INSTALLATION and PARTS MANUAL

FOR

DEVLIEG SPIRAMATIC JIGMIL®

Compiled for

MODEL 2B-36

DEVLIEG *SPIRAMATIC* JIGMIL

Precision Boring and Milling Machine

SERIAL NO. 1-246

DEVLIEG MACHINE COMPANY

[illegible], MICHIGAN, U.S.A.

★ *MAKERS OF FINE MACHINE TOOLS*

DeVLIEG MACHINE COMPANY
450 Fair Ave. Ferndale 20, (Detroit) Mich.

DeVLIEG SPIRAMATIC JIGMIL®

IMPORTANT INSTRUCTIONS

In order to facilitate the installation of this machine, we would appreciate your cooperation in observing the following procedure:

1. The machine should be removed from the skid and the rust-preventative completely removed.

   It is advisable to clean the machine with a non-volatile cleaning fluid. Kerosene, coal oil or similar low base cleaning fluids are recommended as they contain a certain amount of oil. Do not leave the surfaces dry or take away natural lubricants as this will induce rusting. Where guards and chip shields may easily be removed, they should be taken off and the surfaces beneath the guards cleaned.

   It is unnecessary to dismantle the machine for cleaning. The slides should not be moved until the machine is thoroughly cleaned and proper lubricant applied generously to the way members. The slides can then be moved by hand.

   If an Index Table has been shipped on top of the machine table, the Index Table may be removed and thoroughly cleaned. The Index Table locating pins are not engaged for shipment.

2. Certain models of JIGMILS are shipped with various components disassembled. Customer should not attempt to assemble these parts and they should be held for proper assembly by our field demonstrator. This is particularly important when the JIGMIL spindle bar is shipped disassembled. Improper installation may cause permanent damage to the spindle. In shipments of this kind, the spindle is packed in a special box and should be held unpacked, pending the arrival of our demonstrator.

3. The machine should be placed on a reinforced concrete foundation. Leveling screws should be cleaned, lubricated and adjusted for a proper height so that the base of the machine will not touch the foundation at any point. The leveling screws should bear upon the center of the 3" x 3" x 3/4" plates placed in the foundation.

   With a precision level placed in a clean area on the center of the machine table, the machine should be rough leveled - that is, all leveling screws should be placed in contact with the foundation. The machine is considered to be rough leveled when all leveling screws are in contact with the foundation and there is a relatively even tension on each screw as judged by hand with a 12" wrench.

   Early rough leveling is advisable as it relieves strains set up in the machine as a result of its being bolted to the skid during shipment.

   UNDER NO CIRCUMSTANCES SHOULD THE MACHINE BE GROUTED INTO THE CONCRETE FOUNDATION.

4. Electric power should be connected to the machine. Do not move any slides under power until checked by our field demonstrator.

5. We should be given reasonable notice as to the date you will be ready for our demonstrator to visit your plant. Please note that we provide the services of a demonstrator to properly level the machine, check out all its functions and see that it is started up to your satisfaction.

Your cooperation in following the procedure outlined above will avoid any loss of time in getting the machine into operation when our demonstrator visits your plant.

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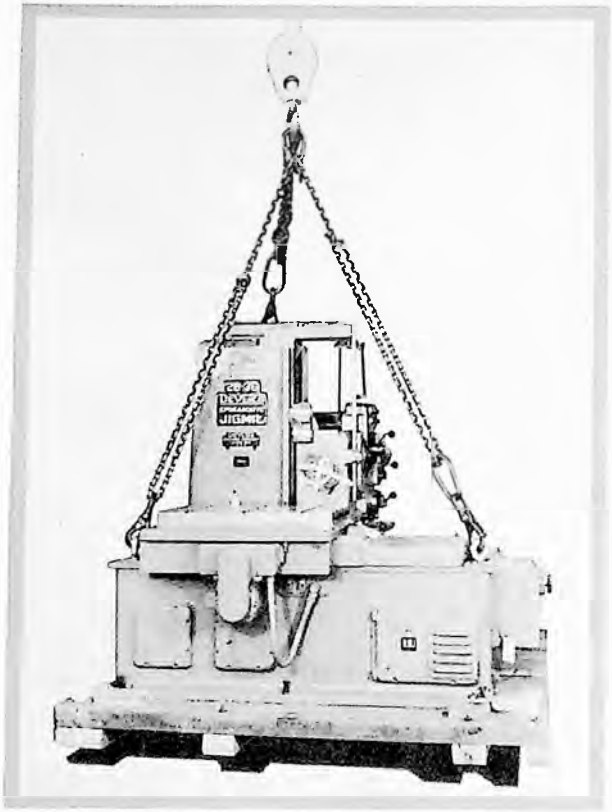
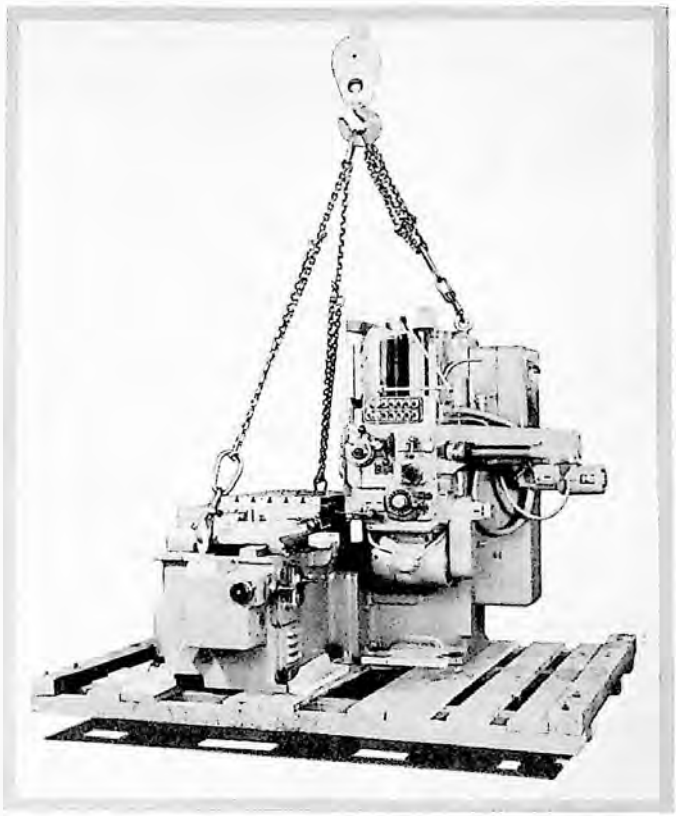
SLING ARRANGEMENT

AND LIFTING INSTRUCTIONS





The Model 2B DEVLIEG JIGMIL is shipped with eyebolts for lifting in position as shown.

Chain or Cable slings capable of lifting 16000# should be arranged as illustrated (net weight of machine without attachments 13000#).

Extreme care should be exercised during all handling and lifting operations to prevent accidental damage to way surfaces, table top or other exposed machine elements.

While the machine is still suspended and after the skids have been removed, all leveling screws should be adjusted to extend approximately 1/2" below the bottom surface of the machine bed.

After setting the machine in position all leveling screws should be brought into equal contact with the steel plates set in the floor or foundation by using uniform wrench tension on all leveling screws. This will leave the machine in position for accurate finish leveling and locking of hold down bolts.

Before connecting power to the machine or moving any of the machine slides, check all items outlined on both the "Installation" and the "Installation Wiring" instruction sheets.

INSTALLATION

FOUNDATION

The DeVlieg JIGMIL should be placed on a generous foundation. This should be made of heavily reinforced concrete in accordance with the detailed specifications furnished for this purpose on request. Poor sub-soil conditions may warrant a heavier foundation. The foundation should be vibration insulated from the rest of the building by using expansion strips anywhere that the foundation comes in contact with the building's floor, footings, etc.

UNCRATING and CLEANING

When the JIGMIL is uncrated it is important that the packing slip be carefully checked with the contents of the crate. Any discrepancy should be reported immediately to the DeVlieg Machine Company. Check thoroughly to see that all blocking and shipping clamps are removed before attempting to move any slides. All rust-proofing and shipping grease must be completely removed before any movement of machine slides is attempted.

ROUGH LEVELING

A careful inspection should be made to see that the base of the machine is not in contact with the floor and that the weight of the machine is being carried equally by all of the leveling screws. Equal wrench pressure on all of the leveling screws is sufficient for this rough leveling. The leveling screws should rest on steel plates set in the foundation and not on pad's vibration insulators or dampeners of any kind.

REMOVAL OF COUNTERWEIGHT SUPPORT ROD

When the JIGMIL has been placed in final location, the rod supporting the counterweight for shipping purposes must be removed before attempting vertical movement of the spindle head.

Positively do not connect the power for this slide operation until this has been done.

The location of the rod is shown in illustration.

Removal is accomplished by placing the "Feed Power-Hand" lever into hand position and applying the hand crank to the spindle head adjustment shaft. Lower the head until the counterweight chain has lifted the counterweight free of the supporting rod.

Remove the rod entirely and save for possible future moving or shipping.

LUBRICATION

It is very important that there be strict adherence to the exact specifications of the various types of oils referred to in the lubricating chart, and that the machine be thoroughly lubricated before starting operation. All gear boxes and reservoirs have been filled at the factory with the proper lubricants and no preservatives have been added.

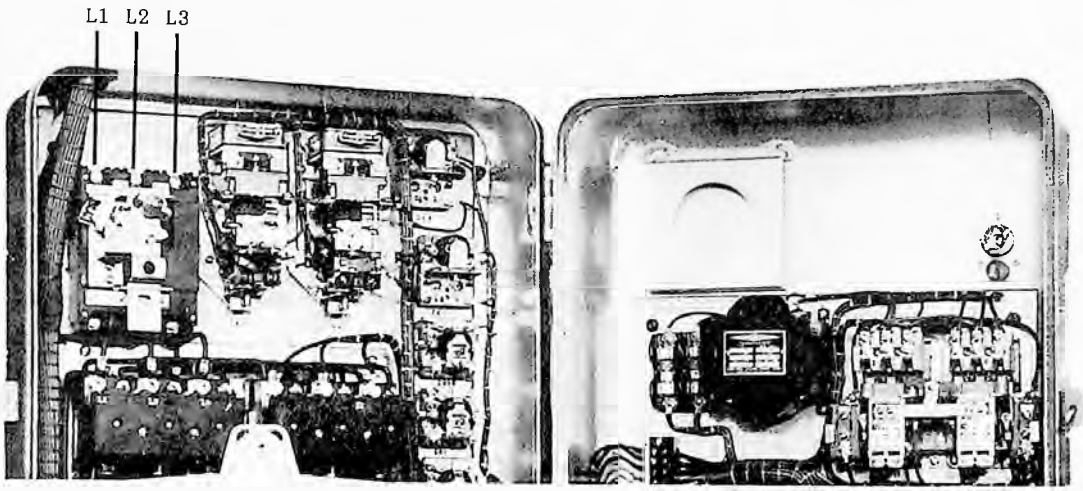
Check for proper oil level in all units but do not drain.

WIRING

For instructions on wiring of the JIGMIL see "Installation Wiring" data sheet.

INSTALLATION

WIRING



Wiring Jigmil

The Main disconnect switch for the JIGMIL is a nonautomatic circuit breaker mounted in the upper left corner of the main control panel on the back of the column. The line power is wired to the three terminals on the top of this circuit breaker.

Do Not Alter Any Wiring In The Panel. The only connections necessary for installation are the three lead wires into the panel.

IT IS IMPORTANT TO CHECK PROPER ROTATION OF MOTORS TO AVOID DAMAGE TO THE MACHINE.

Wiring is correct when ---

PLATEN IN and OUT pushbuttons produce corresponding movements of the Platen.

---OR---

TOOL-LOCK IN produces correct rotation of Draw bar for locking tool in spindle of machine. Do not operate tool lock unless spindle bar is completely assembled and in position with the thrust bearings locked in place in the Bar Feed Bracket.

If these functions are correct, all other functions of the JIGMIL will be properly co-ordinated.

WARNING

Any attempt to establish correct rotation, other than the two methods shown above, may damage the machine as certain limit switches and directional controls are in-operative until machine is correctly wired.

Incorrect wiring can also effect operation of "STOP-ALL" button, making it necessary to use main disconnect to stop machine.

D e V L I E G M A C H I N E C O M P A N Y
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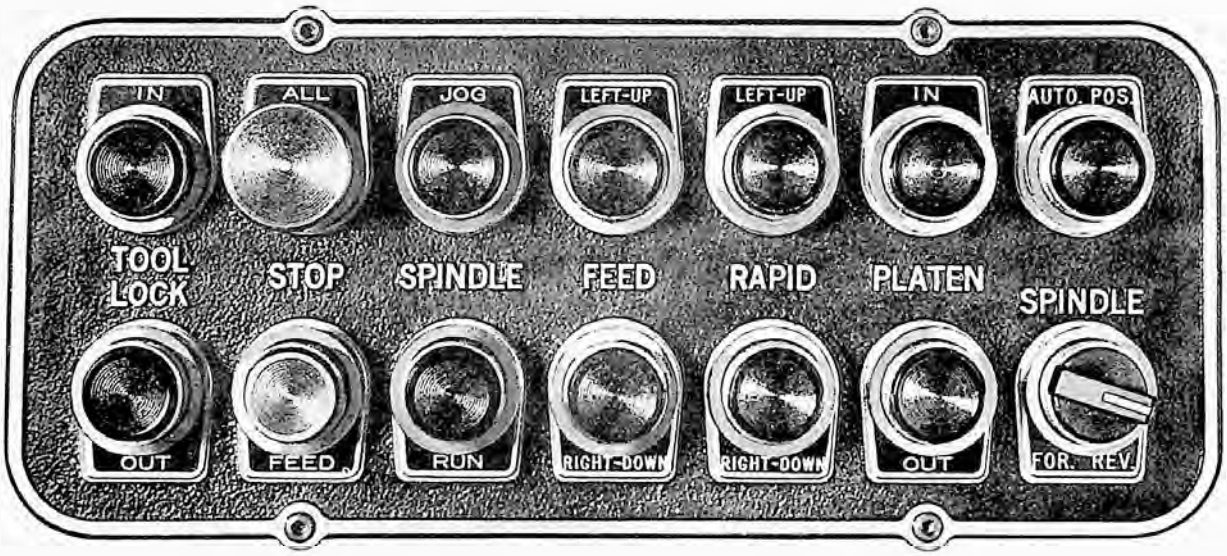
DEVLIEG SPIRAMATIC JIGMIL®

DESCRIPTION OF PUSH BUTTON FUNCTIONS



TOOL LOCK

IN- Locks tool in taper in spindle bar.

OUT- Releases tool from spindle taper.

These functions are performed by the power operated draw bar.

STOP

ALL- Red Mushroom Push Button. An emergency stop that will de-energize and plug stop spindle and feed motors.

FEED- Red Push Button. Used to stop saddle or spindle head when in milling feeds. It will also stop in or out travel of spindle bar when in drilling or boring feeds. This button will not stop rotation of the spindle.

SPINDLE

JOG- Energizes spindle motor for rotation only while button is held depressed.

RUN- Used to start spindle motor for continuous rotation of spindle. Spindle may be stopped and re-started by actuating the spindle speed selector lever.

FEED

LEFT-UP- Used to move the saddle "left" or the spindle head "up" at the selected feed rate.

RIGHT-DOWN- Used to move the saddle "right" or the spindle head "down" at the selected feed rate.

All feed functions are electrically interlocked with spindle circuit to allow feed only when spindle is energized.

RAPID

LEFT-UP- Used to move saddle "left" or spindle head "up" at rapid traverse rates.

RIGHT-DOWN- Used to move the saddle "right" or spindle head "down" at rapid traverse rates.

Rapid Traverse Push Buttons have a two position control, partial depression producing a slow rapid traverse rate and full depression producing a fast rapid traverse rate. Rapid traverse will over run feed in either direction.

PLATEN

OUT- Used for retraction of the platen, away from the spindle at a rapid traverse rate.

IN- Used for repositioning and locking the platen.

These functions are accomplished through a two speed rapid traverse mechanism, positioning and locking against an adjustable stop. "In" push button should be held depressed until positive locking of the platen is observed.

AUTOMATIC POSITION

Used as a start cycle button for energizing the automatic positioning cycle of either the saddle or the spindle head.

SPINDLE - FORWARD-REVERSE

Two position selector switch for controlling direction of rotation of the JIG-MIL spindle.

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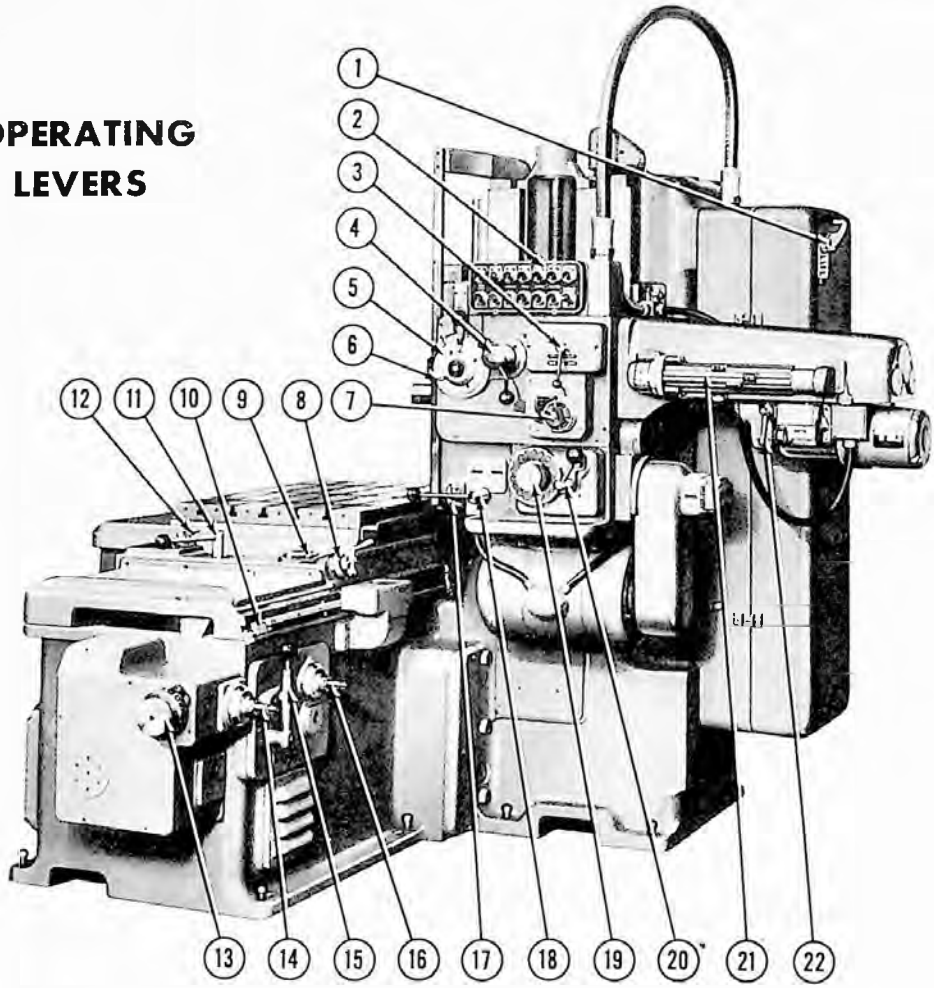
OPERATING LEVERS



1 - Main electrical disconnect switch. (Located on door of control cabinet).

2 - Main control station (Pushbutton Housing).

3 - Power bar feed engagement lever (Forward - Reverse).

4 - Manual bar feed levers. Closed position of handles for fast bar traverse, open position of handles for slow bar traverse.

5 - Bar feed dials, (Fast Dial, Slow Dial and Trip Dial).

6 - Lock lever for engaging bar feed trip dial.

7 - Bar feed rate selector dial.

8 - Crank and Micrometer Dial for setting platen positioning stop.

9 - Lock for platen positioning stop.

10 - Adjustable stop block for end measuring rods (also used on vertical measuring rod trough)

11 - Saddle lock lever.

12 - Saddle - table way lubrication pump.

13 - Quick change feed selector for saddle or spindle head milling speeds.

14 - Micrometer dial for hand adjustment of saddle.

15 - Horizontal - Vertical selector lever. Engages feed - rapid function to either saddle or spindle head lead screw.

16 - Micrometer dial for hand vertical adjustment of spindle head.

17 - Spindle head way lubrication pump.

18 - Spindle head lock lever.

19 - Spindle speed selector dial.

20 - Spindle speed selector lever.

21 - Trip bar - turret depth control.

22 - Lock for bar feed slide bracket.

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AUTOMATIC POSITIONING GENERAL DESCRIPTION

The automatic positioning function, as applied to either the saddle or the spindle head of the De Vlieg JIGMIL is an electrically controled sequence of normal rapid traverse and feed rate movements. These movements are powered through the feed box in the bed of the machine and controled by the contact of the measuring element (measuring rods or duplitrol pins) with the switch in the horizontal or the vertical positioning units.

The feed unit, located on the left hand end of the JIGMIL bed is powered by a two speed reversing motor. The feed unit provides:

1 - A direct drive through a hydraulic actuated multiple disc clutch for rapid traverse.

2 - A reduction drive through eight gear change combinations with a spring actuated jaw clutch making the connection for the milling feed rates.

This combination of gearing plus the two speed motor produces a fast and a slow rapid traverse rate and 16 milling speeds.

The feed unit has two output shafts, one connected to the saddle screw and the other connected to the spindle head elevating screw. These shafts are manually clutch connected to the power train by the Horizontal - Vertical selector lever located on the operators side of the bed.

Hydraulic pressure for disengaging the feed (jaw) clutch and engaging the rapid (multiple disc) clutch is provided by a small motor-pump unit set inside the bed of the machine. This pump is supplied by the oil within the feed unit housing and performs the dual function of hydraulics and lubrication. Note that the feed unit is normally in gear for feed rates. Energizing the hydraulic pump motor shifts the feed unit into gear for rapid traverse.

Automatic Positioning consists of four basic movements:

1 - SLOW RAPID APPROACH. A slow rapid movement (right or down) to contact and over-run the positioning unit switch.

2 - FAST FEED BACK. A fast feed movement (left or up) to break contact with the switch. This movement also has a slight over-run.

3 - SLOW FEED IN. A slow feed movement (right or down) to contact the positioning unit switch a second time. Because of the extremely slow speed no over-run is present with this movement. This brings the machine slide to its final position.

4 - RELAXATION. A slow feed impulse controled by a timing relay (TR3 - left) in horizontal and (TR5 - up) in vertical. This is so slight a revolution of the lead screw as to produce no movement of the machine slides but serves only to float the leadscrew in the center of its backlash, removing any influence tending to make the machine slide move during locking or by vibrations caused by subsequent machining operations.

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DEVLIEG SPIRAMATIC JIGMIL®

AUTOMATIC POSITIONING ELECTRICAL SEQUENCE

The automatic positioning function is applied to either the saddle or the spindle head dependent upon the position of the Horizontal - Vertical selector lever on the front of the bed of the machine.

To provide automatic positioning to the saddle the lever is shifted to the left, connecting the feed unit with the horizontal lead screw and actuating limit switch LS6.

The saddle must be unclamped so that limit switch LS5 will be closed.

Safety limit switches LS1 and LS2 must be open as the automatic positioning function is inoperative when the saddle trips either the right or left limit switch.

The feed rate selector dial on the feed unit must be set on 1.4 inches per minute to produce the proper feed rates for automatic positioning. The selector dial, when set in this position, allows limit switch LS19 to close.

The contact arm on the positioning unit must be in its operating position. The retracted position of this arm prevents actuation of the positioning unit switch making the automatic positioning circuit inoperative.

The end measure rods or duplitrol pins are inserted in position in the machine.

The automatic positioning cycle is started by depressing the pushbutton "AUTOMATIC POSITIONING".

This energizes relay CR50 which in turn energizes starter TR (table right) and the starter for the hydraulic pump motor (HPF) With the starter TS (table slow) being already energized by the normally closed contacts of TR6, the feed unit motor will be energized at its slow speed (600 R. P. M.) in the "right" direction.

The saddle will move to the right at the slow rapid rate until it contacts limit switch LS9. (See position "A" on the diagram).

Contacting limit switch LS9 energizes relay CRLS in turn energizing starter TL (table left), timing relay TR6, relay CR51 and de-energizing starter TR (table right).

Timing relay TR6 energizes starter TF (table fast) and de-energizes starter TS (table slow).

Relay CR51 de-energizes the hydraulic pump motor (HPF) plugging it to a stop through the timer TR7.

The feed unit motor is thus energized in its fast speed (TS - 1800 R. P. M.) and in the left direction (TL). With the hydraulic pump de-energized the feed unit will be in gear for feed rates so the saddle will move to the left in a fast feed rate until it crosses the line of zero positioning relaxing the limit switch LS9. (See position "B" on the diagram).

Relaxing limit switch LS9 de-energizes relay CRLS.

This de-energizes starter TL (table left), energizes starter TR (table right), and energizes timing relays TR3 and TR5.

By de-energizing relay CRLS, timing relay TR6 is de-energized in turn de-energizing starter TF (table fast) and energizing starter TS (table slow).

The feed unit motor is now energized in its slow speed (TS - 600 R. P. M.) and in the "right" direction (TR) moving the saddle to the right in slow feed until it again contacts the limit switch LS9. (See position "C" on the diagram).

Contacting limit switch LS9 again energizes relay CRLS.

This de-energizes relay CR50 which in turn de-energizes starter TR and the timing relays TR3 and TR5.

Starter TS has remained energized through the closed contacts of timing relay TR6.

Starter TL is energized through the instant closing contacts of timing relay TR3 and remains energized for a pre set time through the time delayed opening contacts of timing relay TR3. This will give the desired amount of slow feed left to accomplish the relaxing of tension by floating the lead screw in the center of its backlash.

The saddle may now be locked, opening limit switch LS5 which de-energizes relay CR3. This isolates the complete Automatic Positioning circuit and the feed rapid circuit leaving the machine in position for boring with the slide locked and without power to the feed unit motor preventing accidental starting with the lock applied.

Automatic Positioning of the spindle head is accomplished in the manner described but with the following exceptions:

Horizontal - Vertical selector must be in the "Vertical" position, actuating limit switch LS8.

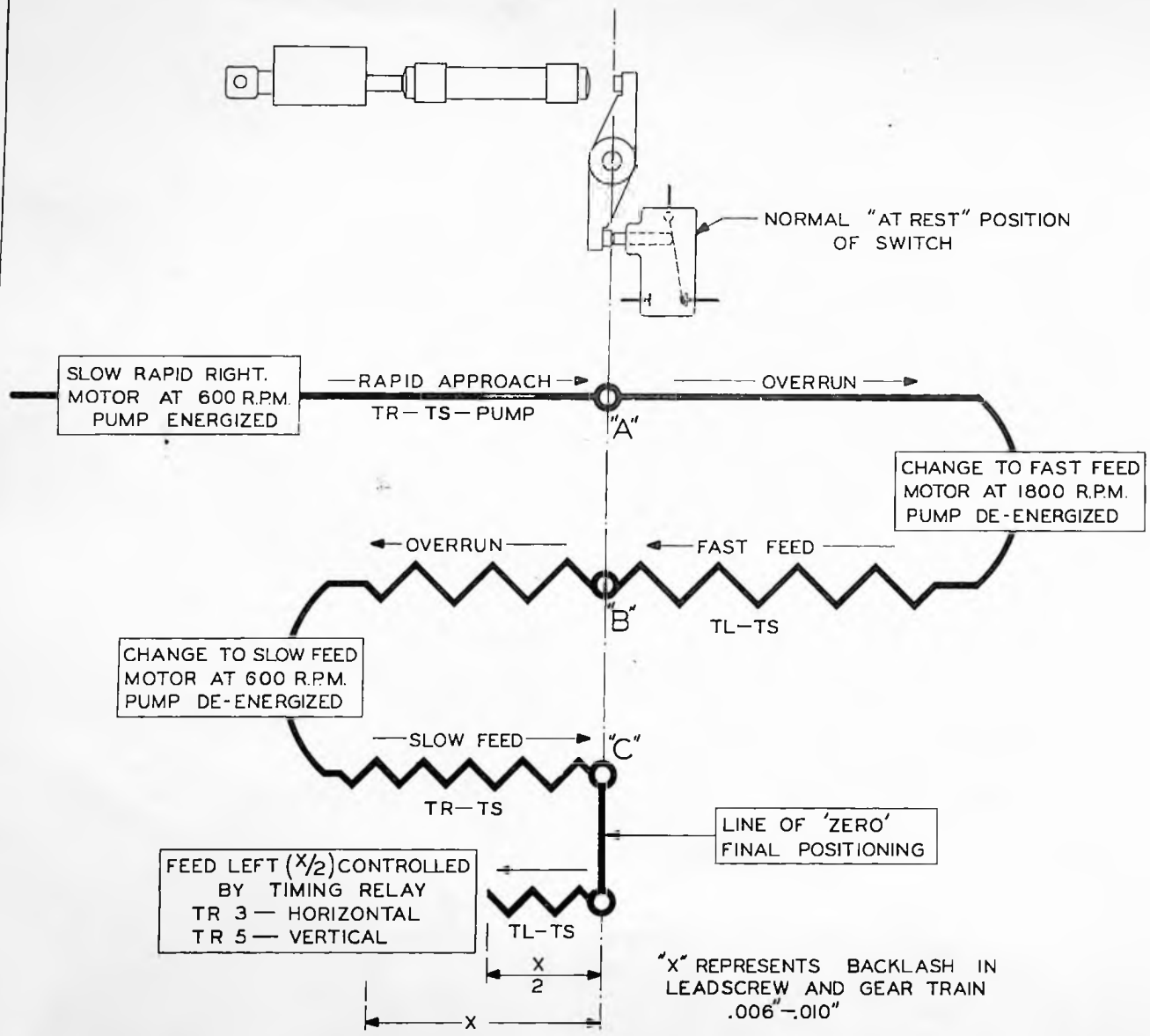
The head lock switch LS7 replaces the saddle lock switch LS5.

Limit switches LS3 and LS4 provide the travel limiting function performed in horizontal by LS1 and LS2.

Limit switch LS10, in the vertical positioning unit, assumes the control function for vertical positioning.

TIMING RELAY TR3 - determines the length of the relaxation stroke in Horizontal Positioning.

TIMING RELAY TR5 - determines the length of the relaxation stroke in Vertical Positioning.



TIMING RELAY ADJUSTMENT

TR3 HORIZONTAL—TR5 VERTICAL

When correctly adjusted, Feed Unit Motor should reverse just enough to approximately split backlash between screw and nut (X/2), that is, if the backlash is found to be .008", Micrometer Dial should back up .004" from the point of final positioning.

Both TR3 and TR5 must be adjusted to give this slight reversal but not to excess as this would result in screw pressure being brought to bear on the opposite side of the feed nuts.

This condition may usually be detected by pumping the Locking Lever several times and observing the Dial Indicator. If the pointer moves, it is an indication of screw pressure on the nuts.

"AUTO. POSITION CYCLE
DE VLIEG MACHINE CO.
DETROIT, MICHIGAN
2B JIGMIL

SEE JIGMIL LUBRICATION SPECIFICATIONS FOR THE SELECTION OF PROPER LUBRICANTS

A – HAND CRANK - VERT. DRIVE - MAINTAIN LEVEL.

B – BEVEL GEARS - VERT. DRIVE - PACKED FOR LIFE.

F – FEED UNIT – DRAIN AND REFILL 3 MONTHS AFTER INSTALLATION AND EVERY 6 MONTHS THEREAFTER.

G – TABLE DRIVE UNIT - MAINTAIN LEVEL.

H – SADDLE WAY PUMP – OPERATE HANDLE HOURLY. KEEP RESERVOIR FULL.

J – SPINDLE HEAD, K – TOOL LOCK – DRAIN AND REFILL 3 MONTHS AFTER INSTALLATION AND EVERY 6 MONTHS THEREAFTER.

L – THRUST BEARINGS - SPINDLE FEED SCREW - PACKED FOR LIFE.

M – THRUST BEARINGS - HORIZ SCREW, N – THRUST BEARINGS - VERT SCREW – FILLED WITH OIL - INSPECT AND REPLENISH IF NECESSARY TWICE YEARLY.

P – COUNTERWEIGHT SHEAVES - GREASE MONTHLY.

Q – SPINDLE HEAD WAY PUMP – OPERATE HANDLE HOURLY, KEEP RESERVOIR FULL.

R – BEVEL GEARS - TABLE POSITIONING – GREASE PACKED - REMOVE COVER AND INSPECT YEARLY.

S – TABLE NUT HOUSING - GREASE MONTHLY.

T – TABLE SCREW AND SHAFTS – OIL MONTHLY OR OFTEN ENOUGH TO MAINTAIN LIGHT OIL FILM.

V – BAR FEED SCREW AND GUIDE BARS - MAINTAIN OIL LEVEL

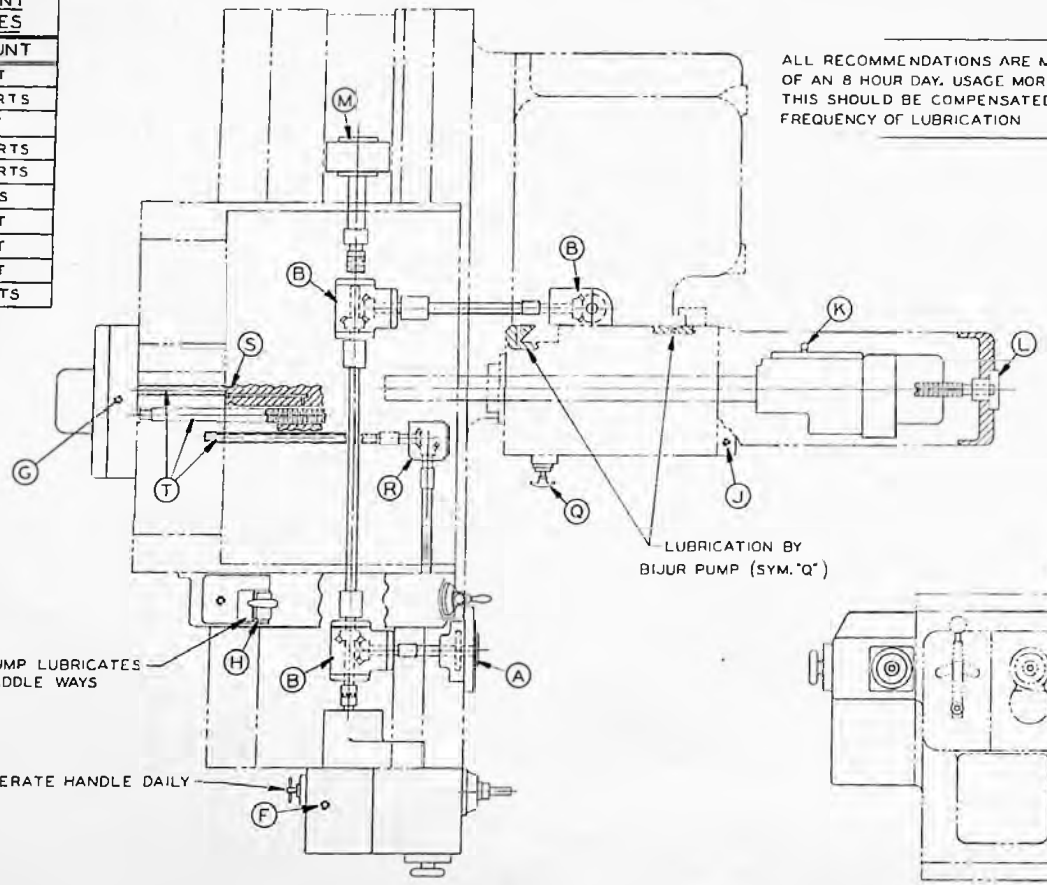
SPINDLE BAR – SHOULD BE WIPED CLEAN AND LUBRICATED WITH OIL. SEE "SPINDLE BAR WIPER" SHEET.

