Part No 061877

Operator's Quick Reference Safety Guide

Trailer Jetters

DTM / DTM Econo

DTB 500 / DTB 500 Econo

DTXII

DTQ

EQUIPMENT • PARTS & ACCESSORIES • SERVICING • TRAINING

FLOWPLANT

1.0 Introduction

Focussed on Your Jetting Needs

Flowplant has been creating innovative, high pressure drain and sewer cleaning equipment for over 40 years, selling thousands of high quality and reliable machines throughout the UK and exporting to over 50 countries around the world.

Through our nationwide network of service and distribution centres, we offer a complete range of keenly priced drain jetters and accessories that get the job done, are affordable within your budget and will continue to operate efficiently and cost effectively for many years.

Contents

This Operator's Quick Reference Safety Guide is intended to allow operators to quickly become familiar with the essential controls and safety requirements of Flowplant jetters. It does not replace the full operation and maintenance manual which should be read and which contains additional operation and safety information.

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Throughout this manual various warnings are given with this icon.
Where shown, failure to follow the instruction can result in serious injury or even death.

Please pay particular attention to these recommendations.

2.0 Scope of Supply

Flowplant drain jetters have been designed to the highest standards so that they will work safely and reliably for many years. It is important that you take time to read the information provided in this guide so that you understand how to make the most of the jetter and how to use it safely. Flowplant jetters are powerful pieces of industrial equipment and should only be operated by competent users who understand that serious injury or death can occur through misuse.

The jetters described in this Operator's Quick Reference Safety Guide are intended to be used for high pressure water jetting in drain and sewer systems from 50mm up to 450mm diameter.

They will remove soft blockages, tree roots and hard scale, liquefying fats and restoring drain flow by blasting high pressure water through a drain nozzle connected to the end of a high pressure hose. Some models can be fitted with jump jets kits to increase the effective cleaning distance.

Flowplant trailer jetters use diesel engines to power a high pressure water pump up to 350 bar (5,000 psi) / 60 l/min (13 gpm).

Additional accessories can be purchased from Flowplant, such as: floor cleaners, jetting guns and jet pumps which extend the range of work that can be carried out with the jetter. Separate details are available on request.

3.0 Health & Safety

Throughout this manual various warnings are given with this icon. Where shown, failure to follow the instruction can result in serious injury or even death.

3.1 Safety Notes

- Operating procedures throughout this manual must be adhered to. In the case of conflicting or ambiguous instructions, reference must be made to a Site Manager or Safety Officer before commencing work.
- Any person operating, working with, or passing near the jetter must wear the necessary Personal Protective Equipment (PPE).
- The Site Management should make available to operators or persons working with the jetter the appropriate technical documentation and should ensure such persons read and understand the documentation prior to commencing their duties.
- Special tools should be used where recommended.
- Prior to any maintenance or repair work being carried out the jetter must be shut down, de-pressurised and equipment isolated.
- Any maintenance requirements in this manual should be adhered to as minimum maintenance requirements. Maintenance records should be up to date at all times.
- Guards which are located within the jetter must be fitted and must not be loosened or removed whilst the jetter is operational. Should it be necessary to remove any guard for access, it must be re-fitted and secured before start up.

3.2 Use of High Pressure Equipment

- All persons using high pressure jetting equipment should be fully conversant with relevant operating instructions, safety notes and Codes of Practice.
- Operators must be competent in all aspects of jetter use.
- All high pressure water jetting operations should be under the control of a fully trained supervisor, who will be aware of the potential hazards to operators and passers-by
- Warning notices, ‘DANGER - HIGH PRESSURE JETTING’ should be displayed at all possible access points to the jetting area. Notices are available from Flowplant Group Ltd.
- Before starting the jetter, ensure that you, and anyone else who may be in control at any time, are fully aware of its controls and their function.
- It is especially important that everyone knows how to stop the jetter in case of an emergency.
- Ensure that all the pre-operational checks have been completed, and that any necessary actions have been taken.
- Do not operate the jetter near any persons or animals.

High pressure jetting can be extremely dangerous if it is not properly controlled by fully trained personnel.

3.3 Potential Hazards and Misuse of High Pressure Equipment

- Never use a jetter that isn't regularly serviced according to the manufacturer's recommendations.
- When a jetter is used to clean drains & sewers that are contaminated with a hazardous substance it is possible these may be entrained in the resulting aerosol and inhaled by operators. Consider using respiratory protection.
- Do not spray flammable liquids - there is a risk of explosion.

- Ensure the correct fuel is used on all occasions or there is a risk of explosion.

- Never start the jetter when frozen. Operating a jetter whilst frozen could cause high speed ice bullets to be ejected from the jetter hose on machine start up.
- Never start jetting a drain, sewer or pipe unless the jet nozzle is safely inside the drain and pointing in the direction that you intend it to travel.
- When drain jetting a drain, sewer or pipe with an inside diameter that is not small enough to prevent the hose from turning back on itself, a drain jet extension (a piece of straight rigid tube equivalent to the pipe diameter) should be fitted between the end of the hose and the nozzle.
- Always use a safety leader hose at the beginning of the main jetting hose to alert operators when the jet nozzle is nearing the manhole entrance.
- Always consider the use of a tiger tail hose feed guide to protect the jetting hose from abrasion and prevent premature failure.
- Be aware that high pressure hoses can generate static electricity which may need to be controlled when working in hazardous areas.
- Never direct a high pressure water jet at electric power lines or electrical equipment as serious injury or death from electrocution could occur.

- When jetting drains or sewers if there is a danger to the general public from hoses laying across public walkways they must be covered in such a way as to protect against injury from hose failure and tripping hazards.
- Before starting work check and ensure the drain jets have no blocked holes or nozzles as this may cause the pumping system to over pressurise which could result in burst disc failure or bursting the jetting hose.
- Never attempt to unblock a fully choked drain or pipe before considering the consequence of releasing the blockage and having a plan to deal with it. E.g. flooding, material ejection, drain nozzle ejection.
- Never attempt to clean drains or pipes in one pass because this could lead to debris build up behind the jet nozzle causing a pressure build up in the drainage system. Be aware that a pressure build up in the drain or pipe could cause the jet nozzle to be ejected at speed back towards the operator.
- Never enter the manhole to either place the jet nozzle into or extract it from the drain entrance unless the required confined space regulations have been met.
- Never work in a manhole with a radio remote control transmitter that is not classified for use in such areas.
- Never use the hydraulic hose reel facility as a winch to retract a jetting hose that has become stuck in the drain or pipe. Damage to the hose could be caused that will make subsequent hose failure more likely.
- Never allow jetting hoses to become kinked and always remove from service any jetting hose with an outer cover that has worn through to the reinforcing braid.
- Never use the high pressure jetting hose for any purpose other than sewer, drain or pipe cleaning, e.g. winching vehicles or other plant.
- Never use jetting nozzles and/or accessories that have not been calibrated for the jetting machine pump performance as this could cause rapid over pressurisation catching operators unaware.

