Repair-Service for the Models N/L and NR/LR

Concrete Test Hammer

SCHMIDT

MADE IN SWITZERLAND

Original SCHMIDT
PROCEQ SA ZURICH SWITZERLAND

ISO 9001

proceq

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2nd edition

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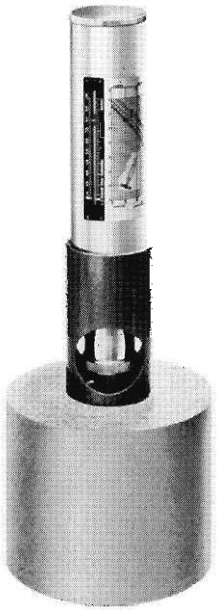
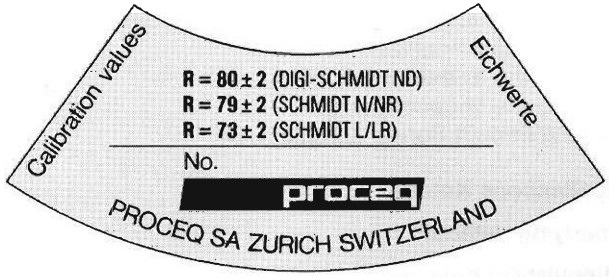
I Repair-Service



Performance Test

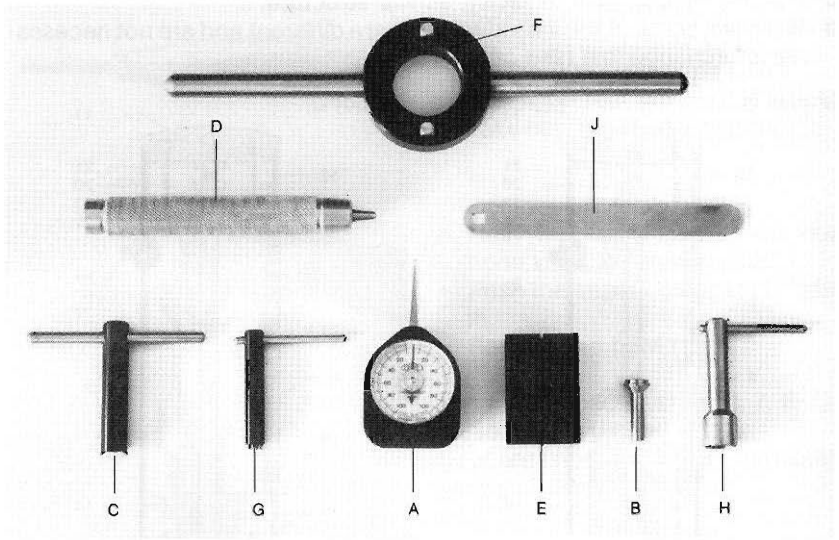
In order to check the Correct performance of the Concrete Test Hammer and the indication of its calibrated value in a reliable manner, a testing anvil is indispensable.



When inspecting the Concrete Test Hammer it must show the according value of the calibration plate.

Tools for the concrete test hammers N / L / NR / LR

For the repair and adjustment the following special tools are necessary. They are packed in a small carrying case of 220/160/40 mm.



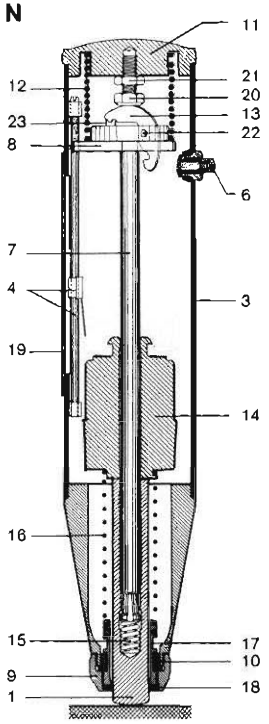
Tools	Application
A Spring balance	For checking the rider friction (Item 4-2)
B Distance gage	For setting the entrainer spring on the rider (Item 4-2)
C Special wrench	For dismantling the push-button (Item 6 NR/LR)
D Expanding arbor	For expanding the snap fastener on the guide bar (Item 7)
E Clamping jaws	For dismantling the push-button (Item 6 N/L) and the guide bar (Item 7)
F Cam wrench	For dismantling the disc (Item 8)
G Pin wrench H Shell-type wrench J Square wrench	For dismantling the knobs (Item 28.5 and 29 NR/LR)

