The Piper User Presentation

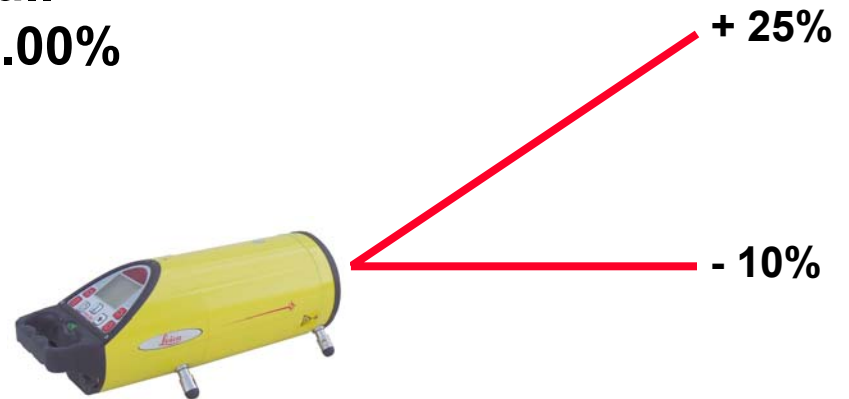- when it has to be **right**
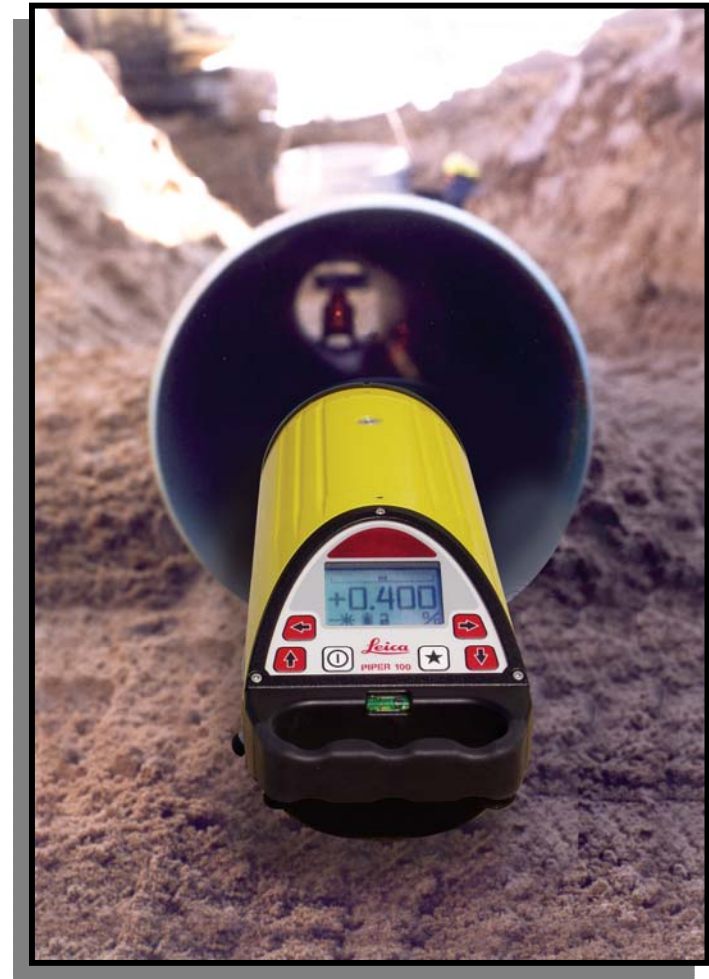
Features

- ## New compact design

  The Piper is the only pipe laser that fits inside a 100 mm pipe.

- ## Self-leveling over full range

  The Piper can self-level over its full grade range, from -10.00% to +25.00% while setting on a flat surface or installed inside the pipe.

+ 25%

- 10%

- when it has to be **right**

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Features

- ## Cross-axis compensation

  If the Piper is set up within +/- 3º of its correct position, the software will correct for inaccuracies caused by any rotation of the unit from level.

- ## Real time grade reading

  When grade is entered into the Piper, the grade counter and grade motors move at the same speed so that when the button is released, the unit is at or very near on grade. This is useful for determining the grade of an existing pipe.

- when it has to be **right**

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Features

- ## Bright, clear display

  Sharp, large grade numbers with backlighting makes the Piper display easy to read in all conditions.

- ## Long battery life

  40 hours of battery life under normal conditions using a Lithium-Ion battery pack.

- ## Intelligent battery indicator

  A special program monitors the amount of charge and discharge of the battery pack to give an accurate indication of the remaining battery life at start-up and while running.
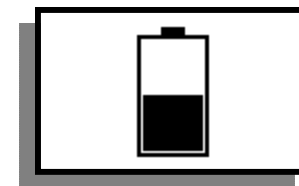
Battery indication at start-up

- when it has to be **right**

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Features

- ## Bright sharp beam

  Set to the brightest setting allowed by law, the Piper is focused to provide great visibility.

- ## Enhanced Target Visibility

  A special filtering device enhances and brightens the beam for better viewing.

- ## Alignmaster (Piper 200)

  Great for second-day setups, the Alignmaster function of the Piper 200 seeks and finds the target.

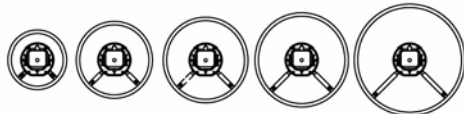- when it has to be **right**

Features

- ## Customer name display

  The customer's name, address and other information can be entered and displayed when the Piper is turned on.

JOE CUSTOMER
CUSTOMER CONCRETE
1234 MAIN STREET
CITY.STATE 56789
TELEPHONE

Customer name
screen at start-up

- ## Self-centering feet

  Sets of feet are available that centers the Piper beam in 150, 200, 225, 250 and 300 mm pipe. Feet for 150 mm pipe are standard with the Piper package.

  The target is easily set to the same size pipe for accurate results.