3.0 Health & Safety

3.3 Potential Hazards and Misuse of High Pressure Equipment

- Never attempt to clean a drain or pipe with a nozzle that has more forward force than rear force. It could be ejected back toward the operator causing injury.
- Never attempt to clean a drain or pipe with a chain flail type jet that has unequal chain lengths as this could lead to severe vibration and high pressure hose failure.
- When using a venturi jet pump to remove fluid from a flooded manhole never place your fingers into the pump inlet as they could be trapped by the vacuum and cause injury.
- When using a venturi jet pump to remove fluid from a flooded manhole always secure the free end of the pump hose securely and ensure adequate drainage is in place to deal with high volumes of pumped water.
- Never use a dry shut type foot control valve on a jetter that does not have a pressure unloader valve as this could result in burst disc failure or bursting the jetting hose.
- Never use a dry shut type jetting gun valve on a jetter that does not have a pressure unloader valve as this could result in burst disc failure or bursting the jetting hose.
- When using a dry shut type system be aware that high pressure can be retained in the jetting hose even after the machine has been shut down. Always discharge pressure in a safe manner after machine shut down.
- Never point the gun at anyone as injury from high pressure water will occur if the jet stream comes into contact with body parts.
- Never work on a slippery surface because the reaction force of the jetting gun could cause you to become unstable and lose your footing.
- Never work from a ladder as the reaction force of the jetting gun could cause the ladder to fall backwards from the working area causing possible injury.
- Never work from scaffolding unless it is designed, erected and managed by competent persons and it is adequately secured to prevent it being pushed over by jetting gun reaction forces.
- When using the jetting gun to clean hard surfaces be aware that splash back could contain hard debris travelling at speed.
- When using the jetting gun to clean contaminated surfaces be aware that splash back could contain dangerous contaminants.
- Never use the jetting gun to clean a surface that could be damage or penetrated by the water pressure unless that is the desired effect.
- Always ensure that an adequate area is cordoned off around the working zone so that flying debris and contamination cannot injure passers by.
- Be aware that the use of water jetting guns fitted with oscillating or rotating heads tend to produce higher hand arm vibration levels than simple fixed head jets.
- When using a jetting gun or nozzle to clean at floor level wear suitable protective foot wear.
- Never use a high pressure jetting gun to clean down PPE whilst you or others are still wearing it as serious injury and death could result.

- Never use a high pressure jetting gun to wash or cool down livestock as serious injury and death could result.

- Drainage systems may carry bacteria and micro-organisms which can cause severe illness or death. Avoid exposing eyes, nose, mouth, ears, hands, cuts or abrasions to waste water or faecal matter during drain cleaning operations. After working around drainage systems help protect yourself by always washing hands, arms and other areas of the body with hot, soapy water and, if necessary, flush mucous membranes with clean water. Disinfect soiled equipment by washing surfaces with a hot soapy wash using a strong detergent.

3.4 Personal Protective Equipment (PPE)

All persons using high pressure water jetting equipment should use all necessary PPE suitable for the task being carried out. This includes, but is not limited to:

- Ear protection
- Eye protection: a helmet with chin guard and visor is recommended
- Hand protection
- Waterproof clothing
- Safety boots with toe protection

Please note: A site specific risk assessment must be completed to analyse which PPE must be worn.

3.5 Hoses

The following checks must be made before use:

- High pressure jetting hoses must be checked along their entire length at the start of each shift to ensure that they are free from external damage. Hoses with exposed or broken reinforcing braid or damaged couplings and fittings may fail without warning and must be replaced immediately.
- Before use check end fittings and couplings for damage to threads, sealing faces and rounding of connection nuts. Only use the correct size spanner to tighten the hose fitting. Stilsons or adjustable spanner type tools with serrated teeth must not be used.
- Hoses that have been used **MUST NOT** be re-ended under any circumstances - see ISO 4413:2010 section 5.4.6.5.1
- If water appears from the hose, coupling or connector, often first sighted as a fine mist, then the hose is damaged and could burst or a joint is loose or defective. **STOP THE JETTER IMMEDIATELY!** No attempt should be made to adjust any hose, coupling or connector whilst that part of the system is under pressure.

3.6 Pressure Safety Devices

- Pressure relief valves should be checked for functionality and certified by the manufacturer or their authorised representative at least every 6 months.
- Pressure discs (burst discs) should be replaced at least every 6 months to ensure continued safe operation and only manufacturer's original replacements should be used.
- Under no circumstance should a foreign object be used in place of a manufacturer's pressure disc (burst disc).

3.7 Carbon Monoxide Poisoning

- Do not use the jetter in enclosed areas.
- It is advisable to carry a carbon monoxide monitor in the rear or the vehicle and the cab of the vehicle as an early warning of any gas build up.
- Ensure that any exhaust emissions are not in the vicinity of any air intakes as suffocation could occur.

The towing vehicle & jetter use an engine that could cause build-up of carbon monoxide gases in enclosed areas.

4.0 Technical Specifications

- ✓ Included
- x3 3 Included
- ? Optional

	DTM Econo	DTB 500 Econo	DTM
Pressure	200 bar / 3000 psi	280 bar / 4000 psi	200 bar / 3000 psi
Flow	36 l/min / 8 gpm	60 l/min / 13 gpm	32 l/min / 7 gpm
Pump	Triplex Plunger	Triplex Plunger	Harben
Engine	Diesel	Diesel	Diesel
Engine Power	16 kW / 21 hp	36 kW / 48 hp	18 kW / 24 hp
Engine Cooling	Water	Water	Water
Run Time Meter	Yes	Yes	Yes
Fuel Type	Diesel	Diesel	Diesel
Fuel Capacity	18 litres	45 litres	18 litres
Standard Tank Capacity	230 l / 50 gal	500 l / 110 gal	230 l / 50 gal
Hose Type	1/2” 90m (300 ft)	1/2” 90m (300 ft)	1/2” 90m (300 ft)
Hose Reel	Pivoting	Fixed	Pivoting
Hose Reel Control	Manual	Hydraulic	Manual
Hose Feed	N/A	✓	N/A
Inlet Hose Reel	?	?	?
Standard Drain Jets	x3	x3	x3
Safety Leader Hose	✓	✓	✓
Radio Remote	?	?	?
Jump Jet Kit	?	?	?
Anti Freeze Kit	N/A	?	N/A
Dry Weight (kg) *	550	990	520
Max Weight (kg) *	780	1490	750
Dimensions (LxWxH) m *	2.94 x 1.39 x 1.34	3.40 x 1.71 x 1.38	2.94 x 1.39 x 1.34