II. Models N and L

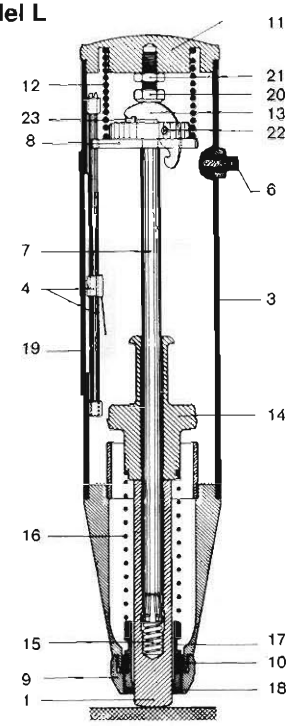
1. Structure

- The two models have basically similar structure.
- However, some of the individual parts are different and are not necessarily interchangeable (see chapter 10).

Model N



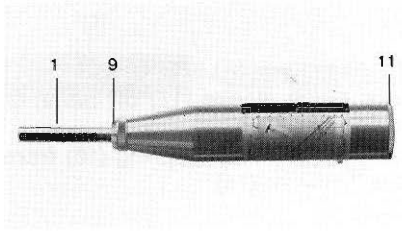
Model L



Designation of the individual parts

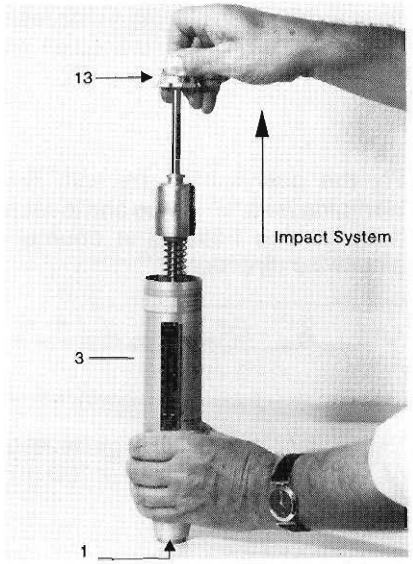
1 Impact plunger
3 Housing, complete
4 Rider with guide rod
6 Push-button, complete
7 Hammer guide bar
8 Guide disk
9 Cap
10 Two-part ring
11 Rear cover
12 Compression spring
13 Pawl
14 Hammer mass
15 Retaining spring
16 Impact spring
17 Guide sleeve
18 Felt washer
19 Plexiglass window scale printed on window
20 Trip screw
21 Lock-nut
22 Pin
23 Pawl spring

2. Dismantling



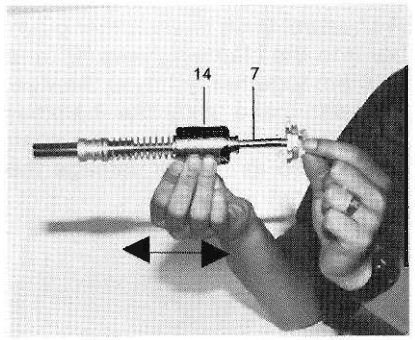
Procedure

- Push impact plunger (1) slightly in and allow it to slide spontaneously into its extreme forward position.
- Screw cap (9) off.
- Remove felt washer (18).
- Take out two-part ring (10).
- Screw off rear cover (11).
- Take out compression spring (12).



- Hold the housing (3) with the cone vertically downwards.
- Push the impact plunger (1) right in.
- Release the pawl (13).

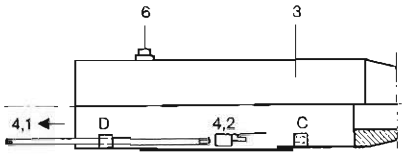
Push the impact system (1, 7, 8, 13, 14, 15, 16, 17) up and out.
Caution: not to bend entrainer spring of rider.



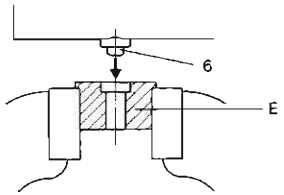
Hold the hammer (14) firmly and jerk the hammer guide bar (7) sharply out of the impact plunger (1).

The retaining spring (15) can now be shaken out of the impact plunger (1).

