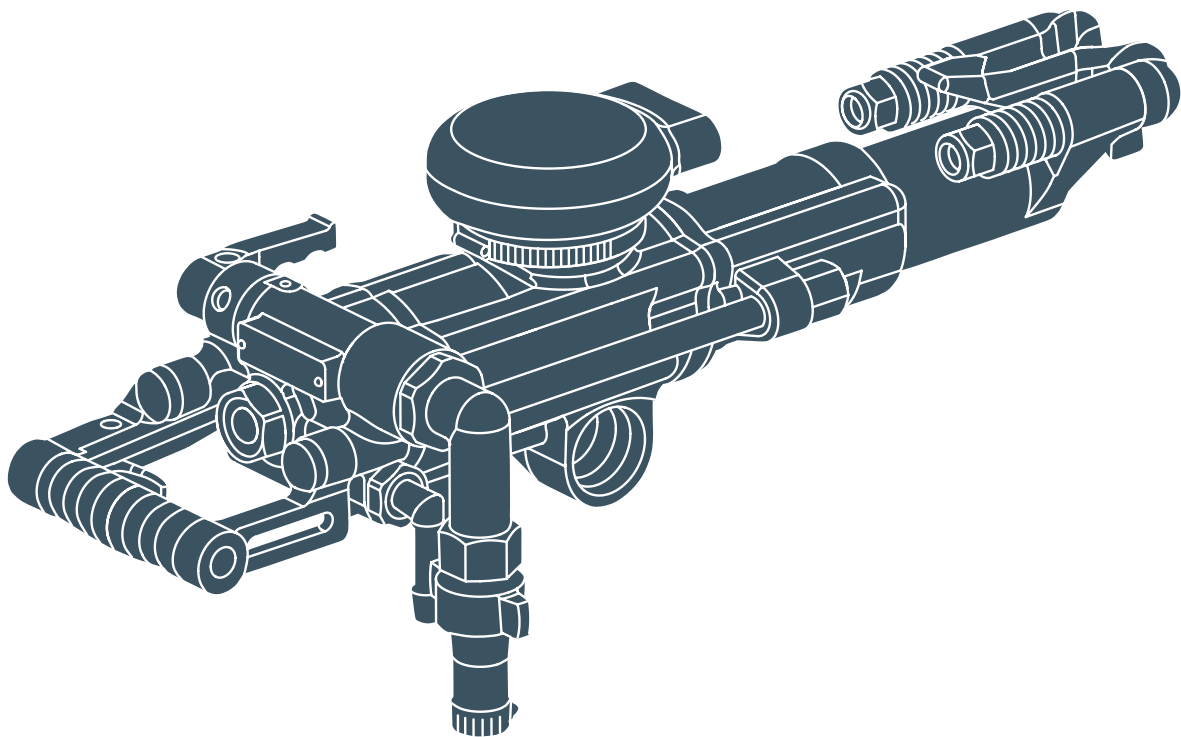


# Secoroc YT27 pusher leg rock drill

Operator's instructions  
Spare parts list



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## Foreword

Thank you for selecting the Secoroc pusher leg rock drill YT27.

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.

# Scope of application

Model YT27 is a highly efficient pusher leg rock drill. It is mainly used in either rock drilling work such as mining and tunneling, or in railway, water conservancy construction projects and stone work. It is suitable for wet drilling on hard and medium hard rock, or for drilling horizontal or inclined blast holes. YT27 can be equipped with pusher leg FT160A and FY250 lubricator.

## Specification

Pneumatic rock drill YT27		
Weight	27	kg
Dimension (L x W x H)	668 x 248 x 202	mm
Cylinder diameter	80	mm
Piston stroke	60	mm
Working pressure	4–6.3	bar(e)
Impact energy (at 6.3 bar (e))	≥70	J
Impact energy (at 5.0 bar (e))	≥64	J
Impact energy (at 4.0 bar (e))	≥48	J
Air consumption (at 6.3 bar (e))	≤85	l/s
Air consumption (at 5.0 bar (e))	≤57	l/s
Air consumption (at 4.0 bar (e))	≤50	l/s
Impact frequency (at 6.3 bar (e))	≥40	Hz
Impact frequency (at 5.0 bar (e))	≥39	Hz
Impact frequency (at 4.0 bar (e))	≥37	Hz
Torque (at 6.3 bar (e))	≥19	Nm
Torque (at 5.0 bar (e))	≥16	Nm
Torque (at 4.0 bar (e))	≥13	Nm
Water pressure	working pressure -1	bar(e)
Air hose inner diameter	25	mm
Water hose inner diameter	13	mm
Drilling diameter	34–45	mm
Max drilling depth	5	m
Working temperature	-30 to +50	°C
Shank size	H22x108±1	mm
Lubricator FY250		
Weight	1.2	kg
Capacity	0.25	litre