***All weights & dimensions are approximate**

4.0 Technical Specifications

✓ Included

x3 3 Included

? Optional

	DTB 500	DTXII	DTQ
Pressure	280 bar / 4000 psi	280 bar / 4000 psi	280 bar / 4000 psi
Flow	55 l/min / 12 gpm	55 l/min / 12 gpm	93 l/min / 20 gpm
Pump	Harben	Harben	Harben
Engine	Diesel	Diesel	Diesel
Engine Power	33 kW / 44 hp	33 kW / 44 hp	48 kW / 65hp
Engine Cooling	Water	Water	Water
Run Time Meter	Yes	Yes	Yes
Fuel Type	Diesel	Diesel	Diesel
Fuel Capacity	45 litres	36 litres	45 litres
Standard Tank Capacity	500 l / 110 gal	900 l / 200 gal	900 l / 200 gal
Hose Type	1/2” 90m (300 ft)	1/2” 90m (300 ft)	5/8” 90m (300 ft)
Hose Reel	Fixed	Fixed	Fixed
Hose Reel Control	Hydraulic	Hydraulic	Hydraulic
Hose Feed	✓	✓	✓
Inlet Hose Reel	✓	✓	✓
Standard Drain Jets	x3	x3	x3
Safety Leader Hose	✓	✓	✓
Radio Remote	?	?	?
Jump Jet Kit	✓	✓	✓
Anti Freeze Kit	?	✓	✓
Dry Weight (kg) *	970	1600	2000
Max Weight (kg) *	1470	2500	2910
Dimensions (LxWxH) m *	3.40 x 1.71 x 1.38	3.63 x 1.89 x 1.65	5.12 x 1.89 x 1.65

***All weights & dimensions are approximate**

5.0 Controls

5.1 DTM / DTM Econo - Front View *

1	Diesel tank	4	High pressure pump
2	Tank filling point	5	Inlet filter
3	Water tank		

DTM version shown here

5.2 DTM / DTM Econo - Rear View *

1	E-stop	3	High pressure hose reel
2	Water tank	4	High pressure selector valve

DTM version shown here

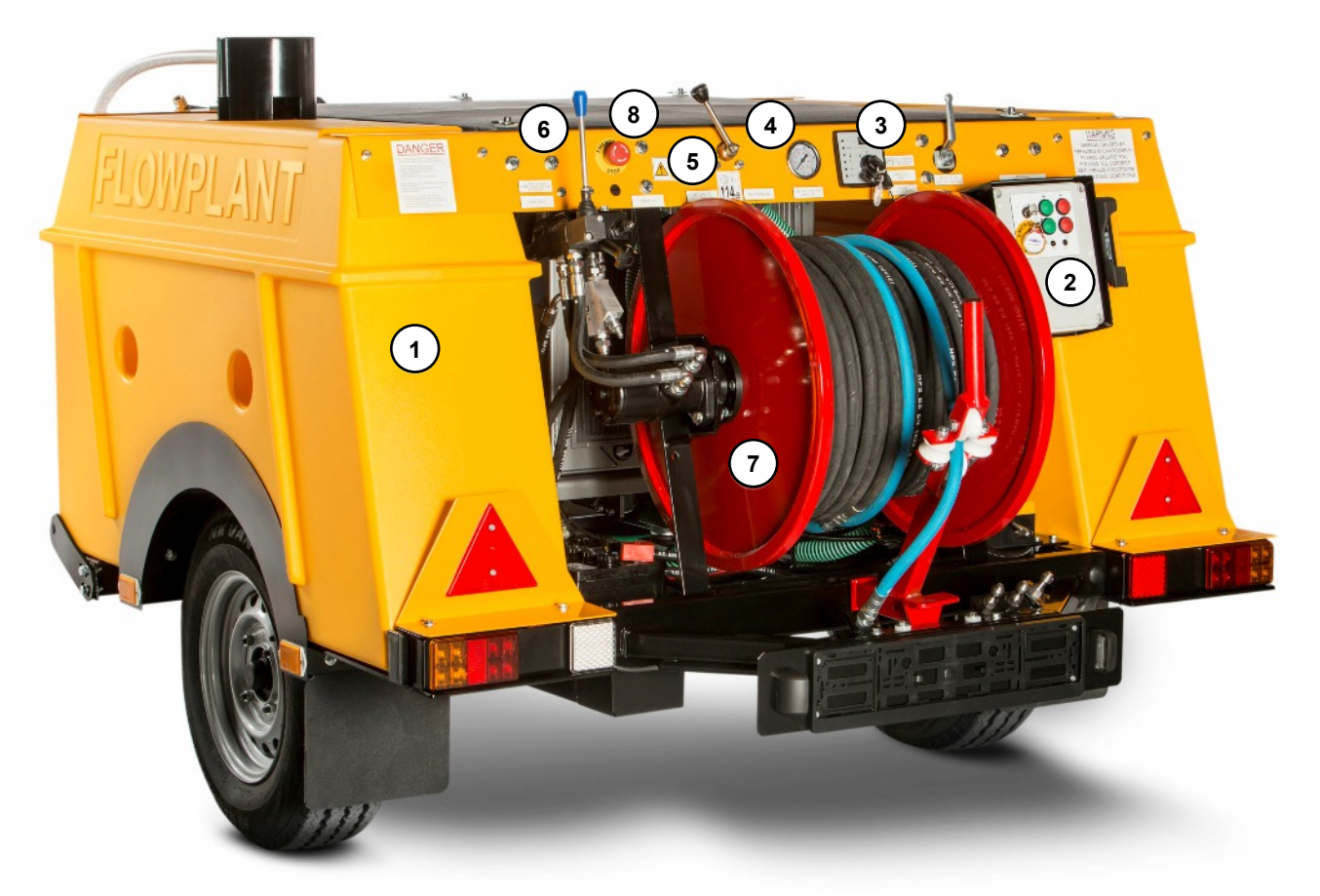
5.0 Controls

5.3 DTB 500 / DTB 500 Econo - Front View*

1	Diesel tank	5	Water tank
2	Antifreeze tank (optional)	6	High pressure pump
3	Inlet filter	7	Antifreeze valve
4	Inlet hose reel (optional)	8	Tank drain

