



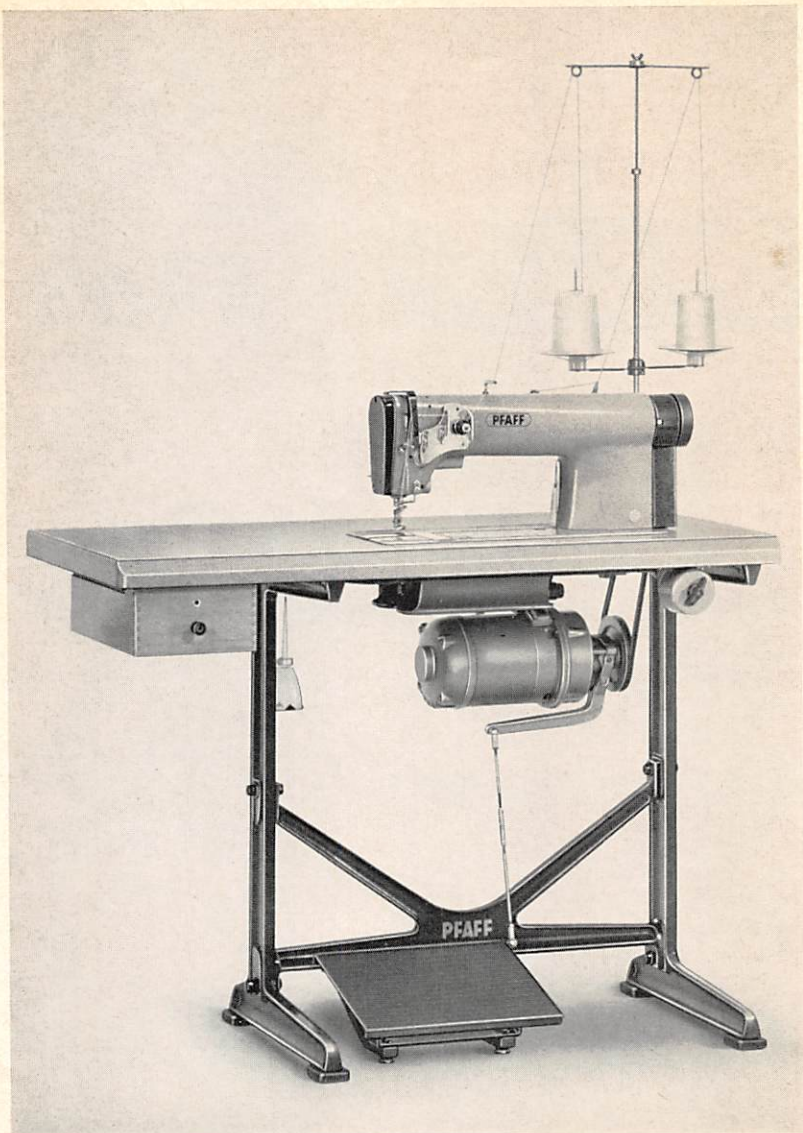
5463

**High-Speed Two-Thread Chainstitch
Sewing Machine**

U. S. Federal Stitch Type 401

Service Manual

G. M. PFAFF AG KAISERSLAUTERN BRANCH



R 9430

Pfaff 5463 two-thread chainstitch, high-speed sewing machine set up on asymmetric power table.

1. General

The new Pfaff 5463 is a flat-bed high-speed sewing machine fitted with a transverse looper which makes the two-thread chainstitch, U. S. Federal Stitch Type 401.

Equipped with ordinary drop feed, this machine follows the same basic mechanical principle built into the Pfaff 463 and closely resembles this latter machine in its exterior design and size.

The essential difference between both machines lies in the fact that the Pfaff 5463 features a two-thread chainstitch sewing mechanism and a disc-type rather than a link-type feed regulator. In addition, it is fitted with a thread take-up lever which is rigidly mounted on the needle bar and replaces the conventional link take-up. The Pfaff 5463 attains a top speed of 6,000 s.p.m. and makes up to $5\frac{1}{2}$ stitches to the inch. It uses 4463 kK needles.

