Reference Manual

F90 LCI
COMPLETE VEHICLE

Technical Training

Technical training.
Product information.

F90 LCI Complete Vehicle.

Edited for the U.S. market by:
BMW Group University
Technical Training
ST2008 7/1/2020

BMW Service

General information

Symbols used

The following symbol is used in this document to facilitate better comprehension or to draw attention to very important information:

Contains important safety information and information that needs to be observed strictly in order to guarantee the smooth operation of the system.

Originally Published: May 2020

BMW Group vehicles meet the requirements of the highest safety and quality standards. Changes in requirements for environmental protection, customer benefits and design render necessary continuous development of systems and components. Consequently, there may be discrepancies between the contents of this document and the vehicles available in the training course.

The information contained in the training course materials is solely intended for participants in this training course conducted by BMW Group Technical Training Centers, or BMW Group Contract Training Facilities.

This training manual or any attached publication is not intended to be a complete and all inclusive source for repair and maintenance data. It is only part of a training information system designed to assure that uniform procedures and information are presented to all participants.

For changes/additions to the technical data, repair procedures, please refer to the current information issued by BMW of North America, LLC, Technical Service Department.

This information is available by accessing TIS at www.bmwcenternet.com.

Additional sources of information

Further information on the individual topics can be found in the following:

- Owner's Manual
- Integrated Service Technical Application
- Aftersales Information Research (AIR)

F90 LCI Complete Vehicle.

Contents.

F90 LCI Complete Vehicle.

Contents.

F90 LCI Complete Vehicle.

1. Introduction.

A lifecycle impulse is due for the F90 in summer 2020.

There are new visual features in vehicle interior and outer area. They give the F90 LCI a more sporty look and feel compared to its predecessor. The new BMW M5 and the BMW M5 Competition now have a more striking presence.

The 2018 electrical system service pack, changeover of the user interface to the BMW Operating System 7 and enhanced driver assistance systems are technological highlights of the life cycle impulse.

BMW M5

Index	Explanation
A	F90
B	F90 LCI

1.1. Models

The following table provides an overview of the available models:

Model	F90	F90 Competition
Engine design/number of cylinders/valves	V/8/4	V/8/4
Displacement, effective [ccm]	4395	4395
Engine output [hp]	600	617
Acceleration 0 – 62 mph [s]	3.4	3.3
Transmission	M 8HP76	M 8HP76

F90 LCI Complete Vehicle.

2. Body.

2.1. Exterior equipment

2.1.1. Front

Change

- Larger BMW badge
- Modified radiator grill design
- Design changes to the bumper and the hood
- New headlight assembly design

Comparison of front of F90 before and after LCI

Index	Explanation
1	F90
2	F90 LCI

2.1.2. Rear

Change

- New bumper design with integrated exhaust pipe trim
- New rear light design with LED technology
- Full-length trim strip and rear light cluster at the tailgate

F90 LCI Complete Vehicle.

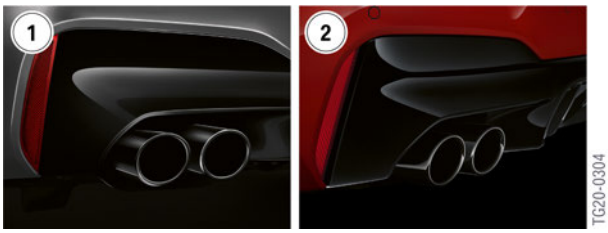
2. Body.

Comparison of rear of F90 before and after LCI

Index	Explanation
1	F90
2	F90 LCI

An independent design is to be used for the tailpipe trims of the F90 LCI.

The exhaust tailpipes of the standard M Sport exhaust system have been retained in black chrome.



Comparison of the tailpipe trims in the F90 LCI

Index	Explanation
1	Tailpipe trims F90
2	Tailpipe trims F90 LCI

F90 LCI Complete Vehicle.

2. Body.

2.2. Interior equipment

2.2.1. Operating elements in center console

The switch for the sports exhaust system (SA 1MA) has been added to the switch panel of the center console. The two keys Setup and M Mode are also a new feature.

Changes can be made to the engine, chassis and steering settings via the Setup key.

Preset M modes can be called up via the M Mode key.

Overview of center console F90 LCI

Index	Explanation
1	Gear selector switch
2	Controller
3	Automatic Hold
4	Electromechanical parking brake
5	Surround View
6	Park Distance Control
7	Switch for electrically controlled sports exhaust system
8	Setup/M-Mode key
9	Dynamic Stability Control

F90 LCI Complete Vehicle.

3. Drive.

3.1. Engines

The drive system of the F90 LCI is equipped with the latest generation of the S63B44T4 engine.

Further information can be found in "ST1916 S63TU4 Engine" reference manual.

3.1.1. Exhaust system

The F90 LCI features new tailpipe trims with a diameter of 85 mm.

F90 LCI Complete Vehicle.
4. Chassis and Suspension.

4.1. Electronic Power Steering

The EPS of the F90 LCI is now only equipped with 2 instead of 3 characteristic curves.

The F90 LCI no longer features the SPORT+ characteristic curve. The SPORT characteristic curve was retuned and optimized.

4.2. Shock absorber

The F90 Competition LCI now includes the shock absorbers of the F93.

These improve not only the handling in the limit range, but also the comfort experience.

4.3. Integrated RDCi tire pressure monitor

The F90 LCI is equipped with the Tire Pressure Monitor integrated (RDCi) which is incorporated into the Dynamic Stability Control (DSC). There are different system suppliers depending on the vehicle type. This must be taken into consideration when replacing the wheel electronics.

4.3.1. Electronic tire pressures plate

The F90 LCI is equipped with the electronic tire pressure specification which was introduced in the G30 (BMW 5 Series). For the valid tire inflation pressures, check the Central Information Display (CID).

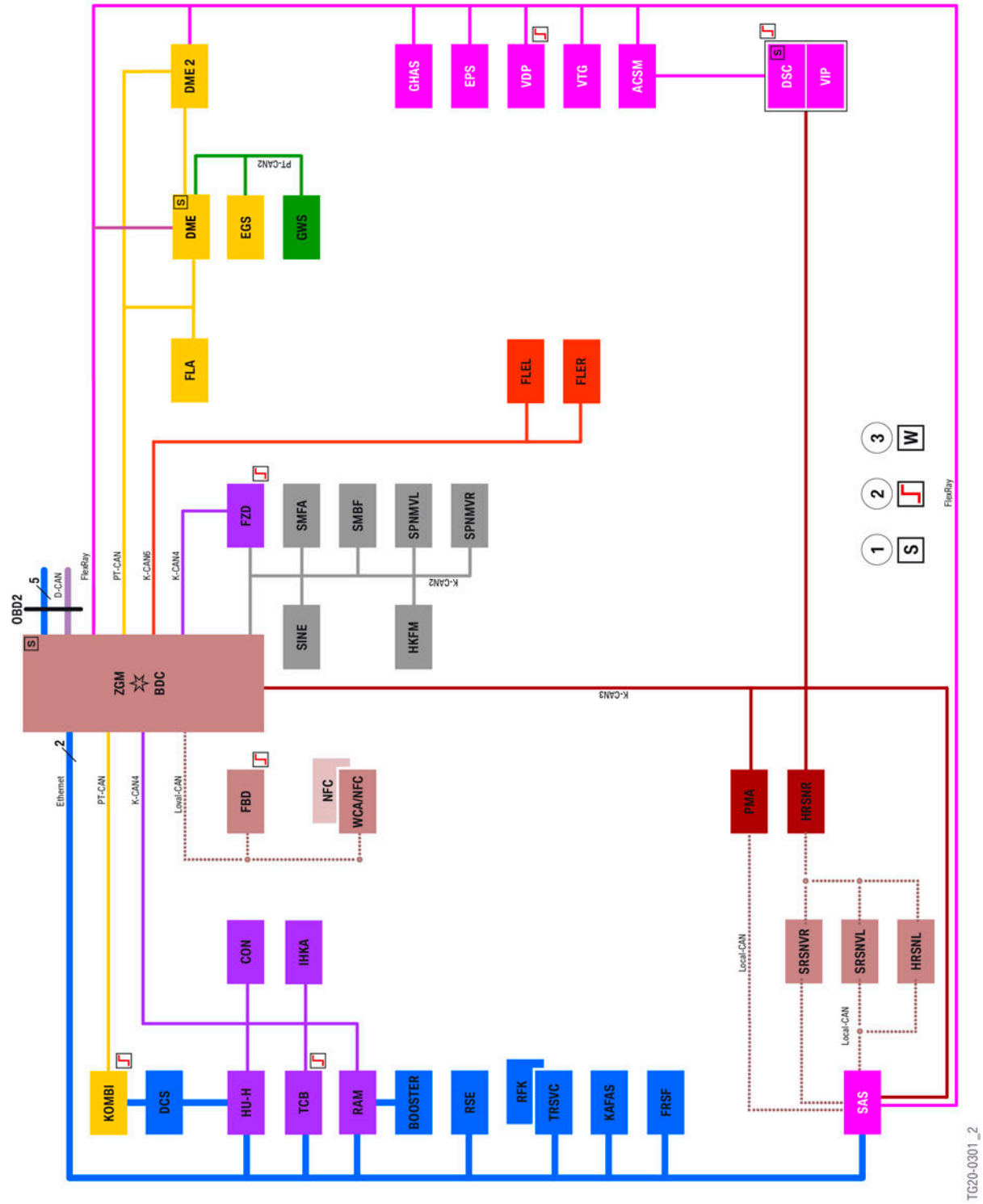
The RDC reset is omitted following adjustment of the tire inflation pressures in vehicles with activated electronic tire pressure specification.

