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Chassis Dynamics

Subject **Page**

Chassis Dynamics

Model: E85

Production Date: Start of Production MY 2003

Objectives of the Module

After completing this module, you will be able to:

- Verify the correct inflation pressure in a RFT.
- Perform the RPA Initialization procedure.
- Identify when to “lock” the ASZE unit for service procedures.
- Describe how the “Sport” button affects the EPS system.
- Understand what must be performed on the EPS column for removal/installation.
- Demonstrate how to activate DTC.

E85 Chassis

The proven chassis and suspension of the E46 serves as the basis for the E85. The combination of a rigid roadster body, lightweight aluminum suspension components, optimum weight distribution and rear-wheel drive are ideal prerequisites for pure driving pleasure with the BMW E85 Z4. The development objectives of E85 Z4 were to further improve the roadster handling characteristics as compared to the predecessor while retaining the outstanding driveability for everyday use.

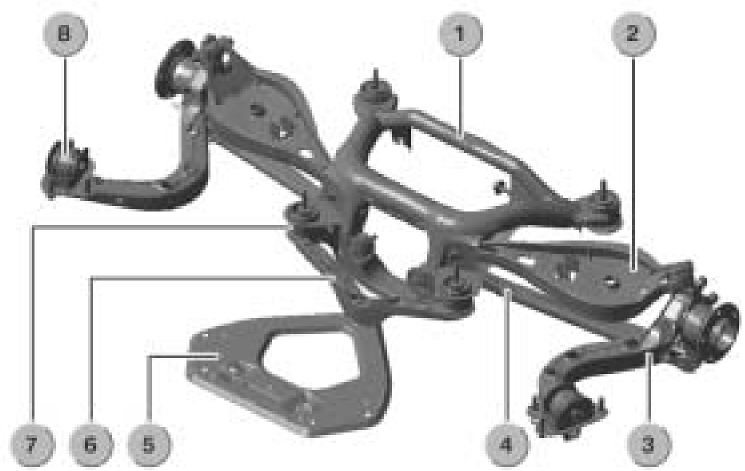
The front axle has been taken directly from the E46. The service brakes, pedal assembly, hydraulics and brake calipers are essentially the same as the E46. Because of the widened track, the E85 has been given new brake discs with a different depth on the rear axle.

Rear Axle

The rear axle for the E85 is very similar to the E46. The roadster-adapted kinematics has resulted in several modifications:

- The track width has been widened by 30 mm.
- A reinforcement plate with cooling duct (for differential) is installed to increase rigidity.
- The rubber bushings on the subframe and on the trailing arms are harder.
- The brake hoses, brake pad wear sensor wire and the wheel speed sensor wires are routed on and underneath the trailing arms (additional brackets on arms).
- ***Three different drive shafts*** (length) are used in the E85 depending on the transmissions.
- ***Two different output shaft sets*** with constant-velocity joints:
  - M54B25 (manual and automatic) and M54B30 (automatic) 31.5 mm diameter.
  - M54B30 with GS6-37BZ manual 38 mm diameter.
- Due to underbody aerodynamics, the rear-axle differential aluminium cover has cooling fins to ensure sufficient cooling (lifetime fluid fill).

1. Rear subframe section
2. Left upper control arm
3. Left trailing arm
4. Left lower control arm
5. Reinforcement plate
6. Reinforcement support bracket
7. Rear subframe mount bushings (1 of 4)
8. Right trailing arm bushing



Springs and Dampers

The spring/damper set is similar to the E46.

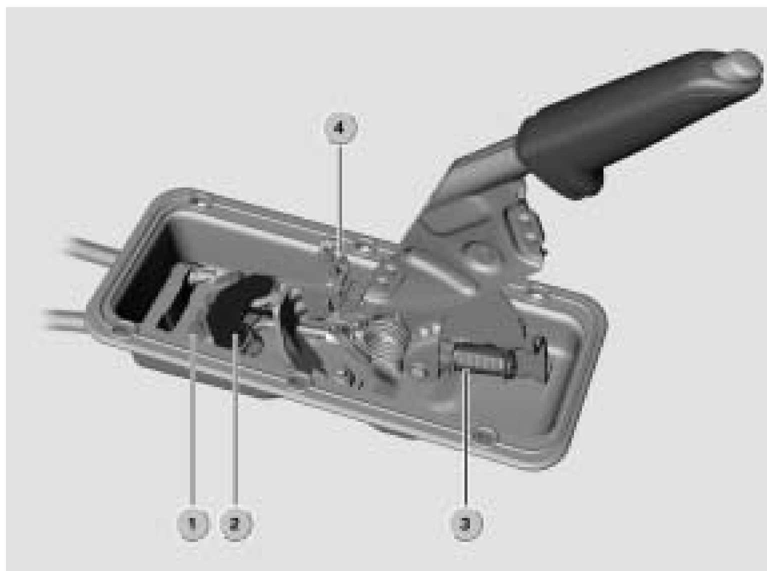
- Front axle: spring struts with coil springs and gas-pressure dampers.
- Rear axle: barrel springs and gas-pressure dampers.
- Ride level is 10 mm lower compared with the E46.
- Compared with the E85 standard suspension, the ride level of the sports suspension (when available) is a further 15 mm lower.

Parking Brake

The parking brake handle assembly is a new design.

A mounting pan flanged to the floorpan houses the automatic cable adjuster with right/left cable equalization.

1. Balance arm
2. Mounting clip
3. Automatic cable adjuster (ASZE unit)
4. Parking brake warning switch



Automatic Cable Adjuster (ASZE unit)

The ASZE unit provides automatic cable adjustments (for normal stretch) and is located in the mounting pan. The ASZE unit consists of:

- Cable tensioning spring
- Rack extension
- Locking clip and hook

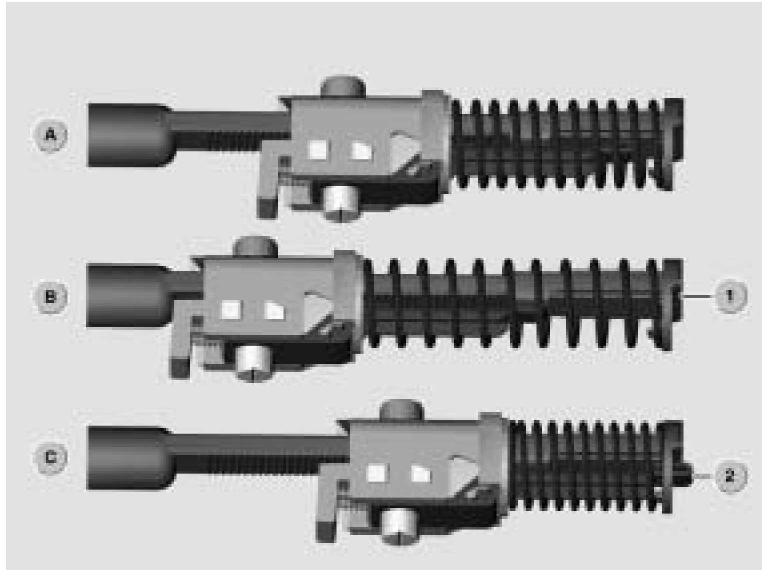
The ASZE unit holds both cables under equal tension via a balance arm.

