Atlas Copco Instruction Manual

Instruction Manual
for Atlas Copco WEDA Dewatering Pump
English

WEDA 50
WEDA 60

all options

Atlas Copco

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for Atlas Copco WEDA Dewatering Pump

WEDA 50
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ATLAS COPCO - PORTABLE ENERGY DIVISION
www.atlascopco.com

Warranty and Liability Limitation

Use only authorized parts.
Any damage or malfunction caused by the use of unauthorized parts is not covered by Warranty or Product Liability.
The manufacturer does not accept any liability for any damage arising from modifications, additions or conversions made without the manufacturer's approval in writing.
Neglecting maintenance or making changes to the setup of the machine can result in major hazards.
While every effort has been made to ensure that the information in this manual is correct, Atlas Copco does not assume responsibility for possible errors.

Preface

Please read the following instructions carefully before starting to use your pump.

It is a solid, safe and reliable machine, built according to the latest technology. Follow the instructions in this booklet.

Always keep the manual available near the machine.

In all correspondence always mention the pump type and serial number, shown on the data plate.

The company reserves the right to make changes without prior notice.

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Atlas Copco

Safety precautions

To be read attentively and acted accordingly before operating, performing maintenance or repairing the unit.

INTRODUCTION

The policy of Atlas Copco is to provide the users of their equipment with safe, reliable and efficient products. Factors taken into account are among others:

- the intended and predictable future use of the products, and the environments in which they are expected to operate,
- applicable rules, codes and regulations,
- the expected useful product life, assuming proper service and maintenance,
- providing the manual with up-to-date information.

Before handling any product, take time to read the relevant instruction manual. Besides giving detailed operating instructions, it also gives specific information about safety, preventive maintenance, etc.

Keep the manual always at the unit location, easy accessible to the operating personnel.

These safety precautions are general and some statements will therefore not always apply to a particular unit.

Only people that have the right skills should be allowed to operate, adjust, perform maintenance or repair on Atlas Copco equipment.

It is the responsibility of management to appoint staff with the appropriate training and skill for each category of job.

Take the necessary steps to keep unauthorized persons away from the unit and eliminate all possible sources of danger at the unit.

When handling, operating, overhauling and/or performing maintenance or repair on Atlas Copco equipment, the mechanics are expected to use safe engineering practices and to observe all relevant local safety requirements and ordinances.

All responsibility for any damage or injury resulting from neglecting these precautions or by non-observance of ordinary caution and due care required in handling, operating, maintenance or repair, also if not expressly mentioned in this instruction manual, is disclaimed by Atlas Copco.

The manufacturer does not accept any liability for any damage arising from the use of non-original parts and for modifications, additions or conversions made without the manufacturer's approval in writing.

If any statement in this manual does not comply with local legislation, the stricter of the two shall be applied.

Statements in these safety precautions should not be interpreted as suggestions, recommendations or inducements that it should be used in violation of any applicable laws or regulations.

PICTOGRAMS AND SYMBOLS

This manual contains safety instructions that, when not observed, can lead to dangerous situations.

These safety instructions are indicated with a general pictogram indicating danger.

Safety instructions related to possible dangers when not observing the electrical safety instructions are indicated with this pictogram. Violating these safety instructions may result in death through electrocution.

This pictogram indicates safety instructions that can lead to damage to the pump when not observed.

All labels on the pump must be kept legible. Damaged labels have to be replaced.

SAFETY DURING USE AND OPERATION

This manual contains basic safety instructions that have to be observed during installation, use and maintenance. This manual is to be read by all operators/users before installing and operating the pump. It must be kept available to all operators/users at the operating site. Apart from the instructions in this chapter also the safety instructions mentioned in others sections of this manual must be observed.

AUTHORISED PERSONNEL

Only people that have the right skills should be allowed to operate, adjust, perform maintenance or repair on Atlas Copco equipment.

It is the responsibility of management to appoint operators with the appropriate training and skill for each category of job.

Skill level 1: Operator

An operator is trained in all aspects of operating the unit with the push-buttons, and is trained to know the safety aspects.

Skill level 2: Mechanical technician

A mechanical technician is trained to operate the unit the same as the operator. In addition, the mechanical technician is also trained to perform maintenance and repair, as described in the instruction manual, and is allowed to change settings of the control and safety system. A mechanical technician does not work on live electrical components.

Skill level 3: Electrical technician

An electrical technician is trained and has the same qualifications as both the operator and the mechanical technician. In addition, the electrical technician may carry out electrical repairs within the various enclosures of the unit. This includes work on live electrical components.

Skill level 4: Specialist from the manufacturer

This is a skilled specialist sent by the manufacturer or its agent to perform complex repairs or modifications to the equipment.

In general it is recommended that not more than two people operate the unit, more operators could lead to unsafe operating conditions.

DANGERS WHEN NOT FOLLOWING SAFETY INSTRUCTIONS

Not observing the safety instructions may lead to personal injury, damage to the equipment and environmental hazards. Not observing the safety instructions will void any warranty claim.

SAFETY-CONSCIOUS WORKING METHOD

All safety instructions in this manual as well as national accident preventing regulations and company-internal regulations regarding labour, operation and safety have to be observed.

PERSONAL SAFETY

Stay alert, watch what you are doing and use common sense when operating a pump. Do not use pumps while tired or under influence of drugs, alcohol or medication. A moment of inattention while operating pumps can result in serious personal injury.

