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**HARDI METPOLE®**

**Users manual**

673618-GB-98/12

# 1. Unpacking the METPOLE

When unpacking the METPOLE it is important not to damage the box or throw it away. The box can be used for future transportation of the METPOLE in case of recalibration.

When removing the METPOLE from the box, be careful not to damage the wind sensor bearing on the top.

## **Contents in the box:**

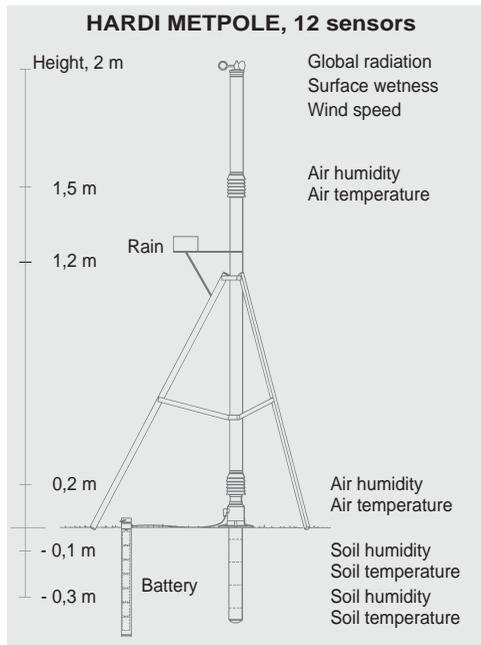
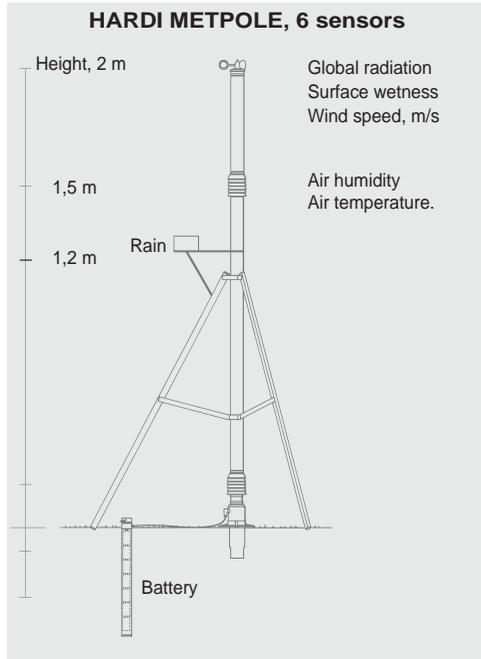
- 1 METPOLE
- 3 pegs
- 1 rain gauge with cable
- 1 battery container with cable
- 1 wind sensor top
- 1 collar

## **Kit of accessories:**

- 4 magnet shoes
- 1 soil auger
- 1 cross bar soil auger
- 1 rain gauge with cable, 50 m
- 25 m antenna cable

Antenna, receiver and battery is delivered separately. The battery is supplied in a yellow millboard tube.

## 2. METPOLE sensors



### 3. Installation and assembly

A suitable place is chosen. Only the part of the METPOLE going into the ground is completely waterproof. If there is so much water around the METPOLE that it reaches the plugs for battery and rain gauge or even the lower slats, the electronics will be damaged.

- 1 The soil auger is driven into the ground by means of a wooden mallet, 2 holes are made of approx. 50 cm. One hole is used for the earth part of the METPOLE, the other one for the battery. The distance between the holes are approx. 1/2 m. It may be necessary to empty the auger for soil a couple of times; especially if the soil is clay.

**Note:** The soil auger must be hauled out by turning and not by tipping it. This is necessary because the soil part of the Metpole must have contact to the earth.

If there is obstructive sharp objects e.g. stones in the hole, the yellow protection layer on the METPOLE could be damaged - make a new hole.

- 2 Fit the collar on the METPOLE and place the METPOLE in the hole by pressing the collar gently with two hands. The legs are adjusted until the supporting bars are horizontal and the METPOLE vertical. Press down the pegs into the soil to secure the legs of the METPOLE.



- 3 The plastic cap on the wind speed rotor bearing is removed and put away in the transport box. Press gently on the top. The top is correctly placed when you hear a click.

Remember to remove the protection sticker on the white plastic top.

4. The rain gauge is fitted. The upper edge must be horizontal. Insert the plug in the bottom of the METPOLE at the mark "rain gauge". The plug can only be placed in one way. Mind the gasket! Screw on the plug.



## 4. Fitting the battery

Place the battery in the battery compartment. Connect the wires: Green to green and brown to brown. The 3 free plugs are used for service purposes.



