

# Vacuum Control Valve

FOR USE IN  
MOBILE VACUUM  
SYSTEMS

ATEX APPLICABLE



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# 1 Introduction

## 1.1 Declaration of Conformity



### Declaration of Conformity

Annex IIA

Samson Pumps A/S  
Petersmindevej 21  
DK-8800 Viborg

Hereby declares that the following products:

**Vacuum control valve, item No.: 1634666**

Conforms to the following directives:

**Machinery Directive 2006/42/EC**

I hereby declare, that the Vacuum control valve are in conformity with the following harmonized standard:

DS/EN ISO12100:2011	Safety of machinery - General principles for design - Risk assessment and risk reduction
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The Vacuum control valve is hazard analyzed according to the ATEX Directive 2014/34/EU with the following result:

The Vacuum control valve do not have a potential ignition source.  
The ATEX Directive 2014/34/EU does not apply to this product.  
The product may be used within the Ex-area.

Applied harmonized standards, in particular.

DS/EN 1127-1:2019	Explosive atmospheres - Explosion prevention and protection - part 1: Basic concepts and methodology
DS/EN ISO 80079-36:2016	Explosive atmospheres - Part 36: Non-electrical equipment for explosive atmospheres - Basic method and requirements
DS/EN ISO 80079-37:2016	Explosive atmospheres - Part 37: Non-electrical equipment for explosive atmospheres - Non-electrical type of protection constructional safety "c", control of ignition sources "b", liquid immersion "k"

The standards are used to the extent it is relevant to the product.  
The product must not be used before the complete system, which it must be incorporated in, has been conformity assessed and found to comply with all relevant health and safety requirements of 2006/42/EC and other relevant directives. The product must be included in the overall risk assessment.

Viborg, 02.09.2020

Jan S. Christiansen – Manager, Technical dept.

## 1.2 Digital services

Samson Pumps offers a number of digital services to help our customers gain the best possible output from our products.

### Calculate



Solution Finder

### Buy



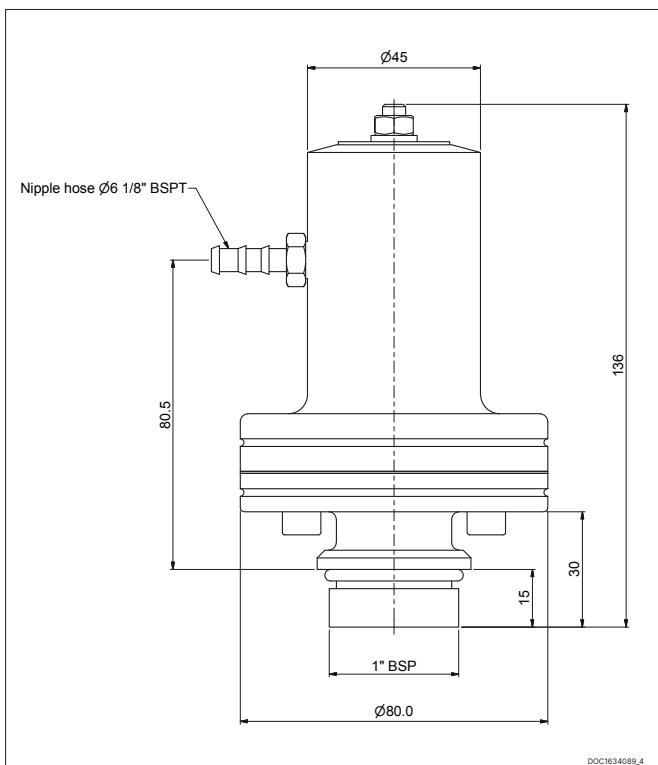
Product Center

### Learn



How to build

## 1.3 Dimensions



## 1.4 Explanation of warning symbols

Important technical and safety instructions are shown by symbols. If the instructions are not performed correctly, it may lead to personnel injury or incorrect function of the vacuum control valve.



To be used with all safety instructions that must be followed. A failure to follow the instructions may result in injuries and/or incorrect machine operation

## 1.5 Functional description



The SAMSON vacuum control valve is exclusively designed for SAMSON liquid ring pumps!

The SAMSON vacuum control valve is designed to control the pressure (vacuum) level and to avoid cavitation in the pump.

The vacuum control valve is installed when the suction line may force the pump to operate below the cavitation limit.

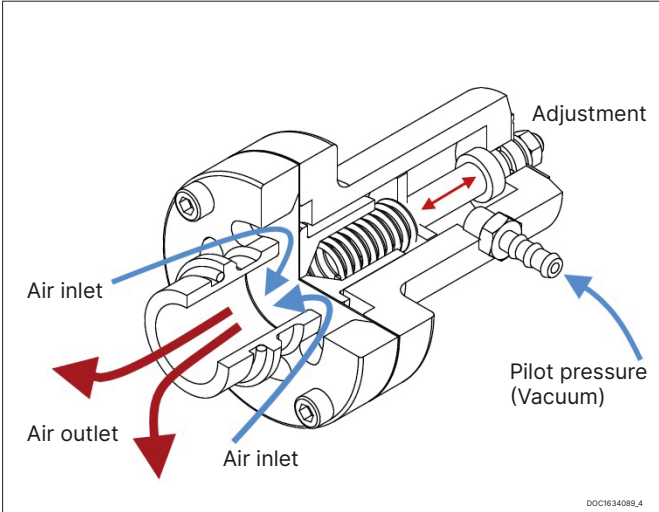
Air must then be supplied to the suction side of the pump through the vacuum control valve, which is regulated according to the required pressure.

