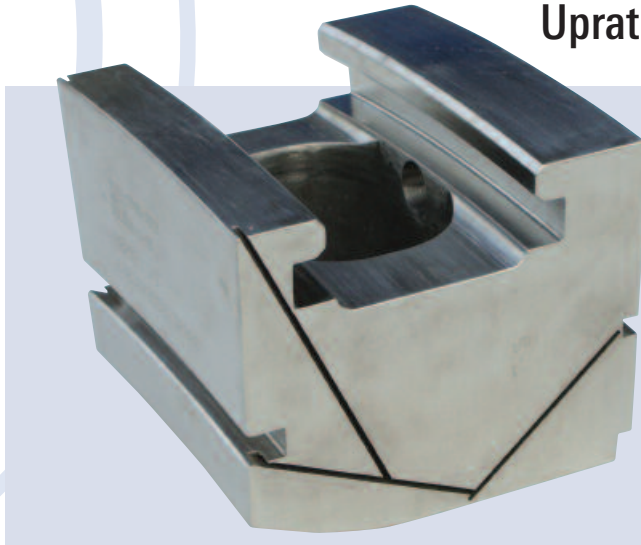


Frame 6001B Shrouds

Uprate and Standard



Turbine Services offer turbine shrouds for all three stages of the Frame 6B gas turbine, including Uprate in Output and Heat Rate as applicable.

All stages of shrouds are designed within the Turbine Services group of companies. Our experience in servicing turbine shrouds throughout their life cycle has provided a unique insight into designing a high quality product that is compatible with the original equipment.

Stage 1 Shroud (Standard + Uprate)

The Stage 1 Shroud is manufactured through an investment casting process followed by primary and secondary machining processes. The shroud is available in three options. These comprise of the standard SS316 material or the HR120 material with two alternative cooling designs. All three shroud types have the choice of a hard face or abradable coating. The application of abradable coating reduces leakage of hot gas between the buckets tips and shroud and thus improve the overall output and efficiency of the gas turbine.
(**Output: +0.7%** **Heat Rate: -0.7%**)

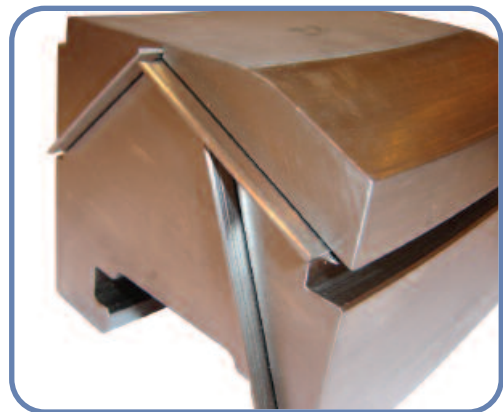
Option I - Standard

The standard shroud is rated for firing temperatures of up to 2042 °F/1117 °C and has design features such as through cooling, pumpkin teeth side face and flat bar sealing.

Option II - HR120 Field Uprate

Both HR120 types have flat side faces with Q-tip sealing and forward face with "W" seals. These seals reduce compressor air leakage into the hot gas path and provide an improvement in GT performance over standard Shrouds (**Output +1%**, **Heat Rate -0.45%**)

The standard HR120 shroud is manufactured from a strengthened Iron-Nickel-Chromium alloy which offers improved fatigue life and facilitates operation at firing temperatures of 2084 °F/1140 °C. This design incorporates standard through cooling within the shroud.



Option III - HR120 for 6581 Units

The HR120 shroud for factory built 6581 gas turbines is the third option, which is specifically for turbines that have the second stage nozzle cooled by 13th stage compressor extraction. These shrouds have an internal perforated box which improves cooling to inner side walls of shroud.

