

**THE RIGHT SUSPENSION
FOR EVERY RACE!**



COMPETITION

THE PERFECT **SETUP**
FOR **EVERY DEMAND!**



FOREWORD

The right suspension for every race.
The perfect setup for every demand.

Whether it is for original equipment in customer motorsports programs or private and factory teams - in professional motorsports and popular sports our customers worldwide rely on the successful KW Competition technology.

Our KW Competition racing program offers a wide range ensuring the right racing solution for every kind of motorsports and regulations. KW Competition solutions are available in different versions which includes 4-way, 3-way and 2-way adjustable racing damper technologies. A fixed pre-configured damping set-up is also available. Our vehicle-specific racing suspensions are produced as homologated series developments for numerous GT3, GT4, TCR and Cup cars or as individual application for your successful race.

Numerous overall victories and class victories in different touring championships, long-distance races - such as the ADAC Zurich 24-hour race Nürburgring, 24-hour race Spa-Francorchamps, 24-hour race Dubai, 24h race Daytona, ADAC GT Masters - Long Distance Championship, NASA 25 Hours of Thunderhill & WERC Championship, Formula Drift Series and national as well as international Hill Championships have been achieved proving the reliability of the diverse KW Competition suspension components.

For many years we have focused our expertise on the circuit, cup, hill and drift suspensions. In addition, we specialize in the individual manufacturing of rally suspension and racing suspension systems for vintage motorsport using the latest damper technology and in-

dividual setup on our 7 post driving dynamics test rig in accordance with today's latest and greatest technology. Upon request, we will afterwards also support you in the validation at the racetrack. Our KW Competition racing service is on-site at numerous racing events with a fully equipped service mobile and our racing technicians will support your team in the suspension setup, can make setup changes and damper tests directly in the paddock.

Our wide-ranging racing suspension program, development coordination directly on our 7post rig and all services from one partner are unique advantages for your success in motorsport.

Klaus Wohlfarth & Jürgen Wohlfarth

LEGEND

Our newly sorted KW Competition catalog introduces new alpha-numeric abbreviations, so you can see at a glance the most important differentiation in criteria for the respective dampers and suspensions.

TT	TwinTube damper
ST	SingleTube damper
R	External Reservoir
W	Washer / Belleville Washer
S	Coil Springs
SP	Solid Piston
P	Plain Bearing
L	Linear Bearing
G	Guided Tube 50mm
2A	2-way adjustable (rebound / compression)
3A	3-way adjustable (rebound / compression low- and highspeed)
4A	4-way adjustable (rebound low- and highspeed / compression low- and highspeed)

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PRODUCT OVERVIEW



KW Competition Cup
Fixed Damping

Damping Adjustment:

–

TT

- TwinTube damper
- For non-wheel guiding dampers and struts

ST 40P

- SingleTube upside-down
- 40mm damper cartridge
- For McPherson applications with cornering forces



KW Competition 2A
2-way adjustable

Damping Adjustment:

- Rebound 16 clicks
- Compression 12 clicks

TT2A

- TwinTube damper
- For non-wheel guiding dampers and struts

ST2A 40P

- SingleTube upside-down
- 40mm damper cartridge
- For McPherson applications with cornering forces



KW Competition 2A EXR
2-way adjustable

Damping Adjustment:

- Rebound 16 clicks
- Compression 15 clicks

STR2A

- SingleTube damper
- For non-wheel guiding dampers and struts

STR2A 40P / 45P

- SingleTube upside-down
- Damper cartridge 40mm and 45mm
- For McPherson applications with normal / increased cornering forces



KW Competition 3A
3-way adjustable

Damping Adjustment:

- Rebound 18 (22) clicks
- Compression low speed 18 clicks
- Compression high speed 18 clicks

STRS3A

- SingleTube damper
- For non-wheel guiding dampers and struts

STRS3A 40P / 45P / 50PG und 40L

- SingleTube upside-down
- Damper cartridge 40mm and 45mm
- 50mm plain bearings guide tube
- 40mm linear bearings
- For McPherson applications with normal / increased cornering forces



