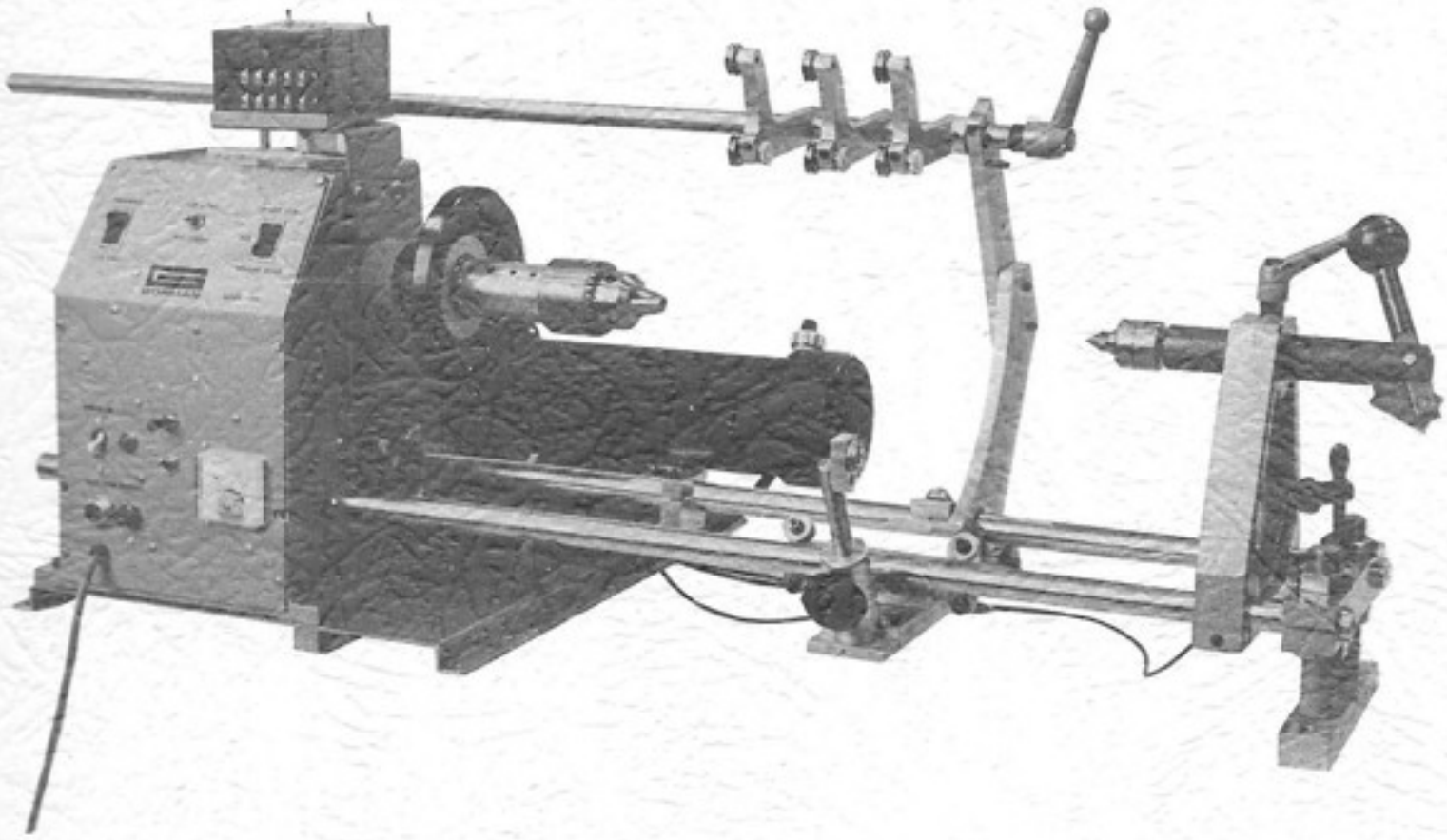
OPERATING INSTRUCTIONS
HDH TRANSFORMER WINDER



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INDEX FOR *HDH*

MACHINE WARRANTY

GORMAN machines are covered by a six month warranty, the terms of which are stated below:

WARRANTY

GORMAN HDH machine, and components thereof, except Electronic Counter, is warranteed to be free from defects in materials and workmanship for six months from the date of initial factory shipment. We will fully repair equipment of our manufacture covered by the warranty terms on a no-charge basis, to include parts and 90 days on labor if machine is shipped PREPAID to and from the factory. Electronic Counter is warranteed by the manufacturer.

Misuse and abuse of the equipment, or unauthorized repair will void this warranty and our obligation to provide no-charge services. ***GORMAN MACHINE CORPORATION*** is not liable for consequential damages.

INTRODUCTION

The ***GORMAN HDH WINDER*** is quite a simple machine to operate. There is no combination of switches to be turned on or off to damage the machine with the exception of the **Forward/Reverse Switch** (A3) which is labeled **"Top Going"** and **"Top Coming"**. Do not reverse the rotation without the machine coming to a full stop. **"Top Going"** is the normal position for winding from the front. The reverse position is usually used for correction of an over-run.

To the left of the **Reverse Switch** is the **High Speed-Low Speed Rocker Switch** (A2). **High Speed** is for lighter wires and the **Low Speed** is for heavier sizes and for greater control. The middle **Neutral** position has no function. The ***HDH*** machine has an SCR motor control for the 1 HP DC motor which gives a **High Speed Range** of from 0 to 1650 RPM, and a **Low Speed Range** of 0 to 350 RPM.

On the right side is the **Rocker Switch** (A5) labeled **Spindle Lock, Free**, and **Dynamic Brake.** In the **Dynamic Brake** position, either the High Speed Clutch or the Low Speed Clutch is left engaged, depending on the setting of the left **Rocker Switch.** When the Foot Pedal is released to stop the machine, the motor is Dynamically Braked to a stop, but when stopped, it can be turned by hand with some resistance. When in the **Spindle Lock** position, and the Foot Pedal is released to stop the motor, the motor is again Dynamically Braked, but both clutches are engaged at half voltage which has the effect of locking the spindle. It still can be turned, but with great resistance.

In the **Free** position, both clutches are disconnected, and the spindle can be turned by hand with no resistance.

