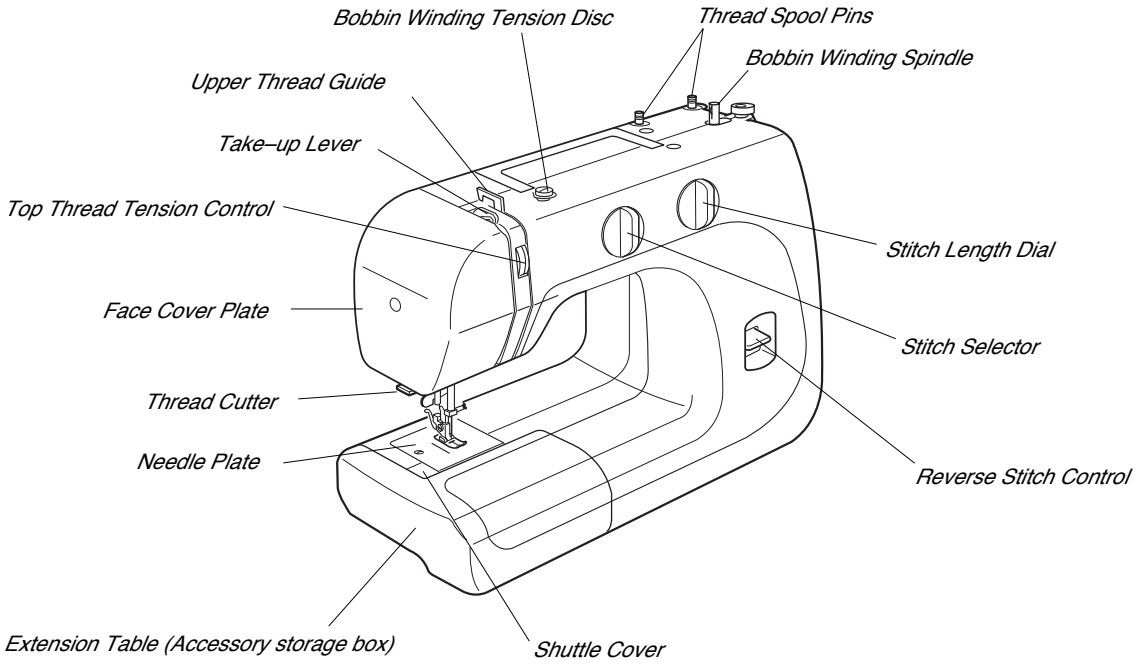
First Edition: 14 September 2016

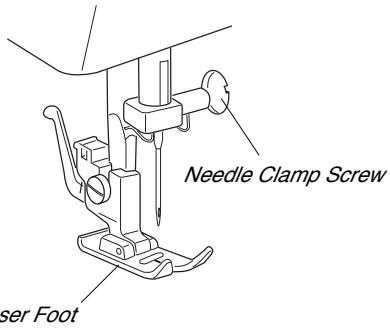
PARTS LIST
&
SERVICE MANUAL

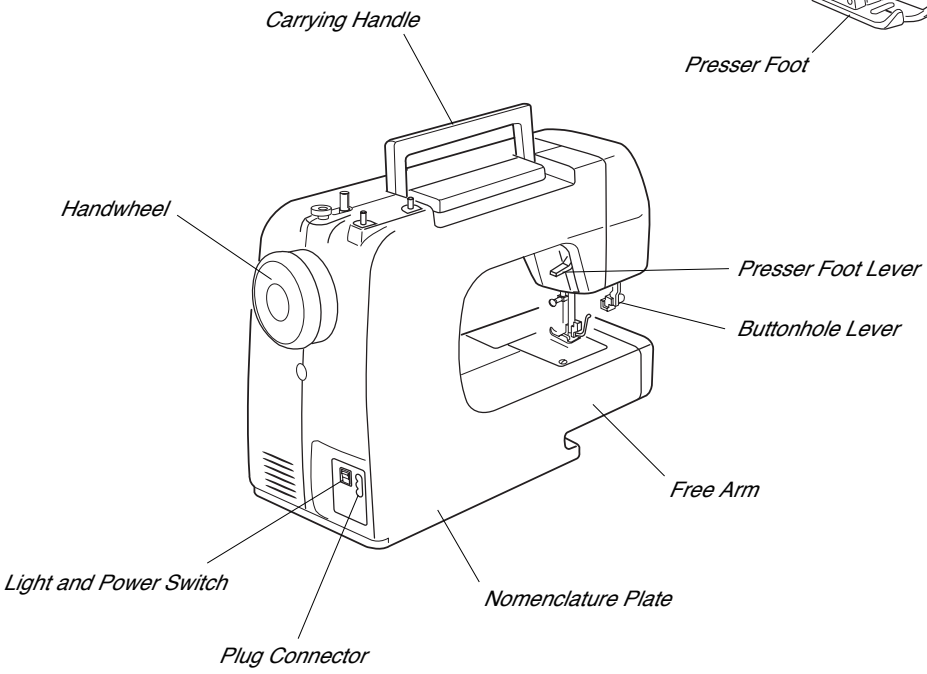
MODEL: Facility 21

CONTENTS

LOCATE AND IDENTIFY THE PARTS

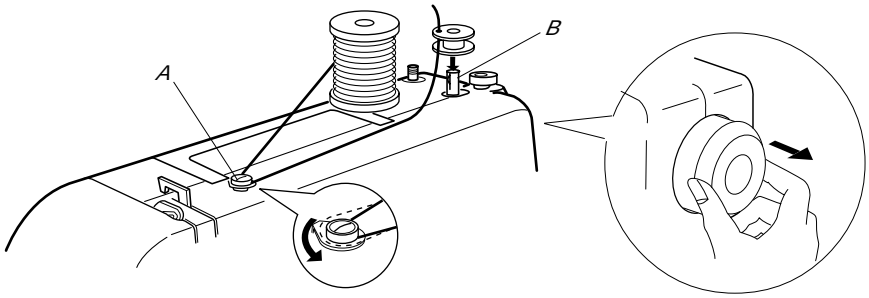


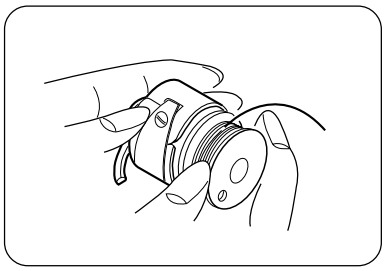




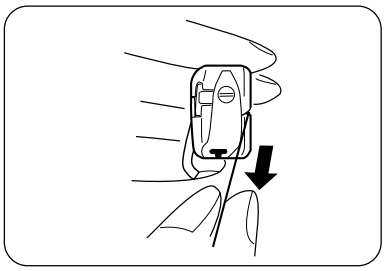
WIND THE BOBBIN

1. PULL THE HANDWHEEL OUT.
2. DRAW THE THREAD FROM THE SPOOL THROUGH THE BOBBIN WINDING TENSION DISCS (A).
3. PULL THE END OF THE THREAD THROUGH THE BOBBIN AS SHOWN.
   PLACE THE BOBBIN ONTO THE BOBBIN WINDING SPINDLE (B) WITH THE END OF THE THREAD COMING FROM THE TOP OF THE BOBBIN.
   PUSH THE BOBBIN WINDING SPINDLE TO THE RIGHT UNTIL IT CLICKS.
4. HOLDING THE END OF THREAD, START THE MACHINE. WHEN THE BOBBIN IS SLIGHTLY FILLED, SNIP OFF THE END OF THE THREAD.
5. WIND THE THREAD UNTIL THE BOBBIN STOPS. REMOVE THE BOBBIN.
6. PUSH THE HANDWHEEL TO THE LEFT.

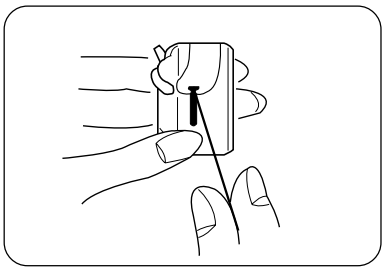




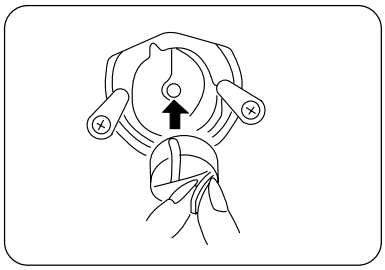
1 PLACE THE BOBBIN IN THE BOBBIN CASE MAKING SURE THE THREAD FEEDS CLOCKWISE, AND IS COMING FROM THE BOBBIN AS SHOWN.



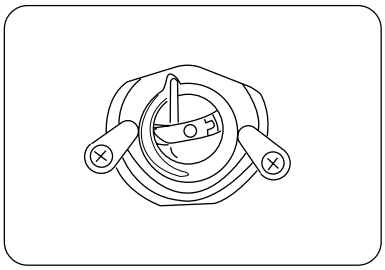
2 PULL THE THREAD THROUGH THE SLOT OF THE CASE AS SHOWN.



3 PULL THE THREAD UNDER THE TENSION SPRING, AND THROUGH THE OPENING AS SHOWN ABOVE.



4 HOLDING THE LATCH OPEN, POSITION THE CASE INTO THE SHUTTLE AND RELEASE THE LATCH.



5 THE CASE SHOULD LOCK INTO PLACE WHEN THE LATCH IS RELEASED.

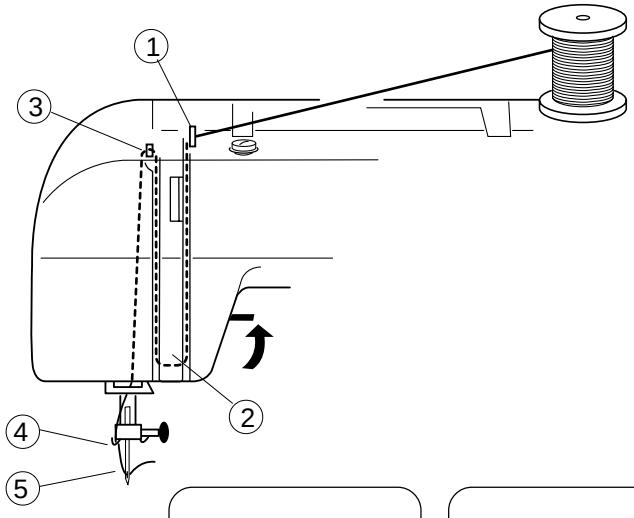
PREPARE YOUR TOP THREAD

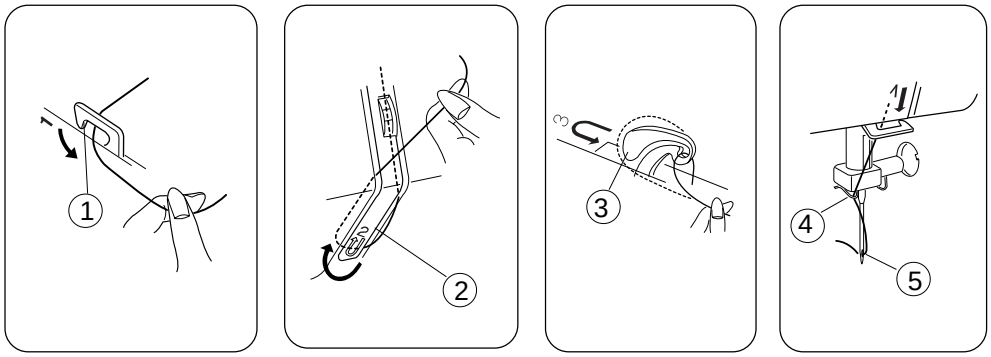
THE STEP NUMBER CORRESPONDS WITH THE NUMBER IN THE ILLUSTRATIONS. THE DOTTED LINES SHOW PLACES WHERE THE LOOPS THREAD AND IS PULLED TIGHT.

RAISE THE TAKE-UP LEVER TO ITS HIGHEST POSITION BY TURNING THE HANDWHEEL TOWARD YOU.
RAISE THE PRESSER FOOT LEVER.
PLACE THE SPOOL ON THE PIN, WITH THE THREAD COMING FROM THE BACK OF THE SPOOL.

1. DRAW THE THREAD THROUGH THE THREAD GUIDE.
2. HOLDING THE THREAD TAUT WITH YOUR RIGHT HAND, DRAW THE THREAD DOWN INTO THE TENSION AREA AND THEN AROUND THE CHECK SPRING HOLDER.
3. FIRMLY DRAW THE THREAD UP AND THROUGH THE TAKE-UP LEVER, FROM RIGHT TO LEFT.
4. DRAW THE THREAD DOWN AGAIN, AND SLIP IT INTO THE NEEDLE BAR THREAD GUIDE.
5. THREAD THE NEEDLE FROM FRONT TO BACK.

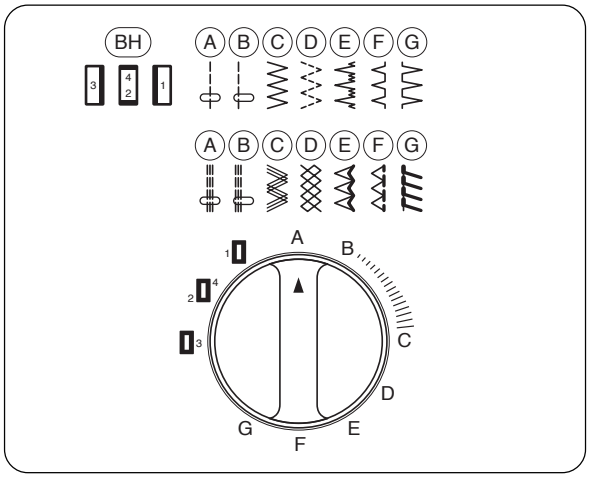
NOTE: YOU MAY WANT TO CUT THE END OF THE THREAD WITH SHARP SCISSORS FOR EASIER NEEDLE THREADING.





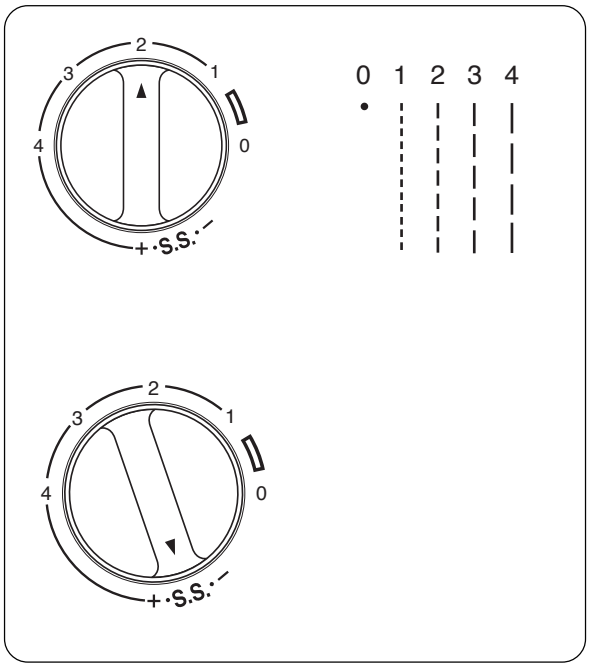
STITCH SELECTOR / STITCH LENGTH CONTROLS

STITCH SELECTOR



RAISE THE NEEDLE AND TURN THE STITCH SELECTOR DIAL TO SET THE ARROW MARK TO THE DESIRED PATTERN.

STITCH LENGTH



TURN THE STITCH LENGTH DIAL TO SET THE ARROW MARK TO THE DESIRED LENGTH.
SET THE ARROW MARK TO "S.S."WHEN SELECTING STRETCH PATTERNS.

