



EDGE PERFORMANCE “EP912STi_Gen2” (109-160HP)

Installation Manual



When Performance Meets Perfection & Reliability.

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1) Introduction & Safety Information

- The EP914Ti_Gen2 is based on the Rotax® 912UL core engine. The engine itself is not mechanically altered as per how it comes from the Rotax factory. In short terms, what we do with the engine is adding our own FADEC ECU, wiring harness, ignition control, turbocharger system with exhaust and intake manifold assembly.

WARNING	
Engine and gearbox are delivered in “dry” conditions (without fuel, oil and coolant). Before putting the engine into operation it must be filled with oil and cooling liquid. Use only oil and coolant as specified.	

System Limit	Min.	Max.
ECU	- 40 °C (- 40 °F)	80 °C (176 °F)

ENGINE STORAGE

The engine is preserved at EdgePerformance thus guaranteeing proper protection against corrosion damage for at least 12 months after the date of delivery from EP.

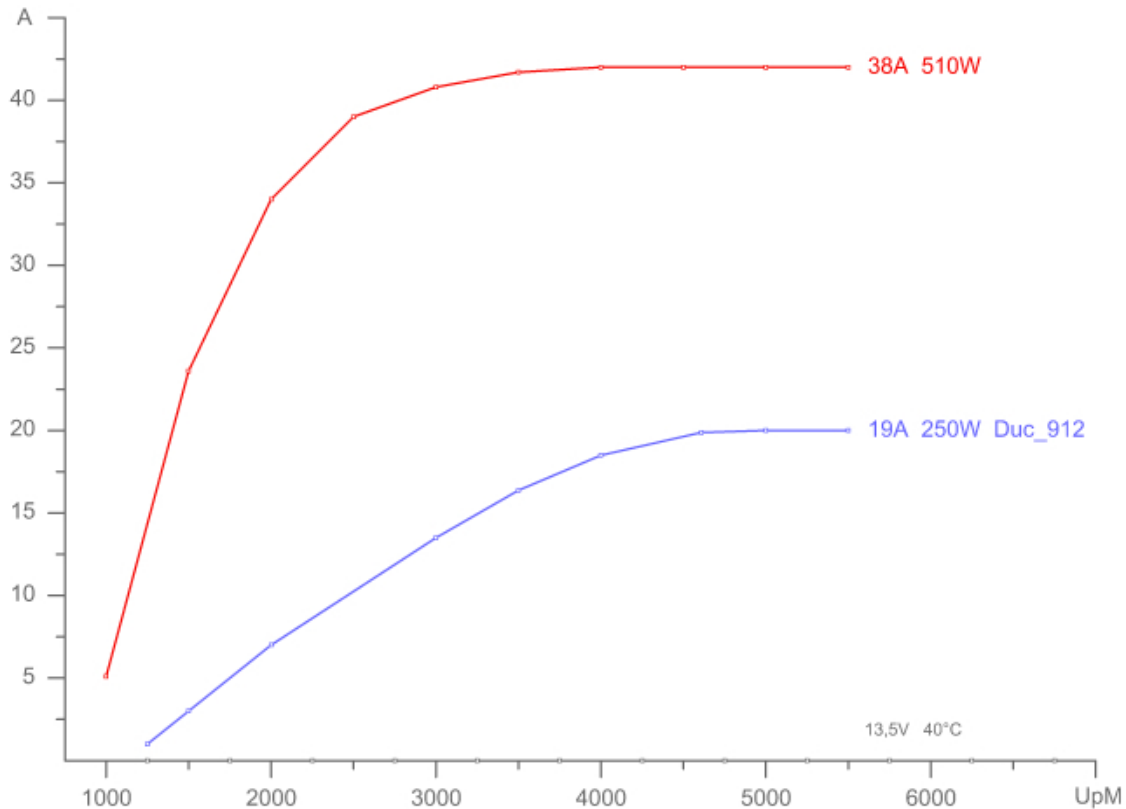
This warranty is subject to the following conditions:

- The engine must be stored in the GENUINE-ROTAX®-packing as supplied by EP
- The covers on various openings must not be removed
- The engine must be stored in a suitable place (at min. -40 °C/-40 °F and max. +80 °C/ 176 °F)
- The bag (blue) surrounding the engine must not be damaged or removed, as it protects the engine from corrosion and oxidation

If the engine is stored for a period of longer than 12 months (or it is not stored in the GENUINE- ROTAX®-packing) then maintenance tasks must be carried out every 3 months as per the currently valid Maintenance Manual Line.

The engines are supplied with the stock 20A @ and above 5000rpm 12V alternator. Optionally the engine can be delivered with a 38A primary alternator or additionally secondary 15 / 32A alternators. Refer to the model specific alternator instructions and manuals for proper installation and wiring.

- Below figure showing stock alternator vs 38A optional alternator current output vs rpm.