Note: Parking brake lining wear is not compensated by the ASZE unit (traditional adjustments at the wheels are still required).

The possible positions of the automatic cable adjuster are shown in the following illustration:

A. Operating position
B. Position when a cable breaks (malfunction)
C. Mounting position (locked)

1. Locking clip
2. Locking hook



The operating position of the automatic cable adjuster is represented by position A. If there is a cable break, the automatic cable adjuster is in position B. The tensioning spring is in the most untensioned position. The balance arm acts as a force-equalizing device and ensures the uniform distribution of actuating force to both cables. The mounting clip locks the cables in the balance arm and prevents the cable ends from being forced out.

Workshop Hints

Removing Cables: In order to change the cables, it is necessary for the mounting pan to be removed downwards to such an extent that the balance arm can be accessed for disconnecting and connecting the cables. To accomplish this, the drive shaft must be removed beforehand. ***The parking brake lever must be in the release position and the ASZE unit must be locked.***

A screwdriver must be used to press back the locking clip of the tensioning spring until the locking hook engages the locking clip of the tensioning spring (position C). In position C the tensioning spring is pretensioned to maximum effect and the balance arm with the cables is in the maximum release setting. ***The ASZE unit must also be locked when replacing the parking brakes shoes.***

Remove the mounting clip (1) and slide the cable sweges out of the locating recesses in the balance arm (2).

The cables can now be disconnected from the parking brake shoe actuators (at the wheels).

Installing Cables: The parking brake lever must be in the "released" position. The cables do not automatically feed themselves into the balance arm on insertion, but must be guided with a screwdriver into the correct position.

Attach the mounting clip (1) to secure the cables in the balance arm (2). The mounting pan can be resecured in position. Connect the cables to the parking brake actuators (at the wheels).

Adjustment: The basic clearance of the parking brake shoes is adjusted at the adjustment wheel (screw) of the parking brake shoes in the traditional manner. The parking brake is automatically adjusted when the ASZE unit is unlocked. The pretension of the tensioning spring is relieved at the automatic cable adjuster with a screwdriver by moving the locking hook out of the locking clip.

The parking brake lever can be tightened in a low notch setting (pull upwards - 1 click) for this procedure. This makes it easier to access the locking hook. When the locking hook is released, the automatic cable adjuster returns to the operating position. The cables are retensioned.

Notes:

Electric Power Steering (EPS)

Purpose of the System

With a conventional power assisted (hydraulic) steering system, a belt driven pump provides pressure to the control valve which is integral in the power steering rack. When the steering shaft is turned, the control valve provides pressure to assist (decrease effort) in turning the steering gear.

On some BMW vehicles, this control pressure is reduced by increasing vehicle speed via an electronically controlled bleed off valve (Servotronic). However; hydraulic power assited steering systems utilize a reservoir, hydraulic fluid, pump, hoses/lines, cooler, hydraulic valve/steering rack, Servotronic valve, purpose built steering shaft and column.

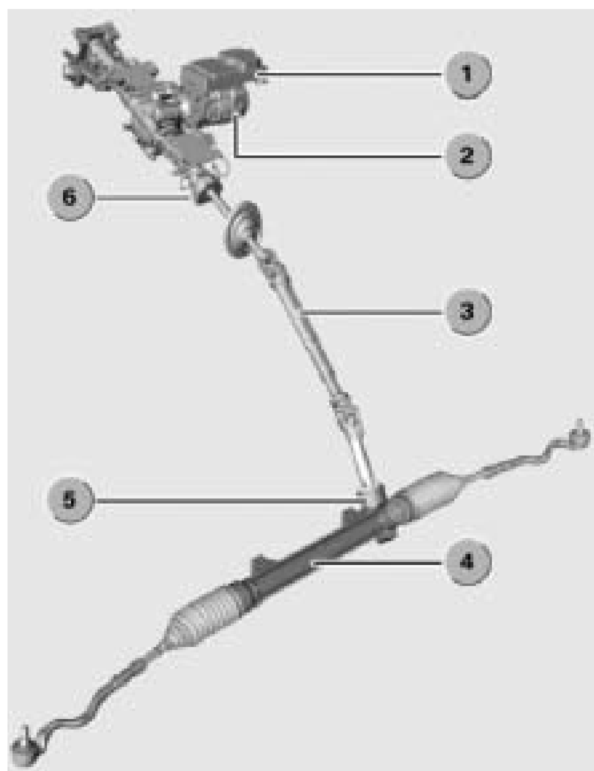
Electric Power Steering (EPS) is used for the first time by BMW in the E85. It provides the typical BMW power assisted steering characteristics and "feel". The EPS is a very direct, sporty steering element with a change-over between normal and "Sport" mode by the Dynamic Driving Control (Sport) button.

The EPS differs from the conventional hydraulic power assisted steering system by utilizing electrical/electronic components to provide power assisted steering ***while retaining a complete mechanical connection***. The EPS is a "dry system", the hydraulic components and oil are not required.

The programmed EPS control functions are influenced by vehicle speed and provide additional benefits regarding steering tuning, absorption adjustments and active steering return characteristics.

The EPS system includes:

1. EPS Control Module	4. Steering Rack
2. EPS Electric Motor	5. Steering Gears
3. Lower Steering Column	6. Steering Angle Sensor



The advantages of EPS are:

- Less maintenance and assembly
- Improved driving dynamics
- Increased comfort
- Increased driving safety
- Weight reduction
- Increased environmental compatibility
- Less power consumption

Improved Driving Dynamics:
- The EPS Electric Motor provides good power assisted steering control characteristics.
- Active return to center.
- Switchable steering characteristic (Dynamic Driving Control).
- Use of light weight sport steering wheels (1kg less than other steering wheels).

Increased Driving Comfort:
- Decouples unnessesary steering oscillations (from road disturbances) while maintaining relevant road feel information (different road conditions) to the driver.
- Speed dependent steering assist force (parking vs. high speed driving).

Increased Driving Safety:
- EPS provides a direct mechanical connection to the steering gear, conveying direct road feel.
- Speed dependent steering actively absorbs left/right roll.

