UPA Home Booster

UPA 15-90, UPA 15-120, UPA 120, UPA 15-160

50/60 Hz

GRUNDFOS

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1. Product introduction

UPA booster pumps increase the pressure of domestic water to make the required pressure available at showers, taps and other tapping points. All UPA pumps are supplied with a cable with or without a plug.

An integrated or external flow switch starts or stops the pump when a tapping point is turned on or off. The external flow switch is placed after the pump outlet.

Integrated flow switch	External flow switch
UPA 15-90	UPA 15-160: flow switch supplied with the pump
UPA 15-120	UPA 120: flow switch available as an accessory

Applications

- UPA booster pumps are designed for pressure boosting of domestic water supplied from an external source in residential homes.
- UPA booster pumps are used in open systems and can also be connected directly to the water main.

TM073950

Applications for UPA Home Booster

Features and benefits

- **Flexibility**: Installation in existing systems.
- **Comfort**: Low-noise operation.
- **User friendliness**: Plug and play.
- **Reliability**: Proven Grundfos quality.
- **Energy-efficiency**: High-efficiency PM technology. UPA 15-160 consumes up to 87 % less electrical power than a conventional constant-speed booster.
- **Corrosion-resistant**: Cataphoresis-coated pump housing.

Pumped liquids

UPA booster pumps are suitable for the these liquids:

- fresh water
- drinking water without chemical additives
- chlorinated drinking water.

UPA booster pumps are not suitable for the transfer of flammable liquids such as diesel oil and petrol.

Identification

Type key

Example: UP A 15 -90 N 230V 50Hz Schuko plug

Code	Explanation
UP	Circulator pump
A	Automatic start/stop
15	Type range
-90	Max. head [dm]
N	Pump housing: N, stainless steel
230 V	Voltage
50 Hz	Frequency
Schuko plug	Cable/plug type

Operating conditions

Temperature

Standard pumps	Max. [°C]	Min. [°C]
Liquid temperature	60 °C (TF 95)	2
Ambient temperature	40	2

