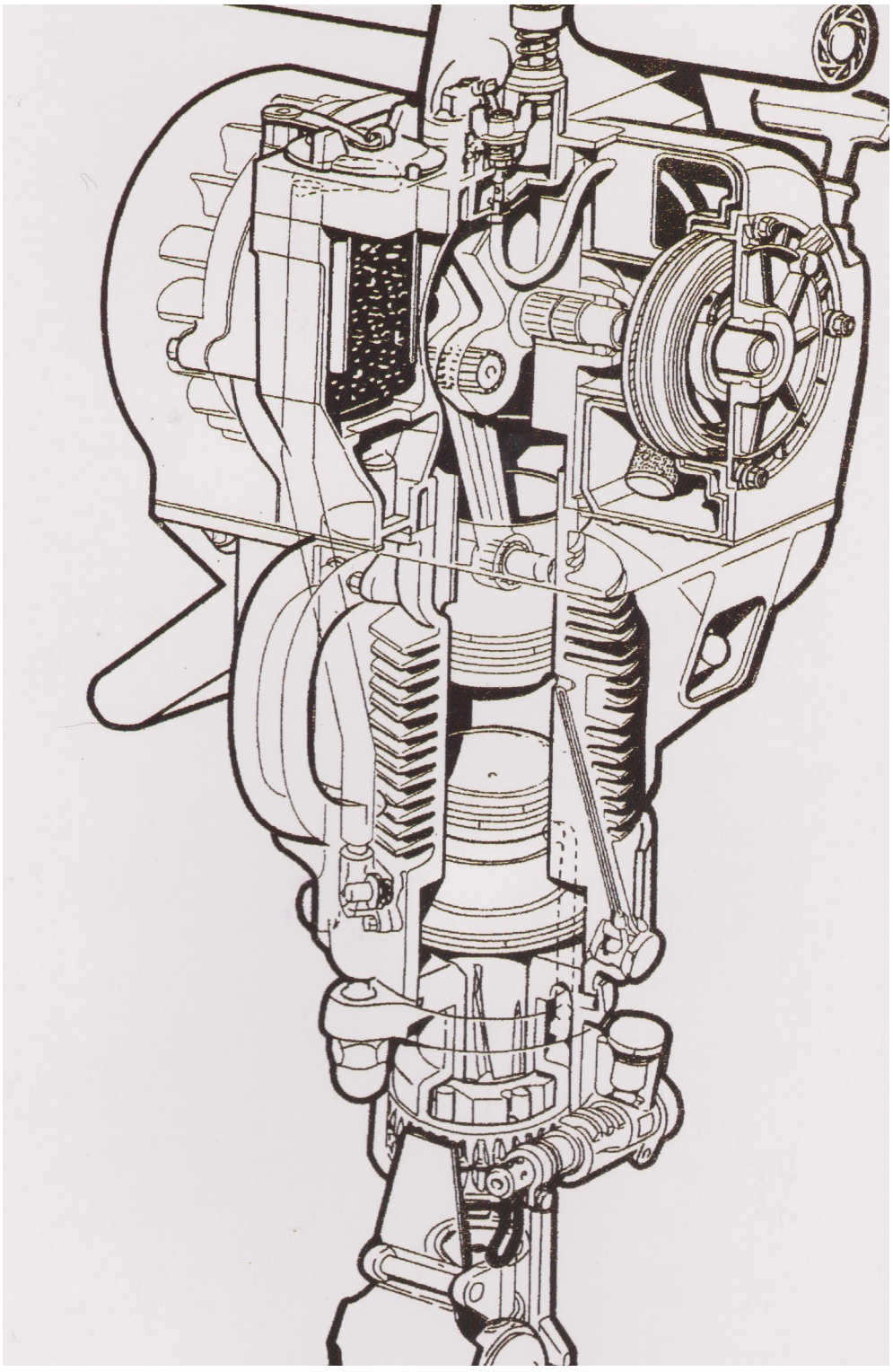
Rock Drill



TECHNICAL SPECIFIC ATIONS

1.Weight of main machine:	27kg
2.Overall dimensions:	746 X 315 X 229mm
3.Type of engine:	single cylinder、air cooled two strokes
4.Cylinder Diameter X stroke of piston:	58 X 70mm
5.Rotating speed of engyine:	≥2450r/min
6.Displacement of engine piston:	185 cm^3
7.Type of carbretor:	hand needle valved、no floating type
8.Ignition system:	controllable silicon、contactless system
9.Drilling speed:(mean value of five holes)	≥250mm/min

