Spinning

füller
GLASTECHNOLOGIE

Linear Spinning System

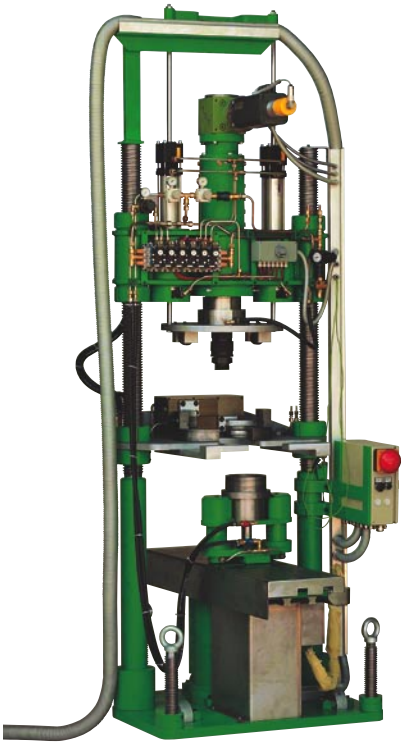
APPLICATION

The spinning manufacturing mode is designed to produce glass items with décor and items with flared rims which meet highest demands in the surface quality. The spinning system may be combined with gob feeding and continuous casting (in combination with the horizontal movement of the telescope unit and the vertical movement of the lower servo-motor system).

Füller Glastechnologie Vertriebs-GmbH
Industriestraße 1
D-94518 Spiegelau

T +49-(0)-85 53-518
F +49-(0)-85 53-514
info@f-gt.de
www.f-gt.de

GLASS ITEMS	dishes, bowls, lampshades, plates
TYPES OF GLASS COMPOSITION	lead glass, soda-lime glass, recycling glass, borosilicate glass
DIMENSIONS OF GLASS ITEM	standard machine layout: - diameter: up to 400 mm - height: up to 300 mm XXL-version: - diameter: up to 600 mm - height: up to 400 mm
GLASS QUANTITY / WEIGHT OF GLASS ITEM	30 g to 10 kg (covering the capacity of the feeder)
PRODUCTION RATE	single station system: 0,5 piece/min. (i.e. 1 item in 2 min.) to 3 pieces/min. two station system: 1 piece/min to 6 pieces/min.



MODE OF OPERATION

The spinning mould is mounted onto the telescope unit, which moves the spinning mould into different positions. In the feeding position, the spinning mould is supplied with a precisely defined quantity of glass by the feeder. The telescope unit then moves the mould into the spinning station. If necessary, the shearmark may be re-heated by infrared burners, before the revolving mould lid and protective device is lowered and the spinning process is started. The mould lid and protective device are moved by the upper servo-motor system. The rotation profile of the spinning process (rotational speed and time) is based on a fully electronically controlled servo-motor system. The graphic tool of the MMC-software helps to adjust the spinning profile to the design requirements of the glass item and to achieve optimal parameters directly, while the movement parameters are precisely translated by the servo-motor system. All production steps, including the cooling time, are individually adjusted to the requirement of the article, since the production cycle is fully electronically controlled. Finally the glass item is fully automatically taken out.

FEATURES

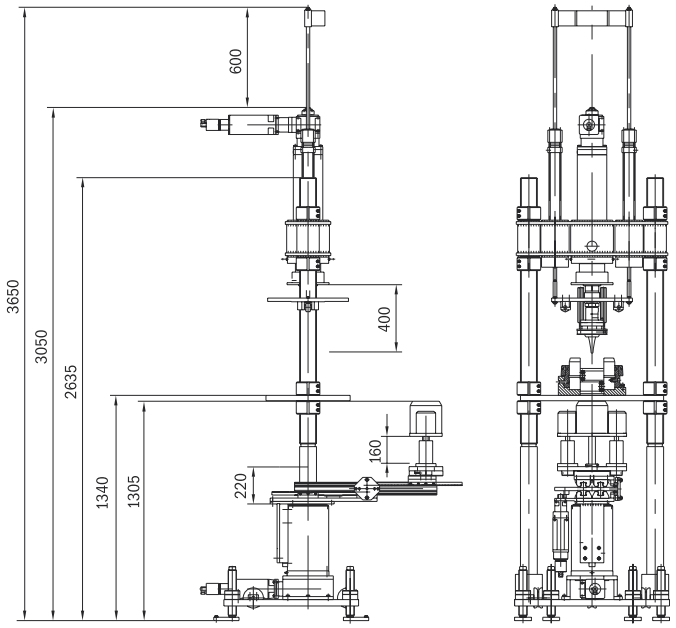
very high and consistent quality	• because the telescope unit moves the mould under the orifice of the feeder and the glass is fed into the mould directly • because the two servo-motor systems – vertical and horizontal movement of the mould – allow a precise positioning of the mould for feeding • since the risk of cord caused by overlaps is eliminated because the electronically controlled positioning of the mould ensures a filling process which is individually adjusted to the mould • due to highly efficient infrared burners which eliminate the shearmark • due to an electronically controlled servo-motor spinning adaptor which allows a precise speed control and an optimal speed profile • due to electronic control and attemperator systems providing optimal mould temperatures
very high surface quality	• because the spinning process enhances the surface quality by stretching the surface • because a pneumatic kick-out system allows to work with very high glass temperatures eliminating the risk of flow-lines and providing excellent surface quality
very high quality of heavy glass items	• because a fully electronically controlled servo-motor system (providing for the vertical movement of the substation) allows to lower the mould while being filled in order to keep a minimum distance between the orifice of the feeder and the base of the mould and guarantees a carefully tuned filling process
very flexible production	• because up to three linear systems may be alternately (independently but synchronised with each other) fed by the feeder – thus meeting the capacity of the feeder, while tool costs are reduced to a minimum and an extremely flexible production is guaranteed • due to a quick-change system for the mould lid and the mould (three-jaw chuck) reducing job-change times to a minimum • due to easy job-changes since the MMC-software provides an efficient product management tool which stores the adjustments of all production parameters under the specific name of the glass item and provides optimal production parameters for later resumption of production
very high productivity	• because the servo-motor based telescope unit is freely programmed so that an optimum production cycle may be achieved, guaranteeing minimum time-loss between the take-out position and the new feeding cycle • a two station system allows to double the production capacity

