RACING PRODUCTS

WHO WE ARE

Working Together to Create World Class Products

KONI develops, manufactures and sells worldwide specialty high quality hydraulic shock absorbers and systems for street and racing cars, buses, trucks, trailers, railway rolling stock, defense and industrial applications.

In the car, bus, truck and trailer Aftermarket the demands for high standards for safety, durability, performance and passenger-comfort are universal. That is why we strive to be the leading solution provider globally. Operating on all continents, KONI dampers are supplied to the world markets through a vast number of local distributors. Providing added value to you means that we are connected to your markets and therefore your needs.

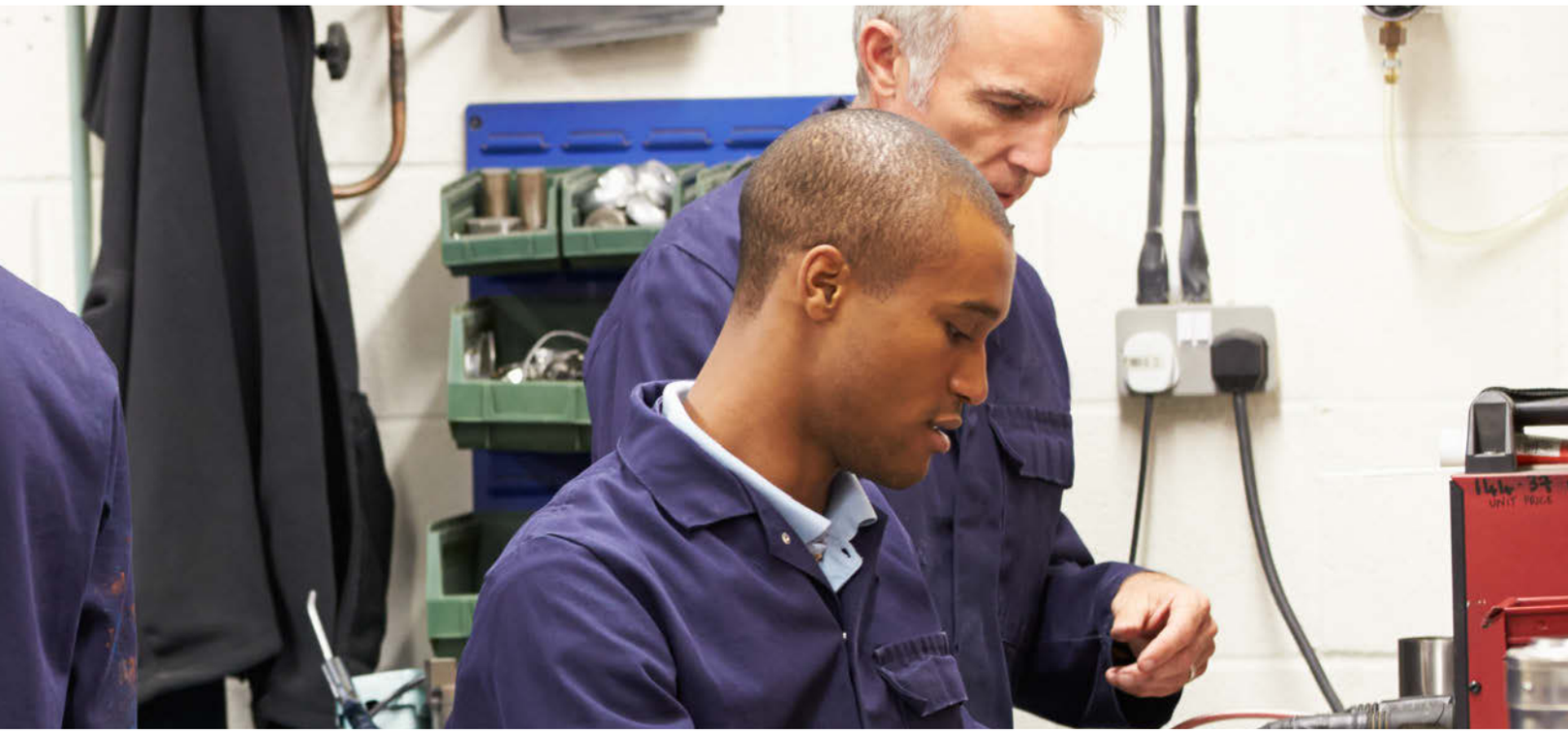
As a market leader, we are committed to offering an unmatched service for our solutions. If we want to exceed your expectations, we need to connect to your business. So we focus on your demands and requirements, whereby working together as a team is the key.

We truly believe teamwork and sharing knowledge supports your business and, therefore, ours.

KONI is the shock absorber specialist. For more than a century we have created products that excel in the toughest and the smoothest of conditions. Each KONI shock absorber and ride system is aimed to enrich the user experience; therefore we like to think that our products have a personality of their own. In a way, diversification is our specialization. Cars or bridges, trains or ferris' wheels, desert racers or army vehicles for the freezing poles: we see opportunities in everything that moves, regardless of the circumstances.

KONI has proven its expertise by providing dampers for:

- Passenger Cars
- Classic cars
- Racing Cars
- 4x4 vehicles and SUV's
- Coaches, Busses, Recreational Vehicles
- Trucks
- Trailers
- Other Heavy Duty vehicles and Industrial Applications
- Railway Products



AN ITT COMPANY

KONI is an ITT Company

ITT is a focused multi-industrial company that designs and manufactures highly engineered critical components and customized technology solutions. Our customers in the energy, transportation and industrial markets depend on us to solve their most critical problems, and we focus on partnering with them to find solutions to their unique challenges. Founded in 1920, ITT is headquartered in White Plains, N.Y., with employees in more than 35 countries. The company has sales in approximately 125 countries and generated 2013 revenues of $2.5 billion. KONI has been part of ITT since 1972.

