DEPARTMENT OF THE ARMY TECHNICAL MANUAL

TECHNICAL MANUAL

OPERATOR, ORGANIZATIONAL, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL

PRINTING PRESS, OFFSET

WEB-FED, MOTOR DRIVEN,

208V, 60 HERTZ

HESS AND BARKER MODEL 3CX

FSN 3610-617-7566

This copy is a reprint which includes current pages from Change 1.

HEADQUARTERS, DEPARTMENT OF THE ARMY

DECEMBER 1974

WARNING

Exercise great care when handling or moving the press and associated equipment. They are extremely heavy units. Use all safety precautions and provide sufficient qualified personnel when performing installation work. Carelessness can result in serious injury or death.
Make sure that all safety guards are in place before operation to insure safety of operating personnel.
Do not attempt to lubricate the press when it is running.
To prevent damage to the press, always disengage the delivery throw off clutch before reversing the offset unit.
Read and follow all instructions, warning and safety notices on containers and packages which contain chemicals, paints, ink lubricants, etc.
When using inflammable solvent, provide adequate ventilation. Place ink and solvent soaked rags in sealed safety cans. Empty cans daily to prevent the probability of the occurrence of spontaneous combustion.
Cleaning solvent PD-680, is a potentially DANGEROUS CHEMICAL.
Do not use near open flame.

CHANGE NO. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *10 February 1977*

Operator, Organizational, Direct Support and General Support Maintenance Manual

**PRINTING PRESS, OFFSET
WEB-FED, MOTOR DRIVEN
208 V, 60 HERTZ
HESS AND BARKER MODEL 3CX
NSN 3610-00-617-7566**

TM 10-3610-215-14, 31 December 1974, is changed as follows:

Title is changed as shown above.

1. Remove old pages and insert new pages as indicated below. New or changed material is indicated by a vertical bar in the margin of the page.

Remove pages	*Insert pages*
i and ii	i and ii
1-1 and 1-2	1-1 and 1-2
B-1 through B-8	B-1 through B-4
C-1 and C-2	C-1
D-1	D-1 through D-8.1
None	E-1 through E-2

2. File this change sheet in front of the publication for reference purposes.

By Order of the Secretary of the Army:

BERNARD W. ROGERS
General, United States Army
Chief of Staff

Official:

PAUL T. SMITH
Major General, United States Army
The Adjutant General

Distribution:

To be distributed in accordance with DA Form 12-25A, Operator maintenance requirements for Platemaker and Copier.

TECHNICAL MANUAL
NO. 10-3610-215-14

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *31 December 1974*

Operator, Organizational, Direct Support, and General Support Maintenance Manual

PRINTING PRESS, OFFSET WEB-FED, MOTOR DRIVEN, 208V, 60 HERTZ HESS AND BARKER MODEL 3CX NSN 3160-00-617-7566

LIST OF ILLUSTRATIONS

CHAPTER 1
INTRODUCTION

Section I. GENERAL

1-1. Scope

This manual is for your use in operating and maintaining the Model 3-CX Lithographic Offset Press with press package.

1-2. Maintenance Forms and Records

Maintenance forms and records that you are required to use are explained in TM 38)750.

1-3. Reporting of Errors

You can help to improve this manual by calling attention to errors and by recommending improvements. Your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), and/or DA Form 20282 (Recommended Changes to Equipment Technical Manuals), may be used. Copies of DA Form 2028-2 are attached in the back of the manual for your use. Please mail your recommended changes direct to Commander, US Army Troop Support Command, ATTN: DRSTSMPP, 4300 Goodfellow Blvd., St. Louis, MO 63120. A reply will be furnished direct to you.

1-4. Equipment Serviceability Criteria (ESC)

This equipment is not covered by an ESC.

1-5. Destruction of Army Materiel to Prevent Enemy Use

a. *General*. The model 3-CX printing press can be rendered inoperable by using mechanical destruction, and by misusing the equipment.

b. *Mechanical Destruction*. Using a pick, sledge or any other heavy implement, damage all vital elements such as controls, switches and valves, electric motors, and any other major assemblies and components.

NOTE

Placing metal obstructions in the rollers of the printing press and running the equipment at maximum speed is a good example of mechanical destruction and misuse of equipment.

1-6. Administrative Storage

For administrative storage instructions, refer to TM 740-90-1.

Section II. DESCRIPTION AND DATA

1-7. Description

a. *General.* The Model e-CX press is a mobile, motor driven, webbed, three color press which produces leaflets, news sheets, small posters and other printed matter, by the offset lithographic process. The principal functional components of the press consists of a feed roll stand, three offset units and a delivery unit. The press will operate at speeds up to 30,000 impressions per hour (maximum) and is capable of producing at least 160,000 cut 10 1/2 by 16 in. (26.67 x 40.64 cm) sheets, per eight hour shift. Overall equipment is shown in two views and is depicted in figures 1-1 and 1-2. The Model 3-CX press package contains the following associated equipment.

(1) *Motor generator unit*. The motor-generator unit (fig. 1-3) supplies the power for operation of the press through three cables.

(2) *Plate bending jig*. The plate bending jig (fig. 14) is used to bend the ends of a plate to a specific angle so that the plate can be properly mounted on the plate cylinder.

(3) *Riveting device*. The riveting device (fig. 1-5) is used for riveting blankets to blanket bars with eyelets.

(4) *Ramp plates*. The ramp plates (2 and 4, fig. 1-6) are made of plywood with skid-proof faced steel plates. Each plate is 88 (223.52 cm) inches long by 21 inches wide (223.52 x 53.24 cm). They are used when unpacking the storage cabinets and motor-generator unit.

(5) *Platform extension plates*. The platform extension plates (1 and 3, fig. 1-6) are made of plywood with skid-proof faced steel plates and equipped with six legs. Each plate is 88 inches long by 21 inches wide (223.52 x 53.34 cm). The plates are used to extend the width of the platform base (13, fig. 1-6).

(6) *Platform base ramp* The platform base ramp (25, fig. 1-6) is made of steel and is 48 inches (121.92 cm) wide. It is used to extend one end of the platform base.

(7) *Tables*. The four tables (5 and 7, fig. 1-6) are made of steel with a zinc-faced top, and folding legs. Each table is 72 inches (182.88 cm) long and 22 inches (55.88 cm) wide.

(8) *Storage cabinets*. The storage cabinets (22, 23, 24, 26, 28, 30, fig. 1-6) are made of steel and painted two-tone green. Each cabinet is 621/4 inches (158.115

cm) long by 72 inches (182.88 cm) high by 18 1/2 inches (46.99 cm) deep, and is provided with two eyebolts (31, fig. 1-6) on top for lifting purposes when installing the equipment.

(9) *Ink mixing slabs*. The three ink mixing slabs (27, fig. 1-6) are made of stainless steel. Each slab is 18 inches (45.72 cm) long by 18 inches (45.72 cm) wide, when in use the slabs are mounted on a table (fig. 1-7).

b. The maintenance paragraphs of this manual contain detailed descriptions of the Model 3-CX press components.

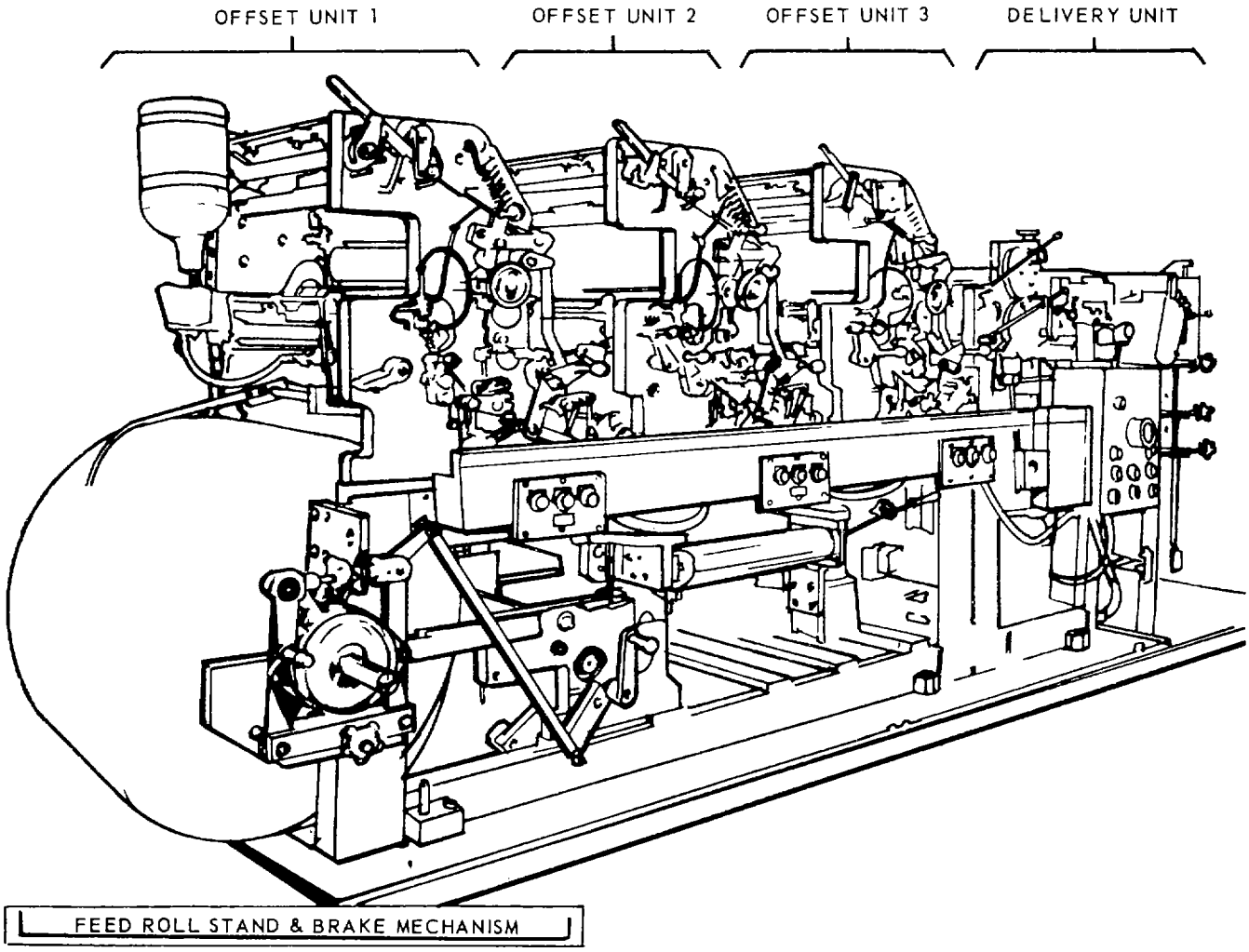

Figure 1-1. Lithographic offset, web-fed press, front view.

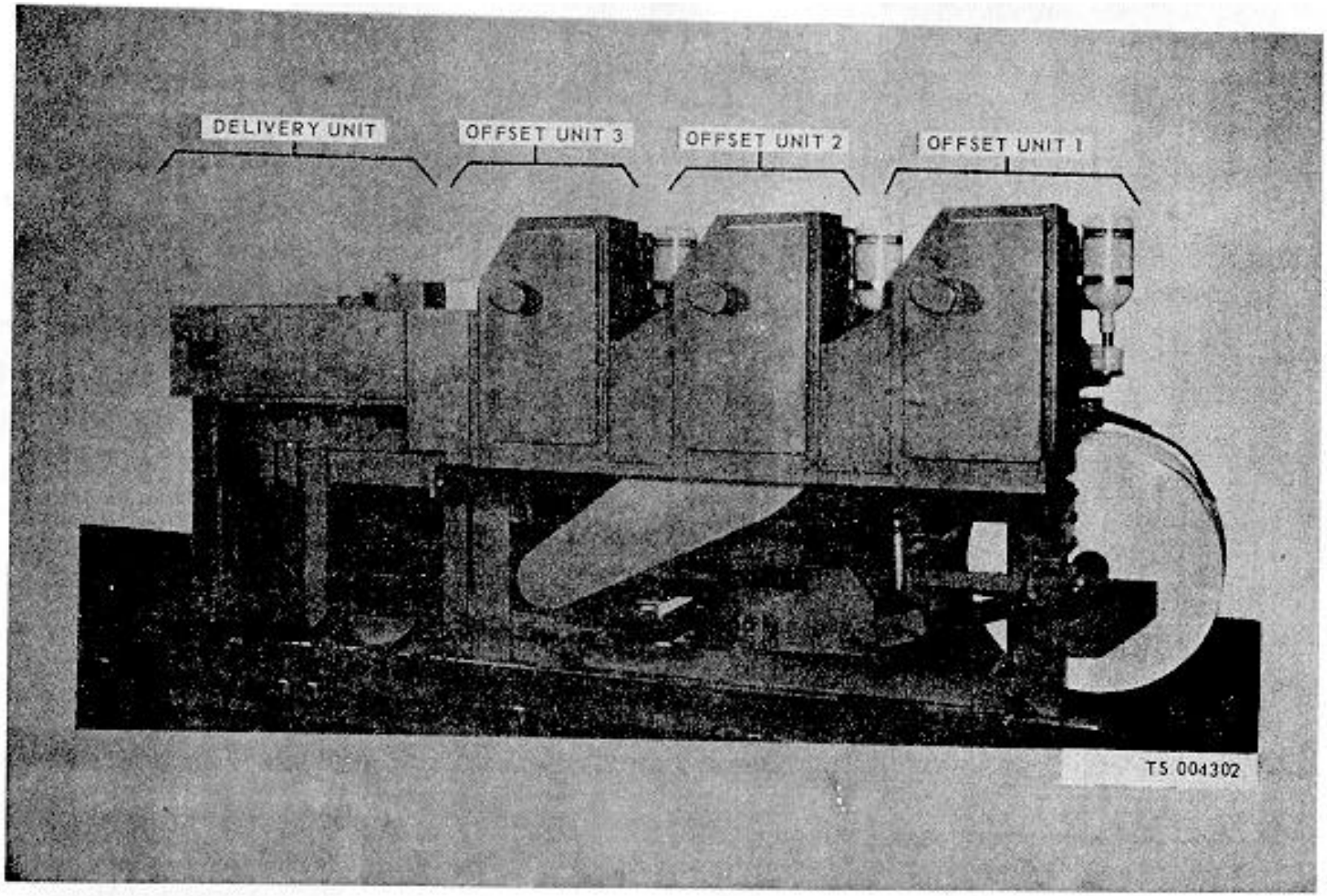

Figure 1-2. Litographic offset, web-fed press, rear view.

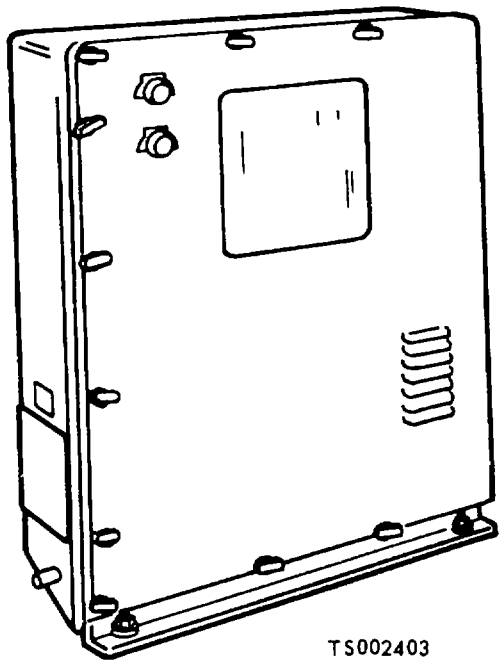

Figure 1-3. Motor-generator unit.

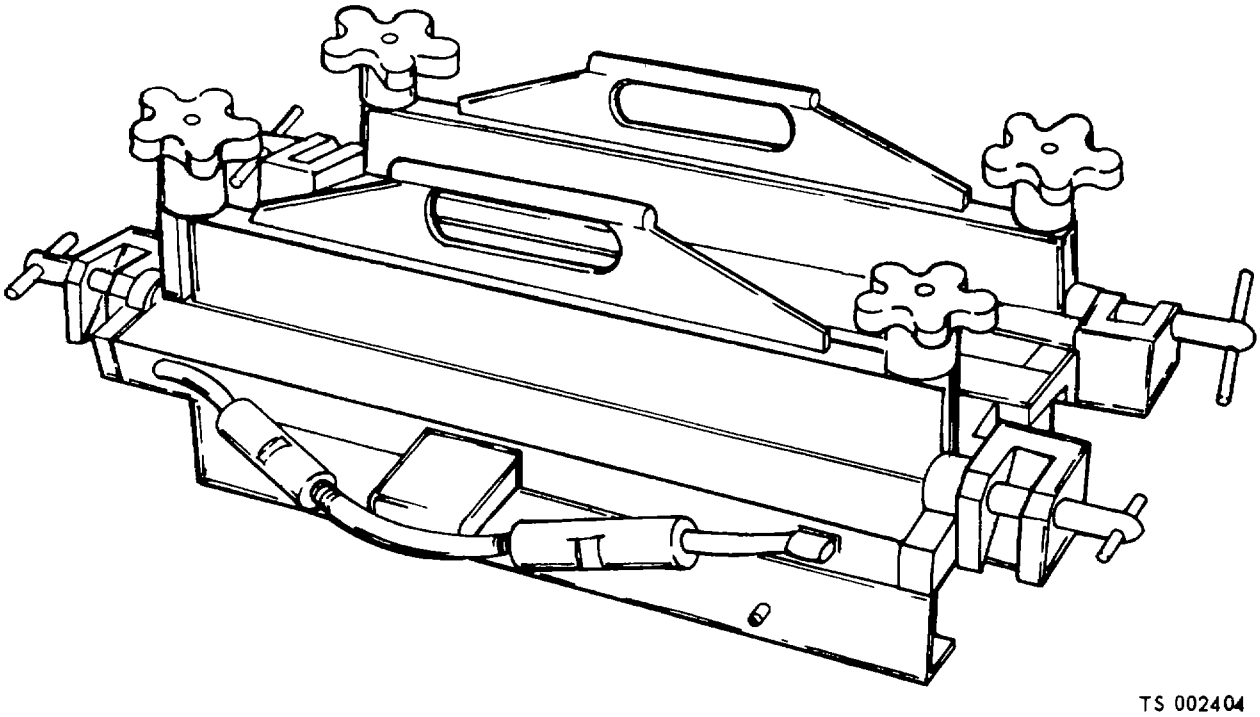

Figure 1-4. Plate bending jig.

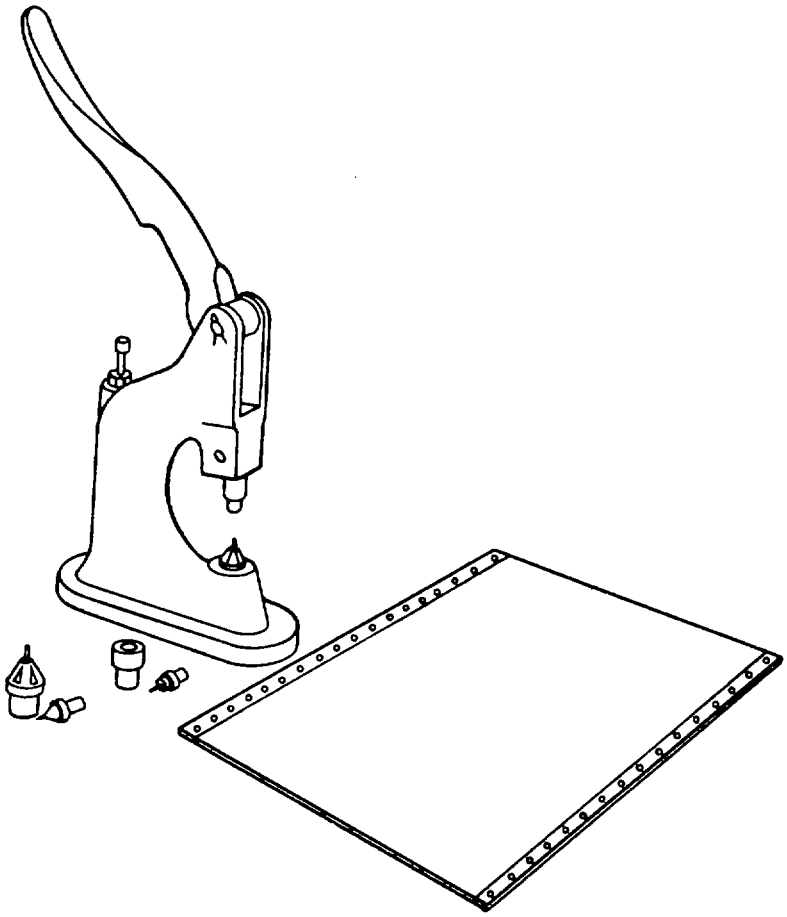

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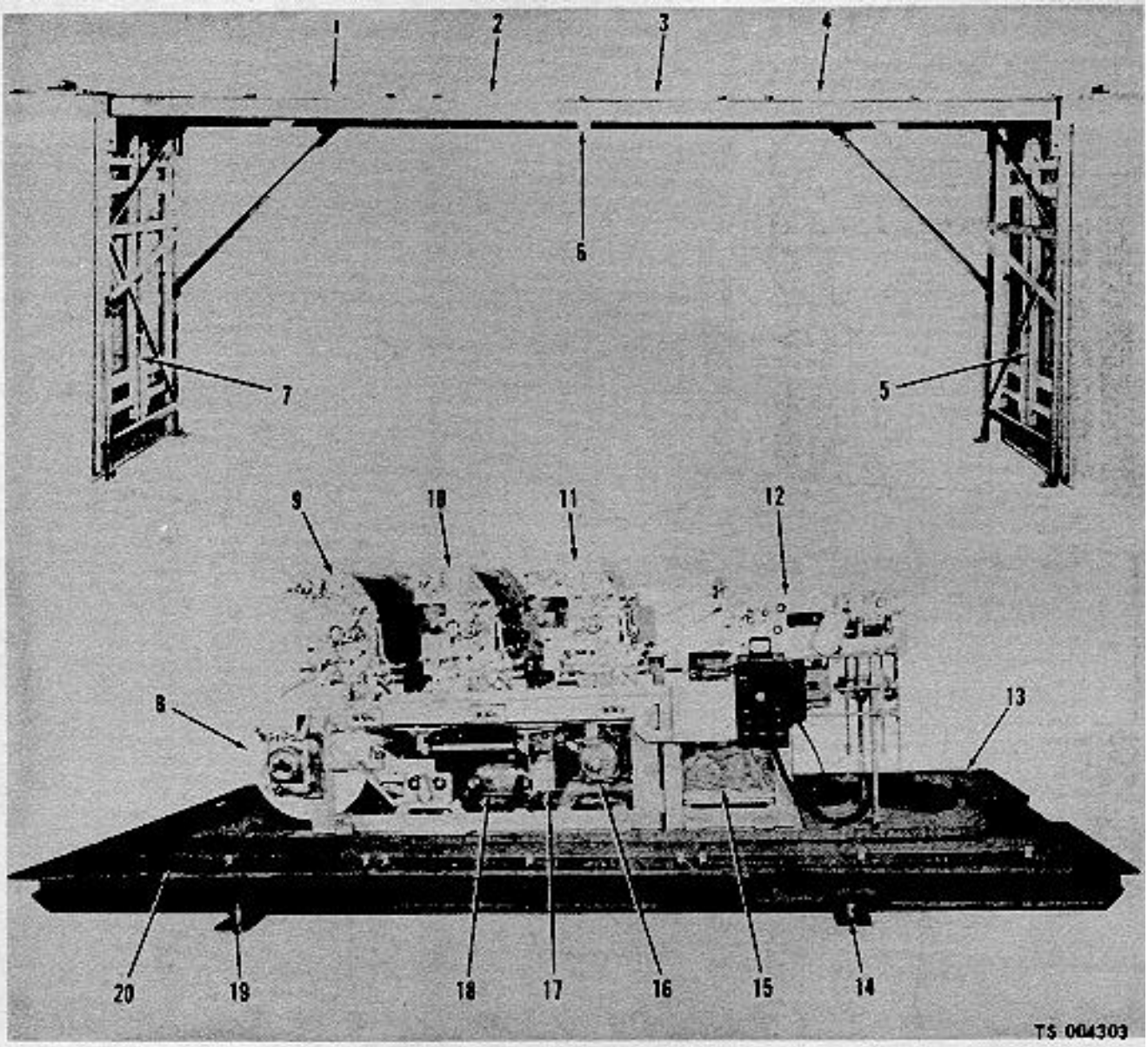
Figure 1-5. Blanket riveting device.



1. Platform Extension Plate (with legs)
2. Ramp Plate (for Removing Storage Cabinets)
3. Platform Extension Plate (with legs)
4. Ramp Plate (for removing storage cabinets)
5. Tables (two)
6. Shipping Frame (knock-down type)
7. Tables (two)
8. Feed-Roll Stand and Brake Mechanism
9. Offset Unit No. 1
10. Offset Unit No. 2
11. Offset Unit No. 3
12. Delivery Unit
13. Platform Base
14. Leveling Jack
15. Blower and Motor Unit
16. Main Drive Motor
17. Oil Reservoir
18. P.I.V. Control Unit
19. Leveling Jack
20. Brackets
21. Motor-Generator Unit
22. Storage Cabinet A
23. Storage Cabinet B
24. Storage Cabinet C
25. Platform Base Ramp
26. Storage Cabinet F
27. Ink Mixing Slabs (three)
28. Storage Cabinet E
29. Tool Board
30. Storage Cabinet D
31. Lifting Eyebolts

Figure 1-6. Press and associated equipment (sheet 1 of 2).

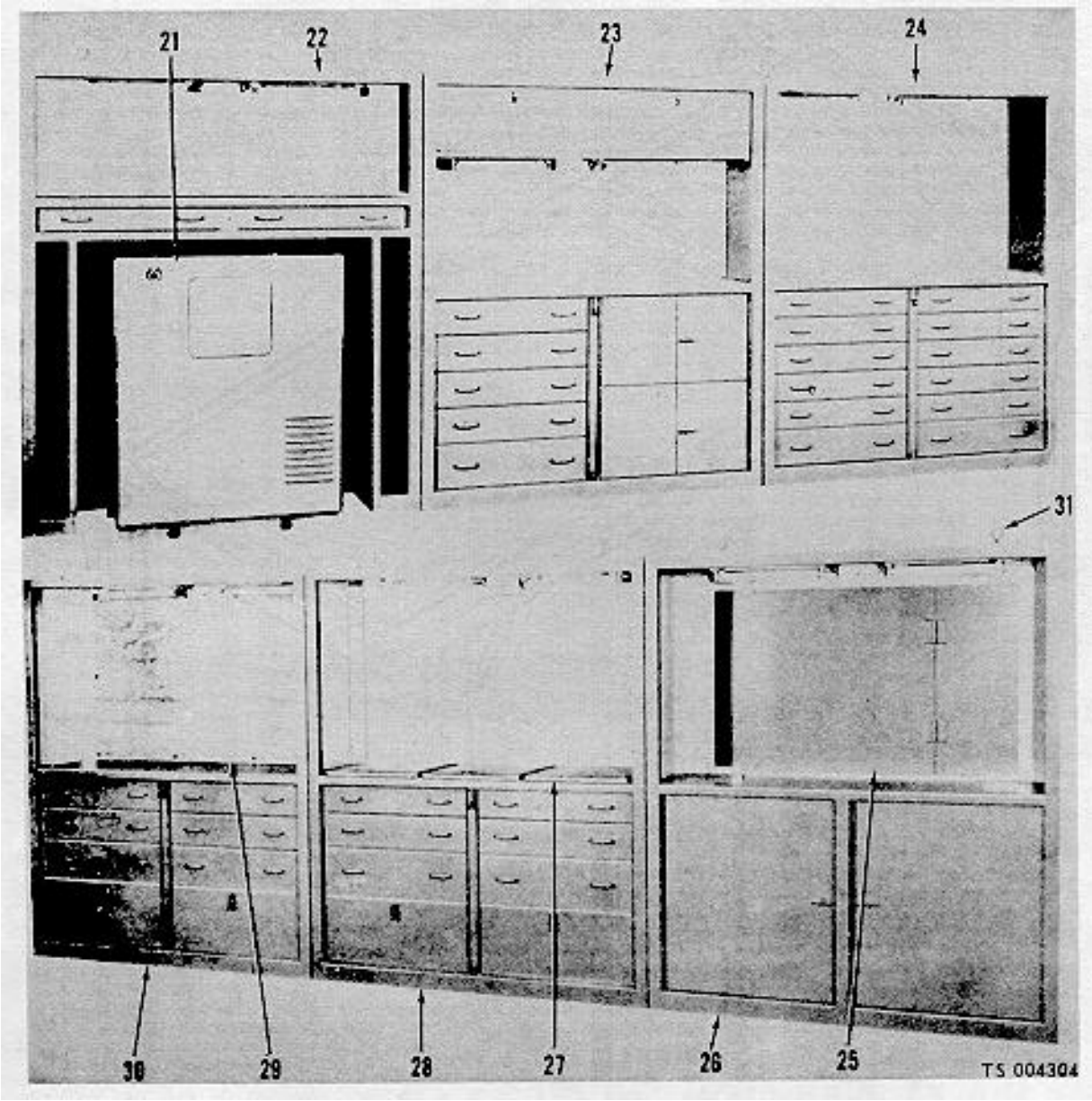


Figure 1-6. Press and associated equipment (sheet 2 of 2).

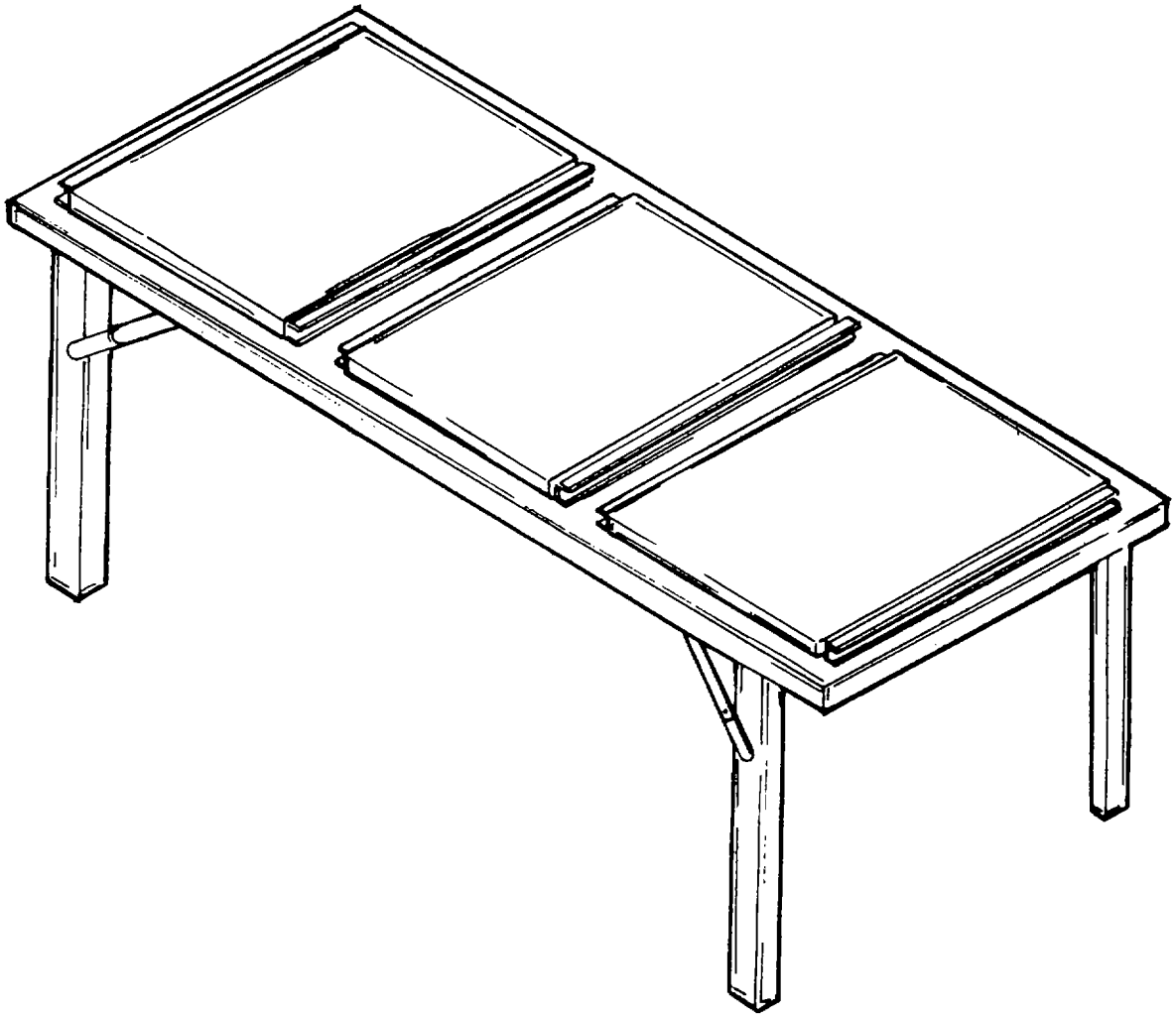


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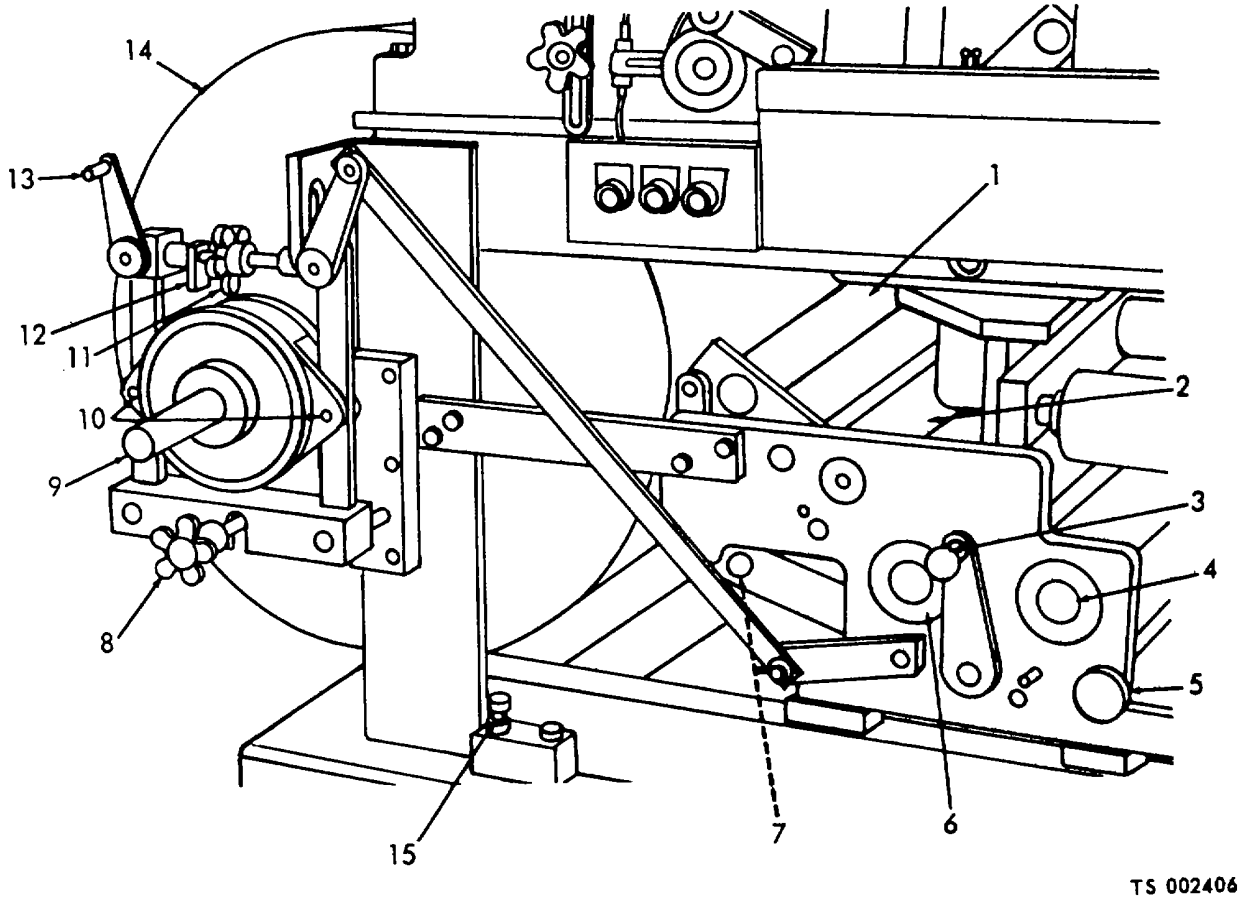
Figure 1-7. Table with ink mixing slab.

c. Feed Roll Stand and Brake Mechanism. (fig. 1-8). The function of the feed roll stand is to unwind the web from a roll of paper and feed the web to the first offset printing unit at a regulated speed. The paper roll (14, fig. 1-8) has a maximum diameter of 32 in. (81.28 cm) and maximum width of 16 in (40.64 cm). The paper rolls used have a cardboard core with 'an inside diameter of 3 inches (7.62 cm) Expanding chucks are provided on the paper roll shaft for mounting rolls of paper. The feed roll stand automatically controls the tension on the web from the maximum diameter of the paper roll to its minimum diameter. It consists of two support brackets, four roll shaft support bearings, two feed rollers (4, 6) with rider roller handle (3), two tension rollers (1, 2), a dancing roller (7) and a dancing roller counterweight with shock absorber. A control knob (5) connected to a variable speed drive unit (PIV) permits synchronizing the speed of the web feed rollers with the speed of the offset printing units ensuring register of printing. The brake mechanism is

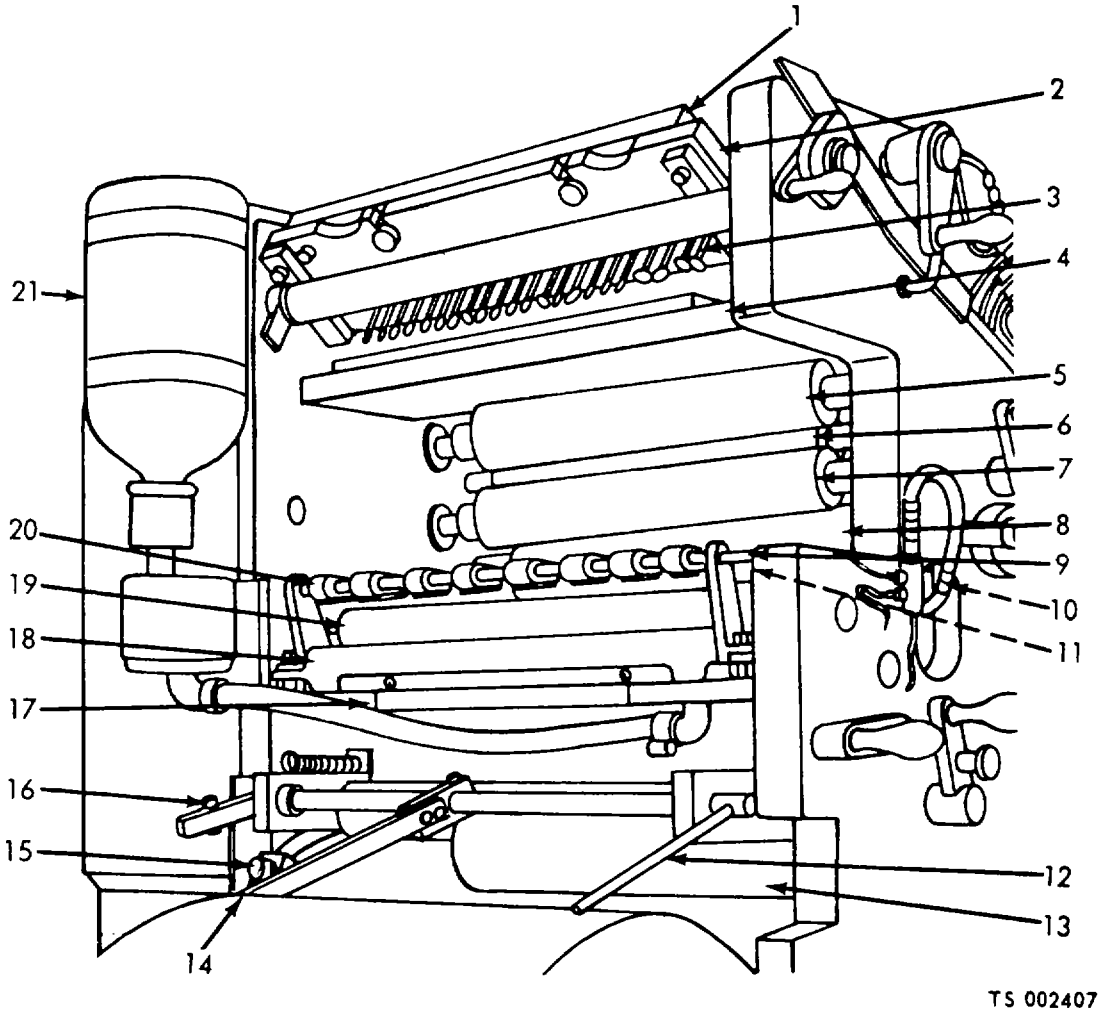
provided to maintain drag on the paper roll shaft to provide web tension and to brake the roll of paper to a stop without paper unwinding when the press is stopped. It consists essentially of two lateral members which house the brake shoes (10), a top member with a brake tension adjusting knob (11), a bottom member with the paper roll lateral adjusting knob (8) and paper shaft with brake drum (9).



1. Feeder Tension Roller
2. Tension Roller
3. ON-OFF Feeder Rider Roller Handle
4. Feeder Roller
5. P.I.V. Control Knob
6. Feeder Roller
7. Dancing Roller
8. Paper Roll Lateral Adjusting Knob
9. Paper Roll Shaft with Brake Drum
10. Brake Shoes (two)
11. Brake Tension Adjusting Knob
12. Brake Locking Nut
13. Brake Locking Handle
14. Paper Roll
15. Leveling Screw

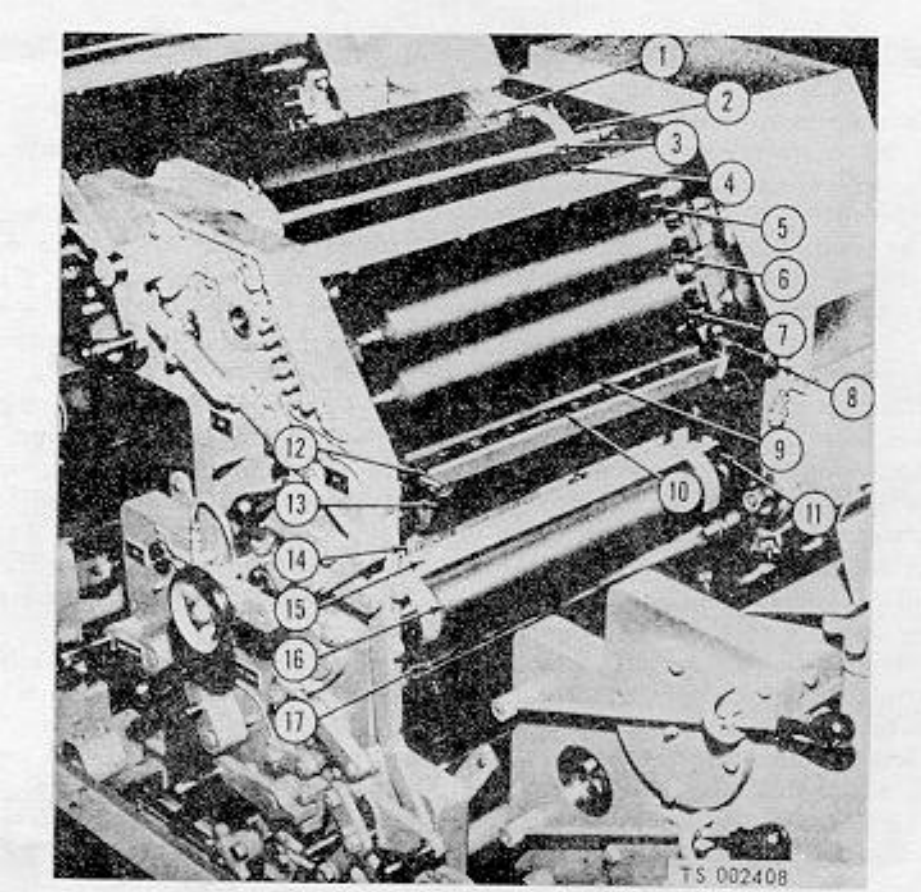
Figure 1-8. Feed roll stand, brake mechanism and feeder.

d. *Offset Units*. (fig. 1-1, 1-9 and 1-10). Printing is accomplished by means of three offset units which are identical in design and interchangeable as a unit or as to parts. These units can print one color on one side of the web and two colors on the other side, or they can print three colors one side of the web; these choices are possible by throwing blanket cylinders off impression and using turn bars on press. The design of the press is such that it can be converted to a two-unit press by the removal of one offset unit and relocation of the delivery mechanism on the base of the unit. Each offset unit is designed for simple but efficient operation and incorporates the following features.



1. Ink Fountain Blade
2. Ink Fountain
3. Ink Fountain Screws (twenty two)
4. Ink Drip Pan
5. Ink Distributor Roller (two)
6. Ebonite Vibrator Roller
7. Ink Form Roller
8. Plate Cylinder
9. Water Form Dampener Roller (two)
10. Water Vibrator Roller
11. Water Ductor Roller
12. Paper Roll Limit Switch Handle
13. Lead Roller
14. Paper Roll Limit Switch Arm
15. Paper Roll Limits Switch
16. Paper Roll Limit Switch Adjustment Screw
17. Water Drip Pan
18. Water Fountain
19. Water Fountain Roller
20. Water Fountain Stops (eight)
21. Water Solution Container and Holder

Figure 1-9. Offset printing unit, rear end.



1. Ink Fountain Blade
2. Ink Fountain
3. Ink Fountain Roller
4. Ink Ductor Roller
5. Ebonite Vibrator Roller
6. Ink Distributor Roller
7. Ink Distributor Roller
8. Wash-Up Adjusting Screw (two)
9. Ebonite Vibrator Roller
10. Cylinder Guard Fastening Screw
11. Wash-Up Blade
12. Wash-Up Device
13. Ink Form Roller
14. Plate Cylinder
15. Cylinder Guard
16. Blanket Cylinder
17. Impression Cylinder

Figure 1-10. Offset printing unit, front end.

(1) *Ink distribution system.* (figs. 1-9, 1-10, and 1-11). The ink distribution system has the function of delivering a thin film of ink fountain (2, fig. 1-9) to the image portions of the plate. The system consists of one ink fountain roller (3, fig. 1-10), one ductor roller (4, fig. 1-10), two ebonite vibrator rollers (6, 9, fig. 1-10), four distributor rollers (5, fig. 1-9, 6, 7, fig. 1-10), and two form rollers (7, fig. 1-9, 13, fig. 1-10). The arrangement of these rollers is shown in figure 11. The system functions in a manner whereby the ink fountain roller takes up ink and transfers it to the ductor roller. The ductor roller then transfers the ink to a distribution system consisting of two ebonite vibrator rollers and four ink distribution rollers. The ink is then delivered in a thin even film to the two ink form rollers which in turn transfer the ink to the printing plate mounted on the plate cylinder (14, fig. 1-10). Control of ink from the ink fountain is accomplished utilizing adjusting screws (3, fig. 1-9), and ink fountain blade (1, fig. 1-10). An ink drip pan (4, fig. 1-9) is provided to catch ink spillage. A movable wash-up attachment (12, fig. 1-10) attached to the side frames facilities cleaning of the ink distribution system. To facilitate the mounting of offset plates, adjusting form rollers, etc., the device can be moved out of the way.

(2) *Water distribution system* (figs. 1-9, 1-10, 1-11). The water distribution system has the function of feeding fountain solution from the water fountain to the printing plate just ahead of the ink of the ink form rollers. The system consists of a water fountain roller (19, fig. 1-9), a molleton covered water ductor roller (11), a chrome plated vibrator roller (10) and two molleton covered water form rollers (9). The arrangement of these rollers is shown in figure 1

11. Water is fed to this system from the water solution container and holder (21) which controls the water level in the water fountain (18). Water fountain stops (20) control water flow to the ductor roller. The water is then passed from the ductor roller to the water vibrator roller which in turn transfers the water to the two water form rollers. The water is then fed to the printing plate just ahead of the ink form rollers. A water drip pan (17) is provided to catch overflow or spillage. Three different speed ratio sprockets are included with all three offset units to increase or decrease the water fountain roller speed. This controls the amount of fountain solution being transferred to the ductor roller. Spare sprockets are mounted on inside of first offset guard.

(3) *Plate cylinder*. See figs. 1-10 and 1-11. The plate cylinder (14, fig. 1-10) is the image carrying cylinder capable of handling standard aluminum or bi-metallic plates. The plate cylinder has hardened steel bearers which are 0.012 in. (0.03048 cm) above main body of plate cylinder. and has a reel rod for mounting the plate. The plate cylinder is adjustable horizontally by the use of a lateral control wheel to a plus or minus 1/8 inch to provide for side registration between offset units. This rotating plate cylinder with printing plate receives fountain solution from the water form rollers and ink from the ink form rollers. The ink image is then transferred from the printing plate to the blanket cylinder.

(4) *Blanket cylinder.* (figs. 1-10 and 1-11). The blanket cylinder (16, fig. 1-10) is the image reproduction cylinder and accommodates standard 3-ply blankets. The blanket cylinder has hardened steel bearers which are 0.071 in. (0.18034 cm) above main body of cylinder and has a reel rod for mounting the blanket. The blanket cylinder bearers ride against the plate cylinder bearers when the printing press is in the impression or printing position thereby maintaining a constant pressure between the printing plate and blanket.

(5) *Impression cylinder* (figs. 1-10 and 1-11). The impression cylinder (17, figs. 1-10) is a smooth surfaced cylinder which forces the web against the blanket cylinder and prints the image onto the web. When the printing press is in the impression printing position, the impression cylinder has an adjustment to permit changing the distance between the impression and blanket cylinders. Paper varying from 9-lb. (4082.4 gram) manifold to 90-lb (40,824 grams) index can be accommodated .

e. Delivery Unit (figs. 1-12 and 1-13). The delivery unit rotary knife cuts the printed web into 10-1/2 x 16 sheets. The cut sheets are delivered to an automatic lowering delivery table with casters (11, fig. 1-13) and an intermediate supporting delivery board (10, fig. 1-13) is provided to receive the sheets while the printed pile is being removed without interrupting productions.

f. Control Stations. Operating control stations are provided at each offset unit on the operators side of the press to permit forward or reverse jogging and stopping of the offset unit. Starting, stopping control, speed control and air blower and impression controls of the entire press is handled from the main control station on the operators side.

g. Main Drive Motor. A 7 1/2 horsepower (7.605 hp metric) main drive direct current motor supplies the drive power for the press. The operating power is received from the remotely located motor generator unit.

h. Blower and Motor Unit. A blower is provided on the press to supply an air cushion between delivered sheets. The blower is V-belt driven by a /2 horsepower (0.507 hp metric), 208 volt, 60 Hertz, 3 phase, AC motor.

i. Automatic Controls. The press is equipped with automatic controls to stop the press whenever there is a web break; a jam prior to the cutting knife operation, and when the paper roll has reached a distance of 1/4 inch (0.635 cm) from the outside of the paper roll core. When the press throws off impression, the printing cylinders separate and the ink form rollers raise from -the offset printing plates. As a safety feature, shear pins are located between the cutting knife cylinder and drive gears in-the event of a severe pile up. For less severe pile-ups the press cut off is made by means of a mechanical linkage which depresses a micro-switch. An automatic lubricator provides a supply of oil for the pressure lubrication system. It contains a 3-pint (86.61 cu in.) oil reservoir with a sight level indicator. A manually operated push button provides for overriding the automatic cycling control. Refer to Chapter 2, Section I for description of all operating controls and instruments.

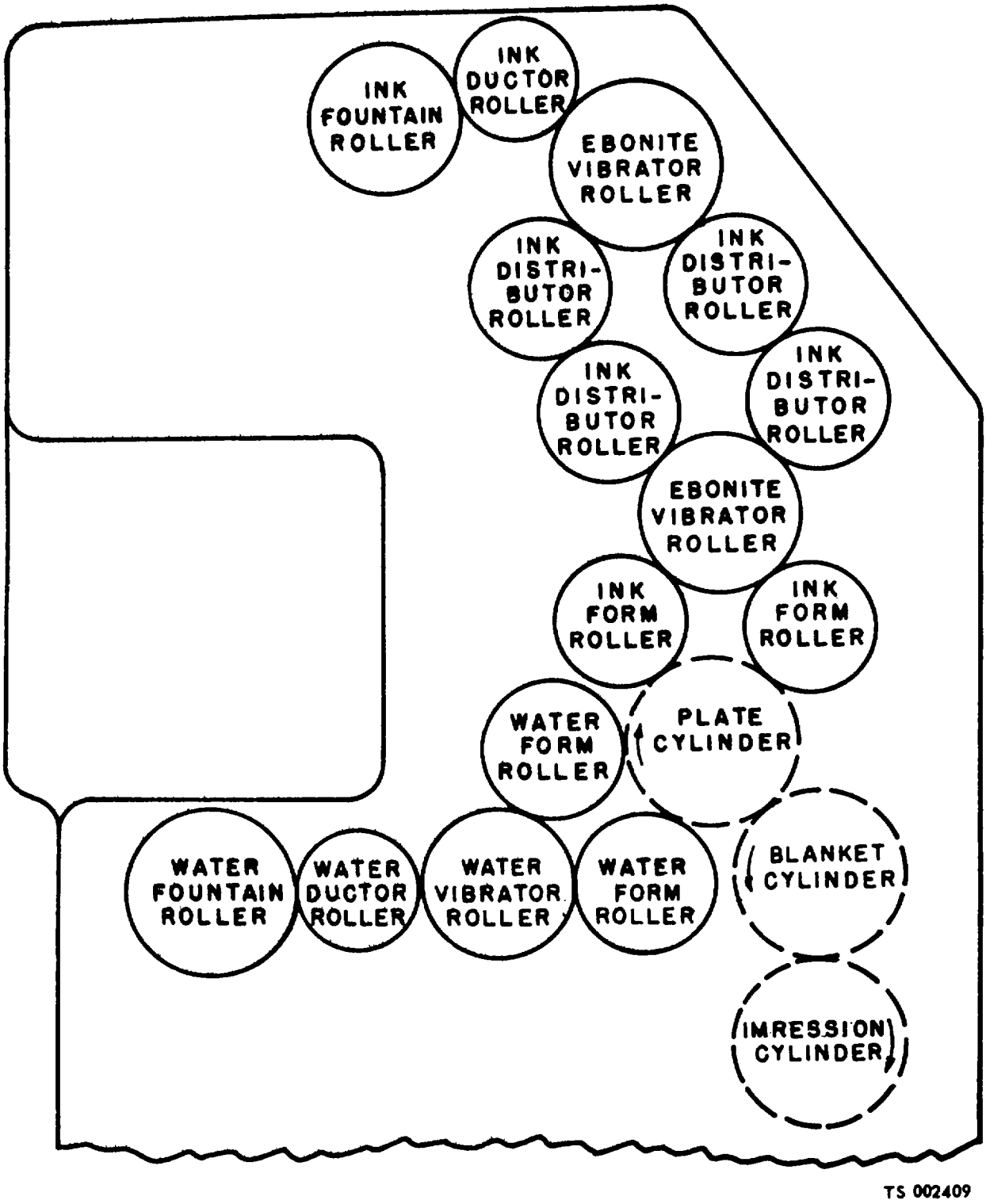


Figure 1-11. Arrangement of rollers and cylinders offset unit.

1-8. Tabulated Data

a. Identification. The press and accessories have major identification plates, and information contained on these plates is listed below.

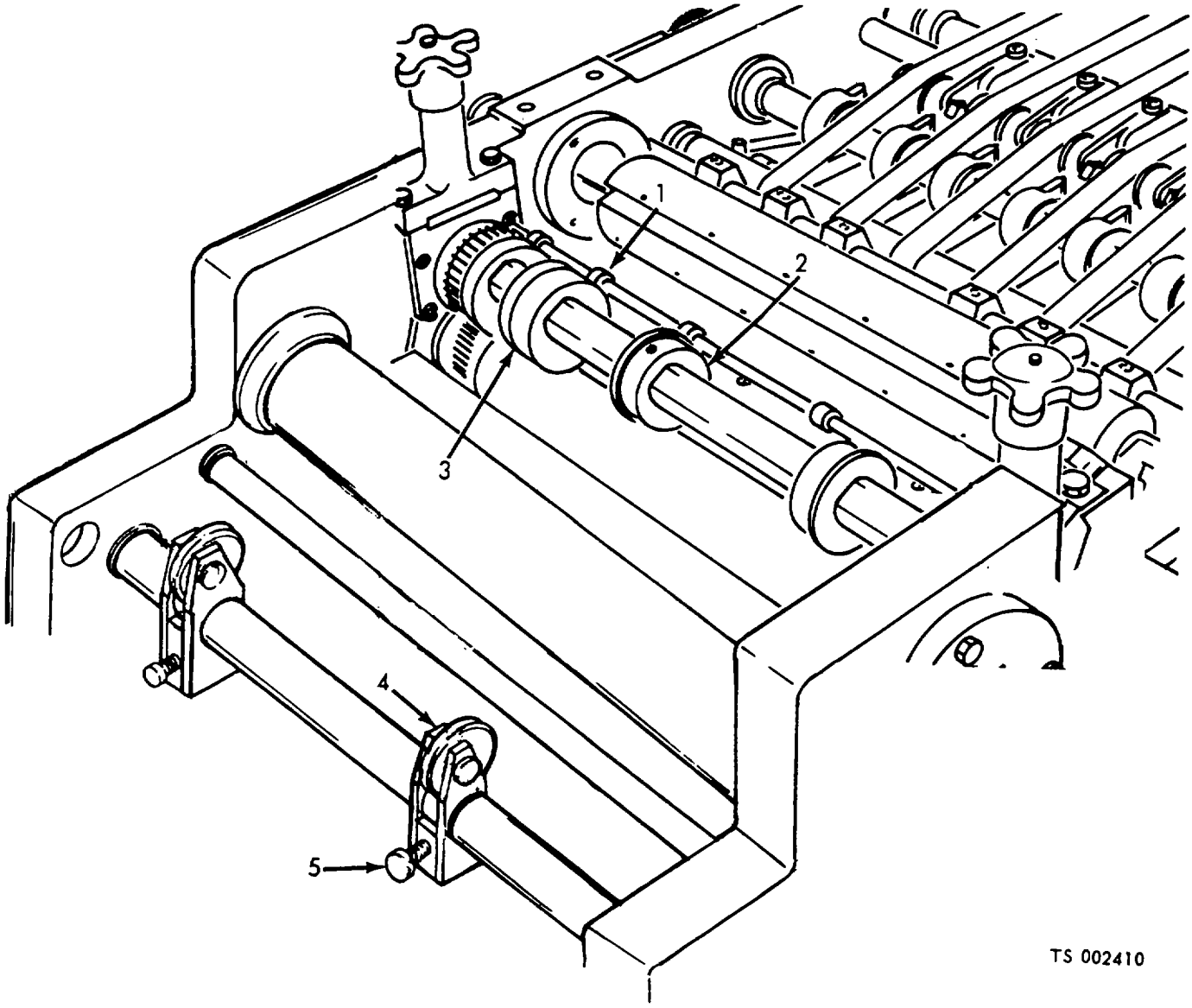
(1) *Press plate*
Model No. 3CX
Size 10 1/2" x 16" (26.67 x 40.64 cm)
Max Width of Web 16" (26.67 cm)
Cylinder Circumference 10 1/2 (40.64 cm)
Plate Cylinder Undercut .012" (0.03048 cm)
Plate Size 11-5/8" x 16-3/8" (29.5275 x 41.6925 cm)
Blanket Cylinder Undercut .071" (0.18034 cm)
Blanket Size 11-9/16" x 16-5/8" (29.36875 x 42.2275 cm)
Printing Surface 9-7/8" x 15 1/2" (25.0825 x 39.37 cm)
Hess and Barker, Philadelphia, PA
(2) *Drive, positive infinitely variable plate*
Model ½-50
Serial No. L918697F
Ratio 2:1
Chain Size, 1-27
Link-Belt Co., Philadelphia, PA
(3) *Drive motor plate*
Serial No. IL893828
Frame 254A
Duty-continuous
240 volt D.C.
7 1/2 HP (7.605 hp metric)
28.6 Amperes
1-1/8" dia. shaft (0.3175 cm)
Reliance Electric and Engineering Company Cleveland, Ohio
(4) *Blower motor plate*
Serial No. M1-60002-C UC
Type P
Frame 56
Horsepower ½ (0.507 hp metric)
Speed 1425/1725 RPM
Voltage 208-220, 60 Hertz 3 phase
Duty-Continuous
Temperature Rise 40 C (104 F)
Amperage 1.88
Doerr Electric Corporation Cedarburg, Wisconsin
(5) *Air pump plate*
Size B
600 RPM
Leiman Brothers, Incorporated East Rutherford, New Jersey
(6) *Power unit plate*
Serial No. 1ST893828
Frame D7 1/2
Volts 208 VAC, 3-Phase, 60 Hertz
Speed 3530 RPM
Amperes Full Load 31
Amperes Locked Rotor 204
Volts 240 VDC
Amperes 28.5
Duty-Continuous
Kilowatts 6.85
Temperature Rise 70 C (158 F)
Reliance Electric and Engineering Company Cleveland, Ohio
(7) *Static eliminator power unit*
Model D268R
Unit No. 74298
Voltage 220, 60 Hertz
Amperage .25

b. Tabulated Data
(1) *Offset press*
Manufacturer: Hess and Barker
Model No. 3CX
(a) *Paper*
Sheet Size, 10 1/2" by 16" maximum (26.67 by 40.64 cm)
Paper Roll, 32" diameter maximum (81.28 cm)
(b) *Plate cylinder*
Plate Size 11-5/8" by 16-3/8" (29.5275 by 41.5925 cm)
Undercut 0.012" (0.03048 cm)
Adjustment, side to side 1 1/8" (0.3175 cm)
(c) *Blanket cylinder*
Blanket Size 11-9/16" by 16-5/8" (29.36875 by 42.2275 cm)
Undercut 0.071" (0.18034 cm)

NOTE

Operating speed depends upon the size, the thickness both the kind and the condition of stock, the accuracy of register, and other operating conditions.

(d) *Control, drive, positive infinitely variable*
Manufacturer: Link-Belt Company
Model No. H ¼/- 50
Input Revolutions per minute 690
Horsepower delivered at output RPM 1.35 at 976 RPM, .95 at 488 RPM
Chain Size 1-27 links per inch (2.540 cm)
(e) *Motor, drive, main*
Manufacturer: Reliance Electric and Engineering Company
Serial No. 1ST893828
Horsepower 7 1/2 (6.705 hp metric)
Speed 1750 RPM
Voltage 240, 60-Hertz 3-phase
Amperes 28.6
Current-Direct
(f) *Motor, blower, delivery end*
Manufacturer: Reliance Electric and Engineering Company, Cleveland, Ohio
Serial No. 396330-1-80
Frame L56
Horsepower ½ (0.507 hp metric)
Speed 1725 RPM
Voltage 208, 60-Hertz 3-phase
Amperes: 2.0
Duty-Continuous
Temperature Rise 55C (131 F)
(2) *Dimensions and weight*
Overall length 218 in. (553.82 cm)
Overall width 96 in. (243.84 cm)
Overall height 79 3/4 in. (202.565 cm)
Weight 22,000 lb. as packaged



1. Actuator, Cam, Microswitch (four)
2. Guide, Nipping Roller
3. Nipping Roller
4. Trolley Wheels
5. Adjusting Screws for Trolley Wheels

Figure 1-12. Delivery unit, rear end.

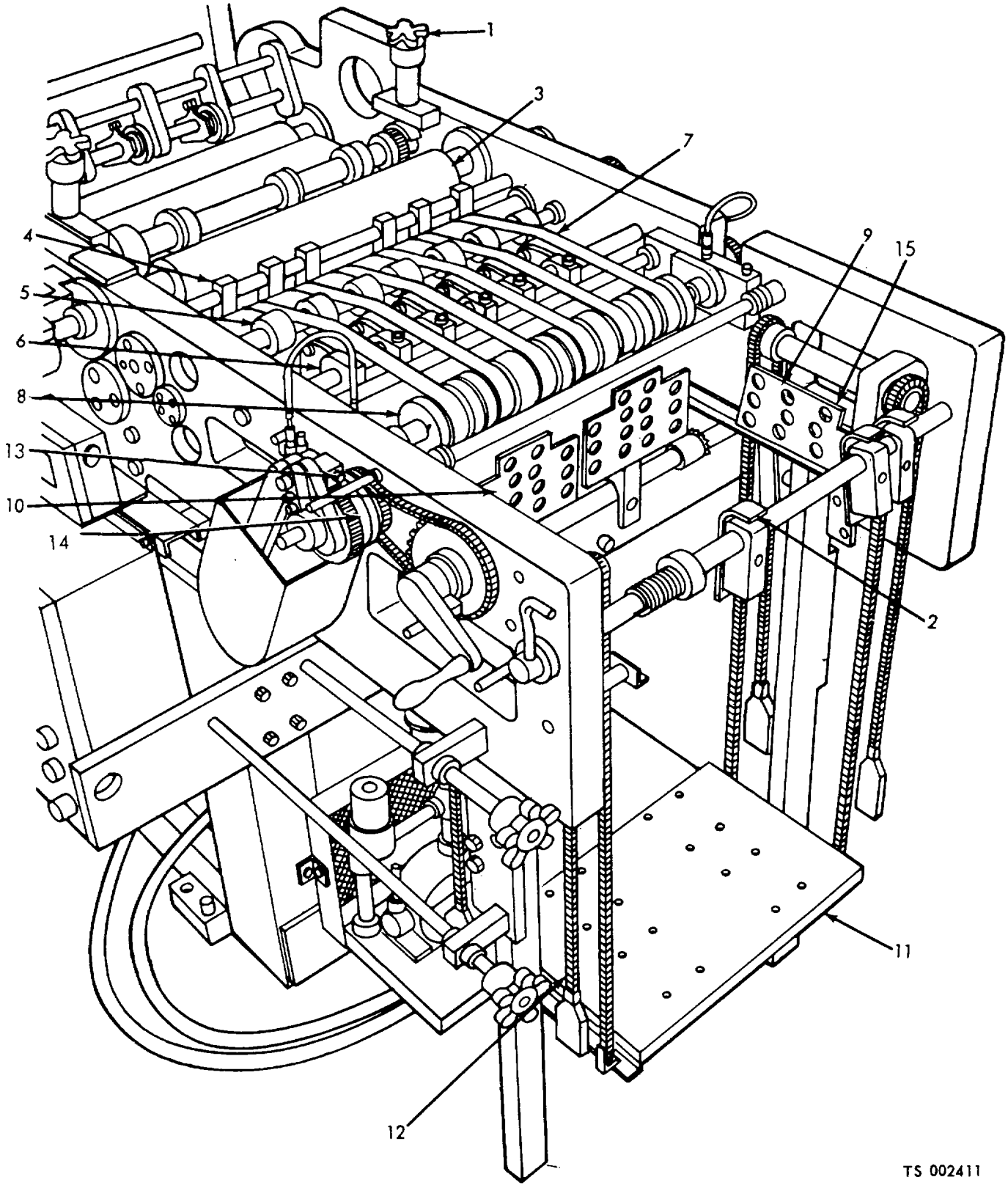
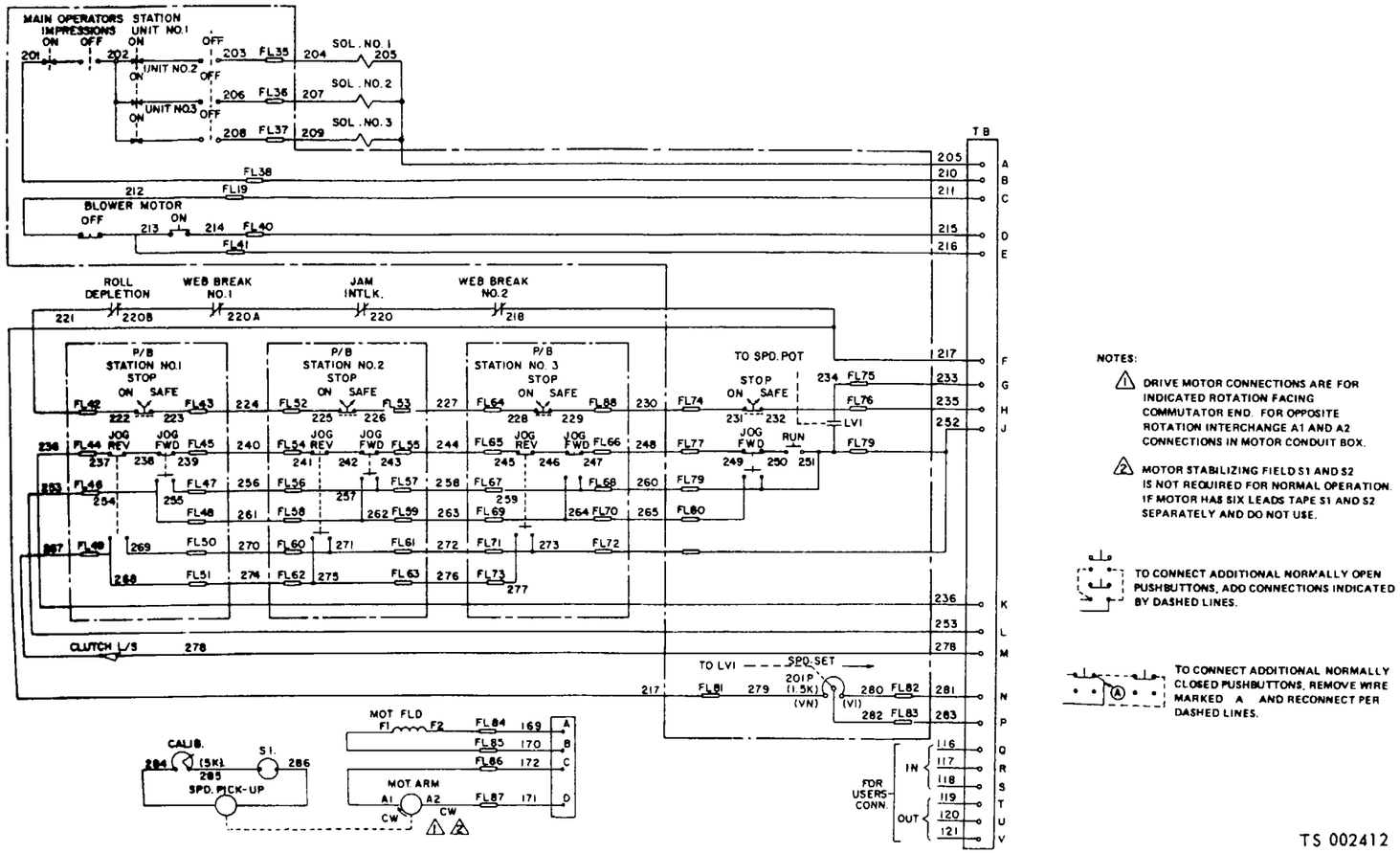


Figure 1-13. Delivery unit, front end.

KEY to figure 1-13:

1. Nipping Roller Adjustment Knobs (two)
2. Sheet Stop Plate
3. Rotary Cutter
4. Sheet Kickers (seven)
5. Pulley Tape
6. Delivery Belt Adjusting Pulleys
7. Delivery Belt
8. Knurled Delivery Roller
9. Side Jogger
10. End Jogger
11. Delivery Table with Casters
12. Chain with Weights
13. Pawl
14. Ratchet
16. Screw

(3) *Wiring diagram.* The electrical system of the offset press is depicted in the wiring diagram shown in figure 1-14.



NOTES:

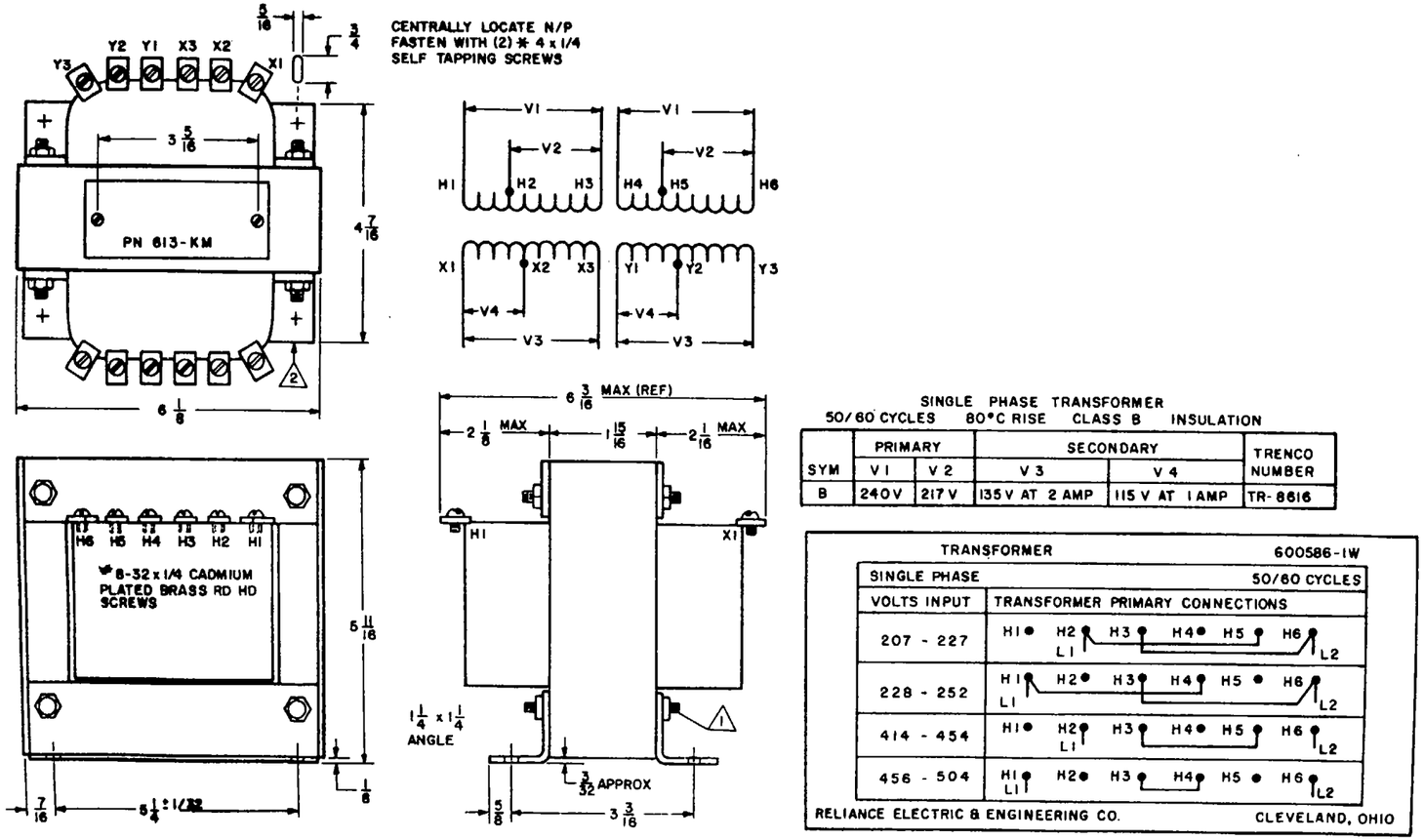
1. DRIVE MOTOR CONNECTIONS ARE FOR INDICATED ROTATION FACING COMMUTATOR END. FOR OPPOSITE ROTATION INTERCHANGE A1 AND A2 CONNECTIONS IN MOTOR CONDUIT BOX.
2. MOTOR STABILIZING FIELD S1 AND S2 IS NOT REQUIRED FOR NORMAL OPERATION. IF MOTOR HAS SIX LEADS TAPE S1 AND S2 SEPARATELY AND DO NOT USE.

TO CONNECT ADDITIONAL NORMALLY OPEN PUSHBUTTONS, ADD CONNECTIONS INDICATED BY DASHED LINES.

TO CONNECT ADDITIONAL NORMALLY CLOSED PUSHBUTTONS, REMOVE WIRE MARKED A AND RECONNECT PER DASHED LINES.

TS 002412

Figure 1-14. Wiring diagram (sheet 1 of 8).



SINGLE PHASE TRANSFORMER
50/60 CYCLES 80°C RISE CLASS B INSULATION

SYM	PRIMARY		SECONDARY		TRENCO NUMBER
	V 1	V 2	V 3	V 4	
B	240 V	217 V	135 V AT 2 AMP	115 V AT 1 AMP	TR-8616

TRANSFORMER 600586-1W

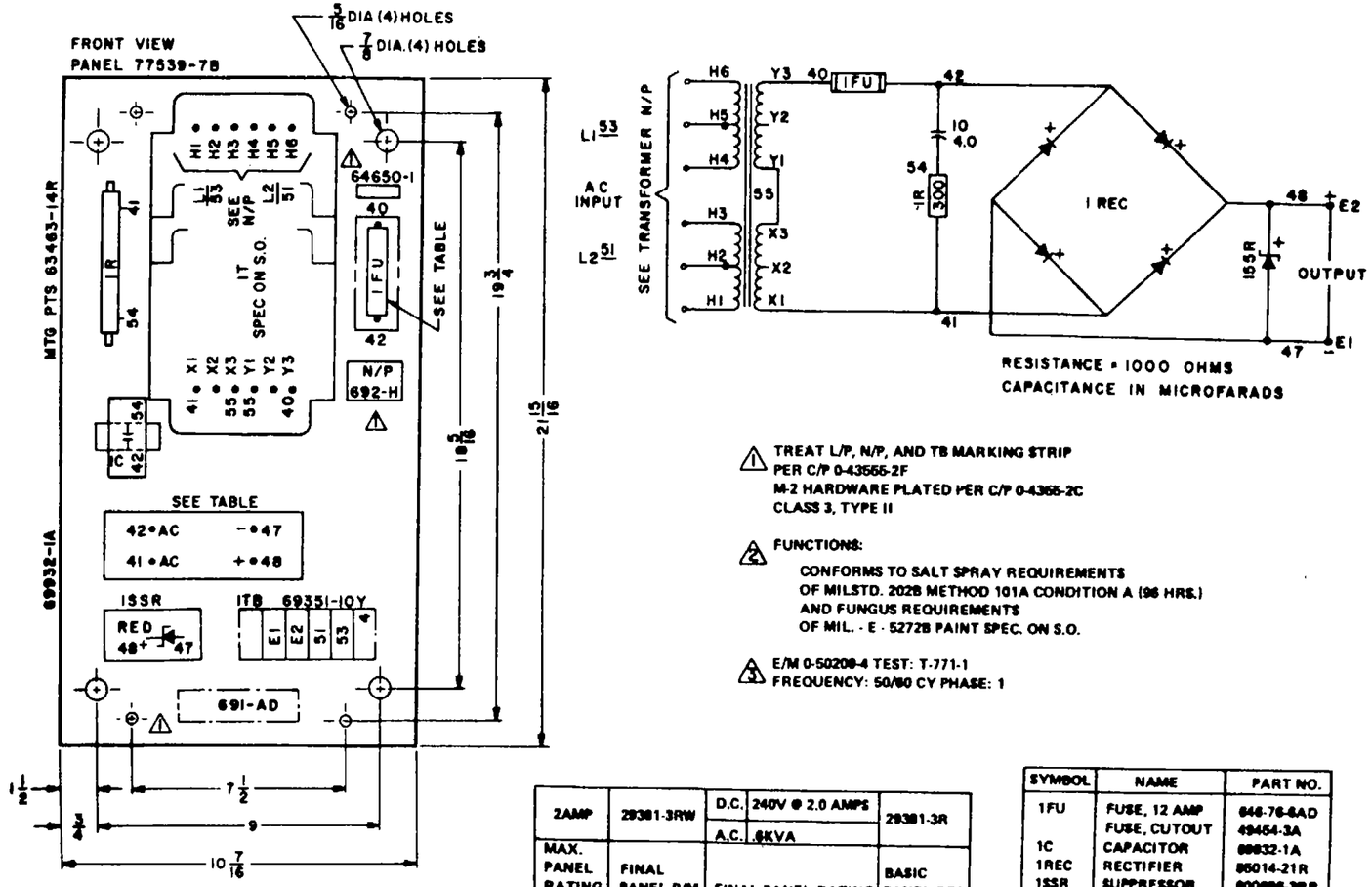
SINGLE PHASE 50/60 CYCLES

VOLTS INPUT	TRANSFORMER PRIMARY CONNECTIONS
207 - 227	H1 H2 H3 H4 H5 H6 — L1 L2
228 - 252	H1 H2 H3 H4 H5 H6 — L1 L2
414 - 454	H1 H2 H3 H4 H5 H6 — L1 L2
456 - 504	H1 H2 H3 H4 H5 H6 — L1 L2

RELIANCE ELECTRIC & ENGINEERING CO. CLEVELAND, OHIO

TS 002413

Figure 1-14. Wiring diagram (sheet 2 of 8).



1. TREAT L/P, N/P, AND TB MARKING STRIP PER C/P 0-43555-2F
   M-2 HARDWARE PLATED PER C/P 0-4365-2C
   CLASS 3, TYPE II

2. FUNCTIONS:
   CONFORMS TO SALT SPRAY REQUIREMENTS OF MILSTD. 202B METHOD 101A CONDITION A (96 HRS.) AND FUNGUS REQUIREMENTS OF MIL. - E - 5272B PAINT SPEC. ON S.O.

3. E/M 0-50209-4 TEST: T-771-1
   FREQUENCY: 50/60 CY PHASE: 1

2AMP	29381-3RW	D.C.	240V @ 2.0 AMPS	29381-3R
		A.C.	6KVA	
MAX. PANEL RATING	FINAL PANEL B/M	FINAL PANEL RATING		BASIC PANEL B/M

SYMBOL	NAME	PART NO.
1FU	FUSE, 12 AMP	646-76-6AD
	FUSE, CUTOUT	49454-3A
1C	CAPACITOR	69932-1A
1REC	RECTIFIER	85014-21R
1SSR	SUPPRESSOR	600696-3RR
1R	RESISTOR	63481-2Q

TS 002414

Figure 1-14. Wiring diagram (sheet 3 of 8).

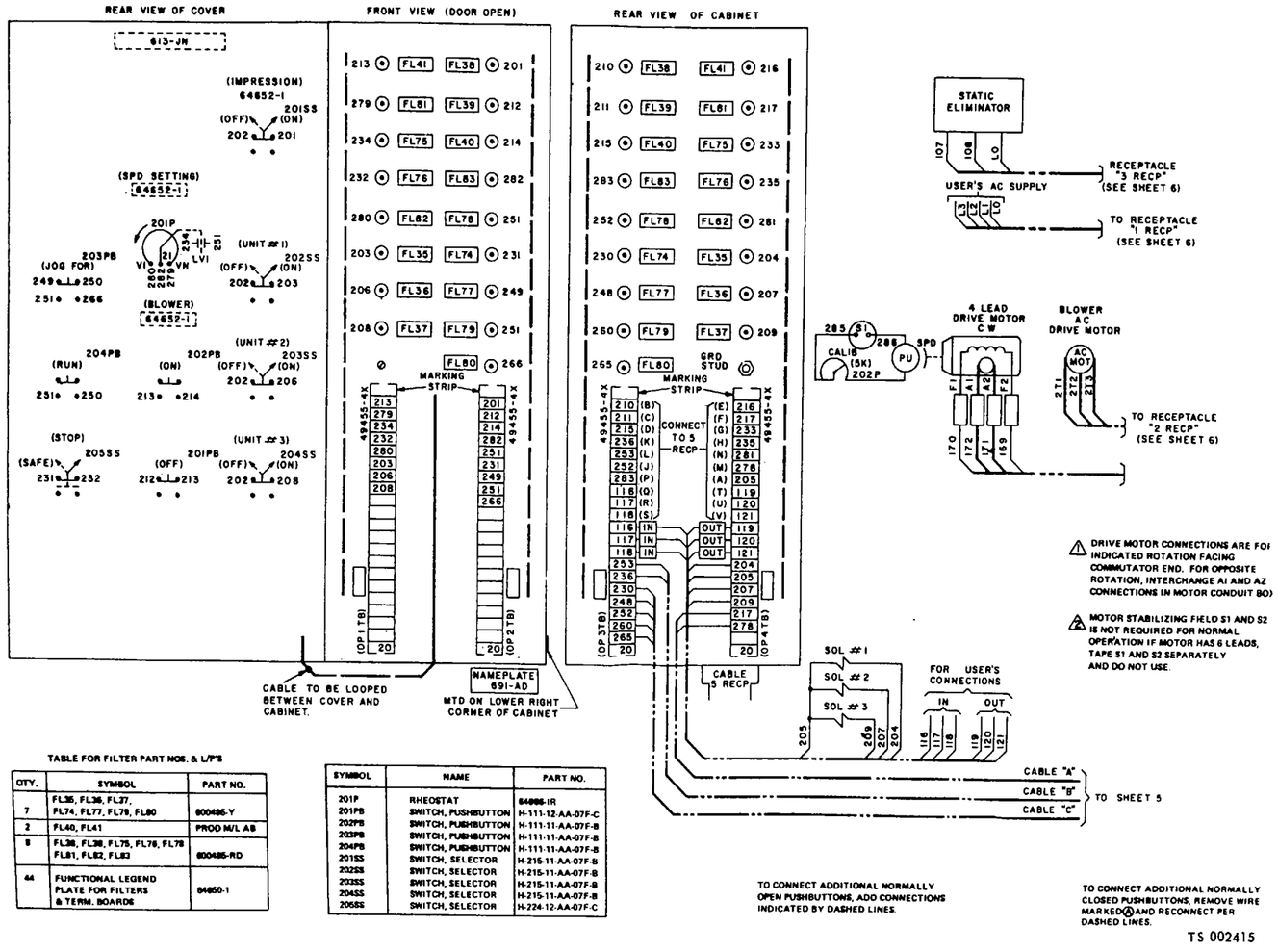


TABLE FOR FILTER PART NOS. & L/P'S

QTY.	SYMBOL	PART NO.
7	FL35, FL36, FL37, FL74, FL77, FL78, FL80	600485-Y
2	FL40, FL41	PROD M/L AB
8	FL38, FL39, FL75, FL76, FL78 FL81, FL82, FL83	600485-RD
44	FUNCTIONAL LEGEND PLATE FOR FILTERS & TERM. BOARDS	64650-1

SYMBOL	NAME	PART NO.
201P	RHEOSTAT	64986-IR
201PB	SWITCH, PUSHBUTTON	H-111-12-AA-07F-C
202PB	SWITCH, PUSHBUTTON	H-111-11-AA-07F-B
203PB	SWITCH, PUSHBUTTON	H-111-11-AA-07F-B
204PB	SWITCH, PUSHBUTTON	H-111-11-AA-07F-B
201SS	SWITCH, SELECTOR	H-215-11-AA-07F-B
202SS	SWITCH, SELECTOR	H-215-11-AA-07F-B
203SS	SWITCH, SELECTOR	H-215-11-AA-07F-B
204SS	SWITCH, SELECTOR	H-215-11-AA-07F-B
205SS	SWITCH, SELECTOR	H-224-12-AA-07F-C

Figure 1-14. Wiring diagram (sheet 4 of 8).

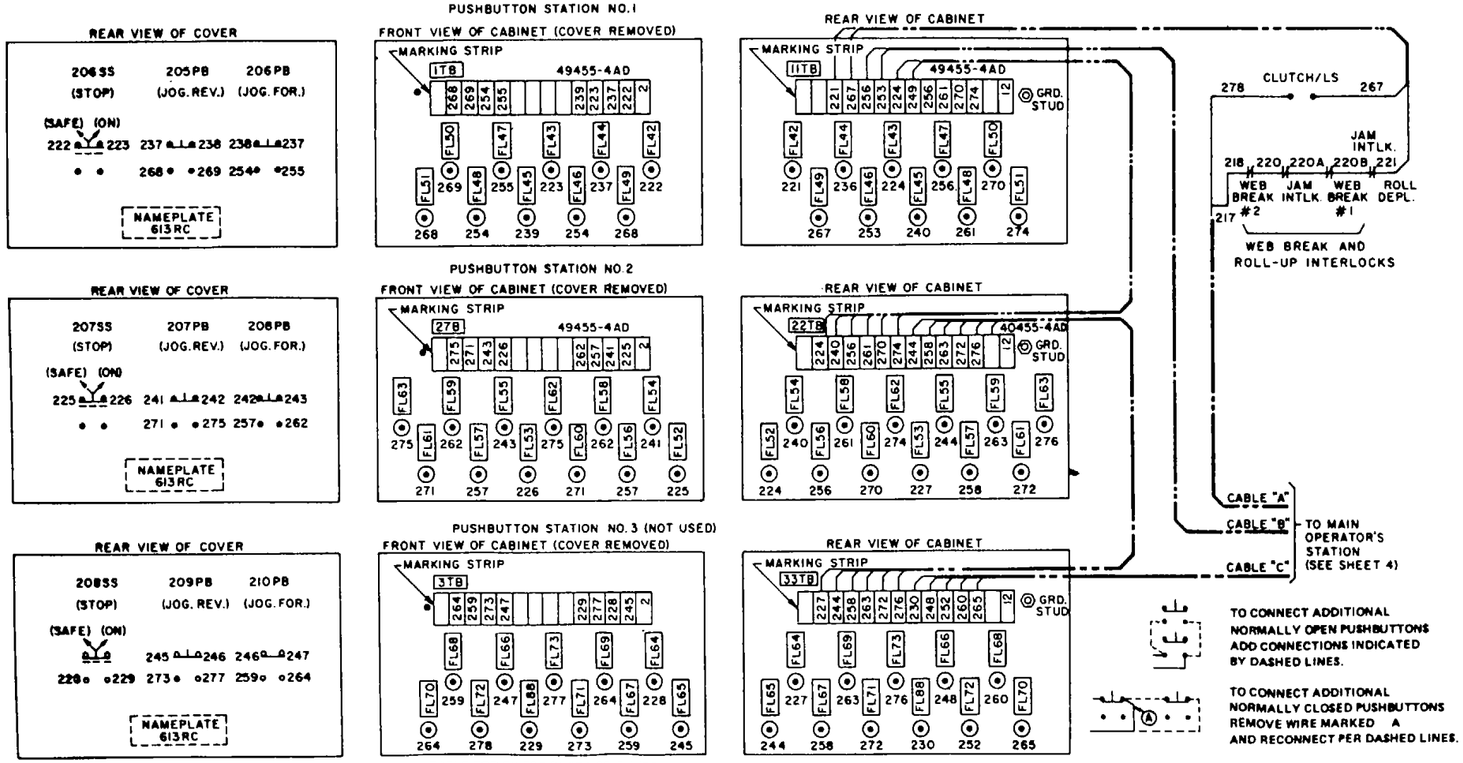


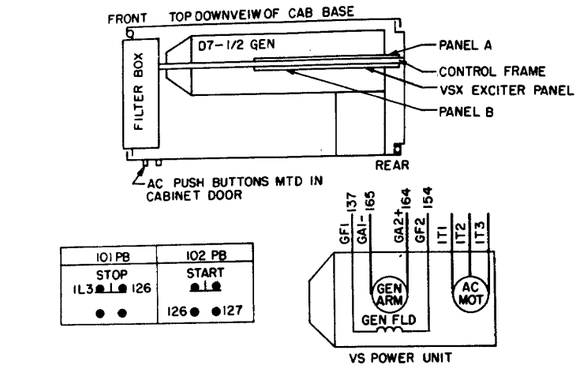
TABLE FOR FILTER PART NOS. & L/P'S

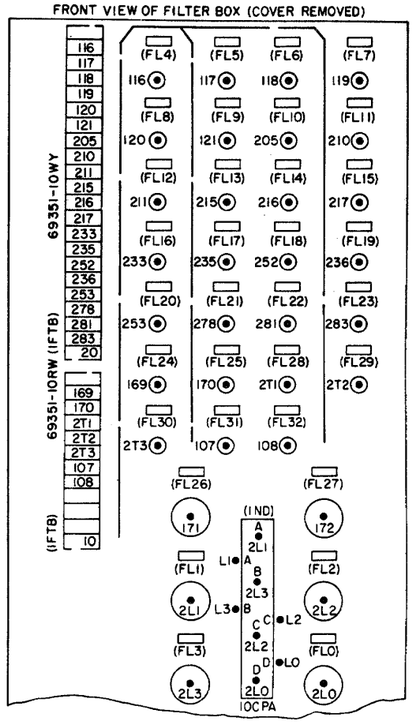
QTY.	SYMBOL	PART NO.
16	FL42, FL44, FL46, FL49, FL52, FL54 FL56, FL58, FL60, FL62, FL64, FL65 FL67, FL69, FL71, FL73	600485-Y
17	FL43, FL45, FL47, FL48, FL50, FL51 FL53, FL55, FL57, FL59, FL61, FL63 FL66, FL68, FL70, FL72, FL88	600486-RD
72	FUNCTIONAL LEGEND PLATE FOR FILTERS AND TERMINAL BOARDS	64650-1

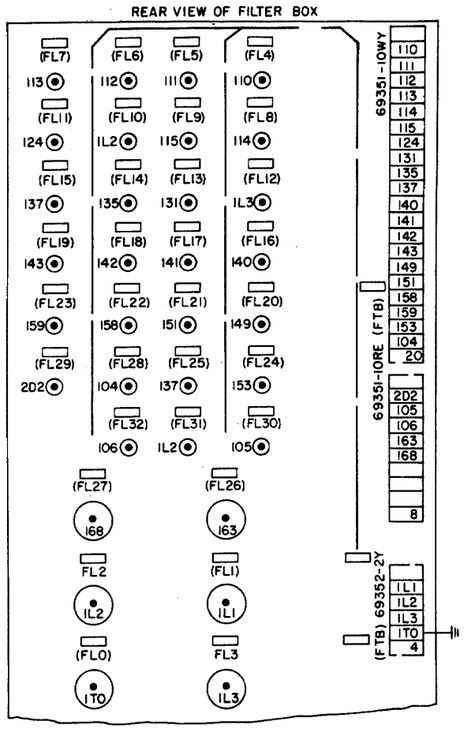
SYMBOL	NAME	PART NO.
205PB	SWITCH, PUSHBUTTON	V-111-11-AA-7F-B
206PB	SWITCH, PUSHBUTTON	V-111-11-AA-7F-B
207PB	SWITCH, PUSHBUTTON	V-111-11-AA-7F-B
208PB	SWITCH, PUSHBUTTON	V-111-11-AA-7F-B
209PB	SWITCH, PUSHBUTTON	V-111-11-AA-7F-B
210PB	SWITCH, PUSHBUTTON	V-111-11-AA-7F-B
206SS	SWITCH, SELECTOR	V-411-12-AA-7F-C
207SS	SWITCH, SELECTOR	V-411-12-AA-7F-C
208SS	SWITCH, SELECTOR	V-411-12-AA-7F-C

TS 002416

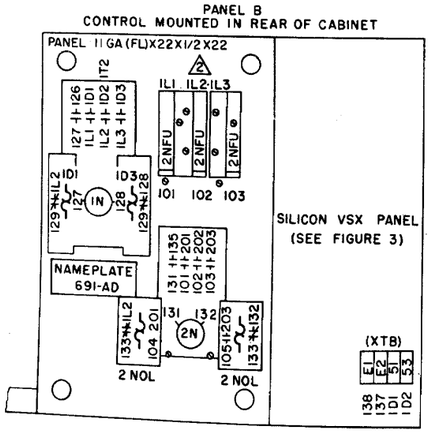
Figure 1-14. Wiring diagram (sheet 5 of 8).







SYMBOL	NAME	PART NO.
1N	STARTER	64407-12W
2N	STARTER	76620-21RB (FAB-ORPPP
FM	CONTACT	64402-14S
FM1	AUX. CONTACT	64412-7R
FM2	DYN BRAKE ASSY	64410-4W
RM	CONTACT	64402-14S
RM1	AUX. CONTACT	64412-7R
RM2	DYN BRAKE ASSY	64410-4R
2NFU	FUSE 10 AMP (3 REQ.)	64767-7D
2NFU	FUSE CUTOUT	78089-1RB
105R	RESISTOR (2 REQ.)	48267-D
101R	RESISTOR	63481-6N
102R	RESISTOR	63481-6X
103R	RESISTOR	63481-6U
104R	RESISTOR	63481-6U
10L	RELAY	69327-W
AP	RELAY	69331-1R
1RR	RELAY	76621-4RY (FD4-RRRW)
RR	RELAY	76621-4RY (FD4-RSS)
101PB	SWITCH, PUSH BUTTON	11-111-12-AA-07F-C
102PB	SWITCH, PUSH BUTTON	11-111-11-AA-07F-B



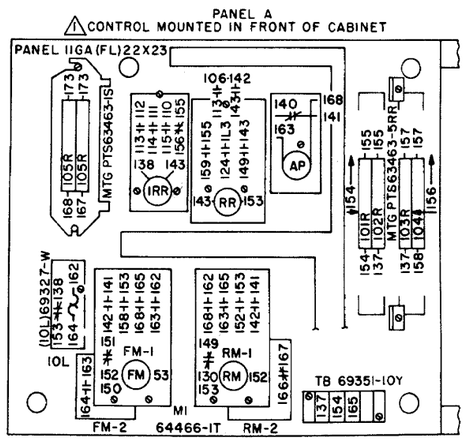


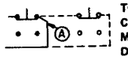
TABLE FOR FILTER PART NUMBERS

QTY	SYMBOL	PART NO.
13	FL4, FL5, FL6, FL11, FL16, FL17, FL18, FL19, FL20, FL21, FL22, FL23, FL24	600485-RD
9	FL7, FL8, FL9, FL10, FL12, FL15, FL25, FL31, FL32	600485-Y
3	FL28, FL29, FL30	600485-WD
2	FL13, FL14	JN14-1689A TT893828-10CP
6	FL1, FL2, FL3, FL0, FL26, FL27	600485-IR
76	FUNCTIONAL L/P'S FOR FILTERS RECEPTACLES & TB'S (FILTER BOX)	64650-1

NOTES:

1. METAL CONDITONER: M/L ITEM PB
   PRIMER: M/L ITEM PC
   PAINT: C/P 0-43555-1AR
2. CONNECT A-C SUPPLY 1L1, 1L2 AND 1L3 TO CORRESPONDING TERMINALS ON A-C STARTER. IF RESULTANT POWER UNIT ROTATION IS NOT CLOCKWISE FACING COMMUTATOR END INTERCHANGE 1L1 AND 1L3 CONNECTIONS.

TO CONNECT ADDITIONAL NORMALLY OPEN PUSHBUTTONS, ADD CONNECTIONS INDICATED BY DASHED LINES.



TO CONNECT ADDITIONAL NORMALLY CLOSED PUSHBUTTONS, REMOVE WIRE MARKED (A) AND RECONNECT PER DASHED LINES.

TS 002417

Figure 1-14. Wiring diagram (sheet 6 of 8).

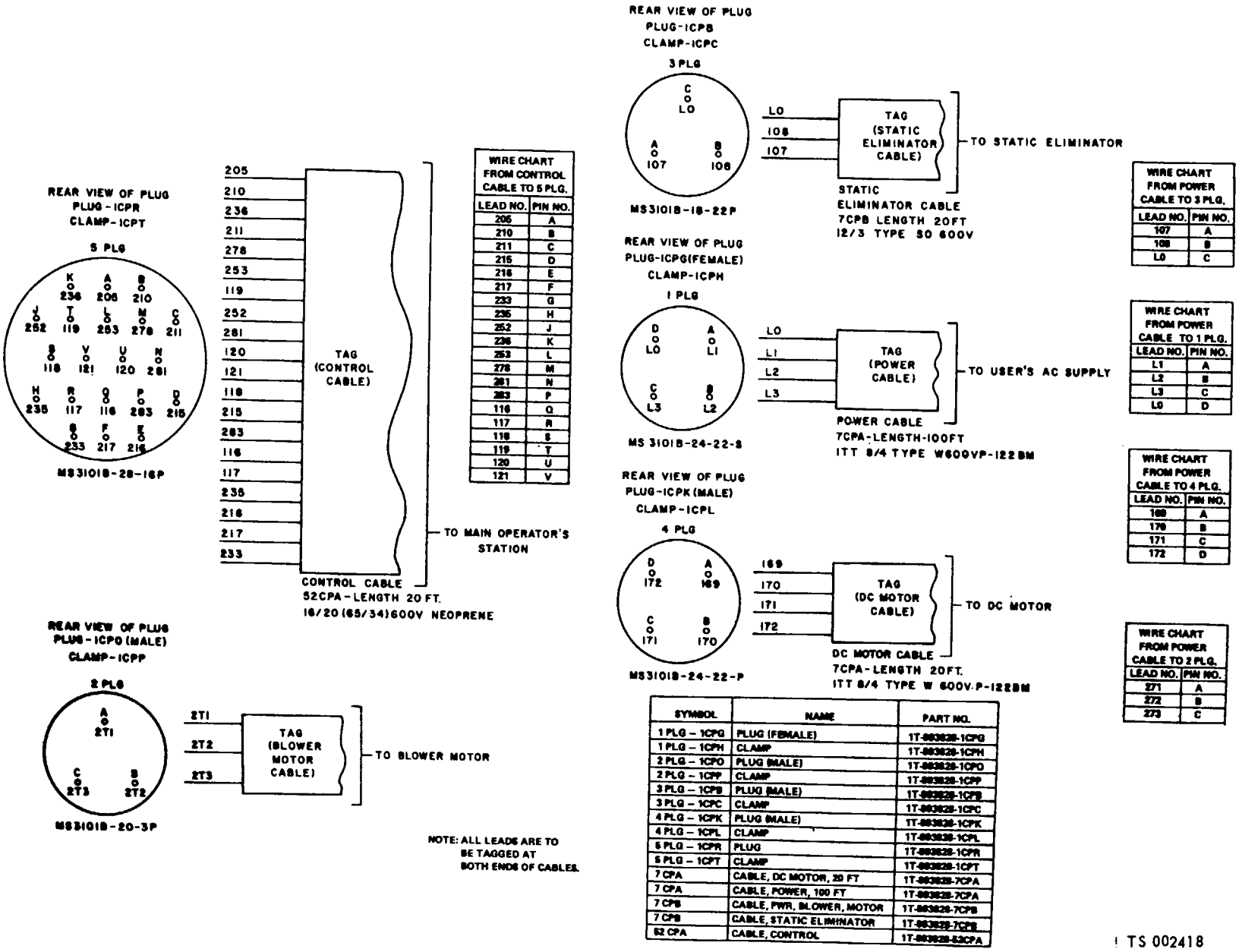


Figure 1-14. Wiring diagram (sheet 7 of 8).

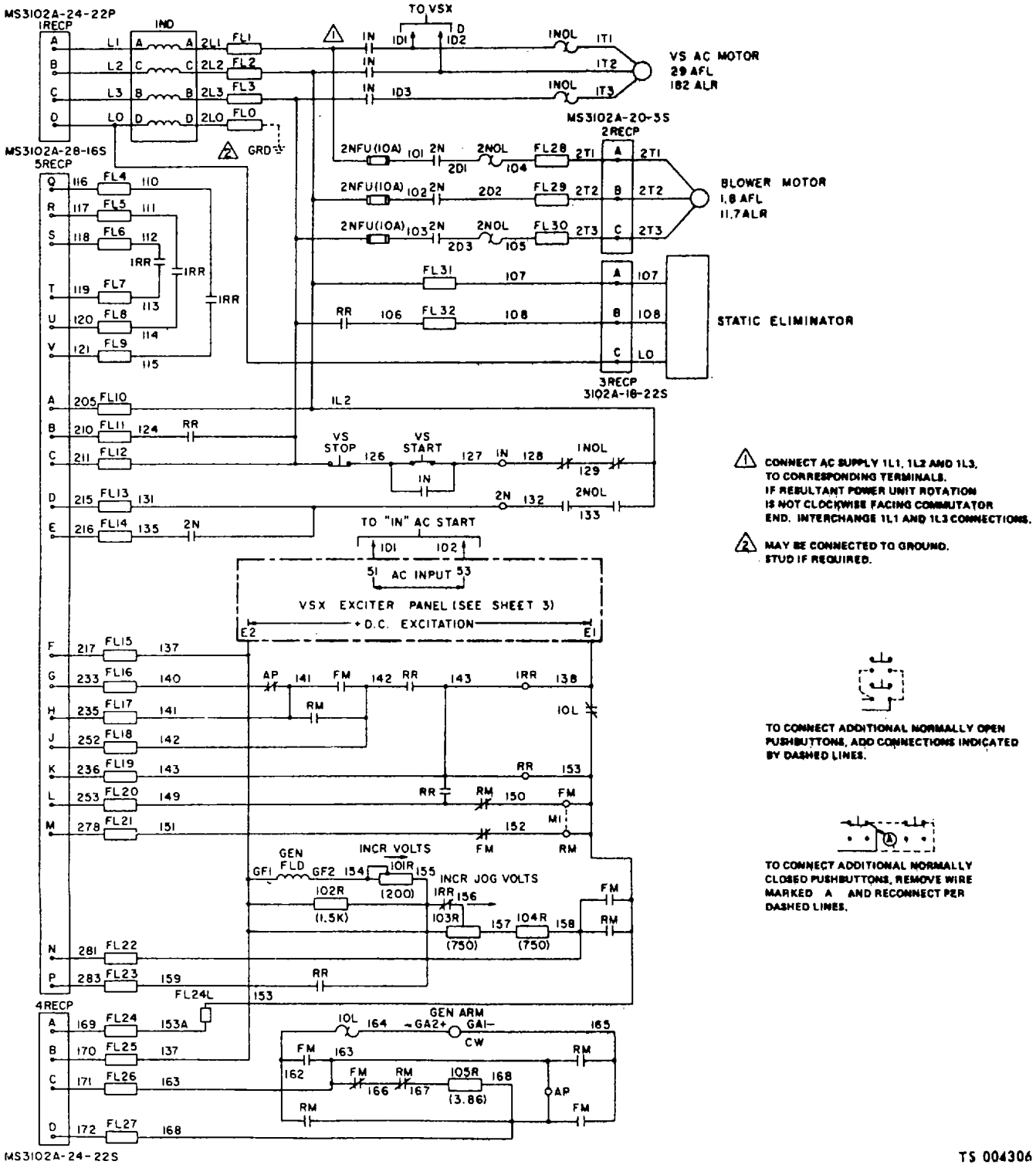


Figure 1-14. Wiring diagram (sheet 8 of 8).

CHAPTER 2

OPERATING INSTRUCTIONS

Section I. OPERATING PROCEDURES

2-1. General

This section contains instructions required for operation of the Model 3-CX Lithographic Offset Press.

2-2. Controls and Instruments

a General. The purpose of the controls and instruments and normal and maximum reading of the instruments are illustrated in figures 2-1 and 2-2.

b. Purpose and Location.

(1) *Impression handle with solenoid switch.* The manual impression handle with solenoid switch (6; fig. 2-1) actuates the blanket cylinder eccentrics putting the printing press on impression at the same time lowering the two rubber covered form rollers onto the plate cylinder.