KW Competition 4A
4-way adjustable

Damping Adjustment:

- Rebound low speed 18 clicks
- Rebound high speed 18 clicks
- Compression low speed 18 clicks
- Compression high speed 18 clicks

TTRWSP4A

- TwinTube damper
- For applications with pushrod-, double- or multi-link axles
- Optionally adjustable blow-off



KW high-performance racing springs
Special high-performance springs for the use in racing

Overview:

- Shorter spring construction length
- Improved wheel clearance
- Weight reduction
- More spring travel
- Higher block load
- Higher load capacity

KW COMPETITION CUP



Racing damper technology with fix configured damper setup

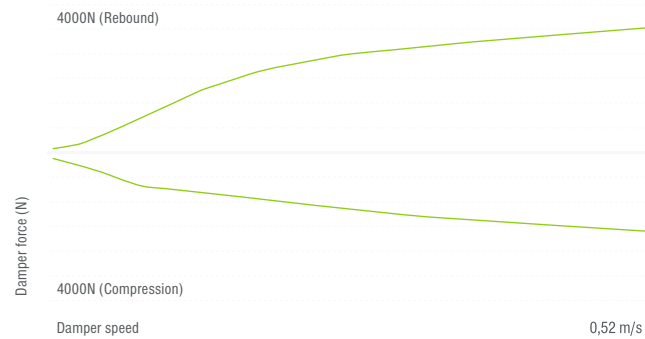
The KW Competition CUP suspensions are available as TwinTube **TT** or SingleTube **ST40P**-version with 40mm upside-down cartridge and fixed configured damping setup. KW Competition CUP suspensions are the entry into motorsport. For a maximum equality between competitors, these racing suspension systems were developed and homologated in collaboration with vehicle manufacturers and Cup organizers.

Example of application:

Porsche Cayman GT4 Clubsport, BMW 318ti Cup, DMV BMW Challenge, Cayman GT4 Trophy by Manthey-Racing, Westfield Cup, etc.

Details at a glance:

- TwinTube and SingleTube damper technology
- Separate compression and rebound valve
- Fix configured damper setup
- Extensive characteristic design
- Piston rod diameters: 15mm, 18mm, 20mm, 22mm and 25mm
- Piston diameters: 27mm, 30mm, 33mm, 36mm and 40mm
- Damper or height-adjustable racing coilover struts in **TT**-version
- McPherson-struts in **TT**- or upside-down version **ST 40P**
- Housing made of high-strength aluminium or in galvanized steel



Exemplary damper diagram



KW COMPETITION CUP / TT



Details at a glance:

- TwinTube damper with separate compression and rebound valve
- Fix configured damper setup
- Damper or height-adjustable racing coilover struts with piston rod diameters: 15mm, 18mm or 22mm
- McPherson-struts with 22mm and 25mm piston rod
- Optionally: low-pressure gas filling

Purpose:

For non-wheel guiding dampers and struts.

Slalom, Circuit, Drift, Hill.



KW **COMPETITION CUP** / ST 40P



Details at a glance:

- SingleTube damper with separate compression and rebound valve
- Fix configured damper setup
- McPherson-sturts with 40mm upside-down damper cartridge and plain bearing
- Low-pressure gas filling

Purpose:

For McPherson-applications with cornering forces

Rally, Circuit, Drift, Hill.



KW COMPETITION 2A



2-way adjustable racing damper technology

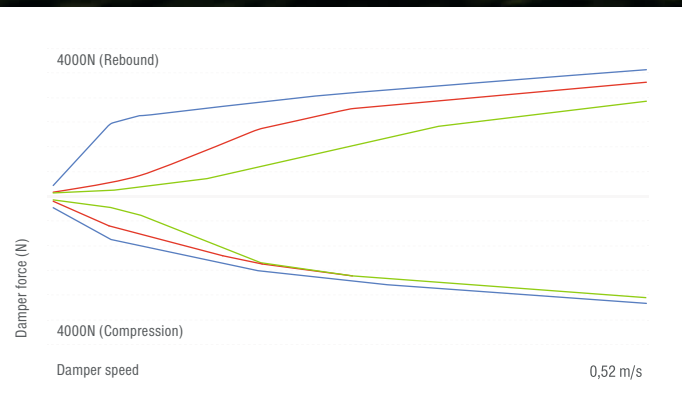
The KW Competition 2A are available as TwinTube TT2A or SingleTube ST2A 40P-version with 40mm upside-down cartridge and separate compression and rebound adjustment. They build the basis of an extensive racing suspension program for demanding mass- and customer motor sport. Available as vehicle-specific development or even as an individual customized production.

