



ECON 900 H

Dust Collector System



Heavy duty hydraulically powered dust collector systems, designed for improved productivity and improved working conditions in the construction and mining industry.



ECON 900 H Dust Collector System

The ILMEG ECON 900 H hydraulically driven dust collectors are used in rock drilling applications for improved productivity and improved working conditions with regards to dust. A typical application is blast hole drilling with top hammer rock drills.

The filter cleansing function is carried out with reversed air.

ILMEG dust collectors are continuously improved and built of high quality components to ensure long, safe and economical operation.

Specification:

Max hole size:	51 mm (2")
Filter area:	7,2 m ²
Oil flow requirement:	25 l/min
Oil pressure requirement:	80-100 BAR
Width x depth x height:	510x520x1716 mm
Approx weight:	140 Kg
Filter cleansing system:	Reversed air
Electric system:	24 V

Optional Equipment:

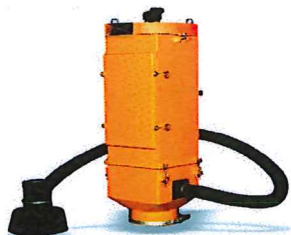
Pre-skimmer



The heavy duty cuttings collector is specially designed to reduce the dust to the minimum.



The fan is purpose built with regards to the specific requirements in mobile drilling applications to ensure a high vacuum capacity in combination with a high suction flow capacity



The filter capacity is 7,2 m² with water resistant filter material in combination with the reversed air cleansing system safeguards a long and trouble free operation



1. The Dust collector

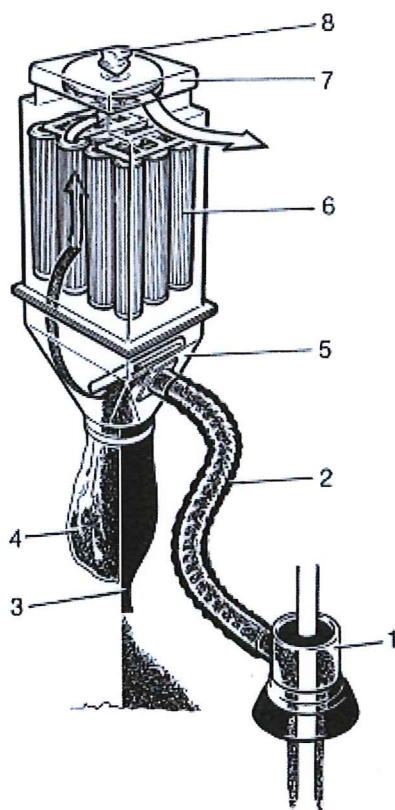
Looking at a drill rig with a dust collector mounted, all you see is: the pick up hood (1), the suction hose (2), and a big box mounted somewhere on the rig, and hopefully no dust. Everytime a new drill rod is added, the big box will drop its contents of drill chips and dust in a plastic sack (4), or just on the ground in a neat pile via the rubber dump valve (3).

What is happening inside the dust collector?

Flushing air and drill chips enter the filter housing through the rubber hose. Inside air and chips hit a heavy steel wear plate, and the heavier chips ricochet downwards into the conical part (5). Air and fine dust moves upwards towards the cylindrical filter elements (6). The fine dust settles on the filter surface, the clean air passes through, and is picked up by the fan (7) (or the venturi on the pneumatic models) and expelled out of the top of the dust collector.

Everytime the driller stops to add on another drill rod suction stops so that the accumulated chips can fall out. At the same time the filter elements are cleaned by repeated air blasts from the inside. This happens automatically everytime drilling is interrupted on the hydraulic units. The pneumatically driven dust collectors are all equipped with a manual filter cleaning system.

THE ILMEG DUST COLLECTOR



1. Pick up hood
2. Suction hose
3. Rubber dump valve
4. Plastic sack
5. Bottom housing section
6. Filter elements
7. Fan
8. Hydraulic Motor



We find several components inside the dust collector whose function is vital to the dust collecting system.

A: Filter elements

The exchangeable filter elements are basically cylindrical, with a diameter of 5" and in two different lengths: 600 mm and 900 mm. The filter material is specially treated to be water resistant.

Surface area:

1: 900 mm filter : 1.2 m^2 (12.9 sq.ft)

2: 600 mm filter : 0.8 m^2 (8.6 sq.ft)

If you are drilling in a type of rock that gives a lot of dust instead of larger chips, the filters need to be cleaned at shorter intervals. If there is water in the drillhole, the dust will turn into mud that sticks to the filter surface, and the automatic cleaning cycle is not sufficient.

The solution is to dry out the filters by disconnecting the suction hose from the pick up hood and let the fan work for some time (5-10 min). After drying, the filter can be cleaned by the automatic cleaning cycle.

