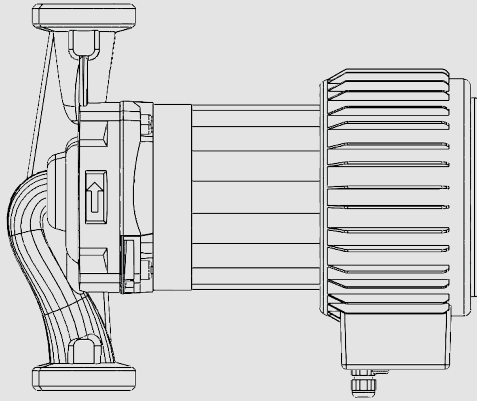


OPUS SERIES

INSTALLATION, OPERATION, MAINTENANCE
AND REPAIR MANUAL



DUYAR 



TABLE OF CONTENTS

1- ATTENTION	3	7.1.3- Variable Pressure Operating Mode	11
2- WARNINGS AND SYMBOLS	3	7.1.4- Night Operating Mode	12
2.1- Symbols Used and Types of Warnings	3	7.2- Error Codes	12
3- GENERAL	5	8- INITIAL OPERATION, CONTINUOUS OPERATION AND STOP	12
3.1- Description of the Pump	5	9- OPERATING MODES AND SELECTION CRITERIA	13
3.2- Application Area (Intended Use)	5	9.1- Manual Operating Mod	13
3.1- Pumped Liquids	5	9.2- Constant Pressure Operating Mode	14
3.1- Operating Conditions	5	9.1- Variable Pressure Operating Mode	14
4- PACKAGE CONTENTS, LIFTING, TRANSPORT AND STORAGE	4	9.1- Operating Mode Selection Criteria	15
4.1- Package Contents	4	10- TERMINAL CONNECTION DETAIL	16
4.2- LIFTING	5	10.1- Terminal Connection Detail Table	14
4.3- Transport and Storage	5	10.2- Terminal Connection Detail Parameter List	15
5- PUMP INFORMATION	5	11- FAULTS, CAUSES AND SOLUTIONS	10
5.1- Technical Information	5	12- APPENDIX	10
5.2- Label Information	6	13- WARRANTY, MAINTENANCE AND SERVICE	10
5.3- Parallel/Backup Operation	7	14- WARRANTY CERTIFICATE	10
5.4- Communication	7		
6- PUMP INSTALLATION	7		
6.1- Positioning	7		
6.3- Water Filling and Air Drain	8		
6.4- Cable-Fuse Selection and Electrical Installation	8		
7- DISPLAY AND SETTINGS	10		
7.1- Operating Modes	11		
7.1.1- Manual Operating Mode	11		
7.1.2- Constant Pressure Operating Mode	11		

1. ATTENTION

Read and check this booklet carefully. The information given here covers the issues that are necessary for practitioners and users in the installation, use and maintenance of the device.

CAUTION Please review this booklet carefully when you need any information for your further applications.

If you need any information about your device or have a problem, it will be sufficient to contact DUYAR PUMP authorized services.

2. WARNINGS AND SYMBOLS

2.1 Symbols Used and Types of Warnings



Ignoring these warnings may result in death or serious injury.



Ignoring these warnings may result in death and/or serious injury from electric shock.

CAUTION

Ignoring these warnings may result in the disruption regarding the safe and secure operation of the pump

3. GENERAL

3.1 Description of the Pump

OPUS Pump is a new technology circulation pump that can adjust the speed according to the needs of the system thanks to the ECM technology it uses and the inverter on it, and saves energy thanks to its different operating modes. Operating modes: manual, constant pressure and variable pressure. See. Chapters 7.1 and 9. The pump operates in accordance with the operating mode selected on the controller and the pump head defined.

3.1 Description of the Pump

OPUS circulation pumps have been developed for the circulation and pressurization of the water circulating in the heating and air conditioning systems in residences, commercial and industrial workplaces

CAUTION OPUS pumps may only be used for specified purposes. Manufacturer and seller companies are not responsible for the consequences of misuse.

