Department of consumer and corporate affairs / Ministère de la consommation et des corporations

STANDARDS BRANCH - DIRECTION DES NORMES

NOTICE OF APPROVAL E-78-1

OTTAWA May 18, 1971

WESTINGHOUSE TYPES "WR-2C" AND "WR-4C" DEMAND RECORDERS

Apparatus

Input	3-wire S.P.D.T. Contact Device. Form C (break before make.) One set per channel
Max. Input Pulses	999 per interval per channel
Min. Time between Pulses	0.6 seconds
Number of Input Channels	1 for WR-2C, 3 for WR-4C
Total Pulses on Register	
WR-2C (5 - dials)	100,000 x 10 at time of turnover
WR-4C (6 - dials)	1,000,000 x 10 at time of turnover
Full Scale on Demand	1,000 pulses (WR-2C only)
Multiplier	10
Demand Period	15 minutes (WR-2C only)
Record and Readout	Pulses
Total Pulse Count	Absolute
Tape	504 feet 1 - mil Mylar, 36 day supply
Tape Speed	1.75 inches per 15 minutes
Power Supply	120 and 240 volts 60 hz
External Carry-over Battery	12 volts nominal
Burden on Contact Device	1.5 va at 50 volts ac 1.0 pf.
Operating Temperature Range	-20°F to 150°F
Dead Band	-2 minutes to +2 minutes
Max. External Resistance	100 ohms

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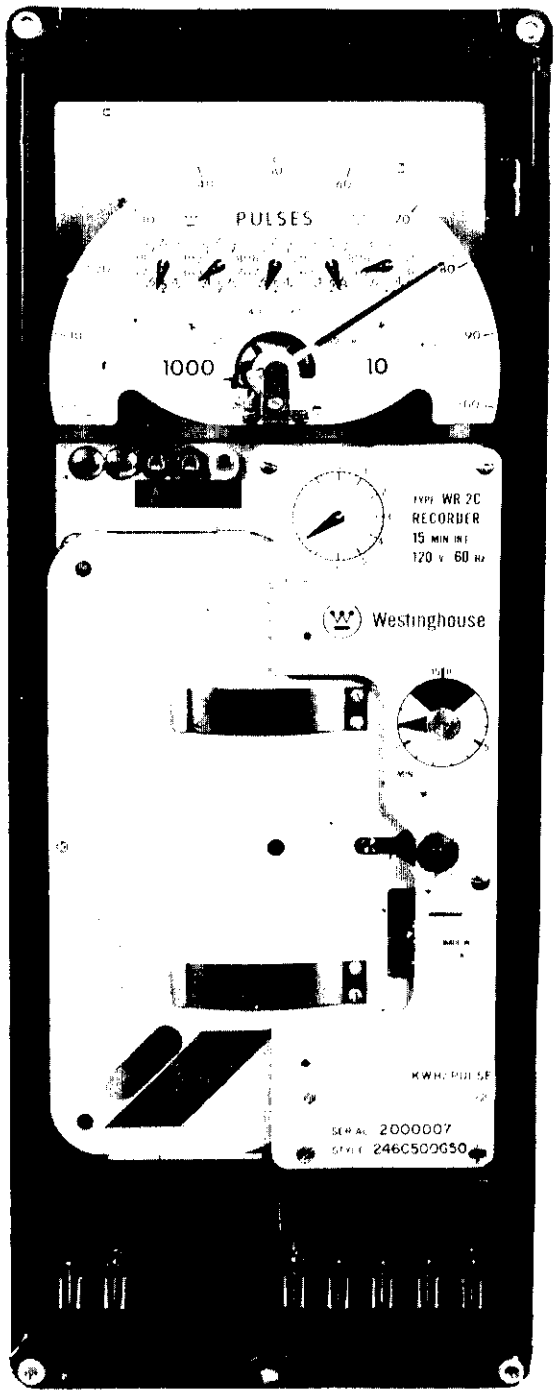


1. Plug-in circuit boards without relays are supplied on the basic recorder, and are for use with pulse initiators of the latched Type Form C or electronic types such as the CD-1 or CD-21 where mercury-wetted relays are part of the initiator system.

   An optional plug-in circuit board with magnetically latched mercury-wetted relays is available for use with pulse initiators of the mechanical type.

NOTE: The common initiator contact terminal "K" of all channels is internally grounded to the recorder chassis.

2. Multiplier applies to demand pointer and register readings.

3. Total tape pulse count is absolute for the time the tape is in place with the recorder energized, but during tape changes, pulses will continue to be added to the register but not to the tape.

