InControl Touch Pro

InControl Touch Pro is Jaguar Land Rover's premium, high end platform for infotainment, providing new fast and powerful hardware and software. The system embraces the 'connected car' concept, initially through significantly enhanced navigation and 'connected' services, such as traffic, fuel and parking (where available) and dynamic live routing. The 'connected car' concept is also achieved by extending wireless and wired connectivity for passengers, through capabilities such as Wi-Fi and HDMI.

E178522

Key Feature Summary

- Touch Screen (TS) with multi-touch gestures and integrated voice interaction:
    - Swipe – Flicking – Panning – Pinching – Zoom
    - 17 languages, 3 of which support natural input: UK/US English, Chinese (Mandarin)
    - Fewer steps required to complete TS functions
- Home screens with customer controlled widgets provide 'at-a-glance' status and access to frequently used functions
- Increased multimedia handling capabilities:
    - Media library – significantly enhanced support for USB memory stick
    - Wide range of wired connectivity solutions – USB, HDMI, MHL
    - 10GB user storage
    - Automatic switching from HD to FM when signal degrades
- Multiple antenna for HD and FM
- Navigation system with connected features and services:
    - Multi-touch gestures – panning – pinching – zoom
    - Commute Mode – no need to set destination for regular journeys (HERE navigation only)
    - Door-to-door routing using Companion App and/or web portal
    - Approach mode (HERE navigation only)
    - Full Instrument Cluster (IC) integration
- InControl Apps™ including InControl Wi-Fi™

InControl Touch Pro has a new 10.2-inch, 21:9 1280 x 542 pixel front Touch Screen. The hard keys on either side of the screen are deleted and the corresponding functions are replaced by soft keys at the bottom of the TS.

InControl Touch Pro 10.2-inch Screen

E178518

Item	Description	Item	Description
1	The principle screen area is identical to the 8 inch screen	4	Direct access to the core features
2	A choice of side panels provides direct access to frequently used features; swipe up/down to switch between 1 of 5 panels	5	Direct access to parking and camera features
3	Back, Home and Settings	6	Replaced physical buttons

System Interaction

Touch Screen Interaction

InControl Touch Pro is built around a sensitive multi-touch TS, which provides response and support for gestures, such as swipe to flick between home screens, or directly navigating maps by panning and pinching to zoom. These 'direct' interactions allow significantly less customer interaction, being potentially safer to use.

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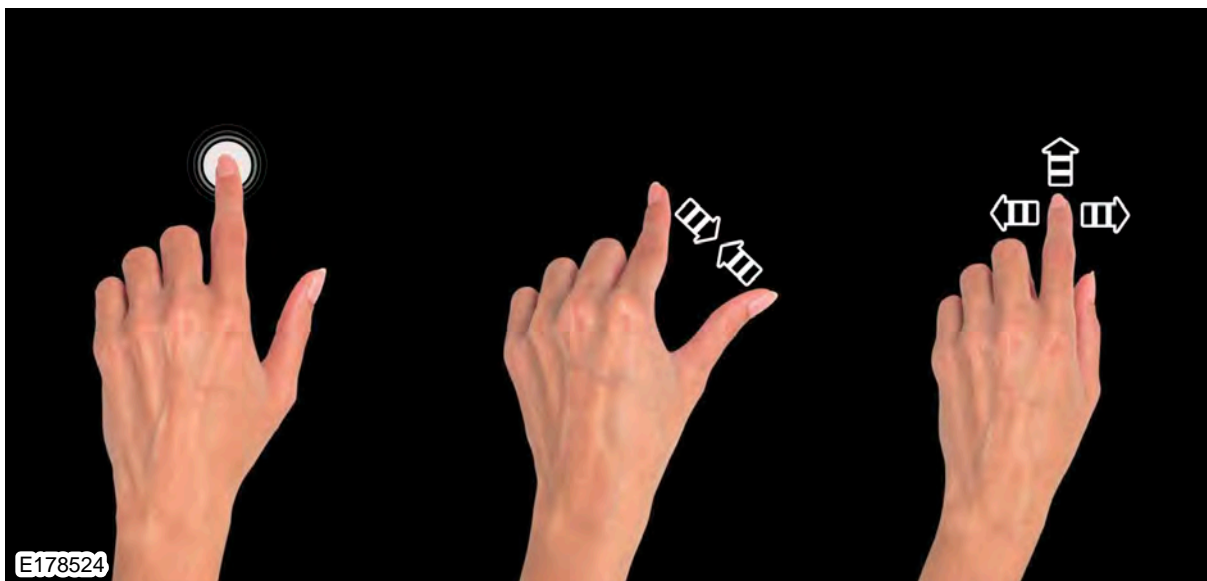
Voice Interaction

The system also includes advanced voice recognition technology, allowing the user to carry out a number of common tasks with a single interaction rather than multiple steps and constant clicking.


E167677

The system provides the following functions:

- Uses a voice recognition solution, stored on the system Solid State Drive (SSD) providing instant response
- Natural speech delivery for English (UK and US) and Chinese (Mandarin) – the system operates with natural phrases, not tied to specific terminology to carry out a specific task
- Conversational interaction – encourages further interaction
- Helpful error feedback rather than 'unable to perform the request'

Touch Screen Interface

The TS interface allows various interactions within the context of the current chosen application.
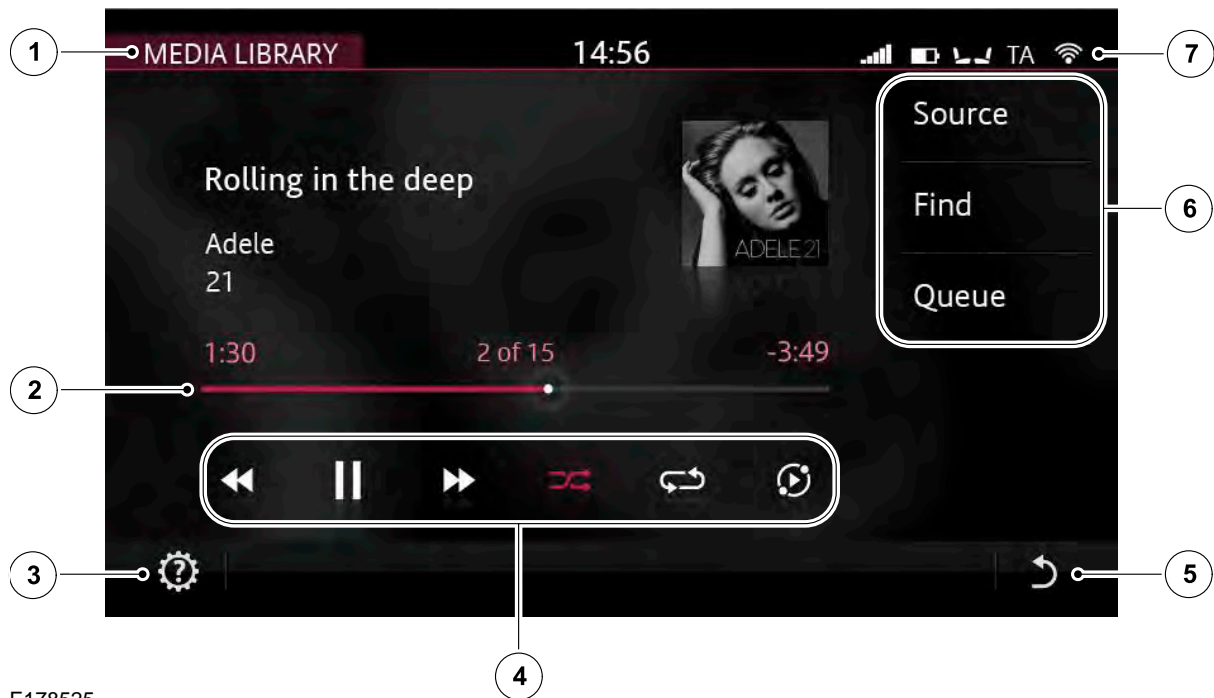
E178525

Item	Description	Item	Description
1	Screen title	5	Back/return soft key
2	Interactive progress bar	6	Controls to access other views within the context of the current application
3	Settings soft key	7	Status bar – indicates phone signal, time, seats and other active functions
4	Current function control soft keys		

Touch Screen Customization: Widgets

Customers can create their own customized 'home screen' using a variety of 'widgets'. These provide shortcuts to specific features and functions, as well as contacts from their address book. Widgets (where applicable) can be sized depending on the complexity of the information and preferences of the user.

The content library organizes the available widgets according to function. Users can easily add additional home screens if a larger canvas is required to add further features, functions or shortcuts.
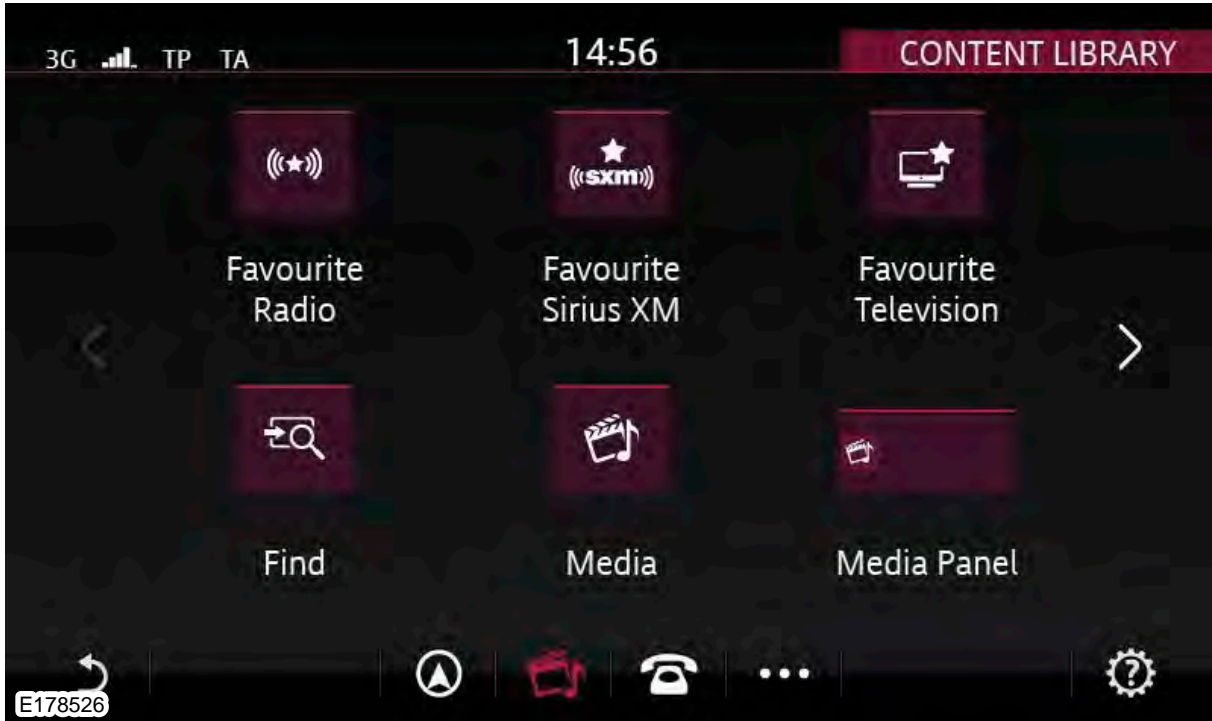
InControl Touch Pro Navigation

E178816

The new fully integrated navigation system, with connected services, provides a number of significant features:

- Fast destination entry
- Predictive destinations
- Expanded IC display
- Door-to-door routing
- Approach mode

Market Coverage

The InControl Touch Pro infotainment platform is built around three navigation systems dependent on region: Rest of World (ROW), China (including Hong Kong and Macao) and Japan. These are powered by the HERE, AutoNavi and NNG navigation systems respectively. The features and operation of each system is marginally different as a result. The availability of connectivity and features may vary across the market regions. Map updates are via USB download.

