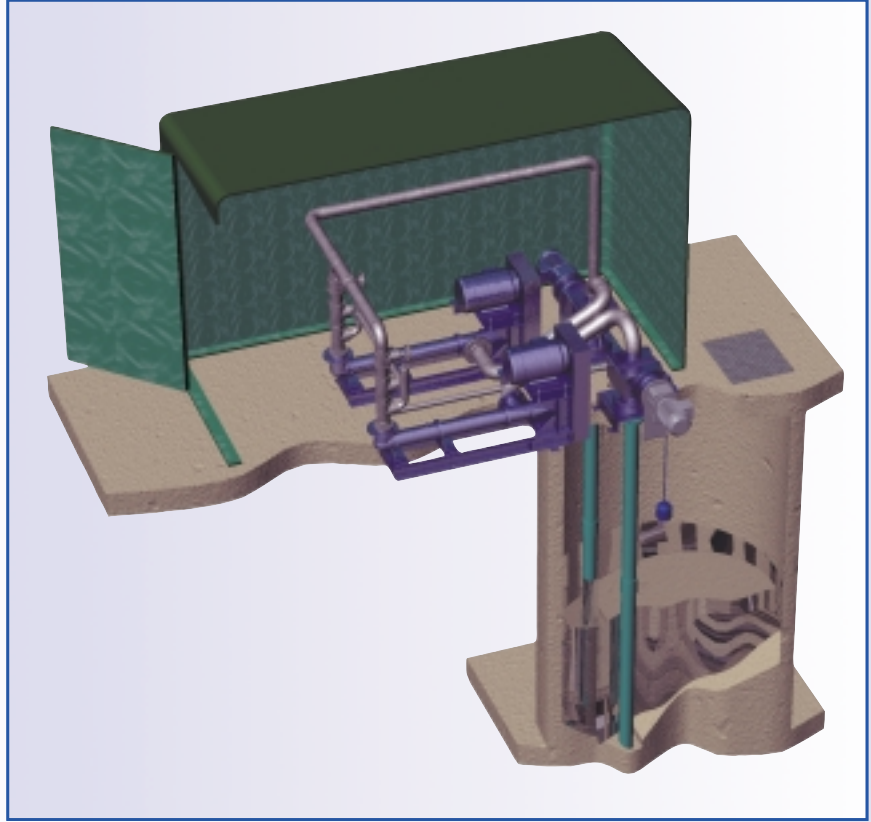


Mono[®]

a Halliburton company

PACKAGED PUMPING SYSTEMS



Mono[®]

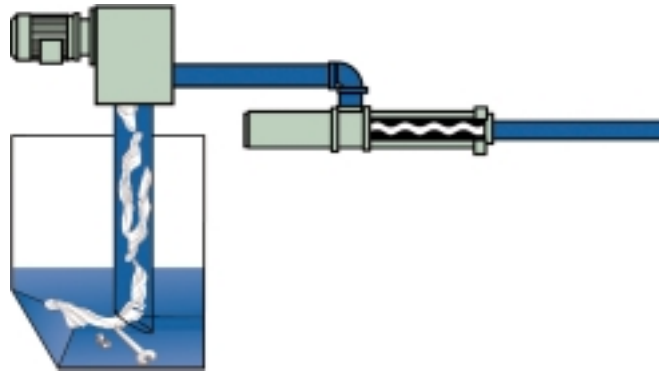

Introduction

Sewage pumping applications require energy-efficient and reliable equipment that can be installed easily and quickly to meet fast track schedules.

The 3 Packaged Pump Systems available from Mono, **Grifter Packaged Pump Station, Compact Mutrator® and Munchpump®**, can offer you just that. Combining the benefits of the progressing cavity pumping principle with our efficient macerators, you are buying a package that offers you many advantages against submersible pump sets.

Principle

The positive displacement action of the pump lifts the raw sewage from the sump into the cutting chamber of the macerator. The sewage and any textile and fibrous matter is macerated and then pumped away to the main gravity sewer. When the pumping cycle ends, unmacerated material falls back into the sump, clearing the suction pipe for the next duty run.