For the time being, the machine is available in two varieties:

The **Pfaff 5463-801** is equipped with one needle and one looper and produces a single line of two-thread chainstitching.

The **Pfaff 5463-802**, on the other hand, is fitted with two needles and two loopers and produces two lines of two-thread chainstitching, using four threads.

The latter variety is available at present in needle gauges of about $\frac{3}{16}$ " and $\frac{1}{4}$ ", or 4.8 and 6.4 mm.

2. Inserting the Needle

Insert the needle into the opening of the needle bar or needle holder and push it up as far as it will go. Turn it so that its long groove faces toward you and tighten the needle set screw securely.

3. Adjusting the Needle Bar Frame

The needle bar frame should be positioned so that the needle will enter the needle plate slot close to its near end, without actually touching it.

To adjust the position of the needle bar frame in the direction of sewing, turn the eccentric stud at the needle-bar-end of the machine with a screwdriver.

If the position of the needle bar frame requires adjustment crosswise of the direction of sewing, push it to the right or left in its bearings, as appropriate.

4. Adjusting the Feed Dog

The lobe of the feed lifting eccentric should point up when the needle bar has reached the top of its stroke. At the same time, the borehole in the balancing collar of the eccentric should point down perpendicularly.

When the feed dog is at its highest point, its teeth should protrude from the surface of the needle plate by about $\frac{3}{64}$ " , or 1.2 mm.

Time the feed dog so that it will start to advance the material right after the needle point has risen clear of the needle plate slot.

4.1 Timing the Feed Motion

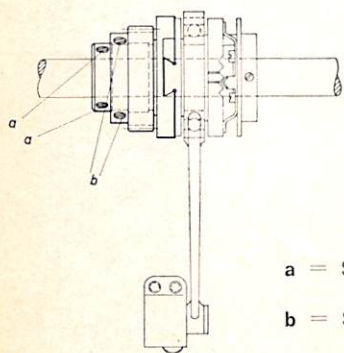
To time the feed motion, loosen set screws **a** in the dovetail guide and turn this guide on its shaft, as may be appropriate (Fig. 1). If the feed motion is supposed to begin later, turn this guide backward; if it is supposed to begin earlier, forward, i.e. toward you. After this adjustment, tighten set screws **a** securely. Any retiming of the feed motion necessitates a re-timing of the looper motion in relation to the needle stroke.

4.2 Setting the Looper to the Needle

To do this, turn the balance wheel toward you until the looper point is opposite the center line of the needle as the looper moves toward the left. Note the relative vertical positions of the looper point and the edge of the needle eye. Then turn the balance wheel in the opposite direction until the looper point is again opposite the center line of the needle and make sure the relative vertical positions of the looper point and the needle eye are the same.

If adjustment is required, loosen set screws **b** (Fig. 1) and rotate the gear on the feed regulator, as may be appropriate. Then tighten set screws **b** securely.

Fig. 1



a = Set screws on dovetail guide

b = Set screws on gear

5. Adjusting and Timing the Looper

5.1 Setting the Looper at the Correct Height

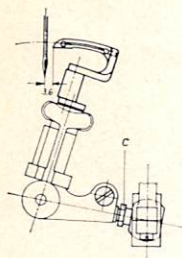
The looper should be set so that its underside rests on the looper holder and its inner surface with the thread groove is positioned at right angles to the sewing direction.

5.2 Setting the Looper Point in Relation to the Center Line of the Needle

When the descending needle reaches the lowest point of its stroke, the looper should be at the extreme right of its stroke. When the looper is at this position, there should be a clearance of about $\frac{9}{64}$ " , or 3.6 mm, between its point and the center line of the needle (Fig. 2).

If adjustment is required, loosen clamping screw **d** (Fig. 3) and, with the aid of wrench SW 6, turn eccentric ball stud **c** (Fig. 2) which connects the looper holder with the driving rod, as may be required. After this adjustment, tighten the set screw securely.

