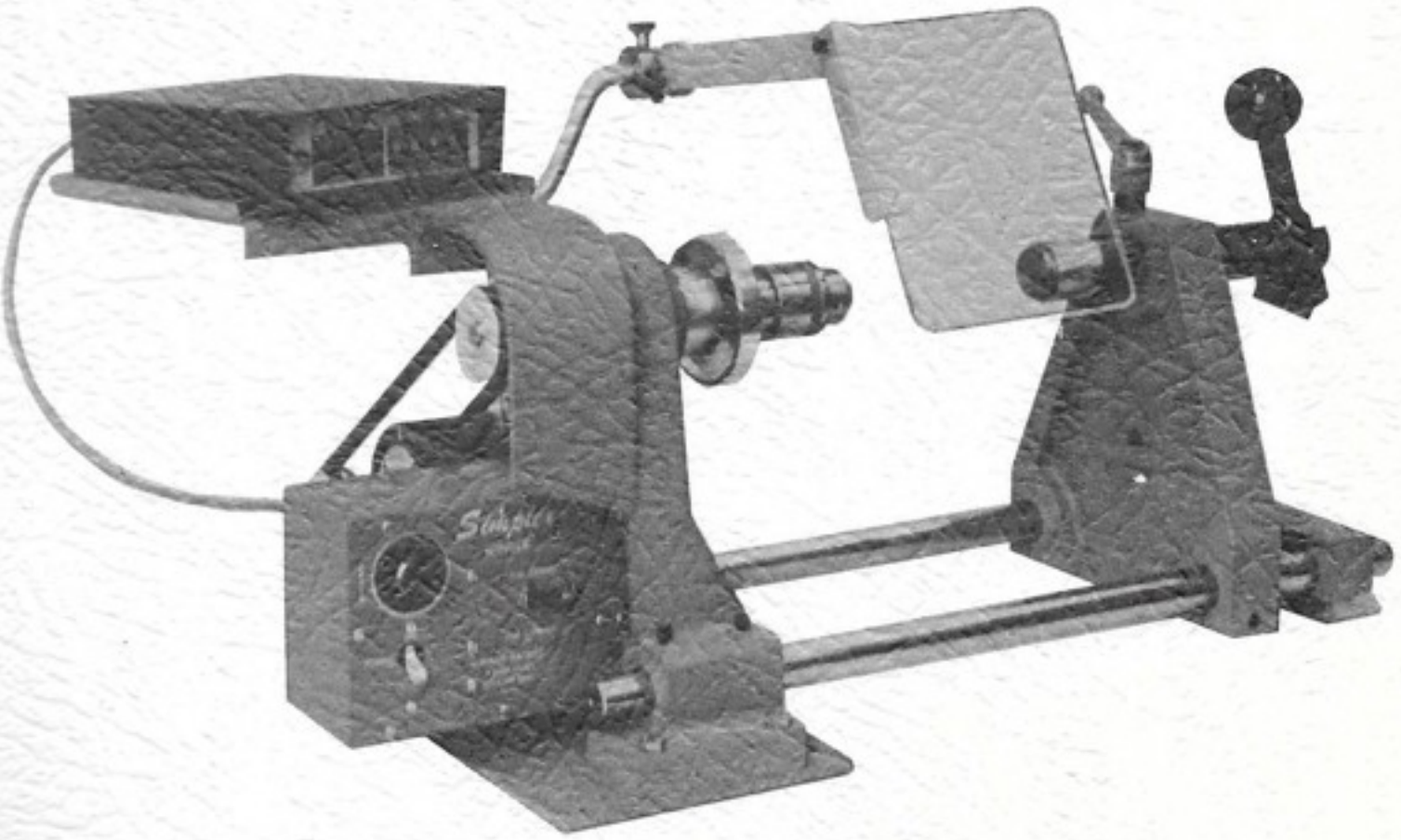
OPERATING INSTRUCTIONS
SIMPLEX HAND WINDER



GORMAN
WIRE WINDING MACHINES

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INDEX FOR THE SIMPLEX

INTRODUCTION

The *SIMPLEX* Winding machine is a simple to operate basic hand guided winder with a considerable range of **Torque-Speed** Pulley combinations for fine or heavy wires.

There is no combination of switches which can be turned "on" or "off" which will damage the machine except the **Forward/Reverse** (A12) or **Top Going/Top Coming Switch** on the control box. Make sure that the machine has come to a full stop before reversing this switch or an over-load will be put on the SCR control.

The **Top Going** position is the normal position for winding and the **Top Coming** position is for un-winding turns.

The other controls on the front face of the control box are the **Circuit Breaker "ON" "OFF" Switch** (A13) and above it is the **Speed Limiter** (A14) which limits the top speed of the machine when run with the **Variable Speed Foot Pedal**, (NOT SHOWN).

The **Foot Pedal** is the only control for operating the machine. When the **Foot Pedal** is depressed, the machine will run until the pre-set count has been reached and then dynamically brake to a stop. If additional turns are needed, just momentarily lift your foot off the pedal and this restores power to the machine without losing the count, and the machine can continue to be run. A dual pre-set Counter can be substituted for the standard single pre-set Counter (A1).

Both these Counters are add-subtract types. If the spindle is reversed, counts will be subtracted. The sense of the pick-up can be reversed by a switch on the counter panel (A1A) so that it can totalize in either a **Top Going** or **Top Coming** direction.

The Counter can add to 9999.9 counts with the last digit after the decimal point counting tenths of turns of the spindle.

BRAKE

An optional **Electro-Mechanical BRAKE** (A16) can be mounted on the motor shaft in combination with the Timimg Belt Pulley Combination (C29).