- Optional secondary EP alternators



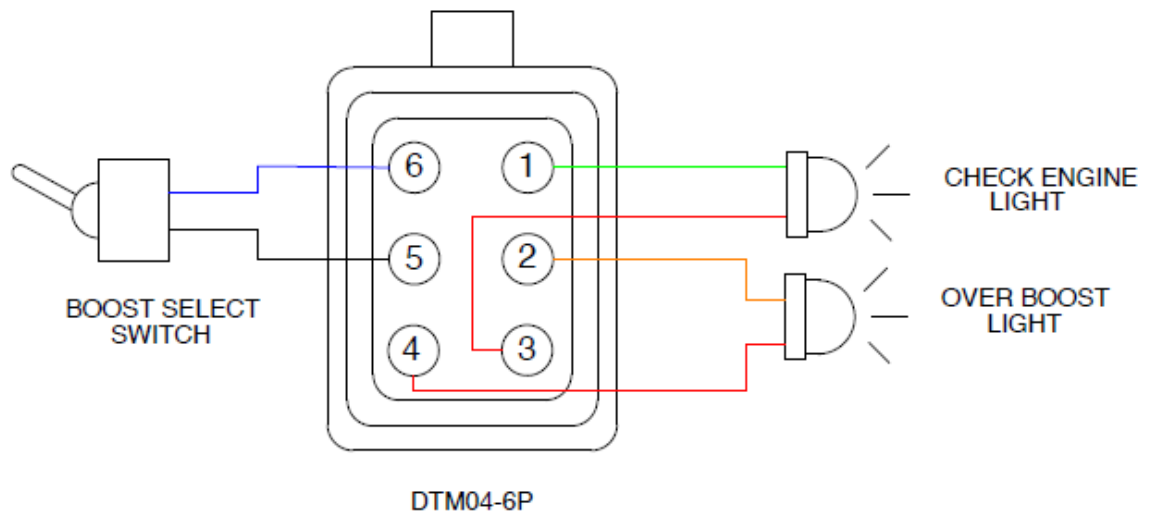
3) Wiring Instructions & Diagrams

When installing the engine and routing the various harness and wires throughout the engine compartment and through the firewall, it is extremely important to cautiously route and secure the wirings. Making sure that there are no sharp edges, corners or parts that can rub, chafe or in any way damage the wiring.

Use only aviation grade TEFZEL wiring with appropriate gauge cross section, aviation grade terminals and the correct tools for stripping and crimping. A safe and correct wiring job is essential to ensure safe and proper engine operation. Failure to do so can result in injury or death.

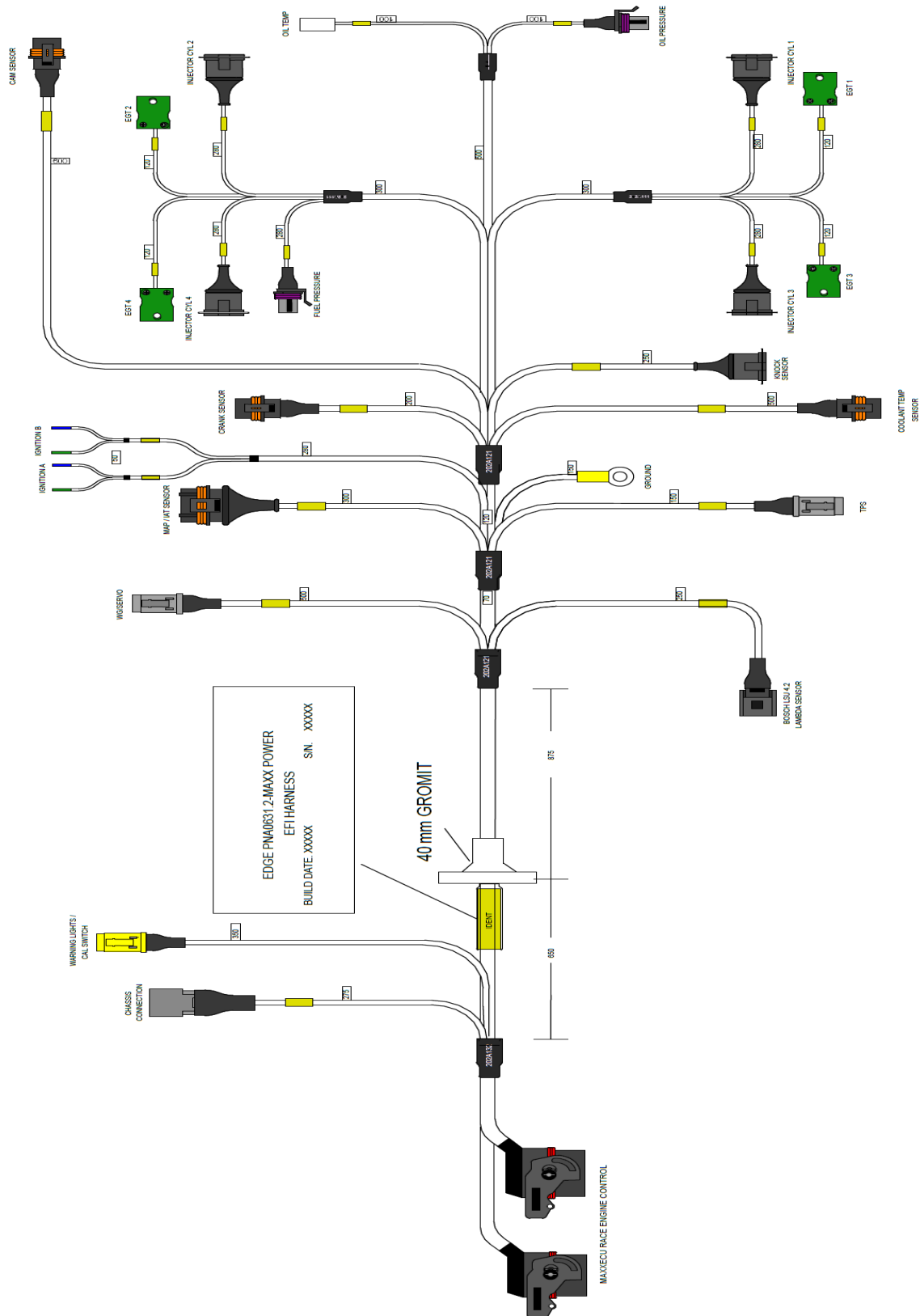
The main wiring harness comes pre-installed to the engine, and all sensor connectors are labeled for easy identification. The only connection the installer must perform is:

- Generator A
- Optional Generator B
- Chassis connector as per Fig. 2
- 2x Fuel pumps via CB/ Switch
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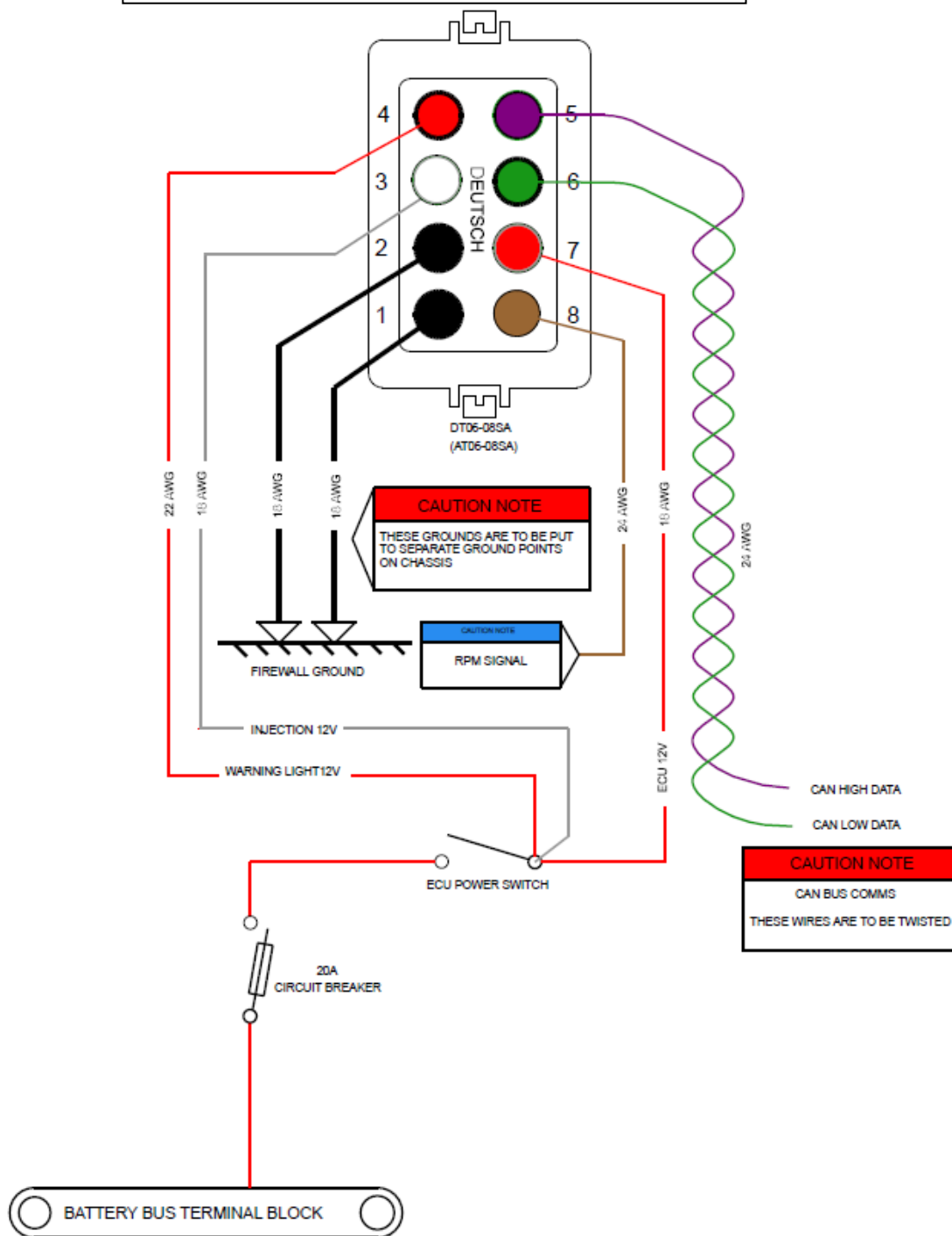


AUX CONNECTION
1 - CHECK ENGINE GROUND SIGNAL
2 - OVER BOOST WARNING GROUND SIGNAL
3 - 12v
4 - 12v
5 - BOOST HI / LO SELECT SWITCH INPUT
6 - GROUND