The **Variable Speed Foot Pedal** is the only control for starting and stopping the machine. Just to the right of the **Foot Pedal Plug** (A23) is a knob which acts as a speed limiter for the **Foot Pedal** (A22). Clockwise increases the top speed. If the **Traverse Mechanism Toggle Switch** (A24) is engaged or "on", the Traverse will start moving when you step on the pedal. When you take your foot off the pedal, the Traverse is automatically disengaged and the wire guides can be moved left or right by hand.

The **Ammeter** (A21) is used by the operator to monitor the current being pulled by the 1 HP motor. It is red lined at 12 amps. You can pull more current, but should not for extended periods of time. If you find a coil is pulling consistently more amps, switch to the low speed range to be safe.

The **Toggle Switch** (A24) to the left of the **Ammeter** is used to engage or disengage the **Traverse Mechanism.** The **Black Lever Switch** above (A26) enables the operator to reverse the direction of Traverse at any time.

TAILSTOCK

The **Tail Stock** (A13) on the ***HDH*** is a rugged toggle action type with a 2" retraction. The retractable member has a 5/8" hole with two set screws for holding either a non rotating center point or a "live" rotating lathe type center (A9). Other types of special tooling can be used in the 5/8" hole.

The entire toggle action mechanism can be slid forwards or backwards an additional 3" or removed entirely by loosening the clamping handle (A10) on the top of the casting. The position of the handle, when clamped, can be set to many positions by lifting up on it and moving it to a different position after clamping.

The toggle arm (A11) is usually set so that it operates in a semi-vertical position as the weight of the handle and friction is what keeps it in the extended position.

If the mechanism becomes loose with operation, it can be retightened again by removing the pivot pin (A12) through the handle and sliding out the whole mechanism. Squeeze the clevis at the Pivot Pin in a vise lightly until the right tension is obtained. Do not overtighten as it is easier to squeeze it tighter than to "unsqueeze" it.

The whole **Tail Stock** casting can be slid along the two 1" bars (A20) for major adjustments. Loosen and retighten the two screws (B32) in the casting just below the holes for the bars.

If the machine comes with the **Tail Stock** assembly removed, insert the two 1" bars in the holes in the sides of the machine and extending to the right. The **Tail Stock** should be slipped over the ends of the bars first, and then fit on the end support assembly, which consists of a base, (A16) two 1" threaded rods, (A20) and the rod supports (B33) which are held in position, top and bottom, by two nuts (A14).

Do not tighten the nuts until the base (A16) has been bolted to the bench if you are planning to do this. The rod support bar (B33) is loose enough on the threaded rods to adjust for any irregularities found in the bench. Finger tighten the nuts top and bottom simultaneously, so that there is no strain on the rods, either up, down, or sideways, if possible. The final tightening of the nuts is best done with a small 8" Stilson wrench purchasable at a hardware store.

ALTERNATE TAIL STOCK – TWO BAR – Line Drawing 4

The other **Tail Stock** available with the ***HDH*** which we will call the **Two Bar** type construction is suitable for some applications. It is pictured on page 11.

It has longer retraction (up to 3") and it also has a provision for vertical and 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 easily installed and removed from the ball bearing.

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 (B32) below the 1" mounting bars, front and rear.

The fine adjustment for the bobbin clamping pressure is made by turning screw (4k) clockwise for loosening and counter-clockwise for increasing the pressure. Before turning this screw, it is necessary to loosen the clamping screw (4i) which is accessible by partially retracting the **Tail Stock** with the handle (4m) 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 (4h) 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 2" retraction and is a little more rigid when in the fully extended position.

The **Tail Stock** Ball bearing (4a) 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 (4b) 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 (4z) at the front, below the bearing, as these are for disassembling only.

TRAVERSE MECHANISM

The **Traverse Mechanism**, (A18) if ordered, is mounted on the two 1" steel bars, and travels between two limit switches, (A17 & A19). The limit switches are adjusted by the two plastic knobs on top of each. Slide the two reversing blocks (B31) which hold the Micro Switches, left or right to the new approximate position desired. Keep the two blocks in as vertical a position as possible and retighten. A final adjustment can be made by turning the two knurled knobs which strike the Micro Switches. Loosen the thumb screws holding them from turning. RETIGHTEN VERY LIGHTLY, so as not to mar the screw threads.

The **Traverse Speed** is controlled by the red handled lever (A1) on the variable speed transmission above and to the rear of the main console. There are two arms which can be placed and locked in any position to limit the travel of the speed control lever (A1). In this manner, two preset **Traverse Speeds** can be programmed into the machine. The Lever has only to be moved from one stop to the other.

The length of **Traverse** is almost infinite by extending the two 1" steel bars and gear rack. But there is a practical limit of about 36", requiring bars of 60". Standard lengths of bars which will fit in the shipping crate so that the machine can be shipped assembled is 40" which gives a spindle to closed Tail Stock length of 16" and a **Traverse** of 15".

The **Traverse** consists basically of a front guiding mechanism (A18) which includes the reversing mechanism, the reversing switches and the carriage which moves on the 1" bars with an adjustable "V" groove wire guide, (B35), which can be removed for other guiding devices.

An option is the rear wire guiding mechanism (B34). This mounts on the carriage and moves a 3/4" steel bar above and to the rear of the spindle shaft. This steel bar holds one or several adjustable wire guides (A7). These guides operate in the "down" position when winding, and may be rotated 45 degrees upwards and out of the way for access to the winding form.

Tension for this motion is supplied by tightening a nylon bushing at the right end of the 3/4" shaft.

There are two positions for this 3/4" shaft. An upper and a lower nylon shaft guide (B28) at the left end. To move the bar from one guide hole to the other, remove the two screws (B34) half way up the vertical arm from the carriage and secure again in the second position above or below the original position. At the same time, insert the left end of the shaft into the other guide hole.

At the lower front of each wire guide is a knurled and threaded shaft (A7) with a "V" groove bearing on the end. A fine adjustment of the lower guide can be made by loosening the screw just above it and turning the knurled knob.

CLEARANCE FOR WINDING FORMS

There is a 6" clearance over both the carriage and to the wire guides and 7" clearance over the two 1" bars which means you can rotate a maximum form diameter of 12" with the traverse and a 14" diameter without the traverse. Wire guides can be set on a minimum of 1 1/2" centers, or any two adjoining guides can be as close as 1/2" apart by reversing the "V" groove bearings.

