

# TECH TIMES



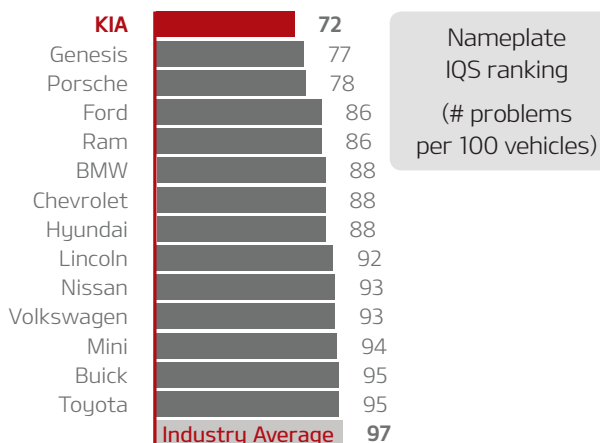
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## KIA TOPS J.D. POWER'S IQS RANKINGS FOR SECOND STRAIGHT YEAR

For the Second consecutive year, the Kia brand has been ranked number one in the 2017 J.D. Power and Associates Initial Quality Study (IQS) released in June. Kia is at the top of the list with an improved score of 72, leading all other manufacturers and improving 11 points over last year. The industry average is 97. The study ranks nameplates based on the number of problems reported per 100 vehicles after 90 days of ownership.

Kia also received five J.D. Power Highest Ranked awards for the Soul (Compact Multi-Purpose Vehicle), Forte (Compact Car), Cadenza (Large Car), Niro (Small SUV) and Sorento (Midsize SUV). The Kia Soul took home an IQS award for the third consecutive year while Kia's two newest models, Cadenza (redesigned) and Niro (all-new), were outstanding performers in their first model year, with the Kia Cadenza earning the top score among all models ranked in the study. The 2017 IQS evaluates eight problem categories that comprise initial quality (Exterior, Driving Experience, Features/Controls/Displays (FCD), Audio/Communication/Entertainment/Navigation (ACEN), Seats, HVAC, Interior, Engine & Transmission); Kia focuses on improving these items as they are the primary responsibility of Kia Motors America (KMA) and its retailers for IQS improvement. KMA wishes to thank all those dealership employees who contributed to this outstanding achievement.



Kia Cadenza

Kia Niro

Kia Soul

Kia Sorento

Kia Forte

## TECHLINE FAQs

<b>Q</b>	My customer heard on the news that Kia just announced a safety recall on Theta II engines. Do you have any information on this?	<b>A</b>	On the Kia website, click on the owner's tab and select Safety Recall Information for questions and answers regarding this recall.
<b>Q</b>	I replaced this Theta II long block and now I do not have oil pressure. The light does go out at higher RPMs.	<b>A</b>	Remove the oil pan and see if all 10 ladder frame bolts are installed.
<b>Q</b>	I have an in-stock Optima Hybrid with service campaign SA 289. Do I replace the HSG on all stock vehicles?	<b>A</b>	Yes, if the vehicle has less than 6500 miles, the HSG will need to be replaced.
<b>Q</b>	I see the SC147 long block is available now, can I cancel my short block I ordered a month ago and use the campaign part?	<b>A</b>	If your RO is dated BEFORE 5/26/17 you cannot use the campaign part as it was before the recall was started, you have to complete the engine install and then perform SC147 with the replacement engine installed. If your RO is dated on or after 5/26 you should be proceeding with SC147 if the vehicle is one affected by the recall.

## LATEST TECHNICAL SERVICE BULLETINS, SERVICE ACTIONS AND CAMPAIGNS

<b>SC 147r3</b>	Theta II Engine Inspection and/or Replacement (11-14MY QF/TF, 12-14MY XMa, 11-13MY SL)
<b>ELE 091r2</b>	Identifying Head Unit Software Version For Direct Exchange (All Models)
<b>TRA 066</b>	Service Action - Dual Clutch Transmission (DCT) Replacement (SA281) (17MY YDm)
<b>CLI 036r1</b>	A/C Discharge Hose Replacement (SA267) (15-16MY YP)
<b>ENG 170</b>	Adaptive Values Reset For DTC P0016 (17MY YDm)
<b>BOD 165</b>	Combination TSB/Service Action: Power Sliding Door (PSD) Drive Unit Replacement (SA271) (15-17MY YP)
<b>BOD 169r2</b>	Panoramic Sunshade Roller Guide Adjustment (SA291A) (17MY UMa)
<b>BOD 107r1</b>	Front Door Glass Run Channel Replacement (SA167) (06-14MY VQ)

**CAUTION**

Vehicle servicing performed by untrained persons could result in damage to the vehicle.

**WARNING**

- Vehicle servicing performed by untrained persons could result in serious injury or death to those persons or to others.
- Always take proper and necessary safety precautions when performing any type of service on a vehicle.
- The Kia technician newsletter (Tech Times) is intended for use by professional and trained Kia automotive technicians only. It is written to provide a general overview of conditions that may occur on some vehicles. Trained Kia technicians have the equipment, tools, safety instructions, publications and expertise to help perform the job correctly.

**NOTICE**

The topics covered in this newsletter are designed to assist you with the diagnosis and repair of specific vehicle conditions. Just because a condition is described in this newsletter, do not assume that it applies to your vehicle, or that your vehicle will have that condition. In all cases, the procedures in the applicable Service Manual and/or Electrical Troubleshooting Manual or on KGIS should be performed first.

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## TRAINING PREREQUISITES — PREPARATION EQUALS SUCCESS!

**Preparation is everything.** No matter what the task, proper preparation produces great results. In the case of Kia Technical Training, preparation comes in the form of course prerequisites.

Prerequisite courses establish a foundation of learning that is common to most tasks performed at work and in the classroom. Completing prerequisites ensures you are ready to advance through Kia's technical training program.

**Prerequisites are required!** To ensure you and your classmates are on a level playing field when you arrive at the training center, Kia requires you to take prerequisite classes. With all students having the same basic level of understanding, an instructor-led class can move forward and focus on the tasks at hand. It is important that all of the students get the most out of their training center experience; prerequisites help with that.

**Prerequisites come in two forms.** Web-based courses introduce you to information covered in greater depth in the training center. These programs often include the systems, function, terms and tools that you will experience at the training center during an instructor-led class. In the case of new Kia models, web-based training is your first introduction to the technology.