- Main Wiring Harness



EP914Ti_Gen2 Chassis harness connection diagram

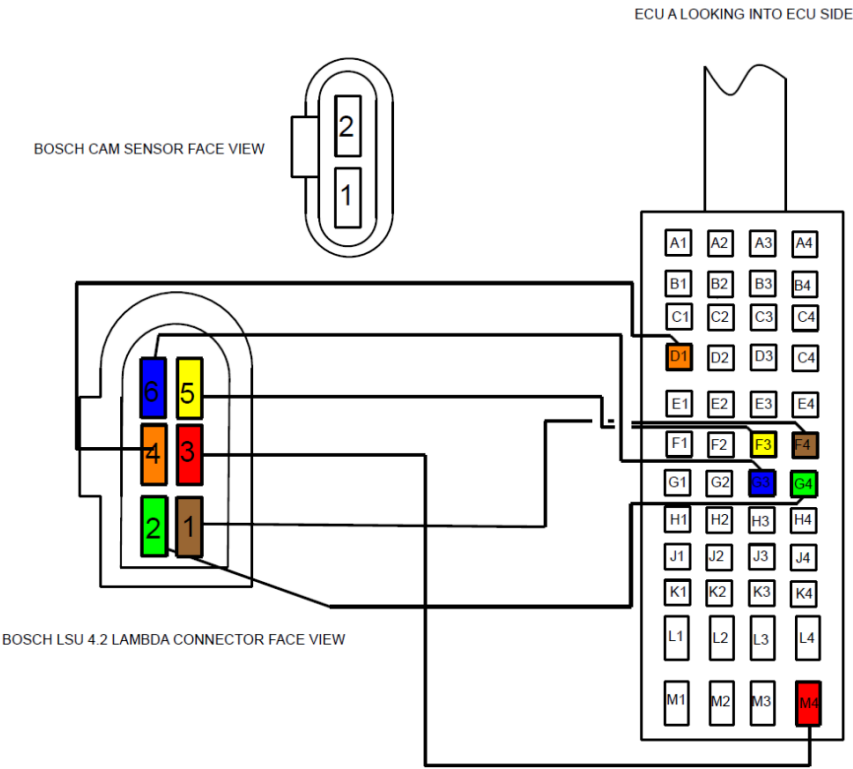


PLEASE NOTE

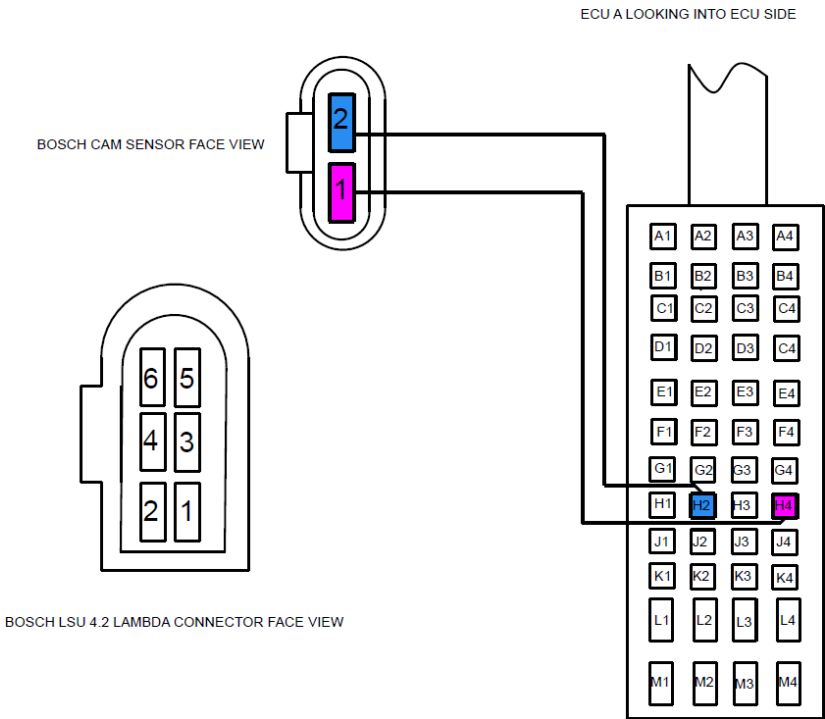
IF YOU ARE IN ANY DOUBT ON THESE CONNECTIONS
PLEASE CONTACT YOUR LOCAL DEALER
FOR ADVICE BEFORE CONTINUING

