



Rapid Prototyping Systems



KLM

RAPID PROTOTYPING SYSTEMS

HIGH QUALITY MANUFACTURING

KLM GmbH (Inc.) was incorporated as a medium-sized family-owned and -managed enterprise in 1997 manufacturing rapid prototyping systems, which has managed to establish itself on global markets through innovation, quality and service. The range of product systems covers small manual vacuum chambers through to complete systems for vacuum casting in series production.

KLM provides a complete through-put service right through from the planning of the equipment, via the production processes to the consignment of the finished product and the subsequent training for the customer on site by the KLM qualified coaching personnel.

The KLM team has many years of experience in vacuum-casting techniques in rapid prototyping technology. On these grounds alone, KLM knows what customers need: reliable equipment for vacuum- and precision-casting processes as well as the associated periphery, such as thermal furnaces and also casting materials and mould ancillaries.

KLM GMBH (INC.)
20 YEARS OF
WORLDWIDE SERVICE
WITH INNOVATION
AND QUALITY!

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PRODUCTION

Quality and innovation are particularly important features for KLM in the development and production of the equipment. KLM therefore manufactures exclusively in its own production facilities and employs only selected and high-grade quality components from preferred prodigious suppliers.

As an extra service feature, KLM also provides special appliance- and equipment constructional services for vacuum-, dosage- and mixing appliances, as well as production-process integration services of a variety of thermal-curing routines and UV-techniques. KLM is an overall through-put services provider for conceptioning and engineering and can inter-connect various techniques together and integrate these into existing systems.

ACCESSORIES

Customers can place orders for their daily requirements with the equipment 'online' at the KLM 'Vacuum Casting Shop' rapidly and conveniently. The quality of the accessories available at the KLM Online Vacuum Casting Shop has already proved itself with many customers.



VACUUM CHAMBERS

On the basis of its vacuum-casting techniques and silicon equipment, KLM can also provide extensions and additions to this equipment by way of modular constructional features. The conceptioning and manufacturing of customer-specific equipment is at all times possible in the KLM works.

Individual training courses can also be organised, tailor-made to address the requirements of customers, in order to ensure an effective commercial exploitation of the equipment as well as the introduction of production-process safety. Such training courses are conducted by specialised instructors, having themselves many years of technical experience, and on the other hand can provide that all important innovative 'cutting-edge', on the basis of the trials carried out in the KLM works on new techniques and working materials.

KLM will also lend subsequent backup support to its customers in project work in the form of providing technological assistance. KLM can also subsequently collaborate with its customers in the selection of production processes and working materials, for example and offer practice-oriented problem-solution approaches for specific problem enquiries.

COMPONENTS:

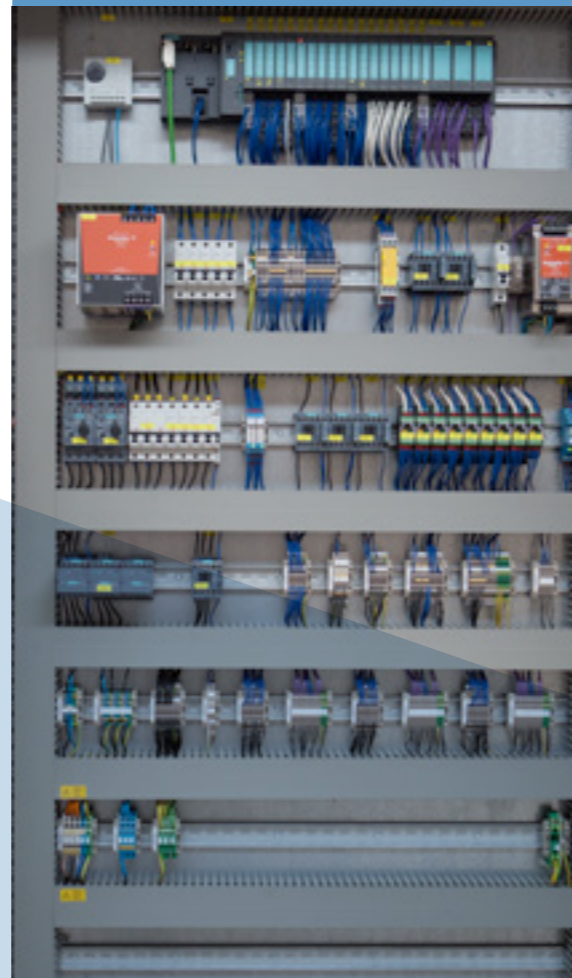
KLM always employs only selected and high-grade quality components and system elements from preferred prodigious suppliers.



