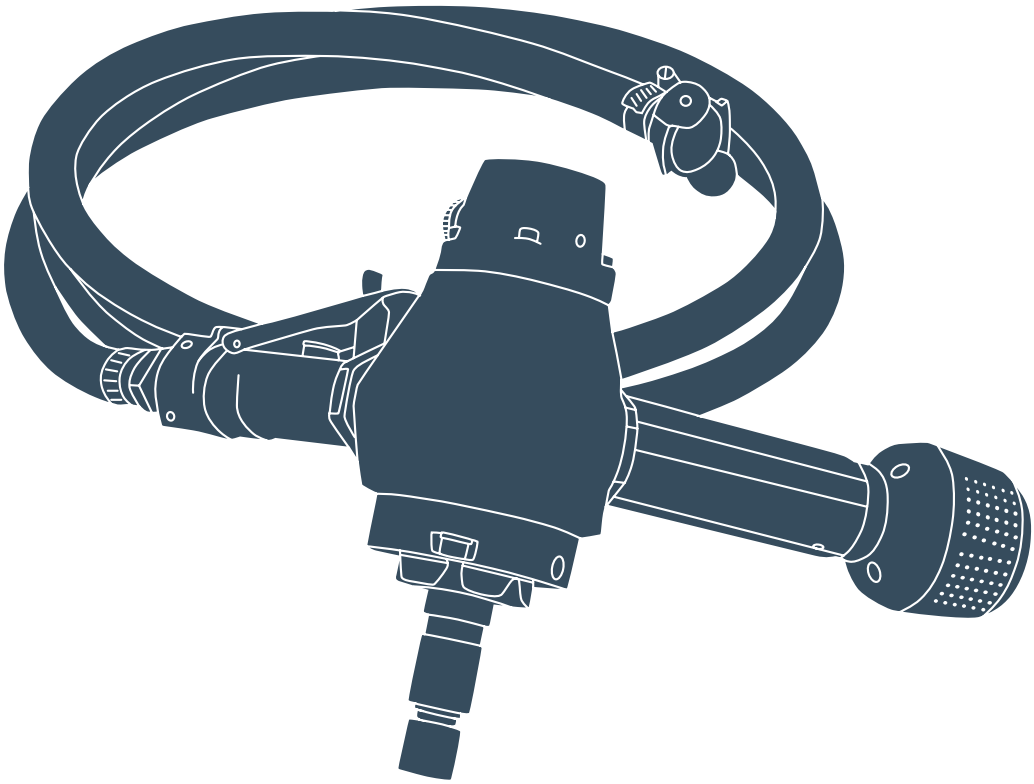
Grind Matic HG

Operator's instructions
Spare parts list

Epiroc



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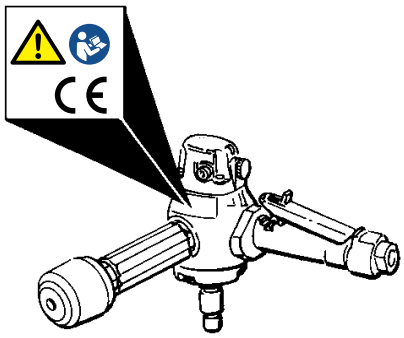

Before using the machine, read the operator's instructions carefully and then put them in a safe place for future reference.

It can be dangerous to use the machine if the care and maintenance instructions are not followed carefully.

Emergency STOP.

Always replace damaged or illegible signs.
Ordering No. 9500-3161

Original instructions.

Safety instructions

• Before using the machine, read through the operator's instructions carefully.

• Important safety information is given at various points in these instructions.

• Special attention must be paid to the safety information contained in frames and accompanied by a warning symbol (triangle) and a "signal word", as shown below:

DANGER

Indicates an immediate risk that WILL result in serious injury or death if the warning is not observed.

WARNING

Indicates hazards or hazardous procedures which COULD result in serious injury or death if the warning is not observed.

CAUTION

• Indicates hazards or hazardous procedures which COULD result in injury or damage to equipment if the caution is not observed.

• Use approved spare parts only. Any damage or malfunction that can be attributed to the use of unauthorized spare parts is not covered by the machine warranty and invalidates product liability.

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Also observe the following general safety instructions:

• Make sure that there are no other personnel close to the grinding machine while grinding is in progress.

• Always wear goggles, protective clothing, steel toe safety shoes, gloves and hearing protection during grinding and handling of grinding bits. Any local regulations must also be observed.

• Wear an approved dust mask or arrange an effective dust-extraction system. This is especially important when grinding indoors.

• The machine must not be used for any purpose other than that for which it is intended. See "Applications".

• The machine must not be modified without the permission of the manufacturer. Modifications not approved by Epiroc Drilling Tools AB can incur the risk of serious injury to yourself and others.

• Before intervening in the air or electrical systems, make sure there is no pressure in the air system and that the electrical system is shut down.

• Beware of the risk of fire and explosion that could be initiated by sparks from the grinding work.