- when it has to be **right**

Features

- **Lighted pivot point indication**

  A simple LED mounted in the top of the housing indicates the pivoting point of the laser for setups in a manhole.

  There are additional markings on the side and front of the Piper to aid is setups.

- **Other features include**

  A rear external level vial

  A protective rubber bumper

  A stringline attachment point

  An ergonomic rear handle

Stringline attachment

Lighted pivot point

Level vial

Rear Handle

Side pivot marks

Protective rubber bumper

- when it has to be **right**

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Features

- ## Rugged trivet assembly

  The rugged trivet assembly for the Piper has a large stable base for setups outside the pipe.

  No adjustments for steeper slopes are needed because the Piper self-levels across its full grade range.

  Graduated markings on the side of the pole give an accurate reading from the top of the pole to the center of the beam for setups in a manhole.

- ## Multi-functional remote control

  Six buttons provide line control, sleep function, strobe function, backlighting and Alignmaster (Piper 200)

IR Remote Control

- when it has to be right

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How the Piper works…

- when it has to be right
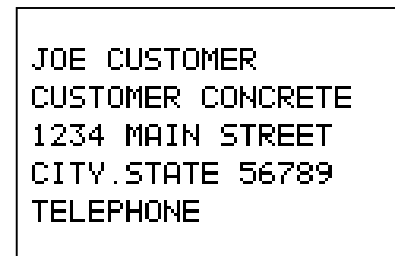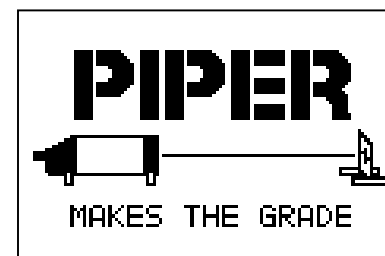
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Powering on the Piper

## To turn on the Piper press the POWER button.

- **The Piper will first display the Leica logo together with the serial number of the laser.**

- **Next, either the Piper page or the customer name will be displayed.**

- **Finally, a large battery indicating the remaining battery power is shown**

- when it has to be right
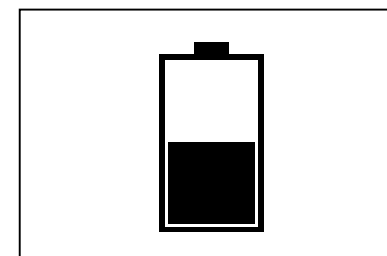
The Control Panel

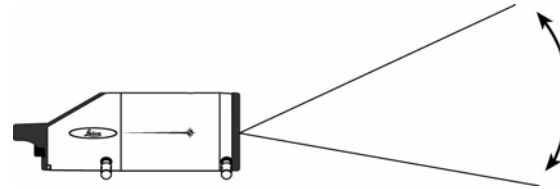**When the start-up screens are completed, the Piper will then show the main display screen.**
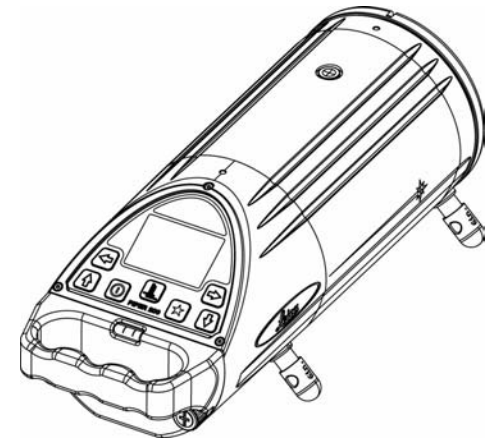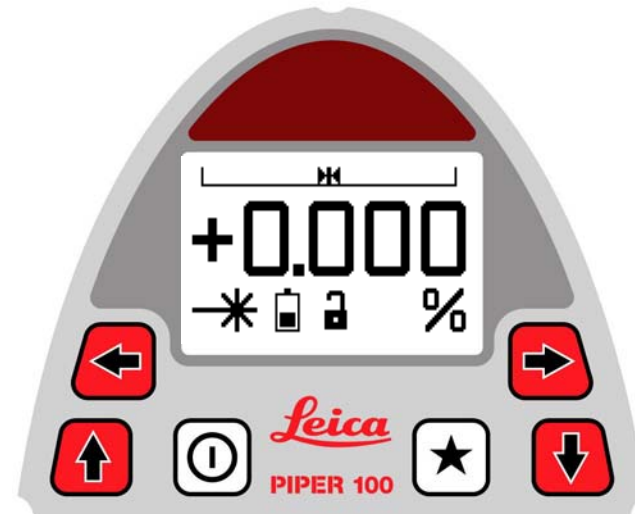

Piper 100 Switch Panel

Piper 200 Switch Panel

- when it has to be **right**

Entering Grade

Direct entry of grade

- The easiest way to enter grade is to simply press an **UP** or **DOWN** arrow.

- The rate the grade changes increases as the button is held.

- When grade is entered into the Piper, the grade counter and grade motors move at the same speed so that when the button is released, the unit is at or very near on grade.
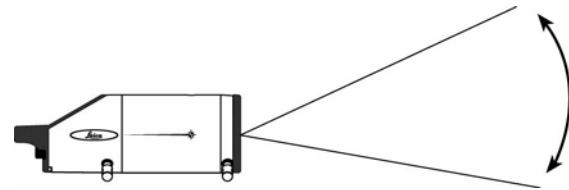
Piper 100 Switch Panel

- when it has to be **right**

Entering Grade by digit

Entering large grade changes:

- To enter large grade changes, press first the **STAR** button and a cursor will appear over the plus/minus sign.

- Use the **LEFT** and **RIGHT** arrows to move the cursor.

- Use the **UP** and **DOWN** arrows to change the value.

