Secoroc Rock Drilling Tools

Secoroc Y Series Surface Rock Drill

Secoroc Y19A Hand Held Rock Drill

Operator's instructions / Spare parts list

Atlas Copco

Foreword

Thank you for selecting the Secoroc hand held rock drill Y19A.

These instructions were developed to help you get the best performance and productivity from the use of your new rock drill.

Please refer to them also for the correct maintenance of the rock drill.

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Scope of application

Hand held rock drill model Y19A is mainly used for drilling, secondary blasting and other work in mines, railway and water conservancy projects. It is designed for both dry and wet rock drilling on hard and medium hard rock, vertically downwards or inclined blast hole. For wet drilling, the water pipe nut must be replaced with the air pipe nut and the water pipe. The rock drill can be equipped with pusher leg FT100 and FY200A lubricator.

Specification

Pneumatic rock drill Y19A		
Weight	19	kg
Dimension (L x W x H)	600 x 534 x 157	mm
Cylinder diameter	65	mm
Piston stroke	54	mm
Working pressure	4–5	bar(e)
Impact energy (at 5.0 bar (e))	≥40	J
Impact energy (at 4.0 bar (e))	≥28	J
Air consumption (at 5.0 bar (e))	≤43	l/s
Air consumption (at 4.0 bar (e))	≤37	l/s
Impact frequency (at 5.0 bar (e))	≥35	Hz
Impact frequency (at 4.0 bar (e))	≥28	Hz
Torque (at 5.0 bar (e))	≥12.5	Nm
Torque (at 4.0 bar (e))	≥9.5	Nm
Noise level	≤121	dB(A)
Water pressure	working pressure -1	bar(e)
Air hose inner diameter	19	mm
Water hose inner diameter	13	mm
Drilling diameter	34–40	mm
Max drilling depth	5	m
Working temperature	-30 to +50	ºC
Shank size	H22x108	mm

Safety instructions

To reduce the risk of serious injury or death to yourself or others, carefully read through this instruction booklet before putting the rock drill to use. Always follow the instructions given in this manual.

- Always wear a safety helmet, impact resistant eye protection with side protection and ear protectors with CE mark during drilling. Any local regulations that exist must also be observed.
- When drilling in certain minerals, there is a risk of spark generation. Before starting work, check that the machine is approved (in accordance with local regulations) for work under such conditions.
- Always take great care when using the machine. The drill steel is subjected to heavy loading and can break, with a risk of injury to personnel.
- Check that the hoses used are of the right quality, and that all hose connections are in good condition and properly tightened.
- Before starting work on any of the systems, make sure that the air and water systems are un-pressurized.
- Make sure that there are no concealed wires or other sources of electricity. Never drill near any electric wires or other sources of electricity.
- Exposure to crystalline silica (sometimes called 'silica dust') as a result of drilling in rock may cause silicosis, cancer or death. To reduce silica exposure, use water flushing.
- A compressed air hose that comes loose can lash around and cause personal injury or death. Check that the compressed air connections are not damaged and that they are properly attached.

Operation

Using the rock drill for the first time

When the rock drill arrives from the factory, the inside of the tool is coated with heavy oil to prevent corrosion.

After unpacking and installing the tool, pour a small amount of lubrication oil into the air connection and operate the tool on partial throttle to clean the interior. Follow this immediately with a liberal amount of air tool oil.

The rock drill is lubricated with oil mixed with compressed air, which is taken to the parts that need continuous lubrication. Oil is metered into the compressed air using the FY200A lubricator connected to the air line.

Preparations before starting

1. Check the drilling equipment

- Check that all of the drilling equipment is in good working order.
- Check that the impact surface of the drill steel shank is flat with no signs of wear.
- Make sure that the air inlet and exhaust ports are free from obstructions.
- Check that the flushing holes in the drill steel and drill bit are not blocked and that the flushing air/water flows through without obstruction.
- Ensure that the fittings are tight and leak-proof.

> **⚠ WARNING**
> A compressed air hose that comes loose can lash around and cause personal injury or death. Check that the compressed air connections are not damaged and that they are properly attached.

2. Blow out the air hose

Every day before using the drill, blow out the air hose to clear it from accumulated dirt and moisture.

3. Check the lubrication oil level

- Fill the lubricator with oil if necessary.
- Always use a recommended lubricant.

