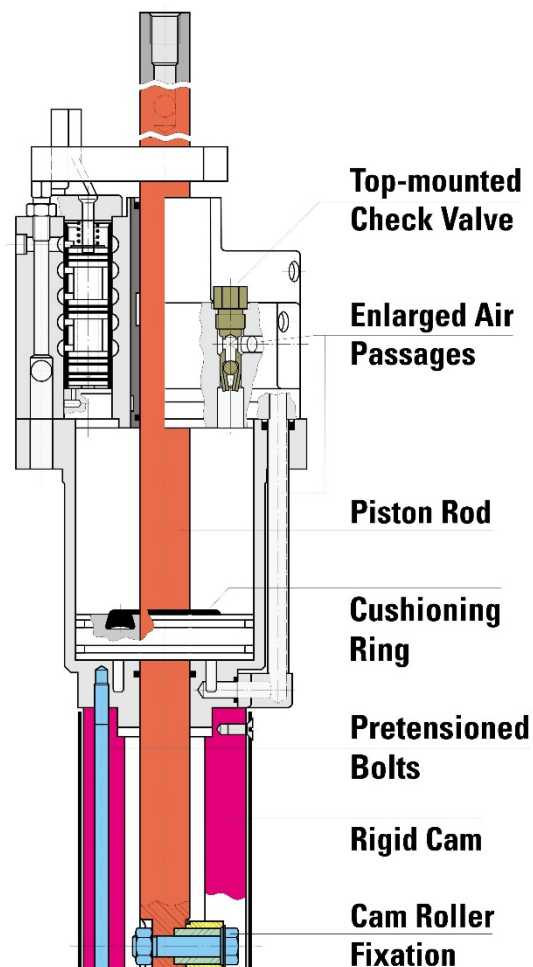


# Technical News Bulletin

Steinhausen, October 2006

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## Baffle Mechanism 4 1/4" and 5"

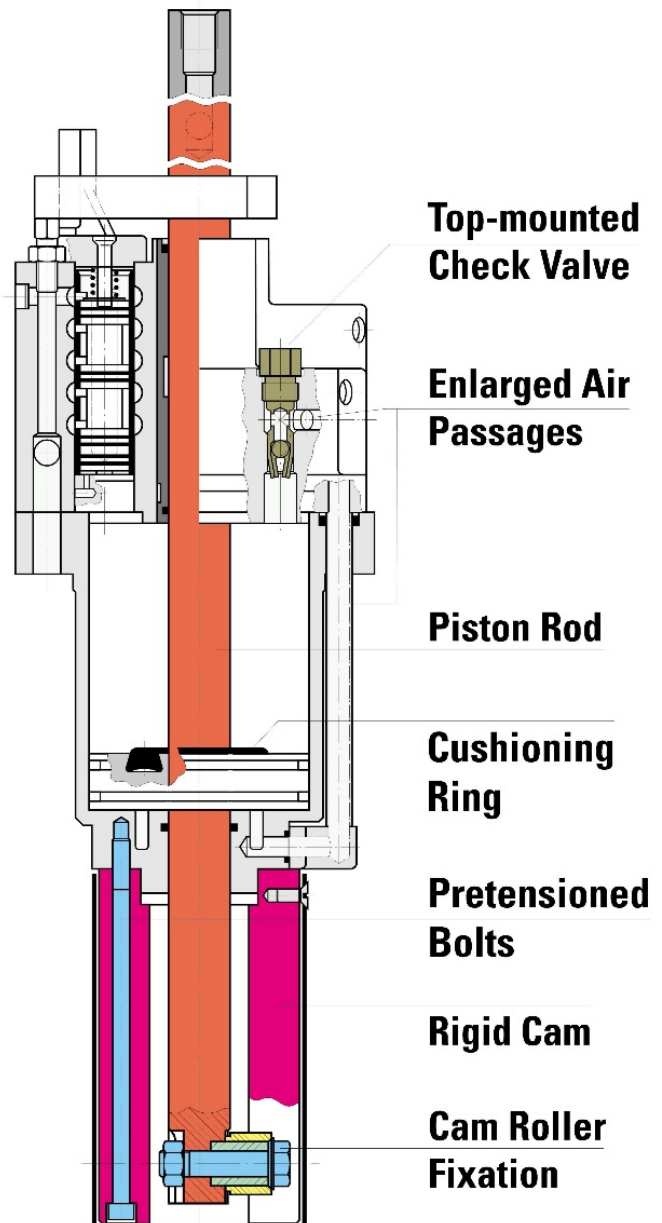
- Intensive research and development led to the Emhart Glass Baffle Mechanism for CD 4 -1/4" and 5".
- Faster and more precise baffle arm movement.
- Standardized mechanisms and spare parts.