# 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 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. Never operate the rock drill without 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 and pusher leg are 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 FY250 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 pressure to around 3 bar. Maximum water pressure is 1 bar less than the working pressure. For example if the air pressure is 5 bar, then 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 25 mm. The inner diameter of connection nipples and hoses must be no less than 19 mm. The ideal overall air hose length is less than 15m.

#### Water hose dimensions

The water hose inner diameter must be no less than 1/2".

## 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.

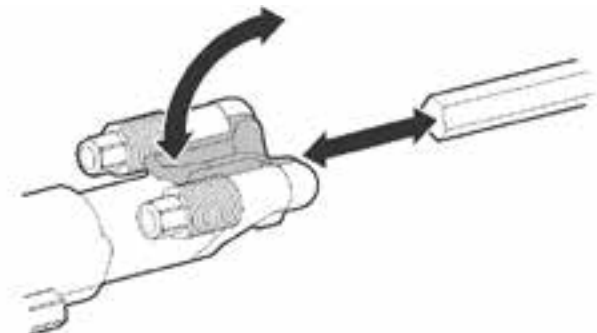
## Fitting and removing the drill steel

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.

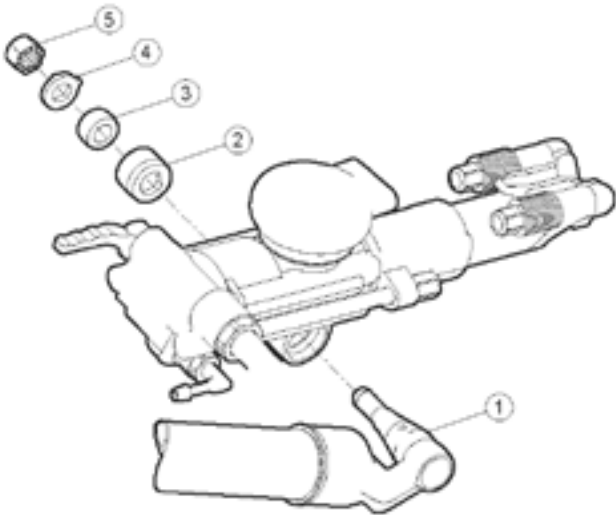


## Removing the drill steel

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.

## Attaching the pusher leg to the rock drill

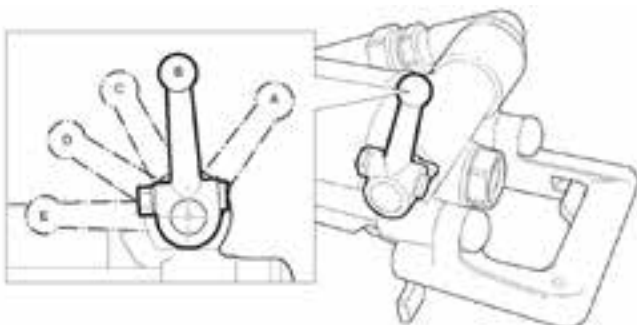
- Mount the pusher leg (1), lock sleeve (2), rubber pad (3), washer (4) and locking nut (5) in the order shown in the picture below.
- Turn the locking nut clockwise with a wrench until you hear a "click".



## Controls

### Throttle lever

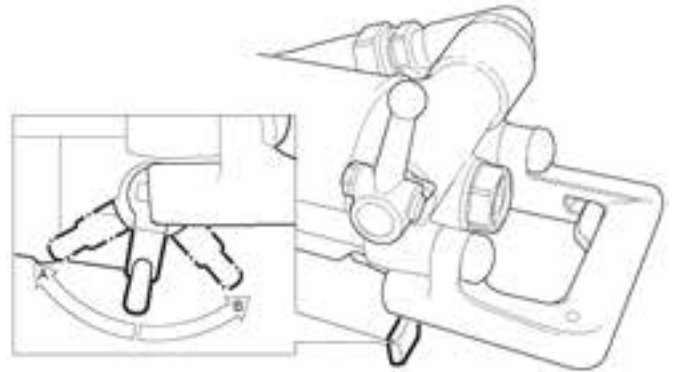
The rock drill is equipped with a throttle lever for regulating both the compressed air to the percussion mechanism and the flushing water.