The **BRAKE** will lock the motor and spindle each time the **Foot Pedal** is released, and will disengage when the motor is started again. The purpose of the **MOTOR BRAKE** is to prevent the spindle from unwinding itself when winding heavy wire which acts like a coil spring and tries to reverse the spindle a bit after stopping.

A **Toggle Switch** (A15) on the left end of the control box can de-activate the auto-braking action.

PULLEY COMBINATIONS

A Timing Belt **PULLEY COMBINATION** (C29) gives a 2.8 reduction in the spindle speed from the motor. This **PULLEY COMBINATION** can be substituted for the standard double Pulley Flat Belt Combination.

ALWAYS PLACE THE SMALLER TIMING BELT PULLEY ON THE MOTOR AND THE LARGER PULLEY ON THE SPINDLE SHAFT – Photo C.

When using the Standard Flat Belt **PULLEY COMBINATION**, the speed range is either half motor speed or equal to motor speed.

Arrange the Flat Belt Pulleys so that the equal size 2" Pulleys are aligned with each other or the Belt will not fit or drive the machine. The Flat Belt can be moved from one pair of Pulleys to the other by pulling forward the black plastic handle next to the motor (C35) and at the same time rolling the Belt from one pulley to the other while turning the spindle by hand. Always move the Belt from the larger Pulley to the adjacent smaller Pulley first.

There are two Motors available for the ***SIMPLEX***. The standard Motor is a 4000 RPM Motor which gives either a 2000 RPM speed or a 4000 RPM speed with the Flat Belt Pulleys. The alternate Timing Belt **PULLEY COMBINATION** gives about 1400 RPM. All these speeds are from zero to these maximum speeds, and are varied with the **Foot Pedal**.

The alternate **7000 RPM** Motor gives 3500 RPM and 7000 RPM with the Flat Belt Pulleys but with less torque. The Timing Belt Combination will give a speed from zero to 2500 RPM.

BELT TENSION ADJUSTMENT

The spindle drive belt can be adjusted for tension by moving the angle bracket (C34) on the casting just behind the spindle pulley. Loosen the two screws holding it in position in its slot and move the bracket towards the motor for more tension. Proper tension should be so that there is no slippage or only slight slippage on the flat belt on the pulley with the spindle held tight and the **Foot Pedal** momentarily fully depressed.

Normally this is set at the factory and no further adjustment is necessary.

TAIL STOCKS

(see drawing (1) on page E)

The **TAIL STOCK ASSEMBLY** of the ***SIMPLEX*** is an accessory which can be fixed to the machine whether ordered with the machine or later, as all machines are bored to accept the two 1" steel bars.

There are two **TAIL STOCKS** available for the ***SIMPLEX***. The unit shown throughout the manual comes with a high speed bearing mounted flat disc on the end for backing up the bobbin flange. This disc is removable for a variety of special shapes to fit the particular bobbin being wound. It also can be fitted with a "live" lathe-type center with a point, for holding some winding forms.

The assembly consists of the **TAIL STOCK** plus two steel bars projecting from the main casting, and an outer end mount which is adjustable up and down for irregularities in the bench.

This standard **TAIL STOCK** available with the ***SIMPLEX*** which we will call the **TWO BAR** type construction is preferable for most application. It is pictured throughout the manual.

It has longer retraction (2" or 3") and it also has a provision for vertical sideways alignment of the **TAIL STOCK** bearing with the spindle to adjust for minor errors due to manufacturing tolerances. Also, various special **TAIL STOCK** inserts can be more easily installed and removed from the ball bearing than with the other type.

The **TWO BAR TAIL STOCK** is mounted on the lower 1" bars just as the other type, and is slid into position with the **TAIL STOCK** slide fully extended until the bobbin support touches the bobbin lightly.

Clamp the main casting in position with the two cap screws (A9) below the 1" mounting bars, front and rear.

The fine adjustment for the bobbin clamping pressure is made by turning screw (1k) clockwise for loosening and counter-clockwise for increasing the pressure. Before turning this screw, it is necessary to loosen the clamping screw (1i) which is accessible by partially retracting the **TAIL STOCK** with the handle (1m) until the screw is accessible with an Allen Wrench. After final adjustment, retighten this screw to prevent any changes in the adjustment.

You will notice there is an extra nylon lined hole (1h) in this block where the fine adjustment is made. This extra hole gives two positions for the **TAIL STOCK SLIDE**. The second position gives a 3" retraction.

The **TAIL STOCK** Ball Bearing (1a) is mounted in a semi-triangular block of aluminum at the front of the **TAIL STOCK**. Normally this bearing is aligned at the factory and will probably not need further adjustment unless it is disassembled or moved out of position.

The adjustment for alignment with the spindle is made by loosening the three cap screws (1b) to the rear of this plate. Move the bearing in its triangular holder to a new position and then retighten the three screws. Never touch the two recessed cap screws (1z) at the front, below the bearing, as these are for disassembling only.

ALTERNATE TAIL STOCK (See Drawing 1)

The **TAIL STOCK** unit shown on the Manual cover consists of a casting, an outer steel tube at the top, and an inner toggle mechanism which slides and locks the inner bar at the end of its 2" travel.

The major adjustment of this **TAIL STOCK** unit is made by sliding the casting along the two bars to a position where the **TAIL STOCK** support disc is about touching the bobbin with the toggle mechanism in its down and locked position.

Clamp the casting in position by the two clamping screws next to the lower mounting bars, front and rear.

Loosen the grey clamping handle on top and make a final adjustment by sliding the whole upper mechanism forward or backwards until the right tension is applied to the bobbin (usually light).

Clamp again in position by turning the clamp handle. This clamp handle is adjustable for its final position. Just pull it up and drop it into another position which is confortable for the operator when tightening.

To retract the **TAIL STOCK**, lift up the black ball at the end to a near vertical position. Do not operate the toggle mechanism in a horizontal position because the weight of the ball and lever plus friction is what keeps it in a locked position.

