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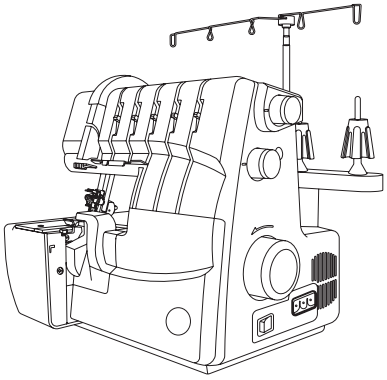
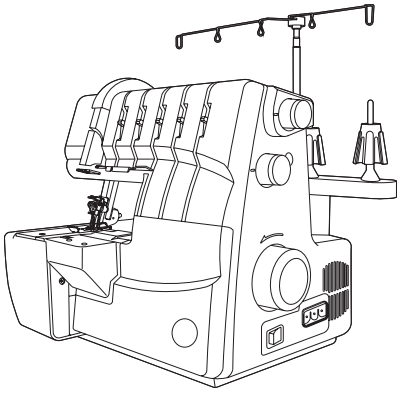




Service Manual

104 73 06-26
16 March 2010

Please note that on disposal, this product must be safely recycled in accordance with relevant National legislation relating to electrical/electronic products. If in doubt please contact your retailer for guidance.

Bitte beachten Sie, dass hinsichtlich der Entsorgung dieses Produkts, vorschriftsmäßig entsprechend der gültigen nationalen Gesetzgebung für elektrische/elektronische Produkte, recycelt werden muss. Bei Zweifel setzen Sie sich bitte mit Ihrem Fachhändler in Verbindung.

Veuillez noter qu'en cas de destruction, ce produit doit bénéficier d'un recyclage sécurisé, conforme à la législation nationale applicable aux produits électriques/électroniques. En cas de doute, veuillez contacter votre distributeur agréé.

• All casted parts within our products are marked with name of material if allowed by size.
• All molded plastic parts within our products are marked with name of material if allowed by size.

Contence

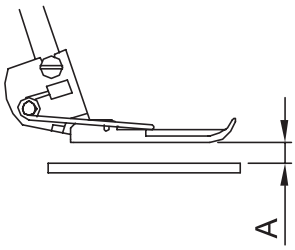
1. Presser bar height

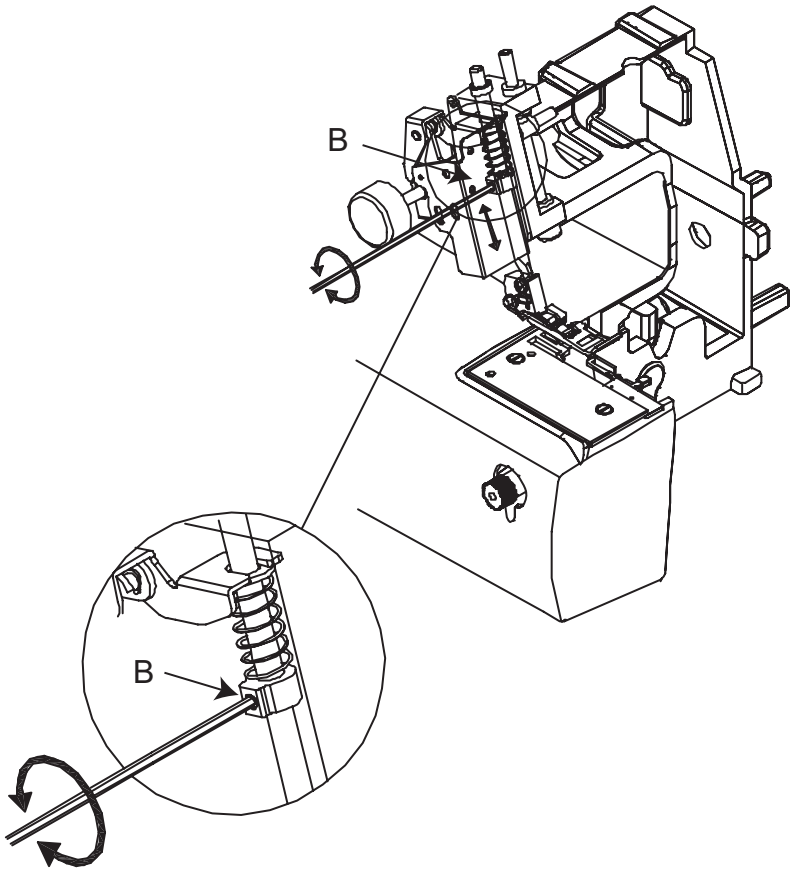
Check

With the presser bar lever raised, there must be a 4.4 mm (A) gap between the needle plate and the bottom of the presser foot.

Setting:

1. Remove the face cover.
2. Remove the fastening screws (D) and lift out the light bulb socket completely.
3. Loosen the 2.5 mm Hexagon screw (B) on the presser bar holder.
4. Move the presser bar until the bottom of the presser foot is positioned, So there is a 4.4 mm (A) gap between the needle plate and the bottom of the presser foot.
5. Slightly tighten the screw (B).
6. Lower the presser foot and, by rotating the presser bar, align the presser foot slots with the needle plate slots.
7. Retighten the screw (C).
8. Re-check as described under “Check”.





2. Needle bar height and parallelism

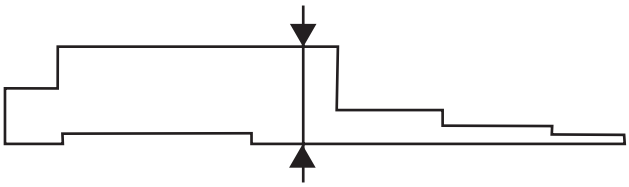
Check

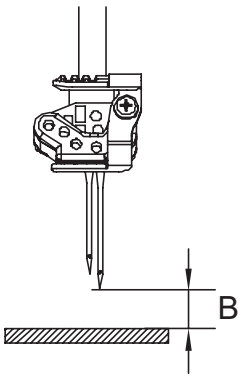
1. Insert a new needle ELx705 # 90 into the left back needle holder "B".
The needle must be inserted into the needle holder as far as it can go.
2. Turn the handwheel in the normal direction until the needle bar is at its upper turning point.
3. The distance from the tip of the "B" needle to needle plate must be 10.8 mm (B).
Check the needle bar height using the adjustment gauge.

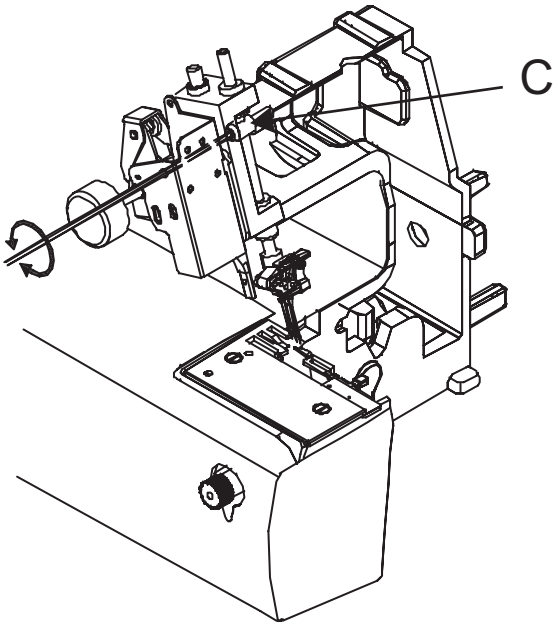
Setting:

1. Remove the face cover.
2. Turn the handwheel in the normal direction until the needle bar is at its upper turning point.
3. Slightly loosen the screw (C) of the needle bar connection.
4. Move the needle bar upwards without turning it until the needle touches the adjustment gauge so the distance is 10.8 mm (B).
5. Tighten the screw (C).

