

PX 10 Transpointer - Operating Instructions

It is essential that the operating instructions are read before the tool is used for the first time.

Always keep these operating instructions together with the tool.

Ensure the operating instructions are with the tool when it is given to other persons.

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1. General information

1.1 Safety notices and their meaning

-WARNING-

The word WARNING is used to draw attention to a potentially dangerous situation which could lead to severe personal injury or death.

-CAUTION-

This word indicates a possible hazardous situation which could result in slight bodily injuries or damage to property.

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-NOTE-

Draws attention to instructions and other useful information.

1.2 Pictograms

Warning signs

Symbols

1 These numbers refer to the corresponding illustrations. The illustrations can be found in the fold-out cover pages. Keep these pages open when studying the operating instructions. In these operating instructions, the PX 10 Transpointer is referred in it's two components. The PX 10T as the "transmitter". The PX 10R as the "receiver". Or in general as the "tools".

1.3 Location of the identification data on the tools

The type designation and serial number can be found on the type designation plate on the tool. Make a note of this data in your operating instructions and always refer to it when making an enquiry to your Hilti representative or service department.

Type: _____ PX 10T

Serial no.: _____

Type: _____ PX 10R

Serial no.: _____

2. Description

The PX 10 is a system built up of a transmitter and a receiver. The receiver is used to find the direction the transmitter is pointing, and for finding the distance between the two devices.

2.1 Intended use

The Transpointer is used to align the receiver position to the preset transmitter position. The system is capable of this function through walls and ceilings, as well as determining the distance between the devices.

The operator can transfer points from one side of a wall to another, and determine at the same time the wall thickness.

This helps:

- to check where a marked entry point for a through hole will exit.
- to determine what length drill bit or core is needed
- to transfer positions

The Transpointer may also be used in conjunction with the slope adapter to:

- To find a exit point from a given reference point and angle
- Find the angle between two points

2.2 Items supplied

- 1 PX 10T transmitter
- 1 PX 10R receiver
- 2 PDA 60 hand straps
- 2 Type 9 volt batteries
- 1 PUA 91 adhesive putty (general)
- 1 PUA 92 adhesive strips (interior)
- 1 Operating instructions
- 2 Producer certificate
- 1 Hilti case
- 1 PXA 70 slope adapter*
- 10 PUA 70 markers*

* depending on the version purchased these items, may not be included in the supplied items.

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2.3 Measuring principle

The transmitter generates a magnetic field. This field can penetrate bricks, wood, concrete, and concrete with metal reinforcement. The field is however affected by metal. Whilst normal reinforcement in concrete is not a problem, welded reinforcement, reinforcement mesh, flat metal sheet or massive metal beams can have a considerably negative effect on the system performance.

The receiver is calibrated to find the center point of the projected field and to determine the distance by the measurement of the strength of the magnetic field between the two tools.

The slope adapter has been developed in conjunction with the Transpointer, so that the magnetic fields can also be measured when the devices are inclined to each other.

3. Accessories

Adhesive putty	PUA 91
Adhesive strips	PUA 92
Hand strap	PDA 60
Slope adapter	PXA 70
Markers	PUA 70

4. Technical data

Position accuracy, typical	±8mm for every 200mm of thickness up to 1m at 21°C (+70°F)
Thickness accuracy, typical	±5% of thickness up to 1m at 21°C (+70°F) (excluding slope adapter)
Position accuracy, maximum	±2mm for every 200mm of thickness up to 1m at 21°C (+70°F) without the influence of metal
Thickness accuracy, maximum	±5% of thickness up to 1m at 21°C (+70°F) without the influence of metal (excluding slope adapter)
Operating range (typical)	50mm to 1.35m (2" to 4' 5")
Operating temperature (PX 10T, PX 10R, PUA 91)	-10°C to +55°C (+14°F to +131°F)
Operating temperature (PUA 92)	+10°C to 40°C (+50°F to +104°F)
Storage temperature	-25°C to +70°C (-13°F to +158°F)
Power supply (PX 10T, PX 10R)	1 x size E-Block battery (9 V)
Life time (PX 10T, PX 10R)	17 hours at +21°C (+70°F)
Protection class (excluding battery compartment)	IP 56 Protected against dust and powerful water jets
Weight with battery (PX 10T)	190g (0.42lb)
Weight with battery (PX 10R)	230g (0.51lb)
Dimensions (PX 10T)	160mm x 95mm x 33mm (6.3" x 3.8" x 1.3")
Dimensions (PX 10R)	210mm x 95mm x 33mm (8.3" x 3.8" x 1.3")
Slope adapter range	90° to 45° (0° to 45°)
Slope adapter maximal accuracy	±2°

-CAUTION-

The accuracy can be strongly degraded if welded metal reinforcement or metal sheets or supports are close to the tools. The thickness measurement in case of welded reinforcement is typically 20% thicker than actual.

