HAND HELD AND PUSHER LEG ROCK DRILL

Y19A

Operating Manual



Table of content

I.	Scoj	pe of application ·····	
II.	Specification		
III.	I. Operation and maintenance		
	1.	Machine operation and maintenance	
	2.	Control handles and its operation	
	3.	Selection of lubrication oil	
	4.	Air hose, air pressure and water pressure	
	5.	Drill steel	
IV.	V. Troubleshooting ······		
V.	. Notes for dismantling /reassembling and maintenance		
VI.	T. Parts sight burst and parts list		

I. Scope of application

Hand held Rock Drill Model Y19A is mainly used for drilling, second blasting and other works in mines, railway, and water conservancy projects. It is designed for both dry and wet rock drilling on hard and medium hard rocks, and drilling vertical down or declined blast hole. It can be equipped with pusher leg FT100 for different work conditions.

II. Specification

Weight	19	kg
Dimension	600×534×157	mm
Cylinder diameter	65	mm
Piston stroke	54	mm
Working pressure	0. 40-0. 5	MPa
Impact energy	≥40 (0.5MPa)	J
	≥28 (0.4MPa)	J
Drilling frequency	≥35 (0.5MPa)	Hz
	≥28 (0.4MPa)	Hz
Air consumption	≪43 (0.5MPa)	L/s
-	≤37 (0.4MPa)	L/s
Torque	≥12. 5 (0.5MPa)	N•m
-	≥9. 5 (0.4MPa)	N•m
Water pressure	0.3	MPa
Air hose inner diameter	19	mm
Water hose inner diameter	13	mm
Suitable drilling diameter	34-40	mm
Suitable max. drilling depth	5	m
Working temperature	-30 - 50	$^{\circ}\mathrm{C}$
Shank size	H22×108	mm

III. Operation and maintenance

Hand held Rock Drill Model Y19A is a reliable and robust machine with high

performance.

Note:

- Clean the parts from rust-protecting oil before starting the rock drill for the first time. All surfaces should be lubricated before reassembly
- Blow away any accumulated dirt and moisture adhering to couplings and air lines before connecting the air hose to the rock drill, any dirt inside may cause damage to parts.
- ➤ Warning! Ensure that the fittings are tight before operation, in order to avoid injury to people caused by loose air hose and damage to parts.
- Before starting the machine, adjust the control valve and pressure regulating valve to the closed position, fill the lubricator with oil.
- Before operation, run the machine at idling speed for 3-5 minutes under a pressure of 0.3Mpa. Deliver the machine to worksite for operating if it performs well.
- Air pressure in air supply hose should be around 0.4Mpa. High pressure may damage the parts and causes rough operation, whereas low pressure results in low drilling efficiency.
- Run at medium speed when retracting drill steel from the drilled hole.
- > Pay attention to the lubrication oil amount, fill the lubricator if necessary.

Please notes: Operation without lubricating is not allowed.

- This machine was assembled for dry rock drilling. When wet drilling is required, disassemble the water pipe nut for air blowing purpose, and change to the nut for water flushing purpose. When finishing the work, first disconnect the water supply, and keep the drill under slight running, to clear away the residual water which would make the parts get rusty.
- Strictly prohibit operating the machine with water/air tube disassembled, which will cause machine abnormal running, and damage the parts. During dry drilling, it allows to cut water/air tube 50-60 mm, which can lengthen water/air tube lifetime and increase the blowing/flushing force
- Please note: During normal operation, two nuts of side bolts can loosen, so check the tightness at regular intervals. Be aware of sudden steel shaft breakage during operation.
- For lengthy period of non-use, please disassemble, clean and lubricate the machine for storage.

1. Control handle and its operation

1.1 Control valve

Its function is to control start and stop of drill, totally having five positions, as shown in Figure below. Position (0): stop, (1) - (4) slight running to full running

1.2 Open-close valve

Open-close valve is to control strong blowing of the machine. Only two positions for this valve, as shown in Figure below. Position (0): stop strong blowing, machine starts

running. (1) Connect strong blowing, machine stops running.