Example of application:

BMW M235i Racing, Mini Challenge, Mercedes CLA Cup Brasil, VW Ameo Cup.

Details at a glance:

- TwinTube and SingleTube dampers
- Separate compression and rebound valve
- 2-way adjustable
- **Dampering adjustment:**
 - Rebound 16 clicks
 - Compression 12 clicks
- Extensive characteristic design
- Piston rod diameters: 15mm, 18mm, 22mm and 25mm
- Piston diameters: 27mm, 30mm, 33mm, 36mm and 40mm
- Damper or height-adjustable racing coilover struts in TT-version
- McPherson-struts in TT or upside-down version ST 40P
- Housing made of high-strength aluminium or in galvanized steel



Exemplary damper diagram



KW COMPETITION 2A / TT2A



Details at a glance:

- TwinTube dampers with separate compression and rebound valve
- 2-way adjustable
- **Damping adjustment:**
Rebound 16 clicks; compression 12 clicks
- Damper or height-adjustable racing coilover struts with piston rod diameters: 15mm, 18mm or 22mm
- McPherson struts with 22mm and 25mm piston rod
- Optionally low-pressure gas filling

Purpose:

For non-wheel guiding dampers and struts with low cornering forces.

Slalom, Circuit, Drift, Hill.



KW **COMPETITION 2A** / ST2A 40P



Details at a glance:

- SingleTube damper with separate compression adjustment and rebound valve
- 2-way adjustable
- McPherson-strut with 40mm inverted damper cartridge and plain bearing
- Low-pressure gas filling

Purpose:

For McPherson-applications with cornering forces.

Rally, Circuit, Drift, Hill.



KW COMPETITION 2A EXR



2-way adjustable racing damper technology with reservoir

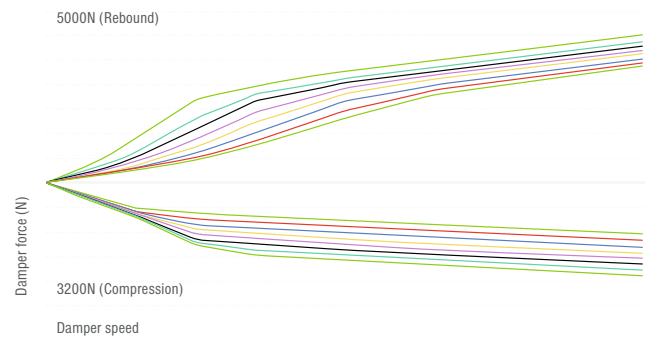
The KW Competition 2A EXR are the consequent further development of the 2-way adjustable racing dampers for the use in GT4 and TCR racing. **STR2A** stands for SingleTube damper technology with 2-way adjustable valve technology and separate reservoir. The damper forces are generated on the working piston and the compression valve in the expansion tank. Due to the position-independent reservoir, the gas volume can be adapted to the damper stroke and higher damping forces can be realized with a lower static gas pressure than with 1-pipe gas pressure dampers without separate pressure stage bottom valve. The KW Competition 2A EXR are also available for McPherson axles in upside-down version **STR2A 40P** and **STR2A 45P** with 40mm or 45mm plain bearings.

Example of application:

Mercedes GT GT4, OPEL Astra TCR, VW Golf TCR VLN Spec., SEAT Leon VLN Spec.

