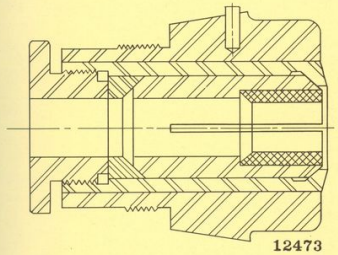
Headstock and Spindle

Photo 16

CAMS AND CAMSHAFT

Cams are of cast Meehanite. They are cut to specifications for each job, and if properly lubricated should last for an indefinite period without having them recut.

The camshaft is of low carbon steel, supported in four places by bronze bushings. Proper lubrication of the bearings is about all the attention the camshaft should ever need.

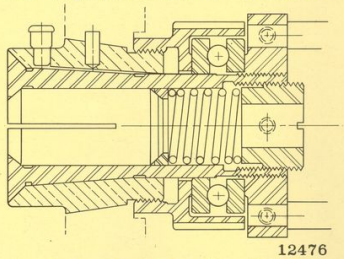


12473

Guide Bushing - Stationary

All stationary guide bushings are of the adjustable type slotted for adjustment. This adjustment feature is not to be considered adjustable over a wide range. About .001" variation is all that can be accomplished. It can readily be recognized that more than .001" adjustment would destroy the accuracy of the bushing. A carbide insert has been brazed in the center of the bushing through which the guide hole has been lapped; this guide hole is in exact dimension, no tolerance. Slots in the bushing allow minus .001" adjustment. Stock seizure in the hole does not destroy the carbide guide bushing. All that is necessary is to remove the guide bushing and drive out the seized stock, after which it will be found that the guide hole is free and clear of any foreign particles. This is an advantage over the hardened steel bushings which become useless after seizure of stock in the hole, due to the fact that brass, bronze or steel will weld itself to the hardened steel surface of the hole.

The revolving guide bushing used mostly for square and hexagon stock is held in a sleeve. This sleeve rotates in a bronze bearing and thrust is carried on a ball thrust bearing. The guide bushing automatically adjusts itself to inequalities of stock diameters by means of the slots cut through the guide hole which make the bushing slightly adjustable. The adjustment is automatic. A coiled compression spring exerts pressure against the rear of the guide bushing which is tapered, fitting into the tapered sleeve. Pressure



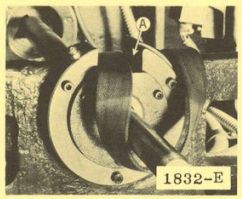
12476

Guide Bushing - Revolving

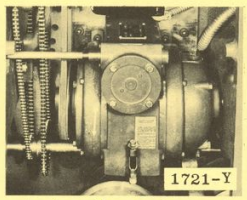
is regulated by an adjusting nut on the rear of the sleeve. Spring pressure pushing the guide bushing against the taper causes the sections between slots to close the diameter of the hole holding the stock in a centered position.

Photo 17

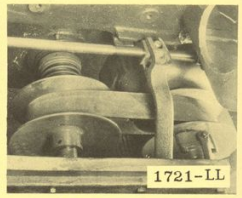
MOTORS



Main Drive Shaft



*Graham Transmission**

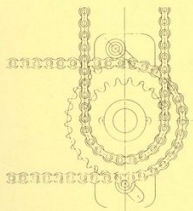


*Reeves Drive***

Keep electric motors lubricated according to the lubrication chart. No special adjustments are necessary on the motor equipment. It is well to remember that water, oil or any foreign substances allowed to accumulate on or around electric motors hampers their efficiency and could cause a short circuit which not only destroys the equipment but is dangerous to the operator.

To fit a new spindle belt, unscrew the three outer hollow head cap screws that run through bracket as shown in illustration of main drive shaft. Place one loop of the belt in the opening (at A), then make the bearing rotate once by means of a rod introduced in one cap screw hole. Belt is now in position inside of the bearing holder.

*GRAHAM TRANSMISSION**



The Graham variable speed transmission for driving camshaft uses roller chains on sprockets between drive and camshaft. Chains are located inside a removable cover on rear of base. Chains run through a special lubricant. Wear is negligible, but when adjustment is necessary, bracket supporting intermediate sprockets shown in drawing can be adjusted by loosening cap screws running through diagonal slots in bracket. Take up slack in both chains at the same time by moving bracket downward to the right, holding in position and then tightening cap screws.

*Full information on the Graham drive unit contained in separate booklet in folder in back of book.

*REEVES DRIVE***

Spindle belts and Reeves drive belts are obtainable through our regular parts department setup. An extra belt on hand is good insurance.

**Information on Reeves drive contained in special booklet found in folder in rear of book.

Photo 18

RADIAL TOOL FRAME

RADIAL TOOL FRAME

All radial tool holders are hardened and ground.

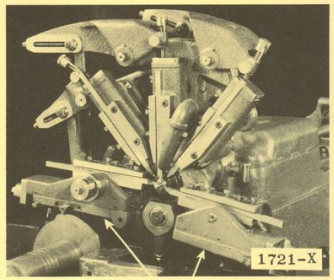
Slides are adjustable for centering of tools by means of adjusting screws fitted on both sides near the top of each holder.

Pins anchored lower in each holder form pivots for tool centering adjustment.

Rocker tools are centered by means of two adjusting screws on top of each holder in back of tool bit set screws. A center screw holding pivot must be loosened before centering adjustment of tool points and tightened on completion of adjustment. Micrometer adjusting screws provided on all five tool holders for regulating diameters and for regulating length tolerances.

ROCKER ASSEMBLY

Rocker assembly is held parallel to front of tool frame by means of a ball bearing and a Timken bearing mounted on a stud anchored firmly in the body of the tool frame. Adjustments of bearings in rocker are made by loosening jamb nut on rear of stud. Hold stud in position with screw driver in slot located in head on front of stud then turn adjusting nut on rear of stud inward. After adjustment has been made hold stud and adjusting nut in same position while tightening jamb nut on rear of stud, locking adjusting nut securely in new position. The rocker frame makes contact with the parallel surface of the radial tool frame. These surfaces are hand scraped to an exact fit. Adjustment of rocker should be made to allow free oscillation of rocker without end play or sticky action.



Rocker Assembly

COOLANT PUMP

The coolant pump is a positive displacement type gear pump directly connected to a 1/4 H.P. electric motor. Both mounted on a bracket underneath a cover below the camshaft. Motor and pump are in a separate compartment. An angle type check valve holds a perpetual prime in the intake line. On the bottom of the intake a filter has been attached, coolant has been screened and settled in the sump; however, the filter on end of intake removes all foreign bodies that may still be in the coolant.

Filters should be taken off and cleaned at regular intervals, time between cleaning dependent upon the type of stock being worked and condition of coolant.

CLEANING SUMP

Coolant returns to sump through screen that screens out larger chips. A sump pan just below the screen is provided with baffles. Smaller chips not removed from coolant by screen settle out in this pan before coolant returns to sump. Pan lifts out for cleaning purposes and for access to sump.

Photo 19

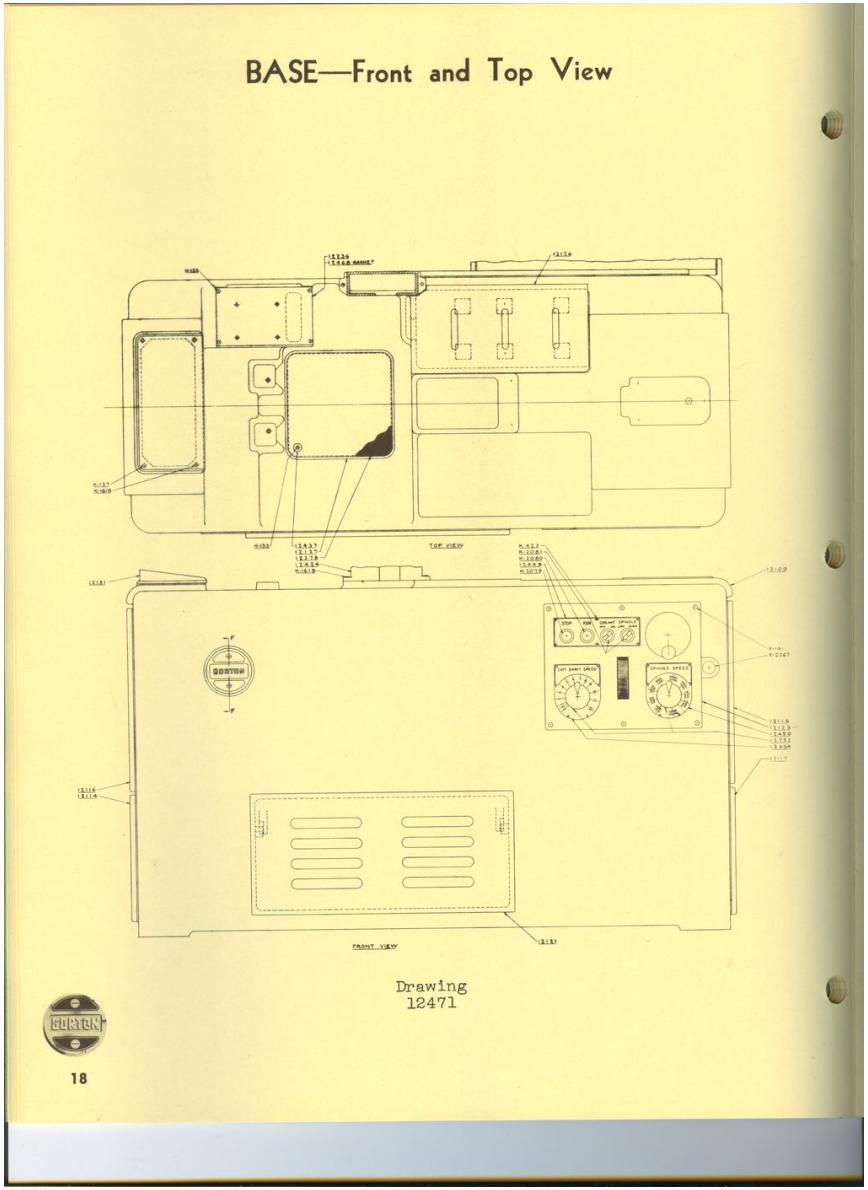


Photo 20

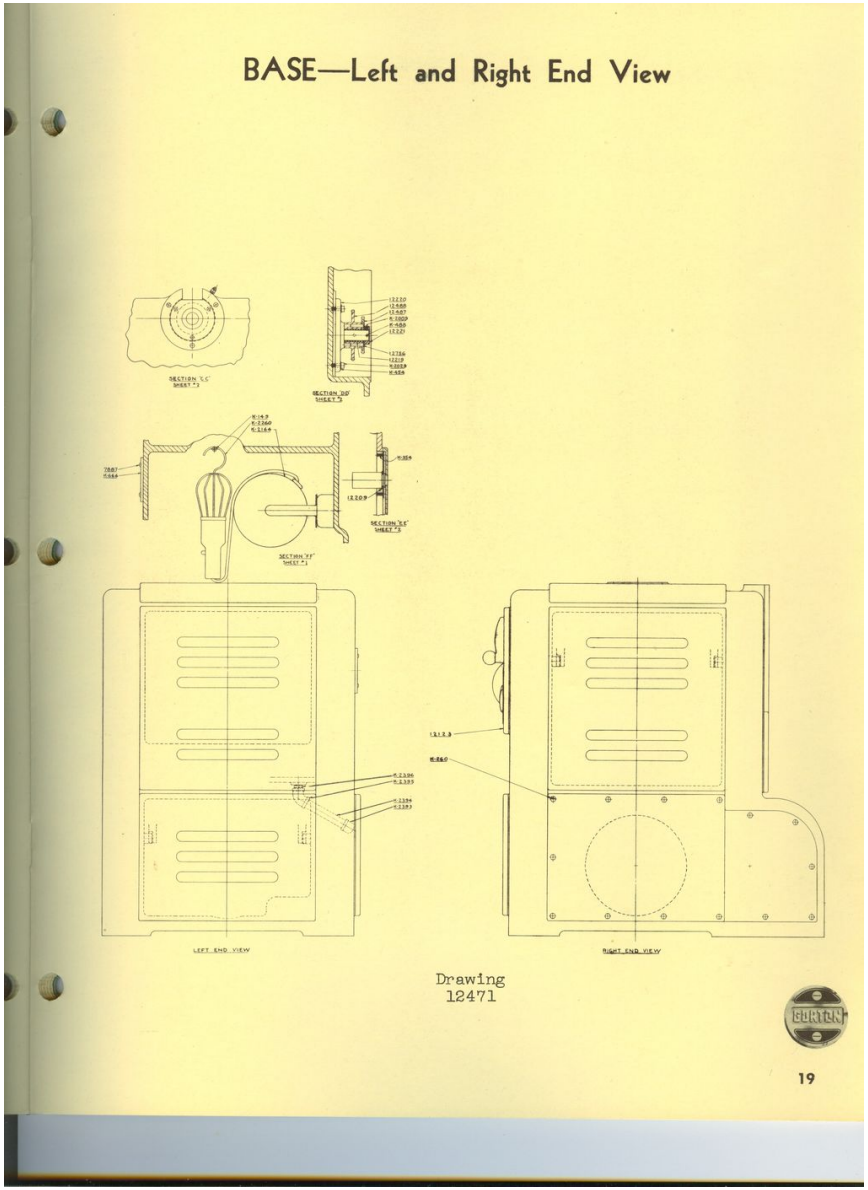

BASE—Left and Right End View
LEFT END VIEW
RIGHT END VIEW
Drawing
12471
BURTON
19