Increased Environmental Compatibility:
- Reduced fuel and engine power consumption
- Leak free "dry system"

System Components

The EPS system is divided into 3 component groups:

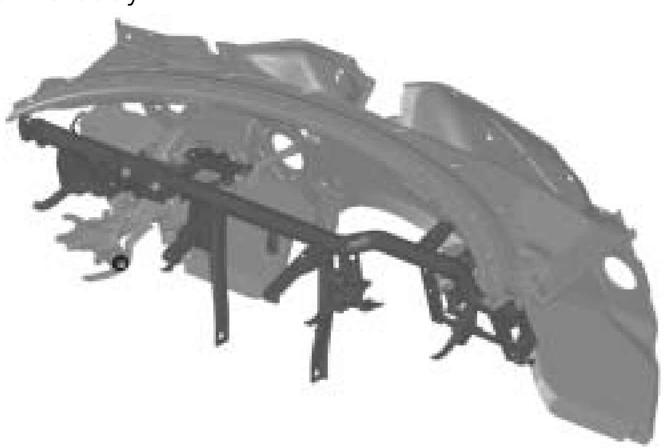
- Upper steering column assembly
- Lower steering spindle
- Steering gear with rack

Upper Steering Column Assembly

The upper steering column mechanical section starts at the steering wheel and ends at the connection to the lower steering spindle. The upper steering column is secured by 4 bolts to a bracket which is welded to the instrument panel support frame. In addition, the support frame bracket is secured by 4 bolts to the body.

The electrical section pertains to the EPS servo unit which consists of the EPS Control Module and the electric motor.

The remaining upper steering column section contains the steering lock with ignition switch and the steering column adjustment mechanism (manual tilt and telescopic).

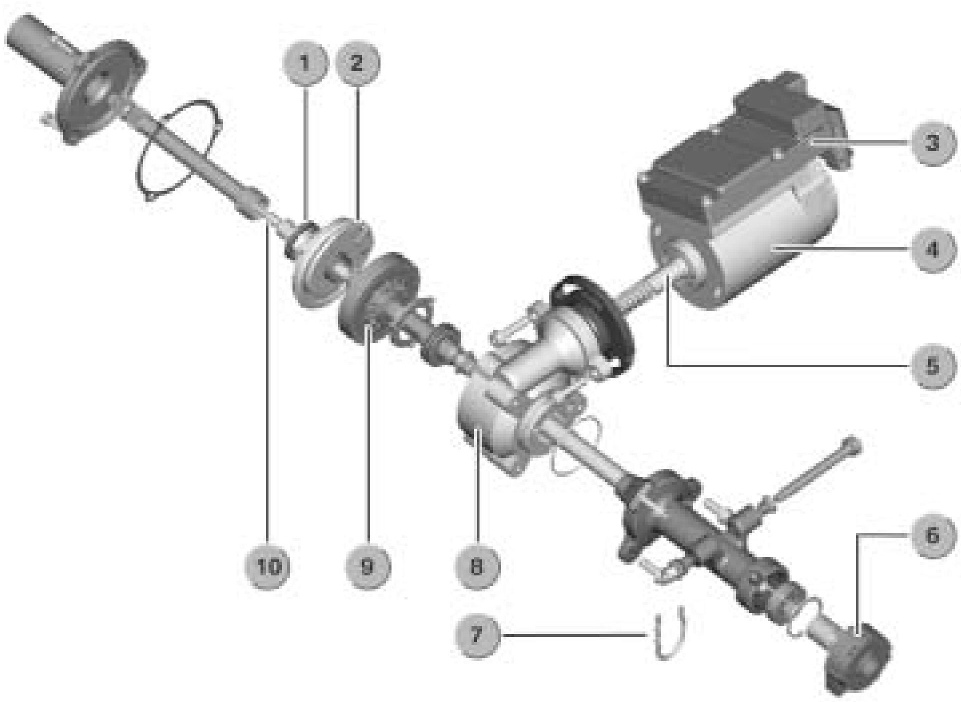


Servo Unit

The servo unit provides active steering-effort assistance as required by steering force and vehicle conditions. The servo unit is located on the upper steering column and is protected in the passenger compartment, it consists of:

- Electric motor
- Worm gear
- Control unit
- Internal sensors for electric motor speed, steering torque, temperature and voltage.
- Coil-spring cassette for the internal steering torque sensor.

1. Magnet wheel
2. Steering torque sensor
3. EPS control module
4. Electric motor
5. Worm gear shaft
6. Steering angle sensor
7. **Shipping/service steering locking pin**
   - **Install before removing steering column.**
   - **Remove after installing column.**
8. EPS housing
9. Driven gear (meshes with worm gear)
10. Torsion bar



The electric motor and the worm gear in the servo unit produce a new acoustic pattern in the passenger compartment. The system acoustics can be heard in particular situations:

- When the steering wheel is spun quickly
- When the steering wheel is turned while the car is stationary
- When the steering wheel is turned in a quiet atmosphere (e.g. radio not turned on)

This acoustic pattern is not a system fault. The conventional sounds generated by hydraulic steering systems (pump modulation, limiting valve) are eliminated.

Note: The EPS Control Module cannot be replaced separately, the entire assembly with the <u>exception of the Steering Angle Sensor</u> must be replaced as a unit (VIN specific part #).

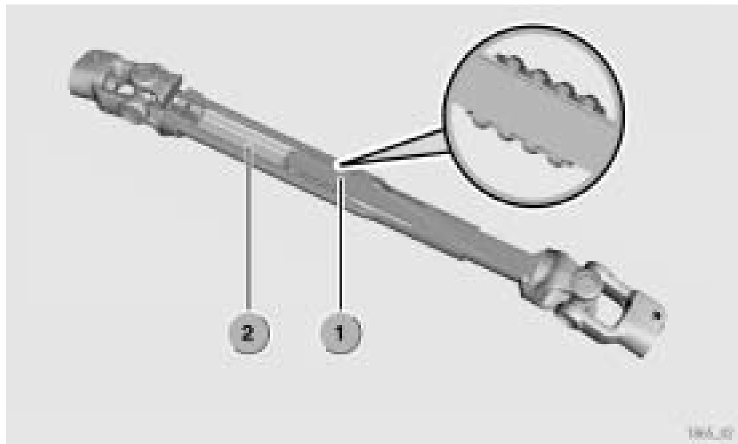
Lower Steering Spindle

The lower steering spindle connects the upper steering column to the steering gear. It runs in the engine compartment from the bulkhead through two universal joints to the steering gear. The lower steering spindle is encased in a plastic sleeve for corrosion protection. The sleeve is made from high temperature resistant plastic. The two parts of the lower steering spindle interslide in a ball-bearing mounting.

The ball-bearing mounting is necessary for:

- Self adjusting length
- Equalization during steering wheel height adjustment
- Telescopic colapsing in event of a crash

1. Ball bearing mounting
2. Telescopic compartment

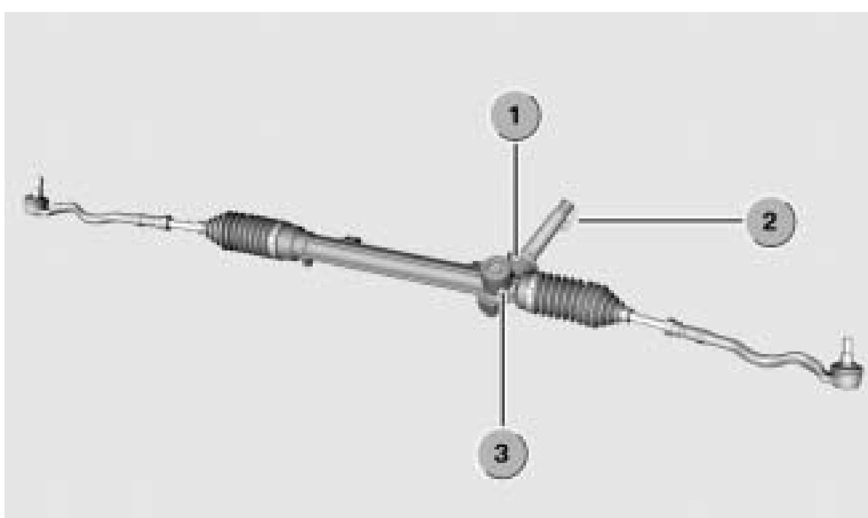


Steering Gear

The steering gear is a purely mechanical rack and pinion system. The steering deflection forces are counteracted by a damped thrust member, which is integrated in the steering gear.