Fig. 2

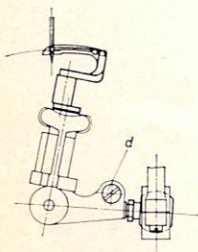


c = Eccentric ball stud

5.3 Setting the Needle at the Correct Height

The vertical setting of the needle is correct if, after it has passed the lowest point of its stroke and risen until it is opposite the advancing looper, its eye is in line with the looper eye (Fig. 3).

Fig. 3



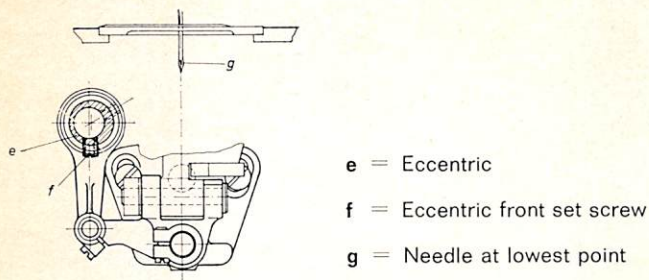
d = Clamping screw

5.4 Timing the Looper Avoiding Motion

The looper avoiding motion is controlled by an eccentric which is carried on the main drive shaft under the bedplate.

Eccentric **e** (Fig. 4) is set correctly if its lobe points to the right toward the needle and its front set screw **f** points downward when the needle has reached the bottom of its stroke (**g** in Fig. 4).

Fig. 4

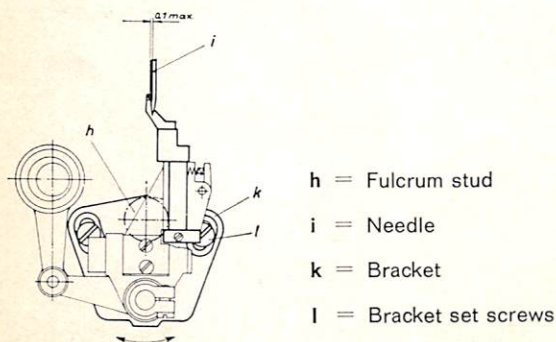


5.5 Setting the Looper to the Needle in Sewing Direction

Turn the balance wheel until needle **i** has reached the lowest point of its stroke and check to see that the looper is at the extreme right of its stroke. If this setting is correct, continue to turn the balance wheel until the looper point is opposite the needle. The clearance between looper point and needle should not exceed .004", or 0.1 mm. On the other hand, the looper must not strike the needle (Fig. 5).

If adjustment is required, loosen both set screws **l** on the looper mechanism bracket and turn this bracket around its fulcrum until the correct amount of clearance between needle and looper is obtained. Then tighten both set screws **l** securely again (Fig. 5).

Fig. 5



6. Adjusting the Looper Thread Pull-Off Lever

Thread pull-off lever **m** is clamped onto a stud on the looper driving rod and should be adjusted so that there is a clearance of about $\frac{5}{64}$ " , or 2.0 mm, between collar **n** of the looper avoiding motion eccentric and the thread pull-off lever when the latter is at the extreme left of its throw (Fig. 6).

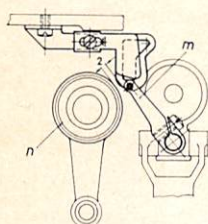


Fig. 6

m = Looper thread pull-off lever

n = Set collar

7. Regulating the Looper Thread Pull-Off

The thread regulator arranged under the bedplate consists of a bracket and an adjustable regulating plate.

Regulating plate **o** can be adjusted on its bracket and determines the amount of thread to be pulled off. To increase this amount, move the plate toward you, and to decrease it, over from you (Fig. 7).

Any adjustment of the thread pull-off lever in relation to the regulating plate changes the time at which the thread is pulled through the looper thread tension. If the thread pull-off lever has been adjusted, regulating plate **o** has to be adjusted likewise.

The regulating plate should be set in relation to the thread pull-off lever so that the looper thread will be pulled taut the very moment the looper begins its return stroke, i.e. when the needle is at the top of its stroke.

