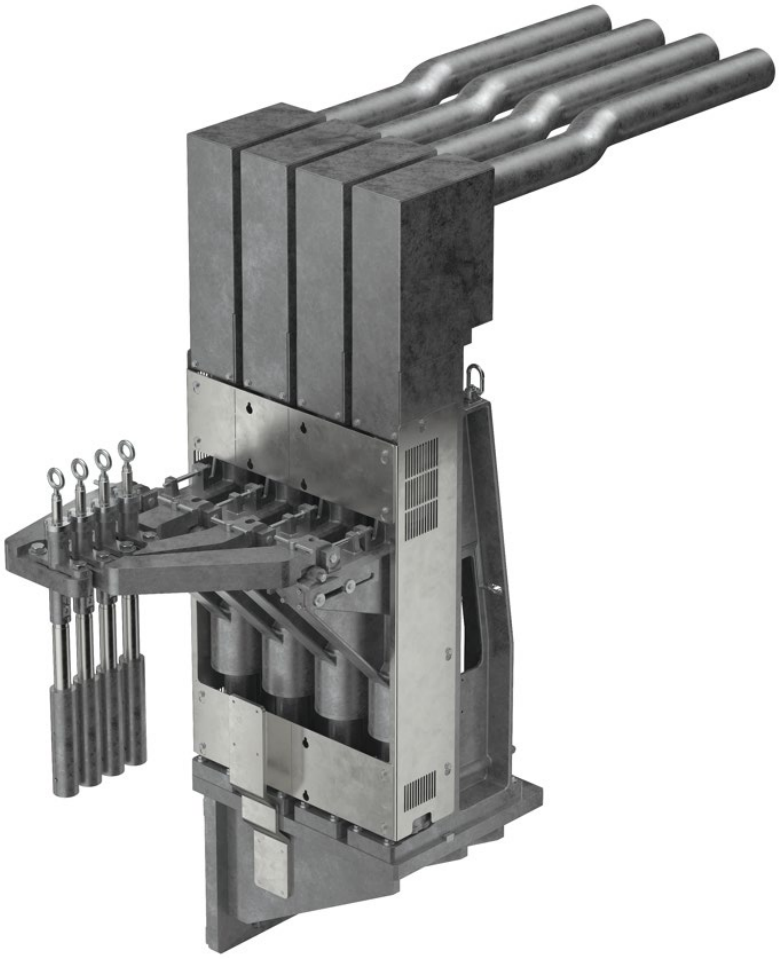
BUCHER
emhart glass

Technical News Bulletin

Steinhausen, September 2022



570 Multi Drive Servo Feeder Plunger

Integral part of SMARTFEEDER™

- Individual needle motion control.
- Compensate for the lack of glass homogeneity in the refractory spout.
- Process control integration.
- Multi Drive Feeder Plunger, together with the 575 Dual Drive Shear, makes the advanced hardware of SMARTFEEDER.

Introduction

Based on the consolidated hardware of the 570 Servo Feeder Plunger mechanism, the 570 Multi Drive Servo Feeder Plunger is designed to meet the market request for an advanced gob forming and a higher integration with process controls.
With the 570 Multi Drive Servo Feeder Plunger, each refractory plunger needle is individually driven by a servo motor, giving the possibility to use independent motion and strokes for each plunger to compensate for the lack of glass homogeneity inside the spout bowl.

570-1006 Multi Drive Feeder.

The 570 Multi Drive Servo Feeder Plunger is designed as a modular mechanism.

Each module is driven by an independent servo motor with adjustable plunger height from 0 to 120 mm and adjustable plunger stroke from 0 to 178 mm.

The independent servo drives give the possibility to move every single axis with a dedicated motion and stroke allowing for an optimal gob shape definition by compensating the potential glass inhomogeneity in the refractory spout.

