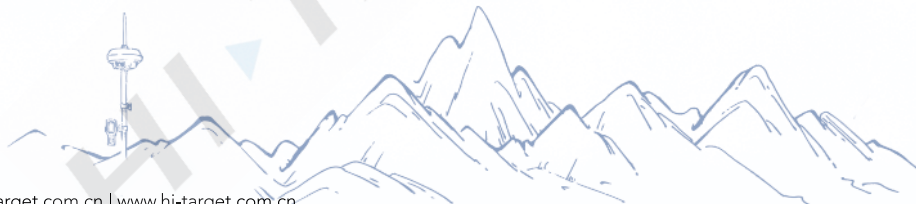


HI-TARGET

HT-32

Automatic Level

USER MANUAL



info@hi-target.com.cn | www.hi-target.com.cn

FOREWORD

Thank you for purchasing the Hi-Target Automatic Level HT-32. For the best performance of the instrument, please read this user manual carefully and keep them for future reference.

INTRODUCTION

Suitable for construction projects, mines, road works etc., this instrument is equipped with an air compensator. A high precision leveling line will settle automatically after the circular bubble is adjusted properly.

The telescope system is equipped with multilayer coating lens. Its high transmission rate is also able to bring out clear and stable image for your work.

On top of that, its IP66 standard protects this instrument from dust and water, which expands its range of working environment.

NOTICE

• For optimum usage, this instrument should be checked and adjusted especially after being stored for a long time or after being transported.

For further information, please refer to page 9.

- Before measuring, please check that the instrument is operating properly.
- Once work has been completed, please clean the instrument and place it in the case.
- Clean the surface, buttons, screen etc. with a soft clean cloth. Please clean the optical part with lens paper. Do not touch the lens with your fingers.
- Please keep the instrument in the case while you transport the instrument. Please place the instrument in the case if you are going to move it.
- Store the instrument in a dry room with consistent temperature.
- If the instrument requires repair, make sure that it is checked and repaired by Hi-Target technicians or by appointed dealers.

WARNING

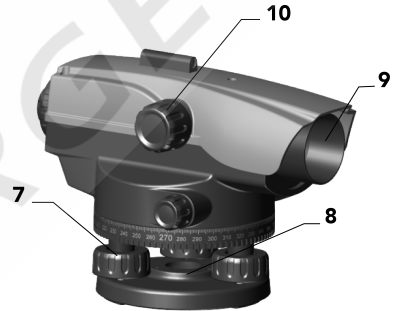
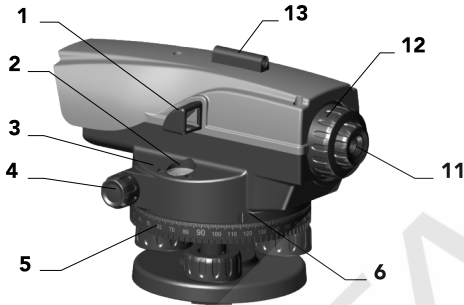
- **Never observe the sun through the telescope system.**
- **Please be careful when working around high voltage facilities.**
- **Do not handle staff during thunderstorms.**
- **Please pay attention to the spiked feet of the tripod during transportation and operation.**
- **The survey should be operated in a safe area.**
- **Please observe local safety and traffic rules.**

CONTENTS

1. Important Parts	5
2. Instrument Operation	6
2.1 Instrument Settings	6
2.2 Sight and Focusing	7
2.3 Measurement	8
2.3.1 Height Measurement	8
2.3.2 Height Difference	8
2.3.3 Stadia Measurement	9
2.3.4 Angle Measurement	10
3. Checking and Adjustment	11
3.1 Circular Bubble	11
3.2 Line of Sight	12
4. Technical Data	15
5. Packing List	16

1. Important Parts

This figure shows the parts of the instrument



1. Reflecting Mirror
2. Circular Bubble
3. Bubble Adjusting Screw
4. Endless Drive
5. Horizontal Circle
6. Graduation Pointer
7. Footscrews

8. Base
9. Objective Lens
10. Focusing Knob
11. Eyepiece
12. Adjustment Screw Cover
13. Peep Sight

2. Instrument Operation

2.1 Instrument Setting

- Extend the tripod legs until the top holder is at eye level.
- Tighten screws and stick tripod legs firmly into the ground.
- Set the instrument and tighten the centering screw. (fig. 1)
- Move the bubble to the centre of the circle by adjusting the foot screws (fig. 2). Adjust A and B screws to move the bubble left and right, then adjust C screw to move the bubble into the centre circle.

