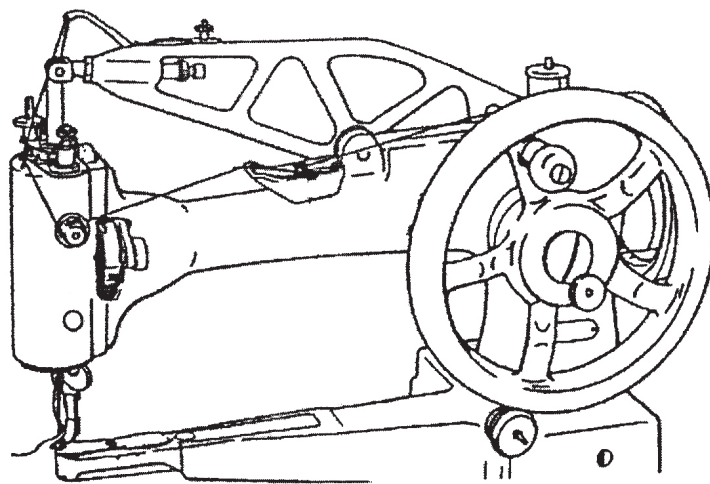


2972/2972B/2973 Series

# **SHOES REPAIRING MACHINE**



Service Manual

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# Description

Machines 2972, 2972B, 2973, for stitching boots, shoes and other tubular work in leather and fabrics, have the following characteristics:

Single needle, lock stitch.

Stop motion hand wheel—releases hand wheel from stitching mechanism for bobbin winding.

Horizontal oscillating shuttle.

Eccentric adjustment for shuttle timing.

Cylinder bed.

Replaceable steel horn.

Universal upper feed for stitching in any direction without turning the work.

Stitch length: 5 to 15 per inch (5.1 to 1.7 mm), depending on material being stitched and operations performed.

Presser foot rise during feeding action: 1/4 inch (6.4mm) – Maximum clearance: 3/8 inch (9.5mm).

Double end needle plate – (two sizes of needle holes at each end for various sizes of needles).

Adjustable thread take-up lever.

Two speed machine pulley.

## 产品概述

2972, 2973B, 2973缝纫机，可以缝制靴子，鞋子和其他皮革、织物等管状物品，并具有以下几个特点：

单针锁式线迹。

停止运动手轮—从缝线机构释放手轮绕线。

水平式摆梭。

摆梭勾线偏心式调整。

筒形底座。

可更换的梭床。

全方位转向的上送料机构，可实现不调整缝料即改变缝制方向。

缝制长度：5至15针每英寸（5.1至1.7 mm），这取决于缝制材料和实际操作。

送料过程中的压脚上升高度：1/4英寸（6.4mm）—最大间隙：3/8英寸（9.5mm）。

双头针板—（两种尺寸的针孔在针板两头旋转使用应对不同尺寸的针头）。

可调式螺纹挑线杆。

双速皮带轮。

## SPEED

The maximum speed recommended for these machines is 500 stitches per minute, depending on material being stitched and operations performed.

For thick work, patching, mending, and stitching elastics, put the driving belt on the larger pulley of the machine and the smaller pulley of the stand.

For light work, put the belt on the smaller pulley of the machine and the larger pulley of the stand.

When in operation, the hand wheel must always turn over toward the right (clockwise).

NOTE: If fitted at end of machine, hand wheel must always turn over toward the operator (counter-clockwise).

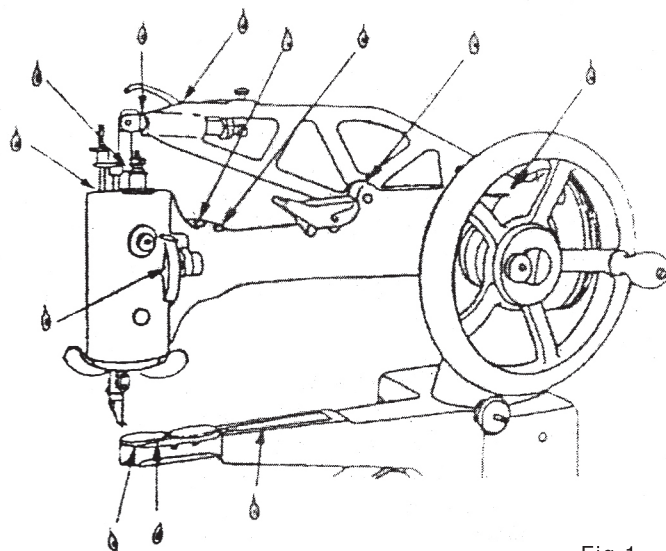


Fig.1

## 速度

建议最高运行速度是500针/分钟，取决于缝料和操作。

对于厚料，修补，修理和松紧带的缝合，建议把驱动皮带放在机身大皮带轮上，同时把皮带放在电机的小轮上。

对于薄料，建议把驱动皮带放在机身小皮带轮上，同时把皮带放在电机的大轮上。

在操作时，手轮必须始终右转（顺时针方向）。

注意：如果手轮安装在机器的右边，手轮必须始终朝向操作者转（逆时针）。

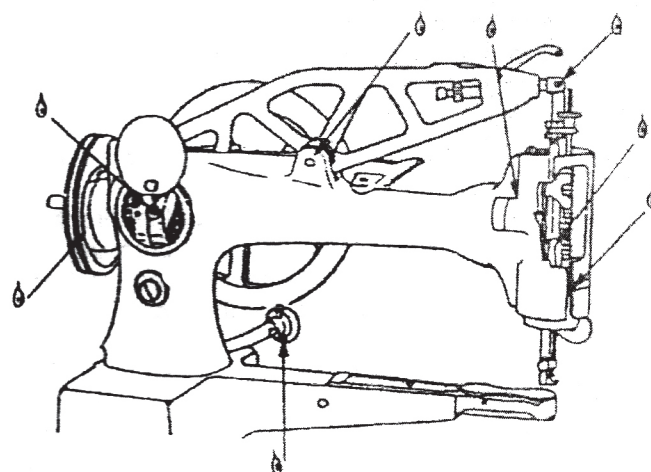


Fig.2

## LUBRICATION

When machine is received from the factory, it should be thoroughly cleaned and a drop of oil should be applied to all parts indicated in Figs. 1, 2, and 3.

Run machine for a few minutes to work oil into bearings. When the machine is in constant use, it should be oiled daily.

To oil shuttle race, raise needle bar to its highest point and lift feeding foot shown in Fig.4 by moving lifter upward.

Apply a drop of oil to the face of shuttle race and to the holes shown in Fig.3.

## 润滑

从工厂处接收到本机之后，须彻底清洁，且应按照图1，图2和图3所示的所有部件位置上缝纫机油。

将机器运行几分钟，使机油进入轴承。当机器处于持续使用状态，应该每天给机器加油。

给旋梭部位加油时，将针杆提高至最高点，且提起压脚（按图4所示抬起压脚提升杠杆）。

在旋梭位置滴入润滑油，且在图3所示的小孔中也滴入润滑油。

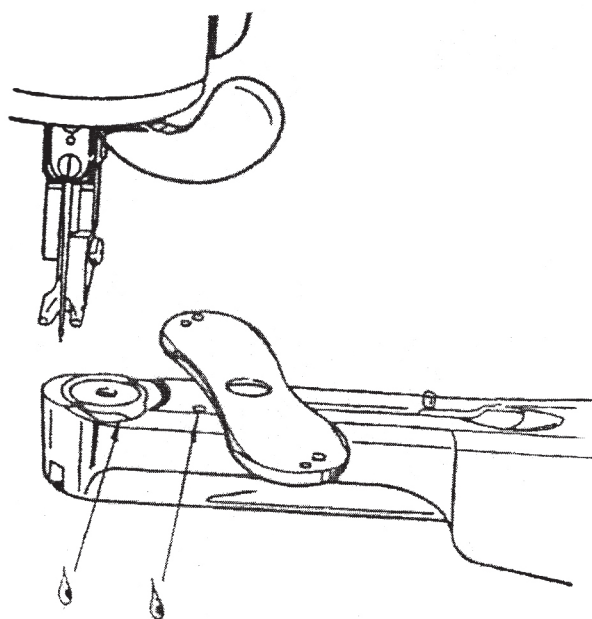


Fig.3



## OPERATION

- 1.Raise feeding foot shown in Fig.4 by moving lifter upward.
- 2.Place both feet upon the treadle.
- 3.Turn top of hand wheel from left to right to start machine. (If hand wheel is fitted on side of machine, turn top of hand wheel over toward you to start machine.)
- 4.Place a piece of material under the feeding foot. Lower feeding foot by lowering lifter and operate machine until you have become accustomed to guiding the material.

Material is moved along by the feeding foot only, and the direction of stitching can be changed as desired by turning handle, Fig.5. To make a curved stitching, operate machine slowly and without turning work, turn the turning handle enough to produce the desired curve.

