

ENDURANCE

Photos: R. Sassen

For the sport brake test, five manufacturers face the factory brakes of the BMW M3.

Which stoppers will come up on top and which will be a flop?

To the red heat without any mercy: Each of the six tested brakes had to complete a hard programme: 20 times from 200 and 100 as well as 10 times from 250 to 0 km/h

Sport brakes are usually used to describe brake disc types that are perforated, grooved, or grained in an XXL format as well as brake callipers that include six and more pistons. Furthermore, the callipers usually have a colourful coating. Yet, besides the optics the stopper must provide

greater braking forces and higher endurance compared to standard systems. In many tests of AUTO BILD SPORTSCARS, the tuned brakes could often not show what they can really achieve. After three to five laps on the race track, the equipment will often only begin to warm up or they will already give in. The classical measurements



AP Racing
3316 euros

Brembo
4,462 euros



– from 200 and 100 km/h to 0 were also rather disappointing so far. Our standard measurements are also limited here to ten brake actions at two specified tempos. At this point, some sport brakes have only just reached their operating temperature. At least, that is what the tuners and brake manufacturers always claim.

That's reason enough to test these statements using special tests.

The requirements for this include a corresponding group for competition and the matching test car; furthermore, all test parameters must be appropriate. We are talking about perfect, dry conditions,

temperatures and a measurement track that provides suitable grip. We have found these at the DEKRA test centre near the Lausitzring. Part of the action: five pure-bred sport brake systems from AP Racing, Brembo, K-Sport, PFC, and Stoptech. These manufacturers want to challenge the M3 brake, which is already

well-conditioned ex-factory. The BMW tuning and brakes expert Marc Müller from Lightweight Performance (www.lightweight-performance.de) will also be joining us.

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K-Sport
3,190
euros

PFC
4,050
euros

Stoptech
3,748
euros

Series
2,246 euros



AP Racing Big Brake Kit

Price	3,316 euros
Item no.	CP5555-49
Diameter	378 mm
Weight	30 kg*
Price/performance	★★★★★
Response	★★★★★
Pressure point	★★★★★
Pedal feel	★★★★★
Readings	★★★★★
Total	★★★★★ (4.2)

*complete with two discs, callipers, accessories



Race track suitability: The two pins (image above) can be removed and new pads can be mounted, using the matching tool

Ideal – AP even includes the brake fluid



The name AP Racing is especially well-known from the world of motorsports. That is where the brakes feel at home. However, the manufacturer also has something to offer for the road. The Big Brake Kit, which is approved for road use by type

approval takes part in the test with a full floating and grooved disc in the 378 millimetre format, along with the six piston calliper with removable rods for fast covering changes. The price of 3,316 euros sounds low, but the expensive type approval for around 700 euros must be added to this.

Assembly and package contents are exemplary. As are the measurement results. No other equipment reaches better stopping distances from 200 and 100 km/h. 30.2 metres from 100 with a delay of 12.7 metres per second are a statement in itself. The pressure point is constant

and very good, the response behaviour is quick and precise. Although the pedal becomes a bit soft in the critical phase, the pressure point remains constant. **Contact:** AP Racing ISA Racing, Tel.: 02651-96250 www.isa-racing.de **Type approval:** KK-Automobile, Tel.: 0 55 53-31 63

K-Sport 8-piston

Price	3,190 euros
Item no.	KS-BV-2552
Diameter	380 mm
Weight	37 kg*
Price/performance	★★★★★
Response	★★★★★
Pressure point	★★★★★
Pedal feel	★★★★★
Readings	★★★★★
Total	★★★★★ (2.7)