5. Safety precautions

-WARNING-

Read and understand all instructions. Failure to follow all instruction listed below may result in serious personal injury.

5.1 Basic information concerning safety

In addition to the information relevant to safety given in each of the sections of these operating instructions, the following points must be strictly observed at all times.

- Tampering with or modification of the tool is not permissible.

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- Observe the information printed in the operating instructions concerning operation, care and maintenance.
- Keep tools out of reach of children.
- Have the tool repaired only at a Hilti service center.
- Take the surrounding conditions into account. Do not use the tool where there is a risk of fire or explosion.
- Check the operating mode of the tool before each use.
- The tool should not be used near pregnant women.
- Avoid contact of the eyes and skin with PUA 91.
- If PUA 91 comes in contact with eyes, immediately wash with water and consult a doctor.
- Wash PUA 91 off skin with lots of water and soap.

5.2 Intended use

The Transpointer is designed so that the receiver can be aligned with the transmitter. The system is capable of this function through walls and ceilings, as well as determining the distance between the devices.

The operator can transfer points from one side of a wall/ceiling to another, and determine the wall/floor thickness.

-WARNING-

The PX 10 does not check what is in a wall. It does not guarantee that an operator will not hit an electrical cable, water/gas pipe, etc.. Due care and attention should always be taken.

5.3 Proper organization of the workplace

- Avoid unfavorable body positions when working on ladders. Work from a stable stance and stay in balance at all times.
- Use the tools only within its specified limits.

Electromagnetic compatibility

Although the tools comply with the strict requirements of the relevant directives, Hilti cannot entirely rule out the following possibilities:

- The tools may cause interference to other equipment, in close proximity (e.g. airplane navigation equipment)
 - The tools may be subject to interference caused by powerful radiation, possibly leading to incorrect operation.
- Check the readings for plausibility when measuring under these conditions or if you are unsure of the results.

General safety precautions

Check the tools before each use. If the tools are found to be damaged, have it repaired at a Hilti service center

The accuracy of the tools must be checked after it has been dropped or subjected to other mechanical stress.

If mounting on a surface, ensure that the PX 10T transmitter is secure.

Although the tools are designed for the tough conditions of jobsite use, as with other measuring instruments they should be treated with care.

Although the tools are designed to minimize entry of water, they should be wiped dry each time before being put away in their transport container.

Electrical

- Do not allow the batteries to fall into children's hands.
- Do not overheat or incinerate the batteries. They may explode or release toxic substances.
- Do not attempt to recharge the batteries (non-rechargeable, alkaline type).
- Do not solder the batteries into the tool.
- Do not discharge the batteries by short circuiting. This may cause the batteries to overheat and swell up.
- Do not attempt to open the batteries and do not subject them to excessive mechanical stress.

6. Before use

6.1 Batteries

The batteries should be taken out of their wrappers and placed in the tools. Ensure the correct orientation of the battery poles, as indicated on the bottom of each tool.

-NOTE-

- The tool may be powered only by the batteries recommended by Hilti.

-CAUTION-

- Do not use damaged batteries.

6.2 Measurement units

To switch between cm and inch distance values in the display press and hold the on/off button of the PX 10R receiver, whilst the tool is switched on, until the symbol changes. This takes approximately 5 seconds. When the tool is switched on again the measurement units are the same as when the tool was switched off.

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7. Operation

7.1 Switching on/off

Press the on/off key

7.2 Setting up the transmitter

The transmitter should be fixed over the reference point using the center hole and the outer marks on the tool. Two different adhesives are provided to help with this. The tool may also be held by an extra person, or hung from the hand strap for added security.

-CAUTION-

It is recommended where possible to use the adhesive putty. However the adhesive putty and adhesive strips can not guarantee a secure fixing, it is therefore also recommended to secure the tool with the hand strap to a nail, screw or similar secure mechanical fixing.

While the transmitter is projecting the magnetic field for the receiver, it is important to align it properly to the surface. Perpendicular to the point it is projecting.

The PUA 91 adhesive putty is for general use but can leave marks. It may also remove some of the surface to which it is applied.

The PUA 92 adhesive strips are only for use in clean interior environments. It may also remove some of the surface to which it is applied.

7.2.1 PUA 91 Adhesive putty (general)

The adhesive putty can be used to mount the transmitter on a wall or ceiling. Three equal sized balls should be made. These should be mounted on the indentations on bottom of the transmitter and then the transmitter firmly mounted on the wall or ceiling.

-NOTE-

- It is suggested to use approximately one cm diameter ball of the adhesive putty provided, however depending on the substrate the quantity may need to be adjusted.

- The adhesive putty works on many surfaces, however in order to get the best performance the substrate should be water, dust and fat free.