(2) *Ink form on-off handle*. The manual ink form on-off handle (4 figure 2-1) actuates the trip linkage which lifts the two form rollers from the plate,

(3) *Ink fountain rollers handle and pawl*. The ink fountain roller handle (3, fig. 2-1) is used to turn the ink fountain roller manually to pre-ink the fountain roller. When the press is running the pawl automatically rotates the ink fountain roller and distributes the ink evenly to the ink ductor roller. Each time the press makes one revolution, the pawl makes a part turn, and the amount it turns determines the amount of ink that is fed to the ink ductor roller.

(4) *Ink ratchet knob and setting screw*. The ink ratchet setting screw (2, fig. 2-1) is the means to control this movement. More uniform ink distribution will be the result if the fountain is set with a "narrow gap" between the ink fountain blade and the ink fountain roller so that a thin film of ink is delivered. Using a high number on the ink ratchet setting screw will produce a longer drive stroke supplying more ink. The method of using "wider gap" between the ink fountain blade and ink fountain roller and a shorter drive stroke will not produce as satisfactory a result.

(5) *Impression cylinder adjusting knob.* The impression cylinder adjusting knob (10, fig. 2-1) is provided to permit changing the distance between the blanket and impression cylinder as may be required by varying thickness of paper being run in the press. Paper varying from 9-lb. manifold to 90-lb. index can be easily accommodated. The amount of clearance between the blanket and impression cylinder bodies will vary depending on the thickness of paper being run in the press. The amount of pressure between the two cylinders must be carefully regulated and should not be greater than the minimum required to produce a clear impression. It is generally best to start with less pressure than is required for a clear impression and then gradually increase the pressure until a good clear print is obtained.

(6) *Impression cylinder throw-off handle*. The impression cylinder throw-off handle (11, fig. 2-1) is provided to manually operate the impression cylinder and this handle can be locked in place by means of the cylinder adjusting knob (10, fig. 2-1). A stop is provided on this adjustment which allows the impression cylinder to be returned to a predetermined pressure once it is set for the stock thickness being run.

(7) *Jogger control station switch.* The offset web fed press has three jogger control stations, one for each offset unit. Each station has a forward switch (9, figure 2-1), a reverse switch (8) and a stop switch (7). To jog an offset unit forward, depress the appropriate forward switch; to jog it in reverse, depress the reverse switch making sure that delivery unit is disengaged. To stop the offset unit, depress the stop switch.

(8) Water ductor on-off handle. The water ductor on-off handle (13, figure 2-1) controls the length of time the ductor roller contacts the fountain roller which determines the amount of fountain ink being transferred to the two molleton covered form rollers. Any desired position can be secured by setting the handle in the notches provided for this purpose.

(9) *Water form, on-off handle.* The water form on-off handle (12, fig. 2-1) is used to lift or lower the water form rollers to the plate cylinder.

(10) *Plate cylinder lateral control wheel.* The plate cylinder lateral control wheel (5, fig. 2-1) is used to make lateral adjustments of the image to

plus or minus 1/8 inch from the centerline. By means of this adjustment wheel it is possible to register the image of first offset units to the second offset unit without moving the plates.

(11) *Trolley wheels handle*. The trolley wheels handle (2, fig. 2-2) is used to place the trolley wheels (4, fig. 1-12) in the "OFF" position and to allow for repositioning of the two trolley wheels in the most advantageous area of the web for positive web control.

(12) *Manual sheet lowering and raising handle*. The manual sheet lowering and raising handle (9, fig. 2-2) raises and lowers the delivery board and also allows the delivery board to be placed in its top position. To raise the delivery board turn the handle clockwise.

(13) *Delivery clutch handle*. The delivery clutch handle (23, fig. 2-2) controls the delivery throw-off clutch gear with disengages the entire delivery unit from the offset unit. The delivery unit must always be disengaged when reversing the offset units.

(14) *Cut-off compensating adjusting knobs*. The compensator knobs (10, 11, 12, fig. 2-2) are located to the right of variable speed control station on the operator's side of the press. They are used by the operator as an aid in making adjustments relative to properly positioning the printed image for the cutting operation. The top knob (10) is used to make adjustments for cut off register between the printed image and cut offs. The middle knob (11) is used for register control between offset printing unit numbers 2 and 3, the bottom knob (12) is used for register control between offset printing unit numbers 1 and 2. To position the image closer to back of a sheet, turn the appropriate knob clockwise. To position it closer to the front of a sheet, turn the appropriate knob counterclockwise.

(15) *Blower-on-off-switches*. The blower on/off switches (16, 17, fig. 2-2) are located on the cover of the variable speed control station. To start the blower and motor which delivers compressed air for the operation of the delivery unit, depress switch (16) to on position. To stop operation, depress the blower off switch (17) to off position.

(16) *Nipping roller adjustment handle* (3, fig. 2-2). When the nipping roller handle is in the on position the two upper nipping rollers contact the lower nipping drive roller pulling the web through the press to the rotary cutter during operation. In the off position the web just remains in place providing the on-off feeder rider roller handle (3, figure 1-6) is also in the off position. With the two handles in their off positions the press can be run to ink up, water up or clean the ink motion rollers utilizing the ink wash-up device or perform other operational functions. The two upper nipping rollers (203, figure 4-29) should be positioned approximately 1 inch in from outer edges of web and adjusted for pressure by means of the two adjusting knobs (17, figure 4-29). Pressure should be sufficient to feed the web smooth and parallel into the rotary cutter without causing any buckling of the web before it enters the nipping rollers. Place the two nipping roller guides (205, figure 4-29) equal distance between the two nipping rollers to keep the web from buckling in the center.

NOTE

Excess pressure adjustment of the nipping rollers will cause damage and possibly cutting of the web.

(17) *Variable Speed Control Station*. The variable speed control station (1, figure 2-2) is located just below the delivery unit at the operator's side of the press. It contains the controls for regulating the operating speed of the press and for starting and stopping the press.

(18) *Off-On Master Impression Switch*. The off-on master impression switch (22, figure 2-2) is located on the cover of the variable speed control station (1). It must be turned to the "ON" position before switches that control offset units can be operated. Turning the impression switch to the "off" position automatically throws the offset units off of the printing impression position.

(19) *Run switch*. The run switch (14, fig. 2-2) located on the cover of the variable speed control station (1). Depress the switch to start the press.

(20) *Jog forward switch*. The jog forward switch (13, fig. 2-2) is located on the cover of the variable speed control station (1). It allows the press to be operated in a forward direction. The press will jog only as long as the switch is depressed.

(21) *On-stop-safe switch.* The on-stop-safe switch (15, fig. 2-2) is located on the cover of the variable speed control station (1). Because of the dynamic braking mechanism with which the variable speed control unit is provided, the press will come to a dead stop in less than two seconds, regardless of the speed at which it is operating, whenever the stop switch is depressed.

(22) *Speed setting control*. The speed setting control (18, fig. 2-2) is located on the cover of the variable speed control station (1). It regulates the speed at which the press is operated. The press can be operated at speeds up to 30,000 iph for short periods of time; however, normal operating speed is 25,000 iph. To set the potentiometer for the number of impressions desired, start the

motor generator unit and turn the potentiometer control knob to the desired setting. The operator checks the iph on the speed indicator (6, fig. 2-2).

(23) *On-off impression switch*. The on-off impression unit printing switches (19, 20, 21, fig. 2-2) are mounted on the left on the variable speed control station (1). The top switch (21) controls the first offset unit and the middle switch (20) controls the second offset unit, and the bottom switch (19) controls the third offset unit. The off-on impression switch (22) must be in the "on" position to operate an offset unit. To operate an offset unit, turn the proper unit switch to the "on" position. To stop all offset units simultaneously, turn the on-off master impression switch to the "off" position.

(24) *Oil pressure gage*. The oil pressure gage (5, fig. 2-2) is mounted on the operator's side of the delivery unit. Start the press, and hold down the pressure lubricating button on oil lubricator for 15 seconds. The oil pressure gage should register 20 psi. If the pressure reading is below 20 psi, check the level of the oil in the oil reservoir.

(25) *Speed indicator*. The speed indicator (6, fig. 2-2) is mounted on the operator's side of the delivery unit. It registers in impressions per hour the operating speed of the press. The recommended operating speed of the press is 25,000 impressions per hour for the best production results.

(26) *Sheet counter*. The sheet counter (4, fig. 2-2) is a six digit counter located on the operator's side of the press. It registers the number of sheets printed. A knob on the end of the counter is used to set it at zero.

(27) *Static eliminators*. Static eliminators are installed at different locations on the press. They eliminate static electricity from web, that is generated when the press is running.

(28) *Microswitches*. Microswitches are installed at different locations on the press. They automatically stop the press whenever the web breaks or rolls up at a cylinder.

(29) *Motor generator unit*. The motor generator cabinet (fig. 4-42) contains a D7.5V-S power unit generator, 3 phase, 60 Hertz, 208 volts AC (fig. 6-23); a 2 amp VSX exciter panel and a magnetic control section (figs. 6-22 and 4-43) which provides the following operating and control features:

(a) Basic control, dynamic braking, armature reversing jog forward, and jog reverse.

(b) AC across the line starter.

(c) Four wire AC power source, 120/208 volts.

(d) AN type receptacle and plugs complete with cable clamps and caps for each plug.

(e) Three normally-open contacts for use to terminate in RFI suppressor-bulkhead.

(f) Fused, non reversing AC starter for 1/2 hp, 308 volt, 3 phase, cycle blower motor.

(g) Drive interlock stopping on web break.

(h) Limit switch on clutch of delivery unit interlock which prevents jog reverse with clutch engaged.

(i) AC pickup on drive motor wired directly to speed indicator.

(j) Start-stop pushbutton switches in cabinet.

(k) Circuitry for operation of static eliminator rated at. 220 volts and 0.25 amps.

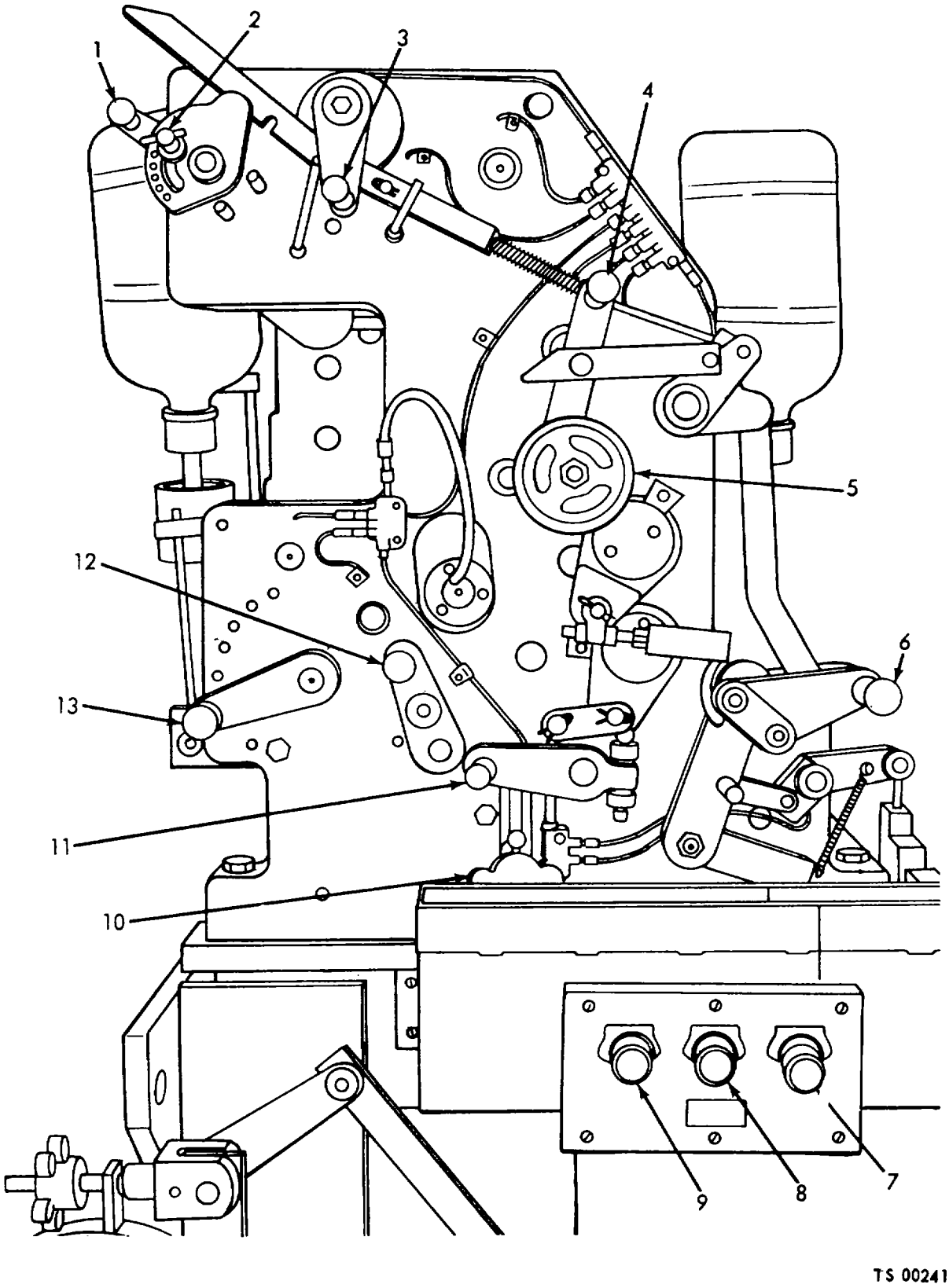


Figure 2-1. Controls and instruments offset unit.

KEY to figure 2-1:
1. Ink fountain handle
2. Ink ratchet setting screw
3. Ink fountain roller handle and pawl
4. Ink form, on-off handle
5. Plate cylinder lateral control wheel
6. Impression handle (with Solenoid switch)
7. On-stop-safe switch
8. Jog reverse switch
9. Jog forward switch
10. Impression cylinder adjusting knob
11. Impression cylinder throw-off handle
12. Water form, on-off handle
13. Water ductor, on-off handle

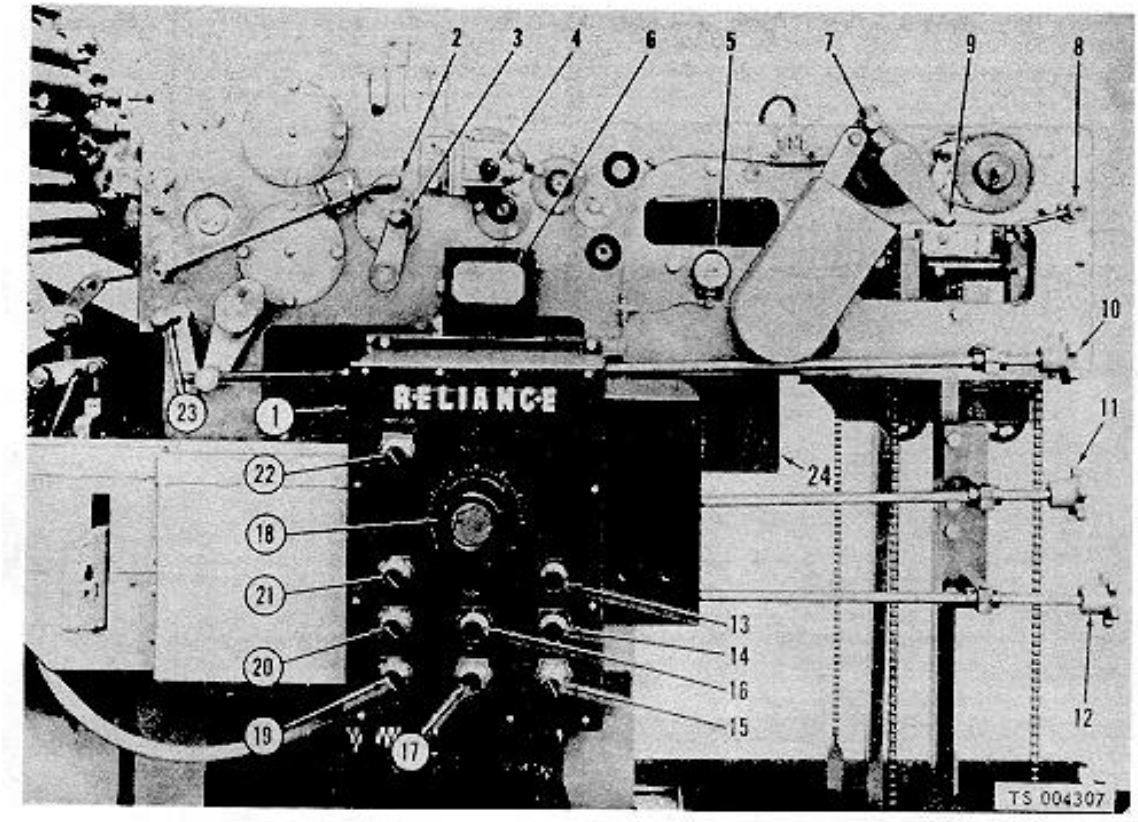


Figure 2-2. Controls and instruments delivery unit.

1. Control Station
2. Trolley Wheels Handle
3. Nipping Roller Adjusting Handle
4. Sheet Counter
5. Oil Pressure Gage
6. Speed Indicator
7. Automatic Sheet Lowering Handle
8. Sheet Stop Handle
9. Manual Sheet Lowering and Raising Handle
10. Cut-Off Compensating Adjusting Knobs
11. Seconds Compensating Adjusting Knob
12. First Compensating Adjusting Knob
13. Jog Forward Switch
14. Run Switch
15. On-Stop-Safe switch
16. Blower, On-Switch
17. Blower, Off-Switch
18. Speed, Setting Control
19. On-OFF Impression Switch No. 3
20. On-OFF Impression Switch No. 2
21. On-OFF Impression Switch No. 1
22. On-OFF Master Impression Switch
23. Delivery Clutch Handle
24. Static Eliminator Unit

2-3. Operation of Equipment

a. Preparation for Starting.

(1) Perform the necessary daily preventive maintenance checks and services (para 3-4).

(2) Prepare the plates for installation, following the procedures listed below.

(a) Check the plate (1, fig. 2-3) to see that it is square. The leading and tail edges must be parallel. Be certain that the centerline of the plate is clearly marked.

(b) Place the plate (1) on the table of the plate bending jig, face side up.

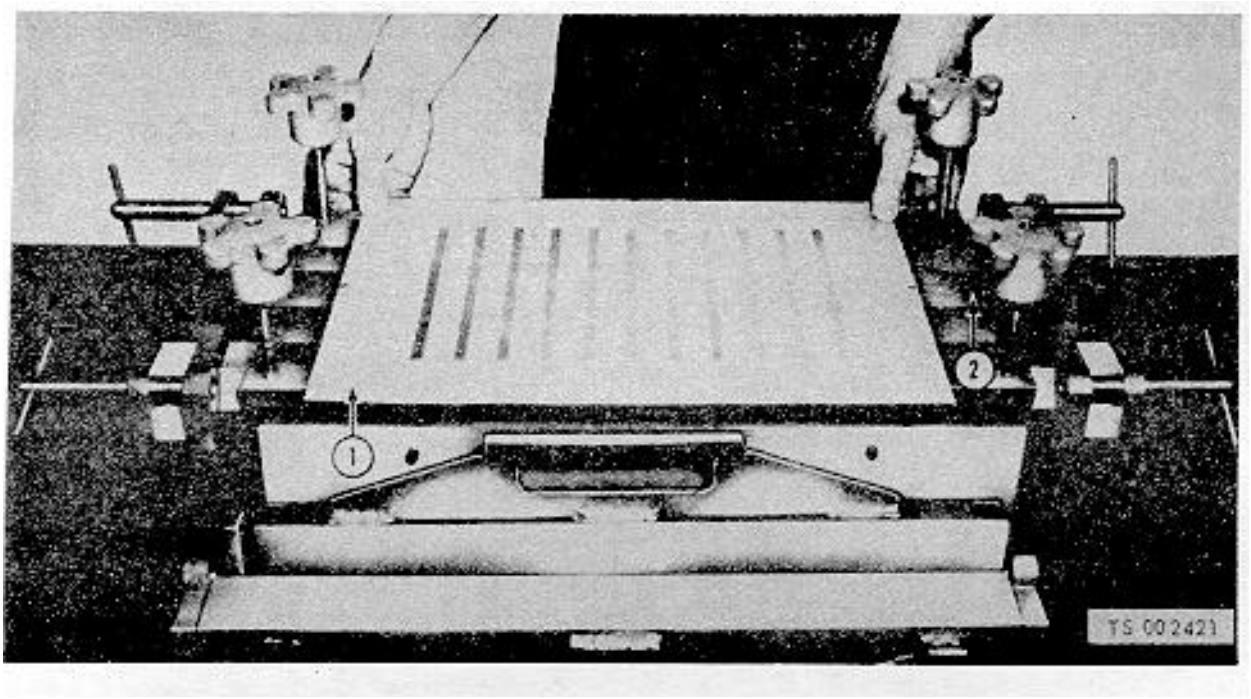
(c) Line up the center marks on the plate with those engraved on the metal plates (2) imbedded in the plate bending jig.

(d) Place the locking bars (1, figure 2-4) on the studs provided and lay strips of clean paper under the bars to protect the plate. The locking bars are not interchangeable; however, the head bar and the tail bar are clearly marked and the way they are to be mounted are clearly indicated.

(e) Tighten all knobs (2) just enough to hold the plate firmly against the table.

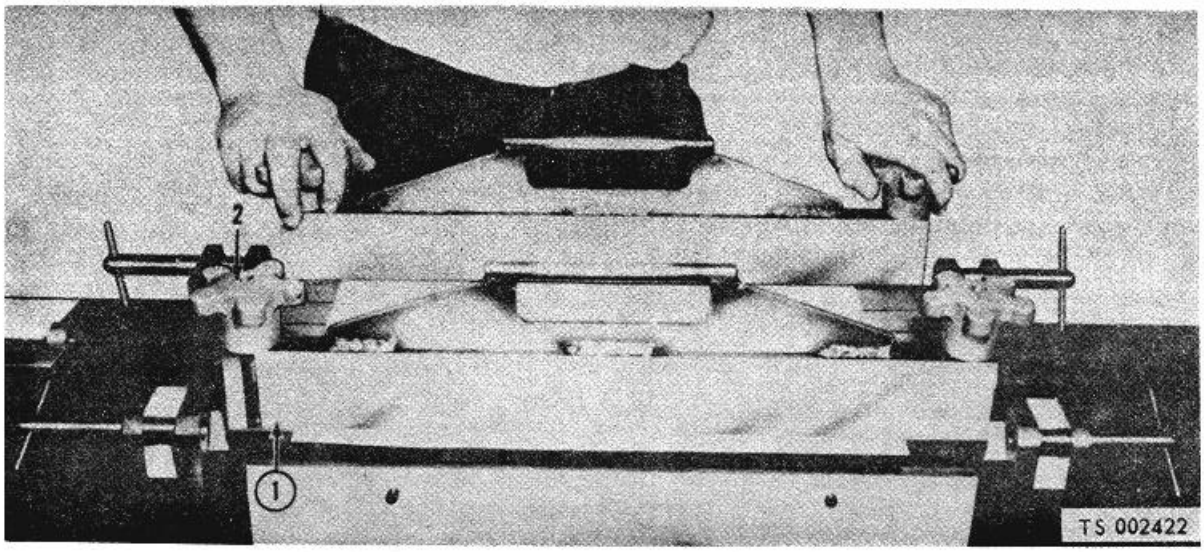
(f) Recheck the center marks and make adjustments as necessary, then tighten the hand knobs until the plate cannot be moved.

(g) Install the plate bending bar (1, figure 2-5) on one end of the jig with bending bar pin handles (2) and pull the bar downward to the stops. This will bend the end of the plate. Follow the same procedures on the other end of the jig.



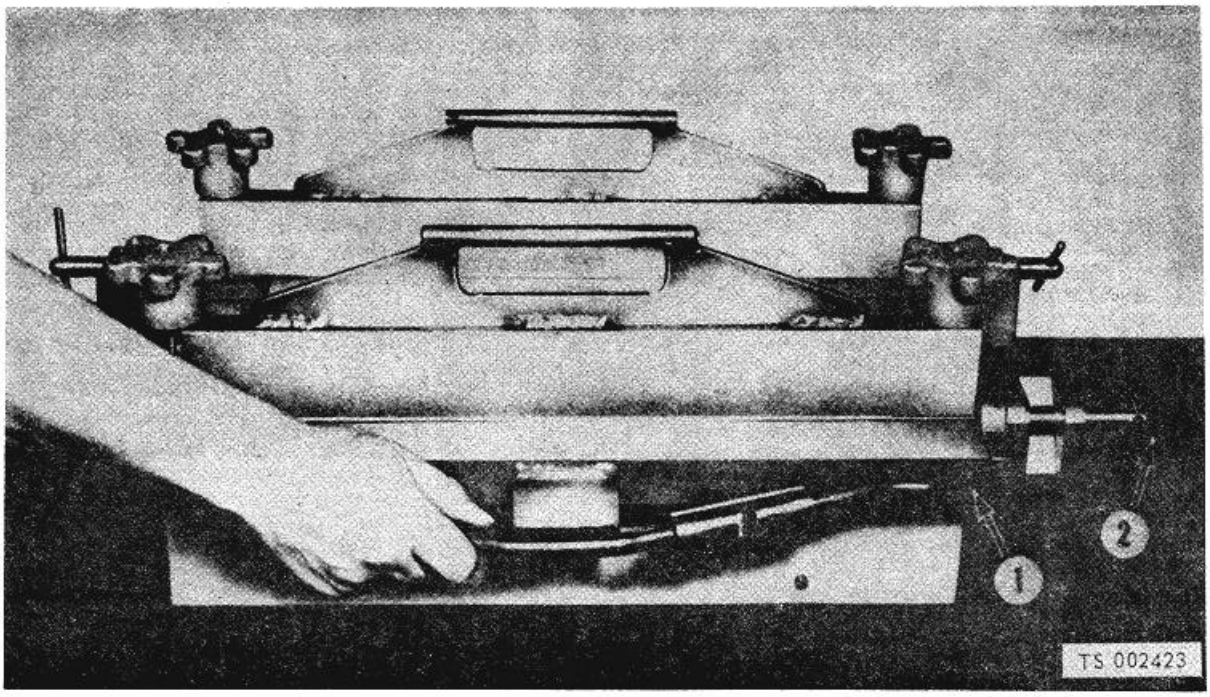
1. Plate **2. Guide Plate**

Figure 2-3. Placing the plate on bending jig.



1. Gripper edge stationary bar
2. Hand Knob

Figure 2-4. Tightening jig hand knob.



1. Gripper Edge Bending Bar
2. Bending Bar Pin

Figure 2-5. Bending the plates.

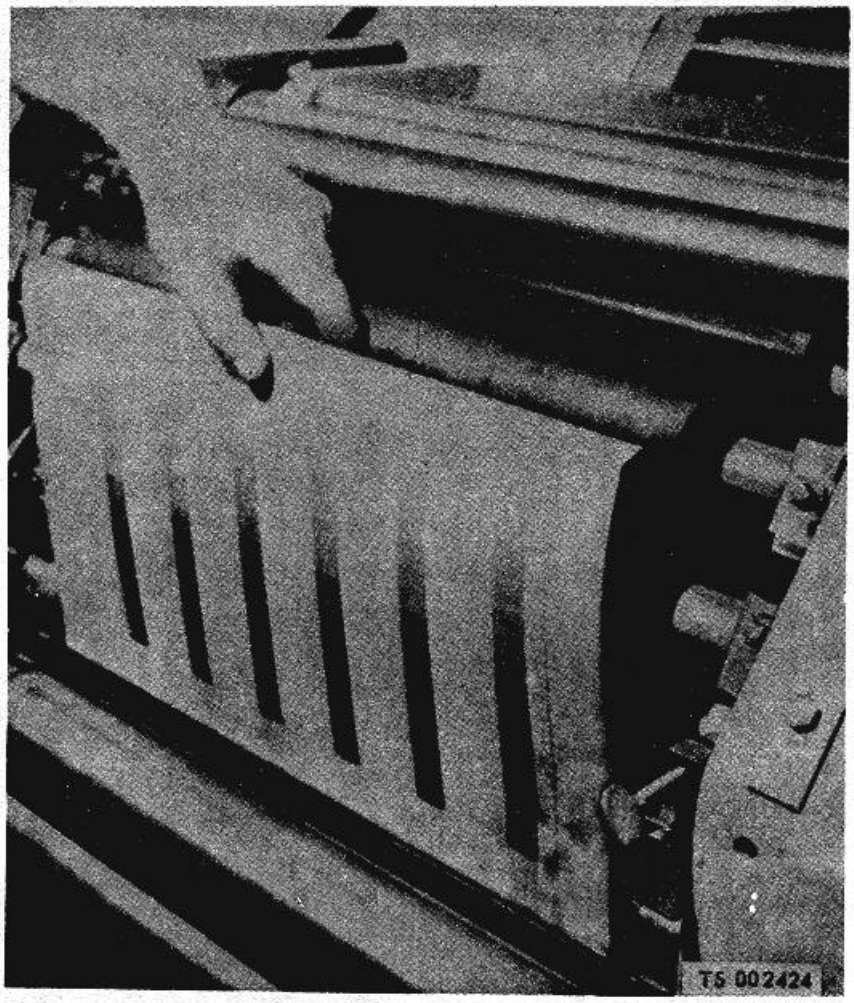


Figure 2-6. Inserting leading edge of plate.

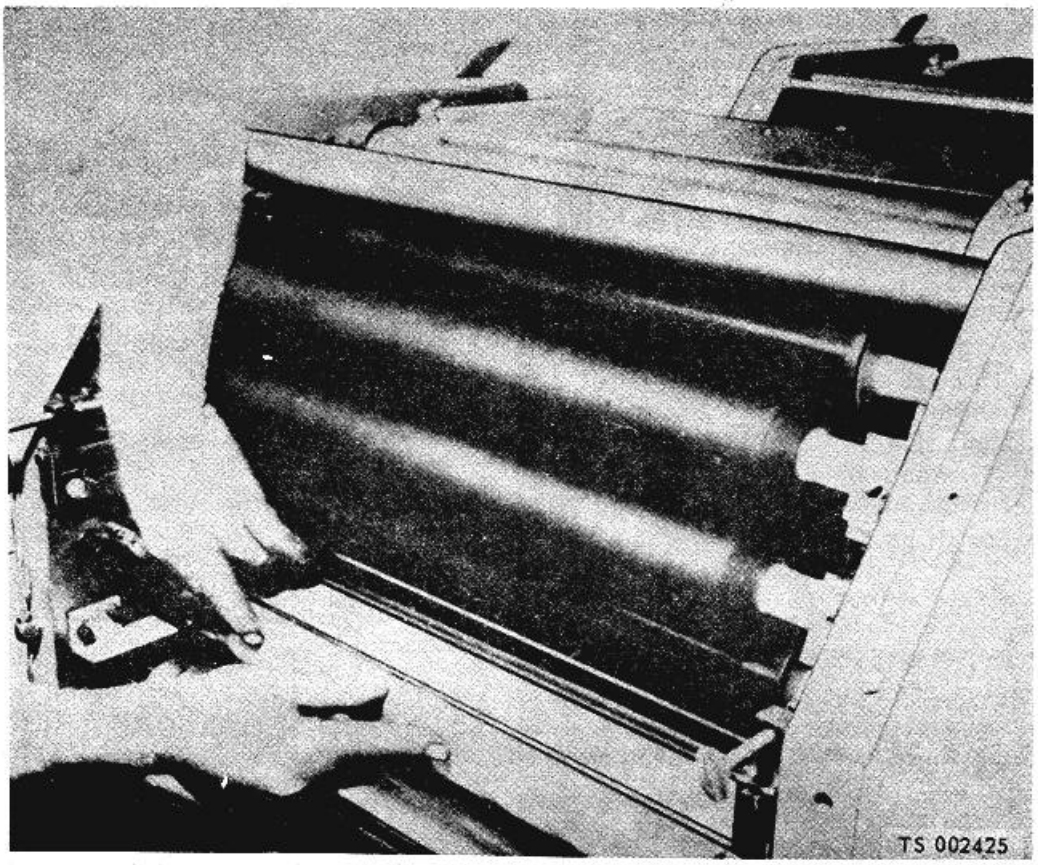


Figure 2-7. Inserting tail edge of plate.

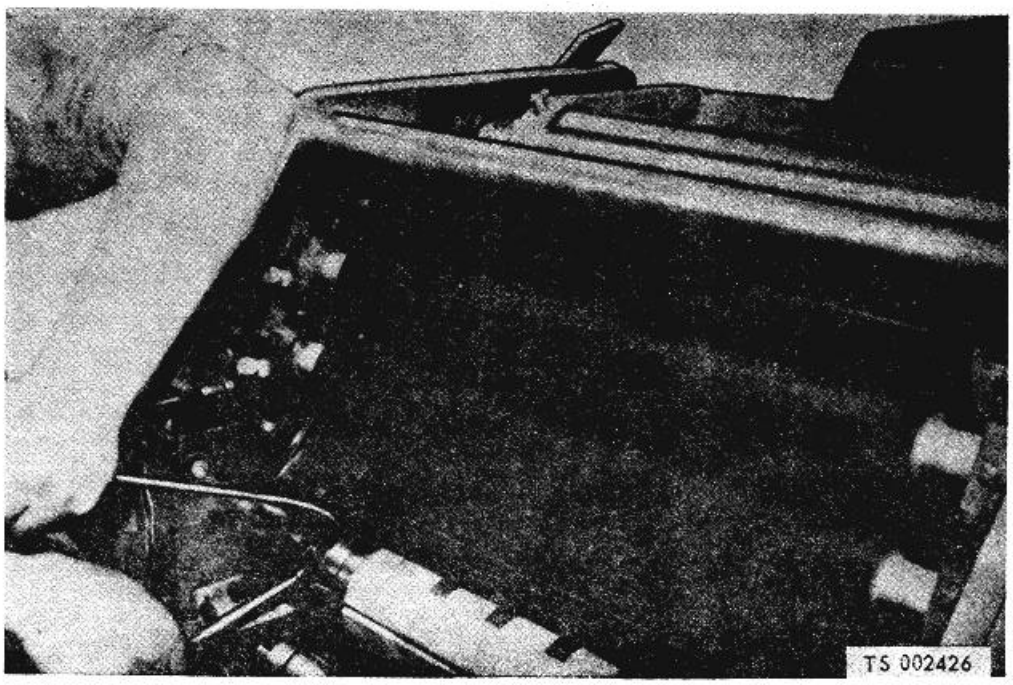


Figure 2-8. Tightening the plate with box and pin wrench.

(3) Load the paper roll on the feed roll stand, following the procedures listed below.

(a) Roll paper roll up to press in loading position directly in front of the stand.

(b) With operator facing paper roll attach right hand thread chuck (3, fig. 2-9) to shaft with brake drum (2) on right hand side.

(c) Place the edge of the right hand chuck six and one half inches from the hub of the brake drum and fasten in place with the tightening clamp bolt (7). This position will suffice for most replacement rolls.

(d) Insert shaft with brake drum (2, fig. 2-9) with chuck through the core of paper roll (1).

(e) Attach the left-hand thread chuck (4) to shaft on left-hand side.

(f) Adjust expansion nuts (5 and 6) with spanner wrench furnished so that paper roll is correctly positioned, and held tight on the shaft (2).

NOTE

The expansion nuts should be tightened in the direction the paper is unwinding.

(g) Tighten clamping bolts (8) on left hand chuck.

(h) Swing down cutter lateral member of brake mechanism by unlocking handle (1, fig. 2-LO).

(i) Mount the assembled paper roll and ;haft on the feed roll stand and check that the)rake drum is properly fitted into the brake mechanism as shown in figure 2-10.

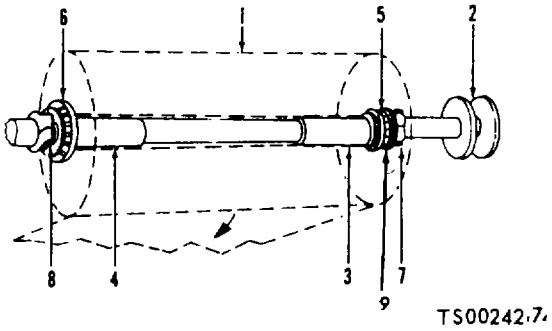
CAUTION

Be careful not to damage paper roll when mounting it on feed-roll stand.

(j) Adjust the brake mechanism by tightening brake tension and adjusting knob (2, fig. 2-10) in a clockwise direction. Tighten knob until dancing roller (3, fig. 2-11) is supported by paper refer to paragraph (6) (c). Generally the brake mechanism should be tightened until the dancing roller is supported by the paper.

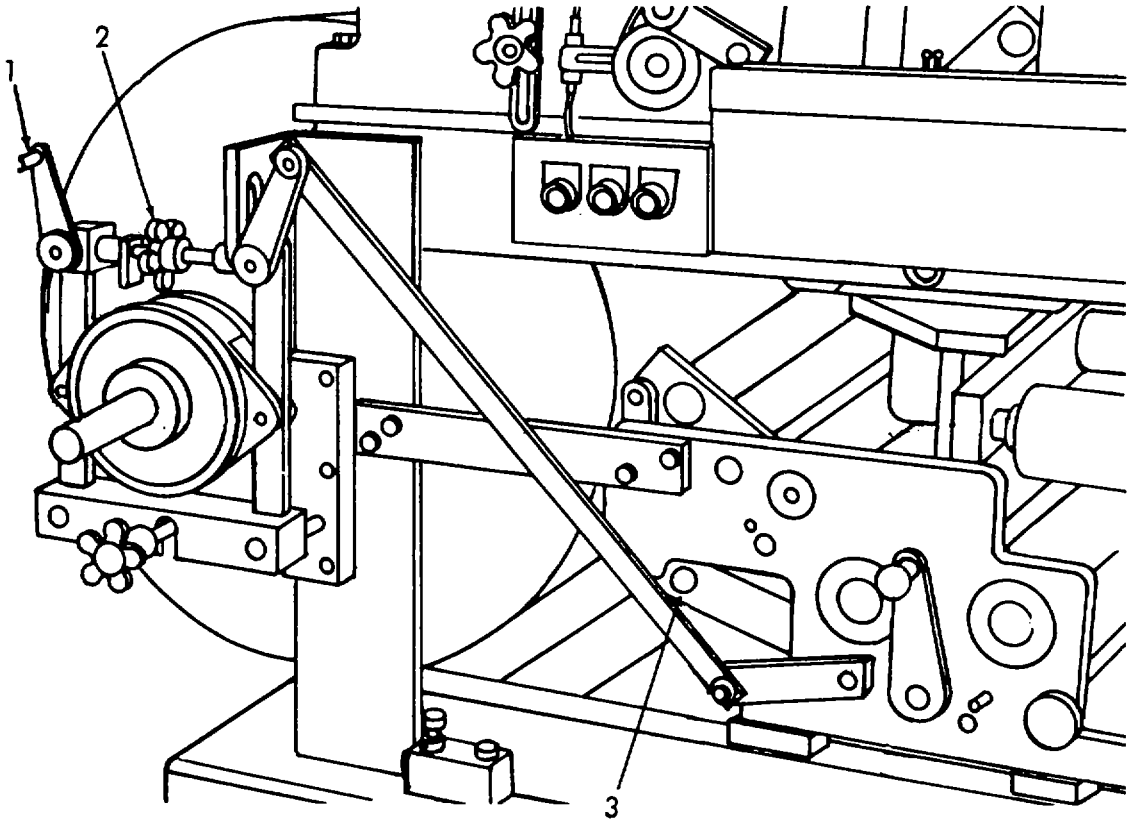
CAUTION

If the brake is too tight, it may cause the web to break. If the brake is not tight enough the web will continue to unwind when the press is stopped.



1. Paper Roll
2. Shaft with Brake Drum
3. Right-Hand Thread Chuck
4. Left-Hand Thread Chuck
5. Expansion Nut
6. Expansion Nut
7. Clamping Bolt
8. Clamping Bolt
9. Spring

Figure 2-9. Paper web installation.



1. Brake Locking Handle 2. Brake Tension Adjusting Knob 3. Dancing Roller

Figure 2-10. Adjusting Brake Mechanism.

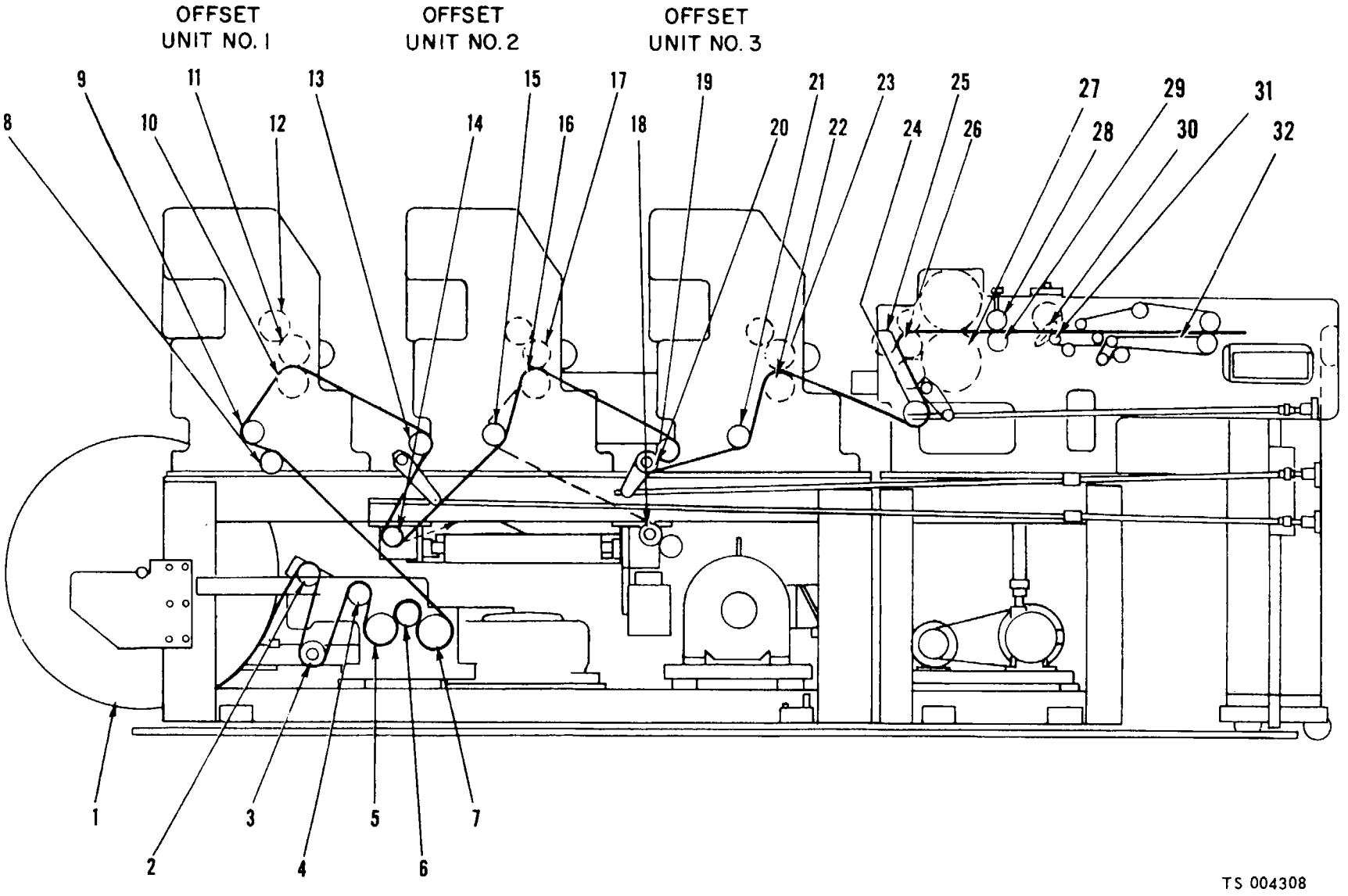


Figure 2-11. Method of threading the web

KEY to figure 2-11:
1. Paper
2. Feeder Tension Roller
3. Dancing Roller
4. Tension Roller
5. Feed Roller
6. Feeder Rider Roller
7. Feed Roller
8. Lead Roller
9. Lead Roller
10. Impression Cylinder
11. Blanket Cylinder
12. Plate Cylinder
13. Lead Roller
14. Lead Roller
15. Lead Roller
16. Impression Cylinder
17. Blanket Cylinder
18. Bay Window Driven Roller
19. Lead Roller
20. Lead Roller
21. Lead Roller
22. Impression Cylinder
23. Blanket Cylinder
24. Lead Roller
25. Trolley Wheels
26. Nipping Roller
27. Idler Shaft
28. Nipping Roller
29. Nipping Roller
30. Rotary Cutter
31. Stationary Cutter
32. Delivery Belts

(4) Prepare the blanket for installation following the procedures listed below:

(a) Inspect the blanket carefully for both imperfections and foreign particles.

(b) Measure the blanket to be certain that it is square, and that it is not too long or too short. The direction in which the blanket must be mounted on the blanket cylinder is shown by arrows on the reverse side of the blanket. The arrow must be facing in the direction the blanket cylinder is rotating during operation. A line drawn through these arrows will be perpendicular to the blanket bars.

(c) Glue bars to blanket and rivet (fig. 2-12) as follows:

1. Using 3M adhesive, or its equivalent, glue head-end blanket bar (2, fig. 2-12) square to edge of fabric side of the blanket (3). The headend blanket bar is Part No. 6-1-4052-3-34 and is 3/32 x 3/8 x 16/4 in.

2. After the glue has dried and with rubber side of the blanket facing upward, use the eyelet machine (1), with punch No. A-1094 in it, to punch a hole through the blanket from the hole in the head-end blanket bar.

3. Insert an eyelet No. 1A-1094 in the hole and form it. Continue until all holes in the head-end blanket are punched and have formed eyelets in them.

4. Use two blanket gages Part No. 6-1 4046-58 to square up the tail-end blanket bar (4) to the other edge of the blanket (3) on the fabric side and then glue the tail-end blanket bar to the blanket. The tail-end blanket bar is part No. 6-14052-3-35 and is 1/32 in. thk x 3/8 in. w x 16 1/4 in. lg.

5. After glue has dried, and with the rubber side of the blanket facing upward; use the eyelet machine (1) with punch No. A-2162 in it to punch a hole through the blanket from the hole in the tailend blanket bar.

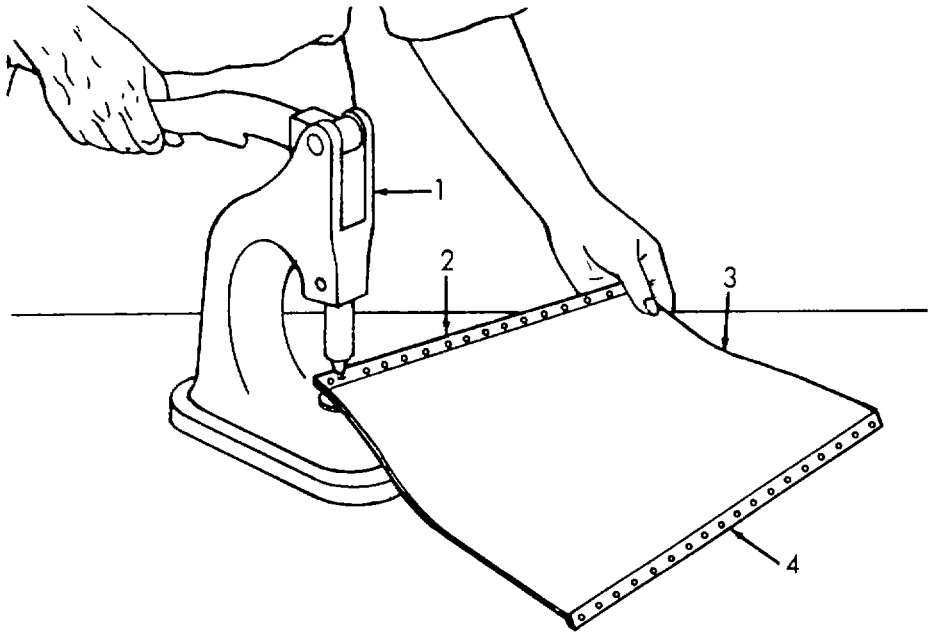
6. Insert an eyelet No. A-2162 in the hold and form it. Continue until all holes in the tail-end blanket bar and blanket are punched and have formed eyelets in them.

7. Trim off end of blanket atboth headend and tail-end blanket bars so that blanket will not extend out past the bars.

(d) Carefully measure the distance between the left edge and the right edge of the ends of both blanket bars. The measurements should be equal within one-sixty fourth inch. The blanket is now ready to mount on the blanket cylinder.

(5) *Blanket installation*. Install the blankets following the procedures listed below:

(a) Clean the blanket surface thoroughly with pumice power, wash the blanket with clean water, and dry the blanket. Dust the surface of the blanket with French chalk. Wipe off any excess chalk and clean off the back of the blanket.



1. **Eyelet Machine**
2. **Head-End Blanket Bar**
3. **Blanket**
4. **Tail-End Blanket Bar**

Figure 2-12. Riveting the blanket.

CAUTION
Be careful to remove any lint or loose threads from the blanket.

(b) Using a micrometer, measure the ,thickness of the blanket at several places, being -careful not to compress the rubber surface of the blanket.

(c) Average the measurements; use the average to determine amount of packing required. The blanket cylinder is undercut 0.071 in.. This means that the bearers are 0.071 in. (.18 cm) above the main body of the cylinder. The surface of the blanket should be 0.002 in. (.00508 cm) above the surface of the bearers. Thus, the thickness of the blanket and the packing together should be 0.073 (185 cm) inch. Because the average 3-ply blanket has an average thickness of 0.064 in. (0.1626 cm), usually 0.009 in. (0.0229 cm) of packing will have to be added.

(d) Inspect the packing sheets to be sure that they are square and that they are cut to the proper size.

(e) Insert the front blanket bar (see fig. 2 13) into the stationary slot in the blanket cylinder.

(f) Make sure slot on reel rod faces up so that tail end of blanket can be installed.

(g) Insert the previously selected packing between the blanket and the cylinder; and, while holding the rear of the blanket, slowly jog the press, allowing the blanket to feed around the cylinder. Be certain that the packing does not wrinkle or pull away from the head end.

(h) When the blanket is in place, insert the tail bar into the stationary slot (fig. 2-14) and lock it in place, making sure that the blanket is properly centered on the cylinder.

(i) Tighten the blanket (fig. 2-15) with box wrench provided. Lock in place by engaging pawl with ratchet (86, 79, fig. 4-23). Do not attempt to take all of the stretch out of the blanket at this time; it cannot be done, and attempting to do so may damage the blanket. Apply only as much pressure as one man can apply with his hands. (After a few hundred impressions have been run. stop the press and tighten the blanket again).

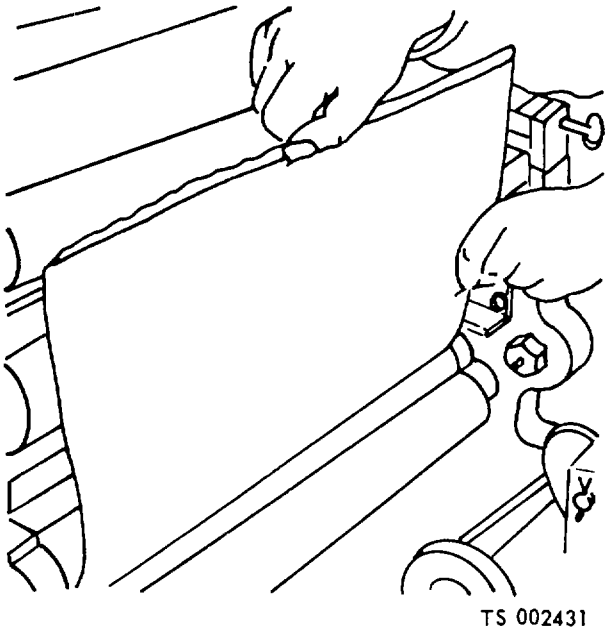


Figure 2-13. Inserting front blanket bar

.

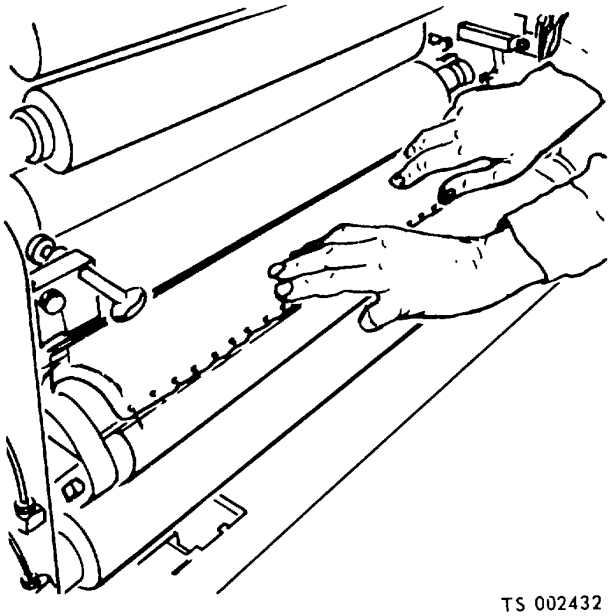


Figure 2-14, Inserting tail blanket bar.

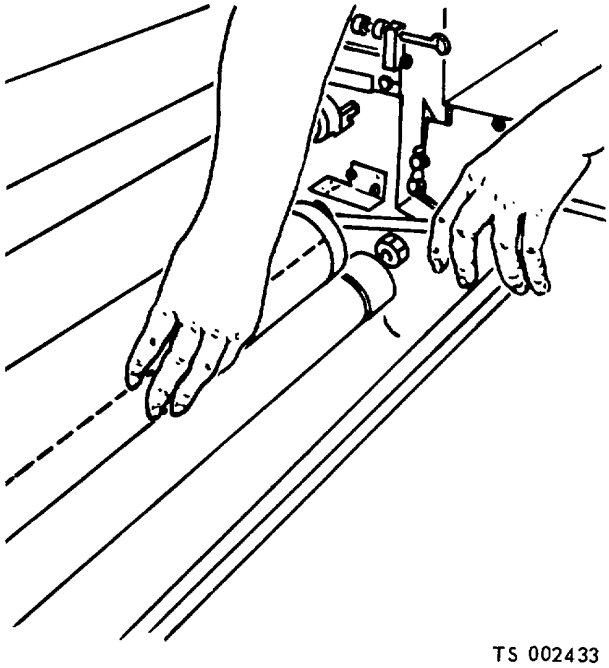


Figure 2-15. Tightening the blanket.

(6) *Threading the Web*. To thread the web, (fig. 2-11) proceed as follows:

(a) Loosen the brake drum holding the paper roll (1).

(b) Pull the web up and around the feeder tension roller (2). The weight of this roller is controlled by a movable weight on a lever attached to the roller. Once this weight has been properly set, it is rarely necessary to move it, usually only when extremely lightweight paper is being run through the press.

(c) Pull the web down and around the dancing roller (3).

(d) Pull the web up and around the tension roller (4).

(e) Feed the web down and around the feed roller (5), then up and around the feeder rider roller (6).

(f) Feed the web down and around the feed roller (7).

(g) Pull the web up and over the lead roller (8), and then under and around the lead roller (9).

(h) Throw the impression cylinder throwoff handle (11, figure 2-1) on offset unit No. 1 to the "off" position, and then thread the web between the impression cylinder (10, figure 2-11) and blanket cylinder (11).

(i) Pull the web down and over the lead roller (13).

(j) Pull the web down and around the lead roller (14).

(k) Throw the impression cylinder throwoff handle (11 figure 2-1) on offset unit No. 2 to the "off" position.

(l) Pull the web up and under lead roller (15, fig. 2-11) then between the impression cylinder (16) and the blanket cylinder (17). (17).

NOTE

If offset unit No. 2 is to print on the opposite side of the web from the printing done by offset unit No. 1, the web must be turned over. To do so, follow instructions (m) through (p) below.

(m) Pull the web from lead roller (14), over and around the lower turning bar (1, fig. 2-16). This bar is at a 45 degree angle with the main axis of the press.

(n) Pull the web from the lower turning bar (1) under and around the bay window roller (2), and then up, over and around the upper turning bar (3). This bar is also at a 45 degree angle with the main axis of the press and at a right angle with the lower turning bar. The two bars thus form a cross.

(o) From upper turning bar (3) pull the web under and up and over the bay window driven roller (18, fig. 2-11).

(p) Pull the web from the bay window driven roller up and under and around the lead roller (15) and then thread it between the impression cylinder (16) and blanket cylinder (17). This completes threading offset unit No. 2 for printing on the opposite side of the web from that done by offset unit No. 1.

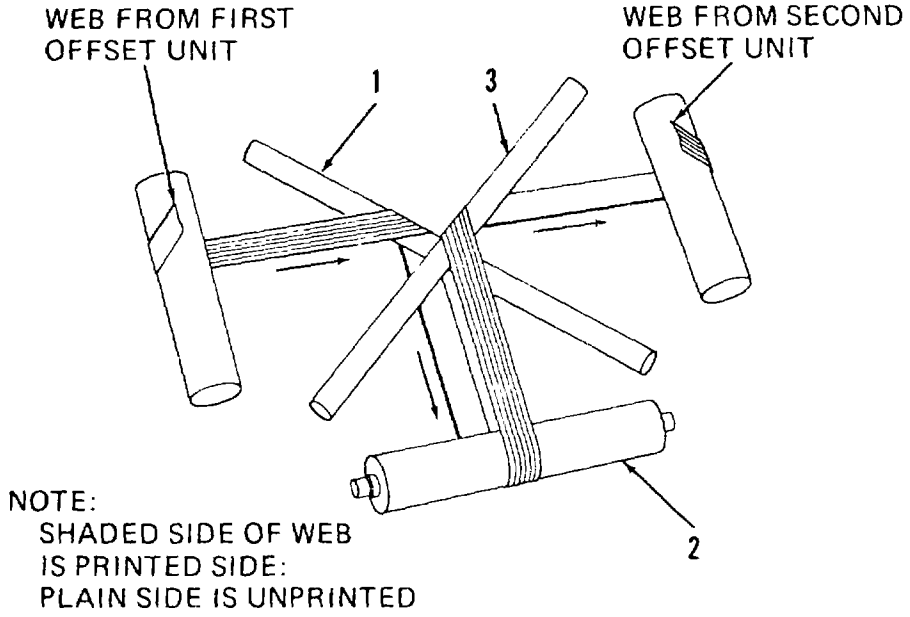
(q) Pull the web over and around lead roller (19) and then over and around the lead roller (20).

(r) Pull the web under the lead roller (21) and thread the web between the impression cylinder (22) and the blanket cylinder (23).

(s) Pull web under and around lead roller (24) and then up and around nipping roller (26) so that the web is between the nipping roller (26) and the trolley wheels (25).

(t) Pull web between nipping roller (28) and nipping roller (29).

(u) Pull web between rotary cutter (30) and stationary cutter (31) and then through delivery belts (32). This will complete threading the web. Threading the press is a time consuming operation. It is advisable, therefore, to leave the press threaded at all times, using the paper which remains in the press as a leader to thread the new paper roll.



1. LOWER TURNING BAR 2. BAY WINDOW ROLLER 3. UPPER TURNING BAR

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1. Lower Turning Bar 2. Bar Window Roller 3. Upper Turning Bar

Figure 2-16. Web lead overturning bars.

(7) Start and slowly run the press (para 23b).

Set the brake mechanism so that the weighted shaft is at its midway position, and check that the web is running properly into the delivery unit.

(8) Stop the press. Disengage the delivery throw-off clutch handle (23, fig. 2-2) and the ONOFF feeder rider roller handle (3, fig. 1-8).

(9) *Plate installation*. Install the plates on the press offset units following the procedures listed below:

(a) Inspect the plate for dirt and for damages of any type. Be certain that the plate is flat and that its edges are smooth and straight.

(b) Clean the back of the plate; first with solvent and next with water.

CAUTION

Do not allow the water to touch the front of the plate.

Water will remove the protective gum surface of the plate. Dry the back of the plate thoroughly.

(c) Using a micrometer, measure the thickness of the plate in several places and average the readings.

(d) Using the figure obtained as an average, determine the amount of packing required. The plate cylinder is undercut 0.012 inch; (.03048 cm) that is, the bearers are 0,012 inch (.03048 cm) above the main surface of the cylinder. The surface of the plate should be 0.001 inch (.00254 cm) above the bearers. Thus, the total thickness of the plate and packing should be 0.013 inch (.033 cm). Packing the plate to the level, and packing the blanket cylinder as recommended in paragraph (4), will produce a squeeze or pressure of 0.003 inch between the two cylinders. This amount of pressure will insure that the transfer of ink from the plate to the blanket, under normal conditions, is adequate. Also it will result in good reproductions and long plate life.

(e) Wipe the surface of the plate cylinder with an oily rag, leaving a thin film of oil. This action will prevent rusting of the plate cylinder body.

(f) Remove the safety guard which fits over the point of contact between the plate and the blanket cylinders. This guard is provided to protect the operator's fingers when the press is running.

(g) Insert the leading edge of the plate into the slot in the plate cylinder, making sure that the plate is centered on the cylinder (fig. 2-6).

(h) Hold the plate straight out, jog the press slightly and insert the packing between the plate and the cylinder. The packing must be the exact width of the plate and long enough to cover the entire printing surface.

(i) Rotate the press slowly, and keep the tension on the plate by pulling the plate outward. Avoid wrinkling the packing.

(j) When the cylinder has made a complete revolution, insert the tailedge of the plate (fig. 27) into the cylinder slot.

(k) Using pin and box wrench provided, tighten plate on cylinder sufficiently (see figure 28) to remove any buckles from the plate, and lock in place by engaging pawl (35, 37, fig. 4-23). Buckles in the plate make it impossible for the impression to register properly. If the plate still shows a buckle after the screws have been properly tightened, the plate has not been put on straight. This condition must be corrected or the buckled portions will wear excessively and will produce a distorted image at the buckled points. To test the plate for proper adjustment, tap the plate lightly at the lead and tail edges with the end of the pin wrench. If the plate gives off a hollow sound, it is not adjusted properly.

(l) Replace the safety guard.

(10) *Installing ink rollers*. After ink rollers are initially installed, it is necessary to remove and reinstall them only for maintenance, extended shutdown, or replacement. To install a roller, fit the roller into the mounting slots on the offset unit. To adjust ink rollers use a Pin wrench and Allen Wrench. The rollers should be adjusted for minimum ink transfer pressure. Use strips of .002 inch (.00508 cm) paper approximately one inch between rollers to determine the proper parallel and pressure setting. When the strips can be pulled out with a firm drag, the rollers are properly set. The rollers should be set in the following order:

(a) Set the ink ductor roller (4, fig. 1-10) to the ink fountain roller (3, figure 1-10) and to the ebonite vibrator roller (5, fig. 1-10).

(b) Install distributor rollers (6, 7, fig. 1-10) and 5, figure 1-9) with bearings in housing on both sides of offset unit. Using strips of paper described below, adjust rollers to each other then adjust rollers on each side to ebonite vibrator rollers (9, fig. 1-10) and lock in place with Allen Wrench. Adjust rollers again to ebonite roller (5, fig. 1-10) in the same manner above and lock in place.

(c) Install form rollers (13, fig. 1-10) with bearings and eccentrics in form roller bracket. Using pin wrench rotate eccentrics and make proper adjustment between form rollers and vibrator roller (9, figure 1-10). Refer to figure 1-11 for eccentric movement direction viewed from

operator's side of press when making these adjustments. Place form rollers to ON position using Ink Form ON-OFF handle (4, fig. 2-1). Adjust screws in form roller brackets to obtain proper contact between form rollers and plate.

NOTE

It is most important that the form rollers are properly set, otherwise poor ink distribution and excessive plate wear will result.

(11) *Inking the press*.

(a) For making three pounds or less batches of ink, remove required amount of ink from can with ink knife and place on a clean marble slab. Add drier in accordance with ink manufacturer's instructions. Work drier thoroughly into ink by turning it over and kneading with ink knife. For making three to five pound batches of ink use electric mixer instead of ink knife and marble slab.

(b) Before placing ink in fountain, the ink fountain blade must be positioned parallel to the ink fountain roller. This is accomplished by first opening all the adjusting screws (3, fig. 1-9) wide then starting in the center and working outward. Tighten each screw until the blade just touches the roller. After all screws have been so tightened, back each one off approximately one-quarter turn.

CAUTION

Be careful not to distort ink fountain blade during adjustment.

(c) Put the ink in ink fountain (2, fig. 1-9) and spread it along the fountain roller in a uniform layer until fountain is half full.

(d) Rotate press to bring ductor roller into contact with fountain roller. Then, turn fountain roller by means of the ink fountain operating lever, (3, fig. 2-1) and examine ink distribution by thickness of ink layer on roller. Open or close thumbscrew if necessary so ink layer corresponds to approximate requirements along the plate.

(12) *Installing water form rollers*. The procedure for setting the water form rollers (dampeners) is the same as that for setting the ink form rollers (para 2-3a. (10). Care must be taken that they are properly adjusted and lined up with each other and the plate cylinder in order to insure an even application of dampening solution to the plate. Since the form rollers are covered with molleton, it is essential that the feelers employed have a smooth surface such as cellophane or thin base fixed-out photographic film. It is advisable to set the top dampener (9, fig. 1-9) with a slightly lighter contact with the vibrator (10, fig. 1-9) than the bottom dampener. This will allow even distribution of water to both rollers. The molleton covering of the water form rollers must always be tight against the vibrator roller; a loose or uneven covering prevents the plate from being properly dampened. When installing newly covered rollers, it is advisable to reset them at the end of the day's operations. Set the dampeners and the ductor, and allow the press to operate long enough to wet them and for the solution to be absorbed by the new rollers. The following morning, be sure to recheck the setting prior to running the press.

(13) *Water fountain preparation*. Fill the water fountains, following the procedures listed below:

(a) Fill the water fountain bottles with the prepared fountain solution, and mount the bottles on the press.

(b) Check to be certain that the fountair solution flows through the tubes to the wate fountains on all three offset units.

(c) Adjust height of all three water fountain bottles so that the desired level will be maintained in the water fountains.

(14) Run the press with both the delivery clutch handle (23, fig. 2-2) and ON-OFF Feeder rider roller handle disengaged. Check that the ink system rollers are properly inked up (para 2-3a (10), and water system rollers are properly dampened (para 2-3a (12).

(15) Stop the press. Lower the ink form rollers manually onto the gummed-up plate. Raise the ink form rollers manually and check the plate. The rollers should leave two distinct lines of ink approximately 1/8 inch (0.032 cm) wide across plate. If lines of ink are tapered, adjust whichever roller eccentrics is required to correct the problem. This check must be performed on all three offset units.

(16) Sponge off the plate to remove the gum and asphaltum. Run the press slowly. Engage dampening rollers and manually lower the ink form rollers. Allow the plate to ink up and then manually raise the ink form rollers again. Check the plate to be sure it is properly inked up and that the non-printing areas are clean.

(17) Jog the press to engage the delivery clutch handle (23, fig. 2-2) and then engage the ON-OFF feeder rider roller handle (3, fig. 1-8).

NOTE

Always press STOP switch before attempting to jog press.

b. *Starting*. Refer to figure 2-17 and start the offset press as follows:

(1) Start the motor-generator unit (fig. 1-3) by pressing the START switch and allow it to warm-up for at least 45 seconds.

WARNING

Check that all safety guards are in place before operation of press to insure safety of operating personnel.

(2) TURN SPEED SETTING control (3, fig. 2-17) to zero position.

(3) Throw BLOWER on switch (4, fig. 2-17) to ON position.

(4) Push RUN switch (5, fig. 2-17) to ON POSITION.

(5) Depress the pressure lubricating button on the oil lubricator (1, fig. 2-17) and hold it for about 15 seconds. At the end of 15 seconds, the oil pressure should read at least 20 psi on the oil pressure gage (2, fig. 2-17). Increase speed setting to 5000 iph.

(6) Throw WATER FORM handle (10, fig. 2-17) and INK FORM handle (11, fig. 2-17) to "ON" position.

(7) Throw ON-OFF master impression switch (6, fig. 2-17) and ON-OFF impression switches (8, 9 fig. 2-17) to ON position.

(8) Turn SPEED SETTING control (3, fig. 2-17) slowly until speed indicator (12, fig. 2-17) shows a speed of 25,000 impressions per hour.

(9) Slow down press to approximately 5000 iph.

(10) Stop the press by throwing master impression ON-OFF switch (6, fig. 2-17) to OFF position. This will automatically throw all three offset units off impression (printing position) and raise the ink rollers form from the plate cylinder on each offset unit.

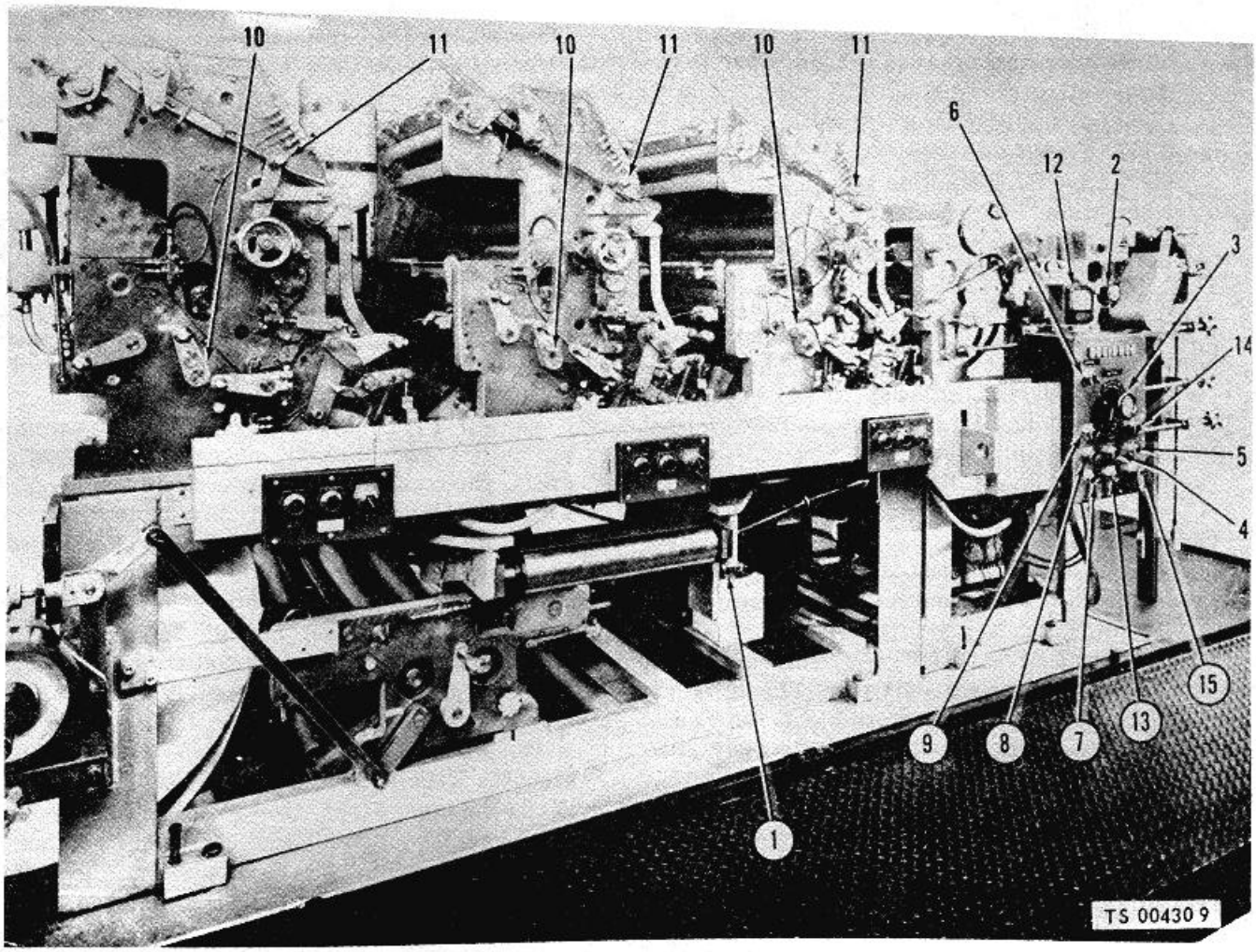
(11) Throw water form handles (10, fig. 2-17) on all three offset units to the off position. This moves the water form rollers away from the plate cylinder.

(12) Check the printed sheets for quality. Check the sheets for registration of images. Check that the sheet out-off is 10 1/2 inches (26.67 cm). (13) Make all necessary adjustments and repeat steps 2 through 12 above.

(a) *Adjusting.* During operation of the press, the operator must make repeated checks of the printed sheet to determine if any press adjustments are necessary. Determining when and; what adjustments are necessary, is primarily a matter of experience, and no set rules can be given. It is always necessary, however, to adjust the ink and water distribution systems frequently to maintain a proper balance between the two. The ink fountain blade adjusting screws and the ratchet and pawl mechanism must be adjusted to control the amount of ink transmitted to the plate. Increase or decrease the ink feed necessary to obtain full density of the ink over the entire image. Water supplied to the plate must always be kept to a minimum.

(b) *Press difficulties*. A list of common difficulties encountered in operating an offset press, their causes and corrections are given in Chapter III, Section II of this manual.

(c) *Control of paper roll*. When the press has been operating long enough to reduce the size of the paper roll to about one half its original diameter, spindle a second roll, and place it in a ready position near the feed roll stand. When the diameter of the roll has been reduced to onefourth inch, exclusive of the core, a paper check lever, which rides on the roll, automatically actuates a limit switch which stops the press. When the press stops, throw off both water form roller handles manually and cut off the balance of the paper remaining on the core, making sure that enough is left to splice onto the new roll. Next, unfasten the brake and remove the old core. Insert the new paper roll (para 2-3a (3), and, using a razor blade, cut its leading edge square. Also, make sure that the end of the old web is square; then overlap this end on the new web about one inch. Attach the two ends together with gummed paper tape two inches wide. Now take out any slack in web and run the press at slow speed until the splice has cleared the press. Throw the water form roller handles to the ON position on all three offset units. Turn the master impression switch to the ON position and resume normal operating speed.



1. Pressure Lubricating Button
2. Oil Pressure Gage
3. Speed Setting Control
4. Blower On Switch
5. Run Switch
6. On-Off Master Impression Switch
7. On-Off Impression Switch Offset Unit No. 3
8. On-Off Impression Switch Offset Unit No. 2
9. On-Off Impression Switch Offset No. 1
10. Water Form, On-Off Handle
11. Ink-Form, On-Off Handle
12. Speed Indicator
13. Blower Off Switch
14. Jog Forward Switch
15. On-Stop-Safe Switch

Figure 2-17. Operation of the press.

2-4. Shutting Down the Equipment

Refer to figure 2-17 and proceed as follows:

a. Wash the ink rollers in the following manner: Scrape all the ink from the ink fountain, and wash the ink fountain with solvent. Set the ink wash-up device with its blade against the lower ink vibrator roller. After it has been adjusted evenly with thumbscrews (8, fig. 1-10) then run press slowly and pour solvent on rollers, back and forth over upper ink vibrator roller until ink rollers are clean. Release the thumbscrews and position device by sliding away from vibrators. Remove the ink wash-up device from the inker assembly and clean thoroughly with solvent. Install device after cleaning.

b. Disengage the delivery unit and throw off the water from rollers.

c. Remove the plate from the press, and place it on a flat surface. Sponge the plate with water, then clean it with a gum solution. If the plate is to be stored, coat it with a thin film of asphaltum.

d. Place in the "off" position the switches on the press and the stop switch that controls the motor-generator unit.

e. Remove the water bottle assembly and drain the water fountain tray.

Section II. OPERATING UNDER UNUSUAL CONDITIONS

When the printing press is operated under unusual conditions such as extreme cold or heat, follow the operating procedures that are applicable when the equipment is operated under usual conditions. A .specific temperature and a specific humidity is required to properly condition the paper used in the printing operation, and this requirement is applicable regardless of operating conditions. An air conditioner should be installed in the press area so that proper temperature and humidity required to condition the paper and to operate the press can be maintained. However, when the printing plant is operated under unusual conditions, requirements for preventive maintenance services may differ from those followed ordinarily.

CHAPTER 3

OPERATOR'S MAINTENANCE INSTRUCTIONS

Section I. LUBRICATION INSTRUCTIONS

3-1. General Lubrication

Refer to Lubrication Order LO 10-3610-200-12 for general lubrication information.

3-2. Detailed Lubrication

a. *Care of Lubrication*. Keep all lubricants in closed containers and store in a clean, dry place away from external heat. Allow no dust, dirt, or foreign material to mix with the lubricants. Keep all lubrication equipment clean and ready for use.

b. *Points of Lubrication*. The press is equipped with a pressure lubrication system which automatically lubricates all main press bearings while the press is in operation. Lubrication points on the press that require manual lubrication are indicated by red dots painted on the press. Lubricate these points daily using heavy duty engine oil S.A.E. 30 in oil holes and caps, and Alemite No. 32 in all grease fittings.

c. *Cleaning*. Keep all external parts not requiring lubrication clean of lubricants. Before lubricating the equipment, wipe all lubrication points free of dirt and grease. Clean all lubrication points after lubricating to prevent accumulation of foreign matter.

WARNING

Dry cleaning solvent, PD 680, used for cleaning is potentially DANGEROUS TO PERSONNEL AND PROPERTY. Do not use near open flame. Flash point of solvent is 100F ... 138 F. (38 C . .. 59 C).

d. *Operation Immediately after Lubrication*. After lubrication and upon commencement of operation of the press, inspect the press as follows:

(1) Inspect for evidence of excessive amounts of oil dripping on the floor or parts of the press, and wipe up surplus oil, especially from the floor.

(2) Inspect all main bearings of press. Should any bearing run exceptionally hot, stop press and remedy fault after allowing the bearing to cool. Then thoroughly clean the surrounding areas of the bearing and check the flow of oil from the tubing and metering valves to the bearing.

(3) Inspect hard to reach lubrication points. Check thoroughly for proper lubrication in these areas.

(4) Inspect surrounding areas of bearings and bushings for foreign matter such as sand, dirt and grit which are particularly harmful to parts.

(5) Inspect that no item or parts are overlubricated. Always keep in mind that frequent lubrication is preferable to infrequent and excessive lubrication.

(6) Inspect that automatic pressure lubricating system of press, when operating, is functioning properly by checking lubrication to all main press bearings.

(7) Check the oil level in the oil reservoir. When the oil level is less than half full, fill the oil reservoir with heavy duty engine oil S. A. E. No. 30.

CAUTION

Never fill the oil reservoir, oil holes and cups, or grease the press when it is running.

Section II. OPERATOR'S PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

3-3. General

To insure that the offset press is ready for operation at all times, it must be inspected systematically, so that defects may be discovered and corrected before they result in serious damage or failure. The necessary Preventive Maintenance Services to be performed are listed and described in paragraph 3-4. The item numbers indicate the sequence of minimum inspection requirements. Defects discovered during operation of the unit

shall be noted for future correction. Stop operation immediately, if a deficiency is noted, which would damage equipment under continued operation. Only those faults that cannot be corrected by the operator or crew, or that are corrected by replacing parts will be recorded on DA Form 2404 (equipment Inspection and Maintenance Work Sheets).

3-4. Operator's Preventive Maintenance Checks and Services

a. Table 3-1 contains a tabulated list of preventive maintenance checks and services which must be performed by the operator.

b. The interval and sequence column indicates the required service interval.

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services

D-Daily — Time required: 2.0

W-Weekly — Time required: .7 Hr

Interval and Sequence No.		ITEM TO BE INSPECTED PROCEDURE	WORK TIME (M H)
D	W		
1		WATER FOUNTAIN ASSEMBLY Clean dirt and scum from fountain. Check the water fountain bottle gravity flow for proper operation. Inspect the hoses for kinks, breaks and leaks.	0.2
2		PAPER WEB Inspect the web for tears, improper mounting and tension.	0.1
3		TROLLEY ROLLERS Inspect the trolley rollers for flat spots and proper pressure setting.	0.1
4		ROTARY CUTTER ASSEMBLY Check the shear pins to see that they are intact. Inspect the stationary and rotary knives for nicks and dullness.	0.2
5		DELIVERY TAPES Inspect the tapes for damage and proper tension.	0.1
6		AUTOMATIC LUBRICATOR Check the lubricator level gage to see that the reservoir is filled with oil.	0.1
7		OIL PRESSURE GAGE Depress the manual lubricating pressure button when first starting press and hold for 15 seconds. Check the actual pressure. It should register 20 P.S.I.	0.1
8		SPEED INDICATOR With the speed control set at 25,000 IPH check the indicator during operation. It should read 25,000 impressions per hour.	0.1
9		REVOLUTION COUNTER Check the counter during operation to see that it is functioning properly as each sheet is cut.	0.1
10		MOTOR GENERATOR UNIT Check the switch for proper operation.	0.1
11		POWER UNIT Start the power unit and observe that the power unit starts and runs smoothly. Listen for any unusual noise that may indicate a defective power unit. Make certain that the power unit responds properly under load.	0.1
12		MAIN DRIVE MOTOR Check the drive motor during operation for overheating and any unusual noise that may indicate a defective drive motor.	0.1
13		AIR PUMP AND BLOWER MOTOR Check to see that the pump lubricator contains oil. Listen for any unusual noise coming from the pump and motor that may indicate a problem or failure.	0.1
14		INK FOUNTAIN ASSEMBLY Clean the fountain of hardened ink. Inspect the fountain blade for distortion. Free up any fountain adjusting screws that bind.	0.3
15		INKER AND DAMPENER RUBBER ROLLERS Inspect inker rollers for imbedded foreign matter and flat spots. Inspect dampener rollers for excessive dirty and worn molleton covers.	0.2
	16	PRINTING CYLINDERS Inspect the plate and blanket cylinder bearers and the impression cylinder body for dents and pitting. Inspect the plate and blanket reel ratchet and pawl assemblies for worn and damaged parts.	0.3

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services -- Continued

D-Daily W-Weekly
Time required: 2.0 Time required: .7 Hr

Interval and Sequence No.		ITEM TO BE INSPECTED PROCEDURE	WORK TIME (M H)
D	W		
	17	PAPER PILE-UP ASSEMBLY Check the paper pile-up assembly for proper operation.	0.1
	18	DRIVE BELTS AND CHAINS Inspect the drive belts and chains for wear and proper tension.	0.3

Section III. OPERATOR'S TROUBLESHOOTING

3-5. General

This section contains troubleshooting information for locating and correcting most of the operating troubles which may develop to the offset press and its components.

3-6. Operator's Troubleshooting

For operator's troubleshooting information, refer to table 3-2.

Table 3-2. Operator's Troubleshooting

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

1. DRIVE MOTOR FAILS TO START
   - Step 1. Check switch for on position at motor generator.
     Place switch in "ON" position.
   - Step 2. Check for speed setting control.
     Turn control to zero.
2. INK NOT RUB-PROOF AFTER DRYING. WILL OFFSET THE SCUFF IN SOME BINDING OPERATIONS (CHALKING) .
   Ink vehicle has been absorbed by paper, leaving pigment in chalky condition on top of sheet.
   Use a stiffer ink, or a less absorbent paper, or a faster dying agent.
3. PAPER BLISTERS, OR PARTICLES OF COATING ADHERES TO BLANKET (PICKING).
   Coating not suitable for offset. Stock is weak, or ink too stiff. Too much backpressure.
   Soften ink slightly. Reduce back pressure to minimum. Change paper.
4. PART OF IMAGE ON PLATES DOES NOT TAKE INK. (BLINDING).
   Gum adheres to surface of lacquer. Image is worn off the plate.
   Wet wash plate. Use non-binding lacquer. Readjust rollers and pressure. Lower blanket.
5. EBONITE ROLLERS REFUSE TO TAKE IN. (STRIPPING).
   Fountain acid and gum have de-sensitized rollers.
   Clean rollers and use less gum in fountain solution.
6. INK DOES NOT DRY FLAT. SOME AREAS DULL AND OTHERS SHINY. (MOTTLING)
   - Step 1. Driers not evenly distributed in ink.
     Distribute driers in ink more thoroughly.
   - Step 2. Paper not of same porosity all over sheet.
     Try another paper.
7. INK CHANGES HUE OR LIGHTENS UNDER EXPOSURE TO LIGHT. (FADING).
   - Step 1. The pigment is fugitive or a poor vehicle was used.
     Use a light-fast ink.
   - Step 2. Too much compound or extender.
     Use less compound or extender.
8. ONE COLOR DOES NOT ADHERE PROPERLY ON A PREVIOUSLY PRINTED COLOR (OVERPRINTING).
   First color has crystallized. The surface has dried tight from a cobalt type of drier.
   Use a paste drier without cobalt on all colors that are to be overprinted.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION

9. GLOSS INKS DRY DULL (NO GLOSS).
   Step 1. Paper not glossy.
   Use a high-gloss paper especially suited to gloss ink printing.
   Step 2. Paper absorbs too much vehicle.
   Adjust ink to set before too much absorption takes place.
10. INDISTINCT IMAGE PATTERNS APPEAR IN SOLIDS (GHOSTING)
   Step 1. Poor layout of sheet.
   Change layout.
   Step 2. Emulsified ink.
   Change ink.
   Step 3. Too much water being run on plate.
   Use a plate that requires less water.
11. SECOND PLATE ON PRESS, SCUMS OVER FIRST COLOR AREA (SECOND COLOR PICKUP)
   First color ink transfers to second color blanket and sensitizes to second color plate.
   Use better de-sensitized plates. Run blankets lower.
12. INK REQUIRES EXCESSIVE LENGTH OF TIME TO DRY. (SLOW DRYING).
   Too much water and toomuch acid used on plate. High humidity of paper and atmosphere.
   Use better plates so that less water and acid are necessary.
13. RADIAL BAND OF INK APPEARING ON NON-PRINTING AREAS. (CATCH-UP).
   Dirty or dry dampeners or parts of dampeners not touching plate.
   Recover dampeners and reset them.
14, AREA OF NON-PRIPNTING SURFACE TAKING INK. (SCUMMING).
   Plate poorly de-sensitized. Incorrect fountain solution Ph. Ink greasy or soupy. Running too much ink. Dirty dampeners.
   Correct plate and solution Ph. Stiffen ink. Use stronger and less ink. Clean dampeners.
15. LIGHT TINT APPEARING ALL OVER SHEET. CAN BE WASHED OFF WITH SPONGE. (TINTING).
   Ink and water is forming an emulsion.
   Run less water on plate. Use a more water resistant ink. Try a different paper.
16. GRAY AND WEAK PRINTING WITH GRANULAR LOOK. (GRAININESS).
   Ink is waterlogged and in a caked condition.
   Run less water on plate. Use a more water resistant ink. Try a different paper.
17. SHADOW DOTS AND REVERSE LETTERS FILL UP. (SLUR).
   Over pressure, or blanket too high.
   Reduce pressure.
18. INK PILES ON BLANKET AND ROLLERS. (PILING).
   Too much water in ink. Coating of paper unsuited for offset. Ink too short.
   Run less water on plate. Try another paper. Long varnish in ink.

Section IV. OPERATOR'S MAINTENANCE PROCEDURES

3-7. General

The instructions in this section are for the information and guidance of the operator to maintain the press.

3-8. Paper Roll Shaft Assembly

a. Visually inspect shaft assembly for broken springs. (9, fig. 2-9).

b. Inspect the attaching hardware for damaged threads.

c. Adjust expansion nuts (5, 6, fig. 2-9) so that paper roll is correctly positioned and held tight on the shaft (2, fig. 2-9).

NOTE

The expansion nuts should be tightened in the direction the paper is unwinding.

d. Tighten clamping bolts (7 and 8, fig. 2-9)

e. Swing down outer lateral member of brake mechanism by unlocking handle (1, fig. 2-10).

f. Mount the assembled paper roll and shaft on the feed roll stand and position the brake drum properly into the brake mechanism as shown in figure 2-10.

CAUTION

Be careful not to damage paper roll when mounting it on feed-roll stand.

3-9. Brake Shoe Assembly

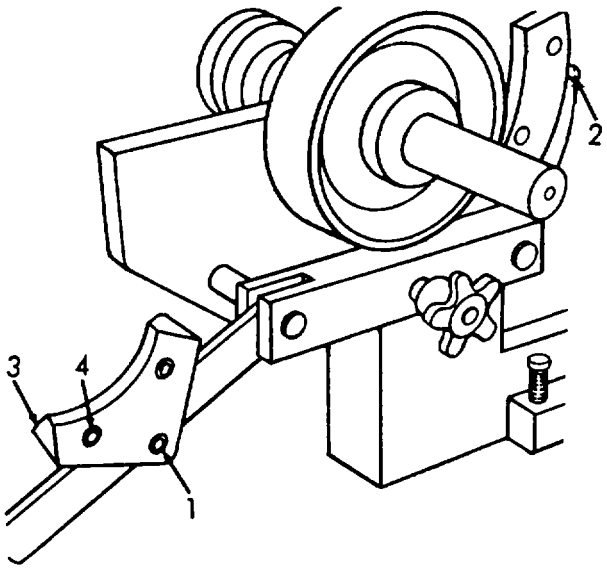
a. Inspect brake tension adjusting knob (2, fig. 2-10) for cracks, breaks, dirty or mutilated threads and improper mounting. Inspect the brake lining (3, fig. 3-1) for dirt, grease, and wear.

b. Clean the loose dirt from the lining, using a clean dry cloth. Remove grease spots and roughen slick surfaces using fine steel wool or fine sandpaper.

c. Adjust the brake mechanism by tightening brake tension adjusting knob (2, fig. 2-10), in a clockwise direction. Tighten knob until dancing roller (3, fig. 2-10) is supported by paper. Generally the brake mechanism should be tightened until the dancing roller is supported by the paper.

CAUTION

If the brake is too tight, it may cause the web to break. If the brake is not tight enough the web will continue to unwind when the press is stopped.



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. Outer brakeshoe member
. Inner brakeshoe member
3. Brakeshoe lining
4. Screws

Figure 3-1. Brakeshoe lining service.

3-10. Counter Weight Assembly

a. Inspect the counterweight for loose thumbscrew (1, fig. 3-2) and slide the counterweight (2, fig. 3-2) back and forth to check freedom of movement.

b. Inspect shock absorber (3, fig. 3-2) for evidence of leakage and worn or deteriorated bushing.

c. Adjust the counterweight by loosening thumbscrew (1, fig. 3-2) and sliding counterweight (2, fig. 3-2) forward or backward on rail.

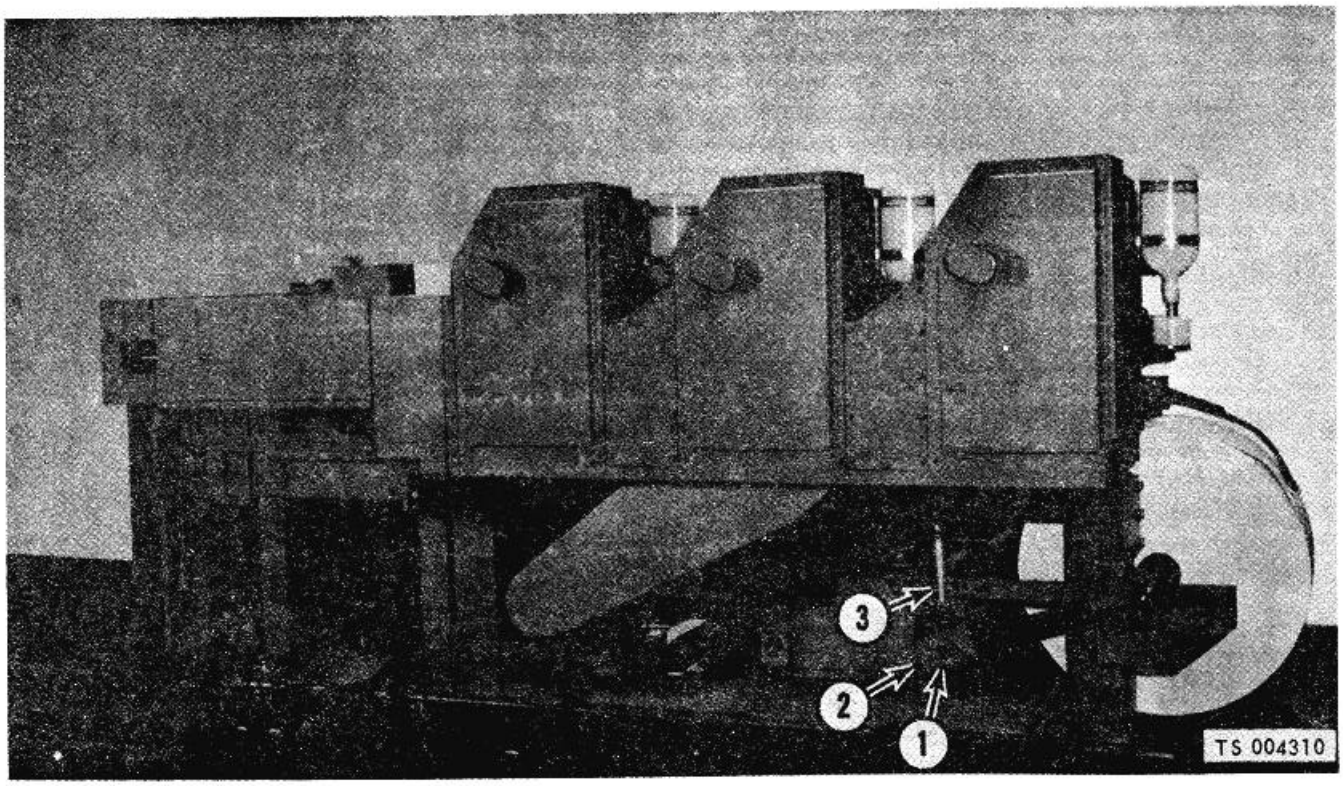


Figure 3-2. Counter Weight.

3-11. Vernier Adjustment Knob

a. Inspect the knob (5, fig. 1-6) for cracks and breaks.

b. Adjust by turning knob (5, fig. 1-6) clockwise or counterclockwise while the press is running.

3-12. Stop Assembly Feed Roll

a. Inspect switch, power on or off by raising lever.

b. *Adjust*. Set arm (15, fig. 1-7) cam and switch. 3-13. Ink Wash-up Device Assembly

a. Inspect neoprene blade (10, fig. 1-8) for evidence of breakage, wear and deterioration.

b. *Service*. Clean blade.

c. Adjust wash-up assembly by turning thumbscrew. (8, fig. 1-8).

3-14. Paper Break Mechanism Assembly

a. Inspect switch (2, fig. 3-3) for evidence of corrosion at terminal connections.

b. Adjust cam (4, fig. 3-3).

KEY to figure 3-3:

1. Paper break mechanism assembly
2. Switch
3. Setscrew
4. Cam
5. Setscrew
6. Collar
7. Pin
8. Collar
9. Nut
10. Bearing
11. Roller
12. Shaft
13. Arm
14. Pin
15. Screw
16. Bracket
17. Cylinder guard assembly
18. Screw
19. Guard
20. Pin
21. Support
22. Support

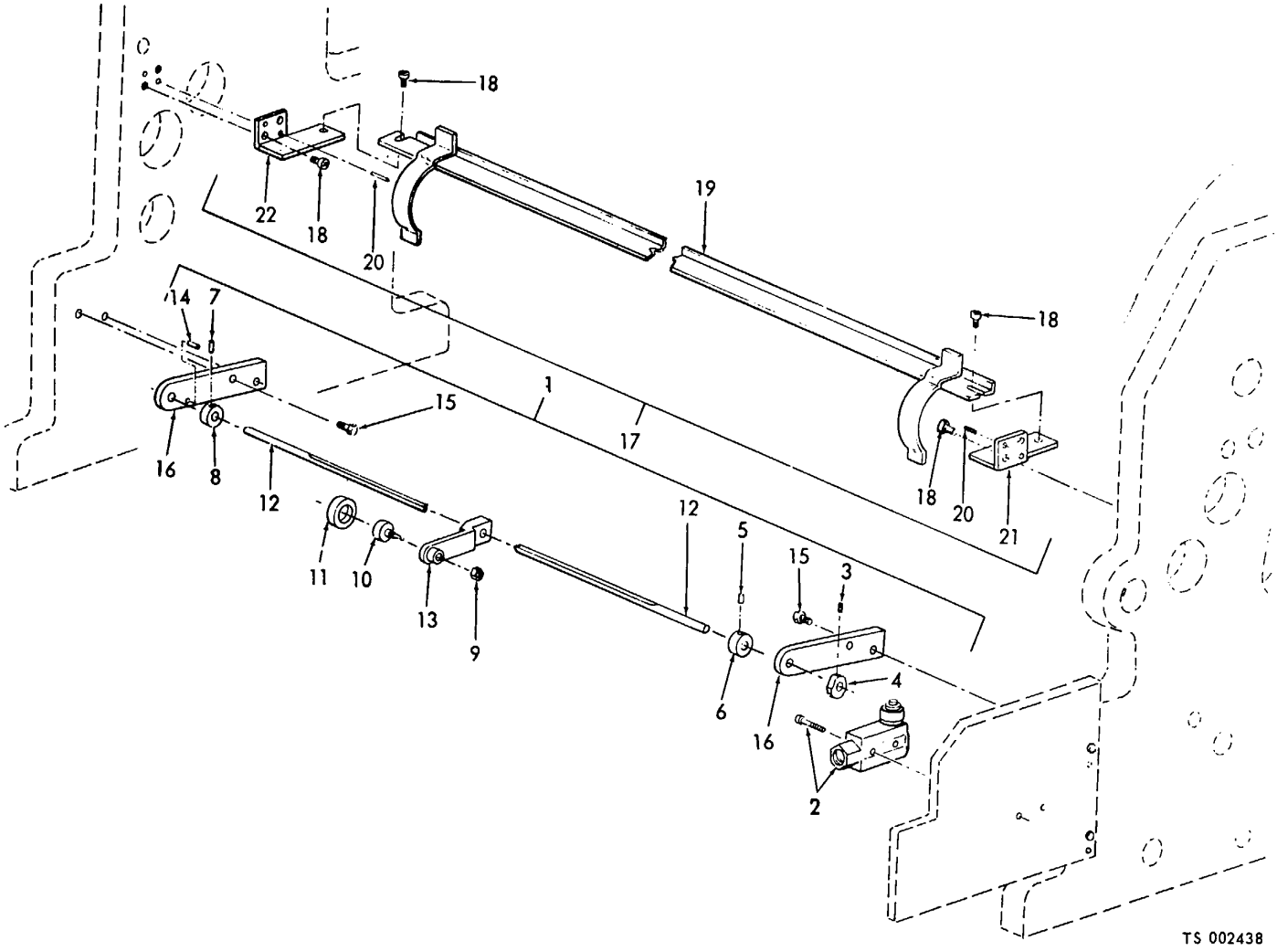


Figure 3-3. Paper break mechanism assembly.

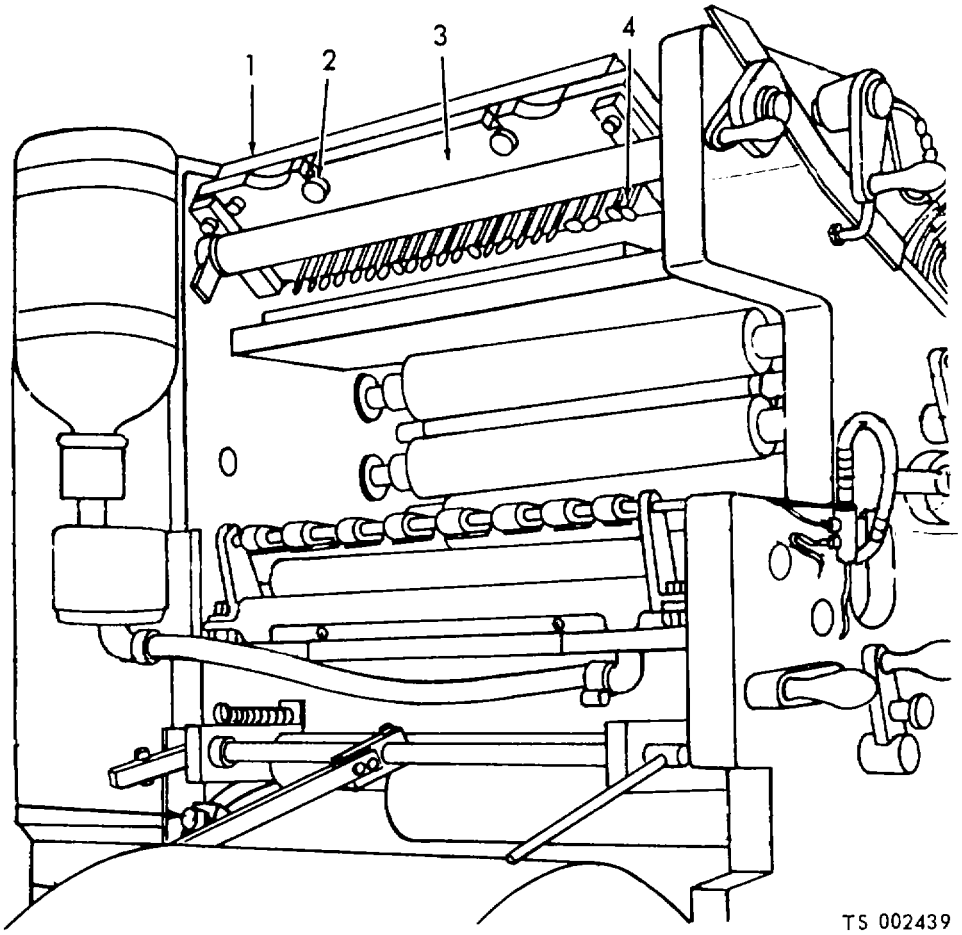
3-15. Guard Assembly, Cylinder (15, fig. 18). Inspect for bent or damaged guard.

3-16. Blade, Ink Fountain

a. Clean any crusty accumulation of ink from the ink fountain blade, and wash the blade (1, fig. 3-4) with solvent. Dry the fountain thoroughly with a clean, dry cloth.

b. Inspect the blade for nicks, cracks, breaks, and distortion, pits and loose rivets.

c. Adjust blade by turning adjusting screw (4, fig. 3-4).



1. Blade, Ink Fountain
2. Screws
3. Fountain, Ink
4. Screw, Ink Fountain Blade Adjusting

Figure 3-4. Ink Fountain Blade and Adjusting Blade, Mounted.

3-17. Adjustment Screws

a. Clean screws (4, fig. 3-4) with ink solvent until threads are clean.

b. Inspect screws for breaks, cracks, and stripped threads.

3-18. Ink Fountain Roller

a. Clean roller (3, fig. 1-8) with a cloth dampened with ink solvent. Dry the roller with a soft cloth.

b. Inspect roller for pits, gouges, flat spots, and other similar defects.

3-19. Pawl and Ratchet Ink Fountain (fig. 3-5)

a. Inspect the ratchet for chipped, cracked or broken teeth, lose mounting and wear.

b. Adjust. Loosen setting screw (2, fig. 2-1) and move handle (1, fig. 2-1) up or down.

3-20. Ink Roller Assembly (fig. 1-7, 1-8).

a. Clean each roller with a cloth dampened with ink solvent, paying special attention to the ends of the rollers. Dry the rollers with a clean, soft cloth.

b. Inspect the rollers for pits, gouges, flat spots, and other similar defects.

c. Adjust ink ductor, intermediate and form rollers. (see para 2-3a(10).

3-21. Side Register, Mechanism Plate Cylinder

a. Inspect control wheel (5, fig. 2-1) for breaks and dents.

b. Adjust. To adjust the plate cylinder, turn control wheel (5, fig. 2-1) clockwise or counterclockwise.

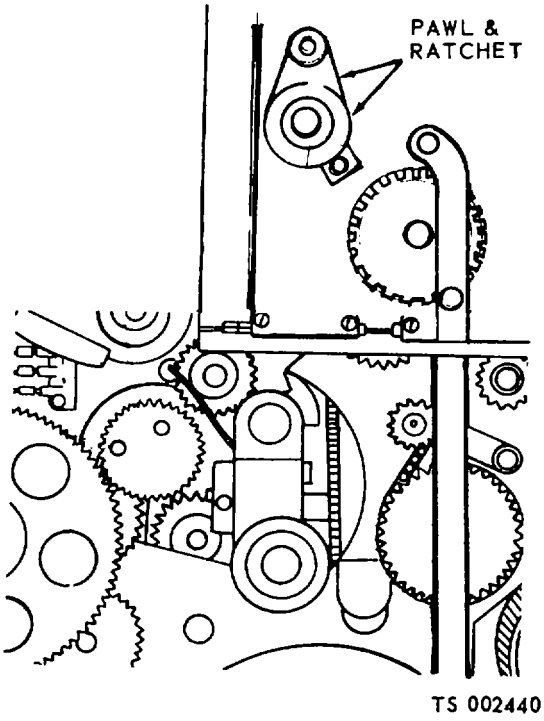


Figure 3-5. Pawl and ratchet.

3-22. Plate Cylinder Assembly

a. Clean thoroughly with a clean, dry cloth.

b. Inspect plate cylinder (8, fig. 1-9) for dents, pits and scoring.

3-23. Blanket Cylinder Assembly

a. Clean blanket cylinder (16, fig. 1-10) with a clean, dry cloth.

b. Inspect blanket cylinder (16, fig. 1-10) for dents, pits, and scoring.

3-24. Impression Cylinder Assembly

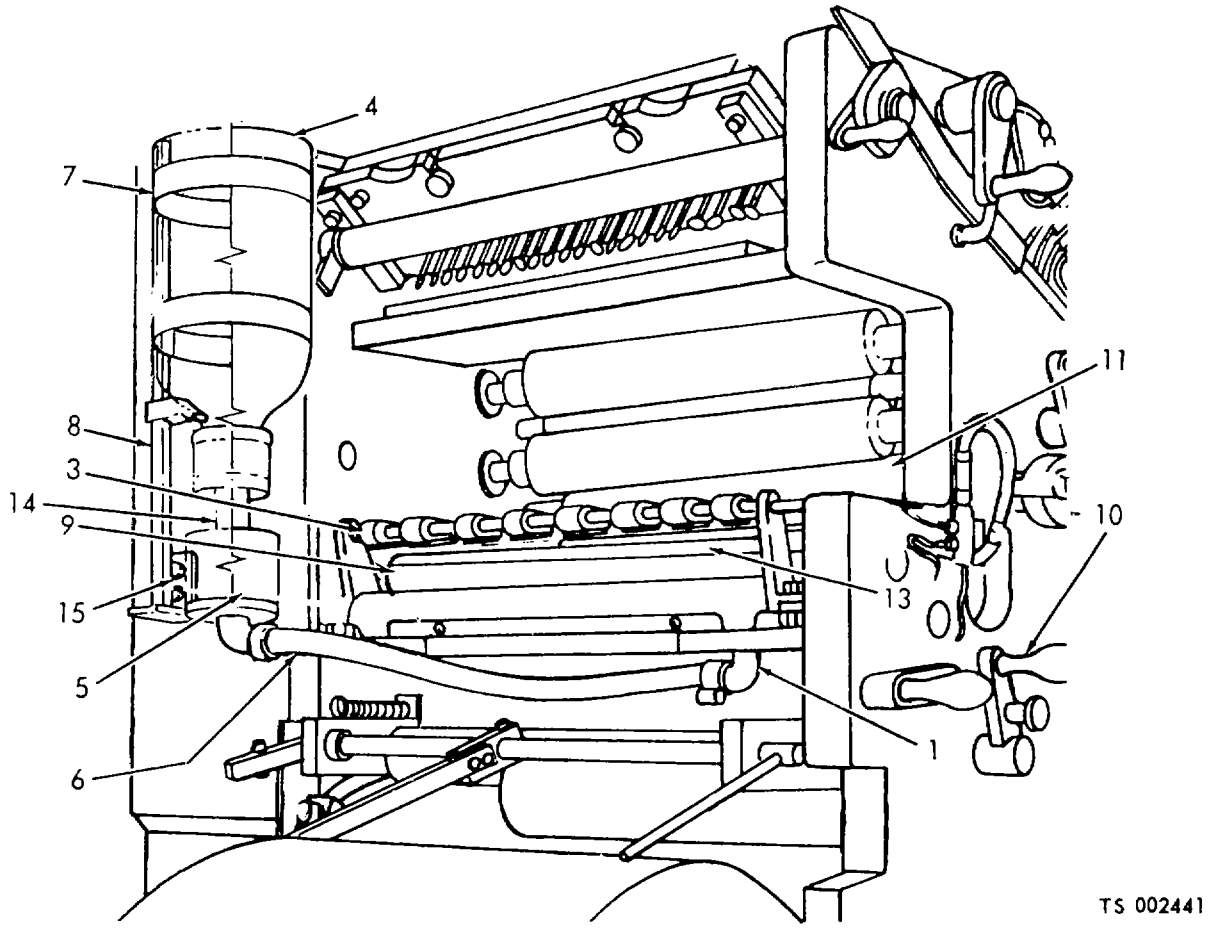
a. Clean impression cylinder (17, fig. 1-10) with a clean, dry cloth.

b. Inspect cylinder (17, fig. 1-10) for dents, pits, and scoring.

