

CROSTHWAITE & GARDINER

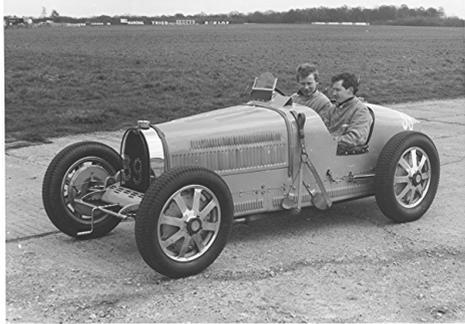
Wheel Catalogue 2015



About Us

Crosthwaite & Gardiner is one of the world's leading manufacturers and suppliers of parts to the historic motor racing industry. Established in 1969, the company is built on a wealth of knowledge and experience gained through over 40 years of producing parts for some of the most famous and important racing cars the world has ever seen.

Crosthwaite & Gardiner was established as a result of the joint passion of Dick Crosthwaite and John Gardiner for historic racing cars, and for Bugatti cars in particular, and has continued to build upon this Bugatti expertise ever since. The company has now worked on every Bugatti, bar the Royale. Buying stock, original pattern equipment and drawings over the decades and manufacturing parts for all the cars they have worked on has resulted in Crosthwaite and Gardiner carrying the largest stock of quality Bugatti parts in the world.



Dick and John in Neil Corner's T35B, chassis no. 4965 at Silverstone in 1967

Expanding on their renown for Bugattis, Crosthwaite & Gardiner developed their expertise into manufacturing components for other famous racing marques. This highly successful expansion has led to a series of projects to re-create historic racing engines, resulting in brand new Coventry Climax FPF, Maserati Birdcage, Jaguar LWE and D-type engines.

With the experience of casting components gained by Crosthwaite & Gardiner, it soon expanded again into the wheel industry, creating sand-casting patterns to precisely recreate a number of historic wheel designs and sourcing high quality magnesium and aluminium alloy to make them from. In recent times wheels have been one of the biggest lines that Crosthwaite & Gardiner produce.

Crosthwaite & Gardiner's enviable and un-rivalled experience in the historic racing industry has given them an incredible depth of knowledge of the cars they work on. This expertise means that they know exactly how each car was built and finished at the time it was originally manufactured. This allows the company to create faithful restorations and recreations of parts conserving the important originality and authenticity of the cars.

Crosthwaite & Gardiner are proud to manufacture the finest products for the finest cars in the world. Be it a precisely crafted Bugatti nut or a world beating Auto Union Grand Prix car, the attention to detail and quality is always the same.

Not all of the products we currently manufacture are in this catalogue and if you have any enquiries please do not hesitate to contact us.

REV 0715



Wheel Dimension, Offset and Treatment

Width

A wheel's quoted width is measured between the inside edges of the two lips that retain the vehicle's tyre and is traditionally measured in inches.

Diameter

A wheel's diameter is measured from the cross-sectional span of the tyre-mounting area, in inches. A 15" wheel will require a 15" tyre and so on, though the wheel's rims actually exceed this diameter across the lips to contain the tyre once fitted.

Offset & Backspace

Offset is the term used to describe the distance between the mounting face and centre-line of the wheel.

A **negative offset** is where the mounting face sits inside the wheel centreline, positioned towards the vehicle side of the rim.

A **zero offset** wheel would have the mounting face positioned on the wheel's centreline, whilst a **positive offset** positions the mounting face towards the outside, or kerb side of the wheel (seen below).

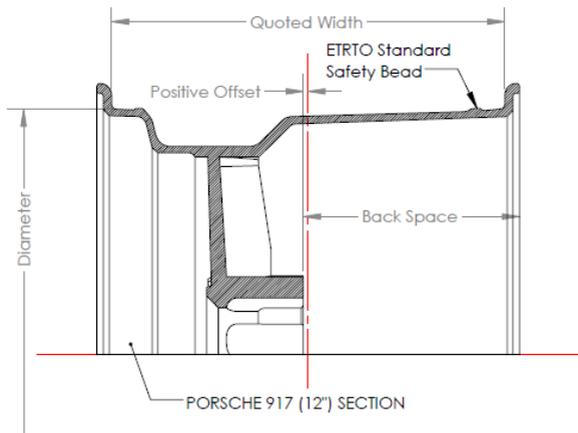
Wheel offset can be used to change or adjust a vehicle's track width and scrub radius, both of which have a large influence on a vehicle's handling and cornering performance.