Feeding foot rises between each stitch while needle is in the material. With needle serving as pivot, material can be turned in any direction. When desired, the feeding foot may be fixed to feed in a straight line in any direction, by tightening the thumb screw shown in Fig.5.

Never turn the work or alter the direction of the feed while the foot is pressing on the material, as this may cause skipped stitches and damage the surface of the work.

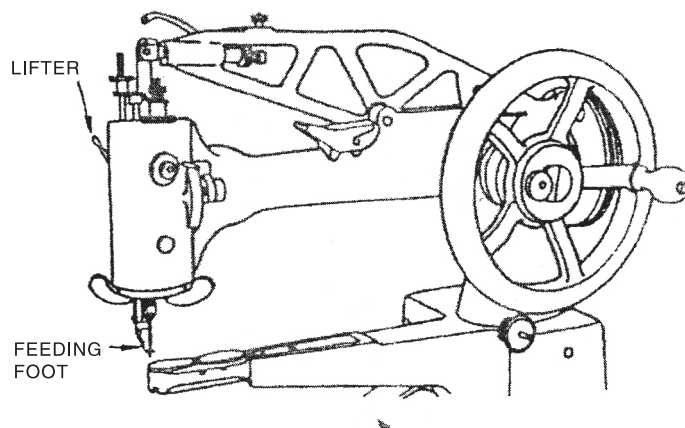


Fig.4

## 操作

- 1.按图4所示向上抬起压脚。
- 2.将双脚放在踏板上。
- 3.从左到右转动手轮启动机器（如果手轮安装在机身右侧则将手轮往操作者侧转动）
- 4.将一块缝料放在压脚下，并放下压脚提升杠杆使压脚压住缝料。操作机器直到你适应了控制缝料的方向。

缝料只会按照压脚方向移动，如需改变缝纫方向，则需按照图5所示旋转把手。如想缝制出曲线效果，将速度放慢且不动缝料，转动图5所示摇柄就可以产生所需的曲线。

缝纫过程中压脚将在每次缝纫间抬起，当然抬起时机针是刺入缝料的状态。用针作为枢轴，材料可以旋转向任何方向。当需要时，送料压脚可固定在任何一个方向缝制直线（通过拧紧在图5所示的螺丝）。

请勿在压脚未抬起时改变缝料的方向，因为这可能会引起跳针或损坏缝料表面。

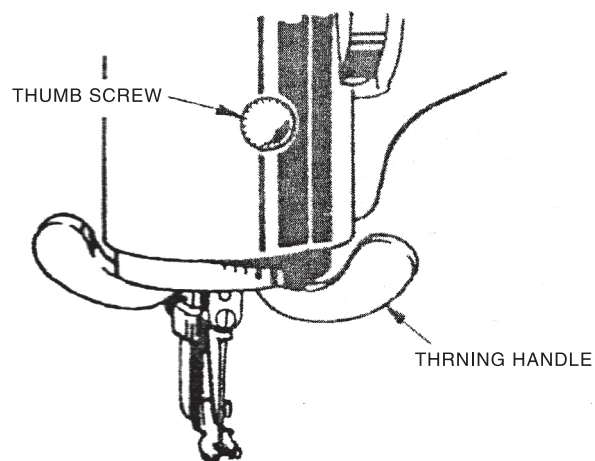


Fig.5

## NEEDLES

Needle for machines 2972, 2972B, 2972C and 2973 are GR 2-2 130 ( or 120 ) .

The size of the needle to be used should be determined by the size of the thread which must pass freely through the eye of the needle. Rough or uneven threads, or threads which passes with difficulty through the eye of the needle will interfere with the successful use of the machine.

## 机针

2972, 2972B, 2972C和2973使用GR2-2 120或130号机针。

应根据缝线的型号（缝线必须能从针眼中穿过）来选择机针。粗糙或凹凸不平的线或很难产国针眼的线会影响机器的使用。

## THREAD

Left twist thread should be used in the needle. Either right or left twist thread can be used for the bobbin.

To determine the twist. Hold the thread as shown. Turn the thread over toward you between the thumb and forefinger of the right hand; if left twist, the strands will wind tighter. If right twist, the strands will unwind.

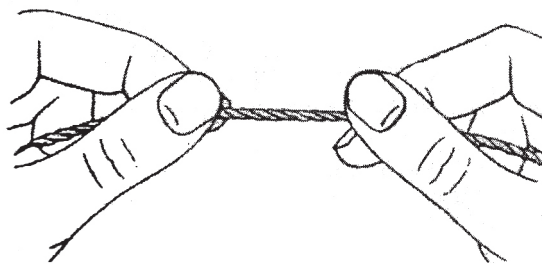


Fig.6

## 缝线

机针部分应使用左旋线。而梭心两种缝线即左旋或者右旋的缝线都可以使用。

如果不确定是哪一种缝线，请用右手拇指和食指握住缝线（如图所示），把线朝你所在方向转动；如是左旋线，则线股将更紧。如果右旋线，线股会放松。

## BOBBIN REMOVAL

Raise needle bar to its highest point and lift feeding foot shown in Fig.7 by moving lifter shown in Fig.5 upward.

Press down lever shown in Fig.7 and swing needle plate around as shown.

Turn hand wheel until point of shuttle is nearest operator, then lift out shuttle with thumb and forefinger.

Turn shuttle over and the bobbin will drop out. NOTE: For 2972 machine, move bobbin retaining spring shown in Fig.7 outward before taking out the bobbin.

## 梭心拆卸

将针杆提高至最高点，且提起图7所示的压脚（按图4所示抬起压脚提升杠杆）。

向下按图7所示针板固定杠杆，并按图示旋转针板。

转动手轮，直到摆梭钩离操作者最近距离，然后用拇指和食指将摆梭取出。

将摆梭倒置，则梭心会自然掉落。

注意：对于2972，将梭芯取出前需将图7所示的梭皮松开。

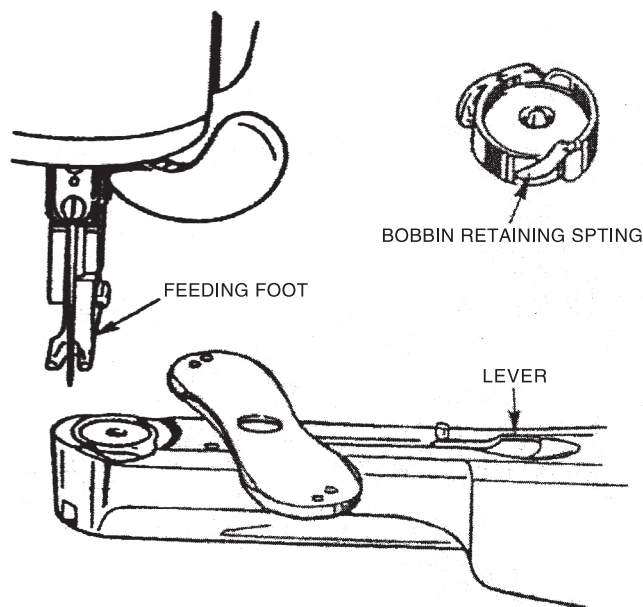


Fig.7

## BOBBIN WINDING

Disengage hand wheel from stitching mechanism by drawing out plunger thumb nut shown in Fig.8 and turning it slightly to left or right.

Place a spool of thread on the spool pin and pass end of thread through the center slot or hole in the bobbin. Then press the bobbin on bobbin winder spindle as far as it will go with the slot on the side of the bobbin facing the outside.

Loosen thumb screw shown in Fig.8 on bobbin winder and push it down until the rubber ring presses against the rim of the hand wheel then tighten screw.

Turn hand wheel over to the right (clockwise) as when sewing and simultaneously guide the thread with the finger as shown in Fig.8.

NOTE: If hand wheel and bobbin winder are fitted at end of machine, the slot on the side of the bobbin is faced to the left. The top of hand wheel must then turn over toward you as when sewing to insure properly wound bobbins.

When bobbin is sufficiently full, remove it from the spindle. Loosen thumb screw shown in Fig.8 on the winder and move screw upward in slot until the rubber ring is out of contact with the hand wheel, then tighten thumb screw.

Re-engage the hand wheel with the stitching mechanism by turning plunger thumb nut shown in Fig.8 slightly while simultaneously turning the hand wheel slowly until the plunger enters the hole in the inner disc.

