

Dendrometer MIJ-02 LM Manual

This manual explain how to install the MIJ-02 LM.

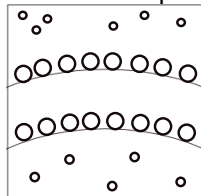
Purpose of using LM

- Measure the growth of sapwood and the bark movement by rainfall.
- Measure sapwood and also the thermal expansion of heart wood.

These purpore will be change by type of tree:

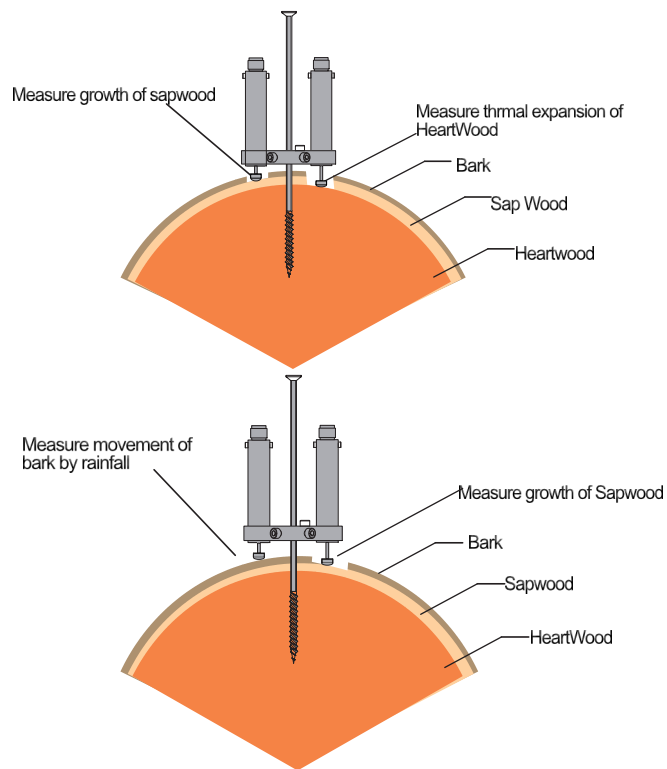
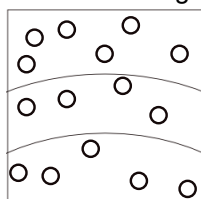
Rings porous wood:

- Measure the growth of sapwood and the bark movement by rainfall.
- Measure sapwood and also the thermal expansion of heart wood.



Diffuse porous wood:

- Measure the growth of sapwood and the bark movement by rainfall.



Preparation

Before install MIJ-02 LM, please prepare follwing equipments.



1.Drill



2.Long Drill Bit



3.Square Bit



4.Long Screw



5.LM Sensor

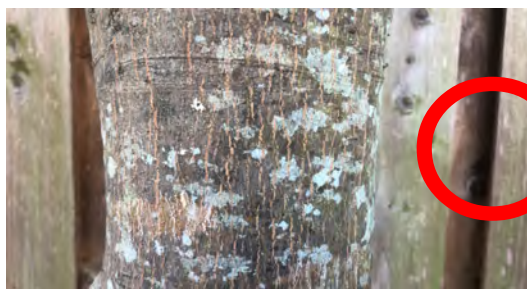


6.MIJ-02 Bracket

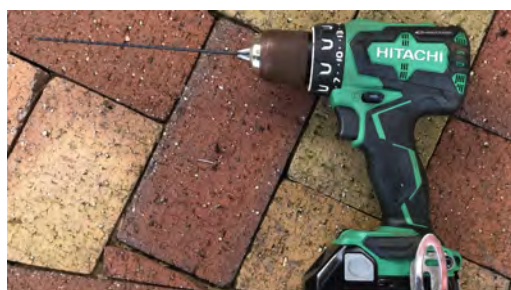


7.Cable

Installation



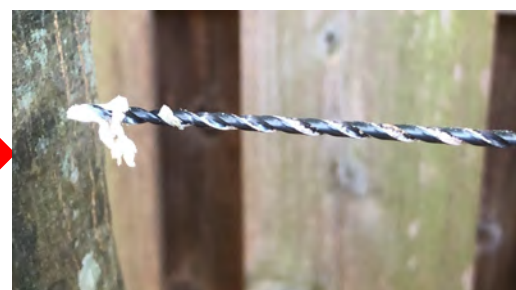
Before installing LM please choose smooth surface of tree.



