

general information:

read thru these instructions carefully and concentrated.

FAILURE TO READ, UNDERSTAND AND FOLLOW THESE PROCEDURES WILL CAUSE PERMANANT DAMAGE TO YOUR BRAKE ROTORS AND KEEP THE SYSTEM FROM WORKING AT IT'S FULL CAPACITY.

most brake system problems are caused by improper installation and/or break-in of the rotors and pads. by reading and understanding these instructions, you will avoid the most common causes of poor brake performance and vibration. FAILURE TO READ AND UNDERSTAND THIS MAY CAUSE SERIOUS PERMANENT DAMAGE TO YOUR ROTORS.

safety notice

improper handling of a vehicle when raised and/or supported by jack stands, ramps or other mechanical means can cause serious injury and/or death. only trained and experienced mechanic with proper equipment should install brake systems. MOVIT gmbh assumes no liability expresses or implied for the improper installation or use of their products.

liability no warranty

products used in automotive racing or performance driving are subject to stress and conditions outside of normal use and wear. all products sold by MOVIT gmbh are sold without warranty, expressed or implied. no warrany or representation is made to the product's ability to protect the user from injury or death. the user assumes all risk. MOVIT gmbh is not responsibel for any damage, consequential or otherwise for product failure or mal-performance after installation. under no circumstances, MOVIT gmbh is liable for labor charges or loss of use.

read the entire manual to fully understand important details about your new brake system and to avoid failure or a bad performance!

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explanation

the stock brake system is designed for the use in a specific vehicle. due to the different demands (braking force, lifetime, wear, comfort, cost, weight, noises etc.) the stock brake system shows a good compromise of all these demands. therefore most stock brake systems consist of a floating 1- or 2-piston caliper and a one-piece rotor. this combination is sufficient for "normal" street and town use. the floating caliper will compensate vibrations caused by a worn rotor and give a comfortable brake feeling. but the braking force demanded under hard braking from higher speeds is not available with this components. the caliper body will start to bend seriously under pressures of more than 40-50 bars. this will give an uneven pad wear as well as an uneven heating of the rotor surface. it will also keep a high amount of heat because it is made out of cast iron. this will lead to fading. at the same time, the weight is also much higher than the weight of an aluminium 4- or 6-piston MOVIT caliper.

a brake system can be modified to get a better performance in some of these demands to suit a different application (vehicles with higher engine output, modified suspension, modified rims etc.). by giving more attention to these demands, the other qualities of a stock brake system (comfort, noises, wear) may suffer.

MOVIT brake systems are designed for ultimate performance in terms of braking power, fading resistance and modulation ability. comfort and noise can only be fulfilled up to a certain level. lifetime and wear depend on the user and can not be influenced or determined in advance. since the braking force of a **MOVIT** brake system is far higher than of a stock brake system, the wear can be higher than the wear of a stock brake with accordingly less braking force. important for this is also the air ducting and driving- / braking habits of the user. **MOVIT** brake systems use 4- or 6-piston calipers, bigger brake discs, larger brake pads and stainless steel coated teflon brake hoses.

calipers

MOVIT brake caliper are much stronger and avoid deflection, especially under high pressure. so they push the pads always in a perfect way/angle to the disc which will give the optimum braking force and heat dissipation as well as perfectly even pad wear. since these non-floating-calipers are fixed to the hubhousing, any kind of vibration may be transferred to the steering wheel and/or brake pedal. (exception: vehicles with electronic brake systems)
extreme attention should be paid especially when installing a brake kit in a used car. even if the wheel bearings, all suspension parts, bushings, toe rod ends, stabilizer bar bushings, driveshafts and halfshafts, rims and tires, etc. do NOT show excessive wear even with low mileage, these parts should be inspected and if required, replaced prior to the installation of your new brake system. these parts can cause severe rotor damage. worn suspension parts can cause the poor performance of the brake system. vibrations in the steering wheel and a pulsating brake pedal will also be caused. MOVIT gmbh cannot be held responsible for damage due to worn suspension parts.