As the case is with any type of filter, these have a limited life. Even though they are cleaned after every drill rod, some dirt will stick in the microscopic pores, reducing the capacity and increasing the pressure drop. The filter material will also finally be worn out by the constant bombarding with drill chips. **WHEN DUST STARTS COMING OUT OF THE FAN, IT MEANS THERE IS A HOLE IN ONE OF THE FILTER ELEMENTS. CHANGE THE DAMAGED FILTER ELEMENT IMMEDIATELY! PASSING DRILL CHIPS THROUGH THE FAN WILL ALSO WEAR OUT THE FAN IN A VERY SHORT TIME.**



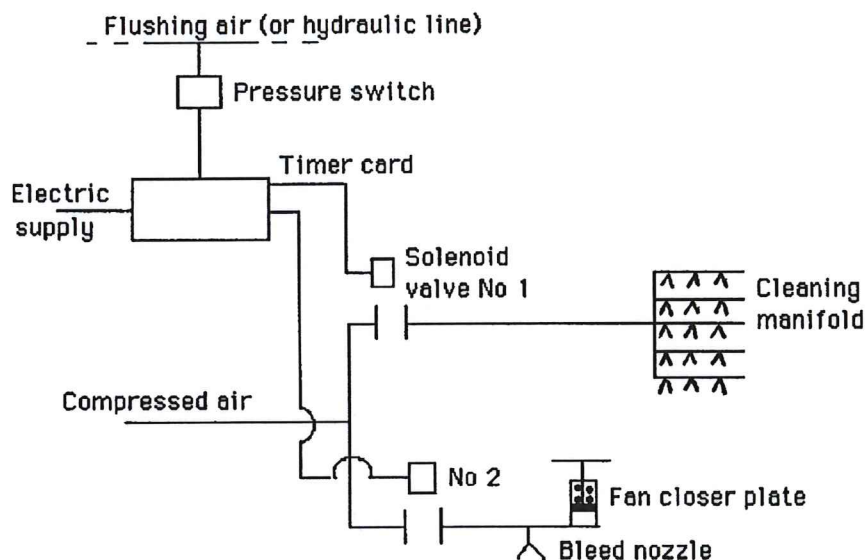
B: The automatic cleaning cycle

In the dust collector the heavy chips fall to the bottom, but the fine dust collects on the filter surface. When adding on a new drill rod there is time to clean the filter elements.

In the Ilmeg dust collectors, compressed air is used for cleaning the filters. This method gives the best cleaning results and does not destroy the filter elements with hard mechanical vibration.

The system works as follows:

As the driller stops the rock drill, the flushing air (or the hydraulic pressure) is also shut off. In the air line or the hydraulic line there is an electric pressure switch. As the pressure drops, the switch is closed and an electric signal goes to a small control unit mounted inside the dust collector. This signal starts the cleaning cycle.



Cleaning cycle:

1. Pressure switch sends signal to the timer card when the rock drill is stopped.
2. Timer card activates solenoid valve No 2 and the fan inlet is closed, which means no air passes through the filters.
3. Timer card activates solenoid valve No 1 with a series of pulses. Altogether 10 pulses, 1 sec between them. As an option there is available Timer card with 3 sec. interval between pulses. The air blasts from the inside of the filters clean the filter surface.
4. After the ten pulses, solenoid valve No 2 closes, the spring loaded air cylinder returns.
5. If drilling is started before the cleaning cycle is finished the built in pressure switch terminates the cleaning cycle.



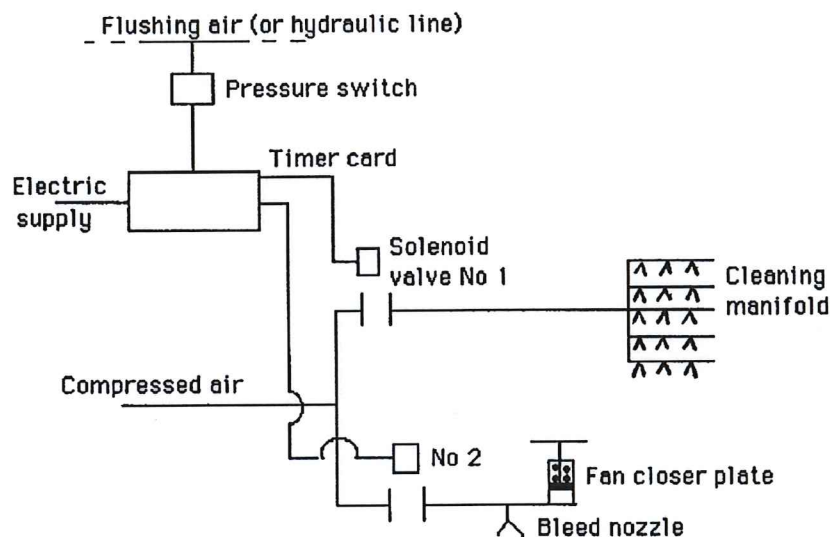
B: The automatic cleaning cycle

In the dust collector the heavy chips fall to the bottom, but the fine dust collects on the filter surface. When adding on a new drill rod there is time to clean the filter elements.

