



SETUP MANUAL



KW automotive



Set Up Manual KW-Variant 3

No. 685 77 127

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.

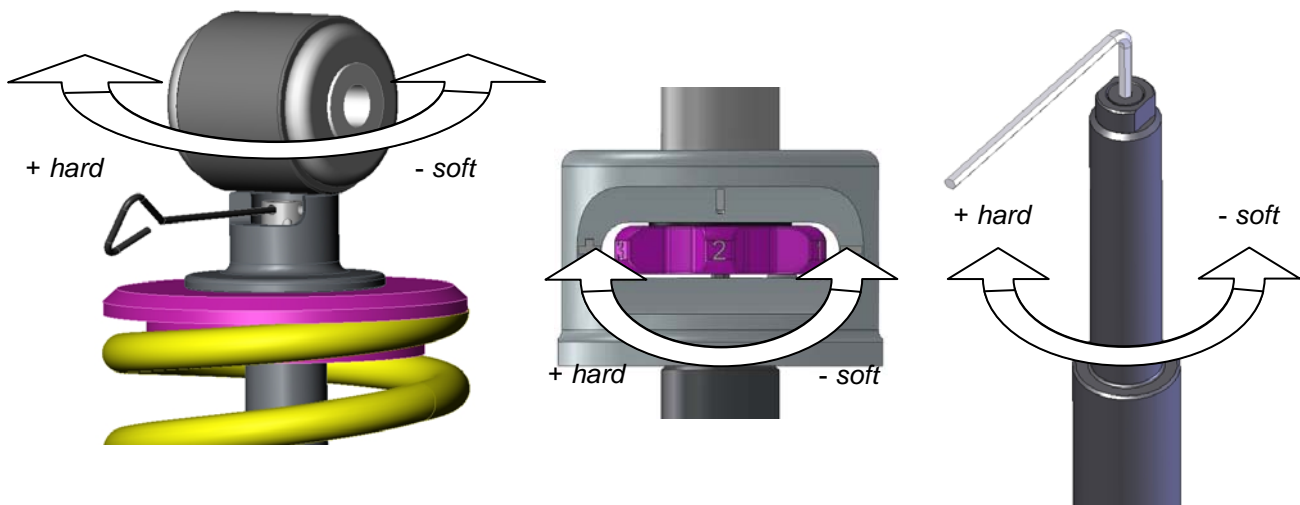
- 1st step: Place the KW adjuster on the adjustment Allen bolt.
- 2nd step: Turn the adjuster counter to the right (clockwise) until it stops. The damper is now adjusted to full hard (clockwise = harder).
- 3rd step: Turn the KW adjuster counter-clockwise to soften the rebound setting to the desired level. The effective adjustment range is from 0 - 16 clicks / 0 - 2,75 turns 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.

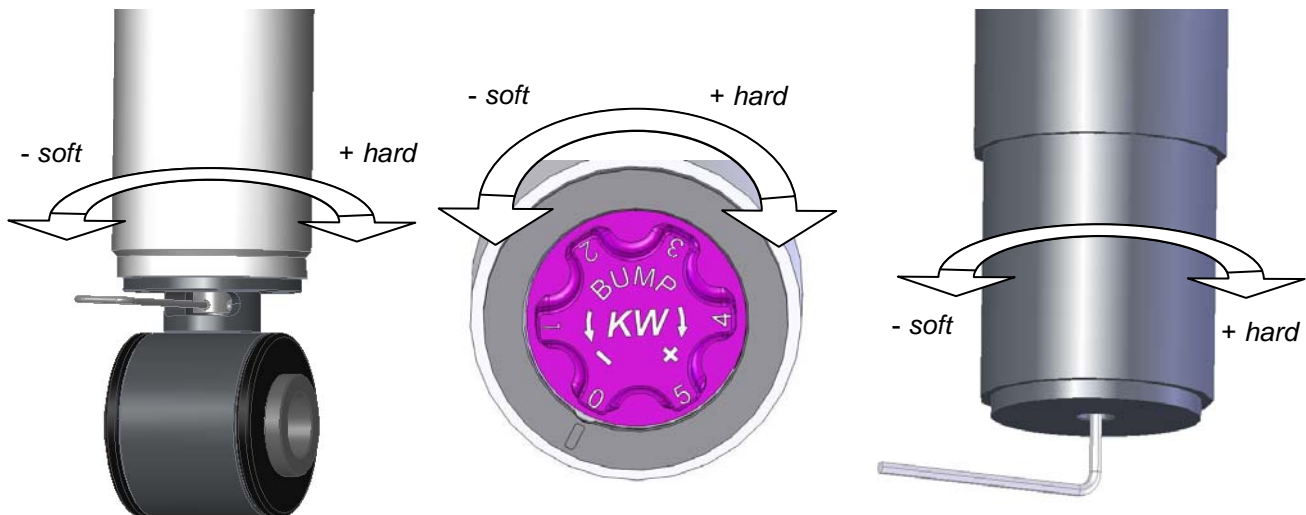
To avoid the mismatch of the dampers when actively changing settings, you should close the valve from time to time to re-calibrate the settings from side to side.