Test:
Check the clearance.
The needle holder must be parallel to the machine housing.
The sides of the needles “C”, “D” and “E” must not touch the sides of the needle plate.





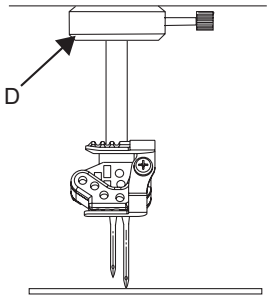


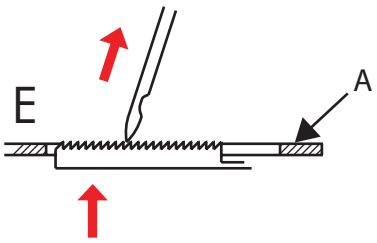
3. Needle timing

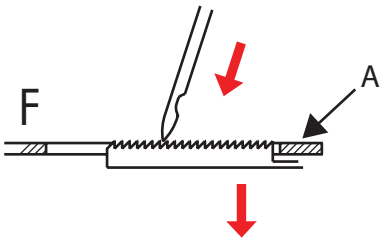
Check
Note:
The timing of the needle eccentric is set by turning the handwheel back and forth.
This method guarantees a 100 % setting.
A new needle system ELx705 Nm 90 must be used for the following steps.

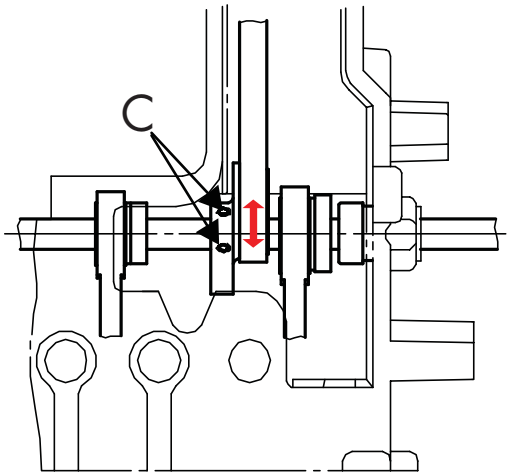
1. Turn the handwheel in the sewing direction until the tip of "B" needle is leveled with the surface of the needle plate. (A)
Note! Feed dog should be in its upwards movement.
2. Put a clamp (D) on the needle bar and up against the machine's housing and secure it .
3. Turn the handwheel in the opposite direction to the normal direction until the needle clamp rests against the machine's housing.
Note! Feed dog should now be in its downwards moment.
4. The tip of the needle (F) should now be in the same leveled position as (E) .

Setting:
1. Slightly loosen both screws (C) on the Needle eccentric.
2. Attach the needle clamp again and repeat the operation as described under "Check".
3. Turn the eccentric until the needle point is the same on both (E) and (F) points.
4. Repeat this procedure, until the setting is correct.
5. Tighten both screws (C) of the needle eccentric.
6. Re-check as described under "Check".





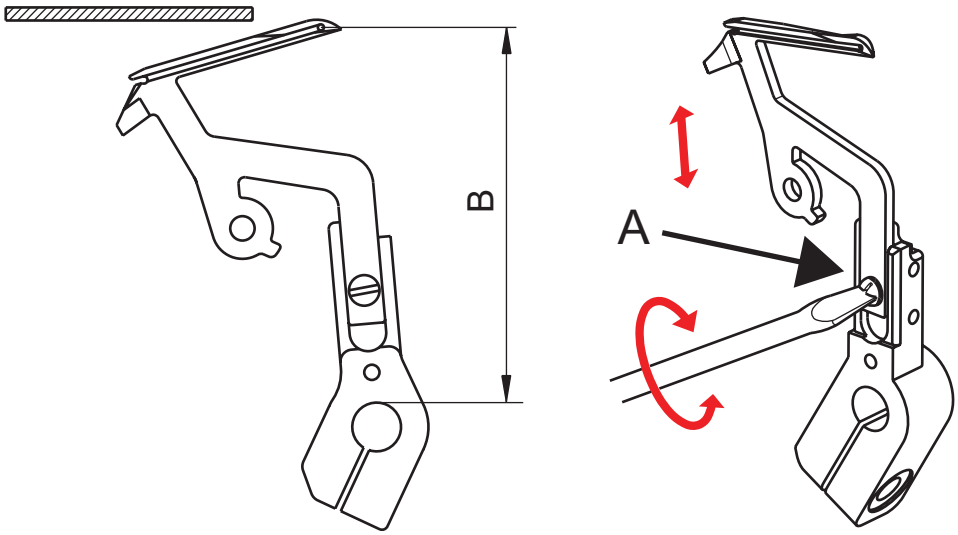




4. Height of the lower looper

Check
The distance between the looper point and top of hole for the looper drive shaft (B) should be approximately 61.3 to 62.0 mm.
Note: The looper drive shaft must not have any axial play.

Setting:
1. Turn the handwheel in the normal direction until the point of the lower looper is at its most right position.
2. Loosen the screw (A) on the lower looper.
3. Move the lower looper until it has a vertical distance is approximately 61.3 to 62.0 mm (B) to the looper drive shaft and lower looper point.
4. Tighten the screw (A) of the lower looper.
5. Re-check as described under “Check”.



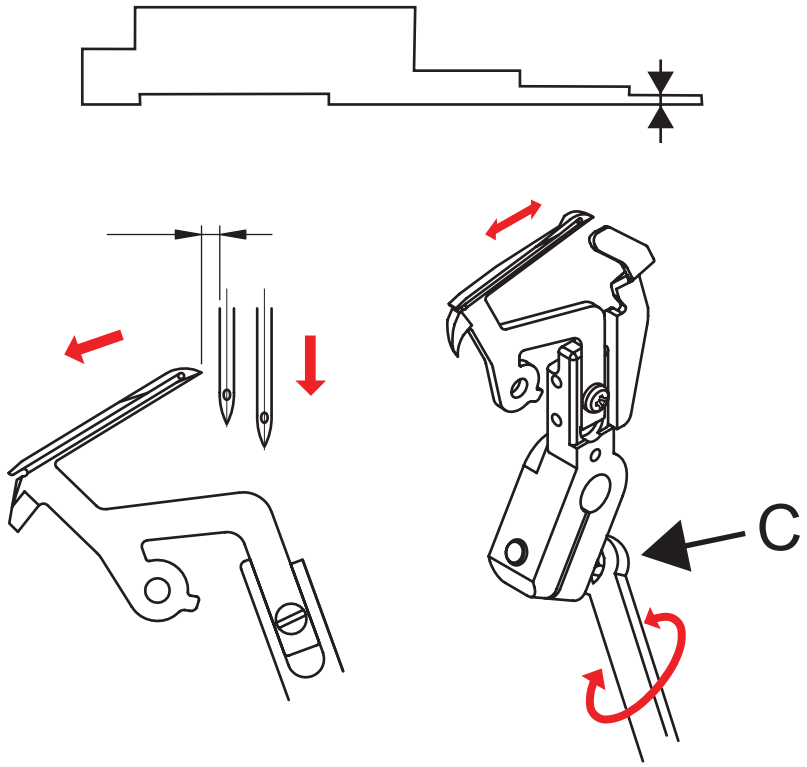
5. Clearance between lower looper the "A" needle.