Lubricant recommendation	
Use a mineral-based air tool oil	
Ambient temperature °C	Viscosity grade (ISO 3448)
-30 to 0	ISO VG 32-68
-10 to +20	ISO VG 68-100
+10 to +50	ISO VG 100-150

4. Air/water pressure and hose dimensions

Air pressure
Ensure that the compressor can deliver the required air pressure of 5 bar at the machine.

- High pressure (>6.3 bar) causes rough operation and damage.
- Low pressure (<4 bar) results in a slow drilling speed.

Water pressure
Set the water preassure to around 3 bar. Maximum water pressure is 1 bar less than the air pressure. For example if the air pressure is 5 bar, the water pressure must be below 4 bar to prevent water entering the impact mechanism.

Air hose dimensions
The air hose diameter must be no less than 19 mm. The inner diameter of connection nipples and hoses must be no less than 17 mm. The ideal overall air hose length is less than 20 m.

Water hose dimensions
The water hose inner diameter must be no less than ½".

5. Prevent freezing

In low ambient temperatures, ice can form in the machine. This can be avoided if the water in the compressed air is removed. This can be done by equipping the air lines with water separators and drainage points for water condensate.

If the rock drill ices up, it must not be heated to melt the ice. Let the ice thaw at room temperature.

Do not pour methylated spirits or similar substances into the rock drill, as they will interfere with the lubrication and lead to increased wear.

6. Conversion to water flushing

The Y19A is normally used for dry drilling. When wet drilling is required, remove the air pipe nut (spare parts list, No. 29). Replace it with the water pipe nut (spare parts list, No. 2) and the water pipe (spare parts list, No. 1). Connect the water hose to the water pipe and turn on the water supply.

Fitting and removing the drill steel

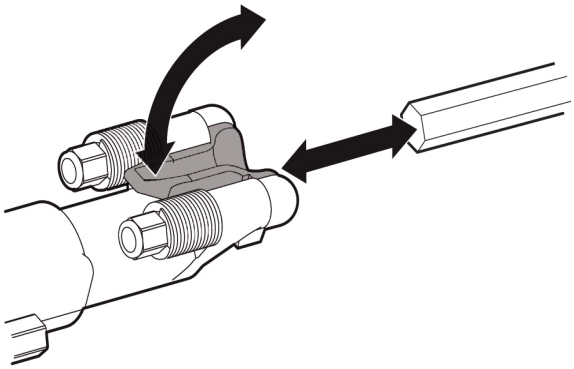
Before fitting the drill steel

- Check that the drill steel shank is of the correct size and length for the chuck used.
- The shank must be clean and the drill steel must be in good condition.
- The suitable quenching hardness of the shank is HRC48-53. A harder end face will cause piston damage and breakage of the end face of the piston. If the shank face is too soft it will be easily deformed by the piston which will result in difficulty in removing the drill steel.
- The shank end face shall be flat and perpendicular to the axis.
- Remove sharp edges from the shank's end face. A rough shank surface will cause premature piston failure.
- Inspect the drill steel: A dull drill steel will slow down the drilling speed and overstrain the drill mechanism. When changing drill steel make sure that the new one is the correct size to follow your previous bore.

➢ Before drilling check that the flushing hole in the drill steel is not blocked.

Fitting the drill steel

1. Push the retainer outwards in the direction of the arrow (see picture below), until the front portion of the retainer is able to accommodate the drill steel collar.
2. Insert the drill in the chuck.
3. When the drill bottoms, push back the retainer to lock it.



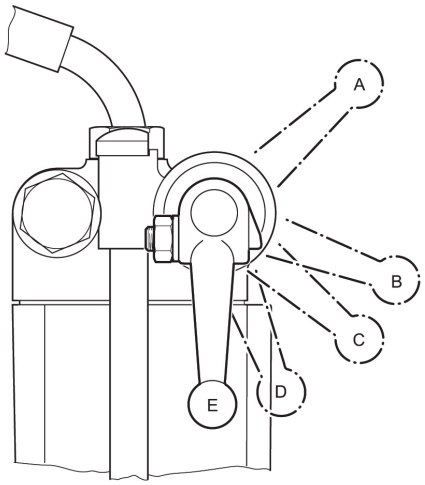
Removing the drill steel

1. Push the retainer outwards in the direction of the arrow until the drill steel collar disengages from the front of the retainer.
2. Pull the drill steel out.
3. Push back the retainer.

Controls

Throttle lever

The rock drill is equipped with a throttle lever for regulating the compressed air to the percussion mechanism.