Stage 2 and Stage 3 Shrouds

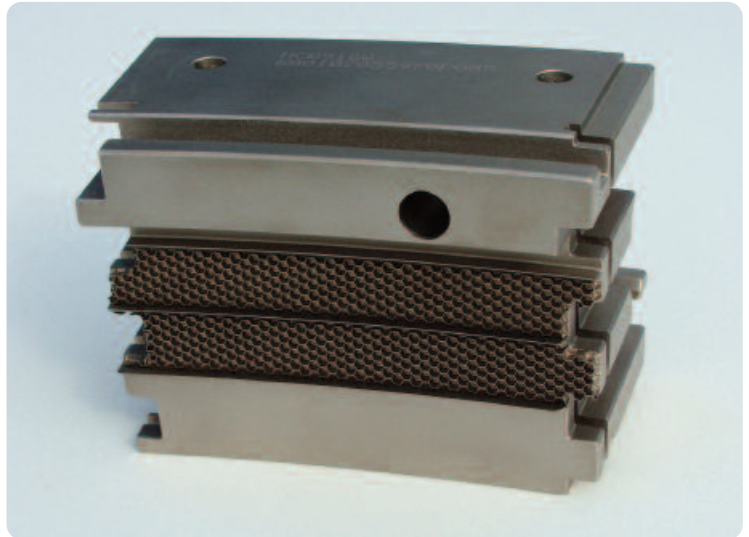
The 2nd and 3rd Stage Shroud segments are also manufactured through an investment casting with a two stage machining process. These are produced from SS316 which has good temperature properties, in addition to good oxidation resistance. These shrouds are rated for operation at firing temperatures of 2084 °F/1140 °C. The designs incorporate pumpkin teeth and flat bar sealing, with the choice of either the standard hard face coating or a honeycomb seal. The honeycomb seal allows for tighter bucket tip clearances improving turbine output and efficiency and reducing performance degradation.

Stage 1 Shroud (S1S)

	Option I	Option II	Option III
<i>Design</i>	Standard Shroud	Field Up-rated GT's	6581 with 13th stage extraction air
<i>Firing Temp</i>	Up to 2042 F	Up to 2084 F	Up to 2084 F
<i>Material</i>	SS316	HR120	HR120
<i>Coating</i>	G001 Hard Face Coating G002 Abradable Coating	G001 Hard Face Coating G002 Abradable Coating	G001 Hard Face Coating G002 Abradable Coating
<i>Cooling</i>	Through cooling	Through cooling	Perforated insert box
<i>Sealing</i>	Pumpkin teeth and flat bar seal	"Q- tip" and "W" Seal	"Q- tip" and "W" Seal

Stage 2 Shroud (S2S)

<i>Design</i>	Standard	Honeycomb
<i>Firing Temp</i>	Up to 2084 F	Up to 2084 F
<i>Material</i>	SS316	SS316
<i>Coating</i>	Hard Face Coating	Honeycomb Coating
<i>Cooling</i>	No cooling	No cooling
<i>Sealing</i>	Pumpkin Teeth Flat bar seal	Pumpkin Teeth Flat bar seal



Stage 3 Shroud (S3S)

<i>Design</i>	Standard	Honeycomb
<i>Firing Temp</i>	Up to 2084 F	Up to 2084 F
<i>Material</i>	SS316	SS316
<i>Coating</i>	Hard Face Coating	Honeycomb Coating
<i>Cooling</i>	No cooling	No cooling
<i>Sealing</i>	Pumpkin Teeth Flat bar seal	Pumpkin Teeth Flat bar seal



TURBINE SERVICES is a global provider to owners and operators of industrial gas turbines, offering an employee skill-base in excess of 2,000 man-years of experience in gas turbine maintenance solutions. With our heritage in John Brown Engineering, our primary specialization is in the heavy duty frame range of GE designed gas turbines.

Our business is founded on the strength of our technical and engineering capability, reinforced by our commitment to quality and customer satisfaction that is demonstrated by our accreditations (ISO 9001:2000) and registrations (Achilles, Supply Line, FPAL and Repro).

In addition to our extensive experience, our customers also benefit from the high-tech capabilities of our parent company, Chromalloy. Leading the industry in advanced technology derived from 60 years of aero and industrial gas turbine component experience, we offer state-of-the-art component, repair, coating and manufacturing technologies.

Turbine Services is a division of Chromalloy Gas Turbine Corporation with interests in the global Aero & Industrial Gas Turbine market sector.

Services include:

- Plant operation & maintenance
- Field & engineering support
- Component refurbishment
- Replacement spare parts
- Turbine control systems
- Plant operator training
- Rotor Overhaul
- Condition Monitoring
- Long Term Service Agreements
- Turbine Refurbishment



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