

جزوه‌ی آموزشی نقشه‌خوانی موتورسیکلت

تهیه و تنظیم: مهندس جواد رفعتی



مرکز تخصصی خودرو

	ترجمه اصطلاحات تخصصی انژکتورموتور سیکلت		
1	SW	Switch	سوئیچ
2	IGN SW	Ignition Switch	سوئیچ اصلی (سوئیچ جرقه)
3	VBAT	Voltag Battery	ولتاژ باتری
4	MPR	Main Power Relay	رله اصلی قدرت
5	Kill Switch	Kill Switch	سوئیچ قطع کن
6	IGN Switch	IGN Switch	سوئیچ اصلی
7	GND	GND	بدنه(منفی)
8	TPS	Throttle Position Sensor	سنسور دریچه گاز
9	MAP	Manifold Air Pressure Sensor	سنسور فشار هوای منیفولد
10	TMAP	Temp MAP Sensor	سنسور دما و فشار هوای منیفولد
11	Coil	Coil	کوئل
12	INJ	Injector	انژکتور
13	MIL	MIL	چراغ چک
14	TACHO	TACHO	دورموتور کیلومتر
15	ROLLOVER	ROLLOVER	سنسور واژگونی
16	Realy	Realy	رله
17	Side Stand SW	Side Stand SW	سنسور جک بغل(سویچ جک بغل)
18	IDLE Valve	IDLE Valve	استپ موتور
19	Neutral SW	Neutral SW	سوئیچ خلاصی(سنسور خلاصی)
20	Neutral Gear	Neutral Gear	سنسور خلاصی
21	Cluteh SW	Clutch SW	سویچ کلاچ
22	Starter Relay	Starter Relay	رله استارت
23	Light Relay	Light Relay	رله چراغ
24	Fuel Pump	Fuel Pump	پمپ بنزین
25	Carbon Canister Valve	Carbon Canister Valve	شیر کربن کنیستر
26	CTS	Coolant Temp Sensor	سنسور دمای مایع خنک کننده
27		Water Temperature Sensor	سنسور دمای آب
28	Air Temperature Sensor	Air Temperature Sensor	سنسور دمای هوا
29	VSS	Vehicle Speed Sensor	سنسور سرعت
30	CKPS	Crankshaft Sensor	سنسور دور موتور
31	ETS	Engine Temp Sensor	سنسور دمای موتور
32	IAT	Intake Air Temp Sensor	سنسور دمای هوای ورودی

ECU Delphi MT05/MT05.2/MT05.3

REAL

FAKE



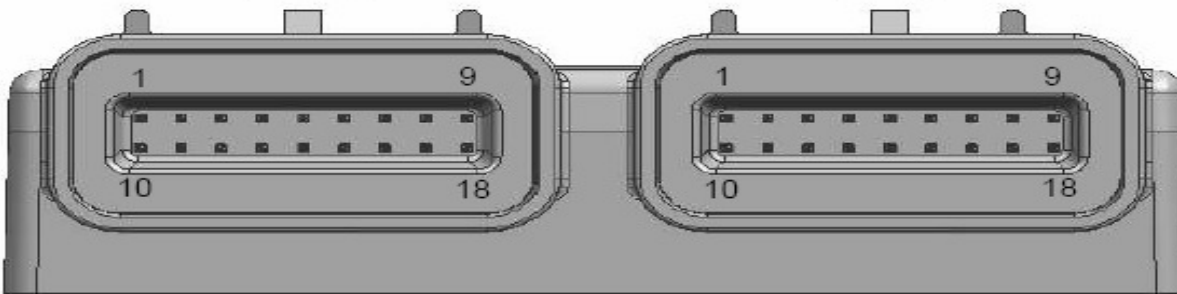
**NO
DELPHI**

J2

(Black)

J1

(Grey)



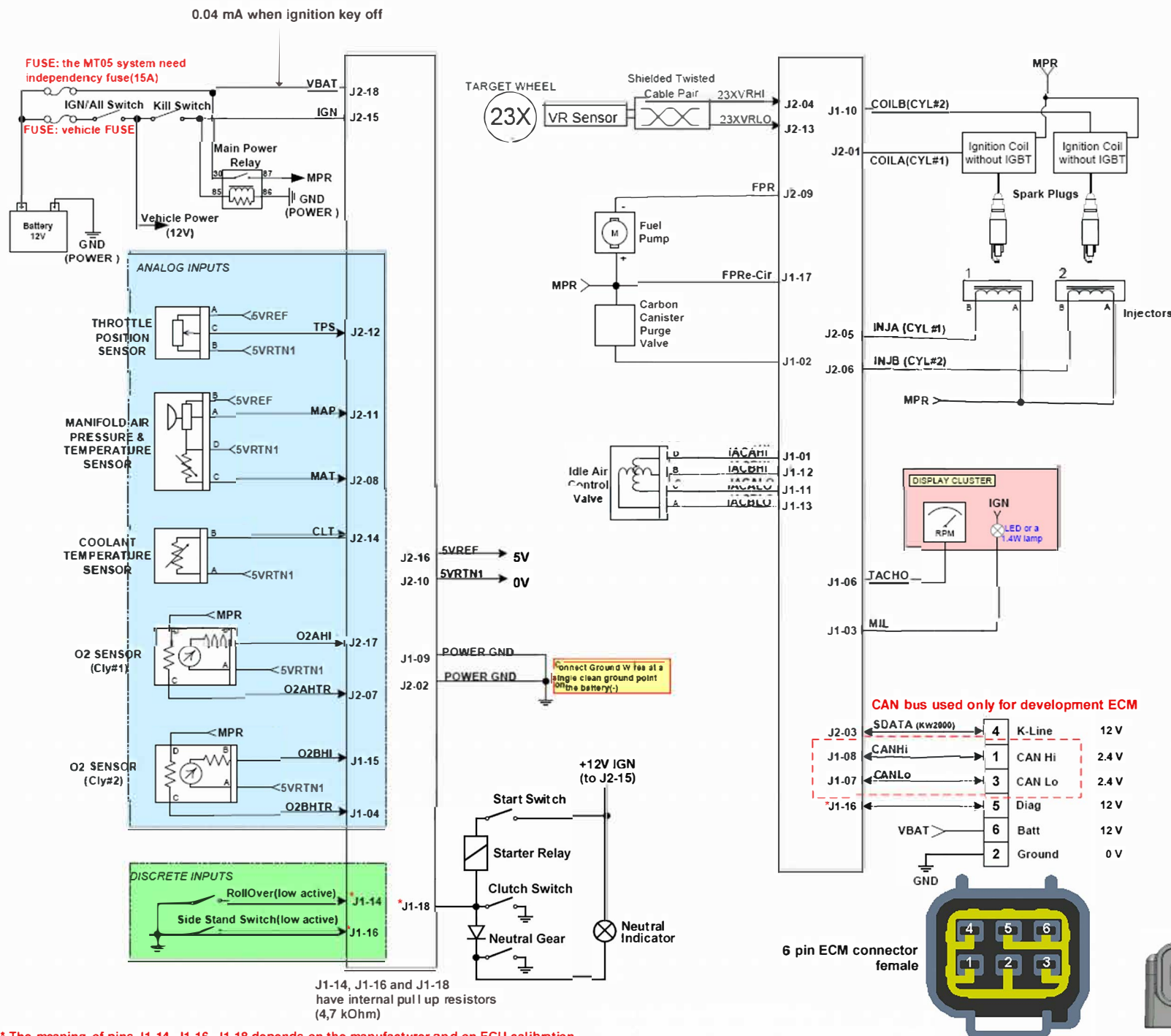
CONNECTOR J1

CONNECTOR J2

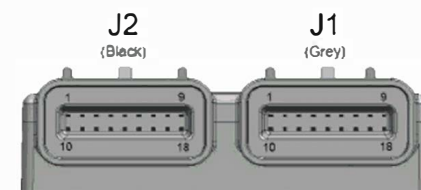
PIN #	Description	PIN #	Description
1	IACAH/I ^{AV}	1	COILA/ESTA
2	MAGNETO CUT RELAY/CLTL/ESTC	2	GND (Power)
3	MIL	3	KW2000
4	DEAD BATT BYPASS/O2B HTR/INJC	4	Crank VR Hi (23XHIFI)
5	SPARE ANALOG/NGK	5	INJA
6	TACHOMETER	6	INJB
7	CANLO	7	O2A HTR
8	CANHI	8	IAT_MAT
9	GND (Power)	9	FUEL PUMP RELAY
10	COILB/ESTB	10	5VRTN
11	IACALO	11	MAP
12	IACBHI	12	TPS
13	IACBLO	13	Crank VR Lo (23XLOFI)
14	ROLLOVER	14	CLT
15	VSS/O2B Sensor		
16	DIAG		
17	Fuel Pump Re-Cir		
18	PNSW	18	VBATT

Note: For MT05.1, only J2 will be populated and in this instance, KW2000, DIAG and MIL will share one pin as indicated in the PMD.

ECU Delphi MT05/MT05.2/MT05.3



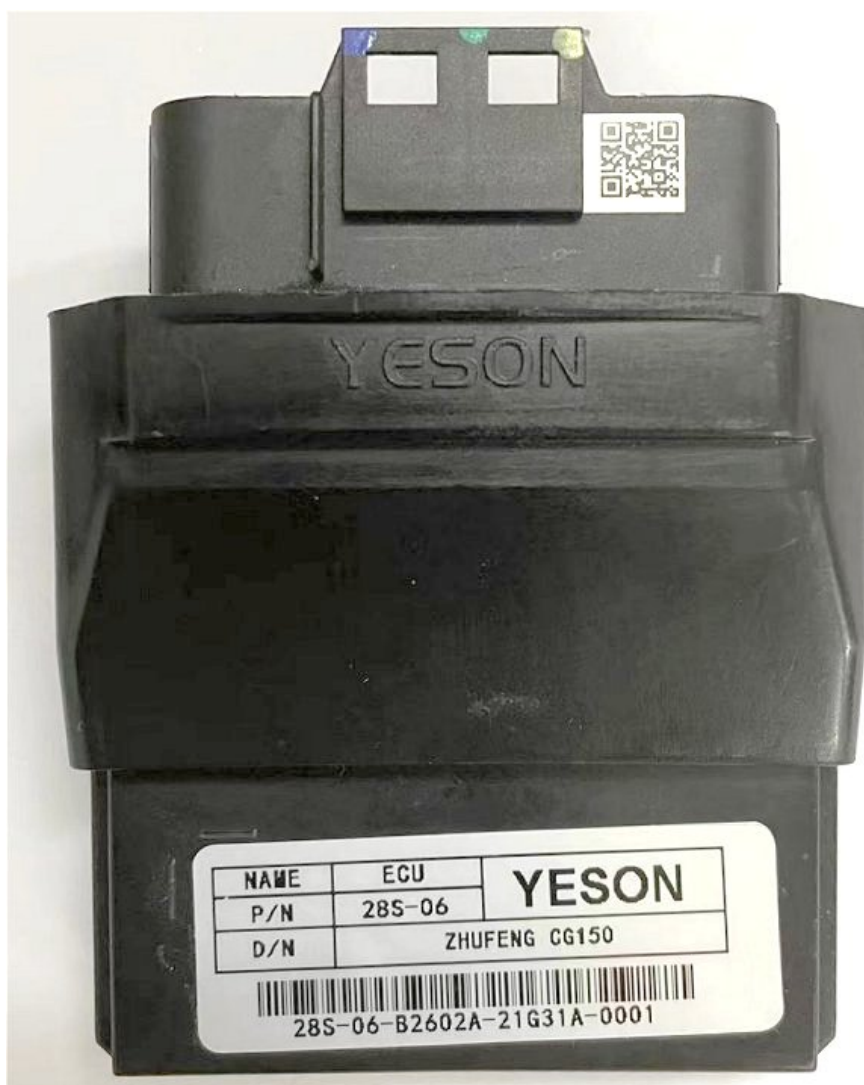
Product Connector	Pin Function Name
J1-1	IACAHI
J1-2	Carbon Canister Valve
J1-3	MIL
J1-4	O2BHTR
J1-5	
J1-6	TACHO
J1-7	CANLo(Used only for Development ECM)
J1-8	CANH(Used only for Development ECM)
J1-9	GND(Power)
J1-10	ESTCOILB
J1-11	IACALO
J1-12	IACBHI
J1-13	IACBLO
J1-14	ROLLOVER(low active)
J1-15	O2BHI
J1-16	Diagnostic Switch (low active)
J1-17	FPR-Cir
J1-18	Clutch / Neutral Switch
J2-1	ESTCOILA
J2-2	GND(Power)
J2-3	SDATA (KW2000)
J2-4	Crank VR HK(23X)
J2-5	INJA
J2-6	INJB
J2-7	O2AHTR
J2-8	MAT
J2-9	FPR
J2-10	5VRTN1
J2-11	MAP
J2-12	TPS
J2-13	Crank VR Lo(23X)
J2-14	CLT
J2-15	IGN
J2-16	5VREF
J2-17	O2AHI
J2-18	VBAT



* The meaning of pins J1-14, J1-16, J1-18 depends on the manufacturer and on ECU calibration

