



 **CFMOTO**

800MT EXPLORE

Contents

6	BRS system	66
	6.1 Circuit Diagram	66
	6.2 Connector	67
	6.3 BSD and LCA Monitoring area description	68
	6.4 RCW monitorin- g area description	70

1. Introduction



EXPLORE EDITION-GEM BLACK



EXPLORE EDITION-STARRY WHITE

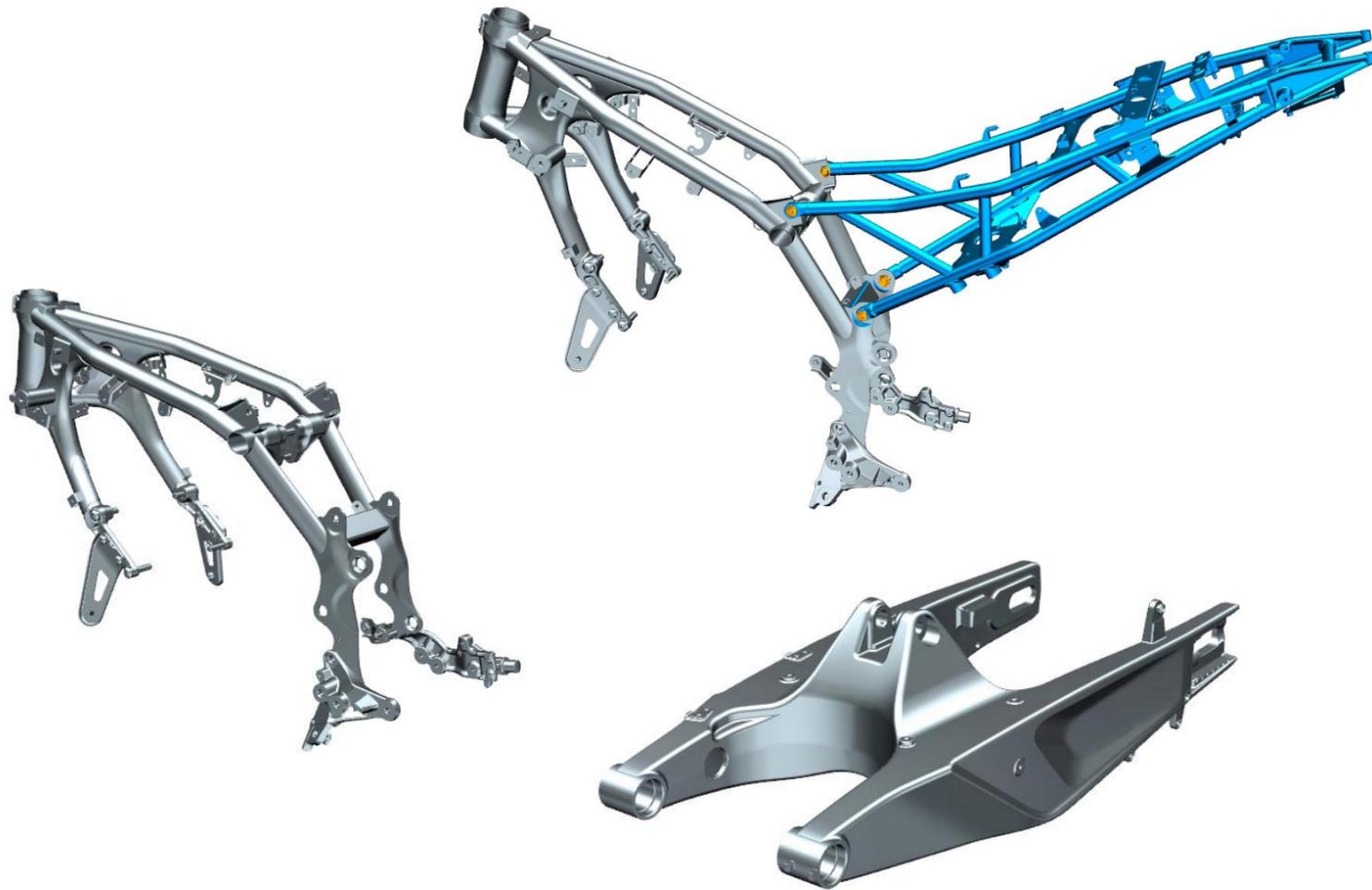
2. Specifications



Chassis	
Engine Type	75°crankshaft, 2-Cylinder Inline, Liquid-cooled
Displacement(ml)	799
Bore x Stroke(mm)	88mm×65.7mm
Maximum Power	67kw/9250rpm
Maximum Torque	75N.m/8000rpm
Compression Ratio	12.7:1
Clutch	Wet, multi-disc, manual ,slipper clutch
Throttle	E- Throttle
Front Wheel	MICHELIN Anakee Adventure 110/80R19M/C59V
Rear Wheel	MICHELIN Anakee Adventure 150/70R17M/C69V
Front Shock Absorber	Upside down telescopic absorber with 8-clicks adjustable and rebound damping 20-clicks adjustable monoshock
Rear Shock Absorber	Preload adjustable and rebound damping 20-clicks adjustable monoshock
Brake System	Bosch c-ABS 9.1 MP
Front Brake	Double discs with J.Juan 4-piston Radial Mount Calipers
	Brake disc diameter: Ø320mm
Rear Brake	Single disc with J.Juan 2- piston floating caliper
	Brake disc diameter:Ø260mm
Seat Height(mm)	825
Ground Clearance(mm)	190
Fuel Capacity(L)	19.2
Curb Weight(kg)	248kg
Front rake	25°

3. Chassis

3.1 Frame



- The main frame is made of lightweight Cr-Mo alloy steel pipe which is made by high-strength chromium-molybdenum alloy steel. That allows the frame tube to have a thinner thickness to reduce the weight. (only 16 kg).
- The subframe uses a kind of individual structure, which is fixed on the frame by 4 bolts.
- The swing arm, designed with the aluminum structure of gravity casting cavity, has sufficient rigidity and high stability, and the direct connection between the rear shock absorber and the swing arm successfully reduces the complexity and accessory's weight.

3. Chassis

3.2 Suspension



FRONT SHOCK ABSORBER

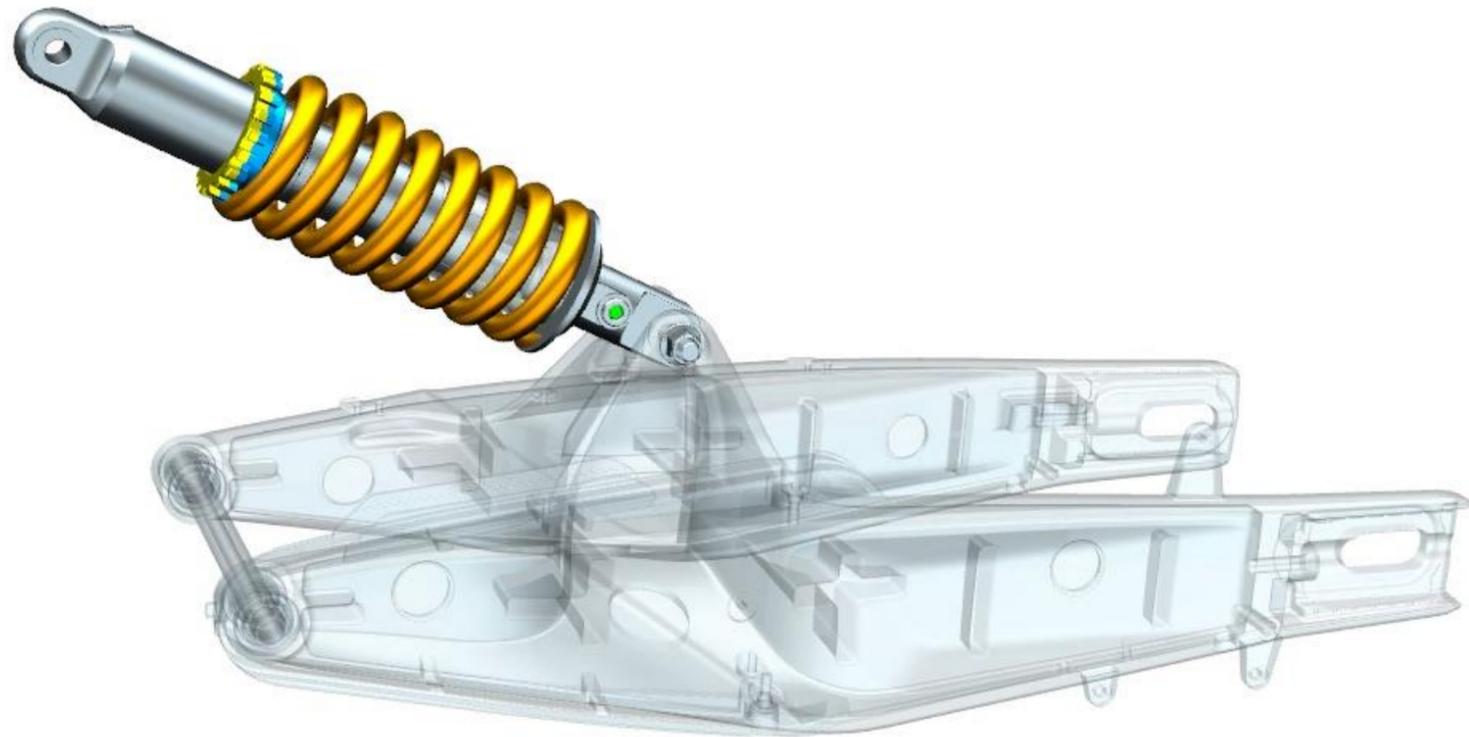


OIL CAPACITY: 610±2ml(EACH SHOCK ABSORBER)

The 25° front rake provides a more faster steering response for the rider;
The wheel travel is 160mm
20 clicks rebound damping adjustable on LH;
20 clicks compression damping adjustable on RH.
Two shock absorbers can adjust 8 clicks of 14mm spring preload.

3. Chassis

3.2 Suspension



A Nitrogen-assisted single shock absorber

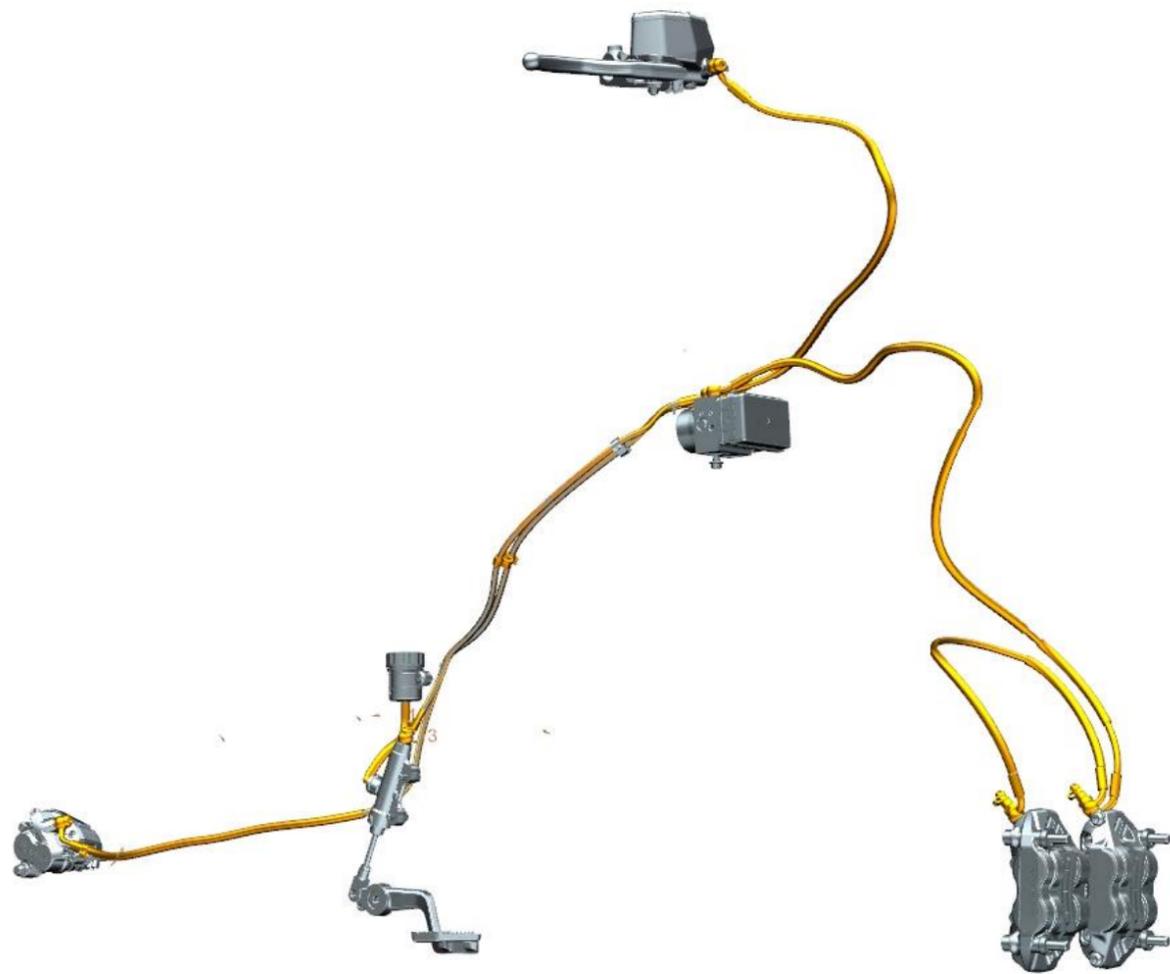
The wheel travel 150mm;
Rebound damping is 20-clicks adjustable.

REAR SHOCK ABSORBER

OIL CAPACITY : 133 ± 2 ml

3. Chassis

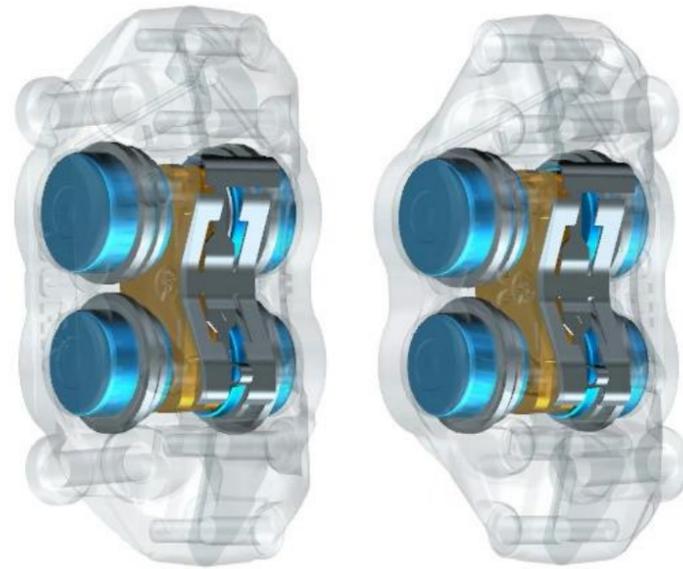
3.3 Break system



J.Juan brake and Bosch 9.1 MP brake system with CORNERING-ABS function in both channels ensure braking safety. Changing brake fluid and exhausting air can be done with CFDSCAN and also can be done manually.

3. Chassis

3.3 Break system



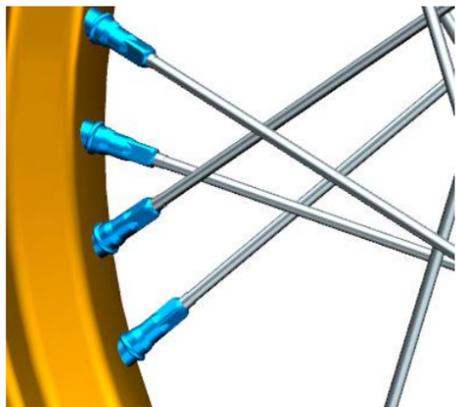
The 320mm front floating brake disc is equipped with two J.Juan radial 4-piston calipers , resulting in improved stopping power, lower brake fade, greater control and higher durability.

The rear wheel is equipped with a 2-piston floating caliper with a 260mm single disc, and also provided by J.Juan.

Use only clean DOT 5.1 brake fluid from a sealed container for service and repair. Never use DOT 5 brake fluid, oil seals and brake lines are not designed for DOT 5 brake fluid!

3. Chassis

3.4 Spoke rim



It has the characteristics of light weight, good toughness, sufficient elasticity, impact resistance and small resistance.

Check tread runout when replacing the tire, if tread runout >2.0 , the spoke's nuts need to be adjusted;

Check the situation of the spokes, if there is any abnormal phenomenon like looseness and breakage, it is necessary to replace the spokes.

Spoke's nuts torque: $4\text{N}\cdot\text{m}\sim 9\text{N}\cdot\text{m}$

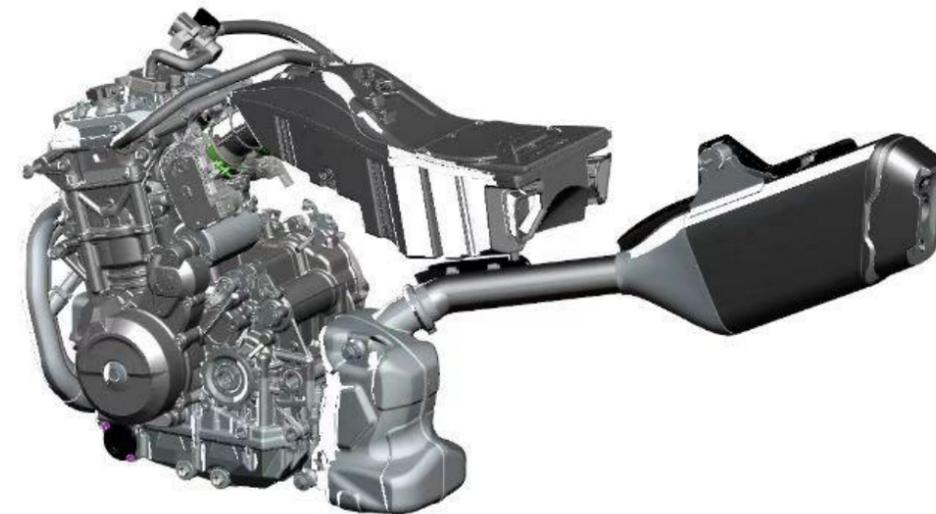
If the torque is not correct, confirm the torque and adjust the runout less than 1.0

4. Engine

4.1 Introduction

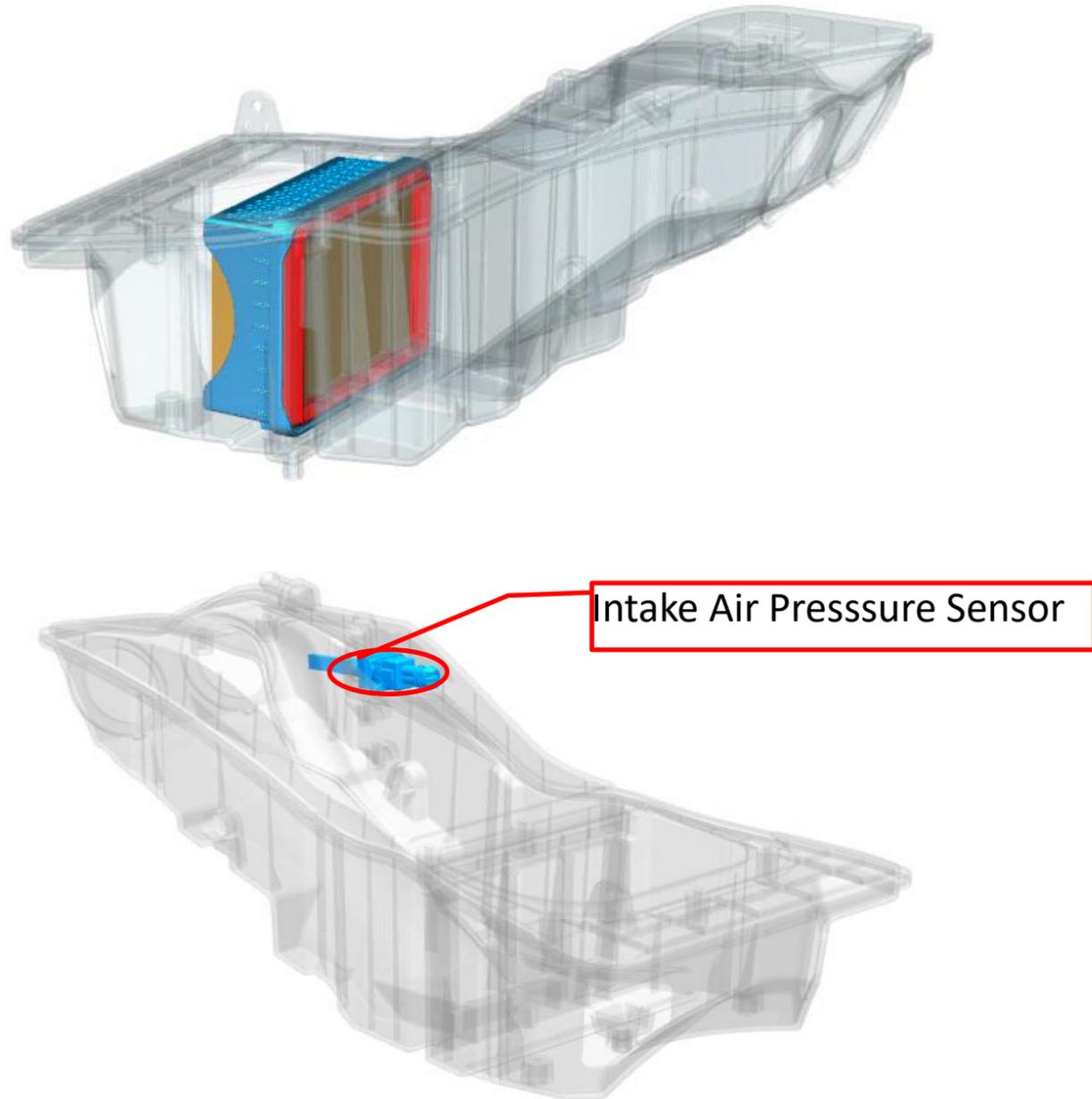
The 288MW engine generates 89.8 Hp and 75·m, it stands for Liquid Cooled 8 valve compact and it is the most compact twin in its class. The engine was tuned for torque, giving it a lot of rideable power.

The open deck Nikasil cylinders are integrated into the horizontally split crankcases made of high pressure cast aluminium, allowing a decrease of the wall thickness for overall engine weight reduction.



4. Engine

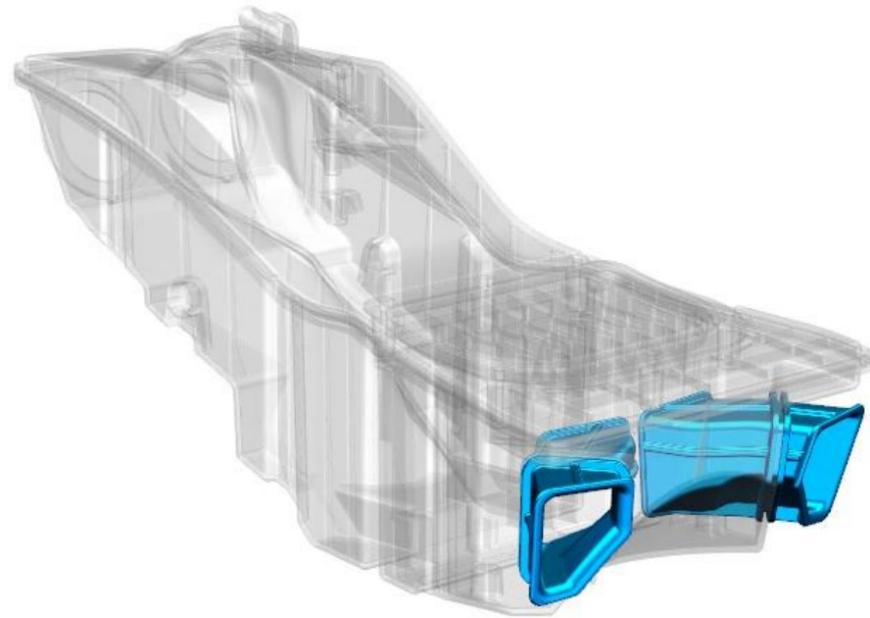
4.2 Intake and exhaust



The air filter box is just located under the seat, which means the user can clean or replace the paper filter rapidly and expediently. When the maintenance interval for the air filter is reached, it is easily accessible by removing the cover of the air filter box located under the rider's seat.