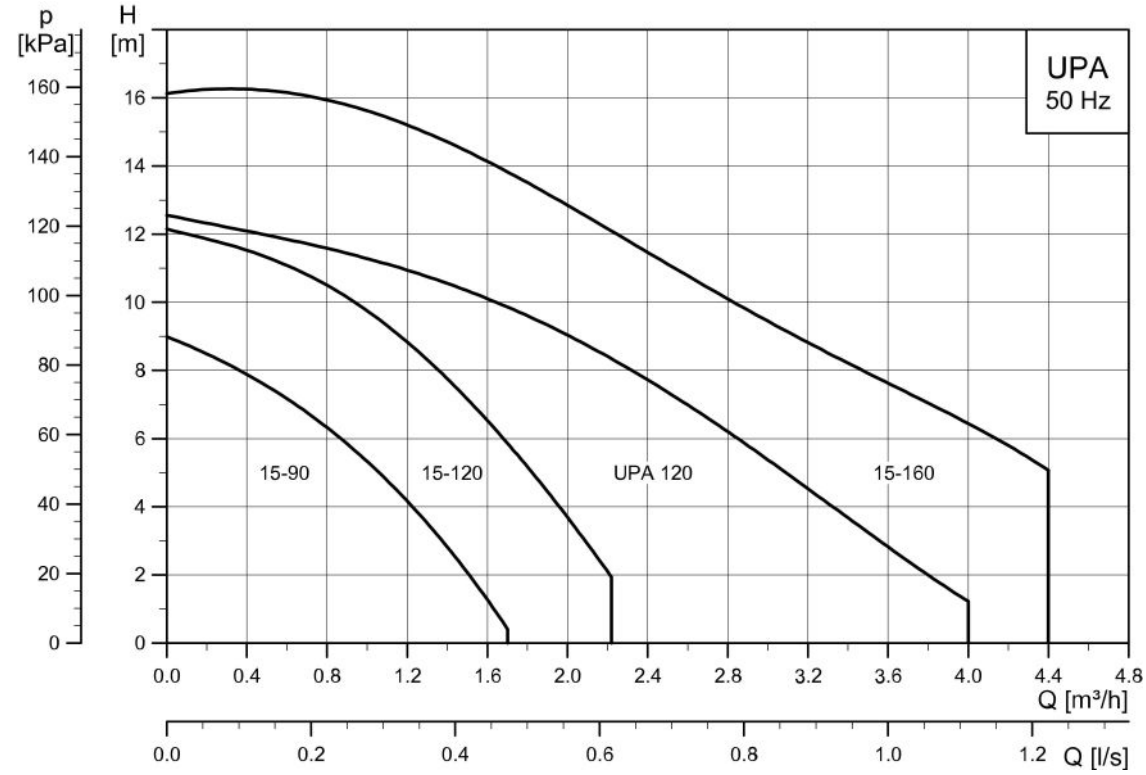
Operating pressure

Pump version	Max. operating pressure	
	[MPa]	[bar]
UPA 15-90	1.0	10
UPA 15-120	1.0	10
UPA 120	1.0	10
UPA 15-160	1.0	10

Inlet pressure

To avoid cavitation noise and risk of damage to the pump bearings, a minimum pressure of 2 m head (0.2 bar) is required at the pump inlet port during operation.

2. Performance range



Performance range UPA 15-90, UPA 15-120, UPA 120, UPA 15-160 (230 V, 50 Hz)

Test liquid: airless water at 20 °C. Kinematic viscosity of u = 1 mm2/s (1 cSt). Head H and pressure ρ conversion at density of ρ = 1000 kg/m3. For liquids with other densities, for example hot water, the outlet pressure is proportional to the density.

3. Construction

UPA booster pumps for pressure boosting are of the canned-rotor type, that is pump and motor form an integral unit without shaft seal. Only two gaskets are required for sealing. The bearings are lubricated by the pumped liquid.

Characteristic materials

Component	Material
Shaft	Aluminium oxide or ceramic
Radial bearing	Ceramic
Thrust bearing	Carbon
Rotor can and bearing plate	Stainless steel
Impeller	Corrosion-resistant material
Pump housing	Cataphoresis-coated cast iron or stainless steel

Motor

UPA 15-90 and UPA 15-90 N

UPA 15-90 and 15-90 N pumps have a 2-pole, asynchronous, squirrel-cage motor. The motor has a built-in impedance protection and is short-circuit-proof. No external motor protection is required.

UPA 15-120 and UPA 120

UPA 15-120 and UPA 120 pumps have a 2-pole, asynchronous, squirrel-cage motor. The motor incorporates thermal overload protection. Therefore, no external motor protection is required.

UPA 15-160

UPA 15-160 high-efficiency boosters are fitted with a 4-pole synchronous permanent-magnet motor. The electronically commutated motor (ECM) has a permanent-magnet rotor and frequency converter.

They are energy-optimised due to improved hydraulics and motor efficiency. The pump controller is incorporated in the control box, which is fitted to the stator housing.

Rotor can

The rotor can is closed with a vent screw fitted directly at the top. The upper radial bearing is incorporated in the top of the rotor can.

Shaft with rotor

The rotor is secured to the shaft with a pipe and an elastic sleeve. The rotor is totally encapsulated in a stainless-steel cladding. To avoid precipitation of calcium in the radial bearings, the shaft has been plunge-ground at the bearing entries.

The shaft has a through-going hole to ensure perfect lubrication and cooling of the upper bearing.

To prevent system water under pressure from running out when the vent screw is removed, a non-return valve (rubber ball) is incorporated at the impeller end of the shaft.

The air in the rotor chamber escapes out into the system through the hole in the shaft.

Thrust bearing

The thrust bearing is secured to the shaft by a spherically flexible suspension.

Bearing plate

The lower radial bearing is pressed into the bearing plate. Due to the relatively large surface of the bearing plate, the motor heat is carried away from the rotor can by the pumped liquid.

Impeller

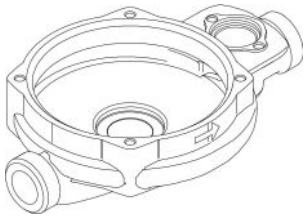
The impeller is a radial impeller with curved composite blades. It is secured to the shaft by a split cone.

Pump housing

UPA 15-90, UPA 15-120 (standard)

The standard pump housing of UPA 15-90 and UPA 15-120 has a bore for a flow switch, and hydraulics have been adapted to the larger impeller. A stainless-steel ring equalises the dimensional difference between stator housing and pump housing.

The standard pump housing is made of cataphoresiscoated cast iron.