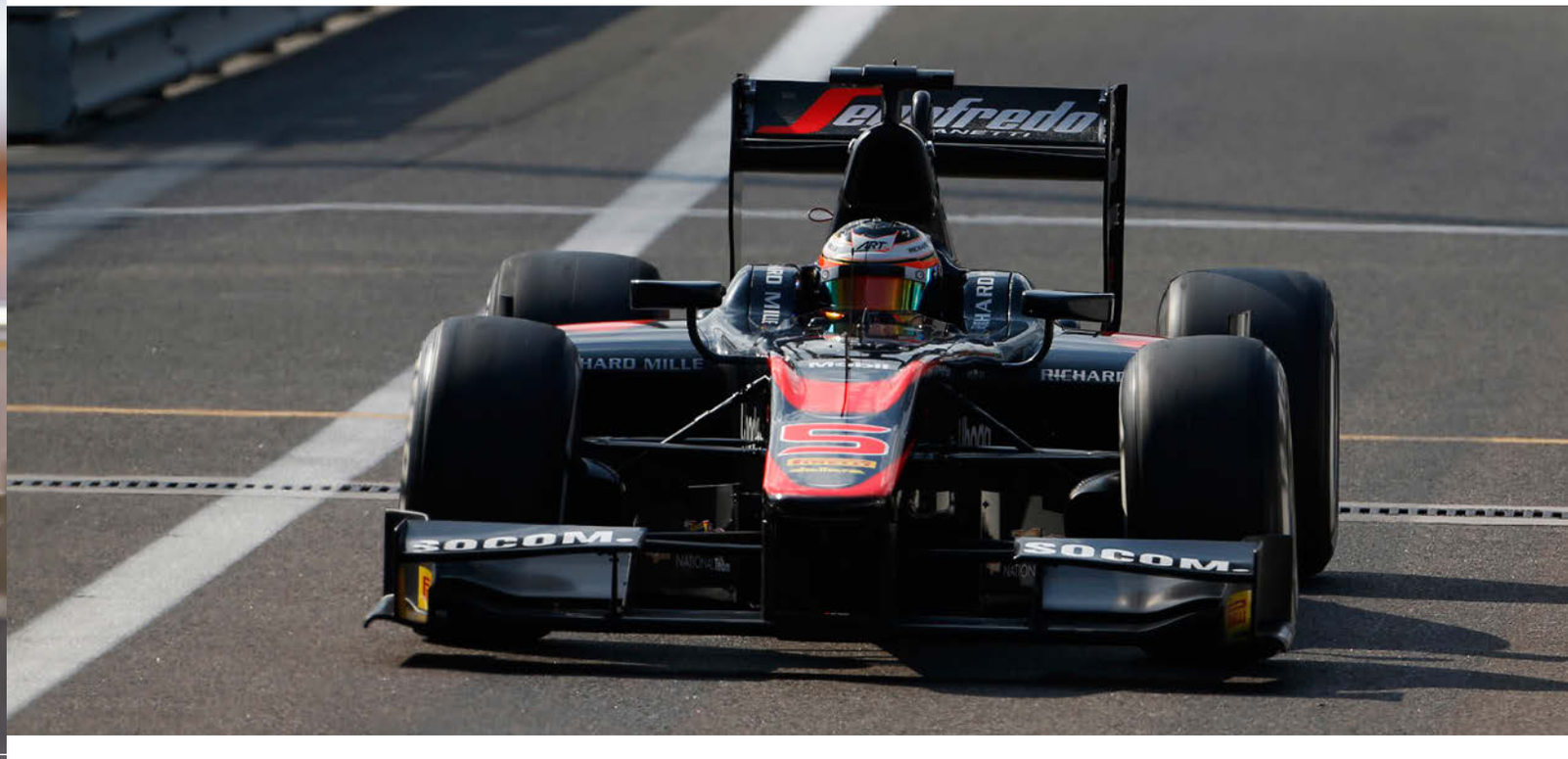
For more information, visit www.itt.com

INNOVATION

KONI invests heavily in innovation. It is one of our core qualities required to continue to produce highly qualified shock absorbers.

In KONI's vision, innovation is the ultimate way to keep improving the world through technology and maintain being a market leader when it comes to car, bus, truck, and trailer, or recreational and specialty solutions.

The research, development and engineering departments of KONI are totally committed to the KONI philosophy of offering the best shock absorber and life expectancy for any application. Contemporary computer supported design technologies, highly (often internally) trained and motivated personnel and the availability of extended measuring and testing facilities lead to well researched and thoroughly developed new products. All of the new product developments are executed under the regime of the international automotive industry standard ISO TS 16949, which secures that all products fully meet their determined objectives – in every aspect.



QUALITY

The Keys to Performance

KONI shock absorbers have a reputation for high performance. In order to maintain that reputation, KONI rely on quality, both in technology as well as manufacturing, to assure their dampers achieve and maintain their performance. All through the manufacturing process the evidence of quality is found: produced from the finest materials, surfaces machined to the narrowest tolerances, strict quality-control standards incorporated in all production steps and a 100% dyno-test at the end of the production line to assure that every single damper delivers its optimum performance.

Why KONI?

- Better Driver Feel
- Wide Range of Adjustment
- Not using an inaccurate needle valve adjustment
- Excellent Reliability and Repeatability
- More Stability
- Excellent Low-Speed Damping *
- Customer-Serviceable
- Out Prices the Competition
- More Control over Bumps
- Low Friction and Weight *

** especially applicable for the 2612 and 28 Series*


HSF LOGISTICS
Red Bull
GIVES YOU WINGS
30
KFC
Jagonya Ayam!
HANKOOK

Introduction

Ever since 1955 KONI have held a prominent position in the world of motorsport. Over the years many championships and victories in F1, IndyCar, Champcar, IRL, F3, GP2, WTCC and other Touringcar and Singleseaters, proof the success and confidence teams have in KONI.

Program range

8211 The product range started with the first product going back all the way to the late 50's: the twin tube, famous for the many F1 victories and championships.

