

## AP12, AP35, AP50

- Ⓜ Installation and operating instructions
- Ⓝ Montage- und Betriebsanleitung
- ⓕ Notice d'installation et d'entretien
- Ⓡ Istruzioni di installazione e funzionamento
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- Ⓜ Οδηγίες εγκατάστασης και λειτουργίας
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- Ⓢ Monterings- och driftsinstruktion
- ⓕ Asennus- ja käyttöohjeet
- Ⓝ Monterings- og driftsinstruktion



## Declaration of Conformity

We **GRUNDFOS** declare under our sole responsibility that the products **AP12**, **AP35** and **AP50**, to which this declaration relates, are in conformity with the Council Directives on the approximation of the laws of the EEC Member States relating to

- Machinery (98/37/EEC).  
Standard used: EN 292.
- Electromagnetic compatibility (89/336/EEC).  
Standards used: EN 61 000-6-2 and EN 61 000-6-3.
- Electrical equipment designed for use within certain voltage limits (73/23/EEC).  
Standards used: EN 60 335-1 and EN 60 335-2-41.

## Déclaration de Conformité

Nous **GRUNDFOS** déclarons sous notre seule responsabilité que les produits **AP12**, **AP35** et **AP50** auxquels se réfère cette déclaration sont conformes aux Directives du Conseil concernant le rapprochement des législations des Etats membres CEE relatives à

- Machines (98/37/CEE).  
Standard utilisé: EN 292.
- Compatibilité électromagnétique (89/336/CEE).  
Standards utilisés: EN 61 000-6-2 et EN 61 000-6-3.
- Matériel électrique destiné à employer dans certaines limites de tension (73/23/CEE).  
Standards utilisés: EN 60 335-1 et EN 60 335-2-41.

## Declaración de Conformidad

Nosotros **GRUNDFOS** declaramos bajo nuestra única responsabilidad que los productos **AP12**, **AP35** y **AP50** a los cuales se refiere esta declaración son conformes con las Directivas del Consejo relativas a la aproximación de las legislaciones de los Estados Miembros de la CEE sobre

- Máquinas (98/37/CEE).  
Norma aplicada: EN 292.
- Compatibilidad electromagnética (89/336/CEE).  
Normas aplicadas: EN 61 000-6-2 y EN 61 000-6-3.
- Material eléctrico destinado a utilizarse con determinadas límites de tensión (73/23/CEE).  
Normas aplicadas: EN 60 335-1 y EN 60 335-2-41.

## Δήλωση Συμμόρφωσης

Εμείς η **GRUNDFOS** δηλώνουμε με αποκλειστικά δική μας ευθύνη ότι τα προϊόντα **AP12**, **AP35** και **AP50** συμμορφώνονται με την Οδηγία του Συμβουλίου επί της σύγκλισης των νόμων των Κρατών Μελών της Ευρωπαϊκής Ένωσης σε σχέση με τα

- η Μηχανήματα (98/37/EEC).  
Πρότυπο που χρησιμοποιήθηκε: EN 292.
- η Ηλεκτρομαγνητική συμβατότητα (89/336/EEC).  
Πρότυπα που χρησιμοποιήθηκαν: EN 61 000-6-2 και EN 61 000-6-3.
- Ηλεκτρικές συσκευές σχεδιασμένες για χρήση εντός ορισμένων ορίων ηλεκτρικής τάσης (73/23/EEC).  
Πρότυπα που χρησιμοποιήθηκαν: EN 60 335-1 και EN 60 335-2-41.

## Försäkran om överensstämmelse

Vi **GRUNDFOS** försäkrar under ansvar, att produkterna **AP12**, **AP35** och **AP50**, som omfattas av denna försäkran, är i överensstämmelse med Rådets Direktiv om inbördes närmande till EU-medlemsstaternas lagstiftning, avseende

- Maskinell utrustning (98/37/EC).  
Använd standard: EN 292.
- Elektromagnetisk kompatibilitet (89/336/EC).  
Använda standarder: EN 61 000-6-2 och EN 61 000-6-3.
- Elektrisk material avsedd för användning inom vissa spänningsgränser (73/23/EC).  
Använda standarder: EN 60 335-1 och EN 60 335-2-41.