Details at a glance:

- SingleTube dampers
- Separate compression and rebound valve
- 2-way adjustable
- **Damping adjustment:**
 - Rebound 16 clicks
 - Compression 15 clicks
- Extensive characteristic design
- Piston rod diameters: 18mm or 22mm
- Piston diameters: 36mm or 40mm
- Damper or height-adjustable racing coilover struts in **STR2A**-version
- McPherson-struts in inverted version **STR2A 40P** or **STR2A 45P**
- Pressure compensation tank as piggyback (rotatable up to 360°) or with hose connection for an installation independent of construction
- Optionally: upgrade to 3-way adjustment



Exemplary damper diagram



KW COMPETITION 2A EXR / KW STR2A



Details at a glance:

- SingleTube damper with separate compression and rebound valve
- 2-way adjustable
- **Damping adjustment:**
Rebound 16 clicks; compression 15 clicks
- Damper or height adjustable racing coilover struts with piston rod diameters: 18mm or 22mm
- Reservoir with low-pressure gas filling
- Housing made of high-strength aluminium

Purpose:

For non-wheel guiding dampers and struts.

TCR, GT4, Rally, Drift, Hill.



KW **COMPETITION 2A EXR** / STR2A 40P / STR2A 45P



Details at a glance:

- SingleTube damper with separate compression and rebound valve
- 2-way adjustable
- **Damping adjustment:**
Rebound 16 clicks, compression 15 clicks
- McPherson-struts with 40mm or 45mm inverted damper cartridge and plain bearing
- Reservoir with low-pressure gas filling
- Housing made of high-strength aluminium or in galvanized steel version

Purpose:

For McPherson applications with normal / increased cornering forces.

TCR, GT4, Rally, Circuit, Drift, Hill.



KW COMPETITION 3A



3-way adjustable racing damper technology with reservoir

KW Competition **STRS3A** are SingleTube dampers with reservoir, coil spring valve technology and 3-way damper force adjustment. The basic compression stage has an individually pre-configurable midspeed valve, in addition to the high speed and low speed compression adjustment, the transition point from a progressive to a digressive characteristic curve can be varied. The adjustable rebound stage can be optimally configured for the intended purpose by an extensive number of needle valves and coil springs with a linear, progressive or digressive characteristic.

The **STRS3A** technology convinces by a maximum reliability and low maintenance effort. For McPherson-axles with 40mm Inverted damper cartridge as **STRS3A 40P** plain bearing or in the unique friction-optimized linear bearing version **STRS3A 40L**. For the rally use with standpipe diameter 45mm and 50mm available as KW Competition **STRS3A 45P** or **STRS3A 50P**.

Examples of application:

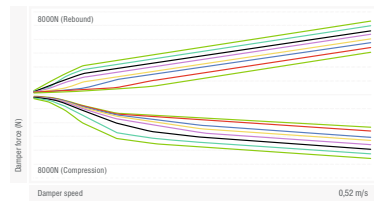
Porsche 991 GT3 R, BMW Z4 GT3, Scuderia Cameron Glickenhaus SCG003 C
Self-built race cars for circuit, hill, slalom and rally.

Details at a glance:

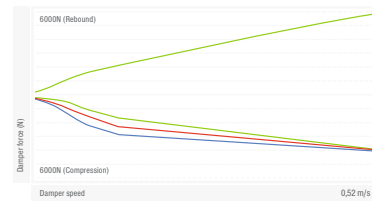
- SingleTube
- Separate compression and rebound valves
- 3-way adjustable
- **Damping adjustment:**
 - 18 or 22 clicks rebound
 - 18 clicks compression damping in low speed
 - 18 clicks compression damping in high speed
- Pre-configurable compression-midspeed-valve
- Individual characteristic design for a linear, progressive or digressive characteristic
- Piston rod diameters: 18mm or 22mm
- Piston diameters: 35mm, 36mm, 40mm and 43mm
- Damper or height-adjustable racing coilover struts in **STRS3A**-version
- McPherson-struts in upside-down-version **STRS3A 40P** or **STRS3A 45P**
- Linear bearing version with 40mm upside-down cartridge **STRS3A 40L**



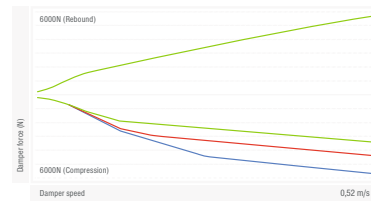
Adjustment range (rebound and compression damping)



