



**CUBICON**

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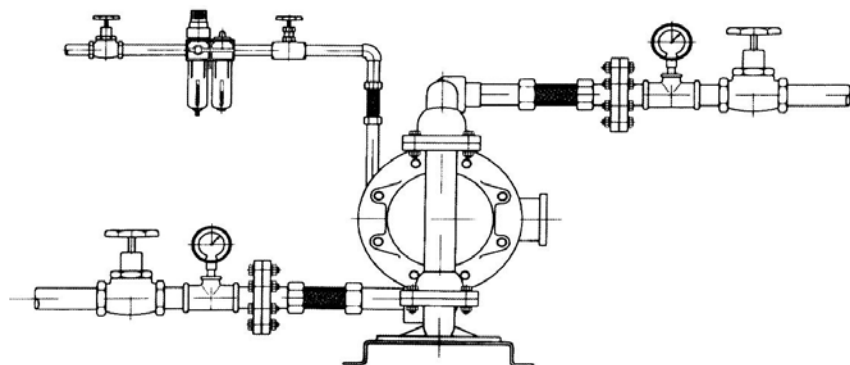
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## **Manual and operating instructions**

# Manual and operating instructions for Air driven diaphragm pumps C - Series

**Caution !!!!**



**at continuous operation  
Do Not Exceed  
air supply pressure  
7 bar !!!**

## 1. Installation

The C pumps come with a footed base for easy mounting in permanent installations. The pumps should be mounted in a vertical position. In permanent installations, the pumps should be attached to plant piping using a flexible coupling on both the intake and the discharge connections to reduce vibration to the pump and piping. A surge suppresser next to the pump may be used.

Suction pipe should be at least equal as the connection or even larger if highly viscous fluid is to be pumped. If suction hose is used, it must be of a non-collapsible reinforced type. Discharge piping should be at least the same as the connection. It is critical, especially on the suction side of the pump, that all fittings and connections are air tight or pumping efficiency will be reduced and priming will be difficult.

The air supply line should be at least the same as the connection. Make certain the supplying line and compressor are capable of supplying the required pressure and volume of air to operate the pump at the desired flow rate. The quality of the compressed air source should be considered. Air that is contaminated with moisture and dirt may result in erratic pump performance and increased maintenance cost as well as frequent process "down time" when the pump fails to operate properly.

### Caution !

**Do not exceed 7 bar air supply pressure !**

## 2. Declaration of conformity

We, EIC-Group GmbH, declare that the air driven diaphragm pumps C Series are constructed in accordance with Directives 89/392/CEE and 91/368 and assume full responsibility for conformity with the standards laid down therein.

Dietzenbach, 14.01.2003

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## 3. Pump operation

The pump is powered by compressed air. Compressed air is directed to the pump air chamber by the main air valve. The compressed air is separated from the fluid by a membrane called a diaphragm. The diaphragm in turn applies pressure on the fluid and forces it out of the pump discharge. While this is occurring, the opposite air chamber is depressurized and exhausted to atmosphere and fluid is drawn into the pump suction. The cycle again repeats, thus creating a constant reciprocating action which maintains flow through the pump. The flow is always in through the bottom suction connection and fluid roughly approximates the air supply pressure supplied to the main air valve.

## 4. Trouble shooting

### The pump will not run, or runs slowly:

1. Examine the air inlet screen for dirt.
2. Check for a sticking air valve. Remove air valve from the pump and flush with solvent to remove dirt.
3. Check the spool and sleeve for nicks and scratches. If the spool is shiny instead of dull black, the spool and sleeve may be worn out and may need to be replaced.
4. Replace gaskets and flat, torn and worn out O-Rings of the pilot shaft and the main shaft

### The pump runs, but little or no material flows:

1. Check for pump cavitation, slow the pump speed down to match the thickness of the material being pumped.
2. Look for sticking ball checks. If the pumped material is compatible with the ball material, the elastomer may swell. Replace the balls and seats with a compatible elastomer.
3. Make sure all the suction line fittings and connections are air tight.

