



**All The
Time . . .
With
National
Time**

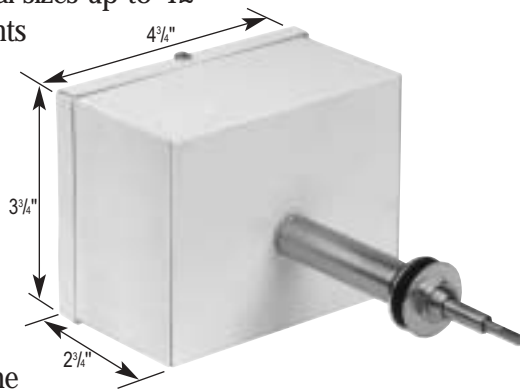
Introduction

Long life, minimum upkeep and design integrity are excellent reasons for choosing time and/or temperature indicators engineered and manufactured by National Time. Since 1930, National Time has been a recognized industry leader in supplying a broad spectrum of precision-built outdoor clock movements and hands. Custom designed movements to suit special requirements are frequently manufactured to the most exacting standards. The result is world-class quality.

Outdoor Clock Movements

2M Series Clock Movements (For Dial Sizes 18" to 42")

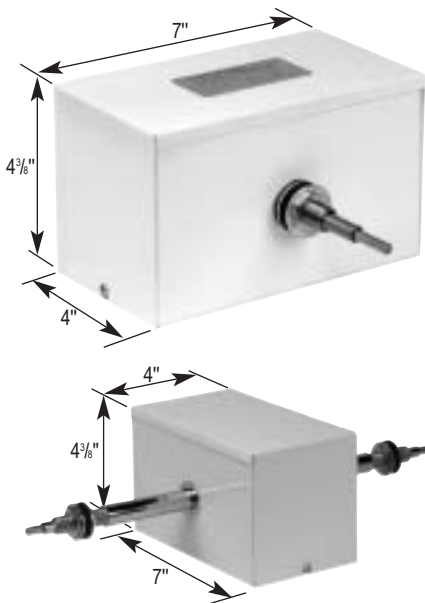
This movement provides sufficient power to drive balanced hands for dial sizes up to 42 inches. It center mounts directly to the clock dial. No cover glass is required to protect hands, which are set easily by turning the minute hand. A No. 970 Remote Reset Control for setting time



is optional. It allows one to stop the clock or advance the hands 10 times faster. Also available are shaft extensions for setting the movement back from translucent acrylic dials to eliminate dial shadow or accommodate thick walls.

DIAL SIZE	TYPE NO.	TYPE NO. WITH REMOTE RESET CONTROL
18"	2M-9	2MR-9
24"	2M-11	2MR-11
30"	2M-14	2MR-14
36"	2M-16	2MR-16
42"	2M-18	2MR-18

3MR Series Clock Movements (For Dial Sizes 18" to 48")



This direct drive movement features a synchronous capacitor motor, which develops ample torque for one- or two-way clock installations. The standard dimension between opposing two-way dials can be 9" minimum to 16" maximum.

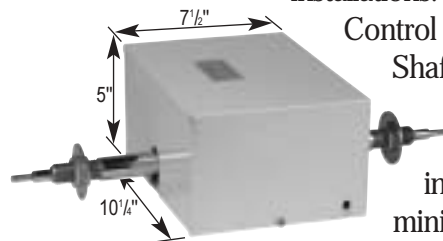
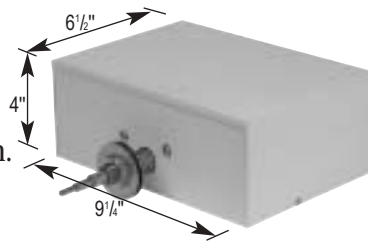
The No. 970 Remote Reset Control is provided for setting hands. Shaft extensions can be furnished when requested.

DIAL SIZE	SINGLE FACE TYPE NO.	DOUBLE FACE TYPE NO.
18"	—	3MDR-9
24"	3MR-11	3MDR-11
30"	3MR-14	3MDR-14
36"	3MR-16	3MDR-16
42"	3MR-18	—
48"	3MR-21	—

Outdoor Clock Movements

HMR Series Clock Movements (For Dial Sizes 36" to 72")

This popular clock movement is the first series which incorporates National Time's cast aluminum gear housing design. The rugged cast housing increases bearing and gear life by resisting substantial load forces and acts as an oil reservoir for perpetual lubrication. The movement is available for one- or two-way installations. The No. 970 Remote Reset Control is provided for setting hands. Shaft extensions can be furnished when requested. Standard dial spacing for two-way installations is 12 inches minimum to 24 inches maximum.

