TN-441
INSTRUCTION MANUAL

SINGLE NEEDLE EXTRA HEAVY WEIGHT CYLINDER ARM COMPOUND WALKING FOOT WITH NEEDLE FEEDING SEWING MACHINE WITH EXTRA LARGE SHUTTLE HOOK

Contents

SPECIFICATIONS

Thank you for the purchase of your new Titan TN-441. This machine is a 1-needle, unison feed, long cylinder bed, lockstitch machine for extra heavy-weight materials. The TN-441 is often used in the manufacturing of saddlery, leather trade, sling and webbing and other heavier weight materials.

	TN-441
Max sewing Speed	800 SPM
Max Stitch length	11 MM
Needle	794 (7x3) Nm 130 to Nm 280 (standard: Nm 230)
Presser foot lift	12 (by hand) 20 by knee or foot
Motor	750W servo motor (Optional Speed Reducer)
Oil	TITAN 032 (Virgin mineral oil ISO032)

Needle size depends on material, threads and speed of sewing. To better understand needle sizes please use the following chart as a guide.

Minimum Needle	Thread size	Government Size	Break Strength
18/110	Tex 70 (CBB69) [Tkt 40]	E	11 lbs
19/120	Tex 90 (CBB92) [Tkt 30]	F	14.5 lbs
22/140	Tex 135 (CBB138) [Tkt 20]	FF	22 lbs
23/160	Tex 210 (CBB207) [Tkt 15]	3 Cord	32 lbs
25/200	Tex 270 (CBB277) [Tkt 10]	4 Cord	45 lbs
26/220	Tex 350 (CBB346) [Tkt 8]	5 Cord	53 lbs
27/250	Tex 400 (CBB415) [Tkt 7]	6 Cord	72 lbs

Tex – Tex is a new standard where the Tex number is how many grams that 1000 meters of that thread weight. For example, Tex 70 means 1000m of this thread weights70 grams.

INSTALLATION ON THE TABLE

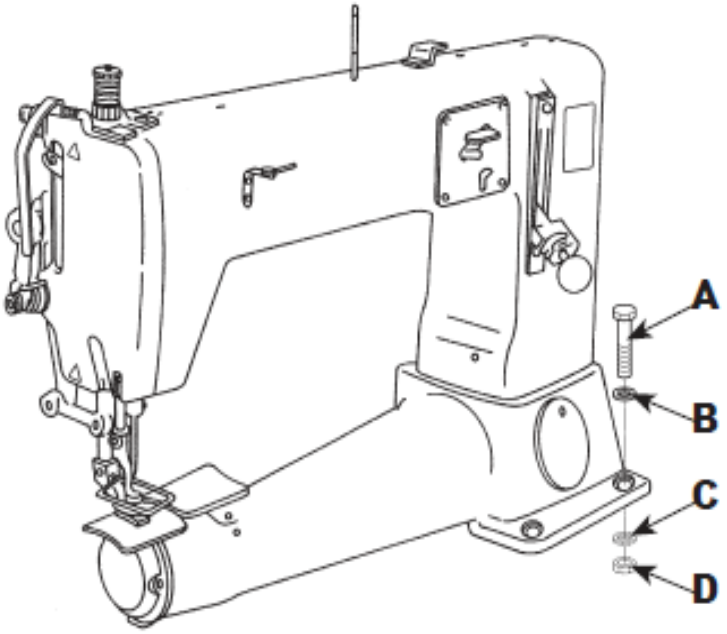
1. Carry the sewing machine with two persons.

2. ***(Caution) Do not lift the machine by the main shaft.***

3. Clean the table where the machine is to be mounted.

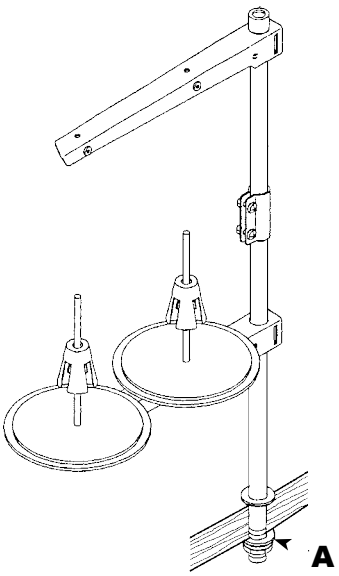
4. Place the sewing machine on the table aligning the mounting holes in the table with those in the machine.

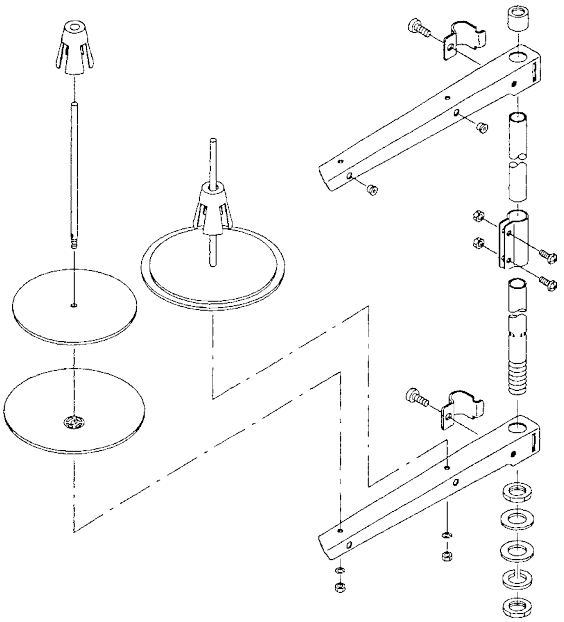
5. Place the hex head bolts **A** and washers **B** through four mounting holes in the sewing machine and fix them with washers **C** and nuts **D** from the underside of the table.



INSTALLING THE THREAD STAND

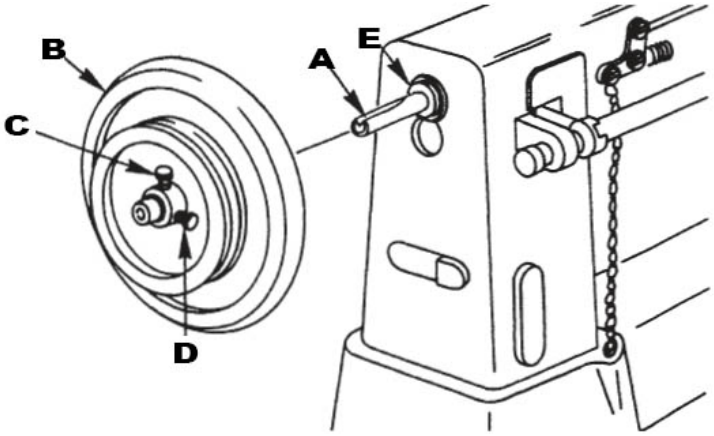
1. Assemble the thread stand unit as shown in the picture above and insert it in the hole in the machine table.
2. Tighten nut **A**.





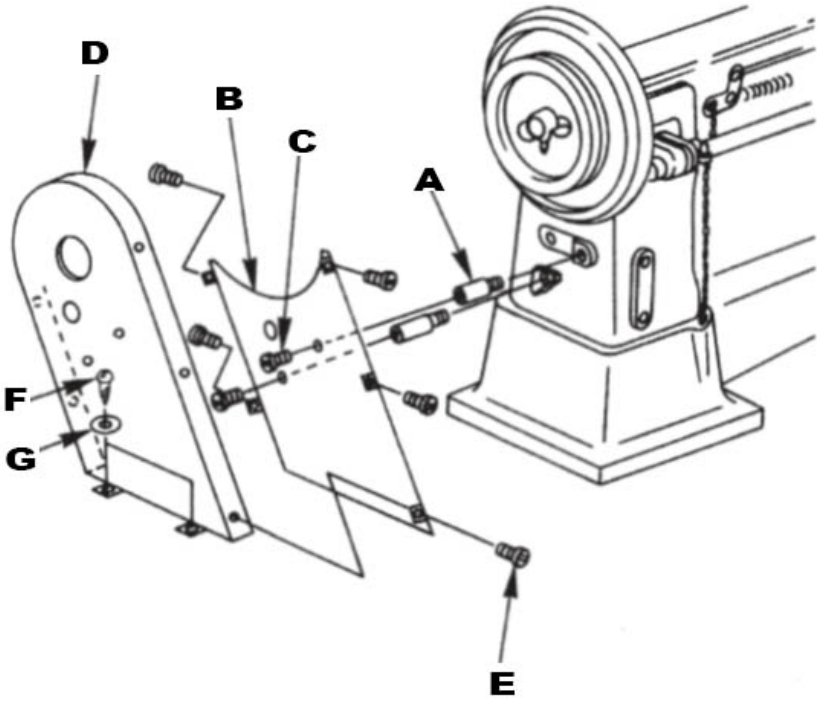
ATTACHING THE HANDWHEEL

1. Slide handwheel **B** onto shaft **A** completely until the handwheel **B** pushes against bushing **E**.
2. Align the groove **A** on the shaft to align with the first screw **C** of the handwheel and tighten the screw.
3. Tighten screw **D**