When the needle enters the thread triangle, the thread should become slack again. During the other phases of the stitch forming cycle, the tension on the looper thread will be regulated automatically.

The curvature of the regulating plate controls the looper thread so that it will not be too slack when the looper swings forward to pick up the needle thread, and that it will not be flung under the top of the looper.

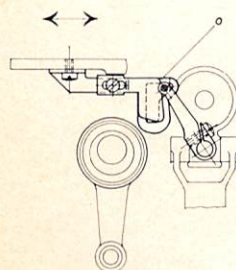


Fig. 7

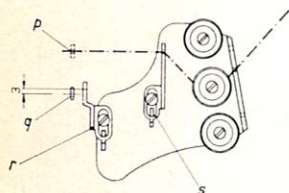
o = Regulating plate

8. Adjusting the Needle Thread Regulator

Thread regulator **r** (Fig. 8) on the tension bracket should be set so that the take-up lever eyelet will be positioned about $\frac{1}{8}$ ", or 3.0 mm, below the top of the thread regulator when the needle bar is at its lowest point (see **g** in Fig. 8).

The adjustable thread guide **s** (Fig. 8) on the tension bracket should be adjusted vertically so that the thread runs in a horizontal line from its top edge to the take-up lever eyelet when the needle bar is at the top of its stroke. This setting should be adapted to the type of material and thread being used (see **p** in Fig. 8).

Fig. 8



- p** = Position of take-up lever eyelet with needle bar at top of stroke
- q** = Position of take up lever eyelet with needle bar at bottom of stroke
- r** = Thread regulator
- s** = Adjustable thread guide

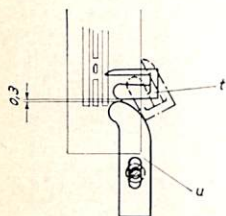
9. Adjusting the Looper Swing-Back Guide

Looper swing-back guide **u** (Fig. 9) should be so adjusted that the looper base clears it at a distance of 0.1", or 0.3 mm (Fig. 9).

When looper **t** is at the extreme right of its stroke, it can be swung out by pressing against the spring-loaded base catch (Fig. 9). With the looper swung out, its base should bear against the swing-back guide so that the thread eyelet near its point clears the edge of the needle plate on the right and the looper can be threaded without any difficulty (see Fig. 14 on page 12).

When sewing is resumed, the looper returns to its operative position automatically.

Fig. 9



- t** = Looper
- u** = Looper swing-back guide

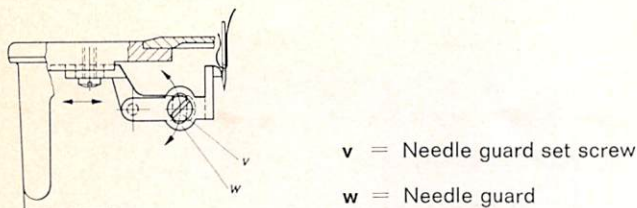
10. Adjusting the Needle Guard

The rigid needle guard **w** should be so adjusted that the descending needle will chafe against it lightly, however without being deflected (Fig. 10).

To adjust the position of the needle guard vertically, loosen set screw **v** and turn the needle guard around its fulcrum, as may be required (Fig. 10). When the point of the advancing looper is opposite the needle on its reverse side, the needle should be out of contact with the needle guard. In adjusting the needle guard, make sure it does not interfere with the proper timing of the loop spreading action.

After this adjustment, tighten set screw **v** securely again.

