

**Technical Specifications
HotRot 3518 Composting Unit
and Ancillary Equipment**

Prepared by

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Introduction

This document provides a brief technical specification of the HotRot 3518 composting unit and associated ancillary equipment.

Specifications are for guidance only and are correct at time of writing but are subject to change without notification.

HotRot 3518

The HotRot composting unit is a U-shaped vessel with a central tine-bearing shaft passing longitudinally through the main vessel. The shaft is rotated periodically to provide mixing and aid aeration. Primary aeration is provided by air injection nozzles positioned along the length of the hull. Excess air is continually drawn from the composting vessel and treated through a biofilter.

The hull of the HotRot 3518 is manufactured using ten precast concrete modules and two concrete end-plates; lids are also pre-cast concrete. These concrete hull modules are generally manufactured locally then transported to site, positioned and post-tensioned together to form an integrated hull module. Once the hull module is assembled then mechanical components such as shaft, bearings, motor and gearbox, and temperature probes and air injection system are all installed.



HotRot 3518 concrete modules being installed

Overall dimensions:	22.0m (l) x 4.92m (w) x 4.25m (h)
Approximate weight empty:	150,000kg
Approximate weight fully loaded:	300,000kg
Main drive:	Brevini SL50005 FAR gearbox, 800,000Nm max. Torque; driven by 3-phase 6-pole electric motor
Air injection:	Four HB729 side channel blowers connected to 4 injection ports each, 3-phase, 4-pole electric motors
Inlet slide gate:	Stainless steel with SEW gearbox, worm drive
Processing capacity:	8.0 – 12.0 tonne per day (typical 9.5-10.5tpd)



HotRot 3518 complete with 20m³ feed hopper; similar to that proposed.

HotRot Exhaust Fans and Ducting

High efficiency Vortex FX or FS series stainless steel centrifugal exhaust fans are supplied with each HotRot composting unit. The fan is mounted directly adjacent to the biofilter and is coupled to a variable speed drive (VSD) to regulate air-draw from the composting vessel.

Flow-rate HotRot 3518:	2500-4000m ³ /h
Working pressure:	1000-1500Pa
Static efficiency:	50-60%
Estimated fan noise:	60-80dBA
Motor:	3-phase, 2-pole, 2800rpm
Ducting:	300mm n.b PVC, solvent joints

Feed Hopper/Auger

The feed hopper / feed auger combination is supplied to enable maximum throughput, provide storage of waste for a period of 1-2 days and minimise operator involvement. The hopper consists of a multi-auger “live-bottom” bin with a nominal capacity of 20 or 40m³ coupled to an inclined and horizontal feed auger. A single feed auger can be used to supply waste to up to 3 HotRot 3518 composting units.

Hopper discharge rate:	10000-14000kg/h nominal at 500kg/m ³ ; hopper would normally operate for 3-4mins per hour
Hopper capacity:	20 or 40m ³
Hopper dimensions:	20m ³ – 4.5m (l) x 2.6m (w) x 1.7m (h, above screws) 40m ³ - 5.5m (l) x 3.2m (w) x 2.3m (h, above screws)
Hopper construction:	5mm mild steel (stainless steel available as an option)
Floor augers:	40m ³ – 6.5m long x 500mm dia variable pitch x 12mm mild steel 100mm NB, Schedule 80 shaft – 6 of
Drives:	Five or Six Brevini torque-arm mounted reduction gearboxes

Exterior surfaces are sand-blasted, zinc-primed and finished with one coat of high-build epoxy (unless manufactured from stainless steel).



Smaller 4.5m³ Feed Hopper and elevating feed auger

Incline feed auger length:	10,800mm
Trough:	u-shaped fabricated from 5mm mild steel, lined with 12mm UHMW abrasive resistant liner, with ship-lap joints
Auger specifications:	450mm dia x 300mm pitch x 20mm thick, carbon steel, shaftless
Drive:	Brevini shaft mounted 12-15rpm 3-phase 4-pole motor
Lids:	2mm 304 stainless steel

HotRot Discharge Auger

A shaftless incline screw conveyor is used to elevate the compost from the back of each HotRot unit to a drop height of approximately 3.5m and transfer the product to a horizontal spreading auger. The spreading auger allows a trailer, bin or skip to be evenly filled with product prior to transfer to storage or screening. Alternatively, the material can be discharge directly into a concrete bunker for periodic clearing by small loader. It is recommended that any bunker, trailer, bin or skip be surrounded by a structure to protect the discharge from wind, which can cause material to be blown around the site.

Incline auger length:	5500-6200mm
Trough:	u-shaped fabricated from 5mm mild steel, lined with 12mm UHMW abrasive resistant liner, with ship-lap joints
Auger specifications:	HotRot 3518 - 400mm dia x 300mm pitch x 20mm thick, carbon steel, shaftless
Drive:	Brevini shaft mounted 12-15rpm, 3-phase 4-pole motor
Lids:	2mm 304 stainless steel



Incline discharge auger installed on smaller HotRot 1811 composting unit

A spreading auger can be used to evenly fill a larger bunker or container. A spreading auger can be any length up to approximately 8-10m and can be fitted with a number of drop-out points sealed with slide gates.

Spreading auger length:	up to 10,000mm
Trough:	u-shaped fabricated from 5mm mild steel, lined with 12mm UHMW abrasive resistant liner, with ship-lap joints
Auger specifications:	400mm dia x 300mm pitch x 20mm thick, carbon steel, shaftless
Drive:	Brevini shaft mounted 12-15rpm, 3-phase 4-pole motor
Lids:	2mm 304 stainless steel

Exterior surfaces are sand-blasted, zinc-primed and finished with one coat of high-build epoxy.

Electrical and Control System

An integrated electrical and control system is fitted with a Beijer T70 HMI¹, or similar, through which the operator can adjust key processing conditions, monitor process temperatures and conditions, and identify and rectify faults. The Beijer HMI is also capable of being viewed directly via a LAN connection; allowing monitoring from remote on-site computers.

The MCC will be supplied as a floor or wall-mount unit for location in a nearby office or control room. On site field wiring is normally conducted by local contractors.

Enclosure:	Rittal IP54 powder coated
PLC:	Compactlogix Ethernet processor
Drives:	One reversing SoftStart for the HotRot main drive, One VSD for the exhaust fan, One reversing DOL starter for each slide-gate DOL starters for each injection fan DOL starter for discharge auger

¹ Human machine interface

Main switch: 150A
Controls: 24Vdc via step-down transformer
Power supply: 380-420Vac, 50-Hz², 3-phase neutral plus earth, power supply must be compatible with VSD drives (i.e. type-B RCD or ELD if present)

A separate small control cabinet containing motor starters and controls specific to the feed hopper may be mounted directly on this unit.



MCC located in small "porta-cabin" building

² Alternative power supply voltage and frequency can be supplied on request.