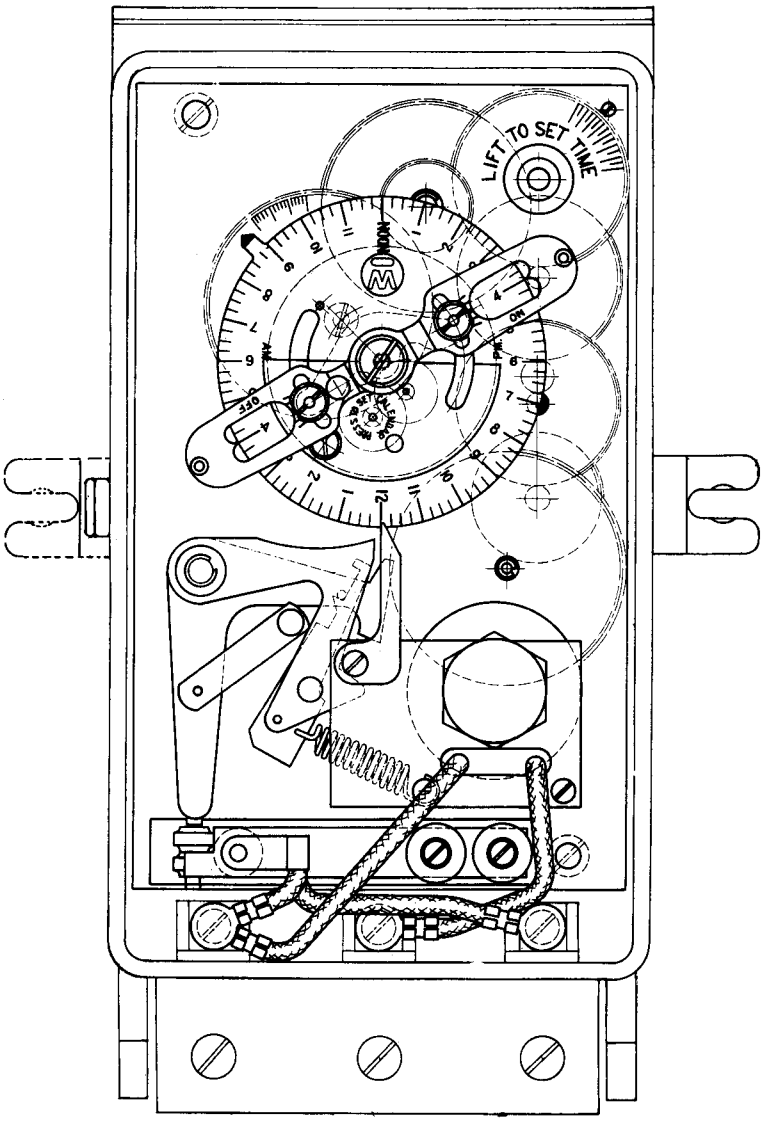
# Westinghouse

I.L. 3003-A

## Astronomical Time Switch

### INSTRUCTIONS






GENERAL DESCRIPTION AND INSTALLATION

The switch is supplied in a die cast case of zinc especially suited for mounting in the base of a cast iron street lighting pole. A mounting strap is supplied with a series of holes arranged for mounting on pipe shafts from 2-1/2 to 6 inches nominal pipe sizes. An alternate case with two mounting lugs is also made. The top of the case is provided with a dirt shield to deflect dirt from the top of the case so that it will not enter the switch when the cover is opened. The switch is driven by a synchronous motor having an input of 1.4 watts at 120 volts, 60 cycles. The motor will start and pull into step at approximately 90 volts, but when in step will carry the load under much lower voltages. The motor speed may be checked stroboscopically with a 1/2 watt, 110 volt neon lamp directed on the teeth of the gear driven by the motor.

The motor drives the one-revolution-a-day dial, carrying the trip arm through a gear train mounted on the base plate of the switch. Pins on the trip arms engage the trip levers, turning the switch on and off. The ON operation is accomplished by the ON trip pin lifting the latch and then pushing the main lever into an unstable position, in which the operating rollers are ejected from between the contact springs, allowing the contacts to close. The OFF trip pin turns the upper lever winding up the spring, and near the end of the travel the latch engages the lower lever. When the turning off time is reached, the upper lever drops off the pin and the spring turns all levers as a unit, the rollers separating the contacts opening the circuit.

The contacts are of pure silver and are rated at 15 amperes incandescent lamp load on a conservative basis.

Three terminals are at the bottom and the diagram appears on the nameplate. The line connects to the left-hand and center terminals, and the load to the center and right-hand terminals. The placement of fuses and whether the switch is to be in the live or grounded side of the load depend on local conditions of use.

This time switch has an astronomical dial mechanism whereby the time of action is automatically varied from day to day to suit the daylight conditions of various seasons. Any switch is suited to the latitude limits given on the nameplate.

# Astronomical Time Switch

## INSTALLATION ADJUSTMENTS

### To Set for the Date

Press the pin marked "Press to set calendar", projecting through the dark sector of the dial, until the dial is released when the calendar dial may be turned to the current date. Note that divisions on dial are two days except at ends of 31-day months. The pin, when depressed, disengages two gears whose teeth are chosen so they will only engage at intervals a day apart. Rock the calendar dial slightly, and the gear will drop in mesh.

