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2018.0 F-TYPE (X152), 206-03B

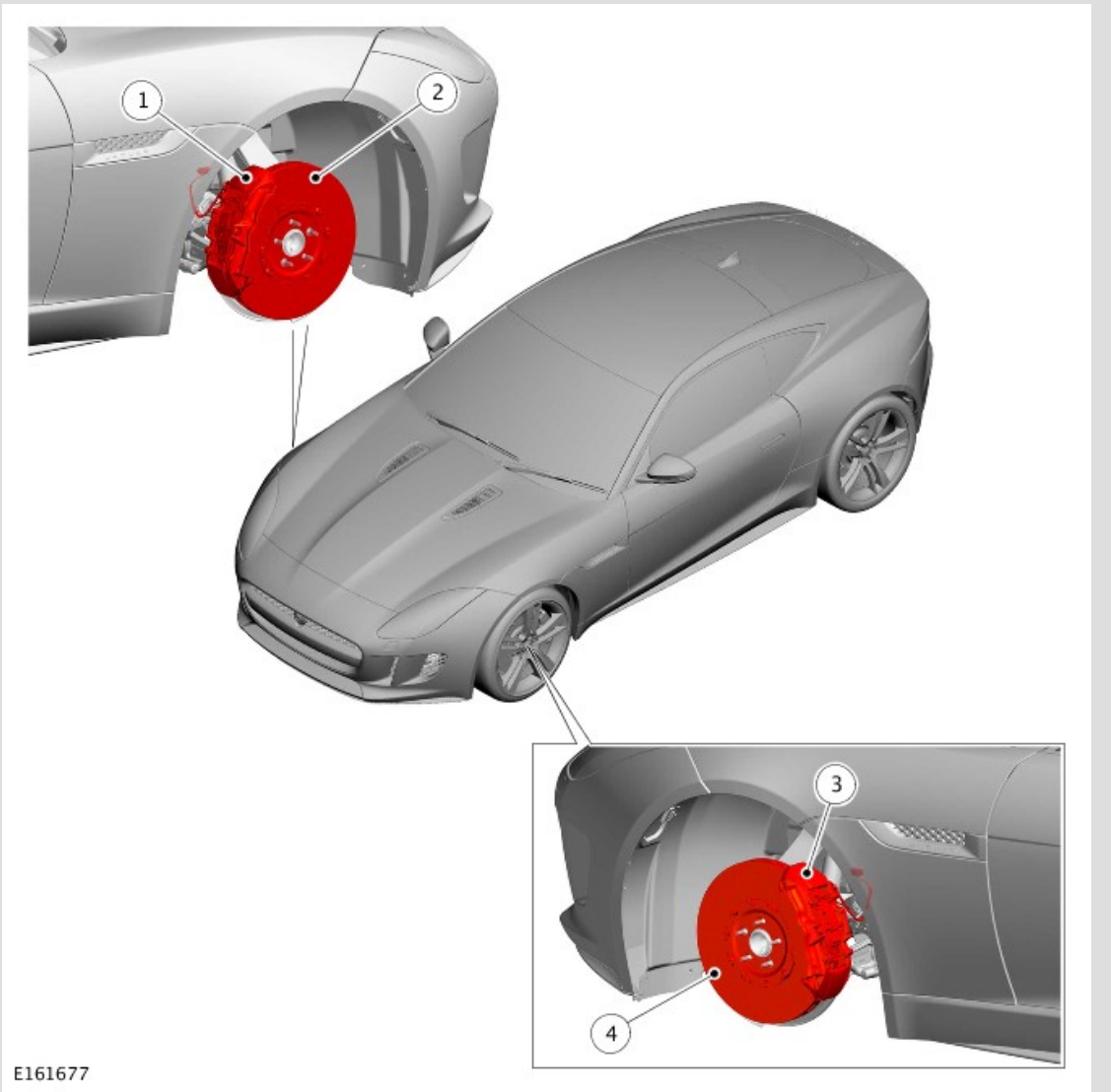
FRONT DISC BRAKE - VEHICLES WITH: CARBON CERAMIC BRAKES

DESCRIPTION AND OPERATION

COMPONENT LOCATION

NOTE:

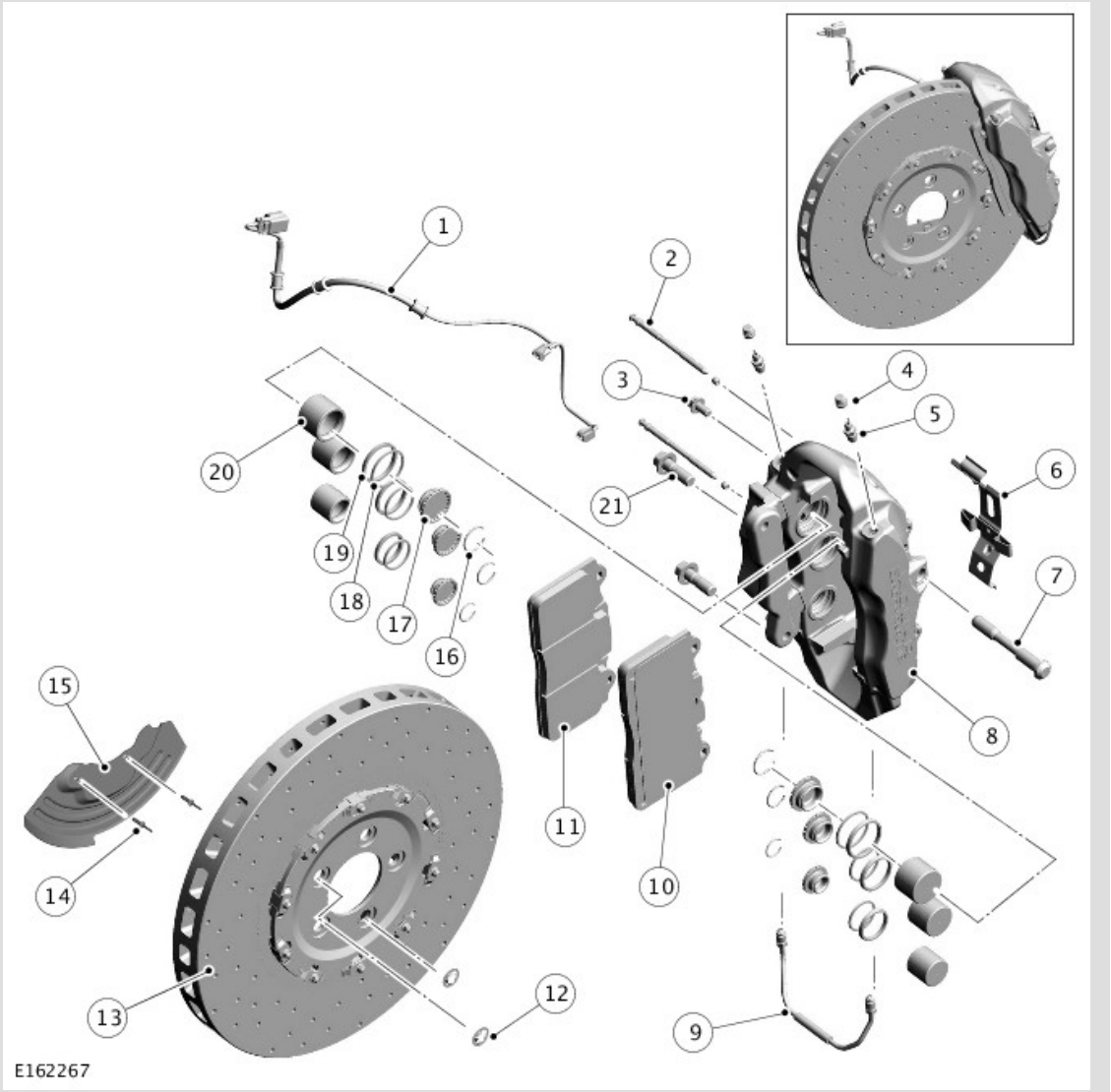
Coupe installation shown convertible installation similar.



