

# BMW Z1



HISTORY	1
SPECIFICATIONS	2
CONSTRUCTION	4
AERODYNAMICS	6
GUIDELINES	7
PRODUCTION FIGURES	10
COLORS	11
BASIC MAINTENANCE	12
WHEEL ALIGNMENT	15
KNOWN PROBLEMS	16
COST	17
REAR SPEAKERS	19
BOOKS	20
BROCHURES	23
MODELS	26
PHONECARDS	28

# HISTORY

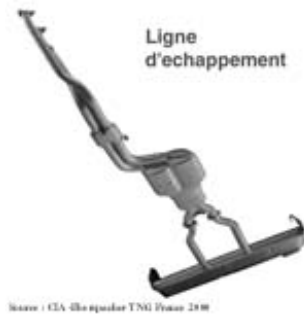
Revealed to the press in August 1986, the Z1 was officially presented at the Frankfurt Motor Show in September 1987. It was developed by BMW Technik GmbH, a subsidiary of BMW AG. Z stands for "Zukunft" i.e. "Future".

The Z1 is equipped with the 2494 cc CAT engine with an output of 170 hp and the 5 speeds manual gearbox borrowed from the BMW 325i. A version with 4 wheels drive was considered but never produced.

The great originality of this roadster are the retractable doors which slide electrically as well as the galvanized steel frame (manufactured by Baur) covered with plastic panels (manufactured by General Electric Plastics). These plastic panels are hard and indeformable except for the bumpers, flexible enough, which can accept shocks up to 5 mph without any damage.



In order to improve aerodynamics, the Z1 has a plastic undershield and a rear silencer shaped like an upside-down wing (BMW part number 11 212805 000). This silencer is manufactured by CIA EBERSPACHER but is not available thru their usual dealers.

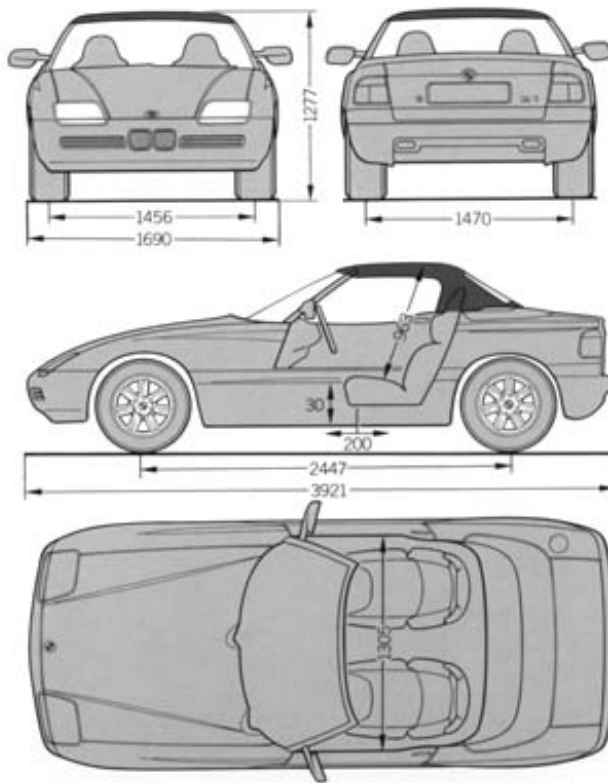


This ground effect is improved by air flow between silencer and rear bumper.

8000 cars were produced between July 88 and June 91 plus 12 prototypes manufactured between 1987 and 1988. The demand was so high that 5000 orders were already recorded before the beginning of the production. Unfortunately, after the time of speculation, sales dropped dramatically in conjunction with the introduction of a new competitor, the new Mercedes SL. BMW decided to end the production in the middle of 91. It is still possible to find some cars with less than 500 km on the meter.

