



DESIGN, MANUFACTURE, SALES AND
SERVICE OF PNEUMATIC TOOLS

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VKS 80

Pneumatic drifter

Operating instructions

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Labour safety - warnings

- Based on noise and vibration values in connection with operation of the hammer drill, the operator is exposed to a risk of health problems when the tool is used in the long term.
- The construction of the product does not protect the operator against the electric shock hazard.
- ***Materials meeting ČSN 83 2063 and ČSN 33 2030 standards in light of application in SNM 3 locations with explosive methane atmosphere were used for construction of the product.***
- The service staff must use respirators in locations with dust nuisance that exceeds the values permitted by the relevant hygienic regulations.

Safety regulations

The service staff must adhere to the following safety regulations as multiple stages of operation and maintenance of these tools are connected with risks and hazards. Before each person begins work with or servicing the hammer drill, they must read these operating instructions or be familiarized with them so as to understand them completely.

Labour safety prevails over the other service requirements in every situation.

As the following regulations cannot cover all possible cases that may occur, sound common sense must be used when working with the hammer drill or in the vicinity of this tool.

1. When working with the hammer, the operator must wear safety shoes, goggles, efficient hearing protectors, safety helmet and other protection means prescribed for the given plant.
2. Do not stay in a noisy environment for a long time without efficient hearing protectors.
3. Do not allow being distracted – there is a risk of accident.
4. Do not start the hammer drill that is lying freely on the ground.
5. The compressed air is dangerous! Never aim the pressure hose at other people or at yourself. Do not clean your workplace or your work clothes using the air from the pressure hose.
6. Make sure that all hose connections are firm and leak proof. The slack hose results in a loss of air, and there is a risk that it will loosen by itself and may hurt the operating staff and people standing by. Fix the hoses (using a cable, wire, string, or chain) to avoid the risk of injury when the hose gets loose or it bursts.
7. The hoses must be secured on the hose sockets using a prescribed number of hose clips specified for the given type of hose located against each recess on the socket.
8. Do not release any connections that are under pressure until you shut the air supply and vent the hoses duly.
9. Put the hammer drill into service with recommended and approved tools only.
10. Observe the safety regulations for the machine used (carrier), given by the manufacturer.
11. If you use a cleaning agent or a solvent to clean the hammer drill, make sure these meet relevant safety regulations and that their application does not cause

environmental damage. When cleaning, observe the instructions recommended by the manufacturer of the given cleaning agent.

Technical description

The VKS 80 is conceived as an impact slide hammer drill with boring rod rotation that depends on the movement of the impact piston. The hammer is powered by the compressed air with 0.4 – 0.6 MPa (4-6 bar) overpressure. The air from the supply elbow pipe is led via the head of cylinder into the distribution system with a throttle and the air is alternatively driven below and above the floating piston head in the hammer cylinder. Thus the piston is set in the combined reciprocating movement. During the impact lift stroke, the piston transfers its kinetic energy to the drill rod and the latter transfers it into the rock to be drilled. During the return stroke of the impact piston, the drill rod is swivelled by means of the drill chuck, carrier nut, screw carrier, latches and the latch body. Using the head latch and the slide valve controlled by the compressed air, it is possible to set the drilling linkage swivel to the left, and then to set the direction of swivel to the right for its disengagement. The air and water supply elbow pipes are rotary whereas the air supply elbow pipe can be fit in place both from the right and left sides of the hammer drill. The sockets to supply the compressed air to the slide valve are adjustable within 180° range. The end of the drill rod comprises the shut-off flange attached to the hammer cylinder with two screws. The noise suppressor is a steel cast fixed to the hammer with four screws and it enables to steer the exhaust pipe along the longitudinal axis of the hammer drill to the left or to the right. The water supply for central drilling mud is made up of a socket located in the hammer right above the collar. The supplied water pressure should be 0.3 to 0.4 MPa (3-4 bar).

