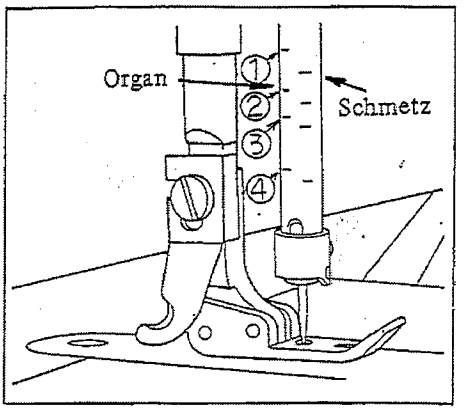
3.-TECHNICAL MANUAL

All maintenance should be performed by a qualified service technician.

3.1.- Sewing Head Adjustments

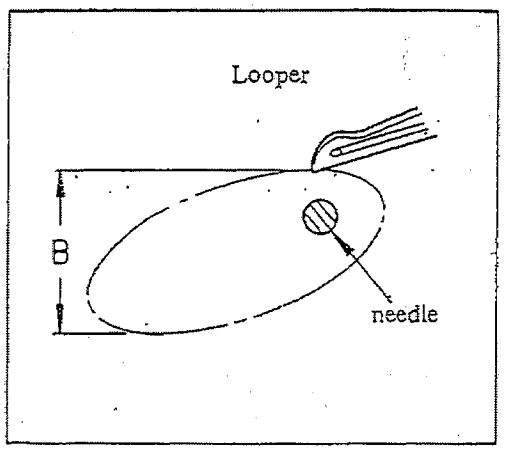
3.1.1.- Adjusting the needle height of the needle bar



Needle System TVx7: Set the needle bar so that when the needle bar has reached to lower dead point the left carved line (No 1 market) matches with the bottom surface of the needle bar lower bushing. (See figure)
Needle System UY-128GAS etc: Set the needle bar so that when the needle bar has reached to lower dead point the right carved line matches with the bottom surface of the needle bar lower bushing. AT this condition the distance between the needle point an upper surface of the throat plate becomes 10.0 mm (25/64)

Note: Due to upper casting ARM welded about .143" higher than original Factory height, disregard needle BAR timing MARKS.

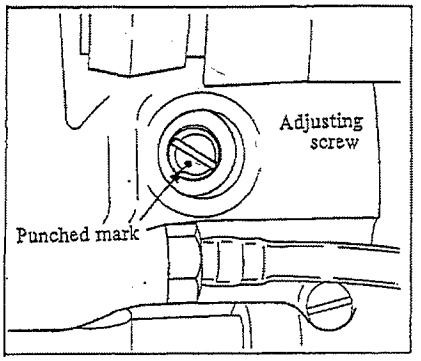
3.1.2.- Matching the needle and the looper



Adjusting the looper avoid motion.
Within the oval of the looper the dimension of B in the figure can be adjusted in the following order.

Reset avoid motion (increase) to accept size 140 needle.
The needle should not deflect on the left to Right movement of the looper.

Remove the rubber cap.
Rotate the hand wheel with the hand.
The heads of the plated adjusting screw (1), flat top screw , clamp screw will appear in that order, so at first, loosen the 2 screws, flat top and clamp screw.
If the punched mark of the adjusting screw (1) is brought to right side, the dimension of B becomes bigger.
Adjustment is made depending on the size number of the needle but normally it is adjusted to #11 needle.

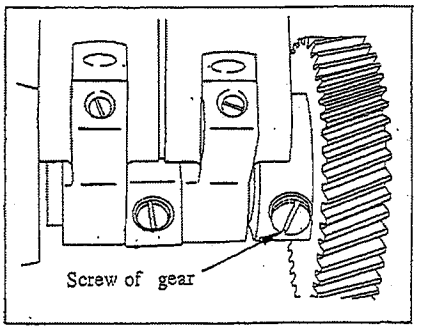


The adjustment should be made so that the looper goes as near the needle side as possible and returns. Then, after setting the position by tightening the flat top screw, securely tighten the clamp screw.