Dress properly. Do not wear loose clothing or jewellery. Contain long hair. Keep your hair, clothing, and gloves away from moving parts. Loose clothes, jewellery, or long hair can be caught in moving parts.

Use approved safety equipment. Always wear eye protection, protective shoes and gloves.

SAFETY DURING MAINTENANCE

The owner is responsible for adequate training of the personnel maintaining the pumps. In principle all maintenance has to be performed on a non-energised pump. Observe the procedures as mentioned in the manual.

ELECTRICAL SAFETY

Pumps must be plugged into an outlet that is properly installed and grounded in accordance with all codes and ordinances. Never remove the grounding prong or modify the plug in any way. Do not use any adaptor plugs. Check with a qualified electrician if you are in doubt as to whether the outlet is properly grounded.

Do not abuse the power cable. Never use the power cable to carry the pumps or pull the plug from an outlet. Keep the power cable away from heat, oil, sharp edges or moving parts. Damaged power cables increase the risk of electric shock.

Use a network protected by a ground fault circuit interrupter.

CONVERSION AND SPARE PARTS

Conversions are only allowed after written consent of the manufacturer. Always use original spare parts. Unauthorised conversion and / or the use of non-original spare parts will void any warranty claims.

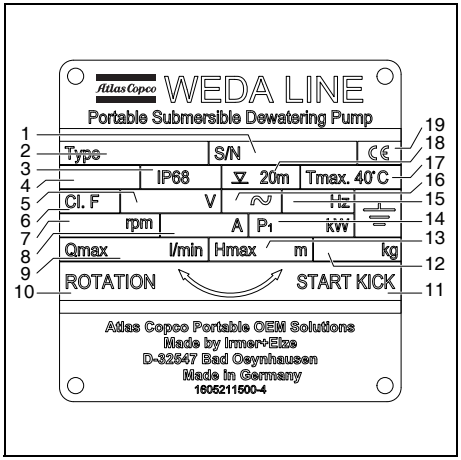
UNINTENDED USE

The reliability of the pump is only guaranteed when it is used according the specifications in this manual. The limits as indicated are not to be exceeded under any circumstances.

Do not use the pump to transport water for human consumption, for water well pumping or for installation in an explosive atmosphere.
Caustic, slightly inflammable and other explosive substances such as petrol, petroleum, diluted nitrogen, greases, oils, salt water and waste water from toilets as well as sludgy water that has a slower flow capacity than water, should not be transported using the pump.
The temperature of the transported fluids should not exceed 40°C.

The appliance is not suitable for use as a stationary installation (such as a lifting device, fountain pump).

DATA PLATE



Reference	Name
1	Serial number
2	Pump type
3	Protection class
4	Production year
5	Rated voltage
6	Motor insulation class
7	Rated rpm
8	Rated current
9	Max. flow capacity
10	Rotation direction
11	Start kick direction
12	Weight
13	Max. head
14	Rated power input
15	Frequency
16	Number of phases
17	Max. fluid temperature
18	Max. submersed depth
19	Approval mark (CE, UL, CSA, ...)

General description

WEDA dewatering pumps are electrical submersible pumps for dewatering applications in construction sites, industry, mining, tanks, pools etc. The range consists of several dewatering pumps, all designed for though pumping in demanding applications. The compact design and light weight make the pumps very versatile and easy to install.

The design with outer jacket for cooling and motor protector keeps the pump running safely under various conditions. The double mechanical seal runs in an oil bath and assures a long life time.

Features:

- Dry running capability. Motor protector.
- Plug and pump.
- The double mechanical seal runs in an oil bath and assures a long life time.
- Impeller from high chrome steel minimizes maintenance.
- The bearings are greased for life with high temperature grease and anti-corrosion additive.
- NVB level control (option)

WEDA 50 and 60 are compact versatile dewatering pumps for various pumping needs. The high chrome steel impeller is designed to handle the water in construction sites, manholes and industrial pits etc. with very low risk of clogging.

HOUSING AND WET END

The housing is made of aluminium and parts of wet end are rubber lined.

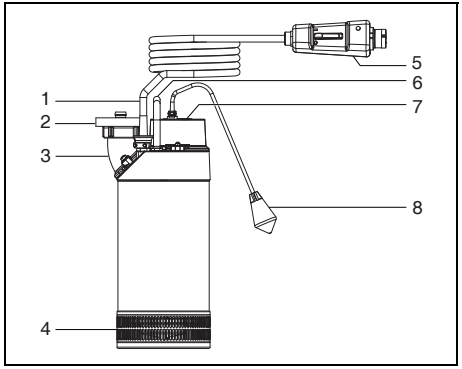
IMPELLER

The WEDA 50 and 60 pumps are equipped with a high chrome steel impeller.

OVERLOAD PROTECTION

The pump is supplied with an automatically resetting thermal overload protection.

