

Unilift AP12, AP35, AP50

Installation and operating instructions



English (US) Installation and operating instructions

Original installation and operating instructions

These installation and operating instructions describe Grundfos Unilift AP12, AP35 and AP50.

Sections 1-5 give the information necessary to be able to unpack, install and start up the product in a safe way.

Sections 6-10 give important information about the product, as well as information on service, fault finding and disposal of the product.



Prior to installation, read this document. Installation and operation must comply with local regulations and accepted codes of good practice.



Successful operation depends on careful attention to the procedures described in this manual. Keep this manual for future use.

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1. Limited warranty

Products manufactured by Grundfos Pumps Corporation (Grundfos) are warranted to the original user only to be free of defects in material and workmanship for a period of 24 months from date of installation, but not more than 30 months from date of manufacture. Grundfos' liability under this warranty shall be limited to repairing or replacing at Grundfos' option, without charge, F.O.B. Grundfos' factory or authorized service station, any product of Grundfos manufacture. Grundfos will not be liable for any costs of removal, installation, transportation, or any other charges that may arise in connection with a warranty claim.

Products which are sold, but not manufactured by Grundfos, are subject to the warranty provided by the manufacturer of said products and not by Grundfos' warranty.

Grundfos will not be liable for damage or wear to products caused by abnormal operating conditions, accident, abuse, misuse, unauthorized alteration or repair, or if the product was not installed in accordance with Grundfos' printed installation and operating instructions and accepted codes of good practice. The warranty does not cover normal wear and tear.

To obtain service under this warranty, the defective product must be returned to the distributor or dealer of Grundfos' products from which it was purchased together with proof of purchase and installation date, failure date and supporting installation data. Unless otherwise provided, the distributor or dealer will contact Grundfos or an authorized service station for instructions. Any defective product to be returned to Grundfos or a service station must be sent freight prepaid; documentation supporting the warranty claim and/or a Return Material Authorization must be included if so instructed.

Grundfos will not be liable for any incidental or consequential damages, losses, or expenses arising from installation, use, or any other causes. There are no express or implied warranties, including merchantability or fitness for a particular purpose, which extend beyond those warranties described or referred to above. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages and some jurisdictions do not allow limitations on how long implied warranties may last. Therefore the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from jurisdiction to jurisdiction.

Products which are repaired or replaced by Grundfos or authorized service center under the provisions of these limited warranty terms will continue to be covered by Grundfos warranty only through the remainder of the original warranty period set forth by the original purchase date.

2. General information

2.1 Symbols used in this document

2.1.1 Warnings against hazards involving risk of death or personal injury



DANGER

Indicates a hazardous situation which, if not avoided, will result in death or serious personal injury.



WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious personal injury.



CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate personal injury.

The text accompanying the three hazard symbols DANGER, WARNING and CAUTION will be structured in the following way:

SIGNAL WORD



Description of hazard

Consequence of ignoring the warning.
- Action to avoid the hazard.

2.1.2 Other important notes



A blue or grey circle with a white graphical symbol indicates that an action must be taken.



A red or grey circle with a diagonal bar, possibly with a black graphical symbol, indicates that an action must not be taken or must be stopped.



If these instructions are not observed, it may result in malfunction or damage to the equipment.



Tips and advice that make the work easier.

2.2 Overview drawing

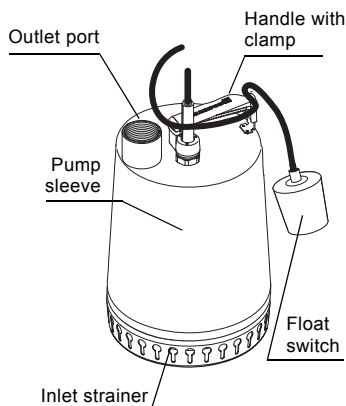


Fig. 1 Unilift AP pump

TM03 6189 4406

3. Receiving the product

CAUTION



Crushing of feet

- Minor or moderate personal injury
- Wear safety shoes when handling the product.
 - Use the pump handle to move the pump. Do not lift it by the power cable.

