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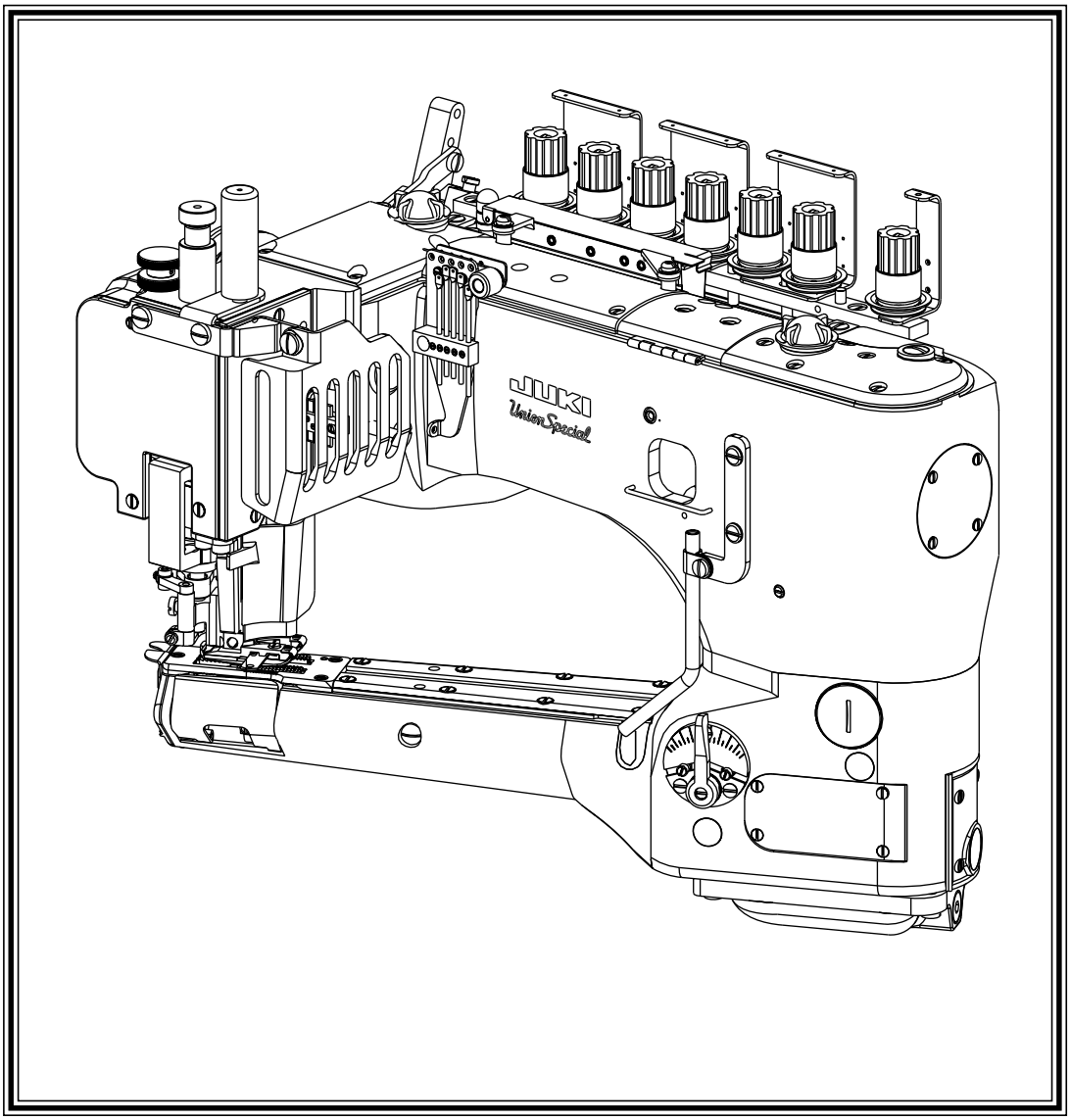
ADJUSTING INSTRUCTIONS / ILLUSTRATED PARTS LIST



MANUAL NO. PT0204-GR
FOR STYLE

36200L220-60

RoHS 2002/95/EC

11/22/06

PREFACE

This parts manual has been prepared to assist you in locating individual parts or assemblies on 36200L220-60 Series machines.

It is the desire of Union Special that each machine run at its optimum performance. Parts listed in this manual are designed specifically for your machine and are manufactured with utmost precision to assure long lasting service.

This manual has been comprised on the basis of available information. Changes in design and/or improvements may incorporate a slight modification of configuration in illustrations or part numbers.

On the following pages are illustrations and terminology used in describing the parts used on 35600 Series machines.

TERMS

Prices are net cash and subject to change without notice. All shipments are forwarded F.O.B. shipping point. A charge is made to cover postage and insurance.

CONTENTS

IDENTIFICATION OF MACHINES

Each UNION SPECIAL machine is identified by a style number, which is stamped into the style plate affixed to the middle of the machine under the tension assembly.

The serial number is stamped in the casting at the right rear base of the machine.

TORQUE REQUIREMENTS

Torque (measured in inch-pounds) is a rotating force (in pounds applied through a distance by a lever (in inches or feet). This is accomplished by a wrench, screwdriver, etc. Many of these devices are available, which when set at the proper amount of torque will tighten the part to the correct amount and no tighter.

All straps and eccentrics should be tightened to 19-21 inch-pounds (22-24cm/kg) unless otherwise noted.
All other nuts, bolts, screws, etc. should be tightened by hand as tightly as possible, unless otherwise noted.

DESCRIPTION OF MACHINES

Universal style, Feed-off-the-arm, high speed, medium throw, five or six thread machine. There are four needles and one retainer abreast, one looper and a manually adjusted differential feed control. There is an enclosed automatic lubricating system, filter type oil return pump, visual sight oil action and supply gauges. The maximum work space in front of the needles is 8 inches (203.2mm). Recommended maximum speed - 3200 R.P.M. for all Styles. Machines can be used on either table or pedestal mount.

STYLE OF MACHINES

36200L220-60 (was 35600JU) — LAP FLATSEAMER: For simultaneously trimming right and left plies and lap seaming with 5 needles for increased seam strength on swimsuits, leotards, sports workout wear, etc.
Seam specifications 610-LSa-1. Components produce a .236" (6.0mm) wide seam.

ILLUSTRATIONS

This manual has been arranged to simplify ordering repair parts. Exploded views of various sections of the mechanism are shown so that the parts may be seen in their actual position in the machine. On the page opposite the illustration will be found a listing of the parts with their part numbers, description and the number of pieces required in the particular view being shown.

Numbers in the first column are reference numbers only, and merely indicate the position of the part in the illustration. The reference number should never be used in ordering parts. Always use the part number listed in the second column.

Component parts of sub-assemblies which can be furnished for repairs are indicated by indenting their descriptions under the description of the main sub-assembly. As an example refer to the following text.

9.	29126 EC	Upper Looper Drive Shaft Assembly	1
10.	22503 F	Screw	1
11.	39543 E	Cam Follower Locking Clamp	1

It will be noted in the previous example that the cam follower, bushing and cam guide and the upper looper drive shaft are not listed. The reason is that replacement of these parts individually is not recommended, so the complete upper looper drive shaft assembly should be ordered.

When a part is common to all machines covered in this manual, no specific usage will be mentioned in the description. However, when the parts for the various machines are not the same, the specific usage will be mentioned in the description and, if necessary, the difference will be shown in the illustration.

A numerical index of all the parts shown in this manual is located at the back. This will facilitate locating the illustration and description when only a part number is known.

IDENTIFYING PARTS

Where the construction permits, each part is stamped with its part number. On some of the smaller parts and on those where construction does not permit, an identification letter is stamped in to distinguish the part from similar ones.

PLEASE NOTE: Part numbers represent the same part, regardless of which manual they appear. On all orders please include part number, name and style of machine for which the part was ordered.

NEEDLES

Each needle has both a type and size number. The type number denotes the kind of shank, point, length, groove, finish and other details. The size number, stamped on the needle shank, denotes the largest diameter of the blade measured between the shank and the eye. Collectively, the type number and size number represent the complete symbol which is given on the label of all needles packed and sold by Union Special.

TYPE	DESCRIPTION
116GKS	Round shank, round point, extra short, double groove, struck groove, spotted, chromium plated needle. .048 (1.2mm) Diameter Shank. Size 065/025 available only.

When changing the needle, make sure it is fully inserted in the needle driving arm before the clamp screw is tightened.

To have needles promptly and accurately filled, an empty package, a needle sample, or the type and size number should be forwarded. Use the description on the label. A complete order should read as follows: "100 needles, type 116 GKS, size 065/025".

SAFETY RULES:

1. Before putting the machines described in this manual into service, carefully read the instructions. The starting of each machine is only permitted after taking notice of the instructions and by qualified operators.

   IMPORTANT! Before putting the machine into service, also read the safety rules and instructions from the motor supplier.

2. Observe the national safety rules valid for your country.

3. The sewing machines described in this instruction manual are prohibited from being put into service until it has been ascertained that the sewing units which these sewing machines will be built into, have conformed with the EC Council Directives (89/392/EEC, Annex II B).

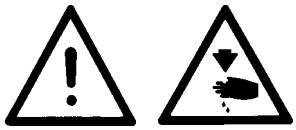
   Each machine is only allowed to be used as foreseen. The foreseen use of the particular machine is described in paragraph "STYLES OF MACHINES" of this instruction manual. Another use, going beyond the description, is not as foreseen.

4. All safety devices must be in position when the machine is ready for work or in operation. Operation of the machine without the appertaining safety devices is prohibited.

5. Wear safety glasses.

6. In case of machine conversions and changes all valid safety rules must be considered. Conversions and changes are made at your own risk.

7. The warning hints in the instructions are marked with one of these two symbols:



8. When doing the following the machine has to be disconnected from the power supply by turning off the main switch or by pulling out the main plug:

   8.1 When threading needle(s), looper, spreader etc.

   8.2 When replacing any parts such as needle(s), presser foot, throat plate, looper, spreader, feed dog, needle guard, folder, fabric guide etc.

   8.3 When leaving the workplace and when the workplace is unattended.

   8.4 When doing maintenance work.

   8.5 When using clutch motors without actuation lock, wait until the motor is stopped totally.

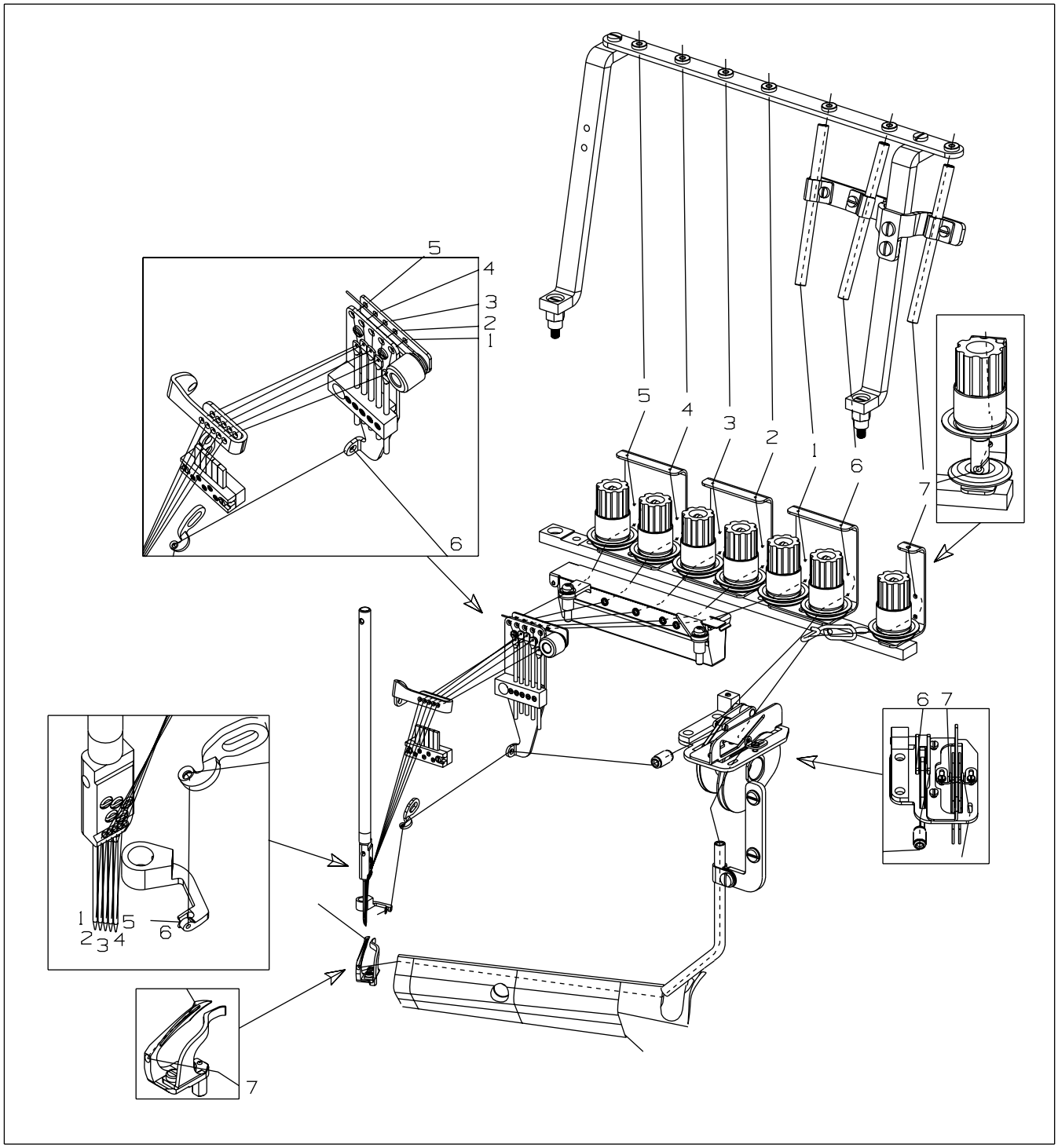
9. Maintenance, repair and conversion work (see item 8) must be done only by trained technicians or special skilled personnel under consideration of the instructions.

10. Any work on the electrical equipment must be done by an electrician or under direction and supervision of special skilled personnel.

11. Work on parts and equipment under electrical power is not permitted. Permissible exceptions are described in the applicable sections of standard sheet DIN VDE 0105.

12. Before doing maintenance and repair work on the pneumatic equipment, the machine has to be disconnected from the compressed air supply. In case of existing residual air pressure, after disconnecting from compressed air supply (i.e. pneumatic equipment with air tank), the pressure has to be removed by bleeding.

THREADING



OILING

Referring to Fig. 1, fill the machine at (A) and (B). Oil capacity of class 36200 is 2.5 ounces in the bottom reservoir and 2.5 ounces in the top reservoir. Use a straight mineral oil, Saybolt viscosity of 90 to 125 seconds at 100° Fahrenheit. The oil level is checked at gauges (C) and (D). Maintain oil level between the red lines of these gauges.

This machine is automatically lubricated by a continuously driven rotary pump. Oil flow can be observed through windows (A) and (B). When installing a new machine or starting a machine that has been idle for some time, priming may be necessary. Remove plug screws (E), fill holes with recommended oil and replace screws BEFORE operating. If oil does not flow while machine is running, pump is inoperative.

Remove screw 22733B (F, Fig. 1 inset) to drain oil from the top reservoir. To drain oil from bottom reservoir remove screw 999-196 (G).

Occasionally, it is necessary to oil the linkage of the presser foot, the knife holder shank (36273A), guide collar (36273K) and the various links and bearings of the presser foot lifting mechanism and thread tension release.

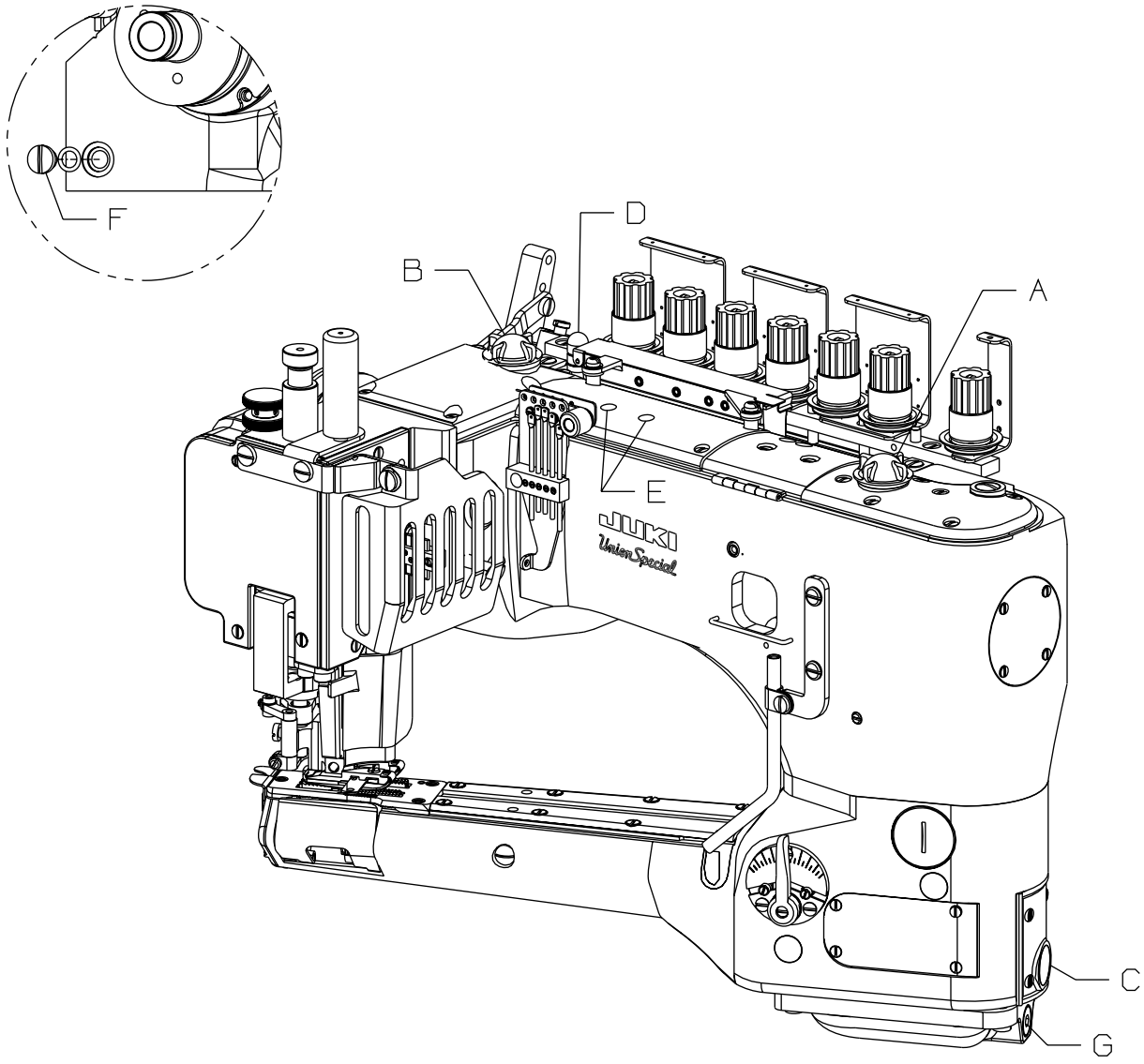


FIG. 1

ADJUSTING INSTRUCTIONS

Instructions stating direction or location, such as right, left, front or rear of the machine are given relative to the operator's position at the machine unless otherwise noted. The handwheel rotates clockwise in operating direction.

