

HILTI

TPM TM

Bedienungsanleitung

de

Operating instructions

en

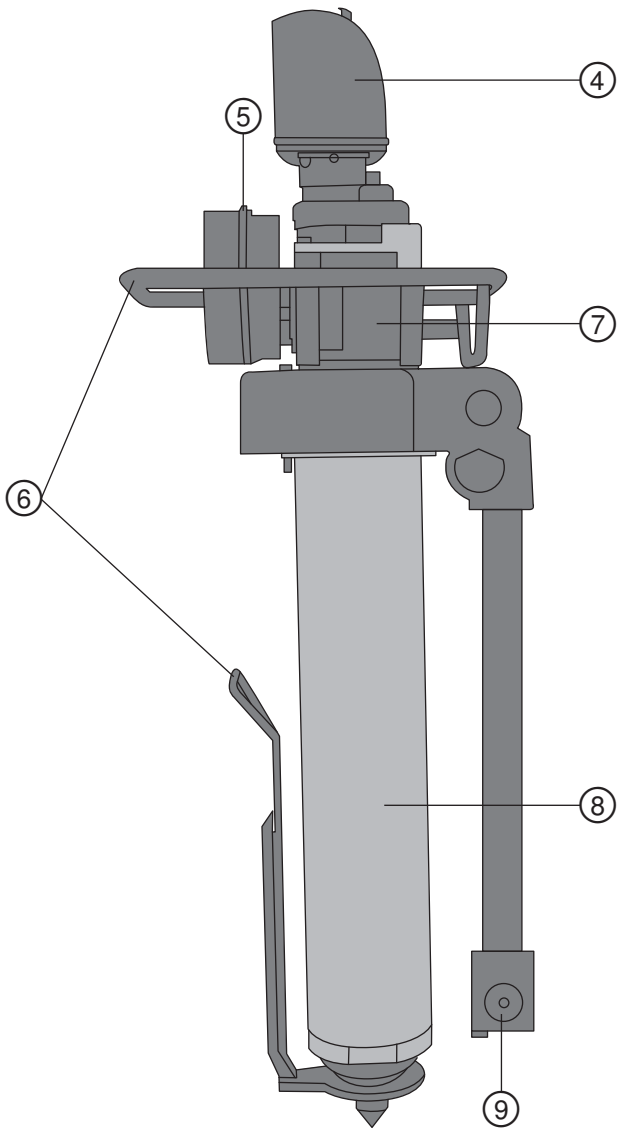
Instrukcja obsługi

pl

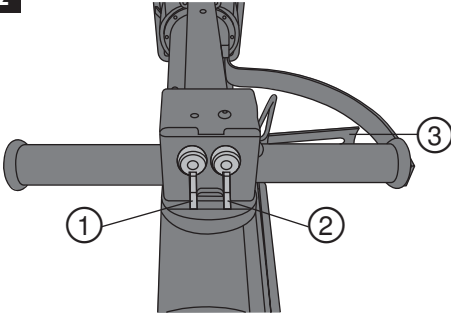
Návod k obsluze

cs

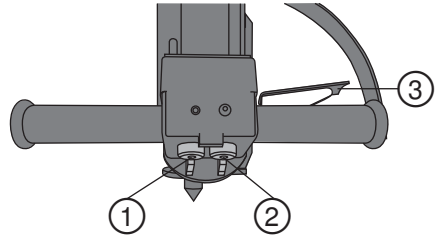




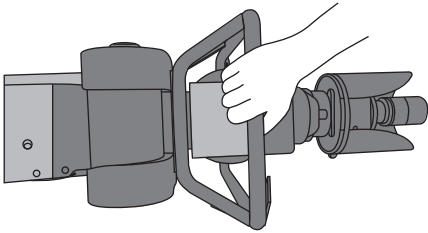
2



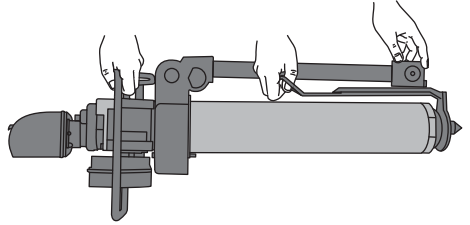
3



4



5



ORIGINAL OPERATING INSTRUCTIONS

Hilti TPM TM pneumatic mining drilling and roof bolting system

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

Always keep these operating instructions together with the tool.