Note: A new needle system ELx705 Nm 90 must be used for the following steps.

Check
When the lower looper is at its most left point, the gap between tip of lower looper and the “A” needle must be 2.6 mm (B)

Setting:
1. Turn the handwheel in the normal direction until the looper is at its left point of reversal.
2. Slightly loosen screw (C) on looper lever.
3. Set the clearance so it is 2.6 (A) mm by lower looper and the "A" needle.
4. Tighten screw (C).
5. Re-Check
6. Re-check the "Looper to needle clearance"
8. Re-set the "Clearance between lower looper needle guard and "A", "B" needles"

Note: The looper to needle clearance can be offset when the screw (B) is loosened.
For this reason the screw may only be loosened slightly.

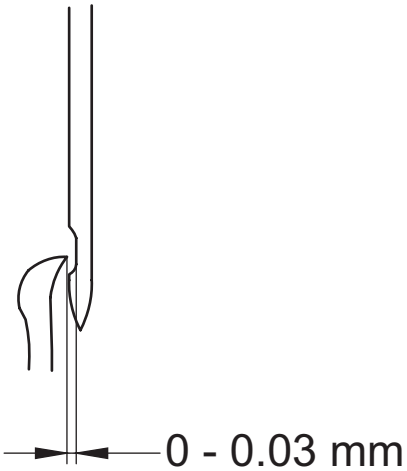


6. Looper to needle clearance

Note: A new needle system ELx705 Nm 90 must be used for the following steps.

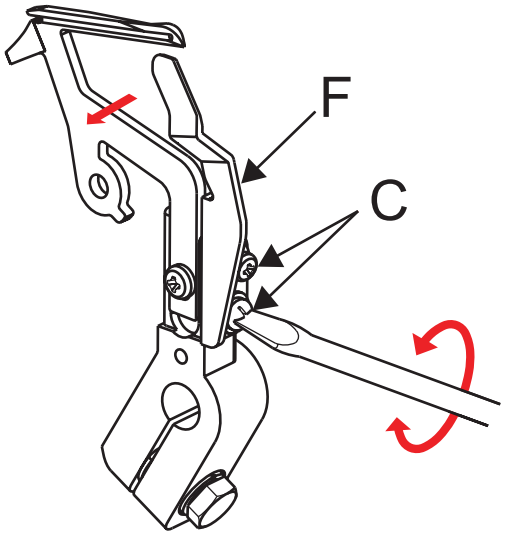
Check

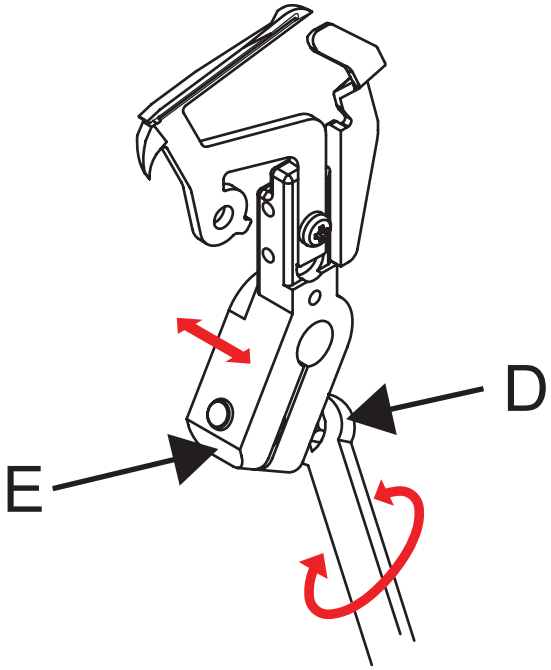
1. Turn the handwheel in the sewing direction until the looper point, as it is moving to the right, is positioned exactly in the scarf of the needle “A”.
2. The looper to needle clearance must be 0 - 0.03 mm.



Setting:

1. Remove the presser foot and the needle plate.
2. Slightly loosen two fastening screws (C) and push the needle guard (F) slightly toward the front.
3. Turn the handwheel in the normal direction until the looper point, when moving to the right, is positioned exactly in the scarf of the needle “A”.
4. Loosen the screw (D) on the looper lever (E).
5. Set the looper to needle clearance by moving the looper lever (E), to the front or to the back.
6. Tighten screw (D).
7. Re-check the distance between both "A" and "B" needles
8 Re-check the clearance between lower looper an "A" needle.
8. Re-set the "Clearance between lower looper needle guard and "A", "B" needles"





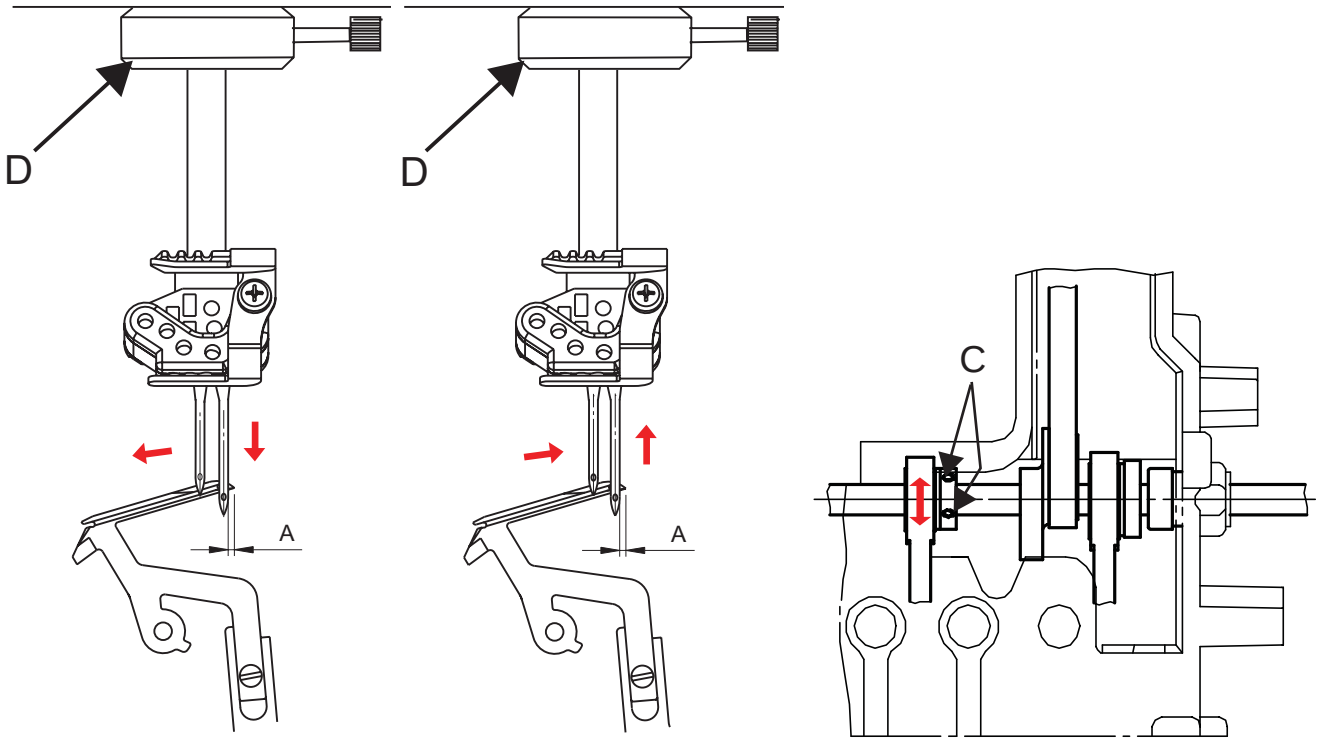
7. Timing of the lower looper

Note:
The timing of the lower looper is set by turning the handwheel back and forth.
This method guarantees a 100 % setting.
This is very important for machines with double eccentric for the loopers and chainstitch loopers.
A new needle system ELx705 Nm 90 must be used for the following steps.

