

Reson Copy
Header Info

Durst Laborator 138 S

+ G 139

Servicing Instructions



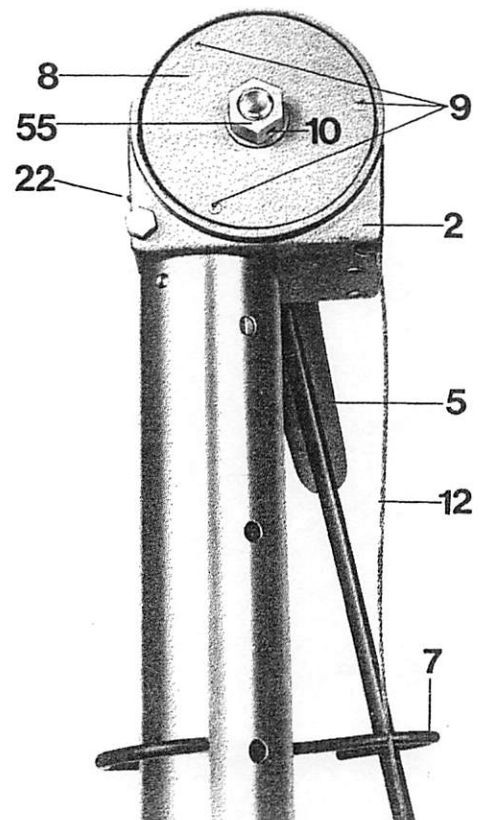
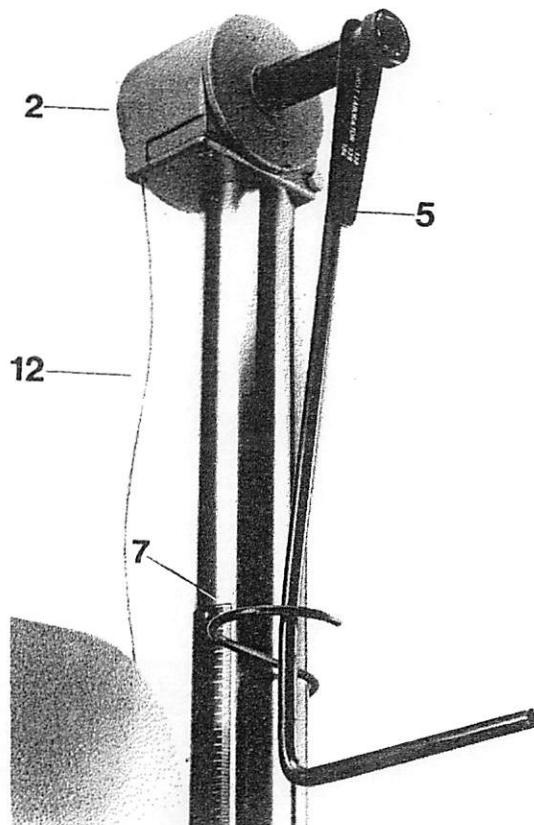
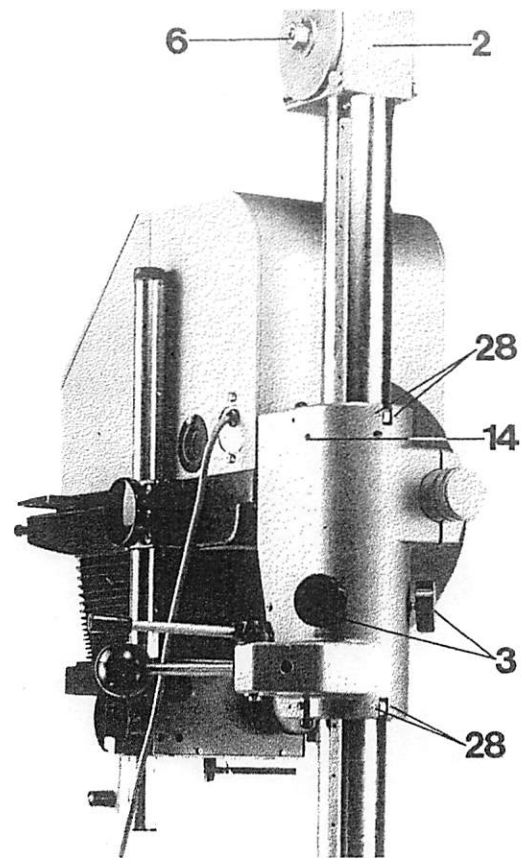
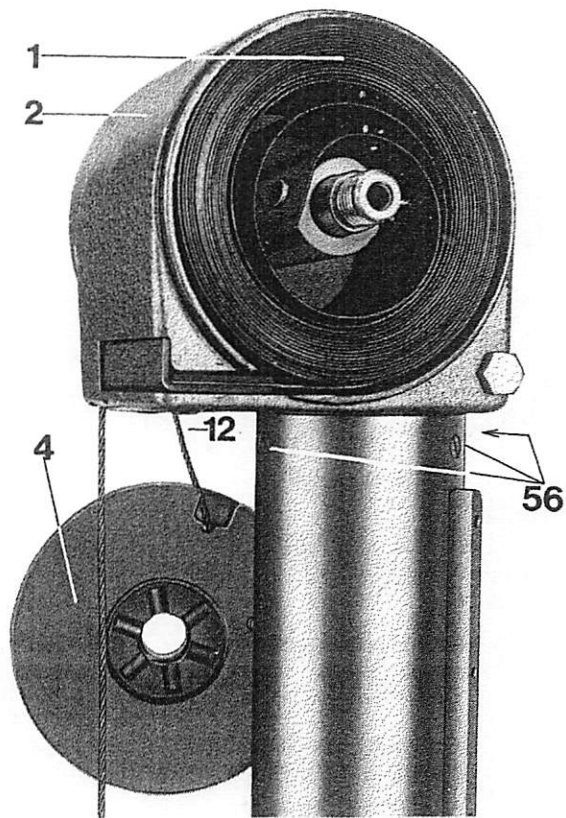
Replacing the counterweight spring

The special tool required for this purpose is supplied to order and charged by Durst.

Important: The counterweight spring (1) must always be replaced together with the column head (2).

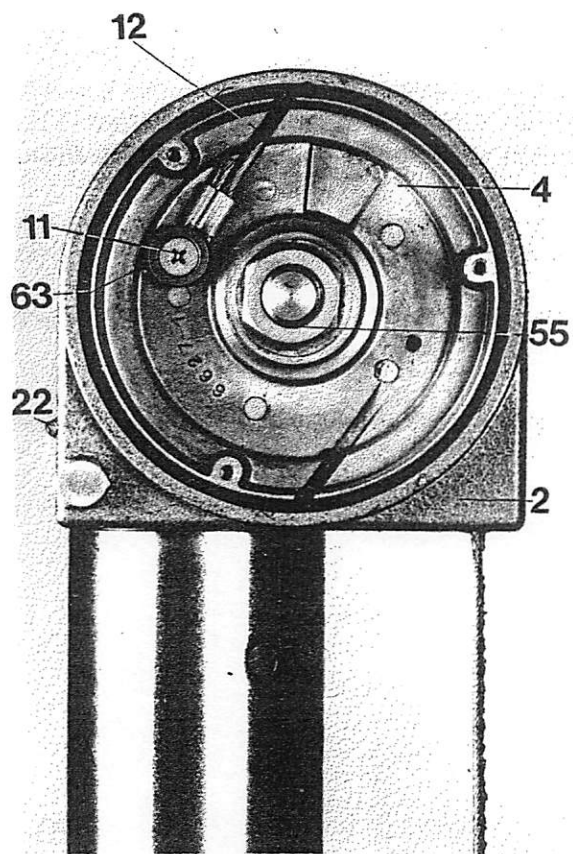
- 1.) Move the enlarger head to the bottom of the column and lock it in position with the two knobs (3) on the carriage (14).
- 2.) The column head (2) contains the counterweight spring (1) and the steel cable

*Not to be attempted
by Customer*



drum (4). Mount the special spanner (5) for tensioning the counterweight spring on the nut (6) at the right-hand side of the column head, slightly tension, and secure the spanner (5) by engaging the hook (7).

- 3.) Unscrew the three cross-head screws (9) and remove the left-hand cover plate (8) of the column head (2). Tap out the locking pin (10) of the hexagonal nut (55) with a punch, and unscrew the nut. Then take out the cable drum (4).
- 4.) Remove the retaining hook (7) and carefully relax the spring (1) fully. Then remove the tensioning spanner (5).
- 5.) Unscrew the cross-head screw (11) and remove the retaining washer (63), then pull the steel cable (12) out of the column head (2).
- 6.) Unscrew the three screws (56) securing the column head on the column, and remove the column head (2). Mount the new column head with the new counter weight spring in the same way. Again attach the tensioning spanner (5) to the right-hand side of the column head and tension the counterweight spring (1) by turning the spanner (5) anti-clockwise through 4 - 6 turns. Then secure the spanner (5) with the hook (7).
- 7.) Draw the steel cable (12) into the new column head (2), attach to the cable drum (4) with the cross-head screw (11) and the retaining washer (63) and refit the cable drum (4). Screw in the left-hand hexagonal nut (55) and secure with the locking pin (10). Fit the left-hand cover panel (8) and tighten the three screws (9).
- 8.) Now remove the retaining hook (7) and the spanner (5).