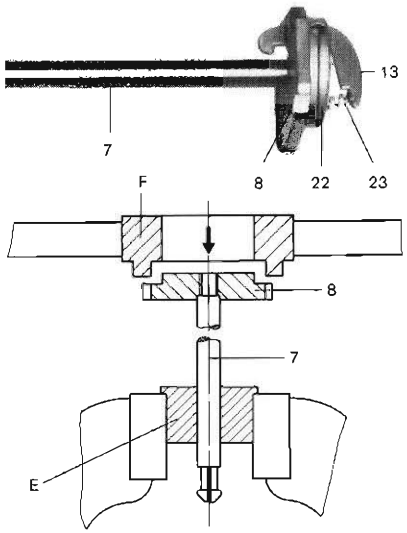
Pull hammer (14), impact spring (16) and guide sleeve (17) off hammer guide bar (7).
Disengage impact spring (16) from the hammer (14).



Use a screwdriver to screw out the rider guide rod (4.1) of the forward bearing "C", then pull out to the rear. Rider (4.2) is now loose and can be shaken out of the housing (3).



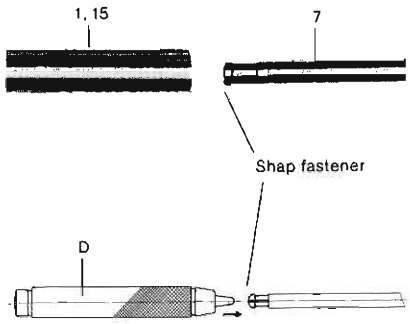
Fix the push-button (6) with the clamping jaws "E" in vice and loosen it by turning housing in counter-clockwise direction.



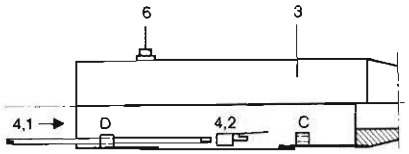
Drive pin (22) out of the guide disk (8) and the pawl (13) with drift diam. 2.8 mm.
Take out pawl (13).
Screw the hammer guide rod (7) out of the guide disk (8).

Procedure: Push the hammer guide bar into the clamping jaws "E" and fix them together tightly in the vice.
Caution: make sure the hammer guide bar is fixed above the snap fastener so as not do damage the rod surface.
Unfasten disk with cam wrench "F".

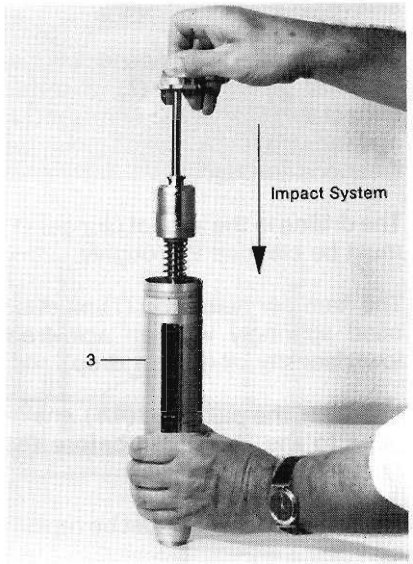
3. Mounting



When reassembling the Test Hammer, proceed in reverse order. Note the following in particular:
Insert the retaining spring (15) in the impact plunger (1).
Thrust the impact plunger (1) onto the hammer guide bar (7) until the latter's snap fastener engages. Check for proper seating and, if necessary, expand the snap fastener with the expanding arbor "D" to ensure that the impact plunger (1) is properly held.
Caution: Push expanding arbor centrically into the snap fastener as far as the stop."Do not make any tumbling motion".

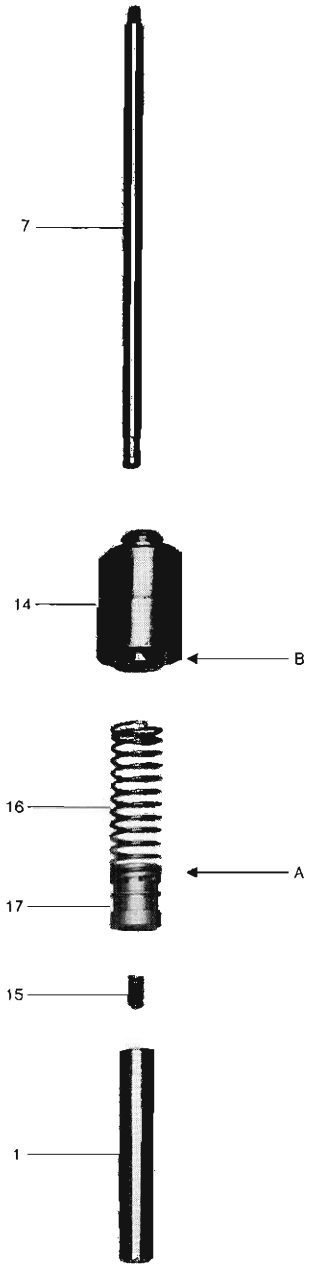


Lay the rider (4.2) correctly in the horizontally-positioned housing (3). Push the guide rod (4.1) through the rear bearing "C".