MOTORS - NOT PERMANENTLY SEALED – SHOULD BE GREASED YEARLY

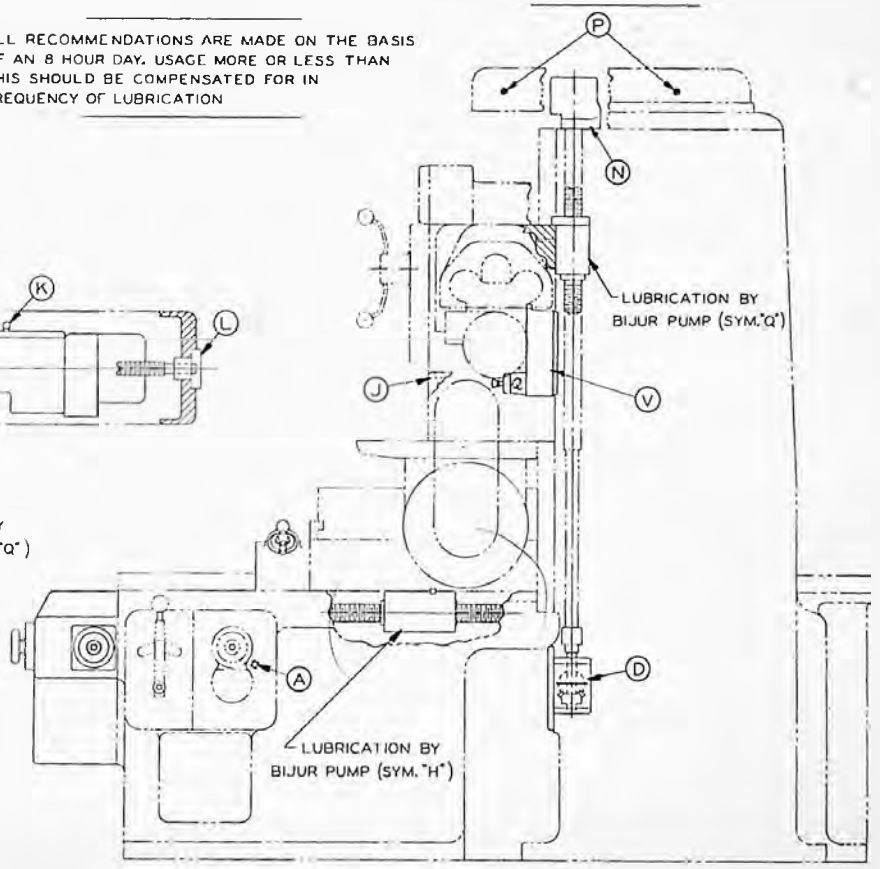
LUBRICANT CAPACITIES

SYM	AMOUNT
A	½ PINT
F	6 QUARTS
G	1 PINT
H	3 QUARTS
J	7 QUARTS
K	3 PINTS
M	½ PINT
N	½ PINT
Q	¾ PINT
V	1½ PINTS

ALL RECOMMENDATIONS ARE MADE ON THE BASIS OF AN 8 HOUR DAY. USAGE MORE OR LESS THAN THIS SHOULD BE COMPENSATED FOR IN FREQUENCY OF LUBRICATION



PLAN VIEW



OPERATORS SIDE VIEW

NAME: LUBRICATION DIAGRAM
DE VLIEG MACHINE CO. DETROIT, MICHIGAN
DRAWN: A.L.B. CHECKED: PART NO.
TRACED: S.E.D. DATE: 1-12-57
28-36

FIRST USED ON 3-219

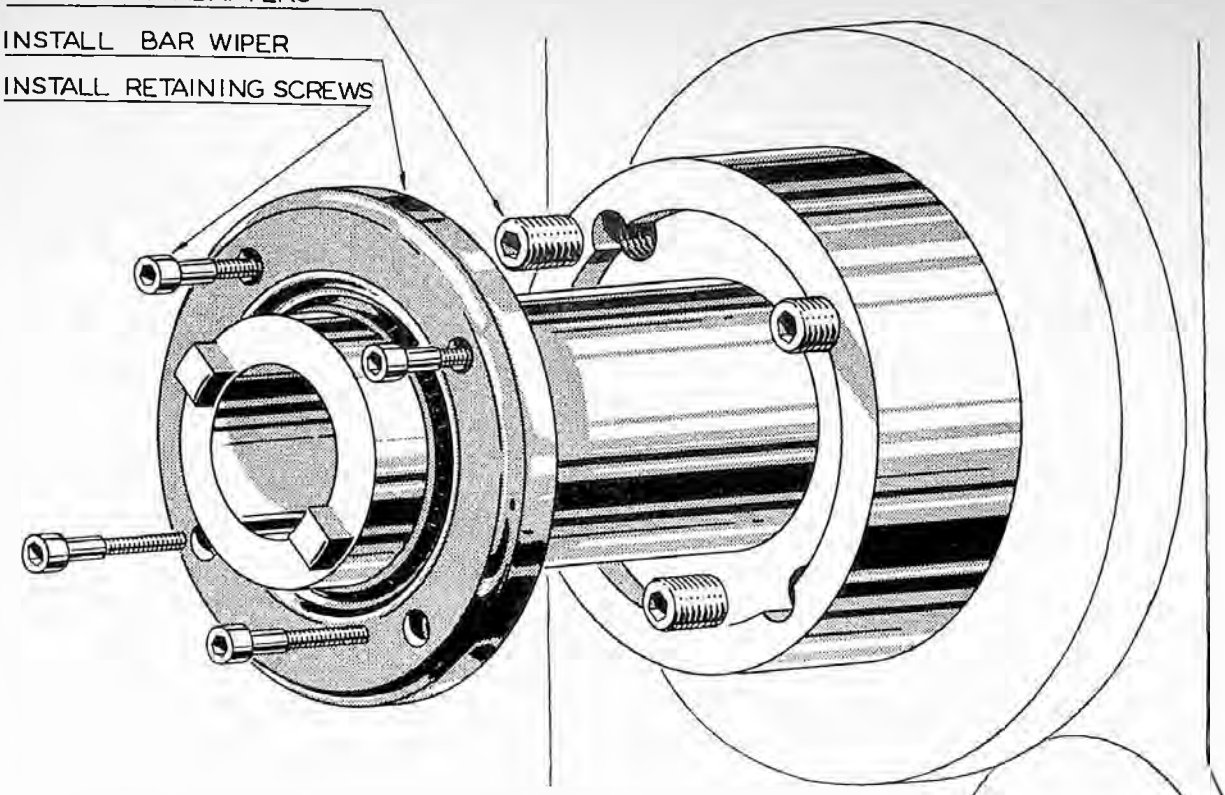
JM 104A

JIGMIL LUBRICATION SPECIFICATIONS

	SOCONY MOBIL-OIL	SHELL OIL CO.	GULF REFINING	STANDARD OIL CO.	TEXAS COMPANY	SUN OIL CO.	SINCLAIR REFINING CO.
J	Mobil Velocite Oil No. 6 60 S. S. U. @ 100°	Shell Tellus Oil 15	Gulfcrest 34	Superla Spindle Oil A	Texaco Spindura Oil AA	Solnus 55	Cadet Oil D
F-K-U	Mobil D. T. E. Oil Light 150 S. S. U. @ 100°	Shell Tellus Oil 27	Gulf Harmony 44	Stanoil Industrial Oil No. 15	Texaco Regal R & O A2	Sunvis 916 or Suntac 152	Duro Oil 150
H-Q-T	Mobil Vactra No. 2	Shell Tonna Oil G			Texaco Way lubricant D	Sunoco Way lubricant No. 80	Truslide 300
H_1 For Models With More Than 60" Horiz. Travel	Mobil Vactra No. 4					Sunoco Way lubricant No. 90	Truslide 800
A-B-G M-N-V	Mobilube G x 90	Shell Spirax E. P. 90	Gulf Multi-Purpose Gear Lubricant 90 or Gulf E. P. 95	Standard Multi-Purpose Gear Lubricant No. 90	Universal E. P. 90	Sun Multi-Purpose Gear Lubricant S. A. E. No. 90	Opaline Gear Lubricant BX
L-P-R-S Electric Motors	Mobilux Grease No. 2	Shell Alvania Grease No. 2	Gulf Precision Grease No. 2	Stanobar Grease S	Regal Starfak No. 2	Sun Prestige No. 42	Litholine Industrial No. 2
Spindle Bar	Mobil Upperlube	Shell Donax U	Gulfcrest 41	Superla Spindle Oil B	Texaco White Oil A	Sunoco Suntune	Sinclair Upper Lubricant

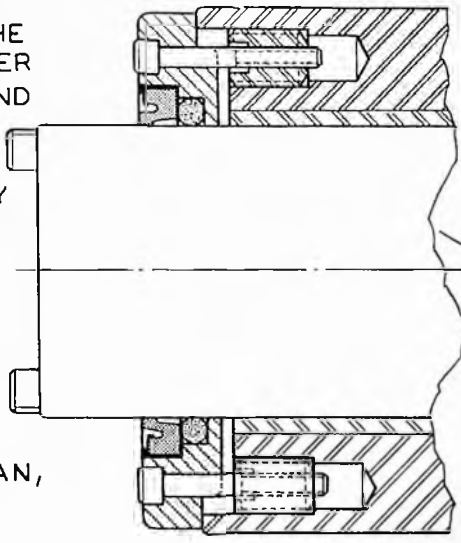
NOTE: The JIGMIL, as shipped, is supplied with lubricants developed by Socony Mobil-Oil in Co-operation with DeVlieg Machine Co. All other lubricants shown in the chart are recommended as indicated by the oil companies shown.

(1) INSTALL 4 ADAPTERS
(2) INSTALL BAR WIPER
(3) INSTALL RETAINING SCREWS



SPINDLE BAR WIPER

FOR USE ON ALL DE VLIEG JIGMILS



WHEN MOUNTED ON THE NOSE OF THE SPINDLE SLEEVE AS SHOWN, THIS WIPER PROVIDES POSITIVE DIRT EXCLUSION AND PROPER LUBRICATION FOR THE JIGMIL SPINDLE BAR.

REMOVE FROM SPINDLE SLEEVE ONLY WHEN NECESSARY FOR MOUNTING OF FLANGE MOUNTED CUTTERS OR ADAPTERS.

KEEP FELT OIL RING SATURATED WITH SPINDLE BAR OIL SPECIFIED ON LUBRICATION DIAGRAM.

NOTE: INTERIOR OF SPINDLE BAR WIPER ASSEMBLY MUST BE KEPT CLEAN, OTHERWISE A LAPPING ACTION WILL BE CAUSED BY FELT WIPER.

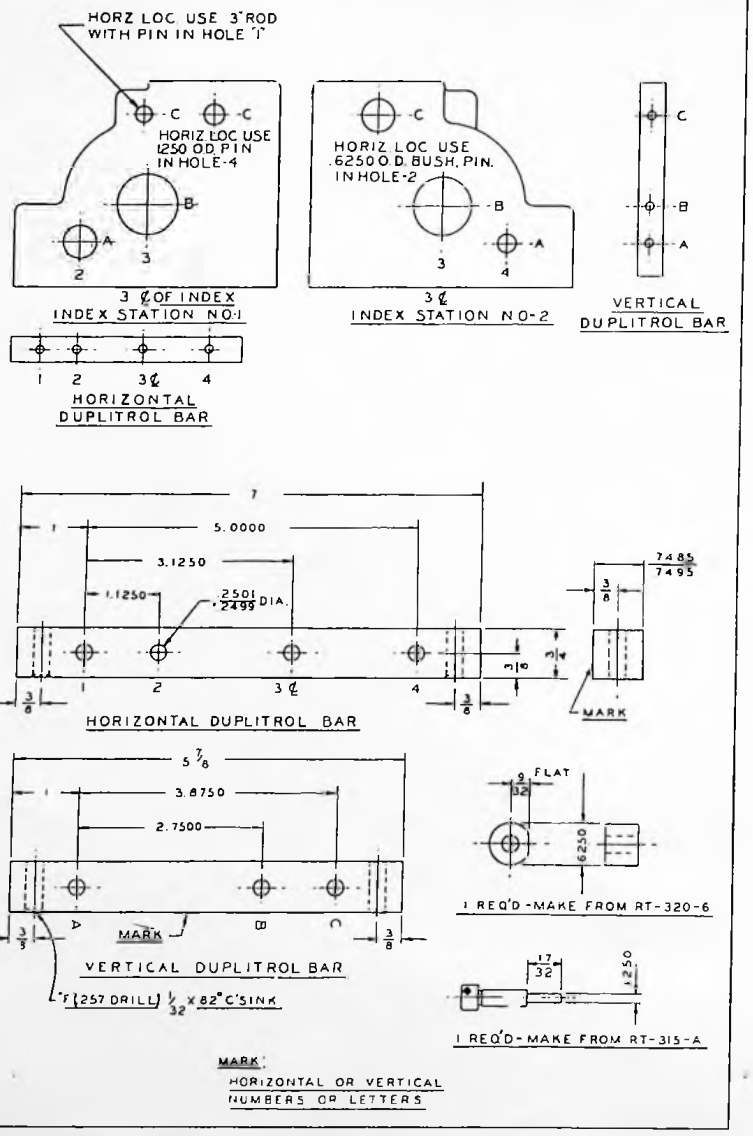
DO NOT RETRACT NOSE OF SPINDLE BAR PAST THE NEOPRENE WIPER, AS LOADING OF THE FELT WIPER WILL RESULT.

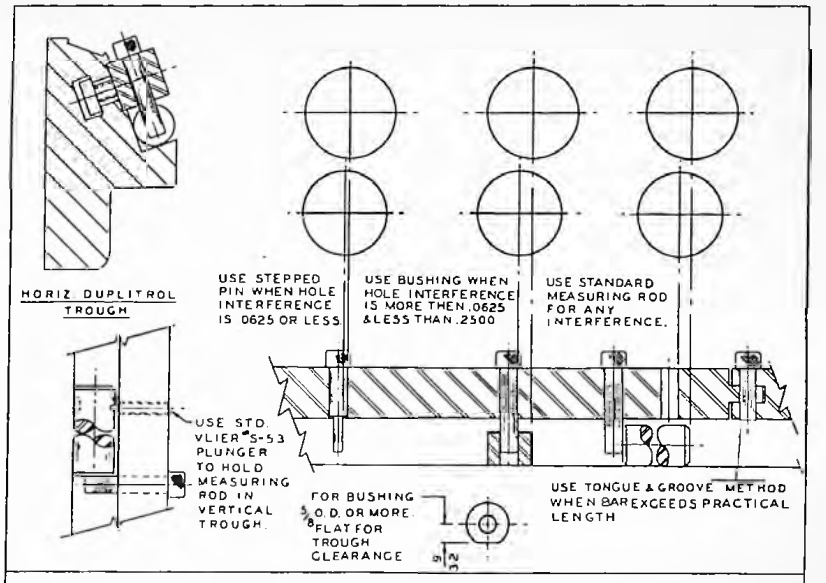
DE VLIEG MACHINE COMPANY

450 FAIR AVE. FERNDALE, 20, MICHIGAN

LITHO. IN U.S.A.

FORM NO. PM-7R-6A





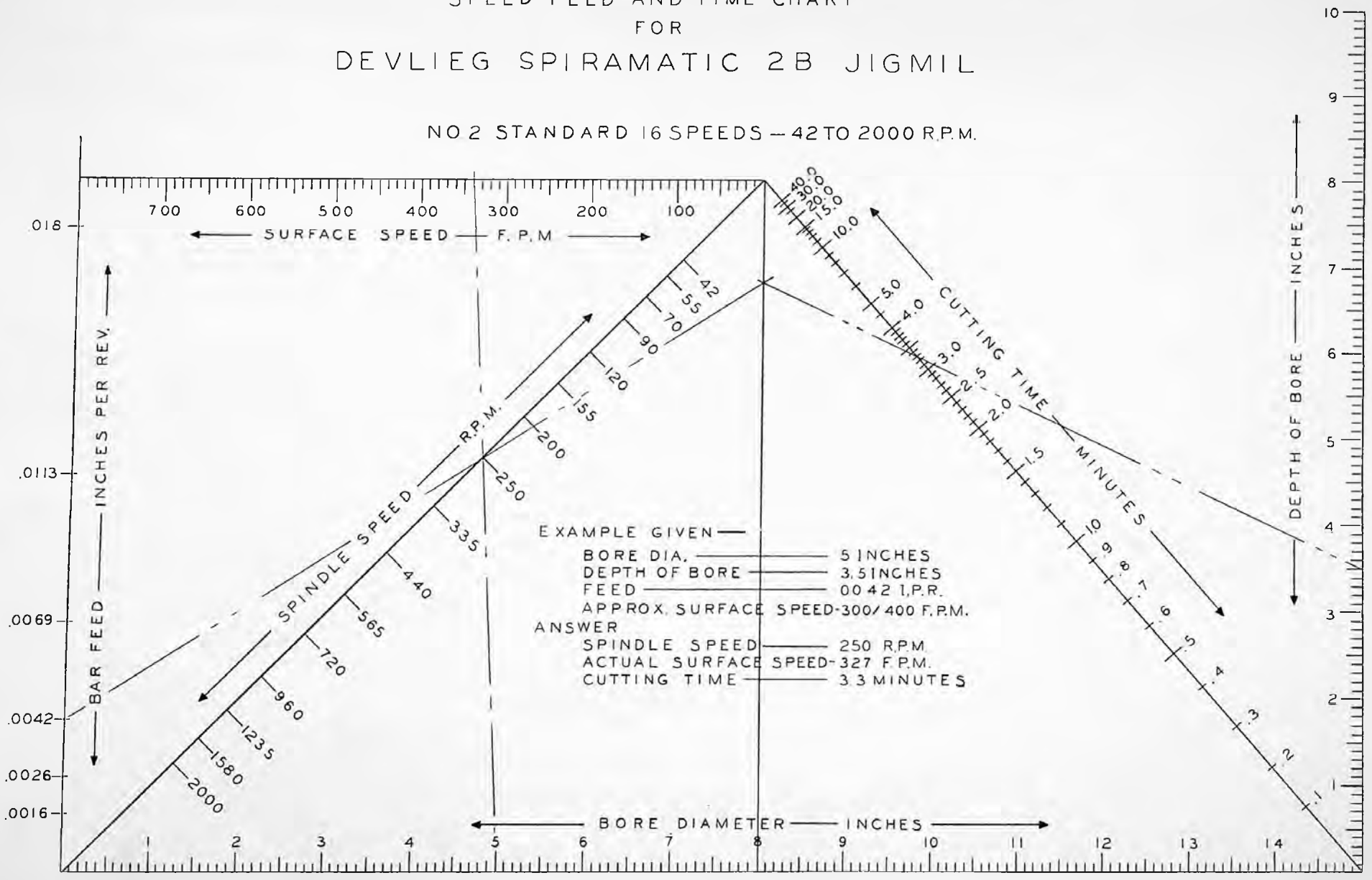
OPERATION OUTLINE FOR DUPLITROL BARS

OPER. NO. 1 STK. SIZE 7/8 SQ X 46" LG. MATERIAL S.A.E. 1095 ANNEAL AT 1500° F COOL IN FURNACE TO 1100° F AIR COOL COLD STRAIGHTEN REHEAT TO 1500° F OIL QUENCH & DRAW AT 1140° F	**OPER. NO. 2** .795 / .800 .795 / .800 ROUGH MILL SIDES	**OPER. NO. 3** HEAT TO 1525° F COOL IN FURNACE TO 1100° F AIR COOL COLD STRAIGHTEN DO NOT USE TORCH REHEAT TO 1500° F OIL QUENCH & DRAW AT 1140° F TO R/C 25-28
OPER. NO. 4 CUT OFF STOCK LENGTH DEEP FREEZE MILL ENDS SQUARE	**OPER. NO. 5** .754 / .752 .754 / .752 SEMI FINISH GRIND SIDES MARK	**OPER. NO. 6** DRILL & C'SINK FOR 1/4 HOLD DOWN SCREWS
OPER. NO. 7 .7485 / .7495 .748 / .750 FINISH GRIND SIDES TO SIZE	**OPER. NO. 8** CENTER DRILL & DRILL TRUE HOLES WITH VULCAN-AIRE ATTACH. & CARBIDE BURR HONE HOLES	**ALTERNATE OPER. NO. 8** MB 121 ADJ. BORING HEAD CENTER DRILL & DRILL BORE AND HONE HOLES

NAME	DUPLITROL REFERENCE SHEET
DEVLIEG MACHINE COMPANY	
450 FAIR AVE FERNDALE 20, DETROIT, MICHIGAN, U.S.A.	
DRAWN G.E.E.	DATE 1-25-57

SPEED FEED AND TIME CHART
FOR
DEVLIEG SPIRAMATIC 2B JIGMIL

NO 2 STANDARD 16 SPEEDS — 42 TO 2000 R.P.M.



JM-109

DeVLIEG MACHINE COMPANY
450 Fair Ave. Ferndale 20, (Detroit) Mich.

DEVLIEG SPIRAMATIC JIGMIL®

HOW TO ORDER PARTS

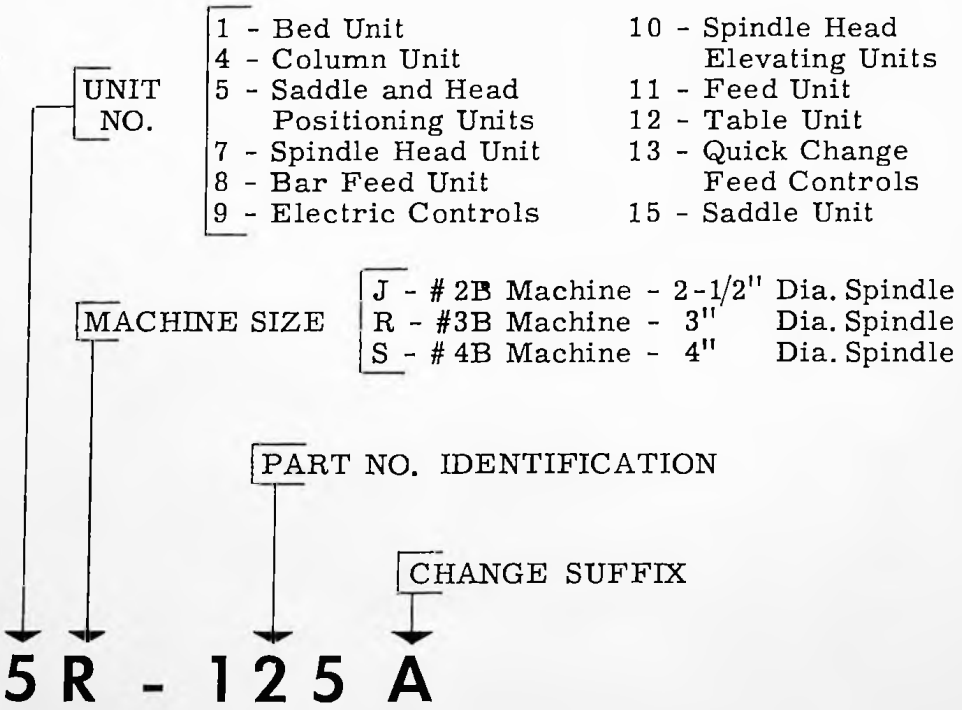
★

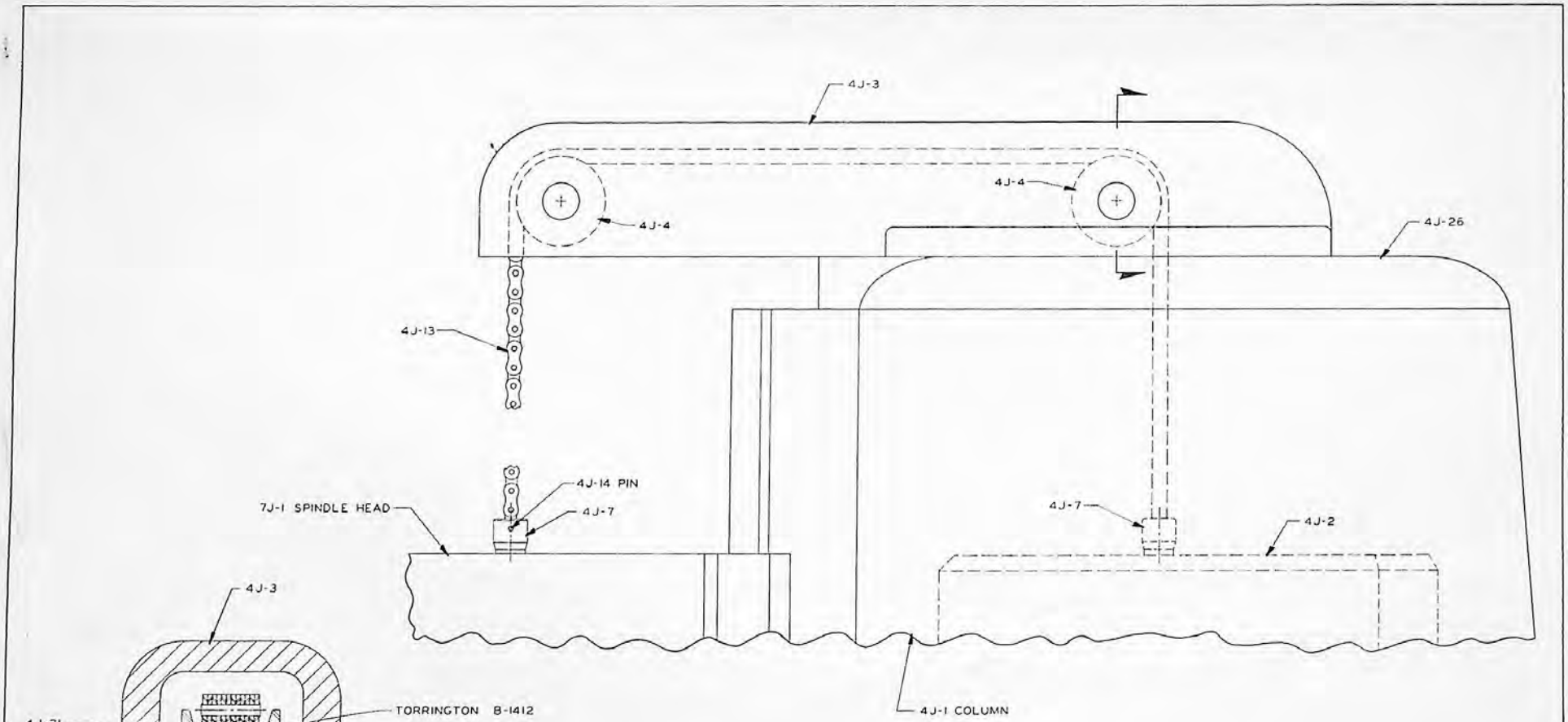
It is essential when ordering repair parts to specify not only the complete part number but also the machine serial number, model, size and general description of the part required.

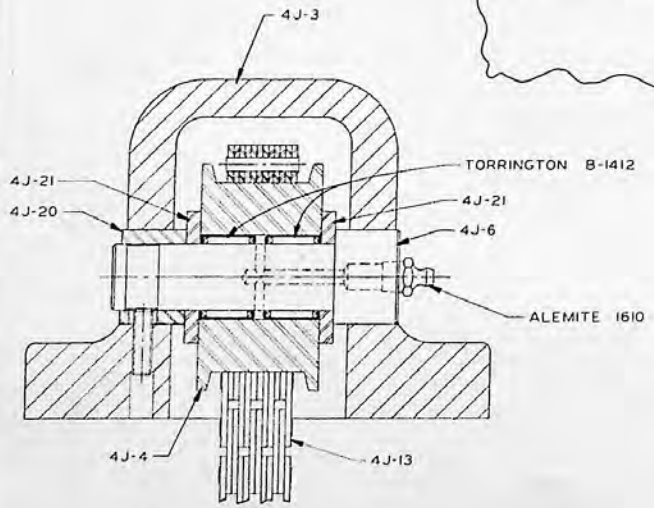
This serial number and model number appears on the name plate on the face of the column of all machines.

When ordering electrical apparatus, (motors, switches or controls) full name plate data should be given to assure prompt and accurate processing of orders.

For purposes of subdividing the machine into its functional units, the following part numbering system is used on all JIGMIL'S.



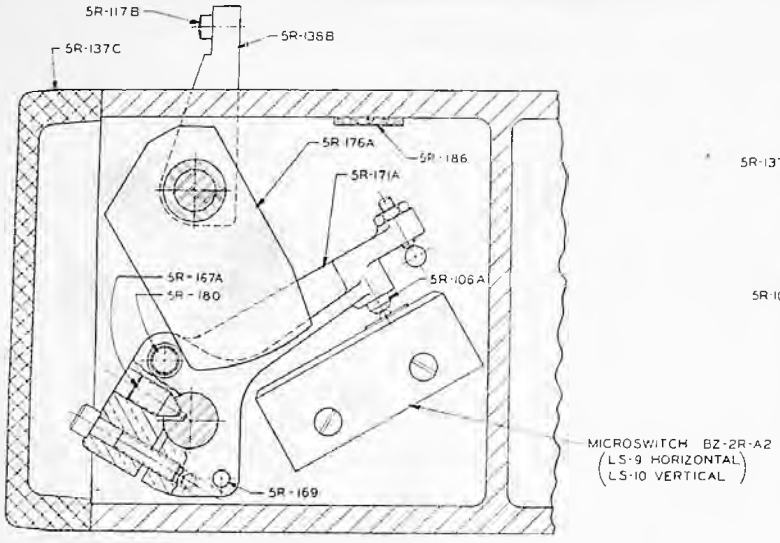




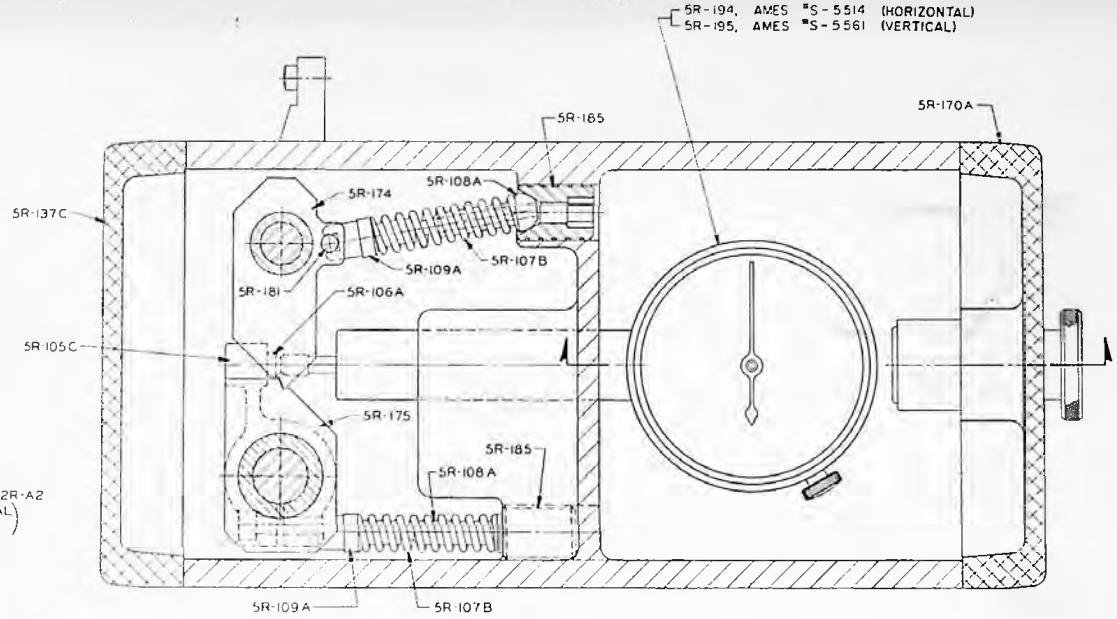
ENLARGED SECTION

NAME COUNTERWEIGHT ASS'Y		
DE VILBISS MACHINE CO. DETROIT, MICHIGAN		
DRAWN GLB / TRACED	CHECKED / DATE 3-28-56	PART NO. 4J