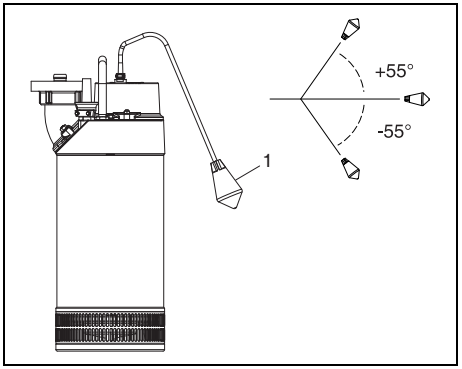
Main parts



Reference	Name
1	Cable
2	Coupling
3	Discharge
4	Strainer
5	Motor protection plug (option)
6	Handle
7	Data plate
8	Float switch

Options

FLOAT SWITCH



Reference	Name
1	Float switch

470W369455 - Float switch kit

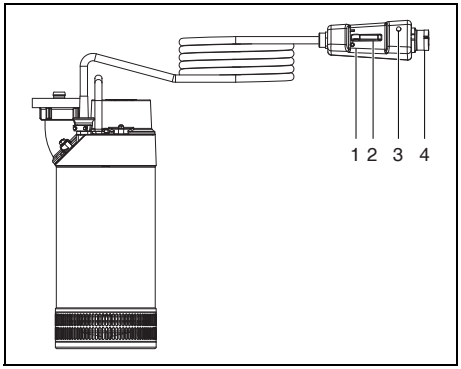
(Float switch kit for local assembly afterwards).

Use the pump with a float switch if automatic starting and stopping is required.

The pump starts if the float switch reaches an angle of +55° and stops at an angle of -55°.

For continuous operation block the float switch vertically, pointing upwards.

MOTOR PROTECTION PLUG



Reference	Name
1	Over current relay
2	On/Off switch
3	Indicator lamp for phase control
4	Plug with phase inverter

Motor protection plug

WEDA 50: **470W157913** 5P-16A 10-16A

WEDA 60: **470W157916** 5P-32A 16-20A

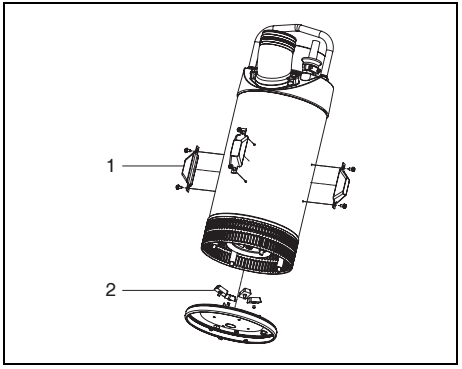
(Only for pumps with 400V - 3ph motor).

To protect the motor against over current it is strongly recommended to use an external motor protector (option only for pumps with 400V - 3ph motor). The external motor protector can be ordered separately. It combines the on/off switch and the overload protection in one device, thus creating optimal operating comfort and protection for the pump.

If the indicator lamp 3 is lighting red, reverse two phases with a screw driver in plug 4.

After a fault the pump must be restarted manually pressing the switch on the external motor protector.

ZINC ANODES



Reference	Name
1	Zinc anode
2	Zinc anode

470W254206 - Zinc anode kit

When pumping salt water (which is highly aggressive towards aluminium), the pump should be protected with zinc anodes.

EPOXY COATING

8162170300 - Epoxy coating

For optimum protection when pumping salty water, water containing aggressive substances, or water with a high or low pH value the pump can be protected with an epoxy resin coating.

ELECTRONIC LEVEL CONTROL (NVB)

The WEDA50/60 series pumps can be equipped with a built-in electronic level control, NVB. It is connected to a set of 2 probes located on the pump contactor cover.

Features

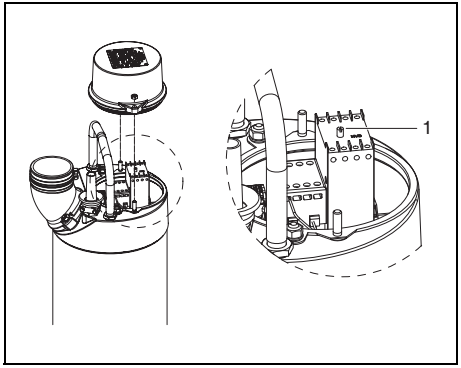
Pumping control of the pump according to the water level.

Pump protection, the pump will stop in case of:

- Wrong phase sequence (change 2 wires in the plug to get the proper sequence).
- Phase failure.
- Overload (clogged strainer, etc…).
- Overheating: controlled by thermo switches inside the motor winding.
- Running without water.

The pump starts automatically as the rising water reaches the probes on the contactor cover. The pump stops again, automatically, once the water level falls to the point at which the pump begins to suck in air through the strainer.

The water level for starting can be moved down using extension wires to connect the probes.



The water level for stopping can be adjusted using the NVB potentiometer (1):

- If the pump does not stop, when no water, turn the potentiometer (1) clockwise until it stops.
- If the pump stops before air suction, turn the potentiometer (1) anti-clockwise.

The level control can be disabled by bridging the probes. The jumper for bridging the probes is supplied with the kit / pump. When switched on the pump runs continuously.

A pump equipped with NVB level control will not start when phase sequence is wrong, or in case of phase failure.

DISCHARGES

Discharge	Part number
3” Hose standard with 1 clamp	470W203562
3” BSP - thread	470W203484
3” NPT - thread	470W203570
4” Hose standard with 1 clamp	470W203564
4” BSP - thread	470W203482
4” NPT - thread	470W203572
3” Cam lock adapter	8162164100
3” Cam lock coupling	8162164300
3” Storz coupling	470W157011
4” Storz coupling	470W157012

The pump can be equipped with several discharges, see table above.

