

D Bedienungs - und Wartungsanleitung " 33

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### PRODUCT SPECIFICATIONS

# **1. GENERAL INFORMATION**

### 1.1 Documentation supplied

#### 1.1.1 Manual

Data Instruction manual Edition 1 Version 0102 Code 253P4250

#### Addressees

This manual is addressed to the operators responsible for operating the machine during all the technical stages of its life.

#### Contents

This manual contains the following information:

- Manufacturer's declaration
- Safety information
- Commercial information
- Information on documentation
- Machine description
- Transportation information
- Storage information
- Installation information
- Information on adjustments
- Operational information
- Maintenance information
- Dismantling information

Information is divided into the following chapters and appendices of this manual:

Chapter 1	: General information
Chapter 2	: Description
Chapter 3	: Installation
Chapter 4	: Operation
Chapter 5	: Maintenance
Chapter 6	: Operating problems
Chapter 7	: Dismantling
Appendix	: Product specifications

# 1.2 Ownership of information

The information contained in this manual is property of PENTAIR WATER ITALY Srl.

It is forbidden to reproduce in whole or in part this manual without the explicit authorisation of PENTAIR WATER ITALY Srl.

The information contained in this manual is related only to the machines indicated in section "Product Specifications".

PENTAIR WATER ITALY reserves the right to make the changes deemed necessary to the machines not listed in the "Machine identification data".

### 1.3 Machine identification data

Machine code	R	2	Т	D	65 -	60	Х	6
Circulating pump								
2 = two-pole motor								
4 = four-pole motor								
Coupling to standard motor								
Twin type								
Rated diameter of mouths								
Max head (in dm)								
Special version (only on								
request •)								
Rated pressure (bar)								

### 1.4 EC compliance declaration

See page 2

### 1.5 General safety information

It is advisable to carefully follow the instructions contained in this manual with specific reference to notes, warnings and danger signs.

Attention Users should always follow the accident prevention laws in force in the country where the product is installed.

Danger

Before repairing or servicing the electropump, disconnect it from the socket and/or turn the main switch to Off (when present) to interrupt the power supplied to the electropump. This prevents the electropump from accidentally restarting and from causing accidents to people and/or damages to the people.

Danger

Do not service, install or move the electropump while it is powered, because these operations can cause serious accidents or even death.

Attention

on During operation, do not remove or move the electropump.



Before using the electropump, always check that the cable and all electric devices are efficient, shielded and protected.

Danger

When starting the electropump (by inserting the plug into the socket and/or turning the main switch to on), always wear shoes and make sure that the hands are dry.



Failure to follow the safety procedures and precautions contained in the documentation supplied shall relieve PENTAIR WATER ITALY from all liability thereof.

#### 1.5.1 Personnel qualifications

Qualification and protection limits established for operators

OPERATOR	QUALIFICATION	RECOMMENDED INDIVIDUAL PROTECTION MEANS
Transportation	Familiarity and knowledge of chapters: - "General information " - "Description"	Protective shoes and gloves
Installation	- "Installation" Qualification compliant with regulations and installation status, knowledge of installation status and familiarity with chapters: - "General information " - "Description" - "Installation""	Protective shoes and gloves
Operation	Familiarity and knowledge of chapters: - "General information " - "Description" - "Installation"	Protective shoes and gloves and protective temperature against high temperatures
Maintenance	Qualification acknowledged by PENTAIR WATER ITALY. Familiarity and knowledge of chapters: - "General information " - "Description" - "Maintenance"	Protective shoes and gloves
Demolition	Familiarity and knowledge of chapters: - "General information " - "Description" - "Installation "	Protective shoes and gloves

Danger The machine operates in safety conditions if it is used by qualified personnel in accordance with the instructions and information contained in this manual and present on board. All the operations referred to in this manual should be performed by qualified personnel

should be performed by qualified personnel equipped with the protection means described in this manual



PENTAIR WATER ITALY shall not be liable for accidents if the machine is used from non qualified or unauthorised personnel and originating from the failure to follow the instructions contained in this manual and present on the machine board

### 1.5.2 Special measures

The use of personnel with a qualification differing from the one indicated can endanger the safety of people and/or damage the property.