If the toggle action becomes too loose with use, it can be retightened again by removing the hardened 3/8" pin at the end. Pull out the whole mechanism and squeeze the clevis ends together. Do not tighten it too much as it is a lot easier to squeeze it in a vise than to "unsqueeze" it, if too tight.

A drop of oil in the mechanism now and then is all the maintenance required.

SET-UP TIPS

When starting a new set-up for a brand new bobbin, a piece of tooling must be made which will attach to the spindle (B26) and hold the bobbin while being wound. Care should be taken to balance the tooling if it is to be wound at high speeds. The bobbin should be loose enough on the tooling so that it can be removed easily after it is wound.

The **TAIL STOCK** should be used to back up the outer bobbin flange if even a little flare is not desired. Just a light touch of the **TAIL STOCK**, enough to rotate the bearing, is all that is usually needed. Too much pressure can cause very high pressures to develop.

MOUNTING INSTRUCTIONS

There are four mounting holes (A11) through the aluminum plate base of the *SIMPLEX*. These are for fastening the machine to a bench. The holes are 5/16" and take a 1/4" bolt. There are two additional mounting holes (B25) in the **TAIL STOCK** base for fastening this also. Care should be taken when fastening the **TAIL STOCK** so that no strain is placed on the two 1" steel rods (A10). If these are bent up or down or are twisted in any way, it will be difficult to move the **TAIL STOCK** casting along these bars. Also the **TAIL STOCK** will be mis-aligned with the spindle.

EYE SHIELD

An **EYE SHIELD** (A6) is provided which can be pulled down to its "in use" position which is adjustable for the operator's convenience. This position is set by the left collar (A3) with the protruding roll pin which is clamped on the 1/2" steel bar (A2) coming out from under the counter mount.

The upper part of this "crank" shaped 1/2" bar is movable forwards and backwards by loosening the clamping screws on the two mounting blocks under the counter mount (C28). The whole assembly is also movable left or right by this same adjustment.

SPINDLE ACCESSORIES

A 1/2" Jacobs Chuck can be set screwed onto the 1/2" or 5/8" spindle shaft (B26) which is handy for holding any round tool holder.

There are a variety of 3 and 4 Jaw Chucks plus a 6" face plate which can be fitted to the spindle along with custom made tooling.

TAIL STOCK ACCESSORIES for TWO BAR TYPE

The **TWO BAR** type **TAIL STOCK** has a 15 mm or .5906" inside diameter ball bearing. We make three standard inserts for this bearing. One is a flat disc of 1 1/2" (A4). The second is a blank rod of 1" diameter projecting 1 1/4" from the bearing and is intended to be finished to shape by the customer to fit a particular form. The third is a 60 degree point on a 3/4" diameter rod with a 1 1/8" O.A.L.

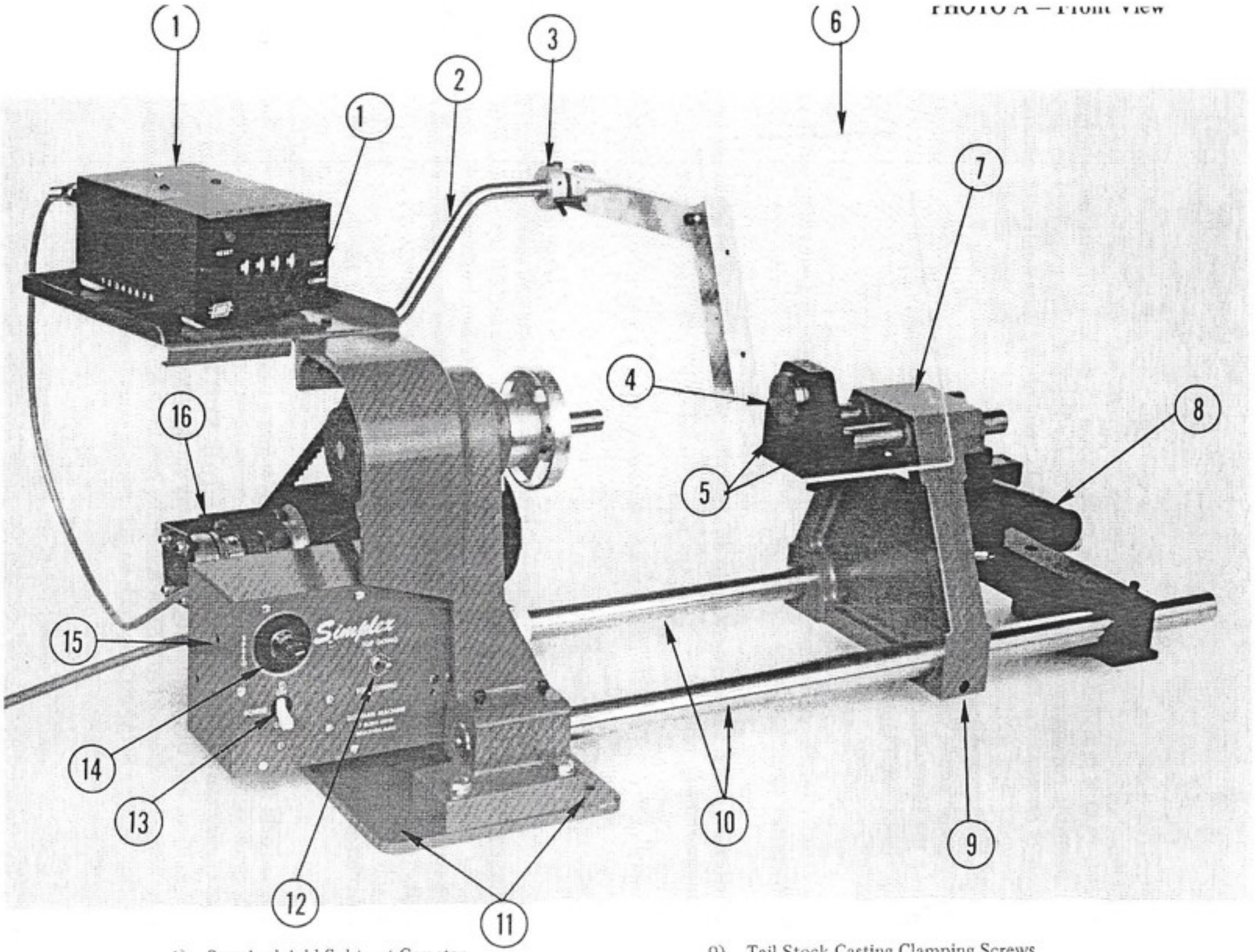
All these forms are held from the rear with a 1/4" 20 screw and washer, FLAT (B18).