Operating instructions

TRANSPORT

Always use the handle to lift the pump. Never use the power cable to lift or transport the pump. Always be careful not to let it fall or bump it against the wall or other equipment.

STARTING

The pump may not be used in an explosive / inflammable environment or used to pump inflammable liquids!

If the pump is being used for pumping water out of a swimming pool:

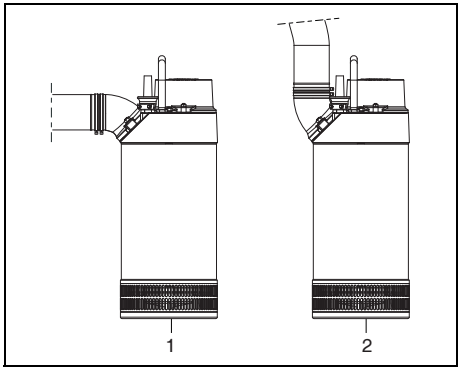
- **nobody is allowed to be in the pool during pumping,**
- **the pump must be connected via a residual current device having a rated residual operating current not exceeding 30 mA.**

Check the power cable with mains plug for damage before every use. If the power cable is damaged, exchange it immediately.

Check whether the power supply matches the rating on the **Data plate**.

Check whether the fluid to be pumped matches the characteristics mentioned in section **Technical details**.

The minimum start water level is approx. 60 mm.



Never operate the pump without the strainer.

Attach a suitable hose to the outlet and make sure it is thoroughly tightened. Avoid making excessive bends in delivery hoses or piping, as this may cause reduced flow. Turn discharge in horizontal (1) or vertical (2) direction according to application.

Run the electric cable so that sharp bends are avoided and there is no danger of the cable being pinched or otherwise being damaged.

Take care that the pump is submerged before putting the plug in the socket. Never install the pump directly on a weak soil layer or muddy ground. The pump may sink and mud/soil may enter the pump and reduce the flow. Check that the pump is pumping.

In case the motor stops due to overload or a blocked impeller, first pull the plug out of the socket before removing the pump from the pump site to check for why the pump has stopped. Remove the blockage, let the pump cool down and resume pumping.

STOPPING

Take the plug out of the socket and take the pump out of the pump site. If the pump has been operating in dirty water, allow it to run in clean water for a short period or flush clean water through the discharge port. If clay, cement or other sticky dirt remain in the pump this may clog the impeller and seal area.

Maintenance

PREVENTIVE MAINTENANCE SCHEDULE

Service task	Every month	Every 3 months	Every 6 months	Every 12 months in use	When worn
Grease check		x			
Pump lubrication			x		
Check wear parts		x			
Change wear parts					x
Adjustment of pump performance			x		
Replace sealing's of sealing package				x	x
Replace bearings of sealing package				x	x
Check contactor function			x		
Stator measurement			x		
Check cable	x				
Check cable gland	x				
Check pipes, valves	x				
Check float switch / Level sensor NVB function	x				
Check external damage, loose parts	x				

For maintenance kits and spare parts please refer to the Atlas Copco Spare parts list 9822 1690 00.

EXTERNAL DAMAGE, LOOSE PARTS

Make sure that all screws, bolts and nuts are tight. Check the condition of the pump lifting handle and replace if damaged or worn. Replace any external part that appears worn or damaged.

MOTOR INSULATION RESISTANCE

Use a 500 V DC Megger and measure the insulation between the phases and between any phase and ground. Resistance values should be over 1 M ohm. If abnormal readings are obtained, immediately hand the pump in for repair.

Also observe any local requirement regulations. The stricter one will prevail.

IMPELLER

Inspect the impeller by removing the strainer and wear plate. Replace the impeller if it is damaged or severely worn.

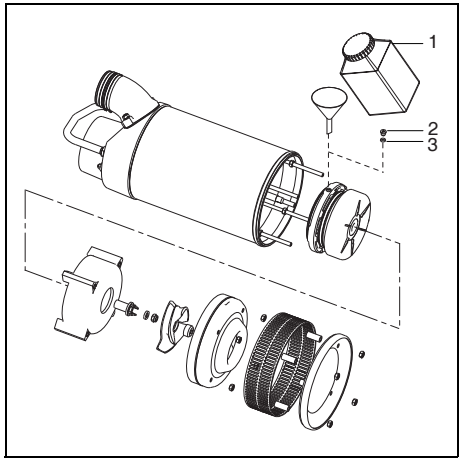
POWER CABLE

Inspect the cable for cuts, scrapes or sharp bends. If the outer jacket is damaged, replace the cable. Do not make splices within wet wells.

CABLE ENTRY

Make sure that the cable entry flange and strain relief clamp are tight. If the cable entry is showing signs of leakage replace the cable.

OIL



Reference	Name
1	Oil
2	Oil plug
3	O-ring

To get access to the oil plugs remove wet end and outer casing.

For disassembly and reassembly refer to the work instructions:

9822 1643 00	WEDA 60N,H	50Hz
9822 1659 00	WEDA 60N,H	60Hz
9822 1691 00	WEDA 50L,N,H	50Hz
9822 1692 00	WEDA 50L,N,H	60Hz

Check the condition of the oil to see if any water leakage has occurred. Remove the oil plug (2). Take an oil sample using a pipette. Check for impurities and emulsification. (Oil must be clear.) If water intrusion has occurred the seal must be replaced. Refill the seal chamber with fresh oil. Refer to section **Technical details** for type and quantity of oil.