QUALITY:

- » KLM manufactures its equipment in its own production facilities in accordance with the latest safety standards.
- » All KLM components are either produced in the KLM works or obtained from preferred prodigious suppliers.

MADE IN GERMANY



THE V 400 VACUUM CHAMBER MODELS

V 400 V 1000 V 1500 2000 XXL



V 400 M:

- » an economically affordable and effective start-up model
- » manual control facility
- » manual fully integrated
- » Ideal for training and development purposes.

OPTIONAL:

Pedestal underframe.



V 400 A:

- » economically affordable production model for small casting mould sizes
- » removable casting system and thus employable as just a vacuum chamber (not as 'AD')
- » 'PLC' control facility
- » graphic display
- » ideal for prototypes and small series.

OPTIONAL:

Pedestal underframe, wax cup, wax module, turntable

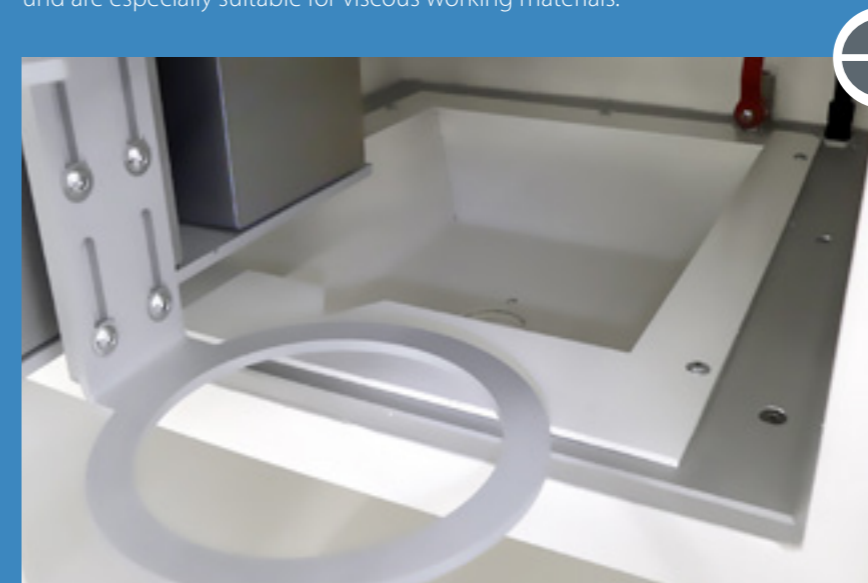


- » ECONOMICALLY AFFORDABLE MODEL
- » AND EFFICIENT

THE V 400 VACUUM CHAMBER DIFFERENTIAL PRESSURE MODEL:

The V 400 Manual and Automatic Models also have a differentiated pressure version with integrated differential pressure board.

The differential pressure versions are available in V 400 MD and V 400 AF versions und are especially suitable for viscous working materials.



THE V 1000 VACUUM CHAMBER MODELS

V 400 V 1000 V 1500 2000 XXL



DIFFERENTIAL PRESSURE:

The V 1000 Basic and Automatic Models are also available in differentiated pressure versions with integrated differential pressure boards.

The differential pressure versions are especially suitable for viscous working materials.



V 1000 B:

- » an economically affordable and effective start-up model
- » control via operating buttons
- » removable casting module
- » ideal for training and development.

V 1000 A:

- » 'PLC' control facility
- » display and control panel via touchscreen with recording function (the production process is recorded once and can then be saved, stored and repeated).