- Press both the **UP** and **DOWN** buttons together to reset the counter to 0.000.
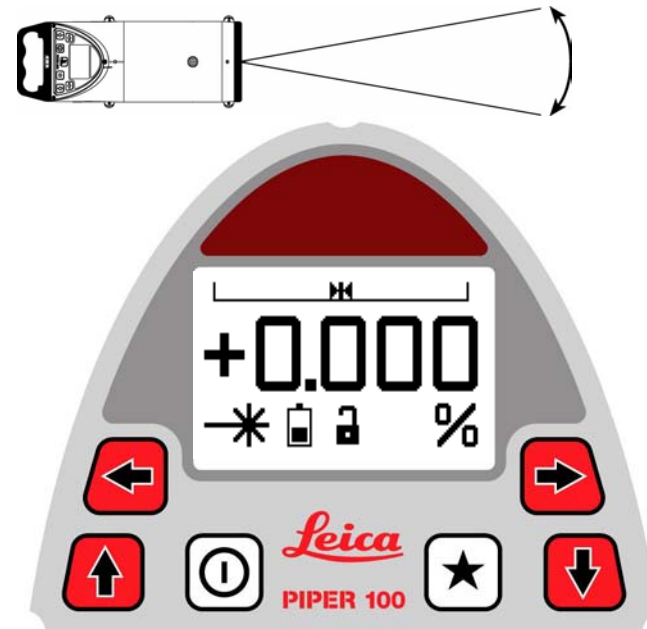
Piper 200 Switch Panel

- when it has to be **right**

Changing Line

To change the line position:

- Move the beam left or right by simply pressing the **LEFT** or **RIGHT** arrow.

- The rate the line moves increases as the button is held.

- Line position can also be changed using the IR remote control.

- Line can easily be brought back to center by pressing both the **LEFT** and **RIGHT** buttons together.
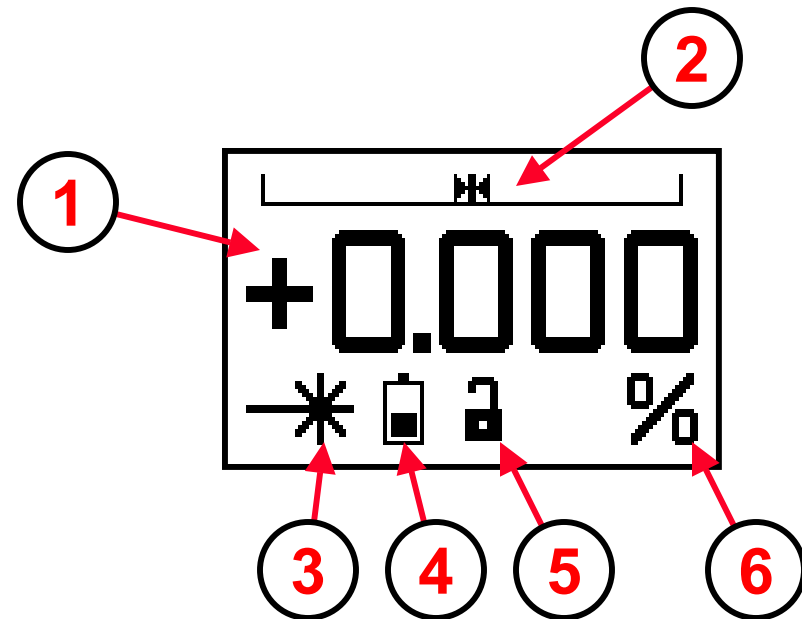
Piper 100 Switch Panel

- when it has to be **right**

The LCD Display

The LCD Display for the Piper 100 and 200 are the same. The main features are as follows:
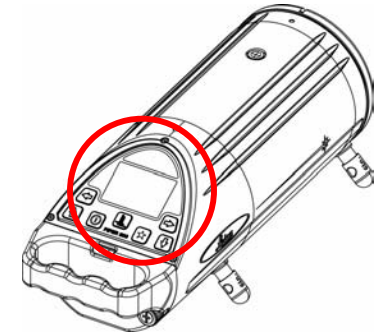
1. Current grade entered

2. Line position

3. Beam blink indication

4. Battery charge status

5. Line and grade lock

6. Percent (Per Mil) indicator

- when it has to be **right**

The Grade Display

- **Grade will be displayed to the third digit in normal operating mode.**

- **When grades of greater than 10% are entered, the third digit is hidden.**

- **The Piper can also be set up to display grades only in hundredths.**

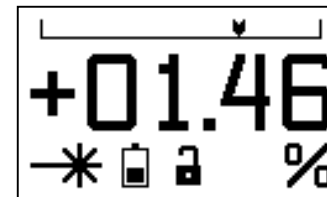- **Another display mode is Per Mil (mm per meter) required for specific markets.**

+0.000 %

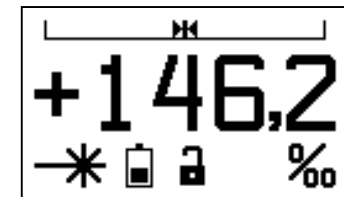**Normal Display (Thousandths)**

Grade greater than 10%

+14.62 %

+01.46 %
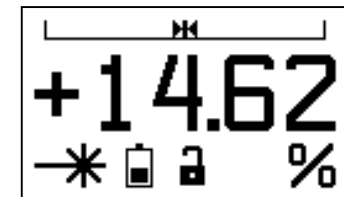
Normal Display (Hundredths)

Per Mil Display (equals 14.62%)

+146,2 ‰

- when it has to be **right**

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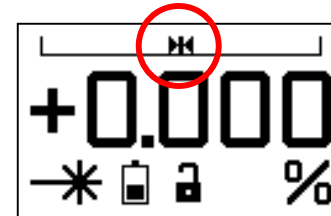
The Line Position

- The current line position relative to the laser is shown at the top of the display.

- When the line position is moved to the left or right of center the indicator changes.

- A limit indication is displayed when the line movement has reached the end of its travel.

