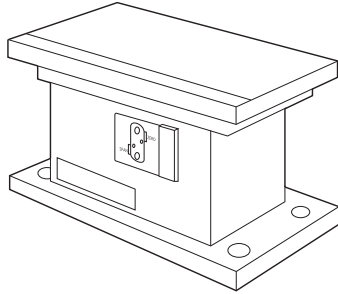


STATIONARY TYPE / TENSION METER FOR WIDE WIDTH OBJECTS
PLT-5K/10K/50K/100K
 Instruction Manual



- Direct input to the programmable controller and display
- Small deflection of the detecting shaft (For use of rated tension)
- Constant output under the variable temperature condition
- Overload capacity is twice as the rated tension.

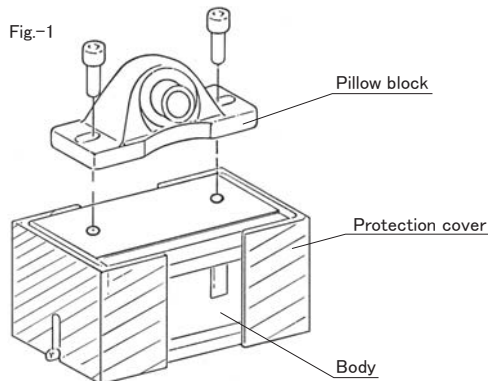
Thank you for purchasing SHIMPO product. To realize the safe and efficient use for long time, make sure to read this instruction manual before the operation.

* Before operation, please confirm that you ordered the correct model.
 Please use the products following this instruction manual.

■ Attentions Before Using

[Protecting cover]

- To protect from the shock while transportation and the heavy torque when installing the pillow block, the protecting cover has been attached. Please install the pillow block before removing the protection cover. (Refer to Fig.-1) Remove the fixing bolt to take off the protecting cover when installation. Keep the protection cover due to this item will be necessary when repairing the pillow block.



[Working condition]

- Please install this product away from water, oil, chemicals or dust. In case of the installation in such situation, protect the unit by covering over it.
- Don't use the product in continuous shock or vibration.
- Ambient temperature must be 0 to +45°C. Humidity must be under 80%RH (no condensation).
- Don't use this product in an explosion atmosphere.

[Other attentions]

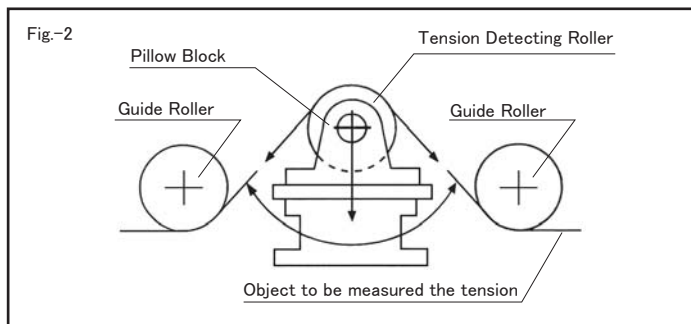
- To stabilize the output characteristic, don't stop the electric supply while the operation. Use it in continuous electric supply.
- Output control (span, zero) should be done after the internal circuit become warmed up enough (more than 30 minutes). Once in a while, re-adjustments are needed even after 30 minutes after the start.
- If the unit gets the overload, the internal mechanical stopper works and it stops the unit to measure temporarily. The unit automatically restarts the measuring after removing the overload.
- Don't shock the unit. Don't disassemble or add any remodeling by yourself.

■ Tension Meter General Description

This Tension Meter is basically for measuring the tensions which works perpendicularly to the installed surface, but the main concept is for measuring the tensions by using the pulleys and rollers as in Fig.-2.

Fig.-2 shows one example of the way of using this product. There are three rollers and the center roller is installed on top with pillow block and the tension of the string is converted into the load. Then the unit detects the load.

