

Technical News Bulletin

August 2019

Bezier Scoop Family for constant cone delivery

Introduction

The introduction of a scoop family based on Bezier curves enriches the Bucher Emhart Glass scoop portfolio. The concept of applying a Bezier curve for the scoop design follows the same principle used for the Constant Cone Bezier Delivery where an optimized centrifugal force distribution contributes to enhanced gob loading.

Bezier Scoops are available in stainless steel as standard supply.

Coated aluminum scoops and Titanium scoops are available on request for selected sizes.

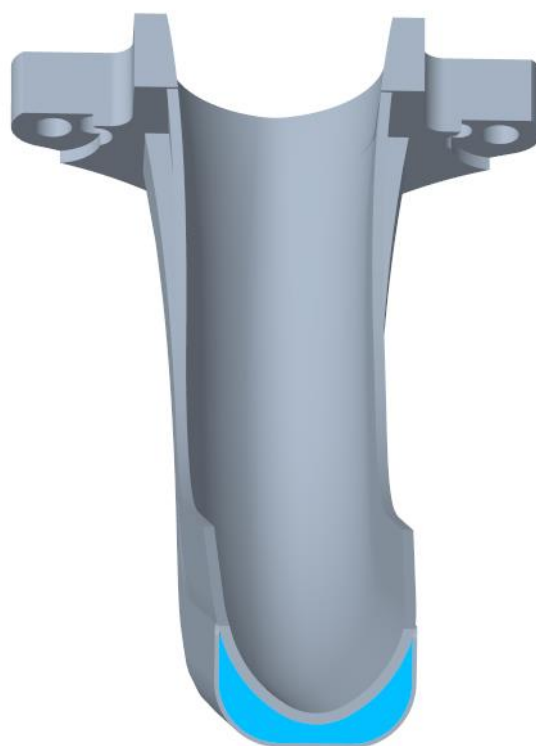
The new Bezier scoops will gradually replace all the previous scoops.



The Bezier scoop design also includes a redesigned cooling chamber to guarantee optimal loading conditions.



Bezier type cooling chamber



Old type cooling chamber

Material Specification

Stainless steel scoops are available for all sizes.

- Stainless steel scoops have a highly polished contact surface to guarantee low frictional characteristics.
- Stainless steel scoops offer excellent chemical resistance, reduced corrosion, low friction, extended service life and do not require coating.

Coated Aluminum and Titanium scoop are available on request for selected sizes.

- Coated Aluminum scoops are available for sizes 0-2 and 2-3 in 3" and 4-3/8" center distances.
- Scoop size #3-1/2 is available for 4-3/8 center distance only.
- Scoop size 0-1 is available for 3" center distance only
- Titanium scoops are available for sizes 0-1 and 0-2 in 3" center distance and for size 0-2 in 4-3/8" center distance.

Single gob scoops are available in stainless steel only.