A 1/2" Jacobs Chuck can be held and rotated in the **TAIL STOCK** by inserting a second ball bearing adjacent to the first, and this combination will rigidly support the Chuck on a 15 mm support rod through both bearings. This second **TAIL STOCK** bearing should fit flush against the front bearing within the housing. Do not use a **SNAP RING** which would space it apart from the first bearing.

MAINTENANCE

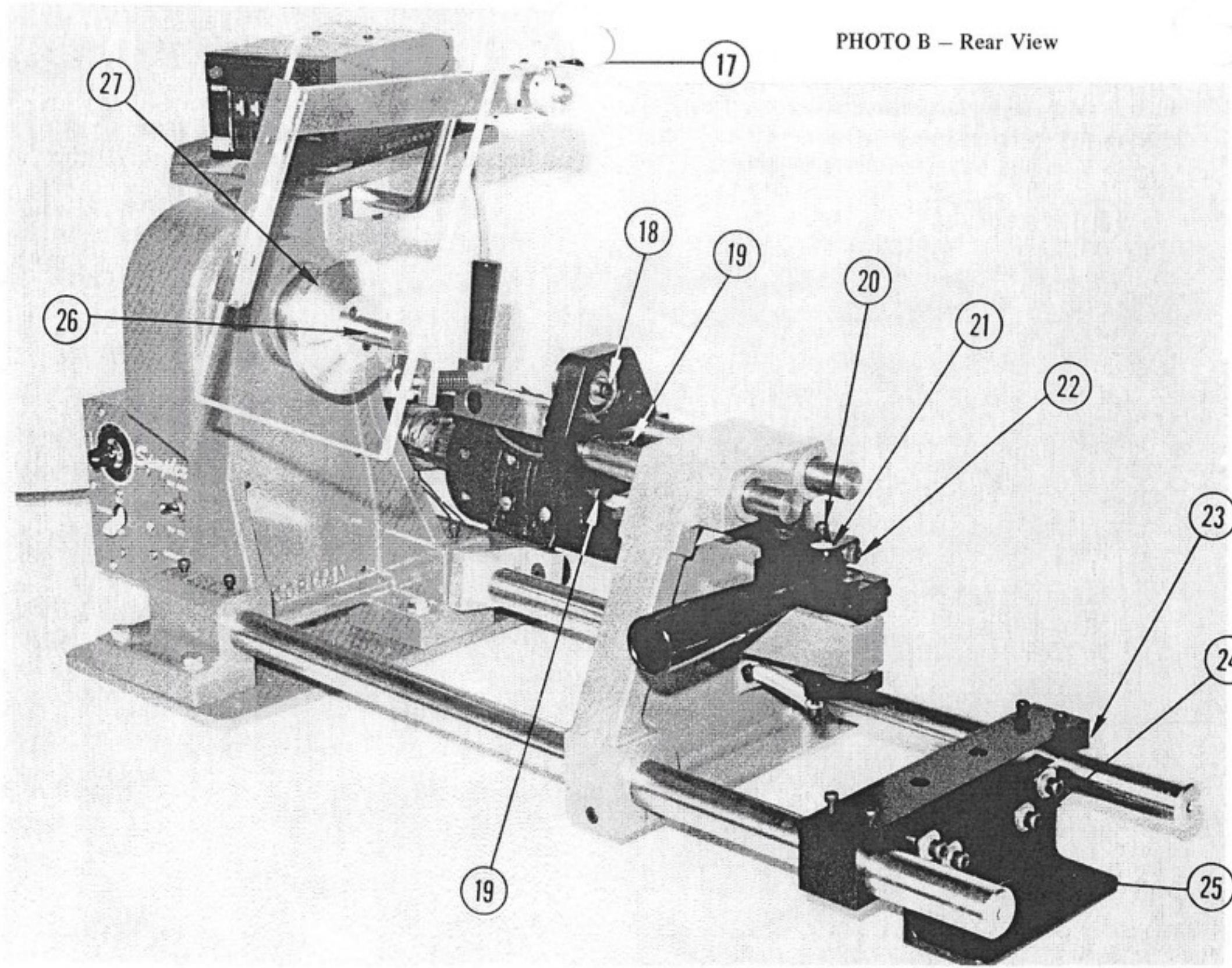
Maintenance on the ***SIMPLEX*** is minimal. There are no points to lubricate periodically as all moving parts are either Ball Bearing mounted or Nylon or Oil Lite Bronze bushed. When operating, be sure not to put the machine in reverse without the machine coming to a full stop.