WHAT TO DO WHEN

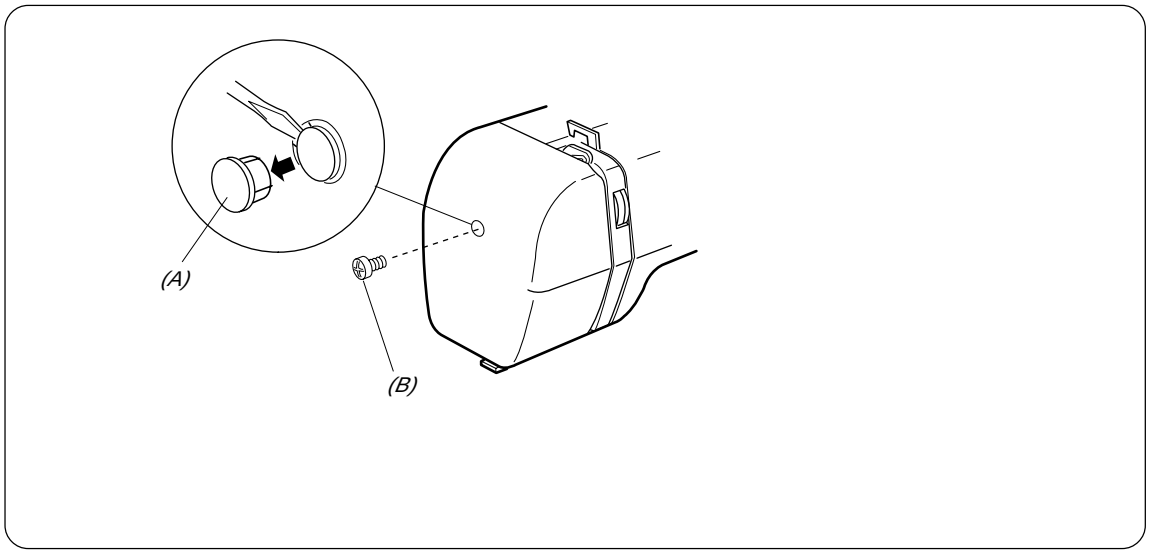
CONDITION	CAUSE	HOW TO FIX	REFERENCE
1. SKIPPING STITCHES	1. NEEDLE IS NOT INSERTED PROPERLY.	INSERT THE NEEDLE PROPERLY.	
	2. NEEDLE IS BENT OR WORN.	CHANGE THE NEEDLE.	
	3. INCORRECTLY THREADED	RETHREAD.	
	4. NEEDLE OR THREAD ARE INAPPROPRIATE FOR FABRIC BEING SEWN.	USE THE RECOMMENDED SEWING NEEDLE AND THREAD.	
	5. SEWING ON STRETCH FABRIC	USE A #11 BLUE TIP NEEDLE.	
	6. INAPPROPRIATE NEEDLE BAR HEIGHT.	SEE MECHANICAL ADJUSTMENT “NEEDLE BAR HEIGHT”.	P.20
	7. INAPPROPRIATE NEEDLE TO HOOK TIMING	SEE MECHANICAL ADJUSTMENT “NEEDLE TIMING TO SHUTTLE”.	P.21
	8. INAPPROPRIATE NEEDLE TO HOOK CLEARANCE	SEE MECHANICAL ADJUSTMENT “CLEARANCE BETWEEN NEEDLE AND HOOK”.	P.17,18
2. FABRIC NOT MOVING	1. INCORRECT F.D. HEIGHT	SEE MECHANICAL ADJUSTMENT “FEED DOG HEIGHT”.	P.19
	2. THREADS ARE JAMMED UNDER THE NEEDLE PLATE.	MAKE SURE TO BRING BOTH NEEDLE AND BOBBIN THREAD UNDER THE FOOT WHEN STARTING SEWING.	
	3. FEED DOG TEETH ARE WORN.	CHANGE THE FEED DOG.	

CONDITION	CAUSE	HOW TO FIX	REFERENCE
3. BREAKING UPPER THREAD	1. INITIAL SEWING SPEED IS TOO FAST.	START WITH MEDIUM SPEED.	
	2. THREAD PATH IS INCORRECT.	USE THE PROPER THREAD PATH.	
	3. NEEDLE IS BENT OR DULL.	REPLACE WITH A NEW NEEDLE.	
	4. UPPER THREAD TENSION IS TOO STRONG.	ADJUST UPPER THREAD TENSION CORRECTLY.	P.12
	5. NEEDLE SIZE IS INAPPROPRIATE FOR FABRIC.	USE APPROPRIATE NEEDLE FOR FABRIC AND THREAD IN USE.	
	6. NEEDLE EYE IS WORN.	CHANGE THE NEEDLE.	
	7. NEEDLE HOLE IN NEEDLE PLATE IS WORN OR BURRED.	REPAIR THE HOLE OR REPLACE THE NEEDLE PLATE.	
4. BREAKING BOBBIN THREAD	1. INCORRECTLY THREADED BOBBIN CASE.	THREAD BOBBIN CASE CORRECTLY.	
	2. TOO MUCH THREAD IS WOUND ON THE BOBBIN.	ADJUST THE POSITION OF STOPPER.	
	3. LINT IS STUCK INSIDE THE BOBBIN HOLDER.	CLEAN THE HOOK RACE.	
	4. THREAD QUALITY IS POOR.	CHANGE TO A HIGH QUALITY SEWING THREAD.	
	5. THREAD IS JAMMING ON THE BOBBIN.	CLEAR OUT THE JAMMING THREAD.	
	6. BOBBIN THREAD TENSION IS TOO STRONG.	ADJUST BOBBIN THREAD TENSION CORRECTLY.	P.13
5. NEEDLE BREAKS	1. NEEDLE IS HITTING THE NEEDLE PLATE.	SEE MECHANICAL ADJUSTMENT “NEEDLE DROP.”	P.16
	2. NEEDLE IS BENT OR WORN.	CHANGE THE NEEDLE.	
	3. NEEDLE IS HITTING THE HOOK RACE.	SEE MECHANICAL ADJUSTMENT “CLEARANCE BETWEEN NEEDLE AND HOOK”.	P.17, 18
	4. THE FABRIC MOVES WHILE THE NEEDLE IS IN IT, OR THE NEEDLE ZIGZAGS WHILE IN THE FABRIC.	SEE MECHANICAL ADJUSTMENT “NEEDLE SWING”.	P.15
	5. FABRIC IS BEING PULLED TOO STRONGLY WHILE SEWING.	GUIDE THE FABRIC GENTLY WHILE SEWING.	

CONDITION	CAUSE	HOW TO FIX	REFERENCE
6. NOISY OPERATION	1. BACKLASH BETWEEN SHUTTLE HOOK GEAR AND LOWER SHAFT GEAR IS TOO BIG.	SEE MECHANICAL ADJUSTMENT “CLEARANCE BETWEEN NEEDLE AND HOOK (NO.2)”.	P.18
	2. INAPPROPRIATE BELT TENSION.	SEE MECHANICAL ADJUSTMENT “MOTOR BELT TENSION”.	P.25
	3. NOT ENOUGH OIL.	APPLY OIL.	P.27
7. DEFORMATION PATTERN	1. INAPPROPRIATE NEEDLE SWING TIMING.	SEE MECHANICAL ADJUSTMENT “NEEDLE SWING”.	P.15
	2. INAPPROPRIATE DISENGAGEMENT OF CAM FOLLOWER.	SEE MECHANICAL ADJUSTMENT “DISENGAGEMENT OF CAM FOLLOWER”.	P.24
	3. UPPER THREAD TENSION IS TOO STRONG.	ADJUST UPPER THREAD TENSION CORRECTLY.	P.12

SERVICE ACCESS

FACE COVER



TO REMOVE:

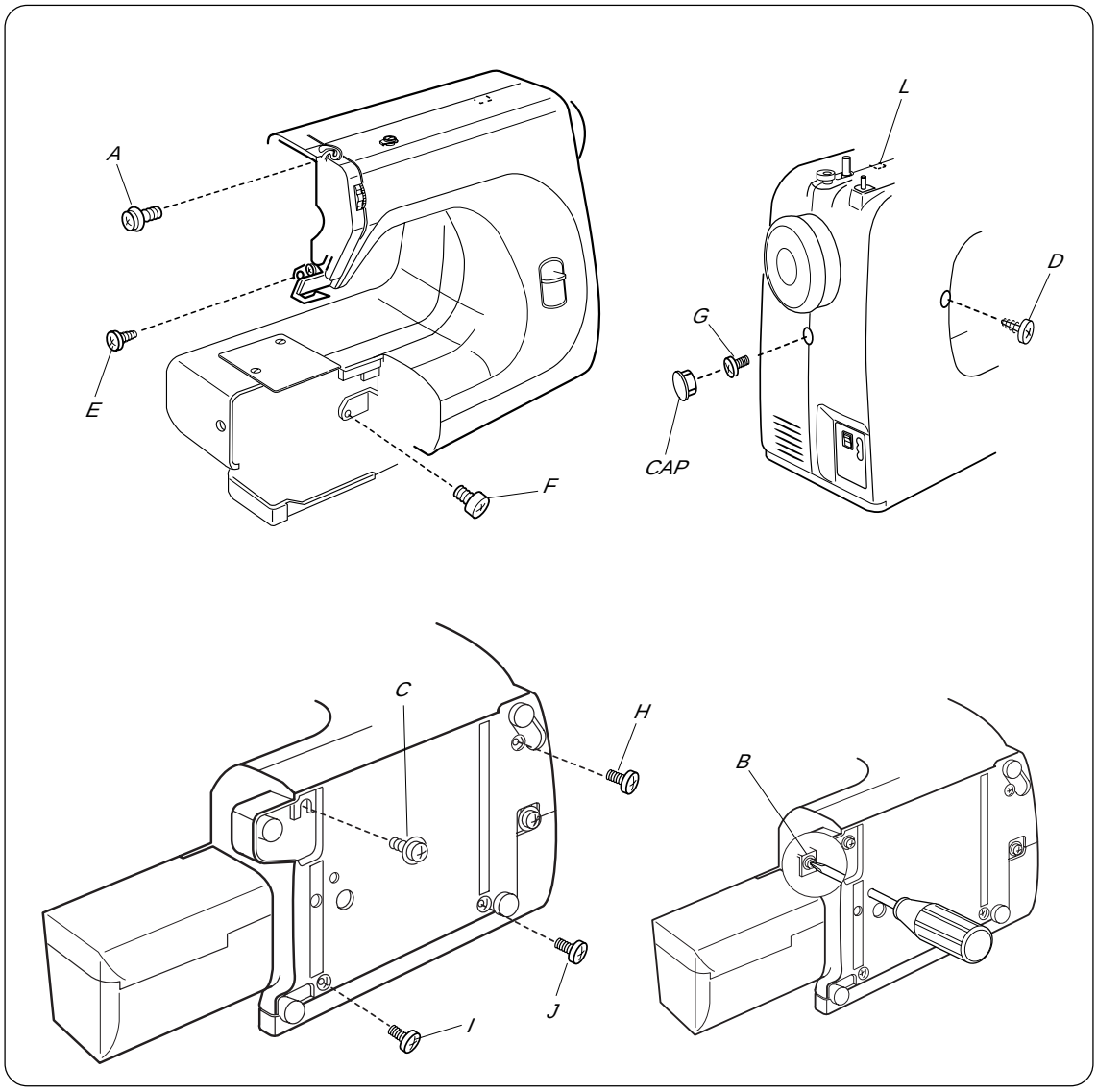
1. REMOVE THE FACE COVER BY REMOVING THE CAP (A) AND SCREW (B).

TO ATTACH:

2. ATTACH THE FACE COVER WITH THE SCREW, AND THEN, REPLACE THE CAP.

SERVICE ACCESS

FRONT COVER



TO REMOVE:

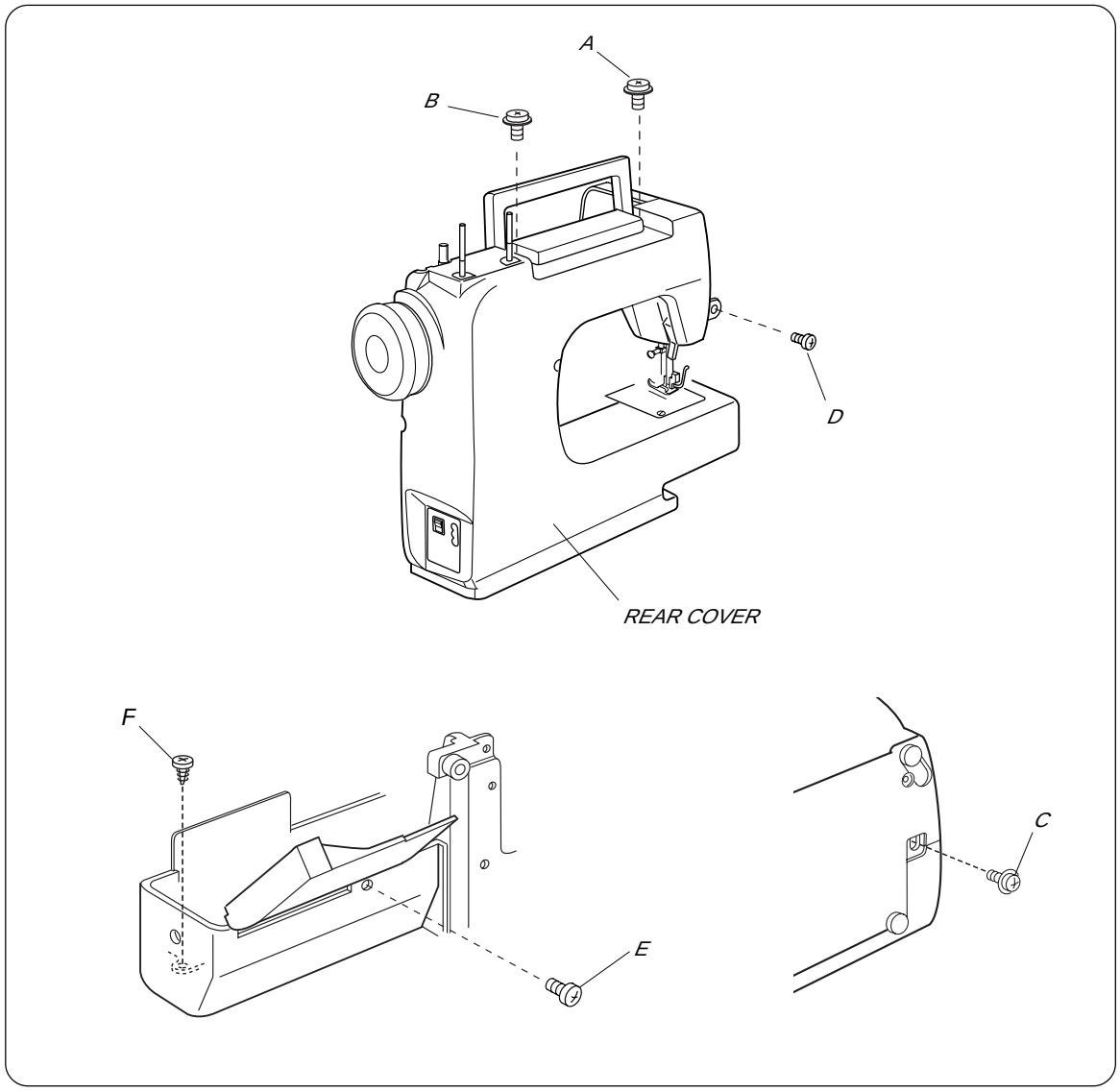
1. REMOVE THE FACE COVER. (SEE PAGE 8.)
2. LOOSEN THE SETSCREWS (A), (B), AND (C), AND THEN, REMOVE THE FRONT COVER BY REMOVING THE SETSCREWS (D),(E),(F),(G),(H),(I) AND (J).
   NOTE: UNHOOK THE TAB (L) FROM THE REAR COVER WHEN REMOVING THE FRONT COVER.

TO ATTACH:

3. FOLLOW THE ABOVE PROCEDURE IN REVERSE.

SERVICE ACCESS

REAR COVER



TO REMOVE:

1 REMOVE THE FACE COVER AND FRONT COVER (SEE PAGES 8,9).

2 LOOSEN THE SETSCREWS (A), (B) AND (C), AND REMOVE SETSCREWS (D), (E) AND (F).

3 PULL UP THE SPOOL PINS.REMOVE THE MACHINE SOCKET. REMOVE THE REAR COVER CLEARING THE PRESSER FOOT LIFTER FROM THE SLIT ON THE COVER.