YESON 28S-06

YESON 28S-16

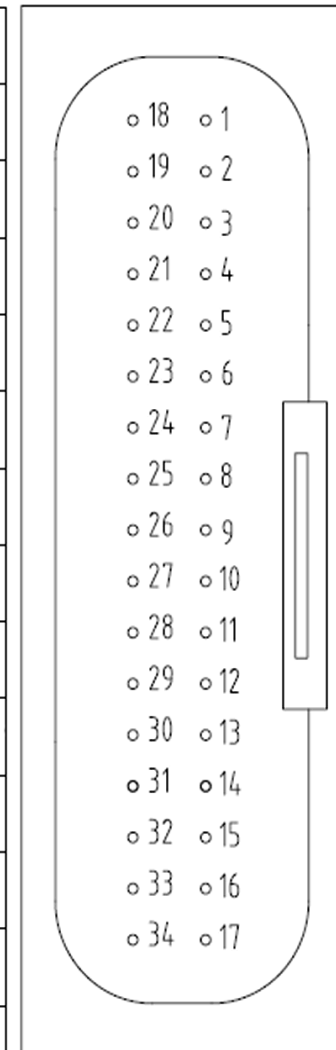


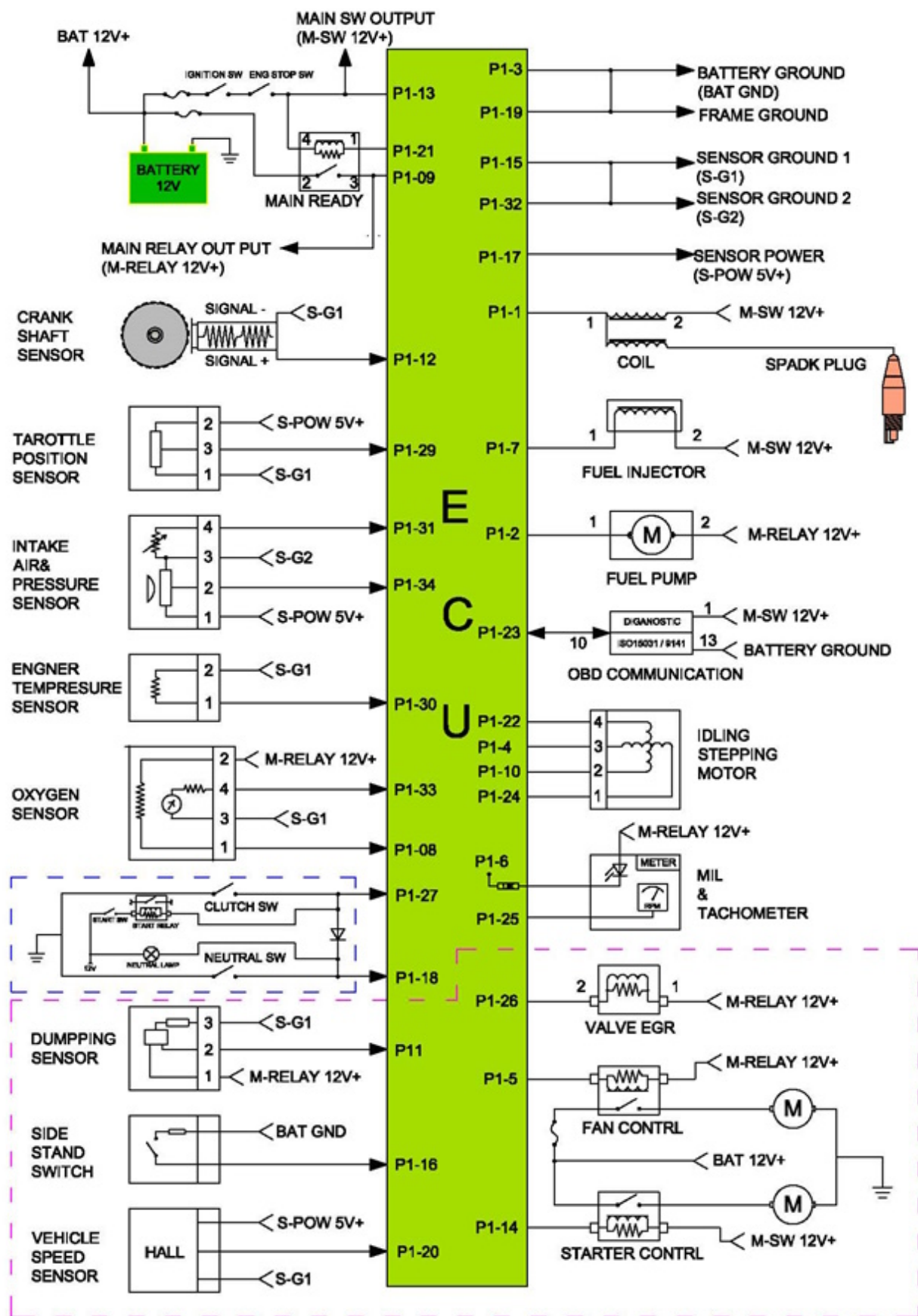
ECU کانکتور

Yeson 28S-06 : Blue pins

Yeson 28S-16 : Blue pins and red pins

1	IGN	Ignition Coil	18	NEUTRAL	Neutral Gear Switch
2	PUMP	Fuel Pump	19	GND	Battery Negative
3	GND	Battery Negative	20	—	Vehicle Speed Sensor
4	A-	IACV Stepper Coil A negative	21	MREL	Coil of Main Relay
5	—	Headlight Relay or Fan Control	22	A+	IACV Stepper Coil A positive
6	MIL	Fault Indicator Lamp	23	K-LINE	Diagnostic
7	INJ	Fuel Injector	24	B-	IACV Stepper Coil B negative
8	O2H	Oxygen Sensor Heater	25	RPMOUT	RPM output for speedometer
9	VBR	Battery +12 Volt over Main Relay	26	EVAP	EVAP Canister Solenoid Valve
10	B+	IACV Stepper Coil B positive	27	CLUTCH	Clutch Switch
11	—	Secondary Air Replenishment Valve	28	—	CAN Bus Hi
12	CKPS	Crankshaft Sensor	29	TPS	Throttle Sensor
13	VBC	Battery +12 Volt over Ignition Key	30	ETS	Engine Temp Sensor
14	—	CAN Bus Lo	31	IAT	Intake Air Temp Sensor
15	S-G2	O2 TPS ETS CKP Sensor Ground	32	S-G1	IAT MAP Sensor Ground
16	SSW	Side Stand Switch	33	O2S	O2 Sensor
17	VREF	+5 Volt Output for sensors	34	MAP	MAP Sensor



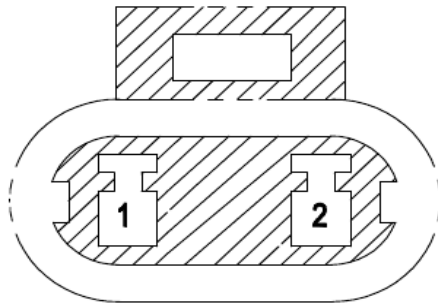


ECU CONTROL SCHEMATIC

YESON

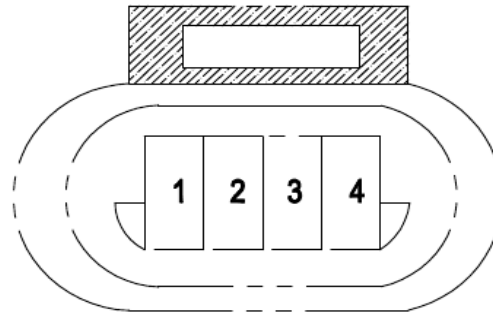
تهیه و تنظیم: جواد رفعتی

Fuel Pump



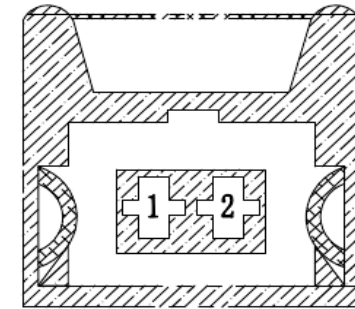
- 1.) Pump
- 2.) +12 Volt

IACV Stepper



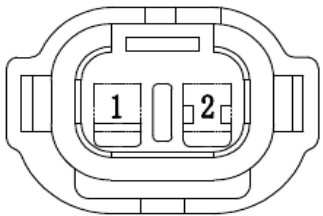
- 1.) Stepper B-
- 2.) Stepper B+
- 3.) Stepper A-
- 4.) Stepper A+

Injector



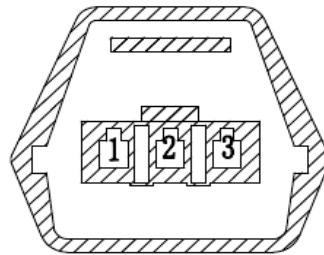
- 1.) Injector
- 2.) +12 Volt

Temp Sensor



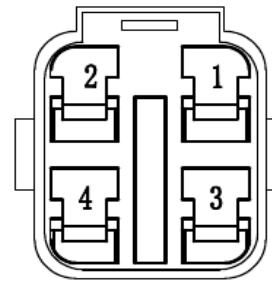
- 1.) Temp Sensor
- 2.) Temp Sensor Ground

Throttle Sensor



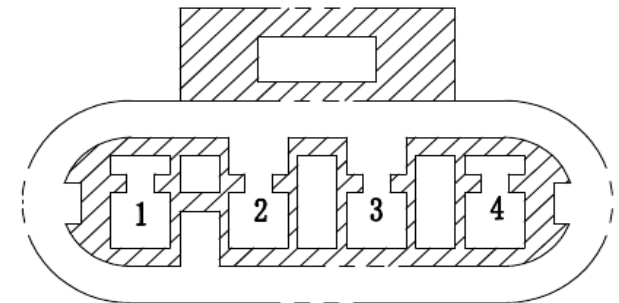
- 1.) TPS Sensor Ground
- 2.) VREF (+5V)
- 3.) TPS Sensor

Oxygen Sensor



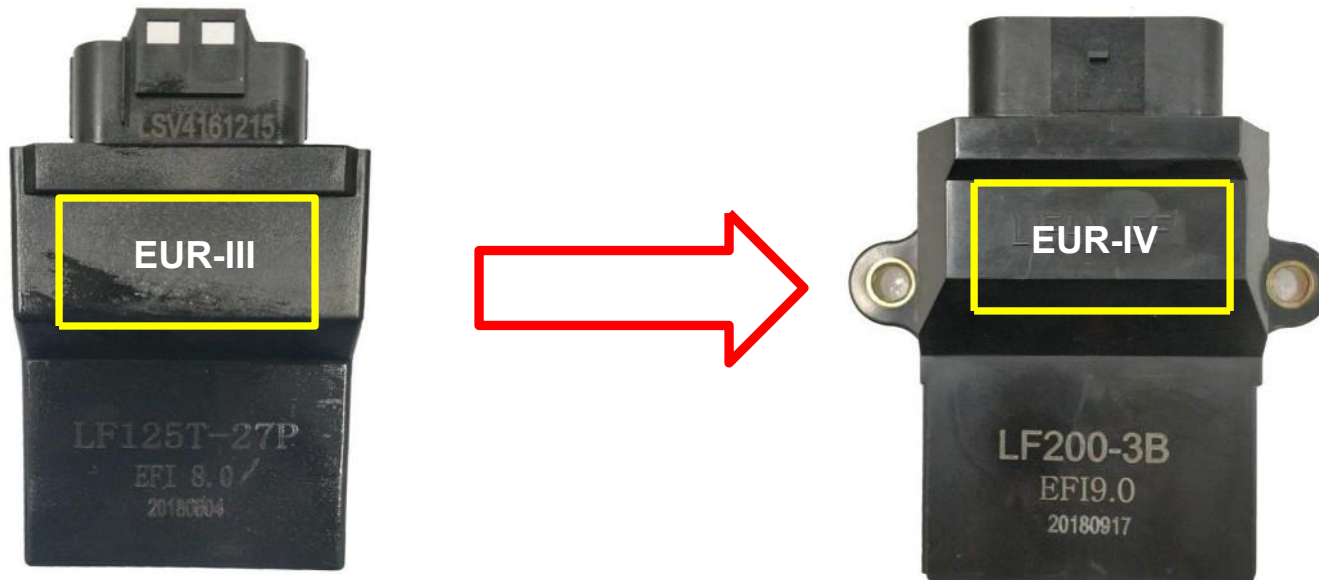
- 1.) Heater
- 2.) Heater (+12V)
- 3.) O2 Sensor
- 4.) O2 Sensor Ground

MAP + IAT Sensor



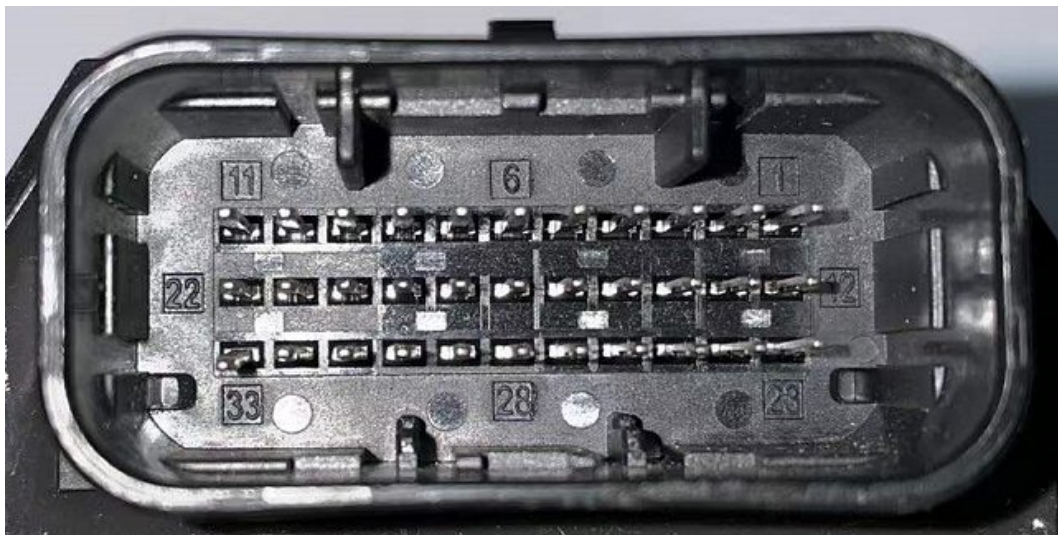
- 1.) VREF (+5V)
- 2.) MAP Sensor
- 3.) Sensor Ground
- 4.) IAT Sensor

Comparison of EUR-III and EUR-IV ECUs



Note: Different models of ECUs are not interchangeable due to different internal software parameters.