Low suction velocities ensure foreign object damage is eliminated, unlike pumping stations with submersible pumps. Any large objects remain in the sump for periodic removal, avoiding any pump damage.

FEATURES	BENEFITS
<ul style="list-style-type: none"> ● Positive displacement pump ● Low speed, high torque, parallel shaft grinder ● Small bore pipe for rising main ● Above sewage, 'dry' location of pumps ● Tri-hammer macerator ● Pre-assembled package with insulated G.R.P. enclosure, containing all pump, Muncher, macerator and control equipment ● Total design, installation, commissioning and maintenance packages available 	<p>Slow speeds, low wear rates and optimum running time. Mutrators and Munchpumps consume less than 50% of the energy of conventional centrifugal sewage pumps.</p> <p>Low rotating speed compared to high speed impellers ensures low power, reduction in maintenance costs and low noise level.</p> <p>Flow is finely macerated. No need for inlet screens and associated labour costs for disposal of screenings.</p> <p>Lower installation costs, reduced risk of septicity and smells, greater freedom in routing layouts (will easily follow ground contours). Lower retention times allow a significantly better feed system to small treatment plants.</p> <p>Routine maintenance can be carried out easily in a clean environment, in-situ. No sump entry risks or hauling pumps up out of the sump - no continual chain certification.</p> <p>3 hammer design gives very efficient product disintegration.</p> <p>Rapid installation, low noise level, fully weatherproof. Can be installed in very remote isolated areas at much lower costs than a conventional pump house construction.</p> <p>Only one order to one company - single sourcing.</p>

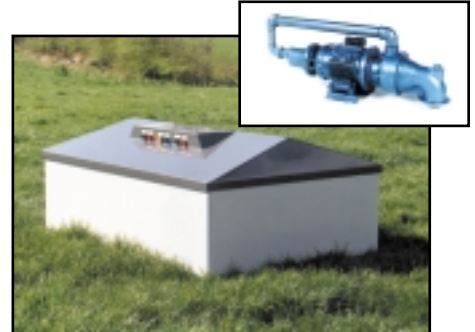
Packaged Pump Systems

Grifter Packaged Pump System - Capacity range 1.7-4.0m³/h / 3 bar

The Grifter is designed to meet domestic user requirements for handling raw sewage. Using a CP progressing cavity pump and tri-hammer macerator, this product is available as a pump unit only or as a Packaged Pump System. The use of a single motor drive directly coupled to the pump and macerator gives lowest possible design/construction and running costs.

The Packaged System features duty and standby pumps, complete with all necessary pipework and factory assembled in a GRP kiosk. Integrally assembled below the pump kiosk is a glass fibre reinforced collection sump.

Applications: Raw Sewage for remote cottages, up to 5 houses, marinas, golf clubs, railway stations



Mutrator/Compact Mutrator - Capacity range 0-15m³/h / 12 bar

The Mutrator range has various design options to suit your application. Mutrators can be installed either horizontally or vertically to give lowest possible design/construction costs with various drive options for correct pump speed. The H and V type Mutrators, for installation into an existing pump house, use either Merlin®, E Range or Monobloc® B pumps together with a tri-hammer macerator.

The Compact Mutrator, gives you a complete sewage pumping station ready to be installed and operational within 2 hours of delivery. A GRP kiosk is included and contains duty and standby Compact Mutrator sewage pumps, an integral control panel and the system is completely pre-plumbed, pre-wired and 'ready to run'.