(After holing,drill ϕ34，with drillrod of 600mm in length,is drilled vertically downward into medium hard granite(f=8–12)to make five holes in succession. The mean value of the five holes are counted as the speed,)

10.Max drilling depth:	6m
11.Fuel consumption:	≤0.121/m
12.Tank capacity:	≥1.14L
13.Mixture ratio of gasoline and lubricating oil(in volumes):	12:1
14.End of drill rod dimensions:	hexagonal 22x108mm
15.Rotating speed of drill rod:	≥200r/min
16.Clearance of spark plug:	0.5~0.7mm

CONSTRUCTION

1.Engine:

The engine is a hand operated, single cylinder and two stroke petrol engine with air cooling, refkux air conversion, no contact ignition, and no floating–type carburetor. It is composed of control parts、starter parts、oil tankparts、 flywheel parts、crankshaft、connecting rod、crankshaft case parts、shield parts、magneto parts、and piston parts and cylinder parts.

2.Air compressor:

The engine piston and hammer piston are mounted separately in the upper and lower place of the cylinder. These two pistons move up and down synchronously, The hammer piston and the biggerbore of the cylinderform a compression chamber, which together with air inlet and outlet valves and ventilator vales, form the air compressor, It is composed of hammer piston parts and Cylinder parts.

3.Rock drill:

It is composed of hammer piston parts、rotation mechanism parts,drill shank housing parts.

Lubrication and Cooling Action

Fuel used by the drill is 12:1,that is, a mixed oil in the proportion 12 parts of gasoline to 1 part of Lubricating oil. In operation, mixed oil enters into the crank shaft in fog to lubricate all parts of the crank shaft and cylinder, During buring, gasoline burns, most of lubricating oil flow into all touching parts through the cylinder space 6 to make them get complete lubrication.

The cylinder of engine is cooled by wind from the flywheel through the surface of emitting heat plats.

Operation

(1)Preparation before starting:

Preparing with mixed oil, drill rod、bit, funnel with filter net, some service tools and spark plug etc.

1.Gasoline:Use gasoline of RQ–60 or RQ–70, that it is, No.60 or No.70 .

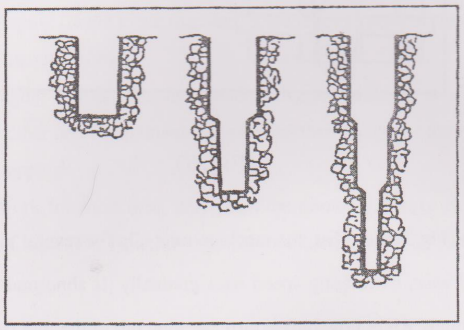
2.Lubricating oil: Use lubricating oil No,15(HQ–15) or HQ–157 including in additive 30% lubricating oil NO.8 at lower tempetature.

3.Length of driil rods and diametet of the carbide percussive drill bit:When drilling,a group of drill rod length with different size should be prepared in order to operate conveniently and safely.They are 0.6m、1.1m、1.6m、

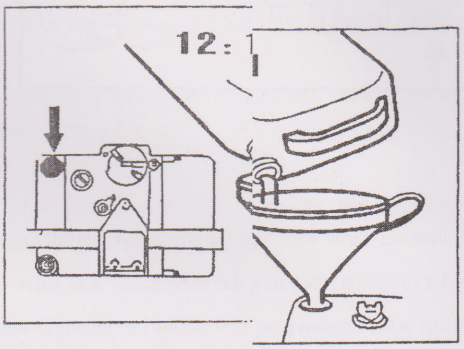
2.0m、2.6m、3.0m, sekecting them according to the depth of hole.In oprating,0.6 is used to drill at first, then 1.1m instead of it, then 1.6m till the needed depth of hole, The size of the drill bit are used from bigger to smaller one, (Fig.1)otherwise, they are easy to choose and can work normally.

(2)Starting:

1.Erect the machine to support the handle of the control body, and fill fuel into the gasoline tank.(Fig.2)



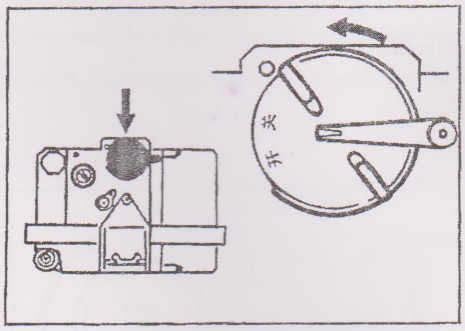
(Fig.1)