Photo 21

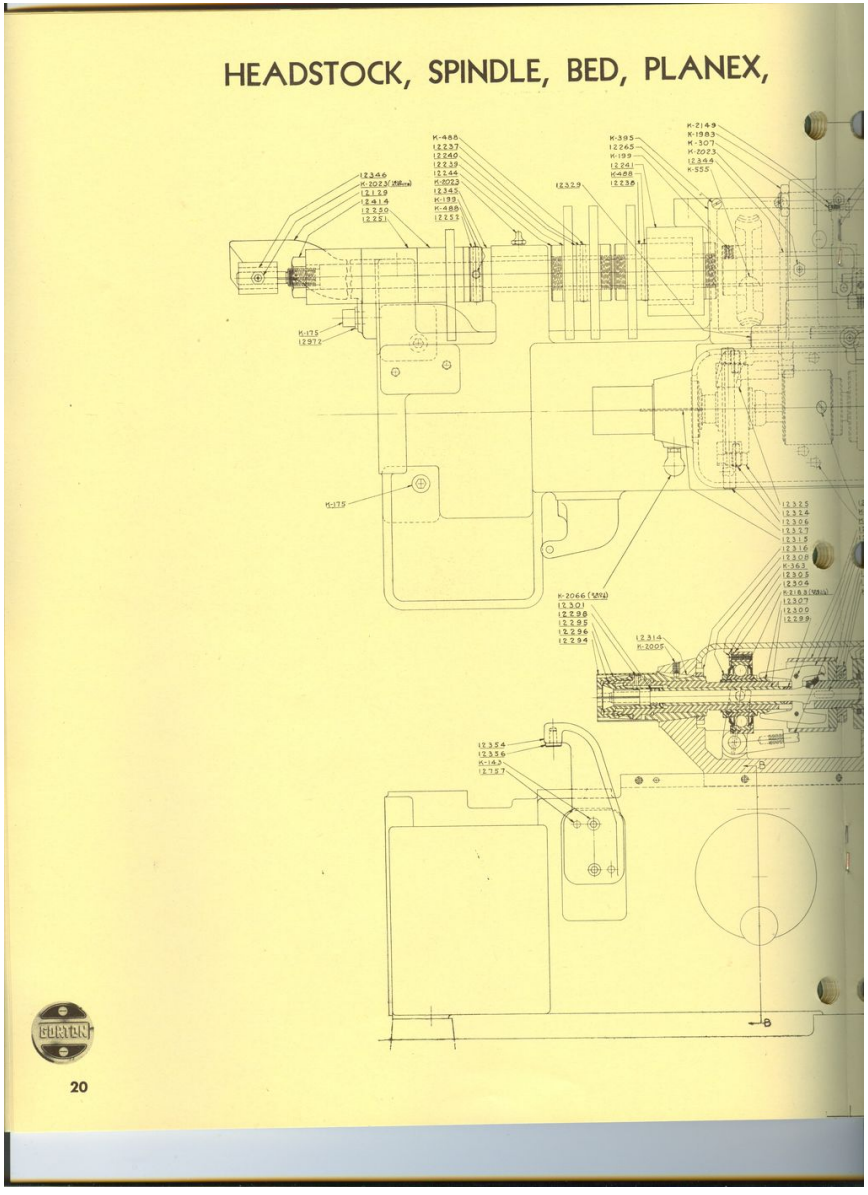


Photo 22

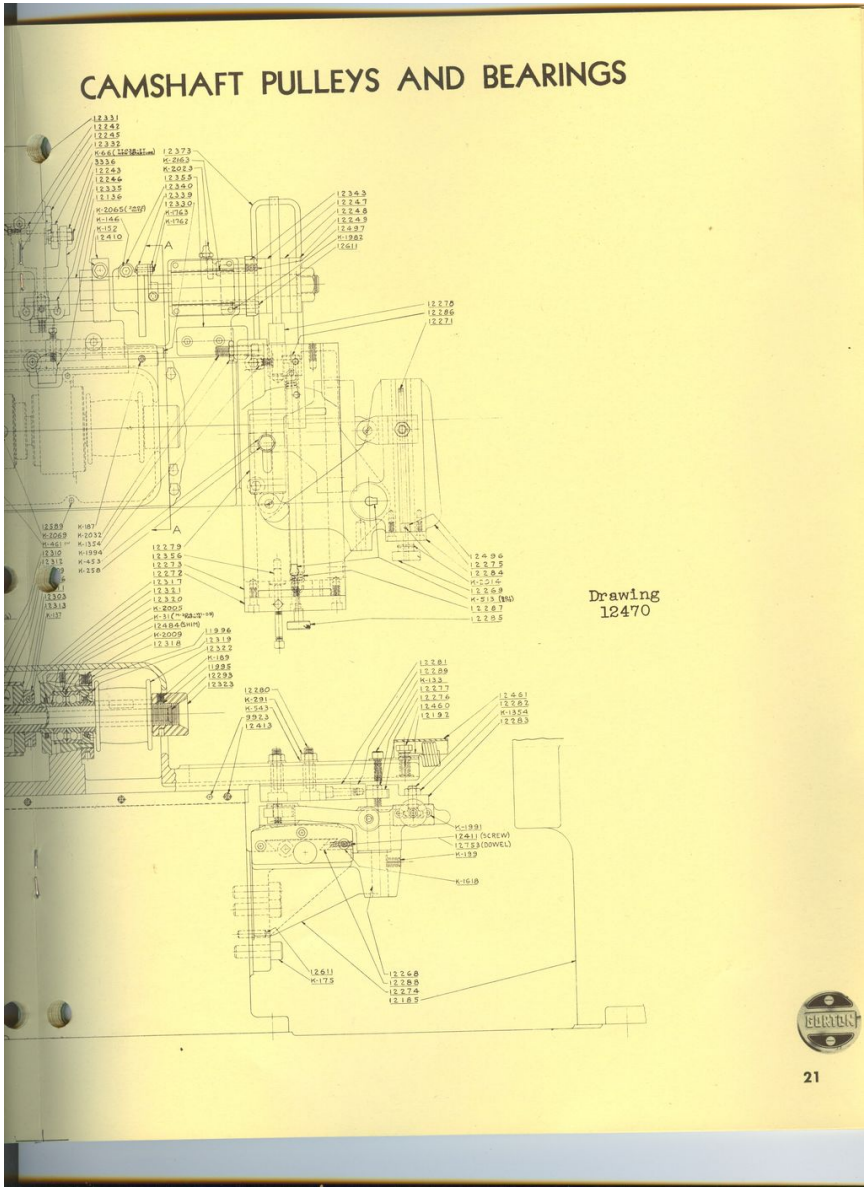


Photo 23

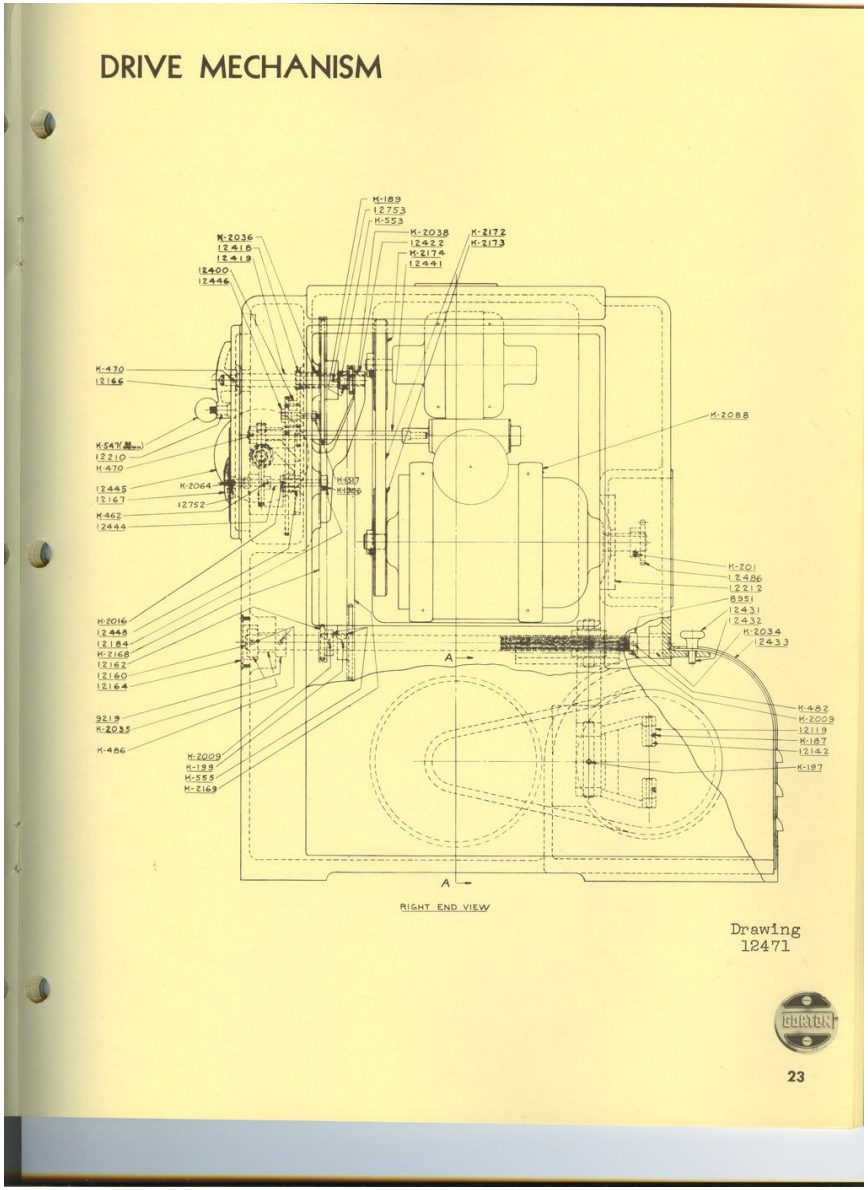

DRIVE MECHANISM
K-189
12753
K-553
K-2036
12418
12419
12400
12446
K-2038
12422
K-2174
12441
K-2172
K-2173
K-470
12166
K-2088
K-547
12210
K-470
12445
12167
K-462
12444
K-2064
12752
K-201
12486
12212
8951
12431
12432
K-2034
12433
K-2016
12448
12184
K-2168
12162
12160
12164
9219
K-2035
K-486
K-2009
K-199
K-555
K-2169
K-482
K-2009
12119
K-187
12142
K-197
A
A
RIGHT END VIEW
Drawing
12471
23