Applications: Raw Sewage for construction sites, small housing developments, caravan parks, leisure facilities, hotels, shops, temporary sites



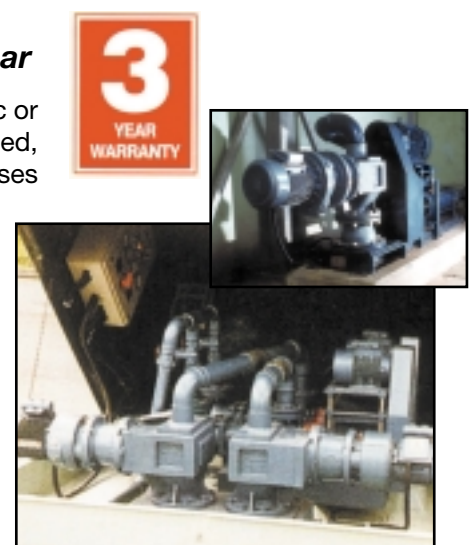
Munchpump Package - Capacity range 0-400m³/h / 24 bar

The Munchpump package consists of SB or TR Munchers with Monobloc or E Range pumps. For sludge handling applications the twin shaft, low speed, high torque grinder has very low energy consumption. In some cases it can be as much as 50% of a comparable submersible pump. With the pump being a p.c. design, head is independent of speed. Low running speeds can therefore be selected, this leads to low maintenance and energy costs, as well as low noise operation.

Pump capacity can be set to generate volume of sewage/sludge flow which helps improve effluent quality at a small treatment plant. The efficient maceration of sewage also eliminates the need to screen inflow.

The SB Muncher is an ideal replacement for high speed macerators, saving up to 85% of the energy requirements of a centrifugal force system. The SB Muncher is so effective as a sewage macerator that we offer a full **3 year warranty** on sewage applications.

Applications: Sludge and Sewage handling for remote or small treatment plants, office developments, public facilities



Applications

Application: Handling raw sewage at a chemical plant

Product Type: Compact Mutrator



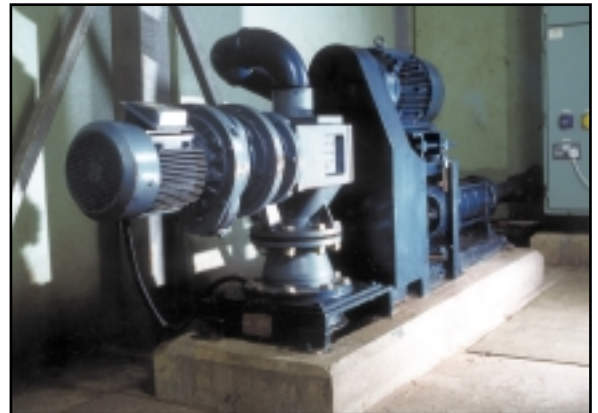
A chlorine manufacturing plant is achieving significant cost savings from the installation of a Compact Mutrator. The pump previously used on sewage was unable to cope with the increased demand from the site development and generated a £3,000 annual repair bill. With the installation of our complete sewage pumping station, the system works unattended and has been entirely trouble-free since installation. Pumping the sewage at 4m³/h, the packaged system uses 15% less electricity and is driven by a 4kW motor, compared with the two 5.5kW motors used previously. The benefit offered by progressing cavity pumps is that head is independent of speed, therefore they can be operated at a far lower speed than before - 400rpm compared with 960rpm, thereby reducing wear, while maintaining high head capability.

Application: Primary Sludge at a Biological Sewage Treatment Works

Product Type: Munchpump

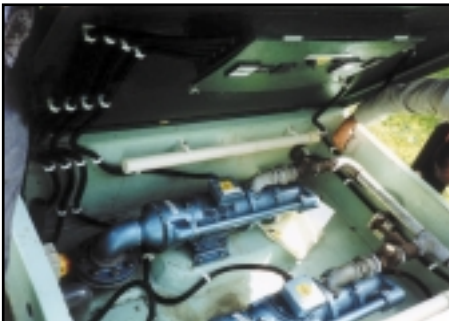
To effectively remove sludge from the primary sedimentation tank for further treatment, this water authority has installed Munchpumps in the auto-desludge system on the primary settlement tanks. Approximately 1713m³/day of primary sludge with 1% DS is lifted from the bottom of the tanks, macerated by the SB Munchers, to prevent blockages, and pumped at a capacity of 36m³/h and pressure of 2 bar by Industrial E Range pumps to the sludge thickening tank.