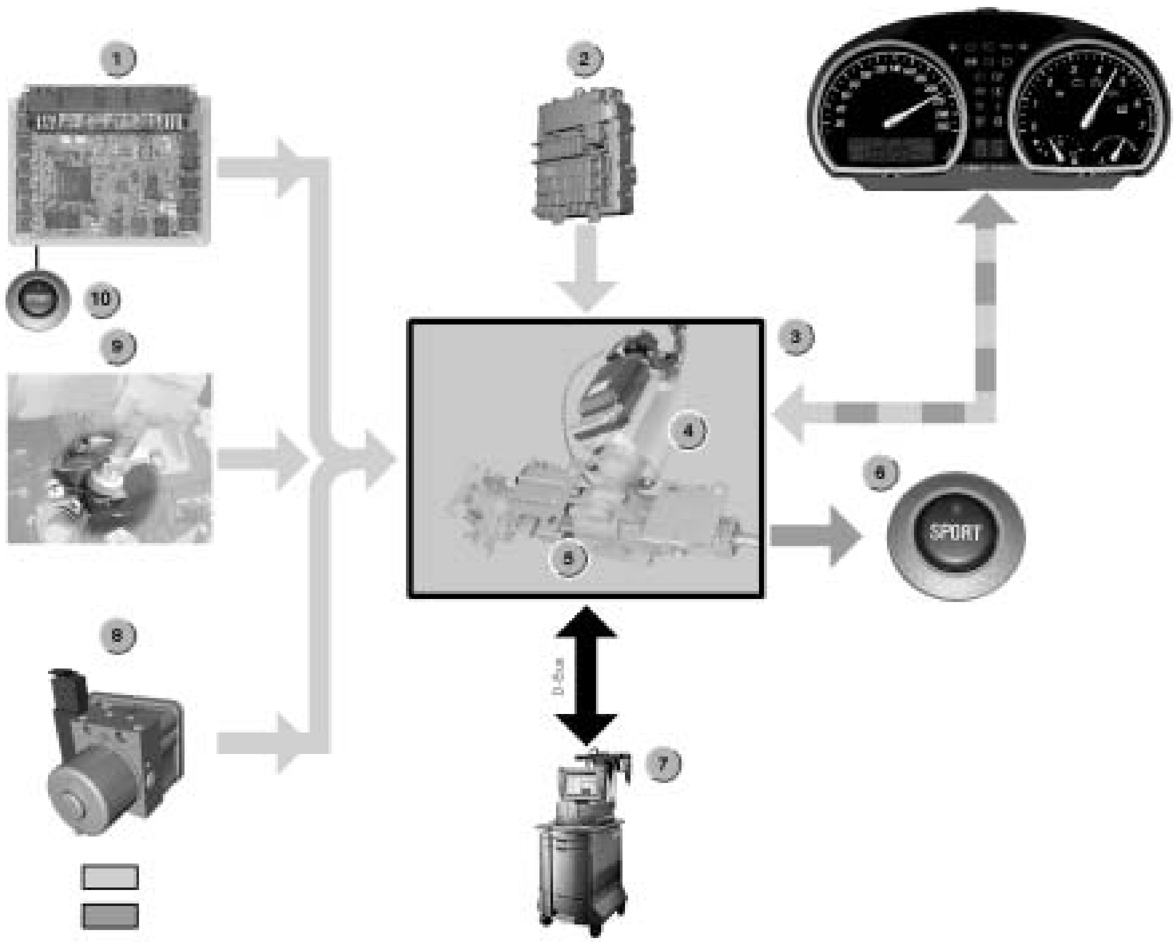
This thrust member has an integral damper element in addition to the tension spring. In the event of rapid steering movements, the rack is not influenced by high deflection forces. Without a damped thrust member, the rack would cause noises when returning at high speed.

1. Steering gear
2. Position lug
3. Thrust member



Note: The thrust member preload is not adjustable.

EPS - Input and Output Signals



1. MS45 ECM
2. Fusebox
3. Upper steering column with EPS servo unit and control module
4. Electric motor internal speed sensor
5. Internal steering torque sensor
6. Dynamic Driving Control “Sport” button illumination
7. DISplus
8. DSC control module
9. Steering angle sensor (LWS)
10. Dynamic Driving Control “Sport” button - function request via ECM

Notes:

Principle of Operation

EPS controls servo assistance for steering. In addition to the measuring the driver's steering torque, the EPS Control Module also monitors further inputs such as:

- Vehicle speed
- Steering angle velocity
- Steering angle
- Dynamic Driving Control (Sport) button
- Internal system temperature

The EPS calculates an assistance setpoint. The electric motor is activated via the integrated power electronics and the torque is transmitted through the worm gear to the driven gear (attached to the steering column output shaft).

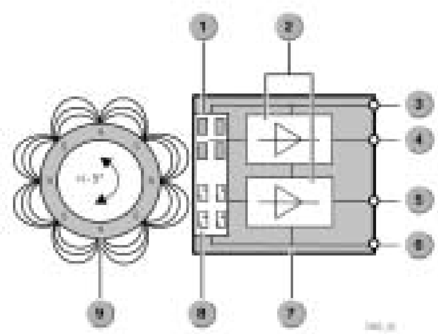
The Servotronic function (vehicle speed dependent steering assistance) is also integrated. The corresponding assistance and damping characteristics are stored in the EPS Control Module. The required assistance torque is gradually increased when the engine is started and reduced (with a delay) when the engine is switched off.

Steering Torque Measurement

The driver's steering torque is measured by a steering torque sensor integrated in the servo unit. The function is based on the magnetoresistive principle, these sensors are curently used in BMWs include wheel speed sensors (DSC III MK60) and Valvetronic position sensors (E65 - N62 engine). The magnetoresistive elements resistance changes as a function of the magnetic field acting on them.

The input shaft of the upper steering spindle is connected by a torsion bar to the output shaft. A magnet wheel is mounted on the input shaft. The magnetoresistive element is mounted on the output shaft.

The magnetic field lines are deflected by the magnet wheel as a result of the rotation of the input shaft with respect to the output shaft (slight twist due to the resistance from the tires on the road, steering gear, etc.). This deflection generates a resistance change (in one of the resistors) causing a voltage change in the evaluation electronics.



