

# Technical News Bulletin

Steinhausen, October 2006

---



## Pantograph Baffle Arm

- Improved alignment between blank molds and baffles
- Prolonged service life of baffle mechanism.
- 60% less force on the baffle mechanism.

## Introduction

Emhart Glass' Pantograph Baffle Arm represents a progressive engineering development for smoother, more efficient baffle operation. It is designed for IS machine types EF 51/2, AIS and F and ensures precise alignment between baffle heads and blank molds.

Due to the parallel movement of the baffle holder, "baffle-on" can be initiated earlier in the cycle and "baffle-off" later. This benefit results in increased cavity rate or prolonged blank mold contact time.

The reduced mass moment of inertia on the pantograph baffle arm itself results in significantly less force on the baffle mechanism. This factor leads to substantially less baffle mechanism wear and prolonged service life.

The new Pantograph Baffle Holder is engineered as a standardized Quick-Change Accessory. Pantograph Baffle Holders are available for single gob applications (on EF 51/2" and F 61/4") as well as the following center distances: DG 51/2", DG 61/4" and TG 41/4".

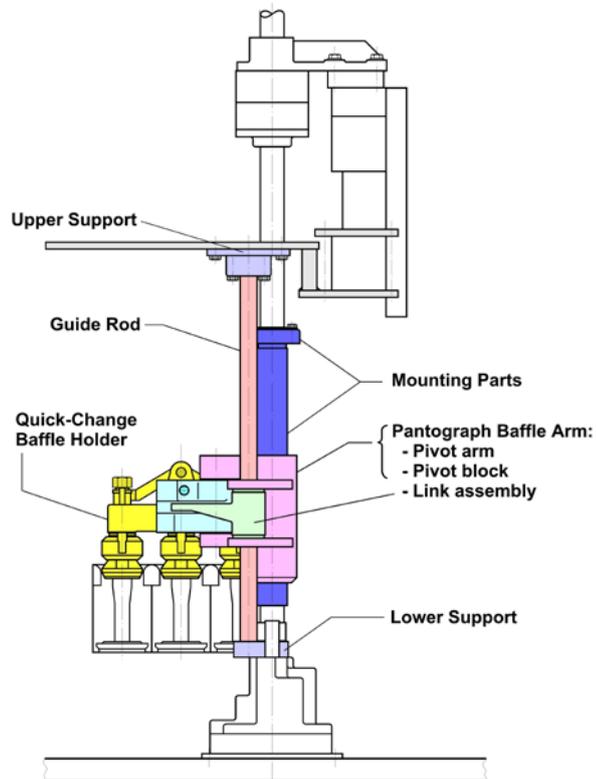
## Product Description

Emhart Glass' unique patented design has successfully solved the problems associated with:

- Arm alignment
- Wear at various pivot points
- Equalization of settle blow pressure for individual cavities

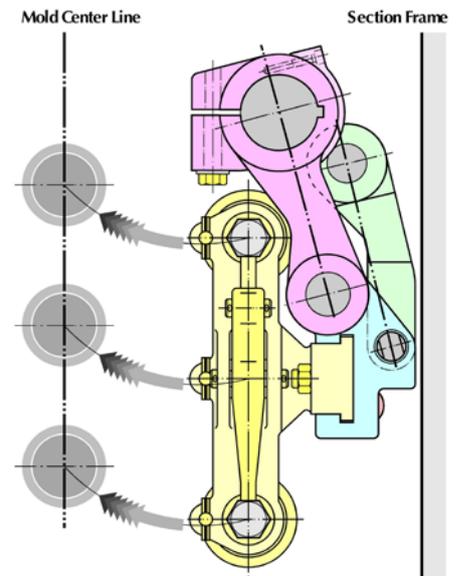
### *Product Components*

The Pantograph Baffle Arm comprises the following individual system components:



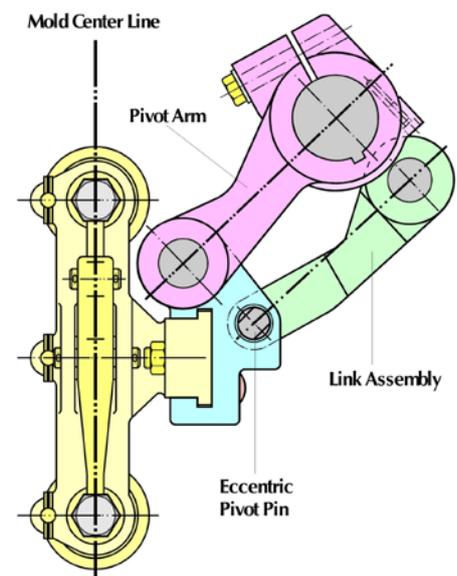
### *Operating Principles*

This top view shows the pantograph baffle in the “Off” position. When the baffle arm is actuated for down-stroke, the baffle piston rod initiates the stroke/swing motion. The pantograph configuration of 4 pivot points and the pivot arm and the link arm of identical length ensures that the baffle holder is always parallel in relation to the blank mold centers.



