

COBRA

148/248

INSTRUCTION MANUAL



Atlas Copco

COBRA 148/248

The Cobra is designed by Atlas Copco AB—the world's leading manufacturer of petrol-driven rock drills and breakers for more than 40 years.

This, together with the tight quality control of each individual machine, guarantees high quality and long service life.

This handbook is intended as a guide to give you hints and advice which will facilitate your work with Cobra. It also contains service information to keep your Cobra in top condition.

Please therefore read through this handbook **before** you put your Cobra into operation.

If you require additional information please contact your nearest Atlas Copco representative.

TECHNICAL DATA

Motor

Displacement	185 cc (11.3 in ³)
R/min of crankshaft (strokes/min)	2500–2700 rpm
Carburettor	Diaphragm type (Tillotson)
Ignition	Thyristor type, breakerless
Spark plug (recommended)	Bosch W 175 T1
Spark plug gap	0.9–1.0 mm (0.4")
Starter	Recoilstart
Fuel mixture	5 %, 1:20 two-stroke oil/petrol of 90–100 octane
Tank volume	1.5 l (0.33 Imp.gall, 0.40 US gall)
Fuel consumption	1.4 l/h (0.31 Imp.gall, 0.37 US gall)

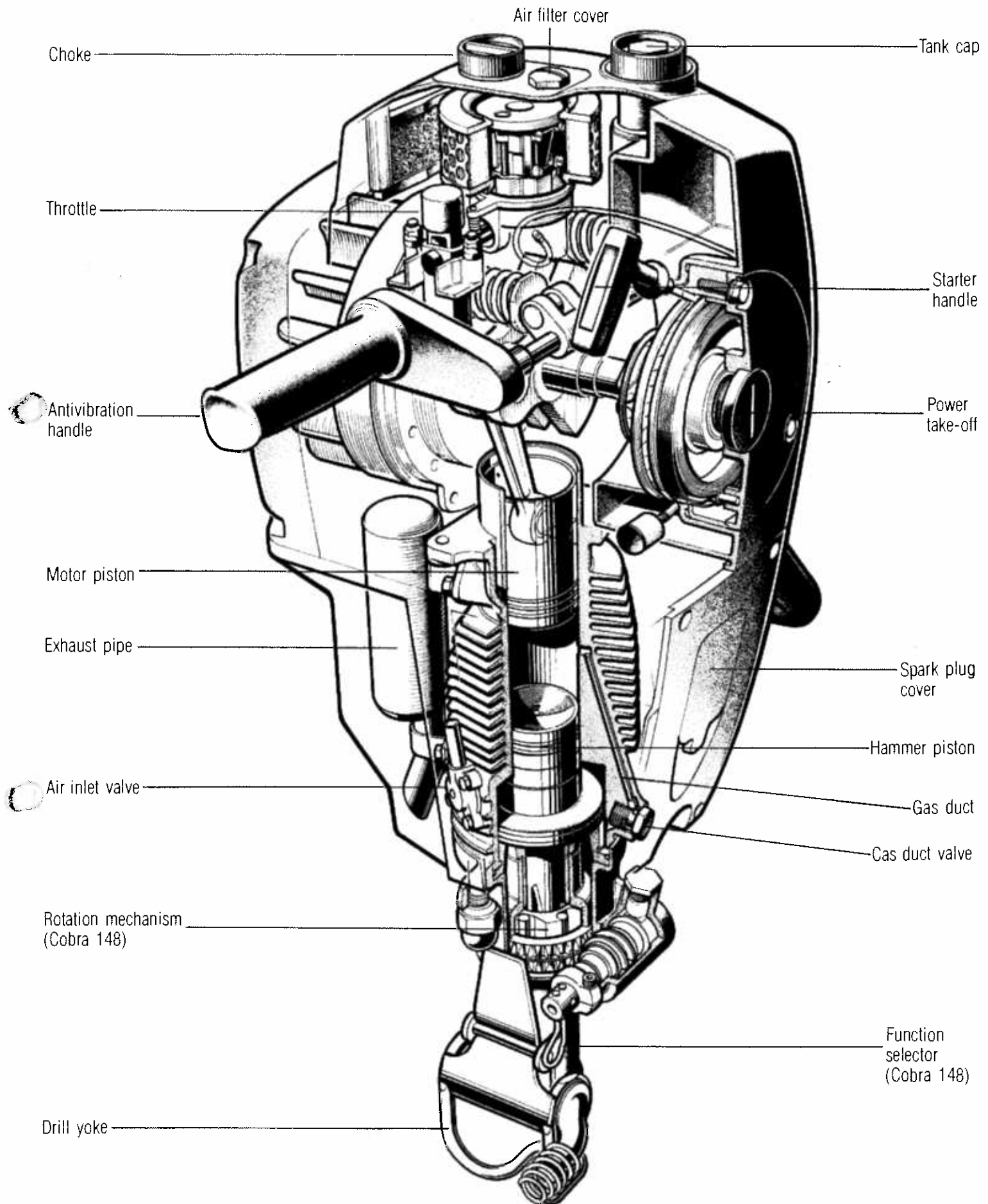
Capacity

Max drilling depth	6 meters (20 ft)
Drilling rate with 29 mm (1.1 in) bit	300–350 mm/min (12–14 in/min)
Drilling rate with 34 mm (1.3 in) bit	250–300 mm/min (10–12 in/min)
Drilling rate with 40 mm (1.6 in) bit	140–200 mm/min (6–8 in/min)

Other data

	Cobra 148	Cobra 248
Tool shank	22×108 mm (7/8"×4.1/4")	22×108 mm (7/8"×4.1/4")
Weight	24 kgs (53 lbs)	22 kgs (51 lbs)
Length	745 mm (30 in)	715 mm (28 in)
Width max	470 mm (19 in)	470 mm (19 in)

