

Measure no.

US 60830088-07

Subject

Rear brake - soft pressure point

Status date (mm/dd/yy)

7/31/18

Status

Accepted

Organization

US, MOT

Date created (mm/dd/yy)

7/31/18

Created by

Hans-Juergen Jahreiss

PQM Problem reference**Release date (mm/dd/yy)****Approved by****Dealer release**

Allow automatic release

Vehicles affected**E series****Engine****Body**

K42 K46 K46/11 K46/12 K46/13

K47 K47/11 K50 K50/11 K51

K52 K53 K54

Production period (from/to)**Feedback (all cases relating to****(mm/dd/yy)****Comment on production period****measure up to) (mm/dd/yy)**

9/1/09 /

Complaint

For exclusive operation of the rear wheel brake with the footbrake lever the driver feels a soft pressure point or a lengthy brake pedal travel.

The conventional bleeding of the rear brake circuit temporarily alleviates the condition.

With increasing usage, little by little the phenomenon may again occur.

Cause

Due to unknown influencing variables, small amounts of air enter into the control circuit of the rear wheel brake. With increasing usage this air can, over time and with exclusive operation of the rear wheel brake using the footbrake lever, be perceived by the rider as a "soft pressure point" or a "lengthy lever travel".

Note:

For partial integral brake systems the pressure for the rear wheel brake is generated by a pump in the ABS modulator through operation of the footbrake lever. If there is air in the rear control circuit (between the rear tandem brake master cylinder and the ABS modulator), the pressure build-up is not influenced by the integral function.

If there is air in the rear wheel circuit (between the ABS modulator and the rear brake caliper), the pump in the ABS modulator can compress small amounts of air in such a way that there are no tangible functional changes for the rider. The phenomenon is only detectable during exclusive operation with the footbrake lever.

The very complex influencing factors are currently being determined through extensive and time-consuming trials in the braking development department.

Note:

With operation of the hand brake lever for the front wheel brake, the vehicle can be braked within the limits of the legally required deceleration values and safely brought to a standstill. Because of the dynamic wheel load distribution, the rear wheel brake plays a lesser role for dynamic braking. In the case of emergency braking (panic braking), the braking power is almost exclusively transmitted through the front wheel brake.

Measure

Bleed the rear brake circuit manually in accordance with the specifications in the Maintenance Instructions.

Then call up the following service program and work through it:

Select the fault pattern "Brake system: soft pressure point", calculate the test plan and perform the service program "Check the brake pressure point". You can find a detailed description of this in the attachment.

Please bleed the affected brake circuit thoroughly over ISTA (incl. modulator). Carry out the routine at least 2 times. This may have to be repeated depending on the amount of air ingress.

After the break bleed process, apply pressure overnight to the rear brake circuit.

To do this, a weight 10-15 kg (22-33 lbs) can be attached to the footbrake lever.

Then flush the system again (at least twice the contents of the reservoir).

The repair tasks can also be invoiced under warranty after expiration of the warranty period using the defect code 34 00 90 72 00 "Rear brake system not adequately bled".

Complaint

Fault location	Fault type	Fault place
Brakes	Too soft	Rear

Cause

#	Fault location	Fault type	Fault place
1	34/51 ABS 2 modulator	Pressure not OK	
	Repair Task	Special Clearance	Area
	Checking, repairing, replacing	No	Chassis and Suspension

#	Fault location	Fault type	Fault place
2	34/21 Rear brake	Pressure drop / loss	
	Repair Task	Special Clearance	Area
	Checking, repairing, replacing	No	Chassis and Suspension

#	Fault location	Fault type	Fault place
3	34/31 Brake master cylinder	Malfunction	
	Repair Task	Special Clearance	Area
	Checking, repairing, replacing	No	Chassis and Suspension