Technical data

Air pressure, max.	7 bar
Air requirement (at 6 bar) off-load on-load	 50 l/s 42 l/s
Water pressure, max	4.5 bar
Speed, max.	17 000 r/min
Hose sizes air water	 12.5 mm (1/2") 6.3 mm (1/4")
Weight excluding hoses	2.8 kg
Sound pressure level*	91 dB(A)
Sound power level **	104 dB(A)
Vibration level ***	< 2.5 m/s2
Ordering No.	9542

*Measuring of sound pressure level according to PN8NTC1.2, spread in measuring method and production 3 dB(A)

**Measuring of sound power level according to PN8NTC1.2, spread in measuring method and production 3 dB(A)

***Measuring of vibration according to EN/ISO 8662

Accessories delivered with the machine

Description	Product code
Allen key (2 mm)	9500-2736
Allen key (3 mm)	9500-2737
Allen key (5 mm)	9500-2738
Grease gun	9500-2739
Seal kit	9500-2779
Support ring	9500-2781
Seat	9500-2780
Adjustable angle connector	9500-2795
Pipe (L=0.3 m)	9500-2785
Hose clamp (26–38 mm)	9500-2720
Hose (PVC 03)	9500-2791
Nipple	9500-2743
Hose clamp (7–8.5 mm)	9500-2716
Hose (PVC, 0.1 m)	9500-2746
Claw coupling (6.3 mm, 1/4")	9500-0068
Hose clamp (11–13 mm)	9500-2717
Operators instructions and spare parts list	9852 2337 01

General

The Secoroc HG is an air-powered grinding machine for button bits. The grinding cup can be cooled with either air or water.

The specially composed grinding medium in the grinding cups contributes greatly to the rapid material-removal rate of the machine. With the Secoroc HG, you can grind all kinds of button bit, from tapered bits and threaded bits to large DTH drill bits. There is a wide range of grinding cups for the machine to suit different button sizes and shapes. Since the machine has a relatively low air consumption, it is possible to grind drill bits on the rig while drilling is in progress.

Applications

The Secoroc HG is intended for grinding button bits only.

Technical description

The Secoroc HG is part of a complete hand-grinding system wconsisting of the grinding machine, grinding cup with grinding medium and a specially designed chuck.

The stainless-steel grinding cups are manufactured using a method that gives very good precision. The cups are fitted with a rubber bushing which serves to reduce the vibrations that can be transmitted from the grinding cup to the grinding machine.

The ergonomically positioned handles on the grinding machine give the operator a better working position and better control of the machine throughout the grinding operation.

The patented chuck has been specially designed for quick and easy changing of the grinding cup.

The Secoroc HG is intended for a working air pressure of 6–7 bar. This pressure must never be exceeded.

General care instructions

- The machine must always be powered by lubricated compressed air, which increases the service life of the machine. If the air supply is not lubricated, connect a lubricator (available as an accessory) into the handle of the machine.
- Keep the machine clean.
- Make sure that the compressed air is clean and dry.
- Make sure that the hoses are of the correct sizes (see "Technical data").
- Always blow clean the air hose before connecting it to the machine.
- Take care when connecting the air hose to the machine.
- Lubricate the machine regularly. Follow the lubricating instructions carefully.
- If the machine is to be left idle for a long time, make sure that it is generously lubricated before storage.
- Before moving the grinding machine to another workplace, always disconnect the compressed-air hose.

Setting up for grinding

CAUTION

- Always observe all safety regulations and instructions.
- Do not connect the grinding machine to air pressures higher than 7 bar.
- Check that the compressed-air hose is connected to the machine correctly. If not, the hose can come loose and whip around dangerously, with the risk of injury to personnel.
- Before removing or fitting a grinding cup, always vent and disconnect the incoming compressed-air hose.
- The grinding cup must be approved for the maximum permissible speed of the grinding machine.

Grinding

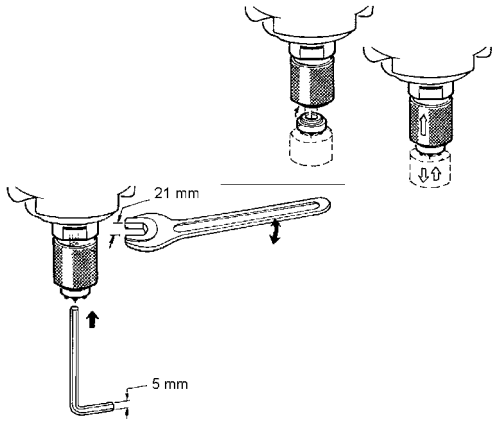
DANGER

- Always check that there are no traces of explosive in the flushing holes of the drill bit. To clean out the flushing holes, ONLY a wooden stick, a length of copper wire or flushing water may be used.
- Beware of the risks of fire or explosion that might be initiated by sparks from the grinding work.

CAUTION

- The exhaust air from pneumatic components contains oil. To inhale oil mist is bad for your health. Be sure to adjust the lubricator to give the correct dosage of oil.
- Make sure that the grinding station or worksite is well ventilated.
- Always wear protective goggles, protective clothing, protectivee gloves, ear protectors and an approved dust mask when grinding. Any local regulations must also be observed.
- Before changing the grinding cup, always vent and disconnect the compressed-air hose.
- Before removing the drill bit from the holder, always switch off the air supply to the table motor.