4. Engine

4.2 Intake and exhaust



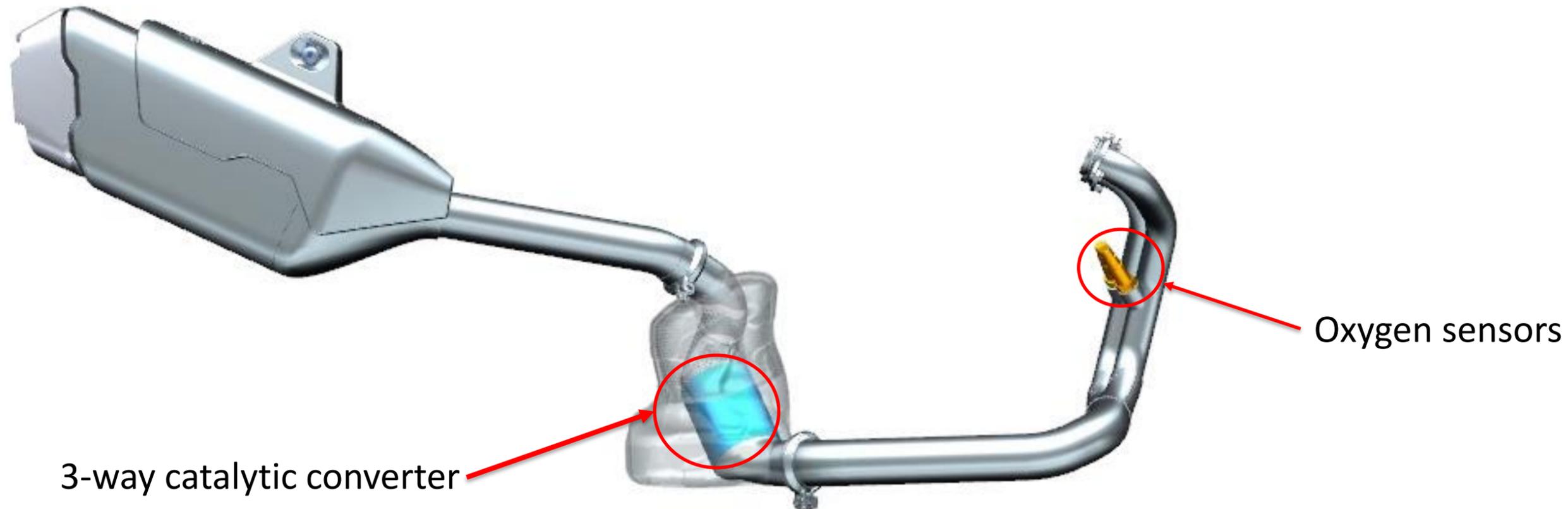
The air enters through the two air inlets and is filtered through a paper filter. This clean air then enters the throttle bodies where it is mixed with atomized fuel from the injectors. After the combustion process, the resulting exhaust gases are measured by the ECU through an oxygen sensor (one per cylinder). The ECU takes this signal and adjusts the mixture to keep the exhaust gases as close as possible to the stoichiometric mixture.

4. Engine

4.2 Intake and exhaust

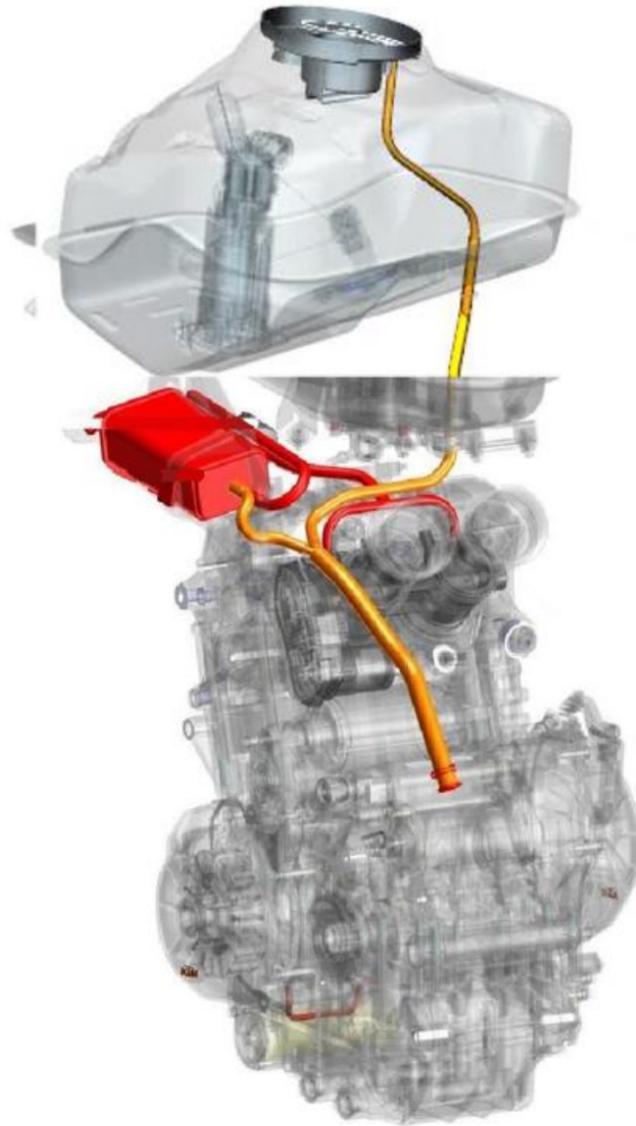
The middle section of the muffler is installed behind the engine, which can make full use of space and achieve small volume and center of gravity concentration, thus maximizing the ground clearance. The exhaust gas are monitored by the ECU through a oxygen sensor and then the harmful emissions are converted to harmless gas by a 3-way catalytic converter placed inside of the muffler.

NOTE: Anti-side lubricant is required when assembling the oxygen sensors threads



4. Engine

4.2 Intake and exhaust

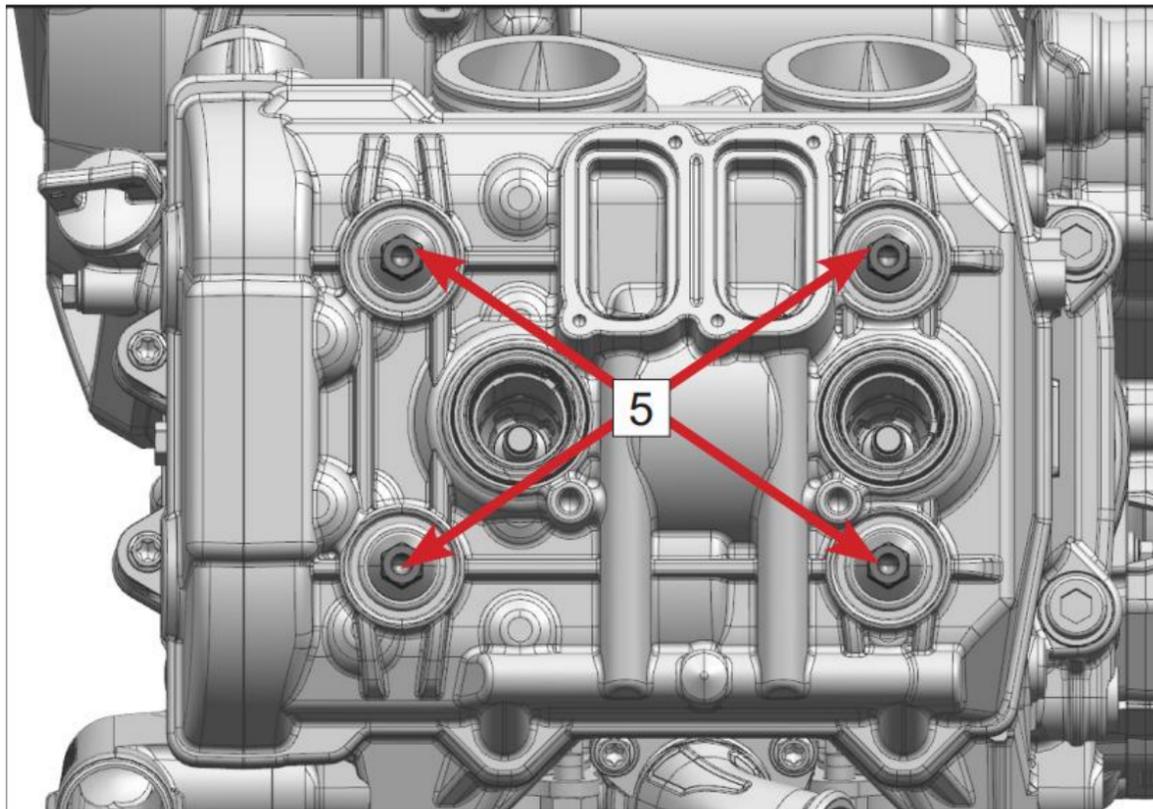


In order to comply with emission standards, an activated carbon canister is fitted to the motorcycle.

The evaporative emission system eliminates polluting fuel vapors and seals off the fuel system from the atmosphere. Vent lines from the fuel tank route vapors to the evaporative emission system storage canister, where they are adsorbed by the active carbon within the canister and stored.

4. Engine

4.5 Cylinder head



Remove screws 5 with gaskets. Take off the valve cover with the valve cover seal. The 8 valve DOHC cylinder head contains twin chain driven camshafts and two spark plugs (one per cylinder). The steel valves are actuated by DLC (Diamond-Like Carbon) coated finger followers, which allow the use of smaller cams to reduce the rotating masses on the camshafts, but without losing opening time on the valves. To keep the timing chain tensioned, the engine uses a hydraulic chain tensioner. The secondary balancer shaft which is actuated by the exhaust camshaft sits between the two camshafts.

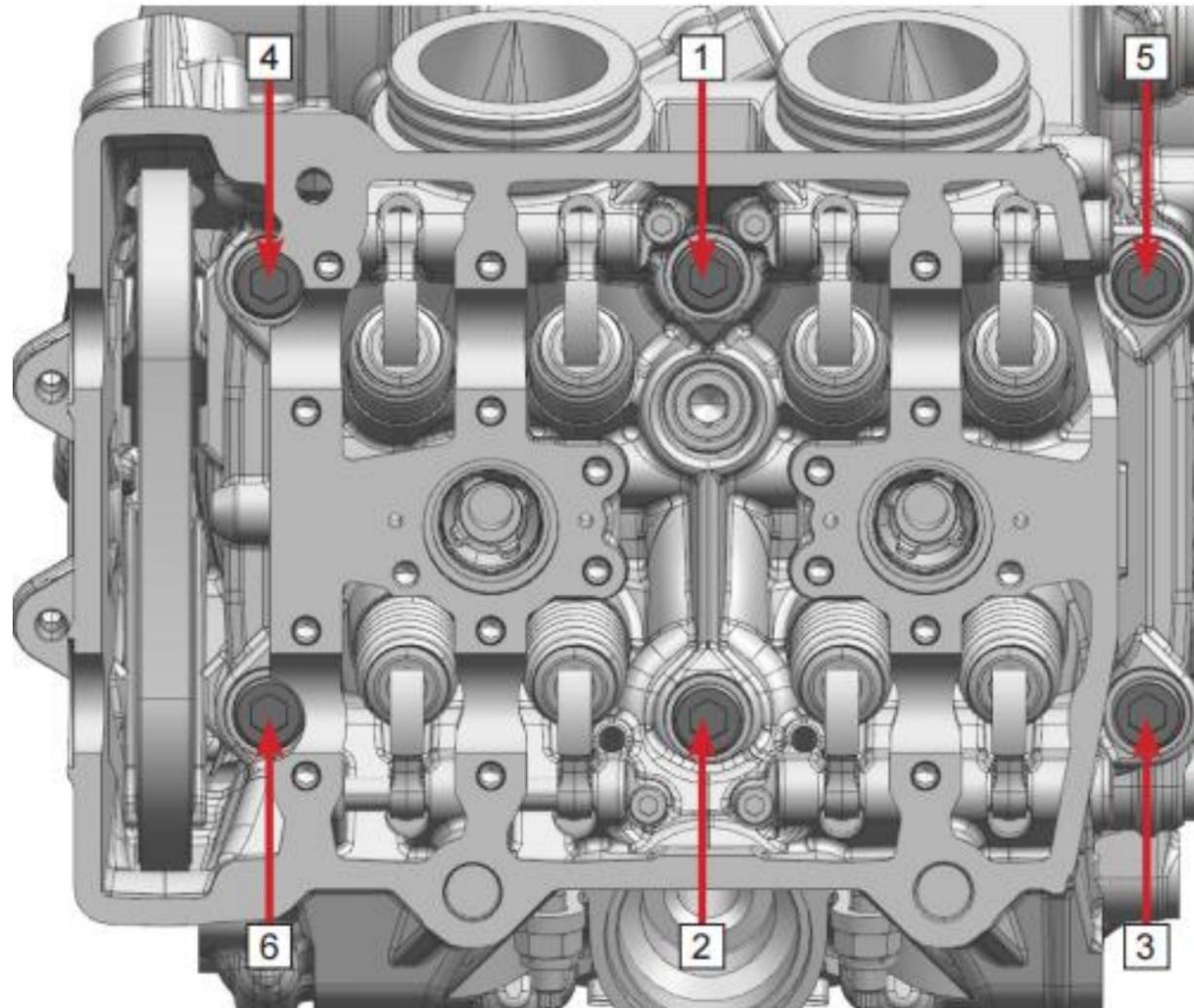
➤ Valve clearance(cold):

IN: 0.08~0.15mm

EX: 0.15~0.20mm

4. Engine

4.3 Cylinder head



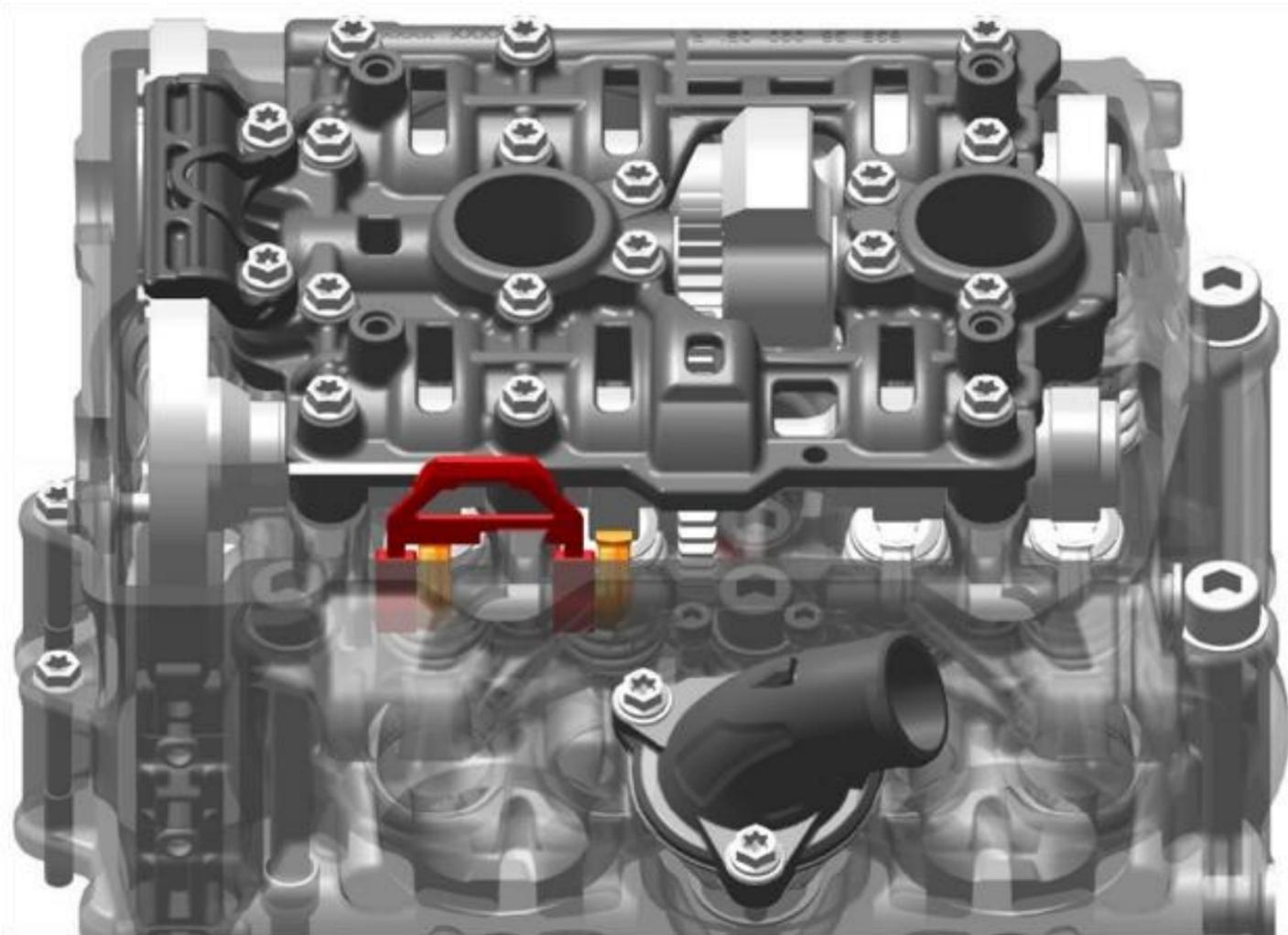
»NOTE:

The six M11x1.5 cylinder head screws must be replaced with new ones every time the cylinder head is disassembled and always use new cylinder head screws.

Screw, cylinder head	M10x1.25	<p>Tightening sequence: Observe tightening sequence.</p> <p>1st stage 5 N•m</p> <p>2nd stage 15 N•m</p> <p>3rd stage 90°</p> <p>4th stage 90°</p> <p>Collar greased / thread oiled</p>
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4. Engine

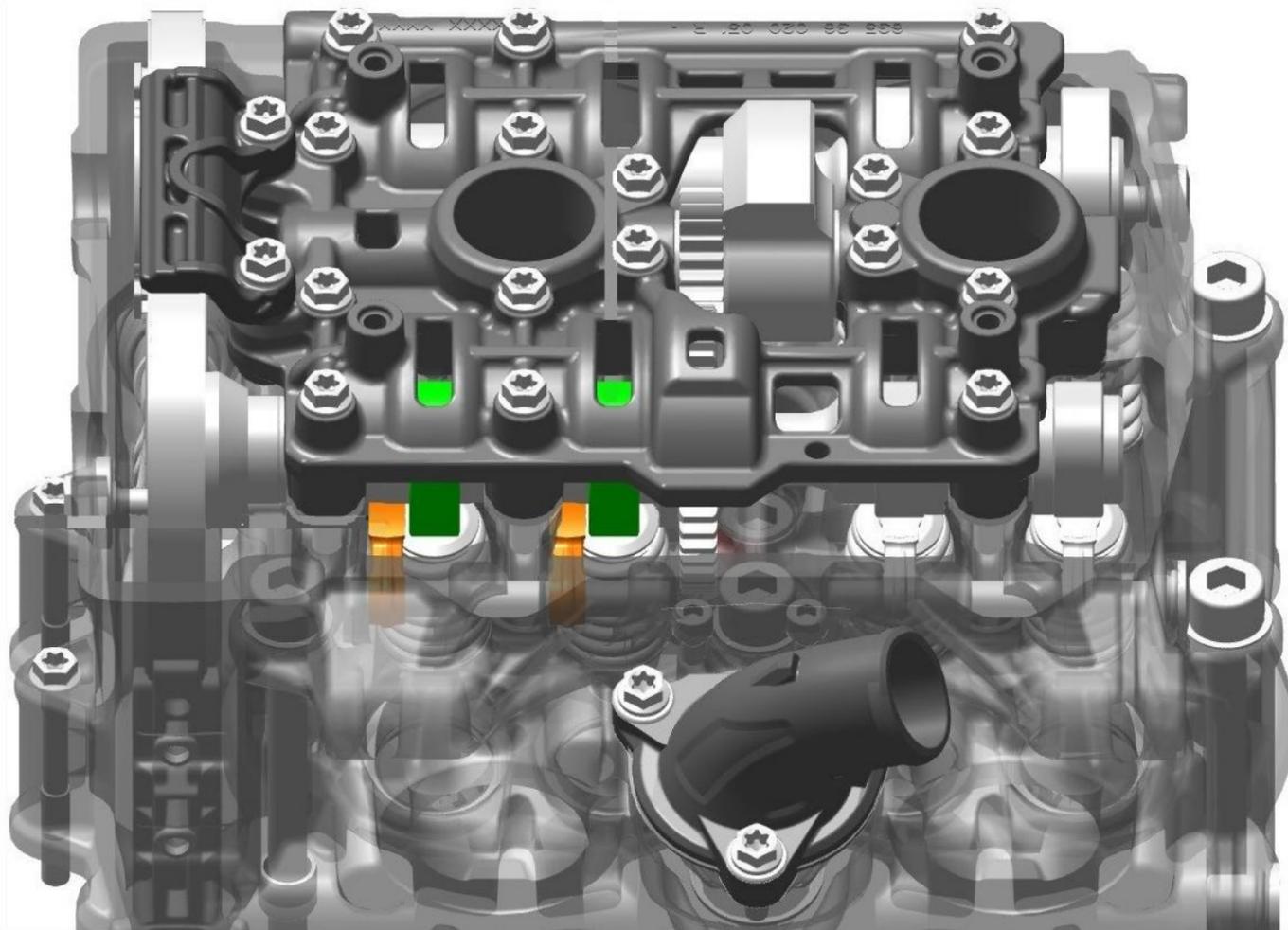
4.3 Camshafts



To avoid any damage to the camshaft bridge (such as warping or deformation), before loosening the retaining screws, remove the tensioner first, the pressure created by the exhaust valves on the camshaft exhaust cams(next page,green) in cylinder two must be relieved. To do this, set cylinder two to TDC, remove the security clip(red) , and slide the cam followers (yellow) towards the camshaft sprocket.

4. Engine

4.3 Camshafts

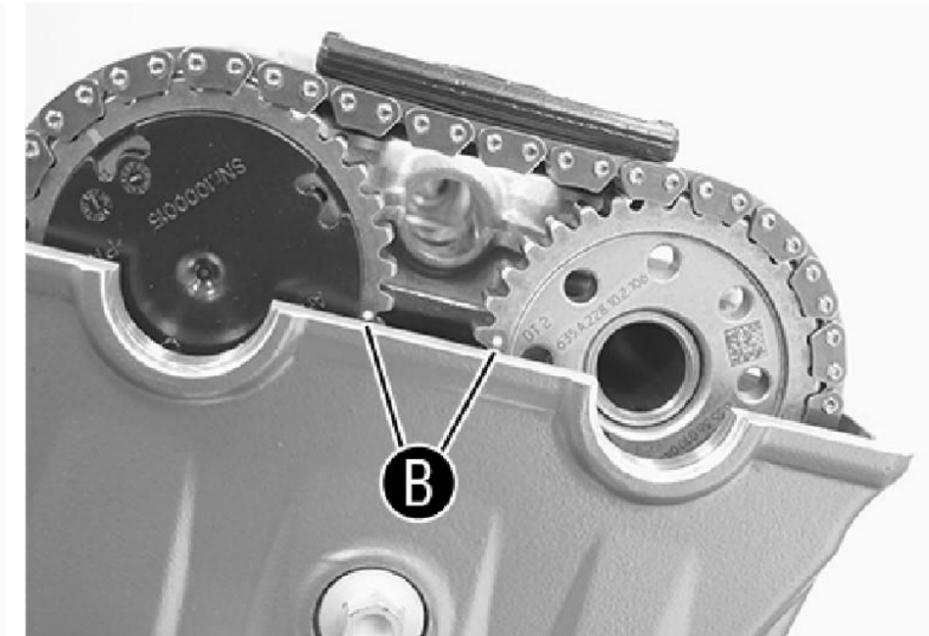
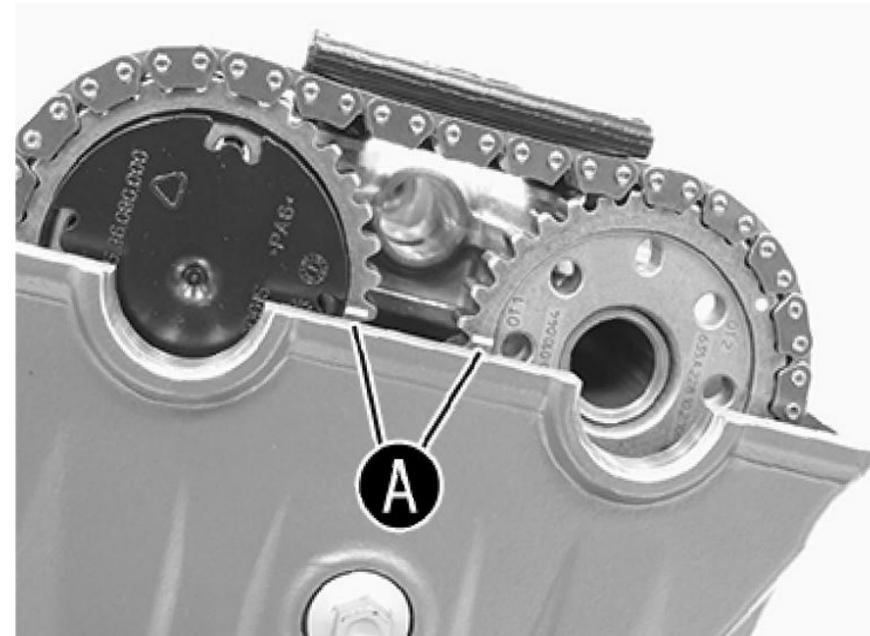


PROCEDURE:

Remove the security clip and slide the cam followers towards the camshaft sprocket.