Two output signals (different voltage values) are generated which are constantly monitored for plausibility by the EPS Control Module. Based on this voltage change, the EPS calculates the extent of the driver's steering torque. The leads for signal transmission, power supply and ground run in a coil spring cassette mounted on the pinion shaft. The coil spring cassette is located in the worm gear housing.

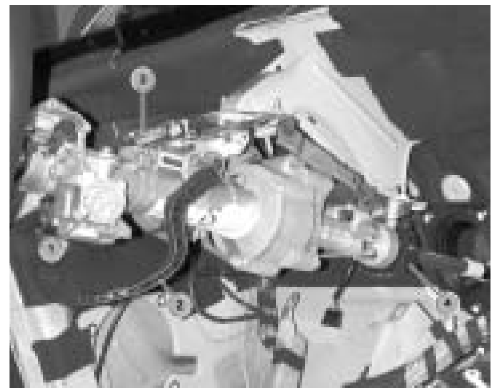
Steering Angle Measurement

To be able to perform active steering wheel resetting (return to center), the EPS Control Module requires the following:

- Steering wheel center position
- Present steering wheel angle

The above information is input to the EPS Control Module by the steering angle sensor (LWS), in addition to the DSC system requirement. The steering angle sensor is located on the lower steering column in the passenger compartment.

Note: The steering angle sensor must be calibrated (like the E46 DSC).



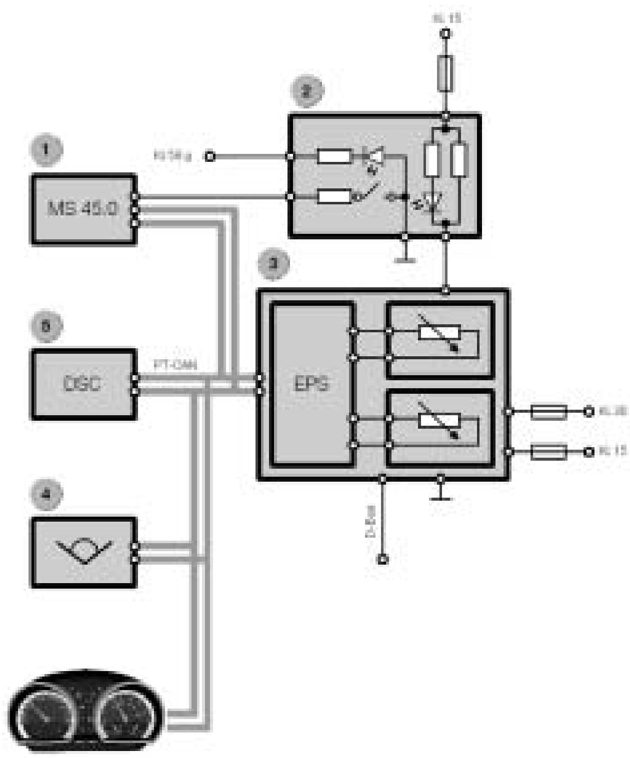
4. Steering angle sensor (LWS)

Dynamic Driving Control Function

When the Dynamic Driving Control function is selected with the “Sport” button, the engine management system directs the request signal via the PT-CAN Bus to the EPS Control Module.

The EPS Control Module switches to sporty vehicle handling. This provides higher steering and holding forces.

1. MS45 ECM
2. Dynamic Driving Control “Sport” button
3. EPS servo unit and control module
4. Steering angle sensor (LWS)
5. DSC control module



Indicator Light

The instrument cluster contains an indicator light for the EPS system. This light alerts the driver to significantly reduced steering effort assistance or to a complete shutdown of assistance. This may be caused by:

- Fault in the EPS Control Module or an associated control module (DSC, ECM).
- Undervoltage/overvoltage
- Overloading of EPS

Workshop Hints

Servo Assistance Reduction or Shutdown

When the EPS system is overloaded, it protects itself by reducing or shutting down servo assistance ***while retaining a complete mechanical connection for steering***. The driver notices the increased steering torque and receives a visual signal from the indicator light.

The following causes will implement protective measures:

- Servo assistance is reduced/shut down if a fault relevant to EPS is detected in an associated Control Module/sensors (ECM, DSC Control Module, Steering Angle Sensor). A fault code is stored and the indicator light in the instrument cluster illuminates in the event of complete assistance shutdown.
- Power assisted steering is reduced as EPS internal temperature increases (due to overloading). When reduction of the power is not sufficient to cool the system down, servo assistance is reduced down to zero. A fault is stored and the indicator light in the instrument cluster illuminates. When the temperature cools down, servo assistance returns within 2 seconds to the present requested value.
- In the event of overvoltage (> 17 V), servo assistance shuts down immediately to protect the output transistors. A fault is stored and the indicator light in the instrument cluster illuminates. When the voltage drops (< 16 V), servo assistance returns within 2 seconds to the present requested value.

- If an undervoltage (< 9 V) is detected, servo assistance is immediately reduced down to 0. A fault is stored and the indicator light illuiminates in the event of complete assistance shutdown. When the voltage returns to a level > 10 V, servo assistance increases with in 2 seconds to the requested value. In all cases, the indicator light goes out when the fault is no longer present.

Default Structure

Default 1 - Complete shutdown (Control Module, under/over voltage, no assist.

Default 2 - When the steering is held in left/right lock position > 40 seconds, power is reduced by 50% (due to increasing internal temperature).

Default 3 - Vehicle speed signal is missing, Servotronic feature is deactivated.

Default 4 - When the Steering Angle Sensor (LWS) input is defective, active return centering is deactivated.

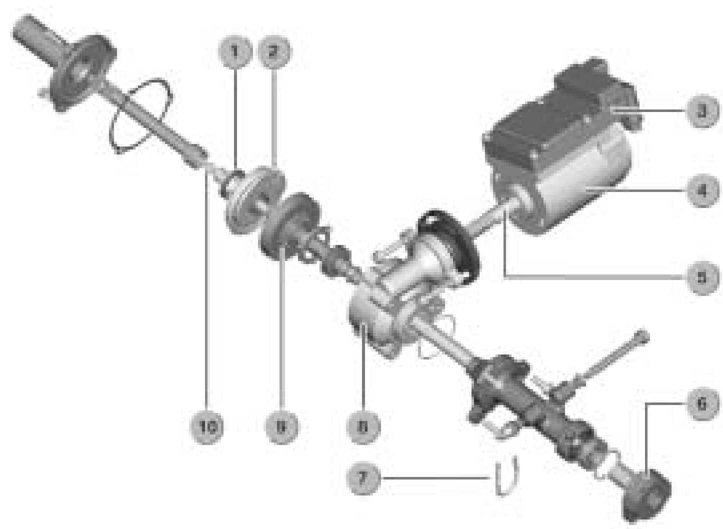
Working on Steering Column

Before performing any work on the steering column, it is required that the steering locking pin is engaged in the "centering" position! This prevents turning of the steering spindle during installation.