# 1.6 Conventions

#### 1.6.1 Terminological conventions

The following conventions have been adopted throughout the manual

- Machine	electropumps specified in section				
	"Product specifications"				
<ul> <li>Authorised technician</li> </ul>	: person authorised by PENTAIR				
	WATER ITALY to perform even				
	the operations not specifically				
	indicated in this manual				
- Specialised technician	: person authorised to perform even				
	the operations not specifically				
	indicated in this manual after				
	being authorised by PENTAIR				
	WATER ITALY				

### 1.6.2 Typesetting conventions



Danger signs indicate procedures that have to be thoroughly followed to avoid causing physical injuries to operators

Warning Warning signs indicate procedures that have to be thoroughly followed to avoid damaging the machine or other equipment connected to it



Notes contain important information that are highlighted outside the text and connected to it

# 1.7 Recommended use

#### 1.7.1 Recommended use

The machine has been designed, manufactured and protected to allow the transfer, circulation and increase of pressure of the following types of liquid:

- Water with a temperature ranging from -20 °C to 130 °C (for temperatures below 0 °C, it is necessary to add an appropriate amount of anti-frost)
- Cooling fluids that do not contain mineral oils
- Neutral, non explosive and non aggressive fluids free from solid particles and suspended fibres

The machine has been designed, manufactured and protected to guarantee a flow rate of fluid that changes according to the desired head (see "Product specifications").

### 1.7.2 Recommended installation

The machine has been designed, manufactured and protected to be installed in the following environments:

- Indoors
- Outdoors with protection against atmospheric agents
- The machine has been designed, manufactured and protected to be used in the following atmospheric conditions:
- Temperature range: -15 °C and +40 °C
- Relative humidity range: from 30% to 90%

Danger

If the temperature of the pumped fluid is above  $65^{\circ}$ C, it is necessary to take appropriate measures to position the pump in order to avoid accidental contact with operators.

The machine has been designed, manufactured and protected to be installed with the motor axis arranged vertically and the motor, in the upper position, located horizontally.

The machine has been designed, manufactured and protected to be placed on overhead pipes able to tolerate the weight of the machine (without supporting base).

The machine has been designed, manufactured and protected to be supplied with electric energy having the following characteristics:

- 230 V, 50 Hz, three-phase

- 400 V, 50 Hz, three-phase

Different voltage and frequency values are available on request

### 1.8 Non recommended use

The machine has not been designed, manufactured or protected for the uses not specifically listed under section "Recommended use"

In particular the machine has not been designed, manufactured or protected to transfer, circulate or increase the pressure of the following fluids:

- Explosives
- Corrosive fluids
- Fluids derived from crude oil or mixtures containing derivatives of crude oil
- Mixtures containing materials or suspended fibres
- Sea water

For special uses, contact our technical department

#### 1.8.1 Liability arising from non recommended use



PENTAIR WATER ITALY shall not be liable for damages to people, animals or property deriving from non recommended use

### 1.9 Warranty



Installation, adjustment and maintenance operations that have not been authorised and/or performed by unskilled personnel will invalidate the warranty

# 1.10 Assistance



If the pump has been used with noxious or toxic fluids, the pump will be classified as polluted and PENTAIR WATER ITALY SrI will have the right to refuse offering its assistance for the pump.

For all assistance requests, contact:

PENTAIR WATER ITALY Srl – Servizio Assistenza Via Masaccio, 13 56010 Lugnano - PISA - ITALY Tel. 050/71.61.11 - Fax 050/70.31.37

# 1.11 How to use the documentation supplied

Operators should carefully read the documentation supplied before performing any operation on the machine.

The documentation supplied should be kept along with the machine until it is dismantled, so that it is available in case of need.

If the used machine is sold, it will be necessary to supply all the documentation enclosed.

# 2. DESCRIPTION

### 2.1 Description

#### 2.1.1 Architecture and operating principles

The machines are horizontal, centrifugal and single stage electropumps with mechanical sealing and suction and delivery on-line flanged mouths.

Machines are directly coupled to an asynchronous three-phase electric motor with 2 (R2T-R2TD) or 4 (R4T-R4TD) poles, closed casing and external ventilation.

Twin models contain two twin pumps and a single delivery and suction mouth, each coupled with its electric motor. These machines are not self-priming.

#### 2.1.2 Machine frame

The pump body and the motor stool are made of cast iron GG20.

The shaft is made of stainless steel AISI 420.

The impeller, the impeller guide ring, the conical bushing and the nut of the conical bushing are made of stainless steel AISI 304.

