



Parallel Shear Unit

APPLICATION

The shear unit cuts the glass stream as it leaves the orifice of the feeder. The servo-motor based shear mechanism in combination with the MMC-software provides optimal conditions for a high-precision and high-speed cutting process.

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

TYPES OF GLASS COMPOSITION	lead glass, soda-lime glass, recycling glass, borosilicate glass
GLASS CONTACT	less than 50 msec.
CUTS / MIN.	up to 120 cuts/min (linear motor systems)
SPEED / ACCELERATION	speed: up to 10 m/sec.; acceleration: up to 30 g

MODE OF OPERATION

Shear Unit, based on Servo-Motor System

The two shearing arms are horizontally opened and closed by a rack-and-pinion drive. The shearing blades, which cut the glass, are mounted onto the shearing arms. The shearing arms are vertically adjustable while the shearing blades are also horizontally adjustable. This allows to fine-tune the shearing process to its optimum, since the movement profile of the shearing arms and the shearing cycle are controlled through the MMC-software's graphic tool, which is precisely relayed to the shear mechanism via the servo-motor system. Glass temperature reduction due to shear blade contact is reduced to a minimum due to the very high shearing speed: glass to shear blade contact is around 50 msec.

Shear Unit, based on LINEAR Servo-Motor System

In order to increase the shearing precision (for extremely high quality requirements) and the capacity (cuts/min.), the linear movement of the shearing arms may also be carried out by two highly dynamic linear servo-motor systems. The shearing arms are mounted onto two slides, while two magnetic plates, which are installed underneath the slides, allow the shearing arms to follow the linear movement of the magnetic field. The electro-magnetic linear motor and the positioning sensor are mounted onto the watercooled static part of the slide. This reduces wear, since the media-supply (cooling water and current) are no moving parts. Since the linear movement is based on electro-magnetism, mechanical parts such as rack-and-pinion, spindles etc. are replaced – reducing the risk of any mechanical backlash. The inertia moment of rotating parts as well as the risk of overshoot distortion of the shear blades while shearing is thus also eliminated.

THE PACKAGE INCLUDES

SHEAR MECHANISM

- one unit servo-motor drive or two units linear servo-motor systems
- mechanically height adjustable shearing arms
- 1 pair of shear blades
- cylinder for the emergency opening device or two cylinders for linear servo-motor shears
- spray nozzles with holders and valves for cooling and greasing

ELECTRONIC CONTROL

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

OPTIONS

STROKE LENGTH

- varying stroke lengths according to the mould diameters: 100 mm – 500 mm per shearing arm



Shear Unit, based on Servo-Motor System

<p>no deterioration of the glass quality provided by the feeder</p>	<ul style="list-style-type: none"> • since any glass temperature reduction due to shear blade contact is reduced to a minimum (glass to shear contact – ca. 50 msec.) • since a reduced glass contact improves the conditions for re-heating the shearmark in the gob and on the surface of the glass • due to a precise positioning of the gob (especially centred gob) with no additional mechanical parts (and no additional glass-to-metal-contact)
<p>large cost-savings</p>	<ul style="list-style-type: none"> • due to an extremely precise movement of the mechanical parts and reduced glass contact (equalling reduced heating of the shear blades) – reducing wear and extending the service life of the blades
<p>highly flexible production</p>	<ul style="list-style-type: none"> • 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
<p>easily adapted to any existing production surroundings</p>	<ul style="list-style-type: none"> • due to its compact construction which ensures that the shears may be mounted underneath practically all feeder systems
<p>optimal production conditions and extremely user-friendly</p>	<ul style="list-style-type: none"> • due to an electronic control system based on the MMC-software (please refer to the advantages of the MMC-software on the separate data-sheet „electronic control“)

Shear Unit, based on LINEAR Servo-Motor System

<p>increased number of cuts/min.</p>	<ul style="list-style-type: none"> • due to minimal mass and reduced inertia moment, which increases acceleration and deceleration and allows to move the shearing arms with higher speed
<p>extremely high precision</p>	<ul style="list-style-type: none"> • because the shearing arms are fully electronically controlled via the MMC-software which allows to store the data and thus to consistently reproduce optimal results • because the shearing arms are independently controlled which allows to achieve an optimal intersection and cutting position • because μm-resolution is possible (depending on the sensor system)
<p>drastically reduced wear and increased life-span</p>	<ul style="list-style-type: none"> • because no electrical components and sensors are mounted onto the movable parts of the slide, which eliminates the risk of damaged cables • because there are no mechanical wearing parts besides the slide bars – reducing service times drastically • because the magnetic system of the linear motors guarantees an absolutely backlashfree movement
<p>very efficient cooling</p>	<ul style="list-style-type: none"> • because the static motor-system is cooled, so that movable parts do not need to be supplied with any cooling agent
<p>very compact construction</p>	<ul style="list-style-type: none"> • because the components of the shear unit – shearing slide, the shearing arms and magnetic plates – are constructed in a highly functional way • because no cable-rack and no motor or driving systems are necessary