DTB 500 version shown here

5.4 DTB 500 / DTB 500 Econo - Rear View *

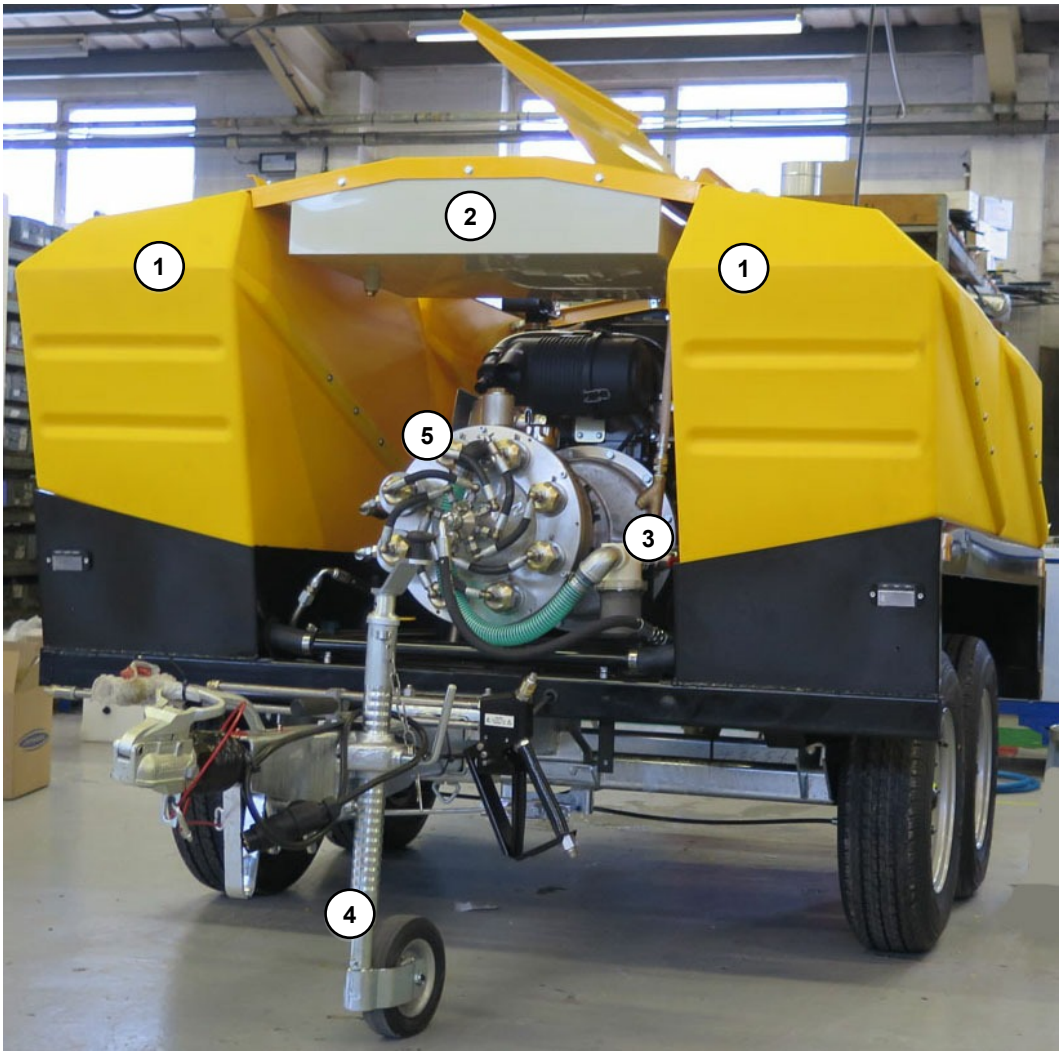


1	Water tank	5	High pressure selector
2	Radio control unit (optional)	6	Hose reel control lever
3	Engine controller	7	High pressure hose reel
4	Pressure gauge	8	E-stop