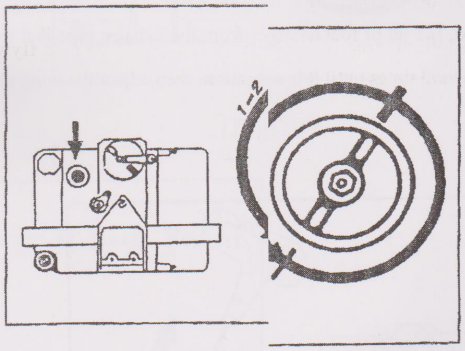
(Fig.2)

2.Close the air filter.(Fig.3)

3.Rotale the wing nut of fuel value in counter clockwise one cycle or two to open it, (Fig.4)



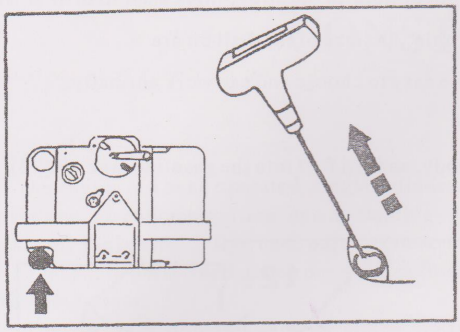
(Fig.3)



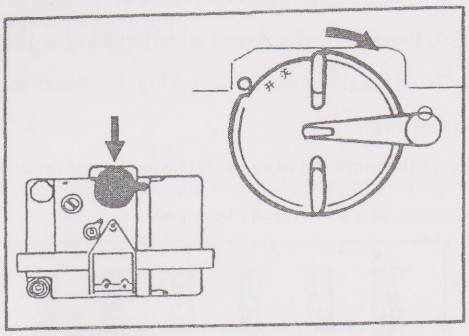
(Fig.4)

4.Pull the starter wire rope slowly for several times to let the mixed oil into the cylinder. When combusitible gas in the cylinder burns, stop pulling(Fig.5)

5.Ooen the air filter,(Fig,6)



(Fig.5)

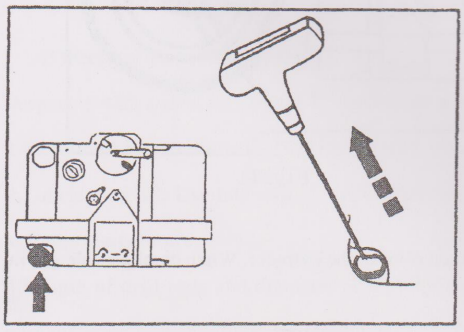


(Fig.6)

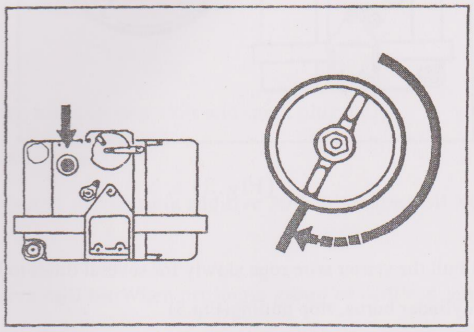
6.Pull the starter wire rope rapidly and powerfully to start,(Fig.7)After that, the machine runs idly for several minutes in order to heat it, then turn the wing nut of fuel valve clockwise, its rotating speed rises gradually ,If abnormal sound with fog in the exhaust pipe, that means fuel supply is not enough, Right now,please turn the wing nut of the fuel value in a controller clockwise direction and increase the amount of fuel supply.

7.Attention points for starting:

Mixed oil entering into the cylinder being too much or insufficient will be adverse to the starting of the engine , The operator is asked to, make a correct judgement for the amount of the mixed oil in the cylinder,The method is to observe the state but a jet of fuel emerges from the exhaust pipe, If poor, please make the wing nut of fuel valve rotate in cotroller clockwise direction, open fuel valve full, Pull wire rope until combustible gas enter the cylinder burns and the engine be started, If a jet of fuel emerges from the exhaust pipe,that means the fuel supply is direction and pull the starter weir rope for several times until it is operation, then adjust the wing nut of the fuel valve in a appropriate position.(Fig.8)



(Fig.7)



(Fig.8)

(3) Drilling:

1.Fiting rod: Press the throttle value with thumb to make the machine operate with lower speed, then insert the shortness drills rod into the rotating sleeve. Snap down the yoke so that bit will not jump out,(Fig,9)

2.Start to drilling: Select an appropriate position. Slow down the rotating speed of the machine, use a foot to guide bit for facilitating the make hole,

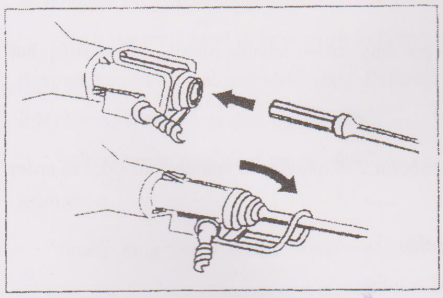
3.Drilling hole: release the throttle valve, Let the machine run at full speed. During operation, add appropriate pressure so that no jumping occurs to the machine, If the rotaing speed of the machine is too low, adjust the fuel valve to raise its speed.