Backspace refers to the distance between the rear most face of the wheel and the hub mounting face. Both offset and backspace are traditionally measured in mm.

Crosthwaite & Gardiner are able to manufacture a range of wheels to custom backspace and offset values to suit customers' requirements.

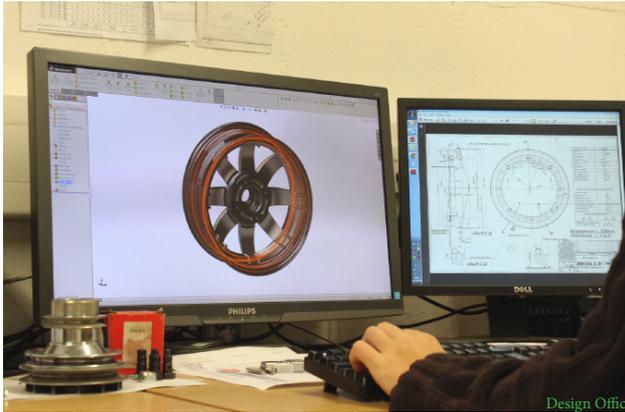
Magnesium Treatment

As magnesium is very porous, Crosthwaite & Gardiner supply magnesium wheels with a standard chromate finish to inhibit and protect the wheel from corrosion. As a further precaution, customers can add additional resin sealing (impregnated) or paint to protect the rim.



Wheel Production

Wheel production is just one of the highly specialised lines of manufacturing that we carry out at Crosthwaite & Gardiner.



Every Crosthwaite & Gardiner part design is produced in-house by our dedicated design offices. Here, historic wheels and many other components are reverse engineered using both original components and original period drawings. The reproduction process includes the originals being measured and 3D modelled using our state of the art CMM (Coordinate Measuring Machine) and CAD (Computer Aided Design) software.

Using these precise designs, we can then create traditional wooden and resin patterns. While some of these patterns have been crafted and improved over our many years of component manufacture, we also constantly design and produce new patterns for small and large production runs. Our expansive pattern stores are filled with patterns to create wheels and thousands of other components for many types of vehicles.

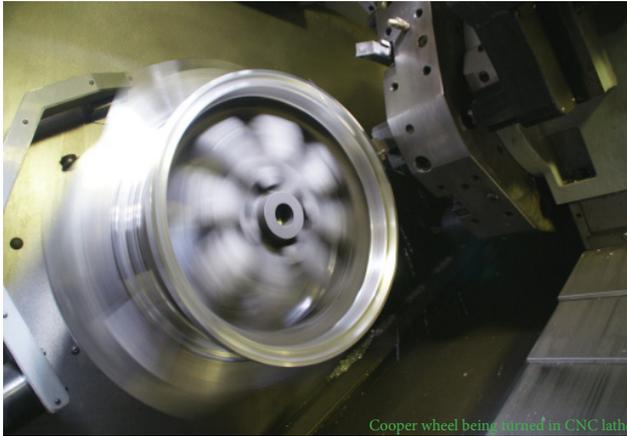


Wheel Production

Each wheel begins its life at one of our carefully selected foundries, located throughout the UK. The ability and knowledge to control this part of the production process ensures quality and repeatability with castings. Most of our wheel offerings are produced from magnesium alloy. This allows for a lighter wheel, and is also faithful to the materials used both in modern and period motorsport in many cases.



We work closely with our selected foundries to ensure that this precious material is handled with the utmost care and attention to detail to produce some of the finest castings possible. Samples of each batch of magnesium are spectrometer tested before pouring to ensure that there are absolutely no defects in the material. Where magnesium was not available or used in period - as with our Bugatti wheel range - high grade aluminium alloy is used to remain period-correct. In a similar process, this material is sand cast at British foundries before being transported to the Crosthwaite & Gardiner factory in Buxted, East Sussex.



These castings are then finished in our machine shop, which features three CNC (Computer Numerical Control) lathes. Once machined and drilled where appropriate, magnesium wheels are chromated black for corrosion resistance. Some wheel models are also crack-detected and impregnated for deflation resistance. Please note that all of our wheels, with the exception of some Bugatti models, feature a safety bead allowing the safe use of tubeless tyres.

Our product range has included everything from one-off sets of wheels for rare historic vehicles to low volume OE supply for a low-volume British trackday car manufacturer.