DTB 500 version shown here

5.0 Controls

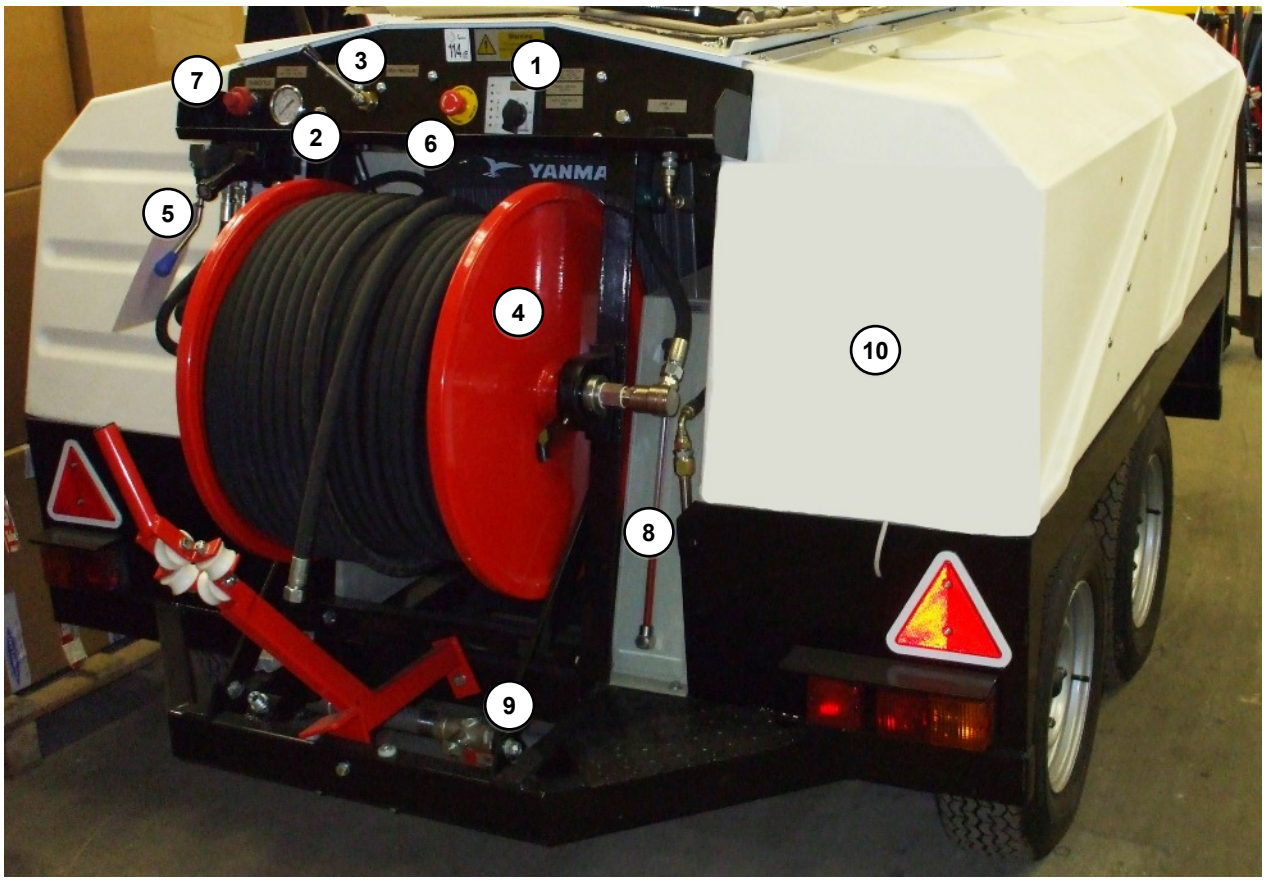
5.5 DTXII / DTQ - Front View*



1	Water tanks	4	Jockey wheel
2	Antifreeze tank	5	High pressure pump
3	Inlet filter		

DTXII version shown here

5.5 DTXII / DTQ - Rear View *



1	Engine controller	6	E-stop
2	Pressure gauge	7	Throttle control
3	High pressure selector	8	Diesel tank
4	High pressure hose reel	9	Tank drain
5	Hose reel control lever	10	Water tank

DTXII version shown here

6.0 Operations

6.1 Daily Checks

Carry out all daily checks before you operate the jetter:

- Pump oil level
- Gearbox oil level
- Water filter cleanliness
- Engine oil level
- Fuel level
- All jets are clean and free from debris
- All jetting hoses are free from damage and abrasion

If the jetter has been in operation for more than 100 hours, other routine maintenance checks may need to be carried out. For a more comprehensive guide to routine maintenance, refer to Section 6.10.

6.2 Hydraulic Hose Reel (Optional)

The hydraulic control lever has three positions:

- In
- Out
- Freewheel (push lever fully back)

In 'freewheel' mode you can rotate the reel without hydraulic power. The speed of the hydraulic motor can be controlled with the black knob on the lever.

It is important to take note of the following points when operating the reel:

- Never wind the hose onto the reel when it is not pressurised. An unpressurised hose will wind very tightly around the reel and cause the drum to crush.
- If the hose becomes trapped in a drain you must stop winding the reel immediately, stop jetting and wind the hose manually. Failure to stop can result in the hose crushing the drum, and/or the hose being permanently damaged.
- If the hose has been wound on too tightly it must be completely unwound and then rewound loosely on the reel.

6.3 Pre-Start Procedure

- Park the jetter safely on a level surface with the towing vehicle left in gear and with the hand brake applied.
- Never attempt to use the hydraulic reel with the jetter uncoupled from the towing vehicle.

- Connect the inlet reel to a mains water supply and fill the jetter tank. When full, the water will flow through the tank overflow pipe.
- Push the hydraulic control lever (optional) to the 'free wheel' position and feed off enough high pressure hose to reach the work area. Return control lever to centre position.
- Check the emergency stop is in the out position
- Check the high pressure valve is in the OFF position (manual machines only)

6.4 Starting the Engine (Manual Jetter)

If your machine is fitted with a radio remote control go to section 6.5

- Turn the ignition key to the first position to energise.
- Once the glow plug light has switched off, or, after approximately 5 seconds on a diesel engine, turn the key to the second position to start the engine.
- If there are any warning lights on the engine controller switch off the engine and consult the engine manual supplied with your jetter. Only use a machine with manual controls where your risk assessment has shown that it is safe to do so!

For a detailed operation guide specific to your jetter please refer to the digital manual included on the USB device supplied with your jetter.

6.5 Starting the Engine (Radio Controlled Jetter)

When operating the jetter using a radio handset it will be necessary to 'pair' the radio handset with the jetter before the engine can be started.

- Check the E-Stop on the radio handset is released and the handset is powered on.
- Select Remote on the jetter radio control panel.
- Turn the ignition key to the first position to energise.
- To pair the radio handset to the jetter, hold down buttons 7 & 8 for about 2 seconds. You should hear a beep once the radio handset is paired and the green handset light will flash.

Please Note: Pairing should take place within 15 seconds of switching the ignition on or else the process will time out.

- Once the glow plug light has switched off, or, after approximately 5 seconds on a diesel engine, turn the key to the second position to start the engine.
- You can now control the engine revs with buttons 1 & 2, and the high pressure water ON or OFF with buttons 3 and 4.
- To stop the machine in an emergency whilst using the radio handset, push the E-stop on the bottom of the handset.

Please Note: The radio handset pairing procedure will need to be repeated each time the handset or engine ignition are switched off.

6.6 Operating the Jetter

An emergency shutdown can be initiated at any time by switching off the engine with the key or pressing the E-Stop button!

- With the engine running and high pressure water OFF fit a nozzle to the end of the hose and tighten it securely.
- Check the nozzle is inserted about 2m into the drain before turning the high pressure water ON.
- Once inserted, switch the high pressure water ON (on manual jetters) or press the water ON button on the radio handset.
- To increase the engine speed, rotate the throttle anticlockwise (on manual jetters) or press the 'speed up' button on the radio handset.
- To shut down the jetter decrease the engine speed and switch the high pressure water OFF (on manual jetters) or press the water OFF on the radio handset.

Please Note: It is possible to use radio control machines in 'local' mode by selecting 'local' on the machine radio control panel and using the local control buttons appropriately.

6.7 Using a Pressure Control Valve

If the jetter has been fitted with a pressure control valve you can adjust the jetting pressure independently of the engine revs.

Please Note: To avoid stalling it is advisable to run the engine at a minimum of 1/2 full speed.