## Introduction

Intensive research and development led to the Emhart Glass Baffle Mechanism for CD 4 -1/4" and 5" which exhibits faster and more precise baffle arm movement. The many advantages offered by this new series are also underscored by substantially less wear on the mold, baffle and baffle lock ring.

More stable operating characteristics are achieved through improved pneumatic operating behavior and enlarged operating air passages. A cushioning ring dampens forces during the final moment of piston upstroke, protecting the mechanism and its equipment.

The rigid cam which guides the cam roller of the piston rod features greater mechanical durability. Improved rigidity enables the cam to better withstand static and dynamic forces and permits longer service life.



## Product Improvements of the Baffle Mechanism

The new Baffle Mechanism features several new improvements which positively affect the operating characteristics of the mechanism, prolong its service life and reduce wear on the blank mold equipment.

### *Rigid Cam*

The rigid cam mounted on the cylinder base serves as a guide for the cam roller which is interconnected with the piston rod and is responsible for the swing motion of the baffle arm.

The basic improvements involve greater mechanical durability of the cam which is CNC-machined from ball bearing steel. This greater rigidity enables the cam to better withstand static and dynamic forces acting on the cam and prolongs service life.

Correct positioning of the cam is achieved by a locating recess and a dowel pin. Rigid inter-connection with the cylinder base is warranted by 5 pretension bolts which prevent loosening due to vibration.

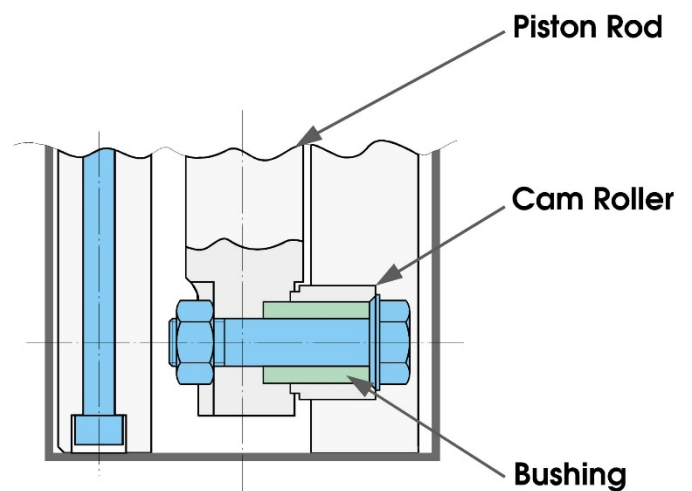


### *Cam Roller Fixation*

The cam roller travels over the entire path of the cam track. It is mounted on a guide bushing and is mechanically connected to the lower end of the piston rod.

The new fixation configuration is designed to achieve optimal mechanical connection.

Greater modular standardization has been engineered into the individual parts of the cam roller fixation assembly since it can be used for all Baffles, Funnels and Blowheads of the 200 Series (EF 4 -1/4" and EF 5" mechanisms) and the 210 Series (EF 5 -1/2 and AIS - DG 6 -1/4" and TG 4 -1/4").



### *Top-mounted Check Valve*

The ball check valve opens to apply air for the downstroke. It is mounted in the top of the cylinder head as a maintenance convenience.

The design for which a patent is pending improves air flow characteristics, resulting in considerably higher operating air throughput.