The direction of swivel of the drill linkage, eventually elimination of direction of swivel is accomplished by the compressed air brought in by socket connectors attached to the hammer drill head to the slide valve mechanism to switch or eliminate the direction of swivel. The air pressure resets the slide valve and thereby the head latch to one of their limit positions whereas the head latch always puts out of operation the four latches designed for the opposite direction of swivel. When the air supply to both socket connectors is shut off, the slide valve and the head latch are set between their limit positions and put out of operation all the latches and thereby the swivel of the drill linkage. The hammer drill is lubricated with oil emulsion, i.e. oil is dispersed into the flow of the compressed air getting into the air line lubricator. The oil emulsion is brought to the individual lubrication places via a system of lubricating channels.

The fastening of the hammer drill onto the carrier is accomplished by additional nuts to the stretching screws. The hammer drill of carriage type is remote-controlled from the control panel located outside the hammer drill according to needs or practice of the operator. It is possible to remote control the start and stop of the hammer, drilling fluid, alteration of running direction and its elimination. When the drill linkage is to be loosen up, the recommended time to swivel to the right is 3 seconds due to a possibility that the screw carrier nut may disengage from the impact piston.

Technical data and main dimensions

		ISO units	VKS 80
Weight		kg	78.5
Frequency of piston impacts	*approx.	Hz	33
Energy of impact	*approx.	J	210
Performance	*approx.	kW	6.78
Piston stroke		mm	68
Air consumption *	*approx.	m ³ min ⁻¹	8.5
Flushing water consumption	*approx.	dm ³ min ⁻¹	5
Operating air overpressure		MPa	0.4 – 0.6
Drill rod		L 400 R32 – 4 winged	
Noise class		N	104 - 108
Outside dimensions	Length L	mm	840
	Height A	mm	200
	Width ?	mm	340
Air supply hose		Js 40 mm	
Flushing water supply hose		Js 20 mm	
Air supply hose to rotation reversion		Js 13 mm	

* At 0.5 MPa air overpressure, mean values presented ($\pm 10\%$ tolerance)

Operating principles

Important maintenance principles

The VKS 80 hammer drill is made with high precision and from high quality materials. It is necessary to observe some principles, the operating and maintenance staff must familiarize with, in order to make the best account of it and to keep its long service life and reliability.

1. The overpressure of the dry and clean compressed air must be 0.4 – 0.6 MPa (4-6 bar) and it must be supplied in the sufficient quantities. The air and water supply hoses must have dimensions specified by the hammer drill manufacturer.

2. The hammer drill must be duly lubricated during drilling with oil emulsion from the air line lubricator. It is necessary to check the proper operation of the lubricator (1 drop in 3-5 seconds).
3. To prevent the hammer drill from washing the oil out of the drill chuck, the surface rod with intact collar for the drilling fluid sealing tube must be used. Therefore, a more suitable way is more frequent replacement of his collar: If the pressure of the drilling fluid is the same or higher than the air pressure, the condition of the collar in the surface drill rod must be good in particular. Generally, the water pressure should be lower by 0.1 - 0.2 MPa (1-2 bar) than the operating air pressure.
4. The hoses must be cleaned by blowing or flushing to remove impurities before they are connected.
5. All joints must be duly tightened to avoid losses.
6. The nuts for tightening bolts must be duly and evenly tightened.
7. It is necessary to protect the hammer drill against penetration of large impurities into the functional section, especially, it is necessary to be particular in cleanliness of supply elbow pipes before connecting the hammer drill to the air and water supplies, when storing the tool against penetration of impurities into the drill chuck and exhaust port.
8. When used in continuous operation, it is necessary to disassemble the hammer drill once a month at least, to perform inspection, and eventually replace damaged components. These operations can only be performed by a serviceman who has special knowledge required in this field.

Assembling instructions

Assembling

Use four shaped nuts (27) and attach the hammer drill to the hammer drill carrier. A special mounting device is needed for mounting the air elbow pipe flexible ring (29). Otherwise, the hammer drill can be assembled and disassembled without using any special tools and assembly jigs.