In the Ilmeg dust collectors, compressed air is used for cleaning the filters. This method gives the best cleaning results and does not destroy the filter elements with hard mechanical vibration.

The system works as follows:

As the driller stops the rock drill, the flushing air (or the hydraulic pressure) is also shut off. In the air line or the hydraulic line there is an electric pressure switch. As the pressure drops, the switch is closed and an electric signal goes to a small control unit mounted inside the dust collector. This signal starts the cleaning cycle.



Cleaning cycle:

1. Pressure switch sends signal to the timer card when the rock drill is stopped.
2. Timer card activates solenoid valve No 2 and the fan inlet is closed, which means no air passes through the filters.
3. Timer card activates solenoid valve No 1 with a series of pulses. Altogether 10 pulses, 1 sec between them. As an option there is available Timer card with 3 sec. interval between pulses. The air blasts from the inside of the filters clean the filter surface.
4. After the ten pulses, solenoid valve No 2 closes, the spring loaded air cylinder returns.
5. If drilling is started before the cleaning cycle is finished the built in pressure switch terminates the cleaning cycle.



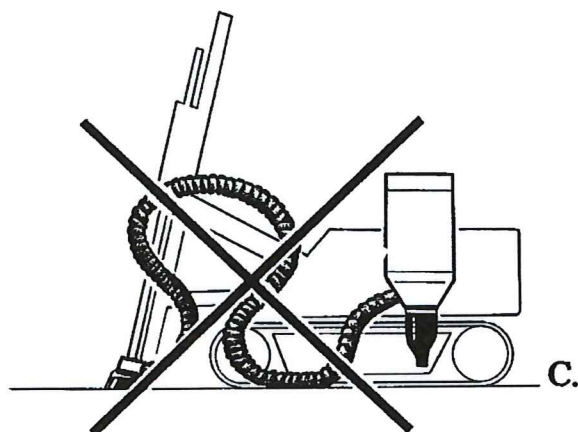
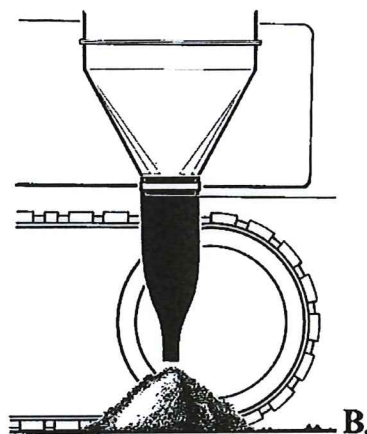
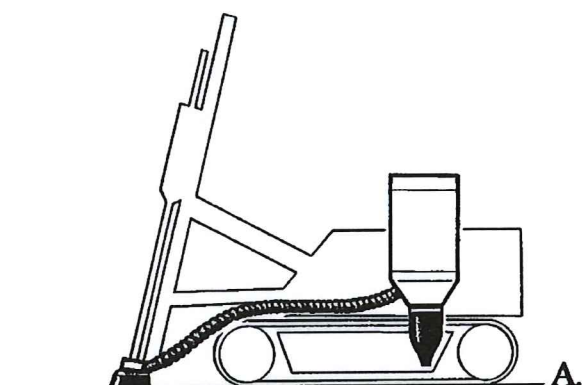
Summing up:

1. The fan capacity and the flow resistance through the dust collector give the volume of air that will pass through the dust collector.
2. This volume must be higher than the volume of the flushing air.
3. The air speed through the suction hose must be high enough (25 m/sec +) to prevent fall-out.
4. The rig hydraulic system must be able to deliver sufficient oil volume (measured in litres/minute) and oil pressure (in Bars) to run the fan motor at the required RPM's.



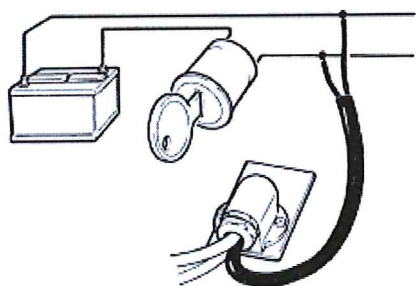
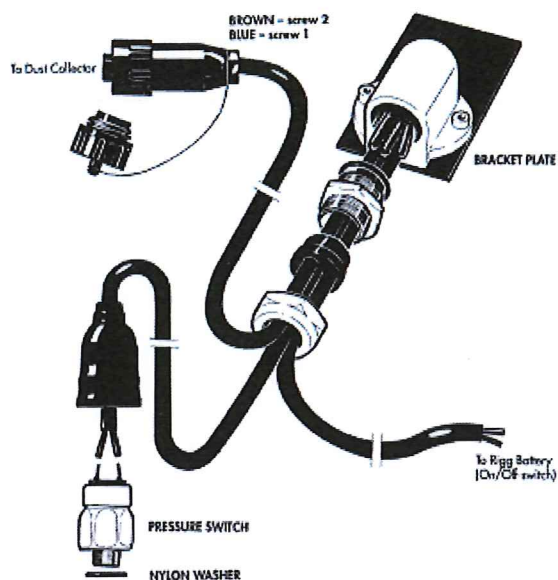
3. How to mount the dust collector on the drill rig

- A. The dust collector should be put in a place where it does not hinder boom and feed movements. It should not make tramping or transport of the drill rig difficult, and it should not hinder the access to other components on the rig that need regular service and maintenance.
- B. The dust collector must be placed high enough above ground, approx 3', so that emptying it, or putting on bags is convenient. The cuttings should not fall on the tracks or other components of the rig.
- C. The suction hose should run as straight as possible between pick up hood and dust collector.
- D. Of course, the bracket holding the dust collector must be able to take the strain of tramping the rig over rough terrain.