Compression damping adjustment low speed



Compression damping adjustment high speed



KW COMPETITION 3A / KW STRS3A



Details at a glance:

- SingleTube damper with separate compression and rebound valve with coil springs
- 3-way adjustable
- Pre-configurable compression-midspeed-valve
- Damper or height-adjustable racing coilover struts with piston rod diameters: 18mm or 22mm
- Pressure compensation tank as piggyback (rotatable up to 360°) or with hose connection for an installation independent of construction
- Low-pressure gas filling
- Housing made of high-strength aluminium

Purpose:

For non-wheel guiding dampers and struts.

GT3, Circuit, Drift, Hill, Rally.



KW **COMPETITION 3A** / STRS3A 40P / STRS3A 45P



Details at a glance:

- SingleTube damper with separate compression and rebound valve with coil springs
- 3-way adjustable
- Pre-configurable compression-midspeed-valve
- McPherson-struts with 40mm or 45mm inverted damper cartridge and plain bearing
- Reservoir with low-pressure gas filling and hose connection for an installation independent of construction
- Housing made of high-strength aluminium or in galvanized steel version

Purpose:

For McPherson applications with increased cornering forces.

GT3, Rally, Circuit, Drift, Hill.



KW **COMPETITION 3A** / STS3A 40L



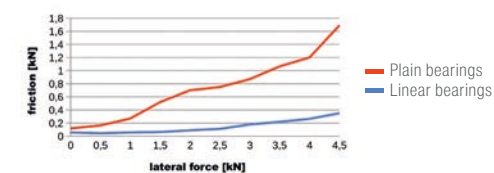
Our 3-way adjustable SingleTube dampers are in addition to the conventional upside-down versions also available as special linear bearing solution **STS3A 40L**, which is characterized by a lower friction and a low breakaway torque. As wheel-guiding McPherson struts are exposed to highest loads during cornering and braking, the advantage of KW linear bearings at increasing transverse forces (lateral forces) is up to 87% less friction compared to plain bearings.

Advantages linear bearing:

- 40mm inverted damper cartridge
- High stability & camber stiffness
- Low brakeaway torque
- Up to 87% less friction under transverse force (lateral force)



McPherson / friction under lateral force



KW **COMPETITION 3A** / STRS3A 50PG



Details at a glance:

- SingleTube dampers with separate compression and rebound valve with coil springs
- 3-way adjustable
- Pre-configurable compression-midspeed-valve
- McPherson-strut with 50mm plain bearing and guide tube
- Reservoir with low-pressure gas filling
- Housing made of high-strength aluminium or in galvanized steel version

Purpose:

For McPherson-applications with increased cornering forces.

Rally, Rally cross.



KW COMPETITION 4A



4-way adjustable racing dampers and racing suspensions

The new KW Competition TTRSPW4A TwinTube damper has a precise 4-way damper adjustment in low speed and high speed forces of the compression stage as well as the rebound stage with 18 clicks each. Its functional principle with solid slave piston allows a direct reaction even at the lowest strokes. The new KW valve technology with plate springs allows an individual characteristic design and covers a large force range of 1000 to 8000N. Depending on the requirements, the modular built damper can also be extended with an additional blow-off characteristic. The valve arrangement ensures a cavitation-free function at a low gas pressure. Due to its construction-independent use possibilities, the damper is suitable for any type of non-wheel-guiding axle constructions such as double wishbone or pushrod suspensions. The external reservoir is connected to the damper either directly as a piggyback or via a hose connection.