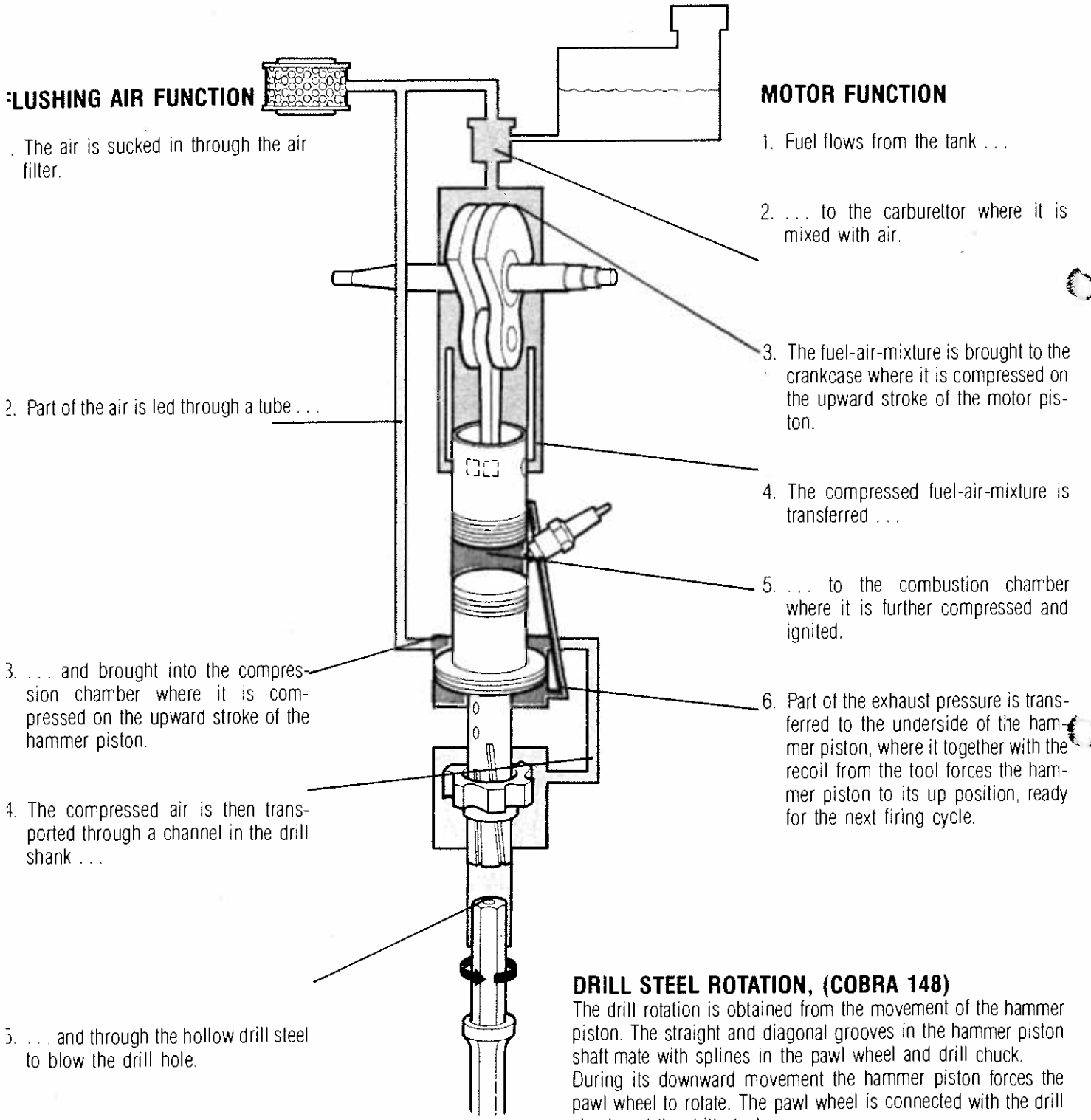
MAIN COMPONENTS



WORKING PRINCIPLE

The Cobra 148/248 is powered by a single-cylinder aircooled two-stroke motor with reverse-flow scavenging. The machine operates according to the opposed-piston principle—both the motor piston and the hammer piston work in the same cylinder. The motor piston is connected via the connecting rod to the crankshaft unit and the fly-wheel.

The hammer piston travels freely in the cylinder and working cycle is automatically synchronized. The machine is equipped with a diaphragm carburettor, which permit work in any position. The ignition system is of the breakerless thyristor type.



FLUSHING AIR FUNCTION

1. The air is sucked in through the air filter.

2. Part of the air is led through a tube ...

3. ... and brought into the compression chamber where it is compressed on the upward stroke of the hammer piston.

4. The compressed air is then transported through a channel in the drill shank ...

5. ... and through the hollow drill steel to blow the drill hole.

MOTOR FUNCTION

1. Fuel flows from the tank ...
2. ... to the carburettor where it is mixed with air.
3. The fuel-air-mixture is brought to the crankcase where it is compressed on the upward stroke of the motor piston.
4. The compressed fuel-air-mixture is transferred ...
5. ... to the combustion chamber where it is further compressed and ignited.
6. Part of the exhaust pressure is transferred to the underside of the hammer piston, where it together with the recoil from the tool forces the hammer piston to its up position, ready for the next firing cycle.

DRILL STEEL ROTATION, (COBRA 148)

The drill rotation is obtained from the movement of the hammer piston. The straight and diagonal grooves in the hammer piston shaft mate with splines in the pawl wheel and drill chuck. During its downward movement the hammer piston forces the pawl wheel to rotate. The pawl wheel is connected with the drill chuck and the drill steel. When the machine is used as a pure breaker this connection can be broken by means of the function selector. Only the pawl wheel is then forced to rotate.