The customer benefits from excellent pumping efficiency - lower speeds and reduced wear rates - with the added benefit of the system being located above the sewage in a dry, clean environment.



Application: Effluent from a Bowling Pavilion's Services

Product Type: Grifter Packaged Pump System



Funded by a £70,000 grant from the National Lottery, a new bowling pavilion has installed a Grifter Packaged Pump Station to transfer all wastewater from the pavilion's services to the main sewerage system over 20m away. Foul and wastewater from the pavilion's washrooms and catering facilities are directed to the Grifter's holding tank, which incorporates float switches. The pump is triggered when the effluent reaches a pre-set level and switches off when the stop level is reached.

To reduce installation requirements, the system was supplied ready assembled in a glass fibre reinforced kiosk. The Grifter Packaged Pump System has provided an instant, hygienic and compact solution to an otherwise messy and potentially expensive problem.

Applications

Application: Raw Sewage from cottages within a National Park

Product Type: Mutrator (horizontal)

A traditional rural stone outhouse has been designed, incorporating duty/standby Mutrators with Merlin pumps, to handle raw sewage from cottages in close proximity to the outhouse. The only electricity supply available was the rural mains, which is a different voltage to conventional mains. Mono was able to supply units configured to operate from the rural supply of 480v single phase and achieved quiet, vibration free operation. The system is ideal to meet the requirements of the small community. Level sensors are installed in the wet well giving efficient pump operation, this leads to low power consumption and reliable, easy to service operation.



Application: Sewage from public toilets

Product Type: Munchpump



Public toilets, located directly beneath a local tourist information centre, are open 24 hours, but not attended at night. This results in abuse of the drainage system, with drink cans and other items of indiscriminately disposed of waste found in the sump. A compressed air operated sewage ejector system was previously installed but could not cope with this abuse. It required weekly maintenance visits and was extremely noisy.

A special Munchpump package was installed in a space measuring 2.5m x 0.5m, arranged in duty and standby mode. The SB Muncher effectively macerates any solids within the sump to reduce blockages and pumps the effluent away quietly. With substantially reduced power consumption and low maintenance requirements, our customer has a trouble-free pumping system.

Application: Sewage from marina sailing boats

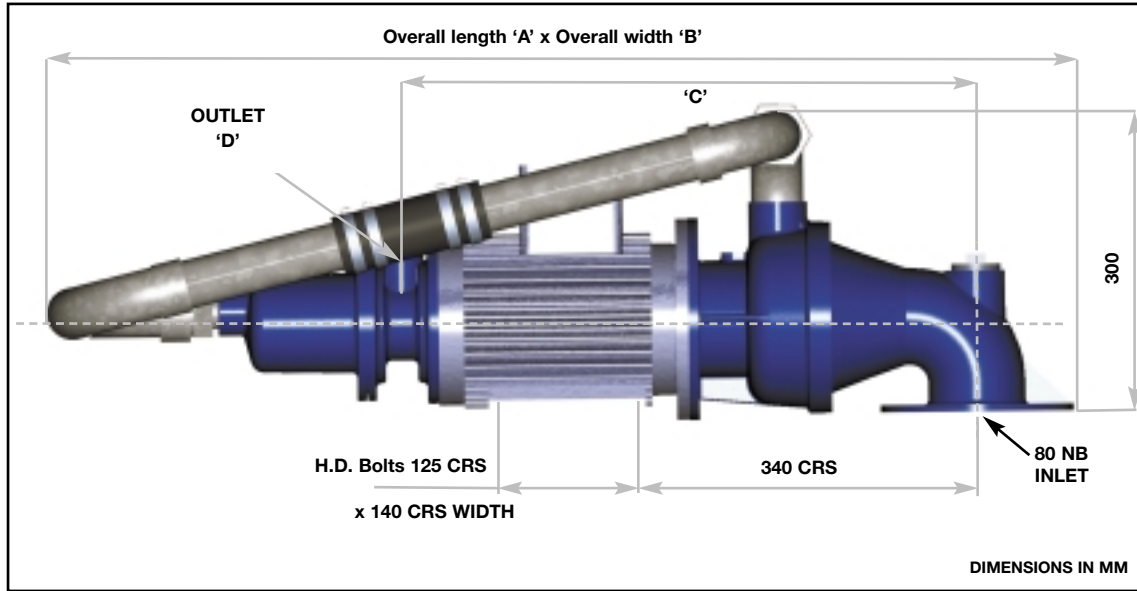
Product Type: Grifter Packaged Pump System

