

1 MACHINE AND MANUFACTURER IDENTIFICATION

AVAILABLE MODELS 230V AC**MANUFACTURER** PIUSI S.p.A. - Via Pacinotti 16/A - Z.I. Rangavino - 46029 Suzzara (MN) Italy

2 CONFORMITY

2.1 FACSIMILE COPY OF EU DECLARATION OF CONFORMITY

The undersigned PIUSI S.p.A.
Via Pacinotti 16/A z.i. Rangavino
46029 Suzzara - Mantova - Italy

HEREBY STATES under its own responsibility that the equipment described below:

Description : **SUBMERSIBLE VOLUMETRIC ELECTRIC PUMP**

Model: **PIUSI SQUALO35**

Serial number: refer to Lot Number shown on CE plate affixed to product

Year of manufacture: refer to the year of production shown on the CE plate affixed to the product
complies with the following legislation:

- Machinery Regulations
- Electromagnetic compatibility

The technical file is at the disposal of the competent authority following motivated request at PIUSI S.p.A. or following request sent to the e-mail address: doc.tec@piusi.com.

THE ORIGINAL DECLARATION OF CONFORMITY IS PROVIDED SEPARATELY WITH THE PRODUCT

2.2 DECLARATION OF COMPATIBILITY

The undersigned: PIUSI S.p.A
Via Pacinotti 16/A - z.i. Rangavino
46029 Suzzara - (MN) - Italy

DECLARES

That **SQUALO35** components in direct contact with the liquids handled, have been tested in conformity with the following directives

ISO22241-1 : 2006 (quality standard)

Diesel engines -- NOx reduction agent AUS 32 -- Part 1: Quality requirements and have been tested with the requirements of the following norm

ISO22241-2 : 2006 (quality standard)

Diesel engines -- NOx reduction agent AUS 32 -- Part 2: Test methods

The Adblue liquid , both before and after testing, resulted within the specified AUS32 (AdBlue) limit in conformance with ISO22241-2:2006 (as per Norm DIN V 70070)

3 MACHINE DESCRIPTION

PUMP MOTOR

Submersible volumetric electric pump for AUS32 (DEF, AdBlue®).
Brush motor, DC, low tension with intermittent cycle, closed type in protection class IP68 according to CEI-EN 60034-5.

3.1 HANDLING AND TRANSPORT

Foreword

Due to the limited weight and dimensions of the pumps, special lifting equipment is not required to handle them. The pumps are carefully packed before dispatch. Check the packing when receiving the material and store in a dry place.

ATTENTION

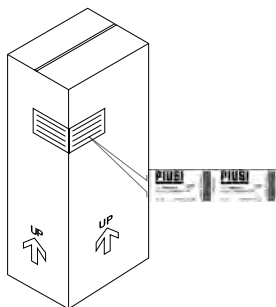


During transport, it is mandatory to use personal protective equipment (DPI)

PACKAGING

The pump is equipped comes packed suitably for shipment. On the packaging a label shows the following product information: Under no circumstances must the electric pump be supported or transported to the power cord. Be use it to the appropriate handle

- name
- code
- weight



WEIGHT (Kg)	PACKAGING DIMENSION(mm)
7	200 x 200 x 430

4 GENERAL WARNINGS

Warnings

To ensure operator safety and to protect the dispensing system from potential damage, workers must be fully acquainted with this instruction manual before attempting to operate the dispensing system.

Symbols used in the manual

The following symbols will be used throughout the manual to highlight safety information and precautions of particular importance:



ATTENTION
This symbol indicates safe working practices for operators and/or potentially exposed persons.



WARNING
This symbol indicates that there is risk of damage to the equipment and/or its components.



NOTE
This symbol indicates useful information.

Manual preservation

This manual should be complete and legible throughout. It should remain available to end users and specialist installation and maintenance technicians for consultation at any time.

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5 SAFETY INSTRUCTIONS**Mains - pre-liminary checks before inst****ATTENTION**

You must avoid any contact between the electrical power supply and the fluid that needs to be FILTERED.