* complete with two discs, callipers, accessories



The included brake line did not fit with the BMW

In spite of multiple tests, the equipment did not run smoothly

The small aluminium splint looks cheap but does the job



Only 3,190 euros for an eight-piston sports brake with Pagid coverings and 380 millimetre discs – that is a very competitive price. If one then also learns that the equipment is manufactured in Taiwan, they might doubt the quality. How-

ever, these doubts are unsubstantiated. The brake, which is sold by the German K-Sport support point, does not only look awesome, it can also perform. Despite the Pagid RS29 coverings, a type approval is not required, the package contents includes all the necessities

for a professional installation. Additionally, covering replacement can be carried out without dismantling the calliper. However, the assembly is not problem free – the supplied steel wrapped brake line does not fit on to the original connection. During the braking actions, the strong vibrations of the

equipment stand out. This does not improve after an inspection in the workshop. A substantial shortcoming. Therefore, in spite of the second-best value from 200 km/h, the brake must settle for the penultimate place. **Contact:** K-Sport Germany, Tel. 0 3 42 05-42 66 90, www.k-sport-germany.com



The fixed clip on the calliper - prevents quick covering replacements



The grey colouring shows that the brake is ready for use



No masterly achievement - sagging pedal, bad values



Brembo GT-Kit

Price	4,462 euros
Item no.	1M1.9022A
Diameter	380 mm
Weight	29 kg *
Price/performance	★★★★★
Response	★★★★★
Pressure point	★★★★★
Pedal feel	★★★★★
Readings	★★★★★
Total	★★★★★ (2.0)

*complete with two discs, callipers, accessories

Brembo is a set name in the brakes scene. The Italians have been at the top both in motor-sports and on the road for many years. Well-known sports car manufacturers and Formula 1 trust the stoppers of this brand. Therefore, the expectations for the retrofitting equipment for the BMW M3 are

high. However, the results are almost the opposite. The installation of the most expensive equipment is completed without any complications. After the specified running-in procedure, the measurement drives can take place. The first braking actions offer a scare due to a failing pedal and zero pressure point. After ano-

ther ventilation, the image repeats itself; it is often necessary to pump twice to regain the pressure point on the handling circuit. As if this was not bad enough, the braking values do not look any better. For the 100km/h value, the equipment still reaches the standard level, but from 200 and 250 km / h,

the stoppers provide the worst values – a 25 metre difference is clearly too much.

Contact: Brembo Center Süd, Tel.: 0 89-37 00 17 23, www.brembo-technik-center.de; Brembo Center Nord, Tel. 0 30-66 50 99 20



The grained holes are quickly filled with covering. Alternative: The equipment is also available as a grooved type.

Unfortunately, the calliper must be dismantled for the covering replacement (image above)



PFC High Performance

Price	4,050 euros
Item no.	3100.0008
Diameter	372 mm
Weight	24 kg*
Price/performance	★★★★★
Response	★★★★★
Pressure point	★★★★★
Pedal feel	★★★★★
Readings	★★★★★
Total	★★★★★ (4.4)

*complete with two discs, callipers, accessories

PFC - Performance Friction – is primarily known for racing sports. An increasing number of teams rely on these English brakes. To no surprise, since the equipment is the lightest in the test and weighs only 24 kilograms. That means about 10

kilogrammes less than the series brakes, a huge difference in times of weight reduction. However, the light weight has its price: 4,050 euros for the M3 kit, along with the type approval of about 500 euros. The coverings are also unique. Here, a whole set of four brake blocks

are used per brake instead of just one. The aim is to reach an even better pressure point. Unfortunately, the calliper must be removed to replace the covering. During the test, the PFC impressed with the shortest brake distance for 250km/h, a very short, constant pedal travel

and excellent response. The victory was thwarted primarily by the high price of the system.

Contact: PFC Performance Friction, Tel.: 01 73-3 05 38 31, www.pfcbrakes.eu
Type approval: KK-Automobile, Tel.: 055 53-31 63; Kornely Motorsport, Tel.: 0 26 92-93 22 44-0

Stoptech Big Brake

Price 3,748 euros

Item no. BBM/M3E90-
BBK.380x35.
ST60

Diameter 380 mm

Weight 34 kg *

Price/performance ★★★★★

Response ★★★★★

Pressure point ★★★★★

Pedal feel ★★★★★

Readings ★★★★★

Total ★★★★★ (5.0)

*complete with two discs, callipers, accessories



Air-ducting brake discs and
pots of aluminium



The calliper cover is opened
in a second ...