Instructor-led Foundation courses, like electrical, GDS and KDS, establish a basic understanding of diagnostic procedures and tools that are commonly used throughout all instructor-led courses and in your daily tasks at the dealership. Foundation courses can help you with your job practically every day. Consider them knowledge tools in your personal tool-box.

Don't get caught in a jam! Complete your prerequisites before you need them. The time will come when you must take a class to become certified to work on a specific system or new model and submit warranty claims. If you have not completed the proper prerequisite classes, you won't be able to take the class that you need now.

The Technical Training Course Map in the Kia University Catalog is your plan for moving through Kia's curriculum from the beginning of your career to your learning destination.

Once you have established your learning plan, go to **KiaUniversity.com** and complete the required web-based training. Then review and sign up for the specific instructor-led training courses that lead you to your destination.

Later this year, the exciting new Kia Stinger will launch. Both web-based and instructor-led courses will enable you to effectively diagnose, service and repair this technology-rich high-performance Kia vehicle. Be ready to meet the challenge by completing the required prerequisites and be the first to sign up for instructor-led training.

**Don't Wait — Be Prepared. Start learning today!**



## NEW PREMIUM NAVIGATION PLATFORM (AVN 5.0)

This article provides information regarding the features and functionality on the latest generation Premium Navigation system (designated as AVN 5.0) that has been applied to the 2018MY Sportage (QL) and Optima (JFa) vehicles. This system has a dual core processor which should result in faster system response and loading between applications as compared to the previous navigation system.

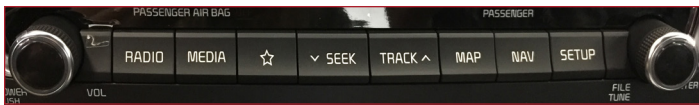


Fig. 1. Button layout on the 2018 Optima (JFa) with AVN 5.0

Some features and functionality differences to note include:

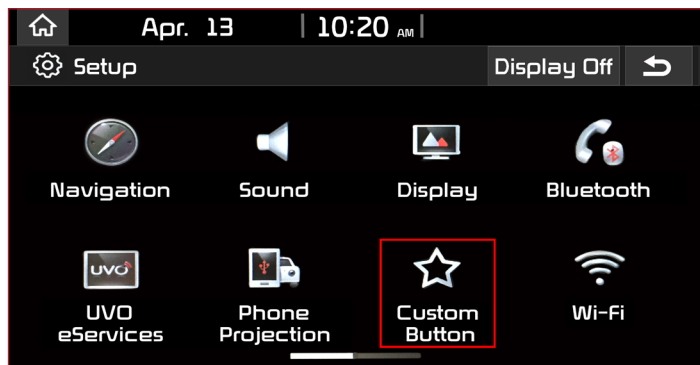


Fig. 2. Custom Button

### The Custom Button (★)

Allows the user to choose or customize quick access to one of several available system features.

1. Press the SETUP key
2. Press the Custom button icon (Fig.2)
3. Select one of the available features:
  - None (default)
  - Phone
  - UVO eServices
  - Phone Projection (Apple CarPlay or Android Auto)
  - Data Services (Sirius XM and HD Data Services)
  - Home (Home Screen)
  - My Menu (Customizable Menu)
  - Bluetooth Audio
  - Display On/Off (Turns display on or off)

### Pairing a Phone

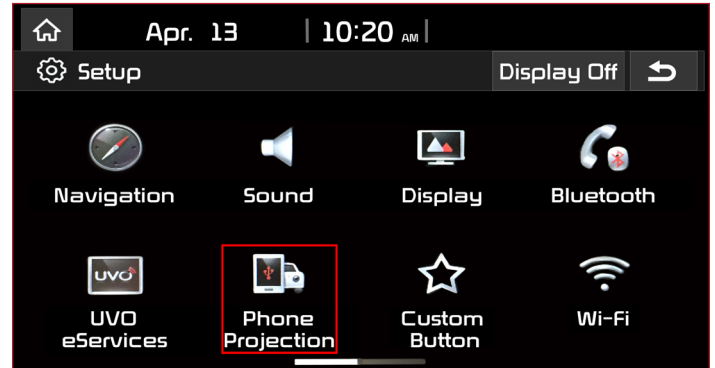
The Bluetooth pairing process is different with this platform compared to previous Kia models and platforms.

1. In order to pair a phone, press the green "Call" button on the steering wheel (Fig. 3)



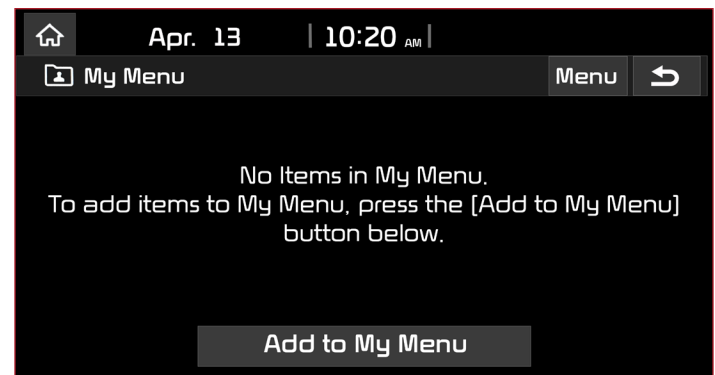
Fig. 3. Call button

2. Turn Bluetooth on from the device (phone) in order to search and select the vehicle name on the phone (Kia Motors) that matches the name on the screen.
3. Follow the instructions on the device to confirm the passkey displayed.
4. Press OK or Pair to complete the pairing. Be sure to allow phonebook download and future auto connection requests on the phone.



### Phone Projection

The icon to set up Apple CarPlay and/or Android Auto is now labeled as "Phone Projection" instead of "Connectivity" (see above). The instructions for setting up CarPlay or Android Auto are unchanged.



### My Menu

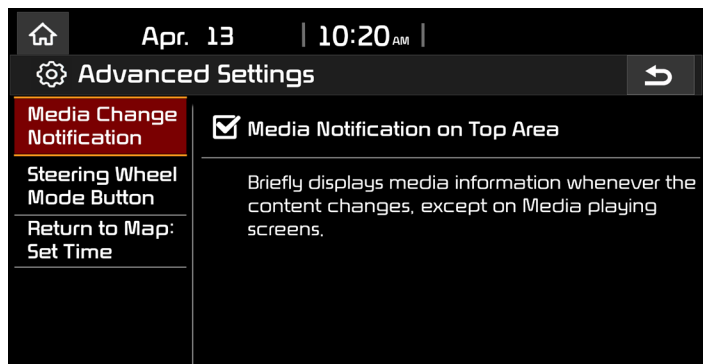
Allows a customer to select favorites or often used features for easy access in one place. The items can then be rearranged by the user (press and hold an item to drag it to another position).