# SPECIFICATIONS

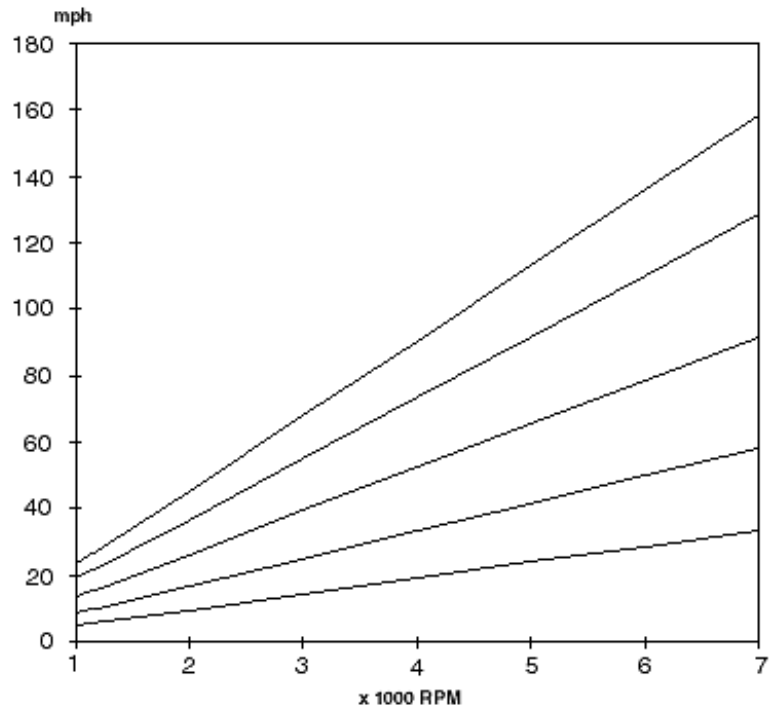
badge	Z1
model code	BA91
engine	B25M20 2494 cc with CAT in line 6 cylinders, 12 valves
max. power	170 hp (125 kW) at 5,800 rpm
max. torque	163.73 lb ft at 4,300 rpm
gearbox	5 speed manual (Getrag 260/5)
brakes	front : ventilated discs rear : solid discs
tires	225/45 ZR 16
overall fuel consumption	22.4 mpg
kerb weight	1,250 kg



## Getrag 260/5 gearbox

	Ratio	Theoretical speed in mph (RPM)						
		1000	2000	3000	4000	5000	6000	7000
1	3.83	4.96	9.92	14.89	19.85	24.81	29.77	34.73
2	2.20	8.64	17.28	25.91	34.55	43.19	51.83	60.47
3	1.40	13.57	27.15	40.72	54.30	67.87	81.44	95.02

4	1.00	19.00	38.01	57.01	76.01	95.02	114.02	133.03
5	0.81	23.46	46.92	70.38	93.85	117.31	140.77	164.23
Reverse	3.46	5.49	10.98	16.48	21.97	27.46	32.95	38.45
Final drive	3.64							



**Original alloy wheel**

**Performance figures**

Size	7,5 x 16	Maximum speed	140 mph
PCD	4 x 100	Standing-1000 m	28.8 s
offset	ET 25	0-50 km/h	2.9 s
Bore diameter	57,2 mm	0-80 km/h	5.3 s
Bolt	12 x 150	0-100 km/h	7.9 s
		0-120 km/h	10.9 s
		80-120 km/h in 4th gear	9.0 s

Sources : BMW

My car has the frame number AL04780.

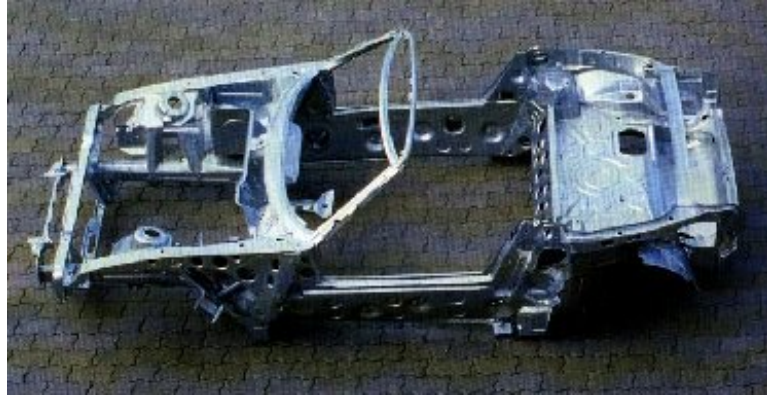
This car was built july the 12th of 1990 and first registered october the 12th of 1990.