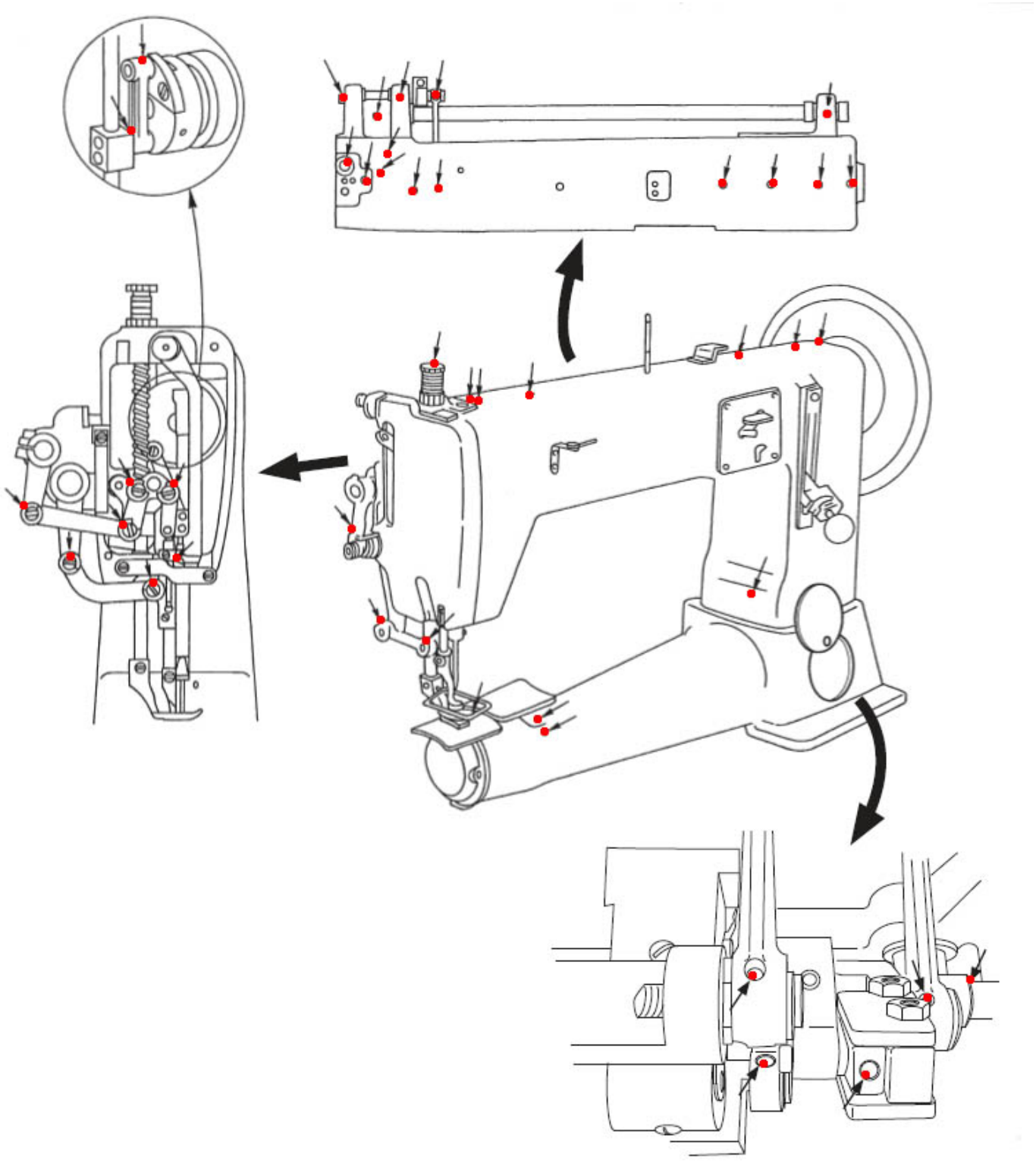


ATTACHING THE BELT COVER

1) Install two belt cover supports **A** to the machine arm.
2) Install belt cover **B** to belt cover supports **A** using screws **C**
3) Hook the V belt on the handwheel.
4) Attach belt cover **D** to belt cover **B** using screws **E.**
5) Fix belt cover **D** on the table using wooden screw **F** and washer **G**.



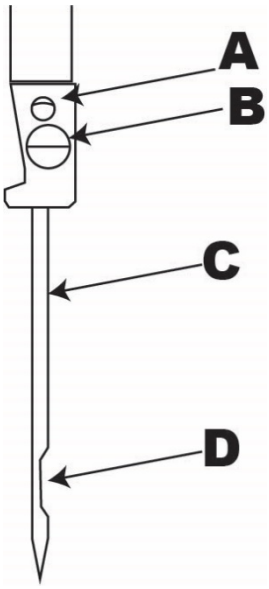
LUBRICATION



1) All red dots on the images above are regular oil spots. These should be oiled (1 to 2 drops) every day of use.
2) Be cautious not to over oil the machine, doing so may cause damage to your sewn goods and stain leather goods.

INSTALLING THE NEEDLE

1) The Standard needle for the Titan TN-441 is system 794 (also called 794H, Dyx3, Canu 52:20) ***(Check the chart below to understand more about needles for this machine)***
2) Ensure the needle is in the highest position when changing the needle. To do this, always make sure you turn the handwheel in the motion of travel (towards you) and bring the needle up.
3) Loosen screw **B** and remove the needle
4) Push the new needle **C** all the way until it makes contact with the top of the needle bar opening as shown in the needle bar hole **A**
5) The scarf of the needle **D** should face the inside of the machine. If this is not placed correctly, the machine may skip stitches or break threads.
6) Tighten screw **B**



UNDERSTANDING NEEDLES

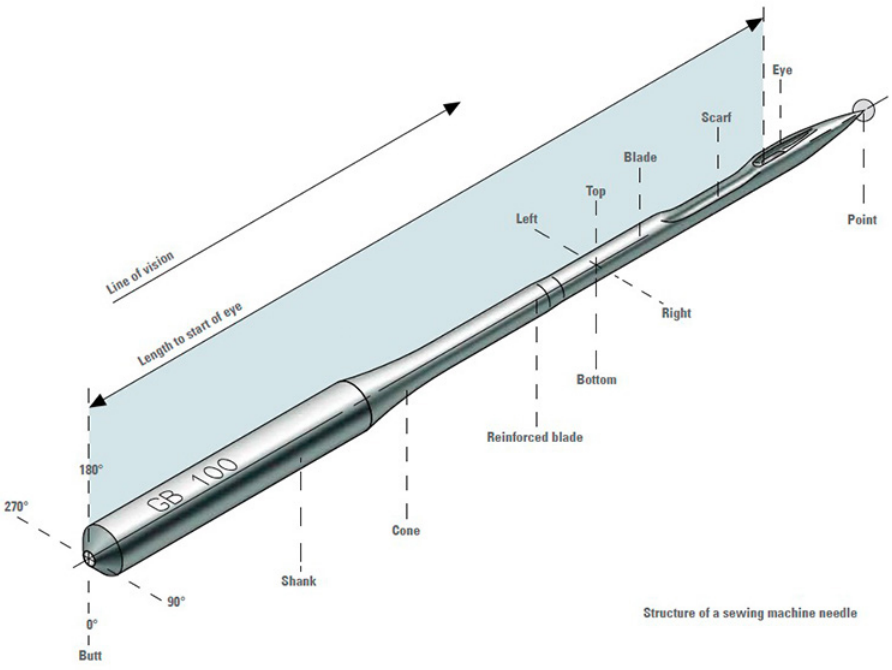
The needle is one of the most important parts of a sewing machine. Without it, sewing would not be possible. Its task is to penetrate the materials that are to be joined in order to form a stitch hole. In the process, the needle guides the sewing thread through the materials and supports it during loop formation. Between the needle and the looper/hook or between the needle and the bobbin thread, a stitch is formed. Since industrial sewing machines allow to perform up to 10,000 stitches per minute, sewing machine needles have to be produced with highest precision.

There is a large variety of needle types and versions, suitable for different machines and used for all sorts of applications and stitch types.

Needle sizes are detirminded by (2) separate designations on the needle. The metric number and imperial number. Example 140/22 - this needle is a 140 metric and/or 22 imperial. A 140 needle means the needle is 1.4 mm in diameter at blade, but all other attributes of the needle will remain the same.

When looking at a needle, the viewing direction is always from the shank towards the point, the long groove facing downwards. This way we can define the directions “bottom”, “top”, “right”, and “left”. When angles are indicated, the long groove is set to 0° for reference. Degree values increase counter clockwise, i.e. “right” is at 90°, “top” at 180°, etc.

Each needle can be divided into two sections: the clamping part consisting of shank and cone and the working part consisting of blade and point.



Structure of a sewing machine needle

DEFINITIONS RELATED TO NEEDLES

Shank:
The shank extends from the butt to the cone. Most needle systems have the same shank diameter for all sizes. Only for some needle systems, the shank diameter gradually changes depending on the needle size. In the sewing machine, the shank enters into the needle bar (hole or clamp) where it is usually fixed by a screw.

The needle size and the producer's logo are stamped into the shank.

The diameter, length, and possible special shapes are determined by the sewing machine.

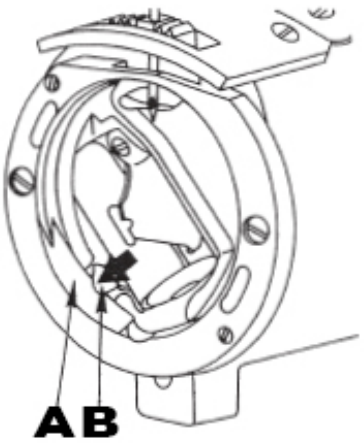
Cone:

The cone is the transition from shank to blade. The length of the cone depends on the ratio shank diameter to blade diameter as well as on the angle or radius of the cone.

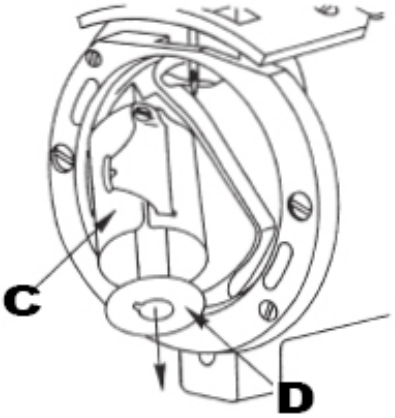
Blade:
The blade is the part of the needle between the end of the cone and the beginning of the eye. Also here exist different types, depending on the manufacturing procedure.
Long groove:
The long groove runs from the end of the shank to the beginning of the eye. It always faces the threading direction and, in most cases, is of the same width as the eye. When the needle penetrates the material or when the loop is enlarged by the looper/hook, the long groove protects the thread from severe frictional contact with the material.
Short groove:
The short groove is opposite the long groove, facing the looper/hook. It also protects the thread from severe frictional contact with the material.
Scarf:
The scarf is a recess in the needle blade, which permits the unobstructed movement of the looper/hook and a reliable catching of the loop. The depth of the scarf is the distance between the blade diameter and the lowest point of the scarf.
Eye:
The eye is the opening in the needle blade through which the thread is inserted. Since the thread passes through the needle eye 40-70 times during the sewing of a lockstitch seam, the beginning and end as well as the surface of the eye must be well rounded and polished.
Point:
The point extends from the beginning of the eye to the end of the needle.
Its position can either be centric or eccentric.