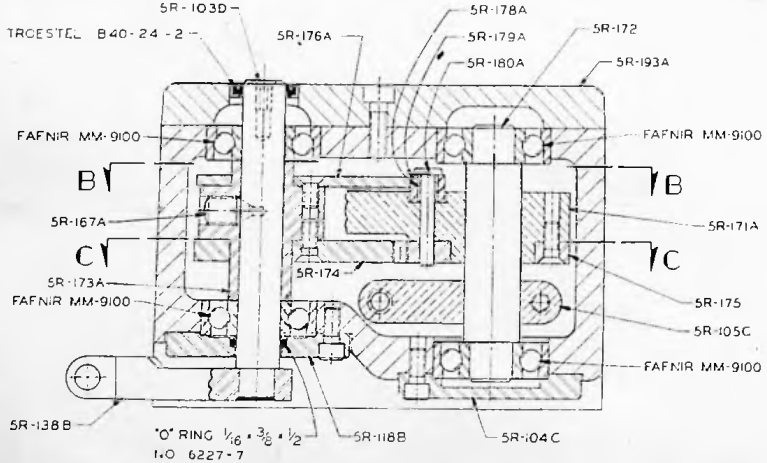
JM-4-1



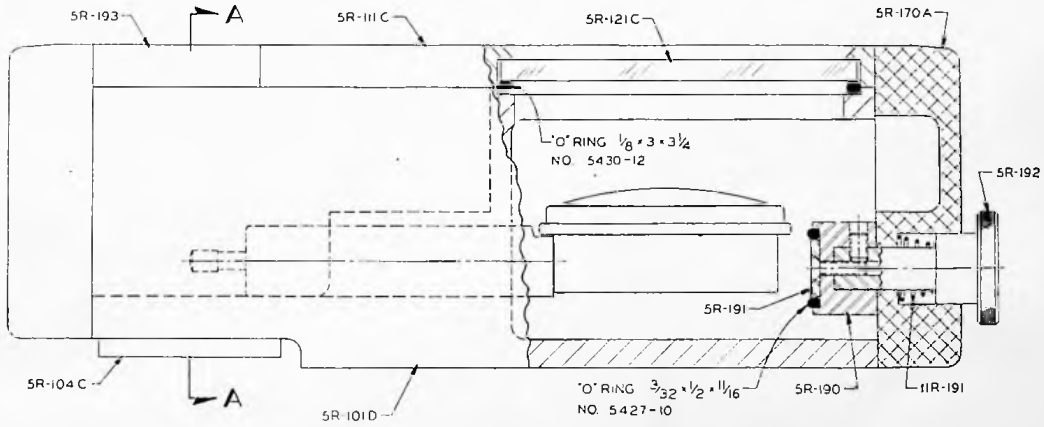
SECTION B-B



SECTION C-C



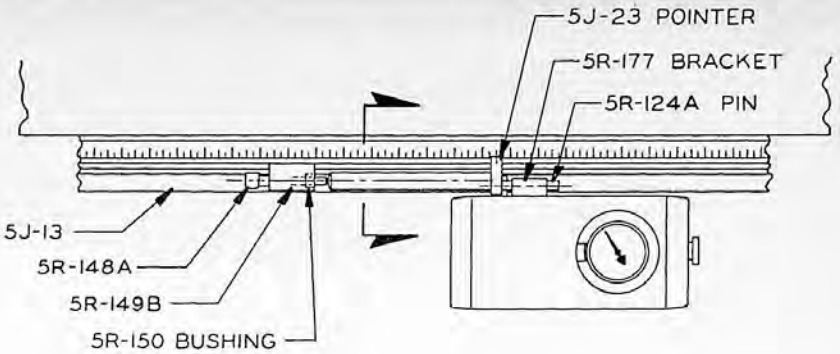
SECTION A-A

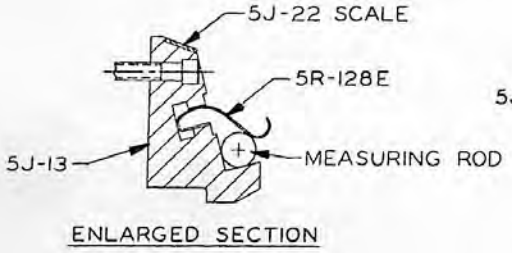


FIRST USED ON			
MODEL	2B	3B	4B
SER NO	1-215	12-222	15-213

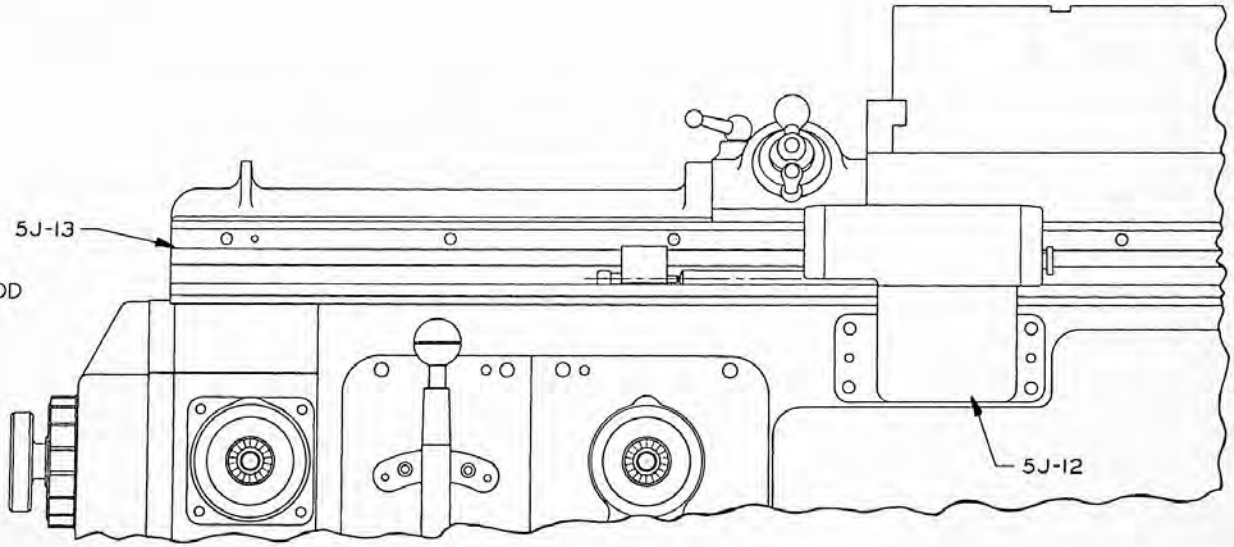
RM-5-1B

NAME POSITIONING UNIT
DE VLIEG MACHINE CO.
DETROIT, MICHIGAN
DRAWN A.J.B. CHECKED PART NO. 5R
TRACED DATE 6-17-58

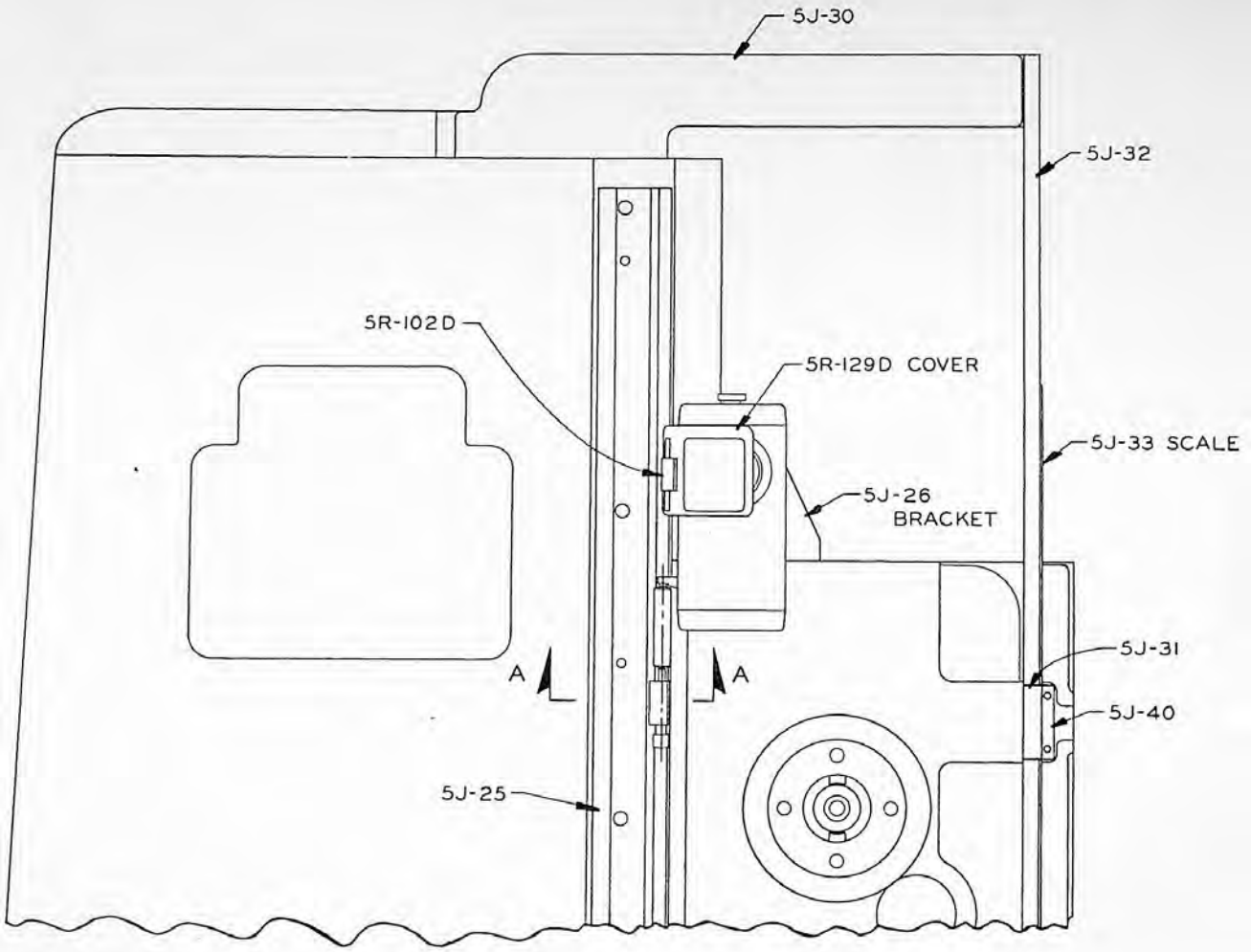


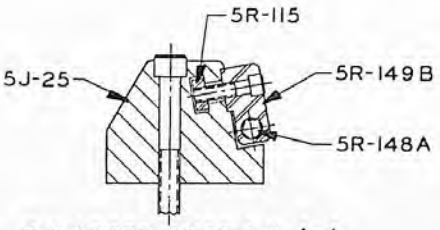


ENLARGED SECTION

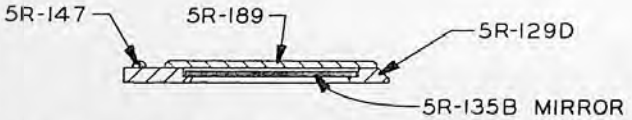


NAME POSITIONING UNIT - HORIZ.		
DE VLIEG MACHINE CO. DETROIT, MICHIGAN		
DRAWN GLB	CHECKED	PART NO. 5J
TRACED	DATE 2-7-56	



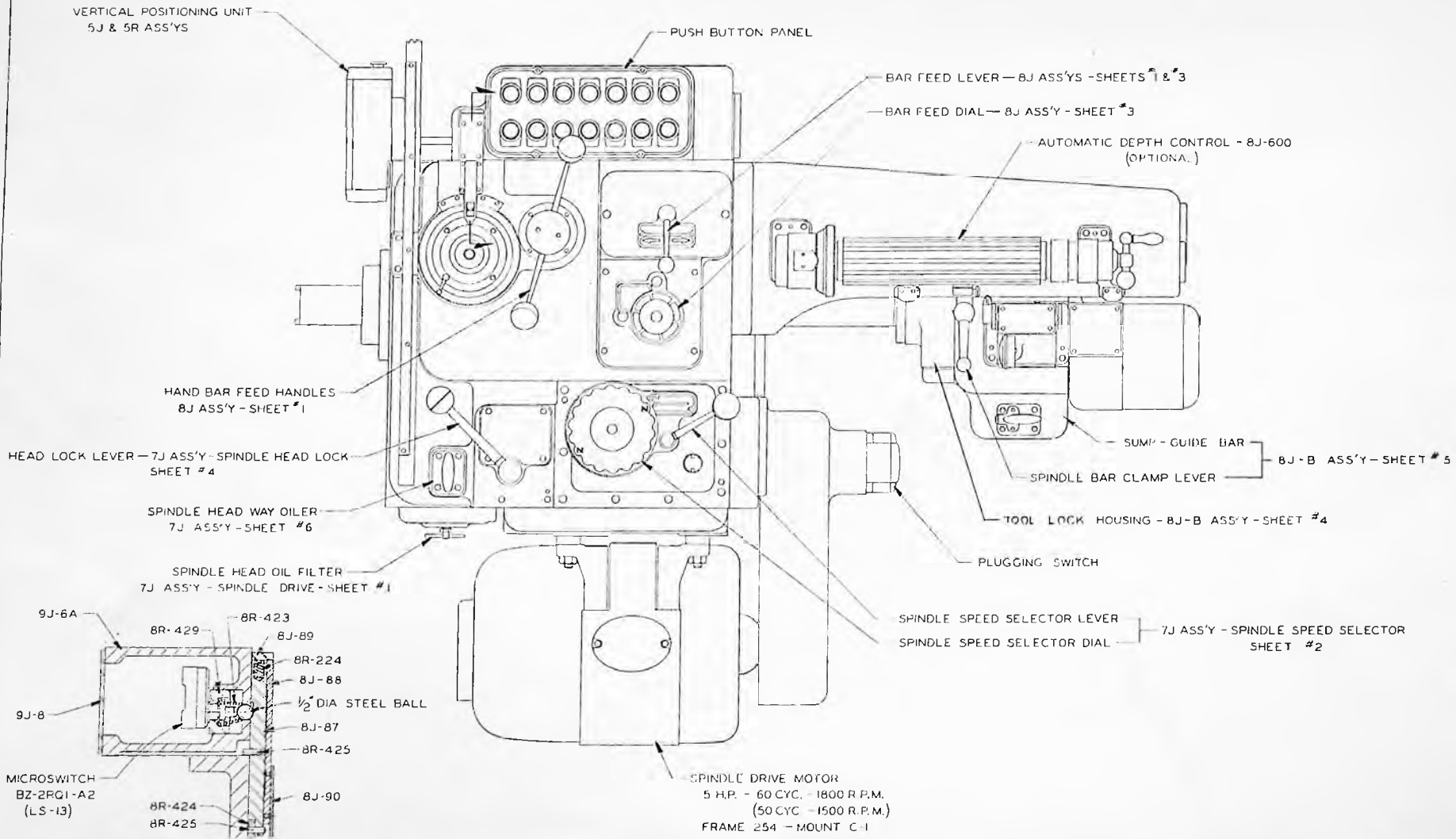


ENLARGED SECTION A-A



ENLARGED SECTION THRU COVER

NAME POSITIONING UNIT - VERT.		
DE VLIEG MACHINE CO. DETROIT, MICHIGAN		
DRAWN GLB	CHECKED	PART NO. 5J
TRACED	DATE 2-6-56	



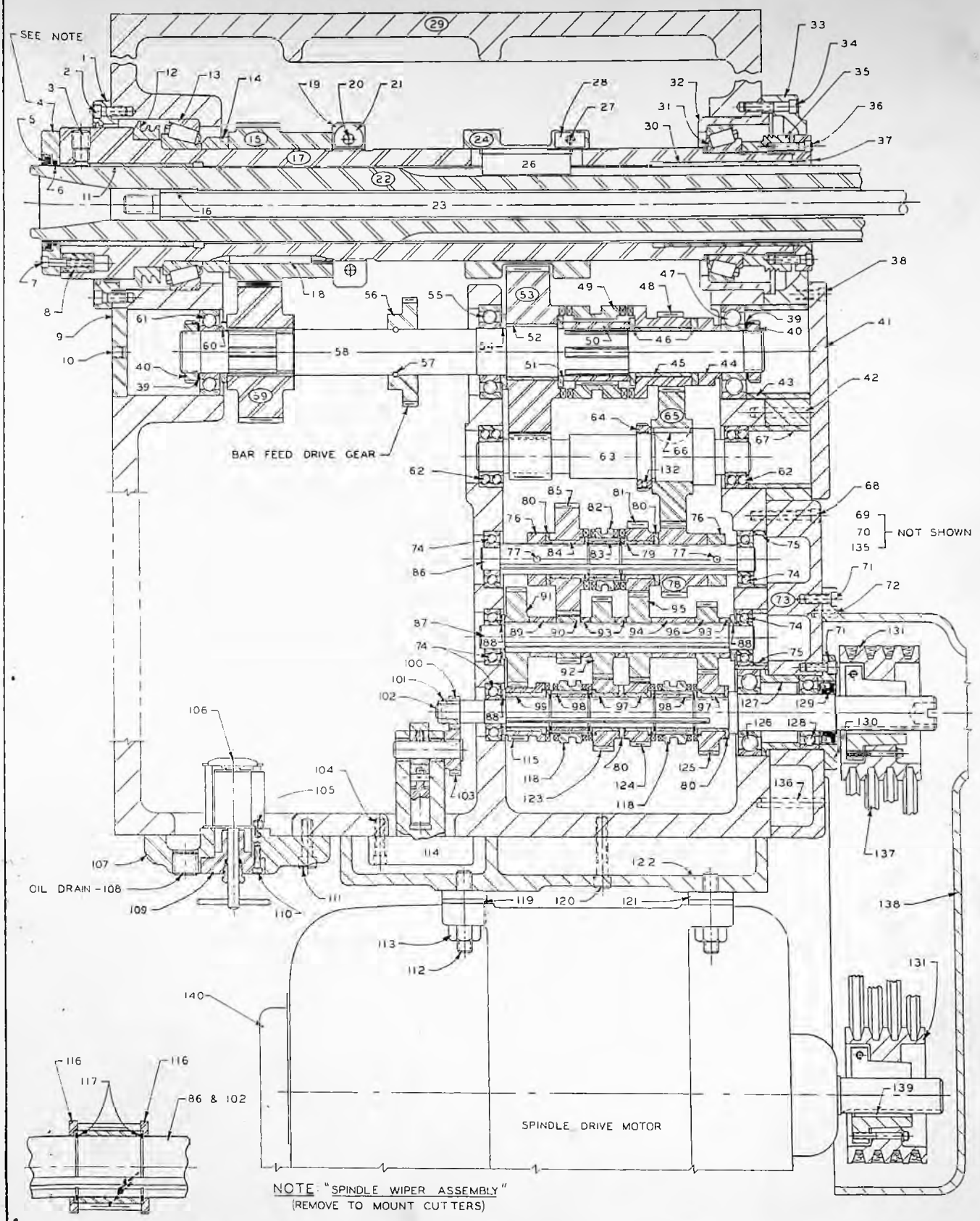
NAME SPINDLE HEAD

DE VLIEG MACHINE CO.
DETROIT, MICHIGAN

DRAWN	CHECKED	PART NO.
GLB		7J
DATE 1-21-57	SEO	

SHEET NO. 3

JM-7-3A



NOTE "SPINDLE WIPER ASSEMBLY" (REMOVE TO MOUNT CUTTERS)

ENLARGED VIEW - RETAINING RINGS (TYPICAL IN THREE PLACES)

FIRST 7-218

DESCRIPTION		
SPINDLE DRIVE ASSEMBLY		
MACH	2B JIGMIL	
DRAWN SED	CHECK	UNIT NO. 7 J
DATE 5-14-57	DATE	SHEET NO. 1
DE VLIEG MACHINE CO. DETROIT, MICH.		

WHEN ORDERING REPAIR PARTS

1 - SPECIFY MACH. MODEL NO. & SERIAL NO.
2 - USE COMPLETE PART NO. AND DESCRIPTION AS LISTED: BACK OF THIS SHEET

JM-7-1A

JL-7-1A

DE VLIEG JIGMIL PARTS LIST — UNIT NO. 7J — SHEET NO. 1 — DATE: 5-14-57

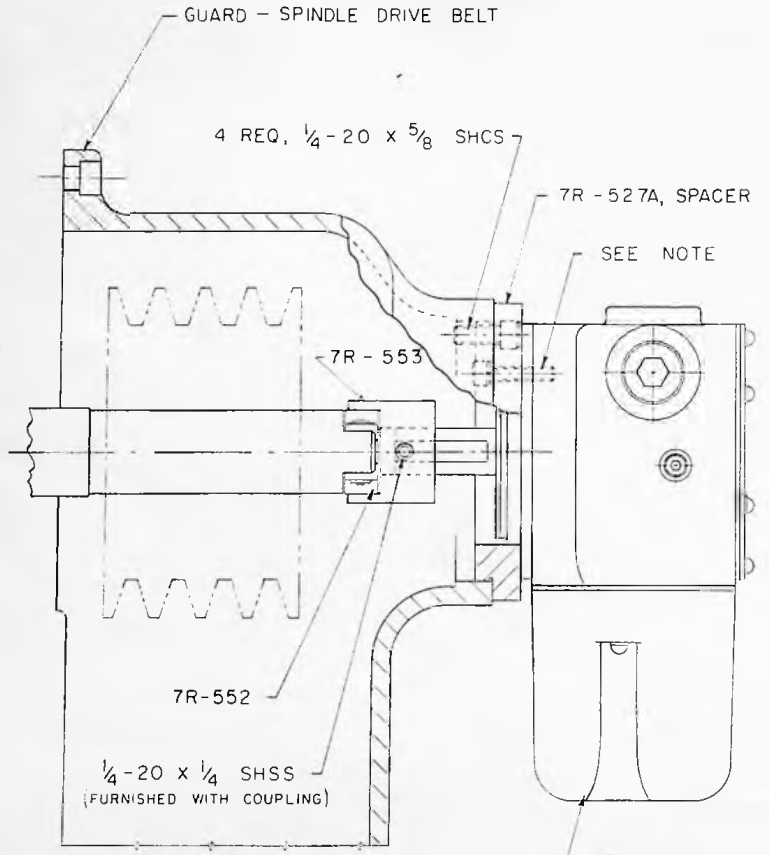
SYMBOL	2B PART NO.	REQ.	DESCRIPTION
1	7J-2	1	RETAINER - FROST
2		6	5/16-18 x 7/8" LG. S.H.C.S.
3	7J-24	1	CLAMP SCREW
4	7J-25B	1	WIPER RETAINER
5		1	OILSEAL 2-1/2 x 3-1/4 x 3/8
6		1	3/16 DIA. x 8-1/2 LONG FELT ROPE
7		4	1/4-20 x 1-1/2 S.H.C.S.
8	7R-356	4	REDUCING BUSHING
9	7J-112	1	PLUG - BEARING BORE
10		1	3/8-16 x 1/2 S.H.S.S.
11	7J-22	1	SPINDLE BUSHING - FRONT
12	7J-81	1	OIL SLINGER - FRONT
13	47820-47896	1	TIMKEN BEARING
14	7J-74	1	SPACER - SPINDLE GEAR
15	7J-86A	1	SPINDLE GEAR
16	7R-334B	1	BUSHING - DRAW BAR
17	7J-19A	1	SPINDLE SLEEVE
18	7J-75A	1	KEY - SPINDLE GEAR
19	7J-73A	1	LOCK NUT - SPINDLE GEAR
20		2	3/8-16 x 1-1/4 S.H.C.S.
21	7R-78	1	SPACER - GEAR LOCKNUT
22	7J-18A	1	SPINDLE
23	7J-20	1	DRAW BAR
24	7J-21	1	RETAINER - SPINDLE KEY
25			
26	7J-23	1	KEY - SPINDLE
27		4	5/16-18 x 1" S.H.C.S.
28	7J-59	4	SPACER - SPINDLE KEY RETAINER
29	7J-1A	1	SPINDLE HEAD
30	7J-25	1	SPINDLE BUSHING - REAR
31	492A-497	1	TIMKEN BEARING
32	7J-26	1	BUSHING - SPINDLE REAR BEARING
33	7J-77	1	OIL RETAINER - REAR
34		4	5/16-18 x 1-1/2 S.H.C.S.
35	7J-30A	1	NUT - SPINDLE REAR BEARING
36		6	1/4-20 x 1" S.H.C.S.
37	7J-76	1	CLAMP RING - SPINDLE REAR BEARING NUT
38		6	5/16-18 x 2-1/4 S.H.C.S.

SYMBOL	2B PART NO.	REQ.	DESCRIPTION
39		2	N-07 FAFNIR LOCKNUT
40		2	W-07 FAFNIR LOCKWASHER
41	7J-79	1	RETAINER - REAR BEARING
42		2	5/16 DIA. x 2" LG. DOWEL
43	7J-116	1	SPACER - JACK SHAFT REAR BEARING
44	7J-117	1	SPACER - JACK SHAFT REAR BEARING
45	7J-125	1	BUSHING - JACK SHAFT GEAR
46	7J-123	2	SPACER - JACK SHAFT GEAR
47	307K	1	FAFNIR BEARING
48	7J-89A	1	GEAR - JACK SHAFT - 33T
49	7J-106A	1	CLUTCH - JACK SHAFT
50	7J-107	1	SLEEVE - JACK SHAFT CLUTCH
51	7J-122	1	SPACER - JACK SHAFT GEAR
52	7J-124	1	BUSHING - JACK SHAFT GEAR
53	7J-88A	1	GEAR - JACK SHAFT - 75T
54	7J-121	1	SPACER - JACK SHAFT CENTER BEARING
55	208K	1	FAFNIR BEARING
56	7J-85	1	GEAR - BAR FEED DRIVE
57		2	NO. 3 x 1-3/4" TAPER PIN
58	7J-111	1	JACK SHAFT
59	7J-87	1	SPINDLE DRIVE GEAR - 60T
60	7J-118	1	SPACER - JACK SHAFT BEARING
61	207K	1	FAFNIR BEARING
62	5205K	2	FAFNIR BEARING
63	7J-90A	1	PINION SHAFT - 17T
64	N-08		BEARING - LOCKNUT
65	7J-91	1	GEAR - PINION SHAFT - 60T
66	1010	1	WOODRUFF KEY
67	7J-126	1	SPACER - PINION SHAFT BEARING
68		8	5/16-18 x 2" S.H.C.S.
69		1	3/4" PIPE PLUG (OIL FILLER)
70	7J-6	1	SCREEN - OIL FILLER
71		6	5/16-18 x 3/4" S.H.C.S.
72		2	1/4 x 7/8" LG. DOWEL PIN
73	7J-4	1	REAR COVER - SPINDLE HEAD
74	204K	5	FAFNIR BEARING
75	7J-34A	2	BEARING SPACER
76	7J-63	2	COLLAR - INTERMEDIATE SHAFT

SYMBOL	2B PART NO.	REQ.	DESCRIPTION
77		2	NO. 4 x 1-3/4" TAPER PIN
78	7J-92	1	GEAR - INTERMEDIATE SHAFT - 31T
79	7J-61	1	BUSHING - INTERMEDIATE SHAFT GEAR
80	7J-33	4	THRUST WASHER
81	7J-93A	1	CLUTCH GEAR - INTERMEDIATE SHAFT
82	7J-207	1	CLUTCH - INTERMEDIATE GEARS
83	7J-105	1	SLEEVE - INPUT SHAFT CLUTCH
84	7J-62	1	BUSHING - INTERMEDIATE CLUTCH GEAR
85	7J-94A	1	CLUTCH GEAR - INTERMEDIATE SHAFT
86	7J-110A	1	INTERMEDIATE SHAFT
87	7J-109A	1	IDLER SHAFT
88	7J-29A	3	SPACER - INPUT SHAFT BEARING
89	7J-49A	1	SPACER - IDLER SHAFT
90	7J-95	1	GEAR - IDLER SHAFT - 21T
91	7J-99	1	GEAR - IDLER SHAFT - 42T
92	7J-97	1	GEAR - IDLER SHAFT - 34T
93	7J-48	3	SPACER - IDLER SHAFT
94	7J-50A	1	SPACER - IDLER SHAFT
95	7J-98	1	GEAR - IDLER SHAFT - 38T
96	7J-96	1	GEAR - IDLER SHAFT - 30T
97	7J-32	3	BUSHING - INPUT SHAFT GEAR
98	7J-255	2	SLEEVE - INPUT SHAFT CLUTCH
99	7J-31A	1	BUSHING - INPUT SHAFT GEAR
100	7J-40	1	PINION - OIL PUMP DRIVE
101		1	NO. 1 x 3/4" LG. TAPER PIN
102	7J-108A	1	INPUT SHAFT
103	7J-41	1	GEAR - OIL PUMP
104		4	5/16-18 x 1-1/4" S.H.C.S.
105		2	#10-24 x 3/8" S.H.C.S.
106	7R-120A	1	FILTER CARTRIDGE
107	7J-260	1	COVER - SPINDLE HEAD, BOTTOM
108		1	1/2" TAPER PIPE PLUG
109	11R-561	1	RETAINER - FILTER
110		4	#10-24 x 3/4" S.H.C.S.
111		4	3/8-16 x 1-1/4" S.H.C.S.
112	7R-80	4	STUD - MOTOR
113		4	1/2-13 HEXAGON NUT
114	7J-35	1	CYLINDER - OIL PUMP

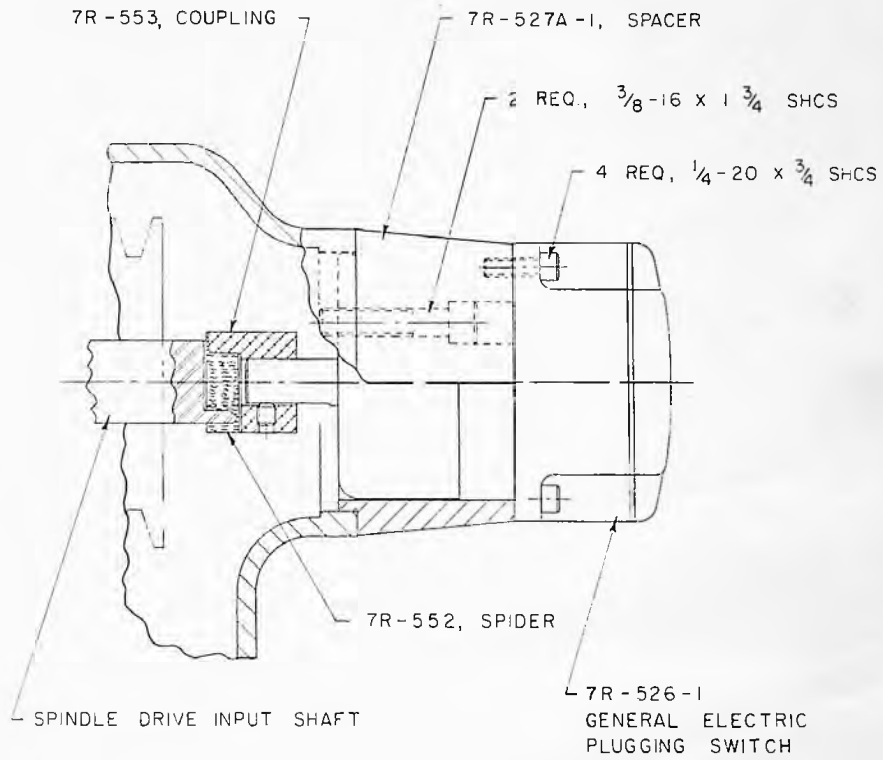
SYMBOL	2B PART NO.	REQ	DESCRIPTION
115	7J-100B	1	GEAR - INPUT SHAFT - 24T
116	7J-47	6	THRUST WASHER - INPUT SHAFT
117	RS-100	6	RETAINING RING - SPIROLOX
118	7J-104B	2	CLUTCH - INPUT SHAFT
119	7R-349	4	SPACER - SPINDLE MOTOR
120		6	3/8-16 x 2" S.H.C.S.
121	7R-348	4	SPACER - SPINDLE MOTOR
122	7J-5	1	PLATE - SPINDLE MOTOR
123	7J-102B	1	GEAR - INPUT SHAFT - 32T
124	7J-101B	1	GEAR - INPUT SHAFT - 28T
125	7J-103B	1	GEAR - INPUT SHAFT - 36T
126	306K	1	FAFNIR BEARING
127	7J-22A	1	SPACER - INPUT SHAFT BEARING
128	206K	1	FAFNIR BEARING
129		1	OILSEAL 1-3/16 x 1-1/8 x 7/16
130	7J-27	1	RETAINER - INPUT SHAFT BEARING
131	S-719A	2	WORTHINGTON MULTI-V-SHEAVE ASSEMBLY
132		1	#10-24 x 1/4" S.H.S.S.
133			
134			
135		4	1/4-20 x 5/8" S.H.C.S.
136		2	5/16 x 2-1/4" LG. DOWEL PIN
137	A-35	4	WORTHINGTON, HI-T BELT (MATCHED SET)
138	7J-82	1	GUARD - SPINDLE DRIVE
139		2	1/4 x 1/4 x 1-3/4 KEYSTOCK
140	7R-359	1	CHIP DEFLECTOR (ROWELL MOTOR)

ALLEN-BRADLEY



NOTE
#10-32 x 7/8 SHCS
#10 LOCKWASHER
4 EACH FURNISHED
WITH SWITCH

GENERAL ELECTRIC



WHEN ORDERING REPAIR PARTS

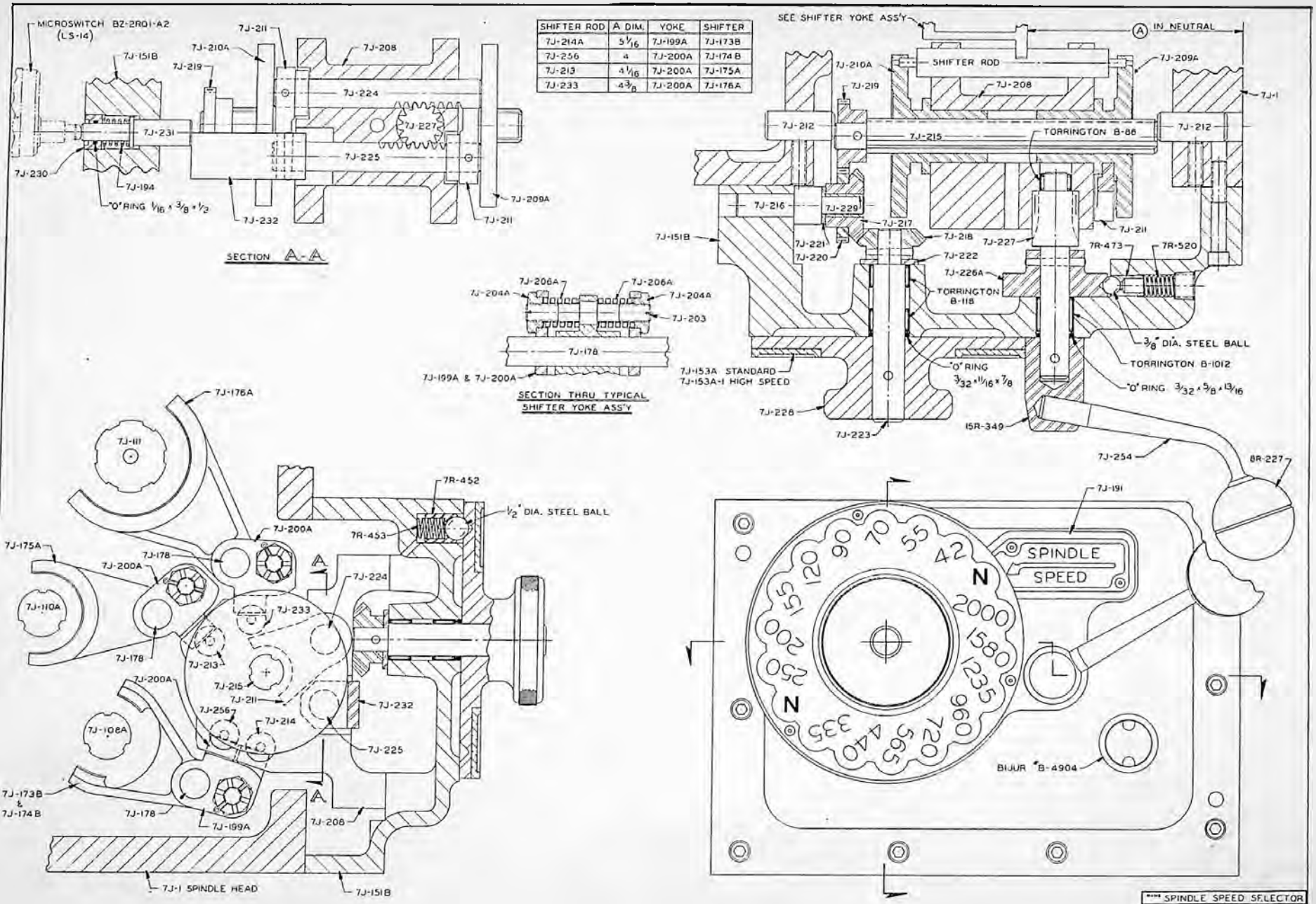
1 - SPECIFY MACH. MODEL NO. & SERIAL NO.
2 - USE COMPLETE PART NO. AND DESCRIPTION AS LISTED ON THIS SHEET

SPINDLE PLUGGING CONTROLS
ALLEN-BRADLEY, GENERAL ELECTRIC

MACH: 2B, 3B, 4B JIGMILS		
DRAWN: SED	CHECK	UNIT: 7R & 7J
DATE: 8-28-57	DATE	SHEET NO. 6

DEVLIEG MACHINE CO.
DETROIT, MICH

RM-7-2



DEVLIEG MACHINE CO. DETROIT, MICHIGAN

SPINDLE SPEED SELECTOR

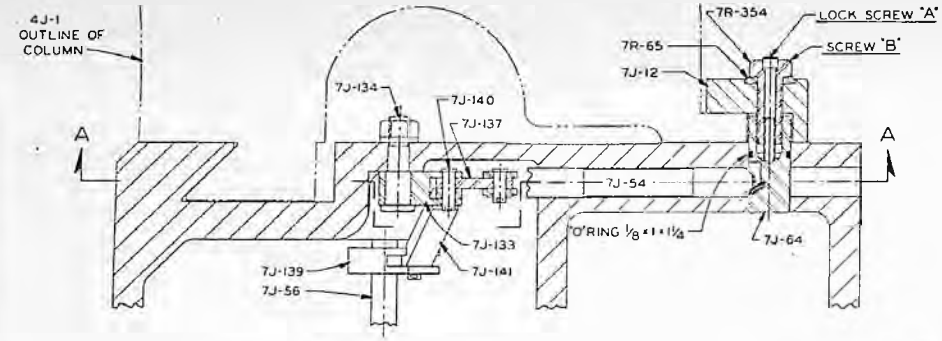
DRAWN GLB | CHECKED | PART NO. 7J

TRACED | DATE 1-13-58

FIRST USED ON 7-218

SHEET NO. 2

JM-7-2A



INSTRUCTIONS FOR SPINDLE HEAD LOCK ADJUSTMENT

1 - RELEASE LOCK SCREWS "A" AT UPPER AND LOWER SCREWS "B".

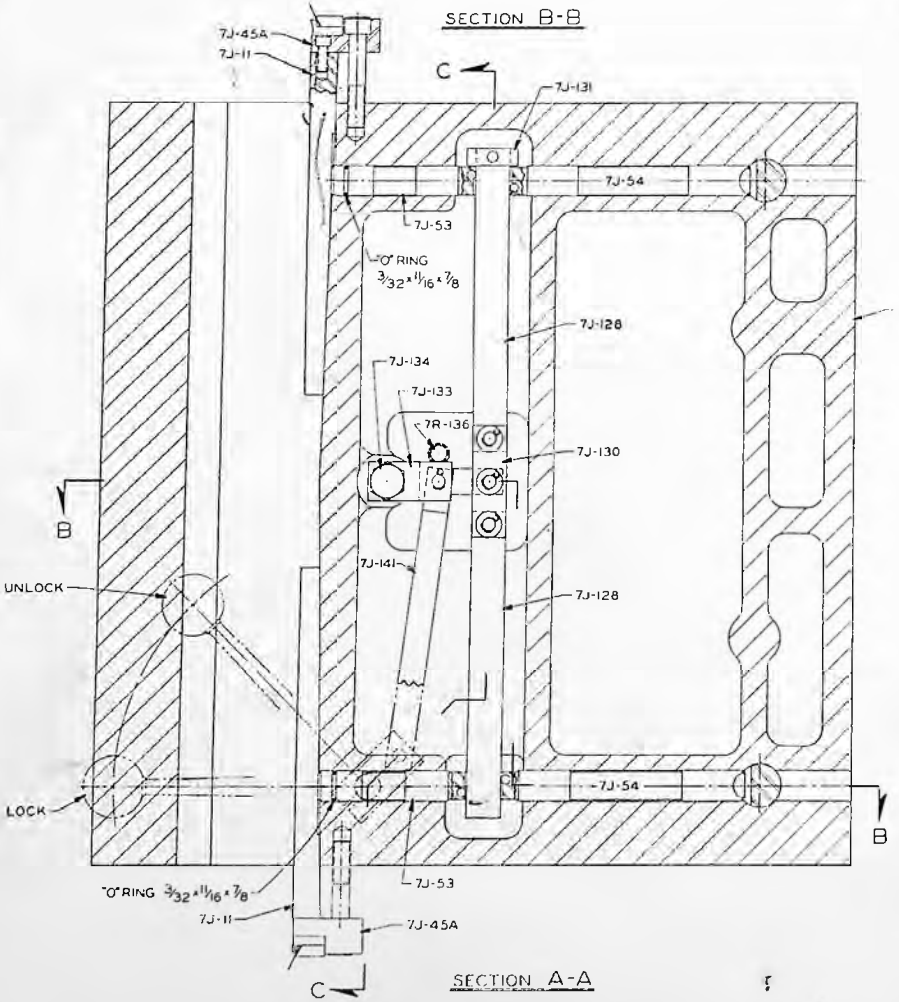
2 - PUT LOCK LEVER "C" IN UNLOCKED POSITION.

