

Section 1

INTRODUCTION

Here are the instructions on
how to install
operate, maintain, and make
repairs on your...

M2000 STITCHER HEAD

Stitcher Head Serial Number _____ Stitcher Head Wire Size _____
Stitcher Head Part Number _____
Stitcher Head Crown Width _____

When ordering parts or requesting information, please state: Quantity required, part number, part name, model, wire size, crown width, stitcher head part number, and stitcher head serial number.

The M2000 Stitching Head has been engineered and developed to provide you with the finest equipment available for your stitching needs. With proper care and maintenance it will give you years of satisfactory efficient service. This manual shows you how to get top performance from your stitcher and is divided into 6 major sections.

Read the M2000 Manual thoroughly. Study it carefully. Best stitching performance will be assured, if all the adjustments are made as instructed.

PRODUCT SPECIFICATIONS

Unit Weight:	Lbs.		
	4.5 lbs.		
Unit Envelope Size:	Height	Length	Width
M2000 Head Without Wire Guide:	11 in.	3.12 in.	1.82 in.

Notes

Section 2

SAFETY PRECAUTIONS AND PROCEDURES

SAFETY

1. Make sure electrical power is turned off before performing any adjustment or maintenance.
2. Keep hand, tools, hair, and clothing clear of stitching area.
3. Become familiar with the moving components of your machine. Keep fingers away from areas that could pinch or cut.
4. Wear adequate safety equipment for eye and face protection. Observe your plant safety rules.
5. Practice “good housekeeping” in your work area. Keep it as clean and uncluttered as possible.
6. A well maintained machine is a safer machine. Clean and lubricate the machine at regular intervals. Check machine daily for broken or worn parts. Replace as necessary. **DO NOT** attempt to operate the machine if a part is broken.
7. Route all electrical cables away from pedestrian transportation lanes.
8. Make sure adequate safety guards and covers are in place. If you are unsure how to safely operate or maintain your Stitcher, contact your Service Representative.

DANGER

**KEEP HANDS CLEAR OF
STITCHING AREA**

CAUTION

**FOR YOUR SAFETY, MAKE
SURE ALL COVERS ARE
PROPERLY IN PLACE BEFORE
OPERATING MACHINE**

Section 3

ASSEMBLY, LUBRICATION, INSTALLATION

Note:

These instructions must be followed to insure proper installation, efficient operation and the prevention of serious damage to your stitcher.

Before Unpacking:

Examine the outside of the crate or carton for any visible damage. If damaged DO NOT UNPACK THE STITCHER. Notify the carrier who delivered the stitcher.

After Unpacking:

Examine your stitcher carefully for any damage in transit. If damaged, DO NOT INSTALL THE STITCHER. Notify your nearest representative and the carrier who delivered your stitcher.

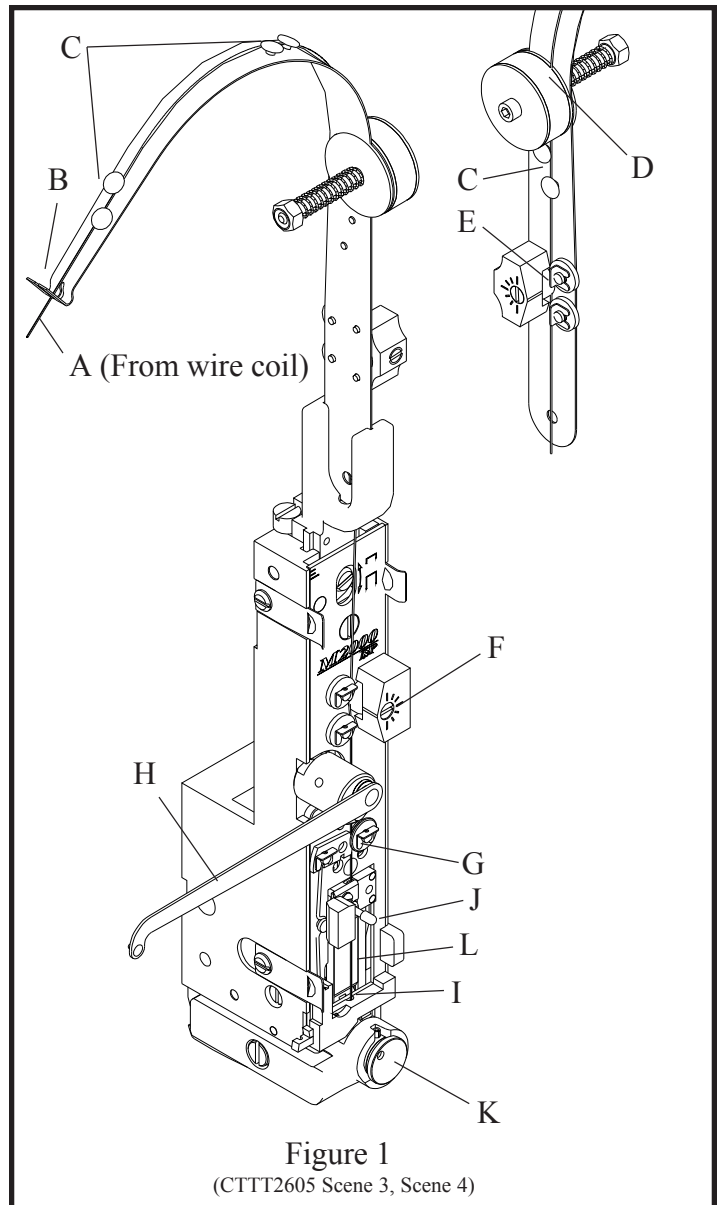
Make certain that you get a signed copy of the Carrier Inspector's Report of the damage incurred.

ASSEMBLY

1. Clamp or bolt the M2000 head to your machine
2. Install Wire Guide Spring into wire guide bracket of M2000 Head.

THREADING WIRE AND ADJUSTING WIRE STRAIGHTENERS (See fig. 1)

1. Draw wire (Index A) by hand, from the coil.
2. Thread the wire through the slot (Index B) at the end of the wire guide spring, through the wire guides (Index C), between the thin and thick felt wire wipes (Index D), through the upper wire straightener (Index E), and through the lower wire straightener (Index F).



3. Release the rotator operating spring (Index H) from the rotator and swing it to the left. Remove Rotator (Index K).
4. Thread the wire between the tension pawl and tension roll (Index G). Feed the wire through the wire cutter lead-in hole (Index I) in the bottom of the face plate.
5. Push grip post to left to open the grip (Index J). Insert wire and release the post so that the grip engages the wire for feeding into the rotator.
6. To check adjustment, hold open grip (Index J) and pull about 1 1/2 feet of wire from below face plate. Cycle machine once by hand to cut wire. Cycle machine again by hand to observe wire straightness. The wire (Index L) should point straight down, prior to being cut.

7. Adjust the upper wire straightener, beginning at position shown, (Index E) so that the wire points straight down. Adjust the lower wire straightener, beginning at the 3:00 o'clock position, (Index F) so that the wire (Index L) feeds straight down.
8. Replace the rotator and rotator operating spring.

NOTE:

When changing coils or wire sizes, check straighteners to insure proper wire feed.

CAUTION

Do not operate stitcher until operating instructions have been read and understood-do not operate stitcher at anytime without work under the head.

**FELT WIPE PADS
LUBRICATION
AND MAINTAINANCE:
(FIGURE 2)**

IMPORTANT! In order for the stitchers to operate properly, the felt wire wipes **MUST** be rotated and dampened with SAE 20W oil before each new spool of wire (50,000 to 70,000 stitches). Replace felt pads when they become so dirty that they cannot be rotated to a clean spot.

1. After every wire spool, rotate the dirty area of the pads slightly so that a clean area can be used for the next wire spool.

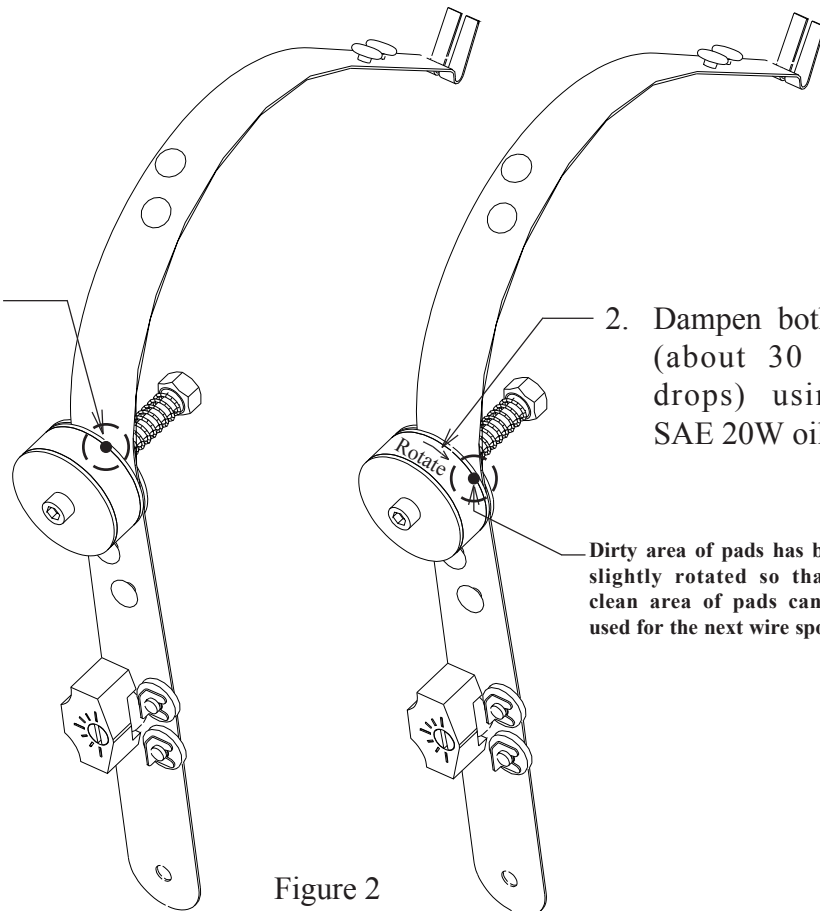


Figure 2
(CTT2605 Scene 7)

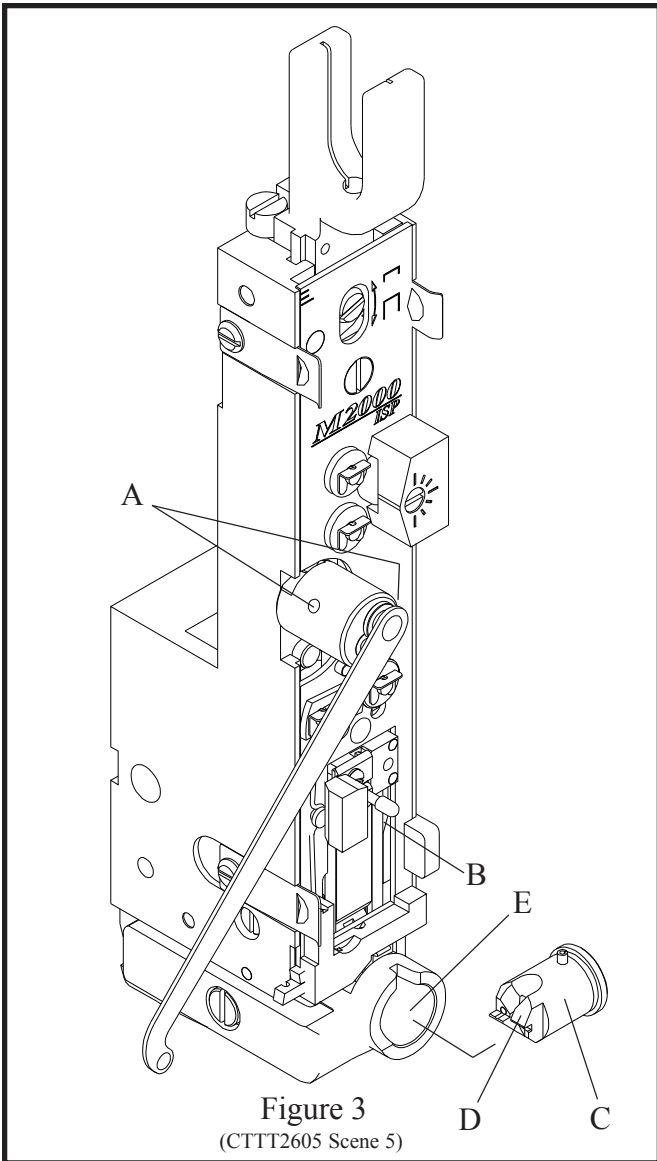


Figure 3
(CTTT2605 Scene 5)

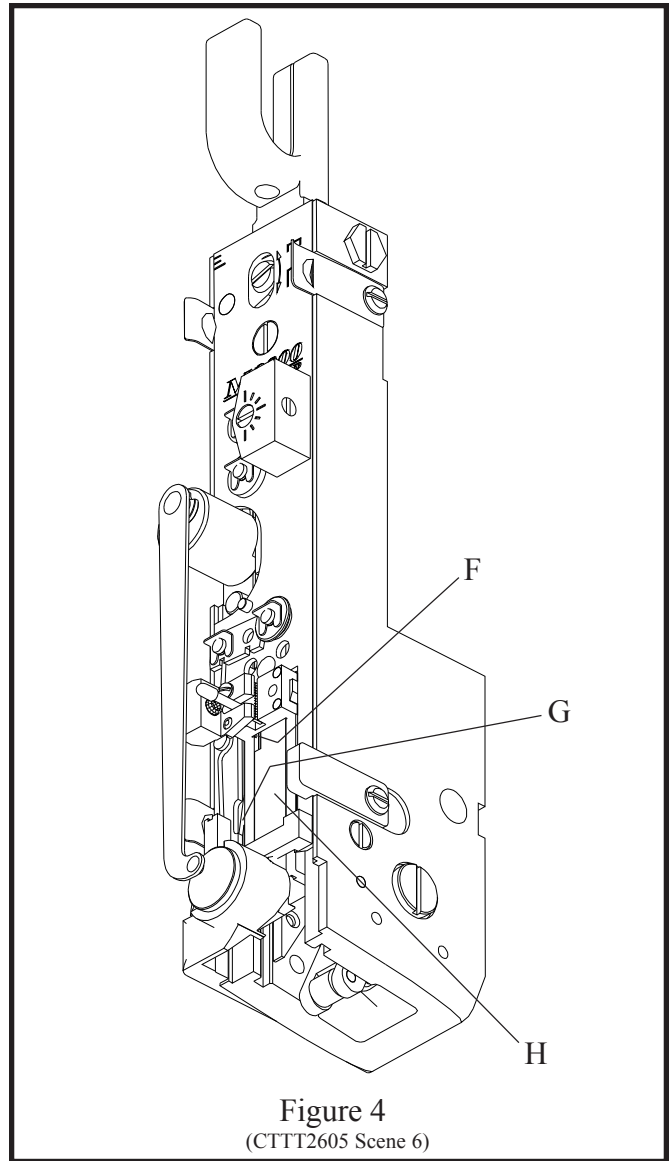


Figure 4
(CTTT2605 Scene 6)

STITCHING HEAD LUBRICATION: (FIGURES 3 & 4)

Typically, the 1/2 inch crown stitcher will run for 1,000,000 cycles without additional lubrication. However, the following procedure used after each spool of wire will assure optimum life and performance. Use **ISP** lubricant #CA9640.

