

Center for International Rehabilitation

Chapter 3 Jigs



Juan Becerra of Peru Using a Sideframe Jig

Wheelchairs can be built much more quickly and accurately by using jigs to hold the parts in place and guide your tools. We have developed jigs for the more difficult steps of building our wheelchair. There are jigs that hold parts at the correct angles during welding, and jigs that guide the drill bits to space holes uniformly.

In our experience, an expert mechanic using a complete set of jigs to make several chairs at a time is able to manufacture a wheelchair in three or four person days, while a mechanic using only a few jigs can take a week or more to make one chair.

There are many different ways in which experienced mechanics build jigs. In every case, however, the jigs must be accurate, produce consistent parts efficiently, and stand up to heavy use. The designs we are offering are the best we have come up with so far; we would very much appreciate hearing from any readers who develop jigs which are more accurate or easier to make.

The amount of time it takes to build one chair can be reduced to a minimum when workers specialize, using jigs to build wheelchair parts in large quantities. Rather than each worker spending a lot of time each day changing tools and tasks, one can make wheels while another bends the sideframes and fenders; one can weld while another sews upholstery.

Our current set of jigs can be purchased as part of the Basic Tool Kit (described in the previous chapter). For those of you who can make the jigs yourselves or who know a local machinist who can make them, we have included diagrams and brief descriptions of each jig in Appendix B at the end of this book.

The following list is a complete list of all the jigs that we are now using to build the ATI-Hotchkiss wheelchair.

A COMPLETE LIST OF JIGS

JIG	PART OF CHAIR	USED IN CHAPTER
1) Seat Back Drilling Jig	Sideframe	7
2) Frame Welding Jig	Sideframe	10
3) Plywood Square	Sideframe	10
4) Brake Hole Drilling Jig	Sideframe	7
5) Seat Support Tube Drilling Jig	X-Brace	9
6) X-Brace Brazing Jig	X-Brace	9
7) Center Hole Drilling Jig	X-Brace	9
8) Brake Catch and Stop Welding Jig	Fender Bar	8
9) Hub Drilling Jig	Rear Wheels	11
10) Spoking Board	Rear Wheels	11
11) Rim Drilling Jig	Handrim	12
12) Caster Fork Bending Die	Front Wheels	13
13) Caster Fork Brazing Jig	Front Wheels	13
14) Upper Tube Welding Jig	Folding Footrests	14
15) Upper Tube Drilling Jig	Folding Footrests	14
16) Lower Tube Drilling Jig	Folding Footrests	14
17) Stop Rod Welding Jig	Folding Footrests	14
18) Cotter Pin Hole Drilling Jig	Brakes	15
19) Edge Bar Drilling Jig	Seat and Back	16

We have included the following diagrams to give you an idea of what the various jigs actually look like. As you refine your production techniques, you will undoubtedly invent new jigs and refine old ones. For directions on how to make each jig see Appendix B at the end of this book.