**Current line position (centered)**

Line position centered

Line position left or right

Line limit reached

- when it has to be **right**

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Line and Grade Lock

- **Both line and grade can be locked to prevent accidental changes.**

- **Press the STAR button plus and UP or DOWN arrow to lock and unlock Grade.**

- **Press the STAR button plus and LEFT or RIGHT arrow to lock and unlock Line.**
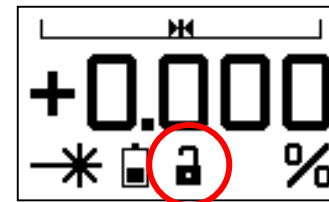
Line and Grade lock indicator (unlocked)

Line and Grade unlocked

Line position locked

Grade value locked

Both Line and Grade locked

- when it has to be **right**
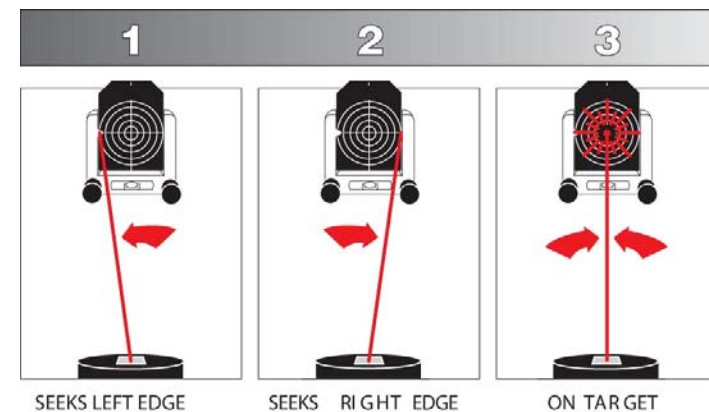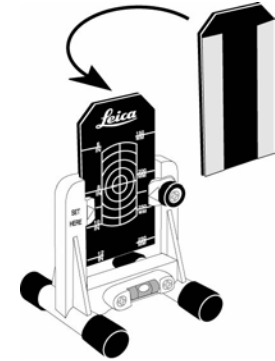
Alignmaster

The Alignmaster feature on the Piper 200 creates a seeking function to locate and center on the target for second day setups.

- The Piper will scan left and right, looking a reflection from the pipe target.

- When found, it will move the beam to center on the target.

SEEKS LEFT EDGE   SEEKS RIGHT EDGE   ON TARGET

- when it has to be right

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Alignmaster

- To activate Alignmaster press the **Alignmaster** button in the center of the switch panel or on the remote.

- While the Piper is scanning, a blinking target will be displayed.

- If, for some reason, the target is not found, a question mark will appear next to the target.

Piper 200 Switch Panel with Alignmaster screen

Target not found

- when it has to be **right**

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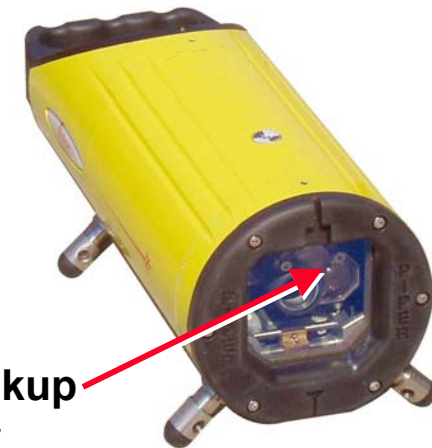
The Remote Control

The infrared remote control is an integral part of the pipe layer's toolbox.

With the Piper's remote control the following functions are possible:

- **Line positioning**
- **Sleep mode**
- **LCD backlighting and pivot LED**
- **Alignmaster (Piper 200 only)**
- **Strobe mode**

Infrared pickup window

- when it has to be **right**
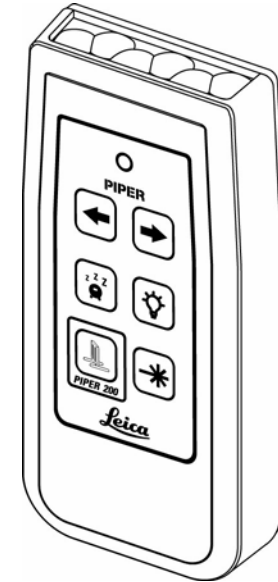
The Remote Control

The Line Buttons

- The Line buttons on the remote perform the same as the buttons on the laser.

- From in front of the Piper the line will move in the direction of the buttons.

- From behind the laser the buttons actually move the beam opposite the arrows due to the way the Piper communicates with the remote.

- when it has to be **right**

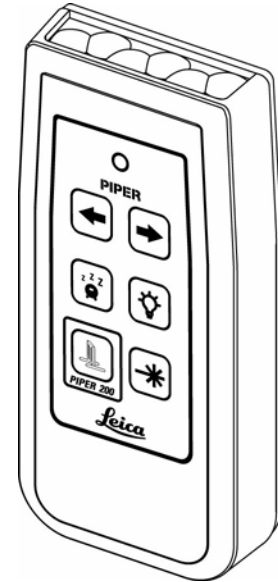# The Remote Control

The Sleep Mode Button

- The sleep mode button sets the Piper to stand-by mode to conserve battery life

The Backlight Button

- The backlight button turns on the top, pivot indicator LED. Any button press will cause the LCD backlight to turn on for 20 seconds.

- when it has to be right

The Remote Control

The Alignmaster Button

- The Alignmaster button performs the same as the button on the laser.

The Strobe Mode Button

- Pressing the strobe mode button will cause the beam to pulse rapidly, improving visibility.