Insert the impact system into the housing with hammer disengaged. Ensure correct positioning of the guide disk (8).

4. Maintenance



The Test Hammer requires no special maintenance but must be kept clean at all times. The only part that needs external cleaning is the impact plunger to prevent dust penetrating into the interior of the housing.

After protracted use (approx. 1000 to 2000 impacts), it is advisable to clean the instrument thoroughly.

For dismantling procedure see Page 7.

It is not as a rule necessary to dismantle
Item 4.1 Guide rod
Item 6 Push-button
Item 8 Guide disk
for cleaning purposes.

When the impact system has been dismantled, only the impact spring (16) should be released from the hammer end B. The forward end A should be left engaged in the guide sleeve (17).

The moving parts, and especially the hammer guide bar (7) and the impact surfaces of the hammer (14) and the impact plunger (1) must be cleaned thoroughly.

The drilling in the impact plunger (1) must be cleaned thoroughly.

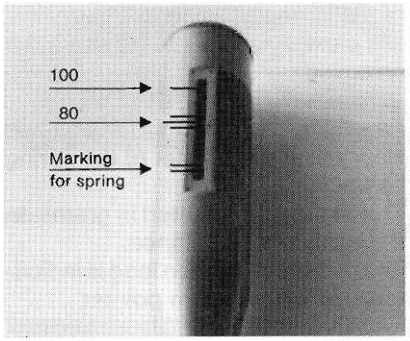
The hammer guide rod (7) must be oiled sparingly with an acid-free, low-viscosity oil (max. 1 drop).

Lubricate the guide rod (4.1), analogous to the guide bar, before the rider friction is adjusted.

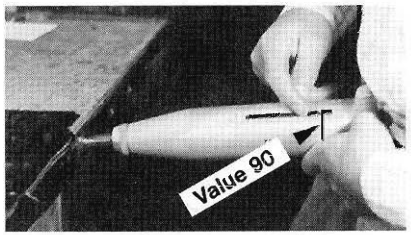
The felt washer (18) must be replaced.

5. Adjusting

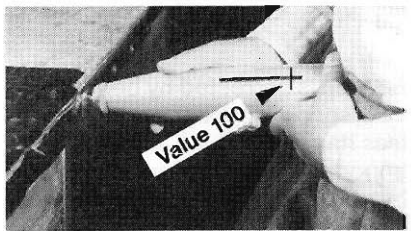
5.1 Checking and Adjusting Impact Actuation



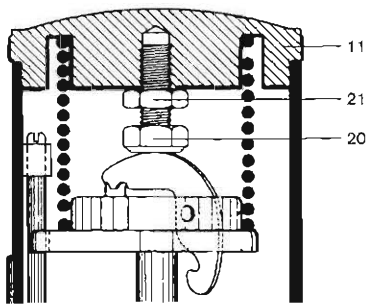
Remove Plexiglass window (19).
The housing is stamped with the following values:
Model N: 78 / 80 / 82 *
Model L: 71 / 74 / 76 *
and value 100, plus two markings for the spring engagement.
* For the following serial numbers these values have been changed as herewith indicated:
Model N-34: 80/82
Model L- 9: 73/76



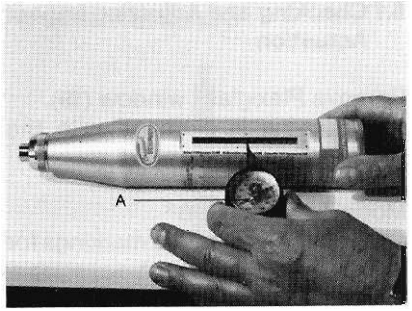
Press the instrument against a wall as though for an impact test and tension it just less than needed to trigger an impact.
Push the rider back by hand to the value 90.



Push slowly, but firmly to trigger an impact and watch the rider closely. It should be entrained. The impact should be triggered immediately the rider has reached the value 100.



