

CHICAGO

Electric

SEWING MACHINE 45 / 21 STITCH

Model 90715

ASSEMBLY AND OPERATING INSTRUCTIONS



3491 MISSION OAKS BLVD., CAMARILLO, CA 93011
VISIT OUR WEB SITE AT [HTTP://WWW.HARBORFREIGHT.COM](http://www.harborfreight.com)

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For technical questions and replacement parts, please call 1-800-444-3353

SPECIFICATIONS

Item	Description
Power Consumption	120 VAC, 60 Hz
Power Cord	Two prong, polarized, 6 feet, UL listed, double insulated
Sewing Functions	45 selectable stitch functions and 21 built-in stitches, forward and reverse by select lever; button function with built-in, one step button holer
Needle Positions	Left to extreme right
Features	<ul style="list-style-type: none">- Bobbin winder- Stitch length and width control- Adjustable thread and tension control- Built-in accessory compartment- Electronic, variable speed foot control- Can sew through multi-layered, light to medium heavy fabrics- Built-in carrying handle
Accessories	Oiler, 3 needles, quilting guide, snap-on zigzag foot; 3 bobbins, two screwdrivers
Weight	18.7 lbs
Overall Dimensions	8-5/8 x 13-1/2 x 17-1/4 inches

Note: This Sewing Machine is intended for household use.

SAVE THIS MANUAL

You will need the manual for the safety warnings and precautions, assembly instructions, operating and maintenance procedures, parts list and diagram. Keep your invoice with this manual. Write the invoice number on the inside of the front cover. Keep the manual and invoice in a safe and dry place for future reference.

GENERAL SAFETY RULES



WARNING!

READ AND UNDERSTAND ALL INSTRUCTIONS. Failure to follow all instructions listed below may result in electric shock, fire, and/or serious injury.

SAVE THESE INSTRUCTIONS

Work Area

1. Keep your work area clean and well lit. Cluttered benches and dark areas invite accidents.
2. Do not operate power machines in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust. Power machines create sparks which may ignite the dust or fumes.
3. Keep bystanders, children, and visitors away while operating a power machine. Distractions can cause you to lose control. Protect others in the work area from machine operation. Provide barriers or shields as needed.

Electrical Safety

4. Avoid body contact with grounded surfaces such as pipes, radiators, ranges, and refrigerators. There is an increased risk of electric shock if your body is grounded.
5. Do not expose power machines to rain or wet conditions. Water entering a power machine will increase the risk of electric shock.
6. Grounded machines must be plugged into an outlet properly installed and grounded in accordance with all codes and ordinances. Never remove the grounding prong or modify the plug in any way. Do not use any adapter plugs. Check with a qualified electrician if you are in doubt as to whether the outlet is properly grounded. If the machines should electrically malfunction or break down, grounding provides a low resistance path to carry electricity away from the user.
7. This double insulated machine is equipped with a polarized plug (one blade is wider than the other). This plug will fit in a polarized outlet only one way. If the plug does not fit fully in the outlet, reverse the plug. If it still does not fit, contact a qualified electrician to install a polarized outlet. Do not change the plug in any way. Double insulation eliminates the need for the three wire grounded power cord and grounded power supply system.
8. Do not abuse the Power Cord. Never use the Power Cord to carry the machines or pull the Plug from an outlet. Keep the Power Cord away from heat, oil, sharp edges, or moving parts. Replace damaged Power Cords immediately. Damaged Power Cords increase the risk of electric shock.
9. When operating a power machine outside, use an outdoor extension cord marked “W-A” or “W”. These extension cords are rated for outdoor use, and reduce the risk of electric shock.
10. Always connect the Line Cord to a Ground Fault Circuit Interrupter (GFCI) protected electrical outlet.

Personal Safety

11. Stay alert. Watch what you are doing, and use common sense when operating a power tool. Do not use a power tool while tired or under the influence of drugs, alcohol, or medication. A moment of inattention while operating power machines may result in serious personal injury.
12. Dress properly. Do not wear loose clothing or jewelry. Contain long hair. Keep your hair, clothing, and gloves away from moving parts. Loose clothes, jewelry, or long hair can be caught in moving parts.
13. Avoid accidental starting. Be sure the Power Switch is off before plugging in. Plugging in power tools with the Power Switch on, invites accidents.
14. Remove adjusting keys or wrenches before turning the power machine on. A wrench or a key that is left attached to a rotating part of the power machine may result in personal injury.

15. Do not overreach. Keep proper footing and balance at all times. Proper footing and balance enables better control of the power tool in unexpected situations.
16. Use safety equipment. Always wear eye protection.

Machine Use and Care

17. Do not force the machine. Use the correct machine for your application. The correct machine will do the job better and safer at the rate for which it is designed.
18. Do not use the power machine if the Power Switch does not turn it on or off. Any machine that cannot be controlled with the Power Switch is dangerous and must be replaced.
19. Disconnect the Power Cord Plug from the power source before making any adjustments, changing accessories, or storing the machine. Such preventive safety measures reduce the risk of starting the machine accidentally.
20. Store idle machines out of reach of children and other untrained persons. Machines are dangerous in the hands of untrained users.
21. Maintain machines with care. Keep cutting tools sharp and clean. Properly maintained tools with a sharp cutting edge are less likely to bind and are easier to control. Do not use a damaged machine. Tag damaged machines "Do not use" until repaired.
22. Check for misalignment or binding of moving parts, breakage of parts, and any other condition that may affect the machine's operation. If damaged, have the machine serviced before using. Many accidents are caused by poorly maintained machines.
23. Use only accessories that are recommended by the manufacturer for your model. Accessories that may be suitable for one tool may become hazardous when used on another tool.

Service

24. Machine **service** must be performed only by qualified repair personnel. Service or maintenance performed by unqualified personnel could result in a risk of injury.
25. When servicing a machine, use only identical replacement parts. Follow instructions in the "*Inspection, Maintenance, And Cleaning*" section of this manual. Use of unauthorized parts or failure to follow maintenance instructions may create a risk of electric shock or injury.

SPECIFIC SAFETY RULES FOR THIS SEWING MACHINE

1. Maintain labels and nameplates on the Sewing Machine. These carry important information. If unreadable or missing, contact Harbor Freight Tools for a replacement.
2. Always wear safety impact eye glasses. Using personal safety devices reduce the risk for injury. Safety impact eye glasses are available from Harbor Freight Tools.

3. Avoid unintentional starting. Make sure you are prepared to begin work before turning on the Sewing Machine.
4. Maintain a safe working environment. Keep the work area well lit. Make sure there is adequate surrounding workspace. Always keep the work area free of obstructions, grease, oil, trash, and other debris. Do not use a power machine in areas near flammable chemicals, dusts, and vapors. Do not use this product in a damp or wet location.
5. Do not force the Sewing Machine. This machine will do the work better and safer at the speed and capacity for which it was designed.
6. Always unplug the Sewing Machine from its electrical outlet before changing needles or settings, or performing inspection, maintenance, or cleaning procedures.
7. ⚠ Danger ! To reduce the risk of electric shock, never leave the Sewing Machine unattended while turned on. Unplug this appliance from the electrical outlet immediately after using and before cleaning.
8. Before each use, check all nuts, bolts, and screws for tightness. Vibration during mixing may cause these to loosen.
9. Keep extension cord off the ground and away from water.
10. Keep hands away from the needle when you turn the power switch on, or while the machine is operating.
11. Do not place your fingers into the thread take-up cover while the machine is operating.
12. Always turn the machine off and unplug the power cord to the electrical outlet before tilting the machine head or removing the V-belt.
13. Never leave the machine running and unattended.
14. During operation, never place your head, hair, or hands in the proximity of the hand wheel, V-belt, bobbin winder, or motor.
15. Do not operate the machine with any safety guards removed.
16. Always use the correct needle plate. The wrong plate can damage the needle.
17. Never operate using a bent or broken needle.
18. Never force the material in or out of the area being sewn. This can damage the needle.
19. Warning: To reduce the risk of burns, fire, electric shock, or injury to persons:
 - A. Do not allow to be used as a toy. Close attention is necessary when this appliance is used by or near children.
 - B. Use this appliance only for its intended use as described in this manual. Use only attachments recommended by the manufacturer as contained in this manual.

C. Never operate this appliance if it has a damaged cord or plug, if it is not working properly, if it has been dropped or damaged, or dropped into water. Take the product to a certified service technician for examination, repair, electrical or mechanical adjustment.

D. Never operate this appliance with any air openings blocked. Keep ventilation openings free from the accumulation of lint, hair, loose clothes and dust.

E. Never drop or insert any object into any opening.

F. Do not use outdoors.

G. Do not operate where aerosol (spray) products are being used or where oxygen is being administered.

H. Keep fingers away from all moving parts. Special care is required around the sewing machine needle.


I. Always use the proper needle plate. The wrong plate can cause the needle to break.


J. Do not use bent needles.


K. Do not pull or push fabric while stitching. It may deflect the needle causing it to break.

L. Switch the sewing machine off (O) when making any adjustments in the needle area, such as threading needle, changing needle, threading bobbin, or changing presser foot, etc.

M. Always unplug sewing machine from the electrical outlet when removing cover, lubricating, or when making any other user servicing adjustments mentioned in the instruction manual.

N.  Danger! Do not reach for an appliance that has fallen into water. Unplug immediately.

O.  Danger! Do not place or store appliance where it can fall or be pulled into a tub or sink. Do not place in or drop into water or other liquid.

P.  Warning! Never operate on a soft surface such as a bed or couch where the air openings may be blocked.

 **WARNING! People with pacemakers should consult their physician(s) before using this product. Operation of electrical equipment in close proximity to a heart pacemaker could cause interference or failure of the pacemaker.**

GROUNDING

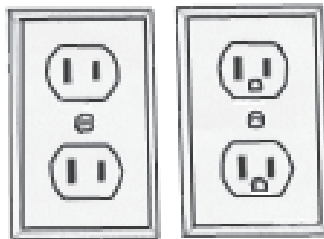
 **WARNING!**

Improperly connecting the grounding wire can result in the risk of electric shock. Check with a qualified electrician if you are in doubt as to whether the outlet is properly grounded. Do not modify the power cord plug provided with the tool. Never remove the grounding prong from the plug. Do not use the tool if the power cord or plug is damaged. If damaged, have it repaired by a service facility before use. If the plug will not fit the outlet, have a proper outlet installed by a qualified electrician.

Double Insulated Tools: Tools with Two Prong Plugs

This Sewing Machine comes with a two-prong plug, and the electrical components inside are double insulated for safety.

1. Tools marked “Double Insulated” do not require grounding. They have a special double insulation system which satisfies OSHA requirements and complies with the applicable standards of Underwriters Laboratories, Inc., the Canadian Standard Association, and the National Electrical Code.
5. Double insulated tools may be used in either of the 120 volt outlets shown below.



EXTENSION CORDS




1. *Grounded* tools with a three-prong plug require a three wire extension cord. **Double Insulated** tools can use either a two or three wire extension cord.
2. As the distance from the supply outlet increases, you must use a heavier gauge extension cord. Using extension cords with inadequately sized wire causes a serious drop in voltage, resulting in loss of power and possible tool damage. (See Table on page 7.)
3. The smaller the gauge number of the wire, the greater the capacity of the cord. For example, a 14 gauge cord can carry a higher current than a 16 gauge cord.
4. When using more than one extension cord to make up the total length, make sure each cord contains at least the minimum wire size required.

5. If you are using one extension cord for more than one tool, add the nameplate amperes and use the sum to determine the required minimum cord size. (See Table below.)
6. If you are using an extension cord outdoors, make sure it is marked with the suffix “W-A” (“W” in Canada) to indicate it is acceptable for outdoor use.
7. Make sure your extension cord is properly wired and in good electrical condition. Always replace a damaged extension cord or have it repaired by a qualified electrician before using it.
8. Protect your extension cords from sharp objects, excessive heat, and damp or wet areas.

RECOMMENDED MINIMUM WIRE GAUGE FOR EXTENSION CORDS* (120 VOLT)					
NAMEPLATE AMPERES (At Full Load)	EXTENSION CORD LENGTH				
	25 Feet	50 Feet	75 Feet	100 Feet	150 Feet
0 – 2.0	18	18	18	18	16
2.1 – 3.4	18	18	18	16	14
3.5 – 5.0	18	18	16	14	12
5.1 – 7.0	18	16	14	12	12
7.1 – 12.0	18	14	12	10	-
12.1 – 16.0	14	12	10	-	-
16.1 – 20.0	12	10	-	-	-

* Based on limiting the line voltage drop to five volts at 150% of the rated amperes.

SYMBOLOLOGY

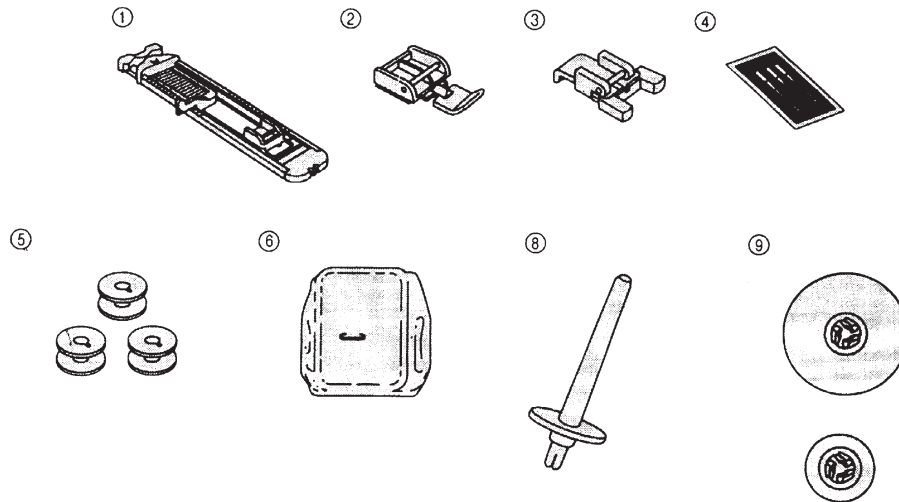
	Double Insulated
	Canadian Standards Association
	Underwriters Laboratories, Inc.
V ~	Volts Alternating Current
A	Amperes
n_o <u>xxxx</u> /min.	No Load Revolutions per Minute (RPM)

UNPACKING

When unpacking, check to make sure that all the parts are included. Refer to the Accessories listed below and the Controls and Indicators section.