- when it has to be **right**
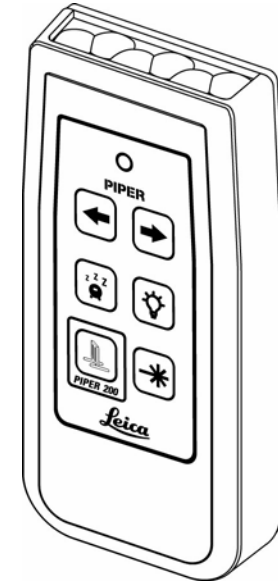
Basic Operation

- **The Piper provides a beam of light anywhere grade and line are required with a single beam.**

- **The Piper is normally used for alignment of gravity flow pipe lines as well as storm and sanitary sewer construction.**
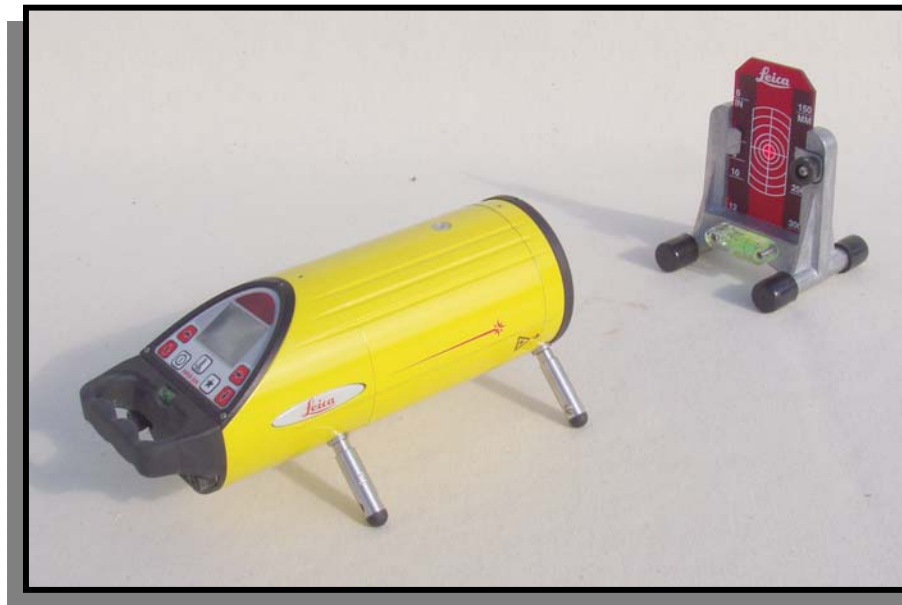
- when it has to be **right**

Basic Operation

The Piper can be set up in a number of ways to satisfy the needs of the contractor.

Outside the Pipe

On a Trivet Mount

Over the Top

- when it has to be **right**

Basic Operation

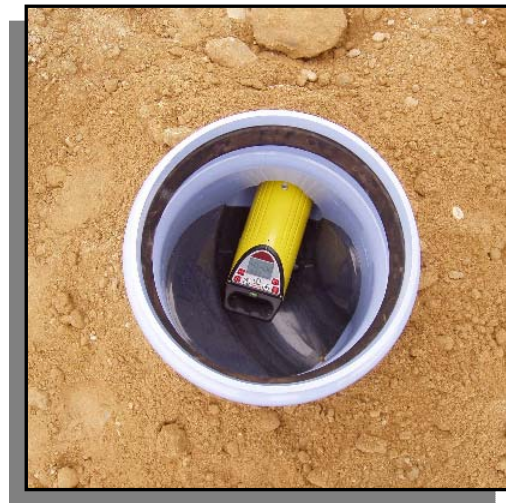## The Piper can be set up in a number of ways to satisfy the needs of the contractor.

Inside the Pipe

In 100 mm Pipe

In tight inverts

- when it has to be **right**

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Basic Operation

The pipe target is used to align the pipe by locating and centering the beam on the target.

- Set the target insert to the same height as the feet being used on the Piper.

- Place the target in the end of the pipe, the retro-reflective strips should be facing the Piper, on the inside.

- Adjust the target until the bubble is centered in the level vial.

- Observe the target and adjust the pipe until the laser beam is centered in the cross hairs.

- when it has to be right
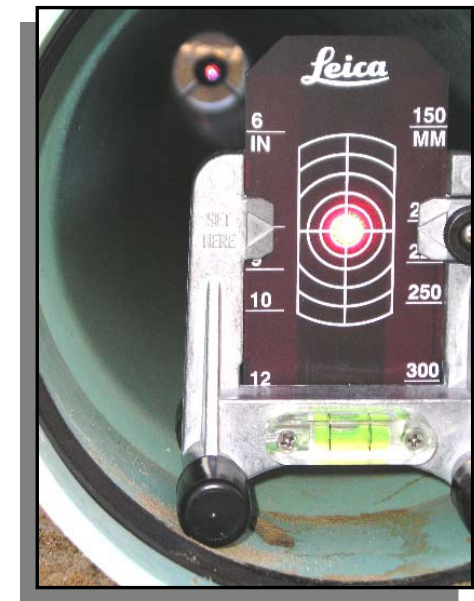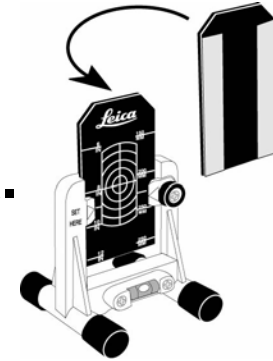
Basic Operation

For every setup there three important parameters that must always be set.

- **Set the GRADE**. As determined by the plans, grade is easily set in the Piper to ensure desired flow.

- **Set the LINE**. Achieved by a number of different methods to ensure that Piper is in line with the starting and ending points

- **Set the ELEVATION.** Usually determined by a preset hub stake or the location of the starting manhole.

- when it has to be right

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Basic Operation

For second day setups the Piper is set up in the previous day's location or inside the first piece of pipe.

- **Set the GRADE**. The grade is the same as the previous day.

- **Set the LINE**. After setting up the Piper, use the Alignmaster feature or the remote or to bring the beam back to the center of the target in the last piece of pipe laid.