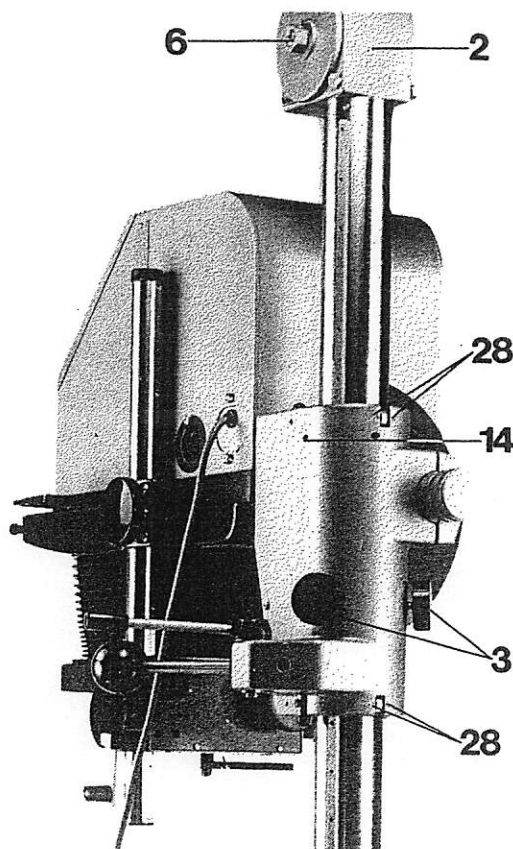


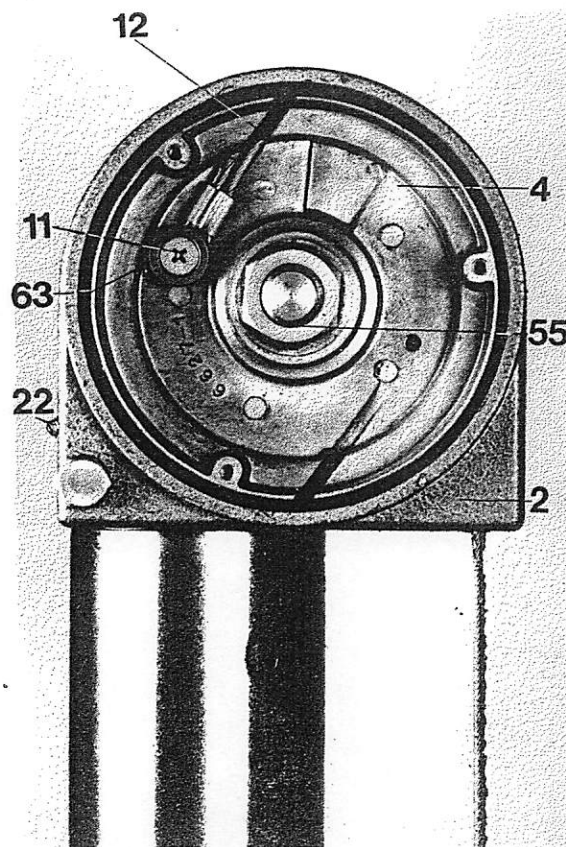
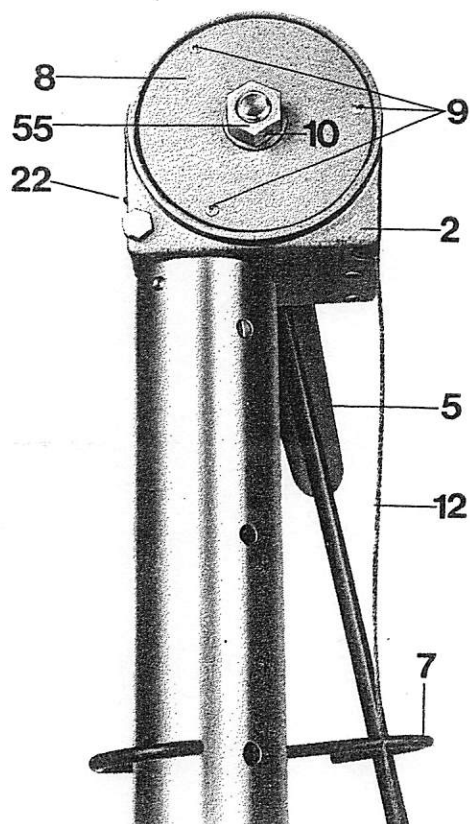
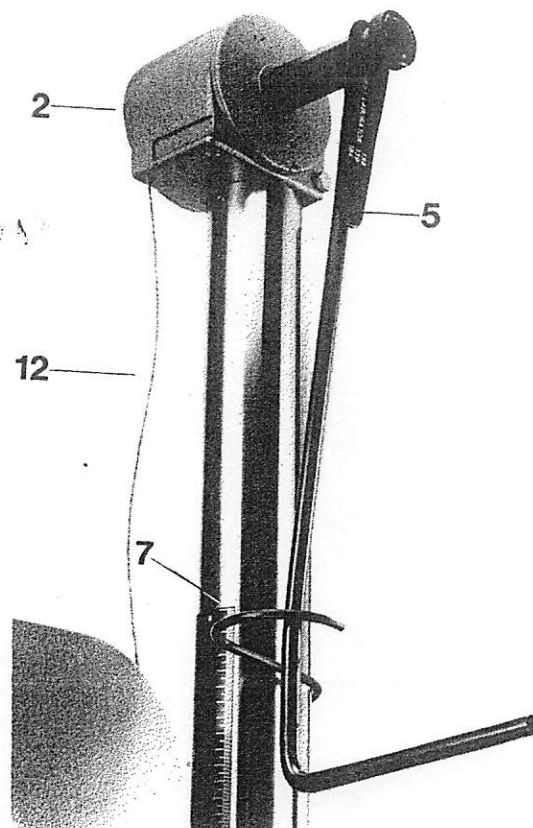
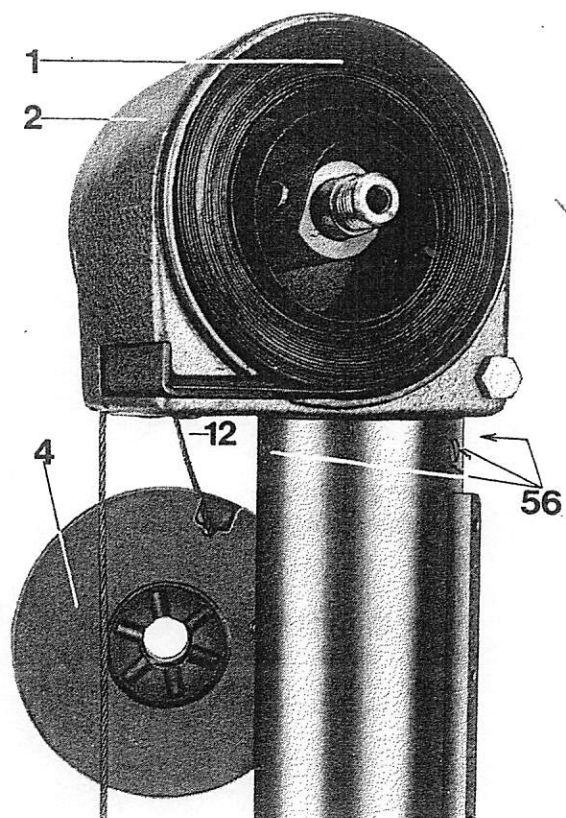
Retensioning the counterweight spring

(NOT BY CUSTOMER)

The special tool required for this purpose is supplied to order and charged by Durst.

- 1.) Move the enlarger head to the bottom of the column and lock it in position on the carriage (14) with the two knobs (3).
- 2.) The column head (2) contains the counterweight spring (1) and the steel cable drum (4). Mount the special spanner (5) for tensioning the counterweight spring (1) on the nut (6) at the right-hand side of the column head, slightly tension, and secure by engaging the hook (7).
- 3.) Unscrew the three cross-head screws (9) and remove the left-hand cover plate (8) on the column head (2). Unscrew the cross-head screw (11) securing the cable and pull back the cable (12) sufficiently to allow the cable drum (4) to run past.
- 4.) To tension the counterweight spring (1) turn the spanner (5) at the right hand side anti-clockwise as far as required and secure again with a hook (7).
- 5.) Secure the cable (12) again. Refit the left-hand cover plate (8) with the three cross-head screws (9).
- 6.) Now remove the retaining hook (7) and the tensioning spanner (5).



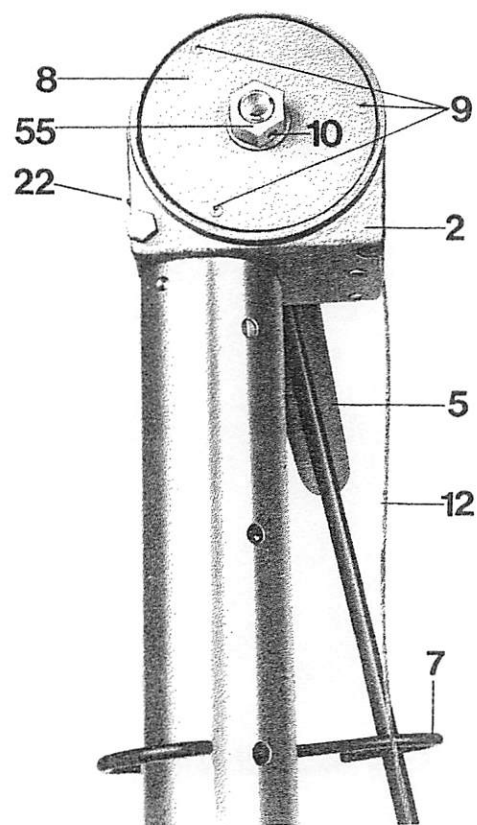
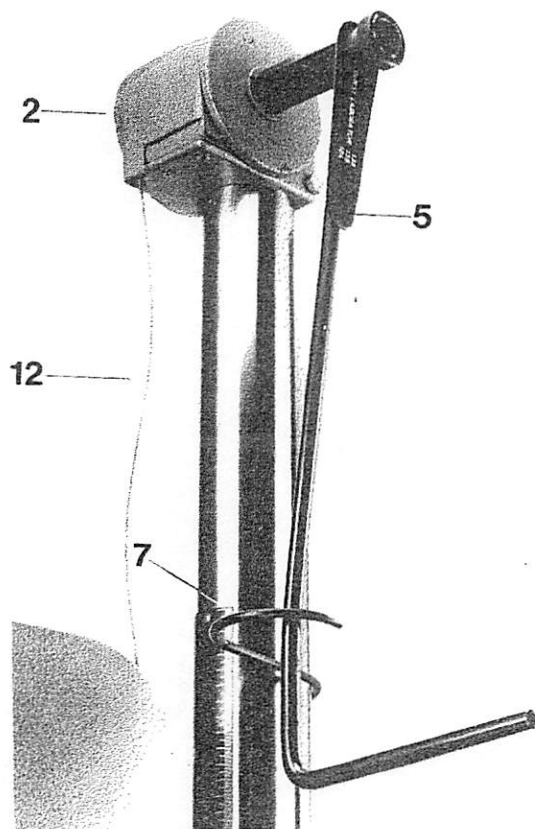
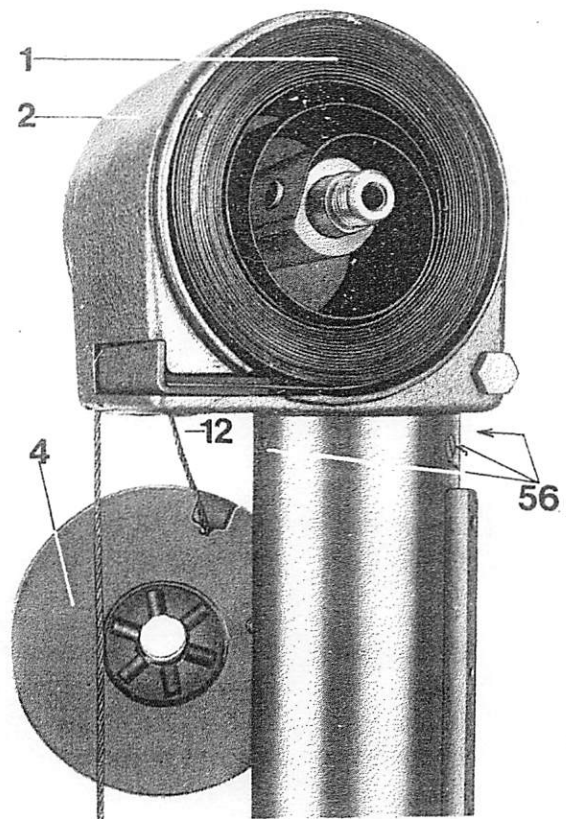
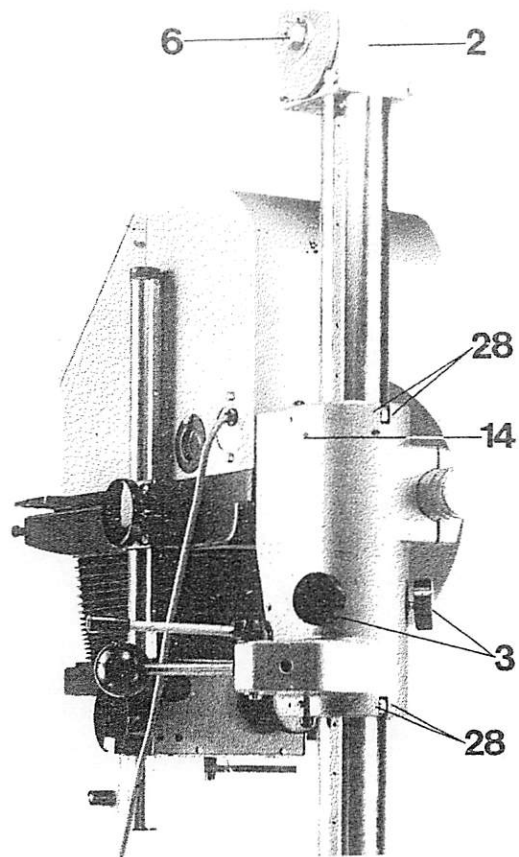


Replacing the steel cable

(NOT BY CUSTOMER)