If any parts are missing or broken, please call Harbor Freight Tools at the number on the cover of this manual as soon as possible.

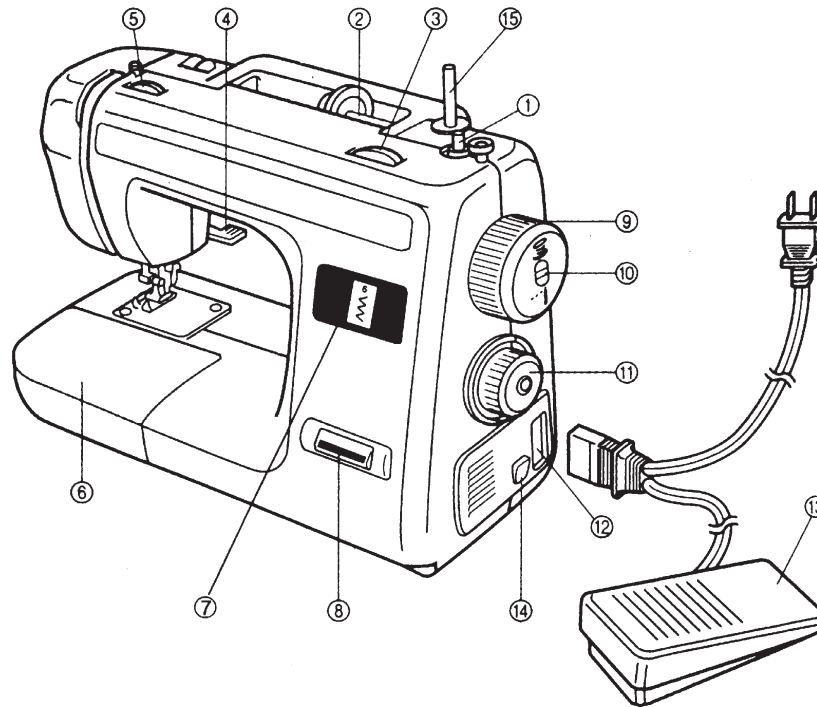
Accessories



1.	Buttonhole Foot
2.	Zipper Foot
3.	Button Sewing Foot
4.	Needle Pack (3 pcs.)
5.	Bobbins (3 pcs.)
6.	Darning Plate
7.	Two screwdrivers (not shown)
8.	Extra Spool Pin
9.	Spool Holder (Large and Small)

OPERATING INSTRUCTIONS

Controls and Indicators



1.	Bobbin Winding Assy. – Winds the thread onto the bobbin to be used for the lower thread
2.	Spool Holder – Holds the sewing thread
3.	Stitch Length Dial – Controls the length of the stitches
4.	Presser Foot Lever – Raises and lowers the presser foot
5.	Upper Tension Control Dial – Controls the tension of the upper thread
6.	Extension Table and Accessories Compartment – Converts from the free-arm into a flat bed machine
7.	Mechanical Pattern Indication Window – Shows the stitch to be performed
8.	Reverse Sewing Button – Push for stitching in the reverse direction
9.	Balance Wheel – Turn toward you (counterclockwise) to raise and lower the needle
10.	Clutch Release Switch – Switches from bobbin winding mode to sewing mode
11.	Pattern Selection Dial – Turn in either direction to select the desired stitch
12.	Foot Controller Receptacle – Receives the foot controller plug
13.	Foot Controller – Used to control sewing speed, start and stop
14.	Main Power Switch – Turns the machine power on and off
15.	Vertical Spool Holder – Used to hold a second spool of thread for twin needle sewing

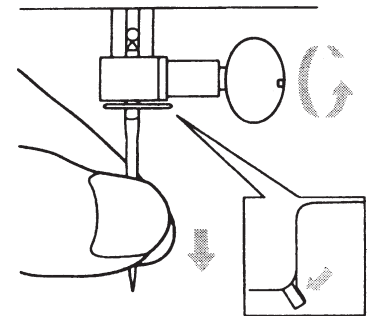
Sewing Steps

Follow these basic steps to setup the sewing machine. Refer to the illustration on the previous page to locate the components referred to below.

1. Set the Sewing Machine on a table with a smooth surface.
2. Select and install the desired needle for the material to be sewn (See below).
3. Place the spool of thread onto the Spool Holder (2) and route the thread from the spool holder down to, and through the needle (See page 11).
4. Wind the bobbin with thread (See page 13), place bobbin into the bobbin case, and route the thread (page 12).
5. Select the desired stitch pattern and length (See page 15).
6. Replace the Presser Foot if necessary for sewing special items (See page 14).
7. Insert the Foot Controller connector into the machine receptacle, then the line cord plug into an electrical outlet (See page 9). Place the Foot Controller on the floor.
8. Press the Main Power Switch (14) to the On (I) position.
9. Press down slowly on the Foot Controller and sew a scrap piece of cloth for a few minutes to test the machine.
10. Periodically clean machine parts (See page 19).
11. Periodically oil the machine (See page 18).

Replacing the Needle

1. Unplug the line cord from the electrical outlet.
2. Turn the Balance Wheel (9) to raise the needle to its highest position.
3. Lower the Presser Foot by pressing down on the Presser Foot Lever (4).
4. Loosen the Needle Clamp and pull the needle down and out.
5. Insert a new needle as far up as possible and against the needle stopper. The needle's flat side must face toward the back.

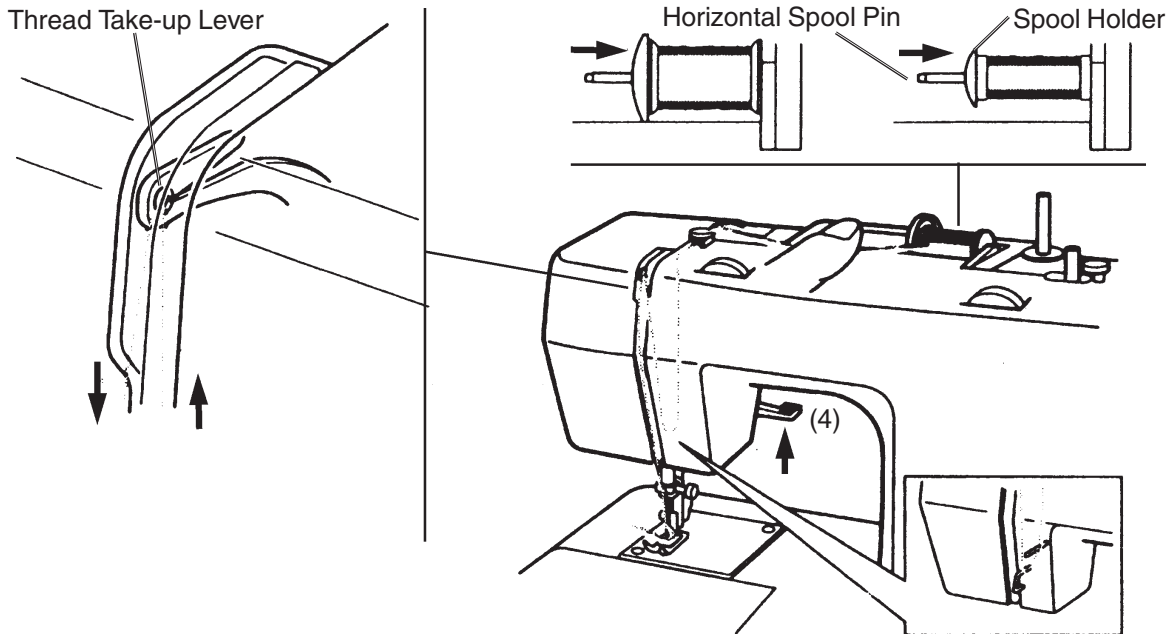


The needle must not be bent or broken. For general sewing, use needle sizes 11 or 14. A fine thread and needle should be used for sewing lightweight fabrics, so the fabric will not be marred. Heavy fabrics require a needle large enough to pierce the fabric without fraying the needle thread.

6. Tighten the Needle Clamp.

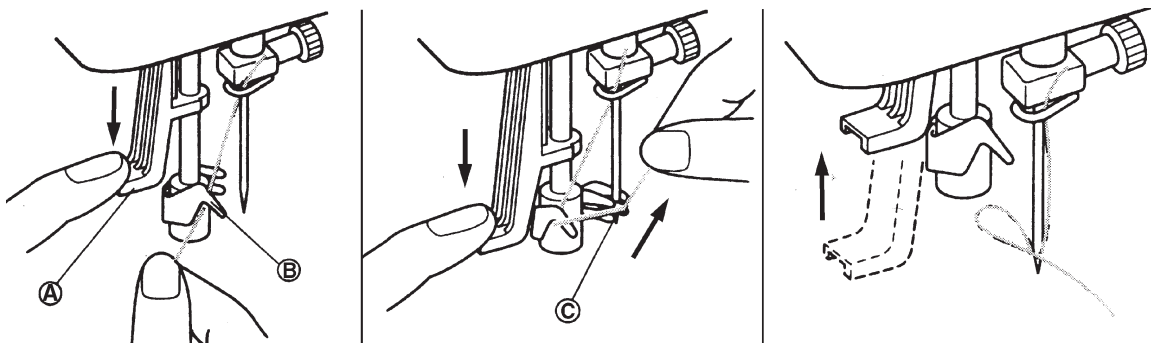
Spool Threading

1. Raise the Presser Foot with the Presser Foot Lever (4).
2. Turn the Balance Wheel (9) counterclockwise to raise the needle to its highest position.
3. Place a spool of thread on the horizontal spool pin and press a spool holder onto the spool pin to hold the thread spool firmly in place.
4. Route the thread through the thread take-up lever from left to right, and down to the needle.



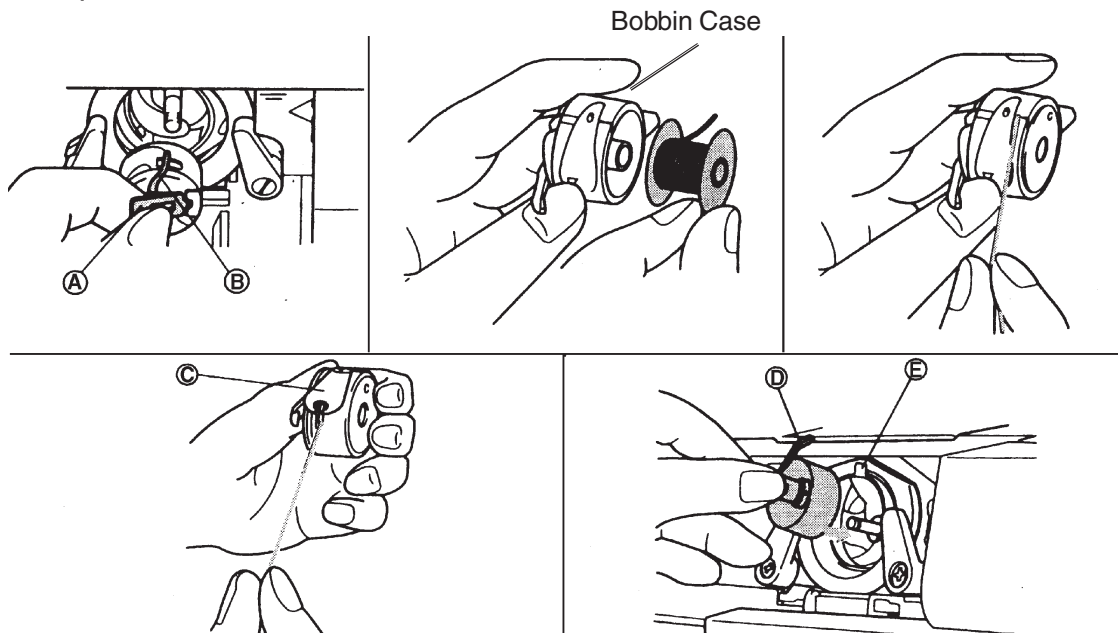
Using the Needle Threader

1. Lower the Presser Foot using Lever (4).
2. Lower the Needle Threader (A) slightly and place the thread under the Guide (B).
3. Move the Needle Threader down to its lowest position, then guide the thread under the Hook (C) which passes through the eye of the needle.
4. Release the Needle Threader and the thread at the same time. This will move the thread through the needle eye. Pull two inches of thread through the needle.

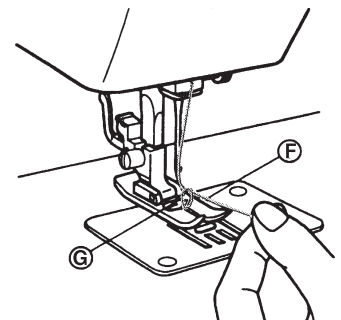


Bobbin Placement and Threading

1. Turn the Balance Wheel (9) counterclockwise to raise the needle to its highest position.
2. Raise the Presser Foot with its Lever (4).
3. Remove the Extension Table (6), and then the shuttle cover (located on front of the free arm).
4. Remove the Bobbin Case by grasping the Bobbin Case Latch (A) and pulling it out. See illustration below.
5. Unwind about four inches of thread from the full Bobbin and insert the Bobbin into the Bobbin Case.
6. Pull the trailing thread into the slot, down and to the left, until it enters the delivery eye under the tension spring (C).
7. Holding the Bobbin Case by the Latch (A), insert the Bobbin Case into the shuttle race and release the Latch. The Bobbin Case Finger (B) must fit into the Notch (E) at the top of the race.

