



INTRODUCTION

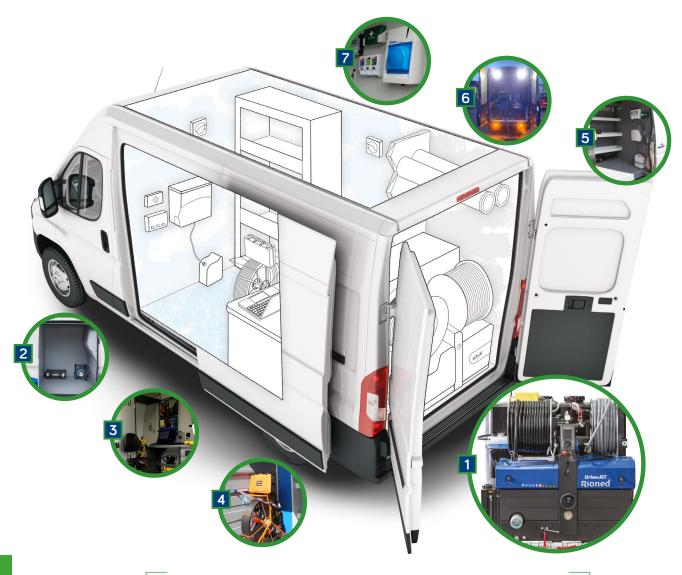
Contractors increasingly recognise the economic and environmental benefits of single-resolution operations. But carrying the requisite equipment for undertaking drain cleaning, surveying, testing and repair in a single visit requires a stripped-back approach, particularly in 3.5t vans - the most popular choice of vehicle in the UK drainage industry.

Weight is paramount in provisioning vehicles for single-visit operations. Modern drainage vans utilise a range of materials and features to optimise the weight of the vehicle whilst improving the efficiency and safety of engineers.

This guide has been compiled to offer an overview of the key considerations when provisioning a van-pack vehicle. We hope it provides food for thought.

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Weight is a primary consideration when equipping a 3.5t drainage vehicle to undertake drain cleaning, surveying, testing and repair in a single visit.

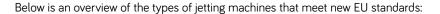


JETTING EQUIPMENT

Lightweight, compact diesel and petrol jetters with pump capacities similar to much larger units are now more common across the drainage industry. These feature-rich jetting machines often include radio remote controls, an essential component of single-man operations.

STAGE V JETTERS

European Stage V emissions regulations have signalled changes in the manufacture of drain jetting equipment. The new regulations for new non-road mobile machinery (NRMM), such as van-pack jetters, came into force in 2020 and the new standards apply to all engines, with a particular bearing on diesel engines from 0 to 56 kW and to all types of engines above 56 kW.





Engine Type	Typical Power Range	Typical Output Range	Max Pipe Diameter
Petrol	15 kW - 42.5 kW	2250 - 3600 psi @ 16 - 22gpm	450 mm
Stage V Diesel (above 18.5 kW)	18.5 kW - 49 kW	2250 - 3600 psi @ 16 - 28 gpm	600 mm
Stage V Diesel (below 18.5 kW)	Up to 18.5 kW	3000 - 2100 psi @ 10 - 13 gpm	450 mm
Electric	25 kW	2400 - 3000 psi @ 13 - 17 gpm	350 mm
PTO	30 kW	Various capacities	350 mm

Vehicles such as the Mercedes Benz Sprinter has a factory fitted PTO option which can be used to drive a high-performance jetter pump.



PETROL JETTERS

Whilst smaller petrol jetters have been around for a

long time, the move away from diesel-powered high-performance jetting machines has coincided with the availability of more reliable and efficient fuel injection petrol engines. New lightweight EFI engines offer improved diagnostic capabilities and performance figures comparable to larger diesel engines.



DIESEL JETTERS



Diesel jetters with a power range below 18.5 kW meet

Stage V requirements and improved pump and engine performance mean that many of these models are suitable for most common drain and sewer cleaning tasks. Where more cleaning power is required, newer common-rail direct-injection diesel engines offer a more durable and quieter engine with better fuel efficiency.