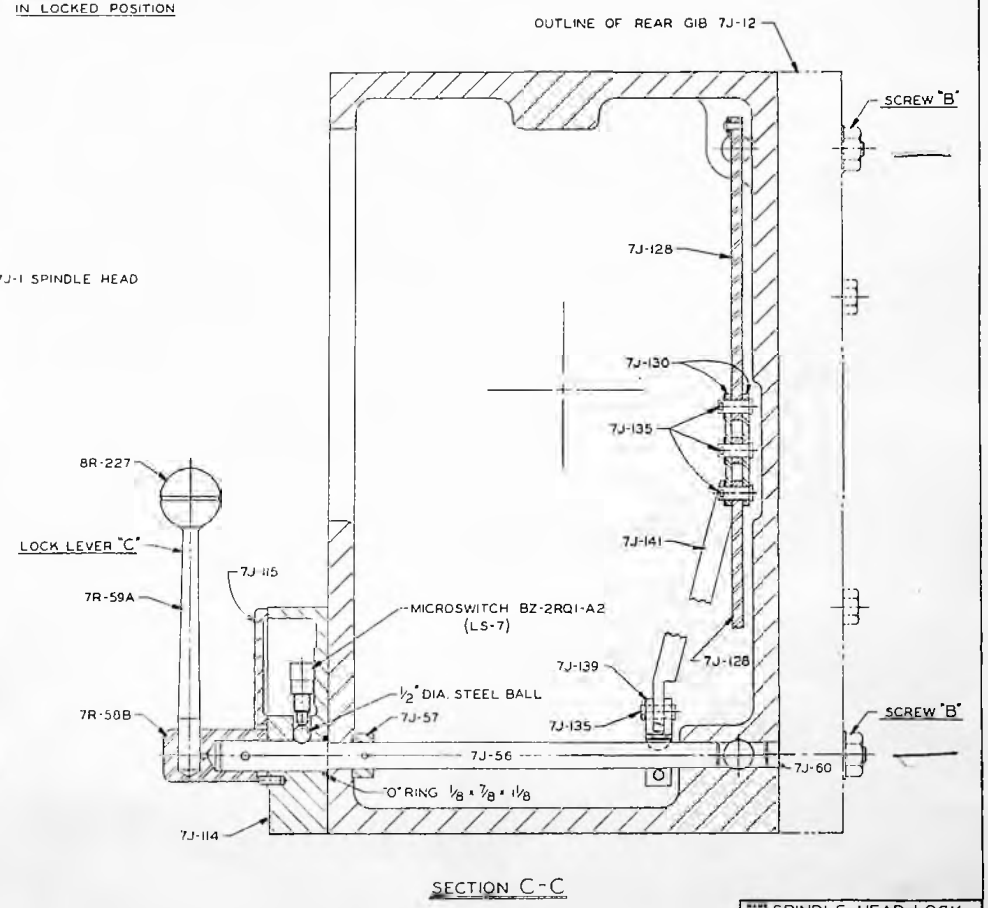
3 - ADJUST SCREWS B UNIFORMLY TO A LIGHT BIND.

4 - TEST LOCK WITH LEVER "C". IT SHOULD REQUIRE NOT MORE THAN 10 POUNDS TO LOCK.

5 - WHEN ADJUSTMENT IS SATISFACTORY, TIGHTEN BOTH LOCK SCREWS "A".

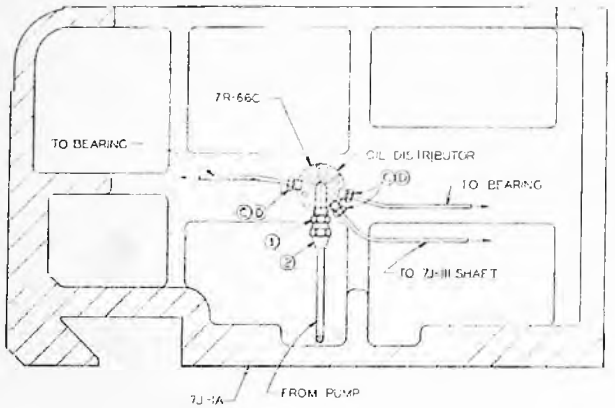
NOTE -
CLAMPING MECHANISM SHOWN
IN LOCKED POSITION





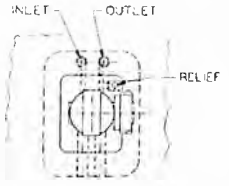
NAME SPINDLE HEAD LOCK		
DE VLIEG MACHINE CO. DETROIT, MICHIGAN		
DRAWN G.A.B. TRACED	CHECKED	PART NO. 7J
	DATE 2-1-54	

SECTION A-A

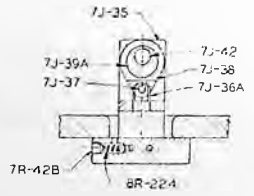


BIJUR LUBRICATION PARTS			
SYMBOL	REQ	PART NAME & NUMBER	
(A)	1	ELBOW ADAPTER - 90°	A-3080
(B)	1	STRAIGHT ADAPTER	A-2835
(C)	5	COMPRESSION BUSHING	B-3783
(D)	5	COMPRESSION SLEEVE	B-1061

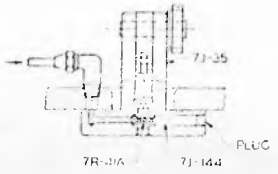
GRAFCO LUBRICATION PARTS			
SYMBOL	REQ	PART NAME & NUMBER	
(1)	1	ADAPTER	1105-4
(2)	4	NUT-STANDARD	1205-4
(3)	1	ELBOW - 45°	1305-4
(4)	2	ELBOW - 90°	1405-4



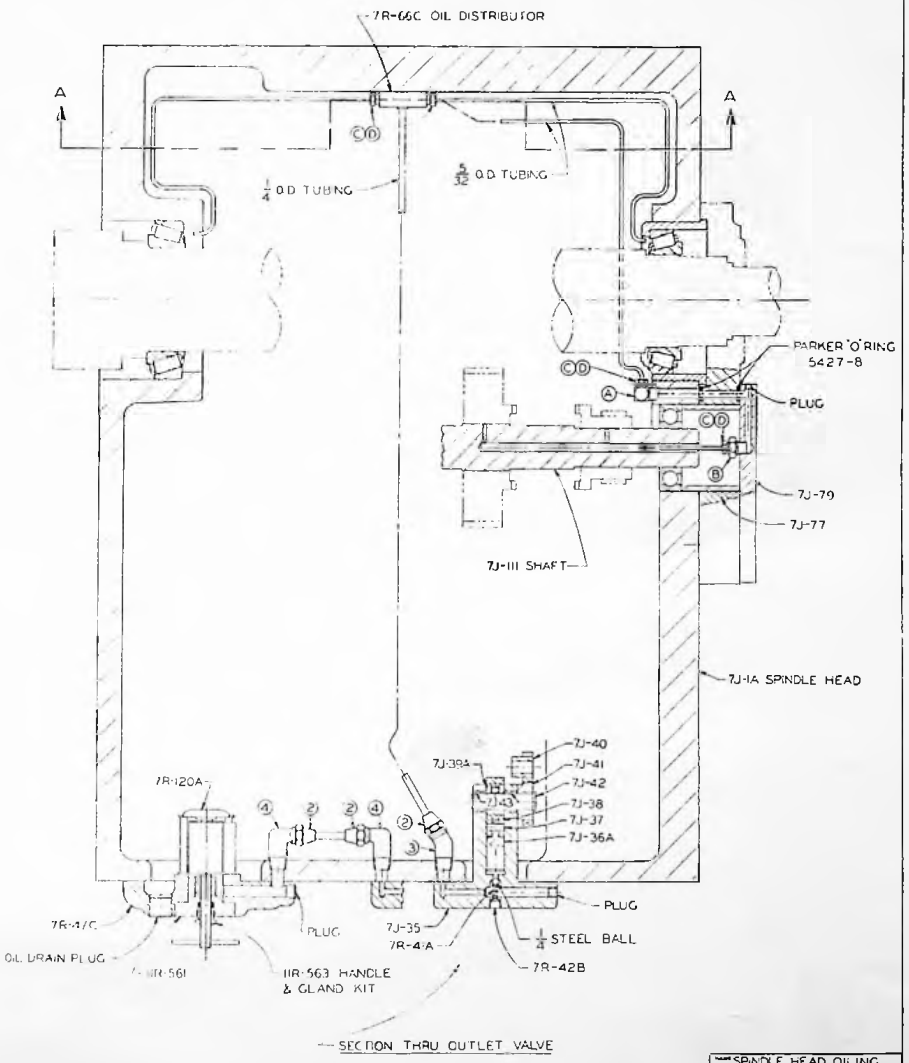
TOP VIEW OF PUMP



SECTION THRU RELIEF VALVE

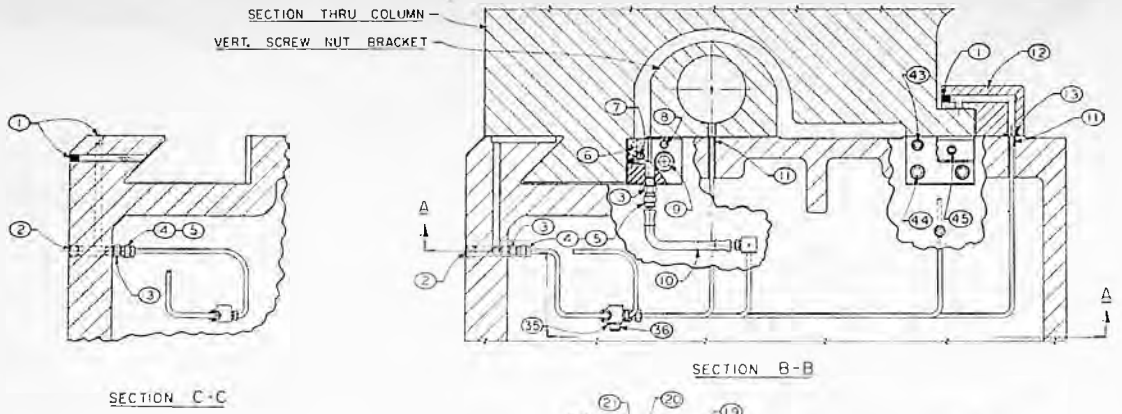


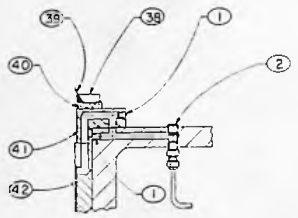
SECTION THRU INLET VALVE

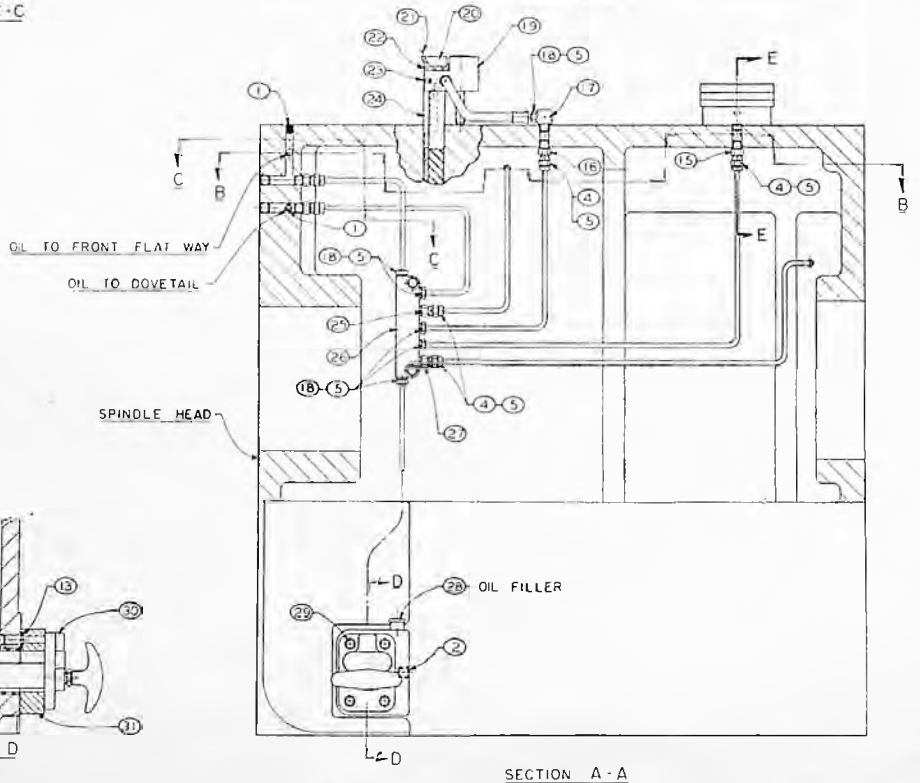


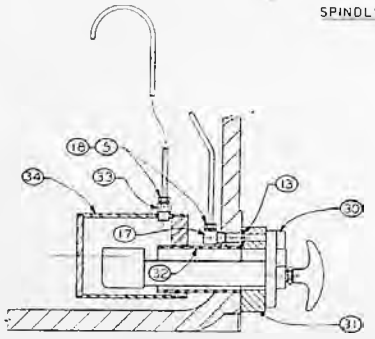
SECTION THRU OUTLET VALVE

SPINDLE HEAD OILING
DEVLIEG MACHINE CO.
DETROIT, MICHIGAN
7J









WHEN ORDERING REPAIR PARTS

1 - SPECIFY MACH. MODEL NO. & SERIAL NO.
2 - USE COMPLETE PART NO AND DESCRIPTION AS LISTED ON PARTS LIST.

FIRST USED ON: 7-244

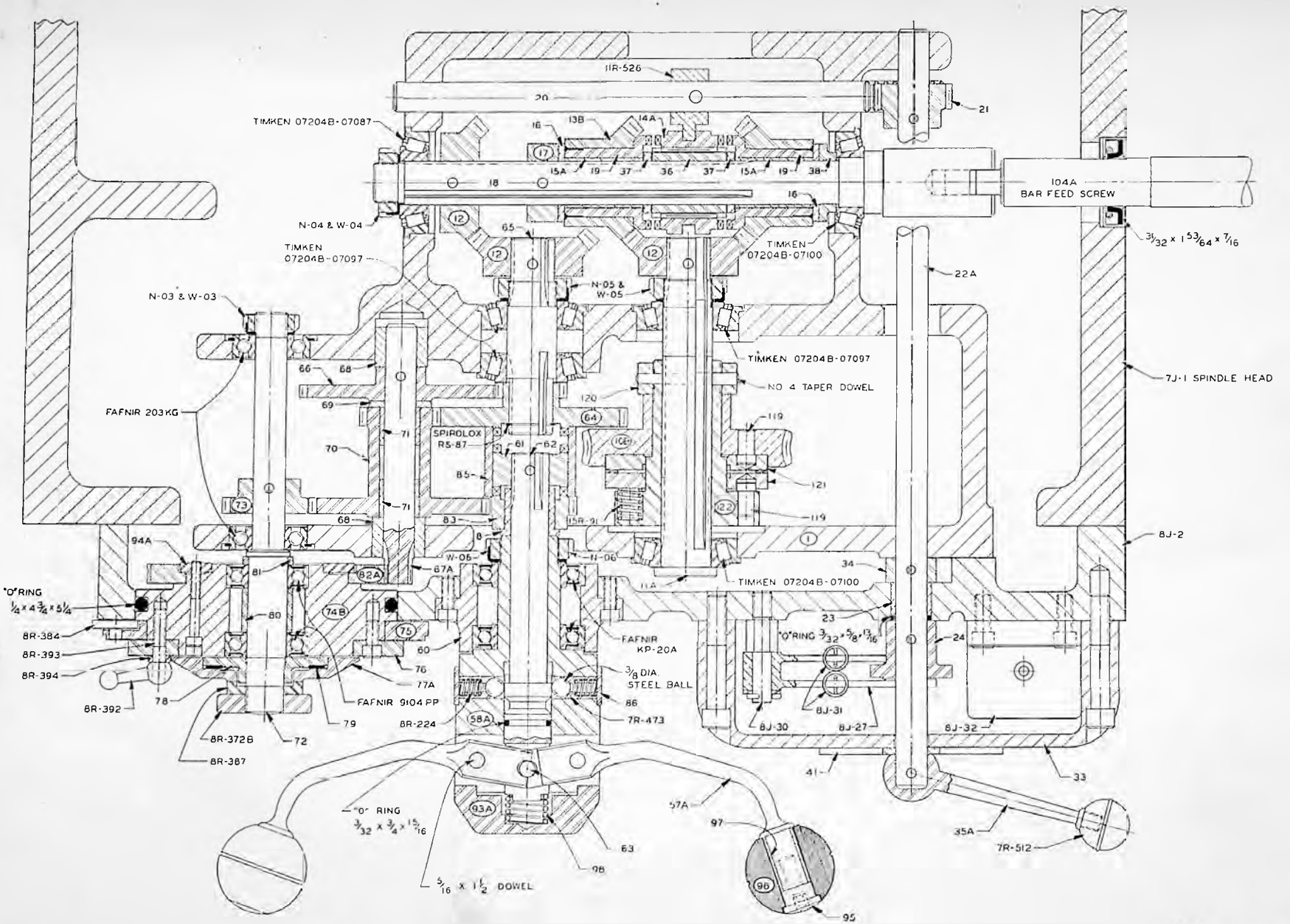
JM-8-6A

DE VLIEG JIGMIL PARTS LIST

SYMBOL	2 B PART NO.	REQ.	DESCRIPTION
1	15R-79	?	PLUG - OIL HOLE
2		4	1/8 TAPER PIPE PLUG
3	B-1085	3	BIJUR METER FSA #2
4	B-1095	7	BIJUR NUT
5	B-1061	15	BIJUR COMPRESSION SLEEVE
6		4	1/4-20 x 3/4 SHCS
7		4	#10-24 x 5/8 SHCS
8		4	5/16-18 x 2 SHSS
9		2	1/2-13 x 2 SHCS
10	B-4514	1	BIJUR HOSE ASSEMBLY
11	B-4067	2	BIJUR DRIVE BUSHING
12	7J-12	1	GIB - REAR
13	5427-8	2	PARKER "O" RING
14			
15	B-1084	1	BIJUR METER FSA #1
16	B-2253	1	BIJUR STRAIGHT ADAPTER
17	A-3080	2	BIJUR ELBOW ADAPTER
18	B-3783	8	BIJUR COMPRESSION BUSHING
19	7J-261	1	END PLATE - TAPER GIB
20	7J-238	2	WIPER RETAINER
21	7J-240	2	SCRAPER
22	7J-239	2	WIPER
23		1	PLUG-OIL LINE 1/8 DIA
24	7J-11A	2	GIB - FRONT
25	B-2498	1	BIJUR METER FJB #3
26	B-3289	1	BIJUR 7 WAY JUNCTION
27	B-2496	1	BIJUR METER FJB #1
28	304	1	GITS FILLER CAP
29		4	1/4-20 x 1 1/2 SHCS
30	C-1957	1	BIJUR LUBRICATOR PUMP
31	7J-113A	1	SPACER-WAY LUB. PUMP
32	7R-306	1	TUBE-OIL RESERVOIR
33	A-2835	1	BIJUR STRAIGHT ADAPTER
34	7R-305	1	OIL RESERVOIR
35		2	1/4-20 x 1" SHCS
36		2	1/4" LOCKWASHER
37	7J-45A	1	END PLATE - TAPER GIB
38	7J-267	1	WIPER RETAINER
39	7J-266	1	SCRAPER
40	7J-265	1	WIPER
41	7J-268	1	END PLATE, TRAM GIB
42	7J-269	1	TRAM GIB
43		2	5/16-18 x 1 1/4 SHCS
44		2	3/8-16 x 1 SHCS
45		2	#10-24 x 3/4 SHCS

DESCRIPTION	SPINDLE HEAD WAYS & VERT. SCREW LUBRICATION SYSTEM		
MACH	2B JIGMIL		
DRAWN SED	CHECK		UNIT NO. 7J-A
DATE 7-2-57	DATE		SHEET NO. 6

DE VLIEG MACHINE CO.
DETROIT, MICHIGAN

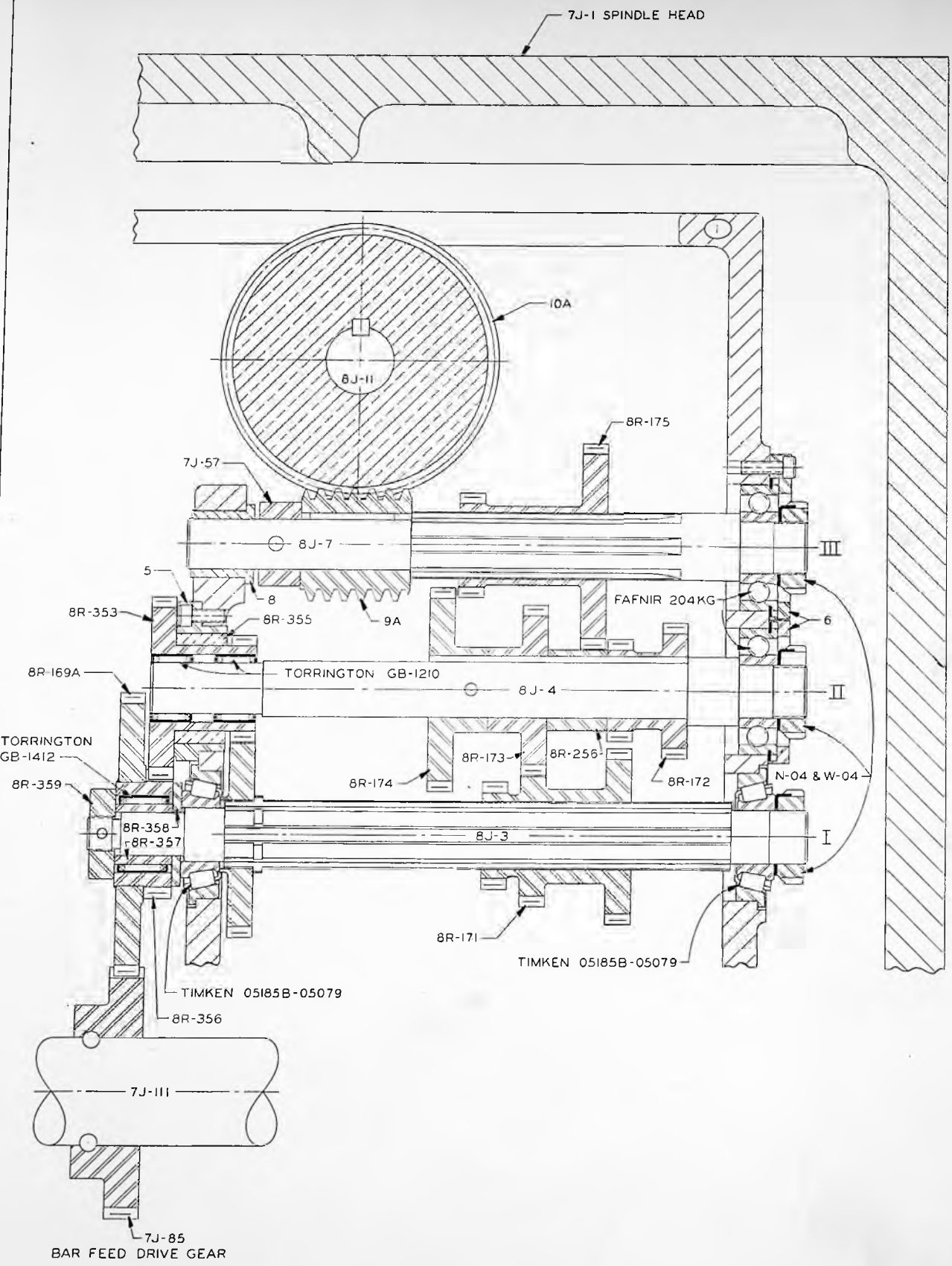


WHEN ORDERING PARTS ADD PREFIX 8J TO ALL PART NUMBERS NOT OTHERWISE IDENTIFIED (EXAMPLE - 8J-98)

NAME	BAR FEED UNIT	
	DE VLIEG MACHINE CO. DETROIT MICHIGAN	
DRAWN AEB	CHECKED	PART NO. 8J
TRACED	DATE 11-21-55	

SHEET NO 1

JM-8-1A

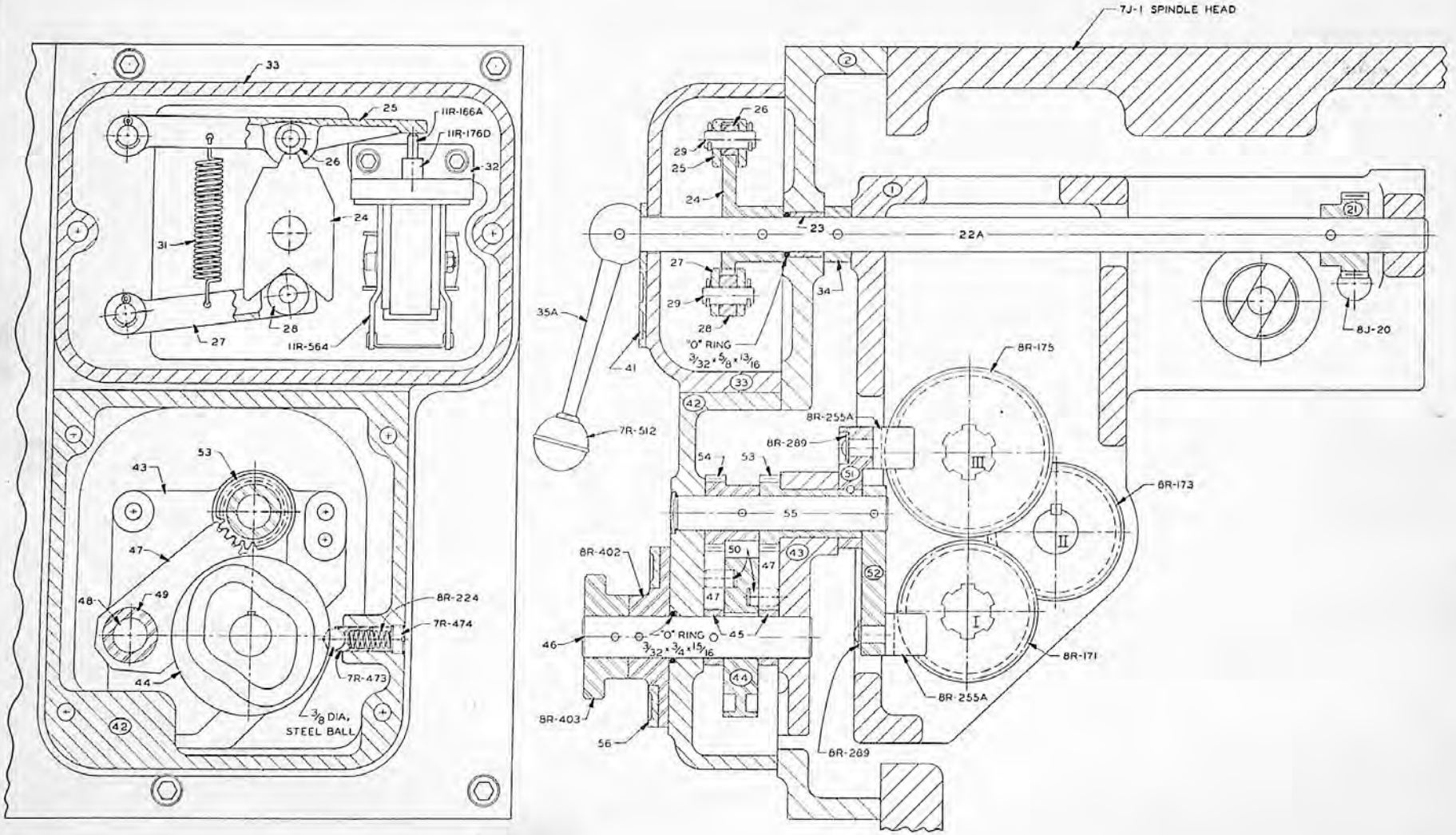


WHEN ORDERING PARTS ADD PREFIX 8J TO ALL PART NUMBERS NOT OTHERWISE IDENTIFIED
(EXAMPLE- 8J-10A)

SHEET #2

NAME	BAR FEED UNIT	
	DEVLIEG MACHINE CO. DETROIT, MICHIGAN	
DRAWN LLB	CHECKED	PART NO. 8J
TRACED	DATE 11-25-55	

JM-8-2

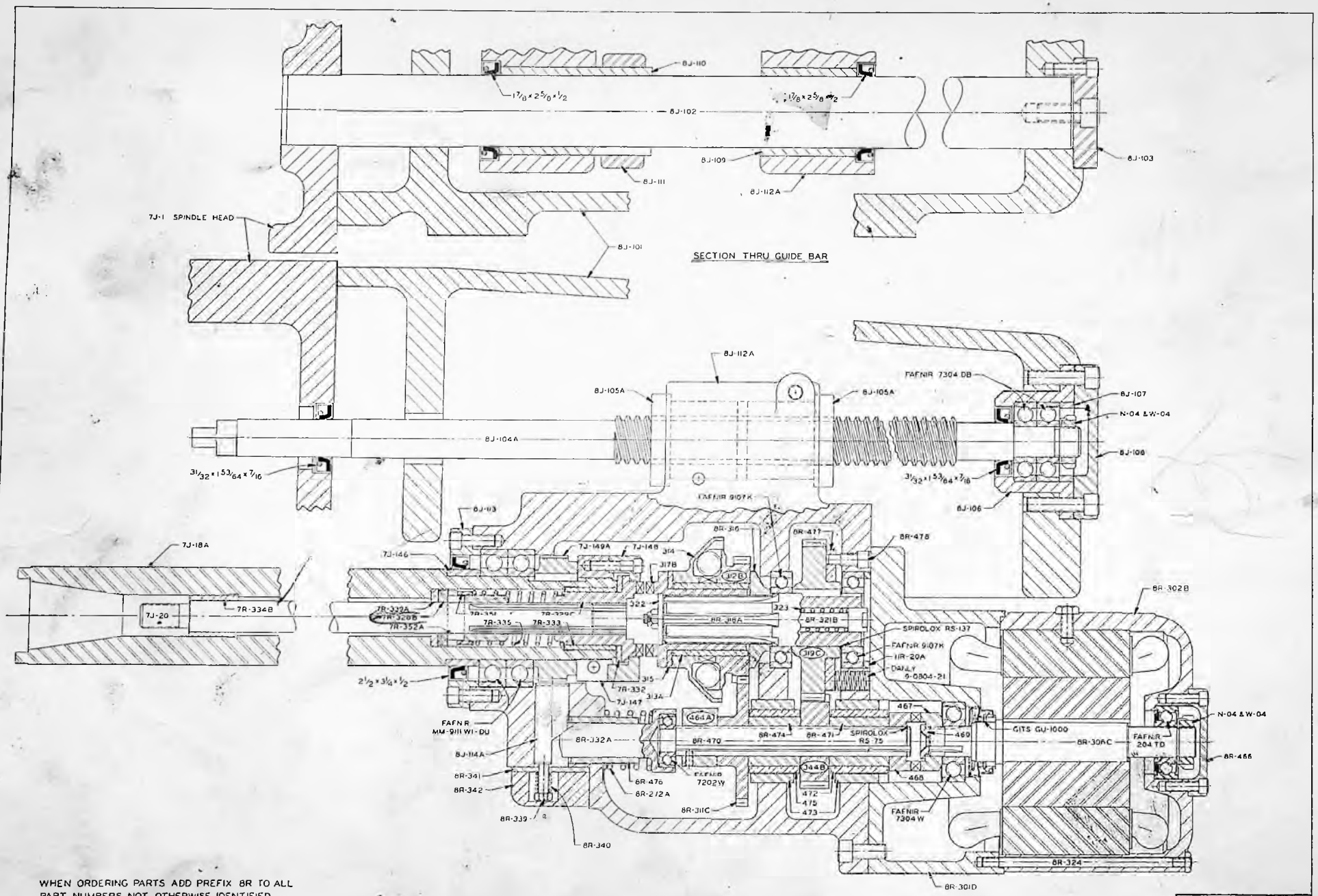


WHEN ORDERING PARTS ADD PREFIX 8J TO ALL PART NUMBERS NOT OTHERWISE IDENTIFIED (EXAMPLE- 8J-44)

NAME	BAR FEED UNIT
	DE VLIEG MACHINE CO. DETROIT, MICHIGAN
DRAWN JLD	CHECKED
TRACED	DATE 11-4-55
	PART NO. 8J

SHEET 3

JM-8-3

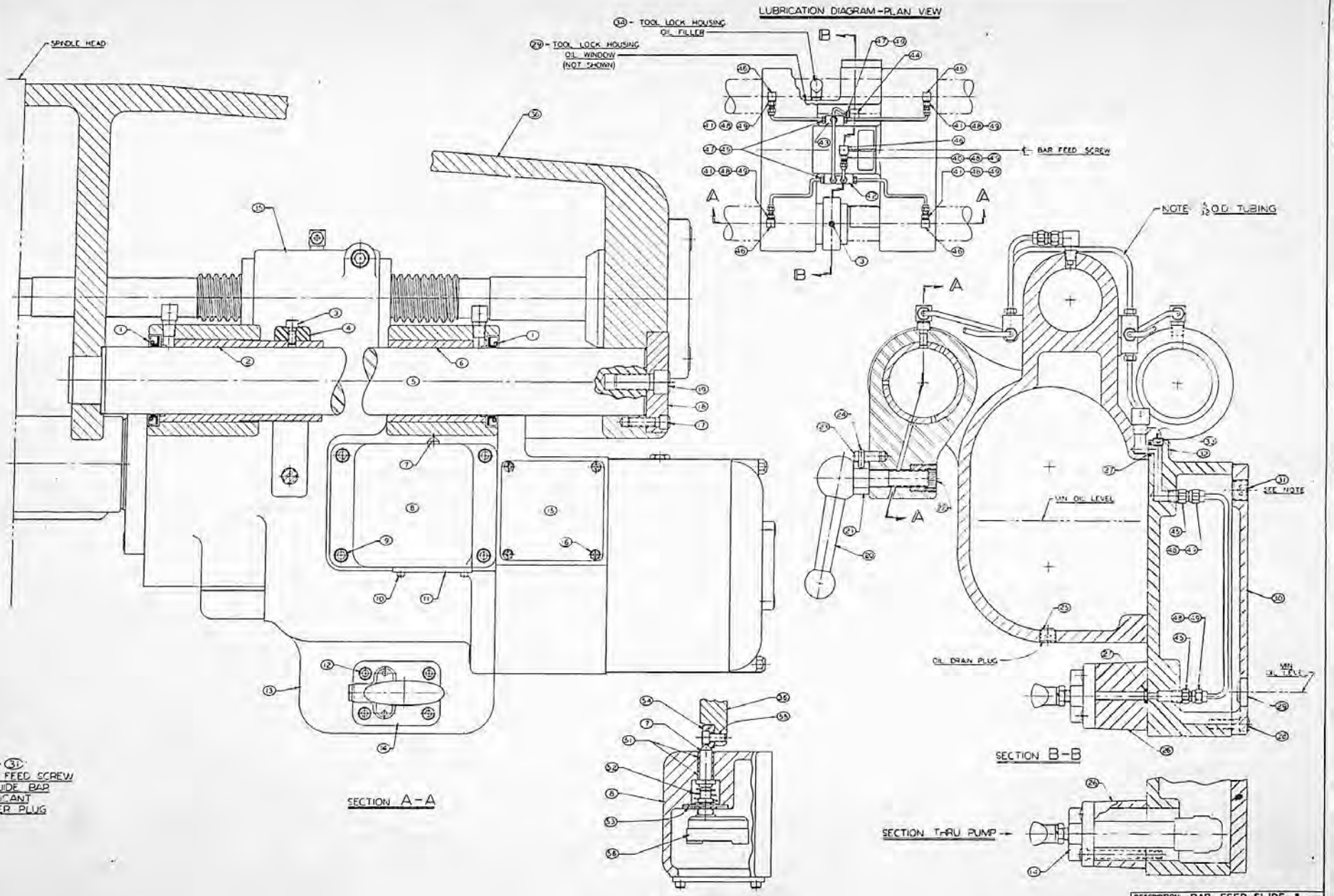


WHEN ORDERING PARTS ADD PREFIX 8R TO ALL PART NUMBERS NOT OTHERWISE IDENTIFIED (EXAMPLE- 8R-313A)

NAME	TOOL LOCK ASS'Y
	DE VLIEG MACHINE CO.
DRAWN	CHECKED
DATE	PART NO. 8J

SHEET #4

JM-8-4



WHEN ORDERING REPAIR PARTS	FIRST USED ON	
1 - SPECIFY MACH MODEL NO & SERIAL NO	MODEL	28
2 - USE COMPLETE PART NO AND DESCRIPTION AS LISTED ON BACK OF THIS SHEET	SER. NO.	3-219

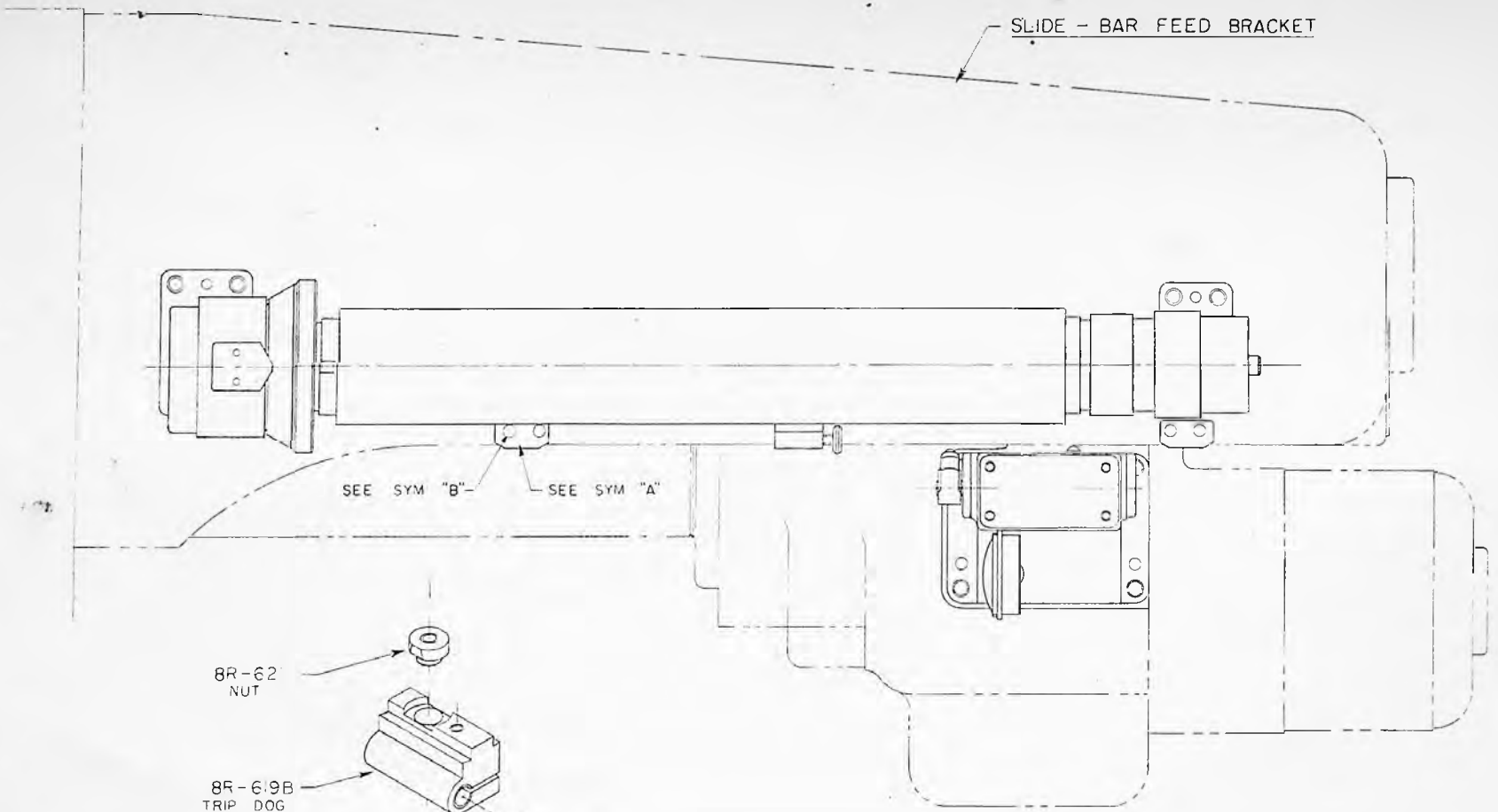
DESCRIPTION: BAR FEED SLIDE & LEAD SCREW LUB. & CLAMP ASS'Y.			
MACH	28		
DRAWN SED	CHECK		UNIT NO. BJ-B
DATE 11-30-38	DATE		SHEET NO. 5
DE VLIEG MACHINE CO. DETROIT, MICH.			

