

MiniJet

Operating Manual



 **masdaf**



EC DECLARATION OF CONFORMITY

AT UYGUNLUK BEYANI

Manufacturer / İmalatçı : MAS DAF MAKİNA SANAYİ A.Ş.

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Teknik Dosyayı Derleyen Yetkili Kişi ve Adresi

The undersigned Company certifies under its sole responsibility that the item of equipment specified below satisfies the requirements of the mainly Machinery Directive 2006/42/EC which is apply to it.
The item of equipment identified below has been subject to internal manufacturing checks with monitoring of the final assessment by **MAS DAF MAKİNA SANAYİ A.Ş.**

Aşağıda tanımlanmış olan ürünler için Makine Emniyeti yönetmeliği 2006 / 42 / AT 'nin uygulanabilen gerekliliklerinin yerine getirildiğini ve sorumluluğun alınmış olduğunu beyan ederiz.

Aşağıda tanımlanan ürünler iç üretim kontrollerine bağlı olarak **MAS DAF MAKİNA SANAYİ A.Ş.** tarafından kontrol edilmiştir.

Equipment / Ürün :Single/Multi Pump Booster Units / Tek/Çok Pompalı Paket Hidroforlar

Seri / Model-Tip : MiniJet Series - MinJet Serisi

For pumps supplied with drivers/ Elektrikli Pompa Üniteleri

Related Directives / Yönetmelikler

2006/42/EC Machinery Directive / 2006/42/AT Makine Emniyeti Yönetmeliği

2014/35/EU Low Voltage Directive / 2014/35/AB Alçak Gerilim Yönetmeliği

2014/30/EU Electromagnetic Compatibility Directive / 2014/30/AB Elektromanyetik Uyumluluk Yönetmeliği

EUP 2009/ 125 /EC Electric Used Products Directive/ Elektrik Kullanılan Ekipmanlar Direktifi (EUP)

Regulations applied acc. to harmonize standards / Uygulanan Uyumlaştırılmış Standartlar

TS EN ISO 12100:2010, TS EN 809+A1, TS EN 60204-1:2018.

We hereby declare that this equipment is intended to be incorporated into, or assembled with other machinery to constitute relevant machinery to comply with essential health and safety requirements of DirectiveThe machinery covered by this declaration must not be put into service until the relevant machinery into which it is to be incorporated has been declared in conformity with provisions of the directive.

Ekipman, uygun bir makina oluşturmak amacıyla diğer ekipmanlar ile birleştirilirken ya da monte edilirken gerekli sağlık ve güvenlik yönetmeliklerine uyulması gerekmektedir.

Bu bildiri kapsamında yönetmelikte belirtilen bütün hükümler yerine getirilmeden makinanın devreye alınması gerekmektedir.

Place and date of issue / Yer ve Tarih

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Name and position of authorized person

: Vahdetin YIRTMAC

Yetkili Kişinin Adı ve Görevi

: General Manager / Genel Müdür

Signature of authorized person

:

Yetkili Kişinin İmzası



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INTRODUCTION



- This manual contains instructions for the installation, operation and maintenance of the Boosters of **MAS-DAF A.Ş.**
- Please read carefully this manual and apply all the instructions to operate pumps without problems. Pumps shall be used for their intended duties. In this manual, there are information on operating conditions, installation, starting-up, settings and main controls of pumps.
- These operating and maintenance instructions contain **MAS DAF MAKINA SANAYI A.Ş.**'s suggestions. The special operating and maintenance information of the plumbing that a pump is fitted to is not considered in these instructions. This information must be given by the plumbing constructors only.
- Please refer to instructions of plumbing constructors.**
- Please pay attention to the warnings in this manual and ensure that it is read before the installation-start up process. **MAS DAF MAKINA SANAYI A.Ş.** is not responsible for the accidents resulting from negligence.
- If you cannot find an answer to your questions in this manual, it is suggested that you contact **MAS DAF MAKINA SANAYI A.Ş.** Please inform us about the rated value and especially the serial number of the pump when you get in contact for help.
- The safety instructions in this manual cover the current national accident protection regulations. Beside all of these, an operation, work and safety measure imposed

by the costumer has to be applied.