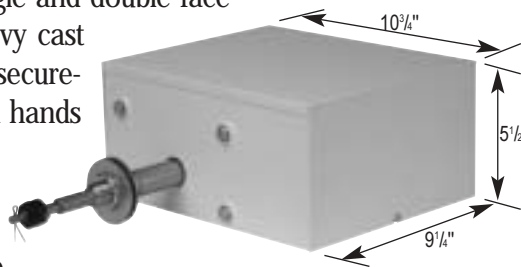


DIAL SIZE	SINGLE FACE TYPE NO.	DOUBLE FACE TYPE NO.
36"	—	HMDR-16
42"	HMR-18	HMDR-18
48"	HMR-21	HMDR-21
54"	HMR-23	HMDR-23
60"	HMR-26	HMDR-26
66"	HMR-29	—
72"	HMR-33	—

NOTE: Consult factory for Series HMRS Movements with sweep second hands.

4MR Series Clock Movements (For Dial Sizes 6 to 11 feet)

Well-suited for large single and double face clocks. It features a heavy cast aluminum housing that securely holds shafts and clock hands in heavy winds. An oil reservoir provides continuous lubrication for moving parts. The No. 970 Remote Reset Control is provided for setting hands. Clock shafts can be extended as required. The standard dial spacing for two-way installations is 15" minimum and 30" maximum.

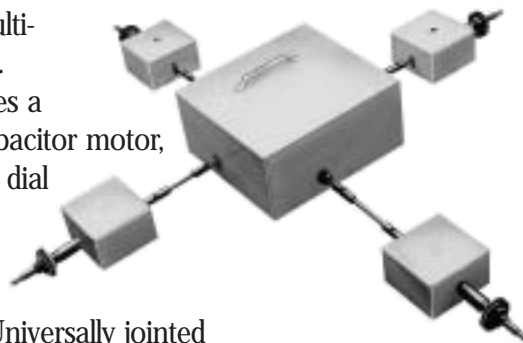


DIAL SIZE	TYPE NO.	TYPE NO. WITH REMOTE RESET CONTROL
5'	—	4MDR-26
6'	4MR-33	4MDR-33
7'	4MR-37	4MDR-37
8'	4MR-41	4MDR-41
9'	4MR-47	—
10'	4MR-52	—
11'	4MR-58	—

NOTE: Consult factory for Series 4MRS Movements with sweep second hands.

3- and 4-way Clock Movements

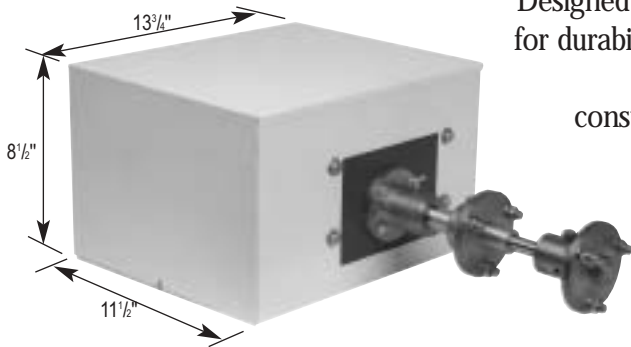
Ideal for tower and multi-faced sign installations. Each clock incorporates a single synchronous capacitor motor, which drives individual dial movements through connecting shafts to insure identical readings on all dials. Universally jointed connecting shafts accommodate misaligned dials. Hands are set remotely with the No. 970 Reset Control. Minimum dial spacing for 'K' Series is 24". Consult Factory for full design parameters, triangular 3-way and other special applications.



DIAL SIZE	90° 3-WAY TYPE NO.	4-WAY TYPE NO.
24"	KMTR-11	KMQR-11
30"	KMTR-14	KMQR-14
36"	KMTR-16	KMQR-16
48"	4MKTR-21	4MKQR-21
5'	4MKTR-26	4MKQR-26
6'	4MKTR-33	4MKQR-33
8'	4MKTR-41	4MKQR-41
10'	4MKTR-52	4MKQR-52

Outdoor Clock Movements

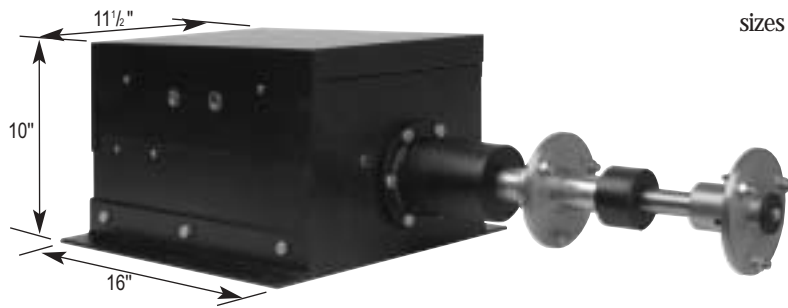
7M & 11M Series Clock Movements (For Dial Sizes 12 to 22 feet)



Designed and quality-built for durability under stress, the reinforced construction of these movements can accommodate the heaviest of hands. Clocks are electrically set with the No. 970 Reset Control.

DIAL SIZE	TYPE NO. WITH REMOTE RESET CONTROL
12'	7MBR-62
14'	7MBR-70
15'	7MBR-76
16'	7MBR-84
18'	11MBR-92
20'	11MBR-100
22'	11MBR-116

NOTE: Consult factory for 13MBR and 15MBR Clock Movements for dial sizes up to 50 feet in diameter.