Changing the grinding cup and chuck



Before fitting the grinding cup, smear the shaft of the cup with a rust-inhibiting agent such as Shell Ensis Compound 356 or similar.

General rules

Use grinding cups of the right shape and size for the buttons that are to be ground. The drill bit must be properly secured for grinding, so that it cannot move. Pressing the grinding cup too hard on to the cemented-carbide button will reduce the service life of the cup. Both the grinding cup and the cemented-carbide button can be damaged by excessive heat generation.

⚠ CAUTION

- Be aware that the grinding cup is hot after grinding.

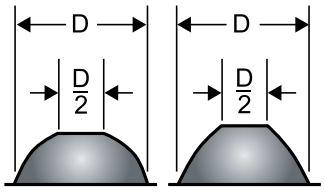
A new grinding cup must always be "run in". Start grinding carefully and increase the feed pressure gradually. This will increase the service life of the grinding cup substantially.

Notice: If anything other than original grinding cups are used, Epiroc Drilling Tools AB will not accept liability for any faults or damage, or the consequences thereof.

Grinding hints

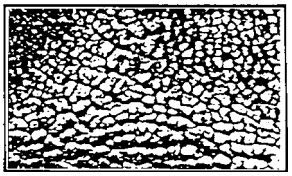
The rate of bit wear depends on the rock formation, and is highest in rocks with a high quartz content. A suitable grinding interval should be determined according to the rate of bit wear. It is more economical to regrind too early rather than to suffer poor penetration rates and risk damaging the drill bit through overdrilling. Following are a few hints about the care of drill bits.

When to regrind



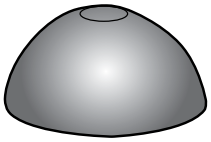
Button bits should be reground when the penetration rate drops, or if any of the cemented-carbide buttons are damaged (fractured buttons should be ground flat). It is both practical and economical to redress the buttons when the wear flat reaches about 1/2 of the diameter of the button.

Look out for "snake skin"



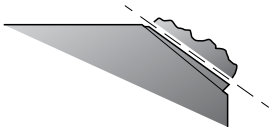
If microscopic fatigue cracks – so-called "snake skin" – begin to appear on the cemented carbide buttons, the cracks must be ground away. In any event, bits should be reground after 300 metres of drilling at the most. This should be done even if there are no visible signs of wear and the penetration rate continues to be good. If snake-skin is not removed, the cracks will deepen and ultimately result in button fracture.

Do not grind away too much cemented carbide



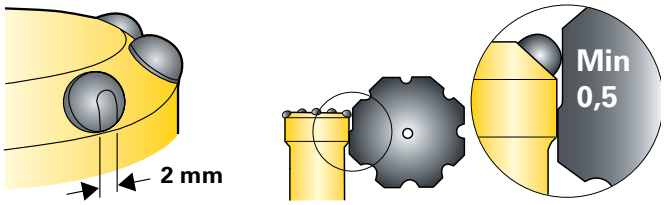
Do not grind too much on the top of the buttons. Let a few millimetres of the wear flat remain on top of the button.

Always grind broken buttons flat



A drill bit can remain in service as long as the gauge buttons maintain the diameter of the bit. Fractured buttons must always be ground flat to prevent chips of cemented carbide from damaging the other buttons.

Avoid grinding the perimeter



Gauge button anti-taper has to be removed by grinding, although excessive reduction of the bit diameter should be avoided. Leave about 2 mm of the wear flat. If necessary, remove some of the bit-body steel below the gauge buttons, so that a clearance (taper) of 0,5 mm is maintained. If the flushing holes start to deform, open them up with the aid of a rotary burr or steel file.

Grinding instructions

To obtain the correct button shape, the grinding machine should be handled as follows:

- When grinding spherical cemented-carbide buttons, move the grinding machine with GC cup evenly over and around the centre of the button.

- When grinding ballistic cemented-carbide buttons, hold the grinding machine with GC-T cup upright over the button.

- Do not press too hard. The weight of the machine itself is usually sufficient feed force.

The diamond-impregnated grinding cup can also be used to remove small amounts of steel from around the button. However, excessive grinding of steel will soon clog up the grinding cup. If this happens, the cup can be "opened up" again by rubbing it against a whetstone (available as an accessory), or by rotating it against a discarded silicon-carbide grinding wheel. The right cup to use for removing steel from around the button is a GC-B boron-nitride cup. Grind down the steel by about 1,5–2 mm by holding the machine directly over the button.

The Secoroc HG is delivered equipped for air cooling of the grinding cup. A kit for converting the machine for water cooling is included in the package.

Maintenance

WARNING

• Before starting work on any of the systems, make sure that there is no pressure in the air system and cooling system. High pressure air can escape, with the risk of injury to the eyes and skin.

CAUTION

• Check that the compressed-air hose is connected to the machine correctly. If not, the hose can come loose and whip around dangerously, with the risk of injury to personnel.