Further information can be found in the "ST1604 G30 Complete Vehicle" reference manual.

F90 LCI Complete Vehicle.

5. General Vehicle Electronics.

5.1. Bus overview



Data bus overview of F90 LCI

F90 LCI Complete Vehicle.
5. General Vehicle Electronics.

Index	Explanation
ACSM	Advanced Crash Safety Module
BDC	Body Domain Controller
Booster	Booster
CON	Controller
DCS	Driver Camera System
DME	Digital Motor Electronics
DME2	Digital Engine Electronics 2
DSC	Dynamic Stability Control
EGS	Electronic transmission control
EPS	Electromechanical Power Steering
FBD	Remote control receiver
FLA	High-beam assistant
FLEL	Frontal Light Electronics Left
FLER	Frontal Light Electronics Right
FRSF	Front radar sensor long range
FZD	Roof function center
GHAS	Regulated rear axle differential lock
GWS	Gear selector switch
HU-H	Head Unit High
HKFM	Tailgate function module
HRSNL	Rear radar sensor short range left
HRSNR	Rear radar sensor short range right
IHKA	Integrated automatic heating / air conditioning
KAFAS	Camera-based driver assistance systems
KOMBI	Instrument cluster
NFC	Near Field Communication
PMA	Parking Assistant
RAM	Receiver Audio Module
RFK	Rear view camera
RSE	Rear Seat Entertainment
SAS	Optional equipment system
SINE	Siren with tilt alarm sensor
SMBF	Front passenger seat module
SMFA	Driver's seat module
SMBFH	Seat module, front passenger's side, rear

Index	Explanation
SPNMVL	Seat pneumatics module front left
SPNMVR	Seat pneumatics module front right
SRSNVL	Side radar sensor short range front left
SRSNVR	Side radar sensor short range front right
TCB	Telematic Communication Box
TRSVC	Top rear side view camera
VDP	Vertical Dynamic Platform
VIP	Virtual Integration Platform
VTG	Transfer box
WCA/NFC	Wireless charging station with control electronics for Near Field Communication
ZGM	Central gateway module
1	Start-up node control units for starting and synchronizing the FlexRay bus system
2	Control units authorized to perform wake-up function
3	Control units also connected at terminal 15 WUP

5.2. Exterior lights

5.2.1. Headlight

The F90 LCI only features LED headlights. The design was reworked and therefore has a flatter appearance.

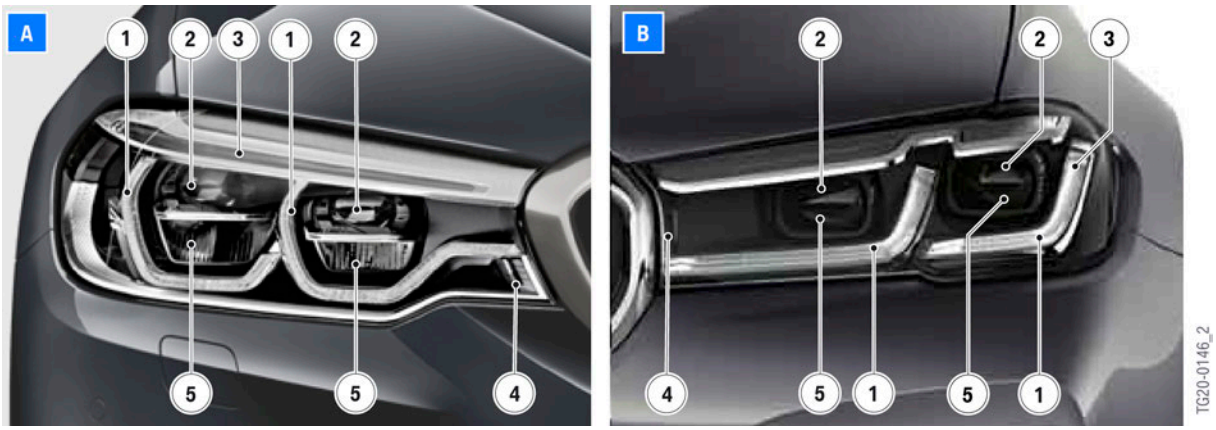
The Adaptive LED Headlights no longer feature a swiveling LED module. The BMW Selective Beam is implemented via matrix segments (individual LEDs switched off). A headlight cleaning system is discontinued.

F90 LCI Complete Vehicle.
5. General Vehicle Electronics.

The following equipment specifications are offered:

- Adaptive LED headlights

Features



Comparison of F90 and F90 LCI BMW Adaptive LED design

Index	Explanation
A	F90
B	F90 LCI
1	Side light, daytime driving lights
2	Low-beam headlight
3	Turn indicator
4	Cornering light
5	High beam

5.2.2. Rear lights

In addition to a new design, the rear lights of the life cycle measure have full-LED technology, including the rear fog lights.

The rear lights and brake lights are assembled in the same lighting chamber.

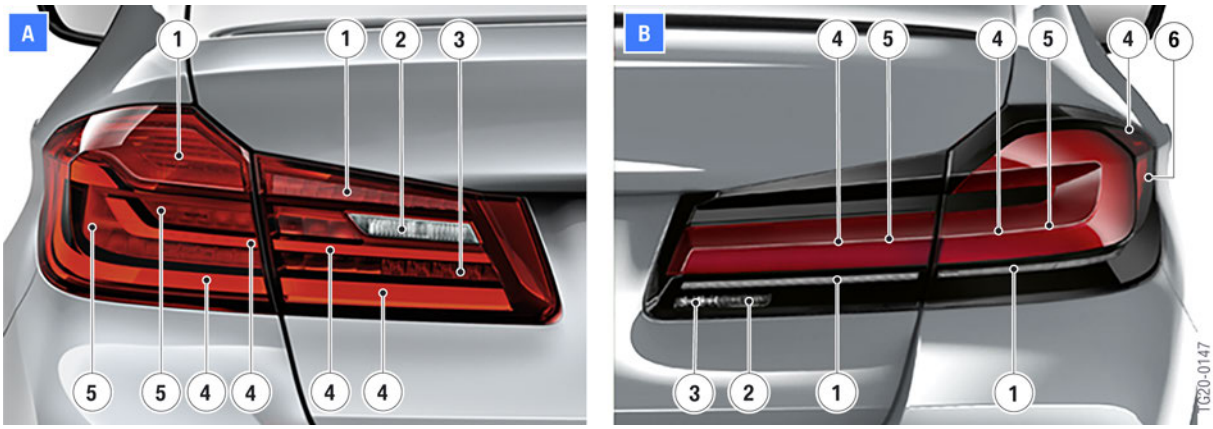
The turn indicator extends across both light units in the tailgate and the side section.

