

Overview

For analogue measurements of the suction tension

A tensiometer is used to measure suction tension. The porous cell of the tensiometer uses capillary action to transport water outwards into the drier soil. A negative pressure is then created within the closed pipe. This negative pressure is an indication of the moisture. Suction tension is a force measuring the tension with which the water is held to the soil or its availability. Plant roots must expend this force in order to absorb water. The decisive factors in creating this force are the fine pores and capillaries in the soil.

This soil characteristic which the tensiometer measures is critical for plant growth. One advantage this instrument has over electrical meters is that it does not need to be calibrated. The value of the suction tension increases as long as the substratum is capable of transferring the water and as long as the moisture differential is maintained. If the surroundings become more moist, the process reverses itself. Close contact with the substrate is needed to get a quick tensiometer reaction and to get a value for certain soil and substratum types.

Tensiometer types:

The available tensiometer base components are classified as small tensiometers or premium tensiometers according to their length and diameter. The tensiometer base components also differ in their connection thread and are classified into the types GL, BL, IT and IT 45.

Display:

The measured value is displayed directly at the measuring point at a manometer that is screwed onto the base of the tensiometer.

Further processing:

Converts the suction tension to an electronic signal when one of the sensors is screwed onto the tensiometer base. Generates a continuous measuring signal using E-sensors or by setting a switching point by means of switching sensors for automatic irrigation.

Overview of products and combinations

Base of tensiometer	+	+ Display		or + Display with further processing		or + Further processing without display	
		Manometer		Manometer with additional output	Switching output	Analogue output	
		Analogue <i>Page 8</i>	Digital <i>Page 9</i>	T-piece 45	M-sensors <i>Page 10</i>	Tensio-Switch <i>Page 11</i>	E-sensors <i>Page 12</i>

Threaded connection

Usage	Measuring depth		Type	Page	GL	BL	IT (45)	GL	GL	GL
Surface	0 cm	Surface tensiometer	FV	5	Mx00		IT (45)	M-Sx	TSW-400	ES-Ax, ES-{3}Vx
	approx. 5 cm		F0	5	Mx00		IT (45)	M-Sx	TSW-400	ES-Ax, ES-{3}Vx
Pots > 8 cm	approx. 8 cm	Small tensiometer	KV02	6	Mx00		IT (45)	M-Sx	TSW-400	ES-Ax, ES-{3}Vx
Common pot sizes	10 cm to 20 cm	Small, premium tensiometers	KV2, LM	6	Mx00		IT (45)	M-Sx	TSW-400	ES-Ax, ES-{3}Vx
Embankment/gutter crops	15 cm to 25 cm	Small, premium tensiometers	KV2, LM	6	Mx00		IT (45)	M-Sx	TSW-400	ES-Ax, ES-{3}Vx
Normal crops	15 cm to 45 cm	Premium tensiometer	LM	7	Mx00	BD	IT (45)	M-Sx	TSW-400	ES-Ax, ES-{3}Vx
Trees	55 cm to 75 cm	Premium tensiometer	LM	7	Mx00	BD	IT (45)	M-Sx	TSW-400	ES-Ax, ES-{3}Vx