Diagnostic diagrams

Lambda pin-out

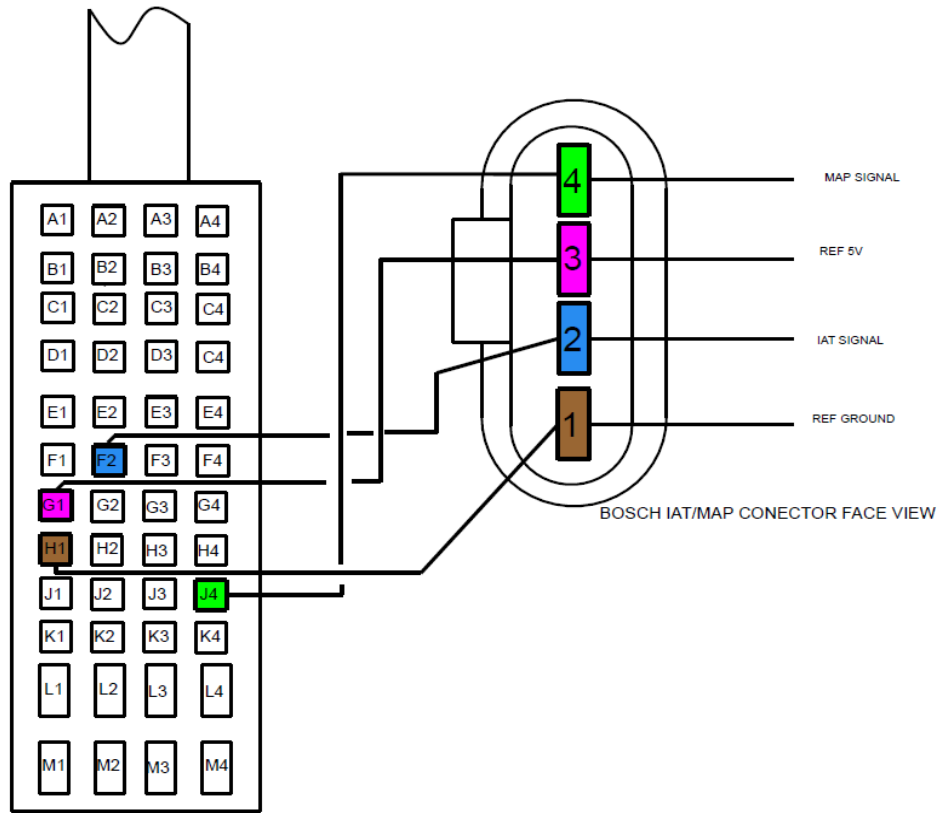


Cam sensor



IAT\MAP Sensor

ECU A LOOKING INTO ECU SIDE



Wiring schedule schematics
See EP914Ti_Gen2 Rev.1

E1a	Connector	MOLEX 64320-3311	Description : MAXXECU RACE CONNECTOR 1		
	Boot :	ATUM 4:1	Label:	EP 914 TI - GEN 2	
Pin No	Description	Destination	Cable	Length	Key
A1	GPO 5	CHECK ENGINE WARNING LIGHT - 1	24		E3-1
A2	Ignition 1	IGNITION CONTROL A GREEN - 1	22		E16
A3	Ignition 2	IGNITION CONTROL A BLUE - 2	22		E16
A4	GPO 8	TACHO - PROP SIGNAL - 8	24		E3
B1	GPO 6	NOT USED	-		-
B2	Ignition 3	IGNITION CONTROL B GREEN	22		E17
B3	Ignition 4	IGNITION CONTROL B BLUE	22		E17
B4	GPO 1	NOT USED	-		-
C1	GPO 7	OVER BOOST WARNING LIGHT - 2	24		E3
C2	Ignition 5	NOT USED	-		-
C3	Ignition 6	NOT USED	-		-
C4	GPO 2	NOT USED	-		-
D1	Lambda Heater Gnd	LAMBDA 4.2 - 4	22		E22
D2	Ignition 7	NOT USED	-		-
D3	Ignition 8	NOT USED	-		-
D4	GPO 3	NOT USED	-		-
E1	Can Hi	CHASSIS - 5	24 TWISTED		E22
E2	Can Lo	CHASSIS - 6	24 TWISTED		E22
E3	Screen Drain	CRANK SCREEN	Screen		E23
E4	GPO 4	NOT USED	-		-
F1	Engine Temp	CLT - 1	24		E24
F2	Air Temp	IAT - 2	24		E6
F3	Lambda Vref	LAMBDA 4.2 - 5	22		E22
F4	Lambda Vs	LAMBDA 4.2 - 1	22		E22
G1	Ref 5v	SPLICE - 1	24		S1
G2	Tps	THROTTLE POSITION - 2	24		E7
G3	Lambda Ip	LAMBDA 4.2 - 6	22		E22
G4	Lambda Rcal	LAMBDA 4.2 - 2	22		E22
H1	Ref Ground	SPLICE - 2	24		S2
H2	Vr Ground	CRANK SENSOR RETURN - 2/ CAM - 1	22 SCN		E23
H3	Trigger	CRANK SENSOR SIGNAL - 1	22 SCN		E23
H4	Home	CAM SENSOR SIGNAL - 2	22 SCN		E4
J1	An In 1 Temp	OIL TEMP - 1	24		E11
J2	An In 2 Temp	NOT USED	-		-
J3	An In 3 0-5v	OIL PRESSURE - 3	24		E9
J4	An In 4 0-5v	MAP SENSOR - 4	24		E6
K1	Inj Cyl 1	INJECTOR CYL 1 - 2	22		E12
K2	Inj Cyl 2	INJECTOR CYL 2 - 2	22		E13
K3	DIN 1	MAP SELECT SWITCH - 5	24		E3
K4	DIN 2	NOT USED	-		-
L1	Inj Cyl 8	NOT USED	-		-
L2	Inj Cyl 7	NOT USED	-		-
L3	Inj Cyl 6	NOT USED	-		-
L4	Power Ground	CHASSIS - 1	18		E2
M1	Inj Cyl 3	INJECTOR CYL 3 - 2	22		E14
M2	Inj Cyl 4	INJECTOR CYL 4 - 2	22		E15
M3	Inj Cyl 5	NOT USED	-		-
M4	12v Supply / LAMBDA HEATER 12V	CHASSIS - 7 / LAMBDA - 3	18		E2 / E22

S2	Connector :	CLOSED BARREL CRIMP	Description :	SENSOR GND SPLICE	
	Bent :	SCL- 1/4-Ø	Label:	NONE	
Pin No	Description		Destination	Cable	Key
1	ECU A SENSOR GROUND OUTPUT		ECU A - G1	22	E1a
2	CYLINDER TEMP		CLT - 2	24	E13
3	COMBINED MAP/IAT SENSOR		MAP / IAT -1	24	E15
4	THROTTLE POSITION		TPS - 3	24	E17
5	OIL PRESSURE SENSOR		OIL PRESS - 1	24	E20
6	FUEL PRESSURE		FUEL PRESS - 1	24	E21
7	OIL TEMP SENSOR		OIL TEMP - 1	24	E22
8	WAST GATE		WG-3	24	E21
S1	Connector :	CLOSED BARREL CRIMP	Description :	SENSOR 5v SPLICE	
	Bent :	SCL- 1/4-Ø	Label:	NONE	
Pin No	Description		Destination	Cable	Key
1	ECU A SENSOR 5v OUTPUT		ECU A - G1	22	E1a
2	COMBINED MAP/IAT SENSOR		MAP / IAT -3	24	E15
3	THROTTLE POSITION		TPS - 1	24	E17
4	OIL PRESSURE SENSOR		OIL PRESS - 2	24	E20
5	FUEL PRESSURE		FUEL PRESS - 2	24	E21
6	WAST GATE		WG-1	24	E21

E1b	Connector	MOLEX 64319-3211		Description : MAXXECU RACE CONNECTOR 2		
	Boot :	ATUM 4:1		Label:	EP 914 TI - GEN 2	
Pin No	Description	Destination		Cable	Length	Key
A1	Egt 5+	Not Used		-		-
A2	Egt 6+	Not Used		-		-
A3	Egt 7+	Not Used		-		-
A4	Egt 8+	Not Used		-		-
B1	Egt 5-	Not Used		-		-
B2	Egt 6-	Not Used		-		-
B3	Egt 7-	Not Used		-		-
B4	Egt 8-	Not Used		-		-
C1	Egt 1+	Egt 1 - +		Type K		E18
C2	Egt 2+	Egt 2 - +		Type K		E19
C3	Egt 3+	Egt 3 - +		Type K		E20
C4	Egt 4+	Egt 4 - +		Type K		E21
D1	Egt 1-	Egt 1 - -		Type K		E18
D2	Egt 2 -	Egt 2 - -		Type K		E19
D3	Egt 3 -	Egt 3 - -		Type K		E20
D4	Egt 4-	Egt 4 - -		Type K		E21
E1	Knock Gnd	Knock - 2		22 SCREENED*		E8
E2	Knock 1	Knock - 1		22 SCREENED*		E8
E3	Knock 2	Not Used		-		-
E4	An In 6 0-5v	FUEL PRESSURE		24		E10
F1	An In 7 0-5v	WG / SERVO - 2		24		E22
F2	An In 8 0-5v	Not Used		-		-
F3	DIN 4	Not Used		-		-
F4	DIN 5	Not Used		-		-
G1	GPD 15 - 12v	Not Used		-		-
G2	GPD 16 - 12v	Not Used		-		-
G3	An In 5 - 0-5v	Not Used		-		-
G4	Power Ground	CHASSIS		18		E2
H1	Motor 2 +	Not Used		-		-
H2	Motor 1 -	WG / SERVO - 4		20		E22
H3	Motor 2 -	Not Used		-		-
H4	Motor 1 +	WG / SERVO - 5		20		E22
* KNOCK SCREEN TO GO TO PIN G4						