The mechanical sealing of the machine consists of sliding backfaces in tungsten carbide.

Suction and delivery mouths are flanged (DN40÷100).

The electric control motor is asynchronous with closed casing and 2 or 4 pole external ventilation, IP54 protection degree and Class F insulation. The motor has a V18 manufacturing form with counterclockwise direction of rotation (viewed from the cooling fan side).

# 2.2 Technical characteristics

Dimensions and weights of machines See "Product Specifications"

#### Electric data

See "Product specifications" and nameplate

#### Pressure

- maximum operating pressure: 6 bar
- minimum suction pressure: depending on NPSH values increased by a safety factor of 0.5 m water gauge (see PRODUCT SPECIFICATIONS - PERFORMANCES).

#### 2.2.1 Noise

The maximum continuous noise equivalent to weighed noise A of acoustic vibrations generated by the machine: 82 dB (A)

#### 2.2.2 Liability

PENTAIR WATER ITALY declines any liability in the event of failure to comply with the values indicated in this paragraph.

# 3. INSTALLATION

### 3.1 Lifting

- The machine can be lifted in one of the following conditions:
- Machine without any kind of packing
- Machine packed in a cardboard box

#### 3.1.1 Machine without any type of packing

It is possible to lift only one machine at a time:

- machines with a weight below 25 Kg: the machine can be lifted manually by one operator
- machines with a weight ranging from 25 and 50 Kg: the machine can be lifted manually by two operators
- machines with a weight above 50 Kg: the machine can be lifted by means of appropriate lifting and slinging equipment

#### 3.1.2 Machine packed in a cardboard box



It is possible to lift several machines packed in a cardboard box, depending on the machine weight. Packed machines are maintained in position by means of the inert material that fills the box.

- machines with a weight below 25 Kg: the machine can be lifted manually by one operator
- machines with a weight ranging from 25 and 50 Kg: the machine can be lifted manually by two operators
- machines with a weight above 50 Kg: the machine can be lifted by means of appropriate lifting and slinging equipment

### 3.2 Transportation

The machine must be transported in the following conditions:

- Machine in fixed position without possibility of moving
- Machine protected from atmospheric agents



### 3.3 Storage

#### 3.3.1 Characteristics of the storage area

The storage area should have the following physical characteristics:

- Sufficient extension to contain the machine and the packing, when present, and to enable its lifting by means of the lifting devices provided
- Flat and horizontal resting surface

- Resting surface with a capacity above the weight of the machines stored
- Protection against accidental impacts

# 3.3.2 Environmental characteristics of the storage area

The storage area should have the following environmental characteristics:

- Acceptable temperature range: +7 °C ÷ +50 °C
- Relative humidity range: 30 ÷ 90%
- Protection from atmospheric agents

Warning Keep the machine in horizontal position

### 3.4 Preliminary inspections

#### 3.4.1 Assessment of damage

- Check the integrity of the packing
- Open the packing and extract the machine
- Check that the received machine complies with the characteristics indicated in the order
- Check that the machine has not suffered damage, and verify in particular that the following components are integral:
- Motor fan cover
- Terminal block cover
- Coupling joint protection
- Cast iron parts

Warning Keep the original packing in the event it were necessary to transport the machine in future

#### 3.4.2 Damage reporting

If non compliance characteristics or damages are detected, immediately report the problem to PENTAIR WATER ITALY or to the distributor within and no later than 8 (eight) days from the date of purchase.

# 3.5 Preparation of the installation site

#### 3.5.1 Characteristics of the installation site

The installation site should have the following characteristics:

- Simplify the positioning and access to the machine
- Enable a safe connection to the electric system
- Enable safe connections to tubing
- Offer an appropriate natural and/or lighting designed to guarantee full operational safety
- Offer a minimum distance of 150 m from each point of the machine and from obstacles
- Offer a free space of at least 300 mm above the machine to guarantee a sufficient ventilation of the motor fan.