### Advanced Settings

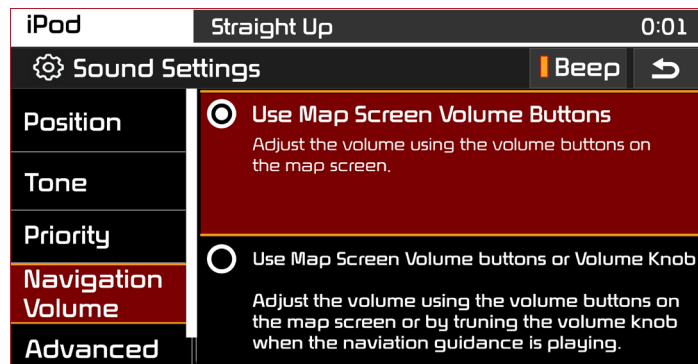
Allows the user to select preferred functionality for media change notifications, steering wheel mode button, and a new "Return to Map" feature.

Continued page 5

## NEW PREMIUM NAVIGATION PLATFORM (AVN 5.0) (continued)



- **Media Change Notifications:** If selected, briefly displays the media information whenever the content changes (except on screens that already display the media playing).
- **Steering Wheel Mode Button:** Allows the user to choose the items that will be displayed or not displayed when the steering wheel “Mode” button is pressed. Basically allows the user to skip media modes that the user does not use.
- **Return to Map: Set Time:** Allows the user to choose to have the radio or media screen switch automatically to the



navigation map screen after a period of time (5, 10, or 20 seconds) if feature is turned on.

**Navigation Volume**

Allows the user to choose how they want to adjust the navigation volume in the map screen (using the volume knob or on screen buttons or just using the map touch screen buttons.)

Note: Some customers may prefer for the navigation volume setting to be controlled separately from the media/radio volume.

**JOE'S CORNER TUNE UP YOUR DVOM**

Is your DVOM firing on all cylinders? Your DVOM may need a tune-up! No, not plugs, points, condenser, and carb adjustment.




But, checking its functions and accuracy would be helpful:

- Check your leads
- Check your fuses
- Check the ohmmeter
- Calculate its input impedance

Remember that its input impedance needs to be at least 10 megohms.

Why 10 megohms? So you get accurate voltage readings when you measure small voltages for sensors, voltage drop, and ground circuits and so your meter does not influence or damage circuitry in the components you're measuring (i.e. electronic control units, etc.)

What are you going to need?

- A fresh (new) key fob 3 volt battery 
- A fresh (new) AA 1.5 volt battery 
- A 1MΩ resistor 

Brown Black Green Gold

Now setup your DVOM to measure ohms. Measure the 1MΩ resistor (**R1**).

Write the number down here:

Ω

Example, it measures 0.998 MΩ.

Now setup your DVOM to measure DC volts.

Measure the 1.5 volt AA (**FB**) battery.

Write the number down here:

Volts

Example, it measures 1.608 volts.

Now the hard part. Place the AA battery negative on the resistor. Measure the voltage of the AA battery and resistor in series (**V**).



Write the number down here:

Example, it measures 1.454 volts.

Volts

Now let's do the math (use a calculator):

$$\begin{aligned} & \text{FB} \times \text{R1} \div \text{FB} - \text{V} \\ & (1.608 \times 0.988) \div (1.608 - 1.454) \\ & 1.588 \div 0.154 = 10.31 \end{aligned}$$

**10.31** MΩ Input Impedance

**How to check your DVOM fuses**

- Setup your DVOM to measure amps “A”.
- Measure the 3 volt KEY FOB battery (**Not the AA battery**). It should be between 0.2 & 0.5 A (amps).
- Setup your DVOM to measure milliamps “mA”
- Measure the 3 volt KEY FOB battery. It should be 200 to 500 mA (milliamps).

The fuses are good if you get a reading for both “A” and “mA”. Stay tuned for my next article: **“Government Found A Leak” EVAP Diagnosis.**

## WORD SEARCH PUZZLE

Test your search ability on this puzzle, which contains 30 different words found throughout this issue.

Words may be across, backwards, and diagonal. Some letters may appear in multiple words. Look to page 12 for the solution.

ACHIEVEMENT  
ACTUATION  
CALCULATOR  
CLUSTER  
CONNECTIVITY  
CONSECUTIVE

CURRICULUM  
DIAGNOSIS  
FILTER  
FUNCTIONALITY  
IMPEDANCE  
INSTRUMENT

MANUFACTURER  
MILLIAMPS  
NAVIGATION  
NOTIFICATIONS  
OUTSTANDING  
PARAMETERS

PREDICTIVE  
PREPARATION  
PREREQUISITE  
PROJECTION  
QUALITY  
REFRIGERANT

REPLACEMENT  
RESISTANCE  
SAFETY  
SEQUENCE  
TEMPERATURE  
VARIANT

N	O	M	F	S	R	E	T	S	U	L	C	F	P	C	T	P	M	T	T
N	O	U	U	U	P	L	U	T	K	M	B	Z	A	O	N	R	O	N	N
O	O	T	T	L	N	M	X	A	U	X	N	L	R	N	E	E	Y	E	E
Q	J	I	I	S	U	C	A	D	O	Z	S	Z	A	S	M	P	L	M	T
D	F	Y	T	F	T	C	T	I	N	L	S	F	M	E	E	A	M	U	I
H	I	J	K	A	I	A	I	I	L	T	S	C	E	C	V	R	E	R	S
Q	W	U	P	F	U	C	N	R	O	L	D	K	T	U	E	A	C	T	I
Y	T	E	F	A	S	T	A	D	R	N	I	C	E	T	I	T	N	S	U
Y	T	I	L	A	U	Q	C	T	I	U	A	M	R	I	H	I	E	N	Q
D	U	N	M	A	E	M	N	A	I	N	C	L	S	V	C	O	U	I	E
P	R	E	D	I	C	T	I	V	E	O	G	G	I	E	A	N	Q	M	R
N	A	V	I	G	A	T	I	O	N	Q	N	A	C	T	J	E	E	G	E
C	O	N	N	E	C	T	I	V	I	T	Y	S	B	M	Y	C	S	Z	R
T	N	E	M	E	C	A	L	P	E	R	F	I	L	T	E	R	S	K	P
S	C	Q	V	R	E	R	U	T	C	A	F	U	N	A	M	B	I	N	X
E	R	U	T	A	R	E	P	M	E	T	W	H	U	V	M	R	B	T	J
P	R	O	J	E	C	T	I	O	N	C	A	L	C	U	L	A	T	O	R
E	C	N	A	T	S	I	S	E	R	E	C	N	A	D	E	P	M	I	A
D	I	A	G	N	O	S	I	S	K	D	O	Z	G	S	N	X	B	P	G
T	N	A	R	E	G	I	R	F	E	R	V	A	R	I	A	N	T	S	W

## 3-PHASE MOTORS AND THEIR APPLICATION ON KIA MODELS

This is the third and last technical article on 3-Phase Motors and their application on Kia vehicles.