E178523
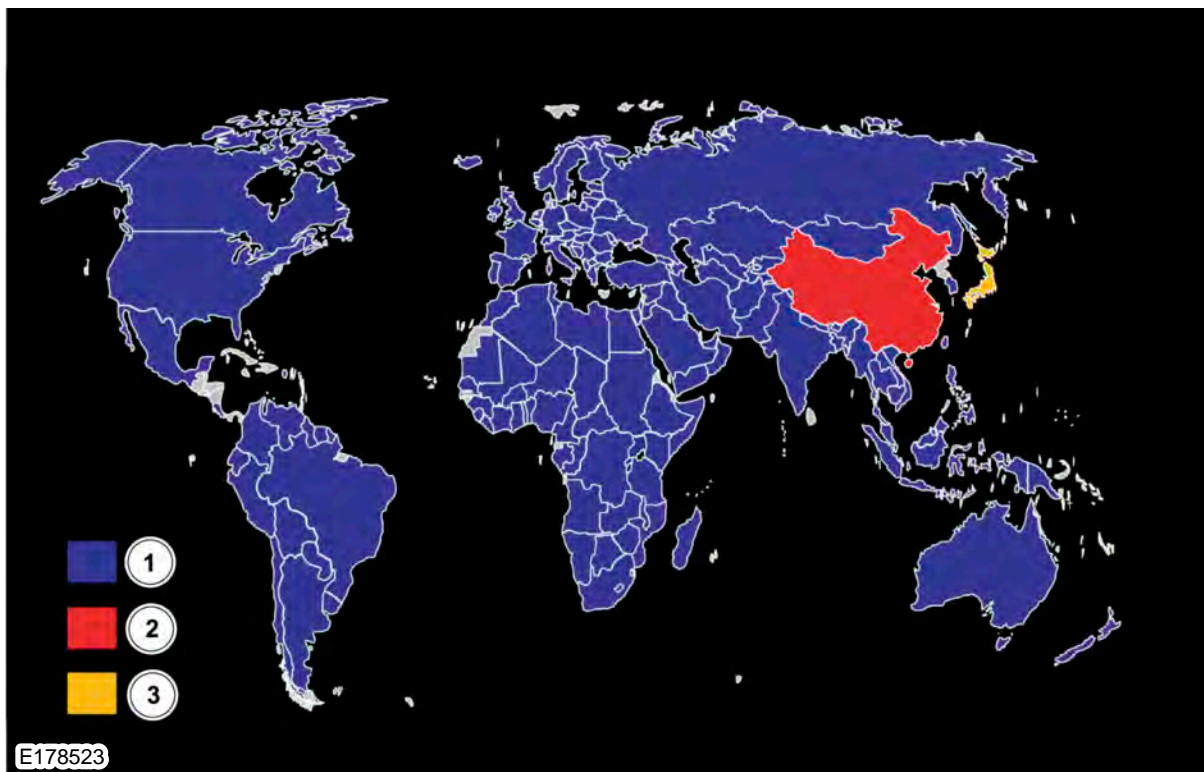
Item	Description	Item	Description
1	HERE (Nokia) – Rest Of World (ROW)	2	AutoNavi – China, Hong Kong and Macao
3	NNG – Japan		

Rest Of World (ROW) Navigation

The navigation system functionality is integrated with smartphones and web connectivity. The following table provides an overview of key features.

Door to Door Function	Personal Guidance	Daily Drive Relevance	Online and Offline
Smartphone Companion App and portal for route and destination planning*	Arrival mode – visual destination reference* and simple parking integration	Commute Mode – predictive destinations based on the user driving habits/journeys with live predicted estimated time of arrival*	Onboard maps
Syncing of places and destinations between embedded application and Cloud*	Tiles homepage for saved searches	Real time traffic*	On/off board points of interest
Simple handover between legs of the journey and transit modes*		Parking and fuel finders*	Onboard 3D and 2D views
Public transport and pedestrian guidance integrated for door to door guidance*		Share estimated time of arrival and place information*	
		Safety cameras	
		Live Search – always up to date. Reviews/ratings and street views integrated into the view*	

NOTE: * Requires data connection.

Door-to-Door Route Planning

The 'Route Planner' Companion App for android and iOS provides a function to manage destinations and routes, as well as door-to-door navigation.
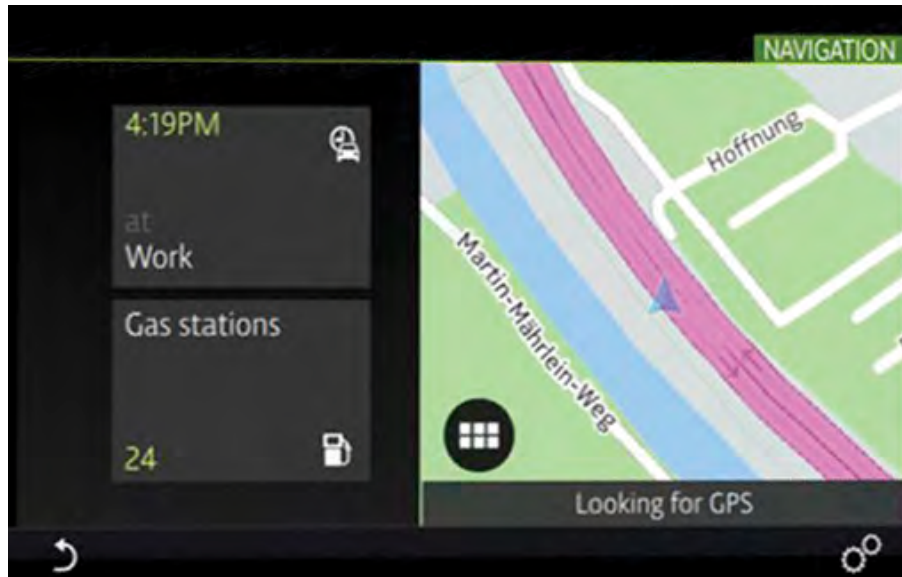

E178817

| Item	Description	Item	Description
1	Set destination via smartphone Route Planner App or web portal	4	Reach the limit of road available, handover to smartphone for pedestrian/public transport guidance
2	Directions to vehicle via smartphone Route Planner App	5	Reach final destination
3	Start the engine, route handover to the vehicle navigation system		

Commute Mode

The system learns the user's commute. Before starting the journey, the feature automatically advises of the expected journey time based on time of day, live and historical traffic movements. The system learns the routes taken for a given destination and advises which of those is the shortest.


E178818

Fuel Finder

Alerts the user to insufficient fuel for the journey when setting a destination, and provides a link to the nearest fuel filling station.
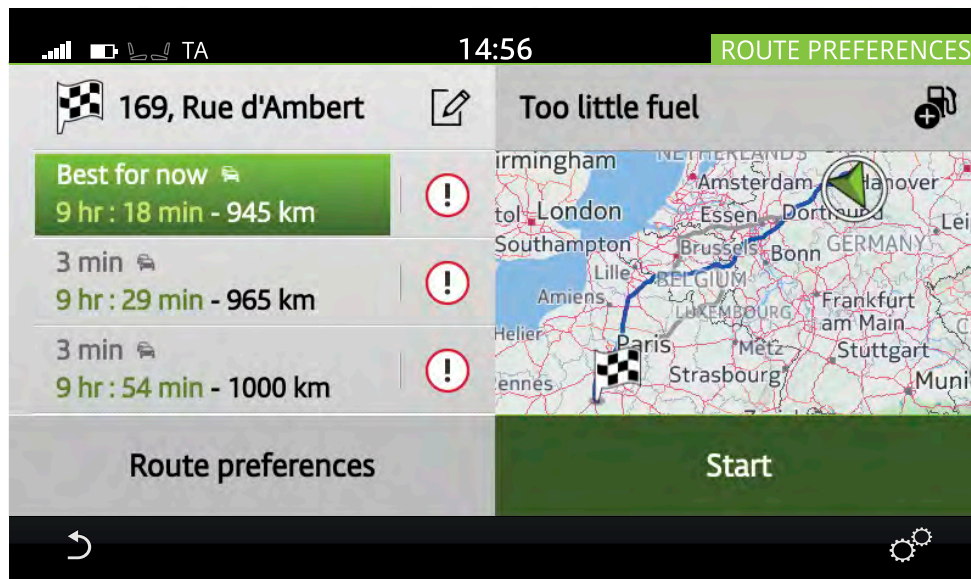

E178819

Arrival Mode and Parking

A visual reference of the destination, in the form of an interactive 360° view, is automatically shown as the vehicle reaches approximately 200 meters from the destination. Selection of the parking function soft key displays the nearest car park information. Where supported, parking availability is also shown. Selecting the desired car park updates the 'guided to' destination.
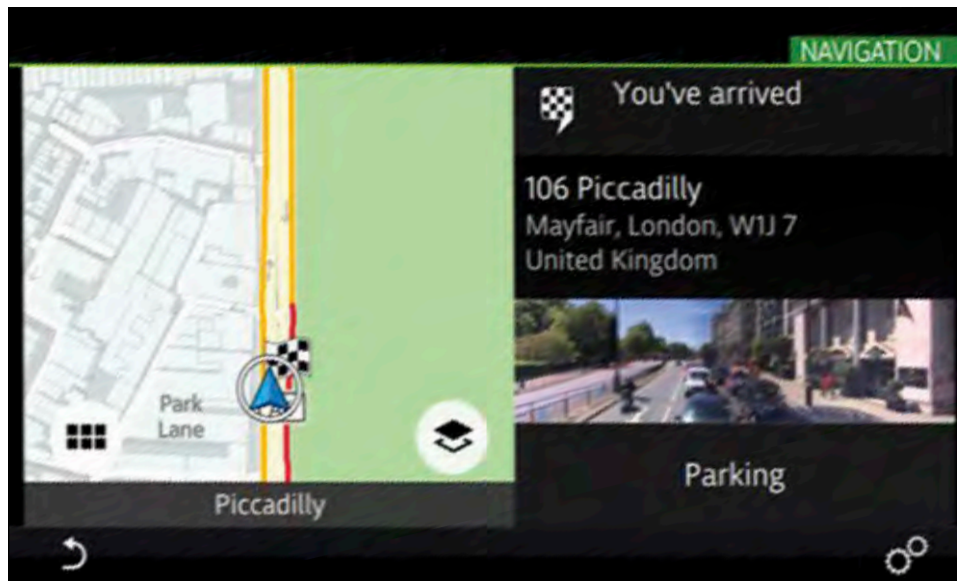
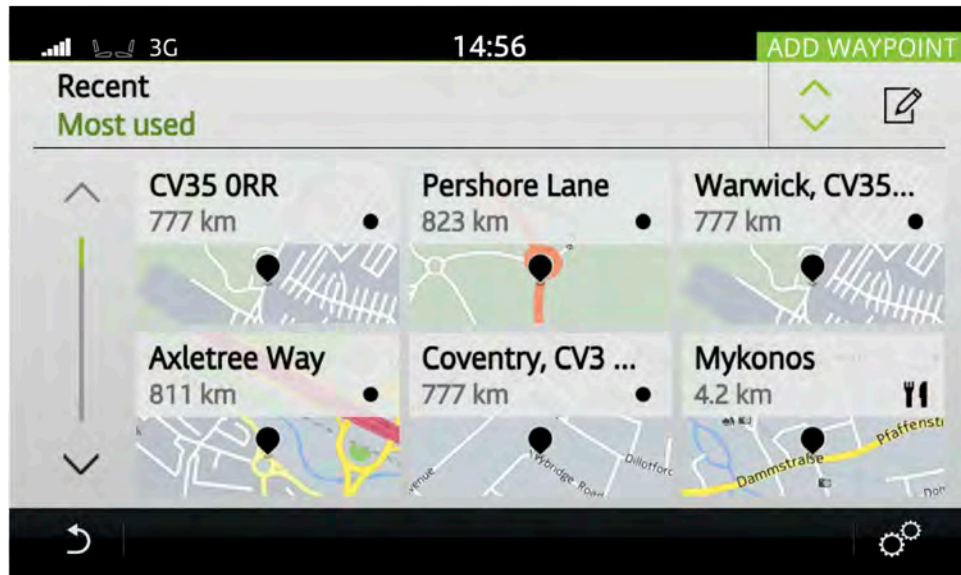