## Overensstemmelseserklæring

Vi **GRUNDFOS** erklærer under ansvar, at produkterne **AP12**, **AP35** og **AP50**, som denne erklæring omhandler, er i overensstemmelse med Rådets direktiver om indbyrdes tilnærmelse til EF medlemsstaternes lovgivning om

- Maskiner (98/37/EØF).  
Anvendt standard: EN 292.
- Elektromagnetisk kompatibilitet (89/336/EØF).  
Anvendte standarder: EN 61 000-6-2 og EN 61 000-6-3.
- Elektrisk materiel bestemt til anvendelse inden for visse spændingsgrænser (73/23/EØF).  
Anvendte standarder: EN 60 335-1 og EN 60 335-2-41.

## Konformitätserklärung

Wir **GRUNDFOS** erklären in alleiniger Verantwortung, daß die Produkte **AP12**, **AP35** und **AP50**, auf die sich diese Erklärung bezieht, mit den folgenden Richtlinien des Rates zur Angleichung der Rechtsvorschriften der EG-Mitgliedstaaten übereinstimmen:

- Maschinen (98/37/EWG).  
Norm, die verwendet wurde: EN 292.
- Elektromagnetische Verträglichkeit (89/336/EWG).  
Normen, die verwendet wurden: EN 61 000-6-2 und EN 61 000-6-3.
- Elektrische Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen (73/23/EWG).  
Normen, die verwendet wurden: EN 60 335-1 und EN 60 335-2-41.

## Dichiarazione di Conformità

Noi **GRUNDFOS** dichiariamo sotto la nostra esclusiva responsabilità che i prodotti **AP12**, **AP35** e **AP50** ai quali questa dichiarazione si riferisce sono conformi alle Direttive del Consiglio concernente il ravvicinamento delle legislazioni degli Stati membri CEE relative a

- Macchine (98/37/CEE).  
Standard usato: EN 292.
- Compatibilità elettromagnetica (89/336/CEE).  
Standard usati: EN 61 000-6-2 e EN 61 000-6-3.
- Materiale elettrico destinato ad essere utilizzato entro certi limiti di tensione (73/23/CEE).  
Standard usati: EN 60 335-1 e EN 60 335-2-41.

## Declaração de Conformidade

Nós **GRUNDFOS** declaramos sob nossa única responsabilidade que os produtos **AP12**, **AP35** e **AP50** aos quais se refere esta declaração estão em conformidade com as Directivas do Conselho das Comunidades Europeias relativas à aproximação das legislações dos Estados Membros respeitantes à

- Máquinas (98/37/CEE).  
Norma utilizada: EN 292.
- Compatibilidade electromagnética (89/336/CEE).  
Normas utilizadas: EN 61 000-6-2 e EN 61 000-6-3.
- Material eléctrico destinado a ser utilizado dentro de certos limites de tensão (73/23/CEE).  
Normas utilizadas: EN 60 335-1 e EN 60 335-2-41.

## Overeenkomstigheidsverklaring

Wij **GRUNDFOS** verklaren geheel onder eigen verantwoordelijkheid dat de producten **AP12**, **AP35** en **AP50** waarop deze verklaring betrekking heeft in overeenstemming zijn met de Richtlijnen van de Raad inzake de onderlinge aanpassing van de wetgevingen van de Lid-Staten betreffende

- Machines (98/37/EEG).  
Norm: EN 292.
- Elektromagnetische compatibiliteit (89/336/EEG).  
Normen: EN 61 000-6-2 en EN 61 000-6-3.
- Elektrisch materiaal bestemd voor gebruik binnen bepaalde spanningsgrenzen (73/23/EEG).  
Normen: EN 60 335-1 en EN 60 335-2-41.