In articles 1 (Vol. 20 issue 1) and 2 (Vol. 20 issue 2), we discussed 3-phase (AC motors used in Kia Hybrid and Electrical vehicles such as the Optima HEV, Niro HEV and Soul EV models. In this article we will discuss the use of 3-phase Direct Current (DC) motors.

3-Phase DC motors are mechanically relatively simple, but they require a control module to energize the windings in the correct sequence and at the correct time. As an example: the Optima Hybrid model range uses an Electric Oil Pump (EOP) to supply the automatic transmission oil pressure in EV Mode, when the transmission's mechanical oil pump and the engine to which it is attached are cycled off by the Hybrid Control Unit (HCU). The EOP is externally mounted on the outside of the automatic transaxle (see Fig. 1).

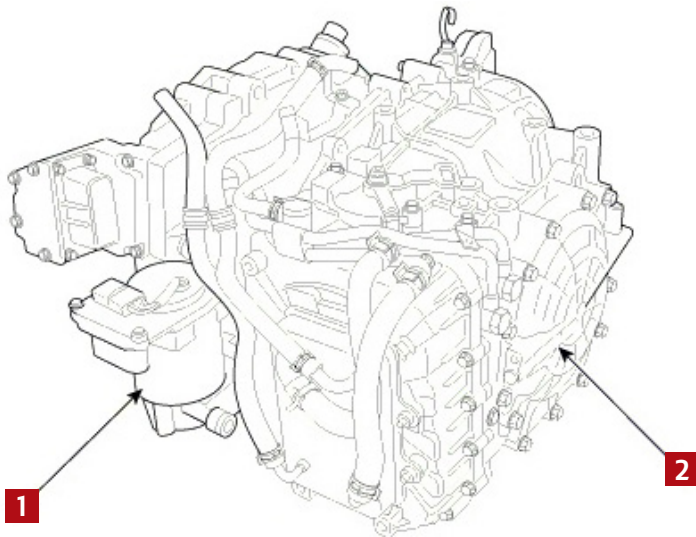


Fig.1 **1** Optima Hybrid Electric Oil Pump  
**2** 6-Speed Automatic Transaxle

Another example of a 3-phase DC motor use on Kia models is in the 2015-2018MY K900, which uses a 3-phase DC motor for the low pressure fuel tank pump.

While the large majority of either the Optima Hybrid EOP or K900 fuel pump faults will result in its respective control module outputting a Diagnostic Trouble Code (DTC), there are a few simple diagnostic tests that a technician will need to perform in order to fully diagnose 3-Phase DC motor related concerns.

### Some of these tests are:

- Phase-to-Phase resistance (see Fig. 2): This test checks the stator winding resistance phase-to-phase.
- KDS/GDS Actuation test (see Fig. 3): This test is performed alongside Current Data to command and monitor motor operation.

Regardless of whether you are working on a high voltage AC

or a low voltage DC 3-Phase motor, bear in mind that testing three-phase electric motors always requires a cautious approach. Therefore, it is imperative that before performing any repairs on 3-Phase motors that you are familiar with all KGIS testing procedures and also have the correct Personal Protection Equipment (PPE) as outlined in the service manual.



K900 3-Phase DC  
low pressure fuel  
tank pump

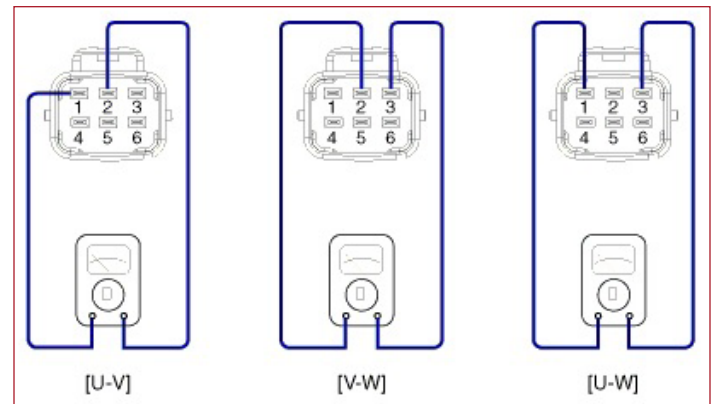


Fig. 2. Phase to Phase Resistance Test

Sensor Name	Value	Unit	Sensor Name	Value	Unit
Shift Solenoid C	0	mA	Shift Solenoid D	0	mA
Pressure Control Solenoid A	0	mA	Oil Pump Speed Actual RPM	0	RPM
OPU Enable Status	ON	-	TM Controllable	OFF	-
Gear Change Active	OFF	-	Blue Drive SW	OFF	-
TM Neutral ACK	OFF	-	Service Lamp	OFF	-
Engine Clutch Limp-Home A...	OFF	-	TCU PowerSave Request to ...	OFF	-
OPU Max Duty Status	OFF	-	Engine Clutch Status	Open	-
Engine Clutch Command Pr...	0.000	bar	Engine Clutch Solenoid	0	mA

Fig. 3. KDS/GDS Actuation Test (Optima Hybrid EOP Actuation Test shown)

## FORTE (YDm) LKAS/LDWS HIGHLIGHTS

The Lane Keep Assist System (LKAS) takes the Lane Departure Warning System (LDWS) one stage further. If the LKAS detects that the driver is veering outside of the lane without using the turn signal, the system issues a warning on the LCD screen on the cluster and sounds an alert, while applying a slight adjustment to the steering, in an attempt to prevent the vehicle from moving outside its lane under certain circumstances.

LKAS has two modes, Standard and Active. In Standard Mode, LKAS will control the steering wheel by requesting steering torque to the Motor Driven Power Steering (MDPS) when the vehicle approaches near the lane line, and will also generate a warning buzzer.