SETTING THE NEEDLE BAR HEIGHT & ALIGNMENT

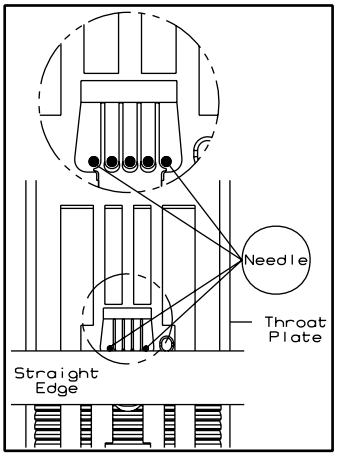


FIG. 2

Insert the first (left) and fifth needles into the needle head. The needles for this Class of machine are made with two flats on the front of the shank This will enable you to correctly position the needles in the needle head. Make certain the needle shank is fully inserted and that the screw is seated firmly on the flat.

To position the needle head square with the throat plate, use the upper knife or a straight edge to align the needles with the cross grooves in the throat plate. (See Fig. 2)

Refer to table 1 for the dimension from the fifth (lowest) needle to the surface of the throat plate and for the number of the needle bar height gauge.

STYLE	DIMENSION FROM 5TH (LOWEST) NEEDLE TO THROAT PLATE SURFACE	NEEDLE BAR HEIGHT GAUGE NUMBER	NEEDLE HEIGHT GAUGE STEP MARKED
36200L220-60	1/2" (12.7MM)	21227DS	.500

TABLE 1

Position the needle bar at its highest point of travel. Loosen needle bar clamp screw (A, FIG.3) & use the specified needle bar height gauge (B) to achieve the desired height dimension from the fifth (lowest) needle (C) to the throat plate surface (D). Tighten clamp screw (A) and recheck setting. Care must be taken not to disturb the needle head alignment while making the adjustment. Add the remaining needles.

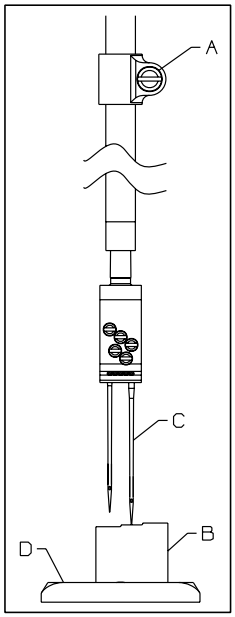


FIG. 3

CAUTION: If the needle head has been replaced it must be torqued to 17 in. lbs. (20cm/kg). Or until torque bar (21227AR), inserted into cross hole in the needle bar, bends. It will not seat against the bottom of the needle bar. After tightening, check for expansion of the needle bar by positioning it up into the lower bushing hole. If the bar has expanded it will bind in the bushing. The bar must be replaced or lapped to reduce the bell shape. Align and set needle bar height as described above.

SETTING THE NEEDLE BAR HEIGHT & ALIGNMENT (CONT)

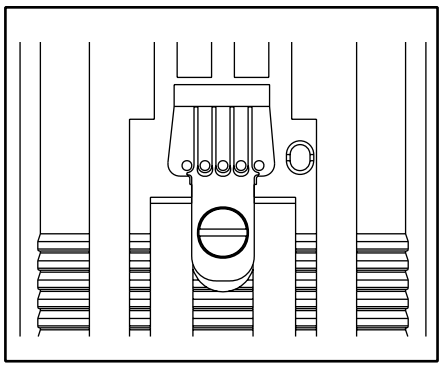


FIG. 4

Correct spacing of the needles in the throat plate stitch tongue is imperative to proper sewing conditions. Improper relationship of the needles to the stitch tongue often results in malformed stitches. When replacing the stitch tongue make sure needles are aligned properly (see Fig. 4).

If the stitch tongue and throat plate are properly seated and the needle position is not correct, the cylinder has probably been forced out of position. If realignment is necessary, refer to the section "Centering the Cylinder".

When the needles are correctly positioned in the throat plate they are centered in the stitch tongue (see Fig. 4). Actually, the needle bar is centered to the throat plate and cylinder, however, to provide clearance on the left side of the needle for the needle loops passing around the looper during the down stroke of the needles, the slots in the stitch tongue are made off-center to the left. Accurate positioning of the needles may be obtained by repositioning the cylinder.

ALIGNING THE CYLINDER

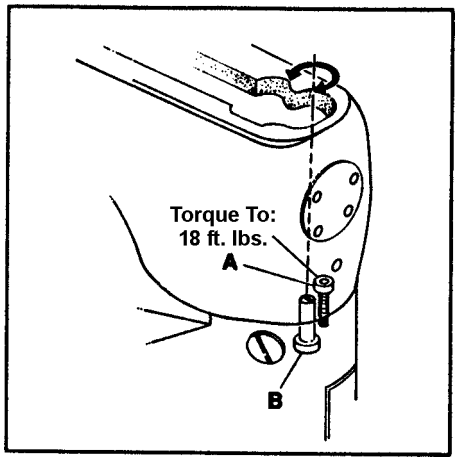


FIG. 5

Remove the top front cover and gasket from the main frame. Loosen cylinder holding screw (A, Fig. 5). Turn eccentric screw (B) clockwise to move the cylinder so the needles are closer to the right side of the stitch tongue. Turn the stud counterclockwise to locate the needles closer to the left. Tighten screw (A) and recheck settings.

NOTE: The cylinder may not move freely when the eccentric is turned because the joint sealant compound has set. Light tapping with a wooden block at the joint or midpoint of the arm may be necessary.

SETTING THE LOOPER TRAVEL USING GAUGE 21227CN

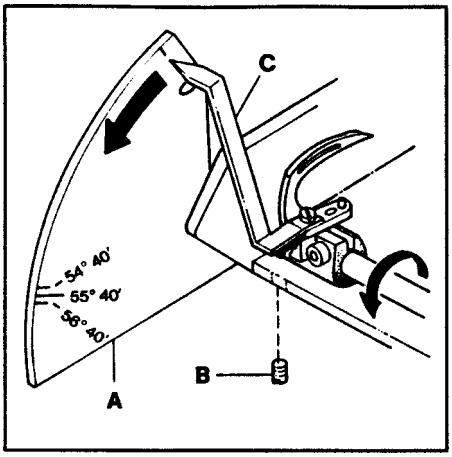


FIG. 6

Attach looper travel gauge plate (A, Fig. 6) to the rear of the cylinder arm. Set the bottom of the gauge so it is approximately horizontal and lock lightly in place with screw (B) directly underneath. Attach looper travel gauge pointer (C) to the looper using the left needle guard screw hole. Turn the handwheel in operating direction until the looper is positioned to the far right. Set pointer (C) at zero degrees by rotating gauge plate (A) and lock in place. Continue turning the handwheel until the pointer stops. If the looper travel is correct the pointer should indicate 55°40'.

SETTING THE LOOPER TRAVEL

To adjust the looper travel remove the top front cover and the end cover. Loosen left-handed locknut (A, Fig. 7) and turn screw (B) clockwise to decrease the looper travel or counterclockwise to increase the looper travel. Tighten locknut (A) and recheck setting.

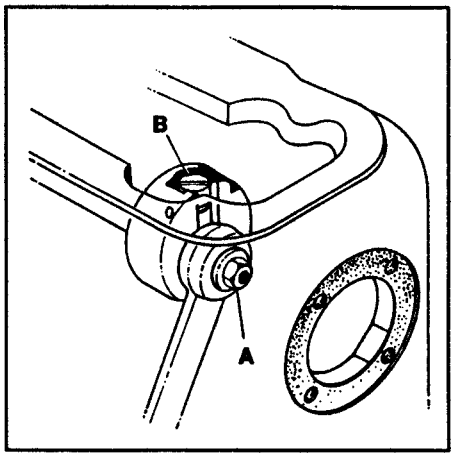


FIG. 7

NOTE: After setting the looper travel the machine must be checked for synchronization.

TIMING THE NEEDLES TO THE LOOPER

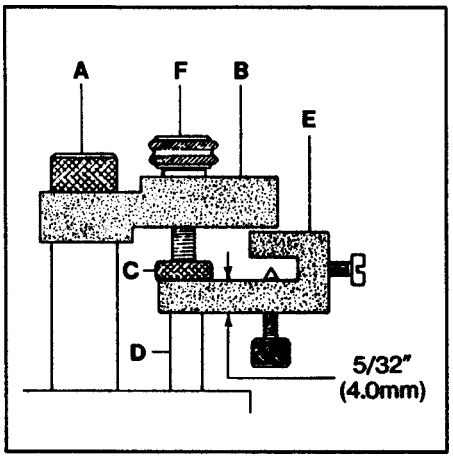


FIG. 8

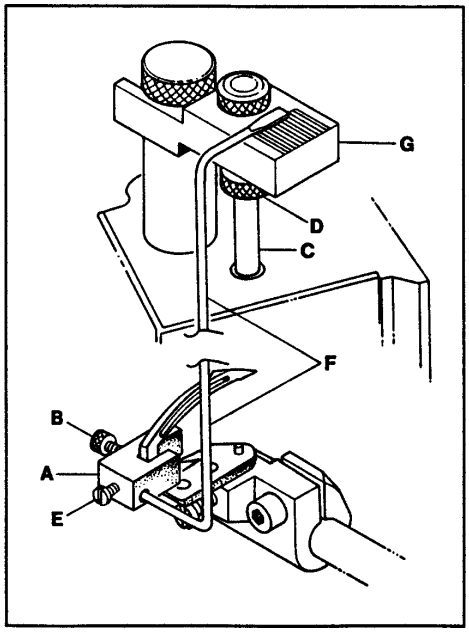


FIG. 9

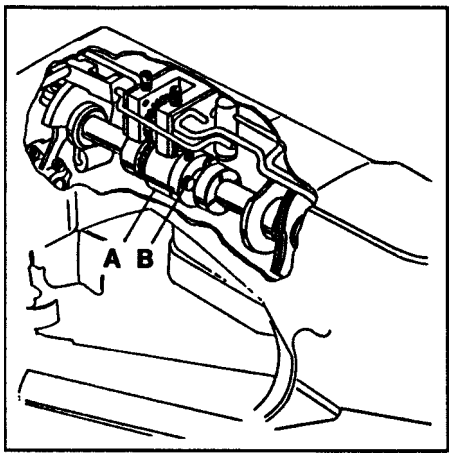


FIG. 10

To visually check the timing of the needles to the looper, turn the handwheel in operating direction until the needle bar has reached its lowest position and has risen 5/32" (4.0mm). At this time the looper point should appear at the same relative position to the needles whether rotation of handwheel is clockwise or counterclockwise.

INSTRUCTIONS FOR USING SYNCHRONIZING GAUGE 21227CG

Turn the handwheel until the needle bar is at its lowest point. Loosen presser bar regulating screw (A, Fig. 8) and insert needle bar setting block (B) under the head of the screw (A) with stop screw (C) above needle bar (D). Tighten screw (A).

The long portion of the looper clamp and height gauge (E, Fig. 8) laid on its side is the 5/32" (4.0mm) gauge used to set the distance between stop screw (C) and the top of the needle bar (D) at its lowest position. Tighten nut (F) to clamp stop screw (C) into place.

TIMING THE NEEDLES TO THE LOOPER (CONT.)

Attach the looper clamp and height gauge (A, Fig. 9) to the heal of the looper by tightening screw (B). Turn the handwheel slowly in a clockwise direction until needle bar (C) touches stop screw (D). Loosen screw (E) and set synchronizing gauge rod (F) so the flat end is on one of the lines in the center of the block (G). Tighten screw (E).

Turn the handwheel in the opposite direction until the needle bar touches stop screw (D, Fig. 9). Synchronizing rod (F) should come to the same line on block (G). The difference must not exceed one line.

If the setting cannot be achieved, main shaft coupling (A, Fig. 10) must be repositioned. Remove the crank chamber cover and gasket. Loosen the three coupling screws (B). If synchronizing rod (F, Fig. 9) moves more to the right while the handwheel is rotated in a clockwise direction, the looper is too fast and the main shaft should be retarded. If the rod moves more to the right when the handwheel is rotated in a counterclockwise direction the looper is too slow and the mainshaft should be advanced. Tighten screws (B, Fig. 10).

NOTE: If the stationary Knife interferes with the synchronizing rod (F) remove the knife to make the adjustment.

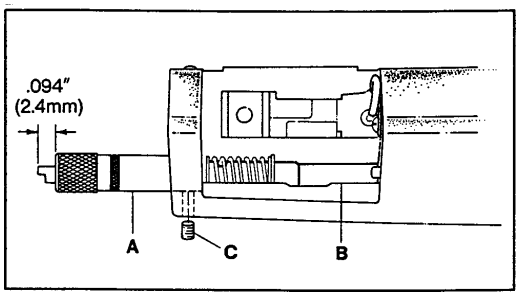


FIG. 11

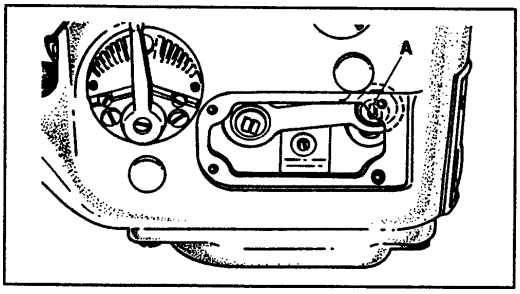


FIG. 12

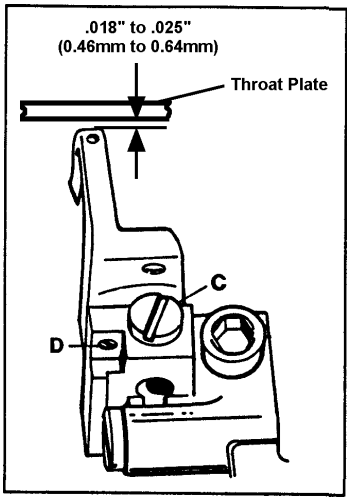


FIG. 13

Looper Avoid

The looper avoid is set at .094" (2.4mm). Using gauge no. 21227BV (A, Fig. 11), position looper shaft (B) fully to the rear (away from operator) and insert the gauge through the looper shaft hole in the end of the cylinder until the plunger is fully extended from the gauge. Tighten clamp screw (C). When the looper is positioned fully to the front, the end of the plunger should be flush with the end of the gauge. The motion of the plunger from the extended position to flush represents .094" (2.4mm) travel. To adjust the looper avoid remove the cylinder cover and loosen screw (A, Fig. 12) with TT-85 wrench. Raise the ball joint to shorten the avoid motion or lower it to lengthen the avoid motion. Tighten screw (A). Reposition gauge (A, Fig. 11) and recheck the setting.

Vertical Adjustment of Looper

A clearance of .018" to .025" (0.46mm to 0.64mm) should be maintained between the top of the looper and the bottom of the stitch tongue. Loosen screw (C, Fig. 13) and turn screw (D), directly under the looper, up or down as required. Make sure the looper is seated and tighten screw (C). Check for clearance.

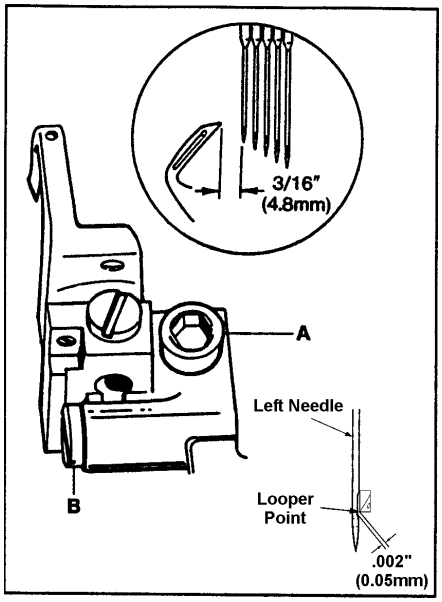


FIG. 15

Looper Gauge

Turn the handwheel in operating direction until the looper has traveled fully to the left. Loosen screw (A, Fig. 15) and move the looper holder to the right or left until the distance from the point of the looper to the center of the first (left) needle is 3/16" (4.8mm) (Looper gauge 21225F3/16 can be used for a more accurate measurement). Clearance between the looper point and the scarf of the needle must not exceed .002" (0.05mm). Turn screw (B) until the .002" (0.05mm) dimension is achieved. Tighten screw (A).

NOTE: Looper gauge may need to be increased or decreased slightly to obtain a proper stitch.

SETTING THE FRONT NEEDLE GUARD

Install needle guard (A, Fig. 16) and position it to touch but not deflect the first needle. Slowly turn the handwheel in operating direction and check the needles to make sure they are not pinched between the looper and the needle guard.

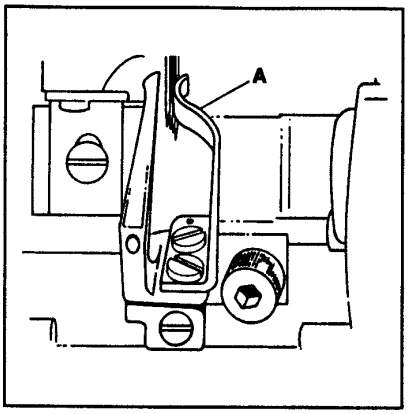


FIG. 16

SETTING THE FEED DOGS

Preliminary Setting:

Install the differential feed dog (A, Fig. 17) with screw (B). Attach rear needle guard (C) to main feed dog (D), pushing in fully to the rear and tighten screw (E). Install main feed dog with screw (F).

As a starting point loosen screw (G) and set the slot in feed bar eccentric stud (H) in a horizontal position. Tighten screw (G). At the highest point of travel feed dogs (A and D) should be the depth of .020" (0.5mm) above throat plate (J). Loosen screws (B and F) and adjust the height of each feed dog by moving them up or down in the elongated slot of the shank. Tighten screws (B and F). Loosen screw (G) and turn stud (H) until the top of the feed dogs are parallel to the throat plate. Rotating stud (H) will simultaneously level both feed dogs.

NOTE: When setting eccentric stud (H) if turned clockwise feeddogs should go up if turned counterclockwise feed dogs should go down.

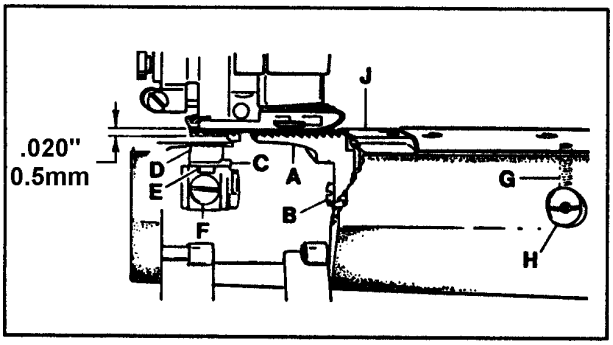


FIG. 17

Final Setting:

Both the main and differential feed dogs may be individually adjusted to height. Main feed dog (D) at its highest position should rise above the top of the throat plate the depth of one full tooth when the normal presser spring pressure is applied. The differential feed (A) may then be raised to it.

SETTING THE REAR NEEDLE GUARD

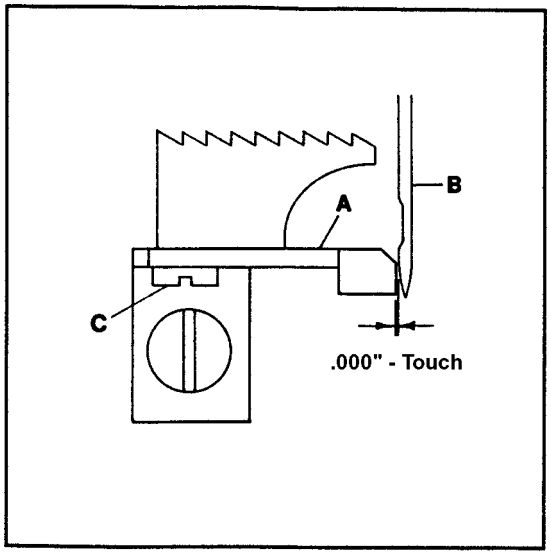


FIG. 18

Set rear needle guard (A, Fig. 18) so it touches the first (left) needle (B) but does not deflect. Check the guard position to the other needles to avoid pinching. Loosen screw (C) and reposition guard (A) as necessary. Tighten screw (C).