3-25. Water Stop Assembly

a. Clean the rubber blade (13, fig. 3-6) with a clean soft cloth.

b. Inspect the blade (13, fig. 3-6) for breaks, excessive wear and deterioration.



1. Fountain, Water
2. Screw
3. Bracket, Water Stop
4. Bottle, Water Fountain
5. Level, Water Fountain
6. Hose, Plastic
7. Band
8. Support, Upright
9. Roller, Ductor
10. Lever, Water Form Throw-Off
11. Roller, Top Water Form
12. Roller, Vibrator
13. Blade, Rubber
14. Cap and Valve
15. Bolts

Figure 3-6. Water dampening system, rear view.

3-26. Roller Water Fountain

a. Clean roller (3, fig. 1-10) with a cloth dampened in fountain etch and pumice powder. Remove all residue from the roller and rinse and clean the roller thoroughly with water. Avoid touching roller after cleaning.

b. Inspect roller for pits gouges, flat spots, loose covers, glazed spots and other defects.

3-27. Water Roller Assembly (fig. 1-9, 1-10.

a. Inspect the rollers for loose or worn covers.

b. Adjust. (para 2-3a(10).

3-28. Water Level Unit

a. Clean using a sponge, water and a small amount of detergent. Clean the water level unit (5, fig. 3-6) and the outside surfaces of the hose. Rinse the items with clean water and dry them thoroughly.

b. Inspect the items for cracks, breaks, distortions and other forms of deterioration.

3-29. Cap and Valve Assembly

a. Inspect cap and valve assembly (14, fig 3-6) for corrosion, freedom of movement and damaged threads.

b. Inspect for broken spring.

3-30. Bracket Assembly

a. Inspect bracket for cracks, breaks an, distortion.

b. Adjust by loosening bolts (15, fig. 3-6) and sliding bracket up or down.

3-31. Trolley Roller Assembly

a. Inspect the tires (4, fig. 1-12) for excessive wear, gouges, flat spots and other forms of deterioration.

b. Adjust trolley roller assembly by turning adjusting screws, (5, fig. 1-12).

3-32. Compensator Assembly Color Register

a. Inspect compensator assembly for freedom of adjustment.

b. Adjust by turning adjusting knobs (11, 12, fig. 2-2). (para 2-2 (14)).

3-33. Nipping Roller Assembly

a. Inspect roller assembly (3, fig. 1-12) for nicks, pits, gouges, flat spots and other similar defects.

b. Inspect bolts, rods, and screws for damaged threads.

c. Adjust roller by turning adjusting knob (1, fig. 1-13).

3-34. Counter Assembly

a. Inspect counter assembly for damaged adjusting knob and broken lens (4, fig. 2-2).

b. Adjust by turning adjusting knob (4, fig. 2-2) and set counter to zero.

3-35. Rotary Cutter Assembly

Inspect knives to determine if they require sharpening or replacing.

3-36. Stationary and Rotary Knives

a. Inspect knives for nicks, cracks, breaks, distortion and other defects.

b. Service, replace and adjust knives (fig. 3-7).

(1) Remove cross brace (38) by removing four screws (37).

(2) Remove stationary knife (45) by removing seven screws (43) and washers (44).

(3) Remove two retaining ring (22) and two shear pin (23).

(4) Loosen screws (39) until screws (40) can be turned.

(5) With knife (42) in rotary cutter (41), use knife gage supplied, Part No. 6-1-4046-61, and adjust the height of the knife evenly all the way across the rotary cutter with adjusting screws (40).

(6) Tighten screws (39, fig. 3-7).

(7) Install stationary knife (45) and secure hand tight with seven screws (43) and washers (44).

(8) Rotate rotary cutter (41) until knife (42) contacts stationary knife (45).

(9) Using three thickness' of printing paper stock, as a shim, insert paper between rotary cutter and stationary knife.

(10) Rotate rotary cutter (41, fig. 3-8) and adjust setscrews (46) until the stationary knife (42) cuts one thickness of paper (top sheet of shim paper).

NOTE

Adjust both ends of stationary knife first, then center of stationary knife..

(11) Using wrench, lightly tighten screws (43).

(12) Repeat steps (10) and (11) and if necessary, readjust stationary knife (42) so that paper stock is cut evenly across the width of rotary cutter (41).

(13) Repeat steps (10) and (11) using two thickness' of printing paper stock.

NOTE

Only a slight adjustment of screws (46) should be required.

(14) When stationary knife has been adjusted to cut the top piece of printing paper, tighten screws (43).

(15) Repeat steps (10) and (11) using one thickness of printing paper stock.

(16) Tighten screws (43).

(17) Rotate rotary cutter (41) and verify that there is no binding.

(18) Install shear pins (23) and retaining rings (22).

(19) Feed web through press.

(20) Run web through cutter.

(21) If web is not being cut cleanly and through completely, jog press until screws (40) are accessible.

(22) With setscrews (46) tight, turn screw (40), which is closest to point of uncut web very slightly.

(23) Re-run web through cutter.

(24) If a clean cut is still not attained, run a caborundum stone lightly across stationary knife (42).

(25) Replace cross brace (38) using four screws (37).

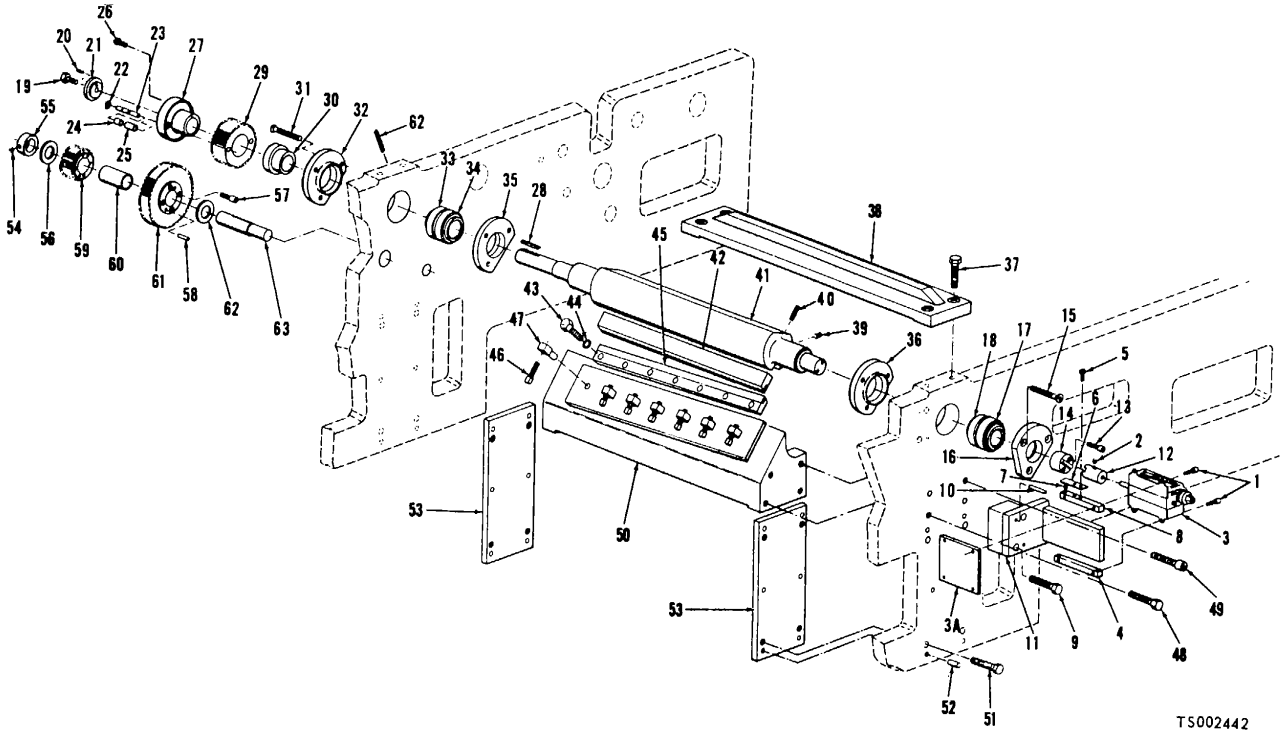


Figure 3-7. Stationary and rotary knives.

KEY to figure 3-7:

1. Screw
2. Setscrew
3. Counter
3A. Bar
4. Bar
5. Screw
6. Spring
7. Pin
8. Bar
9. Screw
10. Pin
11. Bracket
12. Clutch
13. Screw
14. Roller
15. Screw
16. Cap
17. Bearing
18. Bearing
19. Screw
20. Pin
21. Washer
22. Ring
23. Pin
24. Bushing
25. Bushing
26. Screw
27. Hub
28. Key
29. Gear
30. Spacer
31. Screw
32. Cap
33. Bearing
34. Bearing
36. Cap
36. Cap
37. Screw
38. Cross Brace
39. Setscrew
40. Setscrew
41. Cutter
42. Knife
43. Screw
44. Washer
45. Knife
46. Setscrew
47. Poppet
48. Screw
49. Screw
50. Bracket
51. Screw
52. Pin
53. Support
54. Setscrew
55. Collar
56. Washer
57. Screw
58. Pin
59. Gear
60. Bushing
61. Gear
62. Washer
63. Stud

3-37. Pawl and Ratchet

a. Inspect pawl (13, fig. 1-13) for wear.

b. Inspect ratchet (14, fig. 1-13) for broken teeth.

3-38. Jogger Assemblies, Rear and Side

a. Inspect for broken gear teeth.

b. Adjust. Loosen setscrews (15, fig. 1-13) and slide jogger (9, fig. 1-13) in or out.

3-39. Delivery Board Assembly (fig. 1-13).

a. Inspect. Use a clean soft cloth and wipe all dirt, oil and other foreign matter from the delivery table (11, fig. 1-13) and chain (12, fig. 1-13).

b. Inspect the casters for deteriorated rubber, lost hardware, breaks and other defects. Inspect the chain for loose, worn or broken links.

3-40. Compensator Rollers and Levers Assembly Cutoff Register

a. Inspect compensator assembly for freedom of adjustment.

b. Adjust by turning adjusting knob (10, fig. 2-2). (para 2-2 (14).

3-41. Trolley Roller Assembly

a. Inspect the tire (4, fig. 1-12) for wear, gouges, flat spots and other forms of deterioration.

b. Adjust by turning adjusting screw (5, fig. 1-12).

3-42. Oil Separator (fig. 3-8)

a. *Removal*. Refer to figure 3-8 and remove the oil separator cover.

b. *Inspect*. Inspect cheesecloth filter for saturation.

c. *Service*. Change the cheesecloth as soon as it becomes saturated and pack in the new cheesecloth loosely.

NOTE

A change of cheesecloth will last perhaps a week or several months depending on the service. If after running for a while the pump appears to lose its blowing power, it is an indication that the cheesecloth needs to be changed.

3-43. Automatic Oiler (fig. 3-8).

The automatic oiler feeds oil only when the control lever is in the vertical position and does not feed when the control lever is in the horizontal position. The knurled valve adjustment regulates the amount of flow entering the pump. While observing the sight glass adjust the knurled valve adjustment for approximately four drops per minute. Periodically check pump for overheating and unusual noise. If the noise occurs, adjust automatic oiler until overheating or unusual noise is eliminated. This operation sometimes becomes a trial and error operation. During operation the oil feeds slowly from the automatic oiler and is sucked into the pump chamber.

a. Inspect. Inspect for proper gravity flow adjustment.

b. Service. Fill with oil.

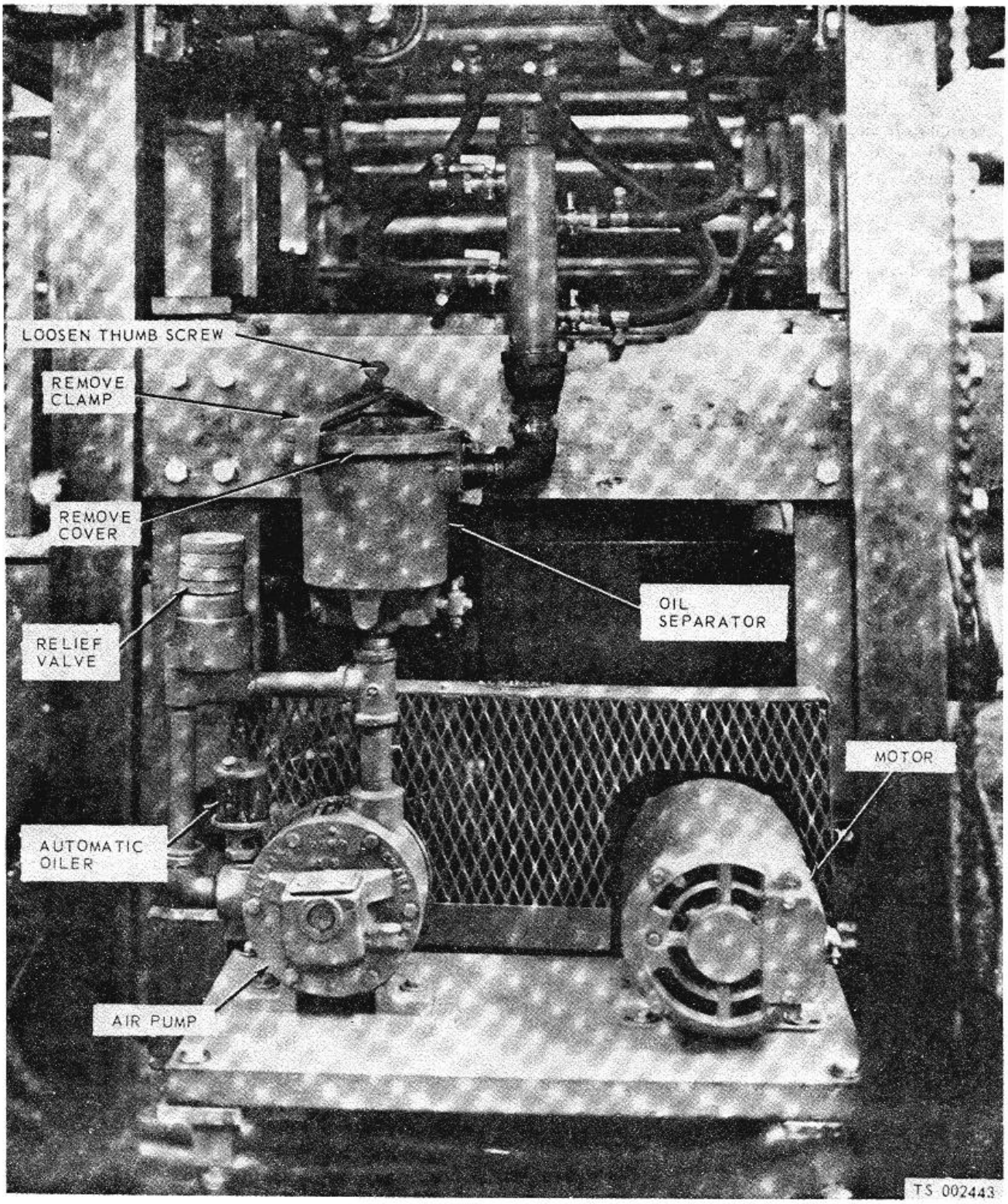


Figure 3-8. Oil separator.

3-44. Static Eliminator Unit

WARNING

Before attempting to perform maintenance on the static eliminator unit, disconnect incoming electrical power.

a. Inspection. Perform the following inspection services on the static eliminator.

(1) Check cabling and wiring for evidence of rot, burns or brittleness.

(2) Check holes of static bars for loose particles and foreign matter (2, fig. 3-9).

b. To service the static bars proceed as follows:

(1) Loosen the supports and revolve the bar to face downward; tapping it to dislodge the particles. Revolve the bar back into position and tighten clamps.

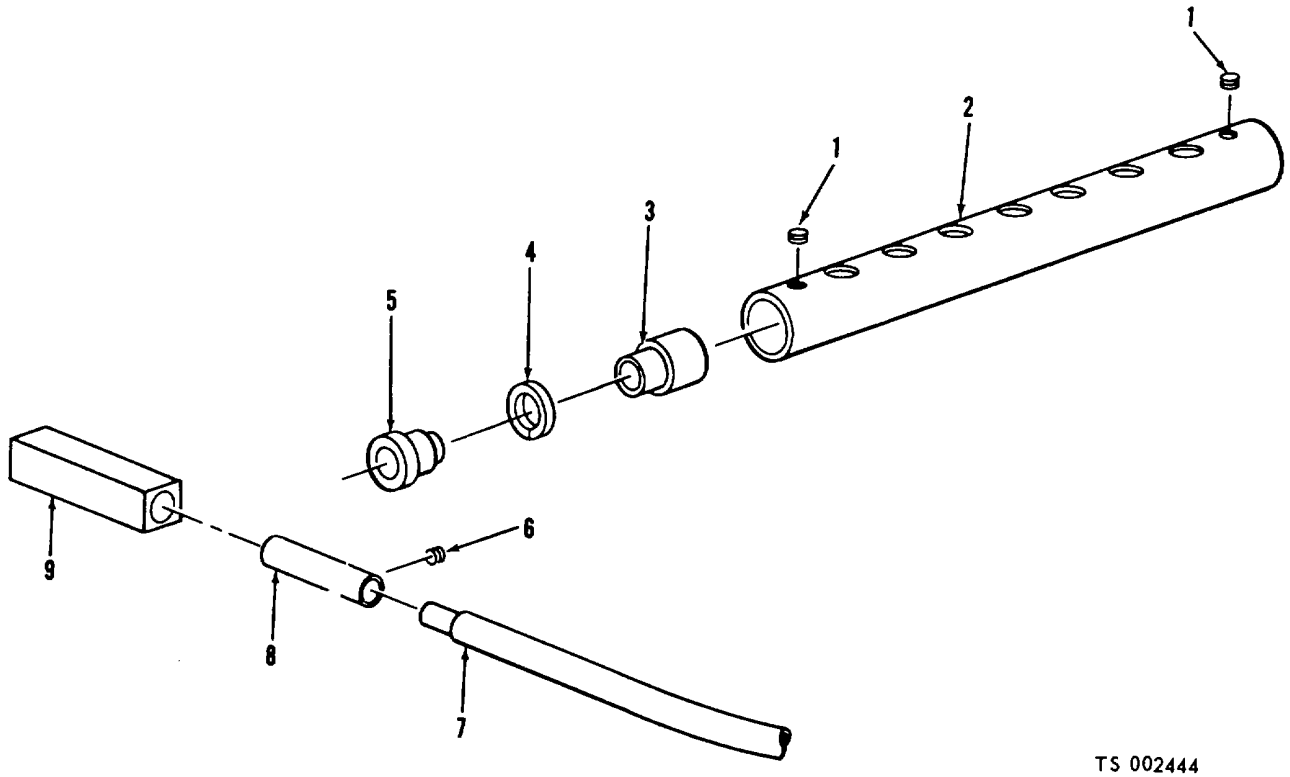
(2) Apply dry compressed air inside of bar to remove light accumulations of dust and dirt.

(3) Use a soft brush to clean lint, grease and other foreign matter which reduces sharpness and decreases efficiency of the points.

NOTE

Occasional pressing of a soft pencil eraser down over each point in turn and twisting slightly is one easy way to remove built up deposits.

Remove ink and resistant coatings by wiping points with "Renuzit". (Other cleaners may damage plastic parts).



1. Setscrew
2. Casing
3. Insulator
4. Insulator
5. Insulator
6. Setscrew
7. Cable
8. Connector
9. Block

Figure 3-9. Static eliminator bar, exploded view.

CHAPTER 4

ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. SERVICE UPON RECEIPT OF MATERIEL

4-1. Unloading the Equipment

WARNING

Exercise great care when handling or moving the press and associated equipment. They are extremely heavy units. Use all safety precautions and provide sufficient qualified personnel when performing installation work. Refer to WARNINGS on page ii at front of this manual. CARELESSNESS CAN RESULT IN SERIOUS INJURY OR DEATH.

a. General. All that is required to unload the press with press package (fig. 4-1) from a flatbed trailer, flat car or slip hold in a standard (15 ton min. capacity) crane. The base has four recessed shackles (10, 12, 23, 25, fig. 4-2? through which cables can be placed. The cables in turn can then be looped and secured to the crane hook, enabling the packaged press to be lifted. Lifting cables should pass over shipping frame spreader base.

b. *Working Space Required.* The press with press package as assembled for shipment weighs approximately 22,000 pounds (9,979.2 kg). Therefore, it must first be positioned in its final operating place with ample working space around it as shown in figure 4-3. A satisfactory installation requires a space of at least 26 feet by 35 feet (7.9248 x 10.668 meters) with an access door or opening (at point E or F) of at least 8-1/2 feet (2.5908 meters) high through which the shipped equipment can be moved. Three roller skids (2, 5, 7, fig 4-4) are provided for moving the press into its final position.

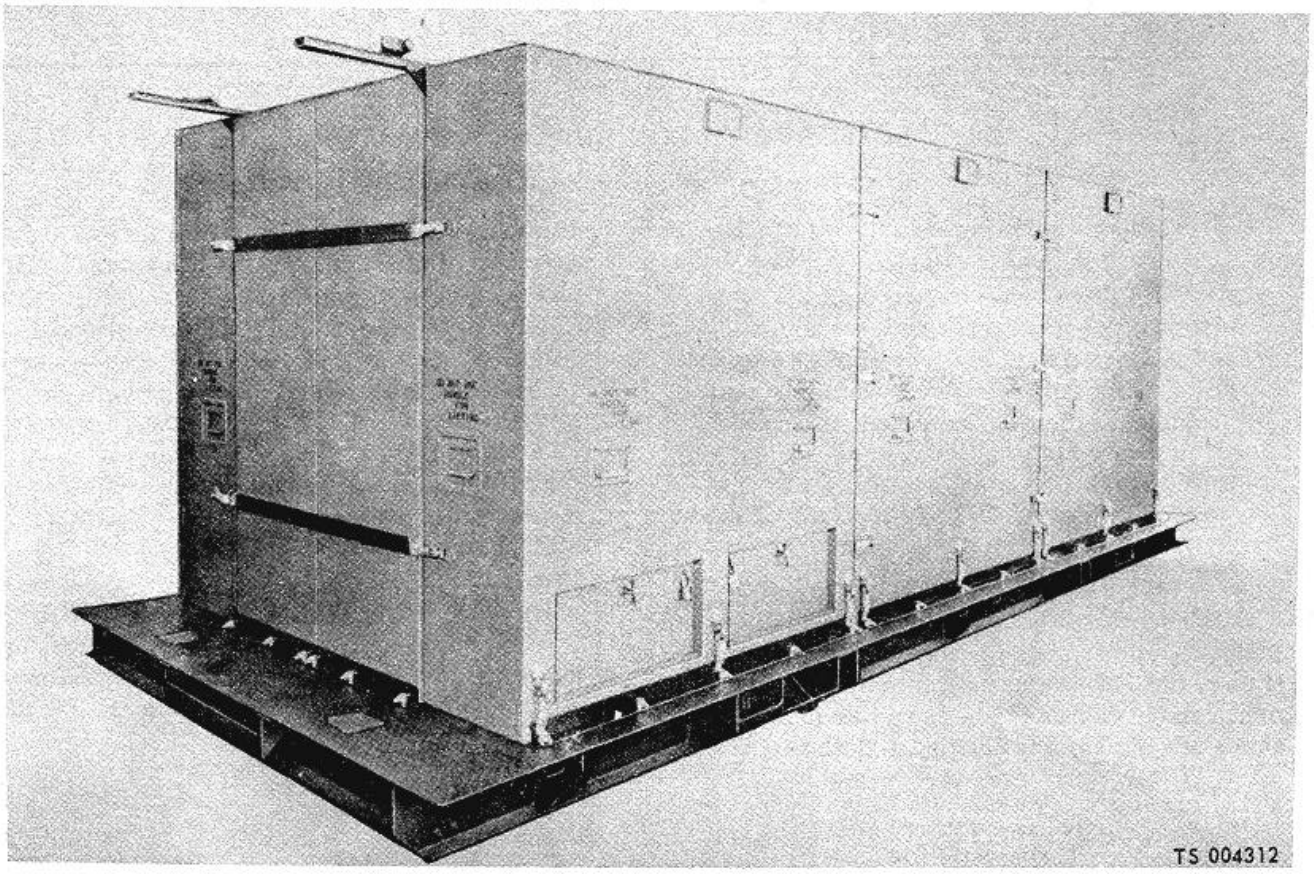
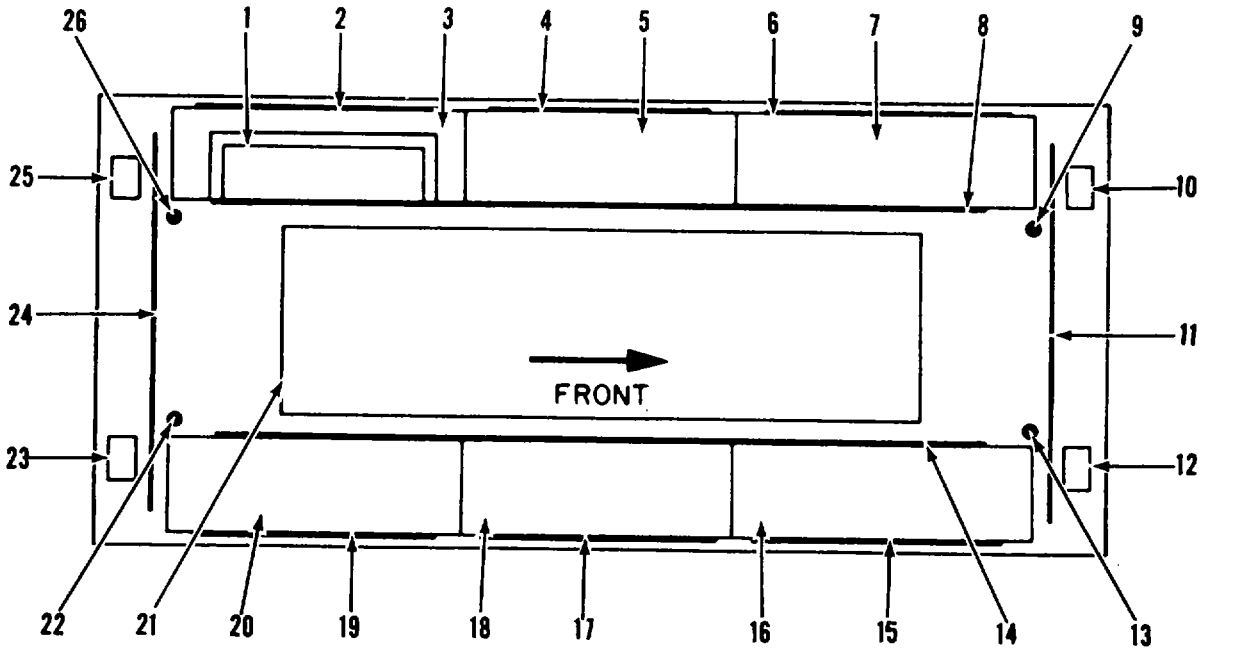
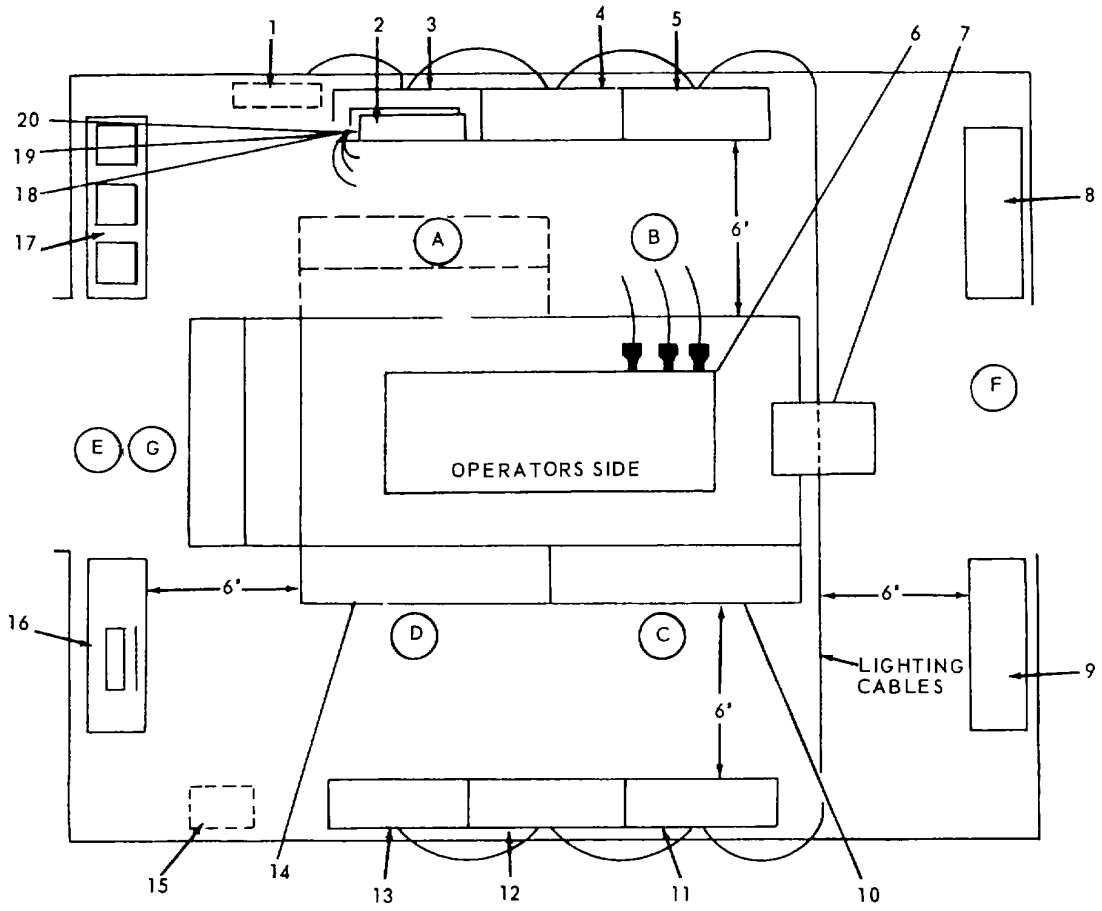


Figure 4-1. Press with press package.



1. Motor-Generator Unit
2. L-Angle Bracket
3. Storage Cabinet A
4. L-Angle Bracket
5. Storage Cabinet B
6. L-Angle Bracket
7. Storage Cabinet C
8. L-Angle Bracket
9. Bolts Attaching Shipping Frame
10. Lifting I-Bolt (Recessed)
11. L-Angle Bracket
12. Lifting I-Bolt (Recessed)
13. Bolts Attaching Shipping Frame
14. L-Angle Bracket
15. L-Angle Bracket
16. Storage Cabinet D
17. L-Angle Bracket
18. Storage Cabinet E
19. L-Angle Bracket
20. Storage Cabinet F
21. Press
22. Bolts Attaching Shipping Frame
23. Lifting I-Bolt (Recessed)
24. L-Angle Bracket
25. Lifting I-Bolt (Recessed)
26. Bolts Attaching Shipping Frame

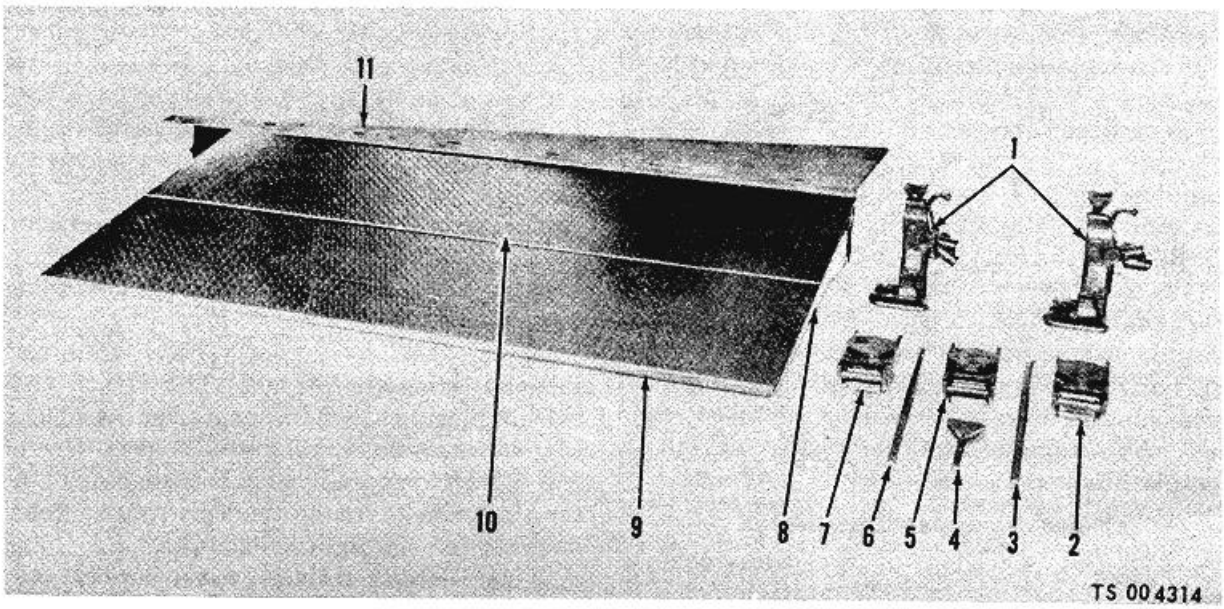
Figure 4-2. Press package plan.



TS 004311

1. Electric Power Supply Box (Not furnished)
2. Adjustable speed control unit (motor generator)
3. Storage cabinet A
4. Storage cabinet B
5. Storage cabinet C
6. Press
7. Platform base ramp
8. Table
9. Table
10. Platform extension plate
11. Storage cabinet D
12. Storage cabinet E
13. Storage cabinet F
14. Platform extension plate
15. Sink and water supply (not furnished)
16. Table with plate bending jig
17. Table with three ink mixing slabs
18. Blower motor cable
19. Static eliminator cable
20. Press control cable

Figure 4-3. Press base plan.



1. Jack
2. Roller skid (fixed)
3. Jack handle
4. Roller skid handle
5. Roller skid (swivel)
6. Jack handle
7. Roller skid (fixed)
8. Wooden ramp incline
9. Ramp plate
10. Ramp plate
11. Platform base of press

Figure 4-4. Ramp plates installed.

4-2. Unpacking the Equipment

NOTE

Remove all waterproof tarpaulin as necessary when following unpacking procedures below.

a. Storage Cabinets and Motor Generator Units. When the press and associated equipment is positioned in its operating place (para 4-1 b) first remove the six storage cabinets and motor generator unit (1, 3, 5, 7, 16, 18, 20, fig. 4-2) as follows:

(1) Remove the six L-angle bracket (2, 4, 6, 15, 17, 19, fig. 4-2) holding the storage cabinets in place.

NOTE

Wrenches are provided for loosening fasteners holding L-angle brackets and are packed in storage cabinet F (20) which has rear access doors.

(2) Disconnect locksets and strikes securing top plates and holding storage cabinets in place.

(3) Remove the four tables (5 and 7, fig. 1-6) and install them at positions shown by index numbers 8, 9, 16 and 17 in figure 4-3.

(4) Remove two ramp plates (2, 4, fig. 1-6) and install them at position A, figure 4-3 as shown in figure 4-4. Three wooden ramp blocks (8, fig. 4-4) will be found packed in storage cabinet F (20, fig. 4-2).

(5) Remove storage cabinet A (3, fig. 4-2) over the ramp plates to the position shown by index number 3 in figure 4-3.

NOTE

Eye bolts are provided in all cabinets which can be removed and reinstalled on top of the cabinets. The use of a monorail hoist will facilitate movement of cabinets.

(6) Move ramp plates and incline ramps to positions B, C, and D in fig. 4-3; over them move storage cabinets B, C, D, E, and F (5, 7, 16, 18, 20, fig. 4-2) to positions shown by index numbers 4, 5, 11, 12 and 13 in fig. 4-3.

b. Platform Expansion Plates, Ramp, and Tables. After storage cabinets and motor generator unit are installed in place (para 4-2 a), proceed as follows:

(1) Remove the two platform extension plates (1, 3, fig. 1-6) and install them at positions shown by index numbers 10 and 14 in figure 4-3.

(2) Remove the platform base ramp (25, fig. 1-6) and install it at the position shown by index number 7 in figure 4-3.

(3) Mount the three inch mixing slabs (fig. 1-7) on the table at position 17, figure 4-3 and the plate bending jig (fig. 2-3) on the table position 16, figure 4-3.

(4) Install ramp plates and inclines at position G in figure 4-3.

c. Shipping Frame and L-Angle Brackets. After the ramp plates, platforms extension plates and tables have been removed from the shipping frame, proceed as follows:

(1) Take out the bolts (9, 13, 22, 26, fig 4-2) attaching the shipping frame, and remove it from the platform base (13, fig. 1-6).

(2) Remove the four L-angle brackets (8, 11, 14, 24, fig. 4-2).

(3) Remove angle braces from shipping frame and swing upright section down flat against horizontal section. Tag all pieces for identification and store for use in reshipment of the press. Also, tag and store for reshipment all ten L-angle brackets.

4-3. Inspecting and Servicing Equipment

Inspecting and servicing of the equipment consists of inspecting the equipment for cleanliness, especially the effectiveness of the previous days washup; insuring that blankets are clean, in good condition, and tight; that rollers are free from damage or evidence of glazing and that proper lubrication is accomplished. Refer to Table 3-1 for more detailed servicing procedures.

4-4. Installation and Setting Up Instructions

a. Location. After the equipment has been unpacked para 4-2) the various units should be positioned as shown by the recommended installation plan (fig. 4-3). Make sure there is at least a six foot width of working space between the press and storage cabinets and the tables. Use the roller skids and jacks (fig. 4-4) to move and position the press in its operating positions.

b. Power Supply, Light, and Water Lines Required. A 3-phase, 208 volts, 60-Hertz, ac power supply line is required for operation of the press. A 110-volt, 60-Hertz, ac power supply line is also required for lightning circuits. Refer to index number 1, figure 4-3 for suggested location of the electric power supply box (not supplied).

(1) *Lighting*. The six storage cabinets (3, 5, 7, 16, 18, 20 fig 4-2 are equipped with Florescent lights and these lights should be connected to the 110 volt ac power supply line as shown in figure 43. Six cables are used for this purpose and are interconnected via receptacles located on rear side of storage cabinets (fig 4-1). The four shortest cables (approx 10 ft. long) are connected to receptacles located on storage cabinets (3, 4, 5, and 11, 12, 13, fig. 4-3). The two longest cables (approx. 25 ft (2.22 meters) long) are connected to receptacles on power supply box (1) and cabinet (3) and cabinets (5) and (11) fig. 4-3. Other working lights should be installed over the press (6), tables (8, 9, 16, 17) and sink (15). Use no. 14 AWG, run in conduit, or BX cable No. 14 AWG, for all lighting circuits, and provide switches, as desired, for the lighting circuits.

(2) *Water supply*. A water supply and sink (not supplied) for general utility use should be installed at a convenient place such as that shown by index number (15) in figure 4-3.

c. Cable Connections. Input power supply of 208 volt alternating current, three-phase, is brought to the motor-generator unit through a cable and receptacle. The output of the unit is carried to the press through three heavy duty cables and self latching receptacles having non-interchangeable contacts. The attaching of the power output supply of the press requires only plugging in to the cable receptacles on the press. It is impossible to incorrectly join the cables.

d. Leveling of Offset Press. The press should always be carefully leveled before operation. Two bubble levels are located on the bottom members of the frame under the offset units; one is lined up with the long axis of the press and the other with the short axis. In the event that either bubble is off center, adjust the four leveling jacks (14, 19, fig. 4-5), and two on rear of platform base) until press is nearly level. Final leveling is accomplished by adjusting leveling screws, in the press base.

Section II. MOVEMENT TO A NEW WORKSITE

4-5. Dismantling for Movement

a. Short Distance Movement. To facilitate a short move of the press it is only necessary for the maintenance personnel to use the roller skids and jacks (fig. 4-4) to move and position the press to a new operating position.

b. Long Distance Movement. If the press is to be moved a long distance, it should be packaged in reverse procedure of paragraph 4-2, Section 1. Prior to packaging, the press with press package can be moved from its operating position to the point of packaging as stated in paragraph (a) above. A standard 15 ton lift crane (para 4a Section 1) can be used to place the package on a flat car, flat bed trailer or in a ship hold for shipment to ultimate destination. During shipment, standard tie down procedures should be employed to prevent vibration and shifting.

4-6. Reinstallation after Movement
Refer to paragraph 4-4, Section I 9 Installation and Setting up Instructions) as procedures are identical.

Section III. REPAIR PARTS, SPECIAL TOOLS AND EQUIPMENT

4-7. Tools and Equipment
There are no basic issue tools or repair parts issued with or authorized for the Lithographic offset press.
4-8. Special Tools and Equipment
No special tools or equipment are required by organizational maintenance personnel for the maintenance of the Lithographic offset press.
4-9. Organizational Maintenance Repair Parts
Repair parts and equipment are listed in the repair parts and special tools list covering organizational maintenance for this equipment (TM 10-3610-215-24P).

Section IV. ORGANIZATIONAL MAINTENANCE PREVENTIVE CHECKS AND SERVICES

4-10. General

To insure that the offset press is ready for operation at all times, it must be inspected systematically, so that defects may be discovered and corrected before they result in serious damage or failure. The necessary Preventive Maintenance Services to be performed are listed and described in paragraph 4-11. The item numbers indicate the sequence of minimum inspection requirements. Defects discovered during operation of the unit shall be noted for future correction. Stop operation immediately, if a deficiency is noted which would damage equipment under continued operation. All deficiencies and shortcomings will be recorded together with the corrective action taken, on DA Form 2304 (Equipment Inspection and Maintenance Worksheet) at the earliest possible opportunity.

4-11. Organizational Maintenance Checks and Services.

a. Table 4-1 contains a tabulated list of preventive checks and services which must be performed by the organizational maintenance personnel.

b. The interval and sequence columns designates the required service interval. A quarterly interval is equal to 3 calendar months or 250 hours of operation, whichever occurs first.

Table 4-1. Organizational Preventive Maintenance Checks and Services

Q-Quarterly
Total man-hours required: 30

Sequence Number	ITEM TO BE INSPECTED PROCEDURE	WORK TIME (M H)
1.	Ink Fountain Assembly Remove, clean and inspect ink fountain blade for loose rivets and distortion. Inspect and replace defective ink fountain adjusting screws.	2.0
2.	Ink Rollers Remove, clean and inspect rubber rollers for flat spots, glazing and deterioration. Inspect and replace defective ink roller bearings.	4.0
3.	Ink Wash-Up Device Remove, clean and inspect the wash-up device. Replace wash-up blade if defective. Inspect and replace defective adjustment screws.	2.0
4.	Water Fountain Assembly Remove, clean and inspect the water fountain bottle assembly. Replace bottle cap and valve assembly if defective.	1.0
5.	Water Dampener Rollers Replace compressed and worn flannel and molleton covers. Clean and inspect rubber rollers for flat spots, glazing and deterioration. Inspect and replace defective dampener rollers bearings.	4.0

Q-Quarterly
Total man-hours required: 30

Sequence Number	ITEM TO BE INSPECTED PROCEDURE	WORK TIME (M/H)
6.	*Vibrator Roller Assemblies Clean and inspect roller surfaces for dents and cracks. Inspect worm and drive gear assemblies for excess end play and wear.	2.0
7.	Printing Cylinders Clean and inspect the cylinder bodies, bearers and reel ratchet and pawl assemblies for surface damage and wear. Replacedefective cylinder parts. Check the cylinders for proper bearer pressure and parallelism.	4.0
8.	Drive Belts and Chains Inspect drive belts and chains for wear and proper adjustment. Replace defective belts and chains.	4.0
9.	Air Pump and Hoses Inspect oil separator for saturated waste. Drain excess oil and replace waste if required. Inspect hoses for breaks and deterioration. Replace defective hoses.	1.0
10.	Feed Roll Stand and Brake Mechanism Clean and inspect for worn and damaged parts. Replace defective parts as required.	2.0
11.	Main Drive Motor and Power Unit AC/DC Inspect the motor brushes for dirt, copper imbedded in brush contact surfaces and excessive wear. Clean the brushes with clean, dry compressed air. Replace the brushes if worn an amount equal to one-half of their original length.	4.0

Section V. ORGANIZATIONAL MAINTENANCE TROUBLESHOOTING

4-12. General
This section contains troubleshooting information for locating and correcting most of the troubles which may develop to the offset press and its components that are within the scope of organizational maintenance.

4-13. Organizational Maintenance Troubleshooting
For organizational maintenance
shooting refer to table 4-2.

Table 4-2. Organizational Maintenance Troubleshooting

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

1. MAIN DRIVE MOTOR STARTS BUT THE PRESS WILL NOT RUN.
   Step 1. Drive belts are either adjusted improperly or broken.
   Have the drive belts adjusted or replaced.
   Step 2. Link in the drive chain is broken.
   Have the chain replaced.
2. SPEED CONTROL SLOW TO RESPOND WHEN ADJUSTING
   Inner drive chain out of adjustment.

Adjust inner drive chain.

3. PAPER WEB TRAVELING OUT OF LINE INTO FEEDER ASSEMBLY
   Alignment control roller out of adjustment.
   Adjust alignment control roller with eccentrics.
4. PAPER WEB FEEDING ERRATICALLY INTO FIRST OFFSET UNIT
   Rubber feeder roller out of adjustment.
   Adjust rubber feeder roller parallel and with proper tension to both metallic feeder drive rollers.
5. PLATE AND BLANKET CYLINDER BEARERS ARE SEPARATED WHEN PRESS IS ON IMPRESSION
   Bearer pressure improperly set.
   Adjust bearer pressure properly.

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
6. IMAGE ON PAPER WEB PRINTING ON ONE HALF OF PAPER ONLY Impression cylinder out of parallel to blanket cylinder. Adjust impression cylinder parallel to blanket cylinder.
7. DELIVERY THROW OFF CLUTCH DIFFICULT TO ENGAGE Throw off clutch surfaces damaged. Disassemble clutch and repair damage.
8. PAPER PILE-UP ASSEMBLY FAILS TO SHUT OFF PRESS Micro-switch plunger sticks or switch is defective. Free up plunger if sticking. Replace defective switch.
9. CUT SHEET JAMING TOGETHER IN THE DELIVERY BELTS Delivery belts improperly adjusted. Adjust delivery belt tension gradually until sheets are smoothly delivered to the delivery board.
10. AIR PUMP OVERHEATING Step 1. Pump is lacking lubrication. Increase flow of oil from automatic oiler. Step 2. Pump wings are sticking. Clean pump while running with small amount of kerosene.
11. AUTOMATIC LUBRICATOR PUMPING OIL SLUGGISHLY Lubricator filter clogged and dirty. Replace filter.
12. MAIN DRIVE MOTOR AND AC/DC POWER UNIT BRUSHES SPARKING EXCESSIVELY Step 1. Brushes incorrectly seated. Reset the brushes to the commutator, first using I1 then #00 sandpaper.
12. MAIN DRIVE MOTOR AND AC/DC POWER UNIT BRUSHES SPARKING EXCESSIVELY CONTINUED Step 2. Brushes worn. Replace with new brushes and seat properly as directed in Step 1 above.
13. HIGH TEMPERATURE BUILD UP IN MOTOR GENERATOR UNIT CABINET ASSEMBLY Both air filters are dirty. Clean and charge both air filters.

Section VI. RADIO INTERFERENCE SUPPRESSION

4-14. General Methods Used to Attain Proper Suppression

Essentially suppression is attained by providing a low resistance path to ground for strap currents. The methods used include shielding the high frequency wires, grounding the frame with bonding straps, and using capacitors and resistors.

4-15. Replacement of Suppression Components

The manufacturer of the Press Drive and Blower Motor has taken all necessary precautions in the internal construction of these units to assure satisfactory radio interference suppression.

Section VII. GUARD ASSEMBLIES

4-16. General

All guards are easily removed with standard maintenance tools.

4-17. Main Drive Guard

a. Removal (Fig. 4-6). Remove attaching hardware and remove main drive guard (7) (14) (26).

b. *Cleaning and Inspection*.

(1) Clean and dry all parts thoroughly.

(2) Inspect the guard for cracks and breaks.

(3) Inspect the attaching hardware for cracks and for damaged threads. Replace defective parts.

c. Installation.

Position guard (7) (4) (26) and secure with attaching hardware.

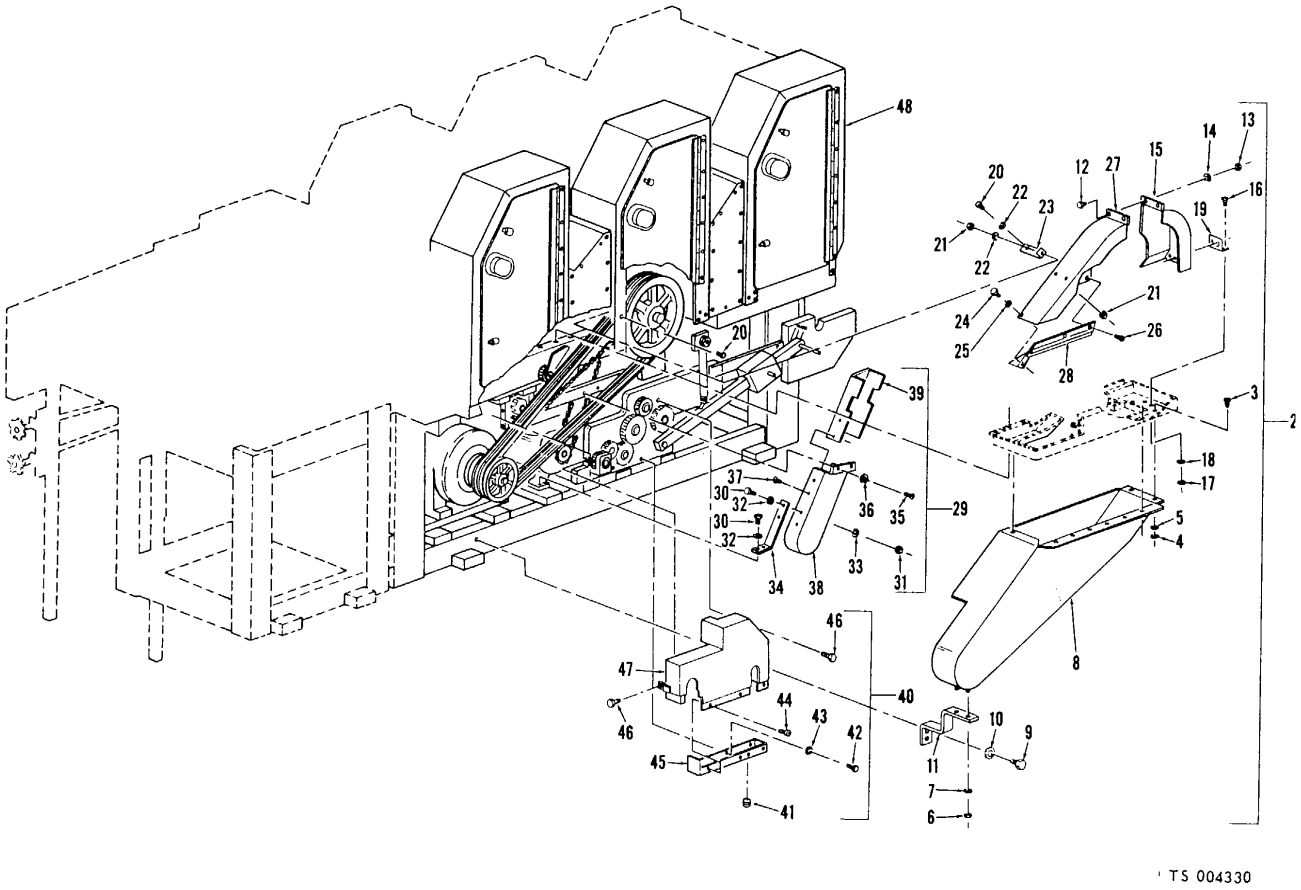


Figure 4-5. Rear side guard assembly, exploded view.

KEY to figure 4-5:

1. Main Drive & V Belt Guard Assembly
2. Screw
3. Nut
4. Flat Washer
5. Nut
6. Lock Washer
7. Guard Assembly
8. Screw
9. Lock Washer
10. Bracket
11. Screw
12. Nut
13. Flat Washer
14. Guard Assembly
15. Screw
16. Nut
17. Flat Washer
18. Bracket
19. Screw
20. Nut
21. Flat Washer
22. Bracket
23. Screw
24. Flat Washer
25. Screw
26. Guard
27. Extension Assembly
28. Offset Unit Guard Assy
29. Feeder Gear Guard Assy
30. Plug
31. Screw
32. Lock Washer
33. Screw
34. Housing
35. Screw
36. Housing
37. Variable Control Guard Assembly
38. Screw
39. Nut
40. Lock Washer
41. Flat Washer
42. Bracket
43. Screw
44. Lock Washer
45. Screw
46. Guard
47. Guard

4-18. Offset Unit Guard

a. Removal. Remove attaching hardware and remove offset unit guard (28, fig. 4-5).

b. Disassembly. Refer to figure 4-6 and disassemble offset unit guard.

c. Cleaning and Inspection

(1) Clean and dry all parts thoroughly.

(2) Inspect the guard for cracks and breaks.

(3) Inspect the attaching hardware for cracks and for damaged threads. Replace defective parts.

d. Installation. Position guard as shown in figure 4-5 (28) and secure with attaching hardware.

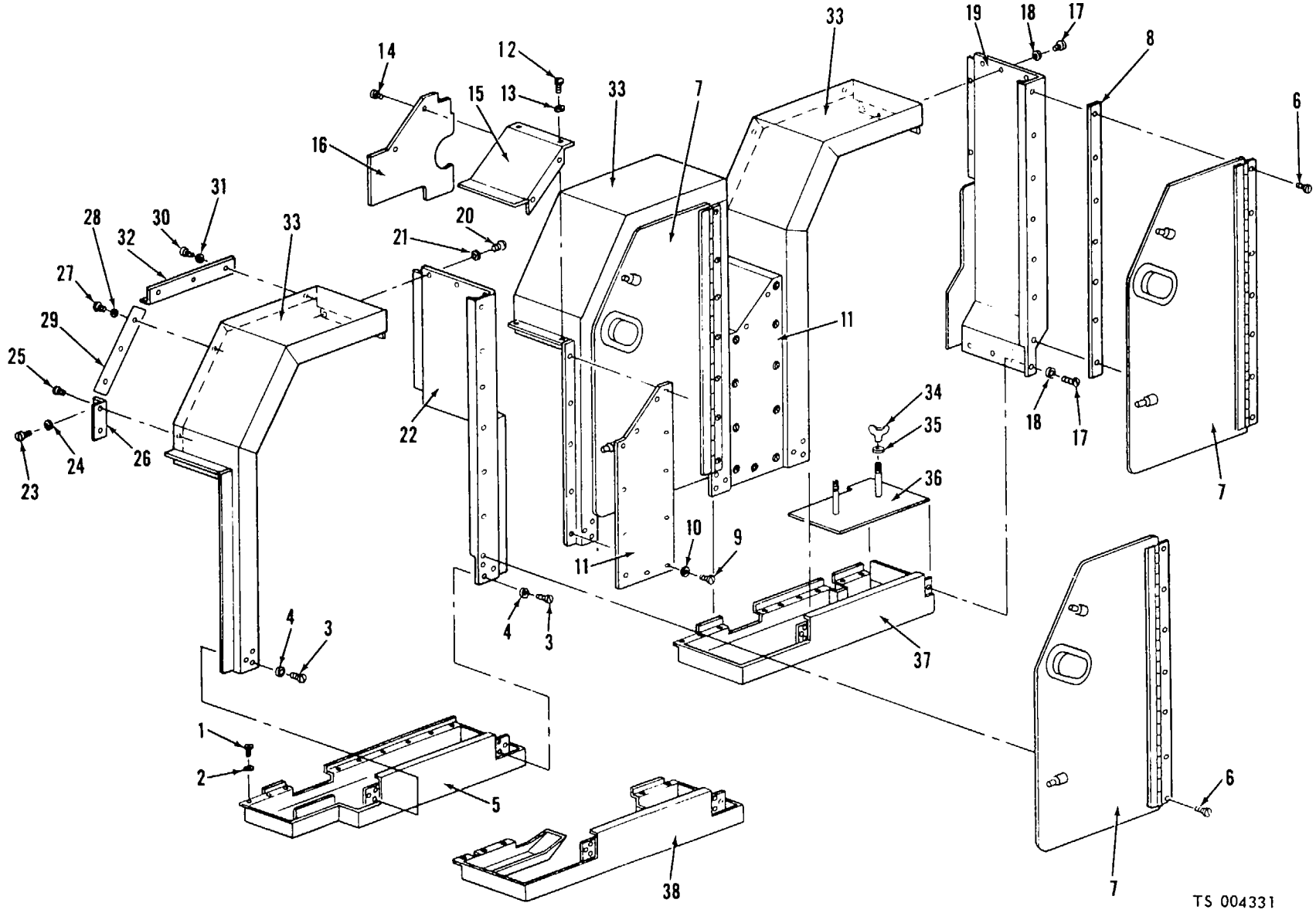


Figure 4-6. Offset unit rear guard assembly, exploded view.

KEY to figure 4-6:

1. Screw
2. Lock Washer
3. Screw
4. Flat Washer
5. Tray Assembly
6. Screw
7. Door Assembly
8. Filler Strip
9. Screw
10. Flat Washer
11. Front piece
12. Screw
13. Flat Washer
14. Screw
15. Top Piece
16. Rear Piece
17. Screw
18. Flat Washer
19. Guard Assembly
20. Screw
21. Flat Washer
22. Guard Assembly
23. Screw
24. Lock Washer
25. Screw
26. Bracket
27. Screw
28. Lock Washer
29. Bracket
30. Screw
31. Lock Washer
32. Bracket
33. Guard Assembly
34. Nut
35. Flat Washer
36. Holder Assembly
37. Tray Assembly

4-19. Delivery Unit Guard

a. Removal. Remove attaching hardware and remove delivery unit guard (1, fig. 4-7).

b. Refer to figure 4-7 and disassemble delivery unit guard.

c. Cleaning and Inspection

(1) Clean and dry all parts thoroughly.

(2) Inspect the guard for cracks and breaks

(3) Inspect the attaching hardware for cracks and damaged threads. Replace defective parts.

d. Installation. Position guard as shown in figure 4-7(1) and secure with attaching hardware.

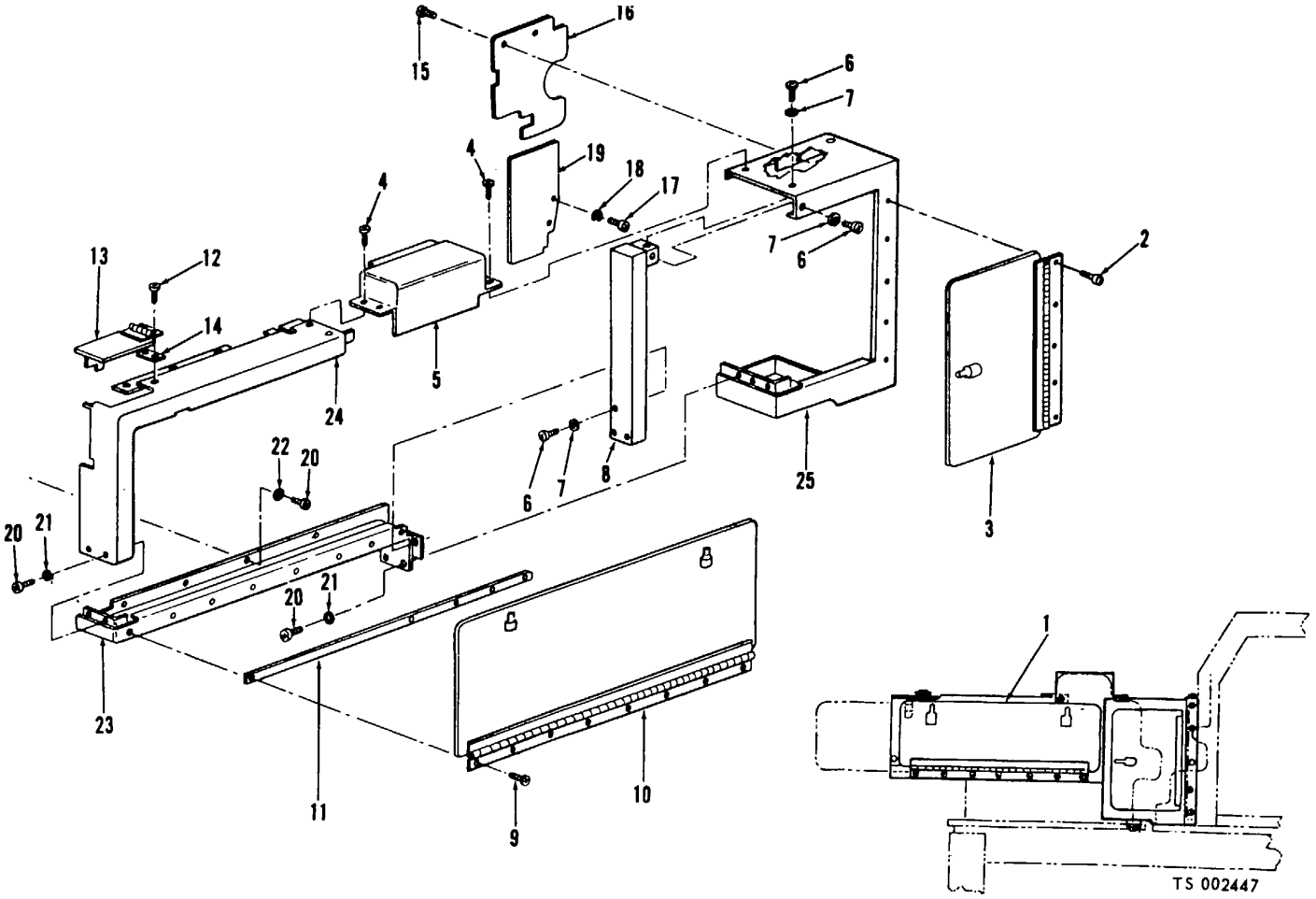


Figure 4-7. Delivery Unit Rear Guard Assembly, Exploded View

KEY to figure 4-7:

1. Delivery Unit Guard Assy
2. Screw
3. Door Assembly
4. Screw
5. Guard Assembly
6. Screw
7. Flat Washer
8. Post Assembly
9. Screw
10. Door Assembly
11. Filler Strip Assembly
12. Screw
13. Cover Assembly
14. Filler Strip
15. Screw
16. Plate
17. Screw
18. Lock washer
19. Plate
20. Screw
21. Flat Washer
22. Lock Washer
23. Tray Assembly
24. Frame
25. Tray Assembly

4-20. Feeder Unit Guard Assembly

a. Removal. Remove attaching hardware and remove feeder unit guard assembly (29, fig. 4-5).

b. Cleaning and Inspection.

(1) Clean and dry all parts thoroughly.
(2) Inspect the guard for cracks and breaks.
(3) Inspect the attaching hardware for cracks and for damaged threads. Replace defective parts.

c. Installation. Position guard (40, fig. 4-5) and secure with attaching hardware.

4-21. Variable Control Guard Assembly

a. Removal. Remove attaching hardware and remove variable control guard assembly (37, fig. 4-5).

b. Cleaning and Inspection.

(1) Clean and dry all parts thoroughly.
(2) Inspect the guard for cracks and breaks.
(3) Inspect the attaching hardware for cracks and for damaged threads. Replace defective parts.

c. Installation. Position guard (37, fig. 4-5) and secure with attaching hardware.

4-22. Operator Side Guards

a. Removal. Remove attaching hardware and remove side guard assembly (1, 4, 5, fig. 4-8).

b. Refer to figure 4-8 and disassemble side guards.

c. Cleaning and Inspection.

(1) Clean and dry all parts thoroughly.
(2) Inspect guards for cracks and breaks.
(3) Inspect the attaching hardware for cracks and for damaged threads. Replace defective parts.

d. Installation. Position guards as shown in figure 4-8(1) (4) (5) and secure with attaching hardware.

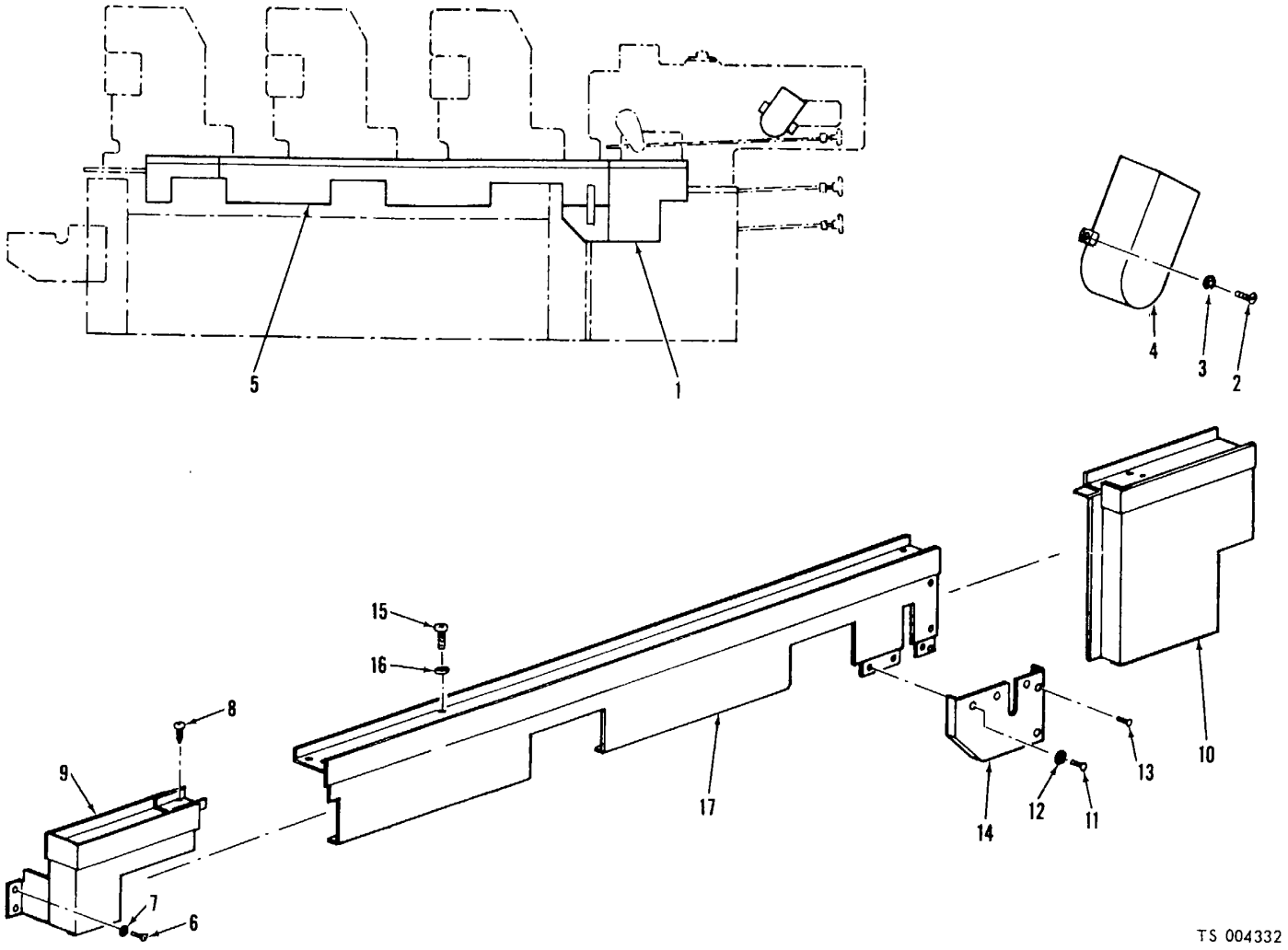


Figure 4-8. Operator side guards, exploded view

KEY to figure 4-8:

1. Guard Assembly
2. Screw
3. Lock Washer
4. Crank Link Guard Assembly
5. Electric Wire & Switch Guard Assembly
6. Screw
7. Lock Washer
8. Screw
9. Guard Assembly
10. Guard Assembly
11. Screw
12. Lock Washer
13. Guard Assembly

Section VIII. MAINTENANCE OF OIL LINE ASSEMBLIES

4-23. General (fig. 4-9 and 4-10 thru 4-12)

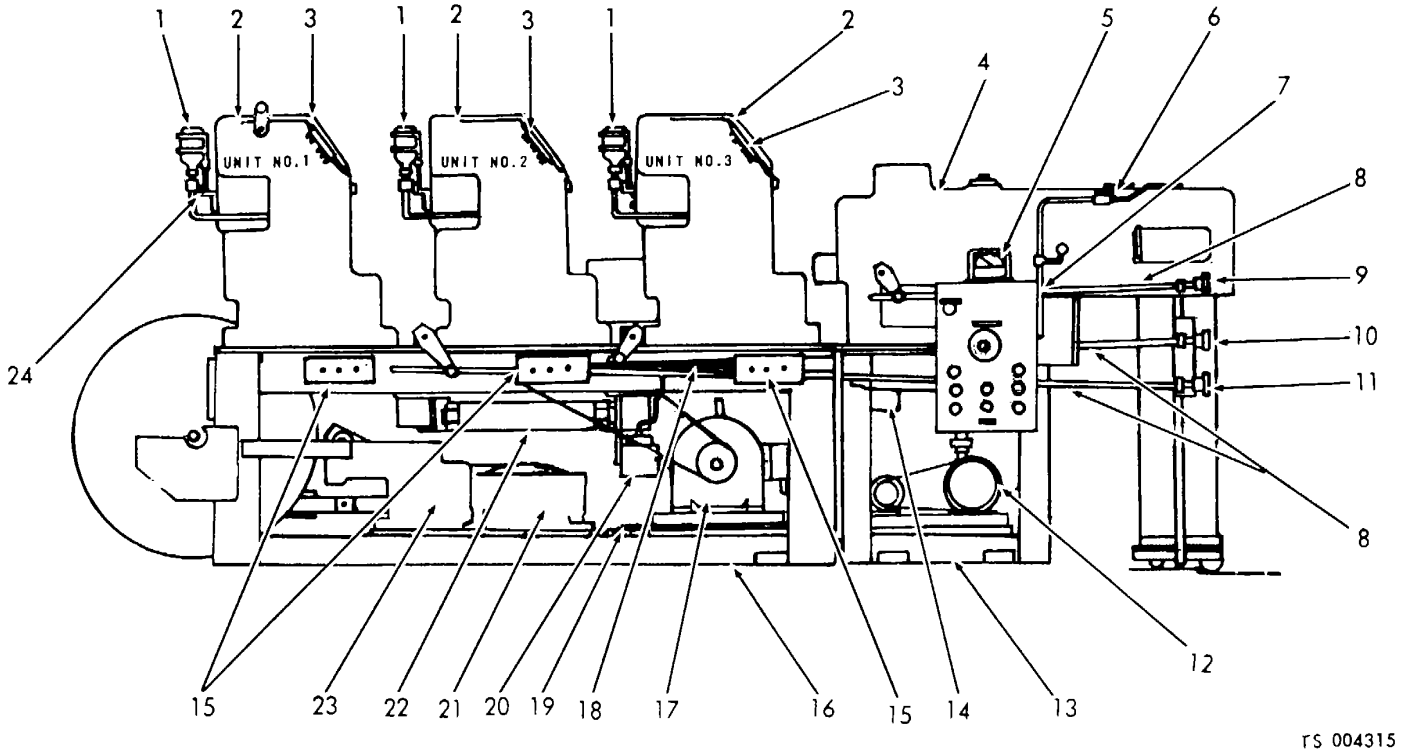
The printing press is protected by an automatic built in oil lubricating system. It assures correct lubrication of all bearing points and smooth operation of the press. The system consists of three basic elements: (1) a lubricator (pump) 20, fig. 4-9) which periodically forces a measured volume of oil from a 3 pint oil reservoir into (2) a single line of distribution tubing branched to supply oil to the bearing surfaces through (3) meter units which proportion the correct oil film to each bearing.

4-24. Drive Side and Feeder Unit Oil Line Assembly

a. Removal. Disconnect and remove piping (fig. 4-10).

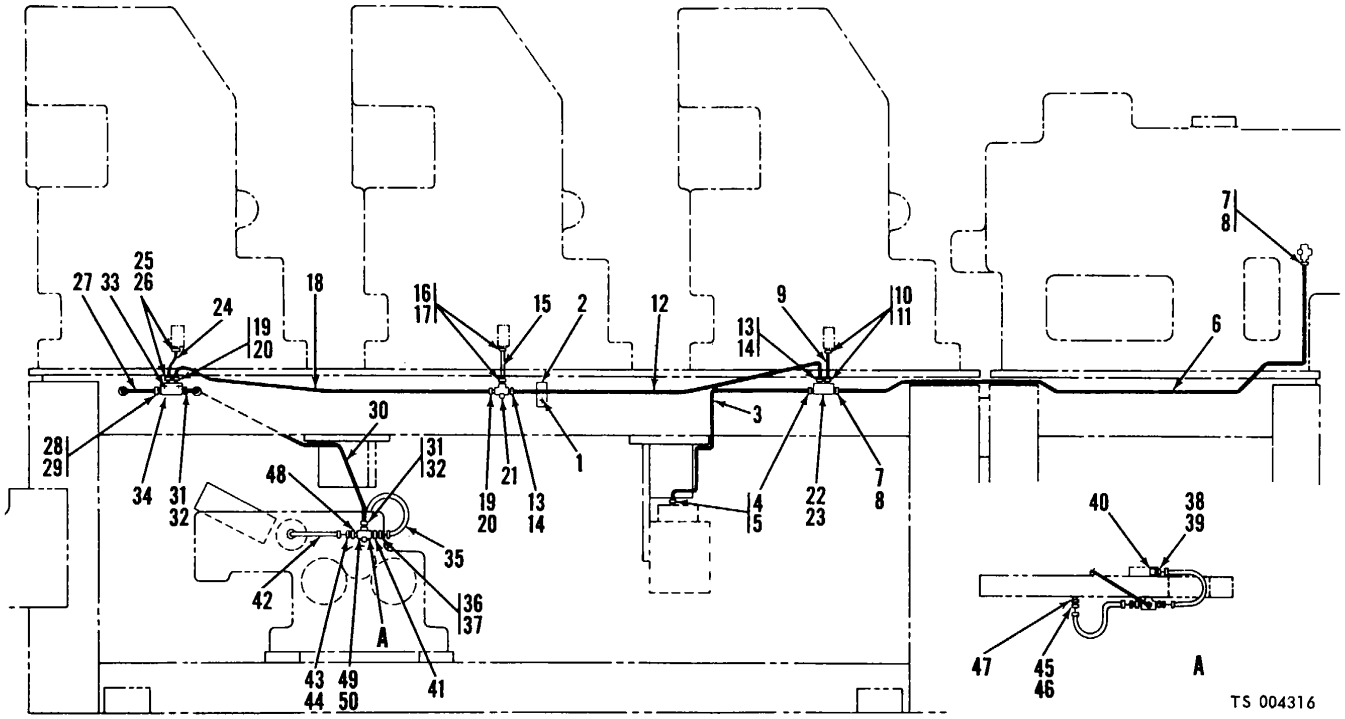
b. Inspect. Inspect the attaching hardware for cracks and for damaged threads. Replace defective parts.

c. Installation. Reverse instruction for removal for installation (fig. 4-10).



1. Water level unit (3 req'd)
2. Offset unit assembly (3 req'd)
3. Oil line assembly, offset unit
4. Delivery unit assembly
5. Speed indicator
6. Oil line assembly, delivery unit
7. Main control station
8. Compensator roller and lever assembly
9. Cutter adjusting knob
10. Unit #2 adjusting knob
11. Unit #3 adjusting knob
12. Air pump and blower motor assembly
13. Delivery unit substructure assembly
14. Static eliminator unit
15. Pushbutton station (3 req'd)
16. Offset unit substructure assembly
17. Main drive motor
18. Oil line assembly, main feed
19. Leveling block assembly
20. Lubricator (pump)
21. Positive infinitely variable control drive unit
22. Turn bar assembly
23. Feeder assembly
24. Water bottle holder bracket assembly (3 req'd)

Figure 4-9. Sectional identification



1. Screw
2. Clip
3. Oil line
4. Bushing
5. Sleeve
6. Oil line
7. Bushing
8. Sleeve
9. Oil line
10. Bushing
11. Sleeve
12. Oil Line
13. Bushing
14. Sleeve
15. Oil line
16. Bushing
17. Sleeve
18. Oil line
19. Bushing
20. Sleeve
21. Manifold
22. Screw
23. Manifold
24. Oil Line
25. Bushing
26. Sleeve
27. Oil line
28. Bushing
29. Sleeve
30. Oil Line
31. Bushing
32. Sleeve
33. Screw
34. Manifold
35. Hose assembly
36. Nut
37. Sleeve
38. Bushing
39. Sleeve
40. Adapter
41. Metering Unit
42. Hose Assembly
43. Nut
44. Sleeve
45. Bushing
46. Sleeve
47. Adapter
48. Metering Unit
49. Screw
50. Manifold

Figure 4-10. Operator side and feeder unit oil line assembly (sheet 1 of 2)

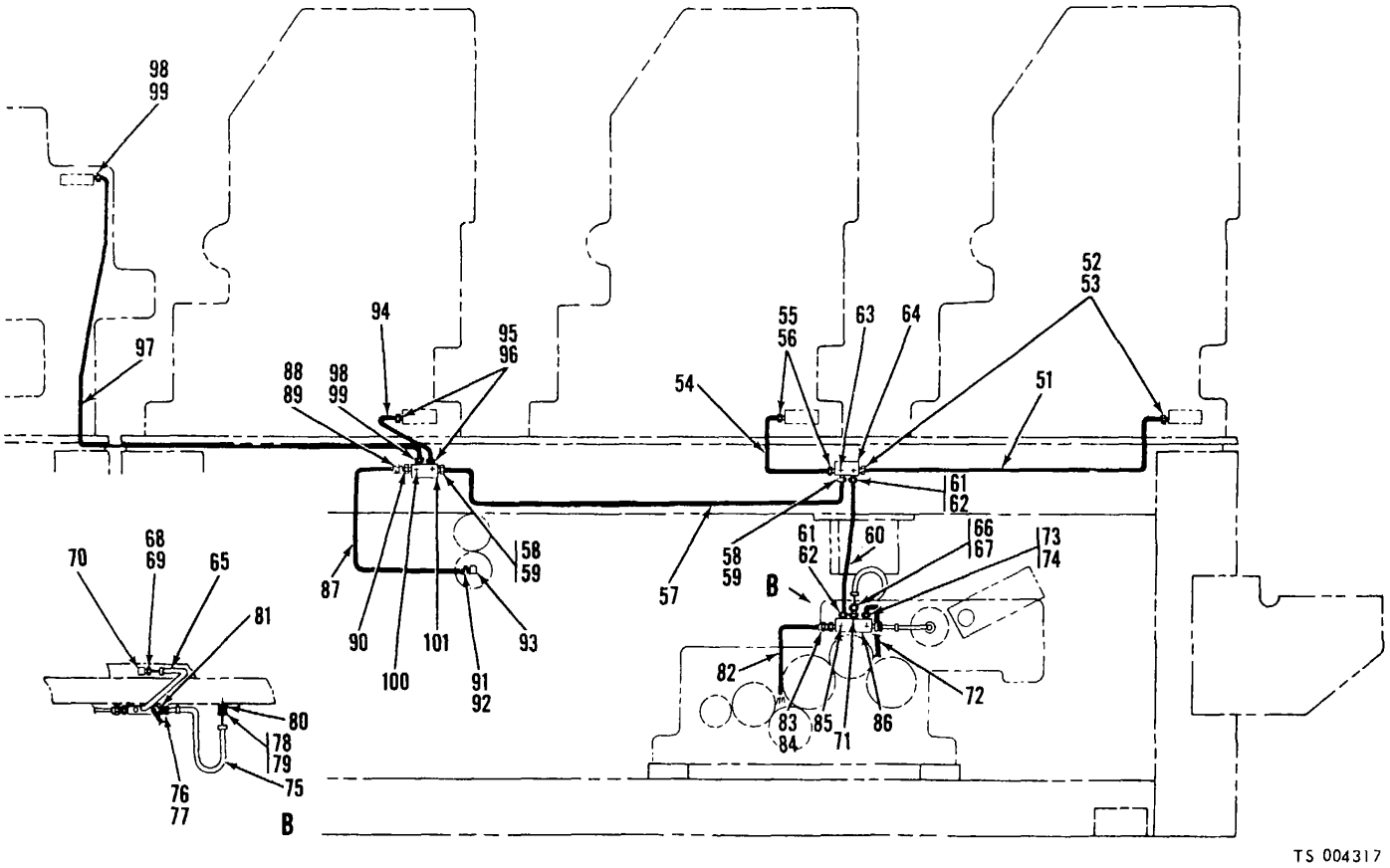


Figure 4-10. Operator side and feeder unit oil line assembly (sheet 2 of 2).

KEY to figure 4-10(2).

51. Oil Line
52. Bushing
53. Sleeve
54. Oil Line
55. Bushing
56. Sleeve
57. Oil Line
58. Bushing
59. Sleeve
60. Oil Line
61. Bushing
62. Sleeve
63. Screw
64. Manifold
65. Hose Assembly
66. Nut
67. Sleeve
68. Bushing
69. Sleeve
70. Adapter
71. Metering Unit
72. Oil Line
73. Bushing
74. Sleeve
75. Hose Assembly
76. Nut
77. Sleeve
78. Bushing
79. Sleeve
80. Adapter
81. Metering Unit
82. Oil Line
83. Nut
84. Sleeve
85. Screw
86. Manifold
87. Oil Line
88. Nut
89. Sleeve
90. Metering Unit
91. Bushing
92. Sleeve
93. Adapter
94. Oil Line
96. Bushing
96. Sleeve
97. Oil Line
98. Bushing
99. Sleeve
100. Screw
101. Manifold

4-25. Offset Unit Oil Line Assembly

a. Removal. Disconnect and remove piping (fig. 4-11).

b. Inspect. Inspect the attaching hardware for cracks and for damaged threads. Replace defective parts.

c. Installation. Reverse instruction for removal and installation (fig. 4-11).

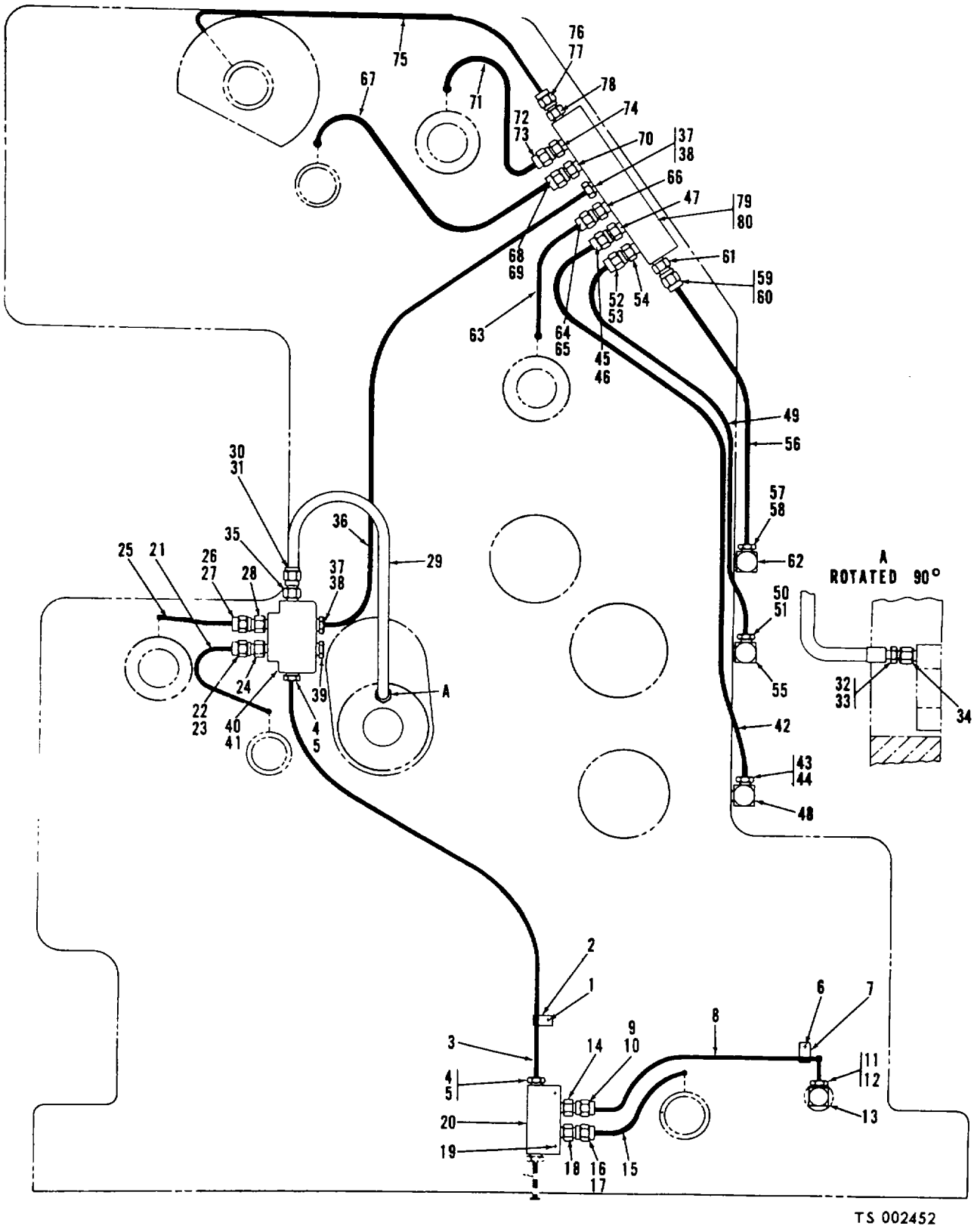


Figure 4-11. Offset unit oil line assembly.
(Sheet 1 of 5)

KEY to figure 4-11 (Sheet 1 of 5)

1. Screw
2. Clip
3. Oil line
4. Bushing
5. Sleeve
6. Screw
7. Clip
8. Oil line
9. Nut
10. Sleeve
11. Bushing
12. Sleeve
13. Adapter
14. Metering unit
15. Oil line
16. Nut
17. Sleeve
18. Metering unit
19. Screw
20. Manifold
21. Oil line
22. Nut
23. Sleeve
24. Metering unit
25. Oil line
26. Nut
27. Sleeve
28. Metering unit
29. Hose assembly
30. Nut
31. Sleeve
32. Bushing
33. Sleeve
34. Adapter
35. Metering unit
36. Oil line
37. Bushing
38. Sleeve
39. Plug
40. Screw
41. Manifold
42. Oil line
43. Bushing
44. Sleeve
45. Nut
46. Sleeve
47. Metering unit
48. Adapter
49. Oil line
50. Bushing
51. Sleeve
52. Nut
53. Sleeve
54. Metering unit
55. Adapter
56. Oil line
57. Bushing
58. Sleeve
59. Nut
60. . Sleeve
61. Metering unit
62. Adapter
63. Oil line
64. Nut
65. Sleeve
66. Metering unit
67. Oil line
68. Nut
69. Sleeve
70. Metering unit
71. Oil line
72. Nut
73. Sleeve
74. Metering unit
75. Oil line
76. Nut
77. Sleeve
78. Metering unit
79. Screw
80. Manifold

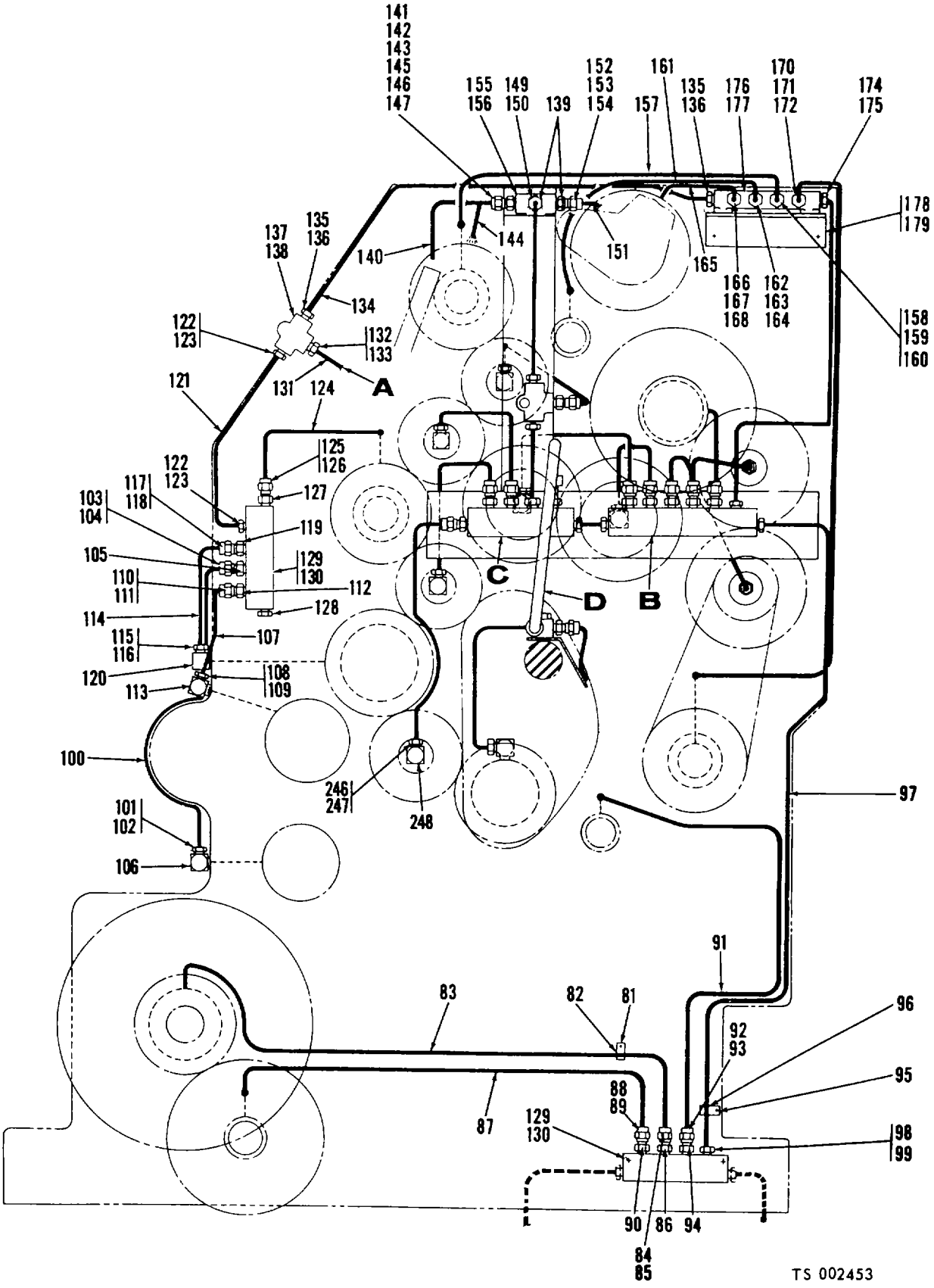


Figure 4-11. Offset unit oil line assembly.
(Sheet 2 of 5)

KEY to figure 4-11 (Sheet 2 of 5):

81. Screw
82. Clip
83. Oil line
84. Nut
85. Sleeve
86. Metering unit
87. Oil line
88. Nut
89. Sleeve
90. Metering unit
91. Oil line
92. Nut
93. Sleeve
94. Metering unit
95. Screw
96. Clip
97. Oil line
98. Bushing
99. Sleeve
100. Oil line
101. Bushing
102. Sleeve
103. Nut
104. Sleeve
105. Metering unit
106. Adapter
107. Oil line
108. Bushing
109. Sleeve
110. Nut
111. Sleeve
112. Metering unit
113. Adapter
114. Oil line
115. Bushing
116. Sleeve
117. Nut
118. Sleeve
119. Metering unit
120. Adapter
121. Oil line
122. B3ushing
123. Sleeve
124. Oil line
125. Nut
126. Sleeve
127. Metering unit
128. Plug
129. Screw
130. Manifold
131. Oil line
132. Bushing
133. Sleeve
134. Oil line
135. Bushing
136. Sleeve
137. Screw
138. Manifold
139. Plug
140. Oil line
141. Nut
142. Sleeve
143. Metering unit
144. Oil line
145. Nut
146. Sleeve
147. Metering unit
148. Oil line
149. Bushing
150. Sleeve
151. Oil line
152. Nut
153. Sleeve
154. Metering unit
155. Screw
156. Manifold
157. Oil line
158. Nut
159. Sleeve
160. Metering unit
161. Oil line
162. Nut
163. Sleeve
164. Metering unit
165. Oil line
166. Nut
167. Sleeve
168. Metering unit
169. Oil line
170. Nut
171. Sleeve
172. Metering unit
173. Oil line
174. Bushing
175. Sleeve
176. Screw
177. Manifold
178. Screw
179. Bracket

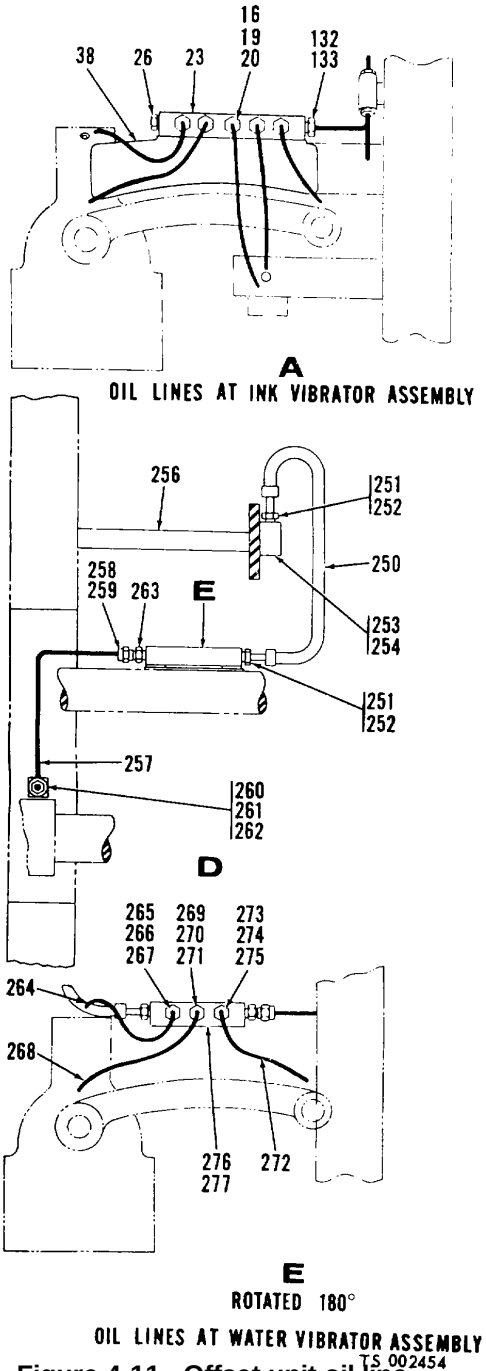


Figure 4-11. Offset unit oil line assembly.
(Sheet 3 of 5)

KEY to figure 4-11 (Sheet 3 of 5):

16.	Nut
19.	Screw
20.	Manifold
23.	Nut
26.	Nut
38.	Sleeve
132.	Bushing
133.	Sleeve
250.	Hose assembly
251.	Bushing
252.	Sleeve
253.	Screw
254.	Manifold
256.	Spacer
257.	Oil line
258.	Nut
259.	Sleeve
260.	Bushing
261.	Sleeve
262.	Adapter
263.	Metering unit
264.	Oil line
265.	Nut
266.	Sleeve
267.	Metering unit
268.	Oil line
269.	Nut
270.	Sleeve
271.	Metering unit
272.	Oil line
273.	Nut
274.	Sleeve
275.	Metering unit
276.	Screw
277.	Manifold

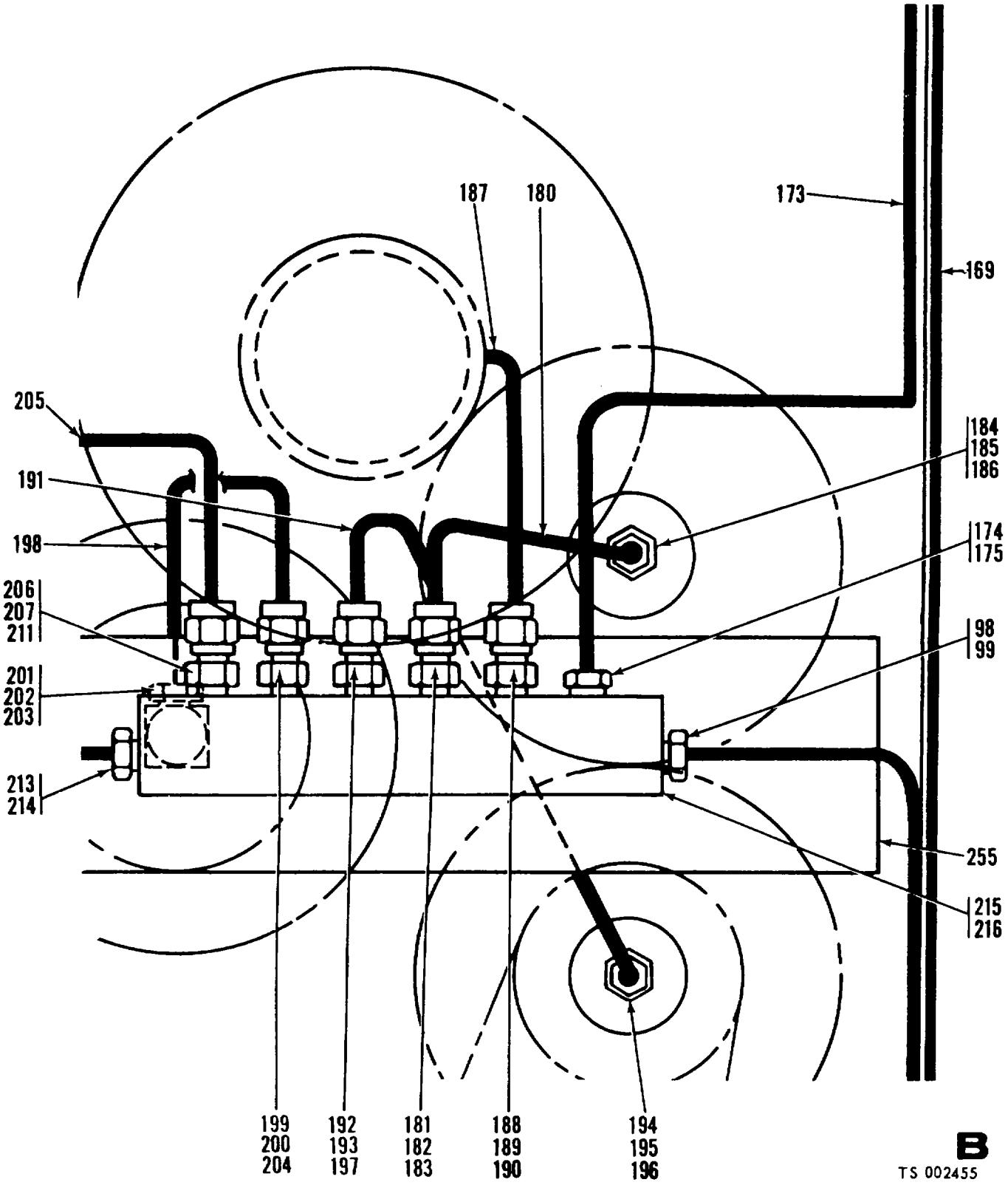


Figure 4-11. Offset unit oil line assembly.
(Sheet 4 of 5)

KEY to figure 4-11 (Sheet 4 of 5):

98. Bushing
99. Sleeve
169. Oil line
173. Oil line
174. Bushing
175. Sleeve
180. Oil line
181. Nut
182. Sleeve
183. Metering unit
184. Bushing
185. Sleeve
186. Adapter
187. Oil line
188. Nut
189. Sleeve
190. Metering unit
191. Oil line
192. Nut
193. Sleeve
194. Bushing
195. Sleeve
196. Adapter
197. Metering unit
198. Oil line
199. Nut
200. Sleeve
201. Bushing
202. Sleeve
203. Adapter
204. Metering unit
205. Oil line
206. Nut
207. Sleeve
211. Metering unit
213. Bushing
214. Sleeve
215. Screw
216. Manifold
255. Bracket

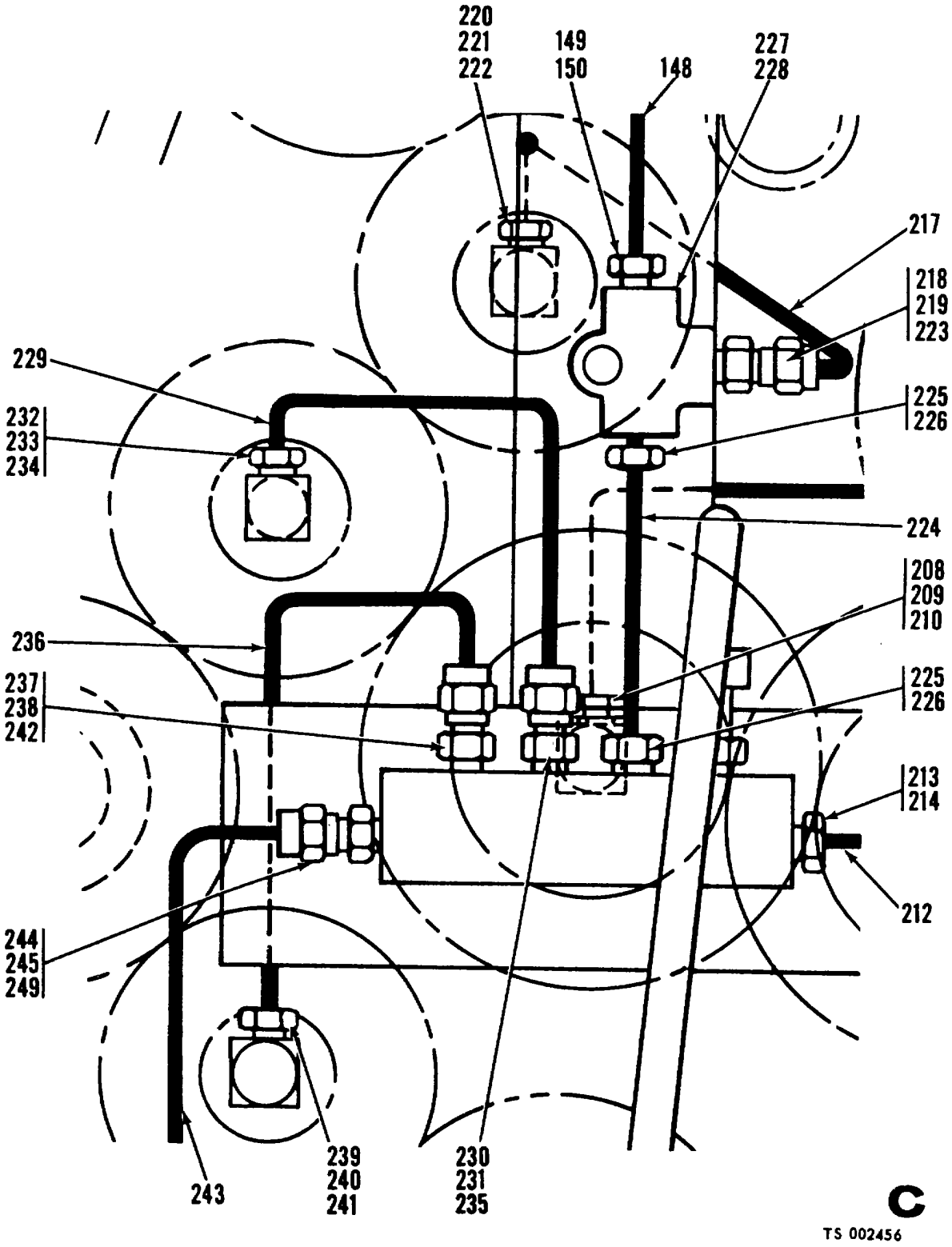


Figure 4-11. Offset unit oil line assembly.
(Sheet 5 of 5)

KEY to figure 4-11 (Sheet 5 of 5):
148. Oil line
149. Bushing
150. Sleeve
208. Bushing
209. Sleeve
210. Adapter
212. Oil line
213. Bushing
214. Sleeve
217. Oil line
218. Nut
219. Sleeve
220. Bushing
221. Sleeve
222. Adapter
223. Metering unit
224. Oil line
225. Bushing
226. Sleeve
227. Screw
228. Manifold
229. Oil line
230. Nut
231. Sleeve
232. Bushing
233. Sleeve
234. Adapter
235. Metering unit
236. Oil line
237. Nut
238. Sleeve
239. Bushing
240. Sleeve
241. Adapter
242. Metering unit
243. Oil line
244. Nut
245. Sleeve
249. Metering unit

4-26. Delivery Unit Oil Line Assembly

a. *Removal*. Disconnect and remove piping (fig 4-12.)

b. *Inspect*. Inspect the attaching hardware for cracks and for damaged threads. Replace defective parts.

c. *Installation.* Reverse instruction for removal and installation (fig. 4-12).

