



Class 204, Class 205
Instructions for Mechanics

Edition August 1983

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1. General

1.1 References and illustration

A functional element mentioned in the text gets a reference, e.g. "A" if it is illustrated in the appendix. The supplement of the reference, consisting of a fraction stroke and of a figure, e.g. A/8, indicates the respective illustration 8 in the appendix. In case of several illustrations, the respective figures with fraction strokes are added.



2. Adjustment

2.1 Adjusting the stitch regulator and feed dog (Class 204-2)

Rule 1:

The feed dog should move freely in the needle plate when the maximum stitch length has been set, Figure 5.

Note 1:

As a check set the maximum stitch by means of the stitch regulator and turn the machine one complete revolution.

To make any correction undo screws a/4 and turn shaft t/4.

Rule 2:

The feed dog follow-through should be 2.0 mm.

Note 2:

The feed dog follow-through is the remaining thrust movement above the needle plate after the thread lever has been brought into the raised position.

As a check turn the machine one complete revolution with the maximum stitch length set.

To make any correction undo screws and turn eccentric b/1.

Rule 3:

When in the raised position the feed dog should protrude 1.8 mm from the needle plate.

Note 3:

To make any correction undo screw n/2 and turn shaft s/2.

Rule 4:

The teeth of the feed dog should sink "vertically" in the needle plate, when the needle pierces the sewing fabric, Figure 5.

Note 4:

As a check turn the machine one complete revolution with the maximum stitch length set.

To make any correction undo screws and turn eccentric u/2.

Remark:

Theoretically the most effective feed is achieved with a "square-shaped" feed action, which ideally corresponds to a "vertical" up and down stroke movement and a long feed path above the needle plate. To this end it is necessary to adapt the follow-through (Rule 2), the height (Rule 3) and the stroke (Rule 4) to each other.

2.2 Stitch regulator, feed dog and needle feed (cl. 204-64)

Rule 1:

The feed dog should move freely in the throat plate when the machine is set for the maximum stitch length, fig. 54

Note 1:

For controlling, set with the stitch regulator the longest stitch and turn the machine.

For correcting, loosen the screws a/4 and turn the shaft t/4.

Rule 2:

The final motion of the feed dog should amount to 2.0 mm.

Note 2:

The final motion of the feed dog is the remaining pushing motion above the throat plate after lifting the thread take-up lever to its upper position.

For controlling, turn the machine with the stitch length being set for its maximum value.

For correcting, loosen the screws and turn the eccentric b/1.



Rule 3:

In its upper position, the feed dog should exceed the throat plate surface by 1.8 mm.

Note 3:

For correcting, loosen the screw n/2 and turn the shaft s/2.

Rule 4:

The feed dog teeth should submerge in the throat plate "vertically" when the needle stitches the material, fig. 5.

Note 4:

For controlling, turn the machine with the stitch length being set for its maximum value.

For correcting, loosen the screws and turn the eccentric u/2.

Note:

Theoretically, the most effective feed is obtained with "rectangular" motion of the feed dog, corresponding in an ideal case to a "vertical" up and down motion and a long travel above the throat plate. For this purpose it is necessary to tune reciprocally the final motion (rule 2), the height (rule 3) and the stroke (rule 4).

Rule 5:

With the stitch length 0, the needle should stitch in the middle of the stitch hole.

Note 5:

For controlling, fit a new needle and move the descending needle until its eye reaches the throat plate level.

For correcting,

- in the x-axis direction: loosen the screw o/14 and align the shaft w/14 axially
- in the y-axis direction: loosen the screw i/14 and shift the block k/14 on the shaft v/14 until the shaft end v/14 juts out of the block k/14 by 18.0 mm.

Rule 6:

With the stitch length being set for its maximum value, the needle should operate in the centre of the stitch hole.

Note 6:

For controlling, fit a new needle and move the ascending and descending needle so that its eye reaches the throat plate level. For correcting, loosen the screw o/14 and adjust the shaft w/14 radially.

2.3 Adjusting the stitch regulator and feed dog (Class 205-6)

Rule 1:

The feed dog should move freely in the needle plate when the maximum stitch length has been set, Figure 6.

Note 1:

As a check set the maximum stitch by means of the stitch regulator and turn the machine one complete revolution.

To make any correction undo screws a/3 and turn shaft t/3.

Rule 2:

The feed dog follow-through should be 2.0 mm

Note 2:

The feed dog follow-through is the remaining thrust movement above the needle plate after the thread lever has been brought into the raised position.

As a check turn the machine one complete revolution with the maximum stitch length set.

To make any correction undo screws and turn eccentric be/1.



2.4 Stitch regulator, feed dog and needle feed (cl. 205-64)

Rule 1:

The feed dog should move freely in the throat plate when the machine is set for the maximum stitch length, fig. 6.

Note 1:

For controlling, set with the stitch regulator the longest stitch and turn the machine.

For correcting, loosen the screws a/3 and turn the shaft t/3.

Rule 2:

The final motion of the feed dog should amount to 2.0 mm.