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:

Front axle	Rebound:	6	Clicks open	Bump:	3	Clicks open
Rear axle	Rebound:	6	Clicks open	Bump:	3	Clicks open



INSTALLATION INSTRUCTIONS



Installation Instructions		<i>KW automotive</i>	
Instruction No.	685 10 383	Date	16.07.2015

KW automotive

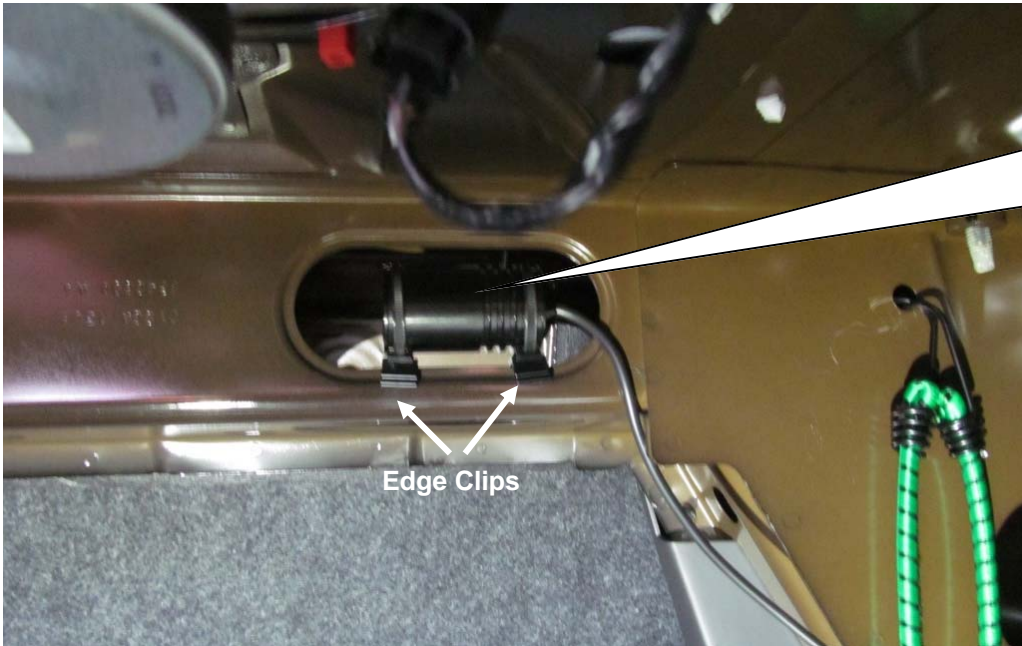
685 10 383
INSTALLATION INSTRUCTIONS
Cancellation kit

Installation Instructions			KW automotive	
Instruction No.	685 10 383		Date	16.07.2015
Front axle:		Mount the front axle electronic kit with the supplied edge clips and cable ties on the chassis edge. Run the standard damper control wire to the supplied electronic component connector. Insert the standard connector into the electronic component connector until it locks and fix it with cable ties.		
Right vehicle side.				



