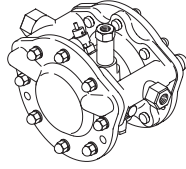


Instruction for  
**Double diaphragm pumps**  
 for pumping and spraying  
 of liquids under low-pressure.



**Ecco Flow SS10**  
**Ecco Flow AL10**

**ECCO**  
 ECCO FINISHING

EIB 12/10-07

**WARNING AND SAFETY INSTRUCTIONS**

**EQUIPMENT IS FOR PROFESSIONAL USE ONLY**

**WARNING**



**Low pressure device for professional use only.**

Read and understand instruction manual before use and maintenance. Observe on warnings.



Do not use spray materials containing reactive solvents with equipment containing aluminum, galvanized or zinc coated wetted parts. e.g. Dichloromethane and ethylene chloride can chemically react with aluminum and galvanized or zinc coated parts and cause explosion hazard.

**WARNING**



**Do not process flammable, explosive, toxic or otherwise hazardous materials without first performing an appropriate hazard analysis.**

Ecco Finishing cannot be an expert in the chemical and biological properties of the infinite number of materials that could be processed in this machine. As sold by Ecco Finishing, this machine is not designed to safely process hazardous materials unless additional precautions are not taken.

Before processing any material that are(or can react to become) flammable, explosive, toxic or otherwise hazardous, the user must perform a thorough hazard analysis and risk assessment of the entire process and determine the best way to deal with the hazard(s) identified, including contingency plans for dealing with processing errors and object conditions.



**It is compulsory to**

- **know the product and possible hazards.**
- **store the product to be used in the appropriate areas.**
- **keep the product used during dispensing in a suitable container.**
- **Dispose the product according to the regulation of hazardous products in force in the country where the product is used.**
- **Were protective equipment designed for that use.**
- **were glasses, gloves, shoes clothes and mask for breath.**

**WARNING**



**SKIN INJECTION HAZARD.** Protect hands and body from pressure fluids. Relieve pressure before disconnecting hydraulic or other lines and tighten all connections before applying pressure. In case of accidental skin injection, seek immediate "Surgical Treatment". Failure to follow this warning can result in amputation or serious injury.



**IF YOU ARE INJECTED, SEE A PHYSICIAN IMMEDIATELY. DO NOT TREAT AS A SIMPLE CUT!**

**NOTE TO PHYSICIAN:**

Injection into the skin is a serious, traumatic injury. It is important to treat the injury surgically as soon as possible. Do not delay treatment to research toxicity. Toxicity is concerned with some toxic coatings injected directly in to the bloodstream. Consultation with a plastic surgeon or a reconstructive hand surgeon may be advised.



- **NEVER** attempt to force the flow of fluid backward through the gun with your finger, hand or hand-held object against the gun nozzle.



- Before flushing system, always remove air nozzle and adjust fluid pressure to lowest possible setting.



**WARNING:** The paint hose can develop leaks from wear, kinking, abuse etc. A leak is capable of injecting fluid into the skin; therefore the paint hose should be inspected before use.

NEVER attempt to plug a hose with any part of your body, adhesive tape or any other makeshift device. Do not attempt to repair a spray hose. Instead, replace it with a new grounded hose. You must see to it that the following points are followed for hoses, accessories or any other hardware:

- Comply with manufacturer' recommendations.
- Withstand the pressure ranges with correct safety factor.
- Must not show any leaks, kinks, sign of wear and should be factory fitted and pressure tested. An air pressure safety valve forms an integral part of the air motor or air regulator and must not be altered or tampered with.



## **WARNING**



**COMPONENT RUPTURE** The system is capable of producing fluid pressure all components in the system must have a maximum working pressure capacity, not less than the pressure rating of the pump.

**SERVICING** Before servicing, cleaning or removing any part, always shut off power source, carefully release pressure in fluid portions of the system.

## **WARNING**



The flow of material through equipment may create static electricity. All equipment being sprayed must be properly grounded to prevent sparking, which may cause fire or explosion.



Due to static electricity potential generated by the high velocity of fluid through the pump, hose and tip, sparking may occur and the system may be hazardous. This can result in an explosion and/or fire, if every part of the spray equipment is not properly grounded. Be sure that both the object being sprayed and the airless equipment are grounded. This can be done by attaching a static wire to water piping or building structural members known to be earthen. If the hose does not contain a static electricity conductor, a static wire must be attached from the spray gun to the earth.

## **CAUTION**



Before any adjustment, inspection, maintenance, cleaning, removing work always shut off the power source, carefully release pressure in fluid of the system.



