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Pressure Booster System

VARIABLE SPEED & PRESSURE CONTROL

MCKARLEN

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Complete Booster Pump Package

WHY USE BOOSTER PUMP

Pressure booster system is a great solution to save electricity and reduce the running cost. It ensures comfort to the residents and guests.

The need for booster system today is not just to distribute the water automatically, but the booster system is a solution to save electricity and also to reduce the cost of building construction (If the booster is installed under the building so it does not need a "roof tank"). By using a variable speed control system booster,

it will ensure constant pressure and lowers water hammer, so that it would provide comfort to occupants or guests of the building.

The design of booster system that is compact and with a pressure switch or pressure transmitter setting are all taking

place in our workshop so that the booster becomes easy to install and easy to operate, without having to make any setting or adjustment.

Booster system with pressure control is an economical option at lower price.



FEATURES & BENEFITS

The MCKarlen booster line-up not only feature Constant Pressure, Energy Saving Operation. It also has a Dry Running Protection built into the system. It also maintains the flow rate and could also reduce construction cost by eliminating the roof tank where it's not needed. □

Airports consume significant amounts of water to maintain their infrastructure. Efforts should be made to assess water consumption profiles as well as alternatives for its efficient use. A proper use of booster system could be the solution.



Proper installation and maintenance are essential to achieve optimum performance.

- 1** **Constant Pressure**
The variable speed controller booster maintains the water constant pressure in the pump system.
- 2** **Energy Saving**
For application at the fluctuating water distribution, it may save more than 30% electricity energy.
- 3** **Dry Running Protection**
The controller is completed dry running protection with install electroda in the inlet pipe/ tank.
- 4** **No reduce of Total Water Flow Rate**
The variable speed controller booster maintains the total water flow rate is not reducing.
- 5** **Compact System**
The pumps with motor, control panel, diafragma tank, pipe header, butterfly /ball valve, check valve, pressure tarsmitter / pressure switch & pressure gauge are fully assembly & mounted on the baseframe.
- 6** **Low Water Hammer**
The variable speed controller reduce the water hammer in the system pipe, up to 75%, it means the noise in the building will be reduced significant.
- 7** **Easy Installation & Operation**
All internal wiring is pre-installed and the system controller is ready to connect to the main power. The panel control indicator are designed to easy operation.
- 8** **Reduce The Construction Cost**
Without the roof tank it means to reduce weight of building and reduce the stress of structure, so the construction cost is lower.

SPECIFICATION

Liquid : Fresh Water
 Temperatur : 0-40°C (Option : 0-60°C)
 Pump Model : Vertical Inline Pump
 End Suction Pump
 Standart Voltage :
 0,37kW - 3,7kW, 1Ph/3Ph x 220V/380V (DOL) x 50Hz
 Up to 3,7kW, 3Ph x 380V/660V (Y-Δ) x 50Hz
 Operation : Single/Paralel Alternate & Squence



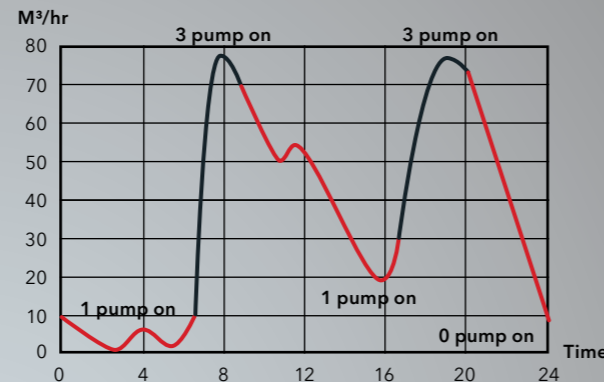
BASIC THEORY & OPERATION

Characteristics or the load profile of the building should be assessed correctly to achieved the optimal energy saving.

BOOSTER OPERATION CHARACTERISTIC

To determine the number of pumps in booster systems, we need to know the characteristics of their use, such as hotels, apartments, hospitals, municipal, mall, housing, etc. Thus saving energy booster pump can be achieved optimally.

The graph below is an example of the characteristics of the distribution of water consumption in the hotel with 3 unit of pumps @ 25 m³/hour.