COUNTERS

The Standard **Counter** on the *HDH* machine is a non-presetting, shaft driven, totalizing. Mechanical **Counter** (not shown) which adds in the spindle **Top Going** direction. It subtracts in the reverse direction.

An optional presettable Mechanical **Counter** is also available which adds and subtracts in the same manner.

A single or dual presetting add subtract type Electronic **Counter** (A4) is available which can add or subtract in either direction and counts tenths of turns. It counts to 9999.9 with the tenth of a turn registered after the decimal point.

With the Foot Pedal depressed, the machine will run until the preset count has been reached and the machine will Dynamically Brake to a stop. To bring power back on the machine, just lift your foot off the pedal and depress it again.

The **Counter** will keep its indicated count and additional turns may be put on indefinitely or until the **Counter** is reset to 0. If the spindle is reversed, turns will be subtracted. A switch on the **Counter** face can make the **Counter** totalize in either direction. Other multi-preset **Counters** can be offered on a special basis.

ACCESSORIES FOR THE *HDH WINDER*

Accessories for the ***HDH*** winding machine consist of various types of winding form holders for the main spindle and either a stationary point or a "live" center (A9) for the **Tail Stock** can be inserted.

The **Chucks** available for the spindle are a 3/4" Jacobs drill **Chuck**, (B27) several different lathe type **Chucks** and an 8" face plate with slots for holding any type of winding form.

The lathe type **Chucks** are either 3 jaw or 4 jaw type and come in 4" and 6" diameters.

MAINTENANCE

There is very little periodic mechanical maintenance required on the ***HDH***. All bearings are either Nylon, Oil-Lite Bronze or Ball Bearing.

Occasional oiling of the **Tail Stock** sliding member is needed for ease of action. A little *WD-40* as a rust preventative will maintain the appearance on bare steel parts such as chucks. Any unusual noises or vibrations should be investigated right away. The clutches inside the main casting and at the rear of the machine for the **Traverse Mechanism** should ***NEVER BE OILED.***

Electrical maintenance is minimal. We utilize the highest grade components available, but as experience indicates, anything can fail. To minimize down time in such an event, we try to make such failable components of a plug-in type such as relays, or quick disconnect types for component boards.

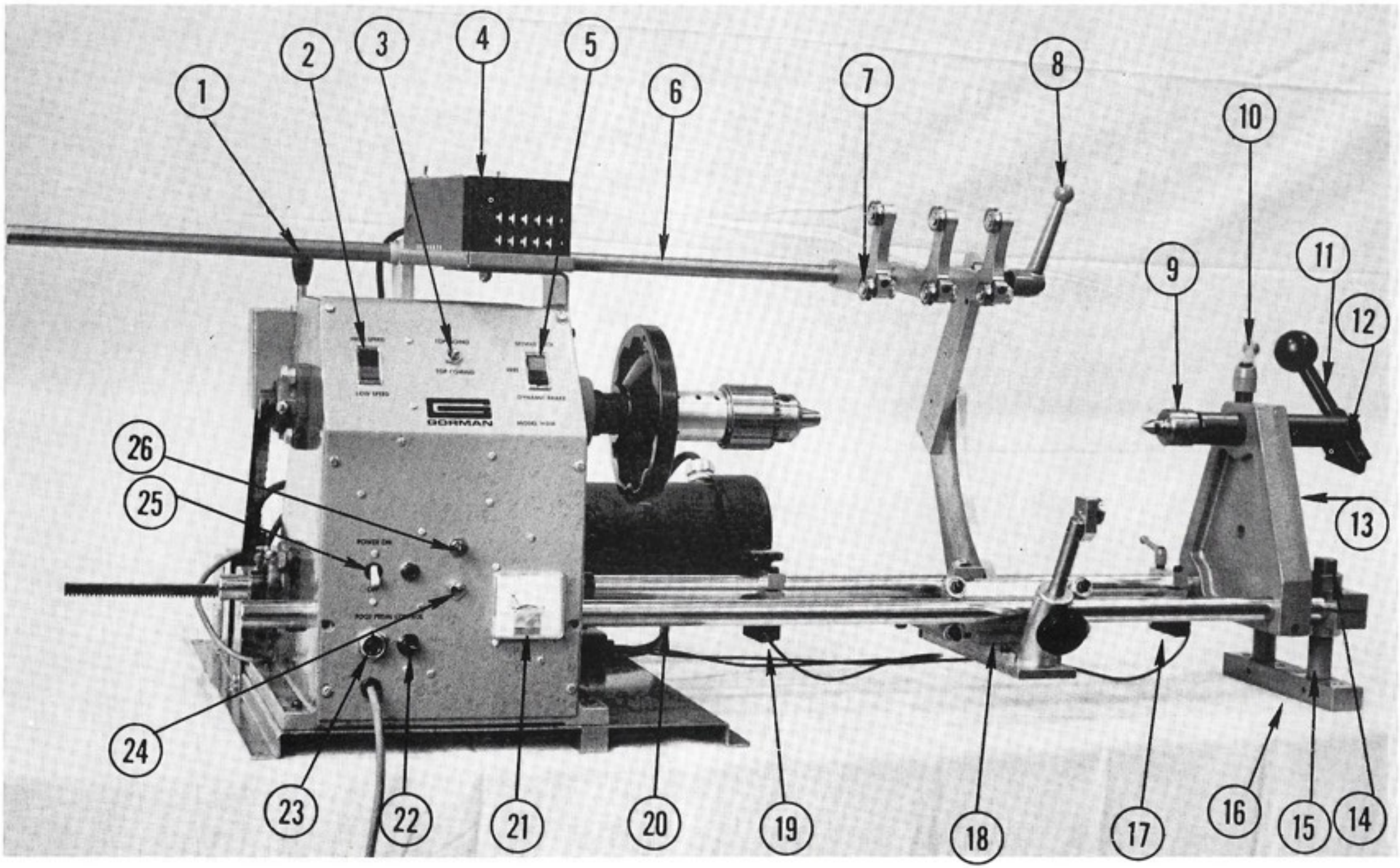
The drive belts are of a rugged long lasting type inside the machine and should require little attention. If the main cogged "V" belt (Browning AX35) between the motor and machine has to be changed it is not necessary to disassemble the lower spindle. Just remove the four bolts holding the lower self-aligning pulley block below the main spindle. A large 2 3/8" hole is in the casting there, and a new belt can be inserted through it and around the shaft and pulley without difficulty. The Traverse Speed of the ***HDH*** is favored towards the heavier wires up to 3/16" per revolution of the spindle which is the equivalent of number 4 AWG wire. Although the Traverse Speed can be reduced all the way to 0, accuracy of layering will be affected if winding fine sizes of wire.