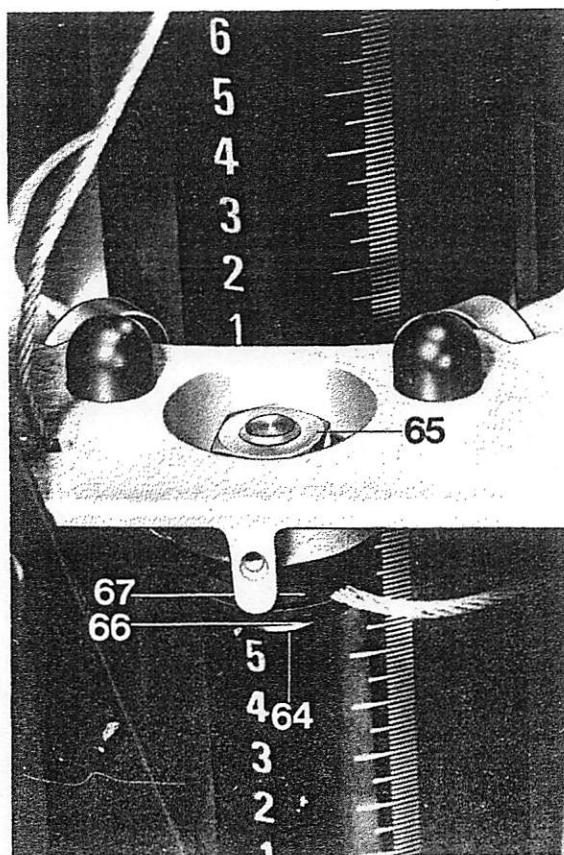
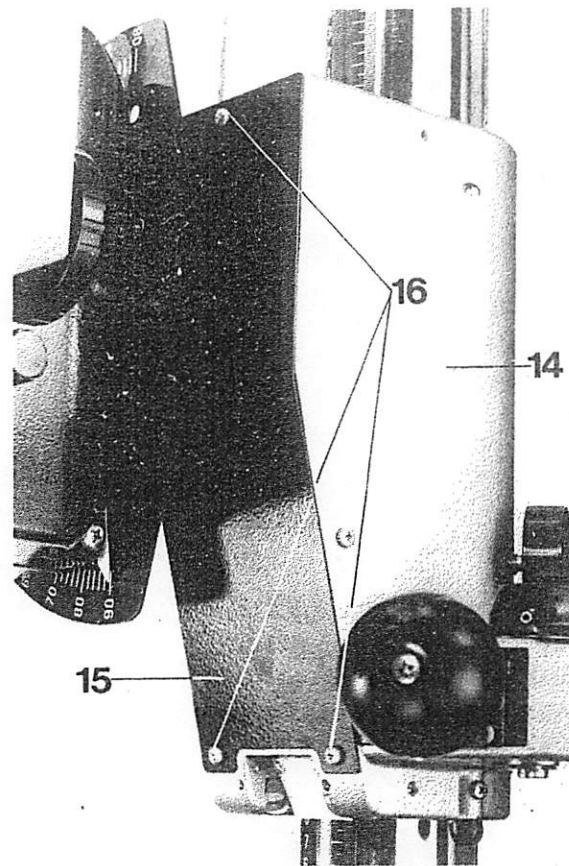
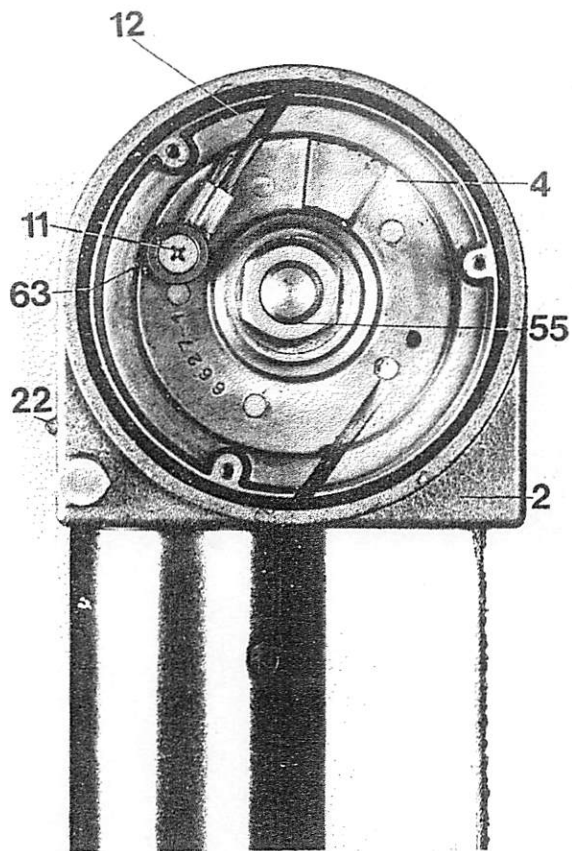
The special tool required for this purpose is supplied to order and charged by Durst.

- 1.) Move the enlarger head to the bottom of the column and lock it in position with the two knobs (3) on the carriage.
- 2.) The column head (2) contains the counterweight spring (1) and the steel cable drum (4). Mount the special spanner (5) for tensioning the counterweight spring on the nut (6) at the right-hand side of the column head, slightly tension and secure the spanner (5) by engaging the hook (7).
- 3.) Unscrew the three cross-head screws (9) and remove the left-hand cover plate (8) of



the column head (2). Unscrew the cross-head screw (11) and remove together with the retaining washer (63).

- 4.) Unscrew the cross-head screws (16) and remove the cover plate (15).
- 5.) Hold the screw (64) and unscrew the nut (65).
- 6.) Release the bottom end of the cable from the screw (64) and pull out of the carriage (14) and the column head (2) from above.
- 7.) Pull a new cable (12) first through the column head (2) and then through the carriage (14).
- 8.) Place the upper end of the cable into the slot of the cable drum (4) and secure with the cross-head screw (11) and the retaining washer (63).
- 9.) Place the washer (66) over the screw (64), fit the lower end of the cable into the slot of the screw (64), form a loop over one half of the screw and fit the second washer (67). Push the whole assembly inside the carriage (14) and secure from above with the nut (65).
- 10.) Refit the cover plate (15), fit the left-hand cover plate (8) and gently release the special spanner (5) until the cable takes up the spring tension. Then unscrew the special spanner (5) and remove.



Retensioning the friction drive

Enlargers of serial Nos. below 1363:

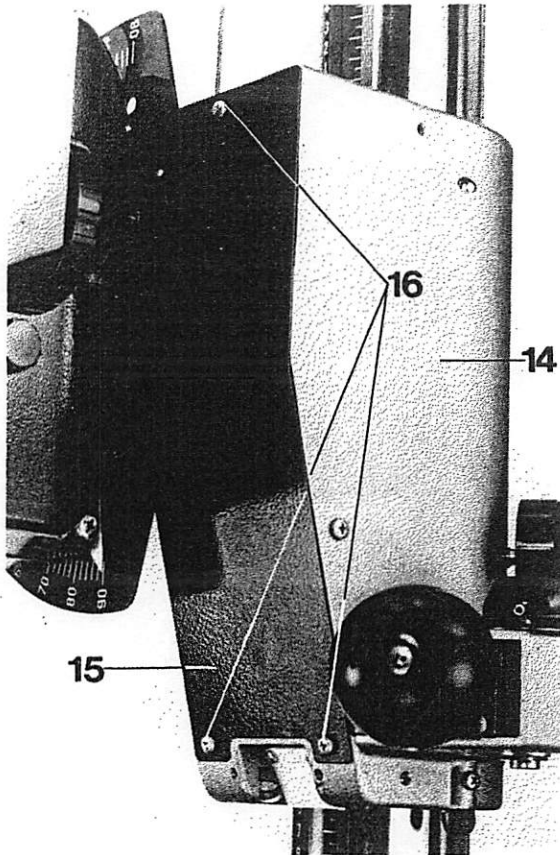
To retension the friction drive, tighten the threaded shaft (13) on the carriage (14) by turning to the right as far as required.

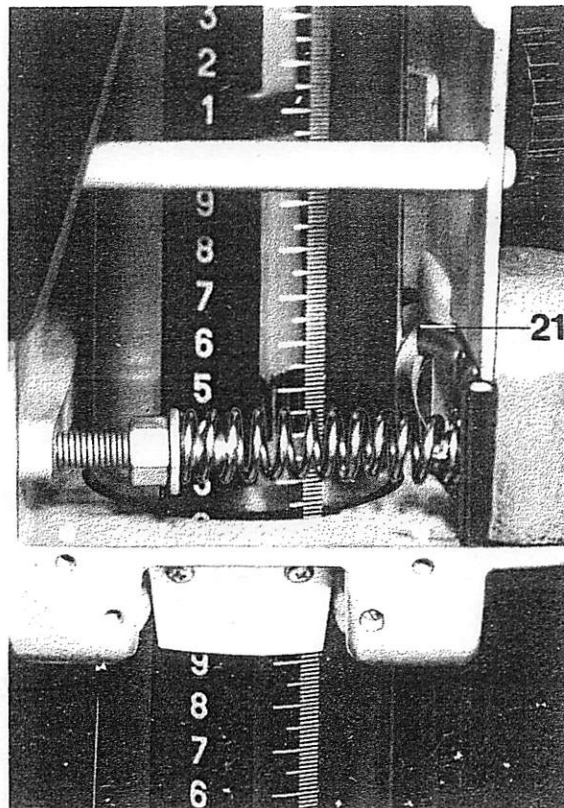
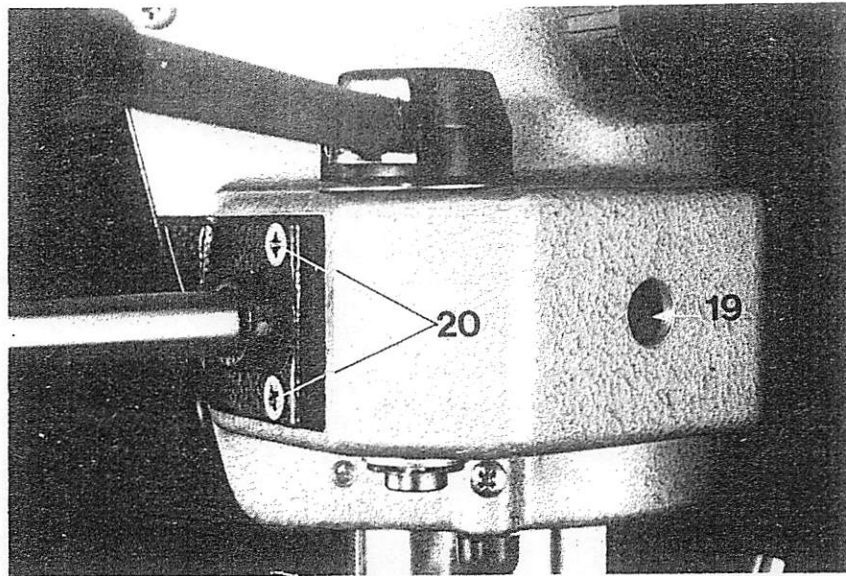
Enlargers of serial Nos. from 1363:

Unscrew the three cross-head screws (16) and remove the black cover plate (15) of the carriage (14). Tension the spiral spring (18) by turning the square nut (17) underneath this cover plate.

Enlargers of serial Nos. from 4619:

Slack off the cross-head screw (19) accessible through the opening in the side. Slightly move the enlarger head up and down on the column and at the same time adjust the two cross-head screws (50) until the friction roller (21) grips correctly. Retighten the cross-head screw (19).