The Signs Used in This Operation Manual



Read the instructions carefully in this operating manual and keep it for your future reference.



Warning sign against the electrical risks



Sign for the operator's safety

1. IMPORTANT SAFETY PRECAUTIONS

In order to minimize the accidents during the mounting and putting into service of the booster, the following rules have to be applied:

- Do not work without taking safety measures relevant to equipment. Cable, mask and safety band must be used when necessary.
- Be sure there is adequate amount of oxygen and there is no toxic gaseous around
- Before using welding or any electrical equipment make sure that there is no risk of explosion.
- Check the cleanliness of the area to take care of your help. (Dust, smoke, etc.)
- Do keep in mind that there is a risk of having accidents related to electricity
- Do not lift the booster before you check the transport equipment.
- Be sure you have a by-pass line
- Use helmet, eye glasses and protective shoes for your safety
- Place a protective barrier around the booster within the necessary safety area
- Dust, liquids and gaseous that may cause overheating, short circuit, corrosion and fire must be kept away from the booster unit.
- By checking the noise level of the booster unit, necessary measures to avoid noisy operation of the booster that can have harmful effects on the personnel and environment.
- Be careful about the direction of transport and storage.
- Cover appropriately the moving parts to avoid possible injury of the personnel. Mount the coupling guard and belting before starting-up the booster.
- All the electrical and electronic applications must be performed by authorized person conforming EN60204-1 and/or domestic instructions.
- Protect the electrical equipment and motor against overloading.
- Do not expose the booster unit to sudden temperature variations.

All Other Health and Safety Rules, Laws and Regulations Must Be Applied

2. GENERAL

2.1. Definition of Pump and Usage Areas

At high-rise and common buildings, industrial plants, hotels, in areas where is not sufficient city network water or pressure, pressure increasing equipment are used which are called booster, to transfer clean water insufficient pressure and quantities instead of the place of use.

2.1. Application Fields of Booster

Boosters are used at;

- Households
- Garden irrigation
- Washing and cleaning applications
- Small-scale agriculture and horticulture
- Light commercial applications.

CAUTION

The chemical and physical properties of the fluid must be considered for right choice of the pump type and other elements of booster.

2.2. Performance Information

Actual performance of the pump can be obtained from the order page and/or from the test report. This information is given on the pump label.

The performance curves given in the catalog are valid for water whose density and viscosity are $\rho=1 \text{ kg/dm}^3$ and $\nu=1 \text{ cst}$, respectively. For those liquids whose densities and viscosities are different from those of water, please consult with **MAS DAF MAKINA SANAYI A.Ş.** since the performance curves vary with density and viscosity

CAUTION

Do not operate the pump with a motor that has a different power except for the given catalog and label values.

The booster is not to be operated at off-design point given in the order and supplied from the firm.

It is necessary to ensure that the instructions are obeyed for the safe running of the pump.

2.3. Warranty Conditions

The entire products in our selling program are warranted by **MAS DAF MAKINA SANAYI A.Ş.**

The warranty conditions will only be valid when all the instructions about installation and start-up operations of the booster unit are taken into account.

For free repair of the pump unit, following conditions must be fulfilled during the warranty period.

- Validate the warranty document to the vendor on the date you received the pump unit.
- Comply with the requirements stated in the manual in the installation and operation of the device.
- Please call our authorized service without intervene in case of failure.

Failure and problems, because of the following conditions, are not covered by the warranty;

- Failure to comply with the terms of the operating manual.
- Maintenance and repairs made by unauthorized services.
- Incorrect booster selection, faulty installation and misuse.
- Disadvantages of transport, storage and atmospheric conditions.
- Removing, replacing or deleting the label of the pump or the motor.
- Using any strainer, the presence of solid particles (sand, gravel, plastic, etc.) in water.
- Failures and damage because of External physical (Shock, scratch, break) and chemical factors.
- Failures because of not using grounding plug.
- Failures resulting from Low voltage, overload, power supply or sudden changes in faulty electrical installation.