7. Shipping/service steering locking pin
- Install before removing column.
- Remove after installing column.

If the steering spindle is turned, this will break the internal sensors' connecting harness to the EPS Control Module.

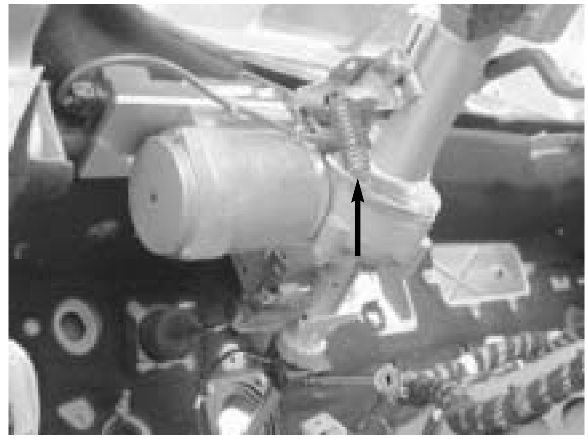
The connecting harness is located in the coil spring. The spring is installed in the servo unit housing.



When the lower steering spindle is disconnected from the steering gear, it is important when reinstalling to ensure that the center marking on the lower steering spindle is aligned with the center marking on the steering gear. The upper steering spindle and the steering gear are equipped with plastic lugs which determine the correct installation position of the lower steering spindle.

General Information

The mass balance spring (arrow) should be disconnected when work is performed on the upper steering column.

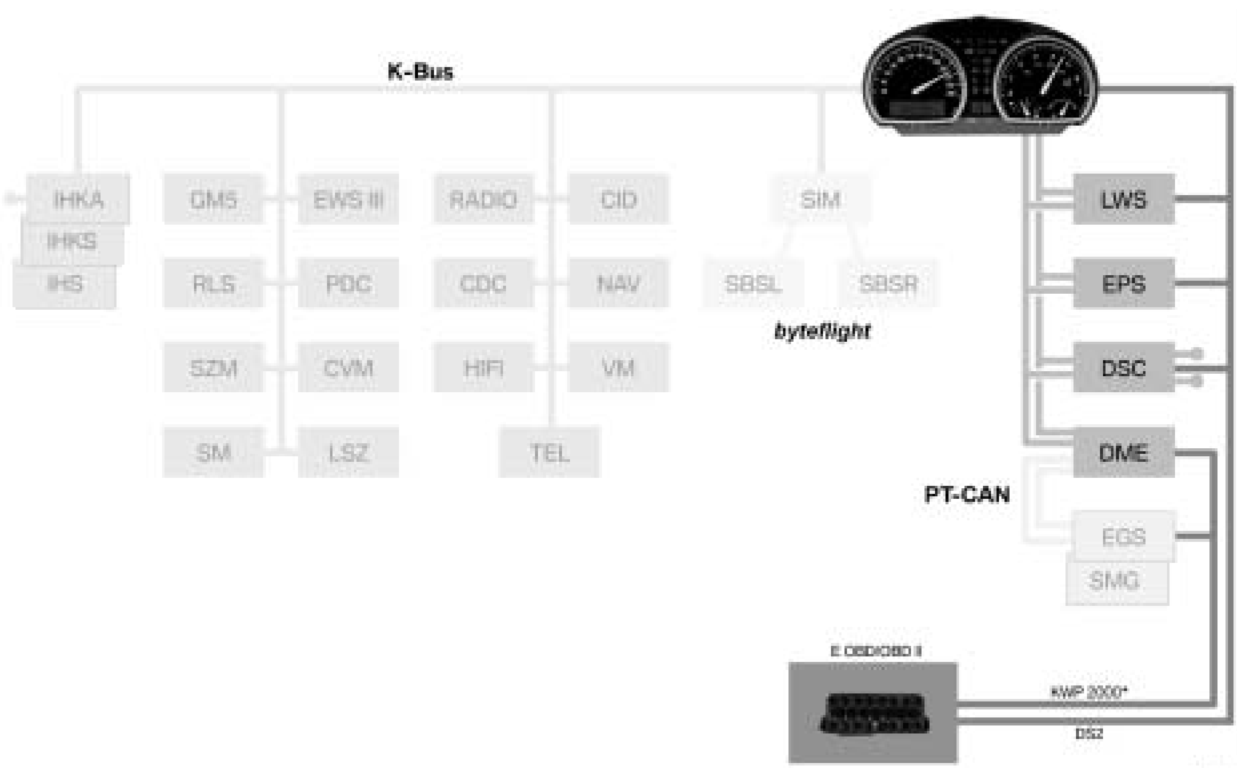


Caution: The mass balance spring is under extreme tension. Be careful not to bend the spring tab mounting retainers.

Note: Only the ignition starter switch, the lock cylinder and the Steering Angle Sensor (LWS) can be replaced as separate components on the upper steering column.

Diagnosis

System faults and additional information pertaining to vehicle responses are stored in the EPS Control Module's fault memory and can be diagnosed with DISplus/GT1.



Dynamic Stability Control

Purpose of the System

The Dynamic Stability Control system (DSC MK 60) currently in the E46 is carried over to the E85. In addition to the ABS, ASC and CBC functions, the DSC system incorporates a further function in the E85, ***Dynamic Traction Control (DTC)***. The DTC function can be activated with the DSC button and provides two subfunctions:

- Sports tuning of the Automatic Stability Control (ASC) + Dynamic Stability Control (DSC)
- Improved traction, particularly on ground surfaces with a low coefficient of friction

All other functions have essentially remained the same. A "DTC" indicator light illuminates in the instrument cluster when the DTC function is activated. The DSC warning light in the instrument cluster flashes when intervention is necessary and takes priority over all other functions (as in current E46 vehicles).

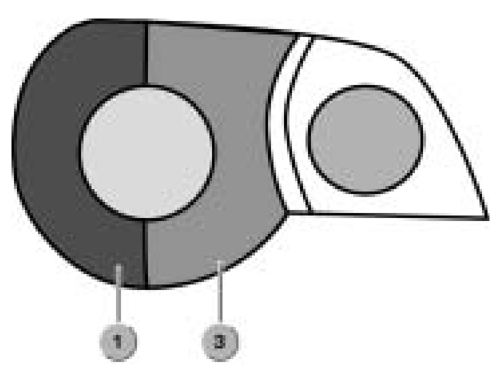
In certain situations (i.e. accelerating on an uphill gradient on a snow covered road), the previous ASC function provided brake intervention at the spinning wheel and extremely reduced the engine output. Although the vehicle remained extremely stable, minimal propulsion was available.

DTC achieves maximum possible traction essentially by expanded ASC and DSC control thresholds. Compared to the ASC/DSC function, DTC mode allows a little more "drift" at low speeds and transverse acceleration (increased rear wheel spin is permissible up to a speed of approx. 45 mph). This allows the engine power output to remain without an extreme reduction of power, improving propulsion.