SETTING THE STITCH LENGTH

This machine is designed to sew 10 to 16 stitches per inch. The normal factory setting is 16 stitches per inch. To change the stitch length remove the plug screw located directly above the cylinder side cover. Loosen screw (A, Fig. 19) in lever (B) and move up to increase the stitch length or down to decrease the stitch length. Tighten screw (A) and replace the plug screw.

CAUTION: If the stitch length is changed the rear needle guard setting must be checked and readjusted if necessary. Failure to do so may result in needle and/or parts breakage.

CAUTION: When making stitch length adjustment do not exceed maximum recomended stitch length due to possible part damage.

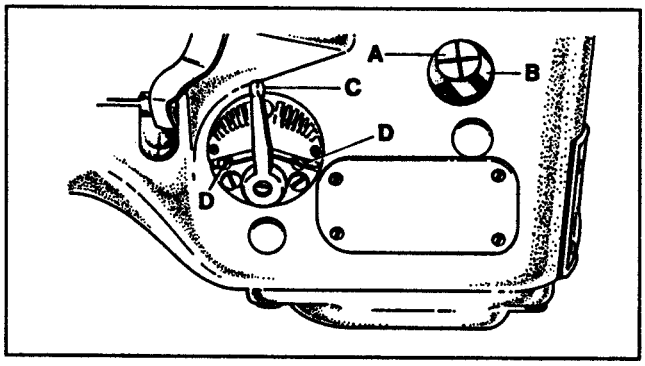


FIG. 19

DIFFERENTIAL FEED CONTROL

The amount of differential feed is controlled by lever (C, Fig. 19). The adjusting plate is numbered from 1 to 9. When the lever is set from numbers 1 to 4 reverse differential or stretching occurs. The numbers from 4 to 5 produce equal feed stitching while numbers 5 to 9 produce a gathering stitch. The two stop screws (D) can be set to limit the movement of lever (C) or lock the lever in one position.

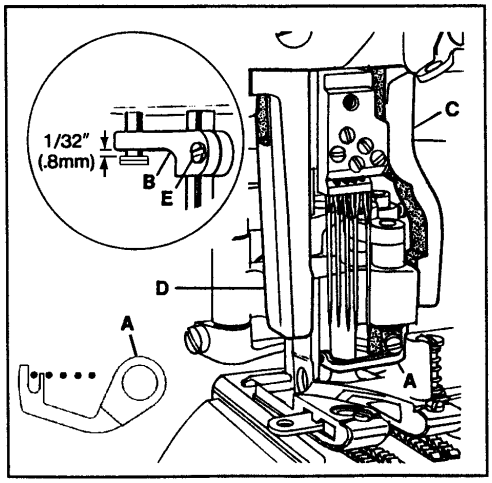


FIG. 20

SETTING THE PRESSER FOOT

Remove the presser bar regulating screw and the presser spring. Raise the needle bar to its highest position and remove the retainer. As the foot is slipped under the needles, swing the upper knife into the opening on the right side of the foot and slide the linkage onto the hook driving sleeve. Insert the presser bar through the linkage and into the presser foot shank. Tighten presser foot screw. With the presser bar inserted properly into the presser foot, position the foot left to right so the finger of cover thread carrier (A, Fig. 20) is between the first and second needles. Set presser bar guide (B, Fig. 20 Inset) so foot will not move. Set right presser foot guide (C) and left presser foot guide (D) to maintain setting. Loosen presser bar guide screw (E Fig. 20 Inset) and check to see that foot has vertical freedom with no right to left play, no bind. Put the needle bar is in its lowest position, and set 1/32"(0.8mm) above head of presser bar guide stud. Tighten presser bar guide screw (E).

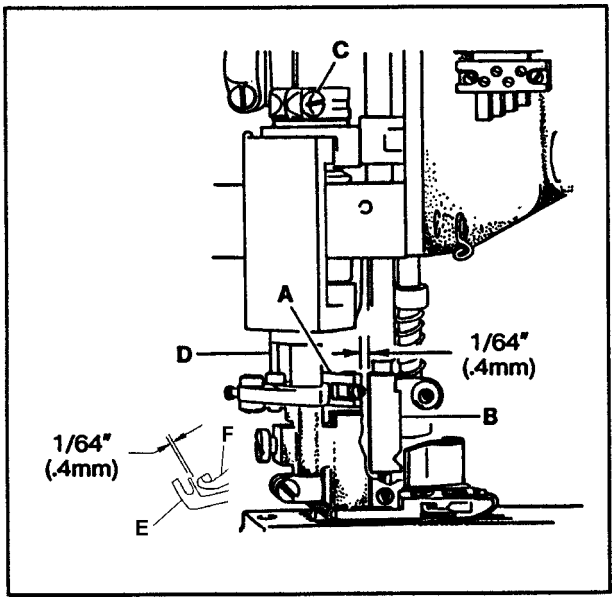


FIG. 21

Turn the handwheel in operating direction until link (A, Fig. 20) has traveled fully to the front. There must be a 1/64" (0.4mm) clearance between link (A) and the back of needle head (B) when link (A) starts to jackknife. Loosen screw (C) and rotate driving sleeve (D) to position link (A). Tighten screw (C).

Add the cover thread hook(F) and cover thread carrier(E) if they are not in place. Position carrier so the thread loop will be carried behind the first two needles. There should be a minimum 1/64"(0.4mm) clearance between the hook and the carrier at their closest position.

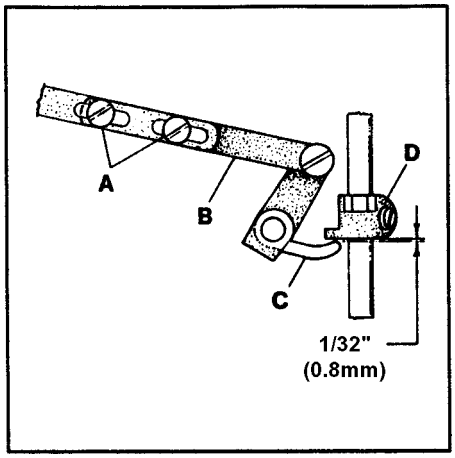


FIG. 22

Replace the presser spring and the presser bar regulating screw. Loosen screws (A, Fig. 22) in lifter lever link assembly (B) and position lever (C) so there is 1/32" (0.8mm) clearance between it and presser bar guide (D) when the feed dogs are below the throat plate.

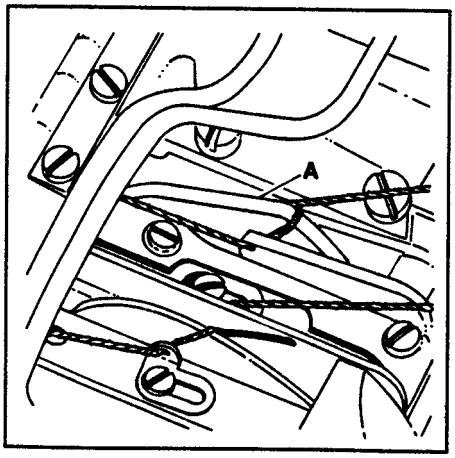


FIG. 23

When the hook swings to the left it will pass over the cover thread. On its return travel, the thread will "pop" into the slot on the underside of the hook and is carried to the right. This thread forms a triangle for the third and forth needle threads to pass through. As the cover thread "pops" into the slot it must cast-off the high point of take-up (A, Fig. 23) at the same time. Loosen the two screws in the cover thread take-up and reposition if necessary. If there is difficulty in making this adjustment, check the thread tension and make sure the hook point has an extremely high polish and the angle is correct. Due to clearance requirements bending the hook is not recommended.

SETTING THE PRESSER FOOT (CONT.)

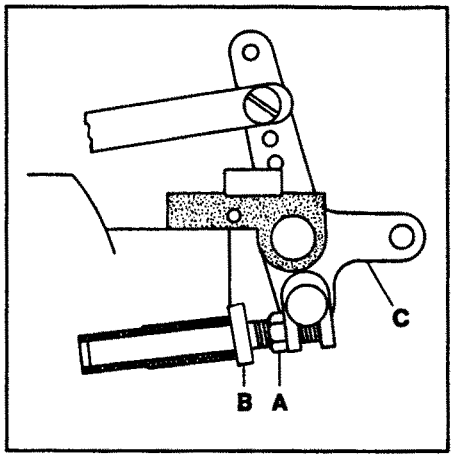


FIG. 24

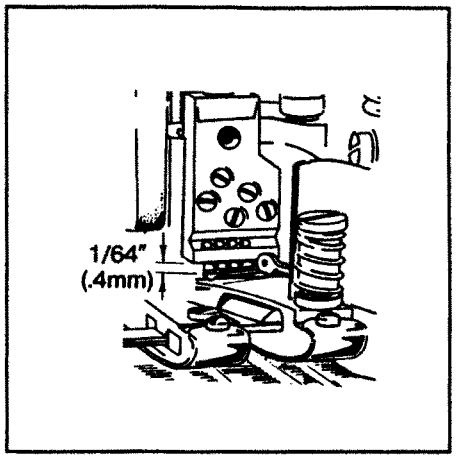


FIG. 25

The presser foot lifter stop plunger must be set so the cover thread hook will not hit the bottom of the needle head as the presser foot is being lifted. Position the needle bar to its lowest point of travel. Loosen nut (A, Fig. 24) and turn plunger (B) clockwise until it strikes the crankshaft counterweight. While applying pressure to lifter (C) to lift the foot, back out of the plunger until the distance between the hook and the underside of the needle head is 1/64" (0.4mm) (see Fig. 25). Tighten nut (A, Fig. 24).

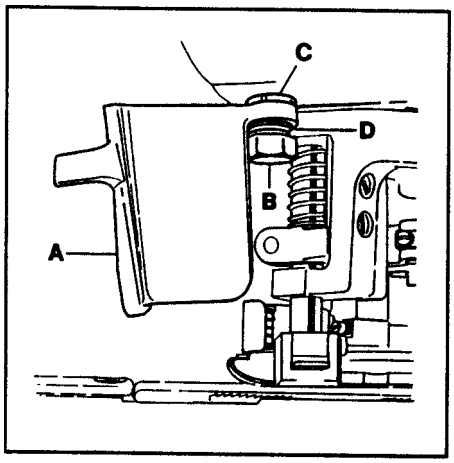


FIG. 26

To adjust the position and tension of frame chip guard (A, Fig. 26), slightly loosen screw (B) and turn washer (C) with 21388Y spanner wrench until spring (D) snaps the guard into the closed position. Tighten screw (B). A light resistance should be felt when opening the guard.

SETTING THE KNIFE DRIVE LEVER

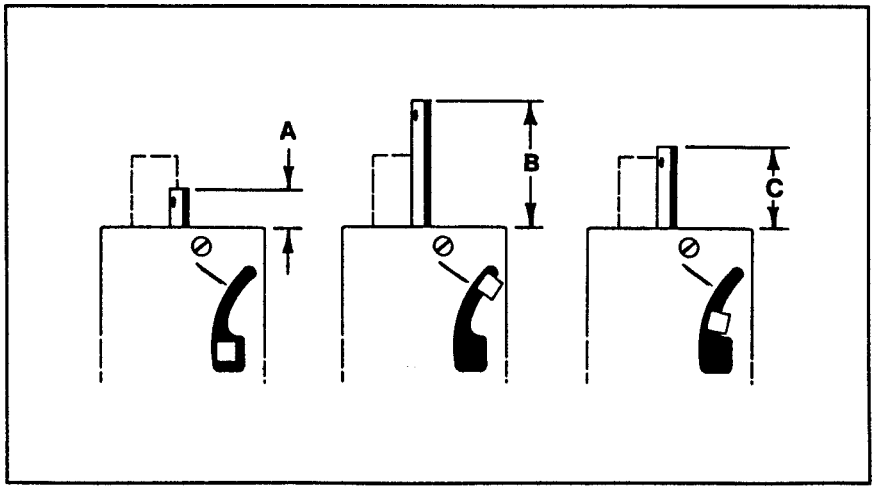
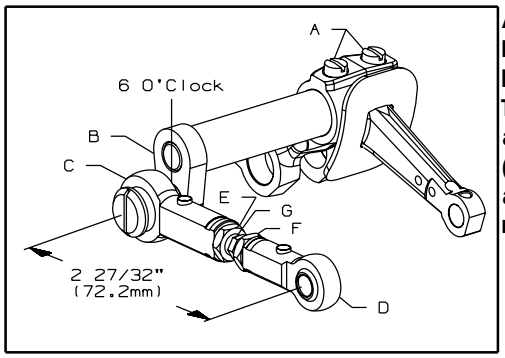


FIG. 27

Position the needle bar at the bottom of its stroke. Measure from the top of the needle bar to the top of the casting to obtain dimension "A" (see Fig. 27).

Position the needle bar at the top of its stroke. Measure from the top of the needle bar to the top of the casting to obtain dimension "B". Subtract dimension "A" from dimension "B" and divide by two. Add this number to dimension "A" to obtain "C". Set a caliper to the "C" dimension and turn the handwheel in operating direction until the height of the needle bar is at the "C" dimension

SETTING THE KNIFE DRIVE LEVER (CONT.)



At this time the knife drive lever should be in the 6 o'clock position. If adjustment is necessary, loosen screws (A, Fig. 28) in the needle lever and reposition knife drive lever (B) to the 6 o'clock position. Tighten screws (A). The dimension between the centerline of right and left knife drive connection ball joints (C and D) must be 2 27/32" (72.2mm). Loosen left hand thread nut (E), right hand thread nut (F) and turn connecting rod (G) until dimension is achieved. Tighten nuts (E and F).

FIG. 28

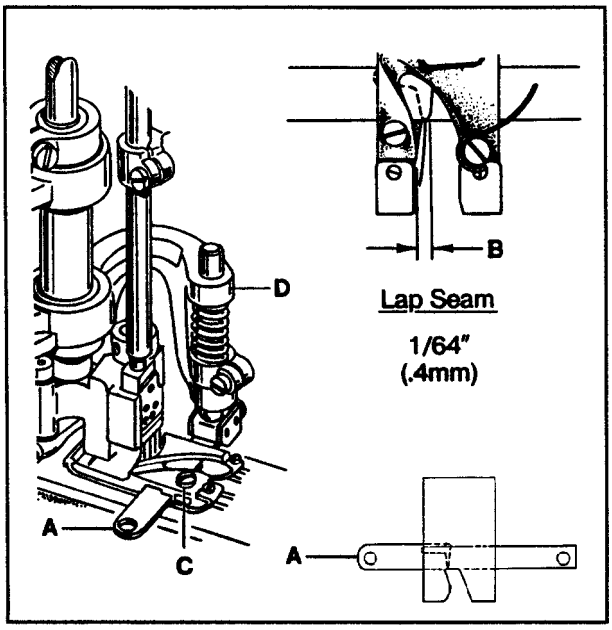


FIG. 29

SETTING THE TRIMMING KNIVES FOR LAP SEAMING

To make the adjustments for a lap seam, position lower knife (A, Fig. 29) in the foot so it extends 1/64" (0.4mm) past the right side of the left toe (B) (approximately even with the first needle). Loosen screw (C) and move knife in or out as required. Tighten screw (C) securely.

Turn handwheel in operating direction until knife driving bracket (D) is positioned to the extreme left. At this time the front edge of both knives should be parallel with each other and the upper knife cutting edge should overlap lower knife cutting edge by 1/64" (0.4mm)

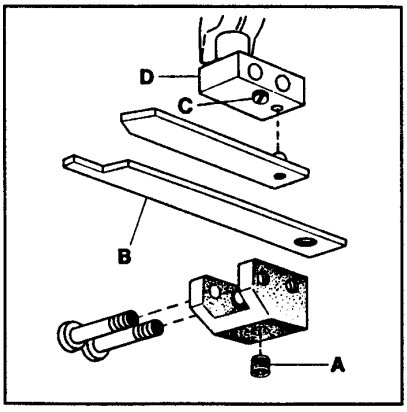


FIG. 30

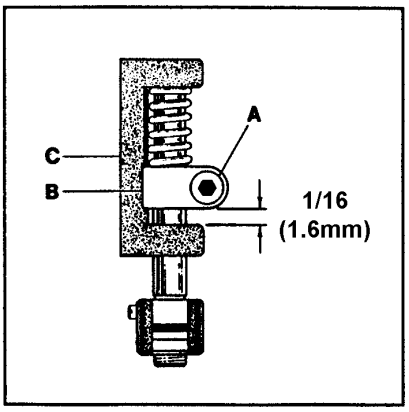


FIG. 31

If necessary loosen screw (A, Fig. 30) and move knife (B) to the right or left as required. Tighten screw (A).

If the shear angle between the knives has to be changed, raise or lower screw (C, Fig. 30) in knife holder shank (D).

To set spring pressure between the knives loosen screw (A, Fig. 31) and raise knife holder guide collar (B) 1/16" (1.6mm) from knife driving bracket (C). Tighten screw (A).

NOTE: More or less spring pressure may be required depending on the type of material being sewn. Also, both knives may have to be repositioned after a trial seam is made so there is an equal margin from the edges of the two plies to the center rows of stitching.

NEEDLE THREAD ADJUSTMENTS

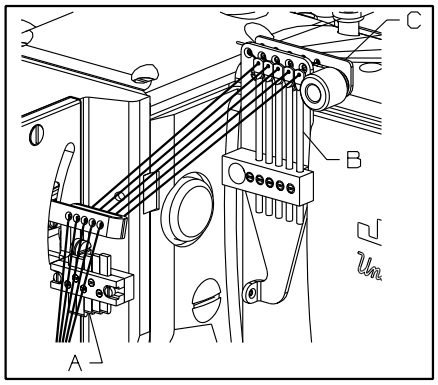


FIG. 32

Five needle thread strike-off pins (A, Fig. 32) are provided for independent needle thread control. Level the take-ups to the height of the thread in the needle lever eyelet at its lowest position. Raise the first take-up (nearest the operator) 1/8" (3.2mm), the second take-up 3/32" (2.4mm) and the third 1/16" (1.6mm). Further adjustment may be necessary to obtain proper needle loop size so skipped stitches may be avoided.

Set the five frame needle thread eyelets (B, Fig. 32) eye with the eyelets in holder (C). Adjust as necessary so the needle thread loops around the looper will remain firm and not seek random positions when the needle bar descends.

Unlocking spring (A, Fig. 33) provides a proportional amount of pull-up of the needle threads when the machine is reversed for unlocking the stitch so the loops will not form on the front of the needles and become caught by the looper. (Needle threads must be under spring wire when unlocking stitch.)

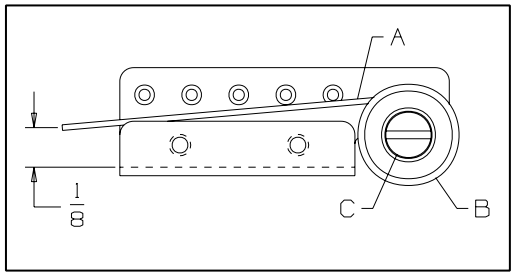


FIG. 33

NOTE: Unlocking spring is only used when starting and stopping on the material.

Turn screw (B) up or down so unlocking spring (A) will have 1/8" (3.2mm) drop from the bottom of the thread holes to the top of screw (B). Loosen screw (C) and turn knurled knob (D) to adjust the spring tension. Tighten screw (C).

Tension of the seven threads is individually controlled. The needle tension is seldom uniform; the first needle thread having more tension than the other four. Use only enough tension to pull up the stitch. A well-balanced stitch will have the first and fifth needle loops pulled up and the second and third needle loops small and even.