**Retailed price for 1991 model year :** 375,000 FF 68,000 USD  
**no option available**

based on 1USD=5.50FF

# CONSTRUCTION

The BMW Z1 is a two-seat soft top roadster. It uses the engine and transmission from the E30 325 mounted in a specially designed base frame or chassis which is made from galvanised steel. The sports body which is made from various types of composite resin panels is fixed onto the base frame. The front suspension is re-worked 325 components, with a wider track. The rear suspension is the specially designed 'Z axle'. The most distinctive features of the body are the electrically powered doors, which in the open position drop down into the side sills, this creating the ultimate 'open car' when the soft top is lowered underneath its flat cover.



The Z1 chassis unit. This is made from hot dip galvanised steel by Baur.  
You can see one like this at Baur factory in Stuttgart



This is the Z1 complete apart from its' plastic body parts.(below)



The ultimate kit car?

At the launch, BMW suggested that owners might like to buy a spare set of body panels, so that they could change the colour of the car from time to time.

The original suggestion was that taking all the body panels off would take about 40 minutes for a skilled mechanic. The reality is that to take them off, AND PUT THEM ON AGAIN(!) is a good 2 day's work.

There are about 5(?) different types of plastic used in the body, and BMW and AKZO coatings developed a new 'Varioflex' paint system to cope with applying paint to the different flexible materials.

From Paul Drawmer's website

# AERODYNAMICS



Air flow pattern

The Z1 has remarkable aerodynamics for a roadster. The design of the underbody has a major influence on this. The whole of the underneath of the car is covered by a flat composite undertray which is designed to smooth the airflow to the rear wing, which is the silencer and bodywork at the rear of the car.

The rear downforce is created by a low pressure area generated by the effect of the airfoil section of the transverse rear silencer box, and it's nearby body parts which work as airfoil slats.

The front downforce is created by a high pressure area at the front edge of the bonnet (hood for our transatlantic cousins). The forward part of this body section is a concave curve, before turning convex as is more normal. A high pressure area is created just above the front wheels.



Air flow pattern around the Z1 rear exhaust box and body panels

The rear silencer is an inverted wing, and the rear fender and undertray work as aerodynamic slots or flaps to increase the negative lift at road speeds.

From Paul Drawmer's website

# GUIDELINES

Due to speculation when the car hits the market and extreme fragility (interior and exterior), it's getting more and more difficult to find a car in perfect condition with all its original papers.



It's usual that salesmen do not even know the number of owners and cannot guarantee mileage. In that case, don't even ask for the user's manual and the maintenance booklet ! Take attention to the timing belt that must be change at least every 4 years.

Z1 can be found between 22,800 USD and 45,500 USD : the first price is for a car with around 60,000 mi (on the meter...) an interior in medium or bad condition and unknown past. the second price is for a brand new Z1 sold by a BMW dealer, with around 300 mi on the meter.

Even if Z1 are more common in Germany, they are not cheaper that in France.

With few car produced and an unforgettable style, the Z1 should keep a high sale price for the years to come, but only for cars in perfect condition.

This page is aiming to give you some advice in order to help you making a good deal.

## Identification

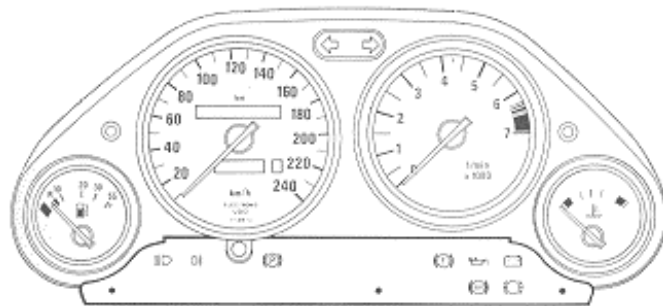
Only one type of Z1 was built with frame numbers like AL0XXXX. All of them have been built between 1988 and 1991.