- The adhesive putty maybe re-used, it is recommended that the balls are reformed.

- The adhesive putty maybe re-used, until it has collected so much dirt that it no longer holds.

- The adhesive putty may leave marks on the surface it is attached to. If this is a problem other ways of fixing the transmitter should be used.

7.2.2 PUA 92 Adhesive strips (interior)

The adhesive strips can be used to mount the transmitter on a wall or ceiling. Two strips should be mounted on the top and the bottom end of the transmitter, approximately a finger width's length should protrude from the tool, and then the transmitter firmly mounted on the wall or ceiling. The red side should be mounted on the tool, and the black side on the wall.

To remove, slowly pull the tab parallel to the base material.

-NOTE-

Whilst it is suggested to use two strips, on some surfaces more may be required.

Whilst working on many surfaces, in order to get the best performance the substrate should be water, dust and fat free.

7.3 Working with the receiver

The signal status symbol lights up on the display when the receiver is within range of the transmitter, typically 1.35 meters. The direction arrows help guide the user to the mid point of the magnetic field generated by the transmitter. This is found when all four arrows are illuminated. Follow the direction the arrows are pointing.

The position of the receiver may be marked either through the hole in the center of the tool head, or with the external marking notches.

When at or near to the mid point the display becomes illuminated and the distance (in min and max values) between the devices is shown.

((SKIZZE))

-CAUTION-

The receiver must always be parallel to the transmitter.

Ensure there is no other transmitter operating in the immediate area.

-HINT-

How to improve your measurement accuracy in case of metal influence

((Graphics needed))

- Measure not in corners or adjacent to walls: rather select a defined offset (i.e. 200mm) on both sides

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- Have the PX 10T stable and make four measurements with the receiver from each side mark them and take the geometrical center
- In cases where the walls are possibly not parallel take four measurements. Each time rotating the PX 10T by 90° and take the geometrical center
- In case of heavy metal in or close to the wall perform a couple of measurements at known distances and take the geometrical centre. (i.e. take four measurements arranged in a square of 100mm side length)

-NOTE-

If working on a rough surface it may be easier to place a smooth non metallic material between the receiver and the surface.

7.4 Working with the slope adapter

The slope adapter may be used to find:

- a point from a given reference point and angle
- the angle between two points

The transmitter is used as before. See section 7.2.

Ensure the receiver is fixed securely to the slope adapter.

-CAUTION-

The reference surfaces must be parallel to each other.

-NOTE-

The display will show the direct distance between the tools, and not the wall/ceiling thickness. Depending on the set angle and distance between the two devices some angles may not be able to be measured anymore due to the maximum working range of the system.

7.4.1 Finding a point from a given reference point and angle

((Graphics))

Set the transmitter up on the reference point parallel to the surface.

Set the required angle on the slope adapter.

Ensuring the base of the adapter remains parallel to the base of the transmitter on the other side of the wall, search with the aid of the direction arrows for the mid point. See section 7.3

7.4.2 Finding the angle between two points

((Graphics))

Set the transmitter up on the first reference point parallel to the surface. Set the base plate of the slope adapter over the second reference on the other side of the wall. The slope adapter should be orientated so that the hinged plate is at 90° to the slope.

Ensure the base plate of the slope adapter remains parallel to that of the transmitter at all times. Turn the slope adapter so that the hinged plate corresponds to the slope direction.

The slope adapter should be moved at 90° to the slope until both directional arrows on this axis are illuminated. This shows the offset perpendicular to the inclination.

The receiver should now be inclined until both directional arrows on the inclined axis are illuminated.

The angle may now be read off the scale.

8. Applications

((add graphics))

The PX 10 Transpointer may be used for many general alignment and setting out activities. It is the operator's responsibility to determine if the device is accurate enough for the task required.

8.1 Preparing for drilling work

- estimating exit points from given start points
- estimating drill bit or core bit lengths for a hole
- when used with the slope adapter, finding the angle between two points

8.2 Reducing damage

- Definition of drill entry side: The finished (masonry, tiles, ...) surfaces of walls are often damaged when drilling through from the inside. Using the PX 10 Transpointer the desired start point can be transferred from the inside to the outside of the building.
- Checking that no objects (i.e. risers) on the other side of the wall will be damaged.

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8.3 Transferring marks

Transferring alignment marks or points through walls/ceilings/floors.

8.4 Measuring wall thickness

To determine the thickness of walls/ceilings/floors.

9. Calibration

We recommend that the tools are checked by the Hilti Calibration Service at regular intervals in order to verify the reliability in accordance with standards and legal requirements.

Use can be made of the Hilti Calibration Service at any time, but checking at least once a year is recommended. The Calibration Service provides confirmation that the tool is in conformance, on the day it is tested, with the specifications given in the operating instructions.