2.4. Test

All boosters are dispatched for sale when all the performance and pressure tests are completed. Proper assurance of material and fault-free operation of pumps whose performance tests are made is under the warranty of **MAS DAF MAKINA SANAYI A.Ş.**

3. SAFE OPERATING CONDITIONS

This manual contains main safety instructions for the installation, operation and maintenance. It must be read by the personnel who are responsible for installation and operation. This manual should always be kept near the installation location. It is important to comply with safety precautions stated in page 1 along with the general safety instructions as well as preventive measures repeated in other sections of this manual.

3.1. Training of Personnel

Installation, operation and maintenance personnel must have necessary knowledge in order to accomplish the given job. The responsibility, adequacies and controlling duties of such personnel must be determined by the customer. It has to be certain that these personnel comprehend totally the content of the operating manual. If the personnel do not have enough knowledge, required training must be given by the customer. If training support is needed by the customer, it will be provided by the manufacturer/seller.

CAUTION

Untrained personnel and unwillingness to comply with safety instructions may be risky for both machine and environment. **MAS DAF MAKINA SANAYI A.Ş.** is not responsible for this kind of damages.

3.2. Hazardous Conditions That May Occur When One does not Comply With the Safety Instructions

Incompliance with safety regulations may put the personnel, the environment and the machine in danger and thus may cause damages. Incompliance with safety regulations may give rise to situations listed below.

Important operational functions of the factory may stop.

Maintenance may get difficult.

One may get injured by electrical, mechanical or chemical hazards.

3.3. Safety Measures for Operator

Dangerous, hot or cold components in the pump area must be covered so that one cannot touch them. Moving components of the pump (such as coupling) must be covered so that one cannot touch them. Those covers must not be dismantled while the pump is running.

Dangers that results from electrical connections must be removed. To get more information about this subject, you can refer to domestic electrical instructions.

3.4. Safety Measures for Maintenance and Installation

The customer must assure that all maintenance, check and installment tasks are performed by qualified personnel. Repair work must only be performed while the machine is not running.

The pump and its auxiliary system must be cleaned thoroughly if it contains hazardous liquids. At the end of the repair work, all safety and protective equipment must be re-installed.

3.5. Spare Parts Replacement

Replacement of spare parts and all modifications must be done after contacting with the manufacturer. Spare parts and accessories certified by the manufacturer are important for the safe operation of the system.

Notice: **MAS DAF MAKINA SANAYI A.Ş.** is not responsible from the usage of improper spare parts.

4. TECHNICAL INFORMATION

4.1. Selection Criteria of Boosters

While determining booster, the selection must be made

where the operation range is at the highest point of the pump efficiency curve.

4.2. Working Principle of the Membrane

Water is inside the membrane. The space between the membrane and the Sheet metal filled with nitrogen. Pressurizing water by the pump begins to fill in the membrane at the same time the way to installation. Gas outside the membrane compresses until the pressure is equal with gas and water area. Pump stops when the pressure is desired value and the pressurized water in the tank compensates small consumption. Due to increasing consumption as a result of fallen pressure, the pump is activated. The main task of the tank in booster system to prevent the continuous cut-in or cut-out of the pump and to avoid pressure fluctuations in the use of water by providing energy savings in the meantime.

4.3. Usage of Boosters

- Boosters should never run dry.
- The air in the pump and the system must be taken out.
- The level floater on delivery should be installed in accordance with the store.
- Pressure of the tank with membrane should be checked periodically.
- Freezing of the water in the booster should be avoided.

4.4. Correct Installation

- MAS-DAF branded boosters have assembled their own chassis, there is no need an extra base.
- Boosters should be placed in enclosed spaces to not expose to external influences like rain, frost etc.
- Base of booster must be secured properly to the floor against noise and vibration.
- Suction and discharge connections should be the same as the booster collector sizes. Suction line should be selected appropriate size according to the pump. The suction pipe diameter should not be reduced.
- Always use a strainer at the booster suction line. The strainer should not be smaller than the diameter of the suction pipe and should be cleaned periodically.
- Installation Connection of should be rigid and installation load never transported to the booster.
- Always use a strainer at the booster suction line. The strainer should not be smaller than the diameter of the suction pipe and should be cleaned periodically.
- Installation Connection of should be rigid and installation load never transported to the booster.
- Horizontal shaft multistage pumps are designed for high pressure discharge. Booster set is used for max. 8 m. negative suction.

- Electrical connection must be performed by a qualified electrician.
- Do not run the booster without water.
- When the water tank level is low, the pump will automatically stop due to float supplied with booster. In this way it is provided a self-protection against dry running.

4.5. Control Panel and Electrical Connection

The settings can be changed against for the protection of the faults that may occur on the system.

Before using, panel operating maintenance manual, that come with the booster, **MUST BE READ CAREFULLY**; control panel specifications should be learned from this manual and service that performed startup procedure.

Faults can be caused by inappropriate use, incorrect connection, any kind of modification and unauthorized intervention are not covered by warranty.

4.6. Pressure Switches

Pressure switches remain running in a certain pressure range of the booster pump.

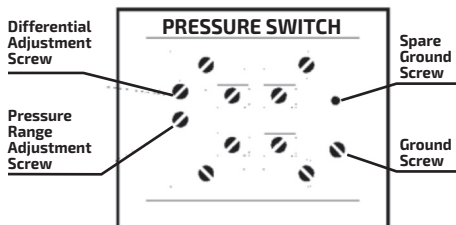
The pump is activated at lower pressure value that the switch was adjusted and deactivated at upper pressure value that was adjusted.

CAUTION

Pressure switch used in MAS-DAF Boosters is set default. Do not definitely interfere to the settings. The switch is broken for any reason, as explained below, should be done by MAS DAF A.Ş. authorized service.

CAUTION

Pressure settings for different types of booster are different. While adjusting pressure of the booster upper and lower pressures should be selected on the Pump Characteristic Curve. Do not definitely drop below allowable lower pressure value at pump characteristic curve.



1. Pressure Range Adjustment Screw

Lower pressure is set from this screw. Pressure rises when turned in the direction of clockwise.

2. Differential Pressure Adjustment Screw

Pressure differential is set from this screw. When turned towards clockwise, the upper pressure rises.

4.7. Start up Procedure

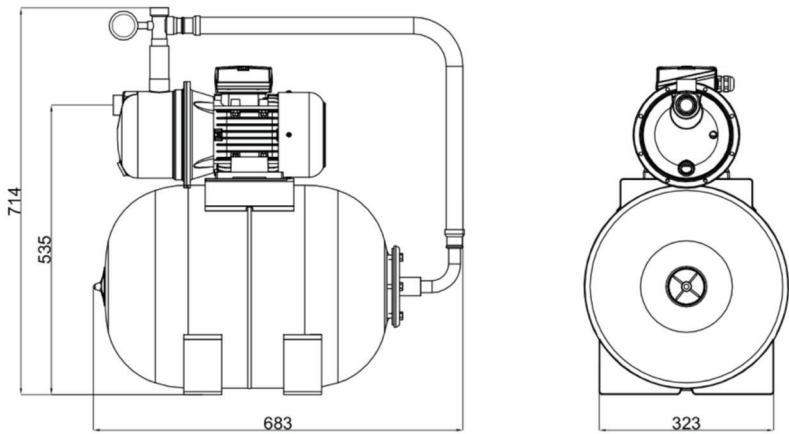
- Check the terms and conditions described in the user manual. When you recognized a situation that does not comply with the mounting scheme and described conditions, please ensure the correct conditions. Failures to comply with any faults that may occur from the conditions described in the user manual are out of warranty.
- Check that the water in the tank, the conformity of the electrical connections, making connections of float and arriving the three-phase to electrical panel.
- Open all vanes at suction line of booster.
- Check the tank connections. If there is a vane at this line, open it.
- Take the air by loosening purge on the pump. Tighten again after continuous water arrived from the purge.
- Pay attention motor rotation direction and arrow on the pump at the same direction by turning on and off the switch on the start button. If the direction of rotation is reverse, ensure the correct direction of rotation of the electric motor by changing the places of any two of the phase input.
- Run the pump by activating switch. Check that increases the pressure on the pressure gauge by closing the valve on the discharge line. The pump should run to the upper pressure.
- Check that the pump run at lower pressure and stop at upper pressure by opening and closing the valve on the discharge line.