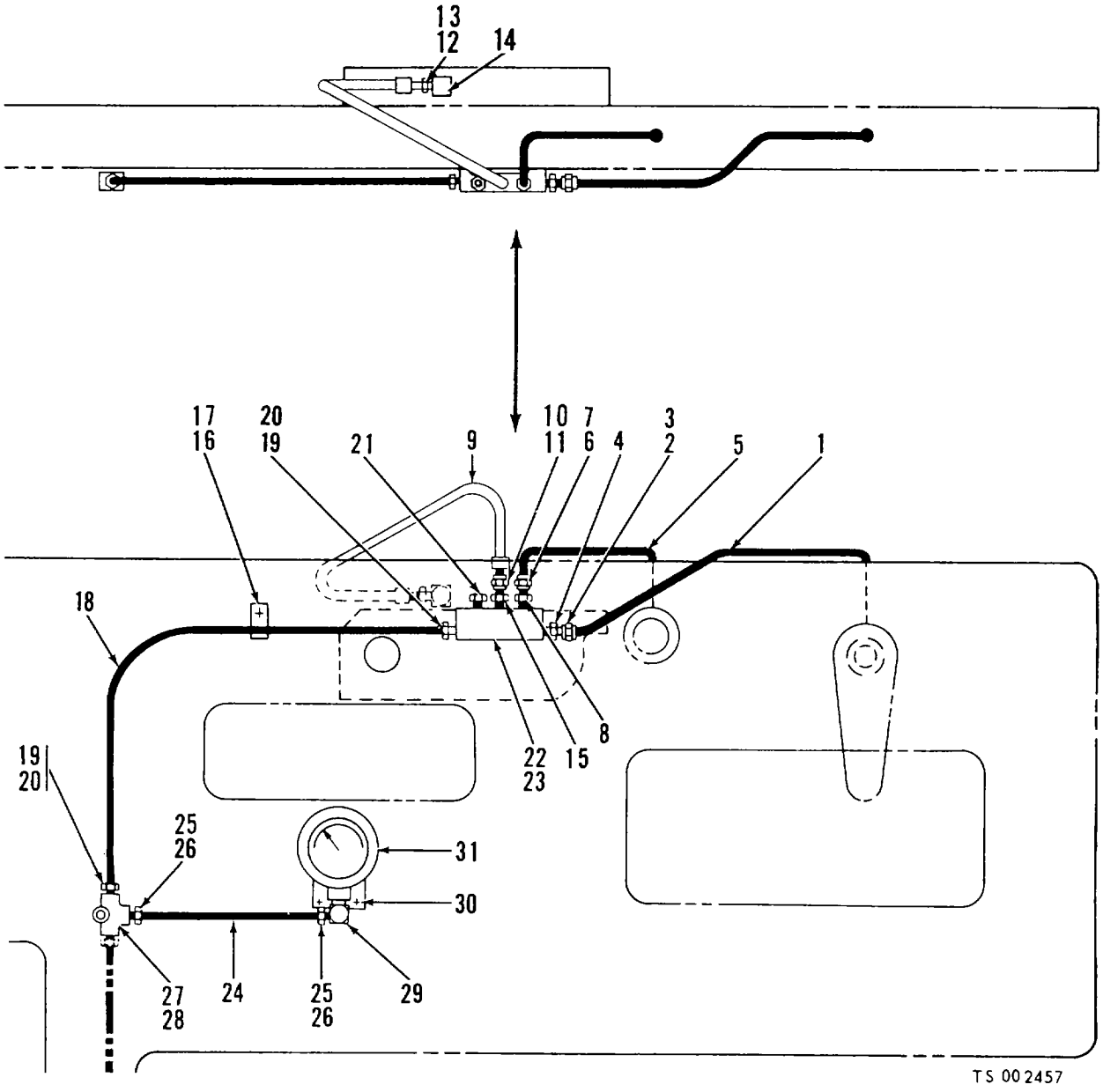


Figure 4-12. Delivery unit oil line assembly.
(Sheet 1 of 2)

KEY to figure 4-12:

1. Oil line
2. Nut
3. Sleeve
4. Metering unit
5. Oil line
6. Nut
7. Sleeve
8. Metering unit
9. Hose assembly
10. Nut
11. Sleeve
12. Bushing
13. Sleeve
14. Adapter
15. Metering unit
16. Screw
17. Clip
18. Oil line
19. Bushing
20. Sleeve
21. Plug
22. Screw
23. Manifold
24. Oil line
25. Bushing
26. Sleeve
27. Screw
28. Manifold
29. Adapter
30. Screw
31. Gauge
32. Screw
33. Clip
34. Screw
35. Clip
36. Oil line
37. Nut
38. Sleeve
39. Metering unit
40. Oil line
41. Nut
42. Sleeve
43. Metering unit
44. Oil line
45. Nut
46. Sleeve
47. Metering unit
48. Oil line
49. Nut
50. Sleeve
51. Metering unit
52. Oil line
53. Nut
54. Sleeve
55. Metering unit
56. Oil line
57. Bushing
58. Sleeve
59. Screw
60. Manifold
61. Oil line
62. Nut
63. Sleeve
64. Metering unit
65. Oil line
66. Nut
67. Sleeve
68. Bushing
69. Sleeve
70. Adapter
71. Metering unit
72. Oil line
73. Nut
74. Sleeve
75. Metering unit
76. Oil line
77. Bushing
78. Sleeve
79. Screw
80. Manifold
81. Oil line
82. Nut
83. Sleeve
84. Bushing
85. Sleeve
86. Adapter
87. Metering unit
88. Oil line
89. Nut
90. Sleeve
91. Metering unit
92. Oil line
93. Nut
94. Sleeve
95. Bushing
96. Sleeve
97. Adapter
98. Metering Unit
99. Oil Line
100. Nut
101. Sleeve
102. Metering Unit
103. Hose Assembly
104. Nut
105. Sleeve
106. Metering Unit
107. Adapter

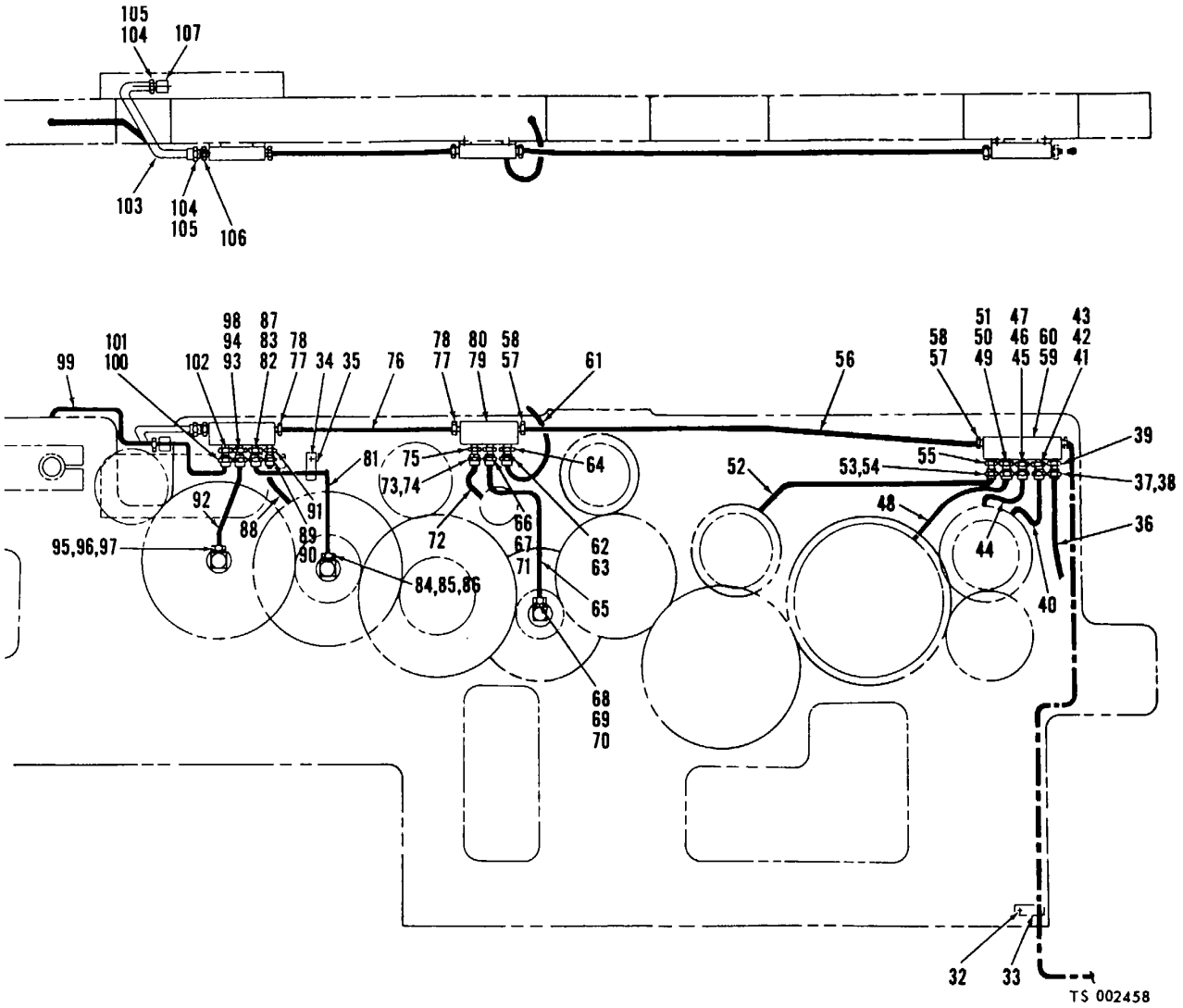


Figure 4-12. Delivery unit oil line assembly
(Sheet 2 of 2)

Section IX. FEEDER ASSEMBLY

4-27. Shaft assembly, Paper Roll, Replacement and Repair

a. Loosen the brake tension adjusting knob (2, fig. 3-3) counterclockwise. Swing the outer brakeshoe member (2). Lift paper roll shaft from the feed roll stand.

b. Replace defective parts.

4-28. Brake Shoe Assembly, Replacement and Repair

a. Loosen the brake tension adjusting knob (2, fig. 3-1) counterclockwise. Swing he outer brakeshoe member (1, fig. -2) down and away from the opposite inner brakeshoe lining (2, fig. 3-2).

b. Inspect the lining (3, fig. 3-2) for dirt, grease, and wear beyond the screws (4) that secure the lining to the brakeshoe members (1 and 2).

c. Remove four screws (4, fig. 3-2) and replace defective lining.

4-29. Roller Assemblies (1, 2, 4, 6, 7, fig. 1-8)

a. Inspect rollers for pits, gouges, flat spots, and other similar defects.

b. Feeder rider roller (141, fig. 4-13) is adjusted by tightening two screws (134) to increase pressure on two feed rollers (169).

c. Dancing roller (98) is adjusted by moving the counterweight forward or backward. This adjustment depends on the weight of the paper.

d. Adjust eccentric (165), for aligning feeder roller (163). This adjustment is for aligning the web thru the feeder.

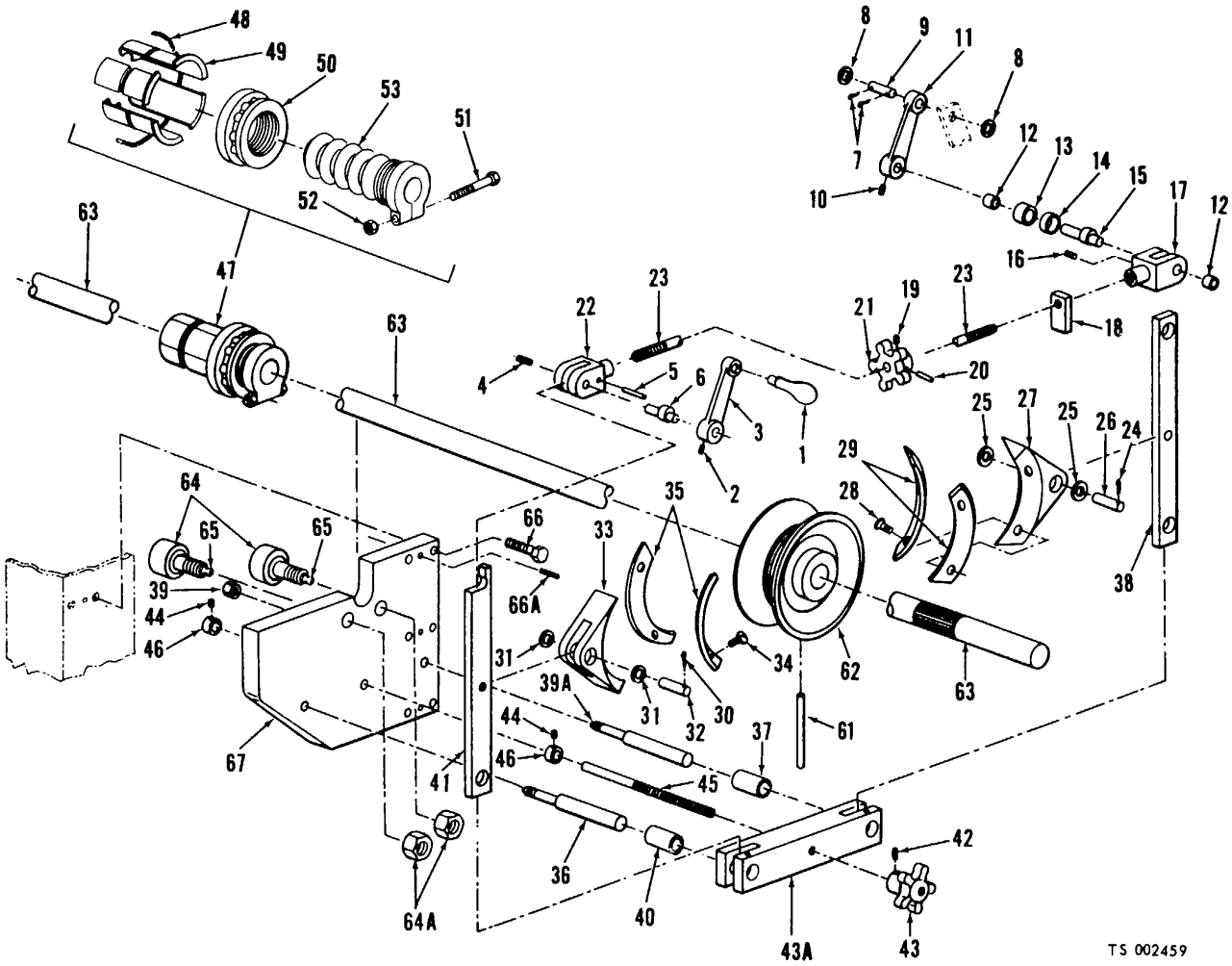


Figure 4-13. Feeder assembly (Sheet 1 of 5)

KEY to figure 4-13 (Sheets 1 and 2 of 5):

1. Handle
2. Setscrew
3. Lever
4. Setscrew
5. Pin
6. Stud
7. Pin
8. Washer
9. Stud
10. Setscrew
11. Link
12. Bushing
13. Bushing
14. Bushing
15. Stud
16. Setscrew
17. Bracket
18. Bracket
19. Setscrew
20. Pin
21. Knob
22. Bracket
23. Rod
24. Pin
25. Washer
26. Stud
27. Shoe
28. Screw
29. Brake Lining
30. Pin
31. Washer
32. Stud
33. Shoe
34. Screw
35. Brake lining
36. Stud
37. Bushing
38. Lever
39. Nut
39A. Stud
40. Bushing
41. Lever
42. Setscrew
43. Knob
43A. Lever
44. Setscrew
45. Rod
46. Collar
47. Chuck
48. Spring
49. Leaf
50. Nut
51. Screw
52. Nut
53. Inner member
54. Chuck
55. Spring
56. Leaf
57. Nut
58. Screw
59. Nut
60. Inner member
61. Pin
62. Drum
63. Shaft
64. Bearing
64A. Nut
65. Fitting
66. Screw
66A. Pin
67. Frame
68. Pin
69. Spindle
70. Screw
71. Washer
72. Setscrew
73. Plug
74. Nut
75. Bearing
76. Fitting
77. Bushing
78. Bracket assembly
79. Screw
80. Spacer
81. Hook
82. Nut
83. Fitting
84. Bearing
85. Screw
86. Screw
87. Pin
88 Frame

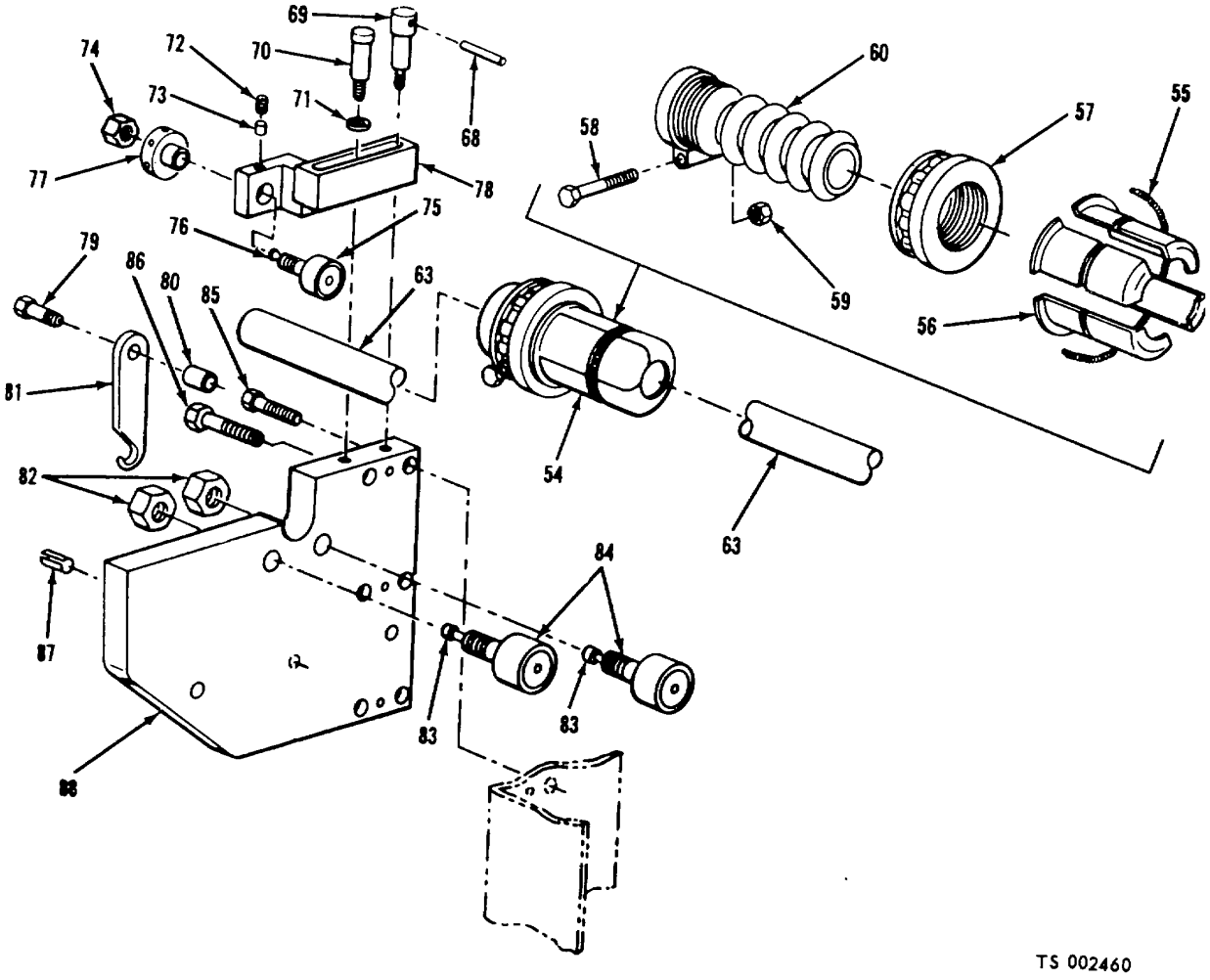


Figure 4-13. Feeder assembly (Sheet 2 of 5).

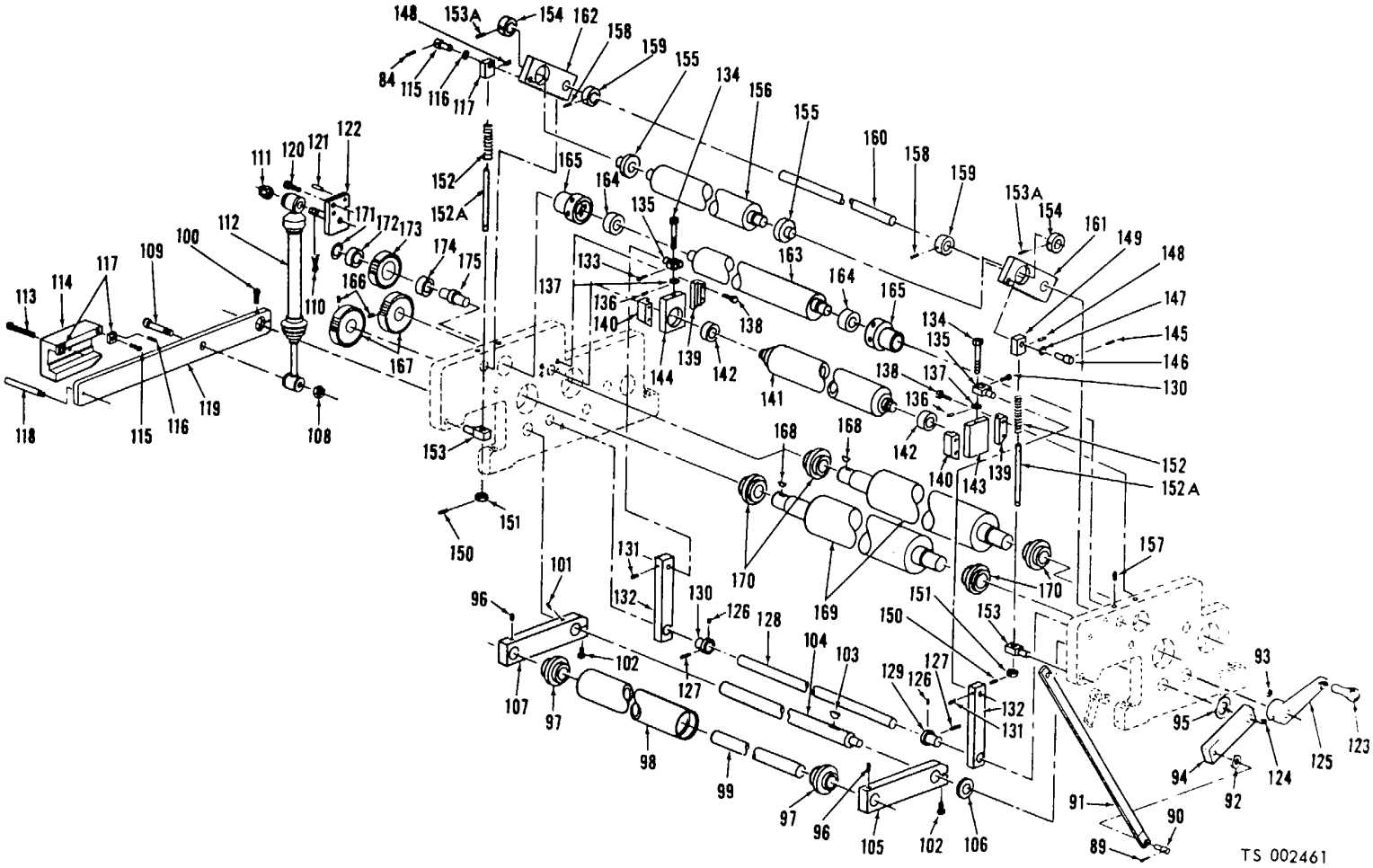


Figure 4-13. Feeder assembly (Sheet 3 of 5)

KEY to figure 4-13 (Sheet 3 of 5):

89. Pin
90. Stud
91. Link
92. Washer
93. Setscrew
94. Lever
95. Washer
96. Setscrew
97. Bearing
98. Roller
99. Shaft
100. Screw
101. Setscrew
102. Screw
103. Key
104. Shaft
105 Lever
106. Washer
107. Lever
108. Nut
109. Screw
110. Pin
111. Nut
112. Shock absorber
113. Setscrew
114. Counterweight
115. Screw
116. Pin
117. Gib
118. Pin
119. Rail
120. Screw
121. Pin
122. Bracket assembly
123. Handle
124. Setscrew
125. Lever
126. Setscrew
127. Pin
128. Shaft
129. Bushing
130. Bushing
131. Setscrew
132. -Link
133. Screw
134. Screw
135. Poppet
136. Setscrew
137. Collar
138. Screw
139. Guide
140. Guide
141. Roller assembly
142. Bearing
143. Holder
144. Holder
145. Pin
146. Stud
147. Washer
148. Pin
149. Rod end
150. Setscrew
151. Collar
152. Spring
152A. Rod
153. Poppet
153A. Setscrew
154. Collar
155. Bearing
156. Roller assembly
157. Setscrew
158. Setscrew
159. Collar
160. Shaft
161. Lever
162. Lever
163. Roller assembly
164. Bearing
165. Adapter
166. Setscrew
167. Gear
168. Key
169. Roller assembly
170. Bearing
171. Ring
172. Bearing
173. Gear
174. Bearing
175. Stud

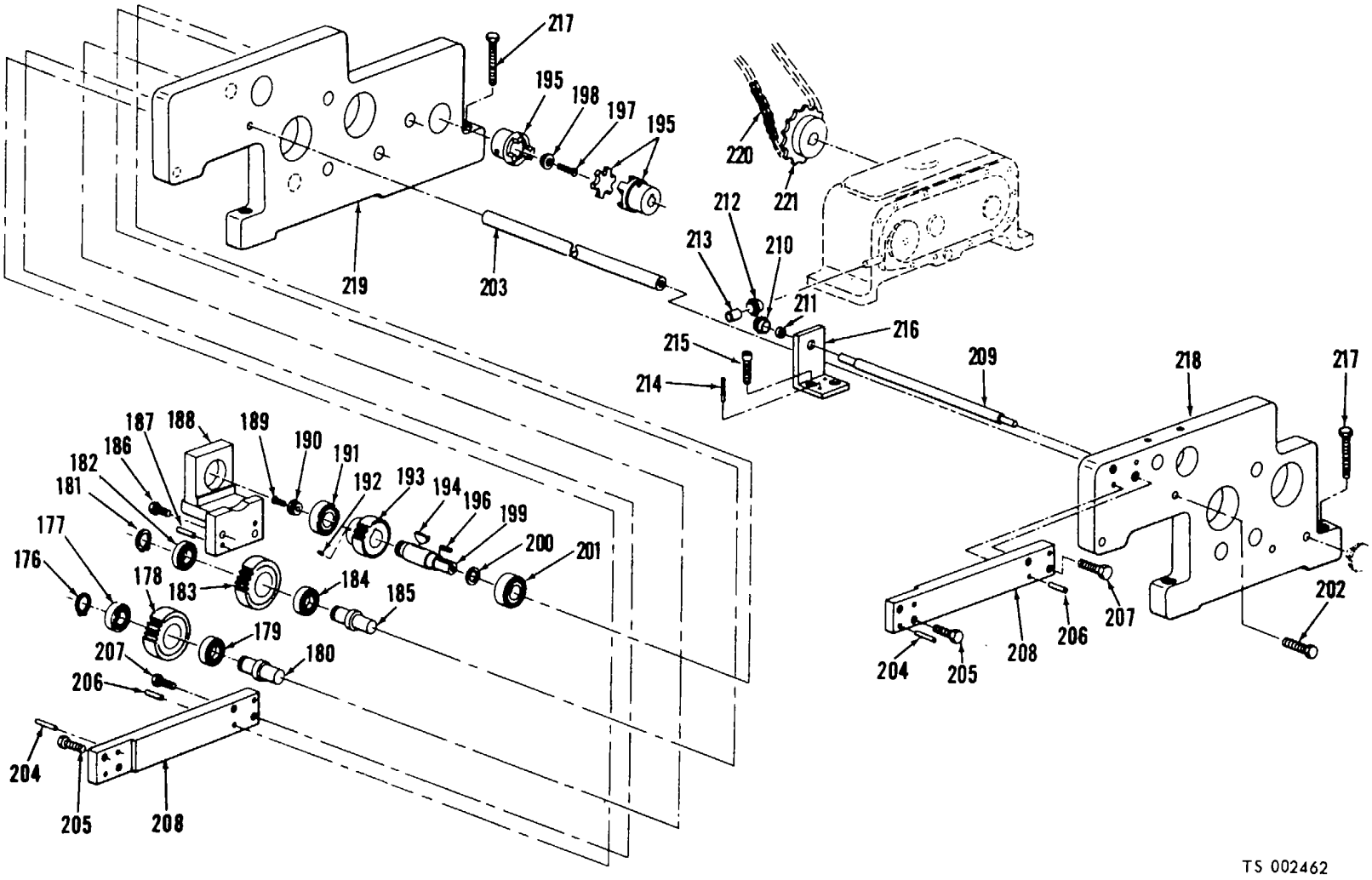


Figure 4-13. Feeder assembly (Sheet 4 of 5)

KEY to figure 4-13 (Sheet 4 of 5):

176. Ring
177. Bearing
178. Gear
179. Bearing
180. Stud
181. Ring
182. Bearing
183. Gear
184. Bearing
185. Stud
186. Screw
187. Pin
188. Bracket assembly
189. Screw
190. Washer
191. Bearing
192. Setscrew
193. Gear
194. Key
195. Coupling
196. Key
197. Screw
198. Washer
199. Shaft
200. Spacer
201. Bearing
202. Screw
203. Tie rod
204. Pin
205. Screw
206. Pin
207. Screw
208. Tie bar
209. Shaft
210. Gear
211. Bushing
212. Gear
213. Bushing
214. Pin
215. Screw
216. Bracket
217. Screw
218. Frame
219. Frame
220. Chain
221. Sprocket

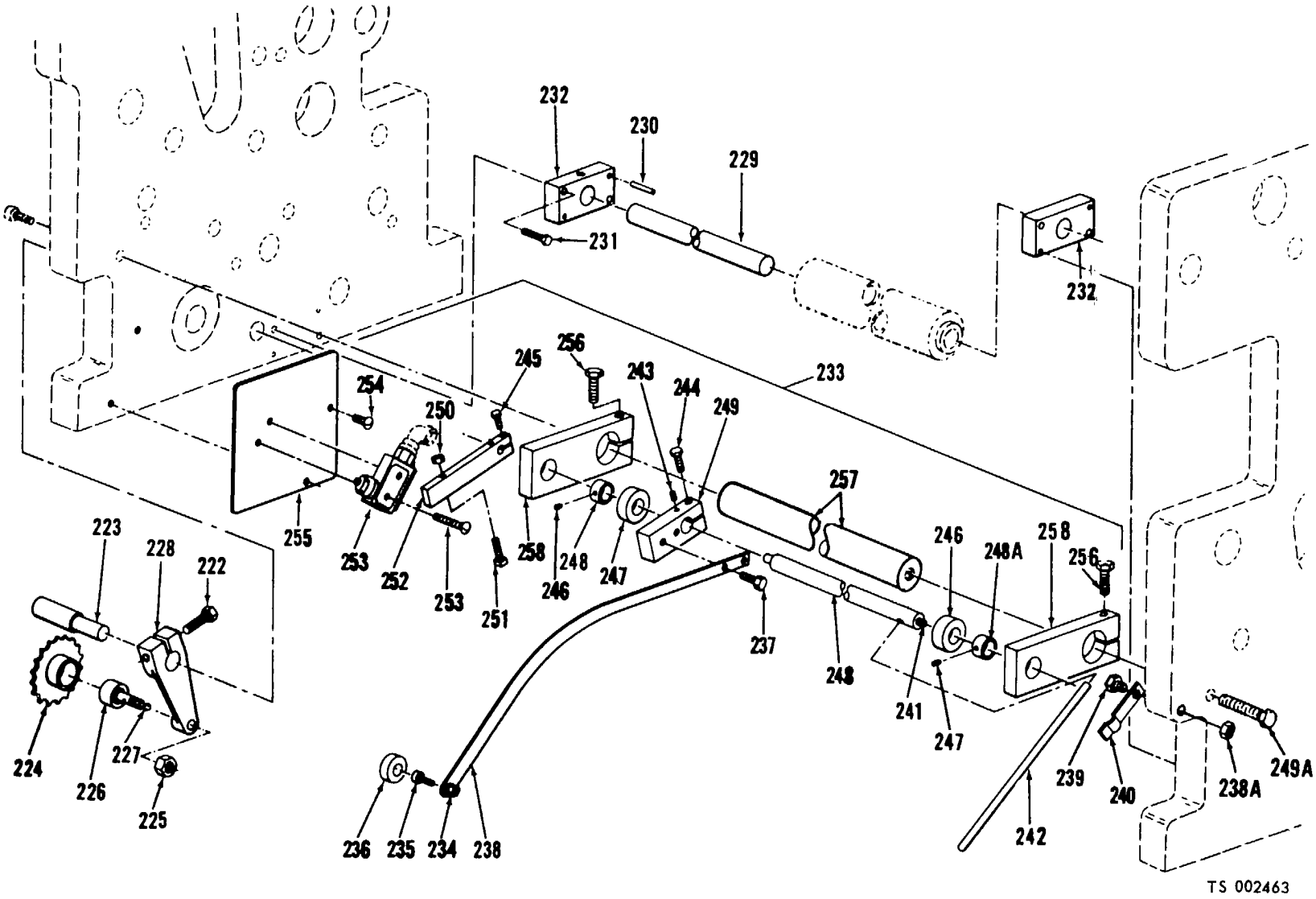


Figure 4-13. Feeder assembly (Sheet 1 of 5)

KEY to figure 4-13 (Sheet 5 of 5):
222. Screw
223. Stud
224. Sprocket
225. Nut
226. Bearing
227. Fitting
228. Lever
229. Shaft
230. Pin
231. Screw
232. Bracket
233. Switch assembly
234. Nut
235. Bearing
236. Roller
237. Screw
238. Arm Assembly
238A. Nut
239. Screw
240. Clip
241. Setscrew
242. Handle
243. Setscrew
244. Screw
245. Screw
246. Collar
247. Setscrew
248. Shaft
248A. Collar
249. Bracket
250. Nut
251. Setscrew
253. Switch
254. Screw
255. Plate
256. Screw
257. Tie rod
258. Bracket

4-30. Counterweight Assembly, Replace and Repair

a. Refer to figure 4-13 and remove counterweight assembly.
b. Replace defective parts.

4-31. Vernier Adjustment Assembly

a. *Removal*. Refer to figure 4-13 and remove items (209 thru 216).
b. Replace all defective parts.
c. *Installation*. Install in reverse order of removal.

4-32. Stop Assembly, Feed Roll

a. *Removal.* Refer to figure 4-13, items (223 thru 259) and remove stop assembly in item number sequence.

b. *Repair and Replace*. Replace all defective parts.
c. *Installation.* Install in reverse order of removal.

4-33. Speed Control Assembly

a. *Removal*
(1) Refer to figure 4-5, item (37) and remove guard.
(2) Refer to figure 4-14, item (1) and remove chain (1), two bolts (2), two washers (3), and remove speed control assembly.

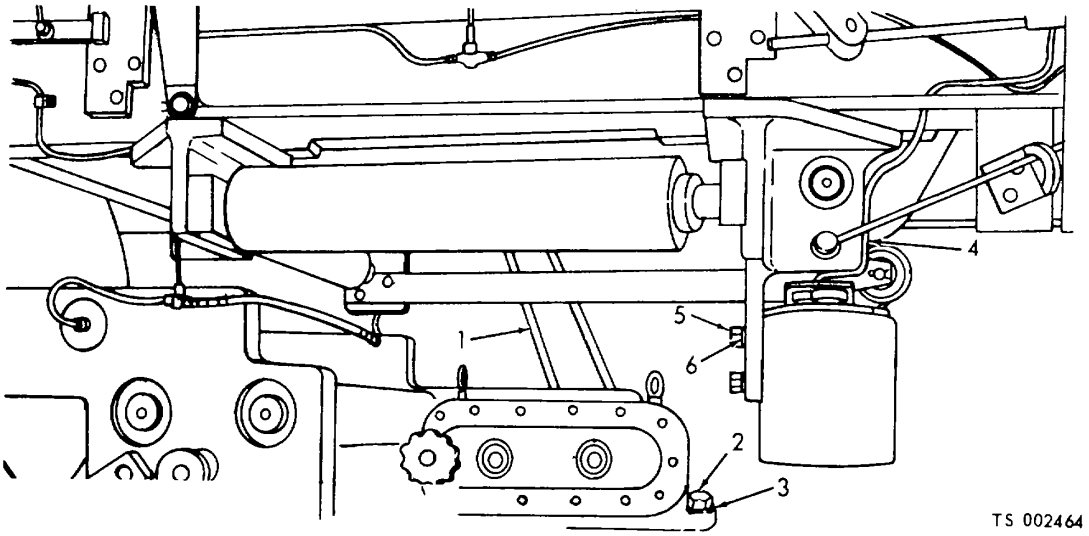
b. *Inspection and Adjustment.* Proper chain tension is of the utmost importance for optimum performance and long life of the P.I.V. drive.

NOTE
Chain tension should always be checked after first 250, 500 hours and 1000 hours of operation, and every 1000 hours thereafter.

(1) Check chain tension by first removing the unit cover plate. Then, by pressing down and lifting up the chain and shoe assembly as a unit, check the total movement of shoe as shown in figure 4-15.
(2) *Adjusting Chain Tension*.

NOTE
Always rotate drive when adjusting chain.

(a) Remove inspection cover.
(b) To loosen or tighten chain as required, rotate drive by hand and turn adjusting shaft in desired direction. Refer to figure 4-16.
c. *Service*. Refer to LO 10-3610-200-12.



1. Chain
2. Bolt
3. Washer
4. Line
5. Bolt
6. Washer

Figure 4-14. Speed Control.

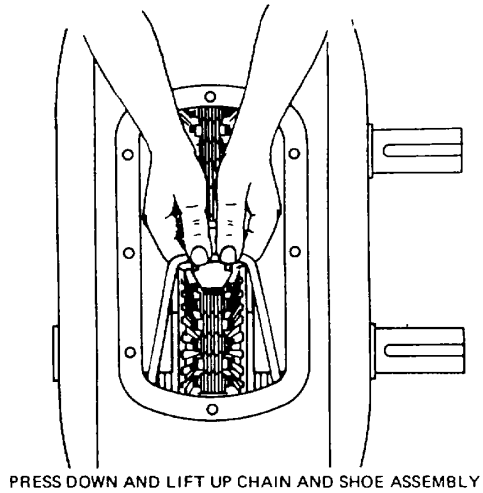


Figure 4-15. Chain tension adjustment check (Sheet 1 of 2).

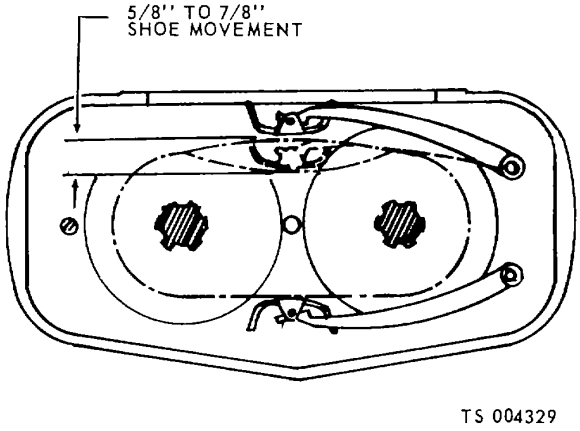


Figure 4-15. Chain tension adjustment check (Sheet 2 of 2).

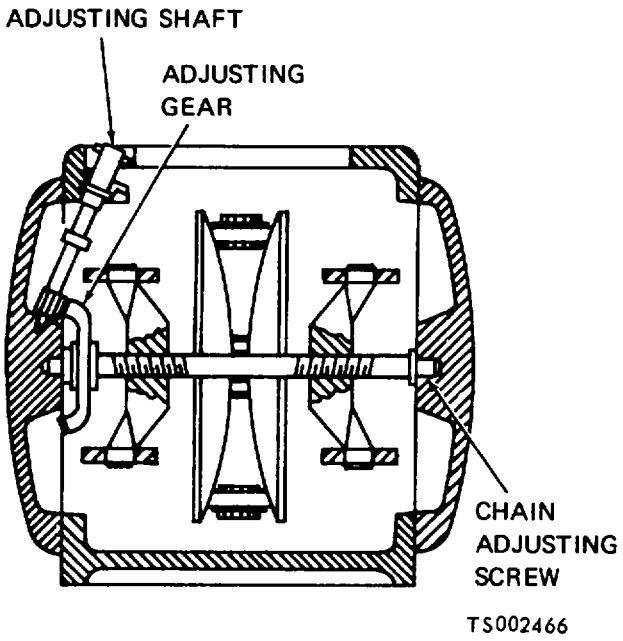


Figure 4-16. Adjusting chain tension.

Section X. MAINTENANCE OF OFFSET UNIT ASSEMBLY

4-34. Ink-Wash-Up Device Assembly

a. Removal. Refer to figure 4-17 and remove the ink wash-up device assembly.

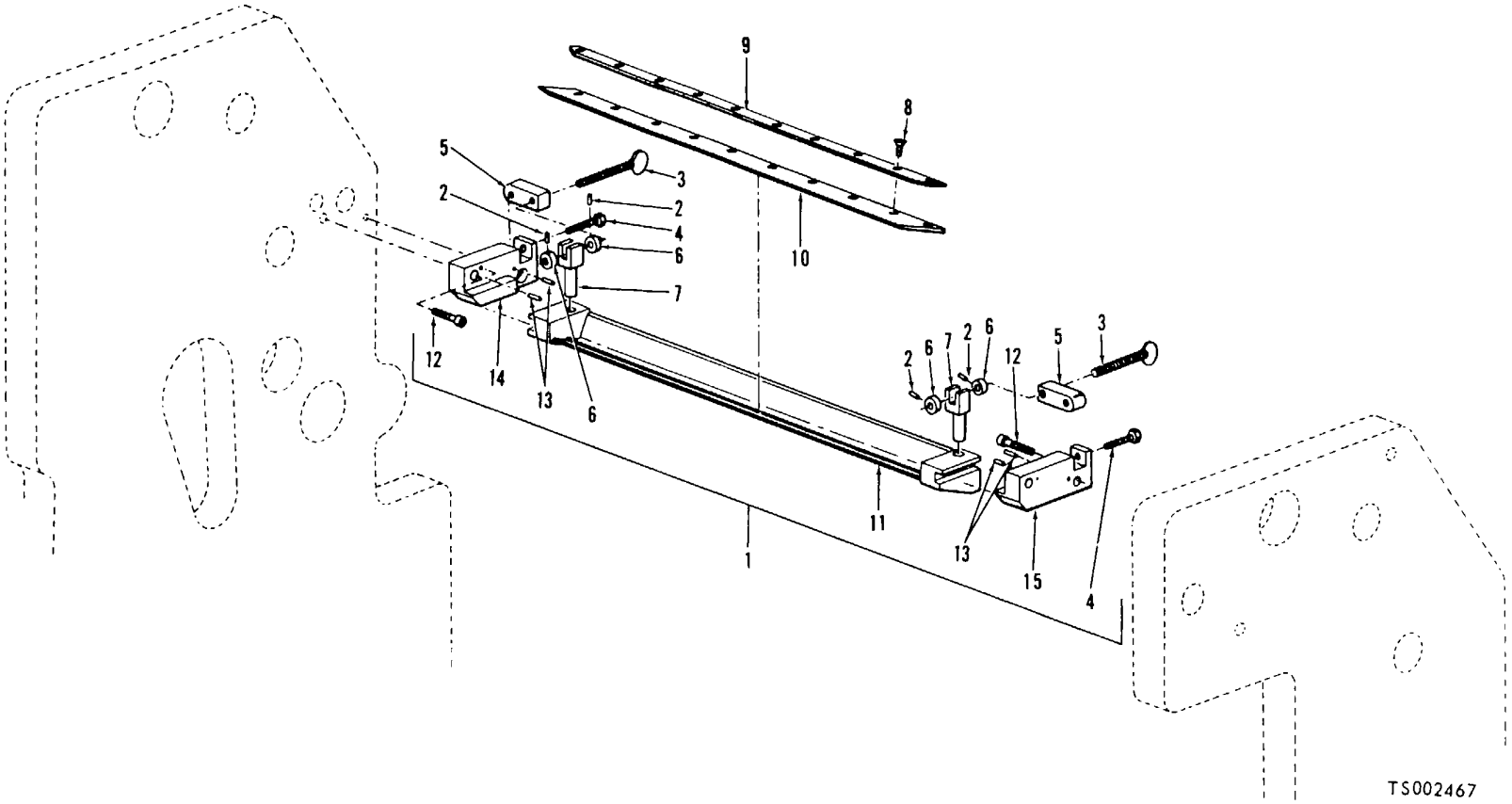
b. Cleaning, Inspection, and Repair.

(1) Clean all parts with an ink solvent and dry thoroughly.

(2) Inspect neoprene blade (10, fig. 4-17) for evidence of breakage, wear, and deterioration.

(3) Replace defective wash-up blade.

c. Installation. Refer to figure 4-17 and install ink wash-up device assembly in reverse of removal.



1. Wash-up Device assembly
2. Pin
3. Screw
4. Screw
5. Swivel
6. Nut
7. Poppet
8. Screw
9. Support
10. Blade
11. Wash-up device
12. Screw
13. Pin
14. Bracket
15. Bracket

Figure 4-17. Ink wash-up device assembly.

4-35. Paper Break Mechanism Assembly

a. *Removal*. Refer to figure 4-18 and remove the paper break mechanism assembly.

b. *Inspect and Repair.*

(1) Inspect switch (2, fig. 4-18) for evidence of corrosion at terminal connection.

(2) Inspect bearing (10, fig. 4-18) for evidence of dirt, abrasives, pitted, scored, or burned condition.

(3) Replace defective parts.

c. *Installation*. Refer to figure 4-18 and install paper break mechanism assembly in reverse of removal.

4-36. Guard Assembly, Cylinder

a. *Removal.* Refer to figure 4-18 and remove guard assembly.

b. *Inspect and Replace*.

(1) Inspect guard (20, fig. 4-18) for cracks and breaks.

(2) Replace defective guard.

c. *Installation*. Refer to figure 4-18 and install guard assembly in reverse of removal.

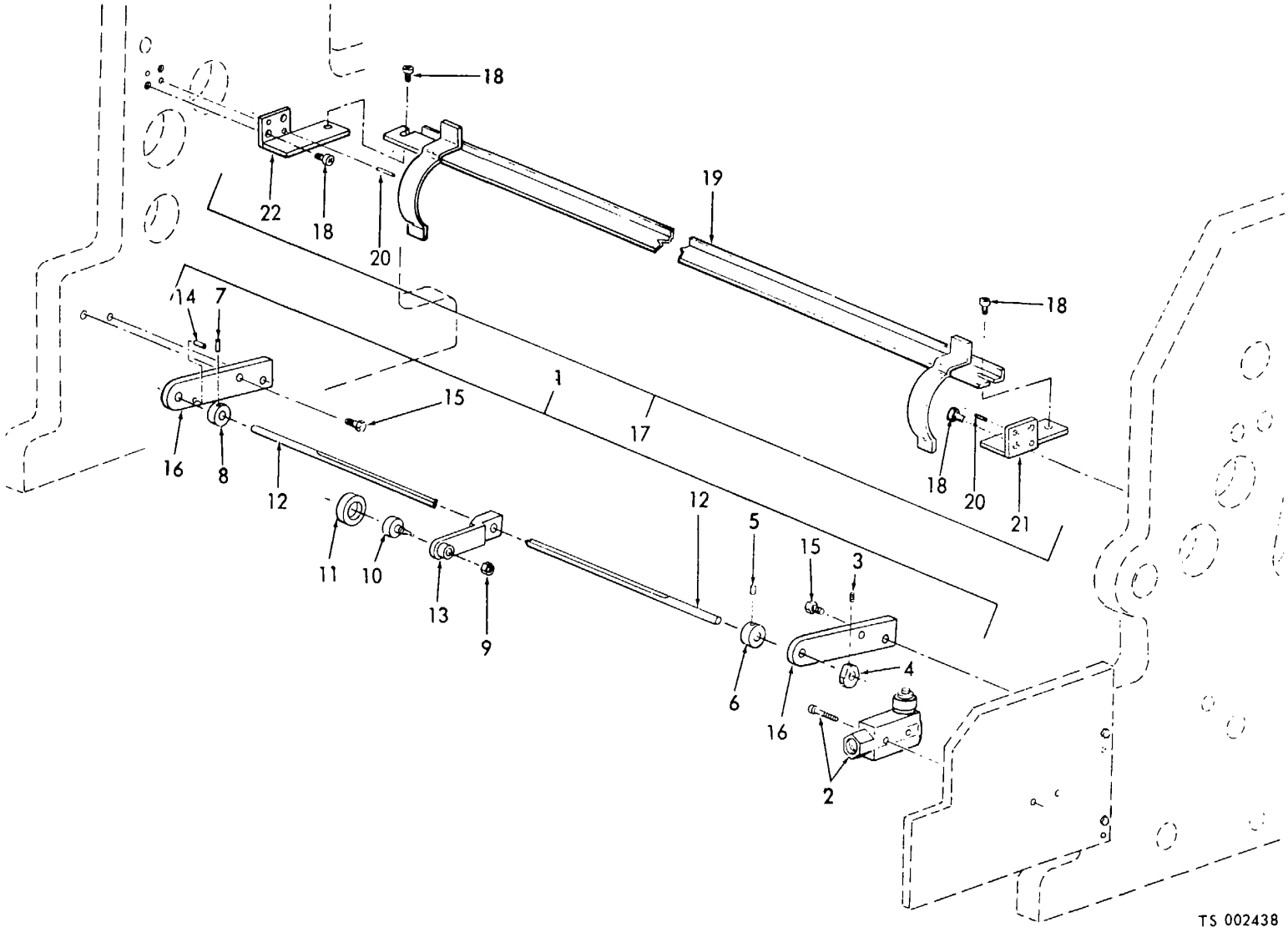


Figure 4-18. Paper break mechanism and cylinder guard assembly.

KEY to figure 4-18:

1. Paper break mechanism assembly
2. Switch
3. Setscrew
4. Cam
5. Setscrew
6. Collar
7. Pin
8. Collar
9. Nut
10. Bearing
11. Roller
12. Shaft
13. Arm
14. Pin
15. Screw
16. Bracket
17. Cylinder guard assembly
18. Screw
19. Guard
20. Pin
21. Support
22. Support

4-37. Throw-Off Assembly, Ink Motion

a. Remove guards (para 4-22).

b. Disassembly. Refer to figure 4-19 and disassemble throw-off assembly.

c. Inspection and Repair.

(1) Inspect parts for wear damage

(2) Replace worn or damaged parts

d. Reassembly. Refer to figure 4-19 and reassemble throw-off assembly.

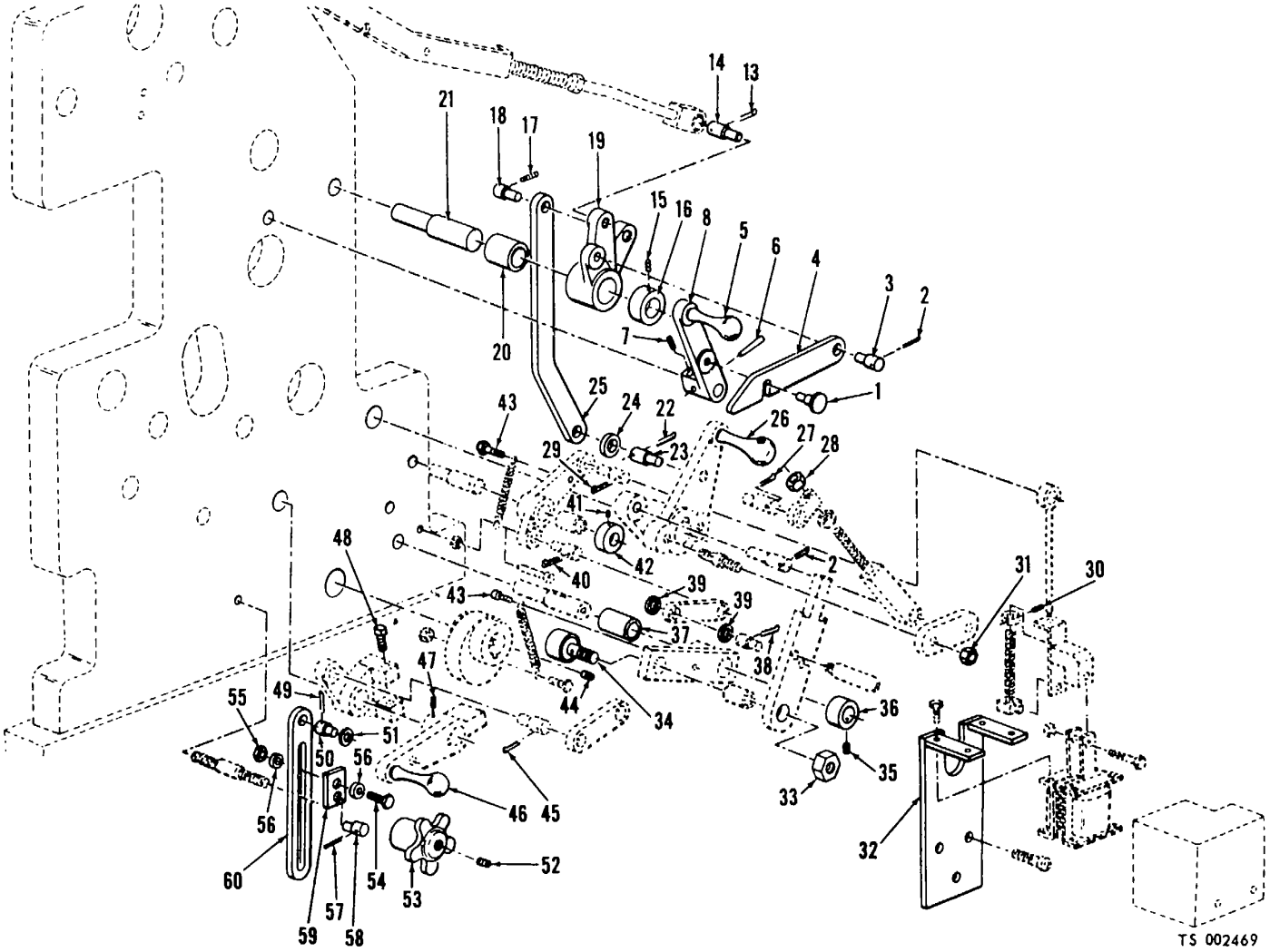


Figure 4-19. Throw-off assembly (Sheet 1 of 2).

KEY to figure 4-19:

1. Stud
2. Pin
3. Stud
4. Link
5. Handle
6. Pin
7. Setscrew
8. Link
9. Pin
10. Setscrew
11. Cam
12. Shaft
13. Pin
14. Stud
15. Setscrew
16. Collar
17. Pin
18. Stud
19. Lever
20. Bushing
21. Stud
22. Pin
23. Stud
24. Washer
25. Lever
26. Handle
27. Pin
28. Nut
29. Pin
30. Pin
31. Nut
32. Limit Switch Mount Assembly
33. Nut
34. Bearing
35. Setscrew
36. Collar
37. Bushing
38. Pin
39. Washer
40. Pin
41. Setscrew
42. Collar
43. Screw
44. Setscrew
45. Pin
46. Handle
47. Setscrew
48. Setscrew
49. Pin
50. Stud
51. Washer
52. Setscrew
53. Knob
54. Screw
55. Nut
56. Washer
57. Pin
58. Stud
59. Lock
60. Link
61. Key
62. Bushing
63. Ring
64. Pin
65. Nut

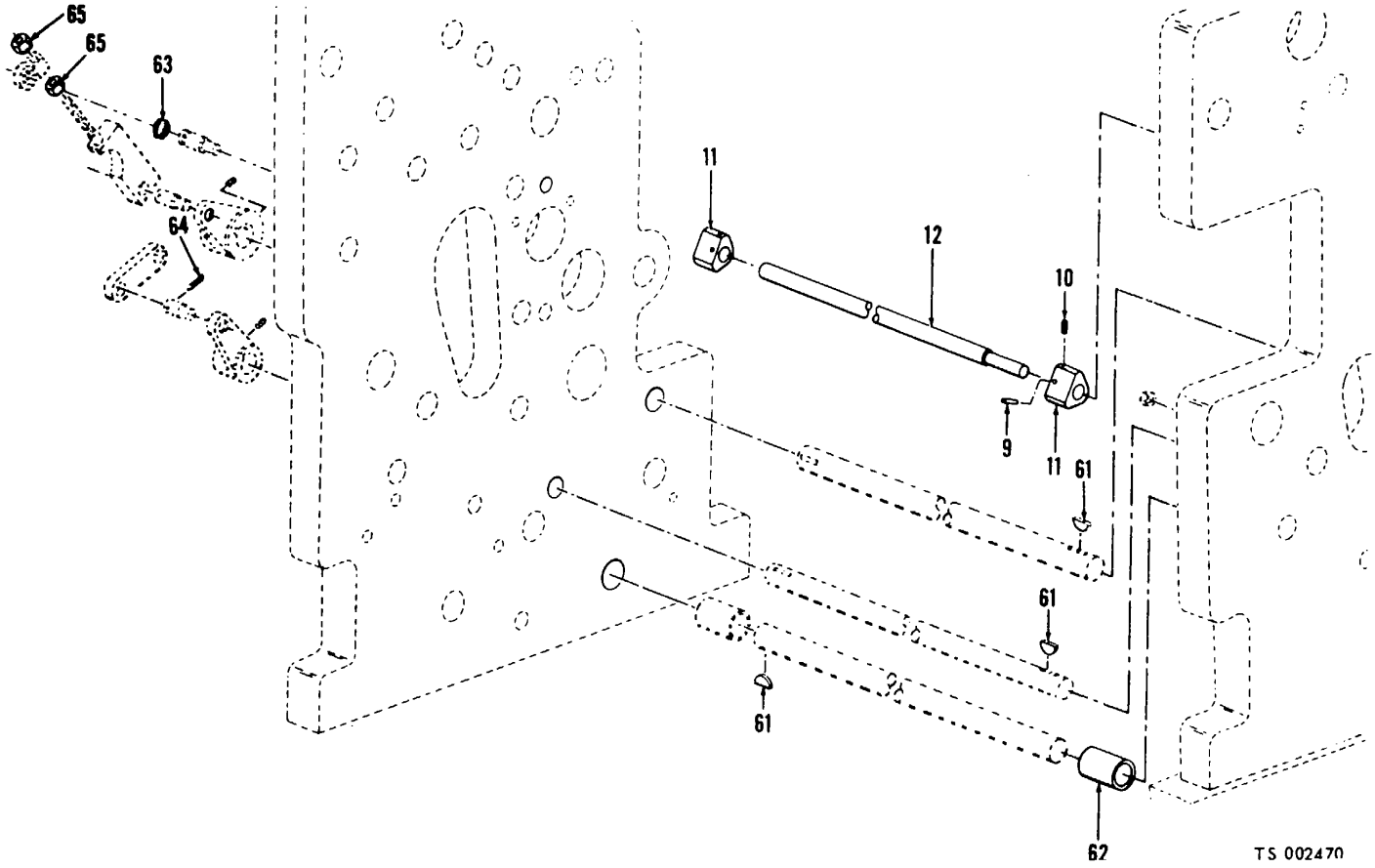


Figure 4-19. Throw-off Assembly (Sheet 2 of 2).

4-38. Outer Linkage Assembly Blanket Cylinder

a. Remove guards (para 4-22).

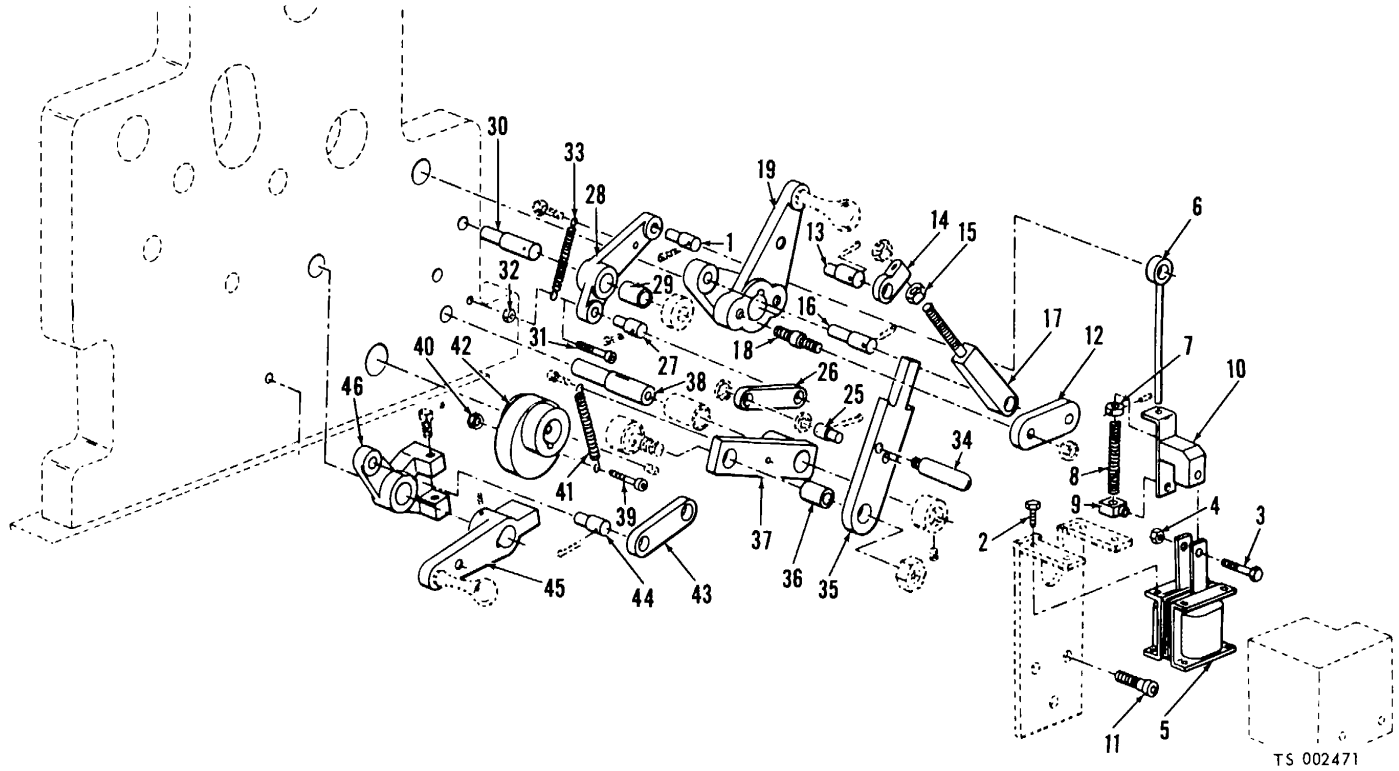
b. Disassembly. Refer to figure 4-20 and disassemble outer linkage assembly.

c. Inspection and Repair.

(1) Inspect part for wear and damage.

(2) Replace worn or damaged parts.

d. Reassembly. Refer to figure 4-20 and reassemble outer linkage assembly.



1. Stud
2. Screw
3. Screw
4. Nut
5. Solenoid
6. Plunger
7. Collar
8. Spring
9. Guide
10. Guide
11. Screw
12. Guide
13. Stud
14. Lug
15. Nut
16. Stud
17. Link
18. Guide
19. Lever
20. Link
21. Lug
22. Stud
23. Setscrew
24. Lever
24A. Shaft
25. Stud
26. Link
27. Stud
28. Lever
29. Bushing
30. Stud
31. Screw
32. Nut
33. Spring
34. Pin
35. Link
36. Bushing
37. Lever
38. Stud
39. Screw
40. Nut
41. Spring
42. Cam
43. Link
44. Stud
45. Lever
46. Lever
47. Link
48. Stud
49. Setscrew
50. Lever
51. Shaft
52. Bushing
53. Stud

Figure 4-20. Outer linkage assembly (Sheet 1 of 2).

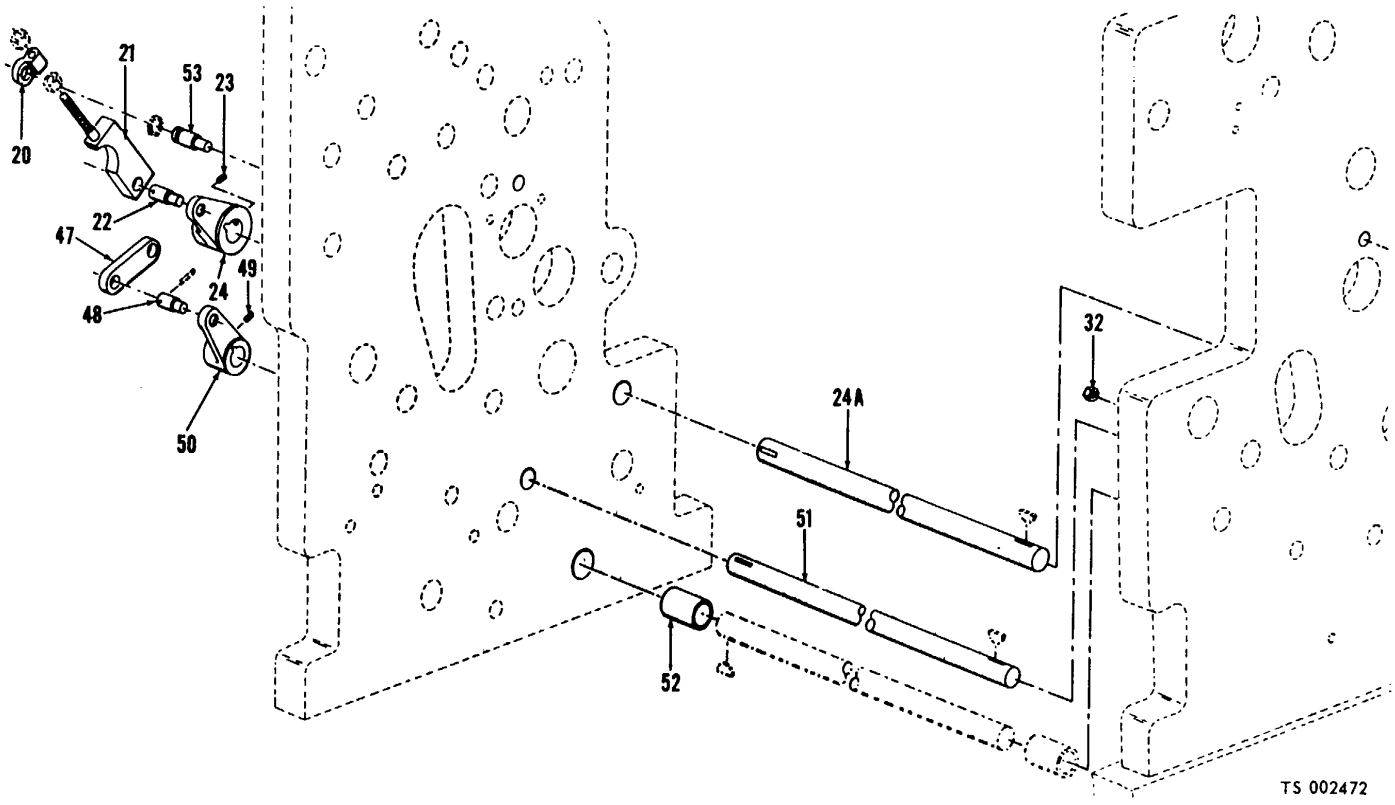


Figure 4-20. Outer linkage assembly (Sheet 2 of 2).

4-39. Solenoid Assembly

a. Removal.

(1) Remove guard (para 4-22).

(2) Remove nut (4, fig. 4-20,) screw (3), and four screws (2), and remove solenoid.

b. Inspect and Repair.

(1) Inspect solenoid for evidence of corrosion at terminal connections.

(2) Replace defective solenoid.

c. Installation. Install solenoid and secure with four screws (2, fig. 4-20), screw (3) and Nut (4).-

4-40. Ink Motion Assembly (fig. 4-21).

a. Clean parts with a cloth dampened with ink solvent.

b. Inspect rollers for pits, gouges, flat spots and other similar defects.

c. Inspect spring (32, 84, 89, 96, and 282, fig. 4-21.)

KEY to figure 4-21(Sheet 1 and 2 of 8):

1. Pin
2. Pin
3. Setscrew
4. Collar
5. Washer
6. Stud
7. Plate
8. Ball
9. Spring
10. Handle
11. Lever
12. Key
13. Nut
14. Pin
15. Stud
16. Setscrew
17. Lever
18. Nut
19. Shaft
20. Bushing
21. Screw
22. Washer
23. Handle
24. Extension
25. Key
26. Adapter
27. Bushing
28. Screw
29. Adapter
30. Screw
31. Bolt
32. Spring
33. Setscrew
34. Collar
35. Screw
36. Plate
37. Block
38. Stud
39. Pin
40. Washer
41. Bushing
42. Rod
43. Stud
44. Pin
45. Lever
46. Bushing
47. Stud
48. Setscrew
49. Collar
50. Setscrew
51. Lever
52. Bushing
53. Ratchet
54. Key
55. Pin
56. Stud
57. Link
58. Cam
59. Spacer
60. Screw
61. Adapter
62. Bushing
63. Key

63A. Extension

64. Bolt
65. Coupling
66. Fitting
67. Screw
68. Key
69. Bearing
70. Bearing
71. Roller
72. Screw
73. Blade
74. Screw
75. Pin
76. Ink fountain
77. Screw
78. Support

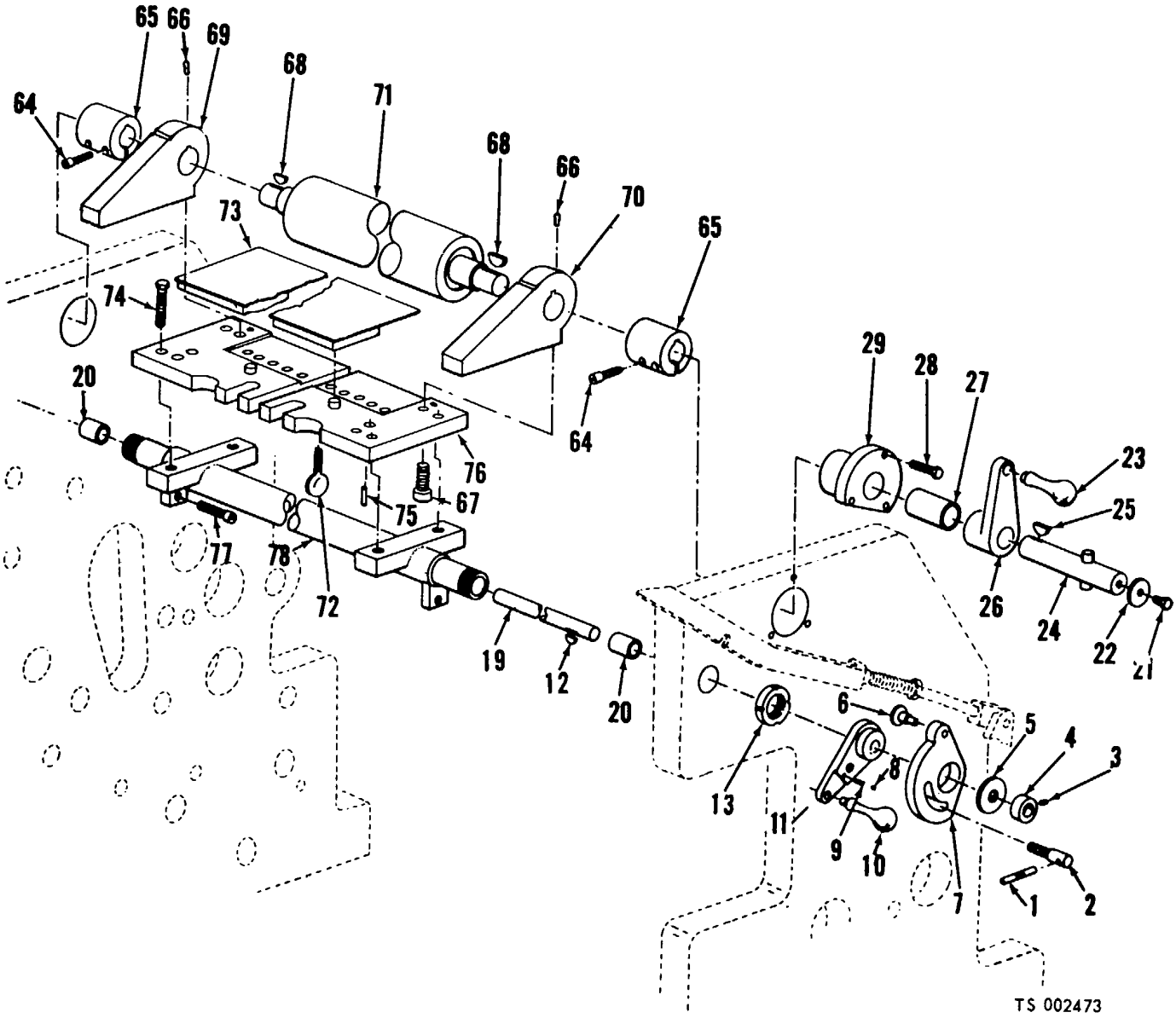


Figure 4-21. Ink motion assembly (Sheet 1 of 8).

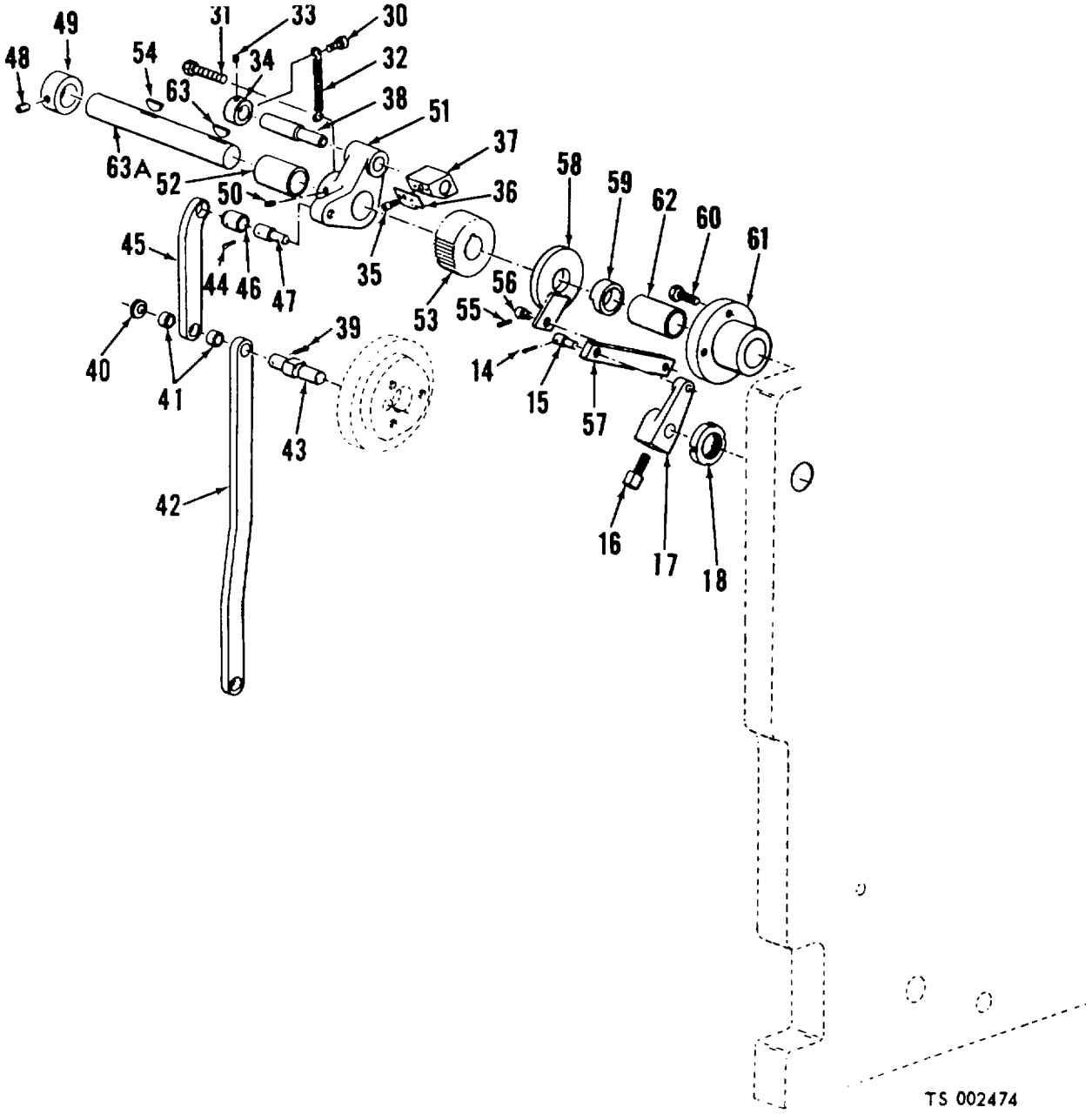
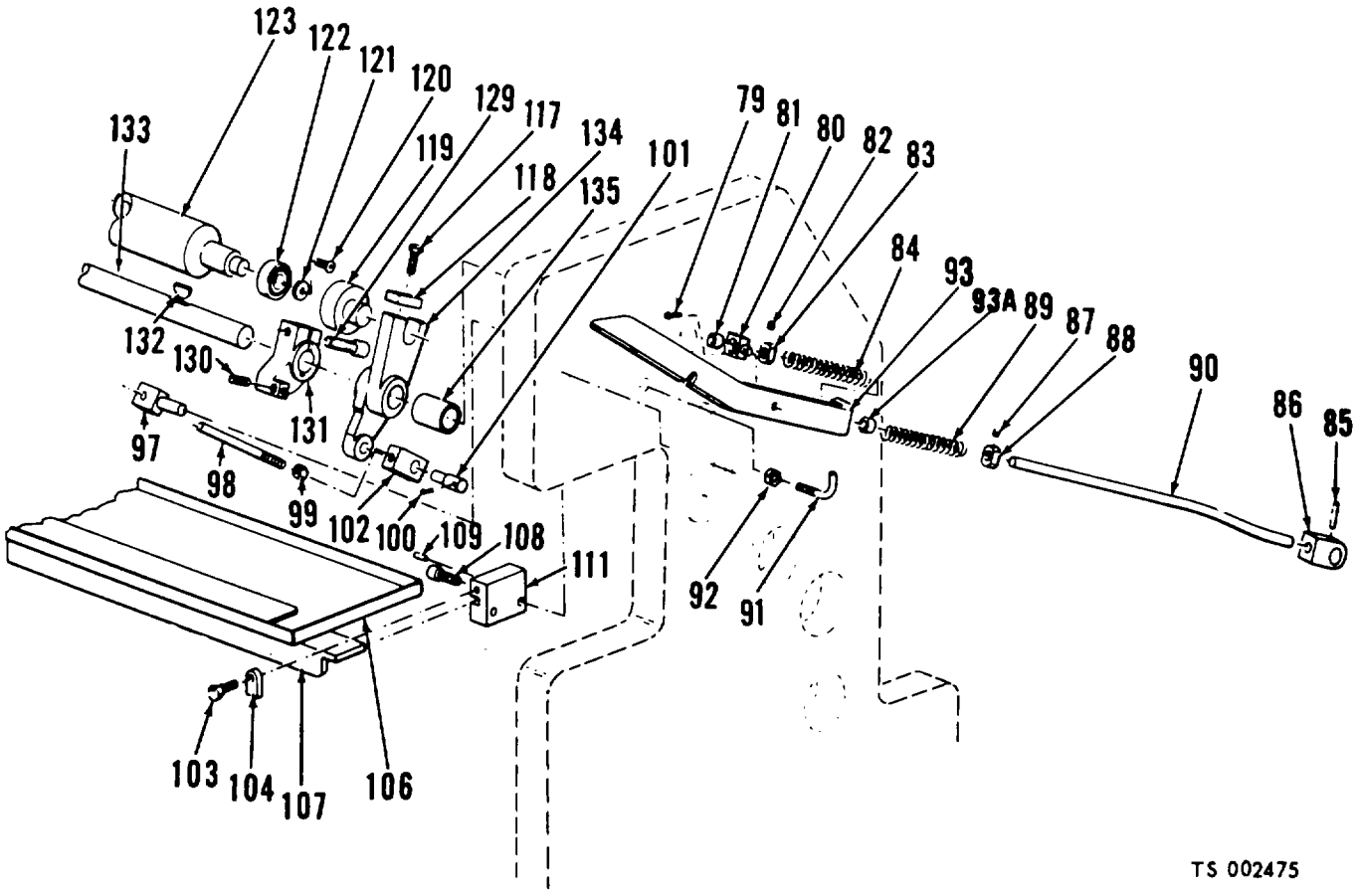


Figure 4-21. Ink motion assembly (Sheet 2 of 8).



KEY to figure 4-21 (Sheets 3 and 4 of 8):

79. Pin
80. Guide
81. Bushing
82. Setscrew
83. Collar
84. Spring
85. Pin
86. Rod end
87. Setscrew
88. Collar
89. Spring
90. Rod
91. Guide
92. Nut
93. Lever
93A. Bushing
94. Setscrew
95. Collar
96. Spring
97. Poppet
98. Rod
99. Nuit
100. Pin
101. Stud
102. Rod end
103. Screw
104. Bracket
105. Support
106. Pan
107. Support
108. Screw
109. Pin
110. Bracket
111. Bracket
112. Nut
113. Bearing
114. Screw
115. Lever
116. Key
117. Screw
118. Retainer
119. Stud
120. Screw
121. Washer
122. Bearing
123. Roller assembly
124. Lever
125. Screw
126. Setscrew
127. Lever
128. Key
129. Screw
130. Setscrew
131. Lever
132. Key
133. Shaft
134. Lever
135. Bushing

Figure 4-21. Ink motion assembly (Sheet 3 of 8).

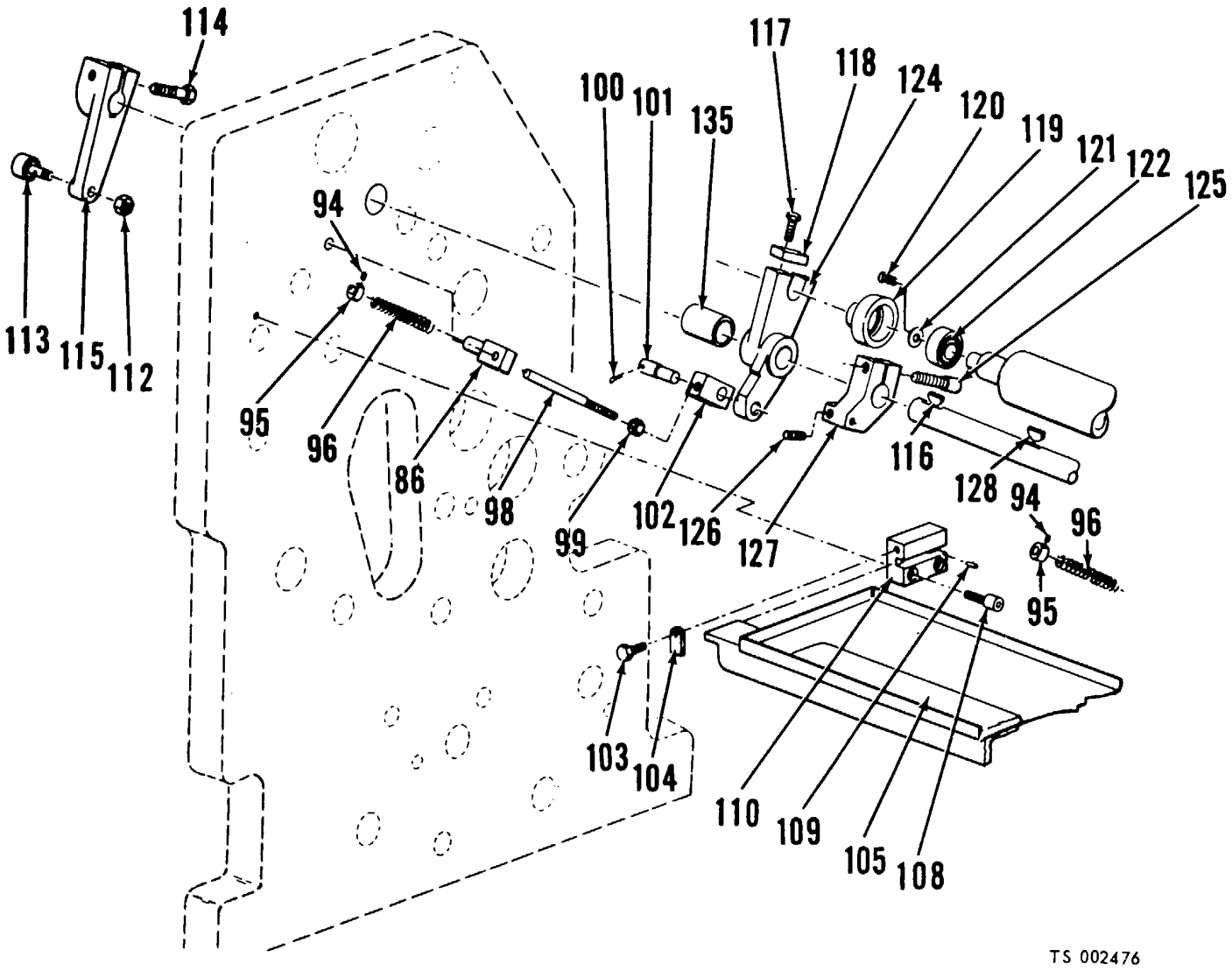
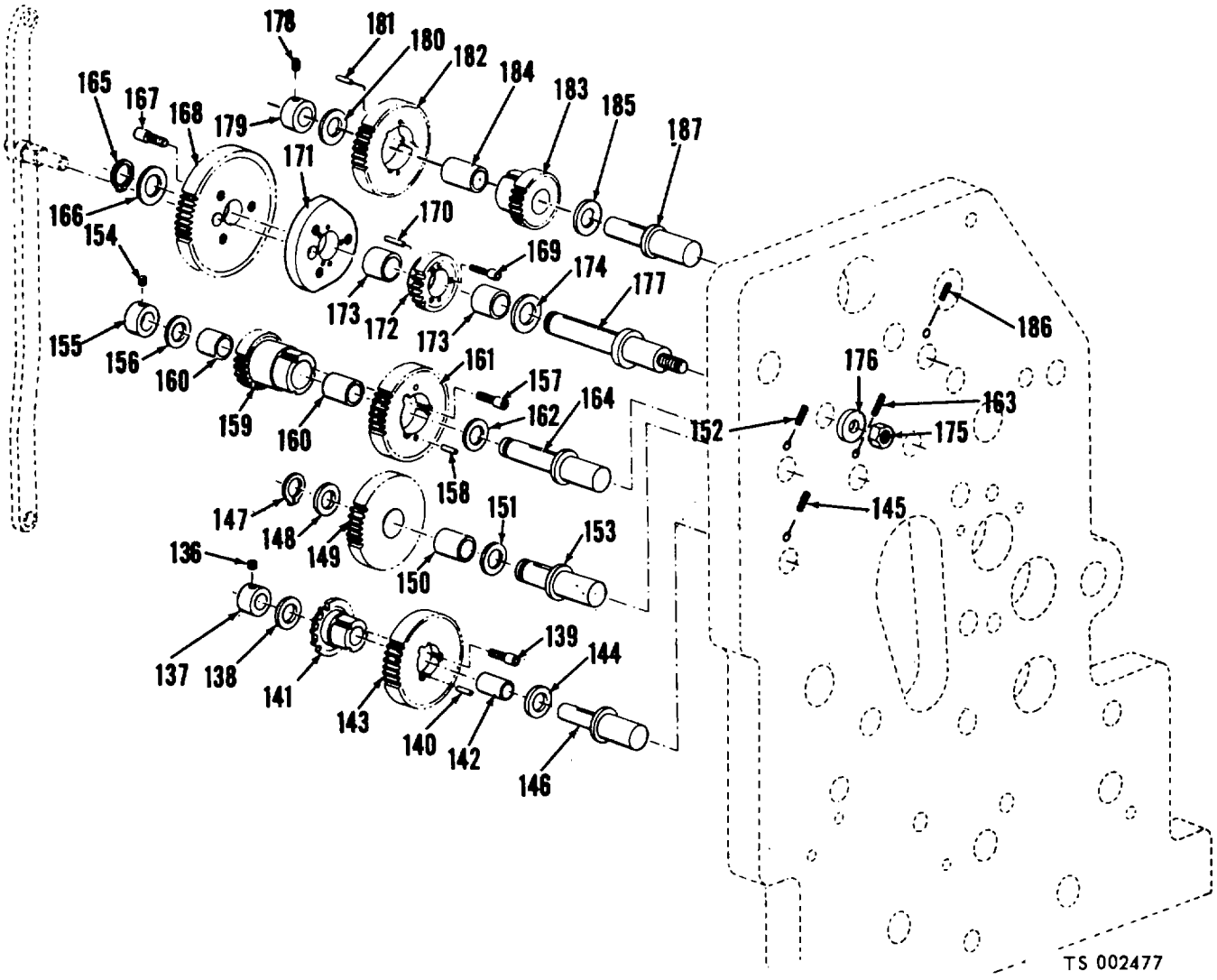


Figure 4-21. Ink motion assembly (Sheet 4 of 8).



KEY to figure 4-21 (Sheet 5 of 8):

136. Setscrew
137. Collar
138. Washer
139. Screw
140. Pin
141. Hub
142. Bushing
143. Gear
144. Washer
145. Setscrew
146. Stud
147. Ring
148. Washer
149. Gear
150. Bushing
151. Washer
152. Setscrew
153. Stud
154. Setscrew
155. Collar
156. Washer
157. Screw
158. Pin
159. Gear
160. Bushing
161. Gear
162. Washer
163. Setscrew
164. Stud
165. Ring
166. Washer
167. Screw
168. Gear
169. Screw
170. Pin
171. Cam
172. Gear
173. Bushing
174. Washer
175. Nut
176. Washer
177. Stud
178. Setscrew
179. Collar
180. Washer
181. Pin
182. Gear
183. Gear
184. Bushing
185. Washer
186. Setscrew
187. Stud

Figure 4-21. Ink motion assembly (Sheet 5 of 8).

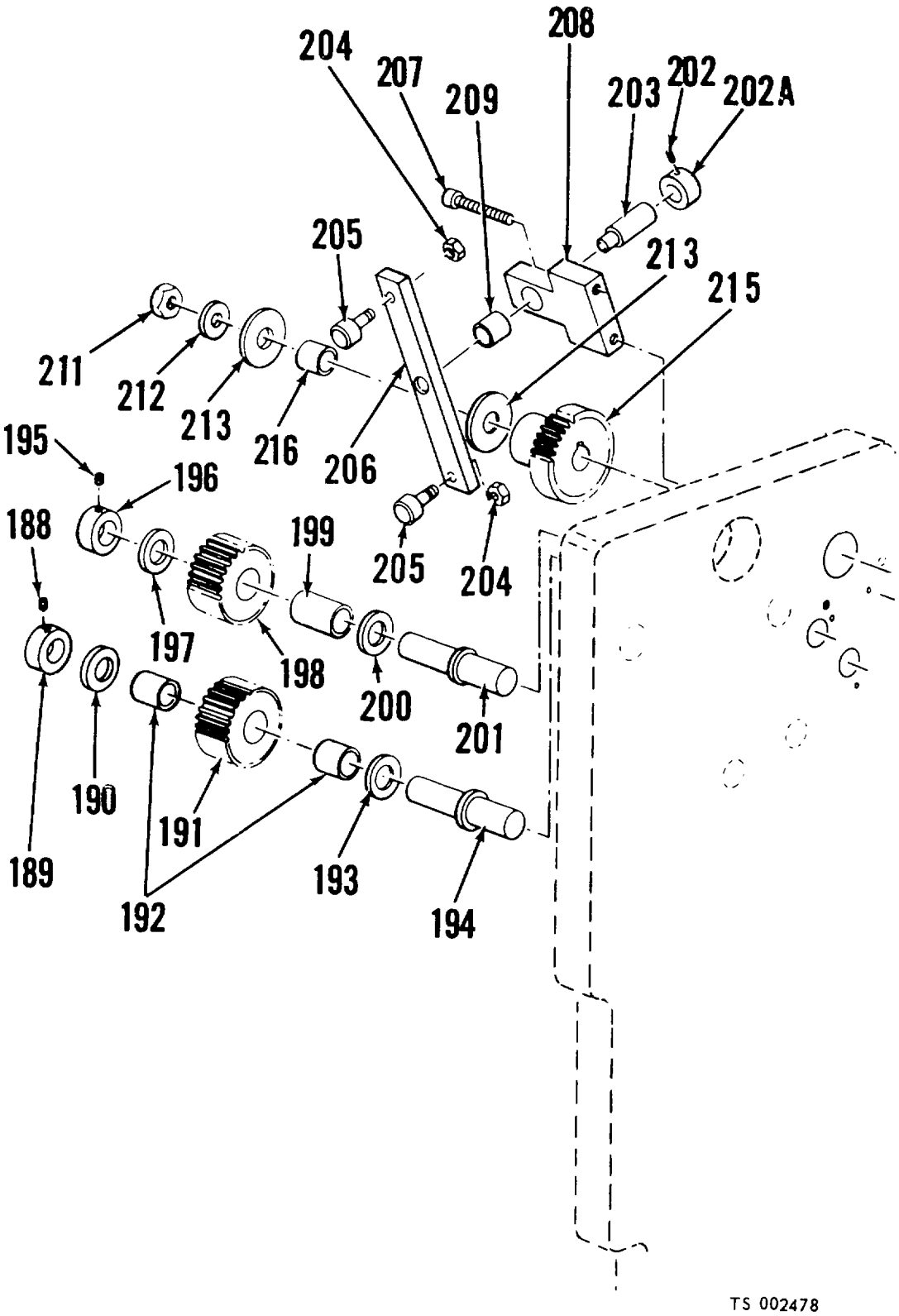


Figure 4-21. Ink motion assembly (Sheet 6 of 8).

KEY to figure 4-21 (Sheets 6 and 7 of 8):

188. Setscrew
189. Collar
190. Washer
191. Gear
192. Bushing
193. Washer
194. Stud
195. Setscrew
196. Collar
197. Washer
198. Gear
199. Bushing
200. Washer
201. Stud
202. Setscrew
202A. Collar
203. Stud
204. Nut
205. Bearing
206. Lever
207. Screw
208. Bracket
209. Bushing
210. Pin
211. Nut
212. Washer
213. Washer
214. Key
215. Gear
216. Spacer
217. Ink vibrator roller assembly
218. Bushing
219. Screw
220. Guard
221. Screw
222. Tie rod
223. Screw
224. Retainer
225. Pin
226. Screw
227. Guide
228. Block
229. Screw
230. Washer
231. Bearing
232. Ink distributor roller assembly
233. Setscrew
234. Setscrew
235. Poppet
236. Screw
237. Washer
238. Bracket
239. Bracket
240. Stud
241. Swivel
242. Poppet

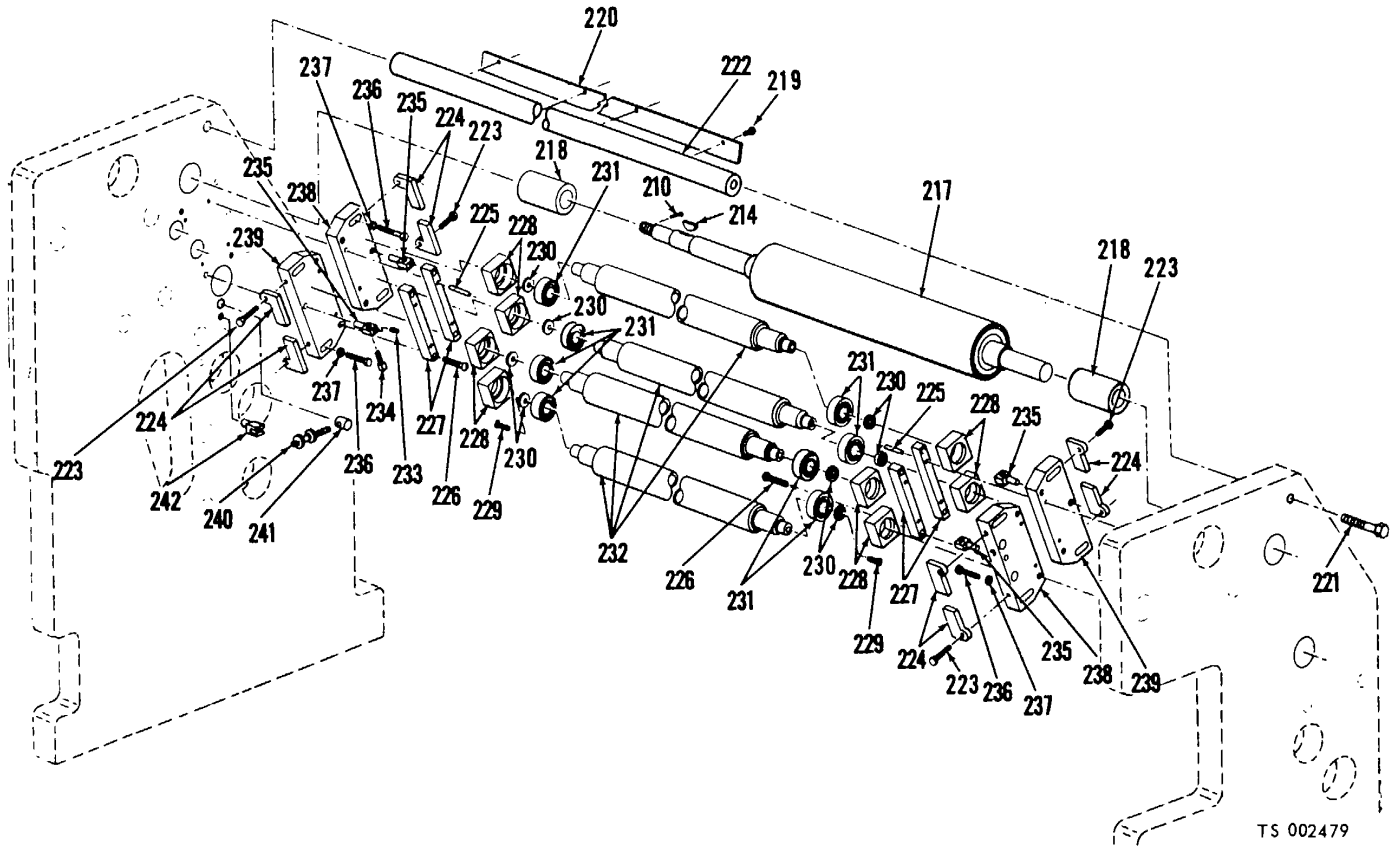


Figure 4-21. Ink motion assembly (Sheet 7 of 8).

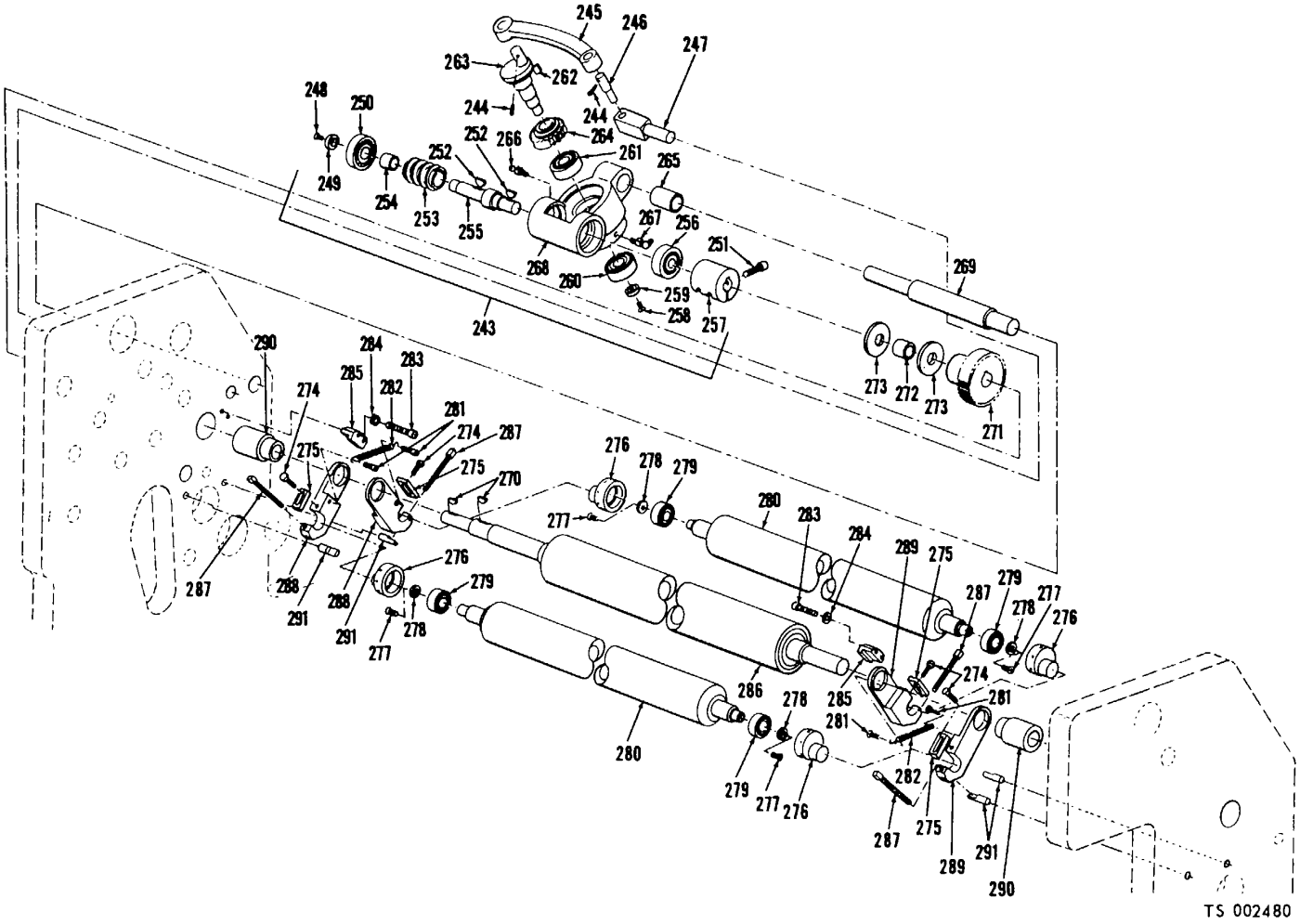


Figure 4-21. Ink motion assembly (Sheet 8 of 8).

KEY to figure 4-21 (Sheet 8 of 8):

243. Ink vibrator assembly
244. Pin
245. Lever
246. Stud
247. Poppet
248. Screw
249. Washer
250. Bearing
231. Screw
252. Key
253. Worm
254. Spacer
255. Shaft
256. Bearing
257. Coupling
258. Screw
259. Washer
260. Bearing
261. Bearing
262. Key
263. Shaft
264. Gear
265. Bushing
266. Fitting
267. Fitting
268. Housing
269. Shaft
270. Key
271. Gear
272. Spacer
273. Washer
274. Screw
275. Retainer
276. Stud
277. Screw
278. Washer
279. Bearing
280. Ink form roller assembly
281. Screw
282. Spring
283. Screw
284. Washer
285. Gib
286. Ink vibrator roller assembly
287. Setscrew
288. Bracket
289. Bracket
290. Bushing
291. Poppet

4-41. Blade Ink Fountain

a. Remove two screws (1, fig. 4-22), two washers (2), and slide blade (3) from the fountain.

b. Inspect the blade for nicks, cracks, breaks, distortion, pits and other visible-defects.

c. Install blade by sliding blade into fountain, and installing washer (2), and screw (1).

4-42. Adjustment Screws, Ink Fountain

a. Remove the 22 ink fountain adjusting screws (72, fig. 4-21 from the ink fountain (76), by turning counterclockwise.

b. Inspect the screws for cracks, breaks, and stripped threads.

c. Install the screws by turning clockwise.

4-43. Ink Fountain Roller

a. Removal (fig. 4-21).

(1) Loosen bolt (64), remove three screws (28), and remove ink fountain roller handler assembly (21 thru 29) and (65).

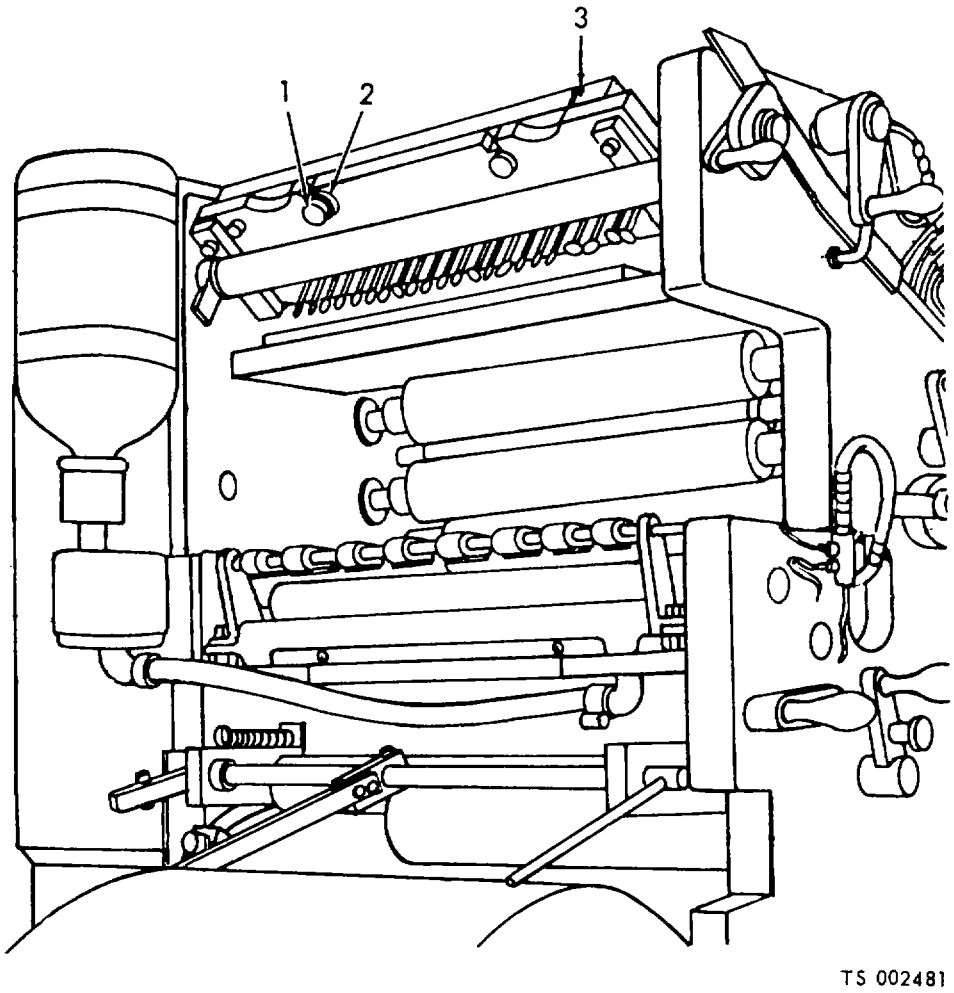
(2) Remove four screws (74), from ink fountain and slide ink fountain assembly out.

(3) Remove four screws (67), and lightly tap bearing (69) and (70), from ink fountain (76).

(4) Remove bolts (64), and remove coupling (65),

(5) Slide bearings (69) and (70) from roller (71), and remove two keys (68).

b. Installation. Install in reverse order of removal.