TO ATTACH:

4. FOLLOW THE ABOVE PROCEDURE IN REVERSE.

MECHANICAL ADJUSTMENT

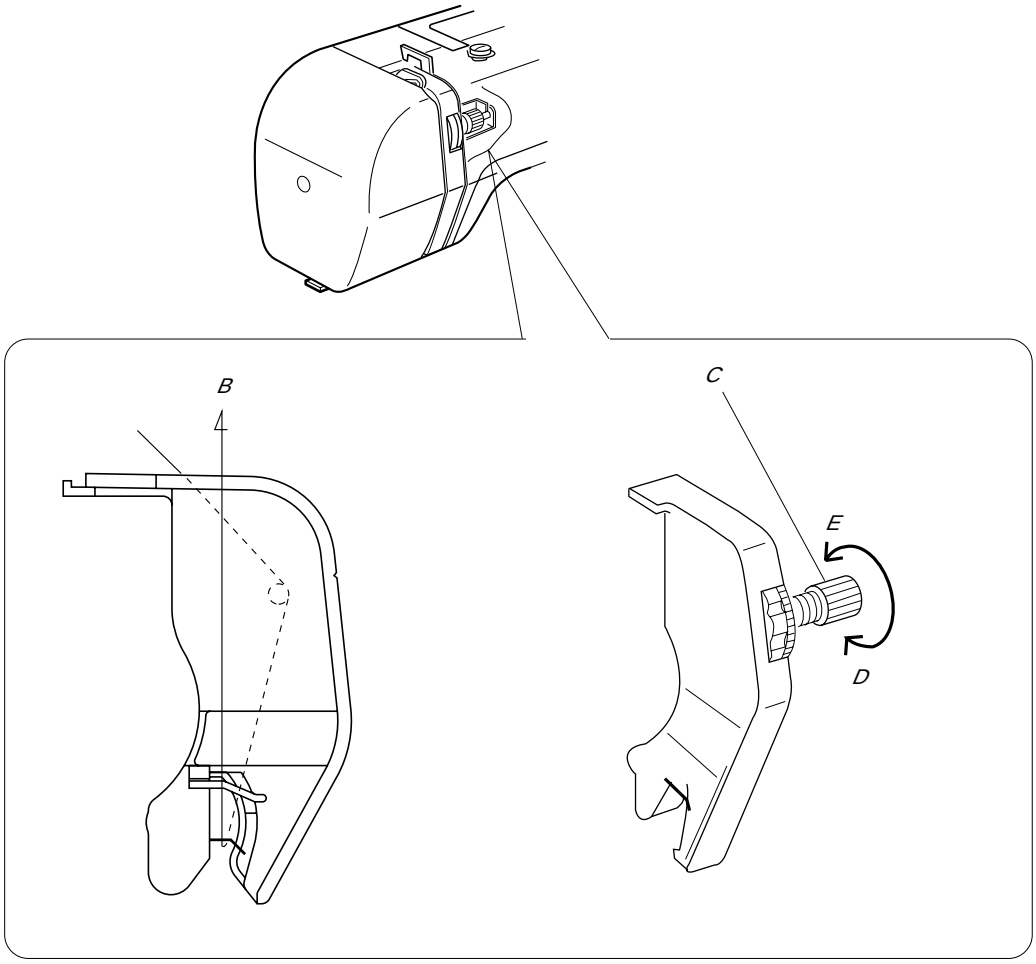
TOP TENSION

TO CHECK:

THE STANDARD UPPER THREAD TENSION SHOULD BE BETWEEN 65 - 95g, WHEN PULLING THE THREAD (COTTON THREAD #50) IN THE DIRECTION OF (B) WITH THE TENSION DIAL SETTING AT “3”. (MAKE SURE THE FOOT IS LOWERED.)
IF THE TENSION IS OUT OF THE STANDARD RANGE, ADJUST IT AS FOLLOWS:

ADJUSTMENT PROCEDURE:

1. REMOVE THE FRONT PANEL COVER UNIT. (SEE PAGE 11.)
2. TURN THE ADJUSTING NUT (C) IN THE DIRECTION OF (D), WHEN THE UPPER THREAD TENSION IS TOO TIGHT.
   TURN THE ADJUSTING NUT (C) IN THE DIRECTION OF (E), WHEN THE UPPER THREAD TENSION IS TOO LOOSE.
3. ATTACH THE FRONT PANEL COVER UNIT.



MECHANICAL ADJUSTMENT

BOBBIN TENSION

TO CHECK:

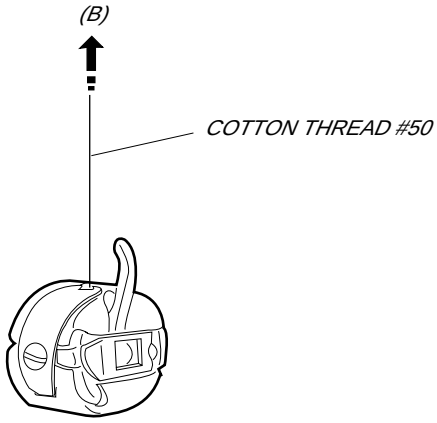
SET THE BOBBIN IN THE BOBBIN CASE, AND PASS THE THREAD (COTTON #50) THROUGH THE TENSION SPRING.

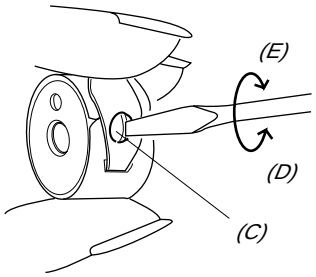
THE BOBBIN THREAD TENSION SHOULD BE BETWEEN 45 - 55g, WHEN PULLING THE THREAD IN THE DIRECTION OF (B).

IF THE TENSION IS OUT OF THE RANGE, ADJUST IT AS FOLLOWS:

ADJUSTMENT PROCEDURE:

1. TURN THE ADJUSTING SCREW (C) IN THE DIRECTION OF (D), WHEN THE BOBBIN THREAD TENSION IS TOO TIGHT.
2. TURN THE ADJUSTING SCREW (C) IN THE DIRECTION OF (E), WHEN THE BOBBIN THREAD TENSION IS TOO LOOSE.





MECHANICAL ADJUSTMENT

PRESSER BAR HEIGHT AND ALIGNMENT

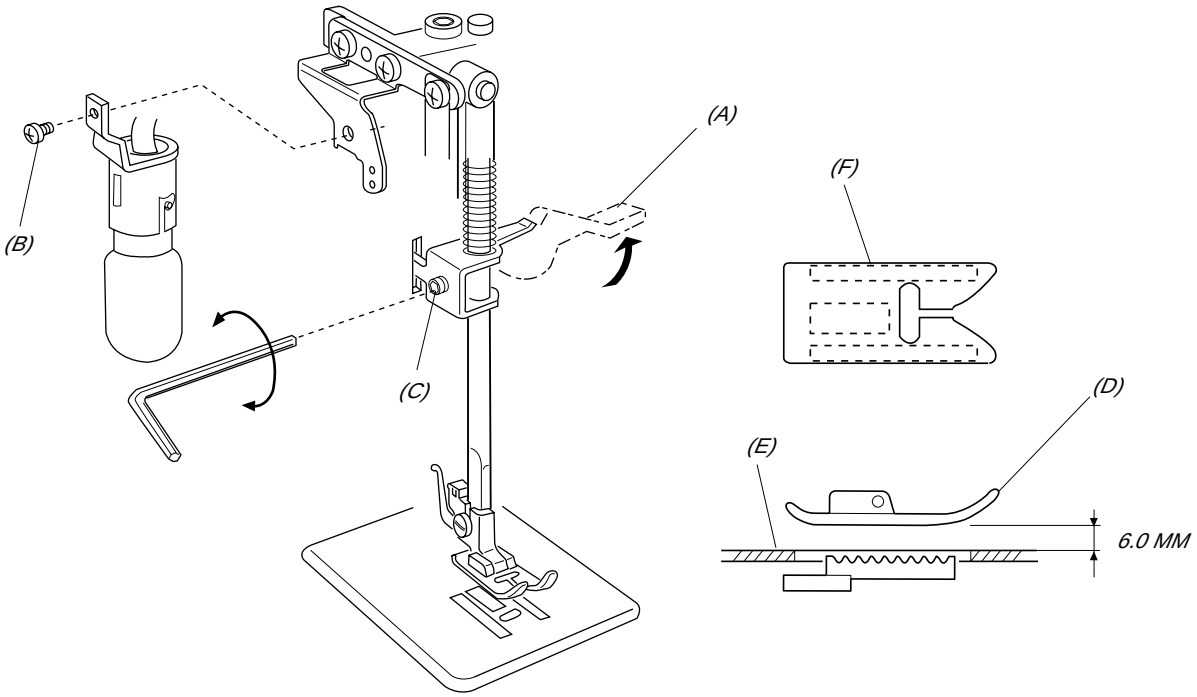
TO CHECK:

1. RAISE THE PRESSER FOOT LEVER (A).
2. THE DISTANCE BETWEEN THE PRESSER FOOT (D) AND THE NEEDLE PLATE (E) SHOULD BE 6.0 MM (0.24").

ADJUSTMENT PROCEDURE:

1. REMOVE THE SCREW (B), AND TAKE THE LAMP SOCKET OFF.
2. RAISE THE PRESSER FOOT LEVER, AND LOOSEN THE SCREW (C) ON THE PRESSER BAR HOLDER.
   ADJUST THE DISTANCE BETWEEN THE PRESSER FOOT (D) AND THE NEEDLE PLATE (E) TO 6.0 MM (0.24").
3. TIGHTEN THE SCREW (C) SECURELY.
4. TIGHTEN THE SCREW (B) TO SECURE THE LAMP SOCKET.

NOTE: WHEN YOU TIGHTEN THE SCREW (C), MAKE SURE THAT BOTH SIDES OF THE PRESSER FOOT ARE PARALLEL TO THE FEED DOG SLOTS (F) ON THE NEEDLE PLATE.



MECHANICAL ADJUSTMENT

NEEDLE SWING

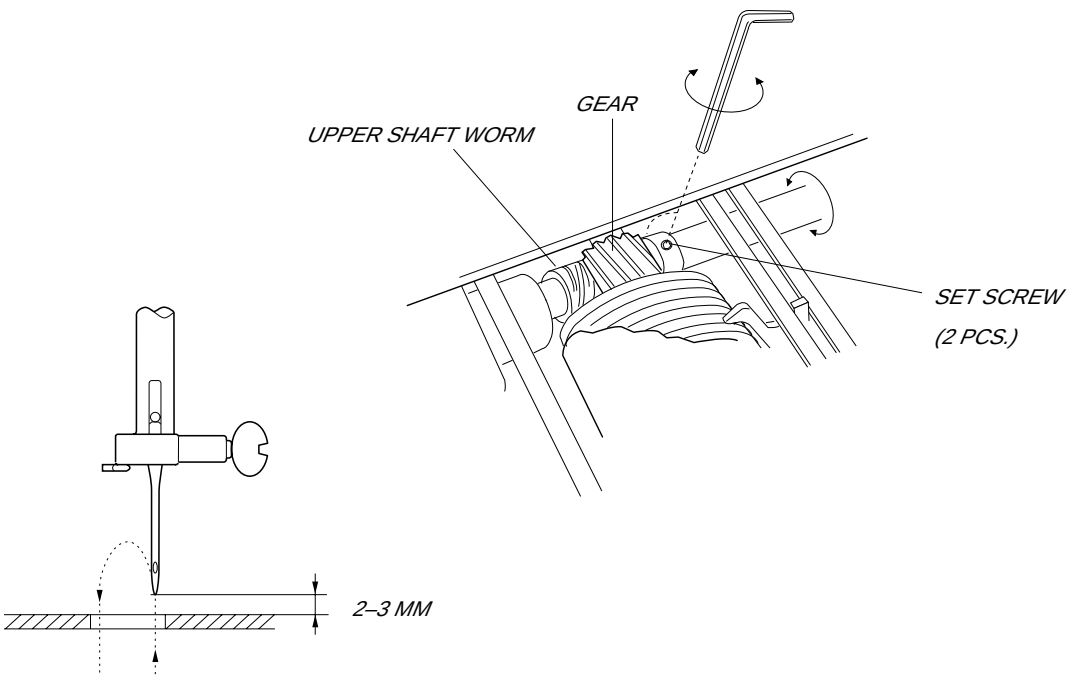
TO CHECK:

IF THE NEEDLE BAR STARTS MOVING SIDEWAYS WHILE THE NEEDLE IS IN THE FABRIC (WHEN SEWING A ZIGZAG PATTERN WITH THE MAXIMUM ZIGZAG WIDTH), ADJUST THE NEEDLE SWING BY THE FOLLOWING PROCEDURE:

ADJUSTMENT PROCEDURE:

1. SET THE PATTERN SELECTOR DIAL TO THE MAXIMUM ZIGZAG WIDTH, AND REMOVE THE FRONT COVER. (SEE PAGE 9.)
2. LOOSEN THE TWO SET SCREWS.
3. ADJUST THE NEEDLE SWING BY TURNING THE HANDWHEEL WHILE HOLDING THE WORM (SO AS NOT TO ROTATE IT) UNTIL THE NEEDLE SWING STARTS AT 2 - 3 MM ABOVE THE NEEDLE PLATE (IN ITS ASCENDING MOTION).
4. TIGHTEN THE TWO SET SCREWS.
5. MOUNT THE FRONT COVER.

   NOTE: AFTER ADJUSTING THE NEEDLE SWING, CHECK THAT THE UPPER SHAFT WORM AND GEAR ROTATE SMOOTHLY WITHOUT ANY BACKLASH BETWEEN THEM.



MECHANICAL ADJUSTMENT

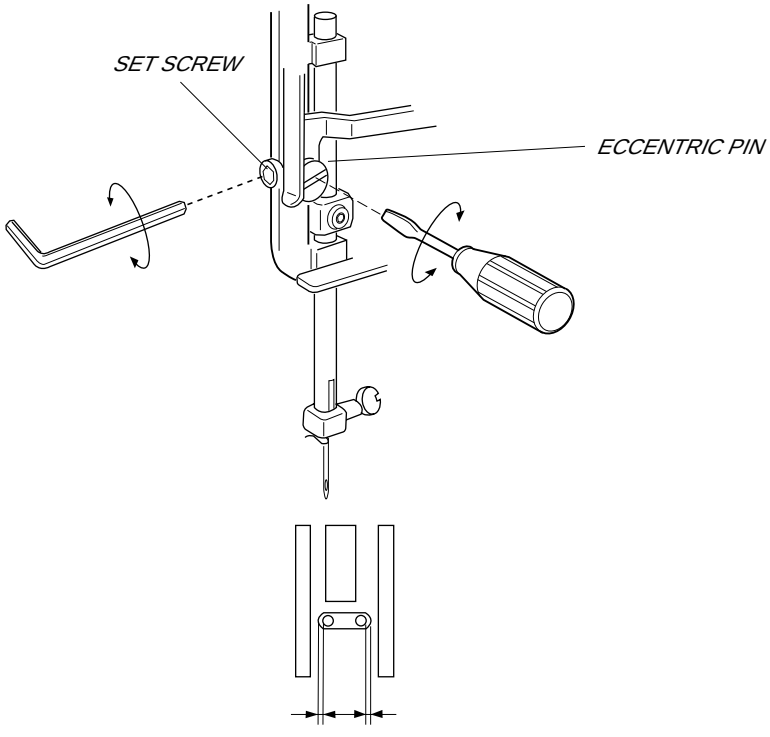
NEEDLE DROP POSITION

TO CHECK:

WHEN THE NEEDLE SWINGS AT THE MAXIMUM ZIGZAG WIDTH, THE DISTANCE BETWEEN BOTH ENDS OF THE NEEDLE HOLE ON THE NEEDLE PLATE AND THE NEEDLE DROP POSITIONS, SHOULD BE EQUAL.
IF NOT, MAKE THE FOLLOWING ADJUSTMENTS:

ADJUSTMENT PROCEDURE:

1. REMOVE THE FACE COVER. (SEE PAGE 8.)
2. SET THE PATTERN SELECTOR DIAL AT THE MAXIMUM ZIGZAG WIDTH.
3. LOOSEN THE SET SCREW.
4. TURN THE ECCENTRIC PIN TO ADJUST THE NEEDLE DROP POSITION.
5. TIGHTEN THE SET SCREW.
   NOTE:CHECK THE HOOK TIMING AFTER THIS ADJUSTMENT.