3.1.3.- Matching the looper

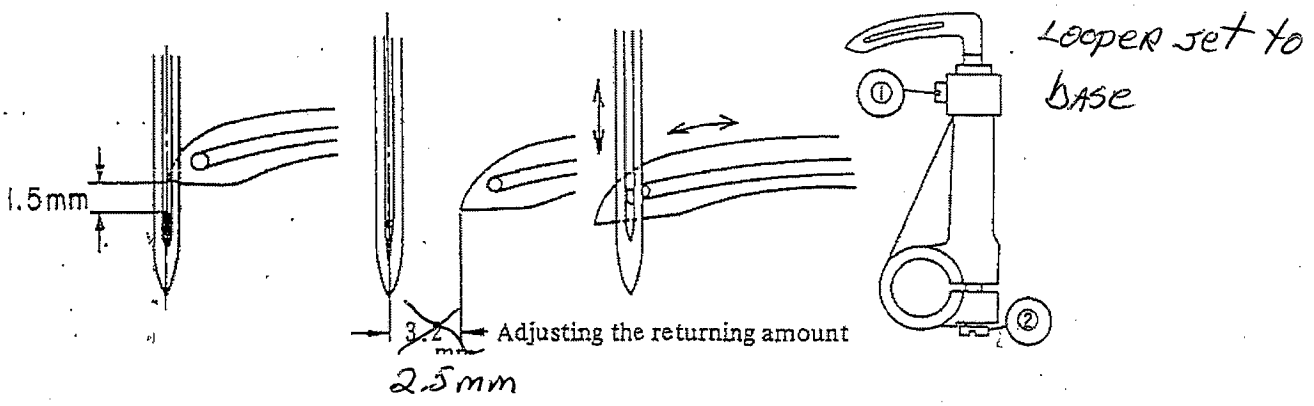
When the needle is at the lowest point, the looper comes to extreme right position. This adjustment is made by loosening the screw of the gear.

VERIFY



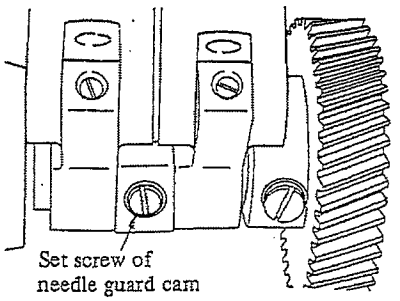
3.1.4.- Scooping amount of the lopper

When the blade point of the looper has reached the center of the needle, the standard distance between the blade point and the upper end of the needle hole is 1.5 mm (1/16). When the No 2 carved line of the needle bar is matched with the lower edge of the needle bar lower bushing Adjust that the blade point of the looper comes to the center of the needle. The returning amount of the looper comes approximately 3.2 mm (1/8) and the relative relationship of the needle hole and the thread hole of the looper becomes as show in the figure.



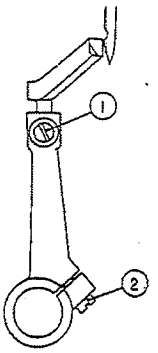
1.- Clearance between the looper and the needle

The clearance between the looper and the needle, when the looper scoops up the thread, should be as narrow as possible. After adjusting the needle guard, re-confirm this condition



3.1.5.- The timing of the needle guard

The timing of the needle guard is determined by matching the first screw of the figure with the flat part of the shaft.

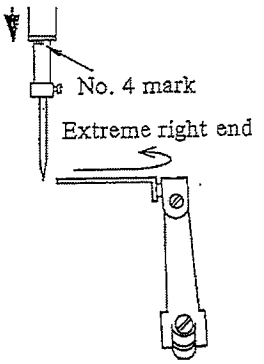


3.1.6.- Position of the needle guard

When the looper scoops up the needle thread, adjust so that the needle point lightly touches the needle guard. Set the height as high as possible to about cover the needle thread loop. Loosen set screws (1) and (2) for this adjustment.