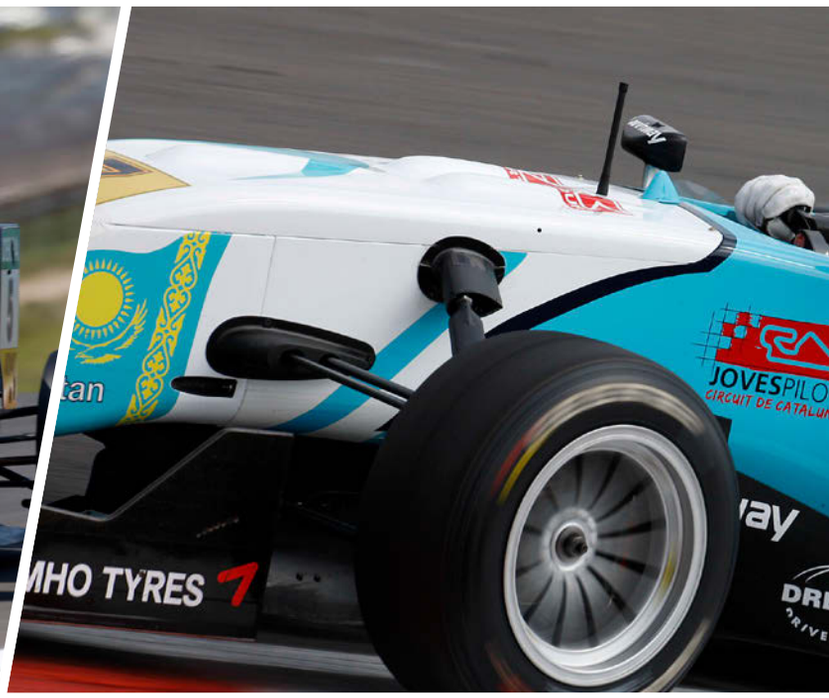
3011 The 8211 series were followed by the 3011 monotube dampers, initially developed for higher damping forces needed on the F1 cars with ground effect.

2812MKII Then came another state of the art product: The KONI 2812MKII, specifically developed to control (very) low damper speeds. The 2812 Long body version is technically identical to the 2812MKII, but made for longer strokes.

2816 / 2817 Based on the 2812 damper layout, both the 2816 insert and the 2817 were designed to be used in McPherson strut suspensions.

2822MKII Also based on the 2812 technology, the 2822 series were designed which include an extra feature for high speed adjustment.

2612 The small diameter 2612, is mostly identical to the 2812MKII series, but in a smaller diameter and lower weight.



2612 Series

Low Weight & Low Friction

Commitments to continuously improve in motorsport products, have resulted in the next level in the KONI range. Requirements from top teams asked for a compact design to improve in weight, aerodynamics and also friction. Consequently the 2612 Series were brought to light.

The 2612 series are based on the proven technology of the 2812MKII 2-way adjustable damper, being used by many race teams over the last decade. The major difference with the 2812MKII is the smaller diameter and the low friction parts being the standard feature.

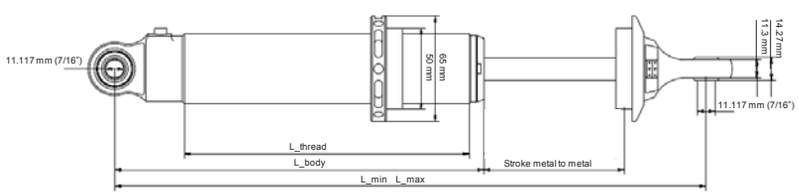
They are having strokes ranging from 29 to 109 mm. All available damper lengths are shown in the length/stroke chart.

The design and operation of the 2612 Series racing damper is again a unique proof of KONI's reputation as the leader in the field of damper technology.

They are specifically designed for competition purposes and offer full adjustability while fitted on the car. Their precision adjustment mechanisms allow maximum control over the damping forces generated, especially in the low speed damping range.

To achieve this, the 2612 series do not rely on the commonly used needle valves. Instead, a superior and advanced adjustment cartridge controls the opening and closing of valve loaded ports. Positive lock detents assure that each port can only be either open or closed. The result is that the cartridge will always accurately reproduce a set of eight pre-programmed damping curves.

Various cartridges are available, each with its own set of characteristics. A pair of cartridges is housed in the main piston, one for bump, one for rebound. Together they can modify any given basic valving in 64 different ways. By having all forces generated by the piston assembly, the control of the damper over the suspension is instant and precise, decisive and smooth. A separate bulky reservoir is not needed and the installation can be kept simple, compact, lightweight and clean.



L-max [mm]	L-min [mm]	Stroke [mm]
224	195	29
229	200	29
234	200	34
239	205	34
244	205	39
249	210	39
254	210	44
259	215	44
264	215	49
269	220	49
274	220	54
279	225	54
284	225	59
289	230	59
294	230	64
299	235	64
304	235	69
309	240	69
314	240	74
319	245	74
324	245	79
329	250	79
334	250	84
339	255	84
344	255	89
349	260	89
354	260	94
359	265	94
364	265	99
369	270	99
374	270	104
379	275	104
384	275	109

2812 MKII Series

Mono Tube Low Speed Damper

The design and operation of the 28 Series racing damper is a unique proof of KONI's reputation as the leader in the field of damper technology.

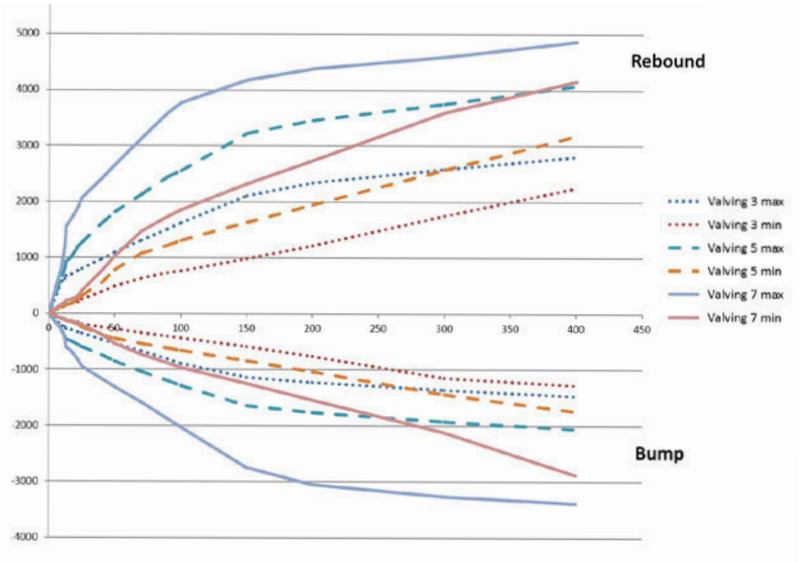
They are specifically designed for competition purposes and offer full adjustability while fitted on the car. Their precision adjustment mechanisms allow maximum control over the damping forces generated, especially in the low speed damping range.

To achieve this, the 2812 Series do not rely on the commonly used needle valves. Instead, a superior and advanced adjustment cartridge controls the opening and closing of valve loaded ports. Positive lock detents assure that each port can only be either open or closed. The result is that the cartridge will always accurately reproduce a set of eight pre-programmed damping curves.