3.1 Inspecting the product

Check that the product received is in accordance with the order.

Check that the voltage and frequency of the product match voltage and frequency of the installation site.

3.2 Scope of delivery

The box contains the following items:

- pump
- power cable
- float switch (if included with this model)
- installation and operating instructions.

4. Installing the product

DANGER

Electric shock

Death or serious personal injury

- The installation, electrical connection, and maintenance of the product must be carried out by an authorized electrician in accordance with the National Electrical Code and any state, local governing codes and regulations.



DANGER

Electric shock

Death or serious personal injury

- Switch off the power supply before starting any work on the product.
- Make sure that the power supply cannot be accidentally switched on.



DANGER

Electric shock

Death or serious personal injury

- Pump installation in a sump pit, basin or tank must be carried out by qualified, specially trained persons in accordance with the National Electrical Code and any state, local governing codes and regulations.



WARNING

Moving parts

Minor or moderate personal injury

- Make sure that persons cannot come into contact with moving parts.



Do not lift the pump by the power cable or by the outlet pipe or hose.

If the pump is installed in a well or tank, lower and lift it by means of a wire or chain fastened to the pump handle.



DANGER

Electric shock

- Death or serious personal injury
- Route the power cable in a way that supports it and protects it from being cut, pinched or damaged.
- If the power cable is cut, pinched, or damaged, replace it before using the product.



DANGER

Electric shock

- Death or serious personal injury
- Do not remove the power cable and strain relief.
- Do not connect electrical conduit to the pump.



Use an approved level controller with a current rating that matches the service factor marked on the product's nameplate.

4.1 Pipe connection

Threaded steel or rigid plastic pipes can be screwed directly into the 1.5" NPT outlet port. For permanent installation, we recommend that you fit a union, a non-return valve and an isolating valve in the outlet pipe.

Other recommendations:

- For portable or temporary installations, a plastic outlet pipe can be used in conjunction with a suitable, screwed connection or a hose coupling.
- Threads must be sealed using Teflon[®] tape.



Do not install the pump hanging from the outlet pipe or hose.

Do not lift the pump by its power cable. Lower and lift it by means of a wire or chain fastened to the pump handle.

4.2 Minimum space

When the pump is installed in a permanent installation with a float switch, and the cable length is set to the minimum length of at least 4 in. (100 mm), the minimum dimensions of the sump pit, basin or tank must be as shown in fig. 2.

In addition, the sump pit, basin or tank must be sized according to the relation between the water flow to the sump pit, basin or tank and the pump performance.

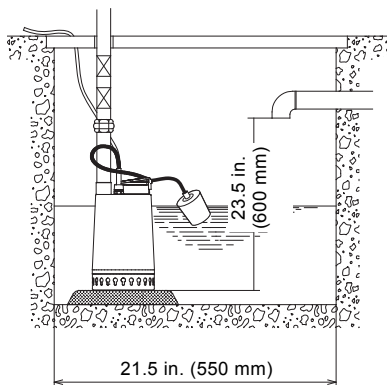


Fig. 2 Minimum installation dimensions

TM03 6194 4406

4.3 Location

The pump can be used in vertical as well as horizontal position with the outlet port as the highest point of the pump. See fig. 3.

During operation, the inlet strainer must always be completely covered by the pumped liquid.

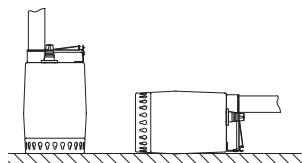


Fig. 3 Pump positions

TM03 6193 4406

When the pipe or hose has been connected, place the pump in its operating position.

Position the pump so that the inlet strainer will not be blocked by sludge, mud or similar materials.

In a permanent installation, the installation site must be cleared of sludge, pebbles, etc. before the pump is installed.

We recommend that you place the pump on a solid base. See fig. 4.