4. Tape is 3M#951 instrumentation tape or equivalent on special 3.4 inch reel.

5. The external battery must be 12 volts nominal and may be either primary or secondary type. A recommended general usage type battery would be a rechargeable nickel-cadmium type rated 2.3 ampere hours. The internal trickle charger in the recorder will keep a battery of this capacity normally fully charged. The purpose of the external battery is to take over the job of maintaining tape movement and the generation of interval pulses during power failure to the recorder. Both recorders may be operated without the external battery, in which case they would lack the carry-over feature.

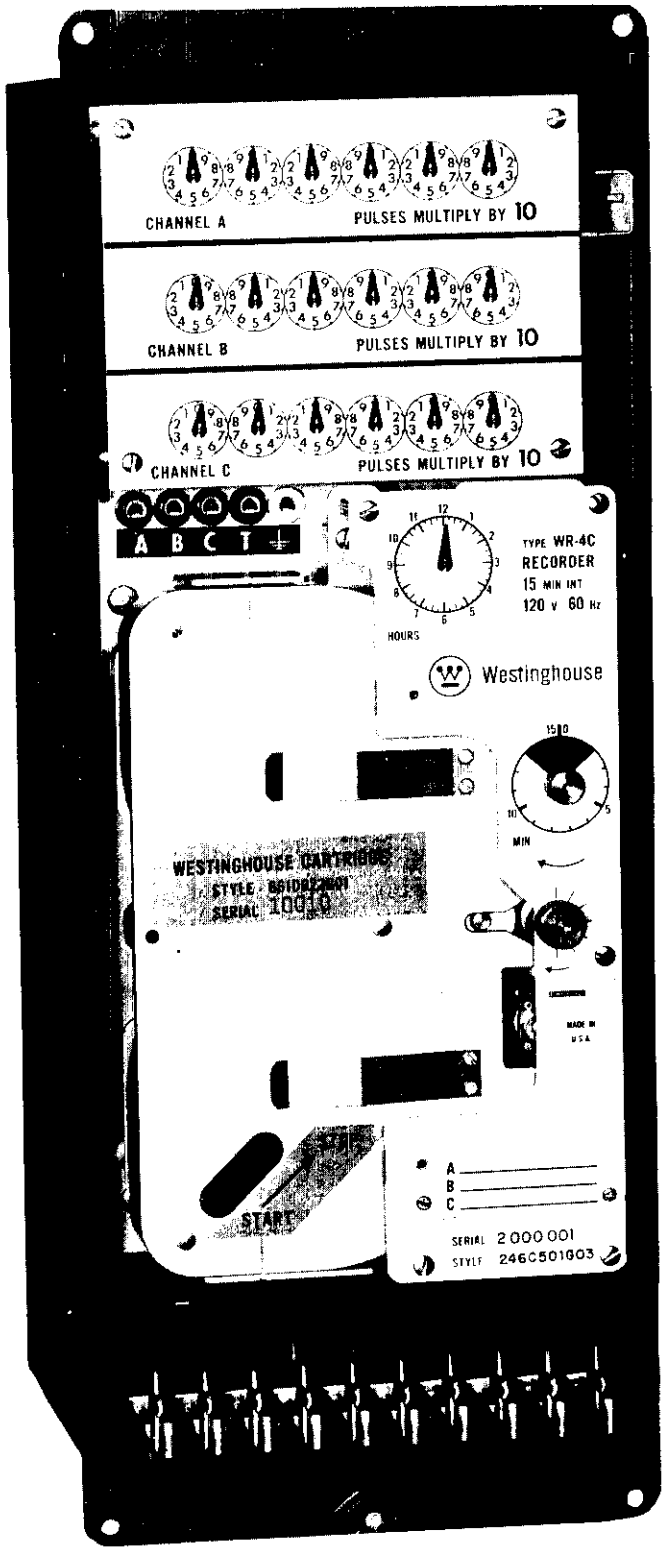
6. The "dead band" is a black sector on the minute dial extending from -2 minutes to +2 minutes from the end of a demand interval and denotes a 4 minute period during which the tape cartridge should not be changed. When the tape is sent for translation, the operator knows from the reported start and stop times the exact time of the first and last pulse that none are omitted.

7. The recorders are suitable without modification for use with pulse transmission lines of up to 100 ohms lead resistance. For transmission lines exceeding 100 ohms but less than 500 ohms, the recorder must be modified, preferably at the factory.

Description

The types "WR-2C" and "WR-4C" are similar to the types "WR-2"(E-13) and "WR-4" (E-26) respectively which they supersede, but differ in that the tape is supplied in a cartridge which is snapped into place, thus eliminating the tape threading operation required in the older designs, and also by the elimination of the internal carry-over battery.