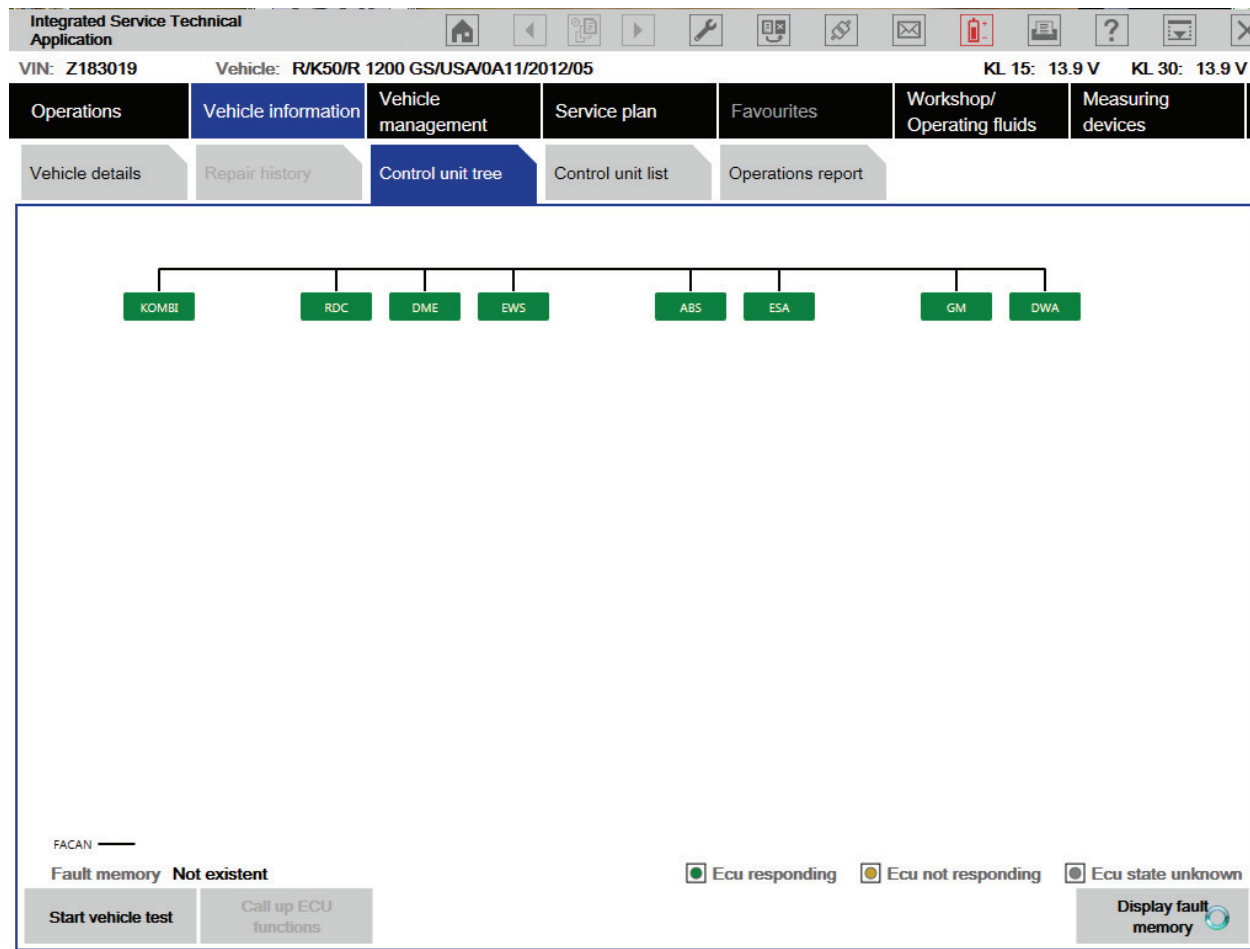
Fault code

Progman / DIS / ISTA / ISTA/P

System	State	Version
--------	-------	---------

Check the brake pressure point

1. Identify motorcycle, start vehicle test



2. Select fault pattern

2.1. Select Main group [002 Chassis and suspension]

The screenshot displays the 'Integrated Service Technical Application' interface. At the top, the VIN is Z183019 and the vehicle is identified as R/K50/R 1200 GS/USA/0A11/2012/05. The battery voltage is shown as KL 15: 13.9 V and KL 30: 13.9 V. The main menu consists of several tabs: Operations, Vehicle information, Vehicle management, Service plan, Favourites, Workshop/Operating fluids, and Measuring devices. The 'Vehicle management' tab is selected, and within it, the 'Troubleshooting' sub-tab is active. Under 'Troubleshooting', the 'Fault pattern' sub-tab is chosen. The main content area is divided into two panels: 'Main groups' on the left and 'Selected structure elements' on the right. In the 'Main groups' panel, the '002 Chassis and suspension' group is highlighted. The 'Selected structure elements' panel shows 'Layer 1: Perceived symptoms (old)'. At the bottom, the status bar indicates 'Number of fault memories: 0 / 0' and 'No. fault patterns: 0'. Navigation buttons include 'Undo all', 'Undo', 'Add fault pattern', 'Show fault pattern', and 'Calculate test plan'.