BOTH CLEARANCE SHOULD BE EQUAL

MECHANICAL ADJUSTMENT

CLEARANCE BETWEEN NEEDLE AND HOOK (NO.1)

TO CHECK:

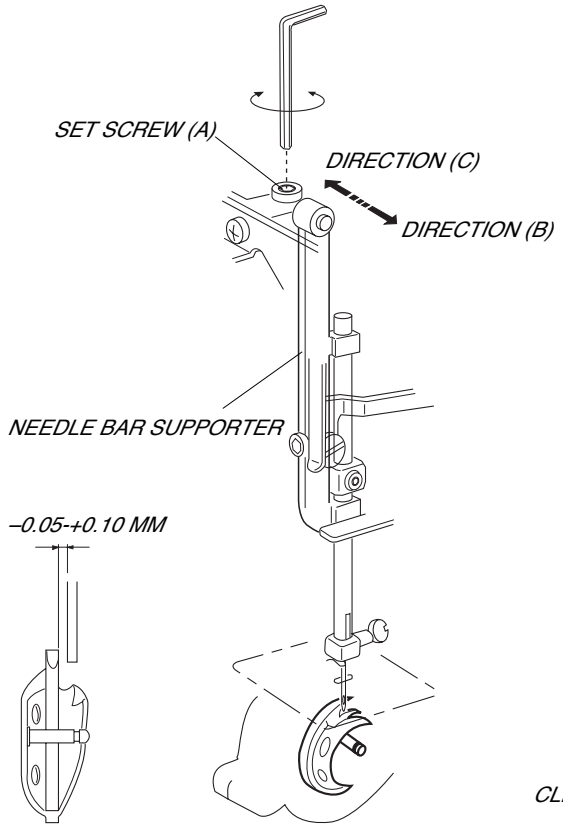
THE CLEARANCE BETWEEN NEEDLE AND THE SHUTTLE HOOK SHOULD BE BETWEEN – 0.05 – +0.10 MM.

IF NOT, MAKE THE FOLLOWING ADJUSTMENTS:

ADJUSTMENT PROCEDURE:

1. OPEN THE FACE COVER PLATE.
2. SET THE PATTERN SELECT DIAL " ⊂⊃ ", WIDTH SELECTOR DIAL " 5 ".
3. LOOSEN THE SET SCREW (A), AND MOVE THE NEEDLE BAR SUPPORTER BACK OR FORTH , TO GET A CLEARANCE BETWEEN –0.05 TO +0.10 MM.
   * WHEN THE CLEARANCE IS TOO WIDE, MOVE THE NEEDLE BAR SUPPORTER TOWARD DIRECTION (B).
   * WHEN THE CLEARANCE IS TOO NARROW, MOVE THE NEEDLE BAR SUPPORTER TOWARD DIRECTION (C).

   NOTE: AFTER THIS ADJUSTMENT, CHECK IF THE CLEARANCE BETWEEN THE NEEDLE AND NEEDLE PLATE IS MORE THAN 0.15 MM, AS SHOWN IN FIGURE (D). IF NOT, ADJUST THE CLEARANCE BETWEEN THE NEEDLE AND THE SHUTTLE HOOK BY USING THE ADJUSTMENT METHOD NO.2 ON PAGE 13. AFTER READJUSTMENT, THE CLEARANCE BETWEEN THE NEEDLE AND THE NEEDLE PLATE SHOULD BE MORE THAN 0.15 MM.



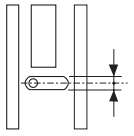


FIGURE (D)

CLEARANCE BETWEEN THE NEEDLE AND THE NEEDLE PLATE IS MORE THAN 0.15 MM

MECHANICAL ADJUSTMENT

CLEARANCE BETWEEN NEEDLE AND HOOK (NO.2)

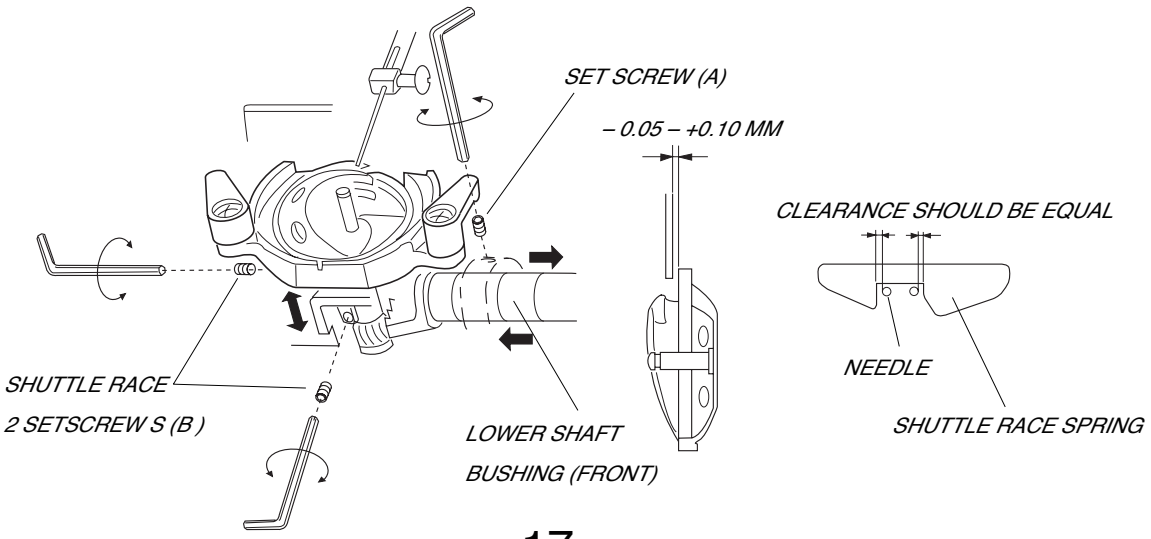
TO CHECK:

USE THIS ADJUSTMENT (NO.2) WHEN ADJUSTMENT NO.1 CAN NOT BE USED.
THE CLEARANCE BETWEEN THE NEEDLE AND THE SHUTTLE HOOK SHOULD BE BETWEEN – 0.05 – +0.10 MM.

ADJUSTMENT PROCEDURE:

1. SET THE PATTERN SELECTOR DIAL AT "⊂⊃". WIDTH SELECTOR DIAL " 5 ". (STITCH LENGTH DIAL AT ANY POSITION.)
2. REMOVE THE REAR COVER. (SEE PAGE 11.)
3. LOOSEN THE SCREW (A) ON THE LOWER SHAFT BUSHING, AND SHIFT THE LOWER SHAFT ABOUT 0.5MM TO THE RIGHT TO DISENGAGE THE GEARS.
4. LOWER THE NEEDLE, AND LOOSEN THE TWO SHUTTLE RACE SET SCREWS (B). PUSH OR PULL THE SHUTTLE RACE UNIT AXIALLY, TO ADJUST THE CLEARANCE BETWEEN THE NEEDLE AND THE SHUTTLE HOOK IN THE RANGE OF – 0.05 TO +0.10 MM.
5. SET THE PATTERN SELECT DIAL AT "≋", TURN THE HANDWHEEL TO CHECK IF THE CLEARANCE BETWEEN THE NEEDLE, AND THE INNER EDGES OF THE SHUTTLE RACE SPRING AT THE LEFT AND RIGHT NEEDLE DROPS, ARE EQUAL. IF NOT, MAKE AN ADJUSTMENT BY TURNING THE SHUTTLE RACE UNIT.
6. TIGHTEN THE TWO SHUTTLE RACE SET SCREWS (B).
7. SHIFT THE LOWER SHAFT TO THE LEFT TO GET THE GEARS BACK TO THE ORIGINAL POSITION WHILE ADJUSTING THE BACKLASH.
8. TIGHTEN THE SCREW (A) FIRMLY.
9. ATTACH THE REAR COVER.

   NOTE: THE BACKLASH SHOULD BE LESS THAN 0.3 MM AND THE LOWER SHAFT CAN TURN SMOOTHLY.
   AFTER THE ADJUSTMENT, CHECK THE HOOK TIMING.



MECHANICAL ADJUSTMENT

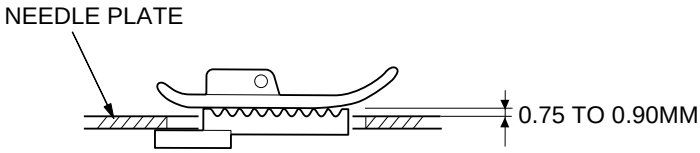
FEED DOG HEIGHT

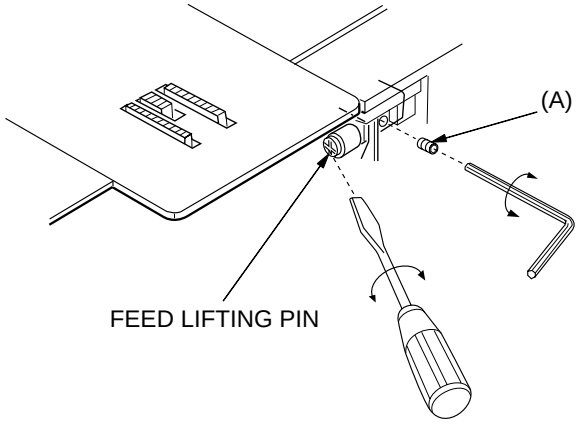
TO CHECK:

1. LOWER THE PRESSER FOOT.
2. TURN THE HANDWHEEL TOWARD YOU TO BRING THE FEED DOG TO ITS HEIGHEST POSITION. THE HEIGHT OF THE FEED DOG FROM THE NEEDLE PLATE SHOULD BE 0.75 TO 0.90 MM.
   IF IT IS NOT IN THE RANGE, ADJUST AS FOLLOWS.

ADJUSTMENT PROCEDURE:

1. OPEN THE BED COVER PLATE.
2. LOWER THE PRESSER FOOT AND TURN THE HANDWHEEL TOWARD YOU UNTIL THE FEED DOG COMES TO ITS HIGHEST POINT.
3. LOOSEN THE SCREW (A) .
4. TURN THE FEED LIFTING PIN TO ADJUST THE HEIGHT OF FEED DOG (0.75–0.90 MM).
5. TIGHTEN THE SCREW (A).
6. TURN THE HANDWHEEL TOWARD YOU TO RECHECK THE HEIGHT OF FEED DOG.





MECHANICAL ADJUSTMENT

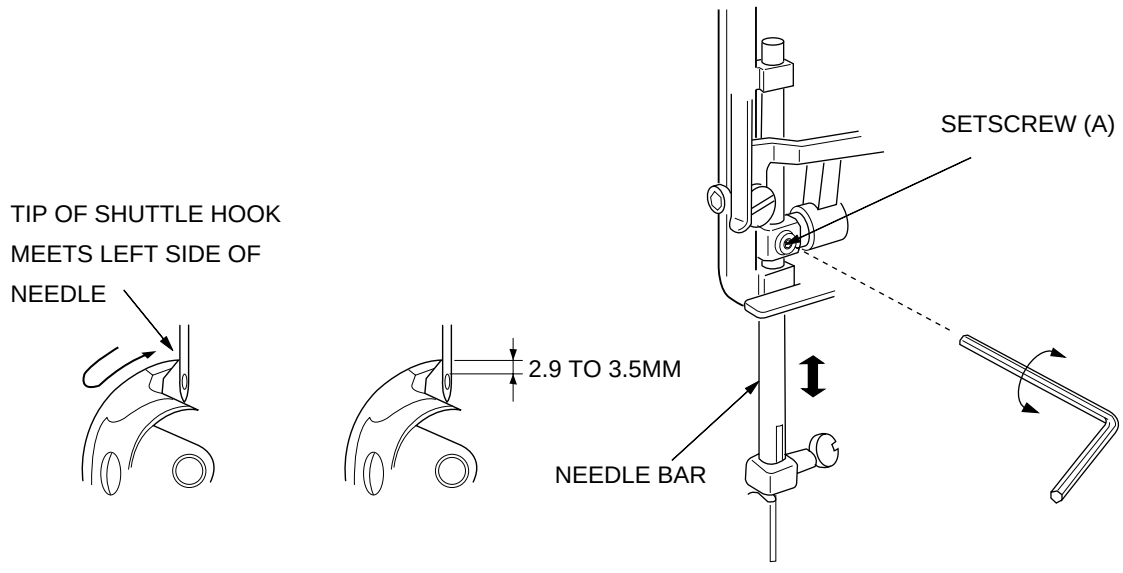
NEEDLE BAR HEIGHT

TO CHECK:

WHEN THE TIP OF SHUTTLE HOOK MEETS THE LEFT SIDE OF THE NEEDLE IN ASCENDING TRAVEL OF THE NEEDLE FROM ITS LEFT AND LOWEST POSITION, THE DISTANCE BETWEEN THE TOP OF THE NEEDLE EYE AND THE TIP OF THE SHUTTLE HOOK SHOULD BE IN THE RANGE OF 2.9–3.5MM.

ADJUSTMENT PROCEDURE:

1. REMOVE THE FACE COVER (SEE PAGE 8).
2. SET THE PATTERN SELECTOR DIAL AT ( ), STITCH WIDTH DIAL AT (0).
3. OPEN THE BED COVER PLATE.
4. REMOVE THE SHUTTLE RACE RING.
5. TURN THE HANDWHEEL TOWARD YOU UNTIL THE TIP OF THE SHUTTLE HOOK MEETS THE LEFT SIDE OF THE NEEDLE.
6. LOOSEN THE NEEDLE BAR CONNECTING STUD SCREW (A).
7. ADJUST THE HEIGHT OF THE NEEDLE BAR BY MOVING THE NEEDLE BAR UPWARD OR DOWNWARD WITHOUT TURNING IT.
8. TIGHTEN THE SCREW (A).
9. ATTACH THE SHUTTLE RACE RING.
10. ATTACH THE FACE COVER.



MECHANICAL ADJUSTMENT

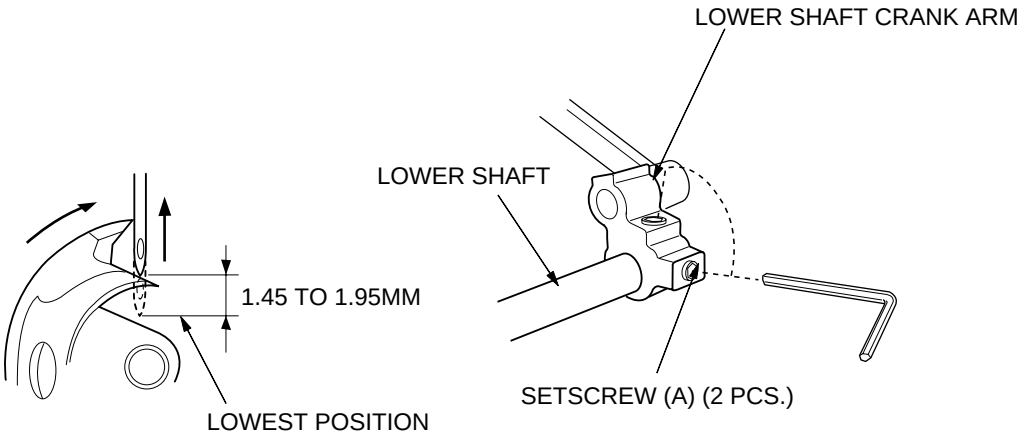
NEEDLE TIMING TO SHUTTLE

TO CHECK:

THE HEIGHT OF THE NEEDLE POINT FROM ITS LOWEST POINT SHOULD BE IN THE RANGE OF 1.45–1.95 MM WHEN THE TIP OF THE SHUTTLE HOOK MEETS THE LEFT SIDE OF THE NEEDLE AT THE LEFT NEEDLE POSITION IN ASCENDING TRAVEL.