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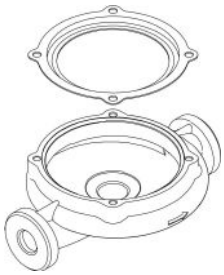
UPA 15-90 and UPA 15-120 standard pump housing

UPA 15-90, UPA 15-160 (stainless steel)

The pump housing of UPA 15-90 N and UPA 15-160 N is made of stainless-steel.

UPA 120 (standard)

The standard pump housing of UPA 120 is made of cataphoresis-coated cast iron.



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UPA 120 and UPA 16-160 standard pump housing

4. Installation

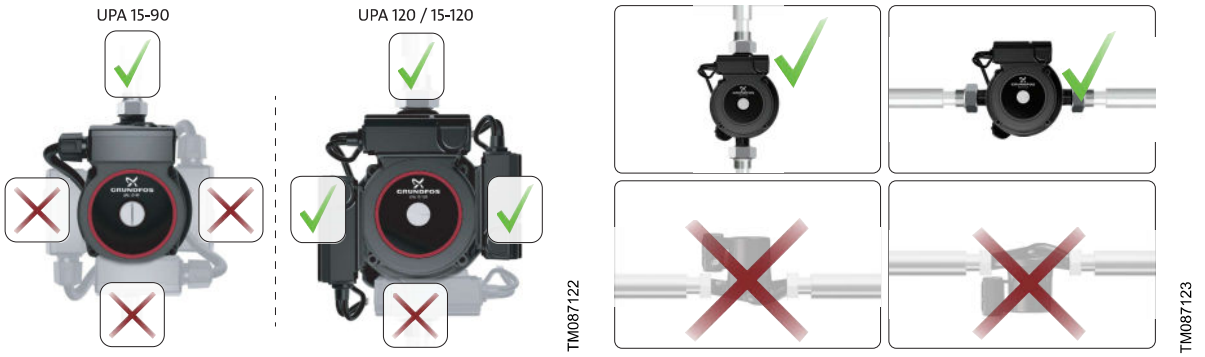
The UPA pump must always be installed with horizontal motor shaft.

For pumps with external flow switch, the mounting position is limited by the length of the cable between the external flow switch and the terminal box.

The external flow switch is supplied with UPA 15-160 and available as an accessory for UPA 120.

As the pumps have drain holes, the terminal box must not face downwards.

UPA 15-90/120/15-120



UPA 15-160

5. UPA 15-90

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UPA booster pumps increase the pressure of domestic water to make the required pressure available at showers, taps and other tapping points.

UPA booster pumps are designed for pressure boosting of domestic water supplied from an external source in residential homes. UPA booster pumps are used in open systems and can also be connected directly to the water main.

The integrated flow switch starts or stops the pump when a tapping point is turned on or off.

Features and benefits

- **Flexibility**: Suitable for installation in existing systems.
- **Comfort**: Low-noise operation.
- **User friendliness**: Plug and play.
- **Reliability**: Proven Grundfos quality.
- **Energy-efficiency**: High-efficiency PM technology.
- **Corrosion-resistant**: Cataphoresis-coated pump housing.

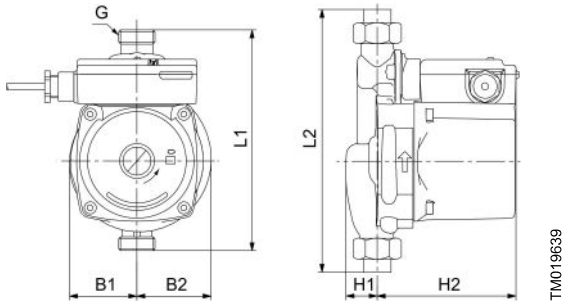
Motor

UPA booster pumps for pressure boosting are of the canned-rotor type, that is pump and motor form an integral unit without shaft seal. Only two gaskets are required for sealing. The bearings are lubricated by the pumped liquid.

UPA 15-90 pumps have a 2-pole, asynchronous, squirrel-cage motor. The motor has a built-in impedance protection and is short-circuit-proof. No external motor protection is required.