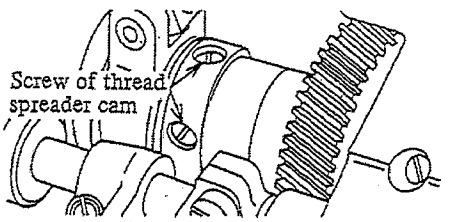
3.1.7.- Thread spreader

Thread spreader is necessary in case of reverse sewing and at the same time it is very important to obtain stable stitches without skip-stitching in case of normal feed sewing.



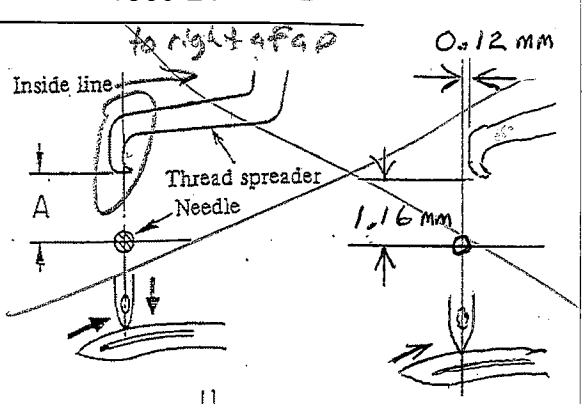
1.- The timing of thread spreader against the needle

As shown in the figure, when the No. 4 mark of the needle bar appears from the bottom of the needle bar lower bushing, set the thread spreader with the thread spreader cam set screw, as shown in the figure, so that the thread spreader comes to extreme right end.



2.- Position of the thread spreader latch

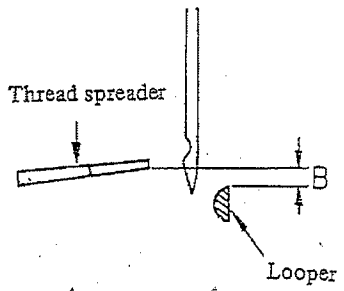
When the pointed end of the descending needle arrives the level of upper surface of the looper, adjust the thread spreader to the position shown by the figure.



The right and left direction should be such that the inside surface of the thread spreader should match with the center of the needle.

Adjust so that the front and back dimension A should be ~~2 mm~~ (5/64") with the screw (2)

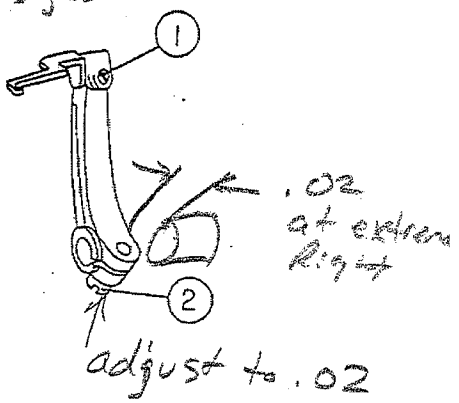
1.16 mm



→Set this where front needle thread is just avoided

The height "B" should be adjusted so that the clearance between the bottom surface of the thread spreader and the upper surface of the looper to be ~~0.2 mm~~ (1/100") with the screw (2).

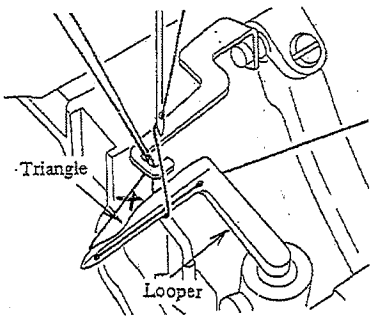
Set height B to 0.5 mm below bottom edge of stitch plate



3.1.8.- Method of thread spreader

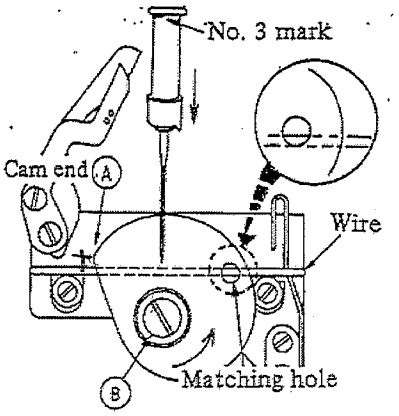
When the thread spreader latch returns, the tip of the thread spreader latch is positively grasping the looper thread and one side of the needle thread loop until the needle point enters the triangle of the thread.