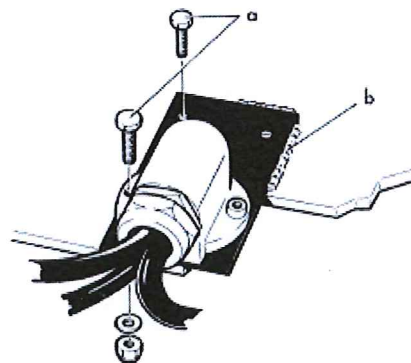




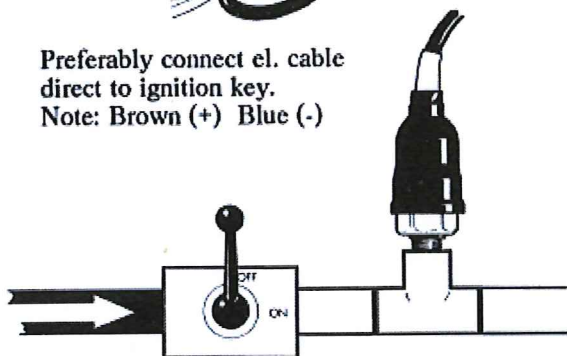
MOUNTING AND CONNECTION OF PRESSURE SWITCH



Preferably connect el. cable
direct to ignition key.
Note: Brown (+) Blue (-)



Bracket to be fitted on suitable
place on rig. Either use supplied
screws (A) or weld (B).

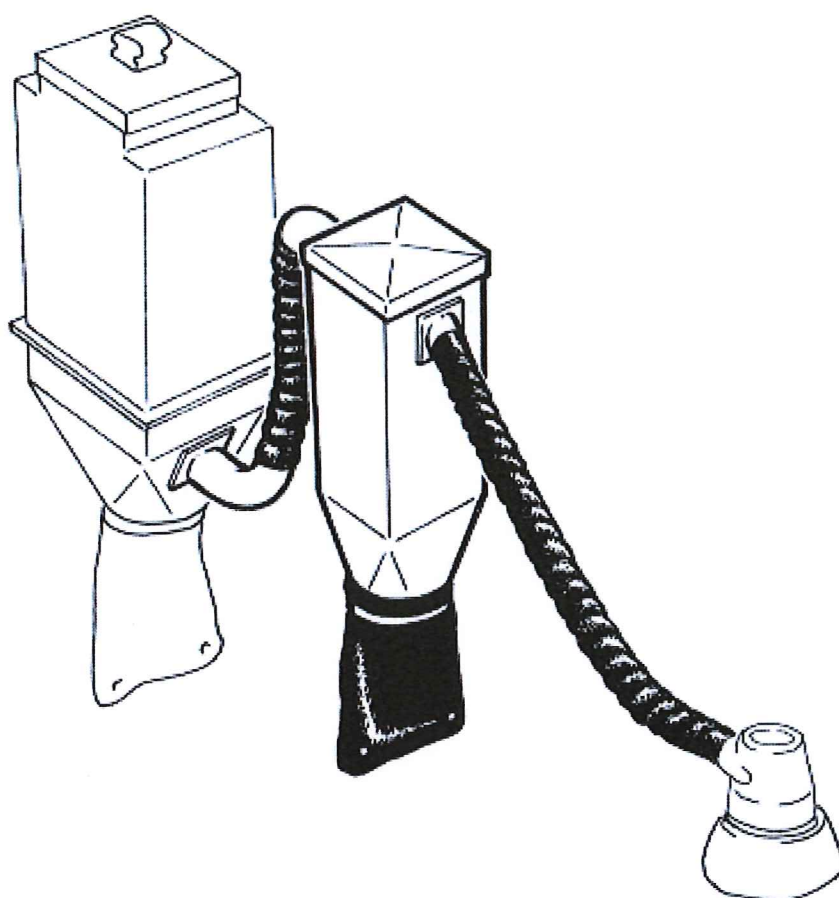


Pressure switch to be
connected to air line
AFTER on/off switch.
Either to hammer air
or flushing air.



4. PRE-SEPARATOR

If drilling mainly coarse dust or regular risk for water in the hole a pre-separator is recommended. Can be mounted either close to pick-up-hood (on boom) or as shown on sketch below.