Warning Do not cover or obstruct the motor fan cover grid

#### Environmental conditions

- Acceptable temperature range: +7 °C ÷ +40 °C
- Acceptable relative humidity range: 30 ÷ 90%
- Protection from atmospheric agents

#### Power supply

Electric power supply should have the following characteristics:

- Offer a differential protection
- Offer voltage and frequency values compliant with the values indicated on the motor nameplate
- Offer a power not below the value indicated on the motor nameplate
- Be equipped with an appropriate thermal protection
- Be equipped with a thermal relay adjusted according to the actual current absorbed
- Be equipped with a cut-off switch with protective fuses
- Be equipped with cables with a section suitable to the power absorbed by the motor

#### Access

Connect the machine so that it can be easily accessible for maintenance operations

#### Supporting system

The machine supporting system can correspond to one of the following configurations:

- The machine can be connected to a fixed pipe able to maintain the machine in position
- The machine can be connected to a pipe and rested on a base with the characteristics indicated in "Product specifications", paragraph "Foundations"
- The machine can be connected to a pipe and fixed, by means of nuts, to a base with the characteristics indicated in "Product Specifications", paragraph "Foundations"

### 3.6 Installations



Warning

Do not install the machine in environments containing gases and/or inflammable or explosive materials.



Electropumps are designed so that all the moving parts are rendered inoffensive by means of protections. Do not use the electropump if these protections have been removed or are damaged, since this could cause serious accidents to people.



The machine supply line should always have a differential circuit breaker.

#### 3.6.1 Assembly

- The arrows printed on the machine body indicate the direction of the flow.
- It is advisable to fit gates downstream and upstream from the machine.

- The machine should be installed so that the axis of the motor is between the vertical and horizontal direction in all positions.
- The motor should never be arranged in a low position to avoid water entering the motor and the bearings. See the following figure for reference.

#### R4T – R2T



R4TD – R2TD

- Install the machine on horizontal or vertical pipes, on the "delivery" and "return" lines.
- The machines used do recirculate used water should always be installed on the vertical section of the pipe so that the water flow is directed upwards.
- The system should also be equipped with an air venting system on the section of the pipe where the machine is installed.
- If the machine is installed on a vertical pipe with the flow directed downwards, the air vent should be fitted on the highest point of the machine.
- Do not install the machine in the lowest point to protect it from deposits.
- To guarantee a regular suction pressure and avoid noise and cavitation, the pipe connected to the expansion vessel should be installed before the suction mouth of the machine.
- Verify that the machine is not subject to tensions caused by pipes or water temperature variations.
- The machines can be directly inserted in the pipes if these are appropriately supported. The threaded holes on its base can be used to fix the machine to a support (see PRODUCT SPECIFICATIONS – DIMENSIONS AND WEIGHTS).
- To avoid deposits from accumulating in the machine and in the valves, drain the system before starting the machine.
- It is advisable to install anti-vibration supports on both flanges and on the base to prevent vibrations from being transmitted along the pipes.

#### 3.6.2 Connection of the machine to the pipes

Check valves should be installed both upstream and downstream from the machine, to avoid having to drain the whole system when it is necessary to disassemble and remove the machine.

Before pipes are installed, it is necessary to make sure that they do not exert mechanical stresses on the machine.

It is necessary to make sure that the diameter of the suction and delivery pipes is appropriate and that the minimum inlet pressure is guaranteed (see 2.2 "Technical characteristics").

To avoid sediments from accumulating inside the machine, it is advisable to avoid installing the machine in the lowest point of the system.

Tubes must be installed in a position that prevents air from accumulating, especially on the suction side.

#### PIPE ASSEMBLY



Warning The pump should never be started if the check valve on the delivery side is closed, hecause this would increase the temperature of the fluid inside the pump. The accumulation of steam could cause cavitation, which could damage the moving components. If the valve can operate with a closed valve, it is advisable to ensure a minimum fluid flow by means of a by-pass or a drain. The drain can also be connected to a collection reservoir every time it is necessary to provide a minimum flow equivalent to at least 10% of the rated one in the maximum vield point. Flow rate and head in the maximum yield point are printed on the pump nameplate.

#### 3.6.3 Air vent

Considering that the mechanical seal is water lubricated, the machine should be operated only after the machine and the system have been filled with water and vented from air. The air is vented from the pump through a special vent valve.



This operation doesn't need to be performed on machines installed on vertical pipes with flow directed upwards.

For twin machines with horizontal or vertical shaft, this operation should be performed by loosening the 1/8" cap on the pump housing.

Sometimes the air venting operation needs to be repeated several times to completely remove the noise originating from the presence of air in the pump.

