

Process	Manchester		China supply partners
	Conventional	ELITE Technique	Conventional
Individual Casting Weight up to	15 Kg	15 Kg	25 Kg
Max size range	500mm x 500mm x 500 mm	500mm x 500mm x 500 mm	500mm x 500mm x 500 mm
Value added process	✓	✓	✓
Stock holding	✓	✓	✓
3D and 2D CAD	✓	✓	✓
Casting simulation	✓	✓	✓
JIT	✓	✓	✓
Machining	✓	✓	✓
Tool Design	✓	✓	✓
Heat treatment	✓	✓	✓
Surface treatments	✓	✓	✓
Impregnation	✓	✓	✓
X-ray	✓	✓	✓
Y-ray			
Rough testing	✓	✓	✓
Pressure test	✓	✓	✓

For reference purposes only. Please note, Dean Group International Ltd do not guarantee the above information.

	Manchester		China supply partners
Dye penetrant	✓	✓	✓
Fast prototypes	✓	✓	✓
CMM	✓	✓	✓
Shadow graph	✓	✓	✓
Thickness tester			
Microscopy	✓	✓	✓
Chemical analysis	✓	✓	✓
Mechanical tester	✓	✓	✓
Dynamic balancing	✓	✓	✓
Approvals	ISO 9001	ISO9001	ISO9001, TS16949

For reference purposes only. Please note, Dean Group International Ltd do not guarantee the above information.

Grade		Mechanical Properties			
Specification	Process	UTS (Mpa)	0.2% PS (Mpa)	Elongation (%)	Typical Hardness (HB)
A356.0 T6	IC/PDC	230	185	2	75
A357.0 T62	IC/PDC	310	241	3	75
BS2L99	IC	230	185	2	
BS L119	IC	215	190	1	85
BS L51	IC	160	125	2	
BS L78	IC	250	220		
BS L169	IC	300	240	3.5	
ADC12	PDC	331	165	2.5	85
BS 1490 LM25TF	IC/SC	230	200	1	
7075	F	572	503	11	150
6061 T6	F	294	245	10	95
60682 TF	F	310	270	8	95
<b>ELITE Technique</b>		<b>Enhanced investment casting properties</b>			

For reference purposes only. Please note, Dean Group International Ltd do not guarantee the above information.

Grade		Mechanical Properties			
Specification	Process	BS1490	ISO	UNS	Similar Grades
A356.0 T6	IC/PDC			A13560	LM25TF
A357.0 T62	IC/PDC			A13570	
BS2L99	IC				
BS L119	IC				
BS L51	IC				
BS L78	IC				
BS L169	IC				
ADC12	PDC	LM2	Al-Si10Cu2Fe	A384.0	
BS 1490 LM25TF	IC/SC		Al-Si7Mg	A356.0 T6	
7075	F		AlZn5.5MgCu	A9705	
6061 T6	F		AlMg1SiCu	A96061	
60682 TF	F		AlSiMgMn		
<b>ELITE Technique</b>		<b>Enhanced investment casting properties</b>			

For reference purposes only. Please note, Dean Group International Ltd do not guarantee the above information.

A356 T6 & A357 T61	Structural aircraft seating parts, automotive transmission cases, aircraft fittings and control parts, electronic enclosures. Other applications where excellent castability and good weldability, pressure tightness, and good resistance to corrosion are required.
BS L99	Good mechanical properties, Excellent castability and ensures a high degree of soundness
BS L119	Retains mechanical properties at elevated temperatures of 350c, difficult alloy to cast and requires specialised foundry techniques
BS L51	Retains mechanical properties at elevated temperatures of 200c
BS L78	Good tensile strength
BS L169	High strength aerospace, military, and automotive applications
7075	High strength forgings for a wide range of applications including Aerospace, Military and Automotive, where strength to weight ratios are critical. Stainless steel mechanical properties at a third of the weight.
ADC12	General purpose alloy, good fluidity, can be clear powder painted and finished with various chemical treatments.
LM25	Good corrosion resistance alloy, good castability. Applications include Marine, Food, Transport and Electrical industries
6061	Electrical Fittings, Brake Components, Valve parts, Marine Fittings, Aerospace, Military and automotive.
6082	Structural applications Automotive, Rail.

For reference purposes only. Please note, Dean Group International Ltd do not guarantee the above information.