Photo 24

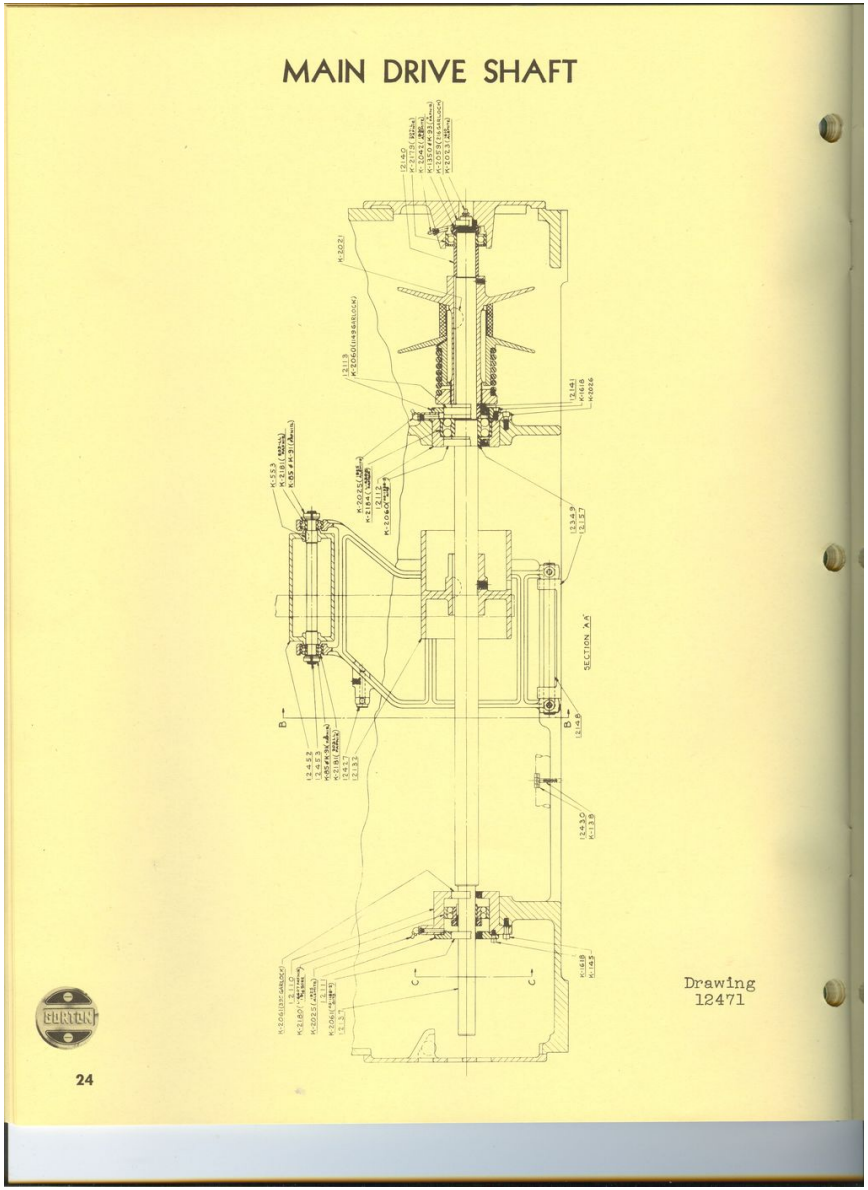


Photo 25

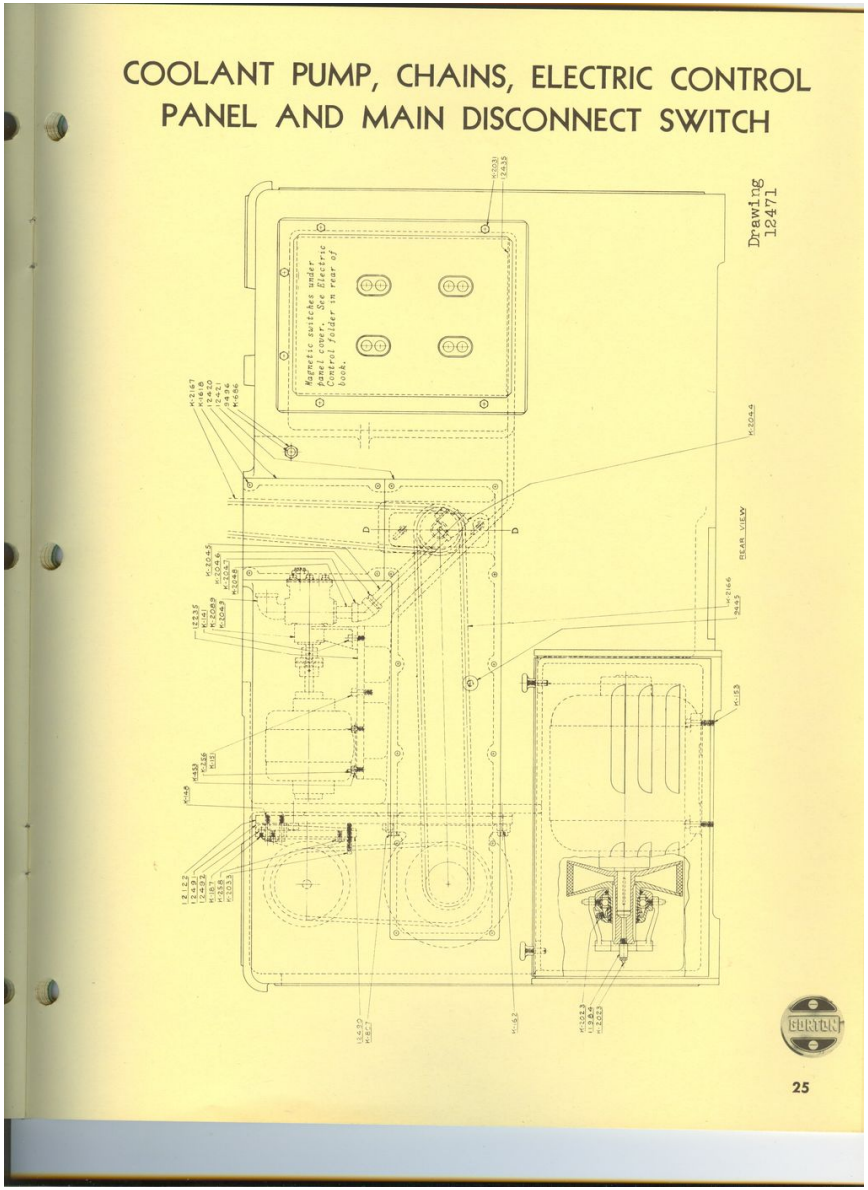
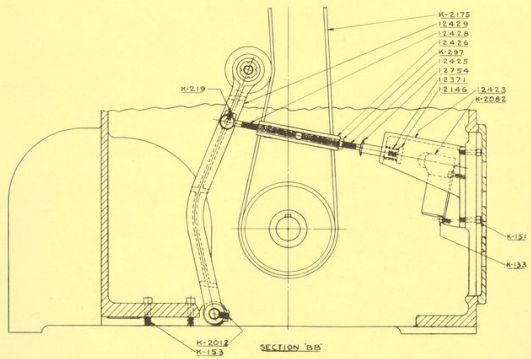

