

OPERATION & MAINTENANCE MANUAL

ALBJERG PNEUMATIC TRANSPORT SYSTEM



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1. Safety information

These information sheets with warnings, are an addition to the operation manual and must be respected at all times, for safety reasons.

General

The machines are produced by the regulations described in the attached *CE – Declaration of conformity*.

It is possible for risk to occur, if operation of the device is handled by not trained personal or when regulations are not being followed. Hereby danger can occur for the personal, the machines and the value and function of those.

Any personal working with setup of the machines, operation, maintenance or repairing, must have read and understood the *Operating & Maintenance Manual* and the safety regulations in particular.

The machines should only be operated by educated and authorized personal.

When working on the machines – such as repair, oil change, maintenance, etc., the machines must be at a stand-still and fuses must be removed.

Transport by crane use must be by certified crane equipment and be performed by personal with special training.

Operation personal risk

- Any line of work which will reduce the safety of the machines must be avoided at all times.
- Operating personal is obligated, immediately to inform if sudden changes occur, which will reduce the safety of the machines.
- Operation personal must be informed about the use of work clothes, safety goggles, earplugs, etc.
- Safety devices – such as safety vents, protection of clutches, protection of belts, switches and switch devices are not to be de-mounted or made dysfunctional at any time.
- Electrical installations and other systems should only be done by authorized personal.
- By machine control work, earplugs must be used - especially when opening mufflers.
- Blower hoses must not be touched when operating - the temperature can exceed 70° Celsius (160° Fahrenheit).

- Do not de-mount blower hoses, before they are relieved and cleaned with neutral gas.
- Oil hoses for greasing or steering must never be opened under pressure. Do not tighten union pieces under pressure. This could lead to damage from leaking oil.
- Particular caution should be taken with working on or near diesel- or petrol driven engines – there is risk of poison from exhaust gasses. The room must be proper ventilated.
- Cleansing work with spray or cleansing materials must be in accordance with regulations, described by product manufacture.
- Converting or alteration of machine done by user must be avoided by safety reasons. If the manufacture of the machine notes an unauthorized alteration, no warranty will be provided.

Spare parts

It must be clearly noted, that unoriginal parts and accessories, which are not delivered by this company, are not tested and released by this company. Incorporation and use of these products can influence the properties and quality of the system. If damages occur, due to the use of unoriginal parts and accessories, the manufacture of the machine cannot be held responsible.

1.1. Warning signs



Beware of rotating blades:

DK:(Pas på roterende blade)

Danger! Risk of cutting or pinching of limbs.

Limbs must never be put into a rotary valve in rotation or when the system is turned on. The power must always be disconnected.



Earplugs ordered:

Risk of hearing damage. Earplugs must be used for work near this sign.



Read the instruction manual:

DK:(Læs instruktionsbog)

This area is a danger zone – read the instruction manual to identify the danger.

2. Operation manual for Albjerg Pneumatic Transport System

2.1. Start-up

The truck engine is turned on and the PTO connected. **Important:** The PTO should be connected when the truck engine is in idle and the clutch is released slowly. This is very important, because the blower rpm runs in double speed of the truck engine.

When the clutch is released completely, slowly turn up to loading speed - see document: **QA-11-AFL-ENG**.

2.2. Loading

The relief valve on the blower is set for loading (closed).

After system start-up, place the suction pipe in the material and open the secondary air on the pipe completely: loosen the handle and turn it, so that all holes are fully open.

During the loading period, secondary air can be adjusted by closing the holes a little. If uneven suction is detected and the hose moves uneasily, open the secondary air again. The system capacity is at its high, right before the hose starts to move.

During system load, the engine rpm should be controlled and regulated if necessary.

At loading start it can be necessary to keep the secondary air fully open to fill up the truck/container in the front. This is in particular relevant in transport of moist and heavy material.

2.2.1. Switch valve

At the loading pipe, a switch valve is placed to change loading direction from the front to the back of the container. The valve can be operated from the ground by a string. By pulling the string, load will shift to the back.

When the valve is positioned for loading in the back, it can also be used for loading of seed.