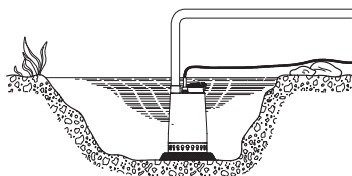


Fig. 4 Pump placed on a plate

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4.4 Adjustment of cable length for float switch

The difference in level between start and stop can be adjusted by changing the free cable length between the float switch and the pump handle.

- An increased free cable length will result in fewer starts and stops and a large difference in level.
- A reduced free cable length will result in more frequent starts and stops and a small difference in level.

The free cable length must be a minimum of 4 in. (100 mm) and a maximum of 14 in. (355 mm).

The stop level must be above the inlet strainer to prevent the pump from taking in air.

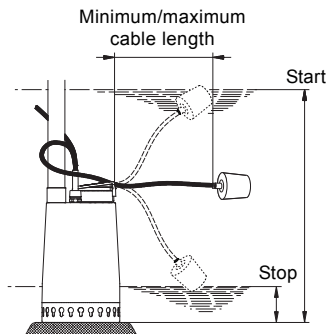


Fig. 5 Start and stop levels

The start and stop levels vary according to the cable length.

Unilift AP start and stop levels

Cable length min. 4 in. (100 mm)		Cable length max. 14 in. (355 mm)	
Start	Stop	Start	Stop
19.7 in. (500 mm)	11.8 in. (300 mm)	21.7 in. (550 mm)	4 in. (100 mm)

Manual operation can be achieved in one of two ways:

- Unplug both the pump and the float switch from the wall socket. Insert the pump plug into the wall socket.
- Keep the float switch in a high position by attaching it to the outlet pipe/hose.

4.5 Electrical connection

DANGER

Electric shock

- Death or serious personal injury
- Pump installation in a sump pit, basin or tank must be carried out by qualified, specially trained persons in accordance with the National Electrical Code and any state, local governing codes and regulations.



WARNING

Electric shock

- Death or serious personal injury
- Connect the product only to a properly grounded receptacle.
 - We recommend that you connect the pump to an electrical circuit with a Ground Fault Circuit Interrupter (GFCI).



WARNING

Electric shock

- Death or serious personal injury
- The protective ground of the pump power plug must be connected to the protective ground receptacle of the power outlet.
 - The plug must have the same ground connection system as that of the power outlet. If not, use a suitable adapter.



The electrical connection must be carried out in accordance with local regulations and follow the National Electrical Code (USA) and the Canadian Electrical Code. The pump must be grounded. The operating voltage and frequency are marked on the nameplate. Make sure that the motor is suitable for the power supply on which it will be used.

Power supply

- 1 x 115 V, 60 Hz
- 1 x 230 V, 60 Hz.

To connect the pump for manual operation, insert the pump plug into a wall socket. If a float switch is included for automatic operation, it will be of the "piggy-back" design. Insert the float-switch plug into the wall socket, and insert the pump plug into the back of the float-switch plug.

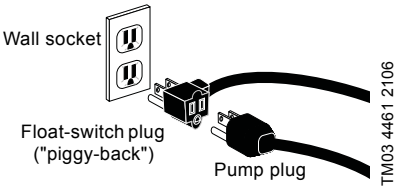


Fig. 6 Pump and float-switch plugs

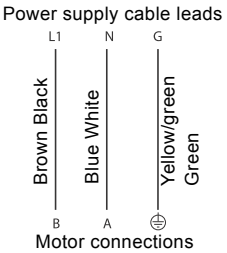


Fig. 7 Wiring diagram

Motor protection

The Unilift AP pumps have built-in thermal overload protection and require no additional motor protection. If the motor is overloaded, it will stop automatically. When cooled to normal temperature, the motor will start automatically.

5. Starting up the product

DANGER



- Minor to moderate personal injury
- Do not touch the inside of the pump while the pump is running.

