

# Positive Displacement BLOWERS

For Bulk Transport  
Vehicles



# ROOTS

IMPELLING QUALITY

# Positive Displacement Blowers and Exhausters

## Type 68 RBTM, 610 RBTM & 613 RBTM

RBT Positive Displacement Blowers were first introduced in 1965 to meet the specific requirements of bulk transport vehicle builders and users. Since then many improvements and refinements have been introduced and today, RBTM Blowers can be found in service on vehicles and in land based applications throughout the world.

To ensure that the changing requirements of bulk transport vehicle builders and operators are adequately met, the performance of Dresser Roots Positive Displacement Air Blowers is regularly monitored as part of a continuing development programme.

The Three models cover the required airflows for all types of bulk transport vehicles.

**Type 68 RBTM** retains many early design features such as the controlled lubrication system along with many new features. The most important of these is that the operating range, both speed and pressure, has been extended. This helps to combat environmental pollution problems associated with dust and noise.

**Type 610 RBTM** is a medium volume, medium pressure blower which has a swept volume approximately 20% greater than that of the high pressure 68 RBTM. It has been designed primarily for use on non-pressurised bulk transport vehicles where the types of material carried and the use of rotary seals require increased air volumes.

**Type 613 RBTM** meets the need for a large volume, medium pressure blower with a swept volume approximately 60% greater than the 68 RBTM machines. Increased air volumes are achieved at acceptable engine speeds, an important feature as power take-off ratios tend to be less than the engine speed.



68 RBTM  
Fitted with Hydraulic Tipper Pump  
(CS P30).

## User Benefits

- Vehicle loads are discharged with low noise levels and engine speeds to minimise dust nuisance (see performance graphs).
- A hydraulic pump with a compact drive arrangement is available for vehicles having a single power take-off aperture or a limited power gearbox, and also for direct coupled powerpacks.
- The blower can be operated with a longitudinal inclination of up to 10° without risk of oil starvation: this is of particular importance when the vehicle is not standing on level ground.
- There are no wear tips or inserts on the impellers which need to be bedded in after installation, and which might subsequently become detached or damaged causing the vehicle load to become contaminated by foreign matter. Air gaps at each end of the cylinder ensure that there can be no contamination by oil or oil vapours.
- Centre timing permits operation in either direction - vertical or horizontal air flow.
- Suitable for combined pressure and exhauster applications with vacuum up to 475 m bar.
- All machines are given a works overload test from cold to prove their reliability.

## Specification

**Casing:** The cylinder and headplates are manufactured from cast iron.

**Impellers and Shafts:** The impellers and shafts are of one-piece construction, with axial location and centre timing.

**Gears:** The straight spur timing gears are taper mounted onto the shafts, and operate in a totally enclosed gearcase.

**Bearings:** The bearings are of generous proportions to give long operational life. Grease lubricated angular contact locating bearings are used at the drive end. Roller bearings at the gear end are splash lubricated from the gears.

**Lubrication:** A patented gear trough controls the lubricating oil system, allowing the blower to operate at maximum speeds without the need for an oil pump. Oil throwers are fitted behind each gear end bearing: these do not require maintenance.

**Air Gaps:** The blower is constructed with an air gap at each end, between bearing and cylinder, to ensure that the delivered air cannot become contaminated by oil or oil vapours.



68 RBTM

## Type of Drive

The type RBTM machines are suitable for direct drive from the power take-off; belt drive; independent drive from a petrol or diesel powerpack or by a hydraulic pump and motor. A V-belt drive directly onto the blower shaft cannot be used if the blower is fitted with a speed increasing gearbox or a hydraulic pump.

## Hydraulic Drive

A unique close coupled assembly is available, enabling a hydraulic motor to be mounted directly onto the blower.

This avoids the complication of aligning couplings or using drive shafts with independently mounted motors and is therefore both economic in cost and space.