In active mode, the system recognizes an expanded control area, and will generate the same warning buzzer and steering correction.

### General Info

- LKAS/LDWS only available on KMM-built Forte 4DR S and EX trims
- The Lane Keeping Assist System (LKAS) utilizes the Multi-Function Camera (MFC) mounted in front of the rear view mirror to detect lane markers on the road and assists the driver's steering to help keep the vehicle between the lanes
- When the system detects the vehicle straying from its lane without the use of a turn signal, it alerts the driver with an audible and visual warning in the instrument cluster display, while simultaneously applying a slight counter-steering torque to prevent the vehicle from exiting its lane
- There are three different modes that can be changed in the User Settings Menu: LDWS (no steering assist); Standard LKA (this default setting starts intervention when the vehicle is predicted to cross the line); and Active LKA (intervenes more frequently and earlier than Standard LKA to keep the vehicle centered in the lane)

### LKAS Activation & Operation

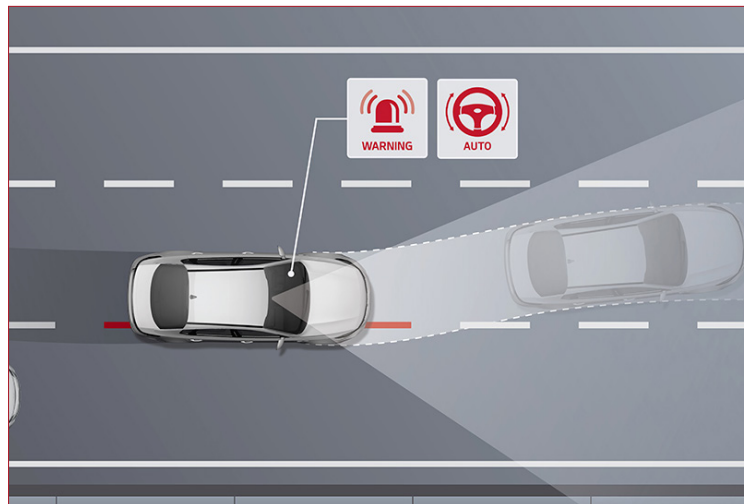
- LKAS will operate when the vehicle exceeds approximately 35 mph (56 km/h).
  - Refer to the Owner's Manual Section 5, Page 64 for the complete list of set conditions
- With instrument cluster menu toggled to display the LKAS screen will appear on the LCD display in the instrument cluster if the system is activated. If the system detects either line, the respective line color changes from grey to white. When both lines are detected and all conditions to activate LKAS are satisfied, the steering wheel will be controlled, indicated by a green steering wheel in the display.

#### WARNING - LKAS Limitations

The LKAS is a supplemental system and should not be solely relied upon by the driver. Do not attempt sudden steering maneuvers while the LKAS is activated. If the vehicle is driven at high speeds, the LKAS may not adjust the steering wheel. It is the driver's responsibility to always pay attention to the road and maintain control over the steering wheel while driving.

### Warning/Notice

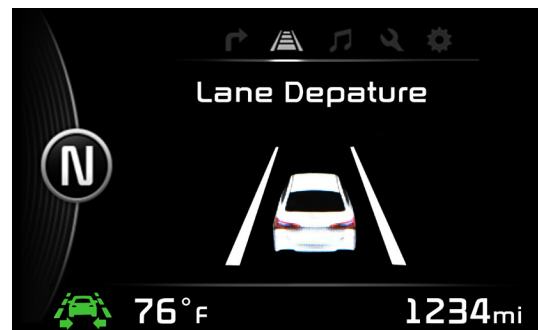
- Always have your hands on the steering wheel while the LKAS system is activated. If



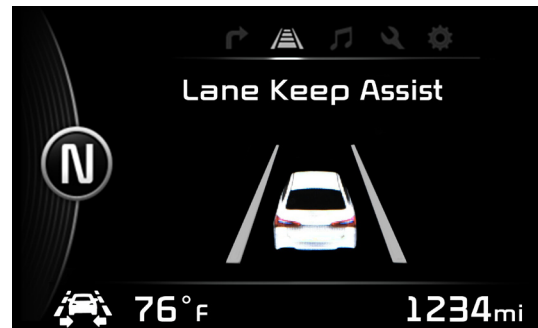
you continue to drive with your hands off the steering wheel after the "Keep hands on steering wheel" message illuminates in the instrument cluster, the system will deactivate until the driver takes hold of the steering wheel again.

- While LKAS is activated, the driver may notice heavier steering feel as the system adjusts steering to keep the vehicle from leaving its lane.

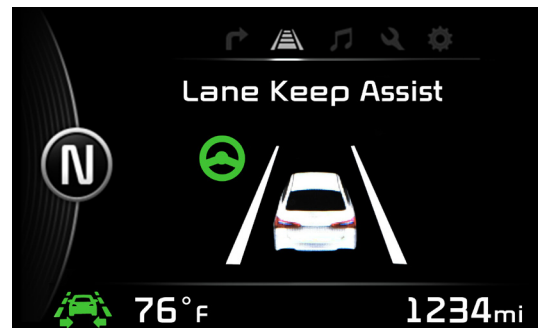
*LDWS "Active"*



*LKAS lanes not detected*



*LKAS "Active"*





## ACX FILTER REPLACEMENT

The filters within the ACX1299 AC service unit are engineered to provide excellent AC service for your customers. During an AC recovery/recycling process, the filters are specifically designed to remove debris and moisture to meet stringent SAE purity standards.

Removing these contaminants ensures that only pure clean refrigerant will be charged into vehicle's A/C system.

To assist with the requirement to change these filters, the ACX1299 unit internally monitors the quantity of processed refrigerant. As the filter nears the end of its capacity, the ACX unit will warn the operator that a replacement will be required soon. It is essential to order or stock a spare combo filter as soon as these warning messages appear.

Filter service kit is part number: **360-82739-00**

When the life of the filter expires, the ACX1299 recovery/recycling will be disabled until a replacement is installed. This filter is accessed through the left side panel on the unit.

The red and blue A/C service hoses included with the ACX1299 are equipped with conical inline filters to prevent debris from entering your unit. If during a recovery/recycling process, the service time appears to be longer than normal, it is a good indication that these hose filters should be replaced. The filter kit includes (1) combo desiccant filter and (4) inline hose filters.