5.1 Starting

Before starting the pump, check that the following requirements are fulfilled:

- The pump's inlet strainer must be submerged below the surface of the liquid.
- The pump is placed on a base so that the inlet strainer is not blocked by silt, mud or similar materials.
- The pipe or hose connection is tight.
- The outlet pipe or hose is open (hose not bent, etc.).
- The pump is connected to the power supply in accordance with the instructions.
- For pumps with a float switch, check that the float switch can move freely. See section [4.4 Adjustment of cable length for float switch](#).

Startup procedure:

1. Switch on the pump and check:
 - that the pump is operating properly
 - that water is being pumped.
2. For pumps with a float switch, check that the float switch will allow the pump to pump down to the chosen level according to [fig. 5](#). If you want to pump below this level, hold the float switch in vertical position.

6. Product introduction

The Grundfos Unilift AP pump is a single-stage, submersible pump designed for the pumping of wastewater.

The pump is designed for automatic operation with a float switch or for manual operation.

The pump can be installed in a permanent installation or used as a portable pump.

6.1 Applications

DANGER



Electric shock

Death or serious personal injury

- Do not use the pump in or at swimming pools, garden ponds, etc. when there are persons in the water.

If the pump has been used for very dirty or chlorinated water, flush the pump thoroughly with clean water after use.



Wear gloves and other suitable personal protective equipment in accordance with local regulations. Observe local regulations on any exposure to wastewater.

Incorrect use of the pump, for example resulting in blockage or wear of the pump will void the pump's warranty. Note that the pump is not suitable for these liquids:

- sewage
- liquids containing long fibers
- flammable liquids (oil, gasoline, etc.)
- aggressive liquids.
- liquids containing solids exceeding the pump's recommended maximum particle size.

The pump is capable of pumping water containing a limited quantity of spherical particles, see section [Maximum particle size](#) on page 14.

Pumping of spherical particles exceeding the maximum particle size for the pump may block or damage the pump.

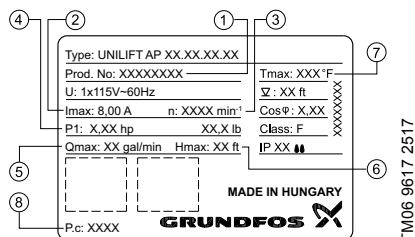
Applications	AP12	AP35	AP50
Pumping of gray wastewater with impurities up to the sizes listed in the section <i>Maximum particle size</i> on page 14, and according to the liquid temperature, viscosity and pH value the pump is designed for.	•	•	•
Mobile use to dewater ponds, pools, flooded basements and other similar applications.	•	•	•
Stationary installation in collecting tanks, sump wells and pits to dewater domestic wastewater (gray wastewater) from showers, washing machines, sinks, bath tubs etc. excluding wastewater (black) from toilets.	•	•	•
Stationary installation in collecting tanks, sump wells and pits to discharge groundwater, rainwater or surface water.*	•	•	•
Wastewater from domestic washing machines or commercial and industrial washing machines, laundries up to the temperature approved.	•	•	•

* Check the regional or local EX-approval requirements for surface water at gas station and in parking areas.

Note: Unilift AP does not have any explosion proof approval. See Grundfos SL range.

6.2 Identification

6.2.1 Nameplate



TM06 9617 2517

Fig. 8 Nameplate

Pos.	Nameplate text	Description
1	Prod. No.	Product number
2	I _{max}	Maximum current [A]
3	n	Speed [min ⁻¹]
4	P ₁	Power input [Hp]
5	Q _{max}	Maximum flow [gal/min.]
6	H _{max}	Maximum head [ft]
7	T _{max}	Maximum liquid temperature [°F]
8	P.c.:	Production code (YYWW)

6.2.2 Type key

Example Unilift AP 35 B. 50. 08. A 1 V

Type range	AP
Maximum solids size [mm]	35
Pump type	B
Blank = AP Pump	
B = AP Basic	
Nominal diameter of outlet port	50
Power output P ₂ / 100 [W]	08
Level control	A
A = Automatic operation (with float switch)	
Blank = Manual operation (without float switch)	
Motor	1
1 = Single-phase	
3 = Three-phase	
Impeller	V
V = Vortex impeller	

6.3 Functions

Pump with float switch

Automatic start and stop.