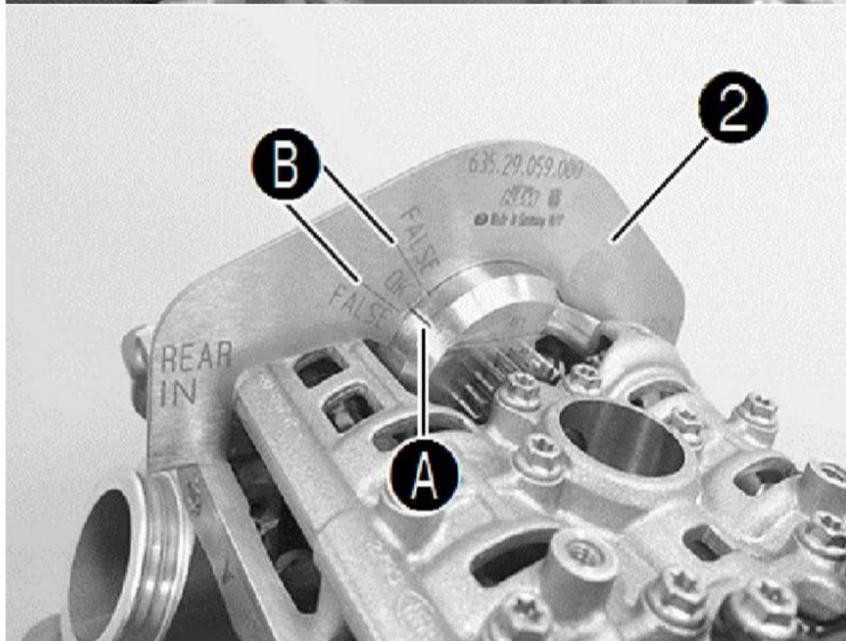
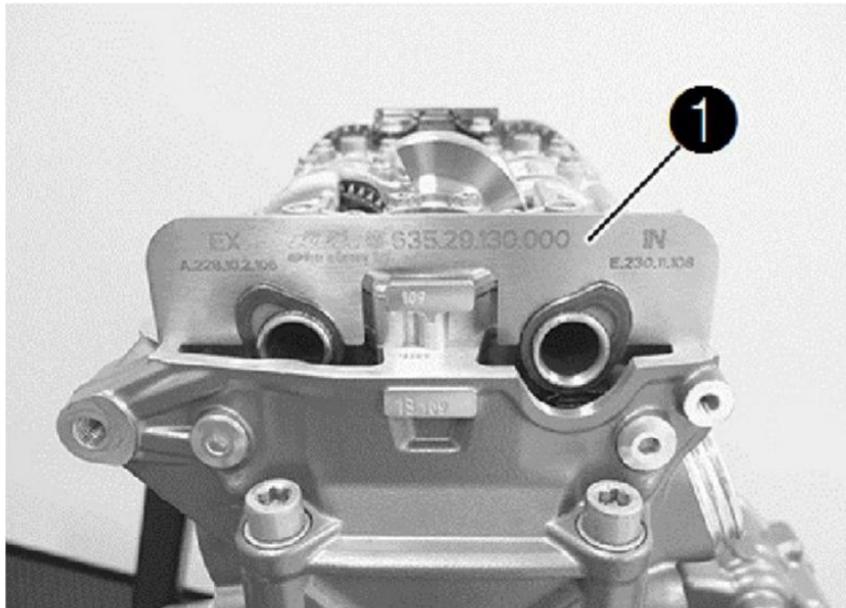
In timing position, the mark "IN" and "EX" on the camshaft should towards to the intake and exhaust side respectively and parallel with the cylinder head top surface, meanwhile the mark $\sim|H$ on the crankshaft should align with the slot mark of the timing view on the clutch cover.

Remove camshaft bridge and continue, finally remove the timing chain, with engine disassembly as described in the repair manual.



4. Engine

4.3 Camshafts



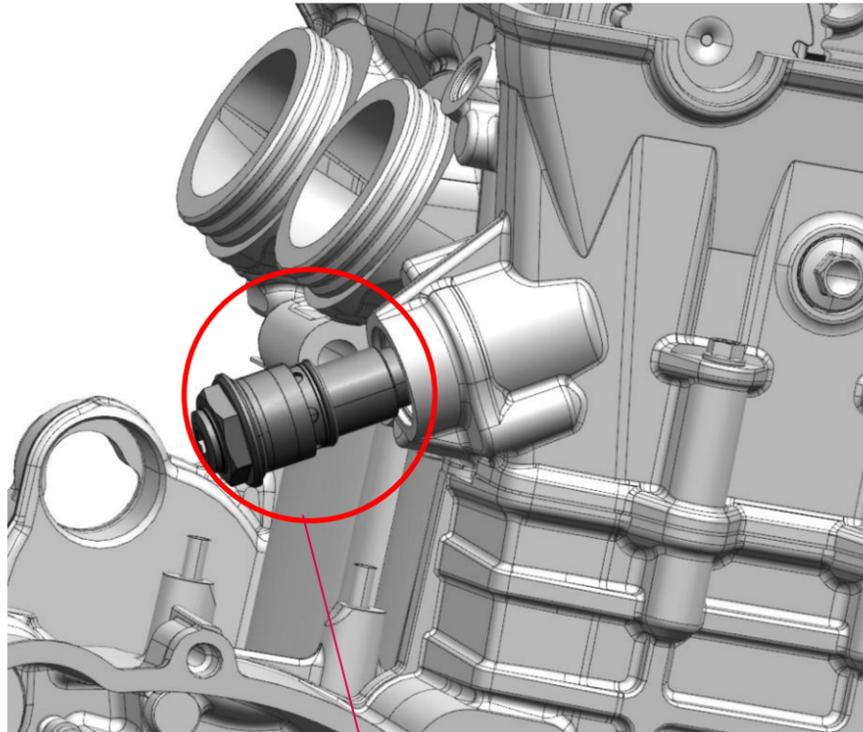
After installing the bridge, the camshaft timing and the upper balancer shaft timing must be checked using the special tools:

- ① ST14 for camshafts and
- ② ST13 for balancer shaft.

The (A) mark on the balancer shaft has to be in between the two lines (B) marked on the special tool.

4. Engine

4.4 Install hydraulic tensioner



When installing the hydraulic tensioner, it must be compressed, with 2~3mm of compression reserved. After installation, tap moderately with $\Phi 8$ mm iron bar from the central screw hole to release the hydraulic tensioner. This position is necessary for installation.

If the timing chain tensioner is now pressed in once more (while it is installed) and then pulled out no more than halfway (preventing it from coming out fully), the latching system locks and the timing chain tensioner can no longer be compacted; this function is necessary to ensure sufficient tension of the timing chain, even at low oil pressure.

4. Engine

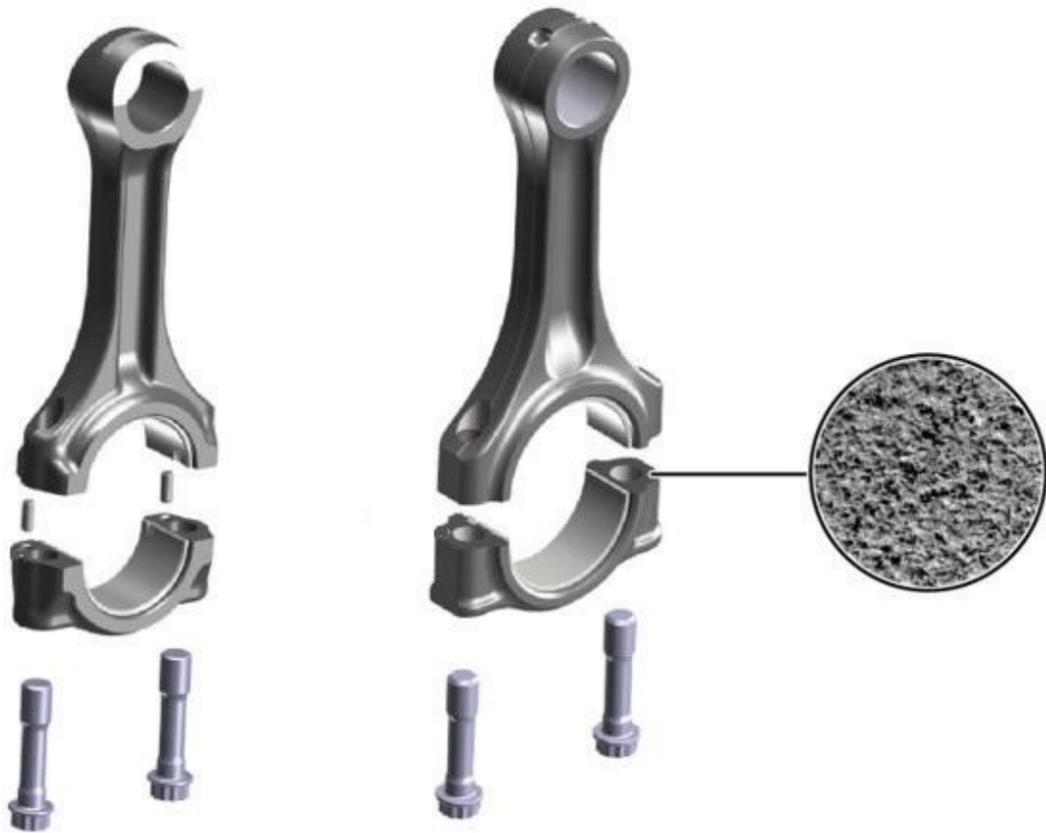
4.6 Piston



Forged aluminium pistons with three piston rings, combined with a chrome ceramic coated piston pin allow for reduced piston weight and thus reducing reciprocating mass. Reduced reciprocating mass results in a faster revving engine and allows for a lighter and smaller crankshaft.

4. Engine

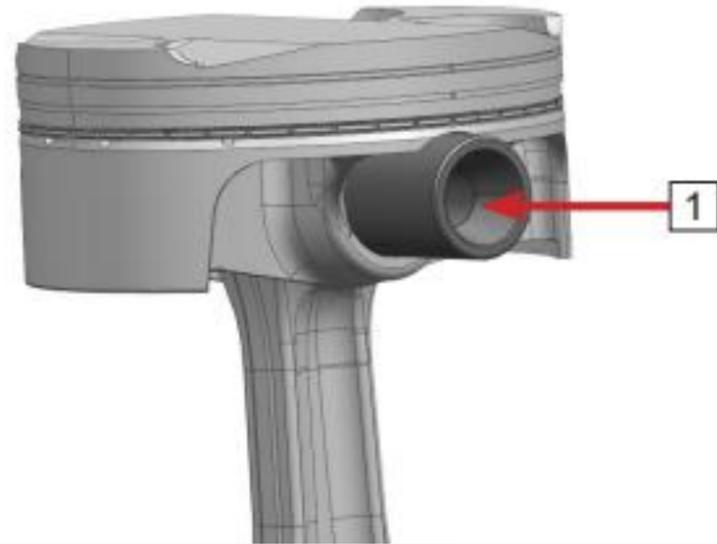
4.6 Piston



The cracking connection rod has the advantages of accurate positioning, high reduction degree, more reliable operation of the connecting rod shoe and longer service life.

4. Engine

4.6 Piston



Mount piston pin (1).
The piston marking (A) and lettering (B)
of the connecting rod point forward after assembly.



4. Engine

4.6 Piston



The inertia generated by the movement of the piston over the circlip can compress it and remove it from its place if it is installed incorrectly, generating serious damage to the engine. The open end of the 'circlip' must be installed upwards; in this way the inertia of the movement instead of compressing the 'circlip' expands it by securing it inside the installation slot.

NOTE:

If you tighten the mating surfaces in the wrong direction, the complete connecting rod must be replaced!

4. Engine

4.6 Piston



The conrod bearing cover and connecting rod are jointly marked. Make sure that each conrod bearing cover is mounted on the same connecting rod.

This number must be installed towards the front of the engine (exhaust side) to easily remember the installation position. Mating surfaces are matched perfectly when installed correctly.

Screw, conrod bearing M8

1st stage: 5 N•m (3.7 lbf•ft)

2nd stage: 15 N•m (11.1 lbf•ft)

3rd stage: 90°

Collar and thread oiled

4. Engine

4.6 Piston

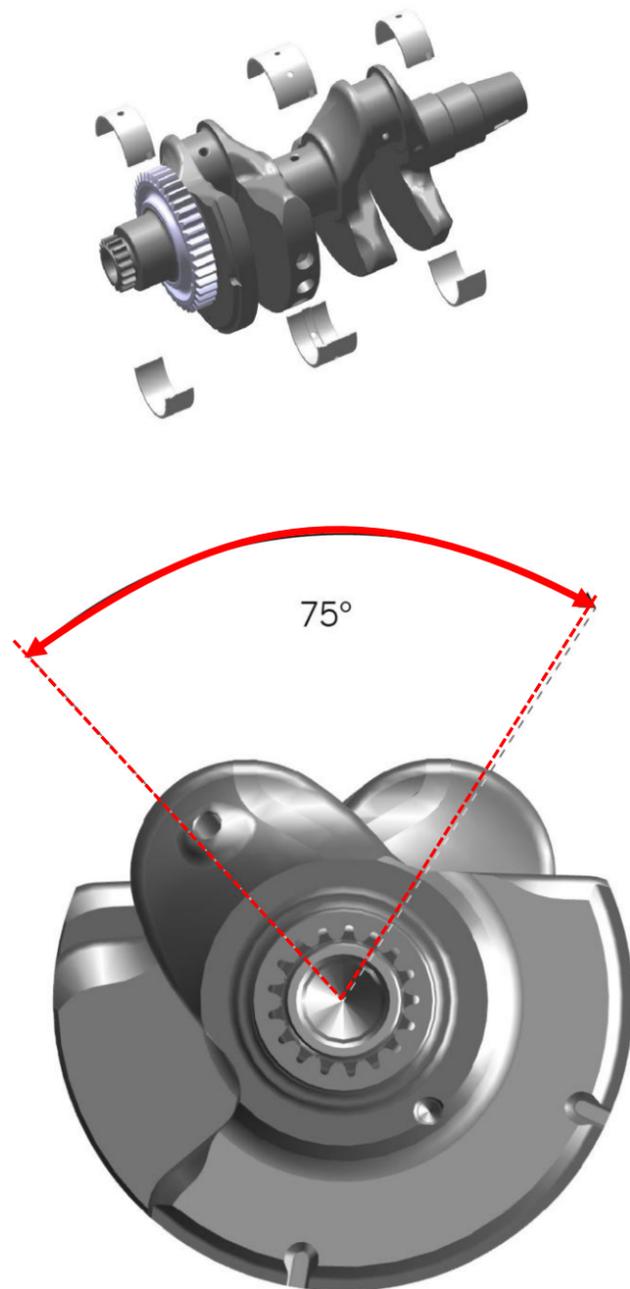
When a new connecting rod is installed, the mating surfaces must be cleaned with a wire brush to eliminate any metal residue produced during the cracking process. When installing the connecting rods, the mating surfaces must be free of oil to achieve a perfect fit between the two surfaces.

If you tighten the mating surfaces in the wrong direction, the complete connecting rod must be replaced!



4. Engine

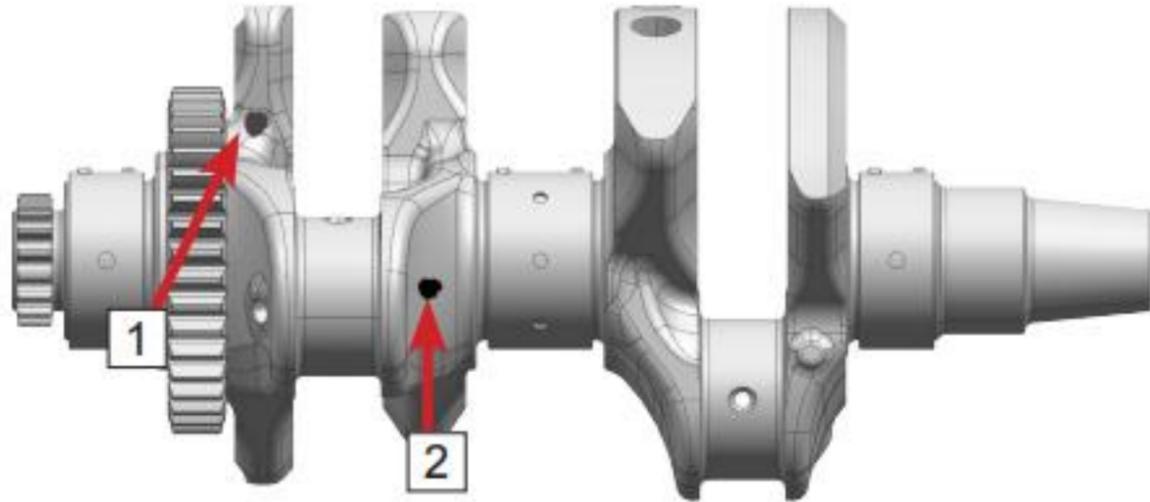
4.7 Crankshaft



The 75° forged one-piece crankshaft with plain bearings is designed to be light and to reduce the rotating masses inside the engine, allowing the engine to change the RPM's faster and therefore improving the throttle response when accelerating or decelerating. Because of the 75° connecting rod journals angle, the ignition system fires from compression TDC in cylinder one to cylinder two every 435°, and from compression TDC in cylinder two to cylinder one every 285°, creating a similar power delivering and sound characteristic as the V-twin engine the.

4. Engine

4.7 Crankshaft



Selecting the main bearing shells

New crankshaft

Select the new bearing shells according to color coding (1)

Color coding (2) refers to the conrod bearing.

Used crankshaft

Measure all main bearing shells and select the new bearing shells accordingly.

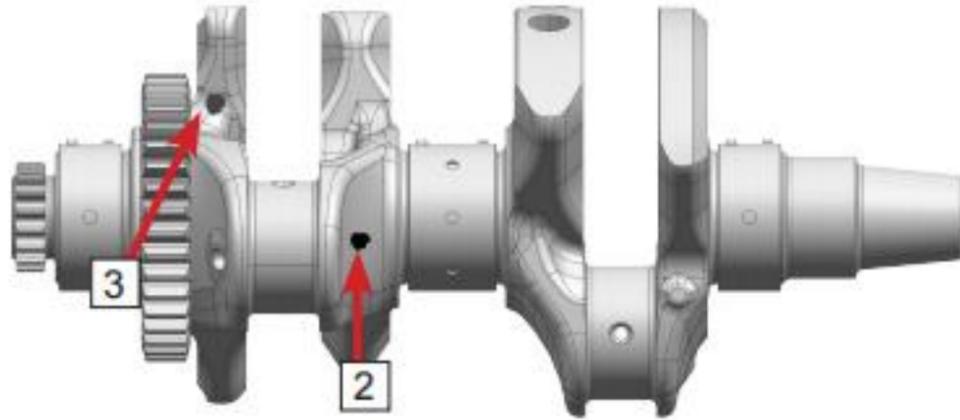
Crankshaft-main bearing diameter

Blue: 37.985mm~37.995mm

Red : 37.995mm~38.005mm

4. Engine

4.7 Crankshaft



New crankshaft

Select the new bearing shells according to color coding(2)

Color coding (3) refers to the conrod bearing.

Used crankshaft

Measure all main bearing shells and select the new bearing shells accordingly. The matching method is showed as a chart chart.



Crankshaft-crank pin diameter

Blue: 37.983mm~37.993mm

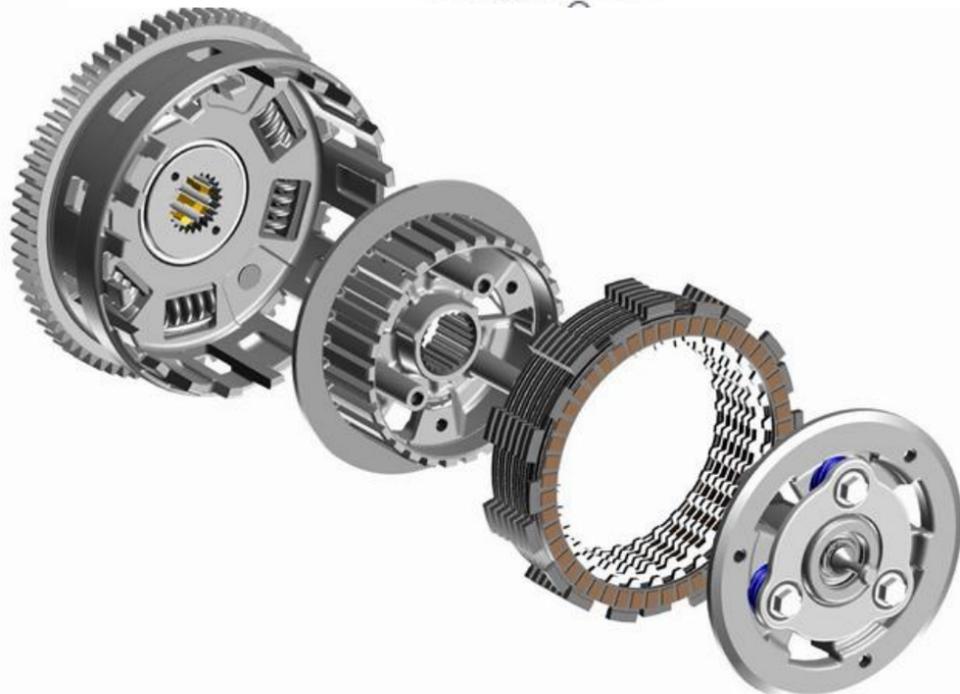
Red : 37.993mm~38.003mm

4. Engine

4.8 Clutch



The 800MT is equipped with a PASC (Power Assisted Slipper Clutch) clutch, which is more compact and therefore lighter. The clutch has forced lubrication to improve the cooling of the clutch discs.

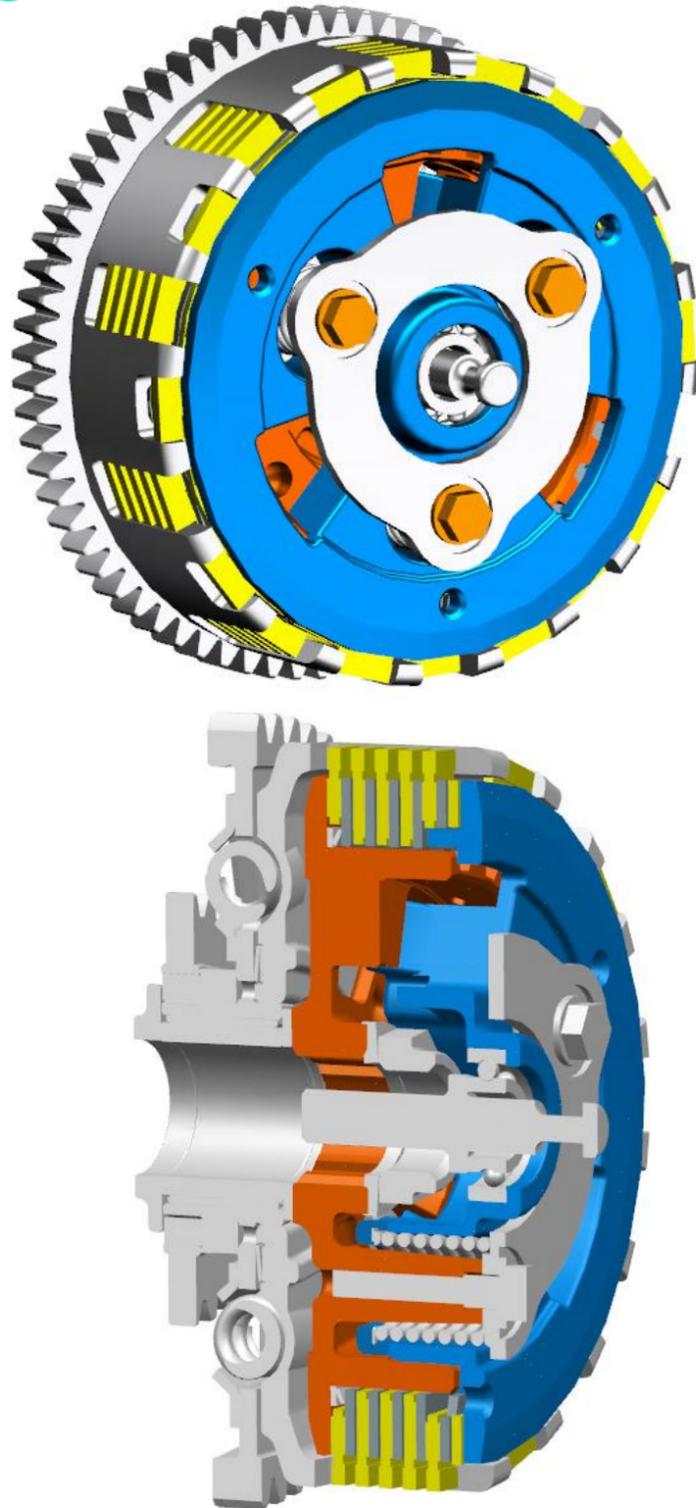


THE PASC CLUTCH HAS TWO FUNCTIONS:

Slipper clutch opens when the engine back-torque becomes too high, preventing rear wheel chatter when braking sharply or decelerating. » It also assists when you open up the throttle. This reduces the force required to disengage the clutch, allowing the clutch to be operated with two fingers.

4. Engine

4.8 Clutch



The 800MT is equipped with a slipper clutch. Under acceleration, the assist ramps pull the pressure plate towards the inner hub working in conjunction with the three clutch springs to compress the clutch plates and discs. This function allows to use lighter spring force which provides a lighter clutch feel.

Under excessive engine braking, which can occur as a result of excessive downshifts, the slipper ramps push the pressure plate away from the clutch hub. This relieves pressure on the clutch plates allowing them to slip which helps to reduce back-torque and keeps the rear tire from hopping and locking up.