A. Extra blowing, water flushing, no drilling

B. Stop

C. Low throttle

D. Medium throttle

E. Full throttle

Drilling

Starting the rock drill

1. Open the main valve for compressed air.
2. Align the rock drill so that the drill steel touches the desired collaring point.
3. Move the throttle lever forward a little, which will start water flushing (if water is connected), percussion and rotation.
4. Collar the hole with reduced feed force.
5. Move the throttle lever fully forward once the drill steel has gained a secure footing in the rock.

Note! Do not bend the drill steel as this will increase wear of the shank bushing and piston. Furthermore, it can also affect drilling efficiency and increase the risk of drill steel breakage.

Stopping the rock drill

Pull the throttle lever backwards, which will stop percussion, rotation and flushing water.

Checking the lubrication

The chuck and drill steel shank must always be covered by a film of oil.

Blow-cleaning the drill hole

⚠ CAUTION

When blow-cleaning, particles and dirty flushing water can emerge at speed from the drill hole.

- Move to the side and cover your eyes before starting to blow-clean the drill hole.
- Always wear impact resistant eye protection with side protection to avoid injury.
- Make sure that no co-workers are in range when blow-cleaning.

If powerful blow-cleaning of the drill hole is required, turn the throttle lever fully backwards, whereupon the rock drill stops. This can be done during drilling. When the drill hole is clean, turn the extra blowing lever forwards again to re-start the rock drill.

When you have finished drilling

Run the rock drill at medium speed when retracting the drill steel from the drilled hole.

Lay down the rock drill on a stone, wooden plank or similar object, so as to prevent drill cuttings and other foreign matter from entering the chuck.

Turn off the water pressure before the air pressure. Run the rock drill for a few seconds to clean out water and moisture after the water has been shut off.

Maintenance

Regular maintenance is a prerequisite for machine safety. Replace damaged and worn components in good time.

Check the machine and drill steel for wear and damage at regular intervals. Do not use a very worn or damaged drill steel.

When cleaning mechanical parts with a solvent, make sure that you comply with current health and safety regulations and ensure that there is sufficient ventilation.

Daily maintenance, regular checking of wearing parts and carrying out repairs in good time prevents breakdowns and increases the service life of the machine.

- Make sure that no foreign matter enters the machine.
- Always hose down and wipe clean the rock drill after use.

Once a shift (after 8 hours of operation)

- Check the wear in the chuck bushing. If the wear limit has been exceeded, the drill steel shank will wear more quickly, or become deformed. This will lead to stoppages and increased drill steel consumption.
- Check the tightness of the side bolt nuts.
- Check the hoses, couplings and controls for leakage and damage.
- Check that the rock drill is receiving enough lubrication. Fill the lubricator with oil if necessary.
- Every day before using the drill, blow out the air hose to clear it from accumulated dirt and moisture.
- Drain the water separator (if one is used).
- Check the air and water pressure. Make sure that the water pressure is at least 1 bar lower than the air pressure (if water is connected).

Once a week (after 40 hours of operation)

Carry out a basic check of all functions of the drilling equipment.

Once a month (after 200 hours of operation)

- Send the rock drill to a workshop for inspection. The local operating conditions will determine whether or not this is a suitable interval for overhauling the drill.
- Clean out the water separator (if one is used).

Selection of spare parts

Use only genuine parts for replacement, to ensure stable performance. Do not use pattern parts, which not only have a short working life but also cause consequential damage to other parts, due to differing measurements and methods of manufacturing.

Storage

- Always oil the rock drill before putting it into storage.
- Store the rock drill in a clean and dry place.
- In the case of long-term storage, pour a quantity of oil directly into the rock-drill's air intake and then turn on the air briefly. This will protect the machine from corrosion.
- Protect the chuck using a wooden plug or a clean piece of cotton waste.