PORSCHE 917

The 917 was introduced in 1969 and is celebrated as the first car to bring Porsche Le Mans victories, which happened in both 1970 and 1971. With a Type 912 flat-twelve engine in capacities from 4.5- to 5.0-litres, the 917 is a true 200mph machine. The wheels seen here were also used on the early 3.0-litre 911 RSRs, while the 15x15" rears can also be fitted to the 908-3.

The Crosthwaite & Gardiner range of 917 wheels are all produced from sand-cast magnesium and are precision machined in our factory before being black chromated, crack detected and impregnated. The correct stainless steel driving peg inserts are used for longevity. The 15" diameter wheel is available in 10.5" and 12" front wheel widths and 15", 17" and 19" rear wheel widths.



Wheel	Width	Part Number
Porsche 917 (front)	10.5"	POR917-101-10.5
Porsche 917 (front)	12"	POR917-101-12
Porsche 917 (rear)	15"	POR917-101-15
Porsche 917 (rear)	17"	POR917-101-17
Porsche 917 (rear)	19"	POR917-101-19



PORSCHE 911 CARRERA RSR



14"

The classic 911 was and still is used in many forms of motorsport all over the world. The most extreme variant of it is the 911 Carrera RSR, which could be found in both 3.0-litre naturally aspirated and 2.1-litre turbocharged form. The most notable victory for the RSR was second place in the 1974 Le Mans 24 Hours.

The Crosthwaite & Gardiner range of RSR wheels are all produced from sand-cast magnesium and are precision machined in our factory before being black chromated and impregnated. The correct stainless steel driving peg inserts are used for longevity. The 15" diameter wheel is available in 9" and 10.5" front wheel widths and a 14" rear wheel width.



10.5"



10.5"



10.5"



14"



Image origin unknown

Wheel	Width	Part Number
Porsche RSR (front)	9"	PORRSR-95-001-9
Porsche RSR (front)	10.5"	PORRSR-95-001-10.5
Porsche RSR (rear)	14"	PORRSR-95-001-14





PORSCHE 908

Porsche introduced the 908 in 1968 in response to FIA rule changes limiting Group 6 Prototype Sports Cars to 3000cc. The 3.0-litre flat-eight and short wheel-base make it an exciting vehicle, which was available in a number of different body formats - open, closed and a longtail version for the 1969 Le Mans 24 Hours.

The Crosthwaite & Gardiner range of 908 wheels are all produced from sand-cast magnesium and are precision machined in our factory before being black chromated, crack detected and impregnated. The correct stainless steel driving peg inserts are used for longevity. The 15" diameter wheel is available in a 9" front wheel width and a 12" rear wheel width.



Image origin unknown



Wheel	Width	Part Number
Porsche 908 (front)	9"	POR908-101-9
Porsche 908 (rear)	12"	POR908-101-12



PORSCHE 910



The Porsche 910, sometimes known as the Carrera 10, was originally raced in 1966 and 1967. It was based on the 906 series of Prototype Sports Cars and featured either a 2.0-litre flat-six or a 2.2-litre flat-eight. One of the distinctive features was its smaller 13" wheels, as per Formula One. The 9.5x13" rear wheel can be used on the front axle of the 908-3.

The Crosthwaite & Gardiner range of 910 wheels are all produced from sand-cast magnesium and are precision machined in our factory before being black chromated and impregnated. The correct stainless steel driving peg inserts are used for longevity. The 13" diameter wheel is available in an 8" front wheel width and a 9.5" rear wheel width.



9.5"



9.5"



Wheel	Width	Part Number
Porsche 910 (front)	8"	POR910-95-001-8
Porsche 910 (rear)	9.5"	POR910-95-002-9.5





8.5"

COBRA FIA-STYLE

The wheel used in period by the FIA legal AC Cobras with 289 cubic inch V8s. Though our other Cobra wheel is race legal, this Halibrand replicating wheel is the one to have if you're looking to create a period-perfect race car. Most versions are made of aluminium, but our magnesium creations weigh as little as 6.05kg or 13.35lb each.

The Crosthwaite & Gardiner range of Halibrand-style Cobra wheels are all produced from sand-cast magnesium and are precision machined in our factory before being black cromated. The 15" diameter wheel is available in 5.6" and 8.5" widths.