4. Engine

4.8 Clutch



Note:

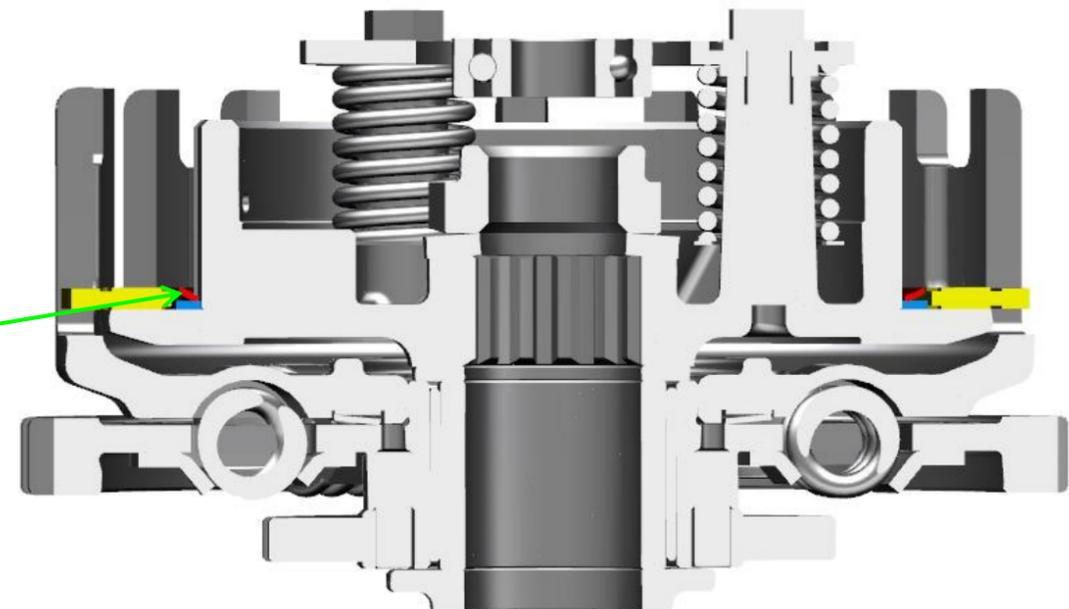
The multi-plate oil-bath clutch consists of five steel plates and six friction plates. The first friction plate in the stack has a larger internal diameter to contain the anti-judder conical springs which work against the clutch springs to allow the clutch to slip more during the engagement reducing the surge and providing a smoother clutch operation.

Note:

The last friction plate in the stack must be offset from the rest of the plates.

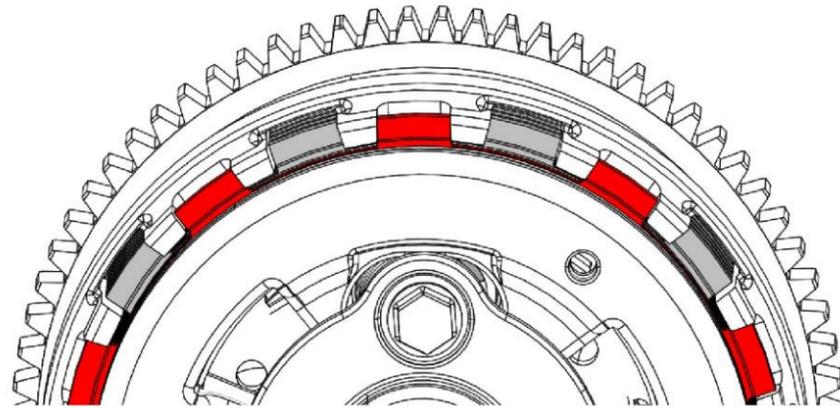
Take care of the direction of the anti-judder conical spring washer.

Anti-judder conical spring washer



4. Engine

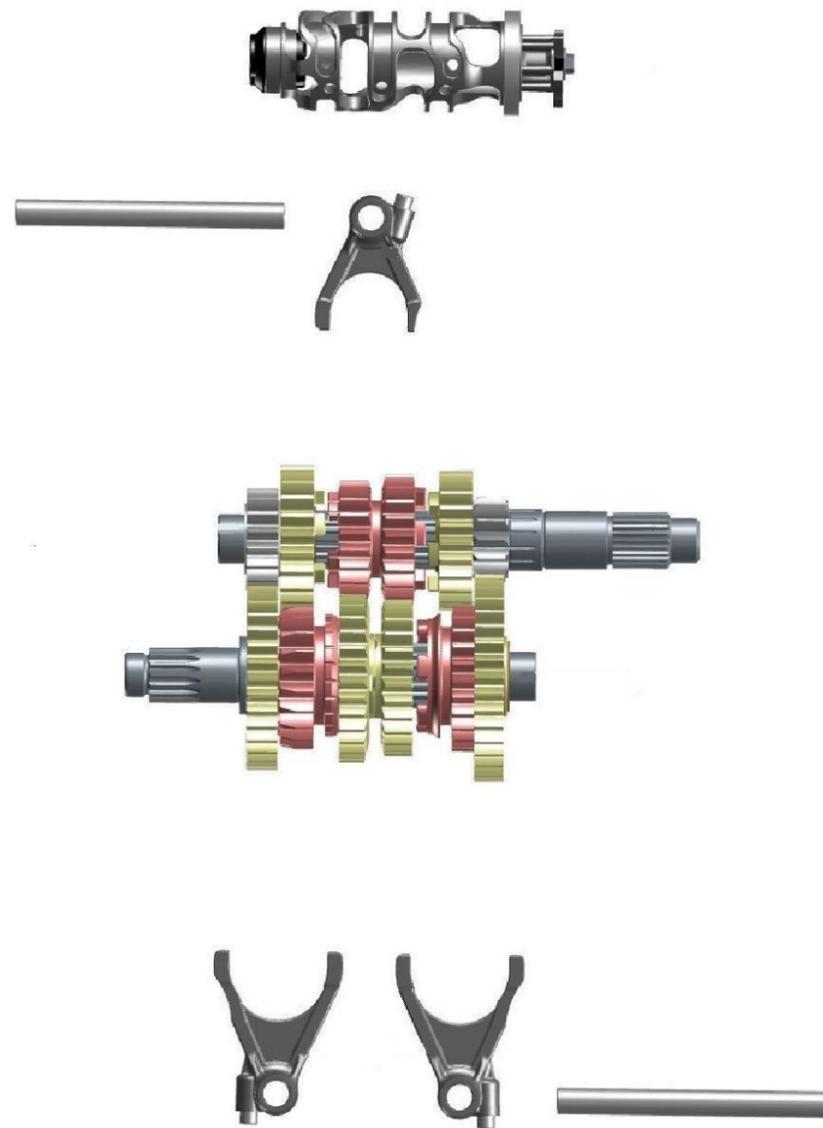
4.8 Clutch



The last friction plate has to be installed offset from the rest of the stack to reduce sounds during clutch operation.

4. Engine

4.9 Transmission



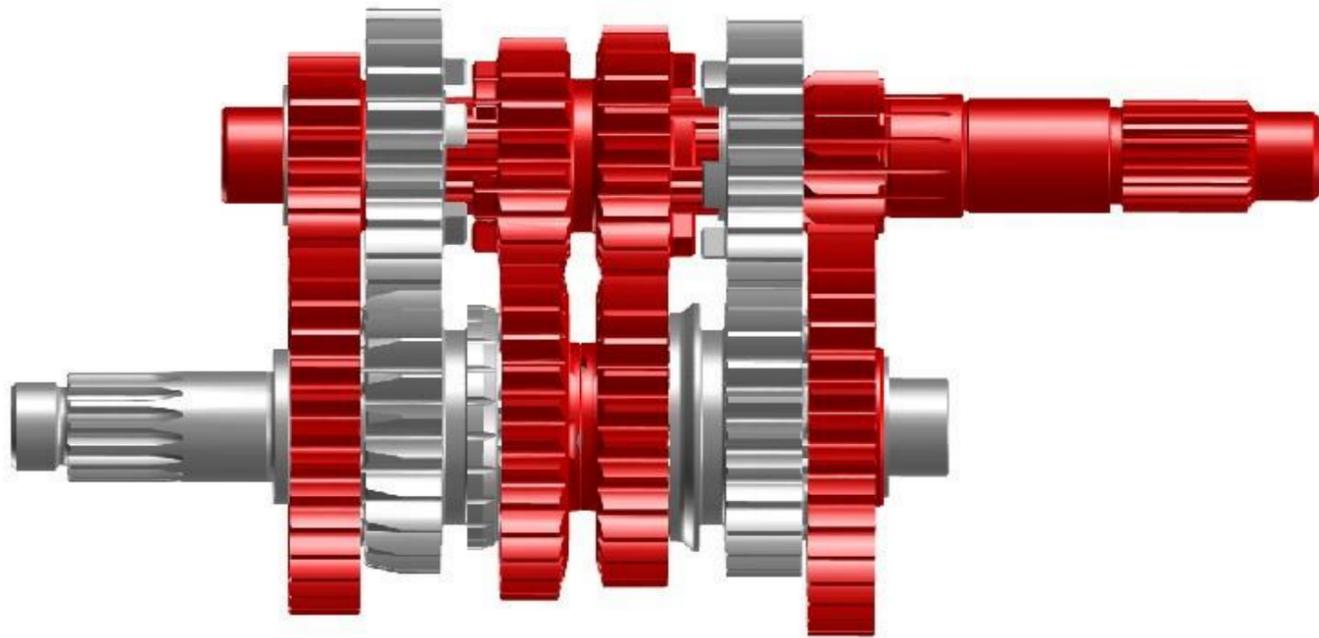
The six-speeds sequential gearbox is essentially composed of two shafts; an Input shaft , connected to the engine through the clutch, and an Output shaft ending with the sprocket. On these shafts are positioned twelve gears (six for each shaft since the transmission is six-speed) that are divided into six nonsliding idler gears (yellow), two non-sliding fixed gears (grey), and three sliding fixed rotational gears (red). Latterly sliding fixed rotationally gears (three) are moved by the shift forks , in turn driven by the shift drum , to select the desired gear. When a fork moves the gears to the right or left, it engages with the adjacent wheel through gear dogs.

4. Engine

4.9 Transmission

The 12 gear wheels are made of forged alloy steel-chromium nickel, and then case hardened. This results in a high durability and toughness.

The power flow through the gears is shown below:

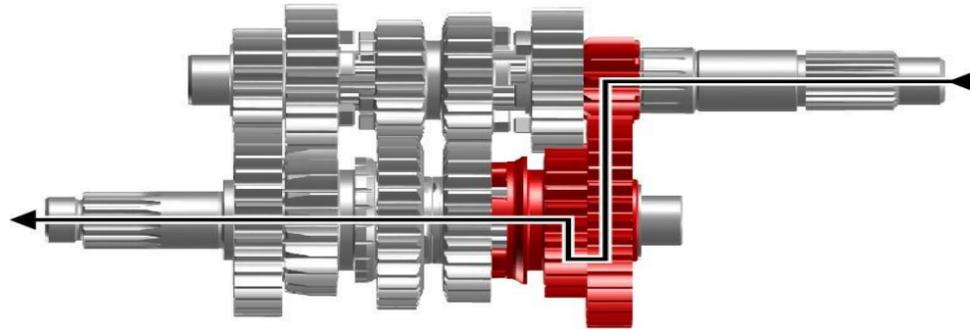


Neutral

When the transmission is in neutral position, the Input and Output shafts spin independently of each other.

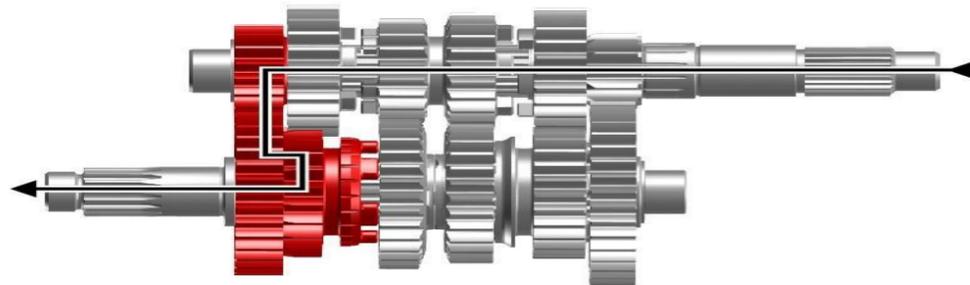
4. Engine

4.9 Transmission



1st Gear

When the transmission is in first gear, power-flow enters from the fixed first gear on the Input shaft, and then transferred to the non-sliding idler first gear on the output shaft, through to the dogs on the sliding, fixed rotation gear, then via the sliding gear splines to the output shaft.

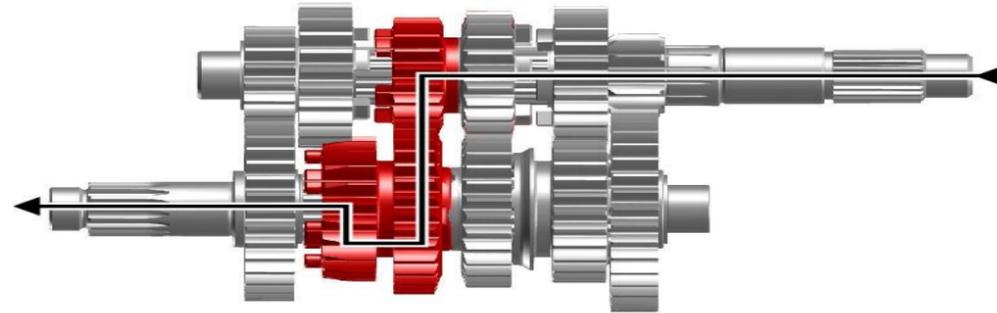


2nd Gear

In second gear, power-flow enters from the fixed second gear on the Input shaft, then transferred to the freewheeling second gear on the output shaft, through to the dogs on the sliding, fixed rotation gear, then via the sliding gear splines to the output shaft.

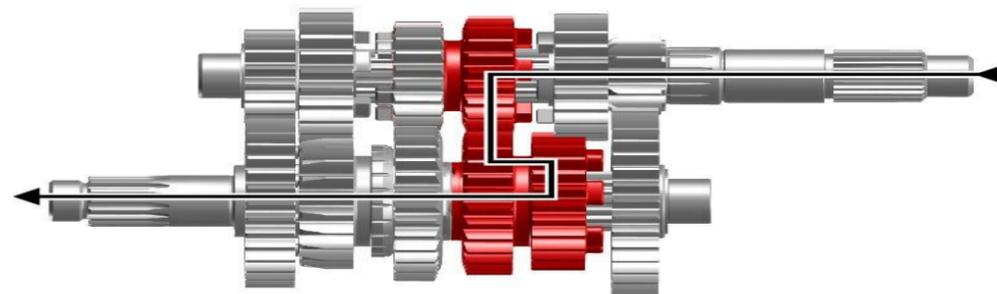
4. Engine

4.9 Transmission



3rd Gear

In third gear, power-flow enters the Input shaft to the splines of the sliding, fixed rotation third gear on the Input shaft, then transferred to the non-sliding idler third gear on the output shaft, through to the dogs on the sliding, fixed rotation gear, then via the sliding gear splines to the output shaft.

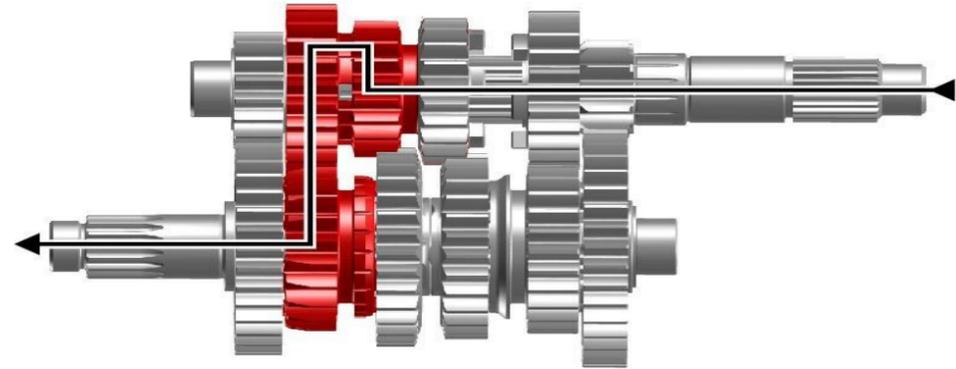


4th Gear

In fourth gear, power-flow enters the Input shaft to the splines of the sliding, fixed rotation gear through the dogs to the idler fourth gear on the Input shaft, then transferred to the sliding, fixed rotational fourth gear to the sliding gear splines of the output shaft.

4. Engine

4.9 Transmission



5th Gear

In fifth gear, power-flow enters the Input shaft to the splines of the sliding, fixed rotation fifth gear on the Input shaft, then transferred to the non-sliding idler fifth gear on the Output shaft to the dogs of the sliding, fixed rotation gear splines, to the output shaft

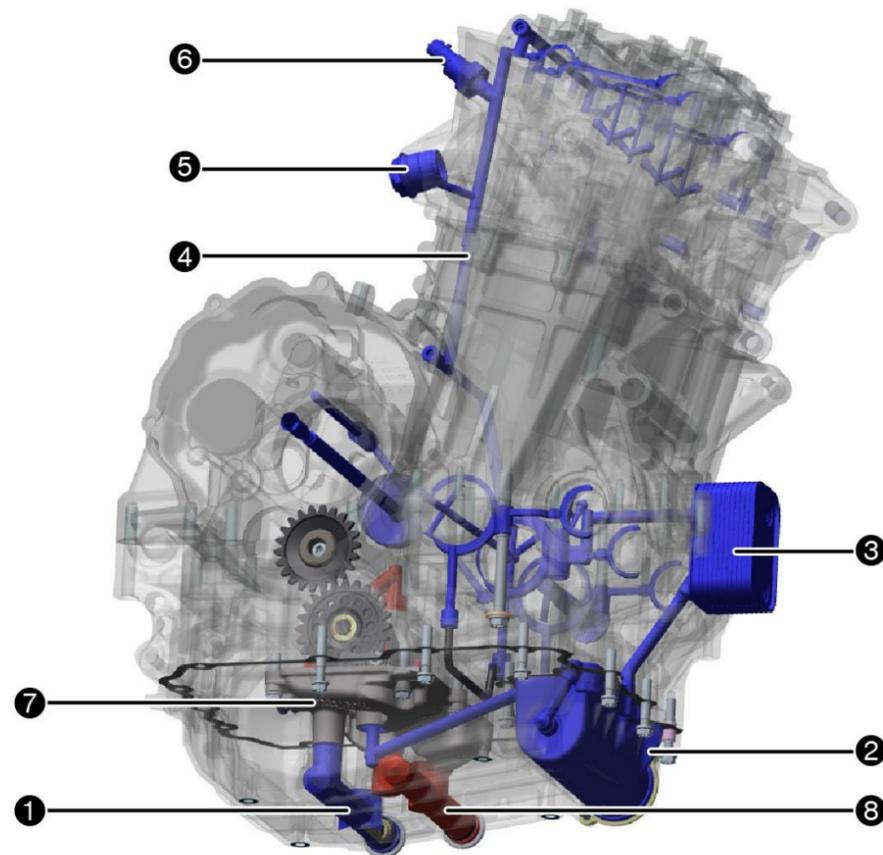


6th Gear

In sixth gear, power-flow enters from the Input shaft to the splines of the sliding, fixed rotation gear dogs, to the non-sliding idler sixth gear, then transferred to the sliding fixed rotation sixth gear which is splined to the Output shaft.

4. Engine

4.10 Oil passage



Oil is forced-fed to the lubrication circuit by an Eaton-type pump. The oil is sucked by the pressure pump through the oil screen ① and sent to the paper filter ②. From here the oil flows into the heat exchanger ③, where the oil temperature is reduced maintaining oil cooling efficiency.

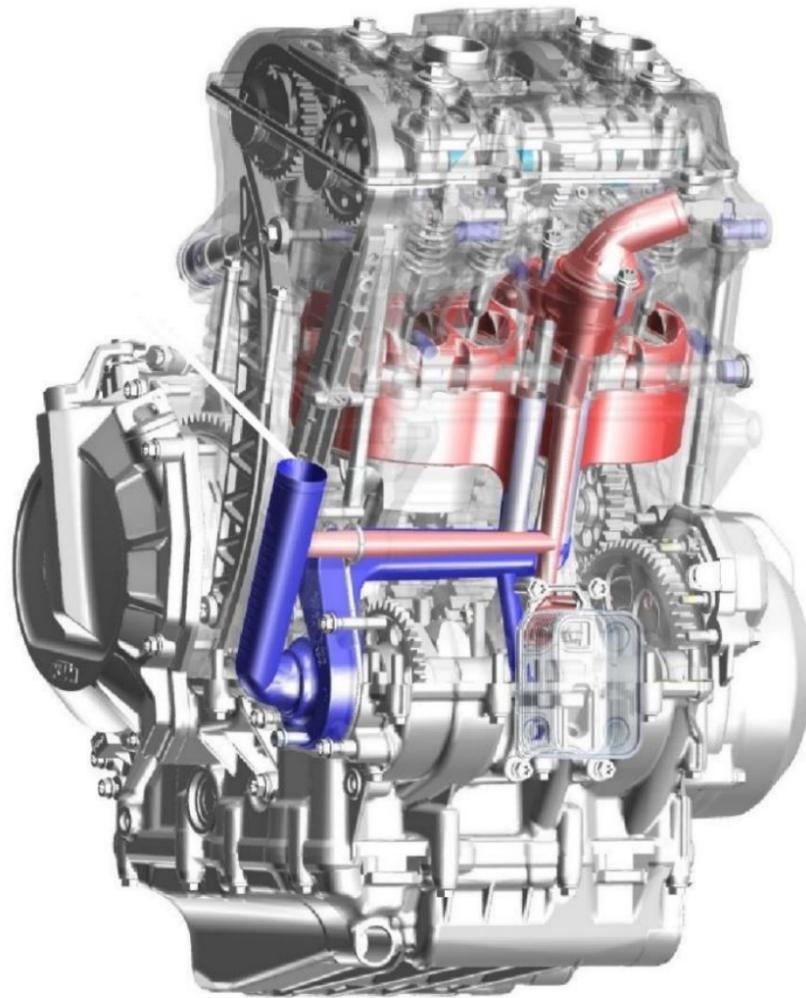
The first parts to receive lubrication are the crankshaft and the primary counterbalancer. The oil comes through the lubrication channels on the crankcases and passes through the holes in the plain bearings creating a lubricating film between the bearing surface and the crank pins.

At the same time the oil flows to the clutch to cool down the friction plates and steel discs and also to the gear box to lubricate the drive train.

The last part to receive lubrication is the cylinder head; the oil travels through the transfer line ④ and reaches the hydraulic chain-tensioner ⑤ to maintain a constant tension on the timing drive chain by means of oil pressure. The oil pressure sensor is located ⑥ close to the camshafts because if the oil pressure is too low at this point, the camshafts do not receive enough lubrication, resulting in damage to the cylinder head.

4. Engine

4.11 Cooling system

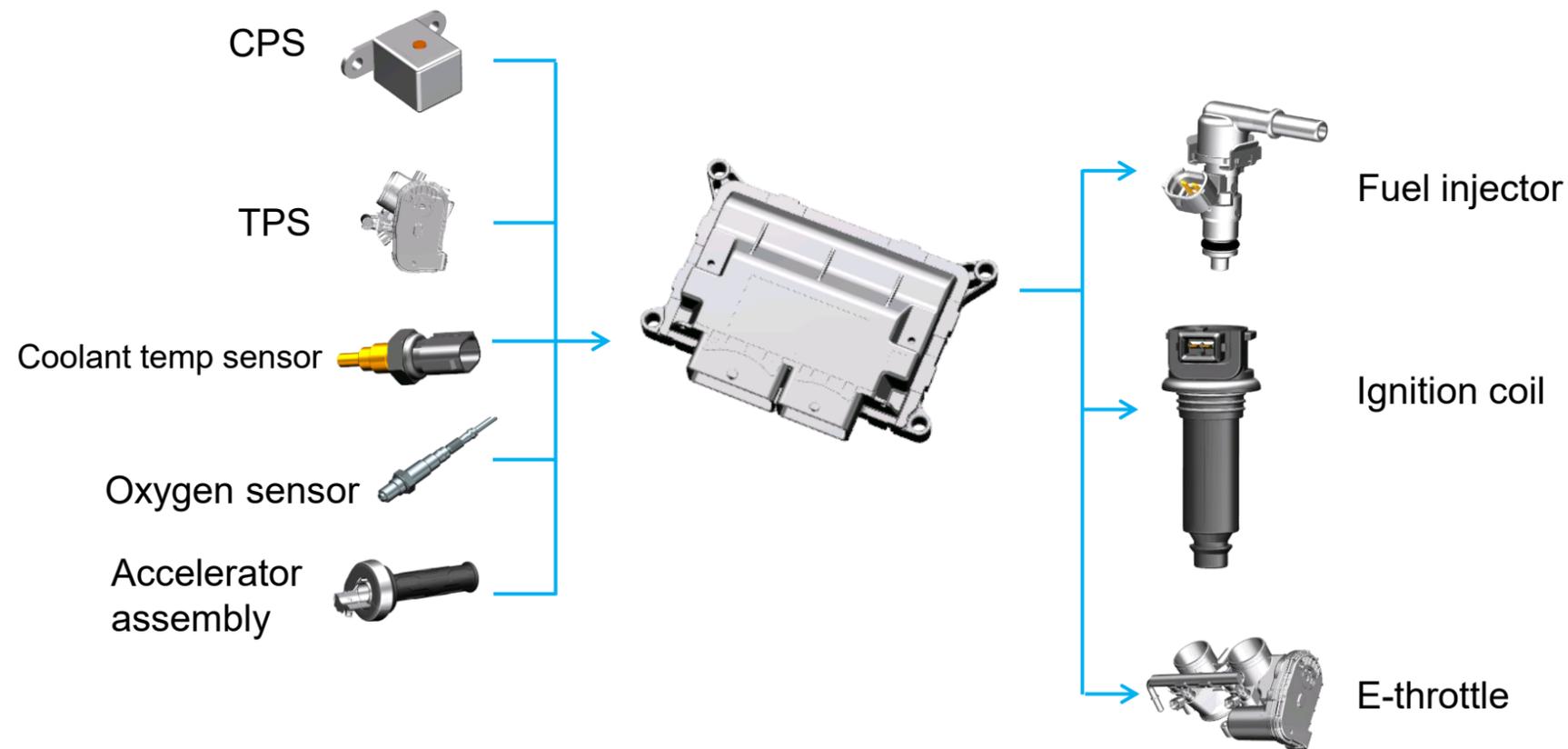


The cooling system contains 1.4 liters of coolant. The thermostat is closed if the temperature of the coolant is below 72°C. It is circulated by a water pump around the open deck cylinders and cylinder head in a close loop, controlled by the thermostat, to reach the working temperature more efficiently.