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

Operating controls 1

- ① Elevation / dump control
- ② Cooling water control
- ③ Air motor rotation trigger

Component parts 2

- ④ Chuck
- ⑤ Muffler
- ⑥ Handle to carry tool
- ⑦ Motor and gearbox
- ⑧ Telescopic leg
- ⑨ T-bar handle with controls

Contents	Page
1. General information	9
2. Description	10
3. Accessories	10
4. Technical data	10
5. Safety rules	10
6. Before use	11
7. Operation	12
8. Care and maintenance	13
9. Troubleshooting	14
10. Disposal	14
11. Manufacturer's warranty	15
12. EC declaration of conformity (Original)	15

1. General information

1.1 Safety notices and their meaning

-CAUTION-

Draws attention to a potentially dangerous situation that could lead to slight personal injury or damage to the equipment or other property.

1.2 Pictograms

Warning signs



General warning

Warning: hot surface

Warning: avoid hand injuries

Keep bystanders away

Obligation signs



Wear eye protection

Wear a safety helmet

Wear ear protection

Wear protective gloves

Wear safety footwear

Symbols



Read the operating instructions before use

1 These numbers refer to the corresponding illustrations. The illustrations can be found on the fold-out cover pages. Keep these pages open while studying the operating instructions.

In these operating instructions, the designation "the tool" always refers to the TPM TM Hilti pneumatic mining drilling and roof bolting system.

Location of identification data on the tool

The type designation and serial number can be found on the type 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: _____

Serial no.: _____

en

2. Description

The Hilti TPM Top Mount Low Pressure Roofbolter is a pneumatic mining drilling and roof bolting system. It is ideal for drilling holes in several rock conditions and set a wide range of anchors.

3. Accessories

TPM A HEX 22 chuck system
TPM A HEX 19 chuck system
TPM A SQ 25 chuck system
TPM A LUB lubricator with hose kit

4. Technical data

High speed		
Motor	@ 689 kPa	@ 413 kPa
R.P.M (no load)	850–900	600
Max. air pressure	12 bar	12 bar
Air Consumption	2832–3398 l/m	2832–3398 l/m
Water supply pressure @ 7–12 Bar (100 psi – 175 psi)	700–1206 kPa	700–1206 kPa
Water flow rate std	10–11 l/min	10–11 l/min
Water flow rate hi flow @ 7 Bar (100 psi)	12–13 l/min	12–13 l/min
Stall torque	251 Nm	163 Nm
Torque through clutch	339 Nm	339 Nm
Leg thrust (Low Pressure)		
Stage 1	11.1 kN	6.7 kN
Stage 2	8.9 kN	5.3 kN
Stage 3	6.7 kN	4.0 kN
Noise level	90 dB (A)	
Vibration level	3 m/s ^{2 1)}	
Uncertainty	K = 1.5 m/s ²	
Weight	33.5 kg – 44.5 kg ²⁾	

¹⁾ The vibration emission level given in this information sheet has been measured in accordance with a standardised test given in EN ISO 20643 and may be used to compare one tool with another. It may be used for a preliminary assessment of exposure. The declared vibration emission level represents the main applications of the tool. However if the tool is used for different applications, with different accessories or poorly maintained, the vibration emission may differ. This may significantly increase the exposure level over the total working period. An estimation of the level of exposure to vibration should also take into account the times when the tool is switched off or when it is running but not actually doing the job. This may significantly reduce the exposure level over the total working period. Identify additional safety measures to protect the operator from the effects of vibration such as: maintain the tool and the accessories, keep the hands warm, organisation of work patterns.

²⁾ Weight is type-specific.

5. Safety rules

5.1 Basic safety information

In addition to the safety rules listed in the individual sections of these operating instructions, the following points must be strictly observed at all times.

5.2 Use for intended purpose

The tool is designed for drilling and bolting in rock (not in reinforced concrete).

5.3 Incorrect use



- Changes or modifications to the tool are not permissible.
- To avoid the risk of injury, use only genuine Hilti accessories and ancillary equipment.

- Observe the information printed in the operating instructions concerning operation, care and maintenance.