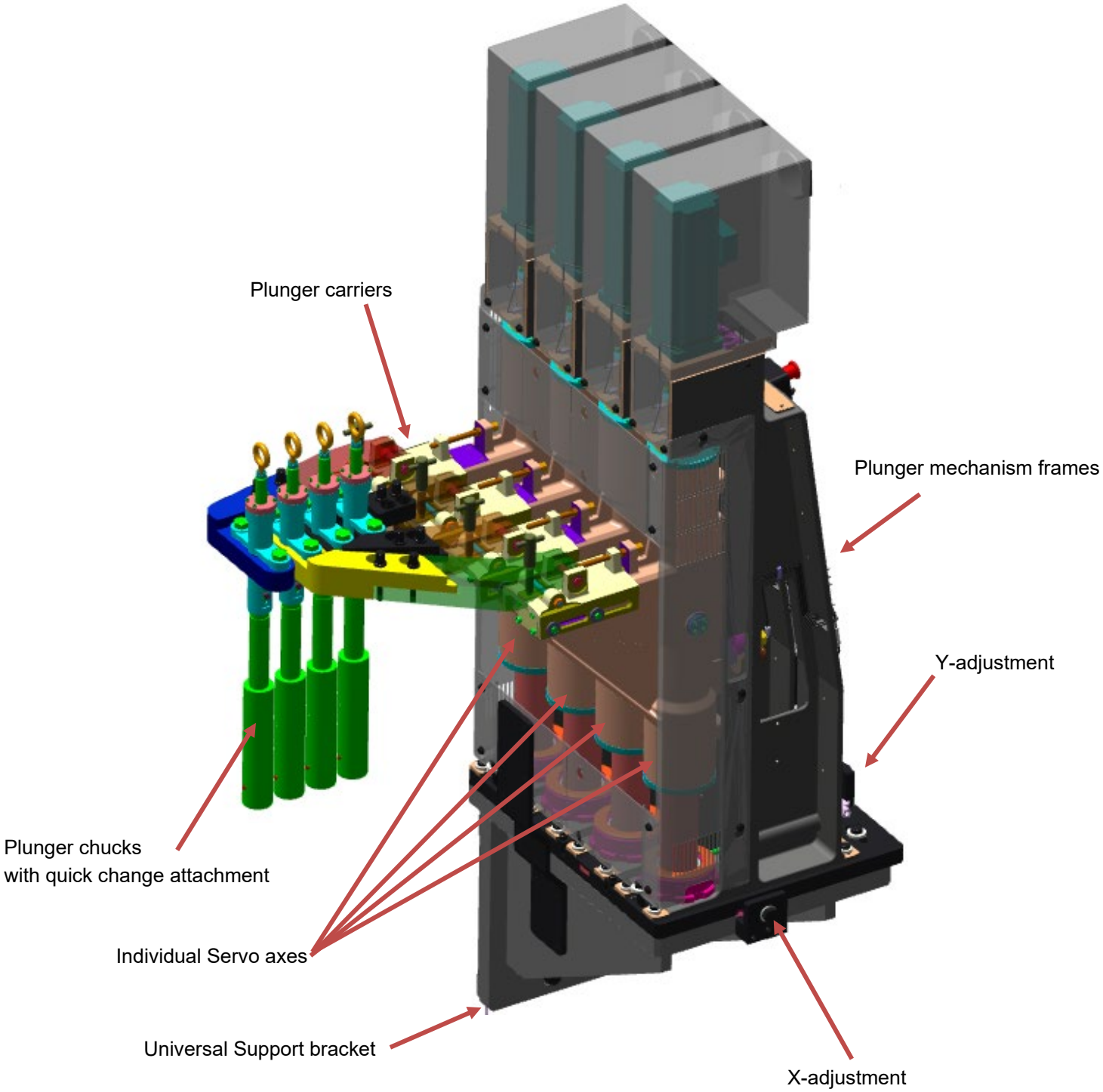
The design of the individual plunger carriers allows also for an easier configuration and conversion of the system: triple, double and single gob configurations use the same components as used for the quadruple gob. A cavity conversion is easily performed by removing the unused carriers and by re-aligning the others with a fixture.

Each carrier arm consists of two pieces, featuring a quick-change design for easier plunger chuck and refractory needle replacement.

Each refractory needle can be individually replaced by moving the selected cavity to the highest position. This feature makes also all the maintenance activities easier and safer.