Lifan EFI 9 Euro 4 ECU



11	Fuel Pump Relay	Rev B	5V voltage Output	Pressure Sensor	Throttle Position	5	Water Temperature Indicator	Oxygen Heater	2	1
Empty	Blue Yellow	Blue White	Blue Red Red Blue	Yellow BLACK	Empty	Green Blue	Brown Yellow	Empty	Empty	
Power Supply of Switching Key	Idle Valve	Rev A	Analog Ground Wire	Cylinder Temperature Sensor	Shut-Off Switch	16	15	Fan control	13	Ignition
BLACK	Blue	Green White	Green BLACK	BLACK BLACK	White	Empty	Empty	Not defined	Empty	BLACK Yellow
K-line	Fault Indicator	Injector	Electronic Ground	Air Temperature Sensor	Oxygen Sensor Signal	27	26	Speed Output	24	Power ground Wire
Pink	Brown Red	Brown White	Green Yellow Red	White	Empty	Empty	Brown Blue	Empty	Green	

ECU plug: Taobao Part Number DJ73327-0.6-21

راهنمای ECU:

FAI ECU





Pin	Internal Name	Usage	Wire Color
1	GND	Not connected	
2	GND	GND	Green
3	BTDC	Ignition Coil	Black/Green
4	BAT1	12V from Battery	Red/White
5	KEY IGNI	12V from Ignition Key	Black
6	O2 IN	O2 Sensor	Yellow/Grey
7	TXD	Tx Data (to OBD adapter)	Green/Red
8	PPI	TPS Sensor	Blue/Red
9	MT Drive 1 B	Not connected	
10	MT Drive 1A	Not connected	
11	MT Drive 2A	Not connected	
12	INJECT	Fuel Injector	Black/Red
13	BL1	Not connected	
14	AGND	GND	Green/White
15	CAN H	CAN Hi	
16	CAN L	CAN Lo	
17	LAMP	MIL Lamp	Red/Grey
18	RXD	Rx Data (to OBD adapter)	Green/White
19	PPO	TPS Output	Orang/White
20	AGND	GND	Green/White
21	FAN	Fan (not connected)	
22	MT Drive 2B	Not connected	
23	INJECT	Fuel Injector	
24		Not connected	
25	BKGDI	ECU Programing	Green/Yellow
26	OILDT (Linear OS)	Oil Temp. Sensor (not used)	
27	TAMP	IAT Sensor	Brown/White
28	TENG	Engine Temp. Sensor	Blue
29	CRTS2	Not connected	
30	CRTS1	Not connected	
31	STARMOT	Not connected	
32	TDCI	Not connected	Blue/White
33	15 V	Not connected	

NOTE: The pins Tx Data and Rx Data are for a proprietary Fai adapter which separates receive and transmit other than K-Line. None of the standard adapters (K-Line, ELM327, J2534) can communicate with these pins.

راهنمای ECU:

Bosch MSE 3.0

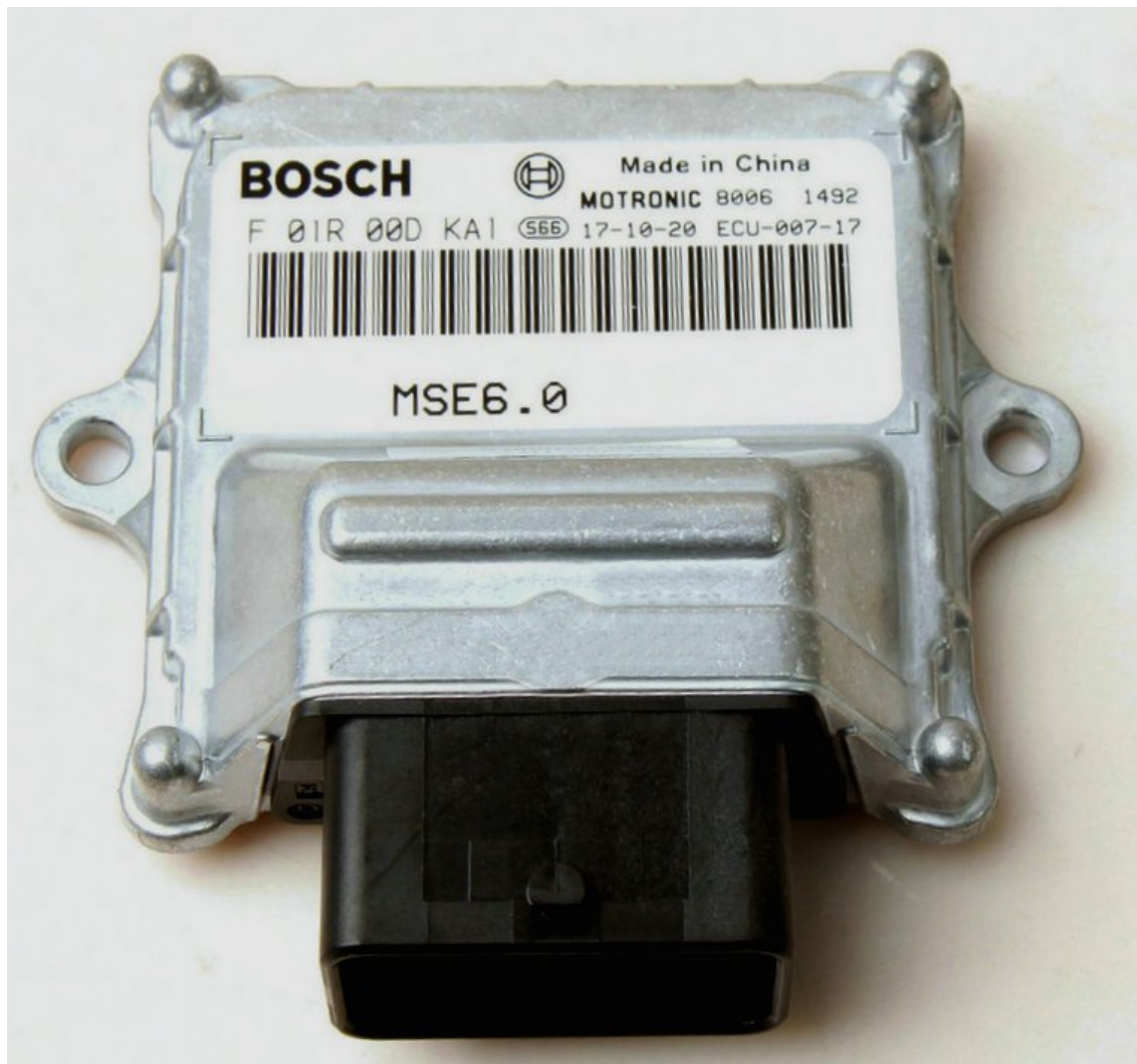




Pin	Usage
1	Ignition Coil
2	GND
3	Fuel Pump Relay
4	MIL Lamp
5	12 Volt
6	IAT Sensor
7	IACV Stepper Phase B
8	IACV Stepper Phase C
9	IACV Stepper Phase A
10	Sensor 5 Volt Output
11	12 Volt from Ignition Switch
12	CKP Sensor B
13	CKP Sensor A
14	Fuel Injector
15	O2 Heater
16	EVAP Canister Purge Valve
17	RPM Output
18	EHT Sensor
19	MAP Sensor
20	TPS Sensor
21	Sensor GND
22	IACV Stepper Phase D
23	12 Volt
24	O2 Sensor
25	Main Relay
26	K-Line

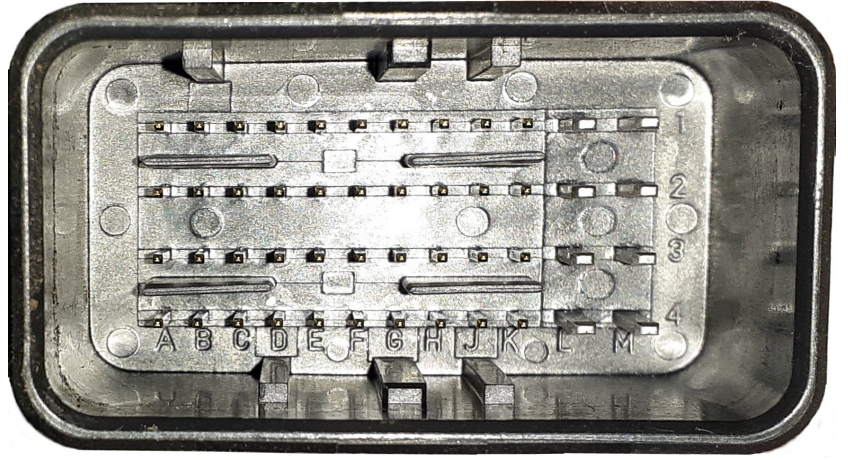
راهنمای ECU:

Bosch MSE 6.0



کانکتور ECU

Bosch	Benelli	Tekken	Usage
A1	1	18	Stepper motor phase C
A2	13	28	Stepper motor phase B
A3	25	38	Roll-Over switch input
A4	37	48	Injector 1
B1	2	17	Stepper motor phase D
B2	14	27	Stepper motor phase A
B3	26	37	Clutch switch input
B4	38	47	Injector 2
C1	3	16	CAN Bus High
C2	15	26	Start relay
C3	27	36	Ignition diagnosis 1 input
C4	39	46	Fuel pump relay
D1	4	15	CAN Bus Low
D2	16	25	unused
D3	28	35	Neutral switch input
D4	40	45	Cooling fan relay
E1	5	14	Main relay
E2	17	24	unused
E3	29	34	K-Line
E4	41	44	Headlight relay
F1	6	13	Engine temperature sensor
F2	18	23	Side stand switch input
F3	30	33	12V Power permanent (from battery)
F4	42	43	Crankshaft position sensor (pickup) A
G1	7	12	Throttle position sensor
G2	19	22	unused
G3	31	32	12V Power over ignition switch
G4	43	42	Crankshaft position sensor (pickup) B
H1	8	11	Intake air temperature sensor
H2	20	21	Ignition diagnosis 2 input
H3	32	31	unused
H4	44	41	Vehicle Speed sensor
J1	9	10	Ground for sensors
J2	21	20	Oxygen sensor 2
J3	33	30	5V output for sensors
J4	45	40	Engine speed output (for RPM display)
K1	10	9	Intake pressure sensor
K2	22	19	Oxygen sensor 1
K3	34	29	MIL Fault Lamp
K4	46	39	Travel/sports mode switch
L1	11	2	Oxygen sensor 1 heater
L2	23	4	unused
L3	35	6	Carbon Canister Purge Valve
L4	47	8	12V Power over main relay
M1	12	1	Oxygen sensor 2 heater
M2	24	3	Ignition Coil 1
M3	36	5	Power Ground
M4	48	7	Ignition Coil 2

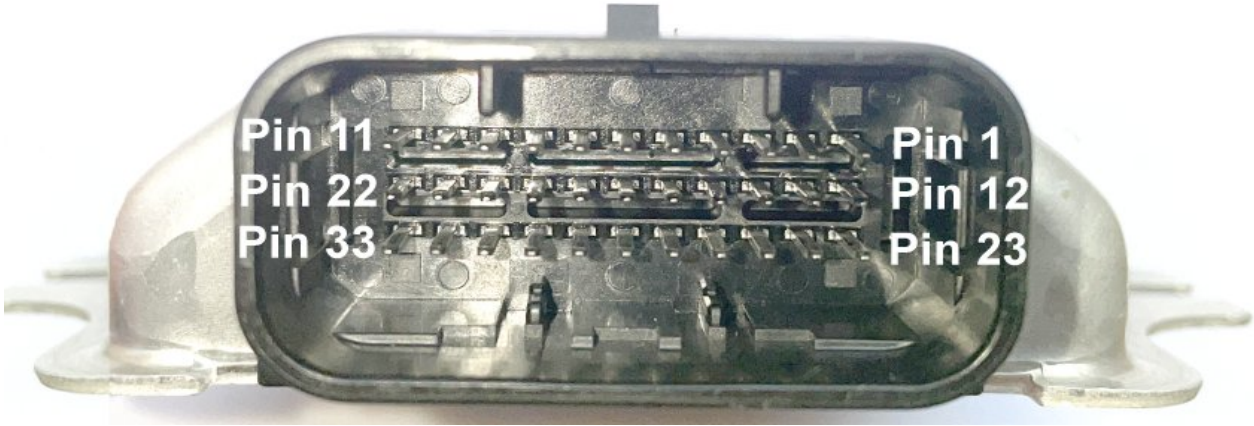


راهنمای ECU:

Bosch MSE 8.0



کانکتور ECU



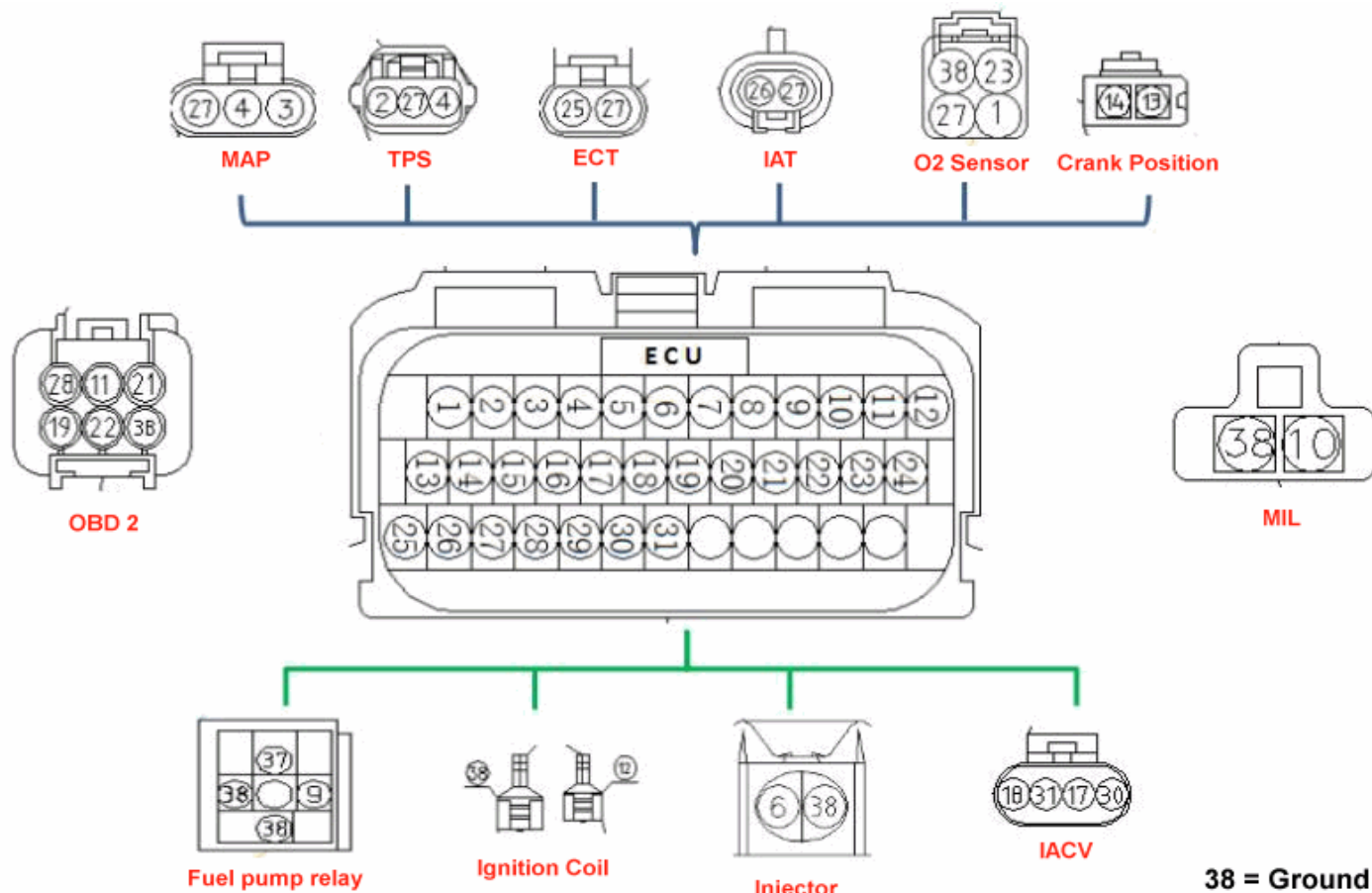
Pin	Usage
1	Oxygen Sensor Heater Output
2	IACV Stepper Motor phase A
3	Vehicle Speed Sensor Input
4	12 Volt permanent (from Battery)
5	Crankshaft Position Sensor A Input
6	Crankshaft Position Sensor B Input
7	Power Ground
8	Intake Pressure Sensor Input
9	Engine Speed Signal Output
10	Power Ground
11	Ignition Coil Output
12	Fuel Injector Output
13	IACV Steper Motor phase D
14	Not Used
15	5 Volt Output for sensors
16	CAN Bus Low
17	CAN Bus High
18	Engine Malfunction Light (MIL) Output
19	Headlight Relay Output
20	Oxygen Sensor Signal Input
21	Fuel Tank Sensor Input
22	Not Used
23	Carbon Canister Valve (EVAP) Output
24	IACV Steper Motor phase C
25	IACV Steper Motor phase B
26	12 Volt over Ignition Swich
27	Sensor Ground
28	Fuel Pump Relay Output
29	Main Relay Output
30	Roll Over Switch Input
31	Side Stand Switch Input
32	Engine Temperature Sensor Input
33	Intake Air Temperature Sensor Input

DENI	E0900	Euro 3	36 pin	2015 - 2017
DENI	E1700	Euro 4	34 pin	2017 - 2022
DENI	E1900	Euro 5	34 pin	2022

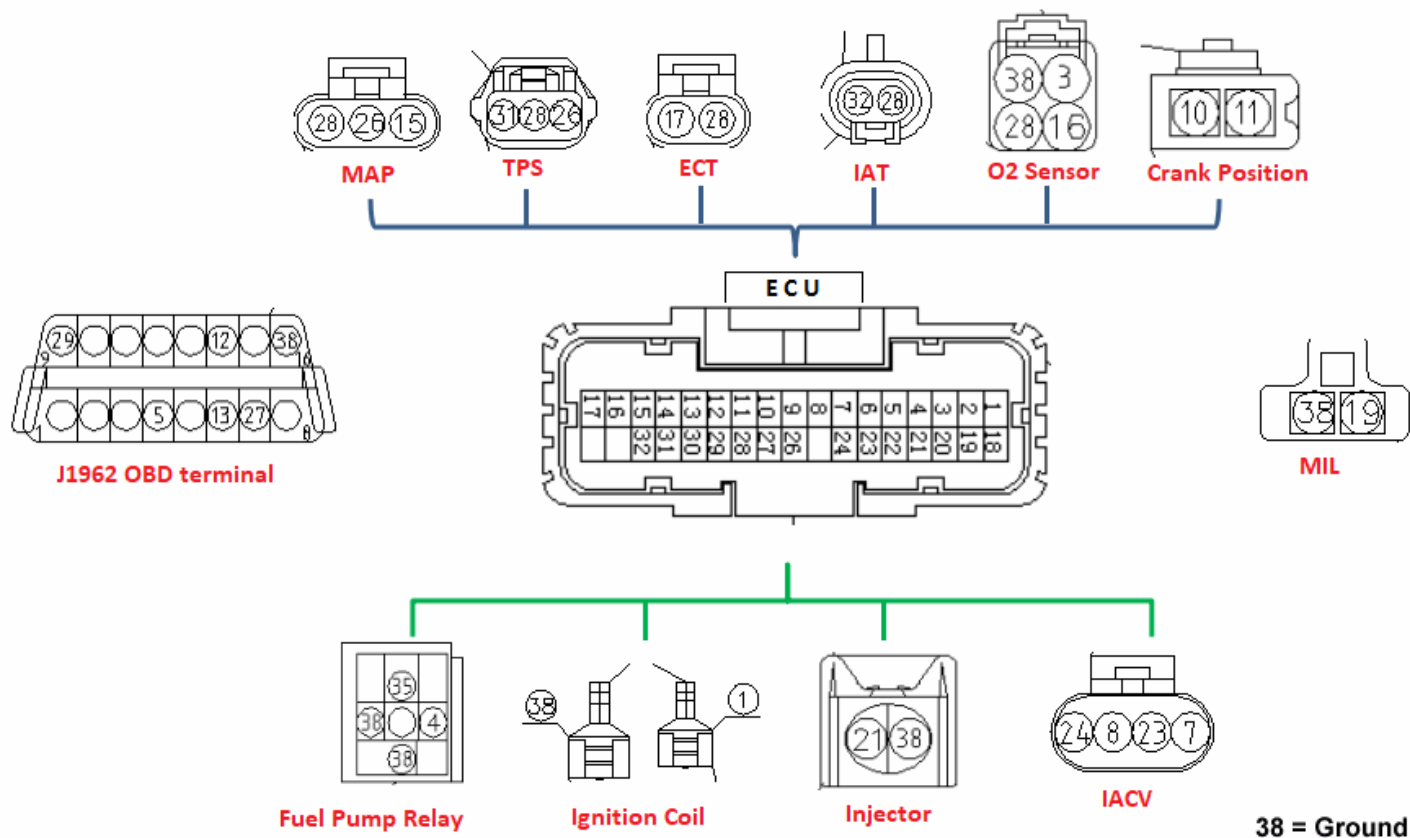


Pin	E0900 (E3800-3)	E1700 (E3800-31)	E1900 (E3800-40)
1	O2 Sensor	Ignition Coil	Ignition Coil
2	TPS Sensor	Ignition Coil GND	Ignition Coil GND
3	MAP Sensor	O2 Heater	O2 Heater
4	Output 5V	Fuel Pump	Fuel Pump
5	Intake Solenoid Valve	GND	GND
6	Fuel Injector	12V Battery	12V Battery
7	GND	Stepper A-	Stepper A-
8	12V Battery	Stepper B-	Stepper B-
9	Fuel Pump Relay	12V Ignition	12V Ignition
10	MIL Lamp	CKP Sensor -	CKP Sensor -
11	GND	CKP Sensor +	CKP Sensor +
12	Ignition Coil	CAN Lo	Canister / Fan / Start Relay
13	CKP Sensor +	CAN Hi	Programming Switch
14	CKP Sensor -	Rollover Sensor	Rollover Sensor
15	Anti Theft Unlock	MAP Sensor	MAP Sensor
16	Rollover Sensor	O2 Sensor	O2 Sensor
17	Stepper A+	ECT Sensor	ECT Sensor
18	Stepper B+	not used	Solenoid Valve / Headlight Ctrl
19	K-Line	MIL Lamp	MIL Lamp
20	RPM Output	RPM Output	RPM Output
21	CAN Hi	Fuel Injector	Fuel Injector
22	CAN Lo	GND	GND
23	O2 Heater	Stepper A+	Stepper A+
24	Ignition Coil GND	Stepper B+	Stepper B+
25	ECT Sensor	not used	Speed Signal
26	IAT Sensor	Output 5V	Output 5V
27	Sensor GND	K-Line	K-Line
28	AFR Output (PWM)	Sensor GND	Sensor GND
29	12V Ignition	AFR Output (PWM)	AFR Output (PWM)
30	Stepper A-	Anti Theft Unlock	Neutral Switch
31	Stepper B-	TPS Sensor	TPS Sensor
32	not used	IAT Sensor	IAT Sensor
33	not used	not used	Side Stand / Start Switch
34	not used	not used	Kill Switch / Headlight Switch
35	not used		
36	not used		

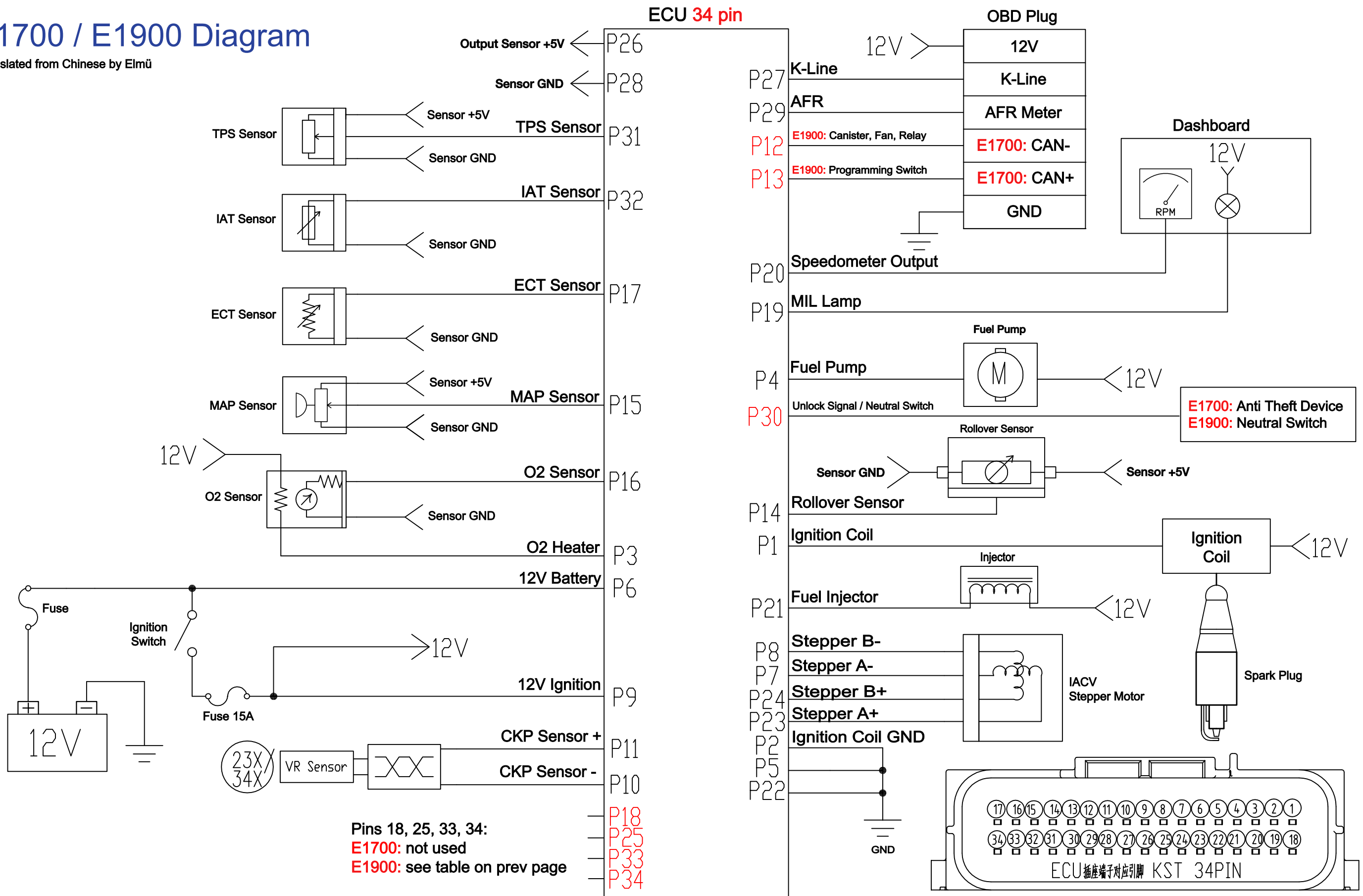
ECU Connector 36 pin



ECU Connector 34 pin



E1700 / E1900 Diagram



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راهنمای ECU:

Motion SE08, DE08

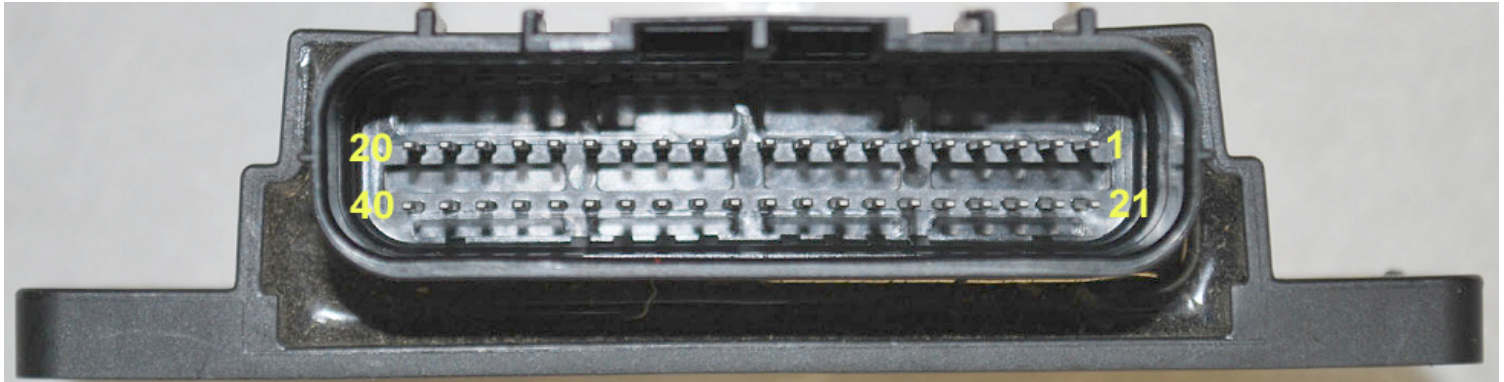


Motion SE08 (single cylinder)



Pin	Usage	Pin	Usage
1	Ignition Coil	18	Power Ground
2	12V Battery Voltage (permanent)	19	Power Ground
3	Crankshaft Sensor(23X) High	20	Crankshaft Sensor(23X) Low
4	IACV Stepper Motor A Low	21	IACV Stepper Motor A High
5	IACV Stepper Motor B Low	22	IACV Stepper Motor B High
6	Oxygen Sensor Heater	23	5 Volt Output for Sensors
7	Fuel Pump Relay	24	RPM Output
8	Secondary Air Valve	25	Fuel Injector
9	Cooling Fan Relay	26	Carbon Canister Purge Valve
10	12V Battery Voltage (over Ignition switch)	27	MIL Lamp
11	K-Line	28	Ground for Sensors
12	Vehicle Speed Sensor	29	Neutral / Clutch Switch
13	Roll Over Switch	30	Side Stand Switch
14	Power Enrich / Reverse Switch	31	MAP Sensor
15	Engine Temperature Sensor	32	TPS Sensor
16	Oxygen Sensor	33	IAT Sensor
17	CAN Bus Hi (only for factory development)	34	CAN Bus Lo (only for factory development)

Motion DE08 (dual cylinder)

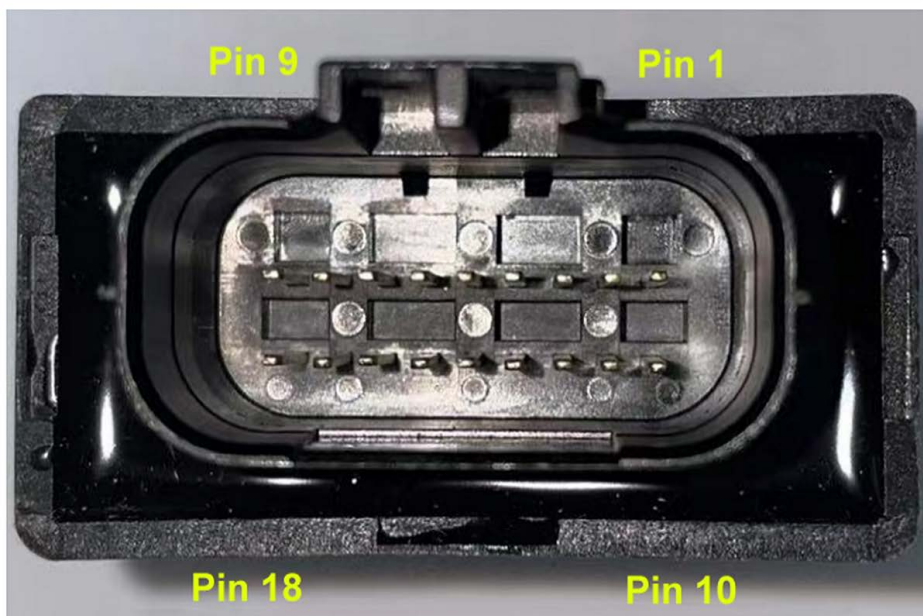


Pin	Usage	Pin	Usage
1	CAN Bus Lo (only for factory development)	21	CAN Bus Hi (only for factory development)
2	Roll Over Switch	22	Side Stand Switch
3	TPS Sensor	23	MAP Sensor
4	IAT Sensor	24	Engine Temperature Sensor
5	Oxygen Sensor 2	25	Oxygen Sensor 1
6	Neutral / Clutch Switch	26	Reverse Switch
7	Vehicle Speed Sensor	27	not used or MAP Sensor 2
8	12V Battery Voltage (over Ignition Switch)	28	K-Line
9	12V Battery Voltage (permanent)	29	Ground for Sensors
10	Crankshaft Sensor (23X) High	30	Crankshaft Sensor (23X) Low
11	Headlight Relay	31	5 Volt Output for Sensors
12	Oxygen Sensor 1 Heater	32	RPM Output
13	IACV Stepper Motor A Low	33	IACV Stepper Motor A High
14	IACV Stepper Motor B Low	34	IACV Stepper Motor B High
15	Cooling Fan Relay	35	Carbon Canister Purge Valve
16	Fuel Injector 2	36	MIL Lamp
17	not used	37	Fuel Injector 1
18	Oxygen Sensor 2 Heater	38	Power Ground
19	Fuel Pump relay	39	Power Ground
20	Ignition Coil 2	40	Ignition Coil 1

راهنمای ECU:

ROJO GY6





Pin	Usage	Wire Color
1	Ignition Coil	Red/White
2	GND	Green
3	Fuel Pump	Yellow
4	VCC 12V	Red
5	Fuel Injector	White
6	MIL Lamp	Pink
7	IACV Solenoid	Brown/White
8	ECT Sensor	Purple
9	O2 Sensor	Grey
10	CKP Sensor	Blue/White
11	Not used	
12	CAN Lo	Orange/Black
13	CAN Hi	Black/White
14	???	Orange
15	5V Output	Black
16	GND	Blue
17	TPS Sensor	Brown
18	Not used	

Honda



کانکتورهای ECU

هوندا صدها نوع مختلف از ECU تولید می‌کند. هر ECU به کانکتور متفاوت دارد و حتی اگر دو تا ECU یکسانی داشته باشند، پین‌ها ممکنه کاملاً متفاوت باشند. همچنین همون موتور ممکنه بسته به سال ساختش ECU متفاوتی داشته باشه. هوندا واقعاً بی‌ثباته. بنابراین این دفترچه فقط می‌تونه چند نمونه بده.

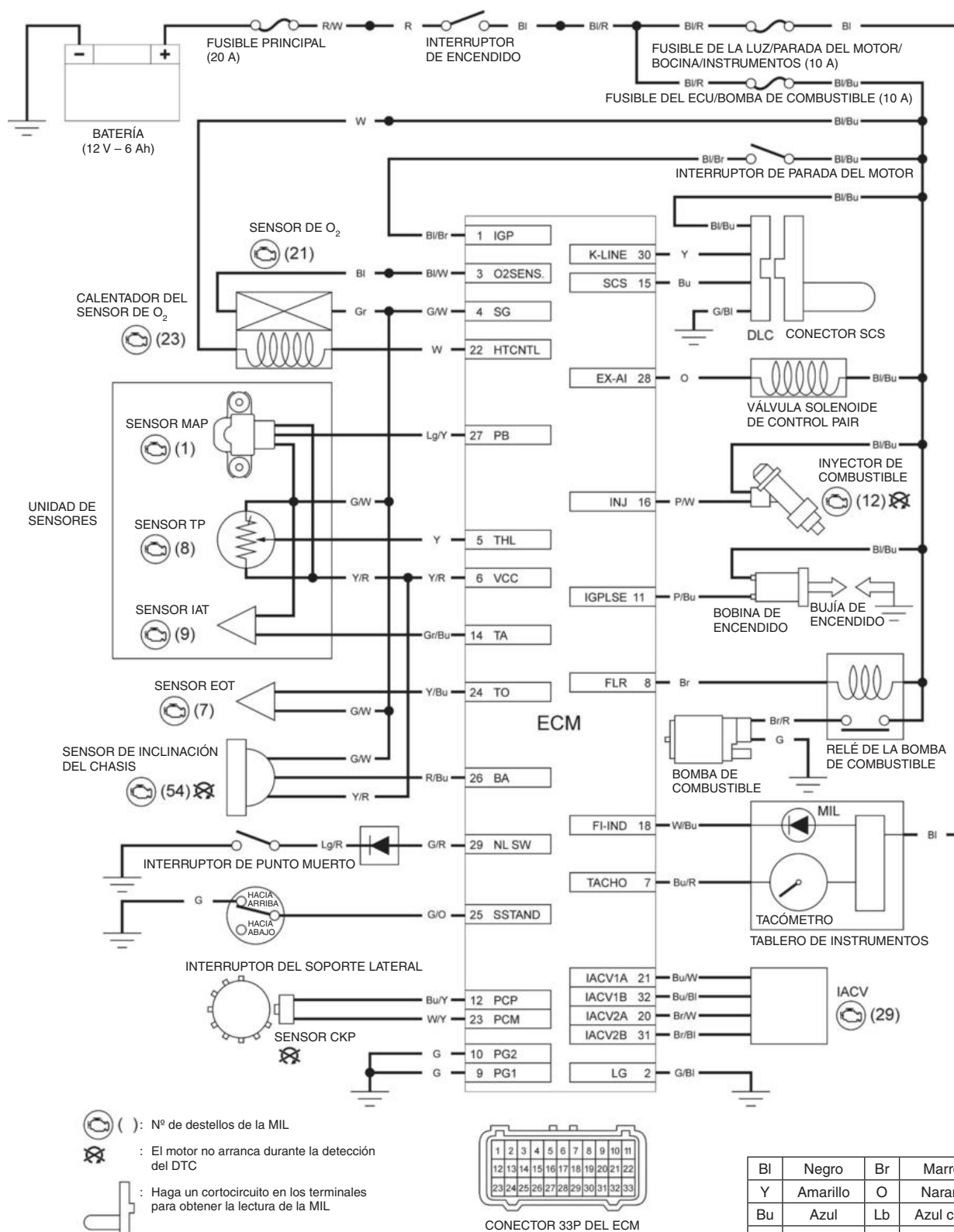
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and many more...