Various cartridges are available, each with its own set of characteristics. A pair of cartridges is housed in the main piston, one for bump, one for rebound. Together they can modify any given basic valving in 64 different ways. By having all forces generated by the piston assembly, the control of the damper over the suspension is instant and precise, decisive and smooth. A separate bulky reservoir is not needed and the installation can be kept simple, compact, lightweight and clean. Drivers like the 28 Series because they feel a real difference between adjustment steps. Mechanics and race engineers appreciate the user friendliness and apparent "simplicity" of the dampers that make them so easy to work with. Buyers also like their price / quality ratio.

L-max [mm]	L-min [mm]	Stroke [mm]
214	185	29
219	190	29
224	190	34
229	195	34
234	195	39
239	200	39
244	200	44
249	205	44
254	205	49
259	210	49
264	210	54
269	215	54
274	215	59
279	220	59
284	220	64
289	225	64
294	225	69
299	230	69
304	230	74
309	235	74
314	235	79
319	240	79
324	240	84
329	245	84
334	245	89
339	250	89
344	250	94
349	255	94
354	255	99
359	260	99
364	260	104
369	265	104
374	265	109
379	270	109
384	270	114

Example of damping characteristic:

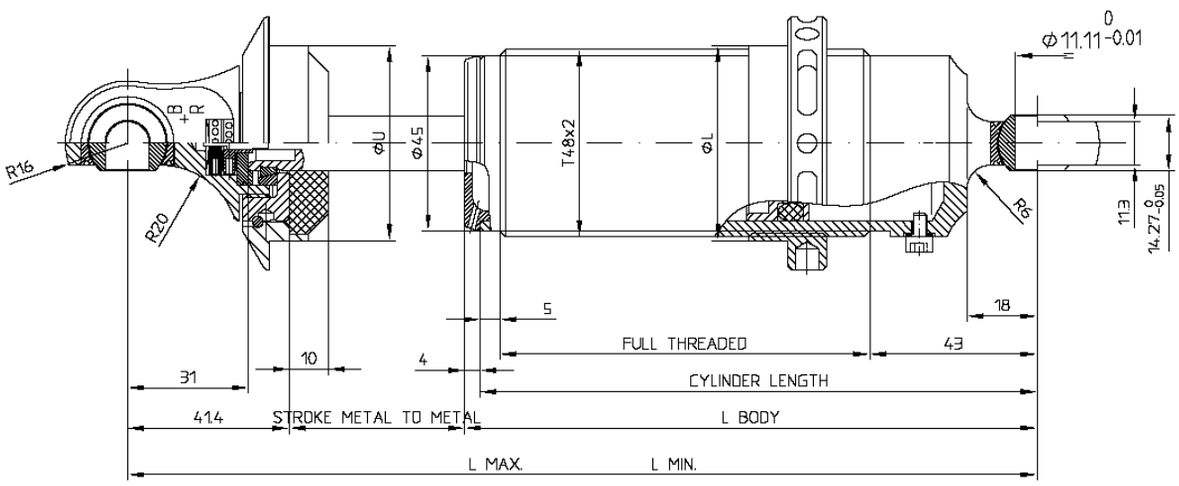


Part Number

Series	Lmax	Valving
2812		

Possible Valving Combinations

	3	5	7
3	Valving 233	Valving 235	
5	Valving 253	Valving 255	
7		Valving 275	Valving 277



2812 Series

Long Body

Commitments to continuously improve the motorsport products have resulted in the next level of products.

Hence KONI developed the Long-body 2812 series race damper. They are an extension to the 2812MKII Series, having a range of strokes from 114 up to 224 mm. All available damper lengths are shown in the length/stroke chart.

The long-body 2812 is designed with an aluminium body and end cap. Both top mountings and lower mountings are designed to fit 1/2" ID bearings. Two top mounts are available, with the difference being the adjustment window position at 0° or 90°.

The 2812 Series are specifically designed for competition purposes and offer full adjustability while fitted on the car. Their precision adjustment mechanisms allow maximum control over the damping forces generated, especially in the low speed damping range.

To achieve this, the 2812 Series do not rely on the commonly used needle valves. Instead, a superior and advanced adjustment cartridge controls the opening and closing of valve loaded ports. Positive lock detents assure that each port can only be either open or closed.

The result is that the cartridge will always accurately reproduce a set of eight pre-programmed damping curves.

Various cartridges are available, each with its own set of characteristics. A pair of cartridges is housed in the main piston, one for bump, one for rebound.

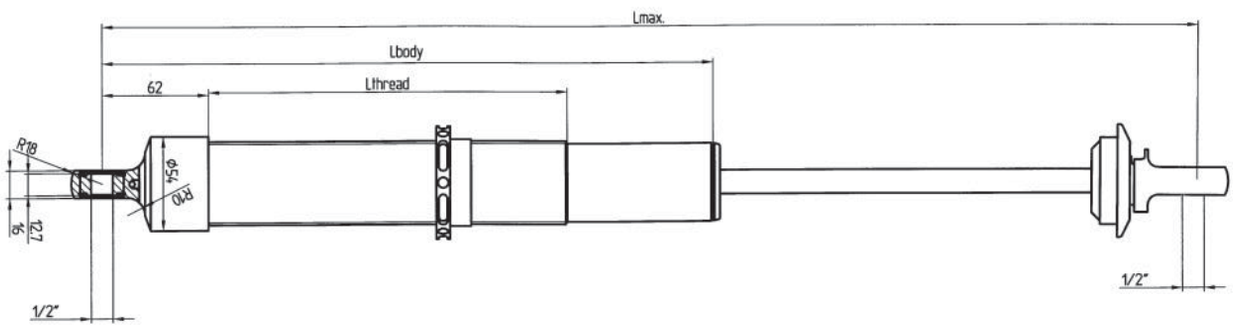
Together they can modify any given basic valving in 64 different ways. By having all forces generated by the piston assembly, the control of the damper over the suspension is instant and precise, decisive and smooth.

A separate bulky reservoir is not needed and the installation can be kept simple, compact, lightweight and clean.

Drivers like the 28 Series because they feel a real difference between adjustment steps. Mechanics and race engineers appreciate the user friendliness and apparent "simplicity" of the dampers that make them so easy to work with. And Buyers like their price / quality ratio.