COOLANT PUMP, CHAINS, ELECTRIC CONTROL PANEL AND MAIN DISCONNECT SWITCH
Drawing 12471
REAR VIEW
25

Photo 26

SPINDLE BELT TIGHTENER AND AUTOMATIC DISCONNECT SWITCH



Drawing
12471

Photo 27

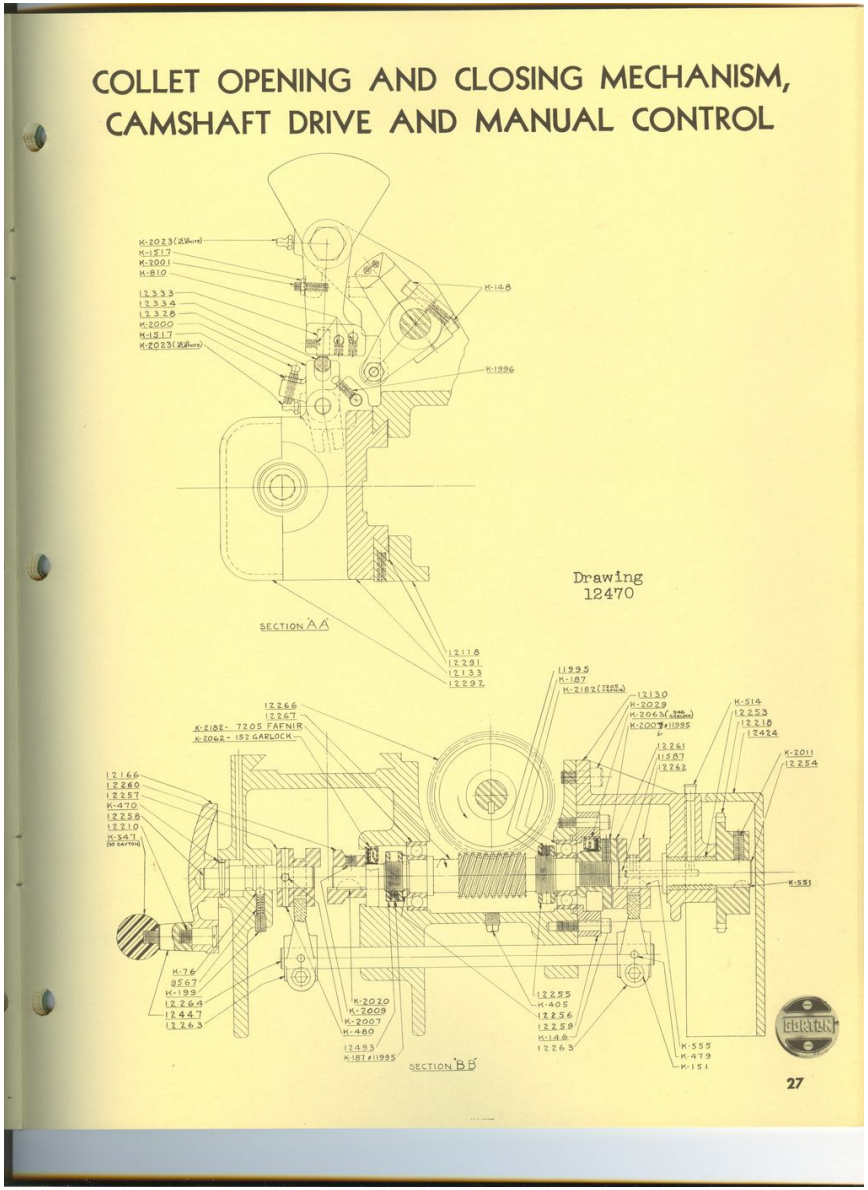

COLLET OPENING AND CLOSING MECHANISM,
CAMSHAFT DRIVE AND MANUAL CONTROL
Drawing
12470
SECTION A A
SECTION B B
27

Photo 28

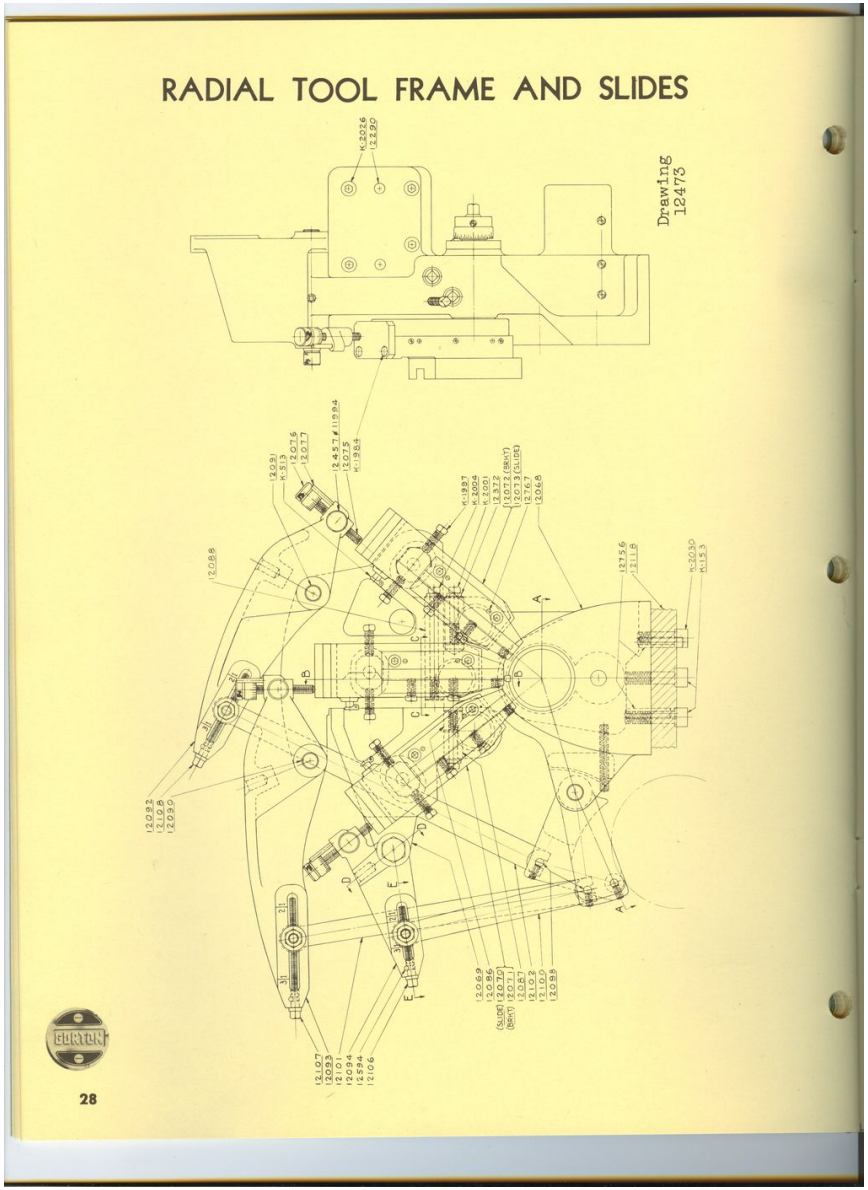


Photo 29

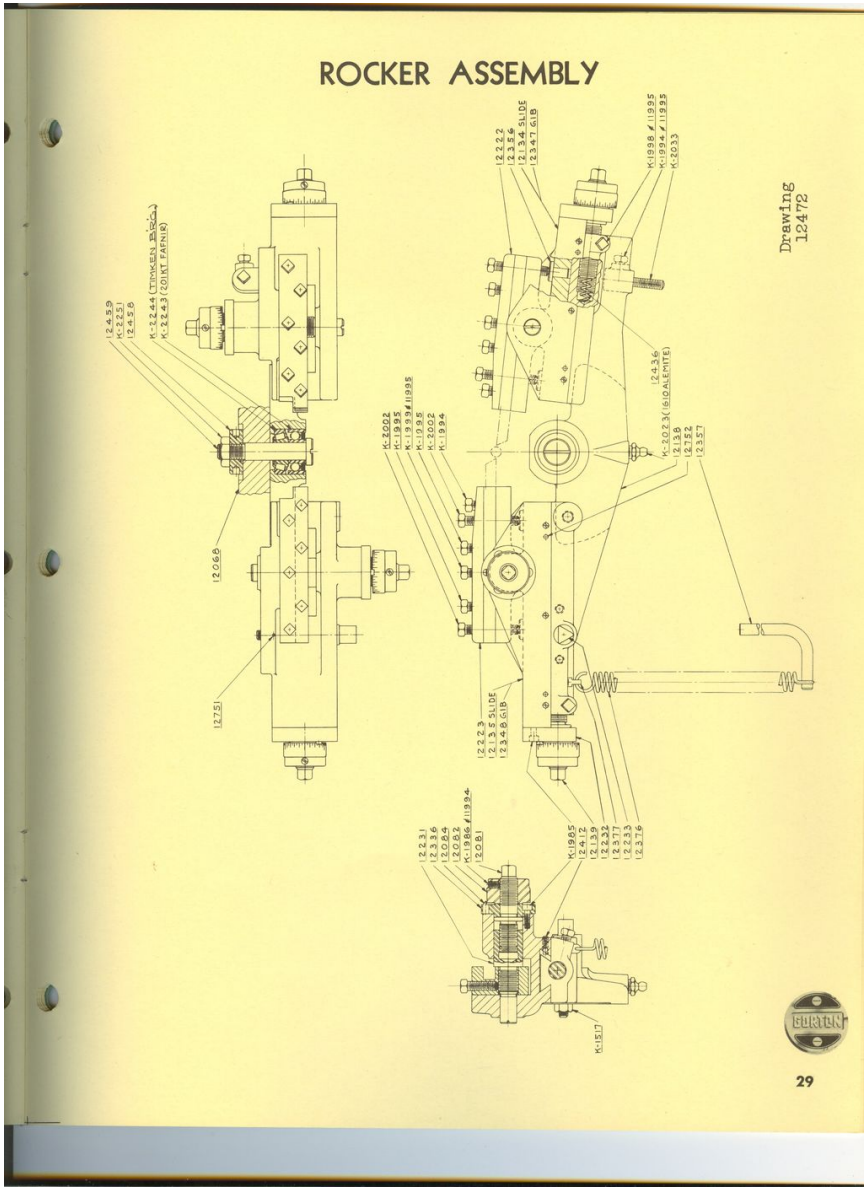


Photo 30

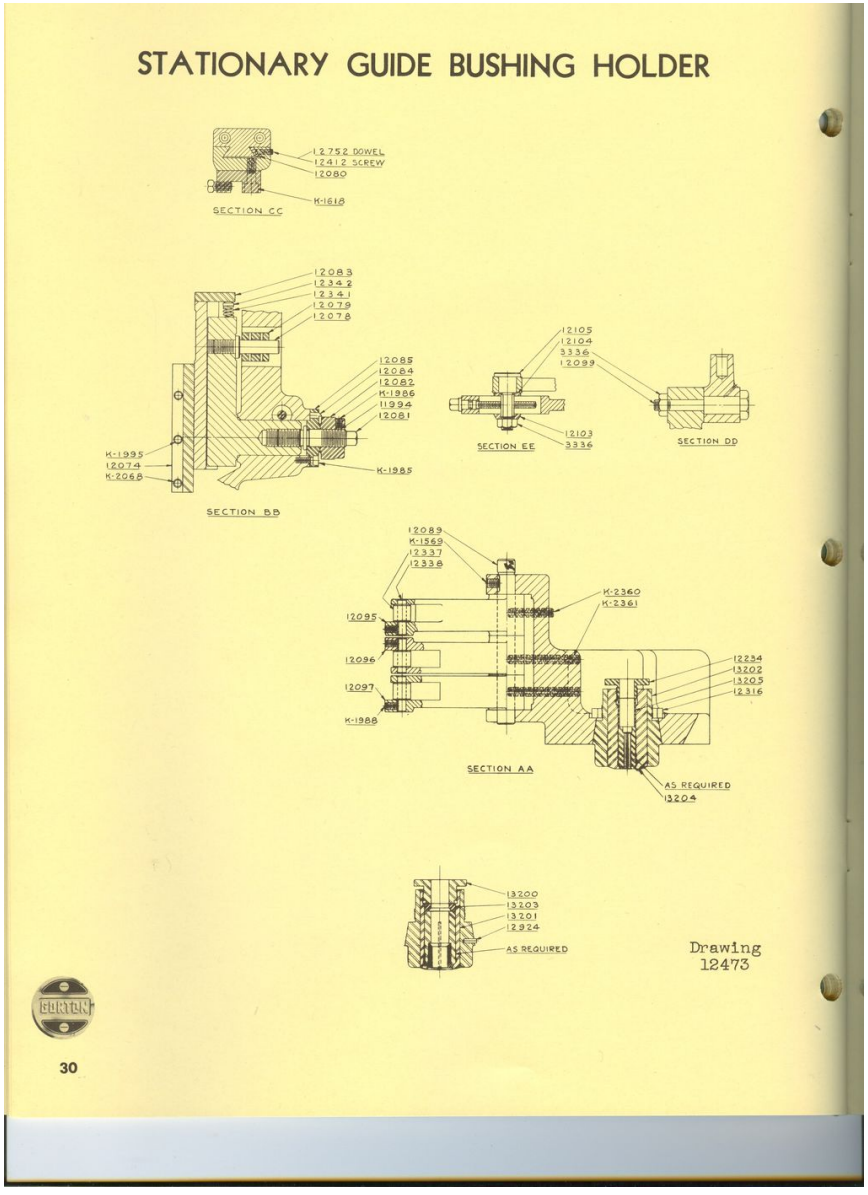

STATIONARY GUIDE BUSHING HOLDER
12752 DOWEL
12412 SCREW
12080
K-1618
SECTION CC
12083
12342
12341
12079
12078
12085
12084
12082
K-1986
11994
12081
K-1985
K-1995
12074
K-2068
SECTION BB
12105
12104
3336
12099
12103
3336
SECTION EE
SECTION DD
12089
K-1569
12337
12338
12095
12096
12097
K-1988
K-2360
K-2361
12234
13202
13205
12316
SECTION AA
AS REQUIRED
13204
13200
13203
13201
12924
AS REQUIRED
Drawing
12473
30

Photo 31

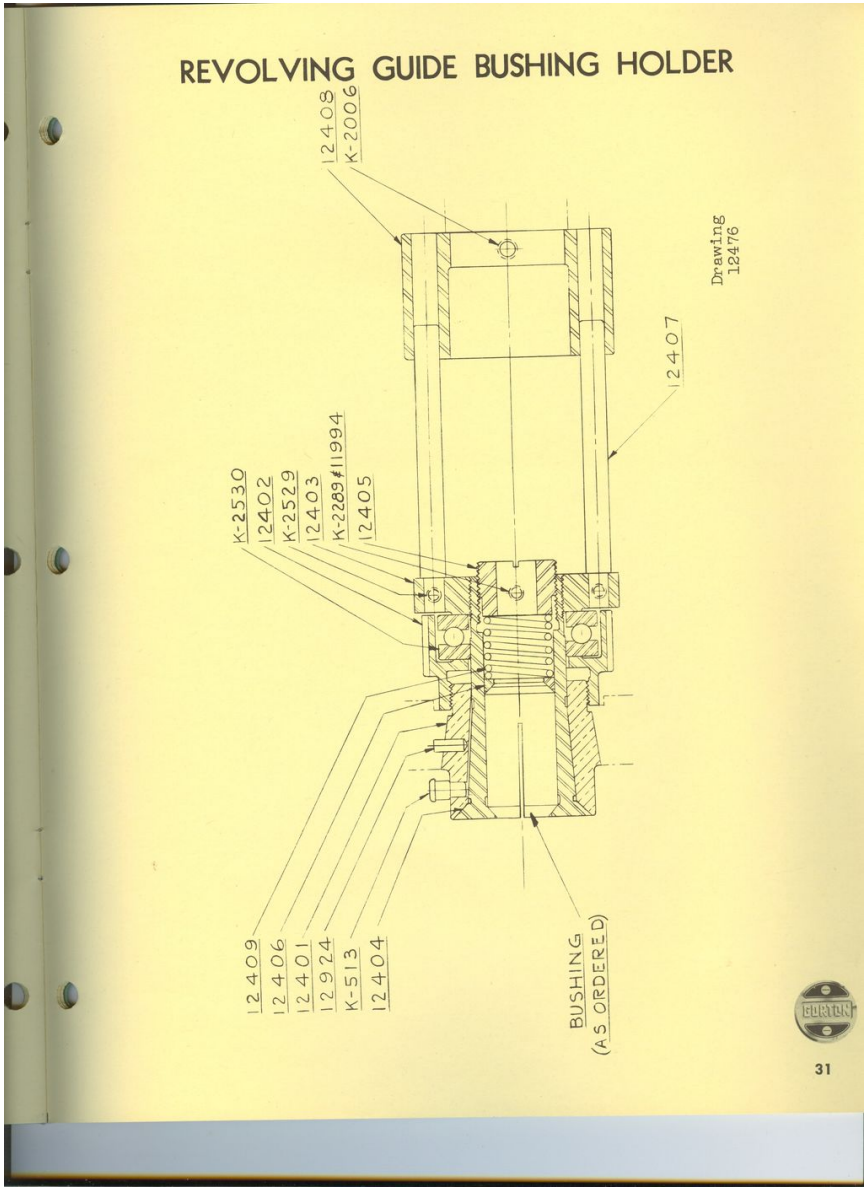
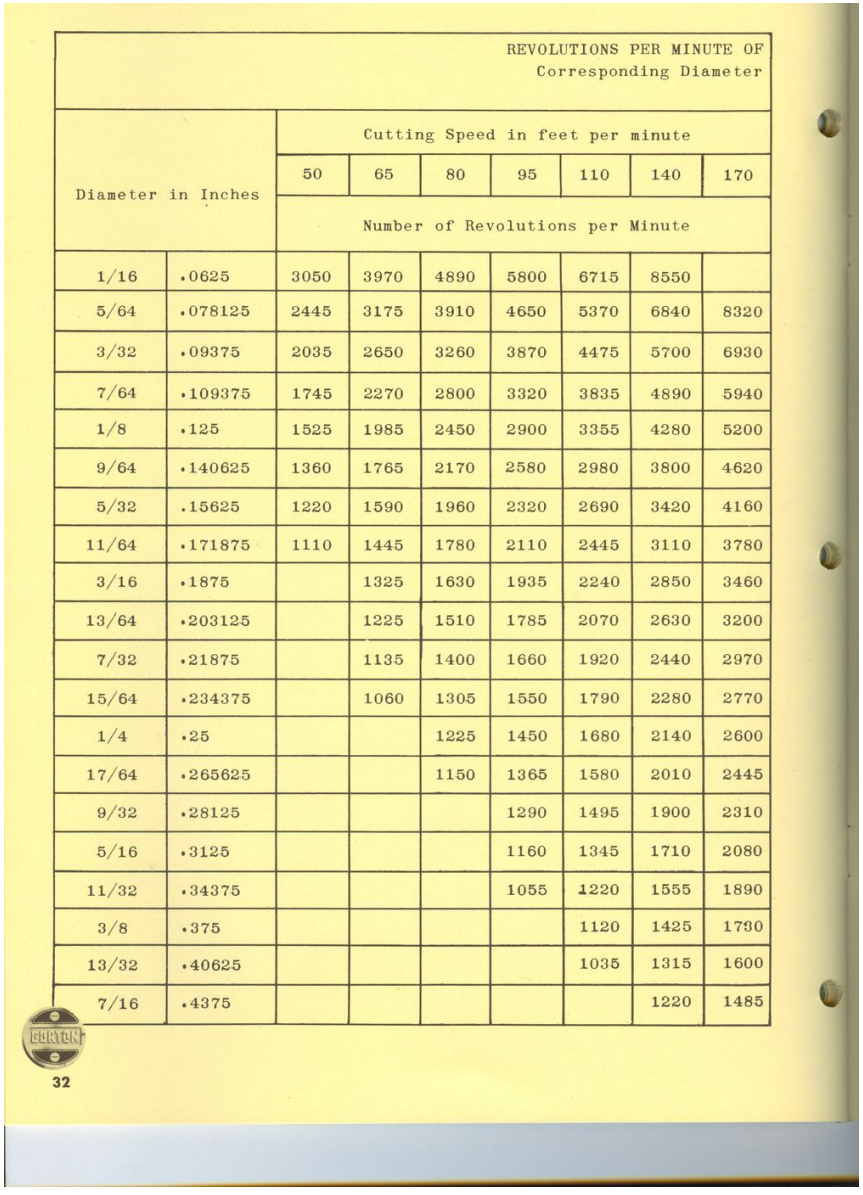