5.4 State of the art

- The tool is designed and manufactured according to the state of the art.
- The tool and its ancillary equipment may present hazards when used incorrectly by untrained personnel or not as directed.

5.5 Proper arrangement and organisation of the workplace

- Wear non-slip footwear and always work from a secure stance.
- It is recommended that rubber gloves are worn when working.
- Dress properly. Do not wear loose clothing or jewellery. Keep your hair, clothing and gloves away from moving parts.
- Avoid unfavourable body positions.
- Ensure that the workplace is well lit.
- Ensure that the workplace is well ventilated.
- Objects which could cause injury should be removed from the working area.
- Keep other persons outside the area affected while you are working.
- To avoid presenting a tripping hazard while working, always lead the air and water hoses away from the tool to the rear.
- Take care of the drill bits. You will work more efficiently and more safely if the drill bits are kept clean and sharp. Observe the maintenance regulations and instructions on changing drill bits.

5.6 General hazards presented by the tool



- Operate the tool only as directed and only when it is in faultless condition.

- Keep the grips dry, clean and free from oil and grease.
- Never leave the tool unsupervised.
- Avoid unintentional starting. Ensure that the ON / OFF switch and the elevation / dump control are in the OFF position during transport.
- Use only the original accessories or items of additional equipment listed in the operating instructions. The use of other accessories may present a risk of injury.
- Do not overload the tool. The tool operates more efficiently and more safely within its given performance range.
- When not in use, the tool must be stored in a dry place, locked up or where out of reach of unauthorised persons.

5.6.1 Mechanical hazards



- Follow the instructions concerning care and maintenance and change drill bits in good time.

5.7 Requirements to be met by users

- The tool is intended for professional use.
- Stay alert, watch what you are doing and use common sense when operating a pneumatic tool. Do not use a pneumatic tool while you are tired or under the influence of drugs, alcohol or medication.
- Improve the blood circulation in your fingers by relaxing your hands and exercising your fingers during breaks between working.

5.8 Personal protective equipment

The user and persons in the immediate vicinity must wear suitable eye protection, a safety helmet, ear protection, protective gloves and safety footwear when the tool is in use.



6. Before use

6.1 Installation & Maintenance

To obtain optimum and safe performance from the tool, the operator should carry out the following instructions at the start of each shift.

1. Flush out air and water lines.
2. An in-line oiler must be used to provide lubrication to the motor during operation. Recommended oil usage is 1 liter per 75 bolts. Based on 5 minutes for drilling/bolting per bolt. It is most important to check and refill in-line lubrication at the start of each shift.
3. The hose connecting the oiler to the tool should be as short as possible (maximum 5 m).
4. It is good practice to pour 50 mls of oil into the hose before use.
5. Type of oil for lubrication of motor and leg: Light Rockdrill 20 - 30 grade.

-CAUTION-

DO NOT USE hydraulic oil or heavy rockdrilling compounds as these will cause leg and air motor failure.

Adequate lubrication must be supplied to motor. However, it is mandatory that the feed rate for lubricant to be set so that the limits for oil mist are not exceeded.

6. Connect air and water lines to the tool and ensure you insert safety locking pins to hose fittings.
7. WET: The tool is fitted with one filter screen in the air supply claw coupling and one filter screen in the water supply claw coupling. There is also a third and fourth filter situated in the pivot block for filtering air and water to the motor and leg.
DRY: There are only two filters in the dry model, one situated in the pivot block and one filter screen in the air supply claw coupling for filtering air to the motor and leg.



- Purge airline before connecting to bolter and then dump 3 times, without rotating the motor, prior to start of shift to eliminate mud and rubbish entering machine.



-CAUTION-

The filters should be checked and cleaned each 8 hour shift and replaced when damaged. Machine not to be used without filters in place.

The fittings used to connect the air/water hoses to the Roof-bolter should provide an attachment comparable with the hose burst pressure rating.


en

   	-CAUTION-
	<ul style="list-style-type: none"> ■ The tool, drill bit and drill support are heavy. ■ There is a risk of pinching parts of the body. ■ Wear a safety helmet, protective gloves and safety footwear.

 	-CAUTION-
	<ul style="list-style-type: none"> ■ The drill bit may become hot during use. ■ There is a risk of burning the hands. ■ Wear protective gloves when changing drill bits.