The tension can be calculated from the load by using below formula.



$$F = 2T \cos \frac{\theta}{2} + 9.8Rw$$

$$\therefore T = \frac{F - 9.8Rw}{2 \cos \frac{\theta}{2}}$$

θ = Lap angle

F = Perpendicular Load (N)

Rw = Weight of the roller part

T = Tension (N)

When the width of the measuring object is wide, in order to measure the tensions precisely, we need to use two units as one set. Two units need to be located each side of the tension detecting roller.

When the width of the measuring object is narrow, only one unit is needed to be installed on one side. The opposite side needs to be supported by equipment as for the self-aligning bearing.

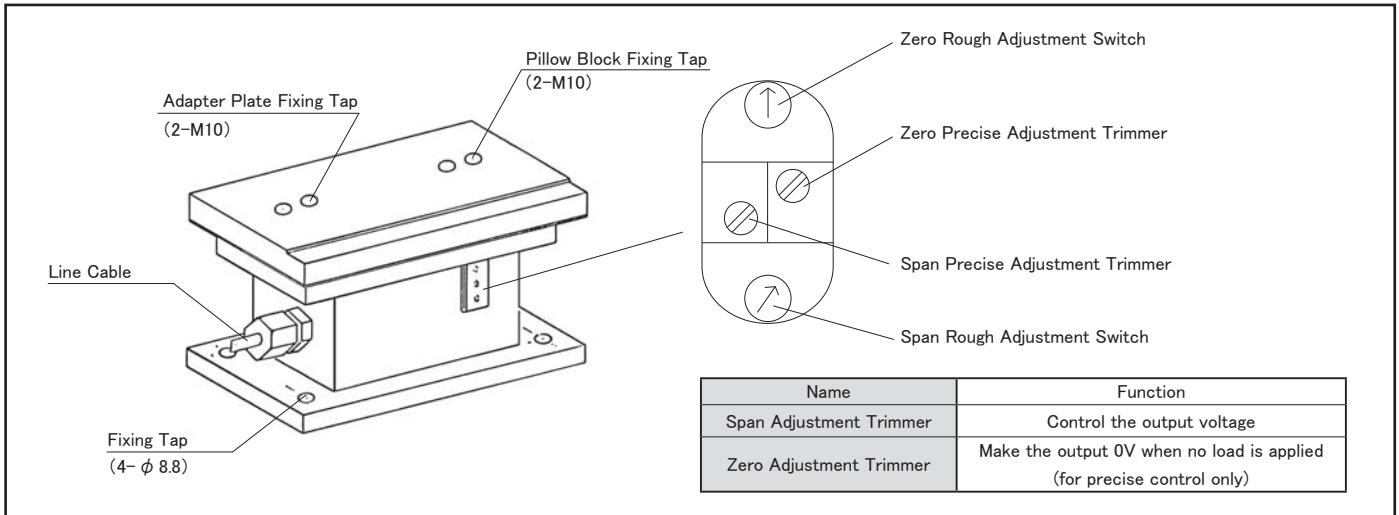
In case to measure the wire, e.g. electric wire or rope, install the pulley on one detector and measure the tension.

This tension meter can measure the loads both of pushing and pulling.