Maintenance control

Before any checks or maintenance work are carried out, disconnect the power source.

FIRE AND EXPLOSION

Pump not suitable for pumping flammable liquids or operating in explosive environments

When flammable fluids are present in the work area, such as gasoline and windshield wiper fluid, be aware that flammable fumes can ignite or explode. To help prevent fire and explosion:

**ELECTRIC SHOCK**

This pump must be grounded. Improper grounding, setup or usage of the pump can cause electric shock.

Connect only to a grounded electrical outlets.

Electrocution or death



Use only 3 wire extension cords in accordance with local electrical codes. **Extension cords should have a ground lead.**

Ensure ground prongs are intact on power and extension cords.

Outside, use only extensions suitable for specific use, according to applicable regulations.

Unsuitable extensions may be dangerous

Never touch electrical connections with wet hands

Do not turn the pump on if the power connection cord or other important parts of the apparatus are damaged, such as the inlet outlet plumbing, dispensing nozzle or safety devices. **Replace damaged components before operation.**

Before each use check that the power connection cord and power plug are not damaged. If damaged, have power connection cord replaced before use **by a qualified electrician.**

The electrical connection between the plug and socket must be kept well **away from water.**

Unsuitable extension leads can be hazardous, in accordance with current regulations. **only extension cords that are labelled for outdoor use and have a sufficient conduction path should be used outdoors.**

For safety reasons, we recommend that, in principle, the equipment be used **only with a earth-leakage circuit breaker (max 30 mA).**

Electrical connections must use ground fault circuit interrupter (GFCI).
Installation operations are carried out with the box open and accessible electrical contacts. All these operations have to be done with the unit isolated from the power supply to prevent electrical shock!

EQUIPMENT MISUSE

Misuse can cause death or serious injury



Do not operate the unit when fatigued or under the influence of drugs or alcohol.

Do not leave the work area while equipment is energized or under pressure.

Turn off all equipment when equipment is not in use.

Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.

Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.

Do not kink or over bend hoses or use hoses to pull equipment.

Keep children and animals away from work area.

Comply with all applicable safety regulations.

BURN HAZARD



To avoid severe burns do not touch hot fluid or equipment.

Toxic Fluid or Fumes Hazard



Read MSDS's to know the specific hazards of the fluids you are using.

Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.

Prolonged contact with the treated product may cause skin irritation: always wear protective gloves during dispensing.

6 FIRST AID RULES

Persons who have suffered electric shock

Disconnect the power source, or use a dry insulator to protect yourself while you move the injured person away from any electrical conductor. Avoid touching the injured person with your bare hands until he is far away from any conductor. Immediately call for help from qualified and trained personnel. Do not operate switches with wet hands.

7 GENERAL SAFETY RULES

ESSENTIAL PROTECTIVE EQUIPMENT CHARACTERISTICS

Wear protective equipment that is:

- Suited to the operations that need to be performed;
- Resistant to cleaning products.

PERSONAL PROTECTIVE EQUIPMENT THAT MUST BE WORN



Safety shoes;



Close-fitting clothing;



Protection gloves;



Safety goggles;

OTHER DEVICES



Instructions manual

8 TECHNICAL DATA

Voltage/ Frequency (V/Hz)	Absorp- tion (A)	Power (W / Hp)	RPM	Nominal Flow Rate (l/min)	Max Back Pressure (bar / psi)	Type of Service (S1-continuous; S3-periodic intermittent)	Tank minimum level (mm / in)
230 50/60	4,0	560 / 0,75	2850/ 3600	35	2,1 / 31	S1	30 / 1,18

ATTENTION



The data refers to the following operating conditions:

Fluid: Water

Temperature: 20° C

9 OPERATING CONDITIONS

9.1 ENVIRONMENTAL CONDITIONS

TEMPERA-
TURE
RELATIVE
HUMIDITY

min. +12 °F / max +104 °F

min. -11 °C / max +40 °C

max. 100%

ATTENTION



The temperature limits shown apply to the pump components and must be respected to avoid possible damage or malfunction.

ATTENTION



The pump does not work with frozen fluid.

