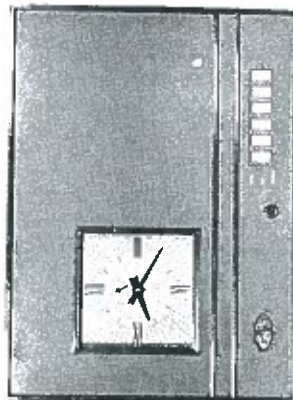




OPERATING INSTRUCTIONS MASTER CLOCKS



Type 943-2



Type 943-4

MASTER TIME CENTER TYPES 943-2 AND 943-4

SIMPLEX TIME RECORDER CO.

SIMPLEX TIME RECORDER CO.

PLANTS IN: GARDNER, MASSACHUSETTS, U.S.A.
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REPRESENTATIVES FOR: DITTA ENRICO BOSELLI, S. P. A., ITALY



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OPERATING INSTRUCTIONS

MASTER TIME CENTER TYPES 943-2 AND 943-4

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Introduction

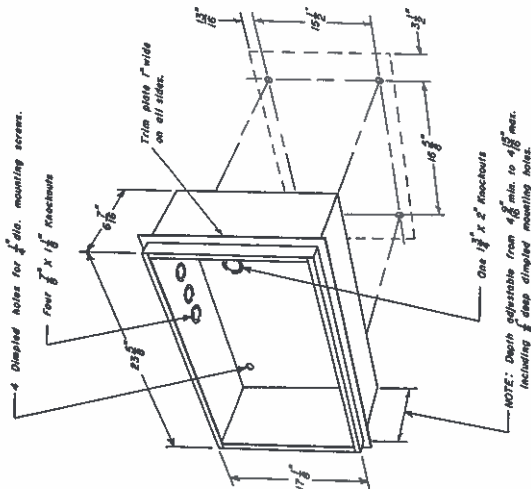
The Types 943-2 and 943-4 Master Clocks are time controls for the regulation of secondary timekeeping units on minute-impulse systems. The movement in both types of master clocks is driven by a synchronous motor, the operating frequency of which is controlled by a crystal oscillator and a series of solid-state divider circuits. Power is supplied to the oscillator and divider circuits by a bank of nickel cadmium secondary cells which are maintained at full charge by the AC line circuit. Battery power is available for over 24 hours of operation after main AC power failure. The Type 943-4 is also equipped with a Type 803 Program Machine to control the sounding of six circuits of audible signaling devices. The following information pertains to both the Type 943-2 and the Type 943-4 when no explicit distinction is made.

Power Requirements

The master clocks are designed to be connected to a 115-volt or 230-volt, 50- or 60-Hz source. The data plate on the bottom of each cabinet provides the particular specifications.

Installation

Shipped with each master clock is an envelope containing four mounting screws with washers, spare fuses, keys, appropriate instructions and, with the Type 943-4 only, program bars for the Type 803 Program Machine. Mounting specifications are outlined in Figure 1.



System Operation

In a Type 943-2 or 943-4 system, the secondary units (indicating clocks, recorders, etc.) are advanced one minute each time they receive a pulse from the master clock. Synchronization between the secondaries and the master clock is compared hourly. Units that are out of time with the master will be restored automatically to the correct time by the self-regulating method, provided they are not more than 10 minutes fast or 49 minutes slow. The impulse self-regulating method allows units which are fast to be held at their 59th minute and slow units to be brought up to their 59th minute with rapid impulses from the master. The range of automatic correction within any one hour is 10 minutes for fast units and 15 minutes for slow units. When desired, the secondary units may be advanced in unison at the rate of one hour every two minutes in accordance with the setting instructions appearing later in the publication.

The Type 803 Program Machine in the Type 943-4 Master Clock provides automatic audible signaling on any or all of six circuits at predetermined times of the day and days of the week. A manual switch for each circuit is accessible at the front of the cabinet and must be in the "AUTO" position for an automatic function to occur. When immediate signaling is necessary at times other than those programmed, the switch must be transferred to and held in the spring-loaded "MANUAL" position for the desired duration of signal sounding. When the switch is released, it will return automatically to the "OFF" position and must be transferred to the "AUTO" position if future automatic signaling is desired. Automatic hourly correction of the program machine occurs at the same time and in the same way as it does for the secondary units. However, in addition to receiving hourly correction, the program machine is also synchronized with the master clock at the reference hours of 6 AM and 6 PM to correct any variation of time up to 12 hours.

