

Quality Castings Sourced Globally



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Micro Metalsmiths

www.globalcastings.net

Introducing Micro Metalsmiths

Micro Metalsmiths is a castings foundry established in 1964 that trades globally, with a reputation for high quality products and customer commitment.

Micro Metalsmiths is an independent company, employing over 100 people in North Yorkshire, England.

Our present customers include

- + SAAB
- + THALES
- + NCR
- + ALCATEL
- + HONEYWELL
- + MOLEX

The major advantage to all our customers is the provision of a full range of in-house facilities and external sourcing of services. As a result, customers' needs can be met with a greater degree of flexibility.

The company has refined its techniques for the production of Copper alloy and Aluminum investment castings over forty years and is able to use the experience gained in controlling its sub contract associates.



Christopher Shaw SB SM (MIT)
Managing Director, Micro Metalsmiths Ltd,
consulting with our overseas colleagues

Micro Metalsmiths is able to offer:

- + Global sourcing of products and services
- + Project Management
- + Design department
- + Investment Foundry
- + Sand Foundries
- + Die castings
- + CNC Machine Shop
- + Assembly Shop
- + Subcontract supply chain management
- + Finished product supply

Micro Metalsmiths was accredited to BS5750 in 1998 and currently holds the latest ISO9001 ; 2000. The company is audited twice a year by the BSI.

Micro Metalsmiths has also been successfully audited by major aerospace and defence organizations and is on their approved supplier list.

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In response to our customers request to supply alternative alloys, Micro Metalsmiths has developed relationships with other foundries globally. With our expertise in casting we have scrutinized and sourced foundries that are able to respond to the requirements of our customers on quality and supply with a competitive cost

Micro Metalsmiths has established direct shipping links from the foundry enabling control of deliveries through customs and to the customer.

Micro Metalsmiths can offer sourced globally:

- + Alloy Steels, copper based alloys, iron, zinc and aluminum products.
- + ISO accreditation on castings.
- + Excellent supply chain control
- + Quality assured product
- + Fully machined products
- + Painted finished products
- + Good communication
- + Tried and tested foundries on delivery.

Deliveries

Micro Metalsmiths is able to manufacture parts to order, schedule or from stock arrangements.

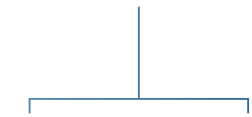
Deliveries are confirmed with daily contact with the foundries.

Initial Samples

As part of the tooling cost 2 cast samples are usually delivered in 5 to 6 weeks from receipt of order.

Production

Parts are delivered by ship, however an express service is available by air should the need arise. Parts have been delivered to the customer within 4 weeks from sample approval.



Investment Cast Tolerances

Dimension mm	Tolerance
Up to 12.5	±0.10
12.5 - 25	±0.20
25 - 50	±0.30
50 - 75	±0.40
75 - 100	±0.50
100 - 125	±0.60
150 - 175	±0.70
175 - 200	±0.80

Sand Cast Tolerances

Dimension mm	Tolerance
Up to 12.5	±0.20
12.5 - 25	±0.50
25 - 50	±1.00
50 - 75	±1.50
75 - 100	±2.00
100 - 125	±2.00
150 - 175	±2.50
175 - 200	±2.50
200 - 225	±3.00
225 - 250	±3.00
250 - 275	±3.00
300 - 325	±3.50
325 - 350	±3.50
375 - 400	±4.00
400 - 425	±4.00
425 - 450	±4.50

Gravity Die Cast Tolerances

Dimension mm	Tolerance
Up to 12.5	±0.26
12.5 - 25	±0.28
25 - 50	±0.32
50 - 75	±0.36
75 - 100	±0.40
100 - 125	±0.50
150 - 175	±0.60
175 - 200	±0.60

Micro Metalsmiths Cast Tolerances

Dimension mm	Tolerance
10	±0.05
20	±0.10
40	±0.20
60	±0.30
80	±0.40
100	±0.50
120	±0.70

Metal Specifications Readily Available

(other manufacturing techniques and materials are constantly updated on our website)

Mechanical Properties

STEEL

	AISI	Tensile N/mm ²	Hardness	Yield N/mm ²	Elongation %
Carbon Steel	1015	≥490	HB185		20
	1025	≥540	HB200		18
	1045	≥690	HB235		17
Low Alloy Steel	4137	≥780	HB300		18
	4140	≥880	HB320		12
	4320	≥830	HB295		17
	52100	≥1050	HRC60-65		2
Stainless Steel	410	≥540	HB163 -229		≥18
	420	≥590	HB179 -241		≥16
	304	≥440	≥ HB183	200	≥30
	316	≥520	≥ HB183	200	≥40
	316L	≥480	≥ HB187	180	≥40
Heat Resisting Steel	309	≥490		200	≥8
	314	≥440		200	≥8
Tool Steel	D3		≥ HRC61		
	D2		≥ HRC58		

COPPER ALLOYS

	Grade	Tensile N/mm ²	Hardness BHN	Yield N/mm ²	Elongation %
Red Brass	C83600	250		110	30
	C83800	240		110	25
Manganese Bronze	C85200	650		330	20
	C86400	440		170	20
	C86800	560		260	22
	HTB3	400	190	400	11
Yellow Brass	C85200	260	85	85	35
	C85400	230		80	35
	C85700	340		120	40
Tin Bronzes	C90500	310		150	25
	C90900	270		130	15
Nickel Silvers	C97300	240		110	20
	C97400	260		110	20
	C97600	310		165	20
	C97800	370		200	15
Aluminium bronze	C95800/AB2	250	170	250	13