START-STOP

- 1 The fuel for the Cobra is oil-mixed petrol. The mixing ratio is 1 part oil to 20 parts of petrol (5%). You can use any kind of petrol between 90-100 octane. The oil should be normal two-stroke oil. It is important that the fuel mixture is correct, as the machine is lubricated through the oil-mixed petrol. Please note that there are no greasing points on the machine. Both the service life and the performance of the machine are therefore dependent on correct petrol-oil-mixture. Use the oil can delivered with the machine when mixing oil and petrol.



- 2
-
- Z C R
- C H O K E
- START**
Start the machine by closing the choke (Clockwise) to position "choke". Please note that it is necessary to close the choke completely only when the machine is cold.
- A circular diagram of the choke lever. The lever is a diagonal bar. Above the circle, there are several small circles representing the lever's path. An arrow points clockwise from the 'run' position to the 'choke' position. The word 'Z C R' is written vertically on the left, and 'C H O K E' is written vertically on the right.

- 3
-
- An illustration of a hand pulling the starter cable. The cable is attached to a handle. An arrow points upwards from the handle, indicating the direction of pull.

Pull the starter cable firmly until the machine starts.

- 4
-
- Z C R
- C H O K E
- When the machine has started, carefully open the choke; turn the choke (anti-clockwise) to position "run". Warm up the machine for about 2-3 minutes before you start working. If the motor does not start it may be flooded. In this case, open the choke by turning it (anti-clockwise) to the "run" position and try to start the motor again. Adjust the choke as soon as the motor starts.
- A circular diagram of the choke lever. The lever is a diagonal bar. Above the circle, there are several small circles representing the lever's path. An arrow points anti-clockwise from the 'choke' position to the 'run' position. The word 'Z C R' is written vertically on the left, and 'C H O K E' is written vertically on the right.

- 5
-
- An illustration of the throttle lever. The lever is a vertical bar. To its right, there are three horizontal lines representing the throttle's range. A double-headed vertical arrow indicates the full range of motion. The lever is shown in the 'stop' position, which is the top of the range.

STOP
Stop the motor by pushing the throttle all the way down. Halfway down is the idling position. Note that the throttle is permanently set for full speed.

OPERATION

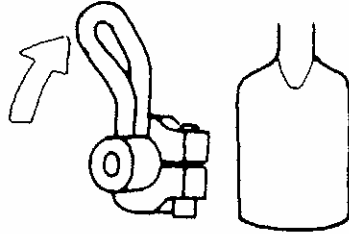
We have on the following pages compiled some hints and advice which will facilitate the work with your Cobra. Always wear ear muffers and protect your feet with safety shoes or boots.

Always warm up the machine before you start working.

Before fitting the tool, make sure that the drill chuck is free from dirt or mud. These parts should always be cleaned before work starts.

ADJUSTING THE TOOL

If you are working with a spade, asphalt chisel or similar you first have to line up the tool with the machine. This is done by turning the selector to its neutral position



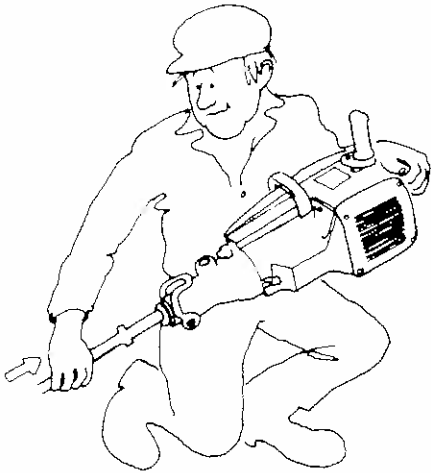
(the selector pointing to the right or left). The tool can now be turned to its correct position. Lock the tool by turning the selec-

tor to its upward position (breaking position). In this position the rotation mechanism and the flushing air are turned off (Cobra 148).