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Real Time Traffic

'Real Time Traffic' provides significantly greater amounts of road coverage detail than conventional broadcast based traffic information systems, making it easier to plan routes either manually or automatically. The system continuously updates, based on live information.
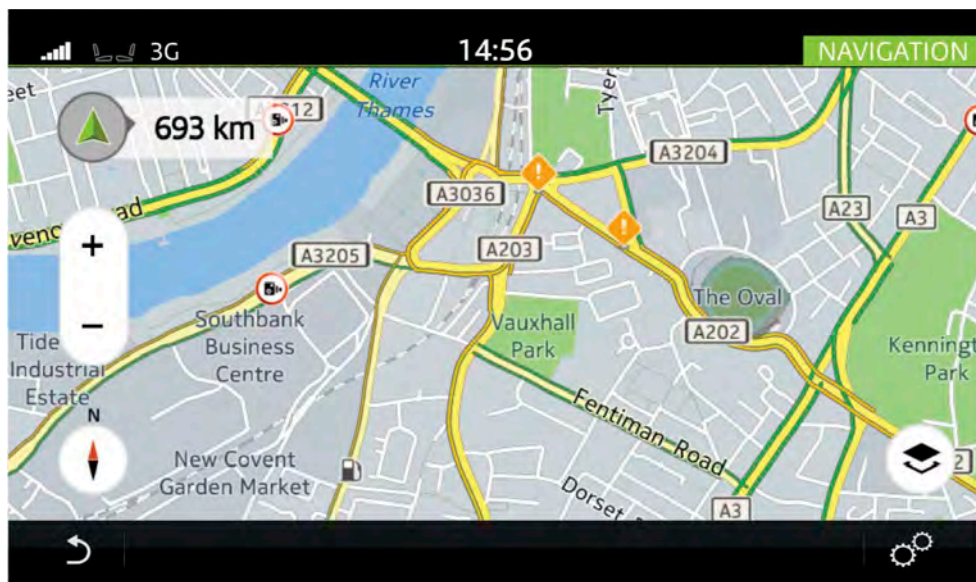
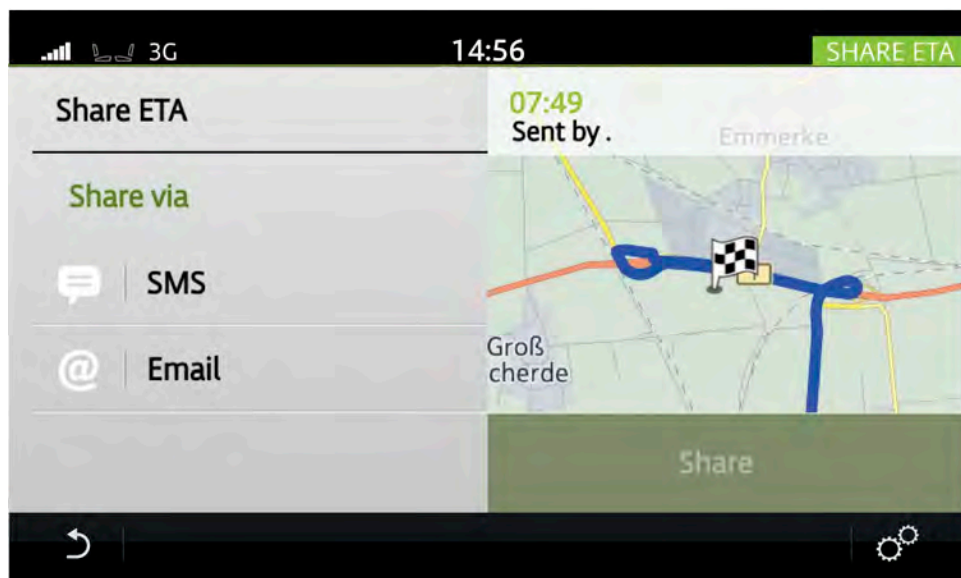E178821

Sync and Sending

This function allows the user to Sync favorites, recent places, routes and destinations between the Companion App, portal and the IMC navigation software.

E178822

Sharing

This function allows the user to share destination, estimated time of arrival and current location with friends and family via email or SMS. If the estimated time of arrival extends by over 5, 10 or 20 minutes (user choice), the system will automatically follow up with an updated estimated time of arrival.
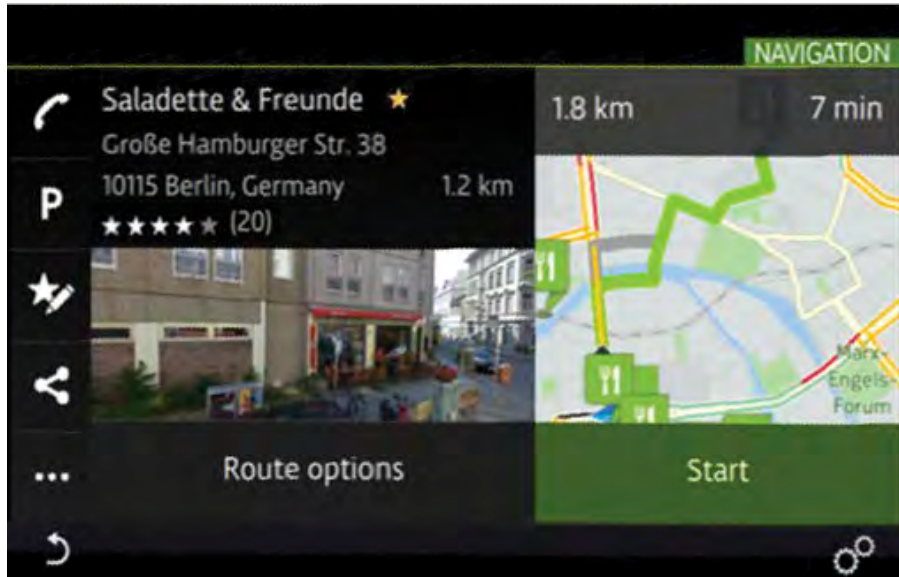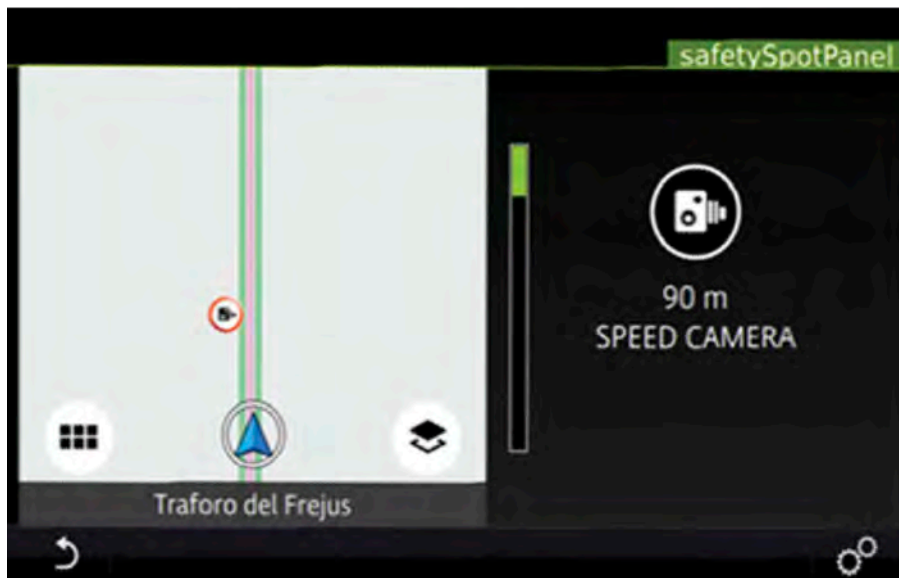
E178823

Live Search

Using Trip Advisor, Lonely Planet, Qype and other information sources, the user can search online for places of interest, view the surroundings and read reviews. The information can be shared with others directly from the system.

E178824

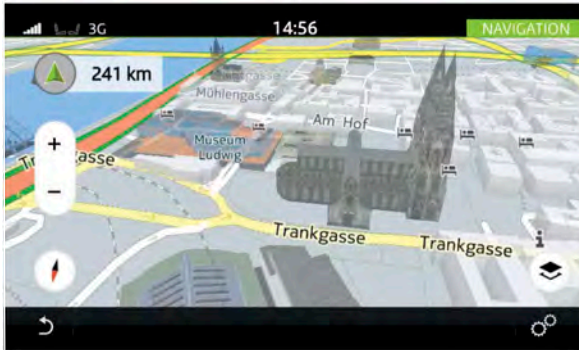**Safety Cameras**

The user is alerted to potential black spots by indicating the position of safety cameras.
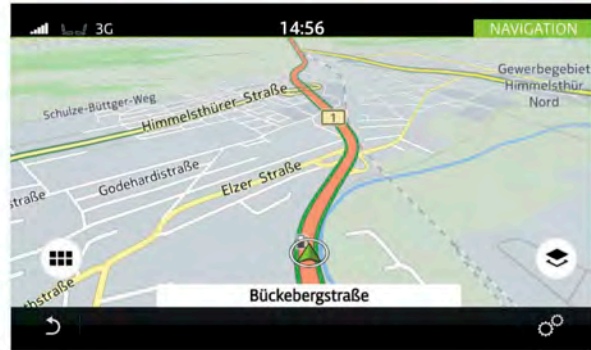

E178825

Alternative Views

The user has various map views to choose from, including 2D, 3D and satellite.

E178826

TFT Instrument Cluster (IC) View

Vehicles equipped with a 12.3-inch TFT Instrument Cluster (IC) have the option to display a full screen navigation page.


E179787

Navigation Updates

InControl Touch Pro navigation mapping updates are downloaded to the Solid State Drive (SSD) of the Infotainment Master Controller (IMC). Mapping data is supplied on a USB memory stick. Updates are carried out by the Jaguar Retailer. The following outline process is based on the Rest of World (ROW) HERE navigation system.

To access the InControl Touch Pro map activation and download data, the Jaguar Retailer must log into the Dealer Ordering Center navigation portal, which is a third party system operated by one of Jaguar Land Rover's navigation partners, HERE. In order to get into the Dealer Ordering Center, the Jaguar Retailer will need a username and password specific to the retailer.