(4)Changing of rod:

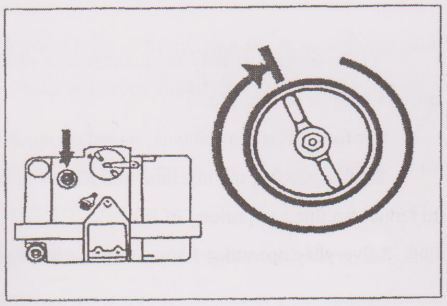
Changing of rod, press the throttle valve to reduce its rotating speed. Snap up the yoke by foot, take out the bit and replace another one, Snap down the yoke and then accelerate the machine to full speed.

(5)Stopping:

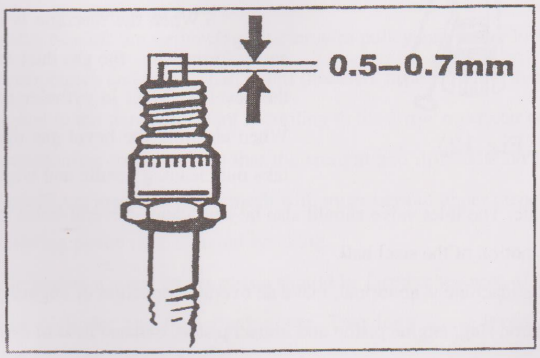
Stop to work for short time, only press the throttle valve, or close the air filter. Stop to work a long time, the fuel valve should be Closed,(Fig.10)Otherwise, to avoid the too much oil enters into the cylinder.



(Fig.9)



(Fig.10)



(Fig.11)

(6) Hammering:

If digging、breaking、splting or ramming, dismantle the rotating sleeve and mount the notch of the hammer sleeve aligning with the round pin in the drill chuck cover, and dismantle the vetilating pipe between the cylinder and the drill chuck cover assy, then all hammering operations are able to be carried out.

(7)Attention points for operation:

1.Fuel filling: only after the machine is stopped.

2.If the machine misfires, make an inspection, Don't pull the starter wire rope vigorously to avoid damage to the parts.

3.During operation, don't press the machine by human body to avoid to valid accidents when a bit breaks,

4.When a bit is blocked, don't move it directly with the machine,

5.At the initial use of a new machine, the throttle valve is not to be regulated high, Only after the machine is well mastered, its speed can be regulated higher.

6.Working in terribly hot area, be cautious that the operation period is not too long, When the temperature of the machine is too high, a short stop is necessary till it gets cool.

7.To avoid corrosion, the machine should be stored at dry places.

(1)To observe strictly the maintenance of the machine tool can not only ensure reliable running of machine, but also prolong its service life.

1.Before filling into oil tank, mixed oil must be filtered.

2.After starting, the machine tool should beatitude without any loads for 2–3 minutes to lubricate all sides in order to reduce trouble and prolong its life.

3.Everyday,operating 4 hour, take out the filter and wash it in vasoline.

Diagram of A infilter

(Fig.12)

4.Every week, outer of the machine and entitling heat plate of cylinder should be cleaned to send out heat,

5.When the machine is running, the deposited carbon is easily formed in the gas duet and on the other parts, Especially the bevel gas duct in cylinder must be assured of its free flow, When cleaning the bevel gas duct, switch down the inlet valve, take out cleaning needle and wipe out the deposited carbon in the bevel gas duct by the needle. The inlet valve should also be kept clean, Several holes in the valves should be ensured free passage to allow free motion of the steel ball.

6.When running of the machine is abnormal, make an overall inspection of engine or make carbon cleaning, to wipe out carbon accumulated piston ring, engine piston and impact piston, exhaust hole in cylinder wall and spark gap. Dirt on the flywheel and magneto should also be taken away.

(2)Attention points for Inspection:

1.Be sure that clearance between spark gap electrodes should be 0.5–0.7mm and constantly clean off carbon and dirties to avoid circuit break and reduction of ignition,(Fig.11)

2.Be sure that the clearance between the steel ball of inlet valve and round pin.

3.Be sure that seal of the check valve plate at the bottom of control body.

4.Be careful whether the angle of ignition is changed, The arrow of flywheel should be aligned with the sign on the crankshaft.