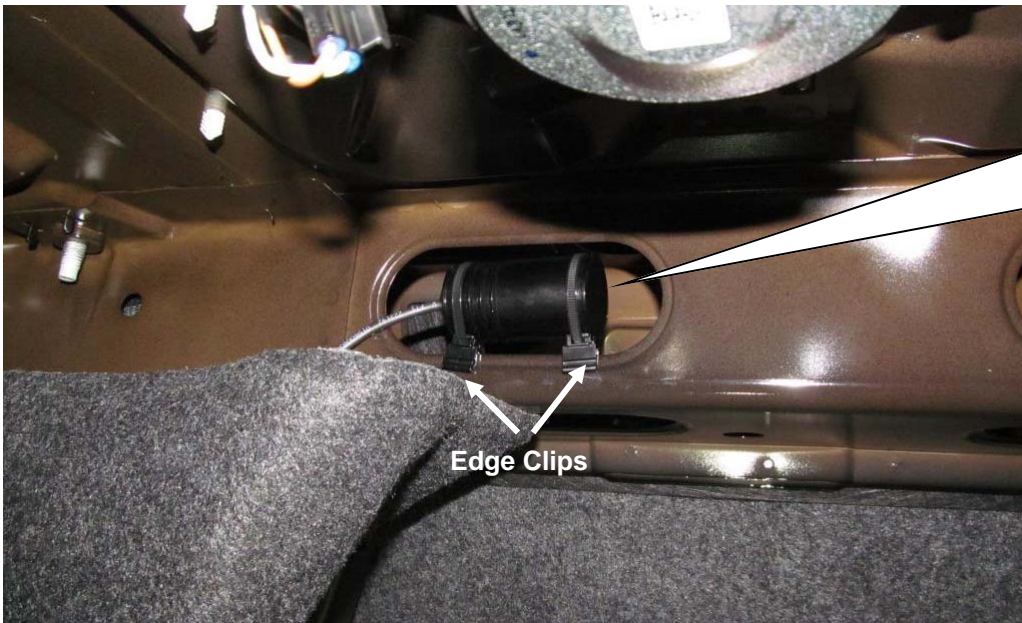
Installation Instructions			KW automotive	
Instruction No.	685 10 383		Date	16.07.2015

Rear axle:



Mount the rear axle electronic kit with the supplied edge clips in the body opening.

Edge Clips



Mount the rear axle electronic kit with the supplied edge clips in the body opening.

Edge Clips



Run the standard damper control wire to the supplied electronic component connector. Insert the standard connector into the electronic component connector until it locks and fix it with cable ties.



INSTALLATION INSTRUCTIONS



Installation Instructions		<i>KW automotive</i>	
Instruction No.	686 30 055	Date	12.09.2013