TAKING OUT / INSERTING THE BOBBIN

1) Turn the handwheel to bring the needle to the lowest position, at which time the shuttle is resting in the indented area **A.** At this time the bobbin case release button **B** should be exposed and can be pressed

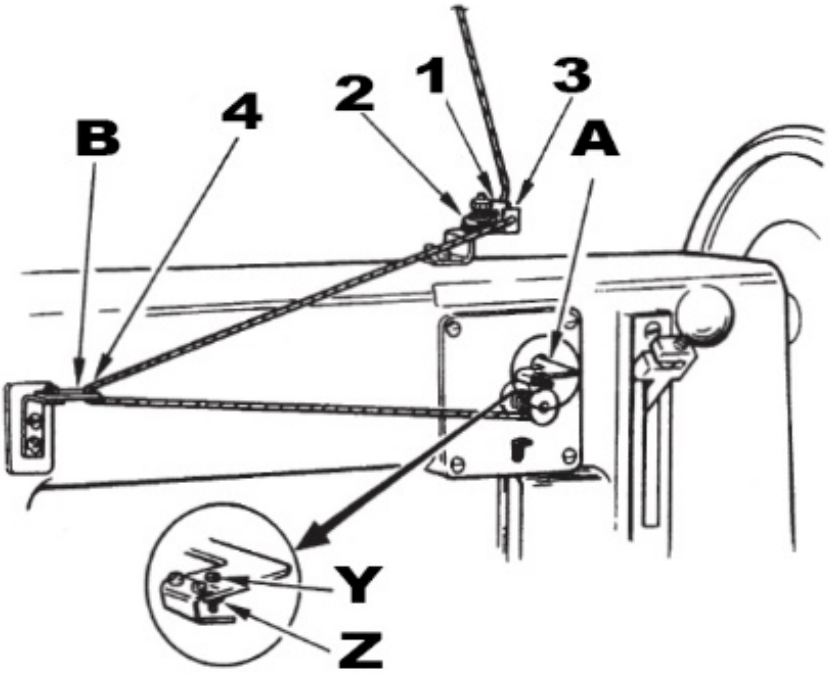


2) Once you press the release button, the bobbin case **C** will pop out and the bobbin **D** will fall out.



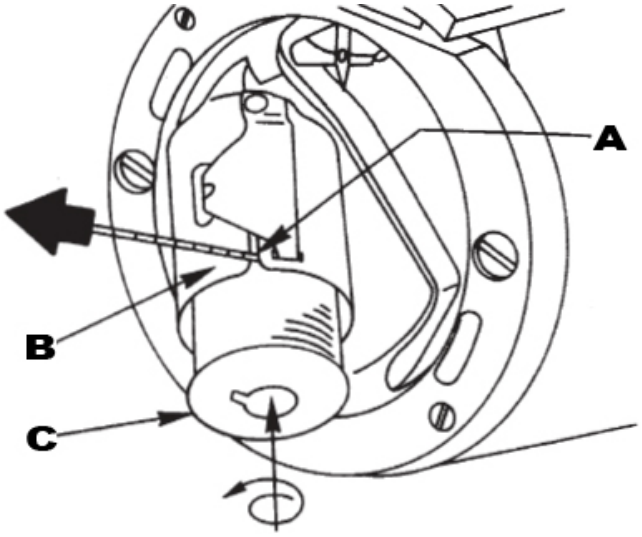
WINDING A BOBBIN

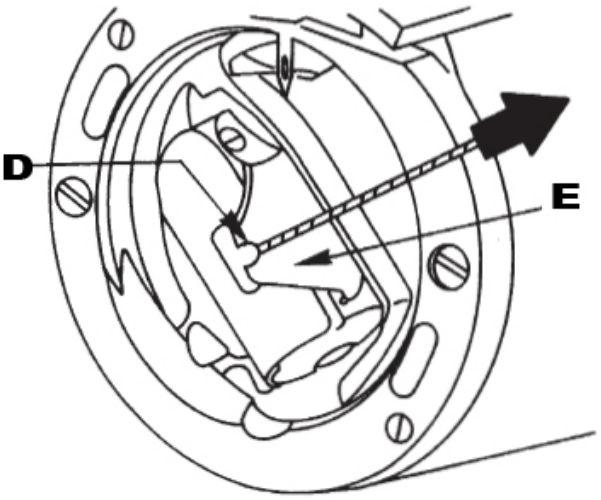
1) Place the bobbin on the bobbin winder spindle. Notice that the spindle has a small pin that fits into the bobbin and holds it in place.
2) Push down the bobbin winder latch **A** and to lock the bobbin onto the shaft and hold it in place.
3) Follow the threading path provided in the illustration to ensure the bobbin is wound correctly.
    a. Pass the thread through the thread guide **1** and around the bobbin tensioner **2**. And back through the thread guide **3**
    b. Pass the thread through the thread guide **4** and then around the bobbin to begin winding.
4) If you find the bobbin winding too much on one side or the other, you can adjust this on thread guide **B**.
5) If you find the bobbin is over filling or not filling enough, you can adjust this on lock nut **Y** and screw **Z**
    1) To decrease the amount wound on the bobbin, turn the screw **Z** clockwise
    2) To increase the amount wound on the bobbin, turn the screw **Z** counter clockwise.



INSTALLING THE BOBBIN

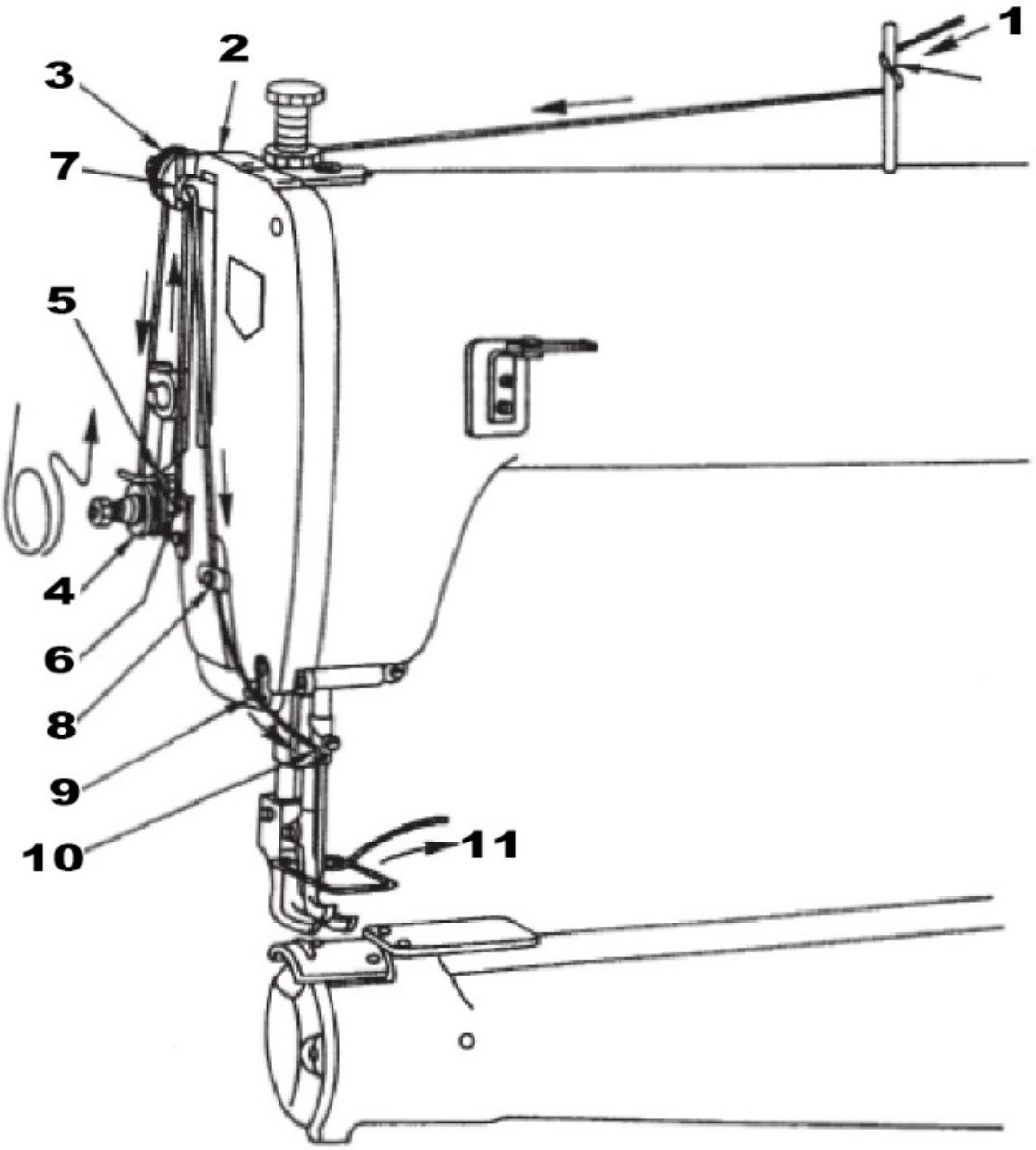
1) Pull some thread off the bobbin **C** and place the bobbin into the bobbin case **B**. When you put the bobbin into the case, ensure the bobbin is turning in a counter clockwise direction. As you push the bobbin **C** into the bobbin case **B**, pass the thread into the groove **A**.
2) Pull the thread up the groove **A** and pass the tension spring **E**. Pull the thread completely into the notched area **D** and close the bobbin case completely into the shuttle.