2.2.2. Automatic cleaning system

The system is designed with an automatic cleaning system, which is placed in the filter box cover. The system is electric driven and it is only necessary to connect the electrical cable and air conduction.

For more information: See **6. Electrical cleaning system**

2.3. Unloading

The relief valve on the blower is set for unloading (open), by loosening the stop (1) and the filter box valve handle turned to open (2). **NOTE! The relief valve must be open before loosening the filter box handle is turned. If closed, the vacuum in the filter box will result in a heavy blow from the handle.**

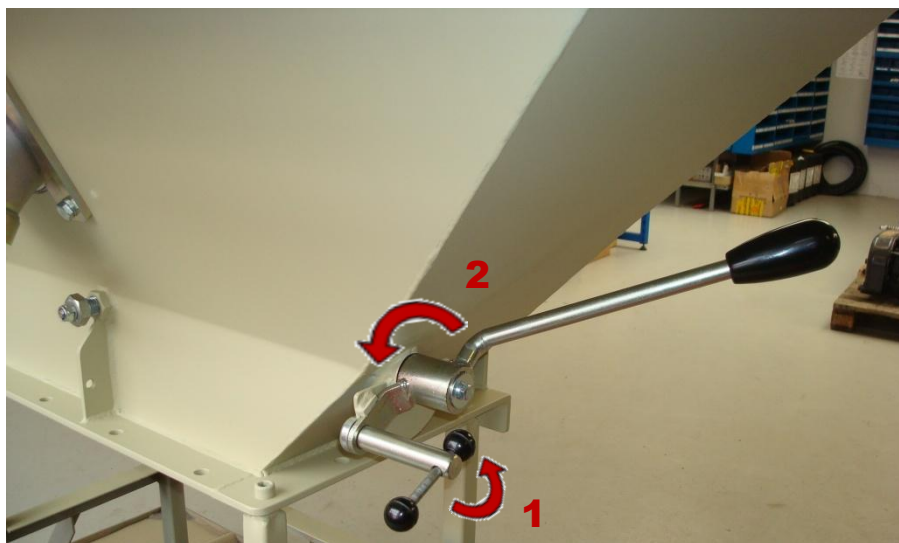
Mount the unloading hose on the rotary valve outlet pipe and connect it to the silo inlet.

Start up the system as described in **2.1 Start-up**. The engine rpm must be adjusted for unloading speed – see document: **QA-11-AFL-ENG**.

Tip up the truck body a bit and open the filter box valve slowly, by using the handle on the side of the box (2). Open the valve until the manometer reaches 0,4 – 0,5 bar. This is the optimal pressure for a stabile unload.

When the pressure drops, close the valve so the outlet doesn't fill up. Tip up the truck body a little more and open the valve until the pressure is at 0,4 – 0,5 bar.

If the valve is opened too much during the unloading, there is risk of blocking the silo pipe. If this happens, the safety valve will open and the system should be stopped immediately and the hoses separated and cleaned. When cleaned, start unloading again after connecting the hoses.



3. Holmes Blower RBTM 610 / 613

3.1. Precaution

To make sure that the blower runs unproblematic, the following bullets should be respected:

3.1.1. Bearings

Greasing of bearings at entry side and gear side, see document: *Appendix II: Holmes Blower*.

Greasing through oiler in bracket mounted between mufflers – see **10.3**.

By greasing the bearings according to specifications, the life cycle of the bearings is increased. Be attentive of overheat at bearings.

3.1.2. Tightening of belts

The belts are adjusted correctly when they can be pushed down 1 cm mid between the two pulleys. It is important that the belts are not tightened excessively. This will increase bearing pressure and decrease life cycle.

3.1.3. Over load

All safety valves must be functioning and adjusted correctly to prevent over load of the blower. If the blower is exposed to overload, the bearing pressure is increased and the gear wheels tear. This can lead to decentralizing of the blower cobs.

3.1.4. Cooling

It is important to cool down the blower after heavy load. To do this, run air through the blower unloaded. It is also important to keep the blower clean, to ensure that the blower can release the heat.