...and the brake coverings
can be changed quickly



Stoptech could not grab the spotlight in any of the various tests in AUTO BILD SPORTSCARS during the past years. Therefore, the expectations were rather modest. No weaknesses came to light during the installation of the Big Brake with a yellow calliper (also available in

black, red, blue, and silver). On the contrary – the calliper features a cover that can be opened for the easy dismounting of brake coverings. The weight of the equipment is a bit below that of the series, the price of 3,748 euros lies within the usual range. After the initial braking,

the first attempt from 100 to 0 can take place. The equipment immediately achieved 31.1 metres, which corresponds to a delay of 12.3 m/s². The best value was measured at 30.6 metres. Peak performance also for the 200 and 250 brake actions with a consistently short pedal travel and the best

response behaviour in the comparison. Fading is not a problem, even under strong pressure – and the victory in this test is thus well-deserved.

Contact: Stoptech,
Advanced Performance Parts BV
Tel. + 031 341 759110
info@advancedperformanceparts.eu

BMW M3 Series brakes

Price 2,246 euros

Supply BMW dealer

Diameter 360 mm

Weight 35.8 kg*

Price/performance ★★★★★

Response ★★★★★

Pressure point ★★★★★

Pedal feel ★★★★★

Readings ★★★★★

Total ★★★★★ (3,0)

* complete with two discs, callipers, accessories



BMW brakes generally rank amongst the best in the sports car scene. The entire M-line already impressed in the last years with perfect steel units with perennial tenacity and longevity. For the very sporty, BMW even officially includes sport coverings in its program. The BMW M3 E92 came from

plant with 360 millimetre, perforated discs including one-piston calliper. The entire equipment weighs just above 35 kilogrammes; the K-Sport brake is heavier by two kilogrammes. Should one decide to go with new BMW equipment, then the dealer asks for 2,246 euros for the complete package with discs,

calipers, coverings and accessories. The installation costs have to be added to this. As expected, the series brakes achieve acceptable results in the comparison. The response behaviour is very good. From 250 and 200 km/h the M3 stands a few metres earlier than with the Brembo system. Under strong

pressure, the pedal feel does however, a few metres earlier than with the Brembo system. Under strong pressure the pedal feel becomes increasingly soft; the perforated discs stand out due to noise. On the handling course, slight brake hammering was also noticeable after some laps.