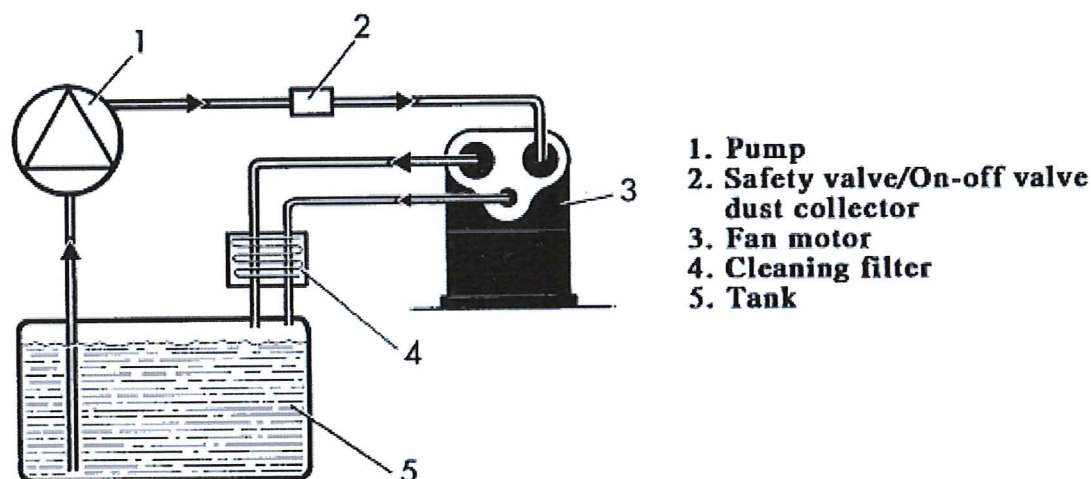
5. The hydraulic connections

As has been pointed out before, the dust collector will not work properly unless the fan works at the proper RPM's. This means the hydraulic system of the rig must be able to deliver the needed oil flow and oil pressure during drilling.

Different drill rigs have different hydraulic systems, and it is necessary to analyze each rig's system to decide where to take the hydraulic power for the fan motor.

For example, if the rig has a separate pump used only for tramming, this pump may also be used to run the fan motor, as the fan does not run while tramming and vice versa. Finally the engine must have the extra horsepower needed to run the fan in addition to other functions like feed and rotation.

Further, it is very important that hoses and valves in the fan motor system are large enough in order to prevent back pressure and overheating of the hydraulic oil.



DIMENSION OF HYDRAULIC HOSES FOR CONNECTION OF FAN MOTOR

Motor	Necessary oil volume for fan RPM 5000	Hose in and out	Leak-oil hose
F11-5	25 l/min (6.6 US GPM)	1/2"	1/4"

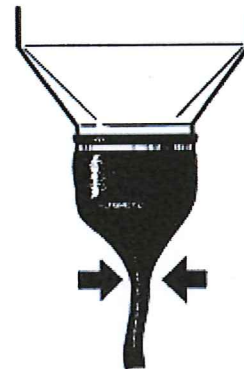


Service and Maintenance

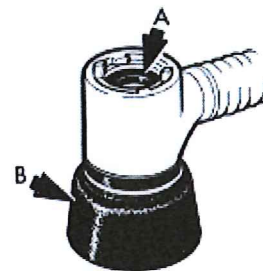
DAILY MAINTENANCE HYDRAULIC DUST COLLECTOR

1. **Start up the dust collector.**
At low temperatures affecting hydraulic oil viscosity, let diesel motor warm up before starting the dust collector.
2. After start-up of the dust collector, first thing that happens is that a free cleaning cycle automatically runs. When compressor produces correct working pressure - allow further one cleaning cycle without drilling.
3. Check that your dust collector sucks properly by looking at the rubber dump valve (or plastic bag) which shall **QUICKLY AND STRONGLY** be sucked up against dust collector bottom.
4. Check that GASKET in pick up hood A) and SKIRT B) are not worn out.
5. Check that suction hose is not damaged or bent.
6. Every day before stopping machine:
Clean filters as described under point 2 above.

3



4





TROUBLE SHOOTING

HYDRAULIC DUST COLLECTOR

If your dust collector performance is inefficient though maintained daily, check the following:

1. Check suction hose for blockages. Clean any water or dirt from hose.
2. Check rubber dump valve (or plastic sack). If worn or otherwise damaged, change to a new one.
3. Check that compressor gives OIL FREE AIR at recommended pressure 7-12 bar (100-172 PSi) for the filter cleaning.

4. Pressure indicating switch

Pressure switch is set on 3,5 bar from factory. Can be adjusted by turning screw (left = lower pressure, right = higher). See sketch...