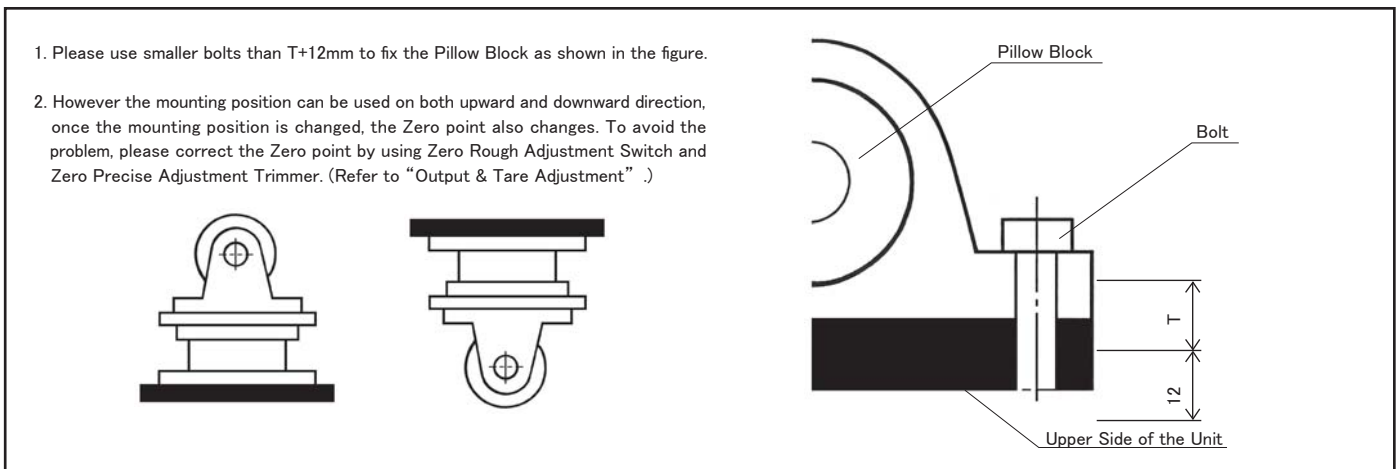
■ Specifications

Model	PLT-5K	PLT-10K	PLT-50K	PLT-100K
Rated Tension	49.03N	98.07N	490.3N	980.7N
Tare load	Less than 50% of Rated Tension			
Accuracy	± 1%/R.O.			
Power Supply	Less than DC ± 24V 55mA / when rated load works			
Output	± DC10V/ when rated load works			
Displacement Range of Detecting Roller	Maximum 0.3mm/ when rated load works			
Ambient Temperature	0 ~ 40°C			
Protecting Construction	IP52			
Overload Capacity	200% R.C.			

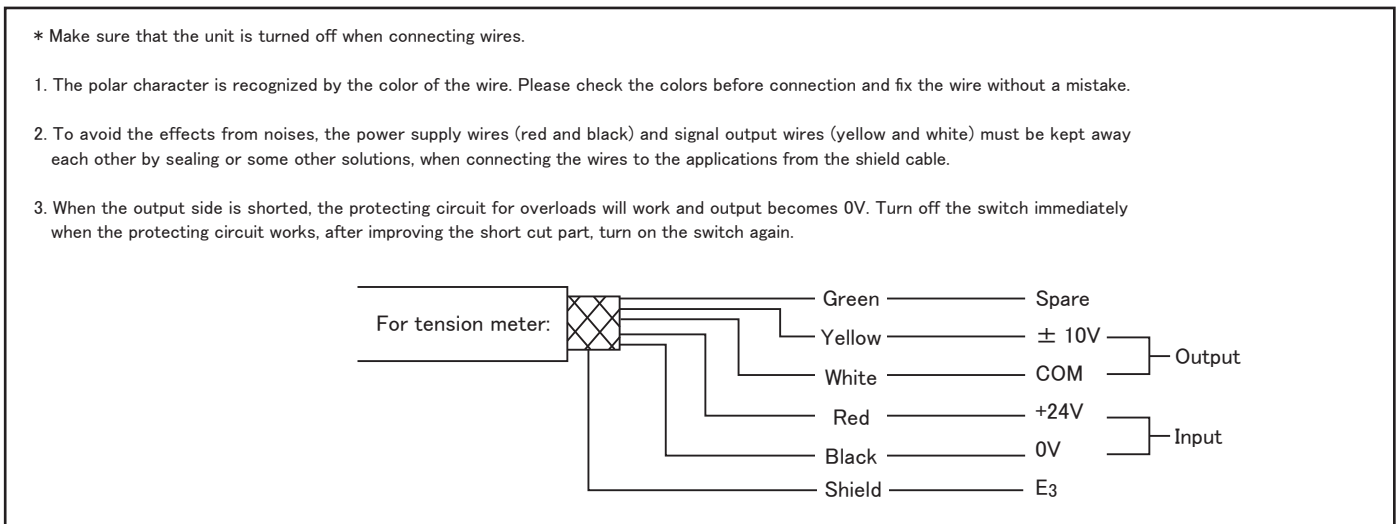
■ Description for each part



■ How to Install



■ Wire Connection



■ Output & Tare Adjustment

* Prepare the screwdriver for the adjustment.