The rear light now stretches over the tailgate and connects the tail lights on the driver and passenger side.

F90 LCI Complete Vehicle.

5. General Vehicle Electronics.

Features



Comparison of F90 and F90 LCI rear light design

Index	Explanation
A	F90
B	F90 LCI
1	Turn indicator
2	Reversing light
3	Rear fog light
4	Tail light
5	Brake light
6	Clearance light

F90 LCI Complete Vehicle.

6. Driver Assistance Systems.

This life cycle measure involves the reworking and further expansion of the diverse range of driver assistance systems in the F90. The F90 LCI features the Service Pack 2018 electrical system. By developing innovations, we continue along the road to highly automated driving. Many of the systems and functions presented in this reference manual have also been introduced in other models equipped with Service Pack 2018. These are mainly vehicles with the optional equipment "Active Driving Assistant Plus" (SA 5AU).

6.1. Further information

This reference manual presents the new features and modifications to the driver assistance systems in the F90 LCI. The following product information items provide basic descriptions of the new features as well as familiar driver assistance systems for specific systems:

Reference manual	Information on	
ST1858 Driver Assistance Systems 2018 (new features)	• KAFAS-Mid-Camera • KAFAS-High-Camera • Driver Camera System (DCS) • Collision/Pedestrian Warning • Lane Departure Warning • Emergency Stop Assistant	• Extended Traffic Jam Assistant • Intersection Collision Warning • Active Cruise Control with Stop&Go function • Automatic Parking (PMA) • Back-up Assistant • Evasion Aid
ST1831 G05 Driver Assistance Systems (new features)	• Daytime Pedestrian Warning • Intersection Collision Warning • Lane Departure Warning • Automatic Lane Change	• Cruise Control • Automatic Parking (PMA) • Back-up Assistant
ST1501 G12 Driver Assistance Systems (already known)	• Collision Warning • Speed Limit Info • Intersection Warning • Lane Departure Warning • BMW Night Vision • Surround View	• Remote 3D View • Park Distance Control (PDC) • Crossing Traffic Alert at the front/rear • Parking Maneuver Assistant (PMA) • Active Lane Keeping Assistant • Evasion Aid

F90 LCI Complete Vehicle.
6. Driver Assistance Systems.

6.2. Overview

6.2.1. Offer structure "Driving"

The purpose of the following tables is to provide an overview of the dependencies between the offer structure and driver assistance systems used as well as their system components. Furthermore, they also list all driver assistance systems available in the F90 LCI. This overview represents the information status at the series launch of the European version of the F90 LCI. Depending on the market and country, other driver assistance systems or function characteristics as well as a different offer structure can be used.

Standard equipment

Active Guard (SA 5AV)	
• Front Collision Mitigation • Daytime Pedestrian Protection	

Dynamic Cruise Control (SA 544)
• Speed Limiter • Speed Limit Assistant

Active Driving Assistant (SA 5AS)	
• Lane change warning • Rear Cross Traffic Alert • Collision/Pedestrian Warning • Active Lane Keeping Assistant • Speed Limit Info • Speed Limit Assistant	

F90 LCI Complete Vehicle.
6. Driver Assistance Systems.

Optional equipment

The following optional equipment is available in the F90 LCI:

- Active Driving Assistant Professional (SA 5AU), contains Active Driving Assistant (SA 5AS) and Active Cruise Control with Stop&Go function (SA 5DF)
- Extended Traffic Jam Assistant (SA 5AR), only in connection with optional equipment Active Driving Assistant Professional (SA 5AU)

Active cruise control with Stop&Go function (SA 5DF)

- Active Cruise Control with Stop&Go function (up to 130 mph)
- Frontal Collision Mitigation
- Daytime Pedestrian Warning
- Speed Limit Info
- Speed Limit Assistant
- Distance Information

Active Driving Assistant Professional (SA 5AU)

- Extended Traffic Jam Assistant
- Active Lane Keeping Assistant with Active Side Collision Protection
- Active Cruise Control with Stop&Go function (up to 130 mph)
- Front Cross Traffic Alert
- Speed Limit Assistant
- Intersection Collision Warning
- Emergency Stop Assistant
- Lane Change Assistant

F90 LCI Complete Vehicle.
6. Driver Assistance Systems.

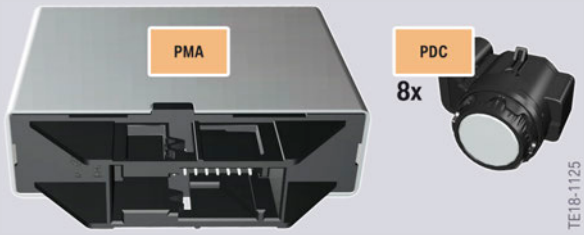
6.2.2. Offer structure "Parking"

Optional equipment

The optional equipment Parking Assistant Plus (SA 5DN) is available with the new F90 LCI. The optional equipment BMW Drive Recorder (SA 6DR) is also available for the first time in the F90. However, this is coupled to the optional equipment Parking Assistant Plus (SA 5DN) in the Executive Package (SA ZEC).

Park Distance Control (SA 508)

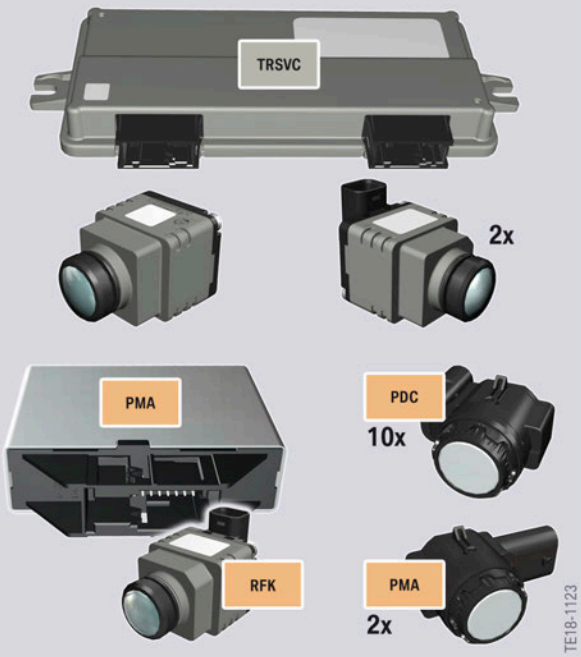
- Front and rear
- Auto PDC



Vehicles not equipped with the Parking Maneuver Assistant (PMA) but with the Park Distance Control (PDC) have a separate control unit, which is recognized as the PMA control unit by the diagnosis tester and is also referred to by this name in the bus diagram. In other words, there is no longer a difference in the naming of the PDC and PMA control unit. There are nevertheless differences between the control units with regard to the hardware version and the software is adapted accordingly.