Westinghouse Types "WR-2C" and "WR-4C" DEMAND RECORDERS



They record on magnetic tape (a) pulses proportional to the load being metered and (b) time interval pulses. The tape is the same in all cases, but the type "WR-2C" has in addition to the time pulse track, only a single track for load information and the type "WR-4C" has three such tracks.

The tape cartridge has clips for holding a card on which can be marked such information as the installation and removal dates and times, the sources of the pulses, multipliers etc., for use by the translator operator.

The magnetic information recorded on the tape is translated onto computer tape or punched IBM cards for automatic billing, load survey etc., as there is a record of the kilowatt hours etc., consumed during each 15 minute period during the month.

In the case of the "WR-4C", the signals on the three information tracks can originate from 3 independent sources, the only common tie being the time reference signal and the common "K" connection.

The tape, as it leaves the supply cartridge, passes over a magnetic guide which orients the oxide to provide a high recorded signal level on the time channel.

NOTE 1. When verifying either of these recorders, the tape magazine must be removed, otherwise a signal would be recorded on the tape that could create confusion when the tape was translated.

NOTE 2. The interval knob must not be turned by hand to set the time or for any other reason with the tape cartridge in the recorder, because a time pulse would be generated each time the interval hand passed zero and would result in a pile-up of time pulses.

NOTE 3. Any WR-2C or WR-4C (except those equipped with a demand register) may be factory equipped to serve as a "master" recorder. This feature consists of adding a dry reed switch and appropriate wiring to provide a switch closure at case terminals labelled "T1" and "T2". This switch is operated by the same permanent magnet cam follower that provides the time pulse. This switch closes at the start of the time interval and remains closed for approximately 10% of the time interval.

NOTE 4. Any WR-2C or WR-4C recorder may be factory equipped to serve as a "slave" recorder. This feature consists of appropriate wiring necessary to bring to external case terminals T3 and T4 leads that allow switch action external to the recorder. If either of these recorders is equipped with a demand register, the external switch closure must be at least 5 seconds in duration at case terminals T and T. A switch

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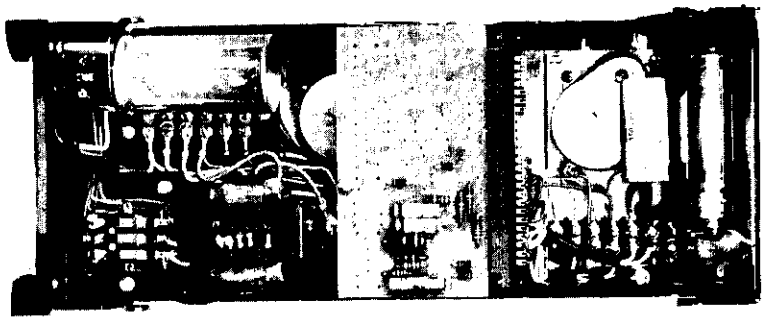

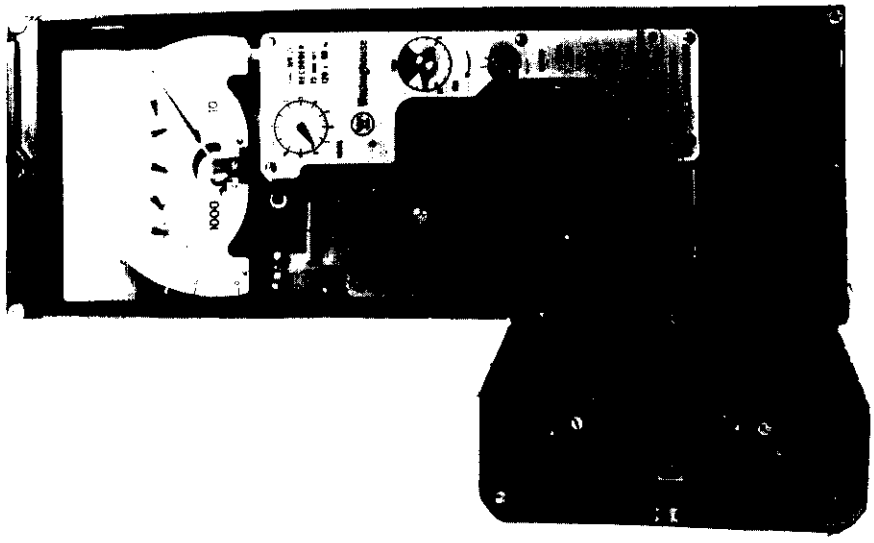

block device is provided such that the operation of the cam follower of the "slave" recorder is mechanically prevented. By removing the device, the unit will perform as a normal recorder.

After translation, the magnetic tape should be completely demagnetized, preferably by the bulk method, before reuse.

Approval granted to:

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