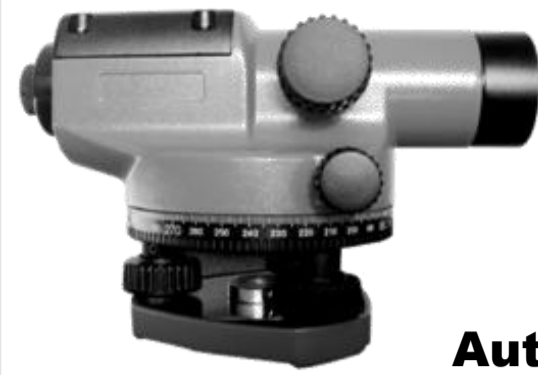
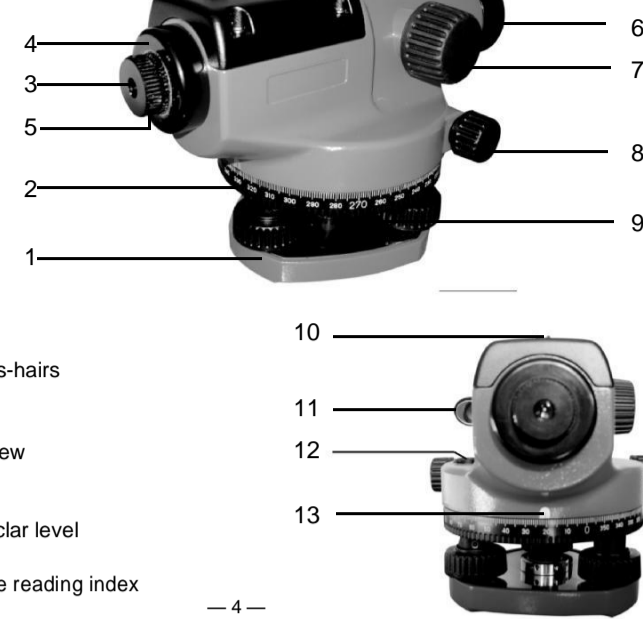


User Manual



Automatic Levels

Outside Structure



- 1.Spheric base plate
- 2.Circle
- 3.Eyepiece
- 4.Eyepiece cover
- 5.Focusing ring for cross-hairs
- 6.Objective lens
- 7.Focusing knob
- 8.Horizontal tangent screw
- 9.Leveling screw
- 10.Peep sight
- 11.Mirror for reading circular level
- 12.Circular bubble
- 13.Horizontal circle scale reading index

— 4 —

Using Method

1. Setting up

- (1) Adjust the tripod to horizontally level, and tighten screw A (Fig.1).
- (2) Adjust the tripod roughly horizontally, then fix it to ground (Fig.2).
- (3) Set the instrument up on the tripod head B, and tighten it (Fig.3).
- (4) Turn footscrews and centre the bubble(Fig.4).

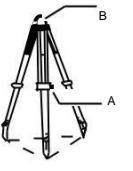


Fig.1



Fig.2



Fig.3

2.Pointing and focusing

- (1) Through the Peep sight, point it to the staff.
- (2) Turn the focusing ring to set the cross hair clear.
- (3) Turn the focusing knob until the staff is clear.
- (4) Adjust the Horizontal tangent screw to put the staff in the centre.

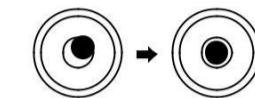


Fig.4

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— 1 —

Measuring method

1.Height measurement

- (1) Set up the instrument between A and B.
- (2) Set up the staff vertically at A,the height reading is a.
- (3) Set up the staff vertically at B,the height reading is b.
- (4) The reading of height distance between A and B is a-b (Fig.5) $h=a-b$
 $=1.735-1.224$
 $=0.511m$

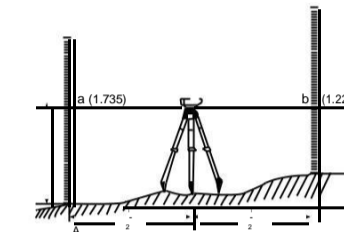


Fig.5

2.Distance measurement

- (1) Point the staff, get the reading between upper & lower stadia hair, unit is "cm"
- (2) Then the distance from the instrument to the staff equals to l , unit is "m". (Fig.6&7) length of l is 32cm, that is the distance from instrument to staff is 32m.