Troubleshooting

Problem	Cause	Action
Pump will not run	1. Fuse blown or circuit breaker tripped 2. Broken cable 3. Power failure 4. Impeller jammed 5. Stator winding burnt-out 6. Float switch is defective or not correctly in position	1. Replace fuse or reset circuit breaker 2. Replace cable 3. Restore power supply 4. Clean impeller 5. Replace pump 6. Check float switch
Pump starts and stops	1. Strainer blocked 2. Insufficient water level 3. Voltage too low when using an extra cable 4. Water too hot	1. Clean strainer 2. Raise water level 3. Use a cable with larger section 4. Let the water cool down
Pump's capacity is too low	1. Delivery hose is squeezed 2. Total pumping head is too high 3. Strainer is blocked 4. Impeller is worn	1. Straighten delivery hose 2. Review pumping situation 3. Clean strainer 4. Replace impeller
Pump with electronic level control will not start when water level reaches probes	1. Probes are bridged 2. Wrong phase sequence 3. Phase failure	1. Remove probe jumper 2. Check phase sequence 3. Check power supply
Pump with electronic level control will not stop when water level drops below strainer	1. Wrong setting of NVB potentiometer	1. Turn NVB potentiometer in "-" direction
Pump with electronic level control stops before water level reaches strainer	1. Wrong setting of NVB potentiometer	1. Turn NVB potentiometer in "+" direction

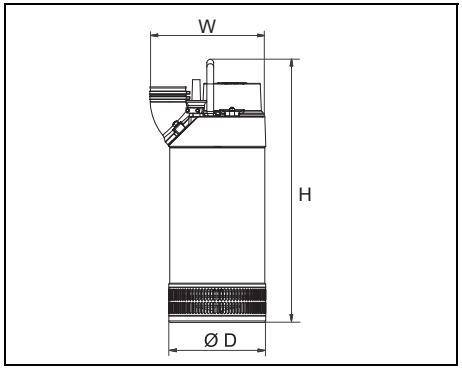
Technical details

	Unit	WEDA 50	WEDA 60
Discharge, smooth and threaded BSP	inch	3”	3”
	inch	4”	4”
Weight	kg	N/L = 55 H = 63	N = 55 H = 63
Max solids handling	mm	6	6
Cable length	m	20	20
Max submersed depth	m	20	20
Impeller type		centrifugal impeller	centrifugal impeller
Impeller material		high chrome steel	high chrome steel
Shaft seals		mechanical seal	mechanical seal
Motor protection		thermal protection	thermal protection
Motor insulation class		F	F
pH range		5 - 8	5 - 8
Max fluid temperature	°C	40	40

The pump is designed to pump water that meets the specifications in the table above.

The pump is not to be used in explosive or inflammable environments or for pumping flammable liquids.

DIMENSIONS



Dimensions in mm	D	W	H
WEDA 50 N	277	330	760
WEDA 50 L	277	330	760
WEDA 50 H	312	330	810
WEDA 60 N	277	330	760
WEDA 60 H	312	330	810

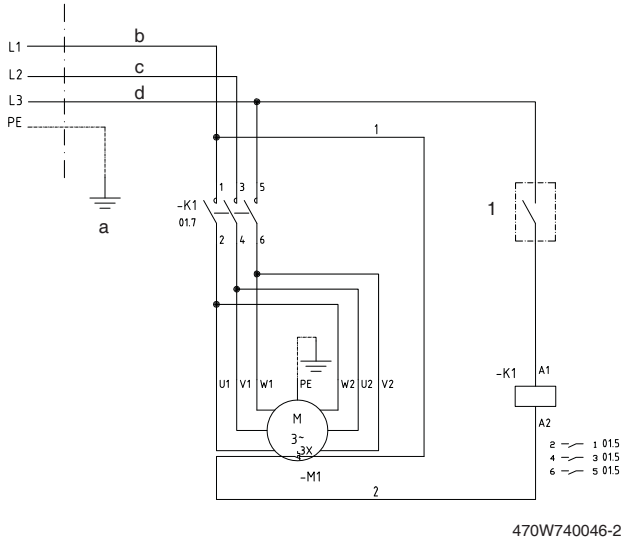
MOTOR DATA WEDA 50

		WEDA 50 L		WEDA 50 N		WEDA 50 H	
Voltage (V)	**Frequence (Hz)**	**Rated current (A)**	**Max. power input (kW)**	**Rated current (A)**	**Max. power input (kW)**	**Rated current (A)**	**Max. power input (kW)**
230	50	13	5.1	on request	4.8	on request	6.0
230	60	19	5.8	15.2	4.6	24	9.2
400	50	10	5.1	9.5	4.8	11	6.0
460	60	10	5.8	8.5	4.6	14.5	9.2