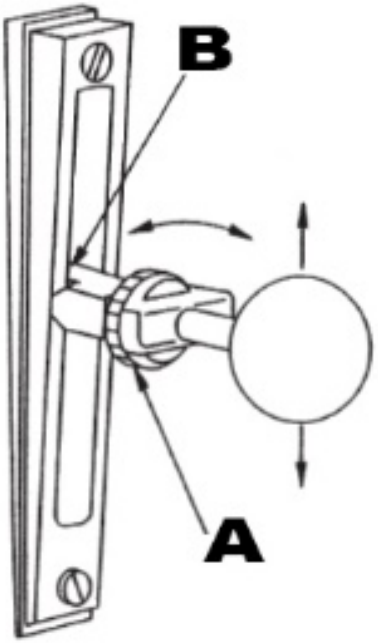
THREADING THE TOP THREAD

1. When threading the top thread, ensure the thread take up assembly is in the highest position (starting position). This will make threading the machine much easier.
2. Thread the upper thread as shown below.
    1. Through the spool pin
    2. Into the first pigtail thread guide
    3. Through the upper tension unit
    4. Down and around the secondary tension unit (making sure to wrap the thread around twice)
    5. Through the thread pigtail
    6. Though the take up spring
    7. Into the thread take up assembly
    8. Though the thread guide on the side cover
    9. Into the pigtail thread guide at the base of the side cover
    10. Into the top of the thread guide on the bottom on the needle bar
    11. Through the needle from the left side to the right



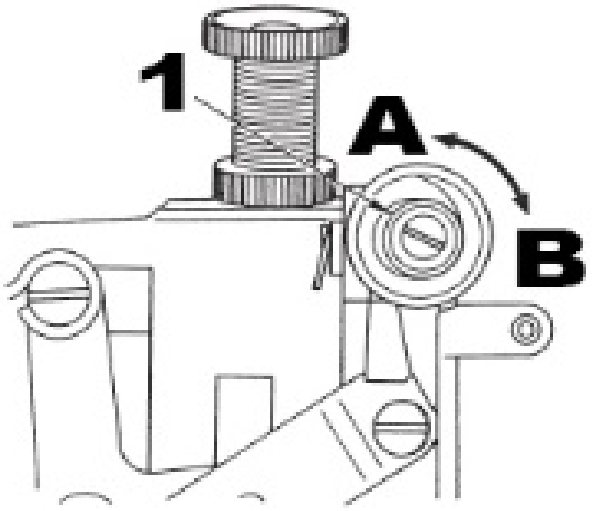
ADJUSTING THE STITCH LENGTH

1. To adjust the stitch length, turn the feed regulator nut **A** and slide the feed arm down (or up for reverse). The stitch length amount is read off the top of the feed lever against the scale.
2. Adjustment is as follow:
    1. To increase the length, turn the feed regulator nut counter clockwise
    2. To decrease the length, turn the feed regulator nut clockwise
3. To reverse stitch, push the lever upwards



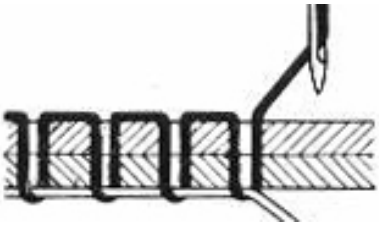
ADJUSTING TOP TENSIONS

1. Thread tensions are adjusted on the primary tension unit on the top, left backside of the machine.
2. To adjust the top tensions, turn the nut **1**
    1. To tighten the top thread tension, turn the nut **1** clockwise in the direction of **B**
    2. To loosen the top thread tension, turn the nut **1** counter clockwise in the direction of **A**

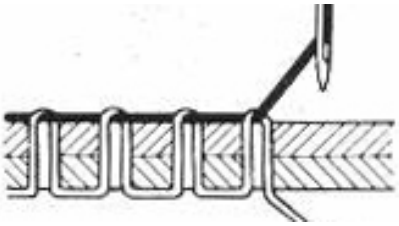


3. Having the correct tensions is important to a quality sewn product. While different materials can show tensions differently, it's important to understand how to adjust tensions.
4. Typically tensions are almost always adjusted on the top tension, however bobbin tension can help to resolve these issues as well.

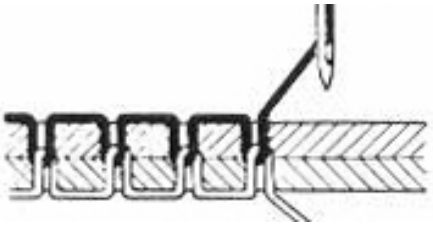
    1. In case **1**, the top tension is too loose and should be tightened in the direction **B**
    2. In case **2**, the top tension is too tight and should be loosened in the direction **A**
    3. In case **3**, the tensions are balanced and this is a perfect example of good tensions



Case **1**



Case **2**

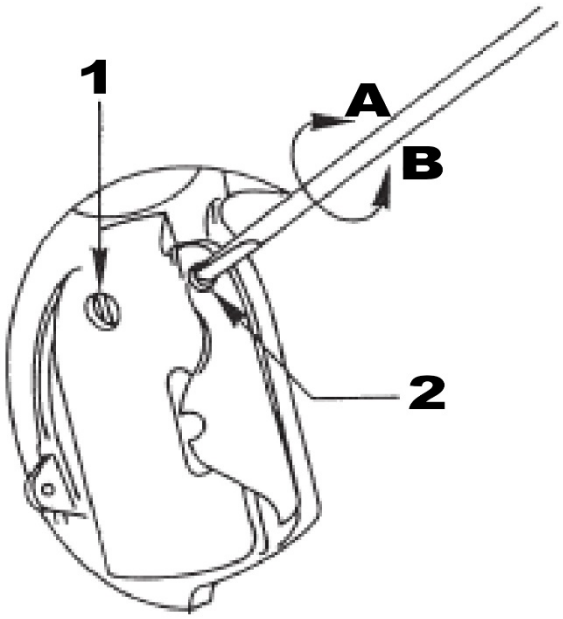


Case **3**

ADJUSTING BOBBIN TENSIONS

Tensions are very rarely adjusted in the bobbin case, but when it's required, follow the steps below.

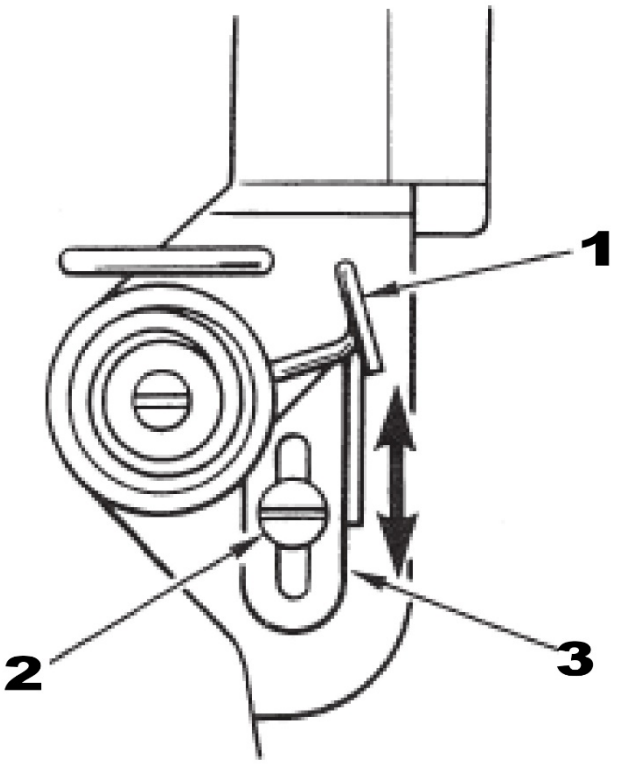
1. Loosen locking screw **1**
2. Adjustments for the bobbin thread tensions are made on screw **2**
    a. To tighten the bobbin tension, turn screw **2** clockwise in the direction of **A**
    b. To loosen the bobbin tension, turn screw **2** counter clockwise in the direction of **B**
3. Once your adjustments are complete, tighten locking screw **1**



ADJUSTING CHECK SPRING (THREAD TAKE UP SPRING)

The standard stroke of the check spring **1** is 8mm to 15mm
To adjust this, follow the steps below

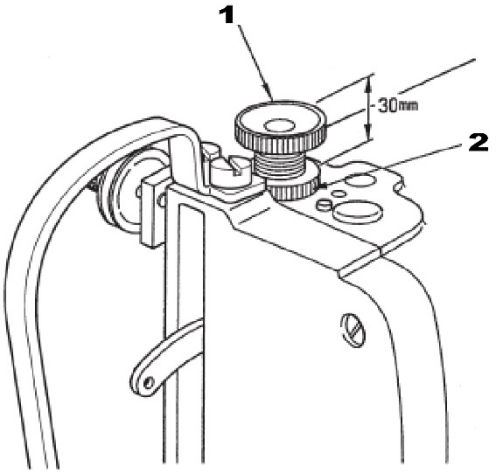
1. Loosen screw **2**
2. Move the check spring stop arm **3** up or down to ensure the check spring has the correct travel
3. Tighten screw **2** once you are complete



ADJUSTING THE PRESSER FOOT PRESSURE

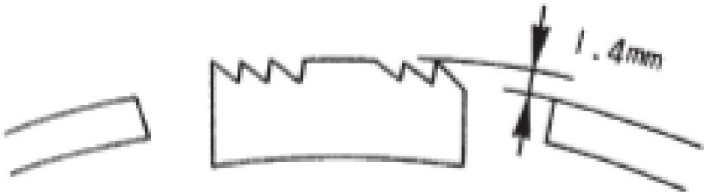
The pressure on the foot is adjusted by screw **1**. The default pressure is 30 mm from the casting to the top of the screw. To adjust this, follow the steps listed:

1. Loosen the lock nut **2**
2. To increase the pressure, turn screw **1** in a clockwise, down motion.
3. To decrease the pressure, turn screw **1** in a counter clockwise, up motion.
4. Tighten nut **2** to secure the adjustment.

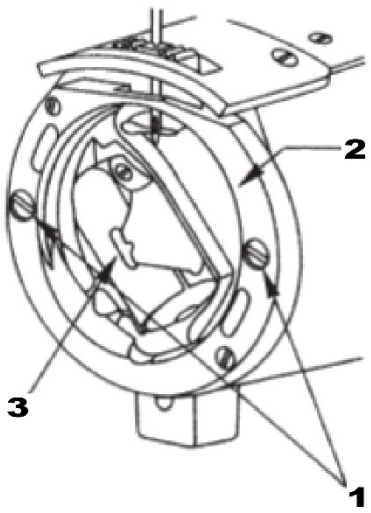


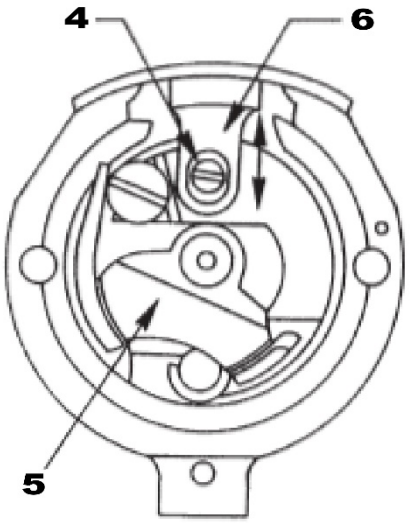
ADJUSTING THE FEED DOGS

The TN-441 has standard or optional smooth leatherwork feed dogs. In both cases, the feed dog adjustment is the same and the top of the feed dogs should be no higher than 1.4mm from the top of the needle plate when they are in their highest setting. To make this adjustment, follow the steps below.