**ALWAYS** follow the coating or solvent manufacturer's safety precautions and warnings. Never spray flammable material near open flames, pilot lights or any other source of ignition.



If you experience any static sparking or slight shock while using the equipment, stop spraying immediately. Check the entire system for proper grounding. Do not use the system again until the problem has been corrected. Follow material supplier's instructions carefully and ensure adequate ventilation of working area to prevent health hazards.

## **CAUTION**



### **FLUSHING/CLEANING**

Always flush the unit into a separate metal container with the air nozzle removed and the gun held firmly against the side of container to assure proper grounding and prevent static discharge, which could cause serious bodily injury.

## **CAUTION**



Check the compatibility of the solvent used in the equipment with the materials of wetted parts.

## **APPLICATION**

Diaphragm pumps is for transferring, spraying and coating with paint and other materials or similar applications.

### **MOUNTING**

Diaphragm pumps are to be mounted vertically or horizontally. Mounting surfaces have to be level and weight supporting. Screws and dowels shall be appropriately sized. Maintain prescribed mounting torque. Slightly lubricate threads.

**Do not** use PTFE tape or hemp.

Components not certified by us have to be sized to match the technical specifications of the diaphragm pump.

### **ELECTRICAL GROUNDING**

Grounding of equipment in hazardous areas in mandatory. The connection to earth has to be sturdy and corrosion resistant to hold up the demands during operation. The connection to earth have to be individually connected to the equipment, i. e. the individual grounds, by soldering, welding or through screw connections. Chain groundings are not permitted. During installation, especially when using pipes or tubes, special attention has to be paid not to interrupt the earth connections must be checked by experts.

Portable, electrically conductive accessories and equipment, which can statically charge, also have to be grounded. Generally this is accomplished via a flexible connection, attached by clamp.

Chain connections are not permissible.

### **Flushing the Diaphragm Pump**

We test all diaphragm pumps by transferring a corrosion preventing liquid. Prior to operation, residue of this protective liquid and any other impurities, which may have entered during installation have to be flushed out by using a solvent. The solvents should be compatible with the materials to be pumped -therefore consulting the material supplier is recommended - operation the diaphragm pump/equipment after flushing process, the solvent should be removed from the diaphragm pump as thoroughly as possible. Air suction is used to achieve this. Set inlet air pressure below 0.5 bar

## **OPERATION**

Keep the air regulator or connected to the diaphragm pump closed.

Open up compressed air supply to air regulator.

The diaphragm pump and the system have to totally free of trapped air. Ensure that suction hose is submerged sufficient into the material or that cup is filled with material. Trigger spray gun and open-air regulator and diaphragm pump starts up.

Operate diaphragm pump under material pressure of 1 bar until all air is removed from the system.

Increase material pressure slowly to the maximum level. For a short time operate the diaphragm pump at this level. Point the spraying nozzle into the material container. Now set desired operating pressure.

Diaphragm pump is now ready for operation.

Operation at ambient temperature of approx. 10°C requires addition of an anti-freeze liquid to the compressed air via a dosing device (forced air lubricator).

The empty diaphragm pump may only be operated under supervision for a short period of time with low inlet pressure. Operation in empty condition, i. e. after transference of all material, has to be avoided under any circumstances; it causes damage of important components.

Prior to extended periods of non-operation paint transferring pumps are to be flushed. To avoid hardening of residual paint, the solvent should remain inside the pump over these periods.

Consult with material supplier regarding solvent compatibility.

## MAINTENANCE

To avoid increased wear of control components through impurities in the compressed air, a filter is installed in the compressed air supply connection. If over a period the number of strokes of the pump decreases, the filter cleaning.

For cleaning, simply unscrew the filter and remove. The diaphragms are subject to the continuous pressing action and natural wear from abrasive materials. Periodic safety inspections will avoid diaphragm breaks in highly used pumps. In case of tears in the lid facing PTFE coating of the diaphragm **both** diaphragms should be changed as a precautionary measure.

- If no automatic water release is provided with the compressed air supply, daily condensate drain from air receiver, filter and filter regulator is required.
- When using anti-freeze liquid (operation in approx 10°C) refill after consumption.
- The life of the hose lines is limited due to exposure to atmospheric oxygen, temperatures, light, etc. even when properly maintained. Frequent visual checking and occasional testing are recommended. Hose lines should be replaced every 2 - 3 years as a precautionary measure.

Regularly check diaphragm pump in the course of operation.