HERE Portal
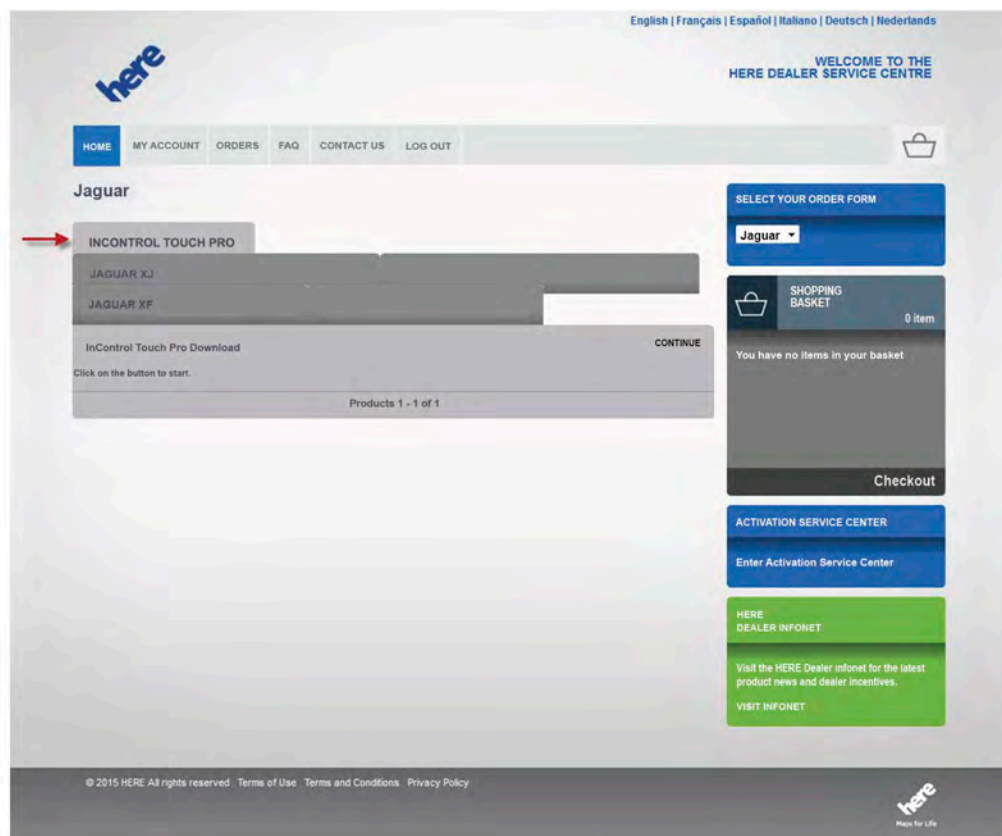
E179401

The first time the Jaguar Retailer uses the navigation portal, they must install the 'map downloader' software. The software manages the download and transfer from PC to USB memory stick. When logged in, the website screen instructions to download the map update must be followed. The vehicle specific VIN is required for input during the process.

The mapping data file size is up to 12 GB, depending on the mapping region. The download time from the Dealer Ordering Centre navigation portal to the Jaguar Retailer PC depends on the internet connection speed. Once the download to the PC is complete, the data is transferred onto the USB memory stick. The USB memory stick should not be used for other media files.

Map Download Progress

The USB memory stick is inserted into one of the vehicle front portable media interface panel USB ports. The system determines that the USB files are a map update. The USB memory stick should not be removed until the map update is completed.
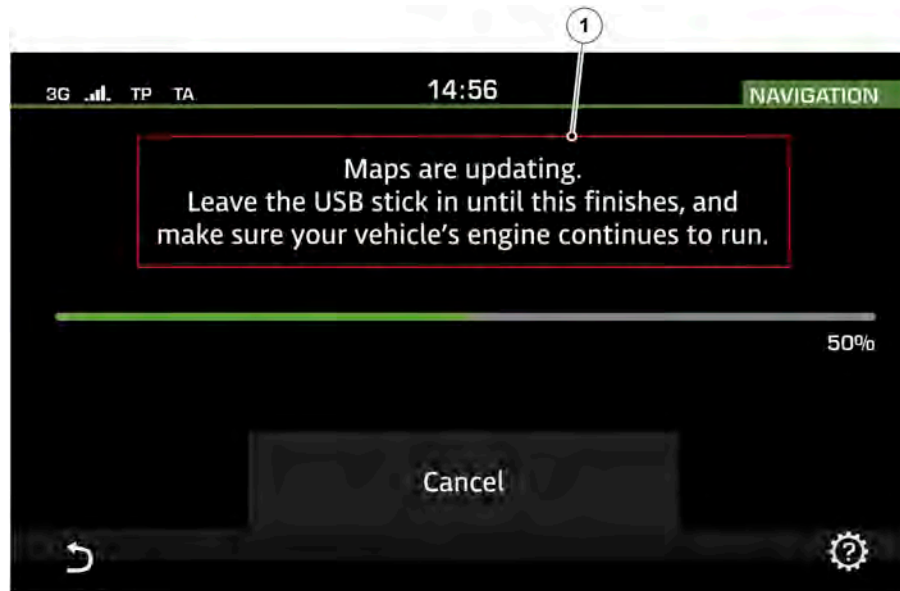
E179475

Item	Description
1	Maps are updating. Leave the USB stick in until this finishes, and make sure your vehicle's engine continues to run.

A status bar on the Touch Screen (TS) displays download progress, and indicates when the download is complete. If a fault occurs during the download process, an error message is displayed, for example, 'Transfer Failed, Try Another USB'.

The initial map download to the vehicle is carried out during the vehicle Pre-Delivery Inspection (PDI) process. There is a prompt to install navigation maps. During the map download the vehicle is prevented from entering 'sleep mode', as the Jaguar Approved Diagnostic Equipment and battery charger will be connected to the vehicle.

During any further map updates, when the Jaguar Approved Diagnostic Equipment and battery charger are not connected to the vehicle, the engine must be running to prevent the vehicle from entering 'sleep mode' during the download process.

If there is a break in the download process, for example the USB memory stick is removed before the download is completed, the process will have to be run again from the beginning.

The download process to the vehicle should not take any longer than 15 minutes. To optimize transfer time, a USB 3.0 memory stick can be used, making sure there are no other InControl Touch Pro functions running, for example, radio, TV, audio, etc.

InControl Touch Pro Entertainment

InControl Touch Pro provides system flexibility and multi-tasking. Each occupant can interact with the system individually without disturbing or restricting the guidance and entertainment systems of the driver. If required, the system can deliver up to 4 visual and 5 audio simultaneous features within the vehicle.

Album Artwork

InControl Touch Pro provides support for artist and album artwork to make browsing and selecting music more intuitive when driving. The user can swipe between albums to jump instantly to a point in their collection. The new 'Music Queue' feature makes it easy to add songs (or entire albums or artists) to a music queue. Artwork is shown in most views where available, thanks to the on-board Gracenotes database (not Bluetooth audio).
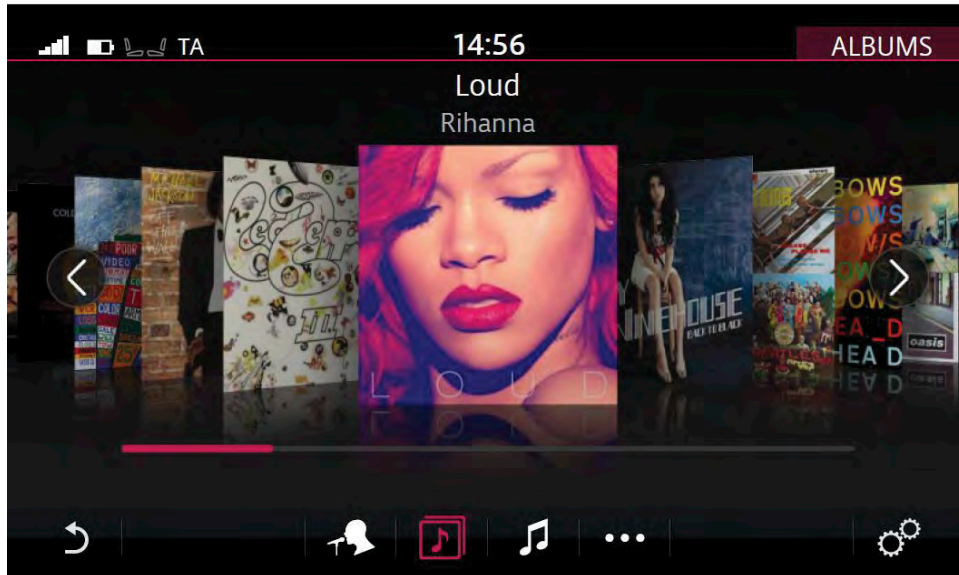
E178830

More Like This

The new 'More Like This' feature creates a database of metadata (multiple data points for each track), which it then compares to the currently playing track. When the user touches the 'More Like This' soft key, the system automatically compiles a similar playlist to listen to.
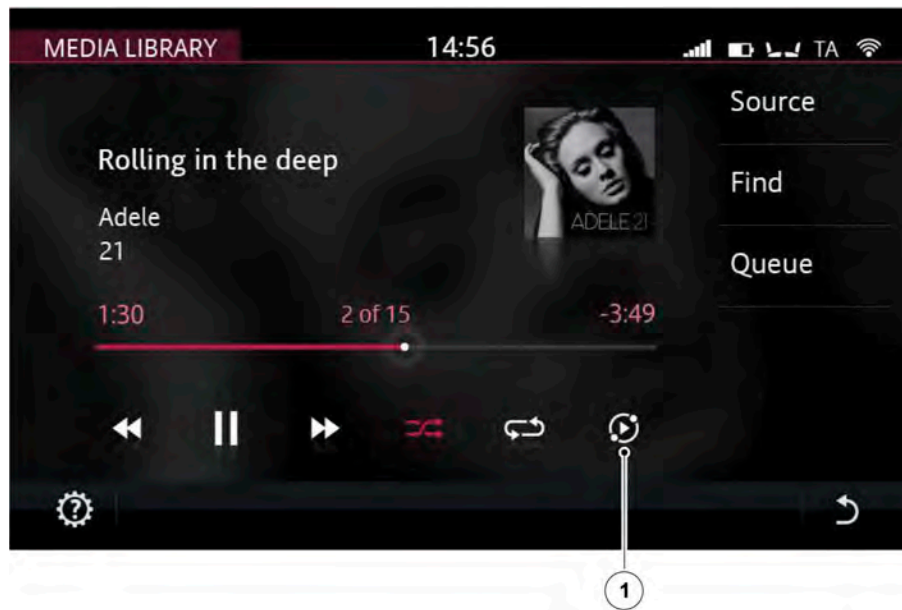
E178831

Item	Description
1	'More Like This' soft key

Solid State Drive (SSD)

The entertainment system is equipped with a fast access Solid State Drive (SSD), with a total system capacity of 60GB. Accessing information is approximately 100% faster than a typical Hard Disc Drive (HDD) based system. This allows the storage of large detailed on-board support databases for maps, voice recognition and Gracenote music services. Approximately 10GB of storage is available to store personal media such as music or movies.

E178832

Virtually every popular music and video format is supported (including a number of specialist formats). Video resolutions up to full HD (1920 x 1080) are supported.

The following audio/video file formats are supported:

- Audio:
  - MP3, WMA, WAV, AIFF, M4A, FLAC, AAC, LPCM and ALAC
- Video:
  - MPEG1, MPEG2, MPEG4, WMV9, VC-1, H.264, H.263, ASP, RAW, VP6 and VP8

The source video can be any size or aspect ratio. The system scales the video image to meet the first screen edge, regardless if it is the top/bottom or left/right edge first. The aspect ratio is maintained. When moving away from the standard 16:9 aspect ratio, a border will appear on the screen relevant to the aspect ratio size. Additionally, low resolution video files are scaled up to meet the first screen edge, affecting pixelation.

In regards to frame rate, different codecs have different upper and lower limits to frame rates that can be supported.

NOTE: A codec is a computer program that both shrinks large movie files and makes them playable on the audio/video system.

As there are so many variations to the parameters that could affect playback performance, it is recommended to not exceed 1080p resolution. Any display device with 1080p resolution typically refers to the ability to accept 1080p signals in native resolution format. This means there are a true 1920 pixels in width and 1080 pixels in height, and the display is not over-scanning, under-scanning, or reinterpreting the signal to a lower resolution.

Digital Disc Player

While digital media is clearly the future, CD and DVD remain popular sources of music and video. InControl Touch Pro includes a number of refinements:

- The quantity of CDs that can be ripped is limited by available user storage only. The user can choose between two options:
  - Quantity – 256 kbps AAC format
  - Quality – Lossless WAV format for the highest possible quality
- System function improvements:
  - Direct access to full screen view
  - Direct access to DVD menu
- Faster CD ripping – individual tracks can be played immediately after ripping; there is no need to wait for the whole CD to be ripped.

Radio

The audio tuner is integrated into the IMC. The following systems are available: AM, FM, HD, SDARS.

