

**WINDTEK** *INC.*

*the best windsocks on the face of the planet...*



## **Runway Light Installation Guide**

*[www.bestwindsocks.com](http://www.bestwindsocks.com)*



The model ML-3 is a low intensity light designed with you the user in mind.

All components are as maintenance free as possible. The quality of our cone is also noteworthy. It is 10 inches in diameter and is made of spun .050 aluminum, which is more than double the thickness of competitive products. We finish this cone with a durable baked yellow enamel which provides a highly visible day time maker for your runway light edges. The post that we employ is made of electrical grade PVC conduit which has UV stabilization and is corrosion free.

The lens are polycarbonate and are designed to magnify light omnidirectionally from horizontal to about 15 degrees above the horizontal plane, which is needed for most approaches. The lens, along with the 15 watt bayonet long-life bulb (1000 hour) is a proven design that has been used successfully for many years. The lens is available in clear, red, green, amber, blue, red/green, red/clear, amber/clear and green/clear. Shields are also available so that light is only visible for 180 degrees in direction. The ML-3 can be mounted in a variety of ways. The easiest is to pound an oversized pipe into the ground and simply insert the unit into the pipe. This requires an extra long PVC post and wiring which remains internal to the post.

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This method also poses a problem with split lens units as a method to hold the unit from turning must be devised. This can be done with a set screw or similar device. The ML-3 is supplied with a post that is 4 inches longer than installed height. This 4 inch area is used to be installed below grade into the vee groove of an angle iron stake and secured

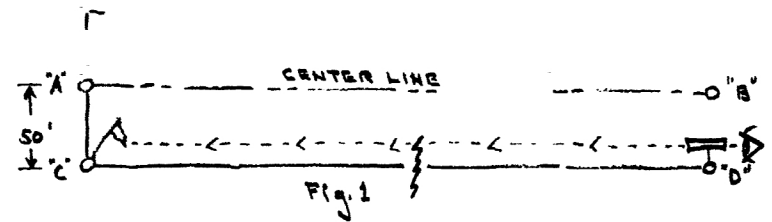
with a stainless steel hose clamp. This makes for a neat installation since wiring is internal to the post. Runway lights should be a total height of 14 inches above the ground. In areas of heavy snowfall, unit can be mounted 24 inches above the ground. Many governmental agencies are now recommending that runway marker lights be placed 200 feet apart with 6 red/green units across each of the thresholds. We recommend that you contact your State agency to check on any local requirements. It is possible that the spacing is at your option and that you could use solid green on each threshold, thereby saving you money. Since low intensity lights use very little power, it is possible to wire your runway using #14 uf (direct burial) wire. A typical 3000 foot runway would need about 40 ML-3 units ( using 200' & 6 threshold config. ) which means that the total load would be only 400 watts. This translates into a current running in the feed line of only 3.3 AC amperes.

It should be noted that each installation is unique and someone with knowledge of voltage drop due to long lines be consulted. But most installations should not require lines greater than #14 wire between units and #12 wire from the source to the runway. Please contact us if you have any questions about your installation needs. Should you find yourself in our area we would be happy to show you our runway light installation at Willows Airport. ( 2000' )

## Runway Light Installation Guide

### *Lay Out The Runway*

The purpose of this guide is to help in your runway installation. You should use this guide in the most general sense. Many changes may be necessary in your particular case, since soil conditions, availability of equipment and material, along with other factors may be different than those depicted in this guide. Check and follow local regulations and code.



IMPORTANT: Make a drawing with spacing, distances, etc.

Needed Tools : Transit ( or rifle scope ), Flagging Pole, Ground Markers, Steel Measuring Tape, Plumb Bob and Two People.

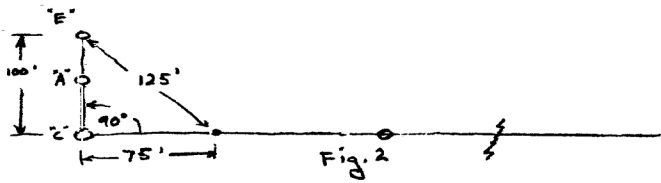
Example: 100 ft. by 2000 ft. runway - 200 ft. spacing.