Image by Geoff Goddard



8.5"



8.5"

Wheel	Width	Part Number	Weight
Cobra FIA	6.5"	HAL-95-001-6.5	6.05kg
Cobra FIA	7.5"	HAL-95-001-7.5	6.4kg
Cobra FIA	8.5"	HAL-95-001-8.5	6.8kg



COBRA



From its humble British Bristol-engined beginnings to the monstrous Ford V8-powered renditions, the Cobra remains one of the best recognised and iconic sports cars to enter racing history. This 'wine glass' wheel design was used in period and thanks to a 7.5" width, a greater range of fitments is available to cater for various types of bodywork and race series regulations.

The Crosthwaite & Gardiner range of Cobra wheels are all produced from sand-cast magnesium and are precision machined in our factory before being black chromated for corrosion resistance. The 15" diameter wheel is available in 6.5", 7.5" and 8.5" wheel widths.



Wheel	Width	Part Number
Cobra	6.5"	COB-95-6.5
Cobra	7.5"	COB-95-7.5
Cobra	8.5"	COB-95-8.5





FORD GT40

The GT40 is the car that proved that Henry Ford could take on Ferrari and win at the Le Mans 24 Hours. First raced in 1964, the GT40 had a troubled time but eventually came through to take victory four years in a row - 1966, '67, '68 and '69. It remains one of the most iconic race cars of all time.

The Crosthwaite & Gardiner range of GT40 wheels are all produced from sand-cast magnesium and are precision machined in our factory before being black chromated for corrosion resistance. The 15" diameter wheel is available in a 6.5" front, 8.5" front or rear and a 10" rear wheel width. Correct combinations are 6.5"/8.5" front and rear or 8.5"/10".



Wheel	Width	Part Number
Ford GT40 (front)	6.5"	GT40-95-001
Ford GT40 (front/rear)	8.5"	GT40-95-002
Ford GT40 (rear)	10"	GT40-95-003



LOTUS 15" WOBBLY WEB



The instantly recognisable 'Wobbly Web' wheel first appeared on the 1957 Formula 2 Lotus Twelve; the design was formulated in order to achieve a lighter wheel, in typical Lotus fashion. A constant material thickness is used, with the tighter waves near the centre resulting in the greatest strength where it is most needed.

The Crosthwaite & Gardiner range of Lotus Wobbly Web wheels are all produced from sand-cast magnesium and are precision machined in our factory before being black chromated. The 15" diameter wheel is available in widths ranging from 4" to 6.5" in 1/2" increments. We can accommodate individual backspacing and hub detail needs upon request. Note: 'FH' suffix denotes integral hub and bearings for front wheels.



4"



6.5"



4"



6.5"



Image by Richard Taylor

Wheel	Width	Part Number	Detail
Wobbly Web	4"	LOT101-4	Front or rear
Wobbly Web	4"	LOT101-4FH	Front, integral hub
Wobbly Web	4.5"	LOT101-4.5	Front or rear
Wobbly Web	4.5"	LOT101-4.5FH	Front, integral hub
Wobbly Web	5"	LOT101-5	Front or rear
Wobbly Web	5.5"	LOT101-5.5	Front or rear
Wobbly Web	6"	LOT101-6	Front or rear
Wobbly Web	6.5"	LOT101-6.5	Front or rear





COOPER T59/T65/T67/T72

These wheels are the period-correct fitment for the T59, T65 and T67 Formula Junior cars, as well as the pictured T72 Formula Three car.

The Crosthwaite & Gardiner range of Cooper wheels are all produced from sand-cast magnesium and are precision machined in our factory before being black chromated. The 13" diameter wheel is available in 5.5" and 6.5" widths. As standard these parts come with a 2 5/8" hub bore - for some fitments a hub spacer (part no COO401-3/4) must be used to change the spigot to 2 1/8". For mating parts and all of our other Cooper products, please see our dedicated Cooper catalogue.



6.5"



6.5"

Wheel	Width	Part Number	Hub Dia	Backspacing
Cooper 13"	5.5"	COO199-5.5	2 5/8"	2 1/8"
Cooper 13"	6.5"	COO199-6.5	2 5/8"	2 3/4"



COOPER T39/T41/T43



The narrower variants of our Cooper 15" range are the period correct wheel for the Cooper T41, T43 Formula 2 and Cooper Bobtail sportscars (T39).

The Crosthwaite & Gardiner range of Cooper wheels are all produced from sand-cast magnesium and are precision machined in our factory before being black chromated. This 15" diameter wheel is available in 3.5" and 4.5" widths. Note: 'D' suffix denotes disc brake version of wheel, while 'H' denotes integral hub and bearings. Non-suffix model shown. For further details, mating parts and all of our other Cooper products, please see our dedicated Cooper catalogue.



