

CASE STUDY



A 2021 Grand Prize Winner in the Hand Tools/Recreation category for metal injection molded components

Quick Disconnect Sling Mount Assembly

Process:
Metal injection molding (MIM)

Material:
4140 low-alloy steel

Density:
7.5 g/cm³

End Use and Function

The quick disconnect assembly of 3 parts is used on slings/harnesses for a variety of small, handheld devices like cameras, binoculars, firearms, etc.

Fabrication

Detailed design discussions with the customer allowed for a near-net-shape assembly. Utilizing the MIM process allowed for smooth transitions and rounded edges, as well as the elimination of machining marks on the visible portions of the parts. Two of the parts are sintered to near-net-shape and are qualified after sintering with a minor sizing operation. The third part is sintered to net-shape with no additional processing required. All three are heat treated and given a ferritic nitrocarburized finish. The parts are made to a 7.5 g/cm³ minimum density.

Results

Utilizing MIM, this complex assembly resulted in an aesthetically pleasing shape and appearance. Manufacturing this assembly with an alternate fabrication method would not have been economically feasible in a production environment. The complexity, geometry, overall size, and intended end use made this an excellent candidate for the MIM technology.



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