Determine where you want the centerline on each end of the runway. Make these spots with your ground markers. Fig 1, A & B (Cut out circle from roof flashing with large spikes in the center will make great markers)

Measure 50' to one side. Mark this spot as it will be the corner of your runway and will have a light installed there. Fig 1 C

On the other end of the runway do the same so that you can sight down the one side of the runway with your transit located directly above this marker. Fig 1 D (Use a plumb bob) A rifle scope can be mounted on a small table etc. Tape it down or do whatever it takes to keep it immobile. You want to sight it at a pole held vertically above the corner marker (Fig 1 C) that you spotted.

**MAKE THE RUNWAY A RECTANGLE  
( NOT A PARRALLELOGRAM )**



See Fig. 2

To make sure the corners of the runway are 90 degrees, you can use the 3,4,5 rule.

This will make sure the lights on both sides of the runway are directly opposite each other. Measure 75 feet from the corner point "C" up the runway edge using the transit to stay on the line. Mark this spot Measure 100 feet from the corner point "C" across the threshold while estimating 90 degrees and temporarily mark this other runway corner "E".

The distance from the 75' mark to point "E" should be 125' Adjust point "E" until these measurements are correct. You can use the same technique anywhere on the runway to check that the units are directly opposite from each other.

Note: In the previous example the 3,4,5 rule uses 25' for one unit. 3 units = 75', 4 units = 100', 5 units = 125' where 4 units is the width of the runway.

If your runway is different, say 120', then 4 units = 120' and therefore one unit = 30'. Your measurement down the runway would be 90' down the runway edge, 120' across the threshold and 150' across the diagonal.

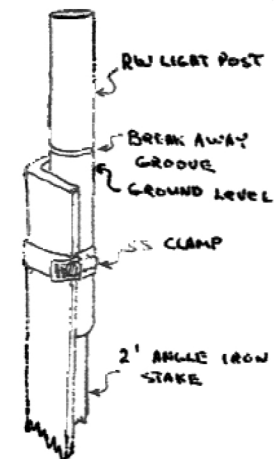
Use the transit and measuring tape and proceed down the runway edge and mark your spots. Set up the transit on the other runway edge using the same techniques until all light locations are marked. Use the 3,4,5 rule on the 2<sup>nd</sup> threshold to make sure it is square and adjust as necessary. Be as precise as possible when spotting the markers and driving the stakes. When your installation is finished you should be able to look down the runway edge and have all the units exactly lined up behind the other.

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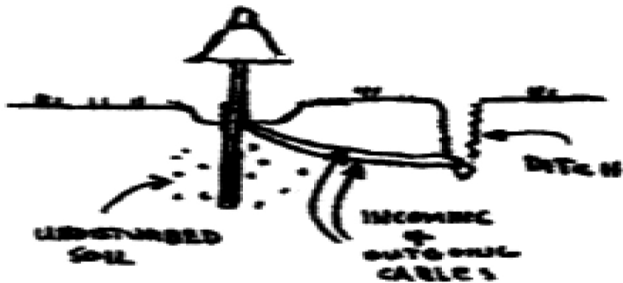
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**The System Installation**



The ML-3 units come with a mounting post. The post is made of 1/2" ID PVC electrical conduit. By using this size conduit we have enough room inside the post to make our electrical connections. The direct burial cable is looped from one light unit to the next and wired in parallel fashion. The simplest method found for securing the post is to drive a 1" by 2" angle iron stake into a shallow (4") hole. The light post is laid into the vee of the angle iron stake and attached with a stainless steel hose clamp.

## The System Installation



1. Lay out markers.
2. Dig your ditch down the runway edge. 2' away from the markers.
3. At marker locations dig shallow (4") hole. Drive stake until top is at ground level. While driving stake check for plumb using a level.
4. Run your cable into the ditch. At each light location make a loop of cable that is long enough to make the connection and return to the ditch. Do not skimp as we do not want underground splices. Hand dig from the ditch to the light. You want the cable to come up to the bottom of the post. The connections will be inside the post – High and Dry.
5. Prepare the light units. Before installing the post to the light body make sure you strip off the outer cover of the pigtail. You want the three wires exposed their full length. This will allow them to be stuffed into the post.
6. Prepare and trim your cable. The cables can be trimmed into a tower configuration with black at top, white to the middle and ground on the bottom. This will allow adequate room to slip the post onto the cable tower. Stuff the tower into the post, position and clamp.