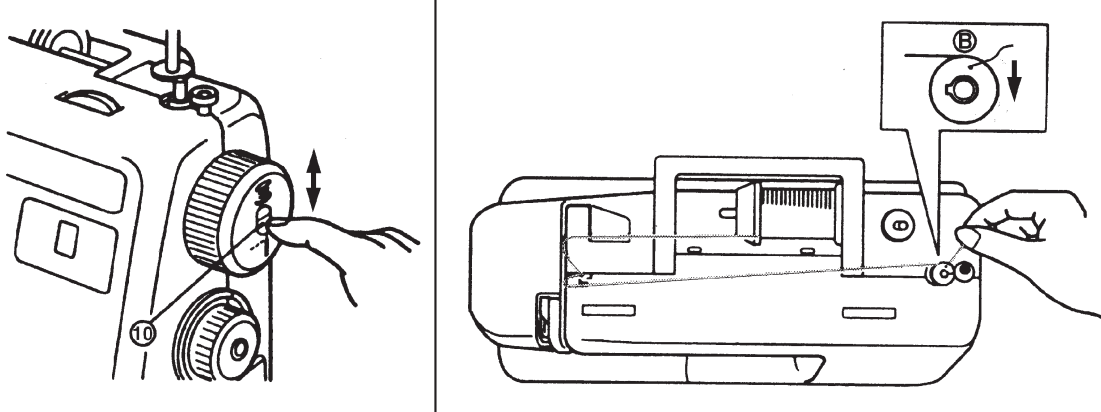


8. Raise the Presser Foot and needle to their highest positions.
9. With your left hand, hold the end of the upper thread (F). With your right hand, turn the Balance Wheel (9) counterclockwise until the needle moves down and back up again to its highest position. The upper thread should have caught the lower thread in a loop.
10. Pull the upper thread toward you and the lower thread (G) will come up from the bobbin in a large loop.
11. Pull out about six inches of both threads and place them between the toes of the Presser Foot and to the right and back of the Presser Foot.

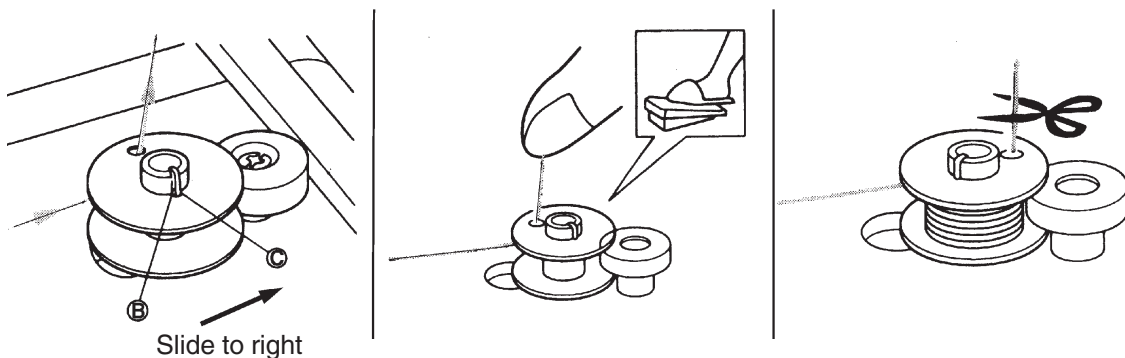


Bobbin Winding

1. Change the Clutch Release Switch (10) from the needle mark to the bobbin mark.
2. With a spool of thread already on the horizontal spool pin, route the thread through the guide to the bobbin as shown below.
3. Place the bobbin onto the bobbin winder shaft (B) and slide the shaft to the right. Turn the bobbin clockwise until the spring (C) on the shaft slides into the slit on the bobbin.



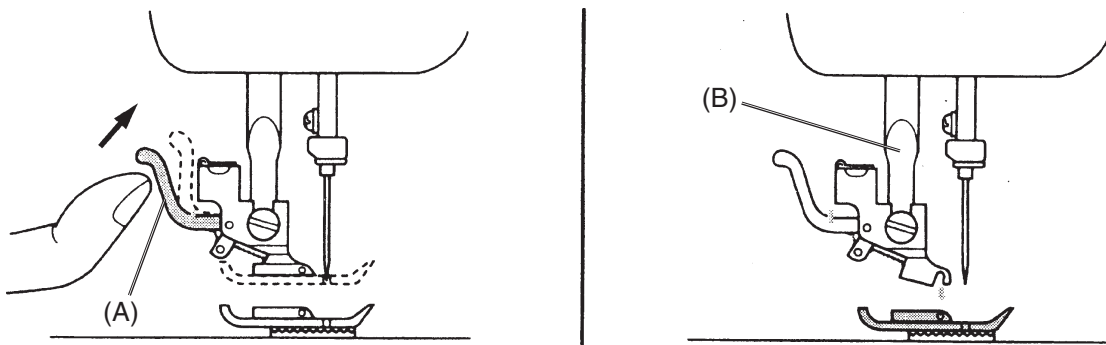
4. Hold the end of the thread from the bobbin and gently press the Foot Controller (13) to begin winding thread around the bobbin a few times as shown below. Release the Foot Controller.
5. Trim the excess thread above the bobbin and continue winding the thread onto the bobbin. The machine will automatically stop when the bobbin is full.
6. Cut the thread, push the bobbin winder shaft to the left, and remove the full bobbin from the shaft.
7. Return the Clutch Release Switch (10) back to the needle mark.



Changing the Presser Foot

1. Turn the Balance Wheel (9) counterclockwise to raise the needle to its highest position.
2. Raise the Presser Foot with its Lever (4).
3. Release the Foot by raising its lever (A) located at the back of the holder.
4. Place a different Presser Foot on the needle plate so that the bar on the Presser Foot is in line with the slot on the shank (B).
5. Lower the Presser Foot lever to fix the Presser Foot onto the shank.

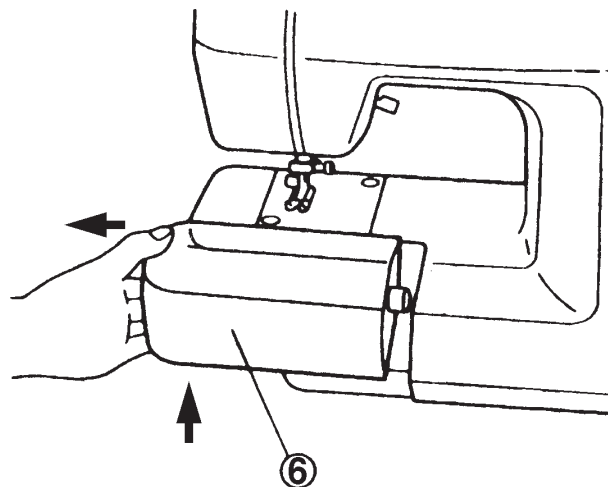
If the Presser Foot is in the correct location, the bar should snap in place.



Converting to Free-arm Style

Free-arm sewing is convenient for sewing tubular and hard-to-reach areas on a garment. To change the machine to free-arm operation, remove the Extension Table (6).

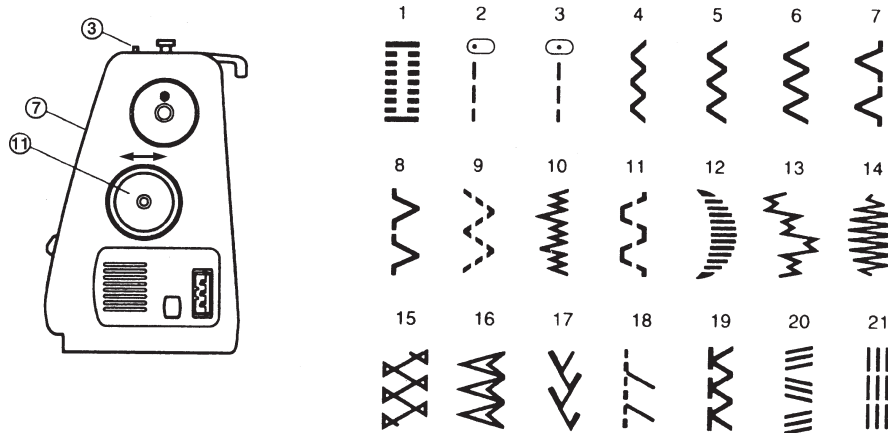
1. Lift up on the Extension Table (6).
2. Slide the Extension Table to the left.



Selecting a Stitch Pattern and Stitch Length

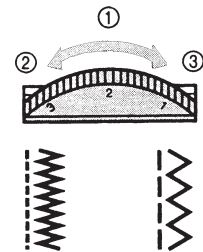
To select a stitch, turn the Pattern Selection Knob (11). The selection knob may be turned in either direction. All stitches are preset in width, therefore, the stitch length is the only other necessary adjustment.

1. Turn the Balance Wheel (9) counterclockwise to raise the needle to its highest position.
2. Turn the Pattern Selection Knob to select the desired stitch pattern. The selection will appear in the Mechanical Pattern Indication Window Version (7) on the front of the machine.



3. To set the stitch length, turn the Stitch Length Dial (3), counterclockwise for a shorter stitch (lower number), clockwise for a longer stitch (higher number). See Table below.

Depending on the selected stitch, it may be necessary to adjust the stitch length for best results. The dial also adjusts upper thread tension. The "O" setting does not feed the material. This is used for sewing on a button. The "F" area is used for making a Satin Stitch (a close zigzag stitch).



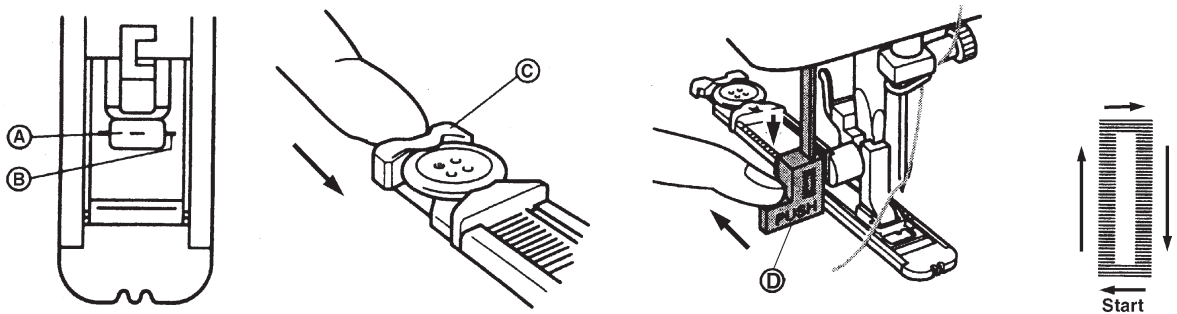
Pattern	Stitch Name	Preset Width	Recommended Length
1	1-Step Automatic Buttonhole	5 mm; 13/64"	F-1/5 mm; 1/64-1/16"
2	Straight Stitch (left needle position)	0	1-4 mm; 3/64-5/32"
3	Straight Stitch (center needle position)	0	1-4 mm; 3/64-5/32"
4	Zigzag Stitch	1.5 mm; 1/16"	F-4 mm; 1/64-5/32"
5	Zigzag Stitch	3.5 mm; 9/64"	F-4 mm; 1/64-5/32"
6	Zigzag Stitch	5 mm; 31/64"	F-4 mm; 1/64-5/32"
7	Blind Hem Stitch	3 mm; 1/8"	F-2 mm; 1/64-5/64"
8	Shell Tuck Stitch	5 mm; 13/64"	F-3 mm; 1/64-1/8"
9	Elastic Stitch	5 mm; 13/64"	F-2.5 mm; 1/64-3/32"
10	Stretch Blind Stitch	3 mm; 1/8"	F-1.5 mm; 1/64-1/16"
11	Double Action Stitch	5 mm; 13/64"	F-3 mm; 1/64-1/8"
12	Scallop Stitch	5 mm; 13/64"	F-1.5 mm; 1/64-1/16"
13	Lightning Stitch	5 mm; 13/64"	F-1 mm; 1/64-3/64"
14	Bead Stitch	5 mm; 13/64"	F-1 mm; 1/64-3/64"
15	Fagoting Stitch	5 mm; 13/64"	Fixed 2.5 mm; 3/32"
16	Arrowhead Stitch	5 mm; 13/64"	Fixed 2.5 mm; 3/32"
17	Feather Stitch	5 mm; 13/64"	Fixed 2.5 mm; 3/32"
18	Slant Overlock Stitch	5 mm; 13/64"	Fixed 2.5 mm; 3/32"
19	Elastic Overlock Stitch	5 mm; 13/64"	Fixed 2.5 mm; 3/32"
20	Triple Zigzag Stretch Stitch	5 mm; 13/64"	Fixed 2.5 mm; 3/32"
21	Triple Stretch Stitch	0	Fixed 2.5 mm; 2/32"

Buttonhole Sewing

1. Select setting No. 1 using the Pattern Selection Dial (11).
2. Turn the Stitch Length Dial (3) to F-1.5.
3. Replace the Presser Foot with the Buttonhole Foot.
4. Mark the position of the buttonhole on the fabric using tailor's chalk.
5. Draw up the lower thread.
6. Lower the Presser Foot, aligning the marks on the foot (B) with the marks on the fabric (A).
7. Open the button plate (C) and insert the button as shown below.
8. Lower the buttonhole lever (D) and push it back slightly.
9. While gently holding the upper thread, start the machine.

