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BASE CONNECTION CLAMP MANUFACTURE BREAKDOWN

<i>Part</i>	<i>No. Required</i>	<i>OEM or custom made</i>	<i>Material</i>	<i>Set-up/Tooling</i>
<p>Rear plate</p> 	2	Custom	10mm mild steel	Watercut file
<p>Centre spacer</p> 	2	Custom	20mm mild steel	Watercut file
<p>Front plate</p> 	2	Custom	10mm mild steel	Watercut file




<i>Manufacturing Process</i>	<i>Amortised costing</i>	<i>50 units</i>	<i>100 units</i>	<i>500 units</i>
Watercut Hot dipped galvanised		\$3.50 ea	\$3.20 ea	\$2.50 ea
Watercut Hot dipped galvanised		\$7.00 ea	\$6.50 ea	\$5.50 ea
Watercut Powder coated red		\$4.00 ea	\$3.80 ea	\$3.20 ea

BASE CONNECTION CLAMP MANUFACTURE BREAKDOWN

<i>Part</i>	<i>No. Required</i>	<i>OEM or custom made</i>	<i>Material</i>	<i>Set-up/Tooling</i>
<p>Front nut</p> 	2	Custom	Steel	Sand cast, post machined/ threaded. Tool cost \$500
<p>Threaded rod</p> 	2	OEM	Steel	n/a
<p>Mast clamp</p> 	2	Custom	32mm mild steel	Watercut file

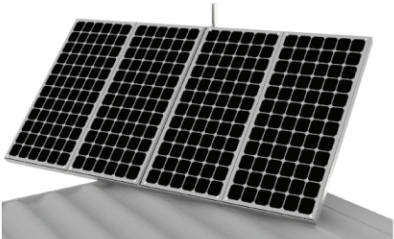
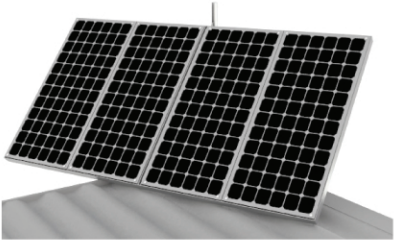

<i>Manufacturing Process</i>	<i>Amortised costing</i>	<i>50 units</i>	<i>100 units</i>	<i>500 units</i>
Sand cast Powder coated red: \$1.00		\$17.00 ea	\$11.30 ea	\$6.60 ea
M20 Bolt: machined flat 50mm and hole drilled through at 82.5mm.		\$4.00 ea	\$3.50 ea	\$2.50 ea
Watercut, front left side threaded to allow for M12 bolt. Top hole threaded to allow for M12 bolt. Hot dipped galvanised.		\$33.00 ea	\$30.00 ea	\$25.00 ea

BASE CONNECTION CLAMP MANUFACTURE BREAKDOWN

<i>Part</i>	<i>No. Required</i>	<i>OEM or custom made</i>	<i>Material</i>	<i>Set-up/Tooling</i>
<p>Bolt</p> 	6	OEM	12mm galvanised. 4 @ 35mm 2 @ 25mm	n/a
<p>Bach Pack C-spanner tool</p> 	1	Custom	6mm mild steel	Sand cast: Tool cost \$500
<p>Ladder</p> 	1	OEM	Aluminium	n/a

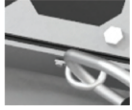


<i>Manufacturing Process</i>	<i>Amotised costing</i>	<i>50 units</i>	<i>100 units</i>	<i>500 units</i>
n/a		M12 x 35mm \$0.60 ea M12 x 20 \$0.40 ea	M12 x 35mm \$0.50 ea M12 x 20 \$0.35 ea	M12 x 35mm \$0.20 ea M12 x 20 \$0.15 ea
Sand cast, linished and rumbled. Powder coated red		\$32.00 ea	\$23.00 ea	\$12.00 ea
n/a		\$220.00 ea	\$200.00 ea	\$180.00 ea