Pump without float switch

Manual external start and stop.

6.4 Pump construction

The main components of the pump appear from the table below and figures A, B and C in the Appendix. See page 15.

Pos.	Description
6	Pump housing
37a	O-ring
49	Impeller
55	Pump sleeve with motor
66	Washer
67	Lock nut
84	Inlet strainer
105	Shaft seal
182	Float switch
188a	Screws
193	Screws

The position numbers are referred to in the cleaning instructions in section 7.1 *Cleaning the pump* on page 12.

7. Servicing the product

DANGER

Electric shock



Death or serious personal injury

- Switch off the power supply before starting any work on the product. Make sure that the power supply cannot be accidentally switched on.

CAUTION

Biological hazard



Minor or moderate personal injury

- Before carrying out maintenance and service, flush the pump thoroughly with clean water.
- After dismantling the pump, rinse the pump parts in clean water.

CAUTION



Sharp element

Minor or moderate personal injury

- Wear protective gloves.



This work must be carried out by specially trained persons. Furthermore, all rules and regulations covering safety, health and environment must be observed.

Clean the pump before service. See section [7.1 Cleaning the pump](#).

Check the function of the pump, inspect it for damage and replace the oil once a year. If the pump is used for pumping liquids containing abrasive particles or it is operating continuously, replace the oil at shorter intervals. See the table below.

In the case of long operating time or continuous operation, replace the oil as follows:

Liquid temperature [°F (°C)]	The oil must be replaced after
68 (20)	4500 operating hours
104 (40)	3000 operating hours
131 (55)	1500 operating hours

The pump contains approximately 60 ml non-poisonous oil.

Used oil must be disposed of in accordance with local regulations.

If the drained oil contains water or other impurities, the shaft seal must be replaced.

7.1 Cleaning the pump

If the pump does not deliver a sufficient quantity of water because of sediment, dismantle and clean the pump.

To dismantle the pump, follow this procedure:

1. Disconnect the power supply.
2. Lift the pump out of the liquid and allow it to drain.
3. Carefully loosen the inlet strainer (84) by inserting a screwdriver through one of the holes of the strainer and press it downward. Repeat the procedure until the strainer is free and can be removed.
4. Remove the inlet strainer, clean, and refit it.
5. Place the pump on its base in the liquid.
6. Connect the power supply and start the pump.

If the pump still does not deliver sufficient water, dismantle the pump:

1. Disconnect the power supply.
2. Lift the pump out of the liquid and allow it to drain.
3. Carefully loosen the inlet strainer (84) by inserting a screwdriver through one of the holes of the strainer and press it downward. Repeat the procedure until the strainer is free and can be removed.
4. Remove the inlet strainer and clean it.
5. Unscrew the six screws (188a) close to the edge of the pump sleeve (55) and lift the pump housing (6) out of the pump sleeve.
6. Clean the pump housing, the pump, and the impeller (49).
7. Check to make sure the impeller can rotate freely. If not, remove the impeller:
 - Hold the impeller in place with a screwdriver while loosening and removing the lock nut (67) on the shaft.
 - Clean the impeller and the shaft.
8. Check the impeller and the shaft. If the impeller is worn or defective, replace it.
9. Assemble the pump in the reverse order of dismantling:
 - Fit the impeller (49) with the washer and lock nut (67). Make sure the impeller engages with the shaft.
 - Position the O-ring (37a) in the pump sleeve and lower the pump onto the pump housing.
 - Fit the six screws (188a) in the pump housing (6) and tighten securely.

7.2 Contaminated pumps

Any application for service (no matter to whom it may be made) must include details about the pumped liquid.