Scrapping and waste disposal

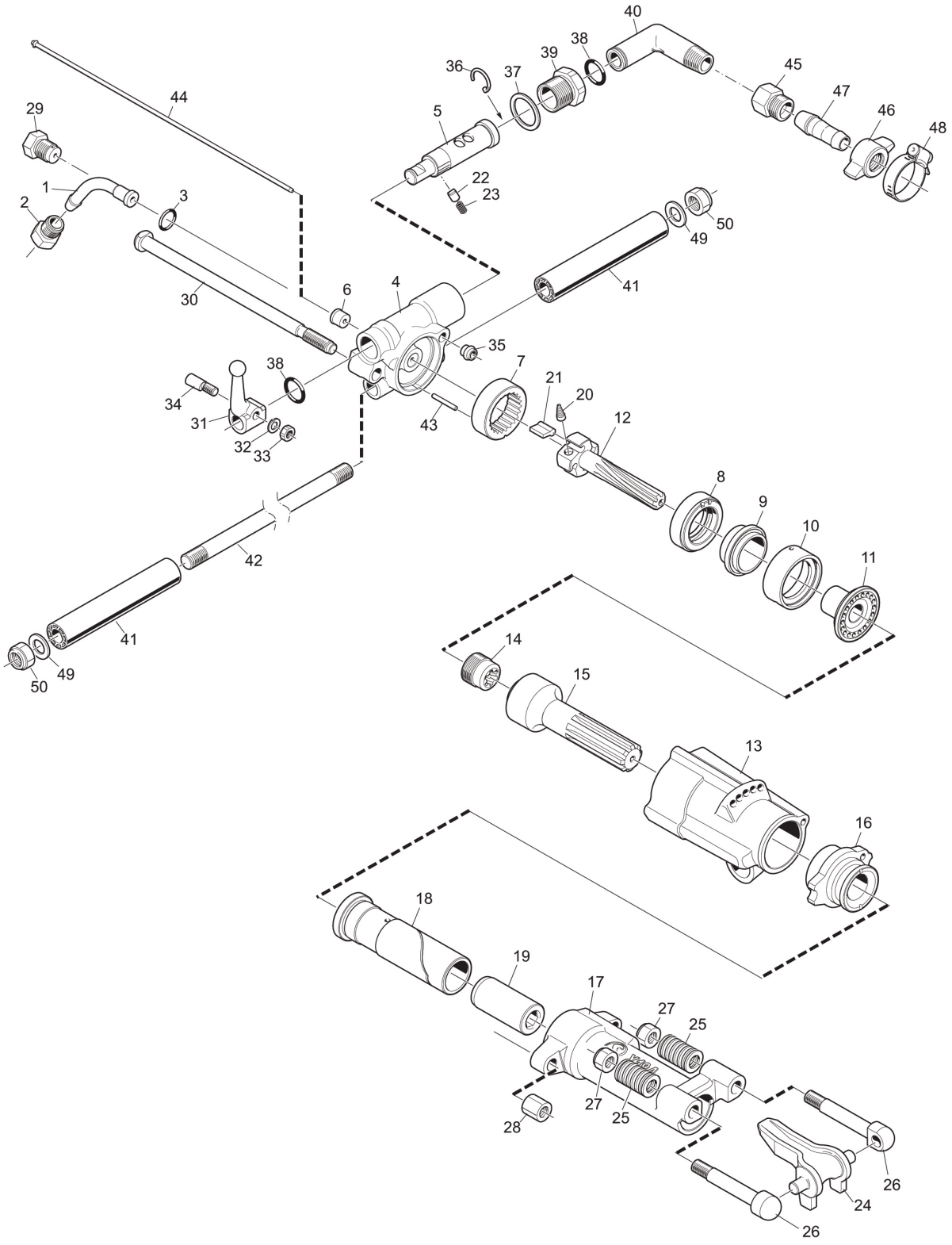
Used and worn-out machines must be disposed of in such a way that as much of the material as possible can be recycled and the impact on the environment is kept to a minimum.