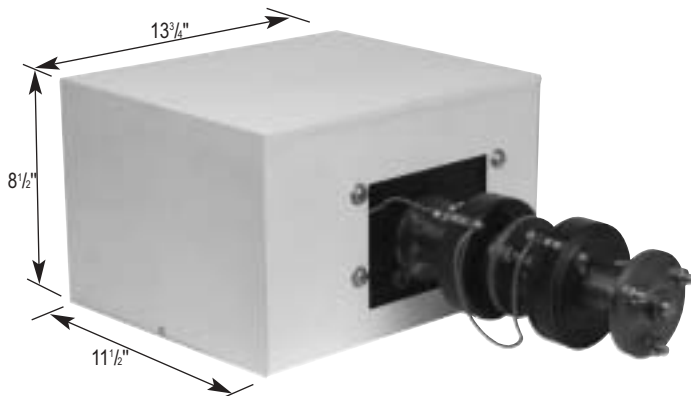


6M, 8M, & 10M Series Clock Movements (For Hands Outlined in Neon Tubing)

Each of these movements have collector rings to carry 120V AC current to neon transformers mounted in the tail section of each hand. Hands are supplied with neon transformers and balanced. Locally available neon tubing for outlining hands is not supplied. Clocks are electrically set with the No. 970 Reset Control.

DIAL SIZE	TYPE NO. WITH REMOTE RESET CONTROL
6'	6MBR-35
7'	6MBR-38
8'	6MBR-42
10'	6MBR-52
12'	6MBR-62
14'	8MBR-70
15'	8MBR-76
16'	8MBR-84
18'	10MBR-92
20'	10MBR-100
22'	10MBR-116

NOTE: Consult factory for 12MBR and 14MBR Clock Movements for dial sizes up to 50 feet in diameter.



Clock Setting Controls

Remote Reset Controls

This attachment is available for all clock movements and is indicated in Type Number with the suffix "R". The clock is wired (with 3 wires) to a conveniently located No. 970 Reset Control Panel (as shown here). The Control provides remote setting of clock hands by either stopping the clock or advancing the hands at a 10:1 reset rate.



A Master Reset Control Panel is available for operating from two to four clocks, which includes a master switch for group correction and separate switches for individual clock correction.



Pilot Clocks

A pilot clock may be located in the viewing vicinity of the Reset Control Panel to assist in setting the featured clock. Pilot clocks are available in several dial sizes of 10, 12 and 15 inches for both surface or semi-flush mounting. Open face or skeleton dial type clocks are also available. (See Clock Bulletin C-278.)



MC-100-WP Clock Controller

The National Time MC100-WP Clock Controller is a state of the art microprocessor based controller capable of automatically correcting outdoor clocks following a power failure or a programmed time change. Four control circuits are available to control clocks or other auxiliary devices such as bells, lights, etc. The MC100-WP also provides an automated individual correction. The correction time span for each clock can be entered using a keypad and the clocks will advance that amount, then return to normal operation automatically. A 32 character liquid crystal will display the time and date to keep track of daylight savings and programmed events for the auxiliary devices.



Enclosed in a polystyrene weather-proof housing, the MC100-WP Controller has no need for special construction considerations and may be conveniently mounted remotely or at the clock location. An interior mounted clock controller, MC-100, is also available.

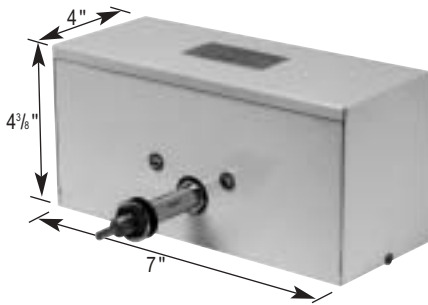
Electronic Thermometer Movements

NATIONAL TIME combines accuracy and reliability of solid state design with meticulous craftsmanship to produce analog thermometer movements you can count on. Our electronic dial thermometer is a state-of-the-art micro-processor based control with accuracy of $\pm 1/2^\circ \text{C}$ over its entire range. A proprietary temperature sensor minimizes unnecessary "temperature searching", resulting in extended bearing and motor life.

Standard movements display temperature ranges of -20 to 120°F or -40 to 100°F (-30 to 50°C or -40 to 40°C) over an angular graduated dial of 280° (288° on Celsius models.) (See illustrations below).

The universal sensor enclosure design facilitates side or bottom mounting. A 15' cable is supplied. Consult factory for two-way thermometers and special installations.