The view shows the pantograph baffle arm in the position over the blank molds. Precise alignment of the different baffles to the blank molds is achieved by means of an eccentric pivot pin.

Full guidance of the link assembly in the pivot arm permits optimal motion sequence of the pantograph baffle arm during piston stroke and swing movements.



Due to the parallel movement of the baffle holder, “baffle-on” can be initiated earlier in the cycle and “baffle-off” later. This benefit results in increased cavity rate or prolonged blank mold contact time.

### *Quick Change Baffle Holder*

The new Pantograph Baffle Holder is designed as a standardized Quick-Change Accessory so that once the pantograph is aligned and adjusted, only the baffle holder is replaced.

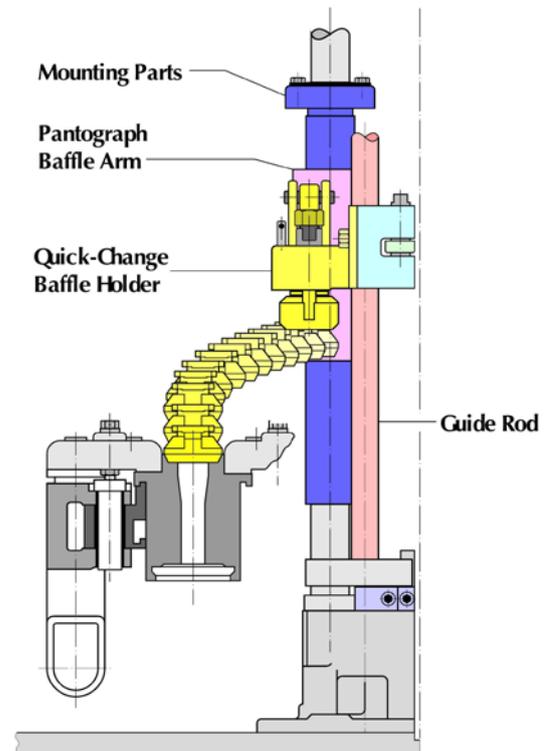


### *Settle Blow Air*

Emhart Glass performed laboratory measurements of settle blow air distribution with the new pantograph design. Full pressure build-up in all cavities was attained after approx. 75 milliseconds. The settle blow air routed through the baffle piston rod, pantograph arm and the QC baffle holder is equally distributed in blank cavities.

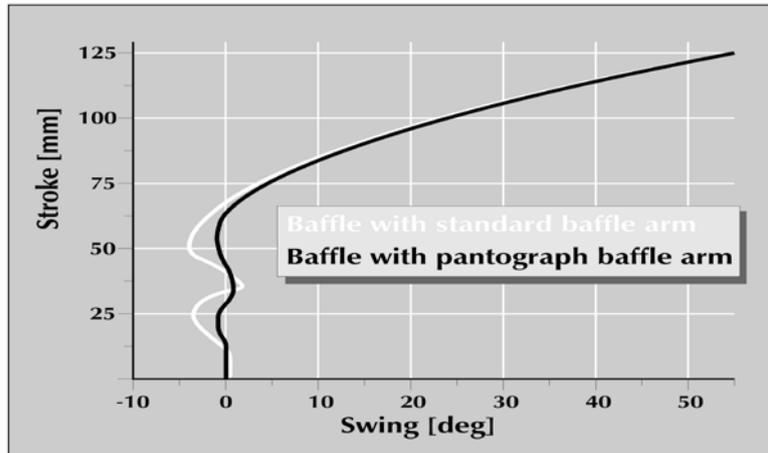
## Performance Characteristics

This illustration shows a view of the motion sequence of the baffle holder as seen from the blank side of the IS machine.



### *Stroke/Swing Diagram*

As the measurements in this graph show, there is significantly less baffle holder oscillation around the vertical axis compared with nonpantograph. The major payoffs are prolonged baffle and mold equipment service life and substantially less wear, in the blank mold/baffle match areas.