3.1.5. Filter system

Filter inserts and the filter system should be checked regular for leaks. Leaks will cause material to be transported through the blower, and the blower will suffer unregulated tear.

Note attentively the valve on the side of the truck. If this valve is placed close to the mudguards, foreign material, such as rocks, lying on these can be sucked into the

blower and cause a jam of the cobs. This can lead to damage on the bearings and decentralizing of the blower cobs.

3.2. Specifications

- Working temperature at max load: 80 – 100 °C
- Maximum pressure aloud: 0,7 bar
- Maximum vacuum aloud: 0,5 bar
- Minimum rpm on blower: 1000 rpm
- Maximum rpm on blower: 2400 rpm

3.3. Maintenance

- The blower has been run-in by the factory and is delivered with oil.
- First oil change after 50 working hours.
- After that, change oil for every 500 working hours and minimum 2 times a year.

3.4. Service & inspection

3.4.1. Bearings

- Grease bearings at drive shaft once a month with bearing grease.

3.5. Oil

- **Oil type on blower: Texaco: *Geartex S5 SAE 75W/90***

3.5.1. Oil level

- Check oil level every day at dipstick or oil level glass. Check the oil when the truck is placed on a plane surface.
- Oil level should be between minimum and maximum on the oil dipstick or centre level in the oil level glass.
- The blower is at stand still during inspection!

3.5.2. Oil change

- Drain the oil when the blower is hot, through tapping hole - see section 10.1.
- The blower is filled with oil – see section 3.5.
- Quantity of oil: approx. 1,0 litres. Do not over fill the blower!
- Filling of oil through oil plug – see section 10.2.
- Oil plug is removed and oil is filled until running out of level hole. Check oil level on dipstick – see section 10.2, 10.3.

4. Rotary valve

4.1. Safety precautions

NEVER PLACE A BODY PART INTO AN OPERATING ROTARY VALVE!!!

4.2. Operation of rotary valve

The rotary valve must operate at approximately 45 – 55 rpm. The speed of the valve is adjusted at the flow-valve, placed by the blower. In the same valve is an over load locker to adjust the maximum pressure on the hydraulic system.

The rotary valve is rotating towards the truck floor at normal operation – see the direction mark on the end cover. The handle on the reversing switch face the truck floor. If the rotary valve gets stuck, turn the rotating direction on the handle away from the floor. When the rotary valve rotates without problems, turn the handle back in position. The reversing switch is placed at the oil engine for the rotary valve.

4.3. Lubrication

- Bearings in the rotary valve are maintenance-free and do not need lubrication.
- Movable parts by the filter box valve needs lubrication regularly through grease nipple.
- When transporting inorganic fertilizer ore similar materials, lubricate regular at grease nipple placed in the rotary valve end cover.

4.4. Maintenance

- The hydraulic oil is changed after the first 50 working hours. After that, for every 500 working hours – but at least twice a year.
- Check oil level regular, through oil level glass – see section 10.5
- If the oil motor runs uneven, it may be caused by too little oil in the container (air in the system) or a worn oil motor / oil pump.
- Change the hydraulic filter for every 400 working hours.
- **Oil type: EP46**

4.5. Oil motor for rotary valve

Specifications:

Type: OMR. 315

Max. Pressure: 120 bar

5. Filter box and lit

5.1. Filter bags

Check the filter bags at least twice a month. If a bag breaks, it must be changed immediately. The bags should be changed or chemical cleaned every year.

5.2. Gasket

Check the gasket between the filter box and the lit simultaneously with the bags. Check broken or worn gaskets. Keep gasket surfaces clean of dirt, grain and other. It will cause a leak in the system and the capacity is reduced.

5.3. Lubrication

The internal movable parts do not need lubrication.

The following external parts needs lubrication: the clamp bolt for valve handle and shaft, lit hinges, etc. These should be lubricated often, with a little bit of oil.

6. Electronic cleaning system

6.1. Operation

By electric control of the cleaning system, the filter bags are cleaned with fixed intervals, independent of the speed of the rotary valve. The system cleans with an interval of appr. 12 seconds. An interval lasts about 0,2 seconds and cleans two filter bags at a time. The intervals are fixed from the factory.