NOTE: As an optional item, the secondary units in either the Type 943-2 or 943-4 may also be provided with the 12-hour correction feature. Another optional feature, the Daylight Time Change Device provides semiautomatic time changes as described under a separate section later in the text.

Setting the Master Clock

The following procedure should be used for setting the Types 943-2 and 943-4 Master Clocks as the first step in setting the time on the entire system.

1. Transfer the "CLOCK MOTOR" switch to the "OFF" position.
2. Advance the minute hand in a clockwise direction until it is one or two minutes ahead of the correct time.
3. When the actual time coincides to the second with the time indicated by the master clock, transfer the "CLOCK MOTOR" switch to the "ON" position.

CAUTION: All corrections must be made by the clockwise advance of the minute hand; in other words, in order to set the master clock back one hour, the minute hand must be advanced through 11 hours. Do not move the hour hand.

Setting the Secondary Units

If all of the secondary units on a Type 943-2 or 943-4 system are equally slow by an amount of time under 49 minutes and immediately approximate correction is desired, or if all secondaries are equally behind the master by an amount of time over 49 minutes (as during the spring time change), they may be set by manually transferring the "HOUR IMP." switch in the master clock. Setting the switch on "ADVANCE" position allows the secondary units to advance one minute every two seconds. When the secondaries are one or two minutes behind the correct time, the switch should be returned to the "RUN" position. The secondaries will be exactly synchronized with the master clock at the next automatic hourly correction.

Manual correction of fast secondaries, when desired, is accomplished by setting the "HOUR IMP." switch on the "OFF" position. The secondaries will be delayed until the switch is returned to the "RUN" position.

NOTE: In the Type 943-4 Master Clock, the transfer of the "HOUR IMP." switch also advances the program machine. Instructions for separately setting the program machine appear later in the text. Also note that when options such as the 12-hour correction feature or the Daylight Time Change Device are included with either the Type 943-2 or 943-4 Master Clock, exceptions to the previous setting instructions may exist. The 12-hour correction feature is described previously under the section entitled "SYSTEM OPERATION"; an explanation of the Daylight Time Change Device is provided in a separate section later in the publication.

Setting the Program Machine (Type 943-4 Only)

Automatic hourly correction of the program machine in the Type 943-4 occurs at the same time and in the same way as it does for the secondaries. (See "SYSTEM OPERATION".) Although 12-hour correction of the secondaries is an optional feature, the program machine in all Type 943-4 Masters is corrected at the master clock reference hours of 6 AM and 6 PM for any variation of time up to 12 hours.

When it is desirable to manually set the program machine and it is as much out of time as all secondaries, the operation of the "HOUR IMP." switch as explained under the section entitled "Setting the Secondary Units" will set both the program machine and all secondaries at the same time.

Whenever it is necessary to separately advance the program machine without affecting the rest of the system, the setting disc located on the right-hand side of the machine may be slowly turned in a counterclockwise direction. If the program machine alone is fast, the "PROGRAM MOTOR" switch in the master may be transferred to the "OFF" position without affecting the operation of the rest of the system. When the program machine has been delayed long enough to synchronize it with the master clock, the switch must be returned to the "ON" position.

The time indicated by the program machine can be determined by observing the relative positions of the stop fingers in the stop-finger guide comb. In each section of the guide comb (Days, AM-PM, Hours, Tens, Minutes), the stop finger that is in the raised position is the time indicator.

Daylight Time Change Device

As an optional feature, the Daylight Time Change Device may be provided with both the Type 943-2 and the Type 943-4 Master Clocks to accomplish the correction of one hour in the spring and fall for the change between daylight time and standard time. The time change is achieved by advancing the system two hours during a one-hour period or stopping the system for one hour. The procedure for initiating the correction operation is as follows: (1) Place the toggle switch in the "SPRING" or "FALL" position. (2) Press the momentary "PUSH TO START" switch. The selected function will cause the system time to be approximately correct at the end of one hour. Any minor variation will be adjusted by the normal correction of the system at the next full hour. Once the "PUSH TO START" switch is operated, the function set at that moment becomes automatic in the fullest sense. If an error has been made in the positioning of the "SPRING" and "FALL" switch, it is recommended that before the initiation of the correct function, one hour be allowed to elapse to prevent scattering of the secondaries on the system. Then, additional corrections, one hour at a time, may be made as necessary.

Maintenance

To insure proper operating conditions for this equipment, periodic inspection and maintenance is important. It is recommended that appropriate servicing by authorized Customer Engineers be obtained by contacting your nearest Simplex branch office.