ENGLISH (Translated from Italian)

POSITIONING, CONFIGURATIONS AND ACCESSORIES NOTES ON SUCTION AND DELIVERY LINES CONNECTIONS ELECTRICAL CONNECTIONS 122 **PIPING CONNECTIONS** INITIAL START-UP EVERY DAY USE MAINTENANCE NOISE LEVEL

PROBLEMS AND SOLUTIONS DEMOLITION AND DISPOSAL EXPLODED VIEWS OVERALL DIMENSIONS

INSTALLATION

MACHINE AND MANUFACTURER 2 **IDENTIFICATION**



MANUFACTURER PIUSI S.p.A. Via Pacinotti 16/A - Z.I. Rangavino - 46O29 Suzzara (Mantova) Italy

3 FACSIMILE COPY OF EU DECLARATION **OF CONFORMITY**

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

HEREBY STATES under its own responsibility that the equipment described Description : PUMP INTENDED FOR DIESEL FUEL TRANSFER

Model: PANTHER 56; PANTHER 72; PANTHER 90

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@ THE ORIGINAL DECLARATION OF CONFORMITY IS PROVIDED SEPARATELY WITH THE PRODUCT

MACHINE DESCRIPTION

Self-Primina. volumetric, rotating electric vane pump, equipped with by-PUMP pass valve. Asynchronous motor, single-phase and three-phase, 2 pole, closed type MOTOR (protection class IP55 in conformance with EN 60034-5-86 regulations) self-ventilated, directly flanged to the pump body. FILTER Inspectable suction filter.

4.1 HANDLING AND TRANSPORT

Foreword	Due to the limited weight and dimensions of the pumps, special liftir equipment is not required to handle them. The pumps are carefu packed before dispatch. Check the packing when receiving the materi and store in a dry place.	
STORAGE	- Store in a covered and dry place. - Store the unit away from dirt and vibration ENVIRONMENTAL CONDITIONS: Storage humidity: Max 90% Storage temperature: min -10 °C Max +50 °C	
PACKAGING	The pump is equipped comes packed suitably for shipment. On the packaging a label shows the following product information:	
- name	\sim	

- weight



		PIUSI Internet State Internet State Interne	8 G
MODEL	WEIGHT (Kg)	PACKAGING DIMENSION(mm)	Essential protective equipment
PANTHER 56	7.4	345 x 175 x 255	 characteristics Personal
PANTHER 72	7.9	345 x 175 x 255	 Personal protective
PANTHER 90	8.2	345 x 175 x 255	equipment that must be work

GENERAL WARNINGS 5

To ensure operator safety and to protect the dispensing system from potential damage, workers must be fully acquainted with this instruction Warninas nanual before attempting to operate the dispensing system. Symbols used in The following symbols will be used throughout the manual to highlight safety the manual information and precautions of particular importance:

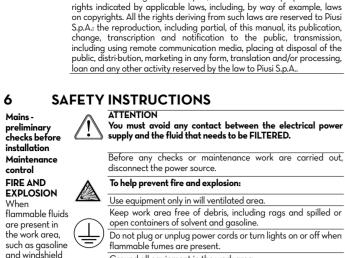
ATTENTION This symbol indicates safe working practices for operators and/or potentially exposed persons. WARNING IJ

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

This manual should be complete and legible throughout. It should remain preservatio available to end users and specialist installation and maintenance technicians for consultation at any time. All reproduction rights are reserved by Piusi S.p.A. The text cannot be reprinted without the written permission of Piusi S.p.A.

© Piusi S.p.A. THIS MANUAL IS THE PROPERTY OF Piusi S.p.A.

ANY REPRODUCTION, EVEN PARTIAL, IS FORBIDDEN.