Parking Assistant Plus (SA 5DN)

- Automatic Parking (PMA) with parallel and perpendicular parking and leaving parking space
- Back-up Assistant
- Active Park Distance Control (PDC)
- Side protection
- Rear view camera
- Surround View
- Panorama View (GPS-based)
- Remote 3D View (only with Remote Services (SA 6AP))

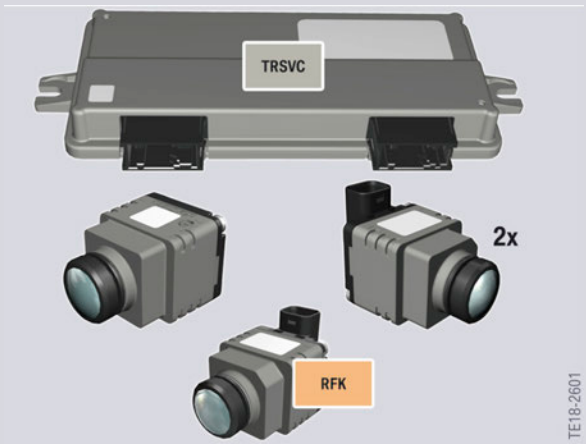


F90 LCI Complete Vehicle.

6. Driver Assistance Systems.

BMW Drive Recorder (SA 6DR)
(only with SA 5DN)

- Event Recorder
- Crash Recorder



Remote Control Parking (SA 5DV)
(only with SA 5DN)

- Remote controlled maneuvering in and out of a parking space with the BMW display key

F90 LCI Complete Vehicle.
6. Driver Assistance Systems.

6.2.3. Innovations

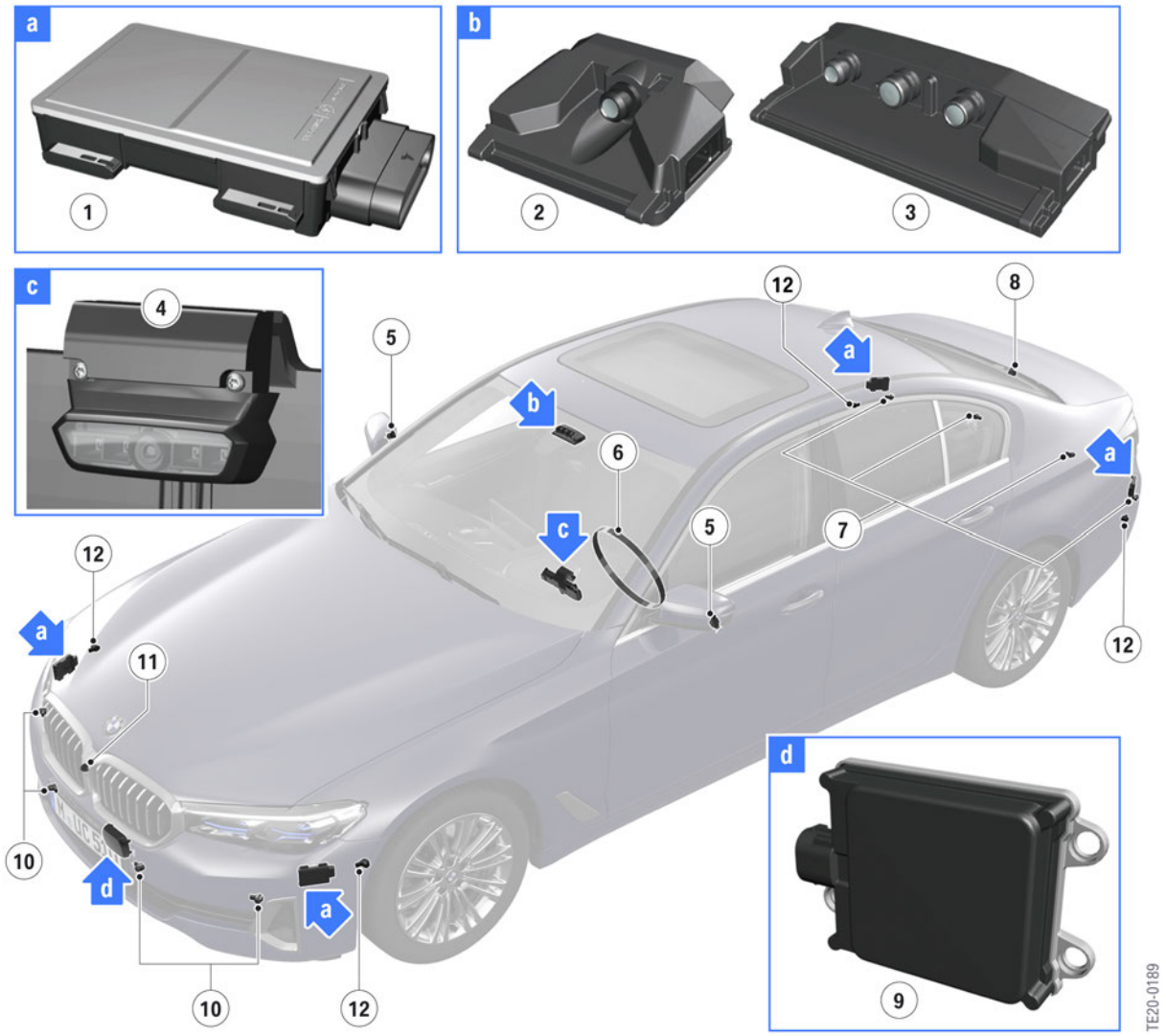
- The instrument cluster has a camera which points at the driver (Driver Camera System DCS).
- The optional equipment Driving Assistant Plus (SA 5AT) is now Active Driving Assistant Professional (SA 5AU).
- There is a new MODE button in the Driver Assistance System control panel on the multifunction steering wheel.
- LED displays on the steering wheel (only with optional equipment Active Driving Assistant Professional SA 5AU).
- The Daytime Pedestrian Warning now also warns of the presence of cyclists (SA 5AU and SA 5DF).
- With the Speed Limit Assistant, the speed limit ahead can be automatically adopted by the cruise control system when the customer accepts the recommendation.
- The Evasion Aid now also takes pedestrians into account.
- The Intersection Collision Warning has been extended to include a city braking function.
- The Night Vision camera is not longer built into the LCI.
- The optional equipment Active Driving Assistant Professional (SA 5AU) now includes the Emergency Stop Assistant and the Lane Change Assistant.
- For the first time, Automatic Parking now supports maneuvering out of parallel parking spaces.
- The parking assistance button no longer needs to be held pressed when parking with the Automatic Parking.
- The BMW Drive Recorder (SA 6DR) is available as optional equipment.
- The remote-controlled parking function (SA 5DV) can be activated with the engine running.

6.2.4. Sensor installation locations

Depending on the vehicle equipment, the sensors shown are used. New or revised sensors are illustrated enlarged.

F90 LCI Complete Vehicle.