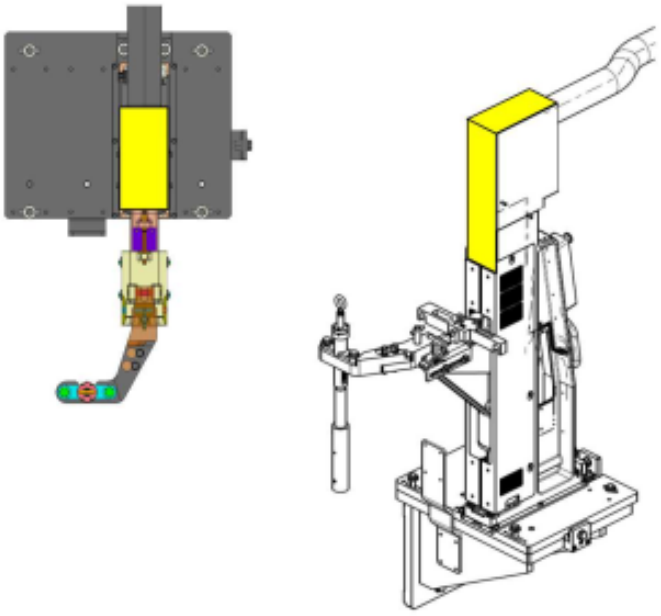
For geometrical reason, the 570 Multi Drive Servo Feeder Plunger is designed with a unique configuration for 90° shearing.