MOTOR DATA WEDA 60

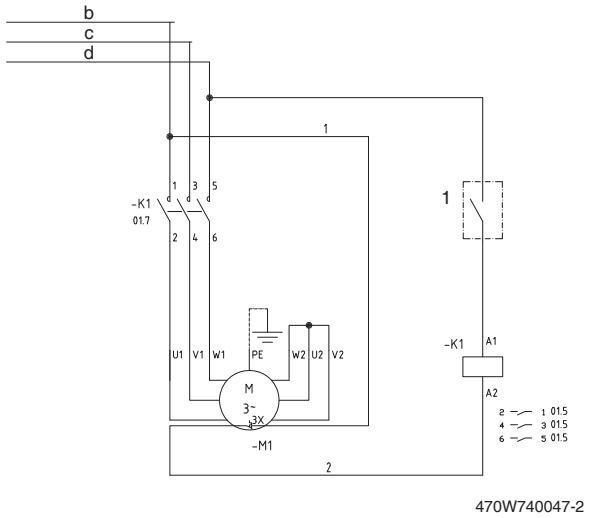
		WEDA 60 N		WEDA 60 H	
Voltage (V)	**Frequence (Hz)**	**Rated current (A)**	**Max. power input (kW)**	**Rated current (A)**	**Max. power input (kW)**
230	50	25.5	9.5	30	11.2
230	60	30	9.4	on request	on request
400	50	16	9.5	19	11.2
460	60	15	9.4	24	10.5
500	50	13	9.5	15.4	11.2

WIRING DIAGRAM



470W740046-2

WEDA 50 - Δ 230V/3ph/50Hz
WEDA 50 - Δ 500V/3ph/50Hz
WEDA 60 - Δ 230V/3ph/50Hz
WEDA 60 - Δ 500V/3ph/50Hz



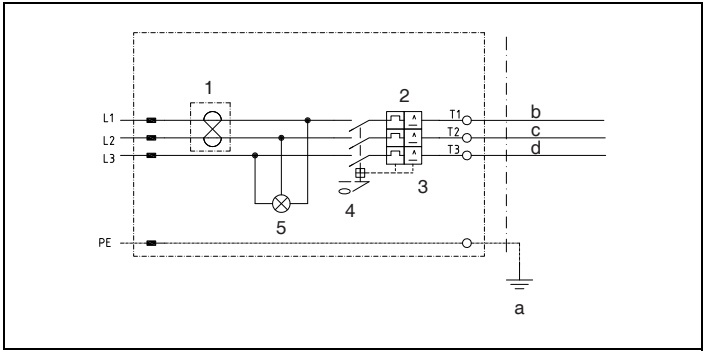
470W740047-2

WEDA 50 - Y 400V/3ph/50Hz
WEDA 50 - Y 440-460V/3ph/60Hz
WEDA 60 - Y 400V/3ph/50Hz
WEDA 60 - Y 440-460V/3ph/60Hz

Reference	Name
1	Float switch (optional)

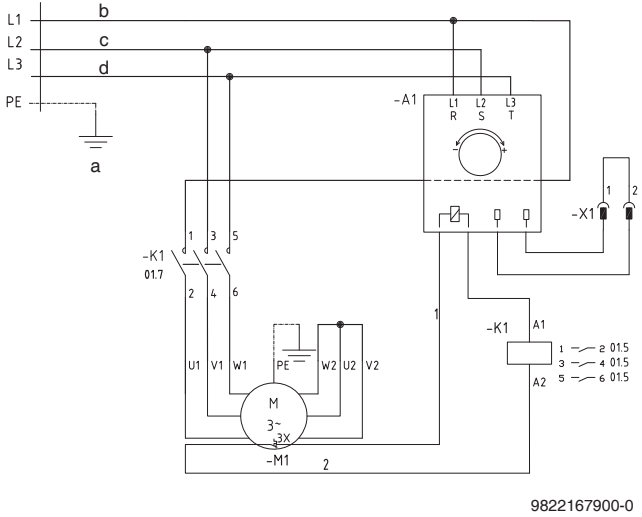
Colour code	
a = green/yellow	c = grey
b = black	d = brown

Optional Motor Protector



Reference	Name
1	Phase inverter
2	Overcurrent relay
3	In
4	On/Off switch
5	Phase control