Mounting of subassemblies

- A) Press the insert (7) into the heated drill chuck (9) – heated up to 120°C in oil. Screw in the carrier, after ungreasing its thread, into the drill chuck (9) from the other end. The thread is sealed with Loctite to avoid loosening. The clutch (6) is run into the drill chuck from the front.
- B) The pin (58) and three plugs are run into the hammer cylinder (1). The exhaust lid (24) is screwed with four screws (68), washers (70), and nuts (69).
- C) The pins (43) are hammered into the lower (15) and upper lids (17) of the distribution system (15).
- D) The springs (38), pins (31), and latches (30) are installed in the latch body (18).
- E) The nut (12) of the carrier is screwed into the piston (11). After degreasing, the thread is sealed with Loctite 601 to avoid loosening.
- F) Pull the bushing (28) with the inserted ring (47, 48) on the supply elbow pipe (35) and fix it with the spring ring (29).
- G) First, press the insert (19) into the head of cylinder (3). Put the slide valve (21) into the head of cylinder (3) and put the guides (22) from both ends, insert the

springs (39) and screw in the plugs (23) on which sealing rings were fitted previously. Now put together F-subassembly – the supply elbow pipe and the plug (36) from the other end fitted with the sealing ring (48).

Mounting of assemblies

- H) Insert **A**-subassembly (drill chuck) into the cylinder lid. Put the surface drill rod (73), the backstop (5) from the front and screw in the closing flange (4), fitted with flexible endstop (50). Fasten the flange with two screws (71), fitted with washers (72). Slide the oil thrower collar (49) onto the surface drill rod (73).
- I) Run the impact bushing (10) into **B**-subassembly (hammer cylinder) and the bushing (13) centred by the raceway on the pin (58); insert **E**-subassembly (piston) into **B**-assembly. Run the key (42) into the assembled distribution system from **C**-subassembly with the slide valve (16) and the spring (40) and run the entire distribution system into the cylinder (1) and put on the screw carrier (11).
- J) Insert the head latch (20), adjusted in the neutral position with all the latches blocked, into **G**-subassembly (head of cylinder) and put on **D**-assembly (latch body). Before putting on, move all the eight latches by some 8 mm aside towards the front of the hammer and insert them into the head of cylinder. Now lift the individual latches and after putting them into the internal part of the head, adjust them easily on the segments of the head latch (20).

Complete mounting

Interconnect **H** and **I** assemblies. Leave the key (20) to run out a few millimetres towards the cylinder. Grasp the completed **J**-assembly and with the key centred in the groove located in the latch body (18) and insert it into the cylinder. Now put on the tightening bolts (25), insert nuts (25) and tighten them firmly. Tighten the nuts (27) so that they cannot get loose and lost during transportation.

Put the seal (53), fluid pipe (37) into the insert (19) and screw the bushing (32) with the washer (41) and sealing ring (46) inserted. Put the nut (34) and collar (54) onto the socket (33); insert the socket (33) into the bushing (32) and screw the nut (34). Fix the two connectors (57) fitted with washers (45) and screw (56) in the head of cylinder.

Put the hoses (66) fitted with sockets and nuts (63) at one end on the connectors (56) and fasten everything with a hose clamp (64). Finally, populate the socket (33) with the hose (67), connector (61) and fasten it with a hose clamp (65).

Before assembling, lubricate all the components with recommended oil (see Lubrication).

Before tightening bolts (25) are finally fastened with nuts (26), check the operation of the swivel mechanism, by turning the surface rod (73), after the slide valve is set to one of its limit positions by the compressed air.

Hammer drill disassembling

The hammer drill can be disassembled, after it is cleaned, in reverse order of assembling.

Drilling tools

Drill rod L 400 (R32, four-winged 1 ¼”).

Drill rod R32, length 1.2 -1.8 m according the type of support.

Coupling

Drill bit – thread R32

Lubrication

The hammer drill must be in a good technical condition and it must be lubricated in order to provide maximum performance, service life and proper functionality.

The oil emulsion from the flow-through lubricator, which is part of the drilling carriage or package, is the most suitable form of lubrication.

Before setting up

Seizing is the most dangerous problem with the new hammer drill. To avoid this problem, it is necessary to make sure that lubrication is sufficient and that the compressed air is clean. Before connecting to the hammer drill, the hose coming from the flow-through lubricator to the hammer must be adequately blown through until the internal surface of the hose is covered with oil. After performing that operation, the correct value is set up. The new hose is blown through (off load) for 5 – 10 min.