3.5"



3.5"



Jack Brabham, Monaco 1958. Source unknown

Wheel	Width	Part Number	Hub Dia	Backspacing
Cooper 15"	3.5"	C311E3.5F	Front, drum brake	2 5/8"
Cooper 15"	3.5"	C311E3.5FD	Front, disc brake	2 5/8"
Cooper 15"	3.5"	C311E3.5FH	Front, integral hub	N/A
Cooper 15"	4.5"	C343JS4.5R	Rear, drum brake	2 3/4"
Cooper 15"	4.5"	C343JS4.5RD	Rear, disc brake	2 3/4"





COOPER T45/T49/T51/T53

This wider range of Cooper wheels is the period correct fitment for the T43 F2 car, T49 Monaco Sports car, and the T51 & T53 Grand Prix cars.

The Crosthwaite & Gardiner range of Cooper wheels are all produced from sand-cast magnesium and are precision machined in our factory before being black chromated for corrosion resistance. The 15" diameter wheel is available in 5" and 6" widths. Note: 'H' suffix denotes integral hub and bearings. Non-hub model shown. For mating parts and all of our other Cooper products, please see our dedicated Cooper catalogue.



Wheel	Width	Part Number	Hub Dia	Backspacing
Cooper 15"	5"	C343JS 5"H	2 5/8"	2 1/2"
Cooper 15"	5"	C343JS 5"FH	Integral Hub	
Cooper 15"	6"	C343JS 6"R	2 1/8"	3 1/4"



COOPER T61 Monaco



The Cooper Monaco evolved through the years to gain a number of changes and upgrades - just one of these changes was the use of wider wheels, allowing the use of wider tyres and therefore generating more mechanical grip.

The Crosthwaite & Gardiner range of Cooper wheels are all produced from sand-cast magnesium and are precision machined in our factory before being black chromated for corrosion resistance. The 15" diameter wheel is available in 7.25", 8" or 9" widths. For mounting on rear, hub adaptor COO401-3/4 must be used to fit 2 1/8" hub. For mating parts and all of our other Cooper products, please see our dedicated Cooper catalogue.



Wheel	Width	Part Number	Hub Dia	Backspacing
Cooper T61M	7.25"	COO117-7.25	2 5/8"	3 5/8"
Cooper T61M	8"	COO117-8	2 5/8"	3 7/8"
Cooper T61M	9"	COO117-9	2 5/8"	





COOPER BRISTOL

1952 saw the introduction of the front-engined Cooper Bristol, built to F2 regulations which at that time allowed it to appear in a number of Grand Prix races.

The wheel is available only from us in the period-correct material, magnesium. Not only are our wheels the correct material, which is 30% lighter than inferior aluminium, but they are truly the best quality wheels available. The wheels are all produced from sand-cast magnesium and are precision machined in our factory before being black chromated for corrosion resistance. Available as a 4.5" width wheel of 15" diameter. For mating parts and all of our other Cooper products, please see our dedicated Cooper catalogue.



Image origin unknown



Wheel	Width	Part Number
Cooper Bristol	4.5"	COO402



JAGUAR D TYPE



The Jaguar D Type made history as arguably the first successful competition car to use a monocoque chassis design - it won Le Mans in 1956, '57 and '58.

Crosthwaite & Gardiner is doubtlessly best-known for its 3.4-litre and 3.8-litre D Type engines and gearboxes (see our *Jaguar* catalogue for more information) but we are now able to offer these faithful recreations of the original Dunlop wheels, produced using a forged alloy outer section and a pressed inner, with a steel mounting plate. This 16 x 5" wheel is perfect for D Type and Lister Jaguar vehicles.



Image by Jaguar MENA

Wheel	Width	Part Number
Jaguar D Type	5"	JAGD-95-001





FULVIA CAMPAGNOLO

The Lancia Fulvia was launched in 1963 and quickly became known for its narrow-angle V4 mounted ahead of the front wheels, and its compact styling. The nimble handling led to a successful time in international rallying.

The Crosthwaite & Gardiner range of Campagnolo wheels for the Lancia Fulvia are all produced from sand-cast aluminium alloy or magnesium and are precision machined in our factory. Magnesium wheels are then black chromated for corrosion resistance. The 13" diameter wheel is available in a 6" width.



