CLINTON'S
MODEL 199
UNDERBED TRIMMER
FOR
UNION SPECIAL 63900

SERVICE MANUAL

40-0252-01

From the library of: Superior Sewing Machine & Supply LLC
### TABLE OF CONTENTS

**THREAD TRIMMER SECTION**

<table>
<thead>
<tr>
<th>SECTION</th>
<th>CONTENT</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SECTION I</td>
<td>GENERAL INFORMATION</td>
<td>1</td>
</tr>
<tr>
<td>A.</td>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>B.</td>
<td>APPLICATION</td>
<td>1</td>
</tr>
<tr>
<td>C.</td>
<td>TRIMMER COMPONENTS</td>
<td>1</td>
</tr>
<tr>
<td>SECTION II</td>
<td>TRIMMER INSTALLATION</td>
<td>2</td>
</tr>
<tr>
<td>A.</td>
<td>PULLOFF ASSEMBLY</td>
<td>2</td>
</tr>
<tr>
<td>B.</td>
<td>TENSION RELEASE AND PULLOFF ASSEMBLY</td>
<td>2</td>
</tr>
<tr>
<td>C.</td>
<td>CUTTER AND WIPER ASSEMBLY</td>
<td>2</td>
</tr>
<tr>
<td>D.</td>
<td>SOLENOID AIR VALVE CONTROL UNIT</td>
<td>2</td>
</tr>
<tr>
<td>E.</td>
<td>NEEDLE COOLER</td>
<td>2</td>
</tr>
<tr>
<td>F.</td>
<td>FOLDER OPENER</td>
<td>2</td>
</tr>
<tr>
<td>SECTION III</td>
<td>PRELIMINARY SETTINGS</td>
<td>3</td>
</tr>
<tr>
<td>SECTION IV</td>
<td>TRIMMER ADJUSTMENTS</td>
<td>3</td>
</tr>
<tr>
<td>A.</td>
<td>TENSION RELEASE AND PULLOFF ASSEMBLY</td>
<td>3</td>
</tr>
<tr>
<td>B.</td>
<td>CUTTER AND WIPER ASSEMBLY</td>
<td>3</td>
</tr>
<tr>
<td>C.</td>
<td>SOLENOID AIR VALVE CONTROL UNIT</td>
<td>3</td>
</tr>
<tr>
<td>D.</td>
<td>FOOTLIFTER ASSEMBLY</td>
<td>3</td>
</tr>
<tr>
<td>E.</td>
<td>NEEDLE COOLER</td>
<td>4</td>
</tr>
<tr>
<td>F.</td>
<td>FOLDER THREAD WIPER</td>
<td>4</td>
</tr>
<tr>
<td>SECTION V</td>
<td>TRIMMER SEQUENCE OF OPERATION</td>
<td>4</td>
</tr>
<tr>
<td>A.</td>
<td>UNDERBED TRIMMER</td>
<td>4</td>
</tr>
<tr>
<td>B.</td>
<td>TENSION RELEASE</td>
<td>4</td>
</tr>
<tr>
<td>C.</td>
<td>NEEDLE THREAD WIPER</td>
<td>4</td>
</tr>
<tr>
<td>SECTION VI</td>
<td>TROUBLE SHOOTING</td>
<td>5</td>
</tr>
<tr>
<td>SECTION VII</td>
<td>PARTS DRAWINGS</td>
<td>6-12</td>
</tr>
</tbody>
</table>
I. GENERAL INFORMATION

A. INTRODUCTION

The air Operated Underbed Trimmer contains a trimming system that cuts both the needle and bobbin threads simultaneously. A movable and a stationary blade, mounted on the throat plate are used in combination to pick up and cut the threads.

Solid state electronics are used to sense the position of the needle and to trigger the trimming mechanism at the proper time as well as to control footlifting and backtacking operations.

B. APPLICATION

The underbed Trimmer/Positioner enables the operator to automatically control the position of the needle in or out of the work, thereby eliminating the need for hand positioning. In addition, the top and bottom threads are automatically cut beneath the throat plate after positioning. This eliminates the need for hand trimming.