- A. Inject lube into hole, or remove and lube shafts.
- B. Wipe area clean and inject a small amount of lube into cam area.
- C. Remove rotator, wipe rotator clean and lube rotator body.
- D. Apply lube to rotator ramp.

- E. Wipe clean inside of rotator holder.
- F. Inject a small amount of lube into cam area of driver bar.
- G. Inject lube into cutter operating slide.
- H. Wipe driver clean, and apply a light coating of lube.

After prolonged use (or storage) accumulations of wire dust, dirt, or other contaminants can mix with the stitcher lubricant. This will reduce the lubricant's effectiveness. The following procedure is recommended every 1,000,000 cycles.

1. Disassemble the head and clean all parts.
2. Lightly lube all sliding surfaces using **ISP** lubricant #CA9640.
3. Double check lube points A through H.

Section 4

OPERATION

General:

After having properly installed and set up the machine, it is now ready for stitching. It is recommended that each operator be instructed as to correct operating procedure and normal adjustments necessary for varying work conditions.

WARNING

Prevent accidents by following these rules:

1. Do not put your hands near area to be stitched when machine is operating.
2. Turn the power off when the stitcher is not in use.

CAUTION

AVOID DAMAGE TO YOUR STITCHER BY FOLLOWING THESE RULES:

1. Never operate your stitcher with wire feeding unless you have work material between the clinchers and formers.
2. Do not drive one stitch on top of another.

Changing Work Thickness: (Figure 5)

Changing work thickness will probably require a change of the wire draw length used to make a stitch. This is done by raising or lowering the face plate. Change face plate position as follows:

1. Switch off power, loosen the face plate screw (Index A).
2. Turn grip release lever (Index B) clockwise to raise face plate for more wire draw or counter clockwise to lower face plate for less wire draw.

NOTE: Raising face plate too high may: (1.) Prevent the grip from closing and drawing wire; (2.) Prevent proper compression resulting in a loose stitch.

3. Retighten faceplate screw.

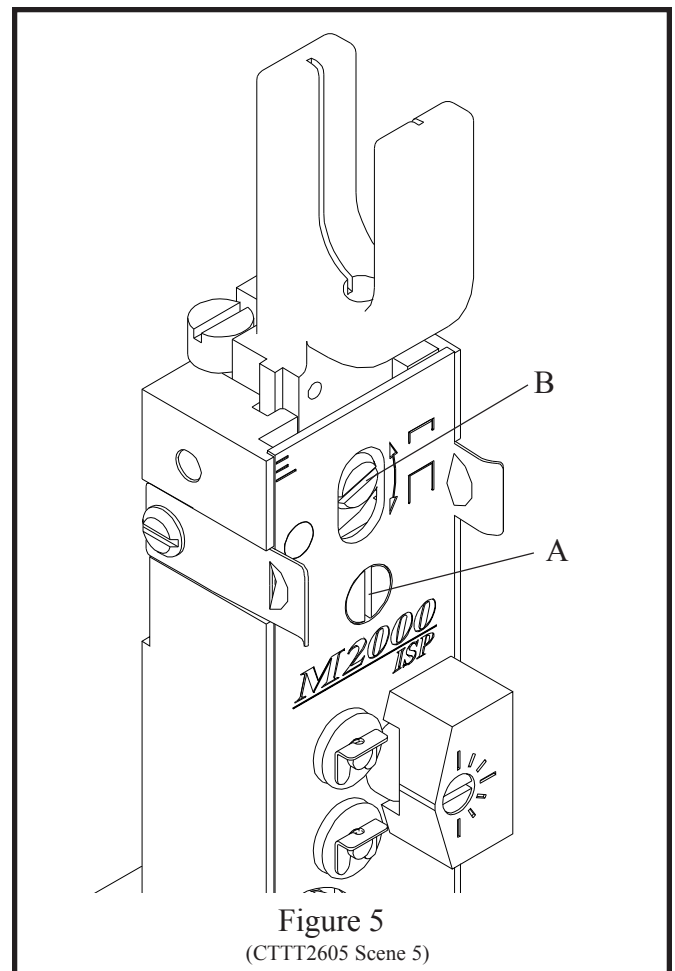


Figure 5
(CTTT2605 Scene 5)

Section 5

MAINTENANCE, TROUBLE SHOOTING AND ADJUSTMENTS

General

The M2000 Stitcher is a friction-type head which depends on smooth sliding friction and proper timing to function correctly. Preventative maintenance will go far to insure trouble-free operation. Avoid production down time by keeping your stitcher lubricated and in top working condition at all times.

Recommended Spare Parts

Like any equipment that has moving parts, certain parts of your stitcher will be subjected to more wear than others and require replacement. The following listing includes all the parts required for minimum maintenance and good operation.

<u>PART NAME</u>	<u>QTY.</u>
Wire Cutters	2
Grip	1
Grip Spring	1
Tension Roll Clip	2
Rotator	1
Clincher Points	2

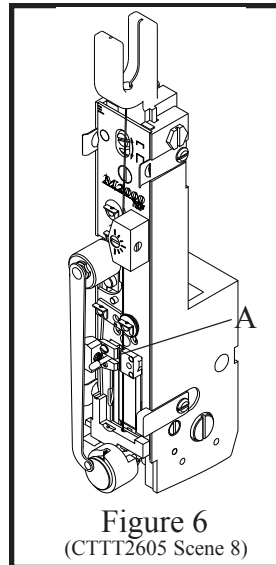


Figure 6
(CTTT2605 Scene 8)

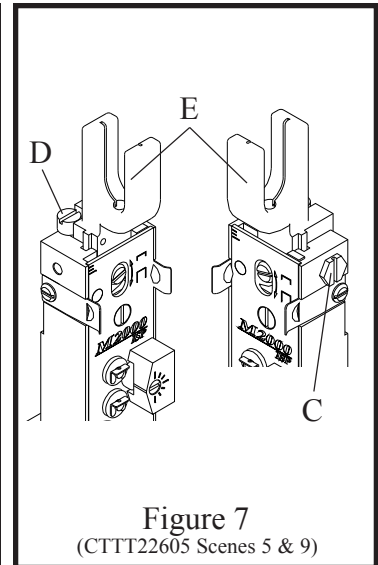


Figure 7
(CTTT22605 Scenes 5 & 9)

Caution

MAKE ALL ADJUSTMENTS WITH THE POWER OFF AND THE STITCHING HEAD IN NEUTRAL POSITION! (Fig. 6)

In neutral position, the wire grip assembly (Index A) is stopped at the top of the slot in the face plate.

Stitching Adjustments

Best stitching performance will be assured if all adjustments are made so that you get the following results:

1. Good Cut-Off
2. Uniform Wire Draw
3. Equal Leg Length
4. Proper Clincher Alignment
5. Sufficient Compression

To Equalize Both Legs of Stitch (Figure 7)



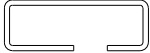
1. Loosen the wire guide locking bolt (Index C).
2. Turn adjusting screw (Index D) clockwise to shorten left leg of stitch; counter clockwise to lengthen left leg.
3. Tap bracket (Index E) down before tightening screw (Index C).

M2000 Head Trouble Shooting

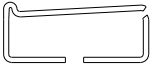
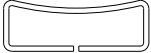


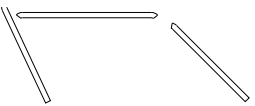

HERE'S HOW A PERFECT STITCH LOOKS



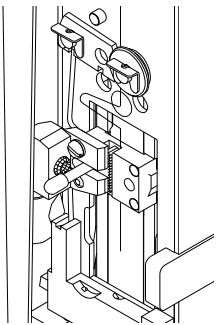
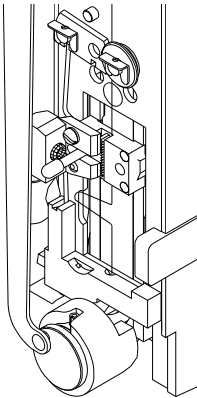
Should stitches appear in any form other than illustrated, one or more kinds of mechanical trouble may have caused the malformation. The possible causes and remedies are given for each kind of mechanical trouble and are listed under each section. The remedies are indexed to the Adjustments Section which gives more detailed information about your stitcher, the mechanical trouble that may occur and suggested remedies. Unless you recognize the correct cause, check each possible cause given.

TROUBLE	POSSIBLE CAUSE	REMEDY
A. Defective Stitches		
<p>1. One or both legs buckled.</p>  <p>NOTE: Since buckled legs are often concealed in the work and may appear the same as a short leg, always remove two or more stitches to see which is occurring.</p>  <p>2. Wrinkled crown.</p>	<ol style="list-style-type: none"> 1. Clincher is worn or improperly aligned. 2. Insufficient compression. 3. Unequal leg length 4. Burred stitch leg. 5. Incorrect wire size. 6. Worn bender bar. 	<p>"B,C" Page 12,13</p> <p>"A" Page 12</p> <p>See "To Equalize Both Legs of Stitch" Page 8</p> <p>"I" Page 16</p> <p>"K" Page 17</p> <p>"D" Page 13</p>
<p>3. Length of one leg varies</p> 	<ol style="list-style-type: none"> 1. Leg Lengths not adjusted properly 2. Gripper is worn or dirty 3. Grip release slide is worn 4. Broken wire guide spring (Figs 20 page 22) 5. Excessive tension on wire straightener 6. Worn Driver bar 7. Worn Tension Pawl or weak tension pawl spring 8. Weak or broken grip spring 	<p>See "To Equalize Both Legs of Stitch" Page 8</p> <p>"H" Page 15</p> <p>"H" Page 15</p> <p>Replace</p> <p>"M" Page 18</p> <p>"F" Page 14</p> <p>"O" Page 19</p> <p>"H" Page 15</p>

M2000 Head Trouble Shooting

TROUBLE	POSSIBLE CAUSE	REMEDY
4. Corner of crown distorted or fractured 	1. Excessive compression 2. Broken driver end 3. Worn bender bar 4. Clincher improperly aligned or worn 5. Incorrect wire size	"A" Page 12 "G" Page 15 "D" Page 13 "B,C" Page 12,13 "K" Page 17
5. Stitch crown not flat and legs not bent into work 	1. Insufficient compression	"A" Page 12
6. One or both legs turn out 	1. Clincher improperly aligned 2. Dull cutters	"C" Page 13 "I" Page 16
7. Flat piece of wire 	1. Rotator is dirty 2. Improperly adjusted lower wire straightener 3. Broken or worn rotator 4. Improperly aligned rotator	"L" Page 17 "M" Page 18 "L" Page 17 "L" page 17
8. Stitches come out in pieces 	1. Improperly aligned rotator 2. Weak rotator operating spring 3. Improperly adjusted upper wire straightener 4. Incorrect wire size 5. Wire jammed in bender bar grooves	"L" Page 17 "L" Page 17 "M" Page 18 "K" Page 17 "D" Page 13
9. Both sticher legs are either too long or too short 	Face plate not adjusted properly	See "Changing Work Thickness" Page 7

M2000 Head Trouble Shooting

TROUBLE	POSSIBLE CAUSE	REMEDY
B. WIRE BUCKLES		
<p>1. Wire buckles above the grip and below the tension pawl</p>  <p style="text-align: center; font-size: small;">(CTTT2605 Scene 10 VA)</p>	<ol style="list-style-type: none"> 1. Worn driver bar 2. Worn bender bar latch 3. Worn or broken bender bar friction plug and/or spring 	<p>"F" Page 14</p> <p>"G" Page 15</p> <p>"E" Page 14</p>
<p>2. Wire Buckles above the wire cutters and below the grip</p>  <p style="text-align: center; font-size: small;">(CTTT2605 Scene 10 VB)</p>	<ol style="list-style-type: none"> 1. Improperly aligned rotator 2. Worn or broken wire cutters 3. Burrs on rotator 4. Improperly adjusted lower wire straightener 5. Worn or broken wire cutter operating slide 6. Wire cutter slot in face plate worn 	<p>"L" Page 17</p> <p>"I" Page 16</p> <p>"L" Page 17</p> <p>"M" Page 18</p> <p>"J" Page 17</p> <p>"I" Page 16</p>
C. GRIP		
<p>1. Grip does not close</p>	<ol style="list-style-type: none"> 1. Face plate is too high 	<p>See "Changing Work Thickness" Page 7.</p>

CAUTION

Turn Power OFF Before making Any Adjustments

A. Insufficient or Excessive Compression

Proper compression of work between the clincher and the bender bars is necessary so that the stitch penetrates the work material and clinches correctly. To test for compression, drive several stitches into sample work material. With proper compression, stitches hold the work together firmly and the clinched legs do not overlap. In the following instances, either one or all of the conditions may exist: with insufficient compression, stitch legs overlap, crown of the stitch is fractured, and the work mutilated. The method for obtaining proper wire draw and compression is detailed in the Operation Section on Page 7 under the heading, "Changing Work Thickness".