Operation position for control valve



Operation positions for open-close valve

2. Selection of lubrication oil

It is very important to select the right lubrication oil in order to develop machine's full performance and prolonging parts service life. Owing to the high impact velocity of the drill parts and heavy pressure upon the fitting surface of the rotary parts, the running surface of parts should be well lubricated, and free from rust. The lubricating oil must possess of film strength and be able to flow on various conditions such as different season temperature and humidity; furthermore it should have proper kinematics viscosity.

The operator can refer to some lubrication oil list in the following table considering local working

temperature

Atmosphere temperature	10°C−30°C	-10°C 10°C	-30℃10℃
Name	Engine oil	Engine oil	Refrigerated oil
Туре	N46	N22	HD – 13
Kinematic viscosity 10 ⁻⁴ m ² /s 40°C	41.1-50.6	19.8-24.2	11-15 (50°C)
Congealing point (°C)	- 10°C	-15℃	-40°C
Standard	GB443-84	GB443-84	SY1213-79
Flash point (°C)	180	170	160

The choice for selecting oil viscosity varies with working temperature. Use oil with high viscosity at high temperature, use low viscosity oil at low temperature.

3. Air hose, air pressure and water pressure

- The diameter of air hose should be 19mm. Inner diameter of connection nipple and hose should be no less than 17mm. The ideal overall length is less than 20m.
- ➢ Working pressure shall not exceed 0.63 Mpa. Higher pressure will damage the parts and increase the risk of drill steel breakage, whereas, if the pressure is lower than 0.3 Mpa, the efficiency will be relatively low. 0.4-0.5MPa is suggested.
- ➤ Water pressure should be lower than air pressure otherwise the water can enter the mechanism, which will make lubrication ineffective and cause the parts to corrode after a short period of non use.

4. Drill steel

The drill steel should be of good quality and have a shank of right size and shape. The standard drill steel (GB/T6481) made by the qualified factories should be used. The following requirements must be met in regards of manufacturing and operating drill steel:

- The suitable quenching hardness of shank is HRC49-57. Harder end face will cause piston damaged and breakage of the end face of the piston. If shank face is too soft, it will be easily deformed by piston, which will result in difficulty in retracting the drill steel. Shank end face should be flat and perpendicular to the axis. Sharp edges at end face should be removed. Rough shank surface will cause damage to piston and partial cracks of the shank.
- It is not allowed to operate the machine if cracks on shank are found as this will cause the piston to wear excessively fast. Unsuitable shank length affects drilling efficiency. Radius of shank collar must not be too small, as this will result in increased breakage of the shank.
- Drill steel should not be bent as this will lead to increased wear of the shank bushing and piston. Furthermore, it can also affect drilling efficiency and increase the risk of drill steel breakage.
- The eccentric tolerance of shank center hole is 1.2mm. If the eccentric tolerance is too large or the center hole too small it will increase the chances of the shank breaking



IV. Notes for disassembling/assembling and maintenance

Parts must be kept clean when dismantling/reassembling, and avoid from hammered, especially for fitting surface of key parts; all parts should be oiled for assembling. If any parts or components can't be assembled, you should try to assemble it on the center line, and oil for trial running after assembling.

For disassembling because of too much wear, heat the shank rotation sleeve up to 200° C as well, jam the lower part with wet cloth, which makes shank bushing shrink, then insert shank into upper end, and hammer the shank bushing out.

When assembling, heat up the rotation sleeve to 200° C, and assemble shank bushing inside quickly, then cool it down naturally. If condition permitted, press it by press machine.