1. Loosen screws **1** to remove the shuttle ring **2** and shuttle hook.**3**
2. Turn the handwheel until the shuttle hook driver **5** is in the position shown
3. At this time you can access the feed dog screw **4**.
4. Loosen the feed dog screw **4** and move the feed dog **6** up or down to adjust this setting.
5. Once the





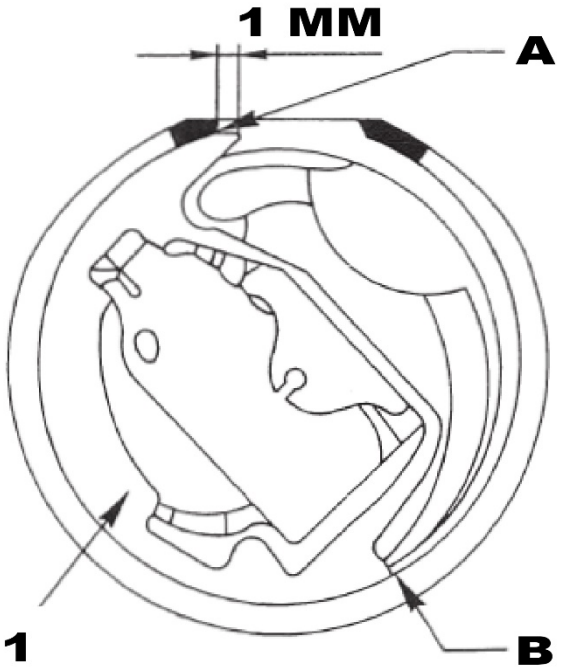
ADJUSTING THE NEEDLE TO HOOK RELATIONSHIP (TIMING)

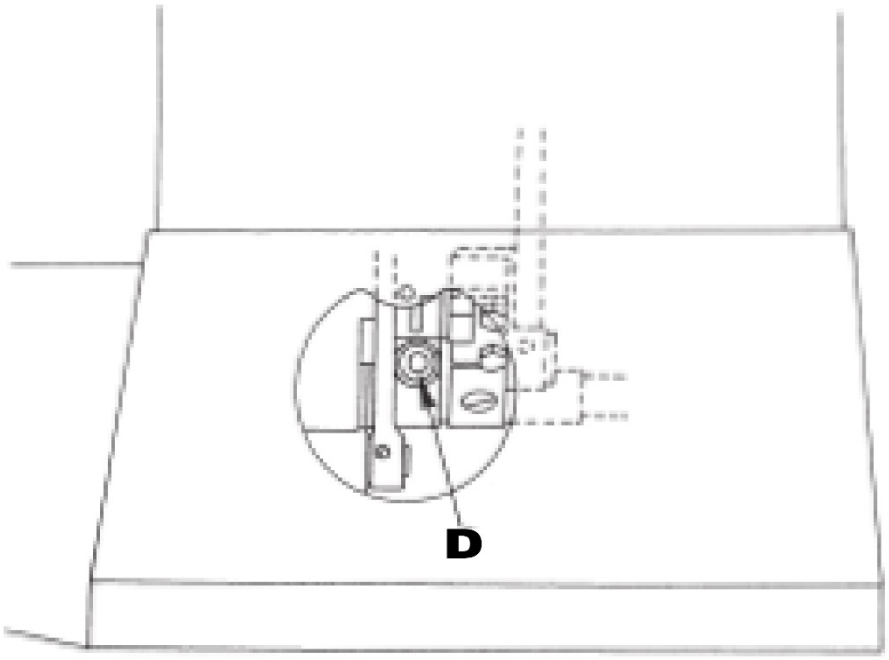
ZERO POSITION

The relationship between needle and hook is one of the most important in a sewing machine. Consider the shuttle hook the heart, the needle part of your arteries and the thread is the blood of the machine. So when we work with a sewing machine we must ensure these settings are optimal so we can sew with limited hindrance and trouble-free. To check and adjust these settings, follow the steps below.

The first step in shuttle timing is making sure the shuttle position in its most recessed is set correctly

1. The tip **A** of the shuttle hook **1** should extend past the shuttle race **B** 1mm when it is in the farthest position backwards (otherwise known as **zero position**)
2. To set this, turn the handwheel in the forward rotation until the shuttle hook rotates to the farthest position backwards (otherwise known as **zero position**)
3. At this position, loosen hex screw **D** and rotate the shuttle to the correct position.
4. Note that you may introduce lateral play when making this adjustment so it is important to ensure you remove any lateral play before you tighten the hex screw **D**
5. Tighten hex screw **D**

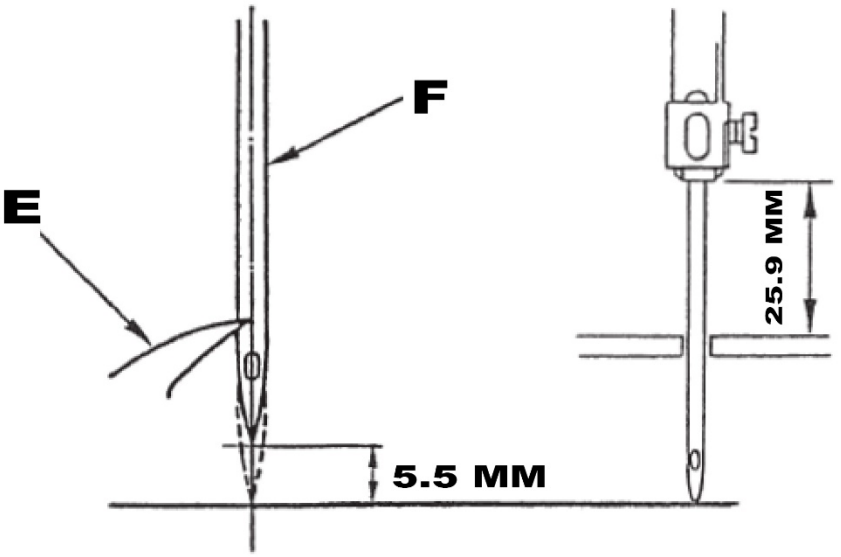


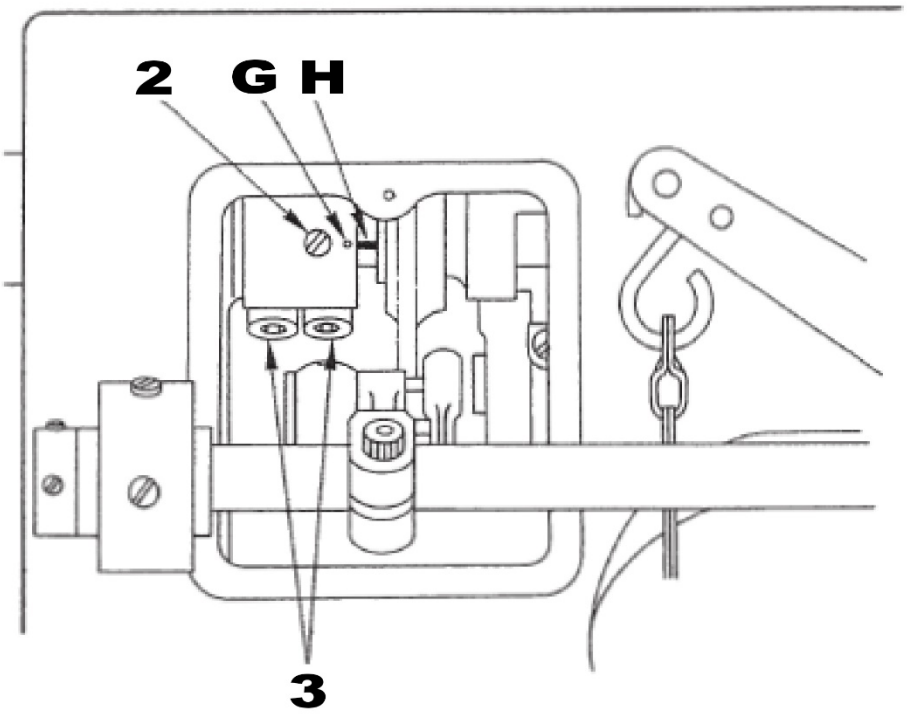


NEEDLE TO HOOK INTERACTION

Once you have set the hook ZERO POSITION, it is now time to time the shuttle hook **E** to needle **F**. This is commonly called hook timing, shuttle timing, shuttle hook timing, etc. To check and adjust these settings, follow the steps below.

1. Set the stitch length to “0”
2. Turn the handwheel to bring the needle to the lowest position. From this point, turn the handwheel in the motion of travel to raise the needle from the lowest position to bring the needle up 5.5mm
3. At this time, the shuttle hook tip **E** should be right behind the needle **F.**
4. Also at this time the bottom of the needle bar should be 25.9mm from the top of the needle plate.
5. If this is not the case, the adjustment is performed on the timing cam thru the back of the machine.
    a. Loosen the screw **2** and screws **3**
    b. Turn the cam to align mark **G** and **H**. If your machine did not come with these marks, simply turn the loose cam to align the needle **F** and shuttle hook tip **E**.
    c. Once these are aligned, tighten screw **2** and then **3**.