B. Clincher (Figure 8)

The purpose of the clincher is to turn the legs of the stitch back after they have penetrated the work material. There are two types of clinchers:

1. Solid (stationary) Type-makes a loop clinch.
2. Activated (moving) Type-makes a flat clinch.

With the Solid (stationary) Type clincher, the legs of the stitch must strike the clincher at the same time and with equal spacing from the outside edges of the grooves. The grooves in the clincher should be smooth. Any interference (particularly worn or pitted grooves), which change the original radii, will cause the stitch legs to buckle and/or the corners of the crown to fracture.

With the Activated (moving) Type clincher, the stitch legs must enter the clincher at the same time

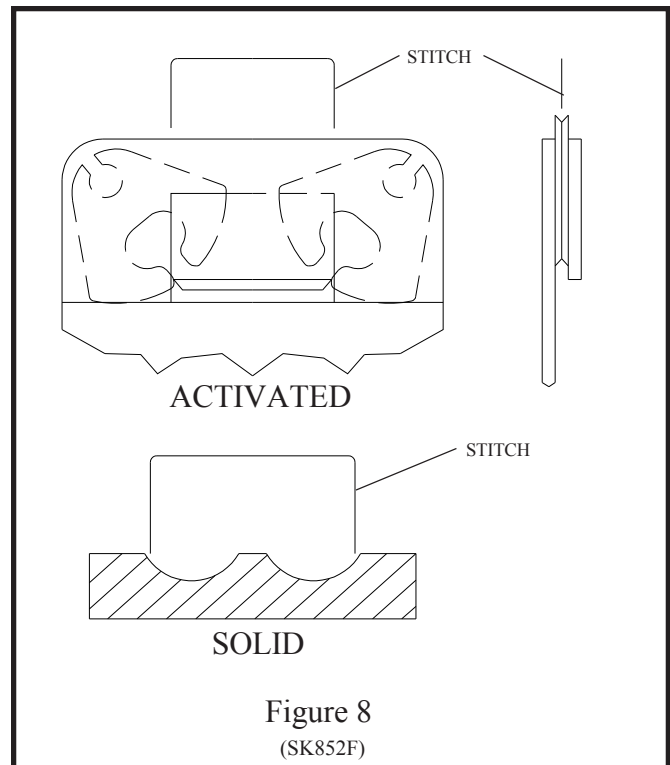


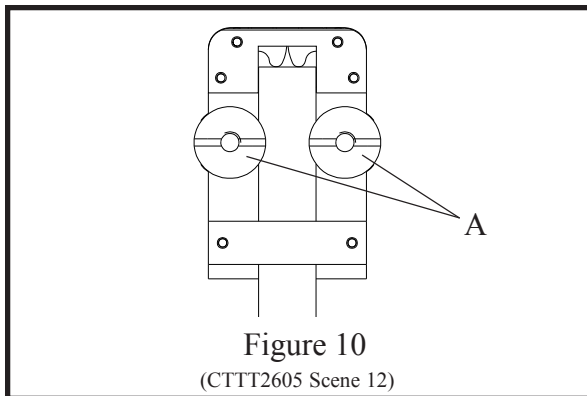
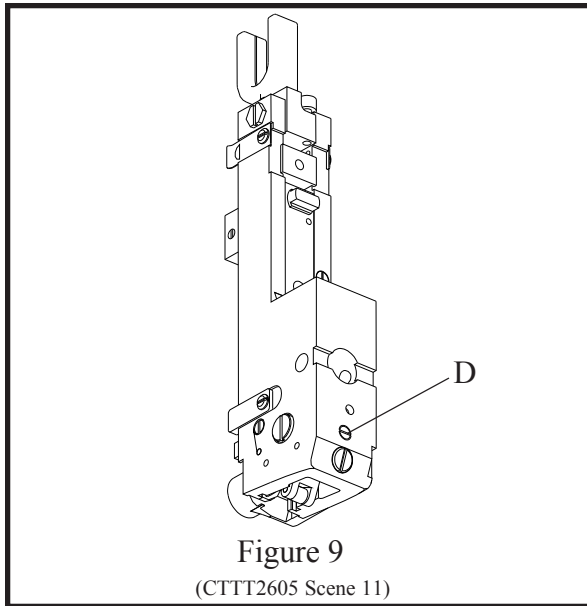
Figure 8
(SK852F)

and with equal spacing from each side. When the stitch legs have penetrated the work material, the moving clinchers are raised to bend the legs towards each other and up flat against the work. The clincher points must bend both legs of the stitch against the work with the same force. Clincher points must always move freely and not bind. Dirt, wire chips, etc. will cause the points to bind.

The clincher points are in a retracted position in the clincher box until the stitch legs penetrate the work material. After the legs penetrate, the clincher points move upward to give a neat, flat clinch against the bottom surface of the work material. If the clincher points remain in the up position, the legs of the next stitch cannot penetrate the work material, causing the stitch legs to buckle and/or the corners of the crown to fracture. Examine the clincher points, clincher slide for possible binding. Clean and oil.

If clincher points rise too high, they fracture the stitch legs and/or mar the work. If the points do not rise high enough, the legs will not clinch flat. Adjust the height of the clincher points. For most work the clincher points should rise to be level with the top of the clincher housing.

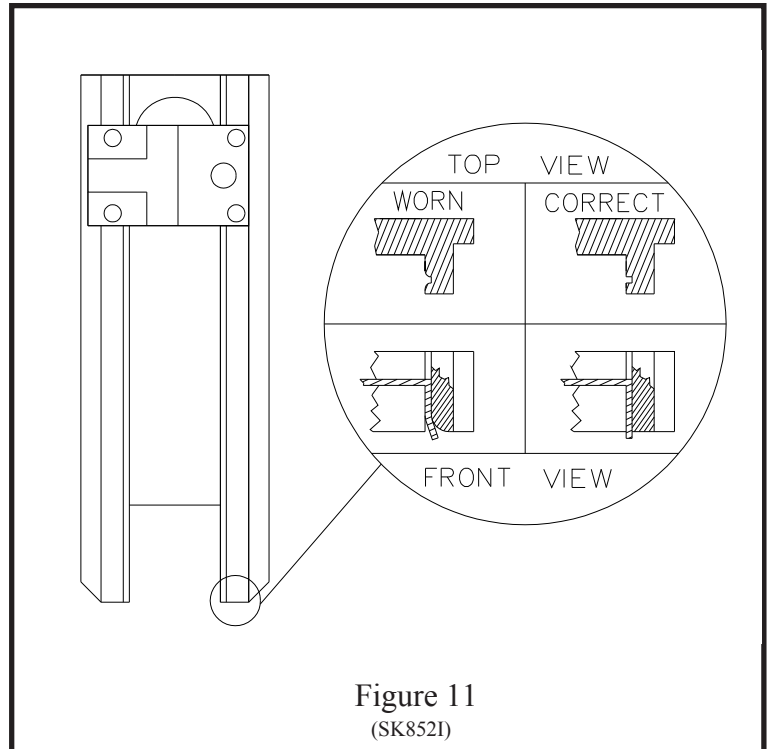
Inject lube into cutter operating slide.



C. Head/Clincher Alignment (Figure 9, 10)

To test alignment: Drive several stitches into a section of material identical to that which is to be stitched. The clinched legs should be identical and aligned with each other. If the legs are not in alignment make one of the following adjustments:

1. To adjust for front-to-rear alignment: (Fig. 9)
 - a. Turn power off. Cycle the stitcher by hand until legs of the stitch appear just below the bender bar to determine if the head should be moved to the front or rear.
 - b. Remove stitcher from machine.
 - c. Turn the head aligning screw (Index D) clockwise to move the head backward; counterclockwise to move the head forward.
 - d. Install stitcher head on machine.



2. To adjust for side-to-side alignment: (Fig. 10)
 - a. Turn power off. Cycle the stitcher by hand until legs of the stitch appear just below the bender bar to determine how far the head or clincher should be moved to the side.
 - b. Loosen clincher plate binder nuts (Index A).
 - c. Move clincher to left or right as required.
 - d. Tighten binder nuts.

D. Bender Bar (Figure 11)

The bender bar bends the wire over the rotator and forms it into an unclinched stitch. The legs of the stitch are guided towards the work material by the bender bar grooves. The legs of the unclinched stitch should be perpendicular to the crown. When the bender bar grooves become worn, the legs tend to flare out (Figure 11) as they emerge from the grooves. This causes the legs to strike the clincher improperly. As a result, one or both legs will crumple and a broken driver bar or a broken bender bar can result. If the lower end of the bender bar grooves become chipped, it will not support the wire and may cause the stitch to break at the crown. Replace the bender bar assembly (See "G" page 15 or Fig. 12). Other bender bar functions are related to wire cutting ("I" page 16), and driving ("F" page 14).

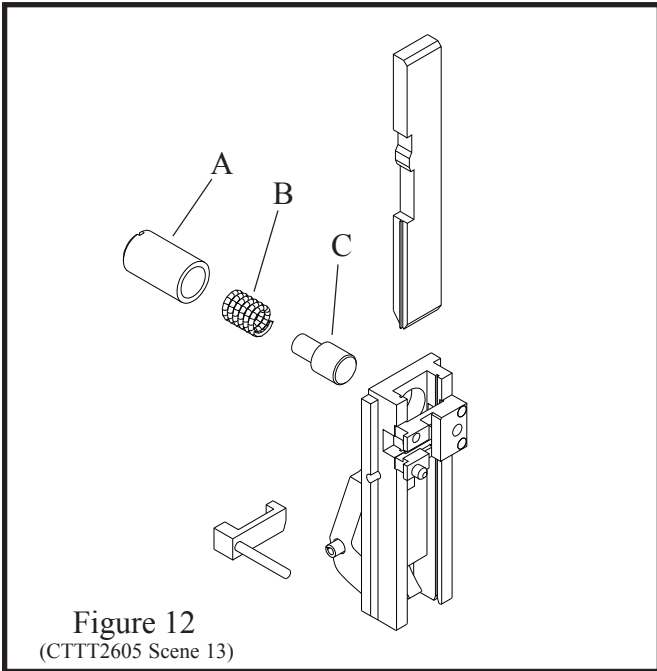


Figure 12
(CTTT2605 Scene 13)

E. Bender Bar Friction Plug And/Or Spring (Fig.12)

Two parts furnish pressure to coordinate movement of driver bar and bender bar. If pressure is insufficient, proper timing is not maintained for the action of the grip. As a result, wire feeds backwards. Replace the plug and/or spring.

To replace bender bar friction plug and/or bender bar friction spring:

1. Remove bender bar assembly by following steps 1 through 18 of "Dismantling M2000 Stitching Head", Pages 20 and 21.
2. Remove bender bar friction bushing (Index A). Bender bar friction plug (Index C) and spring (Index B) will be released forward from bender bar assembly.
3. Replace plug and/or spring and reassemble.

F. Driver Bar (Figure 13)

The driver bar (Index A) has several functions:

1. It imparts the downward thrust from the driving slide assembly (Index B) to the bender bar assembly (Index C).
2. It returns these parts to the neutral position on the upstroke.

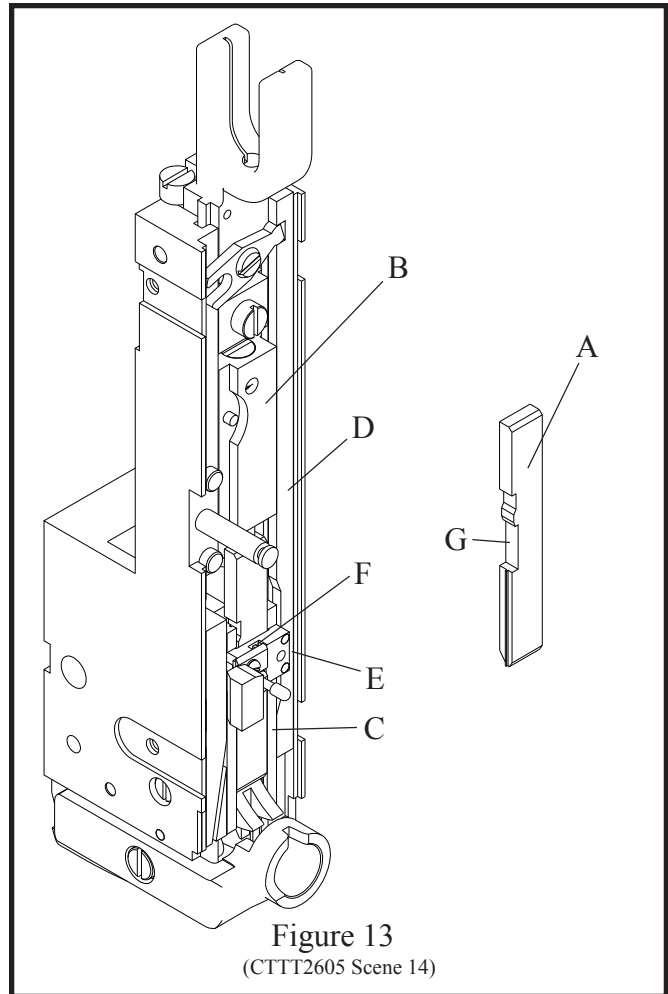


Figure 13
(CTTT2605 Scene 14)

3. In conjunction with the grip release slide (Index D), it controls the movement of the bender bar latch (Index E) that opens and closes the grip (Index F).