3.3 Pumped Liquids

Only clean water free from solid particles should be pumped as a liquid, no antifreeze or similar additives should be added. In order to prevent scaling and corrosion, the properties of pumpable water should be as in Table 3.2:

3.4 Operating Conditions

OPUS circulation pumps have been developed for the circulation and pressurization of the water circulating in the heating and air conditioning systems in residences, commercial and industrial workplaces.

Total Boiler Capacity (kW)	Total Aqualimetal Amount (mol/m ³)	Total H ardness (d _h)	pH value at 25°C	Oxygen Ratio (mg/liter)	Electrical Conductivity at 25°C (µS/cm)
≤ 50	≤ 3.0	≤ 16.8	8.2 - 10.0 <	0.02	< 100
≤	≤	≤ 11			
200 < ... ≤ 600	≤ 1.5	≤ 8.4			
	≤	≤ 3			

Supply voltage : Single phase 230 Volt AC (±10%) and 50Hz (earth protected).

Water temperature : Up to +110°C.

System Pressure : For the minimum and maximum pressure of the fluid in the system: see Table 5.2. and Table 5.3.

Ambient temperature : -10°C to +40°C.



The temperature, pressure and voltage values at which the system operates must be between the values given under the operating conditions.

4. PACKAGE CONTENTS, LIFTING, TRANSPORT AND STORAGE

4.1 Package Contents

The product you have purchased consists of:

- Pump
- User Manual
- Warranty Certificate
- 2 Gaskets

5.3 Parallel/Backup Operation

If more than one pump is installed for backup or parallel operation, a check valve must be provided for each pump in the installation. Pompayı altyapıya yerleştirin ve bağlayın.

5.4 Communication

As Inter-device and BMS: 2 mod-bus, 2 digital inputs, 1 relay output
Optionally, 2 sensor connections, 4 - 20 mA and 0 - 10 V

6. PUMP INSTALLATION



Mechanical and electrical installation of OPUS pumps should be done by authorized service in accordance with the principles specified in this user manual and related standards.

CAUTION

Before starting the installation, contamination in the pipe system should be checked and if there is any contamination, it should be cleaned.

6.1 Communication



During installation, the piping should not press the pump and the pump should not carry the load of the installation pipes.

The following figures should be considered when assembling the pump.

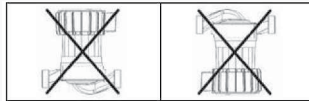
The pump must be connected to the installation smoothly, must not carry the weight of the installation and the pump shaft must be parallel to the ground.

Figure 6.1: Pump Properly Mounted to Vertical Pipe and Horizontal Pipe.



Pump Shaft should not be vertical to the ground.

Figure 6.2: Pump Improperly Mounted



6.3 Water Filling and Air Drain

In order for the pump to operate efficiently, unharmed and noise-efficiently, the air of the installation must be taken and the installation pressure should be between the values in Table 5.1 and Table 5.3. The pump must be operated for a while to drain the air from the installation.

6.4 Cable-Fuse Selection and Electrical Installation



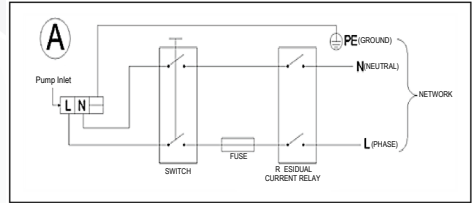
The electrical connection must be made by authorized technical persons in accordance with local regulations and standards.

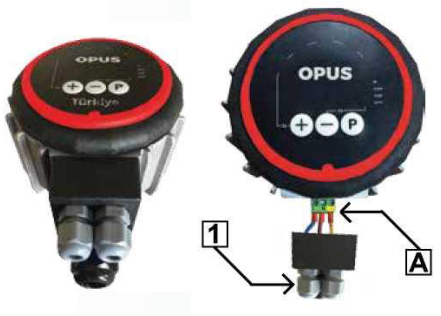


The cable or the pump must not be under energy while making the electrical connection.