6. Driver Assistance Systems.



F90 LCI overview of assistance system sensors (G30 LCI shown)

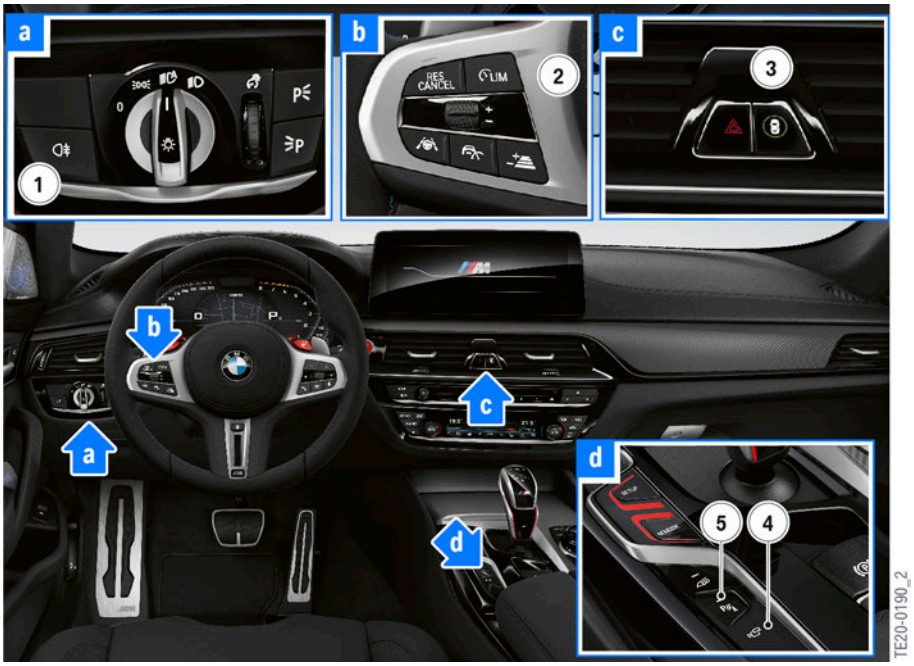
Index	Explanation
1	Side radar sensors (HRSNR, HRSNL, SRSNVR, SRSNVL)
2	KAFAS-Mid-Camera
3	KAFAS-High-Camera
4	Driver Camera System (DCS)
5	Side view camera
6	Capacitive sensor mat on steering wheel rim
7	Ultrasonic sensors for Park Distance Control (PDC), rear
8	Rear view camera (TRSVC)
9	Front radar sensor long range (FRSF)

Index	Explanation
10	Ultrasonic sensors for Park Distance Control (PDC), front
11	Front camera
12	Ultrasonic sensors for Parking Maneuver Assistant (PMA)

6.3. Operating elements

When driving, the driver assistance systems are operated by means of 4 operating elements:

- Light operating unit
- Control panel on the multifunction steering wheel
- Intelligent Safety button
- Buttons in the center console



F90 LCI operating elements of driver assistance systems

Index	Explanation
1	Light operating unit
2	Control panel for driver assistance systems on the multifunction steering wheel
3	Intelligent Safety button
4	Panorama View button
5	Parking assistance button

F90 LCI Complete Vehicle.
6. Driver Assistance Systems.

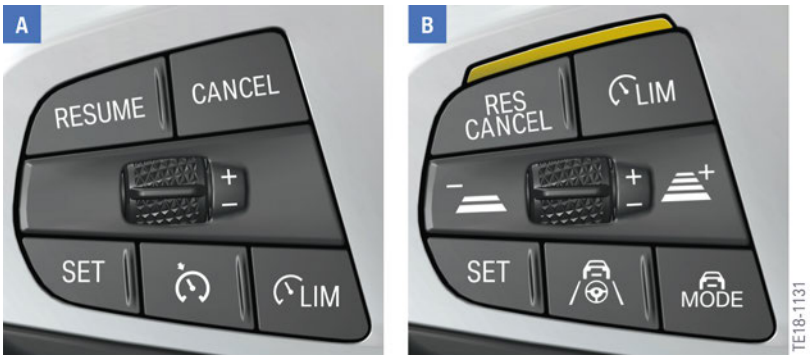
The settings within the Intelligent Safety menu are made via the Controller. This chapter only deals with the operating facilities relevant to the driver assistance systems.

6.3.1. Light operating unit

As before, the operating unit is configured with a mechanical rotary switch. The BMW Night Vision function has been omitted in the F90 LCI.

F90 LCI light operating unit

6.3.2. Multifunction steering wheel



F90 LCI control panel for driver assistance systems on the multifunction steering wheel

Index	Explanation
A	Operating panel standard equipment
B	Operating panel for "Active Driving Assistant Professional" optional equipment (SA 5AU)

A detailed explanation of the individual keys and corresponding functions can be found in “ST1831 G05 Driver Assistance Systems” reference manual.

With the Active Driving Assistant Professional optional equipment (SA 5AU), the number of driver assistance systems exceeds the number of buttons on the multifunction steering wheel. That is why the control of the driver assistance systems has been changed. The assistance system is selected using the MODE button. The selection is then confirmed with the Assist button (to the left).

F90 LCI Complete Vehicle.
6. Driver Assistance Systems.

With the optional equipment Active Driving Assistant Professional (SA 5AU) there is an LED above the left and right control panel respectively. The two LEDs supplement the displays on the instrument cluster and the instructions on the Central Information Display (CID).

- Green: The assistance system is active and is carrying out the lateral guidance (market-specific).
- Yellow: Interruption of the assistance system is imminent.
- Red: The assistance system is deactivated.

F90 LCI settings menu for LED light elements in the CID

Index	Explanation
1	Menu "Feedback via steering wheel"
2	Light-emitting elements at the multifunction steering wheel (switch on and off)

The LEDs can be deactivated via the iDrive menu:

- "Settings"
- "Driver assistance"
- "Feedback via steering wheel"
- "Light-emitting elements"

6.3.3. Intelligent Safety button

The intelligent safety button, already known from the F90, has been adopted without change. It facilitates central operation of the driver assistance systems. The systems can be switched on or off directly and the Intelligent Safety menu can also be called to personalize the settings via the intelligent safety button.

6.3.4. Parking assistance button

The parking assistance button no longer needs to be pressed while parking with the Parking Maneuver Assistant (PMA). It is sufficient to activate this once.

F90 LCI Complete Vehicle.
6. Driver Assistance Systems.

6.4. New range of functions of Active Cruise Control (ACC)

6.4.1. Adaptive distance adjustment

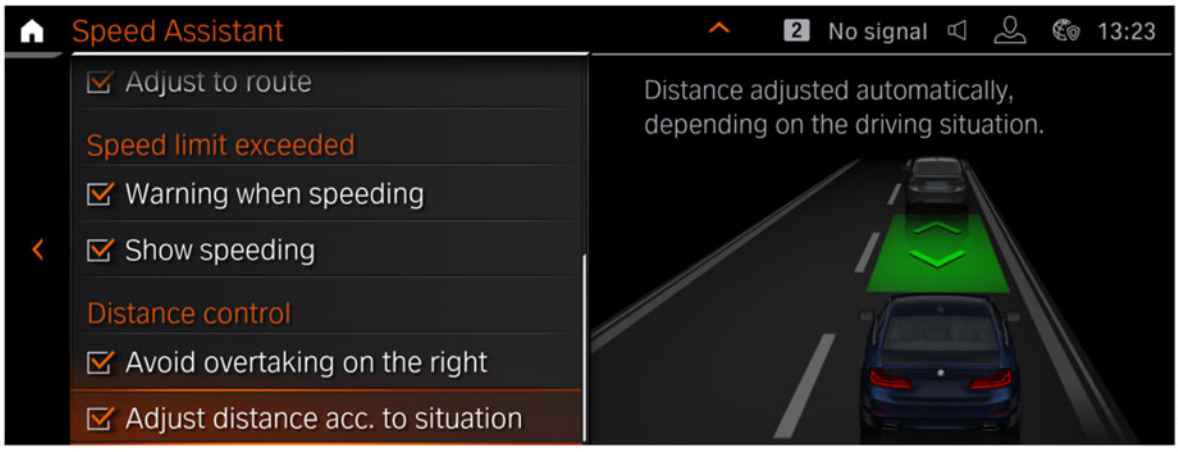
A further innovation is the adaptive adjustment of the distance to the vehicle in front when ACC is activated. This distance is automatically adapted to the driving situation. Several examples are provided here:

- The distance is automatically **reduced** if the system detects a dynamic driver. This happens if the accelerator pedal is operated frequently when Cruise Control is active.
- If there are many vehicles traveling at a similar speed in the adjacent driving lane, there is a risk of these pushing in front of the driver's own vehicle. In this case the distance is also slightly **reduced**.
- If the function detects that a vehicle in front is being driven erratically, poor weather or poor visibility, the distance is **increased** for safety reasons.