## Cable Installation

A fast and easy way to lay the cable is to use a farm tractor and a modified sub soiler. Farmers use such a plow to make channels under the topsoil in order to dry out a wet spot. It is essentially a steel blade with a bullet welded to it's bottom. The blade slices the soil and the bullet makes the channel. The blade is about ½" thick and therefore disturbs very little of the upper soil. If you can borrow one of these plows you will be able to lay the cable necessary for a 3000' runway in one afternoon. As you can see from the drawing, the cable will be laid right into the channel behind the bullet. The conduit should have an ID large enough for the biggest cable you plan to use. Make sure there are no sharp edges on the top of your conduit. Make some test runs to assure that the lashing is adequate.

### BEFORE YOU LAY YOUR CABLE

Drill post holes where you want to bring up cables. The holes must be drilled deep enough so that the wire will be exposed after the wire is plowed in. Keep the plow about two' on the outside of every light location.

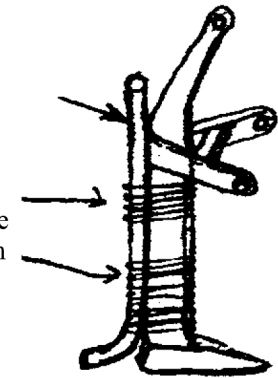
You don't want your plow near the stake locations. Stakes should be driven in undisturbed soil.

### TRIAL RUN WITHOUT CABLE

Plow from hole to hole without cable. Do not raise the plow until you have made the entire run, end to end. You cannot backup with this rig. If you hit a large obstruction you will be doing a lot of hand digging. If you know there are no large rocks etc. then you can probably skip this trial run.

### LAYING THE CABLE

You want to plow down the edge of the runway going from hole to hole without raising the plow. If you did a trial run you will be keeping the plow in the same slit. After you pass a hole you will stop the tractor. Reach down into the hole and pull out enough cable to wire that unit. Secure the cable with a short piece of pipe by wrapping the cable and jamming the pipe into the hole so that it cannot be pulled when the tractor moves onto the next hole.



## RUNWAY LIGHTS

The ML-3 model is a low intensity runway light. All components are as maintenance free as possible. The 10" diameter cone is made of durable baked yellow enamel painted .050" thick aluminum. The post is electrical grade PVC which has UV stabilization and is rust and corrosion free. The acrylic lens houses a 15 watt bayonet bulb. The lens is available in clear, amber, red, green, blue, red/green, red/clear, and green/clear. Shields are also available.



**PLEASE CALL FOR ADDITIONAL INFORMATION ON INSTALLATION AND INDIVIDUAL PRICING OR VISIT OUR WEB-SITE**  
[www.bestwindsocks.com](http://www.bestwindsocks.com)

**ML-3 Complete runway light w/clear acrylic lens**  
**\$42.95**

**ML-3 Complete runway light w/split acrylic lens**  
**\$46.95**

## RUNWAY LIGHT PARTS LIST ML-3

DESCRIPTION	PRICE	PART NUMBER
.050 x 10" Yellow Aluminum Cone	\$19.80	ML-3CONE
1"PVC Post w/ Breakaway Groove	\$4.50	ML-3POST
Clear Lens, Assembly, Complete	\$19.50	ML-3 AFC
Amber Lens, Assembly, Complete	\$20.40	ML-3AFA
Blue Lens, Assembly, Complete	\$20.40	ML-3AFB
Green Lens, Assembly, Complete	\$20.40	ML-3AFG
Red Lens, Assembly, Complete	\$20.40	ML-3AFR
Green/Red Lens Assembly, Complete	\$21.85	ML-3AFGR
15W 130V Bayonet Bulb	\$4.20	ML-3BULB
Coupler/3 Part	\$8.95	ML-3COUPLER

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## Notes



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07/14