There must be a ground line in the electrical installation. If there is no grounding line, the pump should not be operated on that power line.





1. Check the phase and neutral ends of the network.
 2. Attach an appropriate diameter insulated ferrule to the ends of the electrical wires.
 3. Remove the plugs at the top of the unions.
 4. Unscrew the junction box and remove the box.
- Figure 6.8: Removing the junction box**
5. Transmit the ends of the cable through the number 1 gland shown in the figure.
 6. Make the electrical connection of the transmitted cable to the socket named "A" in Figure 6.9 as shown in Figure 6.7.
 7. Tighten the glands so that there is no excessive cable tension at the connection point.
 8. Reinstall the junction box.

Figure 6.8: Removing the junction box



The electrical cable of the pump must not come into contact with the pump or the plumbing.

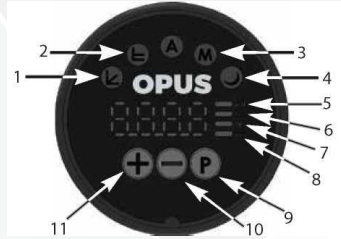


Mains voltage values must be within the values in Table 5.1.












It is recommended to use a residual current relay to protect the user and the pump. Whichever type of pump is to be used, it must be selected according to the nominal current and voltage of that pump, and a B type relay (which can open at DC current and high frequency). (Grounding current should be below 3.5 mA according to EN 60335 standard.)).

7. DISPLAY AND SETTINGS

The OPUS display consists of nine LEDs and three control keys. See. Figure 7.1.



The control screen provides information about the pump status and allows the desired operating mode to be set. Indicators and keys on the control screen are as given below:

-  1. Automatic Variable Pressure Operating Mode
-  2. Automatic Constant Pressure Operating Mode
-  3. Manual Operating Mode
-  4. Night Operating Mode
-  5. Power Drawn
-  6. Target Pump Head
-  7. Motor Output Voltage
-  8. Target Speed
-  9. For Program Selections and Settings
-  10. Minus Key To Decrease
-  11. Plus Key To Increase

7.1 Operating Modes

- Manual Mode
- Constant Pressure Mode
- Variable Pressure Mode

There are four different operating modes. Press and hold the "+" button for 3 seconds to select any operating mode.

For descriptions of operating modes and selection criteria, see Chapter 9.

7.1.1 Manual Operating Mode

Press and hold the "P" key for 3 seconds to set the target speed in manual operation. When the P4 option is reached with the "+" button, when the target speed is reached with the "+,-" keys by pressing the "P" button again, the speed record is made by keeping the "P" button pressed. It is brought from "P4" to "P0" with the "-," key, and exited from the option key with the "P" key. Press the "+" button to start. ımpayı asla boru donanımı için bir destek noktası veya taşıyıcı gibi kullanmayınız.

7.1.2 Constant Pressure Operating Mode

Press and hold the "P" key for 3 seconds to set the desired head in constant pressure operating mode. When you reach the "P5" option with the "+" button, press the "P" button again and bring the desired head to the desired head with the "+,-" keys at 0.5 meters intervals, and keep the "P" button pressed to record the head. It is brought from "P5" to "P0" with the "-," key and exited from the option key with the "P" key. Since the pump is in automatic mode. It starts automatically after 3 seconds.

7.1.4 Night Operating Mode

Press and hold the "P" key for 3 seconds to set the target speed in night work. When the P7 option is reached with the "+" button, when the target speed is reached with the "+,-" keys by pressing the "P" button again, the speed record is made by keeping the "P" button pressed. It is brought from "P7" to "P0" with the "-," key and exited from the option key with the "P" key. It starts automatically after 3 seconds

7.2. Error Codes

In this option, there are errors and warnings given by the pump. For what to do when the pump fails: see Chapter 11.

The error code given shows the status of that error:

- E 1 "Foc runtime" error.
- E 2 "High Voltage" error.
- E 4 "Low Voltage" error.
- E 8 "High temperature" error.
- E 16 "Engine failed to start" error.
- E 32 "Motor Feedback (rotation speed)" error.
- E 64 "Over Current (Motor short circuit " error.
- E 128 Software error.