At this lakeside marina, a Grifter Packaged Pump System is installed on the quayside to transfer sewage from boats to the main sewer. The pumping element of the Grifter lifts raw sewage from the sump to pass through the macerator, reducing solids within the flow. The effluent is then pumped away to the main sewer through a small bore pipeline without any risk of blockage down stream.



Performance Data/Dimensions

Grifter (flows to 4m³/h - supplied as a packaged system or individual units)



Model	kW	A mm	B mm	C mm	D
M12B125 M12B325	0.55	914	325	536	1" BSP FEMALE
M12B280 M12B480	0.75	879	325	561	1 1/2" BSP MALE

- Single or three phase options available

Sump Depth	A	Wt
1200mm	1790mm	270kg
1600mm	2190mm	350kg

Pump Capacity

Up to 1.5m³/h Pump Units M12B125/325
Up to 4.0m³/h Pump Units M12B280/480

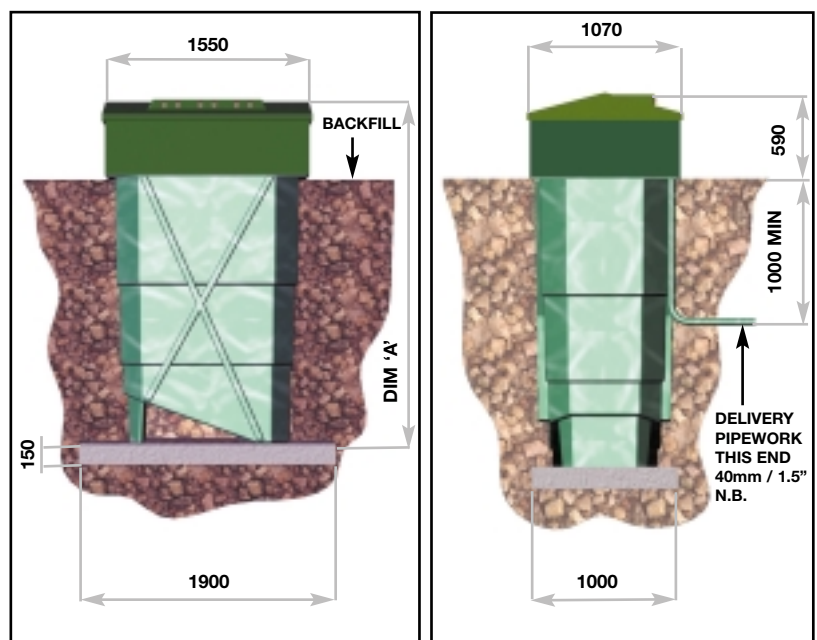
Maximum pressure 3 bar

Discharge connection to rising main:
1 1/2" BSP Union

Kiosk:
1528mm x 1048mm x 590mm high

Sump Depths:
1200mm or 1600mm as standard

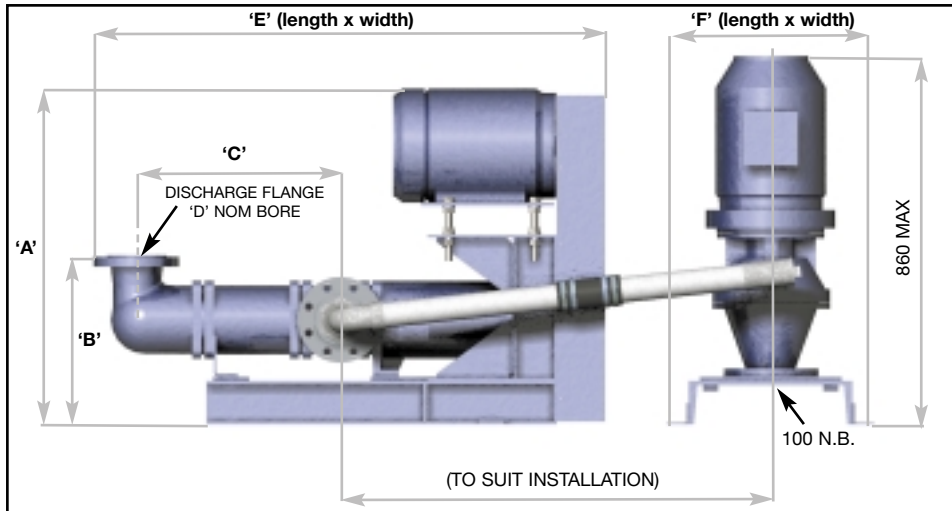
Foundation Slab:
1900mm x 1000mm,
150mm minimum thickness



DIMENSIONS IN MM

Mono Packaged Pumping Systems

Mutrator (flows to 15m³/h - supplied as a packaged system or individual units)

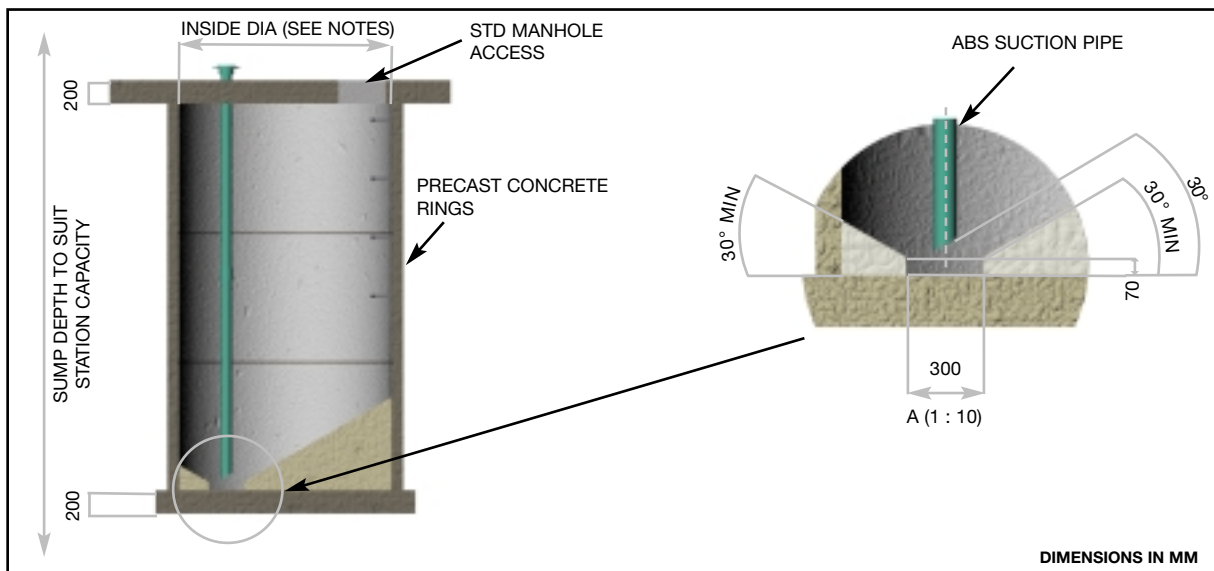


Pump Capacity	Unit Model	Motor/Macerator
Up to 2m ³ /h	H18CAA	2.2kW
“ 4m ³ /h	H or V18CAB	4.0kW
“ 8m ³ /h	H or V18CAC	4.0kW/2.2kW
“ 10m ³ /h	“	“
“ 12m ³ /h	H or V18CAE	5.5kW/4.0kW
“ 15m ³ /h	H or V18CAE	5.5kW/5.5kW