Trouble shooting

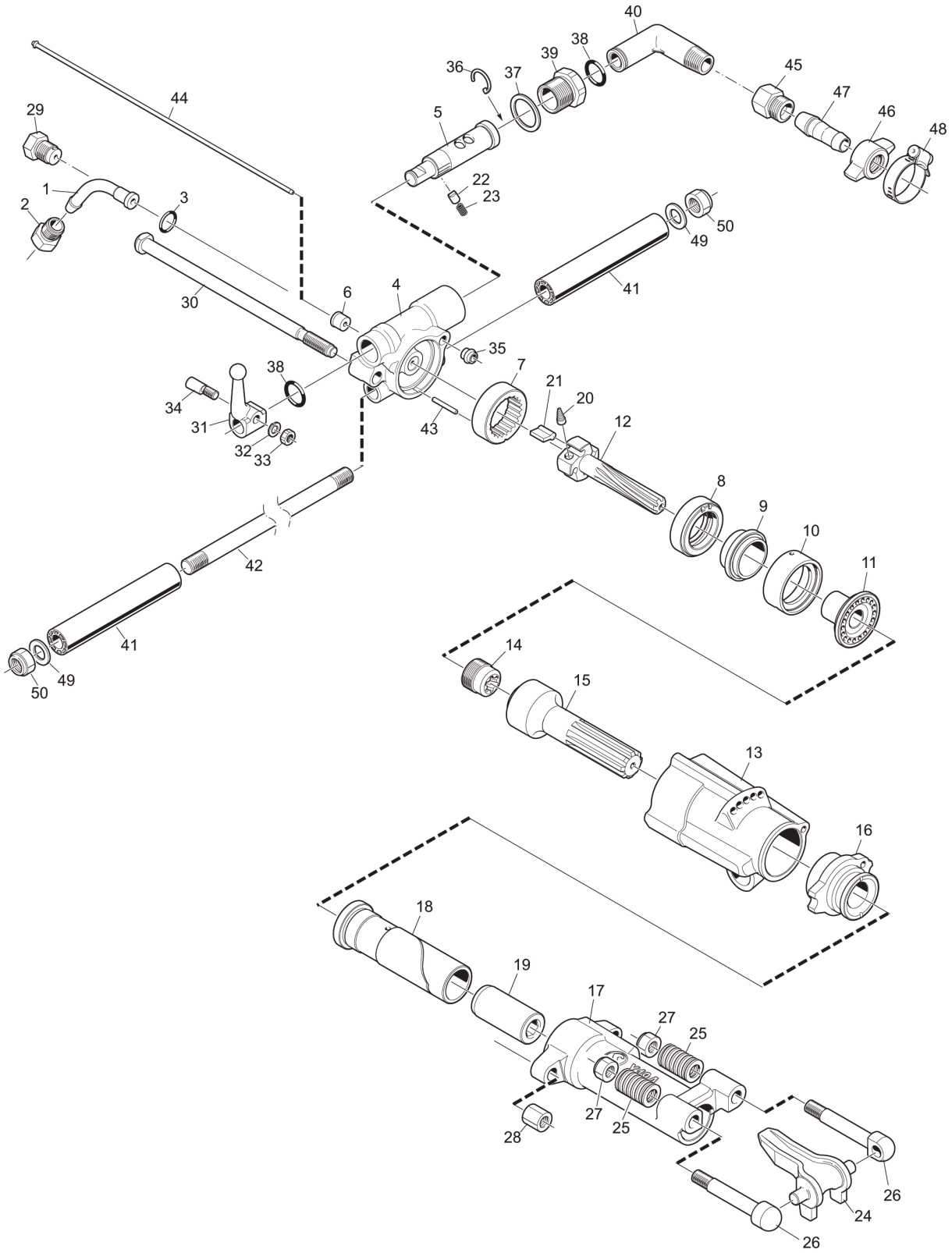
Problem	Cause	Solution
Decreased penetration rate	Air leakage in hoses, couplings	Change packings, and where required, change parts in the throttle valve
	Shank sleeve	Check the shank sleeve for excessive wear. Replace if necessary.
	Air leakage due to worn piston/cylinder	Replace the piston and/or cylinder
	Air leakage due to worn guide sleeve/pilot guide	Change the worn part
Poor rotation	Splines of the rifle nut worn	Replace the rifle nut if the splines are worn
	Splines of the rifle bar worn down	Replace the rifle bar when needed
	Splines on the piston worn down	Replace the piston when needed
	The toothing in the ratchet housing is worn out	Replace the ratchet housing if the tooth housing is so worn that the pawls have difficulty catching
	The toothing in the ratchet wheel is worn out	Replace the ratchet wheel if the toothing is so worn that the pawls have difficulty catching
	Chuck nut worn out	Replace the chuck nut if the splines have been worn to 1/2 of the spline width
	Pawls worn	Replace all pawls, all pawl springs and all pawl pins
Uneven running	Piston has seized in the guide sleeve or the piston guide	Replace the guide sleeve/piston guide. If required, polish the piston. Check the piston for heat damage such as blue colouring and/or fissures. If it is damaged in this way, replace the piston as well
	Dirty or damaged main valve. Caused by impurities or foreign matter entering the drill with the compressed air	Clean and polish the valve so that it seals against the corresponding cylindrical and plane sealing surfaces. If this is not possible because the defects are too serious, the valve must be replaced
	Freezing. Caused by leakage in the flushing system or by excess water in the compressed air or by excessive water pressure	Check the flushing tubes and seals and the water pressure. Drain water from the compressed air system. If the problem continues, fit a water separator in the airline system.