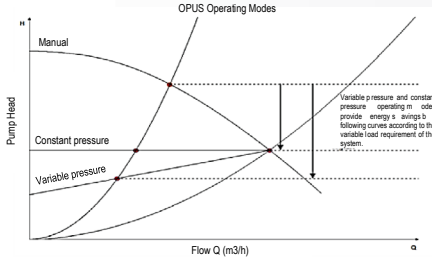
8. INITIAL OPERATION, CONTINUOUS OPERATION AND STOP

Any part of the pump may overheat depending on the temperature of the liquid in the installation. There is a risk of burning and ignition from non-plastic surfaces of the pump on contact.

- Before commissioning the pump, fill the system with water at minimum pressure and bleed it. For minimum pressure, see Table 5.3.
- Check if the mains voltage is within the range of the values given in the technical information in Table 5.2.
- Supply electricity to the system by closing the switch connecting the pump to electricity.
- For changing the operating mode or speed / head, see Chapter 7.
- In case of power failure, the pump saves its settings before the interruption and continues with these settings when it starts working.
- "P" key is pressed when the pump is wanted to be stopped.

9. OPERATING MODES AND SELECTION CRITERIA

OPUS circulation pumps, with their ECM technology, provide operating modes that act in accordance with the variable flow requirement.



As the working point of the pump shifts to the left, that is, the flow rate decreases, the following occurs:

- In manual mode, the head is increased.
- In constant pressure operation mode, the speed decreases and the head remains constant.
- In variable pressure operating mode, the rotation speed decreases linearly so that the head drops to half of the set head value.

9.1 Manual Operating Mode

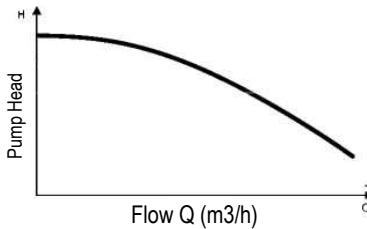


Figure 9.2: Manual Operation Mode Display

In this operating mode, the pump operates at the set rotation speed. The desired speed can be selected.

9.2 Constant Pressure Operating Mode

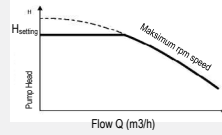


Figure 9.3: Constant Pressure Operating Mode Display

In this operating mode, the pump operates by changing the rotation speed so that the set pump head (H_{setting}) remains constant.

The H_{setting} value of the pumps selected in accordance with the operating point is determined as follows:

- The H value at the operating point is marked on the constant pressure operating mode graph.
- If the marked point is on any operating mode curve belonging to a multiple of 0.5, the H value of that operating mode curve is accepted as the H_{setting} value.
- If the marked point is not on any operating mode curve belonging to 0.5 multiples, the nearest operating mode curve is passed and the H value of that curve is accepted as the H_{setting} value.

The operating mode curves are plotted on the graph at 1 meter intervals. The setting can be selected on the screen in 0.5 meter increments.

9.3 Variable Pressure Operating Mode

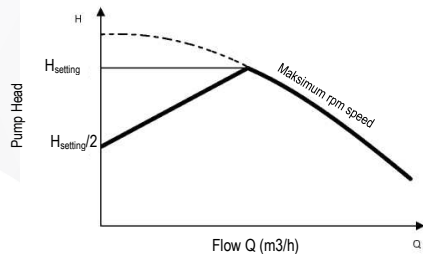


Figure 9.5: Variable Pressure Operating Mode Display

In this operating mode, the pump operates by changing the rotation speed to follow a linear line between the set pump head (H_{setting}) and half of the set value ($H_{\text{setting}}/2$). The pump provides a head on this line depending on the decrease or increase in flow.