After the needle point has entered the triangle, the looper should release the thread.



Above are the thread spreader adjustments for both normal and reverse stitches to form correct stitches.

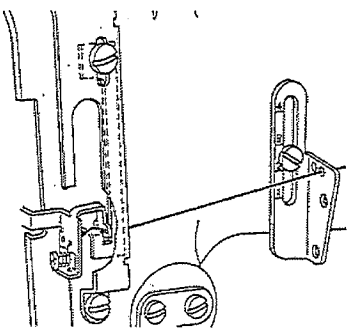
1.- On lopper thread cam



As shown in the figure, when the No. 3 carved line of the needle bar comes to the bottom surface of the needle bar lower bushing, make it so that the wire can be seen through the hole of the matching hole of the cam. The timing of the looper thread cam can be adjusted by loosening the screw B and after the position is determined tighten the screw securely.
After all adjustments are completed, verify the following:

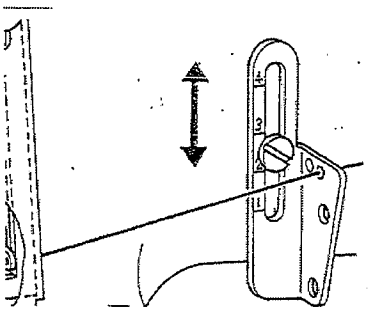
Verify that when the looper thread came off from the protruded end (A) of the looper thread cam, the needle point has completely entered the triangle of the looper thread.
To especially avoid the puckering, adjust the looper cam so that the bottom end of its matching hole is aligned with the lower side of the wire with a little earlier timing, when the looper thread will not be drawn too much and a favorable thread tension will be obtained.

2.- On the position of the take-up thread tension lever



When the needle bar is at the lowest point, if the needle thread is pulled in by hauling motion by the take-up thread tension lever, the needle thread loop becomes big at the scooping time of the needle thread.
In case of normal fine thread, lower the needle to the lowest dead point.

3.- On the frame thread eyelet



The thread tightening changes according to the positions of the frame thread eyelet. When the frame thread eyelet is lowered, the tightening of the looper thread becomes weaker and if it's raised up, the tightening becomes stronger.

Set on #1

4.- Relation between the thread take-up tension plate and the take-up thread tension disc

Function of the thread take-up tension plate

The thread take-up tension plate, which moves with the needle bar, prevents the needle thread from forming unnecessary loop in the opposite side of the looper when the needle bar goes up to its highest position to form the needle thread loop to be hooked by the looper. By so doing, there is not possibility that the thread loop grows up excessively by drawing in such unnecessary loop through the needle eye (A large loop is undesirable to form uniform stitch). Therefore, the tension plate must apply the lowest tension to the thread only for surpassing the resistance produced between the thread and the cloth.

Function of the take-up thread tension disc

The take-up thread tension disc functions especially for preventing the stitches from skipping during reverse stitching and production of chain-off threads.

It is very important to pull in the slack of the needle thread especially when the feed direction is reversed. If a slackened needle thread remains on the cloth, it may be cut by the returning needle or it may form an idle loop which results in stitch skipping. Another function of the take-up thread tension disc is to take in the slack of the needle thread while the needle goes down in order to prevent the chain-off threads from skipping. The needle thread is entirely free from the resistance of the cloth when the chain-off threads are formed. Therefore, when the needle point comes down to pass through a triangular loop formed on the back of the looper, the triangular loop will be deformed or broken to skip a stitch of the interloping needle thread is slackened.

5.- The relation between the thread take-up tension plate and the take-up thread tension disc.

To let these two thread components properly function, it is necessary to maintain the tension of than that of . The standard ratio is 3 g : 1 g (drawing force required for the cotton thread. No. 60).