

# WELDING MANIPULATOR



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## NEED

Access Ability Inc is a metal fabrication company who also manufactures a line of building access ramp products. Some of the subparts to these products require the welding and grinding of multiple seams on each part to complete them. This handling requirement has led to repetitive motion concerns as well as safety concerns of trying to handle parts with one hand while running a hand grinder with the single remaining hand. This solution would require a quick change fixturing solution that could hold various shaped parts in a variety of orientations.

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## SOLUTION

The solution resulted in the selection of an off the shelf welding indexer, having a remote foot speed control pedal. It was fitted with a custom designed quick change clamping fixture. The fixture can be easily adjusted to fit different shaped parts, and features a sliding clamp jaw that is unclamped with the  $\frac{1}{4}$  turn of a lever. The indexing face allows access of up to 5 sides of a part in one setup, which greatly reduces the repetitive handling of the parts. The fixturing face of the indexer may also be tilted in a range from horizontal, to vertical. The assembly is mounted to an adjustable height work cart to allow the device and work to be raised or lowered, and locked to an optimum work height, to further reduce related ergonomic issues.

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## BENEFIT

Access Ability employee Gale Schmidt reported discomfort levels in the pre-project discomfort survey (on the 0 to 10 scale) as follows: lower back- 8, abdominals- 6, neck, shoulders, upper back all rated 4, elbows, forearms, knees all rated 3, hand & wrist rated 2. Following the introduction of the welding manipulator the post-project discomfort survey indicated a rating of 0 (no discomfort) related to the small parts grinding tasks. One can conclude based on the results of the pre and post ergonomic assessments along with the pre and post-project discomfort surveys, that the initial MSD risk factors found in the small parts grinding tasks have been significantly reduced by the engineering controls and ergonomic improvements implemented.

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## CONTACTS

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