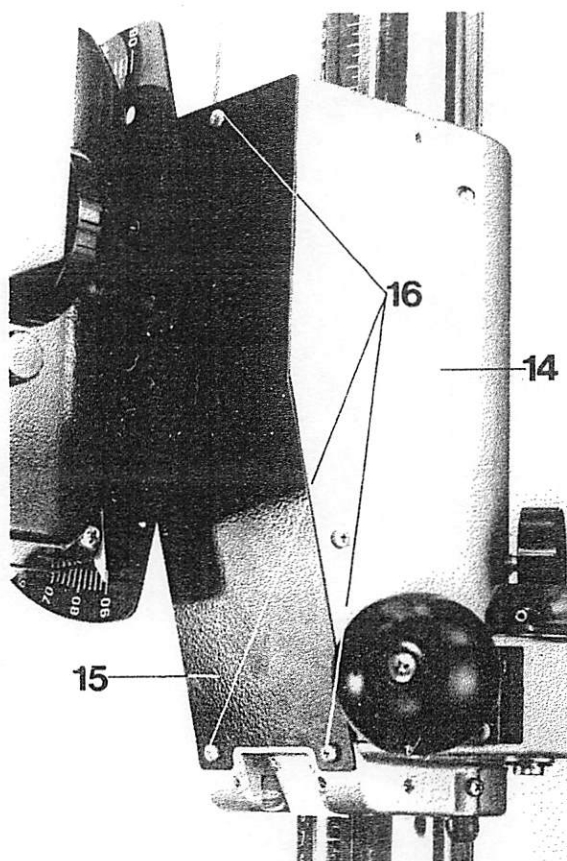
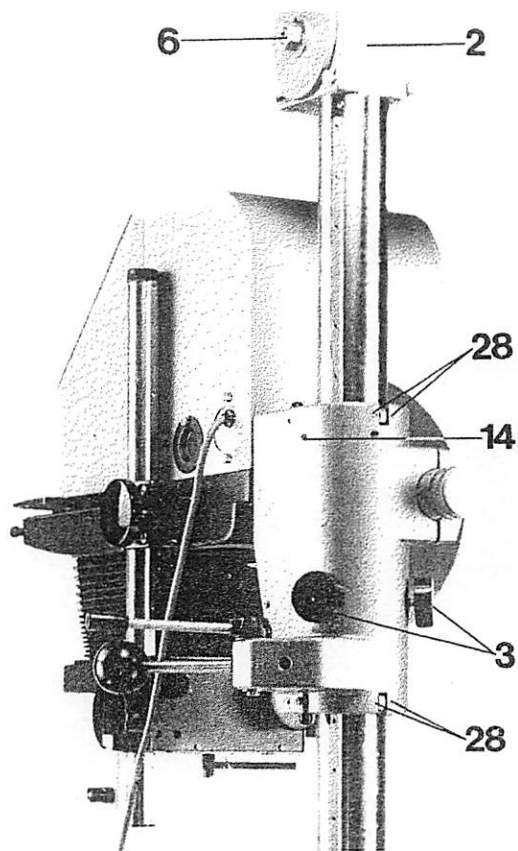
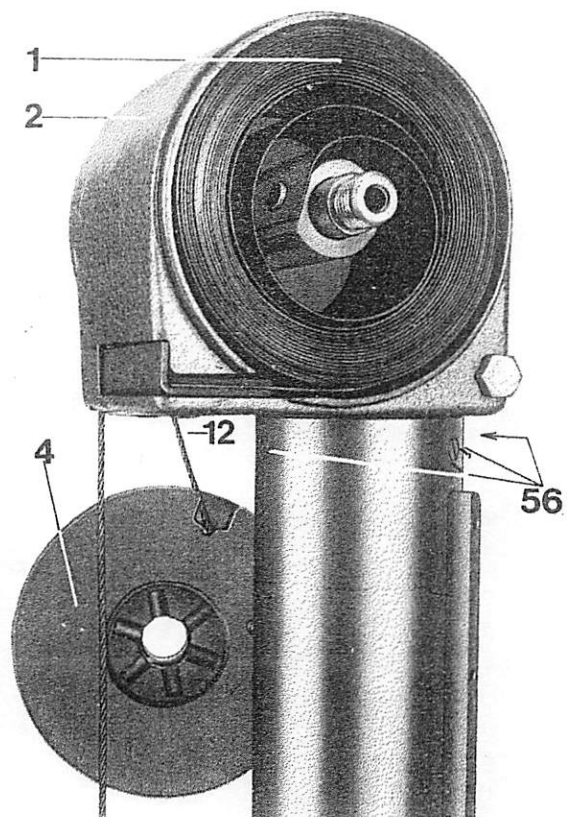
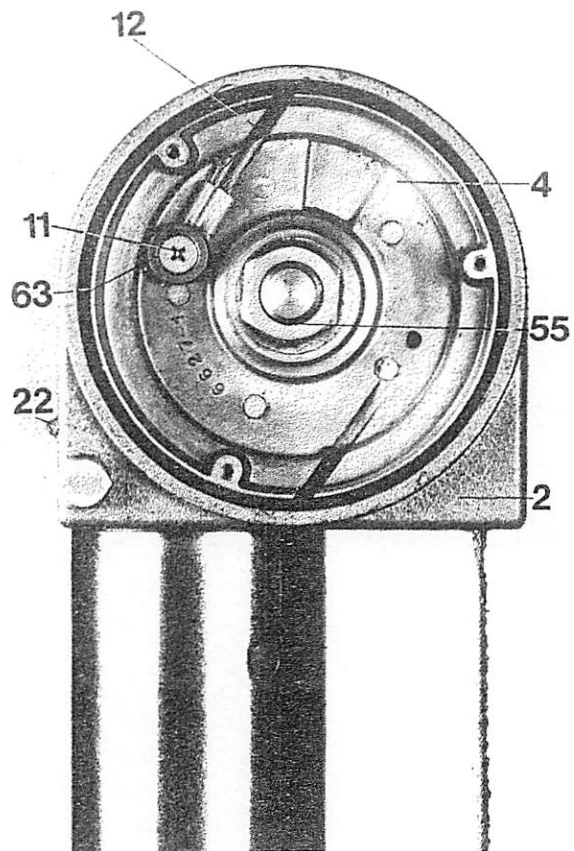




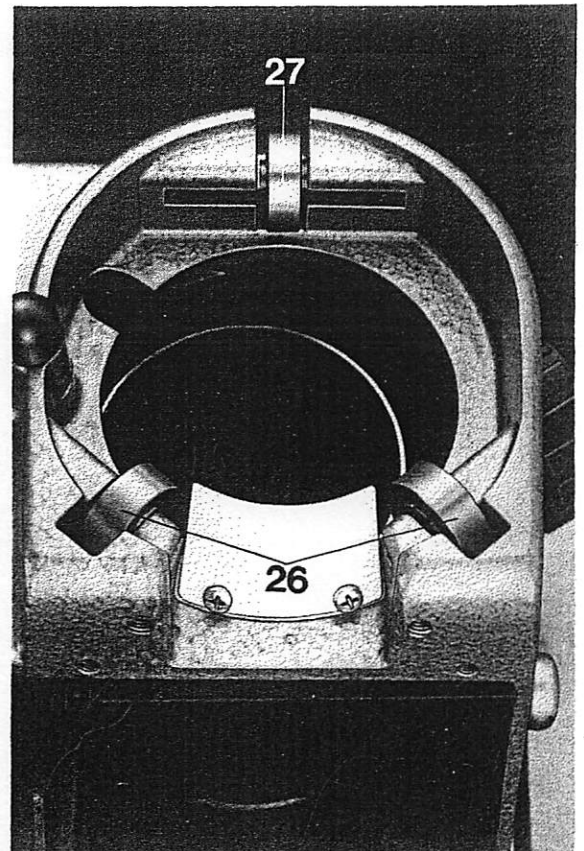
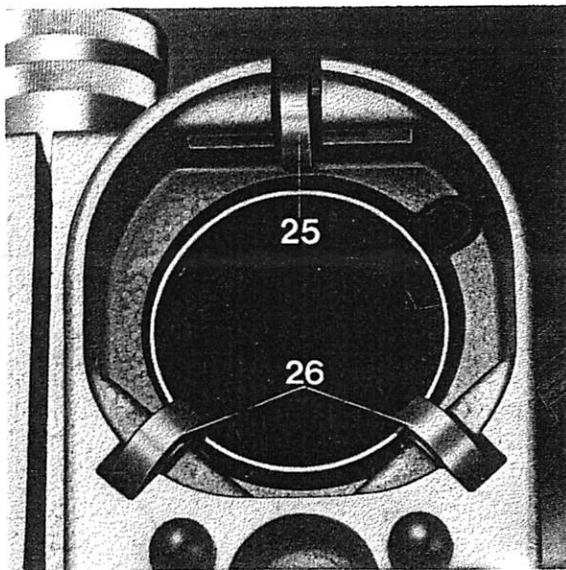
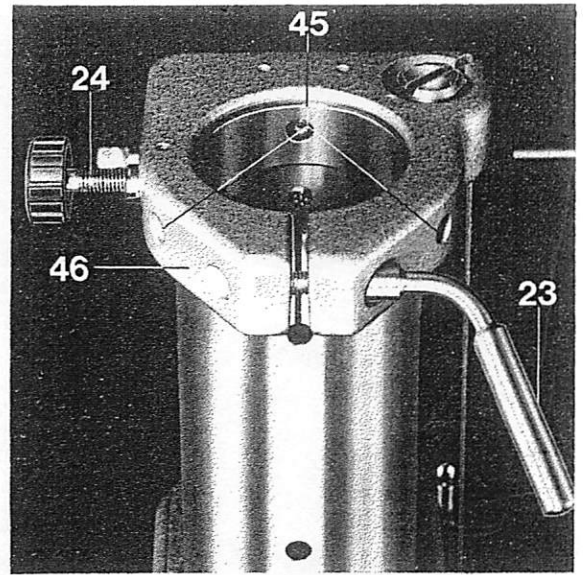
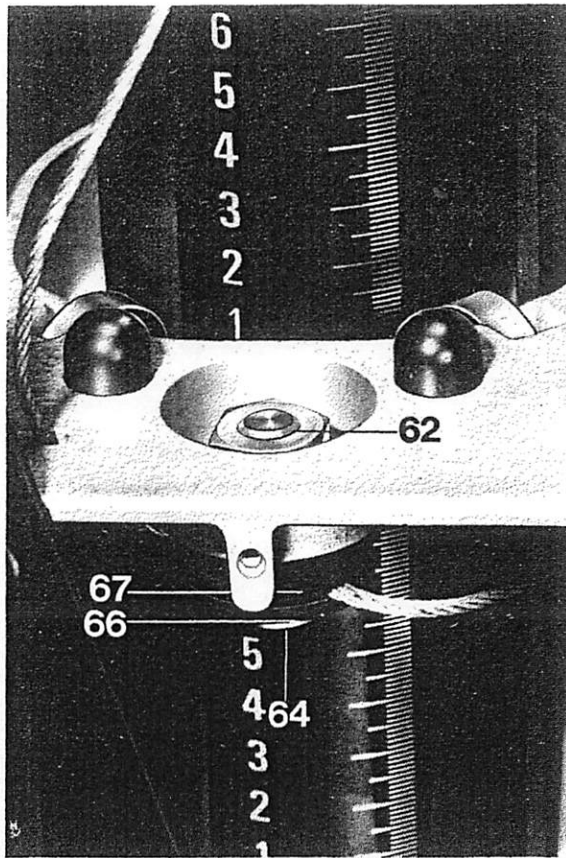
Exchange of the guide rollers in the guide sleeve of the enlarger head

Instead of the two back rollers (upper and lower one), all Laborators 138 S and G 139 as of unit number 202478 will have two ball bearings which guarantee a smoother movement of the enlarger head. These ball bearings can also be mounted as follows into units as of number 137621:

- 1.) Block the counterweight spring (1) by tightening the threaded pin (22) on the back of the counterweight-spring housing (right-hand down).
- 2.) Mark the position of the enlarger head on the column and lift somewhat the head until the steel cable (12) becomes rather slack, then block the head by tightening the two set grips (3) on the sides of the guide sleeve (14) of the enlarger head.
- 3.) Swivel the enlarger head to the left through 90° and remove the black cover plate (15) of the sleeve (14) after loosening the three crosshead screws (16).
- 4.) Loosen the hexagonal nut (62) in the round cut-out on the front top side of the sleeve (14) with a spanner (18 mm) and draw out the steel cable (12).
- 5.) After loosening clamping lever (23) and screw (24), draw the complete upper part of the enlarger out of the lower column, place it on a table, and now, after loosening the three screws (56), draw the counterweight-spring housing out of the column.
- 6.) Loosen the two set grips (3) on the sleeve (14) of the enlarger head and pull out the enlarger head upwards until the upper back roller (25) can be removed easily and exchanged for ball bearings with pressed-in shaft. Take care that both rollers (26) and ball bearing (25) do not fall out of their mounting support. Then reinsert the enlarger head.
- 7.) Pull out the enlarger head just as far downwards and exchange here back roller (27) (like described under 6) for ball bearings. Then reinsert the enlarger head.
- 8.) Block again the enlarger head by tightening the two set grips (3) at the above designed position. Reinsert the enlarger head with column into the lower column and fix it by means of clamping lever (23) and screw (24). Mount counterweight-spring housing (2), reinsert steel cable (12) into the sleeve (14) of the enlarger head and fix it. Remount black cover plate (15).



- 9.) First loosen **cautiously** the two set grips (3) of sleeve (14) (holding the enlarger head fast by hand) and then loosen threaded pin (22) on the back of the counterweight-spring housing. Move the enlarger head up and down, taking care that all roller respect. ball bearings do rotate. If during moving it up and down the head should jam, or if one or more rollers don't rotate, the two ball bearings (25) and 27) should be adjusted by means of the two threaded pins (28) on the back of the sleeve (14), i. e. that they have to be tightened or loosened.