A significant new feature of radio reception is the ability of the system to automatically switch from FM to HD, providing a consistent signal when driving between regions.
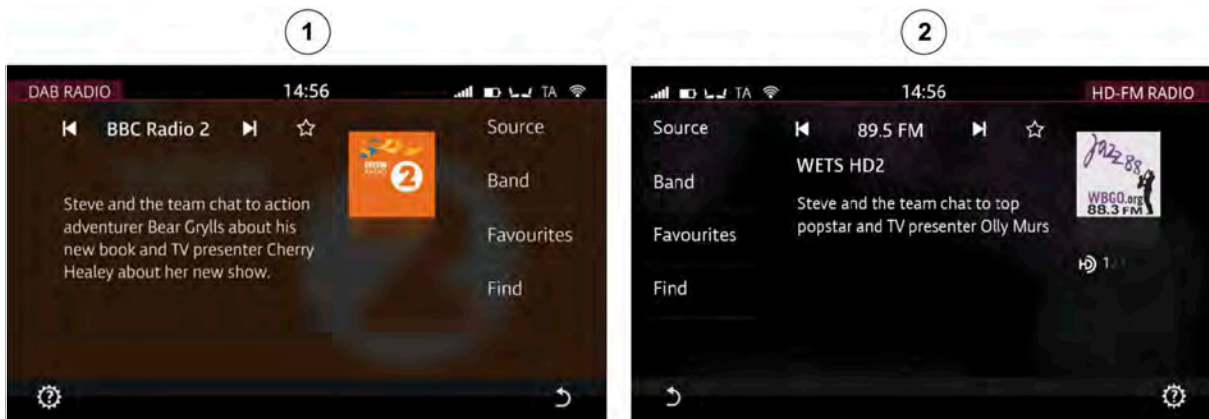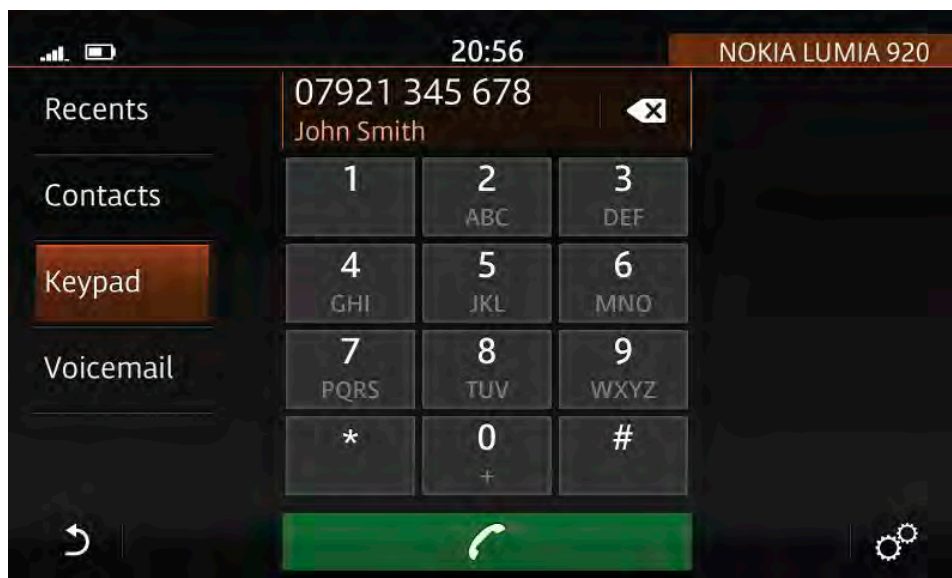

E178834

Item	Description	Item	Description
1	DAB/FM – ROW	2	HD/FM – NAS

InControl Touch Pro Phone and Connectivity

Phone Features

The phone system has several new user features:

- Conference calling
- Usability and information inline with smartphones
- Sort numbers from a range of popular choices, e.g. contacts and recents
- New settings to personalize phone handling
- Home screen integration, e.g. missed call
- Improved keypad
- Direct access to voice mail
- Clearer and larger make/end call soft key
- Easier switching between calls

E178836

Wireless Connectivity

In addition to a connected phone, a second Bluetooth device can be paired for audio playback. For example, it is possible to watch a movie on an iPad screen while listening to the audio through the in-car system over a wireless Bluetooth connection. Pairing has been simplified, and steps have been removed which were previously contributing to pairing failures. Bluetooth devices can now also be used while an iOS device is connected via USB.

E178837

Wired Connectivity

Wired connectivity is made using a portable media interface panel. The level of connectivity is dependent on the vehicle infotainment equipment level. The vehicle is fitted with one of the following three options.

E178838

Item	Description	Item	Description
1	2x USB 3.0 ports	3	2x USB 3.0 ports; 1x HDMI / MHL port; 1x SIM card slot
2	2x USB 3.0 ports; 1x HDMI / MHL port		

InControl Connect Pro

InControl Connect Pro is only available with the InControl Touch Pro system. InControl Connect Pro includes:

- Remote Premium App
- Wi-Fi Hotspot
- InControl Apps
- Pro Services
- Route Planner Companion App and Portal

'Pro Services' and 'Route Planner Companion App and Portal' are a new addition to the Jaguar InControl package, and only available with InControl Connect Pro.

Pro Services

The following connected services and features are included as part of Pro Services:

- Real time traffic flow
- Fuel price service
- Parking service
- Online search
- Satellite view
- Street view
- Online routing
- Cloud sync
- Door to door routing
- Sharing of 'estimated time of arrival' and places
- Live Apps

E178840
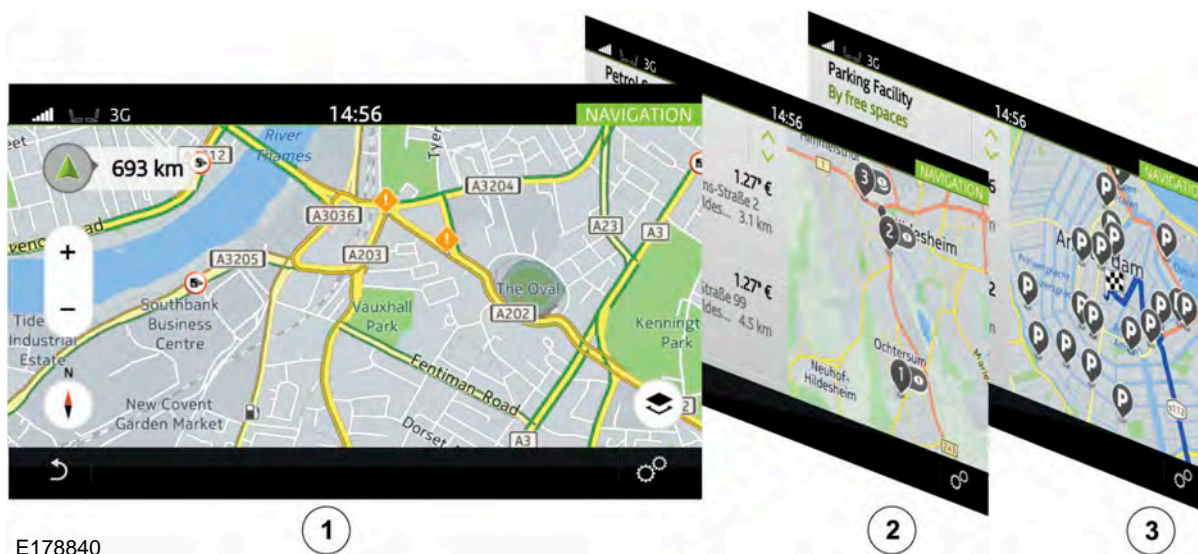
Item	Description	Item	Description
1	Real time traffic flow	3	Parking service
2	Fuel price service		

Live Apps

Live Apps are fully integrated into the InControl Connect Pro system and the vehicle's various on-board sensors and systems. Apps can be downloaded and installed (or updated) to the system via the Live Cloud server.

Initially a small selection of Live Apps will be available. This selection will increase over time. These Apps make best use of the integration into the vehicle via the InControl Connect Pro system while fully benefiting from the live internet connection.
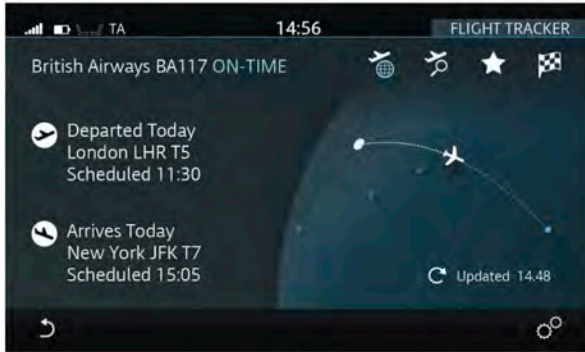
E178841

Item	Description	Item	Description
1	Flight tracker	2	Weather

Route Planner Companion App and Portal

The 'Route Planner Companion App' for Android and iOS provides a function to manage destinations and routes, as well as door-to-door navigation. A web portal also allows destinations and places of interest to be pre-planned and sent to the vehicle.
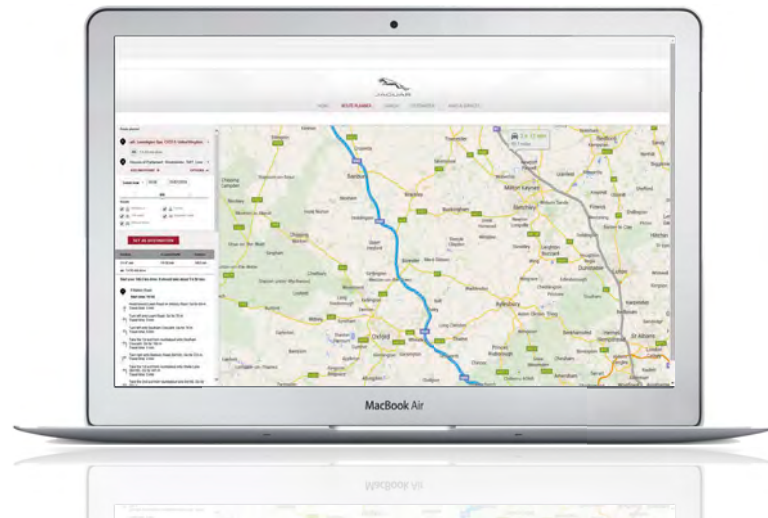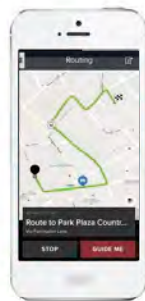
E178842

InControl Touch Pro System Details

Other areas of InControl Touch Pro have been modified and/or updated to provide the user with intuitive system functions:

- System performance
- Connectivity – antennas
- System improvements
- Seats
- Climate
- Cameras
- Eco data
- System configuration