### 绕线

将柱形螺母向外拔出（如图8所示）稍微向左或者向右旋梭脱离缝合机构的。

将线卷放置在线架上，并将线头穿过梭心的中心槽或孔。然后将梭心装上绕线器，梭心中心槽需朝向外侧。

松开图8所示绕线器上的螺丝，将绕线器往前推直到橡胶圈抵住手轮边缘，然后拧紧螺钉。

将手轮向右转（顺时针）当缝纫，同时用手指引导缝线，如图8所示。

注意: 如果手轮、绕线器安装在机器右侧，梭心的槽应朝向左侧。手轮必须再向操作者的方向转动。

当梭心线绕足，把它从绕线器上移开。松开图8所示螺丝，向上移动螺丝至直到橡胶圈与手轮分开，然后再拧紧螺钉。

将手轮与缝合机构重新连接，慢慢转动手轮直到柱状螺丝插入轮盘。

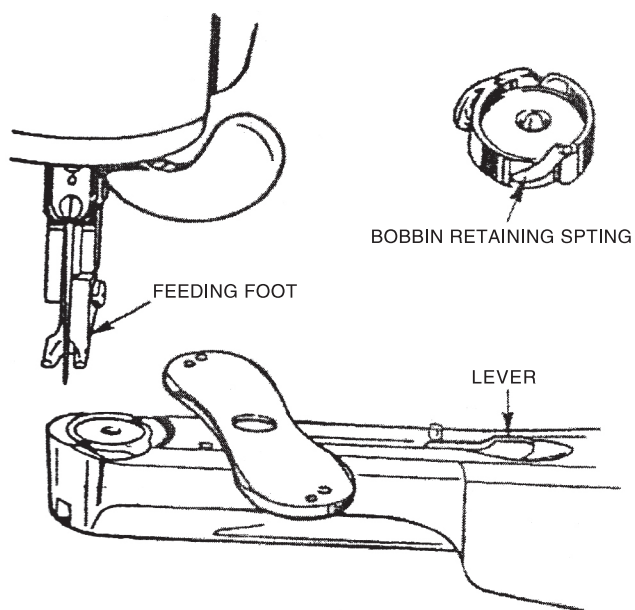


Fig.7

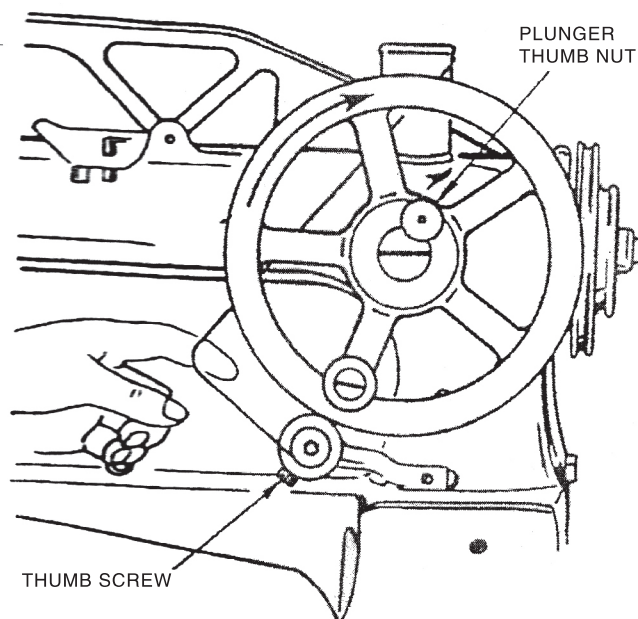


Fig.8

## SHUTTLE THREADING

Hold the bobbin between the thumb and forefinger of right hand with the slot in the edge of the bobbin at the bottom. Allow two or three inches of thread to hang free.

Hold the shuttle in the left hand with the wide opening uppermost. Let end of thread pass through shuttle opening, then place bobbin into shuttle. See Fig.9.

### 摆梭穿线

用右手拇指和食指捏住梭心，并使梭心上的槽在如图9所示下面的位置。线头可往外伸出2到3英寸。

用左手拿起摆梭并使开口朝上，把线头穿过摆梭，并将梭心放入摆梭，如图9所示。

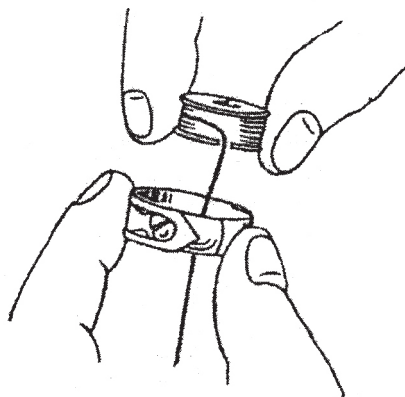


Fig.9

Turn shuttle over while holding bobbin in it and draw the thread into the slot in the edge of the shuttle and under the end of the tension spring. See Fig.10.

将摆梭翻转（请保持梭心在摆梭中），将线头拉出并穿入摆梭的槽内并处于梭皮下方，见图10。

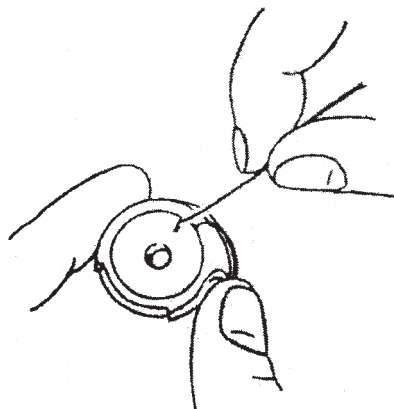


Fig.10

Pass the thread through delivery eye which is in the upper edge of the shuttle. See Fig.11.

将线穿过图11所示孔中。

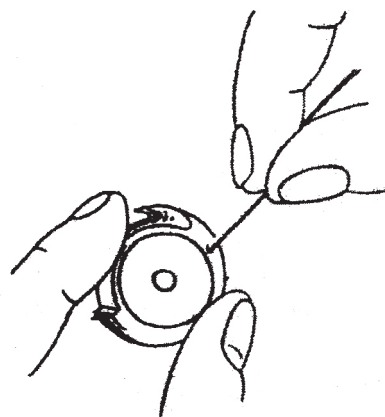


Fig.11

## SHUTTLE REPLACEMENT

After threading the shuttle, turn hand wheel until the upright part of the shuttle carrier is to the right. Then with the point of the shuttle nearest you, and pointing towards the right, place into the recess as shown in Fig.16. With needle bar at its highest point, press down lever shown in Fig.16, and swing back needle plate to its sewing position.

### 摆梭更换

将梭心按要求放入摆梭之后，转动手轮，使摆梭托高出的部分朝向右侧。然后如图16将摆梭放入摆梭托，请将摆梭钩朝向操作者方向。请注意将针杆调整至最高点，然后按下如图16所示的杠杆，然后将针板盖回缝纫位置。

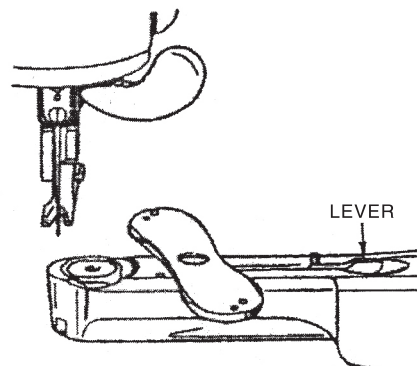


Fig.16

## NEEDLE SETTING

Raise needle bar to its highest point and loosen needle clamping screw shown in Fig.17. Then insert shank of the needle up into the needle clamp as far as it will go with long groove of the needle to the left and its eye directly in line with the arm of the machine. Tighten needle clamping screw showing in Fig.17. Loosen needle bar clamping screw and move the needle bar clamp to right or left until the needle passes through the center hole in the needle plate, then tighten needle bar clamping screw.

CAUTION: There are two double end needle plates furnished with each machine. Be certain needle is straight and corresponds to the correct needle hole size indicated on end of needle plate.

### 机针

将针杆调整至最高位，并松开图17所示的夹紧螺钉。然后将机针尾部尽量插入针杆，且保证勾线槽向右，针眼和机臂成一直线，最后上紧图17所示夹紧螺钉。接着松开针杆夹紧螺钉然后左右调整针杆位置直到机针能顺利通过针板上针孔的中心位置，然后上紧针杆紧固螺钉。

注意：每台机器都会配置两头都有机针孔的针板，请根据不同的机针选择合适的针孔。

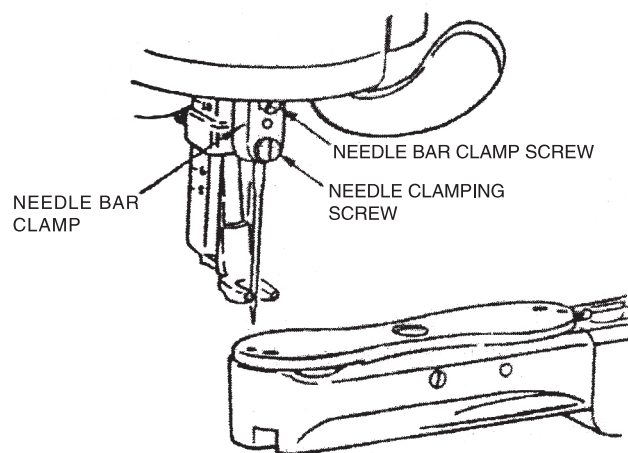


Fig.17



## THREADING

1. Place the spool of thread on the spool pin so that thread will draw from the rear side of spool. See Fig.18.

2. Raise the wire guide in the oil cup on top of the arm and pass thread under guide1, then press guide back into position.