ADJUSTMENT PROCEDURE:

1. SET THE PATTERN SELECTOR DIAL AT ( ), STITCH WIDTH DIAL AT "0".
2. REMOVE THE BASE PLATE (SEE PAGE 5).
3. OPEN THE BED COVER PLATE.
4. REMOVE THE SHUTTLE RACE RING.
5. TURN THE HANDWHEEL TOWARD YOU UNTIL THE TIP OF THE SHUTTLE HOOK MEETS THE LEFT SIDE OF THE NEEDLE.
6. LOOSEN THE LOWER SHAFT CRANK ARM SCREWS (A).
7. WHILE HOLDING THE SHUTTLE HOOK SO IT DOESN'T TURN, TURN THE HANDWHEEL TOWARD YOU UNTIL THE NEEDLE COMES TO ITS LOWEST POSITION. THEN, FURTHER TURN THE HANDWHEEL TO RAISE THE NEEDLE ABOUT 1.7 MM FROM ITS LOWEST POSITION.
8. TIGHTEN THE SCREWS (A).
9. TURN THE HANDWHEEL TOWARD YOU TO CHECK IF THE HEIGHT IS IN THE RANGE OF 1.45–1.95 MM.
   IF IT IS NOT IN THIS RANGE, REPEAT THE ABOVE PROCEDURE.
10. ATTACH THE SHUTTLE RACE RING.
11. ATTACH THE BASE PLATE.



MECHANICAL ADJUSTMENT

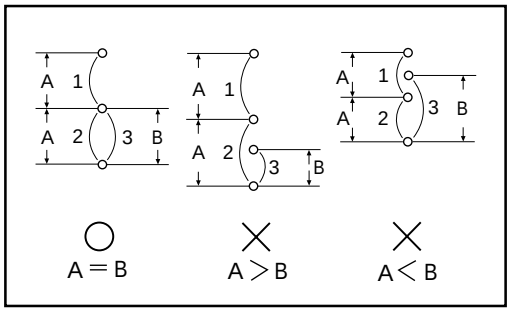
DISTORTED PATTERN

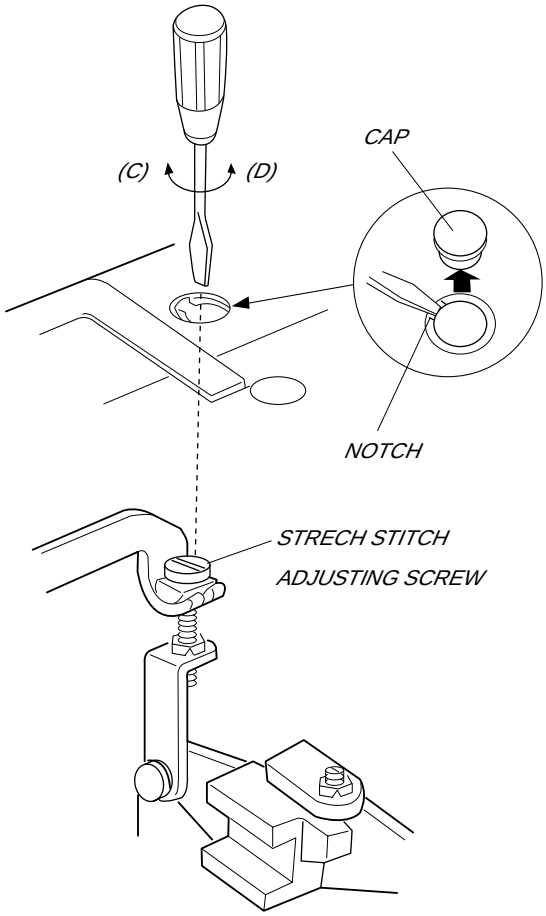
TO CHECK:

IF THE STRETCH STITCH PATTERN ARE DISTORTED WITH SETTING THE STITCH LENGTH DIAL AT " S.S. ". (THE FORWARD AND BACKWARD FEED IS NOT EVEN.) MAKE AN ADJUSTMENT AS FOLLOWS:

ADJUSTMENT PROCEDURE:

1. REMOVE THE CAP.
2. SET THE PATTERN SELECTOR DIAL AT " ", WIDTH SELECTOR DIAL " 0 " AND THE STITCH LENGTH DIAL AT " S.S. ".
3. TURN THE STRETCH STITCH ADJUSTING SCREW IN THE DIRECTION OF (C) WHEN A > B, OR IN THE DIRECTION OF (D) WHEN A < B.
4. MOUNT THE CAP.





MECHANICAL ADJUSTMENT

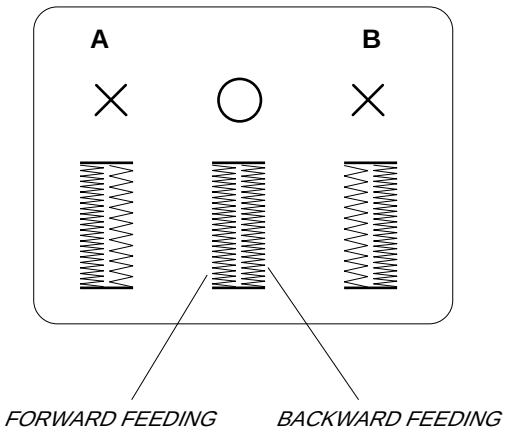
BUTTONHOLE FEED BALANCE

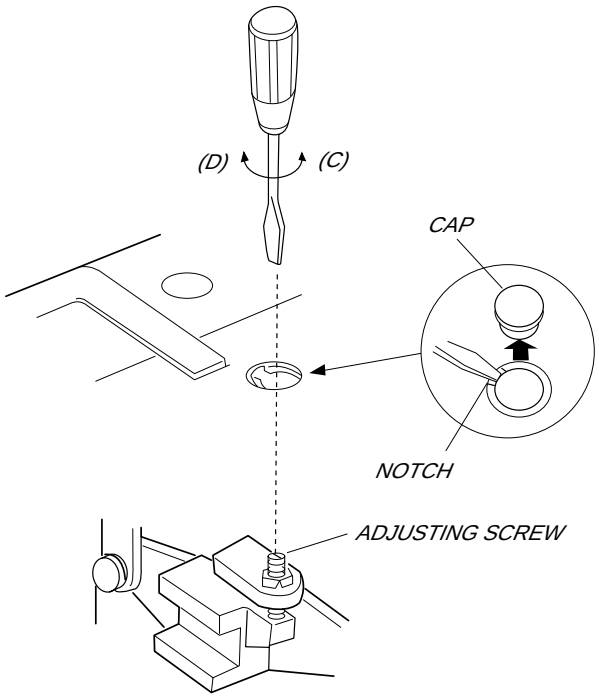
TO CHECK:

WHEN SEWING THE BUTTONHOLE, THE STITCHES ON EACH SIDE OF THE BUTTONHOLE SHOULD BE THE SAME STITCH DENSITY.
THE RANGE OF 9-12 STITCHES IN THE RIGHT SIDE ROW “BACKWARD FEEDING”, AGAINST 10 STITCHES IN THE LEFT SIDE ROW “FORWARD FEEDING”, IS CONSIDERED ACCEPTABLE.

ADJUSTMENT PROCEDURE:

1. CONFIRM THE STITCHES BY SEWING BUTTONHOLES, AND REMOVE THE CAP.
2. TURN THE ADJUSTING SCREW IN THE DIRECTION OF (C) IN THE CASE OF **A** (RIGHT STITCHES ARE ROUGH), OR IN THE DIRECTION OF (D) IN THE CASE OF **B** (LEFT STITCHES ARE ROUGH).
3. MOUNT THE CAP.





MECHANICAL ADJUSTMENT

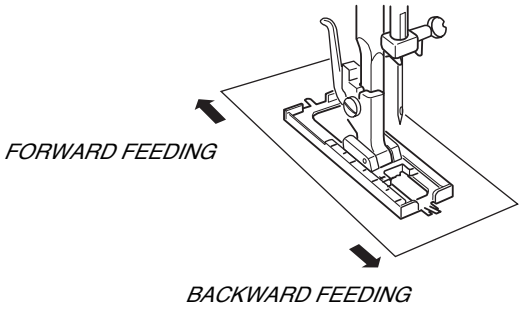
BARTACK FEED OF BUTTONHOLE

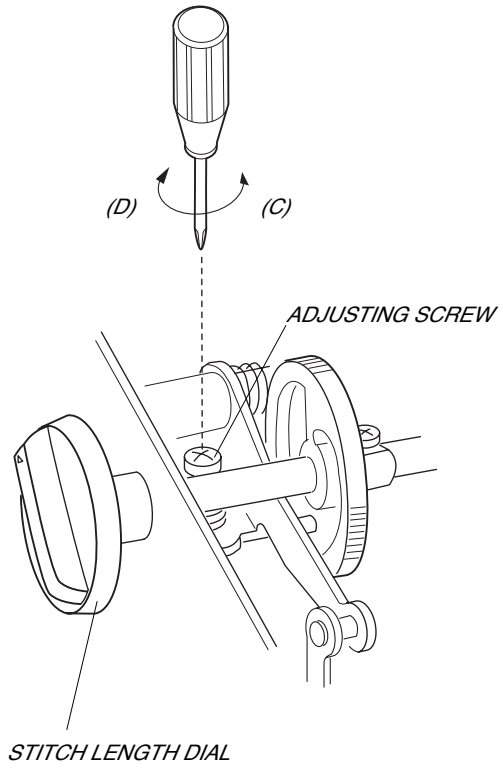
TO CHECK:

IF THE MATERIAL IS FED FORWARD OR BACKWARD WHEN SEWING A BARTACK ON BUTTONHOLE, MAKE THE FOLLOWING ADJUSTMENT:

ADJUSTMENT PROCEDURE:

1. SET THE PATTERN SELECTOR DIAL AT " 4/2 " AND THE STITCH LENGTH DIAL AT " 4 ".
2. REMOVE THE FRONT COVER. (SEE PAGE 9.)
3. PLACE A PIECE OF PAPER UNDER THE FOOT, AND TURN THE HANDWHEEL.
   IF THE PAPER IS FED FORWARD, TURN THE ADJUSTING SCREW IN THE DIRECTION OF (C).
   IF THE PAPER IS FED BACKWARD, TURN THE ADJUSTING SCREW IN THE DIRECTION OF (D).
4. MOUNT THE FRONT COVER.



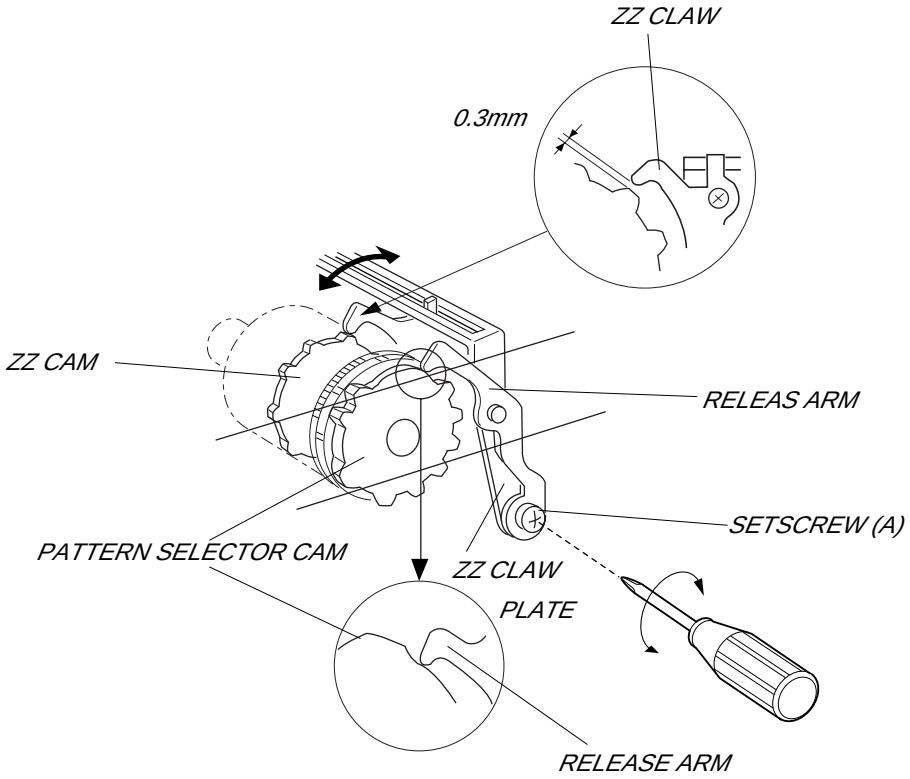


MECHANICAL ADJUSTMENT

CAM CLAW RELEASE

IF THE PATTERN SELECTOR DIAL WILL NOT TURN OR IS CLOGGED UP,OR IF THE WRONG PATTERN IS SELECTED, ADJUST THE CLEARANCE BETWEEN THE CAM AND CAM CLAW AS FOLLOWS.

1. SELECT THE PATTERN**"** ⊂⋮⊃ **"**AND SET THE STITCH WIDTH AT "0".
2. REMOVE THE FRONT COVER. (SEE PAGE 9.)
3. LOOSEN THE SETSCREW (A) AND MOVE THE ZZ CLAW PLATE WHILE PUSHING THE RELEASE ARM AGAINST THE PATTERN SELECTOR CAM TO SET THE TIP OF ZZ CLAW AT THE PEAK OF ZZ CAM.
4. TIGHTEN THE SETSCREW (A).
5. CHECK IF THE CLEARANCE BETWEEN THE ZZ CAM AND CAM CLAW IS 0.3 MM WHEN TURNING THE PATTERN SELCTOR DIAL (WHEN THE CLAW IS MOVING).



MECHANICAL ADJUSTMENT

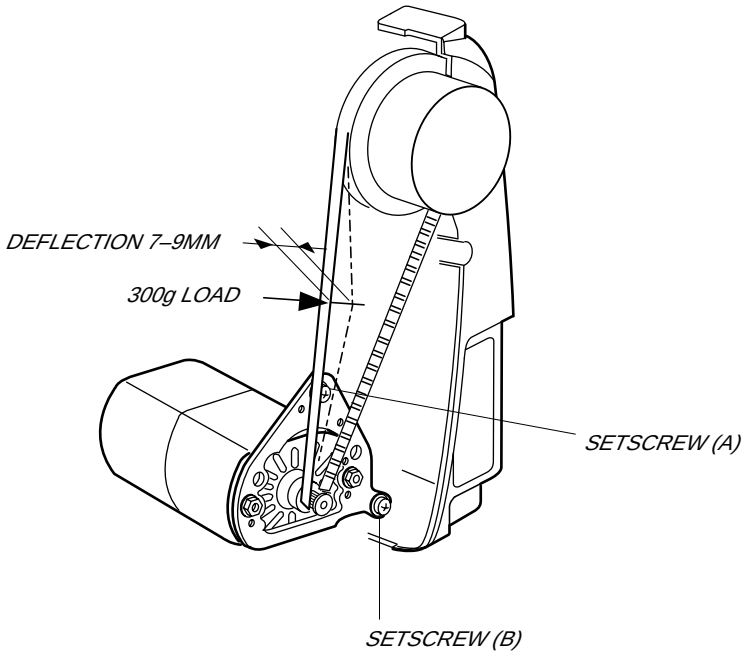
MOTOR BELT TENSION

TO CHECK:

1. IF THE MOTOR BELT TENSION IS TOO TIGHT OR TOO LOOSE, IT CAN CAUSE A BELT NOISE: IF THE TENSION IS TOO TIGHT, IT CAN CAUSE THE MACHINE TO RUN SLOWLY AND THE MOTOR TO OVERLOAD; IF THE TENSION IS TOO LOOSE; IT CAN CAUSE THE BELT TEETH ON THE MOTOR PULLEY TO JUMP.
2. THE CORRECT MOTOR BELT TENSION IS WHEN THE DEFLECTION OF MOTOR BELT IS ABOUT 7 MM (0.28") - 9 MM (0.36"). (WHEN PUSHING THE MOTOR BELT BY FINGER WITH A 300 GRAM LOAD.)