1

2

3

4

Integrated Service Technical Application

VIN: Z183019 Vehicle: R/K50/R 1200 GS/USA/0A11/2012/05 KL 15: 13.9 V KL 30: 13.9 V

Operations	Vehicle information	Vehicle management	Service plan	Favourites	Workshop/Operating fluids	Measuring devices
Repair/Maintenance	Troubleshooting	Service function	Software update	Control Unit Exchange	Vehicle modification	
Fault memory	Fault pattern	Function Structure	Component Structure	Text Search	Input fault code	

Main groups

001 Drive

002 Chassis and suspension

003 Electrical system

Selected structure elements

Layer 1:
Perceived symptoms (old)

Number of fault memories: 0 / 0 No. fault patterns: 0

Undo all Undo Add fault pattern Show fault pattern Calculate test plan

2. Select fault pattern

2.2. Select Main group [Antilock braking system ABS]

The screenshot displays the 'Integrated Service Technical Application' interface. At the top, a toolbar contains various icons for navigation and actions. Below the toolbar, the vehicle information is shown: VIN: Z183019, Vehicle: R/K50/R 1200 GS/USA/0A11/2012/05, and battery voltages KL 15: 13.9 V and KL 30: 13.9 V. A navigation menu is organized into three rows of buttons. The first row includes 'Operations', 'Vehicle information', 'Vehicle management' (highlighted in blue), 'Service plan', 'Favourites', 'Workshop/Operating fluids', and 'Measuring devices'. The second row includes 'Repair/Maintenance', 'Troubleshooting' (highlighted in blue), 'Service function', 'Software update', 'Control Unit Exchange', 'Vehicle modification', and an empty button. The third row includes 'Fault memory', 'Fault pattern' (highlighted in blue), 'Function Structure', 'Component Structure', 'Text Search', and 'Input fault code'. A red arrow points from the 'Fault pattern' button to the 'Main groups' section. In the 'Main groups' section, a list of options is shown: 'Antilock braking system ABS' (highlighted with a red rectangle and a mouse cursor), 'Electronic suspension adjustment', and 'RDC tyre pressure control'. To the right, the 'Selected structure elements' section displays a hierarchical list: 'Layer 1: Perceived symptoms (old)' and 'Layer 2: 002 Chassis and suspension'. At the bottom, status information indicates 'Number of fault memories: 0 / 0' and 'No. fault patterns: 0'. A row of buttons at the very bottom includes 'Undo all', 'Undo', 'Add fault pattern', 'Show fault pattern', and 'Calculate test plan'.

Integrated Service Technical Application

VIN: Z183019 Vehicle: R/K50/R 1200 GS/USA/0A11/2012/05 KL 15: 13.9 V KL 30: 13.9 V

Operations	Vehicle information	Vehicle management	Service plan	Favourites	Workshop/Operating fluids	Measuring devices
Repair/Maintenance	Troubleshooting	Service function	Software update	Control Unit Exchange	Vehicle modification	
Fault memory	Fault pattern	Function Structure	Component Structure	Text Search	Input fault code	

Main groups

- Antilock braking system ABS
- Electronic suspension adjustment
- RDC tyre pressure control

Selected structure elements

Layer 1:
Perceived symptoms (old)