THE HANDLES

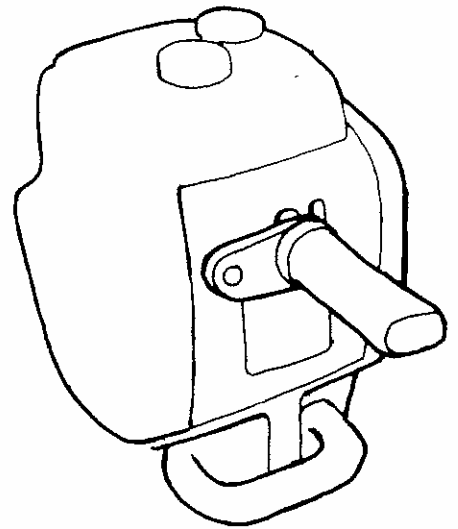
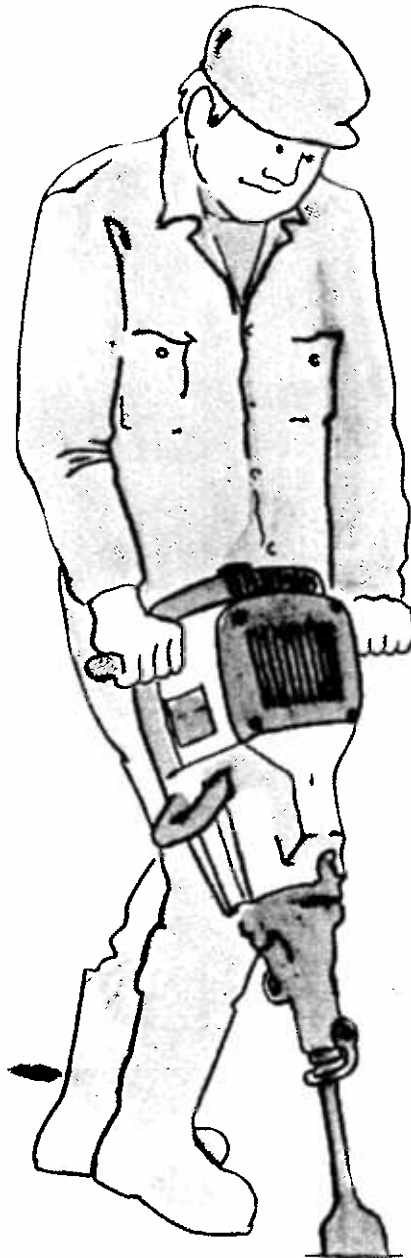
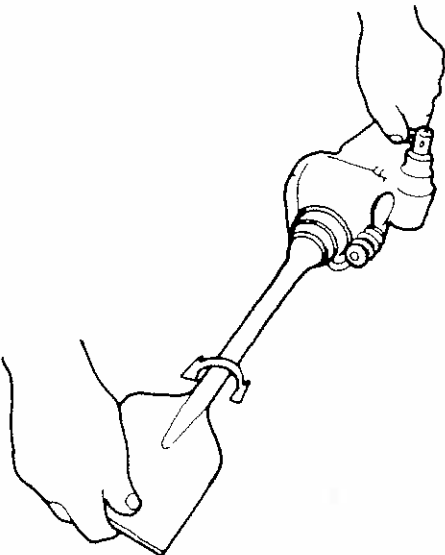
The Cobra is equipped with special vibration damped handles.

The handles are spring-loaded. When the handles are pressed downwards the vibrations are absorbed by the springs. In order to give maximum effect the handles should be pressed down approximately halfway.



FITTING THE TOOL

Lay the machine over your knee with the tool supported on the ground. Insert the tool in the chuck. Clamp the drill yoke down over the tool collar. This is easiest done if you first raise the machine up so that you can operate the yoke with your foot.



BREAKING

When breaking asphalt, concrete etc it is advisable to support the machine with your leg against the back of the machine. You can then operate the machine with full control and the work proceeds smoothly.

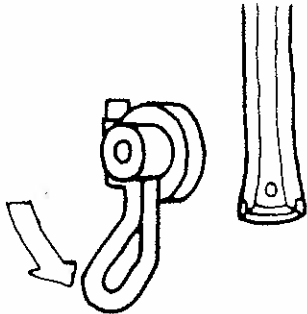
The large picture shows the correct working position for asphalt cutting.

Remember that the tools are as important as the machine itself. Therefore always use the right tools for your job. On page 13 you will find a selection of tools suited for the most common types of work.

Keep your tool in good condition.

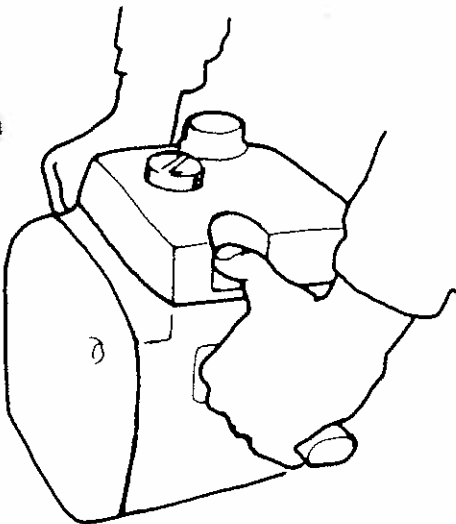
DRILLING

Turn the selector downwards, whereby the rotation function and the flushing air function are turned on (Cobra 148). Then fit the tool as described on the previous page.



Note that the drill chuck on Cobra 148 is fitted with a gasket. This gasket seals the drill shank and prevents the flushing air passing between the walls of the drill chuck and the drill shank. It can happen that the gasket is not in the right position, therefore never force a drill steel or any other tool into the drill chuck.

Check with your finger that the gasket is in its right position.



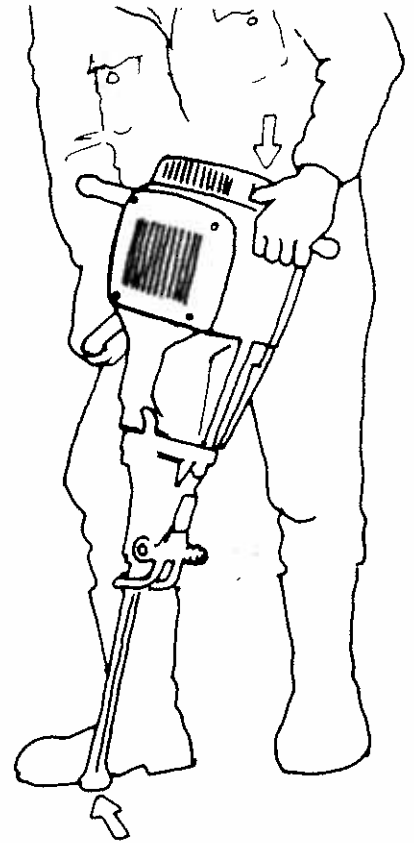
COLLARING

Collaring can be an operation in the drilling sequence which may cause some problems for the inexperienced operator. This is especially the case when angled holes are to be drilled.

Therefore reduce the rpm by pressing the throttle to the idling position (halfway down). Too high rpm may cause damage to the cutting-edge of the drill steel and the machine will be hard to handle.

When the rpm has been reduced lift the machine up by using the lower handle on the right side. Guide the drill steel with your foot until it has gained a secure hold. Then release the throttle to obtain full speed.

Note: the drill steel must not be guided by hand by an assistant as accidents can easily happen. Use your foot instead, protected by safety shoes or boots.



DRILLING HINTS

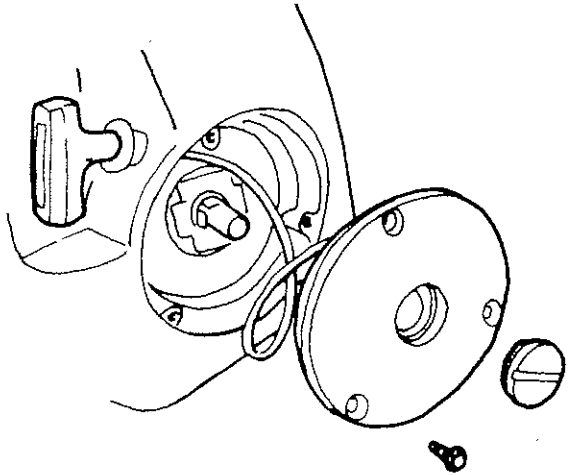
Start with a short drill steel and use it all the way down. Change to a longer drill steel but check that the bit diameter is about 1 mm (0.04 in) smaller than that of the proceeding one. You can check this by inserting and turning the rod by hand. The drill rod should enter and turn easily. As previously mentioned the handles should be pressed down. The feed pressure should here be big enough to keep the machine from jumping on the tool shank, but not so big that the drill cannot rotate in the hole. Always stop drilling at once if the drill gets stuck in the drill hole. To loosen it, try turning with an extraction tool or similar. When the drill steel has been freed, make sure that the bit has not been damaged. If the bit has been damaged as a result of sticking, or for other reasons, the drill hole must be carefully cleaned. Never drill in "old holes". On rock containing excessive crevices or showing evidence of other abnormal conditions, special care should be taken to reduce the feed pressure.

MAINTENANCE

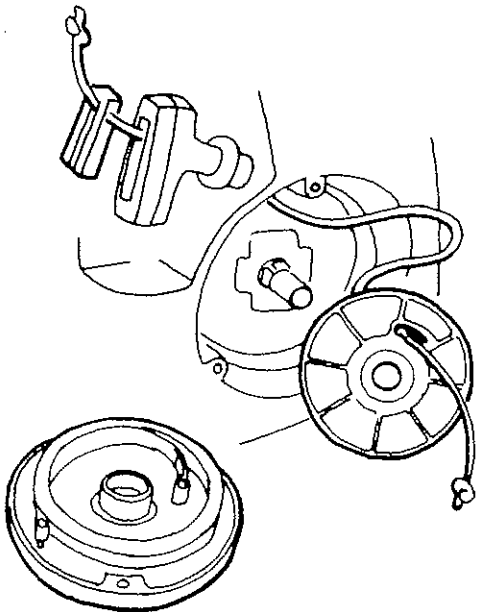
In order to facilitate the maintenance of the Cobra it has been made as easy to service and care for as possible. For instance the whole machine is automatically lubricated by the oil-mixed fuel. There are no special greasing points on the machine which need regular lubrication.

By experience we know that Cobra has to withstand rough treatment. Clean the machine and the air filters regularly. Observe the service intervals and you will have a machine which can take rough treatment and perform well throughout its long life.

CHANGING THE STARTER CABLE

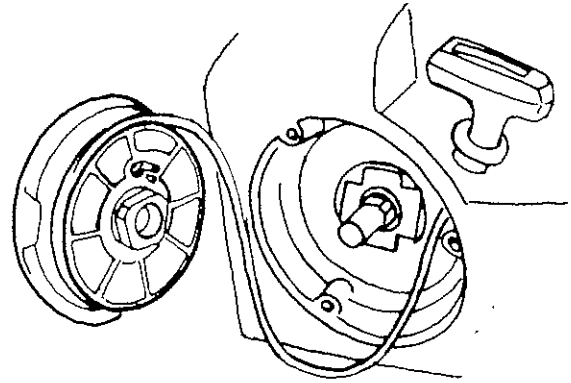


Unscrew the three hexagon screws holding the starter cover. Then unscrew the large center screw and carefully lift the cover, by using a screwdriver or similar in the center hole. Lever the cover so much that you can slip your hand under the cover and lift it off the starter spring cassette.



Lift out the starter pulley and detach the starter cable. If only the starter cable has to be replaced, take off the starter handle with cable attachment and refit the parts on the new cable. Oil lightly before re-assembly.

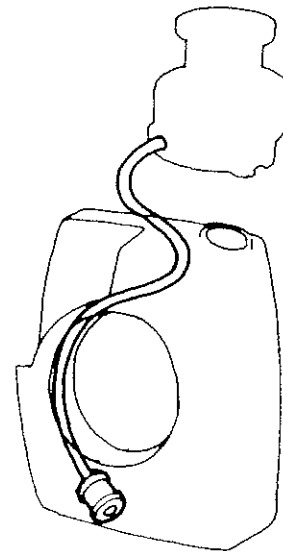
Insert the new cable into the starter pulley. Then thread the cable through the bushing, the starter handle and the cable attachment. Tie a knot at the end of the starter cable and insert it into the cable attachment. Put the cable attachment back into the starter handle.



In many cases, the starter cable can be re-used, since cable breaks usually occur at the starter handle and then only require re-attachment. Follow the instructions. Put the starter pulley and the cover together so that the starter spring is secured to the starter pulley. Wind up the entire cable on the starter pulley clockwise.

Before replacing the complete cover with the starter pulley, pre-tension the starter spring 3/4-1 turn clockwise while pulling carefully on the starter cable. Secure the cover with the screws and test the starter assembly by pulling the handle a few times.