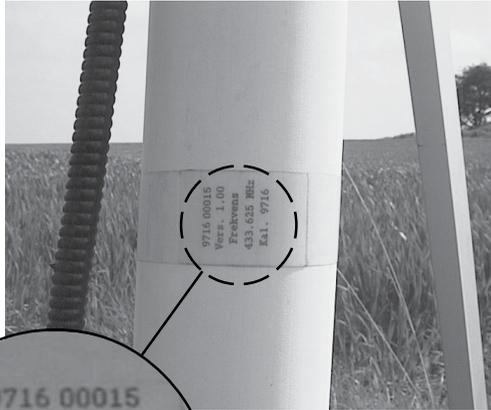
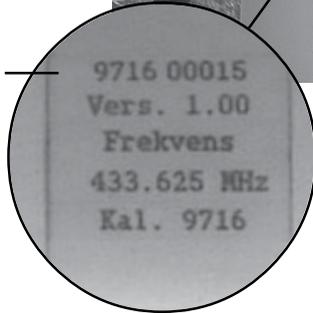
When the battery pack is assembled, observe that the O-rings are placed in a correct way. Otherwise, water will penetrate the battery compartment resulting in irreversible damage.

The battery pack is placed in the hole and the plug inserted into the bottom of the METPOLE on the opposite side of the rain gauge - but otherwise in the same way.

The METPOLE is now in working order and will transmit data within 30 minutes.

Remember to write down the last 5 digits of the serial number of the pole and bring them to the PC.

The last 5 digits on this METPOLE is thus 00015.



## 5. Test transmission

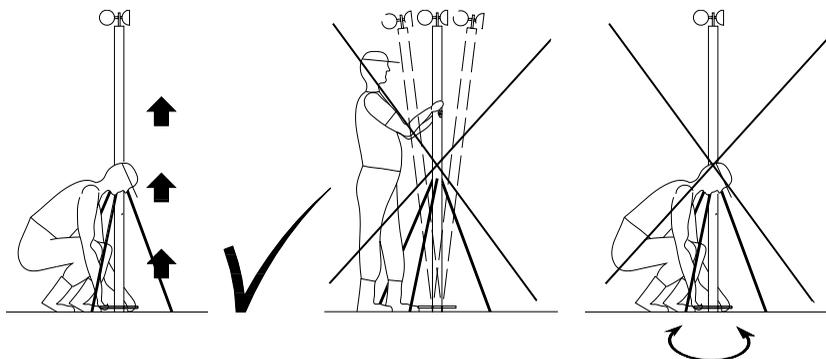
If you want to test the transmission, place a magnet collar as shown on the picture. This will make the METPOLE transmit data every 5th minute. Test data can be deleted in the PC programme if necessary.

Remember to remove the magnet again when the test is terminated and restart the METPOLE. This is done by dismantling the battery plug for 5 seconds. The METPOLE will transmit data after 30 min.



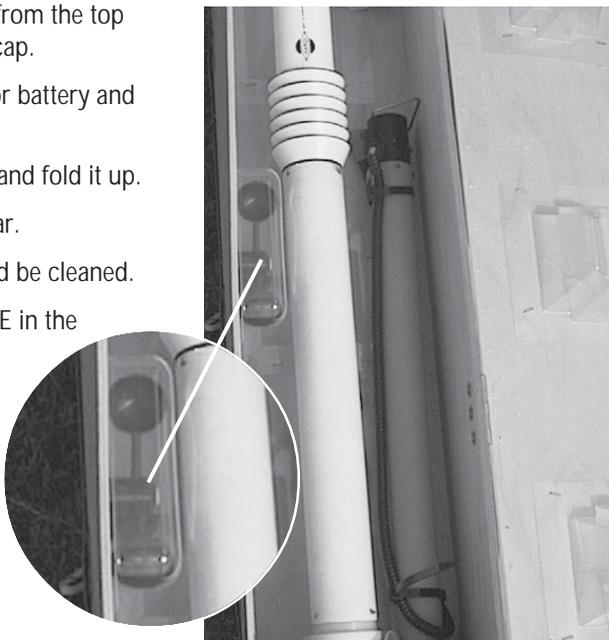
## 6. Taking down or moving the METPOLE

It is **very important** to pull out the soil part straight out from the ground. It must not be turned or twisted. This will make it untight whereby water will penetrate resulting in irreversible damage on the electronics.



## 7. Packing of METPOLE

1. Remove the cups from the top and fit the plastic cap.
4. Dismantle plugs for battery and rain gauge.
3. Loosen the tripod and fold it up.
4. Dismantle the collar.
5. The soil part should be cleaned.
6. Place the METPOLE in the transport box.
7. Place the wind speed rotor as shown on the picture.



## 8. Maintenance and service tips

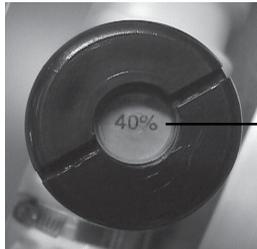
### Relative humidity and air temperature

The slats on the radiation shield may get dirty or coloured by pollen. They must be kept clean, otherwise the shield will be heated by the solar radiation. Cleaning can be done with a cloth moistened with detergent or spirit. Take care, otherwise the slats could get loose.

The relative humidity sensor can be checked by wrapping a wet cloth (a towel or so) around the radiation screen. After 3 to 5 hours the sensor must show >95% RH. The reason for this long time of response is that the air circulation around the sensor stops, when the cloth is wrapped around the screen.