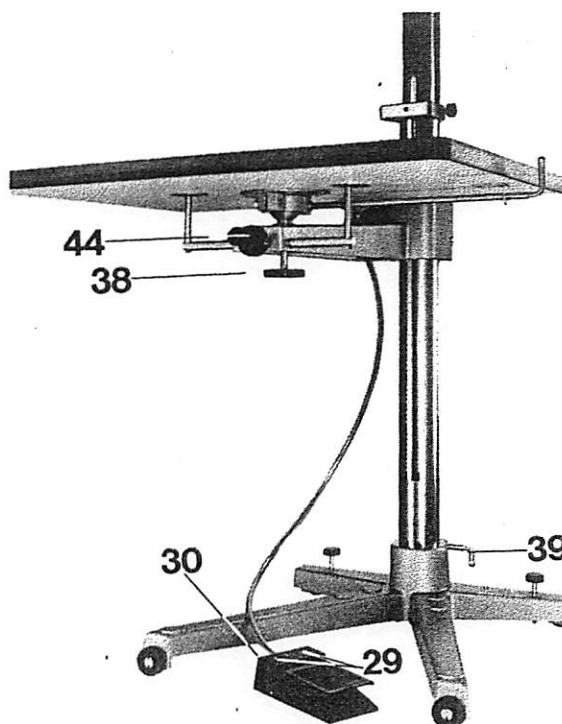


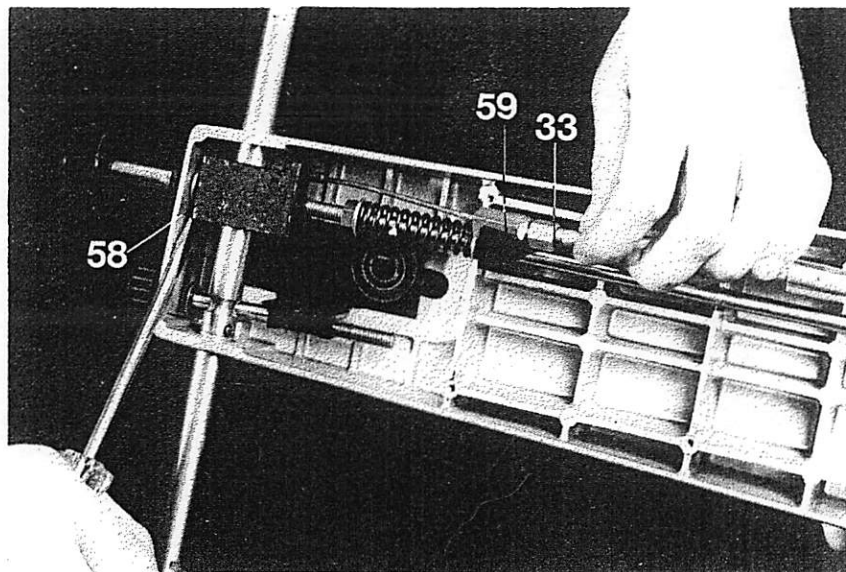
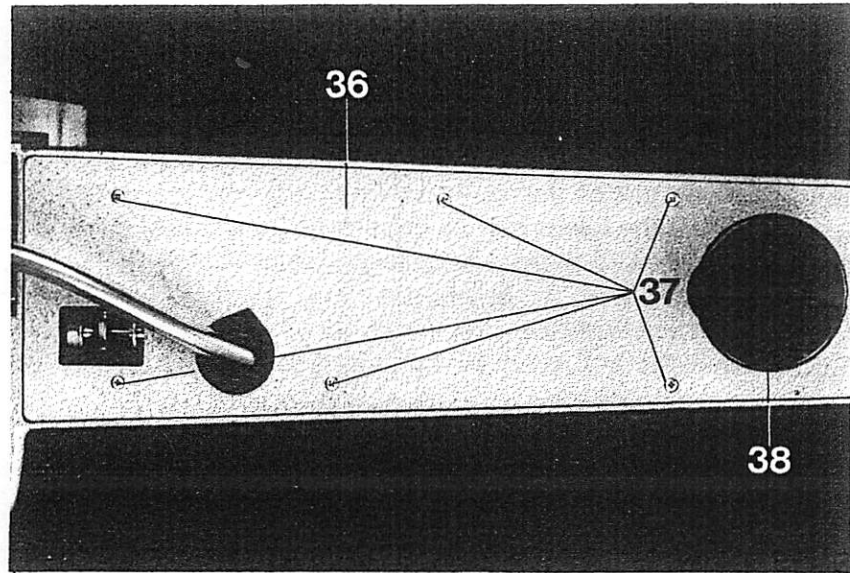
Retensioning the Bowden cable of the baseboard servo-adjustment

- 1.) Unscrew the two cross-head screws (29) and remove the rear cover panel (30) of the foot pedal.
- 2.) Tension the Bowden cable by turning the hexagonal nipple (31) anti-clockwise while holding the hexagonal nut (32) behind it.
- 3.) Replace the cover plate (30) and fix with the two cross-head screws (29).

If the adjustment at the foot pedal is insufficient to retension the cable, a further nipple is provided for adjustment in the carrying arm for the baseboard:

- 1.) Unscrew and remove the baseboard. Pull off the circlip (34) and the washer (35) of the baseboard locking knob at the top of the carrying arm and pull out the knob (38) itself from underneath.
- 2.) Unscrew the six cross-head screws (37) and remove the panel (36) in the underside of the carrying arm.
- 3.) The end of the cable carries a further hexagonal nipple (33) for tensioning the Bowden cable in the same way as at the pedal end.
- 4.) The hexagonal nipple (33) must be withdrawn from the carrying arm in order to

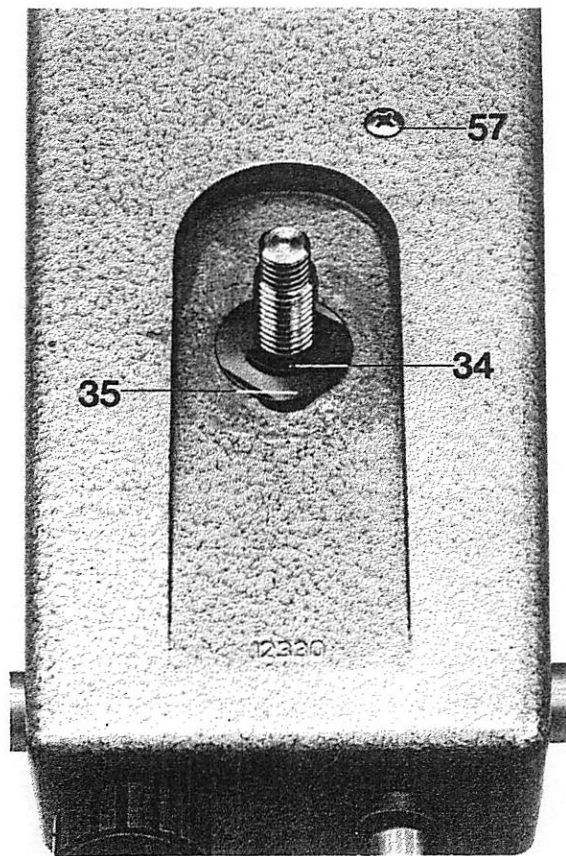
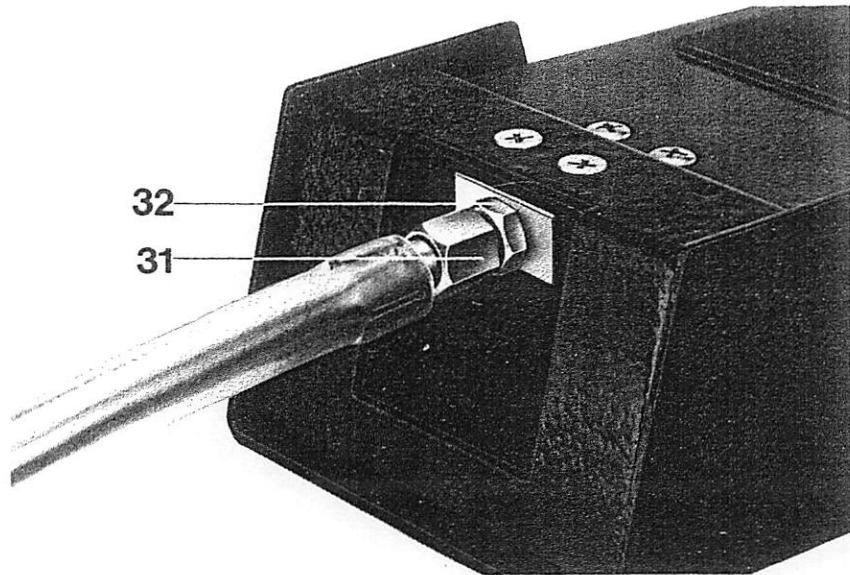




Retensioning the counterweight spring of the baseboard servo adjustment

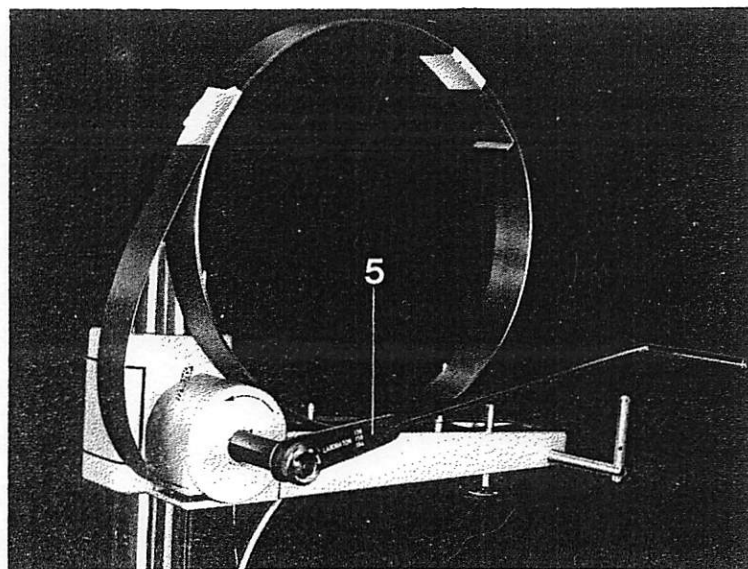
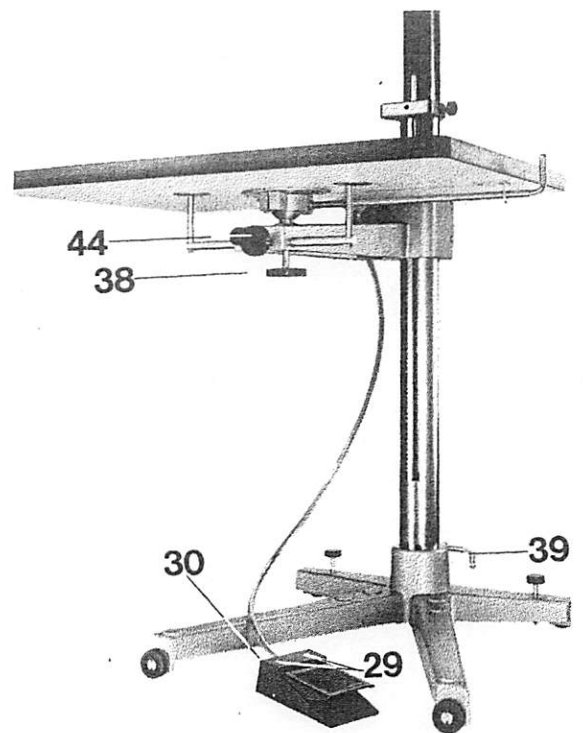
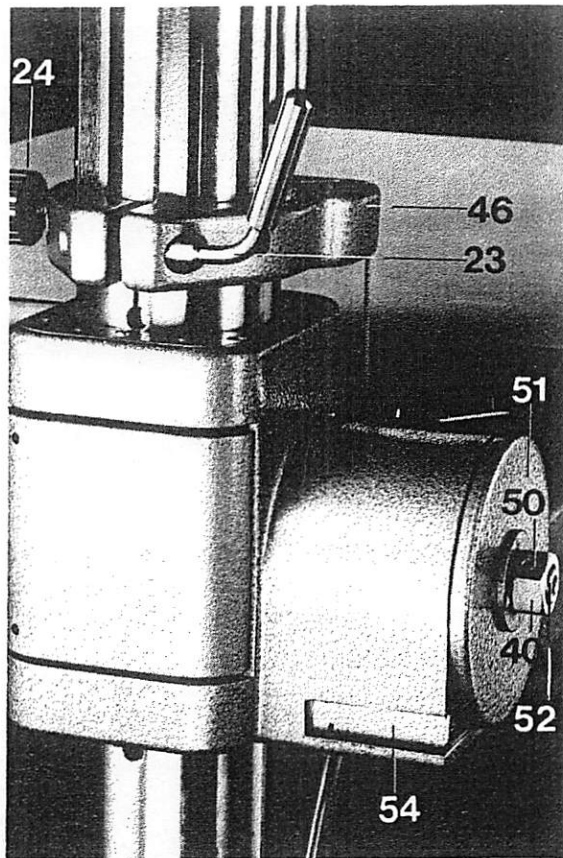
The special tool required for this purpose is supplied to order and charged by Durst.