E2	Connector	DT04-08PA		Description : CHASSIS INTERCONNECTOR		
	Boot :	ATUM		Label:	CHASSIS	
Pin No	Description	Destination		Cable	Length	Key
1	ECU GROUND	ECU A - L4		18		E1A
2	ECU GROUND	ECU B - G4		18		E1B
3	+12V INJECTOR POWER	SPLICE		18		E12-15
4	+12V WARNING LIGHT POWER	WARN / CAL - 3/4		2 X 24		E3
5	CAN - HI	ECU A - E1		24 TWISTED		E1A
6	CAN - LO	ECU A - E2		24 TWISTED		E1A
7	ECU 12V	ECU A - M4		18		E1A
8	TACHO - PROP SIGNAL	ECU A - A4		24		E1A

E3	Connector	DTM06-6SYELLOW	Description :	WARNING LIGHTS CAL SWITCH		
	Boot :	AUTUM 4;1	Lable:	WARN / CAL		
Pin No	Description	Destination	Cable	Length	Key	
1	CHECK ENGINE WARNING LAMP	ECU - A1	24		E1A	
2	OVER BOOST WARNING LIGHT - 2	ECU - C1	24		E1A	
3	12V	CHASSIS - 4	24		E2	
4	12V	CHASSIS - 4	24		E2	
5	MAP SWITCH	ECU A -K3	24		E1A	
6	Ref -0v	ECU A -H1	24		E1A	

E3	Connector	DTM06-6SYELLOW	Description :	WARNING LIGHTS CAL SWITCH		
	Boot :	AUTUM 4;1	Lable:	WARN / CAL		
Pin No	Description	Destination	Cable	Length	Key	
1	CHECK ENGINE WARNING LAMP	ECU - A1	24		E1A	
2	OVER BOOST WARNING LIGHT - 2	ECU - C1	24		E1A	
3	12V	CHASSIS - 4	24		E2	
4	12V	CHASSIS - 4	24		E2	
5	MAP SWITCH	ECU A -K3	24		E1A	
6	Ref -0v	ECU A -H1	24		E1A	

E4	Connector	BOSCH COMPACT BDK 1928 404 072	Description :	CAM SENSOR		
	Boot :	RAYCHEM 202A111	Lable:	CAM		
Pin No	Description	Destination	Cable	Length	Key	
1	SIGNAL	ECU A - H4	22 SCN		E1A	
2	0v Return	ECU A - H2	22 SCN		E1A	

SCREEN TO ECU A - E3

E6	Connector	BOSCH COMPACT BDK 1928 403 736	Description :	COMBINED MAP/IAT SENSOR		
	Boot :	SEALS AND 4 WAY TIMER BOOT	Lable:	IAT / MAP		
Pin No	Description	Destination	Cable	Length	Key	
1	Ref -0v	ECU A - H1	24		E1A	
2	IAT	ECU A - F2	24		E1A	
3	Ref +5v	ECU A - G1	24		E1A	
4	MAP SIGNAL	ECU A - J4				

E7	Connector:	DTM06-3S-E007	Description :	THROTTLE POSITION SENSOR		
	Boot:	ATUM 4 : 1	Lable:	TPS		
Pin No	Description	Destination	Cable	Length	Key	
1	Ref +5v	ECU A - G1	24		E1A	
2	Signal A	ECU A - G2	24		E1A	
3	Ref -0v	ECU A - H1	24		E1A	

E8	Connector	2 WAY TIMER. TE 827551-3	Description :	KNOCK SENSOR		
	Boot :	2 WAY TIMER BOOT	Lable:	KNOCK SENSOR		
Pin No	Description	Destination	Cable	Length	Key	
1	Signal	ECU B - E2	22 SCN		E1B	
2	0v Return	ECU B - E1	22 SCN		E1B	
E9	Connector	Delphi Metri-Pac 150	Description :	OIL PRESSURE SENSOR		
	Boot :	ATUM4 : 1	Lable:	OIL PRESS		
Pin No	Description	Destination	Cable	Length	Key	
1	0v Return	ECU A - H1	24		E1A	
2	5v Ref	ECU A - G1	24		E1A	
3	Signal	ECU A - J3	24		E1A	
E10	Connector	Delphi Metri-Pac 150	Description :	FUEL PRESSURE SENSOR		
	Boot :	ATUM4 : 1	Lable:	FUEL PRESS		
Pin No	Description	Destination	Cable	Length	Key	
1	0v Return	ECU A - H1	24		E1A	
2	5v Ref	ECU B - E4	24		E1A	
3	Signal	ECU A - J3	24		E1A	
E11	Connector	JST 02R-JWPF-VSLE-S	Description :	OIL TEMP SENSOR		
	Boot :	BUILT IN SEALS	Lable:	OIL TEMP		
Pin No	Description	Destination	Cable	Length	Key	
1	Signal	ECU A - J1	24		E1A	
2	Ref -0v	ECU A - H1	24		E1A	
E12	Connector	2 WAY TIMER. TE 827551-3	Description :	INJECTOR 1		
	Boot :	2 WAY TIM+CI21: CW23ER BOOT	Lable:	INJ1		
Pin No	Description	Destination	Cable	Length	Key	
1	+12V	0	22		E4	
2	Signal	ECU A - K1	22		E1A	
E13	Connector	2 WAY TIMER. TE 827551-3	Description :	INJECTOR 2		
	Boot :	2 WAY TIMER BOOT	Lable:	INJ 2		
Pin No	Description	Destination	Cable	Length	Key	
1	+12V	RL1 - 87	22		E4	
2	Signal	ECU A - K2	22		E1a	