L-max [mm]	L-min [mm]	Stroke [mm]
403	289	114
433	309	124
473	329	144
513	349	164
553	369	184
593	389	204
633	409	224

For damper code and valvings see 2812MKII (page 11)



2822MKII Series

4-way Adjustable

In the development of the 2822MKII Series the KONI engineers benefit from our many years of know-how and experience in motor racing. It is based on the proven technology of the 2812MKII 2-way adjustable damper, being used by many race teams over the last decade.

The major difference with the 2812 is the 2822 series being 4-way adjustable. It is a double wall, high pressure gas shock absorber. Specifically designed for competition purposes, it is fully adjustable while fitted on the car. It contains two adjusters in bump (compression) and two in rebound (extension), both having an independent low speed, as well as a high speed adjustment.

They do not rely on the commonly used needle valves. Instead, a superior and advanced adjustment cartridge controls the opening and closing of valve loaded ports. Positive lock detents assure that each port can only be either open or closed. The result is that each cartridge will always accurately reproduce a set of eight pre-programmed damping curves.

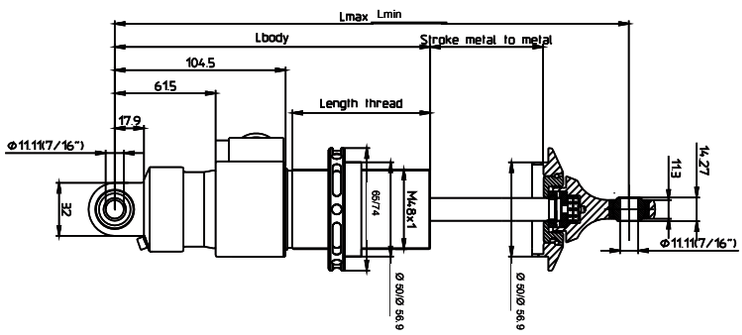
Various cartridges are available, each with its own set of characteristics. One pair of cartridges is housed in the main piston, one for bump, one for rebound, to adjust the low speed damping.

The other two cartridges are fitted in the high speed block to control the high speed damping and adjustment. They allow the damper to have an adjustable blow-off force.

Unique to both low as well as high speed damping is that the bump and rebound forces are generated by the piston area and not by rod displacement at all. This creates a very precise control over the damping forces and very little phase lag (hysteresis) due to the lower hydraulic pressures. Besides, it makes a separate reservoir to accommodate the bump adjuster superfluous, and installation simple, lightweight and clean.

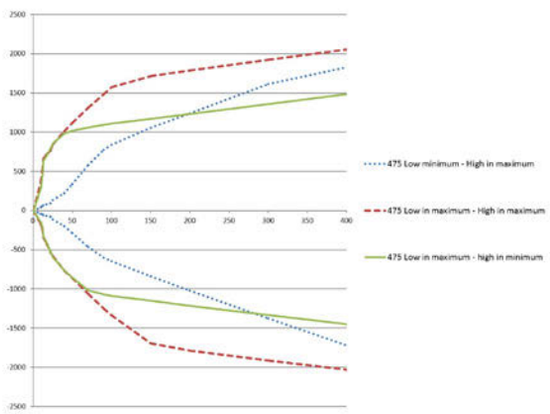
All adjusters operate totally independent of each other and feature 8 positions each in low speed adjustment and 15 positions each in high speed adjustment, all being predefined and having distinct stops. The adjustment range of all four cartridges are wide and divided in equal steps.

Besides being developed to meet the highest quality standards, it is also done in close relation with Dallara (I), who fit the 2822 as standard equipment on their GP2 chassis.



L-max [mm]	L-min [mm]	Stroke [mm]
279	220	59
299	230	69
309	235	74
319	240	79
339	250	89
359	260	99
379	270	109

Example of damping characteristic:



2816 and 2817 Series

Racing Strut and Cartridge

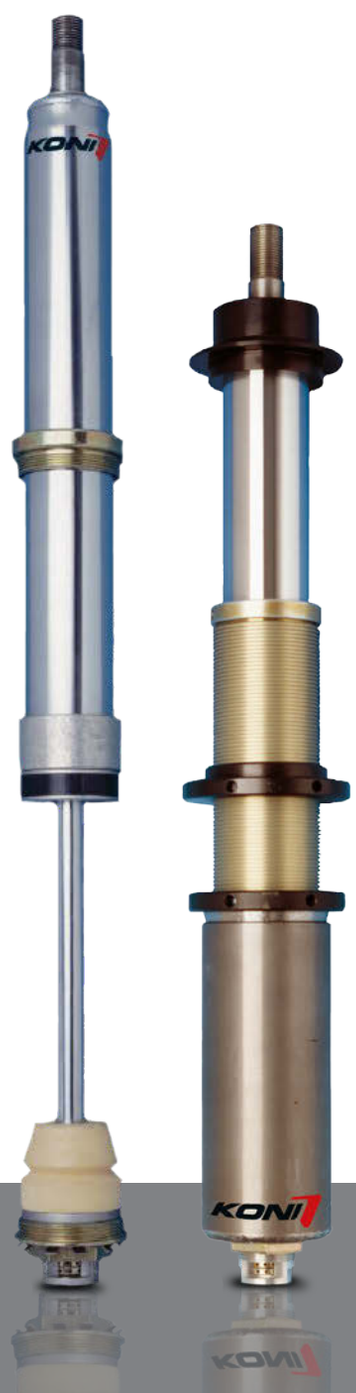
Developed specifically for production-based race cars with strut suspensions, the 2816 and 2817 Series share their internal components with the very successful 2812 racing damper.