Fig. 10

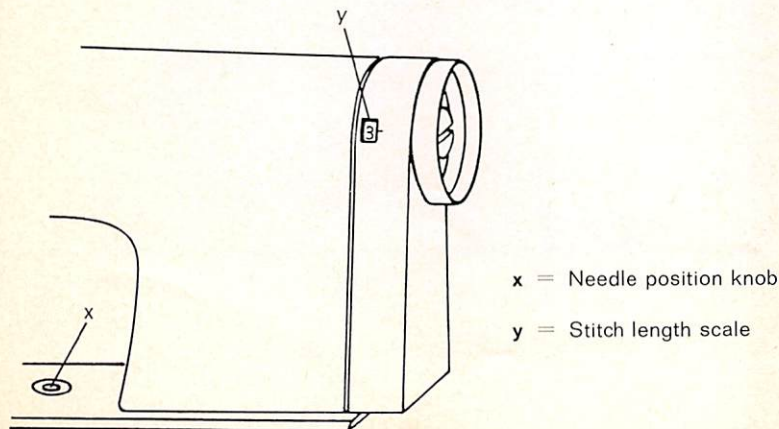


11. Regulating the Stitch Length

To regulate the stitch length, depress button **x** on the bedplate and turn the balance wheel until this button snaps in place (Fig. 11). While keeping it depressed, rotate the balance wheel back or forth until the desired stitch length has been set.

The stitch length set is indicated on scale **y** in the belt guard window (Fig. 11).

Fig. 11



12. Threading the Needle

Upper threading is illustrated in Fig. 12.

Lead the thread from spool 1 up to the top thread guide of the thread stand and down to thread guide 2 on the machine arm. Pass it through the holes of this guide and of thread guide 3, clockwise around and between tension discs 4 and through the center hole of adjustable thread guide 5. Passing above adjustable thread regulator 5a, the thread is then led from right to left through the hole in take-up lever 6 which moves up and down with the needle bar. Then lead the thread down through guides 7, 8 and 9 and pass it from front to back through the eye of needle 10.

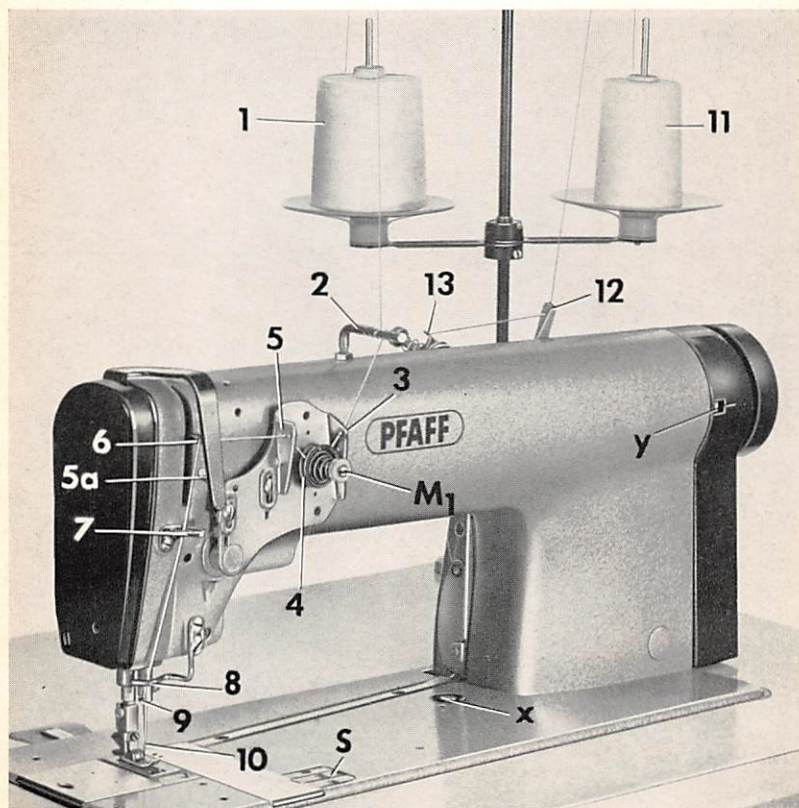


Fig. 12

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13. Threading the Looper

Pass the thread from spool 11 on the thread stand up and through the top thread guide and down through holes 12 and 13, clockwise around and between tension discs 14, down and through hole 15 and thread guide 16 on the arm standard. Swing out thread guide z, insert the thread into thread guide 17 near its lower end, and swing the guide back to its original position. Next, pull the thread into thread channel 18 in the bedplate, starting at the arm standard, and draw it through thread guide 19, hole 20 of the thread pull-off lever, opening 21 of the thread regulator, hole 22 of the thread pull-off lever, hole 23 at the heel of the looper and then from front to back through hole 24 at the looper point.