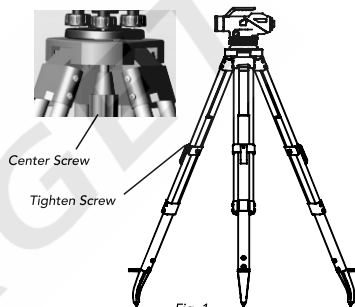


Fig. 1

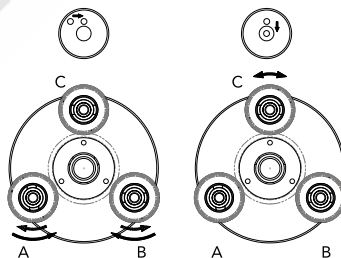


Fig. 2

2.2 Sight and Focusing

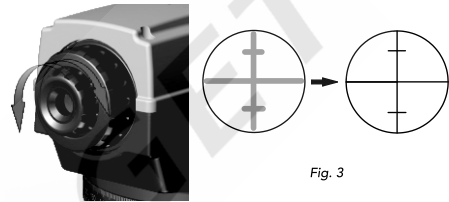


Fig. 3

- Rotate the eyepiece to make the reticle clear (fig. 3).
- Target the staff through the peep sight. Then rotate the focusing knob to ensure that the staff image is clear. Coincide the vertical hair with the middle of the staff (fig. 4).
- Move your eye sight right, left, up and down. If staff image and reticle hair remains still, you can proceed with your work.

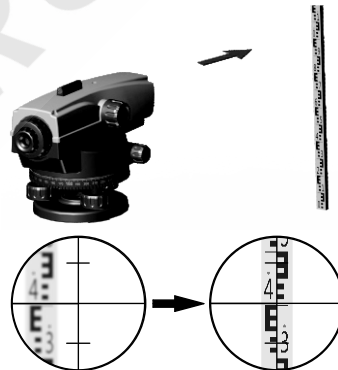


Fig. 4

2.3 Measurement

2.3.1 Height Measurement

- Use the ruler side of the staff and keep it vertical.
- Adjust the eyepiece and focusing knob to make the reticle and staff images clear
- Read data as shown in fig. 5, $H = 1.403\text{m}$

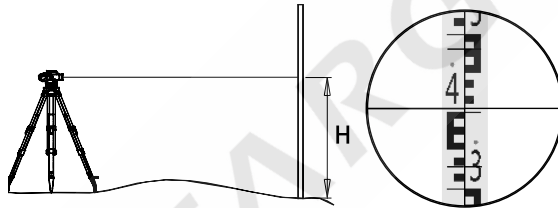


Fig. 5

2.3.2 Height Difference

- Set up the instrument at a point approximately halfway between point A and point B
- Position the staff vertically at point A, take the reading as 'a'

Example: $a = 1.735\text{m}$

- Then read the staff at point B and obtain the reading as “b”
Example: $b = 1.224\text{m}$
- The difference $a-b$ is the AB height difference “h”
Example: $h = a - b = 1.735\text{m} - 1.224\text{m} = 0.511\text{m}$

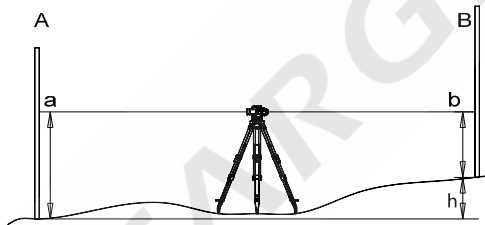


Fig. 6

2.3.3 Stadia Measurement

Read the staff and count the difference of L between two stadia lines (fig. 7)

Upline: 1.480m

Downline: 1.328m

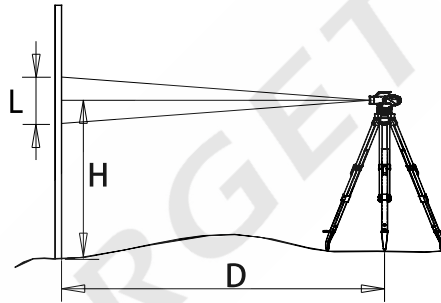
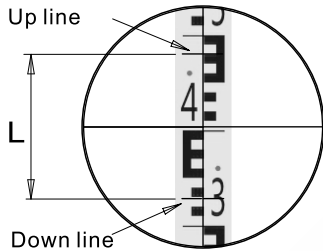


Fig. 7

Difference $L = 1.480\text{m} - 1.328\text{m} = 0.152\text{m}$
 Distance $D = 100 * L = 15.2\text{m}$

2.3.4 Angle Measurement

- Direct instrument to staff A and turn Horizontal Circle to "0" (fig. 8)
- Point instrument to staff B
- Read off Hz-angle from Horizontal Graduation Circle (fig.14): $H_z = 54^\circ$

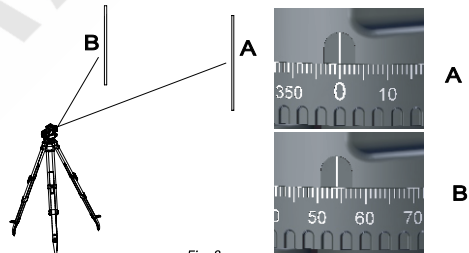


Fig. 8

3. Checking and Adjustment

Please check the instrument before starting your work. The instrument must be checked and adjusted by a trained person regularly.