Technical data

Dimensions and weights



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Dimensions [mm]						
L1	L2	H1	H2	B1	B2	G
160	214	23	103	50	54	3/4"

Net weight [kg]	Gross weight [kg]	Shipping volume [m^3]
2.5	2.7	0.0042

Operating conditions

Enclosure class	IPX2D
Insulation class	H/F
Connections	G 3/4 - R 1/2 unions
Operating pressure	Max. 10 bar
Liquid temperature	2-60 °C (TF 95)
Ambient temperature	2-40 °C
Noise level	< 43 dB(A)

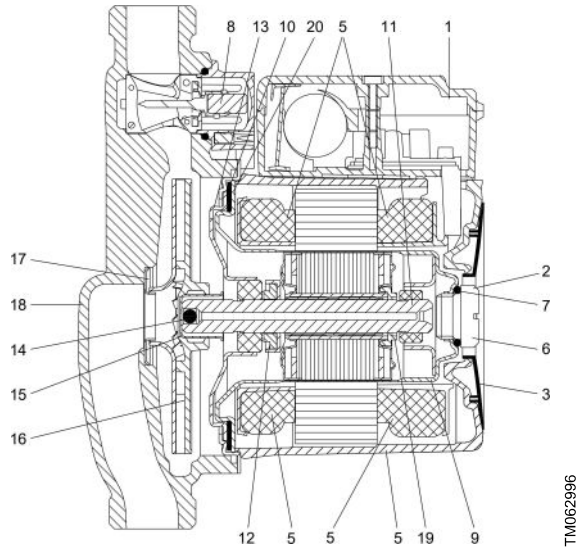
See nameplate data for the specific product model.

Electrical data

Frequency [Hz]	Voltage [V]	$P1_{max}$ [W]	$I_{1/1}$ [A]
50	1 × 230	120	0.48
60	1 × 230	120	0.48
60	1 × 115	120	1.00
60	1 × 127	120	1.00

Construction of UPA 15-90

Material specification



Sectional drawing of UPA 15-90

Pos.	Description	Material
1	Terminal box	Composite PPE/PS
	Electric unit	Composite PET
2	Radial bearing	Ceramic
3	Nameplate	Composite PA66
5	Stator housing	AlSi10Cu2
	Stator winding cap	Composite PET
	Stator windings	Copper
6	Vent screw	Brass, nickelled, Ms58, EN 2.0401.30
7, 10	Gaskets	EPDM rubber
8	Flow switch	Magnet / EPDM rubber / PP 9 Rotor can
9	Rotor can	Stainless steel EN 1.4301, AISI
11	Shaft	Aluminium oxide
12	Thrust bearing	Carbon
	Thrust bearing retainer	EPDM rubber
13	Bearing plate	Stainless steel EN 1.4301, AISI 304
14	Ball (non-return valve)	EPDM rubber
15	Split cone	Stainless steel EN 1.4301, AISI 304
16	Impeller	Composite PP 30 % GF
17	Neck ring	Stainless steel EN 1.4301, AISI 304
18	Pump housing	UPA 15-90: Cast iron EN 1561 EN-GJL-150, ASTM 30 B
		UPA 15-90 N: Stainless steel EN 1.4308, AISI 304 C15
19	Stop ring	Composite PES
20	Intermediate ring	Stainless steel

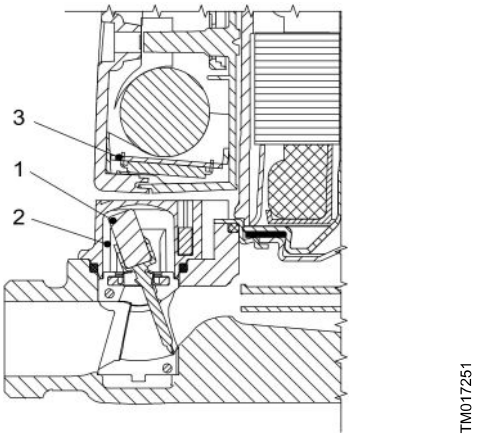
Characteristic materials

Component	Material
Shaft	Aluminium oxide or ceramic
Radial bearing	Ceramic
Thrust bearing	Carbon
Rotor can and bearing plate	Stainless steel
Impeller	Corrosion-resistant material
Pump housing	Cataphoresis-coated cast iron or stainless steel