3. Draw the thread around back of pin 2 which is near the tension discs on top of the arm and from back to front and right to left between the tension discs 3. See Fig.19.

4. Pass thread through wire eyelet 4.

5. Lead thread up and from front to back through the hole 5 in the take-up lever.

6. Draw about 10 inches of thread through the hole in take-up lever and insert the end into the slit in the end of the threading wire supplied with the machine. Then pass end of threading wire supplied with the machine. Then pass end of threading wire down through hole 6 which runs through the center of the needle bar.

7. Remove thread from threading wire then withdraw threading wire. Pass the thread from left to right through the eye of the needle 7. Draw about three inches of thread through the eye of the needle with which to start sewing.

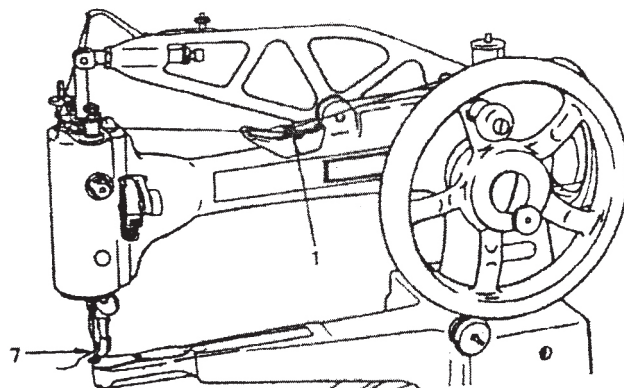


Fig.18

## 机身穿线:

1. 将缝线放置在线架上, 然后将线头从线架上拉出来。

2. 将油槽压簧1抬起, 然后将缝线穿过并压在压簧下。

3. 将缝线从绕线销2后面绕过, 然后从夹线器3右侧绕到左侧, 如图19。

4. 将线头穿过线钩4。

5. 将线头从前面穿过挑线杆顶部的线孔5。

6. 从挑线杆线孔5扯出大约10英寸左右的缝线, 然后用穿线钩将线头穿过针杆顶端的孔6。

7. 将线头拉出, 然后拔出穿线钩。将线头从左至右穿过机针7。留出大约3英寸左右的线头准备开始缝制。

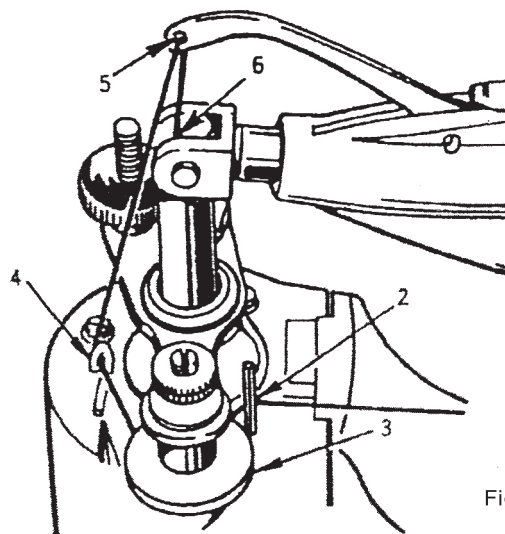


Fig.19

## THREADING FOR DARNING

1. Place the spool of thread on the spool pin so that thread will draw from rear side of spool.

2. Raise the wire guide in the oil cup on top of the arm and pass thread under guide 1 then press guide back into position. See Fig.20.

3. Pass thread over the pin 2 near the tension discs in front of the arm and from right to left under and between the tension discs 3. Fig.22.

4. Pass thread through wire eyelet 4.

5. Pass thread up and from front to back through the hole 5 in the take-up lever.

6. Draw about 20 inches of thread through the hole in take-up lever and hang the middle on V notch on the end of the threading wire supplied with the machine. Then pass end of threading wire down through hole 5 which runs through the center of the needle bar.

7. Remove thread from threading wire then withdraw threading wire. Pass the thread from left to right through the eye of the needle 7. Draw about three inches of thread through the eye of the needle with which to start darning.

### 修补式缝纫的穿线方式:

1. 将缝线放置在线架上, 然后将线头从线架上拉出来。

2. 将油槽压簧1抬起, 然后将缝线穿过并压在压簧1下。如图20。

3. 将缝线从绕线销2下方从右至左绕过, 然后从夹线器3右侧绕到左侧, 如图22。

4. 将线头穿过线钩4。

5. 将线头从前面穿过挑线杆顶部的线孔5。

6. 从挑线杆线孔5扯出大约29英寸左右的缝线, 然后用穿线钩将线头穿过针杆顶端的孔6。

7. 将线头拉出, 然后拔出穿线钩。将线头从左至右穿过机针7。留出大约3英寸左右的线头准备开始缝制。

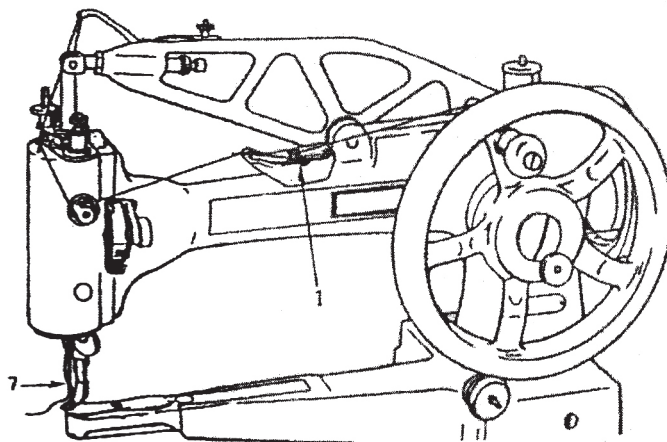


Fig.20

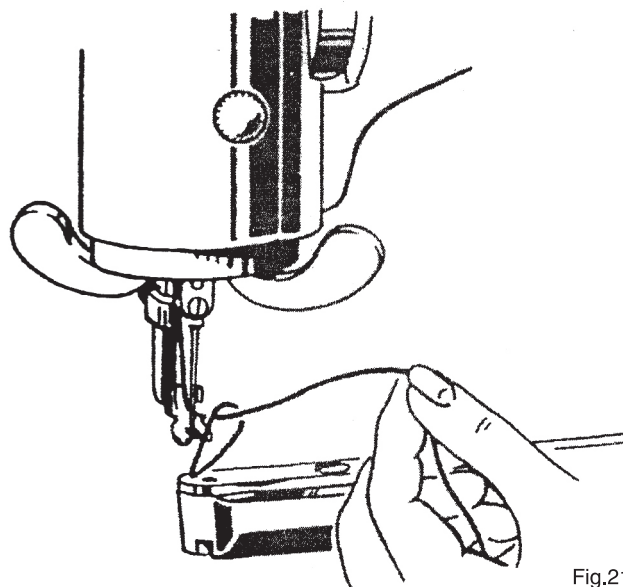


Fig.21

## PREPARING FOR SEWING

With the left hand hold the end of the needle thread, leaving it slack from the hand to the needle. Turn tip of hand wheel over toward the right (clockwise) until the needle moves down and up again to its highest point, thus catching the bobbin thread; draw up the needle thread and the bobbin thread will come up with it through the hole in the needle plate. See Fig.21. Lay both threads back under the feeding foot.

NOTE: Turn top of hand wheel over toward you if hand wheel is fitted on side of machine.

### 缝纫准备

用左手捏住机针处线头, 注意线不能绷太紧。顺时针旋转手轮, 直到机针下扎且再次回到最高位, 那样将会使面线勾出底座, 然后将底线从针板孔中拉出。如图21。将两根线都放在压脚下。

注意: 如果手轮安装在右侧, 请将手轮逆时针旋转——即朝向操作者旋转。

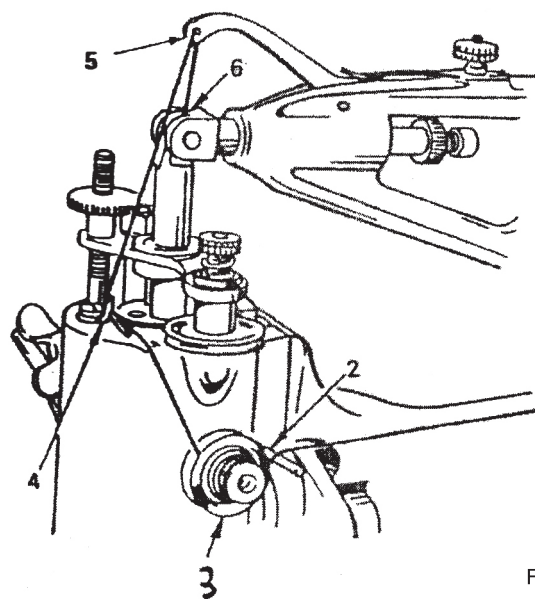


Fig.22

## SEWING

Place the material under the feeding foot, lower the foot and start sew, turning the hand wheel to the right. (Turn hand wheel over toward you if located on side of machine.)