This belt from the motor should be checked for tightness periodically. It should be tight enough so that there is not more than 1/2" up and down motion of the belt at mid point.

To tighten, just loosen the four hold down nuts at the motor base (B30) and then turn the hex-nut (B29) at the rear of the sliding motor base and turn it clockwise. Retighten the four nuts, making sure that the motor is square with the machine.

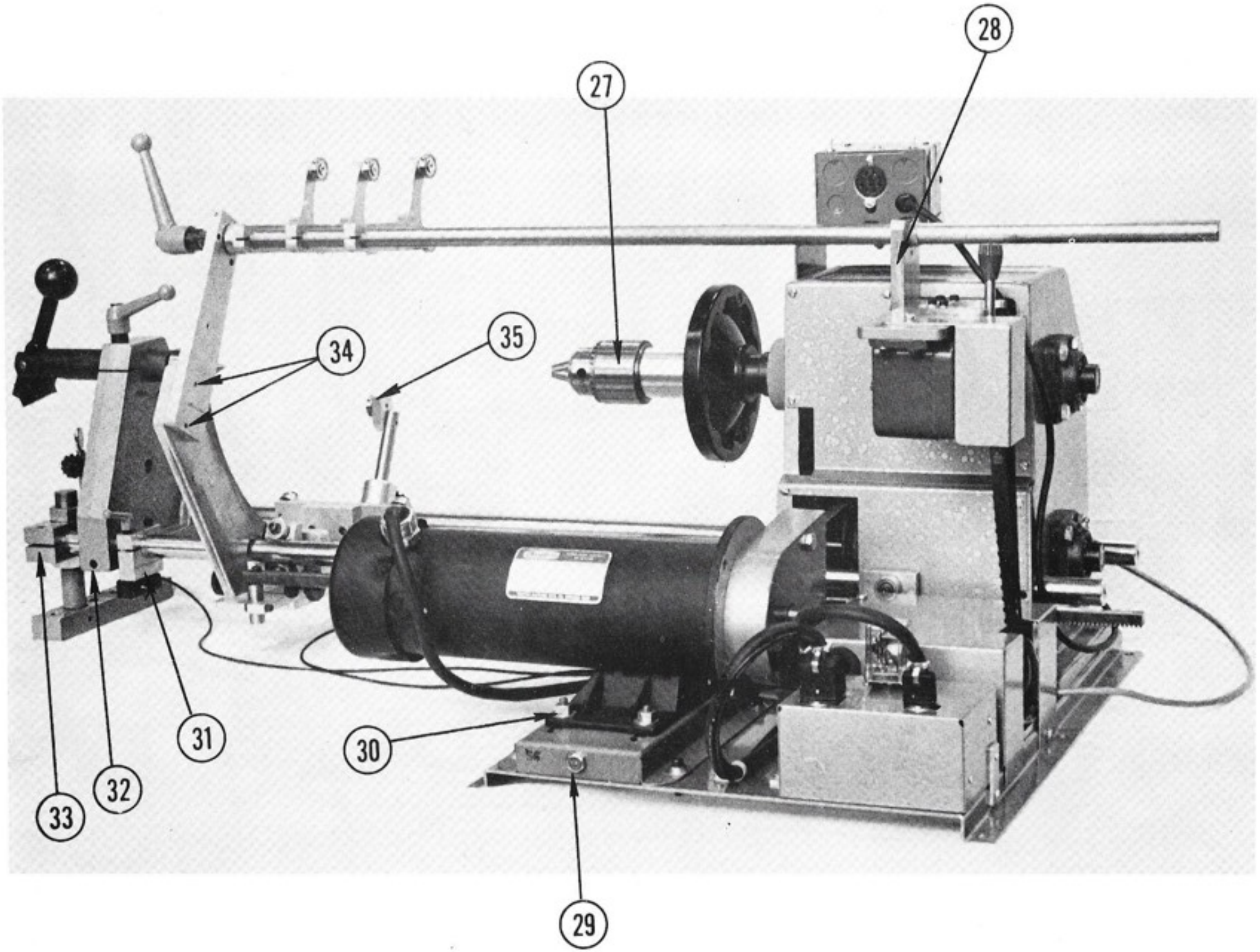
FRONT VIEW OF HDH

1) Traverse Speed Control Knob
2) Rocker Switch–High Speed–Low Speed
3) Motor Reverse Switch
4) Electronic Counter
5) Spindle Lock–Free–Dynamic Braking
6) Rear Wire Guides–Support Rod
7) Wire Guides
8) Wire Guide Lift Handle
9) Live Center
10) Toggle Action Position Lock
11) Toggle Level
12) Clevis Pin
13) Tail Stock
14) Tail Stock Support Nuts
15) Tail Stock Threaded Support Rods
16) Tail Stock Mounting Base
17) Traverse Reverse Switch
18) Front Traverse Mechanism
19) Traverse Reverse Switch
20) 1" Tail Stock Bars
21) Ammeter
22) Foot Pedal Speed Control
23) Foot Pedal Plug
24) Traverse Mechanism Disconnect Switch
25) Power On/Off Switch
26) Traverse Left Right Direction Control