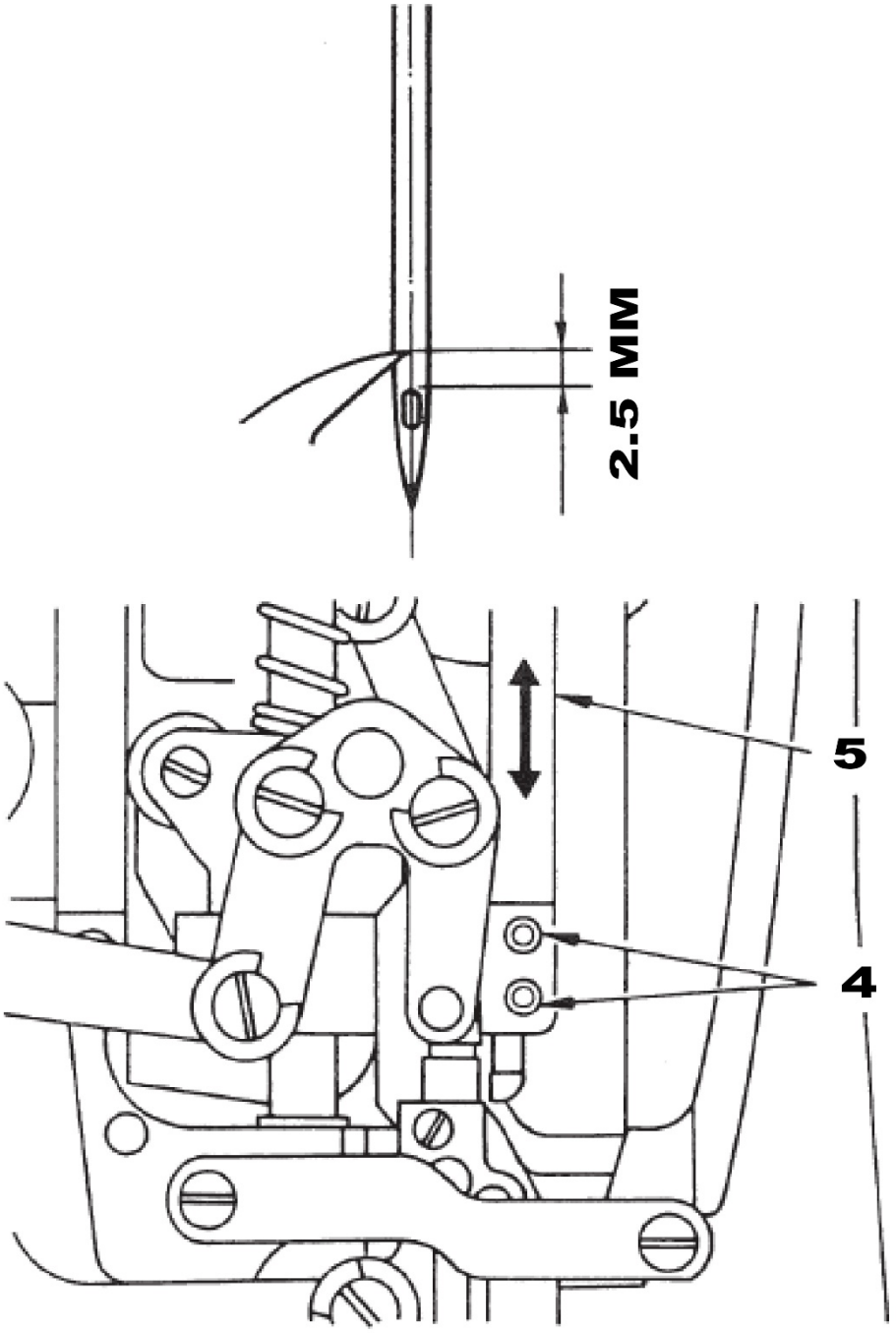




NEEDLE BAR HEIGHT

As part of the needle to hook relationship, the needle bar height must be set to help the needle interact correctly with the shuttle hook. To check and adjust these settings, follow the steps below.

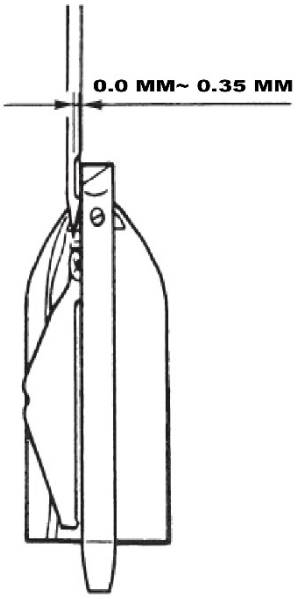
1. Set the stitch length to “0”
2. Turn the handwheel to have the needle come into time with the shuttle hook tip when your shuttle hook timing is correct.
3. At this time, the shuttle tip should interact with the middle of the needle and 2.5mm from the top of the eye.
4. If an adjustment is required, loosen screws **4** and slide the needle bar **5** up and down to adjust the height.
5. Once the adjustment is complete, tighten screws **4**.



NEEDLE TO HOOK DISTANCE

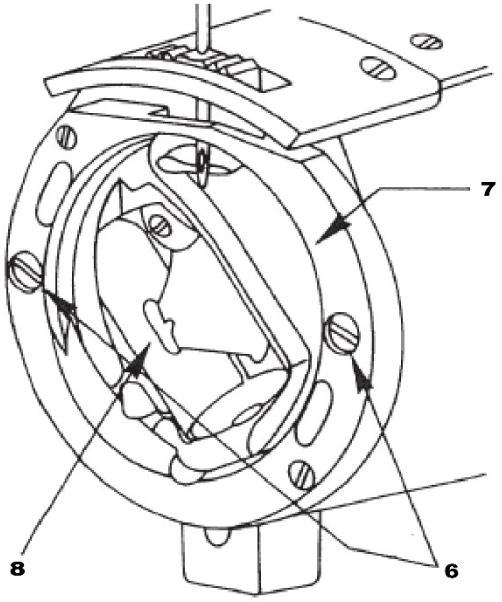
The shuttle hook and needle must pass each other close enough for the shuttle hook to be able to “pick-up” the thread off the needle. We call this term “caressing” the needle. To check and adjust these settings, follow the steps below.

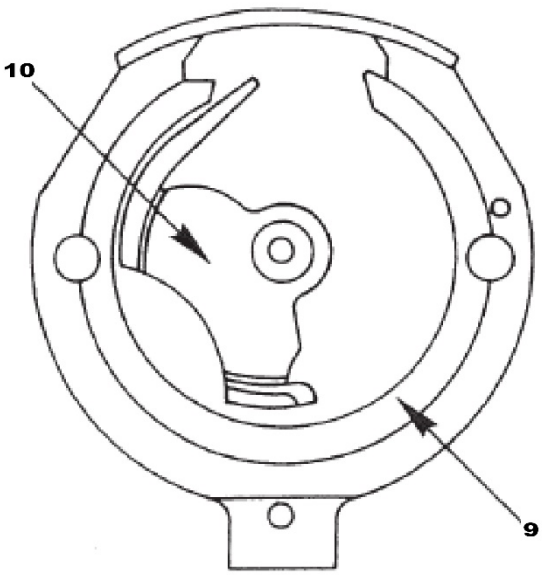
1. Bring the needle to the timing position (5.5mm from the lowest position)
2. When the shuttle hook tip is right behind the needle, check to see the distance between the two in a lateral motion. The needle should be NOT pushing on the needle, nor should the distance be greater than 0.35mm.
3. If this is not correct, the shuttle hook gib should be replaced to accommodate this. Below is a chart of the available gib(s) that can be used to change this.



THICKNESS	NAME	PART NUMBER	NOTES
2.9 mm	GIB 1	769845	
3.1 mm	GIB 2	443304	
3.3 mm	GIB 3	606584	
3.5 mm	*GIB 4*	*503099*	*INSTALLED STANDARD*
3.7 mm	GIB 5	975173	
3.9 mm	GIB 6	313148	
4.1 mm	GIB 7	680928	

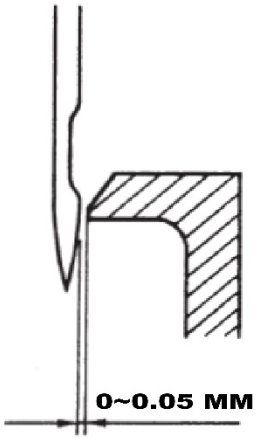
4. To replace the gib, you’ll need to remove the shuttle ring **7** and shuttle hook **8**.
5. Unscrew both shuttle ring screws **6**
6. Remove shuttle ring **7**
7. Remove shuttle hook **8**
8. Turn the handwheel to being the shuttle hook driver **10** into the position as shown below. At this position you can remove the gib **9** and replace it with the new one.
9. **PLEASE PAY ATTENTION TO THE DIRECTION THE GIB IS INSTALLED AND REPLACE AS SUCH.**
10. Reassemble the shuttle hook **8** and shuttle ring **7** in the reverse order that is listed above.
11. Ensure both shuttle ring screws **6** are tight before testing and/or operating the machine.





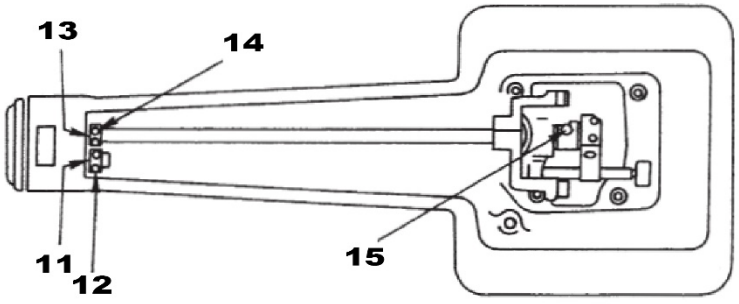
NEEDLE TO SHUTTLE DRIVER CLEARANCE

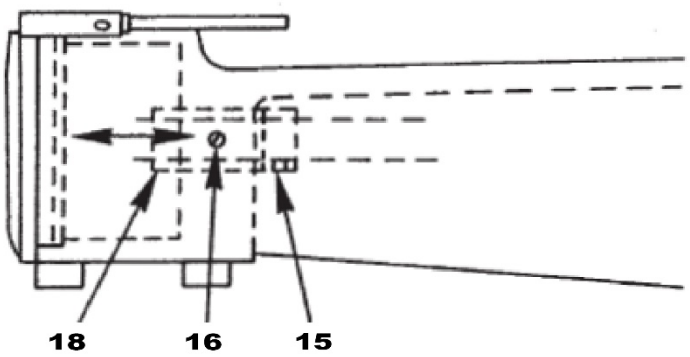
The shuttle driver has a dual function, firstly it turns the shuttle hook in a rotating fashion that allows the hook to pick up the thread off the needle. Secondly it acts like a protector to the shuttle hook when in operation.



When the needle passes and interacts with the shuttle driver, check to see the distance between the two is between **0 ~0.5mm**. If this is not correct and you need to adjust these settings, follow the steps below.