REVOLVING GUIDE BUSHING HOLDER
12408
K-2006
Drawing
12476
12407
K-2530
12402
K-2529
12403
K-2289#11994
12405
12409
12406
12401
12924
K-513
12404
BUSHING
(AS ORDERED)
BURTON
31

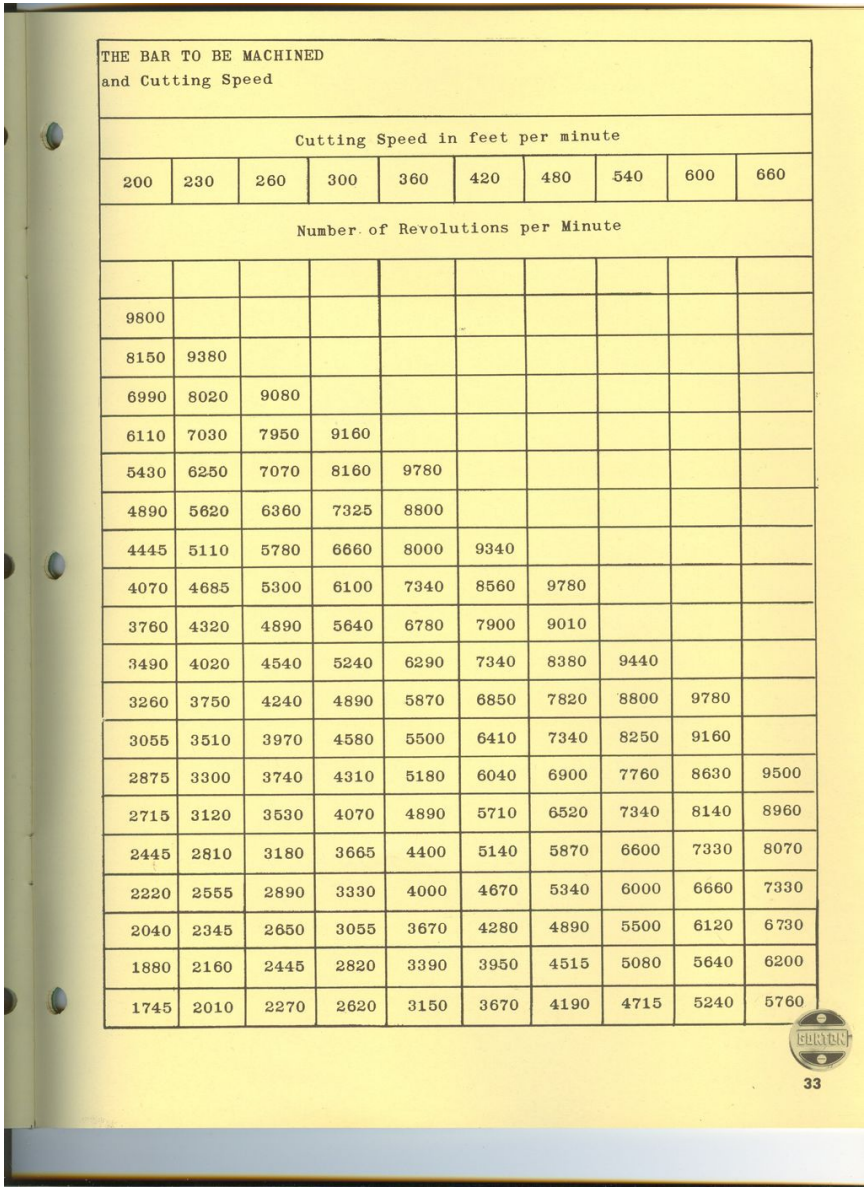
Photo 32



REVOLUTIONS PER MINUTE OF Corresponding Diameter

Diameter in Inches		Cutting Speed in feet per minute						
		50	65	80	95	110	140	170
		Number of Revolutions per Minute						
1/16	.0625	3050	3970	4890	5800	6715	8550	
5/64	.078125	2445	3175	3910	4650	5370	6840	8320
3/32	.09375	2035	2650	3260	3870	4475	5700	6930
7/64	.109375	1745	2270	2800	3320	3835	4890	5940
1/8	.125	1525	1985	2450	2900	3355	4280	5200
9/64	.140625	1360	1765	2170	2580	2980	3800	4620
5/32	.15625	1220	1590	1960	2320	2690	3420	4160
11/64	.171875	1110	1445	1780	2110	2445	3110	3780
3/16	.1875		1325	1630	1935	2240	2850	3460
13/64	.203125		1225	1510	1785	2070	2630	3200
7/32	.21875		1135	1400	1660	1920	2440	2970
15/64	.234375		1060	1305	1550	1790	2280	2770
1/4	.25			1225	1450	1680	2140	2600
17/64	.265625			1150	1365	1580	2010	2445
9/32	.28125				1290	1495	1900	2310
5/16	.3125				1160	1345	1710	2080
11/32	.34375				1055	1220	1555	1890
3/8	.375					1120	1425	1730
13/32	.40625					1035	1315	1600
7/16	.4375						1220	1485

Photo 33



THE BAR TO BE MACHINED
and Cutting Speed

Cutting Speed in feet per minute									
200	230	260	300	360	420	480	540	600	660
Number of Revolutions per Minute									
9800									
8150	9380								
6990	8020	9080							
6110	7030	7950	9160						
5430	6250	7070	8160	9780					
4890	5620	6360	7325	8800					
4445	5110	5780	6660	8000	9340				
4070	4685	5300	6100	7340	8560	9780			
3760	4320	4890	5640	6780	7900	9010			
3490	4020	4540	5240	6290	7340	8380	9440		
3260	3750	4240	4890	5870	6850	7820	8800	9780	
3055	3510	3970	4580	5500	6410	7340	8250	9160	
2875	3300	3740	4310	5180	6040	6900	7760	8630	9500
2715	3120	3530	4070	4890	5710	6520	7340	8140	8960
2445	2810	3180	3665	4400	5140	5870	6600	7330	8070
2220	2555	2890	3330	4000	4670	5340	6000	6660	7330
2040	2345	2650	3055	3670	4280	4890	5500	6120	6730
1880	2160	2445	2820	3390	3950	4515	5080	5640	6200
1745	2010	2270	2620	3150	3670	4190	4715	5240	5760

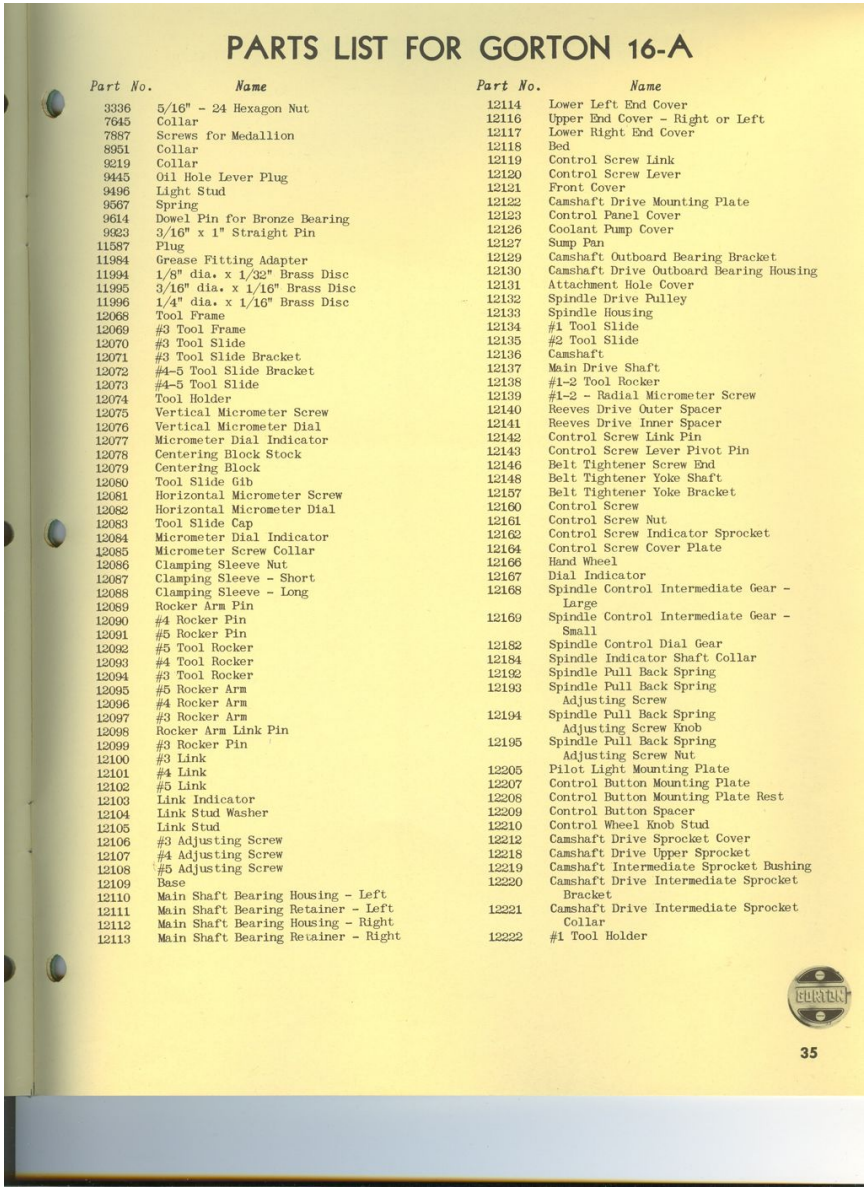
Photo 34

CUTTING SPEEDS AND COOLANTS

Material	High Speed Tools		Carbide Tools	
	Feet per Min.	Type of Coolant	Feet per Min.	Type of Coolant
Brass Cast Yellow	200-220	Dry	400-600	Soluble Oil
Brass One-Half Hard Commercial	135-165	Dry	250-300	Soluble Oil
Copper One-Half Hard Commercial	100-120	Soluble Oil	180-200	Soluble Oil
Bronze, Phosphor	95-115	Soluble Oil		Soluble Oil
Bronze, Gun Metal	130-150	Soluble Oil	200-220	Soluble Oil
Aluminum Commercially Hard Temper	130-140	Kerosene and Lard Oil	200-250	Kerosene and Lard Oil
Durable High Tensile #17 St.	190-200	Soluble Oil	275-300	Soluble Oil
Aluminum Free Machining Commercial	300-Up	Kerosene and Lard Oil	400-Up	Kerosene and Lard Oil
Steel #1112 Screw Stock	160-170	Cutting Oil	220-230	Cutting Oil
Free Cutting High Sulphur	175-185	Cutting Oil	240-260	Cutting Oil
High Manganese Free Cutting	180-200	Cutting Oil	270-300	Cutting Oil
#1120 Screw Stock	135-145	Soda Compound	250-260	Cutting Oil
#1020 Low Sulphur (For Carburizing)	110-120	Soda Compound	240-250	Soda Compound
#1045	80-90	Soda Compound	200-240	Soda Compound
#2315 - 3½% Nickel	110-120	Soda Compound	165-175	Soda Compound
#3120 Chrome Nickel	90-100	Soda Compound	140-160	Soda Compound
Plastics	250-Up		700-Up	

Note:- All speeds in ft. per minute as set forth above have only an approximate value and should be used basically as a guide, and not as a set rule or constant to rule in every instance. Tools, steel, jobs, conditions of all description can alter these values considerably. Coolants are a matter of opinion. It is suggested you consult your supplier for further information.