ITEM	DESCRIPTION
1	Front right brake caliper
2	Front right Carbon Ceramic brake disc

3	Front left brake caliper
4	Front left Carbon Ceramic brake disc

OVERVIEW



ITEM	DESCRIPTION
1	Brake pad wear sensor
2	Brake pad retaining pin (2 off)
3	Caliper bridge pin bolt
4	Bleed screw dust cap
5	Bleed screw
6	Anti-rattle spring
7	Caliper bridge pin
8	Caliper body
9	Brake pipe
10	Outboard brake pad

11	Inboard brake pad
12	Brake disc retaining washer (2 off)
13	Carbon ceramic brake disc
14	Rivet (2 off)
15	Heat shield
16	Cooling duct plate clip (6 off)
17	Cooling duct plate (6 off)
18	Piston dust cover (6 off)
19	Piston seal (6 off)
20	Piston (6 off)
21	Caliper bolt (2 off)

INTRODUCTION

The front braking system features Carbon Ceramic ventilated brake discs. The Carbon Ceramic brake disc is a high performance friction material, with a longer lifetime under any use in comparison to cast iron. 6 piston, opposed piston calipers are installed.

The brake disc is retained on the wheel hub by two retaining washers and the wheel nuts.

Each caliper is mounted to the front wheel knuckle with two bolts.

Both inboard and outboard brake pads are incorporates a pad wear sensor.

NOTE:

New pad wear sensor leads need to be fitted whenever the brake pads are changed irrespective of the brake pad warning sensor being triggered.

The brake pad wear sensors on each caliper are wired in series and connected to the CJB (Central Junction Box). If the thickness of one of the brake pads connected to a wear sensor decreases to a predetermined limit, the CJB sends a message to the IC (Instrument Cluster) via the MS (Medium Speed) CAN (Controller Area Network) bus.

Racing circuit driving and other extreme types of driving can significantly reduce the overall lifetime of the pads and discs.

The deterioration of the braking surface is caused by the oxidation of fibres following extreme thermal stress. When the brake discs reach high temperatures, the fibres on the surface begin to oxidize.

The level of oxidation can be judged on the porosity and roughness of the braking surface. The degradation of the braking surfaces influences the NVH (Noise, Vibration and Harshness) performance.

The Carbon Ceramic brake disc is sensitive to contamination of water and sand mixture. This removes the transfer layer with significant loss in efficiency and increased pad wear. Continued use in these conditions can cause the complete removal of the transfer layer resulting in inability to regenerate compromising the functionality of the braking system.

PRINCIPLES OF OPERATION

When hydraulic pressure is supplied to the caliper, the three pairs of opposed pistons extend in the caliper. The three pistons in each side of the caliper force their related brake pads against the brake disc.