Motors are available with either fixed or variable displacement. Inclusion of a boost unit in the system allows high efficiency with minimal circuit capacity, thereby keeping space and weight to a minimum.

The ability to locate the blower in the most convenient position on the vehicle (or trailer) without reference to the power take-off position is assured, in addition to optimising engine efficiency and a reduction in noise levels.

## Hydraulic Pump

To power the tipping gear and/or a hydraulically driven rotary seal or some other device, a coupling and carrier can be fitted to the RBTM blower to drive a close coupled hydraulic pump. The carrier will accept the Commercial Shearing P30 series pump. This pump will deliver a nominal 45 litres/minute (10 gpm) against 103 bar (1,500 psig) when driven at 1,500 rpm.

Other types of pumps with compatible flange/shaft dimensions may be fitted eg. Volvo F1 Series.

When selecting a power take-off, a further 15 bhp beyond that required by the air blower should be provided. The versatility of blower mounting is not impaired in any way when a pump is fitted, but a pump cannot be fitted to a blower which has a speed increasing gearbox or if it is driven by V-belts.

The maximum speed of the blower when fitted with a hydraulic pump should be limited to 1,800 rpm.

## Power Take-off

When selecting power take-off equipment, care should be taken to ensure that it will pass the power required by the blower at the related power take-off shaft speed. This is particularly important when a speed increasing gearbox is used.

## Blower Protection Devices

Blowers should be protected against differential pressures in excess of those for which they are designed. The following equipment is recommended to give the required protection.

**Relief Valve:** A pressure relief valve is essential to protect the blower against over pressure in the event of line blockage. The relief valve must be selected, set and maintained so that it will pass the full volume of air delivered by the blower, without the pressure at the outlet exceeding that shown on the respective performance graph.

**Vacuum Indicator:** A visual vacuum indicator 350 mm wg (15 in) maximum vacuum should be placed between the air filter and the blower inlet to give warning when the filter requires cleaning. If the filter is not kept clean the blower may seize due to high rotor temperature caused by air starvation. This can result in serious damage to the blower.

**Inlet Filter:** An inlet filter of adequate capacity should be fitted to the intake of the blower. A filter can, with advantage, be combined with a silencer.

**Discharge Silencer:** A discharge silencer is beneficial for all applications, and particularly when long lengths of flexible hose are used, as for example, with tractor mounted blowers for articulate units.

**Non-Return Valve:** It is essential to fit a non-return valve. On pneumatic cargo discharge systems reverse air flow could cause material to be forced back into the blower resulting in serious damage.



610 RBTM  
Fitted with Hydraulic Tipper Pump  
(Volvo F1 Series).

613 RBTM  
Fitted with a Hydraulic Motor  
(Volvo F11-58 or F12-60).

**Timing:** When a standard machine is to provide a horizontal air flow, the top shaft is extended for the drive. If the machine is mounted for vertical air flow, the drive shaft is on the right. The position of the shaft is given when looking at the machine from the drive shaft end. Centre timing enables the blower to operate in either direction. If the machine is required with a bottom or left hand shaft extended, all that needs to be done is to turn the gearcase and trough through 180°. Detailed instructions are given in the installation and operating instruction folder.

**Tachometer Offtake:** A mechanically driven tachometer offtake is available as an option on the gearcase cover. Whilst this is normally driven from the bottom shaft on a standard machine, it can easily be changed to the alternative top position.