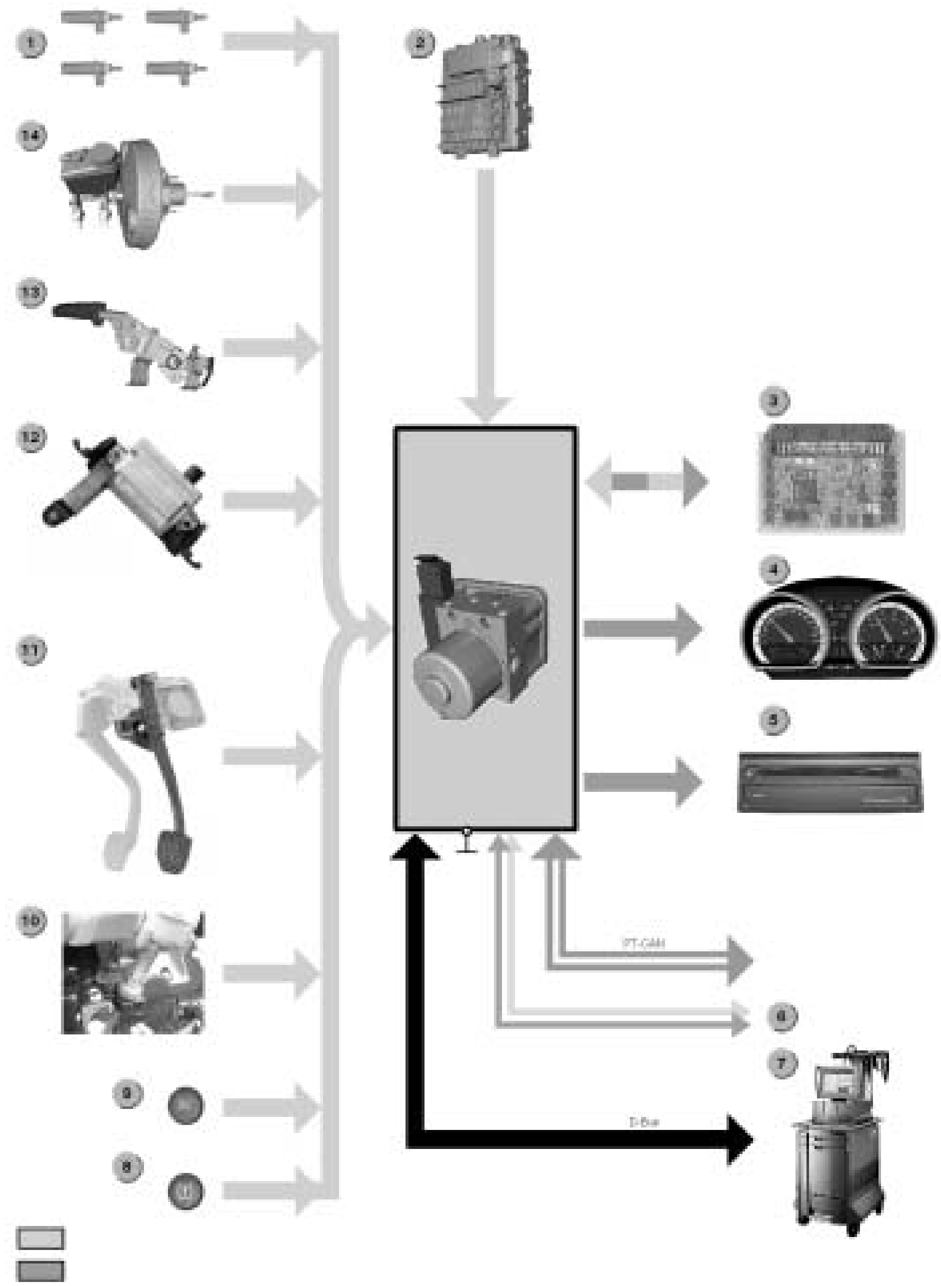
On approaching higher speeds and transverse acceleration (measured by the yaw rate sensor), the DTC function acts more and more like the "normal" ASC and DSC function and the slip thresholds are reduced back to a conservative mode for stability reasons.

Brake Force Display

To improve the reaction of other drivers in a panic stop, the E85 has a Brake Force Display system. If a deceleration of more than $5m/s^2$ or an ABS signal is detected, the bulbs in compartment 3 are activated by the light switch center. They will then receive the full 21 Watts of power and the brake light plus Brake Force Display function is illuminated.



DSC - Input and Output Signals



1. Wheel speed sensors
2. Power distribution box (KL30 and KL15)
3. MS45 ECM
4. Instrument cluster
5. Navigation computer
6. Private CAN (DSC-CAN High and DSC-CAN Low) between DSC yaw rate sensor and DSC module
7. DISplus/GT1
8. RPA (Tire Deflation Warning) button
9. DSC button
10. Steering angle sensor (LWS)
11. Brake light switch
12. DSC yaw rate sensor
13. Handbrake switch
14. Sensors: 2 pressure sensors in master brake cylinder and one brake fluid sensor

System Components

The DSC system consists of following components:

- DSC Control Module (MK60)
- DSC button
- Wheel speed sensors
- DSC yaw rate sensor

Control Module

The DSC Control Module (MK 60) is located in the engine compartment at the left front on the strut tower (as shown above). The Control Module is mounted on the valve block assembly.

DSC Button

The DSC button is located in the center console switch center (1) next to the RPA button. ***DTC mode is activated by briefly pressing the DSC button.***

A DTC symbol in the instrument cluster provides the driver with visual confirmation.

By pressing and holding the DSC button for longer than 3 seconds the DSC function switches off completely and the DSC symbol is illuminated in the instrument cluster. The ABS function is always on line.

The DSC function is reactivated by briefly pressing the DSC button once again. The visual symbol goes out. The DSC symbol flashing signals to the driver that a DSC control intervention is active. By cycling the ignition switch, DTC will be deactivated and DSC is automatically on line (DTC or DSC deactivation must be reselected by the driver).

DSC Sensor

The DSC sensor is located under the passenger's seat on the seat mounting brace/floor pan (1). The sensor is connected via a separate CAN (DSC-CAN High and DSC-CAN Low) to the DSC module. It registers the transverse acceleration and the yaw rate.

E85 Run Flat Tire (RFT) Technology

Purpose of the System

BMW Run Flat Tire (RFT) Technology which was first introduced on the Z8, is standard on the E85 (Z4). RFT technology offers large advantages to the customer in dynamic stability with slow or sudden air pressure loss and Deflation Warning. In addition, the spare wheel and jacking equipment in the trunk is deleted which provides additional storage space.

A tire with back up running ability (RFT) will be differentiated from a non-run flat tire by the encircled letter designation on the side-wall (for example: RSC - **R**unflat **S**ystem **C**omponent).

Principle of Operation

If slow or sudden inflation pressure loss occurs in a RFT, it is still mobile because of the additional high temperature rubber reinforcements that strengthen the side wall.