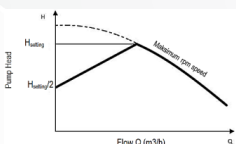
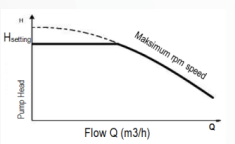
The H_{setting} value of the pumps selected in accordance with the operating point is determined as follows:

- The H value at the operating point is marked on the variable pressure operating mode graph.
- If the marked point is on any operating mode curve belonging to a multiple of 0.5, the H value of that operating mode curve is accepted as the H_{setting} value.
- If the marked point is not on any operating mode curve belonging to 0.5 multiples, the closest operating mode curve is passed and the H value of that curve is accepted as the H_{setting} value.

The operating mode curves are plotted on the graph at 1 meter intervals. The setting can be selected on the screen in 0.5 meter increments.

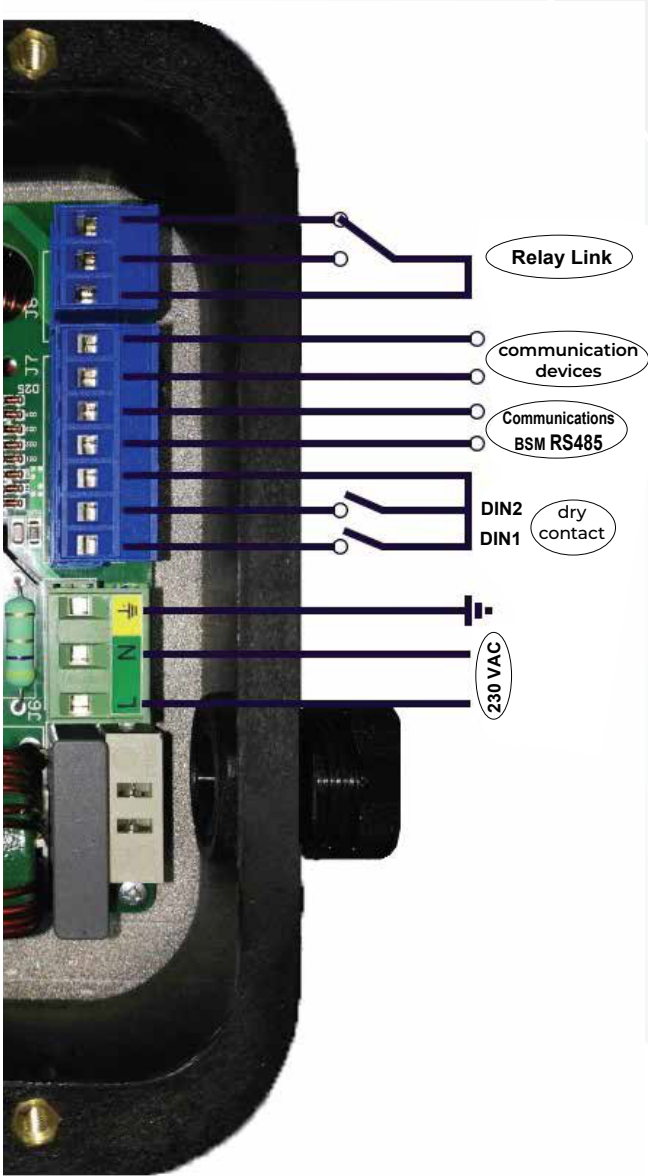
9.4 Operating Mode Selection Criteria

The operating mode is selected by considering the criteria in the table below:

Table 9.1 Operating Mode Selection Criteria			
	Heating Systems with Two Pipes and Thermostatic Valves	<ul style="list-style-type: none"> * Total friction loss > 4mSS * Very long circulation line * High friction losses * Use of pressure balancing valve * Extremely low branch valves 	<ul style="list-style-type: none"> * Total friction loss < 2mSS * Short or large diameter circulation lines * Low friction losses
	Single Pipe Heating Systems		<ul style="list-style-type: none"> * Systems using thermostatic valves * Systems using thermostatic valve and pressure balancing valve
	Underfloor Heating Systems	<ul style="list-style-type: none"> * High friction losses * Use of pressure balancing valve 	<ul style="list-style-type: none"> * Systems using thermostatic valves