Maximum pressure: 9 bar

Model	kW	A mm	B mm	C mm	D mm	E mm	F mm
V18/AB1	2.2/2.2	789	307	243	40	763/470	480/400
V18/AB2	2.2/4.0	789	307	378	40	898/470	480/400
V18/AC1	2.2/4.0	754	349	365	50	974/489	480/400
V18/AC2	4.0/4.0	754	349	584	50	1193/489	480/400
V18/AE1	5.5/5.5	783	394	473	80	1188/512	480/400
V18/AE2	5.5/5.5	783	394	753	80	1468/512	480/400

- Single phase option available up to CAB2 size pumps

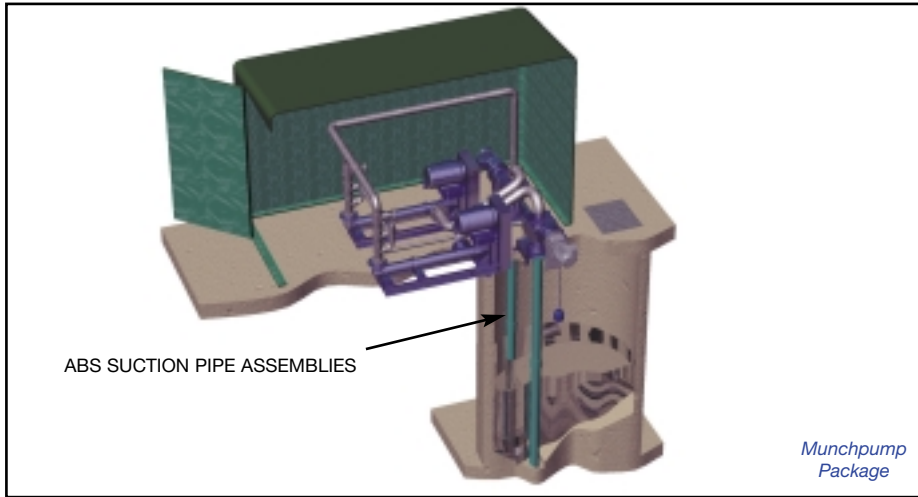


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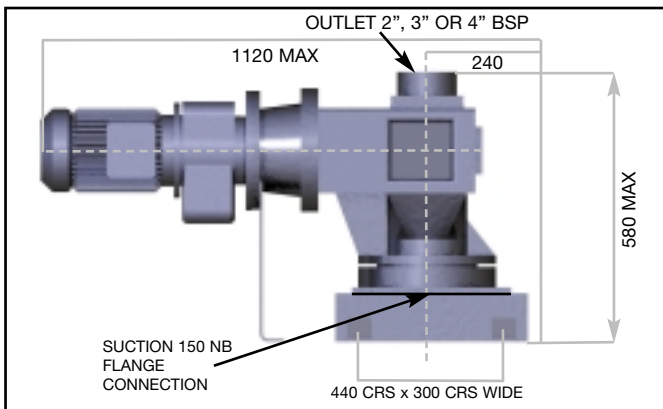
1. Angle of sump benching to bed, 60° (preferred) 30° (minimum)
2. Standard concrete chamber rings available in sizes from 900 I/d to 3000 I/d

Performance Data/Dimensions

Munchpump (flows to 400m³/h - Package includes Mono pump and Muncher)