CAUTION: DO not try to help feeding of the work by pulling the material as this may deflect the needle and cause it to break. The machine feeds the work easily without any assistance.

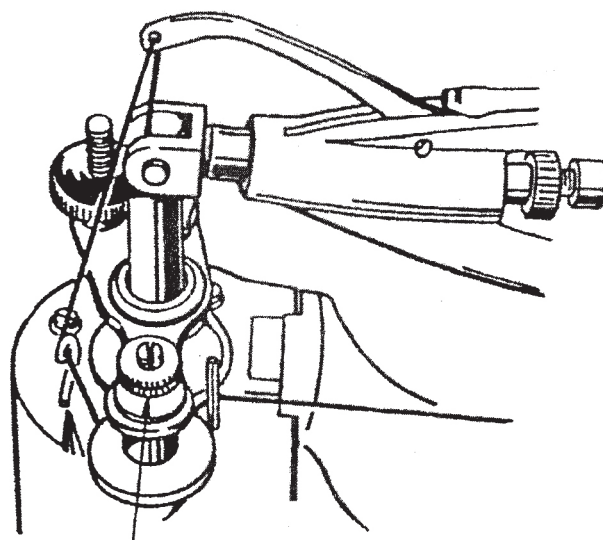
Let the needle bar rest at its highest point, raise the feeding foot, then draw the material backward about 3 inches (75mm) and cut the threads close to the work. Let the ends of the threads under the feeding foot.

### 缝纫

将缝料放置在压脚下，然后将压脚放下就可以开始缝制了。请顺时针旋转手轮（如果手轮安装在右侧，请将手轮逆时针旋转）。

注意：请勿尝试手送缝料，这样会影响甚至损坏机针，机器在不需要帮助的情况下也能轻松的送料。

缝纫完成后，将针杆提升至最高位，抬起压脚，然后向后拉出缝料大约3英寸（75mm），然后贴着缝料剪短缝线，最后将线头至于压脚下方。



THUMB NUT

Fig.23

## NEEDLE THREAD TENSION

The tension on the needle thread is regulated by the thumb nut near the tension discs. See Fig.23.

To increase the needle thread tension, tighten thumb nut

To decrease the needle thread tension, loosen thumb nut.

NOTE: Tension on needle thread can be tested only when the feeding foot is down.

### 面线松紧调节

面线的松紧一般是使用图23所示的夹线器螺钉进行调整。

拧紧螺钉，则面线变紧，反之则变松。

注意：面线的松紧只能在压脚放下的时候测试出来。

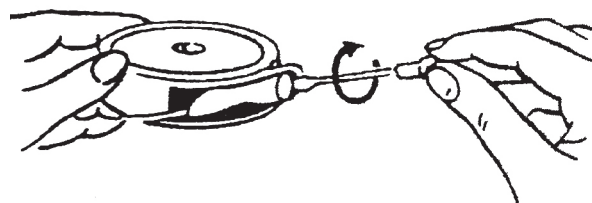


Fig.24

## BOBBIN THREAD TENSION

The tension on bobbin thread is regulated by the screw in Fig.24 and 25 on the end of the shuttle tension spring.

To increase bobbin thread tension, gradually tighten screw. See Fig.24.

To decrease bobbin thread tension, gradually loosen screw. See Fig.25.

When bobbin thread tension has been properly adjusted, it is seldom necessary to change it because a correct stitch can be usually obtained by varying the needle thread tension.

### 底线松紧调节

底线的松紧一般是如图24、25的梭皮螺钉进行调节。

适量拧紧螺钉，则底线变紧，如图24。

适量防松螺钉，则底线变松，如图25。

当调整过底线的松紧之后，一般不需要再次做出调整。一般只需要调整面线松紧即可。

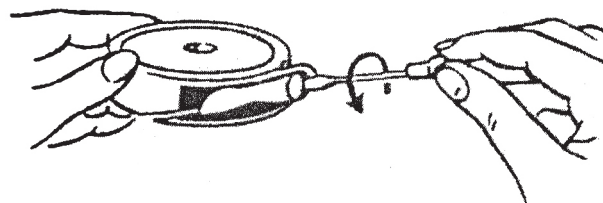


Fig.25



## STITCH LENGTH REGULATION

The length of stitch is regulated by the stitch regulator which is held in position by stitch regulator thumb screw, Fig.26 at back of the feeding foot bar. Loosen thumb screw and move the regulator up or down until its top is in line with the mark indicating desired number of stitches to the inch as shown by the arrow. Then tighten the thumb screw.

### 针距调节

针距可以通过针杆上的针距调节器调节。如图26，松开螺钉，然后可将调节器上下移动，找到位置后，保证调节器上端对准刻度，则该刻度就是想要的针距。最后拧紧螺钉。

## REGULATING TAKE-UP LEVER TENSION

The spring tension on take-up lever shown in Fig.27 is adjusted by tension stud nut. The tension on this lever should be about the same as that applied to the upper thread by the tension discs.

When the stitch is set, at the top of the needle bar stroke, take-up lever should be held down far enough by the tension of the thread so that the take-up action will keep the thread taut until the needle enters the work.

When sewing light weight materials with fine thread, more take-up action may be secured by turning the tension stud nut so that it screws up to decrease the take-up spring tension. This should be done instead of tightening the thumb nut of the tension discs.

For heavier materials and thread, the take-up tension must be about the same as that applied to the upper thread by the tension discs.

Other adjustments can be made in steps by turning the nut to suit any thickness of material and thread within the capacity of the machine.

NOTE: All machines sent out from the factory are so adjusted that they will give satisfactory results on general range of materials. Before any adjustment is made to the travel of the take-up lever, the needle bar should be raised to its highest point.

### 挑线杆松紧调节

挑线杆压簧的松紧可以通过图27所示的螺钉调节。挑线杆的松紧一般需要和面线松紧度保持一致。

当缝纫时，挑线杆需要使线保持足够的张力直到机针刺入缝料。

当缝料薄时，应该松开挑线杆压簧的螺钉，降低压簧松紧度，而不是调整夹线器的松紧度。

当缝纫厚料时，挑线杆需要根据夹线器的松紧度调节压簧，基本需要保持一致的张力。

可以通过调节挑线杆的松紧度来适应各种本机缝制的不同厚薄的缝料以及各种型号的缝线。

注意：所有从工厂发出的机器都已经调整好，并适用于一般通用范围内的各种缝料和缝线。且在对挑线杆有任何调整之前，针杆必须调整至最高位。

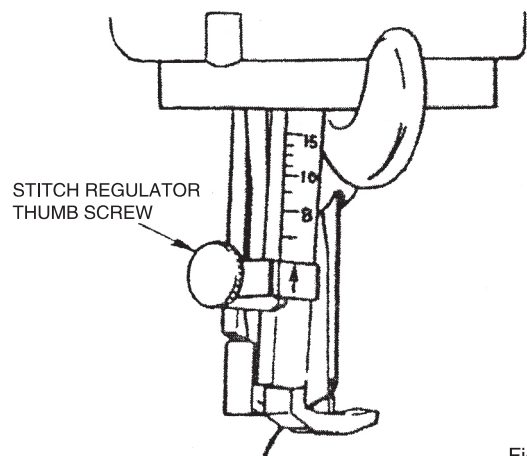


Fig.26

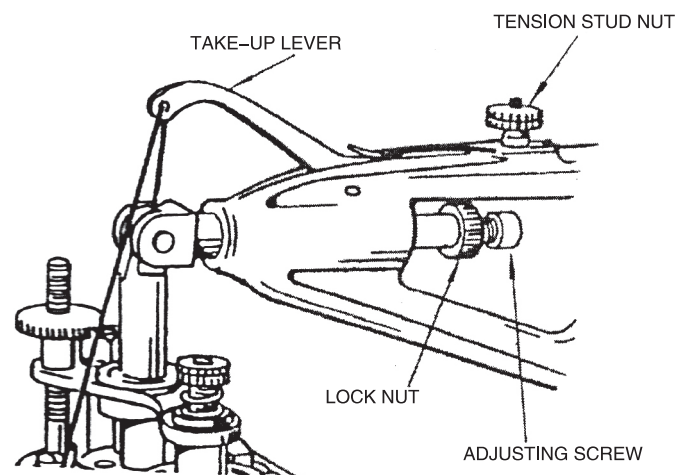


Fig.27

## ADJUSTING TRAVEL OF TAKE-UP LEVER

The range of adjustment, when sent out from the factory, should suffice for all general purposes, but, if desired, the range can be raised or lowered by means of the adjusting screw Fig.27 at the extreme right.

To alter the range, loosen the lock nut and, using a screw driver, turn the adjusting screw to the right to reduce the travel of the take-up lever.

To increase the travel, turn the adjusting screw to the left. Wear at the tip of the center screw can also be taken up in this manner. When the proper adjustment has been obtained, tighten the lock nut.

It is most important that lock nut be securely locked against the face of the position.