- **Set the ELEVATION.** Set up at the same elevation or place the Piper in the pipe.
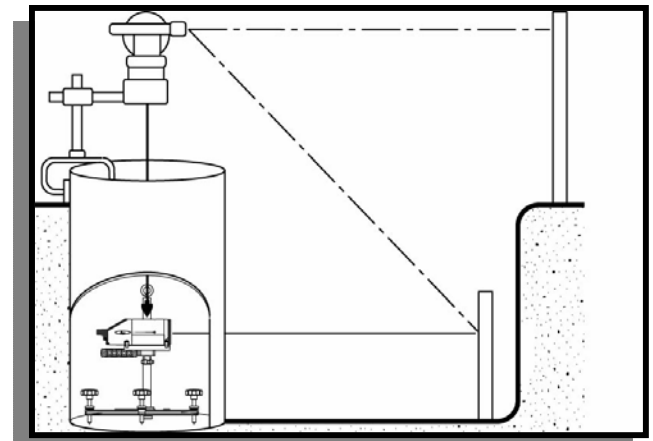
- when it has to be **right**

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Standard Set-up Procedures
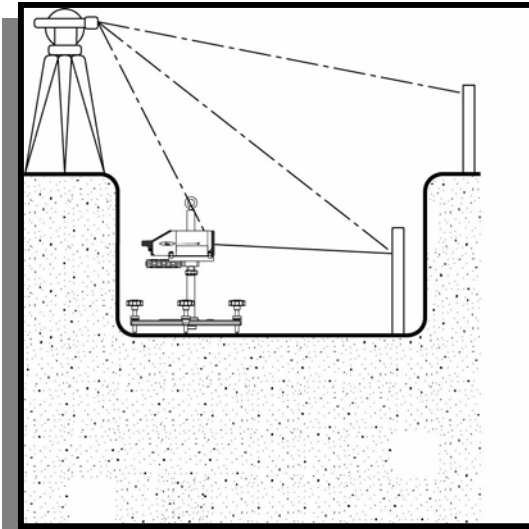
Open Trench, Transit
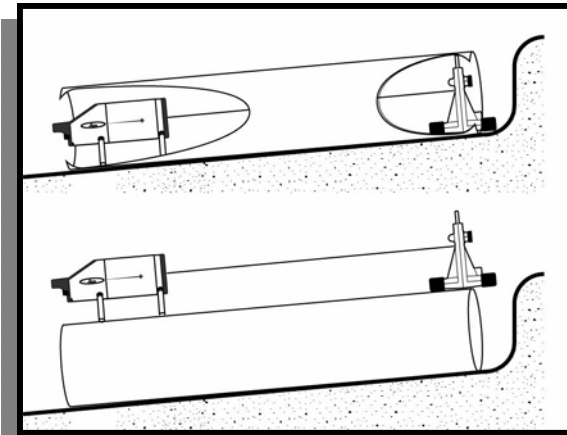
In the Pipe

In the Manhole
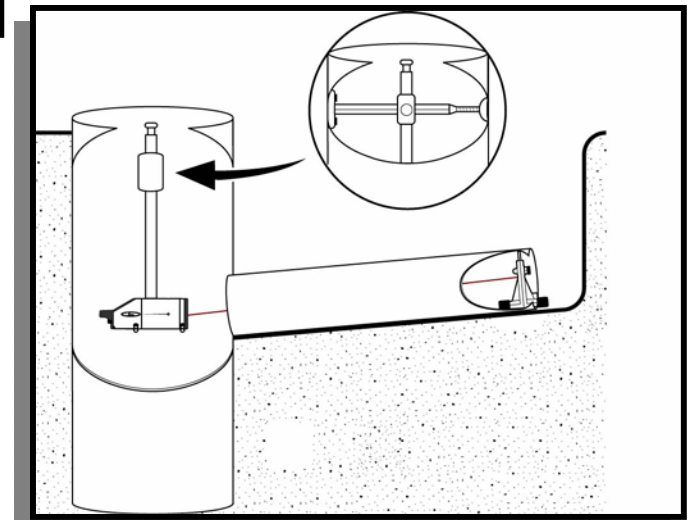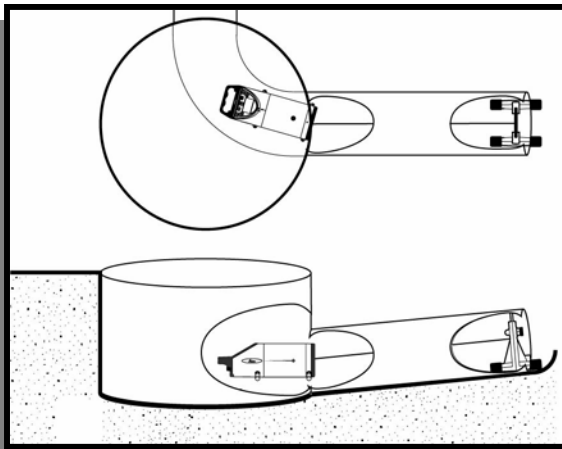
Pre-poured Inverts

Open Trench, Stringline

Drop Manhole Mount

- when it has to be **right**

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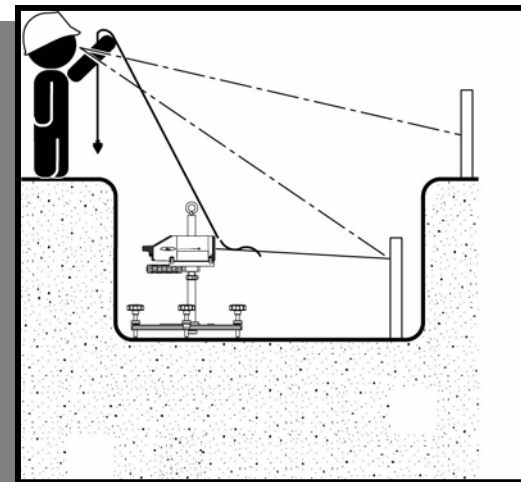
Pre-poured Inverts

- **Set the grade.** Enter the required grade for the pipe to be laid in the display of the Piper.