Buttonhole stitching is sewn clockwise. Adjust the Stitch Length Dial (3) if the stitching is too course or fine.

10. Stop the machine when the bar tacks are sewn.
11. Remove the material from the machine and carefully cut a hole in the middle of the buttonhole.



Button Sewing

1. Measure the distance between the button holes and select the appropriate pattern number using the Pattern Selection Dial (11).

Distance between holes	Pattern No.
1.5 mm (1/16")	4
3.5 mm (9/16")	5
5 mm (13/64")	6

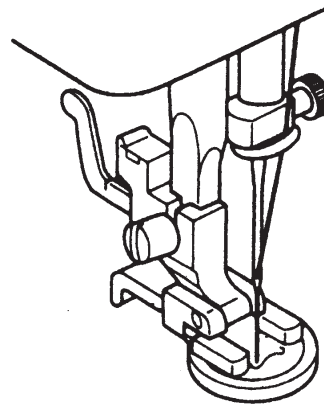
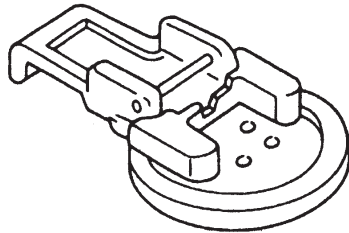
2. Change the Presser Foot to the Button Sewing Foot.
3. Place the darning plate on the needle plate.
4. Place a button between the foot and the fabric, aligning the thread holes in the button with the machine needle.

Turn the Balance Wheel (9) to make sure the needle enters the holes without hitting the button. If it hits, change the pattern number (see step 1).

5. At slow speed, sew about 10 stitches.
6. Remove the material from the machine.

Cut the upper and lower threads and tie both threads at the back of the material.

Button Sewing Foot



INSPECTION, MAINTENANCE, AND CLEANING

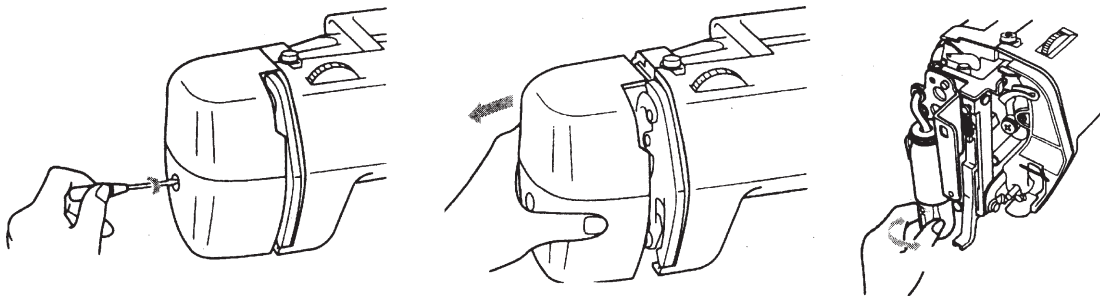
⚠ WARNING! Make sure the Power Switch of the Sewing Machine is in its “OFF” position and that the machine is unplugged from its electrical outlet before performing any inspection, maintenance, or cleaning procedures.

General

1. Any repairs must be completed by an experienced sewing machine technician.
2. Before each use, inspect the general condition of the Sewing Machine. Check for loose screws, misalignment or binding of moving parts, cracked or broken parts, damaged electrical wiring, and any other condition that may affect its safe operation. If abnormal noise or vibration occurs, have the problem corrected before further use. Do not use damaged equipment.
3. Periodically recheck all nuts, bolts, and screws for tightness.
4. Store in a clean and dry location.

Changing the Light Bulb

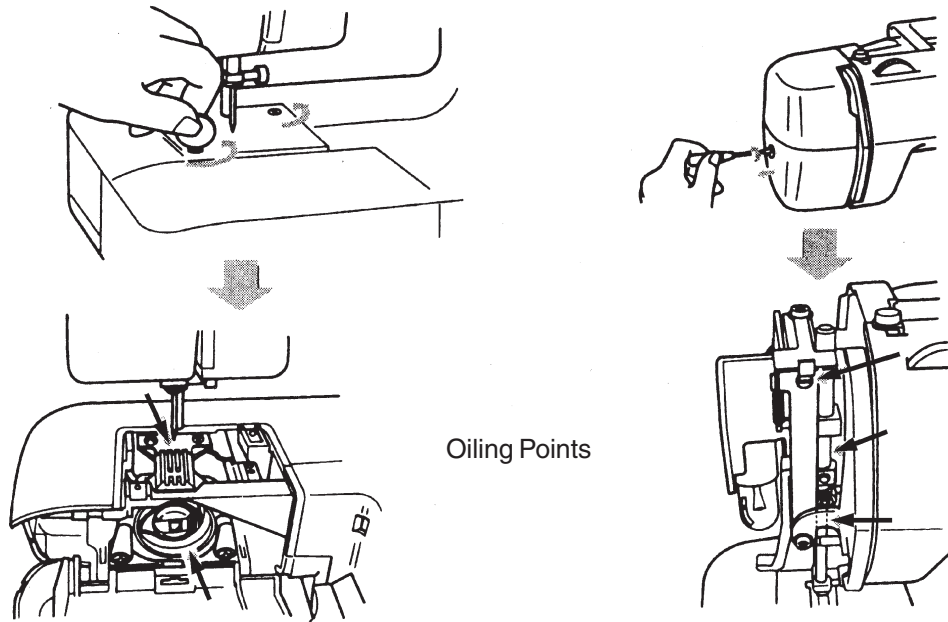
1. Loosen the faceplate screw and pull off the face plate.
2. Unscrew and replace the light bulb with the same type.
3. Replace the faceplate and screw.



Oiling

The machine should be oiled once a week if it is used more than one hour a day. If used more often, oil daily. Use only sewing machine oil.

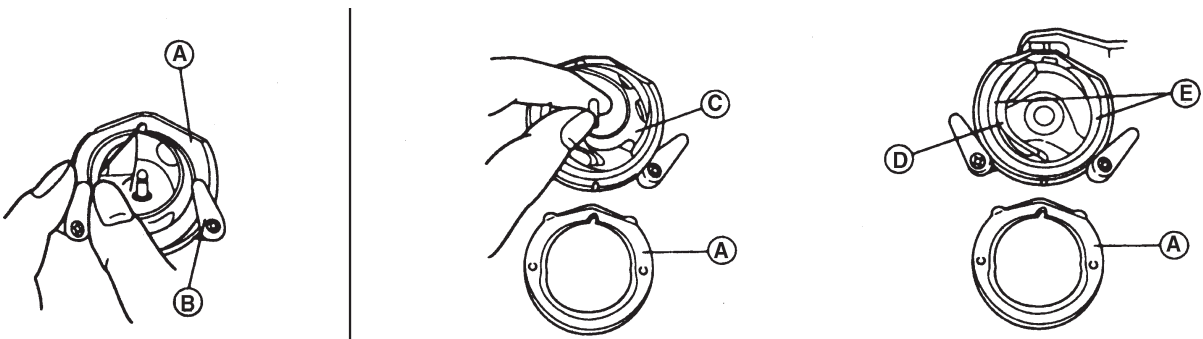
1. Place two to three drops of oil at each of the oiling points shown in the following illustration.
2. After oiling, run the machine a short time at a fast speed without thread.
3. Wipe any excess oil off the machine.



Cleaning

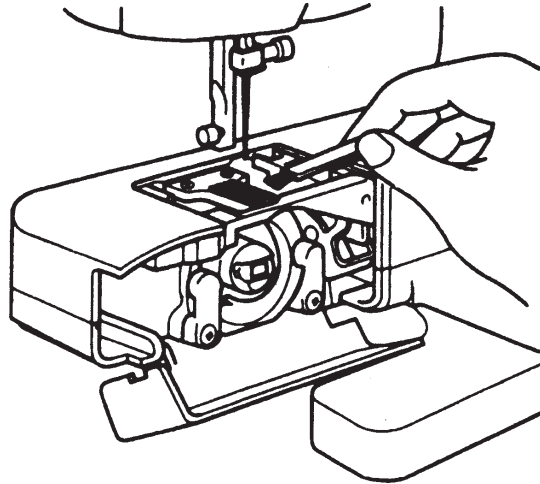
Shuttle

1. Raise the needle to its highest position.
2. Open the shuttle cover on the front of the free arm.
3. Take out the bobbin case by opening its latch lever (B) and pulling it out from the shuttle race.
4. Slide the latch levers out from the retaining ring (A) and remove.
5. Remove the hook by grasping the center post of the hook and pulling it out.
6. Remove any lint and thread from the retaining ring, hook (C), driver (D) and race body (E) with a brush and small vacuum.
7. Reverse steps 1-6 to reassemble.



Feed Dogs

1. Remove the needle plate using a coin to unscrew the screws.
2. Clean the upper part of the feed dogs and shuttle race body with a brush.



PLEASE READ THE FOLLOWING CAREFULLY

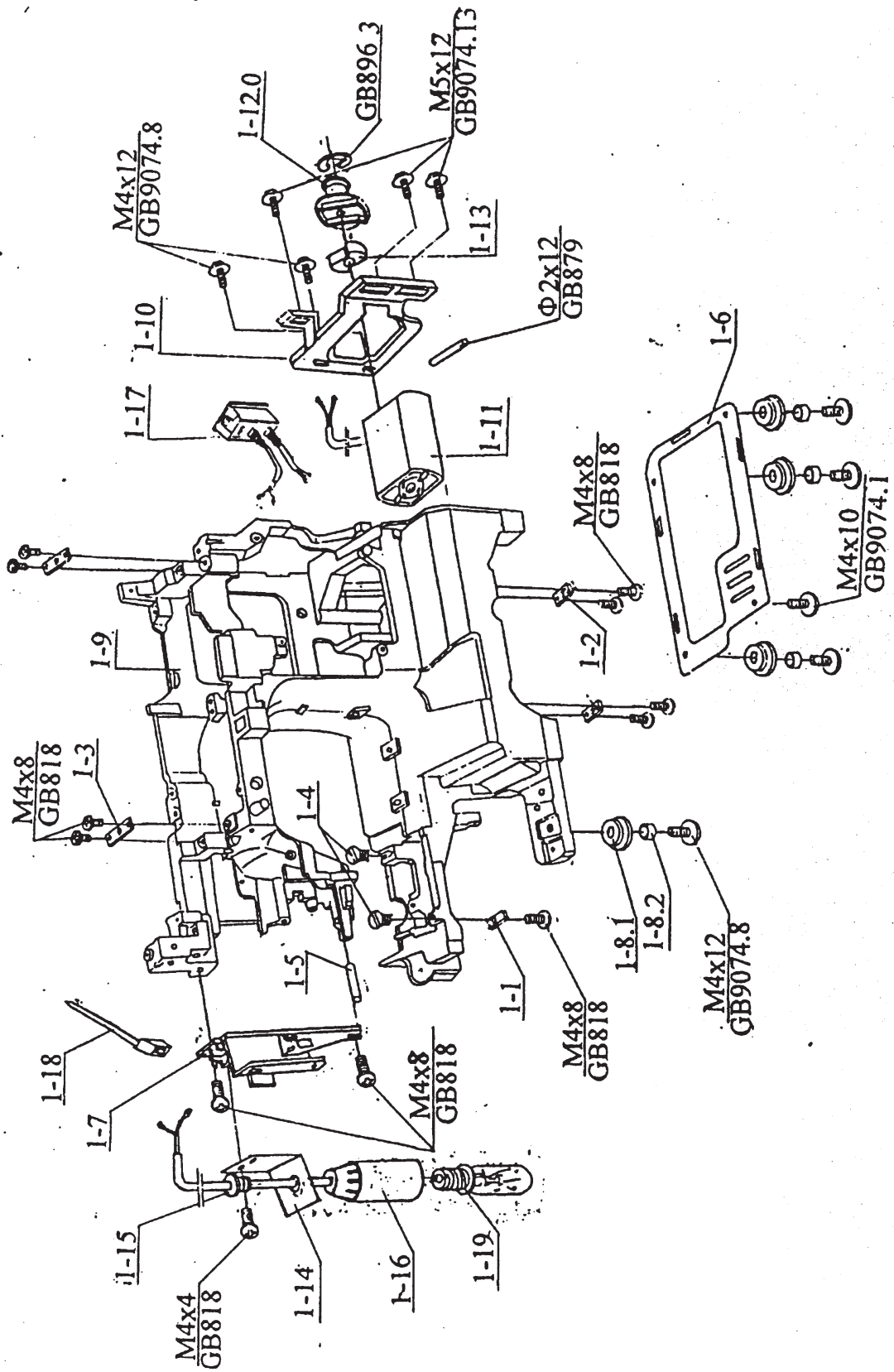
THE MANUFACTURER AND/OR DISTRIBUTOR HAS PROVIDED THE PARTS DIAGRAM IN THIS MANUAL AS A REFERENCE TOOL ONLY. NEITHER THE MANUFACTURER NOR DISTRIBUTOR MAKES ANY REPRESENTATION OR WARRANTY OF ANY KIND TO THE BUYER THAT HE OR SHE IS QUALIFIED TO MAKE ANY REPAIRS TO THE PRODUCT OR THAT HE OR SHE IS QUALIFIED TO REPLACE ANY PARTS OF THE PRODUCT. IN FACT, THE MANUFACTURER AND/OR DISTRIBUTOR EXPRESSLY STATES THAT ALL REPAIRS AND PARTS REPLACEMENTS SHOULD BE UNDERTAKEN BY CERTIFIED AND LICENSED TECHNICIANS AND NOT BY THE BUYER. THE BUYER ASSUMES ALL RISK AND LIABILITY ARISING OUT OF HIS OR HER REPAIRS TO THE ORIGINAL PRODUCT OR REPLACEMENT PARTS THERETO, OR ARISING OUT OF HIS OR HER INSTALLATION OF REPLACEMENT PARTS THERETO.