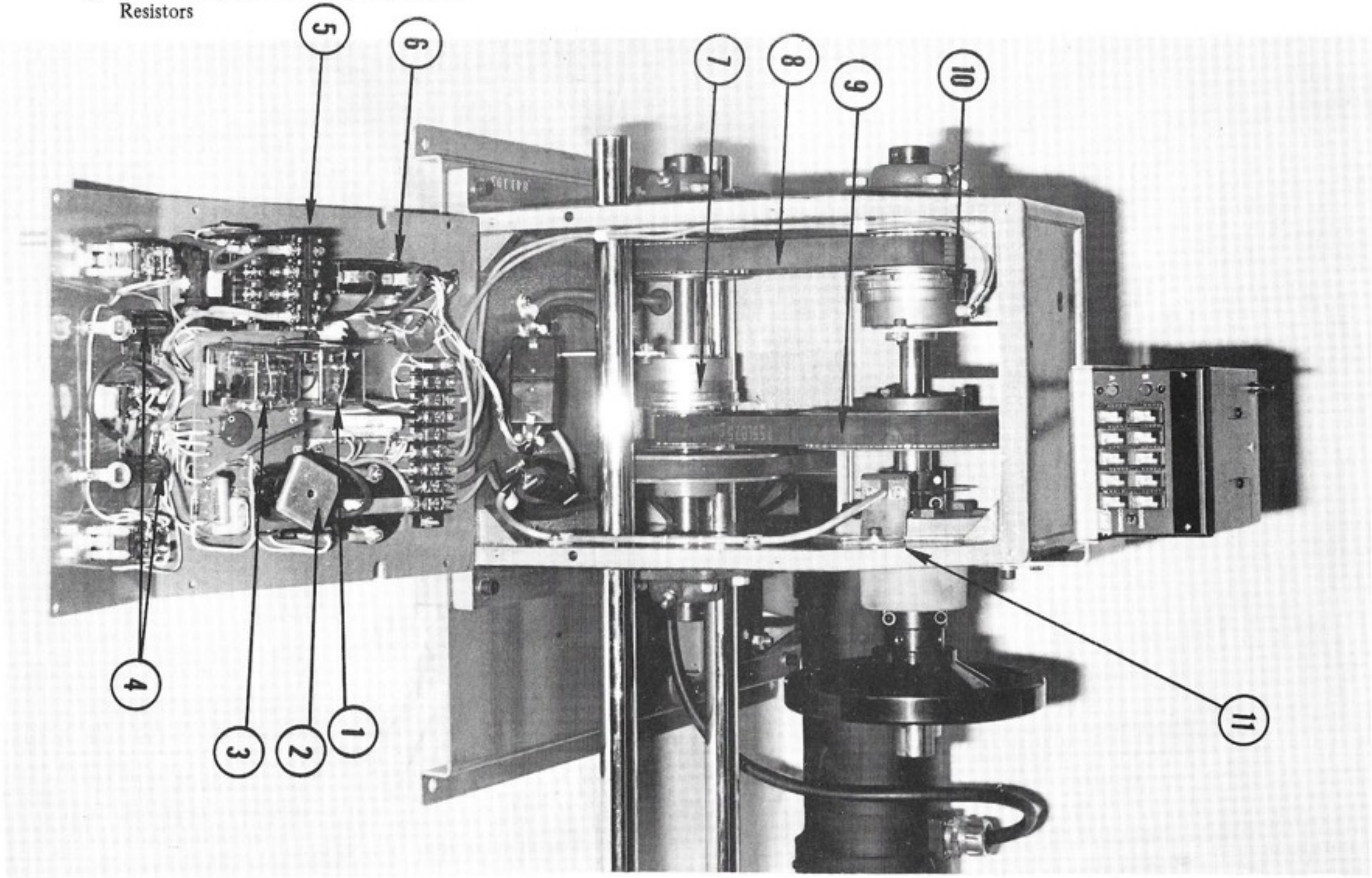
REAR VIEW OF HDH

27) 3/4" Jacobs Chuck on Spindle
28) Upper and Lower Wire Guide Support Guide
29) Hex-Nut for Tightening Motor Belt
30) Motor Hold Down Bolts
31) Traverse Switch Mounting Block
32) Tail Stock Clamping Screw--Rear
33) Tail Stock Support Bar
34) Rear Wire Guide Support Arm--Outer
35) Front Wire Guide Roller