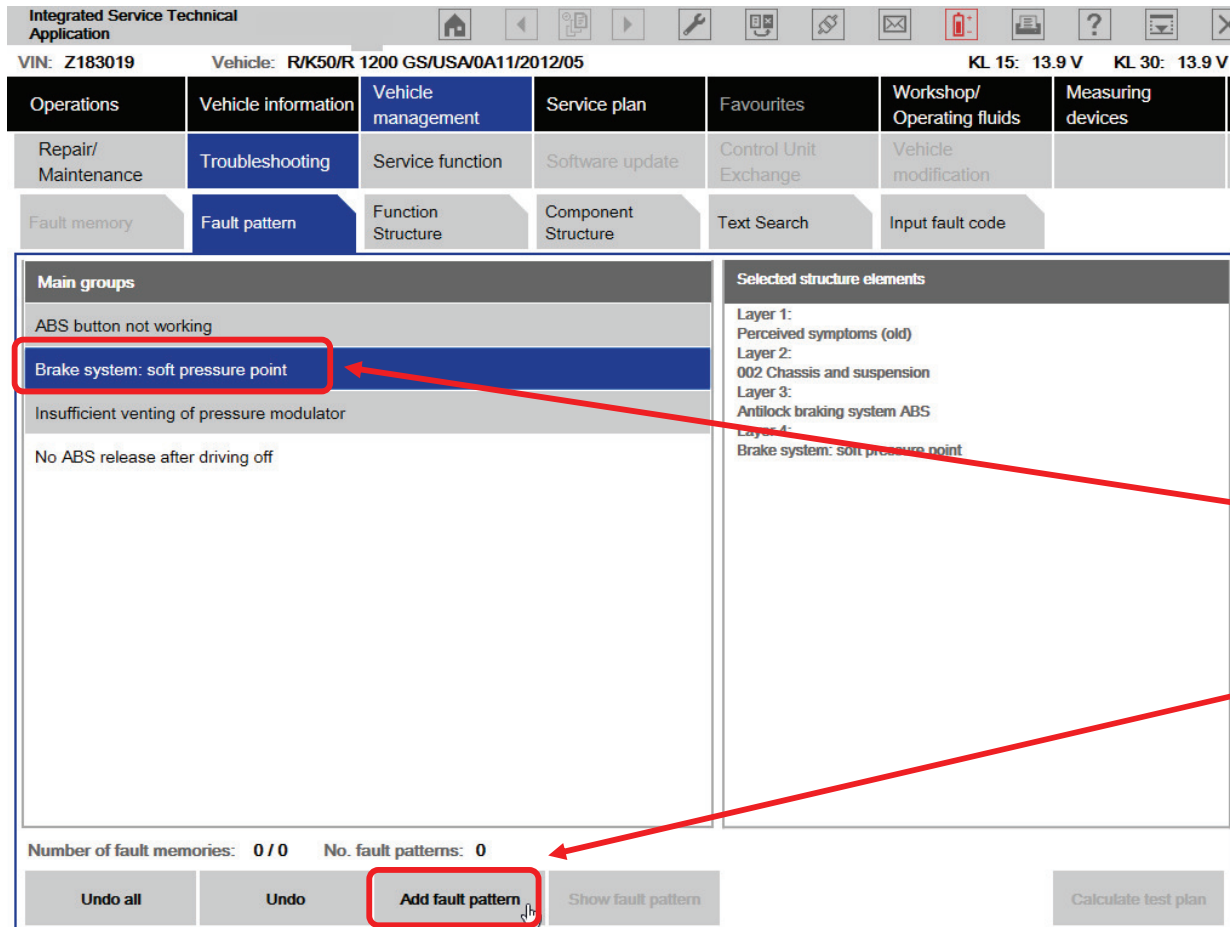
Layer 2:
002 Chassis and suspension

Number of fault memories: 0 / 0 No. fault patterns: 0

Undo all Undo Add fault pattern Show fault pattern Calculate test plan

2. Select fault pattern

2.3. Select the fault pattern [Brake system: soft pressure point], then push button “Add fault pattern”



3. Calculate test plan

Integrated Service Technical Application

VIN: Z183019 Vehicle: R/K50/R 1200 GS/USA/0A11/2012/05 KL 15: 13.9 V KL 30: 13.9 V

Operations	Vehicle information	Vehicle management	Service plan	Favourites	Workshop/ Operating fluids	Measuring devices
Repair/ Maintenance	Troubleshooting	Service function	Software update	Control Unit Exchange	Vehicle modification	
Fault memory	Fault pattern	Function Structure	Component Structure	Text Search	Input fault code	