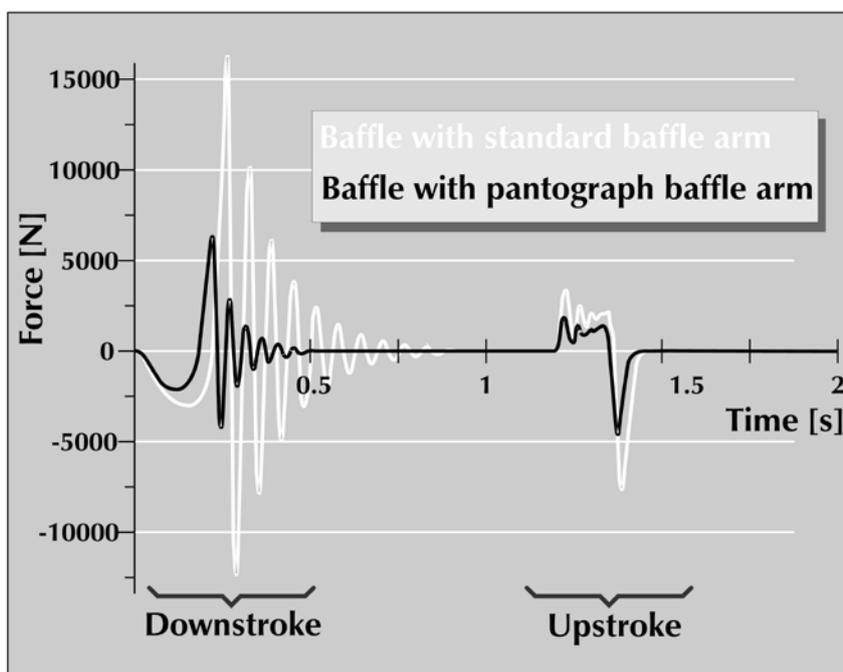


### Force/Stroke Diagram

This graph shows a comparison between a baffle mechanism equipped with a Pantograph Baffle Arm and a standard Quick-Change Baffle Arm. The measurements are based on an elementary equipment configuration, i.e. without blank molds, guide arm and guide post and at full operating speed.

The left side of the graph shows the normal forces acting between cam roller and baffle cam during downstroke. The downstroke of the piston is at full acceleration with fully open speed control valves. Greater forces are encountered due to the gravitational forces and full acceleration.

The graph on the right shows piston upstroke. The amplitude of the forces compared to the downstroke is less. Gravitational forces counteract piston motion and the effect of upstroke cushioning is clear, i.e. there is less force acting on the baffle cam compared with the downstroke.



Compared with nonpantograph baffle applications, the curve for the baffle with the pantograph arm shows that there is approximately 60% less force acting on the entire unit. This is due to the reduced mass moment of inertia on the pantograph baffle application.

## Availability

As of October 1994, Pantograph Baffle Arm 210-208-1 will be available for the following IS machines and center distances. The pantograph baffle is the same for all machines listed below. Only the Quick-Change Baffle Holder changes according to the respective center distance.

Machine Type	Pantograph Baffle	Center Distance	Quick Change Baffle Holder
IS 5 ½	210-208-3	SG DG 5 ½	210-207-1 210-207-6
AIS + IS DG 6 ¼ TG 4 ¼	210-208-3	DG 6 ¼ TG 4 ¼	210-207-7 210-207-4
IS 6 ¼	210-208-3	SG	210-207-5

## Installation Requirements

To install the pantograph baffle arm, the machine and the baffle mechanism must be modified. All information regarding pantograph installation and associated modifications is given in the drawing 210-214 (for the complete machine: AIS, EF 5½ and F)

### Restriction, Mounting on AIS Machine

The left hand blank mold holder arm must be modified according to Drawing 210-192. This modification is required if the new baffle mechanism 210-147-1 is operated on an AIS machine (DG 6¼") with forced convection cooling (but not with Verti-Flow).

### Lower Support

New Baffle Mechanism Series 210-146 and 210-147 for EF + F 5½ and AIS machines already have incorporated support for the pantograph guide rod in the baffle cylinder heads. No modifications are therefore required.

A Conversion Kit for the AIS Baffle mechanism is listed under drawing 210-209-1 and is intended for mechanisms 23-2024 and 210-135.

The Conversion Kit for the F + EF 5½" Baffle Mechanism is listed under 210-279, (for baffle mechanism conversion). The cylinder head must be exchanged, since the guide rod location of the pantograph would be the same as that of the baffle speed control valves. The Conversion Kit is intended for Baffle mechanism 23-230 and 23-781.

### *Mounting Parts*

Quick-Change Mounting Parts are used to connect the pantograph baffle arm to the baffle piston rod.

The Quick-Change Mounting Parts (210-194-1 or 23-1435-1) used on the baffle mechanism can be re-used. Only the clamping ring requires minor modification.

If Quick-Change Mounting Parts are not available, a new set must be specified according to drawing 210-194-2.

### *Upper Support / Plate and Pin*

The upper support for the guide rod is mounted on the overhead manifold.

Depending on the machine section, some of the existing pins for the deflector adjusters must be changed.

### *Fixtures*

One set of fixtures are required for aligning the pantograph baffle arm. It must be purchased only once on first order.

## Features / Benefits

### *Features*

- Improved alignment between blank molds and baffles
- Improved motion and repeatability of baffle arm
- 60% less force on the baffle mechanism
- No baffle arm overlap into adjacent section in the "Off-Position"
- Equal settle blow air pressure build-up in all cavities
- Quick-Change Baffle Head

### *Benefits*

- Less wear on mold equipment
- Prolonged service life of baffle mechanism
- Smoother baffle operation
- Reduced job-change time
- Quick conversion capabilities (SG/DG/TG)
- Improved operating safety
- Compatibility with existing mold equipment