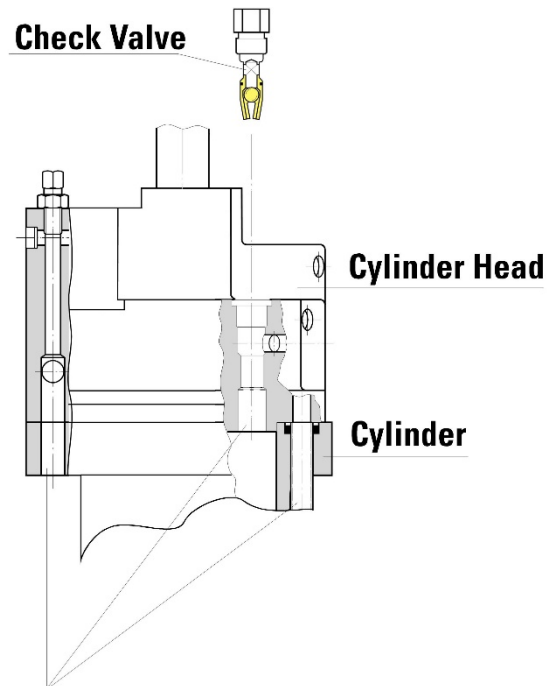
### *Enlarged Air Passages*

The cross section view shows enlarged air passages for the mechanism. The resulting improvement in pneumatic operating behavior permits faster operation. In addition, it provides more precise and smoother mechanism movement, resulting in reduced wear on mold equipment.

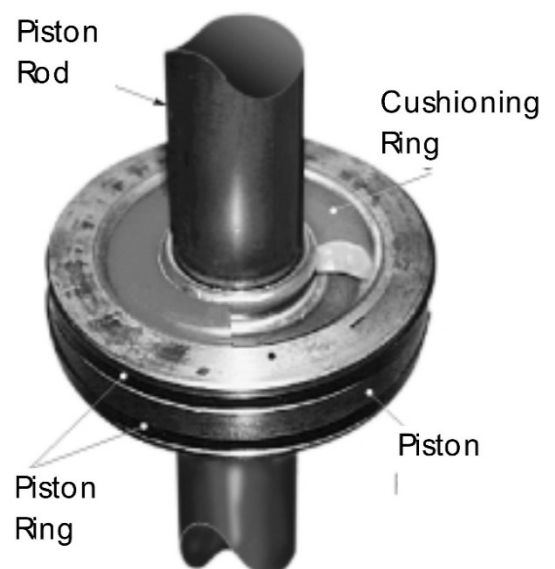
### *Piston Rod Cushioning Ring*

New, precision speed control valves integrated in the cylinder head are used for fine adjustment of the speed control and upstroke cushioning of the piston rod.

The damping effect of the elastomeric cushioning ring prolongs the service life of both the mechanism and baffle lock ring.