Disassembling and assembling

The machine must be assembled correctly, strictly sealed and perfect cleanness. After a period of servile,the machine needs cleaning and repairing, so disassenbling and assembling are of a common occurrence, The following cautions should be followed in disassembling and assume bluing:

1.Disassembling and assembling should be done according to procedure. The parts, especially the piston rings, are to be mounted on their original positions, No errors and missing are allowed.

2.All the parts need to be washed in kerosene or gasoline and applied a layer of lubrication oil. In assembling,drive tight all the screws nuts and spark plug. Before trial running, pull the starter wire rope slightly for several times, to see if it is rotating freely, then start the machine.

3.If the machine need an overhaul disassemble it according to the following procedure, For assembling, do it reversibly:

Spark plug→drill chuck cover→piston guide→impact piston →inlet and outlet valve→shield→crank shaft cast→flywheel→starter→cluth→cylinder→engine piston→magneto→crand shaft→air filter control body→oil tank.

In partial repair, do not disassemble the parts, which need no repairing, Try by every means to disassembleonly the parts wanting to be repaired.

4.In disassembling starter parts, take off the starter ring, Starter wire pulley and starter lover together, Be careful that ring breaks, The connection between clutch and crank, shaft is left threaded, disassemble it in clockwise, And the starter wire rope should be mount in the wire pulley slot according to the arrow on starter cover.

5.In assembling the torque mechanism parts, be sure that the straight and drift slots on the impact piston lever are correctly in mesh with impact piston lever are correctly in mesh with inner keys of upper rachet and rotating sleeve.

6.Be very careful in disassembling piston ring, to avoid breaking.

7.In disassembling the engine piston, a notch on the piston should be faced to the nole of spark plug.

8.Connecting crankshaft case, Cylinder and drill cluck cover, Two long screw levers should be driven tight in interchangeably to ensure the uniform pulling force, but not too tight,

Trouble shooting

Fault	Cause	Remedy
1.The engine is difficult to start	1.Fuel system: 1).Clogging or poor sealing of fuel passages. 2).Clogging of gasoline filter. 3).Use of a wrong brand of gasoline,over flow fuel or water in the fuel. 4).Poor sealing of the check valve plate on the control body. 5).Overflow mixed fuel in cylinder. 2.Electric system: 1).Irregular gap between the spark plug electrodes, and oil conation, accumulated carbon on its surface or loose fitting of the plug core, 2).Shifting of the flywheel from its normal position(Wrong angle for ignition)	Take out of needle valve,blow the fuel hole of oil tank and block it with a hand, then shave it to make a stream of oil sprays from the hole: Disassemble it, inspect and clean it, Choose or blend the fuel by the regulations. Disassemble it and adjust it. Close fuels door, disassemble inlet valve, pull starter wire rope for several times, take away overflow fuel. Adjust the gap by the regulation clear away carbon or oil or replace the plug with a new one. Aligm the arrow on flywheel with the sign on the crankshaft.

Fault	Cause	Remedy
2.The engine works inefficiently.	3.Pneumatic system: 1).Low ratio of compression: a. Carbon deposition in or wear the cylinder, Engine piston ring. b. Clogging of the bevel gas duct in cylinder. c. Irregular clearance of the steel ball in the inlet valve. 2).Air in sufficient supply: Carbon deposition in the outlet on cylinder and the connection pipe of the silencer.	Clean or replace it. Clean away carbon in time. Adjust the steel ball clearance between 0.5-0.7mm Clean it in time. Adjust it. Clean it in time.
3.Poor removal of cuttings	1.Unfitting fuel door or clogging of fuel passage. 2.Carbon deposition in the bevel gas duct, inlet valve, outlet valve and piston ring.	Dean it Replace it
4.Poor rotation of tool shank	1.Clogging in the center hole of drill rod. 2.Damage of hexagonal seal ring.	Replace them. Replace it.
5.The engine races	3.Damage of clogging of inlet and outlet valve. 4.Irregular size and shape of tool shank.	Replace it.
6.Abrupt stop of the machine	1.Damage of upper ratchet or olive ting. 2.Excessive wears of keys of impact piston rod. Upper rachet. Rotating sleeve and other relevant parts. 3.Running inefficient of engine. 1.Seizer of the impact piston and drill rod. 2.Changing of the flywheel sing. 1.Chogging of the hole in oil tank cap. 2.Wrong with electric of fuel system. 3.Carbon deposition in the machine or excessive temperature.	Replace them. See the above. Eliminating the case and make rotation sleeve run freely. Adjust it and align it with the sign or crankshaft. Clean it. See the above. Give it a complete overhaul.