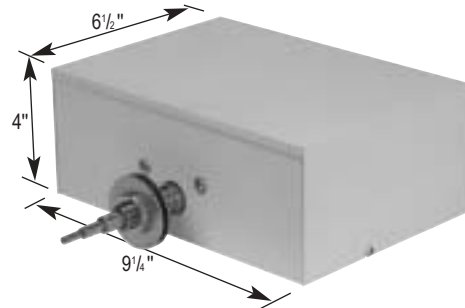
EDT-300 Series Thermometer Movements (For Dial Sizes 24" to 48")



DIAL SIZE	SINGLE-FACE TYPE-NO.
24"	EDT-311
30"	EDT-314
36"	EDT-316
42"	EDT-318
48"	EDT-321

EDT-400 Series Thermometer Movements (For Dial Sizes 54" to 72")

DIAL SIZE	SINGLE-FACE TYPE-NO.
54"	EDT-424
60"	EDT-426
6'	EDT-433



Non-Electric Thermometers

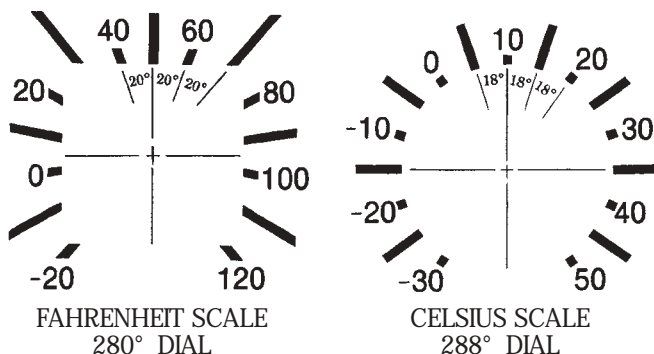
BX and BXG Series Thermometer Assemblies

National Time non-electric thermometer assemblies, are precision-built for reliability. The actuating thermal element is located within a protective dome which is insulated and enameled white. A screened rear section of the dome permits a free flow of air for accurate temperature recording with $\pm 2^\circ$ under normal conditions. The pointer is finished in a baked black enamel unless indicated otherwise. The BXG Series has a pointer mounted behind a cover glass.

BXG SERIES
THERMOMETER
ASSEMBLIES



Typical Dial Layouts
(For Fahrenheit and Celsius Temperature Scales)



DIAL SIZE	BX TYPE NO.	BXG TYPE NO.
18"	BX-7 1/2	BXG-7 1/2
24"	BX-9	BXG-9
30"	BX-12	BXG-12
36"	BX-15	BXG-15

BX SERIES
THERMOMETER
ASSEMBLIES



Open Faced Clocks



Style A Markers with M02 Hands



-FM, Style B Markers with M01 Hands



Style C Markers with M01 Hands



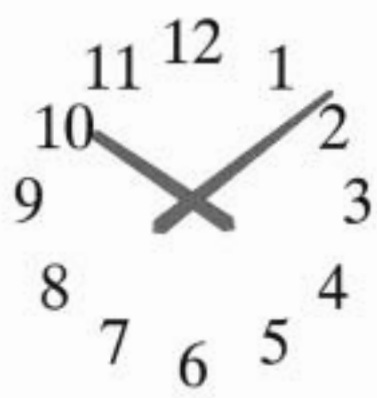
-FM, Style D Markers with M01 Hands



Style E Markers with M00 Hands



Style G Markers with M02 Hands



Style AR Markers with M01 Hands



Style R Markers with M03 Hands

NATIONAL TIME offers the Open-faced clock series to create a complete line of outstanding clocks. Our durable outdoor clock movements combined with markers will complement today's architectural treatments and are ideal for lobby or outdoor decoration. The movements can either be front mounted (-FM) with the mounting plate flush to the wall or rear mounted with extension shafts through the wall. The standard markers are ¼" thick aluminum and can be installed with adhesive on smooth surfaces, or can be ordered with mounting studs for uneven surfaces. Standard enamel finishes available for the hands and markers are black, aluminum or white. Consult factory for other finishes.

Clocks and Thermometers



300MR ROMAN SERIES CLOCK

200 SQUARE & 300 ROUND SERIES

National Time precision built round or square clocks and thermometers are designed and manufactured especially for the sign industry. They are offered in versatile sizes ranging from 18" up to 72". Square cabinets are fabricated from extruded aluminum, while the round units utilize aluminum skins over heavy support angles. Both come completely assembled, with or without illumination, including white translucent dials and standard black numerals for exceptional durability and very low maintenance. Standard choices are Modern, Arabic, or Roman dials, however other styles can be manufactured.



300MR ARABIC SERIES CLOCK

The interior of 200 Series cabinet is accessible through a hinged front dial section. The 300 Series has a removable rear panel.

Clocks feature the reliable standard National outdoor movements and hands, complete with a #970 remote reset panel or optional MC100 Automatic Controller.

There are also two types of thermometer movements to select from. The EDT Series electric model and the BX Series non-electric economy style utilizing a heavy bi-metal element. Both units are described on page 6.



200MR MODERN SERIES CLOCK



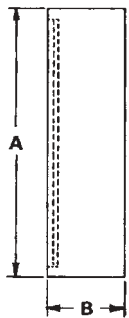
200MR ARABIC SERIES CLOCK



200MR ROMAN SERIES CLOCK

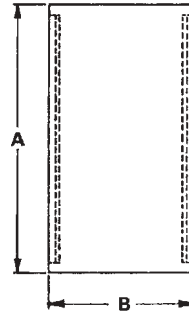


200T STANDARD SERIES THERMOMETER



Surface Mounting (800 MA FLUORESCENT ILLUMINATED)

Surface mounted units are complete including 800 MA high output fluorescent illumination unless you indicate otherwise. Movements are set away from the dial to prevent dial shadow.



