



The creator of a specialized robot that was designed for accurate and high carrying load package handling; needed a customized solution for mobility. The robot, intended for warehouse and distribution facilities, would work alongside people and transport packages at the loading dock, reducing labor and potential injury. The mobile robot has the capability of 4,000 pounds. The application needed a durable motor with low DC voltage and high torque requirements to overcome the system inertia while small enough to meet size and motion control movement for a smooth and uninterrupted operation on truck docking station environment.

Stock Drive Products/Sterling Instrument (SDP/SI) was chosen for the project based on its expertise in motion solutions, its assortment of stock motors and motion control products, the ability to customize, and its engineer-to-engineer support. Initially, the customer approached SDP/SI with a request for standard AGV kits. After careful consideration of the design requirements, especially wheels radial loads, and static and dynamic loads the SDP/SI engineers offered a solution. Our recommendation was to attach a standard two-stage planetary gearbox (S991CTMPGH030G), high torque 142mm 10 poles brushless servo motor with encoder (NH1-142LDA200FACAC), with custom wheel and mounting bracket. The implemented modification allowed for a larger torque transmission and load carrying capabilities. Using CAD software and Finite Element Analysis (FEA), SDP/SI engineers designed a bracket satisfying all the strength, assembly, and space requirements. A dual channel controller with CANbus communication was added, giving the ability to perfectly control two traction servo gear motor assemblies per robot.

For the initial build, the aforementioned parts were in stock and provided the customer with the desired results. The outcome gave them test data and validated the system performance and cost. SDP/SI engineers advised them to leave out some additional features needed for production to optimize performance and reduce lead-times.

*"I have been reminded many times that the success of a product pushing boundaries into new territory depends on a clear understanding of the requirements and its validation. Having an initial functional prototype in a timely manner was key to the success."* Jacques Lemire

Application Assistance – Engineering

Call: 1 (516) 328-3300

Contact us online:

<https://www.sdp-si.com/contact-form/>

### Integrated Motion Control Features

- Large torque transmission and load carrying capabilities
- Precise control with a dual channel controller
- Cost effective design for durability and ease of assembly
- Responsive to immediate need for system performance validation – stock components

### Products

- Two-stage planetary gearbox
- High torque brushless servo motor with encoder
- Custom wheel and mounting bracket
- Dual channel controller