SOLAR ARRAY FRAME MANUFACTURE BREAKDOWN

<i>Part</i>	<i>No. Required</i>	<i>OEM or custom made</i>	<i>Material</i>	<i>Set-up/Tooling</i>
Solar panel 	4	OEM	Photovoltaic film	n/a
Aluminium frame 	1	OEM	50 x 50 x 5mm aluminium	n/a
Caribena 	2	OEM	60mm galvanised	n/a


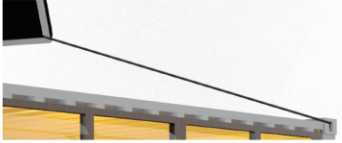

<i>Manufacturing Process</i>	<i>Amortised costing</i>	<i>50 units</i>	<i>100 units</i>	<i>500 units</i>
n/a		\$1000.00 ea		
L-extruded aluminium cut to length and welded together into one enclosed frame. Powdercoat finish.		\$100.00 ea	\$80.00 ea	\$30.00 ea
n/a		\$15.00 ea	\$12.00 ea	\$8.00 ea

SOLAR ARRAY MANUFACTURE BREAKDOWN

<i>Part</i>	<i>No. Required</i>	<i>OEM or custom made</i>	<i>Material</i>	<i>Set-up/Tooling</i>
U-hook 	2	OEM	Galvanised steel	n/a
Ronstan cam feed/lock 	2	OEM	Polycarbonate plastic	n/a
Spring 	2	OEM	Galvanised steel	n/a


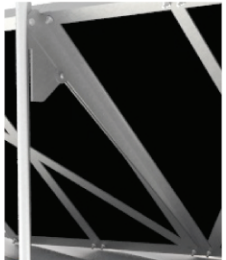
<i>Manufacturing Process</i>	<i>Amortised costing</i>	<i>50 units</i>	<i>100 units</i>	<i>500 units</i>
n/a		\$10.00 ea	\$8.00 ea	\$5.00 ea
n/a		\$188.00 ea	\$150.00 ea	\$110.00 ea
n/a		\$2.00 ea	\$1.00 ea	\$0.50 ea

SOLAR ARRAY MANUFACTURE BREAKDOWN

<i>Part</i>	<i>No. Required</i>	<i>OEM or custom made</i>	<i>Material</i>	<i>Set-up/Tooling</i>
<p>S-hook</p> 	<p>2</p>	<p>OEM</p>	<p>6mm galvanised steel</p>	<p>n/a</p>
<p>Rope</p> 	<p>2 @ 10mm dia. x 8m length each.</p>	<p>OEM</p>	<p>Polyester</p>	<p>n/a</p>
<p>Nuts & bolts</p> 	<p>16</p>	<p>OEM</p>	<p>M12 galvanised bolts</p>	<p>n/a</p>


<i>Manufacturing Process</i>	<i>Amotised costing</i>	<i>50 units</i>	<i>100 units</i>	<i>500 units</i>
n/a		\$5.00 ea	\$3.50 ea	\$2.50 ea
n/a		\$4.50/m	\$4.00/m	\$3.00/m
n/a		\$0.87 ea	\$0.78 ea	\$0.45 ea

SOLAR ARRAY MANUFACTURE BREAKDOWN

<i>Part</i>	<i>No. Required</i>	<i>OEM or custom made</i>	<i>Material</i>	<i>Set-up/Tooling</i>
Fixed angle bracket 	1	Custom	20mm mild plate steel 30mm steel tube	Watercut file
Solar panel frame spine 	1	Custom	20mm mild steel 20mm dia steel rod	Watercut file



<i>Manufacturing Process</i>	<i>Amortised costing</i>	<i>50 units</i>	<i>100 units</i>	<i>500 units</i>
Watercut plate, hole bored into tube, then welded together. Galvanised finish.		\$18.00 ea	\$16.00 ea	\$8.00 ea
Watercut file twice, weld steel rod to combine the two parts. Galvanised finish.		\$60.00 ea	\$52.00 ea	\$30.00 ea