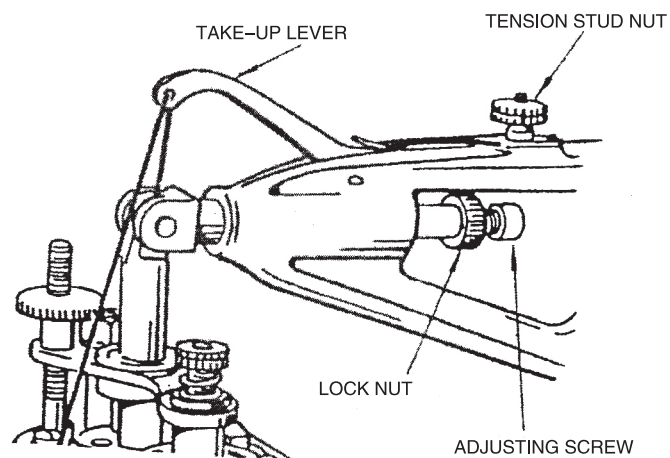


Fig.27

## 挑线杆行程的调整

挑线杆行程一般在出厂时就已经调整到适用于各种一般缝制场合。但是如果有必要，挑线杆行程大小还是可以通过图27所示的调节螺钉调节。

松开锁紧螺母，通过螺丝刀往右旋转调节螺钉可以减小挑线杆行程。如果想要增加挑线杆行程，将调节螺钉往左旋。调整好之后再将领紧螺母拧紧。

请注意必须将领紧螺母锁紧。

## REGULATING PRESSURE ON THE MATERIAL

The pressure on the material is regulated by adjusting nut shown in Fig.28. To increase the pressure, tighten the adjusting nut. To reduce the pressure, loosen the adjusting nut.

Heavier pressure is required for leather work than for sewing cloth or cotton materials. The pressure should be only heavy enough to enable the feed to move the work along evenly.

## 缝料压力的调节

压料的压力可以使用如图28的调节螺母进行调节。拧紧螺钉，则可以增加压力。反之，则减小压力。

皮革等缝料比棉布等材料需要更大的压力。当然压力最好是在一个适中的程度，只要保持能均匀送料即可。

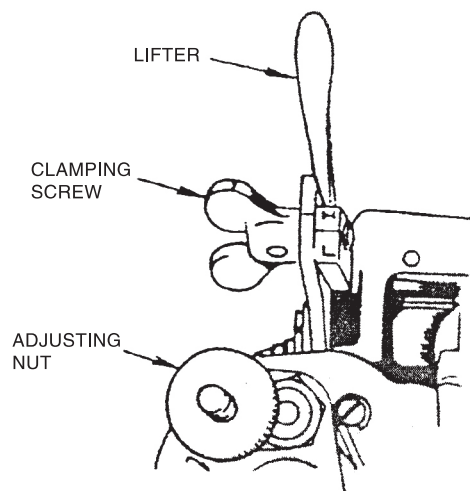


Fig.28

## TURNING A CORNER

Stop the machine with the needle in the work and turn top of hand wheel over toward you until the feeding foot rises. Then turn the work as desired, using the needle as a pivot.

## 缝纫转向

在机针刺入缝料的时候停机，然后转动手轮直到压脚抬高，接着以机针为轴改变缝料方向即可。

## REGULATING THE AUTOMATIC LIFT OF THE FEEDING FOOT

While the machine is operation, the feeding foot rises after it has moved the work forward; then the foot moves toward the needle and descends again upon the fabric. It is advisable that the lift of the foot should be only sufficient to clear the thickest part of the work

To adjust the lift, raise the feeding foot by means of lifter shown in Fig.28. To increase the feeding foot lift, loosen clamping screw and move the screw toward you. To reduce the lift, move the screw away from you. When the desired height of lift is obtained, tighten the clamping screw.

### 压脚运行中的自动提升量调节

当机器在运转的时候，压脚会在送料之后抬起，然后朝向机针运动并再次压上缝料进行送料，我们的建议是：压脚抬起的高度应该是正好能送走缝料最厚的部分为宜。

如需调节提升量，现用图28所示的压脚提升杠杆将压脚抬起。如需加大提升量，则只需拧松图示的夹紧螺钉，并将螺钉向操作者所在方向移动。如需减小提升量则只需将螺钉往反方向移动。当调节好高度后，必须上紧螺钉。

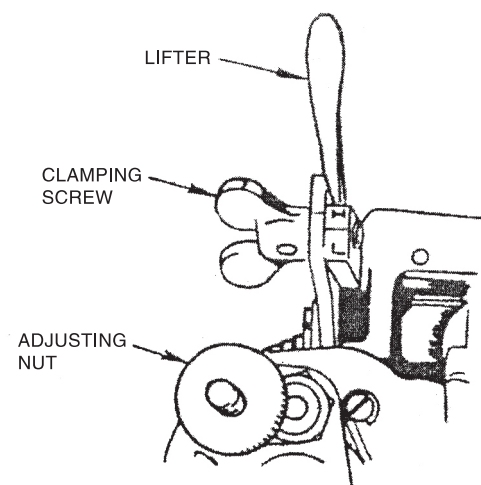


Fig.28

## CHANGING DIRECTION OF THE FEED

While stitching, the work is moved along by the action of the feeding foot only.

The direction of the stitching can be changed as desired by turning the foot around by means of the two handles Fig.29.

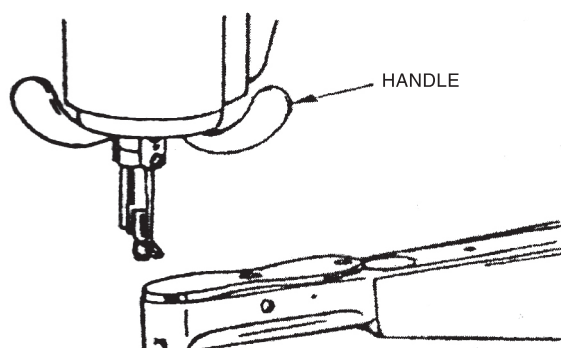


Fig.29

### 改变送料方向

在缝纫过程中，缝料的移动是完全依靠压脚送料的，送料方向可以通过转动图29所示的两个把手来实现压脚的360度转向。

## CHANGING THE NEEDLE PLATE

1. Raise the needle bar to its highest position.

2. Loosen hinge pin binding screw shown in Fig.30 and by lifting upward, remove needle plate and hinge pin.

3. When replacing the needle plate, place flat side of hinge pin toward hinge pin binding screw.

4. Tighten hinge pin binding screw on flat side of hinge pin.

### 更换针板

1. 将针杆抬高到最高位。

2. 松开图30所示针板销固定螺丝，然后取下针板销和针板。

3. 当更换针板时，将针板销上平的一面对准针板销固定螺丝。

4. 拧紧针板销固定螺丝。

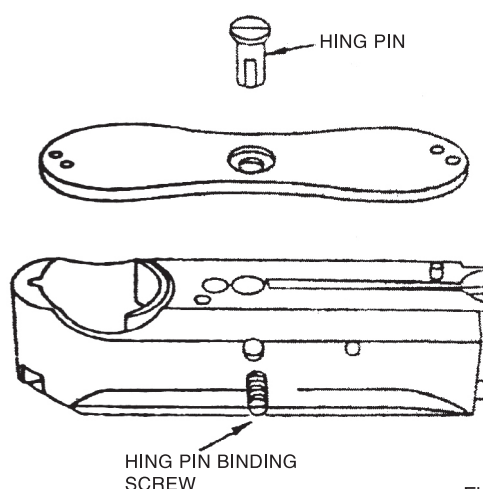


Fig.30

## EXAMINATION FOR REMOVAL AND REPLACEMENT OF GEAR BOX

Remove machine from treadle stand or power bench after taking out the four screw located at the base of the machine. The machine should then be tilted back upon its machine pulley end, the underside facing the adjuster. Parts can be examined or removed from the rack box after taking out the two cover parts. The following parts are then exposed as shown in Fig.32. long rack, short rack, shuttle following pinion, shuttle driving pinion, needle plate locating pin and spring, all of which can be removed Without disconnecting the rack box from the machine.

To take out the shuttle carrier, remove the small set screw in the shuttle driving pinion by inserting a small screwdriver through the groove at the side of the rack box as shown in Fig.32. The shuttle carrier can then be pressed through the pinion. To remove the long rack, insert a screw-driver through hole as shown in Fig.33 and take out the hinge screw. Before proceeding to withdraw the rack, remove the shuttle following pinion then grip the rack and draw it straight toward the pulley end of the machine. The short rack and shuttle driving pinion can be removed without difficulty. When replacing any one or re-assembling the whole of these parts, care must be taken to see that the gears and racks are correctly engaged, as shown in Fig.34.