The thermostat starts to open at 72°C and is fully open at 85°C. When the thermostat starts to open, the coolant flows to the radiator where its temperature is reduced. The pressure in the cooling system (max 1.4 bars) is regulated by a valve in the radiator cap.

5. Electronic system

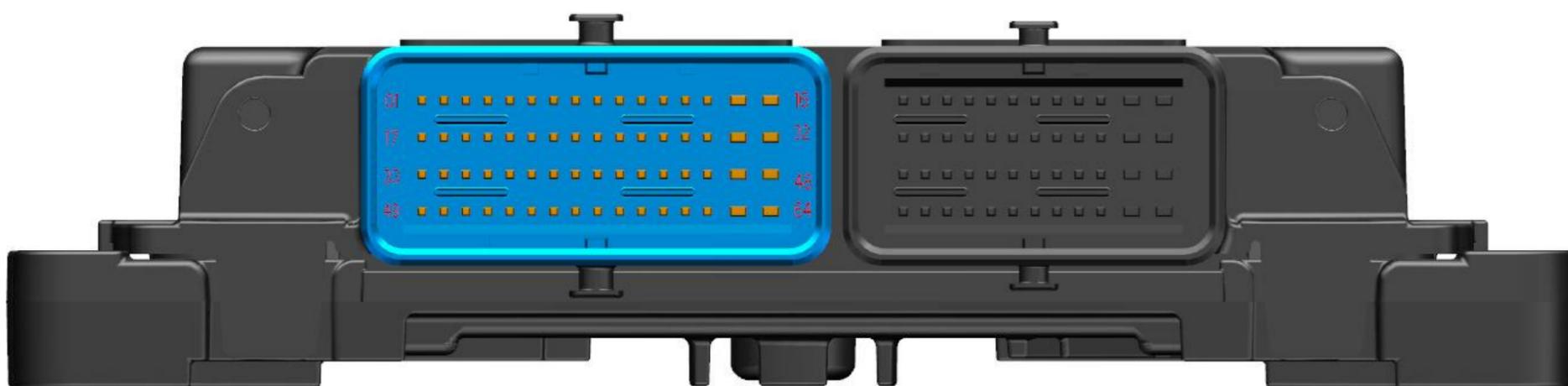
5.1 ECU



The ECU processes the information from the sensors, allowing it to control all system functions such as fuel supply and ignition to ensure a perfect combustion in the engine. The EFI system overview is as shown in left.

5. Electronic system

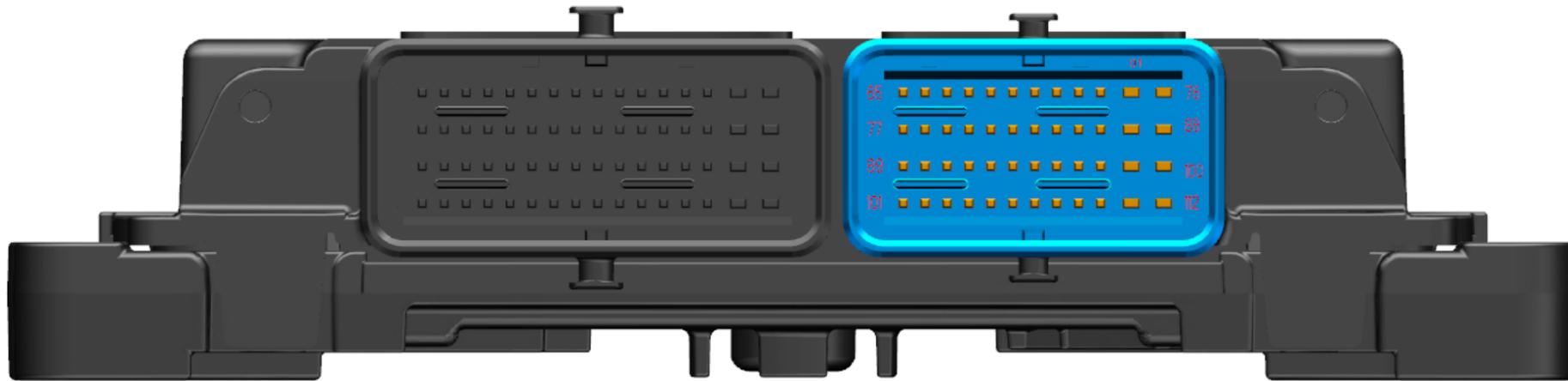
5.1 ECU



PIN	Function	PIN	Function
1	CAN_H	35	Ignition switch
5	Main relay	36	APS 5V power
7	APS 1 GND	37	APS 5V power
9	Cruise control	41	Oil pump relay
12	TPS signal	42	HEADLAMP relay
15	Main relay power 1	43	Oxygen sensor2 GND
16	Main relay power 2	44	Clutch switch
17	CAN_L	45	APS 1
18	K-line	46	Fuel pump relay
19	5V Power	47	GND simulate
20	Battery power supply	48	Oxygen sensor heating
21	Oxygen sensor 2	56	Fan control
23	Break switch	58	Starter control relay
25	Break lamp switch	60	TPS signal
29	Sidestand switch	63	ECU GND2
30	APS2	64	ECU GND1
34	Engine speed output		

5. Electronic system

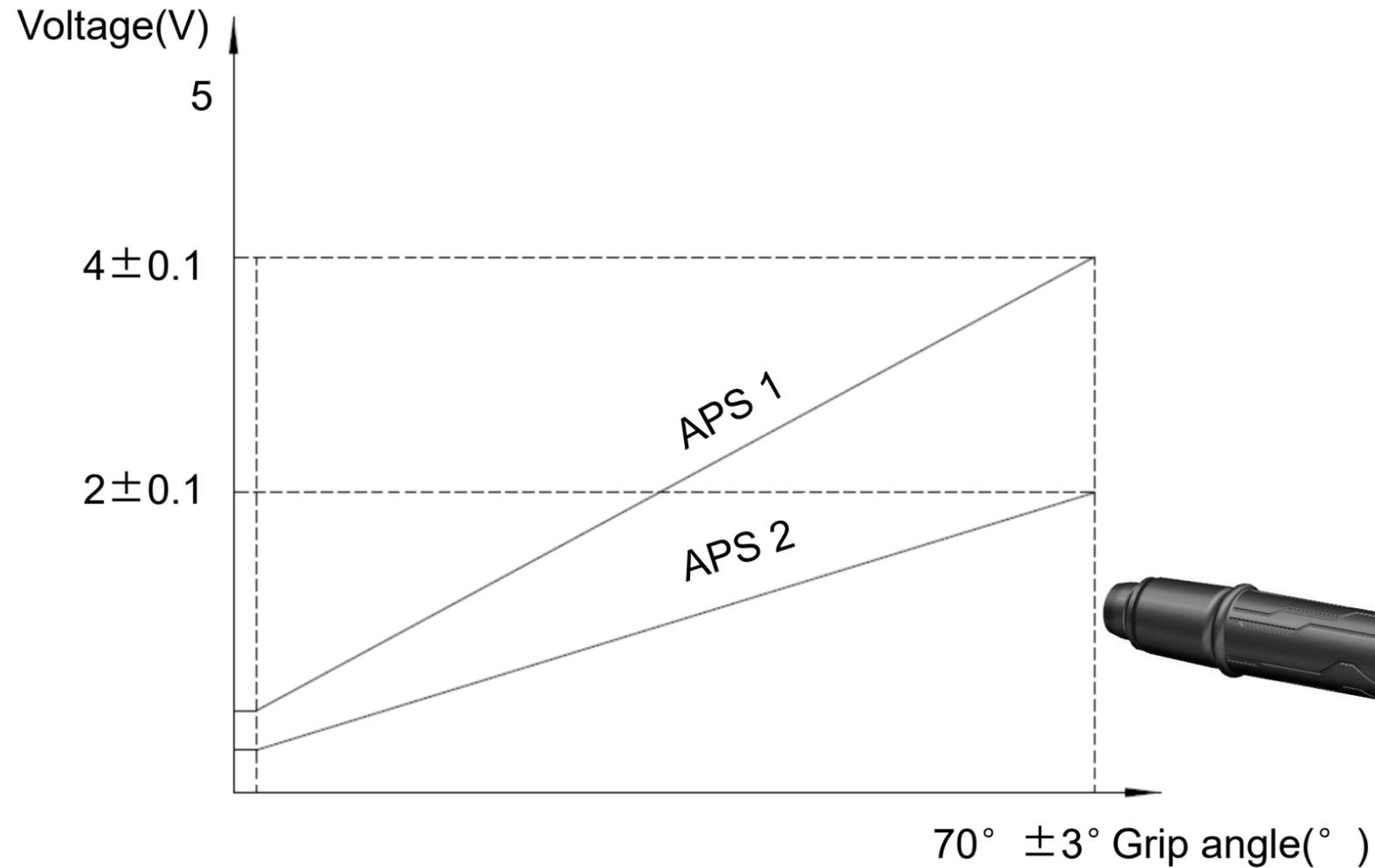
5.1 ECU



PIN	Function	PIN	Function
68	Fuel Injector 1(cylinder1)	94	carbon canister solenoid valve
72	Fuel Injector 2(cylinder2)	97	RPM sensor A
73	Oxygen sensor heating1	98	RPM sensor B
75	Throttle actuatorA	99	Ignition coil2
77	TPS 1	100	Ignition coil1
78	TPS 2	101	Engine temp sensor
79	Shift shaft sensor signal	102	Air intake temp sensor
80	Sensor GND 1	103	Gear sensor signal
83	Sensor GND 6	104	Oxygen sensor 1
84	Sensor GND	107	TPS 5V power
85	Intake manifold sensor GND	108	5V power
86	TPS GND	109	Intake manifold sensor 5V power
87	Throttle actuatorB	111	ECU GND4
91	Air intake pressure sensor1	112	ECU GND3

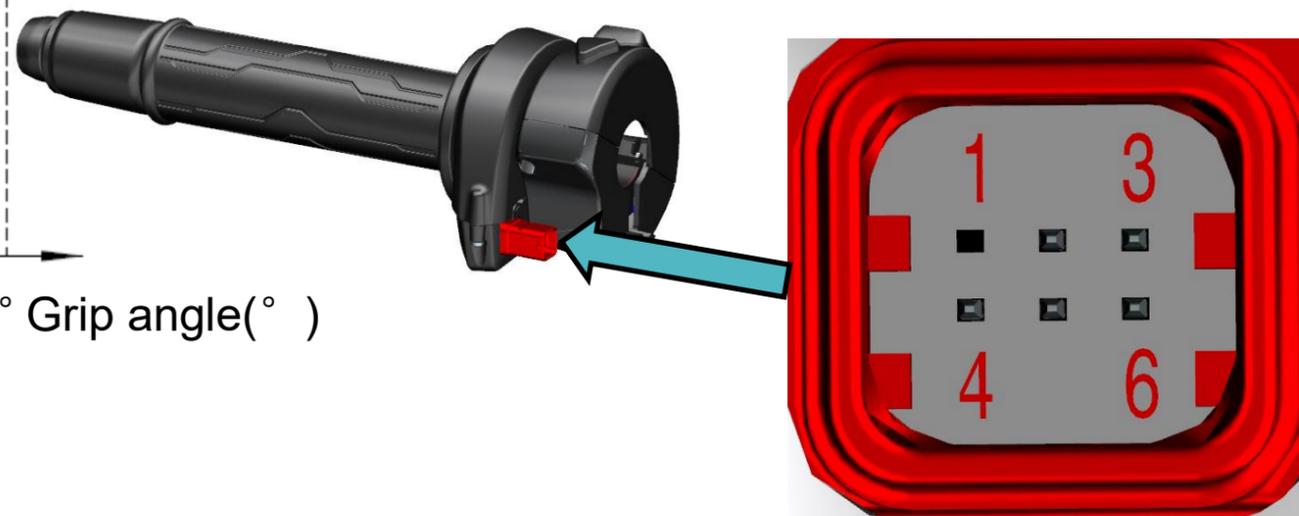
5. Electronic system

5.2 E-throttle



The accelerator grip has two acceleration position sensors, APS1 and APS2, with two different signal outputs, two separate power supplies and two separate grounds.

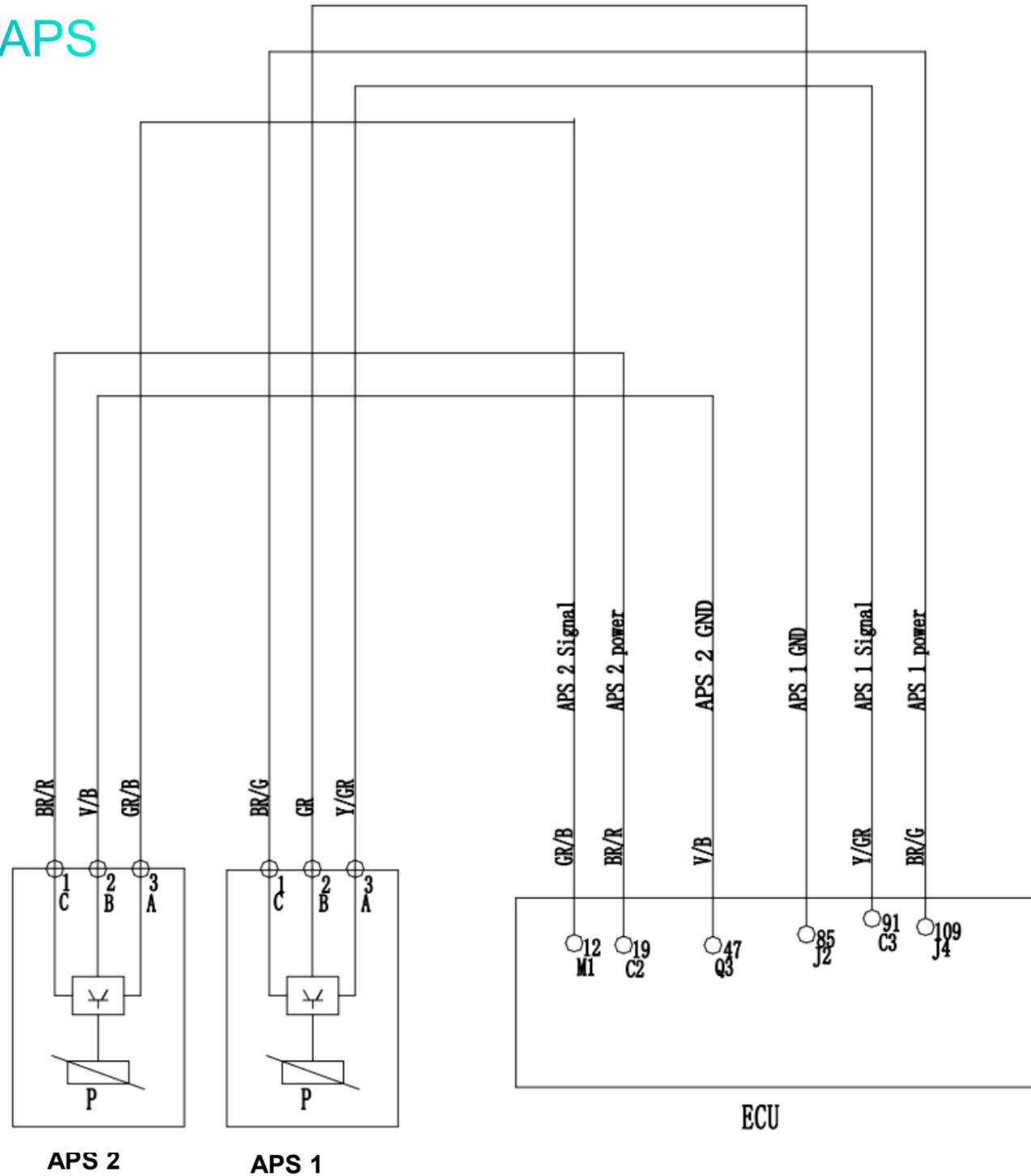
Both of the APS signals increase in voltage with the grip starts to open, but the APS2 signal voltage is half of the APS1 voltage. These combined signals allow the ECU to calculate a mean voltage output from the two signals.



Pin	Function
1	Power 1
2	Signal 1
3	GND 1
4	Signal 2
5	GND 2
6	Power 2

5. Electronic system

5.3 APS



The APS sensor measures the air pressure to calculate the exact air mass entering the engine cylinder, that makes the air-fuel ratio to be controlled with more precision. the air temp and pressure can be read in the datastream.

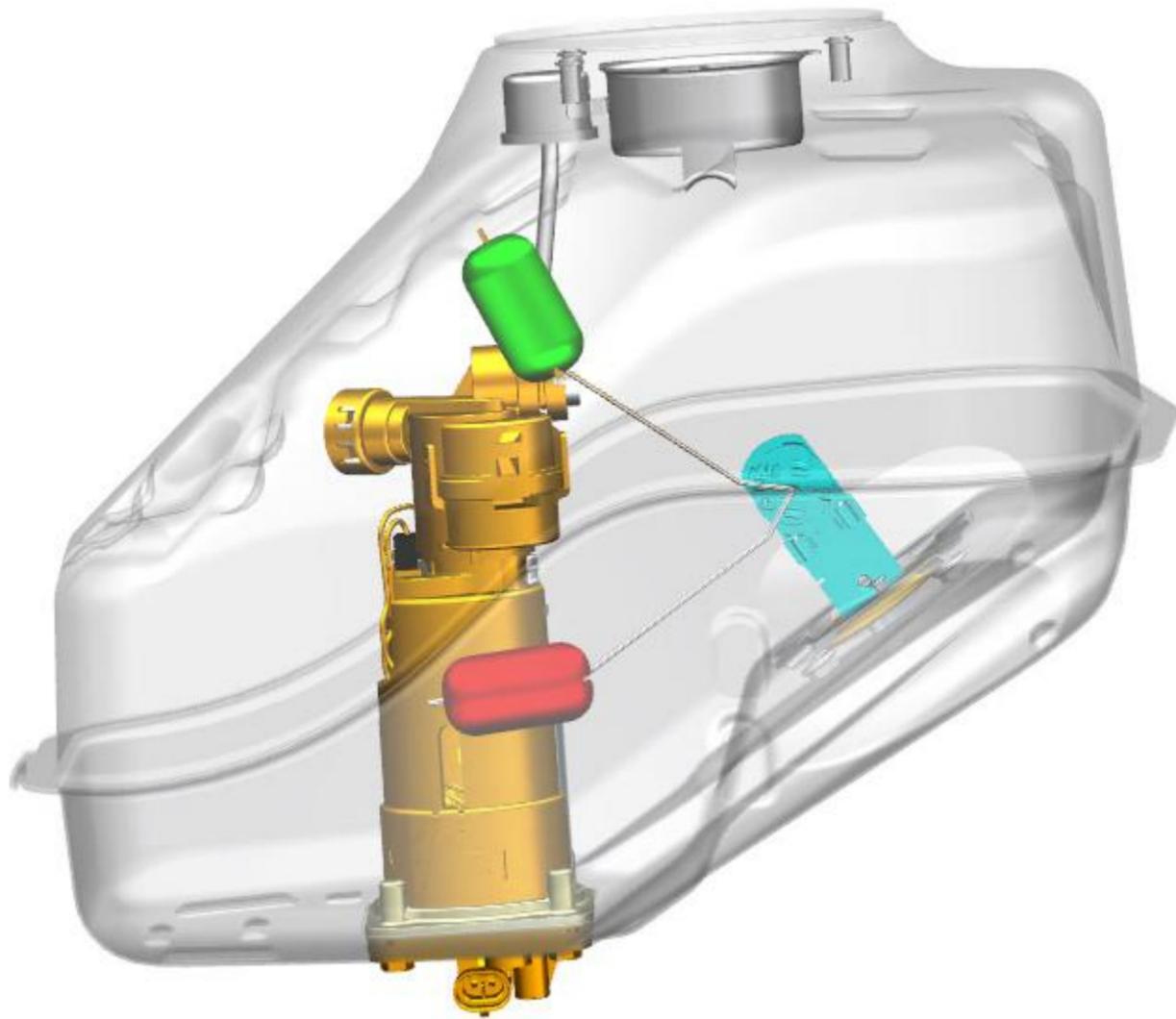
- Pin 1: The 5V power is supplied by the pin C2 of the ECU.
- Pin 2: The GND is grounded to the pin Q3 in the ECU.
- Pin 3: The air pressure signal is sent to the pin M1 in the ECU.



Pin	Function
1	Power
2	Ground
3	Output voltage

5. Electronic system

5.4 Fuel Tank

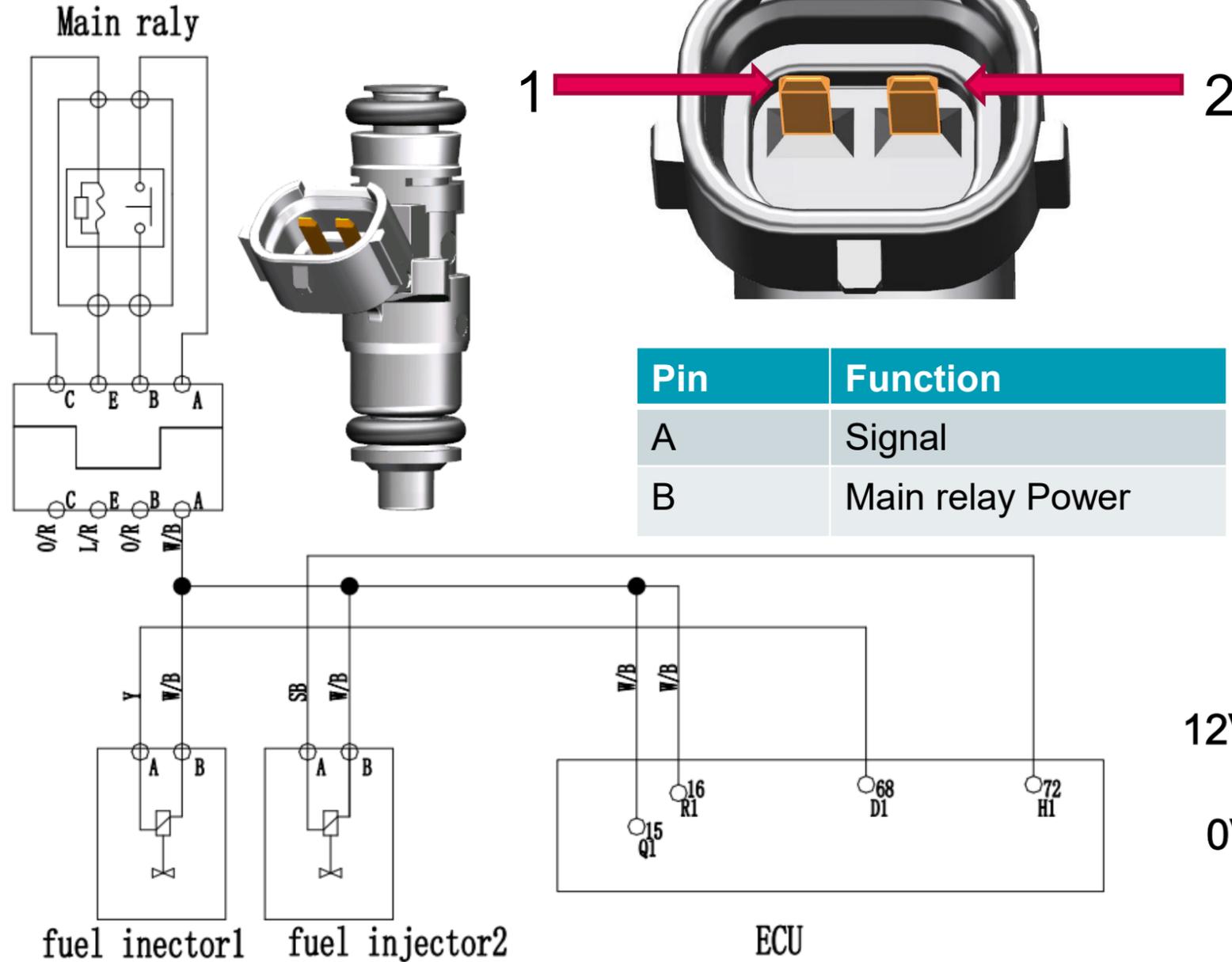


800MT Explore use 19.2L steel fuel tank with fuel pump and fuel level sensor inside of it.

The electric fuel pump is used to pump fuel from the fuel tank to the injectors. Fuel pressure must be within specifications so the injectors can deliver the correct amount of fuel into the engine for the engine to run correctly. A decompression valve is used to make sure the fuel is delivered in correct pressure, the excessive pressure will be released back to fuel tank as soon as it upto 4.0bar. Too low pressure will starve the engine, causing it to run lean, misfire, hesitate or stall. Too much fuel pressure can cause the engine to run rough, increased fuel consumption and increased emissions. The in-tank location helps muffle the buzzing noise produced by the electric pump motor, and immersing the pump in fuel helps lubricate and cool the pump motor.