If the notches (Index G) at the top left side of the driver bar become worn, the grip will not remain open on the upstroke. As a result the wire feeds backwards and buckles above the grip and below the tension pawl. Worn notches can also cause uneven wire draw. Replace the driver bar.

The notches shown on left side of driver bar play an important part in function of bender bar assembly therefore, corners should be free of dirt and notches not marred.

The driver bar rides within the bender bar grooves as part of the bender bar assembly. As this assembly reaches the lower contact point of the cam in the grip release slide, the bender bar latch is forced inward, releasing the wire grip and permitting the bender bar assembly to continue downward with the end of the driver riding on top of the formed

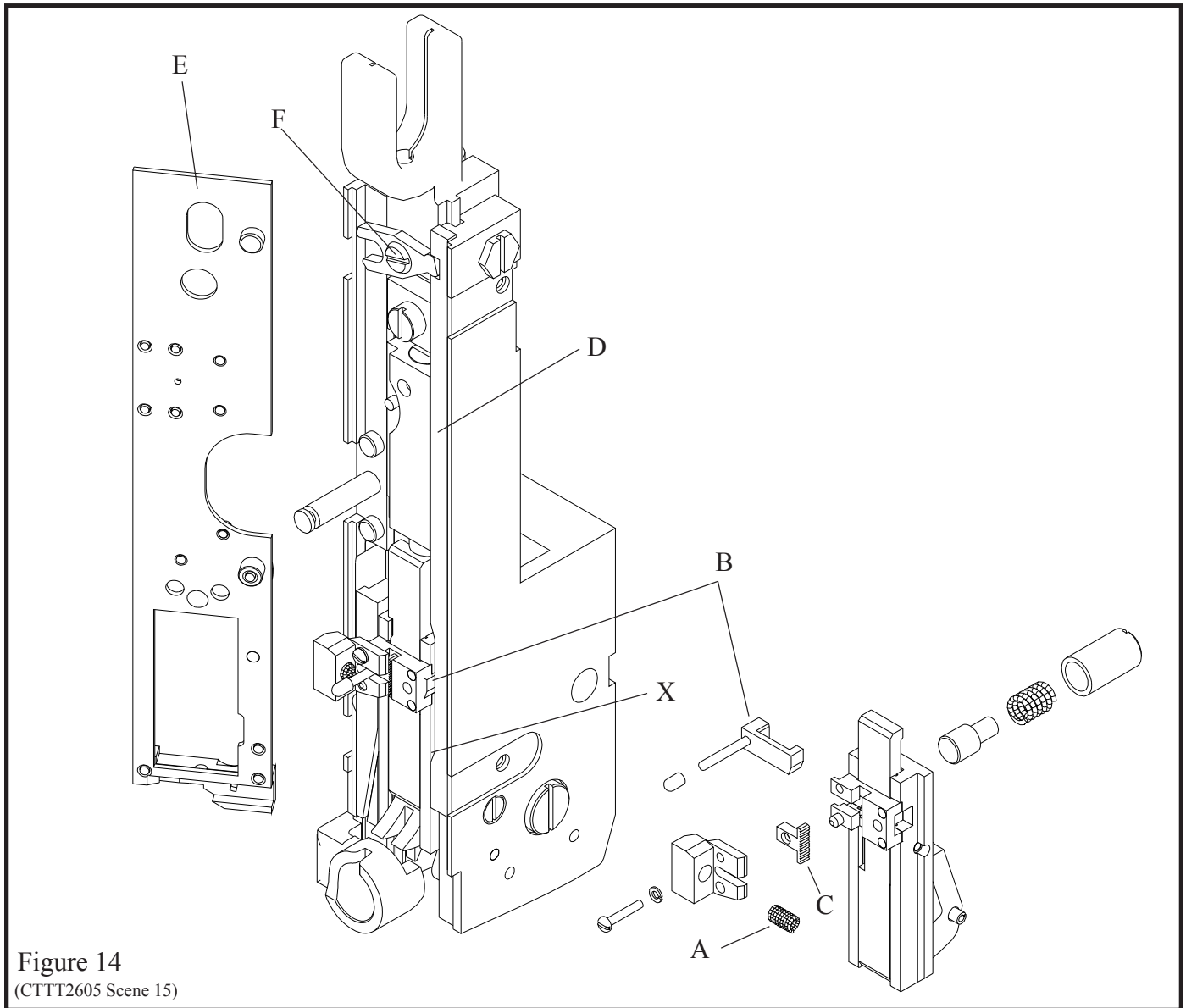


Figure 14
(CTTT2605 Scene 15)

stitch. When the bender bar is stopped against the work material, the driver bar continues downward to exert pressure on the crown of the stitch, driving it through the work material.

If the end of the driver bar is chipped it allows the legs of the stitch to back up into the broken area. This causes the corner of the crown to fracture or a "spike" section to protrude above the crown. A chipped driver bar is usually the result of driving a stitch on top of another stitch. A worn driver often causes deformed stitches or fracturing at the corners of the crown.

G. Bender Bar Latch

The bender bar latch opens and closes the grip and is actuated by the grip release slide and driver bar. If the contact points of the latch become worn, tim-

ing of the grip is erratic and uneven wire feed results. A dirty latch will decrease pressure of the grip on the wire. This causes wire slippage. Clean or replace the latch.

H. Grip, Grip Release Slide and Face Plate: (Figure 14)

The grip spring (Index A) exerts pressure on the benderbar latch (Index B) to close the grip (Index C) at the start of the down stroke. The grip release slide (Index D) actuates the bender bar latch at point X to open the grip after the correct amount of wire has been fed to make a stitch. The serrated teeth on the grip must be sharp or slippage will occur, producing uneven wire draw.

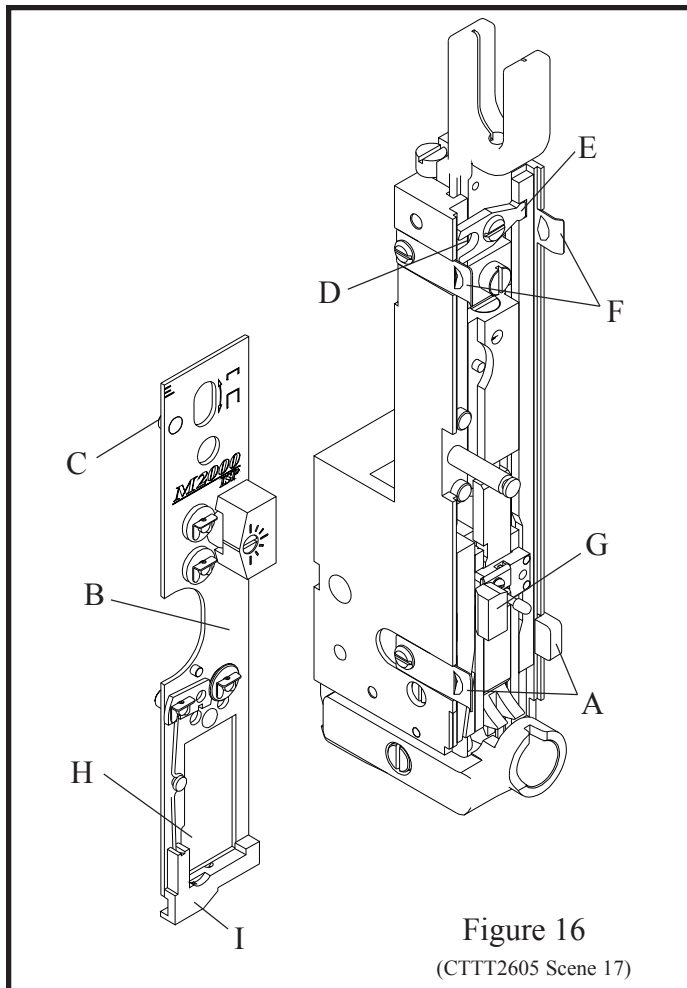


Figure 16

(CTTT2605 Scene 17)

J. Wire Cutter Operating Slide

The wire cutter operating slide actuates the lower wire cutter which acts as the cutting knife. If the slide is worn or broken, the wire cutter is not actuated. Replace the operating slide.

To Replace The Wire Cutter Operating Slide:

1. Cut the wire at the bracket and pull the loose end out.
2. Remove the stitcher head assembly.
3. Lift end of spring (Index L, Figure 15) out of rotator.
4. Swing the spring up to disengage it and lift out.
5. Slip the rotator operating cam (Index M, Figure 15) forward and off the stud.
6. Pull the rotator forward.
7. Loosen the two face plate retaining clips (Index A, Figure 16) and rotate them downward.

8. Push two face plate retaining clips (Index F) outward while lifting face plate up, or remove retaining clips to release face plate.
9. Position grip spring housing (Index G) between tension pawl spring retainer (Index H) and cutter housing (Index I).
10. Remove face plate (Index B) by sliding face plate to the left and lifting up.
11. Remove the cutter operating slide (Index I, Figure 15).
12. Insert a new cutter operating slide.
13. Reassemble

K. Proper Wire

Depending on which M2000 head is being used the wire range may be: 25 to 30 gauge round; 24 gauge round; 20x25 or 21x25 flat. 120,000 to 159,000 psi tensile strength bookbinders wire should be used.

If the wire used is larger than the bender bar grooves were designed for, it will fracture at the stitch corners and come out in pieces. Also, serious damage to the stitcher may result. If the wire used is smaller than the bender bar grooves were designed for, the legs of the stitch do not fit snugly in the grooves and may tend to buckle when they strike the work material because they are not fully supported.

L. Rotator (Figure 15)

The rotator (Index J) (1) receives the wire from the cutoff die, (2) holds the wire while it is being cut, then (3) turns it to a horizontal position, moves it under the bender bar grooves and (4) supports the wire while it is being formed into a "U-shaped" stitch.

The wire lead-in-funnel of the rotator must be aligned with the wire as it comes through the wire cutters. If the rotator is improperly aligned, the wire hits the rotator and buckles. Adjust upper two wire straighteners until wire slips past rotator. Burrs on the rotator prevent the wire from entering the rotator. This causes wire buckling. Remove the rotator and polish the lead-in radius.

The magnets in the rotator hold the wire firmly in the rotator. If a magnet is broken or chipped the wire may fall out. To determine if the rotator has the proper holding strength, remove the rotator and insert a cut length of wire in the rotator. Hold rotator between thumb and forefinger. Attempt to jar wire loose by hitting heel of hand on top of table or against other hand. With proper magnetic holding force wire will remain in rotator. With insufficient holding force wire will fall from rotator. Replace the rotator.

The rotator holder and rotator operating spring are responsible for alignment of the wire beneath the bender bar grooves. The position of the rotator holder determines how far the rotator is pushed forward under the bender bar by the rotator operating spring (Index L, Figure 15). A weak spring will not push the rotator in far enough and with this improper alignment the bender bar will knock the wire from the rotator or will shear the wire into pieces. To secure proper alignment, check the position of the rotator holder and the tension applied by the rotator operating spring. Make any necessary adjustment of the rotator holder or replace the rotator operating spring if weak.

The wire is fed into the rotator and held for forming. If the rotator is dirty, the wire is not gripped securely enough and drops out. Remove and clean the rotator. If the edges over which the wire is formed are sharp, the corners of the stitch crown will fracture. Remove the rotator and polish the edges with a fine emery cloth.

To remove, Adjust or Replace the Rotator Holder:

1. Swing the rotator operating spring to the left.
2. Remove the rotator.
3. Loosen the rotator holder screw (Index N, Figure 15).
4. Adjust the rotator holder.
5. Reassemble.

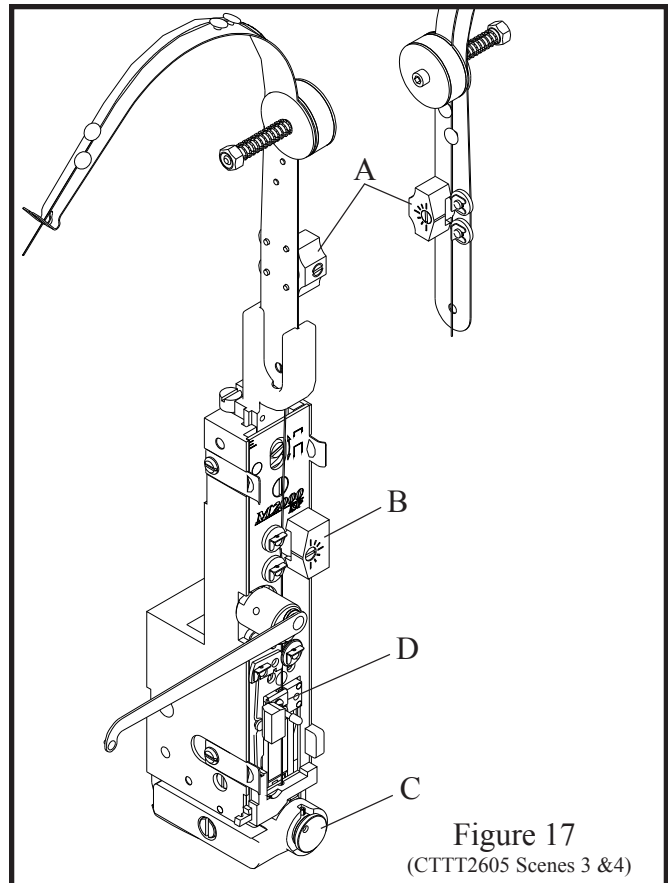


Figure 17
(CTTT2605 Scenes 3 &4)