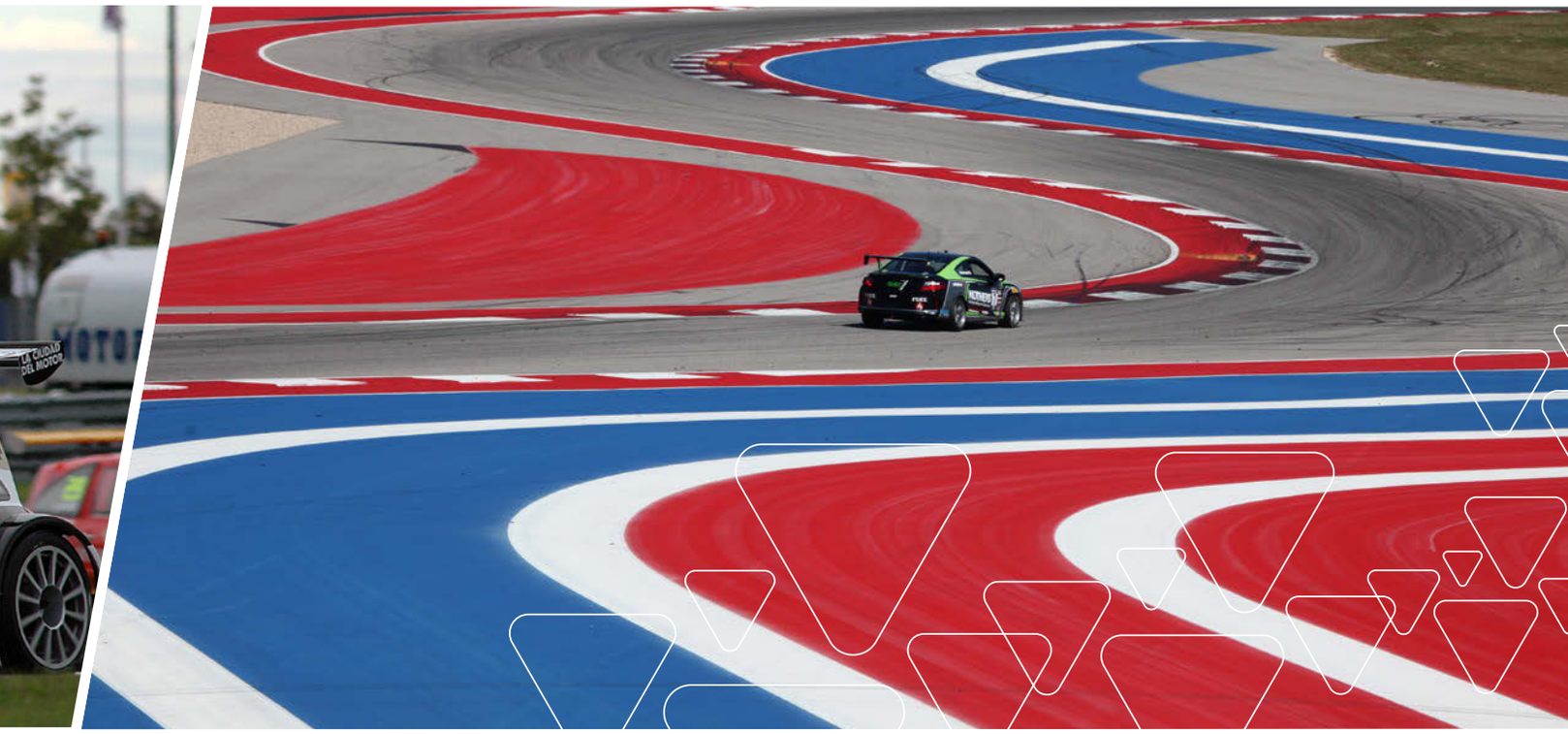
The 2816 is the universal tool for the professional O.E.M. customer who wishes to (re)design a McPherson suspension from scratch. As a bare insert, it offers maximum freedom to the suspension designer. Available with either a pin or eye upper attachment and stroke ranging from 119 (4.685") to 199 (7.835") mm.

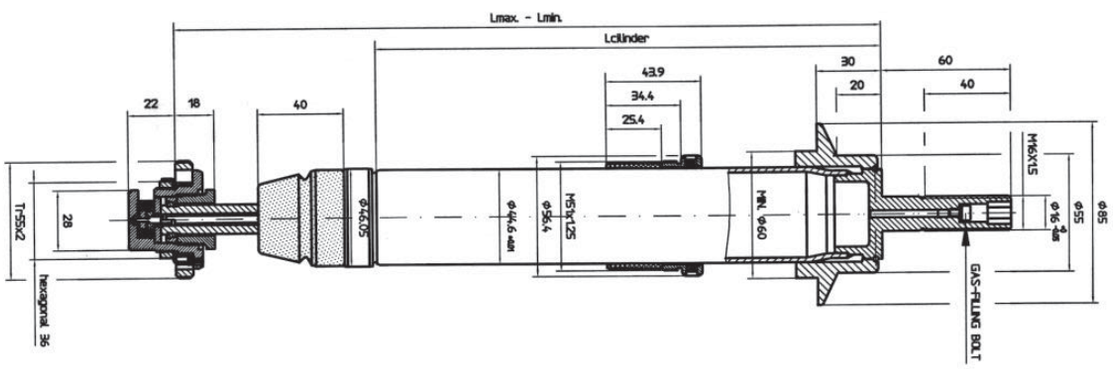
The 2817 is the cost-effective strut solution for the professional or club racer. It is a semi-finished aluminium McPherson strut without brackets, containing a 2816 type insert. It also offers stroke ranges from 119 to 199 mm. Steel brackets can be welded onto the housing by the customer.

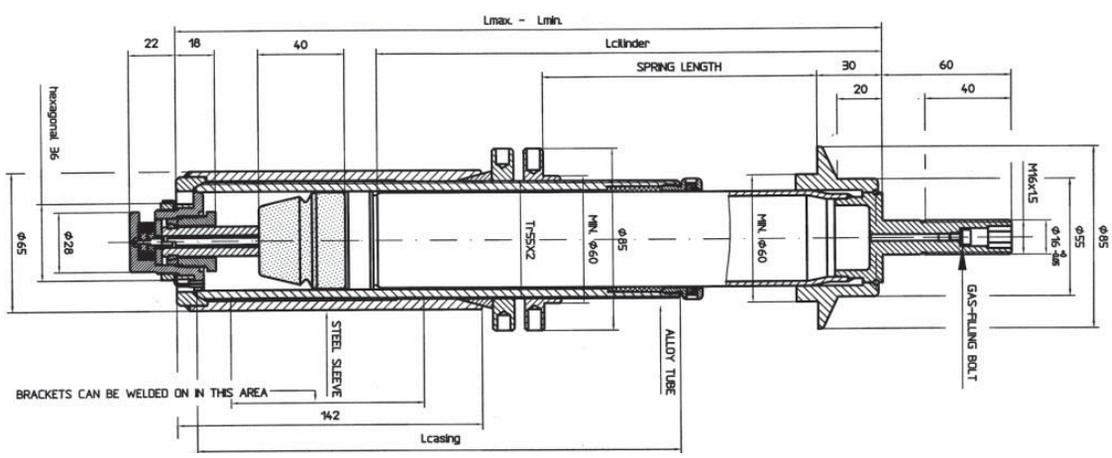
The 2816 and 2817 are modular systems, meaning all 2816 and 2817 shock cartridges share the same basic dimensions and features. The stroke lengths and valving characteristics will be custom-built to suit the specific application.