PART LISTS AND ASSEMBLY DRAWINGS

NOTE: Some parts are listed and shown for illustration purposes only and are not available individually as replacement parts.

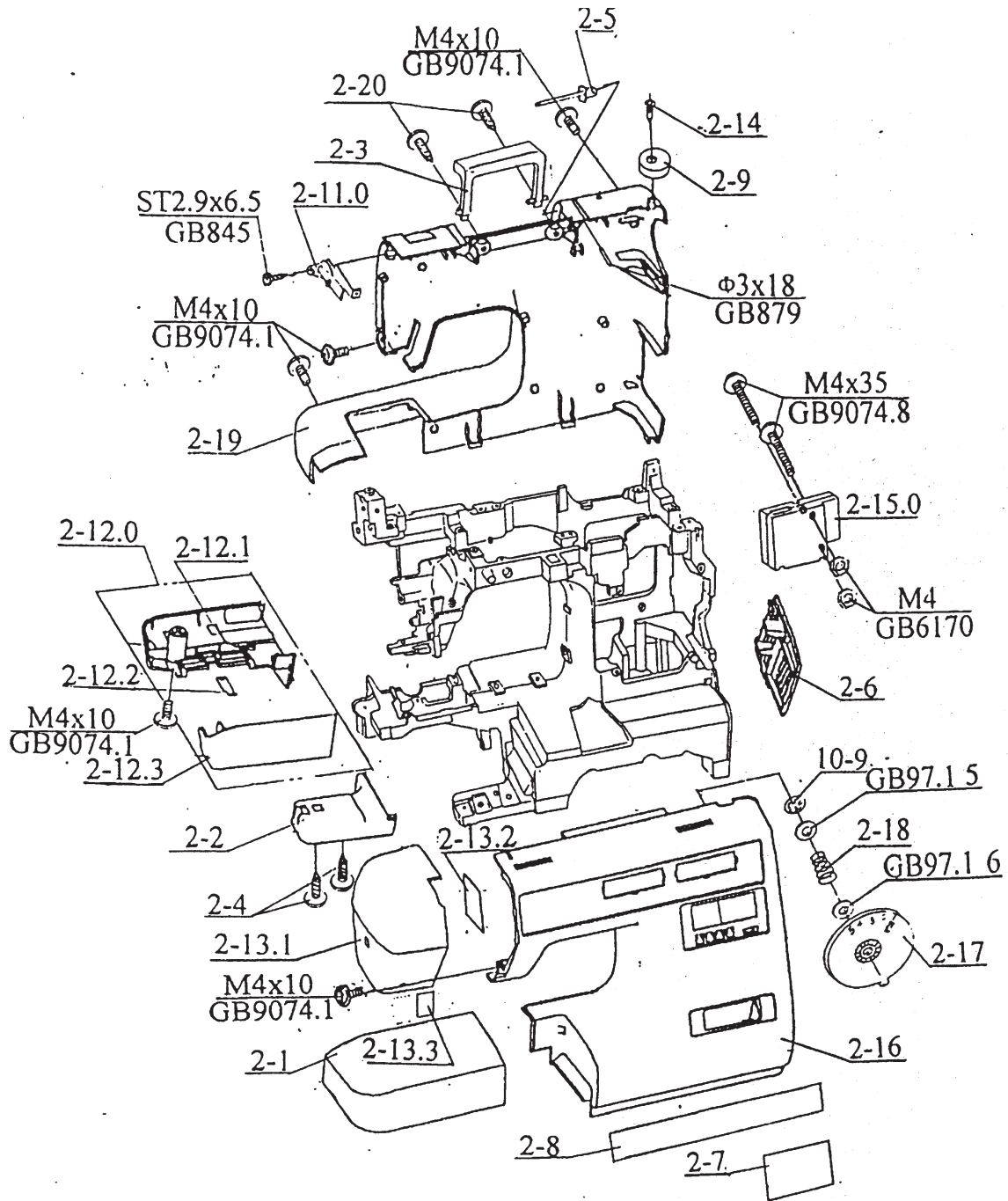
1 - Machine Frame Mechanism

PARTS NO.	NAME	QT.
1-1	FEED SHAFT PRESSER PLATE	1
GB818 M4×8	SCREW	1
1-2	LOWER SHAFT PRESSER PLATE	2
GB818 M4×8	SCREW	4
1-3	MAIN SHAFT PRESSER PLATE	2
GB818 M4×8	SCREW	4
1-4	SCREW	2
1-5	BEARING SHAFT	1
1-6	BOTTOM COVER	1
GB9074.1 M4×10	SCREW	1
1-7	LAMP STAND SET BRACKET	1
GB818 M4×8	SCREW	2
1-8.0	BRACKET ASM.	4
1-8.1	BRACKET	1
1-8.2	INSERTION	1
GB9074.1 M4×12	SCREW	4
1-9	MACHINE MOUNTING	1
1-10	MOTOR SET BRACKET	1
GB9074.13 M5×12	SCREW	3
GB9074.8 M4×12	SCREW	2
1-11	MOTOR	1
1-12.0	MOTOR PULLEY	1
1-12.1	MOTOR PULLEY	1
1-12.2	MOTOR PULLEY COVER	1
1-13	MOTOR PULLEY COVER CLUTCH BLOCK	1
GB879 ϕ 2×12	PIN	1
GB8996 3	SNAP RING	1
1-14	LAMP HOLDER SET BRACKET	1
GB818 M4×4	SCREW	1
1-15	SCREW	1
1-16.0	LAMP STAND ASM.	1
1-16.1	LAMP STAND POWER WIRE SCHEMATIC FIGURE	1
1-16.2	LAMP STAND FIGURE	1
1-17	POWER SWITCH	1
1-18	WIRE BUTTON	1
1-19	LAMP	1



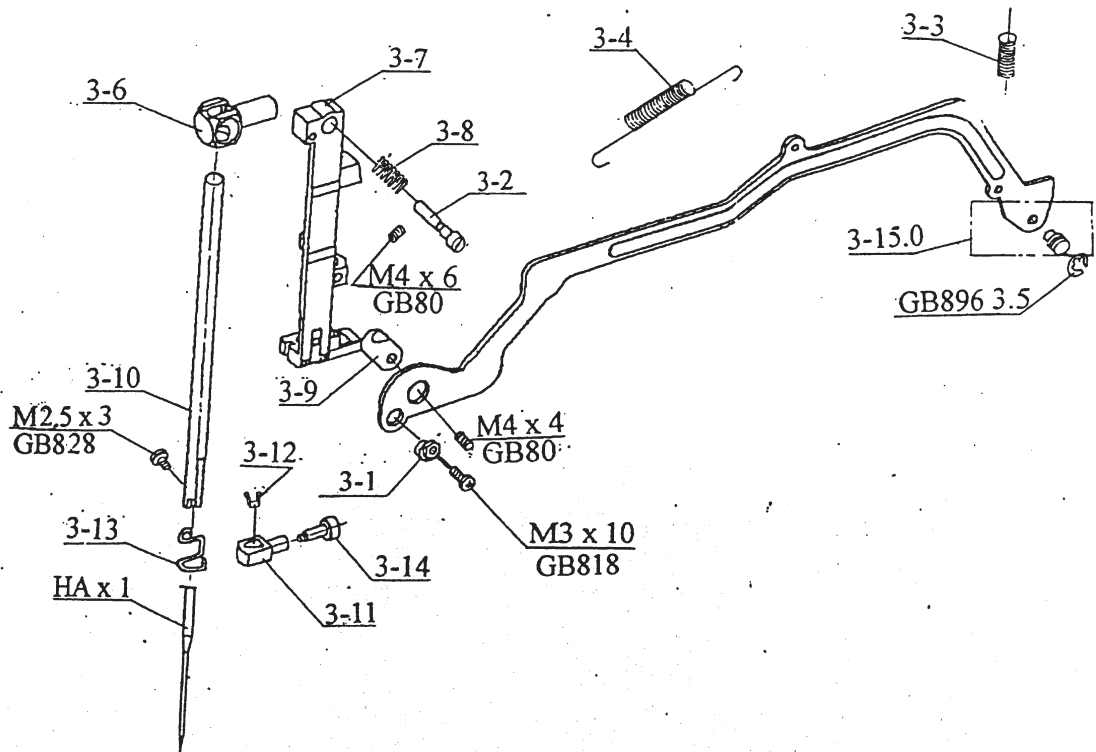
2 - Cover

PARTS NO.	NAME	QT.
2-1	NEEDLE THREAD BOX	1
2-2	COVER PLATE	1
2-3	SCREW	2
2-4	HANDLE	1
2-5	SPANNER	1
GB879 $\phi 3 \times 18$	PIN	1
2-6	SWITCH CLAMPING PLATE	1
2-7	INDICATION PLATE	1
2-8	MARK PLATE	1
2-9	THREAD WINDER WHEEL	1
2-14	SCREW	1
2-11.0	THREAD CLAMP BRACKET ASM.	1
2-11.1	THREAD CLAMP PLATE (III)	1
2-11.2	THREAD CLAMP PLATE (II)	1
2-11.3	THREAD CLAMP PLATE	1
2-11.4	RIVETINT SHAFT	1
GB845 ST2.9 $\times 6.5$	SCREW	1
2-12.0	BOBBIN COVER ASM.	1
2-12.1	BOTTOM COVER	1
2-12.2	SPRING PLATE	1
2-12.3	BOBBIN COVER	1
GB9074.1 M4 $\times 10$	SCREW	1
2-13.0	TOP COVER ASM.	1
2-13.1	TOP COVER	1
2-13.2	REFLECTOR	1
2-13.3	THREADING INDICATION DIAL	1
GB9074.8 M4 $\times 12$	SCREW	1
2-16	FRONT COVER	1
2-17	PATTERN INDICATION DIAL	1
2-18	SPRING	1
GB97.1 5	GASKET (SMALL)	1
GB97.1 6	GASKET (BIG)	1
通10-9	TIGHTEN COLLAR	1
GB9074.1 M4 $\times 10$	SCREW	1
2-19	REAR COVER	1
GB9074.1 M4 $\times 10$	SCREW	2
2-20	SCREW	2
2-21	SOCKET BEARING PLATE	1



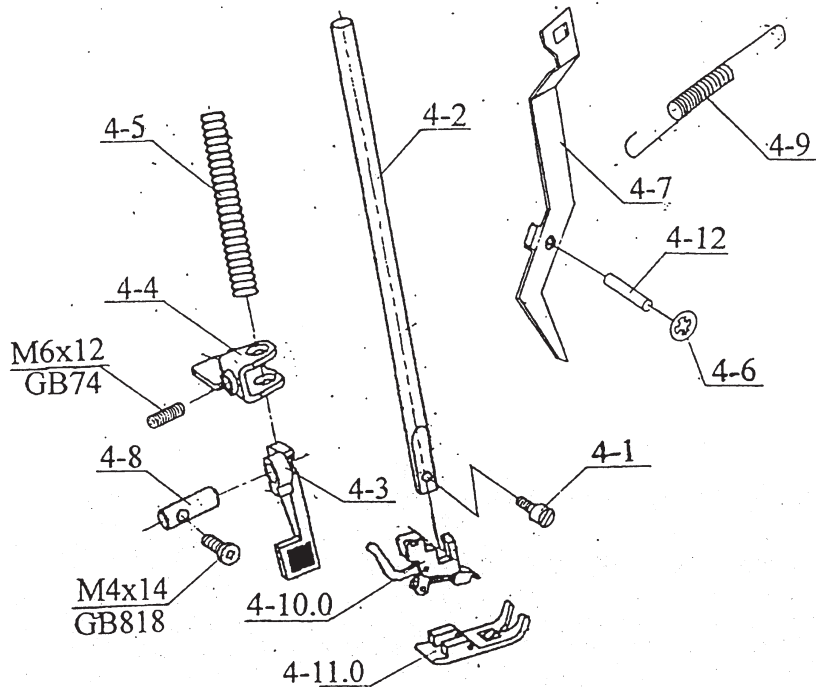
3 - Needle Bar Mechanism

3-2	STUD
GB80 M4 x 6	SCREW
3-3	SPRING I
3-4	SPRING II
3-6	CONNECTING STUD
3-9	NEEDLE BAR CONNECTING PIN
GB80 M4 x 4	SCREW
3-7	OSCILLATING NEEDLE BRACKET
3-8	NEEDLE BAR ADJUSTING SPRING
3-10	NEEDLE BAR
3-11.0	NEEDLE CLAMP ASM.
3-11.1	NEEDLE BAR THREAD GUARD
3-11.2	NEEDLE CLAMP HEAD
3-14	NEEDLE CLAMP STUD
3-15.0	ZIGZAG DRIVING LEVER ASM.
3-15.1	ZIGZAG DRIVING LEVER
3-15.2	PIN
GB896 3.5	V RING
HA x 1	NEEDLE