The air used for cleaning the filter bags, comes from the trucks braking system.

If the capacity falls, it indicates, that the cleaning system cannot keep the filter clean. This can be a result of transportation of high-dusted materials. To correct this, remove the nozzle from the material. Turn the relief valve on the blower for unloading (open) and let the system run for 2-3 minutes, to let the filters clean.

6.2. Maintenance

The electric cleaning system is maintenance free. To check the power supply, look into the filter box cover. The power supply is ok, if there is light in the control lamp on the control box. The pressure valve is limited to 6,5 bars from the factory.

7. Cardan shaft

7.1. Maintenance


- Grease the cardan shaft for every 20 working hours, and at least 2 times pr. month.
- Check the bearings and cardan joint. These should not be slacking. If they are slacking, they must be replaced.
- When greasing, grease should appear at all the needle bearings.


8. Other

8.1. Maintenance

- Safety valves and suction valves are regularly checked and lubricated.
- Lubricate locking screws on hoses and nozzle regular.

9. Service- and maintenance chart

 <p>ALBJERG'S MASKINTEC www.maskintec.dk</p>	Service chart for Pneumaticc transport system <i>Suge - Blæseanlæg</i>	By: PA
		Date: 01-07-2011
		Rev. 01
Service chart	Action	Note
Console with gear	Change the oil on gear and blower Clean and lubricate safety valves	
Console with belt drive	Blower oil change and lubricate Check v-belts and v-belt discs Change v-belts if necessary Clean and lubricate safety valves	
Muffler	Check mufflers	
Rotary valve hydraulic system	Change hydraulic oil Change hydraulic filter	
Cardan	Check slack at needle bearings	
Cardan cross, by needle bearings	Check grease appearance Lubrication	
Rotary valve, Filter box	Check rotary valve housing, end covers and wings Change vulkollan wings if necessary Change bearings and seals	
Rotary valve, Trailer	Check rotary valve housing, end covers and wings Change vulkollan wings if necessary Change bearings and seals	
Filter box	Check gaskets Check inlet Check pressure- and vacuum gauges	
Filter bags	Check the filter bags Change if broken or worn	
Hoses	Check vacuum- and pressure hoses Check hydraulic hoses	
Filter box valve	Check the filter box valve Change valve or gasket if necessary	
Filter box cover	Check control box and shot valves	
Loading pipe	Check the loading pipe	

		Maintenance chart for Pneumatic Transport System <i>Suge - Blæscanlæg</i>							By: PA
									Date: 01-07-2011
									Rev. 01
Service chart	Action	Description	Check					Other	
			Dayly	Regular	3 months	6 months	12 months		
Oil level on blower, gear wheel side	Control		x						
Blower, gear wheel side	Oil change				x			400 hours	
Oil stick / oil level glass, blower, gear wheel side	Control							After filling	
Oil level on blower, gear box	Control		x						
Blower, gear box	Oil change				x			400 hours	
Oil stick / oil level glass, blower, gear box	Control							After filling	
Kardan joint, at needle bearings	Control slack							20 hours	
Cardan cross, at needle bearings	Grease, Control appearance of grease						x	20 hours	
Rotary valve	Lubrication							20 hours	
Hydraulic pump, rotary valve	Kontrol af oliestand, 20mm luft nødvendigt, mål fra top							20 hours	
Hydraulic pump, rotary valve	Oil change							400 hours	
Hydraulic filter	Replace							400 hours	