See drawings on pages 8-11 for reference, or drawing on the inside of the cover.

Normal care

Blow the machine clean and fill with a little oil at the end of each shift. Clean the strainer (60) regularly so that it does not restrict the air supply to the machine. Thorough servicing and inspection of the machine should be carried out after every 500 hours of operation, or once every 6 months.

Lubrication

The motor should be lubricated by atomized oil in the compressed air. The best way to achieve this is to connect an oil-mist lubricator into the air line. The lubricator should be located at the same height or higher than the grinding machine, no more than 7 meters away from the machine. Otherwise, it is recommended that a lubricator (ordering No. 9500-2750) is connected into the throttle handle of the machine. Before starting the machine each day, check that the lubricator is full of oil.

The throttle and ball bearing should be greased during regular maintenance of the machine.

The ball bearing must be greased via the grease nipple after every 20 hours of operation. The recommended quantity of grease is 1 cm^3, which can be administered by approx. 4 strokes of the grease gun 9500-2739.

Use lubricants of good quality. See the list of recommended lubricants.

Other maintenance

The strainer (60) at the air connection should be cleaned frequently so as not to restrict the air supply and cause the machine to operate with reduced power.

When using water flushing, the O-ring (25) should be changed regularly. If there is an obvious flow of water through the drainage hole (47) in the upper part of the machine, change the seal rings (37) and O-rings (36) and (38).

The machine should be stripped for thorough cleaning and inspection every 6 months. If the machine is in daily use, this should be carried out after every 3 months of operation.

Flushing air

The Secoroc HG is delivered equipped for air flushing. Flushing air is taken directly from the air inlet port for the motor. The adjustment screw (45) must be fully tightened.

Connecting the flushing water

• If the grinding cup is to be cooled with water, the conversion kit must be fitted.

• Remove the upper part of the machine, the screw, plug and gasket. Fit the parts (35–38) and (41–42), and fit the locking clip (39) to the shaft (32).

• Mount the upper part (44) together with the gasket (40). Fit the adjustable angle connector (88) together with the hose connection parts (89–95).

• Water is connected to the machine by means of a 6,3 mm (1/4") hose.

• The water pressure must not exceed 4.5 bar (450 kPa or 4.5 kp/cm2).

• Use cold water only.

• The water flow can be regulated by means of the adjustment screw (45).

Rust preventive measures when using water flushing

To avoid corrosion caused by the flushing water, it is important to do the following:

Before fitting the grinding cup, its shaft must be smeared with a rust-inhibiting agent such as Shell Ensis Compound 356 or similar.

At the end of every grinding session, blow the machine clean and lubricate according to one of the following methods:

1. Remove the grinding cup. Blow out the water hose with compressed air and then dip the chuck into a rust-inhibiting agent.

2. Remove the grinding cup. Pour a little oil directly into the water hose and blow through with compressed air until oil mist comes out of the chuck.

Recommended lubricants

Brand	Air-tool oil	Grease
Atlas Copco Air Oil (–30 to +50 °C)		
BP	Energol RD-E46	Energrease LS-EP2
Esso	Rockway EP 68	Uniway EP 2 N
Q8	Q8 Chopin 46	Q8 Rembrant EP2
Mobil	Almo Oil 525	Mobilux EP 2
Shell	Torcula 68/32	Alvania grease EP2
Texaco	Aries 32	Texando FO 20 S
Kluber		Isoflex NBU 15
SKF		LG EP 2

Consumables

	Product code
Lubricator	9500-2750
To be fitted to the machine throttle-handle. Required if there is no oil-mist lubricator in the air supply line.	

Grinding cups

Button size, mm	Designation	Product No	Product Code
For spherical buttons			
7	GC-7	87002566	9500-2566
8	GC-8	87002567	9500-2567
9	GC-9	87002568	9500-2568
10	GC-10	87002569	9500-2569
11	GC-11	87002570	9500-2570
12	GC-12	87002571	9500-2571
13	GC-13	87002572	9500-2572
14	GC-14	87002573	9500-2573
15	GC-15	87002574	9500-2574
16	GC-16	87002575	9500-2575
18	GC-18	87002576	9500-2576
20	GC-20	87002577	9500-2577
For ballistic buttons			
7	GC-7T	87002579	9500-2579
8	GC-8T	87002580	9500-2580
9	GC-9T	87002581	9500-2581
10	GC-10T	87002582	9500-2582
11	GC-11T	87002583	9500-2583
12	GC-12T	87002584	9500-2584
13	GC-13T	87002585	9500-2585
14	GC-14T	87002586	9500-2586
15	GC-15T	87002587	9500-2587
16	GC-16T	87002588	9500-2588
Boron nitride grinding cups for removal of steel			
7-8	GC-8B	87002700	9500-2700
9-10	GC-10B	87002701	9500-2701
11-12	GC-12B	87002702	9500-2702
13-14	GC-14B	87002703	9500-2703
15-16	GC-16B	87002704	9500-2704
17-18	GC-18B	87002840	9500-2840
19-20	GC-20B	87002841	9500-2841