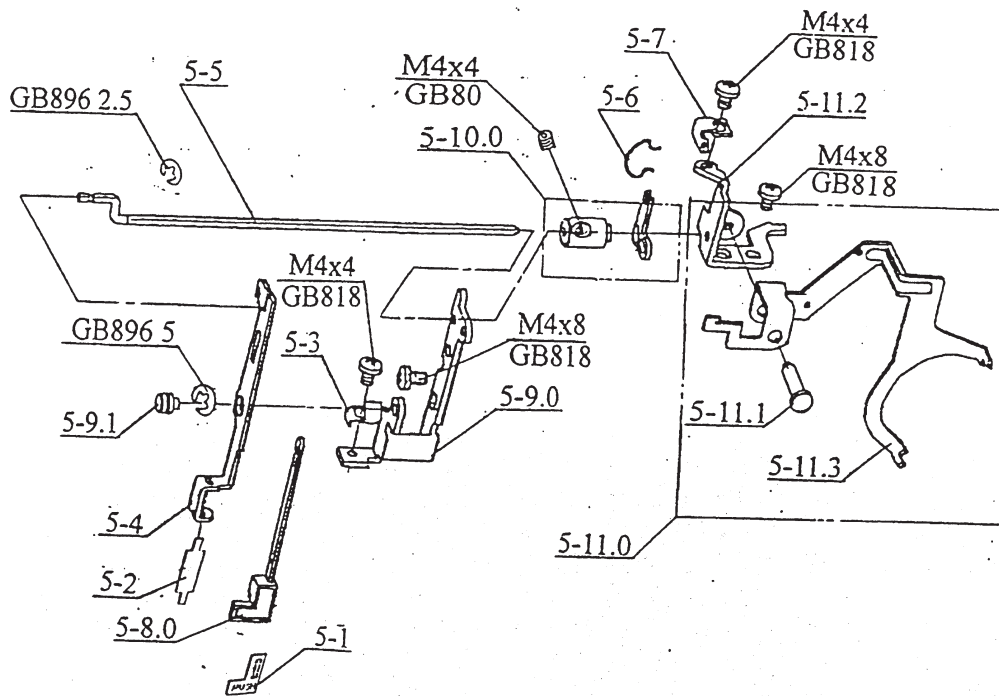
4 - Cloth Presser Mechanism

PARTS NO.	NAME	QT.
4-0	CLOTH PRESSER ASM.	1
4-1	SCREW	1
4-2	PRESSER BAR	1
GB74 M6·12	SCREW	1
4-4	PRESSER BAR GUIDE BRACKET	1
4-5	SPRING	1
4-6	WASHER	2
4-7	THREAD RELEASING WIPER LEVER	1
4-12	PIN	1
4-3	PRESSER FOOT LIFT SPANNER	1
4-8	PRESSER FOOT LIFT SPANNER SHAFT	1
GB818 M4·14	SCREW	1
4-9	SPRING	1
4-10.0	PRESSER FOOT GUIDE BRACKET ASM.	1
4-10.1	PRESSER FOOT CRANK	1
4-10.2	PRESSER FOOT CRANK COVER PLATE	1
4-10.3	COVER PLATE RIVET	1
4-10.4	SPRING	1
4-10.5	PRESSER FOOT CRANK SPANNER	1
4-10.6	PIN	1
4-10.7	CLAMPING NEEDLE	1
4-10.8	PIN	1
4-11.0	PRESSER FOOT ASM.	1
4-11.1	PRESSER FOOT	1
4-11.2	PRESSER FOOT PIN	1



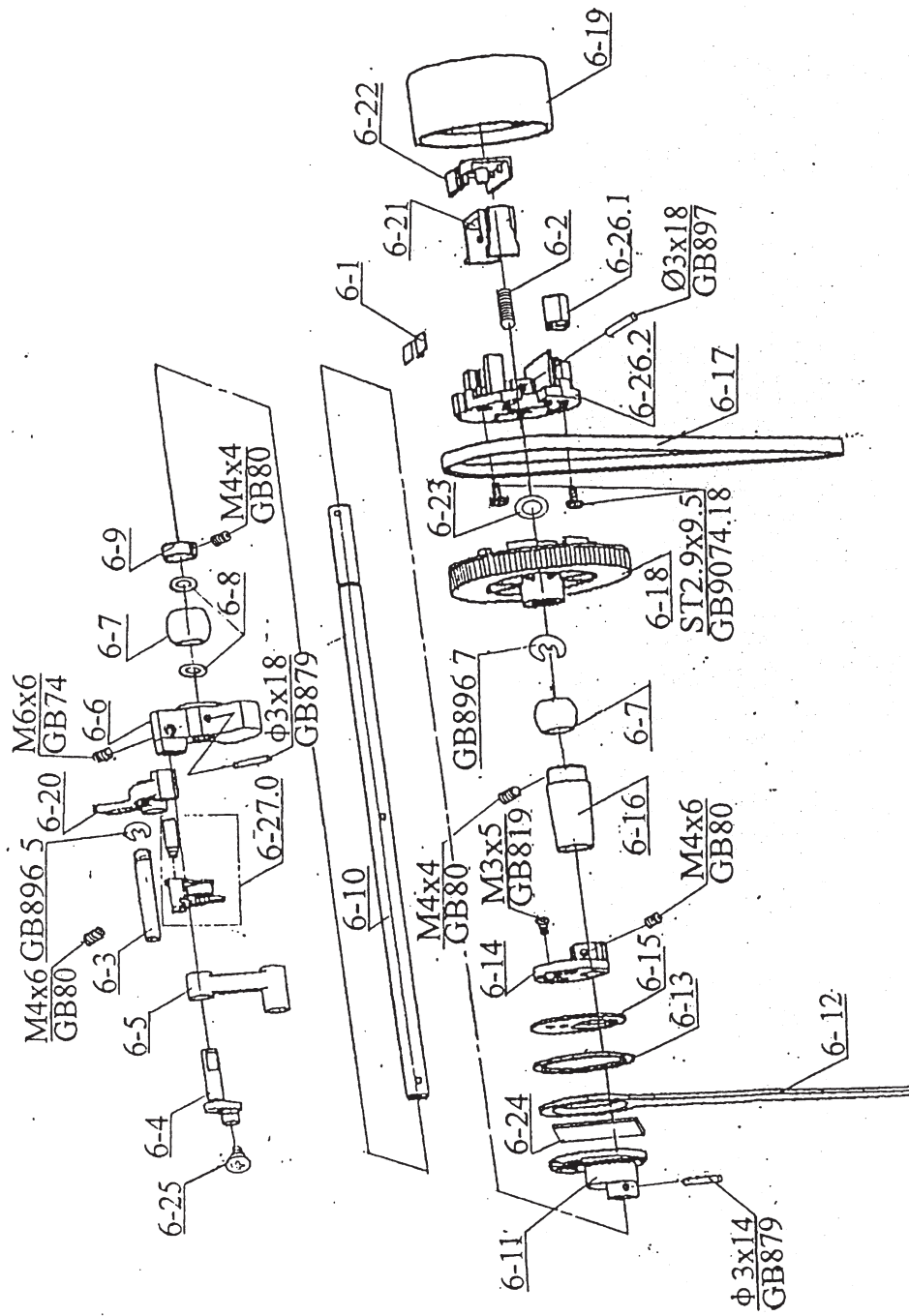
5 - Buttonhole Regulator Mechanism

PARTS NO.	NAME	QT.
5-1	MARK PLATE	1
5-2	CLAMPING GASKET	1
5-3	STOPPER PLATE	1
5-4	RESET ADJUSTMENT SET PLATE	1
GB818 M4×4	SCREW	1
5-5	BUTTONHOLE ADJUSTING LEVER	1
GB896 2.5	SNAP RING	1
5-8.0	BUTTONHOLE ADJUSTMENT PULLING LEVER ASM.	1
5-8.1	BUTTONHOLE ADJUSTMENT PULLING LEVER	1
5-9.0	ADJUSTING ROD SUPPORTING PLATE ASM.	1
5-9.1	SUPPORTING PLATE RIVETING SHAFT	1
GB896 5	SNAP RING	1
GB818 M4×8	SCREW	1
5-10.0	ROCKING ARM ASM.	1
5-10.1	ROCKING ARM SHAFT	1
5-10.2	ROCKING ARM PLATE	1
GB80 M4×4	SCREW	1
5-6	RESET CLAMPING RING	1
5-7	SPRING BRACKET	1
5-11.0	BUTTONHOLE REGULATOR ASM.	1
5-11.1	RIVETING SHAFT	1
5-11.2	BUTTONHOLE REGULATING BRACKET	1
5-11.3	BUTTONHOLE REGULATING PLATE	1
GB818 M4×8	SCREW	1



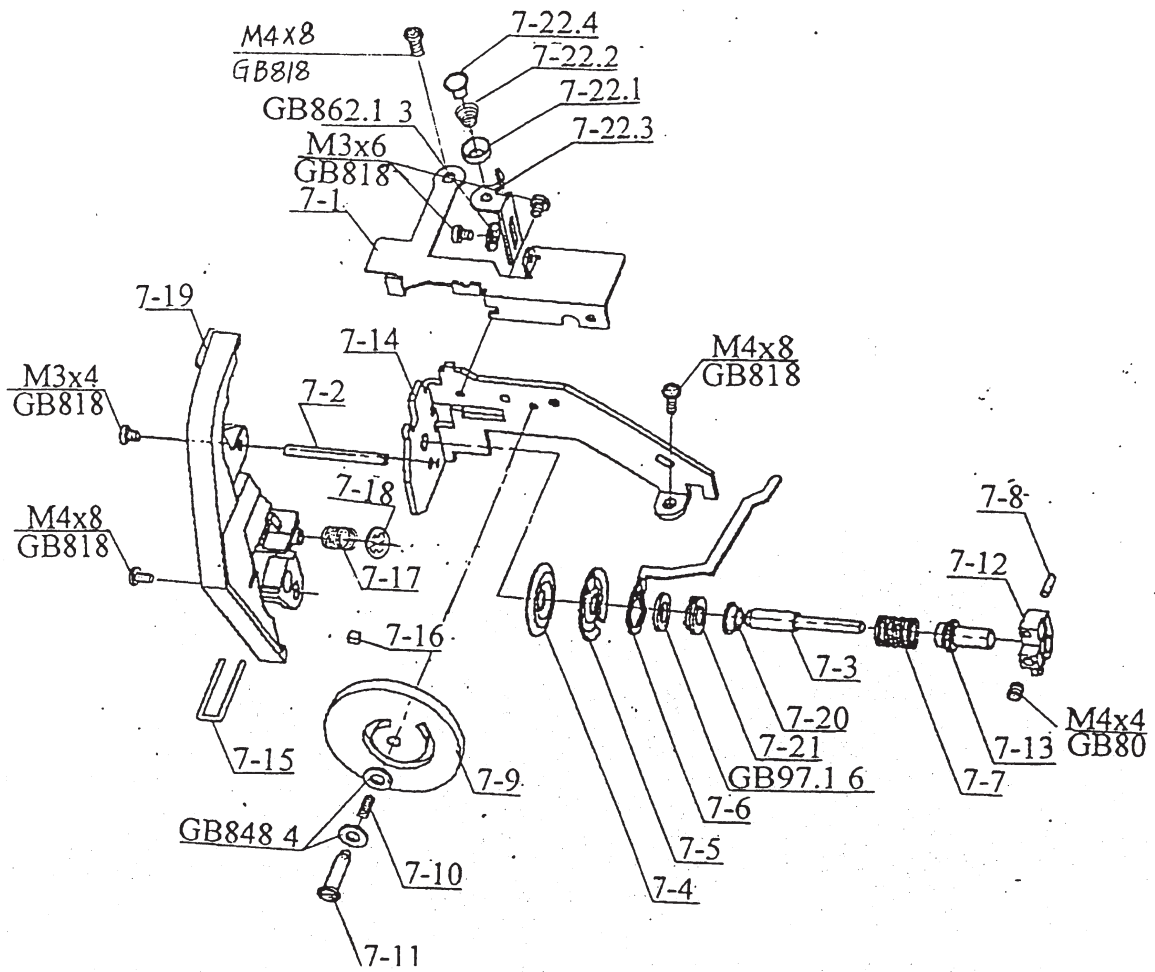
6 - Driving Mechanism

PARTS NO.	NAME	QT.
6-1	CLAMP SPRING GASKET	1
GB879 $\phi 3 \times 18$	PIN	1
6-2	SPRING	1
6-3	THREAD TAKE-UP SHAFT	1
GB80 M4 x 6	SCREW	1
6-4	PIN	1
GB896 5	V RING	1
6-5	NEEDLE BAR CONNECTING ROD	1
6-6	THREAD TAKE-UP CRANK	1
6-7	BALL SUPPORTER	2
6-8	BALL SUPPORTER GASKET	2
GB80 M4 x 4	SCREW	2
6-9	UPPER SHAFT SET COLLAR	1
6-10	UPPER SHAFT	1
6-11	FEED CAM	1
6-12	LOWER SHAFT CONNECTING ROD	1
6-13	SPACER	1
6-14	BOBBIN CRANK	1
GB819 M3 x 5	SCREW	1
6-15	PRESSER PLATE	1
6-16	UPPER SHAFT WORM LEVER	1
GB80 M4 x 4	SCREW	2
6-17	DRIVING BELT	1
6-18	PULLEY	1
6-26.0	SWITCH STAND ASM.	1
6-26.1	SWITCH STAND	1
6-26.2	WEIGHT-ATTACHED BLOCK	1
6-19	SWITCH COVER	1
6-20	THREAD TAKE-UP PLATE	1
6-27.0	THREAD TAKE-UP ASM.	1
6-27.1.0	THREAD TAKE-UP SECTION ASM.	1
6-27.1.1	THREAD TAKE-UP	1
6-27.1.2	THREAD TAKE-UP BUSHING	1
6-27.2	THREAD TAKE-UP RIVETING SHAFT	1
GB879 $\phi 3 \times 18$	PIN	1
6-21	SLIDE BLOCK	1
6-22	TRANSFER SWITCH	1
6-23	PULLEY GASKET	1
GB896 8	V RING	1
GB80 M4 x 4	SCREW	2
6-24	FELT RING	2
6-25	SCREW	1
GB879 $\phi 3 \times 14$	PIN	1
GB74 M6 x 6	SCREW	1
GB74 M6 x 4	SCREW	1
GB9074.19 ST2.9 x 9.5	SCREW	2