The triggering point is adjusted by means of the trip screw (20) and fixed by means of the lock-nut (21).
If triggering occurs at a value
- smaller than 100:
  turn the screw in clockwise direction
- bigger than 100:
  turn the screw in counter-clockwise direction



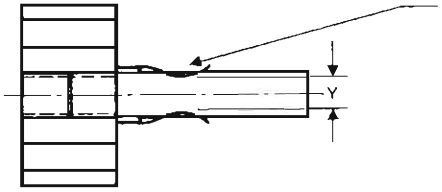
5.2 Setting Rider Friction

The rider friction is tested by means of the spring balance "A". To do this, the plexiglass window (19) must be removed.

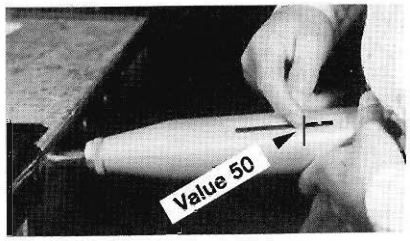
Procedure: Move the rider (4-2) slowly with the pointer of the spring balance.
The friction is indicated in grams on the scale of the balance.
The maximum friction load is indicated by the maximum pointer.

The rider friction should be:
for Models
N = 50 – 80 g
L = 30 – 50 g
NR = 30 – 50 g
LR = 20 – 35 g

If the guide-rod (4-1) is dismantled, the friction of the rider (4-2) is tested analogously.

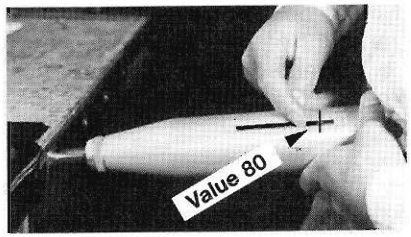


Friction is corrected by bending the both spring tabs on the rider more or less heavily.
Important: Bend the two tabs evenly in order to prevent the rider from tilting.
The basic position Y is with about 3 mm between the tabs.

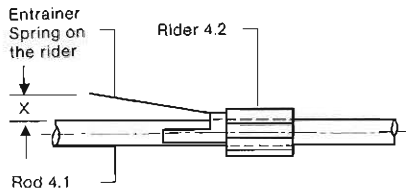


5.3 Checking the Entrainer Spring

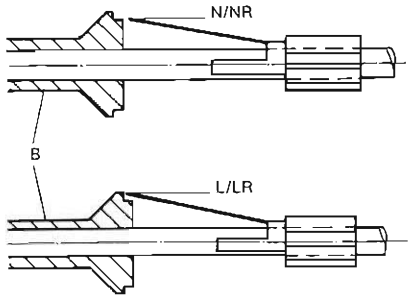
Press the instrument against a wall as if for an impact test and tension it just less than needed to trigger an impact.
Push the rider back by hand to the value 50 and detension the instrument slowly until the rider moves slightly. Retension the instrument. The rider should not be entrained.



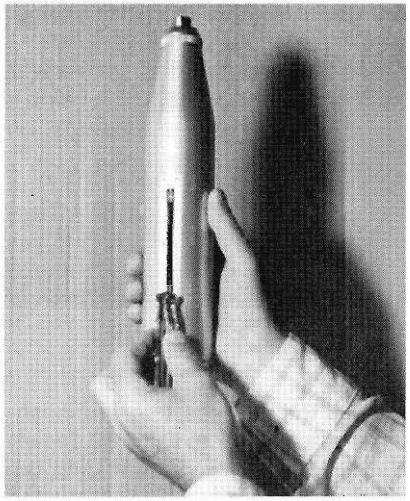
Repeat the process, this time pushing the rider back to value 80. Slowly detension the instrument until the rider moves slightly. Retension the instrument. The rider must now be entrained.



If these conditions are not fulfilled, the entrainer spring on the rider must be adjusted by bending, or the rider replaced.
The distance x between the entrainer spring and the guide rod should be:
for the models N and NR 3.5 mm
for the models L and LR 4.5 mm

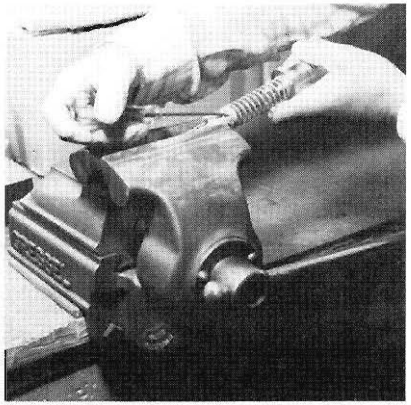


For checking or adjustment the distance gage "B" is used, which is pushed onto the guide rod.