## Vastaavuusvakuutus

Me **GRUNDFOS** vakuutamme yksin vastuullisesti, että tuotteet **AP12**, **AP35** ja **AP50**, jota tämä vakuutus koskee, noudattavat direktiivejä jotka käsittelevät EY:n jäsenvaltioiden koneellisia laitteita koskevien lakien yhdenmukaisuutta seur.:

- Koneet (98/37/EY).  
Käytetty standardi: EN 292.
- Elektromagneettinen vastaavuus (89/336/EY).  
Käytetyt standardit: EN 61 000-6-2 ja EN 61 000-6-3.
- Määrättyjen jänniterajotusten puitteissa käytettävät sähköiset laitteet (73/23/EY).  
Käytetyt standardit: EN 60 335-1 ja EN 60 335-2-41.

Bjerringbro, 15th May 2003



Kenth Hvid Nielsen  
Technical Manager

# AP12, AP35, AP50

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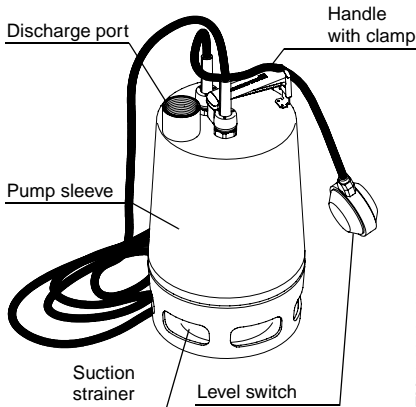
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Before beginning installation procedures, these installation and operating instructions should be studied carefully. The installation and operation should also be in accordance with local regulations and accepted codes of good practice.

## 1. General description

Fig. 1



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### 1.1 Applications

The GRUNDFOS AP pump is a single-stage submersible pump designed for the pumping of waste water.

The pump is capable of pumping water which contains a limited quantity of solids, however not stones and similar materials, without being blocked or damaged.

The pump is available for automatic as well as manual operation and can be installed in a permanent installation or used as a portable pump.

The pump is suitable for:

Applications	AP12	AP35	AP50
Groundwater lowering	●	●	●
Pumping in drainage pits	●	●	●
Pumping in surface water pits with inflow from roof gutters, shafts, tunnels, etc.	●	●	●
Emptying of ponds, tanks, etc.	●	●	●
Pumping of fibre-containing waste water from laundries and industries		●	●
Pumping of surface water from septic tanks and sludge treating systems		●	●
Pumping of domestic waste water without discharge from water closets		●	●
Pumping of domestic waste water with discharge from water closets			●
Maximum particle size [mm]	12	35	50



The pump must not be used in or at swimming pools, garden ponds, etc. when there are persons in the water.

Incorrect application of the pump (e.g. resulting in blocking of the pump) and wear are not covered by the warranty.

### 1.2 Storage and operating conditions

**Storage temperature:** Down to  $-30^{\circ}\text{C}$ .

**Minimum liquid temperature:**  $0^{\circ}\text{C}$ .

**Maximum liquid temperature:**  $+55^{\circ}\text{C}$  continuously. Up to  $+70^{\circ}\text{C}$  for periods not exceeding 3 minutes. Then the pump must cool down.

**Installation depth:** Maximum 10 metres below liquid level.

**pH value:** Between 4 and 10.

**Density:** Maximum  $1100\text{ kg/m}^3$ .

**Viscosity:** Maximum  $10\text{ mm}^2/\text{s}$ .

**Technical data:** See pump nameplate.

### 1.3 Sound pressure level

The sound pressure level of the pump is lower than the limiting values stated in the EC Council Directive 98/37/EEC relating to machinery.

## 2. Safety



Pump installation in wells must be carried out by specially trained persons.

## 3. Electrical connection

**Note:** Depending on local regulations, a pump with 10 metres of mains cable must be used if the pump is used as a portable pump for different applications.

The electrical connection should be carried out in accordance with local regulations.