Operation

The flow-through lubricator must be adjusted in such a way that the stem of the surface rod is properly lubricated, which can be found out by the fact that even a section of the surface rod is covered with a thin layer of oil. In this case, the lubrication of the impacting mechanism is adequate.

Recommended ecological oils:

SETUZA PRIMOL EKO PNEU

ÖMV BIOHYD M 32

MANNOIL EKO PNEU

BP BIOHYD SE 46

TOTAL HYDROBIO

Recommended mineral oils:

PARAMO PNEUMAT 46

If the hammer drill is expected to be put out of operation for a long time (more than 3 weeks), it is necessary to preserve the tool in the following manner: pour approx. 1 dcl of mineral oil into the air supply and then start the hammer briefly.

Never use ecological oils for conservation.

Delivering

The VKS 80 is delivered separately, including the socket and sleeve nut.

Each hammer drill is delivered with the Operating Instructions and the Certificate of Warranty.

Furthermore, it is possible to buy the following items for your complete delivery:

- Tools
- Lubricator, separator, SOOR, AOV 6

- Recommended ecological SETUZA oils
- Hoses + end pieces (Ø13 mm, 20 mm, 40 mm)
- Adapters, bits, sockets, clamps

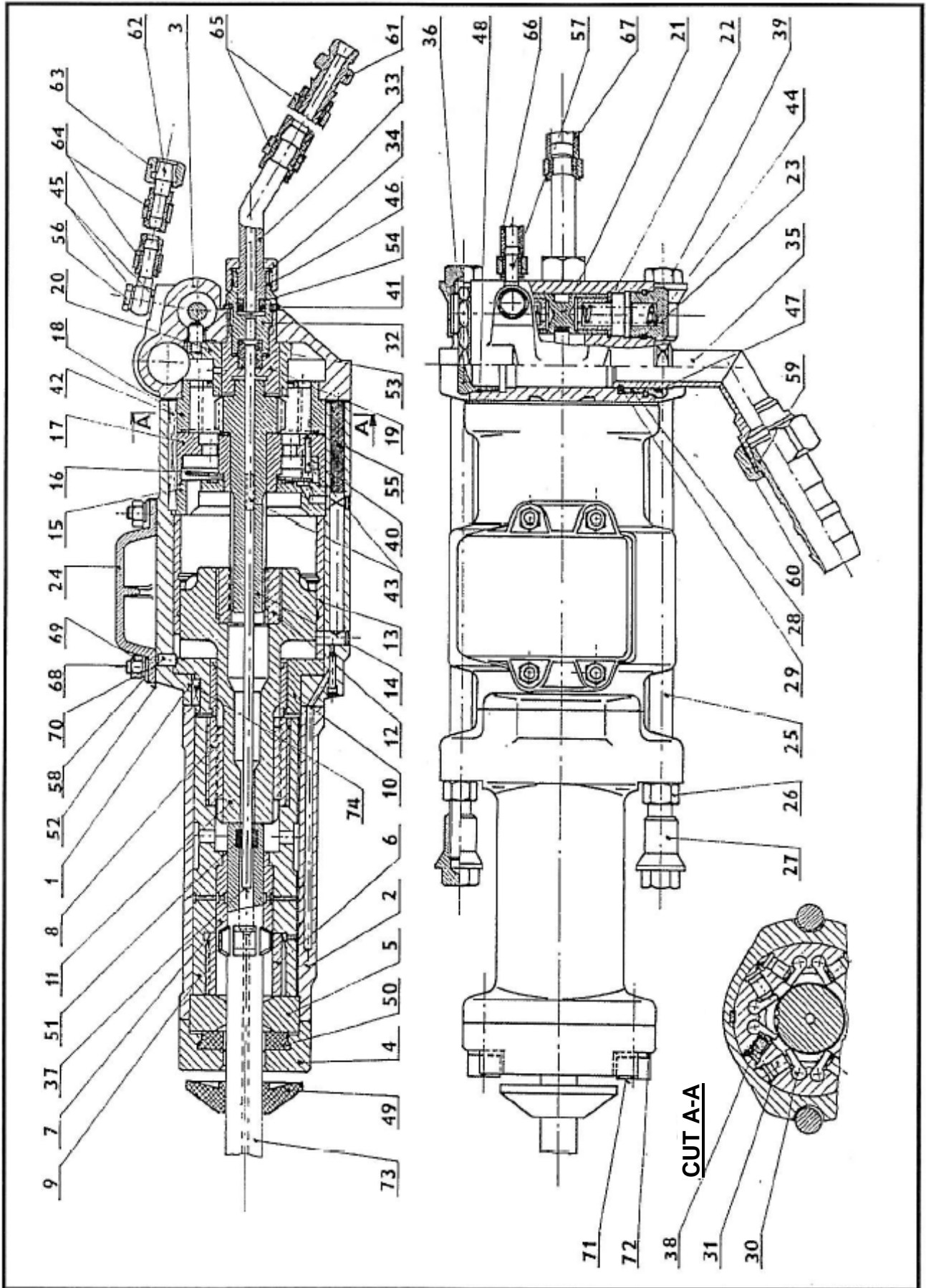
Spare parts – ordering

The VKS is manufactured according to drawing documentation to ensure the exchangeability of components. It is necessary to indicate the type of hammer drill, quantity, name and drawing No. of the required component in your order form.

Example: Tightening bolt 0465-00 2pc

Storage

It is necessary to store the hammer drill in dry premises protected from weather factors – maximum relative humidity is 75%. It is inadmissible to store the tool close to corrosive chemicals and gases. If storage conditions are followed, the hammer drill can be stored for one and a half years without the reconservation process.



Parts list