The first question to ask is the frame number. This number will allow you to know the year of manufacture. Model year 92,93 or 94 are fake with no significant value.

Year of manufacture	Frame number	Numbers
1986-1987	AL00001 - AL00012	12
1988	AL00013 - AL00070	58
1989	AL00071 - AL02470	2400
1990	AL02471 - AL06561	4091
1991	AL06562 - AL08012	1451
TOTAL		8012

The interior garnishing is made of "camouflage" nubuck leather depending on the body color. This interior is particularly easy soiled : the grey turns into black and straw colored turns into ...

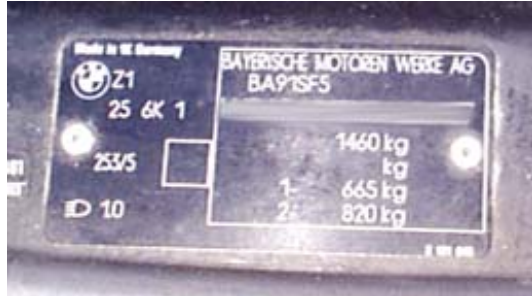
All other parts in the cockpit (interior door trim, dashboard) are made of leather stuck on fiberglass panels. Leather must be regularly maintained (special wax) in order to remain in good condition.







Z1 built for french market an officially imported by BMW France have yellow headlights



BA91SF5 = french car



ABE F214 = german car

VIN plate (located close to the radiator) is helpful to know the origin of the car

SALES IN FRANCE									
	1989	1990	1991	1992	1993	1994	1995	1996	TOTAL
Registered cars	5	155	91	23	18	21	2	2	317

Source : Le distributeur automobile n°226



VIN is stamped close to the Motronic box.  
Frame number is stamped below.

## Checking cylinder head bolts

This relates only to the first model of Z1 (before 1990). M20 B25 engines produced before half-89 were equipped with hex-head cylinder bolts which are prone to break that lead to significant damage on the engine. They must be replaced by Torx-head bolts available at any BMW dealer.

To check the bolt, just remove the oil filler cap and have a look inside the hole.

## Checking mileage on the meter

With trouble past of some cars, it is difficult to guarantee mileage. Usually, they have hardly been driven and it's common that Z1 have less that 30,000 mi for a 8 years old car.



You should particularly inspect :

- no traces of disassembling instrument cluster
- wear of discs and brake pads : at 18,000 mi on the meter discs and brake pads should not present any trace of wear (no ridge on the outer part of the brake disc)
- age and type of tires : origin tires are Pirelli P700Z, you can read their date of manufacture on the sidewall of the tire (3 figures followed by a small triangle registered in a rectangle).

**402** ◀

The first 2 figures are the week of manufacture, the 3rd is the year of manufacture. On that example, the tire has been manufactured the 40th week of 1992.

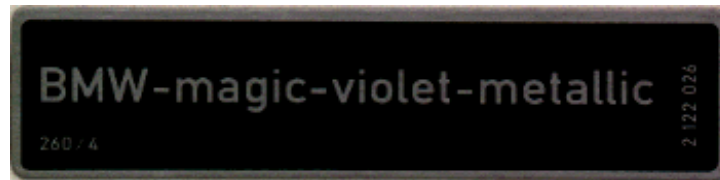
In case of tire replacement, their date of manufacture must be compatible with the date of delivery and the milage on the meter.

#### **I like - I dont' like**

😊 Astonishing design  
Exceptionnal road handling

☹️ Wrong gearbox ratios  
Rough cockpit assembly  
Too fragile for a daily use  
Center locking system doesn't lock trunk  
No alarm if you leave car with lights on











# PRODUCTION FIGURES



Gif animation from Mitsuhiko Kanekatsu website

Body colors	Production	Offical import. BMW France
Metallized black (traum-schwarz)	2301	89
Varnished red (top-rot)	3105	160
Metallized dark green (ur-gruen)	2040	85
Metallized dark purple (magic-violet)	228	0
Metallized blue (pur-blau)	193	6
Varnished yellow (fun-gelb)	133	9
TOTAL	8000	341