- **Set the line.** Place the Piper in the invert and adjust the beam so it is in-line with the next manhole.

- **Set the elevation.** Set the elevation by attaching the required size feet to the Piper.

Pre-poured Inverts

- when it has to be **right**

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Open Trench (Transit)

- **Set the grade.** Enter the required grade for the pipe to be laid in the display of the Piper.

- **Locate the position of the laser.** A transit is set up behind the Piper and is used to position the Piper in place.
  - Place the transit on the centerline of the pipe (a).
  - Using the transit, locate the next manhole (b).
  - Tip the transit down, then move the Piper (c) until it is in-line with the centerline of the pipe to be laid.

Open Trench, Transit

- **Set the Elevation.** Using a trivet or other method, set the Piper to the required elevation.

- **Set the Line.** Align the beam to a new stake in front of the Piper.
  - Set a new stake in front of the Piper (d) using the transit.
  - Align the beam to the cross hairs on the stake.

- when it has to be **right**

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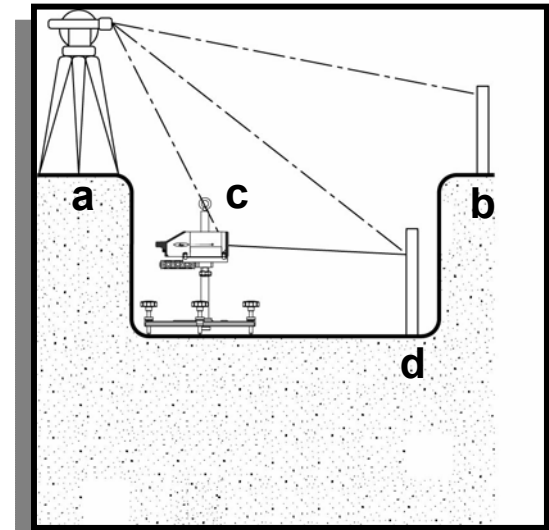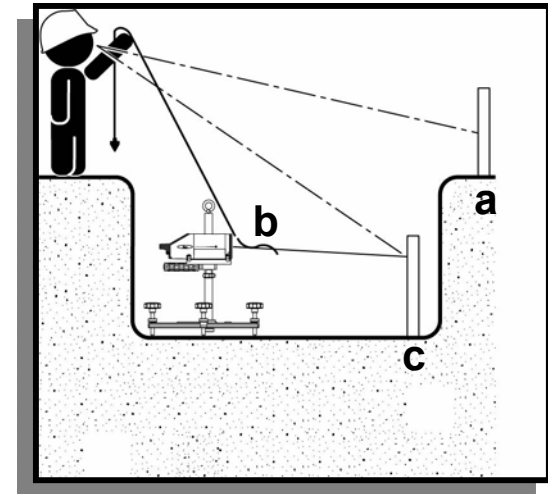
Open Trench (Stringline)

- **Set the grade.** Enter the required grade for the pipe to be laid in the display of the Piper.

- **Locate the position of the laser.** Set up the Piper over the centerline of the pipe.

- **Set the Elevation.** Using a trivet or other method, set the Piper to the required elevation.

Open Trench, Stringline

- **Set the Line.** Align the beam to a new stake in front of the Piper.

  - Place a grade rod at the center of the next manhole (a).
  - Attach a stringline to the slot in the front bumper of the Piper (b). Move the Piper until it is on the centerline on the pipe.
  - Stand behind the Piper, close one eye and hold the stringline up. Glance down and align a new stake in front of the Piper (c). Then use the remote and move the beam until it intersects the stringline.
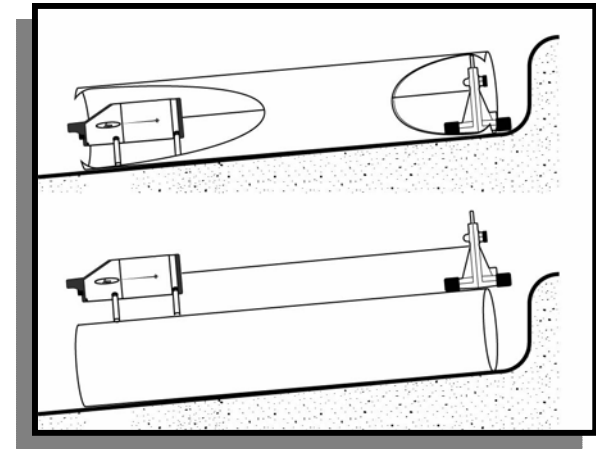
- when it has to be **right**

In the Pipe

- **Set the grade.** Enter the required grade for the pipe to be laid in the display of the Piper.

- **Set the Elevation.** By placing the Piper inside the pipe the elevation is already set by using the self-centering feet. Many contractors prefer to always use one size of foot and set the beam and target from the invert of the pipe.

- **Set the Line.** Align the beam so that it is in line with the next manhole.

In the Pipe

- when it has to be **right**

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In the Manhole

In the Manhole

- **Set the grade.** Enter the required grade for the pipe to be laid in the display of the Piper.

- **Set the Elevation.** Using a trivet or other method, set the Piper to the required elevation.

- **Set the Line.** Align the beam so that it is in line with the next manhole.
  - Place a transit over the centerline of the manhole (a).
  - Using the transit locate the next manhole (b).
  - Using a optical plummet or plumb bob align the Piper until the lighted plumb point (c) is directly below the transit.
  - Set a new stake in front of the Piper (d) using the transit.
  - Align the beam to the cross hairs on the stake.