1. Set the long drill bit to Drill.



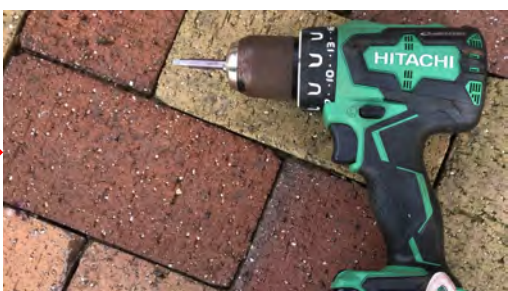
2. Make the hole in the wood



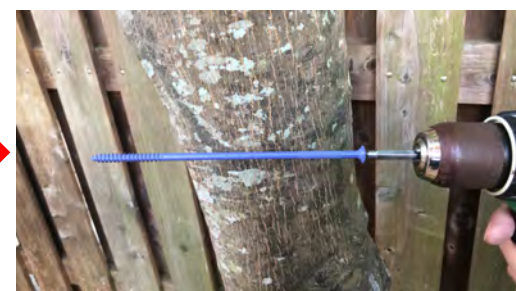
3. When you drill you must remove wood chips and drill again. Repeat this step until proper hole depth.



4. Check the hole and now install the Long screw into this hole.



5. Set the square bit to Drill.



6. Set the square bit to long screw.



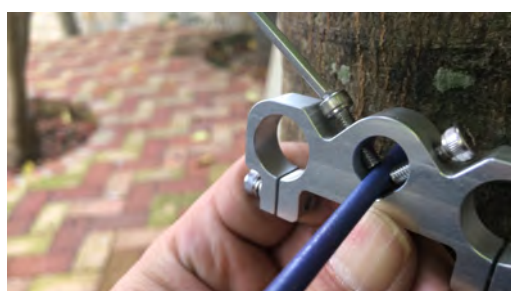
6. Drill the long screw to the hole made at step 4.



7. Insert until the screw part is hidden.



8. Set the MIJ-02 Bracket to the long screw.



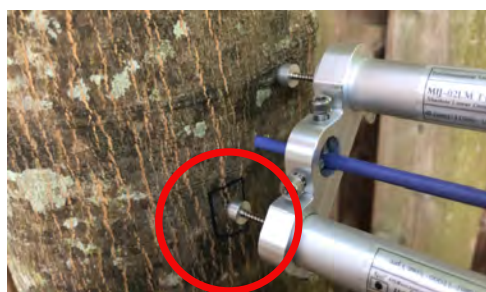
9. Please tighten bracket screw from both side.



10. Since this tree is thin; thus, xylem at the place where screw inserted may be destroyed. Therefore, to measure the growth of xylem properly, it is better to install the bracket diagonally. Do not set the bracket horizontal to the ground for measuring thin trees. For measuring large trees you can set the bracket horizontal to the ground.



11. Insert the LM to the bracket.



10.
Mark the place where shave the bark.



11.
Remove the LM for shaving bark.



12.
Insert the LM back to the position.



13.
Push the LM and tighten LM by using
screw at bottom of braket.
This picture shows the front LM is pushed
toward tree.



14.
Push the other LM toward tree and tighten
LM by using screw at bottom of braket.



15.
Make sure that cable is straight down
toward ground.



16.
Loosen the cable like picture shows and
secure it to the tree.

MIJ-02 LM Dendrometer Wiring

Connect the sensor to a data Logger.
Brown goes to Power port of datalogger
Blue goes to Signal out put + of datalogger
Black goes to Ground of datalogger

Datalogger should be used as single-end. If your datalogger is differential only, connect signal ground and power ground.

Regression Equation (Output)

$dL=11000\times V_{out}/V_{power}$
(dL: displacement (um), Vout: voltage output, Vpre: power voltage)
(If you are using MIJ-01 data logger: $dL=11000\times X001/5000$ input to PVS)

For instance, if the datalogger power is 5V then Vpower will be 5V and the Vout will be the output that datalogger shows.

If the datalogger 5V power and the datalogger output is 1.234V then
 $dr=11000\times (1.234V/5V)$
So the result will be 2714.8micro meter

Specification

| | |
|------------------------|--|
| Range | 11000um |
| Output | Ratiometric (eg: When power 5V then output full scale is also 5V) |
| Resolution | 2.2um/mV |
| Power | 5VDC (<1mA at 5VDC) |
| Withstand Voltage | <18VDC |
| Sliding Resistance | <0.3N |
| Spring Constant | Standard (for wood) 0.3N/mm, Medium (for plants without wood)0.1N/mm |
| Linearity | ±1% |
| Thermal Characteristic | <-0.126um/DEG |
| Waterproof | IP67 |