brake rotors

the bigger brake rotors can take a much larger quantity of heat. this effects the fading resistance in a positive way. to transmit as much as possible heat to the air, MOVIT discs have a complex ventilation system of vanes, fins and holes. the surface of this ventilation system is far bigger than the surface of the stock discs's ventilation system which mostly consists of straight vanes only. compared to the stock discs, the temperature of MOVIT discs is greatly reduced under the same braking power.

important:

to guarantee a perfect operation it is extremely important, that there is sufficient air in the wheel housing. especially on lowered vehicles it is required to maintain an adequate air supply. lack of air may lead to overheating of the rotors and as a result of this to cracking and excessive wear. **holes** in the rotors optimize the ventilation and reduce fading, which is generated by gases between disc and pad under hard braking. at the same time, water, that stays between the rotor surface and the brake pads in wet conditions can escape at once. the known lack of braking force during the first 2-3 seconds of braking action under wet condition is avoided. on the other hand, holes may lead to a "humming" noise after several times

of hard braking. this is normal and does not affect the performance of your brake system in any way.

to improve the "comfort" of your braking system, all **MOVIT** rotors are inspected, measured and documented to runout and thickness difference prior to shipping. the maximum allowed tolerance is 0.025 mm (.0009") runout and 0.008 mm (.0003") thickness difference.

you will understand, that there is extreme need of cleanness during the installation. clean all related parts such as hub and mounting ears perfectly. dirt or even dust will lead to vibration or a "warped rotor" feeling. so pay extreme attention to the cleanness.

all rotors are mounted "floating". this means, that the friction ring can expand in any way under high thermal stress without bending or warping. the floating system may lead to "rattle" noises during the first 500-1000 km. depending on the outside temperature, these noises may be louder (under cold temperature) and less noisy (under higher temperatures). these noises are normal and do not affect the performance of your braking system in any way.

brake pads

the material of the „comfort“ pads was designed for a optimum fricition under normal street conditions. noises are virtually completely surpressed by adding small weights at the outer edges of these pads. depending on the material and the design of the knuckles and/or other suspension parts, there may be noises that cannot be surpressed. knuckles or suspension parts made out of aluminium may create more noises than knuckles and suspension parts of steel/cast iron. to further avoid noises, anti-squeal shims plates are available. theses plates are fixed to the backing plate of the brake pad and connected to the piston with a spring. the brake pad has "more" weight, oscillation and the tendency to squeal will be surpressed. this system is not suitable for race use since the glue that holds the shim plates on the pad's backing plate will dissolve due to the high temperatures. the system will not be working then.

important: „comfort“ pads should never be used on race tracks or under race conditions. the organic pad material will not stand the high temperatures and will give an uneven pad deposition on the rotor surface leading to vibration. at the same time, the high temperatures will lead to fading which is pad compound related and excessive wear. "PRO" pads are available for sport/race use. see "miscellaneous".

brake hoses

stainless steel braided teflon hoses take less brake fluid and improve therefore the brake pedal feeling and modulation ability. make sure, the brake hoses are routed properly and check for stress and bending under full wheel lock. a dangerous failure could occur if the brake hoses are not routed properly. do not drive your car if you are not sure, that the brake hoses are routed properly! MOVIT gmbh cannot be held responsible for any failure as a result of improper brake hose routing. the customer is fully responsible for the proper routing of the brake hoses!

important:

due to the bigger dimensions of a MOVIT brake system compared to the stock brake system, there is accordingly more space required. a minimum clearance of 3 mm to the wheel and all flexible parts of the car is recommended. MOVIT gmbh is not responsible for the clearance of the brake system. This has to be checked and confirmed by the user prior to the first test drive. wheel spacers can provide extra clearance to the caliper but will also widen the track width of the car. this is only allowed to a certain limit and needed mostly a certificate. please contact the manufacturer of the used spacers for further information.

important:

check the clearance prior to the first test drive. not doing so may result in serious injury and damage to several components.

use

new brake rotors and brake pads or after replacing the brake pads it is essentially to bed-in your brake system carefully.