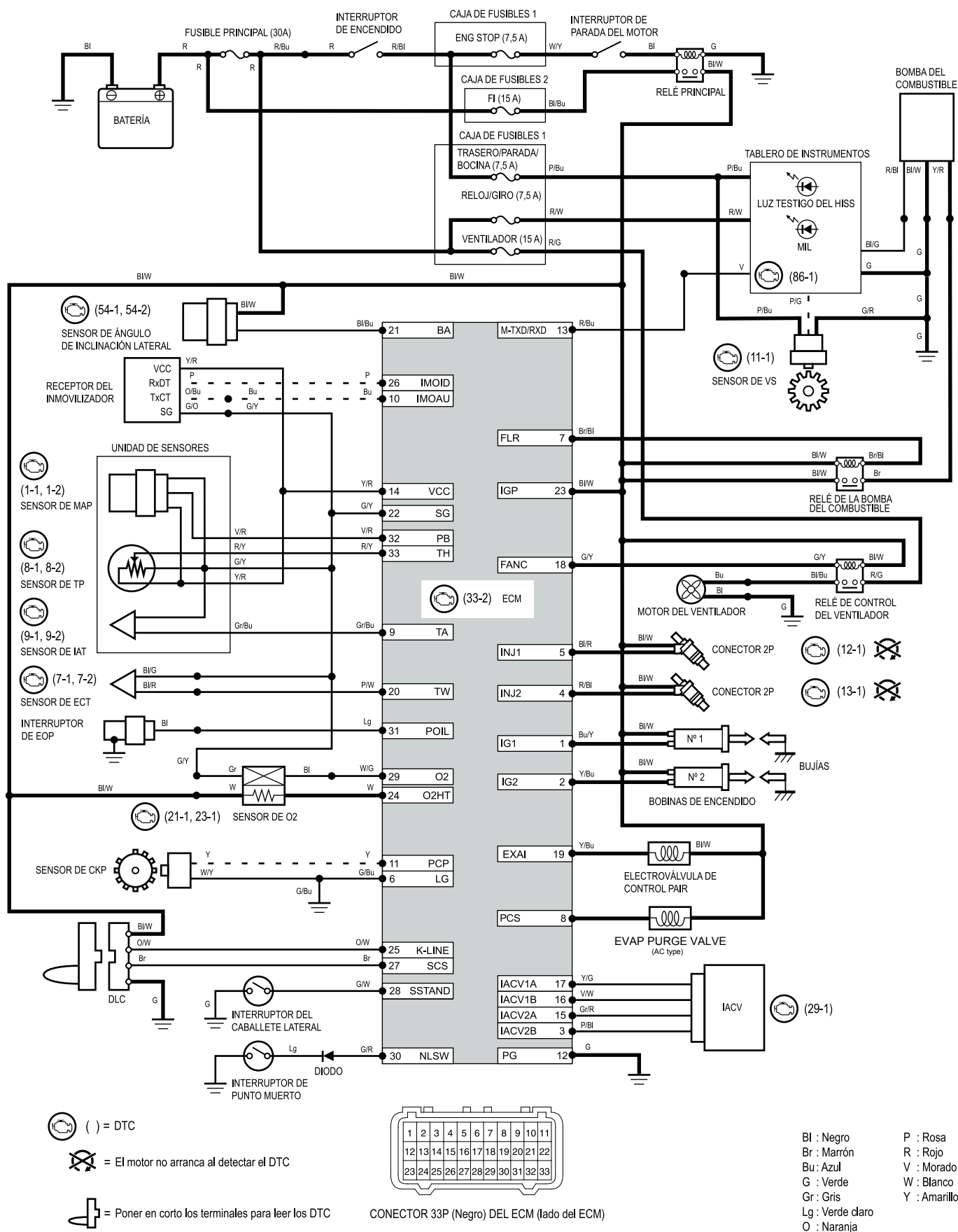
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DIAGRAMA DEL SISTEMA PGM-FI

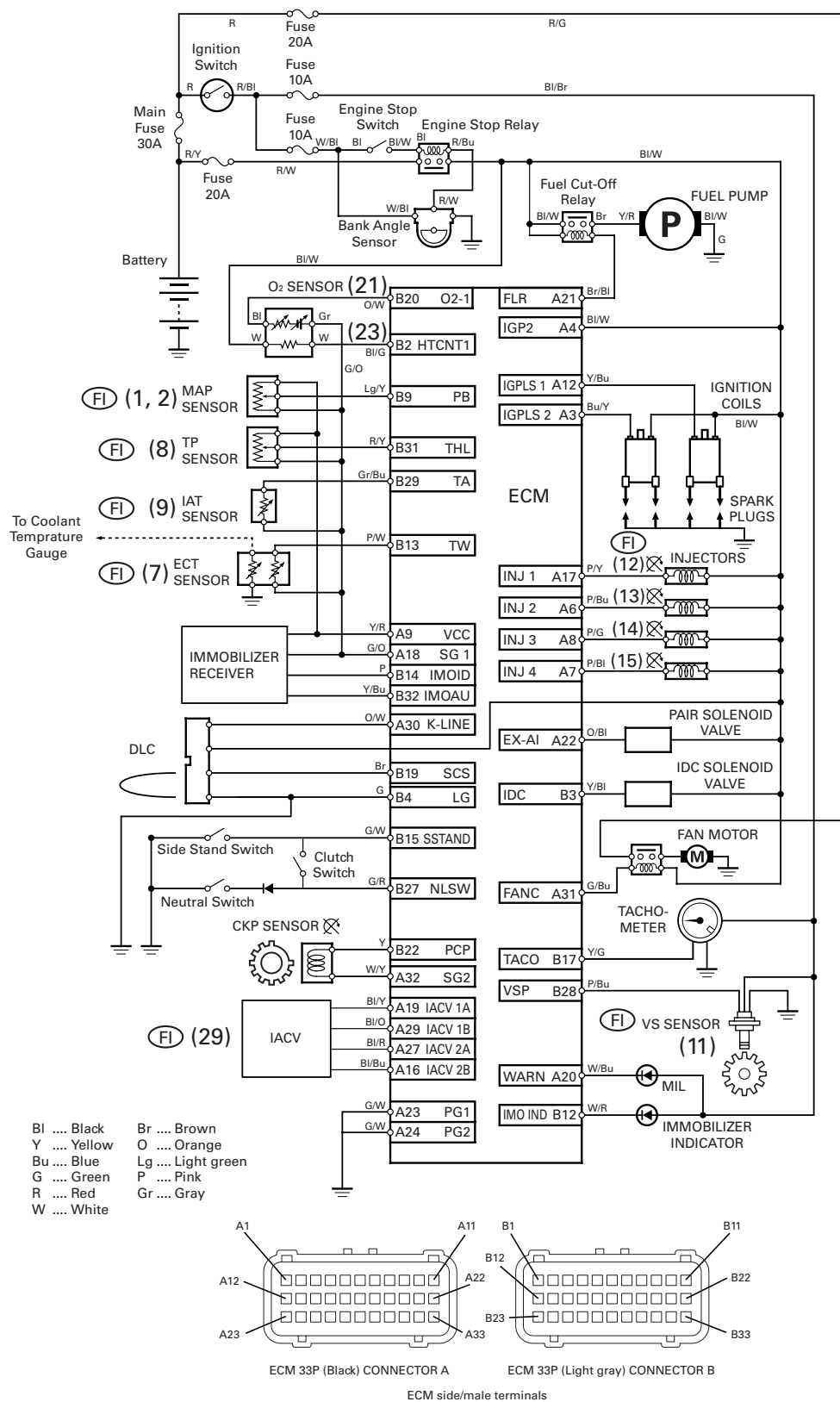


Bl	Negro	Br	Marrón
Y	Amarillo	O	Naranja
Bu	Azul	Lb	Azul claro
G	Verde	Lg	Verde claro
R	Rojo	P	Rosa
W	Blanco	Gr	Gris