Tightening torque guide

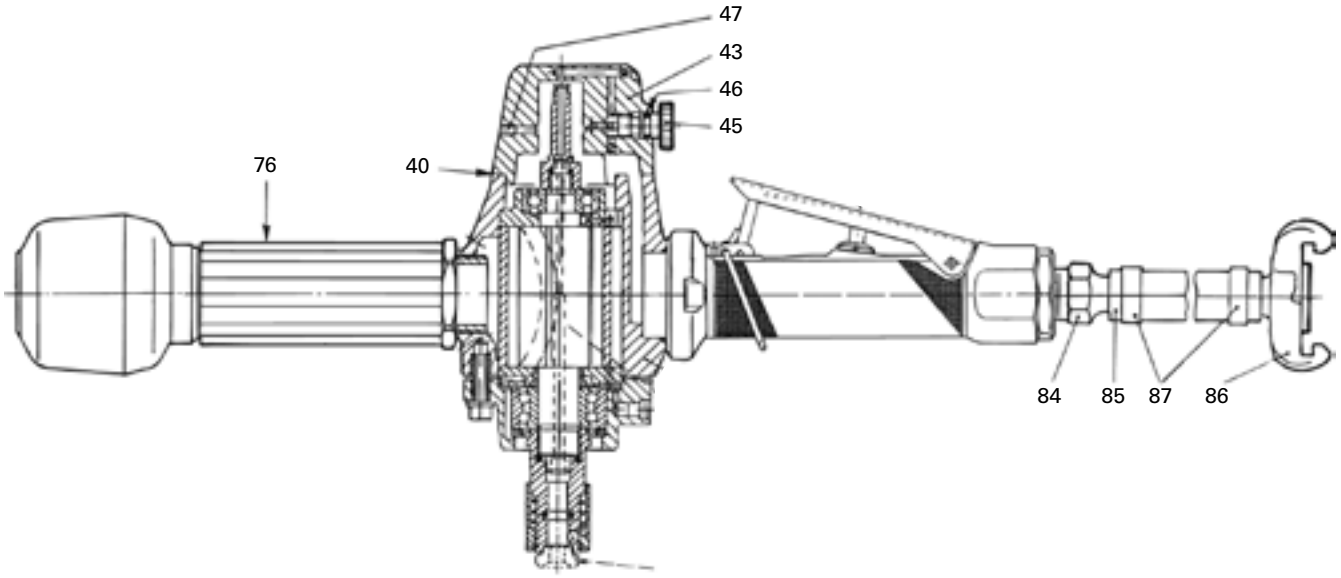
Ref. No	Tightening Torque, Nm 1)	Thread 2)	Width across flats, mm	Use Tool	
				Product No.	Product code
8/23	-	R	5	87002738	9500-2738
8/32	-	L	-	-	-
20	10	R	5	87002738	9500-2738
23	40	R	21	-	-
32	25	L	14	-	-
47	-	R	2	87002736	9500-2736
48	-	R	3	87002737	9500-2737
50	-	R	5	87002738	9500-2738
56	10	R	13	-	-
62	50-70	R	33	-	-
75	10	R	5	87002738	9500-2738
78	-	R	40	-	-
84	-	R	24	-	-

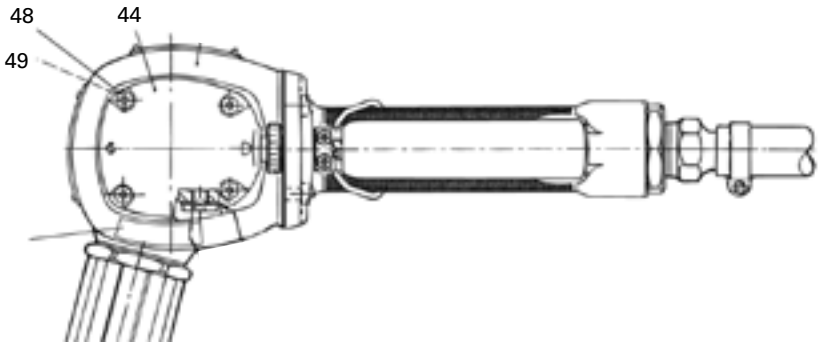
1) Tightening torque (1 kpm = 9,81 Nm; 1 lbf.ft =1,36 Nm)
2) R = Right-hand thread, loosened counter-clockwise
L= Left-hand thread, loosened clockwise

Grinding templates for button bits

	Product No.	Product code
Button bits, spherical	90002944	9104
Button bits, ballistic	90503414	9105
Button bits DTH, spherical	90510753	9129
Button bits DTH, ballistic	90510758	9130