PHOTO A – Front View



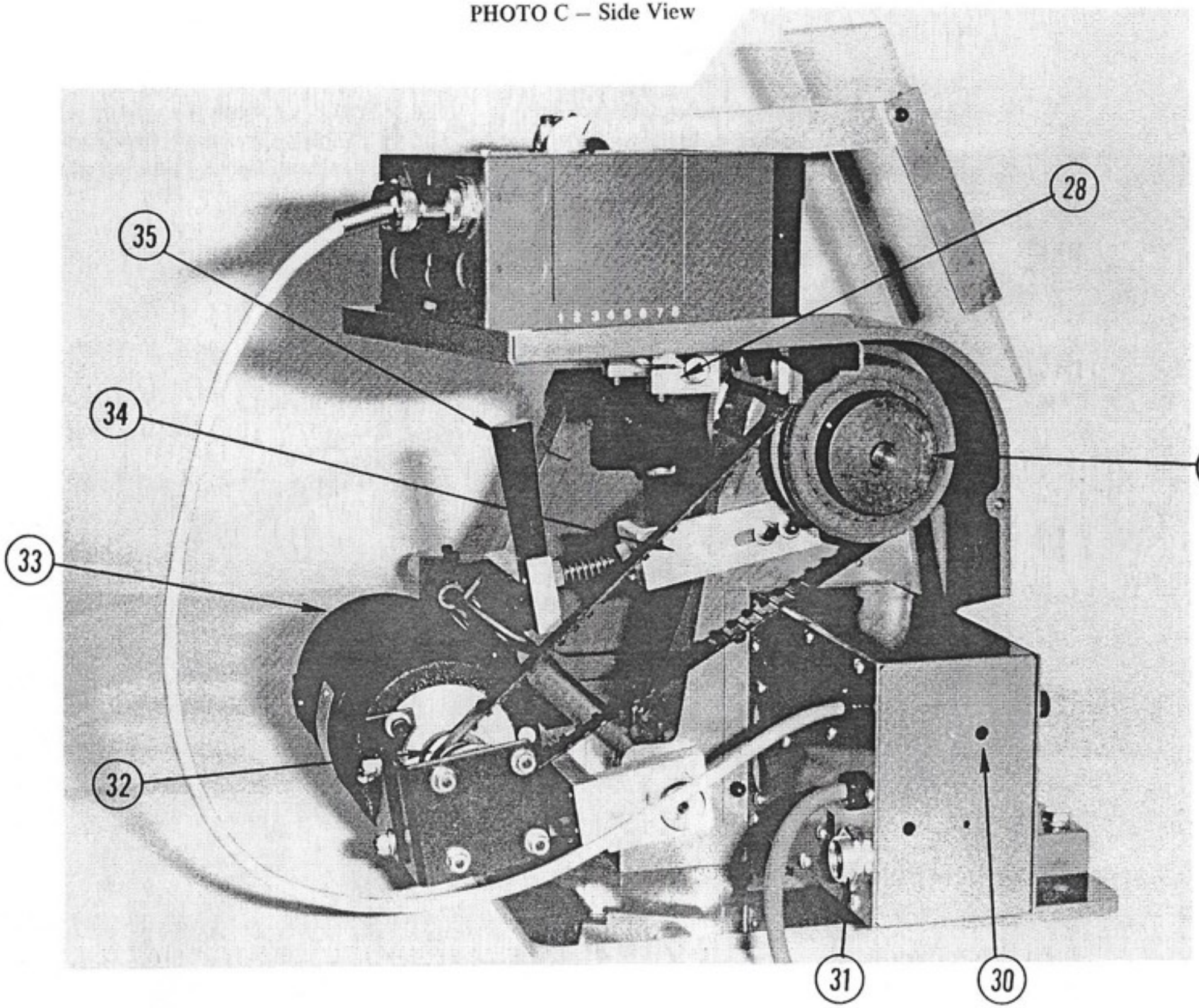
1) Standard Add Subtract Counter
2) 1/2" Eye Shield Support Bar
3) Eye Shield Collar with Roll Pin Stop
4) 1 1/2" Disc in Two Bar Tail Stock
5) Tail Stock Mounting Screws
6) Eye Shield
7) Two Bar Type Tail Stock Assembly
8) Tail Stock Open Close Handle
9) Tail Stock Casting Clamping Screws
10) 1" Steel Bars
11) Simplex Base Mounting Holes, 5/16"
12) Motor Reverse Toggle Switch
13) Circuit Breaker Power On/Off Switch
14) Foot Pedal Speed Control Knob
15) Brake On/Off Switch if Brake installed
16) Motor Brake