5. Electronic system

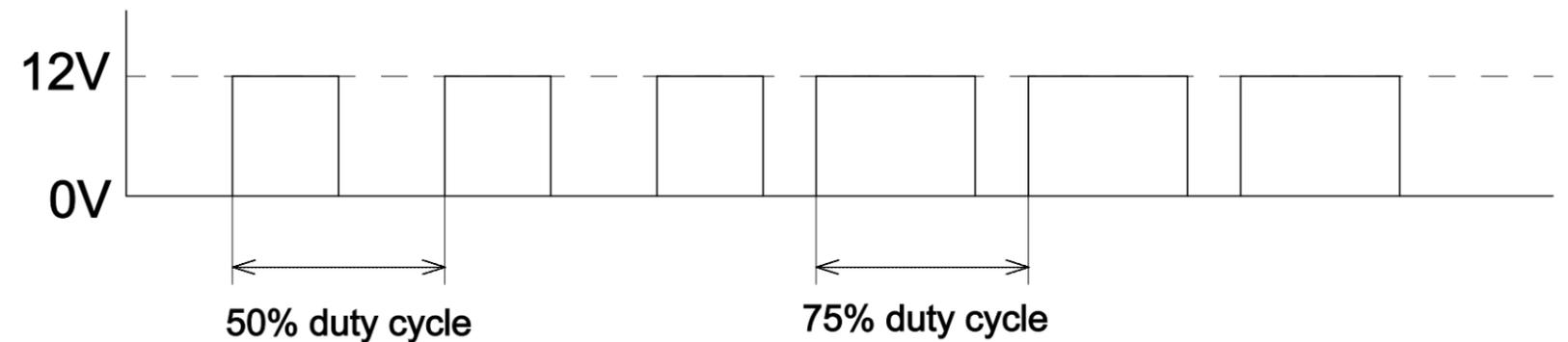
5.5 Fuel injector



The fuel injector is a solenoid valve basically, which controlled by PWM signal sent out from ECU. The signal pulse width can be read in the datastream.

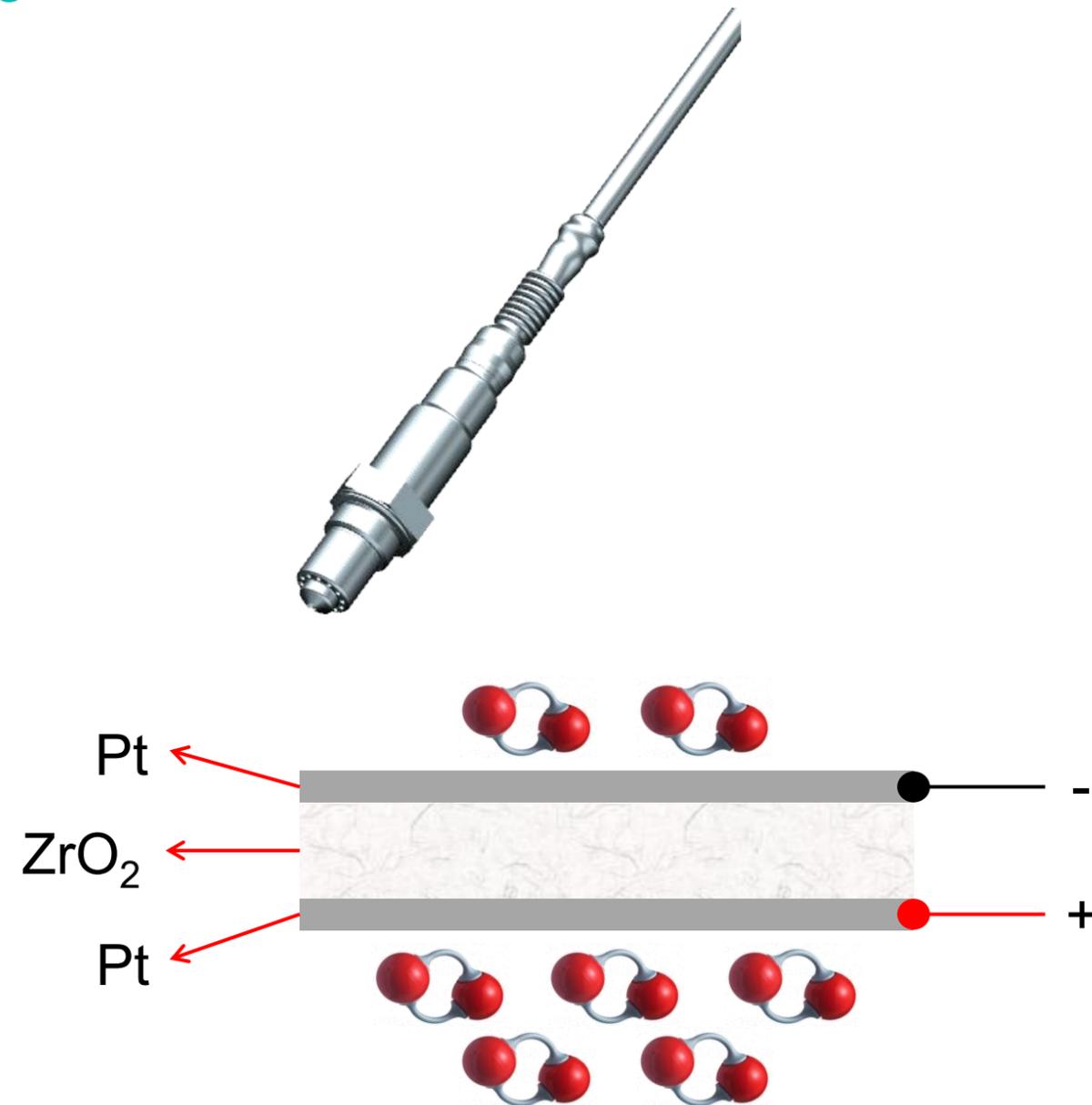
The injector is powered by the key-on power supply from main relay by the ECU pin 15(injector 1)and pin 16(injector 2), ground controlled by the ECU pin 68(injector 1) and pin 72(injector 2).

The resistanse between the two pins on the injector is about 12Ω(at 20°C), which can be tested by a digital multimeter to judge if a injector is abnormal.



5. Electronic system

5.6 Oxygen sensor



After the combustion process, the resulting exhaust gas is measured by the ECU through an oxygen sensor. The oxygen sensors detect the exhaust oxygen quantity and generate different voltage signal in different oxygen concentration, ECU takes this signal and adjusts the mixture to keep the exhaust gases as close as possible to the perfect combustion. The remaining unburnt exhaust gas are converted to harmless gas by the catalyst in the muffler.

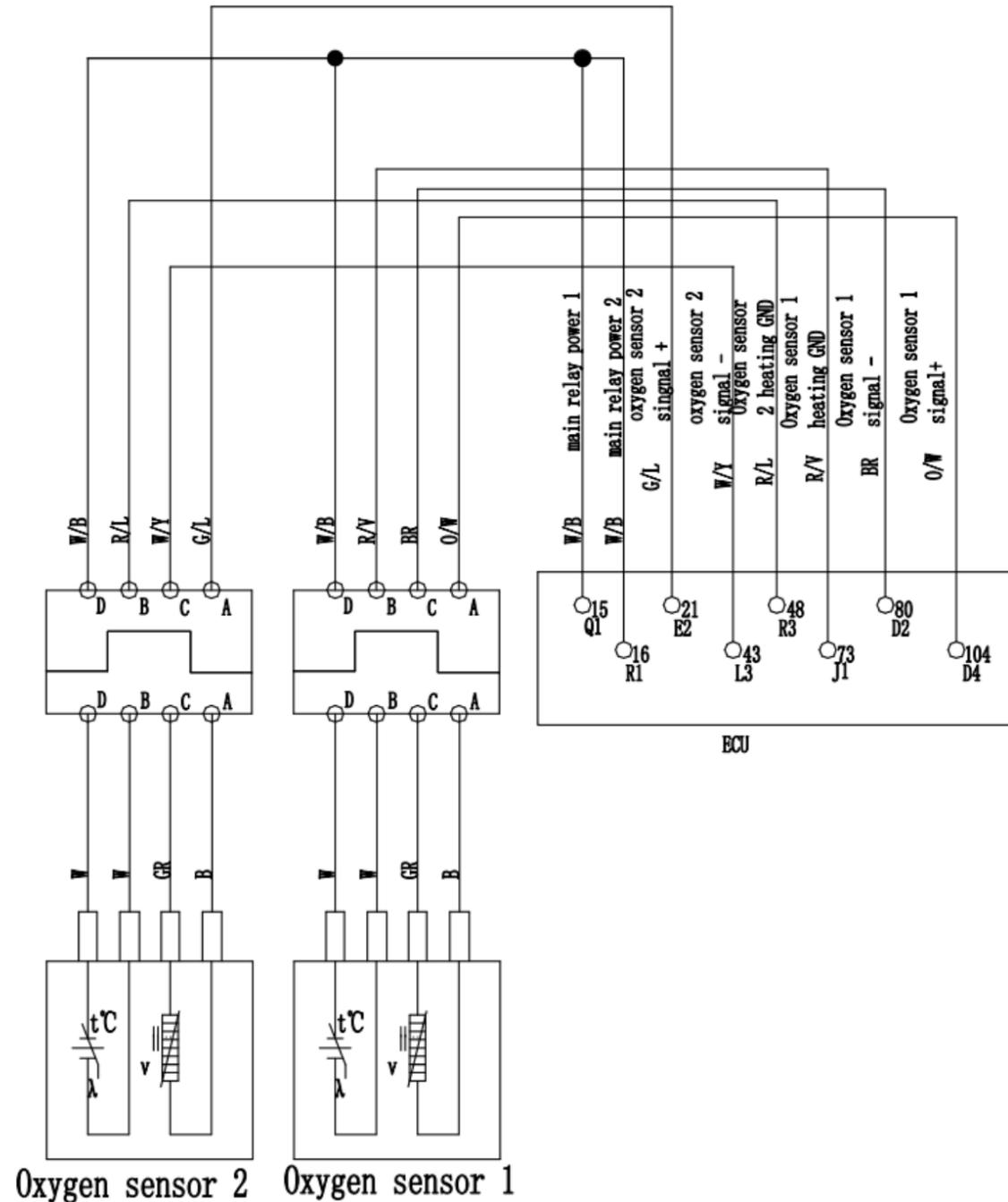
The core parts of the oxygen sensor is a zirconium dioxide (ZrO₂) tube with platinum electrode on both side as shown in pic, the inside of the ZrO₂ ventilate to the atmosphere while the outside is immersed by exhaust gas. After the oxygen sensor is heated to 350°C or higher, the sensor will be activated.

The output voltage will increase with the atmosphere and exhaust gas oxygen differences goes higher:

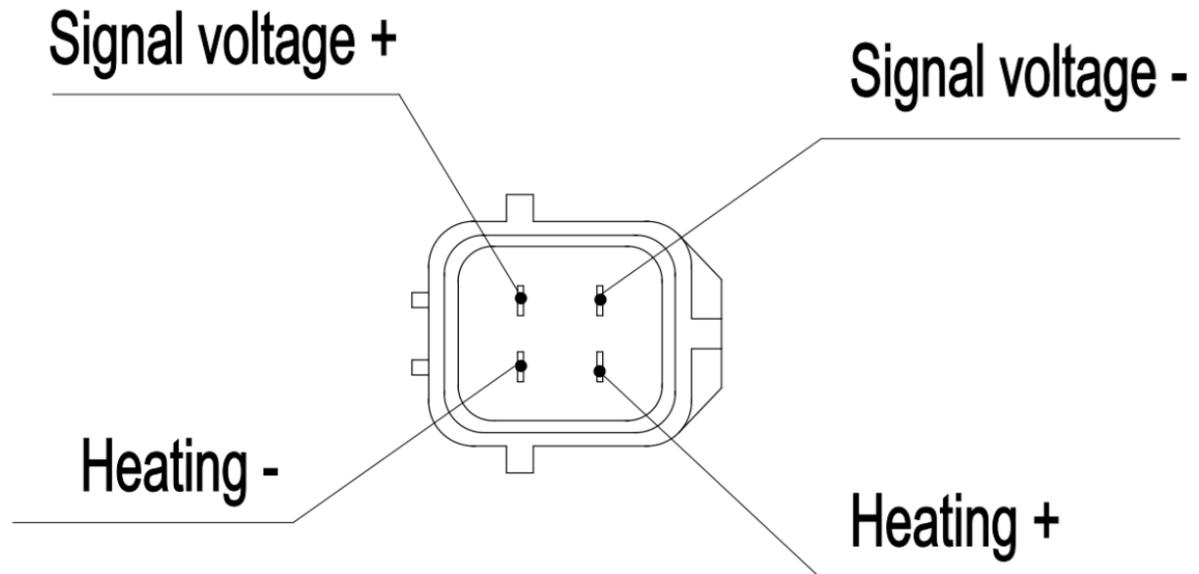
- $\lambda > 1$, O₂ sensor output voltage $U < 0.1V$;
 - $\lambda < 1$, O₂ sensor output voltage will increase, $U_{\max} \approx 0.8V$.
- The voltage can be read in the datastream.

5. Electronic system

5.6 Oxygen sensor



- Heating +: Powered by key-on power supply from main relay.
- Heating -: Controlled by pin J1(bank 1) and R3(bank 2) in ECU.
- Signal voltage +: Powered by pin D4(bank 1) and E2(bank 2) in ECU.
- Signal voltage -: Grounded to the pin D2(bank 1) and L3(bank 2) in ECU.



5. Electronic system

5.7 Dashbord



The 800 MT explore uses an 8-inch touch dashbord also connected with the handlebar switch through 6 pin lines

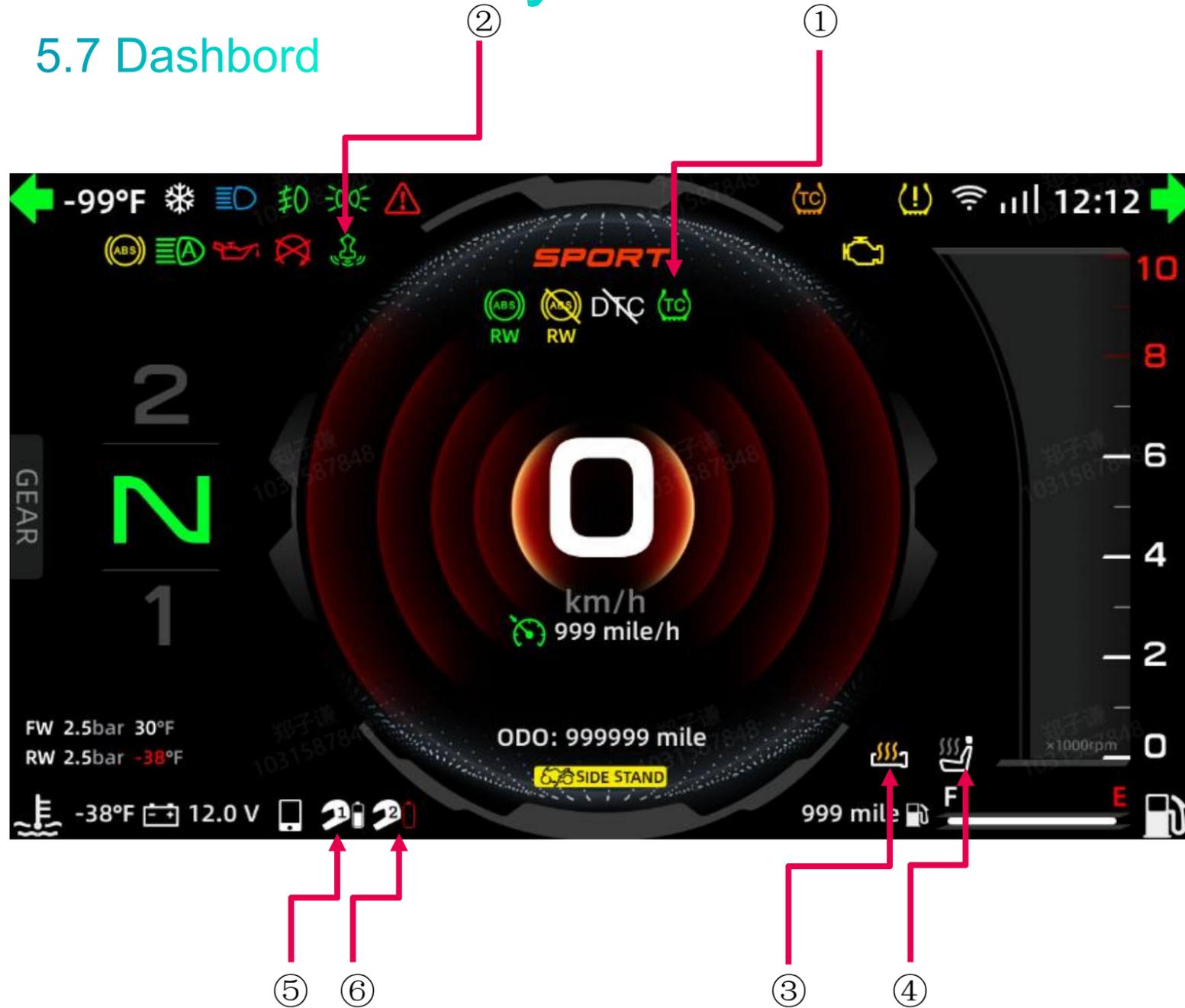
The pin functions are as follows:

PIN	FUNCTION
1	GND
2	Button 1/UP
6	Button 2/RH
7	Button 3/DOWN
8	Button 4/LH
9	Button 5/Fn
10	Button 7/user-defined
14	Key_ON
15	CAN_H
16	CAN_L
19	12V BAT Power



5. Electronic system

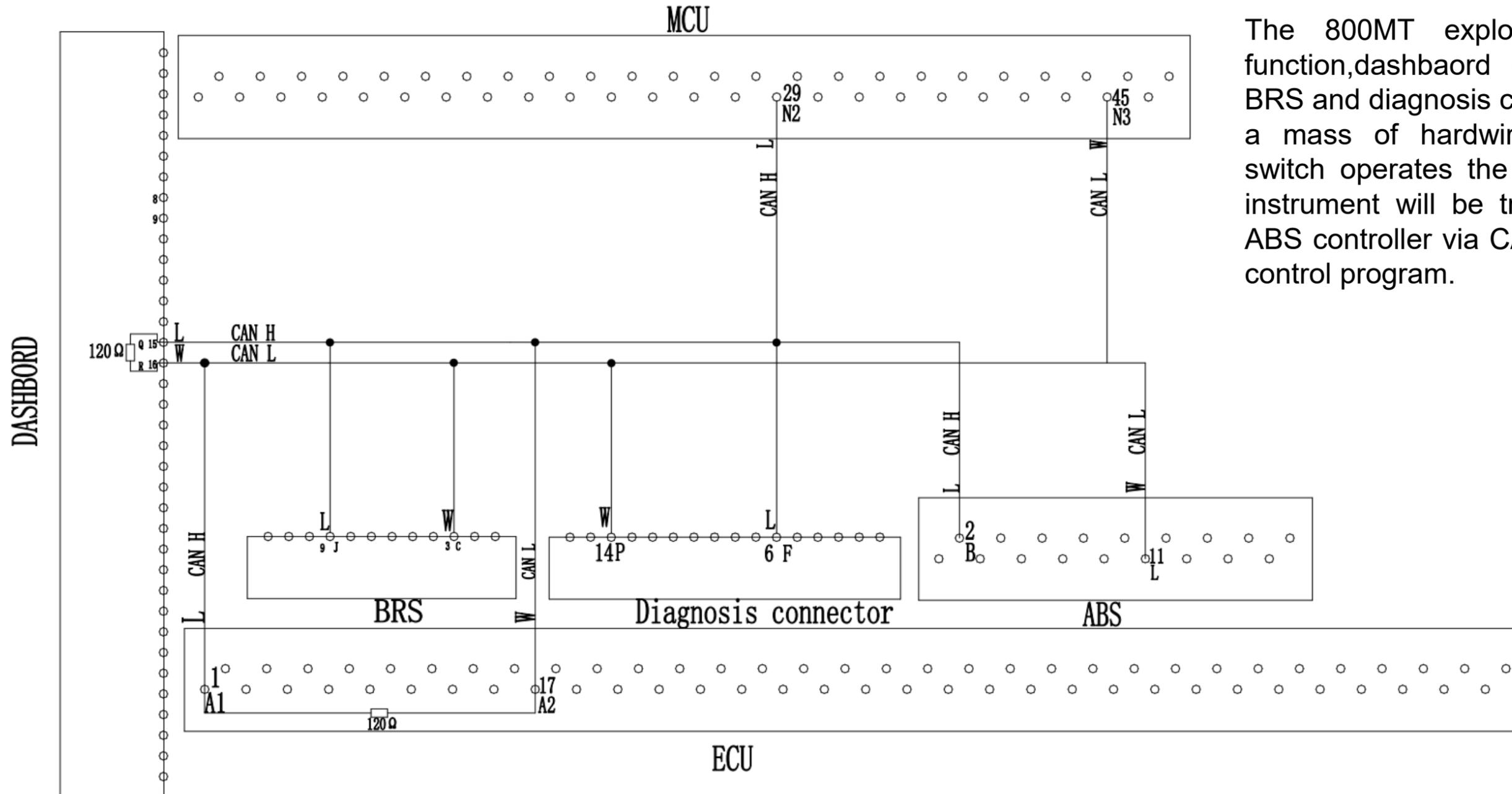
5.7 Dashboard



Some new functions has been added in 800MT explore such as TC function ① (if it works perfectly, This green symbol will lighting, If it being activated, this symbol will keep flash.) BRS ② (when radar function is enabled, this indicator turns green. And if radar function has any fault, the indicator turns red.), Handlebar heating ③, seat heating ④ (rider and passenger seat).