### 拆卸和替换齿轮组件

将机器固定在台板上的螺钉松掉，并将皮带轮移开。然后将机器放倒，使机器底面朝向使用者。在松掉图31所示的两个面板螺钉之后就可以对内部的零件进行检查或者更换。移除面板之后你就会看到如图32所示的长齿条，短齿条，副齿轮，传动齿轮，针板固定销以及弹簧。这些零件都可以在不拆除梭架的情况下替换。

如果想取出摆梭托，请按图32所示的方法用螺丝刀从侧面穿过并取下传动齿轮上的小螺钉。

这样摆梭托就可以被取下。若想取下长齿条，按图33所示用螺丝刀从侧面穿过并取下螺钉。

在想取出齿条之前，先取下副齿轮，然后抓住齿条并向皮带轮方向拉出，然后短齿条和传动齿轮就能很容易取下了。当更换或者重组任何零件的时候，请注意按图34把齿轮和齿条等零件正确的组合在一起。

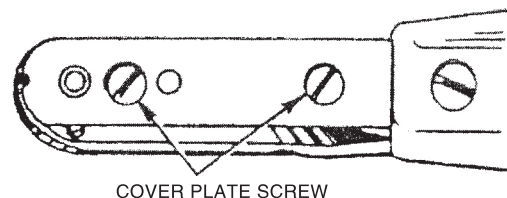


Fig.31

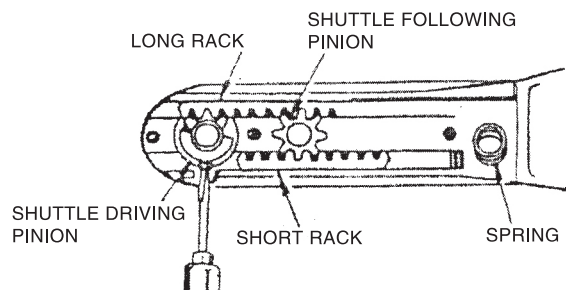


Fig.32

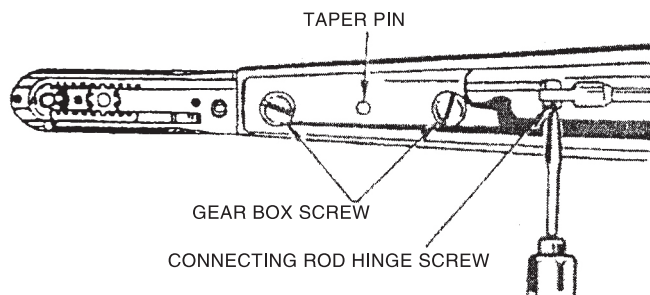


Fig.33

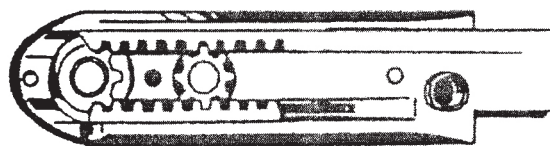


Fig.34



## INSTRUCTIONS FOR REMOVAL OF THE GEAR BOX

If for any reason it is necessary to remove the rack box from the machine, proceed as follows: Remove the machine from its treadle stand or power bench. Turn the hand wheel until the connecting rod hinge screw, Fig.33 is opposite the hole in the lower arm. Then tilt the machine back upon its machine pulley end, the underside facing the adjuster. Insert a screw driver through the hole as shown in Fig.32, and remove the screw. Slightly loosen the two gear box screws by giving them a half turn with a screwdriver. Then drive out the taper pin, using a 3/16" punch and hammer, and take out the two gear box screw. The machine should now be replaced on its feed and the horn will then come away if pulled in a horizontal direction.

**CAUTION:** Never raise the front of the horn or the end of the long rack may be damaged.

When re-assembling the box to the machine, be sure that the taper pin is driven in as far as it will go before finally tightening the two screw shown in Fig.33.

**NOTE:** Cover plate is shown removed in Fig.33 to illustrate how the gears and racks should be correctly engaged.

### 取下整个齿轮盒的方法

若实在有必要取下整个齿轮盒，请按如下步骤操作：将机器从台板固定螺丝上松开，并松开皮带轮。转动手轮直到图33所示的链接螺钉正对下臂的孔。然后将机器放倒，使机器底面对着使用者。用螺丝刀按图32所示取下螺钉，轻轻的松开两个齿轮盒螺钉，然后使用3/16"的冲锤取出锥形销，并取出两个齿轮盒螺钉。现在可以将齿轮盒从水平位置拉出了。

**注意：**千万不要抬起齿轮盒的前端，而要水平拆装。因为这样可能会损坏长齿条。

当安装的时候，请确定锥形销被尽可能的安装到位后再上紧图33所示两个螺钉。

**注：**图33所示的情况是面板已经被移除后的样子。

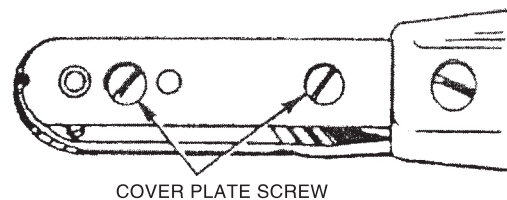


Fig.31

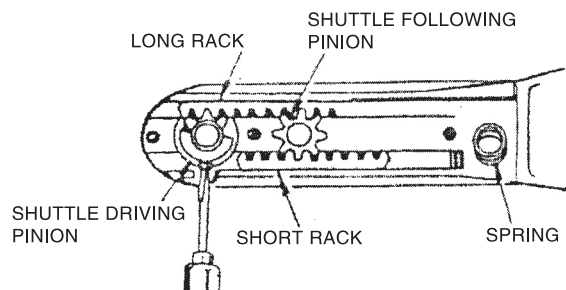


Fig.32

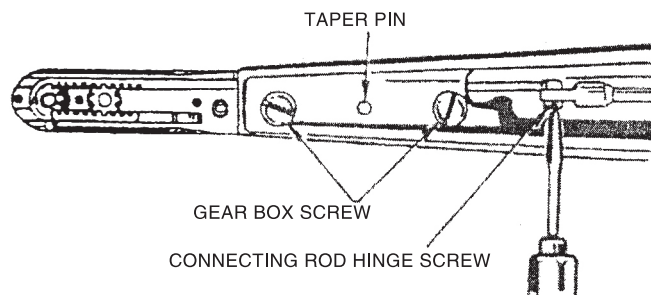


Fig.33



Fig.34

## SHUTTLE TIMING

Turn hand Wheel until eccentric stud is aligned with screwdriver hole shown in Fig.35.

To time the shuttle, turn eccentric stud and screwdriver hole until the leading edge of the shuttle carrier moves at each oscillation to a position approximately one-third the distance across the needle slot below the face plate as shown in Fig.36.

NOTE: Shuttle is removed in Fig.36 to illustrate correct timing of leading edge of shuttle carrier.

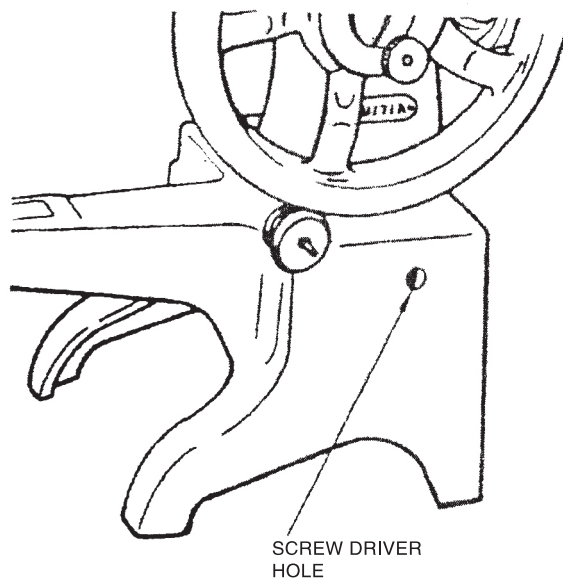


Fig.35

## 摆梭勾线时间

转动手轮直到偏心柱和图35所示的落空对应。

拧动偏心柱调整摆梭托的前缘直到针眼和摆梭托前缘大约1/3的距离。如图36。

注：为了方便讲解及表示出摆梭勾线的时间，图36的图示中摆梭已经取出。

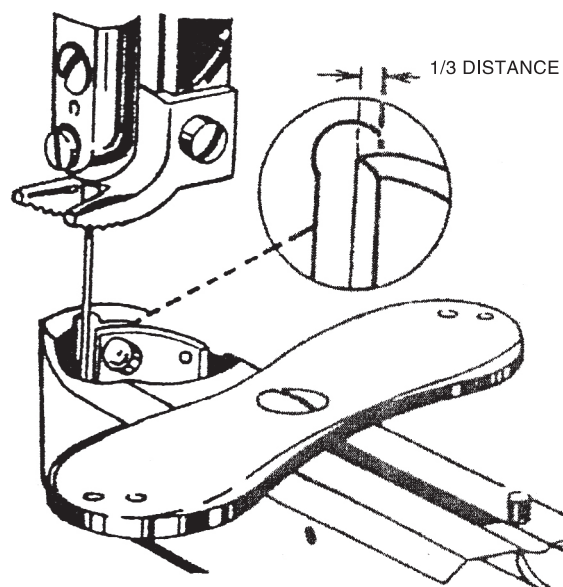


Fig.36

## HINTS FOR PERFECT OPERATION/操作提示

Oil the machine regularly.