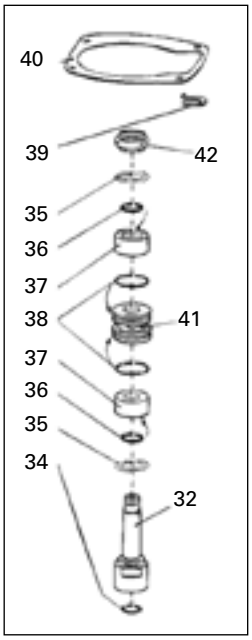
Spare parts list

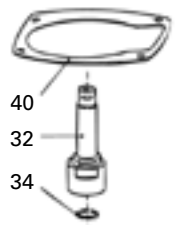


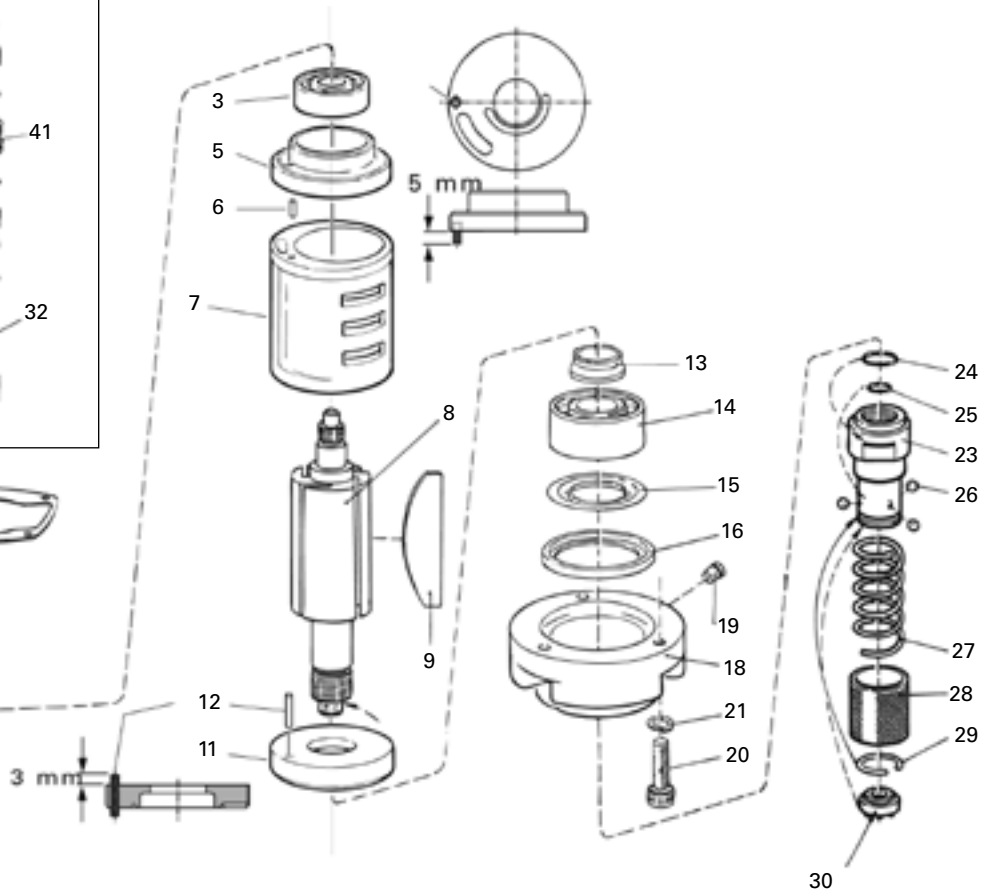


Seal kit

Parts 34-40







Ref	Product No.	Product code	Qty	Description	Specification
1	-	-	1	Motor casing	
3	87002721	9500-2721	1	Ball bearing	6201-RS
4	87002790	9500-2790	1	End plate, complete	Ref 5-6
5	-	-	1	End plate	
6	87002705	9500-2705	2	Pin	CP 3h6x8
7	87003218	9500-3218	1	Cylinder	
8	87002777	9500-2777	1	Rotor	M17x0,75
9	87002789	9500-2789	1	Vane kit	4 pcs incl.
10	87002753	9500-2753	1	End plate, complete	Ref 11-12
11	-	-	1	End plate	
12	87003219	9500-3219	1	Pin	CP 3h6x14
13	87002751	9500-2751	1	Spacer	
14	87002722	9500-2722	1	Ball bearing	3203 C2
15	87002740	9500-2740	1	Seal ring	3203 JV
16	87002752	9500-2752	1	Spacer	
17	87002775	9500-2775	1	Bearing casing, complete	Ref 18-19
18	-	-	1	Bearing casing	
19	87002724	9500-2724	1	Nipple	
20	87002711	9500-2711	3	Screw	MC6S 6x22 12.9
21	87002714	9500-2714	3	Washer	FBB 6,5
22	87002786	9500-2786	1	Quick change chuck, compl.	Ref 23-29
23	-	-	1	Holder	
24	87002729	9500-2729	1	O-ring	9,3 x 2,4
25	87002727	9500-2727	1	O-ring	6,3 x 2,4
26	87002723	9500-2723	3	Ball	5 mm
27	87002788	9500-2788	1	Spring	
28	87002787	9500-2787	1	Sleeve	
29	87002715	9500-2715	1	Lock ring	RW 16
30	-	-	1	Damping ring	*
32	87002778	9500-2778	1	Shaft	
33	87002779	9500-2779	1	Seal kit	Ref 34-40
34	87002726	9500-2726	1	O-ring	**5,3 x 2,4
35	87002742	9500-2742	1	Spring washer	
36	87002728	9500-2728	2	O-ring	7,3 x 2,4
37	-	-	2	Seal ring	
38	87002731	9500-2731	2	O-ring	15,1 x 1,6
39	87002782	9500-2782	2	Lock part	
40	87002784	9500-2784	1	Gasket	
41	87002781	9500-2781	1	Support ring	
42	87002780	9500-2780	1	Seat	
43	87002776	9500-2776	1	Upper part, complete	Ref 44-49
44	-	-	1	Upper part	
45	87002749	9500-2749	1	Adjustment screw	
46	87002734	9500-2734	1	O-ring	7,65 x 1,78
47	87002709	9500-2709	1	Stop screw	SK6SS 4x6
48	87002710	9500-2710	4	Screw	MC6S 4x20
49	87002713	9500-2713	4	Washer	BRB 4,3