5.4 Checking the Impact Spring

Remove the Plexiglass window (19).
Trigger an impact and arrest the instrument by means of the push-button (6).
Position the instrument vertical with the impact plunger (1) uppermost.
Push the rider (4.2) right up until slight resistance is felt, then release cautiously. The rider reading should be between the double marks. This process should be repeated a few times if necessary.
If these conditions are not fulfilled, the length of the impact spring must be corrected. Note the deviation from theorectical length.



5.5 Adjusting Impact Spring Length

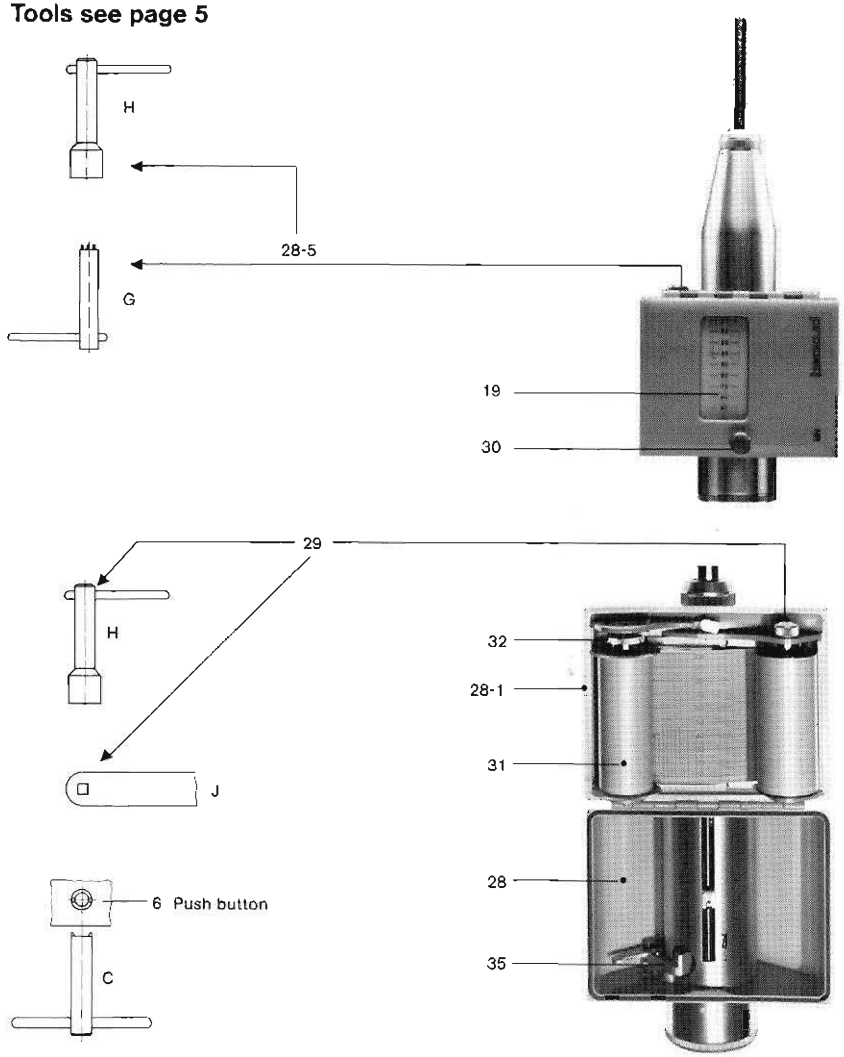
This adjustment is made at the guide sleeve (17).
Dismantle impact system (see Section "Dismantling", page 7).
Disengage the end of the impact spring from the guide sleeve using a small screwdriver.
Engage the spring end in a new and suitable hole.
One hole spacing corresponds to an alteration of 0.4 mm in spring length.

III. Models NR and LR

6. Structure

In principle, these models differ in structure from the standard models N and L only in that they are fitted with a recording device. This automatically causes certain differences with respect to DISMANTLING and ADJUSTING.