C. SYSTEM COMPONENTS

The trimmer components, which can be either pre-installed on the sewing machine head and factory tested, or field installed, include:

1. Standard Components
   a. Pulloff Assembly
   b. Tension Release and Pulloff Assembly
   c. Thread Cutter and Wiper Air Cylinder Assembly
   d. Solenoid Air Valve Control Unit

2. Optional Components
   e. Foot Lifter
   f. Needle Cooler
   g. Folder Opener

D. TUBING

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MATERIAL: VINYL</td>
<td>MATERIAL: POLYURETHANE</td>
<td>MATERIAL: POLYURETHANE</td>
</tr>
<tr>
<td>30-1134-01 CLEAR</td>
<td>30-1540-01 CLEAR</td>
<td>30-2102-01 CLEAR</td>
</tr>
<tr>
<td>-02 YELLOW</td>
<td>-02 YELLOW</td>
<td>-03 RED</td>
</tr>
<tr>
<td>-03 RED</td>
<td>-04 BLACK</td>
<td>-05 BLUE</td>
</tr>
<tr>
<td>-04 BLACK</td>
<td>-06 GREEN</td>
<td>-07 ORANGE</td>
</tr>
<tr>
<td>-05 BLUE</td>
<td>-08 WHITE</td>
<td>-08 GRAY</td>
</tr>
<tr>
<td>-06 GREEN</td>
<td>-09 ORANGE</td>
<td>-09 GRAY</td>
</tr>
<tr>
<td>-07 ORANGE</td>
<td>-08 WHITE</td>
<td>-10 BROWN</td>
</tr>
<tr>
<td>-08 GRAY</td>
<td>-09 ORANGE</td>
<td></td>
</tr>
<tr>
<td>-09 GRAY</td>
<td>-10 BROWN</td>
<td></td>
</tr>
<tr>
<td>-10 BROWN</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
II. TRIMMER INSTALLATION

A. PULLOFF ASSEMBLY

Remove the machine face plate and mount the Pulloff assembly as shown in INS-2377.

B. TENSION RELEASE AND PULLOFF ASSEMBLY

1. Remove from the machine the thread tension discs assembly and tension release pin.

2. Drill and Tap mounting holes using appropriate drill fixture supplied. Refer to machine drilling instructions shown in drawing INS-2355.

3. Mount tension release assembly and the thread tension discs assembly to the sewing machine as shown in drawing INS-2353.

C. CUTTER AND WIPER ASSEMBLY

1. Remove from the machine throat plate and feed shaft clamp plate.

2. Rework clamp plate as shown in drawing INS-1630 and fasten to the machine.

3. Fasten cutter and wiper cylinder assembly to sewing machine bed.

4. Mount new throat plate assembly on the machine with original hook basket retaining finger.

D. SOLENOID AIR VALVE CONTROL UNIT

1. Mount solenoid valve assembly in back of the machine bed as shown in INS-2379.

2. Mount foot lifter air cylinder assembly as shown in INS-2379.

E. NEEDLE COOLER

1. Fasten needle cooler tube to presser foot and roller housing bracket.

2. Mount treadle air valve assembly supplied between the motor and treadle arm.

F. FOLDER OPENER

1. Mount folder opener air cylinder assembly on bed of machine.

2. Assemble the folder opener assembly to the machine cylinder arm.
III. PRELIMINARY SETTINGS

NOTE: Do not connect the air supply at this time.

1. Set the machine head in the table and install "V" belt.
2. Time sewing machine to normal sewing conditions.
3. Connect all air lines as shown in circuit diagram drawing INS-2339.
4. Connect all electrical cables to the main control box.
5. Thread the sewing machine and sew on material being used on the operation.

IV. TRIMMER ADJUSTMENTS

A. TENSION RELEASE

Adjust puller for sufficient thread tail left on needle to start sewing on the next cycle.

B. CUTTER AND WIPER ASSEMBLY

1. Loosen the 10-32 nut on the cylinder shaft and adjust the knife travel so that the cutting edge is about 1/16" past the cutting edge of the stationary blade.
2. Adjust the wiper to pass between the needle and the presser foot without striking either. By loosening the two nuts on the cylinder shaft, the assembly will rotate around the screw to position the wire hook. Bending may be necessary for proper thread pickup.
3. With the power and air off, manually stimulate the trimmer sequence of operation cycle several times to insure that the proper adjustments have been made.

C. SOLENOID AIR VALVE CONTROL UNIT

Turn power and air on. Set regulator to read 60 PSI and adjust the flow control of the trim air cylinder to reduce bobbin spin.

D. FOOTLIFTER ASSEMBLY

Adjust footlifter cylinder for required amount of lift. Readjustment of footlift linkage may be necessary.
E. NEEDLE COOLER

Adjust the flow control for the desired air flow to cool the needle and keep the throat plate knife clean.