Double-Face and Combination (800 MA FLUORESCENT ILLUMINATED)

Double-face clocks and thermometers, or combination units to include one clock and one thermometer, are shipped complete with 800 MA high output fluorescent illumination. Translucent white plexiglass dial lights spectacularly at night. Combination units make an ideal rotating assembly.

CLOCK TYPE NO.	ELECTRIC THERMOMETER NO.*	DIAL SIZE	DIMENSIONS	
			A	B
218MR	218T	16"	20"	8"
224MR	224T	22"	26"	8"
236MR	236T	33"	38"	8"
248MR	248T	44"	50"	8"
324MR	324T	21.5"	26.5"	8"
330MR	330T	27"	32.5"	8"
336MR	336T	33"	38.5"	8"
342MR	342T	39"	44.5"	8"
348MR	348T	44.5"	50.5"	8"
360MR	360T	53"	60.5"	12"
372MR	372T	64"	72.5"	12"

CLOCK TYPE NO.	ELECTRIC THERMOMETER TYPE NO.	COMBINATION CLOCK AND THERMOMETER TYPE NO.*	DIAL SIZE	DIMENSIONS	
				A	B
218MDR	—	218MRT	16"	20"	11"
224MDR	—	224MRT	22"	26"	11"
236MDR	—	236MRT	33"	38"	11"
248MDR	—	248MRT	44"	50"	11"
324MDR	—	324MRT	21.5"	26.5"	12"
330MDR	330DT	330MRT	27"	32.5"	12"
336MDR	336DT	336MRT	33"	38.5"	12"
342MDR	342DT	342MRT	39"	44.5"	12"
348MDR	348DT	348MRT	48"	48"	12"
360MDR	360DT	360MRT	60"	60"	12"
372MDR	—	—	64"	72.5"	12"

*For non-electric thermometer assemble, change suffix "T" to "BX". (Example: 224-BX.) Available to 36" Diameter only.

*For non-electric thermometer assemble, change suffix "T" to "BX". (Example: 224-MRBX.) Available to 36" Diameter only.

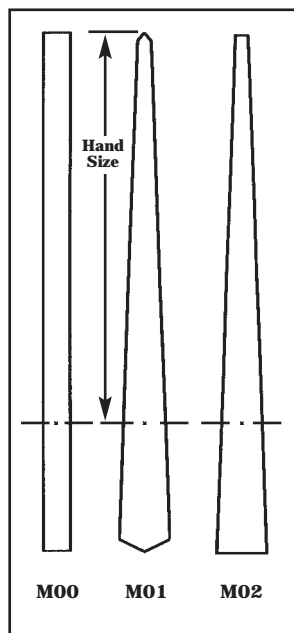
Clocks to be finish mounted into wall will include a trim ring. Consult factory for sizes and applications not shown herein.

Clock and Thermometer Hands

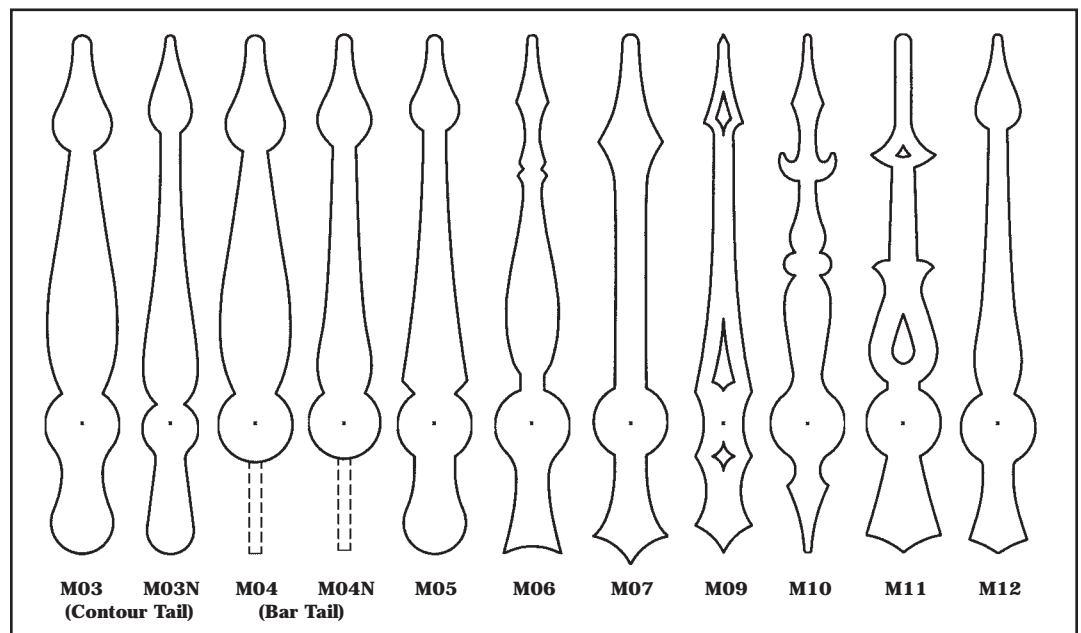
CLOCK HANDS								THERMOMETER POINTERS				
DIAL SIZE	MINUTE HAND SIZE	CLOCK MOVEMENTS						POINTER SIZE	ELECTRIC THERMOMETERS		NON-ELECTRIC THERMOMETERS	
		2M	3M	HM	4M	7M	11M		EDT-300	EDT-400	BX	BXG
18"	9"							7½"				
24"	11"							9"				
30"	14"							12"				
36"	16"							15"				
42"	18"							18"				
48"	21"							21"				
54"	23"							24"				
60"	26"							26"				
66"	29"							29"				
6'	33"							33"				
7'	37"											
8'	41"											
9'	47"											
10'	52"											
11'	58"											
12'	62"											
14'	70"											
15'	76"											
16'	84"											
18'	92"											
20'	100"											
22'	116"											

NOTES: Hour hands are in proportion with minute hands. All hands are balanced and enameled black unless otherwise specified. Consult Factory for custom designed hands and finishes.

Standard Hands



Special Hands

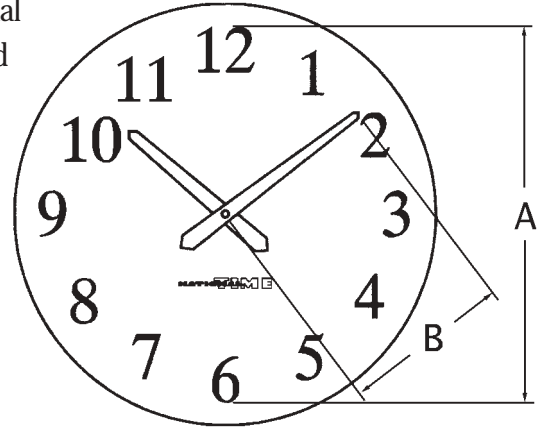


Order & Installation Information

NATIONAL TIME clocks and thermometers are designed for ease of installation and maintenance. All units are shipped with complete installation drawings, instructions and wiring diagrams.

Diagrams that follow depict typical installations and detail dimensional information required with every order. Dial diameter, or minute hand length center to tip, dial material and thickness, back-to-back dial spacing measurements, and extension shaft requirements should be known and reported when you place your order.

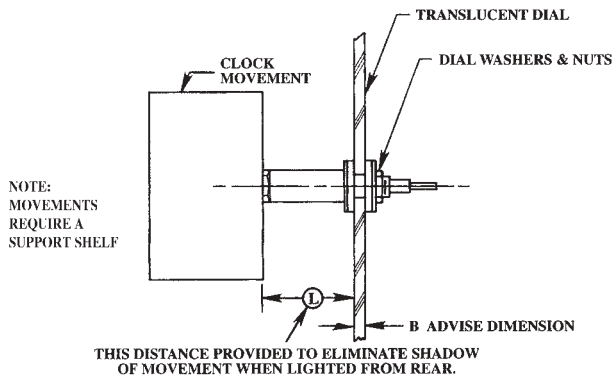
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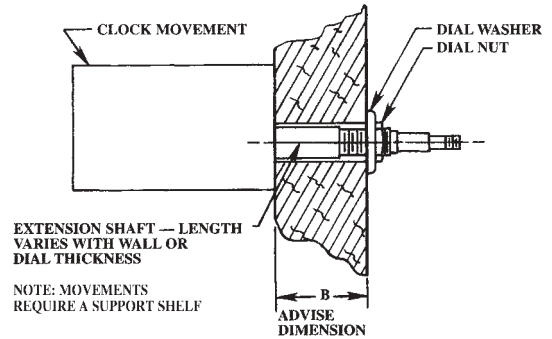
A: Size of Dial

B: Length of Minute Hand (Center to Tip)

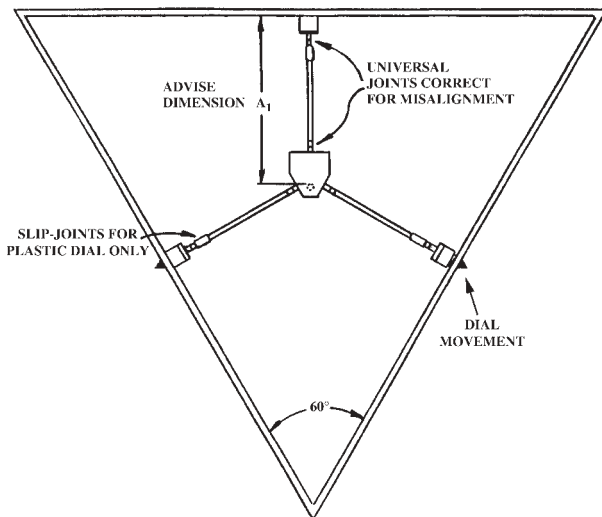
Typical Backlighted Installation



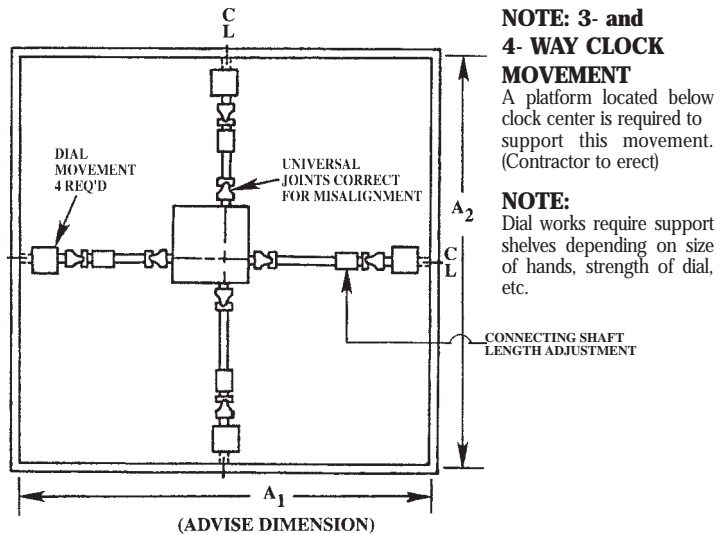
Typical Through-Wall Mounting (May Also Apply To Multiple-Faced Installation)



Three-Way 120° Installation



Typical Four-Way Installation



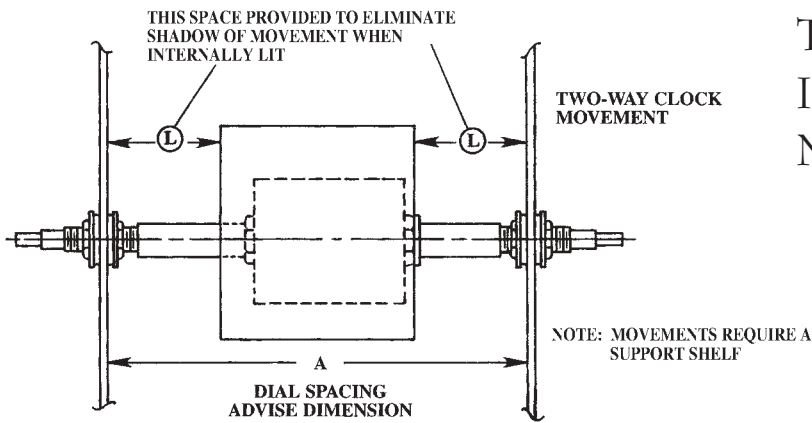
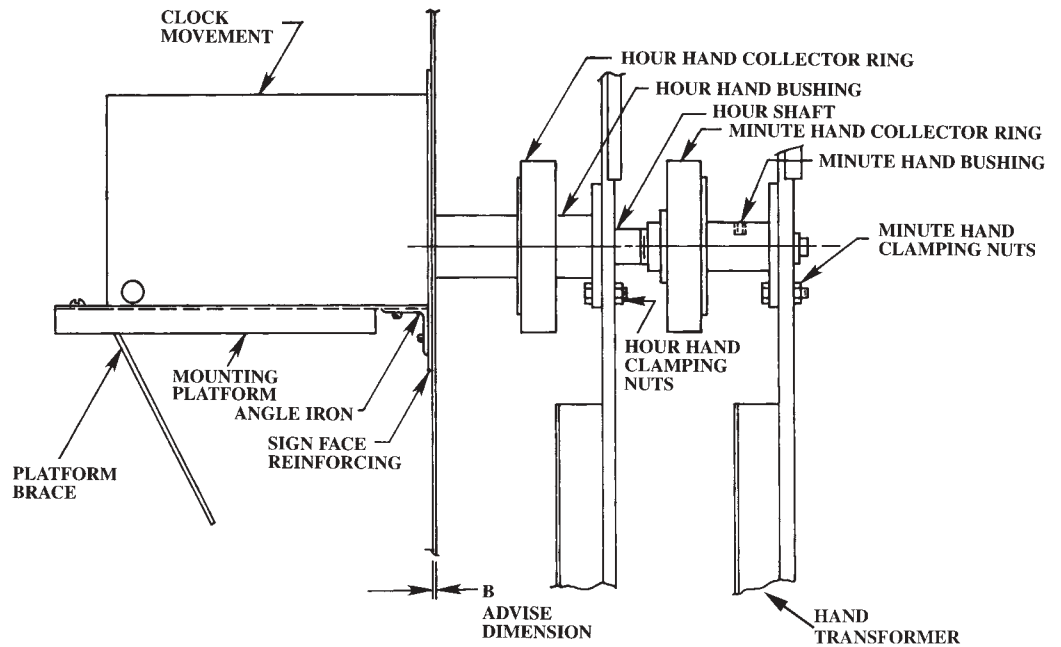
NOTE: 3- and 4- WAY CLOCK MOVEMENT