Flow switch

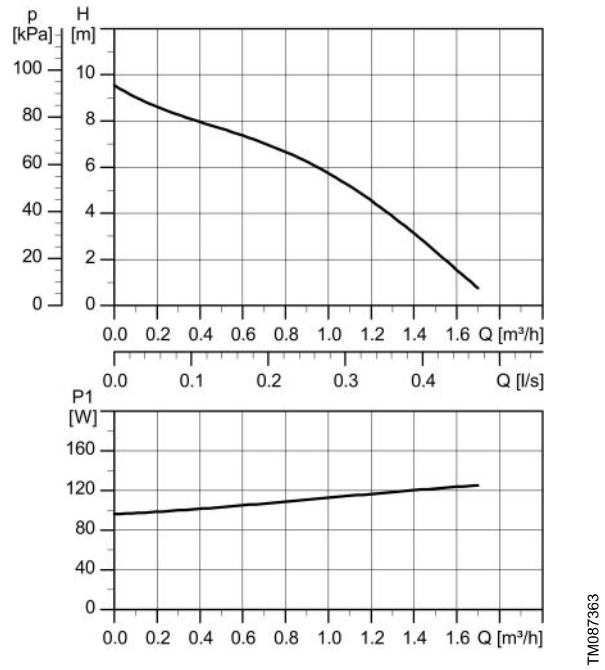
The integrated flow switch starts or stops the pump when a tapping point is turned on or off.

The flow switch consists of an arm with a magnet (1), that moves in a chamber (2). The chamber is separated from the pumped liquid and the terminal box. The magnetic field activates a magnetic contact (3).

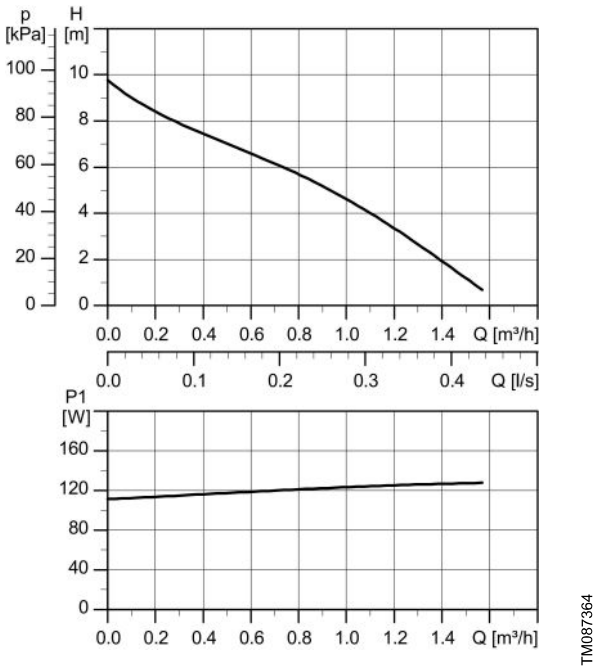


UPA 15-90 flow switch

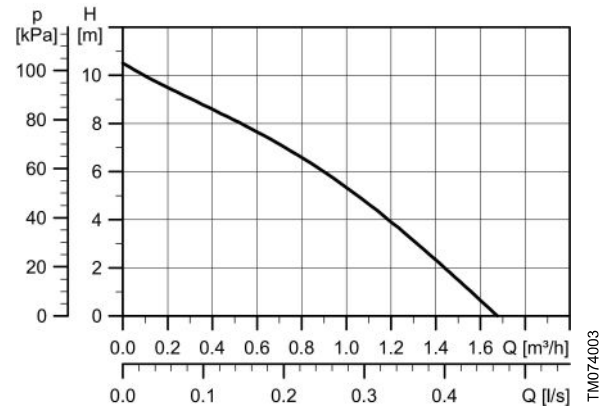
Performance curves



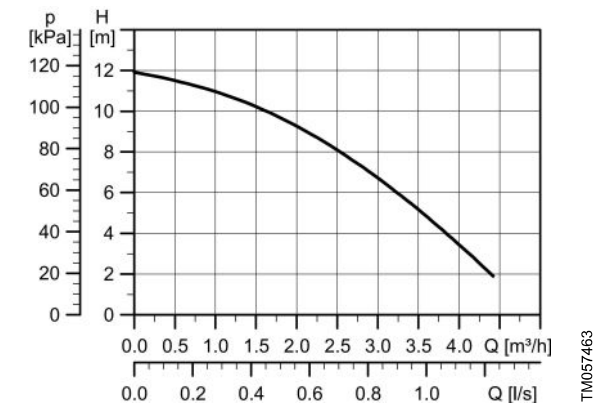
UPA 15-90, 1 × 230 V, 50 Hz



UPA 15-90, 1 × 230 V, 60 Hz



UPA 15-90, 1 × 115 V, 60 Hz



UPA 15-90, 1 × 127 V, 60 Hz