### Soil humidity and temperature

***When moving the METPOLE the soil part must be hauled out of the ground with a vertical pull in the collar. If this is not possible, you will have to dig the soil part free, or it could eventually be necessary to moisture water upon the soil, if the soil is compact due to setimentation or heat. If you twist or tip the earth part, it may no longer be tight.***



Pink: Wet  
Blue: Dry

From the 1st December 1998 a modification on the soil part has been implemented. It is now possible to check from the outside if moisture has been penetrating the soil part. The desiccant should be replaced once a year or when the inspection hole turns pink. In dry conditions it will be blue. It is possible for the user to change the desiccant. Spare part number of the desiccant capsule is: 285654.

All METPOLES sent to calibration or repair at our workshop will have this change modification free of charge.

Testing of the soil part can be done by lowering the yellow part of the tube into a bucket of cold fresh water. After appr. 15 min. the 2 soil temperatures must be almost equal, and the soil humidity appr. 60%. When dry, the soil humidity should read appr. 1%.

## Wind speed rotor and radiation meter

You must not interchange two wind sensor tops of two METPOLES. Each top has been calibrated with the wind sensor fitted due to the solar radiation sensor. In case the wind sensor is damaged, it will be necessary to replace the top completely.

If the white plate on top of the cups is dirty or colored by pollen it can be cleaned by using a cloth moistened with detergent or spirit.

Dismantling of the complete top requires special tools and normally cannot be made by the enduser.

## Rain gauge

The rain gauge bucket must be free from dust/sand. The funnel must be kept free from leaves which can block the hole.

## Plugs

The plugs of the rain gauge and the battery pack must be watertight. It is therefore important that the packing is present when fitting the plug. If the METPOLE has been moved and the packing has disappeared, new packings can be ordered as spare parts (No. 242331).

## 9. Recalibration and repairs

A Metpole should be recalibrated once a year. For the time being this can only be done in the HARDI electronic workshop.

In order to ensure a service time as fast as possible, it is a good idea to give notice to the dealer in good time before sending the pole. The dealer will then book time in HARDI's workshop.

### **At the recalibration the following will be made:**

- Check and calibration of all sensors
- Replacement of battery
- Replacement of desiccant.
- Check of transmitter.

If necessary, defective parts will be replaced/repaired.

*It is very important to enclose a description of the defect. For that purpose the HARDI service order form must be used. If it is not found in the transport box, please order it from the dealer.*

# Microstation

## Set-up of the Metpole receiver:

### Following units are to be used:

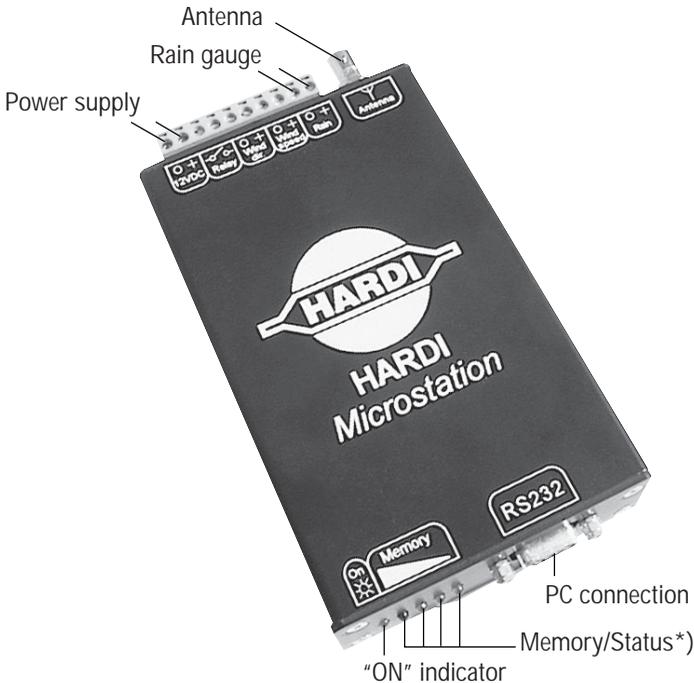
- 1 Microstation
- 1 Power supply
- 1 Rain gauge with cable
- 1 Antenna
- 1 Cable for antenna.

### Site of external units:

The antenna should be sited so no obstructions are between antenna and Metpole. Obstructions may reduce range significantly.

The rain gauge should be placed on a pole which is at least 10 m from buildings and trees.

### Connections and indicators on the Microstation:



\*) The right LED will go "on" when there are new data present in the Microstation.

## Connecting the Microstation:

**Remark:** To avoid damage of the equipment, observe that PC and Microstation are turned off during the connection of the Microstation.

- Connect the rain gauge to the two terminals on the green plug marked "Rain".
- The cable from the antenna is connected to the socket marked "Antenna".
- The PC is connected through the serial cable. Please note which serial port is used.
- Power supply is connected to the terminals on the green plug. The wire with a white line is conneted to the terminal marked 12VDC +. The black wire is connected to the terminal marked 12VDC 0.
- The power supply can now be connected to mains.
- The green LED on the front will turn on, and the Microstation is now ready to be used.

Now the PC can be started and the software installed (see software manual).

**NOTE:** When disconnecting the microstation, power must be turned off.