
Below-the-Hook Devices:

Special Purpose & Fully Custom Grapple



Introduction

Below-the-hook devices offer a number of advantages for heavy lifts in a variety of material handling applications. They help to prevent accidents by ensuring that the load is secure and balanced and can be customized using a wide range of attachments and lifting designs.

Due to the wide range of potential use cases, most below-the-hook equipment is custom designed and manufactured. To ensure that your lift design is ideal for your application, it is important to take into account the intended usage of the crane, weight limits, motion requirements, and the environment in which the crane will operate. In addition, all below-the-hook devices must be compliant with relevant OSHA standards, ASME B30.20, and ASME BTH-1.

American Crane & Equipment Corporation (ACECO) is a leading provider of overhead lifting solutions for our customers in a variety of industries, including construction, automotive, aerospace, industrial, manufacturing, and environmental, among many others. We specialize in the development of special purpose and fully customized equipment for even the most challenging applications.

In the following case study, we were able to put our full range of industry knowledge, customization skills, and world-class service on display to provide a special purpose grapple for a loyal customer's environmental engineering project.

Technical Specifications of the Special Purpose Grapple

This special purpose grapple was designed with a wide array of moving parts and industry-specific materials to meet rigorous design and regulatory specifications. The technical specifications of the grapple were laid out as follows:

- **Capacity:** 16,500 lbs.
- **Grapple Weight:** 1,500 lbs.
- **Grapple Stand Weight:** 451 lbs.
- **Design Specification:** ANSI N14.6
- **Plate Material:** ASTM A240 Grade 316/316L Stainless Steel
- **Round Bar:** ASTM A276 Grade 316/316L Stainless Steel, and ASTM A564 Type 630 Stainless Steel for added strength
- **Round Tube:** ASTM A312 Grade 316/316L Stainless Steel
- **Flat Bar:** ASTM A276 Grade 316/316L Stainless Steel

Project Details: Identifying the Challenge

The customer—a high-profile engineering firm—needed a custom-designed grapple that is not available on the commercial market. The grapples are designed specifically to lift specialty containers with hazardous contents for a client in the environmental industry. American Crane's responsibility in this project covered the manufacture of two specialty grapples and two grapple stands based on proprietary American Crane designs. The equipment was requested with a turnaround of 28-30 weeks from the start of manufacturing to the shipping date.

We agreed to provide all skilled labor and supplies necessary to design, manufacture, assemble, inspect, test, package, and deliver the two specialty grapples, two grapple stands, and full QA documentation in accordance with NQA-1.

Operation

The specialty grapples were designed to operate using mechanical means, with a two set-down release mechanism to ensure operational safety. For easy operation, the mechanism was designed with a clearly visible sequence indicator with three settings:

- Grapple Engaged
- Grapple First Set-Down
- Grapple Second Set-Down

This clear design allows operators to safely move sensitive specialty containers with the utmost reliability and reduces the potential for accidents due to operator error.

Design

Due to the potential for exposure to corrosive materials, all grapple components were made from stainless steel. As the initial designer, American Crane had previously manufactured 17 of these specialty grapples. Our hands-on experience and proprietary familiarity with the design allowed us to complete the manufacturing process with exceptional speed and efficiency.

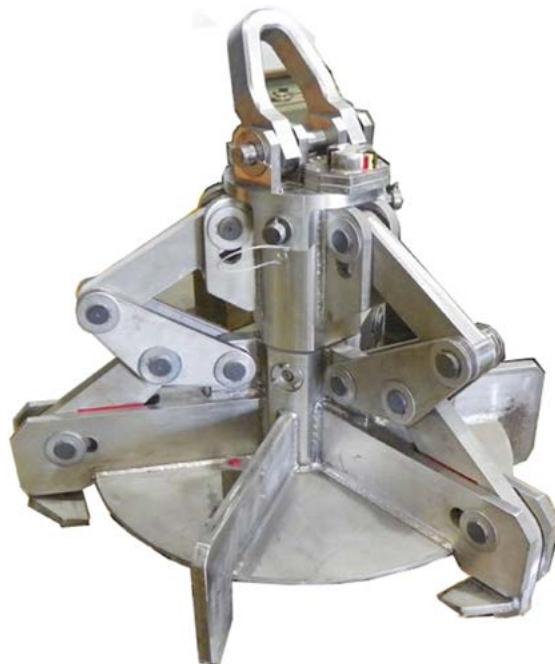
The ACECO Solution

To meet the customer's request, American Crane provided the labor and supplies to design, fabricate, assemble, test, package, and deliver the specialty grapples in keeping with previously manufactured designs created by American Crane and the client. The manufacturing process was complicated during the COVID-19 pandemic, which prevented the customer from reviewing the testing live. ACECO personnel conducted thorough testing on video so that the video could be viewed and approved by the customer.



The Final Result

The specialty grapple design for this project was originally developed by American Crane and used in 17 prior orders. The customer was pleased with the results, and has ordered additional grapples for fulfillment later this year. Overall, our shop personnel and quality assurance team provided excellent support for the fabrication, quality testing, and shipment of this specialty equipment during unprecedented times.



Quality Lifting Solutions From the Specialists at American Crane

At American Crane & Equipment Corporation, we are committed to providing the highest quality lifting solutions for our customers in every industry. We pride ourselves on developing solutions to challenging requests with consummate skill and unmatched innovation. To learn more about our custom overhead lifting solutions, please [contact us today](#) or [request a quote](#).





We are your Expert, Craftsman & Partner.

Our goal is to make our customer's job easier. We provide turnkey material handling solutions for all types of industries; including nuclear, aerospace, energy, and general manufacturing. Our quality is built on depth of capabilities, with an integrated approach, in-house resources, and experience.

At American Crane & Equipment Corporation, we are uniquely positioned to provide our customers with a single source to provide the most highly engineered material handling solutions. This integrated approach includes project managers, engineers, complete manufacturing facilities and service technicians to help you with your material handling needs. Our company has a long-standing reputation as a leading supplier of quality equipment and engineering services to customers throughout the world.

At American Crane, **GRIT Matters**. We are passionate about delighting our customers and put **perseverance, heart** and **integrity** into everything we do.

President & COO

Contact Us

Resource Library

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