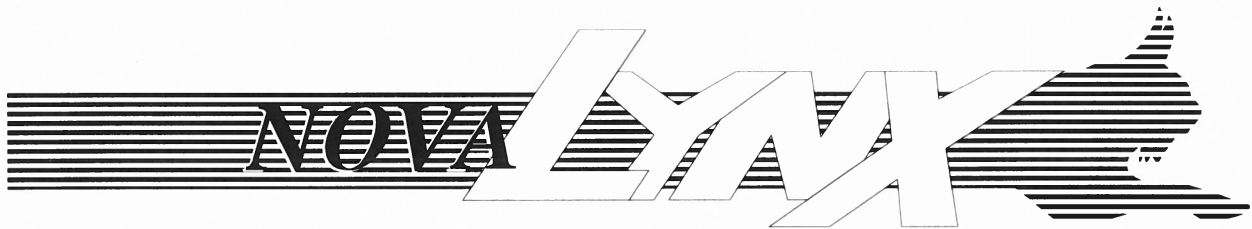


NOVALYNX CORPORATION

**225-7917 Fuel Moisture Scale
225-7918 10-Hour Fuel Moisture Stick
225-7919 Support Bracket**

INSTRUCTION MANUAL



REVISION DATE: 08/07/2000

This Document Replaces and
Supersedes All Previous Versions

Receiving and Unpacking

Carefully unpack all components and compare to the packing list. Notify NovaLynx Corporation immediately concerning any discrepancy. Inspect equipment to detect any damage that may have occurred during shipment. In the event of damage, any claim for loss must be filed immediately with the carrier by the consignee. Damage to equipment sent via Parcel Post or UPS require the consignee to contact NovaLynx Corporation for instructions.

Returns

If equipment is to be returned to the factory for any reason, call NovaLynx between 8:00 a.m. and 4:00 p.m. Pacific Time to request a Return Authorization Number (RA#). Include with the returned equipment a description of the problem and the name, address, and daytime phone number of the sender. Carefully pack the equipment to prevent damage or additional damage during the return shipment. Call NovaLynx for packing instructions in the case of delicate or sensitive items. If packing facilities are not available take the equipment to the nearest Post Office, UPS, or other freight service and obtain assistance with the packaging. Please write the RA# on the outside of the box.

Warranty

NovaLynx Corporation warrants that its products are free from defects in material and workmanship under normal use and service for a period of one year from the date of shipment from the factory. NovaLynx Corporation's obligations under this warranty are limited to, at NovaLynx's option: (i) replacing; or (ii) repairing; any product determined to be defective. In no case shall NovaLynx Corporation's liability exceed product's original purchase price. This warranty does not apply to any equipment that has been repaired or altered, except by NovaLynx Corporation, or that has been subjected to misuse, negligence, or accident. It is expressly agreed that this warranty will be in lieu of all warranties of fitness and in lieu of the warranty of merchantability.

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OPERATING INSTRUCTIONS

Forester Fuel Moisture Scale

This scale should be carefully mounted in true horizontal and vertical position within an instrument shelter. The three point suspension is fixed at one point and slotted at the other two points to allow adjustment. Attach the 100 gram test weight supplied with the instrument to the hook and check that the pointer registers zero increment on the dial. Tap the pivot point lightly three or four times after placing either the test weight or the fuel moisture sticks on the scale in order for the beam to find its true position.

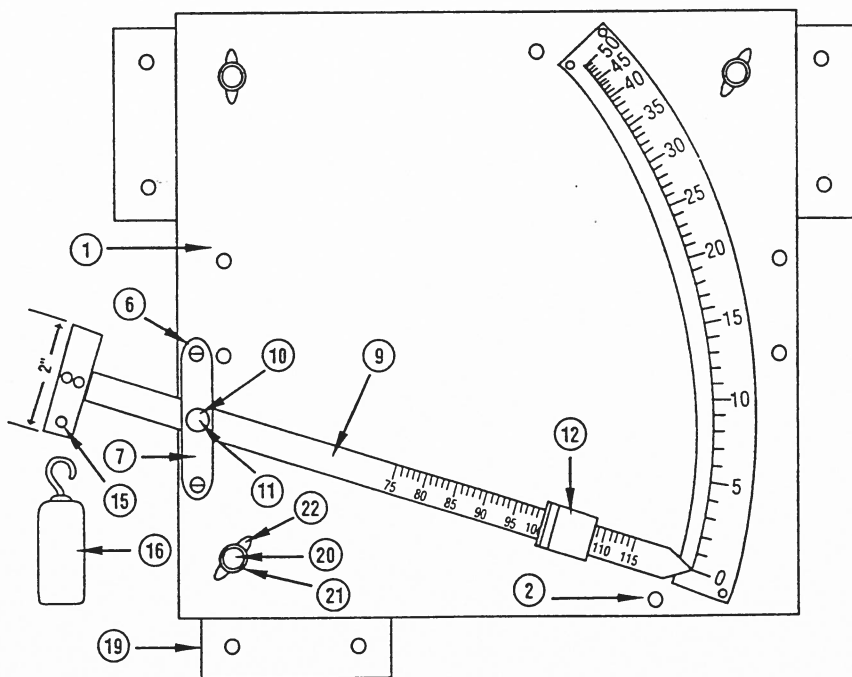
Fuel moisture sticks, P.N. 225-7918, should be supported 10 inches above ground on two wire brackets, P.N. 225-7919. They must be kept free of dust and mud. They should not be touched by hand, but handled with tongs or pliers. To measure fuel moisture content, remove brass weight, carefully hang the sticks on the hook provided, tap the pivot point gently, and read fuel moisture content directly on the scale.

PARTS LIST

FUEL MOISTURE SCALE

Ref. Description

- 1 Backplate with Calibrated Scale
- 2 Beam Stop Peg
- 3 Beam Stop Peg Screw
- 4 Pivot Plate, Rear
- 5 Pivot Plate, Spacer (2)
- 6 Pivot Plate, Screw (2)
- 7 Pivot Plate, Front (Same as 4)
- 8 Beam & Pivot Shaft Assembly
- 9 Beam Only
- 10 Beam Pivot Shaft
- 11 Beam Pivot Shaft Spacer (2)
- 12 Sliding Weight Only
- 14 Sliding Weight Setscrew Wrench
- 15 Beam Link for Test Weight
- 16 Test Weight Assembly
- 19 Wall Mounting Brackets
- 20 Wall Mounting Bracket Bolts (3)
- 21 Wall Mounting Bracket Washers (3)
- 22 Wall Mounting Bracket Wingnuts (3)
- 23 Wall Mounting Bracket Woodscrews (6)



FUEL MOISTURE STICKS

Since Glaborne (1933) first developed the idea in 1924, fuel moisture indicator sticks, or similar types of analogs, have been widely used to estimate the moisture content of small forest fuels.

A fuel moisture indicator stick is "...a specially prepared stick or set of sticks of known dry weight continuously exposed to the weather and periodically weighed to determine changes in moisture content as an indication of moisture change in forest fuels" (Society of American Foresters 1958). Unlike conventional weather instruments, indicator sticks do not measure any single weather variable but rather they "...measure the net effect of climatic factors affecting flammability in terms of the most significant item, the fuel itself." (Davis 1959). For this reason, the practice of using fuel moisture indicator sticks, or some other analog of fuel moisture indicator sticks, or some other analog of fuel moisture, is common at fire-weather stations, both in conjunction with fire rating systems and prescribed burning operations.

A standard fuel moisture indicator stick consists of four ½ inch ponderous pine sapwood dowels spaced one-fourth inch apart on two 3/16 inch diameter hardwood pins. The dowels are held in place on the pins by wire brads at each intersection. The resultant indicator stick (Fig. 5.1) is 2 ¾ inches wide, about 20 inches long, and has an oven-dry weight of 100 grams. A screw hook inserted in the end of one of the dowels and the notation, "This end NORTH, this side up" is stamped just below the screw hook in the surface of the dowel.

A fuel moisture stick should be discarded after one season's use (more often in areas of rapid weathering); hence, there is no annual maintenance requirement. While in use, a few simple maintenance items require the observer's attention.

Dirt, oil, and dust add to the weight of the stick and can interfere with normal moisture changes of the stick. The stick therefore should be kept clean. Prior to each weighing dust the stick with a soft, clean paintbrush. Do not brush the stick if it is wet. Wait until it is dry.

Cover hands with clean gloves or use a clean cloth or a clean piece of hard finish paper to pick up stick for weighing. Handling stick with bare hands might contaminate it with oil and dirt.

A properly installed duff bed will prevent mud from splashing up on the stick during heavy rains. In the event that the stick does become mud splattered, allow mud to dry and then brush off (do not rub in) the dirt.

Do not remove the metal hook at the end of the stick, as its weight is included in the 100-gram dry weight of the stick. Similarly, guard against scratches, chips, breaks, etc. If they occur, replace with a new stick.