- Before starting, check the pressure control valve is wound out to avoid any sudden pressure increase.
- Start the jetter as described in Sections 6.4 /6.5.
- With high pressure water ON, wind in the pressure control valve to increase the pressure.
- To shut down the jetter decrease the engine speed and switch the high pressure water OFF (on manual jetters) or press the water OFF on the radio handset. Unwind the pressure control valve.

6.0 Operations

6.8 Using a Gun

6.8.1 Dump Style Gun

A dump style gun has two barrels. When the trigger is pulled, water comes from the main barrel, through a jet, at high pressure. When it is released the water is dumped safely through a secondary barrel at low pressure.

6.8.2 Dry Shut Gun

A dry shut gun must only be used when an unloader valve is fitted to the jetter. When the gun trigger is released the water is diverted through the unloader valve and back to the jetter tank.

If you do not have an unloader valve fitted when using a dry shut gun you will cause serious damage to your jetter, as well as possible serious or fatal injury to the operator. When working with a gun always consider using a safety shroud to provide the operator with greater protection in the event of a bust hose.

Please Note: After turning off the jetter always point the gun at the ground and pull the gun trigger to safely release any trapped pressure.

6.9 Frost Precautions

Attempting to use a frozen jetting machine can lead to ice pellets being ejected from the hose at high speed with risk of serious injury or death!

It is recommended that during cold periods in the weather you run antifreeze throughout your jetter including the main jetting hose. If you suspect your jetter has frozen then you should not attempt to start it. This can cause serious damage to your equipment resulting in costly repairs.

Flowplant jetters can be fitted with an antifreeze kit as an optional extra or antifreeze can be added to the water tanks. For a detailed procedure specific to your jetter please refer to the digital manual included on the USB device supplied with your jetter.

To antifreeze the machine:

- Drain the water tank, if applicable.
- Check your antifreeze tank is full with a 50/50 antifreeze mix.
- Wind off a few metres of hose and remove any jet or other accessory from the end.
- Turn the antifreeze valve into the ‘Antifreeze’ position. This will close off the main tank and instead feed the pump from the antifreeze tank.
- Start the jetter and immediately switch to pressure ON (on manual jetters) or press the ‘water on’ button on the radio panel.

Please Note: If you allow the jetter to run on dump all of the antifreeze will be diverted to the main tank and will be wasted.

- Pointing the hose towards the ground and running the engine at low speed, flush all the fresh water out of the hose
- As soon as the antifreeze mix comes from the hose switch off the jetter ignition.

To de-antifreeze the machine:

- Fill the water tank
- Move the antifreeze valve to the ‘run’ or ‘main tank’ (depending on jetter) position
- Put the end of the main jetting hose into the antifreeze tank
- Start the jetter and fill the antifreeze tank

Please Note: Start the jetter and immediately switch to pressure ON (on manual jetters) or press the ‘water on’ button on the radio panel.

- Switch to pressure OFF (on manual jetters) or press the “water off” button on the radio panel when the antifreeze tank is full.
- Switch off the jetter ignition.

Please Note: Regularly check the antifreeze strength during cold weather periods.

Please Note: Flowplant suggests the use of propylene glycol type antifreeze because it is less damaging to the environment. Under no circumstances should any antifreeze mix be disposed of into the sewer system or be allowed to enter any water courses.

6.10 Routine Maintenance

We recommend that maintenance be carried out by a recommended service agent. Maintenance should only be carried out with the engine turned off and when cold.

Frequency	Action
Daily	• Check inlet water filter element • Check engine oil level on dip stick • Visual check for hose damage/water leaks • Check emergency stop button operation • Check wheel nuts • Check ball hitch lock • Check ball hitch for wear • Check handbrake operation • Check brake adjustment • Check tyre pressure • Check trailer lights
Weekly / 24 Hours	• Visually inspect the jetter, checking for any loose, damaged or missing parts • Check air filter cleanliness • Check engine fuel filter for contamination
3 Monthly / 50 Hours	• First service (contact Flowplant) • Replace pump oil (only required for first service only) • Adjust trailer braking system if necessary
6 Monthly / 100 Hours	• Inspect tanks and fittings for leaks • Tighten any loose joints • Check condition of 12 volt start battery • Grease battery terminals for protection
Yearly / 200 Hours	• Intermediate service of engine, gearbox and pump required (contact Flowplant) • Closely inspect the structural integrity of the framework for signs of stress and cracking • Carry out detailed inspection of pipes, hoses and fittings • Check unloader valve operation
2 Yearly / 400 Hours	• Major service of engine, gearbox and pump required (contact Flowplant) • Check wiring terminals/connections and continuity of electrical earth

7.0 Fault Finding

7.1 Engine Faults

Problem	Possible Cause	Recommended Action
Engine shutdown	Low oil pressure	Check and replace switch if faulty
		Check oil pressure, if pressure is low refer to engine handbook
	Coolant temperature	Check and replace switch if faulty
		Check water temperature in radiator, if very hot refer to engine handbook
	Emergency stop in	Twist to release
	Low engine charge	Check alternator belt tension
		Check terminals on alternator
		Check engine idle speed, reset if necessary
		Refer to engine handbook

7.2 System Faults

Problem	Possible Cause	Recommended Action
Low system pressure	Worn or incorrect size of cutting nozzle	Replace the old jetting nozzle with a new one
	Engine speed slow	Adjust to correct speed
	Leaks from hose, pipes and connections	Check the connections for tightness, replace if needed
	Blocked inlet filter	Clean or replace element
	Inlet hose too long	Shorten hose length
	Loss of water through dump line of selector valve or gun when high pressure selected	Check seats and seals
	Loss of water through dump line of remote control kit, if fitted	Check seats and seals
High system pressure	Blocked nozzle, selector valve or gun	Clean the items and flush out the delivery line
	Incorrect nozzle size	Replace the nozzle
	Incorrect hose bore size	Replace the hose
	Engine speed high	Adjust to correct speed
	Crushed delivery hose	Replace if necessary
	Two gun choke left in gun when operating as single gun unit	Replace with standard choke
Low water level	Blocked or dirty pre-filters	Clean or replace elements
	Faulty ball valve assembly	Replace if necessary
	Wrong seat in ball valve assembly	Replace the seat if necessary
	Low inlet pressure	Increase pressure