ADJUSTMENT PROCEDURE:

1. REMOVE THE FRONT COVER. (SEE PAGE 9)
2. LOOSEN THE SCREWS (A) AND (B).
3. MOVE THE MOTOR UP OR DOWN TO ADJUST THE DEFLECTION ABOUT 7 MM (0.28") TO 9 MM (0.36").
4. TIGHTEN THE SCREWS (A) AND (B).

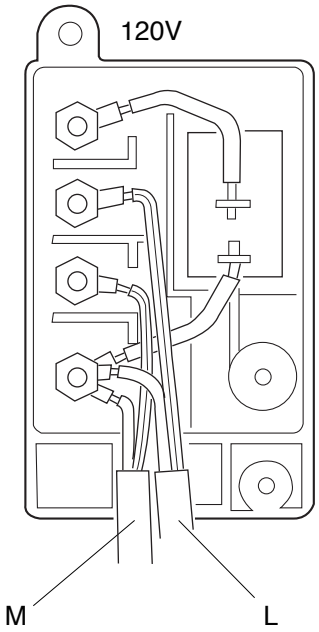


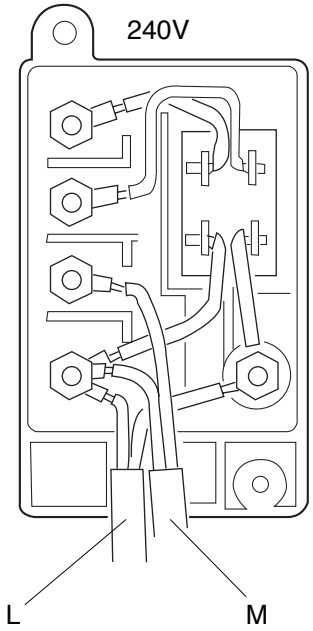
WIRING

1.WIRING FOR MACHINE SOCKET UNIT

M: MOTOR

L: LAMP





OILING

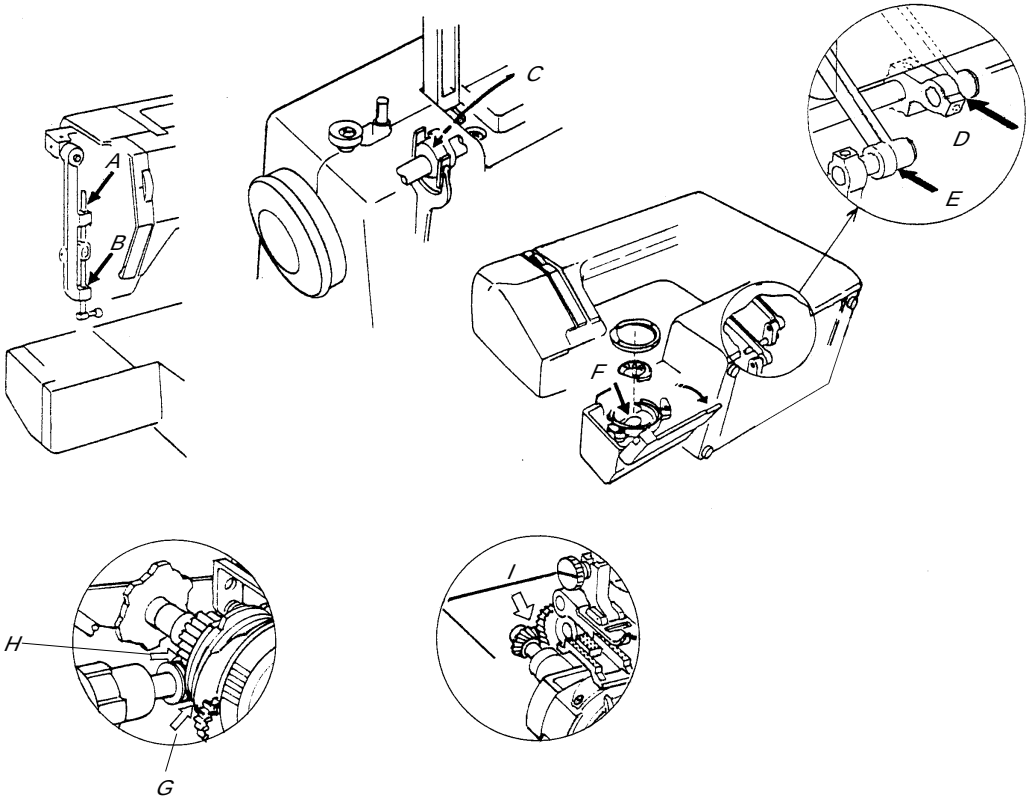
FACTORY LUBRICATED PARTS WILL PROVIDE YEARS OF HOUSEHOLD SEWING WITHOUT ROUTINE OILING. HOWEVER, WHENEVER THE MACHINE IS BEING SERVICED, CHECK TO SEE IF ANY PARTS NEED TO BE LUBRICATED.

OIL

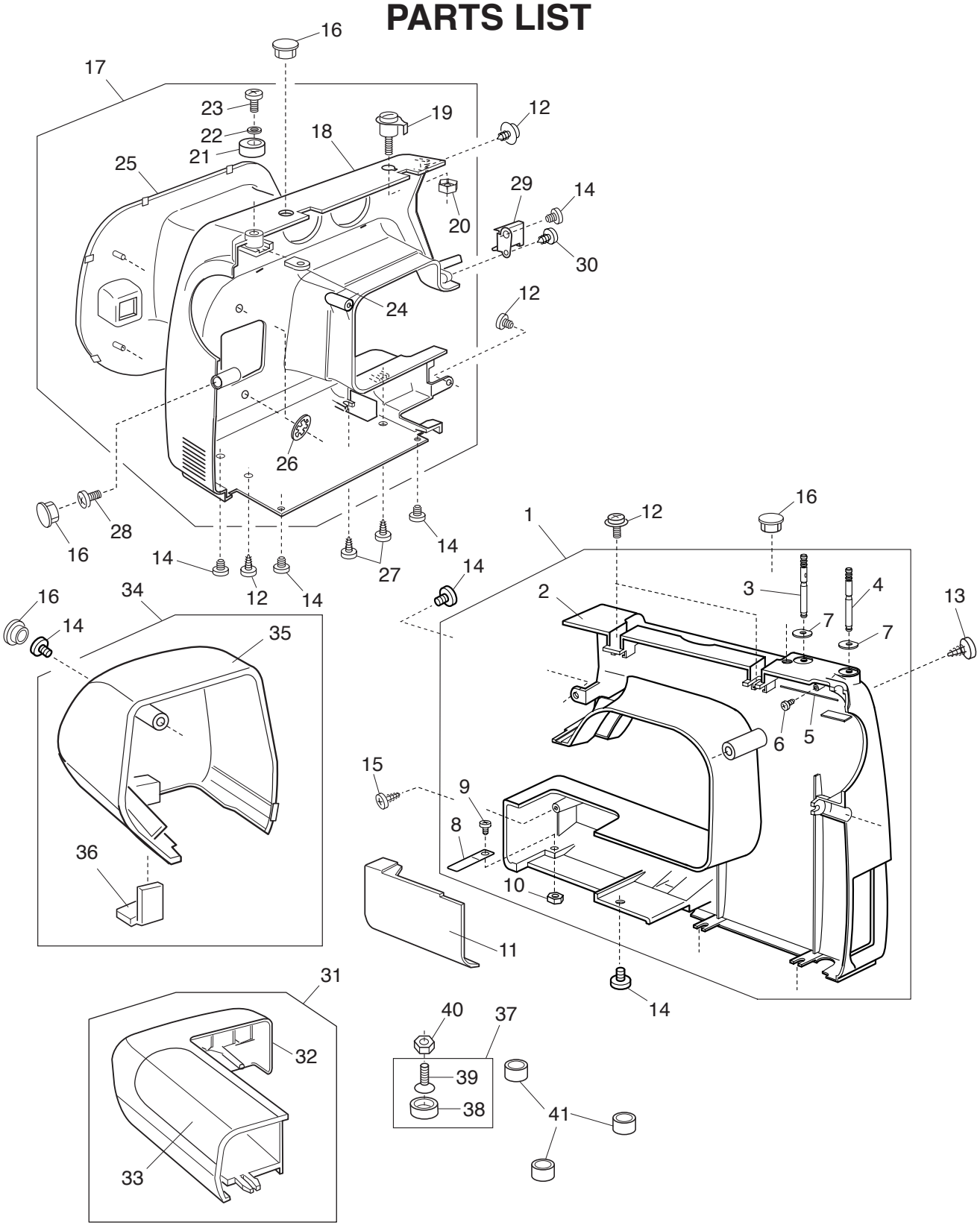
USE GOOD QUALITY SEWING MACHINE OIL AT THE POINTS (A, B, C, D, E, F) INDICATED BY BLACK ARROWS.

GREASE

WHITE GREASE IS RECOMMENDED FOR USE ON GEARS AND CAM SURFACES. IT IS AN IMPROVED GREASE, AND IT CAN BE USED ON THE METAL AND PLASTIC PARTS WHICH POINTS ARE INDICATED BY THE WHITE ARROWS(G,H & I).



PARTS LIST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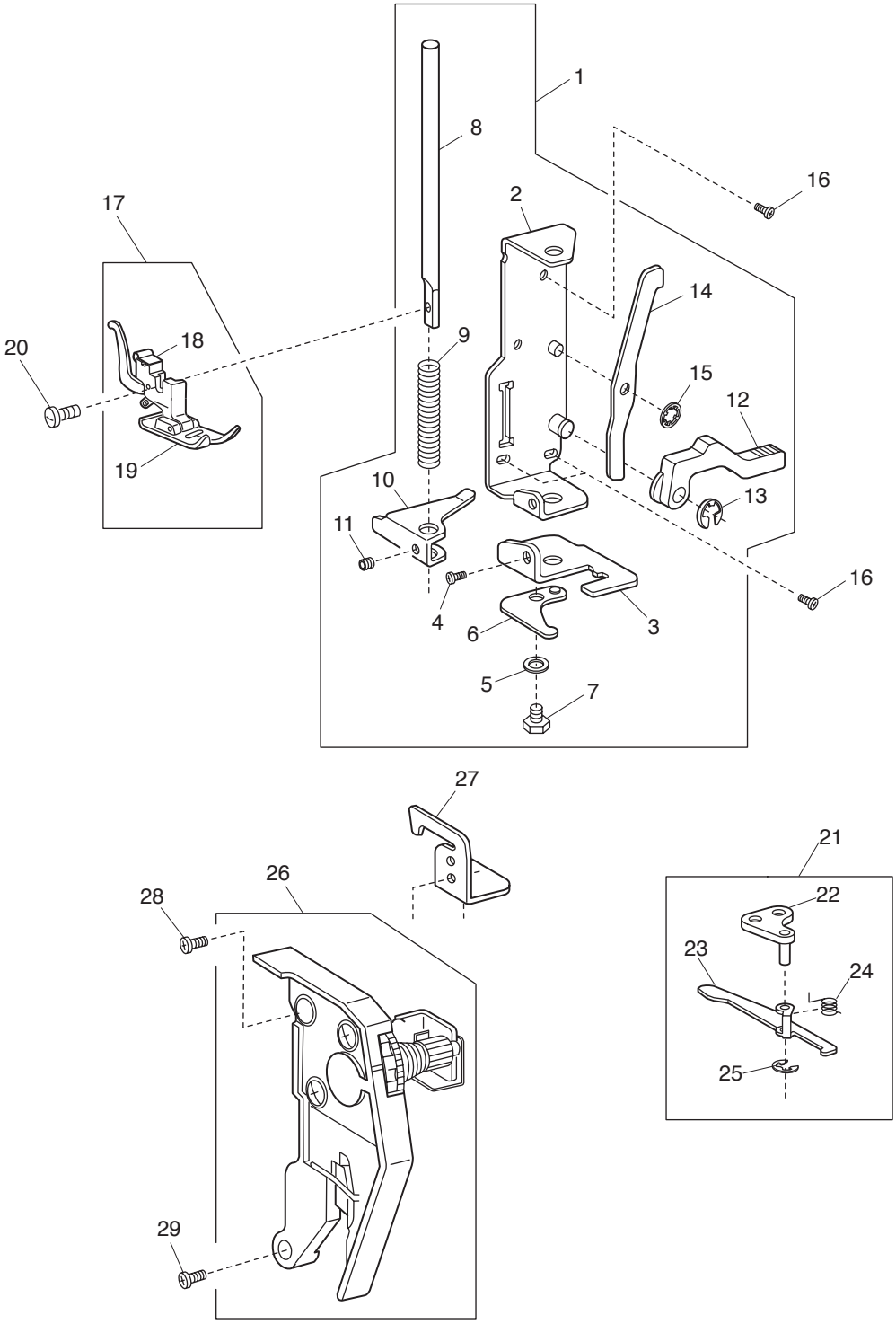
PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	302601002	Rear cover (unit)
2	302001109	Rear cover
3	652302004	Spool pin
4	652205006	Spool pin
5	736007009	Spool pin spring
6	000076317	Tapping screw 3x10
7	735013005	Spool pin spring base
8	730006000	Spring
9	000101404	Setscrew 4x6
10	000061205	Nut
11	739004005	Bed cover plate
12	000115205	Setscrew TP 4x6
13	000119601	Tapping screw 4x25 (B)
14	000081005	Setscrew 4x8
15	000121905	Tapping screw 4x12 (B)
16	653006101	Cap
17	302606487	Front cover (unit)
18	302010B01	Front cover
19	730501011	Thread guide plate (unit)
20	000160102	Adjustable lock nut 4
21	735016307	Bobbin winder stopper
22	000071013	Washer
23	000103107	Setscrew 4x14
24	843014004	Nut
25	302011B01	Panel
26	000014007	Snap ring CS-4
27	000115607	Setscrew TP 4x8
28	000101703	Setscrew 4x12
29	740022003	Thread guide plate
30	000107307	Tapping screw 3x8 (B)
31	302502507	Extension table (unit)
32	302002007	Extension table
33	302003503	Extension table cover
34	302603060	Face cover (unit)
35	302004A01	Face cover
36	840602006	Thread cutter (unit)
37	735616200	Rubber base (unit)
38	735002001	Rubber base
39	000097901	Flat screw M5x18
40	000061319	Nut
41	739064003	Bed rubber base