#### 3.6.4 Terminal block positioning



Before performing any operation, make sure that the pump is not connected to the power supply and that it cannot be started accidentally.

The terminal block can be rotated in any position by 90° steps.



To change the position of the terminal block, perform the operations described here below:

- If necessary, use a screwdriver to remove the grid that protects the motor-pump coupling. Do not remove the coupling.
- 2. Remove the screws that fix the motor to the pump body.
- 3. Turn the motor in the desired position.
- 4. Reposition and tighten the screws.
- 5. Reassemble the protection grid.

#### 3.6.5 Connection to the mains

Danger The installer will have to make sure that the electric supply system has an adequate grounding compliant with the laws in force.

Danger Check that the supply system has a differential switch with a degree of sensitivity of  $\Delta$  = 30 mA (DIN VDE 0100T739).

Danger

Before removing the cover from the terminal block of the motor and before performing operations on the machine, make sure that the supply line has been cut-off.



The electric motors of twin machines are connected separately.

To connect the machine to the mains, perform the operations described here below:

- Make sure that the motor is suitable to the mains voltage and frequency
- Cut the electric system off by using a cut-off switch
- Loosen the screws that fix the cover to the terminal block
- Insert the supply cable into the cable holder.
- Connect the phases and the ground to the terminals following the instructions shown on the diagram inside the terminal block.
- Reposition the cover of the terminal block with the related gasket
- Tighten the screws that fix the cover to the terminal block
- Insert the electric supply by using the cut-off switch
- Supply one current impulse to the machine
- Check the direction of rotation of the motor
  - A- If the direction of rotation complies with the direction of the rotation indicated by the arrows shown on the machine head, the connections are correct
  - B- If the direction of rotation is opposed to the one shown by the arrows present on the machine head, perform the following operations:
    - -- Cut the electric system off by using the cut-off switch
    - -- Loosen the screws that fix the terminal block cover in position
    - -- Invert the connection of the two phases
    - -- Reposition the terminal block cover with the related gasket
    - -- Tighten the screws of the terminal block cover

# 4. OPERATION

Warning Always start the machine after filling it with fluid, as explained under sections "Operation".

# 4.1 Start-up

Perform the following operations to start the machine for the first time:

- Open the gate on the suction line
- Start the machine
- Slowly open the gate on the delivery line to avoid water hammering on the delivery line
- Adjust the thermal relay depending on the current absorbed by the motor
- Adjust the enabling and disabling pressure of the pressure switch that controls the operation of the machine

# 4.2 Checking the frequency of starts and stops

To check the frequency of starts and stops, perform the following operations:

- Check the operation of the machine for an hour

- If the number of starts/stops is above 40, adjust the control equipment in order to reduce the frequency



For high temperature fluids it is necessary to allow the fluid contained in the machine to cool before loosening the screws that fix the machine to the pipes



Always check that the machine is filled. Never start the machine without fluid, as indicated under section "Operation".

# **5. MAINTENANCE**

### 5.1 Lubrication

The gasket on the shaft is self-adjusting. The sealing surfaces are resistant to wear and are lubricated by the pumped fluid.

The bearings of the machine are lubricated by the pumped fluid.

The ball bearings of the motor are self-lubricated with grease resistant to heat.



g If the machines are installed, used and serviced in accordance with the instructions and directions given in this manual, they do not require lubrication. Follow the instructions and directions given in this manual

# 5.2 Temporary disabling

To disable the machine for a long period of time, perform the following operations:

- Cut the electric system off by using a cut-off switch
- If ambient temperature falls below the freezing temperature of the pumped fluid, perform the following operations:
- A- If the whole system has to be disabled:
  - -- Drain the system
- B- If it is not necessary to drain the whole system:
  - -- Close the gates on the delivery and suction lines
  - -- Allow all the fluid to de-flow from the drainage cap of the machine
  - -- Store the drainage cap for future use without disassembling it from the machine

Danger When using high temperature fluids, allow the fluid contained inside the machine to de-flow before removing the cap and draining the fluid

Warning Before restarting the machine, fill it as indicated under sections "Operation".