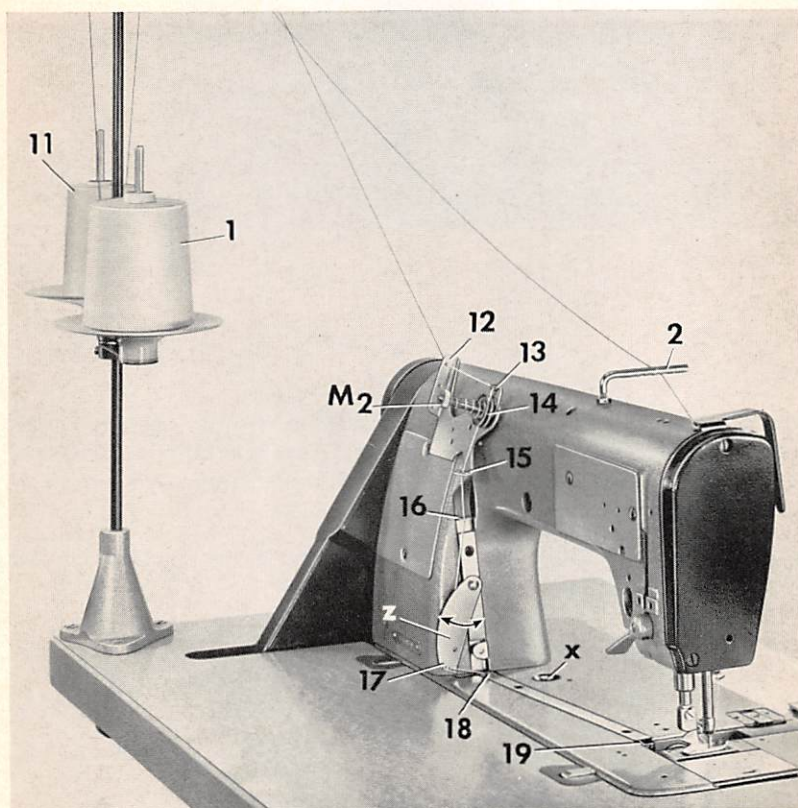


Fig. 13

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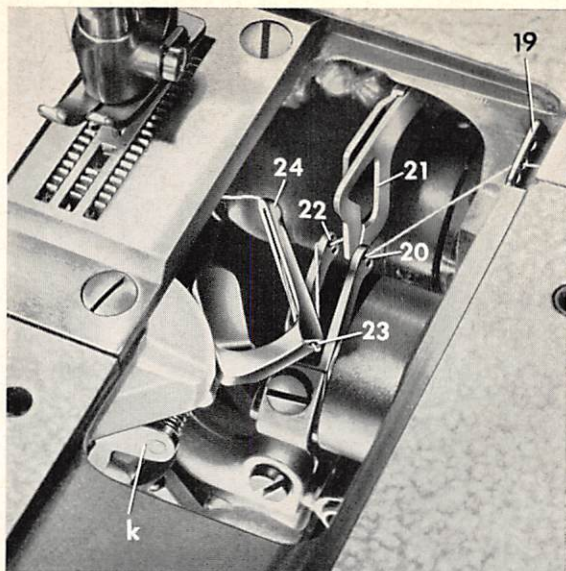


Fig. 14

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To draw the looper thread through guides 19 through 24, remove the right bedplate cover by pulling back slide **S** (Fig. 12). Turn the balance wheel until holes **20** and **22** near the tips of the thread pull-off lever are in line with opening **21** of the thread regulator and the thread can be pulled from thread guide 19 through holes **20**, **21** and **22**.

To thread the looper, rotate the balance wheel until the looper is in its extreme right position. Then swing out the looper by pressing against release latch **k** (Fig. 14) with your finger.

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