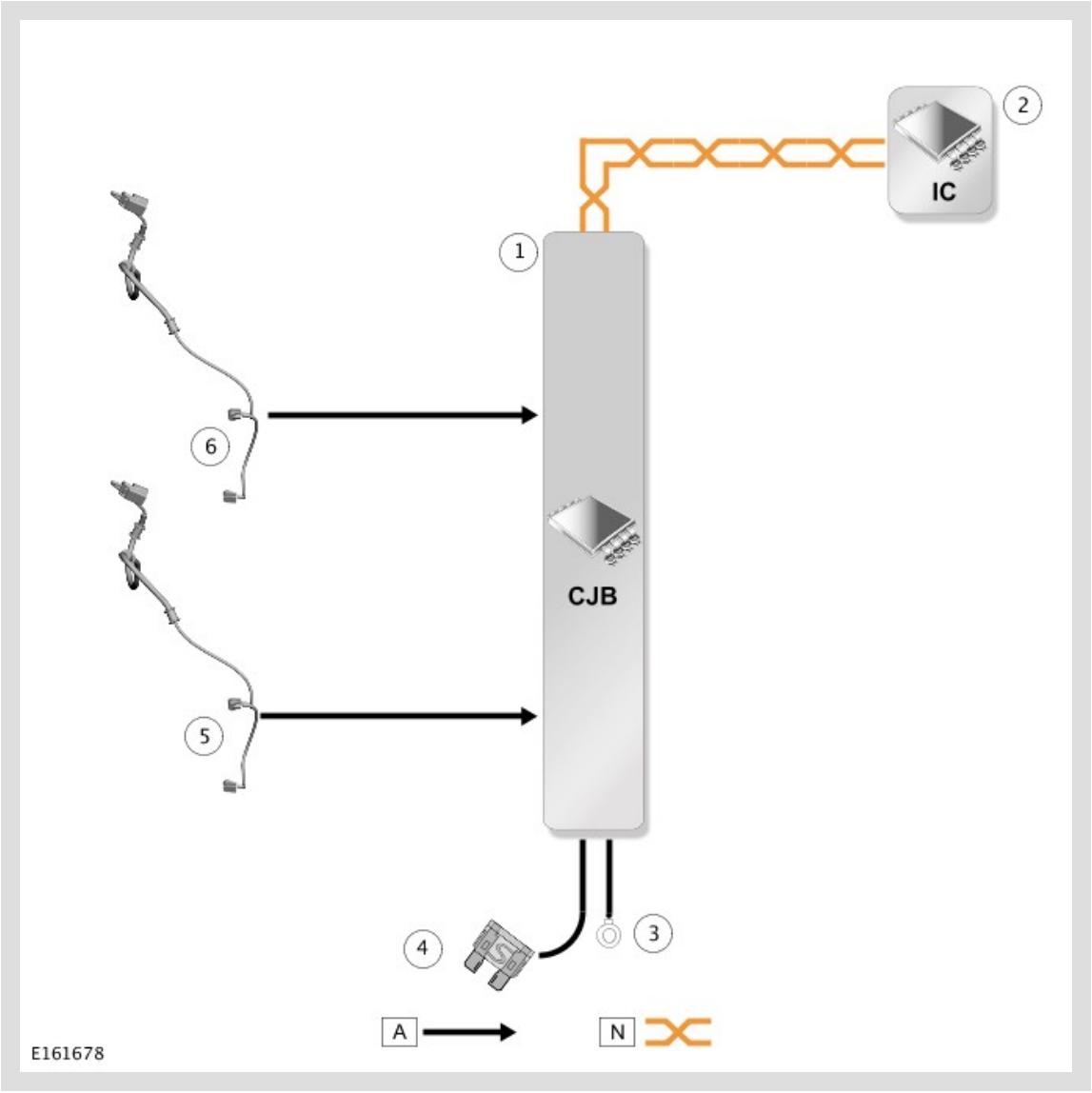
When a brake pad incorporating a brake pad wear sensor is approximately 75% worn, the brake pad wear sensor goes open circuit. When the CJB detects the open circuit, it sends a message to the IC via the MS CAN bus. The IC illuminates an amber LED (Light Emitting Diode) in the brake warning indicator, displays an appropriate warning in the message center and sounds a warning chime. For additional information, refer to: Instrument Cluster (413-01 Instrument Cluster, Description and Operation).

BRAKE DISC WEAR PREDICTION

There is a brake disc wear prediction algorithm available in the ABS (Anti-lock Brake System) control module to predict brake disc duty levels, and uses this data to calculate the brake disc life reduction caused by each braking event.

It is imperative to reset the algorithm in the event that brake discs are replaced.For additional information, refer to: Anti-Lock Control - Stability Assist (206-09 Anti-Lock Control - Stability Assist, Description and Operation).

INPUT/OUTPUT DIAGRAM



A = HARDWIRED; N = MS (MEDIUM SPEED) CAN (CONTROLLER AREA NETWORK) BUS.

ITEM	DESCRIPTION
1	Central Junction Box (CJB)

2	Instrument Cluster (IC)
3	Ground
4	Fused power feed from Battery Junction Box (BJB)
5	Front left brake pad wear sensor
6	Front right brake pad wear sensor