Tools see page 5



7. Dismantling

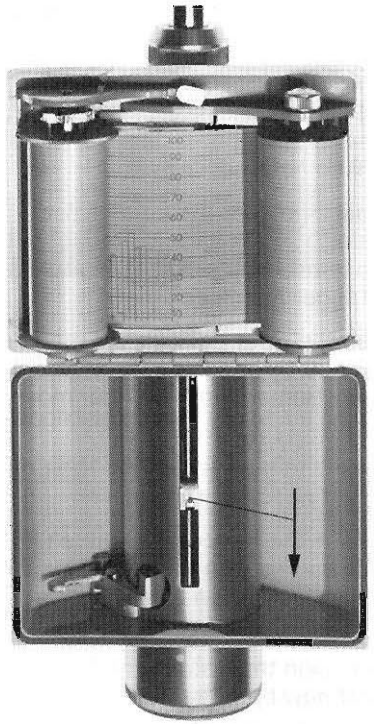
Proceed
as under "DISMANTLING N/L", Page 7, but in addition:

- Screw push-button (6) out, using special wrench "C".
- Drive releasing lever (34) out of the guide disk (8) by forcing out its pin.

Dismantling
the plastic housing proceed as follows:

- Remove rider with guide rod (4) complete.
- Remove push-button (6).
- Screw off transport mechanism (35) by turning the plastic housing (28)
- Remove housing (28).
- Dismantle knob for reel transport (28-5) with wrenches "G" and "H"
  The other parts can now be taken out:
- Housing cover (28-1)
- Roll of recording paper (31)
- Transport reel (32)
- Plexiglass window (19)
- Knob for roll return (29) with wrenches "H" and "J"
- Fixing knob for housing cover (30).

8. Adjusting



8.1 Checking and Adjusting Impact Actuation

Open the cover of the plastic housing. Press the instrument against a wall as in an impact test and tension it to a point just short of triggering an impact.

Push back the rider to value 80.

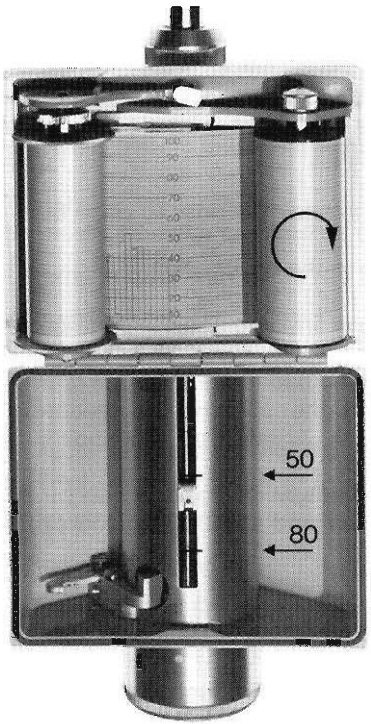
Close the cover.

Press firmly to actuate an impact.

The actuation point can be read off from the scale and/or recording paper. A value of 100 should be shown.
The actuation position can be adjusted and fixed by means of the screw (20/21).

8.2 Adjusting of Rider Friction

Proceed as in Section 5.2, page 12 (Models N and L).



8.3 Checking the Entrainer Spring

Wind the roll of recording paper onto the return spool.

Using a pencil, transfer the 50 resp. 80 value, as the case may be, from the Plexiglass indicator to the aluminium housing.

Reassemble the instrument, press it against a wall as for an impact test and tension it just less than needed to trigger an impact.

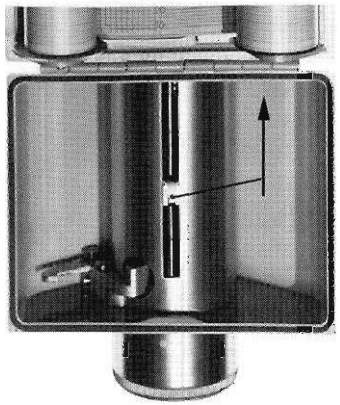
Push the rider back to the marked value 50 by hand. Slowly detension the instrument until the rider moves slightly.

Retension the instrument. The rider should ***not*** be entrained.

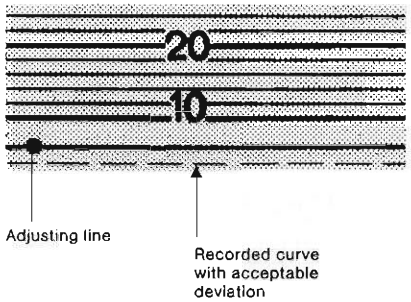
Repeat the process but push the rider back to the marked value 80. Slowly detension the instrument until the rider moves slightly.