- A. Extra blowing, water flushing off, impact and rotation off.
- B. Stop position, air and water off
- C. Low throttle, air to pusher leg, water flushing
- D. Medium throttle
- E. Full throttle

## Feed control

Adjust the feed force by means of the feed control lever as follows:

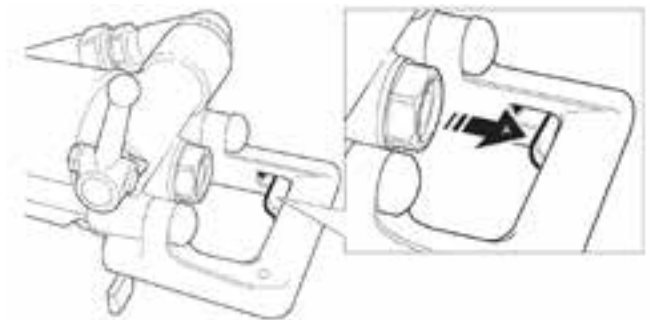


A. Pushing the lever in this direction will increase feed force.

B. Pulling the lever in this direction will decrease feed force

## Trigger

When the trigger (A) is pushed in, the feed force stops abruptly and the setting on the feed control lever is overridden. The piston rod in the pusher leg retracts automatically. This function is used for example to adjust the height of the rock drill, when rigging up the pusher leg, or when there is a tendency to jam. When the trigger is released, the feed control setting is activated again.



## Oil regulating valve

Oil dosing is controlled using a screwdriver. Tighten the nut after regulation.

Check that sufficient lubrication is obtained by putting your hand in front of the exhaust port while adjusting the regulating valve. If the hand is covered by a thin film of oil after a few seconds, the lubricator has been correctly adjusted. Too much oil will have negative effects on the operation whilst too little will result in damage to parts as the temperature rises during operation.

The amount of oil going into the rock drill increases when turning the valve counter clockwise, and it decreases when turning the valve clockwise. Oil consumption is 2.5–6 ml/minute.

## Drilling

### Starting the rock drill

1. Open the main valve for compressed air.
2. Open the cock for the flushing water.
3. Adjust the feed control lever to give a suitable feed force for collaring the hole.
4. Align the rock drill so that the drill steel touches the desired collaring point.

5. Move the throttle lever forward a little, which will start water flushing, percussion and rotation.

6. Collar the hole with reduced feed force.

7. Move the throttle lever fully forward once the drill steel has gained a secure footing in the rock.

8. Adjust the feed force using the control lever so that the maximum penetration rate is obtained.

**Note!** Do not bend the drill steel as this will increase wear of the shank bushing and piston. 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.

### Re-positioning the pusher leg

1. Switch off the rock-drill percussion and flushing using the throttle lever.

2. Press the trigger, whereupon the piston rod is pulled back into the pusher-leg cylinder automatically.

3. Re-position the pusher leg.

4. Release the trigger, whereupon the piston rod will move outwards again.

5. Move the throttle lever forward into the working position.

**Note!** The feed control lever does not need to be touched throughout this operation.

### 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 beyond the stop position for extra blowing whereupon the rock drill stops. This can be done during drilling. When the drill hole is clean, turn the throttle 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 and pusher leg 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 rock drill's connection to the pusher leg.

• Check the hoses, couplings and controls for leakage and damage.

• Check that the rock drill and pusher leg are receiving enough lubrication. Fill the lubricator as necessary.

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

• Drain the water separator.

• Check the air and water pressure. Make sure that the water pressure is at least 1 bar lower than the air pressure.

### 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.

• Dismantle and clean the lubricator.

• Clean out the water separator.