Consult the fluid data sheet for the range of use.

9.2 ELECTRICAL POWER SUPPLY

NOTE



The pump must be powered by a single-phase line in alternating current whose nominal values are indicated in the table in the paragraph "TECHNICAL DATA". The maximum acceptable variations for the electrical parameters are:
Voltage: +/- 5% of the nominal value

ATTENTION



Power supply from lines with values that do not fall within the indicate limits could cause damage to the electrical components and reduction of working performance.

9.3 DUTY CYCLE

NOTE



The pumps have been designed for continuous.

10 INTENDED USE

The pump SQUALO35 has been designed and aimed only to deliver AUS32 (DEF, AdBlue®), partially or totally immersed in the fluid. To guarantee the correct use and the declared performance of the pump, any tampering is forbidden.

10.1 PERMITTED AND NON-PERMITTED FLUIDS

FLUIDS

PERMITTED

FLUIDS NON-PERMITTED

AND

RELATED

DANGERS

- AUS32 (DEF, AdBlue®)

- DIESEL FUEL

- PETROL

- INFLAMMABLE LIQUIDS

- CORROSIVE CHEMICAL PRODUCTS

- SOLVENTS

- WATER

- FOOD LIQUIDS

- OXIDATION OF PUMP

- FIRE

- EXPLOSION

- CORROSION AND INJURY TO PERSONS

- DAMAGE TO GASKET SEALS

- FLUID CONTAMINATION

- FLUID CONTAMINATION

10.2 USE

INTENDED

USE AND

CHARACTER-

ISTICS

The submersible pumps SQUALO35 have been designed and fabricated for AUS32 (DEF, AdBlue®) delivery systems. The pump is provided with:

- Regenerative turbine actuated by a proper electrical motor

- Pressure regulator

- A check valve to prevent the discharge pipe from being delivery

- Electronic board with timer functionality (optional)

- Plastic pump body

- Stainless steel tube to hold the stator

- An aluminum bottom for motor cover

- A cable clamp for locking the incoming electric cable and to avoid tearing it in case of accidental draft

- A half-moon collector for fluid delivery and fitting with retaining fork

A range of accessories are provided optionally (resistive level sensors)

ATTENTION



ANY USE OUTSIDE THE ABOVE DESCRIPTION IS NOT PERMITTED BY THE MANUFACTURER

USE RESTRICTIONS, UNINTENDED BUT REASONABLY PREDICTABLE USE

It is forbidden:

1 - To use the pump for operations other than its intended use

2 - To run the pump dry

3 - To use the pump in a configuration different from the one defined by the manufacturer

4 - To use the pump with performances different from the one defined in the paragraph "TECHNICAL DATA"

5 - To use the pump in hazardous area/classified zones (the machine does not comply with the Directive 2014/34/UE ATEX)

6 - To add systems or equipment not planned by the manufacturer in the executive project

7 - Connect the pump to sources of energy other than those prescribed by the manufacturer and reported in the instructions for use;

8 - To run the pump without having read and fully understood the user manual

9 - To run the pump to deliver other fluids than AUS32 (DEF, AdBlue®)

10 - To partially or totally tamper the pump

ATTENTION



Any other use that differs from the intended use of the pump is considered "EQUIPMENT MISUSE", therefore the manufacturer declines any responsibility in case of accident or damages to property and injury to person or animals

11 INSTALLATION

ATTENTION



The pump must never be operated before the delivery lines have been connected.

Installation is an operation that may be of some complexity. It must be carried out by qualified and authorized installers.

Make sure that there is no danger of toxic fumes or harmful gases in the working atmosphere. In case of welding operations use all precautions to avoid explosions.

Keep in mind the danger of infection and the hygiene and sanitary precautionary rules.

PRELIMINARY INSPECTION

- Verify that all components are present. Request any missing parts from the manufacturer.

- Check that the pump has not suffered any damage during transport or storage.

- Carefully clean the delivery outlet, removing any dust or other packaging material that may be present.

- Check that the electrical data corresponds to those indicated on the data plate.