Photo 35



PARTS LIST FOR GORTON 16-A

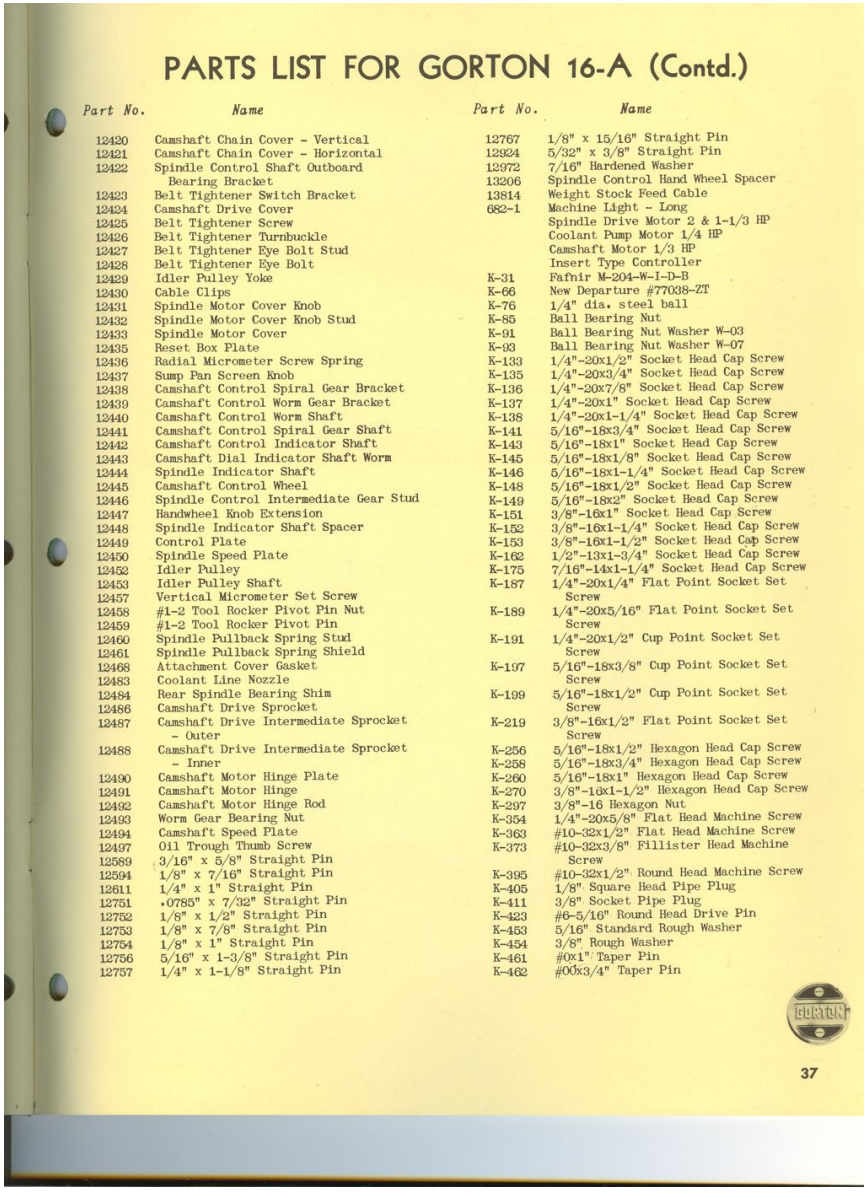
Part No.	Name
3336	5/16" - 24 Hexagon Nut
7645	Collar
7887	Screws for Medallion
8951	Collar
9219	Collar
9445	Oil Hole Lever Plug
9496	Light Stud
9567	Spring
9614	Dowel Pin for Bronze Bearing
9923	3/16" x 1" Straight Pin
11587	Plug
11984	Grease Fitting Adapter
11994	1/8" dia. x 1/32" Brass Disc
11995	3/16" dia. x 1/16" Brass Disc
11996	1/4" dia. x 1/16" Brass Disc
12068	Tool Frame
12069	#3 Tool Frame
12070	#3 Tool Slide
12071	#3 Tool Slide Bracket
12072	#4-5 Tool Slide Bracket
12073	#4-5 Tool Slide
12074	Tool Holder
12075	Vertical Micrometer Screw
12076	Vertical Micrometer Dial
12077	Micrometer Dial Indicator
12078	Centering Block Stock
12079	Centering Block
12080	Tool Slide Gib
12081	Horizontal Micrometer Screw
12082	Horizontal Micrometer Dial
12083	Tool Slide Cap
12084	Micrometer Dial Indicator
12085	Micrometer Screw Collar
12086	Clamping Sleeve Nut
12087	Clamping Sleeve - Short
12088	Clamping Sleeve - Long
12089	Rocker Arm Pin
12090	#4 Rocker Pin
12091	#5 Rocker Pin
12092	#5 Tool Rocker
12093	#4 Tool Rocker
12094	#3 Tool Rocker
12095	#5 Rocker Arm
12096	#4 Rocker Arm
12097	#3 Rocker Arm
12098	Rocker Arm Link Pin
12099	#3 Rocker Pin
12100	#3 Link
12101	#4 Link
12102	#5 Link
12103	Link Indicator
12104	Link Stud Washer
12105	Link Stud
12106	#3 Adjusting Screw
12107	#4 Adjusting Screw
12108	#5 Adjusting Screw
12109	Base
12110	Main Shaft Bearing Housing - Left
12111	Main Shaft Bearing Retainer - Left
12112	Main Shaft Bearing Housing - Right
12113	Main Shaft Bearing Retainer - Right
12114	Lower Left End Cover
12116	Upper End Cover - Right or Left
12117	Lower Right End Cover
12118	Bed
12119	Control Screw Link
12120	Control Screw Lever
12121	Front Cover
12122	Camshaft Drive Mounting Plate
12123	Control Panel Cover
12126	Coolant Pump Cover
12127	Sump Pan
12129	Camshaft Outboard Bearing Bracket
12130	Camshaft Drive Outboard Bearing Housing
12131	Attachment Hole Cover
12132	Spindle Drive Pulley
12133	Spindle Housing
12134	#1 Tool Slide
12135	#2 Tool Slide
12136	Camshaft
12137	Main Drive Shaft
12138	#1-2 Tool Rocker
12139	#1-2 - Radial Micrometer Screw
12140	Reeves Drive Outer Spacer
12141	Reeves Drive Inner Spacer
12142	Control Screw Link Pin
12143	Control Screw Lever Pivot Pin
12146	Belt Tightener Screw End
12148	Belt Tightener Yoke Shaft
12157	Belt Tightener Yoke Bracket
12160	Control Screw
12161	Control Screw Nut
12162	Control Screw Indicator Sprocket
12164	Control Screw Cover Plate
12166	Hand Wheel
12167	Dial Indicator
12168	Spindle Control Intermediate Gear - Large
12169	Spindle Control Intermediate Gear - Small
12182	Spindle Control Dial Gear
12184	Spindle Indicator Shaft Collar
12192	Spindle Pull Back Spring
12193	Spindle Pull Back Spring Adjusting Screw
12194	Spindle Pull Back Spring Adjusting Screw Knob
12195	Spindle Pull Back Spring Adjusting Screw Nut
12205	Pilot Light Mounting Plate
12207	Control Button Mounting Plate
12208	Control Button Mounting Plate Rest
12209	Control Button Spacer
12210	Control Wheel Knob Stud
12212	Camshaft Drive Sprocket Cover
12218	Camshaft Drive Upper Sprocket
12219	Camshaft Intermediate Sprocket Bushing
12220	Camshaft Drive Intermediate Sprocket Bracket
12221	Camshaft Drive Intermediate Sprocket Collar
12222	#1 Tool Holder

Photo 36

PARTS LIST FOR GORTON 16-A (Contd.)

Part No.	Name
12223	#2 Tool Holder
12231	#1-2 Axial Micrometer Screw Stud
12232	#1-2 Radial Micrometer Screw Plate
12233	#1-2 Rocker Toe
12235	Coolant Pump Plate
12236	Slotting Attachment Hole Cover
12237	#3 & 4 Cam Adapter
12238	#5 Cam Adapter
12239	Cam Lock Spacer
12240	#3 Cam Spacer
12241	Slotting Attachment Cam
12242	Collet Opening Toe
12243	Collet Closing Bearing Stud
12244	Cam Locking Collar
12245	Collet Opening Toe Lever
12246	Collet Closing Roller Lever
12247	Cam Spacer - 5 M/M
12248	Cam Spacer - 8 M/M
12249	Cam Spacer - 10 M/M
12250	Cam Spacer - 25 M/M
12251	Cam Spacer - 50 M/M
12252	Camshaft Thrust Washer
12253	Camshaft Drive Outboard Bearing
12254	Camshaft Rear Drive Shaft
12255	Camshaft Drive Worm Bearing Nut
12257	Camshaft Hand Control Shaft Clutch
12258	Camshaft Hand Control Shaft
12259	Camshaft Drive Worm Bearing Retainer
12260	Camshaft Drive Worm Clutch - Front
12261	Camshaft Drive Worm Clutch - Rear
12262	Camshaft Rear Drive Shaft Clutch
12263	Camshaft Shift Rod Fork
12264	Camshaft Shift Rod
12265	Worm Gear Cover
12266	Camshaft Worm Gear
12267	Camshaft Drive Worm Shaft
12280	Spindle Shoe Holder Screw
12281	Spindle Shoe Holder
12289	Spindle Shoe
12290	#3 Tool Frame Dowel Pin
12291	Spindle Housing Gib
12292	Spindle Housing Cover
12293	Spindle
12294	Spindle Nose Sleeve
12295	Spindle Nose
12296	Chucking Sleeve - Large Collet
12297	Chucking Sleeve - Small Collet
12298	Chucking Sleeve Drive Key
12299	Toggle Equalizer
12300	Chucking Sleeve Tube
12301	Chucking Sleeve Spring - Large Collet
12302	Chucking Sleeve Spring - Small Collet
12303	Toggle Key
12304	Bobbin Bearing Housing
12305	Bobbin Bearing Housing Cover
12306	Bobbin Bearing Pivot Pin
12307	Bobbin Bearing Sleeve
12308	Bobbin Bearing Sleeve Nut
12309	Toggle Finger
12310	Toggle Finger Hinge Pin
12311	Toggle Holder
12312	Toggle Holder Sleeve
12313	Toggle Adjusting Nut
12314	Front Spindle Bearing
12315	Front Spindle Bearing Inset
12316	Front Spindle Bearing Lock Nut
12317	Rear Spindle Bearing Housing
12318	Rear Spindle Bearing Housing Nut
12319	Rear Spindle Bearing Nut
12320	Rear Spindle Bearing Spacer
12321	Rear Spindle Bearing Oil Retainer
12322	Spindle Pulley
12323	Spindle Pulley Nut
12324	Bobbin Bearing Lever
12325	Bobbin Bearing Bell Crank Lever
12326	Bobbin Bearing Bell Crank Lever Stud
12327	Bobbin Bearing Lever Shaft
12328	Collet Opening Lever
12329	Collet Opening Lever Shaft
12330	Spindle Locking Shaft
12331	Collet Opening Counterweight Lever
12332	Collet Opening Counterweight Lever Stud
12333	Collet Opening Counterweight Lever Pin
12334	Collet Opening Counterweight Lever Pin End
12335	Collet Opening Pin
12336	#1-2 Tool Axial Micrometer Screw Collar
12337	Rocker Arm Roller
12338	Rocker Arm Roller Pin
12339	Counter Cam Roller
12340	Counter Cam
12341	Tool Slide Spring
12342	Tool Slide Spring Pin
12343	Camshaft Bushing - Right
12344	Camshaft Bushing - Center
12345	Camshaft Bushing - Left
12346	Camshaft Outboard Bearing Bushing
12347	#1 Tool Slide Gib
12348	#2 Tool Slide Gib
12349	Main Drive Shaft Collar
12354	#1-2 Tool Adjusting Bracket
12355	Spindle Stop Bracket
12356	#1-2 Tool Adjusting Bracket Stop Stud
12357	#1-2 Tool Rocker Spring Anchor - Lower
12371	Belt Tightener Spring
12372	1/4" Washer (3-4-5 Clamp Screws)
12373	Planex Cam Oil Trough
12376	#1-2 Tool Rocker Spring
12377	#1-2 Tool Rocker Spring Anchor - Upper
12378	Sump Pan Screen
12399	Spindle Nose - Small Collet
12400	Spindle Control Intermediate Gear Shim
12410	Camshaft Adjusting Nut
12412	Tool Slide Gib Screw
12413	Spindle Housing Gib Screw
12414	Camshaft Nut
12415	Control Screw Sprocket - Large
12416	Spindle Control Shaft Sprocket
12417	Spindle Control Idler Shaft Sprocket
12418	Spindle Control Idler Shaft
12419	Spindle Control Shaft

Photo 37



PARTS LIST FOR GORTON 16-A (Contd.)