Check:
1. Turn the handwheel in the sewing direction until the tip of the lower looper is 1 mm (A) outside the "B" needels left side .
2. Put the needle clamp (D) on the needle bar and up against the machine's housing and secure lightly.
3. Turn the handwheel in the opposite direction to the normal direction until the needle rise clamp rests against the machine's housing.
4. The looper point must now be positioned 1 mm (A) outside the "B" needels left side too .

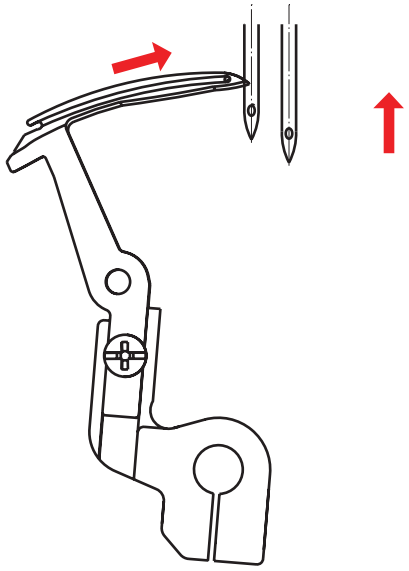
Setting:
1. Slightly loosen both screws (C) on the Lower looper eccentric.
2. Attach the needle rise clamp (D) again and repeat the operation as described under "Check".
3. Turn the drive eccentric until the looper point is in the middle of the rear of the right needle.
4. Repeat this procedure, until the setting is correct.
5. Tighten both screws (C) of the drive eccentric.
6. Re-check as described under "Check".

A= Needle clamp (41310 22- 01)



8 . Clearance between lower looper needle guard and "A", "B" needles

Note: A new needle system ELx705 Nm 90 must be used for the following steps.

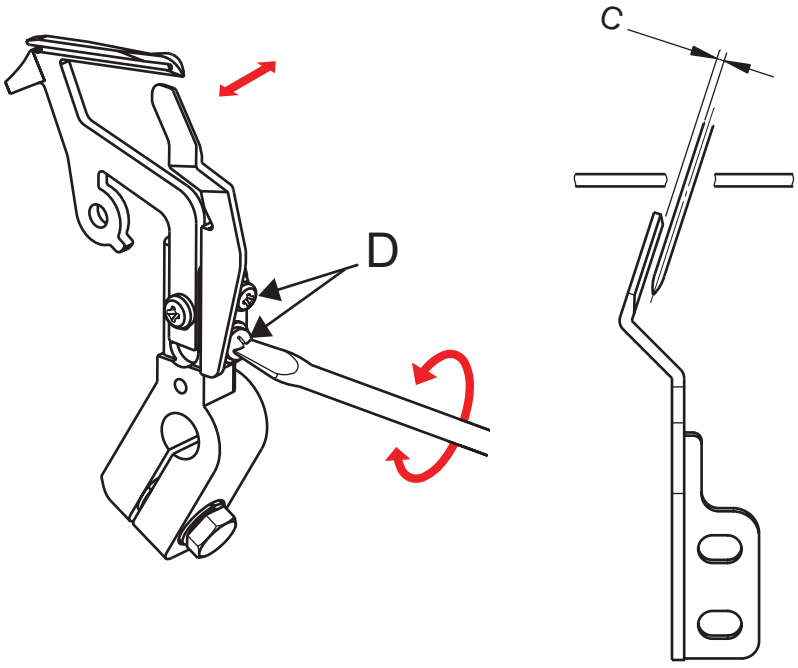


Check:

1. Remove needle plate.
2. Insert 2 new needles (Nm 90) in needle "A" and "B" positions.
1. Turn the handwheel in the normal direction until the lower looper is behind the "A" needle.
2. The needles should have a clearance of 0 - 0.08mm (C) to the lower loopers front needle guard.

Setting:

1. Slightly loosen the screws (D) and push the lower looper front needle guard to the front.
2. Turn the handwheel in the normal direction until the lower looper is behind the "A" needle.
3. Push on the lower looper front needle guard lightly onto the needles, so the clearance becomes of 0-0.08 mm between needle and lower looper front needle guard.
4. Tighten the two screws (D).
5. Re-check



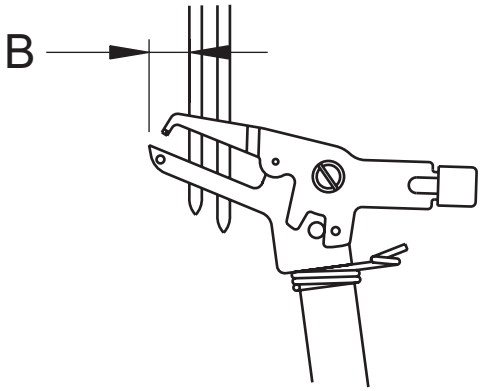
9. Upper looper position to the left needle

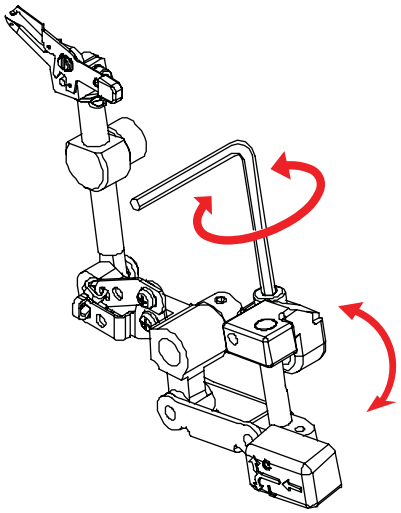
Check:

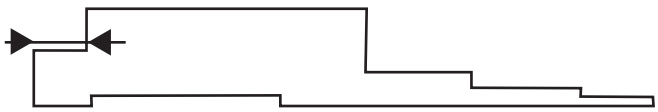
1. Turn the handwheel in the normal direction until the upper looper is at its most left position.
2. The distance between upper looper point to the left needle "A" must now be 4.6 mm (B).

Setting:

1. Turn the handwheel in the normal direction until the upper looper is at its most left position.
2. Slightly loosen fastening screw (C) .
3. Move the upper looper arm until the distance between the upper looper point and the left needle "A" is 4.6 mm (B).
4. Tighten fastening screw (C).
5. Re-check as described under “Check".