5. Electronic system

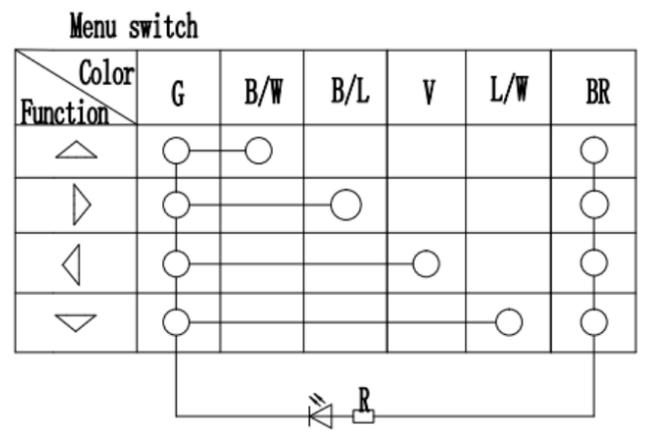
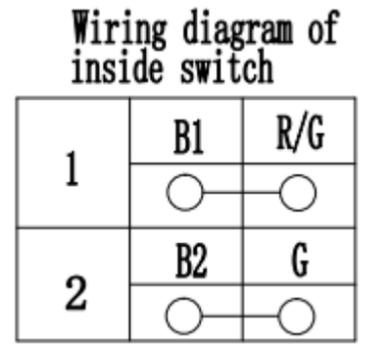
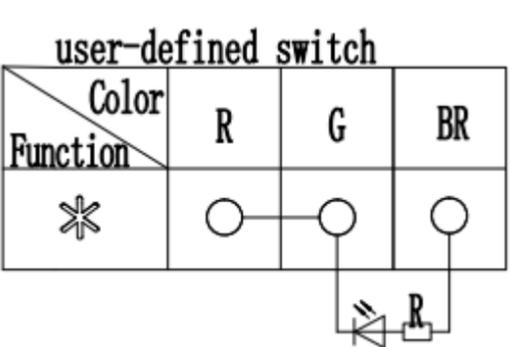
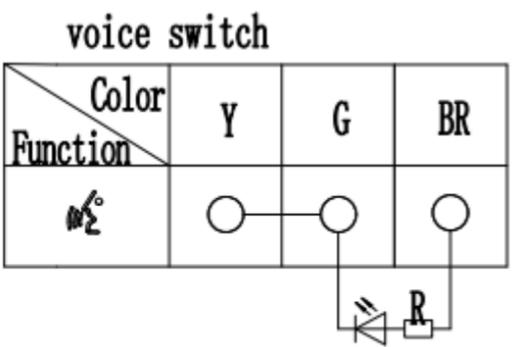
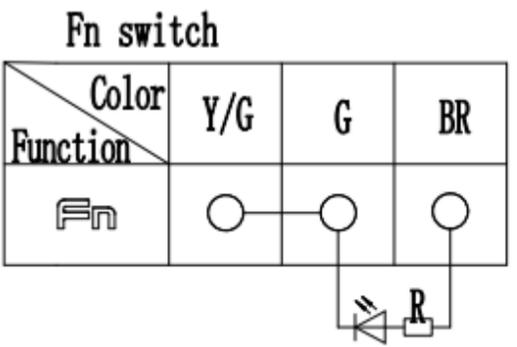
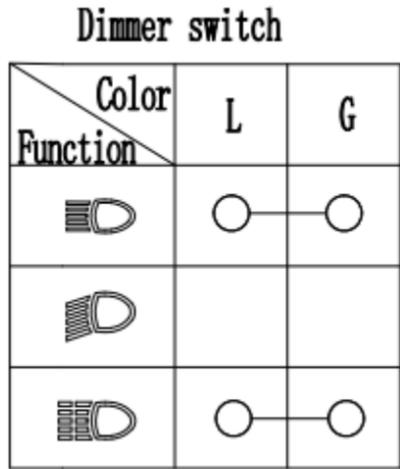
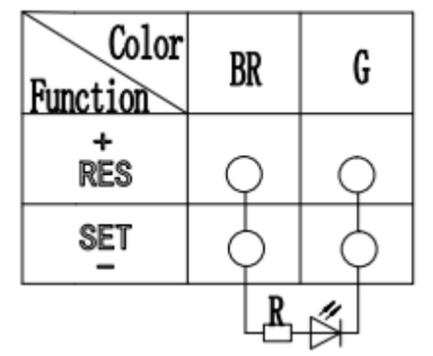
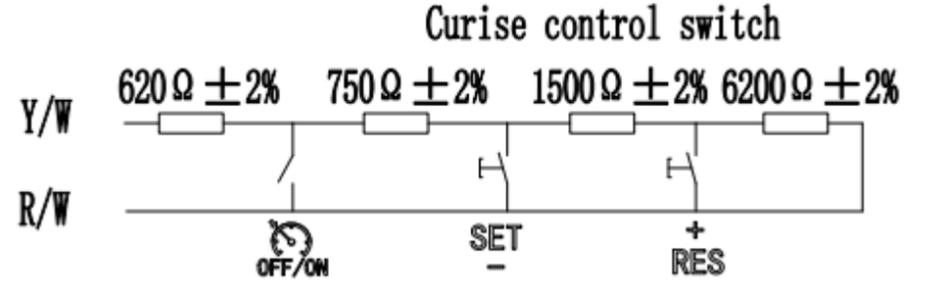
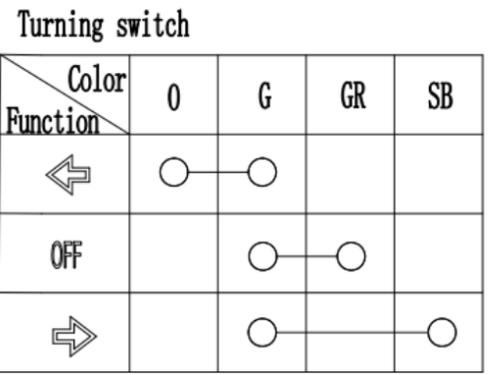
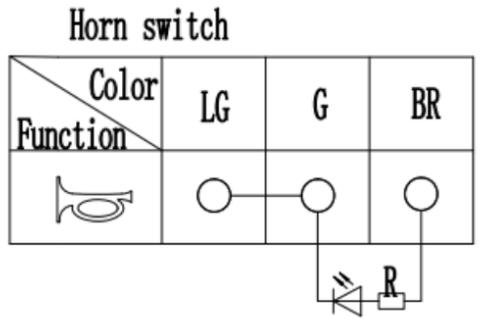
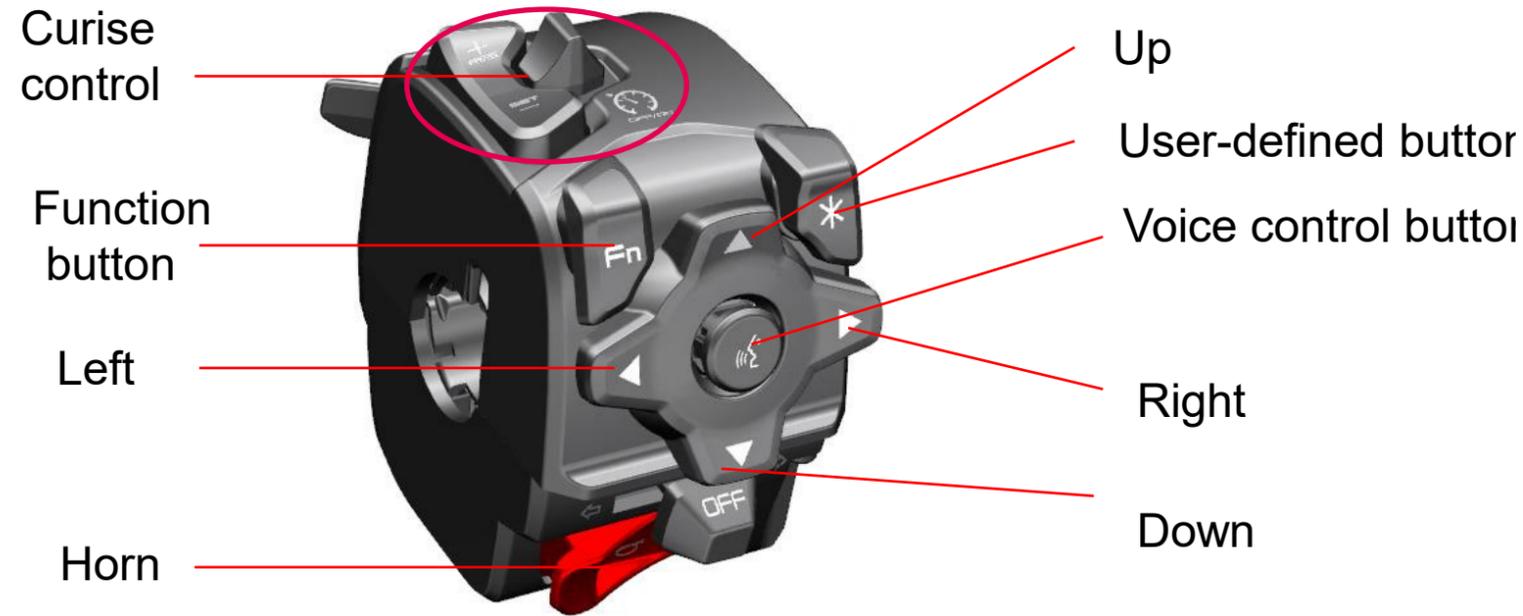
5.7 Dashbord



The 800MT explore has added TC, rear radar function, dashbaord communicates with BCM, ABS, BRS and diagnosis connector via CAN bus and without a mass of hardwires. When the handlebar control switch operates the rear radar and TC function, the instrument will be transmitted to the rear radar and ABS controller via CAN bus to start the corresponding control program.

5. Electronic system

5.8 Handlebar switch



5. Electronic system

5.8 Handlebar switch



800MT explore adopted E-throttle, MCU and CAN bus, The buttons on the handlebar are connected directly to the dash.so the rider can operates the driving mode, seat heating, handlebar heating,with these buttons, but all above these functions can not be started Before engine is running.You can control the bike more easily by voice control switch,but This function can only be used when a rider wears a bluetooth helmet.

Ignition/kill switch

Color / Function	B/BR	G	Y/W
	○—○		
	○—○—○		

Fog lamp switch

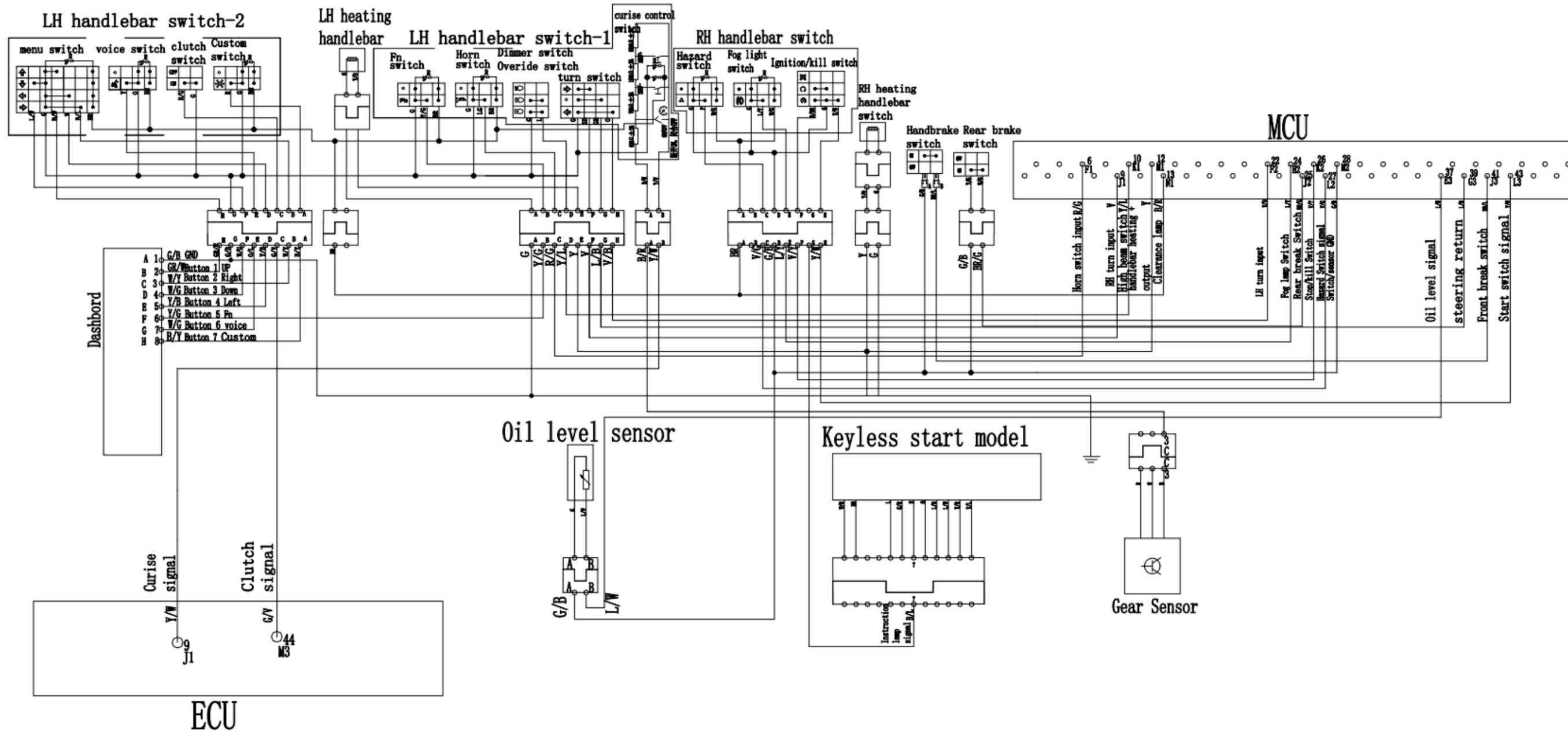
Color / Function	L/Y	G	W/G
	○—○		○

Hazard switch

Color / Function	P	G	W/G
	○—○		○

5. Electronic system

5.8 Handlebar switch



5. Electronic system

5.9 IMU(Inertial Measurement unit)



IMU It has a built-in electronic gyro sensor and accelerometer that detects pitch (rotation relative to the left and right axis), roll (rotation relative to the front and rear axis), yaw (rotation relative to the up and down axis) and the angular velocity of acceleration in the back/left and right/up and down direction.

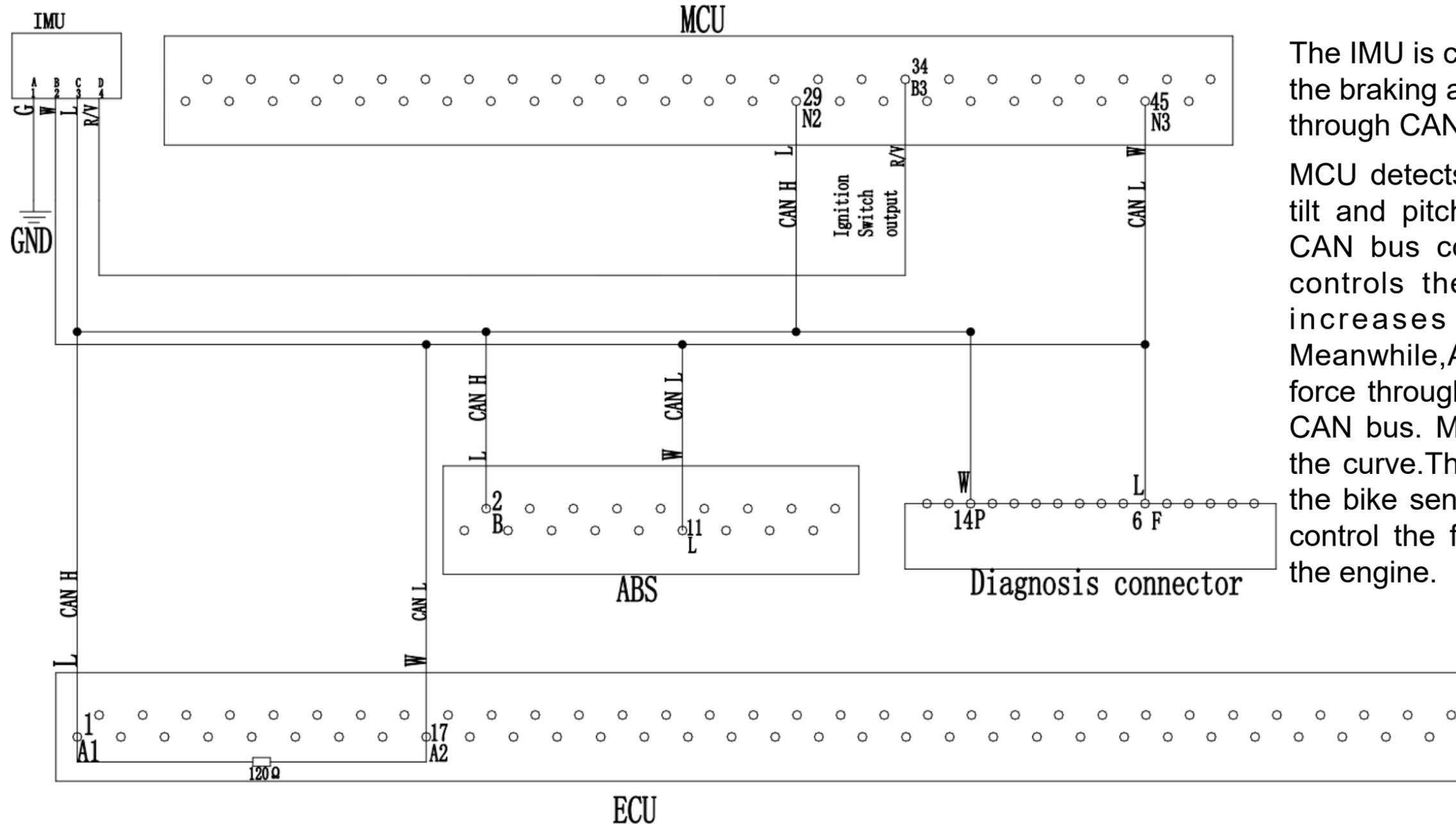
ABS and 6D sensor are connected through CAN bus, and the 6D sensor monitors the attitude change of the body and sends the output signal to ABS.

- Pin 1: The GND is grounded
- Pin 2: The CAN_L is connected with the pin A2 of the ECU.
- Pin 3: The CAN_H is connected with the pin A1 of the ECU..
- Pin 4: The Ignition signal output connected pin (34 B3) of the BCM, pin (4 D) of the ABS

PIN	FUNCTION
1	GND
2	CAN_L
3	CAN_H
4	Ignition signal

5. Electronic system

5.9 IMU(Inertial Measurement unit)

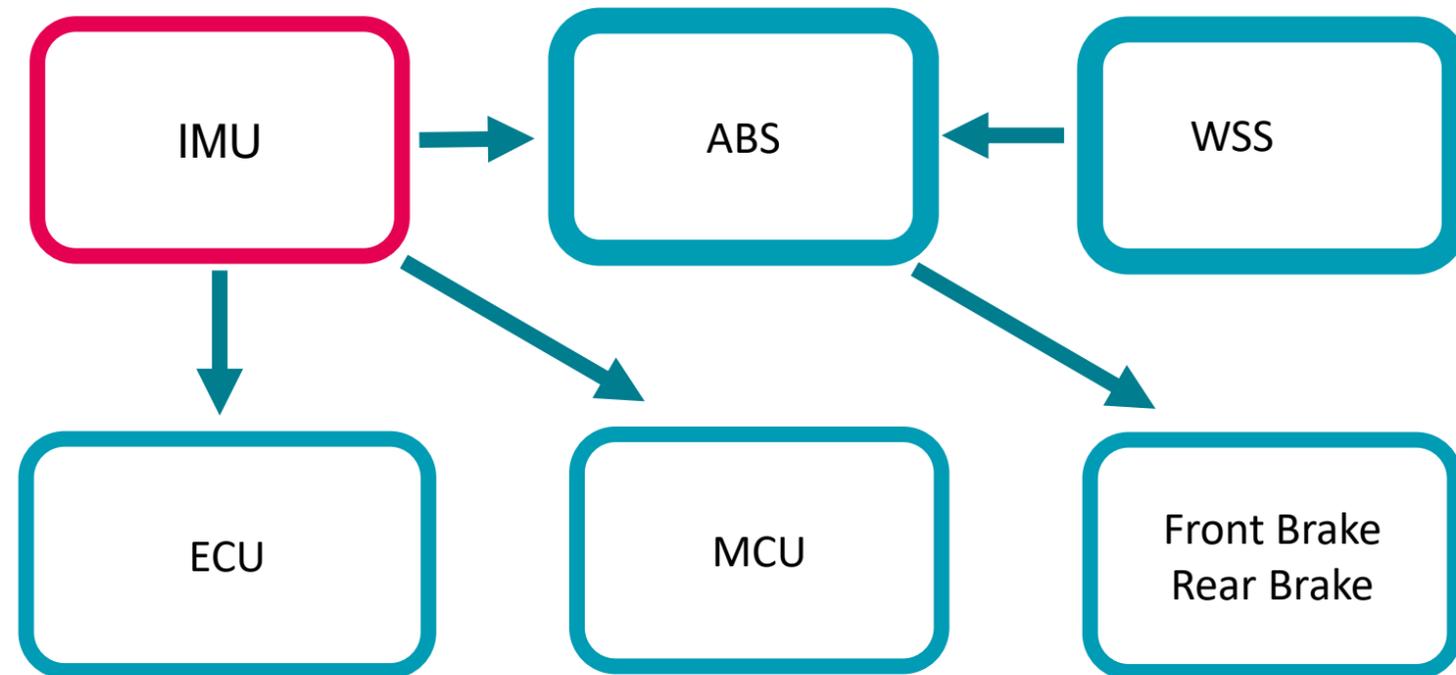


The IMU is connected with ABS and ignition signal, and the braking and ignition can be controlled more directly through CAN bus connection.

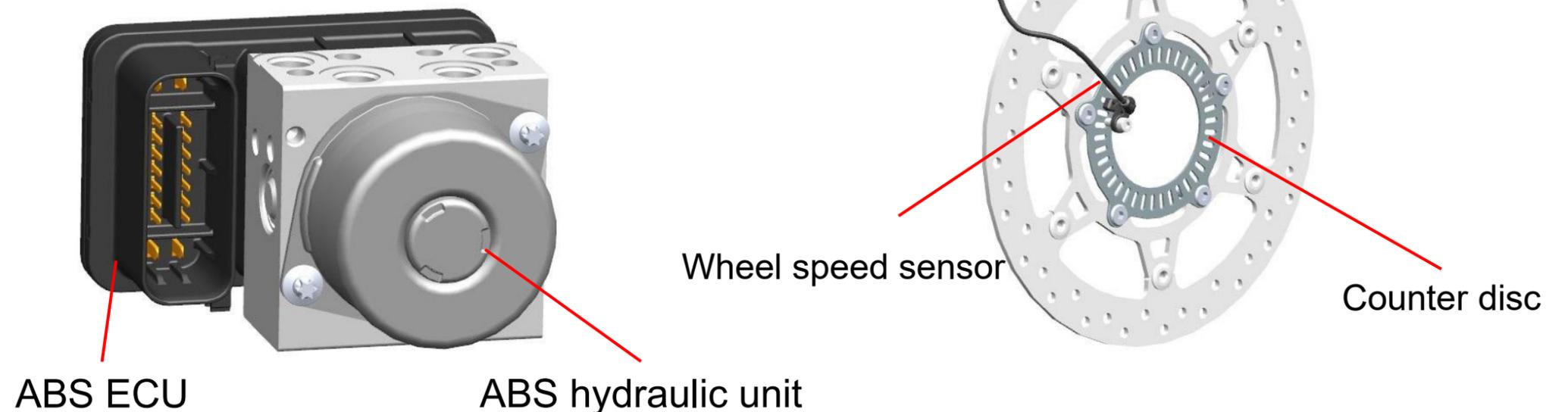
MCU detects the changes of the bike 's whole body tilt and pitch Angle transmitted by IMU through the CAN bus connected with pin 29 and pin 45, then controls the ignition of the engine and limits or increases the output power of the engine. Meanwhile,ABS adjusts the front and rear braking force through the signals from the IMU transmitted by CAN bus. Make the bike can better enter and out of the curve.The ECU can also detect the information of the bike sent by the IMU from the CAN bus, so as to control the fuel injection amount and ignition time of the engine.

5. Electronic system

5.10 CORNERING ABS



The difference between ordinary ABS and CORNERING ABS is that the latter has a 6D sensor(IMU), 6D sensor connecting with ABS,can determine braking force and front/back distribution ratio based on bike's speed and inclination.Moreover,In addition,in the cornering ABS,the ABS can not only collect the front and rear wheel speed difference signal through the wheel speed sensor, but also detect the pitch and tilt Angle of the bike through the IMU, and control the engine ignition,fuel injection and throttle opening.



Wheel speed sensor

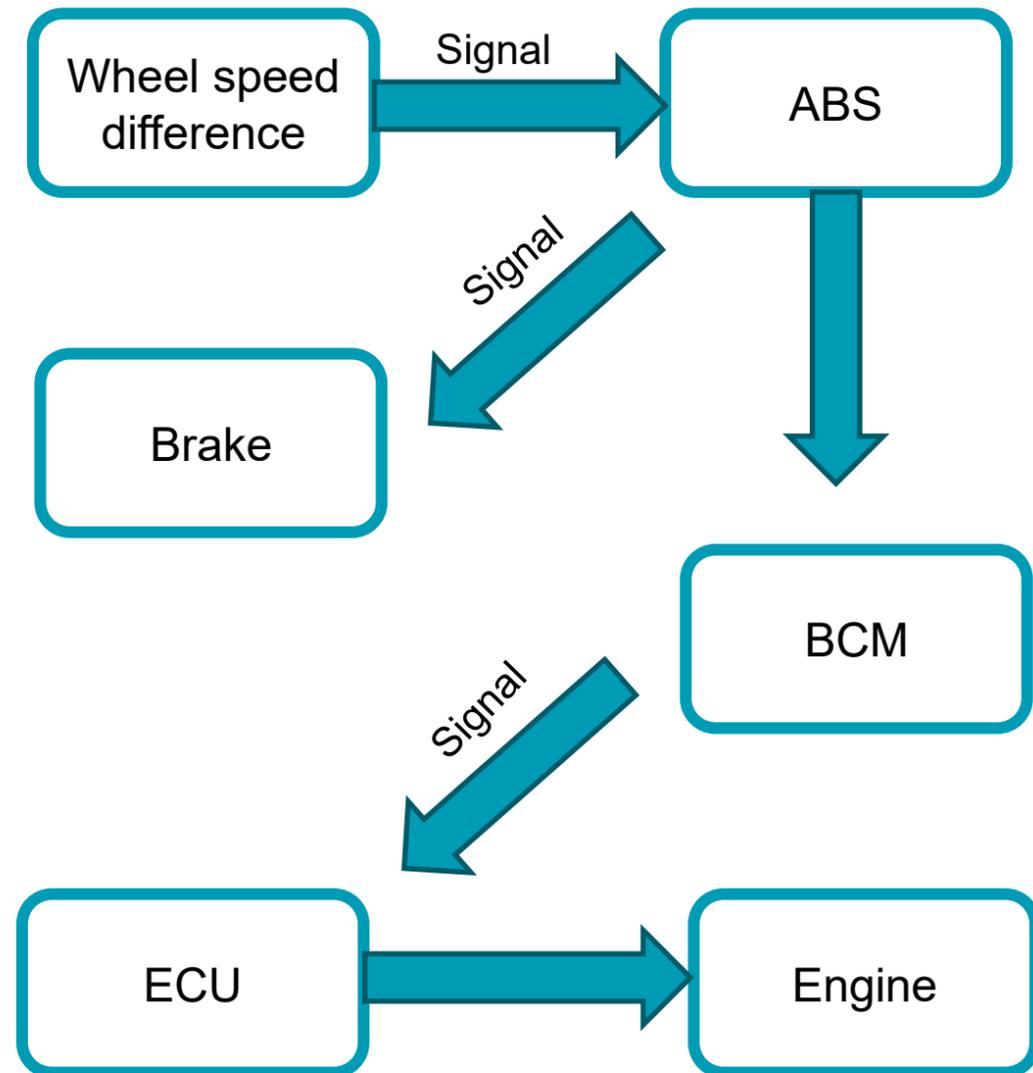
Counter disc

ABS ECU

ABS hydraulic unit

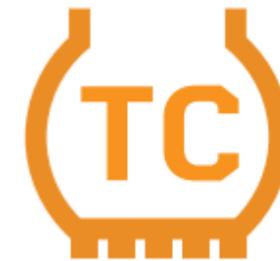
5. Electronic system

5.11 TC Function



Wheel speed sensor is connected to MSC controller, MSC controller is connected to 6D sensor, BCM and ECU through CAN bus. When MSC controller detects that front wheel speed is lower than rear wheel, ABS allocates more braking force to the rear wheels to ensure that the speed difference between the front and rear wheels is not too large.

When TC symbol flashes, it means that TC function is activated and it is adjusting the bike's state.