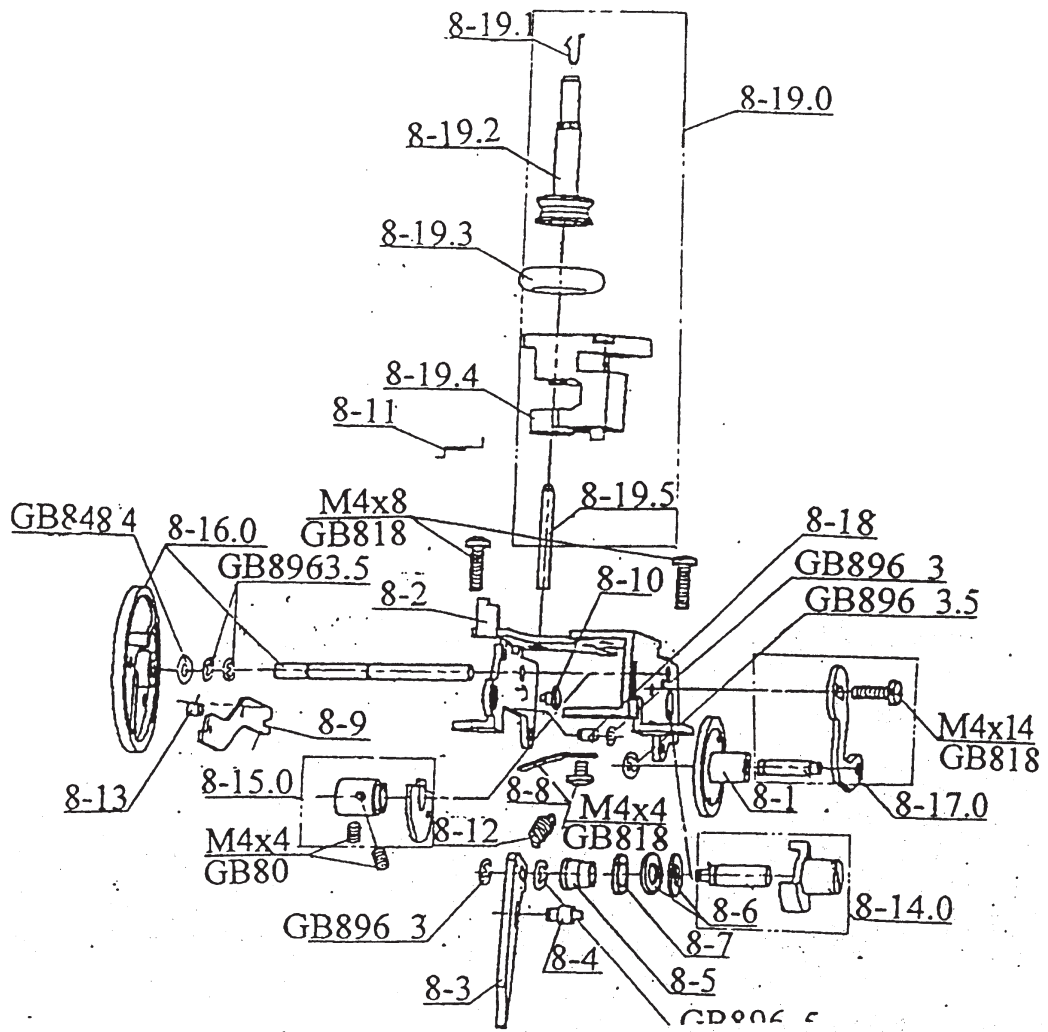
7 - Thread Adjusting Mechanism

PARTS NO.	NAME	QT.
7-1	HORIZONTAL BRACKET	1
7-2	GUIDE LEVER	1
7-3	VERTICAL COLUMN	1
7-4	LEFT THREAD TENSION DISC	1
7-5	RIGHT THREAD TENSION DISC	1
7-6	WIPER FORK	1
7-7	SPRING	1
7-22.0	THREAD GUIDE ASM.	1
7-22.1	THREAD GUIDE PRESSER	1
7-22.2	SPRING	1
7-22.3	SUPPORTING PLATE	1
7-22.4	RIVET	1
GB862.1 3	TIGHTEN GASKET	1
GB818 M3×6	SCREW	1
GB879 ϕ 2.5×8	PIN	1
7-9	CAM DIAL	1
GB848 4	GASKET	2
7-10	SPRING	1
7-11	SCREW	1
7-12	MOVABLE BLOCK	1
7-13	RIGHT SPRING BRACKET	1
GB80 M4×4	SCREW	1
7-14	VERTICAL BRACKET	1
7-15	U FORK	1
7-16	OSCILLATION-DECREASING GASKET	1
7-17	THREAD TAKE-UP SPRING	1
7-18	TIGHTEN WASHER	1
7-19	PLASTIC COVER BRACKET	1
7-20	LEFT SPRING BRACKET BASE	1
7-21	THREAD-PULLING COLLAR	1
GB97.1 6	WIPER FORK GASKET	1
GB818 M3×46	SCREW	2
GB818 M4×8	SCREW	2



8 - Stitch Length Adjusting Mechanism

PARTS NO.	NAME	QT.
8-2	ADJUSTING BRACKET	1
8-3	BUTTONHOLE ADJUSTING LEVER	1
8-1	RIVET	1
8-5	BUTTONHOLE AJUSTING KNOB BUSHING	1
8-6	WAVED GASKET	2
8-7	WASHER	1
8-14.0	BUTTONHOLE ADJUSTING KNOB ASM.	1
8-14.2	ECCENTRIC SHAFT	1
GB896 5	V RING	1
GB896 3	V RING	2
8-12	RESET SPRING	1
8-1	STITCH-LENGTH ADJUSTING GEAR	1
8-17.0	GEAR ROCKING ARM ASM.	1
8-17.1	GEAR ROCKING ARM	1
8-17.2	GEAR SHAFT	1
GB818 M4 · 14	SCREW	1
GB896 3.5	V RING	1
8-8	SEGMENT GEAR BUSHING ELASTIC PLATE	1
GB818 M4 · 4	SCREW	1
8-15.0	SEGMENT GEAR ASM.	1
8-15.1	SEGMENT GEAR	1
8-15.2	SEGMENT GEAR BUSHING	1
GB80 M4 · 4	SCREW	1
8-16.0	STITCH-LENGTH ADJUSTING DIAL ASM.	1
8-16.1	STITCH-LENGTH ADJUSTING SHAFT	1
GB896 3.5	V RING	2
GB848 4	WASHER	1
8-9	REVERSE SEWING STOPPER WIPER FORK	1
8-10	REVERSE SEWING STOPPER WIPER FORK SHAFT	1
8-13	SETTING SHAFT	1
8-18	REVERSE FEED STOPPER SHAFT	1
GB896 4	V RING	1
8-19.0	THREAD WINDER ASM.	1
8-19.1	SPRING	1
8-19.2	THREAD WINDER SHAFT	1
8-19.3	THREAD WINDER ROLLING WHEEL	1
8-19.4	PIN	1
8-19.5	THREAD STAND	1
8-11	SPRING	1
GB818 M4 · 8	SCREW	2

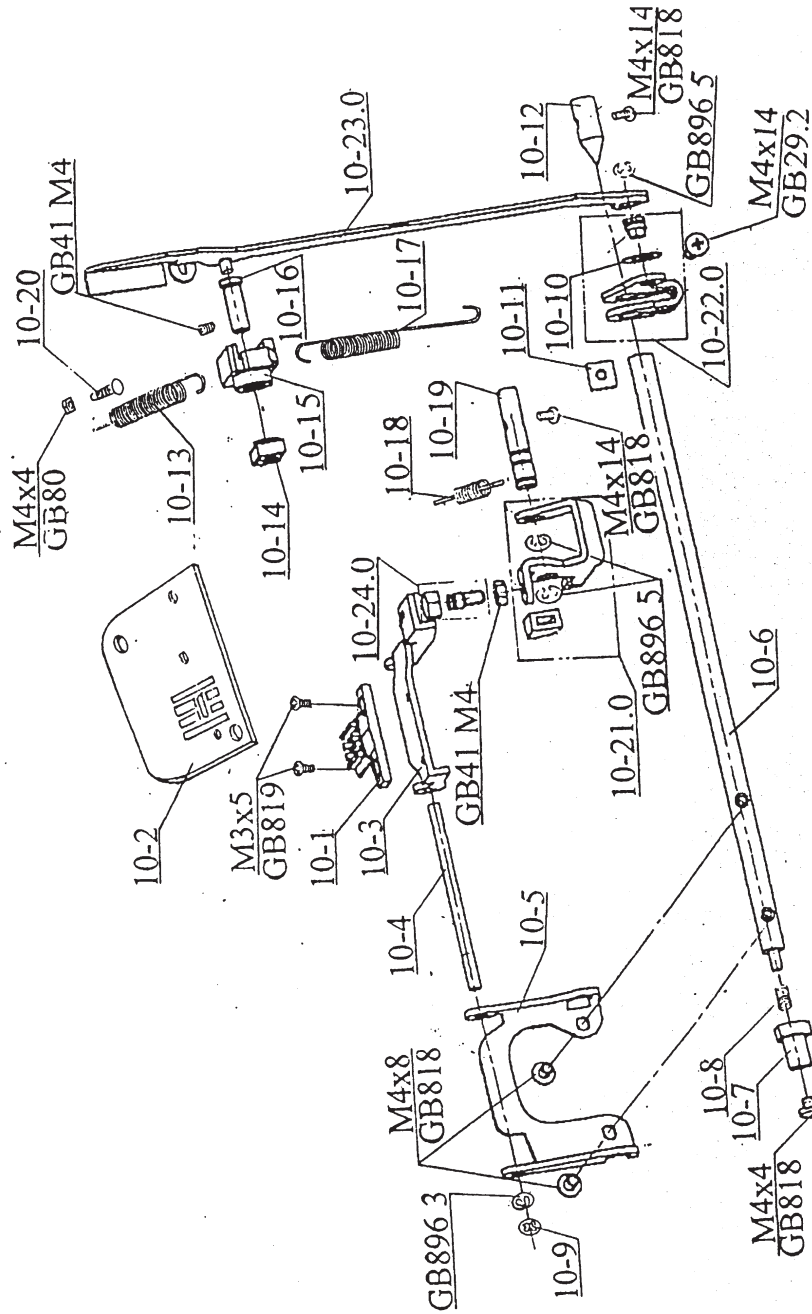


9 - Pattern Selection Mechanism

PARTS NO.	NAME	QT.
9-1	PATTERN SELECTOR SUPPORTING PLATE I	1
9-2	PIN	1
9-3	PATTERN SELECTOR SUPPORTING PLATE II	1
9-4	SELECTOR DRIVING GEAR BUSHING	1
9-5	SELECTOR HANDLE	1
9-17.0	SELECTOR DRIVING GEAR ASM.	1
9-17.1	SELECTOR DRIVING SHAFT	1
GB896 5	V RING	1
GB818 M4×12	SCREW	2
9-6	PATTERN SELECTOR RIVET	1
9-7	PATTER SELECTOR WIPER FORK I	1
9-8	SELECTOR WIPER FORK SUPPORTING PLATE	1
9-9	PATTERN SELECTOR WIPER FORK II	1
9-10	SPRING	1
9-13.0	PATTERN CAM ASM.	1
9-13.1	GASKET I	1
9-13.2	WAVED GASKET	1
9-13.3	STITCH-LENGTH CAM I	1
9-13.4	STITCH-LENGTH MAIN CAM	1
9-13.5	PATTERN SHAFT	1
9-13.6	STITCH-LENGTH CAM II	1
9-13.7	CONNECTING DIAL	1
9-13.8	GASKET II	2
9-13.9.0	OSCILLATING NEEDLE CAM ASM.	1
9-13.9.1	COPPER BUSHING	1
9-13.9.2	OSCILLATING NEEDLE CAM	1
9-13.10.0	OSCILLATING NEEDLE CAM III ASM.	1
9-13.10.1	OSCILLATING NEEDLE CAM III	1
9-13.10.2	RIVETING PIN	1
9-13.10.3	STOPPER ARM	1
9-13.10.4	RESET SPRING	1
GB41 M4	NUT	2
GB896 5	V RING	2
9-14.0	SELECTOR CAM ASM.	1
9-14.1	SELECTOR CAM SHAFT	1
9-14.2	SELECTOR CAM	1
GB896 φ3×14	PIN	1
9-15.0	ROCKING ARM ASM.	1
9-15.1	SPRING	1
9-15.2	ROCKING ARM SHAFT	1
9-15.3	ROCKING ARM	1
	ADJUSTING SCREW	2
GB41 M4	NUT	2
GB896 3.5	V RING	2
9-16.0	WIPER FORK ASM.	1
9-16.1	BUTTONHOLING SELECTOR WIPER FORK I	1
9-16.2	SPRING	1
9-16.0 (a)	BUTTONHOLING SELECTOR WIPER FORK ASM.	1
9-16.3	BUTTONHOLING SELECTOR WIPER FORK II	1
9-16.4	DRIVING BRACKET I	1
9-16.5	ADJUSTING SCREW	2
GB41 M4	TIGHTEN NUT	5
9-16.6	MOVING WIPER FORK I	1
9-16.7	MOVING WIPER FORK I GUIDE SHAFT	1
9-16.8	DRIVING BRACKET II	1
9-16.9	MOVING WIPER FORK II	1
9-16.10	MOVING WIPER FORK II GUIDE SHAFT	1
GB896 6	V RING	3
9-16.11	BUTTONHOLE WIPER BLOCK	1
9-11	SPRING	1
9-16.12	ADJUSTING SCREW	1
9-16.13	COLLAR	1
9-16.14	GASKET	1
9-16.15	WIPER FORK SHAFT	1
9-18.0	WIPER DIAL ASM.	1
9-18.1	WIPER DIAL BUSHING	1
9-18.2	WIPER DIAL	1
GB80 M4×6	SCREW	2
GB818 M4×8	SCREW	3