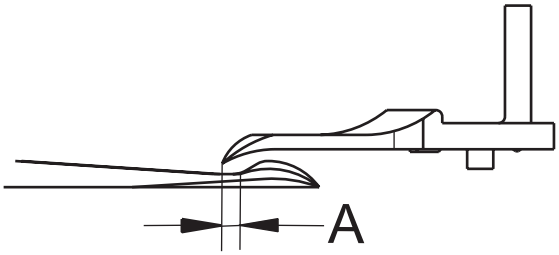
10. Timing of the upper looper

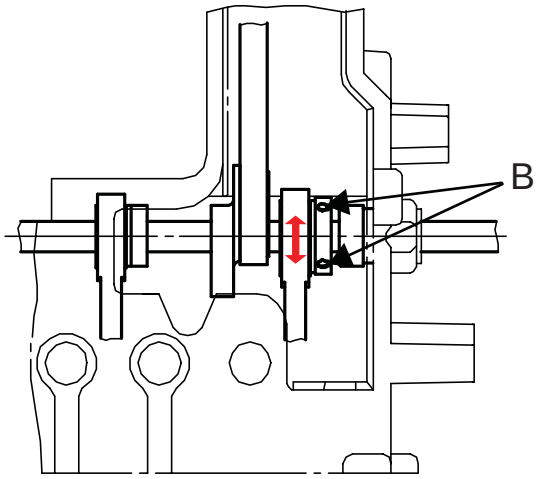
Check:

1. Turn the handwheel in the normal direction until the upper looper, in its upward movement, and behind the lower looper.
2.When the two loopers overlap, the clearance between the point of the upper looper and the head of the lower looper must be between 0.8 and 1.0 mm (A).

Setting:

1. Turn the handwheel in the normal direction until the upper looper, in its upward movement, and behind the lower looper.
2. Loosen the screws (B) on the Upper looper drive eccentric.
3. Turn the Upper looper eccentric until the clearance between the point of the upper looper and the head of the lower looper is between 0.8 and 1.0 mm (A).
4. Tighten the screws (B) of the Upper looper drive eccentric .
5. Re-check as described under “Check”.





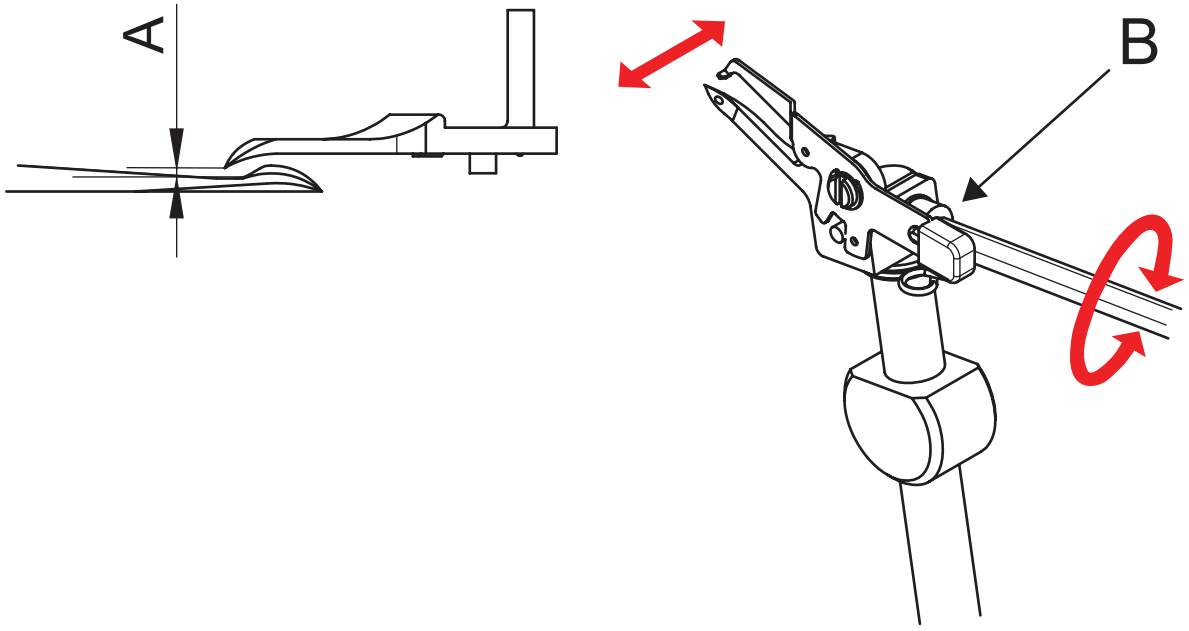
11. Clearance between the upper and lower loopers

Check:

1. Turn the handwheel in the normal direction until the upper looper , in its upward movement, is behind the lower looper.
2. When the two loopers overlap, check the clearance between the point of the upper looper and the back of the lower looper is between 0.05 and 0.2 mm.

Setting:

1. Turn the handwheel in the normal direction until the upper looper , in its upward movement, is behind the lower looper.
2. Slightly loosen the screw (B).
3. Pull the upper looper forward until the clearance between the point of the upper looper and the back of the lower looper is between 0.05 and 0.2 mm.
4. Tighten the screw (B).
5. Re-check as described under “Check”.



12. Height of the chain stitch looper

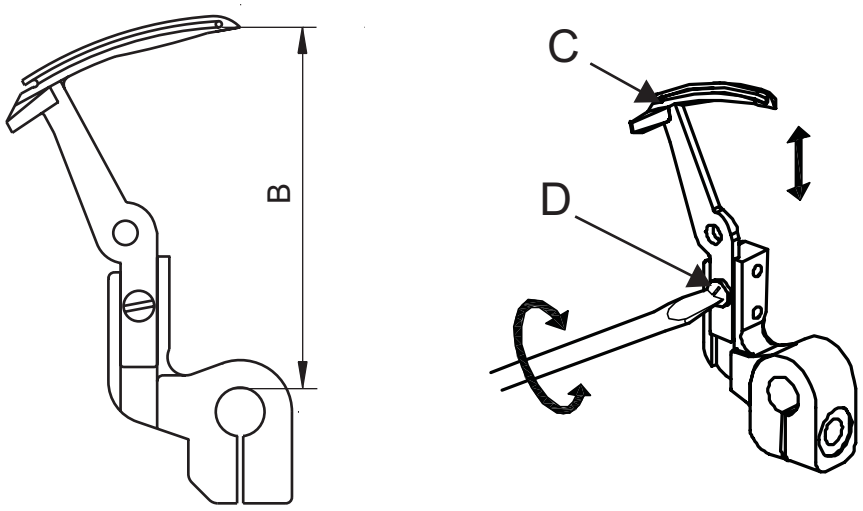
Check

The distance between the chain stitch looper point and the upper side of chain stitch looper drive shaft location must be approximately 58.7 to 60.2 mm (B).

Note: The chain stich looper drive shaft must not have any axial play.

Setting:

1. Turn the handwheel in the normal direction until the point of the chain stich lower looper is at its most right position.
2. Loosen the screw (D) on the chain stich looper.
3. Move the chain stitch looper (C) until it has a vertical distance is approximately 58.7 to 60.2 mm (B) to the chain stitch looper drive shaft location and chain stitch looper point.
4. Tighten the screw (D) of the chain stitch lower looper.
5. Re-check as described under “Check”.