The following rules are observed when changing the distance:

If the distance is set to distance 1 and automatically increases, it will always be smaller than distance 2. If the distance is set to level 3, it will always be greater than level 2 when reduced automatically with the maximum adjustment. Distance 1 is a special case. The distance can only be increased in this case because it is already very close to the legal minimum distance.

To experience the adaptive distance adjustment, the driver must activate it in the Cruise Control menu.



Activation of the adaptive distance adjustment

F90 LCI Complete Vehicle.
6. Driver Assistance Systems.

6.5. Lane change with active route guidance

6.5.1. Functional principle

The "lane change with active route guidance" is a new sub-function of the route progress control system. It actively helps the driver not to miss exit or highway junctions. If the vehicle detects during active navigation that the driver needs to change lanes one or several times in order to exit the highway, the function provides assistance by locating a suitable gap in the adjacent lane. Once this has been identified, the speed is adapted automatically and the driver is prompted to change lanes (if active: with the Lane Change Assistant).

6.5.2. Functional sequence

Step 1:

The function indicates to the driver 1.8 miles at the latest before the exit that if he wants to follow the route selected he should move out of the lane he is currently driving in.

Step 2:

The availability of the function "lane change with active route guidance" is displayed shortly afterwards.

Availability of the function

Step 3:

Depending on the traffic density, the number of lane changes required and the speed driven, the vehicle starts aligning itself alongside a gap in traffic identified in the adjacent lane.

Step 4:

The request to change lane is then displayed when the vehicle is alongside the gap:

Request for lane change in Assisted Driving View

If the gap is large "Activate lane change. Observe traffic" is displayed (Lane Change Assistant). If the gap is smaller "Perform lane change manually" is displayed (manual lane change).

Step 5:

Depending on the situation, the driver can also receive additional information in the form of a haptic feedback signal from the steering wheel immediately after the text message is displayed.

Steps 1-5 are repeated until the vehicle is in the exit lane. In addition to highway exits, the function also responds to highway junctions and driving lanes coming to an end.

6.5.3. Functional prerequisites

So the function can also do what it is supposed to do, the following prerequisites must be met:

- The vehicle is on a highway.
- The vehicle is traveling at least 37 mph.
- The Cruise Control with Stop&Go function is active.
- The steering and lane control assistant is active.
- The Lane Change Assistant is activated.
- The route progress control system is activated.

If one of these prerequisites has not been met, the function cannot be performed.

6.5.4. Additional Information

"Lane change with active route guidance" is designed for drivers who are not familiar with the locality. This explains why the vehicle moves in the direction of the highway exit relatively early. The main aim is not to miss any more exits and to reach the exit ramp as quickly as possible. A more defensive driving style is therefore adopted in this case.

If the traffic volume is high, the function may not be able to find a suitable gap in the traffic. The driver then receives a visual signal that he must follow the route without assistance.

In poor weather conditions, when snow is on the road for example, there may be functional limitations when attempting to find a gap.

F90 LCI Complete Vehicle.
7. Infotainment.

The F90 is equipped with service pack 2018 as part of the life cycle impulse.

The F90 LCI is equipped as standard with the Head Unit High 3 HU-H3 with flash memory instead of a hard drive.

The performance capacity therefore corresponds to the current status of the technology. Highlights worth mentioning in this case are the processor, working memory and flash memory capacity. The Head Unit High 3 has a 2.4 GHz 4-core processor, 6 GB RAM and a 128 GB flash memory.

To offer the customer access to technical developments as quickly as possible, the components and control units have been restructured and given a modular design.

Head Unit High 3 Flash HU-3_F (with eMMC flash memory)

7.1. Head Unit High 3 (HU-H3)

7.1.1. Hardware

The Head Unit High 3 in the F90 LCI is still accommodated in the 1.5" DIN housing.

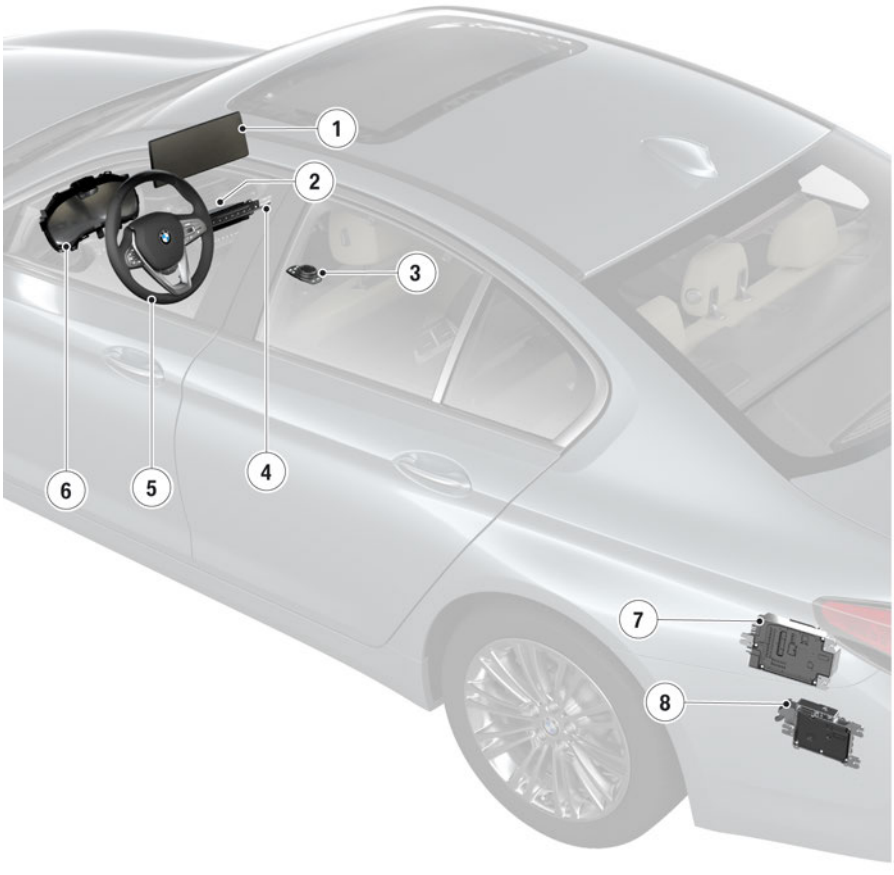
7.1.2. Remote software upgrade

If the customer wants to perform a BMW Remote Software Upgrade, this can only be done once the engine has cooled down. A corresponding warning appears in the CID.

7.1.3. System components

Here you can find an overview of the system components of the head unit high 3.

F90 LCI Complete Vehicle.
7. Infotainment.



F90 LCI overview of Head Unit High 3 system components

Index	Explanation
1	Central information display (CID)
2	Head unit
3	Controller (CON)
4	Audio operating unit
5	Multifunction steering wheel (MFL)
6	Instrument cluster (KOMBI)
7	Receiver Audio Module (RAM)
8	Booster

7.1.4. USB port

There are USB ports in the front center console between the cup holders and in the storage compartment under the center armrest.

The connection in center console is a USB type A and delivers 1.5 A charging current.

The connection under the center armrest is USB type C and delivers 3 A charging current.

The data transfer is performed with the standard USB 2.0.

7.2. Receiver Audio Module (RAM)

The RAM was used for the first time in the G05.

Depending on the equipment, the following functions are integrated in the RAM:

- AM/FM tuner
- DAB tuner
- Aerial diversity
- Audio amplifier (stereo system, hi-fi system)

Further information on the RAM can be found in "ST1857 Infotainment 2018" reference manual.