Performance

InControl Touch Pro is equipped with a high speed Intel Quad Core 1.9 GHz Atom Processor system on a chip with 4GB RAM, along with a fast access 60GB Solid State Drive (SSD). This combination provides a highly responsive system.
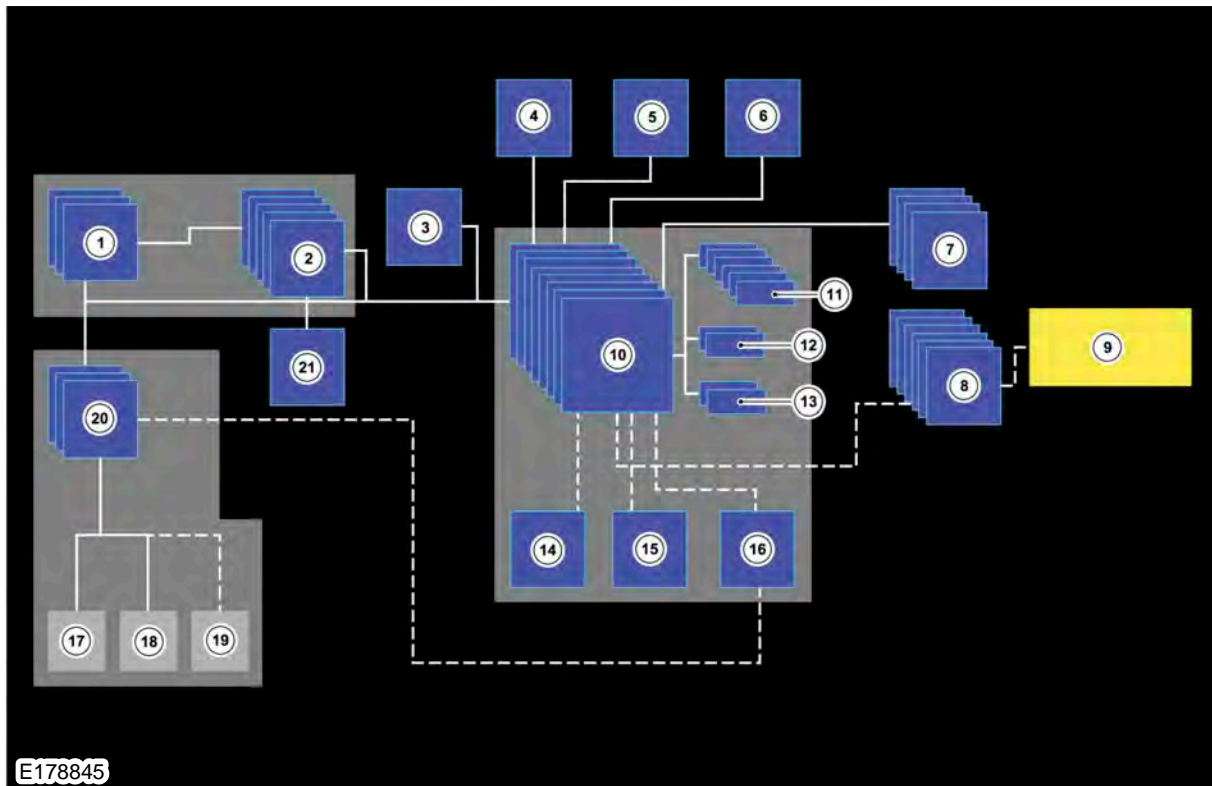
E178843

This structure provides the following system benefits:

- Seamless delivery of complex animations
- Fast response to touch and system reaction time
- Increased 'Voice' recognition reaction times
- Faster navigation route calculation
- High quality multimedia features
- System multi-tasking capabilities

System Configuration

The following is a schematic overview of the InControl Touch Pro system configuration for the All-New XF 16MY.

E178845

Item	Description	Item	Description
1	Speaker configuration	12	Audio tuner software – AM/FM/HD/SDARS
2	Audio Amplifier Module (AAM)	13	Solid state drive – 60GB – 10GB user storage
3	Digital disc player	14	Navigation software
4	Instrument Cluster (IC)	15	Voice software
5	General Proximity Sensor Module (GPSM) – camera module	16	Telephone interface module software (InControl Apps) – operates with portable media interface panel devices 2 and 3
6	Electronic toll collection module (Japan only)	17	Device 1 – 2x USB
7	Touch Screen (TS)	18	Device 2 – 2x USB – Mobile High-Definition Link (MHL)/High Definition Multimedia Interface (HDMI)
8	Telematics Control Module (TCU)	19	Device 3 – 2x USB – MHL/HDMI – SIM
9	Connected services – InControl (Remote, Protect, Secure, Route planner), Pro services and Live	20	Portable media interface panel
10	Infotainment Master Controller (IMC)	21	Wireless headphone transmitter
11	TV tuner software (not NAS)		

InControl Touch Pro New Components

Infotainment Master Controller (IMC)

The Infotainment Master Controller (IMC) is located in the left rear of the luggage compartment. Depending on market and vehicle equipment level, the IMC has the following integrated functions:

- AM/FM diversity
- DAB radio (ROW)
- SDARS/HD radio (NAS)
- Digital TV (not NAS)
- Bluetooth phone and audio streaming
- InControl Apps
- Voice recognition
- Wi-Fi receiver
- SSD navigation
- 2x USB 3.0 input ports
- 1x HDMI/MHL input port
- 1x SIM card input port
- 60GB storage (10GB user media storage).

The Comfort high speed CAN bus provides communication with other system control modules.

The InControl Touch Pro system modules use a new automotive ethernet technology, based on the OPEN Alliance BroadR-Reach® standard, for network data transfer. Jaguar is the first vehicle manufacturer to integrate this network technology into its infotainment architecture. With a bandwidth of 100 Mbps per link between each pair of assigned control modules, automotive ethernet can handle massive amounts of data. This is far higher than traditional vehicle networks.

BroadR-Reach® ethernet technology is engineered to meet stringent in-vehicle requirements, optimized for multiple in-car applications, and is ultimately designed to operate over unshielded twisted pair cabling, similar to the CAN bus. In the first JLR applications, screened cables and highly controlled cable and connector assembly processes are used.

BroadR-Reach® ethernet communication protocol is used between the IMC and the following modules:

- Audio Amplifier Module (AAM)
- Telematics Control Module (TCU)
- Infotainment Slave Controller (ISC) – (Rear Seat Entertainment (RSE) not due for release until 17MY)

Infotainment Master Controller (IMC)

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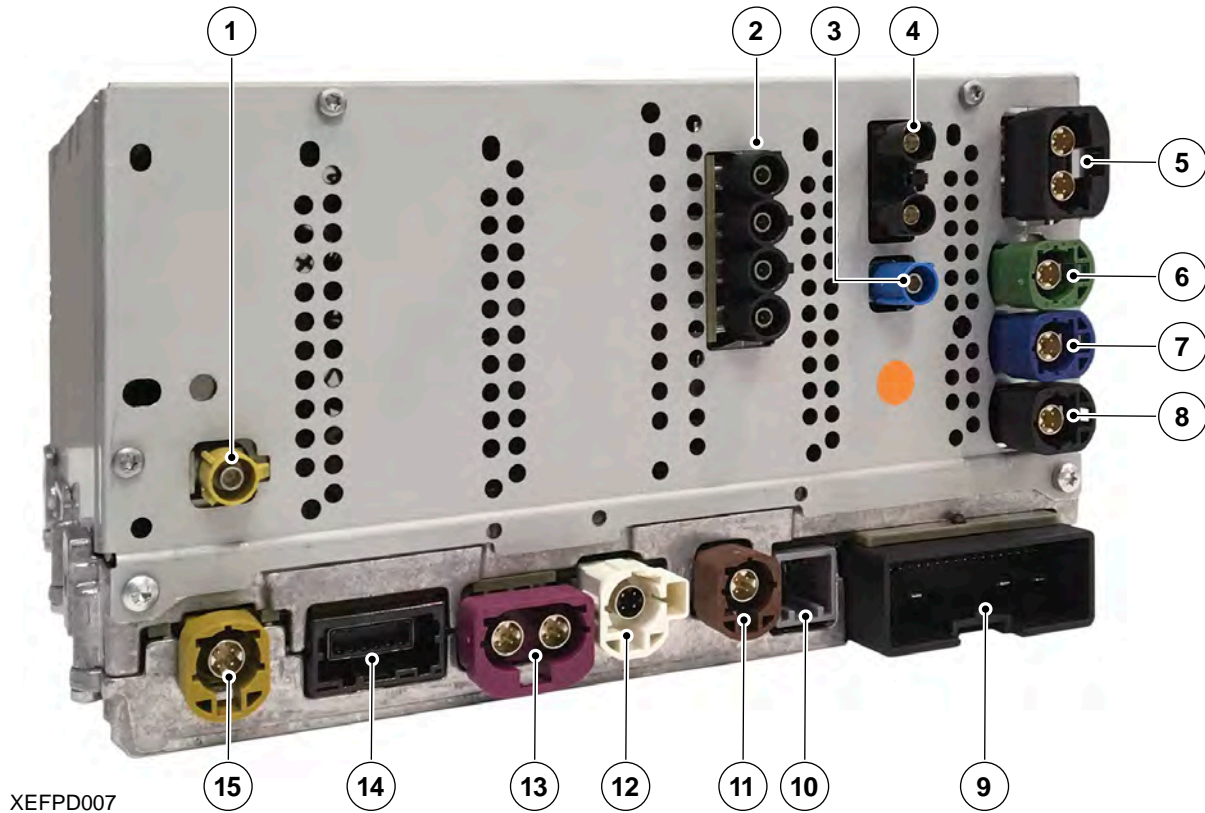
Item	Description	Item	Description
1	Satellite Radio Module	9	Main connector – Power, Ground, CAN Bus, Microphone Input, Fan Control, LIN (Steering Wheel Module – SWM)
2	Radio Tuner	10	Camera Control Module (CCM)
3	GPS antenna	11	Instrument Cluster (IC)
4	Bluetooth and Wi-Fi antennas	12	Touch Screen (TS)
5	Infotainment Slave Controller (ISC) (Rear Seat Entertainment (RSE) not due for release until 17MY)	13	USB 3.0 Repeater – Linked to the Portable media interface panel
6	Audio Amplifier Module (AAM)	14	Portable media interface panel – HDMI and SIM
7	Telematics Control Module (TCU)	15	USB 2.0 Hub – Linked to Digital disc player
8	Diagnostics port (Not used)		

Vehicle Shared Secret

The Vehicle Shared Secret is a means of authenticating the vehicle to obtain information from JLR Cloud over the internet – for example, when using the Live services function for news or weather updates. The Vehicle Shared Secret is stored in the vehicle and the JLR Cloud. When a request for information is made, the vehicle sends the shared secret to the JLR Cloud. If the information sent by the vehicle matches the information stored in the JLR Cloud, the vehicle is allowed to access the information.

The Vehicle Shared Secret can be set up using the application on the diagnostic equipment. When the Vehicle Shared Secret application is run, the vehicle generates a shared secret code. This code is then sent to the JLR Cloud and stored for when the vehicle requests information for Live services. The Vehicle Shared Secret application needs to be executed at Pre-Delivery Inspection (PDI) and when the Infotainment Master Controller (IMC) is replaced or reprogrammed.

If the Vehicle Shared Secret in the vehicle does not match the code in the JLR Cloud, the Live services function will not be available.
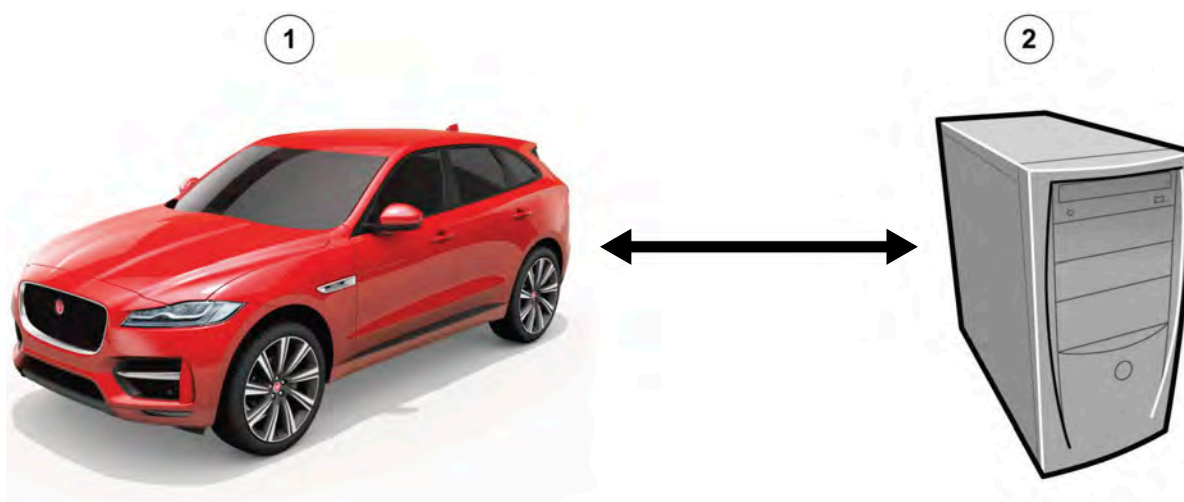
E187239

Item	Description	Item	Description
1	Shared secret stored and generated in vehicle	2	Matching shared secret stored in JLR Server

IMC Cooling Fan

Temperature control within the IMC is necessary to ensure optimum performance, consequently high temperatures are monitored and controlled. At an ambient temperature of 55°C (130°F), the external IMC cooling fan is switched on. When the temperature drops to 45°C (113°F), the fan switches off. The fan is controlled by the IMC.