- » casting volume capacities: 600 ml, 1000 ml and 2000 ml
- » removable casting module
- » metal housing with powder-coated finish
- » entire interior chamber without the module
- » is usable as a vacuum chamber



OPTIONEN:

- » pedestal underframe
- » differential pressure facility
- » wax cup
- » wax module
- » attachable extra chamber
- » electrical lifting gear
- » turntable



THE V 1500 VACUUM CHAMBER MODEL

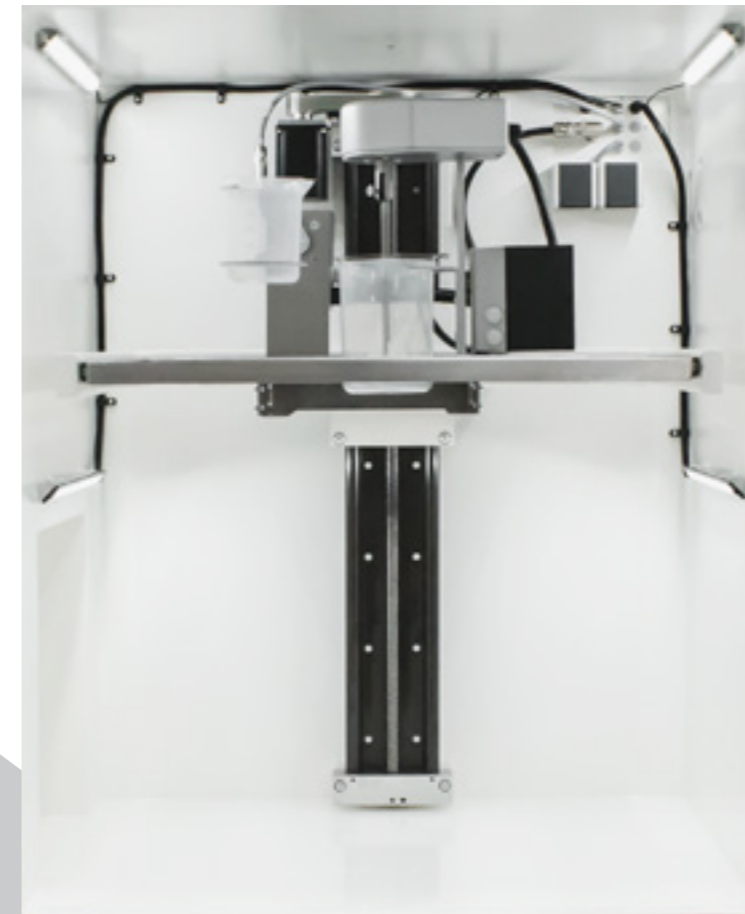
V 400 V 1000 V 1500 2000 XXL



DIFFERENTIAL PRESSURE:

This Model is also available in a differential-pressure version with integrated differential pressure board. The differential-pressure version is supplied without lifting gear.

The differential pressure versions are especially suitable for viscous working materials.



THE V 1500 MODEL:

Production equipment,
Touchscreen display
The casting system can be
mounted on lifting gear

OPTIONS:

- » Pedestal underframe
- » differential-pressure version
- » wax cup
- » wax module
- » attachable extra chamber
- » electrical lifting gear
- » turntable

CHARACTERISTIC FEATURES:

- » casting volume capacities: 600 ml, 1000 ml and 2000 ml
- » removable casting module
- » metal housing with powder-coated finish
- » bright interior illumination
- » entire interior chamber without the module is usable as a vacuum chamber



THE V 2000 VACUUM CHAMBER MODEL

V 400 V 1000 V 1500 2000 XXL

The V 2000 is the basic model for the series manufacturing of large production items

The vacuum chamber is equipped with programmable processing routines and a separate operable lifting gear facility.

The V 2000 Model is characterised by its possibilities of individualised series-casting routines. Very large production items are possible in series manufacture in its large moulding chamber.

KLM has developed its own 'SC' System for series manufacturing processes, which rounds off the entire automation routine.