KW automotive

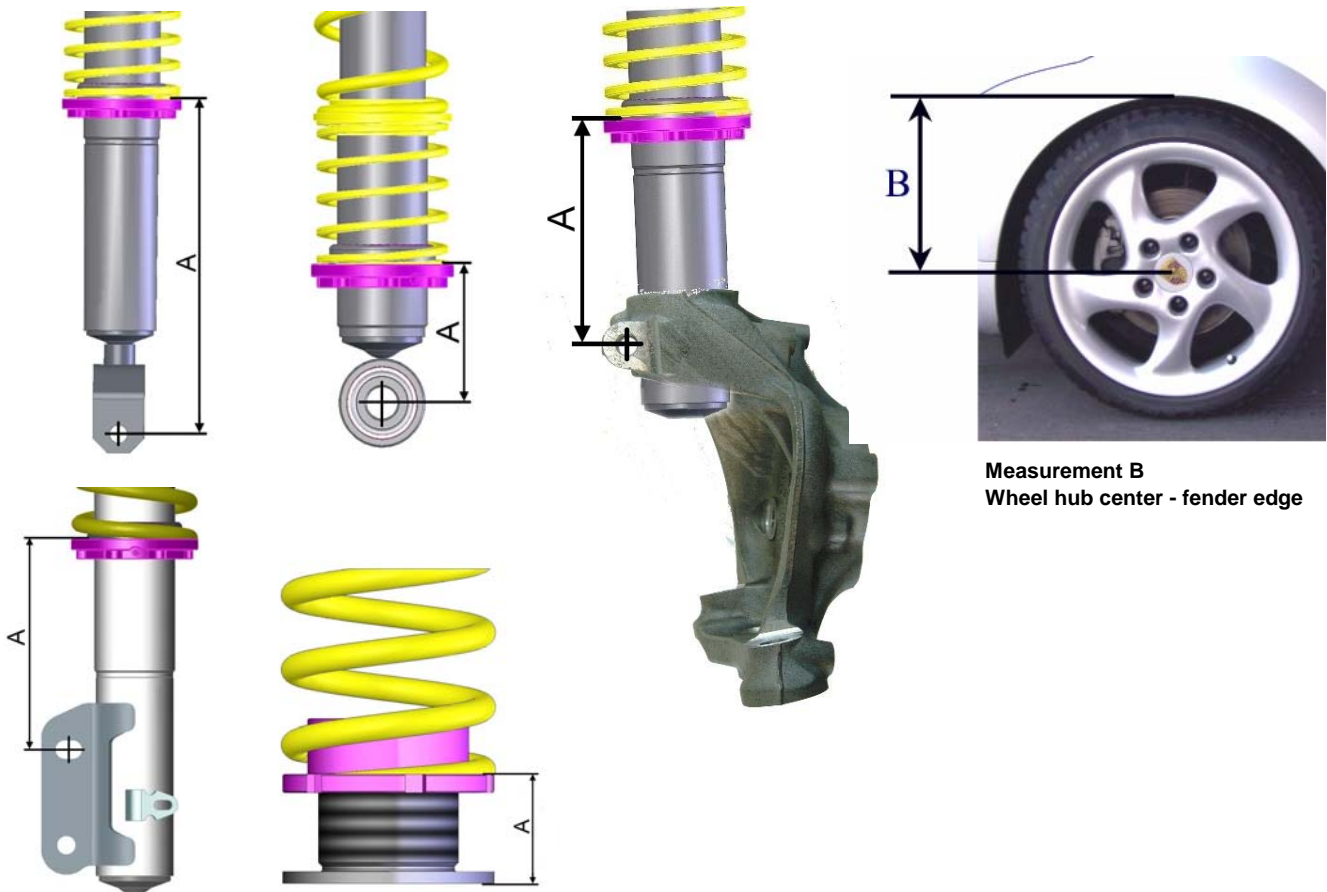
INSTALLATION INSTRUCTIONS

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

- Ensure that the TUEV 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.

Installation Instructions			KW automotive	
Instruction No.	686 30 055		Date	12.09.2013
Technical data		Coilover part number ... 30 055		
Vehicle model	Ford Mustang Shelby GT500	max. permissible front axle load: 1134 kg		
	front axle	rear axle		
Spring signature	KW 10-60-80 / KW 3015		KW 7002	
Coilover strut / Shock absorber signature	300 1022		300 1122	
Approximate distance measurement A Front axle: Lower fastening screw - spring contact area Rear axle: Seating height adjustment - spring contact area or lower fastening screw - spring contact area	min:	max:	min:	max:
	175 mm / 6,9 inch	205 mm / 8,1 inch	27 mm / 1,06 inch	47 mm / 1,85 inch
Approximate measurement* B in mm / inch: wheel hub center to fender edge	min:	max:	min:	max:
	340 mm / 13,4 inch	370 mm / 14,6 inch	370 mm / 14,6 inch	390 mm / 15,4 inch

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 this measurement when using standard fenders.

Installation Instructions			<i>KW automotive</i>	
Instruction No.	686 30 055		Date	12.09.2013



Danger:

1. Always follow the latest accident prevention regulations (not applicable for North America) for each step to prevent any serious bodily harm or injury.
2. 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.
3. The suspension components may only be installed by trained technical personnel using the proper tools.
4. The General Installation instructions, as well as the Technical Inspectorate (German TÜV) documents must be read BEFORE attempting installation.
5. Never use impact wrenches or guns to install or remove shock absorber piston hardware.
6. Never disassemble or cut open shock absorbers and/or shock absorber inserts. They contain oil under pressure. Danger of explosion.
7. Before driving on public highways, carry out the work steps on page 7, items 11 through 14 after installation.
8. The suspension regulation (when available) needs to be disabled through an authorized dealer.
9. 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 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)

Einbauhinweise / Installation Instructions			KW automotive	
Hinweis Nr./ Instruction No.	686 30 055		Erstellt am/ Date	12.09.2013



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.

Installation Instructions		<i>KW automotive</i>	
Instruction No.	686 30 055	Date	12.09.2013

Front axle:

The VA top mount changed from model year 2011. Assemble necessarily the supplied bush below and above the top mount as shown on the picture. In model up to year 2010 will be the supplied bush not required!



Installation Instructions			KW automotive	
Instruction No.	686 30 055		Date	12.09.2013

Front axle:

Supplied coilover strut.

Insert the original top mount and fix it with the supplied stop nut. Tightening torque for the piston rod nut is 50 Nm (36 ft-lb). Please install the strut unit to manufacturers recommended settings regarding tightening torque and fixing specifications.



