

## STEAMRYT\* – Soot Blower Sealing System

Patent # 8,814,432

### COMMON SOOT BLOWER PROBLEMS

- Retract blowers have long overhangs which can cause severe radial/elliptical movement of the shaft in the stuffing box area.

**SOLVED!** Shaft movement is eliminated with use of two very high strength polymer bearings, one fore, one aft in the stuffing box.

- Throat bushings become worn from this movement, as they wear, packing can be easily extruded through the increasing clearance.

**SOLVED!** The use of two close clearance bearings eliminates shaft contact with the throat bushing & prevents inner packing from extruding.

- Mechanical forces on the packing causes tearing and disfiguration

**SOLVED!** Mechanical forces are eliminated in the stuffing box with the use of two close clearance bearings. Packing remains square and works only to seal along the stabilized shaft.

- Excessive number of packing rings which consolidate rapidly.

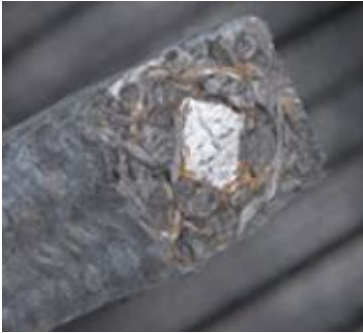
**SOLVED!** The two bearing positions eliminate several former packing positions allowing use of optimal number of sealing rings.

- Very high air/steam temperature.

**SOLVED!** All components, both bearings and packing are rated to 800 degrees F (426 Degree Celsius) or higher.

### Solution:

A combination of **PackRyt BRG Bearing System**, a blend of very high temperature capability imidised polymers allows effective use in very high temperature air or steam under severe mechanical forces, style 283R and style 396C patented technology packing. A packing set with a high density high energized structure giving support and abrasion resistance at the throat bush and throughout the gland/stuffing box. Style 357 can be used as an alternative to the style 396C.



# Style 283R

## Soot Blower packing

### Construction

Style 283R is constructed with a pre-braided centre of carbon yarn pre twisted with graphite exfoliant. The operational temperature of the centre braid exceeds 850°F(454°C) in oxidizing service (air) and 5000°F(2760°C) in non-oxidizing service (steam). Around this centre is a braided single layer of Inconel wire, which aids in extraction of the whole sealing ring in one piece. This combination assures that little or no “consolidation” occurs from the degradation of materials. The centre core is over braided with high temperature Polyimide textiles

### Characteristics

The outer braid maintains integrity during continuous use at 700°F(371°C) and at short-term excursions up to 800°F(427°C). It serves to provide substantial and continuous strength against the shaft. This is an advantage over other sealing materials such as PTFE types that degrade and harden at the operational temperatures resulting in helical scoring of the shaft during tube run-out. The outer structure protection of the inner, pure core is the mechanical and thermal braid requirement for long term soot blower sealing success.

### Applications

Effectively seals soot blowers, including long retract systems.

As with any product designed to operate in critical operations, this product and its installation must be clearly understood. In addition, the user should have full knowledge of the operating considerations of the equipment in which it is to be installed.

Klinger Ltd, 38 Mc Dowell Street, Welshpool, WA, 6106. Telephone: (8) 92511600. Fax: (8) 93509286

For further advice please contact: [technical\\_service@klinger.com.au](mailto:technical_service@klinger.com.au)

AUSTRALIA  
NEW ZEALAND  
ASIA

Non Asbestos



## Style 357

### Construction

All inter braided construction, Style 357 utilizes a resilient, "springy" carbon centre around which the exfoliated carbon-inserted foil is braided while laying very high strength, silky carbon yarn in the corners. This choice of materials and construction enables the surface of Style 357 to overcome the plating effect, common with exfoliant foils alone. Not only is the matrix spring-like, the outer-edge carbon yarns prevent migration of the foil to the stem or sleeve and improves the actual sealing effect. In addition, this particular layup and materials choice yields a much denser product than exfoliant foils alone can yield. This culminates in a product that retains a very high percentage of both its weight and volume even at the highest temperatures and pressures.

Style 357 passes API Standards 622, Process Valve Packing for Fugitive Emissions, test requirements.

### Characteristics

- Prevent exfoliated foil accumulation.
- Retains weight and volume density.

### Operating Conditions

Temperature: To 3315 degree C Non oxidizing  
650 degree C Steam  
-196 to 454 degree C Oxidizing

Pressure: To 4500 PSI (310 bar). Indicated maximum subject to operating conditions.  
Rotary 35 bar

Chemical Resistance: 1 – 14 pH Except for strong oxidizers (nitric, oleum, etc.)

Surface velocity: 22 metres second

As with any product designed to operate in critical operations, this product and its installation must be clearly understood. In addition, the user should have full knowledge of the operating considerations of the equipment in which it is to be installed.

Klinger Ltd, 38 Mc Dowell Street, Welshpool, WA, 6106. Telephone: (8) 92511600. Fax: (8) 93509286

For further advice please contact: [technical\\_service@klinger.com.au](mailto:technical_service@klinger.com.au)

AUSTRALIA  
NEW ZEALAND  
ASIA

Non Asbestos



## Style 396C with patented 333 core

### Construction

A patented core of Style 333, an internally-sprung high temperature, high pressure Inconel reinforced graphite packing, over braided with carbon filament inserted exfoliated graphite foil, Style 396-C is one of the most effectively designed product on the market today for the sealing of fugitive fuel emissions.

Style 396-C and 396C/C meet or exceed the requirements of A.P.I. 589, 607 or 622 tests as well as the A.P.I. fire test for soft-seated quarter-turn valves. All sizes smaller than 6 mm are constructed with exactly the same materials in proportion, but re-orientated to optimise them for performance in very small sizes and designated 396C/C.

### Characteristics

Style 396C is unlike other exfoliated graphite products which offer various other yarn or wire placements to theoretically address extrusion, blow-out prevention, etc.

Style 396-C utilizes its patented Style 333 core, capable of 5800 PSI alone, to provide a highly sprung internal structure which enables 396-C to conform and re-conform through constant thermal cycling to various stem, bore and clearance conditions in various states of degradation. Also an excellent packing in rotating applications such as Boiler Feed and Condensate pumps.

### Operating Conditions

Temperature:	To 3315 degree C Non oxidizing 650 degree C Steam -200 to 454 degree C Oxidizing
Pressure:	To 5000 Psi (345 bar). Indicated maximum subject to operating conditions Rotary 56 bar
Chemical Resistance:	1 – 14 pH Except for strong oxidizers ( nitric, oleum, etc. )
Surface velocity:	22 metres second

As with any product designed to operate in critical operations, this product and its installation must be clearly understood. In addition, the user should have full knowledge of the operating considerations of the equipment in which it is to be installed.

Klinger Ltd, 38 Mc Dowell Street, Welshpool, WA, 6106. Telephone: (8) 92511600. Fax: (8) 93509286  
For further advice please contact: [technical\\_service@klinger.com.au](mailto:technical_service@klinger.com.au)