CHARACTERISTICS:

- » » overall achievable total volume capacity: 10,000 ml
- » 2 casting modules available, separately- fitted and -controllable
- » casting volume capacities: 1000 ml, 2000 ml and 5000 ml
- » 'PLC' control facility
- » display and control panel via touchscreen with recording function (the production process is recorded once and can then be saved, stored and repeated)
- » metal housing with powder-coated finish
- » bright interior illumination
- » integrated lifting gear for the casting system – thus no mould lifting gear required.



DIFFERENTIAL PRESSURE:

This Model is also available in a differential-pressure version with integrated differential pressure board. The differential-pressure version is supplied without lifting gear.

The differential pressure versions are especially suitable for viscous working materials.



OPTIONS:

- » Differential pressure
- » Differential pressure module
- » wax cup
- » wax module
- » turntable
- » attachable extra chamber
- » roller conveyor

THE V 2000 XXL VACUUM CHAMBER MODEL

V 400 V 1000 V 1500 2000 XXL

The V 2000 XXL is the extended basic model for the series manufacturing of large production items

The vacuum chamber XXL is equipped with programmable processing routines and a separate operable lifting gear facility. Very large production items are possible in series manufacture in its large XXL moulding chamber.



- » overall achievable total volume capacity: 10,000 ml
- » 3 casting modules available, separately- fitted and -controllable
- » casting volume capacities: 1000 ml, 2000 ml and 5000 ml
- » 'PLC' control facility
- » display and control panel via touchscreen with recording function (the production process is recorded once and can then be saved, stored and repeated)
- » metal housing with powder-coated finish
- » bright interior illumination
- » integrated lifting gear for the casting system – thus no mould lifting gear required.

OPTIONEN:

- » Differential pressure module
- » Differential pressure module
- » wax cup
- » wax module
- » turntable
- » attachable extra chamber
- » roller conveyor

DIFFERENTIAL PRESSURE:

This Model is also available in a differential-pressure version with integrated differential pressure board. The differential-pressure version is supplied without lifting gear.

The differential pressure versions are especially suitable for viscous working materials.