570 Multi Drive Servo Feeder Plunger Overview

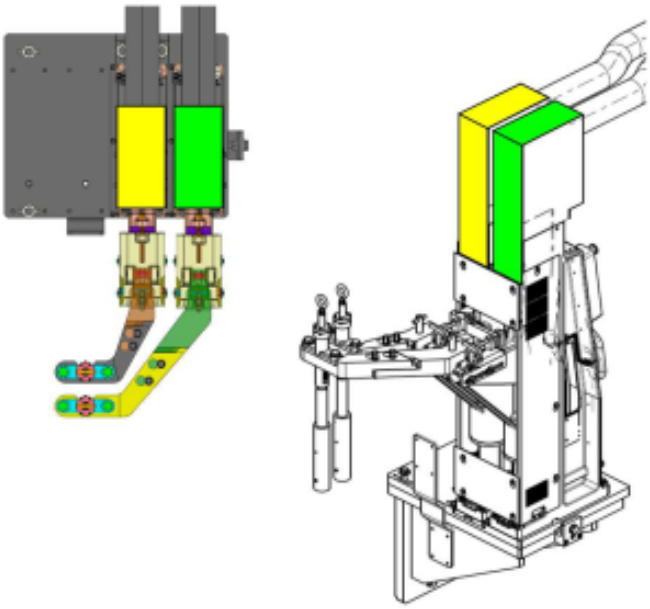


570 Multi Drive Servo Feeder Plunger and carrier configurations

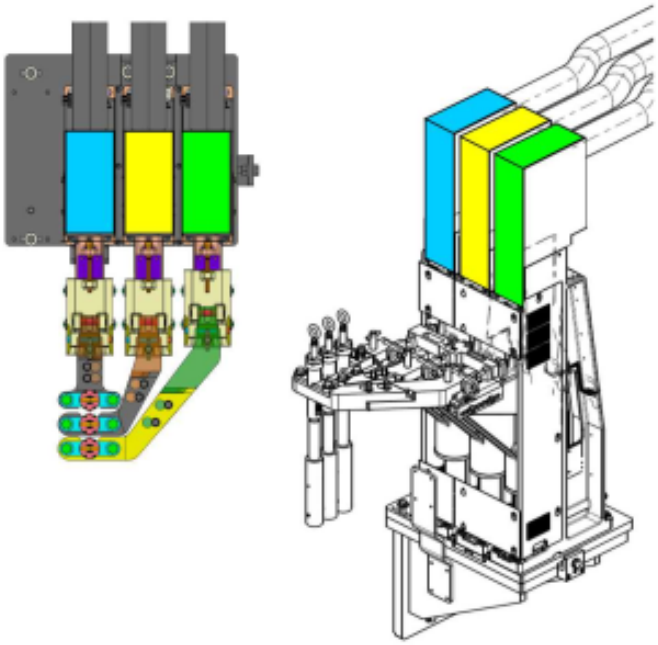
Single Gob



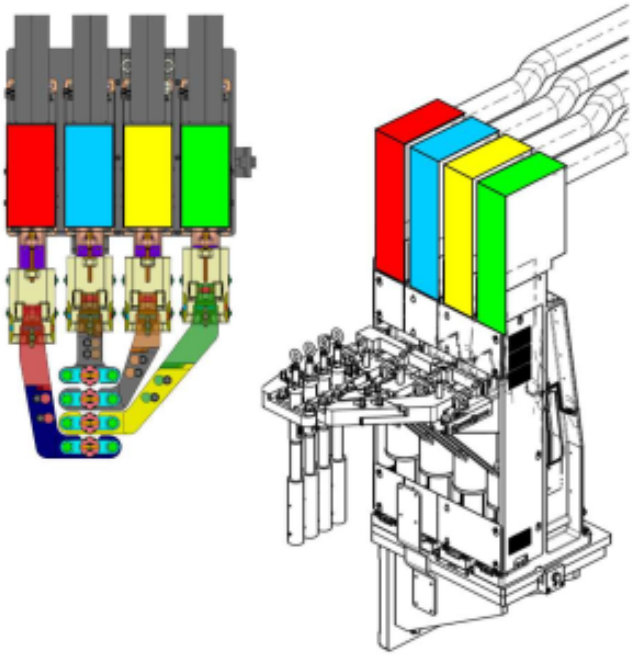
Double Gob 4-3/8”



Triple Gob 4-3/8” and Triple Gob 3”



Quad Gob 3”



Specification

The 570 Multi Drive Servo Feeder Plunger mechanism is available for all center distances and for all the Emhart front casings, but it is limited to layouts with 90° shearing.
An initial Double Gob (or Triple Gob NIS) configuration can be extended to Triple Gob (Quad Gob NIS) by adding the servo module and the additional carrier arm.

	SINGLE GOB		DOUBLE GOB		TRIPLE GOB		QUADRUPLE GOB	
Center distance	**Master assembly**	**Spout casing type**	**Master assembly**	**Spout casing type**	**Master assembly**	**Spout casing type**	**Master assembly**	**Spout casing type**
SG	**570-1006-1**	**81 503 515 555**						
3”					**575-1006-3**	**81 503 515 555**	**575-1006-4**	**585**
4-3/8”			**575-1006-2**	**81 503 515 555 585**	**575-1006-3**	**585**		

Installation Requirements

The 570 Multi Drive Servo Feeder Plunger mechanism can be installed on all existing machines equipped with FlexIS 3 Forming Control system.
For machines running with a different control system, a standalone FlexIS 3 machine control system is needed.
FlexIS3 machine control cabinets built after March 2021 are prepared for receiving the additional drives for 570 Multi Drive Servo Feeder Plunger, plus 575 Dual Drive Shear. FlexIS 3 Cabinets built before that date can be upgraded.