Main groups

Perceived symptoms (old)

Selected structure elements

Number of fault memories: 0 / 0

No. fault patterns: 1

Undo all

Undo

Add fault pattern

Show fault pattern

Calculate test plan

Note: fault pattern selected

4. Operate serviceprogram

Integrated Service Technical Application



VIN: Z183019

Vehicle: R/K50/R 1200 GS/USA/0A11/2012/05

KL 15: 13.9 V

KL 30: 13.9 V

Operations	Vehicle information	Vehicle management	Service plan	Favourites	Workshop/ Operating fluids	Measuring devices
Hit list	Test plan	Programming plan				

Type	Title	Status	Priority
Brake system			1
ABL	Check the brake pressure point	☒	1

Hits: 1 / 1

Filter: Default

☐ Not called

☒ Performed

☐ Minimized

☐ Canceled

☐ Suspected

Back

Filters

Show symptoms

Collapse / expand

Set standard filter

Display

4. Operate serviceprogram

4.1. choose brake circuit

Integrated Service Technical Application

VIN: Z183019 Vehicle: R/K50/R 1200 GS/USA/0A11/2012/05 KL 15: 13.9 V KL 30: 13.9 V

ABL-DIT-BIKE_ABS_CT_MK100_LUFTEINTRAG - Check the brake pressure point

Procedure

Wiring Diagram

Functional Description

Test step selection

Front brake circuit

Rear brake circuit

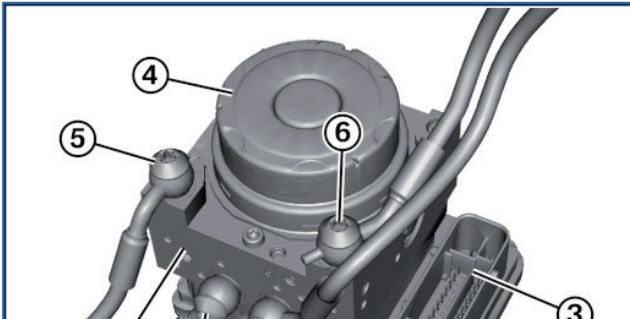
End

BMW Motorrad Integral ABS IV

The BMW Motorrad Integral ABS IV is based on the tried-and-tested MK100 from Continental-Teves and is adapted to the special requirements and functions in Motorrad.
The ABS control operation is effected separately for the front and rear wheel (2-channel ABS).

Brief component description

The ABS control unit (HECU) is made up of the hydraulic unit (HCU), the control unit (ECU) and the electrical pump motor.



Back

Measuring Devices

Keyboard

Full Screen

Update

Next

4. Operate serviceprogram

4.2. Notice instructions

Integrated Service Technical Application



VIN: Z183019 Vehicle: R/K50/R 1200 GS/USA/0A11/2012/05 KL 15: 13.9 V KL 30: 13.9 V

FUB-FUB-BIKE_ABS_MK100_SYSTEMBESCHREIBG - BMW Motorrad Integral ABS IV

Procedure

Wiring Diagram

Functional Description

Function check

The pressure point of the brake lever is checked in the following function check,

1. first with an open and then
2. with a closed ABS intake valve

Notes:

The ABS system must be completely filled as well as fully connected both hydraulically and electrically.

Intake valves

The intake valves are open for normal braking and are closed in the ABS control operation (pressure reduction phase). In the pressure build-up phase of the ABS control operation the intake valves can be held opened and closed in any position or changed (analogue valves).

Exhaust valves

The discharge valves are closed for normal braking and are open in the ABS control operation (pressure reduction phase). During the ABS control operation the position of the discharge valves switches between open and closed (digital valves).

Separator valve

The separator valve is installed in the rear brake circuit between the footbrake cylinder and the pressure side of the 2-piston pump and is open in a de-energized state. In this state brake pressure can be built up in the rear brake circuit via the footbrake. At the start of the integral braking the separator valve is closed and prevents the delivery of brake fluid to the footbrake cylinder. During integral braking the separator valve can be held open or closed in any position or changed for the pressure reduction (analogue valve).

