

HANDBOOK OF HYDROLOGICAL

PROCEDURES:

PROCEDURE No. 41

INSTRUCTIONS FOR TAPE CHANGERS

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### 1. Tape removal

1. 1 Make sure that clock is ticking.
1. 2 Make sure that the instrument has been punching.
1. 3 Await the punchout. If there is no punchout within the time interval, carry on from 1.5.
1. 4 Note punched time, actual time and external staff gauge reading at the time of punchout. Write these in the logbook.
1. 5 Disconnect power and read internal staff.
1. 6 Remove instrument cover by turning side latch wings 180°, unhooking latch and lifting instrument cover straight up.
1. 7 Remove chad tray, and rotate the drive drum forward by inserting a finger under the ratchet wheel at the left-hand side.
1. 8 Turn the take-up spool with the other hand, while still pulling on the ratchet wheel.
1. 9 Wind all the punched part of the tape onto the take-up spool. Fill two complete turns with blank tape before cutting between the upper paper guide and the take-up spool.
- 1.10 Pull out the knurled split pin from the take-up spool and slide off the used tape.
- 1.11 Check whether sufficient tape remains on the supply roll.
- 1.12 At the end of the tape, record the site and the date.

### 2. Installation of new roll

2. 1 Remove the plastic chad tray. Remove the left flange from the supply roll holder by turning it in a counter-clockwise direction.
2. 2 Place the supply roll on the spindle with the loose edge of the paper toward the back of the recorder.
2. 3 Replace the left flange by turning it in a clockwise direction. It should be replaced tightly so that the jarring action of the punch cycle does not loosen it.
2. 4 Unroll about 2 ft of paper from the supply roll.
2. 5 Depress the wide leaf spring located just above the base plate on the front centre of the recorder with one hand and, with the other hand, guide the loose end of the paper under the lower paper guide bar, then along the top of the wide leaf spring until the paper protrudes through to the front of the recorder. With the leaf spring still depressed, take up the slack in the paper.
2. 6 After the large holes in the centre of the paper have engaged the protrusions on the drive drum, release the leaf spring.
2. 7 Insert the loose end of the paper upward between the two sections of the punch block.
2. 8 Thread the paper behind the upper paper guide bar.
2. 9 Remove the knurled split pin from the take-up roll and insert the paper into the slot in the take-up roll.
- 2.10 Replace the split pin so that it straddles the paper. Turn the split pin counter-clockwise to bind the paper slightly in the slot. When done incorrectly the pin will fall out, owing to vibration in service.
- 2.11 Turn the take-up roll in a counter-clockwise direction (as viewed from the open end) to take up the slack in the paper, and grasp the top of the spring belt. Holding the knurled pin, move the spring slightly towards the front of the recorder and release it so that the paper is held back.

N.B. - It is important not to deform the spring by over-stretching.

3. Time setting of tape
3. The procedure below must be followed closely:
3. 1 Place a finger of the left hand under the ratchet wheel of the left end of the drive drum and roll it towards the front.
  3. 2 Turn the take-up roll at the top with the right hand, slipping the belt on the cam shaft and thus taking up the slack as it is fed along by the ratchet wheel. Be careful not to use so much force that the large feed holes are damaged by the pins on the drive drum.
  3. 3 Continue rolling tape on to spool until there are two turns of blank tape on it. Carry on until the printed line on the tape just above the punch block is one time interval earlier than correct time.
  3. 4 Take the left hand away from the ratchet wheel and apply tension to the paper tape by pulling on the top of the spring driving belt, so that the tape is held taut all along the front of the punch arm.
  3. 5 Move the timer cam clockwise so that the switch arm position corresponds to your watch time.
  3. 6 Replace the chad tray.
  3. 7 Read off day number (printed longitudinally in red).
  3. 8 Replace cover (note that cover fits immediately in front of horizontal rear guide).
  3. 9 Connect battery.
4. Tape annotation
4. 1 Wait and observe a punchout.
  4. 2 Complete both tape 'off' and tape 'on' logbook entries.
  4. 3 Remove all pages in logbook which deal with the tape that has just been removed and secure these to the tape with a rubber band. Stow the tape and its logbook pages in a standard container.
5. Intermediate inspections and instrument checks
5. 1 Complete logbook entries after having carefully removed cover.
  5. 2 Do not disturb the instrument setting when inspecting recorder between tape removal dates. Do not attempt to correct minor time errors.
  5. 3 The station generally must be carefully inspected and any troubles rectified or reported for attention by maintenance staff.
  5. 4 Clear and flush intake if necessary, remembering to disconnect the battery; otherwise a faulty river level may be recorded.
  5. 5 Report to office if recorder is not working correctly.
6. Frequency of inspections and tape changes
6. 1 Visit the recorder monthly and, if possible, after every flood.
  6. 2 Remove tapes at four weekly intervals for all reasonably accessible stations. Remote stations may be left 6 weeks.