### Air bubbles in pump discharge:

1. Look for ruptured diaphragm.
2. Check for suction leaks in pump manifolds and piping.

### Material comes out of the pump air exhaust:

1. Look for ruptured diaphragm.
2. Check the tightness of the diaphragm plates to the pump shaft.

# Safety warnings



This equipment should only be used by experienced professional mechanics. Observe all safety warnings.  
Read all safety warnings and operating manuals before using or repairing this air operated diaphragm pump.

## 5. General safety

These pumps may generate fluid pressures equal to the air supply pressure. Therefore do not exceed the recommended air supply pressure: plastic pumps 7 bar; Metal pumps 8,5 bar.

Always wear safety glasses when using power tools to repair these pumps.

Always shut off the air supply and disconnect it before performing maintenance or repair on the pump.

Bleed all pressure from discharge and suction lines before disconnecting the manifolds from the pump.

Do not pump incompatible fluids through the pump  
Consult your distributor or the factory if you are not sure of compatibility with the castings and elastomers.

These pumps are designed to operate on compressed air. Other compressed gases have not been tested and may be unsafe to use.

## 6. Equipment misuse hazard

### General safety

Any misuse of the pump could result in splashing or spraying into the eyes or skin, possible serious bodily injury, fire, explosion or property damage.

### Over-pressurization

Never exceed the recommended operating pressure.

### Noise

Wear proper ear protection when working or standing near the pump. It is recommended that an air exhaust muffler is used on the pump at all time.

### Installation hazards

Do not submerge the pump in liquids that are incompatible with the wetted or non-wetted parts of the pump. When submerged, extend the air exhaust with a pipe or hose above the liquid surface.

### Diaphragm failure

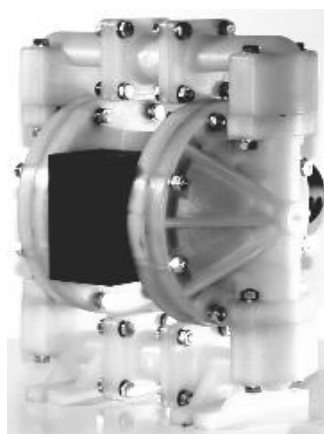
When the diaphragm ruptures, pumping fluid may be expelled from the air exhaust port. Always pipe the air exhaust to a safe location or suitable container.

### Installation

The manifolds and valve housing of the pump are not designed to support any structural weight. The use of flexible piping connections is highly recommended.

### Moving parts hazards

The diaphragm plates on either side of the main shaft move when air is supplied to the pump. Never operate the pump with the liquid chambers removed.



## 7. Fire or explosion hazard

Static electricity can be created by the flow of fluid through the pump. If the pump is not properly grounded, sparking may occur. Sparks can ignite fumes or vapor and cause an explosion. If you experience static sparking or even a slight shock, do not continue to operate the pump until the pump is properly grounded.

### Proper grounding

Pumps, valves, discharge and supply lines as well as tanks must be grounded when handling flammable fluids and when static electricity discharge is a hazard.

1. To ground plastic pumps connect a ground wire to all metallic clamps, air valve body. The ground wire should be connected to a suitable ground location.
2. To ground metallic pumps, connect a ground wire to any accessible point, clamp band or mounting base.

## 8. Sound level ratings, dB(A)

Following table lists the sound level ratings with installed air exhaust mufflers at a distance of 1,0 m, height of 1,6 m.

Pump serie:	Size	Reading
C5	1/2"	71.7 dB(A)
C1	1"	76.5 dB(A)
C15	1 1/2"	76.0 dB(A)
C2	2"	74.3 dB(A)
C3	3"	67.1 dB(A)

## 9. Temperature limitations

Temperature limitations are based on mechanical stress only. Certain chemicals will reduce the maximum safe operating temperatures of air driven diaphragm pumps. Metallic pumps can operate past 100 °C.

The temperature limitations for pumps and elastomers are:

Polypropylene	0 / +80°C
PVDF-Kynar	_ 12 / +107°C
Teflon PFA	_ 29 / +93°C
Neoprene	_ 18 / +93°C
Buna N	_ 12 / +82°C
EPDM-Nordel	_ 51 / +138°C
Viton	_ 40 / +176°C
Teflon	4 / + 105 °C
XL-Santoprene	_ 29 / +149°C
Geolast	_ 29 / +104°C