13. Clearance between chain stitch looper the Left needle “C”

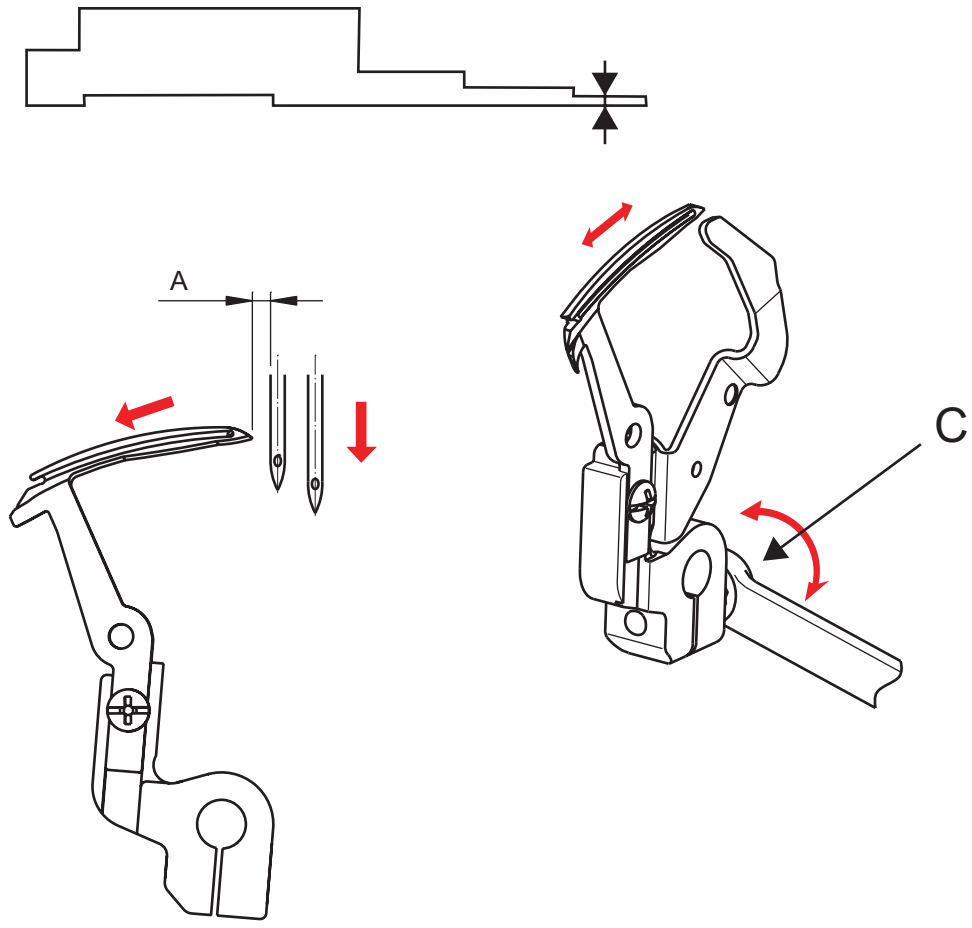
Note: A new needle system ELx705 Nm 90 must be used for the following steps.

Check:
When the Chain stitch looper is at its most left point, the gap between tip of Chain stitch looper and the “C” needle must be 2.6 mm (A)

Setting:
1. Turn the handwheel in the normal direction until the chainstitch looper is at its most left point of reversal.
2. Slightly loosen screw (C) on chain stitch looper lever.
3. Set the clearance so it is 2.6 (A) mm by moving the looper, use the adjustment gauge as an aid.
4. Tighten screw (C).
5. Re-Check as described under “Check”.

Note: The Chain stitch looper to needle clearance can be offset when the screw (B) is loosened.
For this reason the screw may only be loosened slightly.

NOTE! After having set "the clearance between the chain stitch looper to left needle" the setting "chain stitch looper to needle clearance" must be reset and/or controlled.

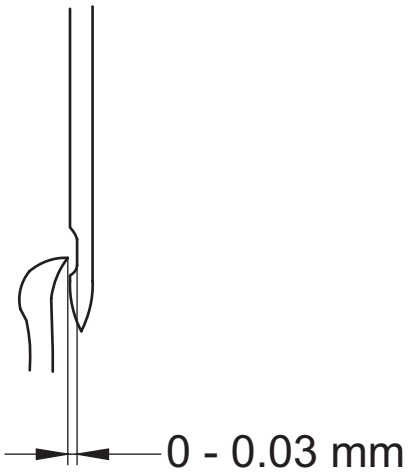


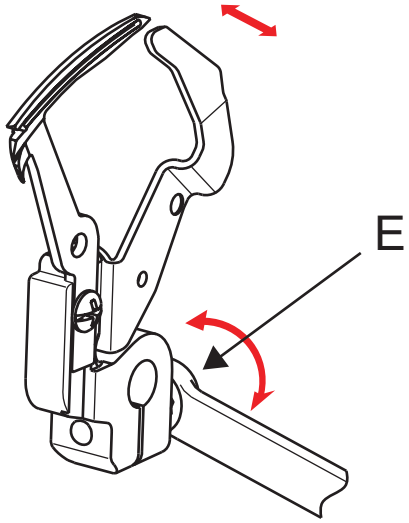
14. Chain stitch looper to needle clearance

Check:
1. Turn the handwheel in the normal direction until the looper point of the chainstitch looper is exactly in the scarf of the needle “C” while moving to the right.
2. The looper-to-needle clearance must be 0- 0.03 .

Setting:
1. Turn the handwheel in the normal direction until the looper point of the chainstitch looper , while moving to theright, is exactly in the scarf of the needle “C”.
2. Slightly loosen the screw (E) on the looper lever .
3. Set the looper-to-needle clearance by pushing the looper lever.
4. Tighten the screw on the looper lever.
5.

Note!
The needles "C" , "D" and "E" will be slightly pressed when it picks up the looper thread.



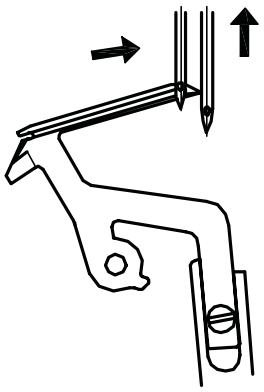


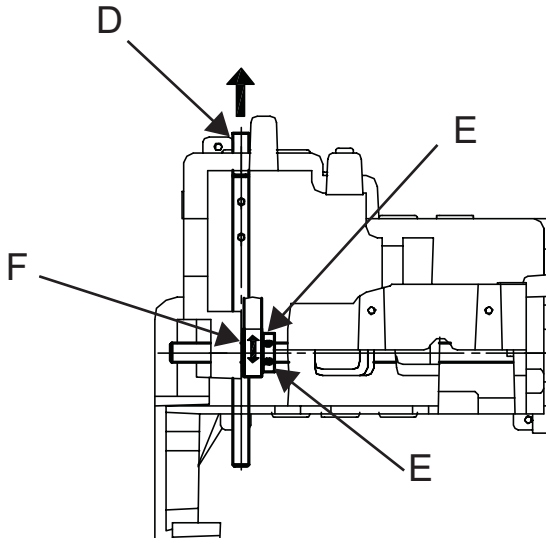
15. Ellipsoidal movement of chain stitch.

Note: This adjustment must only be carried out if a compelling reason exists.