JM-8-5A

DE VLIEG JIGMIL PARTS LIST UNIT 8J-B SHEET NO. 5 DATE: 11-30-56

JL-8-5A

SYMBOL	2 B PART NO.	REQ	DESCRIPTION
1		4	OILSEAL 1-7/8 x 2-5/8 x 1/2
2	8J-110	1	BUSHING-GUIDE BAR CLAMP
3		1	1/4-20 x 1/2 S.H.C.S.
4	8J-111	1	CLAMP COLLAR
5	8J-102A	2	GUIDE BAR
6	8J-109	3	BUSHING-GUIDE BAR
7	8R-348	1	LIMIT TRIP
8	8R-347A	1	LIMIT SWITCH HOUSING
9		4	5/16-18 x 5/8 S.H.C.S.
10		4	#10-24 x 3/8 S.H.C.S.
11	8R-421	1	COVER-SWITCH
12		4	1/4-20 x 2-1/4 S.H.C.S.
13	8R-483	1	SUMP-GUIDE BAR
14		1	BIJUR PUMP "KIC" C-2367
15	8R-327A	1	COVER-MOTOR BRACKET
16		4	#10-24 x 1/2 S.H.C.S.
17		6	5/16-18 x 3/4 S.H.C.S.
18	8J-103	2	RETAINER-GUIDE BAR
19		2	1/2-13 x 1" S.H.C.S.
20	8R-212	1	CLAMP LEVER-BAR FEED BRACKET
21	8R-456	1	CLAMP STUD
22		1	1/2-13 ALLENUT
23		1	5/16 x 1" DOWEL PIN
24		1	NO. 3 x 1-3/8 TAPER PIN
25		1	1/4 TAPER PIPE PLUG
26	8R-484	1	SPACER-PUMP
27		2	5427-6 "O" RING
28		10	5/16-18 x 5/8 S.H.C.S.
29		2	OIL WINDOW BIJUR B-4900
30	8R-303E	1	COVER-SUMP
31		1	3/8 TAPER PIPE PLUG
32		8	5/16-18 x 3/4 S.H.C.S.
32		3	5/16-18 x 2 S.H.C.S.
33		1	1/16 TAPER PIPE PLUG
34		1	GITS OILER 1402 TYLE "LP"
35	8J-112A	1	BAR FEED BRACKET
36	8J-101A	1	SLIDE-BAR FEED BRACKET
37			
38			
39			
40		1	BIJUR METER FSA-3, B-1086
41		4	BIJUR METER FSA-2, B-1085
42		1	BIJUR 4-WAY JUNCTION B-3262
43		1	BIJUR 4-WAY JUNCTION B-4231
44		1	BIJUR ADAPTOR A-3080
45		2	BIJUR ADAPTOR B-2253
46		5	BIJUR ELBOW CONNECTOR A-2768
47		9	BIJUR BUSHING B-3783
48		7	BIJUR COMPRESSION NUT B-1095
49		16	BIJUR COMPRESSION SLEEVE B-1061
50			
51	8R-349	2	BUSHING-LIMIT TRIP
52	8R-423	1	SPRING-MICRO SWITCH
53	8R-422	1	PLATE-MICRO SWITCH
54	8J-115	2	TRIP DOG-LIMIT
55		4	#10-24 x 1/2 S.H.C.S.
56		1	MICRO SWITCH BZ-2RQ1-A2(LS-17)



ENLARGED VIEW OF TRIP DOG ASSEMBLY
12 REQ'D AS SHOWN

WHEN ORDERING REPAIR PARTS

1 - SPECIFY MACH. MODEL NO. & SERIAL NO.
2 - USE COMPLETE PART NO. AND DESCRIPTION AS LISTED.

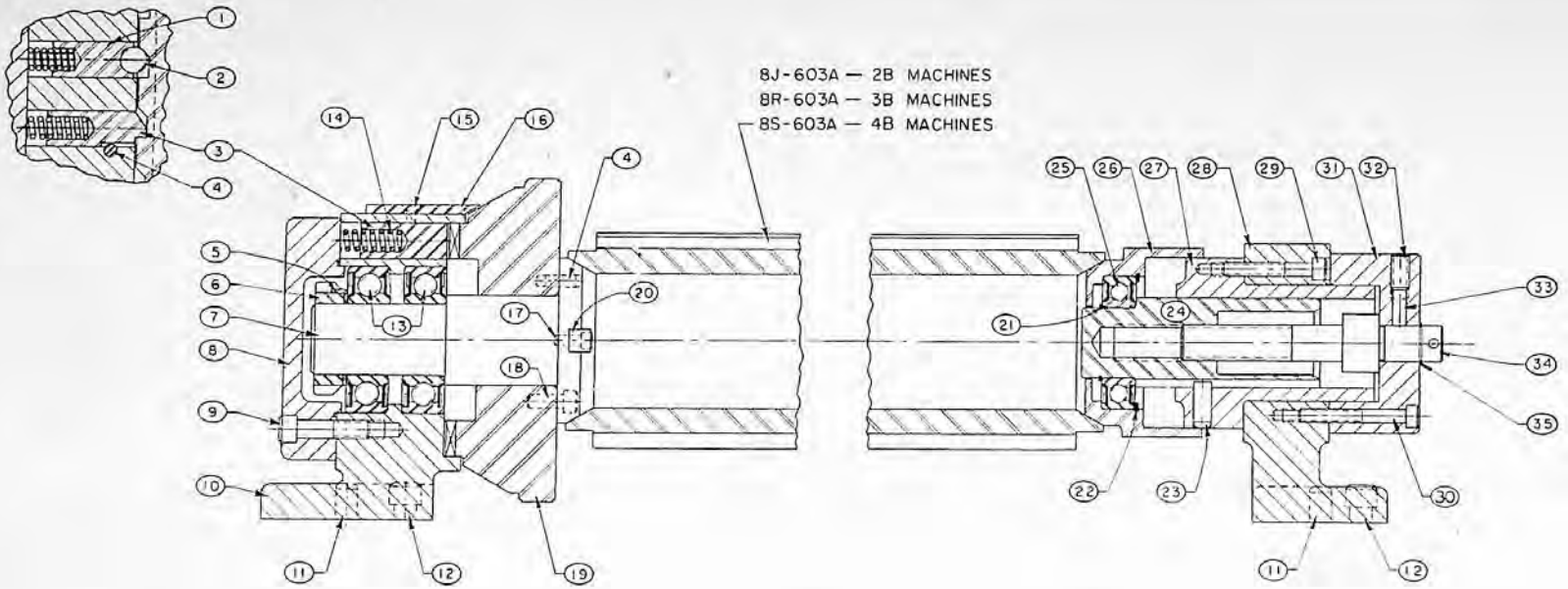
SYM	REQ	MACH	PART NO.	DESCRIPTION
"A"	2	2B	8J-115	TRIP DOG-BAR FEED
	2	3B, 4B	8R-350A	TRIP DOG-BAR FEED
"B"	4	2B	—	#10-24 x 1/2 SHCS
	4	3B, 4B	—	#10-24 x 3/4 BUTTON HD. SCR.

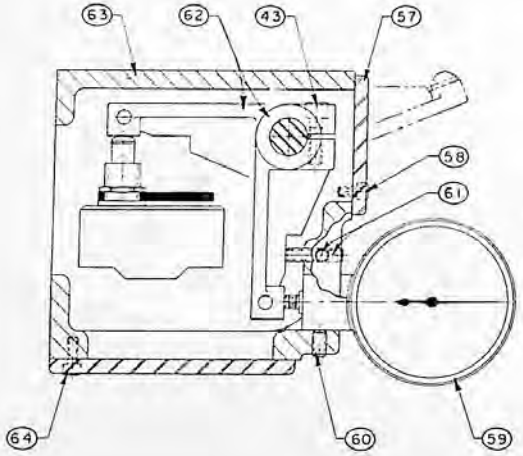
DESCRIPTION
AUTOMATIC DEPTH CONTROL

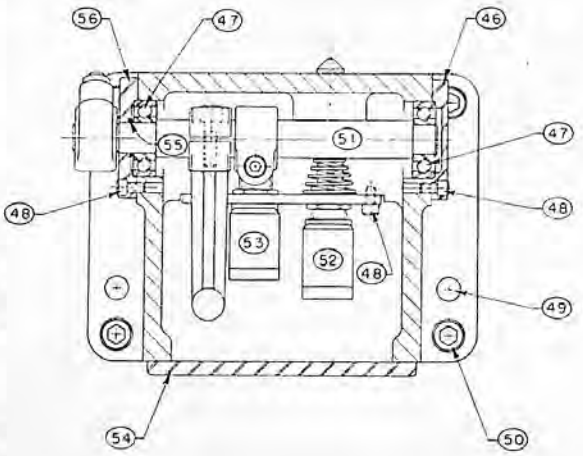
MACH -	2B, 3B & 4B JIGMILS	
DRAWN: S E D	CHECK	UNIT NO: 8R-D
DATE: 6-11-57	DATE	SHEET NO: 1

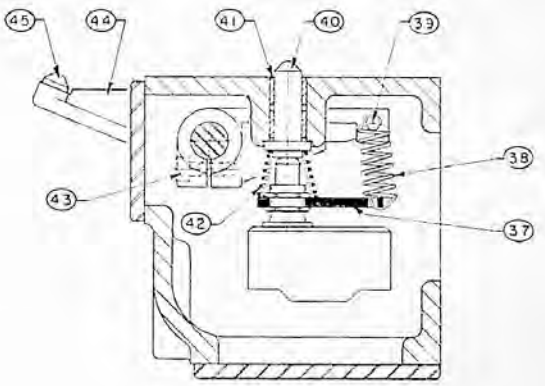
DE VLIEG MACHINE CO.
DETROIT, MICH.

RM-8-6A









WHEN ORDERING REPAIR PARTS:

1 - SPECIFY MACH. MODEL NO. & SERIAL NO.
2 - USE COMPLETE PART NO. AND DESCRIPTION AS LISTED ON BACK OF THIS SHEET.

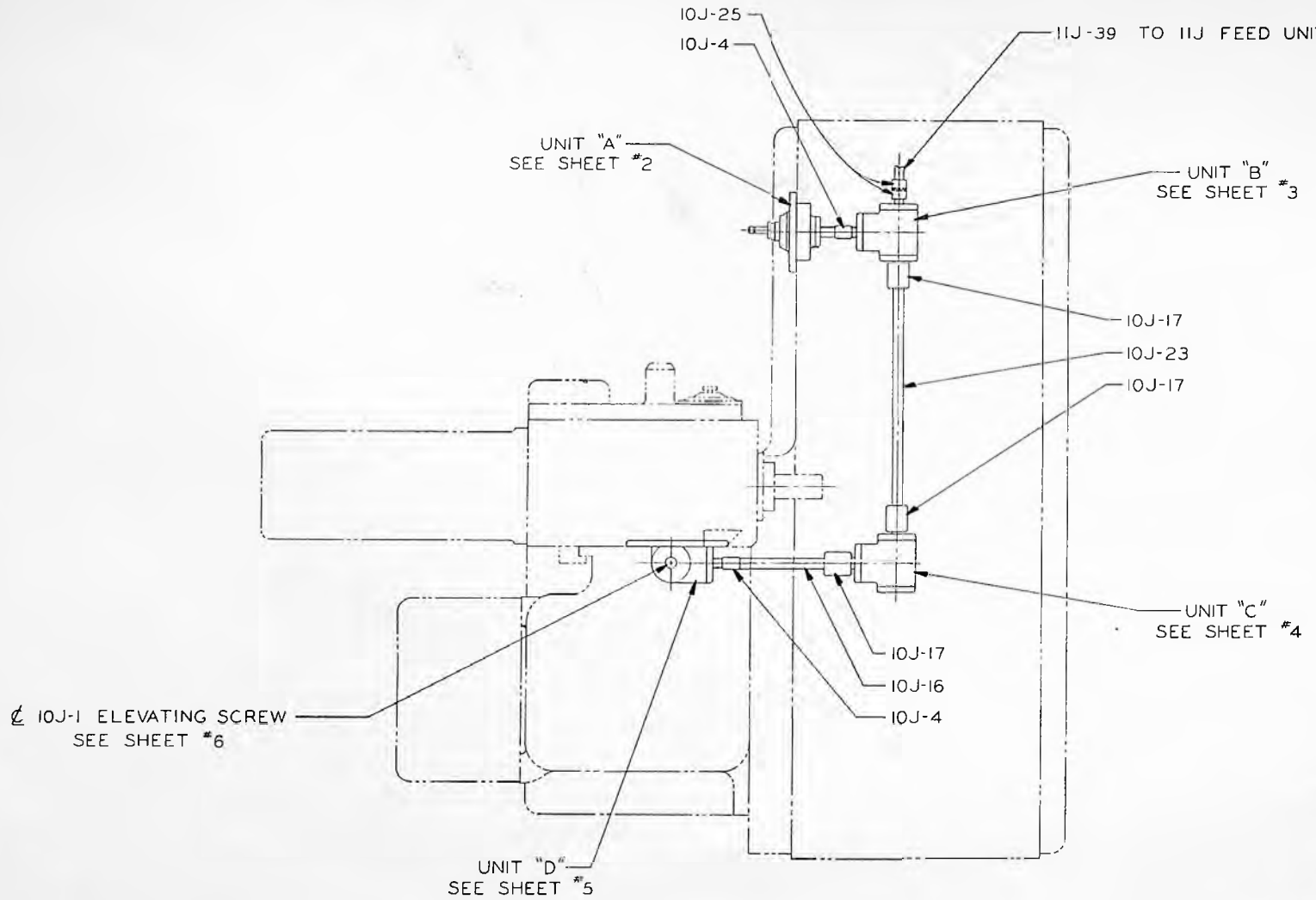
DESCRIPTION: AUTOMATIC DEPTH CONTROL		
MACH. - 2B, 3B, 4B JIGMILS		
DRAWN: SED	CHECK	UNIT NO.: 8R-D
DATE: 6-11-57	DATE	SHEET NO: 2
DE VLIEG MACHINE CO. DETROIT, MICH		

RM-8-7A

DeVLIEG JIGMIL PARTS LIST — UNIT NO. 8R-D — SHEET NO. 2 — DATE: 6-11-57

SYMBOL	2B-3B-4B PART NO.	REQ	DESCRIPTION
1	8R-628	1	DETENT PLUNGER
2		1	3/8" DIA. STEEL BALL
3	8R-629	1	STOP PLUNGER
4		2	3/16" DIA. x 5/8" DOWEL PIN
5	W-05	1	LOCKWASHER
6	N-05	1	LOCKNUT
7	8R-627	1	DIAL SHAFT
8	8R-606A	1	BEARING CAP
9		3	1/4-20 x 1" Lg. SHCS
10	8R-601A	1	BRACKET - FRONT
11		4	5/16 DIA. x 1" Lg. DOWEL PIN
12		6	5/16-18 x 3/4" Lg. SHCS
13	205 PP	2	FAFNIR BALL BEARING
14	8R-224	2	DETENT SPRING
15		2	#6-32 x 1/4" Lg. FL.HD.SOC.SCR.
16	8R-623	1	POINTER
17		1	#6-32 x 3/8 Lg. SHCS
18		3	#10-24 x 1/2" - SHCS
19	8R-604A	1	DIAL
20	8R-630	1	KEY
21	RS-98	1	SPIROLOX RETAINING RING
22	RR-185	1	SPIROLOX RETAINING RING
23		1	1/4" DIA. x 5/8" Lg. DOWEL PIN
24	8R-632	1	SHAFT
25	9105 PP	1	FAFNIR BALL BEARING
26	8R-631	1	CENTER
27	8R-637	1	SLEEVE
28	8R-602A	1	BRACKET - REAR
29		3	#10-24 x 1-1/4" Lg. SHCS
30		3	#10-24 x 1½" S.H.C.S.
31	8R-636B	1	RETAINER
32		1	¼-20 x ½" S.S.S.
33	3R-640	1	SHOE
34	8R-639	1	STUD
35	RS-50	1	SPIROLOX RING.
36			
37	8R-616	1	PLATE-MICRO SWITCH
38	8R-614	1	SPRING - INDICATOR LEVER
39	8R-615	1	PIN - SPRING
40	8R-348	1	LIMIT TRIP
41	8R-349	2	BUSHING - LIMIT TRIP
42	8R-423	1	SPRING - MICROSWITCH
43		2	#10-24 x 5/8" Lg. SHCS
44	8R-611	1	LEVER - TRIP DOG
45	8R-612	1	BUTTON-TRIP LEVER
46	5R-104C	1	RETAINER
47	MM-9100	2	FAFNIR BALL BEARING
48		8	#6-32 x 1/4 SHCS
49		2	5/16 DIA. x 1-1/4" Lg. DOWEL PIN
50		4	5/16-18 x 1" Lg. SHCS
51	8R-613	1	SHAFT - INDICATOR LEVER
52	LS-16	1	"MICROSWITCH" BZ-2RQ1-A2
53	LS-17	1	"MICROSWITCH" BZ-2RQ1-A2
54	8R-609	1	BOTTOM COVER - SWITCH H'S'G.
55	AN 6227-7	1	O-RING
56	5R-118B	1	RETAINER
57	8R-608	1	FRONT COVER-SWITCH H'S'G.
58		4	#8-32 x 1/4" Lg. SHCS
59	8R-626	1	DIAL INDICATOR
60		1	#10-24 x 3/8 SOC.SET SCR.
61		2	#10-24 x 3/4 SOC.SET SCR.
62	8R-610	2	LEVER - INDICATOR
63	8R-607	1	SWITCH HOUSING
64		4	#8-32 x 3/8 SHCS

RL-8-7A

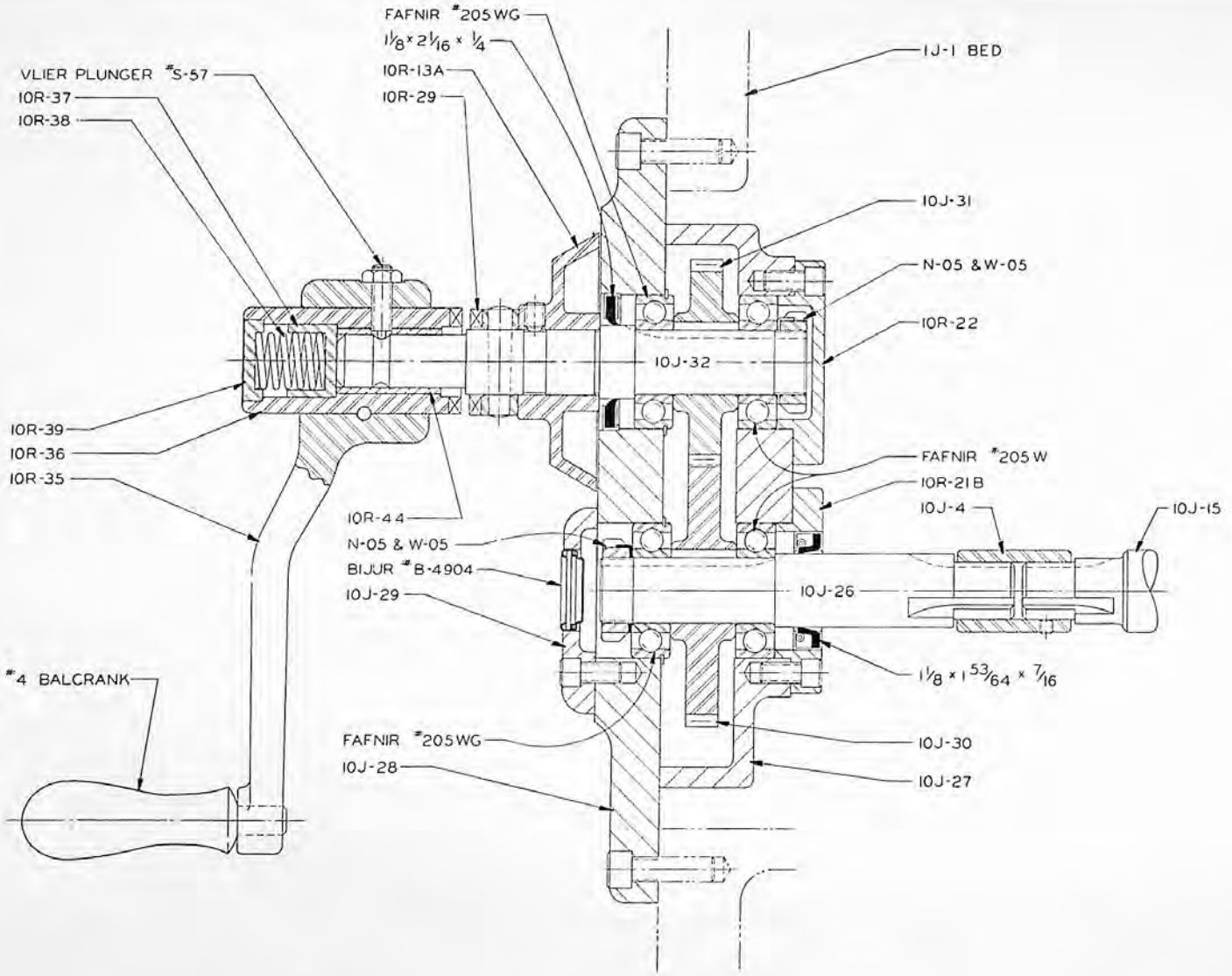


NAME VERTICAL DRIVE - PLAN
DE VLIEG MACHINE CO.
DETROIT MICHIGAN

DRAWN	CHECKED	PART NO.
GLB		10J
TRACED	DATE 8-9-55	

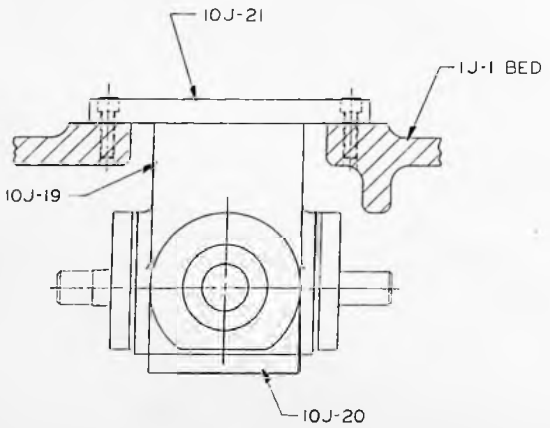
SHEET #1

JM-10-1

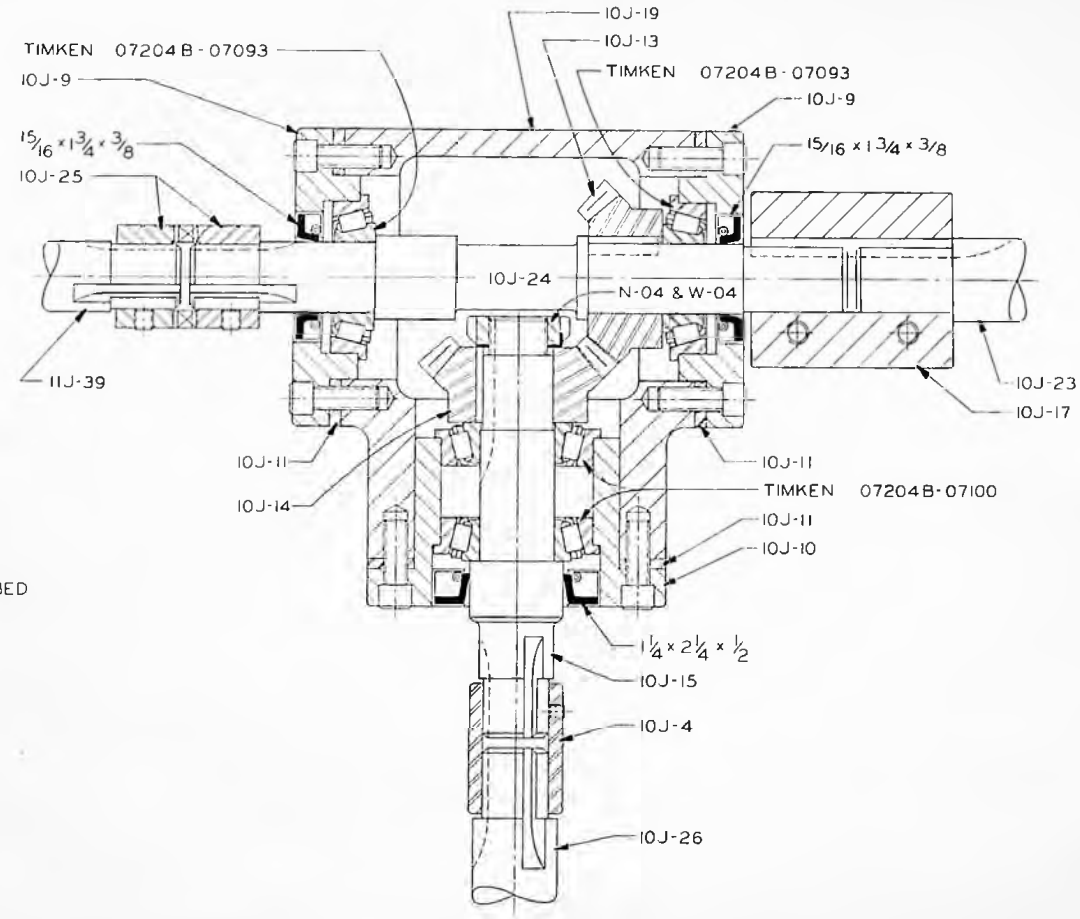


SHEET #2

NAME	VERT. DRIVE - UNIT "A"
	DE VLIEG MACHINE CO. DETROIT, MICHIGAN
DRAWN ALB	CHECKED
TRACED	DATE 9-9-55
PART NO.	10J



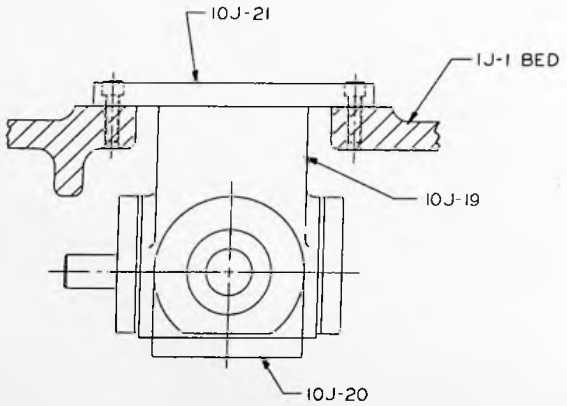
SIDE VIEW



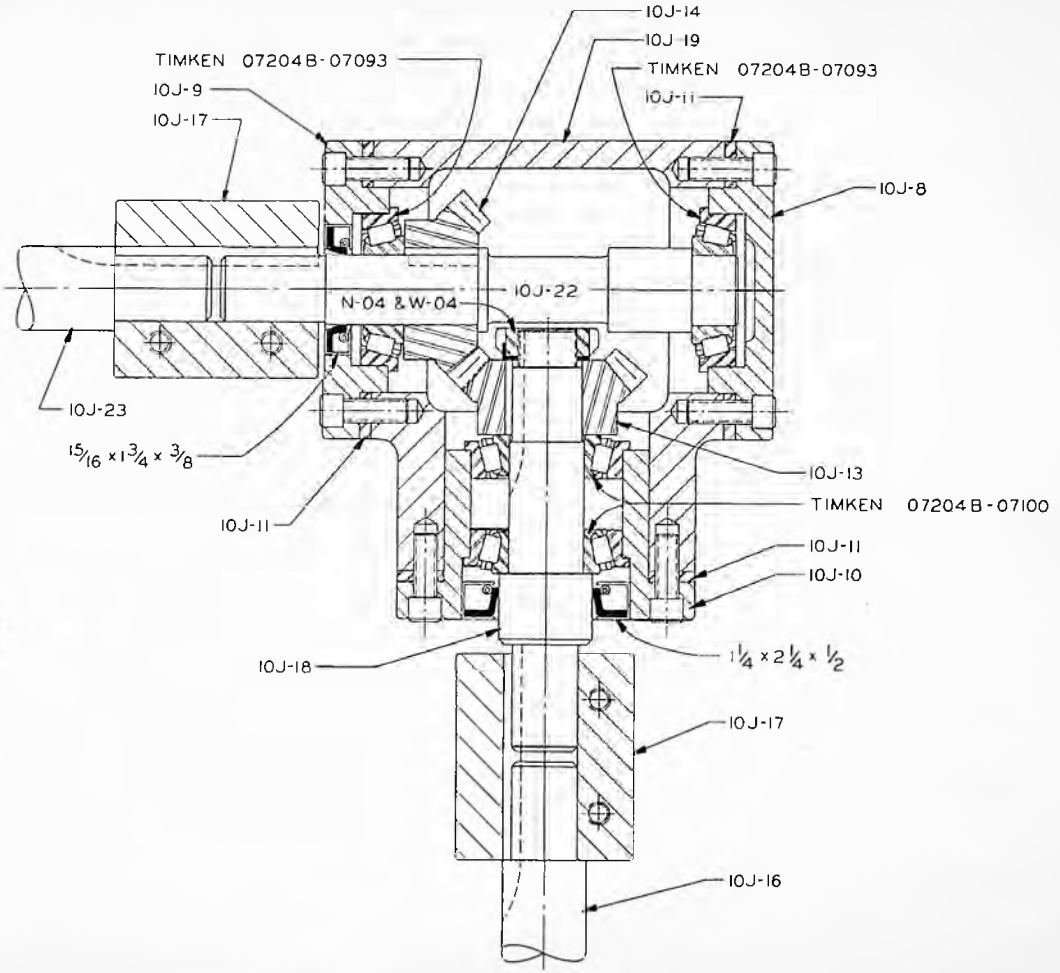
NAME VERT. DRIVE - UNIT "B"
DE VLIEG MACHINE CO.
DETROIT, MICHIGAN
DRAWN ALB
TRACED
CHECKED
DATE 9-12-57
PART NO. 10J