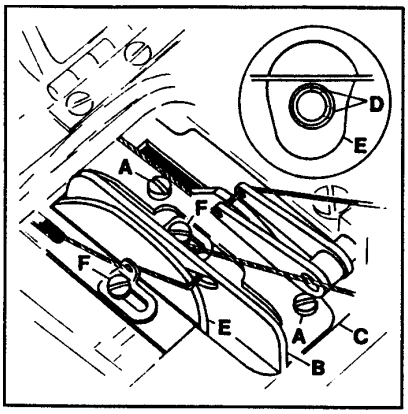


FIG. 34

LOOPER THREAD ADJUSTMENT

Loosen screws (A, Fig. 34) and position looper thread cast-off (B) flush with the right end of cast-off support plate (C). Tighten screws (A). Loosen screws (D, Fig. 34 inset) and time take-up (E) so the thread will cast-off when the needle bar has descended 7/64" (2.8mm) from its highest position. When thread eyelets (F) are moved further to the left the amount of thread pull-off will increase.

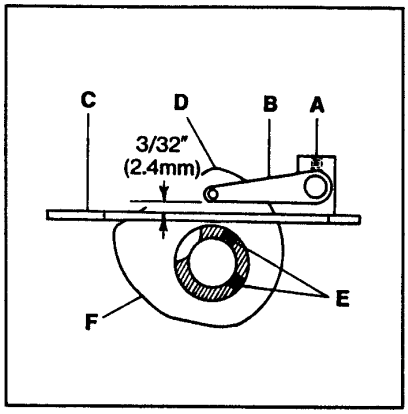


FIG. 35

COVER THREAD ADJUSTMENT

Loosen screw (A, Fig. 35) and set the lower edge of cover thread take-up eyelet (B) so its 3/32" (2.4mm) above the surface of cast-off plate (C). Tighten screw (A). As the cover thread hook moves to the left over the cover thread and the needle bar starts to rise, the cover thread must "cast-off" from the high point of take-up (D). Loosen screws (E) and adjust take-up (F) accordingly. make sure that take-up (F) is centered in cast-off plate slot (C) and take-up eyelet (B) is centered to take-up (F). Tighten screws (E).

TENSION RELEASE

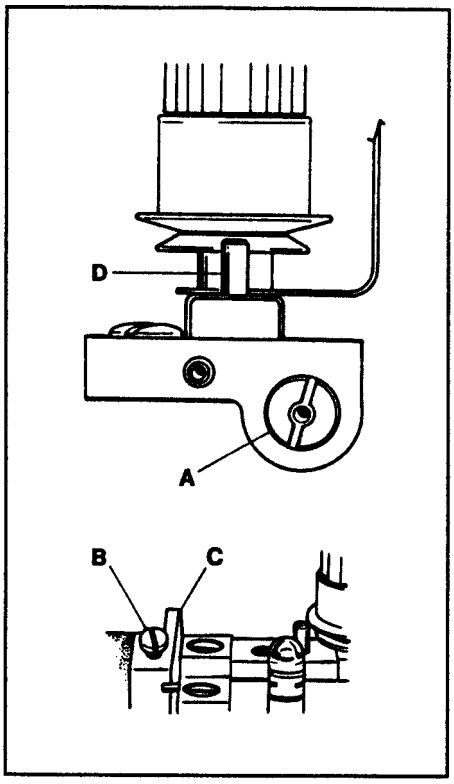


FIG. 36

The tension release should start to function when the presser foot has raised approximately 1/32" (0.8mm) above the surface of the throat plate and be entirely released when the presser foot has reached its highest position. Insert a large screwdriver into slot on the right end of shaft (A, Fig. 36), loosen screw (B) in lifter lever (C) and turn the screwdriver to raise or lower pins (D). Tighten screw (B).

NOTE: Make sure the 1/32" (0.8mm) clearance between the presser bar lifter lever and presser bar guide has been maintained. Refer to Fig. 22 if readjustment is necessary.

HUNG FOOT ADJUSTMENT

When sewing on extremely lightweight material and/or feed cutting is a problem, the presser foot may be "hung" by raising stud (B) until guide (A) rests on the shoulder of stud (B). This adjustment will raise the presser foot slightly, so only the pressure of the presser foot shoes contact the material. Turn handwheel in operating direction until the feed dogs are below the throat plate surface. At this time there should be a 1/32" (0.8mm) clearance between the bottom of presser bar guide (A, Fig. 37) and presser bar guide stud (B). To hang the presser foot loosen lock nut (C Fig. 37) and turn thumb screw (D Fig. 37) so that foot comes up slightly, tighten screw (C Fig. 37).

SETTING THE LAP FORMER

Attach gibs (A, Fig. 38) to the cylinder cover but do not tighten screws (B); leave them snug for further adjustment. Fasten spring (C, Fig. 38 inset) to the bottom of slide block (D) and insert between gibs (A). Attach lap former (E) to slide block (D) with screws (F) and position it in the center of the presser foot. Position the slide block so it has a snug (but not tight) fit the entire length of the gibs. Tighten screws (B).

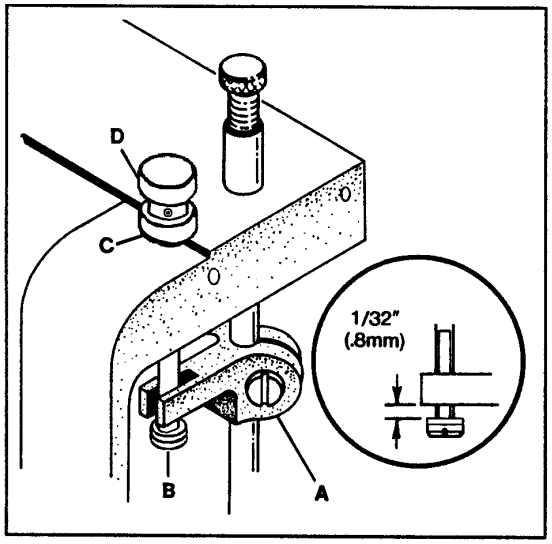


FIG. 37

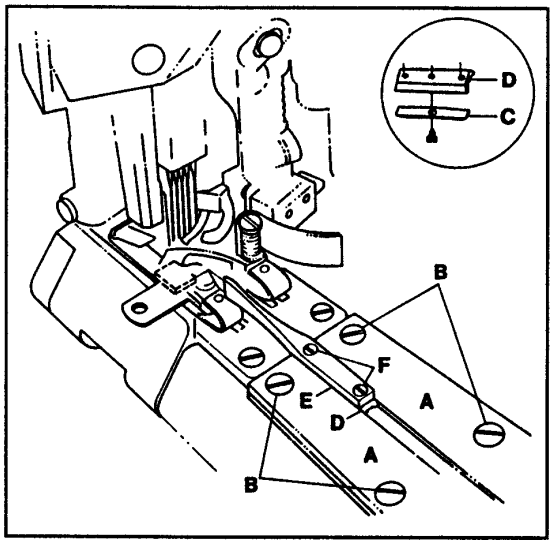
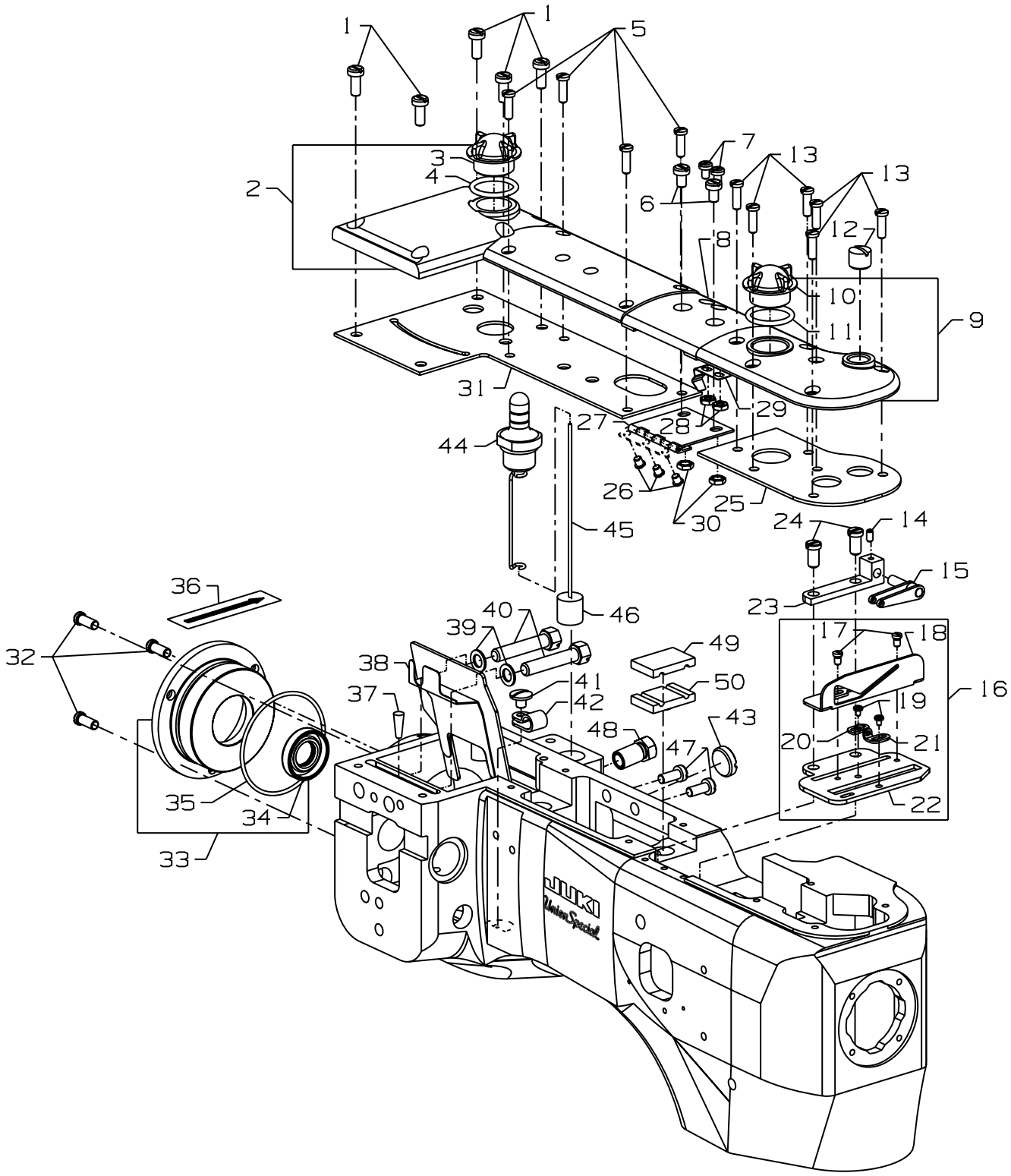


FIG. 38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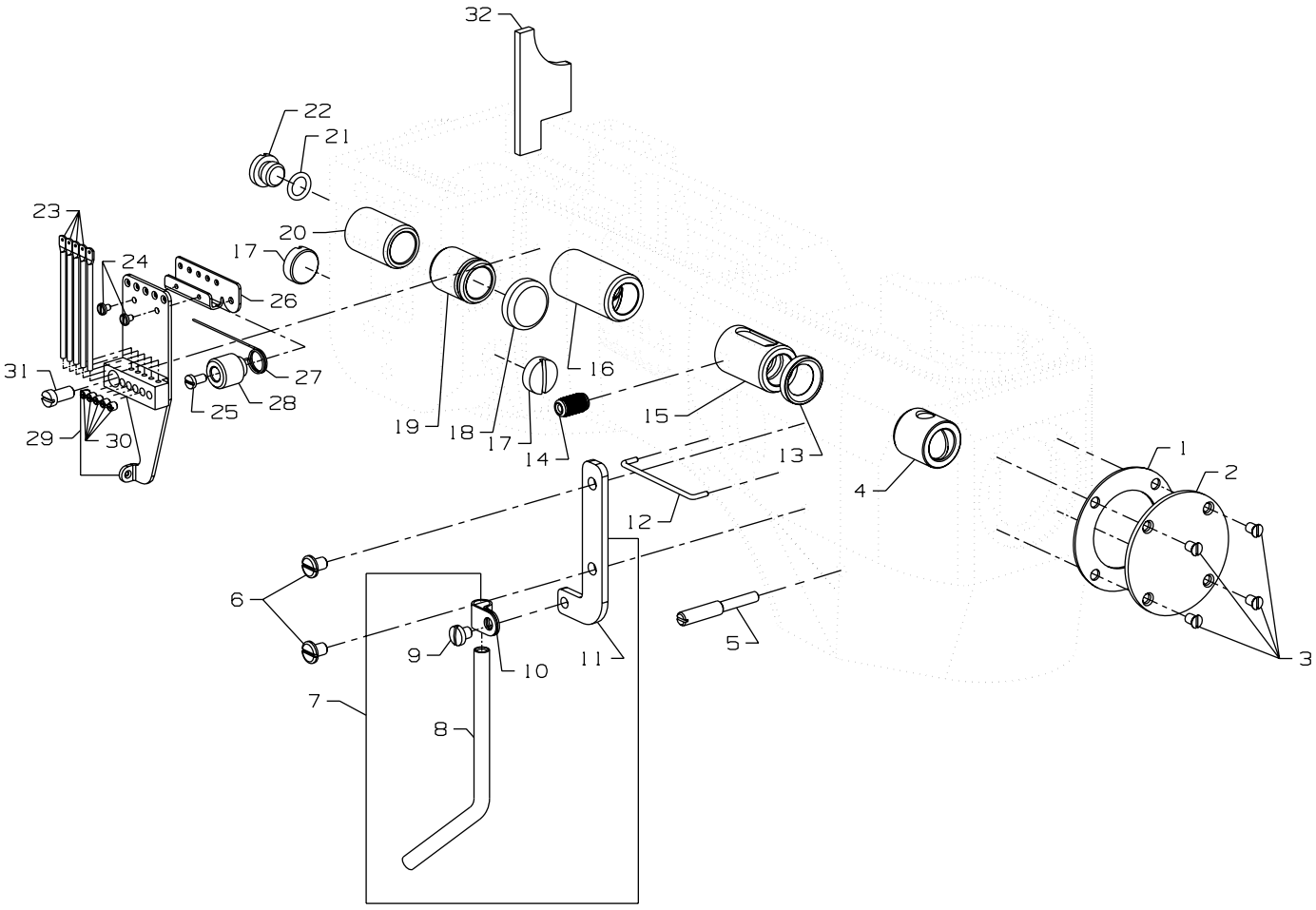
OIL SIGHT GAUGES, TOP COVERS & MISCELLANEOUS TAKEUP & EYELET PARTS

Ref. No.	Part No.	Description	Amt. Req.
1.	93	Screw, for crank chamber cover	5
2.	35888N	Crank Chamber Cover	1
3.	B3530555000	Oil Sight Gauge	1
4.	660-212	"O"Ring	1
5.	22516A	Screw	4
6.	93A	Screw, for middle top cover	2
7.	90	Screw, for spring	2
8.	35887X	Top Cover, middle	1
9.	35887AE	Top Cover, front	1
10.	B3530555000	Oil Sight Gauge	1
11.	660-212	"O"Ring	1
12.	22539M	Plug Screw	1
13.	22516A	Screw, for front top cover	6
14.	73C	Screw	1
15.	36256	Cover Thread Take-up Eyelet	1
16.	29476XC	Cast-Off Plate Assembly	1
17.	22KH	Screw, for cast-off	2
18.	36204	Cast-off	1
19.	73A	Screw, for cast-off plate eyelets	2
20.	52958F	Cast-off Plate Eyelet, rear	1
21.	52958C	Cast-off Plate Eyelet, front	1
22.	36204A	Cast-off Plate	1
23.	36256A	Cover Thread Take-up Eyelet Holder	1
24.	22839	Screw	2
25.	36284T	Gasket, for front top cover	1
26.	22564B	Screw, for middle cover hinge	3
27.	35887R	Middle Cover Hinge	1
28.	41071G	Nut, for top middle cover spring screw	2
29.	35887M	Spring, for middle top cover	1
30.	12934A	Nut, for top middle cover spring screw	2
31.	36284M	Gasket, for crank chamber	1
32.	22569B	Screw, for bushing housing	1
33.	36290M	Crankshaft Bushing Housing Assembly	1
34.	660-1146	Lip Seal	1
35.	660-935	"O"Ring	1
36.	LA528	Directional Label	1
37.	CO67E	Cork	1
38.	35889K	Oil Shield	1
39.	6042A	Washer, for screw	2
40.	22759A	Screw, for connecting head to main frame	2
41.	22711	Screw, for hose clamp	1
42.	998-358E	Hose Clamp, for pump 36293R	1
43.	22539AA	Plug Screw	1
44.	36293B	Oil Sight Gauge	1
45.	36293E	Oil Level Indicator	1
46.	39593C	Oil Gauge Float	1
47.	93	Screw, for oil pump housing	2
48.	35890P	Bushing	1
49.	35893H	Seal, Upper	1
50.	35893G	Seal, Lower	1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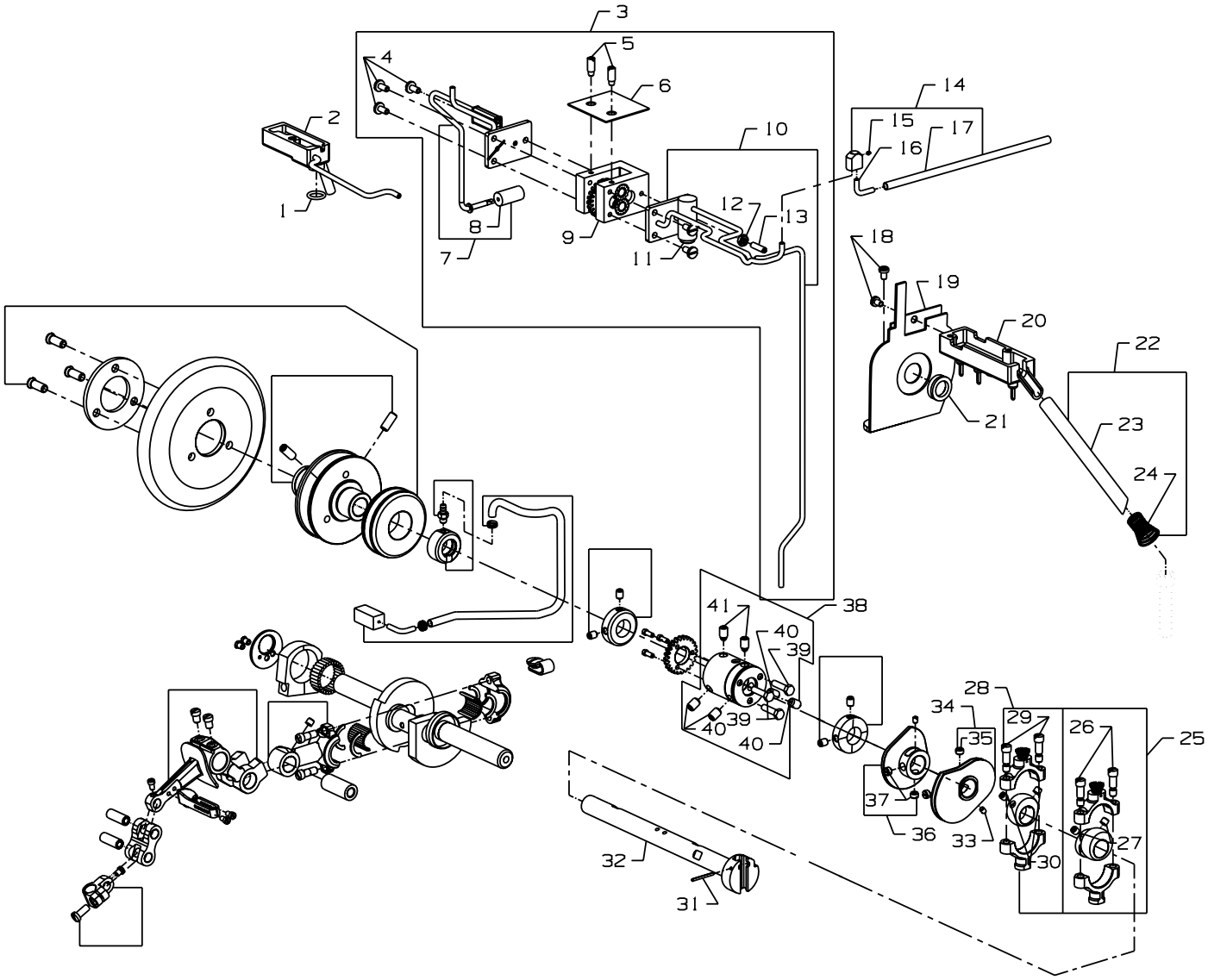
MAIN FRAME, BUSHINGS & MISCELLANEOUS EYELET & COVER PARTS