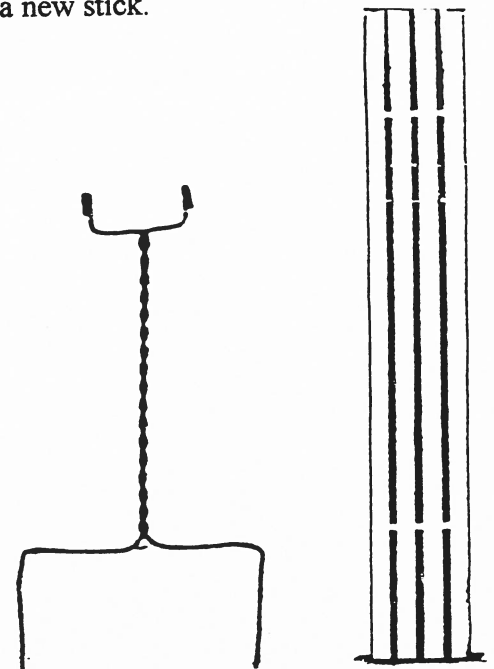


Figure 5.1

½ inch ponderosa pine fuel moisture indicator sticks and wire mounting rack (two required per installation)

DUFF BED

Prepare a bed of coniferous needles or hardwood leaves 2 inches deep over a 3-foot square area. The ground surface beneath the duff bed usually requires treatment of some sort to eliminate herbaceous vegetation. Place the needles on the surface of the ground (not in a pit to assure normal runoff of water after a rain, the purpose of the duff bed is to provide a standard reflection surface and to prevent hard rains from splashing mud on the sticks. A burlap sack fastened to the ground under the sticks would be a good substitute if litter were not readily available.

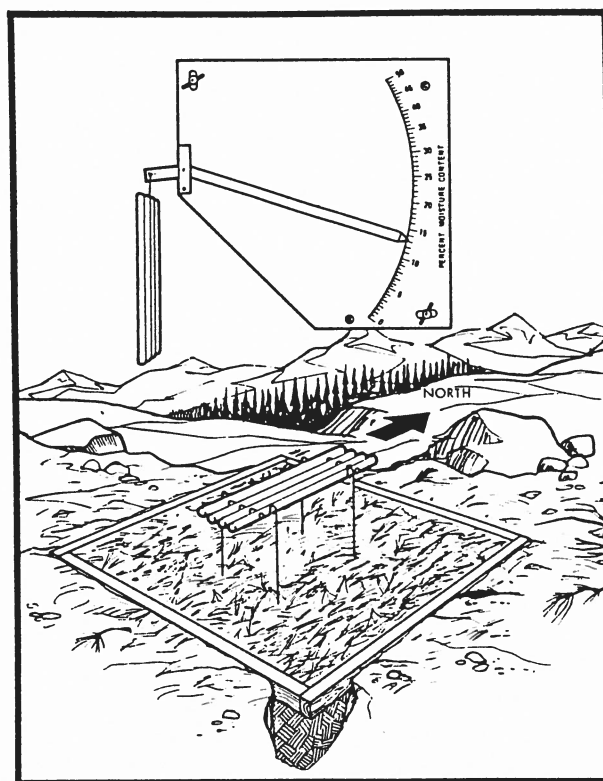
STICK EXPOSURE

Weathering, i.e., the effects of sun, rain, wind, and repeated wetting and drying, reduces the oven-dry weight of fuel moisture sticks over time. For this reason, install a new set of indicator sticks at the beginning of each season and, if necessary, periodically throughout the season. Install the sticks several days prior to the date measurements are to start so they have sufficient time to attain equilibrium with the surrounding air. Expose the sticks in a horizontal position 10 inches above a fresh bed of dry needles or leaves. Place two galvanized wire racks 16 inches apart over the duff bed to support the sticks.

Because of this close relationship between fire-weather observation and fire-danger rating, the past literature on observation practices and station standards consisted, almost exclusively, of regional fire-danger rating handbooks. Since the general adaptation of Spread Phase of the National Fire-Danger Rating System in the United States, these regional fire-danger rating handbooks have gradually gone out of print.

At present, the only generally available source of fire-weather observation information and station standards in the United States is the

National Fire-Danger Rating System Handbook (USDA Forest Service 1964b), a part of the Forest Service directive system. Fire-people in California have the Wildland Fire-Danger Rating System Handbook (USDA Forest Service 1962). Both of these sources will become obsolete when the completed National Fire-Danger Rating System (Deeming and Lancaster 1971) is generally adopted nationwide in 1972 or 1973. Fire-weather observation procedures and station standards required for operation of the completed National Fire-Danger Rating System can be provided by this edition of the Fire Weather Observers Handbook.



Fuel-moisture sticks of the ½ inch size are used to estimate the moisture content of dead fuels of comparable size. They are exposed on a wire rack 10 inches above a bed of litter. By weighing them, their moisture content can be obtained