PTO JETTERS



More traditionally associated with agricultural

equipment, PTO (Power Take-Off) machines are driven by the vehicle engine using a hydraulic system that reduces the power of the vehicle-driven shaft to provide power. In the case of jetters, the PTO drives the high-pressure pump. Installed in a Euro 6 vehicle this type of drive meets new environmental standards.



ELECTRIC JETTERS



Echoing advances in the automotive industry, new battery

technology has led to the development of all-electric jetters with performance capabilities suitable for everyday use. With a growing emphasis on industry to limit particulate, NOx, and CO² emissions, zero-carbon electric jetters are being heralded as the future of the jetting sector and are set to become commonplace.

2 JETTER FEATURES

Jetting equipment has become lighter as the range of features have evolved...

In choosing a high-pressure water jetting machine, the key consideration should be the type of sewer or drain lines that need to be cleared, specifically in terms of length and diameter. As a rule of thumb, longer lines and larger diameter pipes require higher water flow to clean effectively and efficiently. It's also paramount to understand the type of cleaning needed, and choosing the right nozzles for the task can be considered as important as the equipment used.

The health and safety of users have been a driving factor in the development of drain jetting equipment. Modern high-pressure jetters include a range of features designed to ensure the safety of engineers in the field and the rising popularity of single-man operations has accelerated this change.

The use of features such as hose meter counters, water pressure regulators and remote control units has further enhanced the safety of jetters.

A. HIGH-PRESSURE PUMP

The jetter engine generally powers the high-pressure water pump to produce water under pressure.

Modern direct-drive triplex plunger pumps offer smooth, continuous water flow and pressure. Integrated pressure unloaders enhance pump protection and prolong its lifecycle.

B. HYDRAULIC REEL

Hydraulic freewheel systems significantly reduce the effort required to operate a hose reel. A pivoting hose reel allows easier access to drain openings and the addition of a hose reel locking mechanism further improves operator safety.

C. MANAGEMENT SYSTEM

Operator efficiency and safety is enhanced by a central control unit, often with an LCD screen, that provides information such operating hours, service warnings, liquid levels and hose distance at a glance.

D. REMOTE CONTROL

Wireless remote-control systems enable engineers to work more efficiently, safely and with greater control. Modern dual-band remote control kits allow pressure and flow settings to be finely tuned for improved results and savings on running time and water usage.

E. PULSATOR SYSTEM

A pulsator operates by partially interrupted the water flow, creating a pulsing action on the hose which reduces hose drag enabling it to be propelled further and faster into the pipe. It also makes it easier for the hose to navigate tight turns and

clear stubborn blockages.
A pulsator system can save up to 30% in water usage, meaning operators can work longer with the same amount of water.

F. SYSTEM PROTECTION

High-pressure jetters feature a number of components designed to reduce potential damage to the machine and extend its lifecycle. These typically include run-dry protection systems, unloader valves, and anti-freeze systems and valves.

G. LIGHTWEIGHT HOSES

The latest lightweight high-pressure sewer hoses have a smooth inner surface and widened inner core to optimise the flow while significantly reducing resistance and pressure loss. Tests have shown these types of hoses increase effective working pressure at the nozzle by over 10%.





3 VAN LINING MATERIALS

The choice of vehicle lining and storage materials is important in keeping down the weight of vehicles. Often this involves using composite materials, water trays and spray linings rather than plywood. Materials and benefits include:

- Spray Linings: Most often a two-part polymer/catalyst spray system that provides a tough, airtight, water-resistant and non-slip surface without loss of cargo space.
- Composite Boards: Lightweight polypropylene boards often made up of several layers for extra thermal resistance and strength. Strong, flexible and 50% lighter than plywood, these materials are becoming increasingly popular.
- Aluminium Checker-plate: Probably the most durable lining material and often used in jetting vans. It has a disadvantage of being heavier and therefore adds additional weight to the vehicle.



4 INVERTER INSTALLATIONS

Power inverters that convert the vehicle's battery power (DC) into alternating current (AC) are an important asset in drainage vehicles. Many of the electrical tools used by contractors operate with 110v or 240v AC power, which is only possible with an inverter running off the vehicle's DC battery supply. These include:

- CCTV inspection cameras and monitors
- Plug-in power tools and machines
- Recharging batteries
- Heaters
- Refrigerators



Inspection and detection machines are designed to make working easier, whether detecting leaks and power cables or inspecting drains and sewers with camera systems.