Irregularities, such as increased pressure fluctuations, changing noise emissions, irregular running etc. is generally indicative of advanced wear of the diaphragms

Timely exchange of the diaphragm avoids resulting damages.

Always replace both diaphragms.

## REPAIR

Prior to dismantling, safety shut off compressed air supply to the diaphragm pump, depressurize diaphragm pump and disconnect tubes. After dismantling, all parts to be reused have to be thoroughly cleaned. Do not damage sealing surface, therefore never throw or knock the parts, do not use abrasive tools. Renew all dismantled seals. Prior to reassembly lubricate all threads and close tolerant work.

**Note:** Parts have to be replaced when contact or sealing surfaces show clear signs of wear or damage.

## CHANGING DIAPHRAGMS

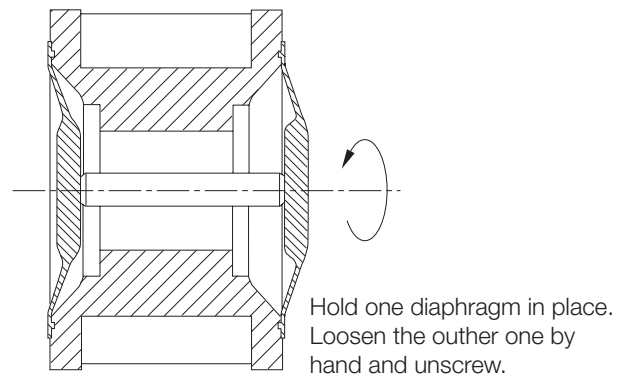


Fig. 1

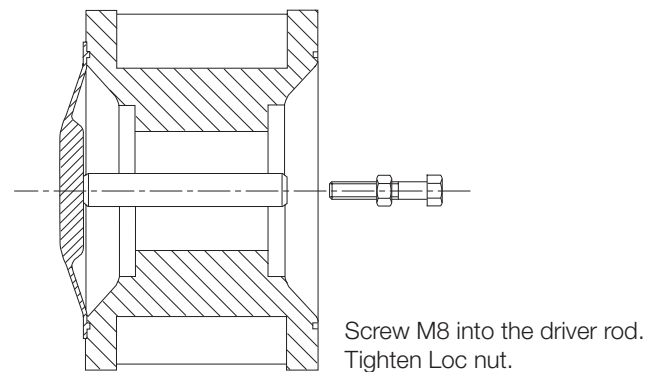
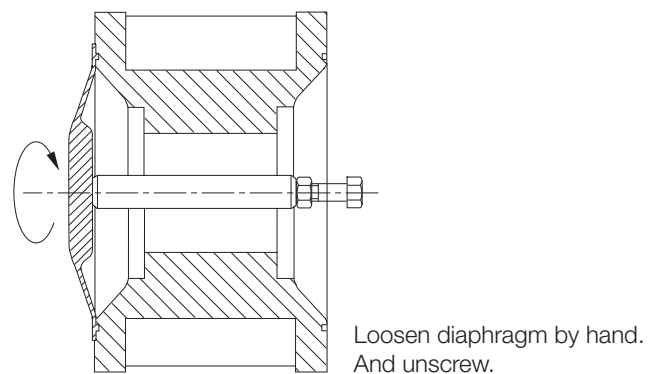


Fig. 2



5243 F58

Fig. 3

Install the new diaphragm in the opposite manner. Do not use tools such as pliers for holding down the diaphragms. Tighten diaphragms slightly by hand.

**Note:** Replacement diaphragms should be stored in a dry, cool, dust free and dark environment, not exceeding 8 months - material aging.



## Replacement of controls (see Fig. 5)

Unscrew relief bolt (21). Lift out flange (23) using screwdriver. Separate slide seat (27) and flange by unscrewing (20) screws. Take out flat slide (28). Remove plugs (17) from housing and push-up driver rod (14).

After exchange of the worn parts, reassembly is done in the opposite manner.

## Changing valve seats (see Fig. 5)

### Delivery seat:

Remove sealing cap (37) and profile support (36). Extract ball guide (32) from housing. Remove ball (33). Remove valve seat (34) with sealing ring (35).

### Suction seat:

Remove valve seat (34) with sealing ring (35). Remove ball (33). Pull ball guide (32) from housing.

For reassembling, put sealing ring into housing, then install valve seat.

Reassemble in opposite manner.

## Changing the driver assembly (8), (29), (30) (see Fig. 5)

Remove diaphragms (see fig 1-3 page 3).  
Remove circlip (29) and (30) sideways from housing.  
Then remove driver rod (8).  
Reassemble in opposite manner.