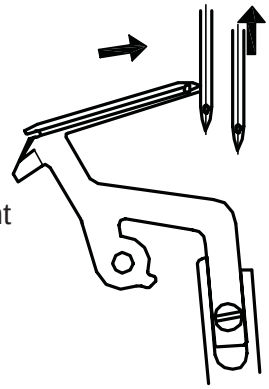
Check:
1.Turn the handwheel in the normal direction until the lower looper is behind the "B" needle.
2.The Chain stitch looper ellipsoidal shaft (D) should now be at its most back position.

Setting:
1. Turn the handwheel in the normal direction until the lower looper is straight behind the "B" needle.
2. Slightly loosen the two set screws (E) on the chain stitch eccentric (F).
3. Turn the drive eccentric until the chain stitch looper shaft is at its most back position
4. Tighten the screws.
5. Re-check





16. Chain stitch needle guard to needle clearance

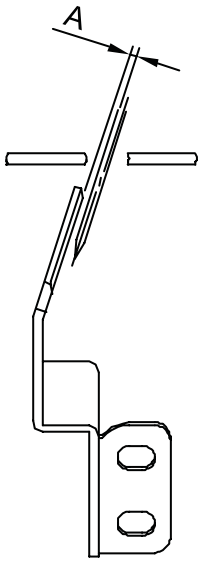


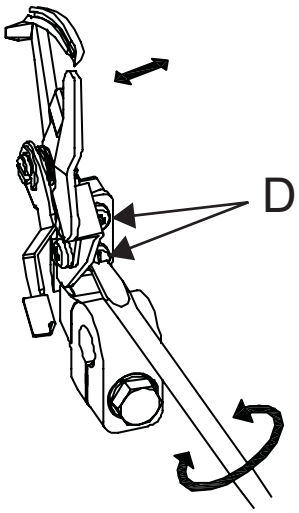
Check:

1. Remove needle plate.
2. Insert 2 new needles (Nm 90) in needle "C" and "E" positions.
3. Turn the handwheel in the normal direction until the chain stitch looper point, when moving to the left, is precisely behind needle "C" .
4. It should be a clearance of 0 - 0.08 mm between to the chain stitch front needle guard and the needle.

Setting:

1. Turn the handwheel in the normal direction until the chain stitch looper point, when moving to the left, is precisely behind needle "C" .
2. Slightly loosen the two screws (D).
3. Push the front needle guard back and forth to obtain a clearance of 0-0.08mm between needle.
4. Tighten the screws (D).
5. Recheck





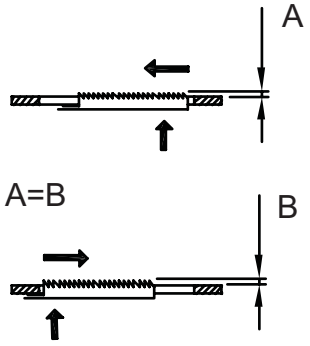
17. Feed Timing

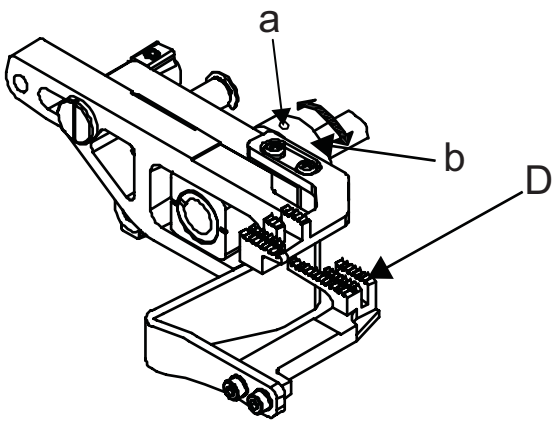
Check:

1. Set the stitch length adjustment knob to “4”.
2. Set the regulator wheel for the differential feed to “2”.
3. Turn the handwheel in the normal direction and set the Front feed dog (D) so it comes to its front top position and just before its starts to go to the back (A).
4. Put the needle clamp (41310 22- 01) on the needle bar and up against the machine’s housing and secure it .
5. Turn the handwheel in the opposite direction to the normal direction until the needle clamp rests against the machine’s housing.
6. The front Feed dog (D) should now have come to its highest position , just before the feed dog goes to the front (B).
7. Both (A) and (B) positions should have equal height.

Setting:

1. Loosen the fastening screw (a) on the front feed dog.
2. Move the front feed dog unit (D) with eccentric (b) until the feed hight is the same on both (A) and (B) positions.
3. Tighten the fastening screw (a) on the main feed dog.
4. Carry out a visual check.





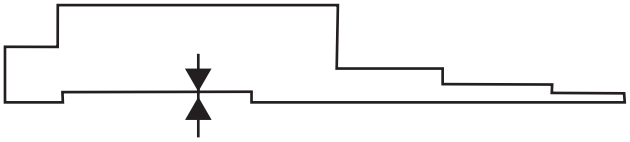
18. Feed dog height

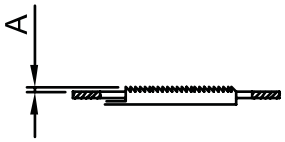
Check:

1. Set the stitch length adjustment knob to “4”.
2. Set the regulator wheel for the differential feed to “2”.
3. Turn the handwheel in the normal direction until the rear feed dog (D) and the front feed dog, in its upward movement, in there highest position.
4. Rear feed dog position should be 1 mm over the needle plate.
5. The Front feed dog should be 0.2-0.3 mm higher when the presser foot is in its up position.

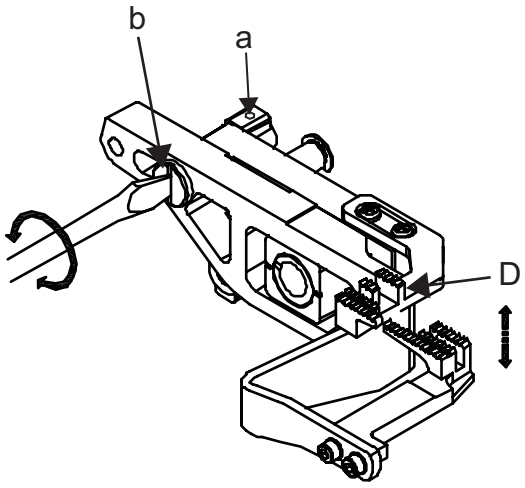
Setting:

1. Loosen the fastening screw (a) on the feed dog unit.
2. Move the rear feed dog (D) with eccentric (b) until the feed dog is 1 mm over the needle plate
3. Tighten the fastening screw (a) on the feed dog unit.
4. Re-check





A=1.0

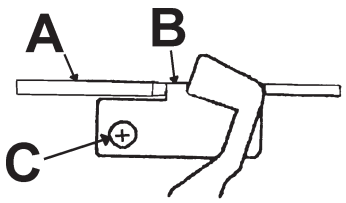


19. Lower Knife

Check:

1. The lower knife cutting edge (B) should be aligned with the surface of the needle plate (A).

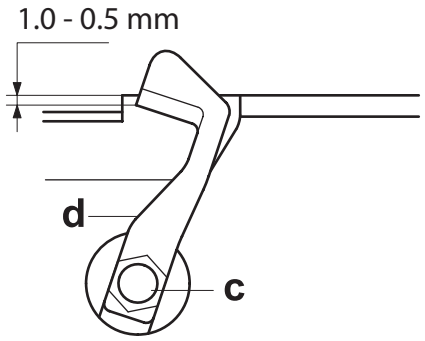
Setting:
Loosen screw (C). Adjust so the lower knife cutting edge is aligned with the surface of the needle plate.



