Monophase and Three-phase Pressure Booster Sets with Horizontal Tank

MiniDAF SERIES

TECHNICAL MANUAL

Mas Grup

Revision No: 01

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MiniDAF Series

Monophase and Three-phase Pressure Booster Sets with Horizontal Tank

Technical Specifications

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Applications

- Drinking water supply
- Irrigation

General System

Increase of Pressure:

Water pressure booster is used in the cases that the minimum pressure coming from city network is lower than the sum of under-mentioned system loses.

$$P_{min\ V} < \Delta P_{geo} + P_{min\ FI} + \sum (IxR+Z) + \Delta P_{wz} + \Delta P_{AP}\ (bar)$$

Pmin V : Minimum pressure of water coming from network
ΔPgeo : Pressure loss arisen from geometric height difference
Pmin FI : Flow pressure in critical level (critical level the most distant point that water in the system is used)
∑ (IxR+Z) : Pipe friction and system losses
ΔPwz : Water meter pressure lose
ΔPAP : Pressure losses of special equipments used in the system (Example: Strainers, filters, dosage instruments etc.)

The need of pressure increase is shown in Figure 1.

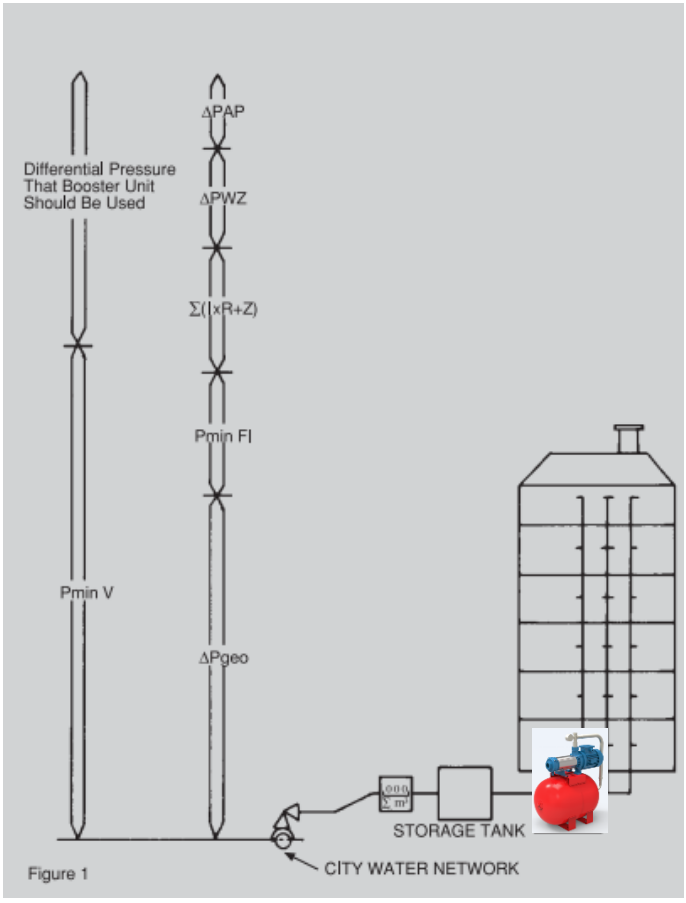

Figure 1

Marks and Symbols Used in Detailed Calculations

SYMBOL	UNIT	DESCRIPTION
V_E	m	Volume of the Pressure Tank
Qmax	m³/h	Max. Flow rate of the Booster Set
$P_{max\ V}$	bar	
$P_{min\ V}$	bar	
$P_{min\ FI}$	bar	Min. Pressure required for comfortly use of the armatures at the end of the plumbing line
P_{geo}	bar	
P_{input}	bar	
P_{output}	bar	
ΔP_p	bar	ΔP_p : P_{output} - P_{input}
P_E	bar	Low Pressure of the Booster Set
P_A	bar	High Pressure of the Booster Set
$\Delta P_{(A-E)}$	bar	Differential Pressure between low-high pressure
s	1/h	Nr. of Pump start / hour

Table 1

Reducing of Pressure:

Pressure reducer is used in case maximum flow pressure of water coming from network is higher than maximum pressure allowed for use of armatures and various heat devices used in the system.

$$P_{max\ V} > \Delta P_{geo} + P_{min\ FI} + \sum (IxR+Z) + \Delta P_{wz} + \Delta P_{AP}\ (bar)$$

Pmax V: Maximum pressure of water coming from network
ΔPgeo: Pressure loss due to geometric height difference
Pmin FI: Flow pressure in critical level
∑ (IxR+Z): Pipe friction and system losses
ΔPwz: Water meter pressure losses
ΔPAP: Pressure losses of special equipments used in the system

The need of pressure decrease is shown in Figure 2.