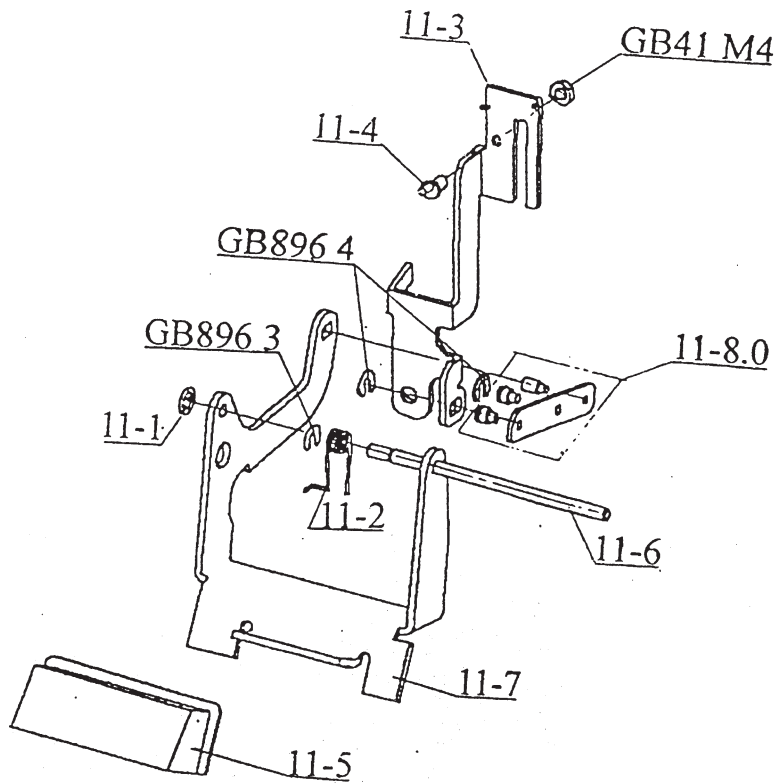
10 - Feed Mechanism

PARTS NO.	NAME	QT.
10-1	FEED DOG	1
GB819 M3×5	SCREW	2
10-2	THROAT PLATE	1
10-3	TOOTH LIFTER PLATE	1
10-4	DRIVING PLATE SHAFT	1
10-5	DRIVING PLATE	1
10-9	TIGHTEN WASHER	1
GB896 3	V RING	1
10-6	FEED SHAFT	1
10-7	SETTING BUSHING	1
10-8	SPRING	1
GB818 M4×4	SCREW	1
10-12	FEED SHAFT POINT	1
GB818 M4×14	SCREW	1
GB818 M4×8	SCREW	2
10-21.0	FEED DOG LIFTER ROCKING ARM ASM.	1
10-21.2	FEED DOG LIFTER ROCKING ARM	1
10-24.0	FEED DOG LIFTER SCREW ASM.	1
10-24.2	FEED DOG LIFTER SCREW	1
10-18	SPRING	1
GB41 M4	NUT CAP	1
10-19	ROCKING ARM SHAFT	1
GB896 5	V RING	2
GB818 M4×14	SETTING SCREW	1
10-22.0	FEED CRANK ASM.	1
10-22.1	FEED CRANK PIN	1
10-22.2	FEED CRANK	1
10-10	GASKET	1
10-11	NUT	1
GB29.2 M4×4	SCREW	1
GB896 5	V RING	1
10-23.0	FEED CONNECTING ROD ASM.	1
10-23.1	PIN	1
10-23.2	FEED CONNECTING ROD	1
10-13	SPRING	1
10-14	SLIDE BLOCK	1
10-15	STITCH-LENGTH REGULATOR	1
10-16	PIN	1
GB80 M4×4	SCREW	1
10-17	SPRING	1
10-20	SCREW	1
GB41 M4	NUT CAP	1



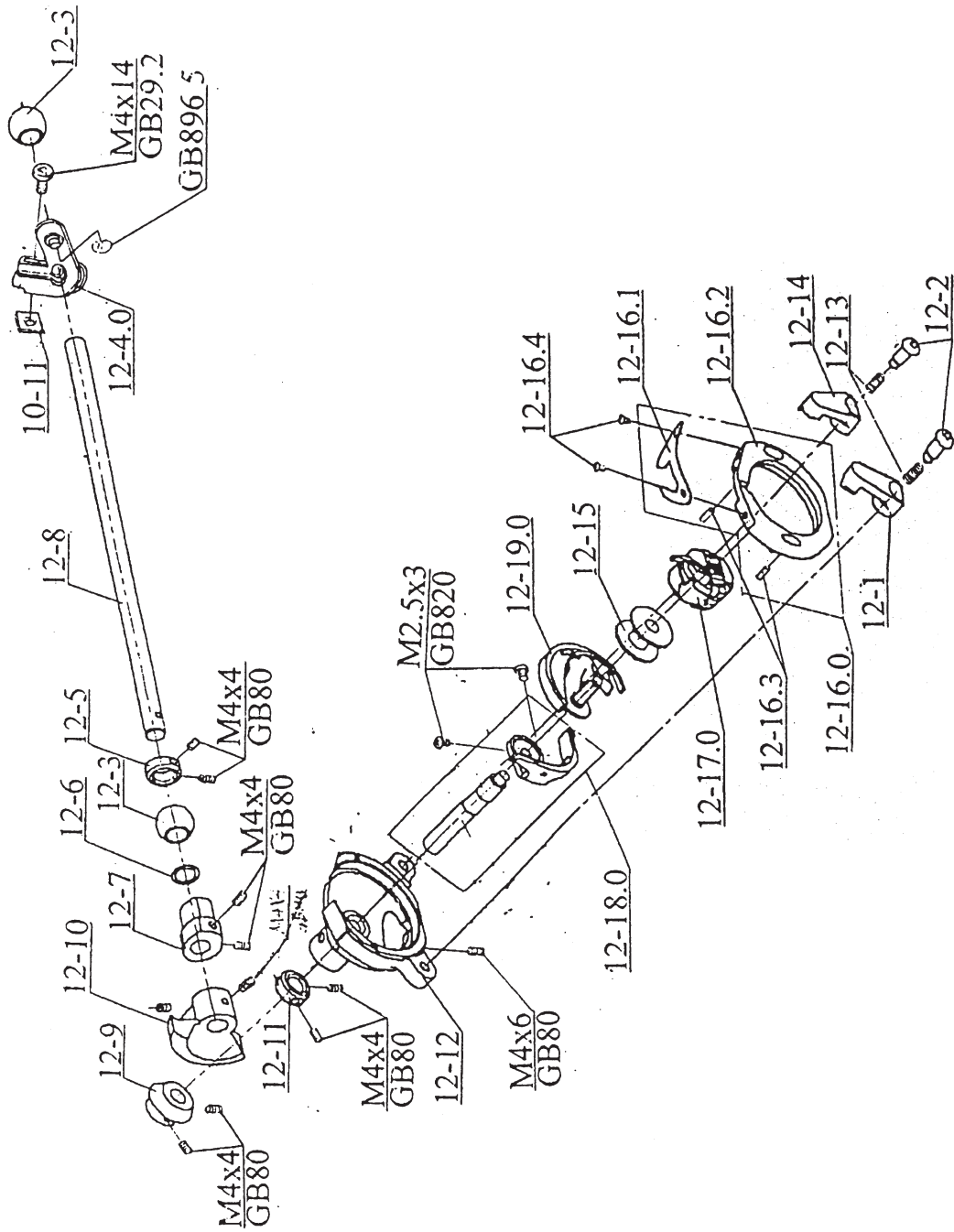
11 - Reverse Feed Mechanism

PARTS NO.	NAME	QT.
11-1	WASHER	1
11-2	SPRING	1
11-6	REVERSE FEED BRACKET SHAFT	1
11-7	REVERSE FEED BRACKET	1
11-5	REVERSE FEED BUTTON	1
GB896 3	V RING	1
11-3	REVERSE FEED PLATE	1
11-4	SCREW	1
GB41 M4	NUT	1
11-8.0	CONNECTING PLATE ASM.	1
11-8.1	CONNECTING PLATE	1
11-8.2	PIN	2
11-8.3	PIN	1
GB896 4	V RING	2

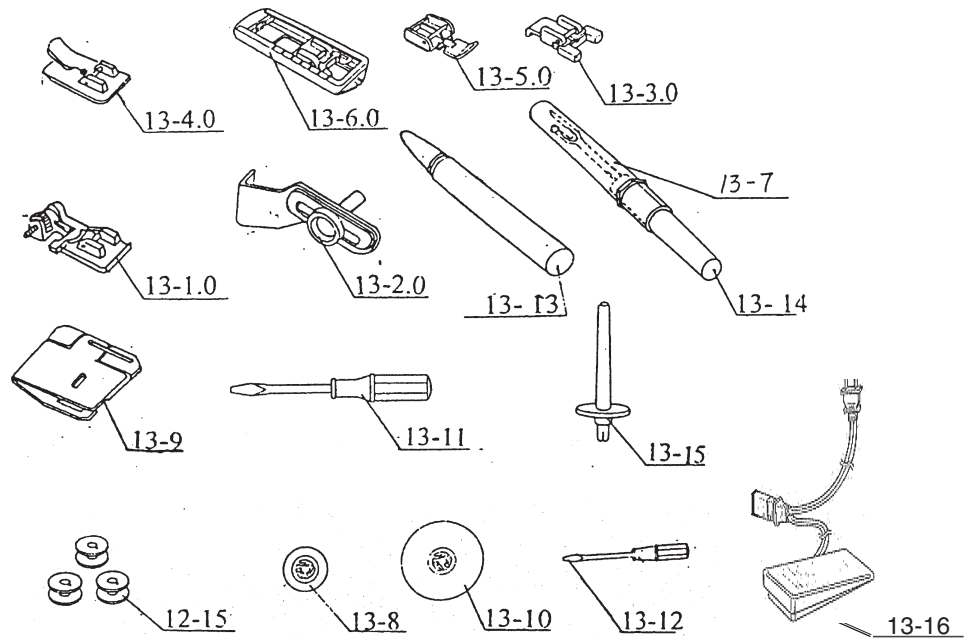


12 - Shuttle Lower Shaft Mechanism

PARTS NO.	NAME	QT.
12-1	SHUTTLE LEFT SPANNER	1
12-2	SCREW	2
12-11	SHUTTLE RIGHT SPANNER	1
12-13	SPRING	2
12-16.0	SHUTTLE SNAP RING ASM.	1
12-16.1	SNAP RING UPPER COVER	1
12-16.2	SHUTTLE SNAP RING	1
12-16.3	PIN	2
12-16.4	SCREW	2
12-17.0	SHUTTLE BOBBIN CASE ASM.	1
12-18.0	SHUTTLE BRACKET ASM.	1
12-18.1	SPRING	1
12-18.2	SHUTTLE BRACKET	1
12-18.3	SHUTTLE BRACKET SHAFT	1
GB820 M2.5-3	SCREW	2
12-19.0	SHUTTLE BODY	1
12-15	SHUTTLE BOBBIN	1
12-3	LOWER SHAFT BALL BEARING	2
12-4.0	LOWER SHAFT CRANK ASM.	1
12-4.1	PIN	1
12-4.2	LOWER SHAFT CRANK	1
	NUT	1
GB29.2 M4-4	SCREW	1
GB896 5	V RING	1
12-5	LOWER SHAFT SETTING COLLAR	1
GB80 M4-4	TIGHTEN SCREW	2
12-6	WASHER	2
12-7	TOOTH LIFTER CAM	1
GB80 M4-4	SCREW	2
12-8	LOWER SHAFT	1
12-9	LOWER SHAFT GEAR	1
12-10	LOWER SHAFT UMBRELLA GEAR	1
GB879 ϕ 3-14	PIN	1
GB80 M4-4	SCREW	2
12-11	SET COLLAR	1
GB80 M4-4	TIGHTEN SCREW	2
12-12	SHUTTLE RACE	1
GB80 M4-6	SCREW	1



13 - Accessories



PARTS LIST

ITEM # DESCRIPTION	ITEM # DESCRIPTION
12-15 Bobbins (3)	13-9.0 Sewing Dial
13-1.0 Seam Pressure Foot	13-10 Thread Dial Holder
13-2.0 Cloth Guard Adjusting Plate	13-11 Big Screwdriver
13-3.0 Buttonhole Pressure Foot	13-12 Small Screwdriver
13-4.0 Straight Sewing Pressure Foot	13-13 Bottle
13-5.0 Zipper Pressure Foot	13-14 Knife
13-6.0 Button Pressure Foot	13-15 Top Thread Winder
13-7.0 Thread Bushing	13-16 Foot Controller
13-8.0 Thread Dial	

WIRING DIAGRAM