PHOTO B – Rear View



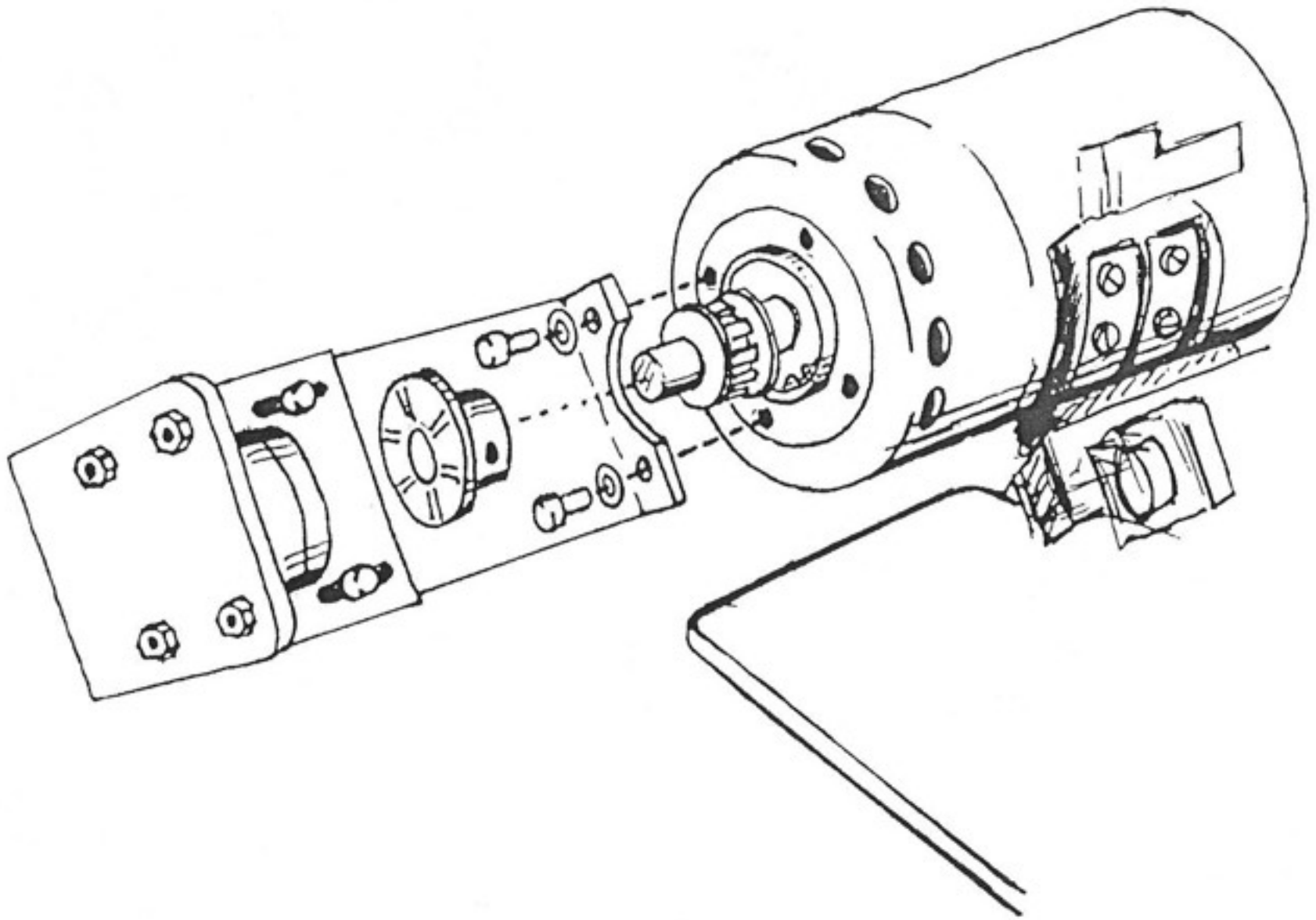
17) Eye Shield Up/Down Clamping Screw
18) Tail Stock Bearing – Fafnir 202KDDG with 1/4" 20 screw and washer holding 1 1/2" Disc
19) Tail Stock Alignment Adjusting Screws (3)
20) Tail Stock Bearing Advance Screw Clamp
21) Alternate Pivot Hole giving 3" Retractions
22) Tail Stock Bearing Advance – Retract Screw
23) Tail Stock Bars Outer Support
24) (4 screws) Up/Down Adjustment for Outer Support
25) (2 Holes) Mounting Holes for Outer Bracket
26) 1/2" Spindle Shaft
27) Hand Wheel

PHOTO C – Side View



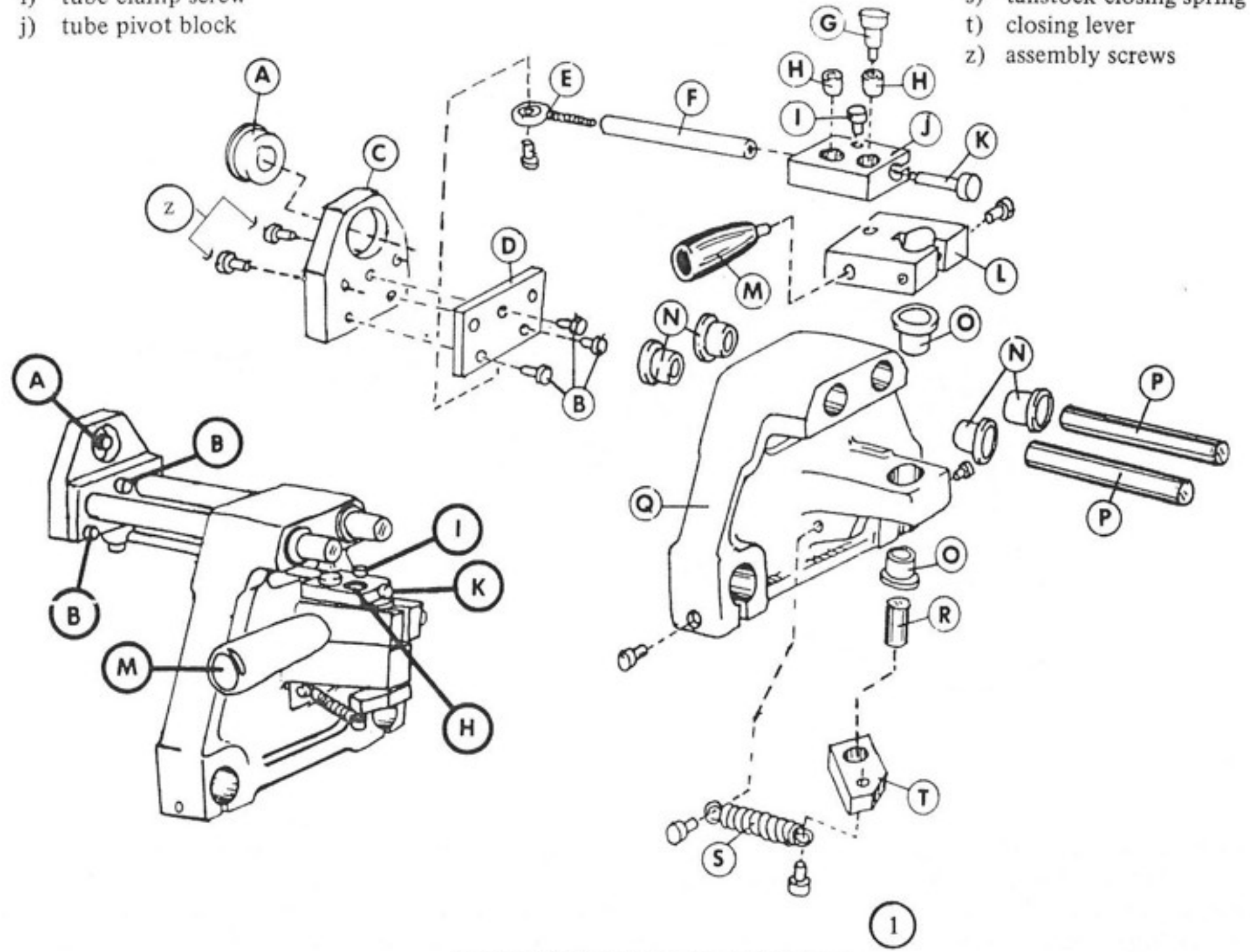
28) Eye Shield Adjustable Support Clamps (2)
29) 28 Tooth Timing Belt Pulley
30) Brake Toggle Discharge Switch –
IF Brake is installed.
31) Foot Pedal Plug
32) 10 Tooth Timing Pulley
33) Boehm Motor 4000 RPM Motor Spec #16246A
Boehm Motor 7000 RPM Motor Spec #11970E
34) Motor Belt Tension Adjustment Bracket
35) Belt Release Handle