Changeover valve

The changeover valve is installed in the rear brake circuit between the expansion tank and the intake side of the 2-piston pump and is closed in a de-energized state. At the

Back

Measuring Devices

Keyboard

Full Screen

Update

Next 

4. Operate serviceprogram

4.3. Braking system at initial state: Evaluate pressure point

Integrated Service Technical Application



VIN: Z183019 Vehicle: R/K50/R 1200 GS/USA/0A11/2012/05 KL 15: 13.9 V KL 30: 13.9 V

ABL-DIT-BIKE_ABS_CT_MK100_LUFTEINTRAG - Check the brake pressure point

Procedure

Wiring Diagram

Functional Description

Function check

Check the pressure point of the rear brake lever:

- Operate the rear brake lever several times and mind the pressure point.

Is the pressure point of the rear brake OK?

☐ Yes

☒ No, pressure point is too soft

Intake valves

The intake valves are open for normal braking and are closed in the ABS control operation (pressure reduction phase). In the pressure build-up phase of the ABS control operation the intake valves can be held opened and closed in any position or changed (analogue valves).

Exhaust valves

The discharge valves are closed for normal braking and are open in the ABS control operation (pressure reduction phase). During the ABS control operation the position of the discharge valves switches between open and closed (digital valves).

Separator valve

The separator valve is installed in the rear brake circuit between the footbrake cylinder and the pressure side of the 2-piston pump and is open in a de-energized state. In this state brake pressure can be built up in the rear brake circuit via the footbrake. At the start of the integral braking the separator valve is closed and prevents the delivery of brake fluid to the footbrake cylinder. During integral braking the separator valve can be held open or closed in any position or changed for the pressure reduction (analogue valve).

Changeover valve

The changeover valve is installed in the rear brake circuit between the expansion tank and the intake side of the 2-piston pump and is closed in a de-energized state. At the

Back

Measuring Devices

Keyboard

Full Screen

Update

Next

4. Operate serviceprogram

4.4. Braking system while ABS-inlet valve is actuated: Evaluate pressure point again

Integrated Service Technical Application

VIN: Z183019 Vehicle: R/K50/R 1200 GS/USA/0A11/2012/05 KL 15: 13.7 V KL 30: 13.7 V

ABL-DIT-BIKE_ABS_CT_MK100_LUFTEINTRAG - Check the brake pressure point

Procedure

Wiring Diagram

Functional Description

Function check

The ABS intake valve is being activated.
Check the pressure point of the rear brake lever again:

- Operate the rear brake lever several times and mind the pressure point.

Is the pressure point of the rear brake very tight?

Remaining activation time: 9 s

015

Note:
The activation can be ended at any time with "Continue".

Intake valves

The intake valves are open for normal braking and are closed in the ABS control operation (pressure reduction phase). In the pressure build-up phase of the ABS control operation the intake valves can be held opened and closed in any position or changed (analogue valves).

Exhaust valves

The discharge valves are closed for normal braking and are open in the ABS control operation (pressure reduction phase). During the ABS control operation the position of the discharge valves switches between open and closed (digital valves).

Separator valve

The separator valve is installed in the rear brake circuit between the footbrake cylinder and the pressure side of the 2-piston pump and is open in a de-energized state. In this state brake pressure can be built up in the rear brake circuit via the footbrake.
At the start of the integral braking the separator valve is closed and prevents the delivery of brake fluid to the footbrake cylinder. During integral braking the separator valve can be held open or closed in any position or changed for the pressure reduction (analogue valve).

Changeover valve

The changeover valve is installed in the rear brake circuit between the expansion tank and the intake side of the 2-piston pump and is closed in a de-energized state. At the

Back

Measuring Devices

Keyboard

Full Screen

Update

Next

4. Operate serviceprogram

4.4. Braking system while ABS-inlet valve is actuated: Evaluate pressure point again

Integrated Service Technical Application

Home

Back

Forward

Print

Search

Help

Exit

VIN: Z183019 Vehicle: R/K50/R 1200 GS/USA/0A11/2012/05 KL 15: 13.9 V KL 30: 13.9 V

ABL-DIT-BIKE_ABS_CT_MK100_LUFTEINTRAG - Check the brake pressure point

Procedure

Wiring Diagram

Functional Description

Function check

Was the pressure point of the rear brake lever very tight during the activation of the ABS intake valve?