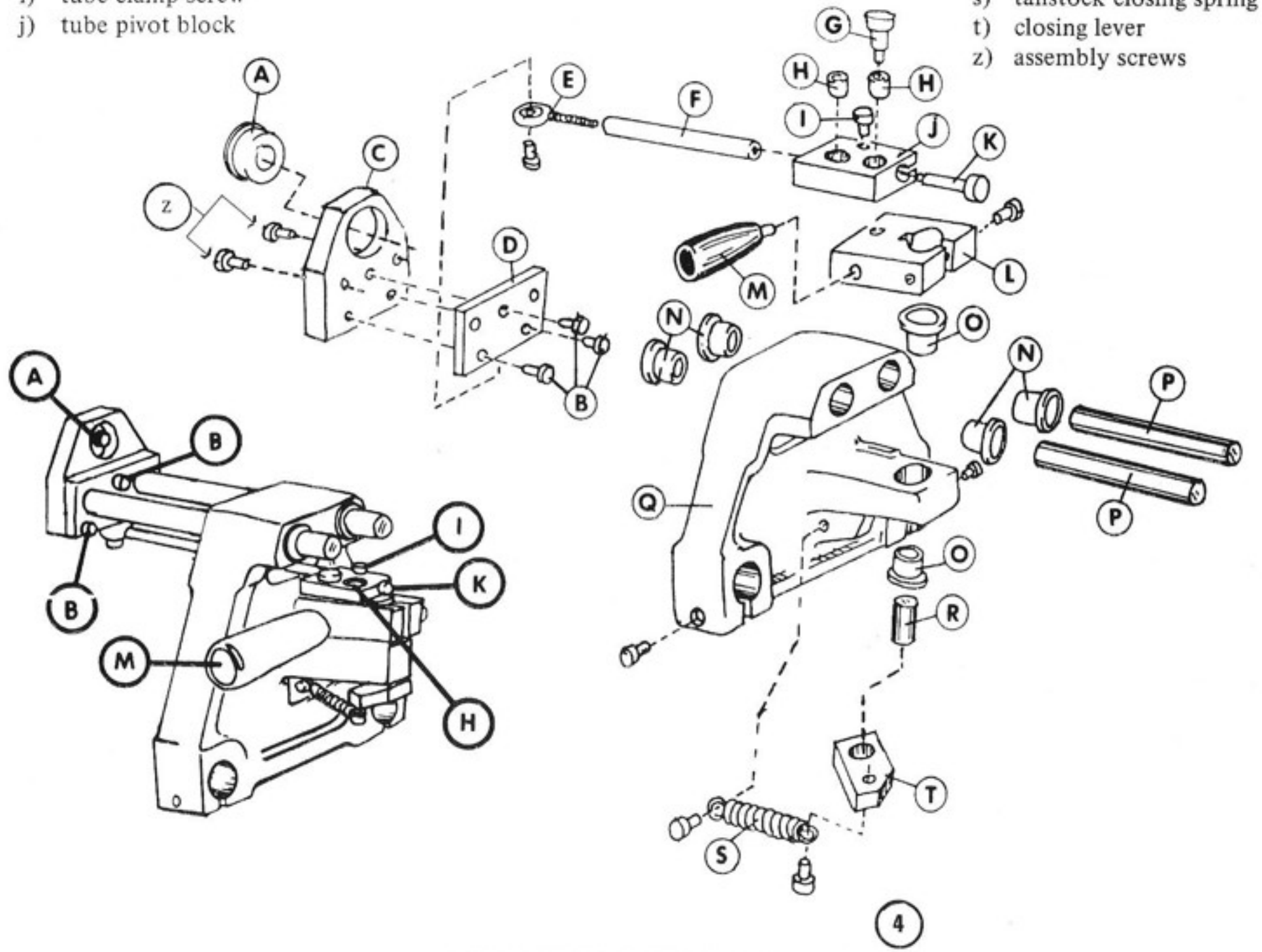


SIDE VIEW OF HDH

1) 110V DC KAP11DG – Spindle Lock
2) 110V DC P.B. KRP11 – Spindle Lock
3) 35 amp Bridge MDA3506
4) 4 ohm 50 watt Resistors–Dynamic Brake Resistors
5) DIL-OOL-44NA Power Relay
6) 15 amp Circuit Breaker JAI-A3-A
7) Lower Clutch – low speed
9) 255L075 – Timing Belt
10) Upper Clutch – high speed
11) Add-Subtract Picks up – FBX12 J.M.R.

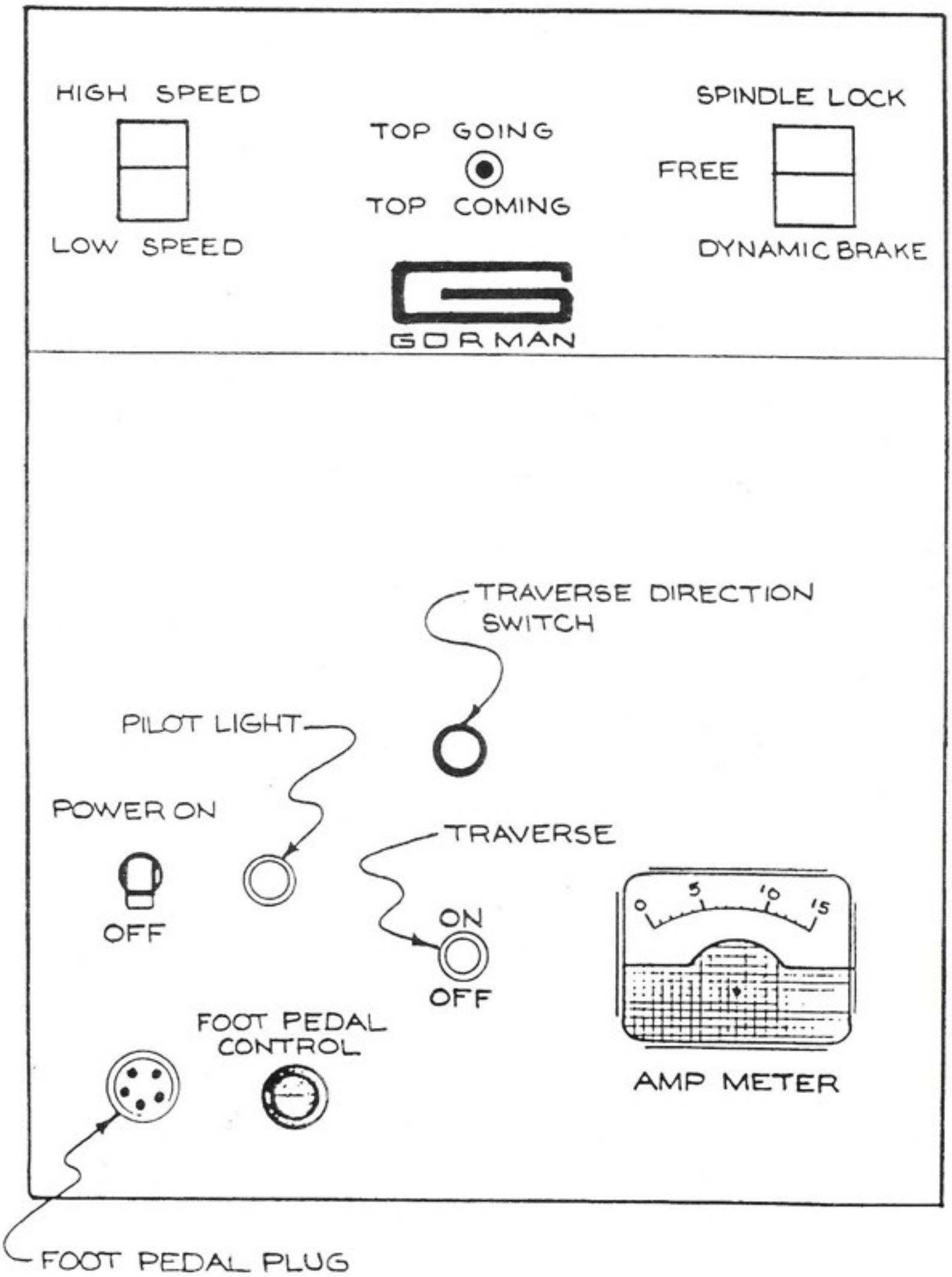


a) main tailstock bearing FAFNIR 202KDDG WIRELOC
b) bearing position adjusting belts (3)
c) front bearing housing
d) housing mounting block
e) swivel bushing
f) swivel bushing tube
g) 3/8" shoulder bolt
h) nylon bushing
i) tube clamp screw
j) tube pivot block
k) bearing block forward/reverse adjuster
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