## 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 and pusher leg well before you put them into storage.

• Store the rock drill and pusher leg 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

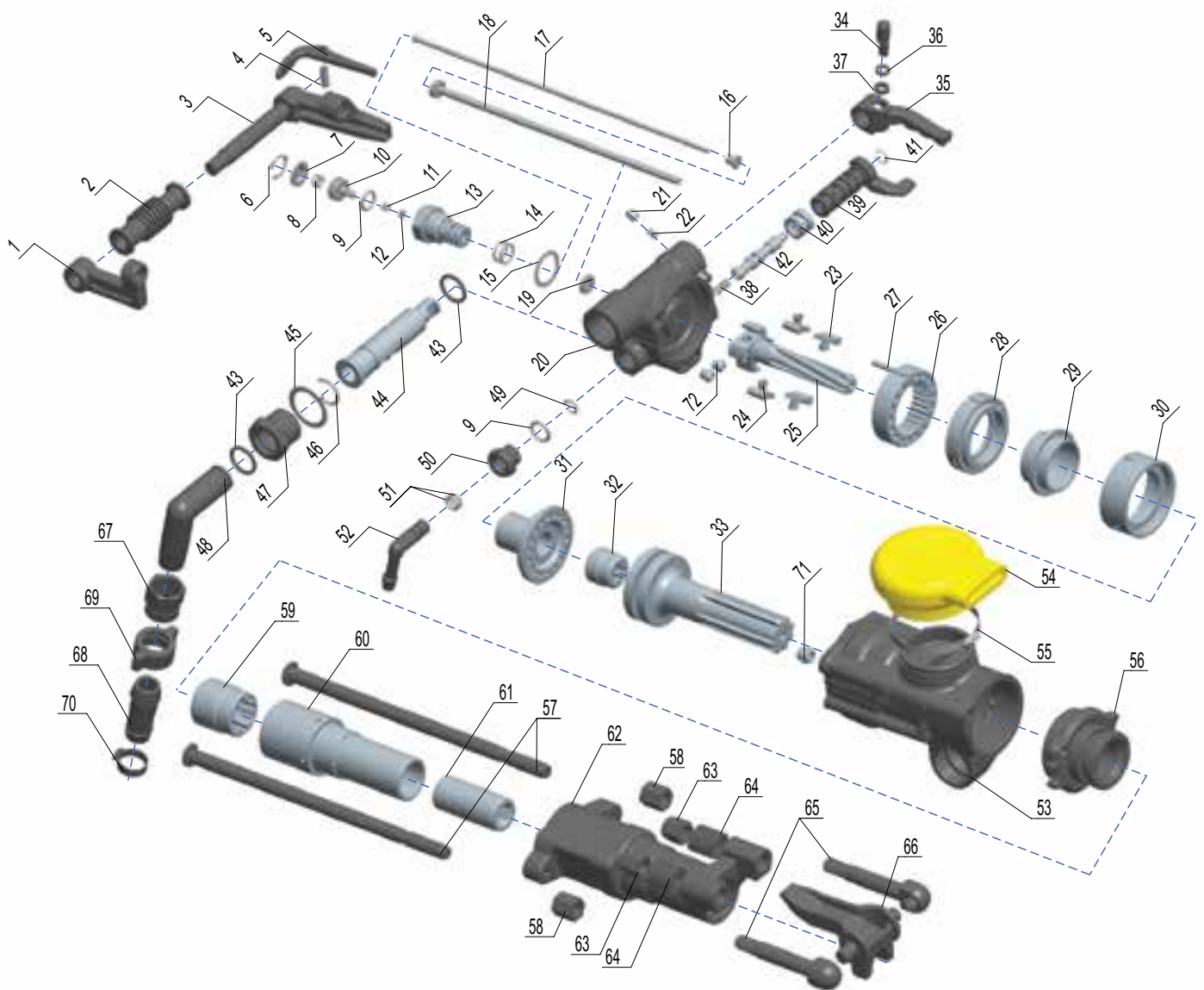
Used and worn-out machines must be disposed of in such a way that as much of the material as possible can be recycled and the impact on the environment is kept to a minimum.

# 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
Insufficient feed force	Piston rod seal (in pusher leg) worn or deformed	Change the seal
	O-rings on pusher leg coupling worn or deformed	Change the o-ring
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.
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
Piston breakage	Lack of lubrication	Increase service intervals
		Lower the water pressure if it is the same as or greater than the air pressure
	Uneven tension in the side bolts	Increase lubrication or change oil
	Worn guide sleeve/piston guide (can be confirmed by the cushion test)	Tighten the bolts correctly
Side bolt breakage	Uneven tension on the bolts	Change the worn part
		Tighten the bolts correctly