1. Loosen screws **12** and remove the thrust collar from the feed driving shaft **11**
2. Loosen screws **14** and move the thrust collar down the feed rocking shaft **13**
3. Once you have moved both thrust collars, you will expose the hook driving shaft and hook driving shaft thrust collar **15**
4. Loosen the screws on the hook driving shaft thrust collar **15** and slide the collar down the shaft.
5. Loosen screw **16** on the hook driving shaft bushing **18**
6. Finally loosen screw **15**.
7. Slide the bushing to the left or right to accommodate the correct distance between the shuttle driver and needle.
8. Once this is complete, tighten all screws and thrust collars in reverse order, paying close attention to make sure there is no lateral play on the shafts and / or bushings and that all play has been removed.
9. Remember that once this has been adjusted, you may have to revisit the setting on ZERO POSITION of the shuttle hook



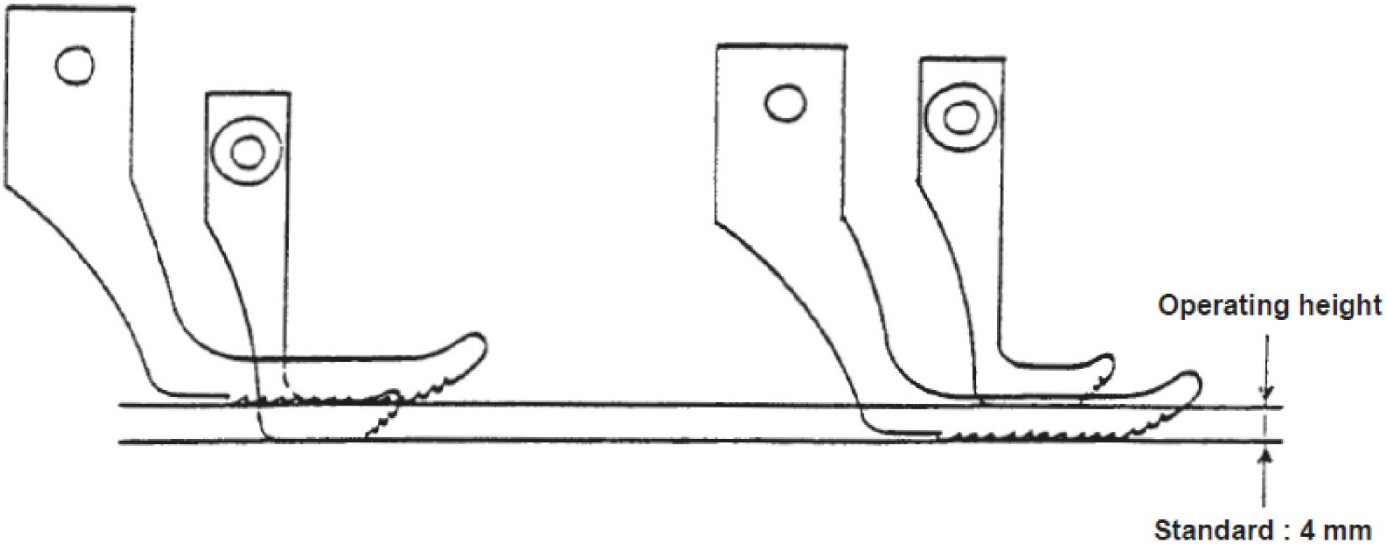


ADJUSTING THE WALKING FOOT AND PRESSER FOOT

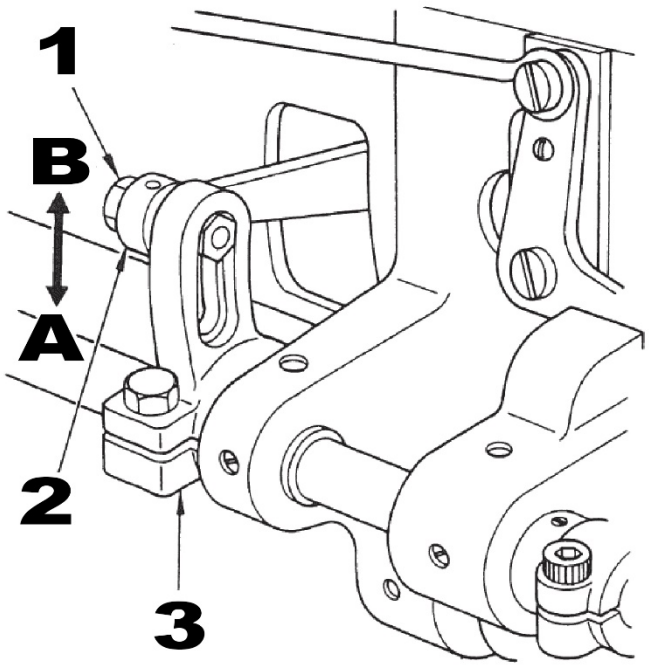
The TN-441 is a compound walking foot with needle feeding sewing machine which means the machine is equipped with a presser foot and a walking foot that helps to feed the material through the machine. While both feed move in opposite vertical motions, it is possible to adjust both the difference (alternation) of the feet height and the balance of the height.

ALTERNATION OF THE FEET

The alternation can be walking foot and presser foot can be adjusted to inscrease the gap between the presser foot and walking foot, which allows the machine to “WALK” over seams much easier. While it may be easier to leave the machine in its highest alternation, this can not only be fatiguing to the operator because of the increased noise generated, but may also cause early wear on the machine if used in the full alternation mode all the time. To check and adjust these settings, follow the steps below.



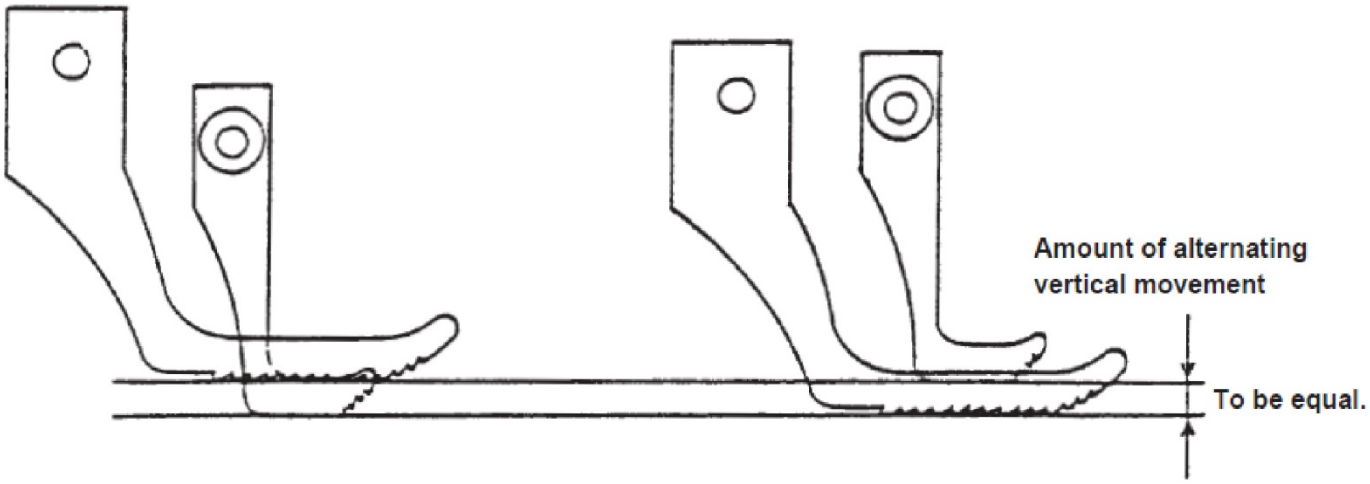
1. Turn the handwheel in the rotation of travel, to bring the INNER PRESSER FOOT to the highest setting, and measure this distance
2. This distance should be approximately 4mm
3. .To adjust this, loosen screw **1**
4. The walking foot rod **2** should now slide up and down within the walking foot arm **3**
    a. As you move the rod upwards (**direction B)**, the alternation should be lower
    b. As you move the rod downwards (**direction A)**, the alternation should be higher
5. Once you have reached the appropriate alteration, carefully tighten screw **1**, being careful to not overtighten these screw.

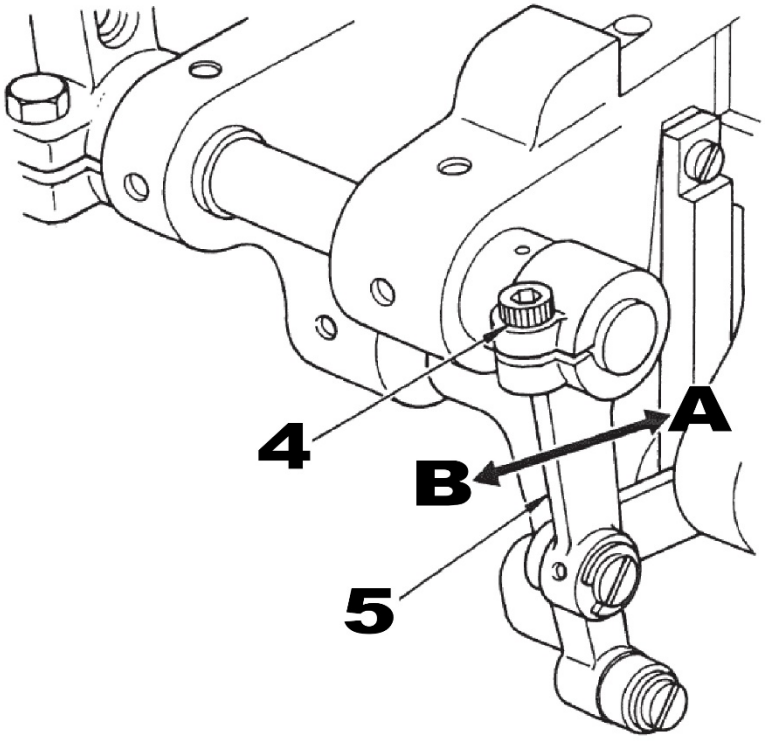


BALANCE OF THE FEET

The balance of the alternation between the walking foot and presser foot should be equal. If this is not correct and you need to adjust these settings, follow the steps below.

1. Turn the handwheel in the rotation of travel, to bring the INNER PRESSER FOOT to the highest setting, and measure this distance.
2. Turn the handwheel to being the OUTER WALKING FOOT to the highest setting, and measure this distance
3. Both meassurements should be equal. If they are not, loosen screw **4** and move the walking foot arm **5**.
    a. To increase the lift on the walking foot, move the walking foot arm **5** in the direction of **A**
    b. To decrease the lift on the walking foot, move the walking foot arm **5** in the direction of **B**
4. Once you have reached the appropriate balance, carefully tighten screw **4**, being careful to not overtighten these screw.