The pump must be connected to an external mains switch. If the pump is not installed close to the switch, this must be of a lockable type.

The operating voltage and frequency are marked on the pump nameplate. Please make sure that the motor is suitable for the electricity supply on which it will be used.



As a precaution, the pump must be connected to a socket with earth connection. The permanent installation must be fitted with an earth leakage circuit breaker (ELCB) with a tripping current < 30 mA.

**Three-phase pumps** must be connected to an external motor starter with differential release and with a minimum contact gap of 3 mm. The set nominal current of the motor starter must correspond to the electrical data marked on the pump nameplate.

If a level switch is connected to a three-phase pump, the motor starter must be magnetically operated.

**Single-phase pumps** incorporate thermal overload protection and require no additional motor protection.

**Note:** If the motor is overloaded, it will stop automatically. When it has cooled to normal temperature, it will restart automatically.

### 3.1 Checking of direction of rotation

(Three-phase pumps only)

The direction of rotation should be checked every time the pump is connected to a new installation.

Check the direction of rotation as follows:

1. Position the pump so that the impeller can be observed.
2. Start the pump for a short period.
3. Observe the rotation of the impeller. The correct direction of rotation is indicated by an arrow on the suction strainer (clockwise when seen from the bottom). If the impeller rotates in the wrong direction, reverse the direction of rotation by interchanging two of the phases to the motor.

If the pump is connected to a piping system, the direction of rotation can be checked as follows:

1. Start the pump and check the quantity of water or the discharge pressure.
2. Stop the pump and interchange two of the phases to the motor.
3. Start the pump and check the quantity of water or the discharge pressure.

## 4. Stop the pump.

Compare the results taken under points 1 and 3. The connection which gives the larger quantity of water or the higher pressure is the correct direction of rotation.



## 4. Installation



The installation of the pump must be carried out by specially trained persons.

**AP35 and AP50:** Care must be taken to ensure that persons cannot come into contact with the pump impeller.

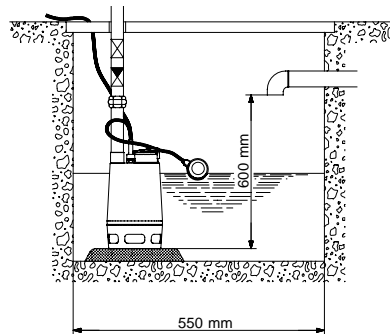
### 4.1 Connection

For permanent installation, it is recommended to fit a union, a non-return valve and an isolating valve in the discharge pipe.

If the pump is installed in a pit with a minimum free cable length of 100 mm, see fig. 6, the minimum pit dimensions must be as shown in fig. 2.

Furthermore, the pit should be dimensioned according to the relation between the water flow to the pit and the pump capacity.

Fig. 2



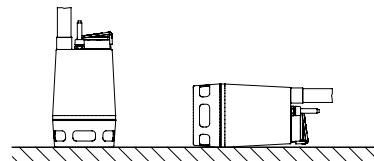
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### 4.2 Pump location

The pump can be used in vertical or horizontal position with the discharge port as the highest point of the pump, see fig. 3.

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

Fig. 3



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

Do not lift the pump by means of the electric cable.

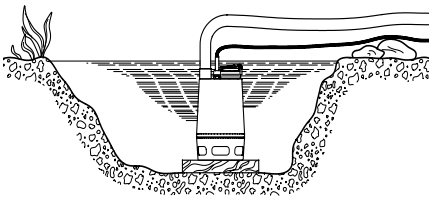
Position the pump so that the suction strainer will not be blocked or partly blocked by sludge, mud or similar materials.

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

It is recommended to place the pump on a solid base, see fig. 4.

The pump must not be installed hanging from the discharge pipe.

Fig. 4



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### 4.3 Setting of level switch

For pumps supplied with a level switch, the difference in level between start and stop can be set by adjusting the free cable between the level switch and the pump handle.