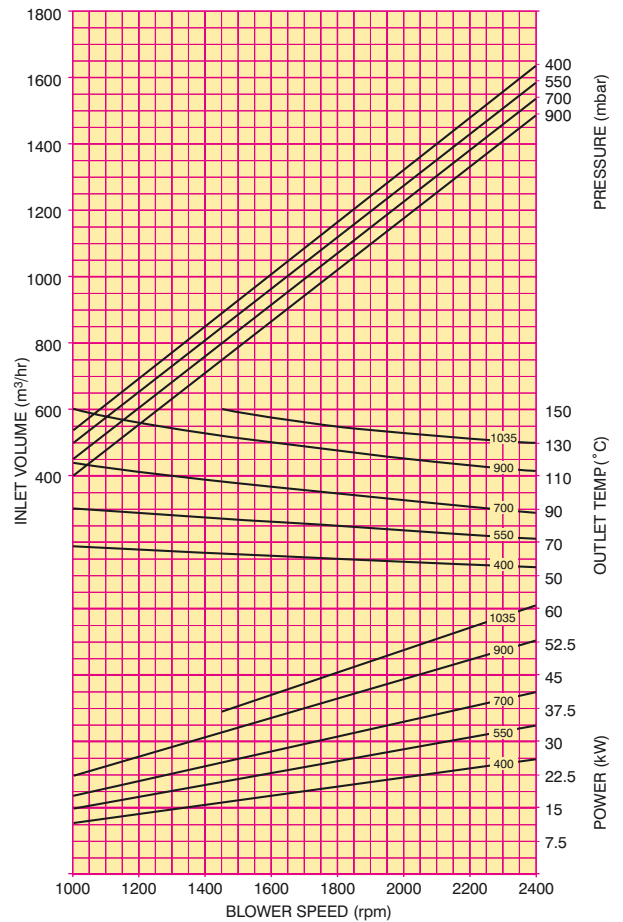
**Performance:** The graphs and table below show the performance as blowers. However all three sizes can operate as exhausters at vacuums up to 475 m bar or combinations of pressure and vacuum. Please refer to the applications department at Dresser Roots for further information on vacuum duties.

Type	Minimum Rec.Speed	Maximum Relief Valve Pressure
68 RBTM	1000 rpm	1035 m bar
	1450 rpm	1240 m bar
610 RBTM	1000 rpm	900 m bar
	1450 rpm	1035 m bar
613 RBTM	1000 rpm	840 m bar

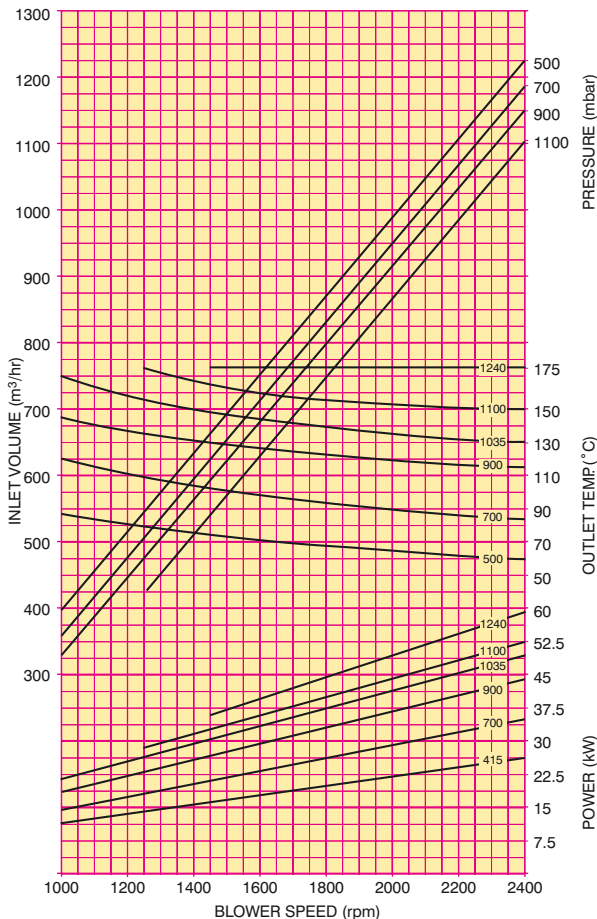
\* **The relief valve** should be selected, set and maintained to pass all the volume delivered without the pressure at the outlet of the blower exceeding the above maximum pressure when the minimum recommended speed is that shown in the above table.