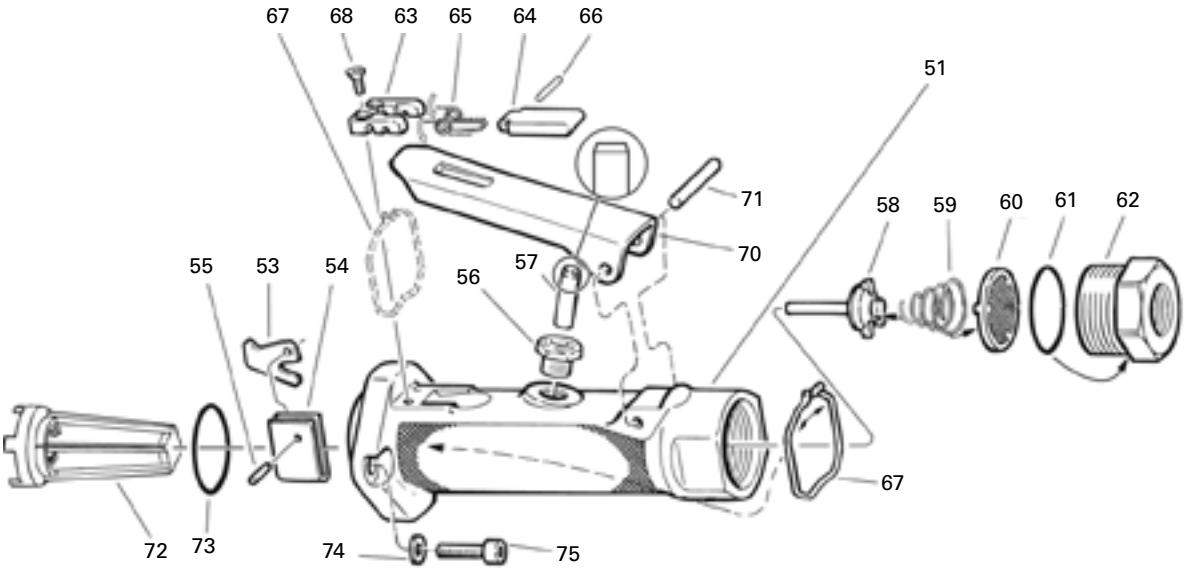
* Delivered with the grinding cups.

When ordering spare parts, please state the model designation of the grinding machine, the part number and description of the desired part (not the Ref No.) and also the production number of the machine (see machine data plate).

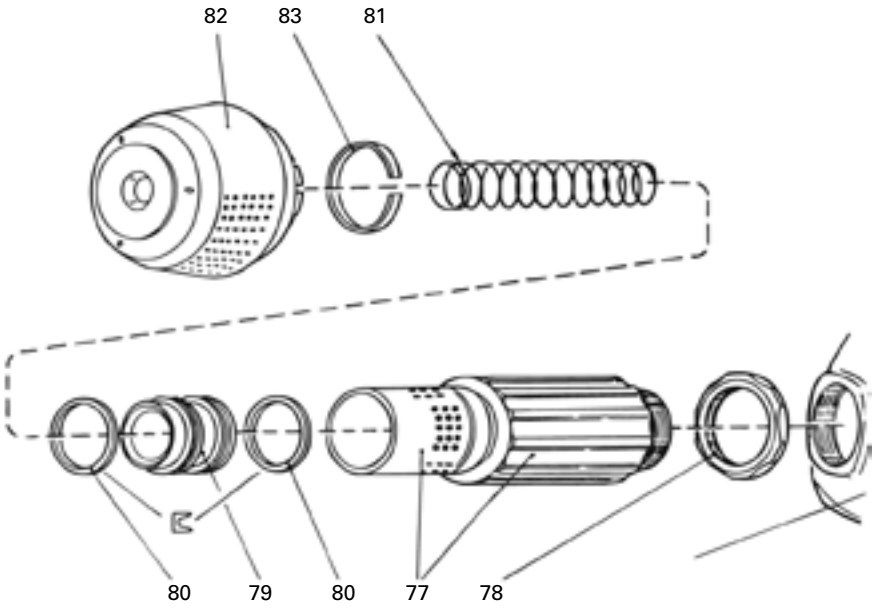
Use approved spare parts only. Any damage or malfunction that can be attributed to the use of spare parts not approved by Secoroc is not covered by the company's warranty and will invalidate product liability.