# COLORS

		INTERIOR				
		Grau  0300	Hellgrau  0420	Gelb  0299	Rot  0421	Total
B O D Y  P A I N T	Traum-schwarz  278	2028	50	190	33	<b>2301</b>
	Top-rot  257	3087	13	1	4	<b>3105</b>
	Ur-gruen  271	1062	11	967	0	<b>2040</b>
	Magic-violet  260	195	31	2	0	<b>228</b>
	Pur-blau  253	89	103	0	1	<b>193</b>
	Fun-gelb  164	104	0	29	0	<b>133</b>
						<b>8000</b>

Source : Z1 Club e.V. and 3er Club Deutschland

# BASIC MAINTENANCE



Z1 is easy to maintain because it is very close to the E30 325i. It is mandatory to have the revue technique ETAI (very complete) and manuel HAYNES (more didactic) before beginning. The best book is the service manual BENTLEY : it's the best book to help you maintaining your car. Indications below make only supplement of these handbooks.

Don't forget to buy BMW MOBILE TRADITION CD Part Catalogue too. You will get all parts numbers and drawings. You can also buy workshop manual in microfiche.

Always buy parts from well known brands (like PURFLUX, BOSCH, VALEO, CHAMPION...) or genuine BMW parts to avoid troubles.

Maintenance costs are moderate because many mechanical parts come from the serie 3 E30 or the serie 5 E34. But it could turn into a nightmare if you have to change specific parts like exhaust or body panels.

It is not necessary to remove the plastic undershield to make all routine maintenance.

## Engine oil change + filter

Use semi-synthetic oil or 100% synthetic oil. Change oil every 3,100 mi or max 4,600 mi. Z1 does not have a service indicator to reset like others BMW.

A 17 mm wrench will be necessary as well as an oil filter wrench. The oil filter is located under the exhaust manifold, on the right of the engine.

It is necessary to remove the coolant expansion tank in order to be able to reach the oil filter. Loosen the oil filter while passing the wrench between the pipes of the exhaust manifold. Be careful to not drop the content of the filter in the plastic undershild of the car!!..



## Fuel filter

Fuel filter is the metal cylinder screwed under the tank, close to left-rear-wheel.

It must be replaced every 50,000 mi.

## Spark plugs

It is necessary to remove the coolant expansion tank in order to be able to reach the spark plug located at the end of the head. Always use Bosch W8LCR. Change spark plugs one at a time to not mix up spark plugs wires.



## Air filter

Loosen the air flow sensor. Unscrew the 2 bolts located close to the left suspension strut (behind the coil spring). Change the air filter by removing the spring clips around the air filter box.

## Clutch and brake fluid

Brake fluid absorbs moisture that makes him lose its efficiency and involves internal corrosion of the brake

system. It must be replaced every 2 years or 25,000 mi. It is better to use a DOT 5 fluid having a higher boiling point.

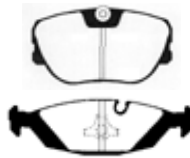


Z1 uses an hydraulic clutch which uses the same brake fluid reservoir. Bleeder valve is located on the slave cylinder on the left side of the gearbox.

Due to internal shape of brake fluid reservoir, it's better to start bleeding clutch circuit. It will avoid trapping dirty fluid in some area of the brake fluid reservoir.

Manual bleeding is easy with 2 persons : one under the car and the other pumping on the pedal. The bleeding order is : right-rear, left-rear, right-front, left-front, clutch. Having an ABS system, one should pump on the pedal at least ten times before seeing clean brake fluid.

Wipe carefully brake fluid which is very corrosive on painted surface. Plan to use two cans of 0.5l brake fluid.



Z1 front  
ATE caliper

Z1 rear  
ATE caliper

## Engine coolant

Engine coolant must be replaced every 2 years or 25,000 mi to avoid a clogged radiator or an engine overheat. It's strictly identical as a 325i engine.



To drain the engine coolant, you will have to unscrew the bolt located on the rear right side, close to the exhaust pipes.