7.3. Booster

The booster is used in the F90 LCI and is an additional audio amplifier in the vehicle.

Further information on the booster can be found in the "ST1857 Infotainment 2018" reference manual.

7.4. Navigation system

The hardware of the navigation system consists of the familiar fixed Central Information Display (CID) with touch function and resolution of 1920x720 pixels, the Head Unit High 3 HU-H3 and the iDrive Controller CON. In terms of key assignment, the controller is the same as the familiar model used in the F90.

For more information, such as new features of the system, refer to "ST1857 Infotainment 2018" reference manual.

F90 LCI Complete Vehicle.
7. Infotainment.

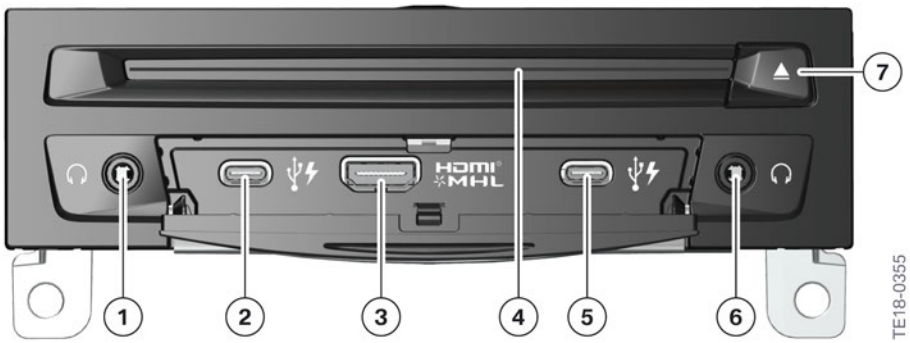
7.5. Rear seat entertainment system

The concept of the rear seat entertainment system is retained. The following changes are incorporated into the optional equipment Rear-seat entertainment – BMW Professional (SA 6FH) as part of the life cycle impulse:

- 10.2" monitors with a resolution of 1080 p on the backrests of the front seats
- Head unit high 3 with 2.4 GHz processor and 4 cores
- 8 GB RAM
- 32 GB flash memory
- 2 type C USB ports, each with 3 A charging current and data transfer in accordance with standard USB 2.0
- Resolution of the zone separation
- Access to sources in the front head unit (CD, DVD, USB and Bluetooth audio).

7.5.1. Head Unit High 3

Front view



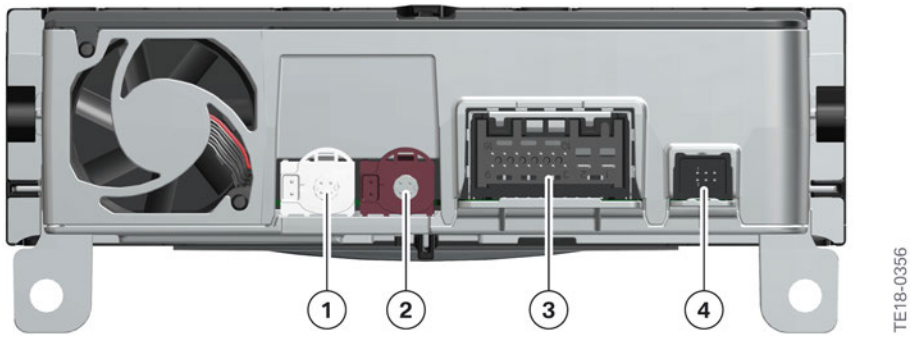
Front view of RSE HU-H3

Index	Explanation
1	Headphones socket, left
2	USB port, type C, left
3	HDMI/MHL connection
4	Blu-ray drive
5	USB port, type C, right
6	Headphones socket, right
7	Eject button for Blu-ray drive

F90 LCI Complete Vehicle.

7. Infotainment.

Rear view



Rear view of RSE HU-H3

Index	Explanation
1	APIX connection for rear compartment display, right
2	APIX connection for rear compartment display, left
3	Main connector
4	Ethernet connection

F90 LCI Complete Vehicle.
8. Displays and Controls.

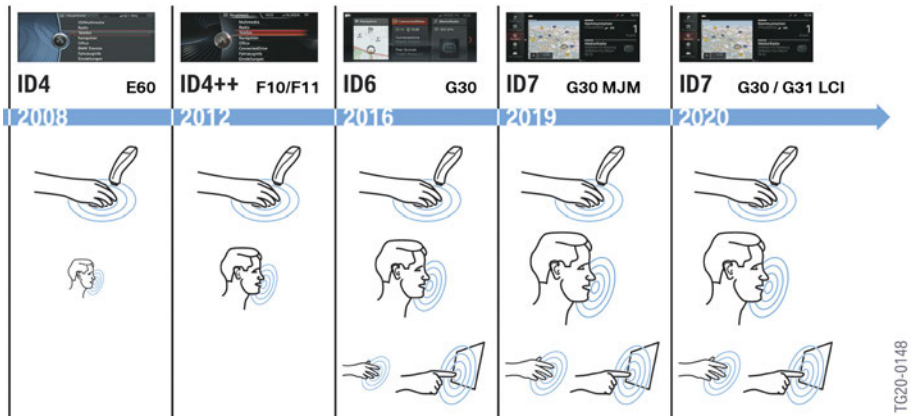
The display and operating concept of the F90 has been retained and has undergone systematic further detailed development as part of the life cycle impulse. The biggest change is the integration of the BMW Operating System 7.

As the basic display elements and their operation are already known from the F90, only the changes are dealt with here. Additional information can be found in “ST1855 Displays and Controls 2018” reference manual.

8.1. Operating elements

8.1.1. Overview

The latest generations of the operating elements are increasingly designed around several operating options. The touch control of the 12.3" large Central Information Display CID is one of the most important operating options of the BMW Operating System 7. This now displays contents at a resolution of 1920x720 pixels. The BMW Operating System 7 can now be controlled with voice input and gestures. The Controller with touch operation is also the central operating element in vehicles equipped with the BMW Operating System 7.



Overview of operation of the previous generations

8.1.2. Gesture control

The current gesture control is integrated into the F90 LCI and more detailed information on the individual gestures can be found in "ST1855 Displays and Controls 2018" reference manual.

8.1.3. BMW display key

The BMW display key can be charged in the wireless charging station. This can now be found in the center console.

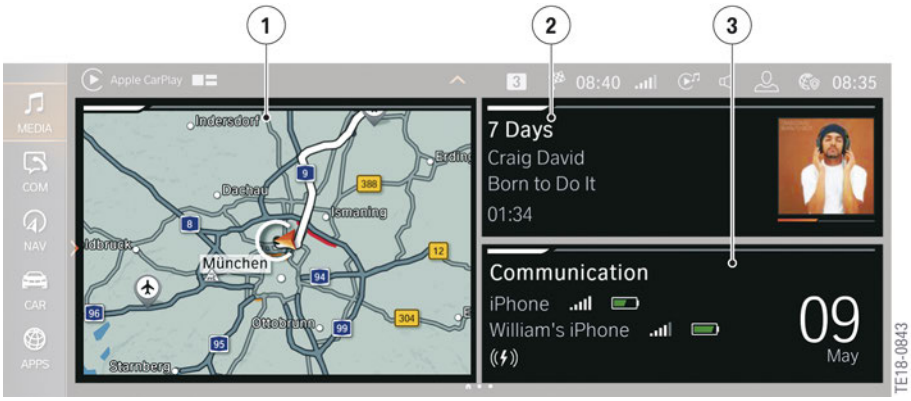
8.2. BMW Operating System 7

The BMW Operating System 7 provides a completely new display and operating structure. The tiles, as used in the ID5 or ID6 for example, are no longer used in the BMW Operating System 7.

F90 LCI Complete Vehicle.
8. Displays and Controls.