**Caution:** The bhp remains constant for any given impeller speed and outlet pressure. When selecting power take-off equipment, relate the bhp to the blower input shaft speed if a speed increasing gearbox is used. The torque increases in direct proportion to the blower gearbox ratio.

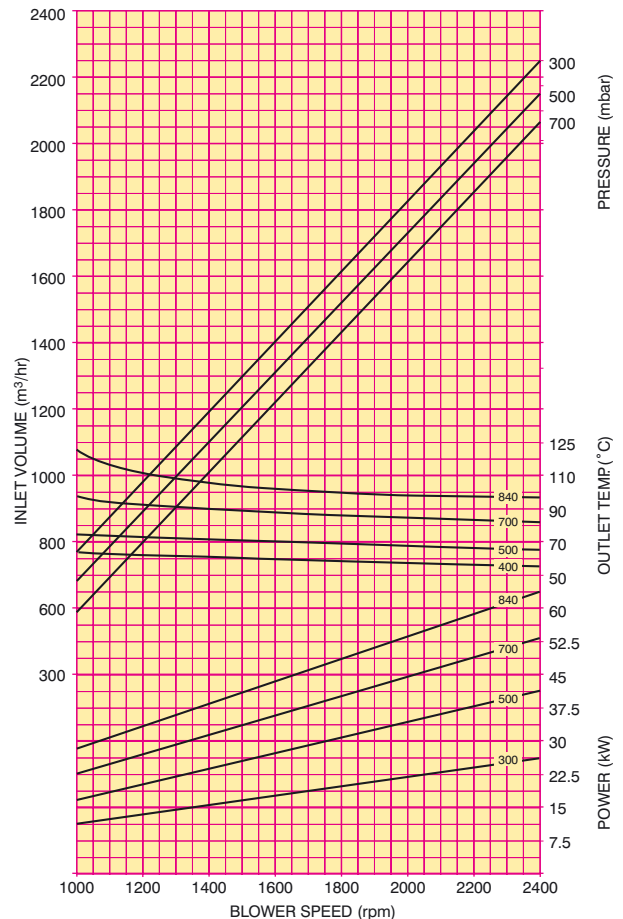
## Performance Graph 610 RBTM

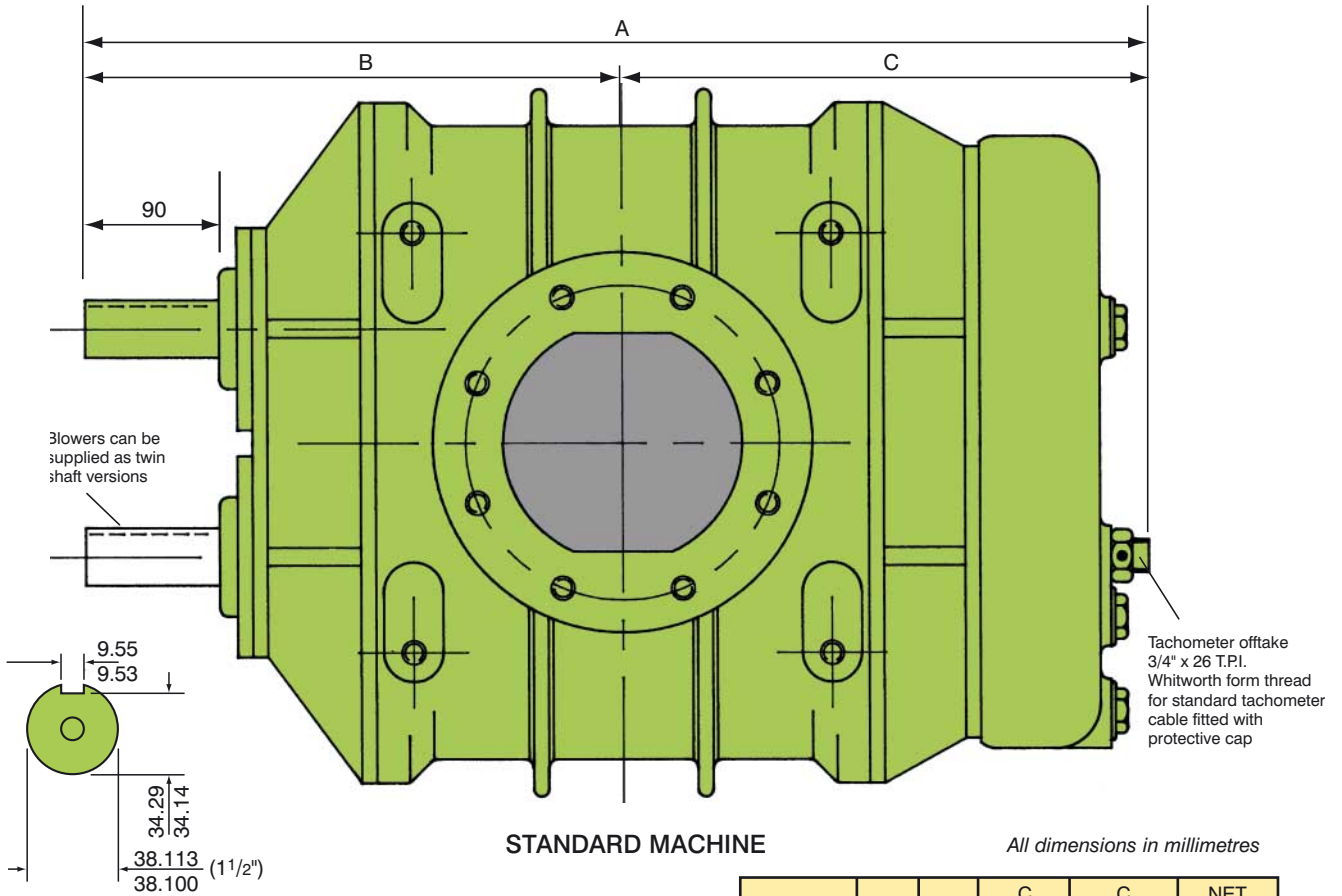