SHEET #3

JM-10-3



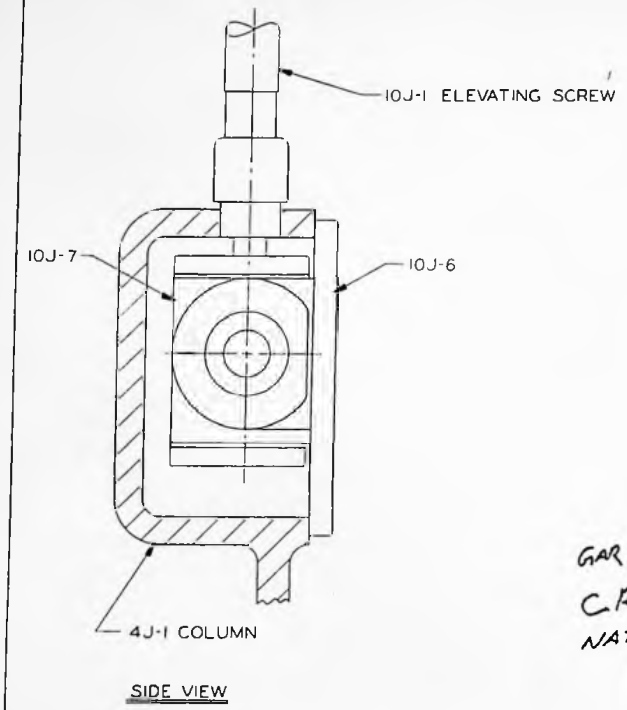
SIDE VIEW



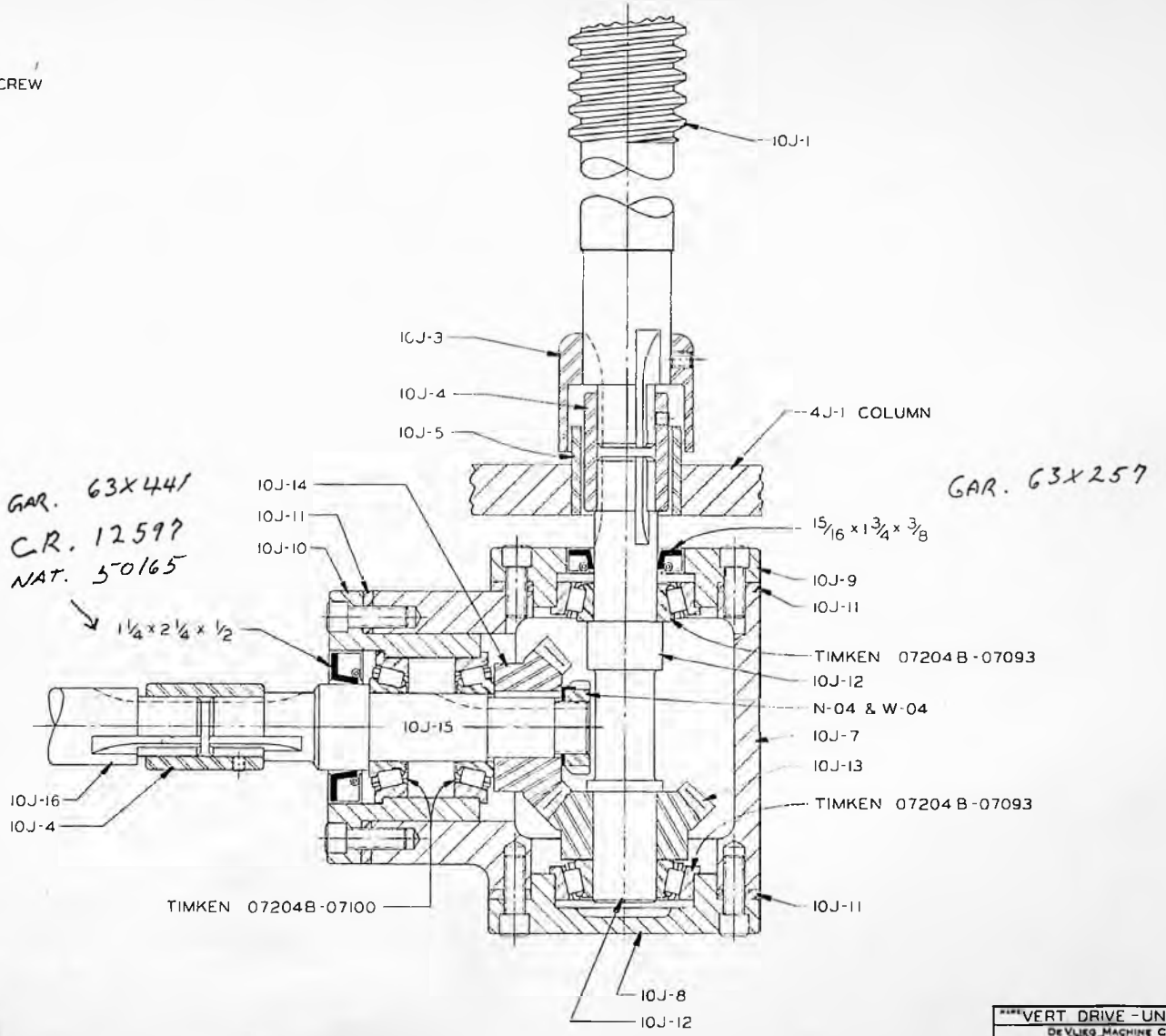
SHEET #4

VERT. DRIVE - UNIT "C"
DE VLIEG MACHINE CO.
DETROIT, MICHIGAN
10J

JM-10-4



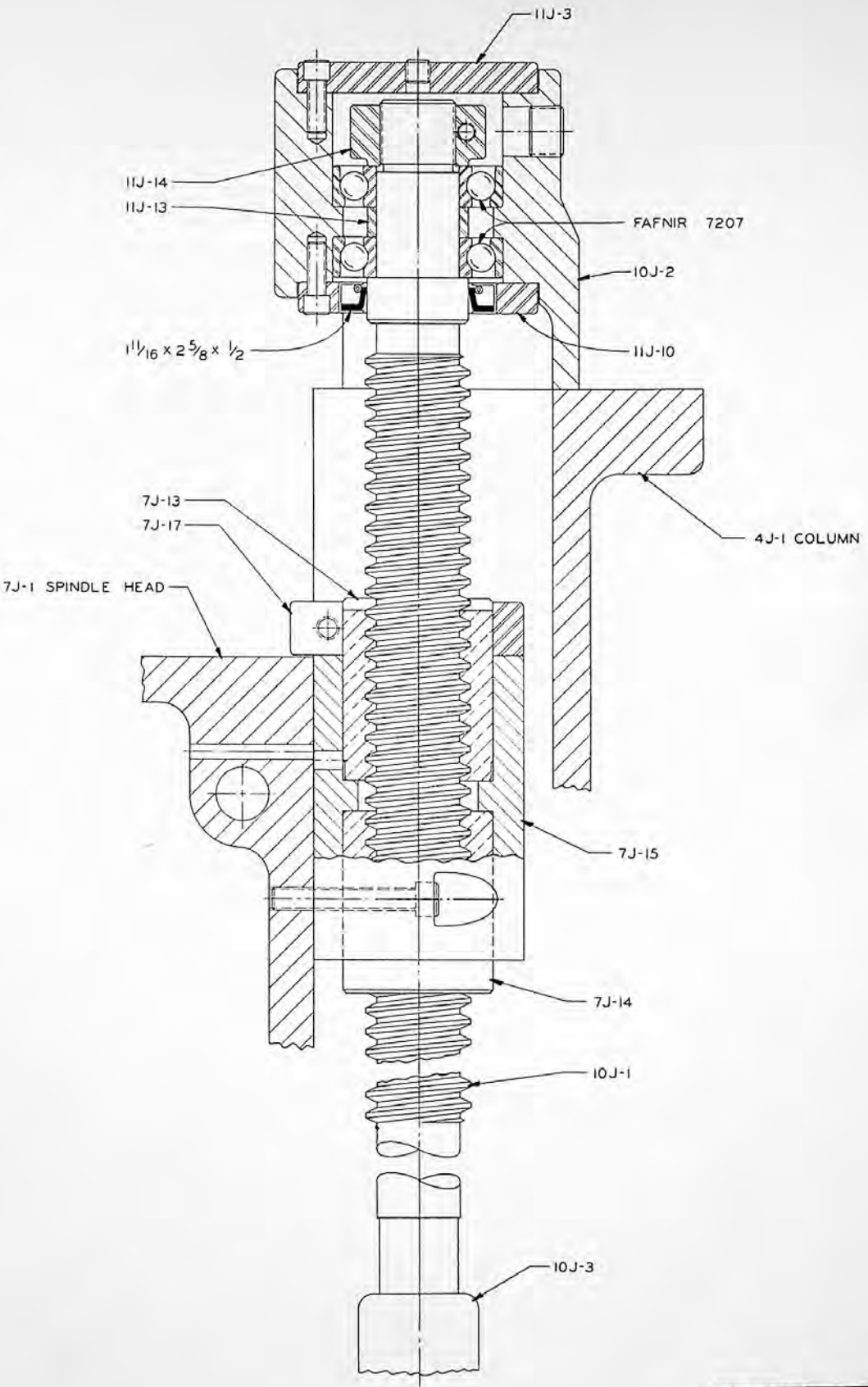
SIDE VIEW



NAME VERT DRIVE - UNIT "D"
DE VLIEG MACHINE CO. DETROIT, MICHIGAN
DRAWN 4-8 PATENT CHECKED PART NO. 10J
DATE 9-30-55

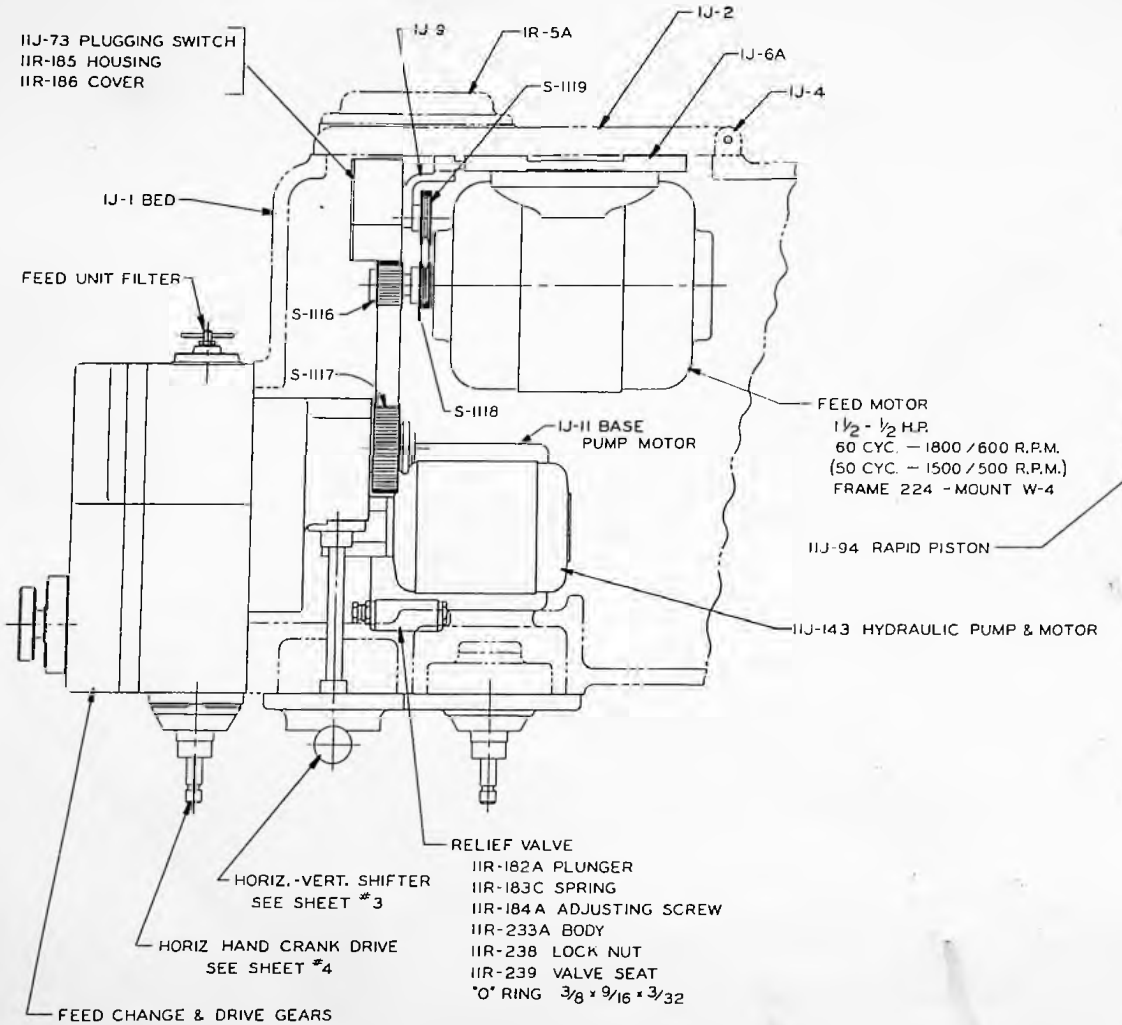
SHEET #5

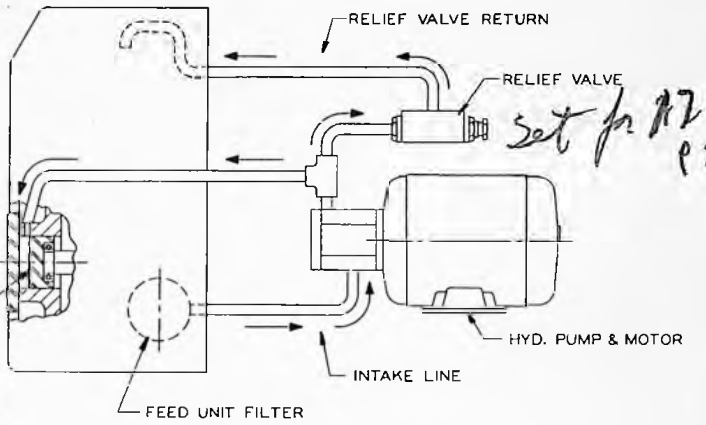
JM-10-5



NAME VERTICAL DRIVE
DE VLIEG MACHINE CO.
DETROIT, MICHIGAN
DRAWN 4-28 CHECKED PART NO. 10J
FILED DATE 12-4-58

SHEET #6



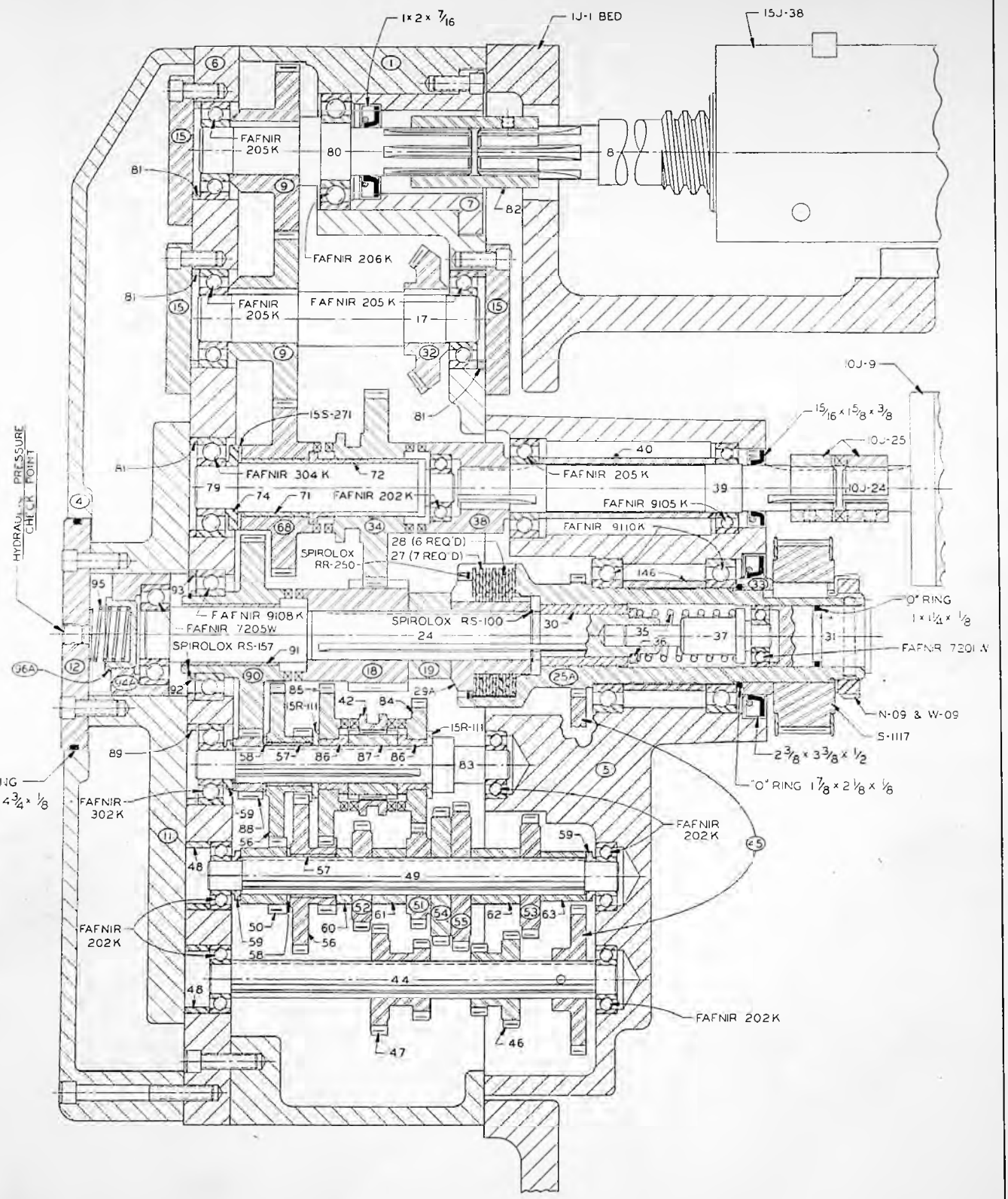


HYDRAULIC CIRCUIT

FEED BOX NORMALLY IN GEAR FOR "FEED" RATES.
HYDRAULIC CIRCUIT SHOWN ABOVE IS ENERGIZED ONLY
FOR ENGAGING RAPID TRAVERSE CLUTCH.

NAME	FEED UNIT	
	DE VLIEG MACHINE CO. DETROIT, MICHIGAN	
DRAWN GLB / TRACED	CHECKED / DATE 3-16-56	PART NO. IIJ

REVISED 5-28-57



FEED CHANGE & DRIVE GEARS

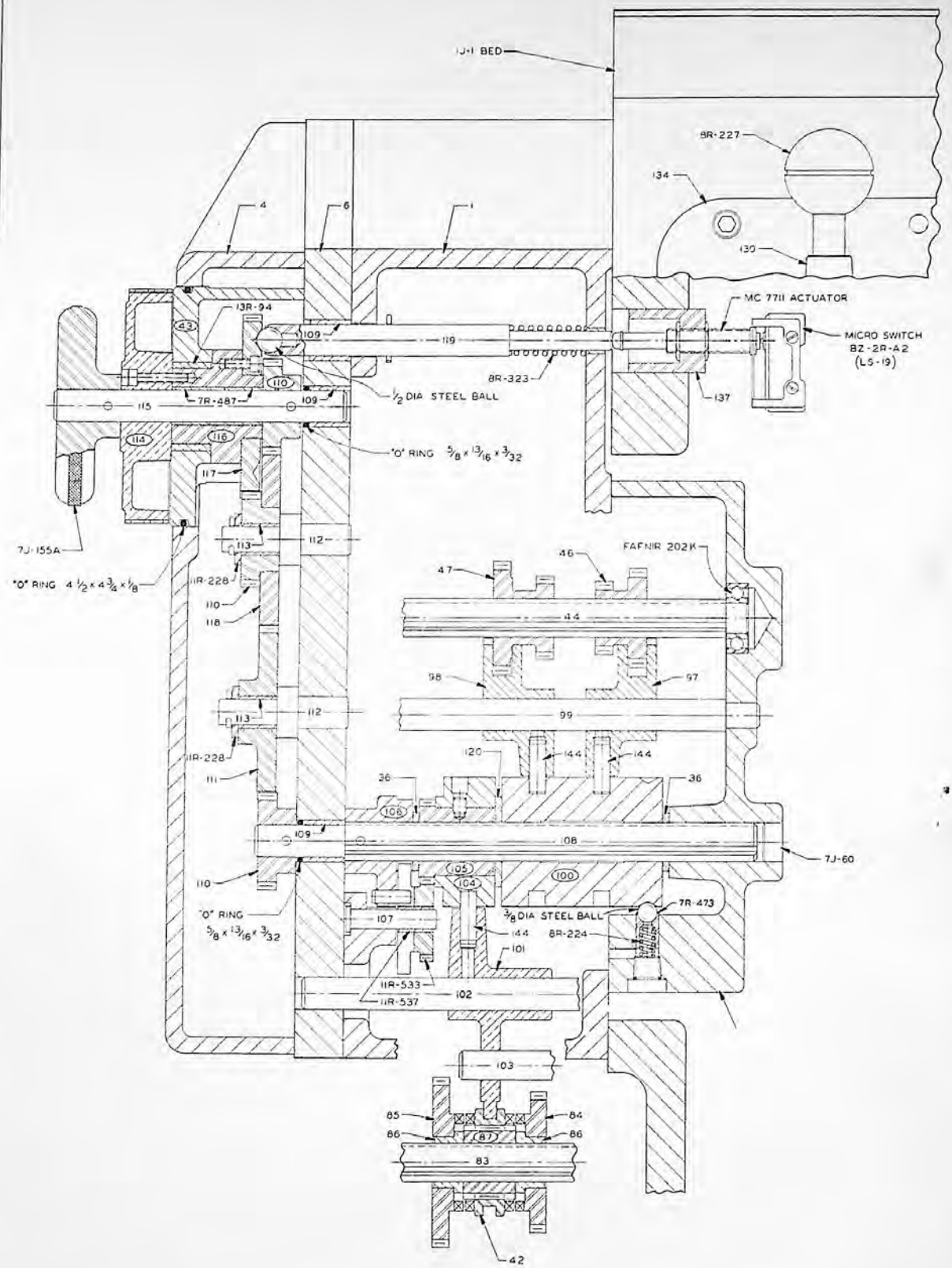
ALL PART NUMBERS ARE 11J
UNLESS SHOWN OTHERWISE

FIRST IN 11-241

SHEET #1

NAME	FEED UNIT
	DEVLIEG MACHINE CO. DETROIT, MICHIGAN
DRAWN S.A.F.	CHECKED
TRACED S.E.D.	DATE 4-10-57
PART NO.	11J

JM-11-1A

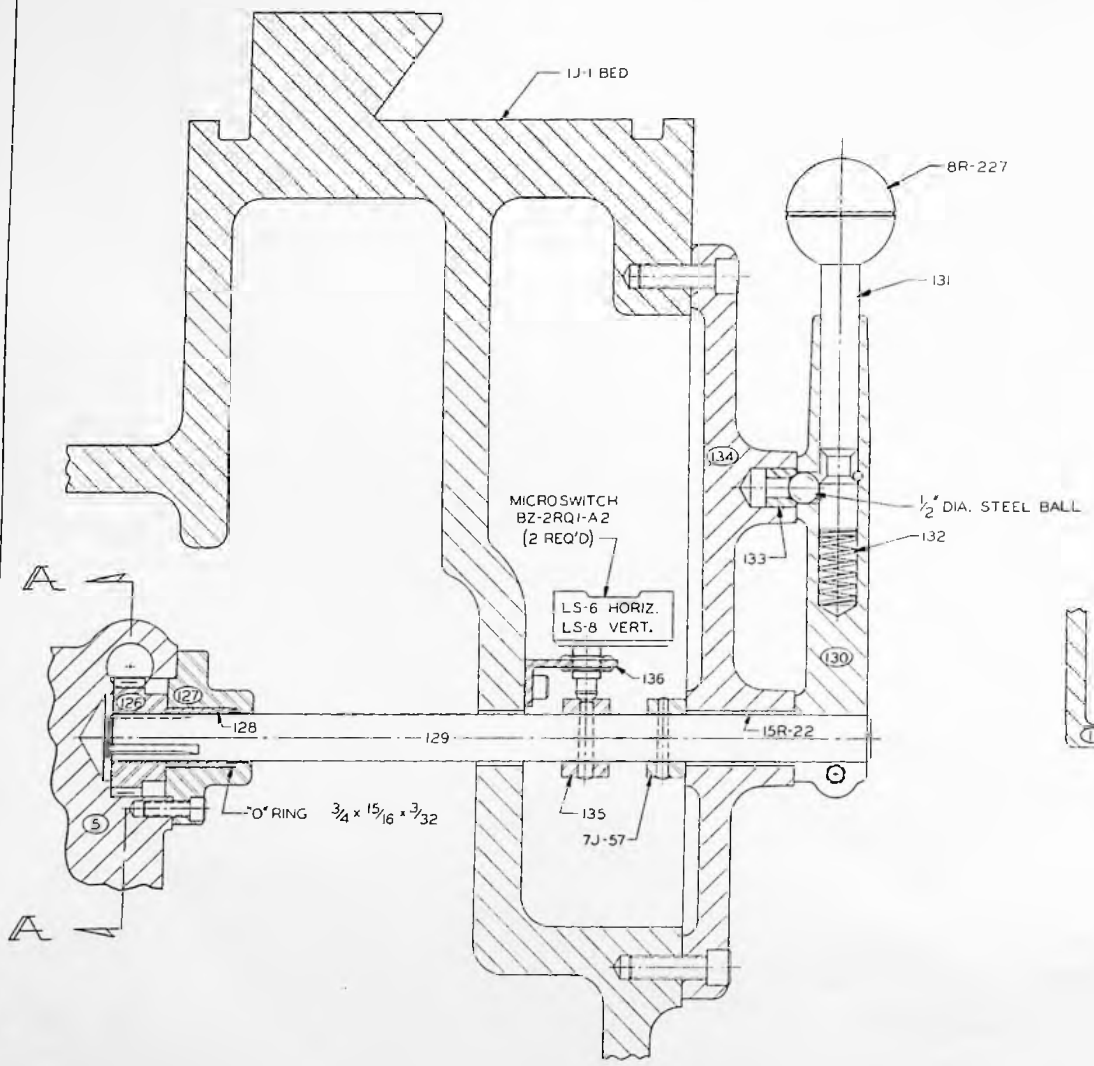


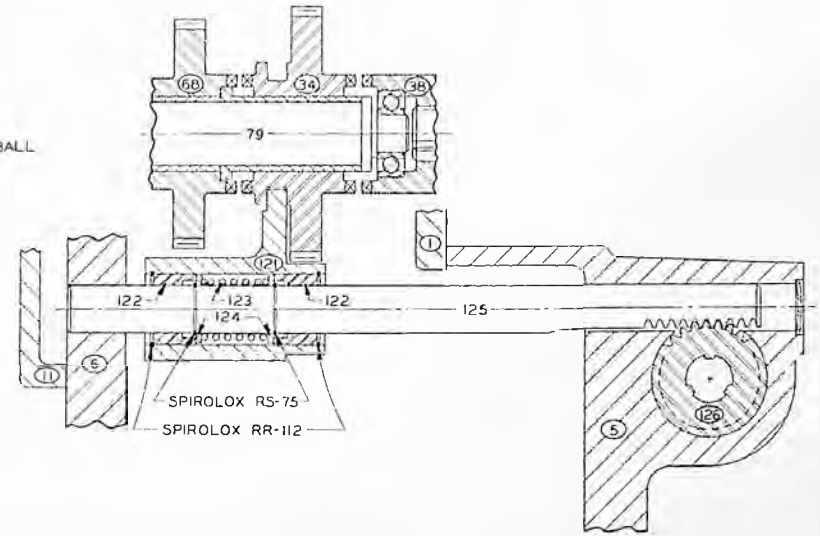
ALL PART NUMBERS ARE 11J
UNLESS SHOWN OTHERWISE

SHEET #2

NAME	FEED UNIT
	DE VLIEG MACHINE CO. DETROIT, MICHIGAN
DRAWN ALB	CHECKED
TRACED	DATE 10-12-54
PART NO.	11J

JM-11-2





SECTION A-A

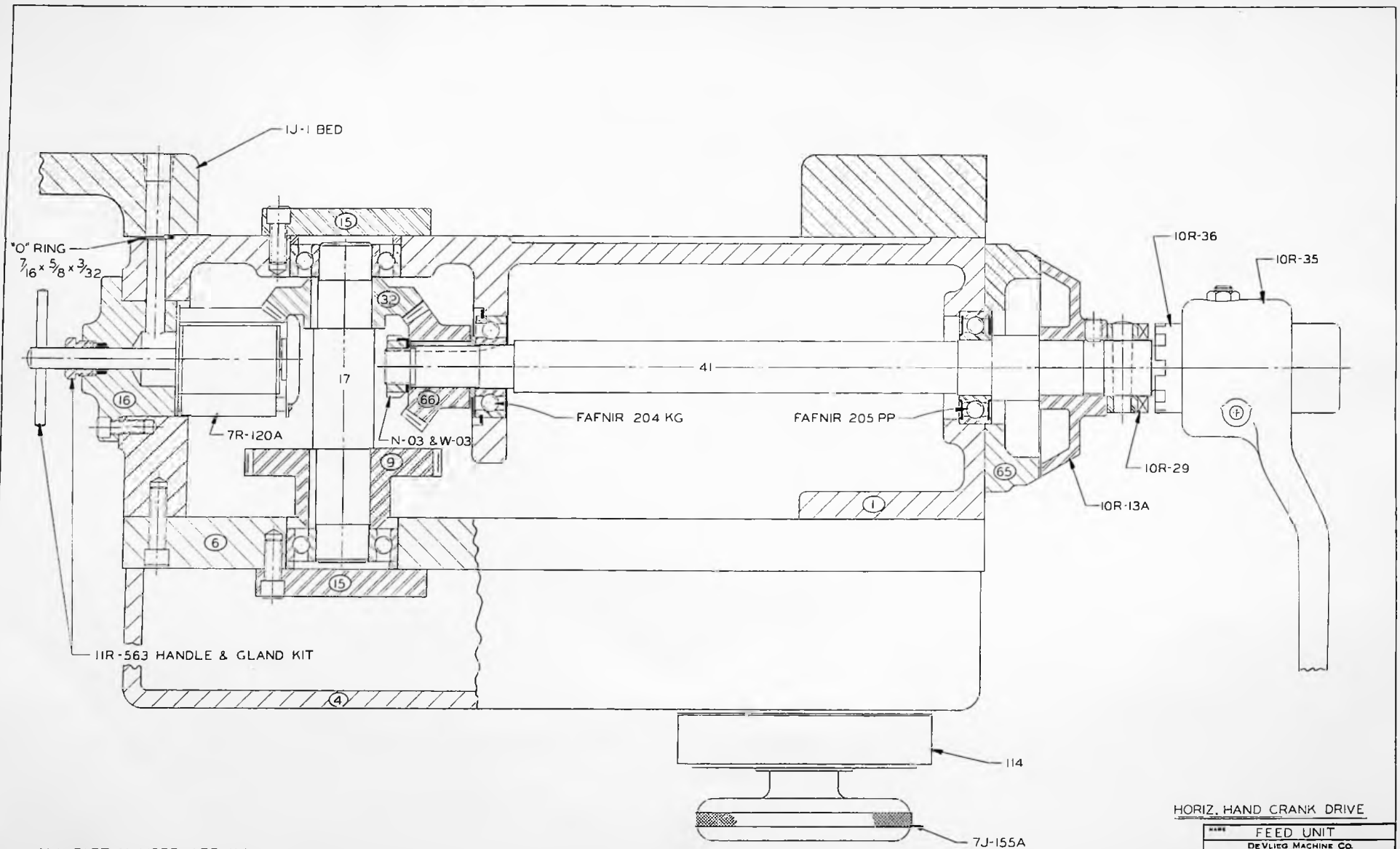
HORIZ.-VERT. SHIFTER

NAME	FEED UNIT
	DEVLIEG MACHINE CO. DETROIT, MICHIGAN
DRAWN	
CHECKED	
DATE	
PART NO.	11J

ALL PART NUMBERS ARE 11J
UNLESS SHOWN OTHERWISE

SHEET #3

JM-11-3



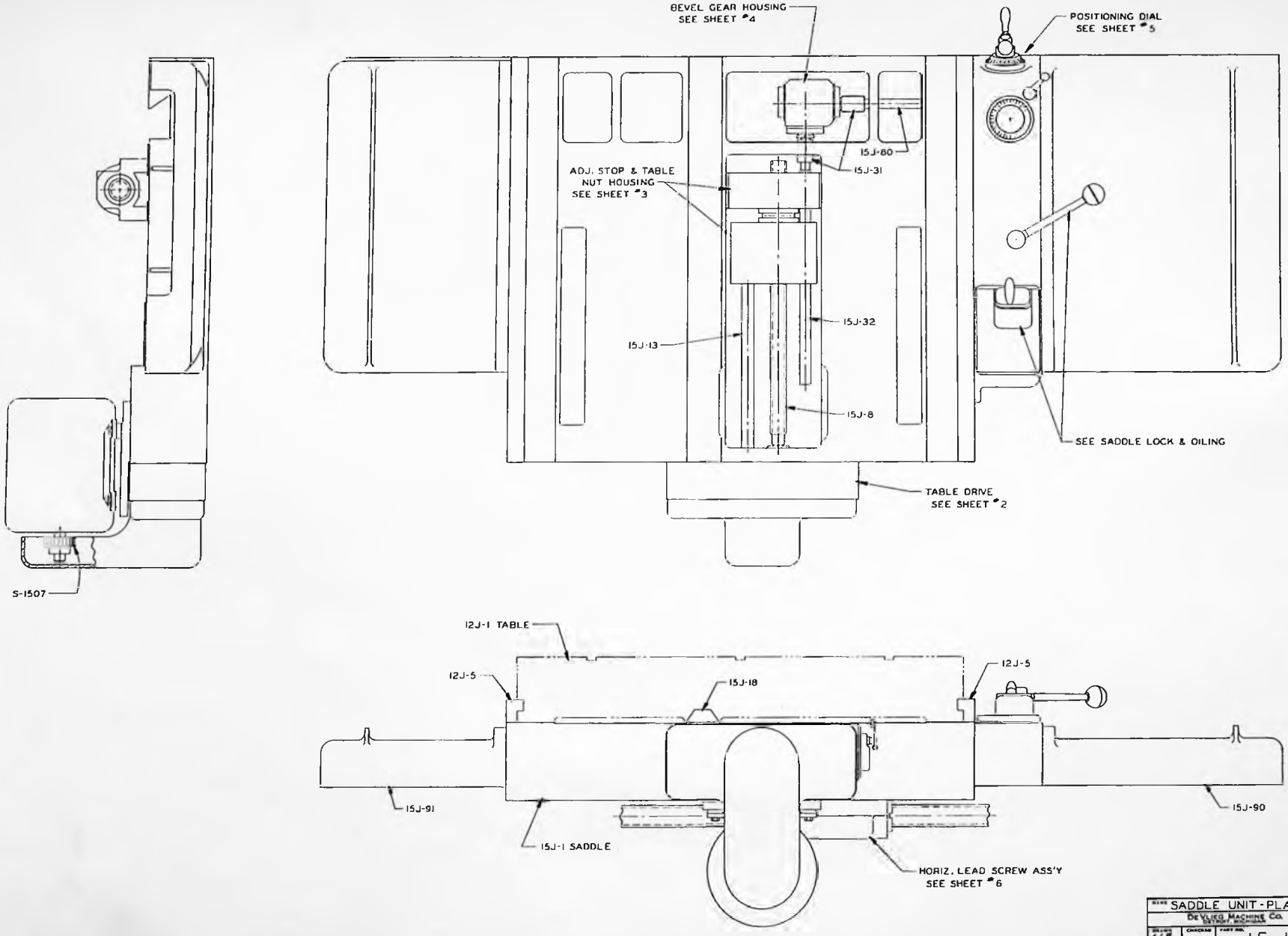
ALL PART NUMBER ARE 11J
UNLESS SHOWN OTHERWISE