The pressure point is very tight

No, pressure point is too soft

Intake valves

The intake valves are open for normal braking and are closed in the ABS control operation (pressure reduction phase). In the pressure build-up phase of the ABS control operation the intake valves can be held opened and closed in any position or changed (analogue valves).

Intake valves

Exhaust valves

The discharge valves are closed for normal braking and are open in the ABS control operation (pressure reduction phase). During the ABS control operation the position of the discharge valves switches between open and closed (digital valves).

Exhaust valves

Separator valve

The separator valve is installed in the rear brake circuit between the footbrake cylinder and the pressure side of the 2-piston pump and is open in a de-energized state. In this state brake pressure can be built up in the rear brake circuit via the footbrake. At the start of the integral braking the separator valve is closed and prevents the delivery of brake fluid to the footbrake cylinder. During integral braking the separator valve can be held open or closed in any position or changed for the pressure reduction (analogue valve).

Separator valve

Changeover valve

The changeover valve is installed in the rear brake circuit between the expansion tank and the intake side of the 2-piston pump and is closed in a de-energized state. At the

Changeover valve

Back

Measuring Devices

Keyboard

Full Screen

Update

Next

4. Operate serviceprogram

4.5. Summarize test result

Integrated Service Technical Application

VIN: Z183019 Vehicle: R/K50/R 1200 GS/USA/0A11/2012/05 KL 15: 13.9 V KL 30: 13.9 V

ABL-DIT-BIKE_ABS_CT_MK100_LUFTEINTRAG - Check the brake pressure point

Procedure

Wiring Diagram

Functional Description

Test result

The pressure point is too tight with a closed intake valve.
The pressure point is too soft with an open intake valve.

There is air in the rear brake circuit between the:

- ABS pressure modulator and
- rear brake caliper.

Instructions:

- Bleed rear brake.
- If applicable, carry out the "bleed pressure modulator" service function again.

Intake valves

The intake valves are open for normal braking and are closed in the ABS control operation (pressure reduction phase). In the pressure build-up phase of the ABS control operation the intake valves can be held opened and closed in any position or changed (analogue valves).

Exhaust valves

The discharge valves are closed for normal braking and are open in the ABS control operation (pressure reduction phase). During the ABS control operation the position of the discharge valves switches between open and closed (digital valves).

Separator valve

The separator valve is installed in the rear brake circuit between the footbrake cylinder and the pressure side of the 2-piston pump and is open in a de-energized state. In this state brake pressure can be built up in the rear brake circuit via the footbrake. At the start of the integral braking the separator valve is closed and prevents the delivery of brake fluid to the footbrake cylinder. During integral braking the separator valve can be held open or closed in any position or changed for the pressure reduction (analogue valve).

Changeover valve

The changeover valve is installed in the rear brake circuit between the expansion tank and the intake side of the 2-piston pump and is closed in a de-energized state. At the