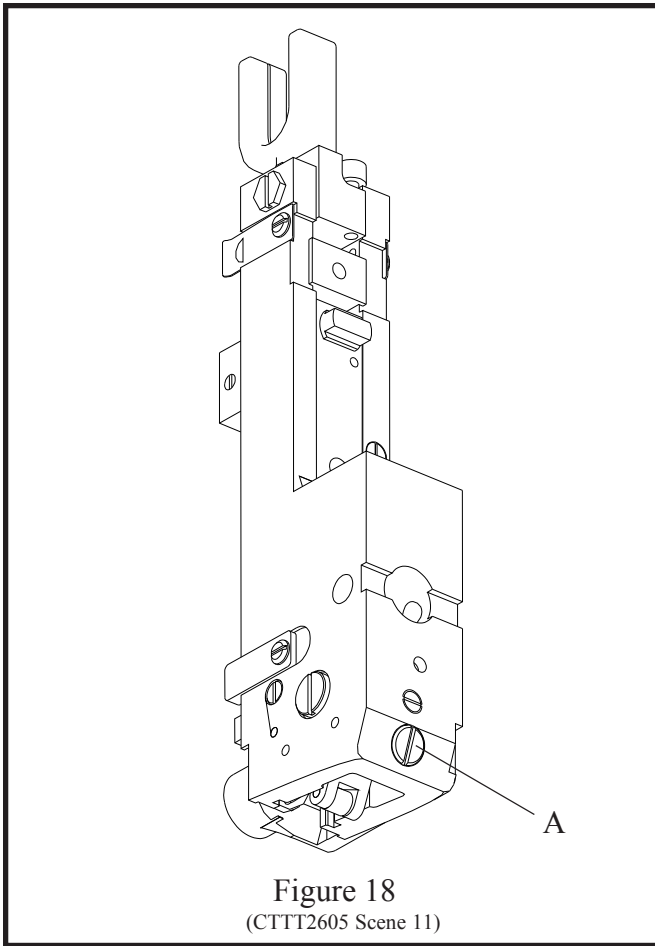
M. Wire Straighteners: (Figure 17)

All coils of stitching wire have a certain amount of bundle curve. The purpose of a wire straightener is to remove this curve. There is both an upper wire straightener (Index A) and a lower wire straightener (Index B) on all M2000 Model Stitchers. See "Threading Wire and Adjusting Wire Straighteners" page 4.

The upper wire straightener should feed wire parallel to the faceplate. This insures that the wire will properly enter the rotator and will be aligned with the grooves in the bender bar.

If the wire is not parallel to the face plate the wire is sheared in the rotator as the bender bar descends. Adjust the upper wire straightener.

The lower wire straightener directs the wire straight down so that it enters the rotator (Index C). If the wire is not straight enough it hits the rotator and buckles. Adjust the lower wire straightener so that



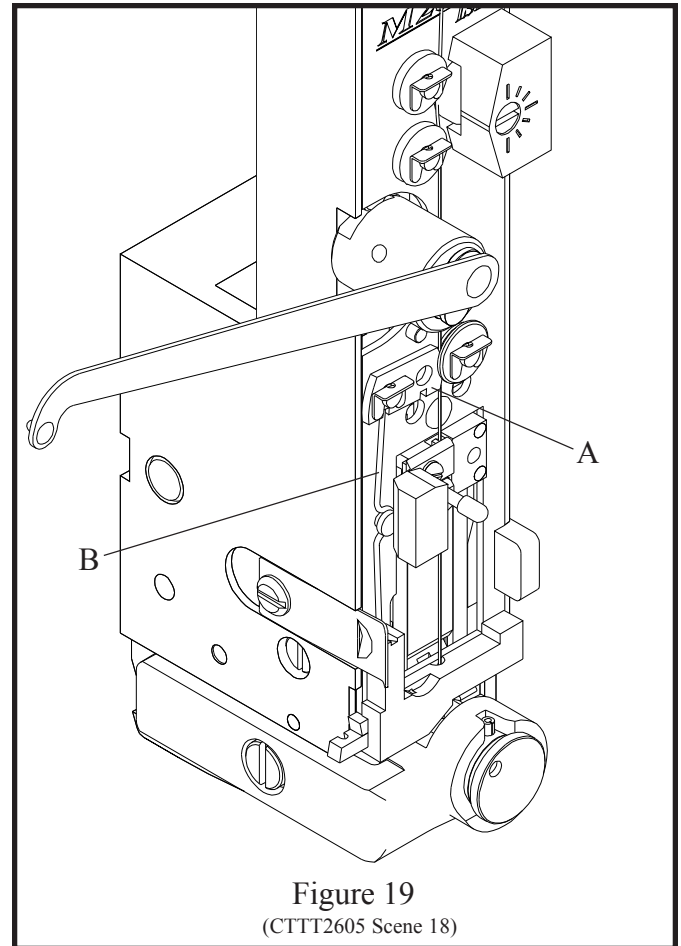
the wire points straight down as in figure 17. Improper straightening of the wire can also cause the stitch legs to buckle or turn out because they strike the clincher improperly. Excessive tension on the wire straightener prevents the grip (Index D) from feeding the wire smoothly. This causes variation in leg length.

NOTE:

Check the wire straighteners when changing the coils to insure the accurate feeding of wire.

N. Supporter

The supporter furnishes the necessary support to the inside surface of the stitch so that it does not buckle as it is being driven into the work material. A lack of (or insufficient) support will often cause the stitch crown to wrinkle or the legs of the stitch to buckle. Tighten the supporter spring bushing (Index A, Figure 18) or replace the spring.



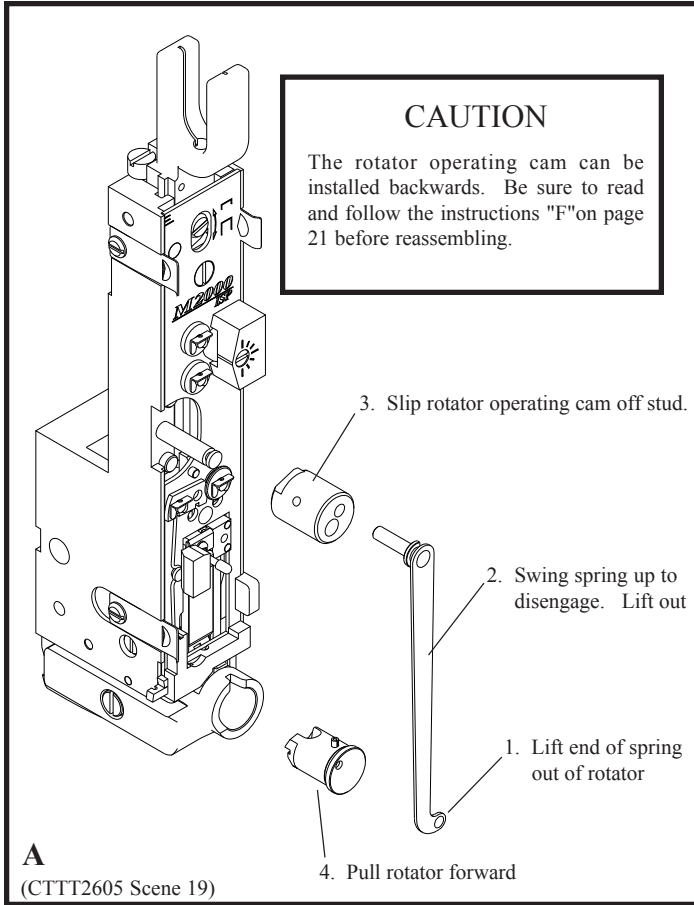
If the corners of the top surface of the supporter are too sharp, or nicked, the corners of the stitch crown will fracture. If operating properly the supporter should function as follows:

1. When the bender bar touches the work material and the legs of the stitch are about to leave the bender bar grooves the supporter should be touching the underside of the crown.
2. As the stitch is driven through the work the supporter is gradually retracted by the driver. It should remain under the crown of the stitch until the last instant before the crown touches the work material.

O. Tension Pawl: (Figure 19)

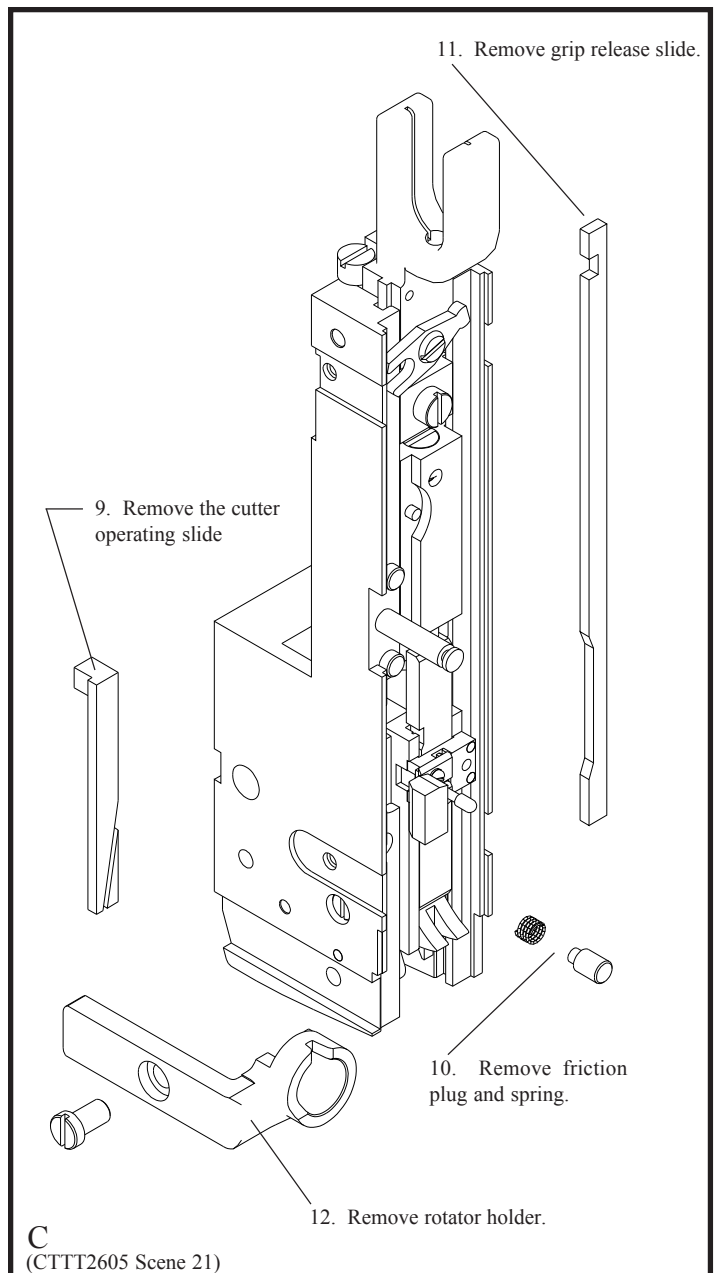
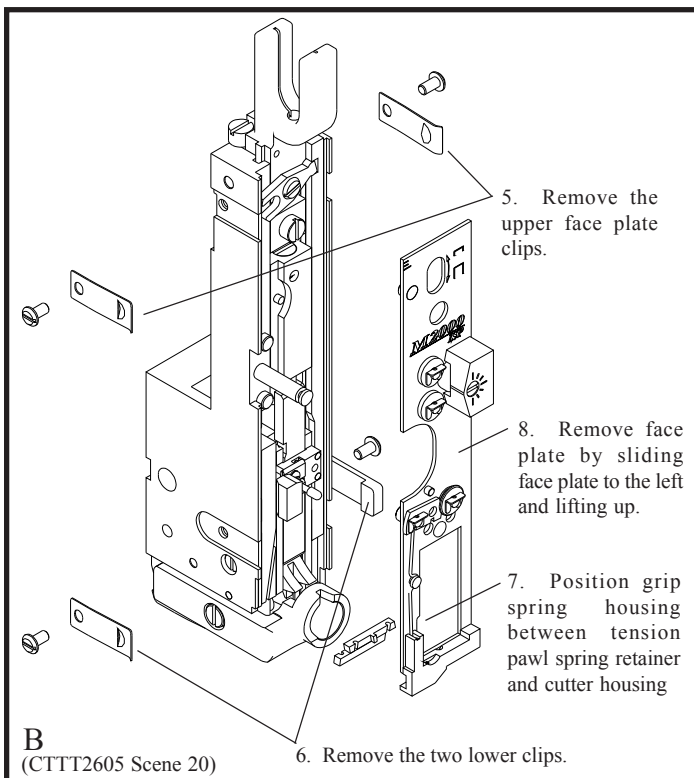
The tension pawl (Index A) and spring (Index B) apply pressure on the wire to prevent back feed. If the pawl becomes worn or the spring becomes weak, the wire feeds backwards resulting in a short wire draw. Reverse or replace the tension pawl and/or spring.