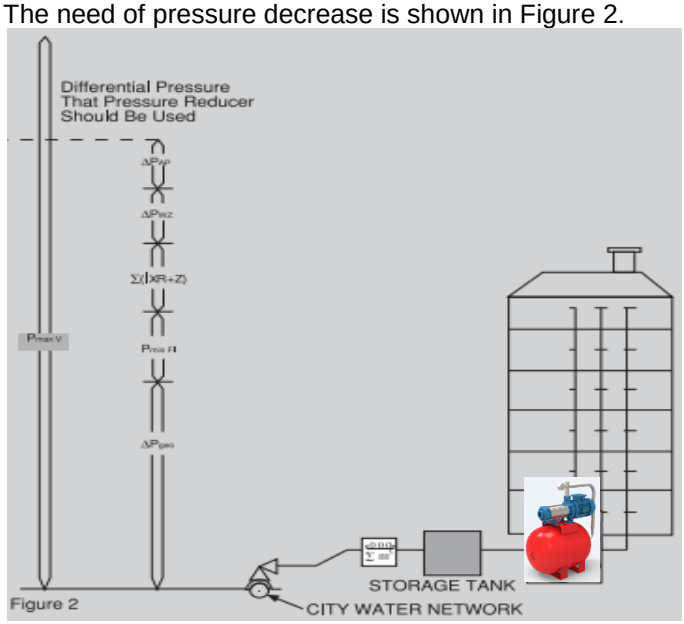

Figure 2

MiniDAF Series

Monophase and Three-phase Pressure Booster Sets with Horizontal Tank

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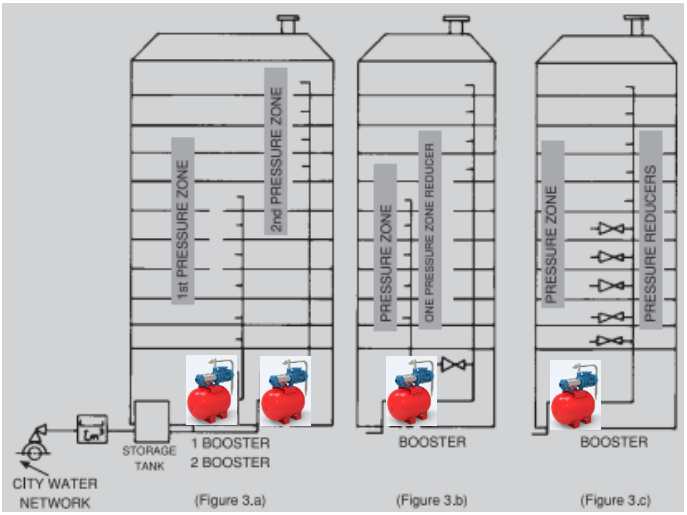
Pressure Increase Unit (Water Booster)

Determination of pressure limits:

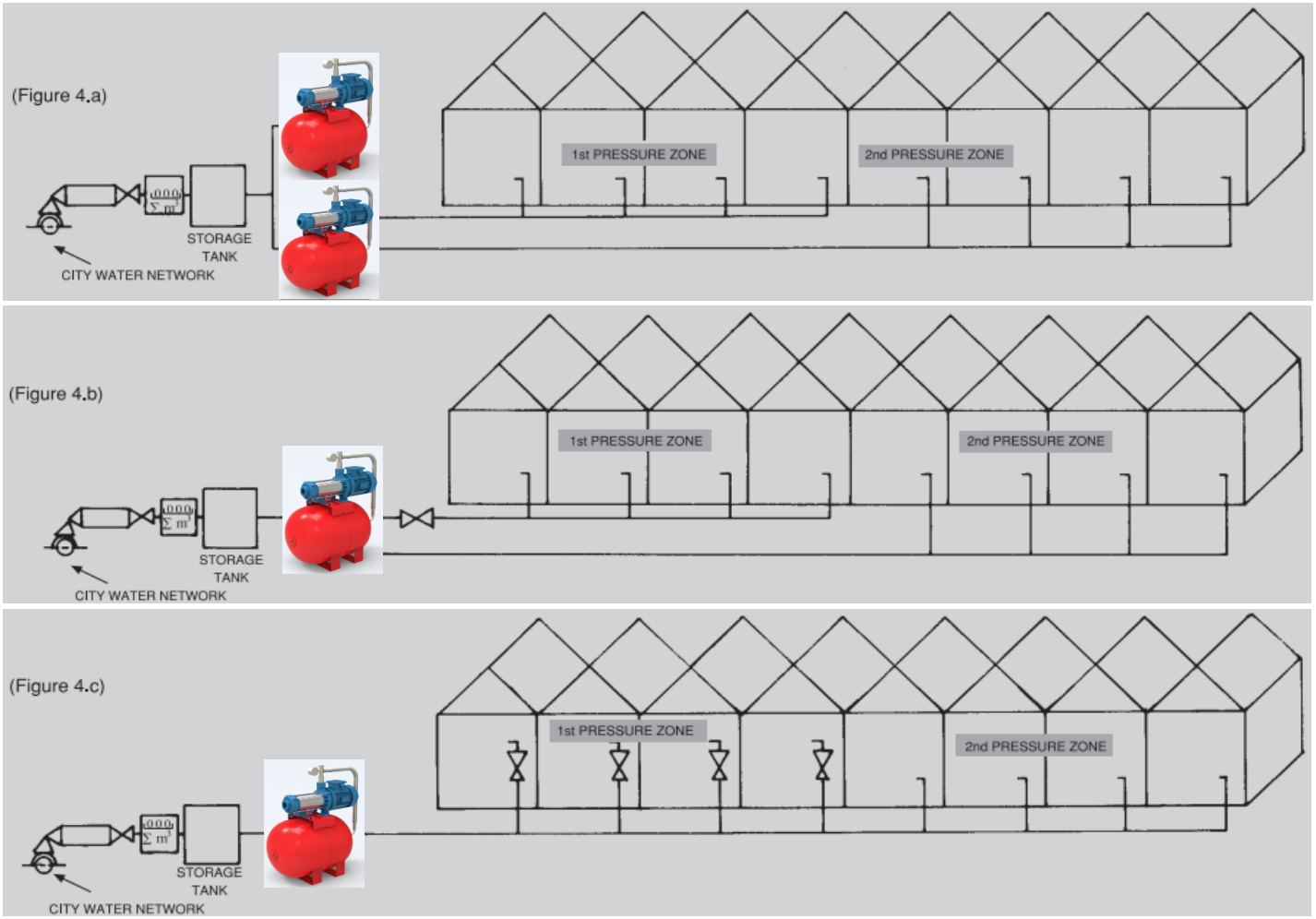
First, the pressure of water booster required for all structure is determined. If the pressure higher than pressure allowed for flats occurs, problems occur in water use at flats and devices. In order to prevent this, pressure reducers are used.

Water Pressure Booster Zones

a. If there is more than one pressure zone at the building, separate water pressure booster selection is made for each zone (Figure 3-a).
   First investment cost is high and energy saving is high.
b. If there is more than one pressure zone at the building, feeding can be made with one water pressure booster; one pressure reducer is used for lower pressure zone. According to Figure 3-b, first investment cost is low and energy saving is high.
c. If there is more than one pressure zone at the building, water supply be made with one water pressure booster, separate pressure reducer is used for each consumption section. According to Figure 3-c, first investment cost is low and energy saving is high.



a. Two pressure zone at building and separate water booster for each pressure zone
b. Two separate pressure zone at building while upper pressure zone is directly lower pressure zone is fed on single pressure reducer
c. If all sections is fed on one column, pressure reducer is installed on all lower pressure sections.



MiniDAF Series

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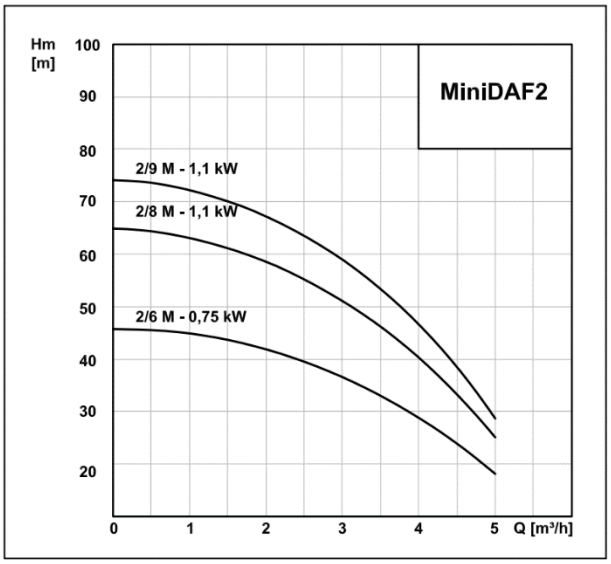
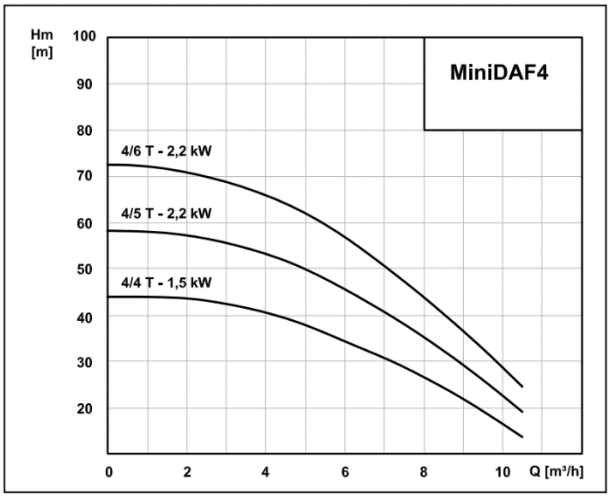
- MiniDAF water pressure boosters are packaged water pressure boosters prepared for utility water of buildings or pressurized water need of systems, operating silently and being fully automatic, comfort.
- Tank is standards of European safety (CE) was used.
- The membrane in the tank is in accordance with German hygiene standards and in type that does not make smell and produce bacteria in water.
- It is provided with float and cable in the end at the form of pluggable (5 m cable).
- It can be driven by three-phase and monophase motors.
- There is an electric control panel in three-phase models as standard but in monophase models it is an option.
- Maximum pressure allowed for water pressure boosters are 8 bar in MiniDAF series.
- In circuits that there is the possibility of network pressure of the system being higher than this pressure, water pressure booster should be protected by inserting additional check valve on water pressure booster pressure line.