5 ANCILLARY EQUIPMENT

To undertake all aspects of a drain inspection, cleaning and repair, contractors need to carry a wide range of additional tools, including:

- Small drain cleaning machines
- Inspection monitors and cameras
- **Detection devices**
- Drain rods
- Relining kits
- Safety equipment and PPE

STORAGE OPTIONS

Vehicle weight distribution affects road-handling and fuel-efficiency. Water tanks and storage units can be positioned to distribute weight while providing ample storage for a range of tools and equipment. Storage solutions include:

- Pipe tubes
- Metal racking and shelving
- Storage lockers
- Heated lockers (for PPE and clothes)
- Monitor desks and drawer arrangements







7 LIGHTING

When working at night or in bad light, a well lit working area is best for both productivity and safety. There is a wide range of lighting options for van-pack vehicles, mostly utilising efficient, low-energy LED lights. These include:

- Internal lamps and lightbars
- External work lamps and lightbars
- Flashing beacons
- Directional warning lamps and lightbars

B HEALTH & SAFETY

Now more than ever it is important to protect workers and customers against bacterial contamination. On-board welfare stations are a key component of this and can include:

- Hand wash units
- Eyewash stations
- First aid kits
- Fire extinguishers and blankets





By choosing a single-source solution, many contractors have discovered a hassle-free and cost-effective way to satisfy their complete jetting requirements.

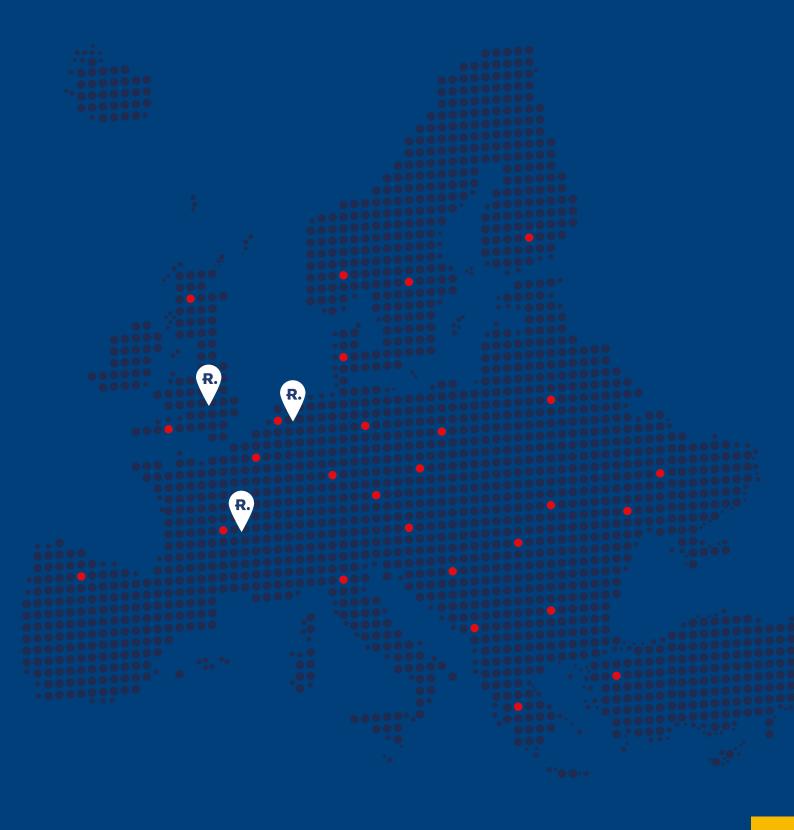
BUYING EQUIPMENT

At Rioned we offer a full turnkey service to provide the vehicle, jetter, conversion work, vehicle branding and financing. We work closely with van suppliers, vehicle conversion specialists and finance companies to ensure the best outcomes.

Comprehensive finance plans are available for jetting equipment, vans and wide range of vehicle customisations and ancillary drainage equipment. Plans have been designed to help customers purchase business-critical equipment, with options such as low-start payments, zero deposits and VAT deferred packages.

For more information about vehicle and equipment finance please contact the sales team on 03300 240404 or visit our finance page.





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