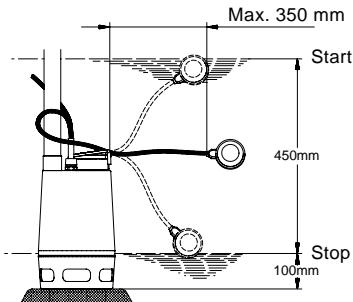
The longer the length of free cable, the larger the difference in level between start and stop.

Maximum length of free cable: 350 mm, see fig. 5.

Minimum length of free cable: 100 mm, see fig. 6.

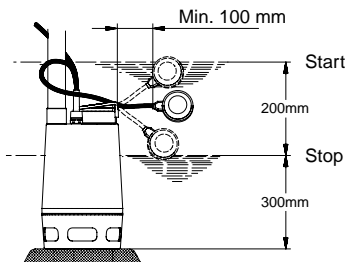
The stop level must be above the suction strainer to prevent the pump from taking in air.

Fig. 5



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Fig. 6



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## 5. Start-up

Before starting the pump, check that the suction strainer is fitted to the pump and submerged in the pumped liquid.

Open the isolating valve, if fitted, and check the level switch setting.

**Note:** The pump may be run briefly to check the direction of rotation without being submerged in the pumped liquid.

## 6. Maintenance and service



Before starting work on the pump, make sure that the electricity supply to the pump has been switched off and that it cannot be accidentally switched on.

Before carrying out maintenance and service, it must be ensured that the pump has been thoroughly flushed with clean water. Rinse the pump parts in water after dismantling.

Check the pump and replace the oil once a year. If the pump is used for pumping liquids containing abrasive particles or it is operating continuously, the pump must be checked at shorter intervals.

In the case of long operating time or continuous operation, the oil should be replaced as follows:

Liquid temperature	The oil should be replaced after
20°C	4500 operating hours
40°C	3000 operating hours
55°C	1500 operating hours



Out of consideration for the personal safety and health, this work must be carried out by specially trained persons. Furthermore, all rules and regulations covering safety, health and environment must be observed.

During dismantling, caution should be exercised as there will be access to sharp edges, etc. which may cut.

The pump contains approx. 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 should be replaced.



## 6.1 Pump construction

The construction of the pump will appear from the table below and figs. A, B and C at the end of these instructions.

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

## 6.2 Contaminated pumps

**Note:** If a pump has been used for a liquid which is injurious to health or toxic, the pump will be classified as contaminated.

If GRUNDFOS is requested to service the pump, GRUNDFOS must be contacted with details about the pumped liquid, etc. *before* the pump is returned for service. Otherwise GRUNDFOS can refuse to accept the pump for service.

Possible costs of returning the pump are paid by the customer.

However, any application for service (no matter to whom it may be made) must include details about the pumped liquid if the pump has been used for liquids which are injurious to health or toxic.

## 7. Fault finding chart

Fault	Cause	Remedy
1. Motor does not start.	a) No electricity supply.	Connect the electricity supply.
	b) Motor switched off by level switch.	Adjust/replace the level switch.
	c) Fuses are blown.	Replace fuses.
	d) Motor protection/thermal relay has tripped out.	Wait until the motor protection trips in again/reset the relay.
	e) Impeller blocked by impurities.	Clean the impeller.
	f) Short-circuit in cable or motor.	Replace the defective part.
2. Motor protection/thermal relay trips out after short time of operation.	a) Temperature of pumped liquid too high.	Use another pump type.
	b) Impeller blocked or partly blocked by impurities.	Clean the pump.
	c) Phase failure.	Call an electrician.
	d) Voltage too low.	Call an electrician.
	e) Overload setting of the motor starter too low.	Adjust the setting.
	f) Incorrect direction of rotation. <i>See section 3.1 Checking of direction of rotation.</i>	Reverse the direction of rotation.
3. Pump runs constantly or gives insufficient water.	a) Pump partly blocked by impurities.	Clean the pump.
	b) Discharge pipe or valve partly blocked by impurities.	Clean the discharge pipe.
	c) Impeller not properly fixed to the shaft.	Tighten the impeller.
	d) Incorrect direction of rotation. <i>See section 3.1 Checking of direction of rotation.</i>	Reverse the direction of rotation.
	e) Incorrect setting of level switch.	Adjust the level switch.
	f) Pump too small for the application.	Replace the pump.
	g) Impeller worn.	Replace the impeller.
4. Pump runs but gives no water.	a) Pump blocked by impurities.	Clean the pump.
	b) Discharge pipe or non-return valve blocked by impurities.	Clean the discharge pipe.
	c) Impeller not properly fixed to the shaft.	Tighten the impeller.
	d) Air in pump.	Vent the pump and the discharge pipe.
	e) Liquid level too low. The suction strainer is not completely submerged in the pumped liquid.	Submerge the pump in the liquid or adjust the level switch.
	f) Level switch does not move freely.	Make the level switch move freely.