10. TERMINAL CONNECTION DETAIL

10.1 Terminal Connection Detail Table



10.2 Terminal Connection Detail Param eter List

Parameter / Setting List		
Parameter	Description	Setting
P1	Image Selection	0 - Watts 1 - Meter (Mt) 2 - Current (A) 3 - Speed (Rpm)
P2		
P3	Device Max. watts	
P4	Target Frequency in Manual Operation	1500 - 4600 Rpm
P5	Operating Meter Value	2.0 - 15.0 Mt
P6	Operating mode	0 - Automatic Variable Pressure 1 - Automatic Constant Pressure 2 - Manual Operation 3 - Automatic Night Mode
P7	Night mode operating speed	1700 - 4600 Rpm
P8	Cross-device Master / Slave selection	0 - 4
P9	Device BMS communication addresses	0 - 255
P14	Factory reset	0 - 1
P15	Relay Mode	0 - Dysfunctional (Does not pull relay) 1 - inverter in fault mode 2 - Inverter running 3 - Inverter in stop state 4 - inverter in variable pressure mode 5 - Inverter in constant pressure mode 6 - Inverter in manual mode 7 - Inverter in night mode
P16	DN1 selection	0 - Dysfunctional device (It works according to its own setting) 1 - The device will start from digital 1. (in mode set in P6) 2 - The device will start-stop from digital 1. It will work according to the max power 3 - The device will start-stop from digital 1. It will work according to the max RPM 4 - The device will start-stop from digital 1 and from the buttons on it in Manual mode
P17	DN2 selection	0 - Dysfunctional device (It works according to its own setting) 1 - The device will start from digital 1. (in mode set in P6) 2 - The device will start-stop from digital 1. It will work according to the max power 3 - The device will start-stop from digital 1. It will work according to the max RPM 4 - The device will start-stop from digital 1 and from the buttons on it in Manual mode
P40	latest error	F1.....20 Latest 20 errors

11. FAULTS, CAUSES AND SOLUTIONS

When a situation occurs that prevents the normal operation of the pump, the pump automatically stops and gives an error or warning code.

See Figure 7.1. Thanks to the codes written on the screen, the cause and solution of the error can be learned. See. Table 11.1.

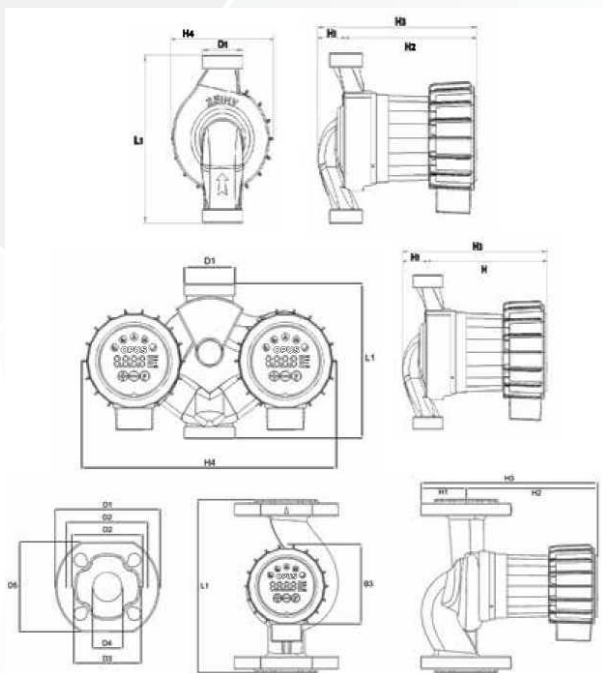
- 1) After an error / warning occurs, the pump switches to standby for 5 seconds. It starts again.
- 2) If the reason for the error / warning disappears after waiting for 5 seconds, the pump starts working again. If the reason for the error / warning continues, the pump gives an error / warning again.
- 3) Error / warning code is found in "P40" in the program menu of the pump.
- 4) All errors are stored in "P40", the last (20) errors.



CAUTION

If the pump fails, it cannot be restarted, service intervention is required.