6.2 Pre-Checks 2 3

- Turn water and air controls to the OFF position.
- Ensure the drill steel is removed from the chuck. Slowly turn water and air on.
- Check elevation and dump control. Raise and lower leg three times.
- A constant supply of clean high pressure water is essential for efficient operation of the tool. Recommended pressure 7-12 Bar (100 - 175 psi)
- Check motor rotation control.
- Check bits and steels.

	-CAUTION-
	<ul style="list-style-type: none"> ■ The tool and the drilling operation emit noise. ■ Excessive noise may damage the hearing. ■ Wear ear protection.

- Put on your ear and eye protection and insert drill steel.

7. Operation

 	-CAUTION-
	<ul style="list-style-type: none"> ■ Drilling may cause hazardous splintering of the material. ■ Splintering material may injure parts of the body and the eyes. ■ Wear eye protection and a safety helmet.

7.1. Drilling

- Insert drill steel and extend the tool slowly until drill bit comes in contact with roof, being careful that the leg pressure **IS NOT FULL ON**. Failure to NOT ease the air lever to stage 1 position, where the leg rises slowly to the roof, will not only bend drill steels but could also cause an accident.

-CAUTION-

The air leg thrust in the tool is considerably greater than most other drills.

- After drill steel has reached roof, pull trigger for rotation of air motor, then turn water lever to ON position.
- The drilling rate may then be regulated to FULL ON by pushing the air lever controlling leg thrust to full on in conjunction with increased revolutions from the motor.
- To dump the tool after completion of drill round, simply turn air control lever to OFF position.
- Then turn water control lever to OFF position and slowly rotate air motor as it is dumping, this will help retain the drill steel.

-CAUTION-

It is essential that these checks be carried out before the start of the shift to ensure that when the roof is exposed, it is supported immediately for everyone's safety.

7.2 Movement of the machine to the drilling position:

- a) Check the roof and rib conditions and pass information on to fellow workers.
- b) Ensure that all hoses are clear of props, machines etc. and cannot foul.
- c) Using the correct lifting method, (See point 7.4) place the tool into the drilling position.
- d) This tool should be positioned to drill in the upright position or at a maximum angle of 15° off the vertical, unless a specific Risk Assessment has been carried out.

7.3 Drilling beside the continuous miner

- a) If rib conditions allow, when working on the left side of the miner, your off-sider should work on your right with the rib on your left.
- b) When working on the driver's side of the continuous miner, the off-sider should be on the rib side and the continuous miner on your left.
 - Taking the tool, position your legs apart with the left leg in a braced position, so that you have control over the machine, not the machine over you.
 - Ensure you are familiar with the type of chemical in use, that is, set time, etc.
 - Loose clothing should not be worn. Long hair should be tied back.
 - At all times during a bolting operation, observe roof, ribs, machine and fellow workers.
 - **If using the older style of face support, that is, withdrawing the continuous miner and bolting in front.**
- a) Test roof and ribs.

- b) Erect temporary roof supports (props or jacks).
- c) Bolt only from the last safe head support into the face.

-CAUTION-

Extra caution should be exercised during this operation

- All check and safety points should be carried out in a swift, professional manner.
- If you have a new or temporary worker, ensure they know your section operations and the tool controls and endeavour to make person part of your team.

7.4 Lifting the tool 4 5

Safety is the main rule to observe when lifting a Roofbolter.

Always use TWO people to lift machine

- Step 1. First person to place right hand inside hand guard on Crash Bar making sure fingers are fully protected.
- Step 2. Second person to place right hand on Control Block (as shown) to balance roofbolter and left hand inside triangle shape on Carry Handle connected to bottom of Roofbolter.
- Step 3. Check to see you have hands safely positioned before lifting, lift slowly.

-CAUTION-

Observe Operational Handling Guidelines for safe lifting when ever moving the tool.

8. Care and maintenance

8.1 Cleaning

On completion of use, this machine should be thoroughly washed down using water. Do not use cleaning solvents as this may damage the leg seals.

-CAUTION-

Do not apply oil to the outside of legs, as this will pick up dirt which can effect the operation of the legs.