20. Upper Knife

Check:
1. Turn the handwheel in the normal direction until the upper blade (d) is at its lowest position.
2. The upper and lower blades must overlap by 1.0 - 0.5 mm

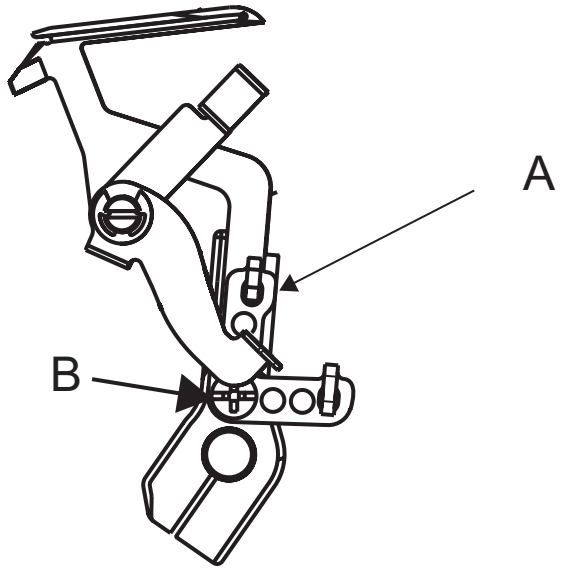
Setting:
1.Turn the handwheel in the normal direction until the upper blade (d) is at its lowest position.
2. Loosen the screw (c) .
3. Set the overlap of the upper and lower blades by moving the upper blade (d).
4. Tighten the screw (c)
5. Recheck its height



21. Set the Lower Looper lower thread guide

Check
The lower looper brackets left side should be flush with the lower looper right side (A).

Setting
1. Open up the set screw (B)
2. Move the thread guide until the correct measurement is achieved.
3. Tighten the set screw (B)



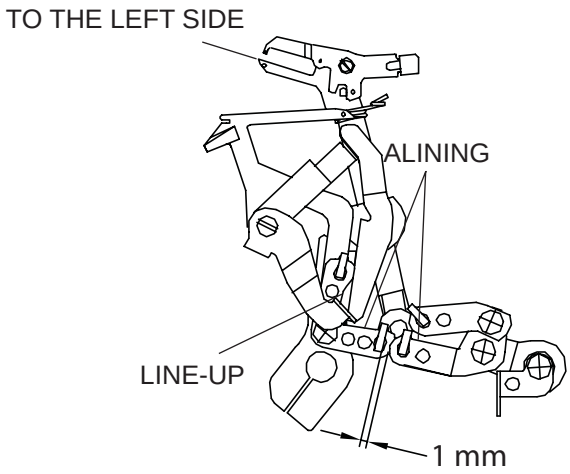
22. Set the Upper Looper lower thread guide

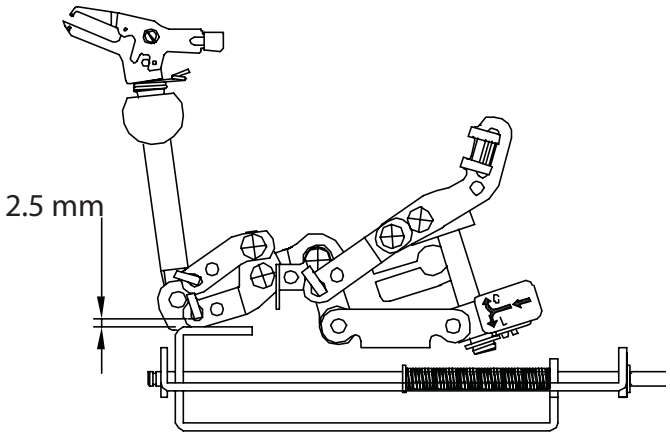
Check

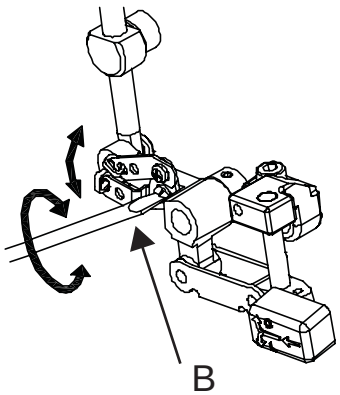
1. Check so the Lower Loopers lower thread guide is set correct
2. Set the upper looper to its left position.
3. The distance between the Lower looper thread guide and the upper looper lower thread guide should be 1 mm and the top of the thread guides should be line up.
4. Set the upper looper to its lowest position.
5. The distance to Front cover braket and upper looper thread guide should be 2.5 mm.

Setting

1. Open up the set screw (B)
2. Move the thread guide until the correct measurement is achieved in both positions
3. Tighten the set screw (B)







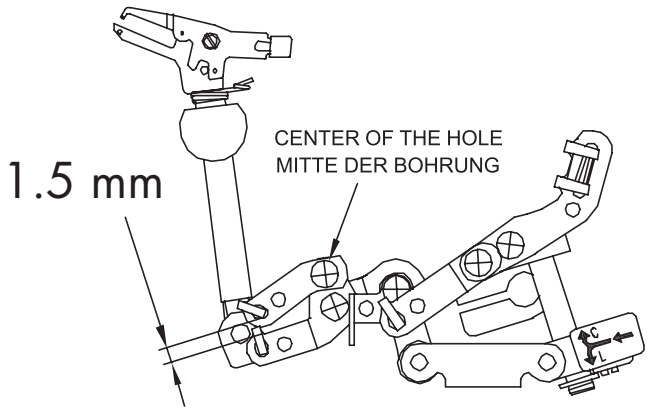
23. Set the Upper Looper upper thread guide

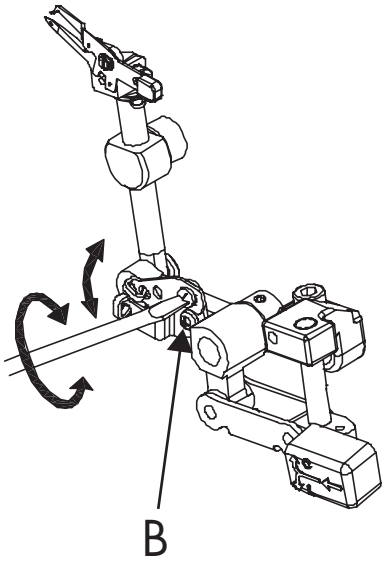
Check

1. Check so the settings of the Lower Looper lower thread guide and Upper Looper lower thread guide is correct.
2. The distance between the upper loopers upper thread guide and the upper loopers lower thread guide should be 1.5 mm when the upper loopers upper thread guide set screw is in the centre of the thread guides hole.

Setting

1. Loosen the Set screw (B)
2. Move the upper loopers thread guide to its correct position.
- to 1.5 mm
- so the screw is in the centre of the hole
3. Tighten the set screw





24. Set the Chain stitch loopers thread take up.

Check

The Left chain stitch loopers thread take up should be 1.5 mm from the right chain stitch looper

Setting

1. Loosen up the set screw (B)
2. Move the thread take up so it it is 1.5 mm clearance.
3. Tighten the set screw (B).