- 1.) Release the clamping lever (23) and the milled knob (24) and lift the enlarger head with the top column out of the lower column. Unscrew the knob (38) and remove the baseboard. Place the lower half of the stand (base, lower column and baseboard carrying arm) on the work bench. Release the clamping lever (39) of the base and turn the lower column with the baseboard carrying arm clockwise through 90°. Lock it in this position with the clamping lever (39). Move the carrying arm to its bottom position and lock it there by tightening the clamping knob (44).
- 2.) Mount the special spanner (5) for tensioning the counterweight spring on the hexagonal nut (40). Tighten the spanner (5) to allow the three grub screws (41) of



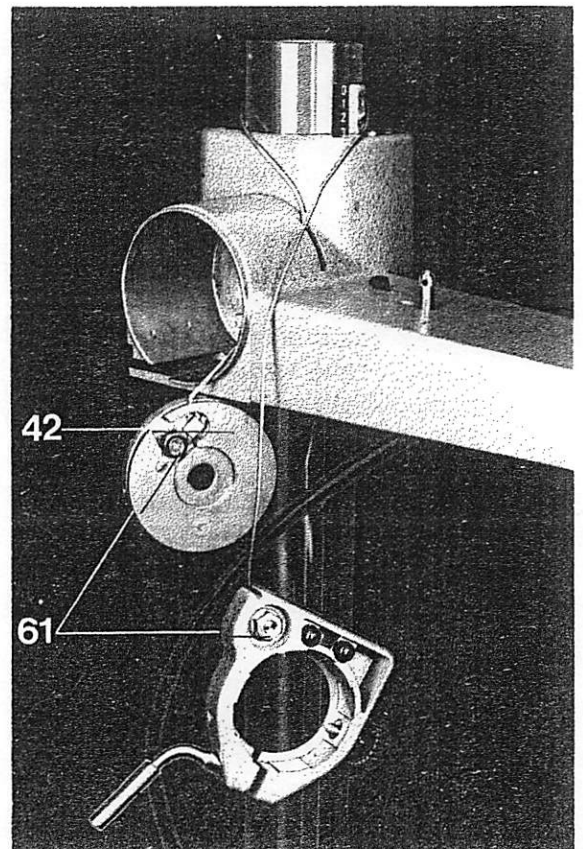
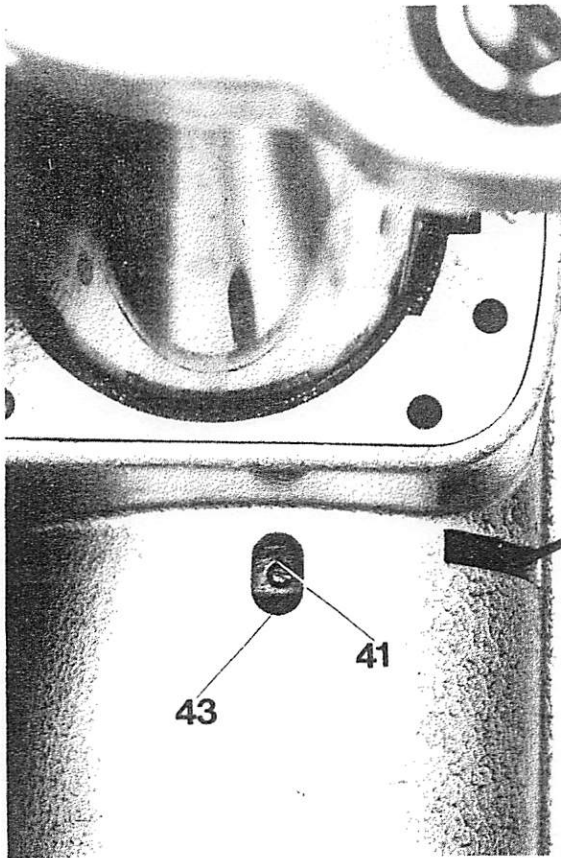
get at it with a spanner. To do this, unscrew the screw (57), clamp the cable with a screwdriver at the point (58) to release its tension and pull out the nipple (33) with its fitting (59).

- 5.) Now reassemble all parts as described under 1. and 2. in the reverse sequence.



the steel cable drum (42) to be slacked off in turn. These screws are accessible through the oblong opening (43) in the top of the counterweight spring housing. These grub screws (41) secure the cable drum (42) on the shaft of the counterweight spring.

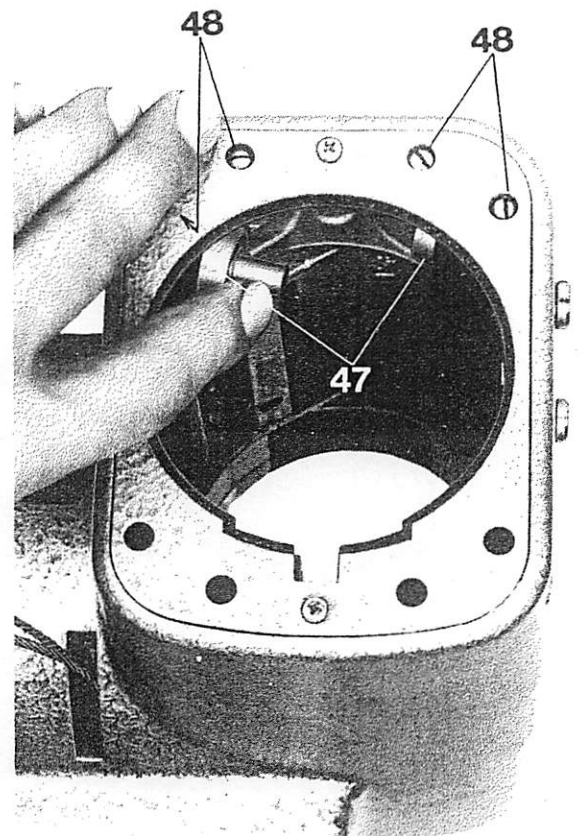
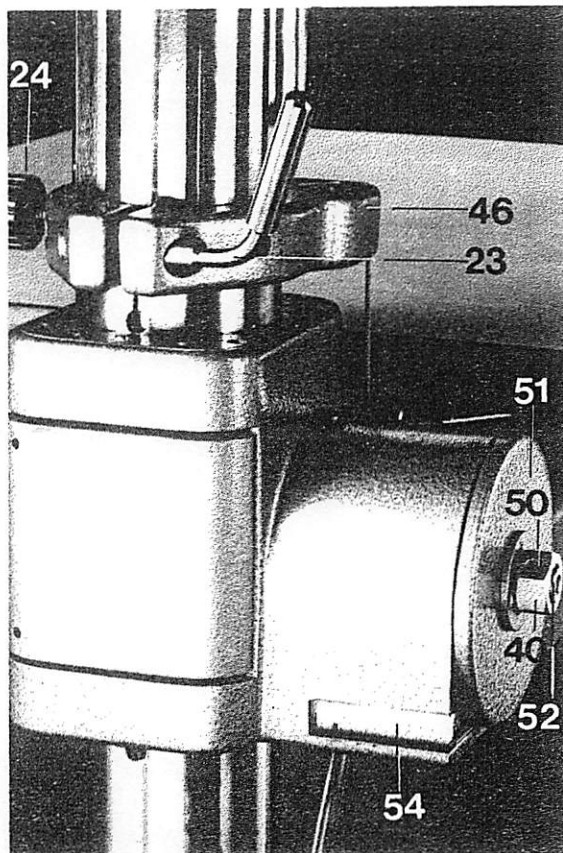
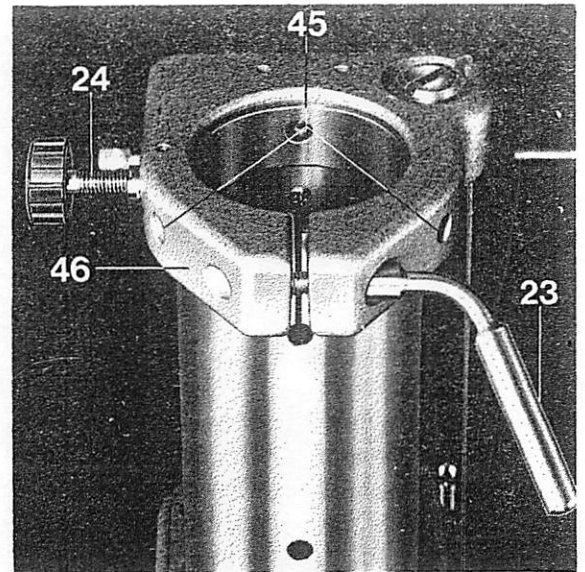
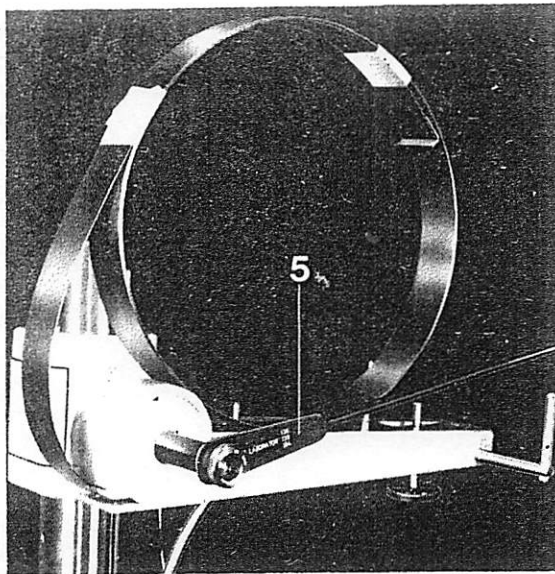
- 3.) To tension the counterweight spring, turn the spanner (5) anti-clockwise as far as required.
- 4.) To screw the grub screws (41) of the steel cable drum (42) into their grooves, turn the tensioning spanner (5) — in either direction as required — while screwing in the first grub screw, until this engages in the groove. On turning the tensioning spanner (5) the two other grub screws are then easily screwed in.
- 5.) Remove the tensioning spanner (5) and release the clamping knob (44) to free the movement of the carrying arm.



Replacing the rollers in the baseboard carrying arm

The special tool required for this purpose is supplied to order and charged by Durst.

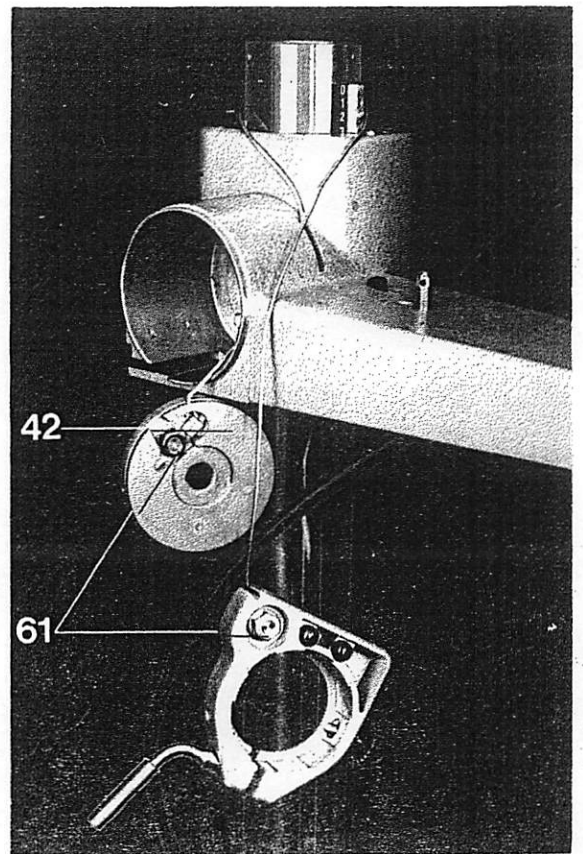
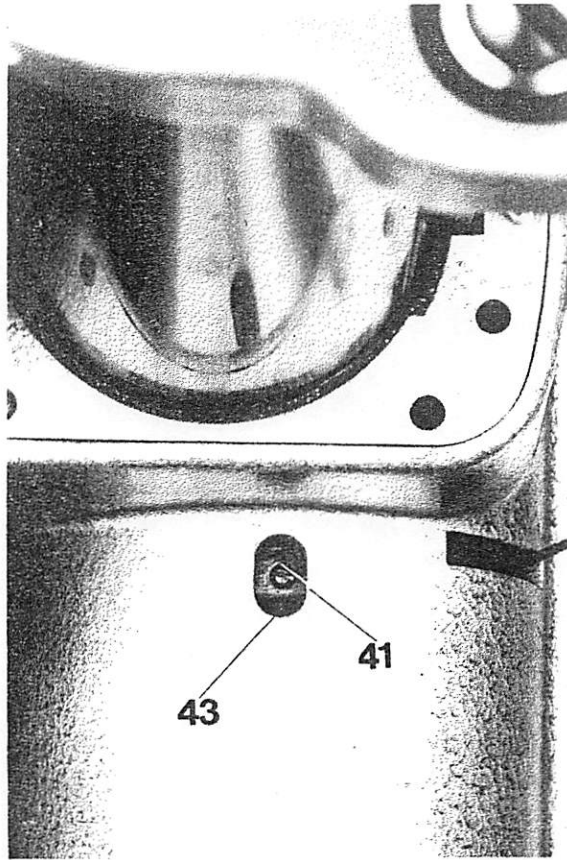
- 1.) Slack off the clamping lever (23) and the shaft (24) on the clamping sleeve, and remove the upper column with the enlarger head. Unscrew the baseboard and lock its carrying arm in position with the clamping knob.
- 2.) Unscrew the three cross-head screws (45) of the clamping sleeve (46).
- 3.) Mount the special spanner (5) on the hexagonal nut (40) and turn anti-clockwise until the steel cable is slack and the clamping sleeve (46) can be pulled out from above. Carefully release the special spanner (5) so that the steel cable gets taut again and the clamping sleeve (46) contacts the counterweight spring housing.
- 4.) Release the locking knob of the carrying arm, press the foot pedal, and lift the arm off the column from above.
- 5.) Now replace the rollers (47) by new ones, or better still by a ball-bearing with pushed-in shaft.
- 6.) Press the foot pedal and refit the complete carrying arm on the column. Make sure that the rollers or ball-bearings do not drop out of their supports. Release the pedal and lock the arm by its clamping knob.
- 7.) Again turn the special spanner (5) anti-clockwise until the steel cable is slack and the clamping sleeve (46) can be inserted in the column. Fix the clamping sleeve to the column by tightening the three cross-head screws (45) and **carefully** slack off the special spanner (5) to allow the steel cable to retension itself. Remove the spanner (5) and unlock the clamping knob of the carrying arm.
- 8.) Mount the baseboard on the carrying arm, press the foot pedal and move the arm up and down on the column. Check that all rollers or ball-bearings are turning evenly. If the arm should jam during its up or down movement, or if one or more of the rollers or ball-bearings fail to turn, adjust the latter. To do this tighten or slack off the pairs of screw shafts (48) at the top rear and bottom front.
- 9.) Refit the upper column with the enlarger head and secure with the screw shaft (24) and locking lever (23).