You will need a 17 mm wrench.

## Plastic panel trim

There are not many plastic parts in the Z1 cockpit ! Nevertheless, the best way to clean them is to use plain water, soap and a toothbrush. After, they look like new ; it's almost incredible. It's better than any other chemical product. But be careful to not drop water on leather or nubuck.

## Soft top

Soft top is fragile and expensive to replace. Rear plastic window tends to become white and dull. A good maintenance will increase its lifetime. Here is the sum up of the Z1 user's manual :

- Do not park car on direct sunlight,
- Do not clean car in automatic car wash,
- Do not fold up top when moist,
- Remove immediately birds drops with small brush,
- Clean rear plastic window with soft cloth only.

The most important is to fold the top carefully, especially the plastic window. Putting a towel on the window

will prevent it to get scratches when both plastic parts will touch each other.

It's better to protect the soft top with a waterproof product at least once a year, but be careful to not drop it on the rear plastic window. For it, it's better to use BMW cleaner (BMW part #81 22 9 407 665) to clean and polish rear window.

# WHEEL ALIGNMENT

## Height

68 kg on each seat, 14 kg in the trunk, full fuel tank  
height : from the lower rim edge to the lower wheelarch edge

Front	588 ± 10 mm
Rear	560 ± 10 mm

## Front wheels

Toe angle	1,8 ± 0,6 mm / 0°15' ± 5'
Camber (no correction possible)	-0°52' ± 30'
Caster (at 10° wheel lock)	10°05' ± 30'
Caster (at 10° wheel lock) (no correction possible)	10°23' ± 30'
Kingpin inclination (at 10° wheel lock)	13°40' ± 30'
Kingpin inclination (at 20° wheel lock) (no correction possible)	14°04' ± 30'

## Rear wheel

Toe angle	3,0 ± 0,7 mm / 0°25' ± 6'
Camber	-1°55' ± 15'



# KNOWN PROBLEMS

Z1 is very close to the 325i so it takes all the benefit of its reliability.

But, being a hand-made car, the Z1 does not profit of the same quality of the interior which we are accustomed on other BMW. Leather/nubuck or leather/fabric interior is extremely fragile.

**Parking brake handle trim is staggering** : tighten the 2 screws located under the heater trim panel. tighten the hex bolt located under the back ashtray, put some washer if necessary.



**Small hole on the soft top, kneecap behind driver's and passenger's seat** : design problem, soft top is not reinforced close to the kneecap.

Add a piece of fabric inside the to protect the soft top



**Window rubber seal cut**

**Difficult or irregular doors sliding** : change doors toothed belts.

**Moisture is getting into the lights and blinkers** : check the rubber gasket around the light.

**Plastic part that protect the gas refueling cap break easily** : open it carefully, above all when plastic is cold.



Original gaz tank filler still has gas and tyres labels



A replaced one will not have any labels



**Rust on silencer** : affect most cars.

Several parts are available but some do not respect original wingprofile, that could affect car's handling at high speed.

# COST



If you wish to buy this kind of vehicle, here are some figures :

Purchase	from 125 to 250,000 F	from 22k to 45k USD
Registration fee (average price in France)	2,158 FF	392 USD
Insurance	6,600 FF	1,200 USD

based on 1USD=5.50FF

All prices are Sale tax included (VAT - 19,6% in France). These are average prices in several shops.

Oil filter	Purflux LS171	69 FF	12 USD
Front brake pads	Valéo L81	520 FF	94 USD
Rear brake pads	Valéo 540405	439 FF	79 USD
Timing belt + tensionner (parts and labour)	by BMW dealer	1,100 FF	200 USD
Tire 225/45 ZR 16	Michelin SX MXX3	1,525 FF	277 USD

based on 1USD=5.50FF

# REAR SPEAKERS



Originally, Z1 is fitted with a pair of separated 2 way loudspeakers. It's really not enough to listen to music, even more at high speed when aerodynamic noise become very important.

My purpose was to realise a rear speaker fitting without drilling or cutting anything in the car, in order to let the car in perfect condition. Furthermore, I wanted the speakers to be invisible to prevent me from theft and vandalism.