Seq. No.	Name	Supply No.	Qty	Weight kg
1	Cylinder	5091-850	1	13.42
2	Cylinder lid	5131-820	1	10.63
3	Head of cylinder	5255-101	1	8.593
4	Shut-off flange	4140-030	1	2.76
5	Backstop	0943-080	1	0.54
6	Connector	3979-011	1	1.01
7	Insert	2023-230	1	0.62
8	Carrier	0441-120	1	1.32
9	Drill chuck	2089-810	1	7.08
10	Impact bushing – assembly	2261-470	1	2.96
11	Piston	5002-620	1	6.47
12	Carrier nut	2068-420	1	0.83
13	Bushing	2001-390	1	2.5
14	Screw carrier machined	5151-510	1	1.59
15	Distribution system lower lid	3924-360	1	1.75
16	Throttle	5149-120	1	0.30
17	Distribution system upper lid	3925-320	1	2.63
18	Latch body	5262-020	1	2.41
19	Insert	2016-140	1	0.46
20	Head latch, assembly	8032-010	1	0.7
21	Slide valve	4019-370	1	0.26
22	Guidance	1532-030	2	0.08
23	Plug	0010-200	2	0.29
24	Exhaust lid	1517-130	1	
25	Tightening bolt	0465-000	2	1.325
26	Nut	0600-350	2	0.07
27	Nut	0610-050	4	0.26
28	Bushing	0010-220	1	0.245
29	Spring ring	4775-100	1	0.01

Seq. No.	Name	Supply No.	Qty	Weight kg
30	Latch	3792-140	8	0.085
31	Pin	3043-320	8	0.01
32	Bushing	2017-090	1	0.375
33	Socket	4424-250	1	0.350
34	Nut	0640-200	1	0.125
35	Supply elbow pipe, weldment	4424-240	1	0.72
36	Plug	0010-210	1	0.355
37	Flushing pipe	4307-230	1	0.11
38	Conic spring	4610-000	8	0.002
39	Spring	4501-640	2	0.04
40	Spring	4501-650	1	0.0002
41	Washer	0911-600	1	0.035
42	Key 8h9x7x100	311 308	1	0.04
43	Pin 6x30 – treatment	3052-320	2	0.0066
44	O-ring 38x2	273 067	2	0.0047
45	Ring 16x20	319 004	4	0.0014
46	O-ring 25x21	273-090	1	0.00039
47	O-ring 44x36	273-022	1	0.00226
48	O-ring 45x2	273-075	2	0.0055
49	Rubber collar 1735-030	273-301	1	0.12
50	Backstop 1 ¼" 4200-470	722-038	1	0.08
51	Collar PU 4219-020	321-023	10	
52	Seal	4224-000	1	
53	Rubber seal 4200-640	273-302	1	0.01
54	Rubber collar 4219-030	273-300	1	0.003
55	Plug 3038-280	321-032	3	0.015
56	Screw	0023-050	2	0.056
57	Adapter	4033-040	2	0.075
58	Pin	3050-000	1	
59	Socket Js 40	4023-329	1	0.43