1. Screw
2. Washer
3. Blade

Figure 4-22. Blade ink fountain.

4-44. Pawl and Ratchet Ink Fountain

a. Removal (Fig. 4-21).

(1) Remove cotter pins (39 and 44), remove lever (45), loosen screw (48) and remove collar (49) and pull lever assembly (51) out.

(2) Remove two screws (35), and remove plate (36). Press shaft (38) from block (37).

b. Installation. Install in reverse order of removal.

4-45. Ink Ductor, Distributor and Foam Roller Assembly

a. Ductor Roller Removal (fig. 4-21).

(1) Remove two screws (117) that secure the ductor roller (123) and the ductor roller stud (119) to the ductor levers (124) and (134) and remove the ductor roller with the stud from the press.

(2) Slide studs (119) from the bearings (122), and remove screw (120) and washer (121) from ductor roller (123).

b. Distributor Roller Removal (fig. 4-21).

(1) Loosen two screws (223) that secure the distributor roller retainers (224) to the distributor roller brackets (239) and remove the rollers with bearing blocks from the press.

(2) Slide blocks (228) from the bearing (231), remove screws (229) and washers (230) from distributor rollers (232).

c. Form Roller Removal (fig. 4-21).

(1) Loosen two screws (274) that secure the form roller retainers (275) to the form roller brackets (289 and 288) and remove form roller with studs (276) from the press.

(2) Slide the studs (276) from the bearings (279). Remove screws (277) and washers (278) from form rollers (280).

d. Rollers Installation.

(1) *Form roller*. Refer to paragraph c and install in reverse order of removal.

(2) *Distributor roller*. Refer to paragraph b and install in reverse order of removal.

(3) *Ductor roller*. Refer to paragraph a and install in reverse order of removal.

4-46. Ink Vibrator Assembly

Inspect to see if vibrator assembly (143, fig. 4-21) is functioning properly.

4-47. Ink Vibrator Roller Assembly

Inspect rollers, for pits, breaks, cracks, nicks, and other similar defects.

4-48. Cylinder and Main Drive Assembly (Fig. 4-23)

a. Inspect belts for proper adjustment.

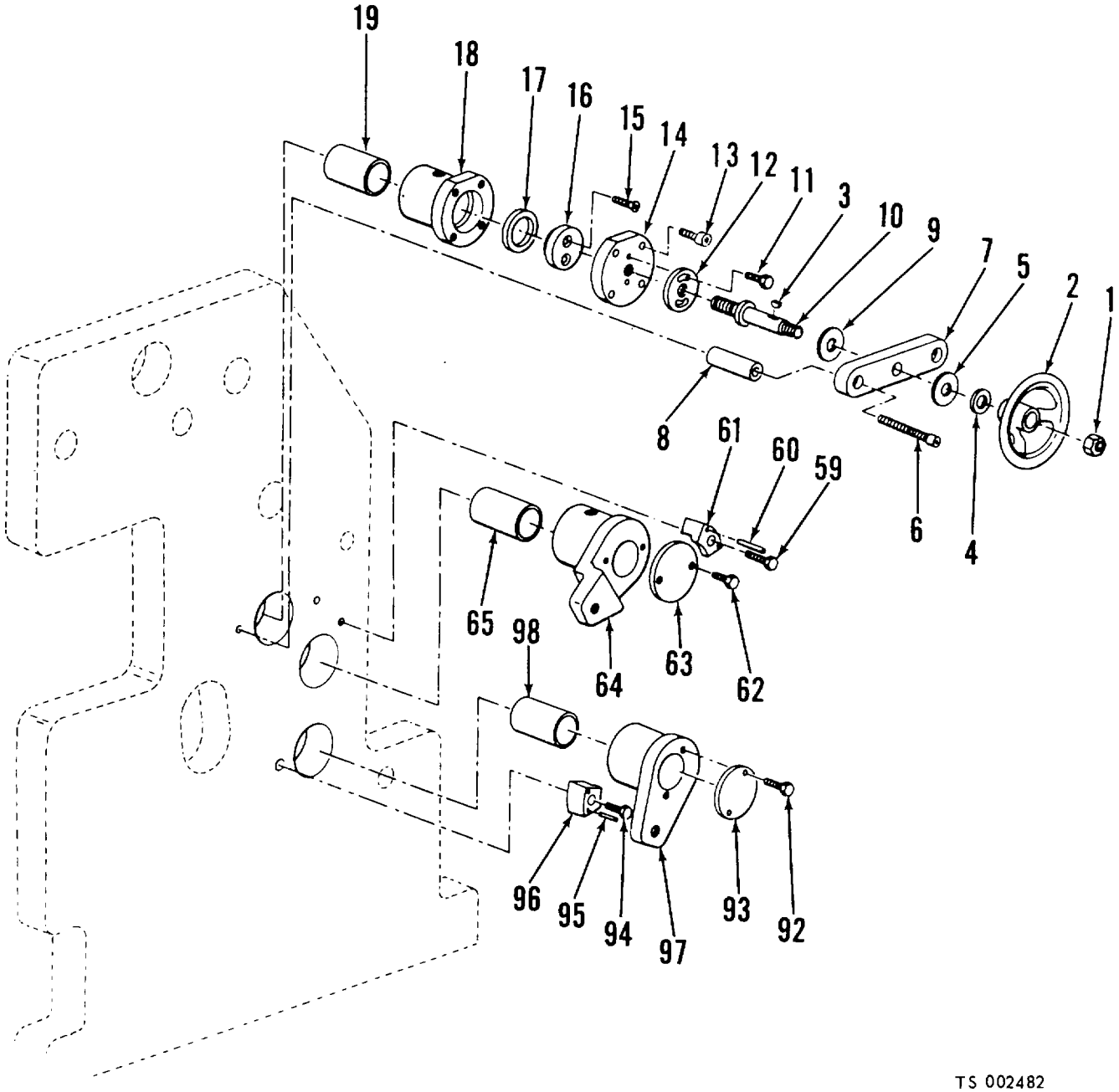
b. Inspect all gear and sprockets for chipped cracked, or broken teeth.

4-49. Side Register Mechanism Plate Cylinder

a. *Removal*. Refer to figure 4-23, item (1 thru 12) and remove side register mechanism.

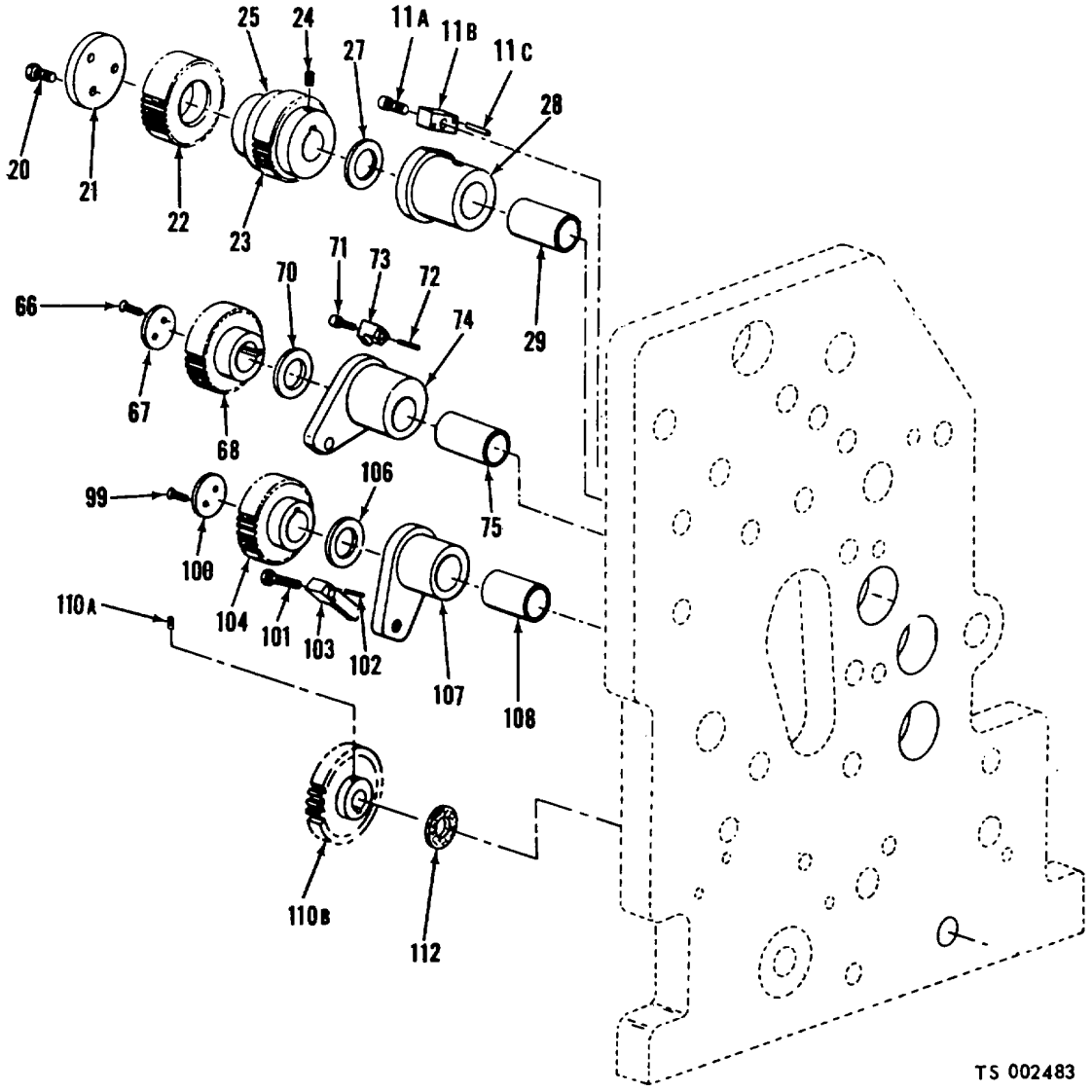
b. *Repair*. Replace defective parts.

c. Installation. Install side register mechanism in reverse order of removal.



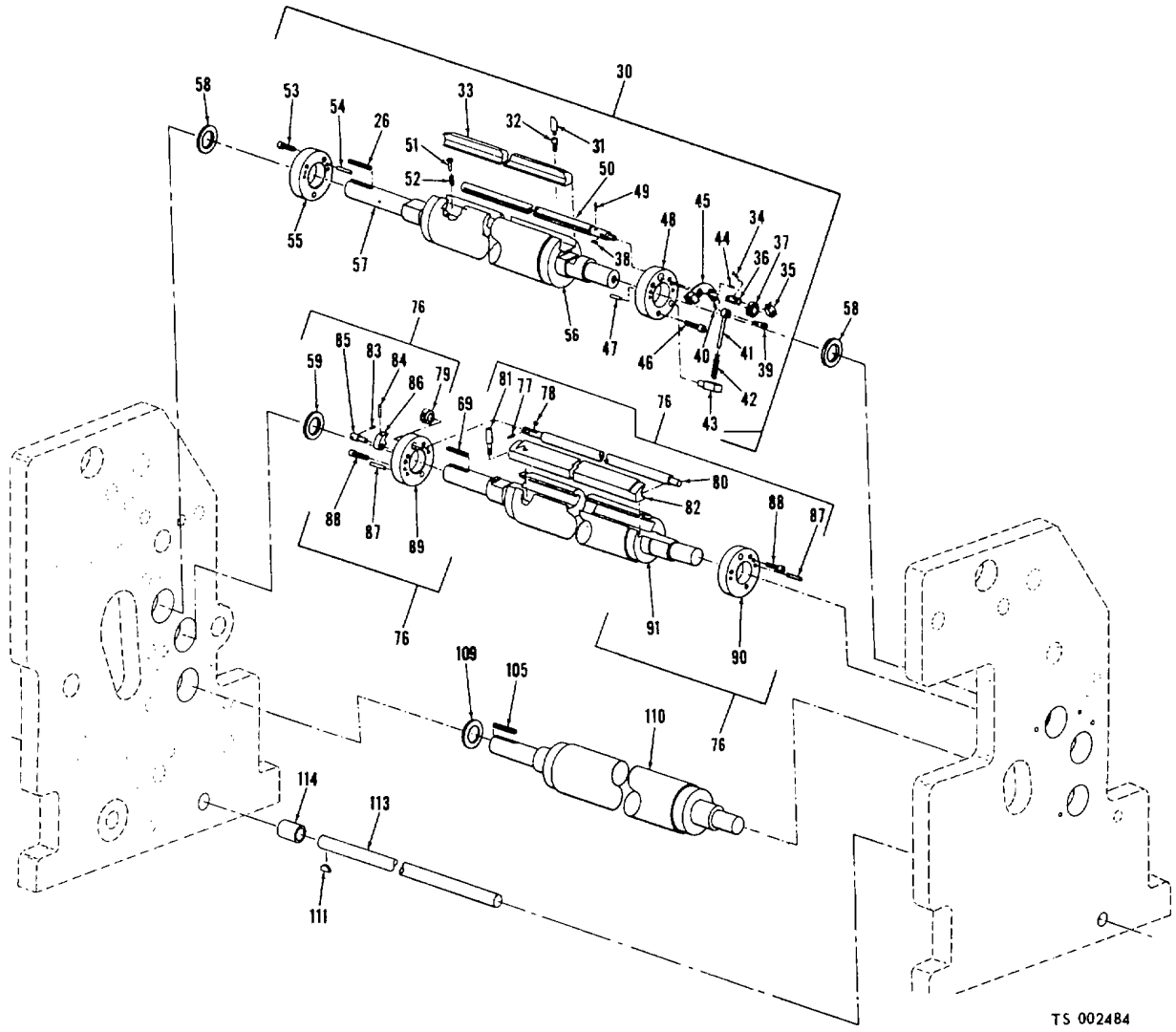
1. Nut	12. Nut	62. Screw
2. Handwheel	13. Screw	63. Plate
3. Key	14. Cap	64. Box
4. Spacer	15. Screw	65. Bushing
5. Washer	16. Washer	92. Screw
6. Screw	17. Washer	93. Plate
7. Bar	18. Box	94. Screw
8. Spacer	19. Bushing	95. Pin
9. Washer	59. Screw	96. Gib
10. Stud	60. Pin	97. Box
11. Screw	61. Gib	98. Bushing

Figure 4-23. Cylinder and main drive assembly (Sheet 1 of 5).



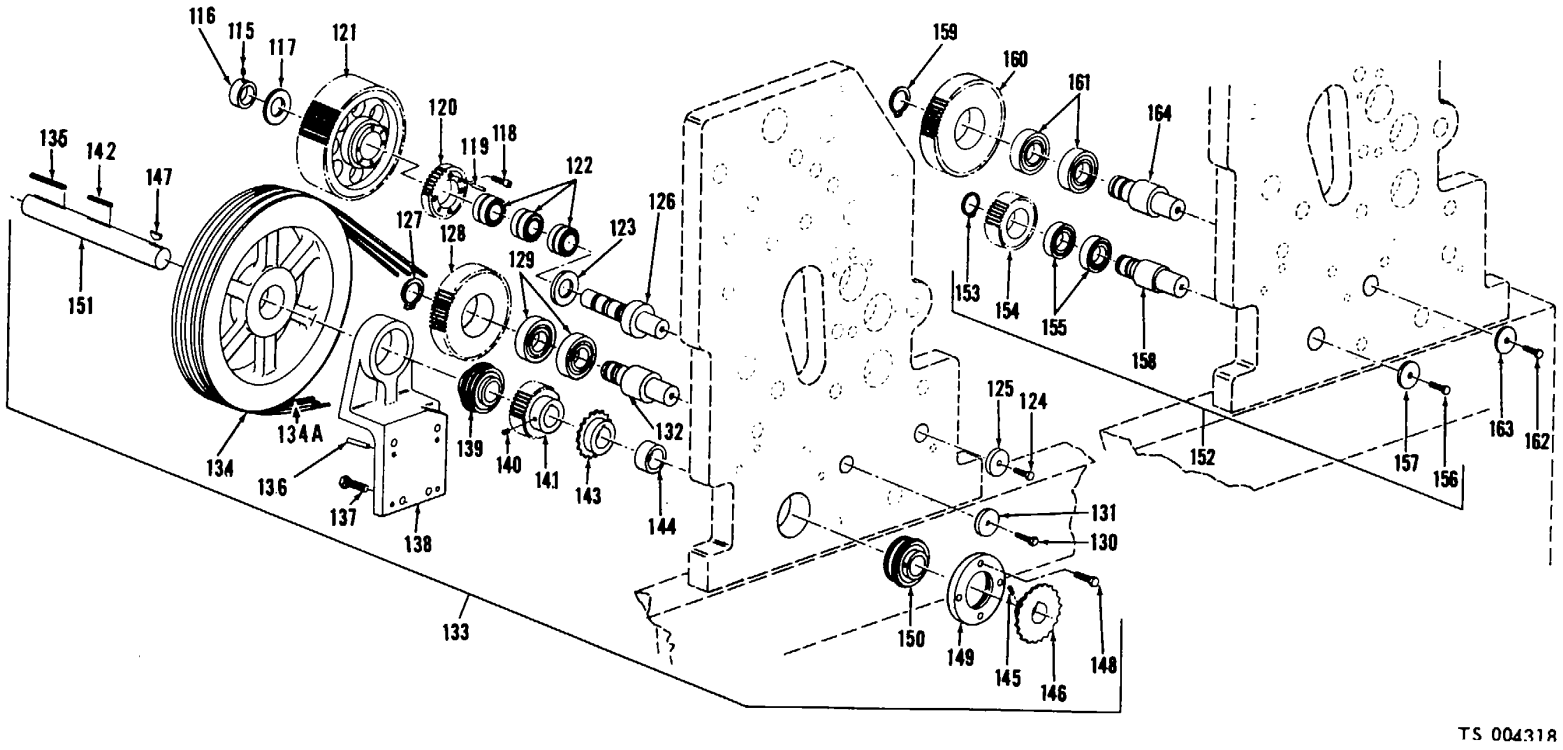
11A. Screw
11B. Gib
11C. Pin
20. Screw
21. Cap
22. Gear
23. Gear
24. Setscrew
25. Gear
26. Key
27. Washer
28. Box
29. Bushing
66. Screw
67. Washer
68. Gear
70. Washer
71. Screw
72. Pin
73. Gib
74. Box
75. Bushing
99. Screw
100. Washer
101. Screw
102. Pin
103. Gib
104. Gear
106. Washer
107. Box
108. Bushing
110A. Setscrew
110B. Gear
113. Shaft

Figure 4-23. Cylinder and main drive assembly (Sheet 2 of 5).



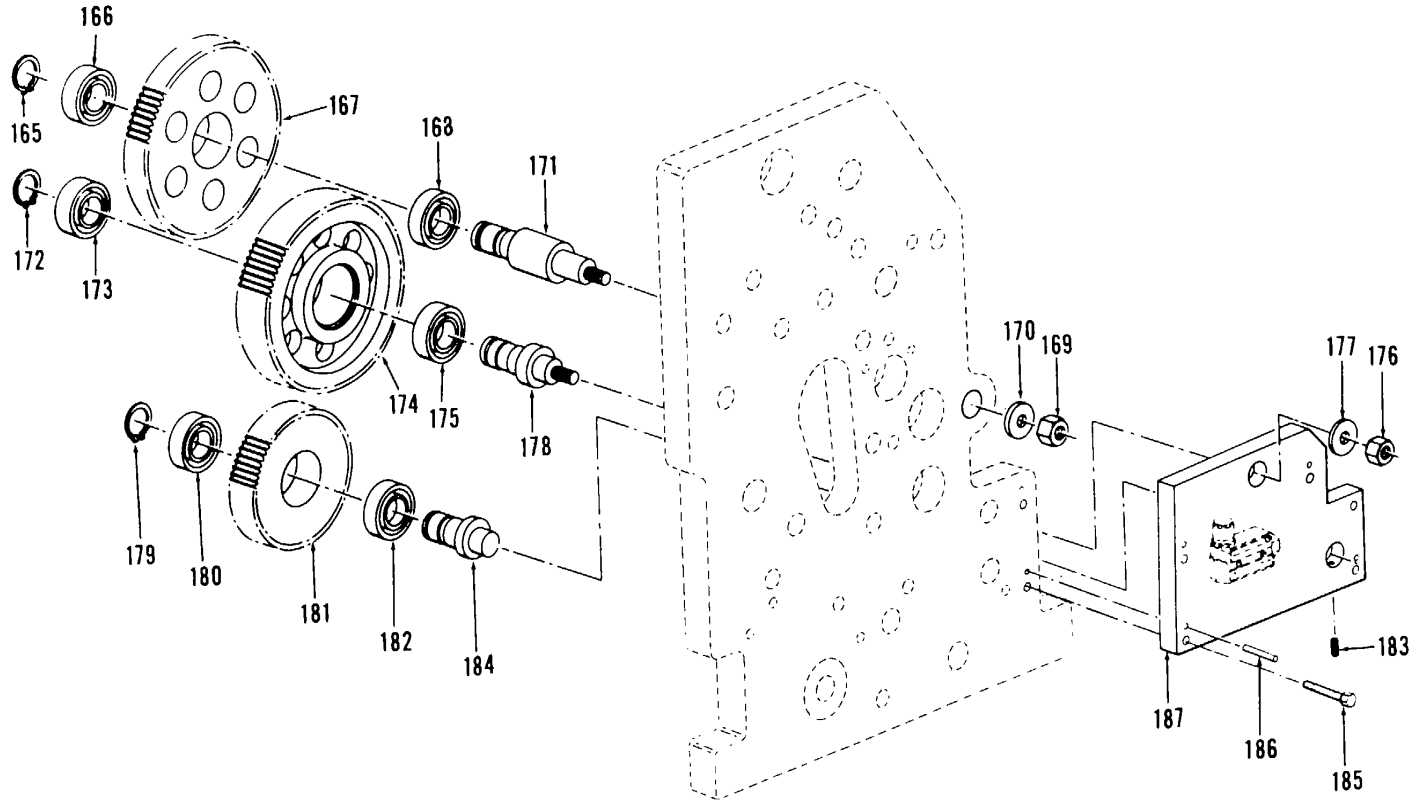
30. Cylinder plate assembly
31. Plug
32. Screw
33. Bar
34. Pin
35. Pawl
36. Stud
37. Ratchet
38. Key
39. Screw
40. Setscrew
41. Rod
42. Spring
43. Poppet
44. Pin
45. Lever Reed Rod Pawl
46. Screw
47. Pin
48. Bearer
49. Pin
50. Rod
51. Rod
52. Spring
53. Screw
54. Pin
55. Bearer
56. Plate cylinder
57. Journal
58. Washer
59. Screw
69. Key
76. Blanket cylinder assembly
77. Pin
78. Key
79. Ratchet
80. Rod
81. Stud
82. Bar
83. Pin
84. Pin
85. Stud
86. Pawl
87. Pin
88. Screw
89. Bearer
90. Bearer
91. Offset blanket assembly
105. Key
109. Washer
110. Cylinder
111. Key
113. Shaft
114. Bushing

Figure 4-23. Cylinder and main drive assembly (Sheet 3 of 5).



115. Setscrew
116. Collar
117. Washer
118. Screw
119. Pin
120. Gear
121. Gear
122. Bearing
123. Washer
124. Screw
125. Washer
126. Stud
127. Ring
128. Gear
129. Bearing
130. Screw
131. Washer
132. Stud
133. Pulley Shaft assembly
134. Pulley
134A. Belt
135. Key
136. Pin
137. Screw
138. Bracket
139. Bearing
140. Setscrew
141. Gear
142. Key
143. Sprocket
144. Spacer
145. Setscrew
146. Sprocket
147. Key
148. Screw
149. Retainer
150. Bearing
151. Shaft
152. Gear Shaft Assembly
153. Ring
154. Gear
155. Bearing
156. Screw
157. Washer
158. Stud
159. Ring
160. Gear
161. Bearing
162. Screw
164. Stud

Figure 4-23. Cylinder and main drive assembly (Sheet 4 of 5).



165. Ring
166. Bearing
167. Gear
168. Bearing
169. Nut
170. Washer
171. Stud
172. Ring
173. Bearing
174. Gear
175. Bearing
176. Nut
177. Washer
178. Stud
179. Ring
180. Bearing
181. Gear
182. Bearing
183. Setscrew
184. Stud
185. Screw
186. Pin
187. Plate

Figure 4-23. Cylinder and main drive assembly (Sheet 5 of 5).

NOTE

Index Nos. 115 thru 151 are used on Offset Unit No. 2 only, Index Nos. 152 thru 164 are used on Offset unit No. 3 only, and Index Nos. 172 thru 187 are used on Offset Units No. 1 and No. 3 only.

4-50. Adjustment of Blanket and Impression Cylinders

a. End Thrust. Thrust washers are shown as items 17, 58, 69 and 106, figure 4-23. Washers close to gears (25, 68, 104) act as a combination spacer-wear ring. The washers near the bearers are machined to allow between .001 and .002 inches (.00254 and .00508 CM) total and thrust.

b. Adjusting Blanket and Impression Cylinder Parallel to Plate Cylinder. To accomplish proper parallel adjustment of the blanket and impression cylinder to the plate cylinder, see figure 4-24 and proceed as follows:

NOTE

For checking and accomplishing the following adjustments, the use of 5/16 and 5/8 inch (0.79375 and 1.5875 CM) open end wrenches and a feeler gauge are required.

(1) Install the plate and blanket on cylinder.

(2) Manually move the impression ON-OFF handle (6, figure 2-1) to a partially off position until the blanket cylinder bearers are separated from the plate cylinder bearers by about 0.010 inch (.0254 CM). (fig. 4-24.)

(3) Check to make sure that the bearer separation between the bearers on the operator's side of the press are the same as those on the gear side. If the separation is not equal, remove blanket cylinder gear and adjust the blanket cylinder eccentrics by using the blanket cylinder adjustment screws until the bearer adjusting separations are equal. Adjustments are considered correct when the blanket cylinder is parallel to the plate cylinder.

(4) Move the impression ON-OFF Handle (6, fig. 2-1) to the ON position.

(5) Push the impression cylinder handle (11, fig. 2-1) down until the gear side of the impression cylinder body is approximately 0.080 inches from the body of the blanket cylinder. (See fig. 4-24).

(6) Check the separation between these two cylinders on the operator's side. If they are not equal, use the 5/16 inch (0.79375 CM) open end wrench and a 5/32 inch (0.15625 CM) socket wrench to adjust the screws (48, fig. 4-21) which move the front impression cylinder eccentric. To move the impression cylinder closer to the blanket cylinder, loosen the bottom screw and tighten the / top screw; this parallels the impression cylinder to the blanket cylinder. To move the impression cylinder farther away from the blanket cylinder, adjust the screws just the opposite. Adjustment is considered correct when the separation on the operator's side is equal to that on the gear side between the impression cylinder and the blanket cylinder.

(7) With all above adjustments and checks accomplished, the three cylinders are now parallel to each other.

(8) Install blanket cylinder gear.

c. Bearer Contact. Proper printing cannot be obtained unless proper bearer contact is accomplished. To check for proper contact, proceed as follows:

NOTE

It is necessary when checking bearer contact to have the plate and blanket mounted on their cylinders.

(1) Smear a thin film of ink about one-half the bearer width and about 3/4 inch (1.905 CM) long on both plate cylinder bearers.

(2) Throw the plate to blanket cylinder impression ON position and jog the press one complete cylinder rotation.

(3) Throw the plate to blanket cylinder impression off and see if the ink transferred equally to both blanket cylinder bearers. If it does, proper bearer contact exists. If ink is not transferred, or not transferred evenly, proceed with the following adjustments:

(4) Move the locking nuts (15, fig. 4-22) on the blanket cylinder eccentric box screws on both the operator's and drive side, as to separate the blanket cylinder bearers from the plate cylinder bearers by about 0.005 inches (.0127 CM) with the blanket cylinder in the ON impression position.

(5) Adjust the operator's and gear side eccentric boxes so the bearers are separated by 0.004 inches (.01016 CM).

(6) Count the number of turns of the nuts on the operators and gear side eccentric to adjust the bearers to a separation of 0.002 inches (.00508 CM).

(7) Turn each nut exactly the same number of turns again. This will bring both bearers into contact.

(8) Check contact using ink smear test described in step (1) above. If contact is not correct, adjust each eccentric box in evenly until a good transfer of ink is made on both the operators end drive side of the press. Correct bearer contact is thereby accomplished.

d. Timing. Timing of the printing cylinders is accomplished by the use of a slip gear 22, fig. 4-23) located on each printing unit. The gear on the unit next to the delivery unit is used to time the printing in this unit to the cut-off knife. The gears

on the other two printing units are used to time the printing to that of the third unit. Small adjustments of timing can be made with the compensators 10, 11, 12, fig. 2-2). To accomplish timing of the printing cylinders proceed as follows:

(1) Loosen screws 20, fig. 4-23). The cylinders can now be rotated by hand without rotating the printing cylinders in the other printing unit.

(2) Tighten all screws after rotating cylinders the correct amount.

NOTE

All cams on the press are fixed and require no adjustments.

e. When performing any other maintenance on the press which involves removing parts of the press the below practices are recommended.

(1) Scribe lines or otherwise mark the position of the part that is to be removed with respect to the part to which it is attached as well as its relative position to any adjacent parts.

(2) When removing a gear, the meshing teeth of all gears in contact with the gear to be removed should be marked to avoid a timing problem when the gear is re-installed.

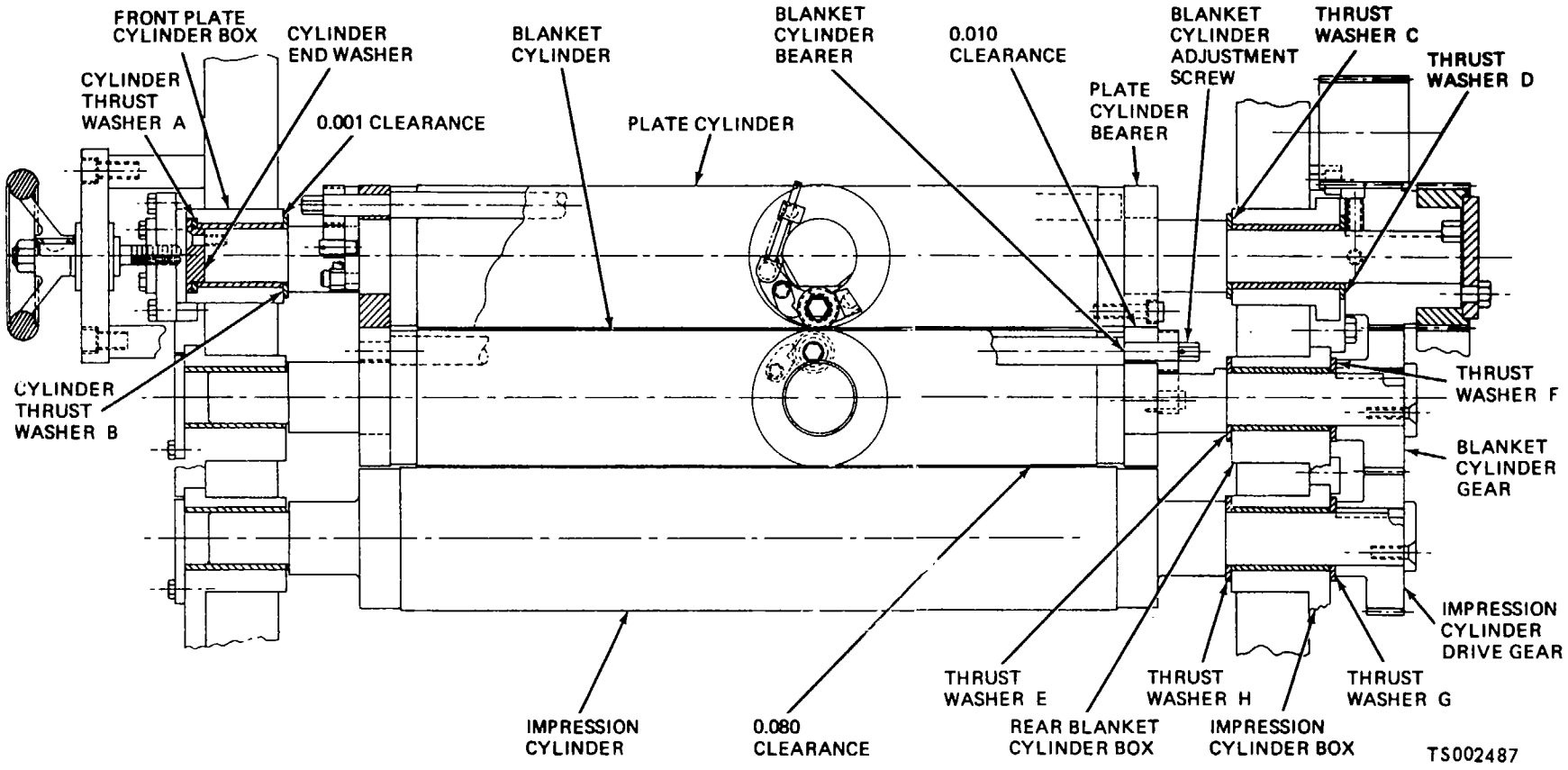


Figure 4-24. Plate Cylinder adjustment.

4-51. Bushing, Cylinder

Inspect bearing (122, 155, 160, 162, 169, fig. 4-23) for evidence of pitted, scored or burned condition.

4-52. Drive Gears, Cylinder

a. Removal. Refer to figure 4-23 for removal of drive gears.

b. Inspect gears for chipped or broken teeth.

c. Installation. Refer to figure 4-23 and install gears in reverse order of removal.

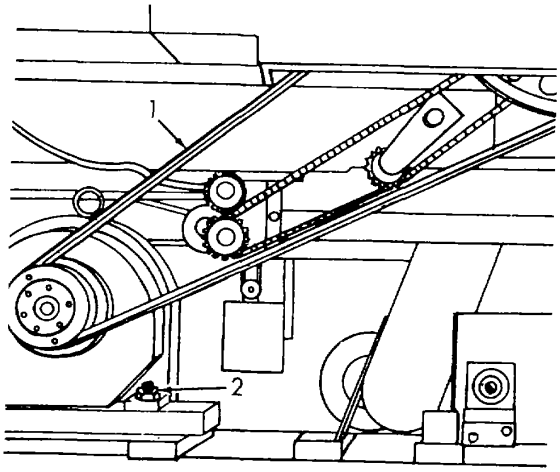
4-53. Belts Main Drive

a. Inspect the belt frequently for proper tension, cracks and wear.

b. Remove guard. Refer to paragraph 4-17.

c. Adjust belts by loosening four nuts (2, fig. 4-25) on motor and adjust belt tension by moving motor ahead or back.

d. Replace defective belt.



1. Belt 2. Nut

Figure 4-25. Motor adjustment.

4-54. Pulley Shaft Assembly

a. Removal.

(1) Remove guards (refer to paragraph 4-16).

(2) Remove belts (134A, fig. 4-23).

(3) Refer to item 133 (fig. 4-23) and disassemble pulley shaft assembly.

b. Inspect and Repair. Inspect and replace worn or defective parts.

c. Installation. Install in reverse order of removal.

4-55. Gears, Main Drive

a. Inspect gears for chipped, cracked or broken teeth.

b. Refer to figure 4-23 and replace defective gears.

4-56. Water Stop Assembly

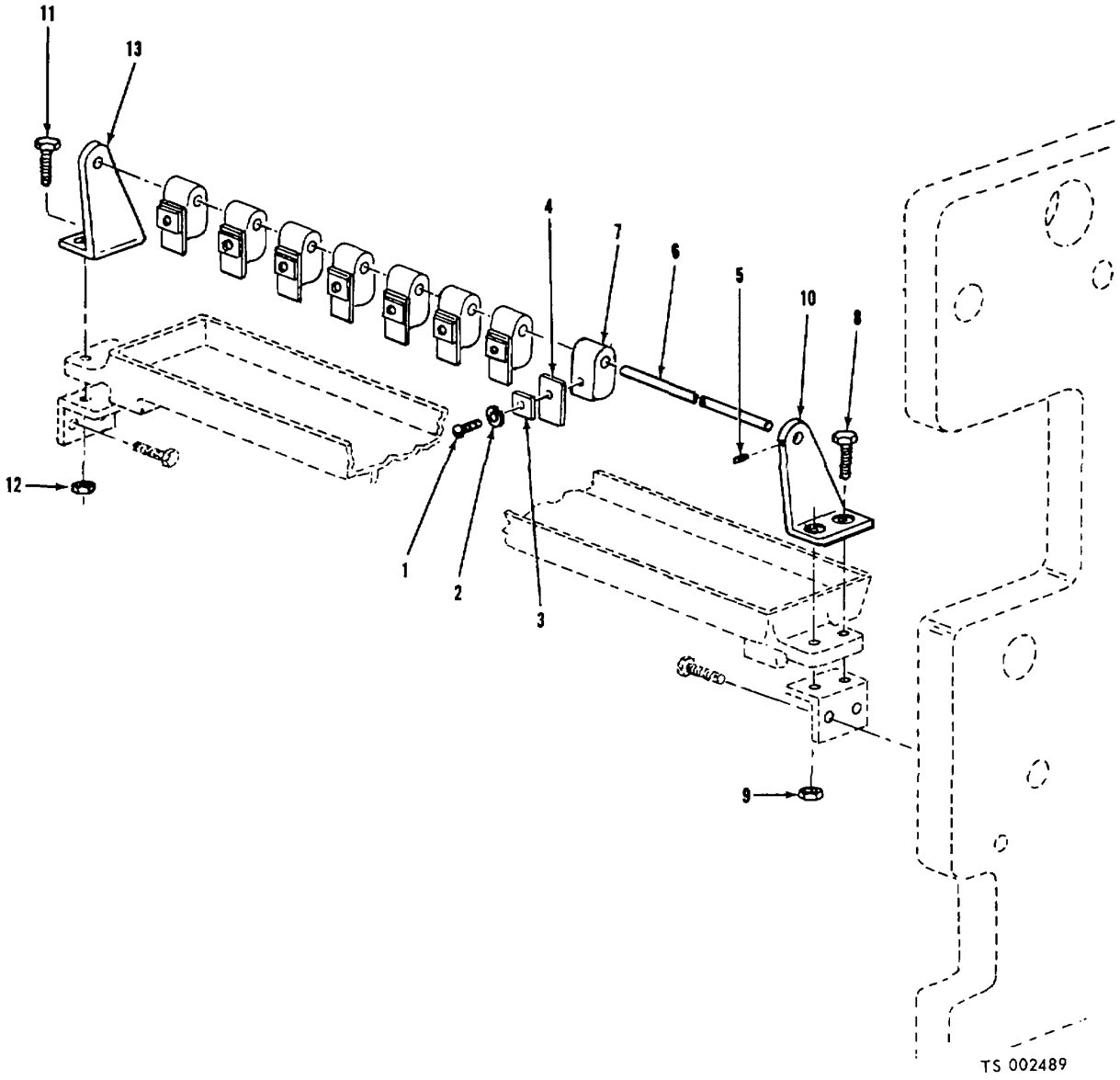
a. Removal. Refer to figure 4-26 and remove water stop assembly.

b. Inspect and Repair.

(1) Inspect the blades for breaks, wear, and deterioration.

(2) Replace defective parts.

c. Installation. Refer to figure 4-26 and install water stop assembly in reverse order of removal.



1. Screw
2. Washer
3. Clamp
4. Blade
5. Setscrew
6. Shaft
7. Holder
8. Screw
9. Nut
10. Bracket
11. Screw
12. Nut
13. Bracket

Figure 4-26. Water Stop Assembly.

4-57. Water Motion Assembly (fig. 4-27)

a. Clean parts with a cloth dampened with solvent.

b. Inspect rollers for pits, gouges, flat spots and other similar defects.

c. Inspect springs (22, 38, fig. 4-27).

4-58. Roller Water Fountain

a. Removal. Refer to figure 4-27, (items 1 thru 14), and remove roller water fountain.

b. Inspect. Inspect roller for pits, gouges, flat spots, loose covers, glazed spots and other defects.

c. Installation. Install roller water fountain in reverse order of removal.

4-59. Water Ductor and Form Roller

a. Ductor Roller Removal (fig. 4-27).

(1) Remove two screws (49), that secure the ductor roller (55) and the ductor roller stud (51) to the ductor levers (59) and (60) and remove the ductor roller with the stud from the press.

(2) Slide studs (51) from the bearing (54). Remove screws (52) and washers (53) from ductor roller (55).

(3) Remove top and bottom from rollers (150 and 142) in similar manner.

b. Roller Installation. Install in reverse order of removal.

4-60. Drive Sprocket

a. Inspect sprocket for cracked or broken teeth.

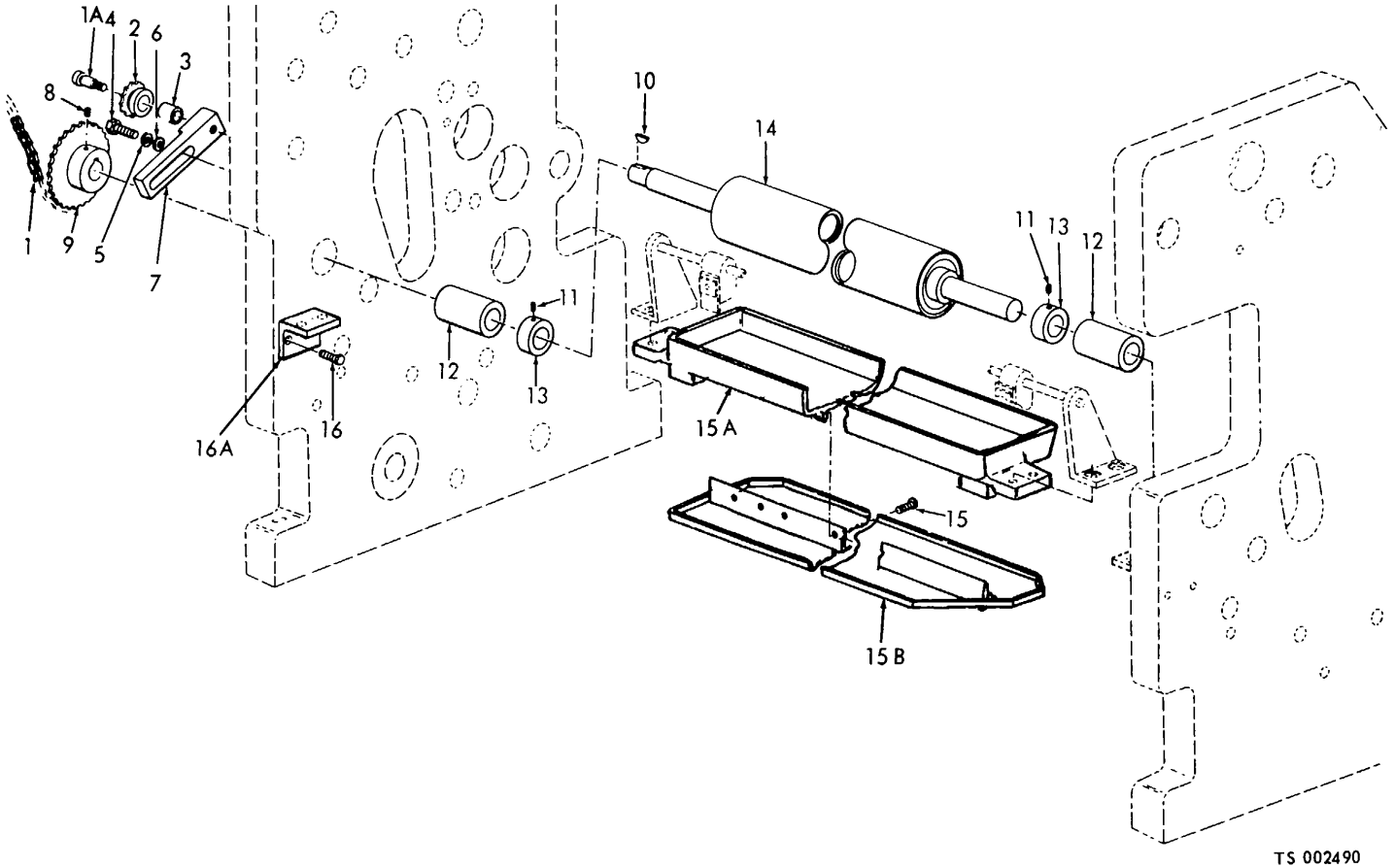
b. Replace defective sprocket (9, fig. 4-27).

4-61. Water Vibrator Assembly

Inspect to see if vibrator assembly (68, fig. 4-27) is functioning properly.

4-62. Water Vibrator Roller Assembly

Inspect rollers for pits. breaks, cracks, nicks, and other similar defects.



1. Chain
1A. Screw
2. Sprocket
3. Bushing
4. Screw
5. Washer
7. Lever
8. Setscrew
9. Sprocket
10. Key
11. Setscrew
12. Bushing
13. Collar
14. Water Fountain Roller Assembly
15. Screw
15A. Fountain Water
15B. Drip Pan
16. Screw
16A. Support angle

Figure 4-27. Water motion assembly (Sheet 1 of 6).

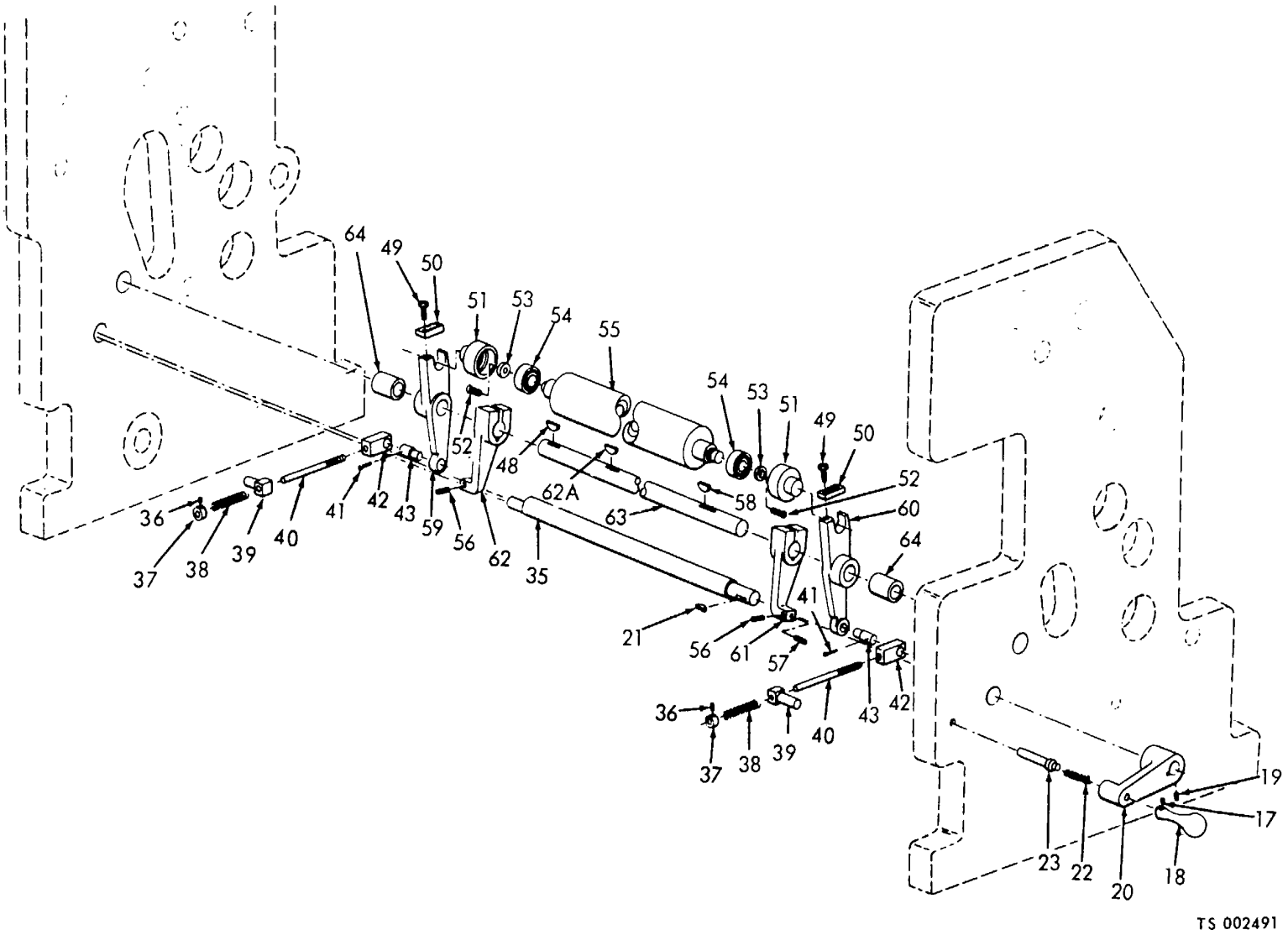
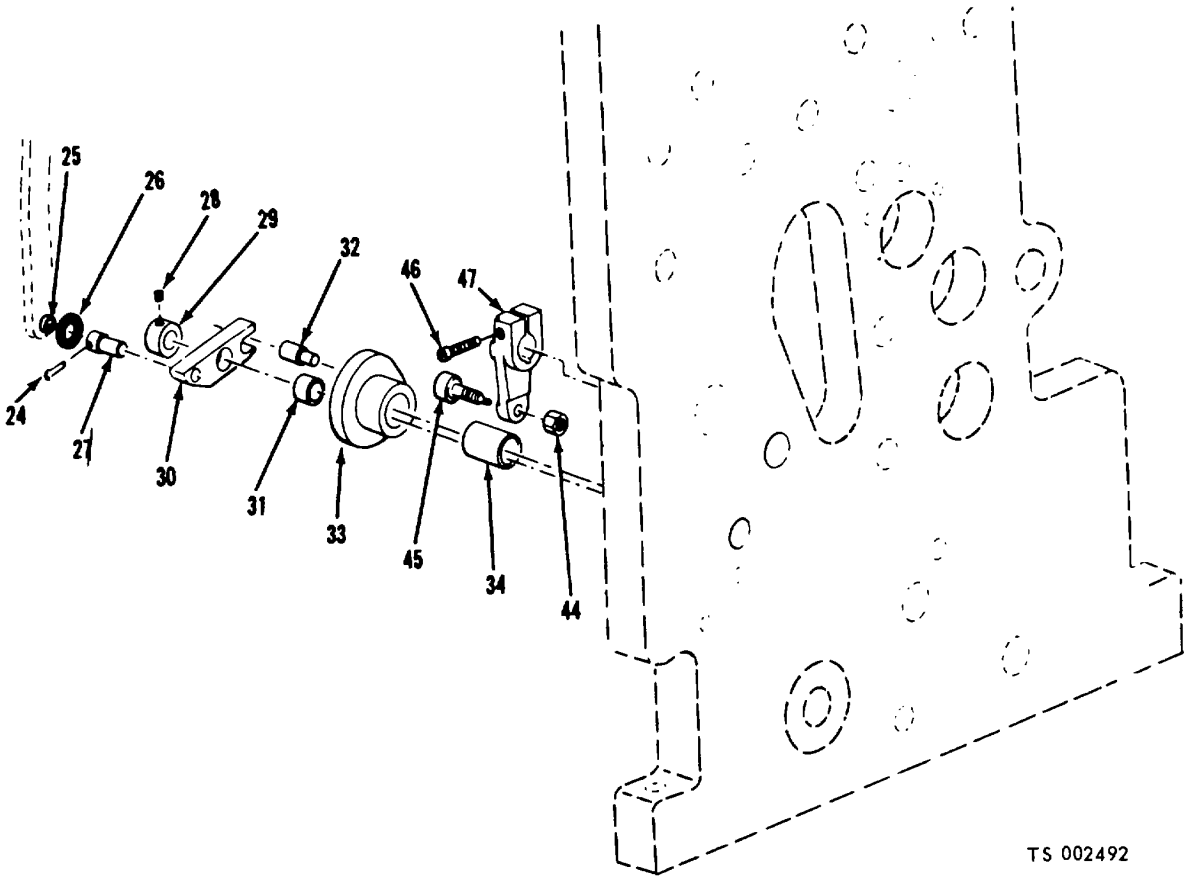


Figure 4-27. Water motion assembly (Sheet 2 of 6).

KEY to figure 4-27 (Sheet 2 of 6):

17. Setscrew
18. Handle
19. Setscrew
20. Lever
21. Key
22. Spring
23. Plunger
35. Shaft
36. Setscrew
37. Collar
38. Spring
39. Poppet
40. Rod
41. Pin
42. End Rod
43. Stud
48. Key
49. Screw
50. Retainer
51. Stud
52. Screw
53. Washer
54. Bearing
55. Ductor Roller Assy
56. Setscrew
57. Setscrew
58. Key
59. Lever
60. Lever
61. Lever
62. Lever
62A. Key
63. Shaft
64. Bushing



24. Pin
25. Bushing
26. Washer
27. Stud
28. Setscrew
29. Collar
30. Collar
31. Bushing
32. Pin
33. Cam
34. Bushing
44. Nut
45. Bearing
46. Screw
47. Lever

Figure 4-27. Water motion assembly (Sheet 3 of 6).

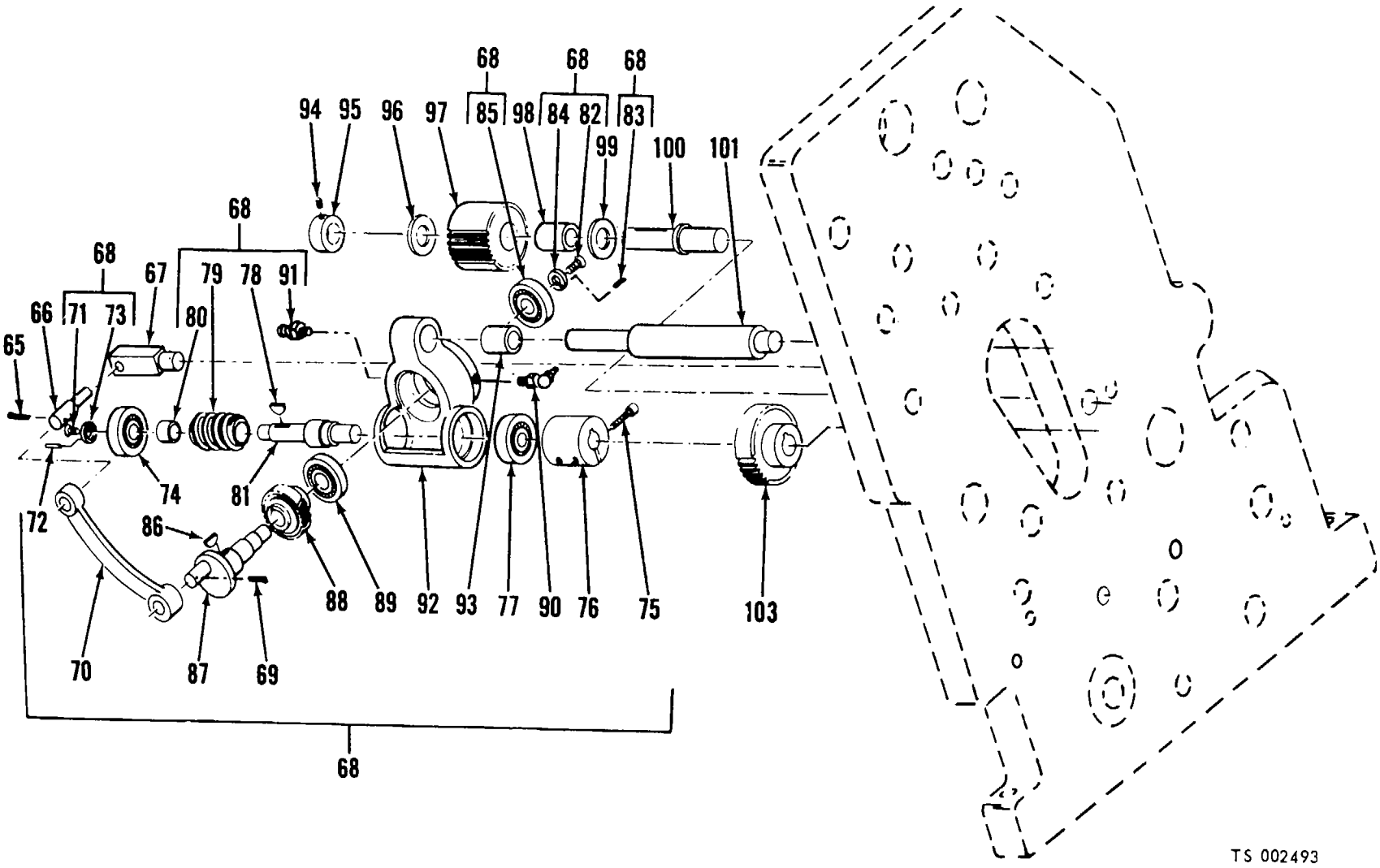


Figure 4-27. Water motion assembly (Sheet 4 of 6).

KEY to figure 4-27 (Sheet 4 of 6):

65. Pin
66. Stud
67. Poppet
68. Water Vibrator Assy.
69. Pin
70. Lever
71. Screw
72. Pin
73. Washer
74. Bearing
75. Screw
76. Coupling
77. Bearing
78. Key
79. Worm
80. Spacer
81. Shaft
82. Screw
83. Pin
84. Washer
85. Bearing
86. Key
87. Shaft
88. Gear
89. Bearing
90. Fitting
91. Fitting
92. Housing
93. Bushing
94. Setscrew
95. Collar
96. Washer
97. Gear
98. Bushing
99. Washer
100. Stud
101. Shaft
103. Gear

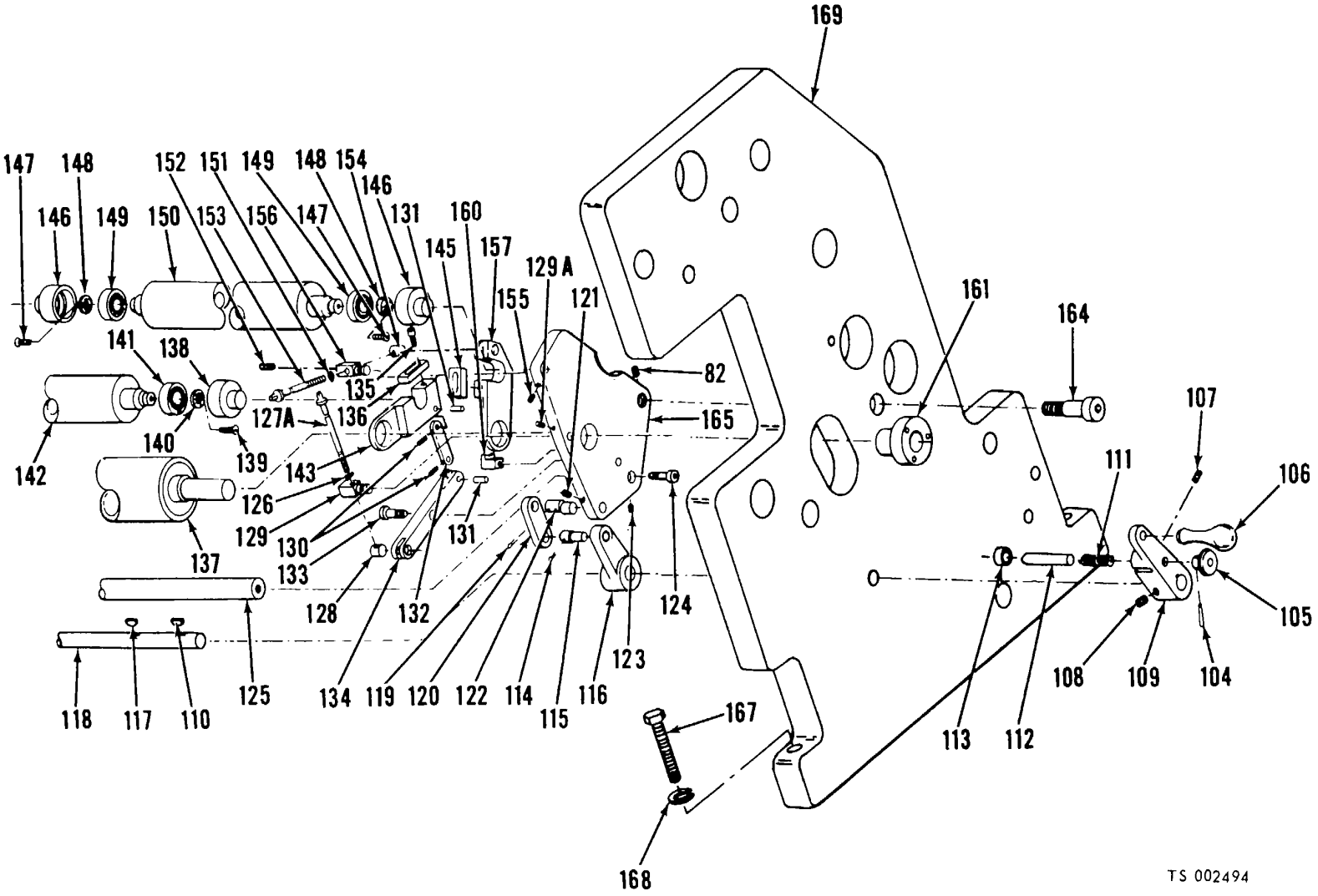


Figure 4-27. Water motion assembly (Sheet 5 of 6).

KEY to figure 4-27 (Sheet 5 and 6 of 6):

82. Screw
102. Key
104. Pin
105. Knob
106. Handle
107. Pin
108. Setscrew
109. Handle
110. Key
111. Spring
112. Plunger
113. Stop
114. Pin
115. Stud
116. Link
117. Key
118. Shaft
119. Pin
120. Link
121. Setscrew
122. Stud
123. Setscrew
124. Screw
125. Tie Rod
126. Ring
127. Setscrew
127A. Screw
128. Pin
129. Poppet
129A. Setscrew
130. Stud
131. Pin
132. Link
133. Screw
134. Link
135. Screw
136. Retainer
137. Water Vibrator Roller Assy
138. Stud
139. Screw
140. Washer
141. Bearing
142. Water Form and Roller Assembly
143. Bracket
144. Screw
145. Retainer
146. Stud
147. Screw
148. Washer
149. Bearing
150. Water Form and Roller Assembly
151. Ring
152. Setscrew
153. Screw
154. Pin
155. Setscrew
156. Poppet
157. Bracket
158. Screw
159. Pin
160. Gib
161. Bushing
162. Setscrew
163. Bushing
164. Screw
165. Plate
166. Plate
167. Screw
168. Washer
169. Frame
170. Frame

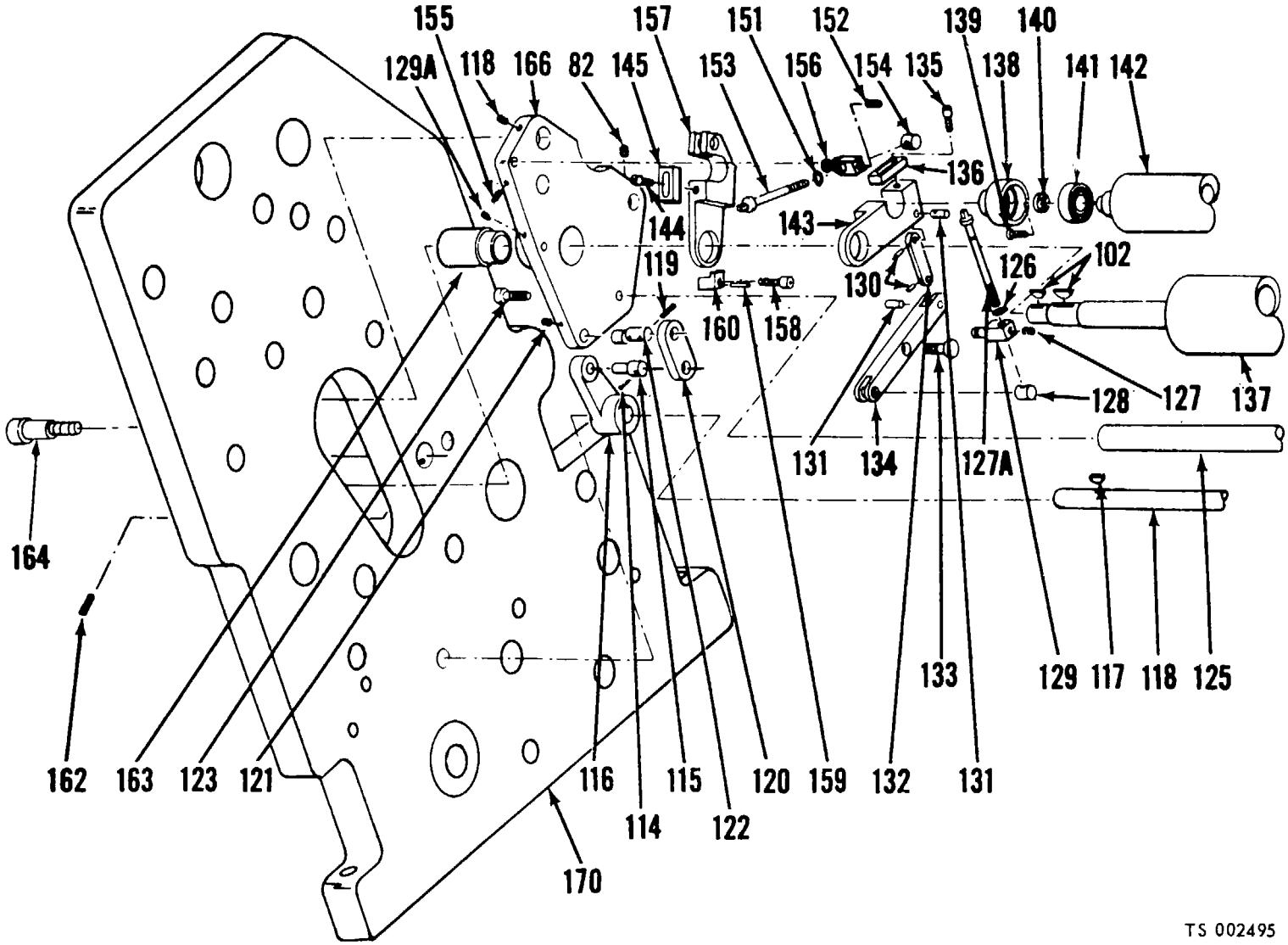


Figure 4-27. Water motion assembly (Sheet 6 of 6).

Section XI. MAINTENANCE OF WATER BOTTLE AND BRACKET ASSEMBLY

4-63. General

This section contains instructions for repair and replacement of the water level unit, cap and valve assembly and replacement of the bracket assembly.

4-64. Water Level Unit

a. Removal

(1) Drain the water from the water system.

(2) Lift the water bottle (6, fig. 4-28) from the water fountain reservoir (20) and remove the bottle from the press.

(3) Remove nut (16) and gasket (17) and remove reservoir (20), basket (19), nipple (18), clamp (1), and hose (2).

(4) Loosen cap (11) and remove cap and valve assembly (6A).

(5) Remove two screws (26), two lockwashers (27), two flatwashers (28), and remove bracket assembly (22).

b. Inspect and Repair. Inspect water level unit for cracks, breaks, distortion, wear and broken spring. Replace defective parts.

c. Installation. Install water level unit in reverse order of removal.

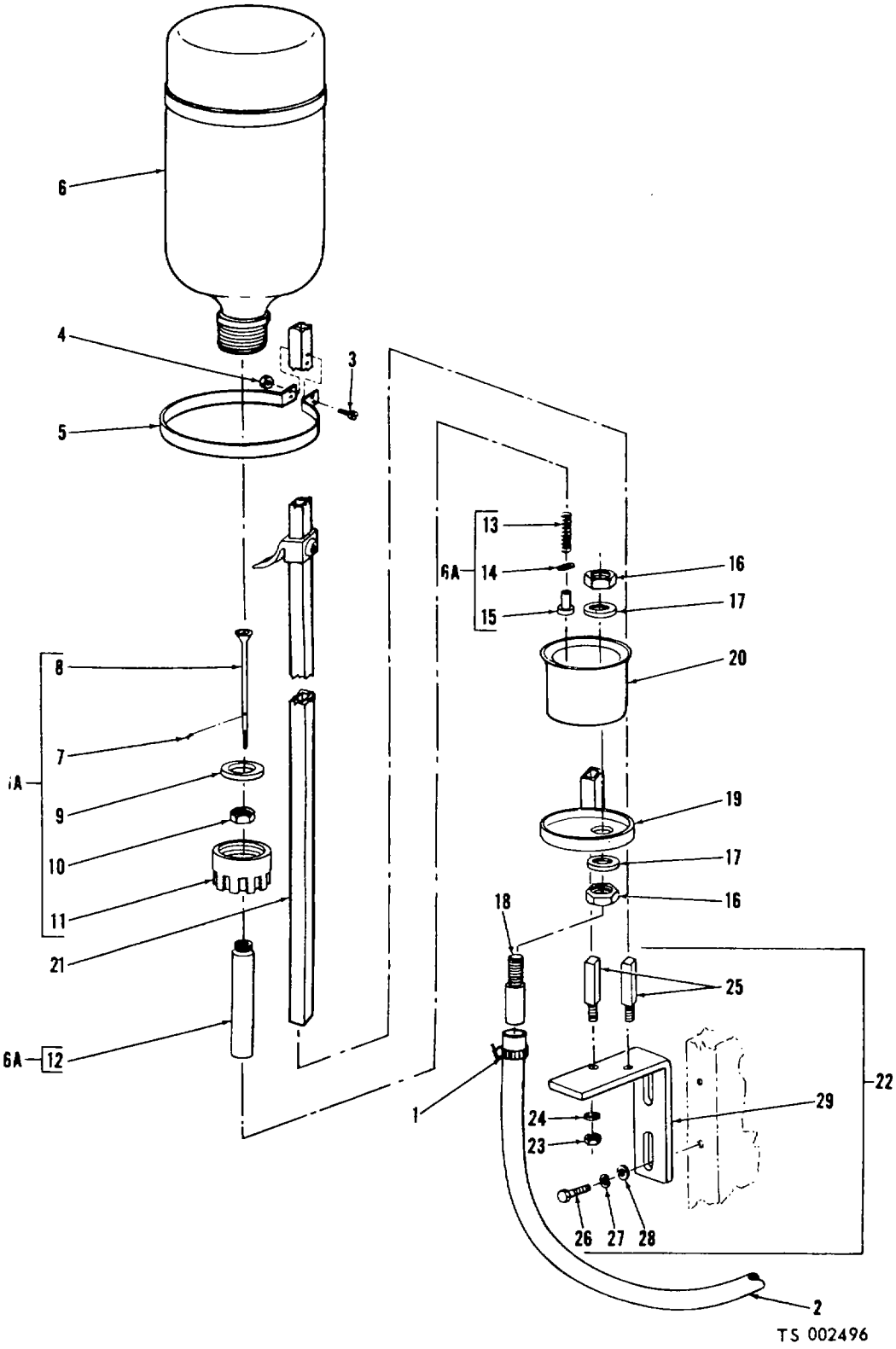


Figure 4-28. Water level assembly.

KEY to figure 4-28:

1. Clamp
2. Hose
3. Screw
4. Nut
5. Clamp
6. Bottle
6A. Cap and Valve assembly
7. Pin
8. Plunger
9. Gasket
10. Nut
11. Cap
12. Body
13. Spring
14. Guide
15. Shoe
16. Nut
17. Gasket
18. Nipple
19. Gasket
20. Reservoir
21. Post
22. Water Bottle Holder Bracket Assembly
23. Nut
24. Washer
25. Stud
26. Bolt
27. Washer
28. Washer
29. Bracket

Section XII. MAINTENANCE OF DELIVERY UNIT

4-65. Trolley Paper Guide Assembly

a. Removal. Refer to figure 4-29 items (127) thru (155) and disassemble trolley paper guide assembly.

b. Inspection.

(1) Inspect bearing (137) for evidence of pitted or scored condition.

(2) Inspect gear (133) for chipped or cracked teeth.

c. Repair. Replace defective parts.

d. Installation. Install trolley paper guide assembly in reverse order of removal.

4-66. Trolley Roller Assembly

a. Removal.

(1) Loosen setscrew (51, fig. 4-29) and remove handle (52).

(2) Remove screws (53) and remove bracket (54). Unscrew handle (56) from collar (57) and remove handle.

(3) Loosen setscrew (55) and remove collar from shaft (76), then remove roller assembly (58) and shaft (76).

4-67. Trolley Drive Roller

Inspect trolley drive roller (122, fig. 4-29) for pits, gouges, and flat spots.

4-68. Clutch Assembly Main Drive

a. Removal. Refer to figure 4-29 items (1) thru (50) and disassemble clutch assembly.

b. Inspection.

(1) Inspect bushings (7), (13), (28), (34) and (39) for wear.

(2) Inspect bearing (2) for evidence of pitted or scored condition.

c. Repair. Replace defective parts.

d. Installation. Install clutch assembly in reverse order of removal.

4-69. Paper Pile Up Assembly

a. Inspect. Manually raise actuators (176, fig. 4-29) while press is operating. At this time the power source should cut off.

b. Removal.

(1) Remove setscrew (172) from cam (173) and remove cam.

(2) Remove setscrews (172) from collars (175) and drive out pins (174).

(3) Remove setscrews (172) from actuators (176) and pull shaft from press.

c. Installation. Install in reverse order of removal.

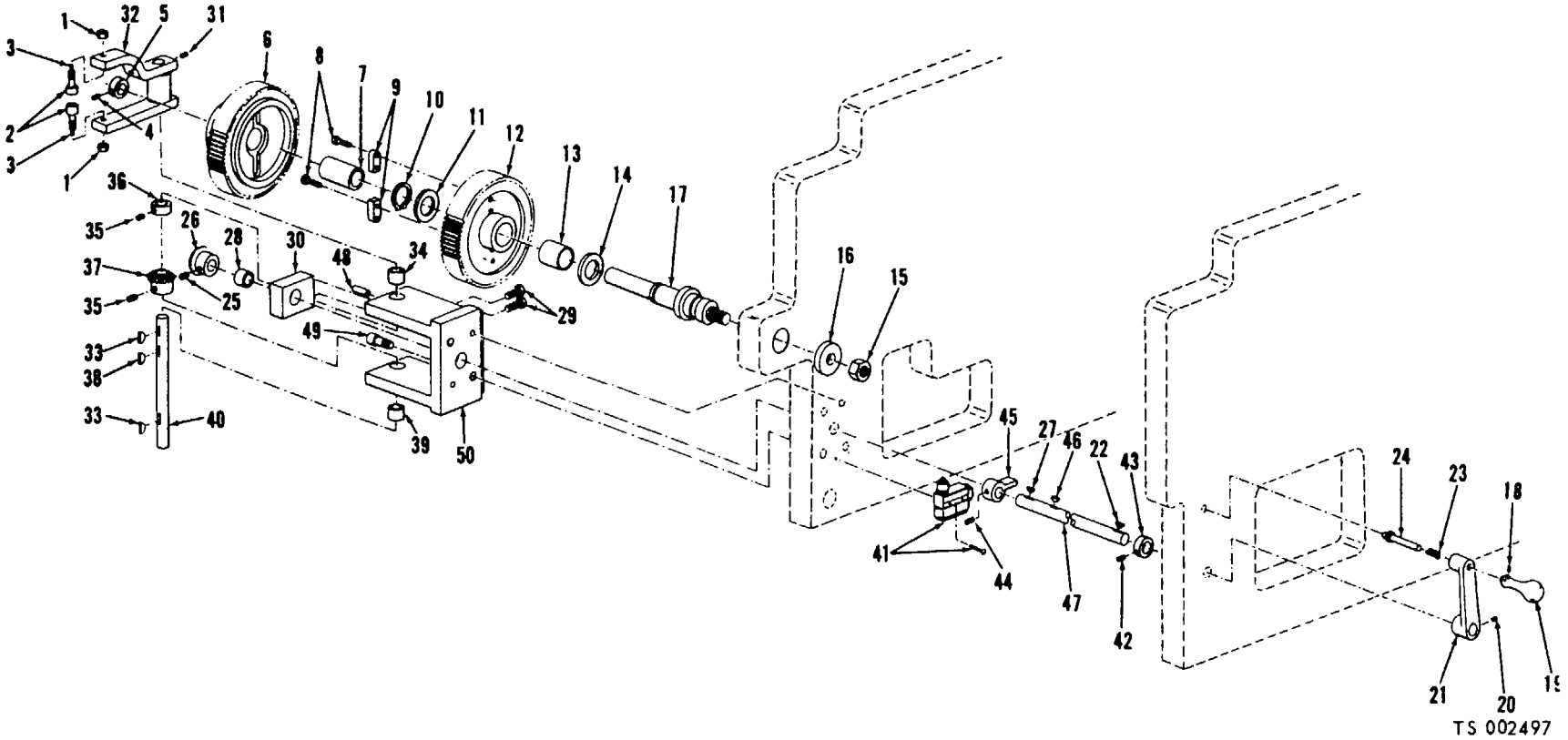
4-70. Paper Guide Assembly

Items (229 thru 236, fig. 4-29) for nicks, burrs and rough spots.

4-71. Lead Roller Assembly

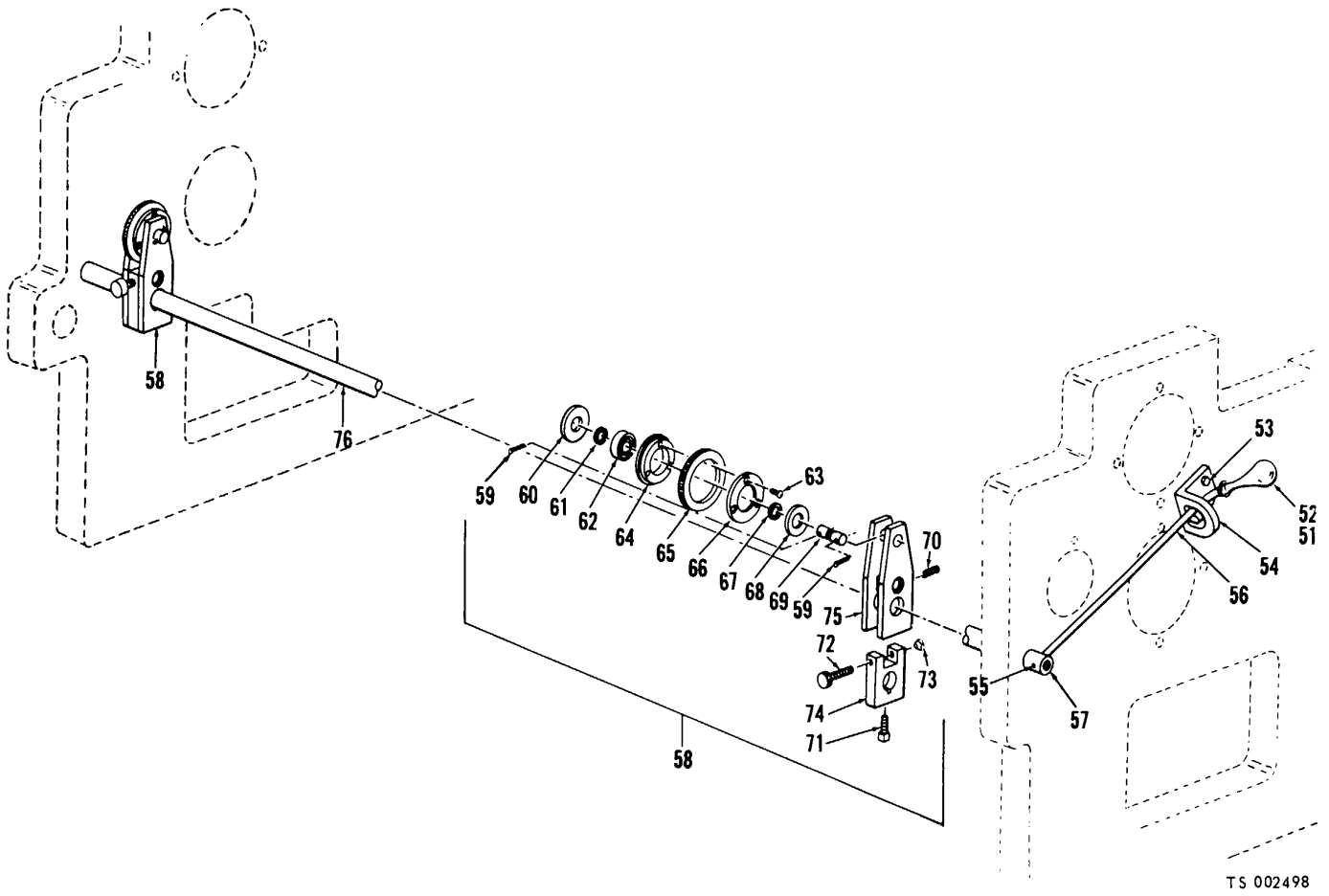
a. Inspect roller assemblies (101, 106, fig. 4-29) for wear.

b. Inspect the grating material on roller assemblies (101, 106, fig. 4-29) for damage.



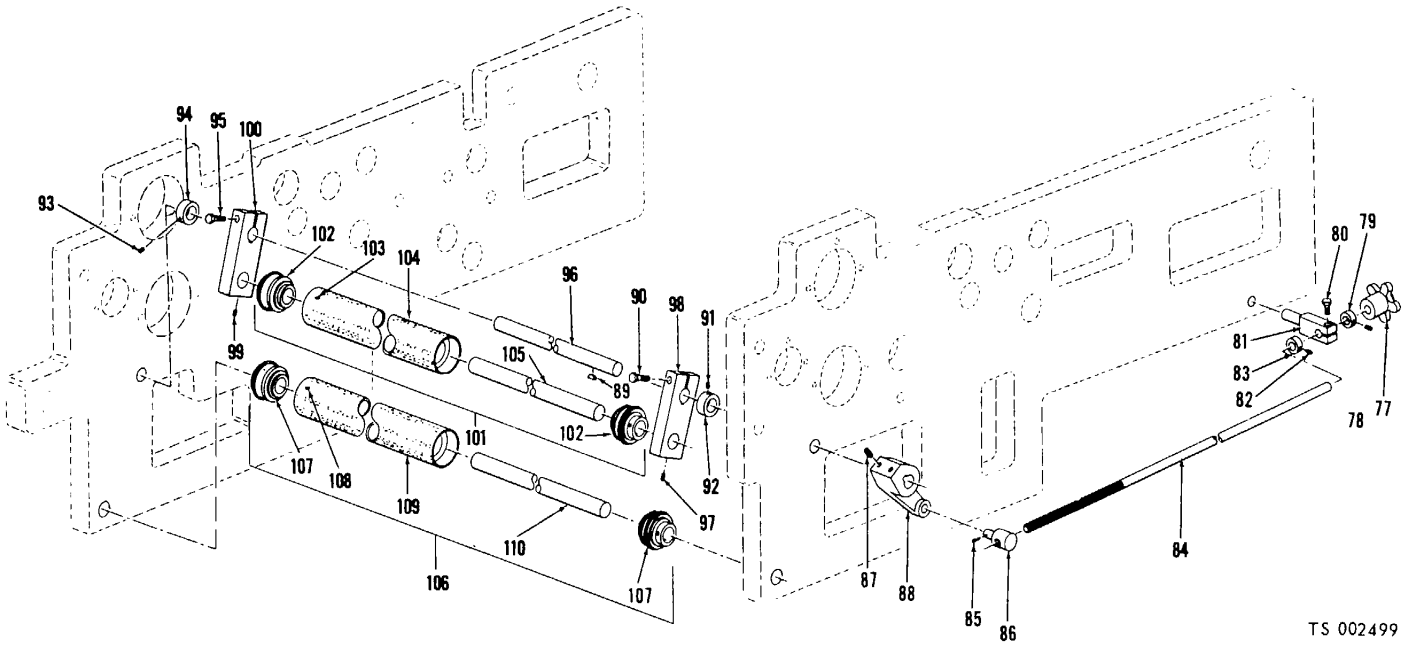
1. Nut
2. Bearing
3. Fitting
4. Setscrew
5. Collar
6. Gear
7. Bushing
8. Screw
9. Key
10. Ring
11. Washer
12. Gear
13. Bushing
14. Washer
15. Nut
16. Washer
17. Stud
18. Setscrew
19. Handle
20. Setscrew
21. Lever
22. Key
23. Spring
24. Plunger
25. Setscrew
26. Gear
27. Key
28. Bushing
29. Screw
30. Bracket
31. Setscrew
32. Lever Assembly
33. Key
34. Bushing
35. Setscrew
36. Collar
37. Gear
38. Key
39. Bushing
40. Shaft
41. Switch
42. Setscrew
43. Collar
44. Setscrew
45. Trip clutch assembly
46. Key
47. Shaft
48. Pin
49. Screw
50. Bracket Assy

Figure 4-29. Trolley, paper guide and nipping roller alignment assembly (Sheet 1 of 7).



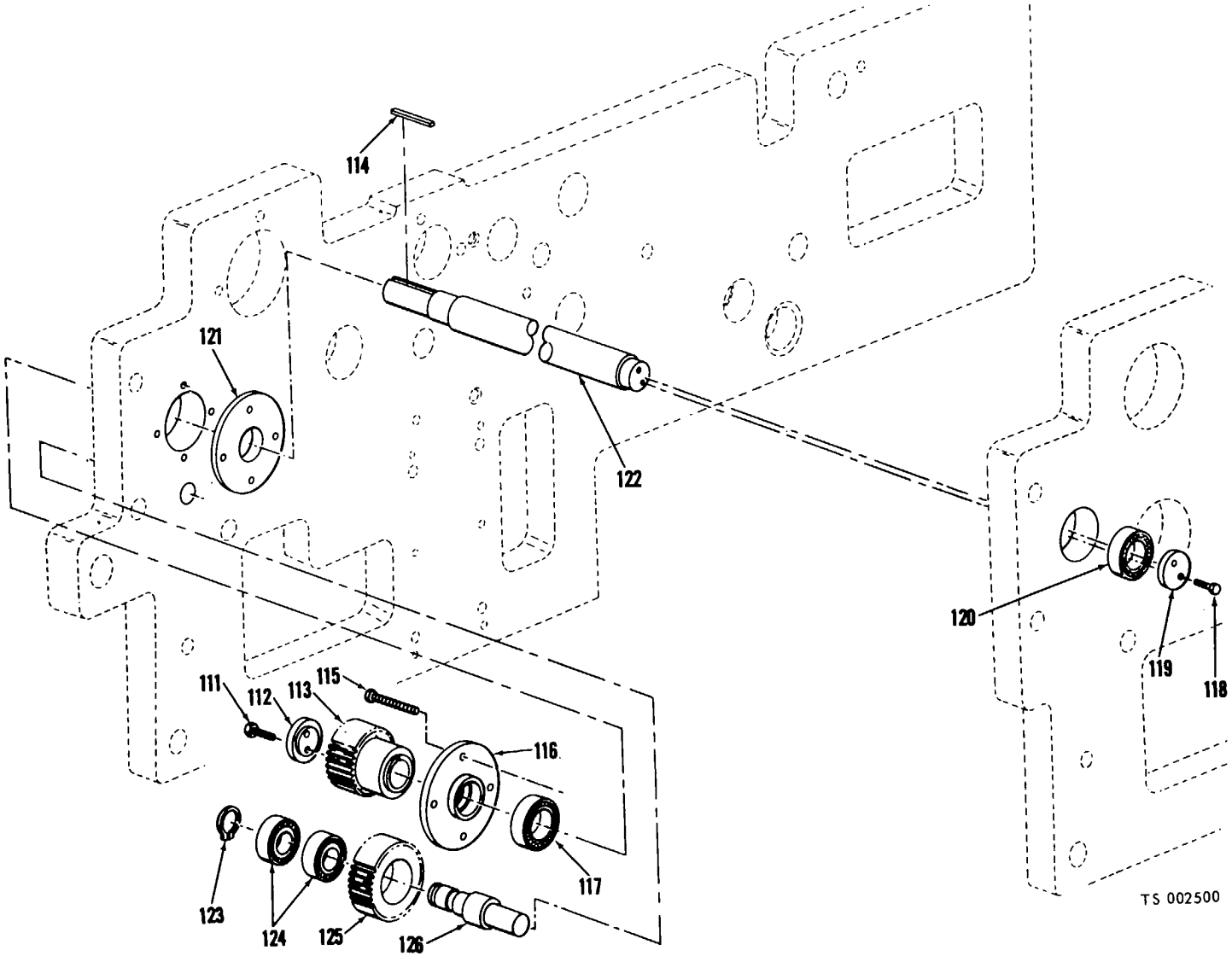
51. Setscrew
52. Handle
53. Screw
54. Bracket
55. Setscrew
56. Lever
57. Collar
58. Trolley Roller assy
59. Pin
60. Washer
61. Spacer
62. Bearing
63. Screw
64. Plate
65. Tire
66. Hub
67. Spacer
68. Washer
69. Stud
70. Spring
71. Setscrew
72. Screw
73. Plug
74. Block
75. Side plate assy
76. Shaft

Figure 4-29. Trolley, paper guide and nipping roller alignment assembly (Sheet 2 of 7).



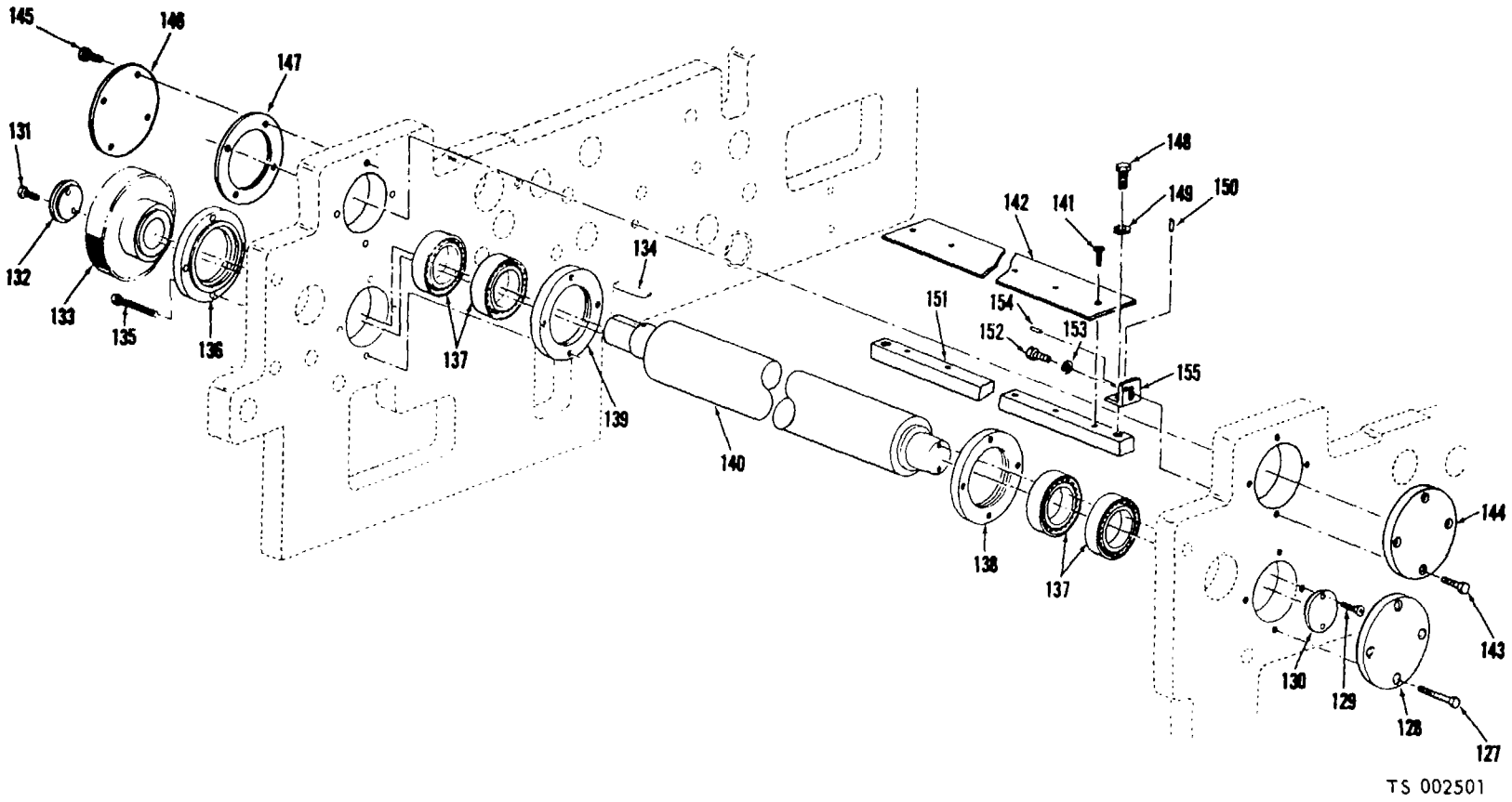
77. Knob
78. Setscrew
79. Collar
80. Screw
81. Poppet
82. Setscrew
83. Collar
84. Rod
85. Pin
86. Poppet
87. Setscrew
88. Lever
89. Key
90. Setscrew
91. Setscrew
92. Collar
93. Setscrew
94. Collar
95. Setscrew
96. Shaft
97. Setscrew
98. Lever
99. Setscrew
100. Lever
101. Lead Roller Assy
102. Bearing
103. Screw
104. Cover
105. Shaft
106. Lead Roller Assy
107. Bearing
108. Screw
109. Cover
110. Shaft

Figure 4-29. Trolley, paper guide and nipping roller alignment assembly (Sheet 3 of 7).



111. Screw
112. Washer
113. Gear
114. Key
115. Screw
116. Cap
117. Bearing
118. Screw
119. Washer
120. Bearing
121. Cap
122. Trolley Roller
123. Ring
124. Bearing
125. Gear
126. Stud

Figure 4-29. Trolley, paper guide and nipping roller alignment assembly (Sheet 4 of 7).



127. Screw
128. Cap
129. Screw
130. Washer
131. Screw
132. Washer
133. Gear
134. Key
135. Screw
136. Cap
137. Bearing
138. Cap
139. Cap
140. Shaft
141. Screw
142. Plate
143. Screw
144. Cap
145. Screw
146. Plate cover
147. Gasket
148. Screw
149. Lockwasher
150. Pin
151. Plate
152. Screw
153. Lockwasher
154. Pin
155. Bar

Figure 4-29. Trolley, paper guide and nipping roller alignment assembly (Sheet 5 of 7).

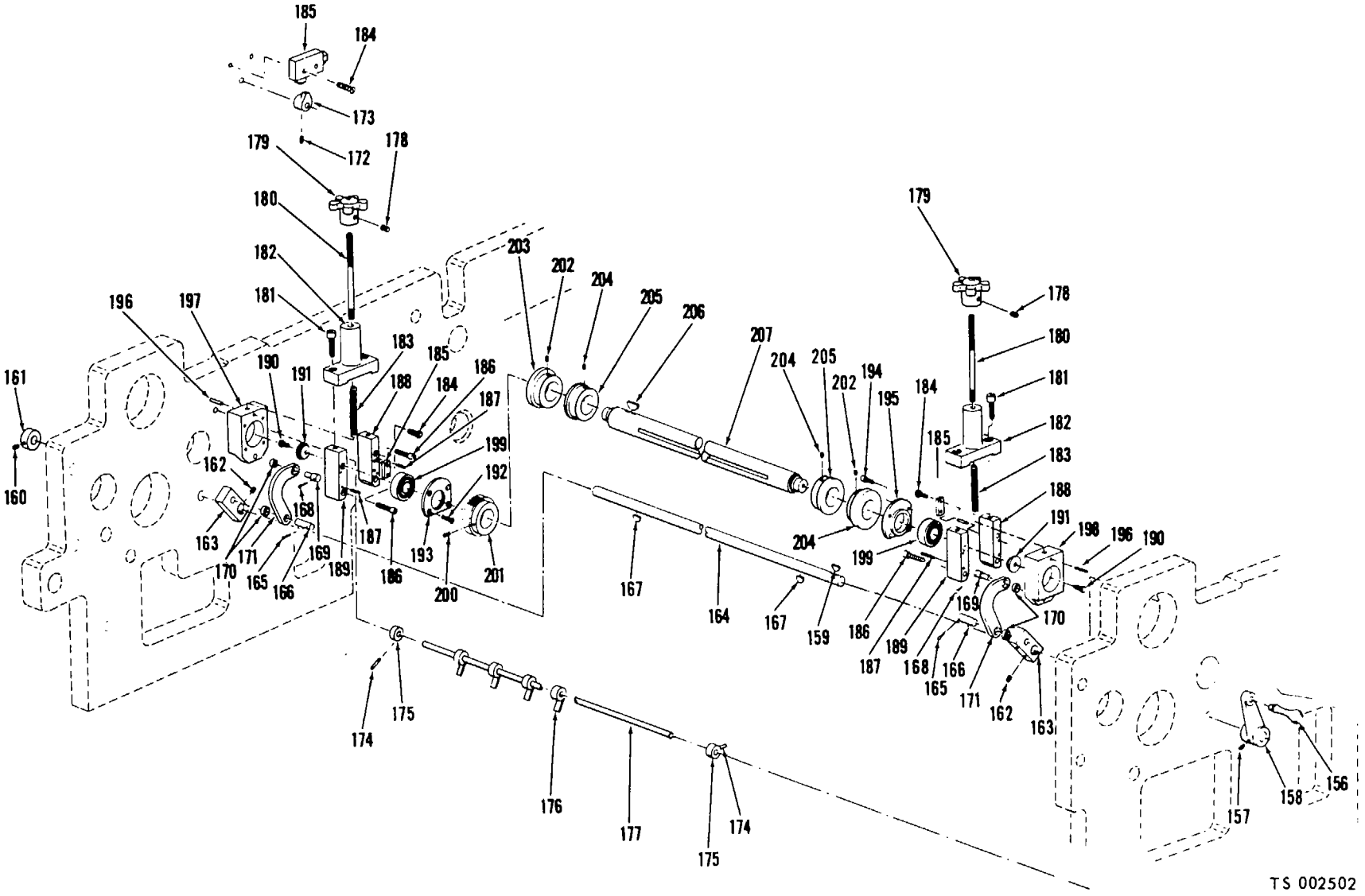
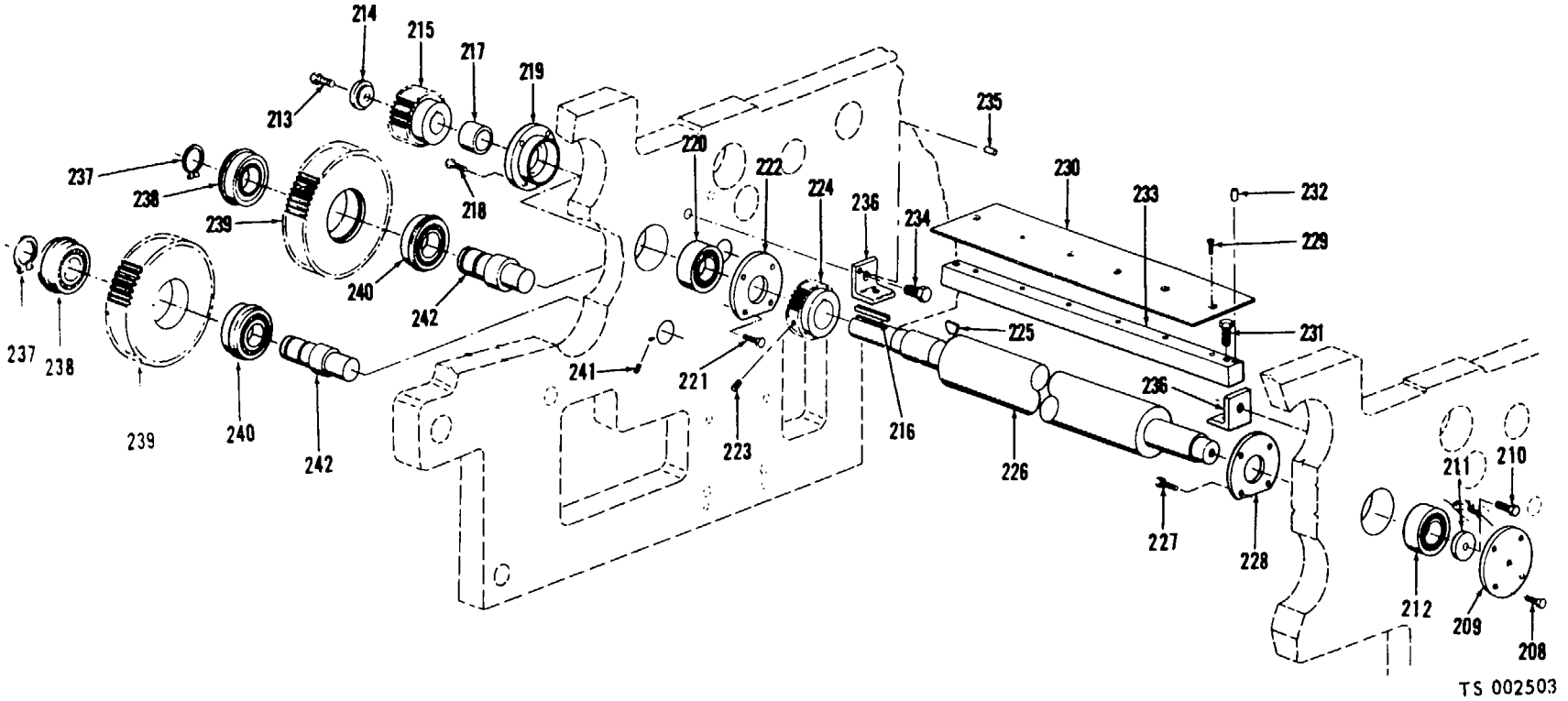


Figure 4-29. Trolley, paper guide and nipping roller alignment assembly (Sheet 6 of 7).

156. Hardle
157. Setscrew
158. Lever
159. Key
160. Setscrew
161. Collar
162. Setscrew
163. Lever
164. Shaft
165. Pin
166. Stud
167. Key
168. Pin
169. Stud
170. Bushing
171. Link
172. Setscrew
173. Cam
174. Pin
175. Collar
176. Actuator
177. Shaft
178. Setscrew
179. Knob
180. Rod
181. Screw
182. Bracket
183. Spring
184. Screw
186. Switch
186. Screw
187. Pin
188. Guide
189. Guide
190. Screw
191. Washer
192. Screw
193. Cap
194. Screw
195. Cap
196. Pi
197. Block
198. Block
199. Bearing
200. Setscrew
201. Gear
202. Setscrew
203. Roller
204. Setscrew
205. Guide
206. Key
207. Shaft



208. Screw
209. Cap
210. Screw
211. Washer
212. Bearing
213. Screw
214. Washer
215. Gear
216. Key
217. Spacer
218. Screw
219. Cap
220. Bearing
221. Screw
222. Cap
223. Setscrew
224. Gear
225. Key
226. Roller
227. Screw
228. Cap
229. Screw
230. Guide
231. Screw
232. Pin
233. Support
234. Screw
235. Pin
236. Support
237. Ring
238. Bearing
239. Gear
240. Bearing
241. Setscrew
242. Stud

Figure 4-29. Trolley, paper guide and nipping roller alignment assembly (Sheet 7 of 7).

4-72. Slow Down Sheeter Alignment Assembly

a. Inspect gears (29, 61, fig. 4-30) for broken or chipped teeth.

b. Inspect all metal parts for bends, cracks, or warping.

4-73. Counter Assembly

a. Removal.

(1) Remove four screws (1, fig. 4-30).

(2) Loosen setscrew (2) and remove clutch (12).

b. Replace defective counter assembly.

4-74. Delivery Drive Tape Assembly

a. Inspect belts (126, fig. 4 30) for fraying, wear, cracks, or other wear.

b. Inspect pulley (91, 114, 136, 152, 180, fig. 4-30) for breaks, cracks, or other damage.

c. Inspect all metal parts for bends, cracks, or warping.

4-75. Belts, HI and LO Speed

a. Inspect the belts for frayed edges, tears, cuts, and other indications of deterioration.

b. Clean the belts with liquid detergent and a stiff brush.

c. Adjust belts by adjusting pulleys (6, fig. 1-13).

d. Belt Replacement. Replace any torn or broken belts on the delivery unit as follows (fig. 4-31).

(1) If the belt to be replaced is not in press, thread a steel tape measure around the pulleys of the press and measure the shortest usable length.

NOTE

If old belt is available, measure the length and add5/8 inch, (1.5875 CM) then proceed as follows:

(2) Place end of belt in grinder and bevel the end.

(3) From point A (fig. 4-31a) measure the length determined in step (1) and cut off square.

(4) Bevel this end on opposite surface. Belt should look as shown in figure 4-31 b.

(5) Trim off ragged ground ends on the lap.

(6) Preheat bonding press approximately 15 minutes.

(7) Install belt in position around pulley and shaft on delivery unit.

(8) Place one end of belt in bonding press, beveled side up as shown in figure 4-31c.

(9) Lock hold down clamp and leave other end free.

(10) Place paper under clamp.

(11) With clean rag moistened with alcohol, or any such grease solvent, wipe around ends clean.

CAUTION

After cleaning, do not touch ends or allow any dirt or grease to get on them.

(12) After ends have dried, lightly wet both with Texalon cement. Wet free end first.

(13) Place free and in bonding press and lock other hold down clamp. Carefully line up both ends.

(14) With laps straight, place paper over the lap and close and tighten bonding press.

(15) Wait 7 minutes, then remove side clamp and loosen pressure screw. Carefully remove soft lap.

(16) Allow to cool and trim edges. Belt is now ready to run.

4-76. Pile Lowering Mechanism.

a. Inspect sprockets (297, 315, 321, fig. 4-30) for broken or chipped teeth.

b. Inspect gears (313, and 319, fig. 4-30) for broken or chipped teeth.

4-77. Pawl and Ratchet, Pile Lowering

a. Removal (fig. 4-30).

(1) Refer to paragraph 4-20 and remove crank link guard assembly (4, fig. 4-8).

(2) Remove cotter pins (203 and 206), washers (205 and 208), and remove link (210, fig. 4-30)

(3) Drive a pin (267) from shaft (274) loosen setscrew (230) and remove collar (231).

(4) Pull level (241) from ratchet (246).

(5) Drive pin (243) from stud pawl (240), remove screw (242) from pawl (245) and remove pawl plate (244).

(6) Pull ratchet from shaft (274).

b. Replace defective parts.

c. Installation. Install pawl and ratchet in reverse order of removal.

4-78. Paper Stop Assembly

a. Removal.

(1) Place pin wrench in hole of collar (331, fig. 4-30), holding firmly. Loosen setscrew (324) and slowly rotate collar in direction of spring pressure with pin until all pressure is released.

(2) Remove setscrew (324) and remove handle (325, fig. 4-30).

(3) Remove setscrews (326) and remove collars (327).

(4) Push shaft (336) in and remove spring (330)

(5) Remove pin (329) and remove retainer (331) .

(6) Remove setscrews (334) and remove brackets (335).

b. Replace defective parts.
c. *Installation.* Install paper stop assembly in reverse order of removal.