6

installatio

Maintenan

FIRE AND

EXPLOSION

are present in

wiper fluid, be

fumes can ignite

Electrocution or

EQUIPMENT

cause death o

serious injury

MISUSE

Misuse car

aware that

flammable

or explode

SHOCK

ELECTRIC

control

ENGLISH (Translated from Italian)

This manual belongs to Piusi S.p.A., which is the sole proprietor of all

Ground all equipment in the work area. Stop operation immediately if static sparking occurs or if you eel a shock. Do not use equipment until you identify and correct the problem. Keep a working fire extinguisher in the work area.

This device must be arounded. Improper arounding setup or usage of the system can cause electric shock. off and disconnect power cord before servicing equipment.

Connect only to a grounded electrical outlets. Ensure ground prongs are intact on power and extension cord <u>、</u> Outdoors, use only extensions suitable for the specific use, in ordance with the regulations in force. The connection between plug and socket must remain away

from water. Never touch the electric plug of socket with wet hands. Do not turn the device 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. or safety reasons, we recommend that, in principle, the equipmer 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!

Do not operate the device when fatigued or under the influence of drugs or alcohol. o not leave the work area while device is energized or under

urn off all device when is not in use. Do not alter or modify thr device. 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 device. Keep children and animals away from work area. Comply with all applicable safety regulations. not exceed the maximum operating pressure or the temperature of the part with lower nominal value of the system. See Technical Data in all equipment manuals. lse fluids and solvents that are compatible with the wetted part

of the system. See Technical Data in all equipment manuals. Read the manufacturer's instructions of the fluids and solvent For more information on the material, request the safety data sheet (MSDS) from the distributor or dealer. Check the device every day. Immediately repair or replace worn or damaged parts only with original spare parts of the **NOTE**

manufacturer. Nake sure the equipment is classified and approved compliant with the standards of the environment where it is used.

distributor for more informatior Keep hoses and cables far from traffic areas, sharp edges

o not bend or overbend the hoses or use the hose to pull the device. Read MSDS's to know the specific hazards of the fluids you are using.

Store hazardous fluid in approved containers, and dispose of it cording to applicable guidelines. rolonged contact with the treated product may cause skin

FIRST AID RULES

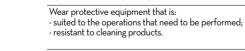


Othe

HAZARD

conductor. Do not touch the electrocuted person far from any conductor. Do not touch the electrocuted person with bare nands until he/she is far from any conductor. Ask qualified and When operating the dispensing system and in particular during

GENERAL SAFETY RULES



Wear the following personal protective equipment during handling and installation:

afetv shoes

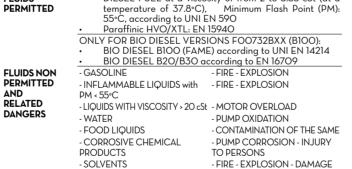






TECHNICAL DATA 9 NOTE Voltage/ ATTENTION Frequency (V/Hz) NOTE 5.5 1.3 Absorption (A) 1.4 4.2 1.6 4.9 500 600 500 500 500 500 500 700 350 Power (W) 2900 3400 3450 2800 2900 3400 2900 2900 2900 RPM 56 56 56 68 72 72 68 90 Nominal Flow Rate(l/min) 1,5 1.4 1,5 1.3 1.3 Max Back Pressure (bar) Type of Service (S1-continuous; S3-periodic ATTENTION rmitten Operating conditions of the declared data Fluid: Diesel Fuel ATTENTION Cemperature: Suction Condition ATTENTION The tube and the pump position relative to the fluid level is such that a pressure of 0.3 bar erated at the nominal flow rate. Under different suction conditions higher pressure values can be created that reduce the flow rate compared to the same back pressure values. To obtain the best performance, it is very important to reduce loss of DELIVERY uction pressure as much as possible by follo **EFFECTS ON** Shorten the suction tube as much as possible FLOW RATE • Avoid useless elbows or throttling in the tubes Keep the suction filter clean Use a tube with a diameter equal to, or greater than, EFFECTS ON icated (see Installation) FLOW RATE The operating pressure of the pump is of 3 ba SUCTION 10 **OPERATING CONDITIONS** Foreword 10.1 ENVIRONMENTAL CONDITIONS TEMPERATURE min. -4 °F / max +140 °F min. -20 °C / max +60 °C RELATIVE max. 90% HUMIDITY NOTE The environment must conform to directive 89/654/EEC LIGHTING on work environments. In case of non-EU countries, refer to directive EN ISO 12100-2 § 4.8.6. The temperature limits shown apply to the pump components and must be respected to avoid possible ATTENTION age or malfunction 10.2 ELECTRICAL POWER SUPPLY WARNING NOTE Depending on the model, the pump must be supplied by a single-phase alternating current line whose nominal values e shown in the table in Paragraph "TECHNICAL DATA". CAVITATION The maximum acceptable variations from the electrical /oltage:+/- 5% of the nominal value requency:+/- 2% of the nominal value HOW TO ower from lines with values outside the indicated limits ATTENTION PREVENT can damage the electrical components. CAVITATION 10.3 DUTY CYCLE The electrical pumps Panther 56 and Panther 72 are designed for continuous use under conditions of maximum back pressure. The electrical pump Panther 90 is designed or alternating use with duty cycle 30" ON and 30" O ATTENTION unctioning under by-pass conditions is only allowed for short periods of time (max. 3 minutes). 10.4 PERMITTED AND NON-PERMITTED FLUIDS FLUIDS DIESEL FUEL at a viscosity of from 2 to 5.35 cSt (at a PERMITTED

ENGLISH (Translated from Italian)



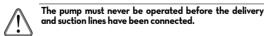
INSTALLATION

AND

11

ATTENTION

PRELIMINARY



TO GASKET SEALS

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 suction and delivery inlets and outlets, emoving any dust or other packaging material that may be

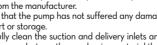
Check that the electrical data corresponds to those indicated on the data plate. Always install in an illuminated area. Make sure that the motor shaft turns freely.





NOTE









ATTENTION

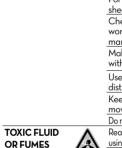
12

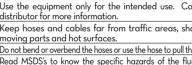
12.1

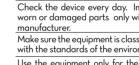
ATTENTION

WARNING









Jse the equipment only for the intended use. Contact your

irritation: always wear protective gloves during dispensing.

trained people for help immediately

refuelling, do not smoke and do not use open flame.

disconnect the unit from the mains, or use a dry insulator as

ENGLISH (Translated from Italian)

11.1 POSITIONING, CONFIGURATIONS AND ACCESSORIES SINGLE-PHAS MOTORS In the case of installation in the open air, proceed to

protect the pump by providing a protection roof. The pump can be installed in any position (pump axis vertical or horizontal)

The pump must be secured in a stable way using the holes on the bed of the motor and vibration damping

THE MOTORS ARE NOT OF THE ANTI-EXPLOSIVE-TYPE. Do not install them where inflammable

vapours could be present. he broad range of pump accessories make it suitable for many different uses, installations and applications The supporting base can be positioned in different

The pumps are furnished without line acces-sories ollowing is a list of the most common line accessories whose use is compatible with the proper functioning of the pumps. SUCTION DELIVER

- Foot valve with filter - Automatic dispensing Rigid and flexible tubing nozzle Manual dispensing nozzle

MeterFlexible tubing

 $(\overline{+})$

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/o cause injury to persons, as well as causing pollution. To maximise performance and prevent damage that could affect pump operation, always demand original accessories.

11.2 NOTES ON SUCTION AND DELIVERY LINES

The choice of pump model must be made keepingthe characteristics of the system in mind. 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 (bypass) will trip to reduce the flow rate. $\ensuremath{\text{HOW TO REDUCE}}$ 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).

> The pumps are self-priming and characterized by good suction capacity. During the start-up phase, with an empty suction tube and the pump wetted with fluid, the electric pump unit is capable of suctioning the liquid with a naximum difference in height of 2 meters.