Hose Filters



Combo Filter



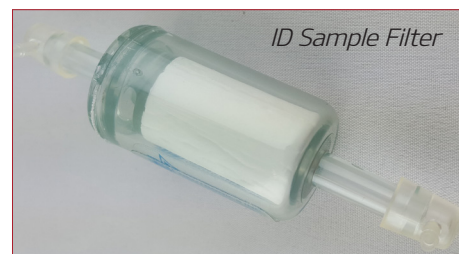
The refrigerant identifier (RFID) on the ACX1299 includes a filter which must be monitored. This filter is located on the top control panel which is easily visible. If this filter appears pink, it indicates that oil has migrated into this device and that the filter and/or sample hose assembly should be replaced as soon as possible. Continuing to perform refrigerant identifications under this condition could result in damaging this sensitive and costly RFID.

RFID filter kit replacement part number: **360-82958-00**.

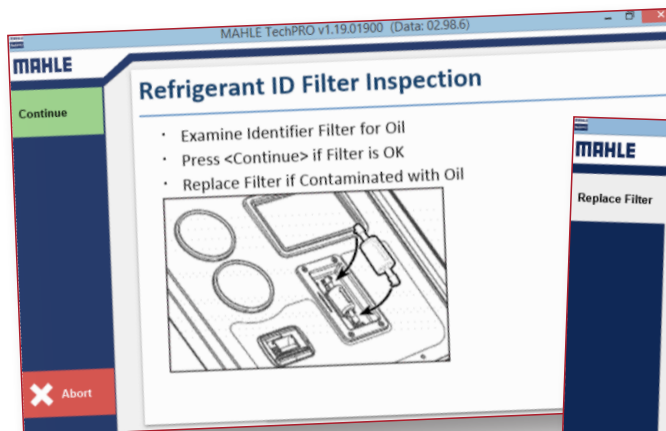
For detailed instructions and operation of unit refer to the online operation manual included within the ACX software (see below).

Technical questions contact MAHLE at (800) 468-2321

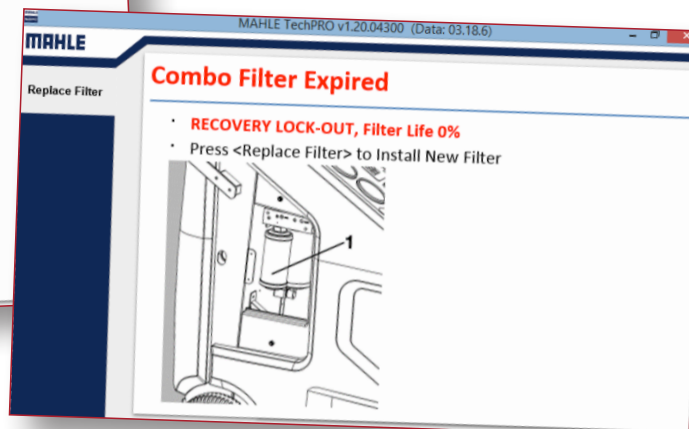
Replacement Parts contact SnapOn at (888) 542-1011



ID Sample Filter



Online Operation Manual screenshots



## KIA MANUAL AIR CONDITIONING SYSTEM DIAGNOSIS

Depending on the model year and variant, certain Kia models are fitted with a Fully Automatic Temperature Control (FATC) system, a Dual Automatic Temperature Control (DATC) system or a Manual Temperature Control system. In this first of two articles, we will discuss a few diagnostic tips for working on the Manual Temperature Control systems.

One challenge that Kia technicians face is how to approach diagnosis, since this type of system does not have the ability to communicate and provide diagnostic data to KDS/GDS.



Fig. 1. 2017 Forte (YDm) Manual Climate Control Panel

The most important factor to consider when working on Manual Temperature Control systems is that there is no DTC or Data Analysis information available via the AIRCON system in KDS and GDS (see Fig. 2, below). This is despite the fact that the Manual Climate Control Panel communicates with other modules on C-CAN.

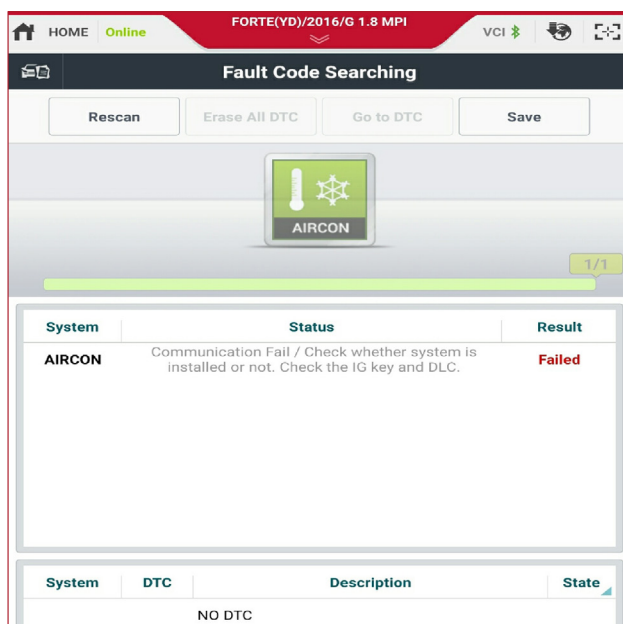


Fig. 2. KDS unable to communicate with Manual Climate Control System Module

The good news is that certain Manual Temperature Control diagnostic information can be accessed by selecting the PCM/ECM module. The PCM/ECM monitors and/or controls certain components such as:

- A/C compressor
- A/C pressure switch (also known as the "Pressure Transducer")
- Other Climate control System related parameters (varies by model)

Diagnosis of these parameters begins by selecting the ECM/PCM module and continuing to "DATA ANALYSIS." Once in the Data Analysis main screen, use the "GROUP" feature to select all available A/C system parameters (see Fig. 3 below).

Once the A/C system grouped parameters are selected, diagnosis of the system can proceed. As shown in Fig. 4 (bottom), monitoring of the A/C compressor, A/C pressure sensor and A/C systems related commands can be performed.

In the next article we will discuss how to verify, diagnose and repair other components of the manual A/C system such as evaporator sensor, climate control air flow door motors and other components.