The displays in the main menu can be customized even more by the driver.

Up to 4 contents can be displayed on the main page. However, it is also possible to display content enlarged, extended across half a page.



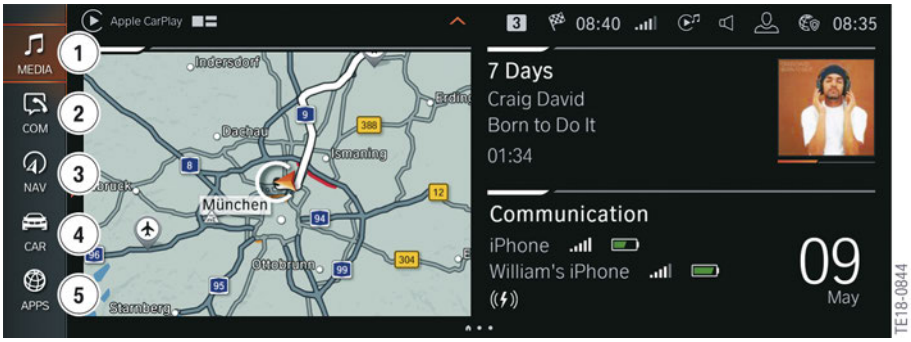
Main page of Central Information Display

Index	Explanation
1	Navigation widget
2	Radio/Media widget
3	Communication widget

8.2.1. Main menu bar

The individual menus are displayed in the toolbar in the left area of the main menu.

There is a total of 5 menus in the toolbar.



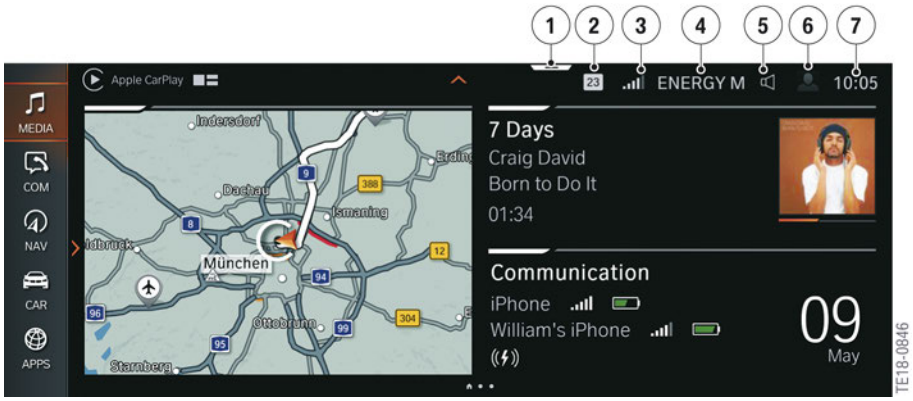
Menus on Central Information Display

F90 LCI Complete Vehicle.

8. Displays and Controls.

Index	Explanation
1	Media
2	Communication
3	Navigation
4	My Vehicle
5	Apps

There is direct access to some menus. However, this can only be achieved with a touch input on the Central Information Display (CID). This example below shows which menus can be jumped to directly and which settings can be made there:



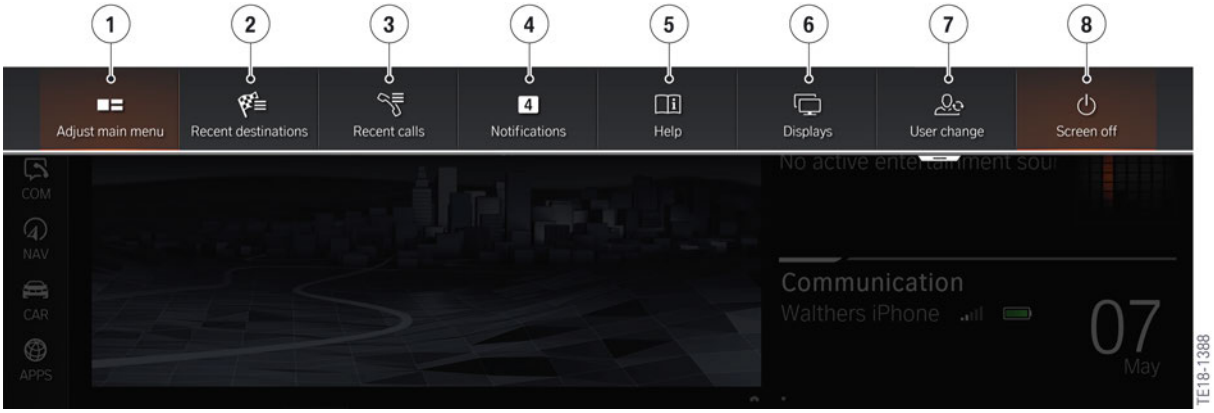
Displays on Central Information Display

Index	Display	Direct opening
1	Display bar	A description of the display bar will be provided separately
2	Messages	Read current pending or unread messages
3	Signal strength of mobile phone	Communication setting
4	Entertainment source	Media setting
5	Volume control	Sound ON/OFF
6	Profile picture	Driver profiles
7	Time	Time and date setting

8.2.2. Display bar

If the display bar is dragged down by touch, a window is opened via which certain menus or settings can be called up. The content is predefined and cannot be personalized. However, the content may vary depending on which functions are currently carried out in the vehicle. For instance, with active route guidance the point "Recent destinations" is no longer displayed.

F90 LCI Complete Vehicle.
8. Displays and Controls.



Display bar

Index	Explanation
1	Configuration of main menu
2	Recent destinations
3	Last calls
4	Current or unread messages
5	Help
6	Display settings
7	Select driver profiles
8	Display OFF

There is no longer a favorites view (last 20 menus selected) with the BMW Operating System 7.

Further information on the BMW Operating System 7, the operation and the submenus can be found in "ST1855 Displays and Controls 2018" reference manual.

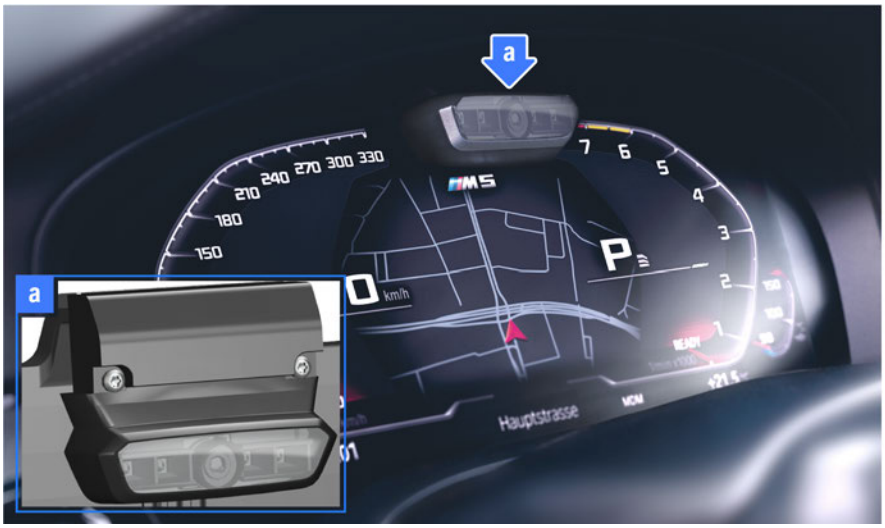
8.3. Display elements

8.3.1. M instrument cluster

The M instrument cluster of the F90 LCI is based on the multi-functional instrument panel (12.3" TFT display) of the F91/F92 and is thus already known from these vehicles.

F90 LCI Complete Vehicle.

8. Displays and Controls.



M instrument cluster F90 LCI

Detailed information on the instrument cluster can be found in the document “ST1915 F91/F92 Complete Vehicle” reference manual.