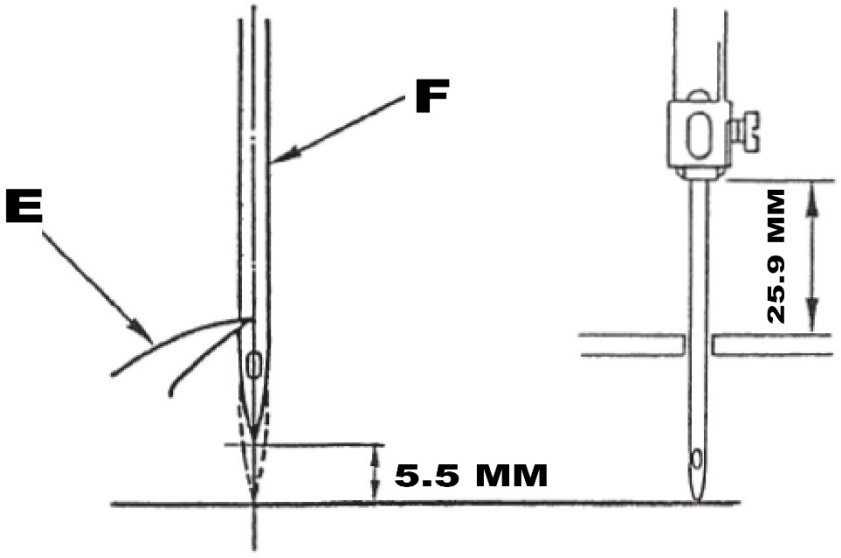
FEED DOG TO NEEDLE RELATIONSHIP

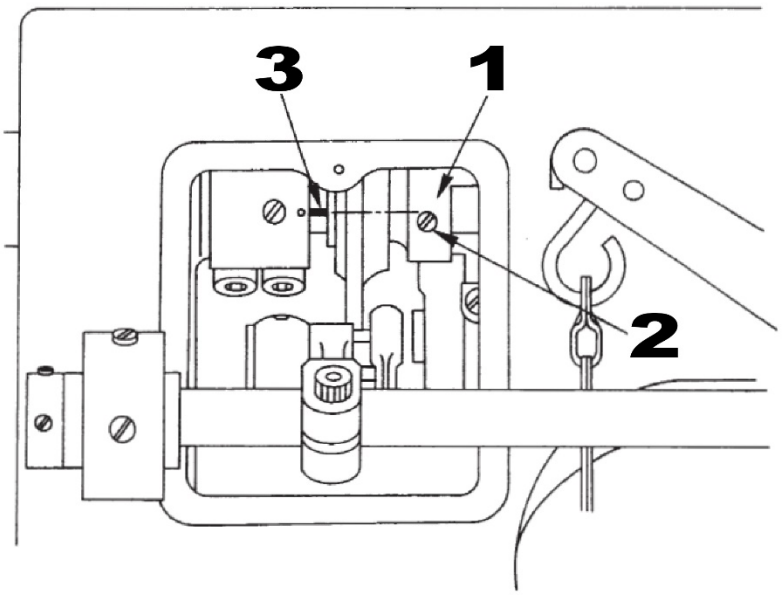
In any needle feeding style machine, it is important that the needle and feed dog share the correct timing together as the needle travels through the center of the feed dogs when the machine moves the material. If the needle and feed dogs do not match correctly, you may cause damage to your feed dogs and other components and this can lead to breaking threads, breaking needles, skipping stitches and more. The relationship between the feed dogs and needle can be adjusted in the timing of the relationship as well as in both the sewing direction and lateral direction.

NEEDLE FEED TIMING

The needle feeding unit must be timed correctly to enter and exit the feed dogs at the correct time. To check and adjust these settings, follow the steps below.

1. Turn the handwheel in the motion of travel until the needle tip comes into correct timing with the shuttle hook tip as seen below.
2. At this point, the feed mechanism should not move even when the stitch length is changed in a forward or reverse motion. (By adjusting the stitch length to the longest stitch, and placing the machine in forward and reverse stitching, the needle and feed dogs should move very little, if any.
3. If required, loosen the two screws on the feed cam **1**
4. Adjust the timing to the shuttle hook timing line by aligning the top of the first screw **2** with the mark on the line **3**. If your machine does not have the line, you can simply rock the feed mechanism from forward to reverse and watch the needle motion. Once the needle stops moving forward and reverse, you have reached the correct setting.
5. Once you have completed the adjustment, firmly tighten both screws on the feed cam **1**





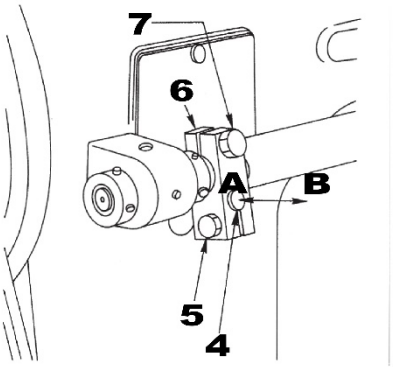
NEEDLE SWAY

The center of the feed dog hole must be completely synchronized with the needle. If there is any lag in the motion of the feed dog or needle, you can adjust this by following the steps below

1. Loosen screw **5**
   a. Move shaft **4** in the direction **A** to decrease the motion of the needle bar frame in relationship to the feed dogs.
   b. Move shaft **4** in the direction **B** to increase the motion of the needle bar frame in relationship to the feed dogs.
2. Check the motion by rotating the handwheel in the motion of travel and check to see that there is no lag and both feed dog and needle are completely synchronized.
3. Once you have completed the adjustment, firmly tighten screw **5**

SEWING DIRECTION

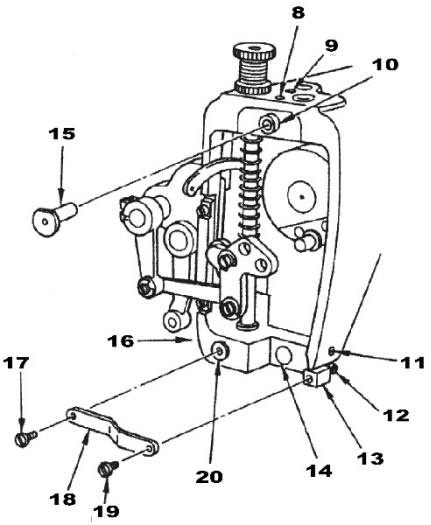
The needle MUST enter the center of the feed dogs in the direction of sewing (front to back). If there is any deviation, you must adjust this motion. To check and adjust these settings, follow the steps below.



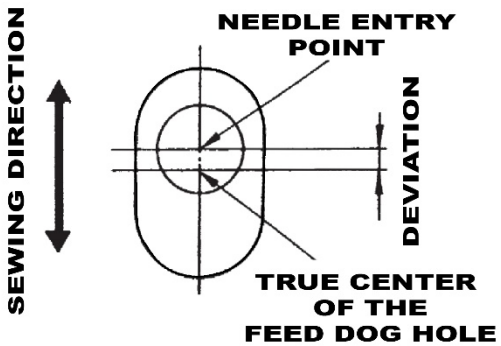
1. Loosen screw **7**
2. At this point you should be able to push the needle bar frame forward and reverse to align the needle in the center of the feed dog hole.
3. Once you have completed the adjustment, firmly tighten screw **7**

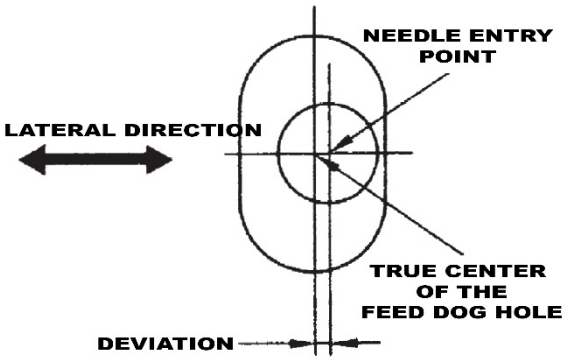
LATERAL DIRECTION

The needle MUST enter the center of the feed dogs in the lateral motion (side to side). If there is any deviation, you must adjust this motion. To check and adjust these settings, follow the steps below



1. Remove the screws to take off the face plate
2. Remove screws **17** and **19** and remove the needle bar presser plate **18**
3. Loosen screw **11** to allow the needle bar frame guide **14** to move freely
4. Loosen screws **8** and **9** and move the needle bar frame bushing **10** until the needle enters the center of the feed dogs in the lateral motion
5. Slowly tighten screw **9** onto the needle bar frame pin **15** while making sure you do not move needle bar frame bushing **10**
6. Make sure the needle bar frame guide **14** comes into contact with the needle bar frame and tighten screw **11**
7. Loosen screws **12** and **16** and adjust frame presser retaining shaft **20** and retaining plate **13** and attach the needle bar presser plate **18** with screws **17** and **19**
8. Adjust the position of the frame presser retaining shaft **20** and retaining plate **13** to ensure there is no play and the needle bar frame moves freely
9. Tighten the screws and check your adjustment.
   After verifying this adjustment, check the clearance of the needle to hook as this may have changed





1) Users are required to read the operation manual completely and carefully before installation or operation.
2) The product should be assembled, tested, and installed trained professionals.
3) Installation of a UPS (Uninterrupted Power Supply) is recommended for best protection. The use of an extension cable with multi-outlet for power connection is not recommended.
4) When connecting power supply cords to power sources, it is necessary to make sure that the power voltage checked and correct. Do not connect a 110V machine to a 220V service. This can cause severe damage.
5) Do not operate in direct sun light, outdoors area and where the room temperature is over 45°C or below 5°C.
6) Please avoid operating near the heater at dew area or at the humidity below 30% or above 95%.
7) Do not operate in area with heavy dust, corrosive substance or volatile gas.
8) The ground wire of power cord must be connected to the system ground of the production plant by proper size of conductions and terminals. This connection should be fixed permanent.
9) For safety, do not operate machine without all covers on to prevent harm from moving parts
10) When turning on the machine in the first time, operate the sewing machine at low speed and check the correct rotation direction.
11) Tum off the power before the following operation:

- Connecting or disconnecting any connectors on the control box or motor.
- Threading needle.
- Raising the machine head.
- Repairing or doing any mechanical adjustment.

12) Repairs and high level maintenance work should only be carried out by electronic technicians with appropriate training.
13) All the spare parts for repair must be provided or approved by Titan Sewing.
14) Don't use any objects or force to hit or ram the product.

Warranty

Warranty period of this product is 1 year dated from purchasing

Any trouble found within warranty period under normal operation, it will be repaired free of charge. However, maintenance cost will be charged in the following cases even if within warranty period:

1) Inappropriate use, including wrong connecting high voltage, wrong application, disassemble, repair, modification by untrained personnel, or operation without the precaution, or operation out of its specification range, or inserting other objects or liquids into the product.
2) Damage by fire, Earthquake, lighting, wind, flood, salt corrosive, moisture, abnormal power voltage and any other damage cause by the natural disaster or by the inappropriate environments.
3) Dropping after purchasing or damage in transportation by customer himself or by customer's shipping agency

Note: We make our best effort to test and manufacture the machine for the highest quality possible. However, it is possible that this product can be damaged due to external magnetic interference and electronic static or noise or unstable power source more than expected. It is recommended to ensure the machine and operation area is equipped with a stable ground and the power supply to the machine is the cleanest possible.

Titan Sewing Machines
www.titansewing.ca