# 5.3 Periodical inspection

At regular intervals, perform the following inspections:

- Hydraulic performances
- Lack of fluid leaks
- Motor overheating
- Relay tripping time
- Start-up frequency
- Correct operation of automatic controls
- Vibrations
- Noise
- A- If check-ups do not reveal the presence of abnormal conditions, continue to use the machine until the next check-up

- B- If check-ups reveal the presence of abnormal conditions, perform the operations described here below:
  - Refer to table "Problems/Causes" under "Operating problems"
  - -- If the problem and cause is listed in table "Problems/Causes" under "Operating problems", contact an authorised technician or a specialised technician and report the abnormal condition found
  - -- If the problem and the cause is not listed in table "Problems/Causes" under "Operating problems", contact an authorised technician or a specialised technician.

### 5.4 Extraordinary maintenance

Extraordinary maintenance operations performed after problems, failures, breakage or technical updates should be performed only by authorised or specialised technicians.



PENTAIR WATER ITALY declines any liability and cancels all warranty contracts in presence of:

- Operations not documented in this manual and performed on the machine
  - Extraordinary maintenance carried out by others than authorised or specialised technicians

# 6. OPERATING PROBLEMS

See table "Problems/Causes".

# 7. DEMOLITION

### 7.1 Machine disabling

- Cut the system off using the cut-off switch
- Close the gates on the suction and delivery lines
- Loosen the screws that fix the terminal block cover

- Disconnect the wires from the terminal block
- Remove the supply cable from the cable holder
- Remove the priming and drainage caps
- Allow all the fluid to drain from the machine
- Loosen the screws that fix the machine to the base
- Lift the machine as described under "Installation", "Lifting"
- Transport the machine as indicated under "Installation", "Transportation"
- To re-use the machine, perform the following operations:
- -- Reposition the terminal block cover with the related gasket -- Tighten the screws that fix the terminal block cover
- Close the delivery and suction holes to prevent dirt from entering inside the machine
- -- Store the machine as indicated in "Installation", "Storage"

Danger If the temperature of the fluid that flows in the pipes and circulates in the machine is above 65 °C, install a protection around the machine to protect it from high temperatures



PENTAIR WATER ITALY shall not be liable of parts of the machine are recycled or reused

# 7.2 Residual risks after disabling



The machine has been manufactured with non biodegradable materials. The machine should be dismantled only in a deposit equipped for these operations

#### Problem/Causes

Problem	Causes
A - The motor fails to run when started	<ol> <li>The line voltage has been interrupted</li> <li>Burnt fuse</li> <li>Tripped thermal relay</li> <li>No conduction in the starter contacts or faulty coil</li> <li>Burnt fuses in the auxiliary circuit</li> <li>Faulty motor</li> </ol>
B - The starter thermal switch trips when voltage is applied	<ol> <li>Burnt fuse</li> <li>Faulty starter contacts</li> <li>Faulty electric connections</li> <li>Faulty motor windings</li> <li>The machine is mechanically blocked</li> <li>The thermal relay calibration is too low</li> </ol>
C - The thermal relay trips occasionally without apparent reason	<ol> <li>The thermal relay calibration is too low</li> <li>The line voltage is periodically missing</li> <li>The line voltage in peak periods is too low</li> </ol>
D - The thermal relay has not tripped, but the machine is unable to run	<ol> <li>The line voltage has been interrupted</li> <li>Burnt fuse</li> <li>No conduction in the starter contacts or faulty coil</li> <li>Burnt fuses in the auxiliary circuit</li> </ol>
E - The machine flow rate is irregular	<ol> <li>Air present in the suction tube or in the pump</li> <li>The pressure on the suction side is insufficient</li> <li>The suction pipe is partially obstructed</li> </ol>
F - The machine runs but fails to supply fluid	<ol> <li>The suction pipe or pump are obstructed</li> <li>The bottom (or stop) valve is blocked in closed position</li> <li>Leaks in the suction line</li> <li>Air in the suction line or pump</li> </ol>
G - When stopped the machine runs in opposite direction	<ol> <li>Leaks in the suction pipe</li> <li>Faulty bottom (or stop) valve</li> <li>The bottom (or stop) valve is blocked in partially or fully opened position</li> </ol>
H - Fluid leaks in mechanical seals	<ol> <li>Misaligned pump shaft.</li> <li>Faulty mechanical seal</li> </ol>
I - The pump is too noisy	<ol> <li>Pump cavitation due to insufficient pressure on the suction side.</li> <li>Misaligned pump shaft.</li> <li>Foreign material inside the pump.</li> </ol>