8.2 Maintenance

-CAUTION-

Before sending Roofbolter to surface in very cold conditions blow air through water valve. This is done by connecting the airline to the water side and operate control lever for the water.

1. It is recommended that after every 200 hours of operating time or not later than intervals of three months the machine should be removed from the work site to a service area for cleaning, inspection and removal of any external / Internal build-up of oil, water, dirt or other contaminants. Servicing includes the inspection / replacement of filters and seals (where necessary) and the checking of the general operation of the machine.

2. Service work should only be performed by Hilti or a service agent authorised in writing by Hilti.

9. Troubleshooting

Loss of power to motor	Main air off	Check
	Air lines damaged	Check
	Air lines fouled	Check
Loss of leg thrust	Main air off	Check
	Air lines damaged	Check
	Air lines fouled	Check
	Leg seals	Check
	Leg damage	Check
Water in leg	Turn machine on head open dump valve and elevate to expel water	
Loss of water pressure	Main water off	Check
	Water lines damaged	Check
	Water lines fouled	Check
	Blocked filter	Check
	Rod control needs adjustment	Check
Slow drilling	Bits and steels	Check
	Air and water supply	Check
	Muffler blocked	Check
Rotation trigger faulty	Valve in Pivot Block	Check
	Control Rod	Check
Dumping slow	Leg seals	Check
	Twin dump valves	Check
	Leg damage	Check

en

10. Disposal



Return waste material for recycling

Most of the materials from which Hilti power tools are manufactured can be recycled. The materials must be correctly separated before they can be recycled. In many countries, Hilti has already made arrangements for taking back your old electric tools for recycling. Please ask your Hilti customer service department or Hilti sales representative for further information.

Disposal of drilling slurry

With regard to environmental aspects, allowing drilling slurry to flow directly into rivers, lakes or the sewerage system without suitable pre-treatment is problematical. Ask the local authorities for information about applicable regulations.

We recommend the following pre-treatment:

- Collect the drilling slurry (e.g. use an industrial vacuum cleaner).
- Allow the slurry to settle and dispose of the solid material at a construction waste disposal site (the addition of a flocculent may accelerate the settling process).
- Water from the drilling slurry should be neutralised by adding a neutralising agent or large quantity of water before it is allowed to flow into the sewerage system.



Only for EU countries

Disposal of electric 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 national law, electric tools that have reached the end of their life must be collected separately and returned to an environmentally compatible recycling facility.

11. Manufacturer's warranty – tools

Hilti warrants that the tool supplied is free of defects in material and workmanship. This warranty is valid so long as the tool is operated and handled correctly, cleaned and serviced properly and in accordance with the Hilti Operating Instructions, and the technical system is maintained. This means that only original Hilti consumables, components and spare parts may be used in the tool.

This warranty provides the free-of-charge repair or replacement of defective parts only over the entire lifespan of the tool. 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 oblig-

ated 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 tool for any purpose. Implied warranties of merchantability or fitness for a particular purpose are specifically excluded.

For repair or replacement, send tool or related parts immediately upon discovery of the defect to the address of the local Hilti marketing organization provided.

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

en

12. EC declaration of conformity (Original)

Designation:	Pneumatic drill
Type:	TPM TM
Year of design:	2011

We declare, on our sole responsibility, that this product complies with the following directives and standards: 2006/42/EEC; 94/9/EEC; EN 12100; EN 4414; EN 4413; EN 13463-1

**Hilti Corporation, Feldkircherstrasse 100,
FL-9494 Schaan**



Paolo Luccini
Head of BA Quality and Process Management
Business Area Electric Tools & Accessories
04/2011

Lars Taenzer
Head of Mining
Energy & Industry
04/2011

Technical documentation filed at:

Hilti Entwicklungsgesellschaft mbH
Zulassung Elektrowerkzeuge
Hiltistrasse 6
86916 Kaufering
Deutschland



Hilti Corporation

LI-9494 Schaan

Tel.: +423 / 234 21 11

Fax: +423 / 234 29 65

www.hilti.com

Hilti = registered trademark of Hilti Corp., Schaan

W 4010 | 1213 | 00-Pos. 1 | 1

Printed in Liechtenstein © 2013

Right of technical and programme changes reserved S. E. & O.

2019729 / A3



2019729