Error or Warning Code & Name	Reason	Solution
Error: E1 FOC	The stator and rotor do not rotate at synchronous speed due to the instantaneous change in load.	Check the suitability of the installation water flow direction with the arrow mark on the pump body. Wait for the pump to exit the error mode.
Error: E2 High Voltage	The supply voltage is high.	Check if the supply voltage is within the specified range, wait.
Error: E4 Low Voltage	The supply voltage is low.	Check if the supply voltage is within the specified range.
Error: E8 High Temp.	Winding temperature rise due to excessive stress in the engine and/or high water temperature	It is checked that the water temperature is not within the specified range. Wait for the pump to exit the error mode.
Error: E16 Engine Start	Locking of the rotor due to any foreign matter entering the rotor rotating area	Wait for the pump to exit the error mode.
Error: E3 2E Engine Rotation Speed	The stator and rotor do not rotate at synchronous speed due to the instantaneous change in load.	Call for the service
Error: E6 4 Engine Short Circuit	Short circuit between pump and body	Call for the service
Error: E128 Software Err.	Software error	Call for the service



PUMP TYPE	D1	L1	H1	H2	H3	H4	Weight
OPUS 25-6 180	1 ½	180	42	194	236	121	4,10
OPUS 25-8 180	1 ½	180	42	194	236	121	4,10
OPUS 25-12 180	1 ½	180	42	194	236	121	4,10
OPUS D 25-8 180	1 ½	180	50	182	232	300	8,80
OPUS D 25-12 180	1 ½	180	50	182	232	300	8,80
OPUS 32-6 180	2	180	42	194	236	121	4,20
OPUS 32-8 180	2	180	50	182	232	300	4,20
OPUS 32-12 180	2	180	42	194	236	121	4,20
OPUS D 32-8 180	2	180	50	182	232	300	8,80
OPUS D 32-12 180	2	180	50	182	232	300	8,80

PUMP TYPE	D1	D2		D3	D4	D5	nxØm (mm)		L1	H1	H2	H3	H4	Weight
		PN6	PN10				PN6	PN10						
OPUS 40-10 220 C	150	100	110	90	44	130	4x14	4x18	220	65	190	255	150	9,10
OPUS 50-8 240 C	160	110	125	100	54	140	4x14	4x18	240	70	195	265	160	10,00
OPUS 40-10 220	150	100	110	90	44	130	4x14	4x18	220	65	190	255	150	9,80
OPUS 50-8 240	160	110	125	100	54	140	4x14	4x18	240	70	195	265	160	10,70
OPUS 40-12 250 V	150	100	110	90	44	130	4x14	4x18	250	65	190	255	150	9,70
OPUS 50-12 280 V	160	110	125	100	54	140	4x14	4x18	280	70	195	265	160	11,00

Dimensions

13. WARRANTY, MAINTENANCE AND SERVICE

OPUS Circulation Pumps are guaranteed for 2 (two) years against material and factory workmanship defects, provided that the warnings, installation and usage principles specified in the standards and this user manual are followed. Defects caused by irregularities in the electricity supply are not covered by the warranty. The first start-up of this product will be carried out by DUYAR POMPA Authorized Services free of charge, and for the product warranty, the first start-up must be done by the authorized service. The warranty certificate will be filled by the authorized DUYAR POMPA dealer from where the device was purchased and sent to DUYAR POMPA and a copy will be given to the user.

During the warranty period, the warranty certificate must be kept and, if necessary, shown to the authorized DUYAR PUMP service.

The service life determined by the Ministry of Science, Industry and Trade for these devices is 10 (ten) years. In accordance with the relevant law, manufacturers and vendors undertake to service the device and provide spare parts within this period.

OPUS pumps do not require any special maintenance as their shafts and bearings are operated in water.

When you encounter any problem or want to learn the nearest authorized service, visit www.duyarpompa.com or call 0 216 365 70 95 DUYAR PUMP call line.

14. WARRANTY CERTIFICATE

This document has been issued in accordance with the Consumer Protection Law No. 6502 and the Warranty Certificate Regulation.