Drivers like the 28 Series because they feel a real difference between adjustment steps. Mechanics and race engineers appreciate the user friendliness and apparent "simplicity" of the dampers that make them so easy to work with.









L-max Static* [mm]	L-max Dynamic** [mm]	L-min [mm]	Stroke [mm]
429	429	310	119
469	469	330	139
509	509	350	159
549	524	370	179
589	564	390	199

* The damper should only reach this length under static (no load) conditions

** This is the maximum damper length allowed under dynamic conditions.

For damper code and valvings see 2812MKII (page 11)

8211 Series

Twin Tube Hydraulic Damper

This is a steel-bodied, externally double-adjustable, coilover damper which has been used on World Champion Formula 1, Can-Am and virtually every other type of race car ever made.

Bump and rebound damping can be adjusted independently without removing the damper from the car. Adjustable spring seats accept 2.25" or 2.50" I.D. springs.

These dampers are fully rebuildable and the valving can be adapted to a wide range of applications. Recently updated to include advances in materials and manufacturing techniques, this classic shock design is the premium shock absorber for vintage race cars and restorations, as well as the ultimate non-gas alternative for many new race car applications.

The 8211 series have plated steel bodies and are ideal for vintage Formula Ford applications or where special mountings are required and weight is not a concern.

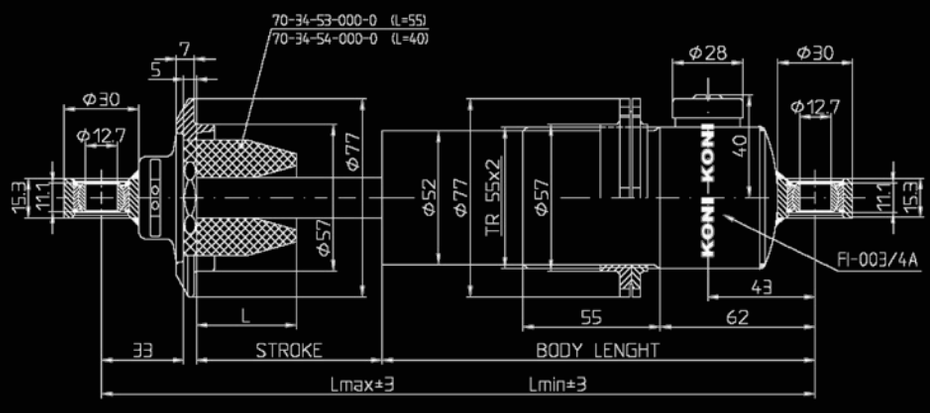
Code	L-max	L-min	Stroke
		Metal to Metal	
1300	282	202	80
1301			
1302	292	207	85
1303			
1304	302	212	90
1305			
1306	312	217	95
1307			
1308	322	222	100
1309			
1310	332	227	105
1311			
1312	342	232	110
1313			
1314	352	237	115
1315			
1316	362	242	120
1317			
1318	372	247	125
1319			
1320	382	252	130
1321			
1322	392	257	135
1323			
1324	402	262	140
1325			
1326	412	267	145
1327			
1328	422	272	150
1329			
1330	432	277	155
1331			

Odd codes have adjustment window turned 90°

Part Number

Series	Code	Valving
8211	13xx	Bx

Valving	N/mm Spring Rates	Lbs/"
B1	up to 40	up to 225
B2	40-60	225-330
B3	50-80	285-450
B6	70-125	400-700
B7	115-170	650-950
B8	160-270	900-1500
B8X	215 and more	1200 and more



3011 Series

Mono Tube Damper

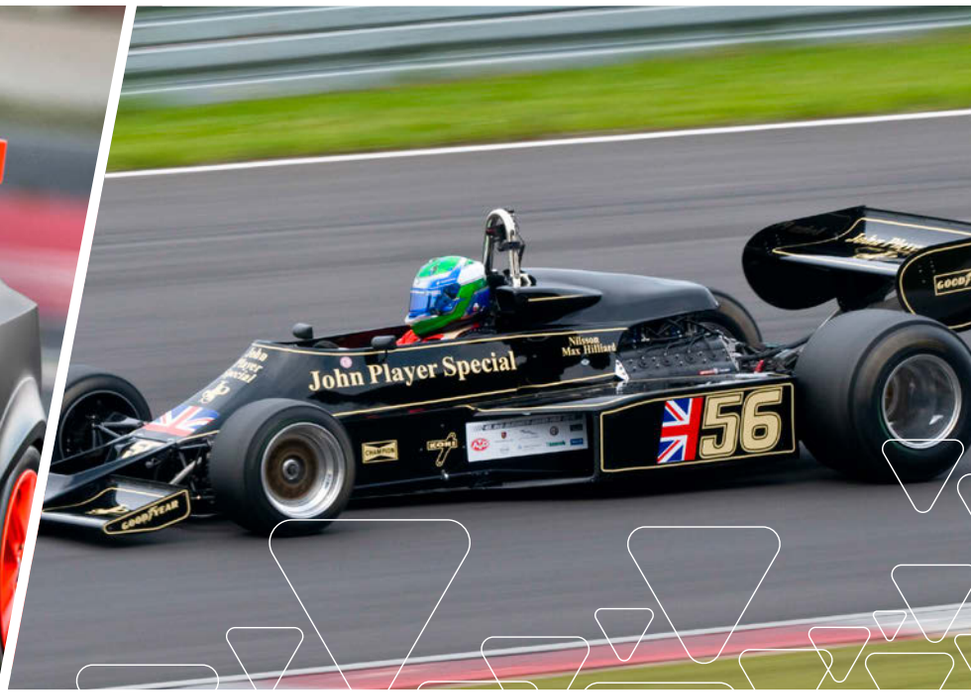
The KONI 3011 shock absorber is performance proven by winning consistently at all levels since 1983, including the Indy 500.

The 3011 is a steel-bodied, externally double-adjustable high-pressure gas, coil-over damper. Its patented monotube design allows for independent changes to the rebound and bump damping. The layout accepts 2.25" I.D. or 2.50" I.D. springs.