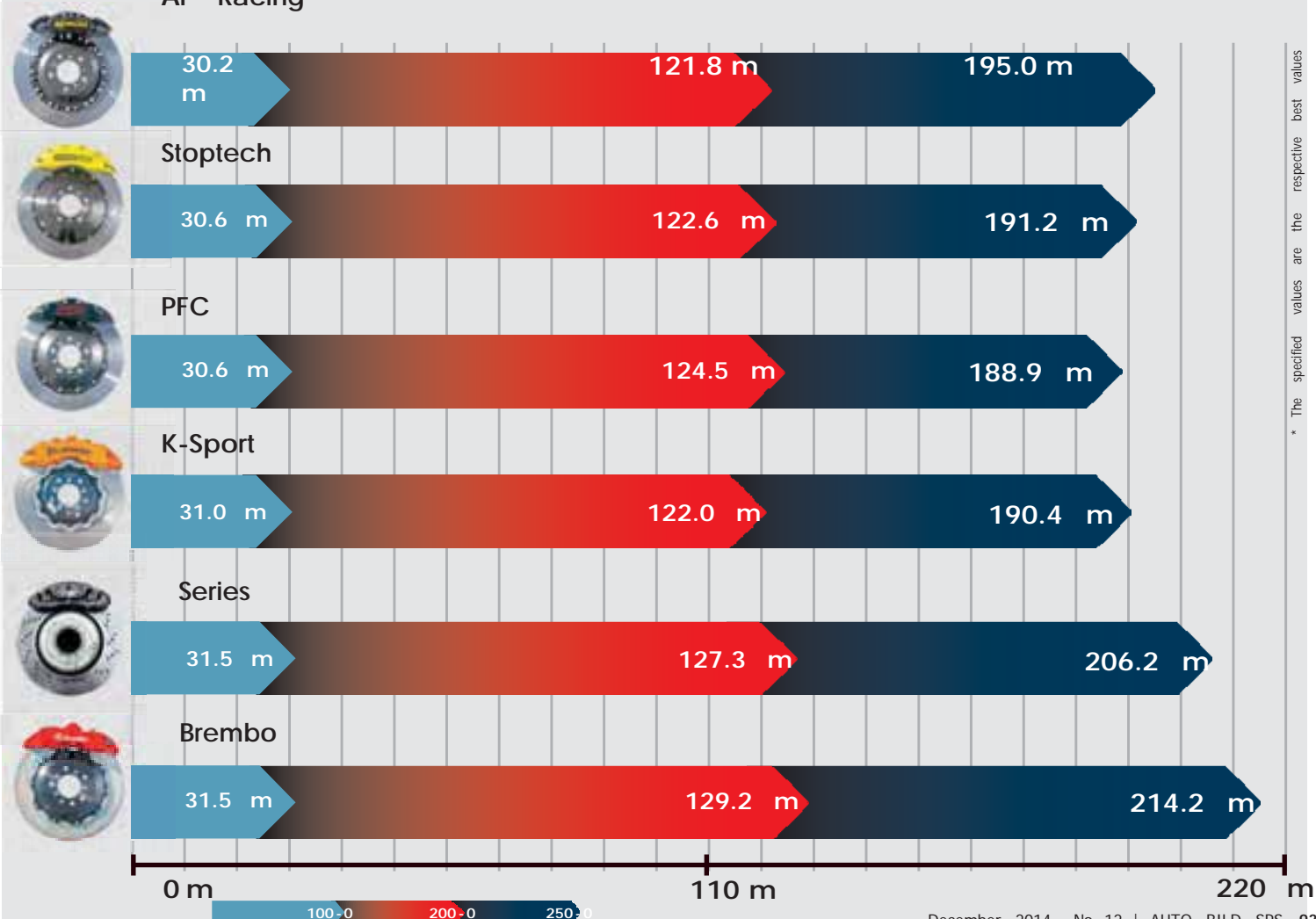
Evaluation: BMW tuner Müller (right),
tester Naumann



100 - 0 km/h	AP	Brembo	K-Sport	PFC	Series	Stoptech
1 st brake action	31.0 m (12.4 m/s ²)	31.5 m (12.2 m/s ²)	32.1 m (11.9 m/s ²)	32.2 m (11.9 m/s ²)	32.4 m (11.8 m/s ²)	31.1 m (12.3 m/s ²)
10 th brake action	30.2 m (12.7 m/s ²)	32.3 m (11.9 m/s ²)	31.8 m (12.1 m/s ²)	30.6 m (12.5 m/s ²)	31.9 m (12.0 m/s ²)	30.6 m (12.5 m/s ²)
20 th brake action	30.9 m (12.4 m/s ²)	31.7 m (12.1 m/s ²)	33.9 m (11.3 m/s ²)	31.4 m (12.2 m/s ²)	31.5 m (12.2 m/s ²)	30.7 m (12.5 m/s ²)

200 - 0 km/h	AP	Brembo	K-Sport	PFC	Series	Stoptech
1 st brake action	124.9 m (12.3 m/s ²)	130.5 m (11.8 m/s ²)	122.3 m (12.6 m/s ²)	124.7 m (12.3 m/s ²)	128.4 m (12.0 m/s ²)	123.6 m (12.4 m/s ²)
10 th brake action	121.8 m (12.6 m/s ²)	137.4 m (11.2 m/s ²)	124.0 m (12.4 m/s ²)	124.5 m (12.3 m/s ²)	131.4 m (11.7 m/s ²)	125.8 m (12.2 m/s ²)
20 th brake action	124.9 m (12.3 m/s ²)	129.2 m (11.9 m/s ²)	122.0 m (12.6 m/s ²)	126.0 m (12.2 m/s ²)	127.3 m (12.1 m/s ²)	122.6 m (12.5 m/s ²)

AP Racing





The handling lap serves for the subjective comparison and to simulate the race track operation – acceleration, braking, acceleration ...