Mj. - 2010

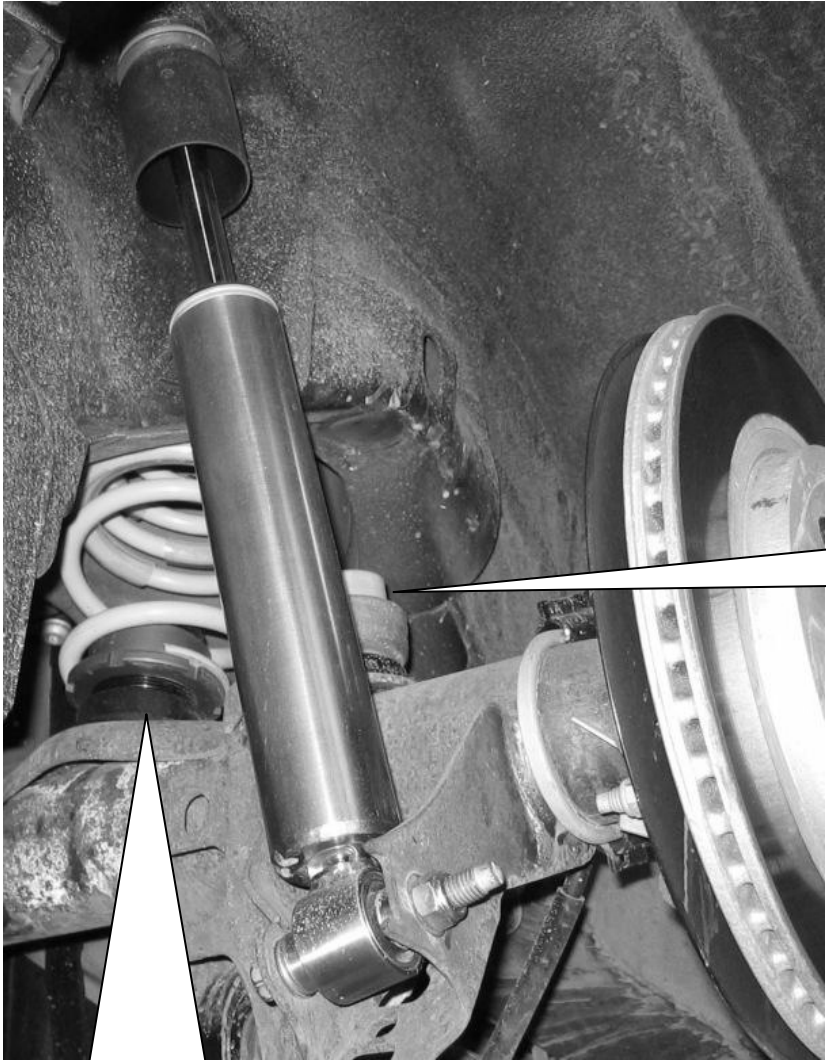
After you have completed installation of the suspension, check the clearance of the wheels/tires to the front suspension strut. The minimum clearance at the narrowest point may not be less than 5 mm (0.2 Inches). If the wheel/tire does not meet this minimum measurement, TUEV approved wheel spacers may be necessary.



Mj. 2011 -

Installation Instructions		<i>KW automotive</i>	
Instruction No.	686 30 055	Date	12.09.2013

Rear axle:



Press in the supplied bump stop as shown on the picture

Mount the rear axle height adjustment perch between spring and axle, remove the original spring supporting disc. Remove the height adjustment perch to correct (screw the

Unless there is no bump stop supplied by KW the factory bump stop has to be used. The factory bump stop has to be in a good condition, otherwise it has to be replaced.
Tightening torque for the piston rod nut is 25 Nm (18 ft-lb).
Please install the damper unit to manufacturers recommended settings regarding tightening torque and fixing specifications.

Parts Approval

No. 3406/07

of 07.08.2007



**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 : *Height-adjustable suspension system lowering the car body
by about 30-60 mm*

Part type(s) : ... **30 055**

Manufacturer



for the vehicle (type) : Ford Mustang Shelby GT 500 (Mustang Shelby GT 500)

max. axle load : VA (*front axle*) 1134 kg
HA (*rear axle*) 1100 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 presented 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.

Parts Approval

No. 3406/07

of 07.08.2007



Compliance with Conditions and Notes

The Conditions and Notes given in III. and IV. must be complied with.

Mitführen von Dokumenten / 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 vehicle documents (vehicle registration documents).

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

I. Field of application

Vehicle manufacturer	Trade name	vehicle type	Variants / Versions	type approval
Ford	Mustang Shelby GT 500	Mustang Shelby GT 500	alle / all	Single operating licensure according to § 21 StVZO (Road Traffic Licensure Regulations)

The vehicles will be placed on the market based on single operating licensure according to § 21 StVZO (Road Traffic Licensure Regulations). The installation of the height adjustable suspension kit to lower the body of non-licensed vehicles can only be approved and recorded according to § 21 StVZO (Road Traffic Licensure Regulations) by an officially recognized expert for motor vehicle traffic (aaS).