### **Enlarged Air Passages**



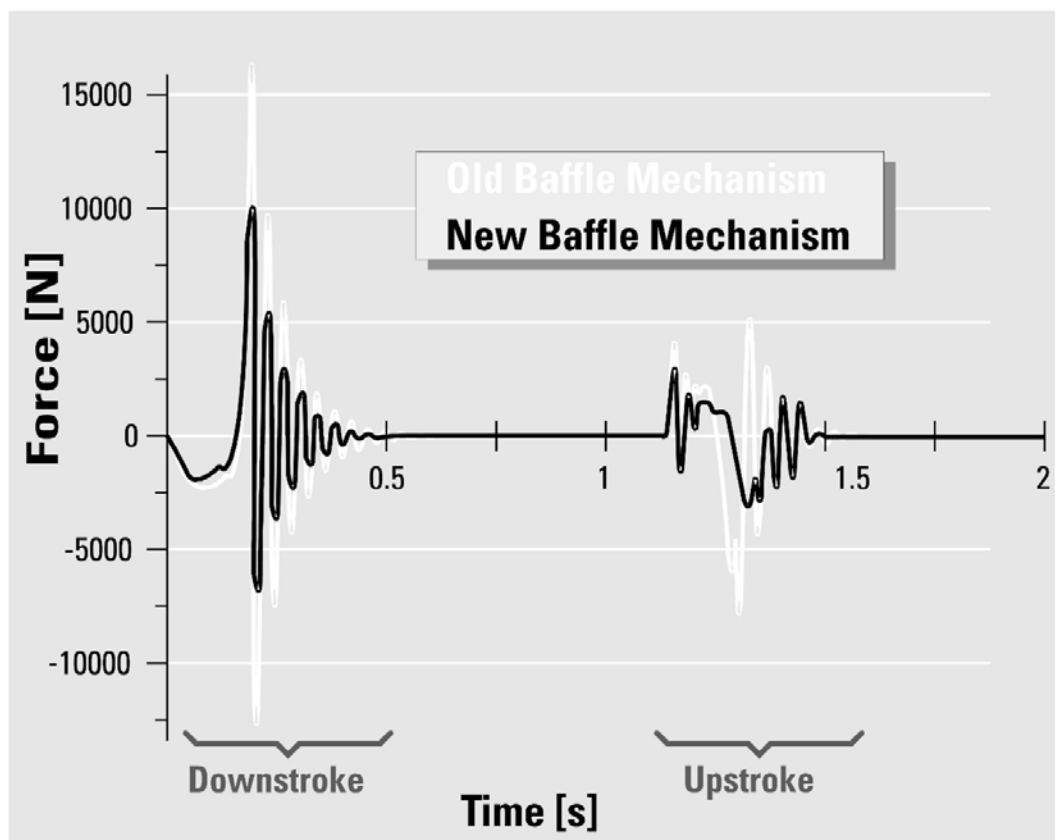
## Performance Characteristics

### *Force/Stroke Diagram*

This graph shows the measurements of forces acting on the cam.

The curves at left indicate the forces acting on the piston during downstroke. Higher forces are encountered since the mold must be closed as soon as possible and therefore, the baffle mechanism is not cushioned during its downstroke. However, the curve for the new baffle (Black) shows that there is approximately 30% less force acting on the new rigid cam during the piston downstroke. This is due directly to the improved pneumatic operating behavior.

The curves in the graph at right show the piston upstroke. They show clearly that the upstroke is subject to significantly less force compared to the downstroke. This is due to upstroke cushioning and precisely adjusted speed control valves. Comparing the previous and new baffle mechanisms, the new one is faster and is subject to reduced forces during upstroke. The reduced normal force leads, in turn, to less mechanism wear and prolonged service life.