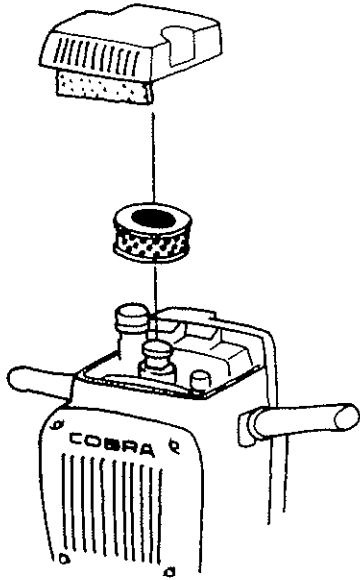
FUEL FILTER



Inside the fuel tank is a fuel filter which should be kept from becoming clogged by observing cleanliness when adding fuel. If the filter has become clogged, it must be replaced. Under normal conditions there is no need to check the filter regularly.

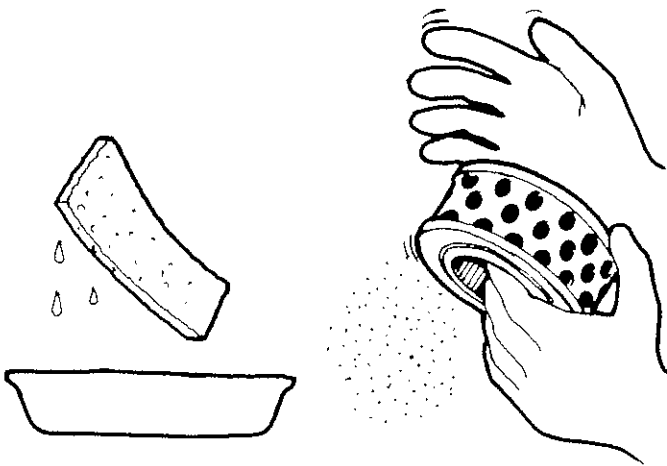
AIR FILTER

The Cobra is equipped with two different air filters. One intake air filter and one main air filter. It is important that these filters are cleaned regularly, to minimize the risk of impurities passing



directly into the crankcase and the cylinder and thereby increasing the wear. The air filters clean the air to both the motor and the flushing air compressor.

Clean the air filters by loosening the screw which holds the air filter cover. Lift off the cover and take out the cassette with the intake air filter (1). Wash this air filter in the same fuel mixture used for the Cobra machine. If pure petrol is used add a few

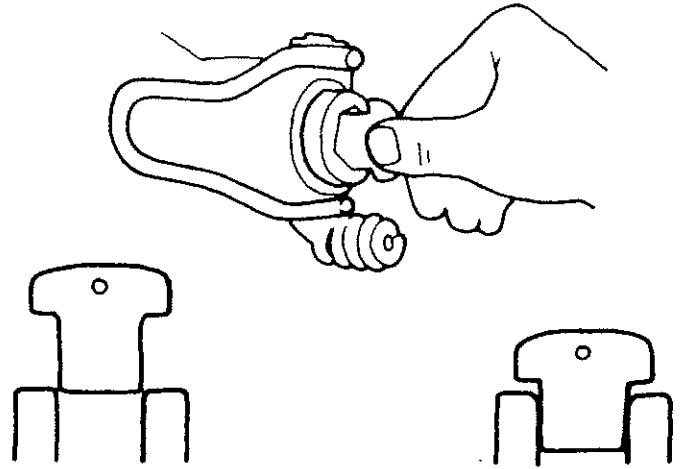


drops of oil on the filter after the cleaning. The main air filter is simply cleaned by knocking out the dust with the palm of your hand. If you have compressed air available, you can carefully blow out the dust. An extremely dirty filter should be replaced by a new one.

Note that detergents or other liquids must not be used when cleaning the main air filter.

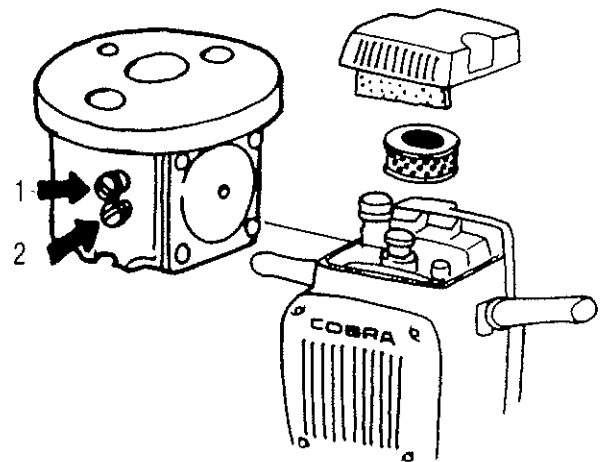
The service life of the machine depends on well cleaned air filters.