Changing the counterweight spring of the baseboard servo-adjustment

The special tool required for this purpose is supplied to order and charged by Durst.

- 1.) Remove the upper column with the enlarger head and also the baseboard.
- 2.) Lock the carrying arm in position with its locking knob. Mount the special spanner (5) for tensioning the counterweight spring on the hexagonal nut (40). Turn the spanner anticlockwise to allow the three grub screws (41) of the steel cable drum (42) to be slacked off in turn. These grub screws are accessible through the oblong opening (43) in the top of the counterweight spring housing. Now **carefully** release the spanner (5) until the spring is fully relaxed. Then remove the spanner (5).
- 3.) Unscrew the three cross-head screws (45) and pull the clamping sleeve out of the

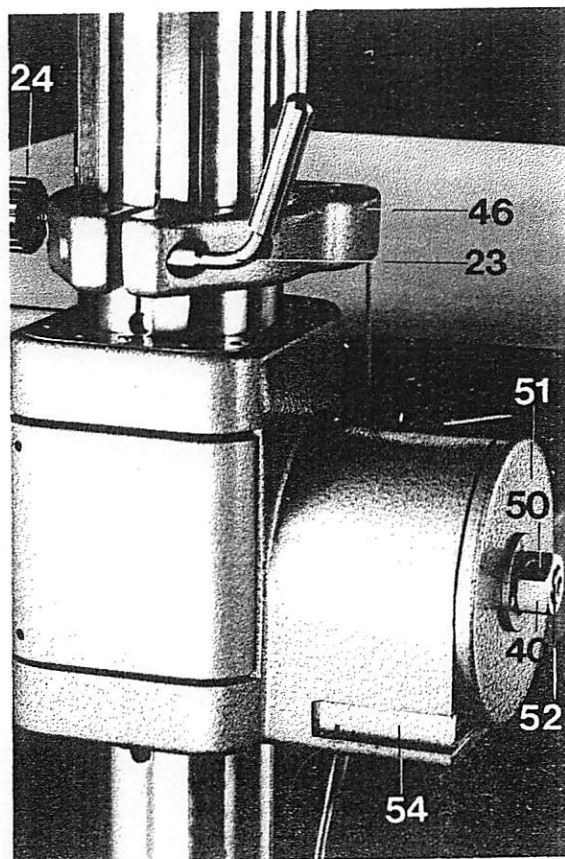
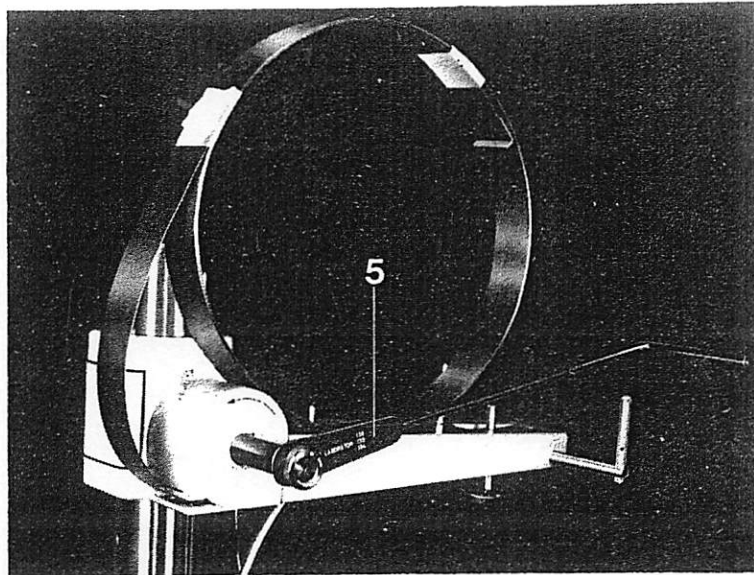


- 7.) Clean the entire spring housing and regrease. Remove the old spring from the core and the shaft (52) by unscrewing the two screws (60). Mount the new spring in the same way on the spring core and shaft (52). Do **not** screw the screws (60) tight; the spring must be able to move on the core. Lock the spring about 4 inches or 10 cm from the spring core in a vice. Mount the nut (40) and locking pin (50) on the shaft (52) and screw the special spanner (5) onto the nut (40). Turn the spanner (5) onto the nut (40). Turn the spanner (5) anti-clockwise to bend the spring and to allow it to be introduced into the housing.

Push the spring with the core into the housing. Remove the carrying arm from the column to allow the shaft (52) to be fixed inside the arm with the securing cap (49).

- 8.) Press the foot pedal and fit the carrying arm in the column. Mount the clamping sleeve on the upper end of the column and secure with the three cross-head screws (45).
- 9.) Remove the nut (40) and locking pin (50), refit the cover plate (51) on the side of the spring housing, screw on the hexagonal nut (40) again and secure with the locking pin (50). Mount the special spanner (5) on the nut and slowly turn anti-clockwise until the spring is fully folded up and tensioned. Thoroughly oil the spring during this operation. Hold the spanner (5) in this position and secure the angle bracket (54) at the end of the spring underneath the spring housing with the two cross-head screws (53). Turn the spanner clockwise until the spring is fully slack.
- 10.) Now tension the spring as required by turning the special spanner (5) anti-clockwise through four to six turns. Move the carrying arm of the baseboard to its lowest position, and mount the steel cable drum (42) on the spring core with the three grub screws (41) which are accessible through the oblong opening in the top of the spring housing. To do this, turn the tensioning spanner (5) in either direction while screwing in the first grub screw until this can be fully screwed in.

On turning the tensioning spanner (5) in either direction the other two grub screws are then easily screwed in. Slowly release the spanner (5) until the steel cable is tensioned, then remove.



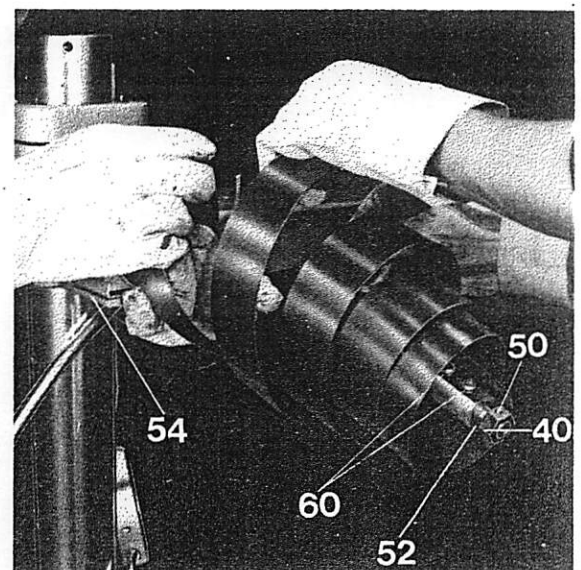
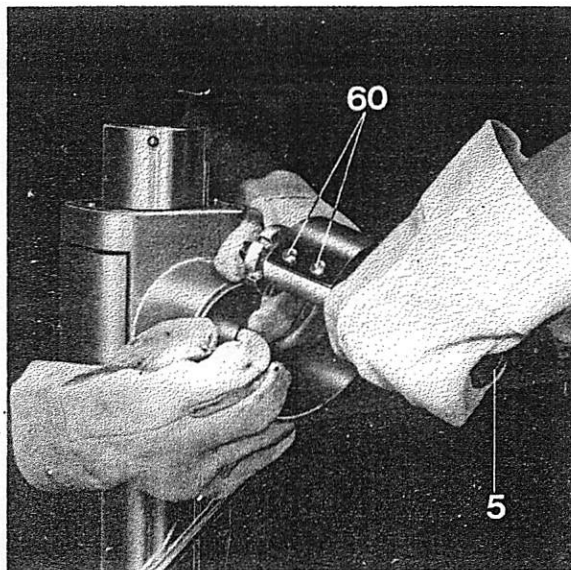
upper end of the column. Slack off the locking knob (44) of the carrying arm, press the foot pedal, and lift the arm off the column from above. Remove the securing cap (49) of the counterweight spring shaft inside the arm.

- 4.) Refit the carrying arm on the column. Tap out the locking pin (50) of the hexagonal nut (40) with a punch and unscrew the nut (40) with a 24 mm spanner. Remove the cover plate (51) of the spring housing.

Important: From this point on all steps require two people. For safety both should wear thick leather gloves or wind thick rags round their hands for protection.

- 5.) Refit the hexagonal nut (40) and the locking pin (50) on the shaft (52) and screw on the special spanner (5).
- 6.) With extreme care first pull out the inner part of the broken spring with the aid of the special spanner (5). The important part of this operation is to have one person carefully turning the special spanner, while the second one holds back the turns of the spring so that only one turn is released at a time. After removing the first two turns, unscrew the special spanner (5) and pull out the remaining turns up to the point of fracture. During this operation hold the turns remaining rolled up in the housing alternately from above and below to prevent the spring from springing out. (See Figs. a and b.)

Once the inner part of the broken spring is removed, grip the second part of the spring with a pair of heavy-duty pliers and pull them out turn by turn as described above. To remove the second part completely, unscrew the two cross-head screws (53) in the bottom of the spring housing.



Replacing the steel cable of the baseboard servo-adjustment

The special tool required for this purpose is supplied to order and charged by Durst.

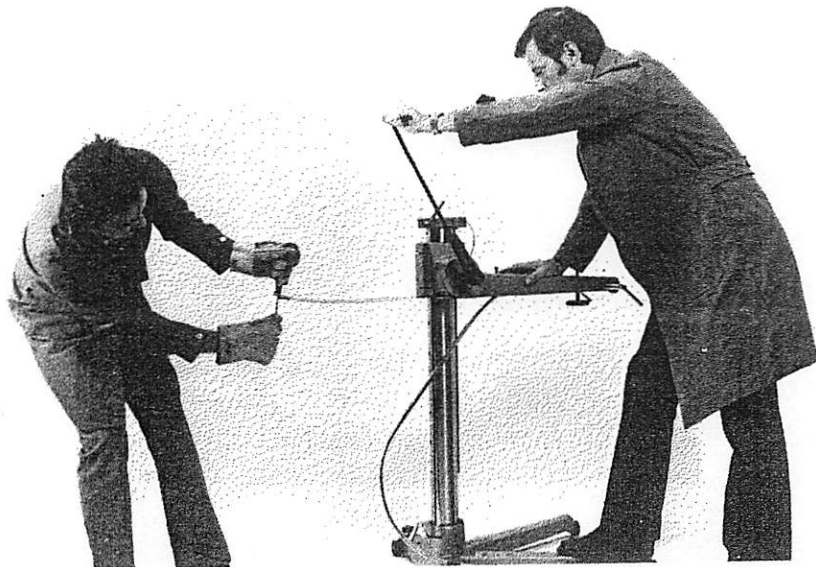
- 1.) Remove the upper column of the enlarger head and also the baseboard.
- 2.) Relax the spring as described in the servicing instruction sheet 138 S - 9, step 2.
- 3.) Remove the spring from the housing.