Ref. No.	Part No.	Description	Amt. Req.
1.	35887AF	Gasket, end cover	1
2.	35887Z	End Cover	1
3.	22564B	Screw, end cover	4
4.	36290B	Main Shaft Bushing, front	1
5.	22791D	Screw, for looper drive lever shaft	1
6.	22829	Screw, looper thread shield	2
7.	29105BH	Looper Thread Shield	1
8.	35866A	Tube	1
9.	SS7110510SP	Screw	1
10.	35866B	Tube Clamp	1
11.	35883AL	Support	1
12.	35781D	Looper Thread Guide Wire	1
13.	660-1138	Oil Seal	1
14.	62271B	Thread Guide	1
15.	36290G	Main Shaft Bushing, rear	1
16.	35890E	Crankshaft Bushing, front	1
17.	22539T	Plug Screw	2
18.	35761D	Bushing Cap	1
19.	35860B	Needle Lever Shaft Bushing, front	1
20.	36260C	Needle Lever Shaft Bushing, rear	1
21.	660-206	Rubber "O" Ring	1
22.	22733B	Oil Drain Screw	1
23.	36271A	Frame Needle Thread Eyelet	5
24.	73A	Screw, for needle thread eyelet	2
25.	22768B	Screw, for unlocking spring height adjusting	1
26.	J35671G	Stitch Unlocker Mounting Bracket	1
27.	36271E	Unlocking Spring	1
28.	36271H	Spring Holder	1
29.	J35671	Needle Thread Eyelet	1
30.	28C	Screw	5
31.	22596D	Screw, for needle thread eyelet	1
32.	36293N	Felt	1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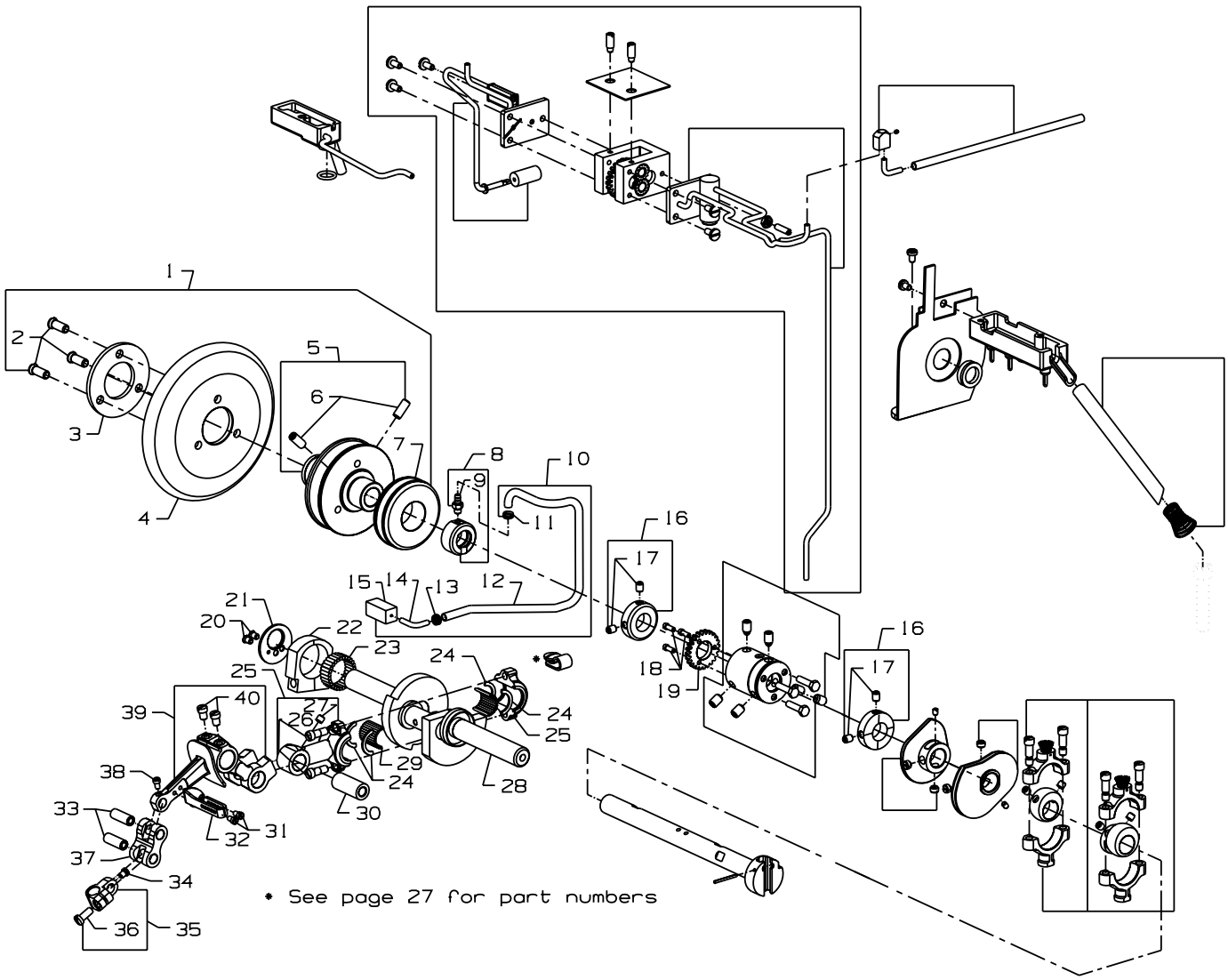
MAIN SHAFT & MISCELLANEOUS OILING

Ref. No.	Part No.	Description	Amt. Req.
1.	660-207	Oil Seal Ring	1
2.	35894D	Oil Reservoir, back	1
3.	29472Y	Pump Assembly	1
4.	22585A	Screw, for housing cover	5
5.	21756G	Vent Screw	2
6.	35897BW	Gasket	1
7.	36297J	Housing Cover and Oil Tube, rear	1
8.	35897BV	Intake Filter	1
9.	29472AC	Pump Body and Gear Assembly	1
10.	36297M	Housing Cover and Oil Tube, front	1
11.	22571B	Plug Screw	1
12.	41071G	Nut	1
13.	22565A	Screw	1
14.	36293M	Oil Splitter	1
15.	1096	Screw	1
16.	36293L	Oil Tube	1
17.	50393-140	Tubing	1
18.	90	Screw, for take-up shield	2
19.	36261A	Take-up Shield Assembly	1
20.	35894L	Oil Reservoir, front	1
21.	666-338	Oil Seal Ring	1
22.	36293K	Oil Tube Bypass	1
23.	671B3	Air Tube	1
24.	11550209	Tension Spring	1
25.	29101J	Feed Drive Eccentric Assembly	1
26.	22587E	Screw	2
27.	22894W	Set Screw	2
28.	29103T	Feed Lift Eccentric Assembly	1
29.	22587E	Screw	2
30.	22894W	Set Screw	2
31.	660-219P	Roll Pin	1
32.	36222C	Main Shaft	1
33.	22801	Screw	2
34.	36223	Double Disc Take-up	1
35.	22580	Screw	2
36.	36223A	Cover Thread Take-up	1
37.	22580	Screw	2
38.	35895X	Main Shaft Coupling	1
39.	22519F	Screw	3
40.	22894J	Set Screw	4
41.	22894K	Spot Screw	2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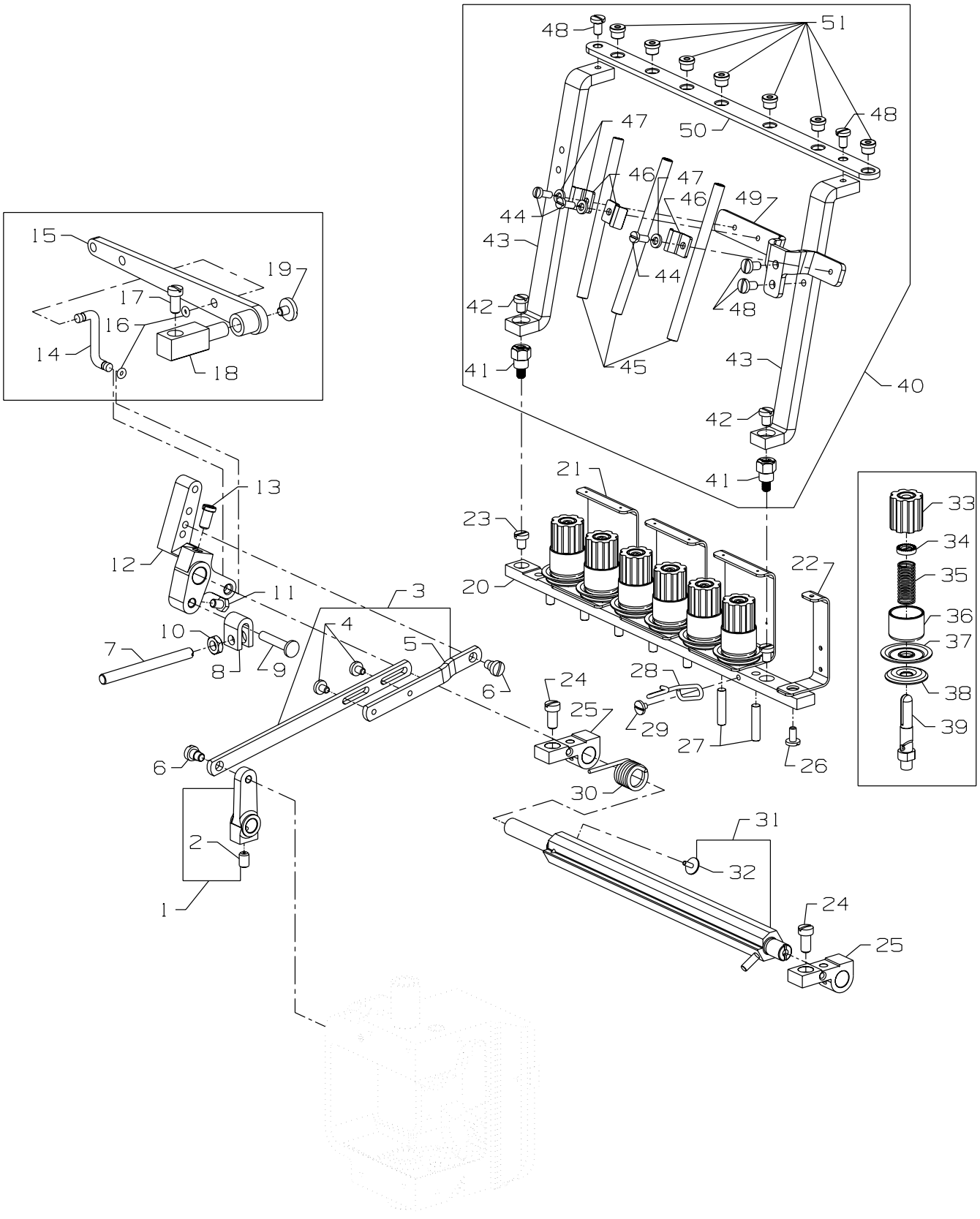
* See page 27 for part numbers

CRANKSHAFT & NEEDLE LEVER PARTS

Ref. No.	Part No.	Description	Amt. Req.
1.	36221N	Pulley Assembly	1
2.	22574	Screw	3
3.	61321L	Clamp Plate	1
4.	61321J	Handwheel	1
5.	36221P	Pulley	1
6.	22894E	Screw, for adjustable pulley	2
7.	50311C	Ball Bearing	1
8.	36293Q	Bushing Pump	1
9.	SQ1110401MZ	Barb Fitting	1
10.	36293R	Pump Assembly	1
11.	50393KM	Tube retainer spring	1
12.	50393-260	Tubing	1
13.	50393CS	Tube retainer spring	1
14.	36293L	Oil Tube	1
15.	666-214	Oil Intake Felt	1
16.	35895Y	Crankshaft Thrust Collar	1
17.	22894AM	Screw	2
18.	22797	Screw	3
19.	35897BY	Pump Driving Gear	1
20.	22766	Screw	2
21.	36251N	Needle Bearing Retaining Plate	1
22.	36251M	Eccentric Bearing	1
23.	36263	Needle Bearing Rollers	28
24.	35763G	Needle Bearing Retaining Ring	4
25.	35862A	Needle Lever Connecting Rod	1
26.	22587B	Screw	2
27.	22894W	Screw	1
28.	36222A	Crankshaft	1
29.	35763F	Needle Bearing Rollers	28
30.	36247	Needle Lever Connecting Rod Pin	1
31.	77	Screw	2
32.	J35664D	Needle Lever Thread Eyelet	1
33.	36254B	Link Pin	2
34.	22564	Screw	1
35.	35816	Needle Bar Connection	1
36.	SS7110910TP	Screw	1
37.	36254A	Needle Bar Link	1
38.	77	Screw	1
39.	36215	Needle Lever	1
40.	22596B	Screw	2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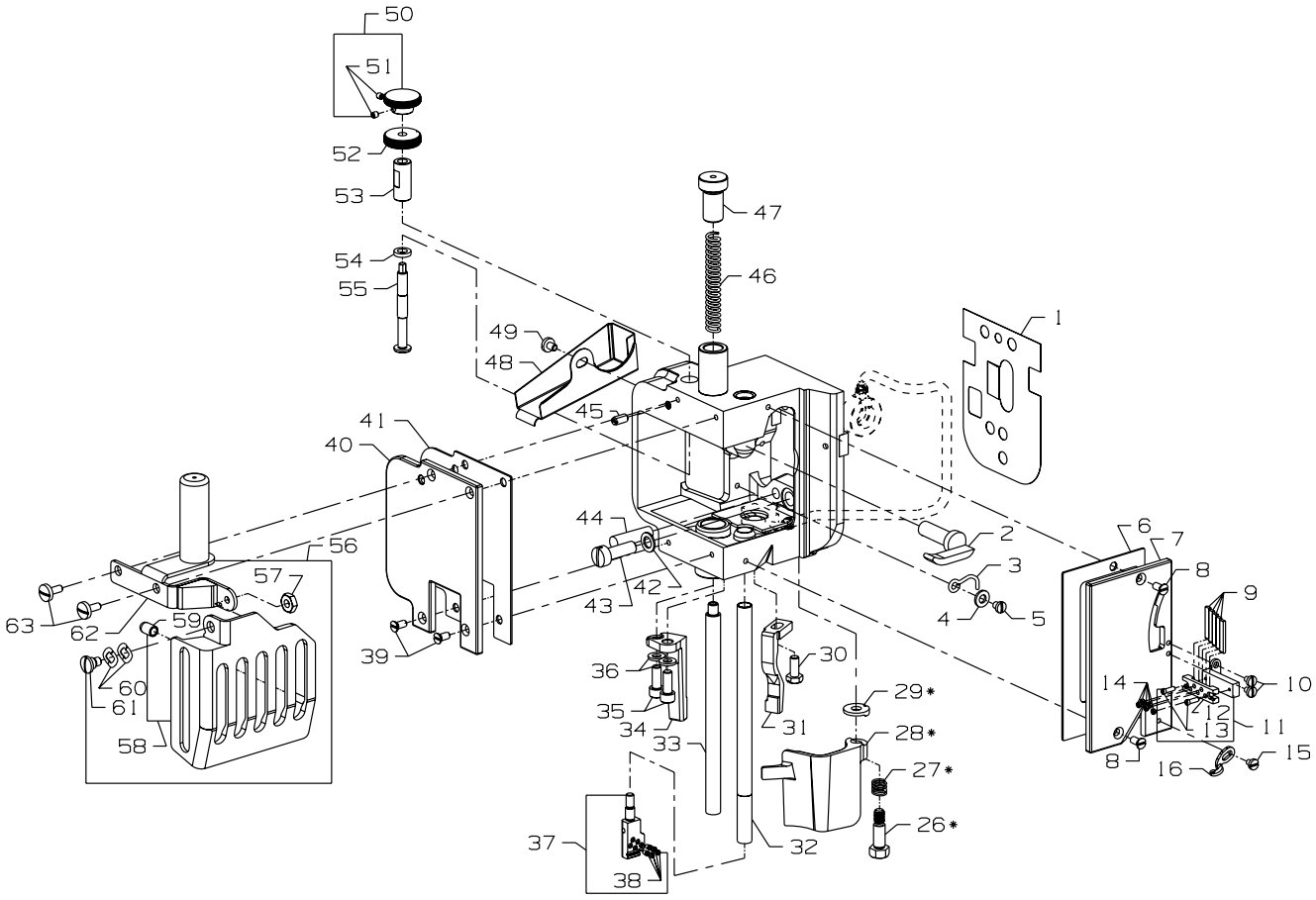
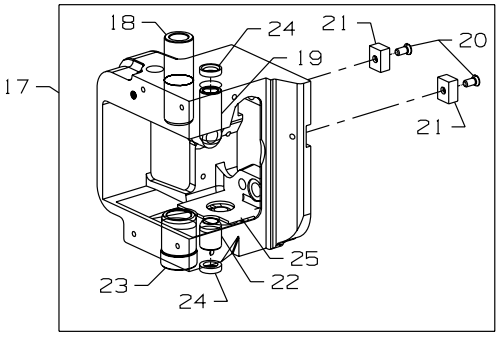
TENSION PARTS

Ref. No.	Part No.	Description	Amt. Req.
1.	35880M	Lift Lever Link Connection	1
2.	22894J	Screw	1
3.	36280V	Lifter Lever Link Assembly	1
4.	22585C	Screw	2
5.	36280U	Lifter Lever Link	1
6.	86	Screw	2
7.	36280A	Presser Foot Lifter Stop Plunger	1
8.	36280C	Stop Plunger Segment	1
9.	36280D	Stop Plunger Segment Pin	1
10.	258A	Nut	1
11.	22519	Screw, for stop plunger segment pin	1
12.	36280W	Presser Bar Lifter Lever	1
13.	22839D	Screw	1
14.	36280T	Lifter Lever Connecting Link	1
15.	36280S	Presser Foot Connection Lifter Lever	1
16.	660-254C	Retaining Ring	2
17.	22517	Screw, for presser foot lifter bearing bracket	1
18.	36280N	Presser Foot Lifter Bearing Bracket	1
19.	255	Screw	1
20.	J35698F	Tension Support	1
21.	36298G	Tension Thread Eyelet	3
22.	J35698G	Tension Thread Eyelet	1
23.	94	Screw, for tension support	2
24.	22517	Screw, for tension plate bracket	2
25.	36292M	Tension Plate Bracket	2
26.	22585A	Screw, for tension post	7
27.	35792T	Tension Disc Release Pin	7
28.	38259G	Eyelet	1
29.	22726A	Screw	1
30.	36292K	Spring, for tension release shaft	1
31.	36292N	Tension Release Shaft	1
32.	22784F	Screw	1
33.	C50092S	Tension Nut	7
34.	39592AK	Tension Spring Ferrule	7
35.	51292F-2	Tension Spring, for cover thread	1
-	51292F-4	Tension Spring, for looper thread	1
-	51292F-5	Tension Spring, for needle thread	5
36.	W56392F	Shield, for tension spring	7
37.	35792	Tension Disc, large	7
38.	109	Tension Disc, small	7
39.	36292Q	Tension Post	7
40.	J35666A	Thread Guide Assembly	1
41.	22894BK	Screw Post	1
42.	94	Screw	2
43.	36283R	Mounting Bracket	2
44.	SS7090910TP	Screw	2
45.	36266	Eyelet Tube	2
46.	36283U	Eyelet Tube Holder	2
47.	WS0410002KP	Washer	3
48.	SS7110840SP	Screw	4
49.	J35683T	Bracket, Tube	1
50.	J35683S	Eyelet Plate	1
51.	B3319704L00	Eyelet	7