Part No.	Name
12420	Camshaft Chain Cover - Vertical
12421	Camshaft Chain Cover - Horizontal
12422	Spindle Control Shaft Outboard Bearing Bracket
12423	Belt Tightener Switch Bracket
12424	Camshaft Drive Cover
12425	Belt Tightener Screw
12426	Belt Tightener Turnbuckle
12427	Belt Tightener Eye Bolt Stud
12428	Belt Tightener Eye Bolt
12429	Idler Pulley Yoke
12430	Cable Clips
12431	Spindle Motor Cover Knob
12432	Spindle Motor Cover Knob Stud
12433	Spindle Motor Cover
12435	Reset Box Plate
12436	Radial Micrometer Screw Spring
12437	Sump Pan Screen Knob
12438	Camshaft Control Spiral Gear Bracket
12439	Camshaft Control Worm Gear Bracket
12440	Camshaft Control Worm Shaft
12441	Camshaft Control Spiral Gear Shaft
12442	Camshaft Control Indicator Shaft
12443	Camshaft Dial Indicator Shaft Worm
12444	Spindle Indicator Shaft
12445	Camshaft Control Wheel
12446	Spindle Control Intermediate Gear Stud
12447	Handwheel Knob Extension
12448	Spindle Indicator Shaft Spacer
12449	Control Plate
12450	Spindle Speed Plate
12452	Idler Pulley
12453	Idler Pulley Shaft
12457	Vertical Micrometer Set Screw
12458	#1-2 Tool Rocker Pivot Pin Nut
12459	#1-2 Tool Rocker Pivot Pin
12460	Spindle Pullback Spring Stud
12461	Spindle Pullback Spring Shield
12468	Attachment Cover Gasket
12483	Coolant Line Nozzle
12484	Rear Spindle Bearing Shim
12486	Camshaft Drive Sprocket
12487	Camshaft Drive Intermediate Sprocket - Outer
12488	Camshaft Drive Intermediate Sprocket - Inner
12490	Camshaft Motor Hinge Plate
12491	Camshaft Motor Hinge
12492	Camshaft Motor Hinge Rod
12493	Worm Gear Bearing Nut
12494	Camshaft Speed Plate
12497	Oil Trough Thumb Screw
12589	3/16" x 5/8" Straight Pin
12594	1/8" x 7/16" Straight Pin
12611	1/4" x 1" Straight Pin
12751	.0785" x 7/32" Straight Pin
12752	1/8" x 1/2" Straight Pin
12753	1/8" x 7/8" Straight Pin
12754	1/8" x 1" Straight Pin
12756	5/16" x 1-3/8" Straight Pin
12757	1/4" x 1-1/8" Straight Pin
12767	1/8" x 15/16" Straight Pin
12924	5/32" x 3/8" Straight Pin
12972	7/16" Hardened Washer
13206	Spindle Control Hand Wheel Spacer
13814	Weight Stock Feed Cable
682-1	Machine Light - Long
	Spindle Drive Motor 2 & 1-1/3 HP
	Coolant Pump Motor 1/4 HP
	Camshaft Motor 1/3 HP
	Insert Type Controller
K-31	Fafnir M-204-W-I-D-B
K-66	New Departure #77038-ZT
K-76	1/4" dia. steel ball
K-85	Ball Bearing Nut
K-91	Ball Bearing Nut Washer W-03
K-93	Ball Bearing Nut Washer W-07
K-133	1/4"-20x1/2" Socket Head Cap Screw
K-135	1/4"-20x3/4" Socket Head Cap Screw
K-136	1/4"-20x7/8" Socket Head Cap Screw
K-137	1/4"-20x1" Socket Head Cap Screw
K-138	1/4"-20x1-1/4" Socket Head Cap Screw
K-141	5/16"-18x3/4" Socket Head Cap Screw
K-143	5/16"-18x1" Socket Head Cap Screw
K-145	5/16"-18x1/8" Socket Head Cap Screw
K-146	5/16"-18x1-1/4" Socket Head Cap Screw
K-148	5/16"-18x1/2" Socket Head Cap Screw
K-149	5/16"-18x2" Socket Head Cap Screw
K-151	3/8"-16x1" Socket Head Cap Screw
K-152	3/8"-16x1-1/4" Socket Head Cap Screw
K-153	3/8"-16x1-1/2" Socket Head Cap Screw
K-162	1/2"-13x1-3/4" Socket Head Cap Screw
K-175	7/16"-14x1-1/4" Socket Head Cap Screw
K-187	1/4"-20x1/4" Flat Point Socket Set Screw
K-189	1/4"-20x5/16" Flat Point Socket Set Screw
K-191	1/4"-20x1/2" Cup Point Socket Set Screw
K-197	5/16"-18x3/8" Cup Point Socket Set Screw
K-199	5/16"-18x1/2" Cup Point Socket Set Screw
K-219	3/8"-16x1/2" Flat Point Socket Set Screw
K-256	5/16"-18x1/2" Hexagon Head Cap Screw
K-258	5/16"-18x3/4" Hexagon Head Cap Screw
K-260	5/16"-18x1" Hexagon Head Cap Screw
K-270	3/8"-16x1-1/2" Hexagon Head Cap Screw
K-297	3/8"-16 Hexagon Nut
K-354	1/4"-20x5/8" Flat Head Machine Screw
K-363	#10-32x1/2" Flat Head Machine Screw
K-373	#10-32x3/8" Fillister Head Machine Screw
K-395	#10-32x1/2" Round Head Machine Screw
K-405	1/8" Square Head Pipe Plug
K-411	3/8" Socket Pipe Plug
K-423	#6-5/16" Round Head Drive Pin
K-453	5/16" Standard Rough Washer
K-454	3/8" Rough Washer
K-461	#0x1" Taper Pin
K-462	#00x3/4" Taper Pin

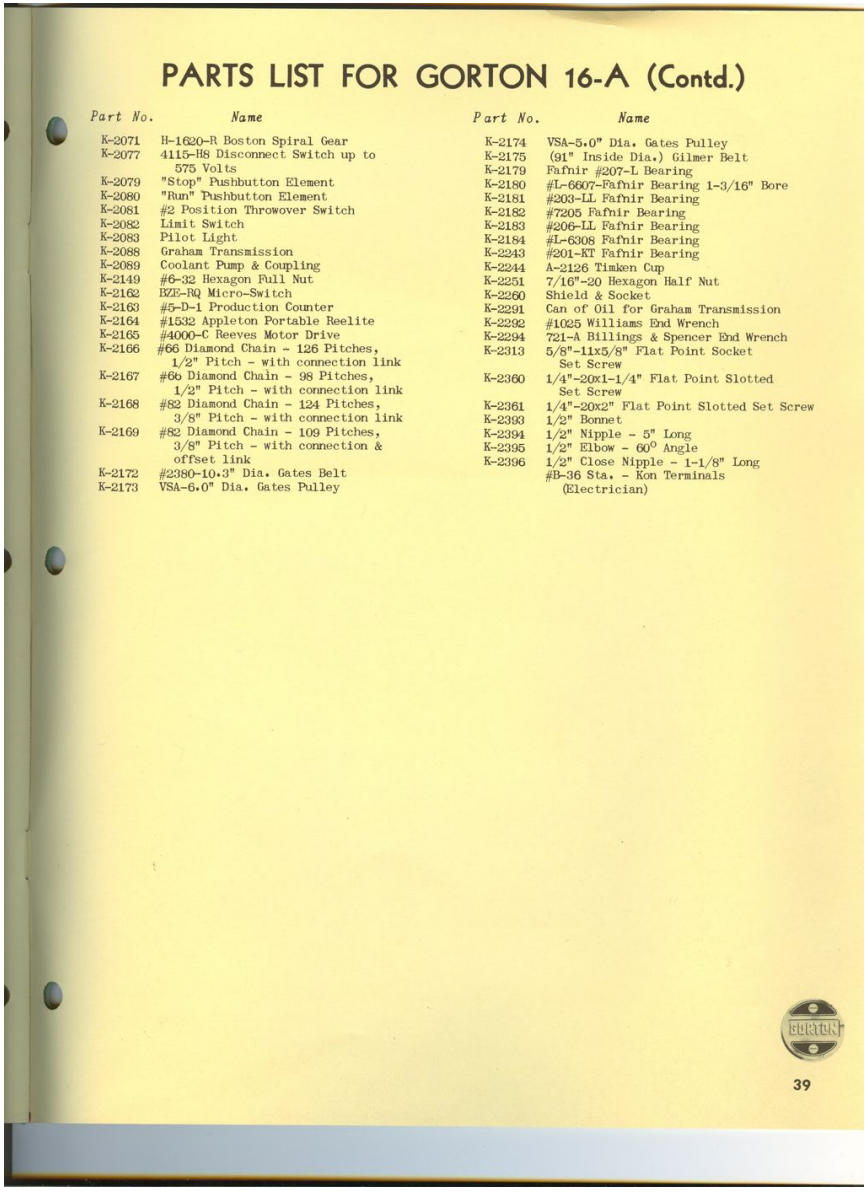
Photo 38

PARTS LIST FOR GORTON 16-A (Contd.)

Part No.	Name
K-470	#2x1" Taper Pin
K-471	#2x1-1/4" Taper Pin
K-479	#3x1-1/2" Taper Pin
K-480	#3x1-3/4" Taper Pin
K-486	#4x1-5/8" Taper Pin
K-487	#4x1-3/4" Taper Pin
K-488	#4X2" Taper Pin
K-513	Gits Oiler #301
K-514	Gits Oiler #302
K-547	#95 Dayton Block Bakelite Ball
K-551	#3 Woodruff Key (1/8"x1/2")
K-553	#5 Woodruff Key (1/8"x5/8")
K-555	#9 Woodruff Key (3/16"x3/4")
K-666	"Gorton" Medallion
K-683	3/8"-16x5/8" Socket Head Cap Screw
K-686	9/16"-12 Hexagon Half Nut
K-807	7/16"-14x1-1/4" Hexagon Head Cap Screw
K-810	1/4"-20x3/8" Full Dog Point Set Screw
K-817	3/8" Nipple - 2"
K-1346	#6-32x3/8" Round Head Machine Screw
K-1350	Ball Bearing Nut N-07
K-1351	9/16"-12 Hexagon Half Nut
K-1354	5/16"-18 Hexagon Half Nut
K-1517	1/4"-20 Hexagon Half Nut
K-1569	1/4"-20x3/8" Flat Point Socket Set Screw
K-1618	1/4"-20x5/8" Socket Head Cap Screw
K-1762	#8-32x3/4" Round Head Machine Screw
K-1763	#8-32 Hexagon Pull Nut
K-1770	250 Watt Transformer
K-1884	15 Amp. Fuse for 440 volts
K-1901	30 Amp. Fuse for 220 volts
K-1916	Coolant Oil Strainer
K-1917	1/2" Nipple - 6" Long
K-1918	5/16"-24x5/8" Oven Hard Machine Screw
K-1982	#4-40X1/4" Round Head Machine Screw
K-1983	#6-32x3/4" Socket Head Cap Screw
K-1984	#8-32x5/16" Socket Head Cap Screw
K-1985	#8-32x1/2" Socket Head Cap Screw
K-1986	#10-32x1/4" Flat Point Socket Set Screw
K-1988	#10-32x3/8" Flat Point Socket Set Screw
K-1994	1/4"-20x3/8" Flat Point Square Head Set Screw
K-1995	1/4"-20x1/2" Flat Point Square Head Set Screw
K-1996	1/4"-20x5/8" Flat Point Square Head Set Screw
K-1997	1/4"-20x3/4" Oval Point Square Head Set Screw
K-1998	1/4"-20x3/4" Flat Point Square Head Set Screw
K-1999	1/4"-20x7/8" Flat Point Square Head Set Screw
K-2001	1/4"-20x1-1/2" Flat Point Square Head Set Screw
K-2002	1/4"-20x1-1/2" Oval Point Square Head Set Screw
K-2004	1/4"-20x3-1/8" Cup Point Square Head Set Screw
K-2005	1/4"-20x1/2" Full Dog Point Socket Set Screw