The tools will be re-adjusted if deviations from the manufacturer's specification are found. After checking and adjustment, a calibration sticker applied to the tool and a calibration certificate provide written verification that the tool operates in accordance with the manufacturer's specification.

Calibration certificates are always required by companies certified according to ISO 900x.

Your local Hilti Center or representative will be pleased to provide further information.

The user should not open the tool as this cancels the warranty and can have a negative effect on the system accuracy.

9.1 Field Check ((Graphic))

A field check should be made, before important measurements or if the tool is dropped or falls.

Use a wall of approximately 50 cm thickness where it is known that there is no metal reinforcement. Measure and mark the found positions whilst taking notes of the wall thickness shown on the display (first setup). Perform a 2nd measurement by exchanging the transmitter and receiver sides (2nd setup). Compare the results of the 1st and 2nd setup against typical accuracies.

NOTE:

- Measure not in corners or adjacent to walls: rather select a defined offset (20 cm) on both sides

PROCEDURE:

- Have the PX 10T mount stable on the surface and make four measurements with the PX 10R receiver coming from each side to the center location, mark them and take the geometrical centre
- In cases where the wall is possibly not parallel enough take four measurements by rotating the PX 10T by 90° each and take the geometrical center.

10. Care and maintenance

10.1 Cleaning and drying

Use only a clean, soft cloth for cleaning. If necessary, slightly moisten the cloth with a little water.

-NOTE-

- Do not use any other liquids as these may damage the plastic parts.
- Observe the temperature limits when storing your equipment. This is particularly important in winter or summer, especially if the equipment is kept inside a vehicle (storage temperatures: -25°C to +70°C / -13°F to +158°F).

10.2 Storage

- Remove the tools from their case if they have become wet. Clean and dry the tools, their carrying case and accessories (at max. temperature of 40°C / 108°F). Re-pack the equipment only when it is completely dry.
- Check the accuracy of the equipment before it is used after a long period of storage or transportation.
- Remove the batteries if the tools are not going to be used for a considerable time. The tools can be damaged by leaking batteries.

10.3 Transportation

Use either the original Hilti case of equivalent quality for transporting or shipping your equipment.

-CAUTION-

Always remove the batteries before shipping the tools.

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11 Disposal

-CAUTION-

Improper disposal of the equipment may have serious consequences:

- The burning of plastic components generates toxic fumes which may present a health hazard.
- Batteries may explode if damaged or exposed to very high temperatures and thus cause poisoning, burns, acid burns or environmental pollution.
- Careless disposal may permit unauthorized and improper use of the equipment, possibly leading to serious personal injury to third parties and pollution of the environment.

Dispose of batteries and the tools in accordance with the national regulations.

Gelöscht: ¶

Only for EU countries

Disposal of electronic tools together with household waste is not permissible!

In observance of European Directive 2002/96/EC on waste electrical and electronic equipment and its implementation in accordance with the national law, electric tools that have reached the end of their life must be collected separately and returned to an environmentally compatible recycling facility.

12 Warranty

Hilti warrants that the product supplied is free of defects in material and workmanship. This warranty is valid as long as the product is operated and handled correctly, cleaned and serviced properly and in accordance with the Hilti operating instructions, all warranty claims are made within 12 months from the date of the sale (invoice date), and the technical system is maintained. This means that only genuine Hilti consumables, components and spare parts may be used with the product.

This warranty provides the free-of-charge repair or replacement of defective parts only. Parts requiring repair or replacement as a result of normal wear and tear are not covered by this warranty.

Additional claims are excluded, unless stringent national rules prohibit such exclusion. In particular, Hilti is not obligated for direct, indirect, incidental or consequential damages, losses or expenses in connection with, or by reason of, the use of, or inability to use the product for any purpose. Implied warranties of merchantability or fitness for a particular purpose are specifically excluded.

Send the product and/or related parts immediately upon discovery of the defect to the applicable Hilti marketing organization for repair or replacement.

This constitutes Hilti's entire obligation with regard to warranty and supersedes all prior or contemporaneous comments and oral or written agreements concerning warranties.

13 FCC and IC statements

-CAUTION-

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radiofrequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment on and off, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient or re-locate the receiving antenna.
- Increase the distance between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced TV/radio technician for assistance.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Gelöscht: ¶

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

Gelöscht: ¶

This device complies with the requirements defined in RSS-210 of IC. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

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Information plates on the product:

14 EC declaration

Designation: Transpointer
Type: PX 10
Year of design: 2006

In conformance with CE

We declare, on our own responsibility, that this product complies with the following directives and standards:

EN 300 330-2, EN 301 489-3 V1.4.1,
EN 60950-1:2001/IEC 60950-1:2001

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