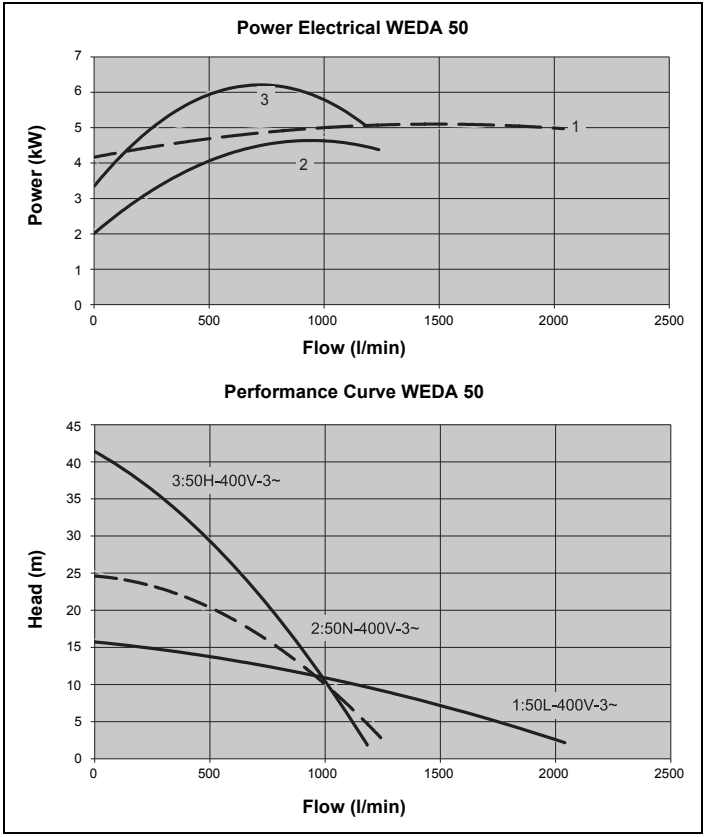
Level Sensor Control



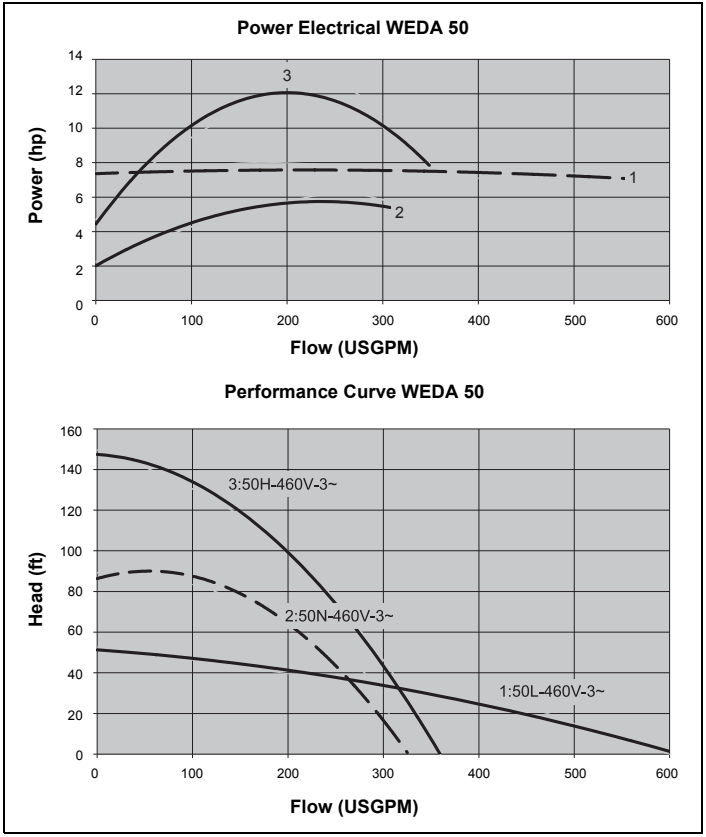
WEDA 50 L, N NVB - Y 400V/3ph/50Hz
WEDA 60 N NVB - Y 400V/3ph/50Hz

