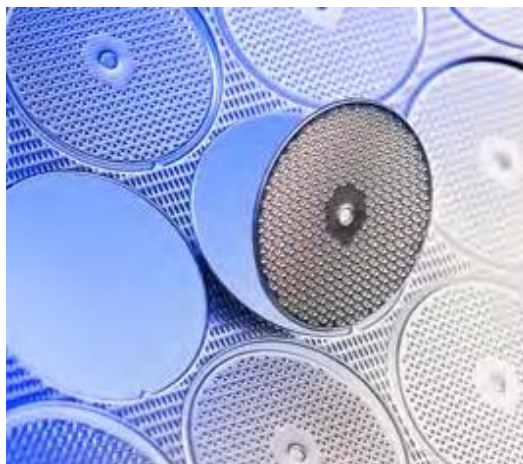
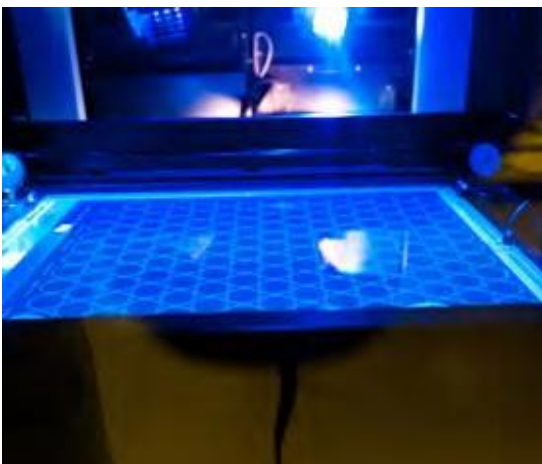




# Choosing the right tool for the Job

Selecting the correct manufacturing process for creating flat metal parts







Quality is all up to the tool used. Get it right and you will get the job right. Nowhere is this more important than in manufacturing metal parts. Choosing the right process is paramount. Precision and accuracy often get compromised by cost and time. But not if you choose Photo Chemical Machining (PCM), it's usually more precise and economical.

We asked a whole range of companies using different manufacturing production methods to quote us on parts of varying complexity. The tables compare prices and tolerances against alternative methods of manufacture – you will soon see why PCM is so attractive and such a serious contender.

## Pricing comparison as a % of PCM price

1 2 3 4 5

← Best price Worst price →

QUANTITY	Photo Chemical Machining			Laser Cutting			Stamping			Electro Discharge Machining (EDM) Wire Erosion			Water Jet Cutting			Photo Electro Forming		
	Tooling/set up	Component price (inc. material)	Component price lot (inc. mat. & tooling)	Tooling/set up	Component price (inc. material)	Component price lot (inc. mat. & tooling)	Tooling/set up	Component price (inc. material)	Component price lot (inc. mat. & tooling)	Tooling/set up	Component price (inc. material)	Component price lot (inc. mat. & tooling)	Tooling/set up	Component price (inc. material)	Component price lot (inc. mat. & tooling)	Tooling/set up	Component price (inc. material)	Component price lot (inc. mat. & tooling)
<b>Subject part 1: Disc</b>																		
100 PARTS	100%	100%	100%	65%	67%	66%	100%	110%	106%	X	50%	27%	X	121% <sup>†</sup>	65% <sup>†</sup>			
5,000 PARTS	100%	100%	100%	65%	93%	91%	1450%	46%	141%	X	260%	190%	X	720% <sup>†</sup>	526% <sup>†</sup>	Not practical		
50,000 PARTS	100%	100%	100%	65%	104%	104%	1450%	26%	44%	X	321%	317%	Not practical					
<b>Subject part 2: Key Way</b>																		
100 PARTS	100%	100%	100%	65%	67%	66%	Not practical			X	50%	27%	X	219% <sup>†</sup>	79% <sup>†</sup>			
5,000 PARTS	100%	100%	100%	65%	100%	97%	1750%	46%	200%	X	260%	190%	X	866% <sup>†</sup>	634% <sup>†</sup>	Not practical		
50,000 PARTS	100%	100%	100%	65%	113%	113%	1750%	26%	48%	X	321%	317%	Not practical					
<b>Subject part 3: Plate</b>																		
100 PARTS	100%	100%	100%	65%	237%	146%	Not practical			X	90%	45%	X	190% <sup>†</sup>	95% <sup>†</sup>			
5,000 PARTS	100%	100%	100%	65%	1375%	1230%	1890%	46%	245%	X	506%	475%	X	1125% <sup>†</sup>	1000% <sup>†</sup>	Not practical		
50,000 PARTS	100%	100%	100%	65%	1285%	1270%	1890%	26%	55%	X	695%	685%	Not practical					
<b>Subject part 4: Leadframe</b>																		
100 PARTS	100%	100%	100%	270%*	2200%*	1150%*	Not practical											
5,000 PARTS	100%	100%	100%	270%*	25000%*	20000%*	Not practical											
50,000 PARTS	100%	100%	100%	Not practical			20000%	55%	190%									
<b>Subject part 5: Grid</b>																		
100 PARTS	100%	100%	100%	300%*	2000%*	2200%*										100%	400%	200%
5,000 PARTS	100%	100%	100%	300%*	12000%*	11000%*	Not practical									100%	120%	119%
50,000 PARTS	100%	100%	100%	Not practical												100%	95%	95%

\*Micro-laser machining

<sup>†</sup> Best tolerance quoted on all parts: ±0.004" (0.1mm)





## Other factors for consideration

	Photo Chemical Machining (PCM)*	Laser Cutting	Stamping	Electro Discharge Machining (EDM) Wire Erosion	Water Jet Cutting	Photo Electro Forming (PEF)
<b>SAMPLING</b>	Low cost	Low cost	High cost	Low cost	Low cost	Medium cost
<b>METALS</b>	Nearly all metals	Nearly all metals	Nearly all metals	Carbon steel and most metal alloys	Nearly all metals	Predominantly nickel. Other metals: copper, silver and gold.
<b>HARDNESS</b>	No restriction	No restriction	Problems with very soft, hard or brittle metals	Hardness is a consideration	Hardness is a consideration	Generally 200-670 HV
<b>STRESS</b>	No stress	Thermal stress on the cutting edge	Stress at the cutting edge and close to it	Deformation, tempering and structural changes may occur in the material	Limited stress on the cutting edge	Low stress
<b>BURRS</b>	No burring	Micro burring	Partial burring	Micro burring	Micro burring	No burring
<b>DESIGN CHANGES</b>	Quick, easy, cost-effective	Quick, easy, cost-effective	Very costly and time consuming	Quick, easy, cost-effective	Quick, easy, cost-effective	Quick, easy, cost-effective
<b>TYPICAL LEAD TIMES FROM</b>	48 hours	48 hours	Several weeks	48 hours	48 hours	5 days
<b>A GENERAL GUIDE TO TOLERANCE AS A % OF METAL THICKNESS</b>	+/-10%	+/-5%	+/-10%	+/-10%	+/-15%	+/-5%
<b>CAN BE SUPPLIED IN SHEETS FOR EASY COUNTING &amp; HANDLING</b>	Yes	Yes	Not easily	Yes	Yes	Yes

**\*OTHER KEY BENEFITS OF PCM**

The ability to half etch through the metal – this can be used for logos ident numbers and bendlines. Step etching can also be used to vary the thickness across a part.

The table above is an illustrative general guide to the capability of each process - this can vary significantly depending on the process supplier.