It is important to point out that the priming time can be as long as one minute and the presence of an automatic dispensing nozzle on the delivery line prevents the evacuation of air from the installation, and, therefore, prevents proper priming. For this reason, it is always advisable to prime the pump without an automatic delivery nozzle, verifying the proper wetting of the pump. The installation of a foot valve is recommende

The installation of a root value is recommended to prevent the emptying of the suction tube and keep the pump wet. In this way, the pump will subsequently always start up immediately. When the system is functioning, the pump can work with pressure at the inlet as high as 0.5 bar, beyond which consider a phonemer are basis with a successful to a suc cavitation phenomena can begin, with a consequent loss of flow rate and increase of system noise and pump damage. . It is important to ensure low vacuums at suction mouth by using: short pipes with larger or identical diameter to that

reduce bends to the utmost use large-section suction filters

use foot valves with minimum possible resistance

keep the suction filters clean because, when they become agged, they increase the resistance of the system.

The difference in height between the pump and the fluid level must be kept as small as possible and, at any rate, within the 2 meters anticipated for the priming phase.If this height is exceeded, it will always benecessary to install a foot valve to allow for thefilling of the suction tube and provide tubing ofwider diameter. It is recommended that thepump not be installed at a difference in heightgreater

than 3 meters. In the case that the suction tank is higher than the pump, it is advisable to install an anti-siphon valve to prevent accidental diesel fuel leaks. Dimension the nstallation in order to control the back pressure due to water hammering.

CONNECTIONS

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

> 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

nstallation type that are suitable for the characteristics indicated in paragraph "TECHNICAL DATA" and the Always make sure that the cover of the terminal strip

box is closed before switching on the power supply, after having checked the integrity of the seal gaskets that ensure the IP55 protection grade.

All motors are equipped with a grounding termina that is to be connected to the ground line of the electrical system.

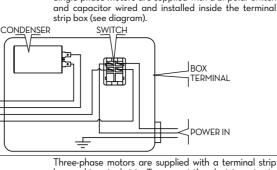
Verify that the terminal strip blades are positioned according to the diagram provided for the available power supply voltage. - Verify the correct direction of rotation of the

motor (see the paragraph overall dimensions), and, if not correct, invert the connection of the two ables in the power supply plug or on the termina

 The pumps are supplied without electrical safety equipment such as fuses, motor protectors, systems to prevent accidental restarting after power failures or others. It is indispensable to install an electric panel, upstream from the pump's power supply line, equipped with an appropriate residual current operated circuit breaker. It is the installer's responsibility to perform the electrical connection

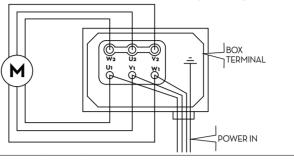
with respect for the applicable regulations. The characteristics of the capacitor are shown on the identification plate for each pump model. he switch has the sole function of starting/ stopping the pump and cannot in any way substitute for the main circuit breaker provided for in the applicable regulations.

Single-phase motors are supplied with a pre-existing 2 - meter cable with electric plug. To change the cable, open the terminal strip cover and connect the line according to the following diagram. Single-phase motors are supplied with a bi-polar switch



ENGLISH (Translated from Italian)

pox and terminal strip. To connect the electric motor to the electric power line, open the terminal strip cover and connect the cables according to the diagram.



12.2 PIPING CONNECTIONS

 (\mathbf{M})

THREE-PHASE

MOTORS

PRELIMINARY

INSPECTION

CONNECTING

SUCTION

DELIVERY

ATTENTION

ATTENTION

ATTENTION

ATTENTION

IF THE PUM

AT THE END OF

THE INITIAL

START-UP

DOES NOT

PRIME

NOTE

TUBING

TUBING

FOREWORD	- Before carrying out any connection, refer to the visual indications i.e.		
	arrow on the pump head, to identify suction and delivery.		
ATTENTION	Wrong connection can cause serious pump damage.		