this procedure may take 500-1000 km (300-600 mls), depending on the frequentness of braking and of course on the driving / braking habits of the user. not before the pad attaches completely to the rotor surface, the full braking force, heat dissipation and therefore fading resistance is achieved. please refer to "break-in and maintenance" to get a detailed explanation. once bedded-in correctly, the brake system will give a noticeable higher braking force even under frequent braking action from high speeds.

the ventilation system requires a „turning“ of the rotors with a certain speed. therefore never park your car with hot brake rotors. at speeds under 80 km/h (50 mph) the ventilation system cannot work

fully efficient. if parked hot after a hard braking action without sufficient cooling, vibrations, lower lifetime and cracking of the holes may be the result. so always try to cool down the rotors to ambient temperature after a hard use.

a high lifetime requires a sensible and responsible use. your brake system will give you a trouble free performance over many years.

maintenance and care

if used hard, the wear of the brake pads and rotors will be higher than normal. brake dust may close the holes in the brake rotor if not cleaned constantly. this will effect the ventilation system in a negativ way and will lead to overheating and a shorter lifetime of both, rotor and pad. as a further result, the holes in the rotor may crack and the rotor may be damaged permanently. the holes should be cleaned from brake dust with a suitable tool regulary. this depends of course on the intensity of the use. a regulary inspection of the brake rotor and brake pad is important. especially in winter it is necessary to clean the brake system regulary. since brake dust may also damage wheels and body, these parts should be cleaned also.

never park the car with wet brake discs. pad material is corrosive. the pads will corrode onto the rotor if not dried after cleaning. this will lead to "rust-spots" on the rotors surface and as a result to vibrations and/or a pulsating brake pedal. to avoid this, simply perform some stops from 80 km/h (50 mp/h) to heat up the rotor. water and humidity will disappear then.

brake fluid

any brake fluid that is recommended from the manufacturer may be used. the recommended service intervals may also be applied. if the brake system is exposed to severe use, the brake fluid should be controlled more often to its boiling point. if used in race conditions, check the brake fluid after every race. due to the higher tempertures the amount of water in the brake fluid may be raised even after a short time of use. the boiling point may be lowered leading to fading even at lower temperatures than normal. complete brake system failure may be the result. change the brake fluid every 12-18 month. brake fluid is hygroscopic. it is important, that the brake fluid reservoir is always closed and that there is no chance for air to get in contact with the brake fluid.

if used in race conditions, rotors and pads should also be checked after each race and replaced if required. the use of a racing brake fluid with a higher boiling point may be suitable. before doing so, check the manufactureres authorisation/admission as well as the admission to public roads.

important:

racing brake fluids with higher boiling points are stronger hygroscopic. this means, that the absorption of moisture is stronger. to avoid brake system failure, these brake fluids must be controlled more often. refer to the manufacturers specifications and maintainance instructions.

important:

brake fluid may damage most painted surfaces. clean spilled brake fluid from any painted surface including the caliper. the caliper paint is specially designed to resist most types of chemicals, but nevertheless may suffer under prolonged exposure to brake fluid.

wear

lifetime of the wear items rotor and pad is basically depending on where and how hard the brake system is being used. the users braking habits are affecting the lifetime fundamentally. "short" and "hard" stops mean less stress for a brake system and its components than "soft" and "long" stops. remember this when stopping from higher speeds. the design of a brake system is limited by the available space, which is determined by the size of the wheels and the suspension geometry. since modern cars with always higher curb weights combined with stronger engines are not designed in respect of a high performance brake system, it is well possible to even overheat and damage a high perfromance brake system if there is little or no air in the wheel housing. air ducting is extremly important for a high lifetime of a brake system. please refer to the section "use" for more information.

various

special „PRO“ brake pads are available for hard use on race tracks. this compound is designed with a even higher friction coefficient for better deceleration under higher temperatures. the compound is metallic and "melted" to the backing plate to avoid a seperating of the compound from the braking plate under high pressure/temperature. especially under high temperatures during race conditions, the wear of both, rotor and pad is reduced. at lower temperatures the wear is

higher and aggressive brake dust is generated. therefore, these brake pads are not suitable for normal street use. if used, clean brake dust at once from any surface to avoid severe damage. since the pad compound is metallic, there may be noises being generated even though special anti-noise weights are used. these pads do not require a "warm-braking". already at lower temperatures there is good braking force available.