| SCOOP EQUIPMENT SPECIFICATION CHART FOR CONSTANT CONE DELIVERY | | | | | | | | | | | | | |
|--|------------|---------------------|-----------------|-------------------|--------------------------|---------------|-----------|------------|-----------|-----------------------|----------------------|-------------------------------|----------------------------------|
| Machine Type | Scoop Size | Delivery C.D. | SCOOP | | | SCOOP HOLDERS | | | | SCOOP EQUIPMENT ASS'Y | GOB DISTRIBUTOR HEAD | GOB DISTRIBUTOR ADAPTER PLATE | |
| | | | Stainless Steel | Titanium (Option) | Coated Aluminum (Option) | Cavity 1 | Cavity 2 | Cavity 3 | Cavity 4 | | | | FUNNEL DIAMETER |
| IS AIS BIS | 0-1 | 3" (TG) | 523-8582 | 523-8585 | N/A | 523-608-1 | 523-608-2 | 523-608-3 | N/A | 22.2 | 401-1546-00 | 535-9-4 | 401-1072-1 |
| | 0-2 | | 523-8577 | 523-8583 | 523-8586 | 523-608-1 | 523-608-2 | 523-608-3 | N/A | 39.7 | | | |
| | 2-3 | | 523-8578 | N/A | 523-8590 | 523-608-1 | 523-608-2 | 523-608-3 | N/A | 48.7 | | | |
| | 0-2 | 4-3/8" (DG) | 523-8579 | 523-8584 | 523-8589 | 523-607-1 | 523-607-2 | N/A | N/A | 42.9 | 401-1545-00 | 535-8-5 | 401-1072-1 |
| | 2-3 | | 523-8580 | N/A | 523-8591 | 523-607-1 | 523-607-2 | N/A | N/A | 57.15 | | | |
| | #3-1/2 | | 523-8581 | N/A | 523-8592 | 523-607-7 | 523-607-8 | N/A | N/A | 63.5 | | | |
| IS AIS | 0-2 | SG | 523-8572 | N/A | 523-160-5 | 401-1392-1 | N/A | N/A | N/A | 42.9 | 401-1392-00 | 535-66-2 | 401-1072-1 |
| | 2-3 | | 523-8573 | N/A | 523-160-6 | 401-1392-1 | N/A | N/A | N/A | 57.15 | | | |
| | 3 | | 523-8574 | N/A | N/A | 401-1392-2 | N/A | N/A | N/A | 73 | | | |
| | 3-4 | | N/A | N/A | 523-160-8 | 401-1392-2 | N/A | N/A | N/A | 73 | | | |
| | 4 | | 523-8575 | N/A | N/A | 401-1392-2 | N/A | N/A | N/A | 73 | | | |
| | 4-5 | | N/A | N/A | 523-160-10 | 401-1392-2 | N/A | N/A | N/A | 73 | | | |
| NIS | 0-1 | 3" (QG) | 523-8582 | 523-8585 | 523-8588 | 523-608-1 | 523-608-2 | 523-608-3 | 523-608-4 | 22.2 | 401-1546-00 | 535-171-1 | 535-228-1 |
| | 0-2 | | 523-8577 | 523-8583 | 523-8586 | 523-608-1 | 523-608-2 | 523-608-3 | 523-608-4 | 39.7 | | | |
| | 2-3 | | 523-8578 | N/A | 523-8590 | 523-608-1 | 523-608-2 | 523-608-3 | 523-608-4 | 48.7 | | | |
| | 0-2 | 4-3/8" (DG - TG) | 523-8579 | 523-8584 | 523-8589 | 523-607-2 | 523-607-3 | 523-607-6 | N/A | 42.9 | 400-5400-00 | 535-92-2 | 535-228-2 (DG) 535-228-3 (TG) |
| | 2-3 | | 523-8580 | N/A | 523-8591 | 523-607-2 | 523-607-3 | 523-607-6 | N/A | 57.15 | | | |
| | #3-1/2 | | 523-8581 | N/A | 523-8592 | 523-607-8 | 523-607-9 | 523-607-10 | N/A | 63.5 | | | |
| NIS* | 0-2 | 4-3/8" (DG - TG) | 523-8579 | 523-8584 | 523-8589 | 523-607-1 | 523-607-2 | 523-607-3 | N/A | 49.9 | 401-1545-00 | 535-92-2 | 535-172-1 |
| | 2-3 | | 523-8580 | N/A | 523-8591 | 523-607-1 | 523-607-2 | 523-607-3 | N/A | 57.15 | | | |
| | #3-1/2 | | 523-8581 | N/A | 523-8592 | 523-607-7 | 523-607-8 | 523-607-9 | N/A | 63.5 | | | |

*) This scoop equipment specification is only for NIS machines that will never be converted to quad gob

***) Single Gob scoops are not based on the Bezier curve, but are redesigned in order to have the same cooling chamber and the same material specification as the Bezier scoops.