## Performance Graph 68 RBTM

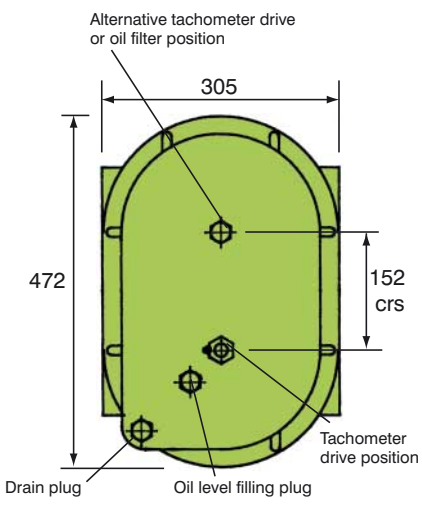


## Performance Graph 613 RBTM

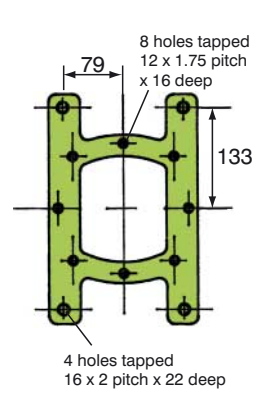




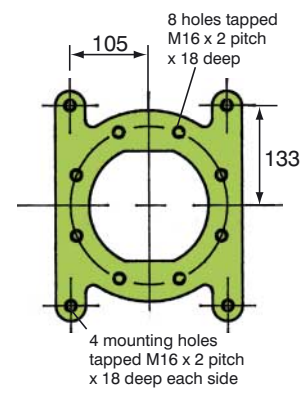
BLOWER	A	B	C WITH TACHO.	C WITHOUT TACHO.	NET WEIGHT Kg
68 RBTM	601	296	305	289	120
610RBTM	651	321	330	312	143
613 RBTM	727	359	368	350	165