Nominal Chemical Analysis														
Specification	Process	Cu	Mg	Mn	Si	Zn	Fe	Al	Ti	Ni	Cr	Sn	Pb	Others
A356.0 T6	IC/PDC	0.2	0.2-0.45	<0.1	6.5-7.5	0.1	0.2	Rem	0.2					
A357.0 T62	IC/PDC	0.2	0.4-0.70	<0.1	6.5-7.5	0.1	0.2	Rem	0.04-0.2					Be = 0.04 -0.07
BS2L99	IC	0.1	0.2-0.45	0.1	6.5-7.5	0.1	0.2	Rem	0.2	0.1				
BS L119	IC	4.5-5.5	0.1	0.2-0.3	0.3	0.1	0.5	Rem						Sb = 0.10-0.3 Co = 0.10-0.30 Zr = 0.10-0.3
BS L51	IC	0.8-2.0	0.05-0.2	0.1	1.5-2.8	0.1	0.1-0.2	Rem	0.25	0.8-1.7				
BS L78	IC	1.0-1.5	1.0-1.5	0.4-0.6	4.5	5.5	0.6	Rem	0.25	0.25				
BS L169	IC	0.1	0.5-0.75	0.1	6.5-7.5	0.1	0.2	Rem	0.1-0.2	0.05				
ADC12	PDC	0.2	0.1	0.5	10.5-12	3	1.3	Rem		0.1				
BS 1490 LM25TF	IC/SC	0.2	0.2-0.6	0.3	6.5-7.5	0.1	0.5	Rem	0.2					
7075	F	1.2-2	2.1-2.9	0.3	0.4	5.1-6.1	0.5	Rem	0.2		0.18 0.28			
6061 T6	F	0.15-0.4	0.8-1.2	0.15	0.4-0.8	0.25	0.7	Rem	0.15		0.04 0.35			
60682 TF	F	0.1	0.6-1.2	0.4-1	0.7-1.3	0.2	0.5	Rem	0.1		0.25			

For reference purposes only. Please note, Dean Group International Ltd do not guarantee the above information.

Grade		Mechanical Properties				
Specification	Process	Alloy condition	UTS (Mpa)	0.2% PS (Mpa)	Elongation (%)	Typical Hardness (HB)
AlMgSil	IC	T6	>300	/	>9	/
ZL101	IC	T6	>225	/	>1	>70
ZL101A	IC	T6	>275	/	>2	>80
ZL102	IC	T6	>135	/	>4	>90
ZL104	IC	T6	>225	/	>2	>70

For reference purposes only. Please note, Dean Group International Ltd do not guarantee the above information.

AlMgSi	Resistance to normal atmosphere is very good, Resistance to Industrial and marine atmosphere is good
ZL101	Its composition is simple, which is easy to melt and cast. It has good casting performance, good air tightness. It is suitable for castings which have thin walls, large area and complex shape but does not have high strength, such as Pump housings and household electrical appliances
ZL101A	Similar to ZL101 with the extra addition of Ti which helps refine the grain structure and improved strength. Therefore the material performance is better, in addition the anticorrosion is also enhanced. It can be used to produce engineering structure parts, motorcycles, cars, home appliances, and instrumentation products
ZL102	Similar properties to ZL101, it is a good general purpose material for complex parts with thin walls, large area with complex shapes, that dont have high requirements of strength
ZL104	The material has good casting properties, and excellent air tightness and corrosion resistance, however it has poor thermal resistance properties, so it's suitable power structure parts in large sizes and complex shapes and large loads such as shells for super chargers, cylinder covers, cylinder sleeves.

For reference purposes only. Please note, Dean Group International Ltd do not guarantee the above information.



Functional Dimensions UK Manufacturing		China supplier partners
Millimetres		
Dimension	Tolerance	Comply to ISO 8060 CT5-10
Up to 15.0	+ 0.10	
15.0 - 25.0	+ 0.13	
25.0 - 50.0	+ 0.25	
50.0 - 75.0	+ 0.33	
75.0 - 100.0	+ 0.35	
100.0 - 125.0	+ 0.45	
125.0 - 200.00	+ 0.55	
200.0 - 250.0	+ 0.60	
250.0 - 300.0	+ 0.70	
300.0 - 400.0	+ 1.10	
Each additional 25mm add $\pm 0.25$ mm		
Dependant on the shape of the casting post process setting can be applied to improve the finished cast tolerance		

Additional tolerancing UK manufacturing		Additional tolerancing China supplier partners	
Min Sections	Elite Technique	Conventional	Conventional
TBA		1.25mm	Locally 2mm
Length of minimum section is dependant on the casting configuration			
Wall Thickness Tolerance			
Special tolerances apply to wall thicknesses. The normal tolerance to be allowed is $\pm 0.20$ mm		VDG P960 material group A1 of Table 1	
Large plain wall sections, should incorporate a tolerance of $\pm 0.3$ mm			
Straightness/Flatness Tolerance	$\pm 0.13$ mm per 25mm excluding localised wax pattern depressions.	VDG P960 A1 of Table 2	
Angular Tolerance	+1/2o	VDG P960 1 of Table 3	
Surface Finish	Typical surface finish - 2.0 -3.2 micrometres.	Typical surface finish - 2.5 -3.5 micrometres.	
Geometric Tolerances			
Dependant on the casting configuration and / or alloy specification, and would be discussed on an individual basis at the quotation and development stage.			

Drawings should indicate the critical tolerances and should relax those which are not important

For reference purposes only. Please note, Dean Group International Ltd do not guarantee the above information.