The particulars to be considered;

** Pump and suction line must be filled with water before operation and air must be taken.

** Level float preventing dry operation must be put in water tank and its cable must be fastened on tank after making level adjustment.

** Suction line must be drawn in one size bigger diameter in shortest way.

Sample Codification:

MiniDAF 2/6 M

- Monophase
- Number of Stage
- Model Type
- Series Name

MiniDAF 4/6 T

- Three-phase
- Number of Stage
- Model Type
- Series Name

Technical Information

Booster Type	kW	Pressure Tank	Max. Liquid Temperature	Electrical Connection
MiniDAF 2/6 M	0,75	50 lt.	40 ° C	220 Volt 50 Hz
MiniDAF 2/8 M	1,1	50 lt.		
MiniDAF 2/9 M	1,1	50 lt.		

Booster Type	kW	Pressure Tank	Max. Liquid Temperature	Electrical Connection
MiniDAF 4/4 M	1,5	110 lt.	40 ° C	220 Volt 50 Hz
MiniDAF 4/5 M	2,2	110 lt.		
MiniDAF 4/6 M	2,2	110 lt.		
MiniDAF 4/4 T	1,5	110 lt.		380 Volt 50 Hz
MiniDAF 4/5 T	2,2	110 lt.		
MiniDAF 4/6 T	2,2	110 lt.		

Pump Materials	
Casing	Cast Iron (GG 22)
Impeller	Noryl
Shaft	Stainless Steel (AISI 430)
Mechanical Seal	Silicium Carbide / Silicon Carbide / Viton

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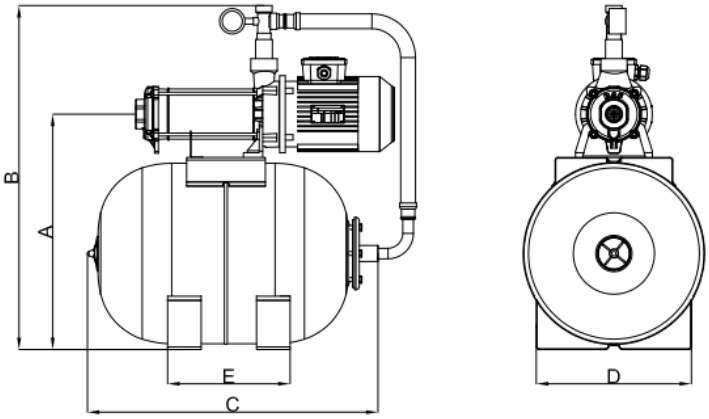
Dimension Table



Booster Type	Suction - Discharge	Dimensions (mm)				
		A	B	C	D	E
MiniDAF 2/6 M	1" 1/4 - 1"	505	740	600	314	255
MiniDAF 2/8 M	1" 1/4 - 1"	505	740	600	314	255
MiniDAF 2/9 M	1" 1/4 - 1"	505	740	600	314	255

Booster Type	Suction - Discharge	Dimensions (mm)				
		A	B	C	D	E
MiniDAF 4/4 M	1" 1/4 - 1"	620	840	800	360	380
MiniDAF 4/5 M	1" 1/4 - 1"	620	840	800	360	380
MiniDAF 4/6 M	1" 1/4 - 1"	620	840	800	360	380
MiniDAF 4/4 T	1" 1/4 - 1"	620	840	800	360	380
MiniDAF 4/5 T	1" 1/4 - 1"	620	840	800	360	380
MiniDAF 4/6 T	1" 1/4 - 1"	620	840	800	360	380

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