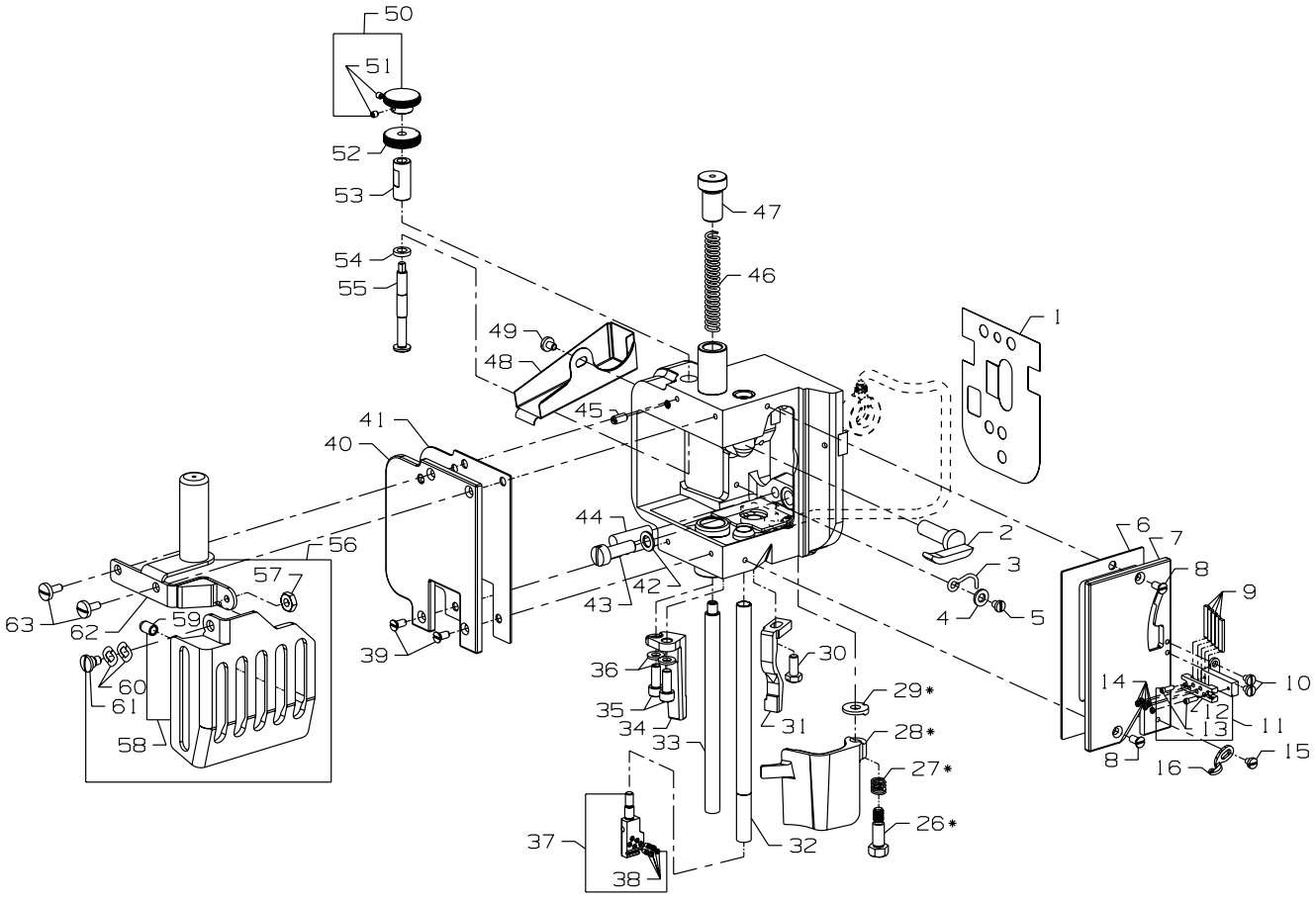


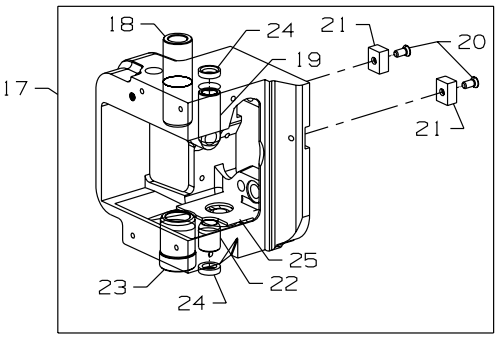
* Items 26, 27, 28, 29, and spanner wrench 21388Y are all part of kit 29480AZJ

DETACHABLE HEAD, HEAD COVERS, NEEDLE BAR & NEEDLE BAR HEAD

Ref. No.	Part No.	Description	Amt. Req.
1.	36289B	Baffle Plate	1
2.	36280J	Presser Bar Lifter Lever	1
3.	36294F	Oil Deflector Wire	1
4.	8372A	Washer	1
5.	22513	Screw	1
6.	36284P	Gasket, for front head cover	1
7.	36289	Head Cover, front	1
8.	22524	Screw, for front head cover	2
9.	36264B	Needle Thread Strike-off Pin	4
10.	28	Screw, for needle thread take-up	2
11.	J35664E	Needle Thread Take-up, complete	4
12.	J35664F	Strike-off Pin Holder	1
13.	22738C	Screw, for needle thread take-up	2
14.	28A	Screw, for needle thread take-up	4
15.	28	Screw, for cover thread eyelet	1
16.	51259	Cover Thread Eyelet	1
17.	36229H	Detachable Sewing Head	1
18.	36278A	Presser Bar Bushing	1
19.	36273T	Needle Bar Bushing, upper	1
20.	22524	Screw	2
21.	35767	Sewing Head Key	2
22.	36273S	Needle Bar Bushing, lower	1
23.	36273R	Cover Thread Carrier and Hook Driving Sleeve Bushing	1
24.	660-739	Oil Lip Seal	2
25.	36293P	Felt	1
26.	22777B	Screw, for frame chip guard	1
27.	36279L	Spring, for frame chip guard	1
28.	36279N	Frame Chip Guard	1
29.	36279M	Washer, for frame chip guard	1
30.	22881A	Screw, for right presser foot guide	1
31.	36278K	Presser Foot Guide, right	1
32.	J35617A	Needle Bar	1
33.	36278	Presser Bar	1

34. thru 63. See Following page

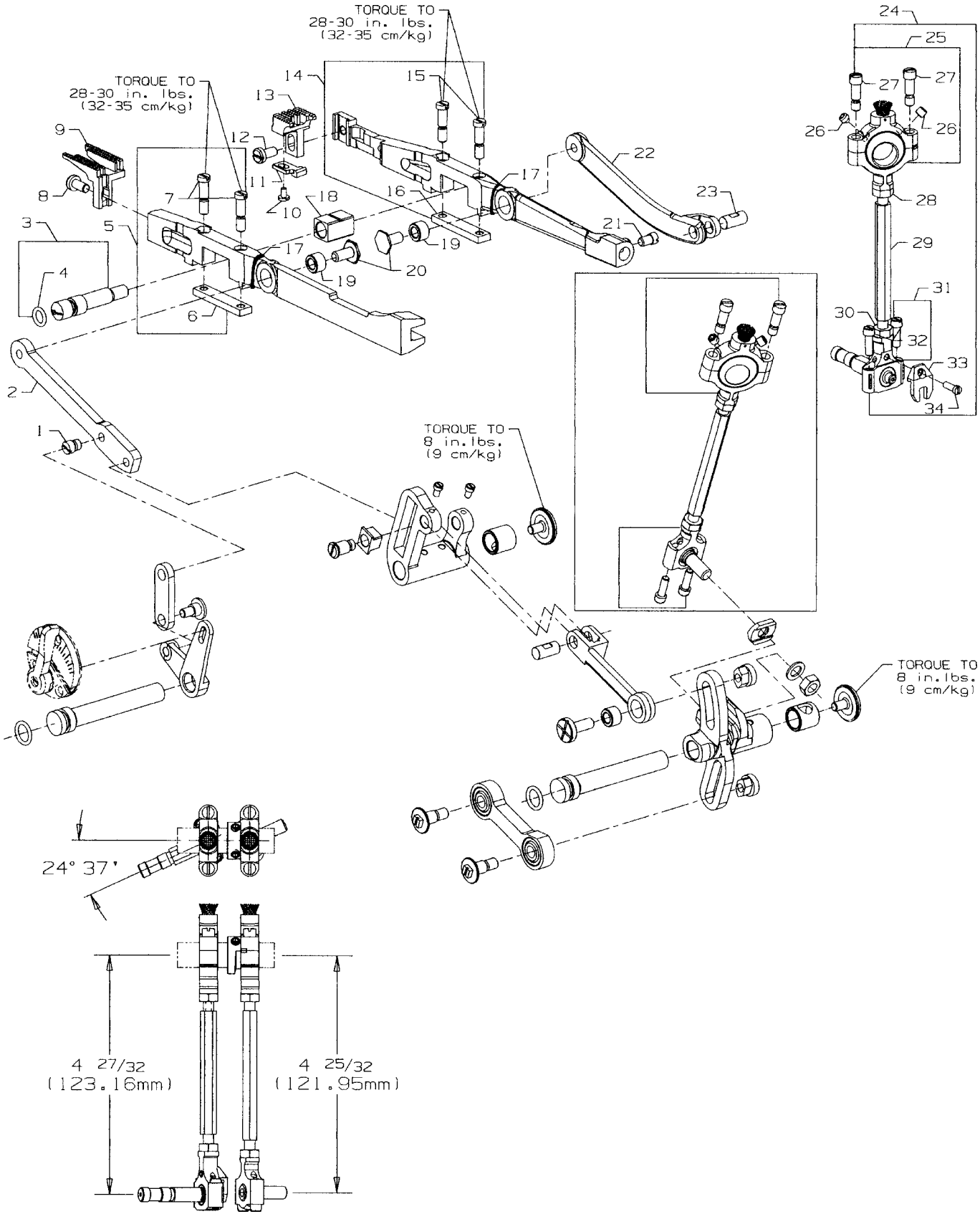




* Items 26, 27, 28, 29, and spanner wrench 21388Y are all part of kit 29480AZJ

DETACHABLE HEAD, HEAD COVERS, NEEDLE BAR & NEEDLE BAR HEAD

Ref. No.	Part No.	Description	Amt. Req.
1. thru 33. See Preceding page			
34.	36278R	Presser Foot Guide, left	1
35.	22653B8	Screw, for left presser foot guide	2
36.	8372A	Washer	2
37.	J35618-5	Needle Head, for 6.0 Gauge	1
38.	22738H	Screw, for needles and retainer	5
39.	22524	Screw, for left head cover	2
40.	36289A	Head Cover, left	1
41.	36284N	Gasket, for left head cover	1
42.	6042A	Washer	1
43.	318	Screw, for connecting head to main frame	1
44.	664F-16	Taper Pin	1
45.	22560A	Screw, for presser bar guide stud	1
46.	J35678F12	Spring, for presser bar	1
47.	36278M	Presser Bar Regulating Screw	1
48.	36294E	Oil Guard	1
49.	22585C	Screw	1
50.	660-1131	Knurled Knob	1
51.	28C	Screw	2
52.	660-1130	Knurled Nut	1
53.	36290E	Threaded Sleve	1
54.	36237M	Collar Bumper	1
55.	36278T	Screw Stud	1
56.	29476YP	Sewing Guard Assembly	1
57.	9937	Nut	1
58.	35896D	Sewing Guard	1
59.	666-340A	Bumper Plug	1
60.	WZ0641510KP	Spring Washer	2
61.	22758E	Screw	1
62.	36283P	Mounting Bracket	1
63.	22585B	Screw	2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28-30 in. lbs.
(32-35 cm/kg)
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TORQUE TO
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(9 cm/kg)
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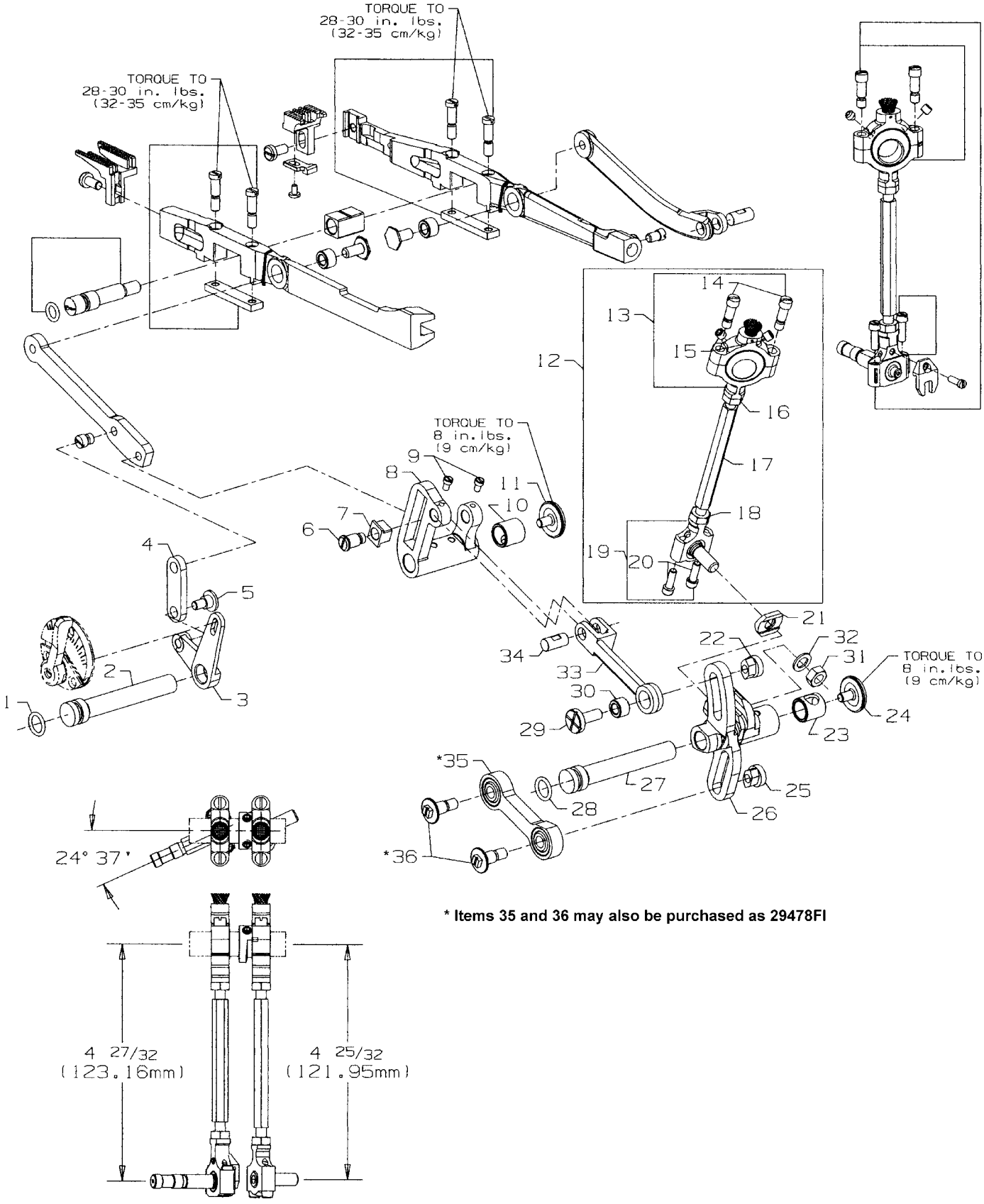
DIFFERENTIAL & MAIN FEED BARS, FEED DOGS & FEED LIFT ECCENTRIC ASSEMBLY

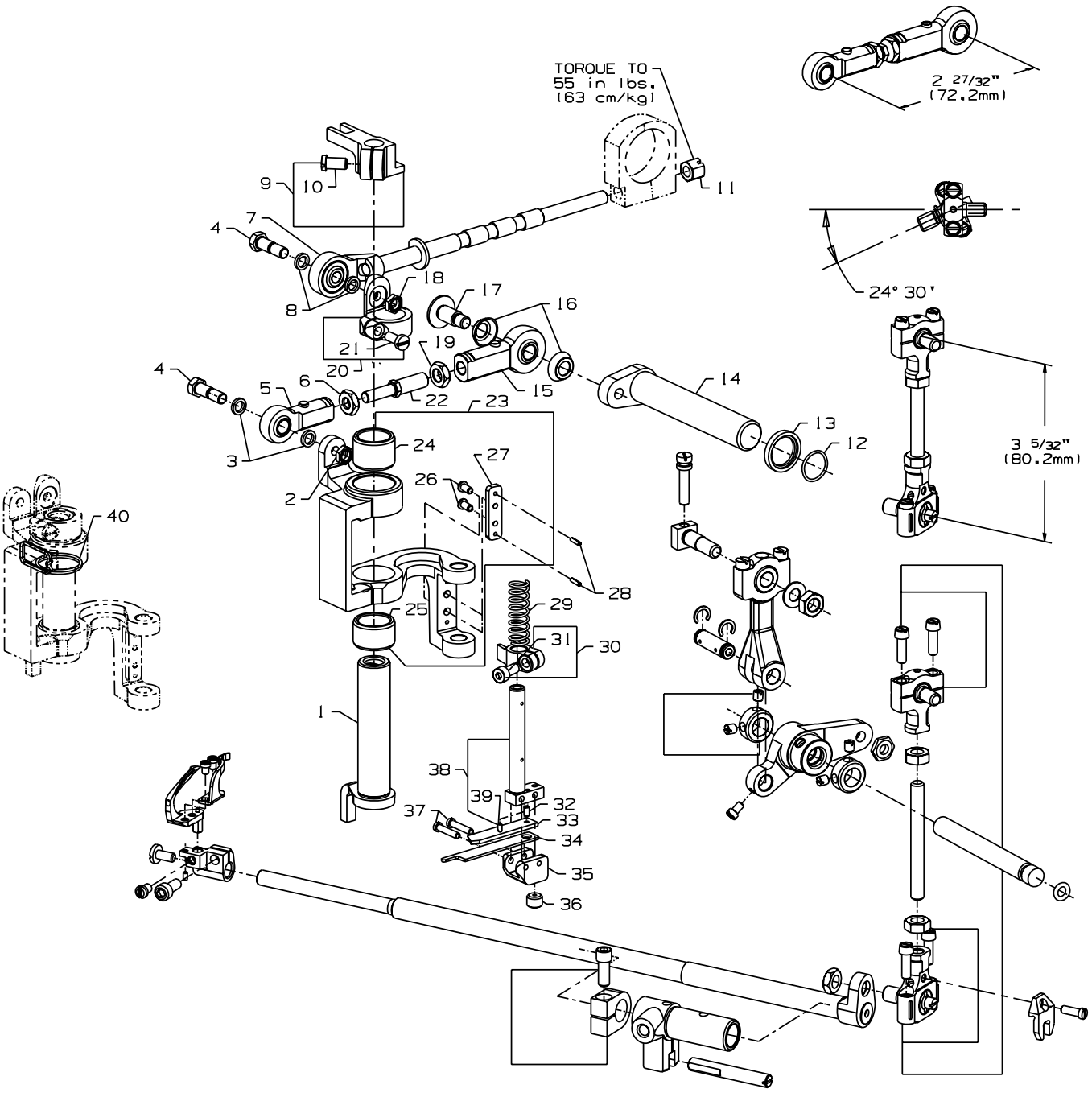
Ref. No.	Part No.	Description	Amt. Req.
1.	22845M	Screw, for differential feed bar driving link	1
2.	36236F	Differential Feed Bar Driving Link	1
3.	36234M	Feed Bar Eccentric Stud	1
4.	660-220	"O"Ring	1
5.	36234F	Differential Feed Bar	1
6.	36234G	Feed Bar Plate	1
7.	22587H	Screw	2
8.	22528	Screw, for differential feed dog	1
9.	J35626M	Differential Feed Dog, marked “AAK”, 20 teeth per inch	1
10.	87U	Screw, for needle guard	1
11.	36225	Needle Guard	1
12.	22528	Screw, for main feed dog	1
13.	J35605M	Main Feed Dog, marked “AAL”, 20 teeth per inch	1
14.	36234E	Main Feed Bar	1
15.	22587H	Screw	2
16.	36234G	Feed Bar Plate	1
17.	CQ200000000	Yarn	2
18.	36234C	Feed Bar Slide Block	1
19.	36236H	Bushing	2
20.	36236G	Driving Link Stud	2
21.	33174B	Screw	1
22.	36236E	Main Feed Bar Drive Link	1
23.	62238A	Link Pin	1
24.	29478CS	Feed Lift Eccentric Assembly	1
25.	29103T	Feed Lift Eccentric Assembly Ball Joint	1
26.	22894W	Set Screw	2
27.	22587E	Screw	2
28.	269	Nut, left thread	1
29.	36244	Connecting Rod	1
30.	18	Nut, right thread	1
31.	36244A	Ball Joint, complete	1
32.	22729C	Screw	2
33.	41255B	Ball Fork	1
34.	22747	Screw, for ball fork	1