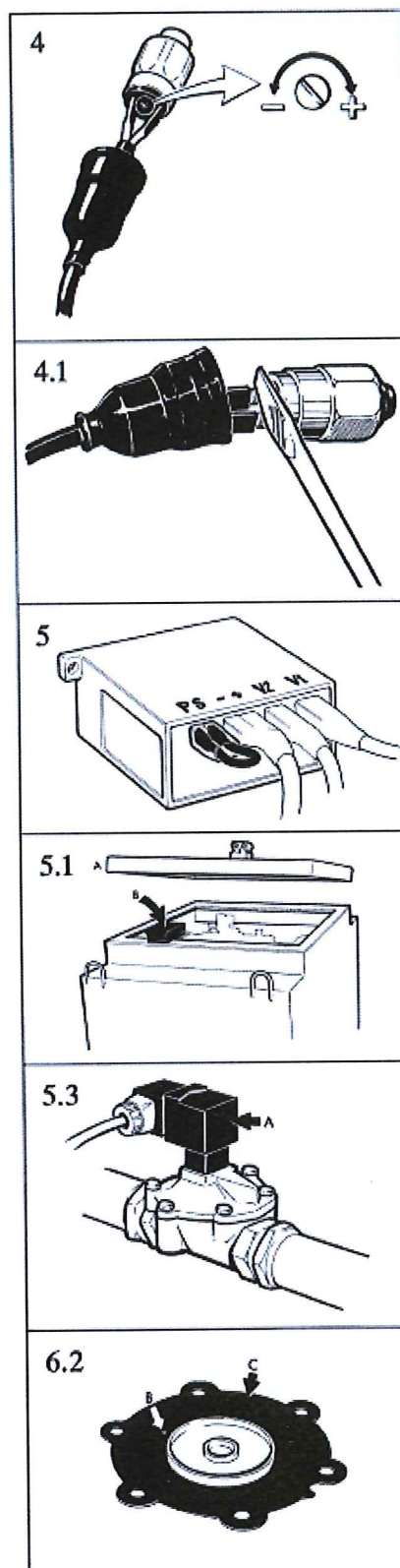
- 4.1 Check function of switch by short circuiting the cables in switch. If cleaning cycle is then started, switch is faulty. Change to a new one.
- 4.2 If cleaning does not start when short circuiting cables, check power supply all the way up to timer card in dust collector.
- 4.3 Check that all cables are unbroken.

5. TIMER CARD

- 5.1 Lift off hydraulic fan top A) to get into the clean air chamber B).
- 5.2 Simulate a cleaning cycle by short circuiting pressure indicating switch as in 4. above.
- 5.3 Listen if solenoid valve indicates 10 cleaning pulses with 1 sec interval. If not, change solenoid A).
- 5.4 Check that cables between timer card and solenoid valves are not damaged.
- 5.5 If no faults in 5.2-5.4 are found, timer card is faulty and has to be replaced!

6. SOLENOID VALVES FOR FILTER CLEANING

- 6.1 If solenoid valves allow air to blow continuously, the diaphragm in valve is broken. Change!
- 6.2 If solenoid valves do not open, i.e. no air is allowed into the cleaning system, check hole B) in diaphragm C). If clogged, blow clean and refit diaphragm into solenoid valve.
If valves still not open, change the solenoid A).





7. AIR CYLINDER

- 7.1 If air cylinder puts the fan closer plate in closed position during drilling, the dust collector does not work.
- Check diaphragm C) in the 1/2" solenoid valve that controls air cylinder movements. If diaphragm is broken, change to a new one. If hole is clogged, blow clean.

- 7.2 Check solenoid by simulating a cleaning cycle as described in 5.2 above.

- 7.3 Check and clean the adjustable relief valves.

NOTE! After refitting adjustable relief valves you must adjust them to achieve correct movements of air cylinder.

How to adjust

Open relief valve by turning 2.5 turns from closed.

- 7.4 Check and clean the bleed filter.

- 7.5 If air cylinder still is not working, change to a new one.

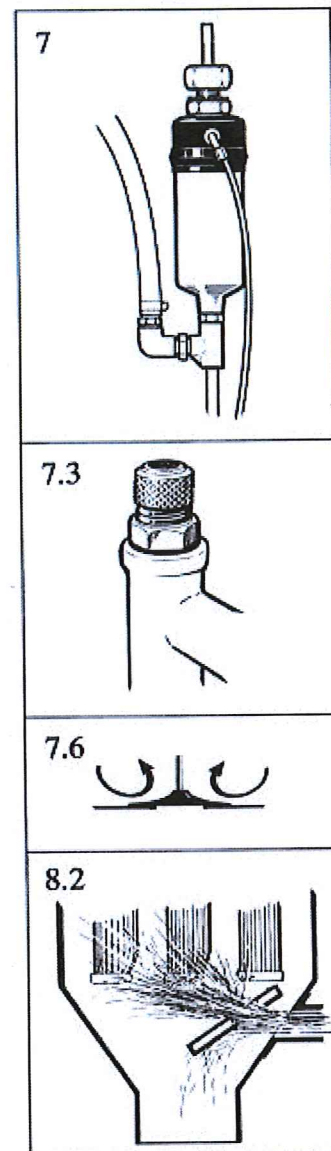
- 7.6 Check fan closer plate. Ensure that assy is secure and seals against bottom plate. This is very important for perfect filter cleaning and full suction capacity.