HORIZ. HAND CRANK DRIVE

NAME	FEED UNIT
	DE VLIEG MACHINE CO. DETROIT, MICHIGAN
DRAWN GLB / TRACED	CHECKED / DATE 4-11-55
PART NO.	11J

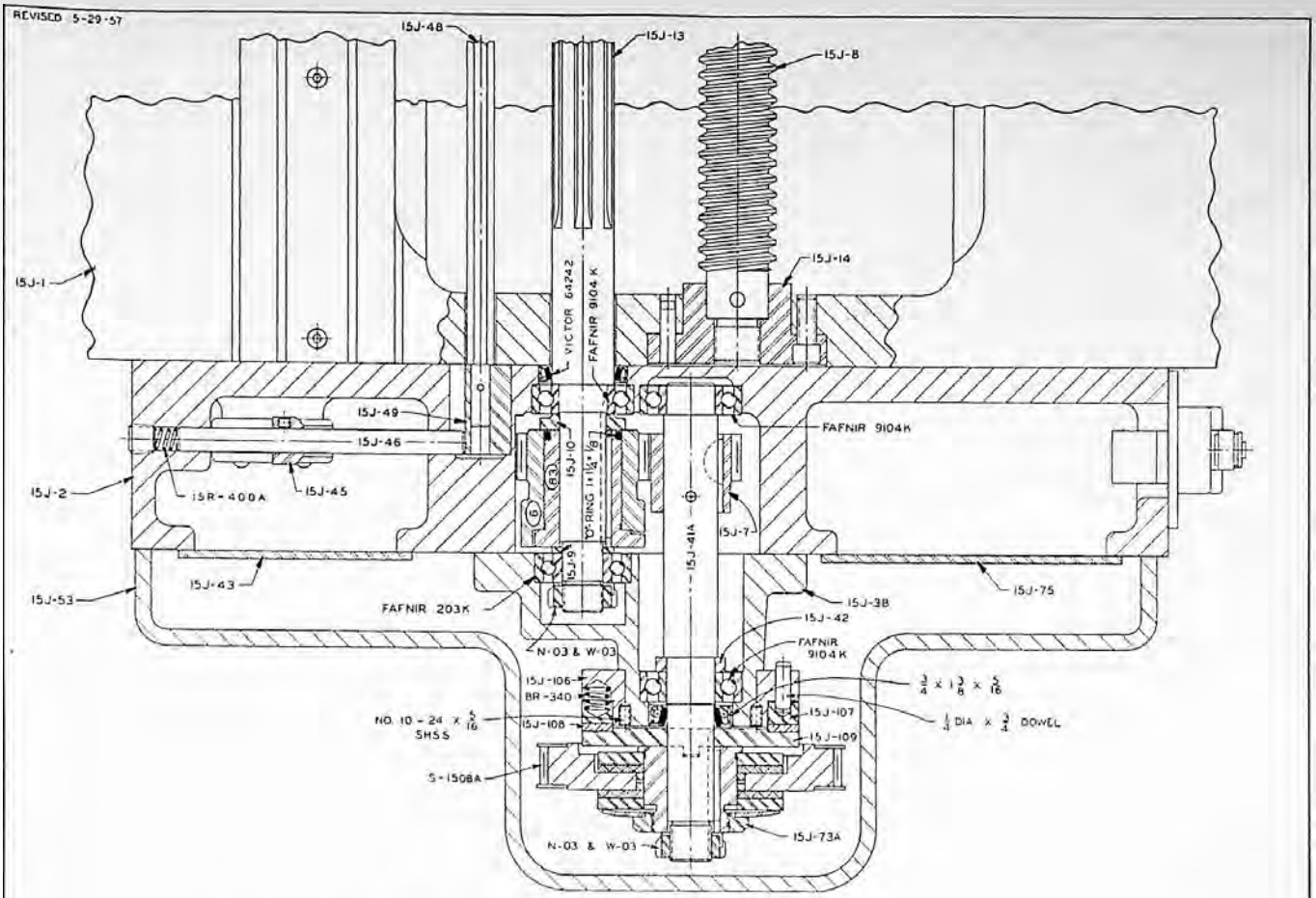
SHEET #4

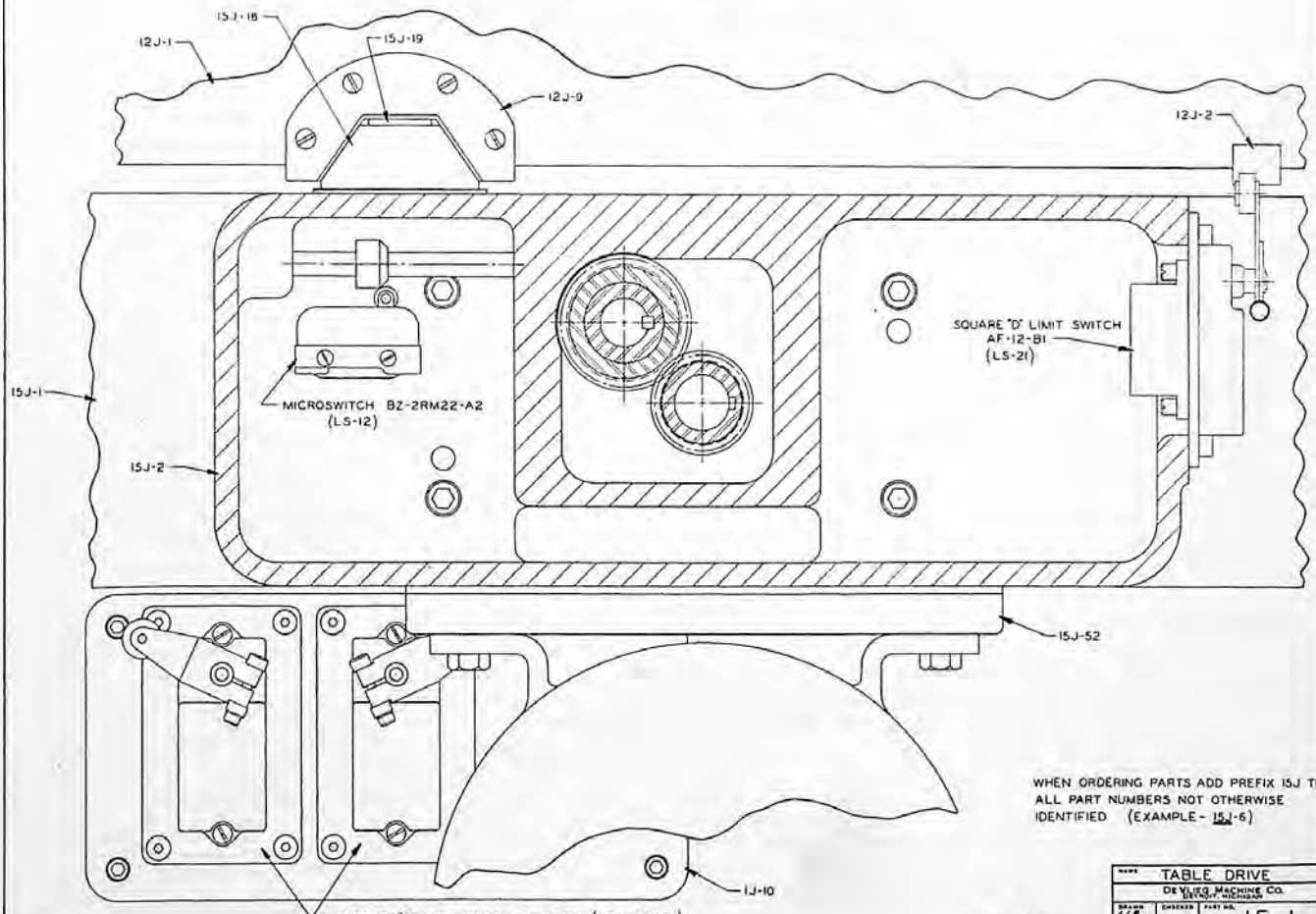
JM-11-4


BEVEL GEAR HOUSING
SEE SHEET #4
POSITIONING DIAL
SEE SHEET #5
15J-80
15J-31
ADJ. STOP & TABLE
NUT HOUSING
SEE SHEET #3
15J-32
15J-13
15J-8
SEE SADDLE LOCK & OILING
TABLE DRIVE
SEE SHEET #2
S-1507
12J-1 TABLE
12J-5
12J-5
15J-18
15J-91
15J-90
15J-1 SADDLE
HORIZ. LEAD SCREW ASS'Y
SEE SHEET #6
SADDLE UNIT - PLAN
DEVLIEG MACHINE CO.
DETROIT, MICHIGAN
15J
SHEET #1

JM-15-2

REVISED 5-29-57





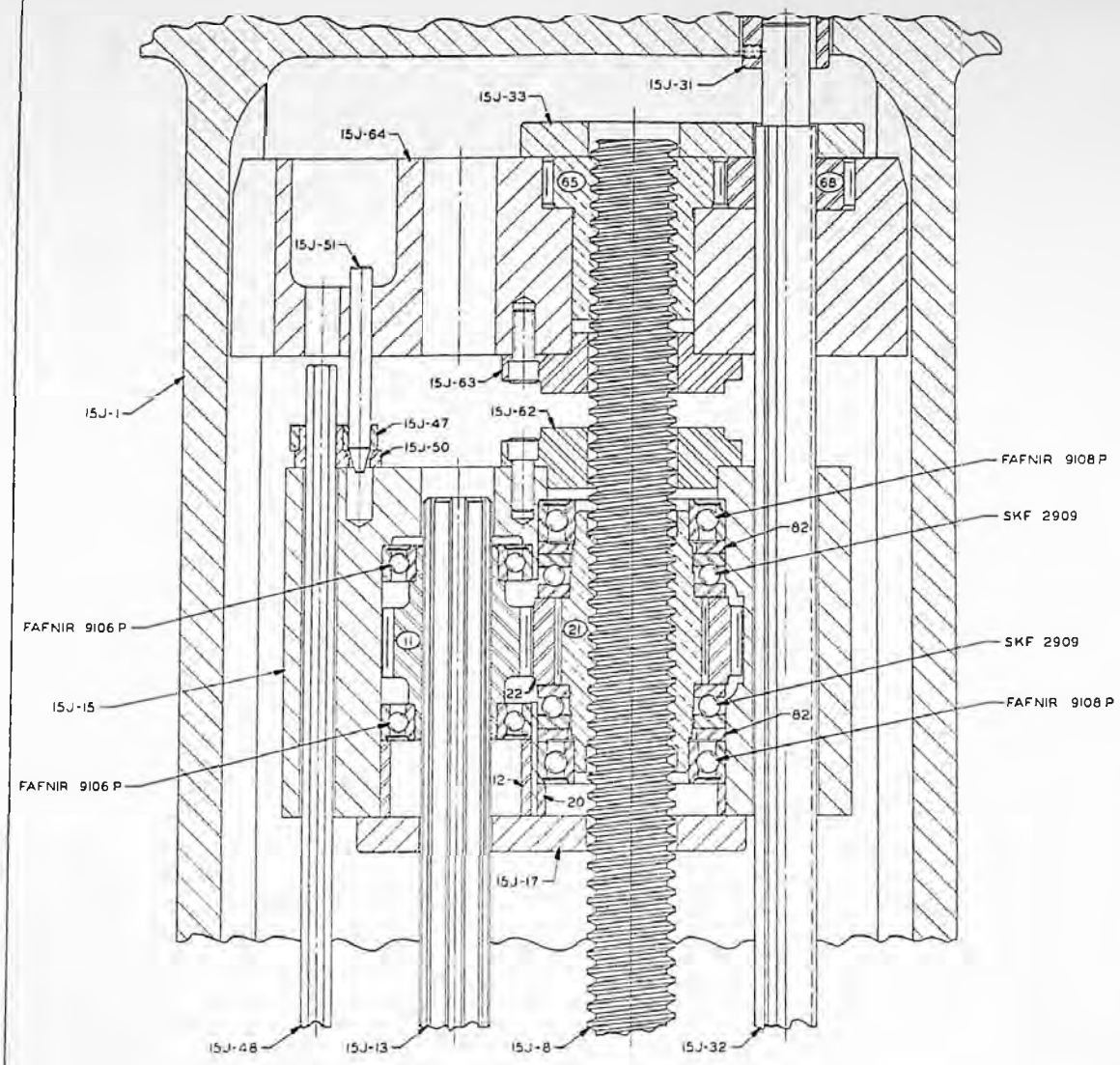
WHEN ORDERING PARTS ADD PREFIX 15J TO ALL PART NUMBERS NOT OTHERWISE IDENTIFIED (EXAMPLE - 15J-6)

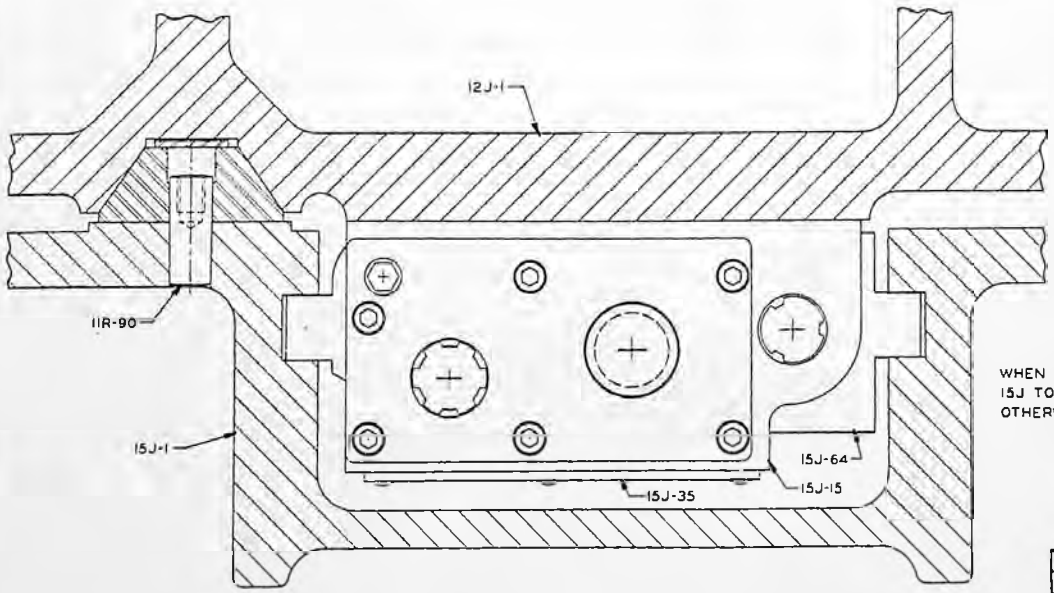
NAME	TABLE DRIVE
	DE VLIEG MACHINE CO. DETROIT, MICHIGAN
DRAWN	CHECKED
TRACED S.C.D.	DATE 4-25-57
PART NO.	15J

FIRST 5-242

SHEET #2

JM-15-3A

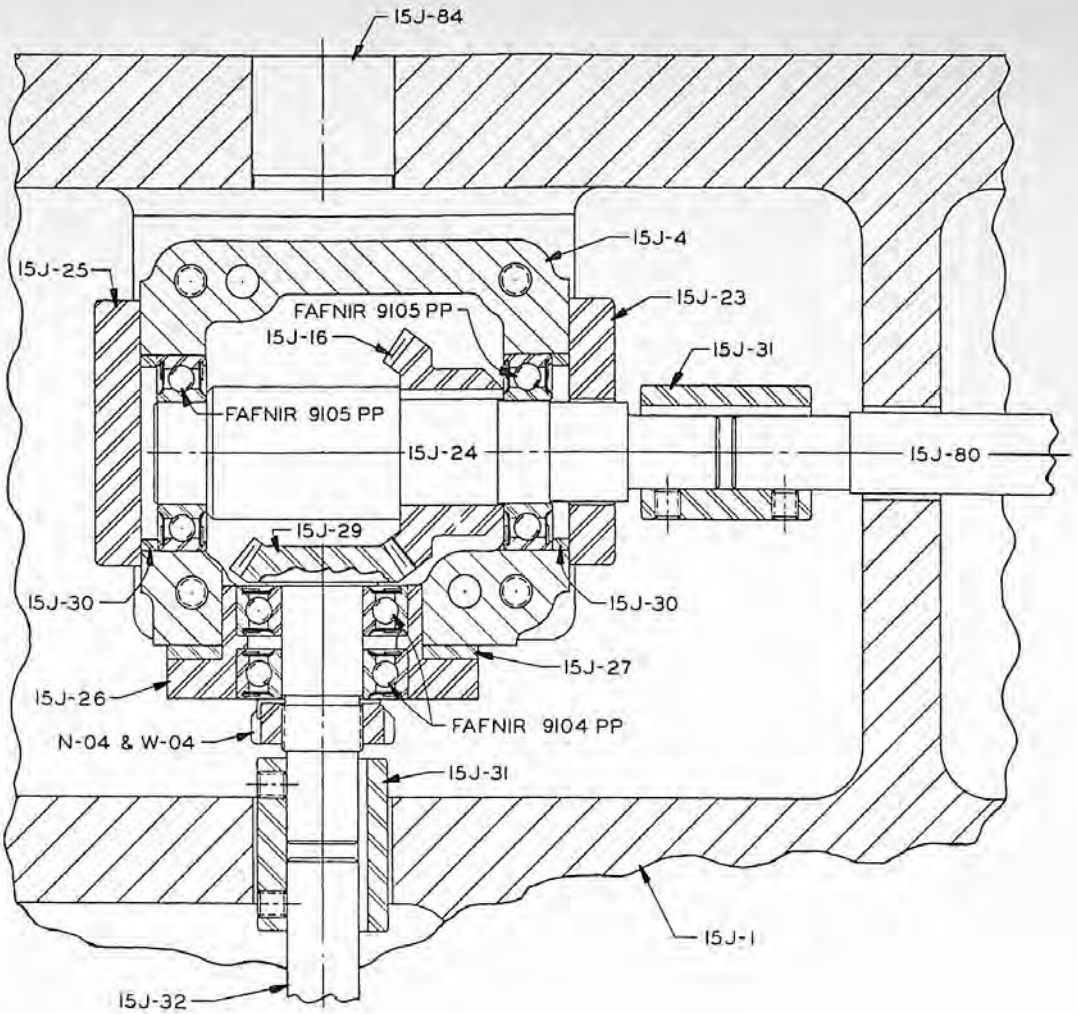


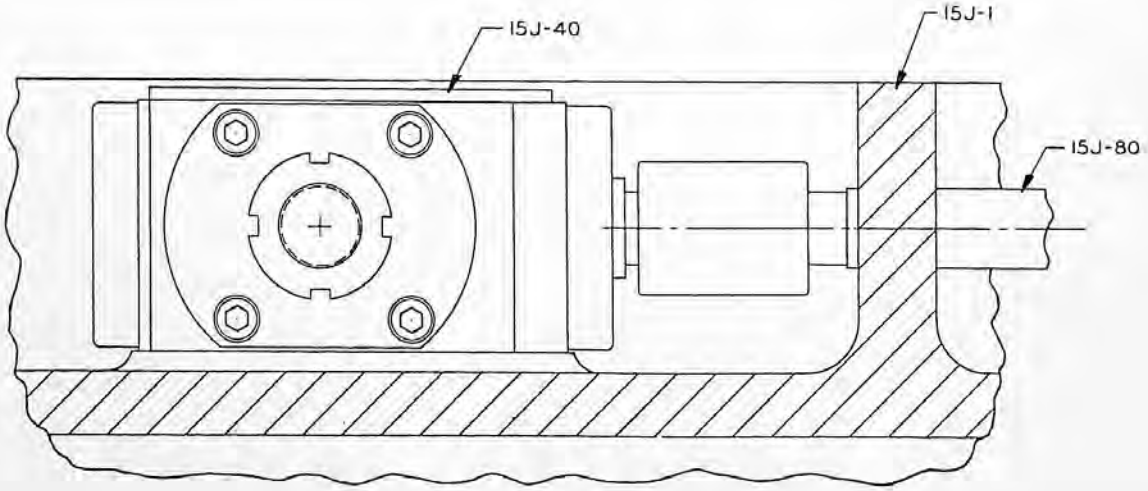


WHEN ORDERING PARTS ADD PREFIX 15J TO ALL PART NUMBERS NOT OTHERWISE IDENTIFIED
(EXAMPLE - 15J-82)

NAME	ADJ. STOP & TABLE NUT HSG
	DE VLIEG MACHINE CO. DETROIT, MICHIGAN
DRAWN / TRACED	CHECKED / DATE 1-6-56
	PART NO. 15J

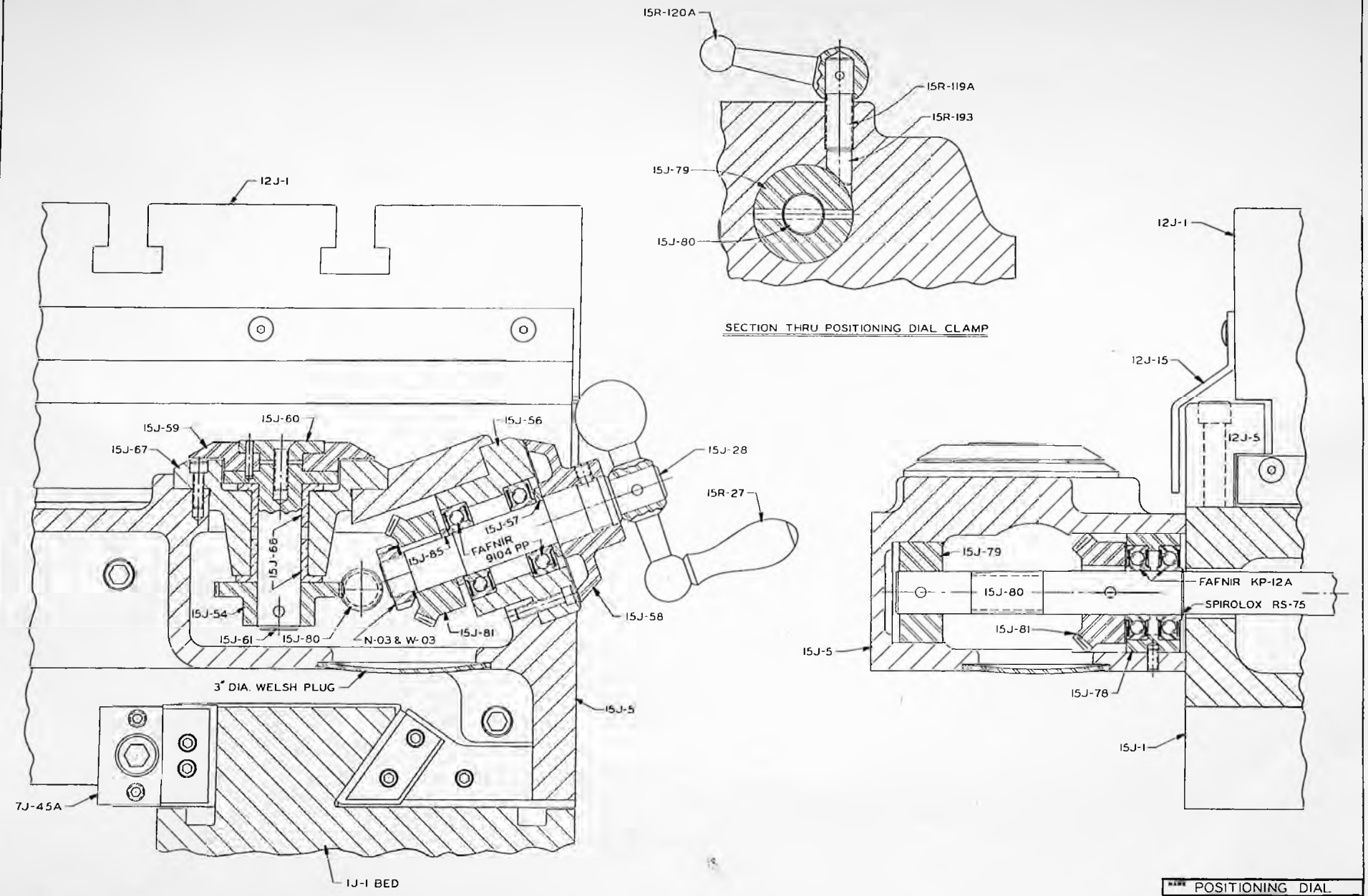
SHEET 3





NAME BEVEL GEAR HOUSING		
DE VLIEG MACHINE CO. DETROIT, MICHIGAN		
DRAWN GLB	CHECKED	PART NO. 15J
TRACED	DATE 1-9-56	

SHEET #4



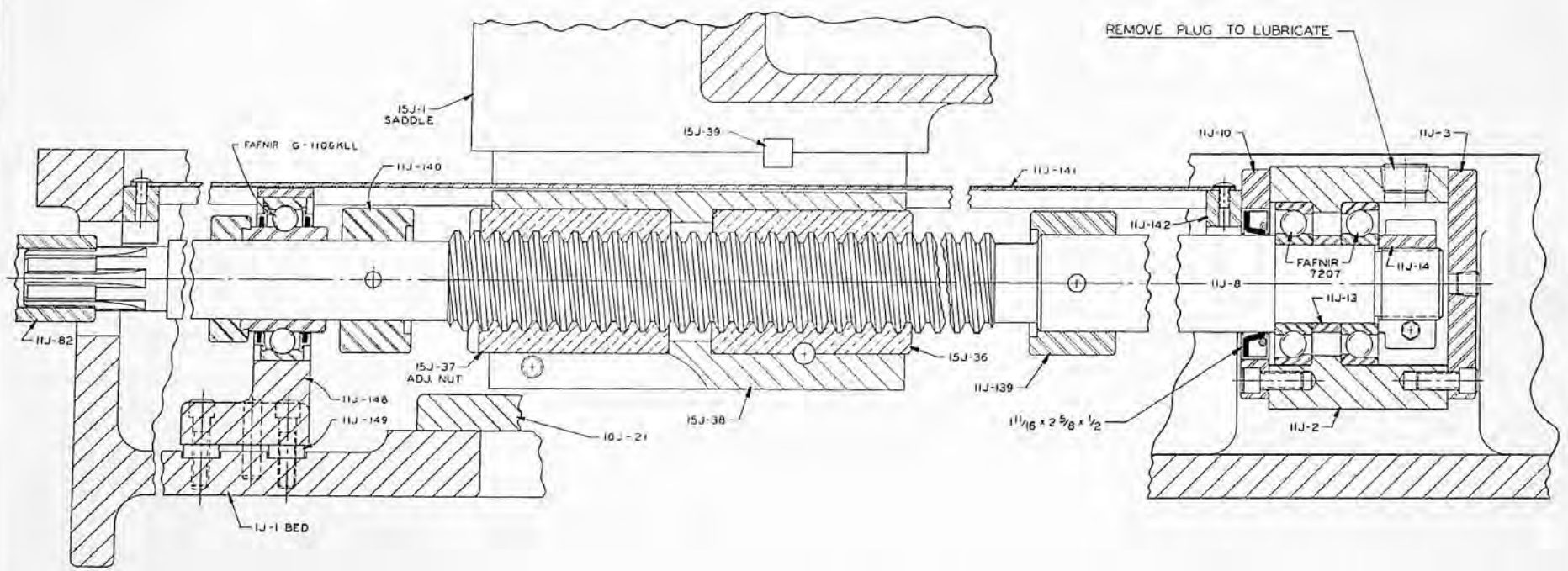
SECTION THRU POSITIONING DIAL CLAMP

NAME	POSITIONING DIAL	
	DeVLIEG MACHINE CO. DETROIT, MICHIGAN	
DRAWN GLK	CHECKED	PART NO. 15J
TRACED	DATE 1-12-56	

SHEET #5

JM-15-6

REVISED 5-28-57



NAME HORIZ. LEAD SCREW		
DE VLIEG MACHINE CO. DETROIT, MICHIGAN		
DRAWN AJB	CHECKED	PART NO. 15J
TRACED SED	DATE 4-22-57	

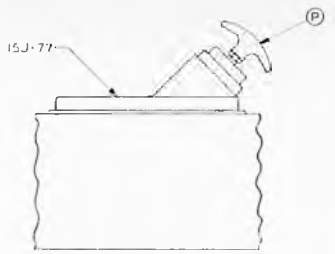
FIRST IN 5-218

SHEET #6

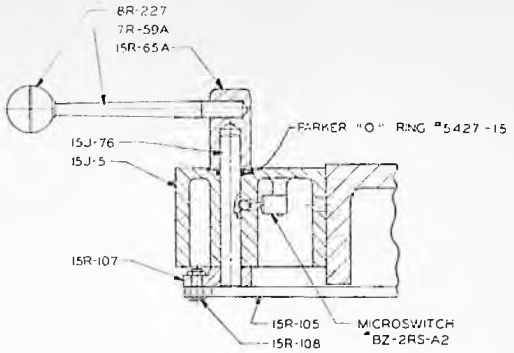
JM-15-7A

REVISED 5-31-57

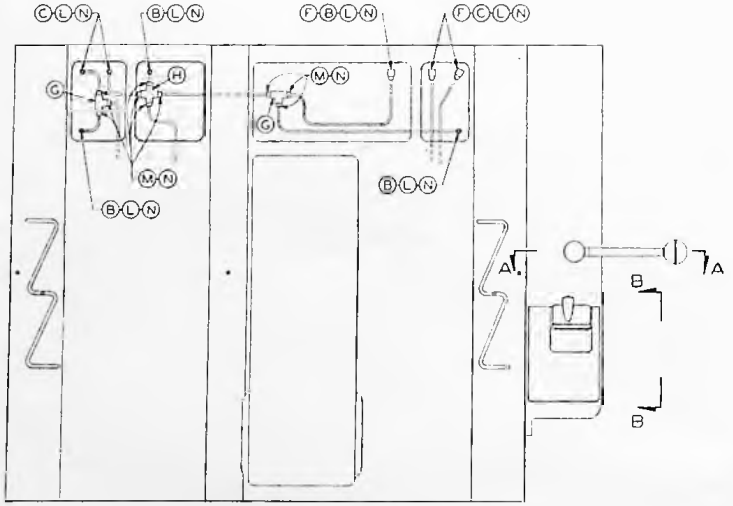
BIJUR LUBRICATION PARTS			
SYM.	REQ.	PART NAME &	NUMBER
(A)	2	METER UNIT FSA-0	B-1083
(B)	6	METER UNIT FSA-1	B-1084
(C)	6	METER UNIT FSA-2	B-1085
(D)	4	METER UNIT FSA-3	B-1086
(E)	1	STRAIGHT ADAPTER	B-2253
(F)	8	ELBOW 90°	A-2768
(G)	2	JUNCTION 3 WAY	B-3065
(H)	3	JUNCTION 4 WAY	B-4231
(J)	1	JUNCTION 6 WAY	B-3264
(K)	1	JUNCTION 7 WAY	B-3289
(L)	19	COMPRESSION NUT	B-1095
(M)	31	COMPRESSION BUSHING	B-3783
(N)	50	COMPRESSION SLEEVE	B-1061
(P)	1	LUBRICATOR PUMP "KIB" (1½")	C-1957

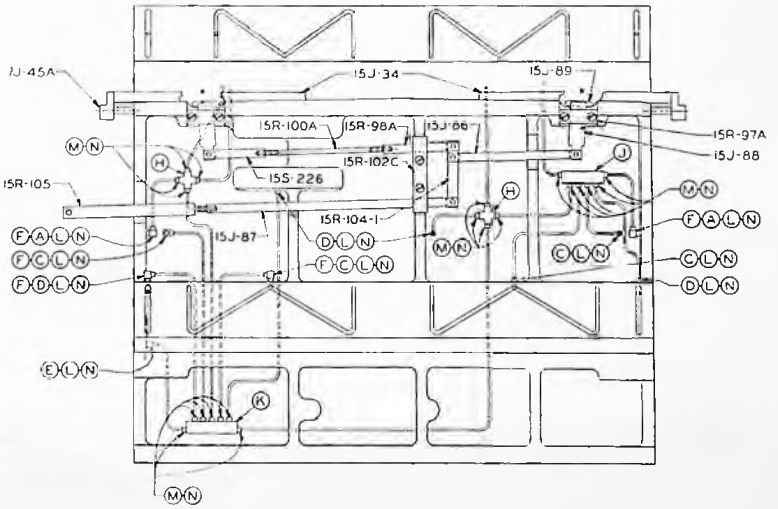


ENLARGED VIEW B-B



ENLARGED SECTION A-A



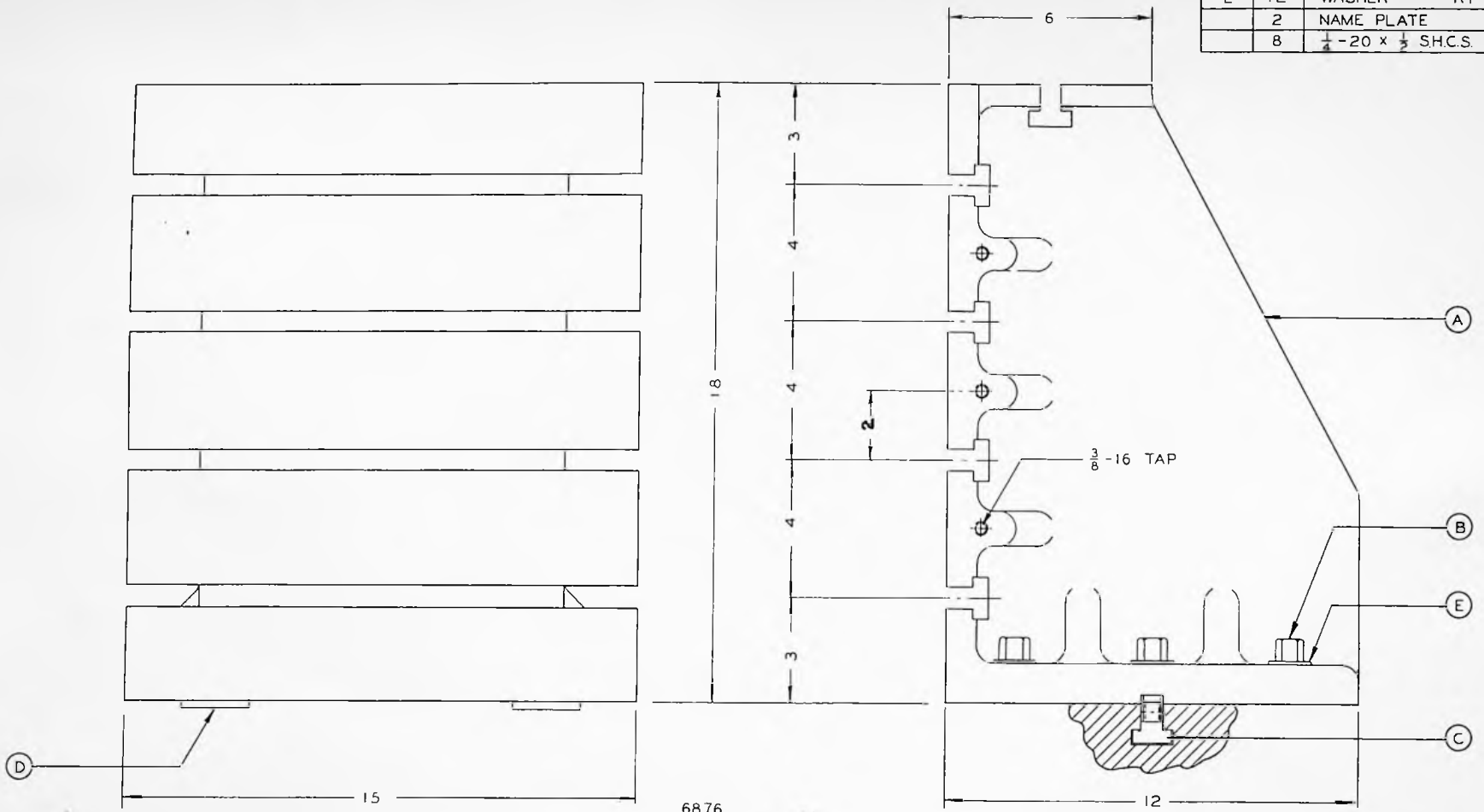


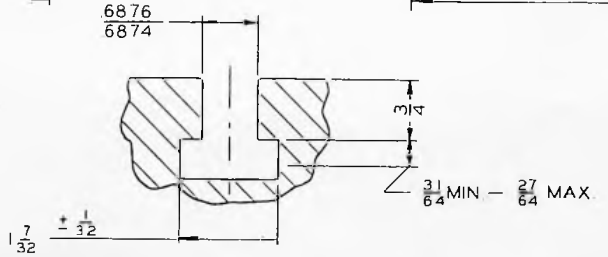
FIRST 7-243

JM-15-1A

SADDLE LOCK & OILING
The Weed Machine Co.
8-8-57
15J-1

SYM	REQ.	PART NAME & NO.
A	1	ANGLE BLOCK RT-2303-1
B	12	CAP SCREW RT-2303-2
C	12	TEE NUT RT-2303-3
D	4	KEY RT-2303-5
E	12	WASHER RT-301A-5
	2	NAME PLATE
	8	$\frac{1}{4}$-20 x $\frac{1}{2}$ S.H.C.S.