F. FOLDER OPENER

Adjust folder opener mounting bracket for required amount of opening.

V. TRIMMER SEQUENCE OF OPERATION

A. UNDERBED TRIMMER

The operation of the underbed trimmer is as follows:

1. Needle positioner stops with the needle thread positioned between the 5 and 6 o'clock position across the hook. The needle is used for the reference point or 12 o'clock position.

2. The movable knife is extended into the needle loop and in position to pick up the bobbin thread.

3. The needle positioner moves the takeup and needle to up position.

4. The tension release, the pulloff and wiper cylinders operate after the positioner reaches to up position.

5. Then the movable knife is returned to cut both needle and bobbin threads.

B. TENSION RELEASE

The needle thread tension is released so that the thread puller can pull off enough thread to start the next sewing operation.

C. NEEDLE THREAD WIPER

The needle thread wiper pulls the needle thread above the foot before it is raised. If the thread is trapped under the foot a long tail will be left at the start of the next sewing operation.
## VI. TROUBLESHOOTING

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>PROBABLE CAUSE</th>
<th>CORRECTIVE ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Needle thread not cut. Bobbin thread is cut</td>
<td>Positioner solenoid binding</td>
<td>Remove bind</td>
</tr>
<tr>
<td></td>
<td>Movable blade missed needle loop</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Binds in trimmer linkage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Positioner solenoid binding</td>
<td>Check synchronizer timing to see that trimmer is fired at correct time</td>
</tr>
<tr>
<td></td>
<td>Movable blade missed needle loop</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Binds in trimmer linkage</td>
<td>Locate and remove bind. A light bind would slow it enough to miss needle loop</td>
</tr>
<tr>
<td>Bobbin thread is cut short</td>
<td>Defective movable blade</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>Water in air lines</td>
<td></td>
</tr>
<tr>
<td>Both threads not cut not picked up</td>
<td>Defective solenoid air valve or air cylinder</td>
<td>Repair or replace</td>
</tr>
<tr>
<td></td>
<td>Defective needle positioner logic</td>
<td>Repair logic</td>
</tr>
<tr>
<td></td>
<td>Binds in trimmer linkage</td>
<td>Locate and remove bind</td>
</tr>
<tr>
<td>Both threads picked up not cut</td>
<td>Defective movable or stationary blade</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>Stroke misadjusted failing to reach cutting position</td>
<td>Readjust</td>
</tr>
<tr>
<td>Needle thread cut short</td>
<td>Pulloff cylinder improperly adjusted</td>
<td>Readjust</td>
</tr>
<tr>
<td>Long tail left on top side at start of sewing</td>
<td>Wiper not operating or incorrectly positioned causing thread to be trapped under foot</td>
<td>Repair or reposition thread wiper as required</td>
</tr>
<tr>
<td>Bobbin thread is cut short</td>
<td>Bobbin tension too tight</td>
<td>Lossen bobbin tension as much as possible</td>
</tr>
<tr>
<td></td>
<td>Bobbin thread slipped out of hook on case</td>
<td>Run bobbin thread through hook</td>
</tr>
<tr>
<td></td>
<td>Bobbin case without hook being used</td>
<td>Replace with correct bobbin case</td>
</tr>
</tbody>
</table>
PULLOFF ASSEMBLY
MODEL 199 U.S. 63900
80-0503-01

TRIM AND WIPER ASSEMBLY
MODEL 199 FOR U.S. 63900
80-0514-01

TENSION RELEASE ASSEMBLY
MODEL 199 U.S. 63900
80-0517-01

AIR CYLINDER THREAD RELEASE ASSEMBLY
MODEL 199 U.S. 63900
10-1403-01

From the library of: Superior Sewing Machine & Supply LLC
DRILLING INSTRUCTIONS / DRILL FIXTURE KIT
MODEL 199 FOR U.S. 63900
10-1405-01

STEP 1. REMOVE LOWER NEEDLE THREAD EYELET & SCREW AS SHOWN.

STEP 2. REPLACE EYELET & SCREW WITH THREAD NIPPER ASSEMBLY (10-0477-01).

02-2893-01 DRILL FIXTURE

MOUNT FIXTURE AS SHOWN USING EXISTING HOLES.

DRILL AND TAP USING DRILL (10-1104-06) AND TAP (10-1103-02).