DISMANTLING M2000 STITCHING HEAD

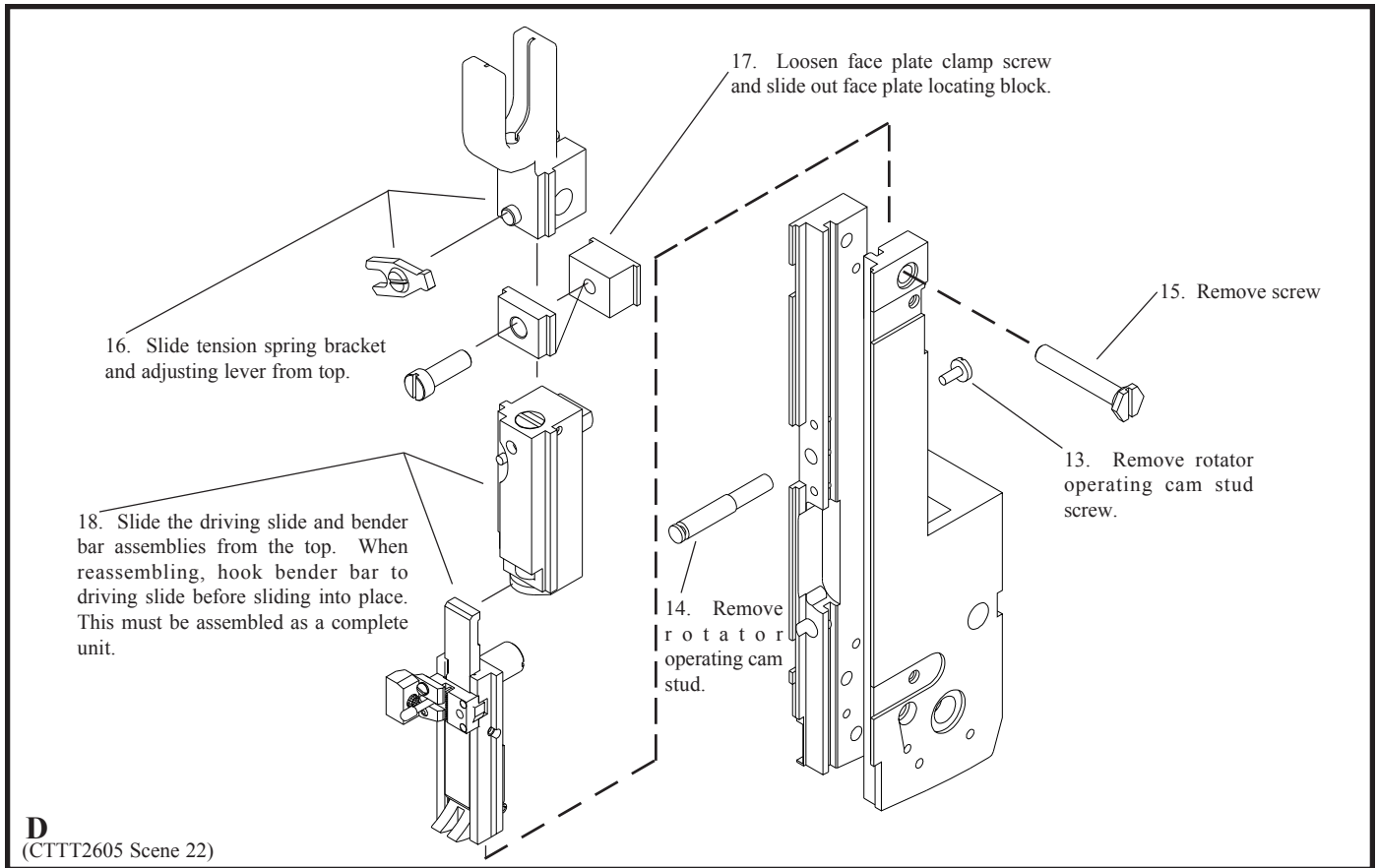


CAUTION

As a precautionary measure-When removing the head from any stitching machine make **SURE** that the power to the machine has been turned **OFF** or disconnected.

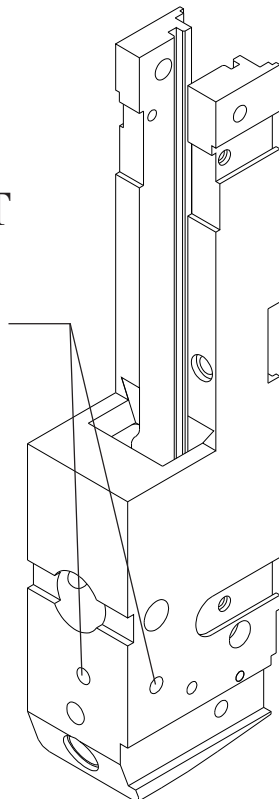


DISMANTLING/REASSEMBLING M2000 HEAD



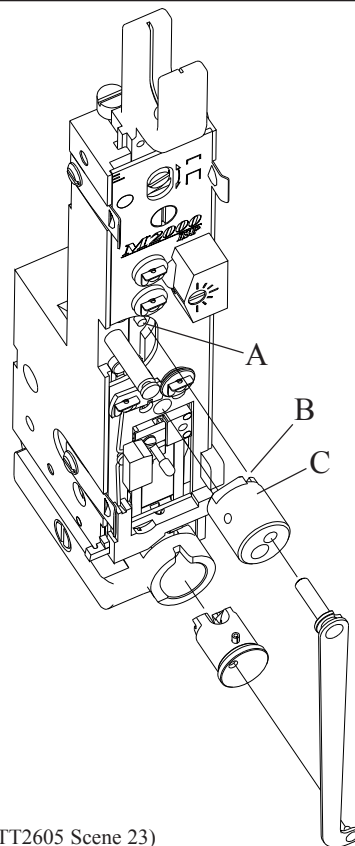
DO NOT REMOVE OR ADJUST THESE TWO SCREWS.

The screws are factory set to control the supporter lever location.



Caution

When reassembling, make certain that pin (Index A) is visible and is aligned with slot (Index B) of rotator operating cam (Index C). If not assembled in this way, the bonnet casting will crack or break on the next cycle under power. It is recommended that the stitcher be cycled by hand to test that proper reassembly procedure has been followed.



Section 6

PARTS LIST

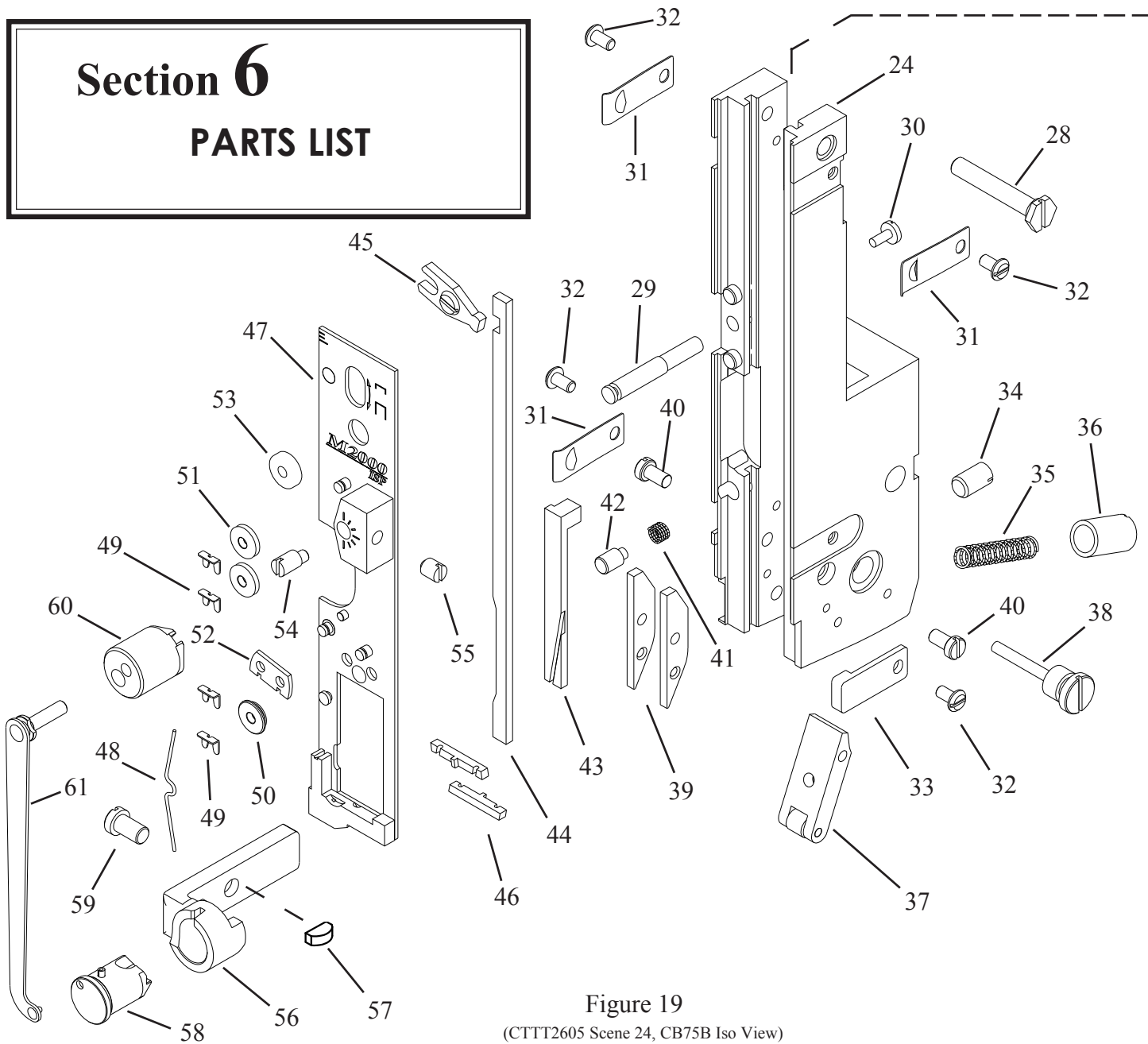
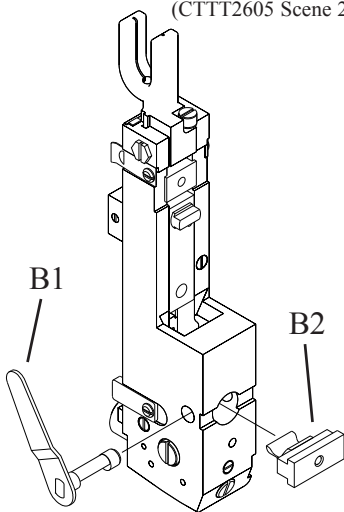


Figure 19

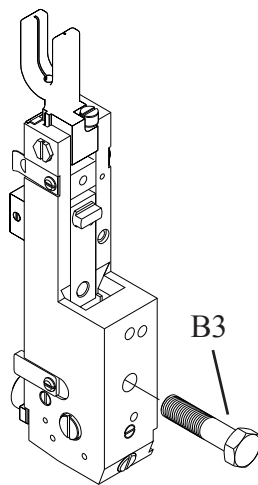
(CTTT2605 Scene 24, CB75B Iso View)

Bolt-On and Clamp-On Heads Figures 20

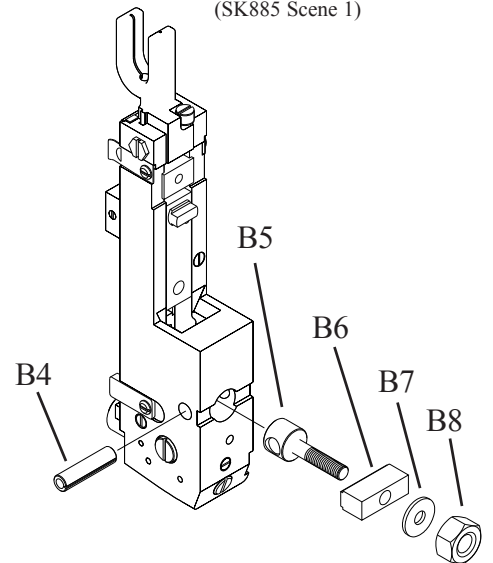
Clamp-On-Type Head
(CTTT2605 Scene 25)

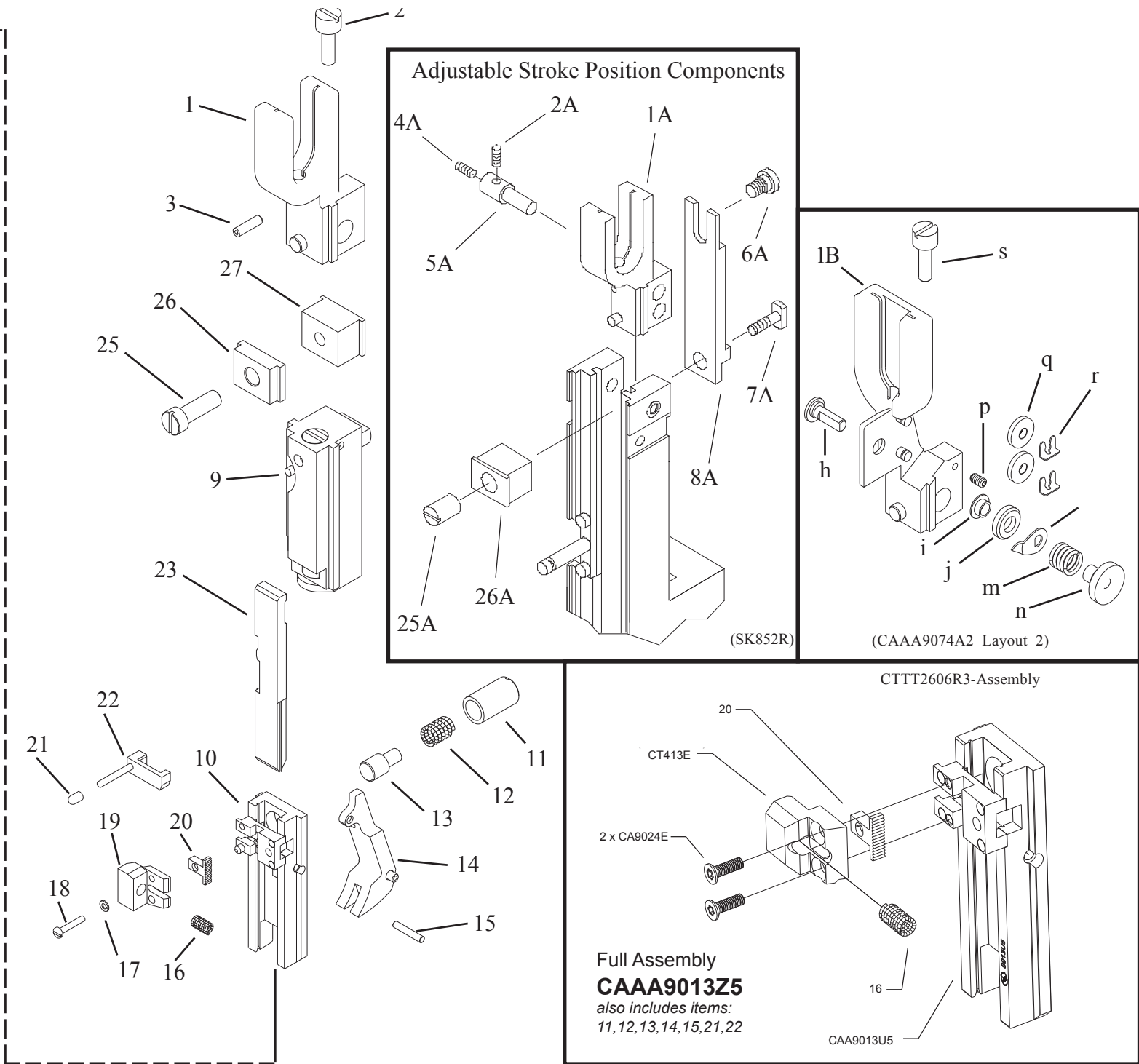


Bolt-On-Type Head
(SK885 Scene 2)