5. PUMP DIMENSIONS and MATERIAL SPECIFICATIONS

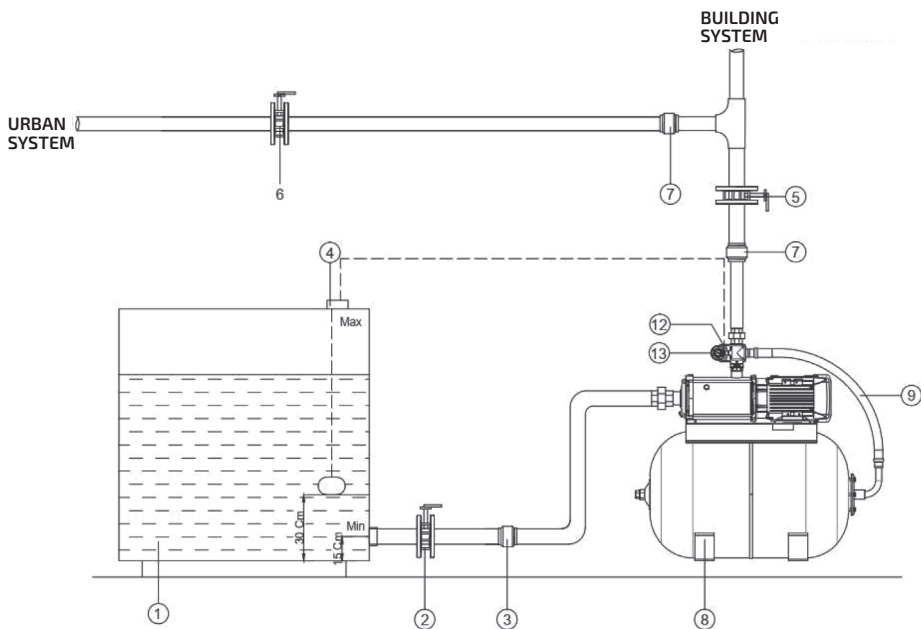
5.1. Booster Pump Material Specifications

Pump Materials	
Pump Casing	Stainless Steel
Impeller	Stainless Steel
Shaft	Stainless Steel
Diffuser	Noryl
Mechanical Seal	Carbon / Ceramic / Stainless Steel