Note 2:

The final motion of the feed dog is the remaining pushing motion above the throat plate after lifting the thread take-up lever to its upper position.

For controlling, turn the machine with the stitch length being set for its maximum value.

For correcting, loosen the screws and turn the eccentric b/1.

Rule 3:

With the stitch length being set for its maximum value, the needle should operate in the middle of the stitch hole.

Note 3:

For controlling, fit a new needle and move the ascending and descending needle so that its eye reaches the throat plate level.

For correcting, loosen the screw o/14 and adjust the shaft w/14 axially and radially.

2.5 Adjusting the presser foot and thread tension lifter

Rule 1:

The clearance beneath the raised presser foot should be 12.0 mm.

Note 1:

As a check, first undo screw o/2, push up the presser foot as far as it will go and tighten up again. Then place the 12.0 mm block gauge, Part No. 981 13 001 0, underneath the raised presser foot.

To make any correction undo screws s/10 and adjust presser bar.

Rule 2:

When the presser foot is in the raised position the thread tension system should also be raised.

Note 2:

To make any correction undo nut n/11 with the presser foot raised and turn bolt r/11.

2.6 Adjusting the thread take-up spring

Rule 1:

When the needle penetrates into the sewing fabric, the thread take-up spring R/12 should rest against the fishplate E/12 when the tension is relieved.

Note 1:

As a check sew a few stitches by turning the handwheel.

To make any correction undo screw A/12 and adjust the fishplate E/12.

Rule 2:

The pretension of the thread take-up spring R/12 is set during trial runs at the factory.



Note 2:

When using other threads it might be necessary to correct the pretension of the thread take-up spring R12.

To make any correction undo nut b/12 and turn bolt c/12

Rule 3:

The effective path of the thread take-up spring should be 8.0 mm.

Note 3:

When using other threads it might be necessary to readjust stop N/12

To make any adjustment undo threaded stud m/12 and swing stop N/12.

2.7 Adjusting the barrel shuttle (Class 204-2)

Rule 1:

A 200 needle should be used for the purpose of checking or adjustment.

Note 1:

Line up a new needle, System 328 Lr No. 200, with the short groove towards the shuttle, push it in as far as it will go and tighten up with the screw.

Rule 2:

The needle should pass by the needle guard with a clearance of 0.2 mm, see Figure 7.

Note 2:

To make any correction undo screw b/4 and adjust shaft c/4. After secure the shaft axially with the setting collar s/4.

Rule 3:

When the point of the shuttle is still at the bottom left of its stroke, the needle should already be 1 mm past bottom dead centre, see Figure 13.

Note 3:

To make any correction undo screws a/1 and turn eccentric e/1.

Rule 4:

In the loop stroke position (3.5 mm) the point of the shuttle should be aligned with the left edge of the needle, see Figure 8.

Note 4:

As a check set the loop stroke by means of a gauge. To this end use a 3.5 mm loop stroke gauge, Part No. 981 15 000 4, and setting gauge, Part No. 981 15 000 2.

To make any adjustment undo screw b/4 and turn shaft c/4.

Rule 5:

When the point of the shuttle has been travelled 0.5 mm beyond the right edge of the needle, the upper edge of the needle ear should be aligned with the bottom edge of the shuttle, see Figure 9.

Note 5:

To make any correction undo screws d/10 and adjust the needle bar.

Rule 6:

When taking up the loop the point of the shuttle should pass by in the groove of the needle with a maximum clearance of 0.1 mm but without forcing the needle away.

Note 6:

To make any correction undo screw m/2, align the shuttle track bearing p/2 parallel to the needle plate and adjust.



2.8 Barrel shuttle (cl. 204-64)

Rule 1:

For controlling or adjusting, use a needle No. 200.

Note 1:

Take a new needle, system 328 Lr No. 200, set it with the short groove towards the shuttle, introduce as deep as possible and secure by the screw.

Rule 2:

The needle should pass along the needle guard at a distance of 0,2 mm, see fig. 7.

Note 2:

For correcting, loosen the screw b/4 and turn the shaft c/4. Finally, secure the shaft axially by the setting ring s/4!

Rule 3:

With the stitch length 0, the shuttle tip should still stand at the left turning point when the needle has already ascended from its lower dead point by 1.0 mm, see fig. 14.

Note 3:

For controlling, set stitch length 0 by the knurled handle.

For correcting, loosen the screws a/1 and turn the eccentric e/1.

Rule 4:

In the loop stroke position (5.5 mm) the shuttle tip should be flush with the left needle edge, see fig. 8.

Note 4:

For controlling

- set 0 stitch length by the knurled handle,
- adjust the loop stroke by gauge. Use additionally a 2,0 mm thick distance piece together with the available loop stroke gauge 3.5 mm, ref. no. 981 15 000 4, and setting block, ref. no. 981 15 000 2.

For correcting, loosen the screw b/4 and turn the shaft c/4.