SOLAR MAST MANUFACTURE BREAKDOWN

<i>Part</i>	<i>No. Required</i>	<i>OEM or custom made</i>	<i>Material</i>	<i>Set-up/Tooling</i>
Top cap	1	OEM	10mm steel plate	Watercut file
Mast 	1	OEM	48.3mm standard galv-anised scaffold tube x 3.5m	n/a
Bevel pinion gear large	1	Custom	Steel	Die cast tool: family tool with both gears cast in the same tool: \$8,000 (\$4,000 per gear).

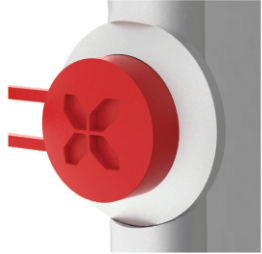
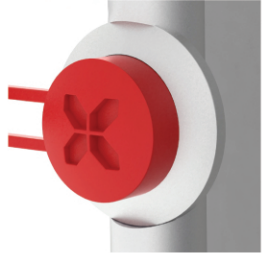

<i>Manufacturing Process</i>	<i>Amotised costing</i>	<i>50 units</i>	<i>100 units</i>	<i>500 units</i>
<p>Watercut, welded to top of scaffold tube. Galvanised finish. \$1.00 for weld, less in larger volumes.</p>		\$4.00 ea	\$3.50 ea	\$2.50 ea
<p>Slot machined into 2.5m of scaffolding tube.</p>		<p>\$70.00 tube \$20.00 machining slot</p>	<p>\$65.00 tube \$18.00 machining slot</p>	<p>\$42.00 tube \$8.00 machining slot</p>
<p>Gravity die cast from steel into blanks which are then post-machined on the gear faces and drive axel holes. Subsequently heat treated/hardened.</p>		\$120.00 ea	\$80.00 ea	\$28.00 ea

SOLAR MAST MANUFACTURE BREAKDOWN

<i>Part</i>	<i>No. Required</i>	<i>OEM or custom made</i>	<i>Material</i>	<i>Set-up/Tooling</i>
Bevel pinion gear small	1	Custom	Steel	As above
Handle: steel rod 	1	OEM	20mm steel rod	n/a
Handle: fold out casing 	1	Custom	6mm steel plate	Watercut file

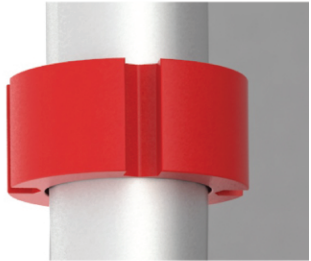

<i>Manufacturing Process</i>	<i>Amortised costing</i>	<i>50 units</i>	<i>100 units</i>	<i>500 units</i>
As above		\$115.00 ea	\$75.00 ea	\$23.00 ea
Cut, hold drilled for pin, red powder coated finish		\$4.00	\$3.80	\$1.80
Watercut, welded to front cap logo, red powder coated finish		\$6.00 ea	\$5.50 ea	\$3.80 ea

SOLAR ARRAY MANUFACTURE BREAKDOWN

<i>Part</i>	<i>No. Required</i>	<i>OEM or custom made</i>	<i>Material</i>	<i>Set-up/Tooling</i>
Handle: front cap logo 	1	Custom	20mm aluminium	Sand cast tool: \$500
Handle: front cap gear casing 	1	Custom	10mm plate steel	Watercut file
Cuff 	1	OEM	10mm dia. steel tube	n/a