*** Items 35 and 36 may also be purchased as 29478FI**

FEED DRIVE ASSEMBLY, FEED ROCKER & LOOPER AVOID PARTS

Ref. No.	Part No.	Description	Amt. Req.
1.	660-207	Oil Seal Ring	1
2.	36236A	Feed Rocker Shaft	1
3.	36237	Differential Feed Adjusting Lever	1
4.	36237A	Differential Feed Adjusting Link	1
5.	22504C	Screw	1
6.	36236J	Differential Driving Link Stud	1
7.	36236K	Differential Feed Driving Link Slide Block	1
8.	36236	Feed Rocker	1
9.	77	Screw	2
10.	36236B	Bushing	1
11.	22733G	Screw	1
12.	29478CT	Feed Drive Assembly	1
13.	29101J	Feed Drive Eccentric Assembly	1
14.	22587E	Screw	2
15.	22894W	Set Screw	2
16.	269	Nut, left thread	1
17.	43246	Connecting Rod	1
18.	18	Nut, right thread	1
19.	35846	Ball Joint	1
20.	22729C	Screw	2
21.	35846B	Washer	1
22.	35866	Nut	1
23.	36236B	Bushing	1
24.	22733G	Screw	1
25.	35766B	Nut	1
26.	35842J	Feed Drive and Looper Avoid Drive Lever	1
27.	36236A	Feed Drive Shaft	1
28.	660-207	Oil Seal Ring	1
29.	35836C	Screw, for feed rocker driving link	1
30.	36236H	Bushing	1
31.	258	Nut	1
32.	6042A	Washer	1
33.	36236C	Feed Rocker Driving Link	1
34.	62238A	Link Pin	1
*35.	35851P	Screw	2
*36.	35851S	Connecting Rod	1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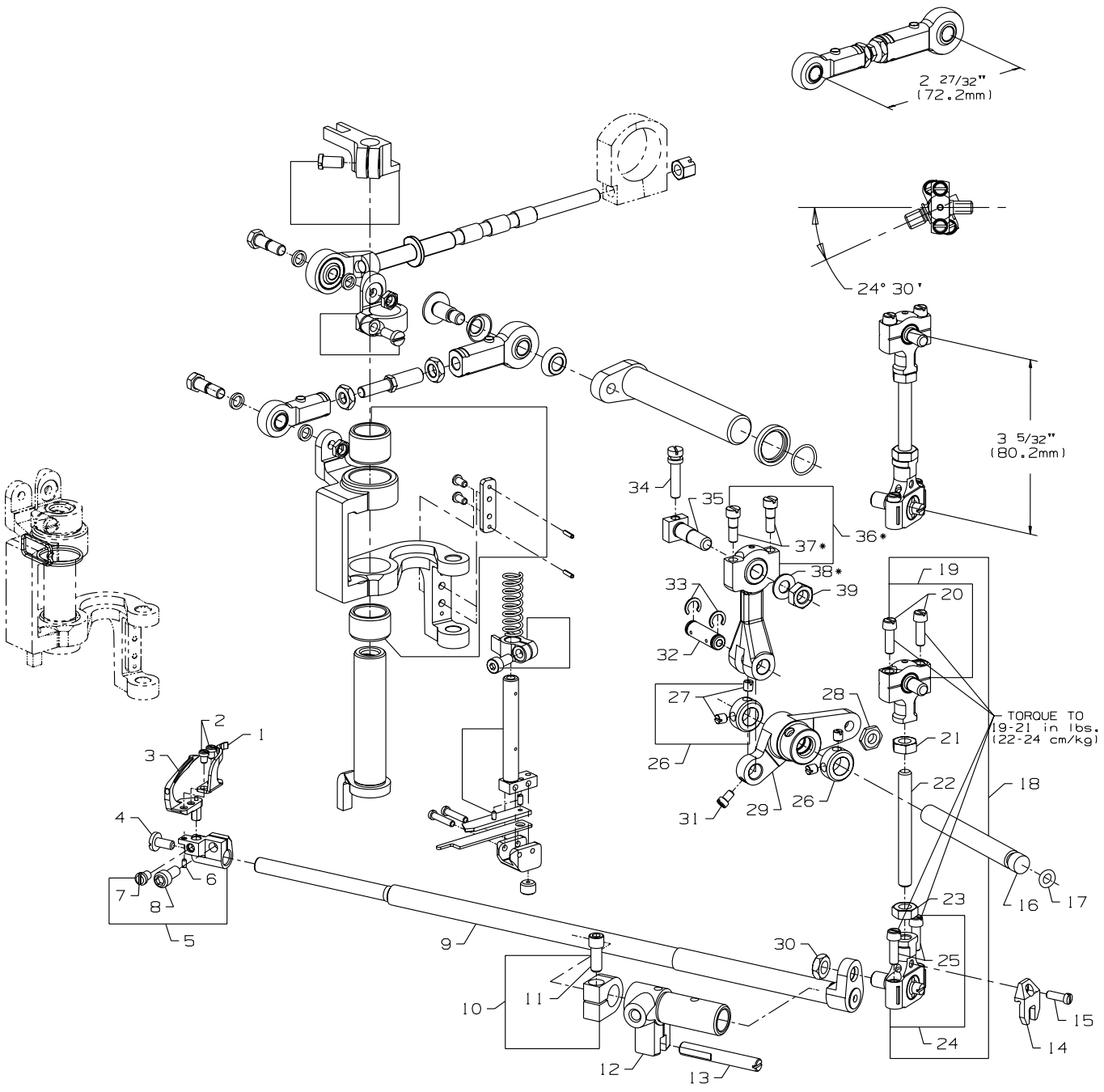
KNIFE DRIVING PARTS

Ref. No.	Part No.	Description	Amt. Req.
1.	36251B	Cover Thread Carrier and Hook Driving Sleeve	1
2.	12934A	Nut	1
3.	51235G	Washer	2
4.	36245K	Screw	2
*5.	36245H	Rod End Bearing	1
*6.	36245D	Nut, right thread	1
7.	36251AA	Cover Thread Carrier and Hook Driving Connection Rod Ball Joint	1
8.	36275A	Washer	2
9.	36278J	Presser Bar Guide	1
10.	22569G	Screw	1
11.	52841H	Nut	1
12.	660-1019	"O"Ring	1
13.	36275	Torlon Washer	1
14.	36261	Knife Drive Lever	1
*15.	GR-36245G	Rod End Bearing	1
16.	36275B	Washer, seal	2
17.	36245J	Screw	1
18.	12934A	Nut	1
*19.	36245E	Nut, left thread	1
20.	36251V	Sleeve Driving Lever	1
21.	22585	Screw	1
*22.	36245F	Stud, Rod End Bearing	1
23.	36273U	Knife Driving Bracket	1
24.	36273Q	Bushing	1
25.	36273P	Bushing	1
26.	605A	Screw	2
27.	36273J	Knife Holder Guide Plate	1
28.	660-219D	Roll Pin	2
29.	36273C	Knife Holder Spring	1
30.	36273K	Knife Holder Guide Collar	1
31.	22729M	Screw	1
32.	22799N	Screw	1
33.	36273D	Knife Support	1
34.	36270B	Knife, upper	1
35.	36273G	Knife Holder	1
36.	22894X	Screw	1
37.	22767A	Screw	2
38.	36273A	Knife Holder Shank	1
39.	1096B	Screw	1
40.	CQ200000000	Oil Wick	1

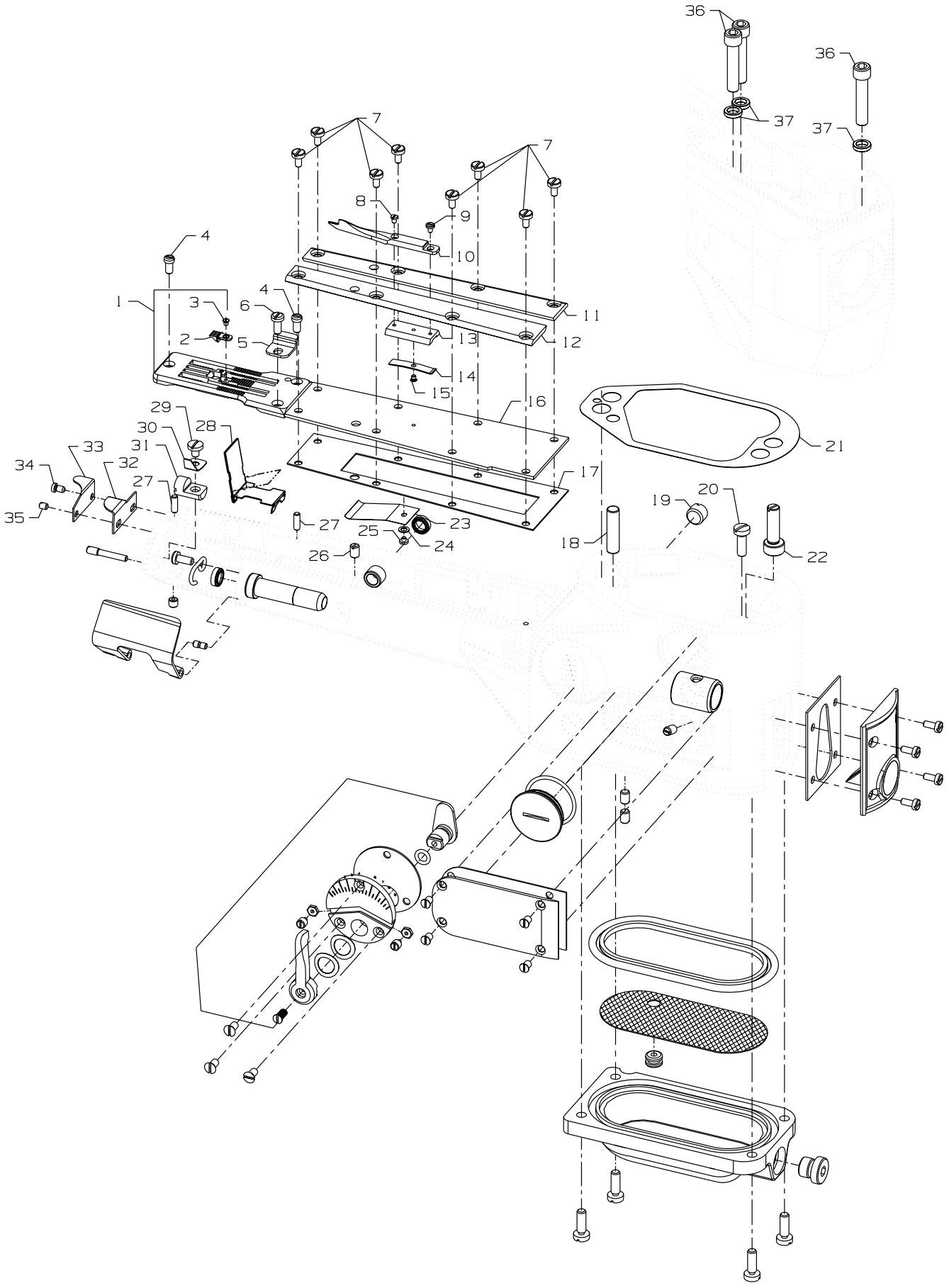
* May also be purchased assembled and set to length as 29478FJ.



* Items 36, 37, and 38 are part of Looper Drive connection kit 29476FG

LOOPER ROCKER SHAFT & LOOPER ROCKER DRIVE PARTS

Ref. No.	Part No.	Description	Amt. Req.
1.	36210	Looper Mounted Needle Guard, marked "FZ"	1
2.	604	Screw, for needle guard	2
3.	36208A	Looper	1
4.	22585A	Screw	1
5.	36248	Looper Holder	1
6.	1096B	Looper Adjusting Screw	1
7.	22564D	Screw	1
8.	22652A6	Screw	1
9.	36249	Looper Rocker Shaft	1
10.	35751G	Looper Shaft Collar	1
11.	22572B	Screw	1
12.	36249B	Looper Shaft Sleeve	1
13.	36278C	Guide Stud	1
14.	41255B	Ball Fork	1
15.	22747	Screw	1
16.	36253B	Looper Drive Lever Shaft	1
17.	660-221	Oil Seal Ring	1
18.	29478CU	Looper Drive Connecting Rod Assembly	1
19.	35851L	Ball Joint, upper	1
20.	22729C	Screw	2
21.	269	Nut, left thread	1
22.	4761	Connecting Rod	1
23.	18	Nut, right thread	1
24.	39145A	Ball Joint, lower	1
25.	22729C	Screw	2
26.	12865	Collar	2
27.	88	Screw	2
28.	15037A	Nut	1
29.	36253A	Looper Drive Lever	1
30.	258A	Nut	1
31.	77	Screw	1
32.	52336	Link Pin	1
33.	660-215	Retaining Ring	2
34.	22795B	Screw	1
35.	36253G	Looper Drive Crank Stud	1
36.	36245B	Looper Drive Connecting Rod and Ferrule Sub-Assembly	1
37.	97A	Screw	1
38.	53636C	Washer	1
39.	269	Nut, left thread	1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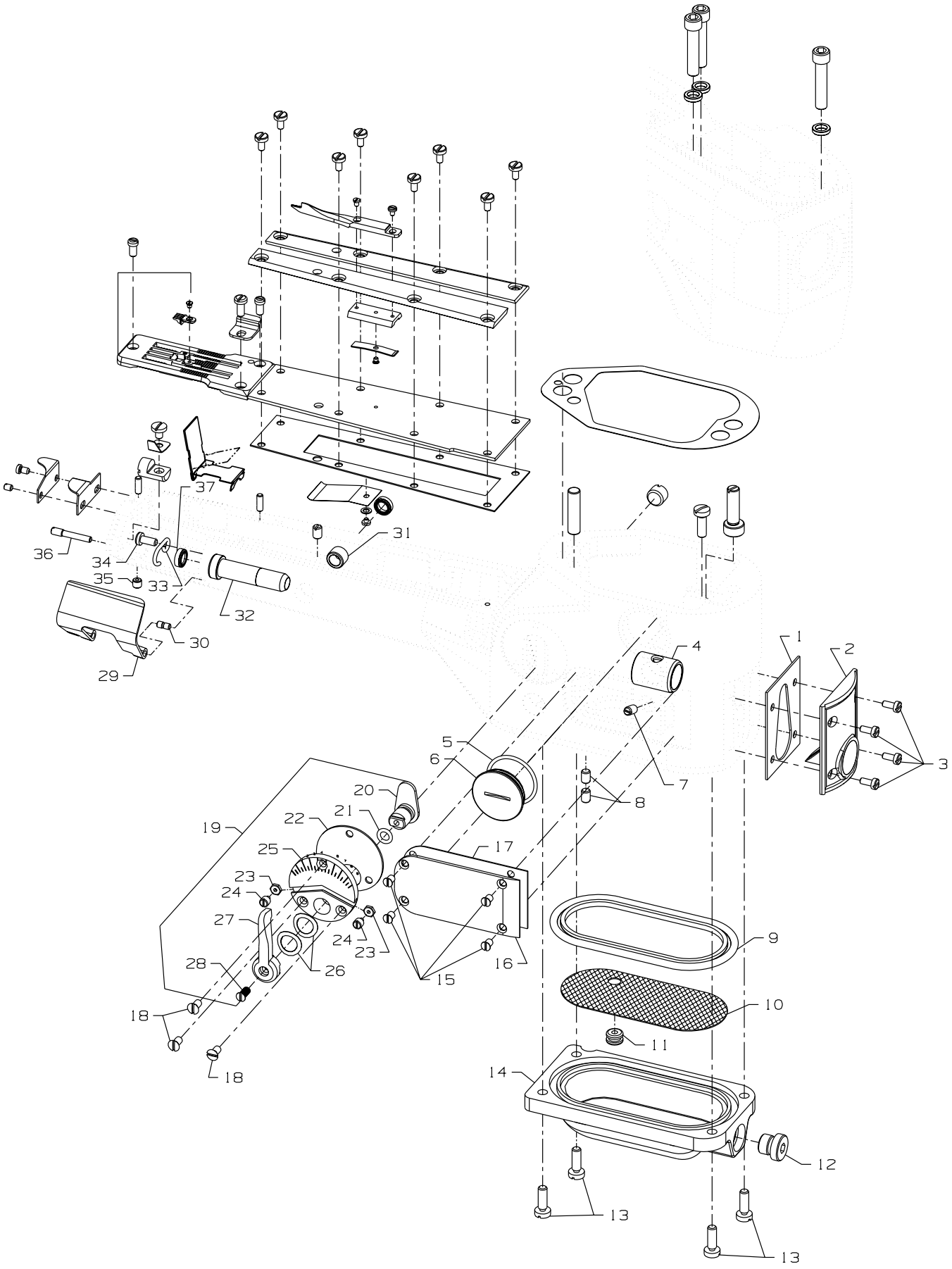
LAP FORMER, MISCELLANEOUS CYLINDER COVERS, THROAT PLATE, & CHAIN CUTTING KNIFE

Ref. No.	Part No.	Description	Amt. Req.
1.	J35624-5	Throat Plate	1
2.	J35640M5	Stitch Tongue, marked "TK"	1
3.	22716A	Screw, stitch tongue	1
4.	22562A	Screw, for throat plate	2
5.	36203	Edge Guide	1
6.	22849	Screw, for edge guide	1
7.	98A	Screw, for cylinder cover	8
8.	22738B	Screw, for lap former	1
9.	73A	Screw, for lap former	1
10.	23420DE	Lap Former	1
11.	36283J	Gib, right	1
12.	36283H	Gib, left	1
13.	23423X	Lap Former Slide Block	1
14.	23424Z	Spring, for lap former slide block	1
15.	22716A	Screw, for lap former slide block spring	1
16.	36283G	Cylinder Cover	1
17.	36283F	Gasket, for cylinder cover	1
18.	22571A	Plug Screw	1
19.	667D16	Dowel Pin	1
20.	22596	Screw, for feed bar eccentric stud	1
21.	GR-36284	Gasket	1
22.	36229A1	Cylinder Alignment Eccentric Pin	1
23.	36284E	Upper Lint Shield	1
24.	40-107	Washer	1
25.	22798	Screw, upper lint shield	1
26.	531	Screw	1
27.	36251K	Dowel Pin	2
28.	36284W	Lower Lint Shield	1
29.	22585C	Screw, spring	1
30.	36283B	Spring	1
31.	36283C	Cylinder Hinged Spring Support Stud	1
32.	36296A	Chain Cutting Knife	1
33.	36296B	Guard, for chain cutting knife	1
34.	22KH	Screw, for chain cutting knife	1
35.	22801	Screw, for chain cutting knife	1
36.	22653E24	Screw, for joining cylinder to main frame	3
37.	35876U	Washer	3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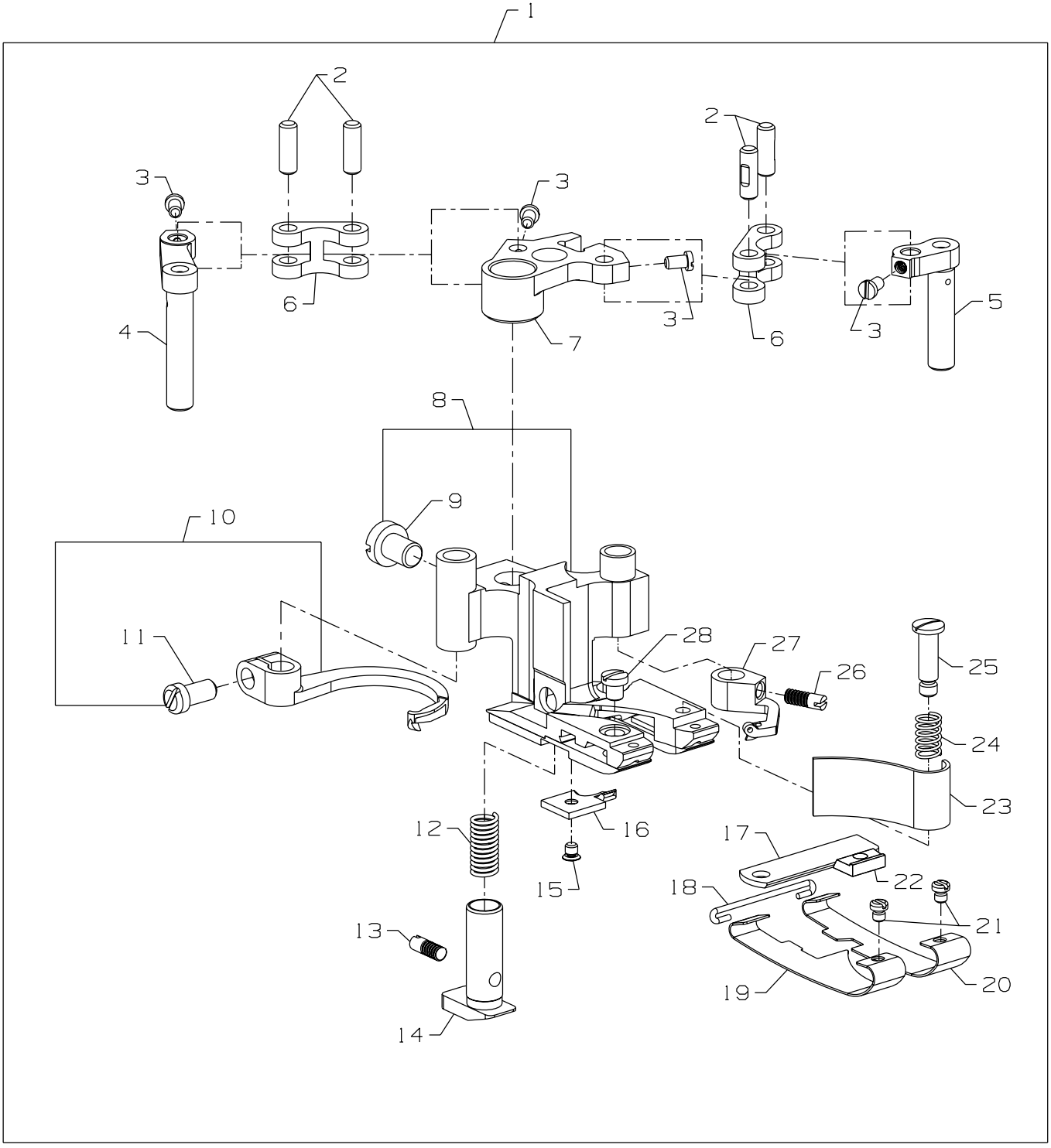
CYLINDER BUSHINGS, DIFFERENTIAL FEED CONTROL ASSEMBLY & MISCELLANEOUS CYLINDER COVERS

Ref. No.	Part No.	Description	Amt. Req.
1.	35884R	Gasket, for front cylinder cover and oil gauge	1
2.	36284C	Cylinder Cover and Oil Gauge, front	1
3.	J87J	Screw, for front cylinder cover and oil gauge	4
4.	36249A	Bushing, for looper shaft, front	1
5.	660-1115	"O" Ring	1
6.	22539AL	Plug Screw	1
7.	22560A	Screw, for guide stud	1
8.	531	Screw	2
9.	36284F	Gasket, for bottom cover	1
10.	36293G	Screen, for bottom cover	1
11.	661-150	Rubber "O" Ring, for screen	1
12.	999-196	Oil Drain Plug Screw	1
13.	22596	Screw, for bottom cover	4
14.	36282	Bottom Cover	1
15.	22766	Screw, for cylinder side cover	4
16.	36286	Cylinder Side Cover	1
17.	36286B	Gasket, for cylinder side cover	1
18.	87A	Screw, for differential feed control assembly	3
19.	29478CZ	Differential Feed Control Assembly, complete	1
20.	36237E	Adjusting Lever	1
21.	660-220	Oil Seal Ring	1
22.	36238F	Gasket	1
23.	60078Z	Nut	2
24.	36237H	Stop Screw	2
25.	36238	Adjusting Plate	1
26.	36237J	Spring Washer	2
27.	36237K	Operating Lever	1
28.	538	Screw	1
29.	36283K	Cylinder Hinged Cover	1
30.	35883G	Pin	1
31.	36237L	Bushing, for feed bar eccentric stud	1
32.	35850F	Bushing, for looper shaft, rear	1
33.	36256B	Looper Thread Guide Wire	1
34.	22849	Screw, for looper thread guide wire	1
35.	22894W	Screw, for cylinder hinged spring support stud	1
36.	22791E	Screw Pin	1
37.	660-1117	Oil Seal	2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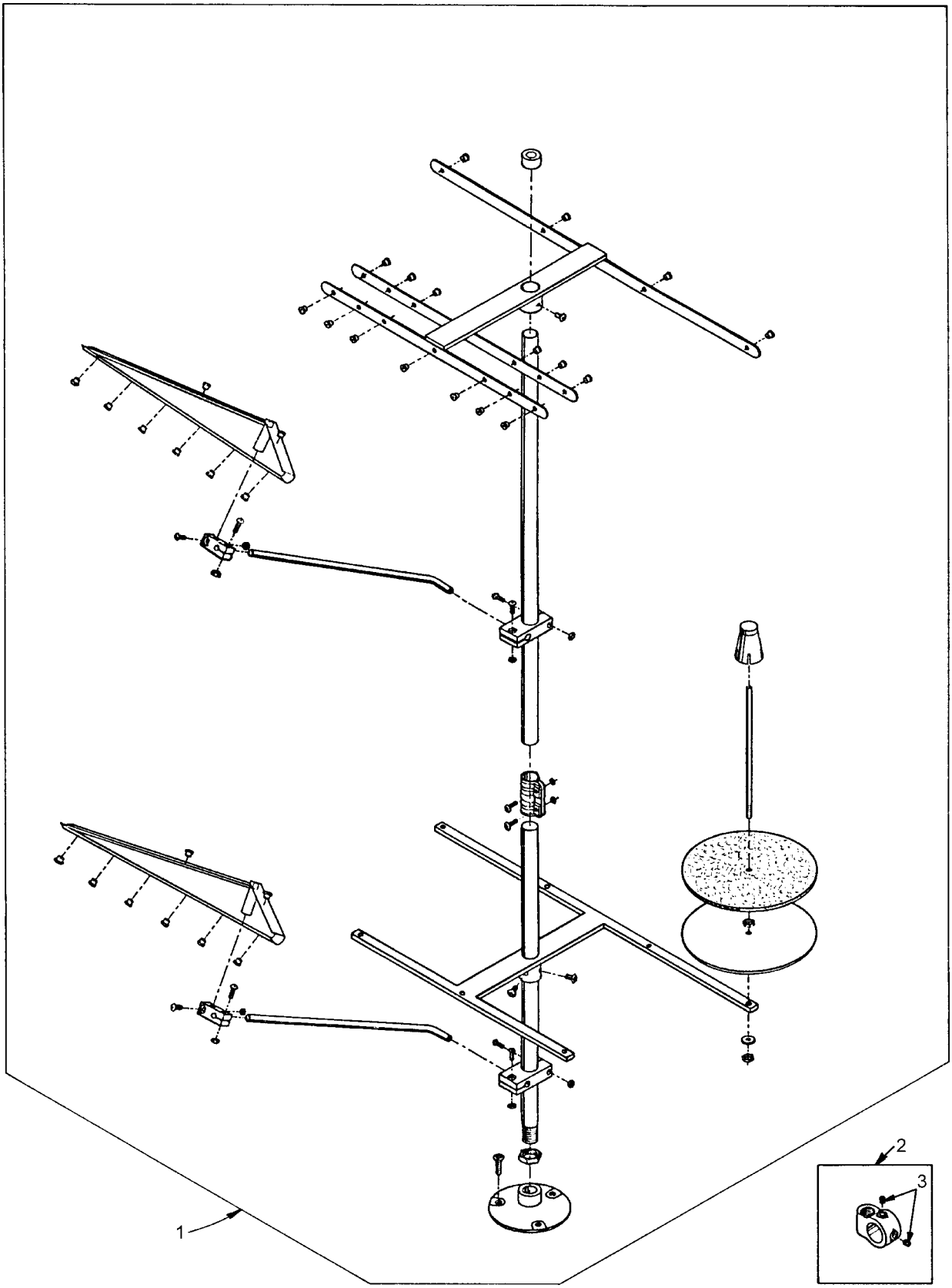
PRESSER FOOT

Ref. No.	Part No.	Description	Amt. Req.
1.	J35620W	Presser Foot, complete	1
2.	36251K	Link Pin	4
3.	22738P	Screw	4
4.	36251H	Cover Thread Hook Driving Lever and Shaft	1
5.	36251G	Cover Thread Carrier Driving Lever and Shaft	1
6.	36251J	Link, for ref. no. 5, 6 and 8	2
7.	36251L	Cover Thread Carrier and Hook Driving Segment	1
8.	36230M	Presser Foot Base	1
9.	94	Screw, for presser foot base	1
10.	36251AD	Cross Thread Hook	1
11.	22562A	Screw, for cross thread hook	1
12.	36230C	Spring, for yielding section	1
13.	22565A	Screw, for yielding section	1
14.	36230P	Yielding Section	1
15.	22716A	Screw, for cloth guide plate	1
16.	36230R	Cloth Guide Plate	1
17.	36250	Stationary Knife	1
18.	36230D	Shoe Holding Wire	1
19.	J36231ZCW2	Presser Foot Shoe, Left	1
20.	J36232ZC	Presser Foot Shoe, Right	1
21.	22738G	Screw, for presser foot shoe	1
*22.	36250B	Stationary Knife Clamp, .213" (5.41mm) ID Mark "A"	1
*-	36250G	Stationary Knife Clamp, .222" (5.64mm) ID Mark "B"	1
*-	36250J	Stationary Knife Clamp, .226" (5.74mm) ID Mark "J"	1
23.	36279C	Chip Guard	1
24.	36279D	Spring, for chip guard	1
25.	22731	Screw, for chip guard	1
26.	22565A	Screw, for cover thread carrier	1
27.	36251W	Cover Thread Carrier	1
28.	150	Screw, for stationary knife clamp	1

*** When replacing the stationary knife clamp, order the clamp that has the same I. D. mark as the one being replaced.**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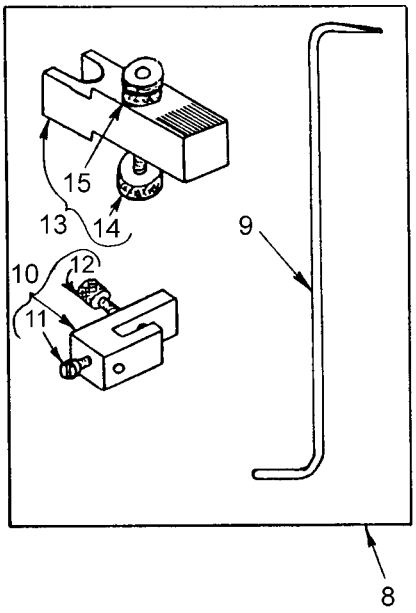
THREAD STAND

Ref. No.	Part No.	Description	Amt. Req.
1.	21101S7	Thread Stand, complete	1
2.	21233AJ	Bracket Connection, marked “AJ”	1
-	21233KS	Bracket Connection, marked “KS”	1
3.	22651CD-5	Screw, for bracket connection	2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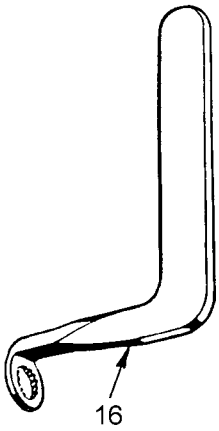
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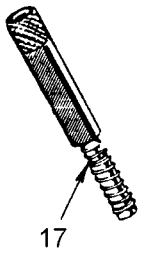
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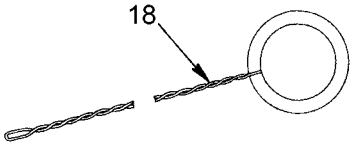
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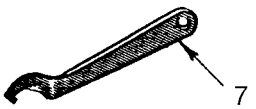
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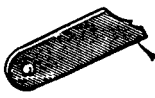
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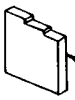
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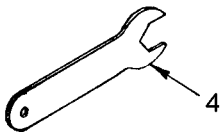
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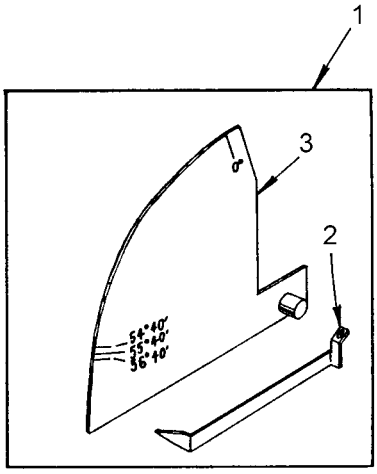
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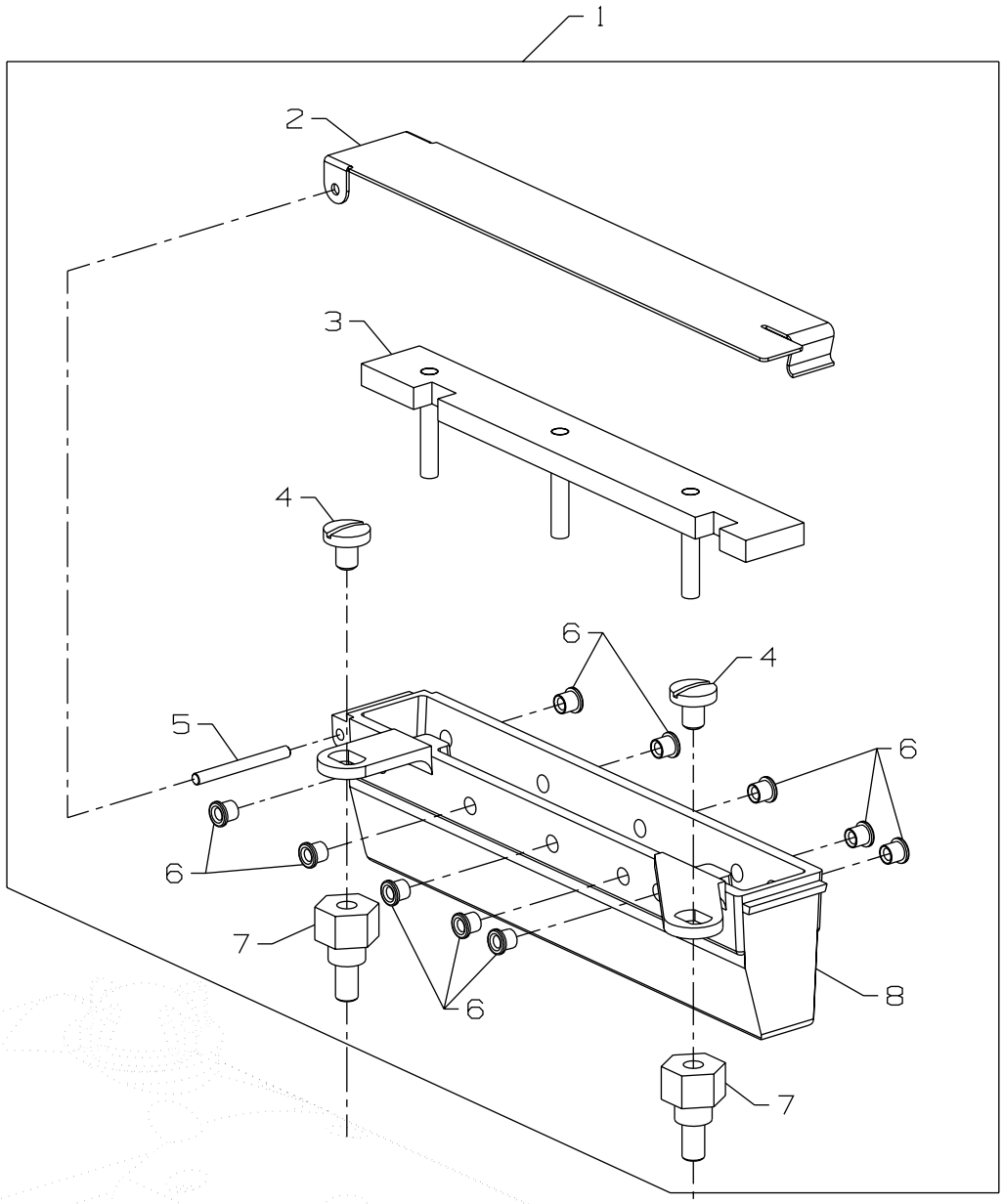
MISCELLANEOUS GAUGES & TAPE REEL PARTS

Ref. No.	Part No.	Description	Amt. Req.
1.	21227CN	Looper Travel Gauge, complete	1
2.	21227CM	Looper Travel Gauge Pointer	1
3.	21227CS	Looper Travel Gauge Plate	1
4.	21388AZ	Wrench, for driving link stud	1
5.	21227DS	Needle Height Gauge	1
6.	21225F-3/16	Looper Gauge	1
7.	21388Y	Spanner Wrench	1
8.	21227CG	Synchronizing Gauge, for looper and needle timing, complete	1
9.	21227CK	Synchronizing Gauge Rod	1
10.	21227CJ	Looper Clamp and Height Gauge	1
11.	22738	Screw	1
12.	22703A	Screw	1
13.	21227CH	Needle Setting Block	1
14.	14087	Thumbscrew	1
15.	1347A	Nut	1
16.	TT85	Wrench, for 3/16" square nut on screw	1
17.	21227BV	Looper Avoid Gauge	1
18.	GR-51899	Threading Wire	1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THREAD LUBRICATOR

Ref. No.	Part No.	Description	Amt. Req.
1.	J35680AZY	Needle Thread Lubricator Complete	1
2.	35893J	Reservoir Cover	1
3.	666-339	Reservoir Wick	1
4.	22585C	Screw	2
5.	660-219AX	Pin	1
6.	50358M	Eyelet	10
7.	22894BL	Screw Post	2
8.	J35693K	Reservoir	1
-	28604W	Bottle of Silicone (not shown)	1

NUMERICAL INDEX OF PARTS

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INDUSTRIAL SEWING EQUIPMENT