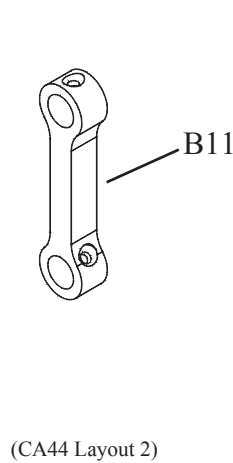
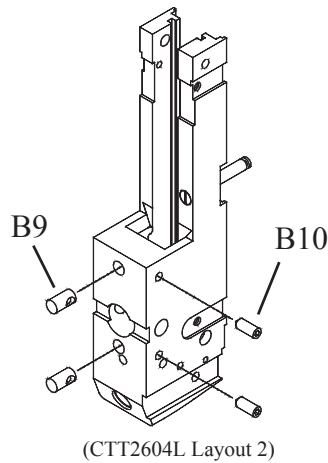


Bolt-On-Type Head
(SK885 Scene 1)





Special Components Figures 21



M2000 HEAD

PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY
1	CAA9074Z	WIRE GUIDE BRACKET ASSEMBLY	1
1A	CTT2615B	WIRE GUIDE BRACKET ASSEMBLY	1
1B	CAA9074A2	WIRE GUIDE BRACKET ASSEMBLY	1
		NOTE: The above Wire Guide Bracket assembly includes the following items h through s	
1B	CAA9074A2	WIRE GUIDE SRACKET SUB-ASSEMBLY	1
h	CA9146A	ECCENTRIC SCREW	1
i	CA9068	ECCENTRIC FRICTION BUSHING	1
j	CA9065	ECCENTRIC ROLL	1
k	CA9070	ECCENTRIC POINTER	1
m	CA9069	ECCENTRIC SPRING	1
n	CA9067	ECCENTRIC NUT	1
p	D31028F	SET SCREW	1
q	CA9103C	WIRE STRAIGHTENER ROLL	1
r	CA9124	TENSION ROLL CLIP	2
s	CA9076	WIRE GUIDE SPRING BRKT ADJ SCREW	2
2	CA9076	WIRE GUIDE SPRING BRKT ADJ SCREW	1
2A	CT56	WIRE GUIDE SPRING BRKT ADJ SCREW	1
3	CA9077	WIRE GUIDE SPRING BRKT SET SCREW	1
4A	CT1060	SET SCREW	1
5A	CT2616	WIRE GUIDE BRACKET ADJ. SCREW STUD	1
6A	CT2614	FACE PLATE ADJ. SLIDE GUIDE STUD	1
7A	CT2612	FACE PLATE LOCATING BLOCK STUD	1
8A	CT2610	FACE PLATE ADJUSTING SLIDE	1
9	See TABLE 1	DRIVING SLIDE ASSEMBLY	1
		NOTE: The Driving Slide Assembly includes the following parts:	
		DRIVING SLIDE (ONLY)	1
	a,c,d,f	CA-2623 (standard)	
	b	CT-2623 (2 sheets to .125 in. thick work)	
	e	CA-2623-B (pin holds in driving slide spring)	
		DRIVING SLIDE SPRING PLUNGER	1
	a,b,c,d,f	CA-2007	
	e	CA-2007-A	
		DRIVING SLIDE SPRING	1
	a,b,c,d,f	CA-9006	
	e	CA-9006-A	
		DRIVING SLIDE SPRING SCREW	1
	a,b,c,d,f	CA-9021-A	
		DRIVING SLIDE SPRING PIN	1
	e	D-37327-F	
		DRIVING SLIDE ROTATOR OP. PIN	1
	all	CA-9028	
		DRIVING SLIDE SPRING SCREW LOCK PIN	1
	a,b,c,d,f	CA-9028-A	
10		BENDER BAR ASSY. COMPLETE	1
a	CAA9013Z2	1/2" Cr., 25 to 30 rd. wire	
b	CAA9013D3	1/2" Cr., 25 to 30 rd. wire (McCain)	
c	CAA9013H3	1/2" Cr., 24 rd. wire	
d	CAA9013K3	1/2" Cr., 20-21 x 25 wire	
e	CAA9013M3	1/2" Cr., 24 rd. wire (McCain)	
f	CAA9013R3	1/2" Cr., 22 Rd. wire	
g	CAA9013Z5	1/2" Cr., CTTT2606R3	
		NOTE: The above Bender Bar Assembly includes the following items through item 23	

ITEM	PART NO.	DESCRIPTION	QTY
		BENDER BAR SUB ASSEMBLY	1
a	CAA9013U	1/2" Cr., 25 to 30 rd. wire	
b	CAA9013Z	1/2" Cr., 25 to 30 rd. wire (McCain, Macey)	
c	CAA9013F2	1/2" Cr., 24 rd. wire	
d	CAA9013H2	1/2" Cr., 20-21 x 25 wire	
e	CAA9013K2	1/2" Cr., 24 rd. wire (McCain)	
f	CAA9013P2	1/2" Cr., 22 rd. wire	
11	CA9115	BENDER BAR FRICTION PLUG BUSHING	1
12	CA9113A	BENDER BAR FRICTION PLUG SPRING	1
13	CA9112A	BENDER BAR FRICTION PLUG	1
14	CAA9026	SUPPORTER ASSEMBLY, 1/2" Cr.	1
15	CA9029	SUPPORTER PIVOT PIN	1
16	CA168	EXTERNAL GRIP SPRING	1
17	CB371K	LOCKWASHER	1
18	CA9024A	GRIP HOUSING RET. SCREW	1
or	CA9024E	GRIP HOUSING RET. SCREW (CAA9013Z5)	1
19	CT413A	GRIP SPRING HOUSING	1
or	CT413E	GRIP SPRING HOUSING (CAA9013Z5)	1
20	CA9015D	GRIP	1
21	CA173	PLASTIC PIN CAP	1
22		BENDER BAR LATCH	1
	CAA9014J	Standard	
	CAA9014N	Special for CAA9013D3 & CAA9013M3 Bender Bar Assemblies (McCain)	
23		DRIVER BAR	1
	CA9012M	1/2" Cr., 25 Round Wire	
	CA9012N	1/2" Cr. (McCain), 25 Round Wire	
	CA9012R	1/2" Cr., 20x25 & 21x25 Flat Wire	
24		BONNET CASTING SUB ASSEMBLY	1
		*	
		<u>M2000 Heads that use bonnet sub assembly</u>	
	CAA2004	CAA2005,B,R	
	CAA2004B	CAA2005J	
	CAA2004E	CAA2005F, G (R.H. HEAD)	
	CTT2604	CTTT2605,A2,C,E3,G,O,R2,R3,R10	
	CTT2604F	CTTT2605F4	
	CTT2604L	CTTT2605Q3	
	CTT2604P	CTTT2605P2,P4	
25		FACE PLATE LOCATING BLOCK SCREW	1
	CT2608	Slotted head (shown)	
	CT2608A	5mm Hexagonal socket head (not shown)	
25A	CT2613	FACE PLATE LOCATING BLOCK NUT	1
26	CT2606	FACE PLATE LOCATING CLAMP	1
26A	CT2611	FACE PLATE ADJ. SLIDE BLOCK	1
27	CT2607	FACE PLATE LOCATING BLOCK	1
28	CA9075	WIRE GUIDE BRACKET SCREW	1
29	CA9127	ROTATOR OPERATING CAM STUD	1
30	CA9058	ROTATOR OPERATING CAM STUD SCREW	1
31	CA9056C	FACE PLATE RETAINING CLIP	3
32	CA2081	FACE PLATE RETAINING CLIP SCREW	4
33	CA9056A	FACE PLATE RETAINING CLIP	1

TABLE 1 (For use in determining customer's Driving Slide Assembly)

ITEM	PART NO.	DESCRIPTION	Driving Slide Style/Use	Lug Style
9		DRIVING SLIDE ASSEMBLY		
a	CTT2623		standard, raised lug	.187 lg. rectangular (CT2602)
b	CTT2623A		lowered lug for 2 sheets to .125 in. thick work	.187 lg. rectangular (CT2602)
c	CTT2623C		standard, raised lug	.25 lg. rectangular (CT2602A)
d	CAA2623		standard, raised lug	round (CA2103) w/.031 thk. washer (CT32B)
e	CAA2623C		pin (D37327F) holds in driving slide spring	round (CA2103) w/.031 thk. washer (CT32B)
f	CAA2623D		standard, raised lug	round (CA2103B) w/.079 thk. washer

* Contact **ISP** customer service for M2000 heads not listed

M2000 HEAD

PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY
34	CT9109	BONNET ALIGNING SCREW	0 to 2 as req'd.
35	CA9032C	SUPPORTER SPRING	1
36	CA9037	SUPPORTER SPRING BUSHING	1
37		SUPPORTER SPRING LEVER ASSEMBLY	1
	CAA9036	Standard (1.625 in. long)	
	CAA9036A	Special (1.494 in. long)	
	CAA9036B	Special (1.312 in. long)	
38	CA9034	SUPPORTER SPRING LEVER SCREW	1
39		SUPPORTER GUIDE PLATE	2
	CA9030	All except listed below.	
	CA9030A	CTTT2605A2 (McCain)	
40	CA9081	SUPPORTER GUIDE PLATE SCREW	2
41	CA9051A	WIRE CUTTER OPERATING SLIDE FRICTION PLUG SPRING	1
42	CA9050A	WIRE CUTTER OPERATING SLIDE FRICTION PLUG	1
43		WIRE CUTTER OPERATING SLIDE	1
	CA9049	1/2" Cr. (All 1/8", .155", 3/16" capacity heads, and CTTT2605F4,H4 heads.)	
	CA9049A	1/2" Cr. (All other 1/2" Cr Heads not listed above)	
44	CA9022J	GRIP RELEASE SLIDE, 1/2" Crown	1
45		FACE PLATE ADJUSTING LEVER	1
	CA9025	For Non-Slotted Face Plates	
	CA9025D	For Slotted Face Plates	
46	CA9048	WIRE CUTTER	2
47		FACE PLATE ASSEMBLY	1
	CAA2132V	1/2" Crown, Slotted	
	CAA2132W	1/2" Crown, No Slot	
	CAA2132Y	1/2" Crown, Fixed (Bypass)	

NOTE: The above face plate assemblies include indexes 47 to55

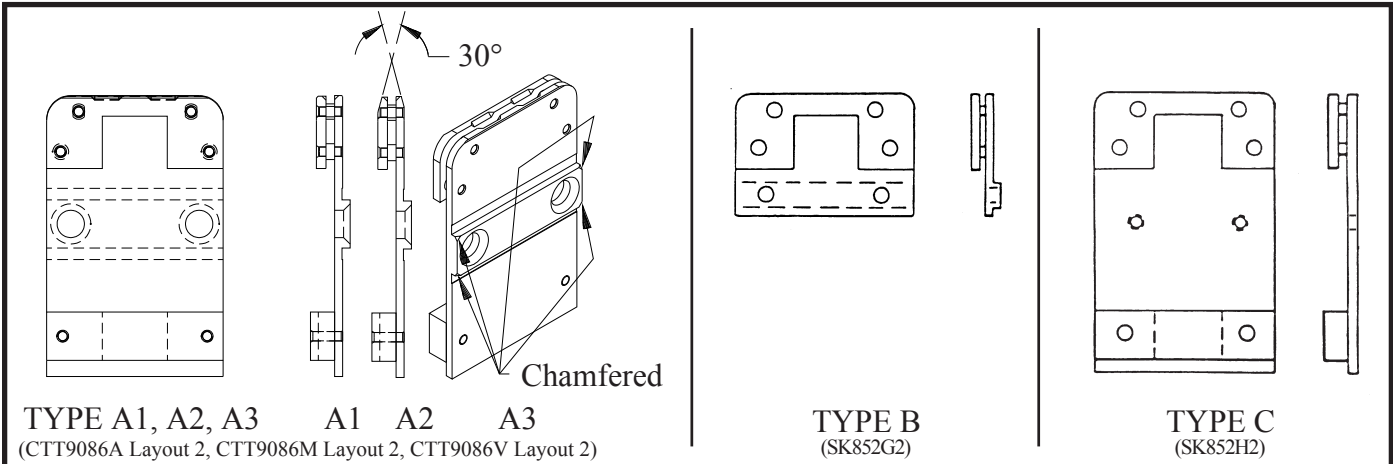
ITEM	PART NO.	DESCRIPTION	QTY
47		FACE PLATE SUB ASSEMBLY	1
	CAA2132V	1/2" Crown, Slotted	
	CAA2132W	1/2" Crown, No Slot	
	CAA2132Y	1/2" Crown, Fixed (By-Pass)	
48	CA9134	TENSION PAWL SPRING	1
49	CA9124	TENSION ROLL CLIP	4
50	CA9103A	CHECK PAWL ROLLER	1
51	CA9103C	WIRE STRAIGHTENER ROLL	2
52	CA9098	TENSION PAWL	1
53	CA9065A	STRAIGHTENER ECCENTRIC ROLL	1
54	CA9066A	WIRE STRAIGHTENER ECCENTRIC	1
55	CA172	ECCENTRIC FRICTION LOCKING SCREW	1
56		ROTATOR HOLDER	1
	CA9043M	1/2" CR., 25 TO 30 RD. WIRE, TAPERED END	
	CA9043L	1/2" CR., 25 TO 30 RD. WIRE	
	CA9043N	1/2" CR., 20-21X25 WIRE	
	CA9043P	1/2" CR., 25 TO 30 RD. WIRE, R.H. (Not Shown)	
57	CB75B	KEY, WOODRUFF (for use with CA-9043-M Rotator Holder only)	1
58	CAA9038E	M2000 ROTATOR, 1/2" CROWN	1
59		ROTATOR HOLDER SCREW	1
	CA9044A	all except below	
	CA9044B	CTTT2605W2,Y2,Z2,A3,X3,R7 CAAA2005K	
60		ROTATOR OPERATING CAM	1
	CA9163C	standard oiling	
	CA9163D	inverted oiling	
61	CAA9046D	ROTATOR OPERATING SPRING ASSEMBLY	1
62	CA44	HEAD OPERATING LINK (For use <u>only</u> with round lug driving slide assemblies)	1