10. Service and maintenance instructions

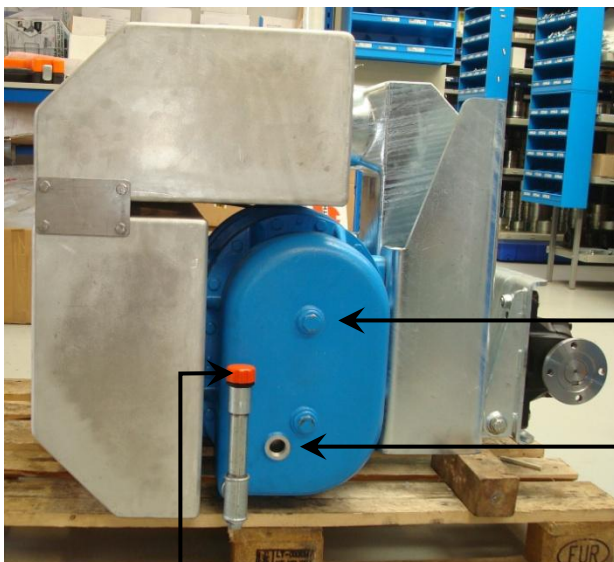
10.1. Tapping oil of the blower



Tap the oil through drain plug.

Loosen the drain plug with wrench

10.2. Filling of oil



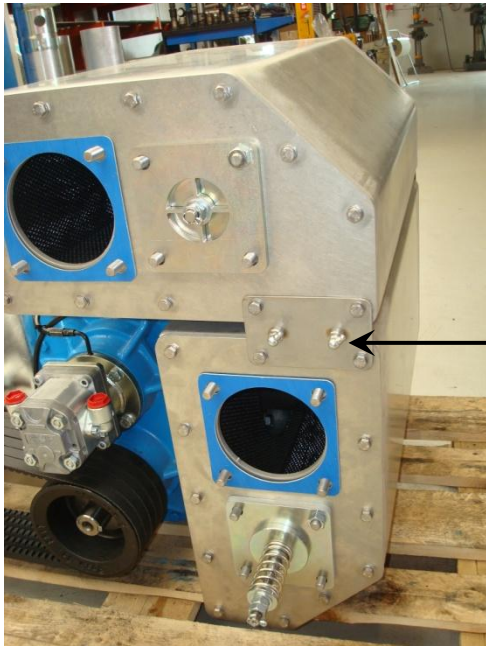
Fill oil here

Olie stick

Remove the oil level plug, before filling oil on the blower.

When oil starts to run out of the oil level hole, the oil level is perfect.

10.3. Greasing the blower



Grease the blower through grease nipples, placed on the left side of the mufflers, seen from the front.

10.4. Greasing the bearings on the countershaft



Grease the bearings on the countershaft through grease nipples on the right side of the mufflers, seen from the front.