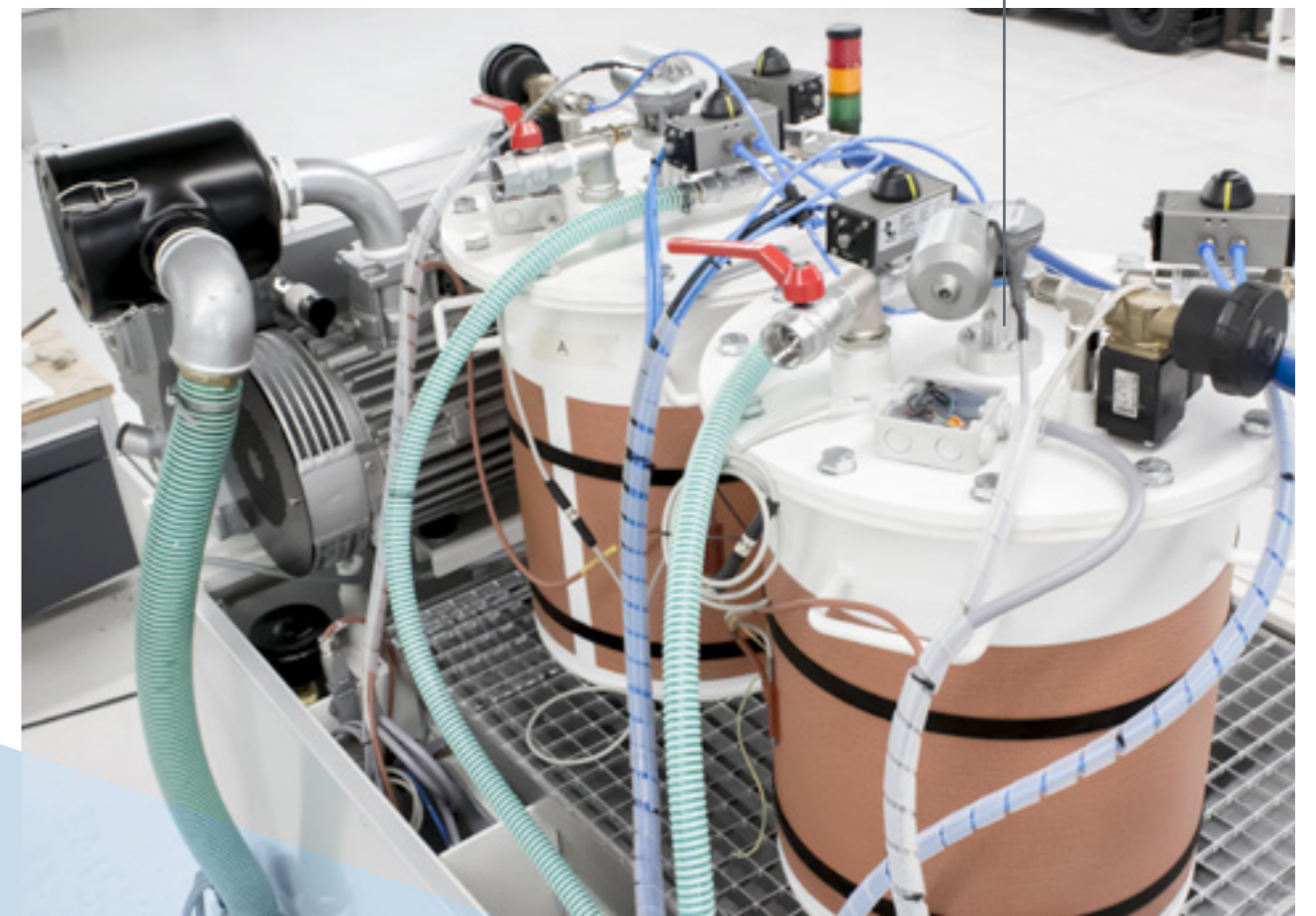
SERIES CASTING SYSTEM



The automatic dosing of 2 components.

Automated programmable weighing of the components and subsequent concurrent mixing and casting.

Pre-vacuumed immediately usable working materials feed for the 2 components.



MODULES

A variety of modules for the extension- and the performance-improvement -of production routines.

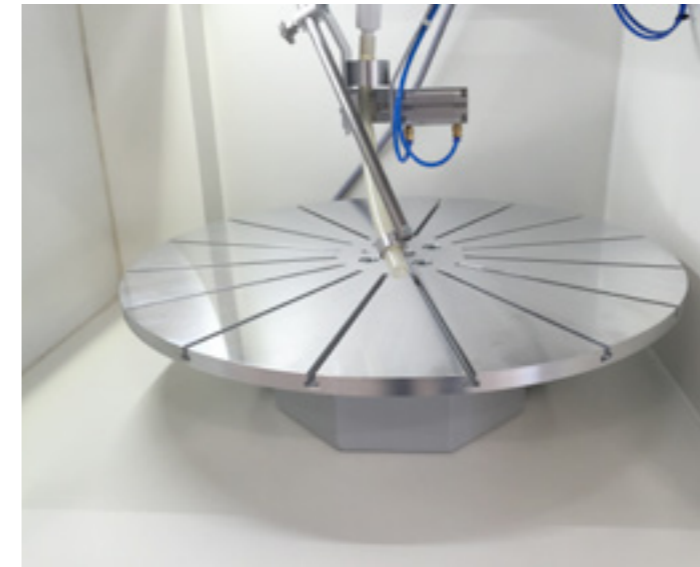
DIFFERENCE PRESSURE MODULE

The Difference Pressure Module is exchangeable and can be replaced by the standard KLM Standard Casting System

- » maximum casting volume: 4 litres
- » heatable temperature regulation up to 80° C
- » mixing and dosing of the working material in a high-performance blade-mixer- / -agitator
- » differential pressure possible up to 1.0 bar in the blade-mixer- / -agitator mixing vessel; the working material is then
- » cast via a riser-standpipe
- » a cut-off mechanism on the filling hose and a pressure gauge enable an ongoing supervision of the casting routine
- » control facility via a touchscreen display