# Secoroc YT27

## Pneumatic rock drill





Ref.	Description	Qty	Prod. No.	Product code
1	Right handle	1	96000163	9603-1-3312310152
2	Shockproof handle	1	96000164	9603-1-3312310153
3	Left handle	1	96000165	9603-1-3312310154
4	Roll pin	1	96000527	9605-1-3312310708
5	Trigger	1	96000162	9603-1-3312310151
6	Circlip	1	96000183	9605-1-3312310173
7	Spring cap	1	96000169	9605-1-3312310159
8	Spring	1	96000170	9605-1-3312310160
9	O seal ring	2	96000482	9605-1-3312310627
10	Water valve	1	96000173	9605-1-3312310163
11	O seal ring	2	96000489	9605-1-3312310642
12	Rubber pad	1	96000175	9605-1-3312310165
13	Water valve body	1	96000148	9603-1-3312310137
14	O seal ring	2	96000502	9605-1-3312310671
15	Pad	1	96000184	9605-1-3312310174
16	Water tube sleeve	1	96000149	9603-1-3312310138
17	Water tube	1	96000172	9605-1-3312310162
18	Air tube assembly	1	96000150	9603-1-3312310139
19	Air tube pad	1	96000176	9605-1-3312310166
20	Back head	1	96000147	9603-1-3312310136
21	Dowel pin	1	96000180	9605-1-3312310170
22	Spring	1	96000179	9605-1-3312310169
23	Ratchet pawl	4	96000166	9605-1-3312310155
24	Conical spring	4	96000167	9605-1-3312310156
25	Rifle bar	1	96000138	9603-1-3312310126
26	Ratchet	1	96000131	9603-1-3312310119
27	Dowel pin	1	96000135	9603-1-3312310123
28	Valve cover	1	96000142	9603-1-3312310130
29	Valve	1	96000133	9603-1-3312310121
30	Valve chest	1	96000132	9603-1-3312310120
31	Valve sleeve	1	96000134	9603-1-3312310122
32	Rifle nut	1	96000814	9600-1-3312310009
33	Piston	1	96000139	9603-1-3312310127
34	Fixing pin	1	96000177	9605-1-3312310167
35	Operating handle	1	96000152	9603-1-3312310141
36	Spring pad	1	96000534	9605-1-3312310716

Ref.	Description	Qty	Prod. No.	Product code
37	Hex nut	1	96000524	9605-1-3312310704
38	Spring	1	96000157	9603-1-3312310146
39	Pressure regulating valve	1	96000159	9603-1-3312310148
40	Expansion ring	2	96000158	9603-1-3312310147
41	Retaining ring	1	96000160	9603-1-3312310149
42	Change over valve	1	96000161	9603-1-3312310150
43	O seal ring	2	96000486	9605-1-3312310633
44	Control valve	1	96000153	9603-1-3312310142
45	Pad	1	96000174	9605-1-3312310164
46	Retaining ring	1	96000182	9605-1-3312310172
47	Air pipe nut	1	96000823	9600-1-3312310020
48	Air pipe swivel	1	96000825	9600-1-3312310022
49	Retaining ring	1	96000156	9603-1-3312310145
50	Water pipe nut	1	96000155	9603-1-3312310144
51	O seal ring	2	96000499	9605-1-3312310667
52	Water pipe connector	1	96000154	9603-1-3312310143
53	Cylinder	1	96000140	9603-1-3312310128
54	Muffler	1	96000137	9603-1-3312310125
55	Hoop	1	96000542	9605-1-3312310725
56	Guiding sleeve	1	96000141	9603-1-3312310129
57	Side bolt	2	96000151	9603-1-3312310140
58	Hex thick nut	2	96000518	9605-1-3312310697
59	Rotation nut	1	96000146	9603-1-3312310135
60	Rotation sleeve	1	96000144	9603-1-3312310133
61	Shank bushing	1	96000145	9603-1-3312310134
62	Front head	1	96000143	9603-1-3312310131
63	Hex lock nut	2	96000531	9605-1-3312310713
64	Drill retainer spring	2	96000818	9600-1-3312310013
65	Drill retainer bolt	2	96000634	9600-1-3312311820
66	Drill retainer	1	96000635	9600-1-3312311821
67	Pipe connector	1	96000187	9605-1-3312310177
68	Conical hose nipple	1	96000186	9605-1-3312310176
69	Wing nut	1	96000185	9605-1-3312310175
70	Hoop	1	96000540	9605-1-3312310723
71	Sealing sleeve	2	96000543	9605-1-3312310726
72	Large sealing sleeve	1	96000544	9605-1-3312310727





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**Epiroc Drilling Tools AB**  
Box 521, SE-737 25 Fagersta, Sweden  
Phone: +46 223 461 00