Seq. No.	Name	Supply No.	Qty	Weight kg
60	Nut	0640-210	1	0.365
61	Adapter	4092-040	1	
62	Socket Js 13	4023-480	2	
63	Sleeve nut	0640-260	2	
64	Hose clamp 20	1172-080	4	
65	Hose clamp SL 34	414-309	2	
66	Hose 13/23	4960-060	2	
67	Hose 20/30	4960-110	1	
68	Set screw M12x28	309 146	4	
69	Precise nut M12	311 011	4	
70	Lock washer 12.2	311 141	4	
71	Screw M20x50	309 188	2	0.20
72	Lock washer 20.5	311 145	2	0.001
73	Surface drill rod Tampela 0.4m	414036	1	2.28
74	Key 8h9x7x25	311 364	1	

EU DECLARATION OF CONFORMITY

Of the product with technical regulations pursuant to §13 of Act No. 22/1997 Coll. subsequently amended:

§ 3, sect. (1), item a) of Government Regulation No. 24/2003 Coll. as amended
§ 3, sect. (1), item c) of Government Regulation No. 23/2003 Coll. as amended

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Statutory representatives (agents): Ing. Vladimír Koudelka
Ing. Jan Koudelka

Description of machinery: Name: hammer drill Type: **VKS 80**
Serial number:

Application: The hammer drill belongs to the medium-duty category of slide hammer drills. It is designed for drilling holes for tunnelling and mining purposes with the use of technology for mineral and coal mining, rock extraction when building foundations, roads, and railways. The hammer is the main part of the machinery.

The product can be used in environments with "dangerous atmospheric conditions 2", device group I (mining), category M2, up to 1.5% of methane concentration, refer to the standards and regulations mentioned below.

The machinery meets the following provisions:

Its construction meets the requirements fixed by EU Parliament and EU Council No. 98/37/EU as amended by Government Regulation No. 24/2003 Coll. and meets the conditions for application pursuant this technical description to the extent indicated in Operating Instructions of 13.4.2007.

The notified person did not take part in the assessment of conformity.

List of technical regulations, harmonized Czech technical standards, national regulations and technical standards by which the conformity was assessed.

Provisions satisfied by the machinery:

Its construction meets the requirements fixed by EU Parliament and EU Council No. 98/37/EU as amended by the Government Regulation No. 24/2003 Coll., the EU Parliament and EU Council Guideline 94/9/EU as amended by the Government Regulation No. 23/2003 Coll. for application pursuant this technical description to the extent indicated in Operating Instructions of 3.4.2007.


Manufacturer's confirmation: As to the construction, the product is safe if the conditions set forth in the Operating Instructions of 13.4.2007 are followed.

The manufacturer is holder of Certificate No. 3076-133/N/2001 of 3.9.2001, Report 9a/11/105/04/452 of 22.7.2004.

By the in-house measures, the manufacturer ensures the permanent conformity of this machinery with technical documentation and with the requirements of the above mentioned technical regulations, national regulations and standards.

Rostoky 217, 13.4.2007




Ing. Jan Koudelka
Representative

Certificate of Warranty

The manufacturer gives a 24 month's warranty of performance and faults resulting from improper production or imperfect material. The warranty does not apply to faults caused by failure to follow the operating and maintenance instructions as well as faults caused by normal wear and tear, inadequate use, rough handling, and incompetent intervention in the product or by using unauthorized parts.

REPAIRS IN WARRANTY PERIOD ARE PERFORMED BY THE MANUFACTURER ONLY OR AUTHORISED DISTRIBUTOR.

Claims resulting from the warranty can only be laid if this fully completed Certificate of Warranty along with the respective product is submitted.

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Service departments and authorized dealers are presented at www.permon.cz

Certificate of Warranty

for

VKS 80

Serial number: _____

Delivered from warehouse:

Date of sale:

***The hammer drill was set up:
(date, signature)*** _____