KEY to figure 4-30 (Sheet 1):
1. Screw
2. Setscrew
3. Counter
3A. Bar
4. Bar
5. Screw
6. Spring
7. Pin
8. Bar
9. Screw
10. Pin
11. Bracket
12. Clutch
13. Screw
14. Roller
15. Screw
16. Cap
17. Bearing
18. Bearing
19. Screw
20. Pin
21. Washer
22. Ring
23. Pin
24. Bushing
25. Bushing
26. Screw
27. Hub
28. Key
29. Gear
30. Spacer
31. Screw
32. Cap
33. Bearing
34. Bearing
35. Cap
36. Cap
37. Screw
38. Cross Brace
39. Setscrew
40. Setscrew
41. Cutter
42. Knife
43. Screw
44. Washer
45. Knife
46. Setscrew
47. Poppet
48. Screw
49. Screw
50. Bracket
51. Screw
52. Pin
53. Support
54. Setscrew
55. Collar
56. Washer
57. Screw
58. Pin
59. Gear
60. Bushing
61. Gear
62. Washer
63. Stud

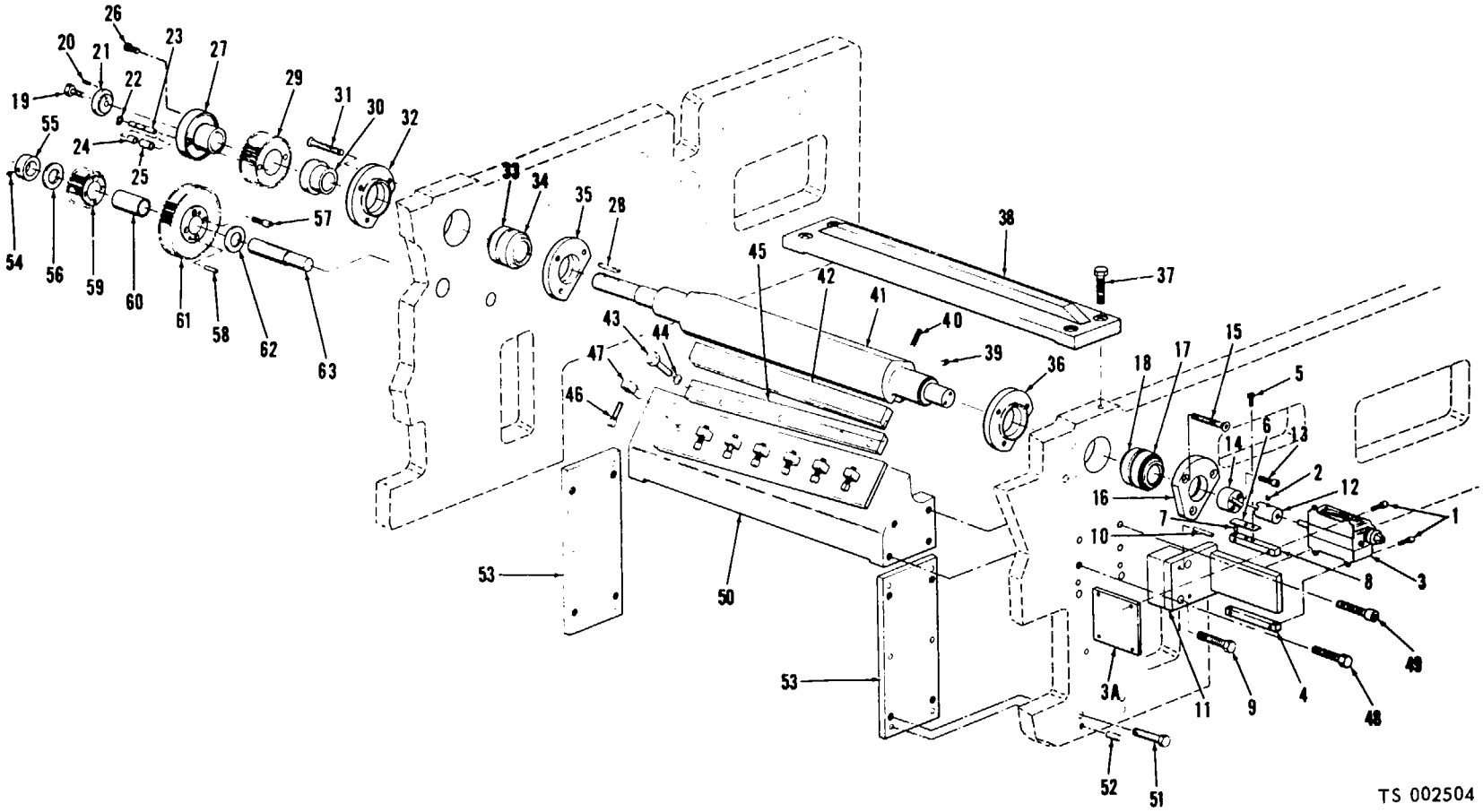
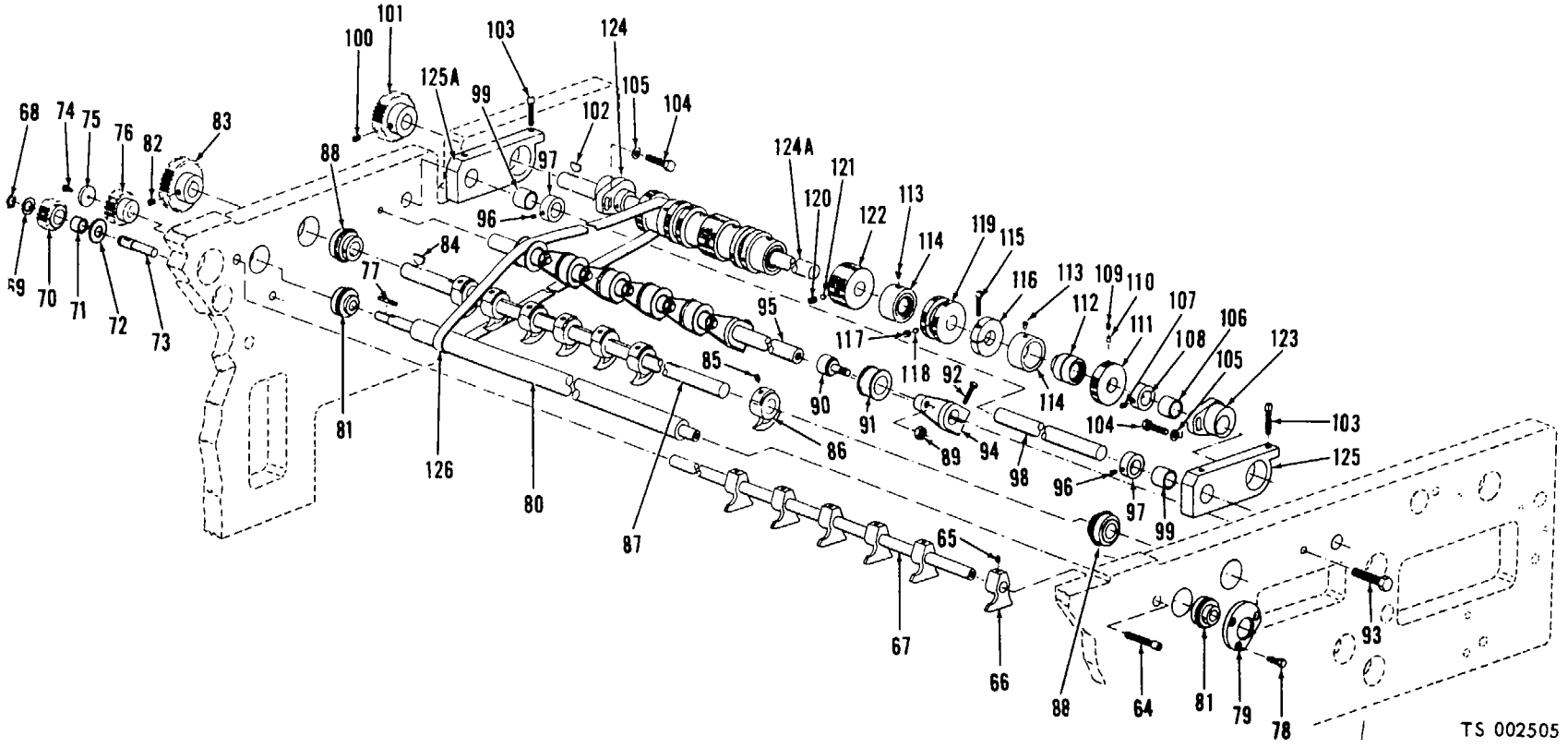
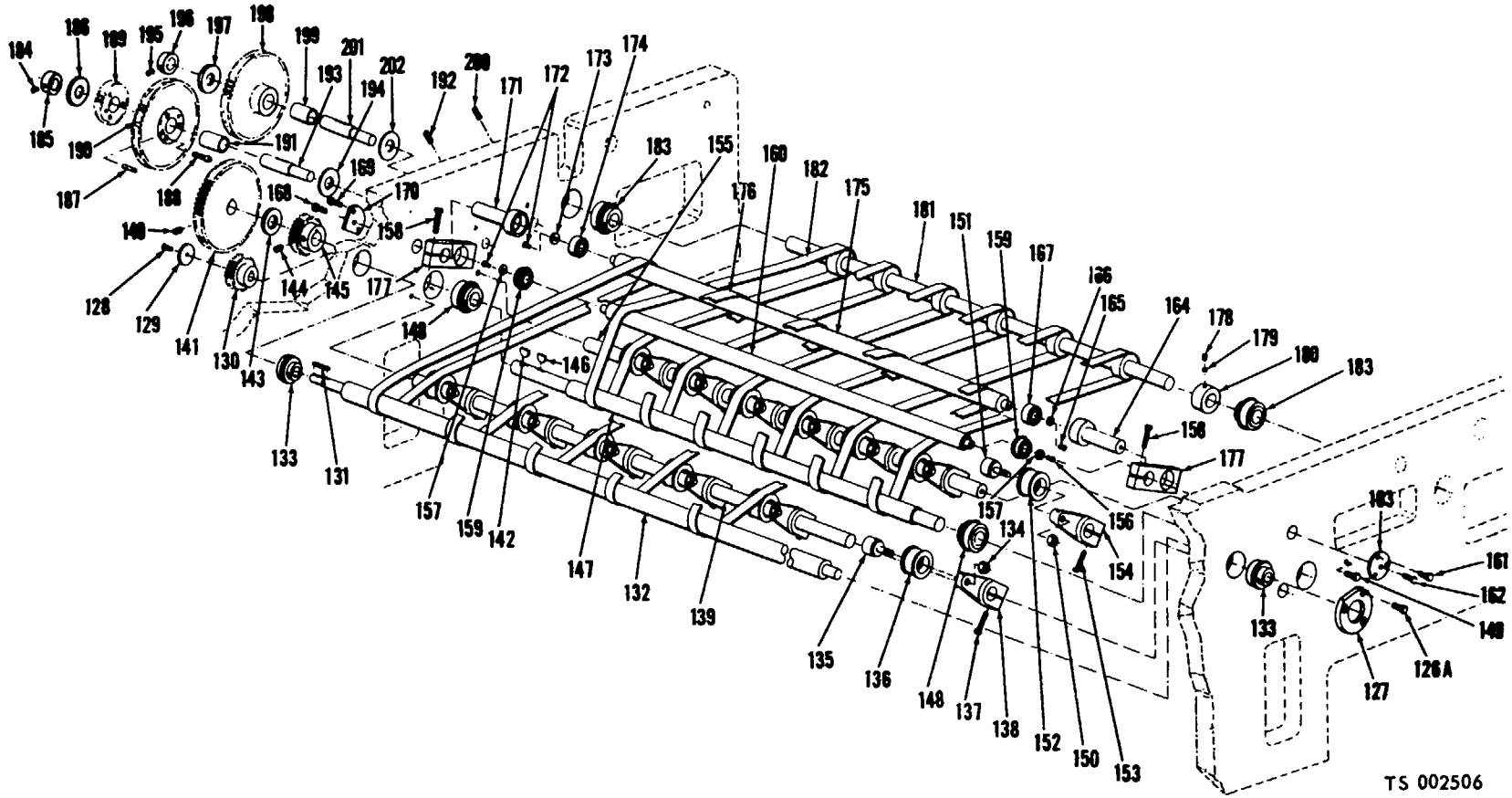


Figure 4-30. Slowdown sheeter alignment assembly (Sheet 1 of 7).



64. Screw
65. Setscrew
66. Guide
67. Shaft
68. Ring
69. Washer
70. Gear
71. Bushing
72. Washer
73. Stud
74. Screw
75. Washer
76. Gear
77. Key
78. Screw
79. Retainer
80. Shaft
81. Bearing
82. Setscrew
83. Gear
84. Key
85. Setscrew
86. Kicker
87. Shaft
88. Bearing
89. Nut
90. Bearing
91. Pulley
92. Screw
93. Screw
94. Lever
95. Shaft
96. Setscrew
97. Collar
98. Shaft
99. Bushing
100. Setscrew
101. Gear
102. Key
103. Setscrew
104. Screw
105. Washer
106. Bushing
107. Setscrew
108. Collar
109. Setscrew
110. Plug
111. Roller
112. Bearing
113. Oil cup assy
114. Pulley
115. Screw
116. Spacer
117. Setscrew
118. Plug
119. Roller
120. Setscrew
121. Plug
122. Roller
123. Lever
124. Lever
124A. Shaft
125. Lever
126. Belt

Figure 4-30. Slowdown sheeter alignment assembly (Sheet 2 of 7).



126A. Screw
127. Retainer
128. Screw
129. Washer
130. Gear
131. Key
132. Shaft
133. Bearing
134. Nut
135. Bearing
136. Pulley
137. Screw
138. Lever
139. Shaft
140. Setscrew
141. Gear
142. Key
143. Washer
144. Setscrew
145. Gear
146. Key
147. Shaft
148. Bearing
149. Screw
150. Nut
151. Bearing
152. Pulley
153. Screw
154. Lever
155. Shaft
156. Screw
157. Washer
158. Screw
159. Bearing
160. Shaft
161. Screw
162. Screw
163. Retainer
164. Holder
165. Screw
166. Washer
167. Bearing
168. Screw
169. Screw
170. Retainer
171. Holder
172. Screw
173. Washer
174. Bearing
175. Shaft
176. Belt
177. Lever
178. Setscrew
179. Plug
180. Pulley
181. Shaft
182. Belt
183. Bearing
184. Setscrew
185. Collar
186. Washer
187. Pin
188. Screw
189. Gear
190. Gear
191. Bushing
192. Setscrew
193. Stud
194. Washer
195. Setscrew
196. Collar
197. Washer
198. Gear
199. Bushing
200. Setscrew
201. Stud
202. Washer

Figure 4-30. Slowdown sheeter alignment assembly (Sheet 3 of 7).

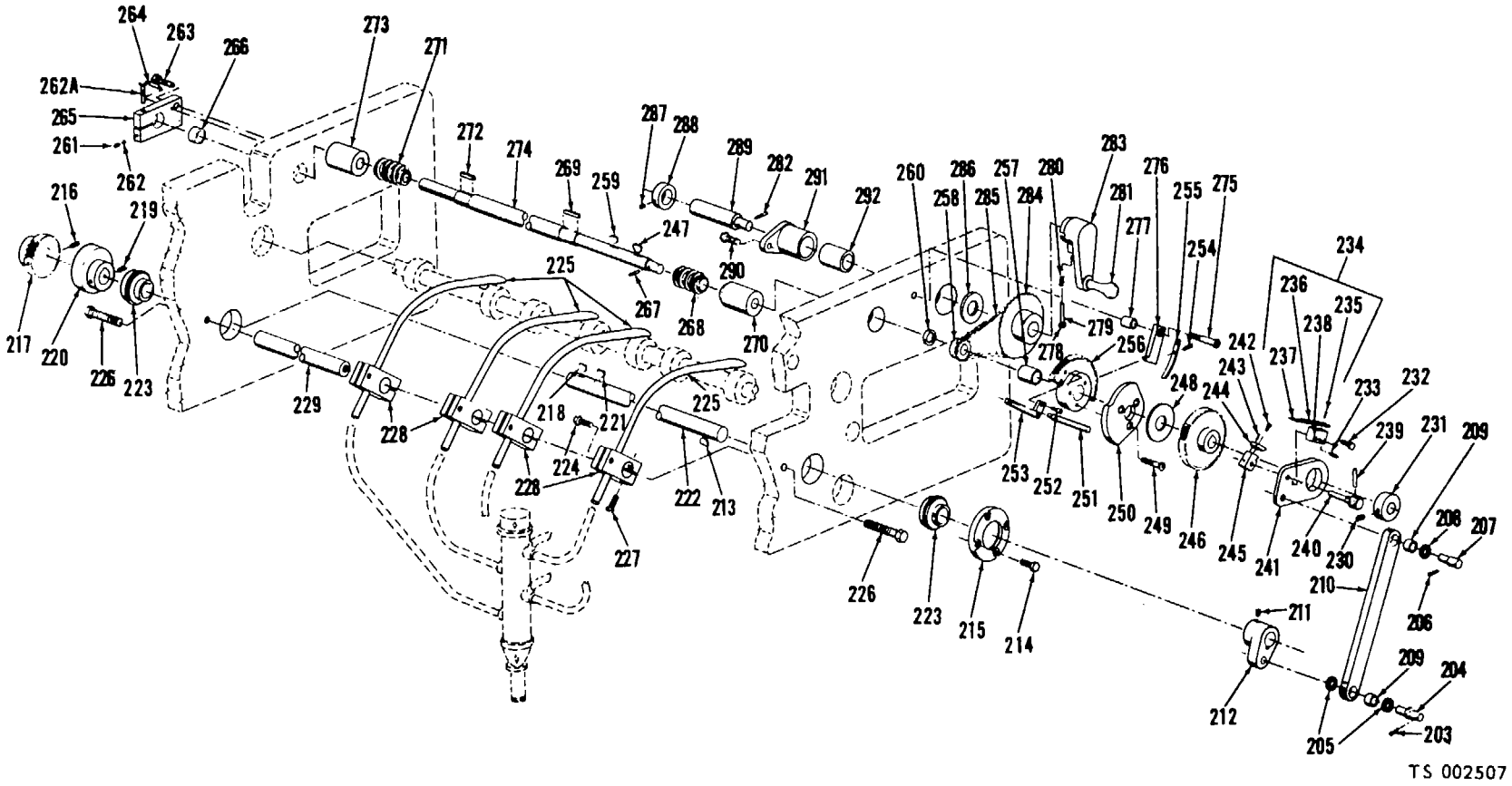
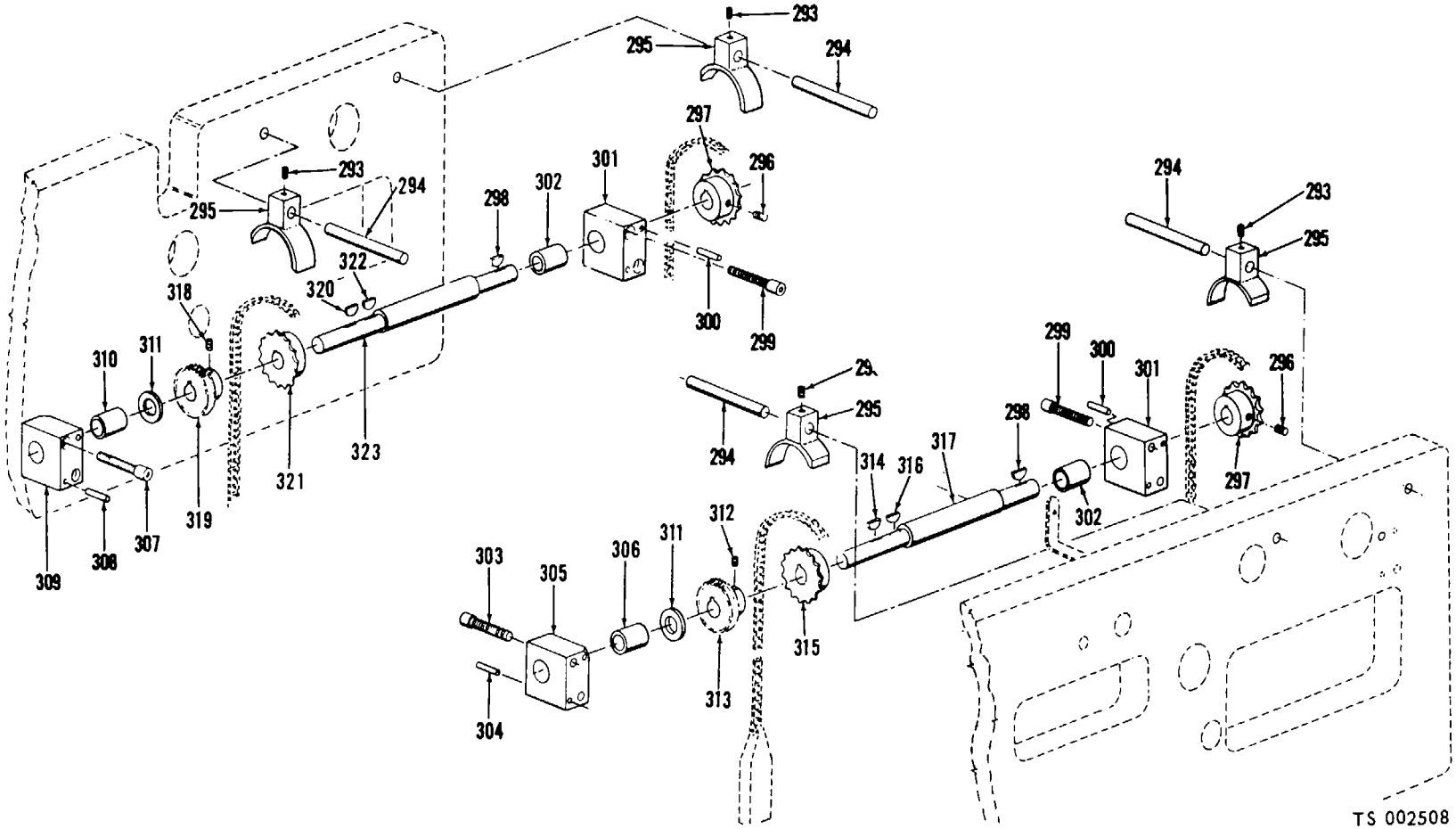


Figure 4-30. Slowdown sheeter alignment assembly (Sheet 4 of 7).

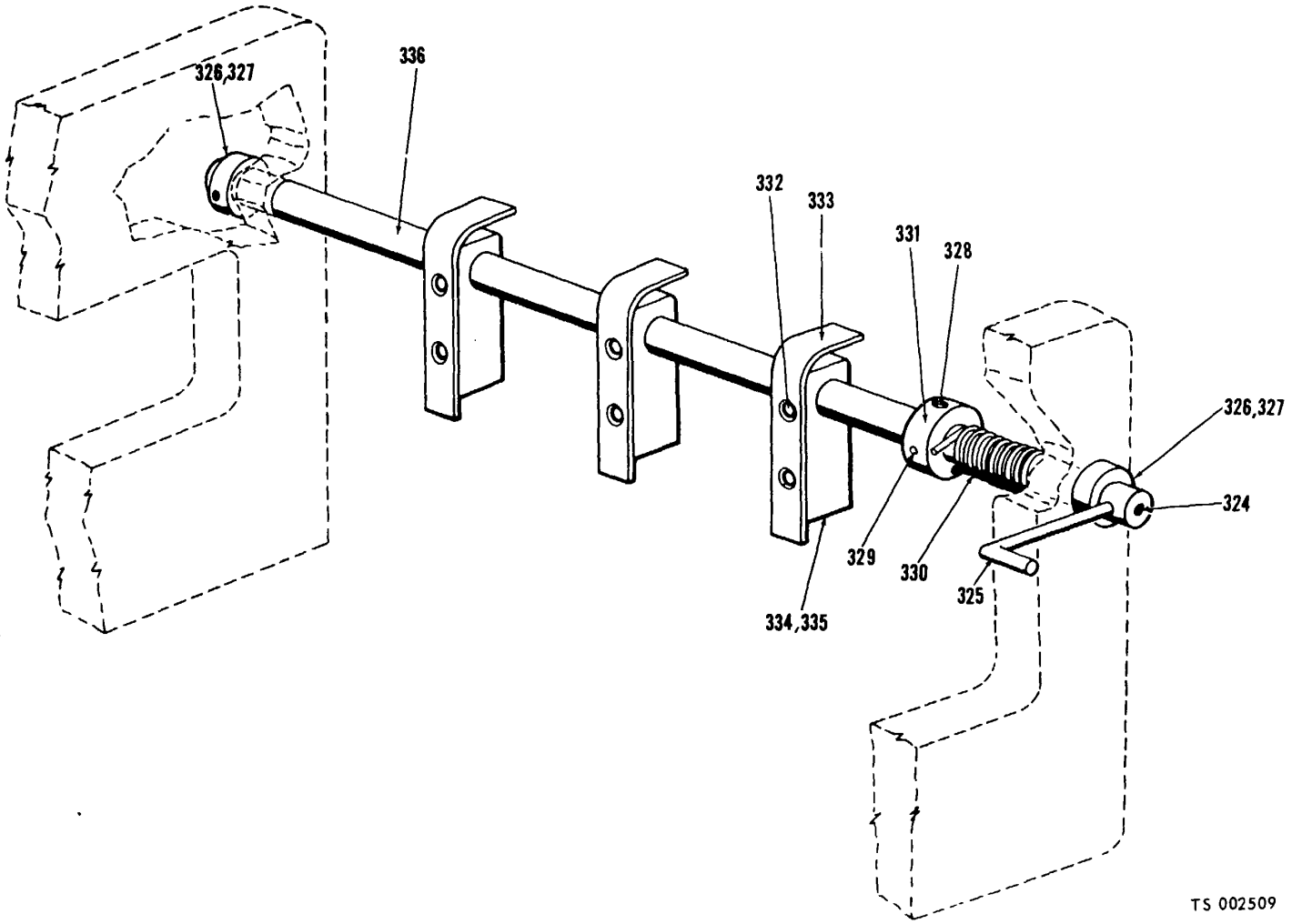
KEY to figure 4-30 (Sheet 4):

203. Pin
204. Stud
205. Washer
206. Pin
207. Stud
208. Washer
209. Bearing
2 10. Link
211. Setscrew
212. Lever
213. Key
214. Screw
215. Retainer
216. Setscrew
217. Gear
218. Key
219. Setscrew
220. Cam 265
221. Key 266
222. Shaft
223. Bearing
224. Screw
225. Tube
226. Screw
227. Screw
228. Bracket
229. Shaft
230. Setscrew
231. Collar
232. Screw
233. Pin
234. Pawl Adjustment Rod Spring and Block Assy
235. Screw
236. Spring
237. Spring
238. Block
239. Stud
240. Stud
241. Lever
242. Screw
243. Pin
244. Plate
245. Pawl
246. Ratchet
247. Key
248. Washer
249. Screw
250. Cam
251. Handle
252. Screw
253. Arm
254. Screw
255. Spring
256. Dial
257. Bushing
258. Sprocket
259. Key
260. Spacer
261. Setscrew
262. Plug
263. Screw
264. Pin
265. Tightener
266. Bushing
267. Pin
268. Worm
269. Key
270. Bushing
271. Worm
272. Key
273. Bushing
274. Shaft
275. Screw
276. Pawl
277. Spacer
278. Collar
279. Pin
280. Spring
281. Handle
282. Pin
283. Lever
284. Sprocket
285. Chain
286. Collar
287. Setscrew
288. Collar
289. Shaft
290. Screw
291. Box
292.Bushing



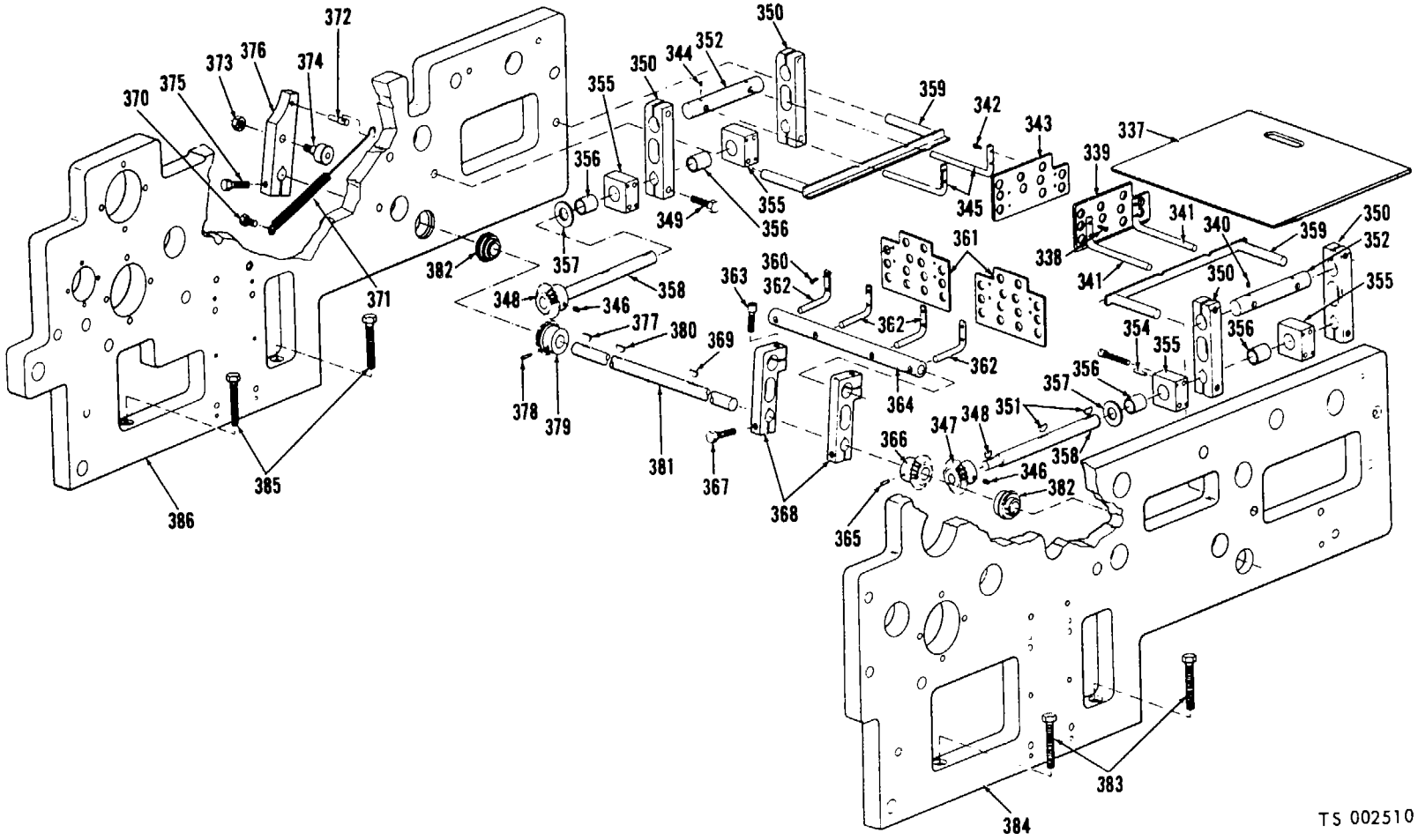
293. Setscrew
294. Stud
295. Pile
296. Setscrew
297. Sprocket
298. Key
299. Screw
300. Pin
301. Block
302. Bushing
303. Screw
304. Pin
305. Block
306. Bushing
307. Screw
308. Pin
309. Block
310. Bushing
311. Washer
312. Setscrew
313. Gear
314. Key
315. Sprocket
316. Key
317. Shaft
318. Setscrew
319. Gear
320. Key
321. Sprocket
322. Key
323. Shaft

Figure 4-30. Slowdown sheeter alignment assembly (Sheet 5 of 7).



324. Setscrew
325. Handle
326. Setscrew
327. Collar
328. Adjusting hole
329. Spring
330. Pin
331. Retainer
332. Screw
333. Plate
334. Setscrew
335. Bracket
336. Shaft

Figure 4-30. Slowdown sheeter alignment assembly (Sheet 6 of 7).



337. Auxiliary Pile Board Assy
338. Screw
339. Plate
340. Setscrew
341. Bar
342. Screw
343. Plate
344. Setscrew
345. Bar
346. Setscrew
347. Miter
348. Key
349. Screw
350. Lever
351. Key
352. Shaft
353. Screw
354. Pin
355. Block
356. Bushing
357. Washer
358. Shaft
359. Auxiliary Board Support
360. Screw
361. Plate
362. Bar
363. Screw
364. Shaft
365. Pin
366. Miter
367. Screw
368. Lever
369. Key
370. Screw
371. Spring
372. Stud
373. Nut
374. Bearing
375. Screw
376. Lever
377. Key
378. Pin
379. Miter
380. Key
381. Shaft
382. Bearing
383. Screw
384. Frame
385. Screw
386. Frame

Figure 4-30. Slowdown sheeter alignment assembly (Sheet 7 of 7).

4-79. Delivery, Board Assembly

a. Removal. Refer to figure 4-32 and remove Delivery Board assembly.

b. Repair or replace defective parts.

c. Install in reverse order of removal.

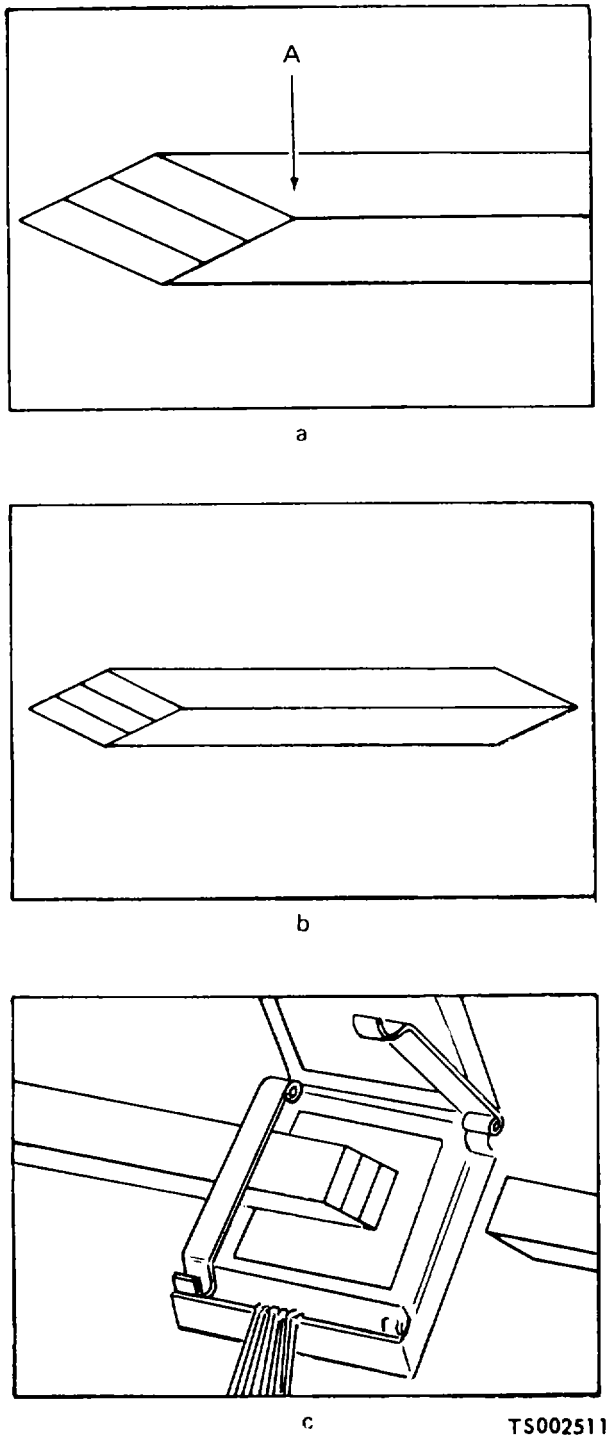


Figure 4-31. Replacement of delivery unit belts.

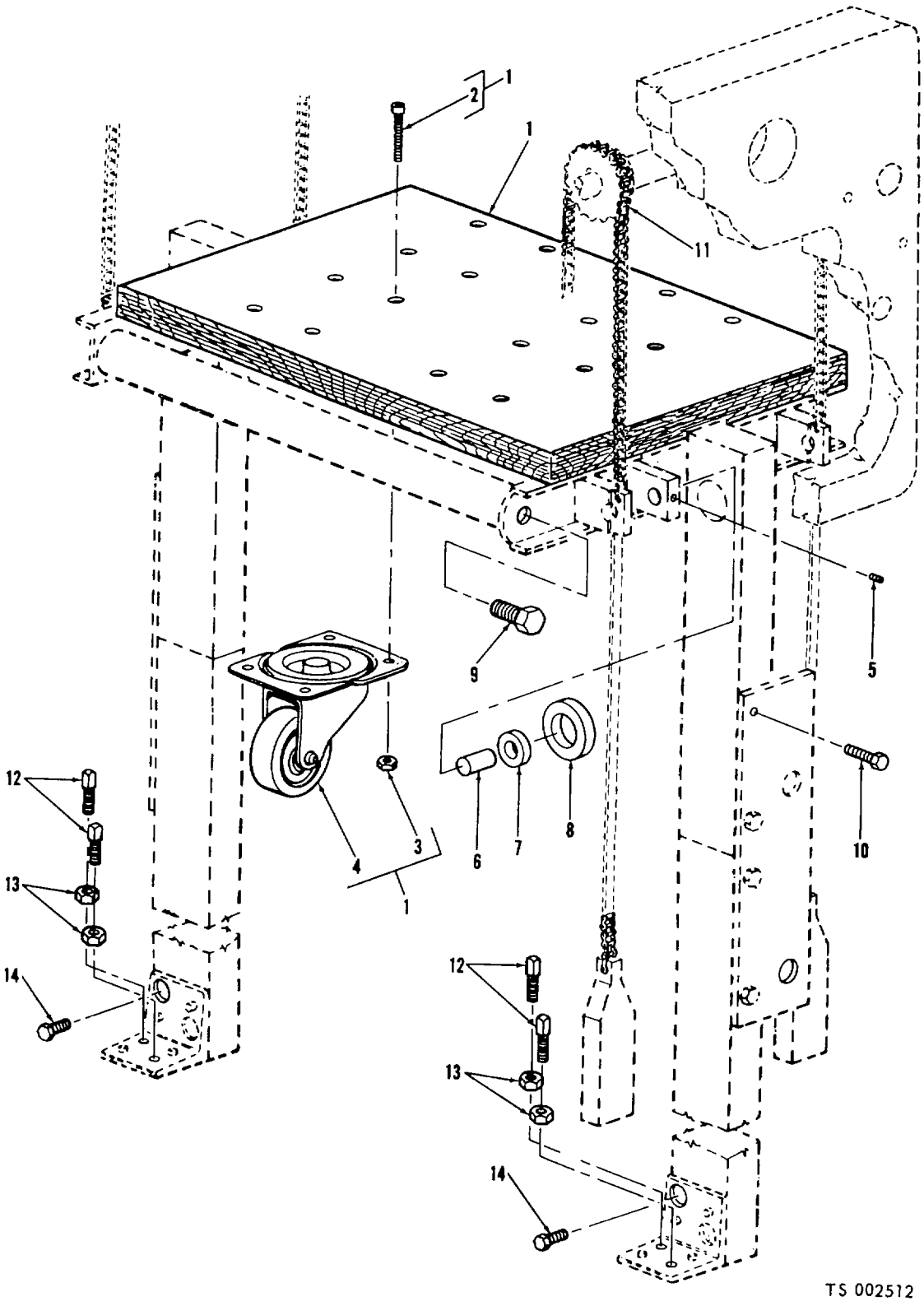


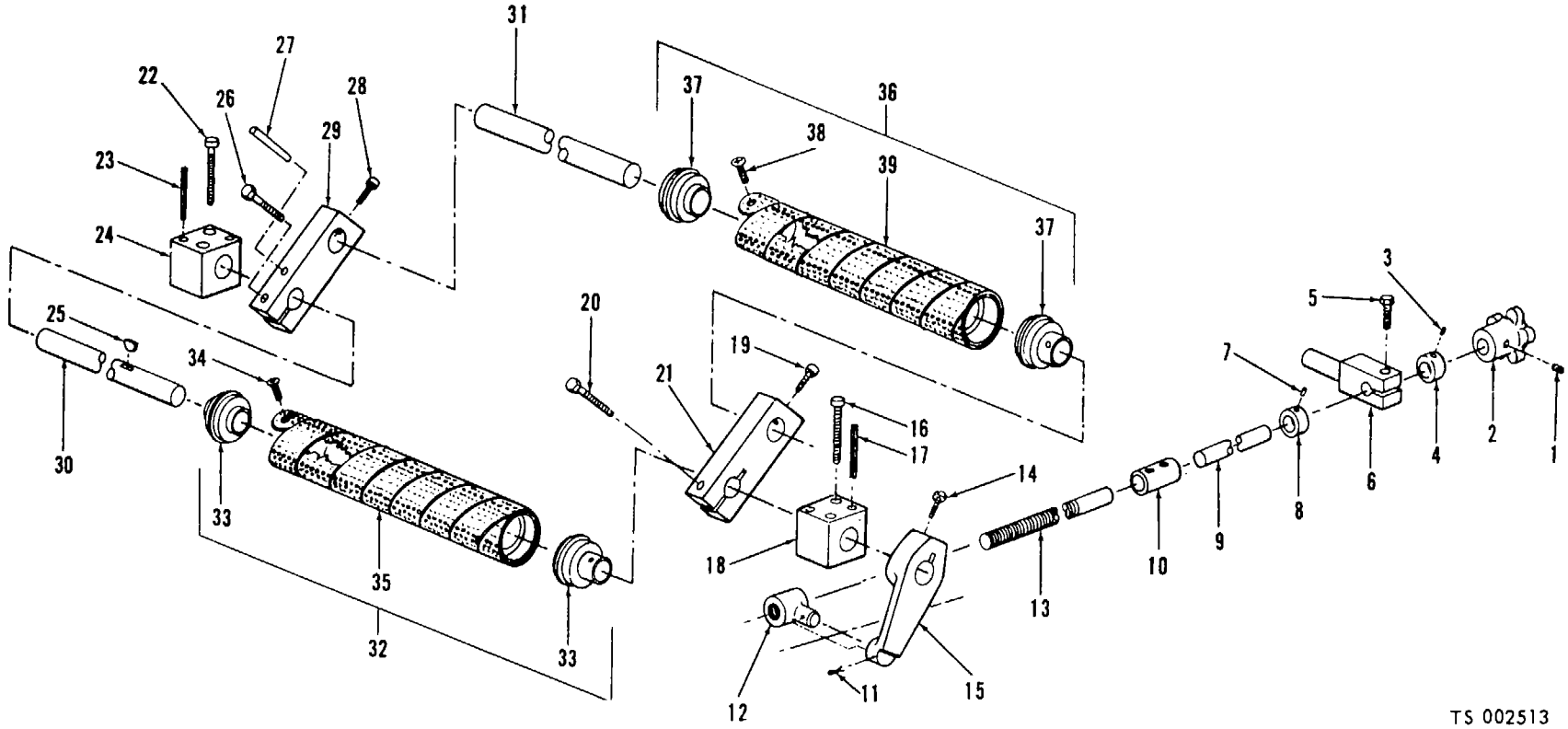
Figure 4-32. Delivery board assembly.

KEY to figure 4-32:

1. Delivery Board
2. Screw
3. Nut
4. Caster
5. Setscrew
6. Pin
7. Roll
8. Bushing
9. Screw
10. Screw
11. Chain
12. Setscrew
13. Nut
14. Screw

Section XIII. MAINTENANCE OF COMPENSATOR ROLLERS AND LEVERS

Inspect lead roller assemblies (32 and 36, fig. 4-33) for wear. Inspect the grating material on the roller assemblies for damage.



1. Setscrew
2. Knob
3. Setscrew
4. Collar
5. Screw
6. Poppet
7. Setscrew
8. Collar
9. Rod
10. Coupling
11. Pin
12. Poppet
13. Rod
14. Setscrew
15. Lever
16. Screw
17. Pin
18. Bracket
19. Setscrew
20. Screw
21. Lever
22. Screw
23. Pin
24. Bracket
25. Key
26. Screw
27. Pin
28. Setscrew
29. Lever
30. Shaft
31. Shaft
32. Lead Roller Assembly
33. Bearing
34. Screw
35. Cover
36. Lead Roller Assembly
37. Bearing
38. Screw
39. Cover

Figure 4-33. Compensator rollers and Levers.

Section XIV. MAINTENANCE OF TURN BARS

4-80. Turn Bar Assembly (fig. 4-34)

a. Inspect sprocket (44), (66) and (84) for broken teeth.

b. Inspect chains (67) for wear.

4-81. Oil Pump Drive Assembly (fig. 4-34)

a. Inspect sprockets (10) for broken teeth.

b. Inspect hardware for damaged threads.

4-82. Front and Drive Roller Assembly (fig. 4-34)

Inspect roller (47, 49) for pits, gouges and flat spots.

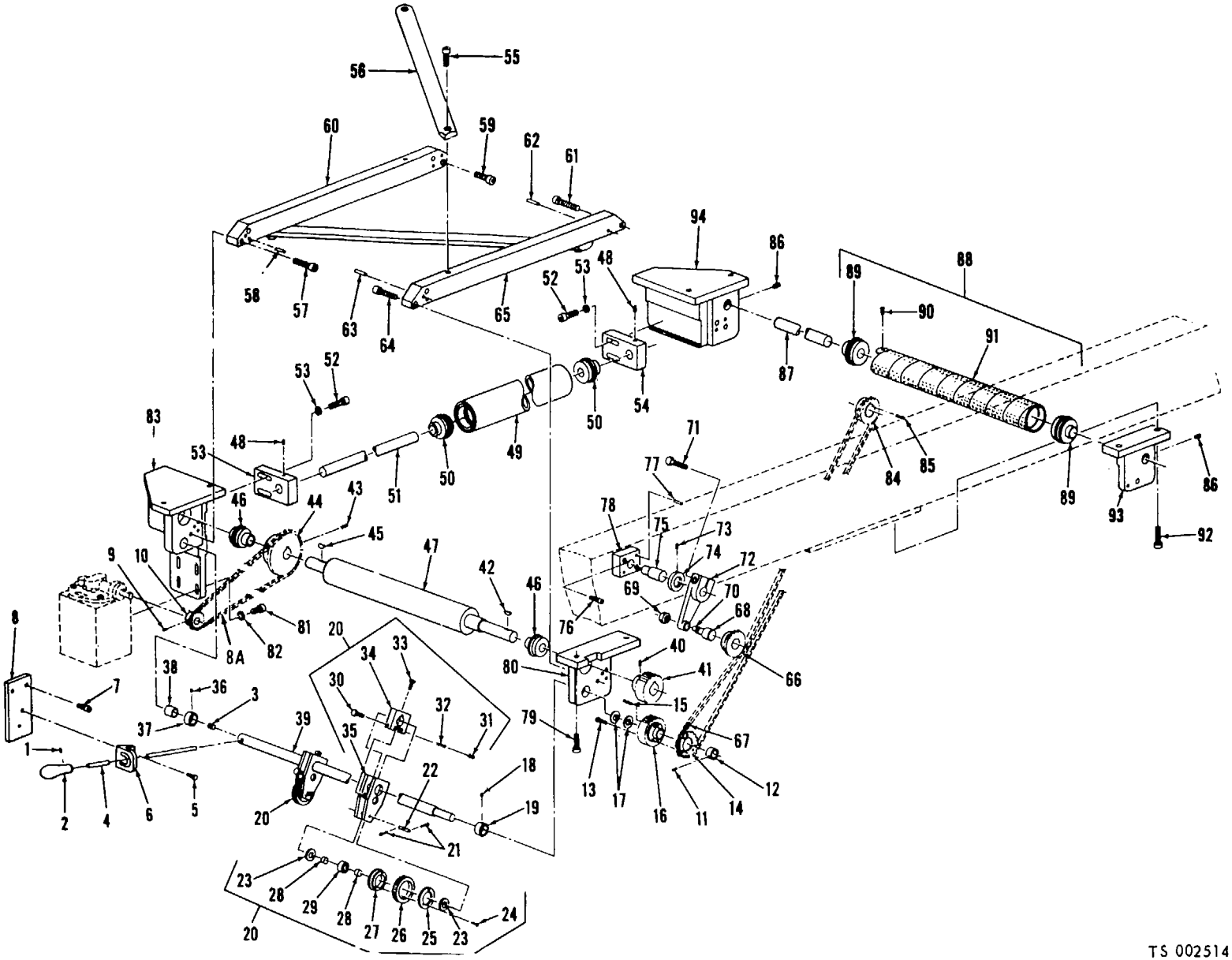


Figure 4-34. Turn bars assembly.

KEY to figure 4-34:
1. Setscrew
2. Handle
3. Setscrew
4. Rod
5. Screw
6. Bracket
7. Screw
8. Bracket
8A. Chain
9. Setscrew
10. Sprocket
11. Setscrew
12. Collar
13. Screw
14. Sprocket
15. Pin
16. Gear
17. Washer
18. Setscrew
19. Collar
20. Roller Trolley Assembly
21. Pin
22. Stud
23. Washer
24. Screw
25. Plate
26. Tire
27. Hub
28. Spacer
29. Bearing
30. Screw
31. Plug
32. Spring
33. Setscrew
34. Block
35. Side Plate Assembly
36. Setscrew
37. Collar
38. Bearing
39. Shaft
40. Setscrew
41. Gear
42. Key
43. Setscrew
44. Sprocket
45. Key
46. Bearing
47. Driven Roller Assembly
48. Setscrew
49. Front Roller Assembly
50. Bearing
51. Shaft
52. Screw
53. Washer
54. Block
55. Screw
56. Bar
57. Screw
58. Pin
59. Screw
60. Bar
61. Screw
62. Pin
63. Pin
64. Screw
65. Bar
66. Sprocket
67. Chain
68. Follower
69. Nut
70. Fitting
71. Screw
72. Lever
73. Setscrew
74. Spacer
75. Stud
76. Screw
77. Pin
78. Block
79. Screw
80. Left Rear Bracket Assy
81. Screw
82. Washer
83. Right Rear Bracket Assy
84. Sprocket
85. Key
86. Setscrew
87. Shaft
88. Roller Assembly
89. Bearing
90. Screw
91. Cover
92. Screw
93. Left Front Bracket Assy
94. Right Front Bracket Assy

Section XV. MAINTENANCE OF AIR PUMP AND BLOWER MOTOR

4-83. Air Pump and Blower Motor Assembly

a. Inspect air pump and blower motor assembly (fig. 4-35) for cracks and breaks.

b. Inspect belt for frayed edges, tears, cuts and guard other indications of deterioration.

4-84. Piping and Valves

Inspect and replace damaged piping (items 1 deterioration. Replace defective belts.

4-85. Pump Drive Belt (fig. 4-36)

a. Removal.

(1) Remove two screws (18) and remove (2) Loosen four nuts (27) and move motor forward to take tension off belt and remove.

b. Inspect belt for frayed edges, cuts and deterioration. Replace defective belts.

c. Adjust belt by loosening four nuts (27) and move motor back until proper tension is obtained.

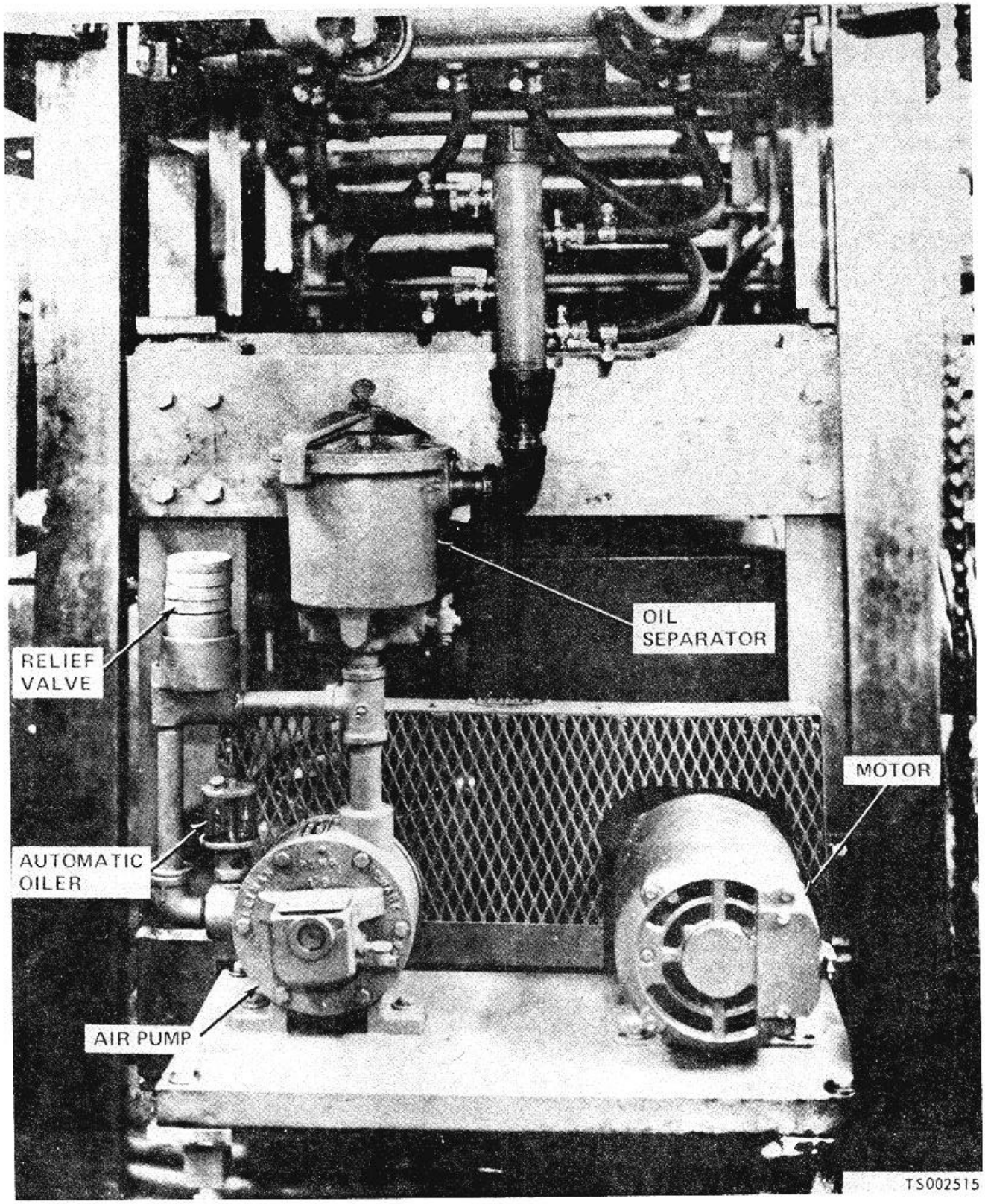


Figure 4-35. Air Pump and Blower Motor.

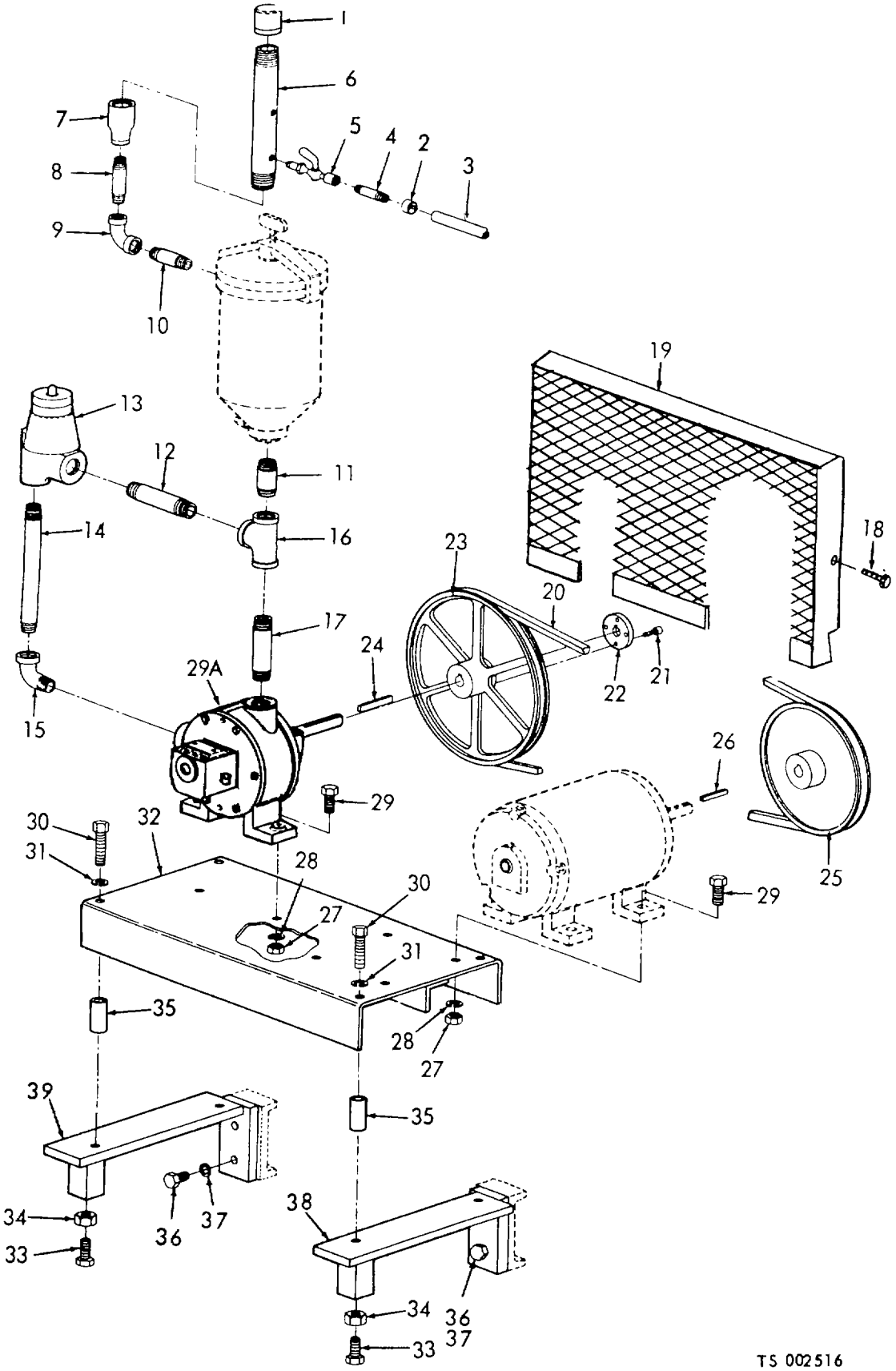
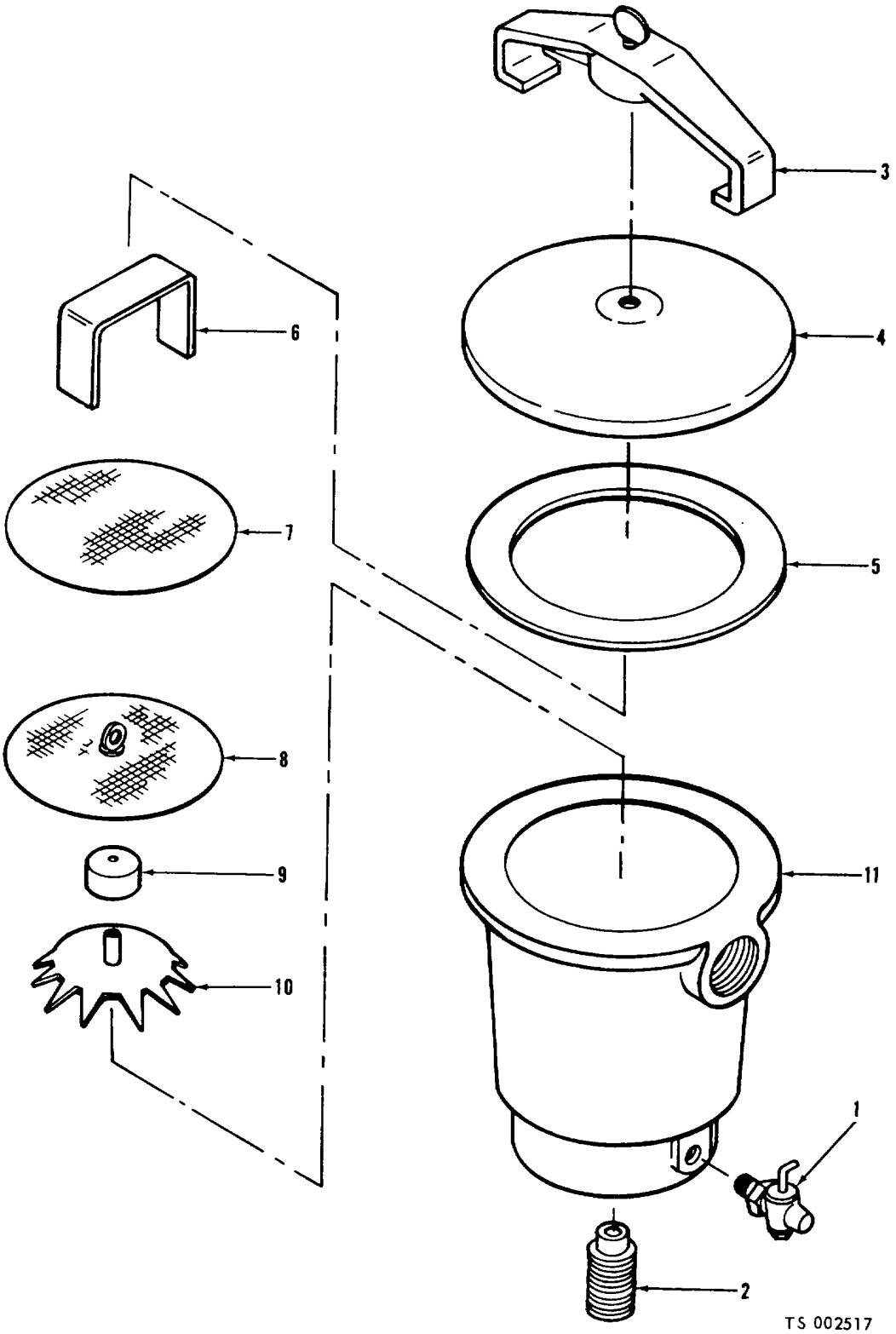


Figure 4-36. Air Pump and Blower Motor Assembly.

KEY to figure 4-36:

1. Cap
2. Clamp
3. Hose
4. Nipple
5. Drain cock
6. Air Chamber
7. Reducer
8. Nipple
9. Elbow
10. Nipple
11. Nipple
12. Nipple
13. Valve
14. Nipple
15. Elbow
16. Tee
17. Nipple
18. Screw
19. Guard
20. V-Belt
21. Screw
22. Washer
23. Pulley
24. Key
25. Pulley
26. Key
27. Nut
28. Washer
29. Screw
30. Screw
31. Washer
32. Base
33. Screw
34. Nut
36. Spacer
36. Screw
37. Washer
38. Leg Assembly
39. Leg Assembly



1. Drain Cock
2. Tube
3. Clamp
4. Cover
5. Gasket, Cover
6. Spacer, Top Screen
7. Screen, top
8. Screen, Bottom
9. Spacer, Baffle
10. Baffle
11. Tank

Figure 4-37. Oil Separator, exploded view.

4-86. Oil Separator

a. Removal. Refer to figure 4-36 and remove piping, items (1 thru 10).

b. Refer to figure 4-37 and replace defective parts.

c. Installation. Install in reverse order of removal.

4-87. Automatic Oiler

Refer to figure 3-8 and replace automatic oiler.

4-88. Pump, Air

a. Inspect pump for cracks and breaks.

b. Service. Flush out pump with kerosene monthly.

c. Removal. Refer to figure 4-36 items 1 thru 29A and remove pump.

4-89. Motor Blower

Inspect motor for cracks and breaks.

Section XVI. MAINTENANCE OF AUTOMATIC LUBRICATOR

4-90. General

This section contains instructions for inspecting service, repair, replacement and adjustment of the automatic lubricator. Repair consists mainly of replacement of components.

a. Inspect. Check lubricator for low level, broken or cracked tubes, loose connection, flattened outlet tube or clogged filter.

b. Service. Replace filter (9, fig. 4-38) on lubricator at least once a year.

c. Removal.

(1) Disconnect discharge line (4, fig. 4-14) by unfastening compression sleeve.

(2) Remove drive sprocket from lubricator drive shaft.

(3) Remove four bolts (5, fig. 4-14), four washers (6), and remove lubricator from press frame.

d. Installation.

(1) Install four washers (6, fig. 4-14) and four bolts (5).

(2) Install drive sprocket.

(3) Connect discharge line.

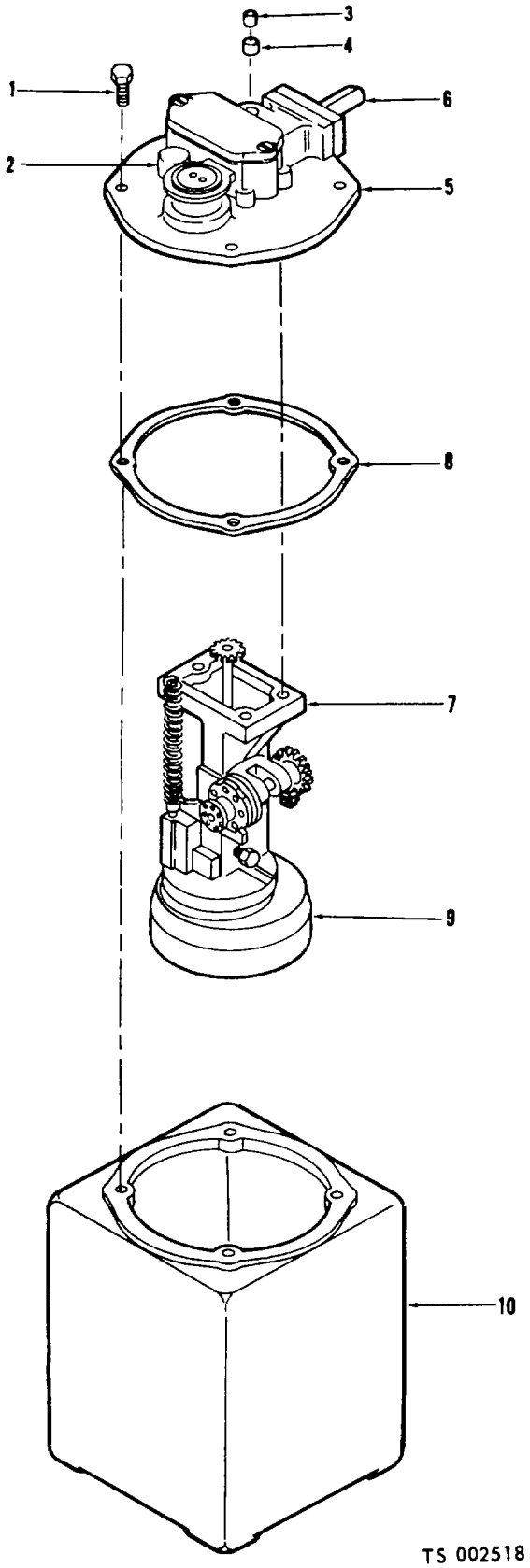


Figure 438. Automatic Lubricator.

KEY to figure 4-38:

1. Screw
2. Button
3. Bushing
4. Sleeve
5. Cover Plate Assembly
6. Drive Shaft Assembly
7. Vertical Shaft and Gear Assembly
8. Gasket
9. Filter Assembly
10. Reservoir

e. Adjust. Upon completion of installation of automatic lubricator components, the fully automatic lubricating system is checked and tested as follows:

NOTE

Check that lubricator reservoir is filled with 3-pints of oil as directed per lubrication Order, LO 10-3610-20012.

(1) Start press and hold down instant feed button and lubricator until oil shows freely at all bearing points.

(2) If too little oil is being delivered at bearing points (evidenced by excessive heat) with press running at operating speed, increase oil feed as follows:

(a) Shut down press and remove lubricator unit from drive sprocket and discharge line.

(b) Remove lubricator from reservoir and note index hole number (fig. 4-39) on cam in which locating pin is engaged.

(c) Pull out knurled knob on cam and rotate until locating pin enters index number with next higher number.

(d) Replace lubricator unit and reservoir on press, then, run press and check all bearing points thoroughly before further adjustment.

(3) If too much oil is being delivered at bearing points after full run-in period of press, reduce oil feed by following steps 1 through 4 above, except rotate cam knob until locating pin enters index hole with next lower number to original setting.

(4) If one particular bearing point receives too much oil, remove meter unit and replace with one of same type but next lower flow rate number. For too little oil at one bearing point, replace meter unit with one of same type but next higher flow rate number.

NOTE

Each increase in flow rate doubles oil feed.

(5) Cam Setting, Cycle Time and Discharge. The discharge figures shown in table 4-3 are for normal drive speed (600 rpm) and with bypass valve closed. The valve may be opened to reduce discharge to any desired amount down to 50 % of figures shown in table 4-3.

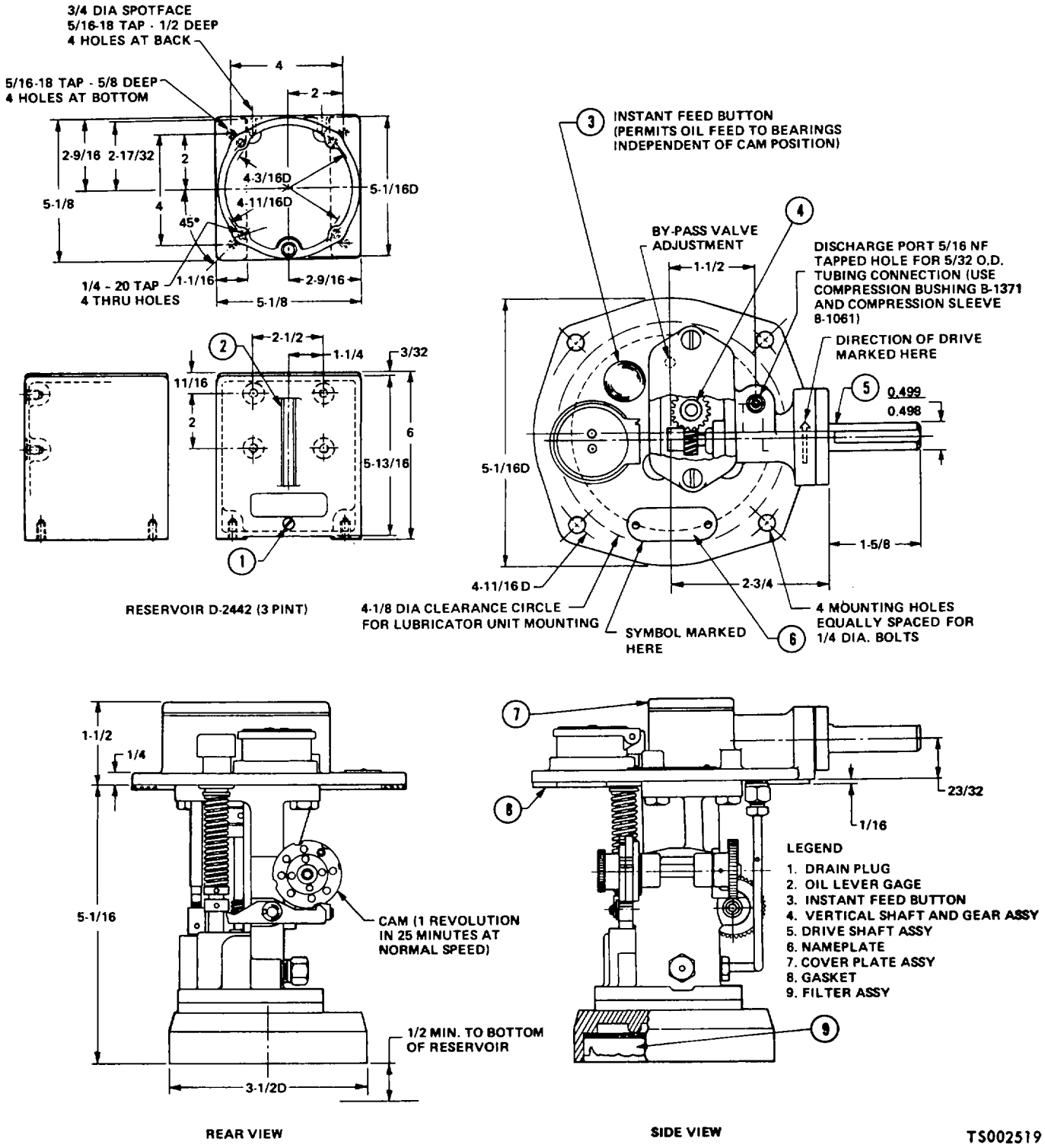


Figure 4-39. Oil reservoir and internal view of lubricator unit.

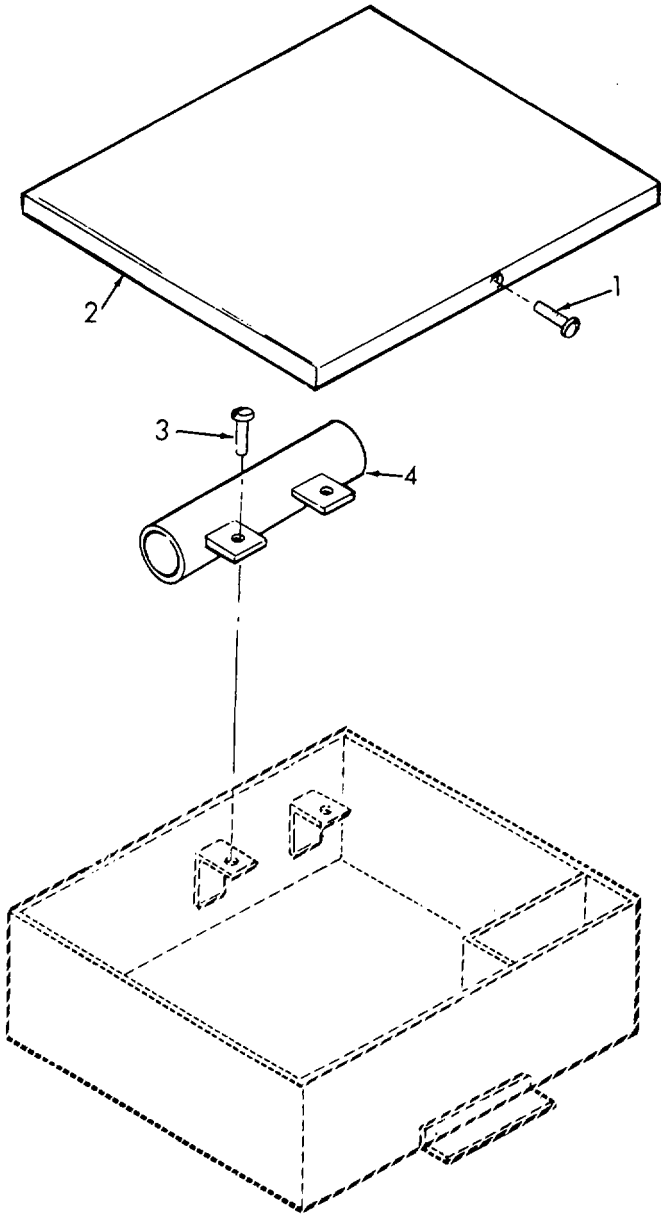
Table 4-3. Lubricator Cam Setting, Cycle Time and Discharge Rates

Cam Setting No.	Cycle Time	Discharge per Cycle	Discharge Per Hour	Time For 1 Pint Discharge
8	6 1/4 min.	32 cu cm	300 cu cm/hr	1 1/2 hrs.
7	6 1/4 min.	21 cu cm	200 cu cm/hr	2 1/2 hrs.
6	6 1/4 min.	14 cu cm	140 cu cm/hr	3 1/2 hrs.
5	6 1/4 min.	10 cu cm	90 cu cm/hr	5 1/2 hrs.
4	25 min.	21 cu cm	50 cu cm/hr	9 1/2 hrs.
3	25 min.	14 cu cm	35 cu cm/hr	14 hrs.
2	25 min.	11 cu cm	25 cu cm/hr	19 hrs.
1	25 min.	8 cu cm	20 cu cm/hr	24 hrs.

NOTES: 1 Discharge per cycle is independent of lubricator drive speed.
2. Discharge is proportional to lubricator drive speed.
3. Cycle time is inversely proportional to lubricator drive speed.
4. 1 Cu inch = 16.4 cu cm.
5. 1 Cu cm = 30 drops (approx.)

Section XVII. MAINTENANCE OF STATIC ELIMINATOR

Inspect power unit resistors (4, fig. 4-40) for secureness of mounting and evidence of corrosion.



1. Screw
2. Cover
3. Screw
4. Resistor

Figure 4-40. Power unit, static eliminator.

Section XVIII. MAINTENANCE OF PRESS FRAME STRUCTURE

4-92. Offset Structure Assembly

Inspect offset structure assembly (fig. 4-41) for bends, breaks and warped parts.

4-93. Leveling Block Assembly

a. Inspect.

(1) Inspect level (6, fig. 4-41) for damage.

(2) Inspect hardware for damaged threads.

b. Removal.

(1) Remove two screws (1, fig. 4-41), two washers (2) and remove from frame.

(2) Remove two screws (1, fig. 4-41), two washers (2) and remove from frame.

c. Repair. Repair damaged parts.

d. Installation.

(1) Install washer (5), screw (4), and install level to bracket (7).

(2) Install washer (2), screw (1), and install leveling block assembly to frame.

KEY to figure 4-41:
1. Screw
2. Washer
3. Leveling Block Assembly
4. Screw
5. Washer
6. Level
7. Bracket
8. Screw
9. Washer
10. Plate
11. Screw
12. Washer
13. Plate
14. Screw
15. Washer
16. Plate
17. Screw
18. Washer
19. Plate
20. Delivery Unit Substructure Assy
21. Offset Substructure Assembly

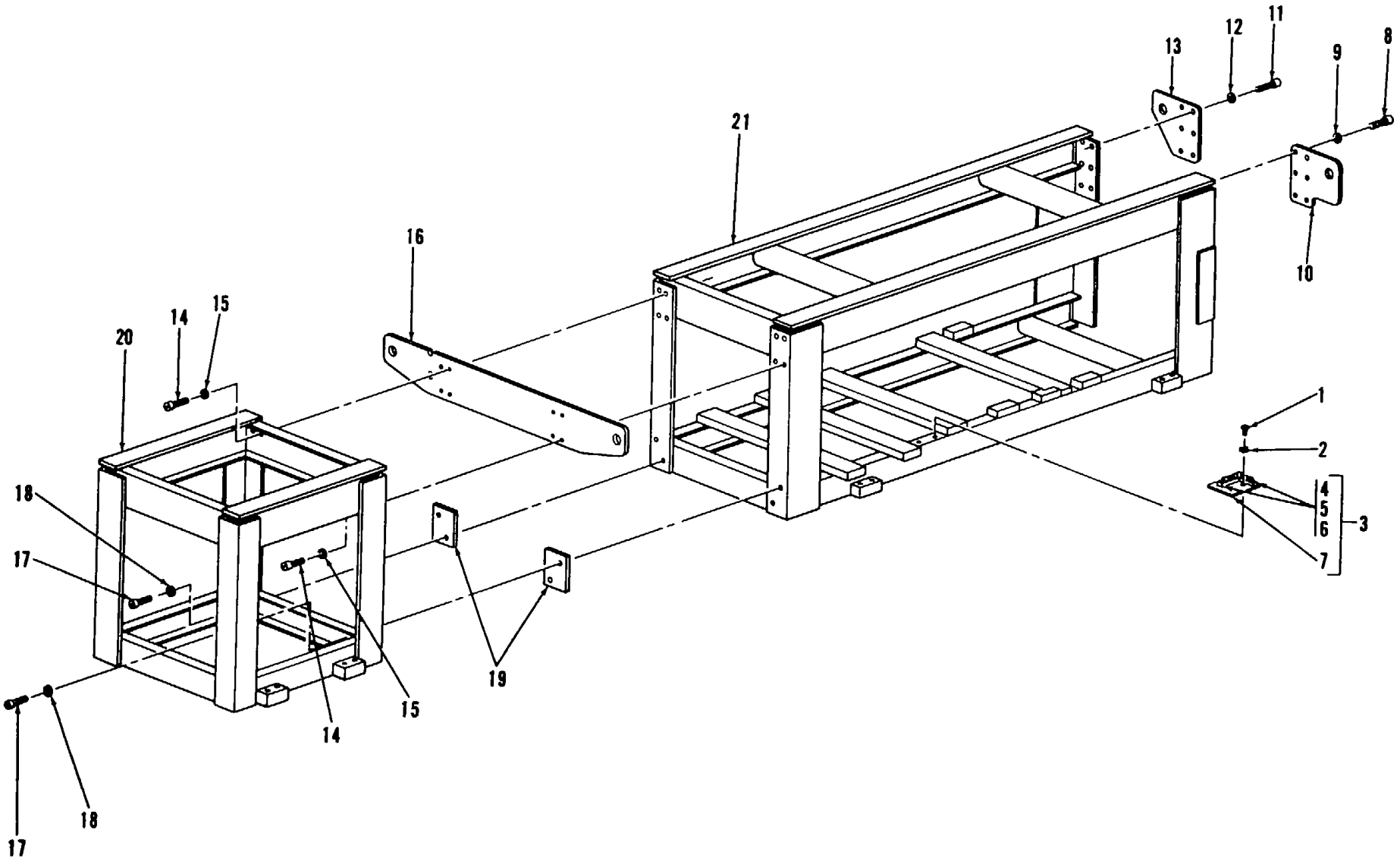


Figure 4-41. Offset Substructure Assembly.

Section XIX. MAINTENANCE OF ELECTRICAL COMPONENTS

4-94. Motor Main Drive D. C.

The motor is designed with a metermatic bearing lubrication system which provides for approximately one year of operation without greasing, permits regreasing as required by the particular application and prevents overgreasing. The lubrication procedure is as follows:

(1) Remove plug from filling hole and install grease fitting.

(2) With motor running, force grease through filling hole until grease appears along shaft. In greasing the fan-cooled motor, grease the bearing at the end opposite the fan end first. Note how much grease is required to make it appear along the shaft, then use approximately two thirds this amount of grease at the fan end.

(3) Remove grease fitting and replace plug in filling hole.

(4) Wipe away excess grease which has appeared at grease relief.

(5) Use only clean grease from clean containers and handle so as to keep it clean.

(6) Refer to lubrication order for lubricants to use and intervals.

4-95. Cabinet Assembly

The control Cabinet (fig. 4-42) is supplied with a filter built to remain efficient over a period of years. For proper air filtration, the filters (9, 18) must be cleaned and recharged properly at intervals depending upon the degree of abusive conditions that exist. Frequent and routine inspection of the cleanliness of filters is highly recommended. Keeping spare filters on hand, for use during cleaning periods, will minimize equipment downtime.

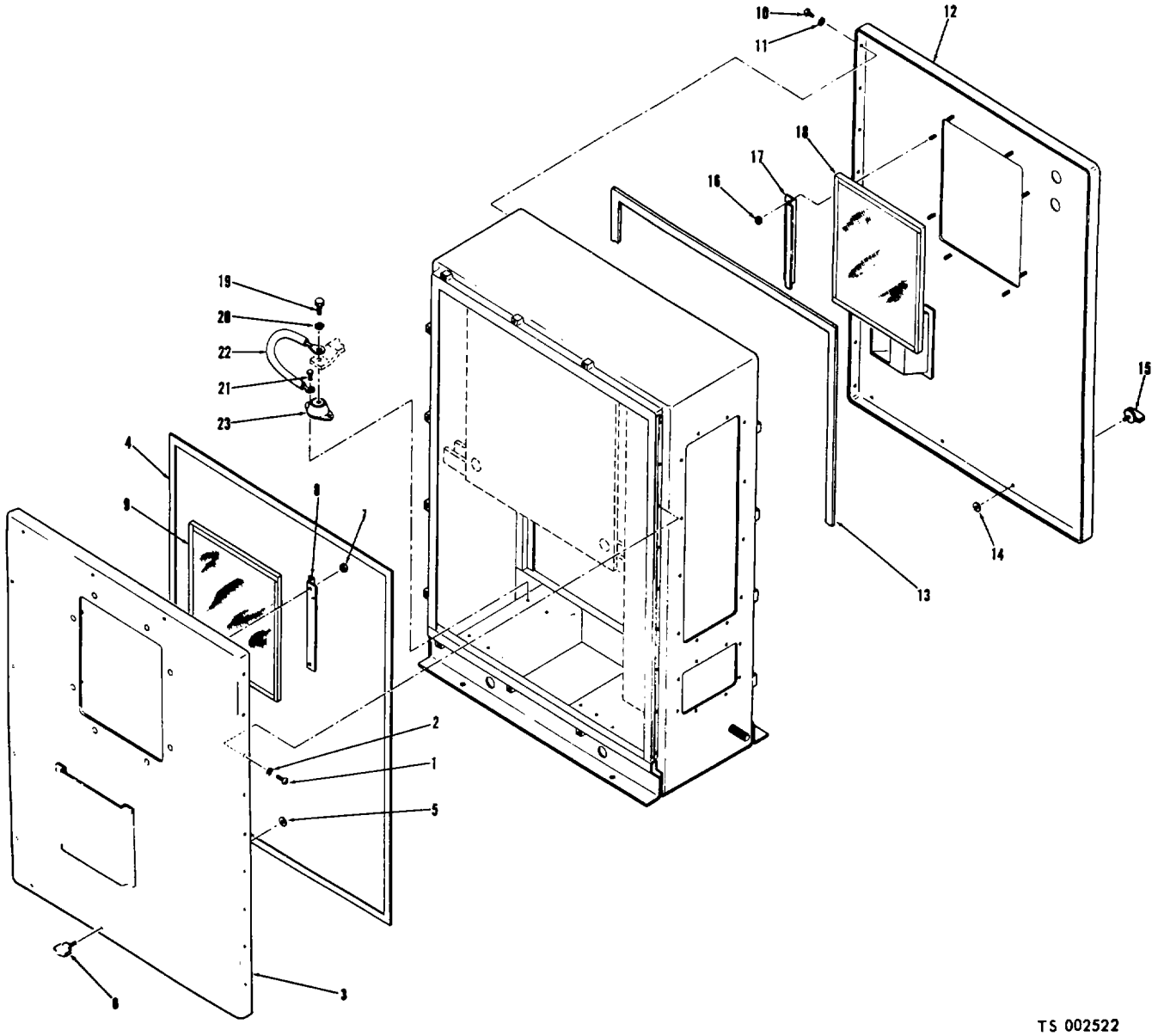
There are three means of cleaning wire filters:

(1) Boiling: Place filter, fine mesh down, in a tank containing solution of Oakite No. 20 (3 pounds (1360.8 grams) to 5 gallons (18.925 liters) of water) trisodium phosphate (1-'/2 pounds (680.4 grams) to 5 gallons (18.925 liters) of water), or other commercial solvent. Boil until the filter is clean. DO NOT USE CAUSTIC SODA.

(2) Hot Water: Agitate filter, fine mesh down, in tank containing hot water and Oakite No. 20 or equivalent. If using Oakite No. 20, a mixture of 3 pounds (1360.8 grams) to 5 gallons (18.925 liters) of water is recommended.

(3) Hose: Use flat nozzle and water pressure. Sweep back and forth across fine mesh side, holding nozzle firmly against surface, flushing out intake and discharge faces. Hot water is preferred.

After cleaning, the filter should be inspected by looking through it toward the light. When thoroughly clean, no cloudy areas will be seen. To recharge the clean filter, the adhesive may be applied by dipping in a suitable tank, power spray gun, or brush. When using the last two means, apply adhesive to both sides of filter to insure complete coverage. An adhesive supplied by the filter manufacturer, or regular SAE 30 to 50 motor oil may be used in recharging. The filter panels should be allowed to drain thoroughly before installing.



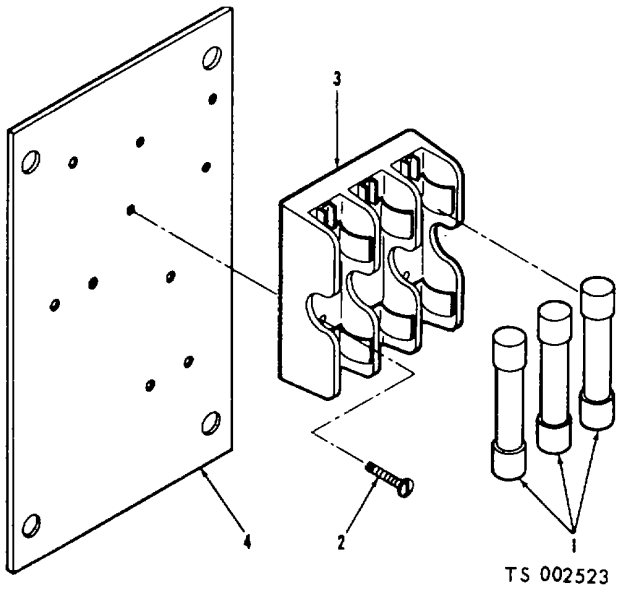
1. Screw
2. Washer
3. Door
4. Gasket
5. Retainer
6. Handle
7. Nut
8. Bracket
9. Filter
10. Screw
11. Washer
12. Door
13. Gasket
14. Retainer
15. Handle
16. Nut
17. Bracket
18. Filter
19. Screw
20. Washer
21. Screw
22. Strap
23. Dampener

Figure 4-42. Motor generator cabinet, exploded view.

4-96. Panel Assembly

a. Inspect panel assembly (fig. 4-43) for damaged parts.

b. Replace all damaged parts.



1. Fuse
2. Screw
3. Fuseholder
4. Panel

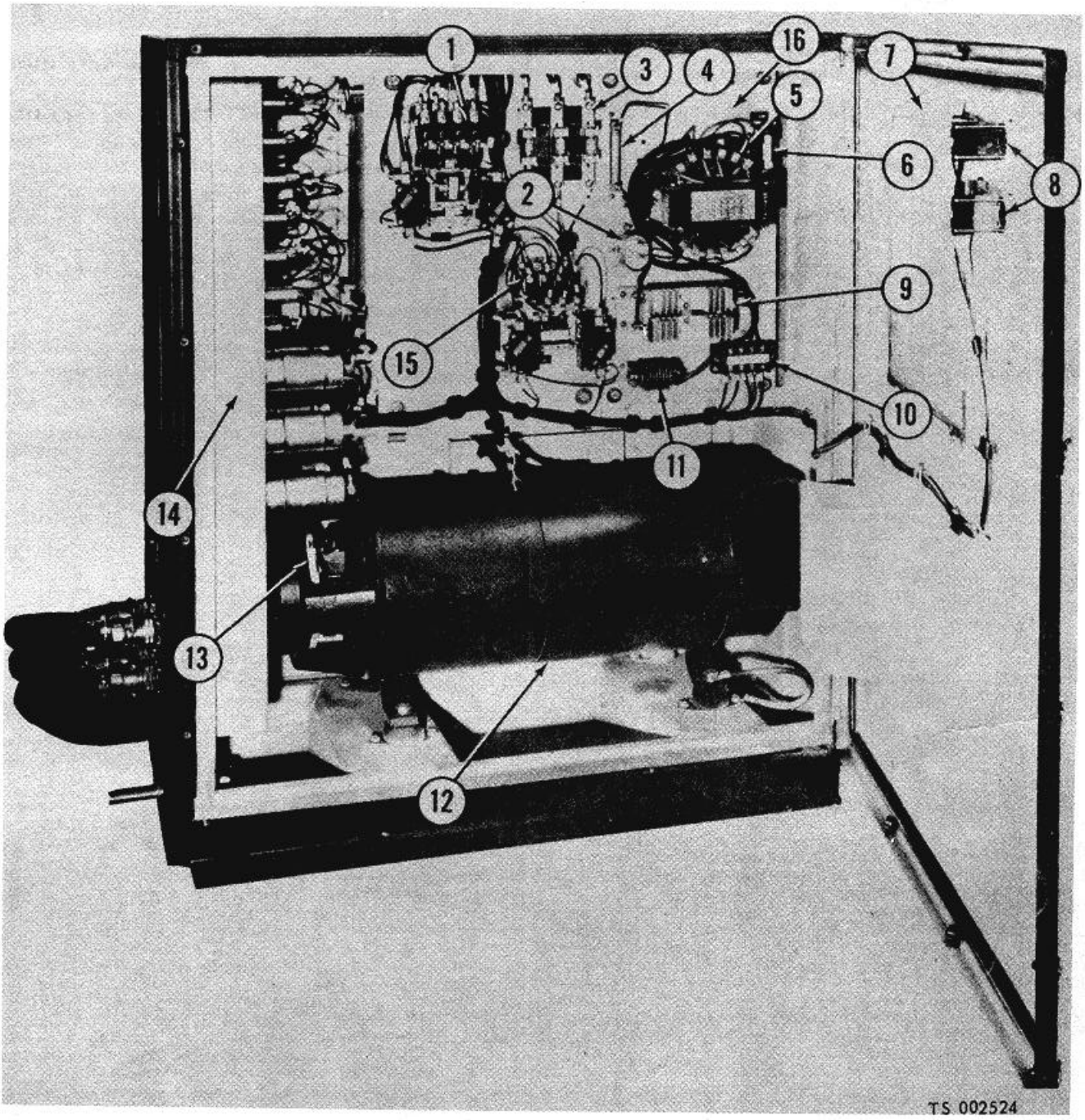
Figure 4-43. B Panel Assembly, exploded view.

4-97. Power Unit, A. C. to D. C.

a. Open motor generator front cover by unfastening turnscrews (fig. 4-44).

b. Using compressed air, blow the dust from the brushes (13).

c. Inspect the brushes for loose electrical connections and for wear. The brushes should rest upon the commutator.



1. Starter 1N
2. Capacitor 1C
3. Fuses 2NFU
4. Resistor 1R
5. Transformer 1T
6. Fuse 1FU
7. Air Filter (two)
8. Start-Stop Switches 101PB, 102PB
9. Rectifier 1REC
10. Terminal Block
11. Suppressor 1SSR
12. Power Unit
13. Brushes
14. Filter Box Assembly
15. Starter 2N
16. VSX Exciter Panel
17. Resistor 105R
18. Relay 1RR
19. Relay RR
20. Relay AP
21. Resistors 101R, 102R, 103R, 104R
22. Terminal Block
23. Dynamic Breaking Assembly RM
24. Contactor RM
25. Dynamic Braking Assembly FM
26. Contactor FM
27. Relay 10L
28. Magnetic Control Panel

Figure 4-44. Motor generator (Sheet 1 of 2).

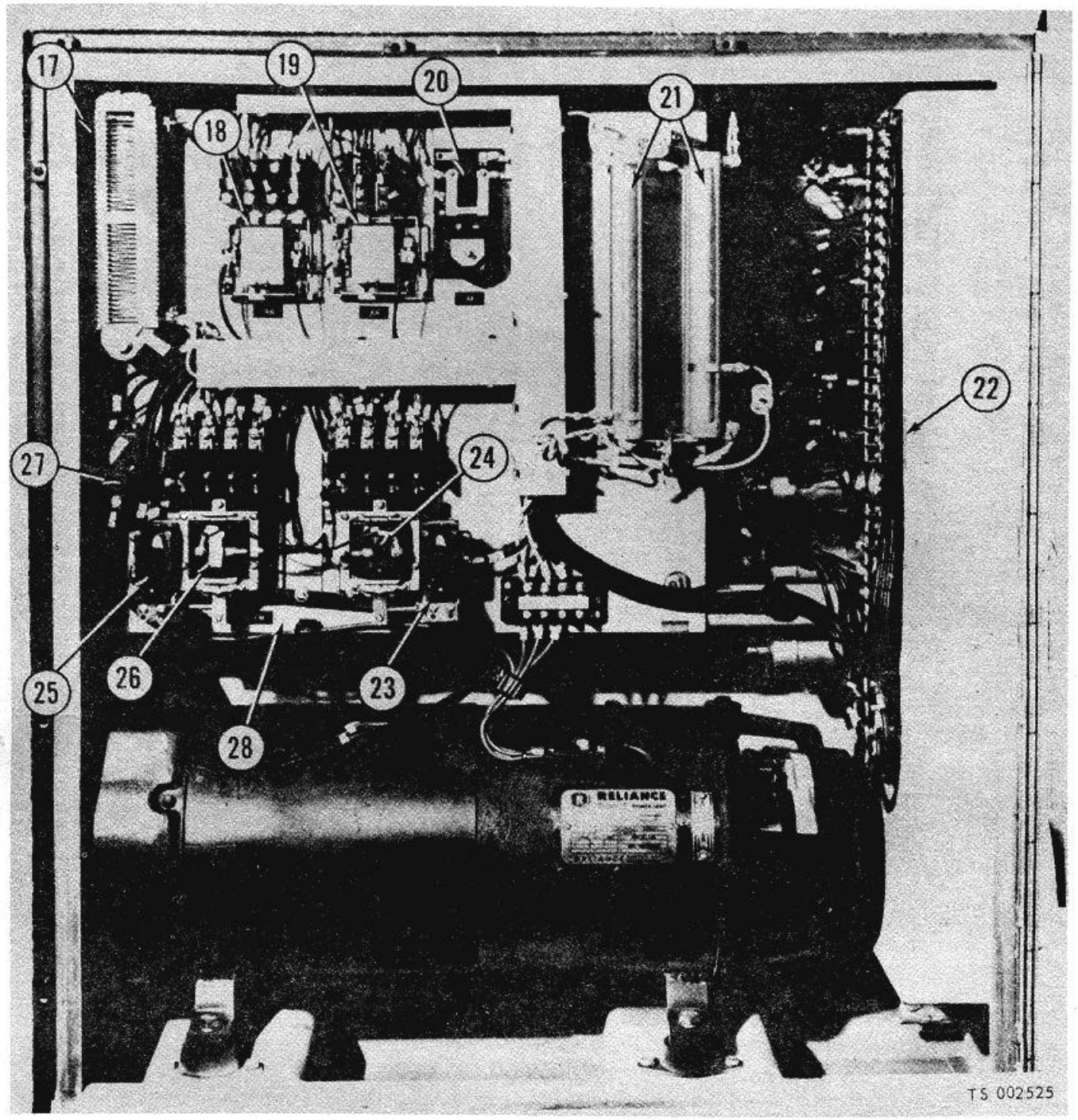


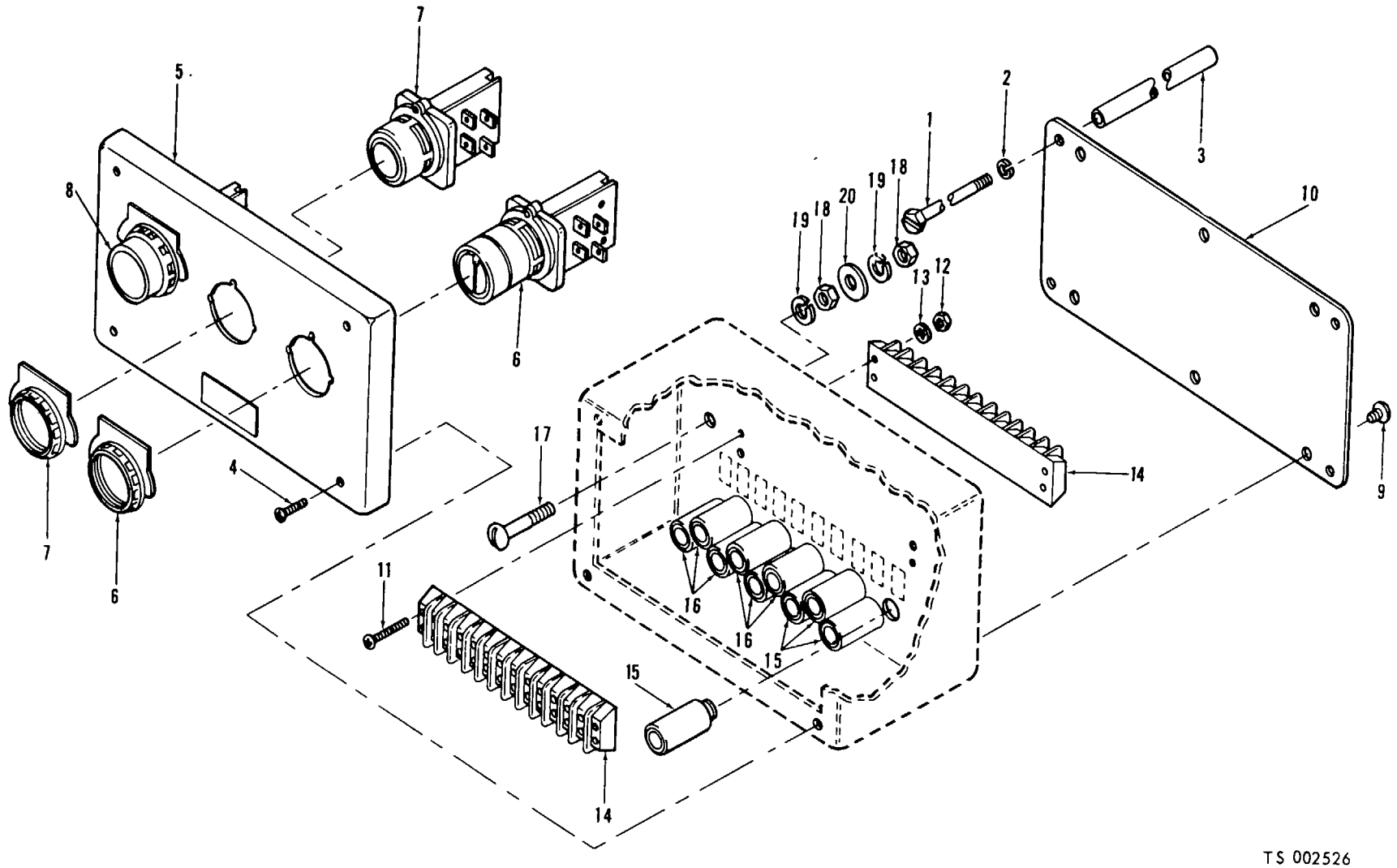
Figure 4-44. Motor generator (Sheet 2 of 2).

4-98. Pushbutton Stations

a. Remove switch plates (6, 7 and 8, fig. 4-45).

b. Remove screw (4) and remove panel (5).

c. Inspect terminal board (14, fig. 4-45) for security of attachments and tighten all terminal screws.



1. Screw
2. Washer
3. Spacer
4. Screw
5. Panel
6. Switch
7. Switch
8. Switch
9. Screw
10. Plate
11. Screw
12. Nut
13. Washer
14. Terminal Board
15. Filter
16. Fitler
17. Screw
18. Nut
19. Washer
20. Washer

Figure 4-45. Pushbutton station.

4-99. Switches, Push

Inspect lead to switches for tightness.

4-100. Main Operator's Station Switches and Rheostat Assembly

Inspect switches and rheostat for security of attachment and tighten all terminal screws (fig. 4-46).

4-101. Speed Indicator

a. Removal. Remove two screws (31) two lock washers (32) and two flat washers (33), figure 4-46 and remove indicator.

b. Install. Install two flat washers (33) two lock washers (32) and two screws fig. 4-46.

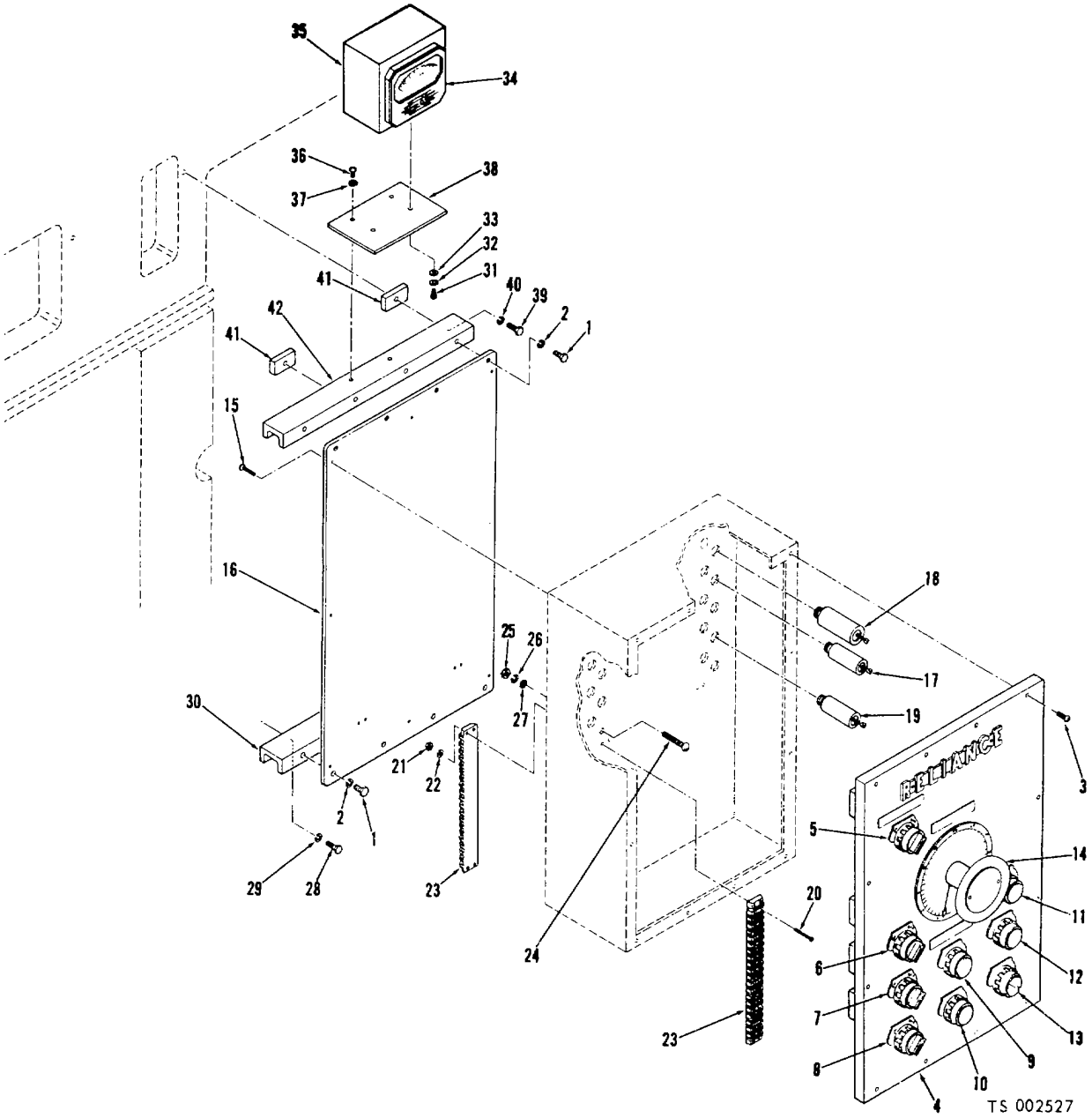


Figure 4-46. Main operator's station.

KEY to figure 4-46:

1. Screw
2. Washer
3. Screw
4. Panel
5. Switch
6. Switch
7. Switch
8. Switch
10. Switch
11. Switch
12. Switch
13. Switch
14. Rheostat
15. Screw
16. Plate
17. Filter
18. Filter
19. Filter
20. Screw
21. Nut
22. Washer
23. Terminal Board
24. Screw
25. Nut
26. Washer
27. Washer
28. Screw
30. Bracket
31. Screw
32. Washer
33. Washer
34. Indicator
35. Box
36. Screw
37. Washer
38. Plate
39. Screw
40. Washer
41. Spacer
42. Bracket

Section XX. MAINTENANCE OF PRESS PACKAGE ASSEMBLY

4-102. Ramp Assembly

a. Removal. Remove ten nuts (9) ten washers (10) ten screws (8), figure 4-47 and remove ramp assembly.

b. Inspect. Inspect attaching hardware for cracks, and for damaged threads. Replace defective parts.

c. Installation. Install ten screws (8) ten washers (10) ten nuts (9) and install ramp assembly.