Parts Approval

No. 3406/07
of 07.08.2007



Rear axle

For vehicles up to 1100 kg rear axle load

	Pre spring	Main spring
Marking	nicht vorhanden <i>non existent</i>	KW 7002 aufgedruckt <i>imprinted</i>
Corrosion protection		EPS – Pulverbeschichtet <i>EPS-powder coating</i>
Wire size		11,2 mm
Outer diameter		84 mm
		105 mm
		80 mm
		265 mm
Untensioned height		7,5
Number of coils		
Coil shape		<i>barrel</i> <i>head(s) baselined</i>

	Spring cup seat (top)	Spring cup seat (bottom)
Max. diameter	80 mm	Serie OEM part
Min. diameter	52 mm	
Diameter rest	61 mm	
Height	28 mm	

	Spring height adjustment	Shock absorber
Specification	<i>Infinitely adjustable cup seat</i>	<i>Sport shock absorber</i>
Marking	---	300 1122

	Rubber or polyurethane foam element
Bump stop	
Length	60 mm

Parts Approval

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III. Notes on possible combination with other modifications

III. 1 Wheel/tyre combinations

It is permissible to install the height-adjustable suspension system in vehicles listed under the field of application which otherwise have series suspension system parts, taking account of the conditions and notes, with all wheel/tyre combinations approved as standard by the vehicle manufacturer or provided for in a wheel appraisal in conjunction with the standard suspension system, provided the specified distances to the suspension system parts or bodywork parts are observed.

III. 2 Aerodynamic devices, special exhaust systems etc.

Where vehicles are equipped with spoilers, aprons or special exhaust systems the use of these suspension springs is only allowed if there is sufficient ground clearance.

III. 3 Trailer coupling

Where a trailer coupling is to be mounted or is present, a check must be made to establish whether the height of the centre of the ball is in the specified range between 350 mm and 420 mm if the vehicle is loaded to the permissible overall weight.

IV. Conditions and Notes

Conditions and notes for the installation shop and modification acceptance

The conversion kit must be produced in accordance with the drawings presented and the approved specimens. Conformity will be confirmed by the manufacturer by supplying the parts approval together with the conversion set.

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The vehicle bodywork is lowered in accordance with the vehicle manufacturer's information and the installation instructions to be supplied and should be undertaken by a specialist shop.

The free movement of the tyres/wheels to the suspension strut must be at least 4 mm. If necessary this minimum distance must be created by taking appropriate action. In addition the free movement of the following parts/subassemblies must be ensured: drive halfshaft, frame front end, steering lever, tie bar/ends, wheel suspension systems, stabilizer(s), brake lines, hoses, cables etc.

*The kinematics of the wheel suspension system and steering (e.g. toe-in, camber, spread, axle-pin rake) must be checked after the conversion to establish adherence to the values specified by the manufacturer for the series vehicle and they must if necessary be adjusted.
The record of check and adjustment has to be provided for the modification acceptance.*

The usability of snow chains was not checked.

The bump stops must correspond to the descriptions in this report (hollow rubber springs). Additional bump travel limiters are not allowed.

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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The adjustments should be adhered to the following specifications.

front axle	min. / min.	175 mm	Distance from the spring rest to the nearest fastening screw
	max. / max.	205 mm	
rear axle	min. / min.	27 mm	Distance from contact point of the car to the adjustable spring perch
	max. / max.	47 mm	

In addition the distance from the wheel centre to the wheelhouse rim shall be:

front axle: min. 340 mm	rear axle: min. 370 mm
-------------------------	------------------------

The ground clearance of the vehicle has to be in any case at least 80 mm (in the case of elastic parts at least 70 mm). Where necessary the possible adjustment range must be reduced.

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
20	New vehicle height, to be measured
22	Mit höhenverstellbarem Fahrwerk der Fa. KW automotive GmbH, Kennz. Federn vorn: KW 10-60-80 / KW 3015; hinten: KW 7002; Federbein vorn: 300 1022; Dämpfer hinten: 300 1122; Maß Radmitte bis Radhausausschnittkante 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.
The test conditions were fulfilled.

Parts Approval

No. 3406/07
of 07.08.2007



VI. Annex: none

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: 2000 (Certificate Registration No.: 12 102 22913 TMS).
The requirements of annex XIX to StVZO (2.1) are satisfied.*

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.