Endurance test: in two days - a DEKRA mechanic and Marc Müller (Lightweight Performance) screwed six brake systems on to the BMW M3. Two hours were sufficient for the replacement of each system. The ventilation was easy and quick for some and lengthier for others. Several litres of brake fluid were required.

FAZIT

1 Stoptech Big Brake



★★★★★ (5.0)

2 PFC High Performance



★★★★★ (4.4)

3 AP Racing Big Brake Kit



★★★★★ (4.2)

4 BMW series



★★★★★ (3.0)

5 K-Sport 8-piston



★★★★★ (2.7)

6 Brembo GT-Kit



★★★★★ (2.0)

★★★★★ = fantastic, ★★★★★ = convincing, ★★★★★ = acceptable, ★★★★★ = could be better, ★ = weak



TEST TIRES Michelin Cup2

... Same conditions for all. For this reason, we mounted a new set of Michelin Pilot Sport Cup2 tires with the dimensions 245/35 and 265/35 R 19 with every brake system. The strong grip tyre contributed its share to the best results.

He also brought along the test car, in the form of a BMW M3 (E92) that was modified as a track tool. Müller has already tested various equipment on different BMW models in everyday life and on the race track and he supported us with advice and action during the tests.

What did we measure and how did we actually measure it? Primarily, we wanted to know how long it would take each brake to bring the car to a standstill. Measurements from 200 and 100 km/h to 0 were set and supplemented by the emergency braking at 250 km/h. The speed is realistic for this vehicle category.

AP and PFC require an individual type approval for the TÜV

gory, especially on the motorway. We added another ten emergency brakings to the ten brakings in our normal test procedure. This way, all the systems should reach the necessary operating temperature.

To ensure identical test conditions for all the test participants, we came prepared with six sets of the Michelin Pilot Sport Cup2 in the M3 series dimension 19 inch. Furthermore, the BMW Coupé was completely refuelled after each measurement. Nothing should be left to chance.

Great care should be taken during the initialisation of the brakes, because there is much room for mistakes here. For this purpose, we demanded the same appropriate procedure from each manufacturer. Stoptech was rather casual about

this: few brake actions at low speeds should suffice; Brembo required that the discs shall assume a grey colour on the edges, before they are ready for use. AP Racing took a more complex approach to the topic. Quote:

"Brake lightly at least 30 times from 90 km/h to 50 km/h from, preferably in blocks of five brakings. At least 800 metres driving distance should lie between the individual blocks." This is exactly what we did. The price/performance section also covers the installation and the quality of the brakes. Does the equipment fit without reworking? Does the package contain everything for a simple installation? Here, there were positive and negative cases. For example, AP Racing provides an extremely complete package, which even includes the brake fluid. The brake hoses supplied by K-Sport did not fit.

We also considered aspects concerning TÜV – in case a manufacturer plans to protest the yellow Pagid-RS 29- brake coverings for AP Racing and K-Sports. Both systems are road -approvable; for K-Sports the report was created with respect to the RS29, AP Racing takes care of the expensive type approval for road-use for the entire system including the coverings, which is carried out by the tuner KK Auto-mobile. This additional type approval is also required for the, principally not road-approved, PFC system and costs around 500 to 700 euros.

Surprise - brakes king Brembo failed in our big comparison test. The Italian premium brand loses with a large drop-off, due to bad readings and the worst subjective impression when compared to the other competitors. Even the standard brake performed better. The clear winner of the test is Stoptech. Their system was able to convince with top values, the best pedal feel and high endurance. Stoptech also earned the well-deserved win thanks to the fact that neither special sport coverings nor

type approvals are required; as a consequence the system has a favourable price. The best braking values from 200 and 100 km/h were achieved by AP Racing, while PFC offers the shortest braking distance from 250 km/h and the lightest system in the comparison. K-Sport achieved short braking distances but ends up behind the series brakes due to strong vibrations.

Guido Naumann



The coupon on this page allows you to obtain one bottle of Sonax winter windshield cleaner