Rule 5:

When producing **reverse stitches**, set for the maximum length, the shuttle tip should be 0.5 mm beyond the right needle edge when the upper edge of the eye of the needle is flush with the lower edge of the shuttle, see fig. 9.

Note 5:

For controlling, set the maximum stitch length by the knurled handle and turn the handwheel backwards.

For correcting, loosen the screw d/10 and shift the needle bar.

Rule 6:

When the loop is being picked up, the shuttle tip should travel in the needle groove with a maximum play of 0.1 mm, but without deviating the needle.

Adjusting indication 6:

For correcting, loosen the screws m/2, set shuttle race bearing p/2 parallel to the throat plate and displace.

2.9 Adjusting the barrel shuttle (Class 205-6)

Rule 1:

A 200 needle should be used for the purposes of checking or adjustment.

Note 1:

Line up a new needle, System 328 Lr No. 200, with the short groove towards the shuttle, push it in as far as it will go and tighten up with the screw.

Another necessary condition is that the setting of the stitch regulator and feed dog has been checked.



Rule 2:

The needle should pass by the needle guard with a clearance of 0.2 mm, see Figure 7.

Note 2:

As a check remove the shuttle and turn the machine one complete revolution by hand.

To make any correction undo screw b/3 and adjust shaft c/3. Afterwards secure the shaft axially with the setting collar s/3!

Rule 3:

When the point of the shuttle is still at the bottom left of its stroke, the needle should already be 1.0 mm past bottom dead centre.

Note 3:

To make any correction undo screws a/1 and turn eccentric e/1.

Rule 4:

In the loop stroke position (3.5 mm) the point of the shuttle should be aligned with the left edge of the needle, see Figure 8.

Note 4:

As a check set the loop stroke by means of a gauge.

To this end use a 3.5 mm loop stroke gauge, Part. No. 981 15 000 4, and setting gauge, Part. No. 981 15 000 2.

To make any adjustment undo screw b/3 and turn shaft c/3.

Rule 5:

When the point of the shuttle has been travelled 0.5 mm beyond the right edge of the needle, the upper edge of the needle ear should be aligned with the bottom edge of the shuttle, see Figure 9.

Note 5:

To make any correction undo screws d/10 and adjust the needle bar.

2.10 Barrel shuttle (cl. 205-64)

Rule 1:

For controlling or adjusting, use a needle No. 200.

Adjusting indication 1:

Take a new needle, system 328 Lr No. 200, set it with the short groove towards the shuttle, introduce as deep as possible and secure by the screw.

Furthermore, it is taken for granted that the stitch regulator, the feed dog and the needle feed have been checked for their adjustment.

Rule 2:

The needle should pass along the needle guard at a distance of 0.2 mm, see fig. 7.

Note 2:

For controlling, remove the shuttle and turn the machine by hand.

For correcting, loosen the screw b/3 and shift the shaft c/3.

Finally, secure the shaft axially by the setting ring s/3!

Rule 3:

With the stitch length 0, the shuttle tip should still stand at the left turning point when the needle has already ascended from its lower dead point by 1.0 mm, see fig. 13.

Note 3:

For controlling, set stitch length 0 by the knurled handle.

For correcting, loosen the screws a/1 and turn the eccentric e/1.

Rule 4:

In the loop stroke position (5.5 mm) the shuttle tip should be flush with the left needle edge, see fig. 8.



Note 4:

For controlling

- set 0 stitch length by the knurled handle,
- adjust the loop stroke by the gauge. Use additionally a 2.0 mm thick distance piece together with the available loop stroke gauge 3.5 mm, ref. no. 981 15 000 4, and setting block, ref. no. 981 15 000 2.

For correcting, loosen the screw b/3 and turn the shaft c/3.

Rule 5:

For producing **reverse stitches**, set for the maximum length the shuttle tip should move 0.5 mm beyond the right needle edge when the upper edge of the eye of the needle is flush with the lower edge of the shuttle, see fig. 9.

Note 5:

For controlling, set the maximum stitch length by the knurled handle and turn the handwheel backwards.

For correcting, loosen the screw d/10 and shift the needle bar.

3. Maintenance

3.1 Lubrication (Fig. 15)

Rule 1:

When working full shifts lubricate all lubricating points about once daily with 1-2 drops of oil.

This is most effective at the beginning of the shift.

Note 1:

The lubricating points on the arm head are marked by plastic lubricators. The lubrication hole is only countersunk in the case of smaller parts. The track of the shuttle must always be cleaned first. For this purpose the shuttle can be removed after the cover spring has been folded back. The guards and covers must be removed at regular intervals to lubricate the gliding parts, according to how hard the machine is used.

Rule 2:

Recommended is "MILLCOT K 68" from Messrs. ESSO or another brand of oil with the following properties:

Viscosity at 40° C;	cST:	65.0
Viscosity at 50° C;	cST:	42.0
Flash point	°C:	212.0

Note 2:

This oil can be ordered from Kochs Adler:

1 litre	-	Part No. 990 47 012 8
5 litres	-	Part No. 990 47 012 9