PUMP FLOW RATE AND HEAD

The main requirement to be met for Flow rate & Head pumps used in the booster system is as follows:

Head: $H_1 = H_2 = H_3 = H_4 = H_5 = H_6$

Where the pump head H_1 to H_6 must be the same

Flow rate: $Q_{Total} = Q_1 + Q_2 + Q_3 + Q_4 + Q_5 + Q_6$
(Max. 6 Pumps Running)

Where the pump flow rate Q_1 to Q_6 allowed for the same or different

PUMP FLOW RATE & PUMP No.

There are two options for determining the flow rate / pump unit and the number of pumps, which are as follows:

- Option 1 : 1-6 Pumps Running

No. of Pump = 1 -6 Pumps : N Pumps

Q_{Total} : Q_t

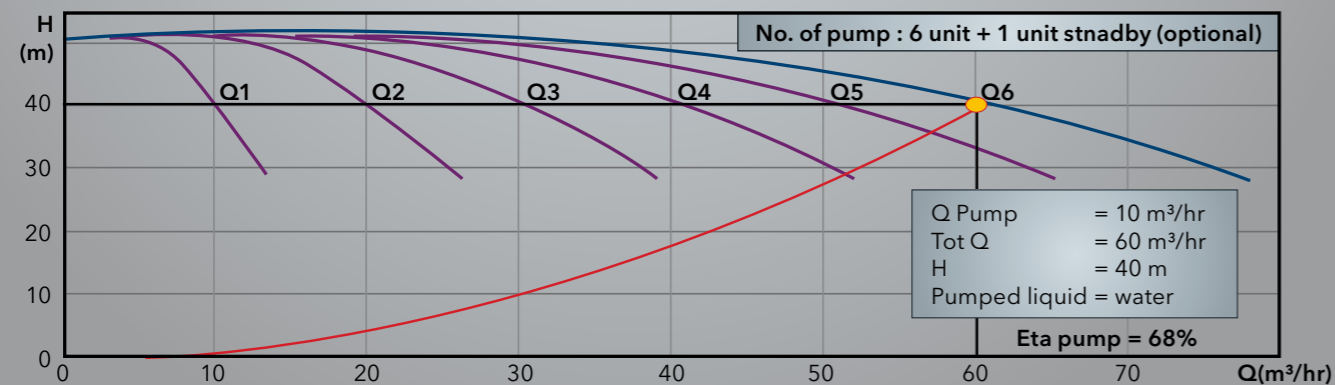
$Q/pump$ (flow rate per pump) : Q_t/N

- Option 2 : 1- 6 Pumps Running + 1 Pump Standby

No of pump = 1-6 : N pumps

Q_{Total} : Q_t

$Q/pump$ (flow rate per pump) : $Q_t/N + Q_t/N$
standby (optional)



Booster system is suitable for various applications in the ever increasing demand of the industry today.

BOOSTER SYSTEM OPERATION

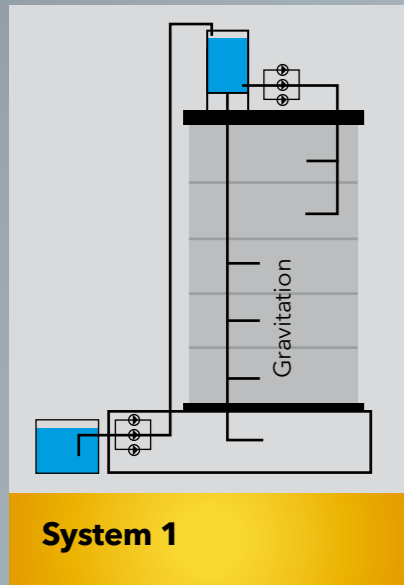
The booster system will operate as below :

- Paralel Alternate Operation : Consist of 1-6 Pumps (All Pump Running) or 1-7 Pumps (1-6 Pumps Running + 1 Pump Standby)
- Squence operation : Change over Start-On for the first time after 1-6 pumps has start-on and then 1-6 pumps has stoped-off, it means to maintain the pump life time is similar
- Automatic ON when the pressure in outlet pipe is decrease, \leq setting press. ON
- Automatic OFF when the pressure in outlet pipe is increase, \geq setting press. OFF
- Automatic OFF when the water level in inlet pipe/ tank is below the electroda dry running protection
- Variable speed control booster system will be Automatic ON-OFF operation by sensor 1 pressure transducer