TABLE 2

(For use in determining customer's special components)

ITEM	PART NO.	DESCRIPTION	QTY	USAGE
B1	CTT9003C	BONNET CLAMP LEVER	1	CTTT2605,C,G,R3,F4
B2	CTT9002	BONNET CLAMP ASSEMBLY	1	CTTT2605,C,G,R3,F4
B3	CB157	BONNET BINDER SCREW	1	
B4	CB835Q	ROLL PIN	1	CTTT2605P2,P4,Q3,R2
B5		BONNET BINDER STUD	1	
	CT9002A	.500-13 NC Thread		CTTT2605R2
	CT9002F	M8 X 1.25-8g Thread		CTTT2605P2,P4,Q3
B6		TEE BAR	1	
	CT9002G	.625 Long		CTTT2605P2
	CT9002L	.841 Long		CTTT2605Q3
B7	CB175	WASHER	1	CTTT2605P2,Q3
B8	CB145A	NUT, .500-13 NC	1	CTTT2605R2
B9	CT9109A	BONNET ALIGNMENT PIN	2	CTTT2605Q3
B10	CT9111	CONE POINT SET SCREW	2	CTTT2605Q3
B11	CA44	HEAD OPERATING LINK	1	CTTT2605R2 (For use <u>only</u> with round lug driving slide assemblies)

CLINCHER PLATE ASSEMBLIES

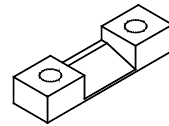


TYPE A1, A2, A3 (CTT9086A Layout 2, CTT9086M Layout 2, CTT9086V Layout 2)

TYPE B (SK852G2)

TYPE C (SK852H2)

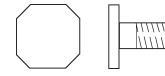
CROWN SIZE	CLINCHER POINT	TYPE	CLINCHER PLATE ASSY.
1/2	CA-9083 Thin	A1	CTT-9086
1/2	CA-9083-A Thick	A1	CTT9086-A
1/2	CA-9083 Thin	A1	CTTT-9086*
1/2	CA-9083-A Thick	A1	CTTT9086-A**
1/2	CA-9083-A Thick	A2	CTTT9086-M***
1/2	CA-9083-A Thick	A2	CTT9086-M
1/2	CA-9083-A Thick	A3	CTTT9086-V****
1/2	CA-9083-A Thick	A3	CTT9086-V
1/2	CA-9083 Thin	B	CTT-9086-B
1/2	CA-9083-A Thick	B	CTT9086-F
1/2	CA-9083 Thin	C	CAA-2089
1/2	CA-9083-A Thick	C	CAA-2089-A



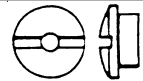
CA9085A
Clincher Guide Plate
(CA9085A Layout 2)



CA-2090
Stud
(SK852J2)

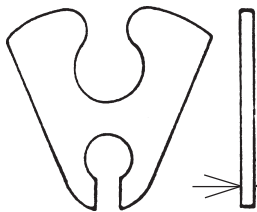


CT-9088
Binderbolt
(SK852K2)



CA-2091
Nut
(SK852L2)

- * Includes CA-9083, CTT-9086, CT-9093, CA-2091, CT-9088.
- ** Includes CA-9083-A, CTT-9086-A, CT-9093-A, CA-2091, CT-9088.
- *** Includes CA-9083-A, CTT-9086-M, CT-9093-A, CA-2091, CT-9088.
- **** Includes CA-9083-A, CTT-9086-V, CT-9093-A.

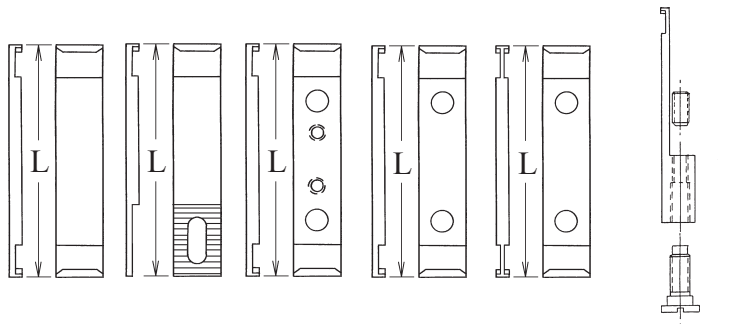


(SK852I2)

CLINCHER POINT

1/16 Nominal, CA-9083-A, Thick, 1/2 Crown
1/32 Nominal, CA-9083, Thin, 1/2 Crown

CLINCHER SLIDES



D (SK852M2) E (SK852N2) F (SK852O2) G (SK852P2) H (SK852Q2) J (SK852R2)

TYPE	L	CLINCHER SLIDE	CLINCHER POINT
D	3-17/32	CT-9093	Thin
D	3-37/64	CT-9093-A	Thick
E	5-9/16	CT-9093-R	Thin
E	5-9/16	CT-9093-S	Thick
F	3-31/64	CA-2095-G	Thick
G	12-25/32	CA-2095-A	Thick
H	12-25/32	CA-2095	Thin
J	3-17/32 Adjustable	CTT-9093-Y	Thin/Thick

WIRE GUIDE SPRING COMPONENTS

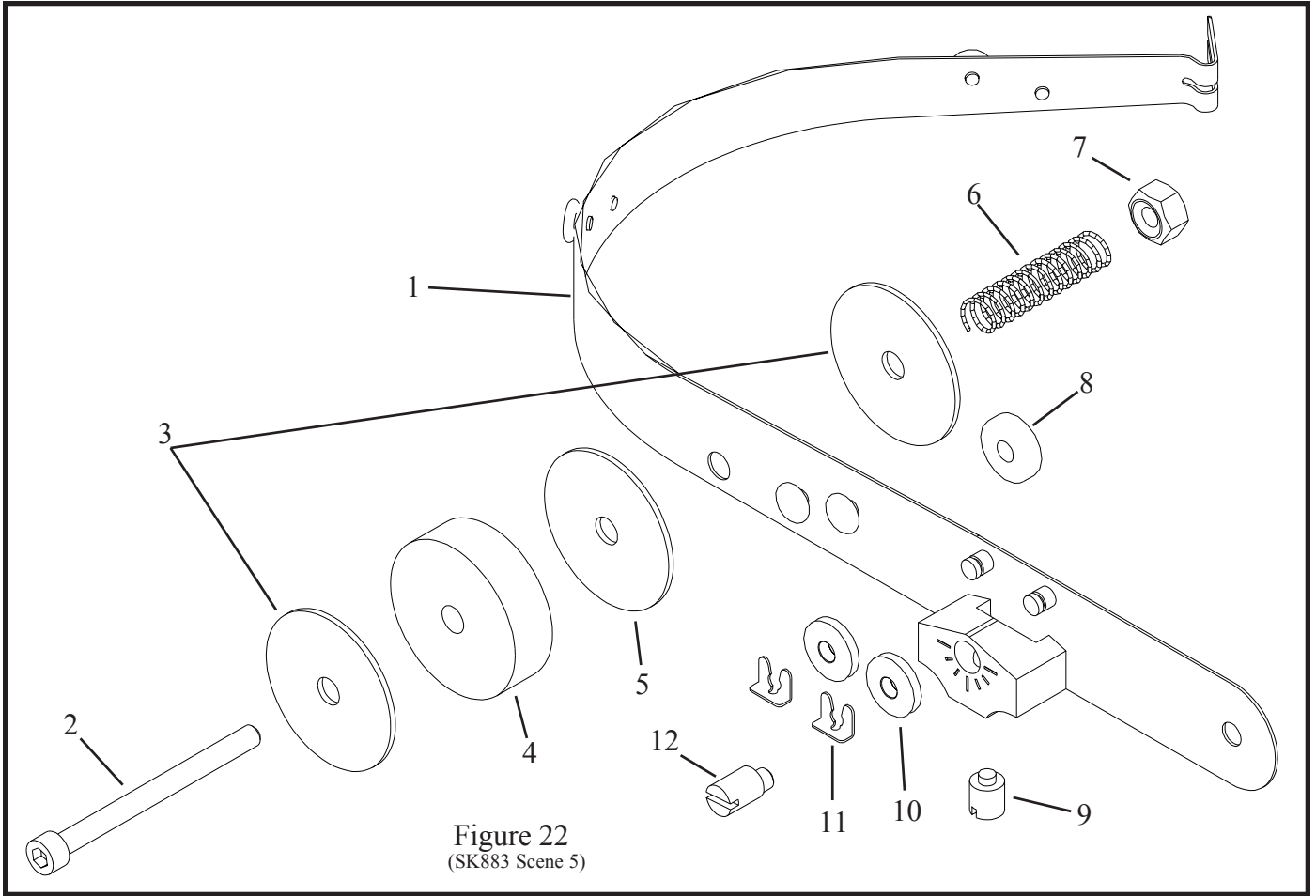
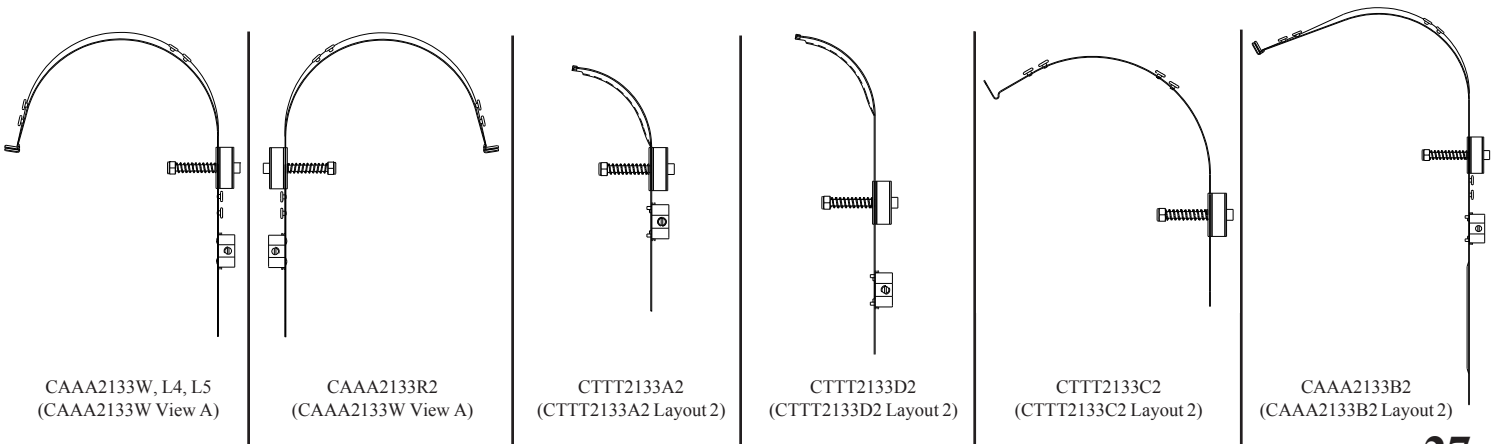


Figure 22
(SK883 Scene 5)

ITEM	PART NO.	DESCRIPTION	QTY
1	See Figures 20	WIRE GUIDE SPRING ASSEMBLY	1
a	CAAA2133W		
b	CAAA2133L4		
c	CAAA2133B2		
d	CAAA2133L5		
e	CAAA2133R2		
f	CTTT2133A2		
g	CTTT2133C2		
h	CTTT2133D2		
NOTE: Most of the above Wire Guide Spring Assemblies include the following parts through 12:			
		WIRE GUIDE SPRING SUB. ASSY.	1
a,b,d	CAA2133W	f	CTT2133A2
c	CAA2133B2	g	CTT2133C2
e	CAA2133R2	h	CTT2133D2

ITEM	PART NO.	DESCRIPTION	QTY
2	CB651E	SCREW, 10-32 x 2.000	1
3	CA9651	WASHER	2
4	CA9652	FELT WASHER, THICK	1
5	CA9653	FELT WASHER, THIN	1
6	CA9032C	SPRING, COMPRESSION	1
7	CB860B	NUT, 10-32, ELASTIC STOP	1
8	CA9065A	ROLLER, ECCENTRIC	1
9	CA172	SCREW, NYLON TIP	1
10	CA9103C	ROLLER, WIRE STRAIGHTENER	2
11	CA9124	CLIP, ROLLER	2
12	CA9066A	ECCENTRIC	1



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22. M2000 Head Stitcher

**USE ONLY REPLACEMENT
PARTS DESIGNED AND
MANUFACTURED BY ISP
SPECIFICALLY FOR YOUR
M2000 STITCHER**

NOTES