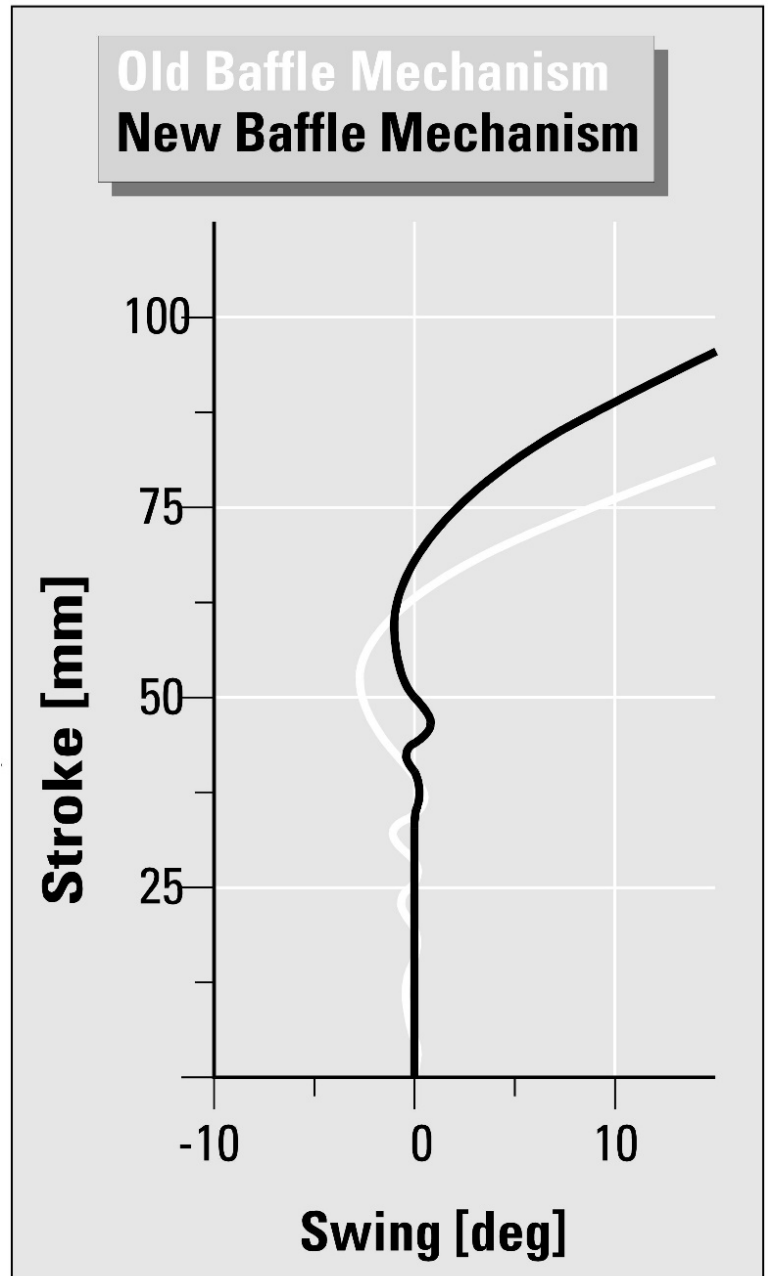


### *Stroke/Swing Diagram*

This graph curve shows the swing and downward motion of the baffle arm encountered during downstroke. The curves from the top right indicate the swing and downward motion of the baffle arm/piston rod. Vertical downward motion occurs only after the curves cross the zero axis.

The difference in height between the two curves is characteristic of a comparison between the previous (4 -1/4" for SG and DG) (Total stroke: 112.7 mm) and new baffle mechanism types (Total stroke: 138.1 mm). Here we see the increase of stroke which is now identical for 4 -1/4" and 5" mechanisms (all center distances).

The oscillating movement around the zero axis indicates clearly that the new baffle mechanism (Black curve) has less deviation from the theoretical path during its downstroke motion, resulting in prolonged service life of the mold equipment.



## Availability

As of June 1, 1994, baffle mechanism series 200-248 for EF 4 1/4 and EF 5 machines will be supplied standard on the following machines:

Baffle Mechanism	Machine Type	Configuration (Machine Center Distance)
200-248	4 1/4"	SG, DG 4 1/4", TG 3"
	5"	SG, DG 5", 85 mm TG

The new **Baffle 200-248** replaces all of the following types 191-6458, 191-5865 and 191-5689 (all center distances).

Phased-out mechanisms will no longer be manufactured after September 1, 1994. Only the new baffle mechanism type 200-248 will be commercially available after this date. Wear parts for phased-out mechanisms will be available until 1999.

## Installation Requirements

### *Mounting on EF 4 - 1/4 and EF 5 IS machines*

Due to the centering ring, no modification is required for installing the 200-248 Baffle Mechanism Series in EF 4-1/4 and EF 5 IS machines. In this manner, existing mold equipment and accessories can be used.

### *Mounting on E-Type 4 - 1/4 and E-Type 5 machines*

Minor modification is required for mounting the baffle mechanism. Centering ring 191-21837 is required for installing mechanism type 200-248. Modification drawing 200-D-266 shows all relevant details.

## Features / Benefits

### *Features*

- Improved cam design and cam roller fixation
- Enlarged air passages
- Optimized upstroke piston rod cushioning
- Improved pneumatic behavior
- Top-mounted check valve
- Totally compatible with previous EF + E mechanism
- Standardized mechanisms and spare parts

### *Benefits*

- Less wear on mold equipment
- Prolonged baffle lock ring service life
- Greater maintenance convenience
- Compatibility with existing mold equipment
- Prolonged mechanism service life
- Reduced inventories for baffle mechanisms and spare parts