- Check that the machine has not suffered any damage during transport or storage. - Clean the inlet and outlet openings, removing any dust or residual packing material.

- Make sure that the motor shaft turns freely. Check that the electrical specifications correspond to those shown on

he identification plate. Before connection, make sure that the tubing and the suction tank are free of dirt and thread residue that could damage the pump and Before connecting the delivery tube, partially fill the pump body with

diesel fuel to facilitate priming. - Do not use conical threaded joints that could damage the threaded pump openings if excessively tightened. Minimum recommended nominal diameter: 1"1/4 - Nominal recommended pressure: 10 bar

> - Use tubing suitable for functioning under suction pressure. Use tubing suitable to resist back pressures of O.8 bar Minimum recommended nominal diameter: 1" Nominal recommended pressure: 10 bar

It is the installer's responsibility to use tubing with adequate characteristics. The use of tubing unsuitable for use with Diesel fuel can damage the pump, injure persons and cause pollution. Loosening of the connections (threaded connections,

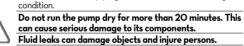
anging, gasket seals) can cause serious ecological and Check all the connections after the initial installation and on a daily basis after that. Tighten the connections,

t necessary

INITIAL START-UP 13 FOREWORD

 $(\overline{+})$

Check that the quantity of fluid in the suction tank is greater than the amount you wish to transfer. - Make sure that the residual capacity of the delivery tank is areater than the quantity you wish to transfer. Make sure that the piping and line accessories are in good



 Never start or stop the pump by connecting or cutting out - Single-phase motors are provided with an automatic

nermal protection switch. Extreme operating conditions can raise the motor temperature and, consequently, cause the thermal protection switch to stop it. Turn off the pump and wait for it to cool before resuming use. The thermal protection automatically turns off when the motor is sufficiently

During the priming phase, the pump must discharge all the air that is initially present from the delivery line. $\langle \cdot \rangle$ Therefore it is necessary to keep the outlet open to permit the evacuation of the air.

f an automatic type dispensing nozzle is installed on he end of the delivery line, the evacuation of the air will be difficult because of the automatic stoppin device that keeps the valve closed. It is recon that the automatic nozzle be temporarily remove during initial start-up.

Depending on the system characteristics, the priming phase can last from several seconds to a few minutes. If this phase is prolonged, stop the pump and verify:

hat the pump is not running completely dry (fill with fluid from the delivery line):

that the suction pipe guarantees against air infiltration; that the suction filter is not clogged;

that the suction height is not higher than 2 mt. that all air has been released from the delivery pipe.

When priming 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

ntification plate; that the suction pressure is not greater than 0.5 bar

that the delivery back pressure does not exceed the maximum back pressure for the pump.

ENGLISH (Translated from Italian)

EVERY DAY USE

14

USE

PROCEDURE

ATTENTION

LACK OF

POWER

ELECTRIC

- If using flexible tubing, attach the ends of the tubing to the tanks. In the absence of an appropriate slot, solidly grasp the delivery tube before beginning dispensing. 2 Before starting the pump make sure that the delivery valve is
- closed (dispensing nozzle or line valve). Turn the ON/OFF switch to ON. The by-pass valve allows functioning with the delivery closed for only brief periods.
- Open the delivery valve, solidly grasping the end of the tubing. Close the delivery valve to stop dispensing.

When dispensing is finished, turn off thepump. To avoid damaging the pump, after use, make sure the

pump is off. In case of a power break, switch the pump off straight Functioning with the delivery closed is only allowed for brief periods (2-3 minutes maximum). After use, make sure the pump is turned off.

A lack of electric power, with the consequent accidenta stopping of the pump, can be caused by: A safety device tripping

- A drop in line voltag n either case, act as follows
- Close the delivery valve
- Attach the end of the delivery to the slot provided on th Turn the ON/OFF switch to the OFF position.
- me operations as described in Paragraph L DAILY USE, after determining the cause of the stoppage.

