



DATA SHEET

RetroReach

Manipulator Arm

A stand-alone retrofit manipulator arm that enhances the functionality of a Pronto4 retrofitted mobility platform

Capable of performing high-maintenance operations, delivering payloads or moving small mobile robots closer to a drop-off point, the RetroReach Manipulator Arm has a wide range of applications on a number of vehicles.

- Attaches to a standard hitch receiver on the front or back of the vehicle
- Mobility platform retrofitted with the Pronto4™ Strap-on Autonomy System
- Short-range wireless communications protocol
- Can perform dangerous or EOD missions



A Kawasaki Mule retrofitted with the Pronto4™ Strap-on Autonomy System and a retrofit manipulator arm.

RetroReach Manipulator Arm Specifications

- Tele-operation or semi-autonomous operations
- Near zero backlash of all rotary joints
- Lifting capabilities exceeding 250 lbs.
- Precise movement controls and high grip strength
- Wide range of manipulator attachments for collecting and placing samples
- Joint controls grouped for natural, coordinated motion
- Simultaneous coordinated motion of multiple joints
- Application specific with designs pulled from existing references and customer specifications
- Power source is a simple electrical connection
- Individually variable, joystick-controlled speed for each joint yielding precise manipulation of all joints
- Single-sided, quick-change, accessory mounting system
- Scalable arms are available to meet user needs

(MORE INFORMATION ON REVERSE SIDE)

RetroReach Manipulator Arm

Additional Features and Specifications

- Arm joints do not drift with weight (no motor backdriving)
- Torso Rotate: -120 degrees to +180 degrees – Backlash = zero
- Shoulder: 215 degrees – Backlash = zero
- Shoulder Length: 37" (940 mm) from pivot center points
- Elbow: 260 degrees; Backlash = zero
- Elbow Length: 30.5" (775 mm) from pivot center point to end
- Wrist: +/- 100 degrees; Backlash = zero
- Wrist Length: 10.25 to 14.75 inches (260 mm to 375 mm) from pivot center-point to end of gripper open and close
- Wrist Extend: 6 inches (150 mm)
- Arm Speed: 60 seconds from fully stowed position to fully extended position of 76.5 inches (1943 mm) with coordinated and simultaneous motion control.
- Gripper: 0 to 12 inches close/open (300 mm)
- Grip Rotate: 360 degrees continuous; Backlash = zero
- Grip Force: 79 lbs (36 kg)
- Lifting Capacity: 260 lbs (118 kg) at 18 inch (457 mm) extension; 165 lbs* (75kg*) at 48 inches (1220 mm); 60 lbs (27 kg) at full extension.
*Robot counterbalanced with weights to avoid tipping forward
- Vertical Reach: 103.5 inches (2629 mm) with arm extended
- Horizontal Reach: 76.5 inches (1943 mm) from front of robot platform
- Simulated Linear Coordinated Motion: simultaneous control of shoulder, elbow and wrist yields horizontal linear motion of 55 inches (1400 mm) in 25 seconds
- Optional High Intensity Light Kit: attaches to gripper or forearm to provide two banks of 40 Watt lighting for 80 Watts maximum



A Pronto4 retrofitted HMMWV with a retrofit manipulator arm attached to the front. The arm can also be attached to the back of the vehicle.

Using a standard hitch receiver, the RetroReach Manipulator Arm can attach to any Pronto4 retrofitted mobility platform for enhanced functionality and capability.

A collaborative effort between:

