

# PARTS APPROVAL



# Parts Approval

Nr. / No. 1243/19  
vom / of 17.12.2019

**on the compliance of a vehicle when vehicle parts are properly installed  
and fitted to the car in accordance with § 19 Par. 3 No. 4 StVZO**

Modification

*Continuously adjustable suspension system for lowering of car body at front axle and the rear axle optionally in combination with adjustable coilover strut top mounts at the front axle*

Part type(s)

: **352 20 8CG**

Manufacturer



KW automotive GmbH  
Aspachweg 14  
D-74427 Fichtenberg

Vehicle Manufacturer / Type(s)

: BMW / G4Z  
Toyota / JTSC

max. axle load

: VA (front axle) 865 kg  
HA (rear axle) 995 kg

## **0. Instructions for vehicle owner**

### **Performance and confirmation without delay of modification acceptance**

*With the modification the type approval of the vehicle will expire if the modification acceptance provided for in StVZO § 19 Par. 3 is not performed and confirmed without delay or if conditions laid down are not complied with.*

*After performance of the technical modification, the vehicle must be pre-sented without delay together with the present TÜV parts approval to an officially recognised inspector at a Technical Inspection Centre or to an inspection engineer from an officially recognised inspection organisation to perform and confirm the specified modification acceptance.*

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*Compliance with Conditions and Notes*

*The Conditions and Notes given in III. And IV. Must be complied with.*

## **Availability of documents**

*After the acceptance procedure the certificate with confirmation of the modification acceptance must be carried in the car and presented to authorised persons on demand; this will not apply once the vehicle documents have been amended.*

## **Amendment of vehicle documents**

*The vehicle owner must apply, in accordance with the provision in the confirmation of modification acceptance, for the competent licensing authority to amend the veh. documents (vehicle registr. documents).*

*Further conditions can be found in the confirmation of modification acceptance.*

## **I. Field of application**

<i>Vehicle manufacturer</i>	<i>Trade name</i>	<i>Vehicle type</i>	<i>Variants and versions</i>	<i>Type approval</i>
BMW	Z4	G4Z	all	e1*?/?*1949*..
Toyota	Supra	JTSC		e1*?/?*1982*..

*The part of the EC type approval number showing \*?/?\* merely document the current status of the framework directive and are of no significance for this parts approval as long as the parts of the vehicle which are relevant to the lowering of the bodywork have not changed.*

## II. Description of the modification V

### Front axle

	<b>Pre spring</b>	<b>Main spring</b>
Marking	10-60-80	60-170*
Corrosion protection	imprinted EPS-powder coating	imprinted EPS-powder coating
Wire size	4,4 x 7,4 mm	10,4 mm
Outer diameter	- mm	- mm
oben / top	76 mm	82 mm
mitte / middle	- mm	- mm
unten / bottom	80 mm	170 mm
Untensioned height	80 mm	170 mm
Number of coils	5,1	6,15
Coil shape	Cylinder, head(s) baselined	Cylinder, head(s) baselined
Spring characteristic	linear	linear

	<b>Spring cup seat (top)</b>	<b>Spring cup seat (bottom)</b>
Max. diameter	80 mm	82 mm
Diameter rest	61 mm	61 mm
Height	14 mm	24 mm
Spring height adjustment	Infinitely adjustable cup seat (Strut)	

	<b>Top mount at the strut</b>
Specification	Camber adjustment by changing the position of the upper strut bearing unit on the top mount plate
Article No.	190 00 948

	<b>Strut</b>
Damping adjustment (rebound/ compression)	without / manual
Marking	202 1050 L/R

	<b>Rubber or polyurethane foam element</b>
Bump stop	
High/Diameter	50/50 mm
Bump travel	extended by 15 mm

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## Rear axle

	<b>Pre spring</b>	<b>Main spring</b>
Marking	20-60-80 <i>imprinted</i>	140-220* <i>imprinted</i>
Corrosion protection	EPS – Pulverbeschichtet / <i>EPS-powder coating</i>	
Wire size	5,4 x 9,4 mm	14 mm
Outer diameter	oben / top - mm	-- mm
	mitte / middle 80 mm	90 mm
	unten / bottom - mm	-- mm
Untensioned height	80 mm	220 mm
Number of coils	6	7,95
Coil shape	<i>Cylinder, head(s) baselined</i>	<i>Cylinder, head(s) baselined</i>
Spring characteristic	linear	linear

	<b>Spring cup seat (top)</b>	<b>intermediate ring (middle)</b>
Max. diameter	80 mm	80 mm
Diameter rest	61 mm	61 mm
Height	17 mm	20 mm

	<b>Spring cup seat (bottom)</b>	
Max. diameter	80 mm	
Diameter rest	61 mm	
Height	12 mm	
Spring height adjustment	<i>Infinitely adjustable cup seat (Bushing)</i>	

	<b>Shock absorber</b>
Damping adjustment (rebound/ compression)	ohne / manuell <i>without / manual</i>
Marking	202 1150

	<b>Rubber or polyurethane foam element</b>
Bump stop	
High/Diameter	50/50 mm
Bump travel	<i>extended by 15 mm</i>

### III.

#### **Notes on possible combination with other modifications**

##### III. 1 **Wheel/tyre combinations**

*There are no technical objections against the use of all O. E. wheel/tyre combinations.*

*If other wheel-/ tyre combinations are used, the examination in accordance with § 21 German Road Traffic Licensing Code - StVZO must be carried out by an officially recognised expert.*

##### III. 2

#### **Aerodynamic devices, special exhaust systems etc.**

*The dynamic ground clearance is decreased by the provision of special springs/dampers which increase the bump travel of the front and rear axle. In the case of the test vehicle, the min. ground clearance of 80 mm is complied with (below front axle). Care must be taken when driving over humps, barriers and heightened paving or road surfaces.*

*If special spoilers, aprons and exhaust systems are mounted, attention must be paid to the decreased overhang angle (driving up ramps etc.).*

### IV. **Conditions and Notes**

#### **Conditions and notes for the installation shop and modification acceptance**

*Mounting of the vehicle bodywork components will be performed in accordance with the vehicle manufacturer's specifications which must be included in the delivery and should be carried out by a specialist shop.*

*Please check regularly, that the main and helper spring at rear axle are in right position and that there is enough pre-tension, when the rear axle is fully extended. In the case of sufficient pretension, the length of the helper spring must be by approx. 60 mm.*

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*The headlight adjustment has to be checked.*

*After modification an axle alignment must be carried out on the vehicle.*

*The base setting at the top mount of the front struts is marked on the measurement- adjustment report with dashes on the top mount plates or rather marked visible on the op mount. On public roads the car may only be driven in this base setting.*

*The record of check and adjustment has to be provided for the modification acceptance.*

*The bump stops (rubber or polyurethane foam element) must correspond to the descriptions of this report. Additional travel limiters are not allowed.*

*When installing the coilover kit in vehicles with electronic damping control - depending on the technical specification of the vehicle - the electronic dampers need to either*

- be deactivated by the use of "KW simulating plugs" respectively by changing the software or*
  - to be connected with the plugs of the serial dampers via the "KW connectors" of the KW dampers.*
- The simulating plugs which optionally can be used, consist of a plug-in sleeve with an integrated electric coil. These plugs are to be connected with the vehicle-mounted connectors instead of the serial dampers in order to simulate the situation that the serial ones would still be installed, furthermore in order to rule out an error signal.*

*Use of the lowering kit on vehicles with levelling system is not permitted.*

*The vehicle height must be laid down in the vehicle documents in box 20. The precise measure of the lowering will depend on the specific vehicle tolerances, tyre size and vehicle version.*

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## Idimensions (mm)

Vehicle	adjustment range (min. – max.)		Clearance		Size of lowering	
	VA/front <sup>1)</sup>	HA/rear <sup>2)</sup>	VA/front <sup>3)</sup>	HA/rear <sup>3)</sup>	VA/front	HA/rear
BMW Z4	150 – 165	18 – 33	330	330	35 – 50	30 – 50
Toyota Supra			335	335	20 – 35	20 – 40

1) Distance from the spring rest to the nearest fastening screw

2) Distance from contact point of the car to the adjustable spring perch

3) Minimum distance from wheel centre to wheelhouse rim

## Amendment of vehicle documents:

Amendment of the vehicle documents is only necessary the next time the approval authority has to do with the vehicle documents. The following example is suggested for the entry:

Item	Entry
22	Mit stufenlos verstellbarem Fahrwerk der Fa. KW automotive GmbH; Kennzeichnung Federn vorn: 10-60-80 / 60-170*, hinten: 20-60-80 / 140-220*; Federbein vorn: 202 1050 L/R, Dämpfer hinten: 202 1150; Maß Radmitte bis Radhausauschnittkante VA/HA.../... *

## V. Basis of tests and test results

The test vehicle and the modification parts were subjected to a test in accordance with the test conditions regarding raising / lowering of vehicles contained in VdTÜV Merkblatt 751 (26.01.2018).  
The test conditions were fulfilled.

## VI. Annex: none



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## VII. Concluding certification

*It is hereby certified that the vehicles described under field of application satisfy the regulations of StVZO in the current version after modification and performed and confirmed modification acceptance, provided the conditions/notes given in the present TÜV approval are observed.*

*The manufacturer KW automotive GmbH maintains a quality management system according to ISO 9001:2015 (Certificate Registration No.: 12 100 22913 TMS).*

*The parts approval may only be reproduced and passed on by the manufacturer in its unabbreviated form.*

*The TÜV parts approval shall cease to be valid if technical modifications are made to the vehicle part or if modifications made to the vehicles described affect use of the part and in the case of any changes to the statutory specifications.*

# ***KW automotive***

## **INSTALLATION INSTRUCTIONS**

**Before you begin installation ,  
please read the following carefully:**

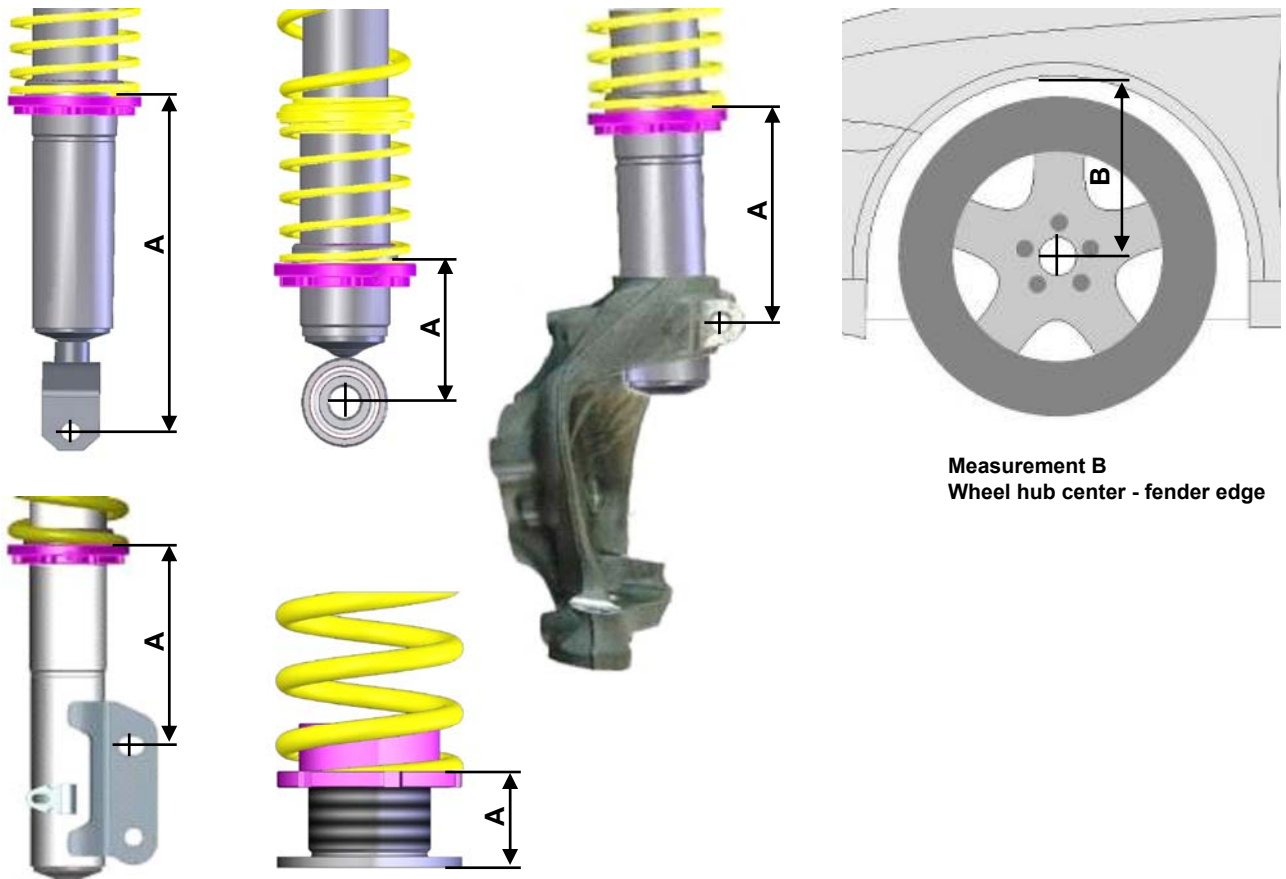
- Ensure that the certificate matches the vehicle specifications (front vehicle identification number (VIN)) etc...**
- The suspension components must match the suspensions application specifications (springs and shock/struts identification numbers).**
- The instructions have to be strictly observed.**

KW Coilovers for automobile suspensions are designed for easy installation. If not otherwise stipulated in these instructions, all suspension components are installed and removed in accordance with the manufacturer's specifications for installing and removing standard springs and damper components. At the time of printing all instructions and specifications are correct.

<b>Technical data</b>	<b>Coilover part number 352 20 8CG</b>			
<b>Vehicle model</b>	<b>BMW Z4 type G4Z</b>		<b>max. permissible front axle load: - 865 kg</b>	
	<b>front axle</b>		<b>rear axle</b>	
<b>Spring signature</b>	10-60-80 / 60-170*		20-60-80 / 140-220*	
<b>Coilover strut / Shock absorber signature</b>	202 1050		202 1150	
<b>Approximate distance measurement A</b> <b>Front axle: Fastening screw - spring contact area</b> <b>Rear axle: Seating height adjustment - spring contact area or fastening screw - spring contact area</b>	min:	max:	min:	max:
	150 mm	165 mm	18 mm	33 mm
<b>Approximate measurement* B in mm / inch:</b> <b>wheel hub center to fender edge</b>	min:		min:	
	330 mm		330 mm	

<b>Vehicle model</b>	<b>Toyota Supra type JTSC</b>		<b>max. permissible front axle load: - 865 kg</b>	
	<b>front axle</b>		<b>rear axle</b>	
<b>Spring signature</b>	10-60-80 / 60-170*		20-60-80 / 140-220*	
<b>Coilover strut / Shock absorber signature</b>	202 1050		202 1150	
<b>Approximate distance measurement A</b> <b>Front axle: Fastening screw - spring contact area</b> <b>Rear axle: Seating height adjustment - spring contact area or fastening screw - spring contact area</b>	min:	max:	min:	max:
	150 mm	165 mm	18 mm	33 mm
<b>Approximate measurement* B in mm / inch:</b> <b>wheel hub center to fender edge</b>	min:		min:	
	335 mm		335 mm	

Calculating the adjustment range (distance measurement A) : (Photos are examples only)



Measurement B  
Wheel hub center - fender edge

Please enter the adjusted height of the modified car into the list:

Coilover part no	Vehicle type	Measurement A		Wheel hub center - fender edge Measurement B	
		Front	Rear	Front	Rear

\* **IMPORTANT:** The allowable measurement between wheel hub center and fender edge as indicated above, may not exceed these measurements when using standard fenders.

## Danger:

Always follow the latest accident prevention regulations (not applicable for North America) for each step to prevent any serious bodily harm or injury.

1. We recommend the use of a vehicle hoist or lift when installing the suspension. If a lift is not available and jacking equipment is used, make sure that the vehicle is secured with commercial wheel blocks and jack stand to ensure safety.
2. The suspension components may only be installed by trained technical personnel using the proper tools.
3. The General Installation instructions, as well as the Technical Inspectorate documents must be read BEFORE attempting installation.
4. Never use impact wrenches or guns to install or remove shock absorber piston hardware.
5. Never disassemble or cut open shock absorbers and/or shock absorber inserts. They contain oil under pressure. Danger of explosion.
6. Before driving on public highways, carry out the work steps on page 7, items 11 through 14 after installation.
7. The suspension regulation (when available) needs to be disabled through an authorized dealer.
8. Please take care in any case that fittings (for example fittings of shock absorber housings or fittings of the lower control arm in the housing of the wheel bearing) are free of dust and oil. (see manufacturer guideline)

## General Instructions for Use:

1. When adjusting the vehicle height, make sure that the threads are clean and free of debris. After initial cleaning, move the perch by 10 mm (0.4 Inches) downwards, and then clean the area that you desire to adjust the perch (up or down).
2. During height adjustments on separate shock and spring systems, remove the perch from the vehicle to adjust the height.
3. After adjusting the vehicle height, repeat steps 11 through 14 from page 7.
4. In the area of the piston rod and the sealing package of the new and used damper there might be oil and grease collected. This could either be caused by using a special black grease during assembling the washer or due to accumulation of streak oil. Further more oil is used during assembling the cartridge and rod guide. There is no reason of worrying about and damage, as in this area also dust and dirt used to be collected.

### **Tightening torque for the piston rod nut:**

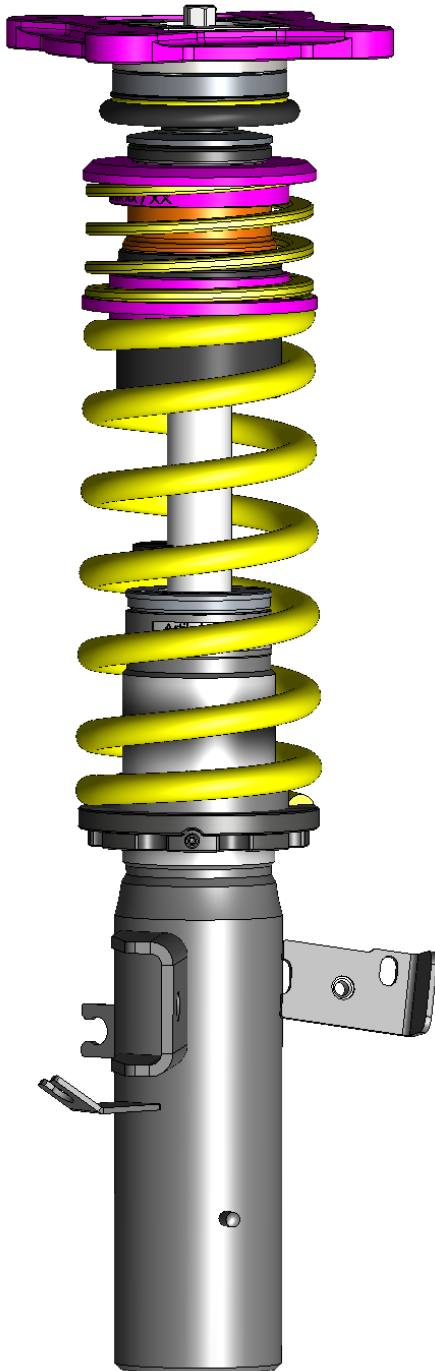
M8 = **25Nm (18 ft-lb)**, M10x1 = **20Nm (15 ft-lb)**, M10x1,25 = **20Nm (15 ft-lb)**, M12x1,25 = **35Nm (26 ft-lb)**,  
M12x1,5 = **40Nm (29 ft-lb)**, M14x1,5 = **50Nm (37 ft-lb)**, M16x1,5 = **50Nm (37 ft-lb)**

## General Mounting Specifications:

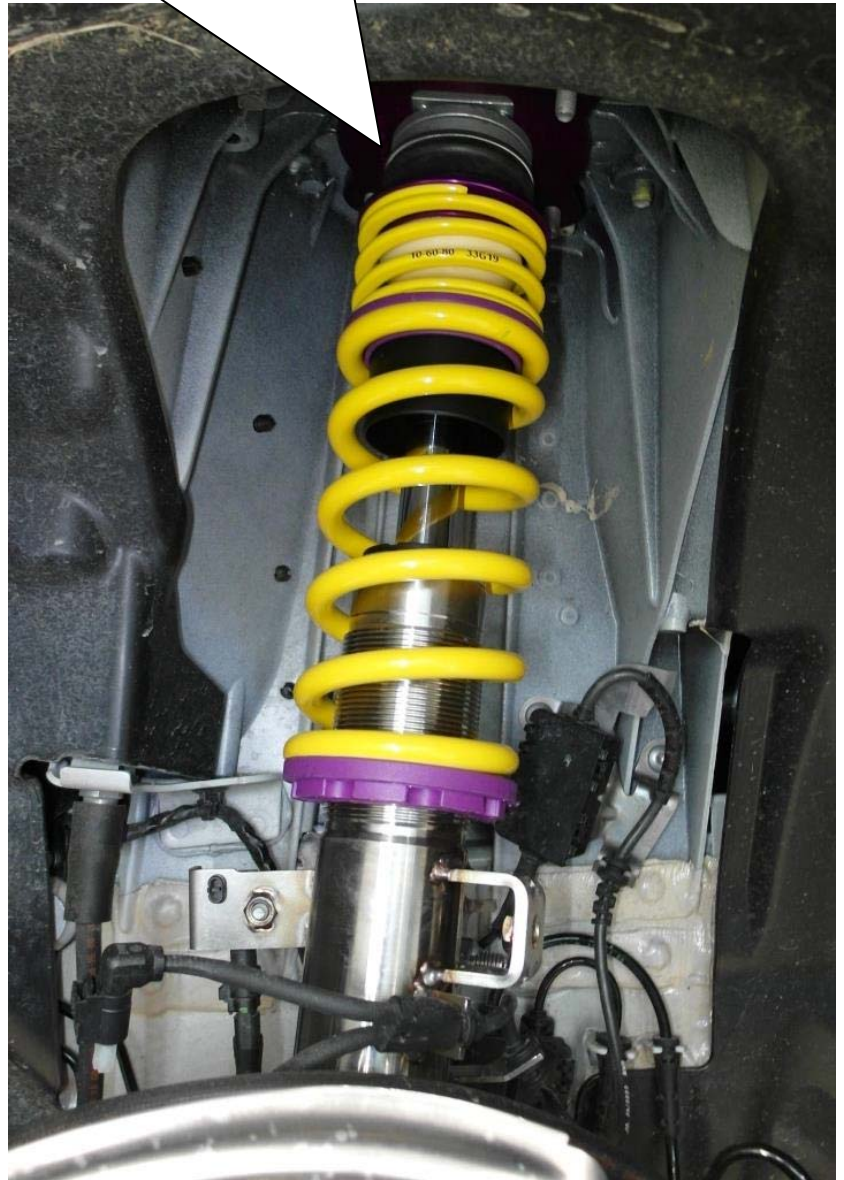
1. We recommend the use of a vehicle hoist or lift when installing the suspension.
2. **Caution:** If the vehicle is equipped with ride height sensors, they should be removed before removal of struts or dampers, otherwise damage may occur.
3. The struts should be removed as specified by manufacturer's instructions.
4. Manufacturer recommended tools for removal of the original struts, or a suitable spring compressor, must be used in order to remove most factory mounted suspension systems.
5. Mount the complete suspension system as described on the following pages.
6. Never use impact drivers to install nuts on the piston rods as permanent damage may occur. It is imperative that you do not damage the piston rod surface, through use of pliers etc, as the smallest damage will result in seal damage, and will not be covered under warranty.
7. Stay within the lowering range specified in the table on page 3.  
**Example:** With a specified range of 20 - 60 mm (0.8 - 2.3 Inches), 40 mm (1.5 Inches) is your height adjustment range.
8. Ensure that the set screw on each spring collar is tightened to prevent movement of the spring perch. On vehicles with separate shock/spring combinations, no set screw is necessary.  
**Caution:** Do not over tighten the set screw. Maximum torque is 1 - 2 Nm (0.74-1.47 ft-lb).
9. Install the suspension components in the vehicle as specified by the vehicle manufacturers in their document.
10. Except as noted, all torque values must comply with manufacturer recommended specifications.
11. After assembly and installation is complete, the vehicle should be rolled onto level ground. Once on level ground, measure the vehicle height and adjust to the customer's requirements, within the prescribed lowering range.  
**Caution:** Wheel hub center—wheel arch maximum measurement in the table of page 3 must not be exceeded! Also take into account minimum road clearances specified in the table on page 7 (only valid for Germany!).  
**Caution:** It is common for the vehicle suspensions to settle by an additional 5 - 10 mm (0.2 - 0.4 Inches)
12. Examine the clearance between the tires and the suspension over the full range of motion of the wheel. The minimum clearance between the suspension and the tire is 4 mm (0.16 Inches). If this clearance is less than 5 mm (0.2 Inches), wheel spacers may be necessary. With strut designs that are located close to the wheel, but that have no steering functions, use 100 mm (3.9 Inches) spacers on diagonally opposed wheel (e.g. front right, rear left). In this position, you must be able to achieve the minimum clearance required. You can also check the clearance between tire and body.  
**Caution:** With torsion beam trailing arm axles, this method is not sufficient. The wheel must be under full load as well as test driven to properly calculate the clearances of 5 mm (0.2 Inches) from any other components.
13. The geometry of the suspension needs to be adjusted according the regulations of the vehicle manufacturer. If a value cannot be reached due to the difference in the height, a optimal value next to the tolerance range of the vehicle manufacturer needs to be adjusted.
14. All components that are controlled by vehicle ride height (e.g. headlights, brake bias regulator etc.) must be adjusted as specified by the vehicle manufacturer instructions and procedures.
15. For vehicles with ESP, DSC or EPC your new suspension components may cause an engine fault code to appear. This is only temporary as the vehicle electronics adjust to the new components/height. On some models this will end after driving approximately 3-5 miles, or through turning the steering wheel from full left to full right. On other models, this must be reset through the factory diagnostic port by a qualified technician.
16. If Vehicles have Driver Assistant Systems and the ride high is lowered by an increase of the compression travel, it must be proofed that all relevant sensors (like Radar Sensor or Camera Systems) be adjusted according to the Manufacture Specifications