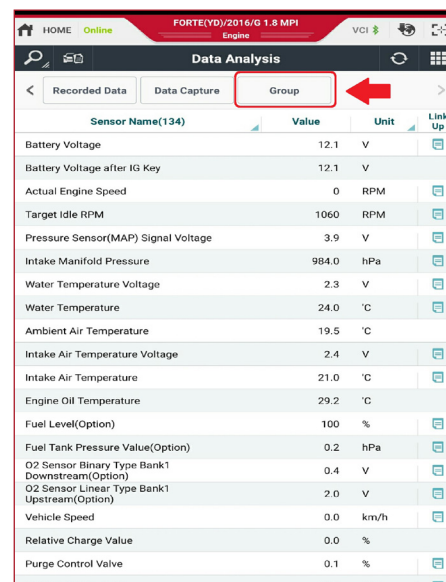


Fig. 3 KDS "DATA ANALYSIS" showing the "GROUP" button

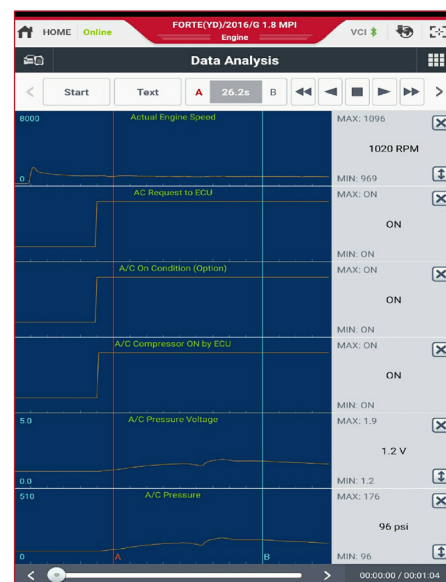
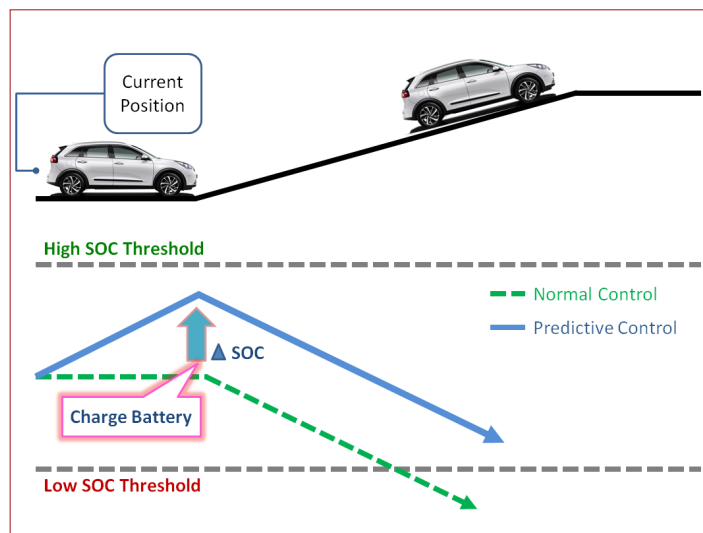


Fig. 4. KDS "DATA ANALYSIS" showing A/C System parameters

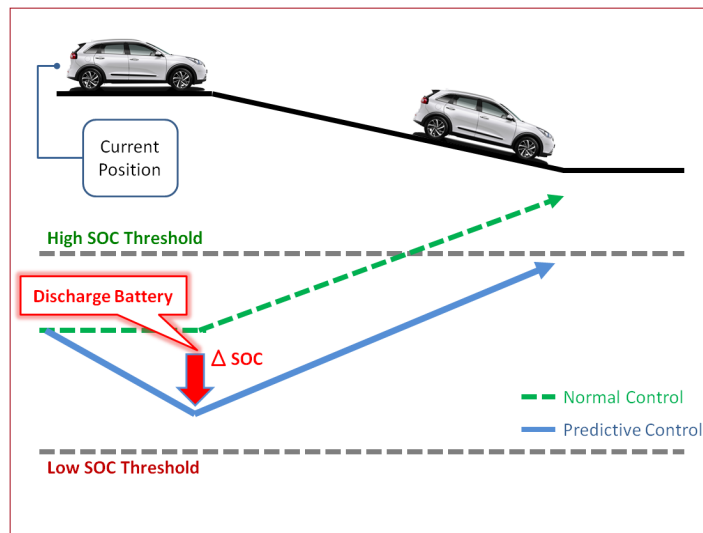
## ECO-DRIVING ASSISTANT SYSTEM (ECO-DAS)

Available on 2017MY Niro Hybrid and Plug-In Hybrid, the Eco-Driving Assistant System (Eco-DAS) is a predictive energy management system that predicts and controls the state of charge gain for HEV systems. Using the navigation system road information it "looks ahead" up to 12 miles (20 km) to determine the most efficient speed, charging, and battery Stage of Charge (SOC) management strategy."



**Uphill section:** Predictive Charge Control

Before entering an uphill section (above), the system charges the battery to secure enough SOC for efficient fuel use and climbing performance. While driving uphill the system manages engine performance to prevent low SOC.

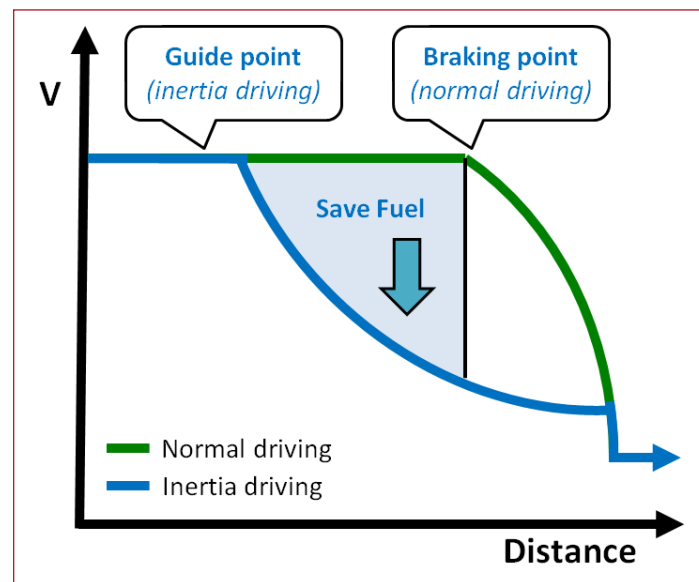


**Downhill section:** Predictive Discharge Control

Before entering a downhill section (above) the system increases the EV drive to use and discharge the battery. Then on the downhill section it engages additional regenerative braking to recharge the battery and manage SOC. This improves fuel efficiency and regenerative braking performance.

Eco-DAS operation mode is always on and is based on information provided by the AVN.