### To Set on Time

Pull out the knob marked "Lift to set time" on the minute wheel, disengaging the drive gear and turn counterclockwise until the proper time is indicated on the twenty-four hour dial. Turn minute dial until the proper minutes past the hour match up with the indicator, then engage the gears. There are 80 teeth on the wheel, so the correct time can be set within plus or minus 22-1/2 seconds.

### To Adjust Dial for Local Conditions

Since the dial is set to standard time and sun time is different, in general, it may be necessary to make adjustments to secure the proper results. The latitude determines the shape of the cams in the switch and time belts are chosen so that a reasonably close curve can be obtained with standard cams. Standard cams are designed to turn on light 15 minutes after sunset and to turn off 30 minutes before sunrise on the standard time meridian. If one is east or west of the meridian in longitude, or if one desires to change the interval between sunset and turning on, the screws in the middle of the levers may be loosened and the change made. Each division is 15 minutes. By removing the OFF lever and replacing it in the hole near the calendar release, a fixed turning off time, adjustable from 12 N to 1 A.M., may be obtained.

## MAINTENANCE AND REPAIRS

Disassembly is only necessary for periodic cleaning or repairs. Periodic lubrication, as described further, can be performed readily without dismantling.

### To Take Dial Apart

Turn calendar wheel until both dial screws are uncovered. Remove screws, lift off dial. Lift out calendar shaft and two drive shafts. The screw holding the lower cam follower may now be removed and the follower pulled out sideways and the base of the dial lifted out. It is desirable to mark gear tooth on dial base with the driving pinion to avoid retiming the dial.

### To Reassemble the Dial

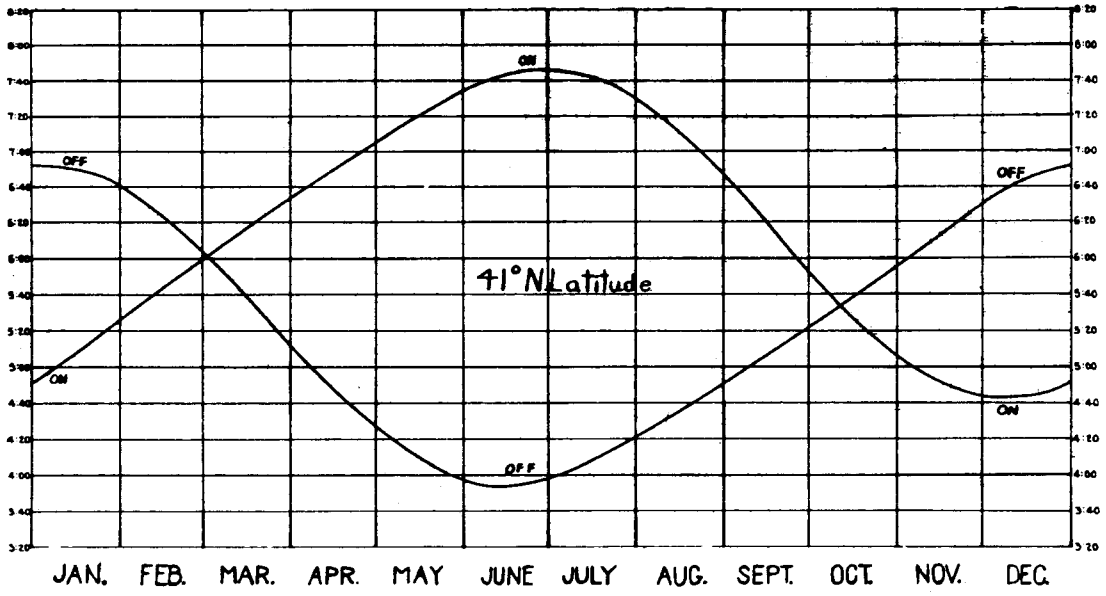
Place dial, base, gear, and hub over mounting post; insert cam follower and cam follower retaining screw. Place in shaft with coarse gear followed by shaft with fine gear, meshing with center pinion and calendar dial shaft. No particular teeth have to be meshed. Place on main dial, making sure OFF lever clears OFF cam, and pin on ON lever enters hole in ON cam follower. Replace screws. The dial may now be out of time with the minute wheel. To check or correct, turn calendar until one of the trip arm appears on an even hour, trip the switch by turning the minute knob, noting the time. The dial on the minute gear is held by friction and may be turned with an eraser tip to the proper time.

### To Take Switch Mechanism Apart

Remove motor and its mounting plate as a unit. Remove snap ring from switch bearing post by pressing sideways on the points with a screwdriver blade. The ring can then be pulled off of its slot and the switch parts removed from the post. When replacing, be sure to have latch member bearing on outer side of pin in lower lever. After replacing snap ring, close it with a small pair of pliers.

### Lubrication

The switch is lubricated when shipped from the factory. The amount of attention needed depends on the service and the following recommendations are only approximate. The gears and switch parts mounted on posts on the plate should be lubricated with Stanolind #200 Oil, which is bottled in 1 oz. bottles for your convenience by W. E. & M. Co. as Style No. 821308. The motor oil is contained in a wool washer, access to which is had by removing the cap on the back of the motor. It is not necessary to remove or even stop the motor. The proper oil for warmer latitudes is Style No. 930615. This is in 8 oz. bottles. A special oil for use where ambient temperatures below 10° F. are common is available. Present indications are that two years' operation can be obtained without attention; however, the first applications in any given service should be inspected at shorter intervals to determine the proper period.

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