TURNTABLE



Programmable casting routines

- » turntable settable in various positions
- » dosage valve for dosing routines on the turntable
- » control facility for the turntable and the dosage valve via touchscreen display
- » program recordable and subsequently recallable
- » a variety of possible turntable layouts



WAX CUP

The wax cup is integrated in the casting system

- » stainless-steel cup with heating jacket
- » interface facility for an external control facility
- » heating temperature individually settable

WAX MODULE

For the vacuum pouring of casting wax into silicon moulds

- » casting volume: 2 litres
- » electrical rating- / capacity: 250V and 750W
- » temperature display
- » temperature regulating stages: +/-2° C / 50° C to 110° C
- » with an adjusted lifting-gear facility to the wax module



SILICON DOSAGE APPLIANCES



Both the S 20 and S 200 Silicon Dosage Appliances provide the possibility of rapidly and economically creating silicon working tools and silicon components

S 20 / S 200

- » Large time-savings: expensive preparation routines become unnecessary, such as weighing, mixing and vacuuming
- » directly conveyable from original dunnage
- » dynamic mixer enabling an intensive- and bubble-free –blending-/ mixing of both components
- » highly viscous silicon and silicon combined with fillers can be processed
- » rigidly coupled-up piston dosage system for a volumetric and absolutely constant mixing ration of both the components

Discharge rate up to 240 litres-/ hour
Fixedly set mixing ratio
ratio: 100 to 10 (as required)



NEW: S 200 A

with a variable mixture ratio

OPTIONS:

- » 'PLC' control facility
- » 3-component mixing head
- » interconnection to other processing routines.

THERMAL FURNACES

The thermal furnace appliances from KLM provide ongoing and continuous first-class quality and process safety, no matter whether with ambient- or forced airflows, for drying- and heating –purposes. These heating cabinets are universally usable – through the enormous temperature range between 5° C above ambient temperature right up to 300° C. The short heating-up times and high capacity reserves are ideal for all applications in science, research and industry.



INDIVIDUAL THERMAL FURNACES

If you are a customer requiring special thermal furnaces for its production needs, then do not hesitate to contact KLM for individual- problem solutions, -forms, -sizes and –equipping. Everything is individually adjustable.



VACUUMED FURNACE

For drying purposes without any residue, incrustation and oxidisation –and all these benefits facilitated under conditions of a 'soft' working programme of the appliance. The vacuum drying cabinet from KLM meets the requirements of scientific research and industrial use to an excellent extent.

PRESSURISED FURNACE

The KLM pressurised furnace is for drying and/or curing working materials under pressurised conditions. The appliance has two operating modes. In the first operating mode, the pressure rises linearly independent of the temperature. In the second operating mode, the stagewise increase in pressure and temperature can be programmed in advance.



ONLINE-SHOP



EVERYTHING FROM ONE SINGLE SUPPLIER!

In the KLM online shop, customers will find practically everything required for working processes and procedures – accessories, consumables or useful tools.

www.vacuumcasting.de



KLM ENGINEERING

Quite apart from the services provided by KLM with its standard sales programmes and the silicon dosage equipment, it can also offer 'engineering' services as well.

KLM provides problem solutions with specialised equipment for vacuum-, dosage and -mixture equipment and appliances, as well as for the associated production-process integration, in conjunction with a variety of thermal curing processes and also UV-techniques.

KLM can today fall back on its own equipment and specialised systems going back over the technical experience of many years in its own business, as well as relying on the support of its reliable suppliers.

KLM will also provide tailor-made training courses on the KLM products, as required for the workforces of its customers.



INNOVATION

KLM also falls back on the technical experience gained from its customers on an ongoing basis, and enjoys such innovative inspiration to the extent, that it develops correspondingly in conjunction with customers, new forms of equipment to ensure that its customers can produce even more effectively and economically.