3.1 Circular Bubble

- Center the bubble of the circular level precisely by using the leveling foot screws.
- Turn the telescope around 180° (fig. 9).
- The bubble needs adjusting if it is not centered.
- Adjust the leveling foot screws to move the bubble to the middle place of the error (fig. 10).



Fig. 9

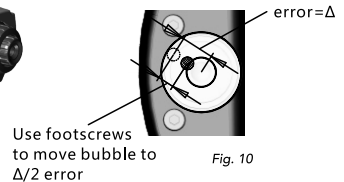


Fig. 10

- Adjust the rest half of error by using the allen key (fig. 11).
- Repeat the above steps until the bubble remains centered when the telescope is pointed at any direction.

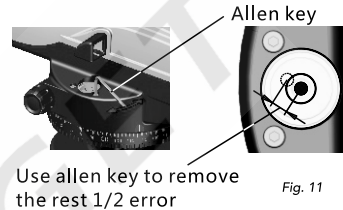


Fig. 11

3.2 Line of Sight

- Set the instrument at a point halfway between point A and B, spaced about 30-40m apart. Take the readings of staff A and B as "a1" and "b1" (fig. 12)

Calculate the real height difference: $\Delta H = a_1 - b_1$

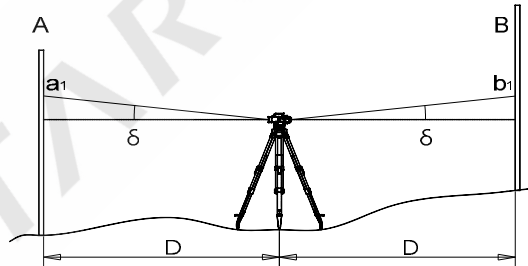


Fig. 12

- Set up the instrument about 1 m away from point A. Then read staff A and staff B as "a2" and "b2" (fig. 13).
- Then you can get the logical value $b_2' = a_2 - \Delta H$ -- b_2' is the height b_2 should be
- When the difference between b_2 and b_2' is more than 3mm, the line of sight must be adjusted.

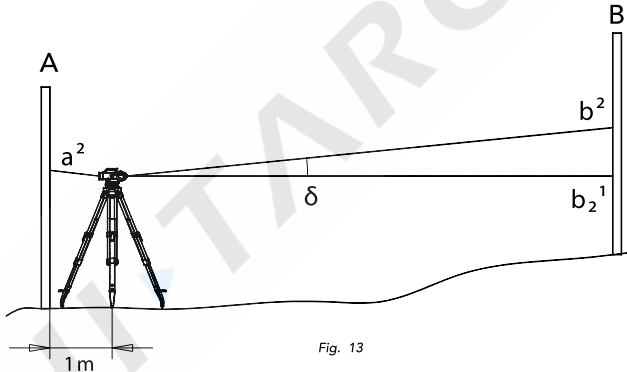


Fig. 13

- Rotate the adjusting screw until horizontal hair move to read b_2'

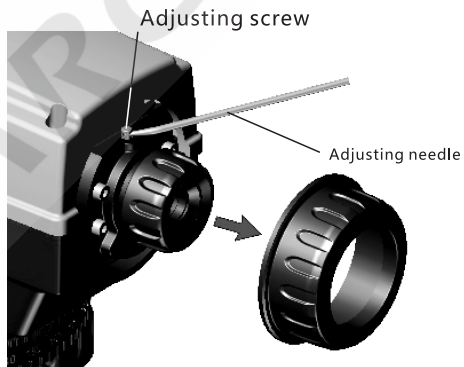


Fig. 14

4. Technical Data

Accuracy	Standard deviation for 1km double levelling ISO17123-2	
Telescope	Erect Image	
	Magnification:	32X
	View angle:	1°20'
	Objective aperture:	36mm
	Shortest target distance from instrument axis:	< 1.9m
Compensator	Working range:	≥15'
	Setting accuracy:	±0.5"
Distance Measurement	Multiplication factor:	100
	Additive constant:	0
Circular Level	Sensitivity:	8'/2mm
Circle	Graduation:	1°/1gon
Environmental Specifications	Operating temperature:	-20°c to 50°c
	Storage temperature:	-40°c to 70°c
	Protection:	IP66
	Dimension:	210mm x 135mm x 140mm
	Weight:	1.4kg

5. Packing List

Instrument	1 Piece
Manual	1 Piece
Carrying Case	1 Piece
Allen Key	1 Piece
Adjusting Needle	1 Piece
Plumb	1 Piece

HI  **TARGET**

info@hi-target.com.cn | www.hi-target.com.cn