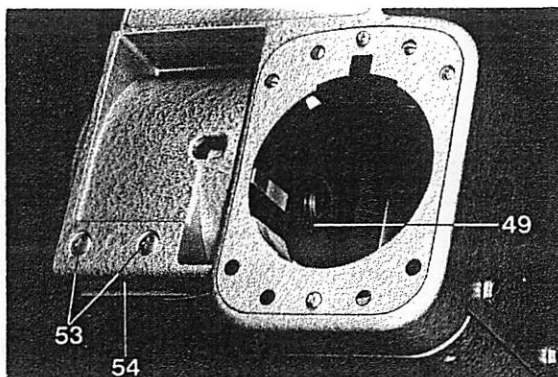
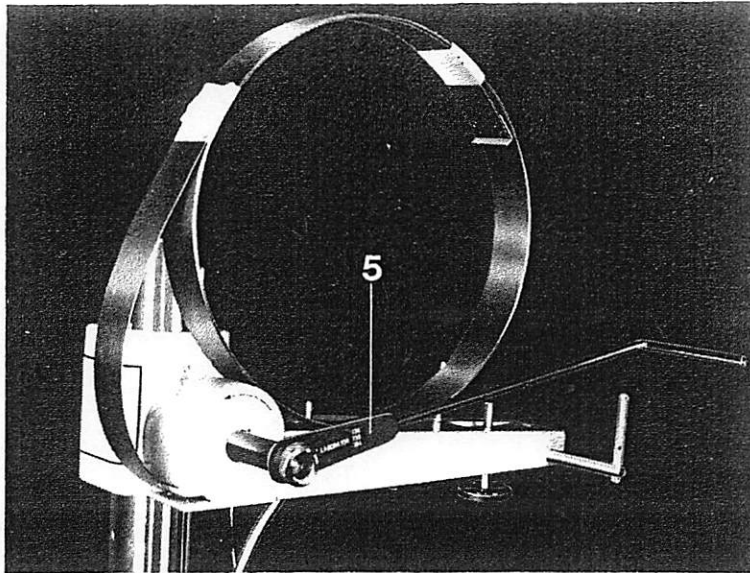
Remove an **intact** spring as follows:

Unscrew the two cross-head screws (53), push a heavy-duty screwdriver between the housing and the angle bracket (54) and lever this out as far as possible. Push the screwdriver into one of the holes of the angle bracket (54) and screw the special spanner (5) onto the nut (4).

Important: From this point on the operation needs two people. For safety both should wear thick leather gloves or wind thick rags round their hands for protection.

- 4.) One operator grips the angle bracket (54) and the screwdriver while the other turns the special spanner (5) anti-clockwise until the spring is easily pulled out by the first person. Continue pulling on the spring and gradually slack off the spring by turning the spanner clockwise, always maintaining sufficient tension for easy





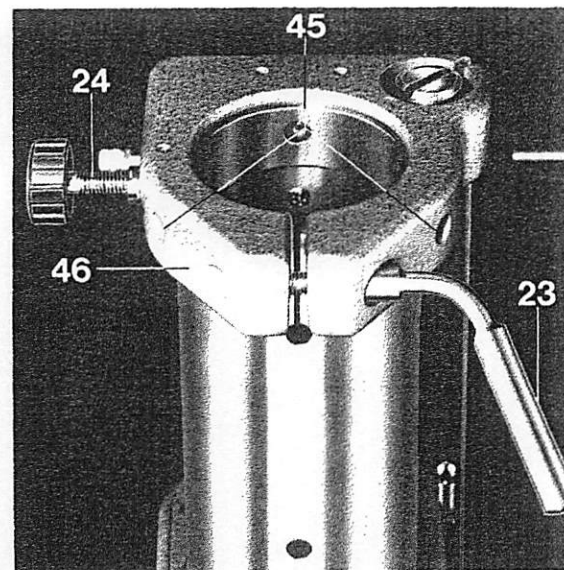
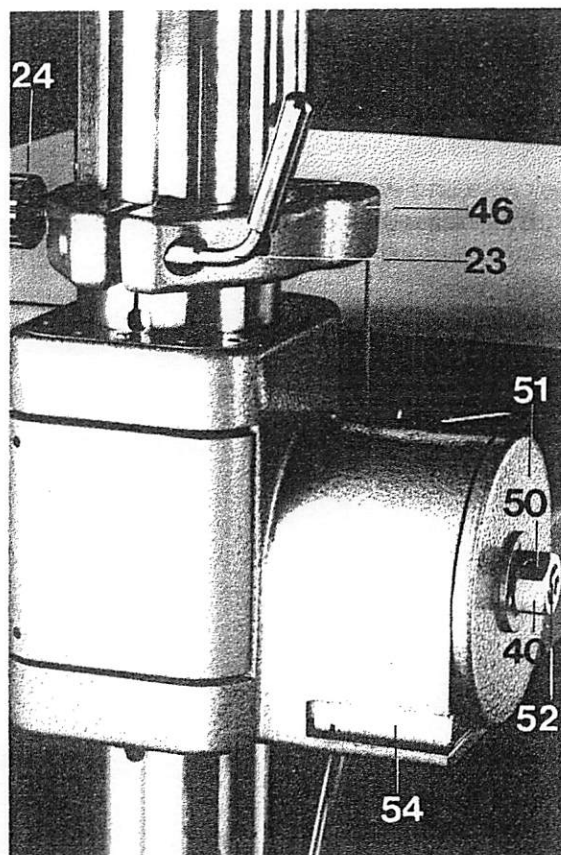
withdrawal of the spring. While the spring is being pulled, hold down the base of the enlarger with one hand and one foot. Once the spring is fully pulled out to its stop, roll it up carefully and tie it together, placing it on the baseboard carrying arm.

Note: Never let go of the spring during rolling up and keep the spring itself always taut. (See Figs. c and d.)

- 5.) Remove the special spanner (5), tap out the locking pin (50) and unscrew the nut (40). If the nut (40) is hard to unscrew, use a counter screw and nut which are screwed into the main shaft (52).
- 6.) Remove the cover plate (51), unscrew the three cross-head screws (45) and pull the clamping sleeve off the upper end of the column.

Release the locking knob of the carrying arm, press the foot pedal, and lift the arm off the column from above. Remove the securing cap (49) of the counterweight spring shaft inside the arm.

Press the pedal again and place the carrying arm on the column. Lock with its knob



- 7.) Pull the last part of the spring with the core and shaft (52) out of the housing and tie securely. Until it is secured, do not let go of this end of the spring, either.

Pull the cable drum (42) out of the housing and release both ends (61) of the cable. Replace the old cable by a new one and push the cable drum (42) back into the housing.

Push the end part of the spring with the core and shaft (52) into the housing, checking that the shaft is correctly seated in the cable drum (42) and the bearing.

- 8.) Pull the carrying arm off the column as described before, and mount the securing cap (49) on the spring shaft (52) inside the arm. Replace the arm on the column and lock.

Refit the clamping sleeve on the upper end of the column and secure with the three cross-head screws (45).

Remount the cover plate (51) on the spring housing, screw in the nut (40) and tap in the locking pin (50).

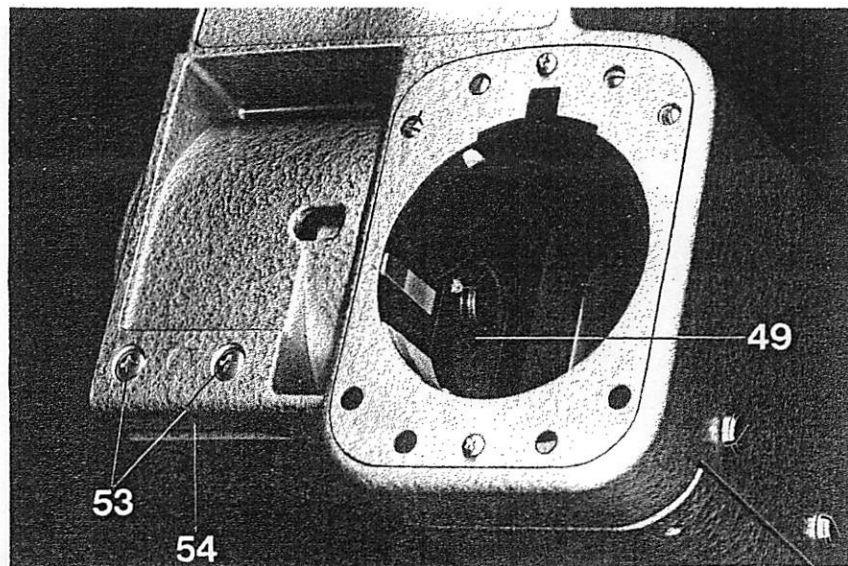
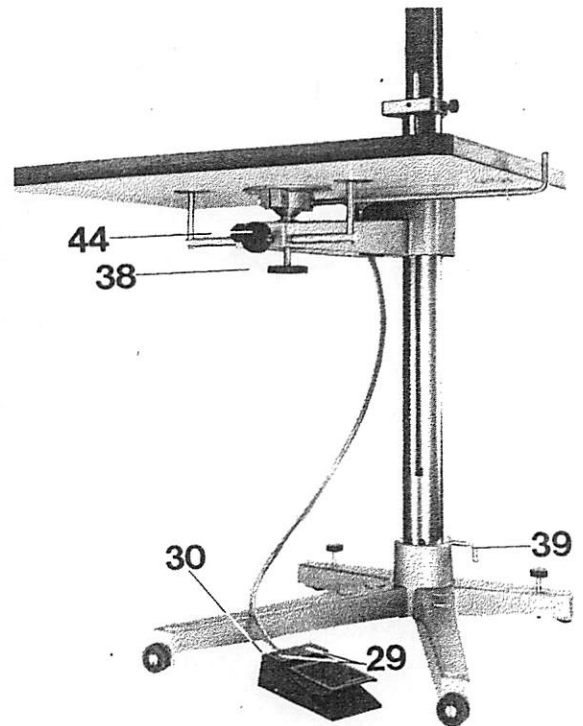
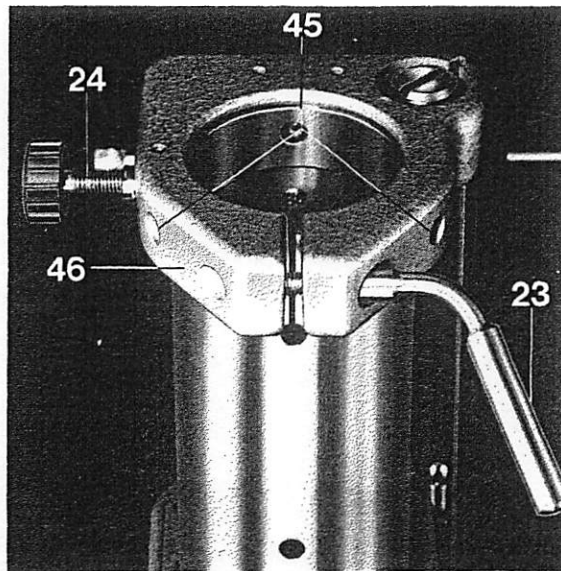
- 9.) Mount the tensioning spanner (5), fully unroll the spring and push a heavy-duty screwdriver through one of the holes of the angle bracket (54) for an easier grip. Thoroughly oil the spring.

- 10.) Turn the tensioning spanner (5) anti-clockwise and wind the spring back into the housing. While one operator winds the spring, the other one holds the spring taut at the other end for easier winding up.

Secure the angle bracket (54) with the two cross-head screws (53).

- 11.) The remaining steps of reassembly are identical with those of servicing instruction sheet L 138 S - 9, steps 10, 11 and 12.

- 11.) Mount the baseboard and move its carrying arm up and down the column to test the spring tension. If this is inadequate to raise the baseboard or, alternatively, if the latter shoots up too fast, readjust the tension as described in the servicing instruction sheet L 138 S - 7.
- 12.) Remount the upper column with the enlarger head.



Resetting the friction coupling of the enlarger head adjustment

If the friction of the enlarger head adjustment becomes insufficient after a short operating period, this is due to the need for running in the whole mechanism for optimum matching. Carry out any necessary adjustment as follows:

- 1.) Slightly slack off the cross-head screw (19).
- 2.) Evenly tighten or slack off the two screws (20) until the friction drive runs perfectly.
- 3.) Tighten the cross-head screw (19) again.