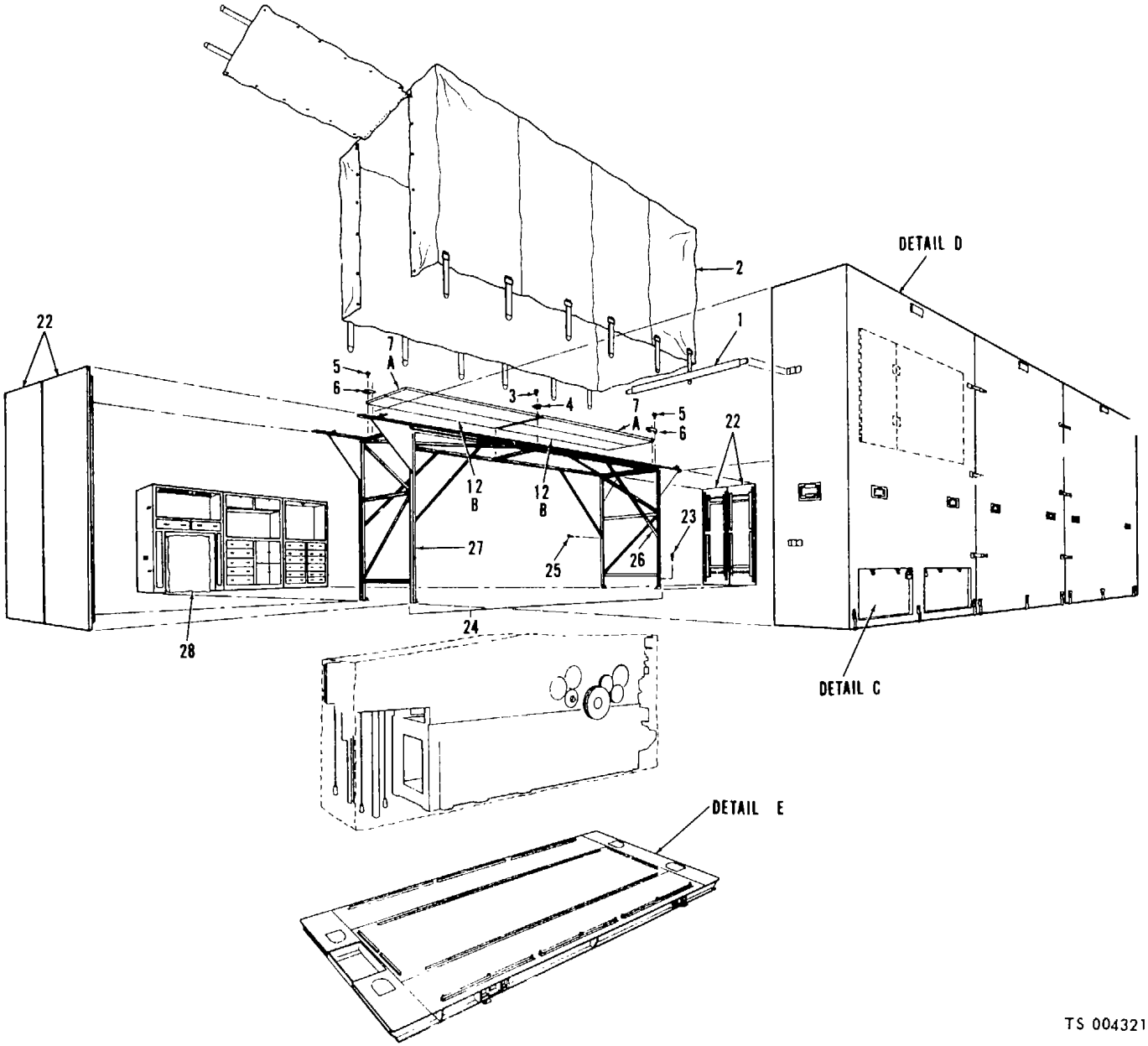


Figure 4-47. Press Package Assembly Type III (Sheet 1 of 2).

KEY to figure 4-47:

1. End Latch Extension Assy
2. Press Package Cover Assy
3. Screw
4. Clamp
5. Screw
6. Clamp
7. Ramp Assembly
8. Screw
9. Nut
10. Washer
11. Screw
12. Extension Platform Assy
13. Screw
14. Nut
15. Screw
16. Skid
17. Skid
18. Screw
19. Delivery Ramp Assy
20. Block
21. Jack
22. Table
23. Screw
24. Spreader Frame Assy
25. Screw
26. Brace
27. Frame Assembly
28. Cover
29. Cabinet Bar Assembly
30. Nut
31. Setscrew
32. Pin
33. Bar
34. Bar
35. Table Angle Assembly
36. Nut
37. Setscrew
38. Table Angle Assembly
39. Nut
40. Setscrew
41. Jack
42. Drip Pan Assembly
43. Base Assembly
44. Screw

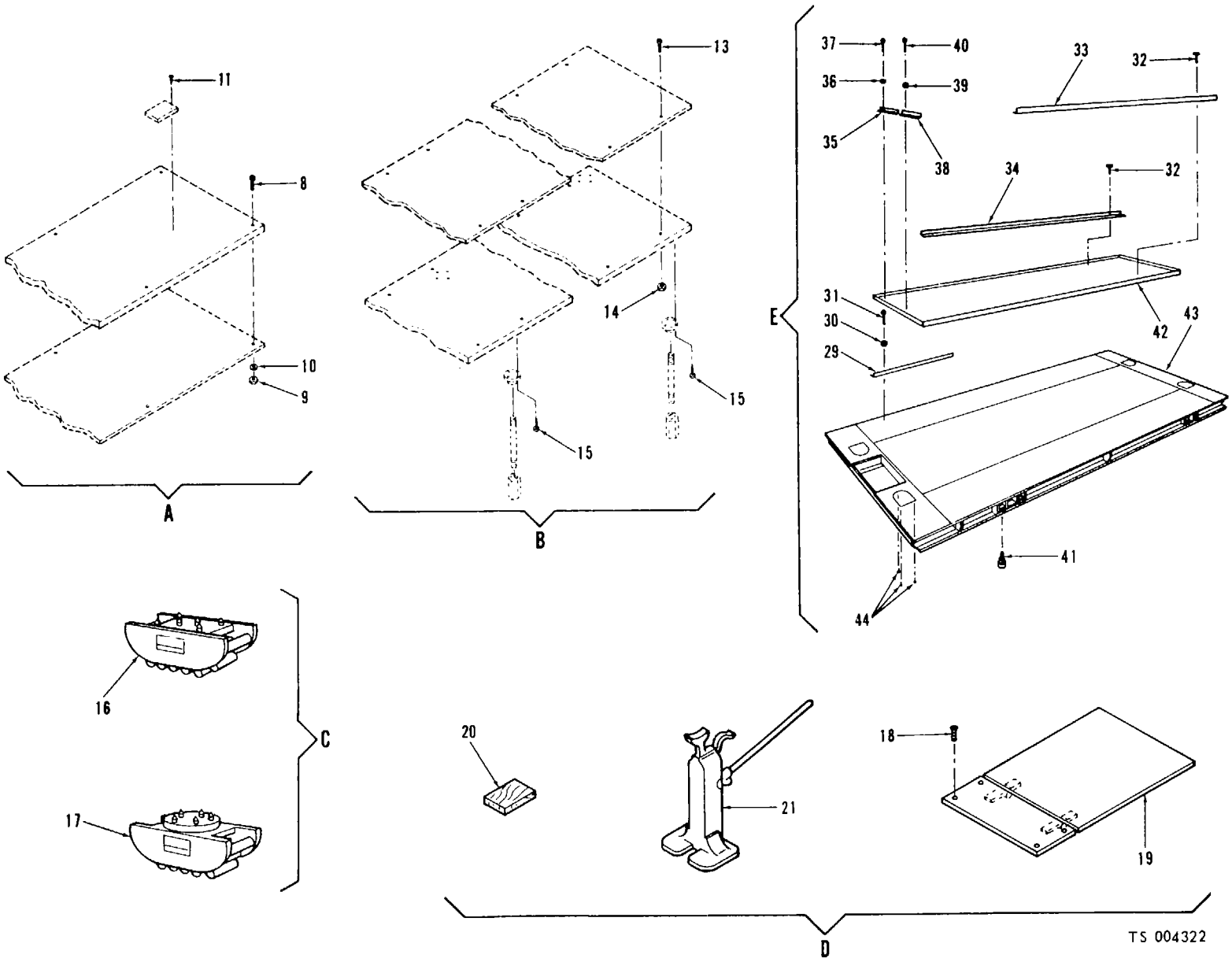


Figure 4-47. Press Package Assembly Type III (Sheet 2 of 2).

4-103. Extension Platform Assembly

a. Removal. Remove ten nuts (14) ten screws (13) twenty-four wood screws (15) fig. 4-47 and remove extension platform assembly.

b. Inspect. Inspect attaching hardware for cracks, and for damage threads.

c. Installation. Install twenty-four wood screws (15) ten screws (13) ten nuts (14) figure 4-47 and install extension platform assembly.

4-104. Skids, Swivel and Fixed

a. Inspect. Inspect skids (16) (17) fig. 4-47 for damage rollers.

b. Replace. Replace defective skids

4-105. Delivery Ramp Assembly (19, fig. 4-47).

a. Inspect. Inspect delivery ramp assembly for damage.

b. Replace. Replace defective delivery ramp assembly.

4-106. Jack Assembly, Ratchet

a. Inspect. Inspect Jack assembly (21 fig. 4-47) for damage.

b. Replace. Replace defective jack assembly.

4-107. Table Folding

a. Inspect. Inspect table folding (22, fig. 4-47) for damage.

b. Replace. Replace defective table.

4-108. Spreader Frame Assembly

a. Inspect. Inspect spreader frame assembly (24, fig. 4-47) for defective parts.

b. Replace. Replace defective parts.

4-109. Cover, Press Package

a. Inspect. Inspect cover (2, fig. 4-47) for rips and tears.

b. Replace. Replace defective parts.

4-110. Cabinet Bar Assembly

a. Removal. Loosen five nuts (30), and remove five screws (31) figure 4-47 and remove cabinet bar assembly (29).

b. Replace. Replace defective parts.

4-111. Table Angle Assembly

a. Removal Loosen six nuts (36) (39) and remove six screws (37) and (40) fig. 4-47 and remove table angle assembly (35) and (38).

b. Replace. Replace defective parts.

4-112. Leveling Jack

Inspect jack for ease of movement (41, fig. 4-47).

4-113. Drip Pan Assembly

Inspect drip pan for damage 42, fig. 4-47).

4-114. Base Assembly

Inspect base for damage (43, fig. 4-47).

Section XXI. MAINTENANCE OF CABINET ASSEMBLY

4-115. Drawer Lock Assembly

a. Inspect. Inspect drawer lock assembly (6) figures 4-48, 4-49, 4-50, 4-51, 4-52, and 4-53 for damage.

b. Removal. Pull lock assembly release down and lift out assembly.

c. Install. Put bottom of lock assembly in hole in cabinet base and pull lock assembly release down and push into place.

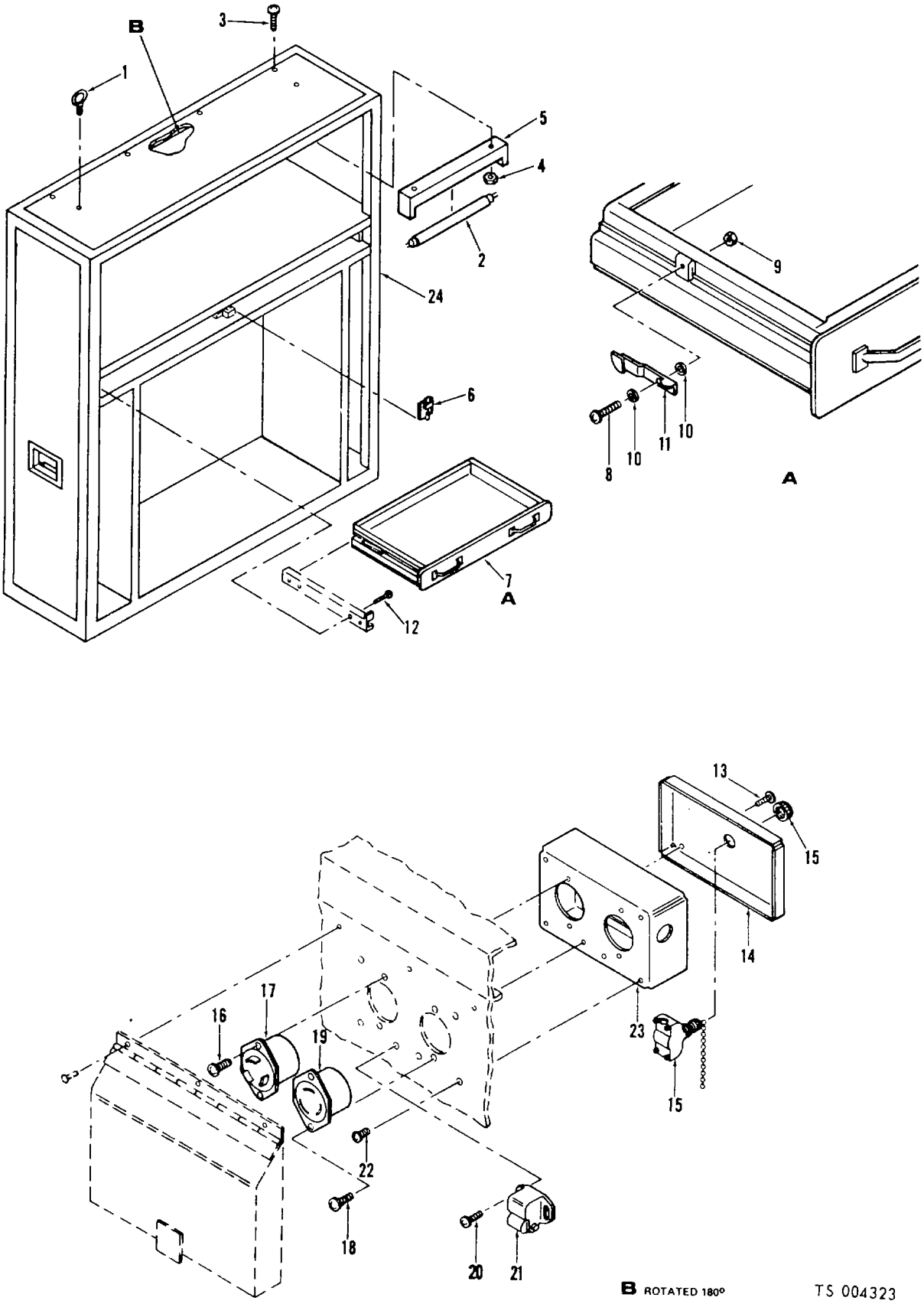


Figure 4-48. Cabinet Assembly, A.

KEY to figure 4-48:

1. Eyebolt
2. Lamp
3. Screw
4. Nut
5. Lampholder
6. Drawer Lock Assembly
7. Drawer Assembly
8. Screw
9. Nut
10. Washer
11. Catch
12. Screw
13. Screw
14. Cover
15. Switch
16. Screw
17. Connector
18. Screw
19. Connector
20. Screw
21. Catch
22. Screw
23. Box
24. Frame Assembly

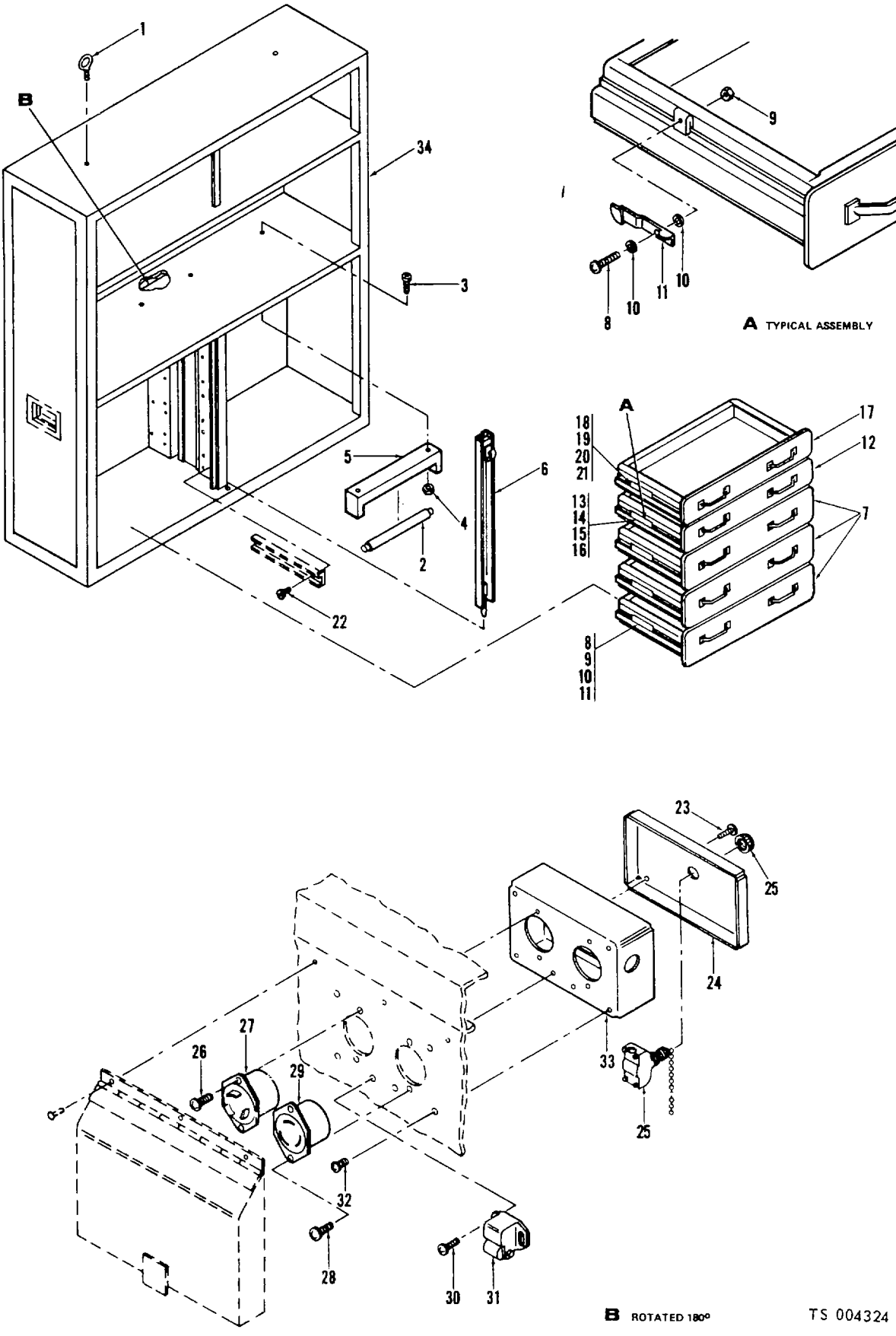


Figure 4-49. Cabinet Assembly, B.

KEY to figure 4-49:

1. Eyebolt
2. Lamp
3. Screw
4. Nut
5. Lampholder
7. Drawer Lock Assembly
8. Screw
9. Nut
10. Washer
12. Drawer Assembly
13. Screw
14. Nut
15. Washer
16. Catch
17. Drawer Assembly
18. Screw
19. Nut
20. Washer
21. Catch
22. Screw
24. Cover
25. Switch
26. Screw
27. Connector
29. Connector
30. Screw
31. Catch
32. Screw
33. Box
34. Frame Assembly

4-116. Lamp Switch

a. Removal.

(1) Remove four screw (13) switch nut (15) and remove cover (14, fig. 4-48).

(2) Pull switch (15) out of box receptacle (23) and disconnect wires.

(3) All switch removed in same manner.

b. Replace.

(1) Attach wires to switch (15) and put in box receptacle (23) put on cover (14) put on switch nut (15) and install four screw (13).

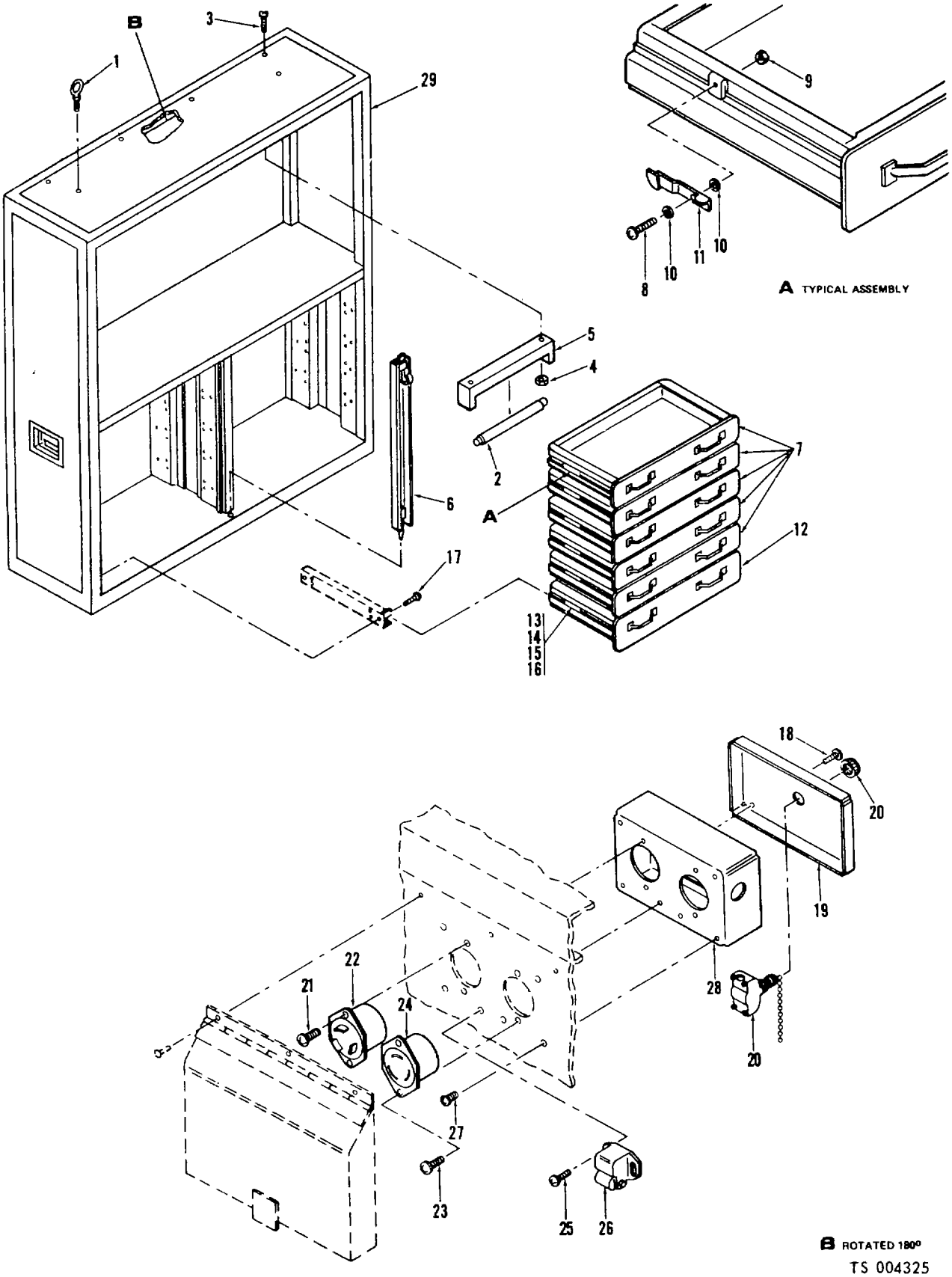


Figure 4-50. Cabinet Assembly, C.

KEY to figure 4-560:

1. Eyebolt
2. Lamp
3. Screw
4. Nut
5. Lampholder
6. Drawer Lock Assembly
7. Drawer Assembly
8. Screw
9. Nut
10. Washer
11. Catch
12. Drawer Assembly
13. Screw
14. Nut
15. Washer
16. Catch
17. Screw
18. Screw
19. Cover
20. Switch
21. Screw
22. Connector
23. Screw
24. Connector
25. Screw
26. Catch
27. Screw
28. Box
29. Frame Assembly

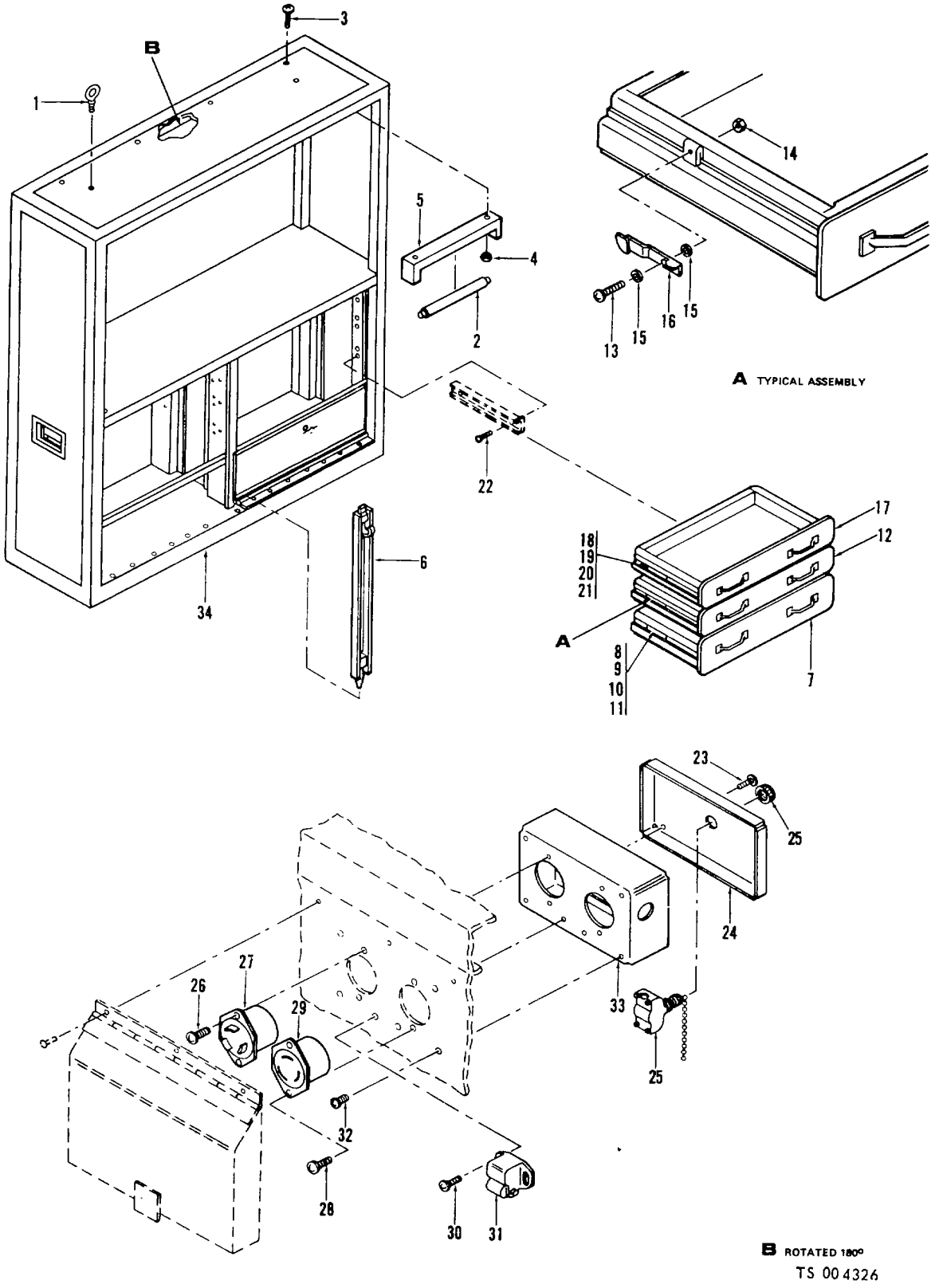


Figure 4-51. Cabinet Assembly, D.

KEY to figure 4-51:

1. Eyebolt
2. Lamp
3. Screw
4. Nut
5. Lampholder
6. Drawer Lock Assembly
7. Drawer Assembly
8. Screw
9. Nut
10. Washer
11. Catch
12. Drawer Assembly
13. Screw
14. Nut
15. Washer
16. Catch
17. Drawer Assembly
18. Screw
19. Nut
20. Washer
21. Catch
22. Screw
23. Screw
24. Cover
25. Switch
26. Screw
27. Connector
28. Screw
29. Connector
30. Screw
31. Catch
32. Screw
33. Box
34. Frame Assembly

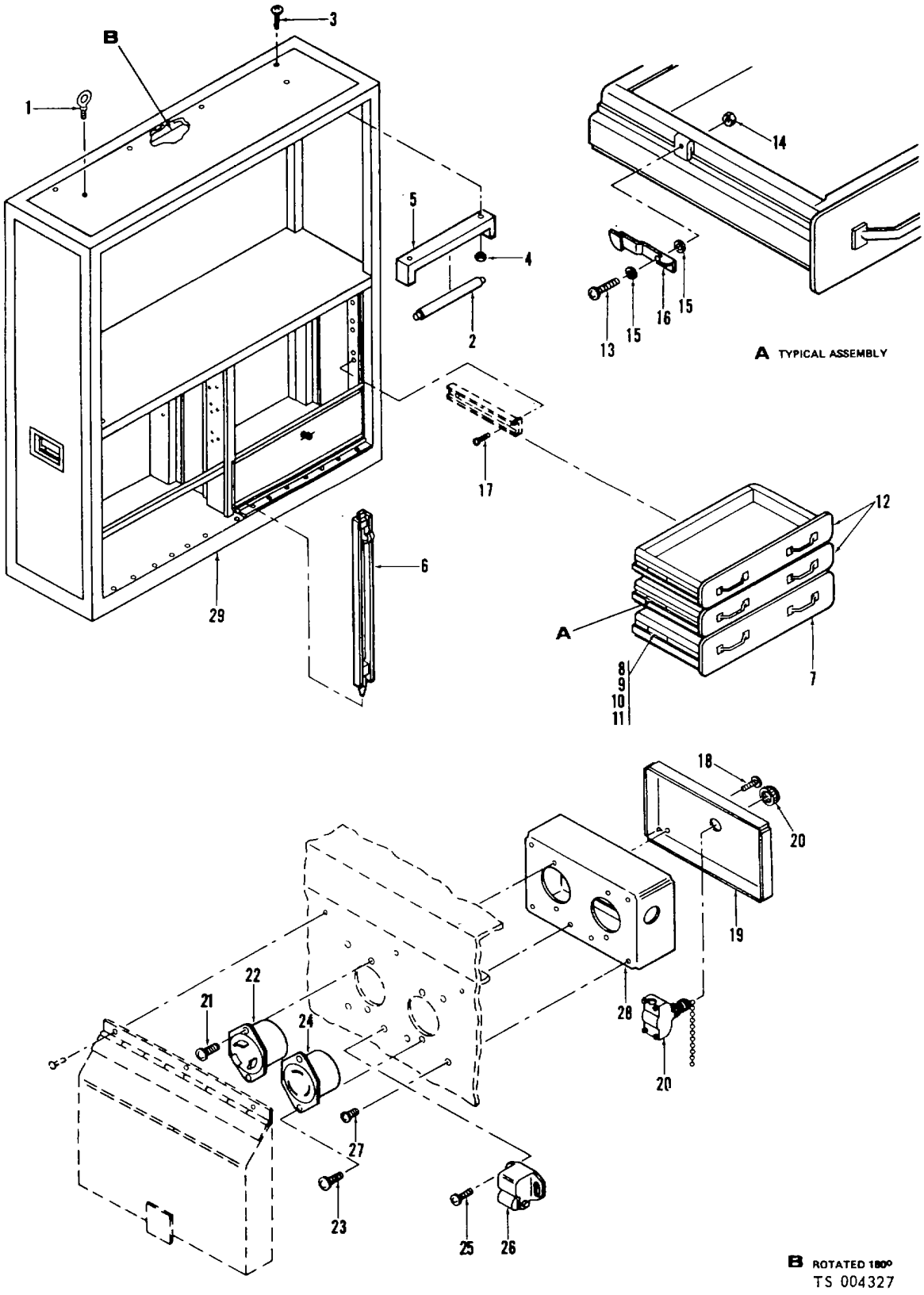


Figure 4-52. Cabinet Assembly. E.

KEY to figure 4-52:

1. Eyebolt
2. Lamp
3. Screw
4. Nut
5. Lampholder
6. Drawer Lock Assembly
7. Drawer Assembly
8. Screw
9. Nut
10. Washer
11. Catch
12. Drawer Assembly
13. Screw
14. Nut
15. Washer
16. Catch
17. Screw
18. Screw
19. Cover
20. Switch
21. Screw
22. Connector
23. Screw
24. Connector
25. Screw
26. Catch
27. Screw
28. Box
29. Frame Assembly

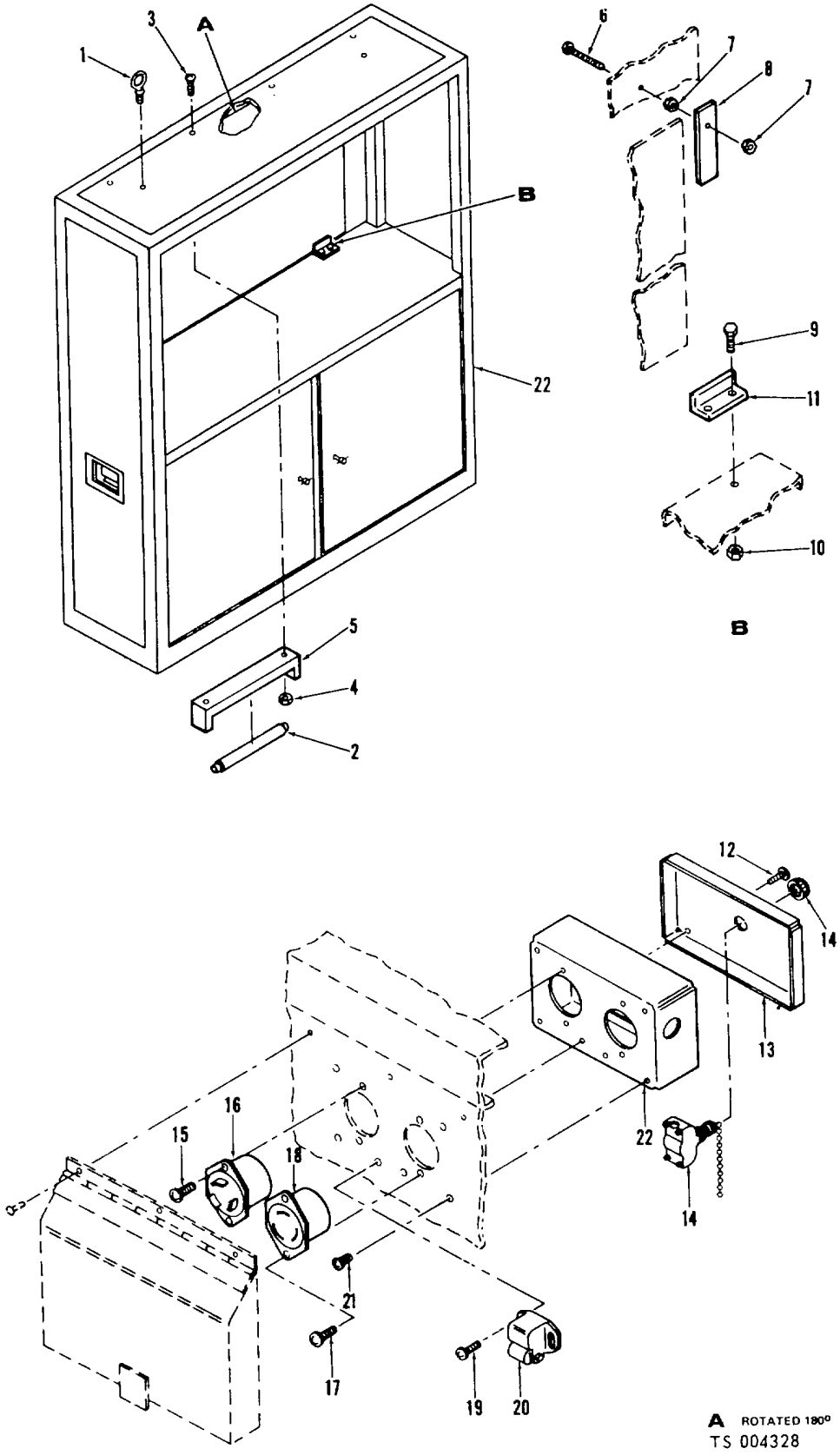


Figure 4-53. Cabinet Assembly, F.

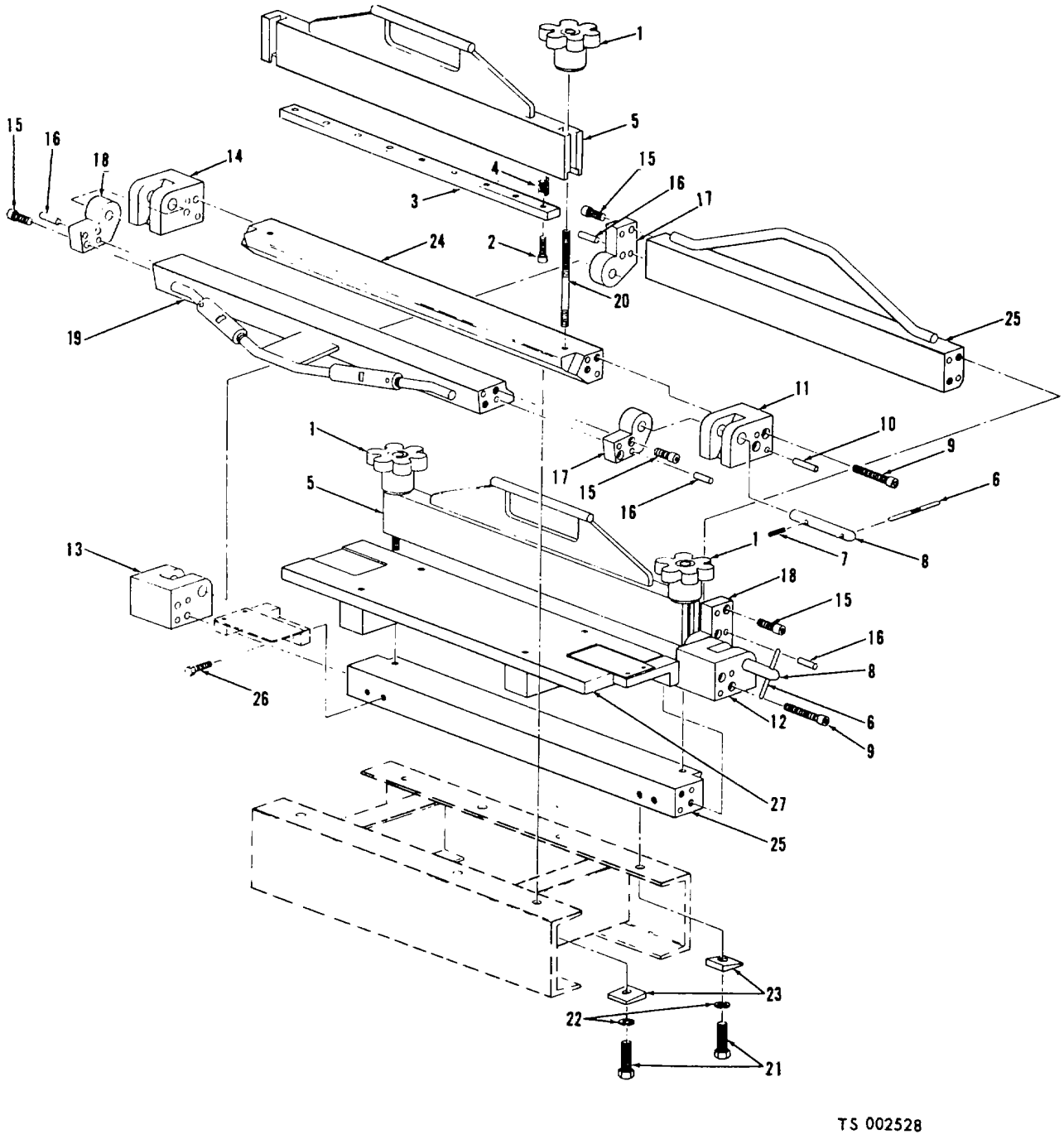
KEY to figure 4-53:

1. Eyebolt
2. Lamp
3. Screw
4. Nut
5. Lampholder
6. Screw
7. Nut
8. Plate
9. Screw
10. Nut
11. Bracket
12. Screw
13. Cover
14. Switch
15. Screw
16. Connector
17. Screw
18. Connector
19. Screw
20. Catch
21. Screw
22. Box
23. Frame Assembly

Section XXII. REPAIR OF BENDING MACHINE

4-117. Plate Bending Jig Assembly

a. *Disassembly*. Refer to figure 4-54 and disassemble, plate bending jig assembly.
b. *Inspect*. Inspect the attaching hardware for cracks and for damaged threads. Replace defective parts
c. *Reassembly*. Assemble in reverse order of disassembly.



1. Knob
2. Screw
3. Bar
4. Spring
5. Bar
6. Handle
7. Pin
8. Pin
9. Screw
10. Pin
11. Bracket
12. Bracket
13. Bracket
14. Bracket
15. Screw
16. Pin
17. Plate
18. Plate
19. Bending bar
20. Stud
21. Screw
22. Washer
23. Washer
24. Bar
25. Bar
26. Screw
27. Guide plate board assembly

Figure 4-54. Bending machine.

CHAPTER 5

DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE INSTRUCTIONS

Section I. REPAIR PARTS, SPECIAL TOOLS AND EQUIPMENT

5-1. Tools and Equipment

There are no basic issue tools or repair parts issued with or authorized for the lithographic offset press.

5-2. Special Tools and Equipment

No special tools or equipment are required by direct support or general support maintenance personnel for the maintenance of the lithographic offset press.

5-3. Direct Support and General Support Maintenance Repair Parts

Repair parts and equipment are listed in the repair parts and special tools list covering organizational maintenance for this equipment.

Section II. DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE TROUBLESHOOTING

5-4. General

This section contains troubleshooting information for locating and correcting troubles which may develop in the offset press and its components.

5-5. Direct Support and General Support Maintenance Troubleshooting

For direct support and general support maintenance troubleshooting refer to table 5-1.

Table 5-1. Direct Support and General Support Maintenance Troubleshooting.

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
CONTROL DRIVE SPEED FLUCTUATIONS
Step 1. Improper chain tension Check and adjust chain tension
Step 2. Excessive shock loads Inspect drive mounting. Check all screws and nuts
Step 3. Improper connections with other equipment Check keys for size and fit
Step 4. Closer limits on speed control necessary Add preloading mechanism to absorb control system tolerances
Step 5. Chain worn beyond effective limits Check for recommended wear allowance. Replace chain if necessary
CONTROL DRIVE OVERHEATING
Step 1. Load exceeds drive capacity Use oversize chain or larger size unit. Lower load requirements.
Step 2. Insufficient oil. Too much oil in drive: heat is generated by excessive oil churning Check oil levels and adjust to proper level
Step 3. Improper grade of oil Flush and refill per data on nameplate
Step 4. Excessive loading Check and adjust chain tension

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

CONTROL DRIVE OVERHEATING-Continued

Step 5. Constant speed shaft RPM higher than 5% limit
Reduce input speed of drive

CONTROL DRIVE RAPID CHAIN WEAR

Step 1. Load exceeds drive capacity
Use oversize chain or larger size unit.
Lower load requirements
Step 2. Improper chain tension
Check and adjust chain tension

CONTROL DRIVE NOISE AND VIBRATION

Step 1. Improper installation
Check mounting bolts use lockwashers to prevent loosening
Step 2. Wear evident by dullness of balls, rollers and raceways
Replace worn bearings
Step 3. Abrasives in oil
Clean and flush drive and replace oil.
Step 4. Spalling or flaking out of raceways
Replace bearings
Step 5. Unusual indication of overload. Gage failure indicates overload
Check bearing adjustments, loading of drive coupling alignment, and overhung loads
Step 6. Overloading causes pitting of tooth faces
Reduce load or replace with drive of sufficient capacity
Step 7. Shoe bracket springs in wrong locations
Check for proper location
Step 8. Improper care or excessive loads
Check chain tension, loading, and lubrication.
Step 9. Low oil level reduces lubrication effect of oil and increase friction in drive
Fill to level indicated
Step 10. Improper chain tension
Check and adjust chain tension.

CONTROL DRIVE EXCESSIVE SHAFT END PLAY

Normal wear or abrasive conditions
Check adjustment on tapered bearings.
Replace ball bearings and check seals for entrance of foreign material. Drain, flush, and refill.

CONTROL DRIVE OIL LEAKAGE

Step 1. Excessive oil
Check level
Step 2. Worn seals
Replace seals
Step 3. Clogged breather holes
Clean breather holes
Step 4. Housing joints not sealed
Refer to reassembly on cleaning and sealing metal-to-metal joints

AIR PUMP RUNS HARD OR EXCESSIVELY HOT

Step 1. Pump wing burred or slightly oversize.
Remove burr. Refit oversize wing.

LACK OF PRESSURE OF AIR PUMP

Step 1. Pump not running at correct speed
Check that inlet of pressure is free and open
Step 2. Obstruction or leaks in air hoses
Check that pump interior is free from dirt.
Repair or replace all defective air hoses.

Section III. GENERAL MAINTENANCE

5-6. General

a. These instructions are published for the use of field and depot maintenance personnel maintaining the Model 3CX Lithographic Offset Press. They provide information on the maintenance of the equipment which is beyond the scope of the tools, equipment, personnel, or supplies normally available to using organizations.

b. Report all equipment improvement recommendations as prescribed by TM 38-750.

5-7. Description

For a complete description of the Model 3CX Offset Press, refer to paragraph 1-7.

5-8. Tabulated Data

(1) Motor, drive, main

Manufacturer ..... Reliance Electric and Engineering Company
Serial No. ..... 11830005T1 meters)
Horsepower 7 1/2
Speed ..... 1750 RPM
Voltage 240
Amperes 28.6
Current ..... Direct
Model No. H56-44353-06

*(2) Power units V*S*

Manufacturer ..... Reliance Electric and Engineering Company
Serial No 1ST830005T1
Frame D-71/
Voltage 208
Amperes Locked Rotor ... 204

(3) Control drive, positive infinitely variable.

Manufacturer ..... Link Belt Co.
Model No. ..... ½ -50
Input revolutions per minute 690
Ratio 2:1
Horsepower delivered output RPM ..... 95 at 488 RPM
1.35 at 976 RPM
Chain size ..... 1-27 links per inch (2.54 CM) shaft
Weight ..... 80 lbs (36.288 kg)

(4) Lubricator unit.

Manufacturer ..... Bijur Lubricating Corp.
Model No. AAD-R3
Part No. D-2234
Lubricating Cycle ..... 4 min.
RPM of drive shaft ..... Min: 400
Normal: 600
Max: 1000
Drive Direction ..... Right hand

(5) Reservoir.

Manufacturer ..... Bijur lubricating Corp.
Part No. D-2214
Capacity ..... 3 phase (1400 cu cm.) when the gear is reinstalled.

(6) Pressure gage.

Manufacturer ..... Bijur Lubricating Corp.
Type ..... PB
Part No. B-3513
Pressure Range ..... 0-200 lbs

(7) Rotary air pump.

Manufacturer ..... Leman Bros. Inc.
Type ..... Curved Wing Type
Part No ..... B
Weight ..... 27 lbs
Speed ..... 600 RPM
Displacement ..... 8.5 cu ft.(.24072 cu per minute

(8) Blower motor.

Manufacturer ..... Wanger Electric Corp. St. Louis, Mo.

Type ..... RP
Speed ..... 1725 RPM
Horsepower ..... ½
Voltage ..... 208-220/440, 3 phase
Amperage ..... 1.8/1.8/.9, 60 Hertz 2/21, 50 Hertz

(9) Static eliminator.

Model No D268R
Unit No. .....
Voltage and Frequency ..... 120 volt, 60 Hertz
Amperage ..... .25

(10) Sheet Counter.

Manufacturer ..... Veedor Root, Inc.
Series No. 1669
Part No 166946-1
Shaft Rotation ..... No. 4 (one count per revolution of drive

5-9. Press Maintenance

When performing any maintenance on the press which involves removing parts of the press that to 35 min. below listed practices are recommended.

a. Scribe lines or otherwise mark the position of the part that is to be removed, with respect to the part to which it is attached as well as its relative to any adjacent parts.

b. When removing a gear, the meshing teeth of all gears in contact with the gear to be removed should be marked, to avoid a timing problem

Table 5-2. Roller Bearing Data

McGill Bearing Number	AFBMA Number	Max Clamping Torque Inch Pounds
CF-1/2N	001CTA	25 (.288 kg-M)
CF-1/2	003CTA	25
CF-9/16	005CTA	25
CF-5/8	013CTA	70 (.806 kg-M)
CF-11/16	015CTA	70
CF-3/4	021CTA	190 (2.2128 kg-M)
CF-7/8	027CTA	190
CF-1	031CTA	500 (5.76 kg-M)

McGill Bearing Number	AFBMA Number Inch Pounds	Max Clamping Torque
CF-1-1/8	035CTA	500
CF-1-1/4	045CTA	690 (7.97 kg-M)
CF-1-3/8	047CTA	690
CF-1-1/2	051CTA	1300 (13.8 kg-M)
CF-1-5/8	057CTA	1300
CF-1-3/4	065CTA	2500 (26.45 kg-M)
CF-1-7/8	069CTA	2500
CF-2	075CTA	3000 (32.21 kg-M)

Table 5-3. Assembly Torque for Set Screws

Set Screw Diam.	Hx. Size Across Flat	Min. Inch Lbs	Recommended Torque Foot Lbs.
#10 (.190)	3/32	28	2.3 (.318 kg-M)
1/4	1/8	66	5.5 (.76 kg-M)
5/16	5/32	126	10.5 (1.45 kg-M)
3/8	3/16	228	19.0 (2.638 kg-M)
7/16	7/32	348	29.0 (4.01 kg-M)
1/2	1/4	504	42.0 (5.81 kg-M)
5/8	5/16	1104	92.0 (12.72 kg-M)

Section IV. REMOVAL AND INSTALLATION OF MAJOR COMPONENTS AND ASSEMBLIES

5-10. General

This section provides instructions for removal and installation of major components of the offset press. In general the major components of the offset press are the motor generator unit with associated drive motor and control panel and the positive infinitely variable control unit.

5-11. Motor-Generator Unit

a. Removal. To remove the motor-generator unit from its location for any reason, remove the electrical connectors to the unit. The unit can now be lifted by inserting steel rods through the holes located at the bottom of the unit and placed on any suitable dolly for movement.

b. Installation. The motor-generator unit has a specific location within the press package. It should be mounted in this space with the front side facing the press. The front door of the control unit is of special construction incorporating both an air intake and exhaust. It is important that this side of the cabinet be clear from obstruction so that the unit will receive proper ventilation. It should be mounted on a firm, level foundation with approximately 6 inches clearance in the front. Rotating equipment of two bearing construction does not require a critical check of alignment. If the rotor and armature turn freely, it should give no trouble.

5-12. Drive Motor and Operator's Control Station

The drive motor and operator's control station and auxiliary pushbutton stations are properly located and mounted on the press. The drive motor and control station are completely interwired and if removed, care should be taken to see that all connecting wires are coded so that they can be correctly rewired.

5-13. Positive Infinitely Variable Speed (P.I.V.) Control Unit

a. Removal. To remove the variable speed control unit remove the four attaching capscrews and chain. Eyebolts are furnished for lifting and handling the unit; however, a rope sling can also be used to balance or level the drive. Use a hoist and sling only when properly secured and capable of handling the load.

b. Installation. Before installing, remove any rust preventive with kerosene or a similar solvent from shaft projections, seals and parts. Mount sprockets as close to the drive as possible, to minimize the overhung load. Avoid heavy blows which may damage the internal gears or bearings. Install unit with capscrew provided and check that unit rests evenly on support, if uneven, shim unit with flat shims so that units rests uniformly on support. This will prevent distortion and misalignment when bolted down. After a few days operation, check alignment and tighten bolts if necessary.

CHAPTER 6

REPAIR INSTRUCTIONS

Section I. REPAIR OF FEEDER ASSEMBLY

6-1. Alignment, Assembly, Repair and Replacement

a. General.

(1) Remove dirt and grit from serviceable brake linings (29, 35, fig.4-13) using a clean dry cloth. Remove grease spots and roughen slick surfaces using fine steel wool or fine sandpaper.

(2) Replace all damaged fiber washers (8, 95, 106, 147).

b. Mount McGill CF Type Bearings (64, 75, 84, fig.4-13).

(1) The cam follower should be drawn up tightly endwise so the bearing end plate is securely backed up by the machine member. However precaution should be taken, that excessive torque is not applied when tightening the nut. Otherwise undue stress may be set up in the stud. (Table 5-2).

(2) A screw-driver slot is provided at the flanged end of the stud for the purpose of flanged end of the stud for the purpose of preventing the stud from turning when the nut is tightened. The bottom of the screwdriver slot is rounded and as necessary use a special screwdriver having a rounded edge to hold the stud securely.

(3) When driving the stud into the machine member, any pressure should be directed against the solid end of the stud, not against the flange portion. This operation should be performed on an arbor press if possible.

(4) The cam follower stud diameter should be a tight fit in the housing bore.

c. Mounting of Sealmaster Bearings (97, 155, 170, fig. 4-13).

NOTE

The ball bearing extended inner race rings are ground for sliding fit over the shaft. They are easily and securely locked to the shaft by means of two self-locking, cup point, socket head setscrews.

(1) When locking bearing unit to shaft, make certain that shafting is free of burrs. Slide bearing into position on the shaft. Never hammer the ends of the inner race since they are comparatively soft. If necessary, use a brass bar on pipe against the end of the inner race to drift bearing into place.

(2) Tighten the self-locking, cup point setscrews securely onto the shaft. Recommended torques for tightening the setscrews are given in table 5-3.

d. Mounting of Radial Ball Bearings. (142, 172, 174, 177, 179, 182, 184, 191, 201, fig. 4-13).

NOTE

The bearing housing must be carefully cleaned to remove all traces of metal chips, filings, etc. It is very important that the bearing be left in its original carton or wrapping until it is to be installed. No attempt should be made to remove the slushing grease in which it is paced since this protective age is also lubricant. If it becomes absolutely necessary to clean the bearing before mounting, use filtered water free kerosene and immediately apply fresh lubricant.

(1) To drive the inner ring of bearing on a shaft a piece of tubing should be used that will bear evenly against the face of the inner ring.

(2) Under no circumstances should pressure be applied to the outer ring of the ball assembly.

e. Install Feed Rollers. When installing feeder rollers (169, fig. 4-13), measure outside diameters of rollers with micrometer, then install roller with larger diameter in frame hole furthest away from the paper roll shaft. This will prevent the paper web from bunching up between these rollers and the feeder rider roller when press is operating.

6-2. Roller Assemblies Repair and Replacement

a. Removal.

Refer to figure 4-13 item 89 thru 175 and remove roller assemblies.

b. Replace defective parts.

c. Installation. Install in reverse order of removal.

a. Removal.

(1) Refer to paragraph 4-33 and remove speed control assembly.

(2) Remove plug (62, fig. 6-2) and drain oil.

b. Disassembly (fig. 6-1 and 6-2).

(1) Release tension by turning chain adjusting pinion (10, figure 6-1) in direction indicated while turning unit by hand. Next, remove chain adjusting pinion from unit.

(2) Remove indicator plate (14, fig. 6-2), lockplate (18) and hand wheel (2).

(3) Remove springs (33, fig. 6-2) from shoe bracket assembly. Note positions of springs as related to figure 6-3 in shoe mechanism and spring assembly.

(4) Uncouple and remove chain (44, fig. 6-2).

(5) Remove plate (4, fig. 6-2) and screw (5) from sideplates at control screw projection. Do not remove oil seal (6, fig. 6-2) from sideplate at the control screw unless damaged. File or polish setscrew marks or burrs from control screw projection. Do not remove oil seal (6, fig. 6-2) from sideplate at the control screw unless damaged. File or polish setscrew marks or burrs from control screw projection to protect seals from damage.

(6) Remove all keys (47, fig. 6-2) from ex tensions. Clean off all burrs and make provisions to protect seals if they are to be used again. Replace all damaged seals.

(7) For further disassembly the unit should be turned on its side, slinging whenever necessary. Turn internal assembly on its side and support it on blocks high enough to clear shaft projections.

(8) Remove all bolts in upper sideplate and separate joint with thin steel wedge or jack screws. Lift side plate straight up until clear of all projections; with a rope sling, lift out the balance of the internal parts of the unit as an assembly. Remove shoe bracket (37, fig. 6-2) and related items.

(9) For further dismantling, support the internal assembly on blocks placed under the control lever.

(10) Remove entire control screw (59, fig. 6-2) and related items by sliding it out of the slots in the levers (39).

CAUTION

Be careful not to lose the control pivot blocks (48, fig. 6-2) on the end of the control pivots (49, 51, 52, 53).

(11) Remove bolts (37A, fig. 6-2) from top of control levers and lift off. Note their position for reassembly. Holes are off-center and levers become right or left hand by inverting.

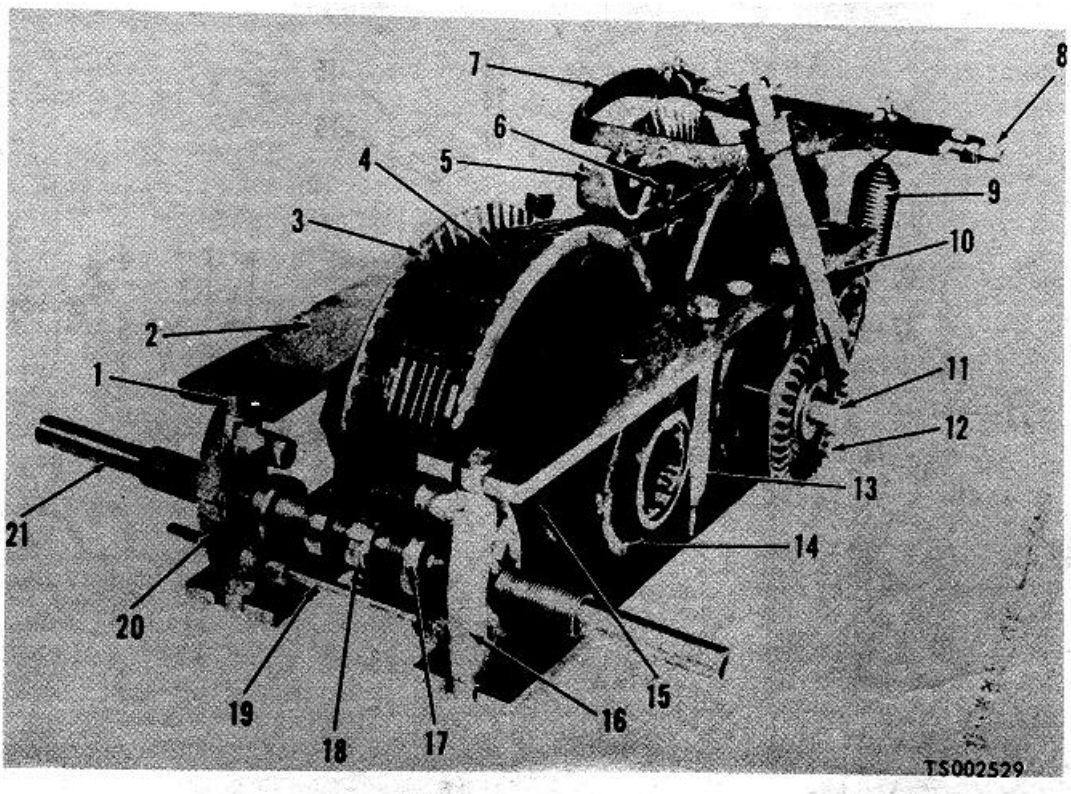
(12) Lift out chain adjusting screws (60, fig. 6-2) and related items.

(13) Remove shafts (46, and figure 6-2) by lifting out entire assembly including wheel flanges (45), bearings (42) and yokes (41).

(14) Press bearings from shaft and remove thrust yoke.

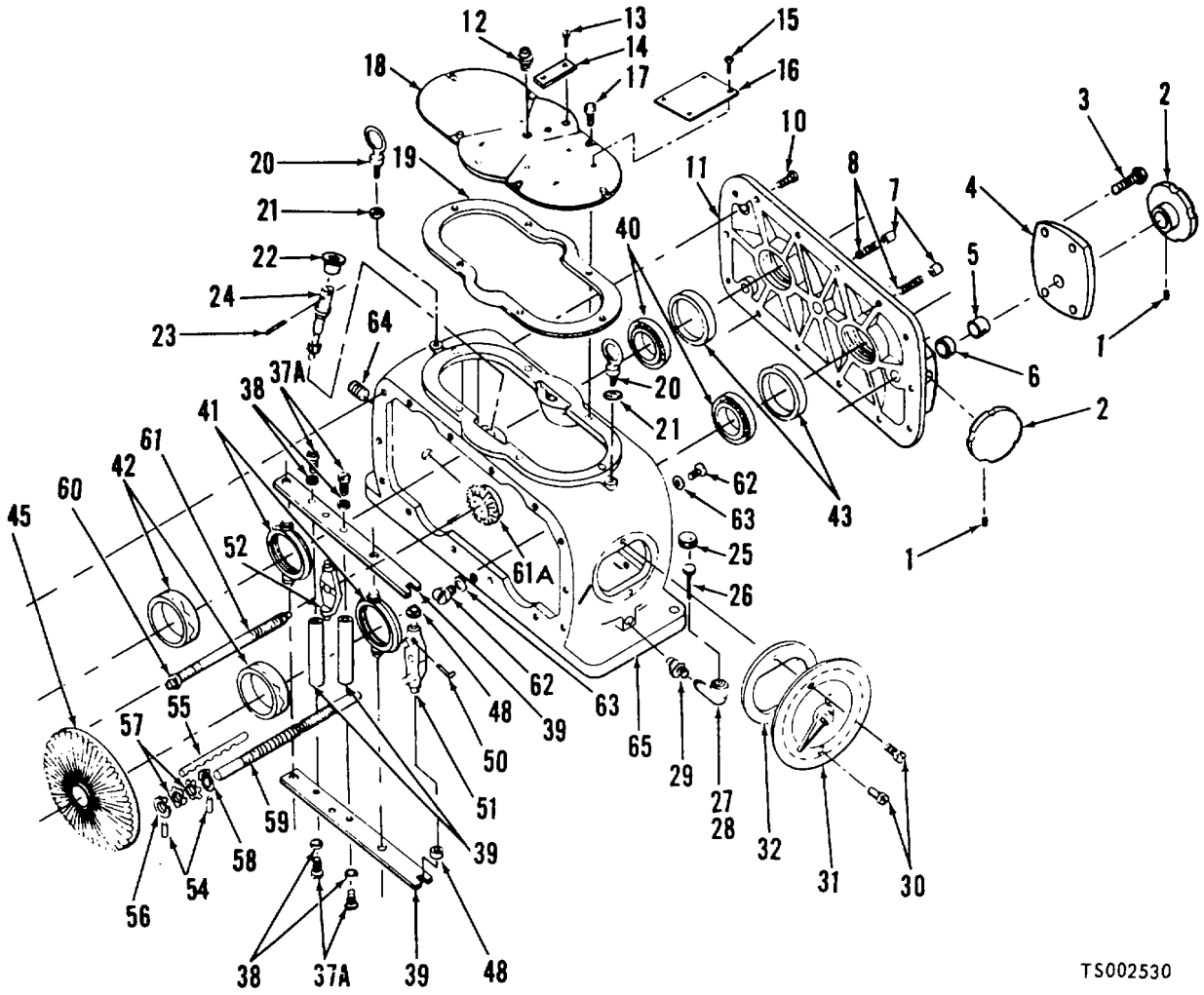
(15) Remove thrust bearings, noting that the inside diameter of one race seats on hub of flange while the other does not.6-2

(16) Remove wheel flanges from shaft, keeping them in matched pairs for each shaft.



1. Control Pivot Block
2. Control Lever
3. Wheel face
4. Chain
5. Shoe
6. Shoe pin
7. Shoe Bracket
8. Bushing
9. Spring
10. Pinion
11. Screw
12. Gear
13. Spacer
14. Yoke
15. Bearing
16. Pivot
17. Nut
18. Nut
19. Rack
20. Pivot
21. Screw

Figure 6-1. Internal view of P.I.V. Unit.



1. Setscrew
2. Handwheel
3. Screw
4. Plate
5. Linkage
6. Seal
7. Nut
8. Stud
9. Closure
10. Screw
11. Plate
12. Breather
13. Screw
14. Plate
15. Screw
16. Plate
17. Screw
18. Plate
19. Gasket
20. Bolt
21. Washer
22. Bushing
23. Pin
24. Pinion
25. Cap
26. Pin
27. Body
28. Gasket
29. Adapter
30. Screw
31. Indicator assembly
32. Gasket
33. Spring
34. Pin
35. Shoe
36. Bushing
37. Bracket
37A. Screw
38. Washer
39. Lever
40. Bearing
41. Yoke
42. Bearing
43. Seal
44. Chain
45. Wheelface
46. Shaft
47. Key
48. Block
49. Pivot
50. Pin
51. Pivot
52. Pivot
53. Pivot
54. Pin
55. Rack
56. Nut
57. Nut
58. Nut
59. Screw
60. Shim
61. Screw
61A. Gear
62. Plug
63. Gasket
64. Plug
65. Housing

Figure 6-2. PIV Unit (Sheet 1 of 2).

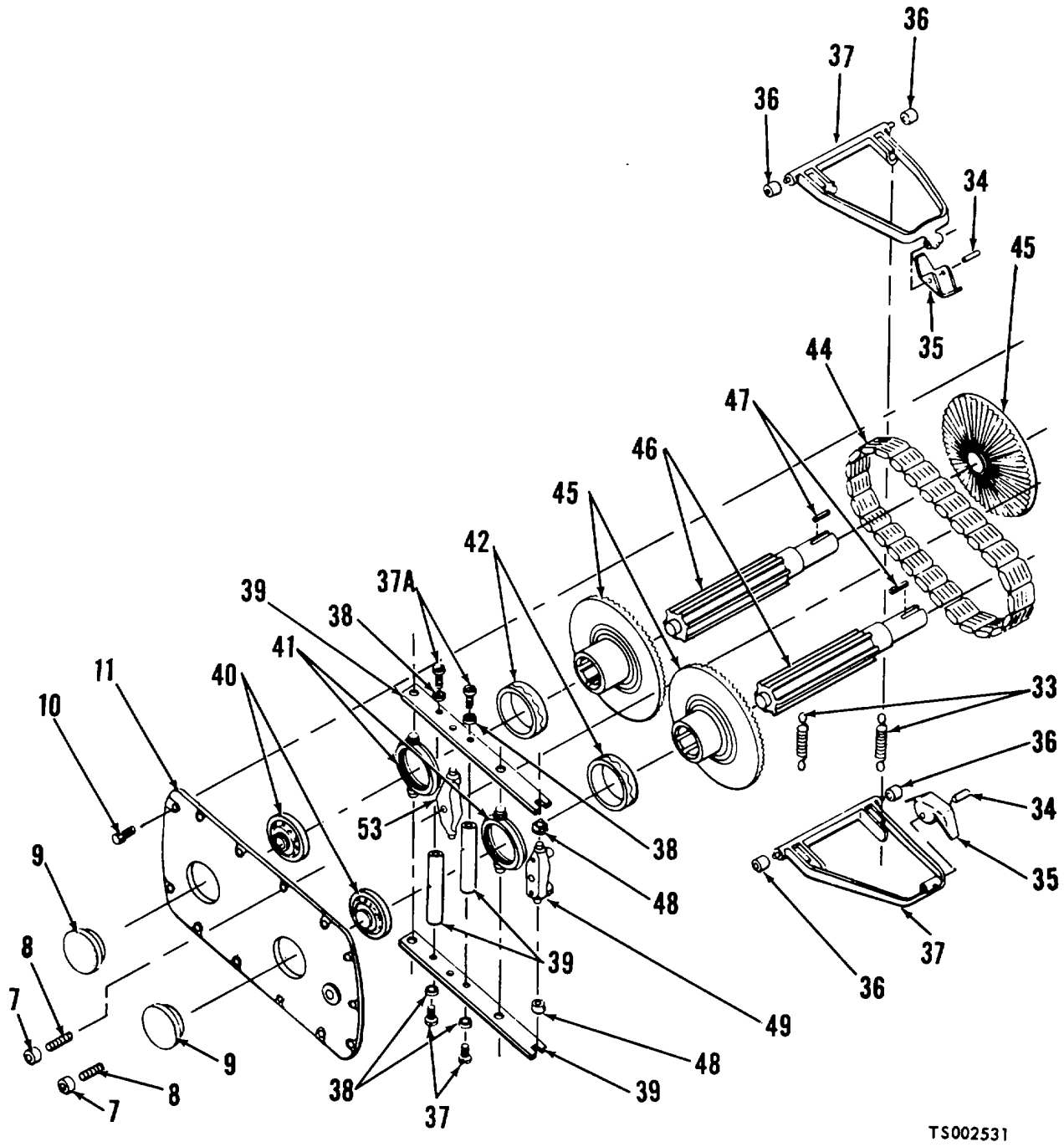


Figure 6-2. PI V Unit (Sheet 2 of 2).

c. Reassembly and Adjustment. Reassembly is the reverse of disassembly with the following additional instructions.

(1) Thoroughly clean all parts before reassembly. Pay special attention to all metal-to metal sealing joints to assure oil-tight units after assembly.

(2) Replace wheel flanges on shafts in pairs as removed, noting etched numbers on back rim of flanges. Be sure they are assembled diametrically opposite.

NOTE

If flanges require replacement, replace in pairs.

(3) It is essential to evenly space control screw pivots and chain adjusting screw pivots on their respective screws before reassembling. This assures proper alignment of the assembled unit. Refer to figure 6-6.

(4) Guide control screw, chain adjusting screw and shoe bracket journals into their respective bores. Be certain each is properly seated and moves freely when the unit is reassembled.

(5) Tighten bolts uniformly on sideplates, covers, and attachments during assembly.

(6) Check rotation of the basic variable speed unit by hand. Then, reassemble geared input and output attachments in their proper positions.

(7) To adjust chain tension, loosen or tighten chain as required; rotate drive by hand and turn adjusting shaft in desired direction. See figure 412.

(8) To adjust ratio limits, turn the two adjustable limit nuts until they are back to back, approximately in the center of the indicator dial and pointer assembly at control end of unit (fig. 64). Be certain limit lock plate (fig. 6-5) engages with notches in adjustable limit nuts.

(9) Check Alignment after each dismantling and reassembly operation, using a straight edge and scale, through the inspection cover opening as follows:

(a) Place scale on back side of flange contacting rim at two points as far apart as possible and extending to second pair of flanges. Take accurate measurement from straight edge to back of flange. Record this dimension and repeat same procedure for opposite flange. The two dimensions (See figure 6-7) obtained by this method must not exceed the variation within .020 inch (approximately 1/64 inch) (.0397 CM).

(b) At 1 to 1 ratio, the flanges must be directly in line with each other subject to the above tolerances. When variations beyond these limits are encountered, it is necessary to dismantle the unit and reassemble it again. Pay particular attention to spacing of the control screw and chain adjusting screw pivots on their respective screws. Refer to figure 6-6.

(10) Fill with proper grade and quantity of lubricant for operating conditions, as specified in lubrication order.

(11) The shoe mechanism and spring assembly provide correct chain seating pressure. To produce the desired pressure on the shoe, attach springs (fig. 6-3) in the position shown in relation to the floor line.

(12) The control Screw Lock is an adjusting screw located in a clamping device (See figure 6-8) on the control screw. The amount of restraint applied to control screw is determined by the pressure exerted by the adjusting screw.

d. Installation. Refer to paragraph 4-29 and install speed control assembly in reverse order of removal.

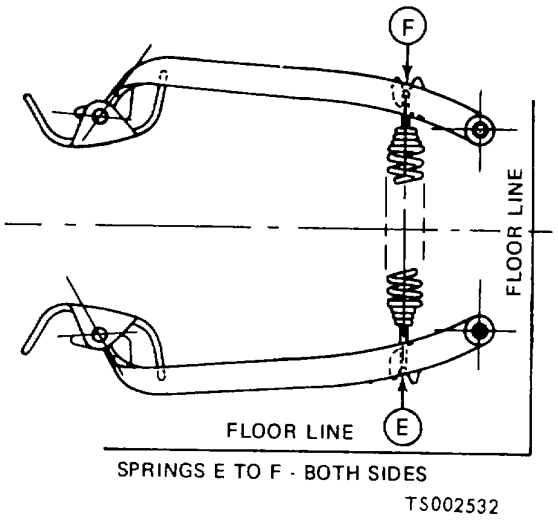


Figure 6-3. Shoe Mechanism Springs Installed.

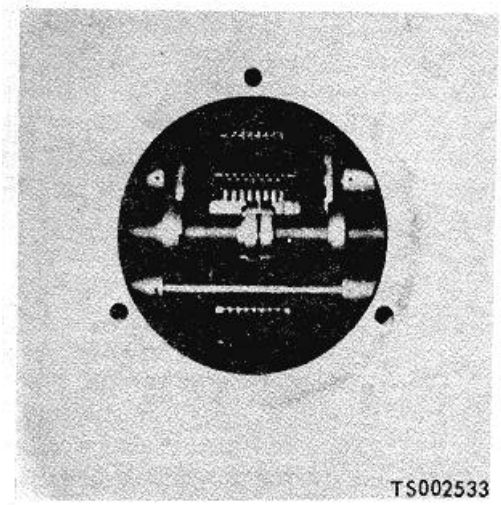


Figure 6-4. Adjustable Limit Nuts.

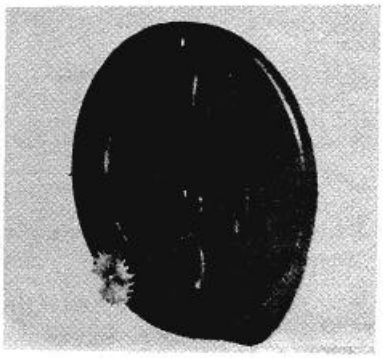


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Figure 6-5. Limit Lock Plate.

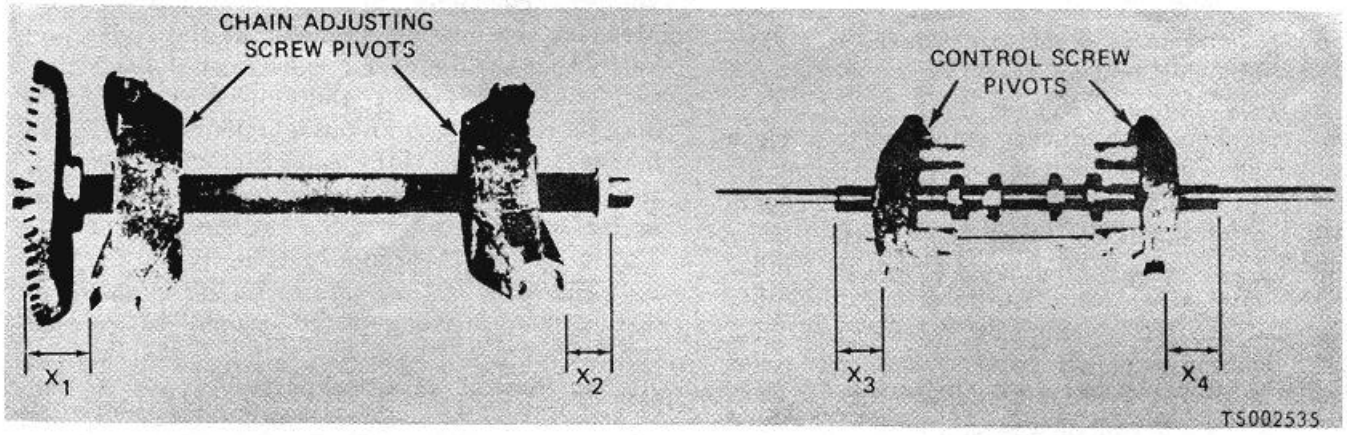


Figure 6-6. Adjustment Screw and Control Screw Pivots.

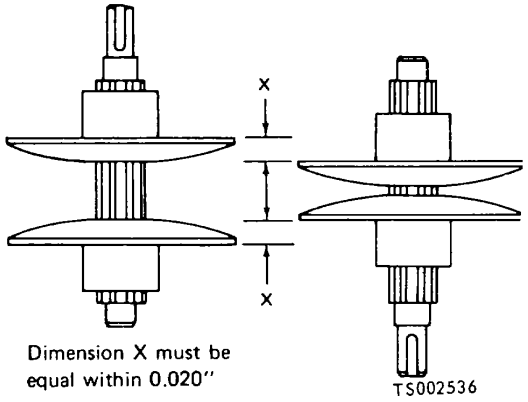


Figure 6-7. Alignment check of Wheel Flanges.

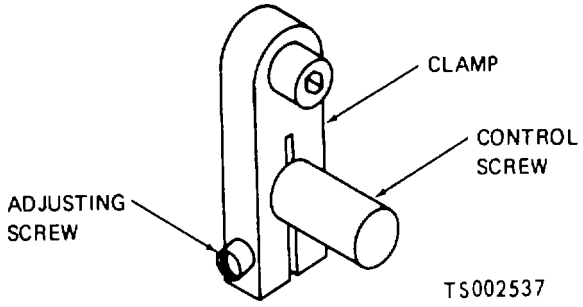


Figure 6-8. Control Screw Lock Adjustment

Section II. REPAIR OF OFFSET UNIT

6-4. Ink Motion Assembly

a. Disassembly. Refer to figure 4-21 and disassemble ink motion assembly.

b. Inspection and Repair.

(1) Clean each ductor roller with a cloth dampened with ink solvent, paying special attention to the ends of the rollers. Dry the rollers with a clean soft cloth, then inspect the ductor roller for pits, gouges, flat spots and other similar defects. Measure the outside diameter of the roller and verify that the dimension is between 1.9995 and 2.005 inches (5.079 and 5.09 cm). The roller may be reground to an outside diameter of 1.9995 inches (5.079). If the roller cannot be repaired, the roller must be rerubbered back to standards, or replaced .

(2) Clean distributor rollers with a cloth dampened with ink solvent, paying special attention to the ends of the rollers. Dry rollers with a clean soft cloth. Inspect the rollers for pits, gouges, flat spots, and other similar defects. Measure the outside diameter of the rollers and verify that the dimension is between 2.495 and 2.505 inches (6.337 and 6.363 cm). The roller may be reground to an outside diameter of 2.496 inches (6.337 cm). If the roller cannot be repaired, the roller must be rerubbered back to standards or replaced.

(3) Clean each ink form roller with a cloth dampened with ink solvent paying special attention to the ends of the rollers. Dry the rollers with a clean soft cloth. Inspect the rollers for pits, gouges, flat spot, and other similar defects. Measure the outside diameter of the roller and verify that the dimension is between 2.495 inches and 2.505 inches (6.337 and 6.363 cm). The roller may be reground to an outside diameter of 2.495 inches (1.337 cm). If the roller cannot be repaired, the roller must be rerubbered back to standards, or replaced.

(4) Inspect bearings (69, 70, 113, 122, 205, 231, 250, 256, 260, 261, and 279) for evidence of dirt and abrasives, pitted scored or burned condition.

(5) Replace defective parts.

c. Reassembly. Refer to figure 4-21 and assemble in reverse order of disassembly.

6-5. Ink Vibrator Assembly and Roller Assembly

a. Disassembly. Refer to figure 4-21 items (243 thru 268} and disassemble ink vibrator assembly.

b. Repair. Replace defective parts.

c. Reassembly. Reassembly ink vibrator assembly in reverse order of disassembly.

6-6. Ink Vibrator Roller Assembly

a. Removal. Refer to figure 4-21 item 269 thru 291 and remove ink vibrator roller assembly.

b. Repair. Replace defective parts.

c. Installation. Install in reverse order of removal.

6-7. Plate Cylinder and Bushings

a. Removal.

(1) Refer to figure 4-23 and remove items 1 thru 29.

(2) Remove item 30, cylinder plate assembly, and disassemble in item number sequence 31 thru 58.

(3) Replace defective parts.

b. Installation. Install in reverse order of removal.

6-8. Blanket Cylinder Assembly and Bushings

a. Removal.

(1) Refer to figure 4-23 and remove items 59 thru 75.

(2) Remove item 76, blanket cylinder assembly and disassemble in item number sequence 77 thru 91.

(3) Replace defective parts.

b. Installation. Install in reverse order of removal.

6-9. Impression Cylinder Assembly and Bushings

a. Removal.

(1) Refer to figure 4-23 and remove items 92 thru 109.

(2) Remove item 110, impression cylinder assembly.

(3) Replace defective parts.

b. Installation. Install in reverse order of removal.

6-10. Water Motion Assembly

a. Disassembly. Refer to figure 4-27 and disassemble water motion assembly.

b. Inspect and repair.

(1) Remove the ductor and form roller 3/32 inch mollector cover and 1/16 inch flannel cover. Clean the ductor and form rollers (55, 142, and 150, figure 4-27\ with a cloth dampened with solvent. Dry the rollers with a clean soft cloth, then, inspect the ductor and form roller for glazed spots, pits, gouges, flat spots, and other defects. Measure the outside diameter of the roller and verify that the dimensions are between 1 59/64 and 1 61/64 in (4.88 and 2.42 cm). The rollers may be reground to an outside diameter 1 59/64 in (4.88 cm). If the rollers cannot be repaired, the rollers must be rerubbered back to standards or replaced. After repair, recover the ductor and form rollers with new mollector and flannel covers.

(2) Clean the vibrator roller (137) and with a clean, soft cloth dampened with solvent. Rinse roller with clean water and dry it with a soft clean cloth. Inspect the roller for breaks, cracks, nicks and other similar defects.

(3) Inspect bearings (45, 54, 74, 77, 85, 89, 141, 149) for evidence of dirt and abrasives, pitted, scored, or burned condition.

(4) Inspect bushings (3, 12, 31, 34, 64, 93, 98, 161, 163) for wear.

(5) Inspect lubrication fitting (90) on vibrator housing (92) for evidence of contaminated or clogged condition.

(6) Inspect fiber washers (26, 96, 99) and replace as required.

(7) Inspect springs (22, 38) for bends, cracks, breaks or distorted coils.

(8) Replace defective parts.

(9) Reassembly. Refer to figure 4-27 and assemble in reverse order of disassembly.

6-11. Water Vibrator Assembly

a. Disassembly. Refer to figure 4-27, items 68 thru 102 and disassemble water vibrator assembly.

b. Repair. Replace defective parts.

c. Reassembly. Reassemble water vibrator assembly in reverse order of disassembly.

Section III. REPAIR OF DELIVERY UNIT

6-12. Trolley Drive Roller

a. Removal. Refer to figure 4-29 and remove items 111 thru 122.

b. Repair. Replace defective parts.

c. Replace. Replace trolley drive roller in reverse order of removal.

6-13. Compensator, and Lead Roller Assembly

a. Removal. Refer to figure 4-25, item 77 thru 110, and remove compensator and lead roller assembly .

b. Repair. Replace defective parts.

c. Installation. Install in reverse order of removal.

6-14. Idler Roller Assembly

a. Removal. Refer to figure 4-29, items 127 thru 155, and remove idler roller assembly.

b. Repair. Replace defective parts.

c. Installation. Install in reverse order of removal.

6-15. Nipping Roller and Paper Guide Assembly

a. Removal. Refer to figure 4-29, items 156 thru 242 and remove paper guide and nipping roller assemblies.

b. Repair. Replace defective parts.

c. Installation. Install in reverse order of removal.

6-16. Rotary Cutter Assembly

a. Removal. Refer to figure 4-30, items 13 thru 42, and remove rotary cutter assembly.

b. Repair. Replace defective parts.

c. Installation. Install in reverse order of removal.

6-17. Delivery Drive Tape Assembly

a. Removal. Refer to figure 4-30, items 64 thru 202, and remove delivery drive tape assembly.

b. Repair. Replace defective parts.

c. Installation. Install in reverse order of removal.

6-18. Pile Lowering Mechanism

a. Removal. Refer to figure 4-30, items 203 thru 292, and remove pile lowering mechanism.

b. Repair. Replace defective parts.

c. Installation. Install in reverse order of removal.

6-19. Jogger Assembly, Rear and Side

a. Removal. Refer to figure 4-30, item 337 thru 386, and remove jogger assembly.

b. Repair. Replace defective parts.

c. Installation. Install in reverse order of removal.

Section IV. REPAIR OF COMPENSATOR ROLLERS AND LEVERS, AND TURN BARS

6-20. Compensator Rollers and Levers

a. Removal. Refer to figure 4-33 and disassemble compensator roller and lever assembly by following sequence of numbers.

b. Repair. Replace defective parts.

c. Installation. Install in reverse order of removal.

6-21. Turn Bar Assembly

a. Disassemble the turn bar assembly by following sequence of index numbers assigned to exploded view illustration (fig. 4-34).

b. Inspect bearings (29, 38, 46, 50, 68, 89) for evidence of dirt and abrasives and pitted, burned or scored condition.

c. Inspect chain (67) for wear.

d. Reassemble items in reverse order of disassembly. After assembly, it may be necessary to adjust turning bars (56) to prevent web from wrinkling, to adjust, loosen screw (55) and turn turning bars (56) to left or right as required.

Section V. REPAIR OF AIR PUMP AND BLOWER MOTOR

6-22. Air Pump

a. Removal. Refer to paragraph 4-88 and remove air pump.

b. Disassembly. Refer to figure 6-9 and disassemble air pump in numerical sequence.

c. Inspection.

CAUTION

A small steel silver or pipe thread crumb (too small to be easily seen} under a wing will cause hard running and over heating.

(1) Inspect wings (9) for breaks or distortion.

(2) Inspect all remaining parts for evidence of damage.

d. Repair. When necessary to replace wings of pump proceed as follows:

(1) Bolt one cylinder head (5) to the side of the cylinder (12) with the piston (10) put in position.

(2) If the wings are wider than position that should be filed to match the piston. Each wing should be fitted separately by inserting in the piston, putting on the cylinder head and turning the piston one revolution. If the wing will not pass the top of the cylinder, the wing should be removed and the joint "A" (see figure 6-10).

(3) If the lip of the worn wings have sharp edges (see figure 6-11) 12), these edges should be filed off round as shown in figure 6-11 11). The edges must be filled even and straight across, and should be checked with a square to see if they have been filed square with the sides of the wing.

NOTE

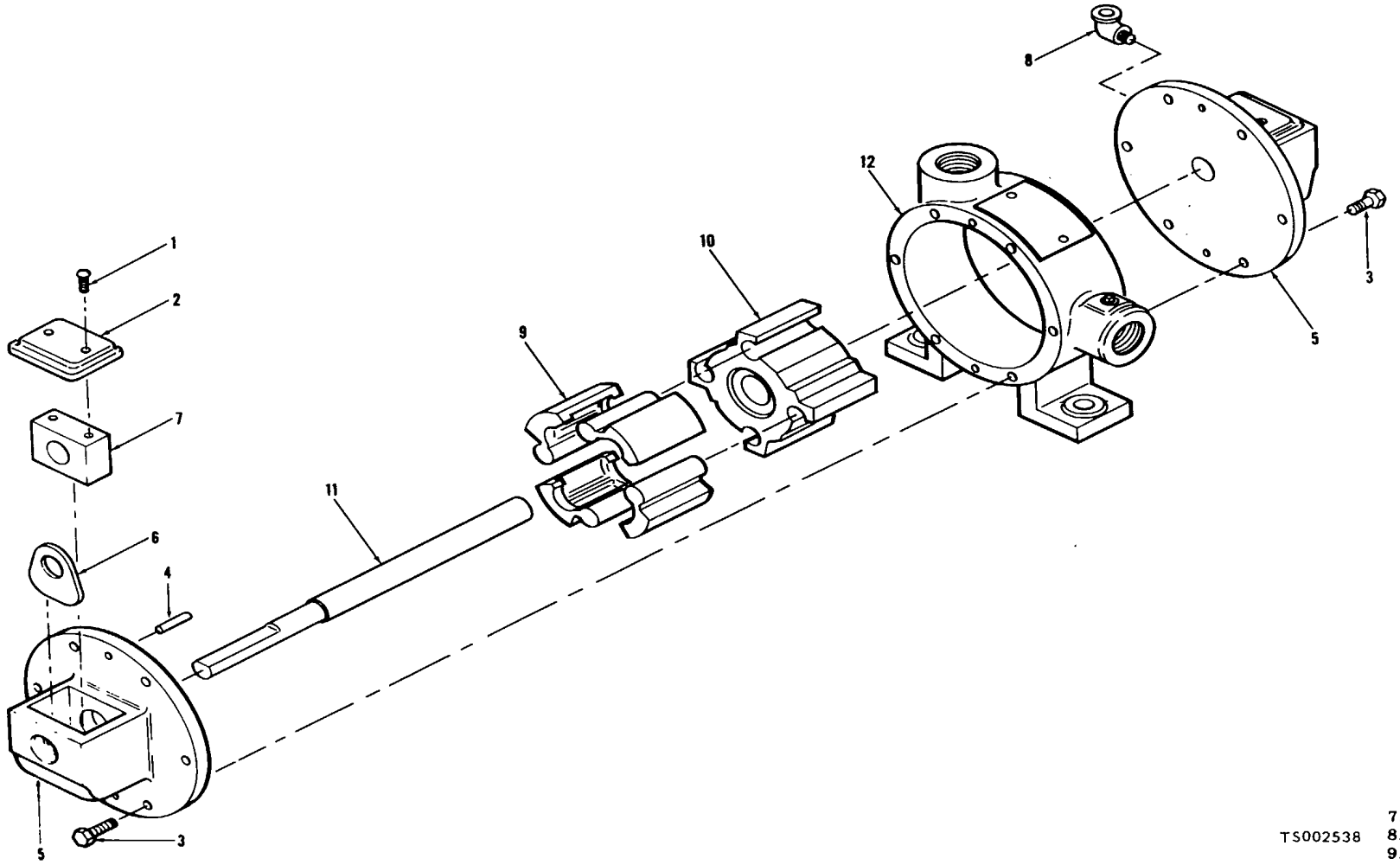
All wings are numbered on side 1 2 3 4. Be sure to replace them in their proper socket in rotor, which is also numbered.

(4) Install piston and wings in cylinder.

(5) It is not normally necessary to replace bearing washers 16), but in placing cylinder head on pump check that washers are not caught on the end of the shaft as it enters the bearing. Tighten bolts (3) opposite to each other and evenly all around. Rotate pump by hand as you proceed. If the pump does not rotate freely, repeat procedures above. Shaft end play must be 0.004 inch minimum, 0.006 maximum. If endplay is not within limits, thickness of washers (6) must be adjusted as required.

e. Reassembly. Assemble in reverse order of disassembly.

f. Installation. Refer to paragraph 8-4 and install pump.



1. Screw
2. Cover
3. Screw
4. Pin
5. Head
6. Washer
7. Bearing
8. Oiler
9. Wing
10. Piston
11. Shaft
12. Cylinder

Figure 6-9. Air Pump, Exploded View.

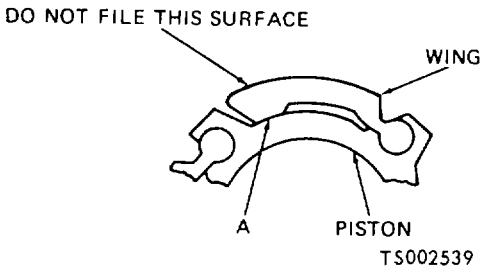


Figure 6-10. New Wing Installation on Air Pump.

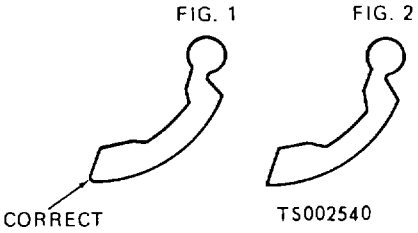


Figure 6-11. Refitting Old Wings.

6-23. Blower Motor

a. Removal. Refer to figure 4-36 and remove items 18, 19, 20, 25, 26, 27, 28, and 29.

b. Disassemble. Refer to figure 6-12 and disassemble blower motor in numerical sequence.

c. Inspection. Inspect bearings (9, 12) for evidence of dirt and abrasives and pitted, burned or scored condition. Check rotor and shaft (13) and wound stator frame (14) for burns, defects or contaminated conditions. Use armature test set to check for open coils or short circuits in rotor and shaft assembly and wound stator frame. Check insulation by applying 600 volts, 60 cps between rotor and shaft and wound stator and frame for one second; there shall be no indication of insulation breakdown.

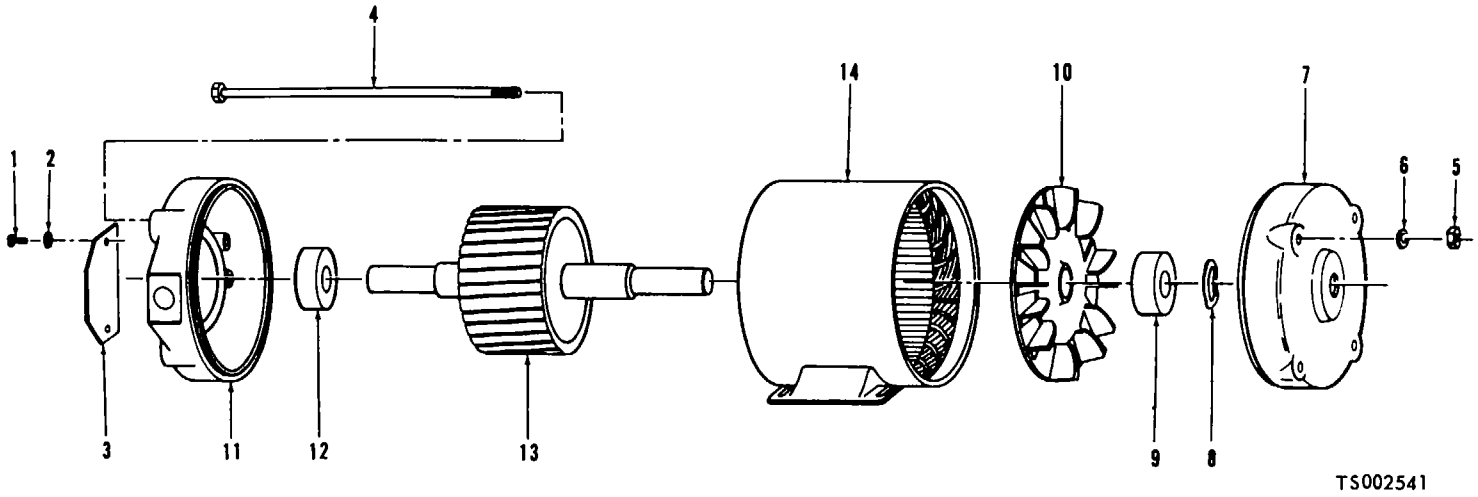
d. Repair.

(1) Ball bearings are prelubricated with a special grease, and require no other lubrication. If bearings are damaged, replace them.

(2) Renew surfaces of rotor and shaft assembly and wound stator frame at 135° C (275°F) for one hour and impregnate windings with varnish per military Specification MIL-V113-, Type M, Grade CB while under a pressure of two to five inches Hg absolute. Remove excess varnish. Bake rotor and shaft assembly and wound stator frame for 16 hours at 135 °C (275 °F).

e. Reassembly. Reassemble motor in reverse order of disassembly.

f. Installation. Install in reverse order of removal.



1. Screw
2. Washer
3. Cover
4. Bolt
5. Nut
6. Washer
7. End Shield
8. Spring Bearing Load
9. Bearing
10. Fan
11. End shield
12. Bearing
13. Rotor and Shaft Assembly
14. Stator Frame and Base Assy

Figure 6-12. Blower Motor

Section VI. REPAIR OF STATIC ELIMINATOR

6-24. Static Eliminator, BAR

WARNING

Before attempting to perform maintenance on the static eliminator unit, remove incoming power.

a. Removal. Remove cable figure 3-9 item 7, loosen clamps and lift eliminator bar out.

b. Disassembly. Refer to figure 3-9 and disassemble.

c. Repair. Replace defective parts.

d. Reassembly. Assemble in reverse order of disassembly.

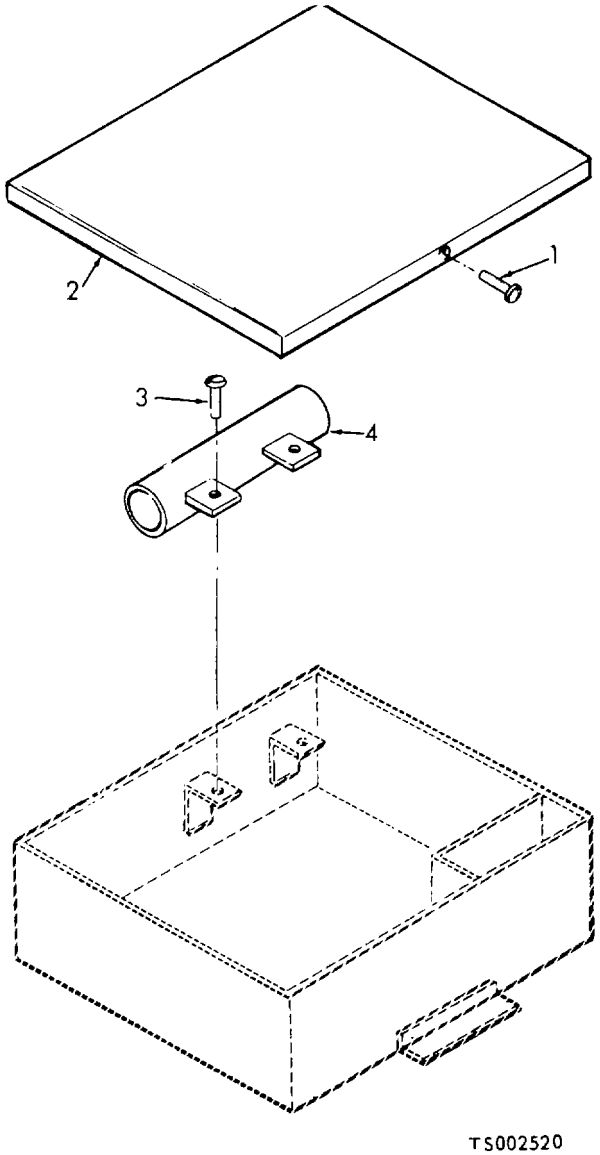
6-25. Power Unit Repair

a. Remove screw (1) figure 6-13 and remove cover (2).

b. Remove screw (3) and replace resistor (4).

c. Put cover and screw back on unit.

d. Replace complete power unit if the potted transformer is defective.



1. Screw
2. Cover
3. Screw
4. Resistor

Figure 6-13. Power Unit Static Eliminator.

Section VII. REPAIR OF ELECTRICAL COMPONENTS

6-26. Motor, Main Drive D.C.

a. Inspection. Inspect bearing for excessive heat.

b. Removal.

(1) Refer to paragraph 4-13 and remove guards.

(2) Disconnect motor from line.

(3) Remove bolts mounting motor to frame.

(4) Remove motor from base.

c. Disassembly. (fig. 6-14).

(1) Remove protective covers.

(2) Remove brushes, disconnect leads to brush-holder studs.

d. Armature Assembly Repair. An armature assembly (47, fig. 6-14) in good condition is clean and smooth and has a medium polish and is light brown in color. Keep clean by occasionally wiping with a canvas pad. Use no lubricant or emery abrasive. If the armature assembly becomes rough it needs to be resurfaced. Roughness can be easily detected with the machine running by resting a pencil-like rod of insulating material (dry wood) on one of the brushes. In mild cases, a dressing stone can be used. Very rough or out of round armature assemblies require turning in a lathe. In every case, maintain concentrically and remove the minimum material required for proper clean-up. Under-cut the mica approximately 1/16 inch (.15875 cm) and polish. Adjust brush holders for approximately 1/8 inch (.3175 cm) clearance to armature assembly.

e. Reassembly. Reassembly of the parts is primarily a matter of reversing the disassembly operations. Care must be exercised to avoid injury to critical parts, to make sure all parts are clean and are returned to their original positions and alignment. Specific instructions are as follows:

(1) Place bearing in its cap and heat in oven at 250°F (121 C) for 30 minutes maximum. Bearing can then be pressed into shouldered position by hand. Gloves worn should be clean. Higher temperatures or longer heating periods may cause separation of oil in the grease. After installing front end bearing (43) install lock washer (44) and then bend washer ears.

(2) Install back end bracket (6) on armature assembly (47) and tighten bearing cap screws.

Avoid damage to metering plate (10) in bracket hub. A long threaded stud may be useful in aligning bearing cap holes.

(3) Install main poles (60) and interpoles (57) reconnect correctly. Make sure original bolts and shims are replaced. Brass shims are placed next to the frame. Pole bolts must be tight.

(4) Use the same care in placing the armature assembly (47) in the frame as in removing it. Bolt the back end bracket (6) to frame.

(5) Replace the front end bracket (30) and bolt to the frame. Make sure bracket is in its original position. Avoid injury to the metering plate (45) in the hub. Replace bearing cartridge cap screws.

(6) Reconnect the leads to the brush-holder studs (31) and replace brushes (36).

(7) Brush-holders (35) should have 1/8 inch (.3175 cm) clearances to the surface of the armature assembly (47). A 1/8 inch thick piece of hard-board or plastic may be used as a gauge. All brushes on each stud must be in line. After seating the brushes, this may be checked by noting if they toe in the same commutator slot or bar. The brushes must be equally spaced around the commutator. This spacing is assured by the milled brush stud slots in the rocker (40). If the rocker has been reduced by turning or grinding, it may be necessary to reset the rocker so that the brushes are on the electrical neutral. The preferred method of checking rocker position to observe full load speed in both directions of rotation. Adjust the rocker until speed in both directions is equal.

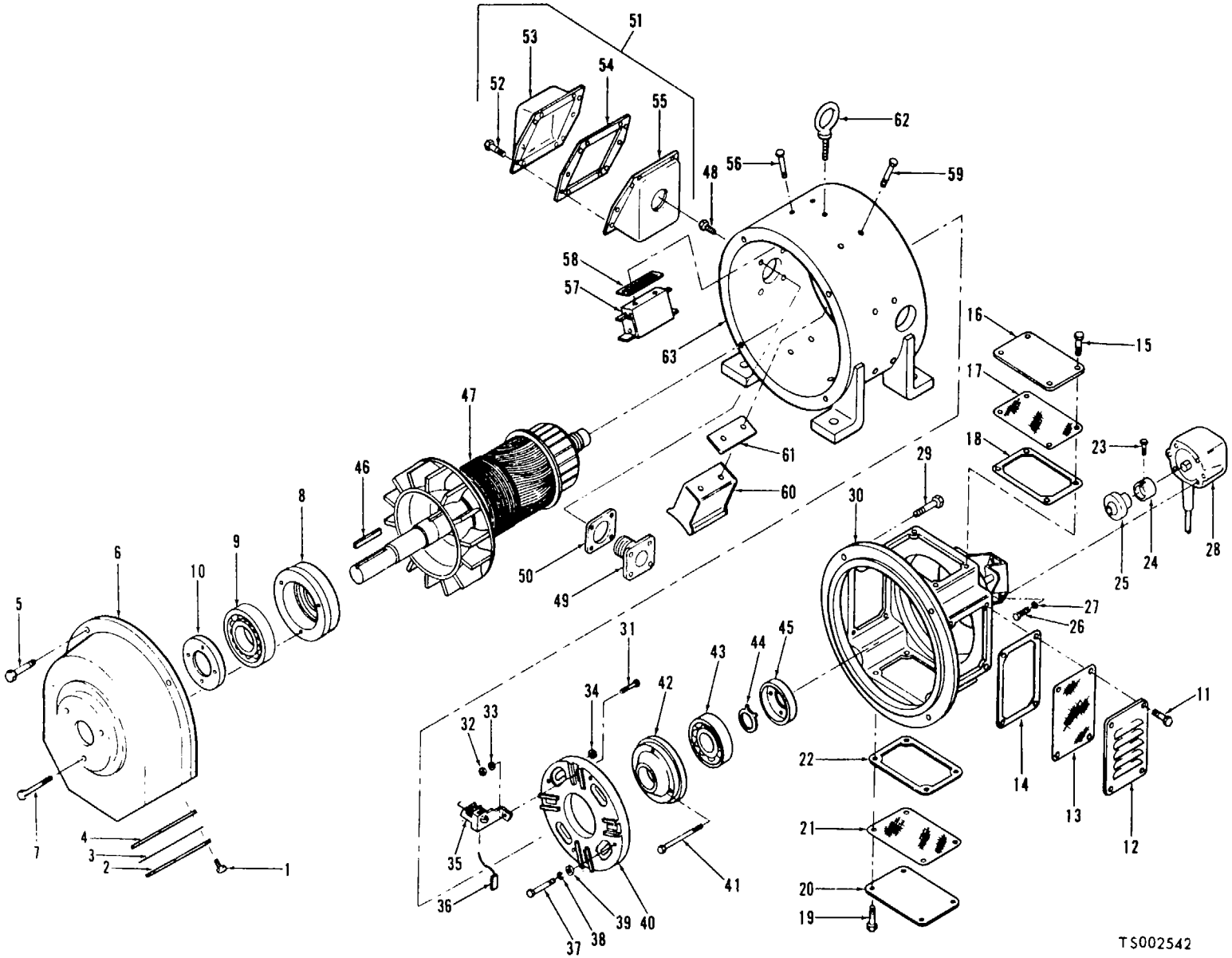


Figure 6-14. D.C. Drive Motor, Exploded View.

KEY to figure 6-14:

1. Screw
2. B.E. Bracket Cover
3. Screen
4. Gasket
5. Screw
6. B.E. Bracket
7. Screw
8. B.E. Inner Cap
9. B.E. Bearing
10. B.E. Metering Plate
11. Screw
12. F.E. Side Cover
13. Screen
14. Gasket
15. Screw
16. F.E. Top Cover
17. Screen
18. Gasket
19. Screw
20. F.E. Bottom Cover
21. Screen
22. Gasket
23. Screw
24. Shaft Coupling
25. Adapter Coupling
26. Screw
27. Lockwasher
28. A.C. Tachometer
29. Screw
30. F.E. Bracket
31. Carriage Bolt
32. Jam Nut
33. Lockwasher
34. Retaining ring
35. Brush holder
36. Carbon brush
37. Screw
38. Lockwasher
39. Flat washer
39. Flat washer
41. Screw
42. F.E. Inner Cap
43. F.E. Bearing
44. Lockwasher
45. F.E. Metering Plate
46. Key
47. Armature assembly
48. Screw
49. Lead outlet base
50. Gasket
51. Conduit box assembly
52. Screw
53. Cover
54. Gasket
55. Conduit box
56. Screw
57. Interpole assembly
58. Shim
59. Screw
60. Main pole assembly
61. Shim
62. Eye bolt
63. Frame

6-27. Motor Generator Magnetic Control

a. Inspect.

(1) Check moving parts for easy operation.

(2) Check moving parts for proper seating when operating coil is energized.

(3) Check return spring tension to make sure moving parts seat properly when operating coil is de-energized.