Spare parts list

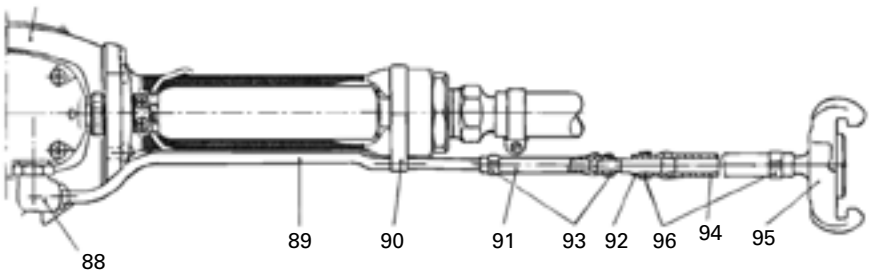
Throttle handle, complete



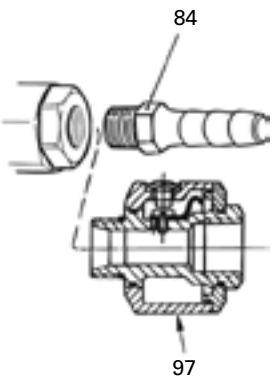
Support handle, complete



Conversion kit



Lubricator



Ref.	Product No.	Product code	Qty	Description	Specification
	87002907	9500-2907	1	Throttle handle, complete	Ref 51-75
50	87002735	-	1	Plug	1/8”
51	-	-	1	Handle	
52	87002908	9500-2908	1	Valve kit, complete	Ref 53-57
53	-	-	1	Lever	
54	-	-	1	Lever guide	
55	87002909	9500-2909	1	Bearing needle	2 x 17,8
56	-	-	1	Bushing	
57	87002910	9500-2910	1	Pin	6 x 24
58	87002911	9500-2911	1	Valve	
59	87002912	9500-2912	1	Spring	
60	87002913	9500-2913	1	Strainer	
61	87002914	9500-2914	1	O-ring	21,4 x 2,4
62	87002915	9500-2915	1	Adapter	BSP ½",G ½"
	87002916	9500-2916	1	Latch, complete	Ref 63-68
63	-	-	1	Latch lever	
64	-	-	1	Latch	
65	87002917	9500-2917	1	Spring	
66	87002918	9500-2918	1	Pin	2 x 16
67	-	-	1	Staple	
68	87002919	9500-2919	2	Screw	MFTS 3x10
69	87002920	9500-2920	1	Lever, complete	Ref 70-71
70	-	-	1	Lever	
71	87002921	9500-2921	1	Bearing needle	4 x 29,8
72	-	-	1	Strainer	
73	87002732	9500-2732	1	O-ring	32,1 x 1,6
74	87002714	9500-2714	2	Washer	FRR 6,5
75	87002712	9500-2712	2	Screw	MC6S 6x20

Ref.	Product No.	Product code	Qty	Description	Specification
	87002766	9500-2766	1	Support handle, complete	Ref 77-83
77	87002767	9500-2767	1	Sleeve, complete	
78	87002758	9500-2758	1	Lock nut	
79	87002765	9500-2765	1	Plunger	
80	87002768	9500-2768	2	Plunger ring	
81	87002755	9500-2755	1	Spring	
82	87002757	9500-2757	1	Silencer cover	
83	87002756	9500-2756	1	Retainer ring	
84	87002792	9500-2792	1	Hose nipple	½"
85	87002794	9500-2794	1	Hose	½"
86	87002793	9500-2793	1	Claw coupling	½"
87	87002718	9500-2718	2	Hose clamp	16-22 mm
88	87002795	9500-2795	1	Angle connector	
89	87002785	9500-2785	1	Pipe	L = 0,3 m
90	87004757	95004757	1	Hose clamp	32-44 mm
91	87002791	9500-2791	1	Hose	PVC 03
92	87002743	9500-2743	1	Nipple	
93	87002716	9500-2716	2	Hose clamp	7-8,5 mm
94	87002746	9500-2746	1	Hose	PVC6
95	87000068	9500-0068	1	Claw coupling	6,3 mm / 1/4"
96	87002717	9500-2717	2	Hose clamp	11-13 mm
97	87002750	9500-2750	1	Lubricator	
	87003189	9500-3189	1	Service kit	Ref. 60, 61, 65, 66, 68, 72, 73

When ordering spare parts, please state the model designation of the grinding machine, the part number and description of the desired part (not the Ref No.) and also the production number of the machine (see machine data plate).

Use approved spare parts only. Any damage or malfunction that can be attributed to the use of spare parts not approved by Secoroc is not covered by the company’s warranty and will invalidate product liability.

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