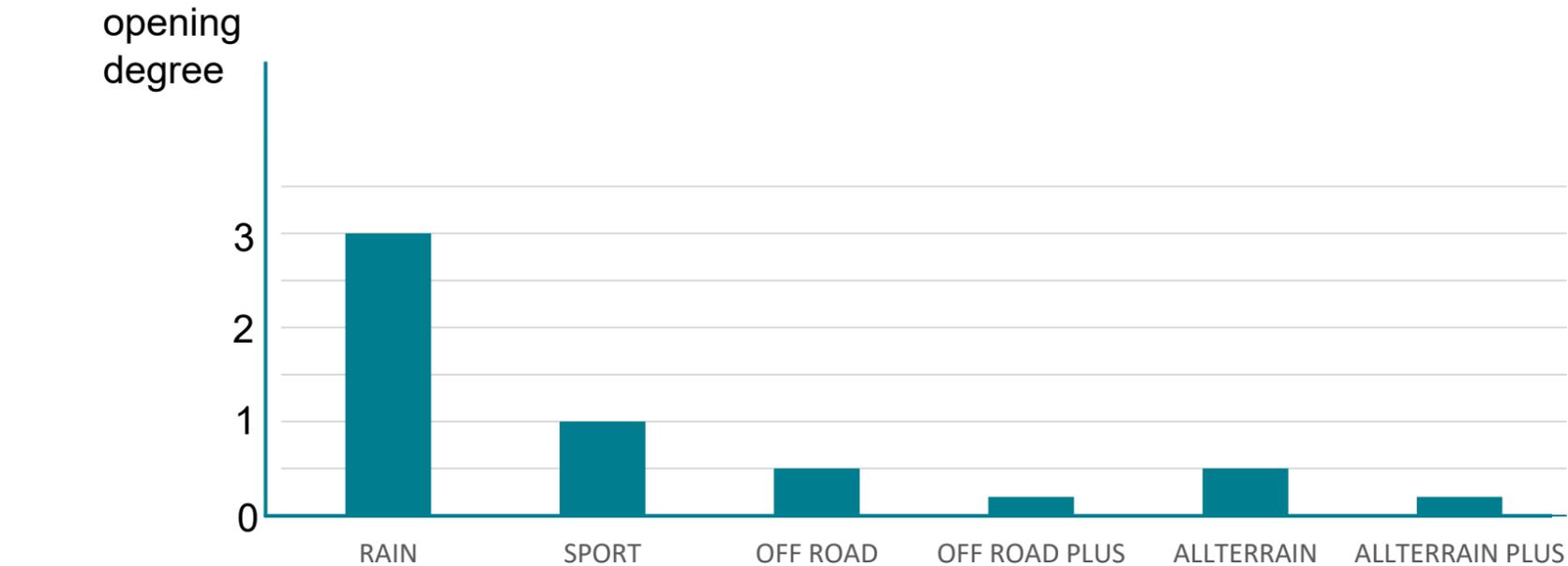
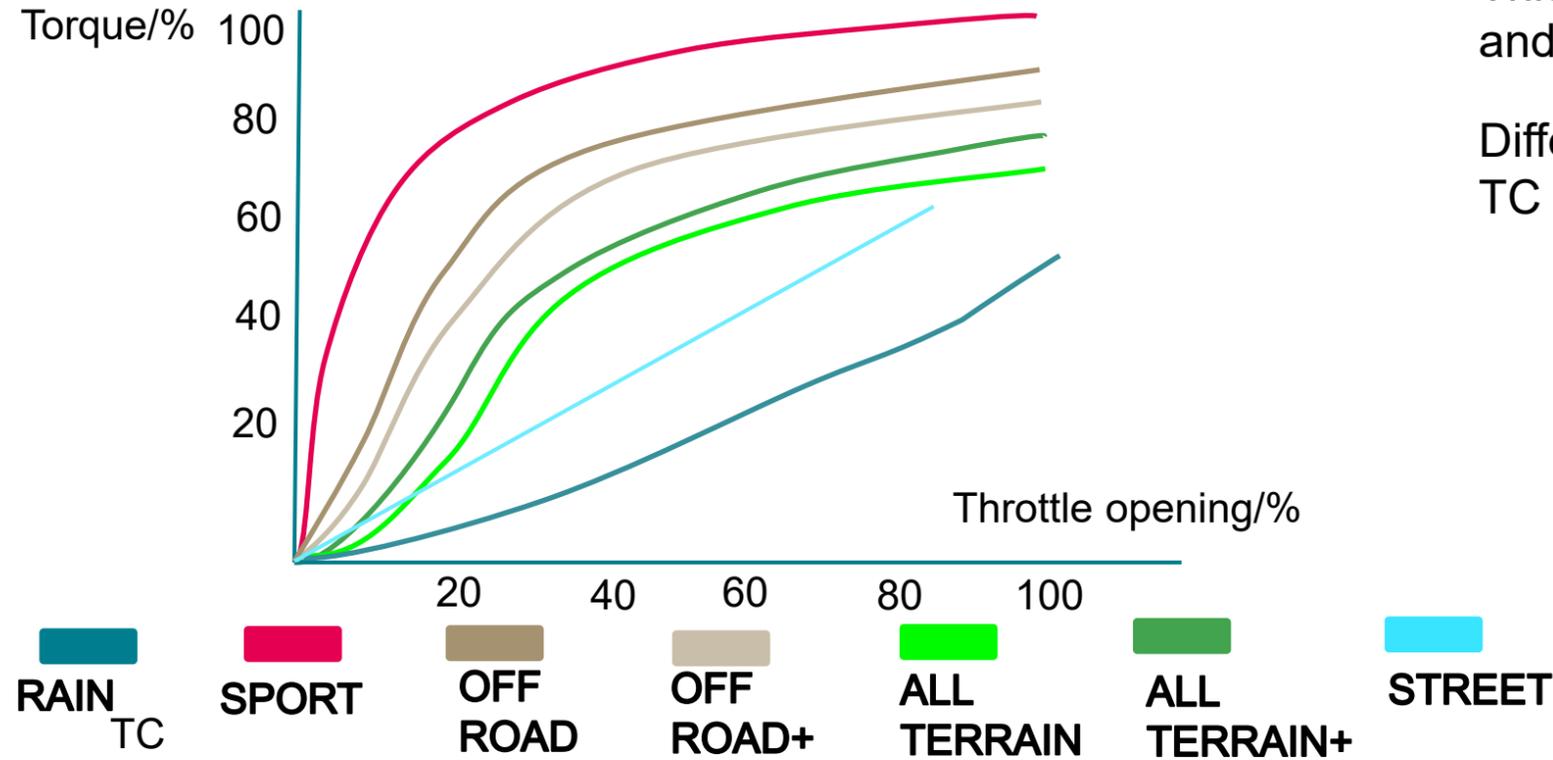


5. Electronic system

5.12 Ride mode

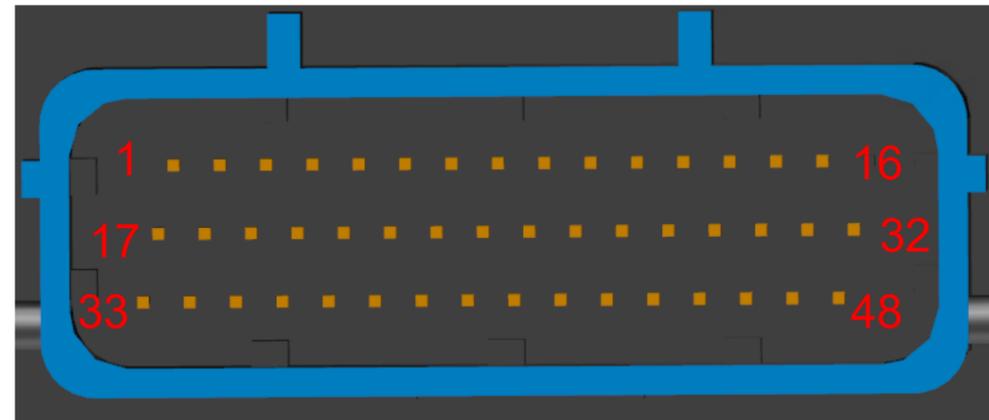
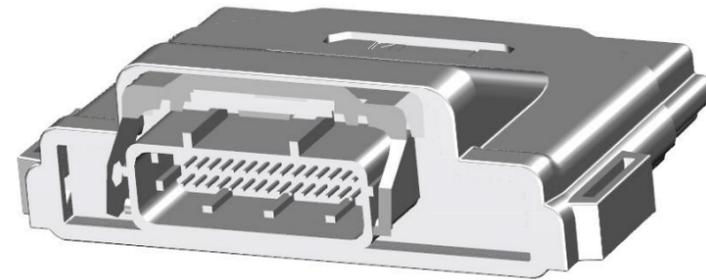
This bike offers many kinds of riding modes for different road conditions and different riding abilities

Different riding modes have different torque outputs and different levels of TC control involvement, See the table on the left for details.



5. Electronic system

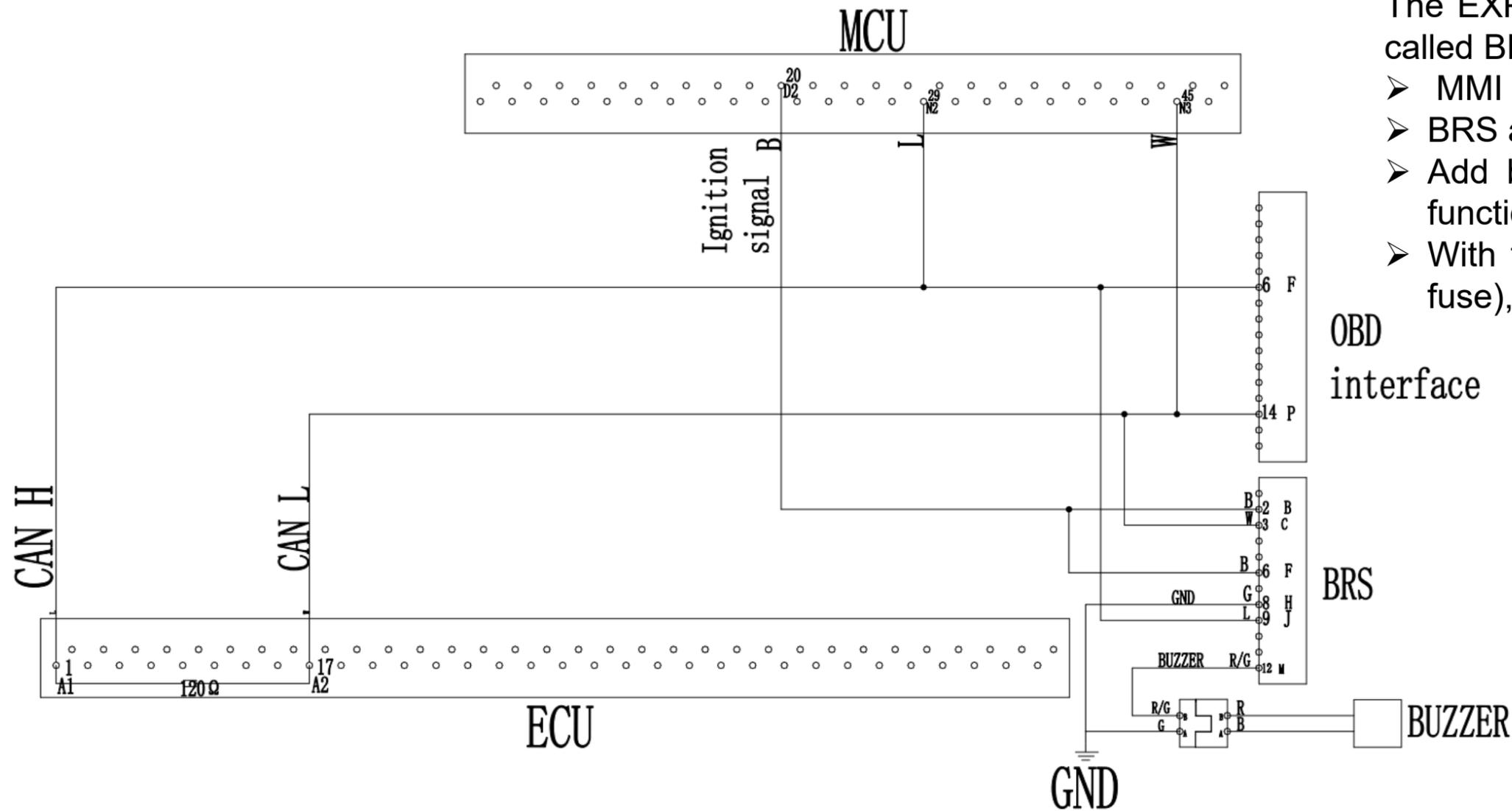
5.13 MCU



PIN	ATTRIBUTE	FUNTIONS	PIN	ATTRIBUTE	FUNTIONS
1	OUT	REAR TURN SIGNAL,RH	25	IN	REAR BRAKE SWITCH
2	OUT	STARTER RELAY	26	IN	STOP SWITCH, ENGINE
3	OUT	FRONT TURN SIGNAL,RH	27	IN	HAZARD SWITCH
4	OUT	HEADLAMP	28	IN	SWITCH SIGNAL GND
5	OUT	HIGH BEAM LAMP	29	COM	CAN_H
6	IN	HORN SWITCH	30	GND	FOG LAMP,LH
7	IN	OIL PRESSURE SIGNAL	31	OUT	BRAKE LMAP
8	IN	NEGATIVE POWER SUPPLY	32/33	SUPPLY	POWER MCU (30A)
9	IN	TURN SIGNAL SWITCH,RH	34	SUPPLY	POWER THE EXTERNAL CONTROLLER
10	IN	HIGH BEAM LAMP SWITCH	35	OUT	ANTI-THEFT LAMP
11	IN	LAMP SWITCH	36	OUT	SMALL FAN/BACK HEATED SEAT
12	OUT	HEATED GRIP	37	IN	FUEL LEVEL SENSOR
13	OUT	CLEARANCE/LICENSE PLATE LAMP/HANDLE LAMP	38	IN	BACK HEATED SEAT SWITCH
14	OUT	MAIN HEATED SEAT(PWM)	39	IN	STEER RESET SWITCH
15	OUT	HORN	40/42	GND	VEHICLE GROUND
16	SUPPLY	POWER MCU (30A)	41	IN	FRONT BRAKE SWITCH
17	OUT	OUTPUT POWER TO ECU	42	IN	POWER NEGATIVE
18	OUT	REAR TURN SIGNAL, LH	43	IN	START SWITCH
19	OUT	FRONT TURN SIGNAL, LH	44	OUT	FAN
20	IN	IGNITION SWITCH	45	COM	CAN_L
21	IN	SSB SWITCH	46	OUT	FOG LAMP,RH
22	IN	TURN SIGNAL SWITCH,LH	47	IN	ECU START SIGNAL
23	IN	OVERTAKING SWITCH	48	SUPPLY	POWER MCU (30A)
24	IN	FOG LAMP SWITCH			

6. BRS system

6.1 Circuit Diagram

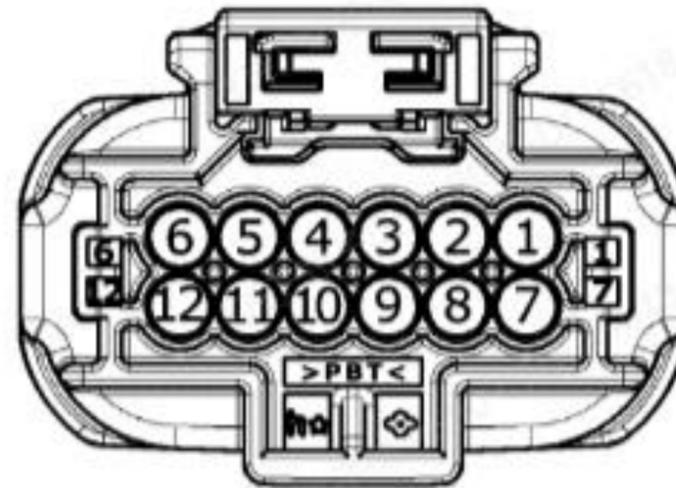
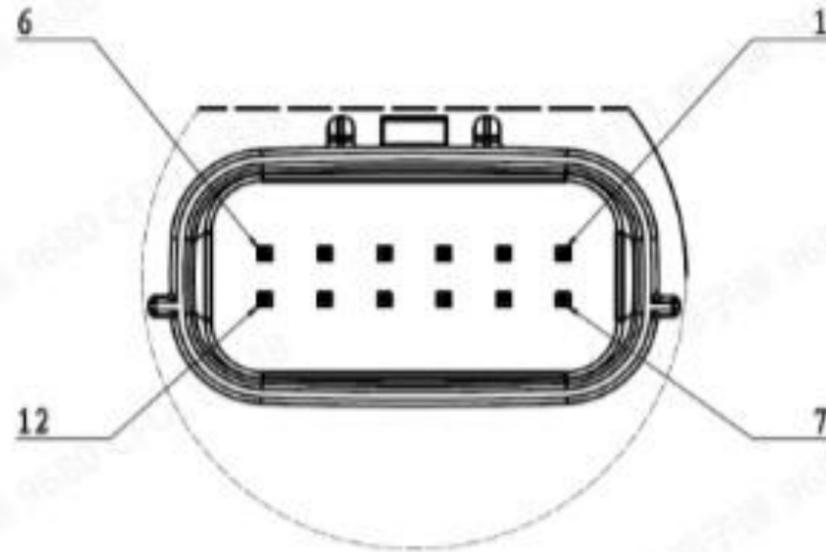


The EXPLORE version also has a newly added rear radar, which called BRS(behind radar system),

- MMI adds the interactive function with radar
- BRS adds K15 power-on control function.
- Add buzzer (radar buzzer alarm), rearview mirror alarm light function;
- With the wiring harness is increased, radar power supply (add fuse), communication branch, 15 relay control branch;

6. BRS system

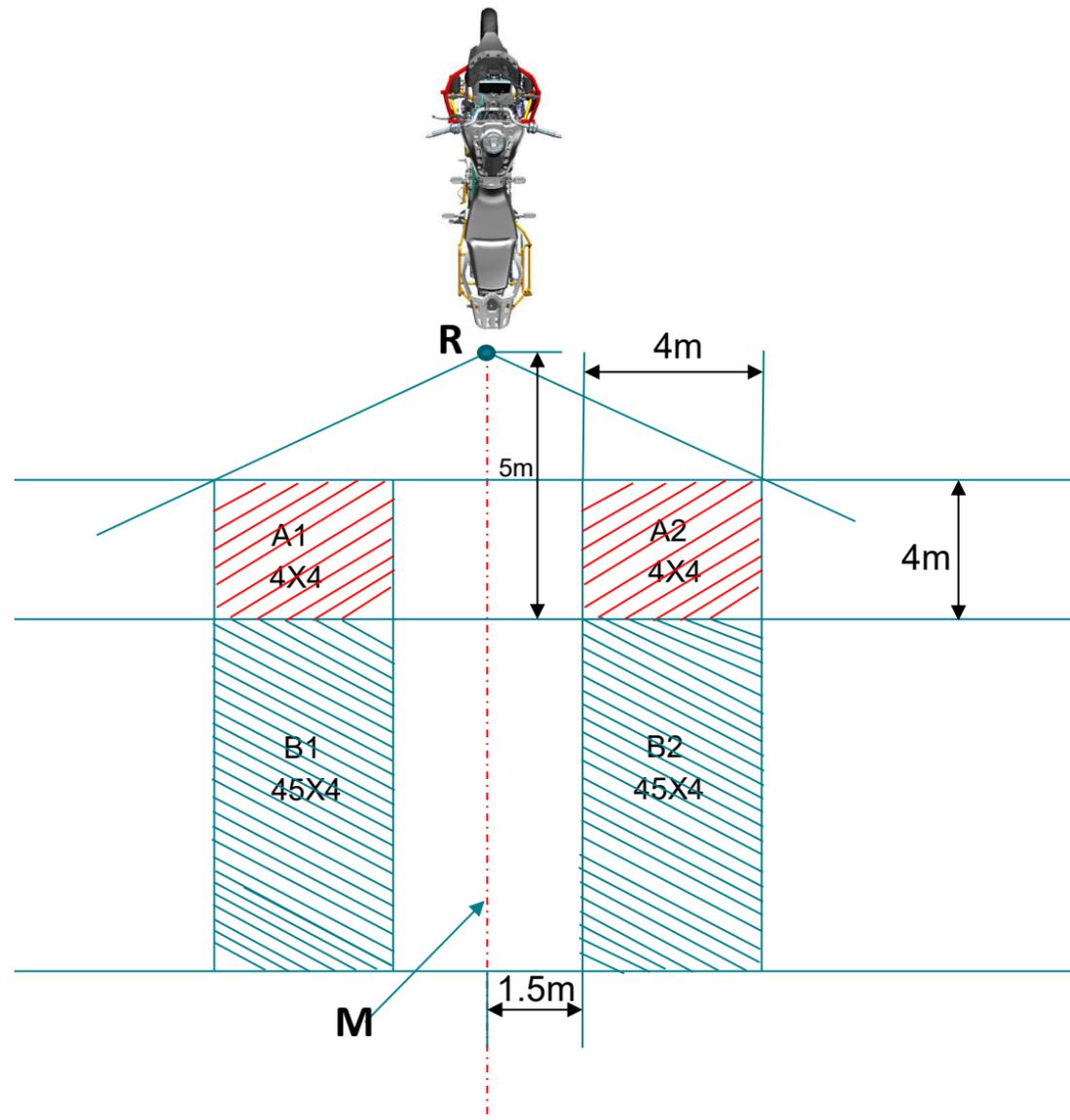
6.2 Connector



PIN No.	PIN pin definition
2	Battery power
3	CAN_L
6	Battery power
8	GND
9	CAN_H
12	Buzzer

6. BRS system

6.3 BSD and LCA Monitoring area description



BSD

Blind spot monitoring, the function is used to monitor the driver's blind field of vision in real time, and send a warning or warning message when other road users appear in the blind area.

LCA

Lane change collision Warning, the function is used to monitor other road users on the side and rear of the vehicle in real time, and send a warning or warning message when the risk of lane change occurs.

Area A1 and A2 are the areas covered by BSD function
Area B1 and B2 are the areas covered by LCA function

6. BRS system

6.4 BSD and LCA Monitoring area description

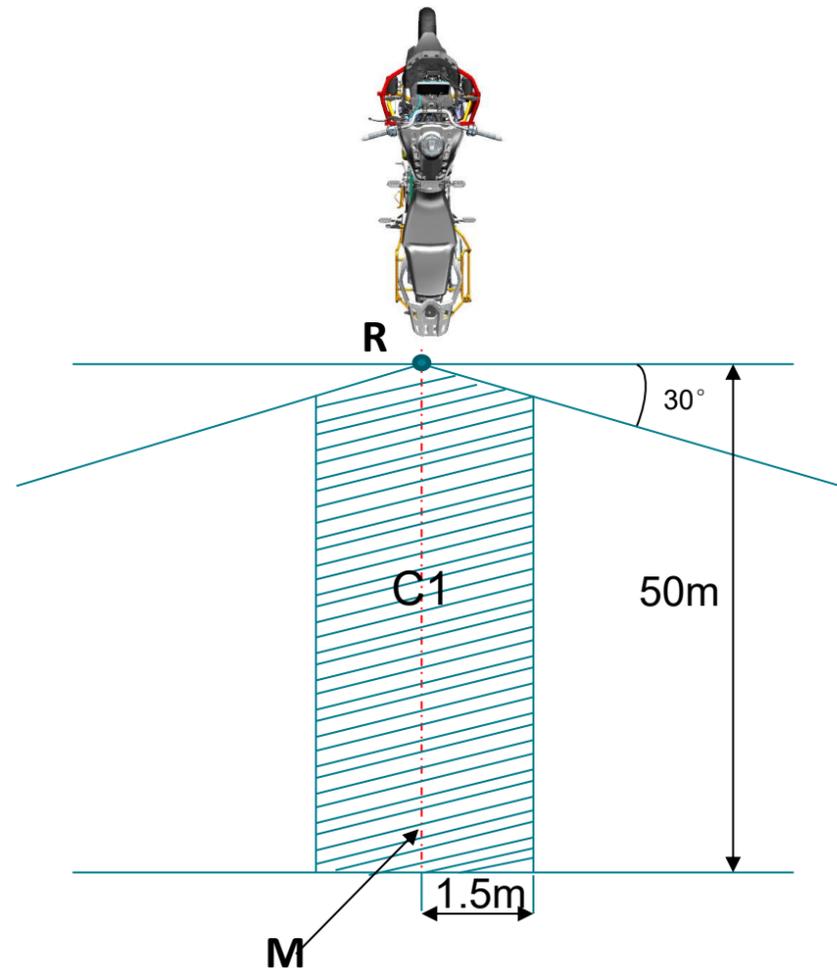


When BSD/LCA is working, other road users from behind on both two sides and in a blind spot, BSD will trigger the first-level alarm, and flash with yellow light, if turn signal of the bike has been turned on, it will activate Level 2 Alarm, and flash turn yellow light into red light with both left side and right side and the rear side.

FUNCTION	Alarm class	Rearview mirror LED alarm light
BSD/LCA	Level 1	Steady light
	Level 2	2Hz
FUNCTION	Alarm class	Rearview mirror LED alarm light

6. BRS system

6.5 RCW monitoring area description



RCW

Rear Collision warning The RCW function monitors the nearest vehicle behind the lane in real time and sends an alert or warning message when a potential collision hazard occurs.

The left picture where C1 area shows is the RCW alarm area.

6. BRS system

6.6 RCW monitoring area description



When the RCW is working, If other road users approaches the bike from the rear and detects the vehicle in the blind area, the RCW triggers the first-level alarm, the LED alarm light of the external rearview mirror on both sides flashes with yellow light(2Hz), and the buzzer is activated (2Hz).If it is close enough to meet the threshold, it will flash red light.

FUNCTION	Alarm class	Rearview mirror LED alarm light	buzzer
RCW	Level 1	2Hz	2Hz



determined,
progressive,
more fun.