---

DRILLING AND MOUNTING INSTRUCTIONS
THREAD NIPPER ASSEMBLY 61400 M, T, W - 63900 M, T, W
REWORK - TAKEUP SPRING THREAD WIRE 61400 M, T, W

63900 M, T, W
STEP 1. REMOVE LOWER NEEDLE THREAD EYELET & SCREW AS SHOWN.
STEP 2. REPLACE EYELET & SCREW WITH THREAD NIPPER ASSEMBLY (10-0477-01).

---

61400 M, T, W
STEP 1. DRILL AND TAP HOLE SQUARE (90°) TO SURFACE OF MACHINE USING #31 DRILL AND UNION SPECIAL #V107 TAP.
STEP 2. MOUNT THREAD NIPPER ASSEMBLY (10-0477-01).

---

UNION SPECIAL #61453-6

61400 M, T, W
CUT OFF SHADED AREA
FOLDER ASSEMBLY
MODEL 199 FOR U.S. 63900
80-0513-01

NOTE:
ALL PARTS NOT IDENTIFIED ARE SUPPLIED BY UNION SPECIAL.
SEE UNION SPECIAL MANUAL.

ACCUSTOP
SYNCHRONIZER ADAPTER MOUNTING FOR U.S. 63900
80-0323-51

NOTE: ALL PARTS NOT IDENTIFIED ARE SUPPLIED BY UNION SPECIAL. SEE UNION SPECIAL MANUAL.

REWORK FEED SHAFT CLAMP PLATE

CHAMFER THIS CORNER APPROX. AS SHOWN

MACHINED DOTTED AREA TO THE COUNTERBORES

UNION SPECIAL #63939F

From the library of: Superior Sewing Machine & Supply LLC
MODEL 199
(MACHINE REAR VIEW)

FILTER, REGULATOR, GAUGE ASSEMBLY

NEEDLE COOLER ASSEMBLY
80-0204-03

01-4936-01 TUBE
01-4938-01 CLAMP
30-1064-01 SCREW

TENSION RELEASE ASSEMBLY

SOLENOID VALVE ASSEMBLY

NEEDLE COOLER ASSEMBLY

FOOTLIFTER ASSEMBLY

From the library of: Superior Sewing Machine & Supply LLC
THROAT PLATE ASSEMBLY
MODEL 199 FOR U.S. 673900
80-0515-01

33-3105-06
SCREW
S.H.C.S.

01-3015-21
SCREW

01-1819-21
BUSHING

10-1395-01
BLADE MOVABLE

10-1394-01
ARM

10-1393-01
THROAT PLATE

01-3019-51
SCREW

01-6655-02
SPRING

01-5753-01
SPACER

01-6656-02
STATIONARY BLADE

30-1248-01
FITTING

01-4027-01
NEEDLE BUSHING

EXISTING SCREWS

From the library of: Superior Sewing Machine & Supply LLC
FOOTLIFTER ASSEMBLY
MODEL 199 FOR U.S. 63900
80-0180-125
FILTER/REGULATOR

OPERATION

AIR ENTERS THE INTEGRAL FILTER/REGULATOR UNIT AND IS DIRECTED DOWNWARD THROUGH A SET OF LOUVERS (10) TO IMPART A WHIRLING ACTION. THIS CENTRIFUGAL ACTION CAUSES LIQUID PARTICLES TO BE SEPARATED FROM THE AIR STREAM AND SETTLE TO THE BOTTOM OF THE BOWL. ACCUMULATED LIQUID IS DRAINED MANUALLY (15).

AIR THEN PASSES THROUGH THE SINTERED BRONZE FILTER ELEMENT (11) WHERE SMALLER SIZE FOREIGN PARTICLES ARE REMOVED.

THE CLEAN AIR PASSES THROUGH THE VALVE (5, 6, 7, 8) OF THE REGULATOR AND IS CONTROLLED TO A PRESSURE, DETERMINED BY THE ADJUSTMENT OF THE REGULATOR. PRESSURE IS INCREASED BY ROTATING THE KNOB COUNTERCLOCKWISE OR DECREASED BY ROTATING THE KNOB CLOCKWISE.

CAUTION: THIS MINIATURE INTEGRAL FILTER/REGULATOR SHOULD NOT BE USED IN APPLICATIONS WHICH MAY EXCEED 250 PSIG. DURING MAINTENANCE PERIODS, INSPECT AND CLEAN EACH PART CAREFULLY, USING ONLY CLEAR, WARM WATER OR KEROSENE. DO NOT USE SOLVENTS AS THE POLYCARBONATE BOWL MAY BE DAMAGED.