WARNING

Authorised installation personnel



All installations must be carried out by authorised and competent personnel only. Authorised persons must

- ensure the correct installation of equipment required for the correct functioning of the pump;

- only use accessories that have been supplied with the system.

ATTENTION



The use of accessories that are unsuitable and were not provided with the system is strictly prohibited. Piusi S.p.A. accepts no responsibility for damage to persons, property or the environment caused by failure to comply with this requirement.

THE PUMP IS FOR PROFESSIONAL USE ONLY.

Motors are not explosion-proof. DO NOT install the system in places with danger of explosion.

ISO 22241 provides the AUS32 (DEF, AdBlue®) requirements including:

- 1) quality of AUS32 (DEF, AdBlue®) solution,
- 2) applicable test methods,
- 3) packaging transportation and storage requirements and
- 4) refilling interface requirements.

AUS32 (DEF, AdBlue®) solution must be:

- HANDLED AND STORED IN COMPATIBLE MATERIAL;

- KEPT FREE OF CONTAMINATION;

- STORED AT TEMPERATURES THAT WILL NOT CAUSE THE SOLUTION TO DETERIORATE.

The use of contaminated or out of specification AUS32 (DEF, AdBlue®) can cause filter problems, clogged injectors, deterioration of the selective catalytic reduction process, or poison the vehicle's catalytic converter used in the exhaust system.

AUS32 (DEF, AdBlue®) manufacturers may require a system inspection to insure that all components are AUS32 (DEF, AdBlue®) compatible and that the tank and system have been properly cleaned, rinsed, and flushed before AUS32 (DEF, AdBlue®) is delivered.

The tank in which the pump is being installed must be vented in accordance with manufacturer's installation instructions. Follow the tank manufacturer's tank installation instructions.

- Make sure that the tank is free from sand, dirt, and other debris.

- Cable extension junctions should only be made with a safe and water-proof system.

As a general rule of electrical safety it is always recommended to power the device by protecting the line with:

- Magnetothermic switch / disconnecter with current flow rate suitable for the electric line;

- 30 mA differential residual current device.

The electrical connection must have a circuit breaker (gfci).

- The pump cannot be run dry

During installation and periodically, provide for verification of the grounding circuit in compliance with current regulations.

In order to prevent deformations and breakages, make sure that the pipes do not exert excessive forces on the delivery port of the pump.

11.1 POSITIONING, CONFIGURATIONS AND ACCESSORIES

ATTENTION



It is the responsibility of the installer to provide the necessary line accessories to ensure the correct and safe operation of the pump. The accessories that are not suitable to be used with the previously indicated material could damage the pump and/or cause injury to persons, as well as causing pollution.

ATTENTION



To maximise performance and prevent damage that could affect pump operation, always demand original accessories.

11.2 NOTES ON DELIVERY LINES

EFFECTS ON FLOW RATE

Length and diameter of pipe, flow rate of dispensed liquid, accessories fitted, can create back pressures above those allowed.

In this case, the pump mechanical control (pressure regulator) will trip to reduce the flow rate.

HOW TO REDUCE EFFECTS ON FLOW RATE

To avoid these problems, system flow resistances must be reduced using shorter and/or larger diameter pipes, as well as line accessories with low resistances (e.g., automatic nozzle for higher flow rates).

CHARACTERISTICS OF DELIVERY PIPES



A product filter must be installed between the tank / piping and the dispensing point. The filter should be sized to insure that AUS32 (DEF, AdBlue®) supplied to the dispenser nozzle meets the requirements of ISO 22241 and does not pass particulates that may clog the injector nozzles in the vehicle.

The delivery pipe must have the following technical characteristics:

- recommended minimum nominal diameter: 3/4" (DN20)

Only use hose with a cylindrical male thread. Do not use conical threads to avoid damage to the connections.

12 CONNECTIONS

12.1 ELECTRICAL CONNECTIONS

ATTENTION

IT IS THE INSTALLER'S RESPONSIBILITY TO CARRY OUT THE ELECTRICAL CONNECTIONS IN COMPLIANCE WITH THE RELEVANT STANDARDS.