A SURVEY OF KLM EQUIPMENT AND APPLIANCES

TECHNICAL DETAILS:



V 400

Dimensions (H x W x D) in mm	
Mould interior space volume:	360x400x460
Chamber internal volume:	700x400x460
External dimensions:	1100x790x530
Exhaust ventilation time:	90 secs.
Input aerating time:	20 secs.
Vacuum chamber ultimate pressure:	0,5 mbar
Pump capacity:	25 m ³ /h
V 400 M:	
Casting volume:	600ml
Elec. rating / capacity:	230 V / 50 Hz
Control facility:	manual
V 400 A:	
Casting volume:	600ml oder 1000ml
Elec. rating / capacity:	400 V / 50 Hz
Control facility:	'PLC', graphic display, automation mode, parameter programming with (20 programs).
V 400 MD/AD:	
Differential pressure facility	



V 1000

Dimensions (H x W x D) in mm	
Mould interior space volume:	500x600x670
Chamber internal volume:	1000x600x670
External dimensions:	1300x1100x750
Exhaust ventilation time:	90 secs.
Input aerating time:	20 secs.
Vacuum chamber ultimate pressure:	0,5 mbar
Pump capacity:	40 m ³ /h
Elec. rating / capacity:	400 V / 50 Hz
Overall elec. connection rating:	3 KVA approx.
Maximum:	16 A
Elec. current supply:	3-phase N. PE
V 1000 B:	
Control facility:	manual
V 1000 A:	
Control facility:	'PLC', graphic display, automation mode, parameter programming with 20 programs.
V 1000 BD/AD:	
Differential pressure facility	



V 1500

Dimensions (H x W x D) in mm	
Mould interior space volume:	700x1000x800
Chamber internal volume:	1200x1000x800
External dimensions:	1500x1500x900
Exhaust ventilation time:	240 secs.
Input aerating time:	20 secs.
Vacuum chamber ultimate pressure:	0,5 mbar
Pump capacity:	100 m ³ /h
Elec. rating / capacity:	400 V / 50 Hz
Overall elec. connection rating:	3 KVA approx.
Maximum:	16 A
Elec. current supply:	3-phase N. PE
V 1500 AD:	
Differential pressure facility	



V 2000

Dimensions (H x W x D) in mm	
Mould interior space volume:	850x1500x900
Chamber internal volume:	1500x1500x900
External dimensions:	2500x1900x1600
Exhaust ventilation time:	240 secs.
Input aerating time:	30 secs.
Vacuum chamber ultimate pressure:	0,5 mbar
Pump capacity:	250 m ³ /h
Electrical rating / capacity:	400 V / 50 Hz
V 2000 D:	
Differential pressure facility	

S20/200

Dimensions (H x W x D) in mm	
Pressure	8 bar
Blending-/ mixture ratio:	100 : 10 (or as specifically ordered)
Electrical rating-/ capacity	230 V/ 50 Hz
S 20	
External dimensions	1800 x 1200 x 800
Conveyor capacity 1 / per min.	2 - 3
S 200	
External dimensions	1800 x 1800 x 1000
Conveyor capacity 1 / per min.	3 - 4
S 200 HP	
External dimensions	1800 x 1800 x 1000
Conveyor capacity 1 / per min.	6 - 8
Electrical rating-/ capacity	400 V/ 50 Hz



V 2000 XXL

Dimensions (H x W x D) in mm	
Mould interior space volume:	1000x2000x1000
Chamber internal volume:	1700x2000x1000
External dimensions:	2200x2400x1800
Exhaust ventilation time:	240 secs.
Input aerating time:	30 secs.
Vacuum chamber ultimate pressure:	0,5 mbar
Pump capacity:	305 m ³ /h
Electrical rating / capacity:	400 V / 50 Hz
V 2000 XXL D:	
Differential pressure facility	



NEW:
THE S 200 AUTOMATIC MODEL
 Including individually settable blend-/ mixture ratios.

WORLDWIDE EXPERTISE



bertrandt

MINOKO

materialise

SINTEF

PROTOTAL



The KLM online shop for accessories, consumables or useful tools!

www.vacuumcasting.de

KLM GMBH

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