This model is aligned to output 0V under the condition of horizontal installation (upward direction) with no load as for the figure here. After turning the switch on, when some load applies on the unit, the voltage will generate the output.
(Push load --- [+] side, Pull load --- [-] side)

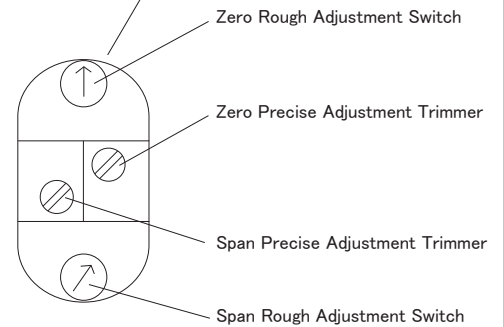
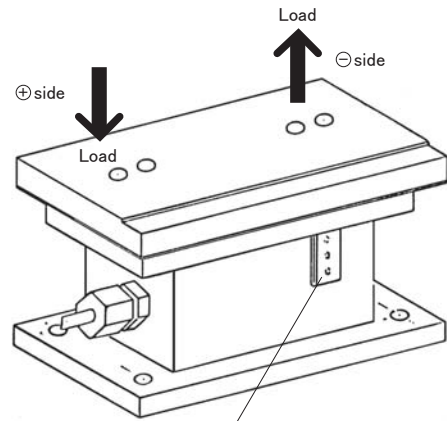


ATTENTIONS!

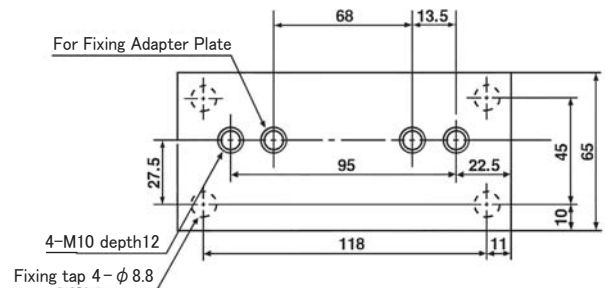
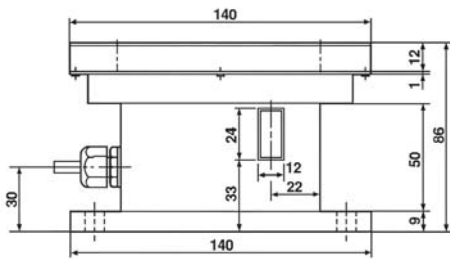
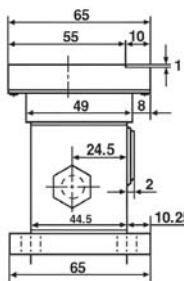
Please adjust the output at shortest 30 minutes after turning on the switch, when the internal circuit is completely warmed up.

When the mounting position is changed / when the pillow block or roller is applied, the original 0V output will no longer be valid. For that case, please re-adjust the output to 0V by the Zero Adjustment Trimmer and tare adjustment.

1. Connect the signal output wire (yellow and white) to the voltmeter and display.
2. Adjust the output voltage to near 0V by controlling Zero Rough Adjustment Switch.
3. For the precise adjustment, use the Zero Precise Adjustment Trimmer to make it 0V. Originally, this model is adjusted to output +10V when the rated tension is applied. If the output needs to be less than 10V at the rated tension, use the span adjustment trimmer to align the output signal accordingly.



■ Dimensions



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