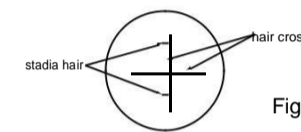


Fig.6

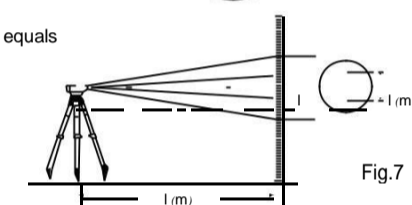


Fig.7

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3.Angle measurement

- (1) Sight A with vertical hair, read circle to get angle α .
- (2) Turn instrument to sight B, to get angle β .
- (3) $\angle AOB = \alpha - \beta$ (Fig.8)

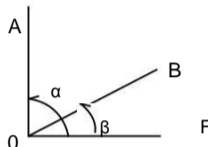


Fig.8

Checking and adjusting

1.Circular bubble checking

- (1) Turn the footscrews to centre the bubble.
- (2) Turn the instrument 180°, the bubble shall be at the centre. (Fig.9) otherwise it shall be adjusted. The method is as following.
- (I) Turn the footscrews, making the bubble become halfway to the centre (Fig.10).
- (II) Using the wrench adjust the bubble screws to move the bubble to the centre (Fig.11).
- (3) Repeat (I) & (II) until the bubble stays at the centre when the instrument is turned to any directions.



Fig.9

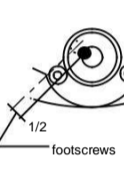


Fig.10

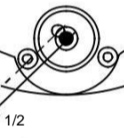


Fig.11

2.Horizontality of the line of sight

- (1) Set the instrument halfway between A and B. Staff A and B shall be 30~40m away, the readings are a_1 、 b_1 (Fig.12).

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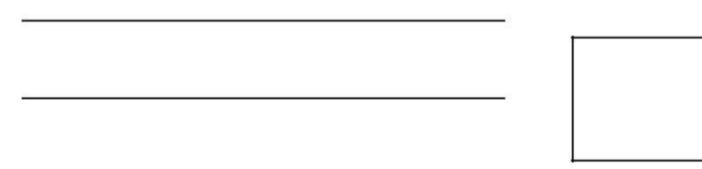
Technical Data

Technical Data	AL28	Compensator	AL28
Telescope	erect	Working range	$\pm 15'$
Magnification	28X	Setting accuracy	$\pm 0.5''$
Clear objective aperture	30mm	Sensitivity of bubble	$8' / 2mm$
Field of view	$1^\circ 20'$	Circle graduation	1° or $1gon$
Shortest focusing distance	0.55m	Standard deviation for 1km double - run levelling	2.0mm
Multiplication factor	100	Instrument N.W.	1.3kg
Additive factor	0	Centre size of tripod	M16 or $5/8''$
Waterproof	yes		

— 2 —

Instrument Packing

- Carrying Case $\times 1$
- Auto-level $\times 1$
- Adjusting pin $\times 1$
- Allen wrench $\times 1$
- User guide $\times 1$
- Plumb(additional) $\times 1$
- Drier $\times 1$



— 10 —

- (2) Move the instrument 2m away from A, the readings are a_2 、 b_2 (Fig.13).
- (3) Calculate $b_2' = a_2 - (a_1 - b_1)$, if $b_2' = b_2$, it shows that line of sight is not need to be corrected.
- (4) If $b_2' \neq b_2$, it shows that correction shall be needed.
- (5) Point the optical sight to staff B, unscrew the eyepiece cover, adjust the screw of cross-hair to make the middle hair give the required reading b_2' .
- (6) repeat the above until $|b_2' - b_2| < 3mm$.

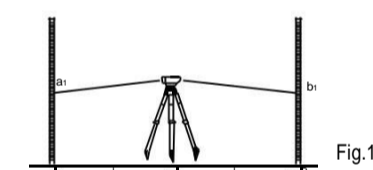


Fig.12

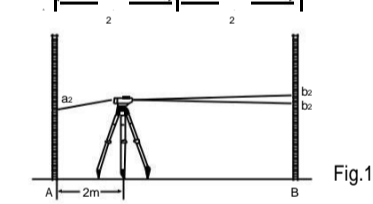
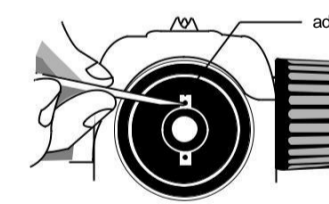


Fig.13



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Maintenance of instrument

In order to protect all parts and not lose its accuracy, care must be taken.

1. After the surveying operation, the instrument should be cleaned and kept in the container/ case.
2. Use soft brush and lens paper to wipe lenses. Do not use finger to touch lenses.
3. If the instrument has something wrong or damaged, it must be checked and repaired by a Metsys service technician or have it repaired by the manufacturer.
4. Please use the bag supplied to cover the instrument should you be working in the rain. If the unit does get wet, do not put back into the carry case wet, instead leave it out to dry first.
5. The instrument should be stored in a dry & clean environment.

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Auto Level Warranty Card

Please complete and return within 15 days of purchase to validate your warranty.

Model Number: _____
 Serial Number: _____
 Date Purchased: _____
 County/State/Province Purchased: _____
 Your Company Name: _____
 Contact: _____
 Office Address: _____
 City: _____ Phone/Fax: _____
 Zip: _____ State/Province: _____