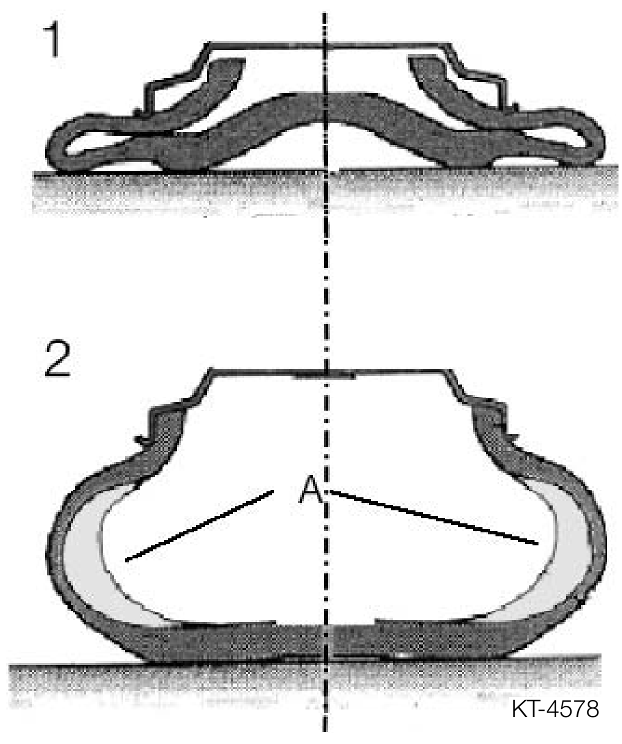
These reinforcements prevent side wall damage when the tire is deflated and also provides support during extreme loads (even when negotiating curves). In addition, the special RFT wheel (rim) grips the tire for sufficient steering, braking and accelerating power.

System Components

Comparison (cross section) of a standard tire to a self supporting RFT:

1. Standard tire (deflated)
2. Self supporting RFT (deflated)

A. High temperature rubber reinforcements



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Note: Because of the self supporting characteristics of the RFT, it is difficult to visualize a deflation, therefore; ***always verify air pressure with a tire pressure gage*** (refer to RPA initialization).

Note:

- With a sudden inflation pressure loss the vehicle can be driven with a maximum speed of 50 mph for a maximum distance of approx. 100 miles.
- With a slow inflation pressure loss the vehicle can be driven with a maximum speed of 50 mph for a maximum distance of approx. 1200 miles.
- A winter profile RFT will also be offered.
- In an extreme case, standard tires can be temporarily substitued on the same wheel (rim) if RFT is not available.

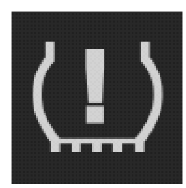
Tire Deflation Warning (RPA)

When a slow inflation pressure loss is present, it is more difficult for the driver to recognize the gradually increasing "spongy" handling of the vehicle (this constitutes approx. 80% of flat tire cases). The condition is more dificult to detect with RFT because of the increased sidewall rigidity. The Tire Deflation Warning (RPA) monitors tire deflation and will alert the driver.

Principle of Operation

The Tire Deflation Warning (RPA) function is performed by the DSC Control Module. When a tire loses air pressure, the radius and dynamic rolling circumference is reduced. This increases the rotational speed as compared to the other tires on the vehicle. The RPA function measures the number of wheel revolutions from the four DSC wheel speed sensors and performs a diagonal comparison for a speed average.

If there is a difference, this is recognized as pressure loss. The RPA can inform the driver after a short drive, approx. 1-3 minutes, from a vehicle speed > 10 mph via an indicator light (red) in the Instrument Cluster.



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Initialization/Operation

The system must be initialized when the tire inflation pressures are changed or when the wheels/tires are replaced.

The RPA switch (1) in the center console switching center must be pressed to start initialization (as follows on the next page).

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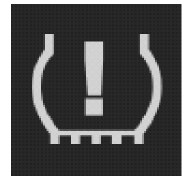
With KL15 “on”, press the RPA switch until the RPA indicator light in the Instrument Cluster illuminates in “yellow”.



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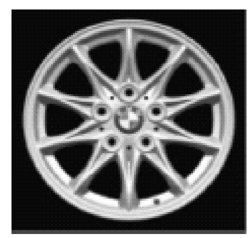
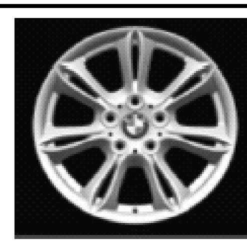
After a a short drive (approx. 1-3 minutes), from a vehicle speed > 10 mph, the system learns the new wheel speed sensor reference values and the RPA indicator light (yellow) goes out.

When an inflation pressure loss is determined, the RPA indicator light illuminates in “red”. The driver is informed of a RPA system failure by the “yellow” illuminated RPA indicator light.

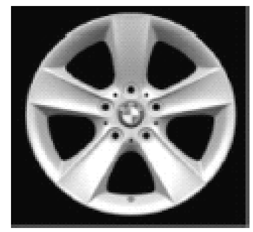
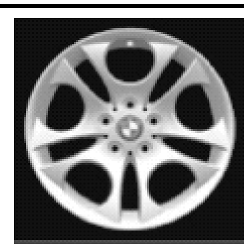
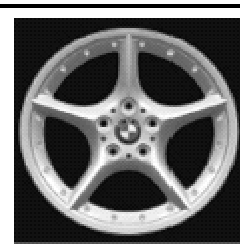
Wheel/Tire Styling Combinations

All wheels are cast aluminum. Different Special equipment (SA) wheel stylings are available for all body/engine combinations.

Motor	Räder/Reifen (Run Flat Tyres)	Styling Nummer	Styling
Serie			
M54B22, M54B25	7 J x 16 EH2 IS47 Reifen 225/50 R 16	104	
M54B30	8 J x 17 EH2 IS47 Reifen 225/45 R 17	103	

Note: The wheel lugs (same as the E46) must be torqued to 120 Nm.

Additional Wheel/Tire Styling Combinations

SA			
M54Bxx	7 J x 16 EH2 IS47 Reifen 225/50 R 16	102	
M54Bxx	8 J x 17 EH2 IS47 Reifen 225/45 R 17; 8,5 J x 17 EH2 IS50 Reifen 245/40 R 17	105	
M54Bxx	8 J x 17 EH2 IS47 Reifen 225/45 R 17	106	
M54Bxx	8 J x 18 EH2 IS47 Reifen 225/40 R 18; 8,5 J x 18 EH2 IS50 Reifen 255/35 R 18	107	
M54Bxx	8 J x 18 EH2 IS47 Reifen 225/40 R 18; 8,5 J x 18 EH2 IS50 Reifen 255/35 R 18	108	

Review Questions

1. What is the only reliable method to verify the correct inflation pressure in a RFT?

2. List the RPA Initialization procedure:

3. The ASZE unit <u>must</u> be in the “locked” position for what two service procedures?

4. How does the “Sport” button affect the EPS system?

5. What must be installed in the EPS column before removal and be removed after installation?

6. How is DTC activated?

7. When the EPS indicator light is illuminated, what does this indicate?

   What could be the causes?