„PRO“-pads are not certified for street use!

security advice

additional to the facts described under section „wear“, that require a replacement of rotor or pad, all other components should be inspected regularly. special attention should be paid to the condition of the brake hoses. all work should only be done by qualified mechanics or qualified dealerships / garages and must be traceable.

warranty

as mentioned already in section "use", even a MOVIT brake system has certain limits which are not touched when used reasonably under normal conditions. MOVIT gmbh is not liable for any damage as a result of stresses and conditions outside of normal use as well as a result of worn suspension parts. all products are sold or provided without warranty, expressed or implied. MOVIT gmbh is under no circumstances liable for labor charges or loss of use. no warranty or representation is made to the product's ability to protect the user from injury or death.

break-in and maintenance

failure to read, understand and follow these procedures will cause permanent damage to your brake system and will keep it from working at its full capacity. read carefully through these instructions to avoid damage to your rotors, pads and the entire brake system.

nearly all brake system problems are due to improper installation and/or break-in of rotors and pads. by reading and understanding the following you will avoid most causes of poor brake performance and vibration. when breaking-in rotors and pads you are heatcycling these parts. also, a layer of pad material is deposited onto the rotors

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surface. this is essential and fundamental for a properly working brake system. if not bedded-in properly, an uneven layer of pad material is deposited onto the rotor surface causing a vibrating steering wheel and/or a pulsating brake pedal. nearly any feeling of a "warped rotor" is caused by uneven pad deposition.

the new brake system must be bedded-in 500-100 km (300-600 mls)! to attach the pad to the rotors you should perform a series of 10-15 stops from 80-100 km/h (50-60 mph) to 20 km/h (12 mp/h) with light pedal pressure. the exact speed is not important. as soon as you get again to approx. 100 km/h (60 mph), begin the braking cycle. as you approach 20 km/h (12 mph) do not keep your eyes on the speedometer but start the braking cycle again. do not come to a complete stop during this cycles since pad material would be imprinted onto the rotor surface which will cause vibrations later.

after the 7th or 8th stop, there may be a light smoke coming out of the rotors. this is normal and will not affect the bedding-in result in any kind. also, a distinct smell may occure after several stops. after the 8th or 9th stop, there may be a light fading which is normal and will go away once the brakes have cooled down completely. after the bedding-in proceedure, the rotor should show a light gray surface. if race pads are used, add 4-5 stops from 140 km/h to 20 km/h (80-12 mp/h) with light to middle pedal pressure.

after this first break-in cycle, the brake system still does not operate at it's full capacity. the brake pad is attached to maybe 20% to the rotor surface. two or three more cycles are needed to get the brakes working at a minimum of their real capacity.

there may still be marks of the machining visible on the rotor surface. these will go away after the first 500-1000 km (300-600 mls). as soon as you do not see these marks anymore and the rotor surface is smooth with the same colour all over, you will have full heat transfer and braking power of your brake system. always make sure to cool the brakes down completley between each cycle. a cycle is a series of stops to break-in the rotors and pads. the more patience you have and the longer you will break-in the rotors and pads, the better the result will be.

during the breaking-in of the brake system, hard stops from high speeds should be avoided. rotors and pads may be damaged doing this. breaking-in of the pads should not be done in wet road conditions.

inspect your brake rotors and pads regularly. clean the holes with a suitable tool regularly to avoid brake rotor failure and excessive wear. inspect the brake rotors for cracks as shown in the attached sheet. cracks of up to 4 mm around the holes are "normal" and do not affect your brake system's performance in any kind. cracks from the "outer" hole to the outer diameter of the rotor may lead to a complete cracking of the rotors and may cause severe damage to the suspension and as a result to the complete car. if the rotors show cracks to the outer diameter replace them at once.

if you have any doubts about the condition of your rotor call or email us at once prior to using the brake system again.

if you have any further questions do not hesitate to contact us!

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