Place large 28 tooth 3/8" pitch timing belt pulley on upper spindle shaft with the hub out. Tighten the 2 set screws tightly on the flat 1/2" shaft. Slide the smaller 10 tooth pulley onto the motor shaft with the hub towards the motor. Now slide the brake disc with its mounting collar onto the end of the motor shaft as far as it will go and tighten the mounting collar. Slide the 10 tooth timing pulley outwards until it is against the collar and tighten it on the shaft flat. Put timing belt on pulley. Mount the brake bracket on the two outer and lower 1/4-20 tapped holes on the motor flange as shown.



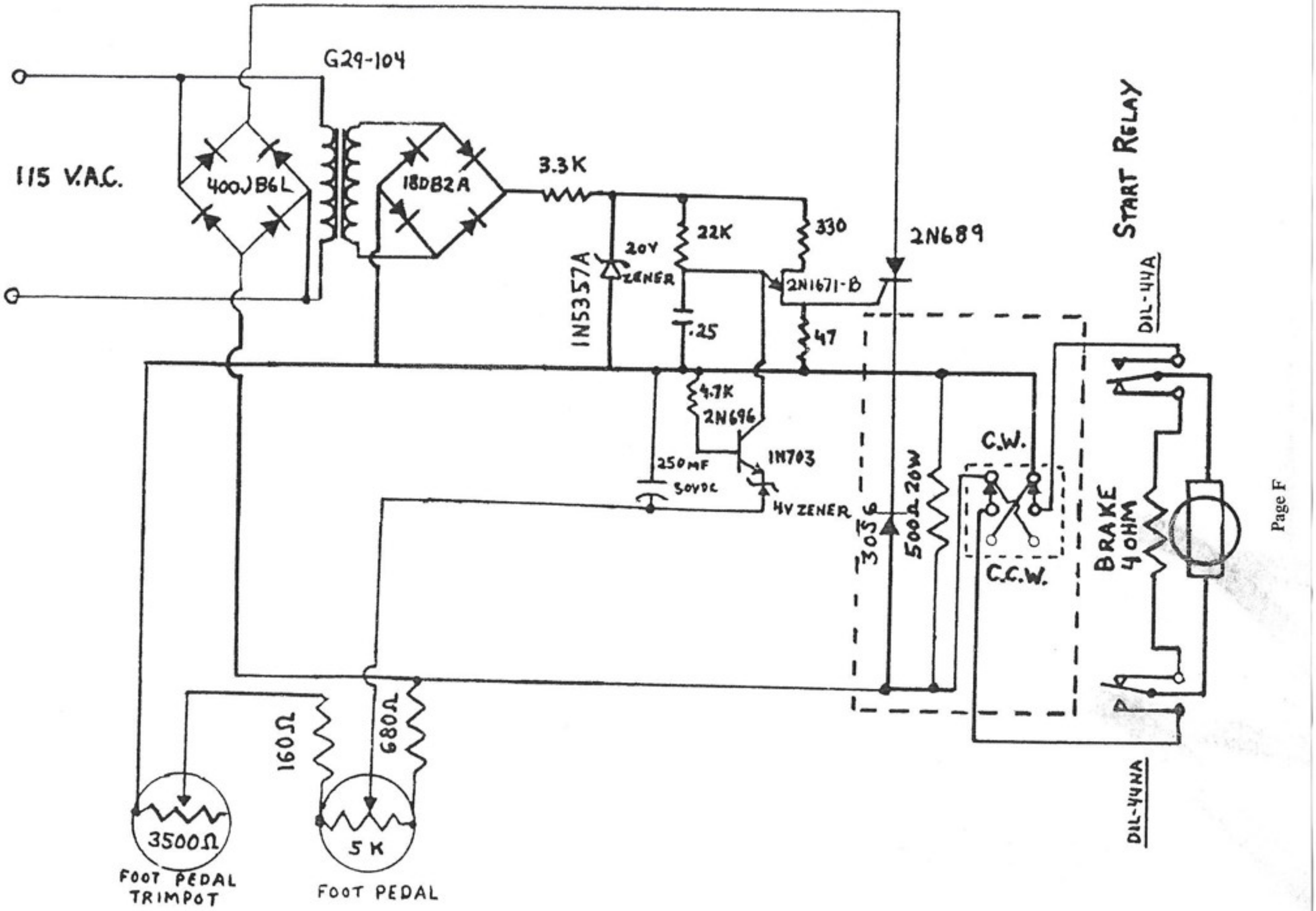
LINE DRAWING D -- Simplex Brake Assembly