5.2. Dimensions of Booster Pump

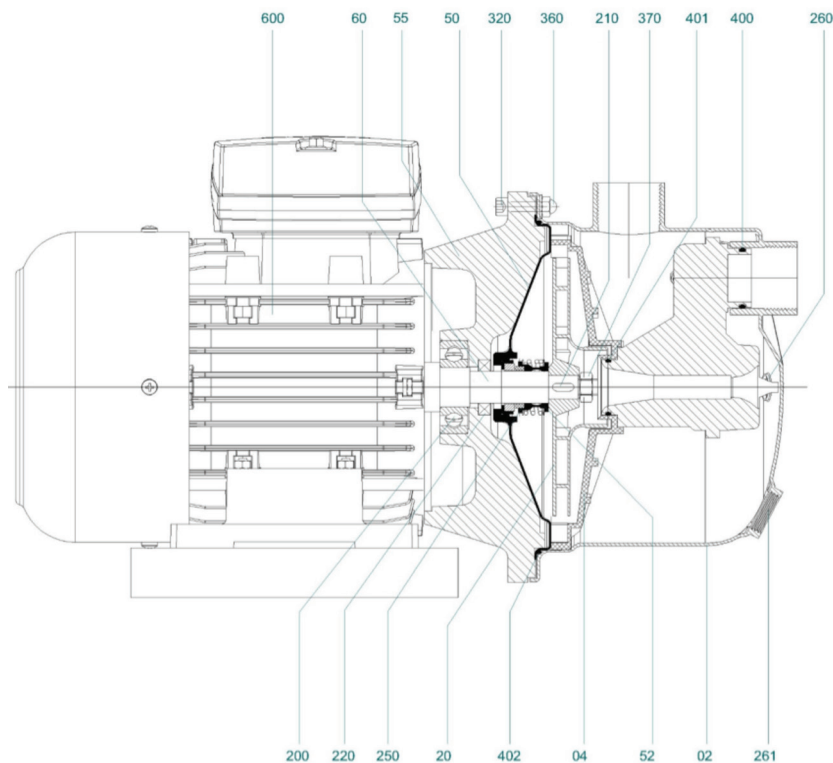


6. SAMPLE BOOSTER SYSTEM INSTALLATION DIAGRAM



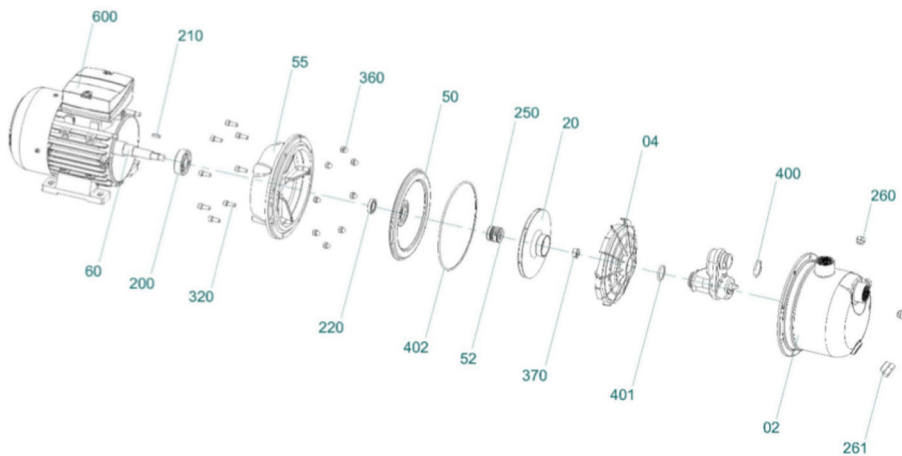
Part No	Part Name	Part No	Part Name
1	Water Tank	7	Check Valve
2	Valve	8	Booster Set
3	Check Valve	9	Flexible Hose
4	Floater	10	Pressure Switch
5	Valve	11	Manometer
6	Valve		

7. BOOSTER PUMP SECTIONAL DRAWING AND PART LIST



Part No	Part Name	Part No	Part Name	Part No	Part Name
2	Pump Casing	200	Deep Groove Ball Bearing	360	Nut
4	Plastic Diffusor	210	Key (Impeller)	370	Nut (Impeller)
20	Impeller	220	Oil Seal	400	O-Ring
50	Mechanical Seal Bushing	250	Mechanical Seal	401	O-Ring
52	Mechanical Seal Thrust Bushing	260	Plug 1/4 "	402	O-Ring
55	Motor Cover	261	Plug 1/2 "	600	Electric Motor
60	Motor Shaft	320	Imbus Bolt		

8. BOOSTER PUMP EXPLODED VIEW AND PART LIST



Part No	Part Name	Part No	Part Name	Part No	Part Name
2	Pump Casing	200	Deep Groove Ball Bearing	360	Nut
4	Plastic Diffusor	210	Key (Impeller)	370	Nut (Impeller)
20	Impeller	220	Oil Seal	400	O-Ring
50	Mechanical Seal Bushing	250	Mechanical Seal	401	O-Ring
52	Mechanical Seal Thrust Bushing	260	Plug 1/4 "	402	O-Ring
55	Motor Cover	261	Plug 1/2 "	600	Electric Motor
60	Motor Shaft	320	Imbus Bolt		

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