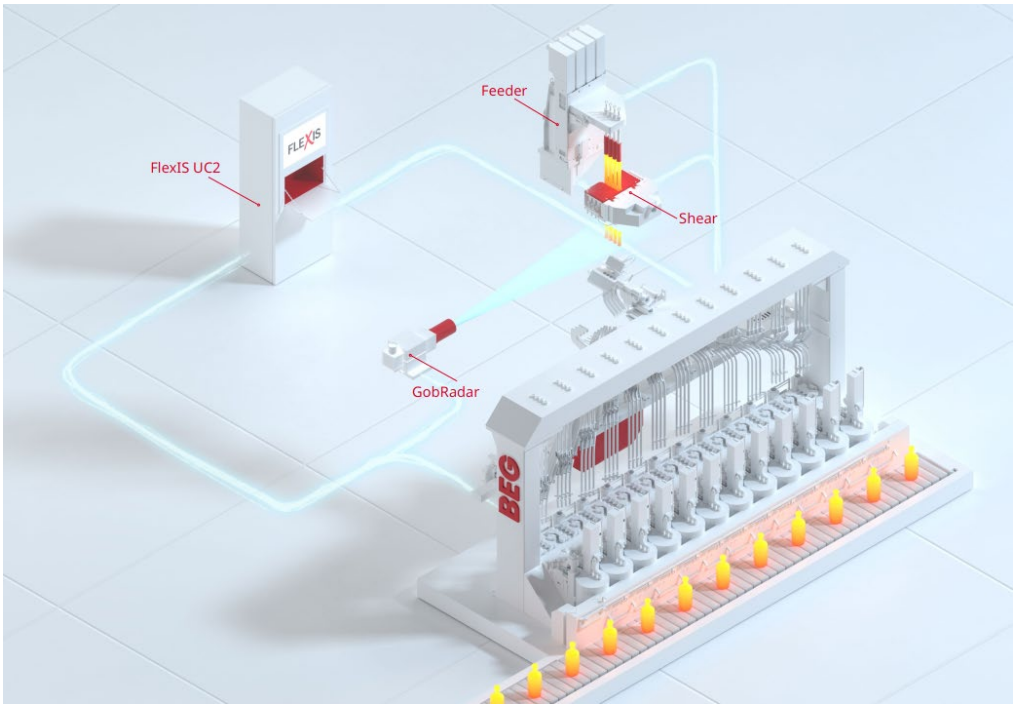
Refer to the following documents to validate space requirements:

- Installation diagram Single Gob 570-1006-1
- Installation diagram Double Gob 570-1006-2
- Installation diagram Triple Gob 570-1006-3
- Installation diagram Quadruple Gob 570-1006-4

SMARTFEEDER integration

Today, producing gobs with a proper shape is a complex activity. It requires time consuming setups and combining different sizes and shapes of refractory needles to achieve compromises that can be easily disturbed by minor variations in glass conditioning or by the natural wear of the glass contact materials.
The 570 Multi Drive Servo Feeder Plunger in combination with the 575 Dual Drive Shear, the Gob Radar and the Gob Control closed loop, supersedes the need for such a complex setup.
The desired gob parameters (gob weight, length) are entered in the system and constantly monitored by the Gob Radar. The Gob Control Closed Loop then automatically and individually adapts the settings of the servo motors for each needle to:

- Keep the gob weight constant and minimize weight variations.
- Keep the gob length constant and minimize length variations.



- The 570 Multi Drive Servo Feeder Plunger and the Gob Control Closed Loop features provide cascading benefits to the container manufacturing process:

- Automatic compensation of gob elongation through the delivery equipment to guarantee the same gob length for all sections. For example, in a 12-section machine, the gravity force and the friction between gob drops and delivery equipment generates a gob elongation, which means that different gobs shapes are loaded into the blanks of the machine sections.
  With SMARTFEEDER the drop parameters can be set section by section, and the Gob Control Closed Loop automatically ensures that the proper shaped gob is delivered to the related machine section.

- The Multi Gob Application can benefit from the Gob Control Closed Loop and from the 570 Multi Drive Servo Feeder Plunger, to ensure that the production meets the requested specification.

- The Gob Radar and the Gob Control Closed Loop allow for an advanced gob weight control in Blow and Blow operations.
- PPC2 is directly connected with the feeder plunger servo drives → PPC2 stepper motors are not needed.

Features	Benefits
Individual drives	Individual drive motion compensates for glass conditioning inhomogeneity. PPC2 stepper motors removed.
Independent configurable cam profile	Enhanced gob shaping supersedes the need for special needles shape and mixture of different needle sizes for the different cavities. Perfect support for Multi Gob Application.
Modular design	Increase flexibility and low spare parts inventory.
Quick Change Plunger chuck adapter	Faster Needle replacement.
Integral part of SMARTFEEDER	Full gob control. It provides huge benefits in controlling gob variations (weight and length) and for an optimal approach to Multi Gob application.