Back

Measuring Devices

Keyboard

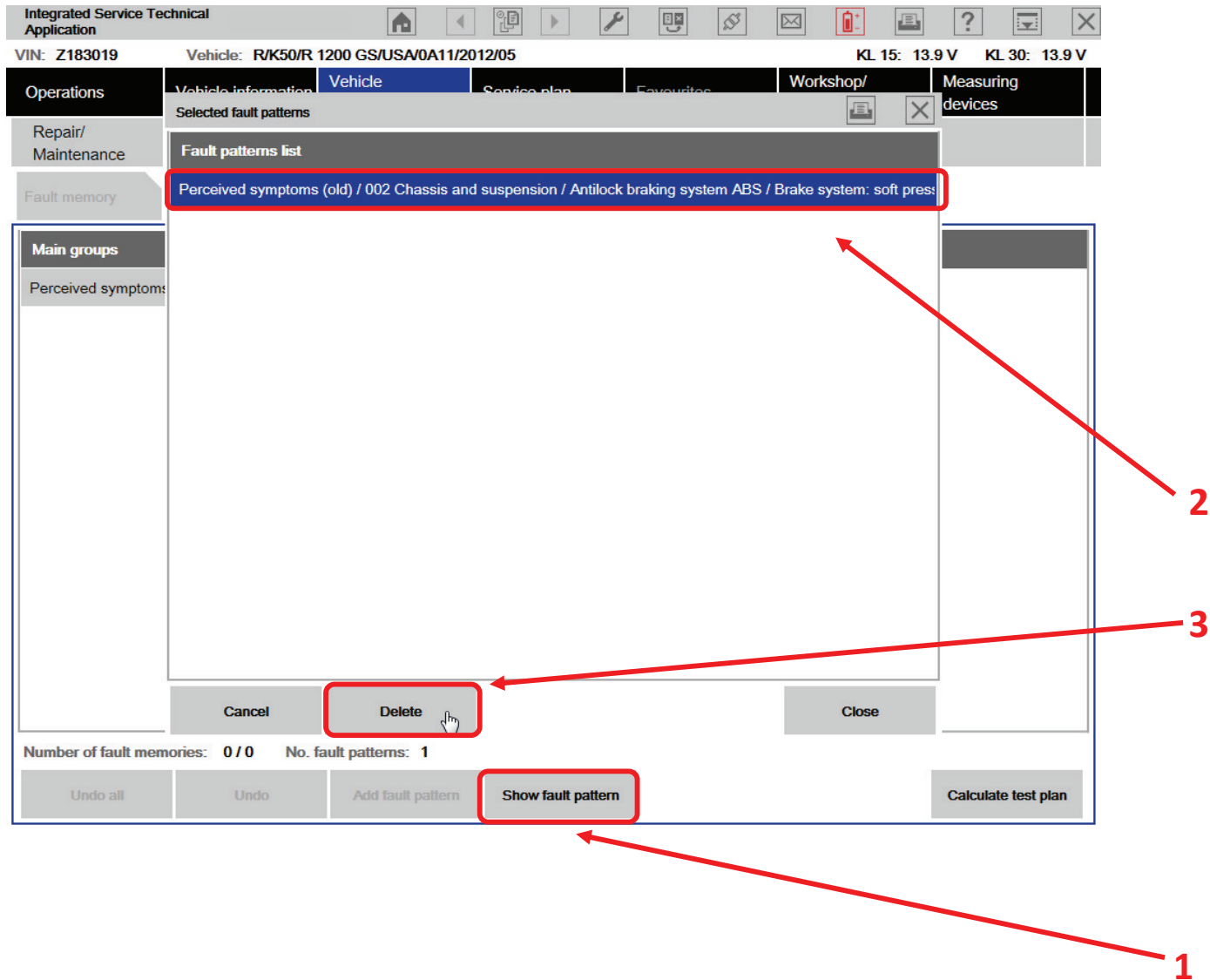
Full Screen

Update

Next

-> terminate service program.

5. Reset fault pattern



6. Display test result and diagnostic code in the operations report

Integrated Service Technical Application

VIN: Z183019

Vehicle: R/K50/R 1200 GS/USA/0A11/2012/05

KL 15: 13.9 V KL 30: 13.9 V

Operations

Vehicle information

Vehicle management

Service plan

Favourites

Workshop/
Operating fluids

Measuring
devices

Vehicle details

Repair history

Control unit tree

Control unit list

Operations report

DIAGNOSE_MODE	JOB_STATUS	OKAY
ECU function - ABS - X ABS		
Action	Function	Result
STEUERN_IO	JOB_STATUS	OKAY
ECU function - ABS - X ABS		
Action	Function	Result
STEUERGERAETE_RESET	JOB_STATUS	OKAY
Function check		
Was the pressure point of the rear brake lever very tight during the activation of the ABS intake valve?		1
The pressure point is very tight		
No, pressure point is too soft		
Test result		
The pressure point is too tight with a closed intake valve.		False
The pressure point is too soft with an open intake valve.		
There is air in the rear brake circuit between the: ABS pressure modulator and rear brake caliper.		
Instructions:		
Bleed rear brake. If applicable, carry out the "bleed pressure modulator" service function again.		
na		M0401_00000000_50_104
DIAGCODE: M0401_00000000_50_104		
Diagnosecode		
M0401_00000000_50_104		
Test step selection		3
Front brake circuit		
X Rear brake circuit		
End		

Show vehicle test

Information search