Installation Requirements

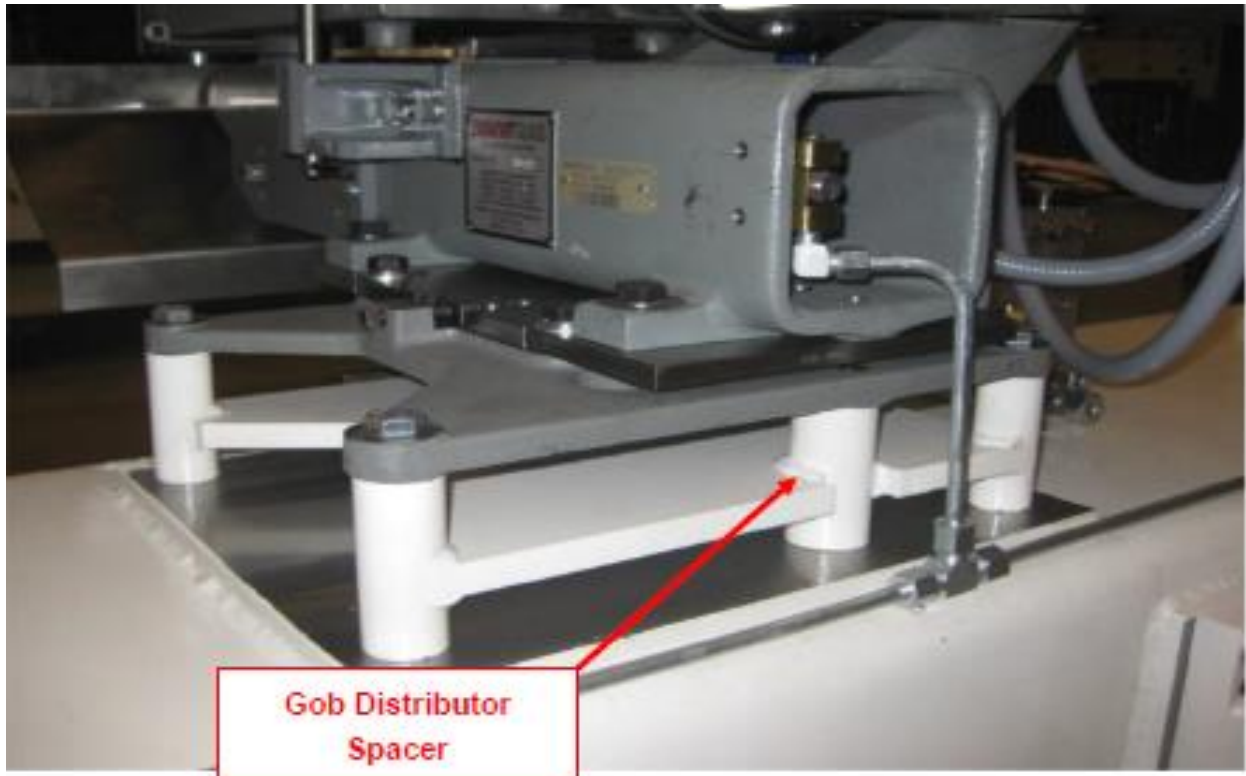
- Bezier scoops are designed for constant cone delivery and are the standard supply for all new machines (except single gob).
- Bezier scoops are also applicable for non-constant cone delivery on 10 and 12 sections IS and AIS machines.
- Existing machines can be upgraded to Bezier scoops with some minor changes depending on the machine type and configuration:

Constant Cone machines:

- For IS, AIS and BIS machines DG 4-3/8 the replacement is 1:1.
- IS, AIS and BIS TG3" require a new set of scoop holders.
- NIS machines with 4-3/8 center distance needs a new set of scoop holders and the gob distributor must be raised by replacing the existing gob distributor adapter plate with the new 535-228. (If the machine has to be convertible to QG).
- NIS machines with QG 3" center distance need the gob distributor to be raised by replacing the existing gob distributor adapter plate with the adapter plate 535-228.
- For NIS machines not planned to be QG convertible, the scoop replacement is 1:1.

Non Constant Cone machines:

- Usage of Bezier scoops on non constant cone delivery is limited to 10- and 12-section machines.
- For DG 4-3/8 IS and AIS non constant cone, the replacement is 1:1 if the machines are already configured for two-lower scoop operation***.
- For old machines running with upper and lower scoops, the gob distributor must be raised with the gob distributor spacer 523-595. Group number for 523-595 depends on machine type and size.
- Non constant cone machines IS and AIS needs the gob distributor to be raised with the spacer 523-595. Group number for 523-595 depends on machine type and size.
- Existing TG scoop holders must be replaced by 523-608-5/6/7 for 10 and 16 sections machines and with 523-608-1/2/3 for 12 sections machines.



***) The picture is showing the gob distributor spacer used on non constant cone machines for running two lower scoop operation in double gob.

Using previous scoops, at every cavity conversion from DG 4-3/8" to TG 3" this spacer was to be removed. Using Bezier type scoops, all the non constant cone machines (10 and 12 sections) will be converted to TG 3" without removing the spacer.

Features / Benefits

| Features | Benefits |
|---|--|
| Smoother curve | Reduced radial forces → Reduced gob shape variation + increased loading stability |
| Improved cooling chamber | Increase loading stability for large gobs |
| Stainless steel | Longer life time – Coating is not needed |
| Raised gob distributor TG 3" to DG 4 3/8" | Faster cavity conversion (gob distributor doesn't need to be moved up and down at the cavity conversion) |