DIAGRAMA DEL SISTEMA

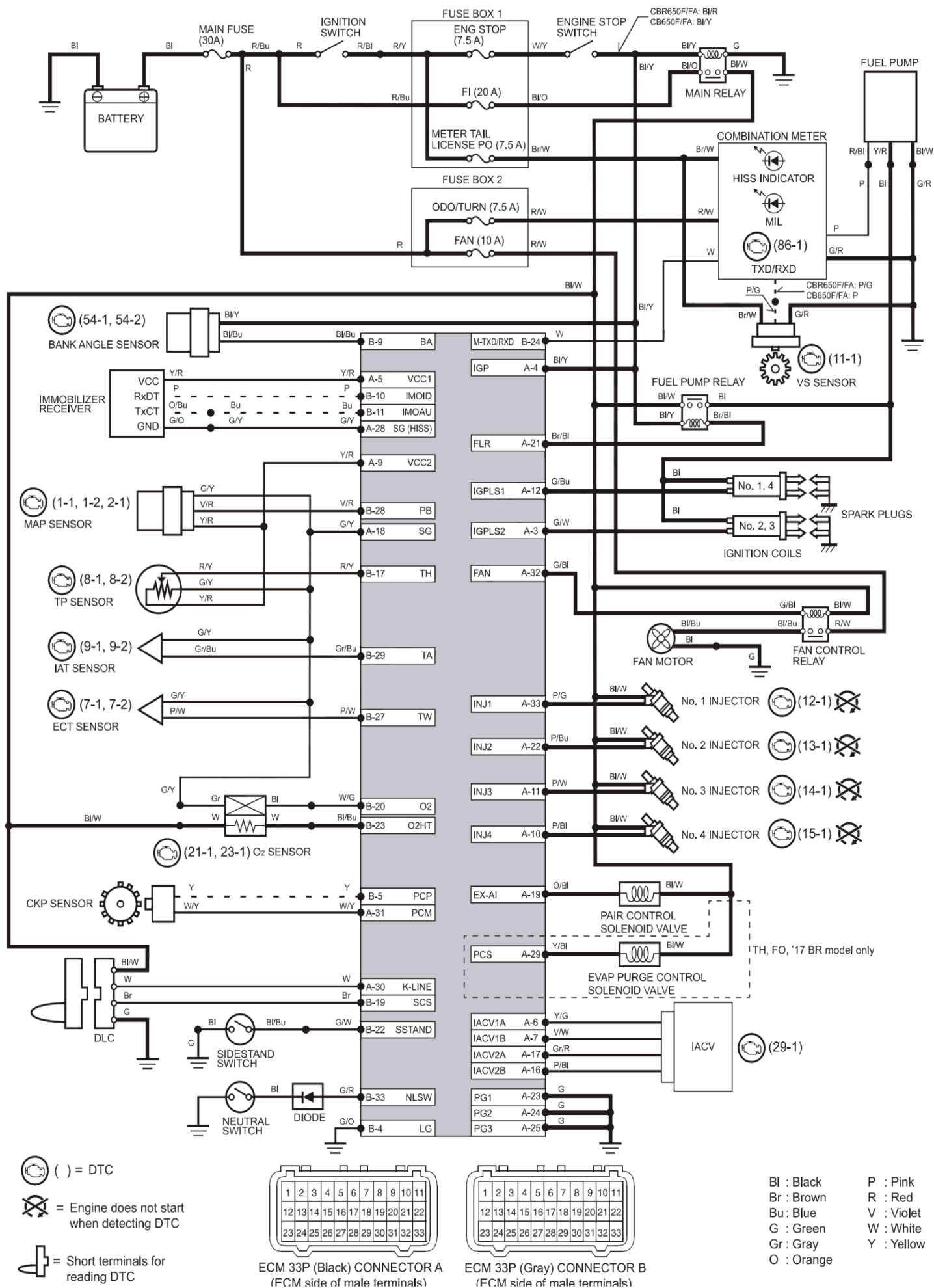


PGM-FI SYSTEM DIAGRAM



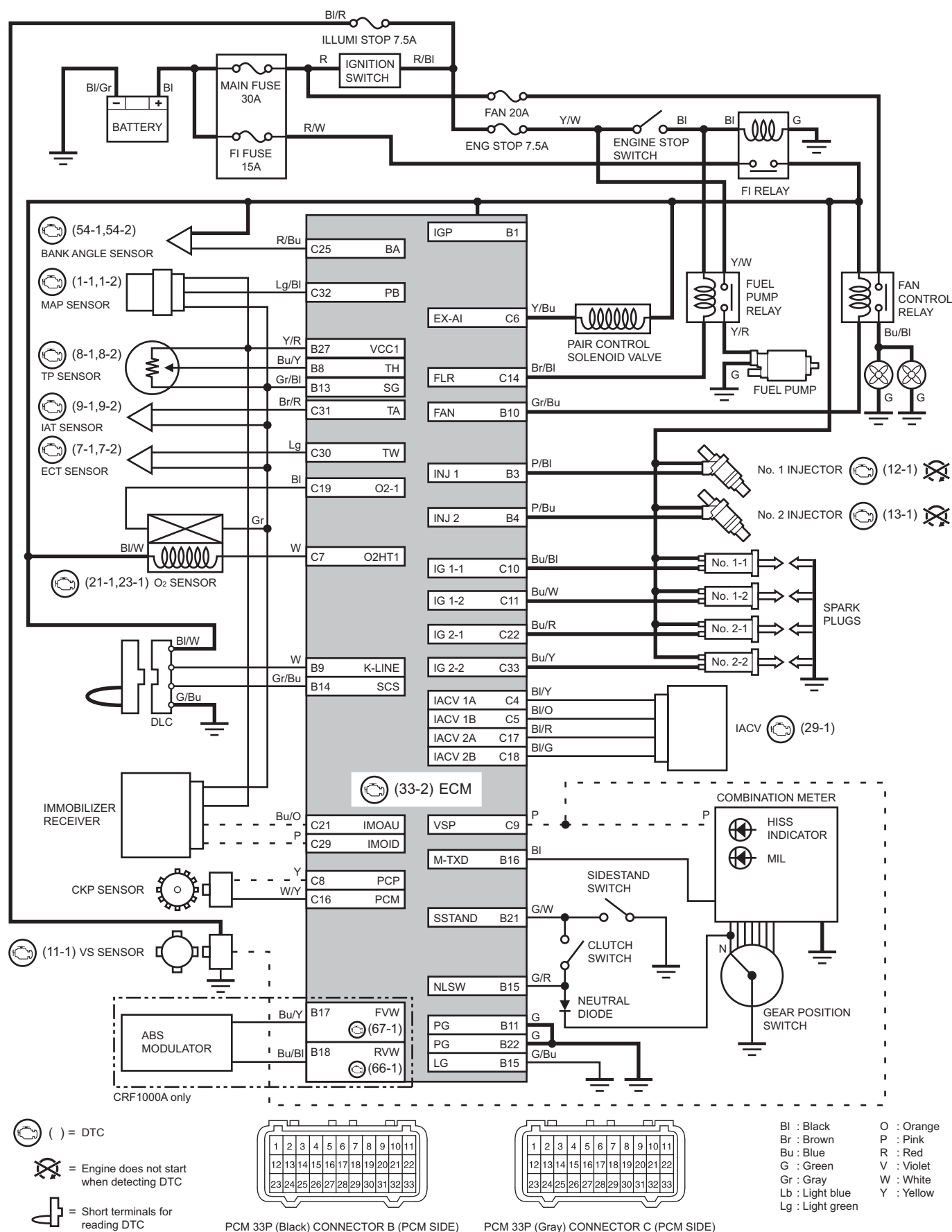
SYSTEM DIAGRAM

'14 – '16 Except BR model, '15 – '17 BR model



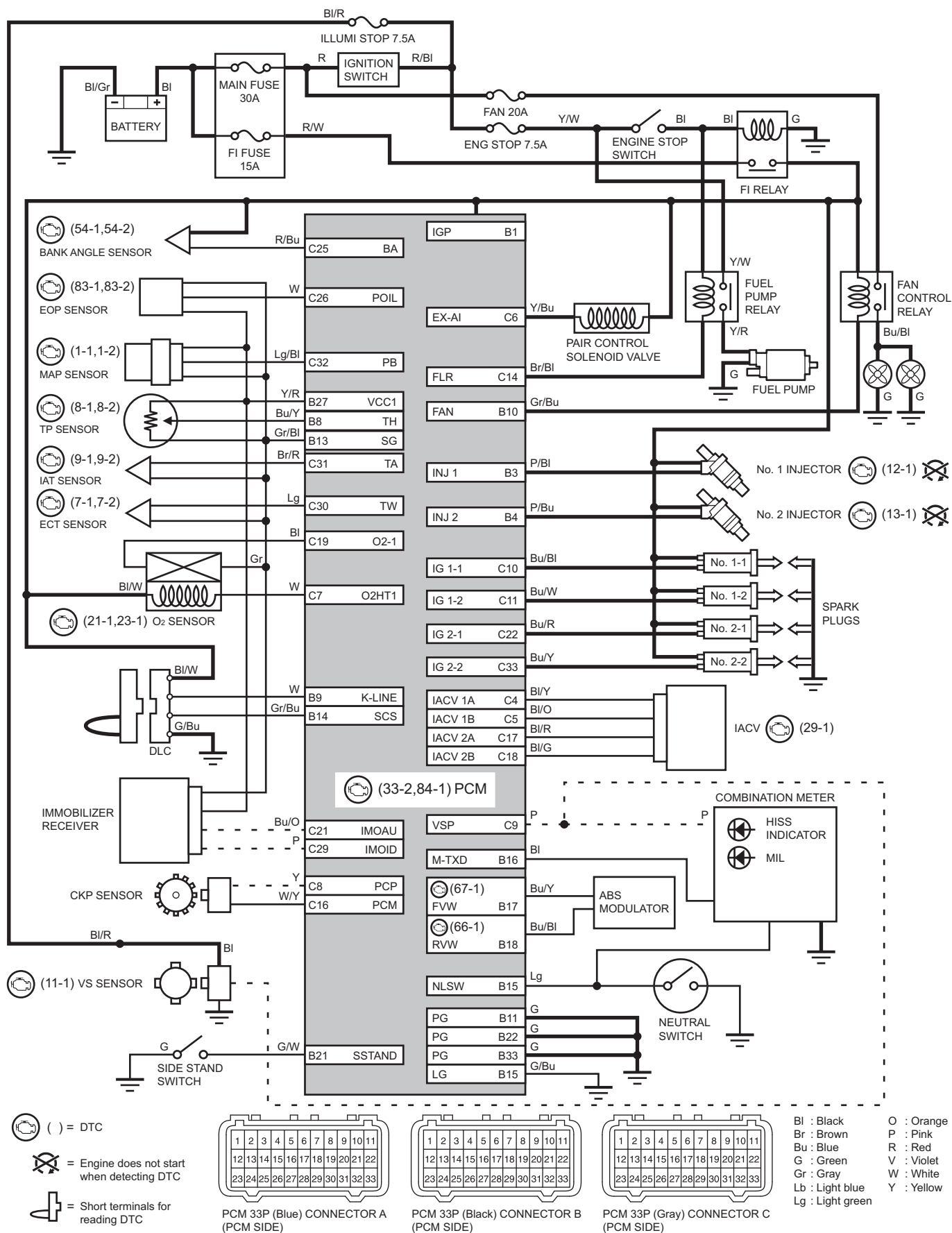
SYSTEM DIAGRAM

CRF1000/A

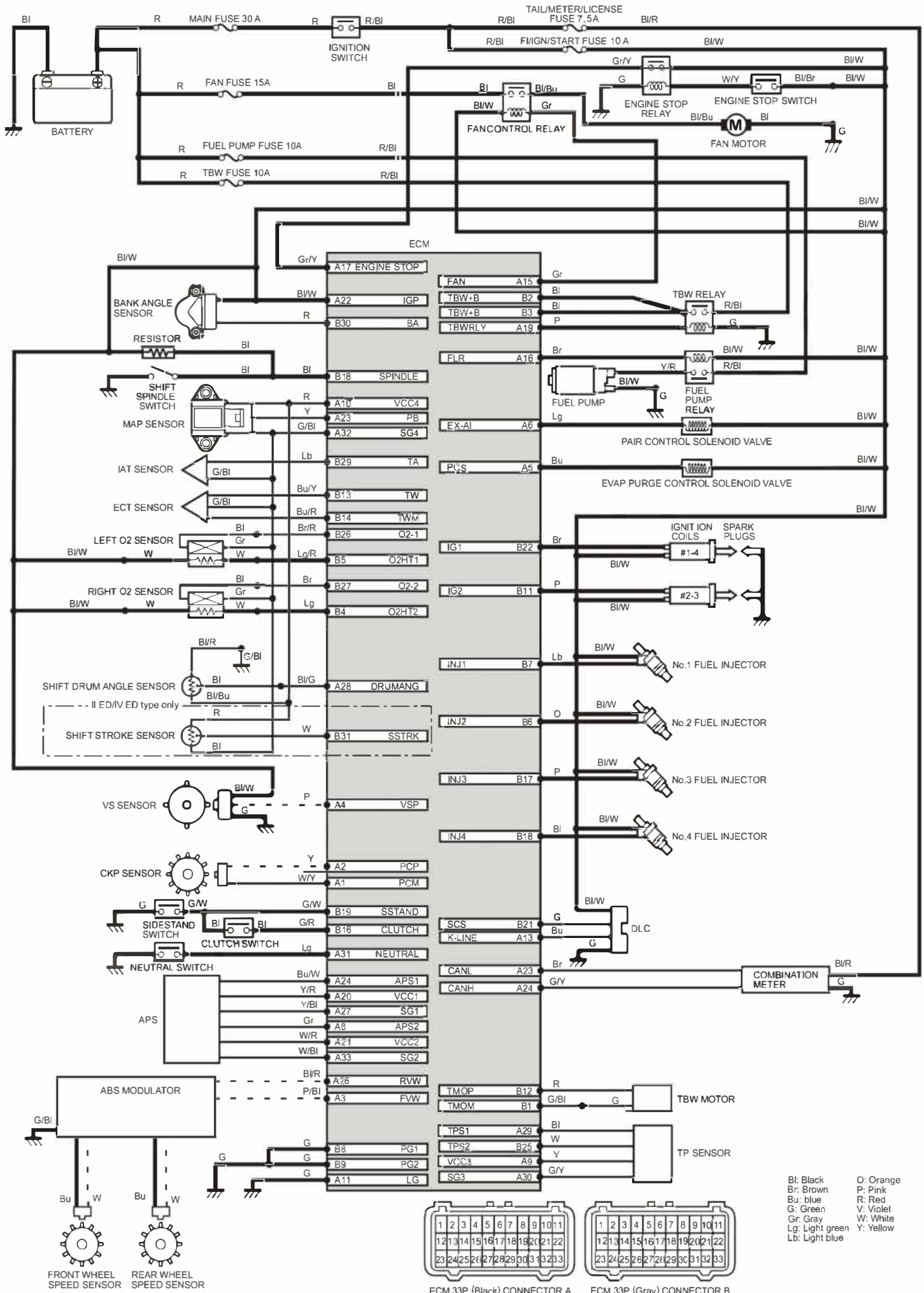


PGM-FI SYSTEM

CRF1000D



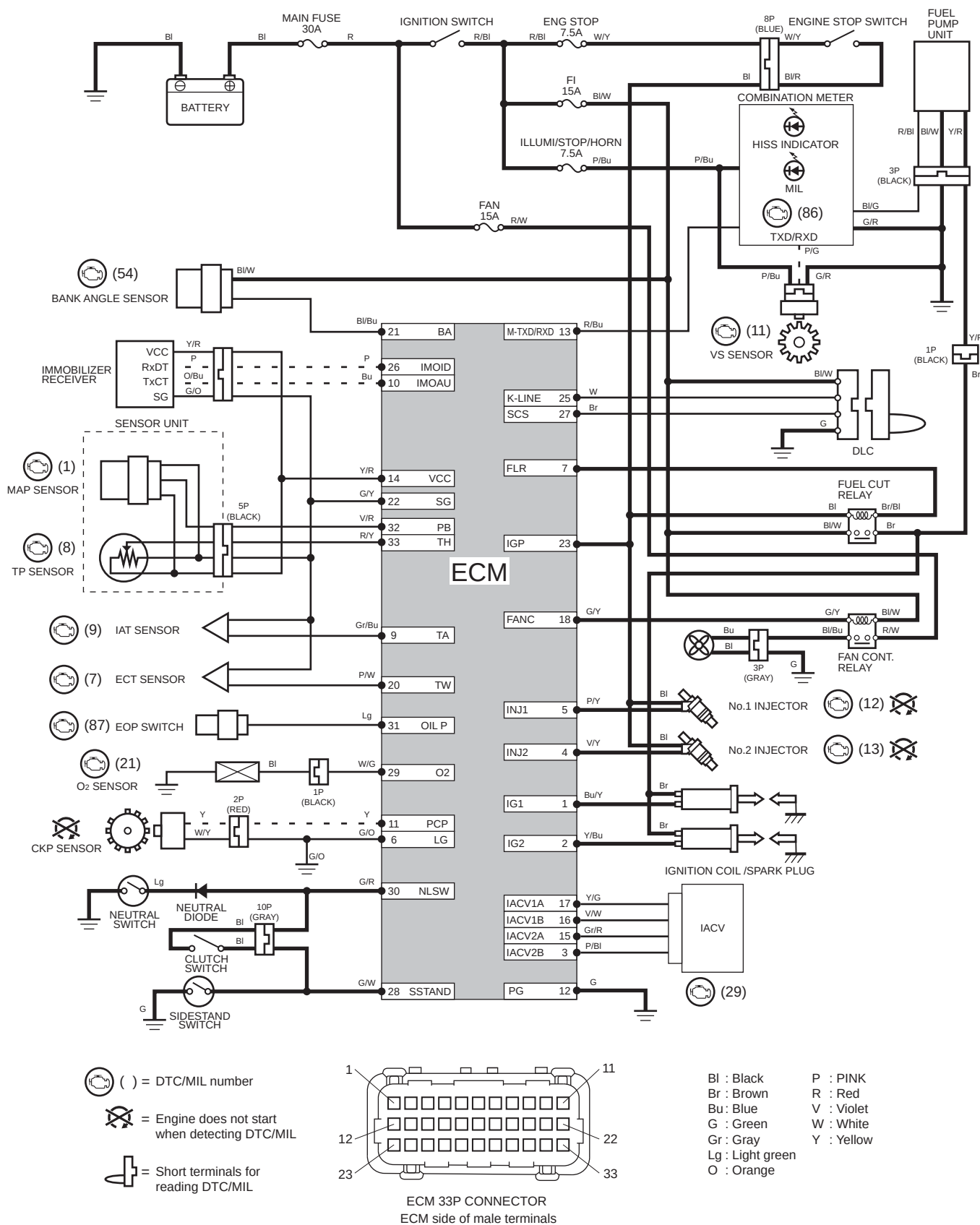
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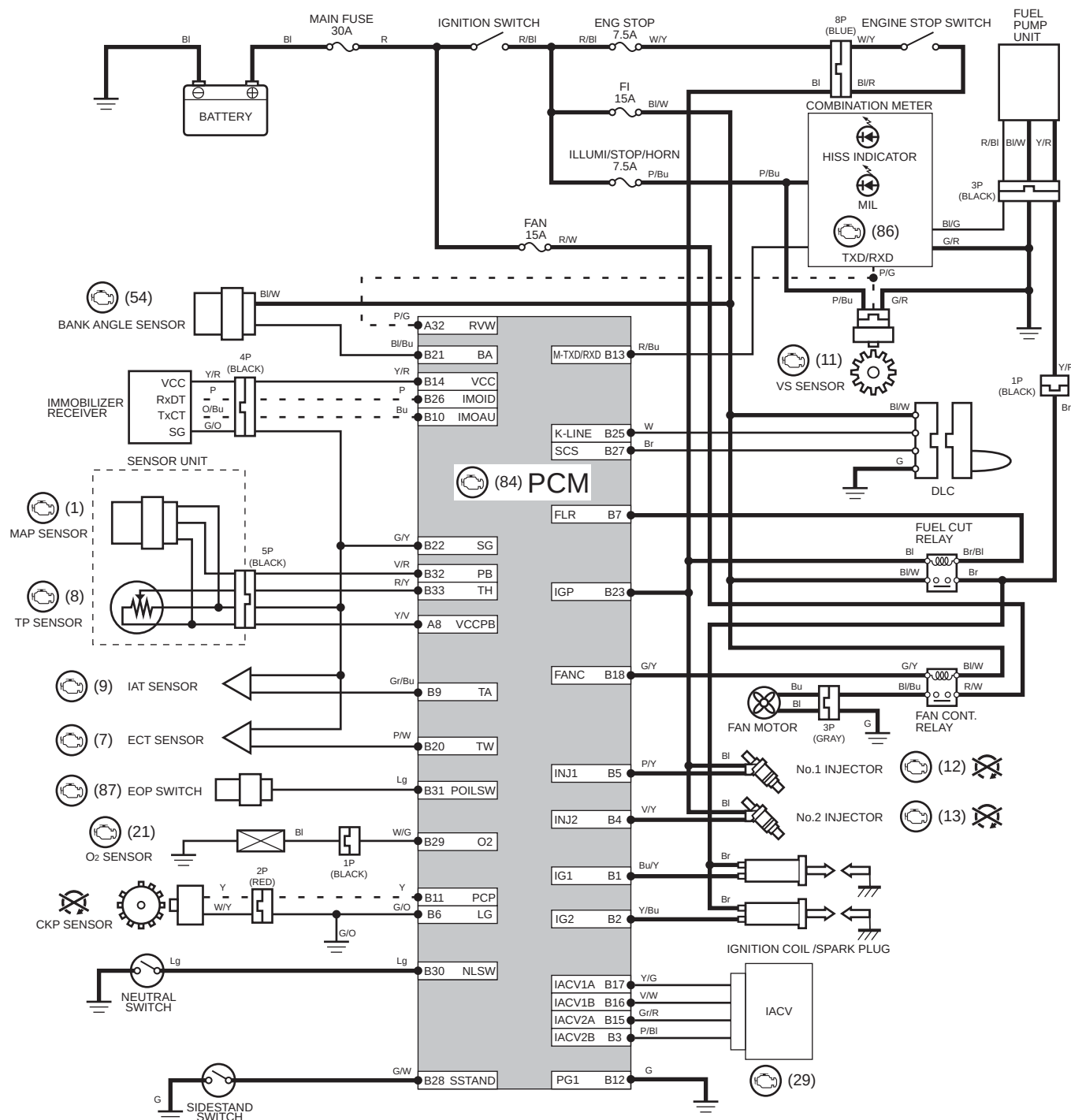
PGM-FI SYSTEM