E14	Connector	2 WAY TIMER. TE 827551-3	Description :	INJECTOR 3		
	Boot :	2 WAY TIMER BOOT	Lable:	INJ 3		
Pin No	Description	Destination	Cable	Length	Key	
1	+12V	RL1- 87	22		E4	
2	Signal	ECU A - M1	22		1a	

E15	Connector	2 WAY TIMER. TE 827551-3	Description :	INJECTOR 4		
	Boot :	2 WAY TIMER BOOT	Lable:	INJ 4		
Pin No	Description	Destination	Cable	Length	Key	
1	+12V	RL1- 87	22		E4	
2	Signal	ECU A - M2	22		1a	

E16	Connector	2 X SUMITOMO 1500-0105	Description :	IGNITION A		
	Boot :	OPEN TERMINALS	Lable:	IGN A		
Pin No	Description	Destination	Cable	Length	Key	
1	IGNITION CONTROL A GREEN	ECU A - A2	22		E1A	
2	IGNITION CONTROL A BLUE	ECU A - A3	22		E1A	
TO FIT INTO HOUSING SUMITOMO 6187-6801 (NOT SUPPLIED)						

E17	Connector	2 X SUMITOMO 1500-0105	Description :	IGNITION B		
	Boot :	OPEN TERMINALS	Lable:	IGN A		
Pin No	Description	Destination	Cable	Length	Key	
1	IGNITION CONTROL B GREEN	ECU A - B2	22		E1A	
2	IGNITION CONTROL B BLUE	ECU A - B3	22		E1A	
TO FIT INTO HOUSING SUMITOMO 6187-6801 (NOT SUPPLIED)						

E18	Connector	RS 455-9578 - TYPE K	Description :	EGT 1		
	Boot :	N/A	Lable:	EGT 1		
Pin No	Description	Destination	Cable	Length	Key	
+	Green	ECUB - C1	Type K		E1B	
-	White	ECUB - D1	Type K		E1B	
SUPPLY MATING HALF						

E19	Connector	RS 455-9578 - TYPE K	Description :	EGT 2		
	Boot :	N/A	Lable:	EGT 2		
Pin No	Description	Destination	Cable	Length	Key	
+	Green	ECUB - C2	Type K		E1B	
-	White	ECUB - D2	Type K		E1B	
SUPPLY MATING HALF						

E20	Connector	RS 455-9578 - TYPE K	Description :	EGT 3		
	Boot :	N/A	Lable:	EGT 3		
Pin No	Description	Destination	Cable	Length	Key	
+	Green	ECUB - C3	Type K		E1B	
-	White	ECUB - D3	Type K		E1B	
SUPPLY MATING HALF						

E21	Connector	RS 455-9578 - TYPE K	Description :	EGT 4		
	Boot :	N/A	Lable:	EGT 4		
Pin No	Description	Destination	Cable	Length	Key	
+	Green	ECUB - C4	Type K		E1B	
-	White	ECUB - D4	Type K		E1B	
SUPPLY MATING HALF						
E22	Connector	1J0 973 733	Description :	BOSCH LSU 4.2 LAMBDA SENSOR		
	Boot :	3 WAY TIMER BOOT	Lable:	LAMBDA SENSOR		
Pin No	Description	Destination	Cable	Length	Key	
1	VS	ECUA - F4	22		E1A	
2	RCAL	ECUA - G4	22		E1A	
3	HEATER +12v	ECUA - M4	22		E2	
4	HEATER GROUND	ECUA - D1	22		E1A	
5	COM	ECUA - F3	22		E1A	
6	IP	ECUA - G3	22		E1A	
E23	Connector	BOSCH COMPACT BDK 1928 404 072	Description :	CRANK SENSOR		
	Boot :	RAYCHEM 202A111	Lable:	CRANK		
Pin No	Description	Destination	Cable	Length	Key	
1	SIGNAL	ECUA - H3	22 SCN		E1A	
2	0v Return	ECUA - H2	22 SCN		E1A	
SCREEN TO ECU A - E3						
E24	Connector	2 WAY TIMER, TE 827551-3	Description :	CYLINDER HEAD TEMP SENSOR		
	Boot :	2 WAY TIMER BOOT	Lable:	CLT A		
Pin No	Description	Destination	Cable	Length	Key	
1	Signal	ECUA - F1	24		E1A	
2	Ref -0v	ECUA -	24		E1A	
E25	Connector	DTM06-06-E007	Description :	WG /SERVO		
	Boot :	ATUM 4:1	Lable:	WG / SERVO		
Pin No	Description	Destination	Cable	Length	Key	
1	+5V	ECUA - G1	24		E1A	
2	SIGNAL	ECUB - F1	24		E1B	
3	0V	ECUA - H1	24		E1A	
4	WG MOTOR STEPPER 1	ECUB - H2	20		E1B	
5	WG MOTOR STEPPER 2	ECUB - H4	20		E1B	
6	NOT USED	-	-		-	

E26	Connector	RS 455-9578 - TYPE K	Description :	EGT 2		
	Boot :	N/A	Lable:	EGT 2		
Pin No	Description	Destination	Cable	Length	Key	
+	Green	ECUB - C2	Type K		E1B	
-	White	ECUB - D2	Type K		E1B	
SUPPLY MATING HALF						

E27	Connector	RS 455-9578 - TYPE K	Description :	EGT 3		
	Boot :	N/A	Lable:	EGT 3		
Pin No	Description	Destination	Cable	Length	Key	
+	Green	ECUB - C3	Type K		E1B	
-	White	ECUB - D3	Type K		E1B	
SUPPLY MATING HALF						