E179279

The temperature assessment software is integrated into the IMC. Temperature assessment takes place every 10 seconds +/ – 2 seconds. At every 20th ignition cycle, the cooling fan operates for 180 seconds to enable a maintenance check. The vehicle exterior temperature must be above 3°C (37°F) for the maintenance check to function. A fan test application is available in the Jaguar Approved Diagnostic Equipment.

Portable Media Interface Panel

The portable media interface panel is available in the following three configurations, based on Infotainment system specification:

- Standard fitting
  - 2x USB 3.0 ports
- Fitted with InControl Apps
  - 2x USB 3.0 ports
  - 1x HDMI/MHL port
- Fitted with InControl Connect Pro
- 2x USB 3.0 ports
- 1x HDMI/MHL port
- 1x SIM card slot

The portable media interface panel provides a 5V device charging function. The maximum charging current supplied is 1.5A for USB and 0.5A for HDMI/MHL. The USB ports do not support an external plug-in USB hub.

Standard Fitting

The standard fitting portable media interface panel includes two USB 3.0 ports (which also support USB 2.0) and are connected to the IMC through a USB Repeater.

E179280

Item	Description	Item	Description
1	USB data	2	Connector – power and ground

Fitted with InControl Apps

The portable media interface panel fitted with the InControl Apps option includes two USB 3.0 ports and a single HDMI/MHL port. HDMI supports multiple devices – for example, iPad (requires Apple adaptor) for audio/video playback on the system TS. MHL provides charging for supported devices – some Samsung smartphones, for example.

Data transfer from the HDMI/MHL port is direct to the IMC, using an APIX2 high speed digital serial link.

E179281

Item	Description	Item	Description
1	USB data	2	HDMI/MHL data – power and ground

Fitted with InControl Connect Pro

The portable media interface panel fitted with the InControl Connect Pro option includes two USB 3.0 ports, a single HDMI/MHL port and a SIM card slot (micro SIM) for data connectivity.

Data transfer from the SIM card is direct to the IMC, using the APIX2 high speed digital serial link.

E179282

Item	Description	Item	Description
1	USB data	2	HDMI/MHL and SIM card data – power and ground

USB 3.0 Repeater

USB 3.0 provides data transmission speeds that are 10 times faster than USB 2.0 (480 Mbps). USB 3.0 significantly reduces the time required for data transmission, reduces power consumption, and is backwards compatible with USB 2.0.
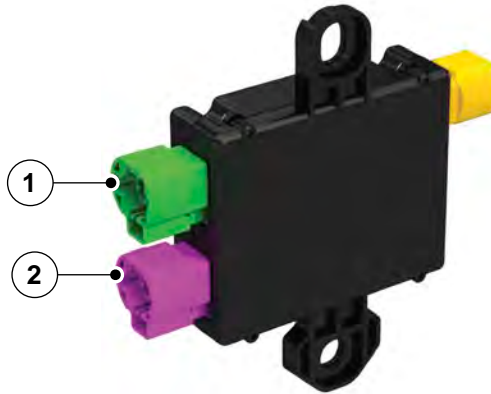
To provide greater data transmission distance, without signal degradation, a USB 3.0 repeater is fitted in the data transmission line. The repeater essentially 'boosts' the signal along the line that it is connected to.

E179283

USB 2.0 HUB

The USB 2.0 hub functions as a repeater for USB 2.0 signals between the Digital Disc Player and the IMC.

E179284

Item	Description	Item	Description
1	Digital disc player	3	IMC

Digital Radio Antenna Combiner

The digital radio antenna combiner allows both Band 3 and Band L antenna signals to be connected to the same port of the IMC. The Band L antenna is located in the roof pod, the Band 3 antenna is shared with an FM antenna (the FM2/Band 3 antenna has two outputs, feeding FM and digital radio separately).

To simplify the number of inputs into the IMC (the receiver), Band 3 and Band L signals are combined. The digital radio antenna combiner simply adds the two frequency blocks (spectrum) together. Once the signal is received at the IMC, the signals are split and decoded independently.
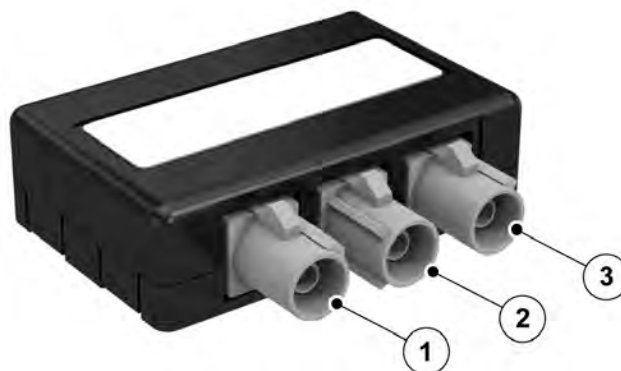
E179285

Item	Description	Item	Description
1	Band L input	3	Band 3 input
2	Output to IMC		

Bluetooth and Wi-Fi Antennas

The Bluetooth and Wi-Fi antennas connected to the IMC are identical, as they coexist in the same part of the radio spectrum. This means they operate over the same 2.4 GHz ISM band, but on different channels. Each antenna is connected directly to a separate port on the IMC. A separate Wi-Fi antenna, located in the roof pod, is connected directly to the Telematics Control Module (TCU).

E179286

Item	Description
1	Connector

10.2-inch Touch Screen

The Touch Screen (TS) is the primary user interface of the infotainment system, providing control of the system from a single point. Touch Screen communication is through the APIX2 high speed digital serial link to the IMC. Similar to the 8-inch TS, the 10.2-inch TS has a capacitive touch panel controller. The use of the capacitive TS reduces the amount of pressure required when pressing the screen soft key functions, enabling the user to drag, scroll or swipe the content. Hard keys on either side of the screen are deleted, and the corresponding functions are replaced by soft keys at the bottom of the TS.

Calibration of the TS, using the Jaguar Approved Diagnostic Equipment, enables updates to be downloaded as new technology becomes available, or any fault concerns that require software updates. No configuration procedure is required if the TS is replaced.
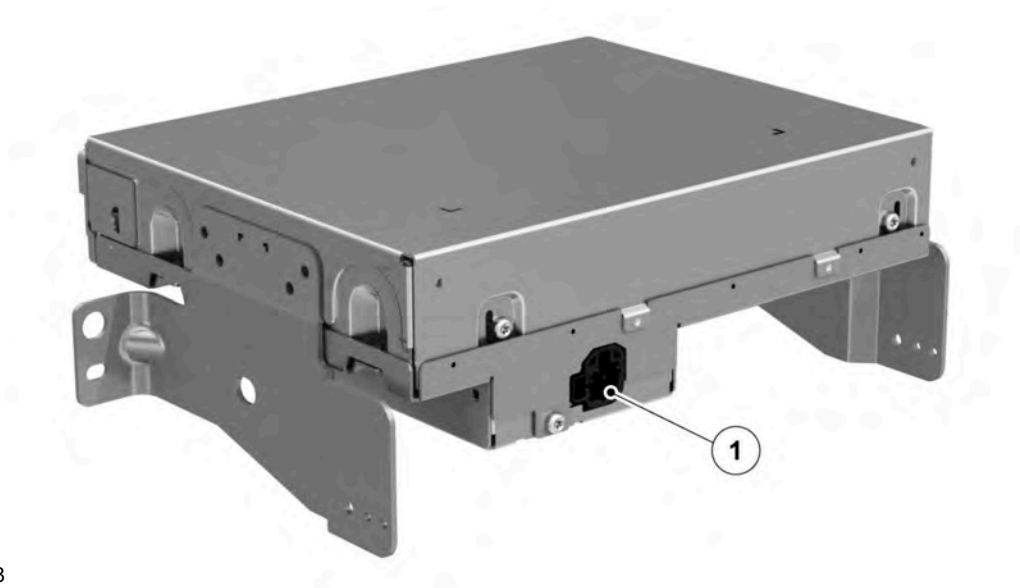
E179287

Item	Description
1	APIX2 connector

Digital Disc Player

The Digital Disc Player will play back standard definition CD/DVD video discs only. The module is connected to the USB 2.0 Hub. Data is transmitted from the USB 2.0 Hub directly to the IMC. The IMC logs DTC faults generated by the Digital Disc Player. When replaced, the Digital Disc Player is calibrated using the Jaguar Approved Diagnostic Equipment.
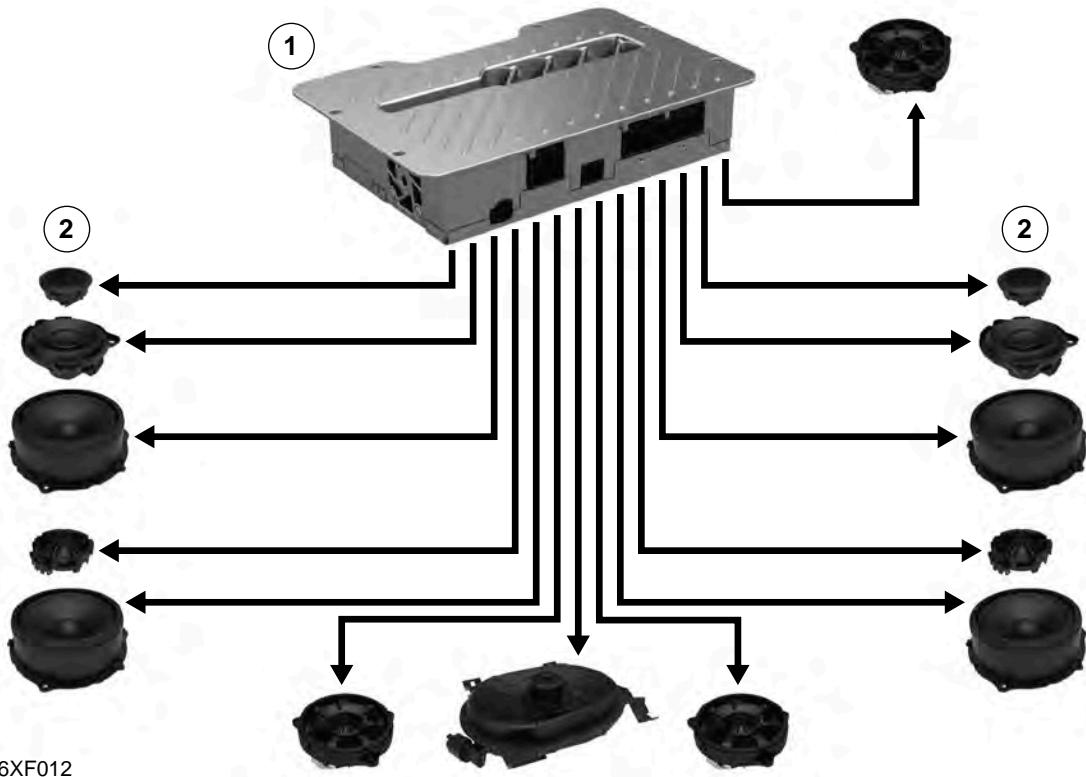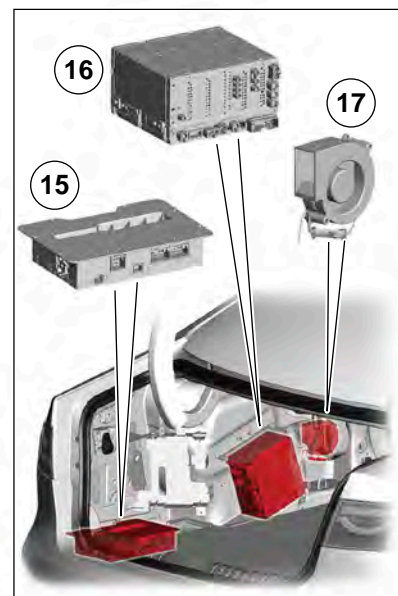
E179288