PARTS LIST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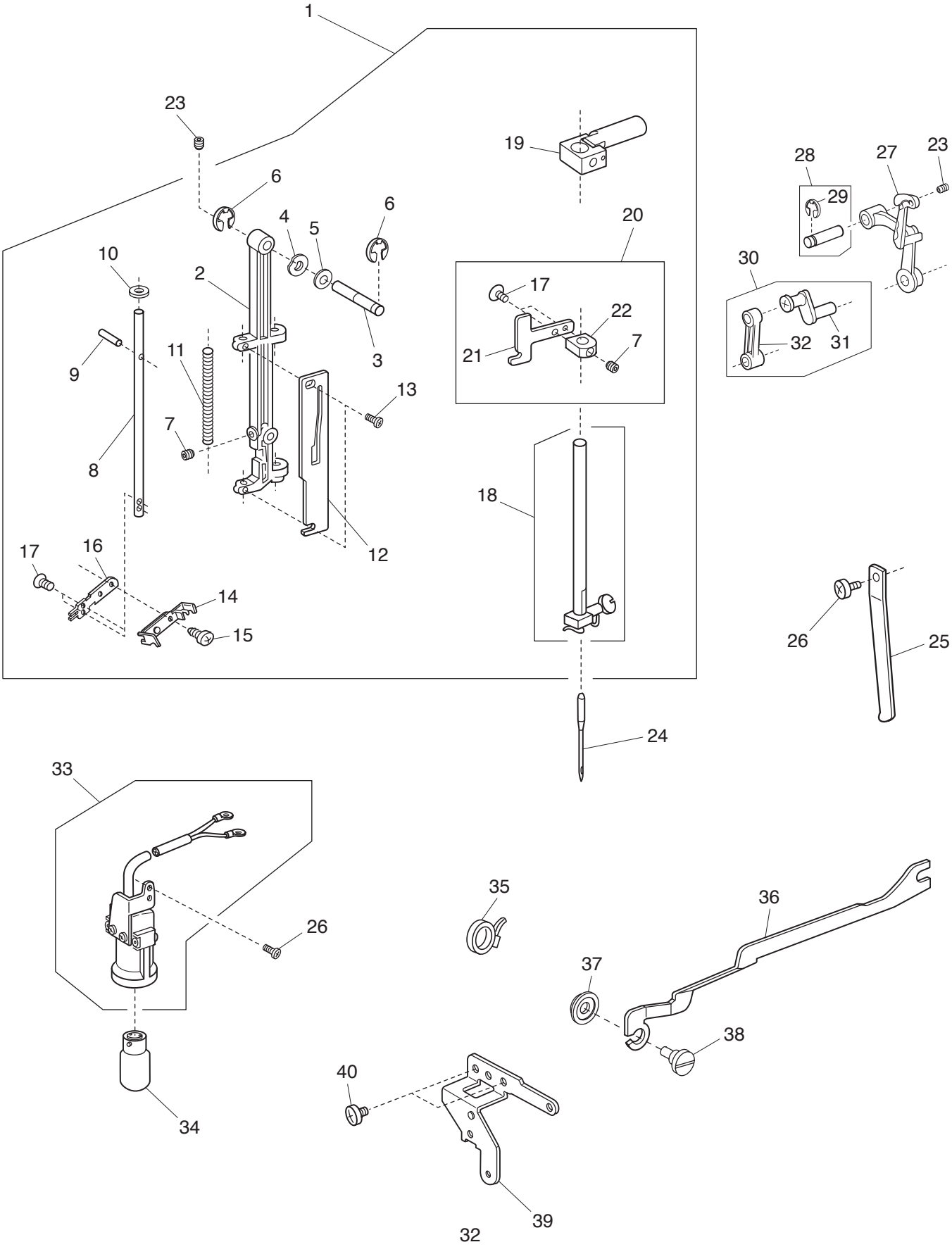
PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	735626100	Presser bar base plate (unit)
2	735221008	Presser bar base plate
3	735222009	Needle drop adjusting plate
4	000101404	Setscrew 4x6
5	000070506	Washer
6	735025000	Presser bar supporter stopper
7	000138307	Bolt 4x8
8	735194104	Presser bar
9	735027002	Presser bar spring
10	735028003	Presser bar bracket
11	000111500	Hexagon socket screw 4x8
12	735029004	Presser foot lifter
13	000001609	Snap ring E-5
14	735030008	Tension release lever
15	000013903	Snap ring CS-5
16	000081005	Setscrew 4x8
17	301612003	Presser foot (unit)
18	611510000	Presser foot holder (unit)
19	301505002	Zigzag foot (unit)
20	660106001	Thumbscrew
21	741604008	Tension release arm (unit)
22	739017001	Tension release arm base
23	741008006	Tension release arm
24	739019003	Tension release spring
25	000002105	Snap ring E-3
26	302501034	Thread tension (unit)
27	739016000	Top cover thread guide
28	000103808	Setscrew 3x5
29	000010703	Setscrew 4x12

MODEL: Facility 21

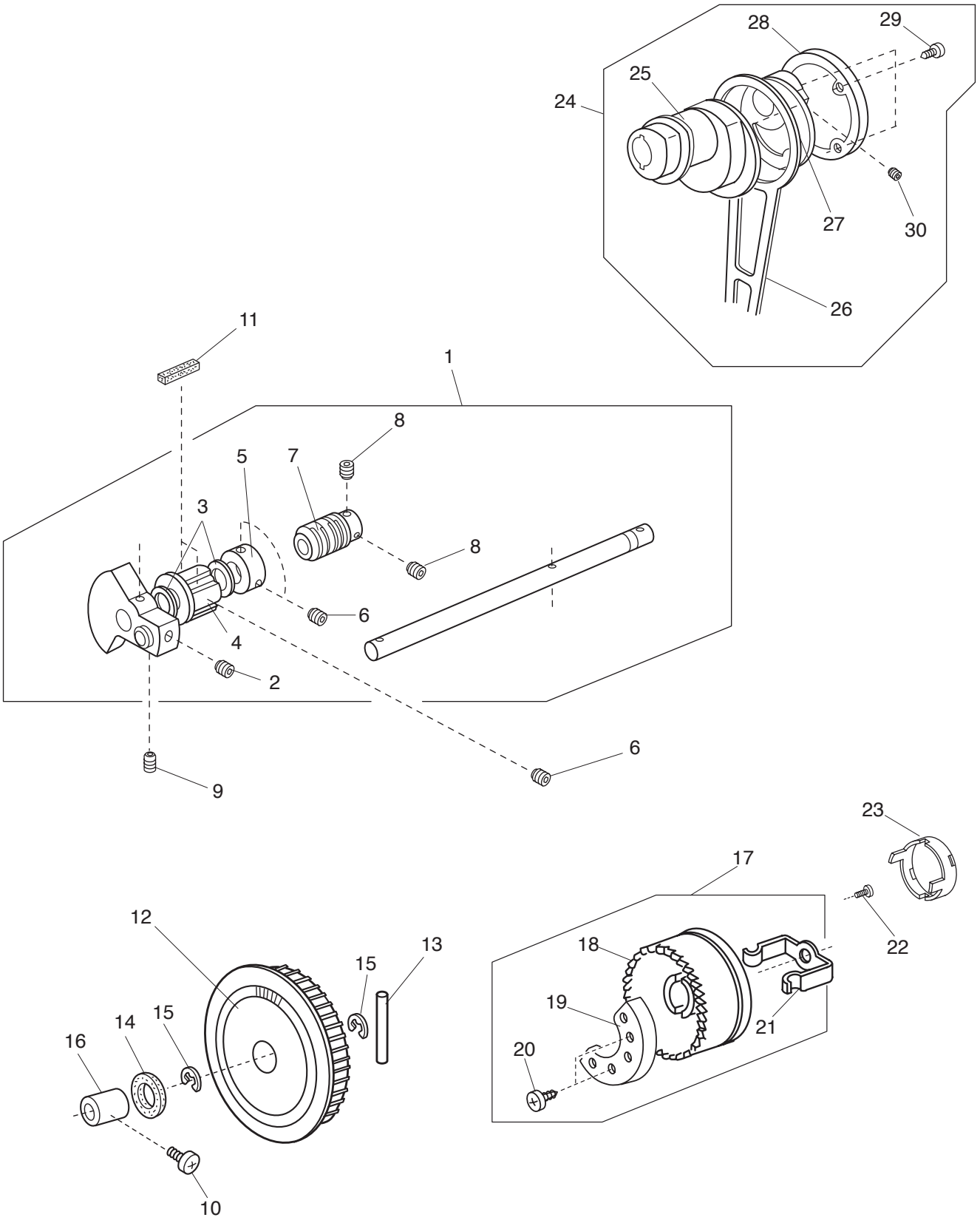
PARTS LIST



PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	301613808	Needle bar supporter (unit)
2	301032106	Needle bar supporter
3	730022002	Needle bar supporter pin
4	673022002	Washer
5	000070609	Washer 6
6	000002507	Snap ring E-4
7	000111902	Hexagonal socket screw 3x4
8	734093017	Needle threader shaft
9	000122906	Pin E-2x14-CH
10	734107004	Washer
11	734094007	Needle threader spring
12	735196003	Needle threader plate
13	000101105	Setscrew 3x4
14	734515009	Needle threader plate (unit)
15	000105501	Setscrew 1.6x2.5
16	834015007	Needle threader lever
17	000097602	Setscrew 2x4
18	730503116	Needle bar (unit)
19	301504104	Needle bar connecting stud (unit)
20	735628009	Needle threader set plate (unit)
21	735197004	Needle threader set plate
22	734102009	Needle threader base
23	000111304	Hexagonal socket screw 5x5
24	102408089	Needle
25	730024004	Needle bar supporter spring
26	000101404	Setscrew 4x6
27	625506109	Thread take-up lever (unit)
28	731511006	Thread take-up lever pin (unit)
29	000002806	Snap ring E-6
30	743664105	Needle bar crank (unit)
31	735504008	Needle bar crank pin (unit)
32	680032007	Needle bar crank rod
33	743634003	Lamp socket (unit)
34	000009009	Lamp 240V 15W
35	000053709	Cord tie band
36	735119002	Zigzag rod
37	748021006	Zigzag rod plain washer
38	678084007	Eccentric pin
39	740007013	Face plate set plate
40	000081005	Setscrew 4x8

PARTS LIST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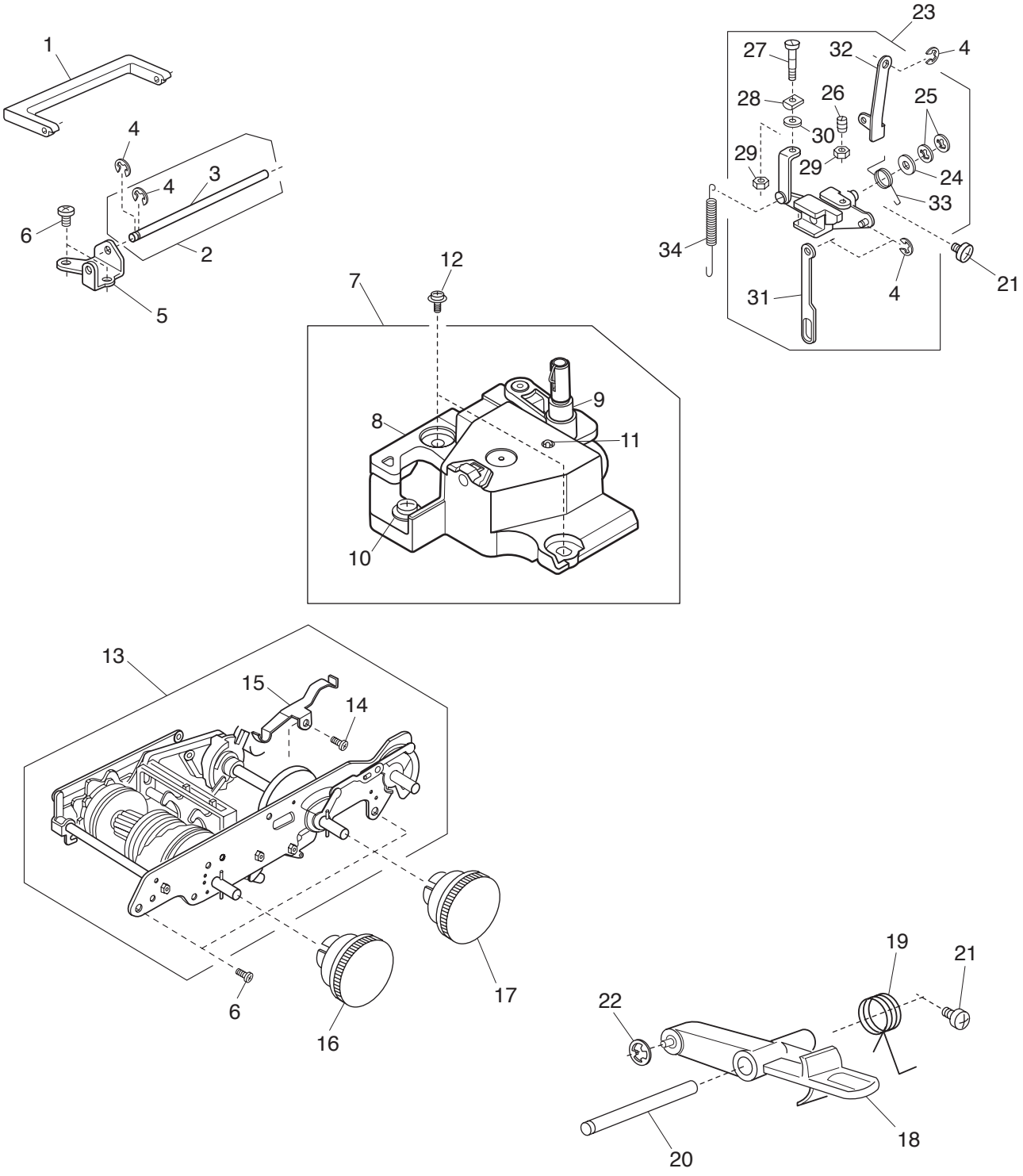
PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	304607200	Upper shaft (unit)
2	102073003	Setscrew
3	000036717	Thrust washer
4	732025001	Upper shaft front bushing
5	639095000	Ring
6	000111304	Hexagon socket screw 5x5
7	751146101	Worm
8	000111201	Hexagon socket screw 4x4
9	761052007	Setscrew
10	000172602	Setscrew 5x8
11	731312005	Felt
12	743019006	Belt wheel
13	000023803	Spring pin
14	743029009	Felt
15	000030205	Snap ring E-8
16	732003003	Upper shaft rear bushing
17	302604201	Handwheel (unit)
18	302007208	Handwheel
19	304050006	Balance weight
20	000107802	Tapping screw 3x10 (B)
21	639113016	Clutch spring
22	000081005	Setscrew 4x8
23	650070587	Clutch cap
24	304609006	Crank rod (unit)
25	304042005	Feed cam
26	743011008	Crank rod
27	304044007	Crank cam
28	304043006	Crank cam plate
29	000161309	Tapping screw 3x12
30	000110107	Hexagon socket screw 5x5

PARTS LIST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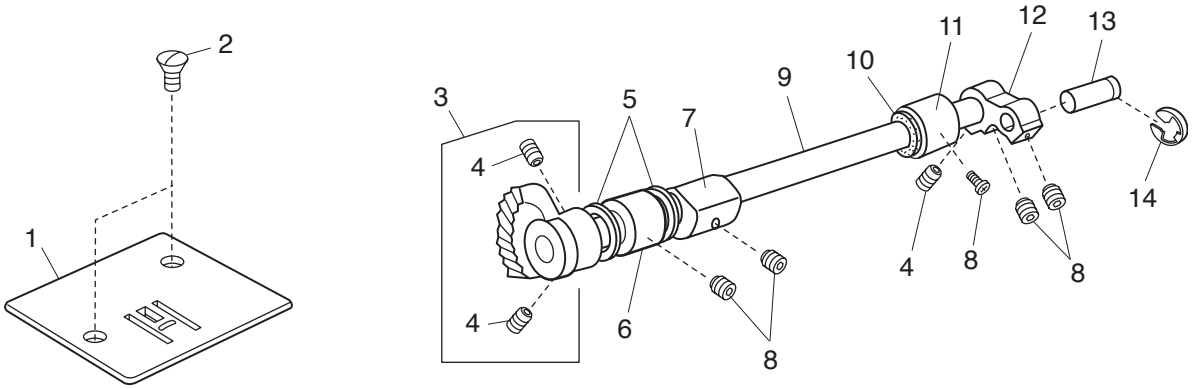
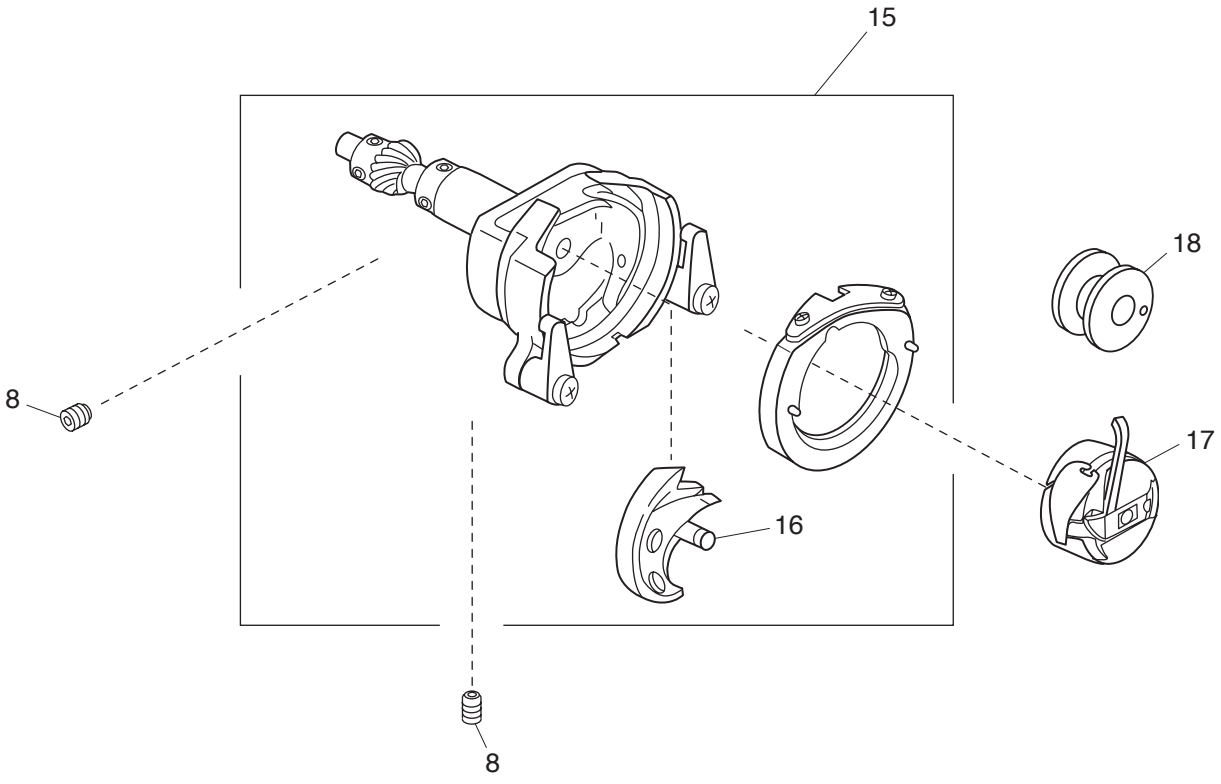
PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	302006001	Handle
2	740624001	Handle shaft (unit)
3	740011009	Handle shaft
4	000002105	Snap ring E-3
5	740010008	Handle supporter
6	000081005	Setscrew 4x8
7	311606005	Bobbin winder supporter (unit)
8	311011007	Bobbin winder base plate
9	311503001	Bobbin winder arm (unit)
10	000109103	Setscrew 4x12
11	740042009	Bobbin winder arm spring
12	000115607	Setscrew TP 4x8
13	745606208	Zigzag mechanism (unit)
14	000103808	Setscrew 3x5
15	737011009	Index spring
16	302029A01	Dial
17	302029A02	Dial
18	302008601	R button
19	739063002	R button spring
20	736015000	R button shaft
21	000101301	Setscrew 5x10
22	000014007	Snap ring CS-4
23	736604105	Feed regulator (unit)
24	735073003	Plain washer
25	000013800	Snap ring CS-6
26	648010009	Setscrew
27	735074004	SS adjusting screw
28	735076006	SS rod block
29	000160102	Adjustable lock nut 4
30	000071013	Washer
31	745052007	Reverse link
32	739020007	Feed regulating rod
33	735077007	Feed regulating body spring
34	740125001	Feed regulator spring