After completion of repair, reassemble diaphragm pump. Place cover plate on top, line up with openings and tighten screw to bind. Do not tighten yet. Turn diaphragm pump over and place on the cover plate. Insert cover (18) into the guides of cover plate and the diaphragm pump. Opening in cover have to be lined up and arranged in the direction of the diaphragm pump suction connection. Place second cover plate. Tighten screw (19).

## Tightening torque

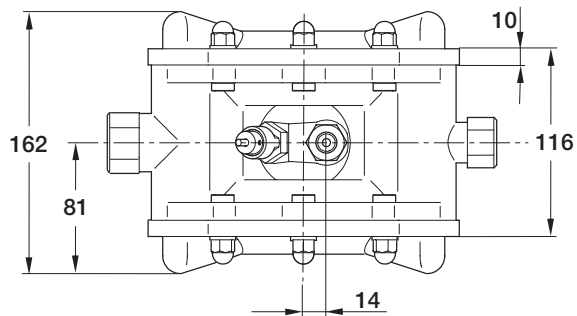
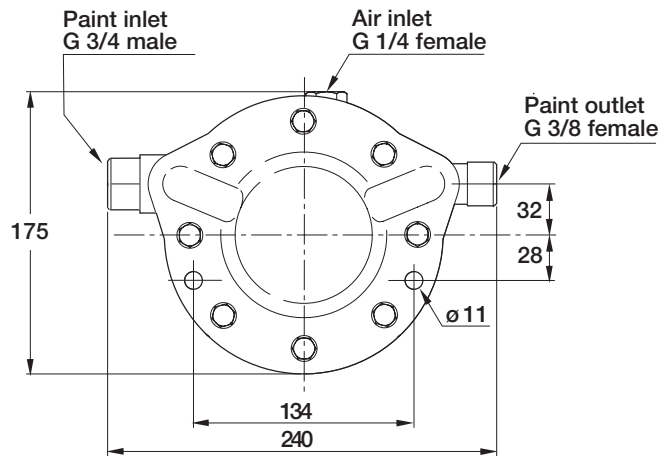
Tightening torque for screw (19) 8 Nm.

Tightening torque for relief bolt (21) 3 Nm.

## Technical specifications

Type.....	1:170
Ratio.....	1:1
Output/cycle.....	170 cc
Recommended transfer.....	17 l/min
Air inlet pressure max. ....	6 bar
Output pressure max. ....	6 bar
Air consumption N l/min max. ....	100