DRILL CHUCK



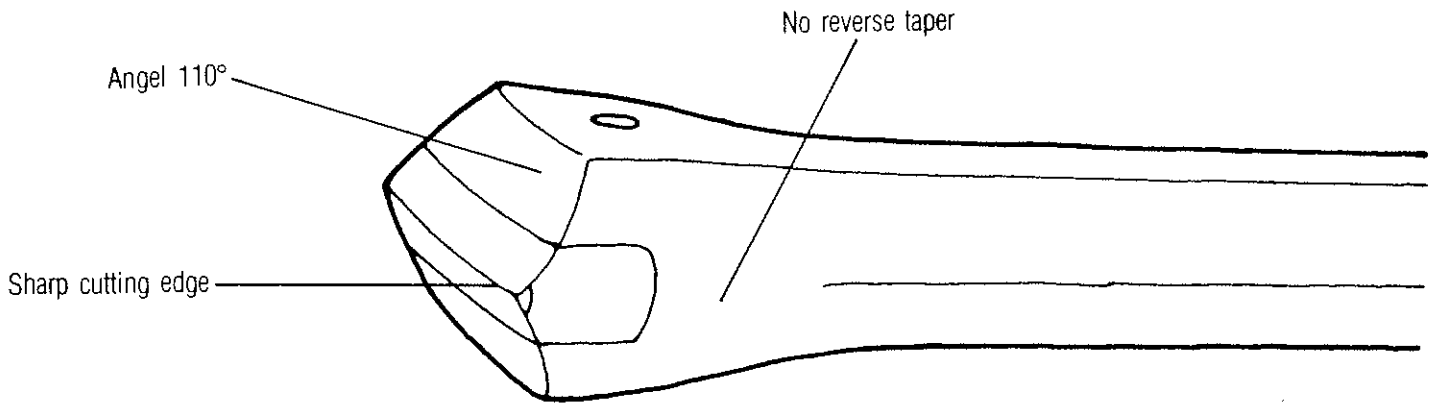
The drill chuck is the part of the machine which is exposed to the greatest wear. Therefore regularly check the hexagon flats of the drill chuck with the gauge supplied with the machine. If the gauge can be fully inserted between the flats, the chuck is worn out and has to be replaced. Remember that a worn drill chuck will quickly damage new tool shanks. New gauges can be ordered using part No. 91003800.

WORKING AT HIGH ALTITUDES



The machine is adjusted for work at normal altitudes. For work at high altitudes, e.g. 2000–3000 m above sea level or more, you may have to adjust the carburettor so it gives a leaner mixture. This is done by adjusting the main fuel nozzle clockwise (see page 13, carburettor arrow No 1).

DRILL STEEL MAINTENANCE



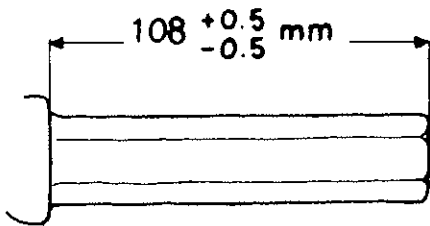
A drill steel is exposed to millions of strokes from the hammer piston and equally many rough contacts with the rock. In order to withstand such treatment for a maximum length of time, maintenance of the drill steels is of great importance.

Note that shank failures may cause considerable damage to the machine. Never use damaged drill steels or tools.

The drill steel should be reground when the corner wear exceeds 5 mm, measured from the highest point of the cutting edge. Measure this by using the Cobra grinding template delivered with the machine. See illustration Nr 2.

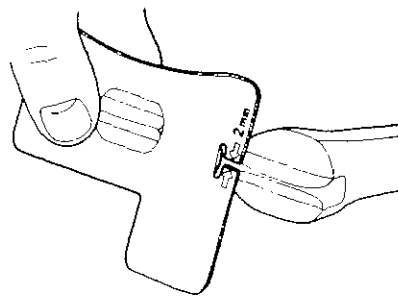
Please note that if the rounding is allowed to continue, an antitaper is formed, causing the drill steel to wedge against the walls of the hole.

Choose a proper grinding wheel. If in doubt, ask your drill steel supplier or nearest Atlas Copco representative. The Cobra standard drill steels have a tip angle of 110° which is sufficient for most types of



No. 1.

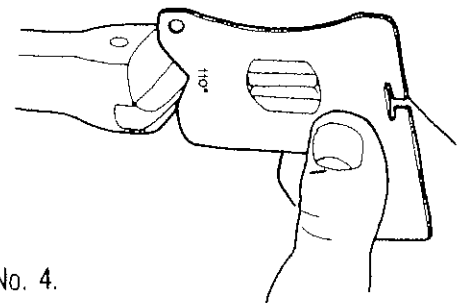
Check the drill steels regularly, thus making sure that there will be no excessive wear between the regrindings. Start by checking the length of the shank (equally important for drill steels as for ordinary breaking tools). The shank should measure 108 mm. If it is damaged you can grind or file it down, max 0,5 mm.



No. 3.

When regrinding a drill steel for a Cobra the edge should be ground in its full length with no rounded corners. This will give maximum drilling rate.

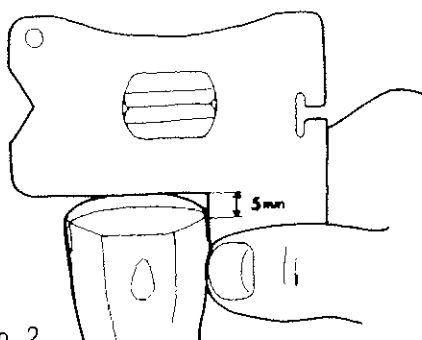
The wear of the cutting edge should not exceed 2 mm, measured 2 mm from the side. Check by using the grinding template in accordance with illustr. No. 3.



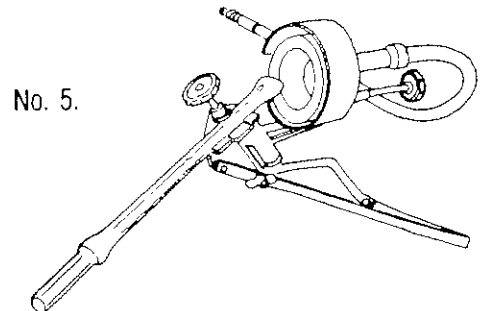
No. 4.

rock. Check the angle with the template. See illustr. No. 4. In very soft kinds of rock a somewhat bigger angle can be recommended (up to 130°).