Problem	Cause	Solution
Uneven running (continued)	The side bolts are unevenly or insufficiently tightened. Can cause the various parts to lose their alignment, resulting in the seizure of the movable parts. Abnormal strains on the side bolt may result in fracture at the threads.	Check and repair any damage to the contact points and tighten the bolts with the correct tightening torque
The drill gets hot	Lack of oil	Add oil and check that it runs through. It is not sufficient that there is oil in the exhaust air. There must also be an oil coating on the shank of the drill steel.
Freezing	High level of humidity in the compressed air	Use water traps
	Water pressure higher than the air pressure	Lower the water pressure
Water pipe breakage	Misalignment of the shank	Change drill steel or shank sleeve or both
	Damaged flushing hole in the shank	Change drill steel
Chipping of the piston tip	Misalignment of the shank	Change the drill steel or shank sleeve or both
	Excessive wear of the piston tip	Change piston
Spline breakage	Lack of lubrication	Lower the water pressure if it is the same as or greater than the air pressure
		Increase lubrication or change oil
	Dirt intrusion (specially when drilling upwards)	Increase service intervals
Piston breakage	Lack of lubrication	Lower the water pressure if it is the same as or greater than the air pressure
		Increase lubrication or change oil
	Uneven tension in the side bolts	Tighten the bolts correctly
	Worn guide sleeve/piston guide (can be confirmed by the cushion test)	Change the worn part
Side bolt breakage	Uneven tension on the bolts	Tighten the bolts correctly

Spare parts list and exploded drawing



No.	Description	Quantity	Product no.	Product code
1	Water pipe	1	96000216	964H-1-3312310211
2	Water pipe nut	1	96000215	964H-1-3312310210
3	O ring	1	96000502	9605-1-3312310671
4	Back head	1	96000228	964G-1-3312310225
5	Operating valve	1	96000229	964G-1-3312310226
6	Water tube bush	1	96000822	9600-1-3312310019
7	Ratchet	1	96000230	964G-1-3312310227
8	Valve cover	1	96000231	964G-1-3312310228
9	Valve	1	96000232	964G-1-3312310229
10	Valve chest	1	96000233	964G-1-3312310230
11	Valve sleeve	1	96000234	964G-1-3312310231
12	Rifle bar	1	96000235	964G-1-3312310232
13	Cylinder	1	96000227	964G-1-3312310224
14	Rifle nut	1	96000236	964G-1-3312310233
15	Piston	1	96000225	964G-1-3312310222
16	Guiding sleeve	1	96000237	964G-1-3312310234
17	Front head	1	96000226	964G-1-3312310223
18	Rotation sleeve	1	96000816	9600-1-3312310011
19	Shank bushing	1	96000168	9605-1-3312310157
20	Conical spring	4	96000167	9605-1-3312310156
21	Ratchet pawl	4	96000166	9605-1-3312310155
22	Dowel pin	1	96000180	9605-1-3312310170
23	Spring	1	96000179	9605-1-3312310169
24	Drill retainer	1	96000635	9600-1-3312311821
25	Drill retainer spring	2	96000818	9600-1-3312310013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No.	Description	Quantity	Product no.	Product code
26	Drill retainer bolt	2	96000634	9600-1-3312311820
27	Nut	2	96000531	9605-1-3312310713
28	Hexagon thick nut	2	96000518	9605-1-3312310697
29	Air pipe nut	1	96000214	964H-1-3312310209
30	Side bolt	2	96000238	964G-1-3312310235
31	Control handle	1	96000307	962A-1-3312310313
32	Pad	1	96000534	9605-1-3312310716
33	Hexagon thin nut	1	96000524	9605-1-3312310704
34	Fixing pin	1	96000177	9605-1-3312310167
35	Big sealing sleeve	1	96000544	9605-1-3312310727
36	Retaining ring	1	96000182	9605-1-3312310172
37	Pad	1	96000174	9605-1-3312310164
38	Ring seal	2	96000486	9605-1-3312310633
39	Air pipe nut	1	96000823	9600-1-3312310020
40	Air pipe swivel	1	96000825	9600-1-3312310022
41	Rubber handle	2	96000218	964H-1-3312310213
42	Handle rod	1	96000219	964H-1-3312310215
43	Dowel pin	1	96000239	964G-1-3312310236
44	Water tube	1	96000821	9600-1-3312310018
45	Pipe connector	1	96000223	9605-1-3312310220
46	Wing nut	1	96000221	9605-1-3312310218
47	Conical hose nipple	1	96000222	9605-1-3312310219
48	Hoop	1	96000539	9605-1-3312310722
49	Washer	2	96000526	964H-1-3312310706
50	Lock nut	2	96000532	964H-1-3312310714

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