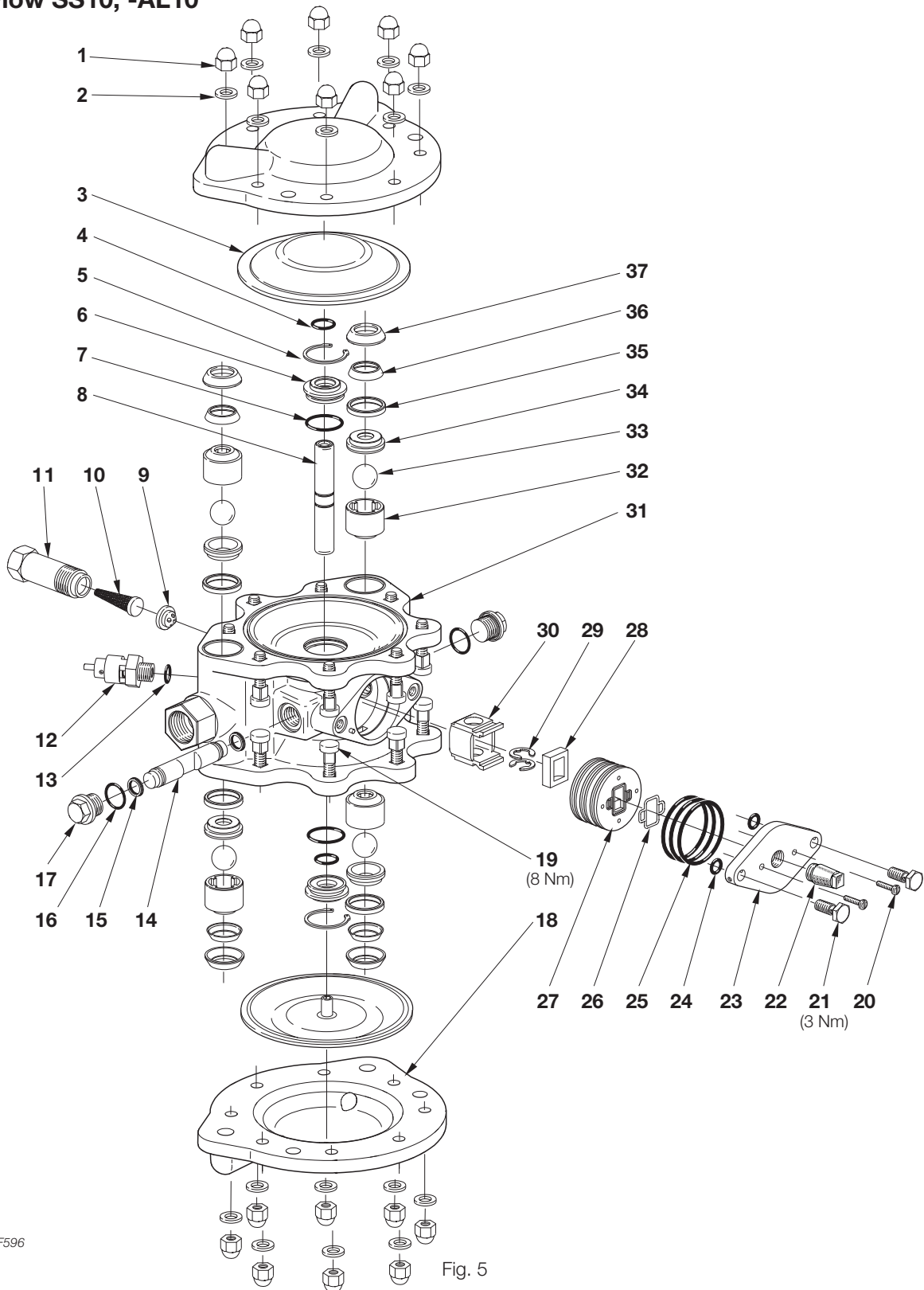
Dimensions in mm



5243 F60-2

Fig. 4

# Ecco Flow SS10, -AL10



5243 F596

Fig. 5

Ref. No.	Description	Ref. No.	Description	Ref No.	Description	Ref No.	Description
1	Dome nut (M18 x 1.25)	11	Insert	21	Reelife bolt	31	Housing assembly
2	Washer (8.4 x 16)	12	Safety valve (G 1/4)	22	Silencer (G 1/4)	32	Ball guide
3	Diaphragm	13	O-ring (11.3 x 2.4 FPM)	23	Oval flange	33	Ball (18)
4	O-ring (14 x 2 NBR)	14	Driver rod	24	O-ring (8 x 2 NBR)	34	Valve seat
5	Internal circlip (B32)	15	U-seal	25	O-ring set	35	Sealing ring
6	Bush	16	O-ring (17 x 1.5 NBR)	26	Sealing ring	36	Profile support
7	O-ring (24 x 1.9 NBR)	17	Plug (G3/8)	27	Slide seat	37	Sealing cap
8	Driver rod	18	Diaphragm plate	28	Flat slide		
9	Inner insert	19	Bolt (M8)	29	Circlip (RS 9 A2)		
10	Filter sleeve	20	Screw (RXS 3.5 x 19 A2)	30	Driver		

## TROUBLE SHOOTING

Component	Problem	Evidence	Possible Causes	Correction
<b>Compressed Air Supply</b>	material pressure drops, pump does not start up	large amount of leakage	defective control panel	replace defective parts
		diameter shrinkage	hose line bent, control panel soiled	check lines, clean control
<b>Diaphragm Pump</b>	irregular running, lifting frequency drops, pump stops	defective flat slide	wear	replace worn parts
		freezing	compressed air too humid, lifting frequencies too high, temperature too low	remove ice, change operation conditions
	constant air outlet from exit	flat slide or slide seat defective	dirt entered	replace defective parts, check filter regulator
	stops during operating	diaphragm breaks	service life exceeded	replace both diaphragms, clean diaphragm pump
	continuous running with closed outlet material hose	suction or pressure valves defective	wear, dirt entered	replace defective parts check filter and suction unit
	does not start up	material hardening in diaphragm pump	not sufficiently flushed prior to long non-operating periods	clean diaphragm pump
<b>Material Suction Device</b>	pump does not start up, pressure fluctuations	filter clogged, max. suction distance exceeded hose or seal defective	dirt in the material, faulty installation of diaphragm	clean filter, observe technical data, replace defective parts
<b>Material Pressure System</b>	pump does not start up, stops during operation	hose bent, spray gun passages plugged	improper handling, dirt in material	check hose line, clean spray gun