Details at a glance:

- TwinTube damper
- 4-way adjustable
- Valve arrangement for a cavitation-free function
- Solid slave piston 35mm
- Piston rod 15mm
- Separate low speed and high speed rebound and compression damping valves with plate spring
- Individual characteristics design, force range 1000N to 8000N
- **Damper adjustment:**
 - Rebound low speed and high speed 18 clicks each
 - Compression low speed and high speed 18 clicks each
- Rotatable pressure compensation tank as piggyback (45° positions) or with hose connection
- Low gas pressure, gas volume adapted to damper stroke
- Dampers or height-adjustable racing coilover struts
- Housing made of high-strength aluminium
- Optionally with adjustable blow-off

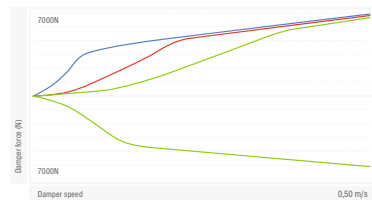
Purpose:

For applications with pushrod-, double- or multi-link axles.

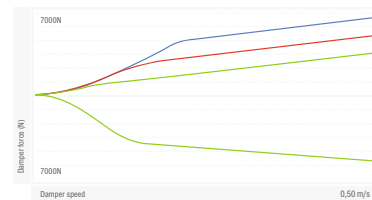
Formel, LMP, Prototypes, GT3, 4-way adjustable KW TwinTube-technology.



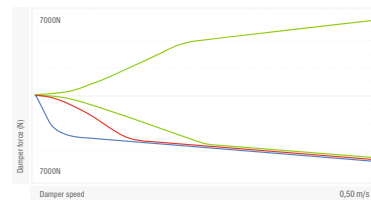
Rebound damping adjustment low speed



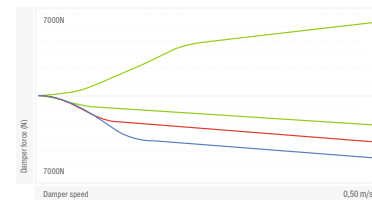
Rebound damping adjustment high speed



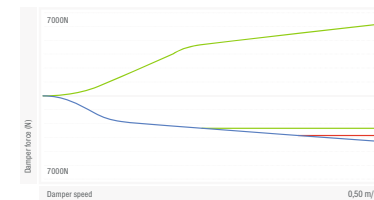
Compression damping adjustment low speed



Compression damping adjustment high speed



Compression adjustment blow-off





KW SPRINGS & ACCESSORIES

1

The KW racing springs are made of special alloyed and tempered spring steel. The higher load capacity of the material allows new constructions of the springs with a smaller wire diameter. This makes the springs up to 30% more powerful than conventional racing springs. At the same construction length this means:

- Lower weight
- More spring travel
- Higher block load

Example	Standard racing spring	KW high-performance racing spring 60-200*
		
Spring rate R	60N/mm	60N/mm
Lenght L0	200mm	200mm
Wire Ø	11,25mm	10,5mm
Weight	1,34kg	1,09kg
Max. spring travel Sn (mm)	104,5mm	126,5mm
theor. max. spring force Fc	6100N	7900N

2

KW top mounts

KW Competition top mounts made of high-strength aluminium are manufactured vehicle- and suspension-specific.

3

KW hydraulic quick coupling

The leak-free KW quick coupling for racing sports applications in SingleTube construction, to be able to easily install the compensation tank.

4

KW spanner wrench

The KW spanner wrench for a fast height adjustment is available in different versions for the respective suspension solutions.

5

KW rear axle height adjustment

Universally applicable height adjustment for applications without coilover dampers.

6

KW adjusting rings / counter rings

For our racing dampers with 2-way and 3-way adjustment, we offer three different dimensions of the adjusting and counter rings.

7

KW reservoir pump

The pump allows to quick and easy check the pressure in the damper system without pressure loss.

For any questions, suggestions or problems as well as order, please contact our customer service.

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1



2

5



6



4



7



3



KW KW RACE SERVICE

Our racing service is present at many events with our racing service truck in the paddock. This allows us directly at the track to revise the suspensions, make setup changes and support your team also in regards of the suspension setup.

You can meet the KW Race Service at the following events:

VLN Long Distance Race Championship • KW Hill Cup • DMV BMW Challenge • ADAC GT Masters • TCR Germany • FHR Long Distance Race • Oldtimer Grand Prix • ADAC Zurich 24h-race Nürburgring • 24h Spa-Francorchamps • IMSA USA • 24h Race Daytona 12h Race Sebring • Pirelli World Challenge • Formula D • and many more...

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