7.2 System Faults (continued)

Problem	Possible Cause	Recommended Action
Pump not running evenly (refer to pump manual)	Air in water	Water bleed pump
	Air in crankcase oil	Oil bleed pump
	Worn drive coupling	Replace flexible elements and examine coupling
	Faulty inlet or delivery valve	Check valve condition
	Valve nut over tightened	Check tightness of inlet & delivery nut
Burst disc failure or safety relief valve operating (also refer to high system pressure problem)	Incorrect burst disc	Replace with correct disc
	Incorrect valve setting	Check certificate/setting
	Faulty valve	Repair or replace if required
	Faulty or fatigued burst disc	Replace with new disc

7.3 Useful Links

- www.flowplant.com
- www.lombardini.co.uk
- www.yanmar.com
- www.engines.honda.com
- www.speck.co.uk
- www.interpump.co.uk
- www.waterjetting.org.uk

8.0 Appendix

8.1 Declaration of Conformity - DTM / DTM Econo

FLOWPLANT

EC Declaration of Conformity

In accordance with BS EN ISO/IEC 17050-1:2010

Flowplant Group Ltd
Gemini House
Brunel Road
Churchfields Industrial Estate
Salisbury
Wiltshire, UK
SP2 7PU

Herewith declares that the machinery:

☐ DTM ☐ DTM Econo

Make	FLOW/02/1
Variant	FLOW/02/1/DTM Econo
Category	O2
Location of Statutory Plate	Off Side Drawbar
Location of VIN	Off Side Drawbar
EC Type Approval Number	e11*2007/46*1544*00

Serial No: _____ **VIN:** _____

Has been manufactured using the following transposed harmonised European Standards and technical specifications:

- ***BS EN 809:1998: Pumps and pump units for liquids-Common safety requirements***

And within the limits specified for the machinery is in conformity with:

- ***The Machinery Directive 2006/42/EC***
- ***The Noise Emission in the Environment By Equipment for use Outdoors Directive 2000/14/EC***

Has been designed and manufactured to the following standards:

BS EN ISO 9001:2008

For and on behalf of the company

Mr Steven Smith
Head of Production & Engineering

FLOWPLANT

EC Declaration of Conformity

In accordance with BS EN ISO/IEC 17050-1:2010

Vehicle Information
DTM / DTM Econo

Number of Axles	1
Wheel Base	N/A
Axle Track	1.070m
Length	2.984m
Coupling to Rear	2.948m
Length of Loading Area	N/A
Width	1.385m
Height	1.340m
Ground Area	4.13m²
Rear Overhang	0.964m
Max Weight - Laden	757kg
Nose Weight +/-10%	74kg
Axle Load +/-10%	683kg
Max Axle Weight	900kg
Loadable Axle	N/A
Coupling Max Weight	Vertical 100kg / D-Value 18.5kN
Tyre & Wheel	4.50x13, 155/80R13 4xM12 100 PCD
Braking System	Brake Drum
Coupling Approval No	e11*94/20*0728*02
Steering Method	Non Steered
Bodywork	DC19
Exemptions	

For and on behalf of the company

Mr Steven Smith
Head of Production & Engineering

8.0 Appendix

8.1 Declaration of Conformity - DTB / DTB Econo

EC Declaration of Conformity

In accordance with BS EN ISO/IEC 17050-1:2010

Flowplant Group Ltd
Gemini House
Brunel Road
Churchfields Industrial Estate
Salisbury
Wiltshire, UK
SP2 7PU

Herewith declares that the machinery:

☐ DTB 500 ☐ DTB 500 Econo

Make	FLOW/02/1
Variant	FLOW/02/1/DTB
Category	O2
Location of Statutory Plate	Off Side Drawbar
Location of VIN	Off Side Drawbar
EC Type Approval Number	e11*2007/46*1544*00

Serial No: _____ **VIN:** _____

Has been manufactured using the following transposed harmonised European Standards and technical specifications:

- ***BS EN 809:1998: Pumps and pump units for liquids-Common safety requirements***

And within the limits specified for the machinery is in conformity with:

- ***The Machinery Directive 2006/42/EC***
- ***The Noise Emission in the Environment By Equipment for use Outdoors Directive 2000/14/EC***

Has been designed and manufactured to the following standards:

BS EN ISO 9001:2008

For and on behalf of the company

Mr Steven Smith
Head of Production & Engineering

FLOWPLANT

EC Declaration of Conformity

In accordance with BS EN ISO/IEC 17050-1:2010

Vehicle Information
DTB 500 / DTB 500 Econo

Number of Axles	1
Wheel Base	N/A
Axle Track	1.670m
Length	3.323m
Coupling to Rear	3.287m
Length of Loading Area	N/A
Width	1.711m
Height	1.380m
Ground Area	5.68m²
Rear Overhang	1.091m
Max Weight - Laden	1470kg
Nose Weight +/-10%	85kg
Axle Load +/-10%	1385kg
Max Axle Weight	1600kg
Loadable Axle	N/A
Coupling Max Weight	Vertical 300kg / D-Value 24.84Kn
Tyre & Wheel	185R 13 C6 WITH 5 1/2 JX13 RIM
Braking System	Brake Drum
Coupling Approval No	E1* 01 0646
Steering Method	Non Steered
Bodywork	DC19
Exemptions	

For and on behalf of the company

Mr Steven Smith
Head of Production & Engineering

8.0 Appendix

8.1 Declaration of Conformity - DTXII / DTQ

EC Declaration of Conformity

In accordance with BS EN ISO/IEC 17050-1:2010

Flowplant Group Ltd
Gemini House
Brunel Road
Churchfields Industrial Estate
Salisbury
Wiltshire, UK
SP2 7PU

Herewith declares that the machinery:

☐ DTXII

☐ DTQ

Serial No: _____

Has been manufactured using the following transposed harmonised European Standards and technical specifications:

- ***BS EN 809:1998: Pumps and pump units for liquids-Common safety requirements***

And within the limits specified for the machinery is in conformity with:

- ***The Machinery Directive 2006/42/EC***
- ***The Noise Emission in the Environment By Equipment for use Outdoors Directive 2000/14/EC***

Has been designed and manufactured to the following standards:

BS EN ISO 9001:2008

For and on behalf of the company

Mr Steven Smith
Head of Production & Engineering

8.1 Service History

Serial Number:		
Unit Number:		
Date of Manufacture:		
Date: .... Engineer: .... Type of Service:	Official Flowplant Stamp & Signature Please state if other service provider is used:	
Date: .... Engineer: .... Type of Service:	Official Flowplant Stamp & Signature Please state if other service provider is used:	
Date: .... Engineer: .... Type of Service:	Official Flowplant Stamp & Signature Please state if other service provider is used:	
Date: .... Engineer: .... Type of Service:	Official Flowplant Stamp & Signature Please state if other service provider is used:	
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Date: .... Engineer: .... Type of Service:	Official Flowplant Stamp & Signature Please state if other service provider is used:	
Date: .... Engineer: .... Type of Service:	Official Flowplant Stamp & Signature Please state if other service provider is used:	
	Type of Service - Intermediate, Yearly	FLOW 0322 Iss 1

8.0 Appendix

8.1 Service History

Serial Number:	
Unit Number:	
Date of Manufacture:	
Date: .... Engineer: .... Type of Service:	Official Flowplant Stamp & Signature Please state if other service provider is used:
Date: .... Engineer: .... Type of Service:	Official Flowplant Stamp & Signature Please state if other service provider is used:
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Date: .... Engineer: .... Type of Service:	Official Flowplant Stamp & Signature Please state if other service provider is used:
Type of Service - Intermediate, Yearly	FLOW 0322 Iss 1

Serial Number:		
Unit Number:		
Date of Manufacture:		
Date:	Official Flowplant Stamp & Signature	
Engineer:		
Type of Service:	Please state if other service provider is used:	
Date:	Official Flowplant Stamp & Signature	
Engineer:		
Type of Service:	Please state if other service provider is used:	
Date:	Official Flowplant Stamp & Signature	
Engineer:		
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Date:	Official Flowplant Stamp & Signature	
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	Type of Service - Intermediate, Yearly	FLOW 0322 Iss 1

8.0 Appendix

8.1 Service History

Serial Number:	
Unit Number:	
Date of Manufacture:	
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Type of Service - Intermediate, Yearly	FLOW 0322 Iss 1

Serial Number:		
Unit Number:		
Date of Manufacture:		
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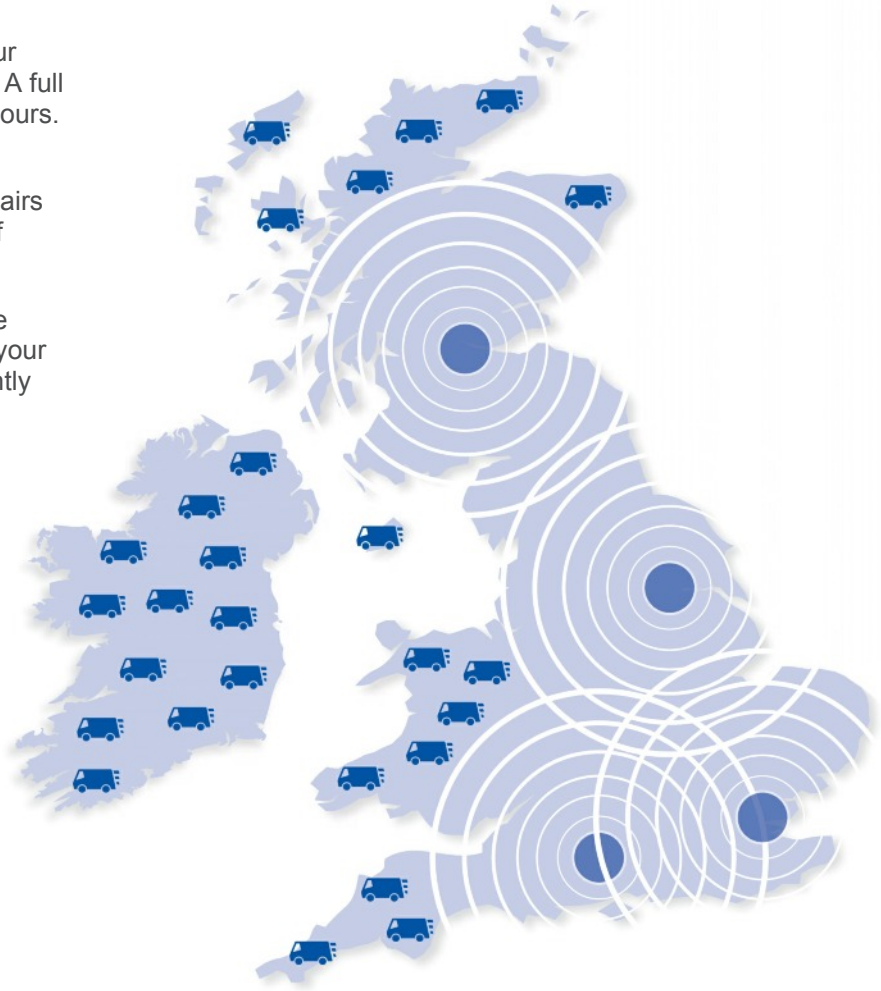
Date: .... Engineer: .... Type of Service:	Official Flowplant Stamp & Signature Please state if other service provider is used:	
	Type of Service - Intermediate, Yearly	FLOW 0322 Iss 1

Servicing & Maintenance

Our nationwide network of service centres and mobile engineers are always on hand to offer expert advice on all aspects of maintaining your water jetting systems, pumps and equipment. A full range of spares is readily available within 24 hours.

Our Service Division can advise you or your engineering staff plus undertake servicing, repairs and remedial work in the field, from our fleet of mobile vans, or at our service centres.

We offer a range of servicing and maintenance packages to suit your requirements, ensuring your equipment is always operating reliably, efficiently and safely.



South West & Ireland
Gemini House, Brunel Road,
Churchfields Industrial Estate,
Salisbury, Wiltshire, SP2 7PU
t: 01722 325 424
f: 01722 411 329

South East
7 Thames Road, Barking, IG11 0HN
t: 020 8591 4210
f: 020 8594 4195

North
15 Stadium Court, Parkgate, Rotherham,
S62 6EW
t: 01702 838 308
f: 01709 838 028

Scotland
18 Cumberland Street, Glasgow, G5 9QJ
t: 0141 429 7478
f: 0141 429 7478

Opening Hours

Monday - Thursday: 8:30am - 5:00pm
Friday: 8.30am - 4:00pm
Please contact us prior to visiting our Service Centres to ensure that an engineer will be on site.

FLOWPLANT GROUP

Gemini House, Brunel Road, Churchfields Industrial Estate,
Salisbury, Wiltshire, SP2 7PU

Tel: +44 (0)1722 325 424, Fax: +44(0)1722 411 329,
info@flowplant.co.uk, www.flowplant.co.uk