The removable panel seems to be the best way to realise this installation.

So, I cut a plywood panel with the same size of the original BMW panel. I decided to set up a pair of 2 separated way 5" loudspeaker, like the ones in the front. Fixing them just in the center of the panel, the back of the speaker doesn't hit the plastic window of the soft top, even with top fold. Wires go easily under the leather strip from dashboard to rear.



Front view, without wire fencing nor acoustic material



Rear view, with acoustic material fitted

Hopefully, I found acoustic material with almost same color as original BMW carpet.



It's better to put very thin wire fencing under the acoustic material to protect speakers

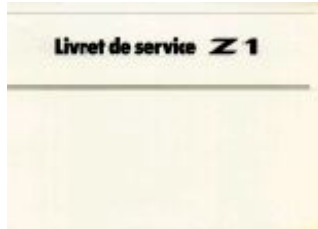
Final setting is almost invisible but sounds really well. If necessary, this panel can be removed in few seconds.

# BOOKS



**BMW Z1 notice d'utilisation**  
BMW part # 01 42 9 782 672 fr

Out of print



**BMW Z1 livret de service**  
BMW part # 01 72 9 782 692 fr

Out of print



**BMW Serie 3 essence depuis 1983**  
Revue Technique Automobile n°448

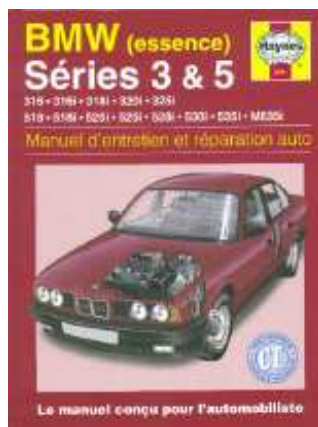
E.T.A.I.  
ISBN 2-7268-4486-3



Very complete, very technical

Difficult for a beginner

Essential for any heavy technical intervention

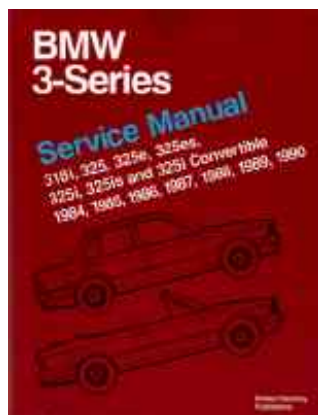


**BMW essence Serie 3 & 5**  
Manuel d'entretien et réparation auto n°3291

HAYNES  
ISBN 1-85960-291-6



A little confused because covers too many different cars



**BMW 3-series 1984-1990**  
Service manual

ROBERT BENTLEY  
ISBN 0-8376-0325-0



Very complete, very didactic

Many pictures

Absolutely essential



**BMW Personenwagen seit 1952**

Typenkompaß  
Walter Zeichner

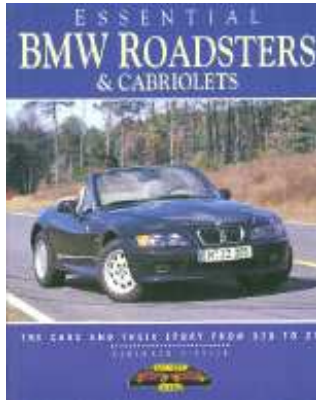
MOTOR BUCH VERLAG  
ISBN 3-613-01873-X



All BMW since 1952

Specification, production figures

Absolutely essential



**Essential BMW Roadsters & cabriolets**

The cars and their story from 328 to Z3  
Eberhard Kittler

BAY VIEW BOOKS  
ISBN 1-870979-77-X



History of BMW convertible

Specification, production, frame numbers

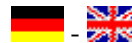
Many pictures



**BMW Art Car Collection**

A. R. Penck

BMW AG PUBLIC RELATIONS



Making of the Z1 painted by A.R. Penck  
par A.R. Penck



**BMW**

Schlegelmich / Lehbrink / von Osterroth

KONEMANN  
ISBN 3-8290-0657-8



Studies about each important car of the company.

Lot of pictures.