- when it has to be **right**

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Drop Manhole

- **Assemble the drop manhole T-bar and trivet pole.**
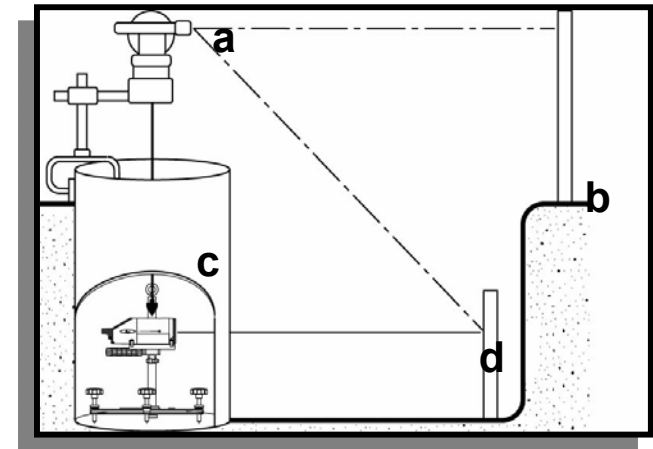
- **Set the grade. Enter the required grade for the pipe to be laid in the display of the Piper.**

- **Set the Elevation. Lower the pre-assembled T-bar, bracket and Piper into the manhole until the T-bar is approximately 12" above or below the pipe. Make sure the T-bar is perpendicular to the pipe, then secure it to the manhole. Adjust the Piper up or down to the required elevation.**

- **Set the Line. Align the beam so that it is in line with the next manhole.**

Drop Manhole Mount
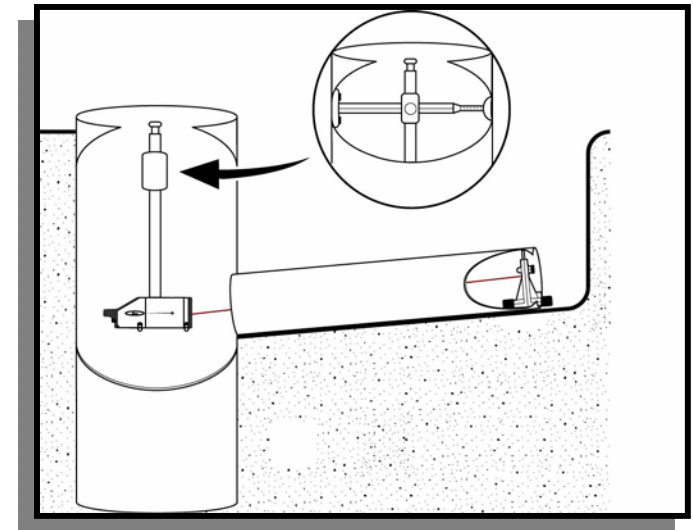
- when it has to be **right**

Technical Data

- **Laser Diode**   635 nm
- **Laser Color**   Red
- **Alignmaster**   Piper 200 (only)
- **Battery Pack**   up to 40 hours*
- **Battery Charge Time**   Four hours
- **Battery Type**   Lithium-Ion
- **Weight**   2.0 kg
- **Dimensions**   96 x 267 mm
- **Construction**   Cast Aluminum
- **Operating Temperature**   -20°C to +50°C

* Battery life is dependant upon environmental conditions

- when it has to be **right**

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Technical Data

- **Working Range**   200 m
- **Grade Range**   -10% to +25%
- **Self-leveling Range**   -15% to +30%
- **Line Range**   6 m at 30 m
- **Laser Output**   5.0 mW Maximum
- **Laser Classification**   IIIa / 3R

- **Remote Range**   Up to 150 m front
                              Up to 10 m rear
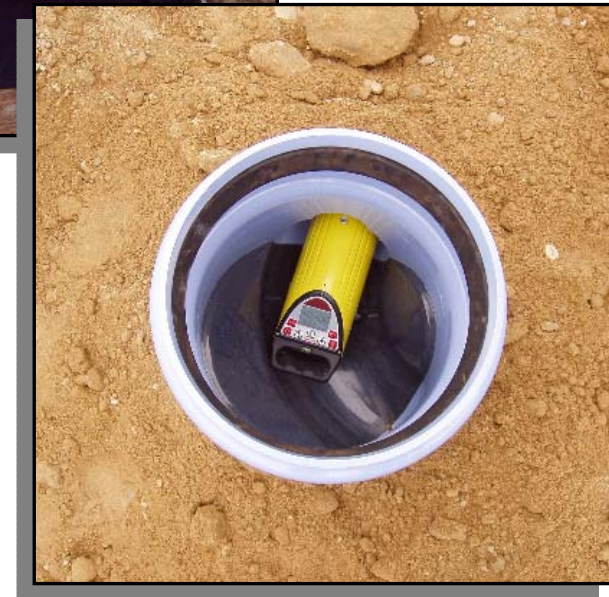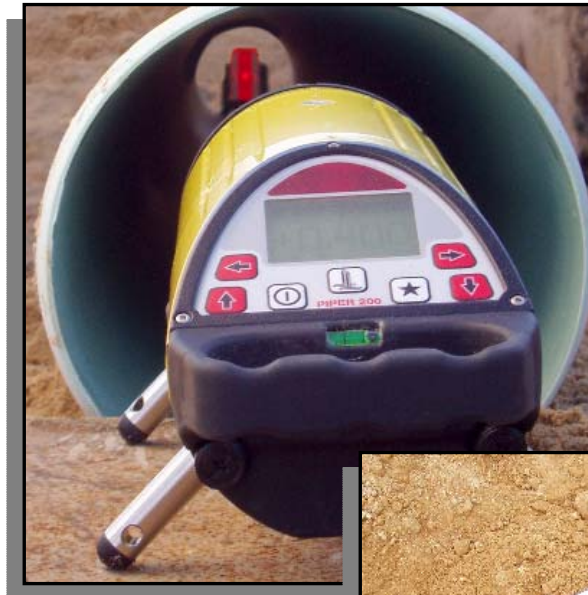- **Remote Battery Life**   Approx. 12 months

- when it has to be **right**

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Pictures

A Typical Jobsite

- when it has to be **right**

Leica Geosystems

Pictures

A Typical Package

- when it has to be **right**

Pictures

- when it has to be right

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The Piper

Compact, Powerful, Versatile

- when it has to be **right**

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