MAINTENANCE:


CAUTION: WHEN REASSEMBLING, VALVE SEAT (5) SHOULD NOT BE TIGHTENED TO MORE THAN 4 TO 6 INCH POUND TORQUE. BONNET ASSEMBLY (1) SHOULD BE TIGHTENED 50 TO 60 INCH POUNDS TORQUE.

MANUAL DRAIN FILTER SECTION: TO SERVICE THE FILTER SECTION SHUT OFF THE AIR PRESSURE. UNSCREW BOWL ASSEMBLY (14) AND REMOVE "O" RING (9). UNSCREW STUD (13) AND FROM THE STUD REMOVE FILTER ELEMENT (11), LOUVER (10) AND GASKETS (12). THE FILTER ELEMENT SHOULD BE CLEANED PERIODICALLY WITH KEROSENE AND BLOWN OUT WITH COMpressed AIR.

AFTER CLEANING, INSPECT EACH PART CAREFULLY, REPLACE ANY DAMAGED PARTS. WHEN REASSEMBLING, TIGHTEN STUD (13) TO 5 TO 10 INCH POUNDS TORQUE.

LUBRICATOR

CAUTION: THIS UNIT HAS A POLYCARBONATE BOWL.

1. BE SURE IT IS NOT MOUNTED WHERE TEMPERATURES OF 125 FOR MORE WILL BE NEAR IT, OR ON A LINE WHERE AIR PRESSURE EXCEEDS 150PSI.
2. BEWARE OF CONDITIONS, FUMES AND FLUIDS THAT WILL HARM THE TRANSPARENT BOWL.
3. TO CLEAN BOWL, RINSE OR WIPE WITH A PETROLEUM SOLVENT ONLY, SUCH AS KEROSENE, OR HOUSEHOLD DISHWASHER DETERGENT.
4. DO NOT USE NEAR, OR CLEAN WITH SUCH MATERIALS AS ACETONE, ALCOHOL, BENZENE, DIISOBUTYL CARBONATE, ETHYL ACETATE, LACQUER THINNER, OCTANE, CHLORIDE, CARBON TETRACHLORIDE, ALKALIES, AMINES, ETERS, KETONES AND AROMATIC HYDROCARBONS.
5. DO NOT INSTALL ON A COMPRESSED AIR LINE WHERE THE COMPRESSOR IS LUBRICATED WITH, OR THE AIR CONTAINS, A SYNTHETIC, FIRE-RESISTANT LUBRICANT.

IMPORTANT: INSTALLATIONS INSTRUCTIONS FOR LUBRICATORS.

WHERE AND HOW TO INSTALL:

1. INSTALL AS CLOSE AS FEASIBLE TO EQUIPMENT TO BE LUBRICATED WITH AIR FLOWING IN AND OUT PORTS SO MARKED.
2. TO FILL THE LUBRICATOR, TURN OFF AIR PRESSURE, REMOVE BOWL AND FILL.
3. POUR IN ONLY CLEAN OIL. SAE 10 OR LIGHTER USUALLY IS BEST, NEVER USE ONE OF THE FOLLOWING OILS: CELLULUBE #150 AND #220, KANO KROIL, KEYSTONE PENETRATING OIL #2 OR PRYDAUL AC.
4. AS SOON AS AIR PRESSURE REBUILD INSIDE THE BOWL, OIL WILL DRIP THROUGH THE SIGHT GAUGE. CONTROL THE RATE OF OIL ENTERING THE AIR STREAM BY TURING THE ADJUSTMENT SCREW DOWN TO GIVE LESS OIL AND UP TO GIVE MORE OIL. THIS IS A UNIQUE LUBRICATOR. YOU ADJUST THIS TYPE SO THAT WHILE THE SMALLEST AMOUNT OF AIR IS FLOWING THROUGH IT YOU GET THE DESIRED AMOUNT OF OIL FOR THAT FLOW. THE MORE THE AIR FLOW INCREASES, THE MORE OIL YOU WILL NEED AND THE MORE YOU WILL GET AUTOMATICALLY.

HOW TO MAINTAIN:

1. PERIODICALLY CLEAN ADJUSTING SCREW NEEDLE VALVE AND SEAT BY SWISHING A CLEANER AND BLOWING OFF WITH AIR.
2. DRAIN OFF ANY CONTAMINANTS OR WATER IF THEY SETTLE IN THE BOTTOM OF THE BOWL.