Cavitation arises when the pressure in the pump falls to under the steam pressure of the water, which makes the water boiling and steam bubbles arise in the water. These bubbles cannot exist when they enter the discharge side of the pump and there they collapse.

The impact force on the surface of the rotor and flow plate will damage the pump and can lead to a total breakdown. It is a very harmful situation that must be avoided.

It is the combination of the pressure and the temperature that will lead to the cavitation.

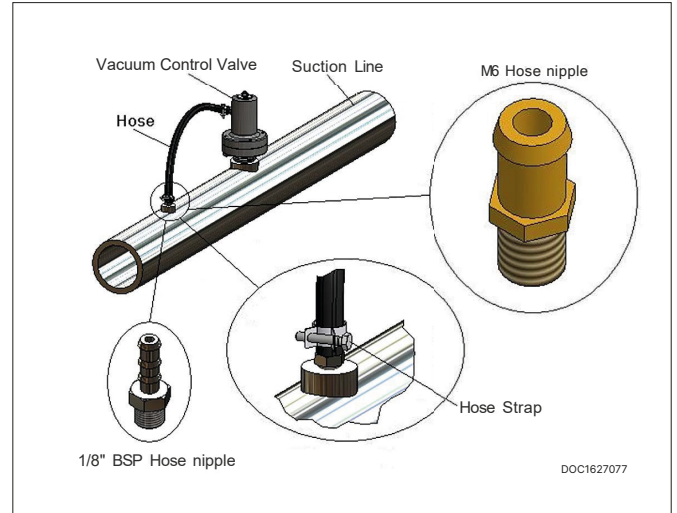
Therefore, it is recommended to install a vacuum control valve, see the following illustration that shows a clockwise rotating pump. If counter-clockwise rotating pump, mount in opposite manifold.



Vacuum	50%	75%	80%	90%
Temperature °C	90	64	59	44
Maximum discharge temperature	70	50	40	30

**Note:**

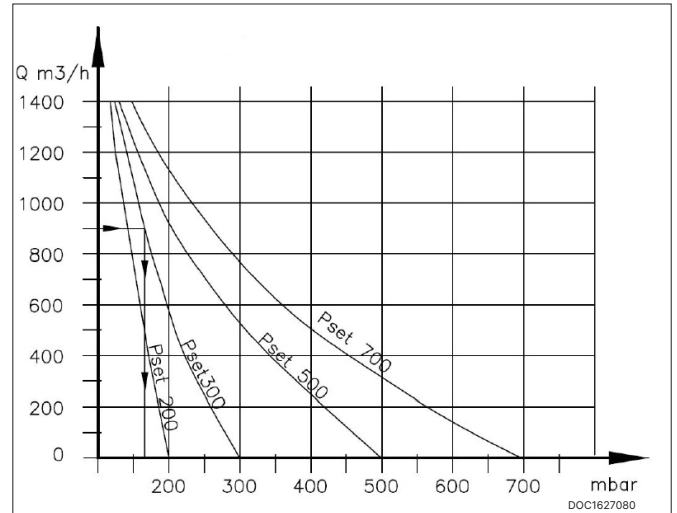
It is recommended to adjust the valve to the lowest possible set pressure in order to avoid cavitation in the pump and undesired noise from the air inlet.



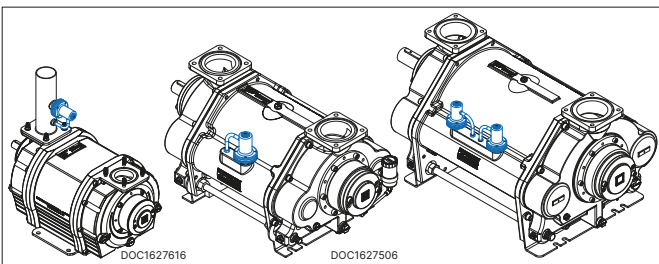
**1.6 Installation**

- The vacuum control valve may not be used or installed if it is damaged.
- Repair of vacuum control valve used in Ex zones is not allowed.

- Install the vacuum control valve on the suction line by using the 1" BSP thread.
- Connect the hose to the suction line by using the 1/8" BSP nipple hose and the two straps, which are included in the kit.
- If you have an existing installation, you are able to use M6 nipple hose on your suction line. It is recommended to adjust the valve to the lowest possible set pressure in order to avoid cavitation in the pump and undesired noise from the air inlet.



**Vacuum control valves placement**



Vacuum control valves required				
Truck Master 2	Truck Master 3	Truck Master 1700	Truck Master 2500	Truck Master 3400
1 pcs	1 pcs	1 pcs	2 pcs	2 pcs

**1.7 Adjustment**

- Step 1) When the pump is running, close the valve by turning the M6 set screw counter clockwise (-direction)
- Step 2) Open the valve by turning the set screw clockwise (+direction), until the required set pressure is reached.

