

CASE STUDY



A 2011 Award of Distinction winner in the Medical & Dental category.

Distal Channel Retainer

Process:
Metal injection molding

Secondary Processes:
Reaming

Material:
17-4 PH stainless steel

Density:
7.7 g/cm³

Tensile Strength:
175,000 psi

Yield Strength:
158,000 psi

End Use and Function

This component is a 17-4 PH stainless steel distal channel retainer formed via the metal injection molding (MIM) process. The complex, multi-level part is the main distal-side component of an articulation joint in an articulating mechanical stapler/cutter used in endoscopic surgery.

Fabrication

Formed to a typical density of 7.7 g/cm³, the part has a typical tensile strength of 175,000 psi, yield strength of 158,000 psi, and a 6% elongation. Closest dimensional tolerance is $\pm .0006$ (formed by secondary operation). Complex surface profiles are held to a tolerance of .002".

Results

The MIM process provided a cost savings in the range of 25%–30% vs. other design options.



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