**Front axle:**

Supplied coilover strut with the supporting bearing unit.



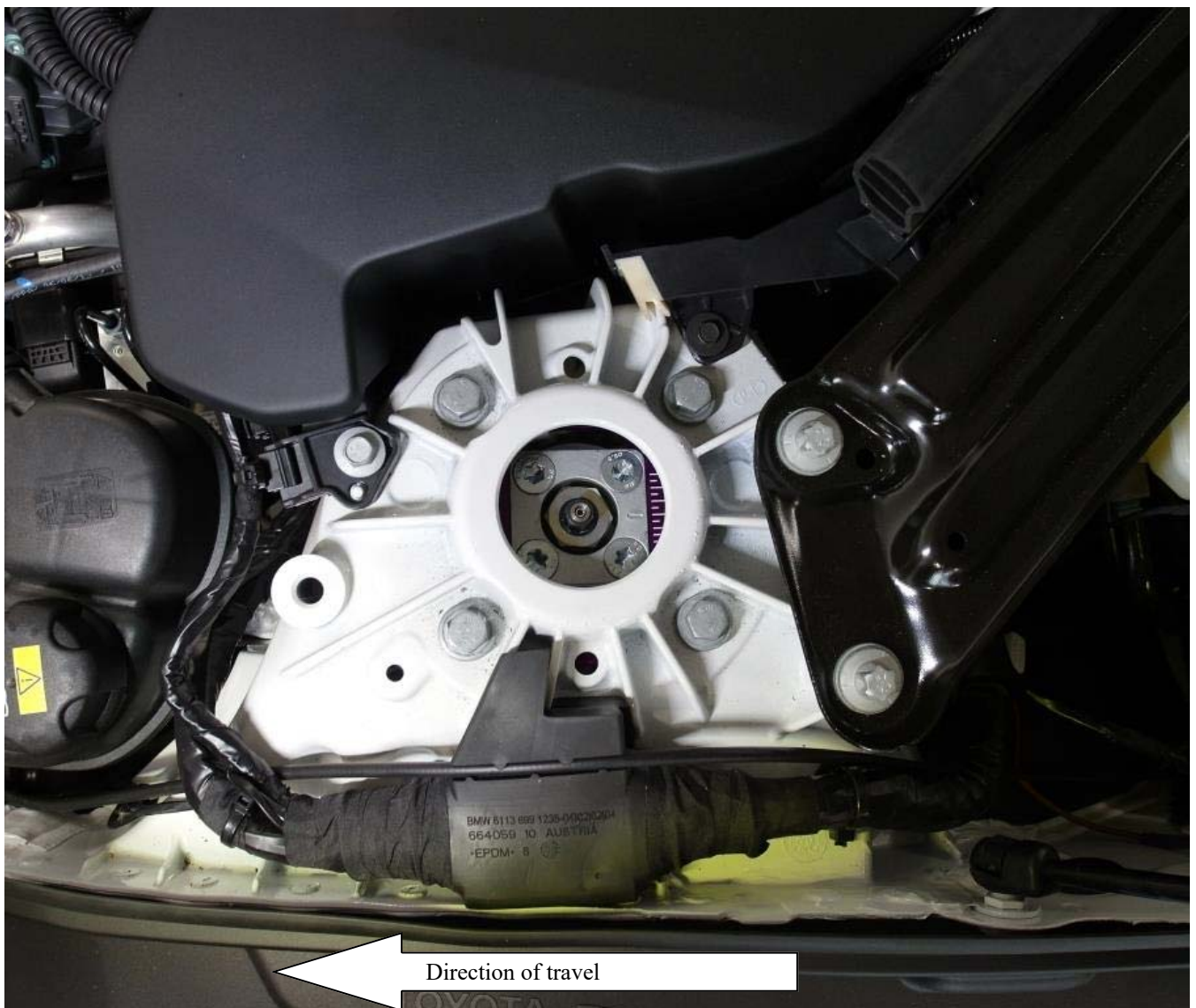
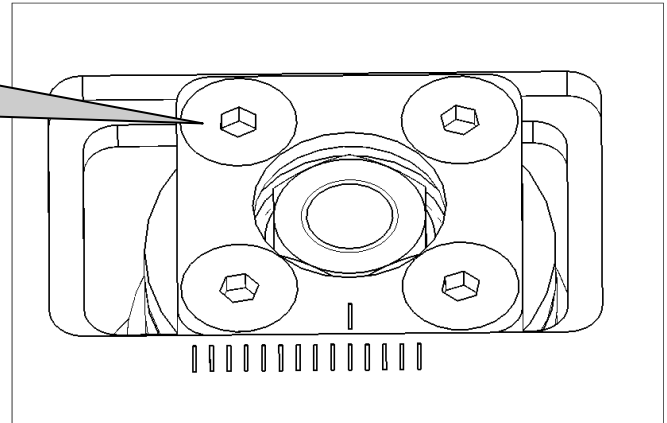
The strut unit has to be installed according to manufacturers recommended settings regarding tightening torque and fixing specifications.