PGM-FI SYSTEM DIAGRAM

NC700X/XA/S/SA:



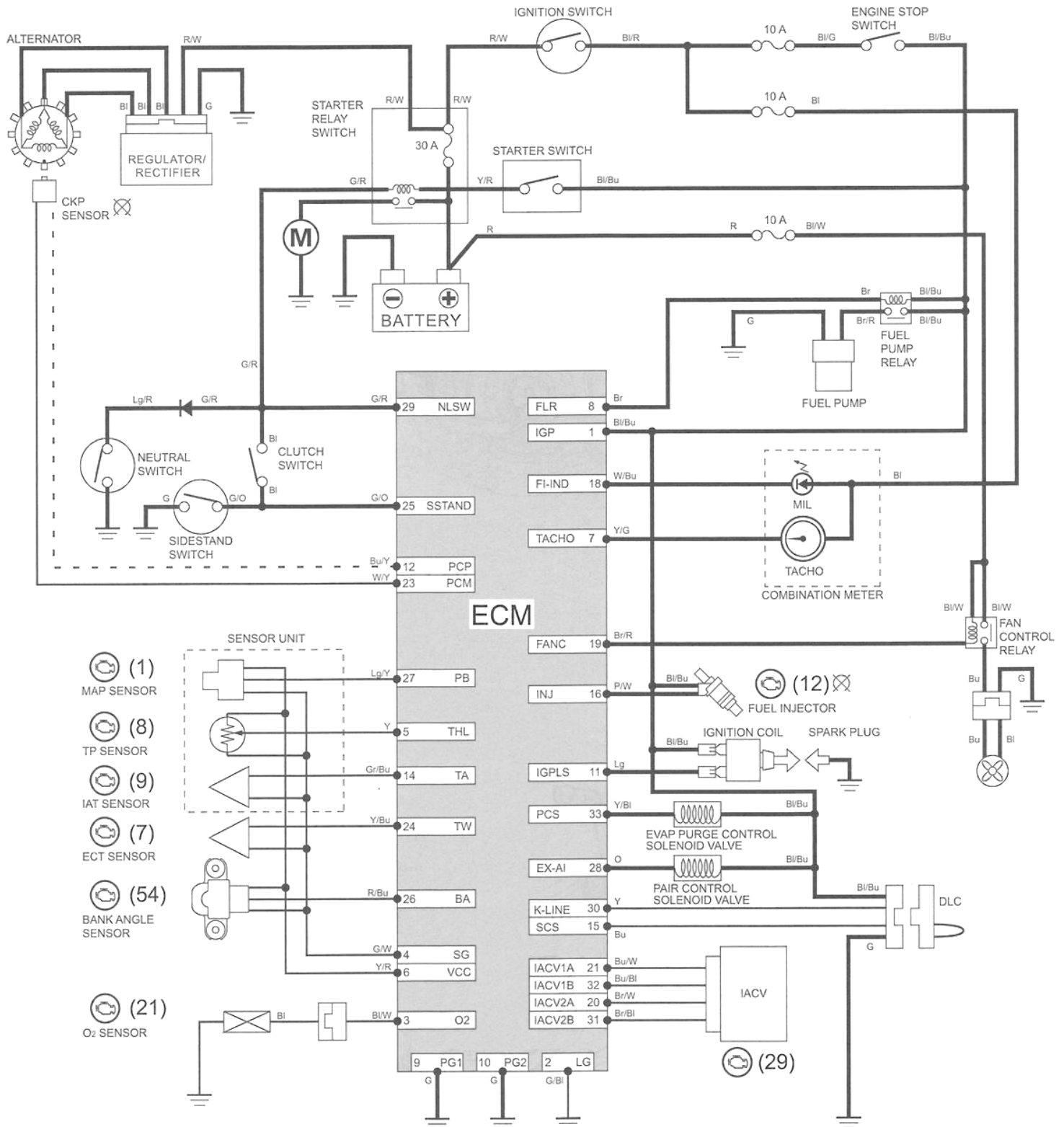
NC700XD/SD:



PCM 33P (BLACK) CONNECTOR
PCM side of male terminals

PCM 33P (GRAY) CONNECTOR
PCM side of male terminals

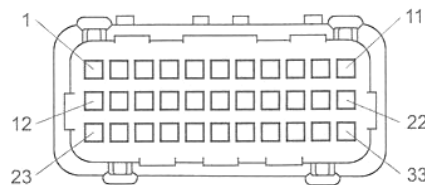
PGM-FI SYSTEM DIAGRAM



() = Number of MIL blinks

⊗ = The engine does not start if there is malfunction

⏏ = Short terminals for reading MIL

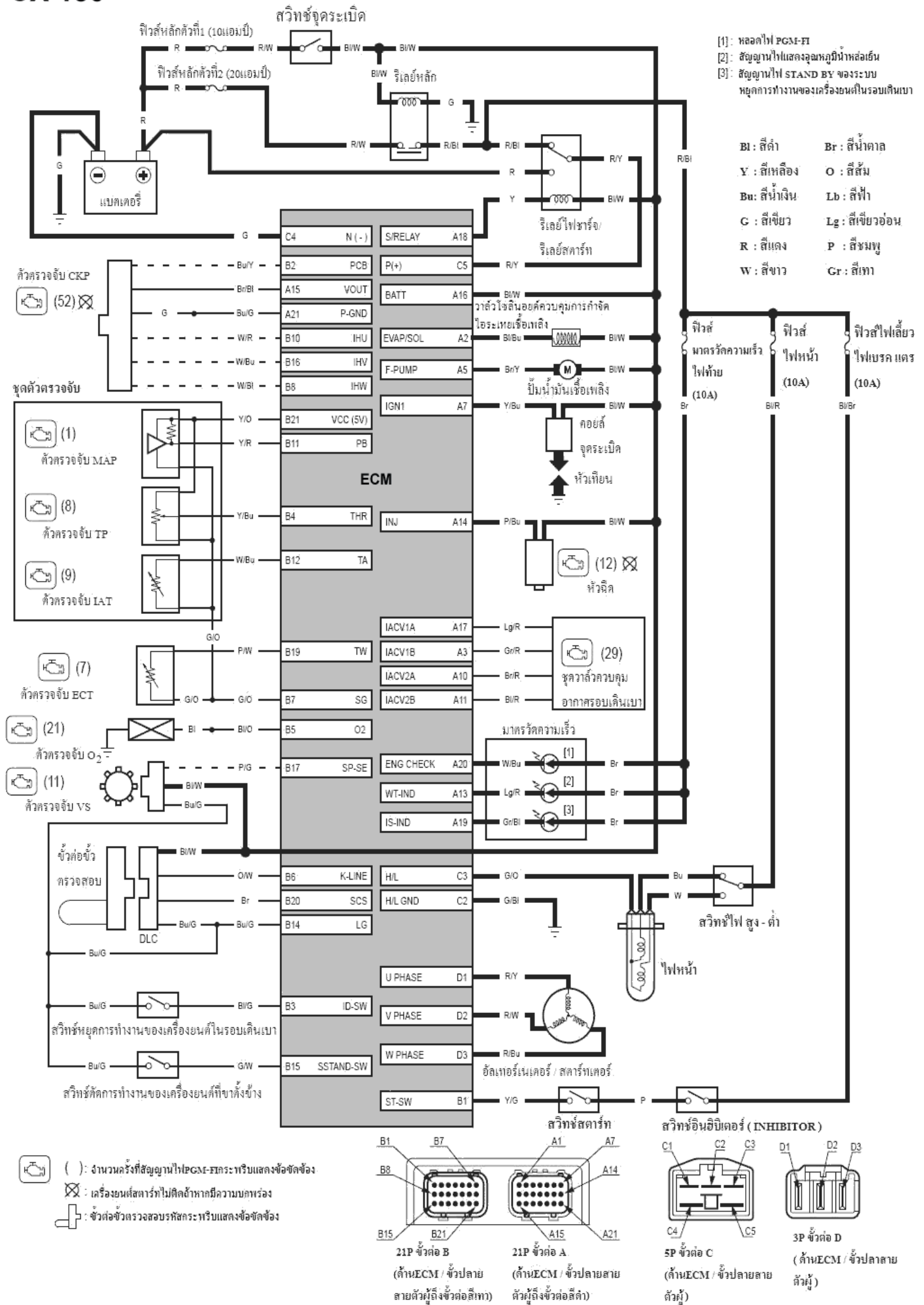


ECM 33P CONNECTOR
ECM side of male terminals

Bl : Black
Br : Brown
Bu : Blue
G : Green
Gr : Gray
Lg : Light green
O : Orange
P : Pink
R : Red
W : White
Y : Yellow



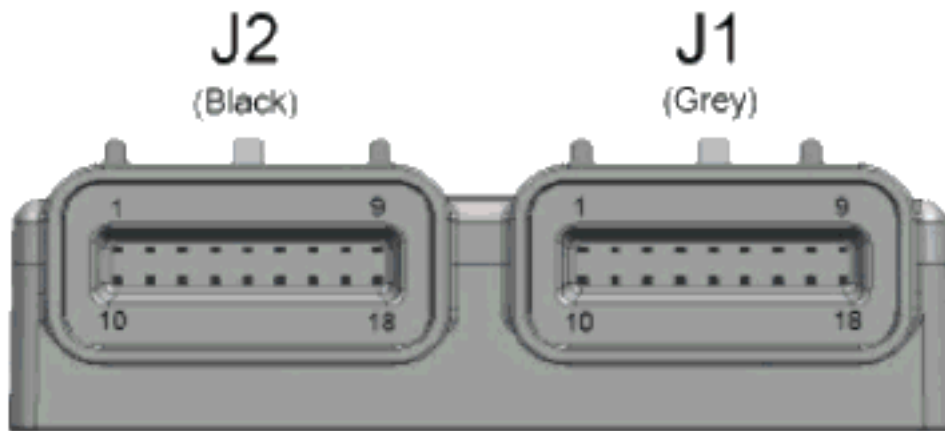
PCX 150



Harley Dyna 2016



کانکتورهای ECU



Black Connector		Grey Connector	
Pin	Usage	Pin	Usage
1	Rear Ignition Coil	1	IACV Stepper Motor A High
2	Front Ignition Coil	2	Active Intake Solenoid
3	Front O ₂ Heater	3	Exhaust Actuator
4	Vehicle Speed Sensor	4	Automatic Compression Release Enable
5	Front Fuel Injector	5	Purge Solenoid
6	Rear Fuel Injector	6	IAT Sensor
7	MAP Sensor	7	Ground for Sensors
8	Jiffy Stand Sensor	8	Engine Temperature Sensor
9	Ignition Coil ION Sense	9	5 Volt Output for Sensors
10	Ground	10	Ground
11	not connected	11	IACV Stepper Motor A Low
12	not connected	12	IACV Stepper Motor B High
13	CAN Low	13	IACV Stepper Motor B Low
14	CAN High	14	Exhaust Feedback
15	Rear O ₂ Heater	15	TPS Sensor
16	Crankshaft Position Sensor A	16	12 Volt System Power
17	Front O ₂ Sensor	17	Rear O ₂ Sensor
18	Crankshaft Position Sensor B	18	12 Volt from Battery