FEATURES

easily adapted to any existing production surroundings	• because the telescope unit is compatible with different feeding systems: manual feeding, ball feeder and all other available feeder systems
large cost-savings	• because the décor spinning-moulds replace cost-intensive engraving, cutting and acid-polishing • because tool costs are significantly reduced since only one mould for each item is required • due to a mould-check system, which eliminates the risk of damaging the spinning tools if moulds are not empty and reduces standstills for tool changes and maintenance to a minimum
optimal production conditions	• because the relevant parameters may be altered while the machine is in operation and optimal results may thus be achieved immediately • because the MMC-software facilitates noting, connecting and keeping record of all adjustments and events and helps to efficiently control and monitor the production process
extremely user-friendly	• due to the uncomplicated user menu of the MMC-software • due to the MMC-software's graphic programming tool which includes all movement cycles and the spinning process

TECHNICAL DETAILS

ELECTRICAL SUPPLY	3/N/PE AC 50/60 Hz 230/400 V 3 x 220 V optional
COMPRESSED AIR	0,5 – 0,6 MPa
DISTILLED COOLING WATER IN THE CIRCULATION	0,3 MPa
GAS	5 kPa
OXYGEN	0,5 Mpa



THE PACKAGE INCLUDES

BASIC EQUIPMENT

- base plate, 2 columns and a crossbeam
- telescope unit for linear horizontal movement
- servo-motor system for the vertical movement of the mould (reducing the distance between the mould and the orifice of the feeder to a minimum)
- mould plate (with quick change system: three-jaw chuck)
- pneumatic kick-out
- mould checker

SPINNING EQUIPMENT

- fully electronically controlled servo-motor spinning unit (allowing a defined spinning profile)
- fully electronically controlled servo-motor system performing the vertical movement of the mould lid or the protective device
- holder for the mould lid

TEMPERATURE REGULATION

- optic system for the temperature control of the mould
- cooling system for the glass item (airmover, based on injector principle)

ELECTRONIC CONTROL SYSTEM

- PC-based real time system with MMC-software and Windows 2000 operating system, incl. cooling system

OPTIONS

MACHINE LAYOUT

- standard (for standard mould sizes)
- XXL (for extremely large moulds)

PERFORMANCE OF SPINNIG UNIT

- up to 2000 rpm

MOULD EQUIPMENT

- air-cooled mould plates / mould holders
- water-cooled mould plates / mould holders
- electrically isolated mould plates / mould holders
- quick change system for mould plates / mould holders
- mould holder for block moulds

TEMPERATURE REGULATION FOR THE TOOLS

- optic system for measuring the temperature of the tools

cooling

- air-cooling / air manifold
- airmover based on injector principle
- airmover based on water/air-mixture
- water-cooling (closed circulation)

FUNCTIONAL STATION EQUIPMENT

- station for re-heating the shearmark
- burner system for fire-polishing rims or seams
- pneumatic kick-out
- mould-checker (control system which assures that the mould is ready to be re-filled)
- fully automatic take-out device (mechanical gripper or vacuum)

EXTENSIONS

- Four-in-One Combi-System (combination of injecting, pressing, spinning and/or casting manufacturing mode)

ELECTRONIC CONTROL

- external control panel, when there is insufficient space to install the control panel close to the press