After you have completed installation of the suspension, check the clearance of the tire to the front suspension strut. The minimum clearance at the narrowest point is 5 mm and must, where necessary, be provided using commercially available, Technical Inspectorate approved spacers.

**Front axle:**

Tightening torque max. 22 Nm (17 ft-lb).





## Rear axle:

Supplied damper

Install the factory top mount and secure it with the supplied nuts. Tightening torque for the piston rod nut is 20 Nm (15 ft-lb). The strut unit has to be installed according to manufacturers instructions settings regarding tightening torque and fixing specifications.



**Rear axle:**

Mount the rear axle adjustment between spring and chassis, the original spring supporting disc is not longer used. You have to remove the rear axle adjustment to correct (screw up the threaded ring) the car height.



140-220\*

20-60-80

Use the supplied spring support at the bottom end of the spring.





## Set Up Manual KW-Clubsport

No. 685 79 066

Our 2-way adjustable competition shock absorber is based on the KW twin tube damping system, and features independent rebound adjustment. Depending on the sealing and the adjusting system of the individual kit, our systems may be charged with pressures of 3 to 8 bars, or without any pressure at all.

### **Adjusting rebound:**

The rebound adjustment is positioned in most cases at the end of the piston rod (top of strut). Please use the supplied KW adjustment wheel on the extruded tab adjuster for all adjustments.

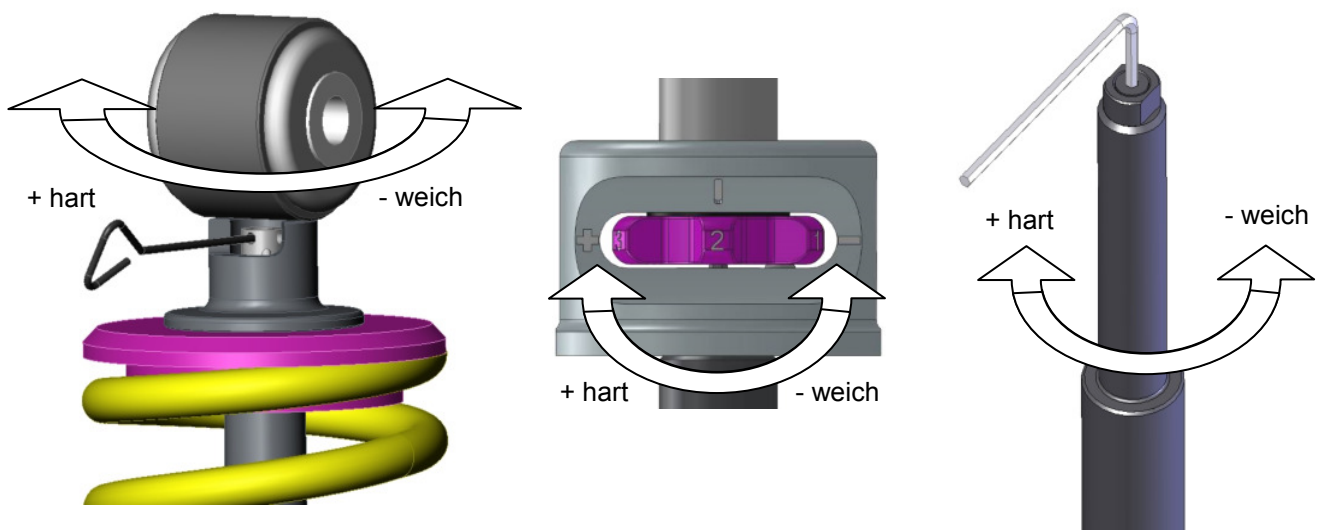
- 1<sup>st</sup> step: Place the KW adjuster on the adjustment Allen bolt.
- 2<sup>nd</sup> step: Turn the adjuster clockwise to the right until it stops. This is now adjusted to full hard. (clockwise=harder).
- 3<sup>rd</sup> step: Turn the KW adjuster clockwise to soften the rebound setting to the desired level. The effective adjustment range is from 0 - 16 clicks open.