New grinding templates can be ordered using part No. 0795 1327 00.















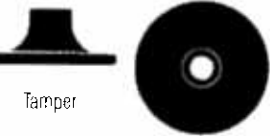
No. 2.



No. 5.

The Cobra grinder, powered by a flexible shaft connected to the crankshaft of the Cobra offers a simple and profitable solution to your grinding problems.

DRILL STEEL AND TOOLS (7/8" × 108 mm)

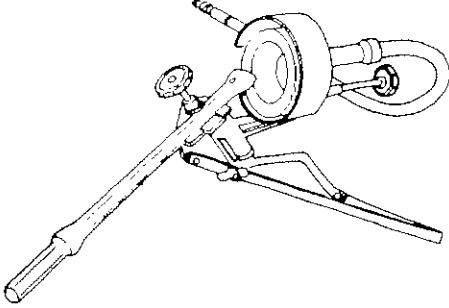
Tool description	Order No.	Length (excl. shank) mm	Width (edge or dia.) mm	Weight kg.	Applications and remarks
 Drill steel Sandvik Coromant	0714 04 34 27 0714 08 33 27 0714 12 32 37 0728 04 29 27 0728 06 28 27	400 800 1200 400 800	34 33 32 29 28	1.8 3.0 4.2 1.4 2.2	For all kinds of drilling jobs.
 Mori point	9245 28 12 40 9245 26 12 50	350 490	- -	1.5 2.0	Demolition work in concrete and loose kinds of rock.
 Wedge	9245 28 12 70 9245 28 12 80	350 490	35 35	2.5 3.2	Demolition work in concrete or similar material and for loosen up hard and frozen ground.
 Concrete chisel	9245 28 12 60	390	45	1.8	Demolition work in concrete or asphalt at low temperatures and in loose kinds of rock.
 Asphalt cutter	9245 28 12 90	350	100	2.3	Demolition work in asphalt.
 Spade	9245 28 12 30	350	125	2.5	For all kinds of digging.
 Tie tamper	9245 28 13 70	460	80	3.4	Tie tamping.
 Hammer for tube	9245 28 03 10 9245 28 03 20 9245 28 03 30	140 140 140	∅ 3/4") 1") 1 1/4")	0.9 1.0 1.2	For driving pipes.) tube dimension. Other dimensions available upon request.
 Wedge hammer	9245 28 13 40	115	∅ 42")	1.2	Hammer for wedge.) inner diameter.
 Wedge compl. with leathers	9245 28 13 51 9245 28 13 81	380 350	34") 29")	2.0 1.0	For splitting blocks and stones.) hole diameter.
 Shaft	9245 28 13 20 9245 28 13 30	160 350	- -	1.2 1.8	Standard shaft for tampers and sheet pile hammer.
 Tampers	9245 28 13 11") 9245 28 13 10	165 65	150 150	4.6 3.4	Surface packing.) compl. with shaft.
 Tampers	9245 28 13 01") 9245 28 13 00	170 65	∅ 180 180	6.3 5.1	Surface packing.) compl. with shaft.

Other tools and sizes available on request.

ACCESSORIES

COBRA DRILL GRINDER

Large drilling sites are usually provided with a special grinding station which takes care of all drills.



But on small jobs and out in the wilds there will be problems. That is where the Cobra Drill Grinder offers a simple and profitable solution.

The Cobra Drill Grinder is designed for use on integral drillsteels. It automatically grinds the correct edge angle and radius. The grinder is powered by the Cobra machine via a flexible shaft coupled to the crankshaft.

Grinding machine complete

with grinding wheel and flexible shaft

order no. 8301 0407 16.

Grinding wheel, order no. 9238 2900 10

Carrying harness

Transport over difficult terrain can be facilitated with the special carrying harness designed for the Cobra machine. The harness has also a mount for two drill steels.

Carrying harness for Cobra, order no. 9238 2814 10.

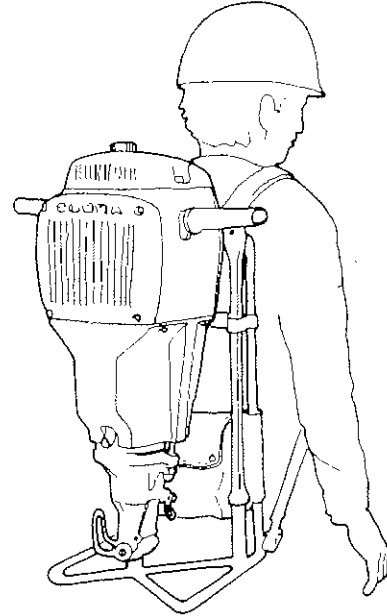
Other accessories,

Extra silencer

order no. 9210 0801 80

Adapter

order no. 9238 2819 71



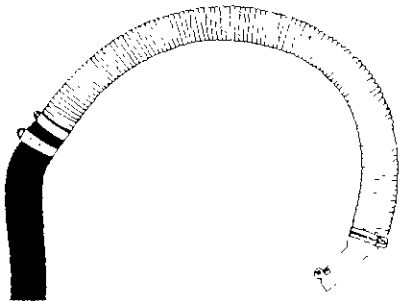
Concrete vibrator compl.
with flexible shaft

order no. 9238 2898 80

Water pump compl. with
flexible shaft

order no. 9238 2899 21

For further accessories and information ask for separate leaflet.



Exhaust hose

When operating the machine indoors or in places with poor ventilation an exhaust hose can be adapted to the exhaust pipe.

The exhaust hose is available in the following lengths;

Exhaust hose 2.5 m order no. 9238 2811 71

Exhaust hose 5.0 m order no. 9238 2811 31

Exhaust hose 10.0 m order no. 9238 2811 81