CAUTION



Biological hazard

Minor or moderate personal injury
 - Flush the pump thoroughly with clean water and rinse the pump parts in water after dismantling.

The product will be classified as contaminated if it has been used for a liquid which is injurious to health or toxic.

If you request Grundfos to service the product, contact Grundfos with details about the pumped liquid before returning the product for service. Otherwise Grundfos can refuse to accept the product for service.

Any application for service must include details about the pumped liquid.

Clean the product in the best possible way before you return it.

Costs of returning the product are to be paid by the customer.

7.3 Replacement of parts

The impeller assembly and power cable can be replaced. The part numbers and the components included in the service kits can be found on Grundfos Product Center (www.grundfos.us). Alternatively, contact your local Grundfos dealer or service center.

8. Fault finding the product

DANGER

Electric shock



Death or serious personal injury
 - Switch off the power supply before starting any work on the product. Make sure that the power supply cannot be accidentally switched on.

Fault	Cause	Remedy
1. The motor does not start.	a) No power supply.	Connect the power supply.
	b) The motor is switched off by the float switch.	Adjust or replace the float switch.
	c) The fuses are blown.	Replace the fuses.
	d) The motor protection or thermal relay has tripped.	Wait until the motor protection trips in again or reset the relay.
	e) The impeller is blocked by impurities.	Clean the impeller. See section 7.1 Cleaning the pump .
	f) There is a short circuit in the cable or motor.	Replace the defective part.
2. The motor protection or the thermal relay trips after a short time of operation.	a) The temperature of the pumped liquid is too high.	Contact your Grundfos representative.
	b) The impeller is blocked or partly blocked by impurities.	Clean the impeller. See section 7.1 Cleaning the pump .
	c) Phase failure.	Consult an electrician.
	d) The voltage is too low.	Consult an electrician.
	e) The overload setting of the motor-protective circuit breaker is set too low.	Adjust the setting.
3. The pump runs constantly or gives insufficient water.	a) The pump is partly blocked by impurities.	Clean the pump. See section 7.1 Cleaning the pump .
	b) The outlet pipe or valve is partly blocked by impurities.	Clean the outlet pipe or valve.
	c) The impeller is not properly fixed to the shaft.	Tighten the impeller.
	d) The float switch is set incorrectly.	Adjust the float switch setting.
	e) The pump is too small for the application.	Replace the pump.
	f) The impeller is worn.	Replace the impeller.

Fault	Cause	Remedy
4. The pump runs but gives no water.	a) The pump is blocked by impurities.	Clean the pump. See section 7.1 Cleaning the pump .
	b) The outlet pipe or the non-return valve is blocked by impurities.	Clean the outlet pipe or the non-return valve.
	c) The impeller is not properly fixed to the shaft.	Tighten the impeller.
	d) Air is trapped in the pump.	Vent the pump and the outlet pipe.
	e) The liquid level is too low. The inlet strainer is not completely submerged in the pumped liquid.	Submerge the pump in the liquid or adjust the float switch.
	f) The float switch does not move freely.	Make the float switch move freely.

9. Technical data

Enclosure class

IP68.

Insulation class

F (311 °F / 155 °C).

9.1 Operating conditions

Minimum liquid temperature

32 °F (0 °C).

Maximum liquid temperature

122 °F (50 °C) in continuous operation.

Minimum water level

The water level must be above the inlet strainer.

Maximum installation depth

30 ft (10 m) below liquid level.

Maximum starts per hour

20 starts, evenly distributed once every 3 minutes.

pH value

Between 4 and 10.

Maximum particle size

Pump type	Max. spherical diameter
Unilift AP12	0.47 in. (12 mm)
Unilift AP35	1.38 in. (35 mm)
Unilift AP50	1.97 in. (50 mm)

Density

Maximum 68 lbs/ft³ (1100 kg/m³).

Viscosity

Maximum 10 cSt (centistoke) (10 mm²/s).