Colour code	
a = green/yellow	c = grey
b = black	d = brown

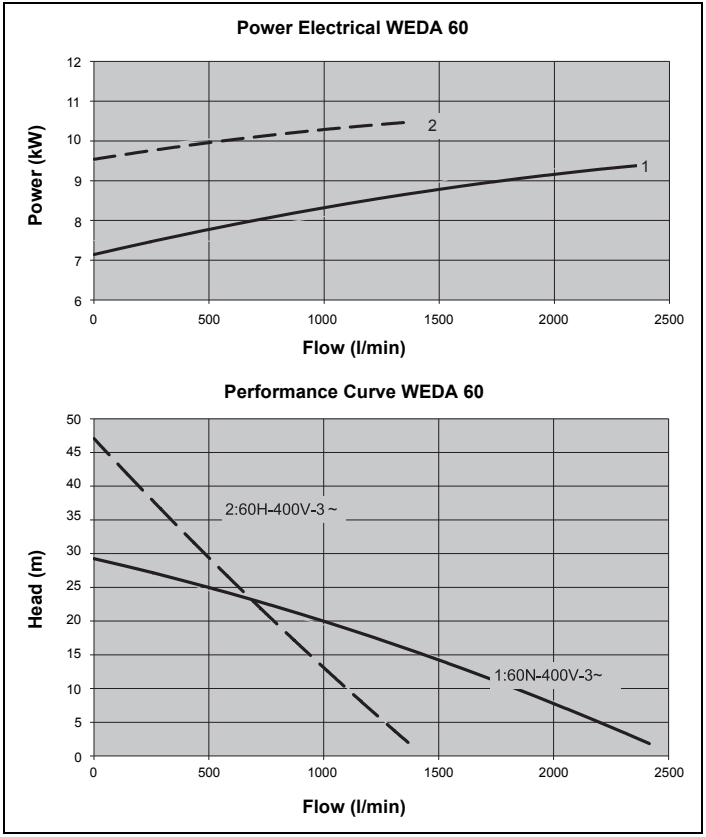
FLOW CHARACTERISTICS



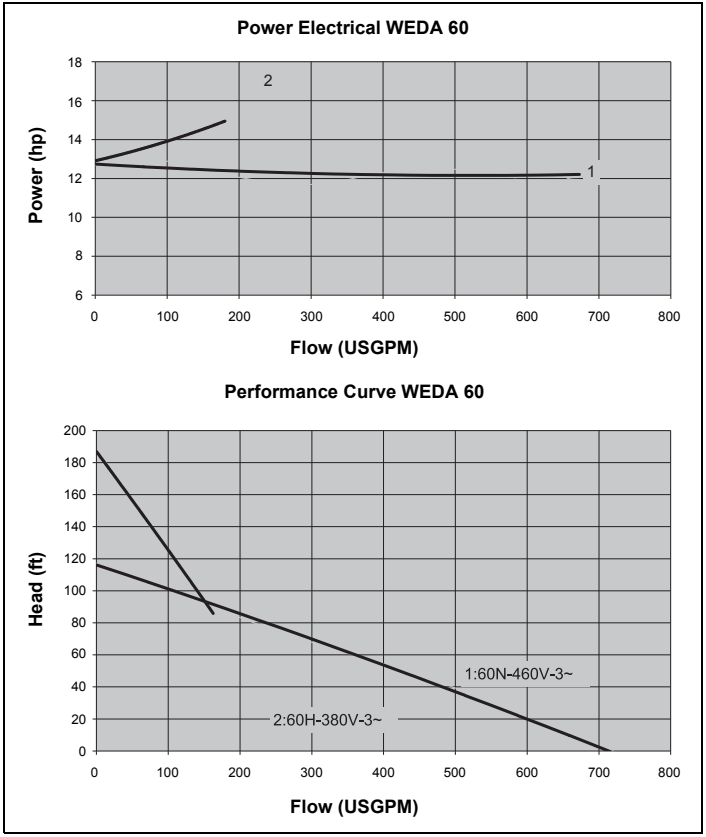
WEDA 50 - 50 Hz



WEDA 50 - 60 Hz



WEDA 60 - 50 Hz



WEDA 60 - 60 Hz

Spare parts

ORDERING SPARE PARTS

For spare parts see spare parts list:

9822 1690 00 - ASL WEDA 50/60

To avoid errors in delivery, please give the following information when ordering spare parts:

1. Pump type
2. Pump serial number
3. Quantity required
4. Part number
5. Part description

OIL SPECIFICATION

Oil capacity: 3.0 L

Oil: partnr. 1605 2254 00 (2.0 L)

Oil: partnr. 1605 2255 00 (0.5 L)

Warranty

The warranty terms published by the relevant Atlas Copco Customer Center or authorized dealers are applicable in each country. We will repair potential failures of your pumps within the warranty period free of charge, provided that such failure is caused by faulty material or defects in manufacturing.

In the event of a warranty claim please contact your local dealer or the nearest authorized Atlas Copco Customer Service Center.

Disposal

GENERAL

When developing products and services, Atlas Copco tries to understand, address, and minimize the negative environmental effects that the products and services may have, when being manufactured, distributed, used and disposed.

Recycling and disposal policies are part of the development of all Atlas Copco products. Atlas Copco company standards determine strict requirements.

Material selection, substantial recyclability, disassembly possibilities and separability of materials and assemblies are considered, as well as environmental perils and dangers to health during the recycling and disposal of the unavoidable rates of non-recyclable materials.

Your Atlas Copco pump consists mostly of metallic materials, that can be remelted in steel and melting works and are therefore almost infinitely recyclable.

DISPOSAL OF MATERIALS

Dispose of contaminated substances and material separately, in accordance with locally applicable environmental legislation.

Before dismantling a machine at the end of its operating lifetime drain and dispose of all fluids of according the applicable local disposal regulations.

Separate the machine into metal, wiring, hoses, insulation and plastic parts.

Dispose of all components in accordance with applicable disposal regulations.

Remove spilled fluid mechanically; pick up the rest using an absorbing agent (for example sand, sawdust) and dispose of it in accordance with local disposal regulations. Do not drain into the sewage system or surface water.

This concept can only succeed with your help. Support us by disposing professionally. By assuring correct disposal of the product you help prevent possible negative consequences for environment and health as a result of inappropriate waste handling.

Recycling and re-usage of material help preserve natural resources.

Atlas Copco

1 **EC DECLARATION OF CONFORMITY**

2 We, IRMER+ELZE Kompressoren GmbH, declare under our sole responsibility, that the product
3 Machine name: *portable submersible dewatering pump*
4 Machine type: *WEDA 40*
5 Serial number:

6 Which falls under the provisions of article 12.2 of the EC Directive 2006/42/EC on the approximation of the laws of the Member States relating to machinery, is in conformity with the relevant Essential Health and Safety Requirements of this directive.

The machinery complies also with the requirements of the following directives and their amendments as indicated.

7	Directive on the approximation of laws of the Member States relating to		Harmonized and/or Technical Standards used	Att□mt
a	Machinery safety	2006/42/EC	EN ISO 12100:2011 EN ISO 809:2009	
d	Electromagnetic compatibility	2004/108/EC	EN 60034-1:2010	
e	Low voltage equipment	2006/95/EC	EN 60204-1:2011-01 EN ISO 60335-1:2012 EN ISO 60335-2-41:2010	

8.a The harmonized and the technical standards used are identified above

8.b IRMER+ELZE Kompressoren GmbH is authorized to compile the technical file.

9 10	Conformity of the specification to the directives	Conformity of the product to the specification and by implication to the directives
12 Issued by	Engineering	Purchasing
14 Name		
15 Signature		
16 Date		

Atlas Copco Portable OEM Solutions
IRMER+ELZE Kompressoren GmbH — Part of the Atlas Copco Group

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For info, please contact your local Atlas Copco representative

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