(4) Check relay contacts for pitting or corrosion. Clean with No. 000 sandpaper if

b. Replace. Refer to figure 6-15 and replace magnetic control components.

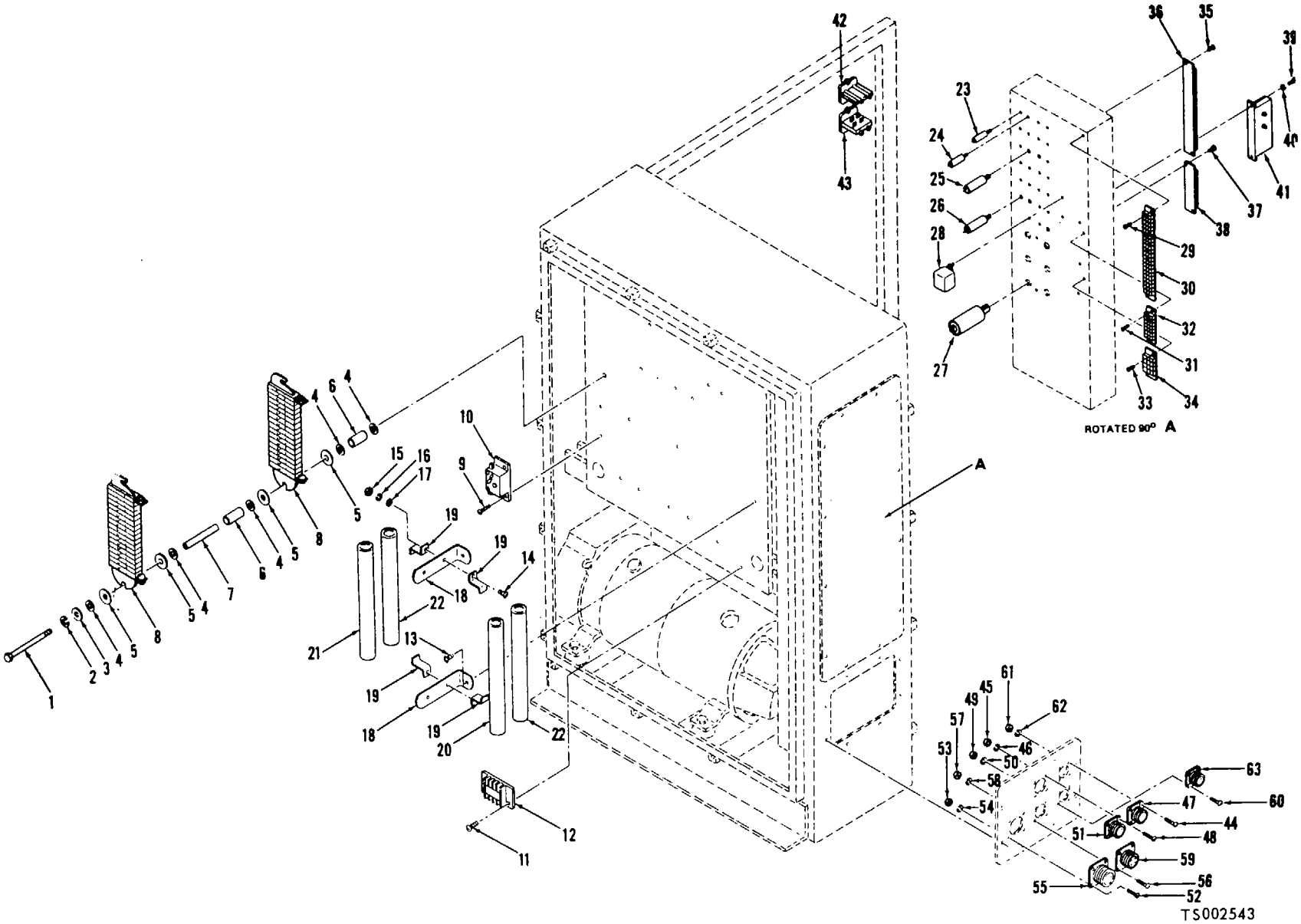


Figure 6-15. Magnetic Control.

KEY to figure 6-15:

1. Screw
2. Washer
3. Washer
4. Washer
5. Washer
6. Spacer
7. Tube
8. Resistor
9. Screw
10. Relay
11. Screw
12. Terminal board
13. Screw
14. Screw
15. Nut
16. Washer
17. Washer
19. Bracket
20. Resistor
21. Resistor
22. Resistor
23. Filter
24. Filter
25. Filter
26. Filter
27. Filter
28. Filter
29. Screw
30. Terminal board
31. Screw
32. Terminal Board
33. Screw
34. Terminal Board
35. Screw
36. Terminal Board
37. Screw
38. Terminal Board
39. Screw
40. Washer
41. Filter
42. Switch
43. Switch
44. Screw
45. Nut
46. Washer
47. Connector
48. Screw
49. Nut
56. Wash
52. Screw
53. Nut
54. Washer
55. Connector
56. Screw
57. Nut
58. Washer
59. Connector
60. Screw
61. Nut
62. Washer
63. Connector

6-28. Cabinet Assembly

a. Wire Filters. Refer to paragraph 4-95 for instructions to clean, inspect and recharge the filters.

b. Starter. (fig. 6-16).

(1) Inspect for broken spring.

(2) Repair Starter, Part No. 64407-12W (fig. 6-16).

(a) Movable Contacts: Remove allen head screw (1) take off cross arm (3). Depress movable contact (4) to notches in post (7), rotate 90 ° and lift off. Remove spring washer (5) the same way. Now lift off spring (6).

(b) Stationary Contacts: with cross arm (3) removed, take out terminal screw (10) and spring clip (11) from head. Now the stationary contacts (8, 9) can be removed.

CAUTION
Do not file contacts, do not lubricate.

(c) *Coil*: With cross arm (3) removed, slide plunger(14) out bottom of magnet. Remove plunger guide (16) and pull out bottom of magnet. Take out coil clip (17) and coil washers (18). Now coil (19) can be removed.

(d) *Overload Relay:* Replace relay by removing screws (21).

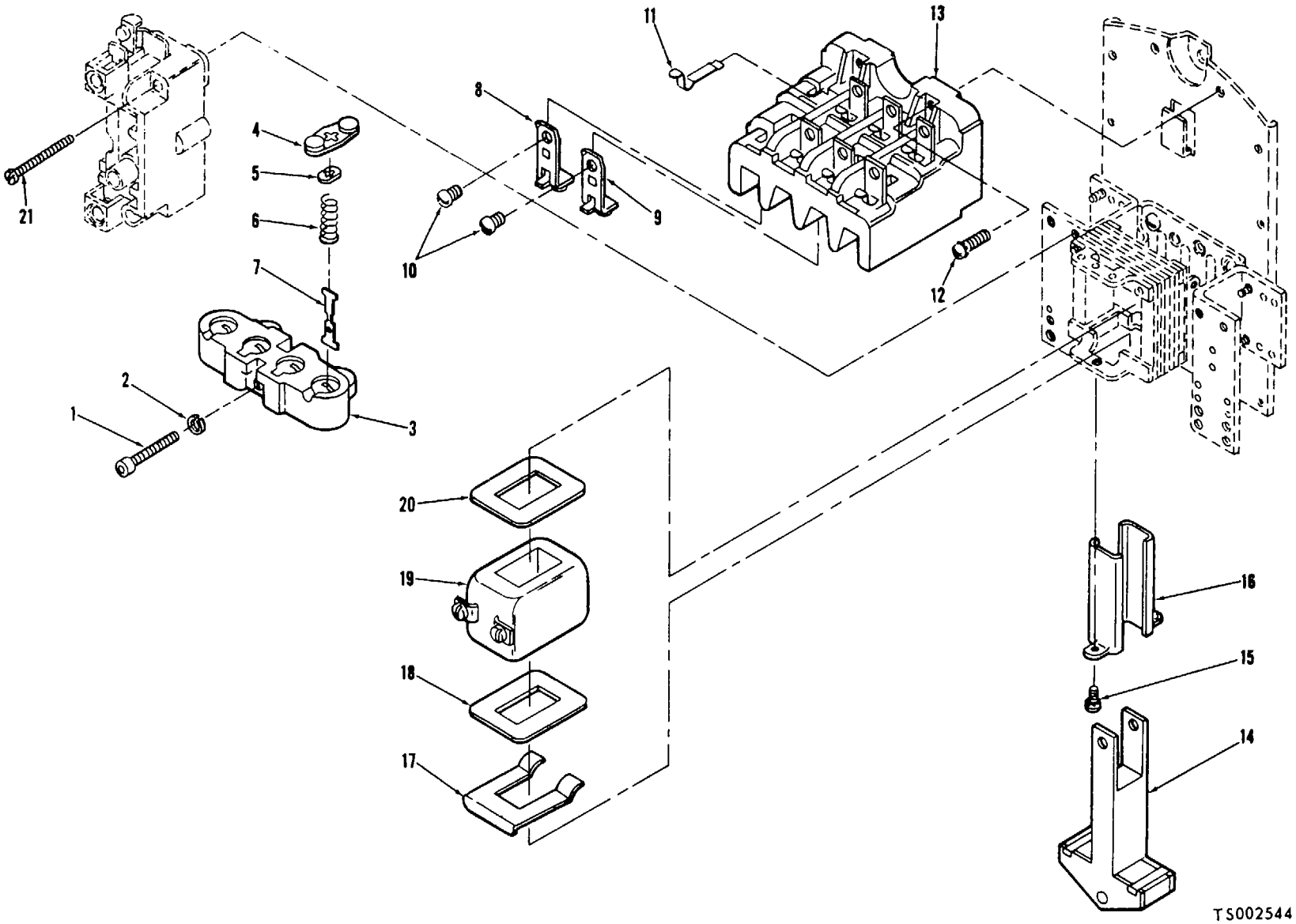


Figure 6-16. Starter Part No. 64407-12W.

KEY to figure 6-16:

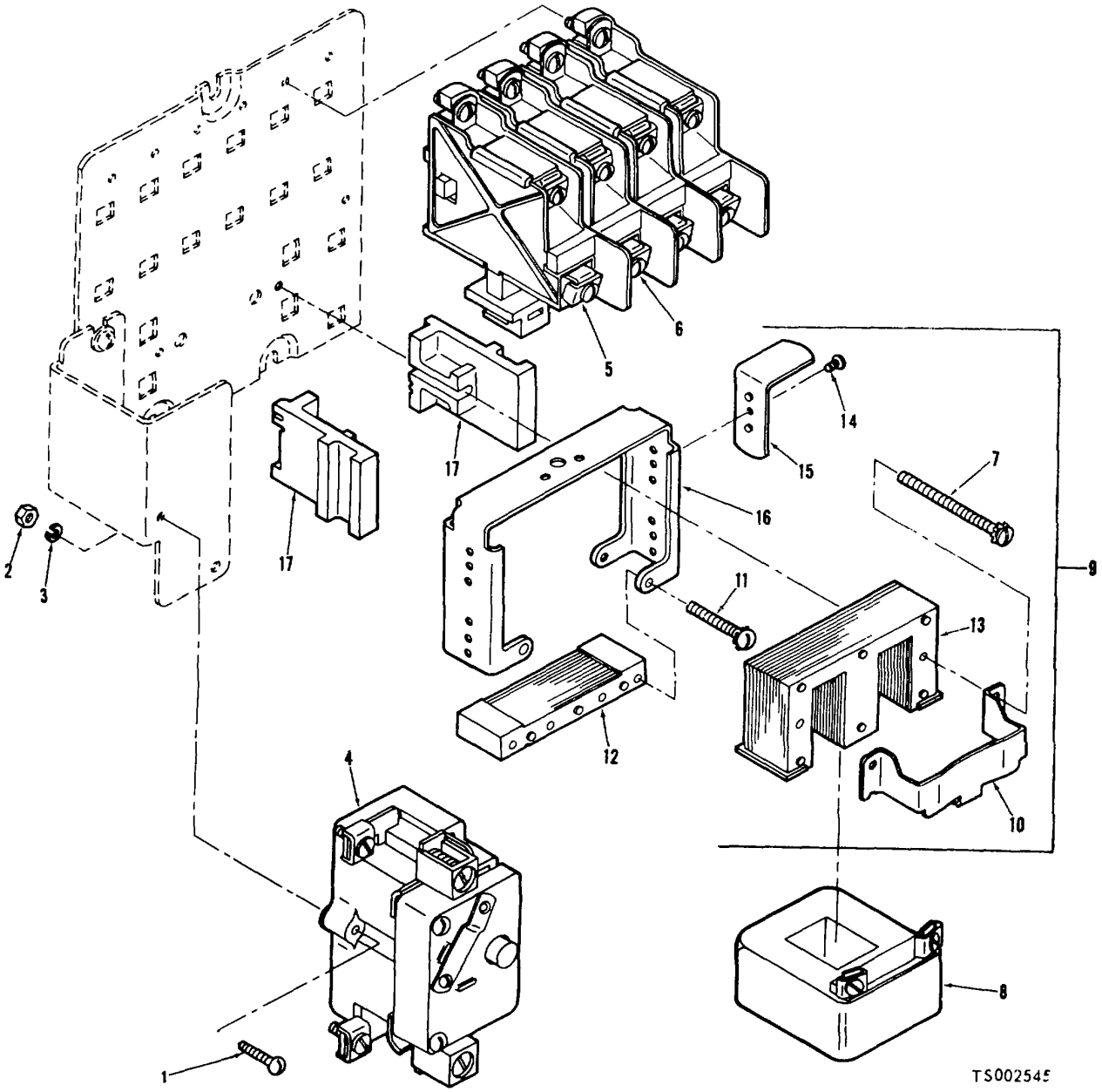
1. Screw	8. Contact	15. Screw
2. Washer	9. Contact	16. Guide
3. Cross Arm	10. Screw	17. Clip
4. Contact	11. Clip	18. Washer
5. Washer	12. Screw	19. Coil
6. Spring	13. Contact Head	20. Washer
7. Post	14. Plunger	21. Screw

c. Repair. Starter Part No. 76620-21RB Repair (fig. 6-17).

(1) Remove overload relays (4) by removing nuts (2), lockwashers (3), and screws (1).

(2) Remove pole assemblies (5, 6) by unscrewing captive screws.(7) and bracket (10).

(3) Remove coil (8) by removing two screws (7) and bracket (10).



1. Screw
2. Nut
3. Washer
4. Relay
5. Pole assembly
6. Pole assembly
7. Screw
8. Coil
9. Eight Pole Base and Magnet assembly
10. Bracket
11. Screw
12. Magnet
13. Magnet
14. Screw
15. Bracket
16. Bracket
17. Mounting Bracket and Guide

Figure 6-17. Starter Part No. 76620-21RB.

d. Repair. Contactor, Part No; 64402-14S (figure 6-18).

(1) *Movable contacts:* Unscrew Allen head screw (1) and remove cross arm (3). Depress movable contact (4) to notches in contact post (7), turn 90 , lift off. The spring washer (5) is removed the same way. Now lift off contact spring (6).

(2) *Stationary Contacts:* Remove cross arm (3), terminal screws (10) and holding clips (11). Now the stationary contacts (8, 9) may be pulled out.

(3) *Coil:* Unscrews screws (12) to remove power plant. Remove cross arm (3), slide plunger (13) out bottom of magnet. Plunger guide (15) is removed the same way. Remove coil clip (16) and coil washers (17 and 20). Remove screw (18) at top center of magnet, withdraw coil (20) and pull magnet stop (21) from center of coil.

KEY to figure 6-18:

1. Screw
2. Washer
3. Cross Arm
4. Contact
5. Washer
6. Spring
7. Post
8. Contact
9. Contact
10 Screw
10. Screw
11. Clip
12. Screw
13. Plunger
14. Screw
15. Guide
16. Clip
17. Washer
18. Screw
19. Washer
20. Coil
21. Stop
22 Screw
22. Screw
23. Contact head

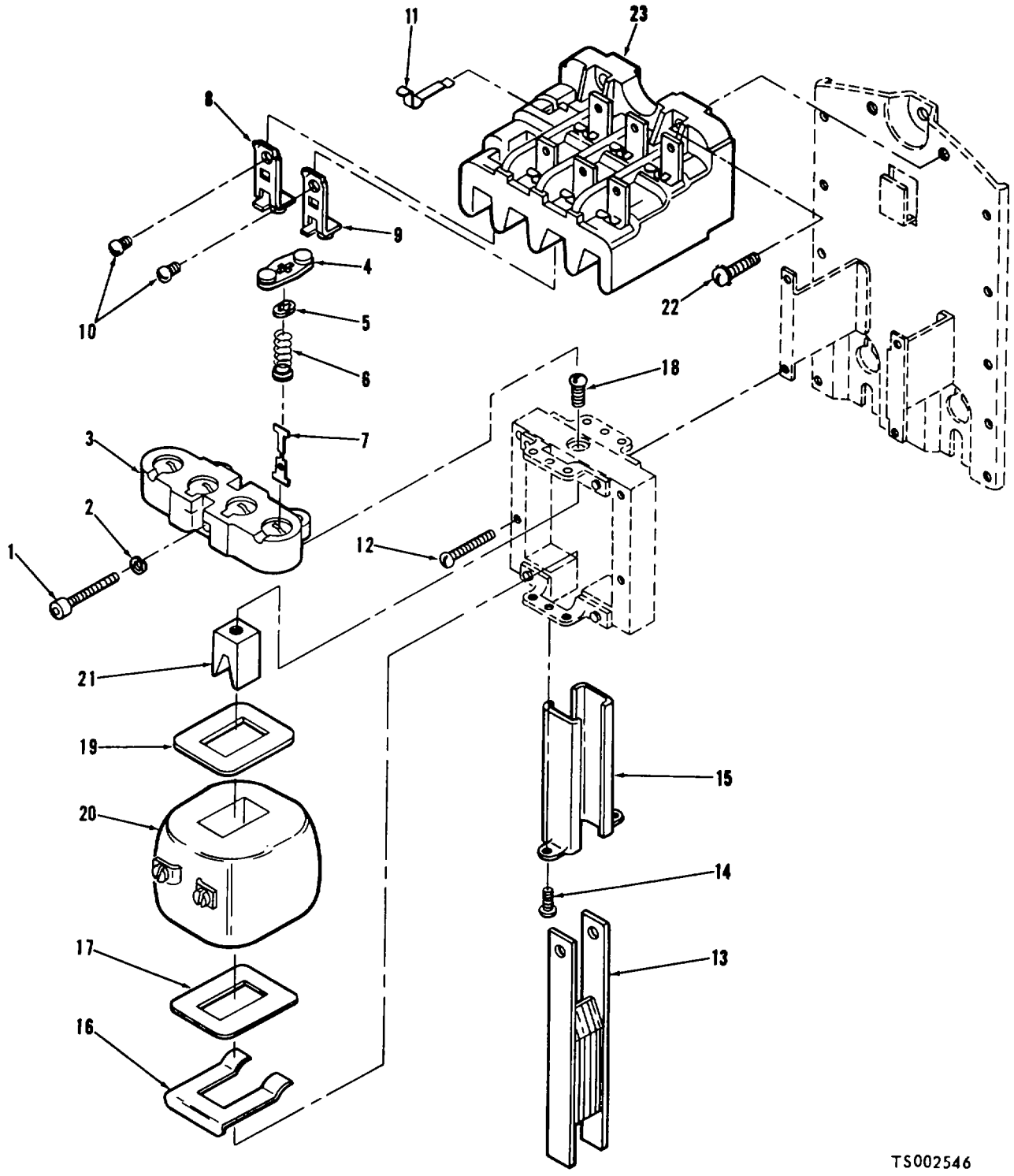


Figure 6-18. Contactor Part No. 64402-14S.

e. Repair Dynamic Braking Assembly (Fig. 6-19).

(1) Movable contact: Lift contact carrier (4). Depress movable contact (5) to notches in pin, rotate 90° and lift off. Now spring washer (9) and spring (6) may be removed.

(2) Stationary contacts: Disengage tail6-23 spring (7) from its anchors. Lift movable contact and carrier (4), using the proper size socket head wrench unscrew the stationary contacts (8).

KEY to figure 6-19:

1. Screw
2. Operating Arm Assembly
3. Anchor
4. Carrier
5. Contact
6. Spring
7. Spring
8. Contact
9. Washer
10. Pin
11. Terminal Bar
12. Screw
13. Shaft
14. Screw
15. Screw
16. Screw
17. Washer
18. Bracket
19. Support

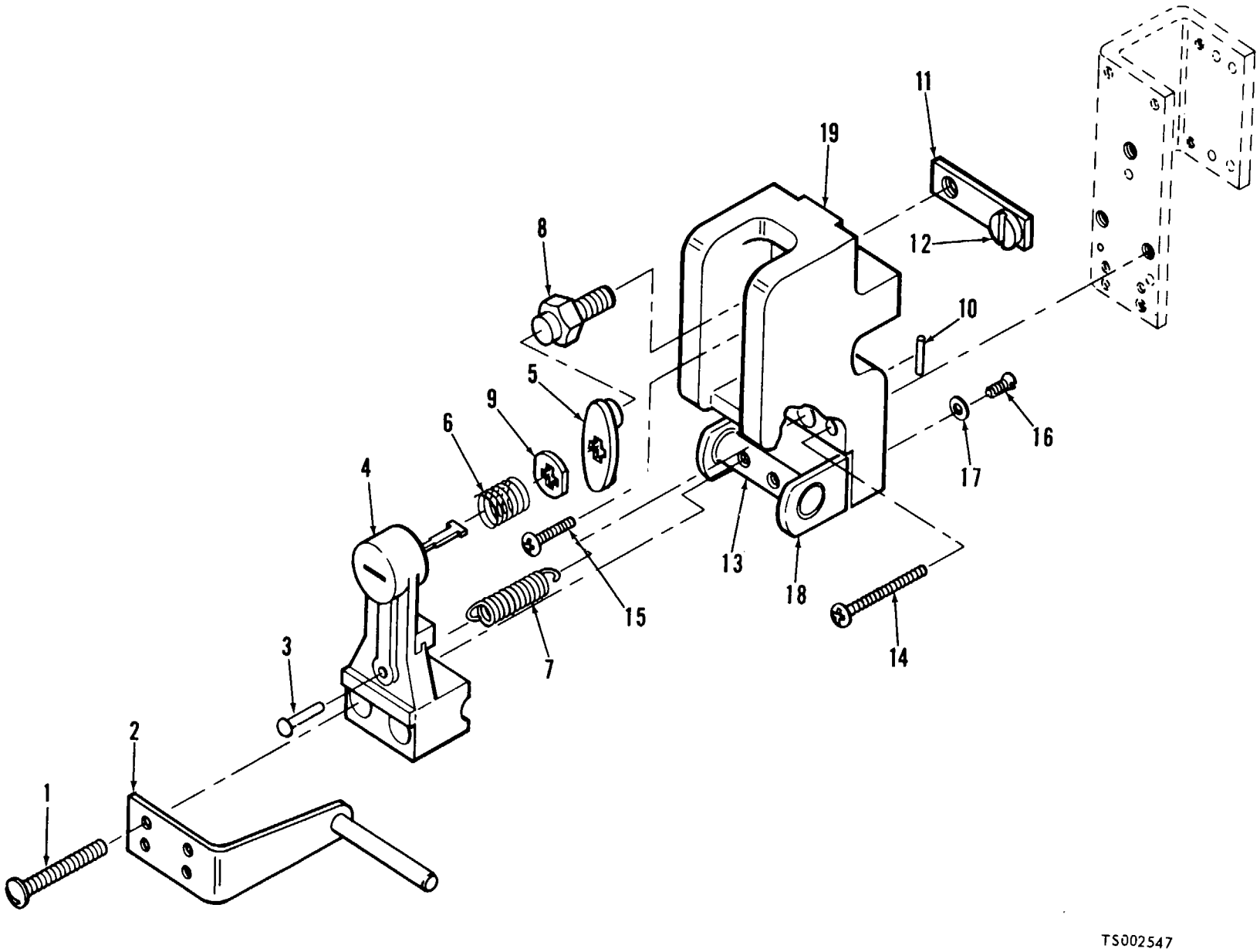


Figure 6-19. Dynamic Braking Assembly.

f. Repair Relay, Part No. 76621-4RY (fig. 620)

(1) *Contact pole assemblies:* Unscrew captive screw (9) and lift complete pole assembly (10, 11) off base plate.

(2) *Coil*: To remove entire power plant, remove screws (6) to disengage bracket (8) and unscrew frame mounting screws (1). Lift entire power plant off base plate, withdraw solenoid plunger (7) unscrew two screws (2) and remove frame plate (5). Now coil (4) can be removed.

NOTE

When reassembling make sure that nylon plunger guide (not shown) is installed with the shouldered end toward the open end of the magnet.

KEY to figure 6-20:

1. Screw
2. Screw
3. Cover
4. Coil
5. Plate
6. Screw
7. Plunger
8. Bracket
9. Screw
10. Pole assembly
11. Pole assembly

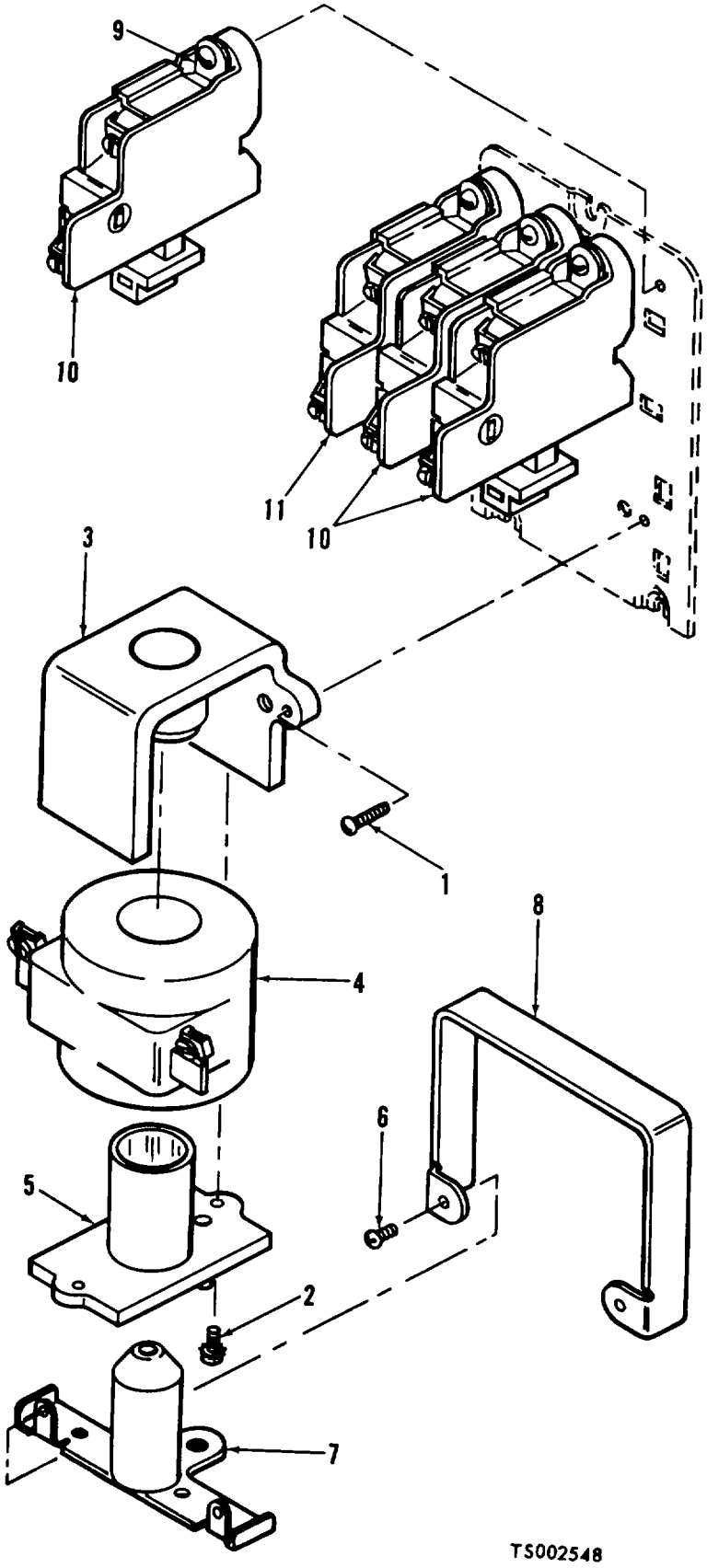


Figure 6-20. Relay part no. 76621-4RY.

d.Repair of Relay Part No. 69331-lR (fig. 621).

(1) Remove coil by removing nuts (8), lockwashers (10), and screws (9) securing coil leads. Remove screw (11) and lockwashers (12) then coil (13).

KEY to figure 6-21:

1. Screw
2. Washer
3. Washer
4. Contact Arm Assembly
5. Insulator
6. Contact screw assembly
7. Spring
8. Nut
9. Screw
10. Washer
11. Screw
12. Washer
13. Coil

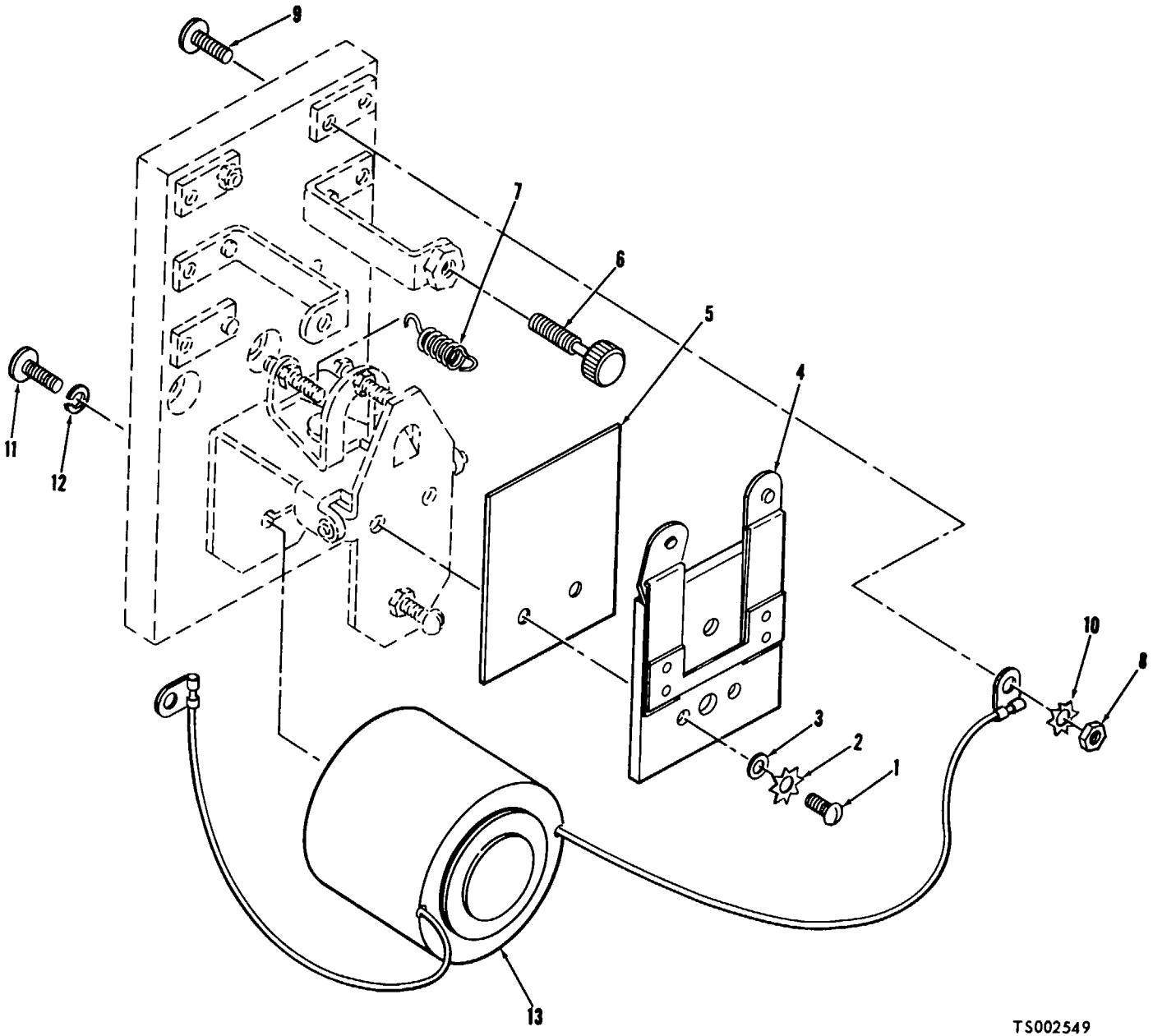


Figure 6-21. Relay Part No. Exploded View 69331-1R.

6-29. VSX Regulator Panel Assembly

a. Removal. (fig. 6-22) removal.

(1) Remove fuse (1).

(2) Remove two screws (2) and remove fuseholder (3).

(3) Remove four screws (4) and remove transformer (5).

(4) Remove two screws (6) and remove resistor (7).

(5) Remove two screws (9) two washers (10) and remove capacitor (11).

(6) Remove four screws (12) and remove rectifier assembly (13).

(7) Remove four nuts from semiconductor device (14) and (15) and remove from heat sink (25).

(8) Remove four screws (31) and remove suppressor (32).

b. Repair. Replace defective parts.

c. Installation. Install in reverse order of

KEY to figure 6-22:

1. Fuse
2. Screw
3. Fuseholder
4. Screw
5. Transformer
6. Screw
7. Resistor
8. Bracket
9. Screw
10. Washer
11. Capacitor
12. Screw
13. Rectifier assembly
14. Semiconductor device
15. Semiconductor device
16. Screw
17. Strip
18. Screw
19. Screw
20. Nut
21. Washer
22. Bus bar
23. Bracket
24. Screw
25. Heatsink
26. Screw
27. Nut
28. Washer
29. Washer
30. Bracket
31. Screw
32. Suppressor
33. Screw
34. Terminal board
35. Panel

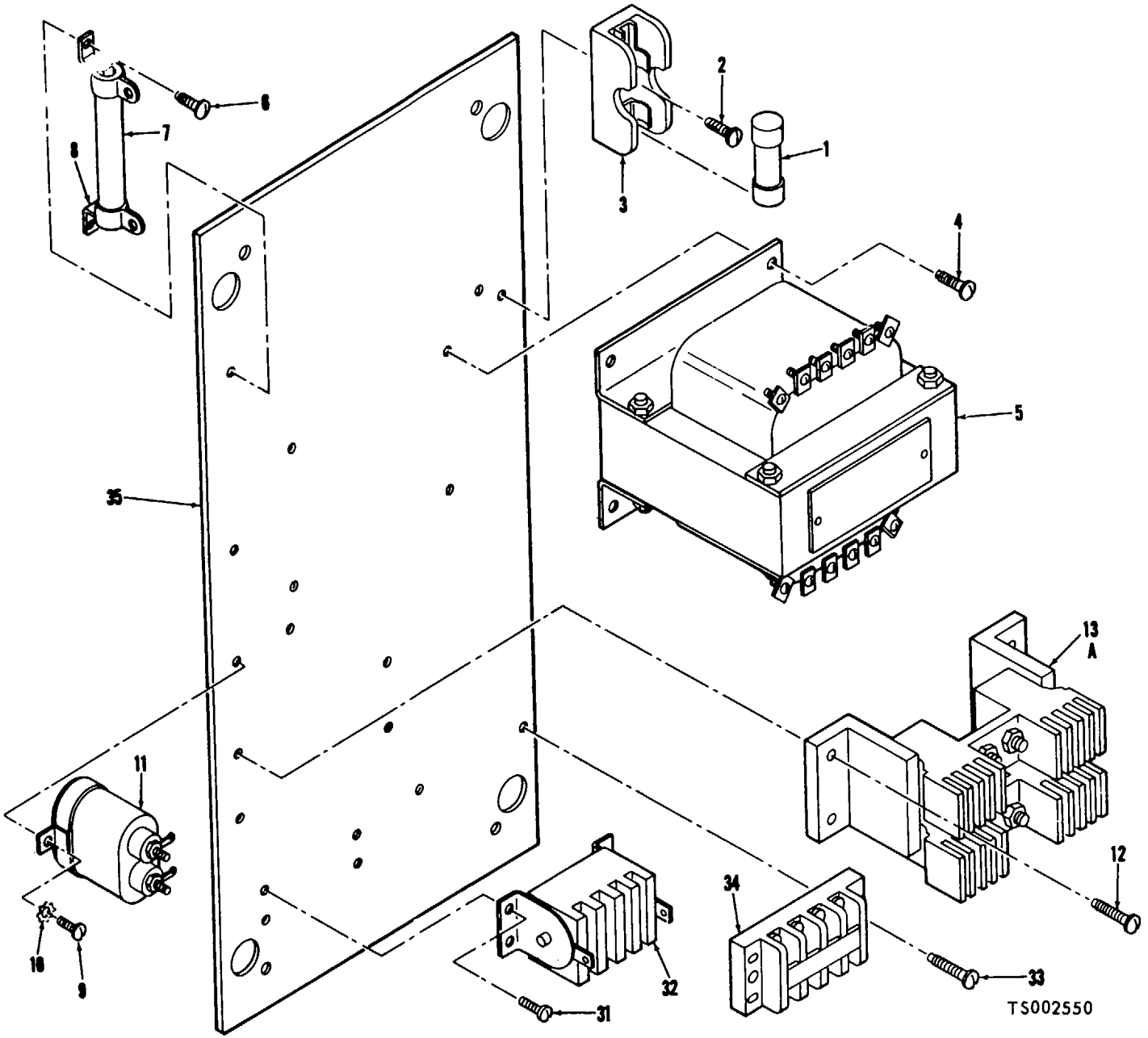


Figure 6-22. VSX Exciter Panel Assembly, (Sheet 1 of 2)

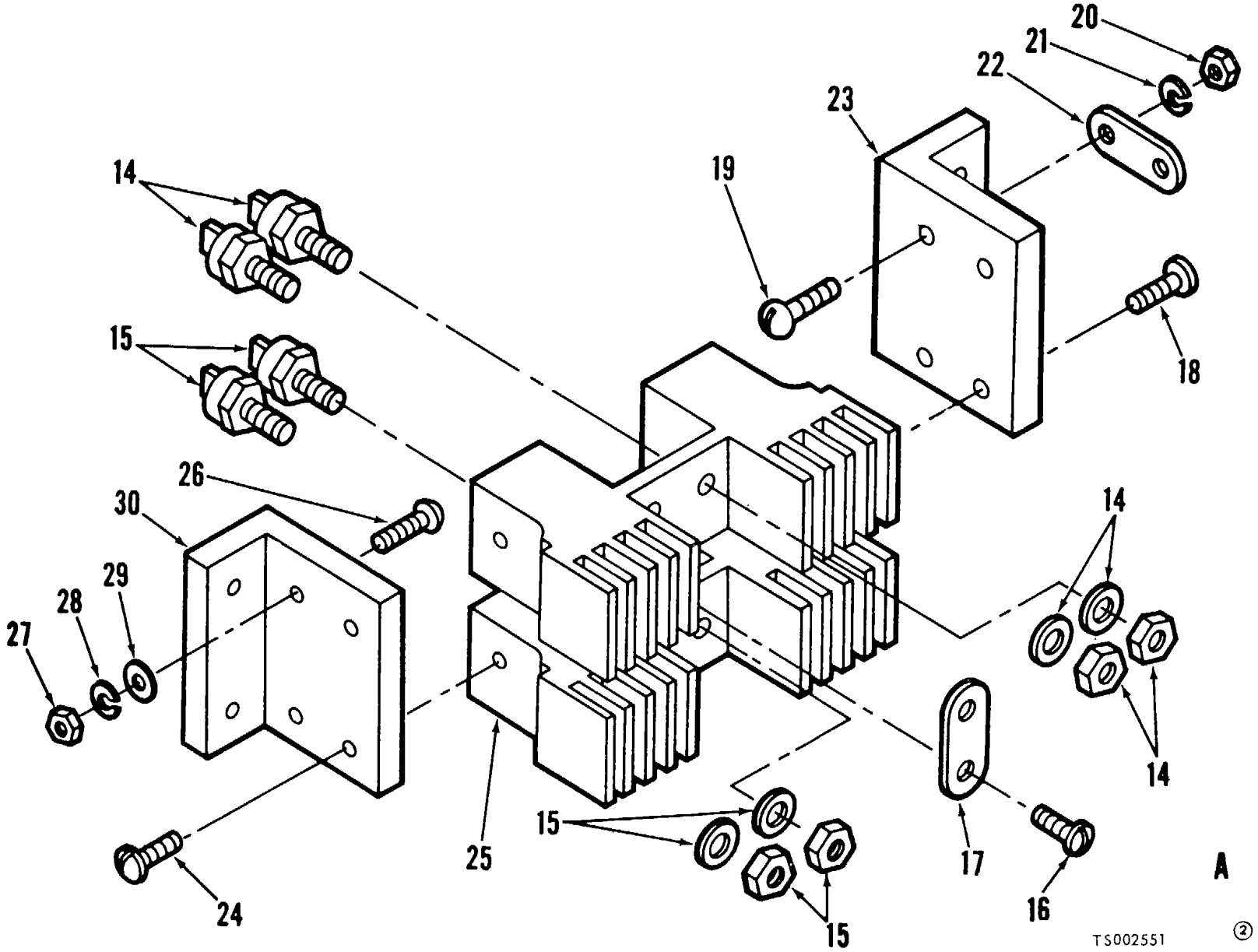


Figure 6-22. VSX Exciter Panel Assembly, (Sheet 2 of 2)

6-30. Power Unit

a. Removal.

(1) Disconnect electrical wires from cabinet to power unit.

(2) Remove four screws and four lockwasher mounting power unit to cabinet and remove power unit.

b. Disassembly. Refer to figure 6-23 and disassemble power unit in numerical sequence.

c. Replace. Replace defective parts.

d. Reassembly. Assemble in reverse order of disassembly.

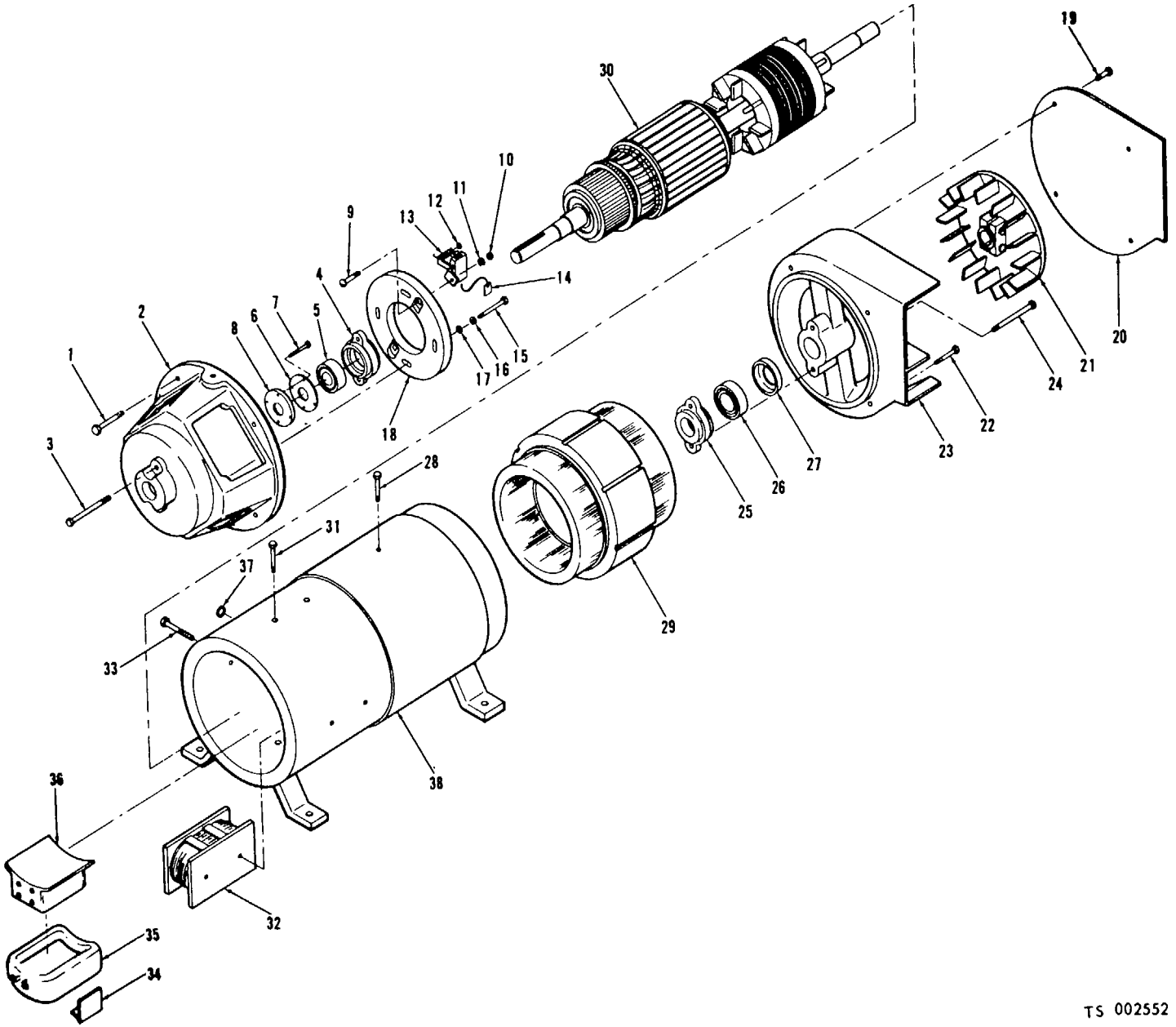


Figure 6-23. Motor Generator Power Unit.

KEY to figure 6-23:

1. Screw
2. F.E. Bracket
4. F.E. Inner Cap
5. F.E. Bearing
6. Shim
7. Screw
8. F.E. Metering Plate
9. Carriage Bolt
10. Jam Nut
11. Lockwasher
12. Retaining ring
13. Brushholder
14. Carbon Brush
15. Screw
16. Lockwasher
17. Flat Washer
18. Rocker
19. Screw
20. B.E. Bracket Cover
21. Motor Fan
23. B.E. Bracket
24. Screw
25. B.E. Metering Plate
26. B.E. Bearing
27. B.E. Inner Cap
28. Screw
29. Stator Core
30. Rotating Unit
31. Screw
32. Interpole
33. Screw
34. Field Pole Clip
35. Main Pole
36. Field Pole
37. Grommet
38. Motor Frame

6-31. Pushbutton

a. Removal (fig. 4-45).

(1) Disconnect electrical leads.

(2) Remove pushbutton stations from press by removing four screws (1), four lockwashers (2), and four spaces (3).

b. Disassembly.

(1) Remove rear plate (10) by removing six screws (9). Inspect terminal board (14) for security of attachment and tighten all terminal screws.

(2) Remove four screws (4) and carefully pullfront panel (5) away from case. To replace switches, remove screws securing leads to switch, then unscrew dress nut and slide switch away from front panel.

(3) With front panel (5) removed, inspect terminal board (14) for security of attachment and tighten all terminal screws. (31) tag leads and studs for proper reconnection.

(4) Observe special care to protect mating surfaces and fit of motor

(5) Lockwashers should be noted for proper replacement when reassembling.

(6) Remove cap screws near shaft holding bearing cap to front (commutator) end bracket.

(7) Remove four cap screws (29) attaching front end bracket to frame. Remove front end bracket (30) from frame (63). Due to the close fits between the bracket and the frame and bearing cap, force is required to remove the bracket. Force should be evenly applied to the bracket around the frame fit using either a lead mallet or a wood block to transmit the blows. Use care to avoid injury to the armature assembly (47) when removing the bracket. The bracket should be well supported and balanced during removal. Do not let the bracket bear on the armature assembly to avoid damage to the metering plate (45) installed in the bracket hub.

(8) Remove four cap screws (5) attaching the back (drive) end bracket (6) to the frame. Remove the armature assembly (47) and bracket from the frame together. Do not damage the armature assembly. Use a rope sling and a hoist to support the weight of the armature and bracket. A long pipe with a snug fit to the drive shaft extension is useful as a lever to balance the armature during removal. As the armature is inched out, move the Assembly rope sling progressively closer to the center of gravity of the assembly. Do not place the sling under the coil heads or commutator. Rest the armature on wood supports under the core iron only

(9) Remove the back end bearing cap screws (7).

(10) Remove the back end bracket (6) from the armature assembly (47) with the care to avoid damage to the metering plate (10).

(11) If bearings are not being replaced, protect them from dirt and contamination by wrapping the entire bearing and cartridge assembly with clean wrapping paper. Seal the paper to the shaft with tape.

(12) If a bearing is to e replaced, remove it by unscrewing the bearing cap. Pull off the bearing by applying steady pressure on the cap with a bearing puller. Use a spacer block to protect the shaft center.

(13) To remove main poles (60) or interpoles (57), disconnect the leads and remove the bolts (56, 59) holding the field poles to the frame. The shims (58, 61) must be kept with the pole to which they belong for proper reassembly. Stainless steel interpole bolts must be kept with the interpoles. Diagram or tag the field coil connections so that proper reconnection can be made.

(14) Because of the critical nature of the alignment of the brush rigging, these parts should not be dismantled unless necessary. Disassembly is easily accomplished by loosening or removing the bolts (31) which hold the brush holders (35) to the rocker (40), and then remove bolts (37) holding the rocker to the frame. Before disassembly, mark all parts so that they can be reassembled in their original positions to give the same spacing and setting of the brushes relative to the bracket.

6-32. Main Operator's Station

a. Removal (fig. 4-46).

(1) Disconnect electrical leads

(2) Remove the main operator's station from

the press by removing eight screws (1) and eight lockwashers (2).

b. Disassembly and Repair.

(1) Remove rear panel (16) by removing eight screws (15). Inspect terminal block (23) for security of attachment and tighten all terminal screws.

(2) Remove twelve screws (3) and carefully pull front panel (4) away from case. To replace switches (6 through 13), remove screws securing leads to switch, then unscrew dress nut and slide switch away from front panel.

(3) With front panel (4) removed, inspect terminal block (23) for security of attachment and tighten all terminal screws.

APPENDIX A

REFERENCES

A-1. Fire Protection

TB 5-4200-200-10	Hand Portable Fire Extinguisher Approved for Army Users

A-2. Lubricants

C9100IL	Fuel, Lubricants, Oils, and Waxes
LO 10-3610-200-12	Lubrication Order

A-3. Painting

TM 9-213	Painting Instructions for Field Use

A-4. Cleaning

C6800IL	Chemicals and Chemical Products

A-5. Maintenance

TM 38-750	The Army Maintenance Management System
TM 5-764	Electric Motor and Generator Repair
TM 10-3610-215-24P	Organizational, Direct Support, and General Support Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools)

A-6. Shipment and Storage

TB 740-97-2	Preservation of USATROSCOM Mechanical Equipment for Storage
TM 740-90-1	Administrative Storage of Equipment

A-7. Operating Supplies

SC 3610-97-CL-E17	Printing Plant, Special Warfare: Semi-Trailer Mounted

APPENDIX B
COMPONENTS OF END ITEM LIST

Section I. INTRODUCTION

1. Scope
This appendix lists integral components of and basic issue items for the printing press to help you inventory items required for safe and efficient operation.

2. General
The Components of End Item List is divided into the and characteristics of the item by means of its following sections:

a. Section II. Integral Components of the End Item. These items, when assembled, comprise the printing press and must accompany it whenever it is transferred or turned in. These illustrations will help you identify these items.

b. Section III. Basic Issue Items. These are minimum essential items required to place the printing press in operation, and to operate it, and to perform emergency repairs. Although shipped and packed separately they must accompany the equipment during operation and whenever it is transferred between accountable officers. The illustrations will assist you with hard-to-identify items. This manual is your authority to requisition replacement BII, based on Table(s) of Organization and Equipment (TOE)/Modification Table of Organization and Equipment (MTOE) authorization of the end item.

3. Explanation of Columns
a. Illustration. This column is divided as follows:

(1) *Figure Number.* Indicates the figure number of the illustration on which the item is shown (if applicable).

(2) *Item Number*. The number used to identify item called out in the illustration.

b. National Stock Number (NSN). Indicates the National Stock Number assigned to the item and which will be used for requisitioning.

c. Part Number (P/N). Indicates the primary number used by the manufacturer, which controls the design engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items.

d. Description. Indicates the Federal item name and, if required, a minimum description to identify the item

e. Location. The physical location of each item listed is given in this column. The lists are designed to inventory all items in one area of the major item before moving on to an adjacent area

f. Usable On Code. "USABLE ON" codes are included to help you identify which component items are used on the different models. Identification of the codes used in these lists are:

Code	*Used On*
(Not Applicable)	

g. Quantity Required (Qty Reqd). This column lists the quantity of each item required for a complete major item.

h. Quantity. This column is left blank for use during inventory. Under the Rcv'd column, list the quantity you actually receive on your major item. The Date columns are for use when you inventory the major item at a later date, such as for shipment to another site.

Section II. INTEGRAL COMPONENTS OF END ITEM

(1) Illustration		(2)	(3)		(4)	(5)	(6)	(7)	(8) Quantity			
(a) Figure No.	(b) Item No.	National Stock Number	Part No. & FSCM		Description	Location	Usable On Code	Qty Reqd	Rcv'd	Date	Date	Date
4-47	16		6-1-3225-7	(81337)	Skid, Fixed			2				
4-47	17	3610-00-482-3747	MK4s	(04135)	Skid, Swivel			1				
4-47	19	3610-00-482-8852	6-1-3221-16	(81337)	Delivery Ramp Assembly			1				
4-47	21	5120-00-834-5169	84A	(59462)	Jack, Ratchet			2				
4-47	22	3610-00-478-5700	6-1-3221-12	(81337)	Table, Folding			4				
4-47	7	3610-00-482-3848	6-1-3220-17	(81337)	Ramp Assembly			2				
4-47	12		6-1-3224-21	(81337)	Extension Platform Assembly			2				
4-54	—	3610-00-256-5423	6-1-3007-11	(81337)	Plate Bending Jig Assembly			1				
4-47	2		6-1-3227-13	(81337)	Cover, Press Package Assembly			1				
4-47	24		6-1-3010-10	(81337)	Spreader Frame Assembly			1				
4-48	A		6-1-3212-4	(81337)	Cabinet Assembly, A			1				
4-49	B		6-1-3213-5	(81337)	Cabinet Assembly, B			1				
4-50	C		6-1-3214-6	(81337)	Cabinet Assembly, C			1				

INTEGRAL COMPONENTS OF END ITEM - Continued

(1) Illustration (a) Figure No.	(1) Illustration (b) Item No.	(2) National Stock Number	(3) Part No. & FSCM	(4) Description	(5) Location	(6) Usable On Code	(7) Qty Reqd	(8) Quantity Rev'd	(8) Quantity Date	(8) Quantity Date	(8) Quantity Date
4-51	D		6-1-3215-7 (81337)	Cabinet Assembly, D			1				
4-52	E		6-1-3216-8 (81337)	Cabinet Assembly, E			1				
4-53	F		6-1-3217-9 (81337)	Cabinet Assembly, F			1				
1-3	-		21006-41S (50380)	Magnetic Control (Motor Generator Unit)			1				
4-47	43		6-1-3008-3 (81337)	Base Assembly			1				
4-47	2		HB2212 (28410)	Drip Pan Assembly			1				
1-1	-	3610-00-617-7566	3CX (28410)	Printing Press, Offset			1				
4-3	20		6375B (92194)	Cable, Power, 100FTLG			1				
4-3	18		1937-3B (92194)	Cable, Blower Motor			1				
4-3	-	6145-00-770-4127	4620 (92194)	Cable, Control, 20 FT LG			1				
		3610-00-418-4744	6-1-4058-4-1 (81337)	Roller Assembly, INK Ductor			3				
		3610-00-418-4740	6-1-4059-4-15 (81337)	Roller Assembly, INK Form and Distributor			18				
		3610-00-418-4765	6-1-4039-5-11 (81337)	Roller Assembly, Water Form and Ductor			9				
		5307-00-422-0976	6-1-4067-4-99 (81337)	Stud, Ink and Water Form Roller			24				
		3120-00-445-7107	6-1-4067-4-104 (81337)	Stud, Ink and Water Ductor Roller Bearing			12				
		3610-00-418-4763	6-1-4064-4-63 (81337)	Block, Ink Distributor Roller			24				
		3110-00-990-4223	6202A2RSC3 (52676)	Bearing, Roller			60				
		5310-00-446-8129	6-1-4068-4-113 (81337)	Washer, Roller End			60				
			6-1-4005-4-218 (81337)	Screw, Cap, FH, Hex Socket STL. CAD-PLD, 1/4-20 UNC-2A, 112 IN. LG			60				

Section III. BASIC ISSUE ITEM

(1) Illustration (a) Figure No.	(1) Illustration (b) Item No.	(2) National Stock Number	(3) Part No. & FSCM	(4) Description	(5) Location	(6) Usable On Code	(7) Qty Reqd	(8) Quantity Rev'd	(8) Quantity Date	(8) Quantity Date	(8) Quantity Date
56	1	5120-00-152-2344	6-1-4046-61 (81337)	Wrench, Sheeter Pin			2				
56	2	5120-00-152-2343	6-1-4046-59 (81337)	Wrench, Roller Setting Pin			2				
56	3	5120-00-152-2341	6-1-4046-56 (81337)	Wrench, Plate & Blanket Cylinder			2				
56	4	5210-00-497-1614	6-1-4046-58 (81337)	Gage, Blanket			2				
56	5	5210-00-185-6797	6-1-4046-60 (81337)	Gage, Knife Edge Cylinder			1				
		5210-00-517-8096		Gage, Thickness, 9 Blades, 6 in. lg. x 1/2 in. wide, 0.0015 thru 0.015 in. thk., FED SPEC GGG-G-17, Type VIII, Class 1, Style B, Size 1			1				
		4930-00-253-2478		Gun, Grease, Lever Operated, High Pressure, 14 oz. capacity MIL-G-3859C, Type I, Size 1			1				
		5120-00-293-0486		Hammer, Plastic, Screw-in Inserted Face, I in. Dia., 8 oz., Total Wt. FED SPEC GGG-H-33, Type 1, Class 3, Style B, Design A							
		5120-00-935-4641		Key, Socket Head Screw (Allen Type) Short Series, L-Handle w/Metal Case, Sizes 0. 0.028, 0.035, 0.050, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 5/16, 318, 7/16, 1/2, 9/16, 5/8 and 3/4 in. FED SPEC GGG-K-275, Type 1, Class 1			1				

Section III. BASIC ISSUE ITEMS—Continued

(1) Illustration		(2)	(3)	(4)	(5)	(6)	(7)	(8) Quantity			
(a) Figure No.	(b) Item No.	National Stock Number	Part No. & FSCM	Description	Location	Usable On Code	Qty Reqd	Rev'd	Date	Date	Date
		5120-00-935-7340		Key, Socket Head Screw T-Handle Type, Nonreplaceable Blades, 8-3/4 in. lg., sizes 3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 5/16, and in. across Flats			1				
		5120-00-221-1536		Knife, Putty, Flexible Blade, 1-1/4 in. w. X 3-1/2 in. lg., FED SPEC GGG-K-481, Type IV, Class I			2				
		5120-00-223-9159		Caliper, Micrometer, Paper, Ratchet Stop, 0 thru 3/8 x 1/1000 in., FED SPEC GGG-C-105, Type 1, Class 2			1				
		5210-00-293-3514		Rule, Machinist, Steel R.H. Reading Graduations, 32d's and 64th's, One Side Only, .500 in w. x 6 in. lg., FED SPEC GGG-R-791, Type IV.			1				
		5120-00-831-1054		Wrench, Reversible Ratchet, Size 3/8 in. and 7/16. in., Double End, Six Point Box Wrench, FED SPEC GGG-W-001405			1				
		5120-00-293-0315		Screwdriver, Medium-Heavy Duty, Design A, Round Blade, Shape A, 3/8 in. Dia. x 6 in. lg., FED SPEC GG-S- 121, Class 5							
		5120-00-293-3309		Screwdriver, Medium-Heavy Duty, Design A, Round Blade, Shape A, 3/8 in. Dia. x 10 in. Lg., FED SPEC GG-S-121, Class 5			1				
		5120-00-228-9504		Wrench, Box and Open End Combination, Box End Offset, 15 Degree 3/8 in. Size Both Ends, FED SPEC GGG-W-636, Type III			1				
		4930-00-141-8703		Oiler, Hand, Compressible Feed, 9 in. lg. Spout, 16 oz. capacity, FED SPEC GGG-O-591, Type 1, Class B			1				
				Wrench, Open End, Fixed Double Head, Engineer's, 15 Degree Angle Opening, FED SPEC GGG-W-636, Type IV							
				Wrench Opening Size							
		5120-00-271-2311		1/4 in. x 5/16 in.			1				
		5120-00-277-2307		5/16 in. x 3/8 in.			1				
		5120-00-293-1329		3/8 in. x 1/2 in.			1				
		5120-00-277-4834		7/16 in. x 9/16 in.			1				
		5120-00-277-1228		19/32 in. x 11/16in.			1				
		5120-00-277-8299		11/16 in. x 3/4 in.			1				
		5120-00-187-7131		7/8 in. x 15/16 in.			1				
		5120-00-187-7134		1-1/16 in. x 1-1/4 in.			1				
				Wrench, Socket, Single Socket, T Type, Fixed Handle, Hex Socket							
				SOCKET SIZE NOMINAL O/A LENGTH							
		5120-00-227-7382		1/2 in. 5-1/4 in.			1				
		5120-00-227-7412		9/16 in. 5-3/4 in.			1				
		5120-00-227-7385		5/8 in. 6 in.			1				
		5120-00-227-7387		3/4 in. 6-1/8 in.			1				
		5140-00-331-5496		Box, Tool, 7 in. x 7 in. x 9 in. Size, FED SPEC GGG-T-558							

BASIC ISSUE TEMS-Continued

(1) Illustration (a) Figure No.	(1) Illustration (b) Item No.	(2) National Stock Number	(3) Part No. & FSCM	(4) Description	(5) Location	(6) Usable On Code	(7) Qty Reqd	(8) Quantity Rev'd	(8) Quantity Date	(8) Quantity Date	(8) Quantity Date
		3160-00-971-2223	Model 6-80 Beveler, (92075)	Belt Hand			1				
		3610-00-962-4713	Model 5-80 (92075)	Press, Belt			1				
		6530-00-772-0326		Bowl, Surgical Sponge, 6-1/4 in. I.D. x 3/4 in. Deep, FED SPEC RRR-B-616, Size 2			3				
		7240-00-274-3875		Pail, Stainless Steel, 4 gal. Size, MIL-P-20637A			1				
		7240-00-2567700		Can, Flammable Waste STL, 10 Gal. Capacity, Foot Operated, FED SPEC RR-C- 114			1				
		7240-00-404-9792		Funnel, Plastic, 7-3/4 in. O.D. Rigid Spout w/o Strainer, 2 QT Capacity, FED SPEC L-F-1593, Class 2			1				
		6630-00-247-2956		Hydrometer, Graduated Scale, Baume 0 to 20 Deg., 6 in. Lg. w/ Jar, FED SPEC 66-H-925, Type 1, Class A			2				
		6640-00-427-5250		Graduate, Liquid Laboratory Glass, Conical, 200 to 1000 ML, w/Pour Out Graduations 8, 12, 16, 20, 24, 28 and 32 oz., FED SPEC DD-G-666, Type III, Size I			2				
		7350-00-170-8333		Pitcher, Stainless Steel 5 QT. Capacity, FED SPEC RR-P-386			1				
		6640-00-264-8285		Spatula, Laboratory, Steel Blade, 1-3/4 in. w. x 12 in. lg., Wooden Handle, FED SPEC NNN-S-1356, Class 2, Size 6			3				
		6640-00-634-9313	35999-1 (96906)	Rod, Stirring, Laboratory, Phenol Fiber, Flat Ends, 3/in in. Dia. x 18 in. lg.			3				
		7240-00-244-7412		Safety Can, Steel, 1 in. Dia. Fixed Spout, 1 QT. Capacity, FED SPEC RR-S-30, Style 1			4				
			TM 10-3610-215-14	Technical Manual, Department of the Army, Operator, Organizational, Direct and General Support Maintenance			1				

Section II. MAINTENANCE ALLOCATION CHART

(1) Group No.	(2) Assembly group	(3) Maintenance functions											(4) Tools and equipment	(5) Remarks
		A Inspect	B Test	C Service	D Adjust	E Align	F Calibrate	G Install	H Replace	I Repair	J Overhaul	K Rebuild		
0612	Counter Assy	C			C				O					
		0.2			0.1				2.0					
0613	Rotary Cutter Assy	C							F	F			4-D	N-I
		0.5							24.0	16.0				
0614	Stationary and Rotary Knives	C		C	C				C				5-D	O-C, D
		0.2		1.0	2.0				4.0					
0615	Delivery Drive Tape Assys	O							F	F				
		0.5							24.0	30.0				
0616	Belts, Hi and Lo Speed	O		O	O				O					P-C, D
		0.2		0.5	1.0				2.0					
0617	Pile Lowering Mechanism	O							F	F				
		0.5							24.0	30.0				
0618	Pawl and Ratchet, Pile Lowering	C							O					
		0.2							1.0					
0619	Paper Stop Assy	O							O	O				
		0.2							2.0	2.0				
0620	Jogger Assys, Rear and Side	C			C				F	F				
		0.5			0.2				16.0	8.0				
0621	Delivery Board Assy	C							O	O				
		0.2							0.2	2.0				
	07 Compensator Rollers & Levers													
0701	Compensator Rollers & Levers Assy	C			C				F	F				
		0.5			0.2				12.0	20.0				
0702	Lead Roller Assy	O							F	F				
		0.5							4.0	8.0				
	08 Turn Bars													
0801	Turn Bars Assy	O							H	H				
		0.5							12.0	24.0				
0802	Oil Pump Drive Assy	O							F	F				
		0.5							8.0	12.0				
0803	Trolley Roller Assy	C			C				F	F				
		0.5			0.2				4.0	8.0				
0804	Front and Drive Roller Assys	O							H	H				
		0.5							12.0	16.0				
	09 Air Pump & Blower Motor													
0901	Air Pump & Blower Motor Assy	O							F					
		0.5							16.0					
0902	Piping & Valves	O							O					
		0.5							8.0					
0903	Pump Drive Belt	O			O				O					Q-D
		0.2			0.5				0.5					
0904	Oil Separator	C		C					O	O				R-C
		0.2		1.0					1.0	2.0				
0905	Automatic Oiler	C		C	C				O					S-C
		0.2		0.5	0.1				1.0					
0906	Pump, Air	O		O					O	F				T-C
		0.5		1.0					2.0	8.0				
0907	Motor, Blower	O							F	F				
		0.5							2.0	8.0				
	10 Automatic Lubricator													
1001	Automatic Lubricator Assy	O		O	C				O	O				U-C
		0.5		1.0	1.0				1.0	4.0				
1002	Reservoir, Lubricator	O							O					
		0.2							1.0					
	11 Static Eliminator													
1101	Static Eliminator Unit	C		C					F	F				V-C
		0.5		2.0					2.0	4.0				
1102	Power Unit	O							F	F				
		0.5							1.0	2.0				

Section II. MAINTENANCE ALLOCATION CHART

(1) Group No.	(2) Assembly group	(3) Maintenance functions A Inspect	B Test	C Service	D Adjust	E Align	F Calibrate	G Install	H Replace	I Repair	J Overhaul	K Rebuild	(4) Tools and equipment	(5) Remark
0612	Counter Assy	C	..	..	C	..	..	..	O					
		0.2	..	..	0.1	..	..	..	2.0					
0613	Rotary Cutter Assy	C	..	..	..	..	..	..	F	F	..	..	4-D	N-I
		0.5	..	..	..	..	..	..	24.0	16.0				
0614	Stationary and Rotary Knives	C	..	C	C	..	..	..	C	..	..	..	5-D	O-C, D
		0.2	..	1.0	2.0	..	..	..	4.0					
0615	Delivery Drive Tape Assys	O	..	..	..	..	..	..	F	F				
		0.5	..	..	..	..	..	..	24.0	30.0				
0616	Belts, Hi and Lo Speed	O	..	O	O	..	..	..	O	..	..	..	.....	P-C, D
		0.2	..	0.5	1.0	..	..	..	2.0					
0617	Pile Lowering Mechanism	O	..	..	..	..	..	..	F	F				
		0.5	..	..	..	..	..	..	24.0	30.0				
0618	Pawl and Ratchet, Pile Lowering	C	..	..	..	..	..	..	O					
		0.2	..	..	..	..	..	..	1.0					
0619	Paper Stop Assy	O	..	..	..	..	..	..	O	O				
		0.2	..	..	..	..	..	..	2.0	2.0				
0620	Jogger Assys, Rear and Side	C	..	..	C	..	..	..	F	F				
		0.5	..	..	0.2	..	..	..	16.0	8.0				
0621	Delivery Board Assy	C	..	..	..	..	..	..	O	O				
		0.2	..	..	..	..	..	..	0.2	2.0				
	07 Compensator Rollers & Levers													
0701	Compensator Rollers & Levers Assy	C	..	..	C	..	..	..	F	F				
		0.5	..	..	0.2	..	..	..	12.0	20.0				
0702	Lead Roller Assy	O	..	..	..	..	..	..	F	F				
		0.5	..	..	..	..	..	..	4.0	8.0				
	08 Turn Bars													
0801	Turn Bars Assy	O	..	..	..	..	..	..	H	H				
		0.5	..	..	..	..	..	..	12.0	24.0				
0802	Oil Pump Drive Assy	O	..	..	..	..	..	..	F	F				
		0.5	..	..	..	..	..	..	8.0	12.0				
0803	Trolley Roller Assy	C	..	..	C	..	..	..	F	F				
		0.5	..	..	0.2	..	..	..	4.0	8.0				
0804	Front and Drive Roller Assys	O	..	..	..	..	..	..	H	H				
		0.5	..	..	..	..	..	..	12.0	16.0				
	09 Air Pump & Blower Motor													
0901	Air Pump & Blower Motor Assy	O	..	..	..	..	..	..	F					
		0.5	..	..	..	..	..	..	16.0					
0902	Piping & Valves	O	..	..	..	..	..	..	O					
		0.5	..	..	..	..	..	..	8.0					
0903	Pump Drive Belt	O	..	..	O	..	..	..	O	..	..	..	.....	Q-D
		0.2	..	..	0.5	..	..	..	0.5					
0904	Oil Separator	C	..	C	..	..	..	..	O	O	..	..	.....	R-C
		0.2	..	1.0	..	..	..	..	1.0	2.0				
0905	Automatic Oiler	C	..	C	C	..	..	..	O	..	..	..	.....	S-C
		0.2	..	0.5	0.1	..	..	..	1.0					
0906	Pump, Air	O	..	O	..	..	..	..	O	F	..	..	.....	T-C
		0.5	..	1.0	..	..	..	..	2.0	8.0				
0907	Motor, Blower	O	..	..	..	..	..	..	F	F				
		0.5	..	..	..	..	..	..	2.0	8.0				
	10 Automatic Lubricator													
1001	Automatic Lubricator Assy	O	..	O	C	..	..	..	O	O	..	..	.....	U-C
		0.5	..	1.0	1.0	..	..	..	1.0	4.0				
1002	Reservoir, Lubricator	O	..	..	..	..	..	..	O					
		0.2	..	..	..	..	..	..	1.0					
	11 Static Eliminator													
1101	Static Eliminator Unit	C	..	C	..	..	..	..	F	F	..	..	.....	V-C
		0.5	..	2.0	..	..	..	..	2.0	4.0				
1102	Power Unit	O	..	..	..	..	..	..	F	F				
		0.5	..	..	..	..	..	..	1.0	2.0				

Section II. MAINTENANCE ALLOCATION CHART

(1) Group No.	(2) Assembly group	(3) Maintenance functions											(4) Tools and equipment	(5) Remarks
		A Inspect	B Test	C Service	D Adjust	E Align	F Calibrate	G Install	H Replace	I Repair	J Overhaul	K Rebuild		
1328	Switches, Push	O							F					
		0.5							1.0					
1329	Filters, R.F.	F							F					
		0.5							1.0					
1330	Main Operator's Station	O							F	F				
		0.5							4.0	24.0				
1331	Switches, Rotary	O							F					
		0.5							2.0					
1332	Switches, Push	O							F					
		0.5							1.0					
1333	Rheostat Assy	O							F					
		0.5							2.0					
1334	Filters, R.F.	F							F					
		0.5							1.0					
1335	Indicater, Speed	O							O					
		0.5							1.0					
	14 Cable Assys													
1401	Cable Assys, Power	O							F	F				
		0.5							1.0	2.0				
	15 Press Package													
1501	Press Package Assy	O							O	O				
		1.0							8.0	80.0				
1502	Ramp Assy	O							O	O				
		0.2							1.0	2.0				
1503	Extension Platform Assy	O							O	O				
		0.2							1.0	2.0				
1504	Skids, Swivel & Fixed	O							O					
		0.2							4.0					
1505	Delivery Ramp Assy	O							O					
		0.2							1.0					
1506	Jack Assy, Ratchet	O							O					
		0.2							2.0					
1507	Table Folding	O							O					
		0.2							1.0					
1508	Spreader Frame Assy	O							O	O				
		0.3							2.0	8.0				
1509	Cover, Press Package	O							O					
		0.2							1.0					
1510	Cabinet Bar Assys	O							O					
		0.2							2.0					
1511	Table Angle Assy	O							O					
		0.2							4.0					
1512	Leveling Jack	O							H					
		0.2							4.0					
1513	Drip Pan Assy	O							H					
		0.2							16.0					
1514	Base Assy	O							H	H				
		0.5							16.0	24.0				
	16 Cabinets, "A" thru "F"													
1601	Cabinet Assembly	O							O	O				
		0.3							2.0	8.0				
1602	Lamp Assembly	F							F	F				
		0.2							2.0	2.0				
1603	Drawer Lock Assy	O							O					
		0.2							1.0					
1604	Switch, Lamp	O							O					
		0.1							1.0					
1605	Cable Assys	O							O	O				
		0.2							0.5	1.0				

Section II. MAINTENANCE ALLOCATION CHART

(1) Group No.	(2) Assembly group	(3) Maintenance functions A Inspect	B Test	C Service	D Adjust	E Align	F Calibrate	G Install	H Replace	I Repair	J Overhaul	K Rebuild	(4) Tools and equipment	(5) Remarks
1701	Kits, Starter Repair	..	..	..	..	..	..	F						
	18 Special Tools & Support Equipment													
1801	Plate Bending Jig Assy	C 0.5	.. ..	.. ..	C 0.5	.. ..	.. ..	.. ..	O 1.0	O 12.0				

Section III. SPECIAL TOOL AND SPECIAL TEST EQUIPMENT REQUIREMENTS

Reference code	Maintenance level	Nomenclature	Tool Number
1-D	C	Wrench, Pin, Roller Setting	NSN 5120-00-152-2343
2-D	C	Wrench, Pin, Plate and Blanket Cylinder	NSN 5120-00-152-2341
3-D	C	Gage, Blanket	NSN 5120-00-497-1614
4-D	C	Wrench, Pin, Sheeter	NSN 5120-00-152-2344
5-D	C	Gage, Knife Edge Cylinder	NSN 5120-00-185-6797

Section IV. REMARKS

Reference code	Remarks
A-I	Straighten and weld
B-I	Replace damaged tubing, sleeves and defective metering units.
C-C	Lubricate bearings weekly
D-I	Replace defective lining
E-I	Replace defective shock absorber
F-I	Check adjustment weekly
G-C	Replace P.I.V. oil every 2500 hours of operation
G-D	Check P.I.V. chain adjustment every 1000 hours of operation
H-I	Replace defective wash-up blade
I-A	Check daily for overheating
J-D	Check adjustment weekly
K-C	Clean reservoir bi-weekly
L-A	Check rubber tires daily for distortion
M-D	Check power cut-off operation bi-monthly
N-I	Replace damaged shear pins
O-C	Sharpen blades as required
O-D	Adjust blades after replacement
P-C	Clean belts weekly
P-D	Adjust belt tension monthly
Q-D	Adjust belt tension monthly
R-C	Clean bi-monthly
S-C	Fill with lubricant daily
T-C	Flush out pump with kerosene monthly
U-C	Drain and replace filter once a year
V-C	Clean static bars weekly
W-C	Check brushes quarterly
X-C	Clean filters bi-monthly
Y-C	Check brushes quarterly

APPENDIX C
ADDITIONAL AUTHORIZATION LIST
(Not Applicable)

APPENDIX D
MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

D-1. General

a. This section provides a general explanation of all maintenance and repair functions authorized at various maintenance levels.

b. Section II designates overall responsibility for the performance of maintenance functions on the identified end item or component and the work measurement time required to perform the functions by the designated maintenance level. The implementation of the maintenance function upon the end item or component will be consistent with the assigned maintenance functions.

c. Section III lists the special tools and test equipment required for each maintenance function as referenced from Section II.

d. Section IV contains supplemental instructions or explanatory notes for a particular maintenance function.

D-2. Explanation of Columns in Section II

a. Column (1), Group Number. A number is assigned to each group in a top down breakdown sequence. The applicable groups are listed on the MAC in disassembly sequence beginning with the first group removed.

b. Column (2), Functional Group. This column contains a brief description of the components of each numerical group.

c. Column (3), Maintenance Functions. This column lists the various maintenance functions (A through K). The lowest maintenance level authorized to perform these functions is indicated by a symbol in the appropriate column. Work measurement time standards (The active repair time required to perform the maintenance function) are shown directly below the symbol identifying the maintenance level. The symbol designations for the various maintenance levels are as follows:

C - Operator or Crew
O - Organization maintenance
F - Direct support maintenance
H - General support maintenance
D - Depot maintenance

The maintenance functions are defined as follows:

A. Inspect. To determine serviceability of an item by comparing its physical, mechanical, and electrical characteristics with established standards through examination.

B. Test. To verify serviceability and detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

C. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean, to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

D. Adjust. To maintain within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.

E. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

F. Calibrate. To determine and cause corrections to be made or to be adjusted or instruments or test measuring and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

G. Install. The act of emplacing, seating, or fixing into position an item, part, or module (Component of assembly) in a manner to allow the proper functioning of an equipment or system.

H. Replace. The act of substituting a serviceable like type part, subassembly, or module (Component or assembly) for an unserviceable counterpart.

I. Repair. The application of maintenance services (inspect test, service, adjust, align calibrate, or replace) or other maintenance actions (welding, grinding, riveting, straightening, facing remachining or resurfacing) to restore serviceability to an item by correcting

specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

J. Overhaul. That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DMWR) in appropriate technical publication. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

K. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equip ment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurement (hours/miles, etc.) considered in classifying Army equipment/components.

d. Column (4), Tools and Equipment. This column is provided for referencing by code the special tools and test equipment, (Sec. III) required to perform the maintenance functions (Sec. II).

e. Column (5), Remarks. This column is provided for referencing by code the remarks (Sec. IV) pertinent to the maintenance functions.

D-3. Explanation of Columns in Section III

a. Reference Code. This column consists of a number and a letter separated by a dash entered from column 4 on the MAC. The number references the special tools and test equipment requirements and the letter represents the specific maintenance function the item is to be used with. The letter is representative of columns A through K on the MAC.

b. Maintenance Category. This column shows the lowest level of Maintenance authorized to use the special tools or test equipment.

c. Nomenclature. This column lists the name or identification of the tools or test equipment.

d. Tool Number. This column lists the manufacturer's code and part number , or Federal stock number of tools and part number, or Federal stock number

D-4. Explanation of Columns in Section IV

a. Reference Code. This column consists of two letters separated by a dash, entered from column 5, Section II. The first letter references the Remark and the second letter references a maintenance function, column (3), A through K, to which the remark applies.

b. Remarks. This column lists information pertinent to the maintenance function being performed, as indicated on the MAC Section II.

Section II. MAINTENANCE ALLOCATION CHART

(1) Group No.	(2) Assembly group	(3) Maintenance functions A Inspect	B Test	C Service	D Adjust	E Align	F Calibrate	G Install	H Replace	I Repair	J Overhaul	K Rebuild	(4) Tools and equipment	(5) Remarks
	01 GUARD ASSEMBLIES													
0101	Guard, Main Drive	O 0.2							O 1.0	O 2.0				A-1
0102	Guard, Offset Unit	O 0.2							O 1.0	O 2.0				A-1
0103	Guard, Delivery Unit	O 0.2							O 1.0	O 2.0				A-I
0104	Guard, Feeder Unit	O 0.2							O 1.0	O 2.0				A-I
	02 OIL LINE ASSEMBLIES													
0201	Oil Lines, Drive Side	O 0.1							O 0.3	O 0.5				B-I
0202	Oil Lines, Offset Unit	O 0.1							O 0.3	O 0.5				B-I
0203	Oil Lines, Delivery Unit	O 0.1							O 0.3	O 0.5				B-I
0204	Oil Lines, Feeder Unit	O 0.1							O 0.3	O 0.5				B-I

MAINTENANCE ALLOCATION CHART - Continued

(1) Group No.	(2) Assembly group	(3) Maintenance functions A Inspect	B Test	C Service	D Adjust	E Align	F Calibrate	G Install	H Replace	I Repair	J Overhaul	K Rebuild	(4) Tools and equipment	(5) Remarks
	03 FEEDER ASSEMBLY													
0301	Feeder Alignment Assy	O 0.5	...	O 0.5	...	...	...	...	F 8.0	F 32.0	...	...	.....	C-C
0302	Shaft Assy, Paper Roll	C 0.2	...	...	C 0.4	...	...	...	O 0.2	O 4.0				
0303	Brake Shoe Assemblies	C 0.2	...	C 0.3	C 0.4	...	...	...	O 0.5	O 4.0	...	...	.....	D-I
0304	Roller Assemblies	O 0.2	...	...	O 0.4	...	...	...	F 1.0	F 4.0				
0305	Counterweight	C 0.2	...	...	C 0.4	...	...	...	O 1.0	O 4.0	...	...	.....	E-I
0306	Vernier Adjustment Assy	C 0.2	...	...	C 0.2	...	...	...	O 0.5	O 1.0				
0307	Stop Assy, Feed Roll	C 0.2	...	...	C 0.5	...	...	...	O 2.0	O 4.0	...	...	.....	F-I
0308	Speed Control Assy	O 0.5	...	O 1.0	O 2.0	...	...	...	O 2.0	F 16.0	...	...	.....	G-C, D
	04 OFFSET UNIT													
0401	Offset Unit Assy	O 1.0	...	...	...	...	...	...	H 32.0					
0402	Ink Wash-Up Device Assy	C 0.2	...	C 0.3	C 0.5	...	...	...	O 1.0	O 2.0	...	...	.....	H-I
0403	Paper Brake Mechanism Assy	C 0.2	...	...	C 0.5	...	...	...	O 1.0	O 2.0				
0404	Guard Assy, Cylinder	C 0.2	...	...	...	...	...	...	O 1.0					
0405	Throw-Off Assy, Ink Motion	O 0.5	...	...	...	...	...	...	O 4.0	O 6.0				
0406	Impression Cylinder Adjustment Assy	O 0.2	...	...	...	...	...	...	O 4.0	O 6.0				
0407	Outer Linkage Assy, Blanket Cylinder	O 0.2	...	...	...	...	...	...	O 6.0	O 8.0	...			
0408	Throw-Off Assy, Impression Cylinder	O 0.2	...	...	...	...	...	...	O 4.0	O 6.0				
0409	Solenoid Assy	O 0.2	...	...	...	...	...	...	O 2.0	O 2.0				
0410	Ink Motion Assembly	O 0.5	...	...	...	...	...	...	F 6.0	F 12.0				
0411	Blade, Ink Fountain	C 0.2	...	C 0.2	C 0.4	...	...	...	O 1.0					
0412	Adjustment Screws Ink Fountain	C 0.2	...	C 0.4	...	...	...	...	O 1.0					
0413	Ink Fountain Roller	C 0.2	...	C 0.2	...	...	...	...	O 6.0					
0414	Pawl and Ratchet, Ink Fountain	C 0.2	...	...	C 0.1	...	...	...	O 3.0					
0415	Ink Ductor, Distributor & Form Roller Assys	C 0.2	...	...	C 1.0	...	...	...	O 2.0	...	...	...	1-D	
0416	Ink Vibrator Assy	O 0.5	...	...	...	...	...	...	F 4.0	F 8.0				
0417	Ink Vibrator Roller Assys	O 0.5	...	...	...	...	...	...	F 4.0	F 8.0				
0418	Cylinder & Main Drive Assy	O 0.5	...	...	...	...	...	...	H 24.0					
0419	Side Register Mechanism, Plate Cylinder	C 0.2	...	...	C 0.2	...	...	...	O 2.0	O 2.0				
0420	Plate Cylinder Assy	C 0.5	...	...	O 1.0	...	...	...	F 16.0	F 8.0	...	...	2-D	

MAINTENANCE ALLOCATION CHART - Continued

(1) Group No.	(2) Assembly Group	(3) Maintenance functions A Inspect	B Test	C Service	D Adjust	E Align	F Calibrate	G Install	H Replace	I Repair	J Overhaul	K Rebuild	(4) Tools and equipment	(5) Remarks
0421	Blanket Cylinder Assy	C			O				F	F			2-D	
		0.5			1.0				20.0	12.0			3-D	
0422	Impression Cylinder Assy	C			O				F					
		0.5			1.0				24.0					
0423	Bushings, Cylinder	O							F					1-A
		0.5							8.0					
0424	Drive Gears, Cylinder	O							O					
		0.5							2.0					
0425	Belts, Main Drive	O			O				O					J-D
		0.2			1.0				1.0					
0426	Pulley Shaft Assy	O							O	O				
		0.5							8.0	16.0				
0427	Gears, Main Drive	O							O					
		0.5							2.0					
0428	Water Stop Assy	C		C					O	O				
		0.2		0.3					1.0	0.5				
0429	Water Motion Assy	O							F	F				
		0.5							6.0	12.0				
0430	Roller, Water Fountain	C							O					
		0.2							6.0					
0431	Water Ductor & Form Roller Assys	C			C				O				1-D	
		0.2			1.0				2.0					
0432	Drive Sprockets	O							O					
		0.5							1.0					
0433	Water Vibrator Assy	O							F	F				
		0.5							4.0	8.0				
0434	Water Vibrator Roller Assy	O							F	F				
		0.5							4.0	8.0				
	05 WATER BOTTLE & BRACKET ASSY													
0501	Water Level Unit	C		C					O	O				K-C
		0.2		1.0					1.0	2.0				
0502	Cap and Valve Assy	C							O					
		0.2							0.5					
0503	Bracket Assy, Water Bottle Holder	C			C				O					
		0.2			0.2				0.5					
	06 DELIVERY UNIT													
0601	Delivery Unit Assy	O							H	H				
		0.1							40.0	80.0				
0602	Trolley Paper Guide Assy	O							O	O				L-A
		0.2							4.0	8.0				
0603	Clutch Assy, Main Drive	O		O					O	O				
		0.5		0.2					8.0	16.0				
0604	Trolley Roller Assy	C			C				O	O				L-A
		0.5			0.2				1.0	2.0				
0605	Trolley Drive Roller	O							F					
		0.2							4.0					
0606	Compensator Assy	C			C				F	F				
		0.5			0.2				12.0	20.0				
0607	Lead Roller Assy	O							F	F				
		0.5							4.0	8.0				
0608	Paper Guide Assy	O							F	F				
		0.2							2.0	1.0				
0609	Nipping Roller Assy	C			C				F	F				
		0.5			0.2				12.0	20.0				
0610	Pile-Up Assy, Paper	O			O				O	O				M-D
		0.2			1.0				1.0	2.0				
0611	Slow Down Sheeter Alignment Assy	O							H	H				
		0.5							24.0	16.0				

MAINTENANCE ALLOCATION CHART - Continued

(1) Group No.	(2) Assembly group	(3) Maintenance functions A Inspect	B Test	C Service	D Adjust	E Align	F Calibrate	G Install	H Replace	I Repair	J Overhaul	K Rebuild	(4) Tools and equipment	(5)
0612	Counter Assy	C	...	...	C	...	...	...	O					
		0.2	...	...	0.1	...	...	...	2.0					
0613	Rotary Cutter Assy	C	...	...	...	...	...	...	F	F	...	...	4-D	N-I
		0.5	...	...	...	...	...	...	24.0	16.0				
0614	Stationary and Rotary Knives	C	...	C	C	...	...	...	C	C	...	...	5-D	O-C, D
		0.2	...	1.0	2.0	...	...	...	4.0					
0615	Delivery Drive Tape Assys	O	...	...	...	...	...	...	F	F				
		0.5	...	...	...	...	...	...	24.0	30.0				
0616	Belts, Hi and Lo Speed	O	...	O	O	...	...	...	O	...	...	...	.....	P-C, D
		0.2	...	0.5	1.0	...	...	...	2.0					
0617	Pile Lowering Mechanism	O	...	...	...	...	...	...	F	F				
		0.5	...	...	...	...	...	...	24.0	30.0				
0618	Pawl and Ratchet, Pile Lowering	C	...	...	...	...	...	...	O					
		0.2	...	...	...	...	...	...	1.0					
0619	Paper Stop Assy	O	...	...	...	...	...	...	O	O				
		0.2	...	...	...	...	...	...	2.0	2.0				
0620	Jogger Assys, Rear and Side	C	...	...	C	...	...	...	F	F				
		0.5	...	...	0.2	...	...	...	16.0	8.0				
0621	Delivery Board Assy	C	...	...	...	...	...	...	O	O				
		0.2	...	...	...	...	...	...	0.2	2.0				
	07 COMPENSATOR ROLLERS & LEVERS													
0701	Compensator Rollers & Levers Assy	C	...	...	C	...	...	...	F	F				
		0.5	...	...	0.2	...	...	...	12.0	20.0				
0702	Lead Roller Assy	O	...	...	...	...	...	...	F	F				
		0.5	...	...	...	...	...	...	4.0	8.0				
	08 TURN BARS													
0801	Turn Bars Assy	O	...	...	...	...	...	...	H	H				
		0.5	...	...	...	...	...	...	12.0	24.0				
0802	Oil Pump Drive Assy	O	...	...	...	...	...	...	F	F				
		0.5	...	...	...	...	...	...	8.0	12.0				
0803	Trolley Roller Assy	C	...	...	C	...	...	...	F	F				
		0.5	...	...	0.2	...	...	...	4.0	8.0				
0804	Front and Drive Roller Assys	O	...	...	...	...	...	...	H	H				
		0.5	...	...	...	...	...	...	12.0	16.0				
	09 AIR PUMP & BLOWER MOTOR													
0901	Air Pump & Blower Motor Assy	O	...	...	...	...	...	...	F					
		0.5	...	...	...	...	...	...	16.0					
0902	Piping & Valves	O	...	...	...	...	...	...	O					
		0.5	...	...	O	...	...	...	8.0					
0903	Pump Drive Belt	O	...	...	...	...	...	...	O	...	...	...	.....	Q-D
		0.2	...	...	0.5	...	...	...	0.5					
0904	Oil Separator	C	...	C	...	...	...	...	O	O	...	...	.....	R-C
		0.2	...	1.0	...	...	...	...	1.0	2.0				
0905	Automatic Oiler	C	...	C	C	...	...	...	O	...	...	...	.....	S-C
		0.2	...	0.5	0.1	...	...	...	1.0					
0906	Pump, Air	O	...	O	...	...	...	...	O	F	...	...	.....	T-C
		0.5	...	1.0	...	...	...	...	2.0	8.0				
0907	Motor, Blower	O	...	...	...			...	F	F				
		0.5	...	...	...	...	...	...	2.0	8.0				

MAINTENANCE ALLOCATION CHART - Continued

(1)	(2) Assembly group	(3) Maintenance functions A Inspect	B Test	C Service	D Adjust	E Align	F Calibrate	G Install	H Replace	I Repair	J Overhaul	K Rebuild	(4) Tools and equipment	(5) Remarks
	10 AUTOMATIC LUBRICATOR													
1001	Automatic Lubricator Assy	O	...	O	O	...	...	...	O	O	...	...	.....	U-C
		0.5	...	1.0	1.0	...	...	...	1.0	4.0				
1002	Reservoir, Lubricator	O	...	...	...	...	...	...	O					
		0.2	...	...	...	...	...	...	1.0					
	11 STATIC ELIMINATOR													
1101	Static Eliminator Unit	C	...	C	...	...	...	...	F	F	...	...	.....	V-C
		0.5	...	2.0	...	...	...	...	2.0	4.0				
1102	Power Unit	O	...	...	...	...	...	...	F	F				
		0.5	...	...	...	...	...	...	1.0	2.0				
	12 PRESS FRAME STRUCTURE													
1201	Leveling Block Assy	O	...	...	...	...	...	...	O	O				
		0.2	...	...	...	...	...	...	0.5	1.0				
1202	Substructure Assys	O	...	...	...	...	...	...	H					
		0.2	...	...	...	...	...	...	80.0					
	13 ELECTRICAL COMPONENTS													
1301	Motor, Main Drive D. C.	F	...	O	...	...	...	...	F	H			.....	W-C
		0.5	...	2.0	...	...	...	...	2.0	16.0				
1302	Armature Assy	H	...	...	...	...	...	...	H	H				
		1.0	...	...	...	...	...	...	1.0	4.0				
1303	Interpole & Main Pole Assys	H	...	...	...	...	...	...	H					
		1.0	...	...	...	...	...	...	4.0					
1304	Magnetic Control	F	...	...	...	...	...	...	...	F				
		2.0	...	...	...	...	...	...	...	24.0				
1305	Resistors	F	...	...	...	...	...	...	F					
		0.5	...	...	...	...	...	...	0.5					
1306	Relay, Overload	F	...	...	...	...	...	...	F					
		0.5	...	...	...	...	...	...	1.0					
1307	Filters, R. F.	F	...	...	...	...	...	...	F					
		0.5	...	...	...	...	...	...	1.0					
1308	Switch, Push	F	...	...	...	...	...	...	F					
		0.5	...	...	...		...	...	1.0					
1309	Cabinet Assy	F	...	O	...	...	...	...	H	H	...	...	.....	X-C
		0.5	...	1.0	...	...	...	...	16.0	16.0				
1310	Starter	F	...	...	...	...	...	...	F	F				
		0.5	...	...	...	...	...	...	2.0	2.0				
1311	Contactor	F	...	...	...	...	...	...	F	F				
		0.5	...	...	...	...	...	...	2.0	4.0				
1312	Dynamic Breaking Assy	F	...	...	...	...	...	...	F	F				
		0.5	...	...	...	...	...	...	2.0	4.0				
1313	Relay	F	...	...	...	...	...	...	F	F				
		0.5	...	...	...	...	...	...	2.0	4.0				
1314	VSX Regulator Panel Assy	F	...	...	...	...	...	...	...	F				
		0.5	...	...	...	...	...	...	...	24.0				
1315	Capacitors	F	...	...	...	...	...	...	F					
		0.5	...	...	...	...	...	...	2.0					
1316	Transformer	F	...	...	...			...	F					
		0.5	...	...	...	...	...	...	8.0					
1317	Rectifier Assy	F	...	...	...	...	...	...	F					
		0.5	...	...	...	...	...	...	8.0					
1318	Diode, Semi-Conductor Device	F	...	...	...	...	...	...	F					
		0.5	...	...	...	...	...	...	2.0					
1319	Heat Sink	F	...	...	...	...	...	...	F					
		0.2	...	...	...	...	...	...	3.0					

MAINTENANCE ALLOCATION CHART - Continued

(1)	(2) Assembly group	(3) Maintenance functions											(4) Tools and equipment	(5)
		A	B	C	D	E	F	G	H	I	J	K		
		Inspect	Test	Service	Adjust	Align	Calibrate	Install	Replace	Repair	Overhaul	Rebuild		
1320	Suppressor, Surge	F 0.5							F 2.0					
1321	Panel Assy, B	O 0.2								O 0.4				
1322	Power Unit, A.C. to D.C.	F 0.5		O 2.0					H 4.0	H 24.0				Y-C
1323	Bearings, Power Unit	H 0.5							H 1.0					
1324	Brush Holder	H 0.5							H 1.0					
1325	Rotating Unit	H 1.0							H 2.0	H 6.0				
1326	Main & Field Poles	H 1.0							H 4.0					
1327	Pushbutton Stations	O 0.5							F 2.0	F 12.0				
1328	Switches, Push	O 0.5							F 1.0					
1329	Filters, R.F.	F 0.5							F 1.0					
1330	Main Operator's Station	O 0.5							F 4.0	F 24.0				
1331	Switches, Rotary	O 0.5							F 2.0					
1332	Switches, Push	O 0.5							F 1.0					
1333	Rheostat Assy	O 0.5							F 2.0					
1334	Filters, N.F.	F 0.5							F 1.0					
1335	Indicator, Speed	O 0.5							O 1.0					
	14 CABLE ASSYS													
1401	Cable Assys, Power	O 0.5							F 1.0	F 2.0				
	15 PRESS PACKAGE													
1501	Press Package Assy	O 1.0							O 8.0	O 80.0				
1502	Ramp Assy	O 0.2							O 1.0	O 2.0				
1503	Extension Platform Assy	O 0.2							O 1.0	O 2.0				
1504	Skids, Swivel & Fixed	O 0.2							O 4.0					
1505	Delivery Ramp Assy	O 0.2							O 1.0					
1506	Jack Assy, Ratchet	O 0.2							O 2.0					
1507	Table Folding	O 0.2							O 1.0					
1508	Spreader Frame Assy	O 0.3							O 2.0	O 8.0				

MAINTENANCE ALLOCATION CHART - Continued

(1)	(2) Assembly group	(3) Maintenance functions											(4) Tools and equipment	(5) Remarks
		A Inspect	B Test	C Service	D Adjust	E Align	F Calibrate	G Install	H Replace	I Repair	J Overhaul	K Rebuild		
1509	Cover, Press Package	O 0.2	...	...	...	...	...	...	O 1.0					
1510	Cabinet Bar Assys	O 0.2	...	...	...	...	...	...	O 2.0					
1511	Table Angle Assy	O 0.2	...	...	...	...	...	...	O 4.0					
1512	Leveling Jack	O 0.2	...	...	...	...	...	...	H 4.0					
1513	Drip Pan Assy	O 0.2	...	...	...	...	...	...	H 16.0					
1514	Base Assy	O 0.5	...	...	...	...	...	...	H 16.0	H 24.0				
	16 CABINETS, "A" THRU "F"													
1601	Cabinet Assembly	O 0.3	...	...	...	...	...	...	O 2.0	O 8.0				
1602	Lamp Assembly	F 0.2	...	...	...	...	...	...	F 2.0	F 2.0				
1603	Drawer Lock Assy	O 0.2	...	...	...	...	...	...	O 1.0					
1604	Switch, Lamp	O 0.1	...	...	...	...	...	...	O 1.0					
1605	Cable Assys	O 0.2	...	...	...	...	...	...	O 0.5	O 1.0				
1701	Kits, Starter Repair	...	...	...	...	...	...	F						
	18 SPECIAL TOOLS & SUPPORT EQUIPMENT													
1801	Plate Bending Jig Assy	C 0.5	...	...	C 0.5	...	...	...	O 1.0	O 12.0				

Section III. SPECIAL TOOL AND SPECIAL TEST EQUIPMENT REQUIREMENTS

Reference code	Maintenance level	Nomenclature	Tool Number
1-D	C	Wrench, Pin, Roller Setting	NSN 5120-00-152-2343
2-D	C	Wrench, Pin, Plate and Blanket Cylinder	NSN 5120-00-152-2341
3-D	C	Cage, Blanket	NSN 5120-00-497-1614
4-D	C	Wrench, Pin, Sheeter	NSN 5120-00-152-2344
5-D	C	Cage, Knife Edge Cylinder	NSN 5120-00-185-6797

Section IV. REMARKS

REFERENCE CODE	REMARKS
A-1	Straighten and weld
B-1	Replace damaged tubing, sleeves and defective metering units.
C-C	Lubricate bearings weekly
D-1	Replace defective lining
E-1	Replace defective shock absorber
F-1	Check adjustment weekly
G-C	Replace P.I.V. oil every 2500 hours of operation
C-D	Check P.I.V. chain adjustment every 1000 hours of operation
H-1	Replace defective wash-up blade
1-A	Check daily for overheating
J-D	Cheek adjustment weekly
K-C	Clean reservoir bi-weekly

REMARKS - Continued

REFERENCE CODE	REMARKS
L-A	Check rubber tires daily for distortion
M-D	Check power cut-off operation by-monthly
N-I	Replace damaged shear pins
O-C	Sharpen blades as required
O-D	Adjust blades after replacement
P-C	Clean belts weekly
P-D	Adjust belt tension monthly
Q-D	Adjust belt tension monthly
R-C	Clean bi-monthly
S-C	Fill with lubricant daily
T-C	Flush out pump with kerosene monthly
U-C	Drain and replace filter once a year
V-C	Clean static bars weekly
W-C	Check brushes quarterly
X-C	Clean filters bi-monthly
Y-C	Check brushes quarterly

APPENDIX E
EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

1. Scope

This appendix lists Expendable Supplies and Materials you will need to operate and maintain the printing press. These items are authorized to you by CTA50-970, Expendable Items (except Medical, Class V, Repair Parts and Heraldic Items).

2. Explanation of Columns

. *Column1 Item Number.* This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material.

. *Column 2 Level.* This column identifies the lowest level of maintenance that requires the listed item.

c. Column 3 National Stock Number (NSN). This is the national stock number assigned to the item; use it to request or requisition the item.

d. Column 4 Description. Indicates the federal item name and, if required, a description to identify the item. The last line for each item indicates the part number followed by the Federal Supply Code for Manufacturer (FSCM) in parenthesis, if applicable.

e. Column 5 Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., each (ea), inch (in.), pair (pr), etc.). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will. satisfy your requirements.

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
	C	8305-00-170-5063	Cheesecloth, Unbleached, Closely Woven, 50 YD Bolt, Size 36 in. x. x 1.07 oz. to Square Yard, Fed Spec CCC-C-440	BO
	C	6510-00-201-4000	Cotton, Surgical, 1 lb. Roll, Grade A, USP, Fed Spec JJJ-C-561	PG
	C	6640-00-290-0146	Litmus Paper, Blue Strip, 5 CM LG, 0.6 CM W, 100 Units per Vial	VI
	C	6640-00-290-0147	Litmus Paper, Red Strip, 5 CM LG, 0.6 CM W, 100 Units per Vial	VI
	C	5320-00-240-2920	Steel Wool, Grade 00, 1 lb. Pkg.	PC
	C	7920-00-240-2555	Sponge, Cellulose, Rectangular, 6 in. lg., x 3-13/16 in. W. x 1-7/8 THK, Fed Spec L-S-626, Type II, Class 2, Porosity B	EA
	C	3610-00-263-9017	Stone, Correction, Litho, Etching Slip, Rectangular or Round, MIL-S- 11476, Type II	EA
	C	3610-00-263-9018	Stone, Correction, Litho, Scotch Hone Square, MIL-S-11476, Type I	EA
	C	8310-00-238-2401	Thread, Linen, Polished, 8 Ply, 84 yd ball, Fed Spec V-T-291, Type B	EA
	C	7920-00-205-1711	Rag, Wiping, Cotton, Unbleached, 50 lb. Bale Fed Spec DDD-R-30, Class 2, Grade B	BE
	C	6850-00-291-0963	Lithographic Blanket -- Roller Wash, Slow drying, Type I, Fed Spec O-L-298	GL
	C	6850-00-281-1985	Dry Cleaning Solvent, Liquid, I Gal. Can, Fed Spec D-D-680, Type I	GL
			Ink, Printing, Offset Process, Full Tone & Halftone, 5 lb. Can	
	C	7510-00-018-9480	Black	CN
	C	7510-00-018-9481	Warm Red	CN
	C	7510-00-018-9484	Rhodamine Red	CN
	C	7510-00-018-9485	Process Blue	CN
	C	7510-00-935-7246	Victoria Blue	CN
	C	7510-00-018-9486	Bright Green	CN
	C	7510-00-018-9487	Benzadine Yellow	CN
	C	7510-00-935-7427	Gold	CN

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
	C	6850-00-270-9991	Regenerator, Lithographic Blanket, Liquid 1 Qt. Can, Fed Spec O-R-1151	QT
	C	5350-00-161-9034	Pumice, Technical, Pulverized, 5 lb. Can, Fed Spec SS-P-821, Grade FF	CN
	C	6850-00-281-3461	Lithographic Plate, Asphaltum Solution, 1 QT. Can	QT
	C	3610-00-926-5361	Lithographic Plate Kit, Bi-Metallic, Fredrick H. Levey Co., P/N LPILS C/o 25 each plates and Processing Chemicals	KT
	O	3030-00-124-1238	Cement, Texalon, P/N 20ZTC (92075), 2 oz. Bottle	BT
	C	7510-00-262-8617	Varnish, Lithographic, O Viscosity, I QT Can	CN
	C	7510-00-262-86i8	Varnish, Lithographic, 8 Viscosity, I QT Can	CN
	C	6810-00-270-9989	Talc, Technical, Powder, 1 lb. Can, Fed Spec ZZ-T-416, Type IV, Class C	LB
	C	6810-00-753-4777	Phosphoric Acid, ACS, 1 PT Bottle, Fed Spec O-C-265	BT
	C	6850-00-935-7244	Gum., Arabic Solution, 14 Baume	CN
	C	6515-00-339-7900	Gloves, Surgeon's, Rubber, Medium Weight Size 8-1/2., Fed Spec ZZ-G-421, Type 11, Grade A	PR
	C	3610-00-495-6048	Blanket, Lithographic, Rubber, w/Bars Size 11-9/16 in. Around the Cylinder Lay x 16-5/8 in. Wide	EA
	C	3610-00-741-5520	Cover. Roller, Inner, Flannel, to fit over 1-15/16 In. Dia. x 17 in. Lg Roller. Final Dia. Size w/Molleton Cover 2-1/4 in.	EA
	C	3610-00-777-5382	Cover, Roller, Molleton to fit over 1-15/16 in. Dia. x 17 in. Lg Roller w/one Inner Flannel Final Dia. Size 2-1/4 in.	EA
	C	8150-00-163-1547	Needle, Sailmaker's, Stell, Straight Shank, Triangular Point, Size 14, 25 per Pkg., Fed Spec GGG-N-202	PC
	C	9150-00-265-9435	Lubricating Oil, Engine, OE-30, 5 Gal., Can, MIL-L-2 104	CN
	O	9150-00-265-9442	Lubricating Oil, Engine, OE-50, 5 Gal., Can, MIL-L-2104	CN
	C	9150-00-190-0905	Grease, Automotive and Artillery, GAA, 5 lb. Can, MIL-G-10924	CN
	C	9310-00-727-0511	Paper, Book, Uncoated, White Chemical - Wood Paper. Offset or Letterpress, Long Grain, Size 16 in. w. x 32 in. dia., 80 lb., Wt. Basis: 1000 SH 25" x 38"	RL
	C	9310-00-727-7071	Paper, Book, Uncoated, White Chemical - Wood Paper, Offset or Letterpress, Long Grain, Size 16 in. w. x 32 in. dia., 100 lb., Wt. Basis: 1000 SH 25" x 38"	RL
	C	9310-00-727-0510	Paper, Book, Uncoated, White Chemical - Wood Paper. Offset or Letterpress Long Grain, Size 16 in. w. x 32 in. dia., 120 lb., Wt. Basis: 1000 SH 25" x 38"	RL

ALPHABETICAL INDEX

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FRED C. WEYAND
General, United States Army,
Chief of Staff.

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