8. If dust escapes through fan top, one or more filters are broken. **STOP DRILLING IMMEDIATELY** and check which filters are broken. Exchange broken filters for new ones.

IMPORTANT! When opening filter housing from bottom section, follow instructions given in page 19!

Also check the clean air chamber and clean away any dust which otherwise can fall down inside the clean filters. If necessary, clean filter housing and bottom section.

- 8.1 Check if filters are clogged. If impossible to clean, change to new filters.
- 8.2 Check wear plate inside dust collector inlet. If plate is worn out, high-speed dust will blow directly into the filters and destroy them in a very short time.

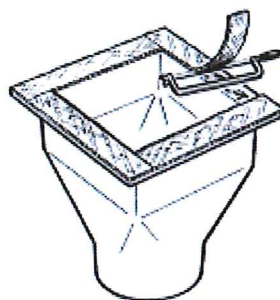




WHEN OPENING FILTER HOUSING FROM BOTTOM, ALWAYS:

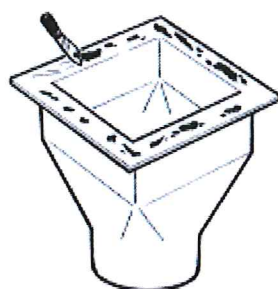
**Remove
damaged
foam rubber
seal**

1



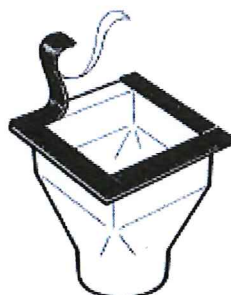
**Clean
carefully**

2



**Fit new
seal**

3

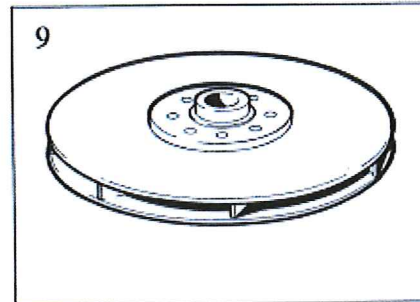


9. FAN

If broken filters have caused dust to blow up through the fan, this will very quickly cause unbalance.

Fan has to be dismantled immediately, cleaned and checked. If still not in balance, fan has to be replaced by a new one.

If the fan is driven while unbalanced, the hydraulic motor bearing will be affected and can lead to replacement of the complete motor unit.