PARTS LIST

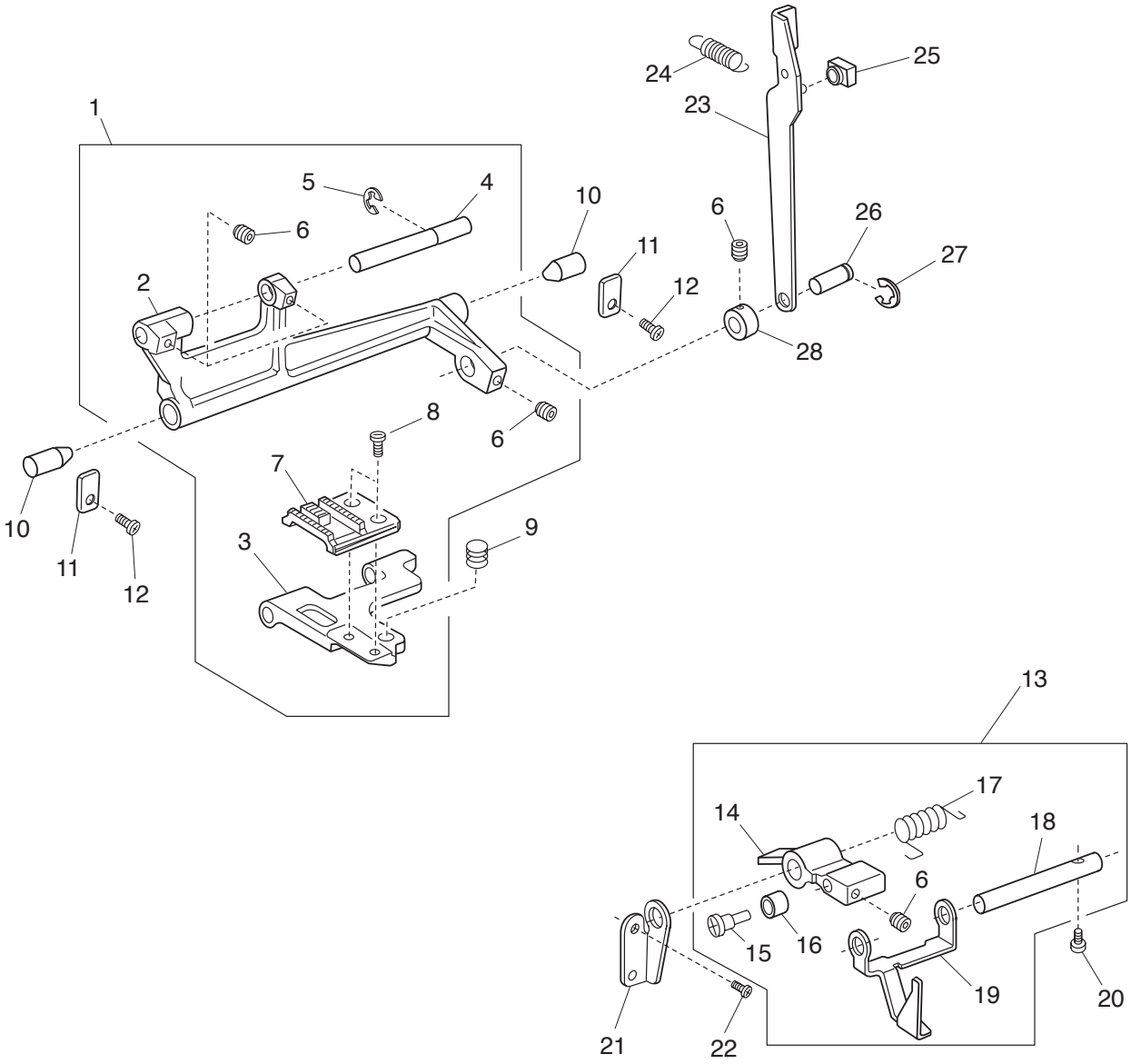




PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	744004001	Needle plate
2	681009101	Setscrew
3	735950003	Lower shaft gear (unit)
4	000110107	Hexagon socket screw 5x5 (WP)
5	000036201	Washer 8-0.5
6	735233003	Bushing
7	735061101	Feed lifting cam
8	000111304	Hexagon socket screw 5x5
9	735236006	Lower shaft
10	822070003	Felt
11	735234004	Bushing
12	639036003	Lower shaft crank arm
13	639037004	Pin
14	000001609	Snap ring E-5
15	735610101	Shuttle race body (unit)
16	532096007	Shuttle hook
17	647515006	Bobbin case (unit)
18	102261000	Bobbin

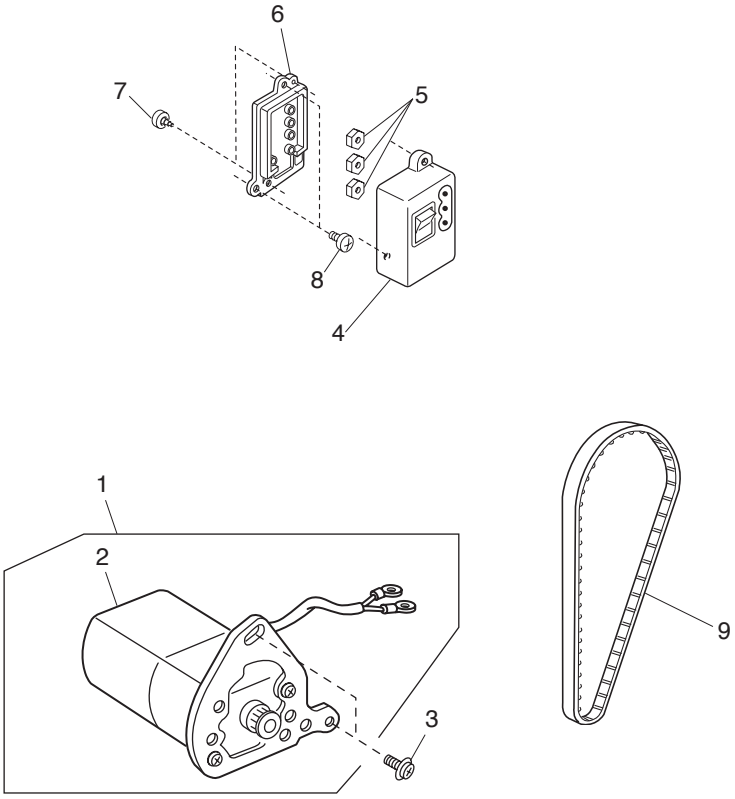
PARTS LIST



PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	735612000	Feed rock shaft (unit)
2	735078008	Feed rock shaft
3	735079009	Feed bar
4	735080003	Feed bar shaft
5	000002507	Snap ring E-4
6	000111201	Hexagon socket screw 4x4
7	735081004	Feed dog
8	735082005	Setscrew
9	735083006	Feed bar spring
10	735084007	Feed rock shaft center
11	735085008	Feed rock shaft center plate
12	000101404	Setscrew 4x6
13	301609007	Feed lifting arm (unit)
14	301027005	Feed lifting arm
15	735087000	Feed lifting pin
16	735088001	Feed lifting roller
17	730061003	Feed lifting spring
18	735090006	Feed lifting shaft
19	740013001	Drop feed selecting plate
20	000101703	Setscrew 4x12
21	739022009	Feed lifting shaft holder
22	000081119	Setscrew 4x6
23	743012009	Feed rod
24	743013000	Feed rod spring
25	102141003	Feed regulator slide block
26	735071104	Feed rock shaft connecting pin
27	000002806	Snap ring E-6
28	735276008	Ring

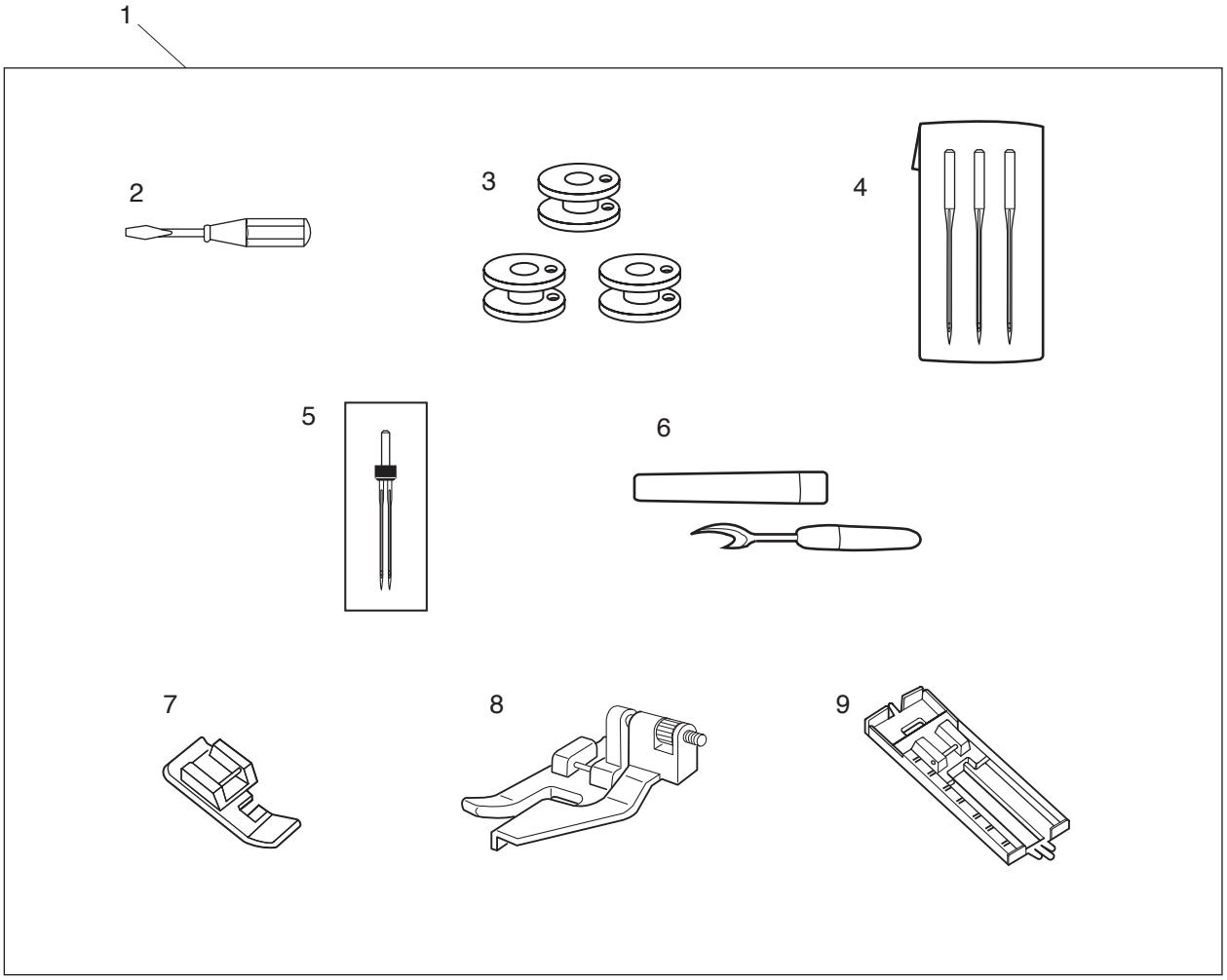
PARTS LIST

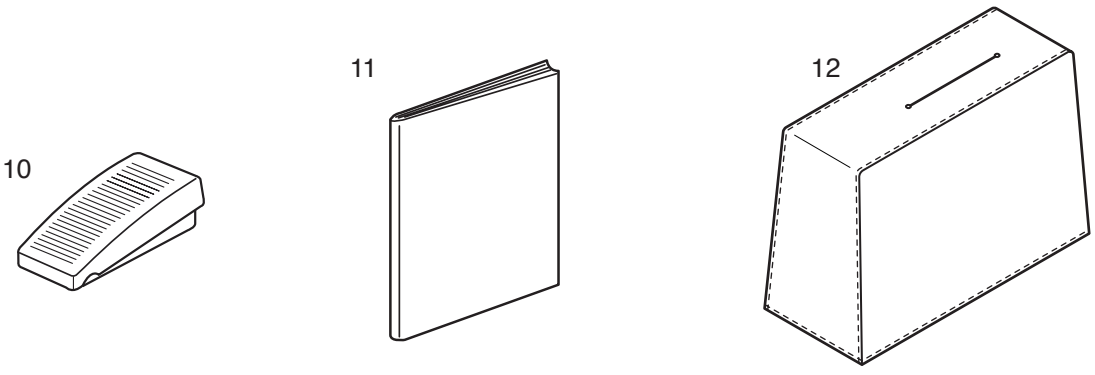


PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	743671002	Motor (unit)
2	025501003	Motor
3	000201209	Setscrew TP 5x12
4	739503308	Machine socket (unit)
5	000060802	Nut 3-1-5.5
6	739037007	Machine socket cover
7	000107802	Setscrew 3x10
8	000103509	Setscrew 4x10
9	650166019	Motor timing belt

PARTS LIST





PARTS LIST

KEY NO.	PARTS NO.	DESCRIPTION
1	302870406	Accessories (unit)
2	647803004	Screwdriver (small)
3	102261000	Bobbin
4	639804000	Needle set (unit)
5	302804007	Twin needle (unit)
6	647808009	Seam ripper
7	611406002	Zipper foot (unit)
8	611411000	Blind foot (unit)
9	611413002	BH foot (unit)
10	045501005	Foot controller
11	302800678	Instruction book
12	741811000	Cover