**BMW MOBILE TRADITION CD**

BMW part # 72 00 0 035 315



Parts catalogue

Absolutely essential



**Microfiche**  
**MANUEL DE REPARATION Z1**  
BMW part # 01 52 9 782 232 fr



Information to setup door's  
belt...

# BROCHURES



**PRESS INFORMATION**  
**BMW (GB) LTD**  
10/10/88

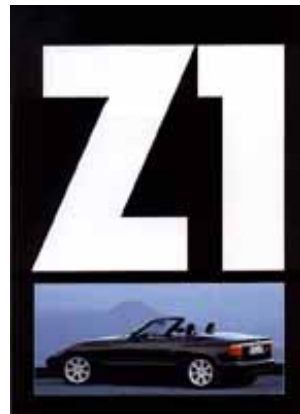
210 mm x 297 mm  
3 pages

203 mm x 152 mm  
1 picture



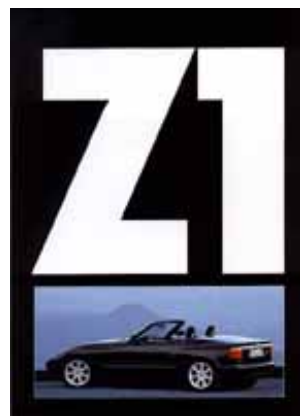
**BMW Z1**  
ref 7 11 08 01 10 - 2/87

297 mm x 420 mm  
2 pages



**BMW Z1**  
ref 9 11 08 01 10 - 1/89

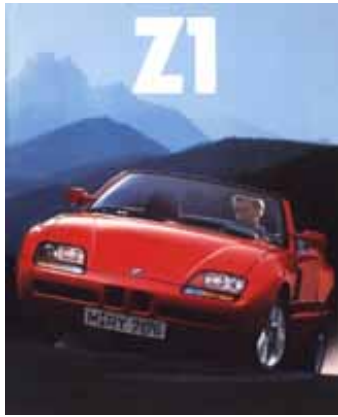
820 mm x 594 mm  
2 pages



**BMW Z1**  
ref 9 11 08 01 30 - 1/89  
820 mm x 594 mm  
2 pages





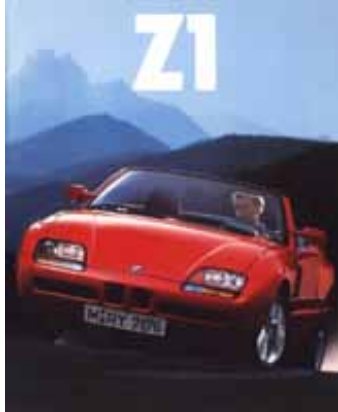


**BMW Z1**

ref 9 11 08 03 30 - 1/89

285 mm x 340 mm

20 pages



**BMW Z1**

ref 0 11 12 02 10 - 2/90

285 mm x 340 mm

20 pages



**BMW Technik GmbH**

210 mm x 297 mm

28 pages



**HARTGE**

210 mm x 100 mm

2 pages





# MODELS

## Schabak



Scale 1:24 - ref 1600



Scale 1:43 - ref 1160

## Revell



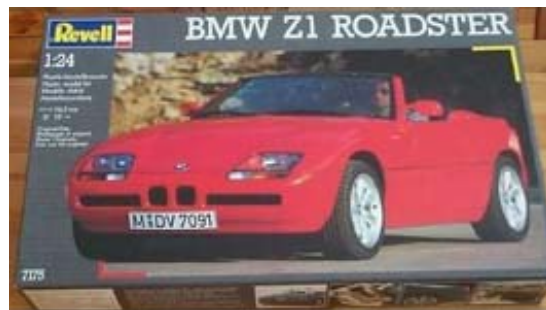
Scale 1:24 - ref 8620

## Herpa



Scale 1:87 - ref 020749

## Revell



Scale 1:24 - ref 7175



Scale 1:24 - ref 8709

# PHONECARDS



French phonecard 02/92  
10000 made



French phonecard 11/97  
6000 made

Thanks to Jacques Peyrichou for these information and the scans