WARNING

Comply with the following (not exhaustive) instructions to ensure a proper electrical connection:

- During installation and maintenance make sure that power supply to the electric lines has been turned off.
- Use cables with minimum sections, rated voltages and installation type that are suitable for the characteristics indicated in paragraph "TECHNICAL DATA" and the installation environment.

SINGLE PHASE WIRING

Connect the cable of the single phase pump to the electric panel, ensuring that the following parts correspond:

SINGLE PHASE WIRING DIAGRAM**GREEN/YELLOW CABLE****BROWN CABLE****LINE****BLUE CABLE****NEUTRAL****ATTENTION**

The pump should be installed with an electric panel guaranteeing the following functions: overload protection, short circuit protection, dry run protection. **DO NOT MODIFY AND / OR MAINTAIN THE CONFIGURATION OF THE ELECTRICAL PARTS.**

TAMPERING OF THE ELECTRICAL PARTS CAN CAUSE UNEXPECTED ALTERATIONS IN ELECTROMAGNETIC EMISSIONS.

The pump must be installed with an electrical panel that guarantees the following functions:

- overload protection;
- short-circuit protection;
- dry running protection.

ATTENTION

During installation and periodically, provide for verification of the grounding circuit in compliance with current regulations.

13 INITIAL START-UP

FOREWORD

- Make sure that the residual capacity of the delivery tank is greater than the quantity you wish to transfer;
- Make sure that the level of liquid in the tank where the SQUALO35 pump is located is sufficient to guarantee the suction;
- Make sure that the piping and line accessories are in good condition.

ATTENTION



Do not run the pump dry. This can cause serious damage to its components.

ATTENTION



Do not start the pump unless it has been completely submerged in fluid.

NOTE



- Never start or stop the pump by connecting or cutting out the power supply.
- Prolonged contact with some fluids can damage the skin. The use of goggles and gloves is recommended.

WARNING



If an automatic type dispensing nozzle is installed on the end of the delivery line, the evacuation of the air will be difficult because of the automatic stopping device that keeps the valve closed. It is recommended that the automatic nozzle be temporarily removed during initial start-up.

PRELIMINARY CHECK

Before start up, the suction part of the pump must be primed. Prime by means of submerging the entire pump in AUS32 (DEF, AdBlue®), this ensures that the sealing surfaces are properly lubricated and that the pump can immediately dispense the liquid.

START-UP

- Turn the power supply switch upstream from the pump to position I (ON) and wait until the liquid comes out of the delivery pipe.
- If malfunctions are found, disconnect the pump from the power supply, turning the power supply switch to position O (OFF) and consult the section on "TROUBLESHOOTING".

AT THE END OF THE INITIAL START-UP

When start-up has occurred, verify that the pump is operating within the anticipated range, in particular:

- that under conditions of maximum back pressure, the power absorption of the motor stays within the values shown on the identification plate;
- that the delivery back pressure does not exceed the maximum back pressure for the pump.

14 EVERY DAY USE

FOREWORD

MAKE SURE THAT THE TANK LEVEL NEVER GOES DOWN UNDER THE SUCTION OF THE PUMP.

SAFETY WARNINGS

During use it is mandatory to use personal protective equipment (PPE) However, keep the following minimum recommendations for proper pump operation into account

AUTHORIZED FOR USE PERSONNEL

Use of the SQUALO35 pump is reserved exclusively for specialized personnel. Any tampering can lead to the decay of performance and danger for people and / or things, in addition to the forfeiture of the warranty.

ATTENTION



To avoid damaging the pump, after use, make sure the pump is off.

In case of a power break, switch the pump off straight away.

Should any sealants be used on the delivery circuit of the pump, make sure that these products are not released inside the pump.

Foreign bodies in the delivery circuit of the pump could cause malfunctioning and breakage of the pump components.

TIMER

The pump is equipped with a timer which switches it off automatically after approximately 11 minutes of operation.