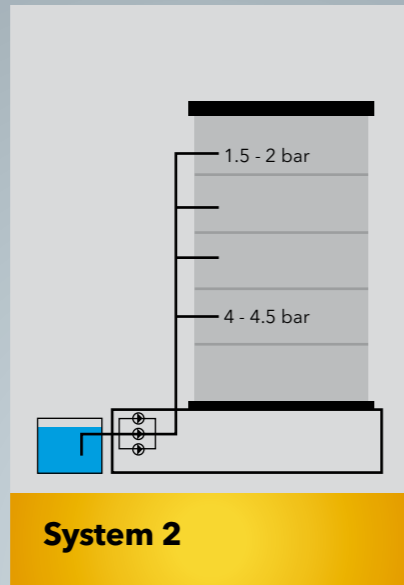


INSTALLATION

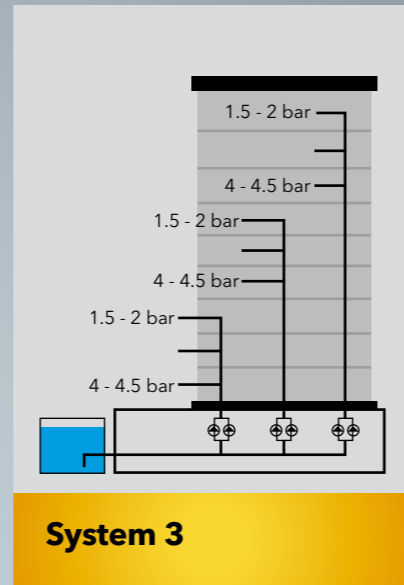
There are 3 options for installation of the booster system. They are determined by the type and heights of buildings as follows:



The installation of booster system on a building by using roof tank as inlet reservoir. Booster to distribute water in the top 2 floors, while on the floor below using gravity.



The installation of booster under the provisions of the building with maximum pressure between 1,5bar-2bar at the highest floor, while the maximum pressure on the floor underneath is between 4bar-4,5bar.



That the installation of booster under the building by using a system of zones with each zone has the following provisions, the maximum pressure between 1,5bar-2bar on the highest floor, while the maximum pressure on the floor underneath is 4bar-4,5bar.



A Wide Variety of Applications



APPLICATIONS

Applications of the booster system used on almost on all buildings, factories and houses that can be classified as follows:

Building Services

Hotels, Office, Apartment, Shopping Center, Hospital, School, Airport, etc.

Water Management

Municipal Water services, Irrigation, Flood Control.

Industrial

Factories, Industry (Food, Textile, Manufacturing), etc.

Residential

Residential, Private Villa, etc.



VARIABLE SPEED CONTROL

PUMP MODEL :

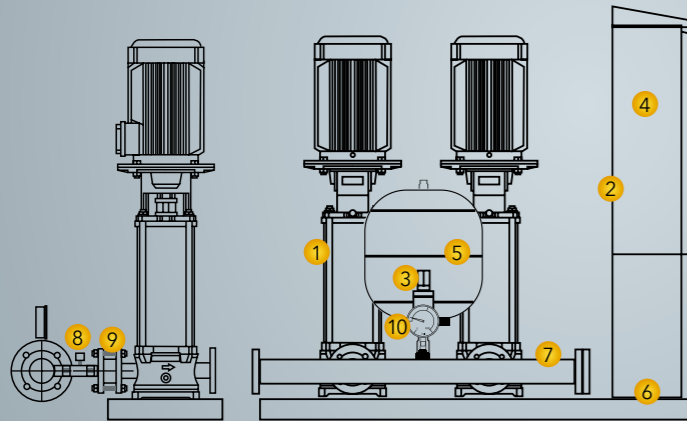
- V-VS MODEL- VARIABLE SPEED CONTROL With Vertical Inline Pump:
 - HCR - Multi Stage Pump (4 - 100 m³/h)
 - VIS - Single Stage Pump (100 - 300 m³/h)
 - SCI - Split Case Pump (200 - 3000 m³/h)
- H-VS MODEL -VARIABLE SPEED CONTROL With Horizontal Pump:
 - End Suction Multi Stage Pump (4 - 25 m³/h)
 - End Suction Single Stage Pump (20 - 500 m³/h)

PRESSURE CONTROL

PUMP MODEL :