# SCHEDA PRODOTTO/PRODUCT DE SPECIFICATION FICHE DU PRODUIT/PRODUKTPLAN FICHA DEL PRODUCTO/PRODUCTBESTEK КАРТА ИЗДЕЛИЯ

Alimentazione elettrica Power supply Alimentation electrique Stromzufuhr Alimentacion electrica Elektrische voeding Электропитание

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Dimensioni e pesi Dimensions and weights Dimensions and poids Abmessungen und Gewichte Dimensiones y pesos Afmetingen en gewichten *Размеры и вес* 

Prestazioni Performances Performances Leistungen Prestaciones Prestaties Xapaĸmepucmuku pag. 75

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# Power supply - Alimentation electrique - Stromzufuhr Alimentacion electrica - Alimentazione elettrica Alimentação elèctrica - Elektrische voeding

		kW	Volt (V)	Hz	3 x 400 V	A 3 x 230 V	n (min <sup>-1</sup> )	۱٫/۱ (%)
RL4T	40 - 30	0,25			1,10	1,90	1380	4,6
RL2T	40 - 60	0,37			1,00	1,73	2840	4,1
RL2T	40 - 120	0,55			1,45	2,50	2810	5,2
RL4T	50-30	0,25			1,10	1,90	1380	4,6
RL4T	50- 60	0,37			1,25	2,15	1390	4,2
RL2T	50 - 120	0,75			1,90	3,30	2810	4,5
RL2T	50 - 180	1,10			2,60	4,50	2860	5,2
RL4T	65-30	0,25		50	1,10	1,90	1380	4,6
RL4T	65-60	0,37	2 × 220 + 400		1,25	2,15	1390	4,2
RL2T	65 - 120	1,10	3 X 230 - 400		2,50	4,30	2840	5,8
RL2T	65 - 180	1,50			3,40	5,90	2870	6,0
RL4T	80-30	0,25			1,10	1,90	1380	4,6
RL4T	80- 60	0,75			2,25	3,90	1405	5,1
RL2T	80 - 120	2,20			4,80	8,30	2870	4,8
RL2T	80 - 180	2,20			4,80	8,30	2870	4,8
RL4T	100- 30	0,55			1,70	2,90	1390	4,5
RL4T	100- 60	1,10			3,00	5,20	1395	4,0
RL2T	100 - 120	3,00			6,30	10,90	2870	4,2
RL4TD	40-30	2 x 0,25			1,10	1,90	1380	4,6
RL2TD	40 - 60	2 x 0,37			1,00	1,73	2840	4,1
RL2TD	40 - 120	2 x 0,55			1,45	2,50	2810	5,2
RL4TD	50-30	2 x 0,25			1,10	1,90	1380	4,6
RL4TD	50- 60	2 x 0,37			1,25	2,15	1390	4,2
RL2TD	50 - 120	2 x 0,75	_		1,90	3,30	2810	4,5
RL2TD	50 - 180	2 x 1,10	_		2,60	4,50	2860	5,2
RL4TD	65-30	2 x 0,25	_		1,10	1,90	1380	4,6
RL4TD	65-60	2 x 0,37	$3 \times 230 \pm 400$	50	1,25	2,15	1390	4,2
RL2TD	65 - 120	2 x 1,10	0 x 200 . 400		2,50	4,30	2840	5,8
RL2TD	65 - 180	2 x 1,50	_		3,40	5,90	2870	6,0
RL4TD	80-30	2 x 0,25	_		1,10	1,90	1380	4,6
RL4TD	80- 60	2 x 0,75	_		2,25	3,90	1405	5,1
RL2TD	80 - 120	2 x 2,20			4,80	8,30	2870	4,8
RL2TD	80 - 180	2 x 2,20			4,80	8,30	2870	4,8
RL4TD	100- 30	2 x 0,55	4		1,70	2,90	1390	4,5
RL4TD	100- 60	2 x 1,10	4		3,00	5,20	1395	4,0
RL2TD	100 - 120	2 x 3,00			6,30	10,90	2870	4,2

# Dimensions and weights - Dimensions et poids Abmessungen und Gewichte - Dimensiones y pesos Dimensioni e pesi - Dimensões e pesos - Afmetingen en gewichten



RL4TD

RL2TD

100 - 60

100 - 120

148 210 170

18 4 108 457 565 450 189 261

504 615

kg

140 280 M16

140 560 286 274



