Wheel	Width	Part Number	Weight
Campagnolo Fulvia	6"	40439 (alloy)	6.75kg
Campagnolo Fulvia	6"	40439 (magnesium)	4.75kg



ABARTH CAMPAGNOLO

The lightweight Group 5-competing (Group 2 from 1970) Abarth 1000TCR is a truly distinctive racer, thanks to its short length but bulbous arches and three-wheeled cornering antics. Another defining characteristic was the lightweight Campagnolo wheels that many had fitted.

The Crosthwaite & Gardiner range of Campagnolo wheels are produced from sand-cast magnesium or aluminium alloy (as pictured) and are precision machined in our factory. Magnesium wheels are black cromated. The 13" diameter wheel is available in 6", 7" or 8" widths.



Wheel	Width	Part Number
Campagnolo Abarth	6"	ABA106-6"
Campagnolo Abarth	7"	ABA106-7"
Campagnolo Abarth	8"	ABA106-8"





BUGATTI WHEEL RANGE

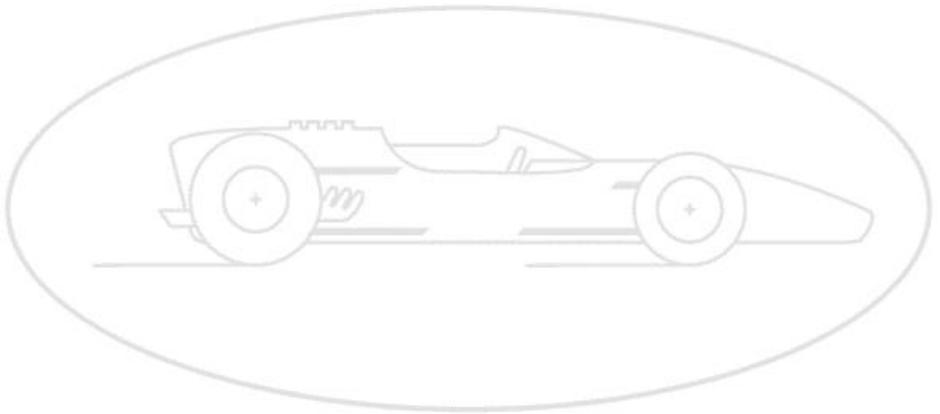
Crosthwaite & Gardiner holds the UK's biggest stock of Bugatti parts, and a key part of our range is the wheel section, with many types of the prestigious Molsheim cars catered for. This includes wheel nuts, screws for split rim sections and much more.

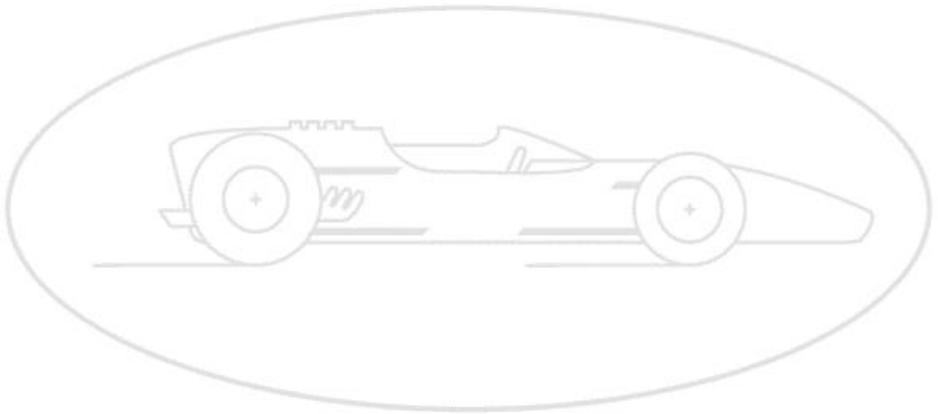
The Crosthwaite & Gardiner range of Bugatti wheels are all produced from sand-cast aluminium alloy and are precision machined in our factory. To see our full range of Bugatti wheels and other Bugatti components, see our dedicated Bugatti catalogue.



Part Number	Detail
35CH172	Alloy Wheel, Beaded Edge
35CH456	Alloy Wheel - 270mm Drum
43CH8	Alloy Wheel - 330mm Drum
43CH83	Alloy Wheel - Well Base with 330mm Drum
46CH89	Alloy Wheel - 20" x 80mm, Bolt On, Radial Fins
50CH27	Alloy Wheel - 20" x 80mm
54CH67	Road Wheel
59CH27	Wire Wheel, Complete, Narrow (3")







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