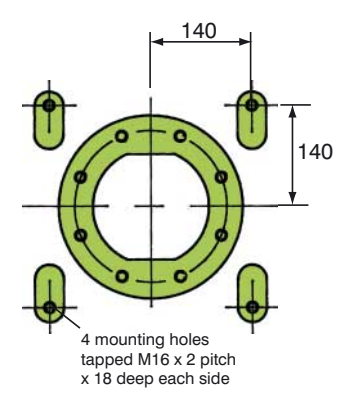
**FLANGES**



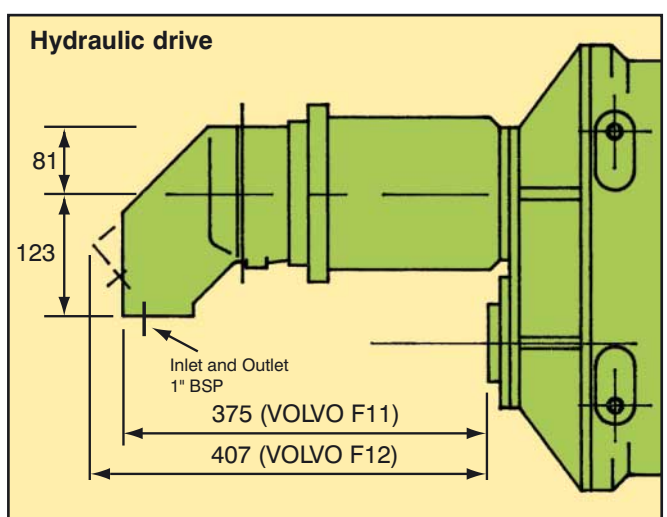
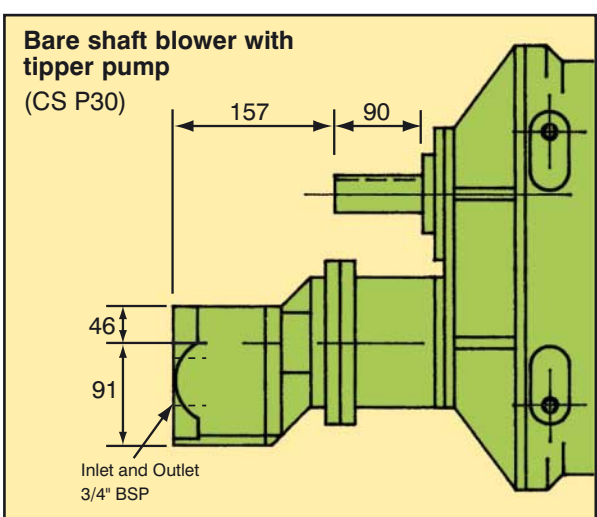
**68 RBTM**