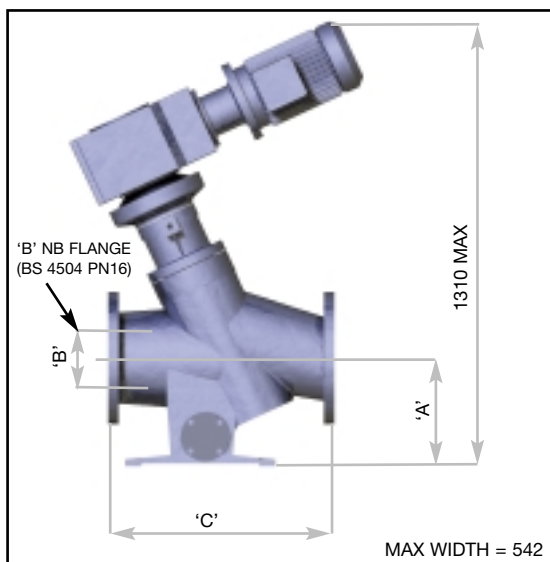
SB Muncher



Flow Rate	Pump Size	Muncher Size
Up to 6m ³ /h	B/E04	CB201 1.5kW
" 15m ³ /h	B/E05	CB201 1.5kW
" 27m ³ /h	B/E06	CB201 1.5kW
" 50m ³ /h	B/E08	CB201 1.5kW
" 50m ³ /h	B/E09	CB201 1.5kW

Maximum pressure: 24 bar

TR Muncher



Flow Rate	Pump Size	Muncher Size
Up to 60m ³ /h	E09	CT203 1.5kW
" 80m ³ /h	E10	CT203 1.5kW
" 120m ³ /h	E12	CT203 1.5kW
" 200m ³ /h	E15	CT203 2.2kW
" 300m ³ /h	E20	CT205 2.2kW
" 400m ³ /h	E20	CT205 2.2kW

Maximum pressure: 24 bar

Dim	Model				
	203C	203D	203E	205F	205G
A	205	230	256	281	332
B	100	150	200	250	300
C	489	540	591	692	794

DIMENSIONS IN MM AND FOR GUIDANCE ONLY

Control Equipment

Grifter	Panel, single compartment IP54, duty only, duty/standby, duty/assist, manual/auto.
Mutrator	Panel, single compartment IP54, duty/standby, duty/assist, manual/auto.
Munchpump	Panel, multi compartment Form 4 IP55, duty/standby, duty/assist, manual/auto PLC overload sensor.

Level Control

Grifter	Auto level switch control via multi position single float switch.
Mutrators/ Munchpumps	Auto level switch control via electronic sensing probes, mercury float switches or other customer specified ultrasonic level sensors.

Sales Support and Service

The Company provides full product and technical support for pumps, grinders, screens, packaged pump systems and ancillary equipment. Quick delivery and easy availability is ensured through Mono's international distributor and authorised repairers network. Full back-up facilities, with metallurgical and chemical experts are also available to solve your system problems and give you expert technical advice:

- Pre sales assistance
- Warranty and after sales service
- Maintenance contracts
- Breakdown service
- Trouble shooting
- Service exchange and refurbishment
- Installation & commissioning
- Laboratory facilities
- Genuine Mono parts



You can call Mono 24 hours a day, should you have a problem with any of our equipment. Mono's team of Service Engineers, who are skilled in both mechanical and electrical aspects of maintenance and repair, are ready to assist and get your equipment back into full working order quickly and efficiently with minimum downtime.

For total peace of mind, we also offer regular planned Maintenance Contracts tailor made to your individual needs.



Mono's electronic selection programme for our Packaged Pumping Systems is now available. Please contact Mono for a copy.

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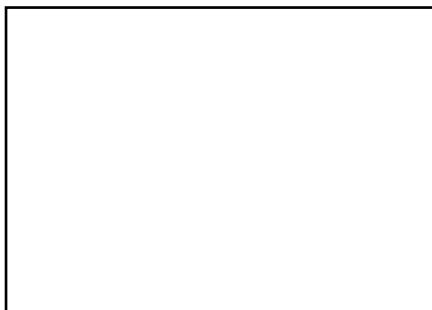
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Please contact the nearest Mono Office for details of your local authorised distributor.

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