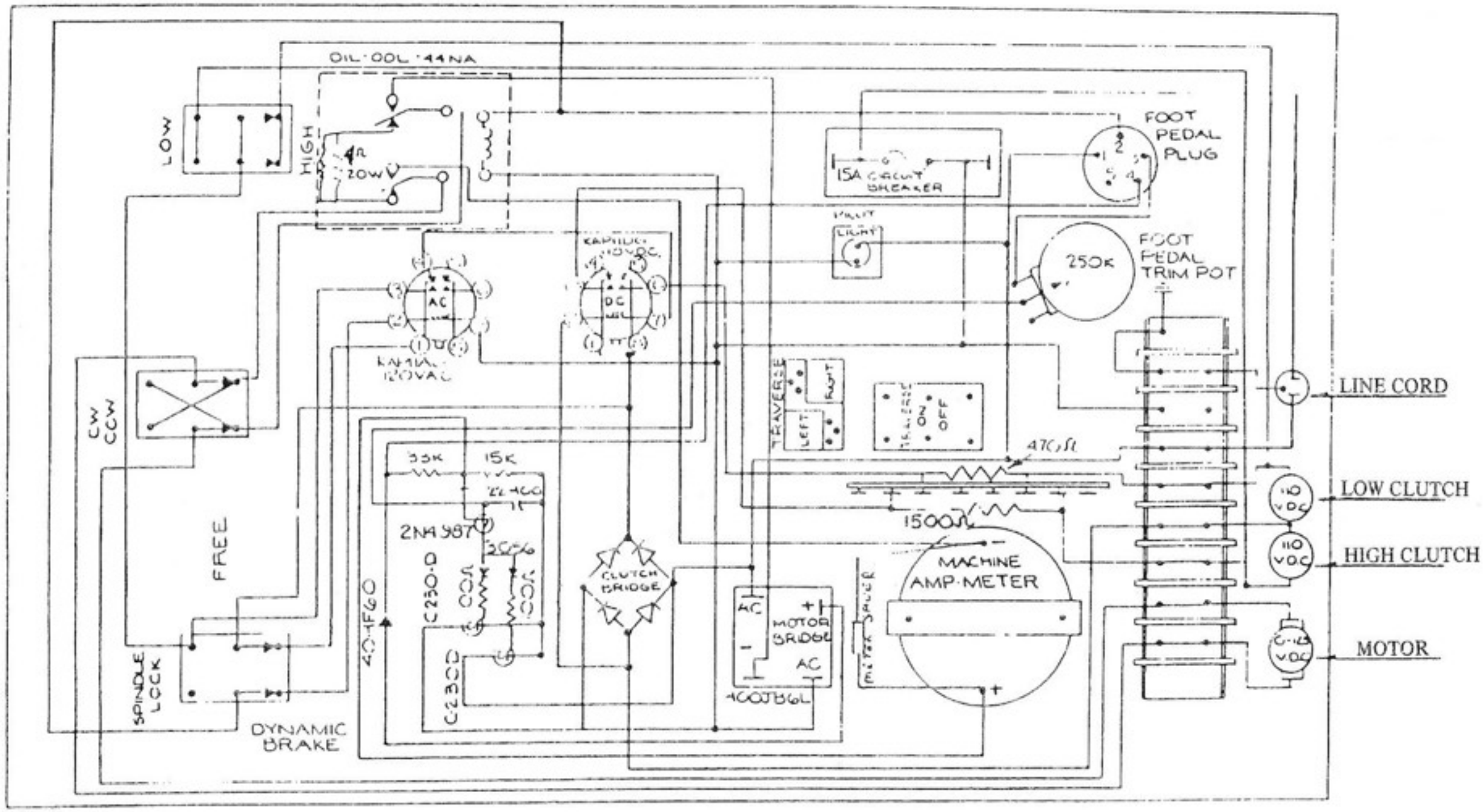


TWO BAR TAIL STOCK ASSEMBLY

Line drawing 4


HIGH SPEED
LOW SPEED
TOP GOING
TOP COMING
GORMAN
SPINDLE LOCK
FREE
DYNAMIC BRAKE
TRAVERSE DIRECTION SWITCH
PILOT LIGHT
POWER ON
OFF
TRAVERSE
ON
OFF
FOOT PEDAL CONTROL
0
5
10
15
AMP METER
FOOT PEDAL PLUG

1. ALL RESISTORS ARE ½ WATT
   UNLESS OTHERWISE NOTED.
2. IN SPINDLE LOCK POSITION WITH MOTOR OFF
   HIGH CLUTCH SHOULD READ 65 VDC
   LOW CLUTCH SHOULD READ 40 VDC



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PARTS FOR THE HDH

DEREELERS:

Part #	Description	Ref #
AD430	Eyelet with steel shank	EG430
AD705	Dereeler cones	
AD706	Extension arms	
AD707	Dereeler Assembly (Top)	
AD709	Felt 1/4" Round	
AD710	Felt 1/8" Round	
AD711	Clamp with felt	
AD712	Felt for clamp (1-1/2" X 9/16" X 1-5/8"	
AD713	"O" Ring (Rubber-Heavy)	2-136+
AD714	Spring - Heavy tension	9A-11B
AD715	Spring - Light tension	8A-11A
AD716	Pigtail	5A2 or 92-6
AD719	Pulley - Plastic - Wire Tension	DWG9002

BEARINGS:

BB158	Main spindle bearing	Browning M7123
BB158H	Housing for BB158 Bearing	NPC100RDC
BB159	Pillow block bearing (3)	VF-4S-210
BB160	Traverse mechanism bearing	KP4
BB165	V-Groove bearing on wire guide (Photo A6)	FS270
BB916	Tailstock bearing	202KDDG,6202Z

BELTS:

BAX35	"V" Belt	AX35
B130X	Traverse gear rack drive	130XL037
B170X	Counter Drive Belt	170XL037
B225L	Bottom Drive (Photo C8)	225L075
B255L075	Top Drive (Photo C9)	255l075
B367L	Traverse timing belt	367L050

CHUCKS:

HCH34	3/4"capacity Jacobs chuck with extension (Photo B27)
HCH44	4" Diameter 4 Jaw Chuck
HCH63	6" Diameter 3 Jaw Chuck
HCH64	6" Diameter 4 Jaw Chuck

CLUTCHES:

ACL281	Zero max transmission	E2
HCL14	Bottom clutch with 14 tooth pulley	24BEC30C-B-10-10
HCL19	Top clutch with 19 tooth pulley	24BEC30C-A-10-10
HCL20	Top clutch w/19 tooth pulley (NEW'93)	142BEC42C101090VT
HCL22	Clutch for traverse mechanism 6-6-12VL	B25-SBEC-22C
HCL267	Shaft 5/8" diameter (Lower Clutch)	

(Cont'd)

COUNTERS:

Part #	Description	Ref #
BCD52-1	Durant 5 digit, 2 preset	58830401
BE394	Electronic Pick Up	FXB12/48740-300 Duran
HC201	Dual preset mechanical Barker control	VAO-9345-1
BE395	Vane disc – no hub (Standard 10 vane)	VF300-10
BE406	Vane disc and collar assembly (Standard 10 vane)	VF300-10
BE430	Vane disc – no hub (Special 1 vane)	VF300-1
BE431	Vane disc and collar assembly (special 1 vane)	VF300-1
HC208	Mechanical counter I:1 ratio Veeder Root	0729825-003
HMI33	Flex cable from counter to machine (Sold by foot)	

MOTORS:

HM807	1 HP Permanent DC Motor	CDP3445
HM808	Motor Mount	3M276
HM823	Motor brushes for permanent magnet motor	2M170
HM824	Brushes for Baldor motor	BP5013

ELECTRICAL:

AE30S6	Diode	30S6
AE311	Foot pedal toe shield	
AE313	Foot pedal coil spring	
AE318	Foot pedal socket	91PC6F
AE319	Foot pedal plug	91MC6M
AE330	Bridge for armature	MDA-3506 B2
AE331	Bridge with octal plug in socket	B3
AE332	Lamp with clamp	
AE382	Potentiometer (foot pedal) (panel)	5K
AE408	Motor control board	KBIC-125
AE411	Pilot Light	
AE422	Capacitor	22MF-400VDC
AE423	Line Cord	
BE377	Transistor for motor control	2N1671A/B
BE394	Pickup	FXB12E/48740-300 Dura
HE371	500K potentiometer	
HE410	HDH foot pedal 5K	
HE412	Diode 60 AMP 400 P.I.V.	IR40HF60
HE413	DC AMP Meter	
HE414	Resistor 4 OHM 50 Watt	
HE415	Resistor 470 OHM 11 Watt (Ceramic)	
HE416	Resistors 1500 OHM 11 Watt (Ceramic)	
HE421	Capacitor 1MF-400 VDC	14PSP10
HE422	100K Potentiometer	
HE423	11 Pin Plug for counter	R78715
HE424	Foot pedal cord/male connector	
HE434	Pulse Transformer for power supply	
HE435	Triac	SC230D
HE436	Socket 6 Pin	
HE437	Plug 6 Pin	
HE450	Socket 6 Pin (for foot pedal new machines)	Switchcraft OC6F
HE816	SCR	CZ30D
HE817	Resistor (brake) 4OHM 25W	

(Cont'd)

RELAYS:		
AR414	Power start relay	DIL-R22-115VAC
AR429	Relay in Durant 5-2 Counter	38133202
HR402	Spindle lock relay 110V DC (Photo C1)	KAPA11DY110VDC
HR403	High-low	KRPA11AY120VAC
HR412	Traverse relay 12V DC (Photo C2)	KRPA11DY12VDC
TRAVERSE:		
HT950	Front guiding traverse mechanism complete	
HT951	Traverse power supply	
HT953	Traverse switch mounting blocks (Photo B31)	
TAILSTOCK:		
HTS905	Toggle action tailstock with non-rotating center	
HTS906	Toggle action tailstock with live center (Photo A9)	
HTS907	Extra length tailstock bars	
HTS914	Bobbineer tailstock with choice of 1 of 3 inserts	
HTS923	Steel Handle K1EP1ELESA #28405	
HTS925	Live center insert for Part No. HTS906	
HTS726	Dead center insert for Part No. HTS905	
RTS920	Tailstock unfinished insert 1" dia. X 1-1/4" long.	
RTS921	Tailstock insert with 60 degree point	
RTS922	Tailstock flat insert 1-3/8"	
PULLEYS:		
AP18	18XL037	18XL037
HP10	Adjustment pulley for 367L050 belt modified	10L050
HP12	Transmission pulley	12L050
HP14	Traverse pulley 3/8" Modified	14XL037
HP22	Motor Pulley	AK22 X 5/8"
HP24	Gear rack pulley	24XL037
HP30	Bottom pulley	TL 30L075
HP31	Bottom pulley with taper lock	TL30L0375+1610-5/8"
HP36	36XL037	36XL037
HP38	Transmission to counter pulley (mod) 3/8"	20XL037
HP48	Main top pulley	48L075
HP49	Main top pulley with taper lock	48L075+SDS-1
HP50	Taper lock (Bottom)	TL30L075+1610-5/8
HP51	Taper lock (Top)	SDS-1
HP54	Bottom "V" Pulley	AK54 X 5/8"
HP58	Transmission to counter (Mod) 5/8" hole pulley	20XL037
SWITCHES:		
AS721	Traverse on/off and motor reverse (Photo A24)	2PDT
AS722	Spindle lock(3 positon rocker (Photo A5)	2P3T
AS762	Circuit breaker switch (Photo C6)	JA1-A3-A
HS770	High/low speed (2 position rocker (Photo A2)	2P2T
HS777	Micro switch for foot pedal	V3L-3005-D8

(Cont'd)

SWITCHES (Cont'd)

HS772	Armature reverse toggle switch	3PDT
HS774	Traverse direction switch	16036
HS775	Unilateral switch	2N4987
HS776	Traverse micro switch	BZ-2RD
HS777	Micro Switch for foot pedal	V3L-3005-D8

WIRE GUIDES:

HWG10	Rear wire guide assy.with 1 adj.wire guide(Photo B24)
HWG11	Additional wire guides (Photo B35)

MISCELLANEOUS:

AMI594	Dust Cover	
HMI31	Gear rack (Give length)	L2020
HMI32	Collar	15130
HMI33	Flex cable from counter to machine (Sold by foot)	
HMI34	Maintop shaft	