The Eco-DAS also has a eco-Coasting Guide (eCoasting) which predicts the point where deceleration is required for stopping, speed limit reduction or turns. The system provides a visual display and alarm to indicate when to reduce pressure on the accelerator to start coasting.



Fuel consumption unnecessary in the inertia driving section

The coasting guide has these User's Settings Menu (USM):

- Inertia driving guide function (On/Off)
- Inertia driving guide alarm (On/Off)
- Inertia driving distance setting (long, normal, short)

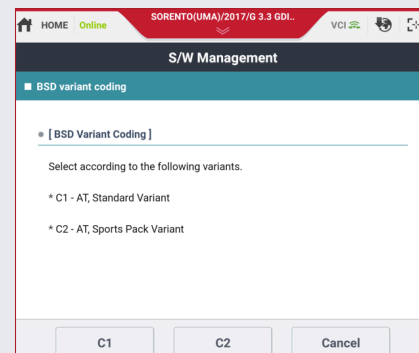
## BLIND SPOT DETECTION (BSD) VARIANT CODING OPTIONS (2016MY SORENTO UMa)

This article provides additional information for 2016MY Sorento: following the replacement of a Blind Spot Detection (BSD) module, select the appropriate variant code, based on the trim level of the vehicle being serviced.

C1 applies to LX/EX trim levels

C2 applies to SX/SXL trim levels

Please refer to Pitstop PS499

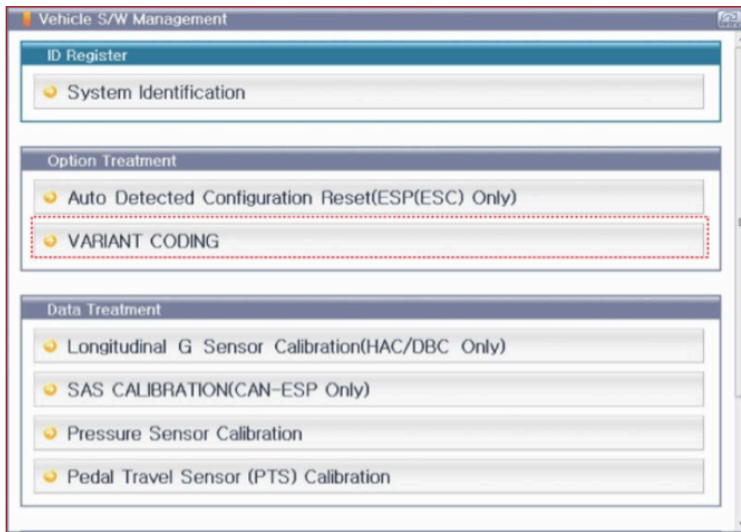


## 2017MY NIRO (DE) IBAU VARIANT CODING

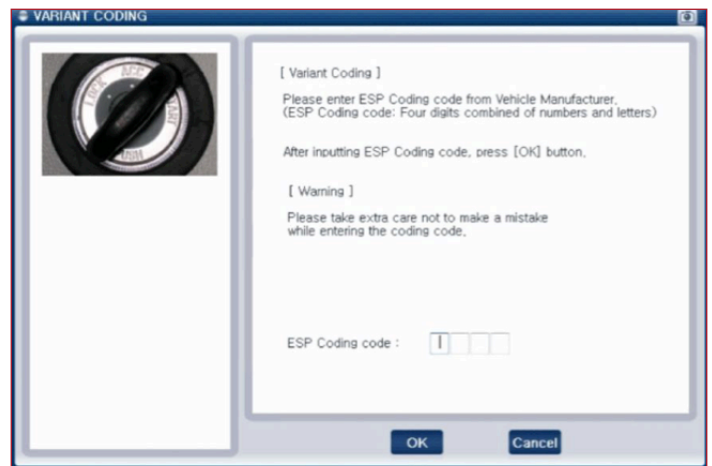
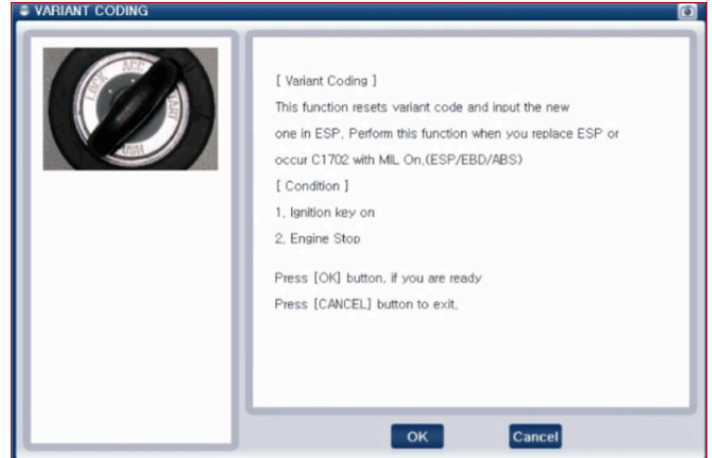
When replacing the Integrated Brake Actuation Unit (IBAU) it must be variant coded on 2017MY (DE) Niro HEV. Please follow the steps in the service information on KGIS and use the following variant codes.

### VARIANT CODE

2017MY (DE) Niro HEV: 2802



Please refer to PitStop PS 457



## WORD SEARCH PUZZLE SOLUTION

Here is the solution to the Word Search puzzle. The first letter of the word is provided (for example, A 12, for the first letter of the word CLUSTER).

- NOTIFICATIONS (A 1)
- OUTSTANDING (A 2)
- PARAMETERS (A 14)
- PREDICTIVE (K 1)
- PREPARATION (A 17)
- PREREQUISITE (N 20)
- PROJECTION (Q 1)
- QUALITY (I 7)
- REFRIGERANT (T 11)
- REPLACEMENT (N 11)
- RESISTANCE (R 10)
- SAFETY (H 6)
- SEQUENCE (M 18)
- TEMPERATURE (P 11)
- VARIANT (T 12)

- ACHIEVEMENT (K 16)
- ACTUATION (J 9)
- CALCULATOR (Q 11)
- CLUSTER (A 12)
- CONNECTIVITY (M 1)
- CONSECUTIVE (A 15)
- CURRICULUM (J 12)
- DIAGNOSIS (S 1)
- FILTERS (N 12)
- FUNCTIONALITY (A 4)
- IMPEDANCE (R 19)
- INSTRUMENT (J 19)
- MANUFACTURER (O 16)
- MILLIAMPS (I 13)
- NAVIGATION (L 1)