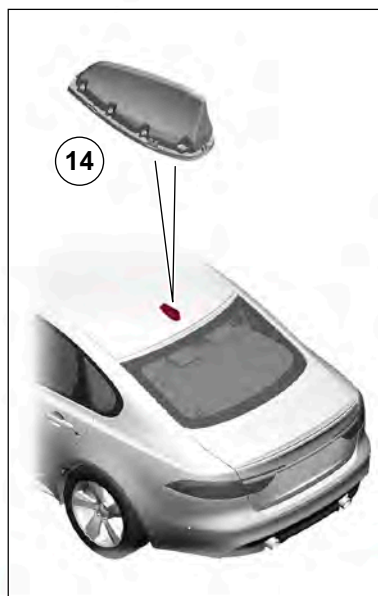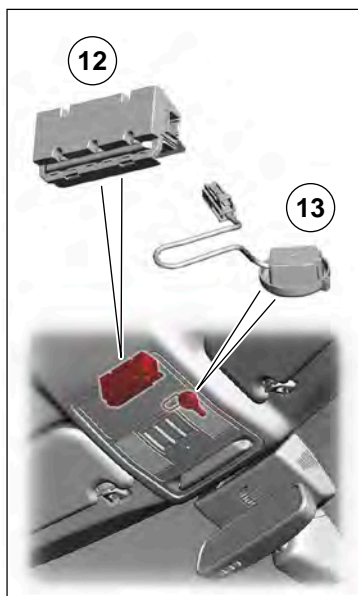| Item	Description
1	USB Connector

Amplifier and Speakers

Meridian Digital Surround Sound System

NP16XF012

Item	Description	Item	Description
1	16-channel amplifier – 825W	2	13 speakers + subwoofer

Component Locations (XF Shown; XE / F-PACE Similar)
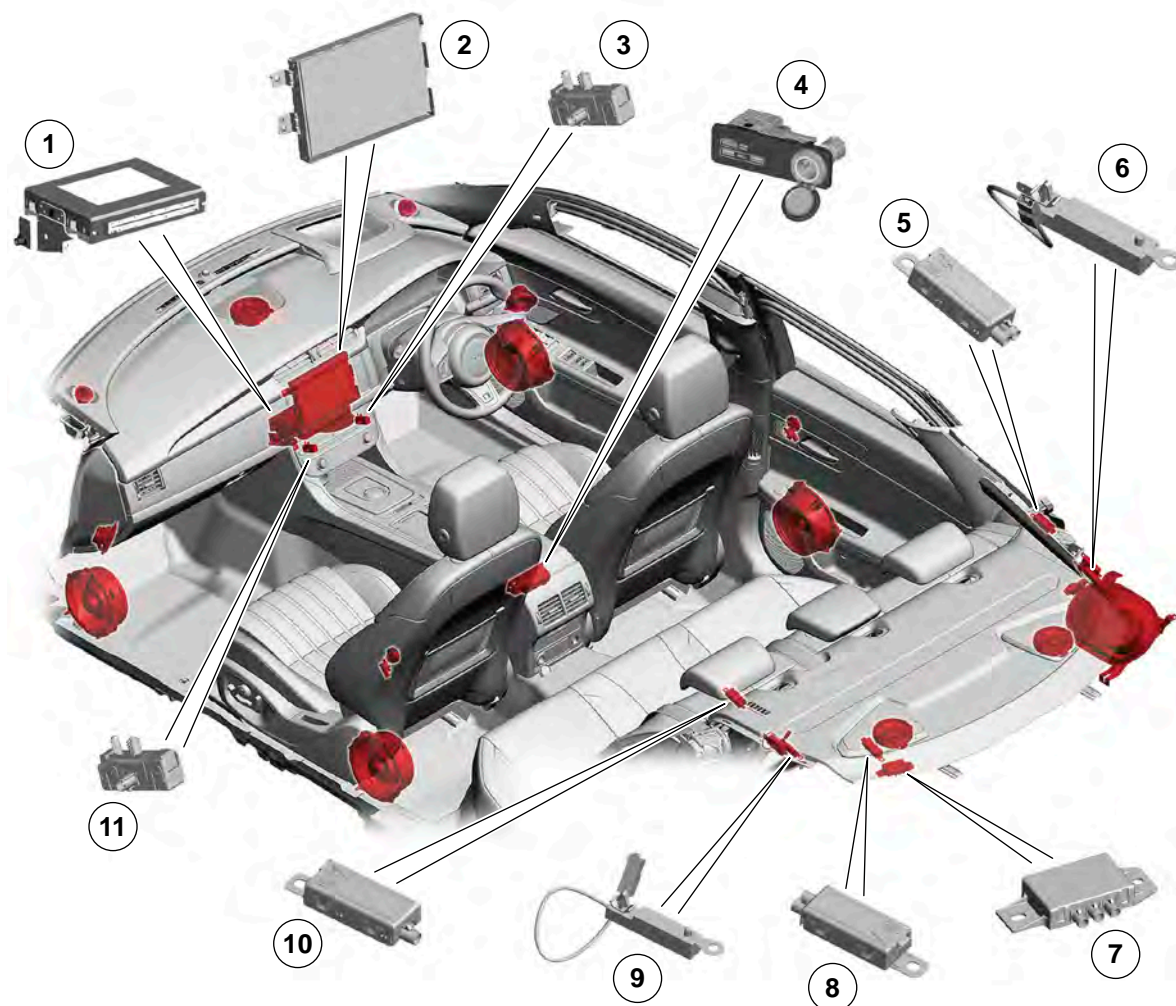
NP16XF022

Key to NP16XF022 on facing page

Item	Description	Item	Description
1	Digital Disc Player	10	AM/FM antenna amplifier
2	Touch Screen	11	Left Wi-Fi Antenna
3	Right Wi-Fi Antenna	12	Headphone transmitter (Rear Seat Entertainment only)
4	Portable Media Interface panel	13	Microphone
5	FM2/TMC/DAB-3 Antenna Amplifier	14	Roof pod – GPS/GSM/DAB antenna
6	RF filter – Heated Rear Window positive (+)	15	Audio Amplifier Module (AAM)
7	GPS signal splitter	16	Infotainment Master Controller (IMC)
8	TV/DAB Antenna Amplifier	17	IMC cooling fan
9	RF filter – Heated Rear Window negative (-)		

InControl Touch Pro Audio System Control Diagram

IMC

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AE ▬▬▶

AT ▪▪▪▶

AU ═══▶

AW ▪▪▪▶
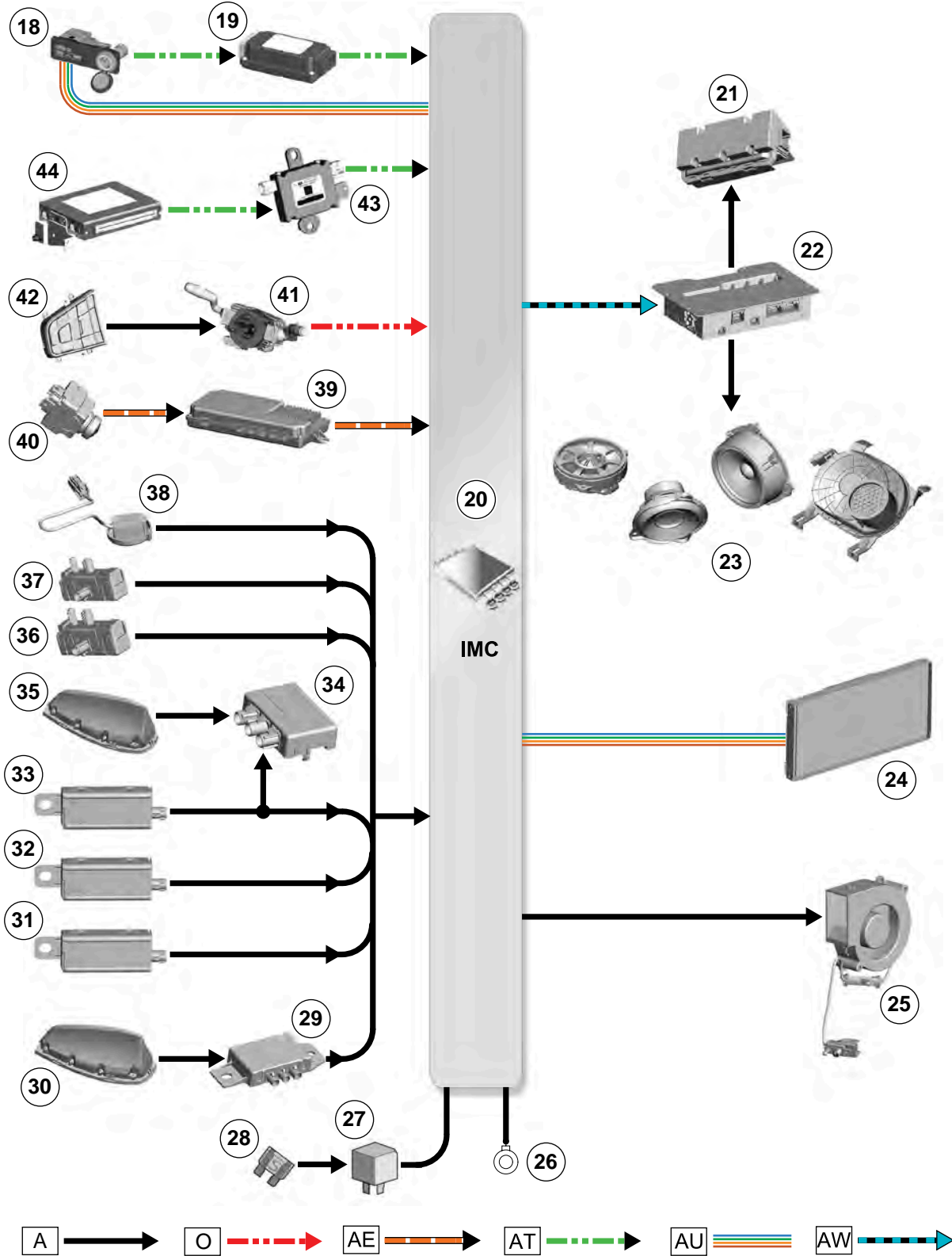
NP16XF021

Key to NP16XF021 on facing page

Item	Description	Item	Description
18	Portable Media Interface panel	35	Roof pod – DAB-L antenna
19	USB 3.0 signal booster	36	Right Wi-Fi antenna
20	Infotainment Master Controller (IMC)	37	Left Wi-Fi antenna
21	Headphone transmitter (Rear Seat Entertainment only)	38	Microphone
22	Audio Amplifier Module (AAM)	39	Camera Control Module (CCM)
24	Touch Screen	40	Rear View Camera
25	IMC cooling fan	41	Clockspring
26	Ground	42	Steering Wheel Switchpack – left
27	Relay (located in the QCCM)	43	USB 2.0 Hub
28	Fuse (located in the QCCM)	44	Digital Disc Player
29	GPS signal splitter	A	Hardwired
30	Roof pod – GNSS/DAB-L/GSM/SDARS antenna (NAS only)	AE	LVDS
31	DAB-3 antenna amplifier	AT	Universal Serial Bus (USB)
32	DAB-3 antenna amplifier	AU	APIX2
33	FM2/TMC/DAB-3 antenna amplifier	AW	BroadR-Reach® Ethernet
34	DAB signal combiner	O	Local Interconnect Network (LIN)