## 8. Disposal

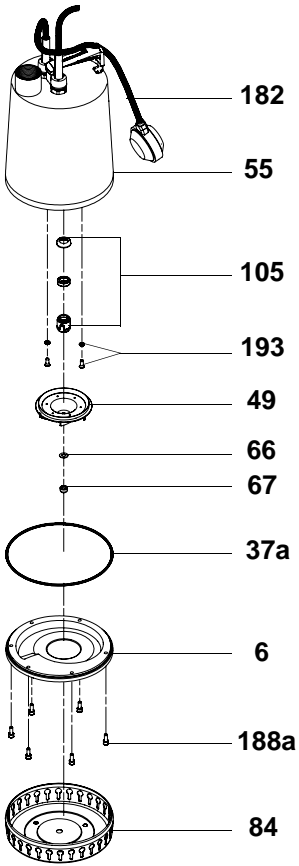
Disposal of this product or parts of it must be carried out according to the following guidelines:

1. Use the local public or private waste collection service.
2. In case such waste collection service does not exist or cannot handle the materials used in the product, please deliver the product or any hazardous materials from it to your nearest GRUND-FOS company or service workshop.

Subject to alterations.

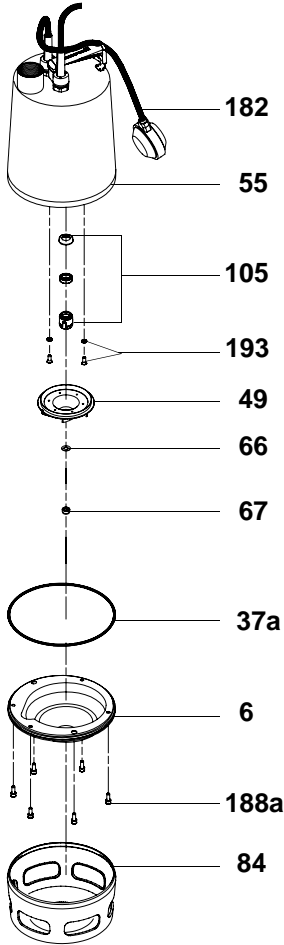


Fig. A: AP12



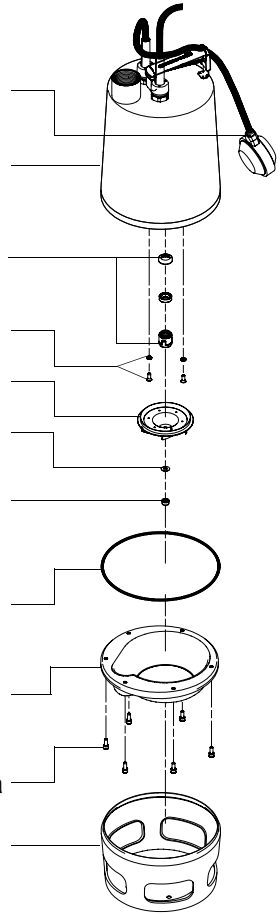
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Fig. B: AP35



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Fig. C: AP50



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