The 3011 Series are especially suited to applications with higher piston speeds, where more progressive damping characteristics are required. They have approximately four to six times the adjustment range in any given valving than their competitors, thus eliminating constant revalving procedures from track to track.

The 3011 series are available with a variety of valvings to meet your specific damping requirements.

Having up to a 9" stroke, it makes the 3011 series a very versatile performer from club racer to Indy, and from street to Historic F1.



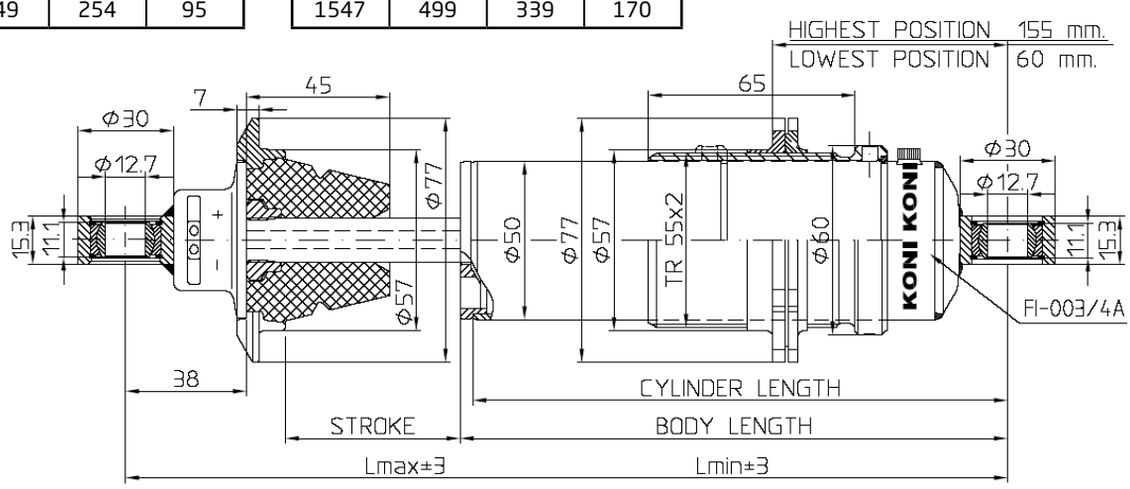
Code	L-max	L-min	Stroke
		Metal to Metal	
1500	264	209	55
1501	269	214	55
1502	274	214	60
1503	279	219	60
1504	284	219	65
1505	289	224	65
1506	294	224	70
1507	299	229	70
1508	304	229	75
1509	309	234	75
1510	314	234	80
1511	319	239	80
1512	324	239	85
1513	329	244	85
1514	334	244	90
1515	339	249	90
1516	344	249	95
1517	349	254	95

Code	L-max	L-min	Stroke
		Metal to Metal	
1518	354	254	100
1519	359	259	100
1520	364	259	105
1521	369	264	105
1522	374	264	110
1523	379	269	110
1524	384	269	115
1525	389	274	115
1526	394	274	120
1527	399	279	120
1528	404	279	125
1529	409	284	125
1530	414	284	130
1531	419	289	130
1536	444	299	145
1537	449	304	145
1546	494	334	170
1547	499	339	170

Part Number

Series	Code	Valving
3011	15xx	BAxx

Valving	N/mm	Lbs/"
	Spring Rates	
BA16	up to 45	up to 250
BA23	45 - 270	250 - 1500
BA53	90 - 350	500 - 2000
BA83	115 - 625	650 - 3500



WORKING WITH KONI

KONI, an ITT Company, is one of the world-leading providers of shock absorption technology and services. KONI helps thousands of companies and people to improve their street and racing cars, buses, trucks, trailers, railway rolling stock, defense and industrial applications. KONI serves the worlds needs by a global network of official KONI Distributors.

To find out more about our solutions, please contact KONI directly.

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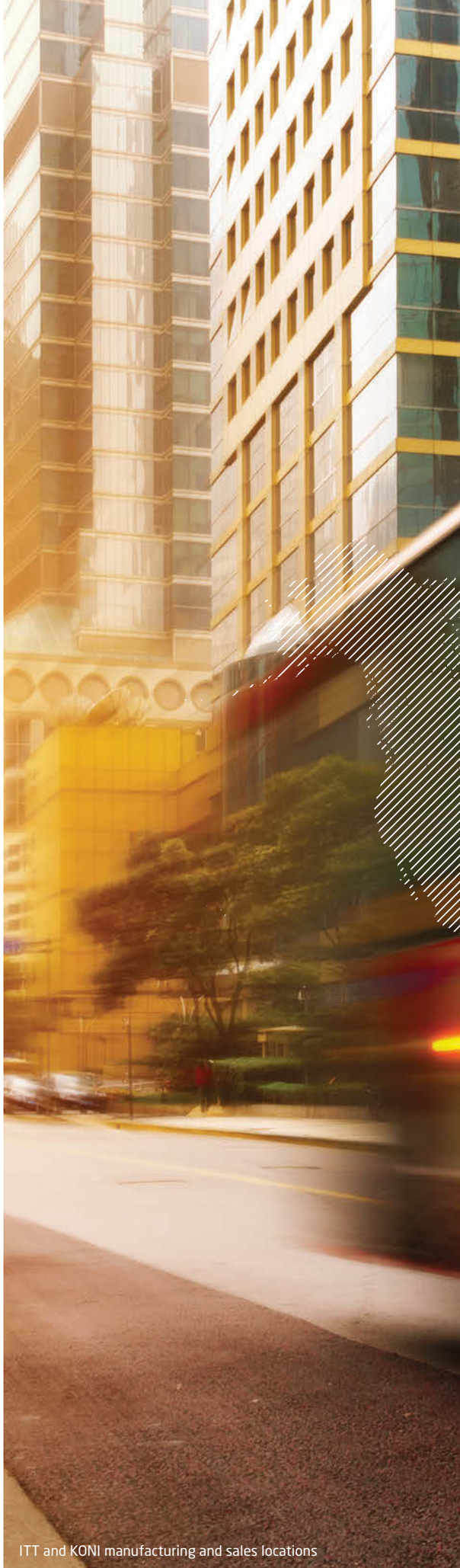

ITT and KONI manufacturing and sales locations

KONI

SAHARA force india formula one team
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