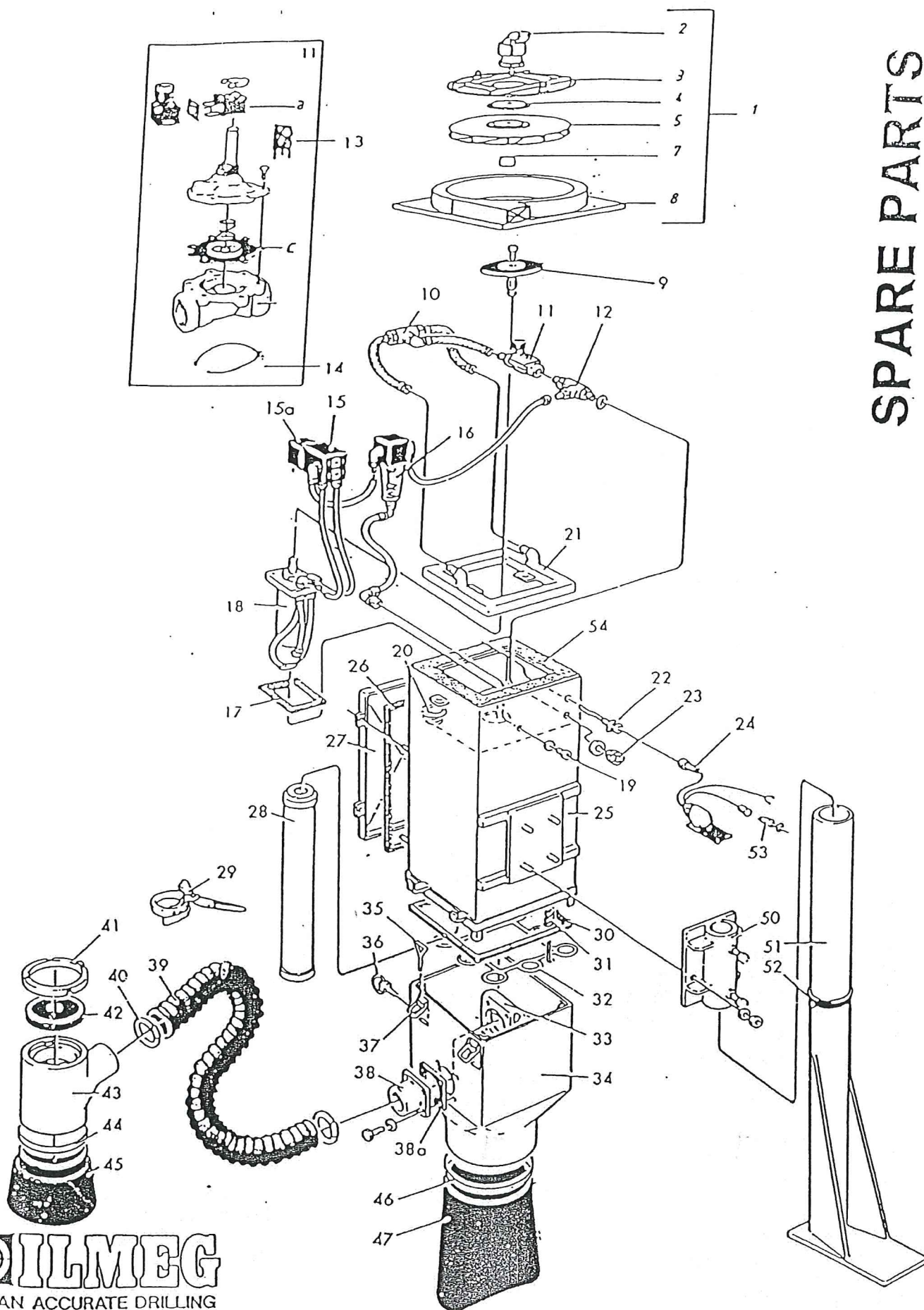
10. HYDRAULIC MOTOR

10.1 Check that the motor gets necessary oil volume at correct working pressure (see diagram page 12 in instruction book).

10.2 Also check that the motor is correctly connected with hydraulic hoses of recommended diameter (see sketch on page 12 instruction book).

If points 10.1 and 10.2 are fulfilled and the fan still is not running at 5000 rpm, there is probably an internal leakage in the motor. The motor should then be returned to your nearest Ilmeg distributor or Volvo representative for repair or replacement.

SPARE PARTS



OILMEG

CLEAN ACCURATE DRILLING

TEL. 140 455 00 00 70

SPARE PARTS LIST**ECON 900 H**

Pos	Description	Part no	Notes
1	Hydraulic fan top assy.	399 S22120	F11-5/HCB10
2	Hydraulic motor F11-5	399 S40050	
3	Fan housing top	399 S90200	
4	Load bearing plate (OBSOLETE)	399 S54800	
5	Fan	399 22100	
7	Fan locking bushing	399 43000	
8	Fan housing plate	399 S88150	
9	Fan closer plate assy.	399 88550	
10	Housing assy.	399 S54011	
11	Solenoid valve assy.	399 S54045	24V DC
	Solenoid valve assy.	399 S54040	12V DC
11a	Solenoid	399 53790	24V DC
	Solenoid	399 53490	12V DC
11c	Diaphragm	399 54400	
12	T-coupling	399 S84510	
13	Timer card	399 00005	
14	Timer card cable set	399 00126	
15	Valve assy.	399 S88353	24V DC (incl. 15a)
	Valve assy.	399 S88352	12V DC (incl. 15a)
15a	Solenoid	399 53790	24V DC
	Solenoid	399 53490	12V DC
16	Water separator	399 S14879	Incl. hoses
17	Gasket for bracket plate	399 68840	
18	Double acting cylinder	399 S09100	
19	Draining nipple assy.	399 S89430	
20	Filter thread incl. pin	399 15470	
21	Cleaning manifold	399 S10101	
22	El. coupling, male	399 S09301	
23	Claw coupling	399 80150	
24	El. cable assy.	399 S71280	Give length
25	Filter housing	399 S16455	
26	Sealing	399 11750	
27	Inspection door	399 S51300	
28	Filter 900 mm.	399 15220	6 pcs
29	Filter tool	399 15500	
30	Seal	399 S69004	
31	Spring	399 18100	
32	Filter spacer grid	399 S18340	
33	Wear plate	399 S82150	
34	Bottom housing section	399 S46200	
35	Locking pin	399 86200	
36	Safety pin	399 53400	
37	Excenter lock 703 RL	399 14800	
38	Inlet 3"	399 S4080	
38a	Gasket	399 S69000	
39	Suction hose	399 83640	
40	Hose clamp	399 73950	
41	Gasket lock ring	399 53000	
42	Pick-up-hood gasket	399 70100	
43	Pick-up-hood housing	399 S0040	
44	Skirt clamp	399 79100	
45	Rubber skirt	399 07100	
46	Dump valve clamp	399 79300	
47	Rubber dump valve	399 S26000	
50	Bracket plate	399 S8130	
51	Mounting pole	399 S8101	
52	Swivel ring	399 S8161	
53	Pressure switch	399 S86800	
54	Sealing	399 12501	

ILMEG Products AB
SE-611 45 Nyköping SWEDEN
Tel. + 46 155 22 02 70
Fax + 46 155 22 02 77
web. www.ilmeg.se
E-mail info@ilmeg.se

VERY IMPORTANT
Serial number should be
given when ordering.