V. Troubleshooting

Problem	Cause	Solution
Drilling speed	Low working air pressure	1. Check pressure pipe load, reasonably reduce
is too low		the quantity of Rock Drills in simultaneous
		operation.
		2. Eliminate hose leakage problem, check if

		air hase diameter and its switch size is too small	
		3. Air hose is too long, cut it to suitable length.	
	Insufficient lubrication	 Lack of lubrication oil in oiler. Refill oil. Lubrication oil is dense and dirty, replace as specified. 	
	Water leaks from Front head	 Water tube broke, replace Central hole of drill steel is too small or blocked, replace drill steel 	
	Main parts wear	 Contact surface between cylinder and piston is scratched. Polish it by oil stone. Replace defective air valve parts Main parts such as piston, rifle bar, rifle nut, ratchet pawl rotation sleeve and shank bushing etc, wear seriously, replace immediately. 	
	Incorrect shank size	Supply correct shank	
Difficult to start	Water/air tube was disassembled;	Assemble water/air tube;	
	Lubrication oil is too sticky	Replace lubrication oil	
Water/air tube break	Mushrooms on small end face of piston, center hole in shank is not in alignment.	Replace piston or drill steel	
	Clearance between shank and shank bushing is too big	Hex. Size wears to 2mm in shank bushing, then replace it, otherwise it will cause water/air tube to break as well as piston and drill steel	
	Water tube is too long Shank bushing hole is shallow	Make water tube in suitable length Make shank bushing according to production drawing	
Drill steel break	Air pressure is too high	Reduce air pressure	
	Speed up engine suddenly	Start up slowly	
	Drill steel is deformed	Straighten the drill steel	
	Radius on drill steel collar is too small	Make shank according to the drawing	
	Shank is overheated. Heat treatment cracks on shank	Improve the shank production process	

VI. Parts sight burst and parts list



Parts list of rock drill Y19A

No.	Parts code	Parts description	Qty per unit
1	Y26 - 303	Water pipe	1
2	Y26 - 302S	Water pipe nut	1
3	24×2.4 GB1235-76	Seal ring	1
4	Y19A - 04	Back head	1
5	Y19A - 05	Operating valve	1
6	7655 - 304	Water tube bush	1
7	Y19A - 06A	Ratchet	1
8	Y19A - 07B	Valve cover	1
9	Y19A - 08B	Valve	1
10	Y19A - 09B	Valve chest	1
11	Y19A - 10A	Valve sleeve	1
12	Y19A – 11	Rifle bar	1
13	Y19A – 03	Cylinder	1
14	Y19A – 12	Rifle nut	1
15	Y19A – 01	Piston	1
16	Y19A – 13	Guiding sleeve	1
17	Y19A - 02	Front head	1
18	7655 – 202A	Rotation sleeve	1
19	YT25 - 2.03	Shank bushing	1
20	YT25 – 1.15	Conical spring	4
21	YT25 – 1.14	Ratchet pawl	4
22	YT25 – 3.21	Dowel pin	1
23	YT25 - 3.20	Spring	1
24	7655 - 207B	Drill retainer	1
25	7655 - 205	Drill retainer spring	2
26	7655 - 203A	Drill retainer bolt	2
27	GB889 - 86 - M16	Lock nut	2
28	GB56 - 86 - M16	Hexagon thick nut	2
29	Y26 - 302F	Water pipe nut	1
30	Y19A – 14	Side bolt	2
31	YSP45 – 316	Control handle	1
32	GB93 - 87 - 10	Pad	1
33	GB6172-86-M10	Hexagon thin nut	1
34	YT25 – 3.17A	Fixing pin	1
35	YT30 - 3.07	Big sealing sleeve	1
36	YT25 - 3.33	Retaining ring	1
37	YT25 - 3.12	Pad	1
38	$30 \times 3 - 25$	Seal ring	2
39	7655 - 307	Air pipe nut	1

40	7655 – 309A	Air pipe swivel	1
41	Y26 - 305A	Rubber handle	2
42	Y26 - 306A	Handle rod	1
43	Y19A – 15	Dowel pin	1
44	7655 - 303	Water tube	1
45	19 – 16	Pipe connector	1
46	39466	Wing nut	1
47	19 - 04	Conical hose nipple	1
48	No.1	Ноор	1
49	GB848 20	Washer	2
50	GB889 M20	Lock nut	2
	Accessories		

FY200A	Line oiler	1