**610 RBTM**



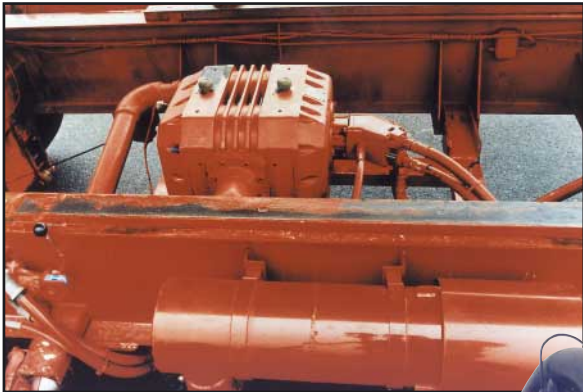
**613 RBTM**



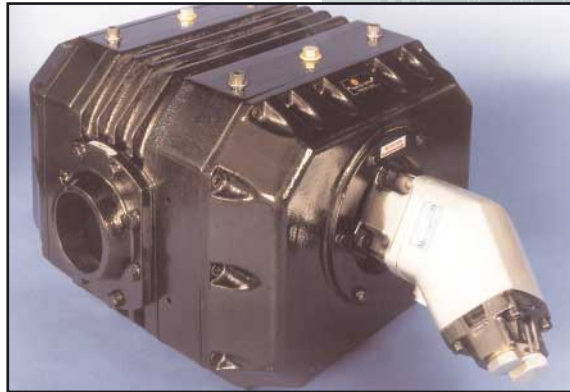
N.B. Other types of pumps with compatible flange/shaft dimensions may be fitted e.g. Volvo F1 Series

N.B. Volvo tipper pump can be fitted/supplied in combination with Volvo hydraulic drive motors.

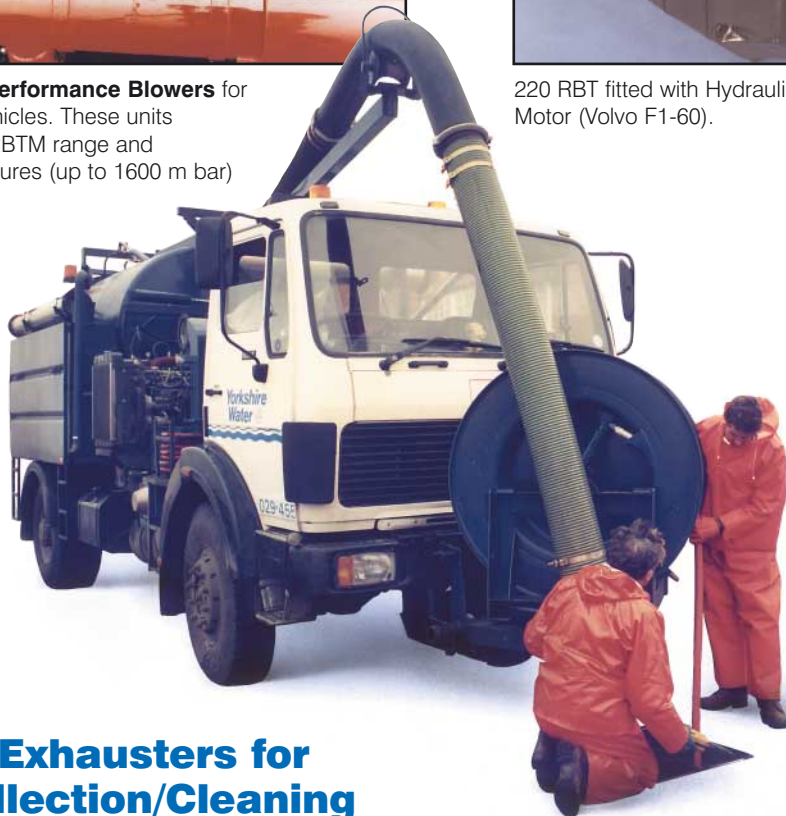
# Your single source for Vehicle Mounted Exhausters and Blowers



**220 RBT High Performance Blowers** for bulk transport vehicles. These units supplement the RBTM range and offer higher pressures (up to 1600 m bar) and lower noise.



220 RBT fitted with Hydraulic Motor (Volvo F1-60).



## Vehicle Exhausters for Bulk Collection/Cleaning

Volumes from 1600 to 7000 m<sup>3</sup>/hr and vacuums ranging from 500 to 900 m bar (i.e. up to 90% vacuum).

The original **ROOTS** blower™



**Roots**

*Following the Company's policy of constant development we reserve the right to alter any detail specified or illustrated in this publication without notice and without incurring any obligation to provide such modifications on machines previously delivered.*

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