Retension the instrument. The rider ***must now*** be entrained.

If these conditions are not fulfilled, the rider entrainer spring must be bent into the correct position or the rider must be replaced.



Recording paper



8.4 Checking the Impact Spring

Open the housing cover.

Trigger an impact and arrest by means of the push-button (6).
Position the instrument vertical with the impact plunger uppermost.
Push the rider by hand right up until slight resistance is felt, then release cautiously.

WARNING: Do not bend the rider scriber!

Carefully close the housing cover without shaking the instrument.

Turn the recording paper rotary knob (28-5) a few millimetres and open the cover.

The recorded curve on the paper-strip should be in the area of the adjusting line (bottom line). Acceptable deviation: ± 0.75 mm.

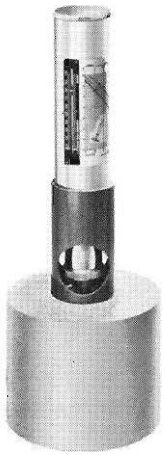
If this condition is not fulfilled, impact spring length must be corrected. Note the deviation from theoretical length.

8.5 Adjusting Impact Spring Length

If this adjustment should be necessary, proceed exactly as in Section 5.5, page 14 (Models N and L).

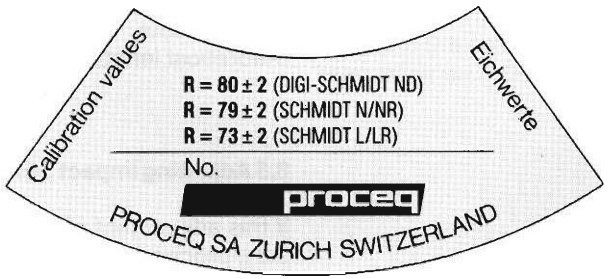
IV. Miscellaneous Notes

9. Remedying Defects



Start by checking the proper functioning of the Test Hammer and its calibration, using the test anvil.

Example:
Calibration plate on test anvil:



Fault	Possible Causes	Remedy
No indication	– Rider entrainer spring bent	Replace rider
	– Rider guide rod bent	Replace rider guide rod
No recording (NR/LR)	– Rider scriber defective or bent	Replace rider
Faulty indication	– Test anvil contact surfaces fouled	Clean contact surfaces
	– Instrument fouled	Clean instrument (see "Maintenance")
	– Rider friction incorrect	Set rider friction (see "Adjustment") or replace rider and if necessary guide rod
	– Impact spring (16) fatigue (never store instrument with spring tensioned) – Impact surfaces of impact plunger (1) or hammer (14) deformed – Hammer guide bar (7) bent	Replace relevant parts
No impact actuation possible	– Pawl broken (13) – Defective pawl spring (23) – Compression spring fatigue (12) – Retaining spring missing (15)	Replace relevant parts
	– Screw has been screwed in too deeply (20)	Readjust triggering value "100"

Note:
When the Test Hammer is assembled, the extruded impact plunger protrudes from the housing at a slight angle. This position is correct and may not under any circumstances be altered by force.

Store test hammer with impact spring (16) released!
(Tension instrument as if for an impact test – trigger an impact– and press push-button (6)).

10. Distinguishing between the individual parts of models N/L/NR/LR

The summary shows the parts that are *not* identical and therefore not necessarily interchangeable.
For a clear identification the original parts marked with *) have in addition a red marking.

Description	Item	Models N	L	NR	LR	Notes
Impact plunger	1	○	*)□	○	□	
Housing	3	○	□	△	☆	
Rider	4-2	○	*)⊗	□	*)⊠	Same versions for N/L and NR/LR resp. Friction figures vary (see page 12).
Push-button	6	○	○	□	□	
Guide disk	8	○	○	□	□	
Cap	9	○	●	○	●	All versions the same: N/NR aluminium colourless L/LR red
Rear cover	11	○	●	○	●	
Hammer mass	14	○	□	○	□	
Impact spring	16	○	*)□	○	*)□	
Plexiglass window	19	○	○	□	□	
Carrying case	26	○	○	□	□	

11. Spare Parts Order

To be able to execute spare parts orders correctly we need the following information:
- Test Hammer Model
- Serial number or instrument number
- Description and part number as per Spare Parts Catalogue or Price List