ATTENZIONE



In case of pump automatic shut off through the timer, switch off and switch on the pump through the main switch

15 MAINTENANCE

Safety instructions

The SQUALO35 pump has been designed and built to require minimal maintenance.

Before carrying out any type of maintenance and before being taken out of the containment tank, the pump must be disconnected from all sources of electrical and hydraulic power supply,

During the maintenance it is mandatory to use personal protective equipment (PPE)

Authorised maintenance personnel DANGER OF FROST

All maintenance must be performed by qualified personnel. Tampering can lead to performance degradation, danger to persons and/or property and may result in the warranty being voided.



When the pump remains inactive for a long time at temperatures of less than +12°F/-11°C, the pump body must be completely emptied, to prevent possible cracking of the hydraulic components.

ATTENTION



During installation and periodically, provide for verification of the grounding circuit in compliance with current regulations.

16 NOISE LEVEL

Under normal operating conditions, noise emission of all models does not exceed 70 dB at a distance of 1 metre from the electric pump.

17 PROBLEMS AND SOLUTIONS

For any problems contact the authorised dealer nearest to you.

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
THE MOTOR IS NOT TURNING	Lack of electric power	Check the electrical connections and the safety systems.
	Impeller blocked	Check for possible damage or obstruction of the Impeller
	Motor problems	Contact the Service Department
THE MOTOR TURNS SLOWLY WHEN STARTING	Low voltage in the electric power line	Bring the voltage back within the anticipated limits
	Low level in the suction tank	Refill the tank
	Filter clogged	Clean the filter
	High loss of head in the delivery circuit	Use shorter piping or of greater diameter
LOW OR NO FLOW RATE	Low rotation speed	Check the voltage at the pump. Adjust the voltage and/or use cables of greater cross-section
	The suction filter or the pipes are blocked.	Remove the obstructions, as indicated in the chapter on Warnings
	The impellers are worn or blocked.	Change the impellers or remove the obstruction.
	The non-return valve is locked in the closed position.	Check good operation of the valve and replace it if necessary.
	LEAKAGE FROM THE PUMP BODY	Seal damaged

18 DEMOLITION AND DISPOSAL

Foreword

If the system needs to be disposed, the parts which make it up must be delivered to companies that specialize in the recycling and disposal of industrial waste and, in particular:

Disposing of packing materials

The packaging consists of biodegradable cardboard which can be delivered to companies for normal recycling of cellulose.

Metal Parts

Metal parts, whether paint-finished or in stainless steel, can be consigned to scrap metal collectors.

Disposal

Disposal of electric and electronic components

These must be disposed of by companies that specialize in the disposal of electronic components, in accordance with the indications of directive 2012/19/EU (see text of directive below).

Information regarding the environment for clients residing within the European Union



European Directive 2012/19/EU requires that all equipment marked with this symbol on the product and/or packaging not be disposed of together with non-differentiated urban waste. The symbol indicates that this product must not be disposed of together with normal household waste. It is the responsibility of the owner to dispose of these products as well as other electric or electronic equipment by means of the specific refuse collection structures indicated by the government or the local governing authorities.

Disposing of RAEE equipment as household wastes is strictly forbidden. Such wastes must be disposed of separately.

Any hazardous substances in the electrical and electronic appliances and/or the misuse of such appliances can have potentially serious consequences for the environment and human health.

In case of the unlawful disposal of said wastes, fines will be applicable as defined by the laws in force.

Miscellaneous parts disposal

Other components, such as pipes, rubber gaskets, plastic parts and wires, must be disposed of by companies specialising in the disposal of industrial waste.

- 19 **DIMENSÕES E VISTA EXPLODIDA**
 - 19 **INGOMBRI E VISTA ESPLOSA**
 - 19 **OVERALL DIMENSIONS AND EXPLODED VIEW**
 - 19 **DIMENSIONS ET VUE ÉCLATÉE**
 - 19 **ABMESSUNGEN UND EXPLOSIONSANSICHT**
 - 19 **TAMAÑO TOTAL Y DESPIECE**
 - 19 **MAATBESLAG EN EXPLOSIETEKENING**
-