Operation

The inlet strainer must always be covered by the pumped liquid. The pump can run continuously.

See the nameplate on the pump for the electrical and hydraulic performance data.

9.2 Sound pressure level

The sound pressure level of the pump is lower than the limiting values stated in the EC Council Directive 2006/42/EC relating to machinery.

A-weighted sound pressure level

< 65 dB (A) in accordance with ISO 3743.

For further technical data, see sections [6.2.1 Nameplate](#) and [6.2.2 Type key](#).

9.3 Storage

Storage temperature

Not lower than -22 °F (-30 °C).

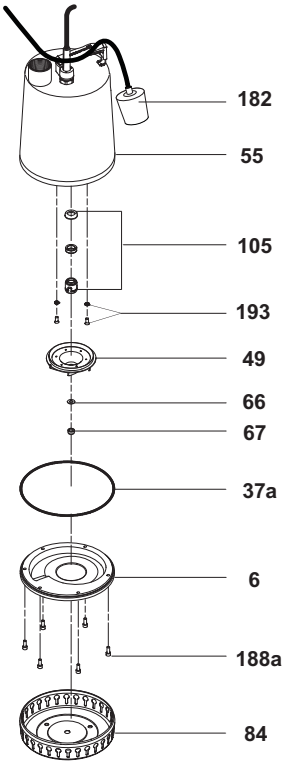
10. Disposing of the product

This product or parts of it must be disposed of in an environmentally sound way:

1. Use the public or private waste collection service.
2. If this is not possible, contact the nearest Grundfos company or service workshop.

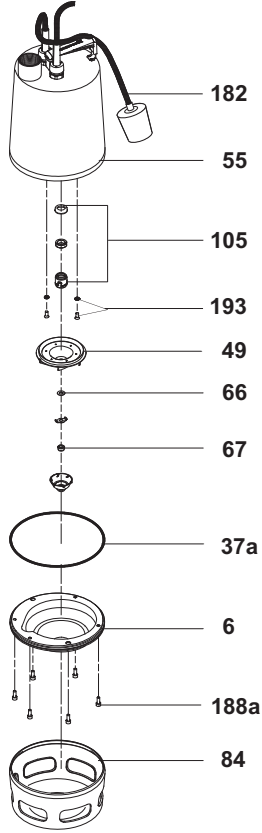
Subject to alterations.

Fig. A: Unilift AP12



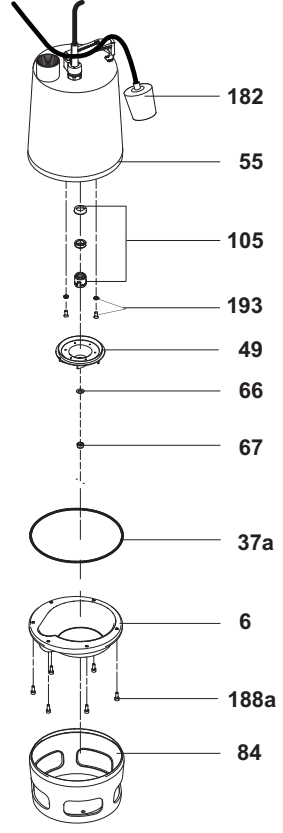
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Fig. B: Unilift AP35



TM03 6187 4406

Fig. C: Unilift AP50



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GRUNDFOS Kansas City

17100 West 118th Terrace
Olathe, Kansas 66061
Phone: (913) 227-3400
Fax: (913) 227-3500

www.grundfos.us

GRUNDFOS Canada

2941 Brighton Road
Oakville, Ontario L6H 6C9 Canada
Phone: +1-905 829 9533
Telefax: +1-905 829 9512

www.grundfos.ca

GRUNDFOS México

Boulevard TLC No. 15
Parque Industrial Stiva Aeropuerto
C.P. 66600 Apodaca, N.L. México
Phone: 011-52-81-8144 4000
Fax: 011-52-81-8144 4010

www.grundfos.mx

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