A platform located below clock center is required to support this movement. (Contractor to erect)

NOTE:

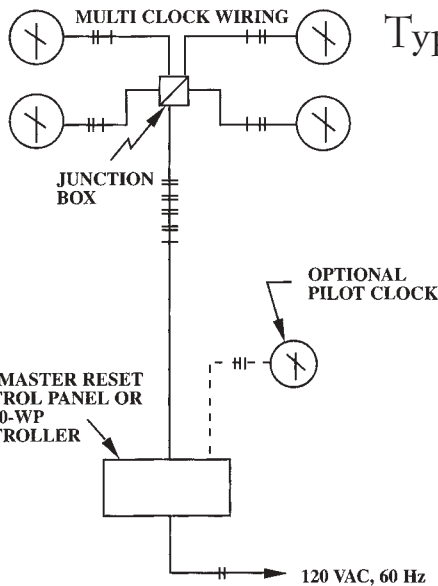
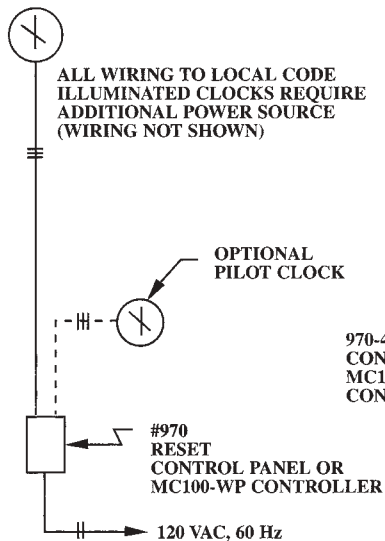
Dial works require support shelves depending on size of hands, strength of dial, etc.

Typical
6M and 8M
Installation for
Neonized Hands

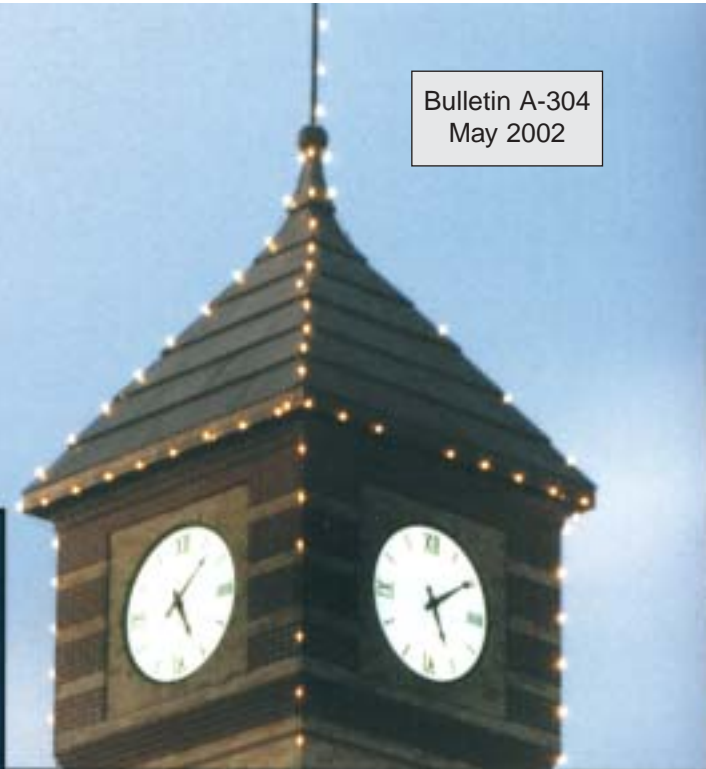


Two-Way
Installation for
Narrow Dial Spacings

SINGLE CLOCK WIRING



Typical Wiring Circuits



VICTO

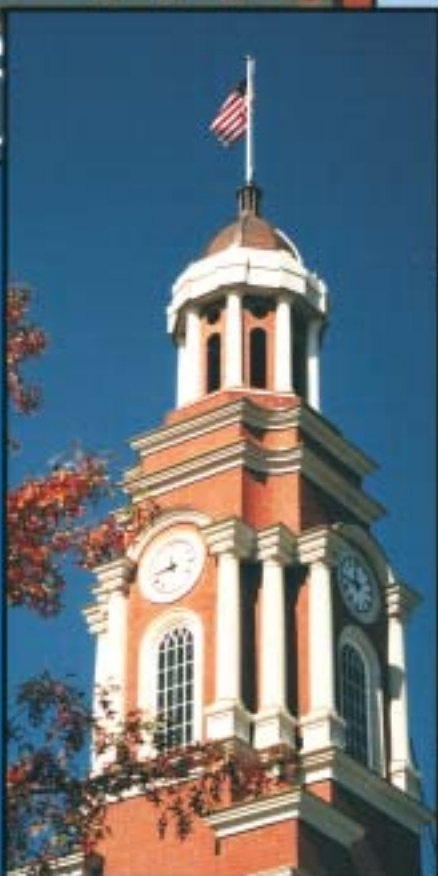


IMAGE  TIME



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