10.5. Oil level – hydraulic oil



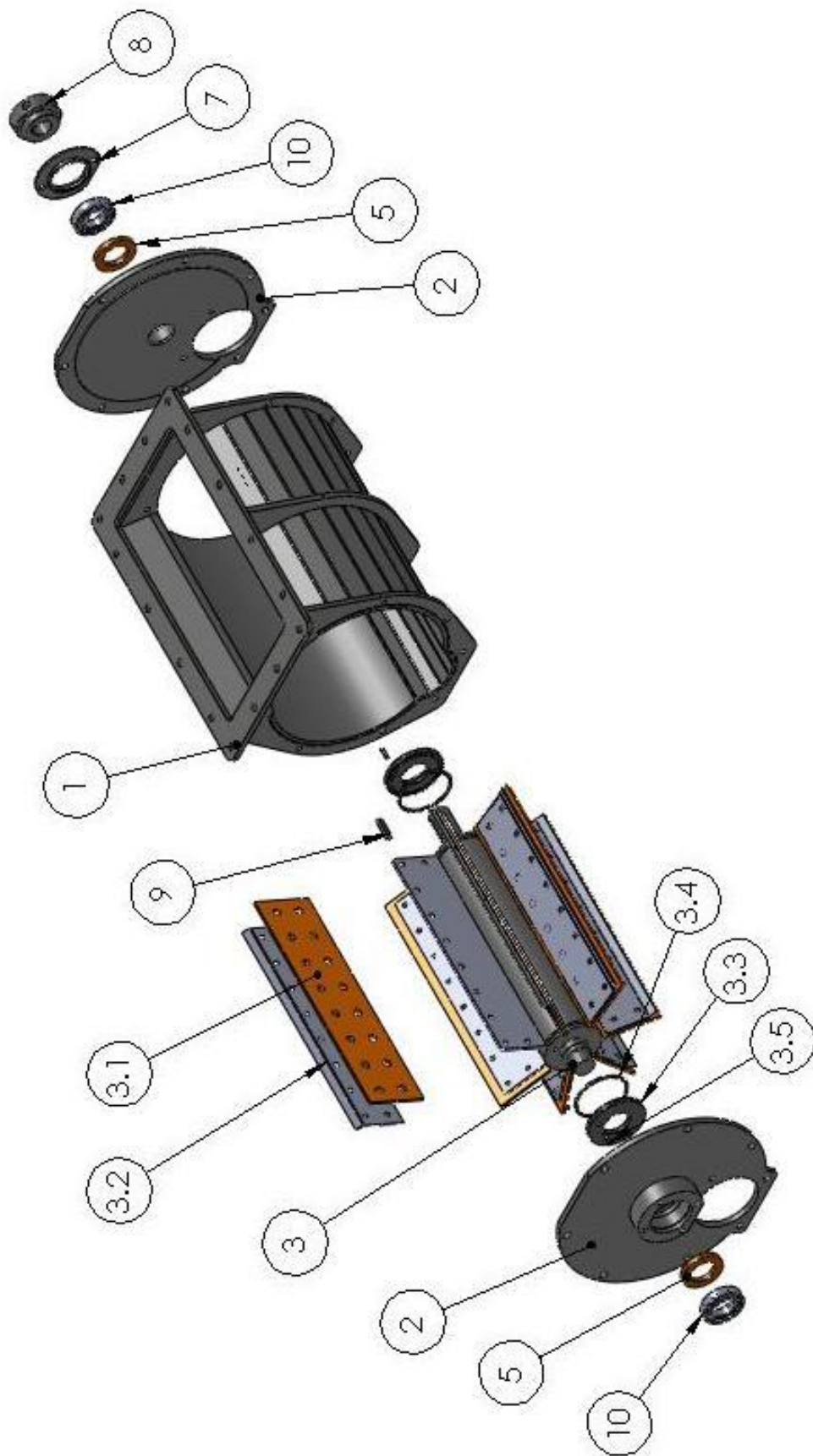
Oil level glass, for hydraulic oil.

Check oil level acc. to point **4.4 Maintenance**

11. Reservedele / Spare parts

11.1. Rotary valve GB400 / GB340 / GB600

Pos. no.	Part no.	Description	Qty.
1	270024	Housing GB400 (4")	1
	270019	Housing GB340 (5")	
	270032	Housing GB600 (6")	
2	270025	End cover GB400 (4")	2
	270018	End cover GB340 (5")	
	270033	End cover GB600 (6")	
3	270016	Rotor GB400	1
	270017	Rotor GB340	
	270017	Rotor GB600	
3.1	270000	Vulkollan wing GB400 (4")	7
	270001	Vulkollan wing GB340 (5")	
	270001	Vulkollan wing GB600 (5")	
3.2	270014	Protection bar	7
3.3	270057	Hardened disc	2
3.4	270002	Rubber ring for disc	2
3.5	280006	Pin	2
4	280001	Bearing	2
5	270013	Sealing	2
7	270012	End plate for driver	1
7.1	280008	Sealing for end plate	
8	270011	Driver	1
		Feather key	
	270007	Scraper, complete	
	270008	Vulkollan for scraper	
	240005	Return valve	
	240003	Oil pump	



11.2. Filter box and filter box cover

Filter box 5" system

Pos. No.	Part no.	Description	Qty.
3	210249	Filter box inlet	1
4	280392	Gasket to rotary valve	1
5.1	210020	Pressure gauge	1
5.2	210021	Vacuum gauge	1
7	210251	Filter box cover	1
7.1	270620	Distribution jet	6
7.2	280250	Shot valves	6
7.3	270610	Scavenge pipe	1
7.4	210004	Cleaner control box	1
	-	Filter bag (different sizes)	12
	210014	Filter box valve	1
	210009	Gasket for filter box valve	1
	210012	Footboard (optional)	1