- V-PC MODEL- PRESSURE CONTROL With Vertical Inline Pump:
 - HCR - Multi Stage Pump (4 - 100 m³/h)
 - VIS - Single Stage Pump (100 - 300 m³/h)
 - SCI - Split Case Pump (200 - 3000 m³/h)
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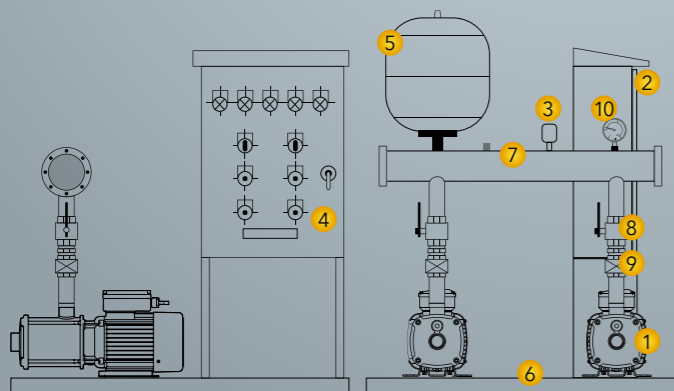
V-VS Model



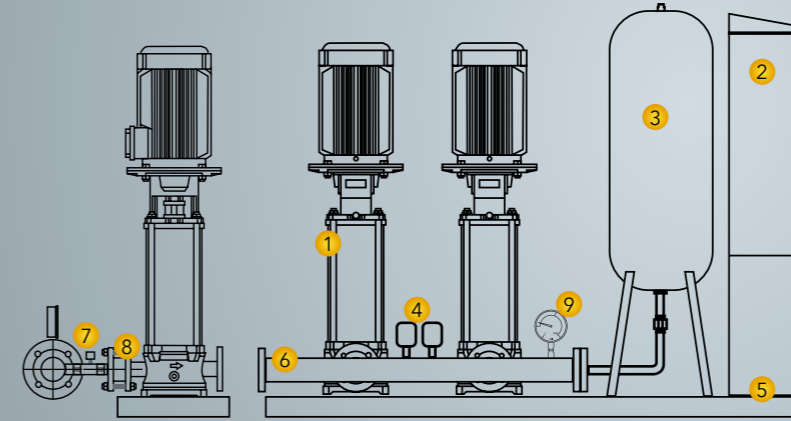
MAIN COMPONENTS OF VARIABLE SPEED CONTROL :

1. N (1- 6) Unit Pumps (Vertical Inline/End Suction Model)
2. 1 Unit Panel Control (Variable speed control)
3. 1 Unit Pressure Transmitter
4. N (1-6) Unit VSD (Variable Speed Drive)
5. 1 Unit Diafragma Tank
6. 1 Set Steel Baseframe
7. 1 Set Steel Pipe Outlet-Header
8. 2 x N (1-6) Unit Butterfly/Ball Valve
9. N (1-6) Unit Check Valve
10. 1 Unit Pressure Gauge

H-VS Model



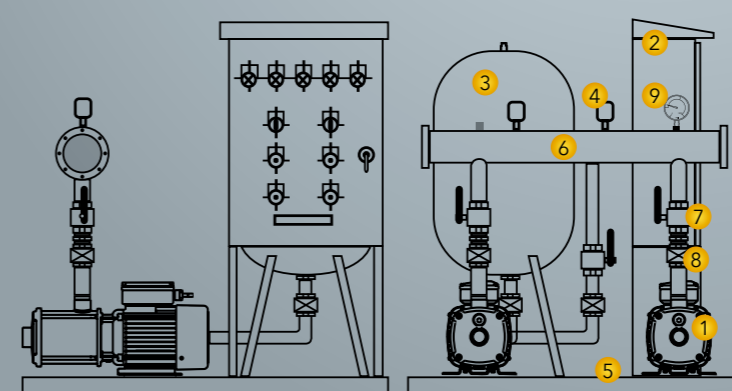
V-PC Model



MAIN COMPONENTS OF PRESSURE CONTROL :

1. N (1- 6) Unit Pumps (Vertical Inline/End Suction Model)
2. 1 Unit Panel Control (Pressure Control)
3. 1 Unit Diafragma Tank
4. N (1-6) Units Pressure Switch
5. 1 Set Steel Baseframe
6. 1 Set Steel Pipe Header
7. 2 x N (1-6) Unit Butterfly/Ball Valve
8. N (1-6) Unit Check Valve
9. 1 Unit Pressure Gauge

H-PC Model





**We understand the importance of reliable equipment
in industry and building services market**

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