a) main tailstock bearing FAFNIR 202KDDG WIRELOC
b) bearing position adjusting belts (3)
c) front bearing housing
d) housing mounting block
e) swivel bushing
f) swivel bushing tube
g) 3/8" shoulder bolt
h) nylon bushing
i) tube clamp screw
j) tube pivot block
k) bearing block forward/reverse adjuste
l) tailstock retracting pivot block
m) retraction handle
n) bronze ¾" bar bearing
o) retraction pivot shaft bearing
p) ¾" steel bars
q) main tailstock casting
r) retraction pivot shaft
s) tailstock closing spring
t) closing lever
z) assembly screws



1

TWO BAR TAILSTOCK ASSEMBLY


G29-104
115 V.A.C.
400JB6L
18DB2A
3.3K
1N5357A
20V ZENER
22K
330
2N689
2N1671-B
.25
47
4.7K
2N696
1N703
250MF 50VDC
4V ZENER
START RELAY
DIL-44A
C.W.
C.C.W.
30Ω 20W
500Ω 20W
BRAKE 40HM
DIL-44NA
160Ω
680Ω
3500Ω
5K
FOOT PEDAL TRIMPOT
FOOT PEDAL

GORMAN MACHINE CORP
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```PARTS FOR THE SIMPLEX

DEREELERS:

Part #	Description	Ref #
AD255	Eyelet (ceramic) Top	
AD702	Dereeler Assembly - Single Spool	
AD705	Dereeler Cones	
AD706	Extension arms	
AD711	Clamp with felt	
AD712	Felt for clamp (l/2" X 9/16" X 1-5/8")	
AD716	Pigtail	5A2 or 92-6
AD721	Double wire dereeler on adjustable mount	

BEARINGS:

BB166	Spindle bearings (2)	203KDDG,62032RS
BB916	Tailstock bearing	202KDDG,6202Z
BB917	Oilite Bronze	FB1214

BELTS:

B041R	Motor to spindle (Flat)	GG041R
B270L	Timing belt	270L050

CHUCKS:

RCH12	l/2" Jacobs chuck for 1/2" Spindle
RCH58	l/2" Jacobs chuck for 5/8" Spindle
RCH60	6" Clamping Face Plate with 60 degree center point

COUNTERS:

BCD52-1	Durant 5 Digit, 2 preset	58830401

MOTORS:

AM813	SCR	2N689
MB3	Motor brushes (set) Large	
XM828	Permanent magnet DC Motor	16462A

TAILSTOCK:

RTS907	Extra length tailstock bars
RTS914	Tailstock assembly with high speed bearing
RTS920	Unfinished Insert l" dia X 1-1/4" Long
RTS921	Insert with 60 degree point
RTS922	Insert (Flat) 1-3/8"

(Cont'd)

ELECTRICAL:

Part #	Description	Ref #
AE311	Foot pedal toe shield	
AE313	Foot pedal coil spring	
AE314	Foot pedal cord/with male connector	
AE318	Foot pedal female receptacle	91PC6F
AE319	6 pin male connector counter to controller	91MC6M
AE326	Brake resistor (2OHM 20W)	
AE382	Potentiometer (Panel) or (Foot pedal)	5K380C-1
AE408	Motor control board	KBIC-125
AE422	Capacitor 22 micro farad-400 VDC	
AE423	Line Cord	
AM813	SCR	2N689
BE394	Pick-up	FX-B12E/48740-300 Durant
RE375	Transistor	2N6520
RE380	Transformer (Motor Control)	P6134
RE385	Rectifier	40HF60
RE395	Vane Disc - No Hub	VF-300-10
RE397	Board-Motor control (Old Mach. Green board)	GMC/MIA
RE399	Variable speed foot pedal	500AN
RE406	Vane Disc - With Hub	
RE410	Cables (for changing from single to dual counter)	
XE405	Electric brake	
XE426	Diode	1N914
XE427	Diode Zener	1N4747-A
XE428	IC	LM-324-N
XE429	Transistor	2N2895
XE431	Transformer	G29-106
XE432	Motor control box	
XE433	Bridge	MDA3506 or 35MD60A
XE434	Socket	S304CCT
AE30S6	Diode	30S6

RELAYS:

AR429	Relay in Durant 5-2 Counter	38133202
XR416	Motor relay	S87R11A2B1D1
XR417	Foot pedal over ride relay	R10-E1-X2-115

PULLEYS:

RP00	Spindle pulley Small (1.275" & 1.850" dia)	
RP01	Spindle pulley Large (l.850" & 2.375" dia)	
RP10	Motor timing drive pulley (modified)	10L050
RP28	Spindle timing pulley (modified)	28L050
XP45	Timing belt/pulley combination	
XP46	Flat belt double pulley combination	

(Cont'd)

SWITCHES:

Part #	Description	Ref #
AS762	Circuit breaker Power on/off	JA1-A3-A
AS763	Foot pedal micro switch	V37-3005-D8
RS781	Top going/top coming switch	2P3T 7563K4
RS787	Brake switch	1P2T MTG106D

MISCELLANEOUS:

AMI594	Dust Cover
RMI29	Motor tension spring handle
RMI31	Plastic shield-standard equip.6-1/2"X 9" long
XMI20	Spindle shaft 1/2"
XMI21	Spindle housing
XMI36	Spindle shaft 5/8"
XM138	Spindle assembly complete with l/2" shaft
XM139	Spindle assembly complete with 5/8" shaft
XMI40	Locking collar for hand wheel