ALUMINIUM

Grade	Tensile N/mm ²	Hardness BHN	Yield N/mm ²	Elongation %
LM25	140	55	80	2.0 - 3.0
LM25TF	250	90	200	0.0 - 2.0
A356T6	230	70	160	5
356	130	55	120	2

IRON

Material	Grade	Tensile N/mm ²	Hardness	Yield N/mm ²	Elongation %
Gray Iron ASTM A48 - 83	20	≥ 138			
	25	≥ 172			
	30	≥ 207			
	35	≥ 241			
	40	≥ 276			
Ductile Iron ASTM A536 - 84	18,45,65	≥ 414			
	06,55,80	≥ 552		≥ 379	≥ 6
	03,70,100	≥ 689		≥ 483	≥ 3
	02,90,120	≥ 827		≥ 621	≥ 2
Malleable Iron ASTM A47 - 84	22010	≥ 340		≥ 220	≥ 10
	24018	≥ 360		≥ 240	≥ 18

Chemical Composition

Fe	C	Si	Mn	P	S	Ni	Cr	Mo	V	AISI	
Bal	0.13 - 0.18	0.15 - 0.60	0.30 - 0.60	<0.030	<0.035					1015	Carbon Steel
Bal	0.22 - 0.28	0.30 - 0.60	0.30 - 0.60	<0.030	<0.035					1025	
Bal	0.42 - 0.48	0.60 - 0.90	0.60 - 0.90	<0.030	<0.035					1045	
Bal	0.33 - 0.38	0.15 - 0.35	0.60 - 0.85	<0.030	<0.030		0.90 - 1.20	0.15 - 0.30		4137	Low Alloy Steel
Bal	0.38 - 0.43	0.15 - 0.35	0.60 - 0.85	<0.030	<0.030		0.90 - 1.20	0.15 - 0.30		4140	
Bal	0.17 - 0.23	0.15 - 0.35	0.40 - 0.70	<0.030	<0.030	1.60 - 2.00	0.40 - 0.35	0.15 - 0.30		4320	
Bal	0.95 - 1.10	0.15 - 0.35	<0.50	<0.025	<0.025		1.30 - 1.60			52100	
Bal	<0.15	<1.50	<1.00	<0.04	<0.04		11.50 - 14.00			410	Stainless Steel
Bal	0.16 - 0.24	<1.50	<1.00	<0.04	<0.04		11.50 - 14.00			420	
Bal	<0.08	<2.00	<2.00	<0.04	<0.04	8.00 - 11.00	18.00 - 21.00			304	
Bal	<0.08	<2.00	<2.00	<0.04	<0.04	10.00 - 14.00	17.00 - 20.00	2.00 - 3.00		316	
Bal	<0.030	<1.00	<2.00	<0.045	<0.03	12.00 - 15.00	16.00 - 18.00	2.00 - 3.00		316L	
Bal	0.20 - 0.50	<2.00	<2.00	<0.040	<0.040	11.00 - 14.00	24.00 - 28.00			309	Heat Resisting Steel
Bal	0.35 - 0.45	<1.75	<1.50	<0.040	<0.040	19.00 - 22.00	23.00 - 27.00			314	
Bal	1.80 - 2.40	<0.40	<0.60	<0.030	<0.030	<0.50	12.00 - 15.00			D3	Tool Steel
Bal	1.40 - 1.60	<0.40	<0.60	<0.030	<0.030	<0.50	11.0 - 13.0	0.80 - 1.20	0.20 - 0.50	D2	

Cu	Sn	Pb	Zn	Ni	Fe	Mn	Al	Grade
85	5	5	5					C83600
83	4	6	7					C83800
72	1	3	24					C85200
63		1	40					C86400
55			37	3	2	3		C86800
55	0.2	0.2	Bal	1	1.5 - 3.25	4	3.0 - 6.0	HTB3
72	1	3	24					C85200
67	1	3	29				0.3	C85400
63	1	1	34.7					C85700
88	10		2					C90500
87	13							C90900
56	2	10	20	12				C97300
59	3	5	16	17				C97400
64	4	4	8	20				C97600
66	5	2	2	25				C97800
Bal	0.1	0.03	0.5	4.0 - 5.5	4.0 - 5.5	3	8.8 - 10.0	C95800/AB2

Al	Mn	Zn	Fe	Ni	Cu	Pb	Sn	Mg	Ti
Bal	0.3	0.1	0.5	0.1	0.2		0.05	0.2 - 0.6	0.2
Bal	0.1	0.1	0.2		0.2			0.25 - 0.45	
Bal	0.35	0.35	0.6		0.25	0.25		0.2 - 0.45	0.2 - 0.45

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DISCLAIMER: Micro Metalsmiths has taken every care to ensure that the information on these tables is accurate, however Micro Metalsmiths can not be held responsible for any errors.





Part manufactured in brass - machined at Micro Metalsmiths



Retail furniture

Slide cover - manufactured in brass and machined at Micro Metalsmiths



Steel Cast link for the rail industry



Door furniture



Lock industry sliding bolts

Lock industry



Electronics industry connecting couplings



Cast link - former steel fabrication (part is 600mm long)



Sample of parts manufactured in Micro Metalsmiths Process