15 MAINTENANCE

afety structions	Panther 56, Panther 72 and Panther 90 pumps are designed and constructed to require a minimum of maintenance. Before carrying out any maintenance work, disconnect the dispensing system from any electrical and hydraulic power source. During maintenance, the use of personal protective equipment (PPE) is compulsory. In any case always bear in mind the following basic recommendations for a good functioning of the pump
uthorised aintenance ersonnel	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.
NCE A WEEK:	- Check that the pipe connections are not loose to prevent any leaks; - Check and keep the filter installed on the suction line clean.
NCE A ONTH:	 Check the pump body and keep it clean and free of any impurities; Check and keep the pump filter clean and any other filters installed. Check that the electrical supply cables are in good condition.

NOISE LEVEL 16

n normal operating conditions, noise emissions of all models do not exceed 75 dBA at a distance of 1 metre from the electric pump.

17 **PROBLEMS AND SOLUTIONS** POSSIBLE CAUSE CORRECTIVE ACTION PROBLEM Lack of electric power Check the electrical connection and the safety systems. Check for possible damage Rotor jammed or obstruction of the rotating THE MOTOR IS NOT components. The motor protecting Wait for the motor to cool, verify thermalswitch has tripped that it restarts, and research the cause of the overheating Motor problems Contact the Service Department THE MOTOR TURNS Low voltage in the electric Bring the voltage back within SLOWLY WHEN powerline the anticipated limits STARTING Low level in the suction tank Refill the tank Clean and/or replace the valve Foot valve blocked Filter clogged Clean the filter

Excessive suction pressure

	Excessive socion pressure	the level of the tank or increase the cross-section of the tubing	
	High loss of head in the circuit(working with the by-pass open)	Use shorter tubing or of greaterdiameter	
LOW OR NO FLOW RATE	By-pass valve blocked	Dismantle the valve, clean and/ or replace it	
	Air entering the pump or thesuction tubing	Check the seals of the connections	
	A narrowing in the suction tubing	Use tubing suitable for workingunder suction pressure	
	Low rotation speed Check the voltage at the Adjust the voltage and/o cablesof greater cross-section		
	The suction tubing is resting on the bottom of the tank	Raise the tubing	
	Cavitation occurring	Reduce suction pressure	
INCREASED PUMP NOISE	Irregular functioning of the by- Dispense until the air is purg pass from the circuit		
	Air present in the diesel fuel	Verify the suction connections	
LEAKAGE FROM THE PUMP BODY	Seal damaged	Check and replace the mechanical seal	
	Suction circuit blocked	Remove the blockage from the suction circuit	
	Malfunction of foot valve fitted on suction circuit	Replace foot valve	
NOT PRIME THE	The suction chambers are dry	Add liquid from pump delivery	

Lower the pump with respect to

suction and delivery valves

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: he packaging consists of biodegradable cardboard which can be Metal parts, whether paint-finished or in stainless steel. can be consigned to scrap metal collectors. 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).

regarding the clients residing within the European Union

parts disposa









- ^	DE	
ЛĄ	Ň.	
IT	ALY	



Disposing of RAEE equipment as household wastes is strictly forbidden.

Any hazardous substances in the electrical and electronic appliances

n case of the unlawful disposal of said wastes, fines will be applicable

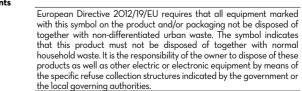
Other components, such as pipes, rubber gaskets, plastic parts and wires, must be disposed of by companies specialising in the disposal



Such wastes must be disposed of separately. and/or the misuse of such appliances can have potentially serious consequences for the environment and human health.

18

ng materials delivered to companies for normal recycling of cellulose.



as defined by the laws in force.

of industrial waste.