Part No.	Name
K-2006	1/4"-20x1/2" Flat Point Socket Set Screw
K-2007	1/4"-20x5/8" Cup Point Socket Set Screw
K-2009	5/16"-18x5/16" Flat Point Socket Set Screw
K-2010	5/16"-18x3/4" Flat Point Socket Set Screw
K-2011	5/16"-18x7/8" Flat Point Socket Set Screw
K-2012	3/8"-16x5/8" Flat Point Socket Set Screw
K-2016	#000x1" Taper Pin
K-2017	#1x1-1/4" Taper Pin
K-2018	#00x1/2" Taper Pin
K-2020	#7 Woodruff Key (1/8"x3/4")
K-2021	#6 Woodruff Key (3/8"x1-1/2")
K-2023	Grease Fitting - Alemite #1610
K-2025	Grease Fitting - Alemite #1925
K-2026	5/16"-18x7/8" Socket Head Cap Screw
K-2029	3/8"-16x7/8" Socket Head Cap Screw
K-2030	3/8"-16x1-1/8" Socket Head Cap Screw
K-2032	5/16"-18x1-1/4" Flat Point Square Head Set Screw
K-2033	5/16"-18x2" Flat Point Square Head Set Screw
K-2034	Oilite A-1130 Bushing
K-2035	Oilite A-1108-1 Bushing
K-2036	Oilite A-1054-5 Bushing
K-2038	Oilite A-604-1 Bushing
K-2039	Oilite A-411 Bushing
K-2040	Oilite A-604-4 Bushing
K-2042	#1930 Alemite Grease Fitting
K-2043	#6576 Alemite Grease Gun
K-2044	1/2" Swing Valve
K-2046	3/4" Male - 1/2" Female Reducer
K-2047	3/4" - 45° Elbow
K-2048	3/4" Nipple - 2" Long
K-2049	3/4" Street Elbow
K-2050	1/2" Male - 3/8" Female Reducer
K-2051	3/8" Nipple - 5½" Long
K-2052	3/8" Tee
K-2053	3/8" Nipple - 15-3/4" Long
K-2054	3/8" Elbow
K-2055	3/8" Union
K-2056	3/8" Valve
K-2057	3/8" Nipple - 3" Long
K-2058	3/8" Nipple - 7" Long
K-2059	#216 Garlock Closure
K-2060	1149 Garlock Closure
K-2061	#390 Garlock Closure
K-2062	#151 Garlock Closure
K-2063	#546 Garlock Closure
K-2064	#10-32x1/2" Oval Head Machine Screw
K-2065	#WT-2402 Gits Oiler
K-2066	DF-2301 Gits Oiler
K-2067	1-1/4" Dia. Expansion Plug
K-2068	1/4"-20x1/4" Flat Point Slotted Set Screw
K-2069	1/4"-20x3/8" Fillister Head Machine Screw - Low Head
K-2070	Q-1344 Boston Gear

Photo 39



PARTS LIST FOR GORTON 16-A (Contd.)

Part No.	Name
K-2071	H-1620-R Boston Spiral Gear
K-2077	4115-H8 Disconnect Switch up to 575 Volts
K-2079	"Stop" Pushbutton Element
K-2080	"Run" Pushbutton Element
K-2081	#2 Position Throwover Switch
K-2082	Limit Switch
K-2083	Pilot Light
K-2088	Graham Transmission
K-2089	Coolant Pump & Coupling
K-2149	#6-32 Hexagon Full Nut
K-2162	BZE-RQ Micro-Switch
K-2163	#5-D-1 Production Counter
K-2164	#1532 Appleton Portable Reelite
K-2165	#4000-C Reeves Motor Drive
K-2166	#66 Diamond Chain - 126 Pitches, 1/2" Pitch - with connection link
K-2167	#6b Diamond Chain - 98 Pitches, 1/2" Pitch - with connection link
K-2168	#82 Diamond Chain - 124 Pitches, 3/8" Pitch - with connection link
K-2169	#82 Diamond Chain - 109 Pitches, 3/8" Pitch - with connection & offset link
K-2172	#2380-10.3" Dia. Gates Belt
K-2173	VSA-6.0" Dia. Gates Pulley
K-2174	VSA-5.0" Dia. Gates Pulley
K-2175	(91" Inside Dia.) Gilmer Belt
K-2179	Fafnir #207-L Bearing
K-2180	#L-6607-Fafnir Bearing 1-3/16" Bore
K-2181	#203-LL Fafnir Bearing
K-2182	#7205 Fafnir Bearing
K-2183	#206-LL Fafnir Bearing
K-2184	#L-6308 Fafnir Bearing
K-2243	#201-KT Fafnir Bearing
K-2244	A-2126 Timken Cup
K-2251	7/16"-20 Hexagon Half Nut
K-2260	Shield & Socket
K-2291	Can of Oil for Graham Transmission
K-2292	#1025 Williams End Wrench
K-2294	721-A Billings & Spencer End Wrench
K-2313	5/8"-11x5/8" Flat Point Socket Set Screw
K-2360	1/4"-20x1-1/4" Flat Point Slotted Set Screw
K-2361	1/4"-20x2" Flat Point Slotted Set Screw
K-2393	1/2" Bonnet
K-2394	1/2" Nipple - 5" Long
K-2395	1/2" Elbow - 60° Angle
K-2396	1/2" Close Nipple - 1-1/8" Long
	#B-36 Sta. - Kon Terminals (Electrician)

Photo 40

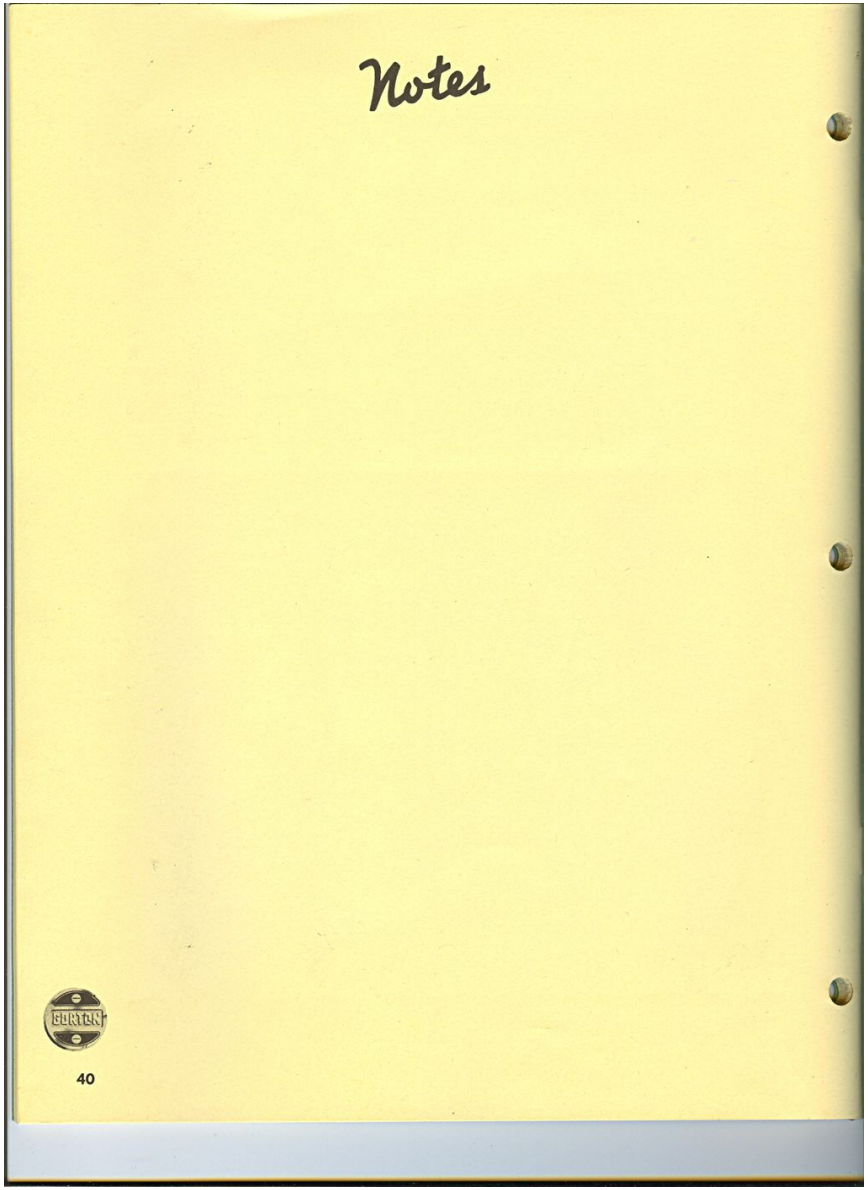


Photo 41

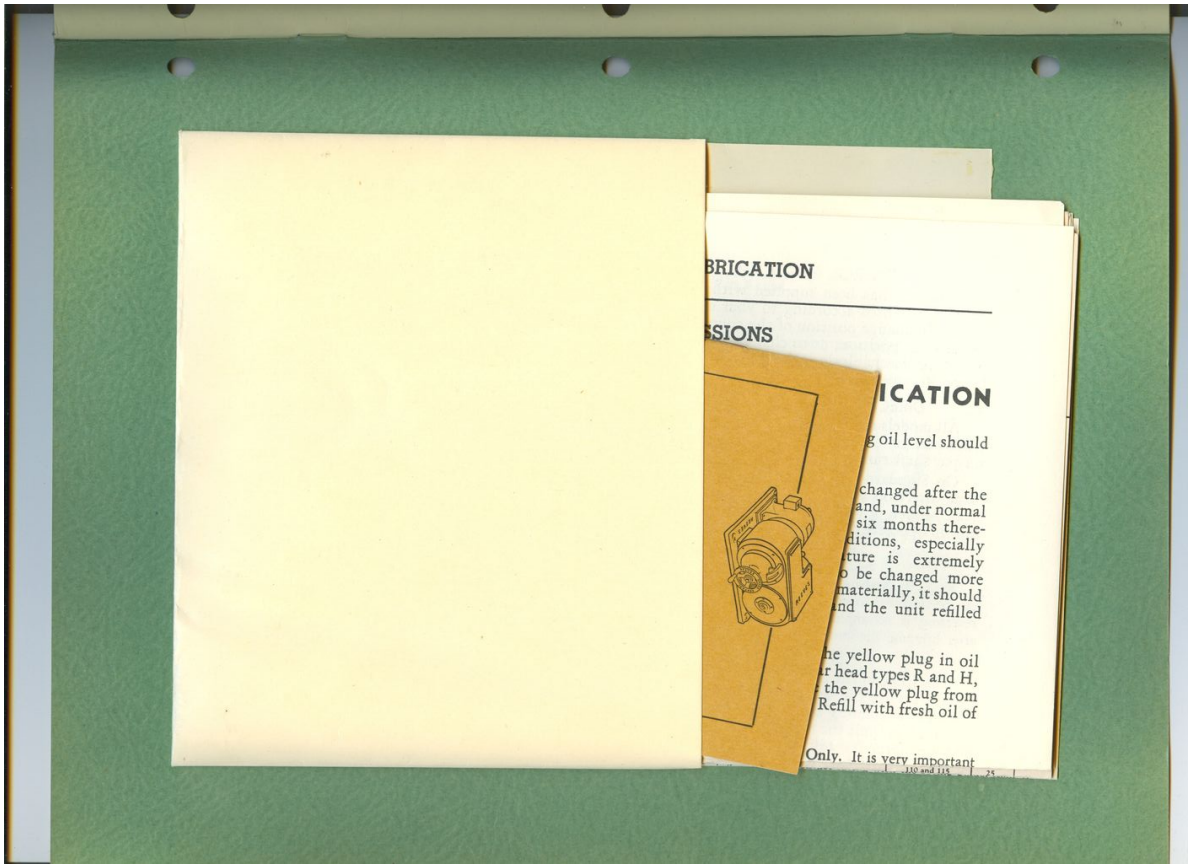

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Photo 42


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