The top of hand wheel must always turn over toward the operator (counterclockwise). If located at side of machine, the hand wheel must turn from left toward right (clockwise).

Never run the machine without material between the feeding foot and needle plate.

Do not run the machine when both shuttle and needle are threaded unless there is material under the feeding foot.

经常润滑机器。

在操作时，手轮必须始终右转（顺时针方向）。如果手轮安装机器的右边，手轮必须始终朝向操作者转（逆时针）。请勿在没有缝料在针板和压脚之间的时候运行机器。

The Belt

See that the belt is not too tight: it should be just tight enough not to slip. If too loose, remove the hook at one end, shorten the belt and rejoin.

皮带

请检查皮带不能绷太紧，应该是刚好能运行机器而不打滑的松紧度。而如果太松，请松开电机固定螺丝，并调整位置后上紧螺丝。

Machine Working Heavily

If the machine runs hard after standing idle for some time, use a little kerosene or benzine in the oiling places, run the machine rapidly, then wipe clean and oil.

机器运行不畅

如果机器运行不畅、很紧，请停机一段时间，并使用煤油或者汽油滴入油孔，然后快速运行机器，最后将溢出的油擦净。

To Avoid Breaking Needles

The feeding foot should be securely fastened by the thumb screw. Do not sew heavy seams or very thick material with too fine a needle. A large needle and thread to correspond should be used on heavy work. See page 4.

Avoid pulling the material when stitching. This may cause the needle to strike on the needle plate then break.

避免机针损坏

压脚必须用螺钉牢牢固定，请不要用太细的机针去缝制很厚的缝料。厚料需用更粗的机针去缝制。需避免在缝制过程中拉扯缝料，这也可能会导致机针的扎到针板上导致损坏。

Breaking of Upper Thread

Improper threading of machine.

Tension being too tight.

The thread being too coarse for the size of the needle.

The needle being bent, having a blunt point, or being set incorrectly.

面线断线

机器穿线不当。

线绷的太紧。

缝线对机针来说太粗。

机针弯曲，有钝点，或机针没有被正确安装。

Beaking of Under Thread

Improper threading of shuttle.

Bobbin thread tension being too tight.

底线断线

摆梭穿线不当。

摆梭线太紧。

Skipping of Stitches

The needle may not be accurately set into the needle bar or the needle may be blunt or bent.

Remove the accumulation of dirt or lint which might gather behind thread retaining spring near bottom of needle bar by working a piece of tape or thread back and forth between spring and needle bar.

跳针

机针没有安装到位，或机针钝了或弯曲。

将堆积的污垢和线头从针杆的过线环，针板等位置清理干净。

CAUTION: Do not bend spring away from needle bar or spring may become permanently damaged.

Examine feed foot and remove any dirt or lint from the teeth to insure regular feed of material.

注意：请勿弯曲过线环，否则可能永久性的损坏。检测压脚，并清理压脚牙齿上的脏东西和线头等，保证送料正常。

Working on old, hard leather

When working on old, hard leather, it is advisable to soften the leather with oil, use a coarse needle and make a long stitch to prevent needle from splitting the leather.

在硬而旧的皮革上操作

如果需要在这种场景工作，建议先用油将皮革弄软，然后用粗针大针距缝纫，防止机针损坏皮革。





SHAFT, CAM WHEEL, SHUTTLE DRIVING LEVER, PULLEY WHEEL AND SHUTTLE DRIVING LEVER CDNECTING ROD ASSEMBLY	9101	Shuttle Driving Cam and Gear.	9213	Cup (release).	9509	Stitch Regulator Thruab Screw.	HAND WHEEL ANO STOP MOTION COMPLETE		
	9102	Shaft.	9214	Disc (2).	9510	Roller and Stud,			
	9103	Pin.	9215	Washer (leather).	9511	Slide Bar.			
	9104	Gear.	9216	Friction Spring Pin.	9512	Revolving Bush.			
	9105	Shuttle Driving Cam.	9217	Head of Machine.	9513	Joint Screw (2).			
	9106	Screw.	9218	Thread Guide Pin (side).	9514	Revolving Bush Hlanddle			
	9107	Needle Bar Cam and Pulley Wheel.	9219	Head Revolving Bush Stop	9515	Handle Screw (2),			
				Thumb Screw.	9516	Bell Crank Lever.			
				Adjusting Stud (side).	9517	Gib.			
				Disc (2).	9518	Stitch Regulator.			
9108	Feed Motion Cam Wheel.	9222	Tension (side) Spring.				9705	Spring.	
9109	Cam Wheel Pin.	9223	Head Binding Screw (4).	9407	Check lever Thread Take-up		9706	Stop Motion Plunger.	
9110	Roller.	9224	Slide Rod Lock Nut (upper).		Adjusting Screw with Indicator complete.				
9111	Shaft Bushing.	9225	Foot Bar Revolving Joint Bearing.	9408	Lock Nut.		9707	Hand Wheel.	
9112	Roller Pin.	9226	Hinge Pin.	9409	Index Head.		9708	Plunger Thumb Nut.	
9113	Roller and Stud.	9227	Lock Nut (lower).	9410	Index Head Stop Pin.		9709	Handle (wool).	
9114	Bearing Screw.	9228	Slide Rod.	9411	Adjusting Screw.		9710	Spindle.	
9115	Shuttle Driving Lever.	9229	Lifter.	9412	Lovating Plunger.		9711	Retaining Screw.	
9116	Eccentric Stud Nut.	9230	Hinge Screw.	9413	Spring.		9712	Plunger Stop Screw.	
9117	Cam and Pulley Wheel Set Screw.			9414	Indicator Body.	9601			
9118	Shuttle Driving Lever Connecting Rod Complete. Nos.			9415	Indicator Body. Lock Nut	9602			
9119	Connecting Rod End (front).	9301	Stud Nut.	9416	Needle Bar complete.	9603	Shuttle complete.	BOBBIN WINDER COMPLETE	
9120	Pin (front).	9302	Spring.	9417	Spring Screw (2).	9604	Bobbin.	9801	Bobbin Winder complete.
9121	Connecting Rod.	9303	Spring Stud.	9418	Thread Tension Spring.	9605	Shuttle Body.	9802	Frame Screw.
9122	Pin (back).	9304	Needle Bar Driving Lever.	9419	Needle Bar	9606	Tension Regulating Screw.	9803	Spindle.
9123	Connecting Rod End (back).	9305	Spring Stead Pin.	9420	Needle Bar Clamp.	9607	Tension Spring.	9804	Frame.
9124	Eccentric Stud.	9306	Spool Pin.	9421	Needle Clamping Screw.	9608	Shuttle.	9805	Eccentric.
		9307	Cam Roller and Stud.	9422	Clamp Screw.	9609	Spring.	9806	Eccentric Thumb Screw.
		9308	Joint Pin.			9610	Spring Screw.	9807	Pulley.
		9309	Oil Cup Screw.			9611	Gear Box.	9808	Rubber Ring Spindle.
		9310	Oil Cup with 8597 and 8695.			9612	Pinion Bushing.		
HEAD DE MACHINE AND TENSIONS COMPLETE		9311	Spring.			9613	Rack (short).		
		9312	Oil Pad (cloth)			9614	Pinion Screw.		
9201	Screw.	9313	Vibrating Presser Lifting lever (for medium work).			9615	Driving Pinion.		
9202	Thread Eyelet (head of arm).	9314	Lifting Lever Screw.			9616	Rack (long).		
9203	Friction Spring.	9315	Thumb Screw.			9617	Pinion Cover. Plate.		
9204	Clamping Screw.					9618	Plate Screw (2).		
9205	Lifting Lever Shaft Lever.	9320	Arm Side Cover (back).			9619	Needle Plate (medium and coarse needle holes).		
9206	Lifting Lever Shaft.	9321	Hand Wheel Hub Complete, Nos. 11663, 81869, 82008 and 82052 for use when Hand Wheel is fitted on front of Machine.				Following Pinion Stud		
9207	Lifting Lever Shaft Adjusting Lever						Gear Box Position Pin.		
9208	Clamping Screw.						Releasing Lever Hinge Pin.		
9209	Hinge Screw.	9322	Hand Wheel Shaft Gear.				Releasing Lever.		
9210	Tension Thumb Nut (2).	9323	Gear Pin.				Locating Plunger.		
9211	Tension Spring.	9324	Shaft.				Needle Plate Hinge Pin		
9212	Adjusting Stud (top).	9325	Hub.				Binding Screw.		
							Plunger Spring.		
							Following Pinion.		
							Gear Box Screw (2)		
							Connecting Rod Hinge Screw.		