### **Attention:**

Never drive the vehicle with the shock absorbers set to full hard or full soft! Never apply force to the adjusting mechanism of the shock absorber. As soon as you reach the end of the adjustment range, you will recognize a certain resistance. Stop turning to avoid damage to the bottom valve.

### **Rebound adjusting principles:**

In general a soft rebound adjustment provides a comfortable ride at low vehicle speeds but the vehicle will have less stability at higher speeds, especially on the front axle (vehicle will tend to float at higher speeds). A hard rebound adjustment offers more stability but could reduce vehicle grip (i.e. the vehicle will tend to skip across road imperfections, reducing traction).





**Adjusting the bump/compression:**

The compression forces can be adjusted on our patented 2-way bottom valve. Access to the bump valve in most instances is found on the bottom of each shock case. Hardness adjustment on the rebound valve is made on the end of the piston rod with the supplied setting wheel or with a 2mm Allen key.

**Adjusting bump:**

Bump forces, especially on low damper speeds, have a great influence on handling and driving behaviour of your car. The setting of the bump forces will be made from the bottom of the shock case. Behind the adjusting groove you gain access to a pin with 4 holes. With the supplied small key, the adjusting pin can be adjusted by 3 clicks in either direction. Smaller increments are possible.

Before performing any adjustments, the valve must be closed by turning the adjuster clockwise until it stops. In this position, the shock will be at full hard, or "maximum power". From here, the adjustment range is 12 clicks.

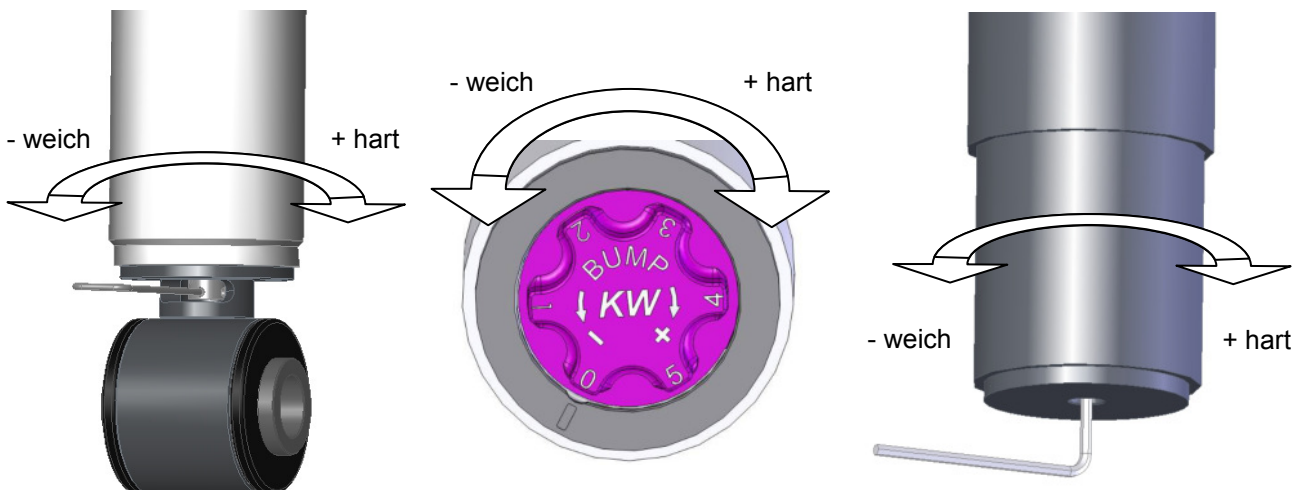
To avoid the mismatch of the dampers when actively changing settings, you should close the valve from time to time to re-calibrate the settings from side to side.

**Bump adjusting principles:**

Generally, hard low speed bump settings will stabilize the corresponding axle (less over steer on the rear, for example) or offer the front a more precise steering response. Too much low speed bump power will decrease grip!

Depending on the valve configuration found inside the kit, maximum bump forces will not influence the suspensions response when encountering hard bumps, such as curbs on the racetrack.

**Attention! Do not turn the adjusting spindle by force when you reach the end of the adjustment range, this may damage the fine valve inside the system!**



Our recommendation for your car to start with

<b>Front axle</b>	<b>Rebound:</b>	8	Clicks open	<b>Bump:</b>	5	Clicks open
<b>Rear axle</b>	<b>Rebound:</b>	9	Clicks open	<b>Bump:</b>	6	Clicks open

[View other performance suspension parts made by KW Suspension on our website.](#)