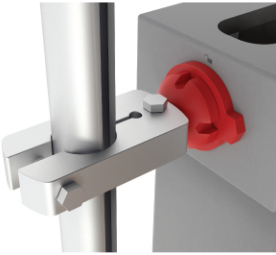
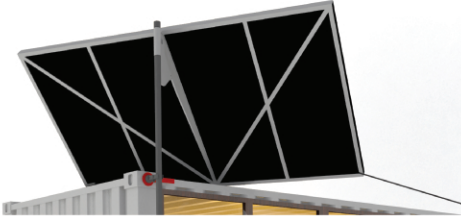

<i>Manufacturing Process</i>	<i>Amotised costing</i>	<i>50 units</i>	<i>100 units</i>	<i>500 units</i>
Aluminium is cast in mold, welded to fold out handle casing, red powder coated finish. After welding, part requires finishing to clean up.		\$25.00 ea	\$18.00 ea	\$14.00 ea
Watercut and then machined.		\$10.00 ea	\$9.50 ea	\$4.50 ea
Tube cut to size and welded to scaffold tube.		\$3.00 ea	\$2.80 ea	\$1.20 ea

SOLAR ARRAY MANUFACTURE BREAKDOWN


<i>Part</i>	<i>No. Required</i>	<i>OEM or custom made</i>	<i>Material</i>	<i>Set-up/Tooling</i>
Directional nut 	1	Custom	Steel	Sand cast mold. Tool cost: \$500
Clip 	1	Custom	6mm sprung steel	n/a
Screw drive	1	Custom	20mm steel rod	n/a

<i>Manufacturing Process</i>	<i>Amotised costing</i>	<i>50 units</i>	<i>100 units</i>	<i>500 units</i>
Aluminium is cast in mold, welded to scaffold tube. Red powder coated finish.		\$17.00 ea	\$11.30 ea	\$6.60 ea
Manufactured by soring maker or wire product company.		\$6.00 ea	\$5.00 ea	\$2.00 ea
n/a		\$150.00 ea	\$130.00 ea	\$60.00 ea

FINAL COSTING SUMMARY

Section of Bach Pack product	Amotised costing	50 units	100 units	500 units
Base connection with mast clamp 		\$172.00 ea	\$140.10 ea	\$179.30 ea
Solar array frame 		\$671.93 ea	\$545.48 ea	\$351.20 ea
Solar mast 		\$550.00 ea	\$427.40 ea	\$197.40 ea

FINAL COSTING SUMMARY

Specifications	Solar Panel	Batteries	Solar Controller	Transformer	Generator	Efergy Meter
						
Product Name	Mitsubishi Electric PV - MF100EC4	Exide RP12/200	Outback FlexMax80	Transformer/Rectifier	Honda EU2000i	E-Reader
Number Required	4	4	1	1	1	1
Dimensions w x d x h (mm)	646 × 1425 × 56	518 × 276 × 242	140 × 40 × 100	300 × 300 × 50	290 × 510 × 425	100 × 80 × 20
Power (Collected/ Output)	100W collected per panel	n/a	n/a	n/a	2kW	n/a
Lifespan	30 years	3-10 yrs depending on maintenance	10-20yrs	10-20yrs	7-8yrs: (4yr warranty)	20yrs
Retail Outlet	Eco Innovation	Eco Innovation	Eco Innovation	Eco Innovation	NZero Technologies	Eco Innovation
Price (\$NZ)	\$1,000/panel	\$600/battery	\$1,200	\$750	\$1,600	\$100
Additional Info:	11.5kg/panel Corrosion resistant	66kg	64 days data logging 5.6kg	n/a	n/a	n/a
Electrical System Component Cost	\$10,050 (approx.) + gas califont and gas bottle					

FINAL COSTING SUMMARY

<i>Total cost including system components</i>	Amotised costing	<i>50 units</i>	<i>100 units</i>	<i>500 units</i>
Bach Pack		\$1,393.93	\$1,112.98	\$727.90
System Components		\$10,050	\$10,050	\$10,050
TOTAL COST		\$11,443.93	\$11,162.98	\$10,777.90