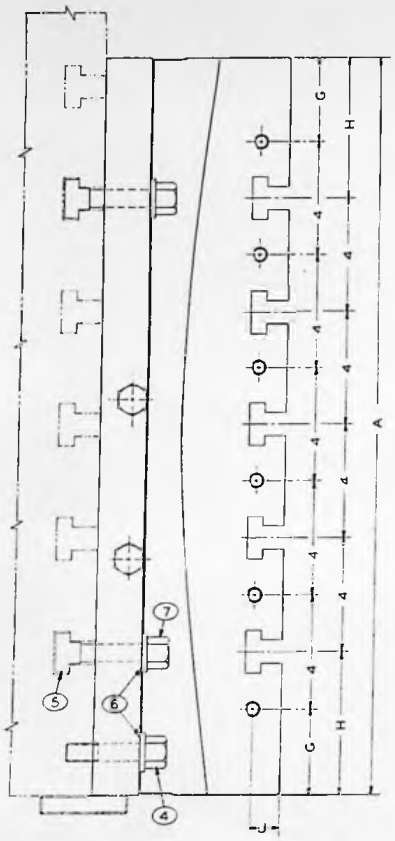


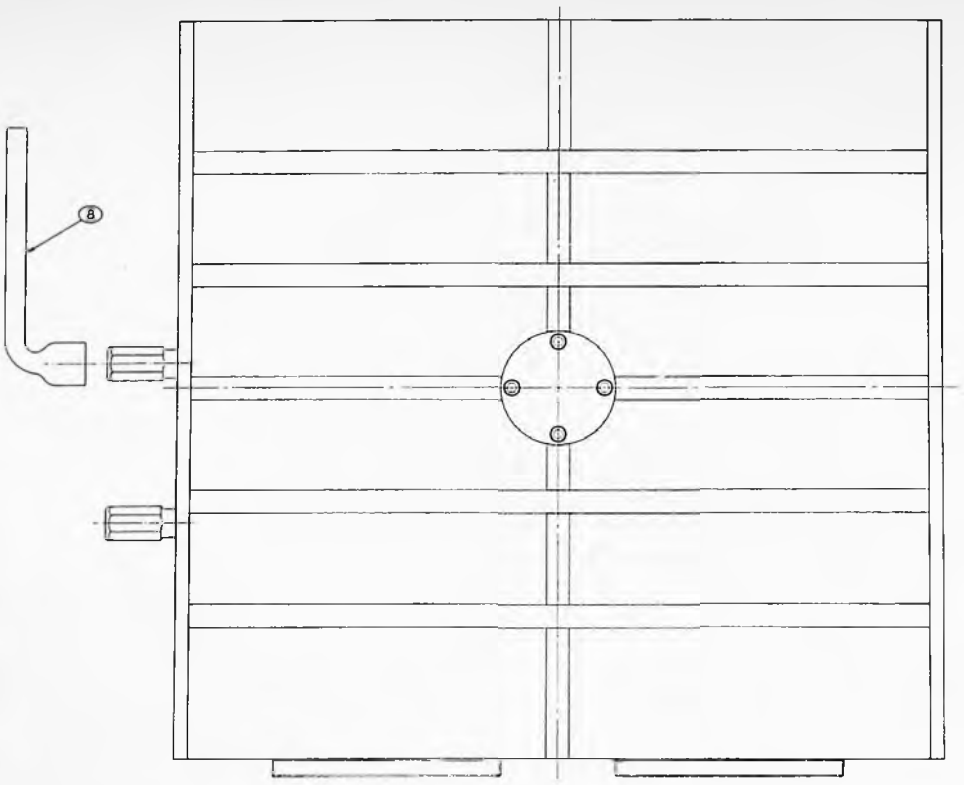


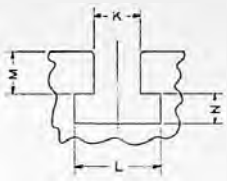
T-SLOT

NAME 2B ANGLE BLOCK SET
DE VLIEG MACHINE CO. DETROIT, MICHIGAN
DRAWN S.E.D. CHECKED PART NO. RT-2303
TRACED DATE 11-5-56

JMT-23-1

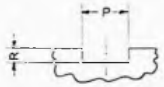






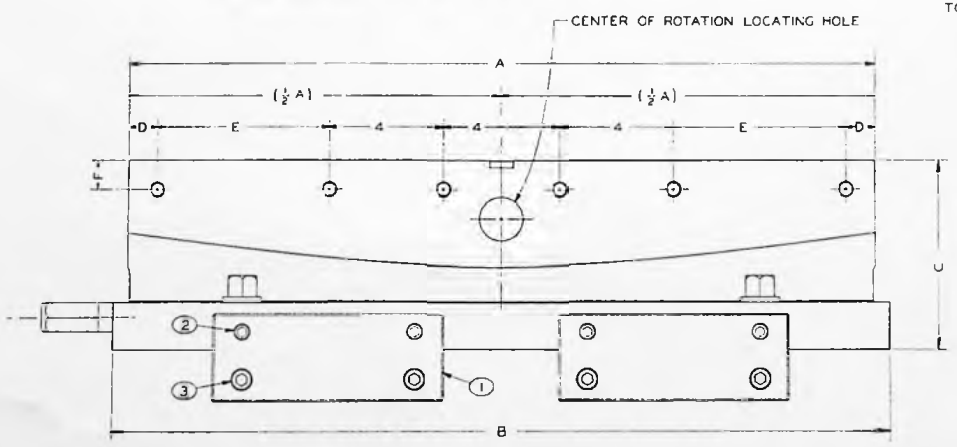
T-SLOT

SIZE	K	L	M	N
13/16	.8124/.8126	1 15/32	3/4	17/32
11/16	.6874/.6876	1 7/32	5/8	27/64



CROSS-SLOT

SIZE	P	R
13/16	.8124/.8126	1/4
11/16	.6874/.6876	1/4



TOLERANCES -

CENTER T-SLOT & CROSS-SLOT WITHIN ±.001 OF CENTER

CENTER TO CENTER OF T-SLOTS ±.005

NOTE -

T-SLOT & CROSS SLOT SIZE IS ONLY DIFFERENCE BETWEEN RT-2603A TABLE & RT-2604 TABLE

TABLE NO.	A	B	C	D	E	F	G	H	J
RT-2601	20	21	5 1/2	4	—	5/8	4	2	5/8
RT-2602	16	19 1/2	5 1/2	2	—	5/8	2	4	5/8
RT-2603A*	26	27	6 1/2	1	6	1	3	5	1
RT-2604 *	26	27	6 1/2	1	6	1	3	5	1

TABLE NO.	T-SLOT		CROSS-SLOT	
	SIZE	NO.	SIZE	NO.
RT-2601	11/16	5	11/16	1
RT-2602	11/16	3	11/16	1
RT-2603A*	13/16	5	13/16	1
RT-2604 *	11/16	5	11/16	1

DESCRIPTION: TYPE "M" INDEX TABLES

DRAWN: GLB | CHECK: | UNIT NO: RT-2600

DATE: 4-16-57 | DATE: | SHEET NO:

DEVLIEG MACHINE CO.
DETROIT, MICH.

RMT-26-18

RLT - 26 - IA

LOCATING AND HOLD DOWN HARDWARE
TYPE "M" INDEX TABLES

NOTE - VARIABLE USAGE OF THESE PARTS IS DEPENDENT UPON MODEL OF JIGMIL THAT INDEX TABLE IS TO BE USED ON

RT-2601 INDEX TABLE (20 x 20)

SYM.	PART NO.	DESCRIPTION	NO. REQ'D		
			2B	3B	4B
1	RT-2601-27A	LOCATING PLATE	2		
1	RT-2601-28	LOCATING PLATE		2	2
2		3/8-16 x 3/4" S.H.C.S.	8	4	4
3		1/2-13 x 1" S.H.C.S.		4	4
4	RT-304-1	CAP SCREW		2	
5	RT-2303-3	T - NUT	4		
5	RT-303-2	T - NUT		2	4
6	RT-301A-5	WASHER	4		
6	RT-303-3	WASHER		4	4
7	RT-2601-26	CAP SCREW	4		
7	RT-303-1	CAP SCREW		2	4
8	270 D	WILLIAMS WRENCH	1	1	1

RT-2602 INDEX TABLE (16 x 16)

SYM.	PART NO.	DESCRIPTION	NO. REQ'D		
			2B	3B	4B
1	RT-2601-27A	LOCATING PLATE	2		
1	RT-2601-28	LOCATING PLATE		2	2
2		3/8-16 x 3/4" S.H.C.S.	8	4	4
3		1/2-13 x 1" S.H.C.S.		4	4
4	RT-2303-2	CAP SCREW	2		
4	RT-304-1	CAP SCREW		2	2
5	RT-2303-3	T - NUT	2		
5	RT-303-2	T - NUT		2	2
6	RT-301A-5	WASHER	4		
6	RT-303-3	WASHER		4	4
7	RT-2601-26	CAP SCREW	2		
7	RT-303-1	CAP SCREW		2	2
8	270 D	WILLIAMS WRENCH	1	1	1

RT-2603A INDEX TABLE (26 x 26)

SYM.	PART NO.	DESCRIPTION	NO. REQ'D		
			2B	3B	4B
1	RT-2601-27A	LOCATING PLATE	2		
1	RT-2601-28	LOCATING PLATE		2	2
2		3/8-16 x 3/4" S.H.C.S.	8	4	4
3		1/2-13 x 1" S.H.C.S.		4	4
4	RT-303-1	CAP SCREW		2	
5	RT-2303-3	T - NUT	4		
5	RT-303-2	T - NUT		2	4
6	RT-301A-5	WASHER	4		
6	RT-303-3	WASHER		4	4
7	RT-2603-32	CAP SCREW	4		
7	RT-2603-33	CAP SCREW		2	4
8	270 D	WILLIAMS WRENCH	1	1	1

INSTALLATION OF INDEX PIN, INDEX PIN GUIDE BUSHINGS & INDEX LOCATING BUSHINGS IN INDEX TABLES

For Types "M" and "AM" Index Tables

BASE

1. Determine the hole size for index pin guide bushing to within .000025. Please note that this is a stepped bushing.

2. Grind O.D. of bushing to the size determined in Step 1 to provide a metal-to-metal fit.

3. Assemble bushing to the index table. If more than hand pressure is used in this assembly, the fit between the pin and bushing will be destroyed. The pin and bushing have been accurately lapped at the factory. Use care in tightening screws; they must not be too tight.

4. Assemble index pin and pinion, oil lightly with Permalube 10W-30 or equivalent.

   a) After a 20-minute waiting period, determine the pin fit by actuating the pinion.

   b) If a correction is necessary to loosen the pin, extreme care must be used. Experience has shown that .000010 to .000020 correction is sufficient to free a tight pin. This correction should be made by lapping the O.D. of the guide bushing so as not to affect the fit between the pin and the index bushings.

TOP SECTION

1. Determine the hole size for index locating bushings to within .000025.

2. Grind bushing O.D.

3. Assemble bushings to the index table top.

For Type "E" Index Tables

1. Same as Steps 1 thru 4 above under BASE.

Assemble index locating bushings to JIGMIL table.

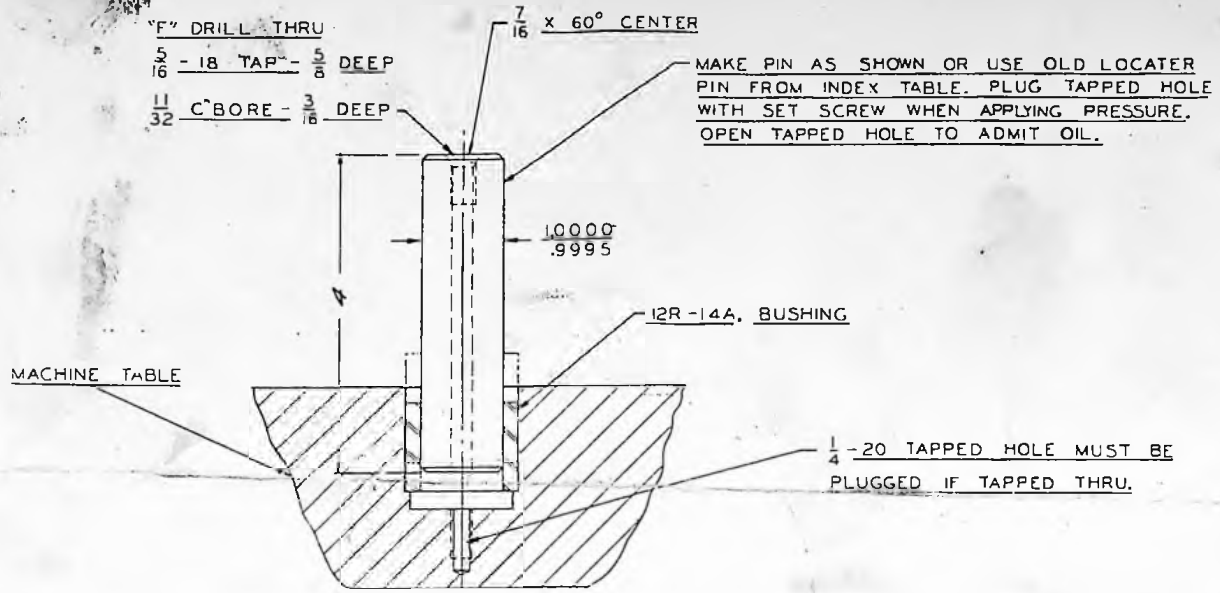
1. Determine the hole size for index bushings to within .000025.

2. Grind bushing for JIGMIL table .0002 over size determined in Step 1.

3. Deep freeze bushing for 15 to 20 minutes at -100F° and install in table. If it is necessary to loosen the fit between index pin and index bushing, move the bushing up ¼". (Refer to top sketch on back.) Then gently tap the bushing back down to within 1/64 of its seat. If it is still necessary to loosen the fit between index pin and bushing, remove and replace with .000050 smaller outside diameter.

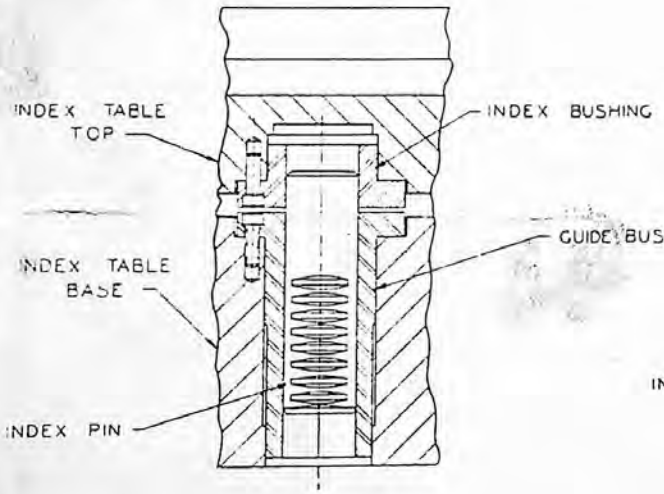
HD:hkw
11-16-71

Form: RPD 104

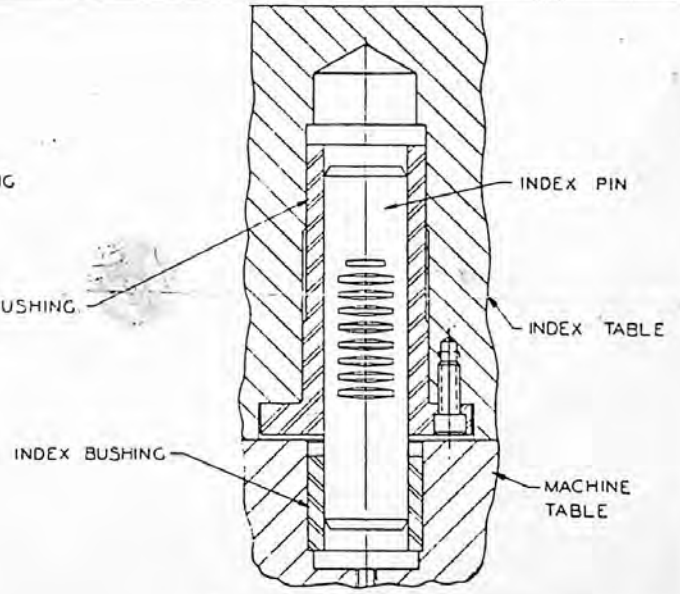


PARTIALLY FILL HOLE WITH OIL, INSERT PIN, STRIKE PIN WITH LEATHER FACED MALLET. AS BUSHING MOVES UP ADD MORE OIL TO PREVENT PIN FROM BOTTOMING IN HOLE.

NAME	BUSHING REMOVAL FOR TYPE "E" INDEX TABLES
	DE VLIEG MACHINE CO. ROYAL OAK, MICH.
DRAWN S.E.D.	DATE 8-21-61
MODEL	TYPE "E" TABLES
UNIT	DWG. NO. 61P-113

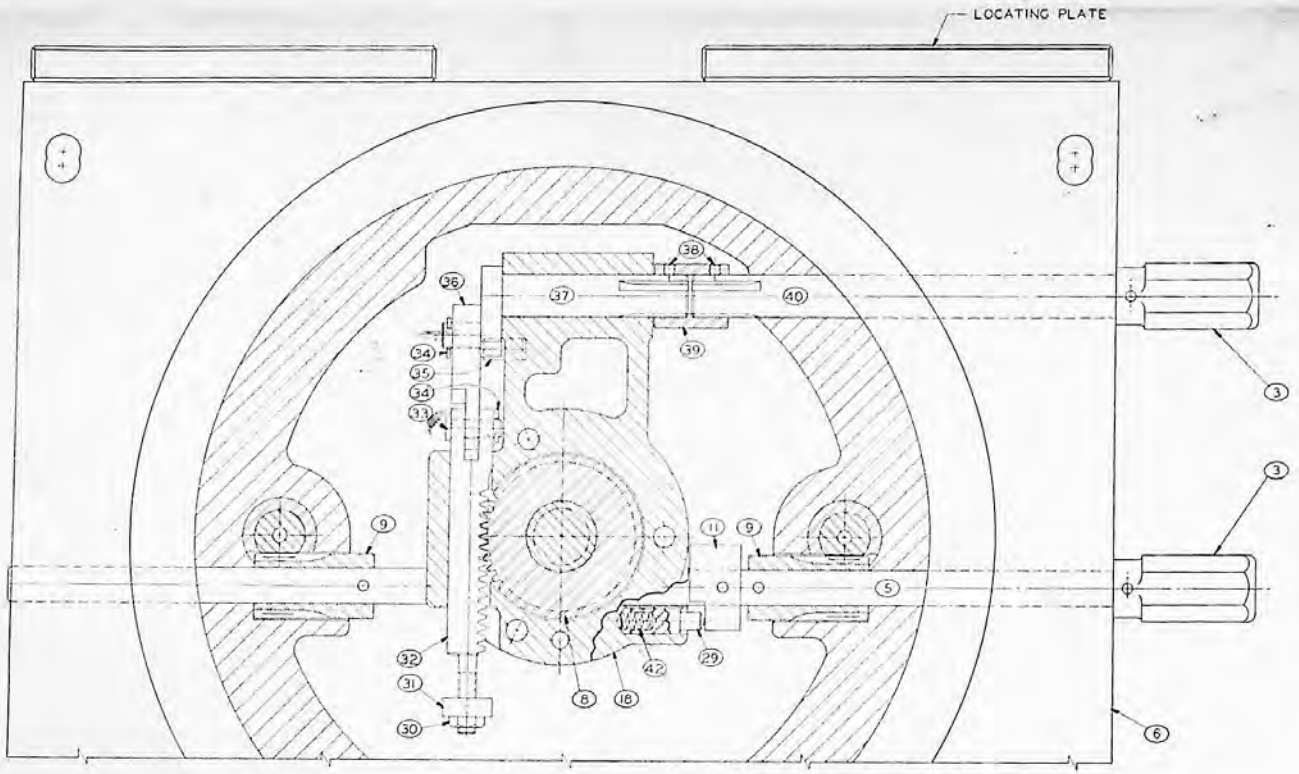


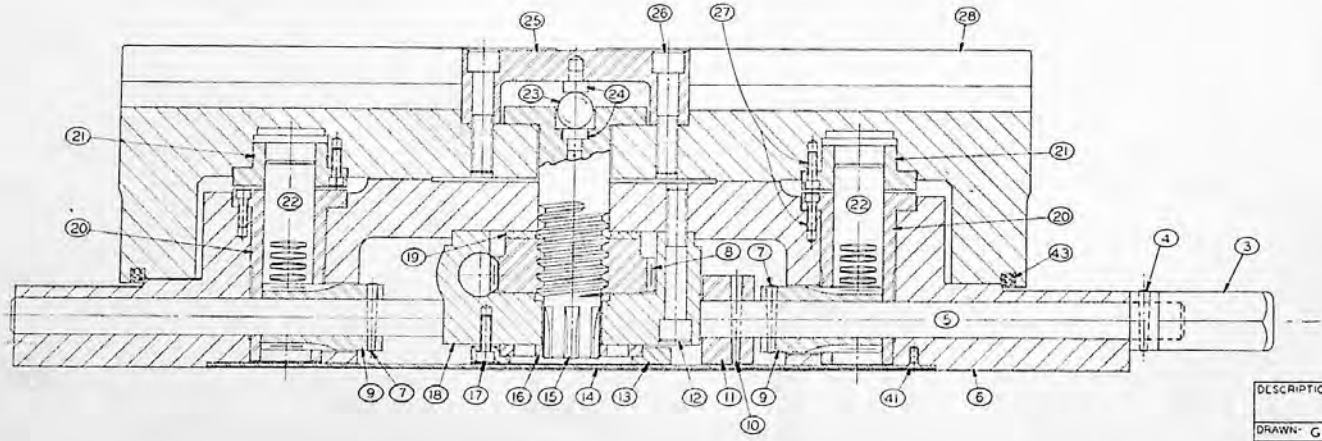
TYPE "M" & "AM"



TYPE "E"

NAME	INDEX BUSHING ARRANGEMENTS
	DE VLIEG MACHINE CO. ROYAL OAK, MICH.
DRAWN S.E.D.	DATE 8-18-61
MODEL	TYPE "M", "AM" & "E"
UNIT	DWG. NO. 61P-111





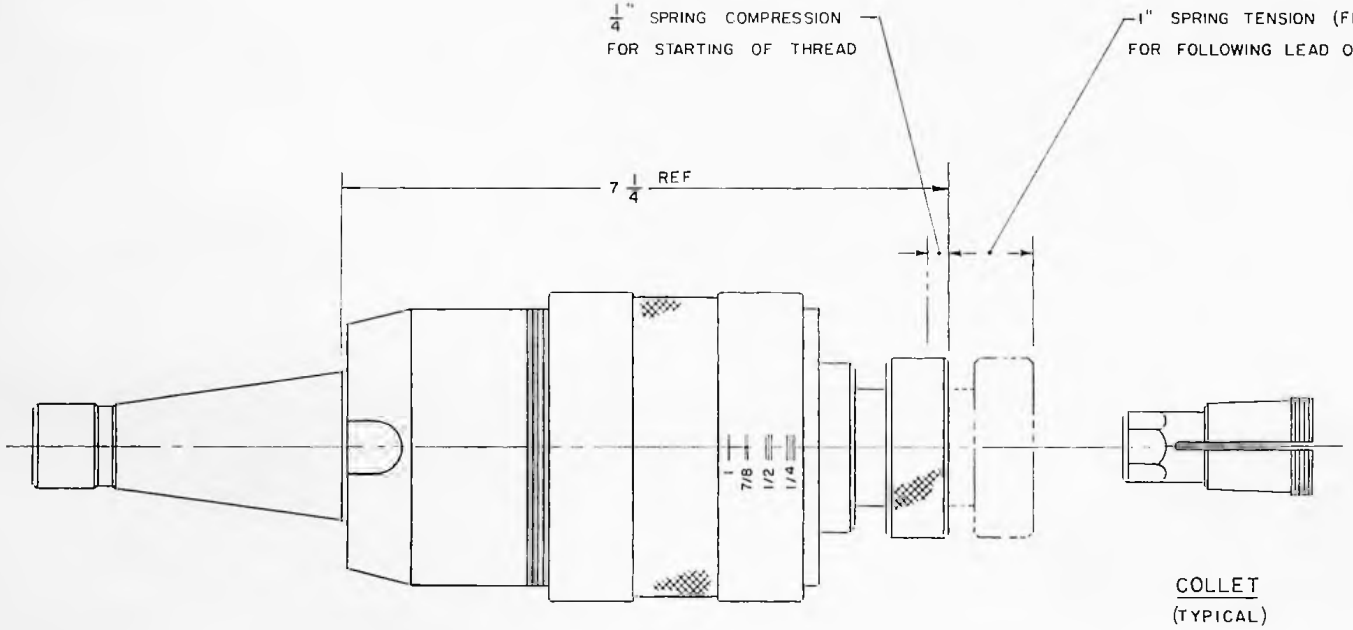
DESCRIPTION: TYPE "M" INDEX TABLES		
DRAWN: GLB	CHECK:	UNIT NO: RT-2600
DATE: 4-22-57	DATE:	SHEET NO: 2
DEVLIEG MACHINE CO. DETROIT MICH.		

RMT-26-2A

RLT - 26-2A	INDEX TABLES - TYPE "M"						
SYM.	RT-2601 (20x20)		RT-2602 (16x16)		RT-2603A (26x26)		DESCRIPTION
	PART NO.	REQ'D	PART NO.	REQ'D	PART NO.	REQ'D	
1							
2							
3	RT-2603-34A	2	RT-2603-34A	2	RT-2603-34A	2	KNOB
4		2		2		2	#3 x 1" TAPER PIN
5	RT-2601-22A	1	RT-2602-22	1	RT-2603-22	1	PINION ROD
6	RT-2601-1	1	RT-2602-1	1	RT-2603-1A	1	BASE
7		2		2		2	#2 x 1-1/8" TAPER PIN
8	RT-2601-9	1	RT-2601-9	1	RT-2601-9	1	NUT
9	RT-2601-21	2	RT-2601-21	2	RT-2601-21	2	PINION
10		1		1		1	#2 x 1-1/2" TAPER PIN
11	RT-2601-23B	1	RT-2601-23B	1	RT-2603-23A	1	PINION LIMIT
12		3		3		3	3/8-16 x 2-1/4" S.H.C.S.
13	RT-2601-7	1	RT-2601-7	1	RT-2601-7	1	PLATE
14	RT-2601-25	1	RT-2602-25	1	RT-2603-25	1	COVER
15	RT-2601-5	1	RT-2601-5	1	RT-2603-5	1	ELEVATING SCREW
16	RT-2601-6	1	RT-2601-6	1	RT-2601-6	1	PLATE
17		3		3		3	#10-24 x 5/8" S.H.C.S.
18	RT-2601-3	1	RT-2602-3	1	RT-2601-3	1	BRACKET
19	RT-2601-8	1	RT-2601-8	1	RT-2601-8	1	WASHER
20	RT-2601-19	2	RT-2601-19	2	RT-2603-19	2	BUSHING
21	RT-2601-18	4	RT-2601-18	4	RT-2601-18	4	LOCATING BUSHING
22	RT-2601-20	2	RT-2601-20	2	RT-2603-20	2	LOCATING PIN
23		1		1		1	5/8" DIA. STEEL BALL
24	RT-622	2	RT-622	2	RT-622	2	BUTTON
25	RT-2601-4	1	RT-2601-4	1	RT-2601-4	1	RETAINER
26		4		4		4	3/8-16 x 1-3/4" S.H.C.S.
27		18		18		18	#8-32 x 1/2" S.H.C.S.
28	RT-2601-2	1	RT-2602-2	1	RT-2603-2A	1	TABLE
29	RT-2601-32	1	RT-2601-32	1	RT-2601-32	1	DETENT PLUNGER
30		1		1		1	5/16-18 JAM NUT
31	RT-2601-29	1	RT-2601-29	1	RT-2601-29	1	NUT
32	RT-2601-10B	1	RT-2601-10B	1	RT-2601-10B	1	RACK
33	RT-2601-12	1	RT-2601-12	1	RT-2601-12	1	CLEVIS PIN
34		2		2		2	1/16 x 3/4" COTTER PIN
35		1		1		1	3/8 x 1" DOWEL PIN
36	RT-2601-11A	1	RT-2602-11A	1	RT-2601-11A	1	DRAW BAR
37	RT-2601-13A	1	RT-2601-13A	1	RT-2601-13A	1	ECCENTRIC
38		2		2		2	#10-24 x 1/4" S.H.S.S.
39	RT-2601-14	1	RT-2601-14	1	RT-2601-14	1	COUPLING
40	RT-2601-15A	1	RT-2602-15	1	RT-2603-15	1	SHAFT
41		9		7		10	#8-32 x 3/8" FLAT HD. MACH. SCREW
42	8R-224	1	8R-224	1	8R-224	1	DETENT SPRING
43	RT-2601-33	1	RT-2602-33	1	RT-2603-33	1	SEALING RING
	RT-321	1	RT-321	1	RT-321	1	NAMEPLATE

FRACTIONAL DIMENSIONS ALLOW ±.010"

ASSEMBLY NO.	TAPPING ATTACHMENT	COLLETS									CHEST	NAME PLATE
		1/4	5/16	3/8	1/2	9/16	5/8	3/4	7/8	1"		
RT-176A	RT-176A-1 40 NMTB TAPER	SJ-23081	SJ-23082	SJ-23083	SJ-23085	SJ-23086	SJ-11525	SJ-11528	SJ-11532	SJ-11534	RT-176A-9	RT-176-10
RT-178A	RT-178A-1 50 NMTB TAPER	SJ-23081	SJ-23082	SJ-23083	SJ-23085	SJ-23086	SJ-11525	SJ-11528	SJ-11532	SJ-11534	RT-178A-9	RT-176-10



TAPPING ATTACHMENT

TO SET TORQUE; RETRACT LOCKING SLEEVE AND TURN SPINDLE UNTIL ITS INDEX MARK IS IN LINE WITH SIZE, AND PROPER NO. OF WITNESS RINGS APPEAR BEHIND SLEEVE AFTER RE-ENGAGEMENT.

1/4" THRU 1" TAP CAPACITY

TOOL NUMBERS	SYM	CHANGE	BY	DATE		FIRST	LAST
					4B		
					3B		
					2B		

SCULLY JONES SPECIAL "SAFE-TORQUE" DRIVER

HEAT TREATMENT

NAME: TAP DRIVER SET

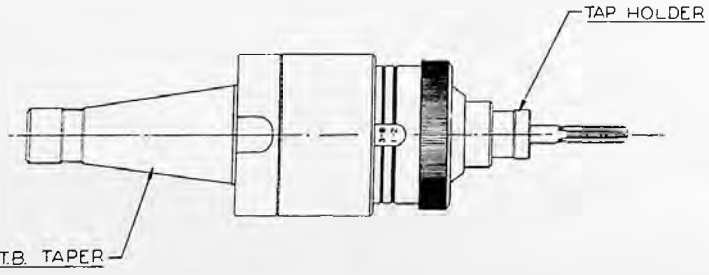
SHEET OF

DEVLIEG MACHINE COMPANY DETROIT, MICHIGAN

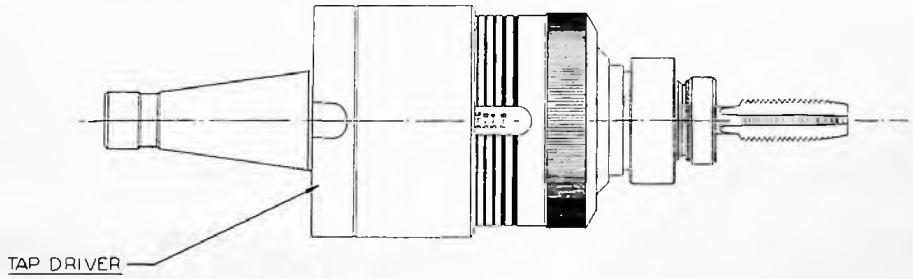
MATERIAL	NO. REQ'D	DRAWN	CHECKED	PART NO.
PURCHASE	1 SET	SED		RT-176A RT-178A
	SCALE	DATE 5-21-57	DATE	

RMT-1-1

N.M.T.B. TAPER	SET NO.	TAP DRIVER	TAP HOLDER										WRENCH	CHEST	NAME PLATE
			#10	1/4	5/16	3/8	1/2	9/16	5/8	3/4	7/8	1"			
#40	RT-176	RT-176-1	RT-176-2	RT-176-3	RT-176-4	RT-176-5	RT-176-6						RT-176-8	RT-176-9	RT-176-10
		RT-177-1						RT-177-2	RT-177-3	RT-177-4	RT-177-5	RT-177-6	RT-177-8		
#50	RT-178	RT-178-1	RT-176-2	RT-176-3	RT-176-4	RT-176-5	RT-176-6						RT-176-8	RT-178-9	RT-178-10
		RT-179-1						RT-177-2	RT-177-3	RT-177-4	RT-177-5	RT-177-6	RT-177-8		



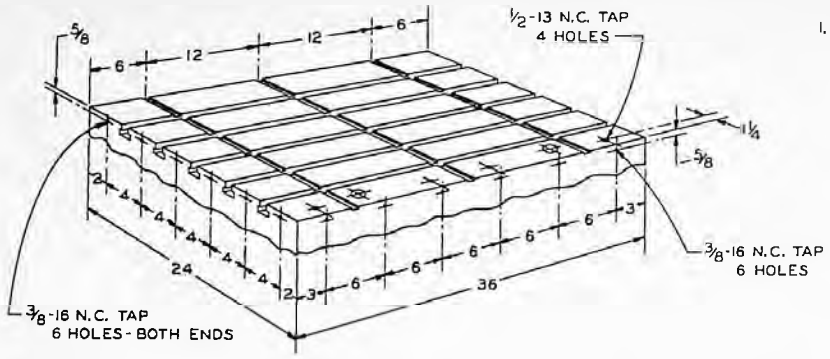
RANGE - #10 THRU 1/2"



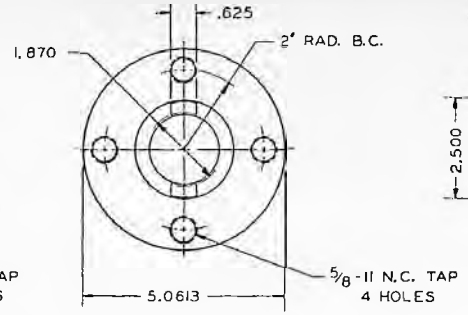
RANGE - 9/16" THRU 1"

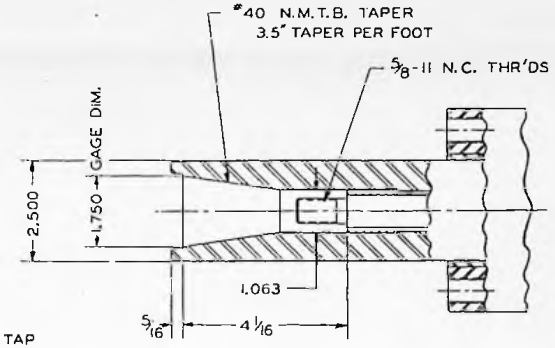
NAME	TAP DRIVER SET
	DE VLIEG MACHINE CO.
DRAWN	PART NO. RT-176 RT-178
DATE 5-8-58	

FORM NO. RMT-1-2

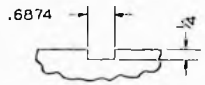


MACHINE TABLE



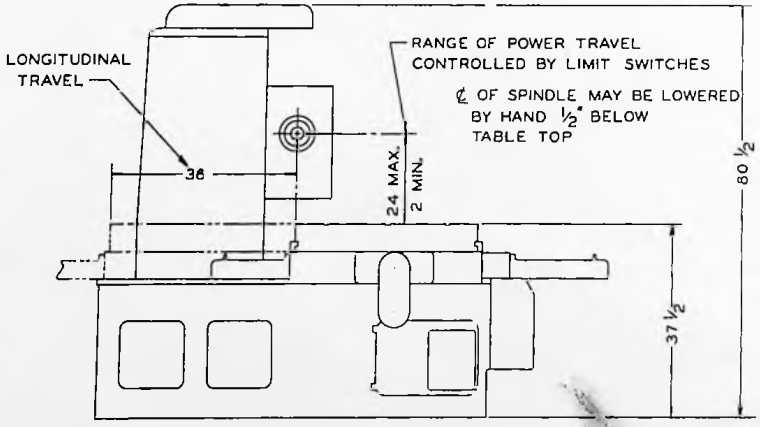


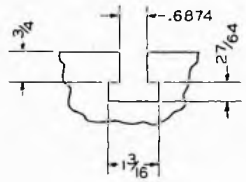
ENLARGED VIEW OF SPINDLE BAR



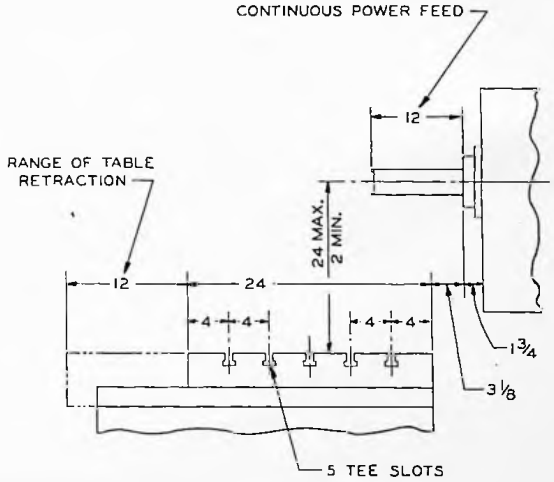
ENLARGED VIEW
OF CROSS SLOTS

MAXIMUM CLEARANCE RADIUS FROM CENTER OF
STANDARD RT-2600 INDEX TABLE - 29" R.
(MACHINE TABLE AT EXTREME LEFT & EXTREME OUT)





ENLARGED VIEW
OF TEE SLOTS



SPEEDS, FEEDS & WEIGHTS

SPINDLE SPEEDS - 16

STANDARD				HIGH SPEED			
42	55	70	90	50	65	85	110
120	155	200	250	145	185	240	300
335	440	565	720	410	530	680	865
960	1235	1580	2000	1150	1480	1900	2400

REV. PER MIN.

BAR FEEDS - 6

.0016	.0026	.0042	.0069	.0113	.0180

IN. PER REV.

MILLING FEEDS - 16

0.4	0.6	0.8	1.0	1.4	1.8	2.4	3.2
4.3	5.8	7.8	10	13	18	24	32

IN. PER MIN.

RAPID TRAVERSE 50 & 150 IN. PER MIN.

MAXIMUM LOAD CAPICITY - 2500#
BASED ON EVENLY DISTRIBUTED LOADING
OF FIXTURE & WORK PIECE

NET WEIGHT OF MACHINE - 13,000#

NAME GENERAL SPECIFICATIONS
DEVLIEG MACHINE CO.
DETROIT, MICHIGAN
DRAWN GLB
CHECKED
TRACED
DATE 3-7-56
PART NO. 2B-36

JM-103A