WARRANTY CONDITIONS

1. The warranty period starts from the delivery date of the goods and is 2 years.
 2. The entire product, including all parts, is under warranty.
 3. If it is understood that the goods are defective, the consumer can use one of the rights specified in the 11th article of the Law on the Protection of the Consumer No. 6502 and stated below;
 - a- Withdrawing from the contract
 - b- Requesting a discount from the sales price,
 - c- Requesting a free repair,
 - d- Requesting that the sold item be replaced with a non-defective one.
 4. In the event that the consumer chooses the right to repair free of charge from these rights, the seller is obliged to repair the goods or have them made, without demanding any labor cost, replacement part cost or any other fee. The consumer can also use the right of free repair against the manufacturer or importer. The seller, the manufacturer and the importer are jointly responsible for the use of this right by the consumer.
 5. If the consumer uses the right to free repair, the consumer may request from the seller a refund of the price of the goods, a discount at the rate of defects or, if possible, replacement of the goods with a non-defective one; in the following cases:
 - Failure again within the warranty period,
 - Exceeding the maximum time required for repair,
 - Determining that repair is not possible with a report by the authorized service station, dealer, manufacturer or importer
- The seller cannot refuse the consumer's request. If this request is not fulfilled, the seller, the manufacturer and the importer are jointly and severally liable.
6. The repair period of the goods cannot exceed **20 working days**. This period starts from the date of notification of the defect related to the goods to the authorized service station or the seller within the warranty period, and from the date of delivery of the goods to the authorized service station outside the warranty period. If the defect of the goods cannot be repaired within 10 working days, the manufacturer or importer must allocate the goods to another financial consumer with similar characteristics until the repair is completed. In the event that the product fails within the warranty period, the time spent in the repair is added to the warranty period.
 7. Defects resulting from the use of the product contrary to the terms in the user manual are not covered by the warranty.
 8. The consumer may apply to **the Consumer Arbitration Committee or the Consumer Court** in the place of residence or the consumer transaction, in case of disputes that may arise regarding the use of his rights arising from the warranty.
 9. In case this Warranty Certificate is not given by the Seller, the Consumer may apply to the **Ministry of Customs and Trade, General Directorate of Consumer Protection and Market Surveillance**.

Manufacturer: Seller Company :

Duyar Pompa ve Hidrofor Sistemleri San. ve Tic. A.Ş.
Dudullu OSB Mah. İMES -101. Sk. İmes Sit A Blok No:13

Ümraniye - İstanbul /TÜRKİYE

Tel : (0216) 365 70 95 Fax :

Faks : (0216) 365 70 95

E-posta : info@duyarpompa.com

Seller Company:

Title:

Address :

Telephone :

Fax :

Email :

Invoice Date and Number:

Delivery Date and Place:

Authorized Signature :

Company Stamp :

Product

Type : MOTORIZED WATER PUMP

Brand : DUYAR

Model

Product Product

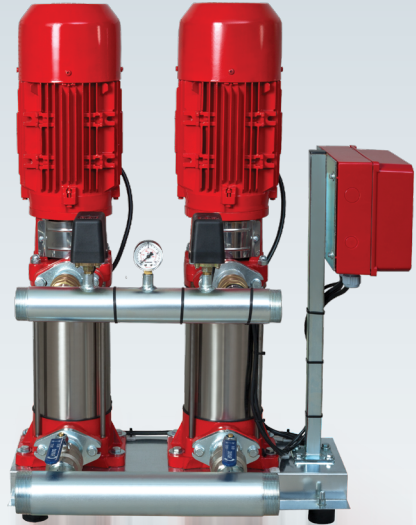
Warranty Period : 2 years

Maximum Repair Time : 20 working days

Banderole and Serial No.



**STAINLESS
BOOSTER**



FIRE BOOSTER



DNP HORIZONTAL END SUCTION PUMP

**SINGLE-STAGE, END SUCTION, CLOSED WHEEL, ELECTRIC
OR DIESEL ENGINE, AXIAL TYPE PUMP**



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