E27	Connector	RS 455-9578 - TYPE K	Description :	EGT 4		
	Boot :	N/A	Lable:	EGT 4		
Pin No	Description	Destination	Cable	Length	Key	
+	Green	ECUB - C4	Type K		E1B	
-	White	ECUB - D4	Type K		E1B	
SUPPLY MATING HALF						

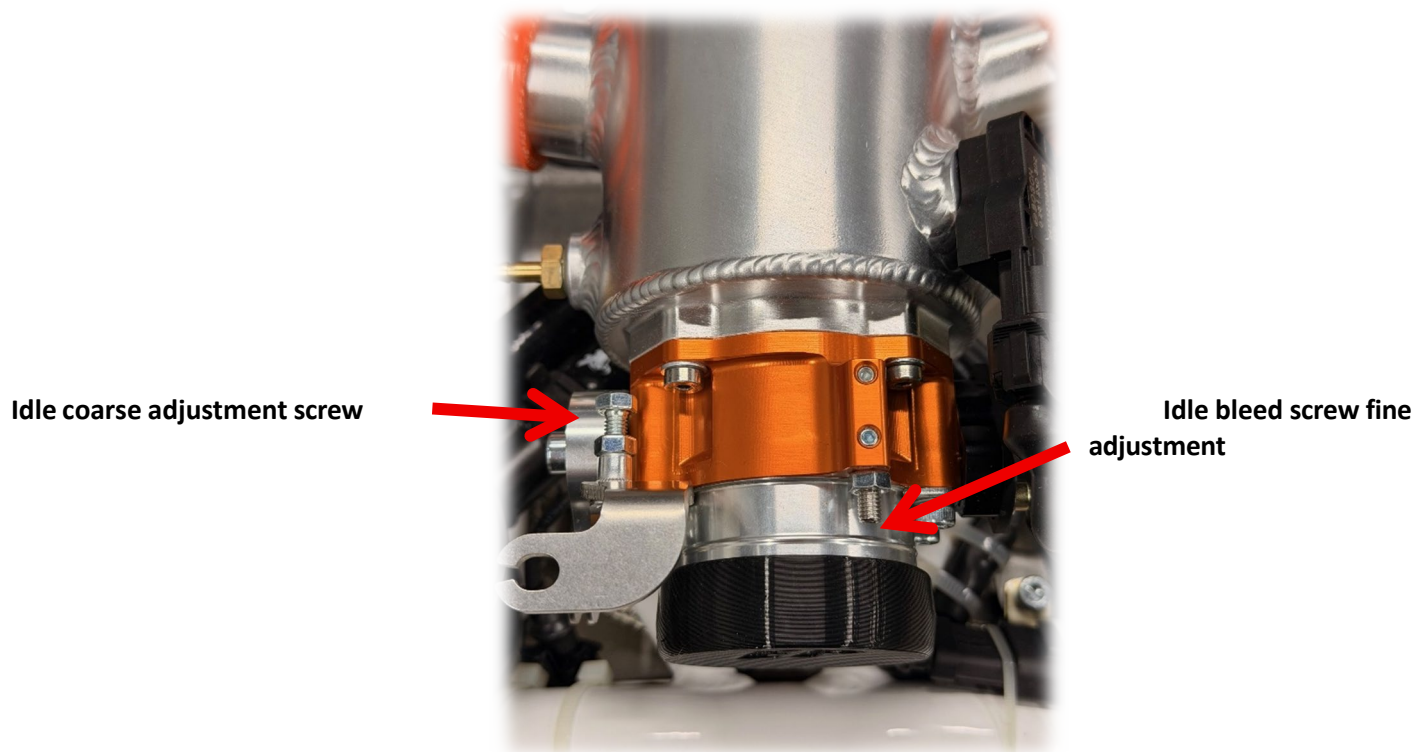
E28	Connector	1J0 973 733	Description :	BOSCH LSU 4.2 LAMBDA SENSOR		
	Boot :	3 WAY TIMER BOOT	Lable:	LAMBDA SENSOR		
Pin No	Description	Destination	Cable	Length	Key	
1	VS	ECU A - F4	22		E1A	
2	RCAL	ECU A - G4	22		E1A	
3	HEATER +12v	ECU A - M4	22		E2	
4	HEATER GROUND	ECU A - D1	22		E1A	
5	COM	ECU A - F3	22		E1A	
6	IP	ECU A - G3	22		E1A	

E29	Connector	BOSCH COMPACT BDK 1328 404 072	Description :	CRANK SENSOR		
	Boot :	RAYCHEM 202A111	Lable:	CRANK		
Pin No	Description	Destination	Cable	Length	Key	
1	SIGNAL	ECU A - H3	22 SCN		E1A	
2	0v Return	ECU A - H2	22 SCN		E1A	
SCREEN TO ECU A - E3						

E30	Connector	2 WAY TIMER. TE 827551-3	Description :	CYLINDER HEAD TEMP SENSOR		
	Boot :	2 WAY TIMER BOOT	Lable:	CLT A		
Pin No	Description	Destination	Cable	Length	Key	
1	Signal	ECU A - F1	24		E1A	
2	Ref -0v	ECU A -	24		E1A	
E31	Connector	DTM06-06-E007	Description :	WG /SERVO		
	Boot :	ATUM 4:1	Lable:	WG / SERVO		
Pin No	Description	Destination	Cable	Length	Key	
1	+5V	ECU A -G1	24		E1A	
2	SIGNAL	ECU B - F1	24		E1B	
3	0V	ECU A -H1	24		E1A	
4	WG MOTOR STEPPER 1	ECU B - H2	20		E1B	
5	WG MOTOR STEPPER 2	ECU B - H4	20		E1B	
6	NOT USED	-	-		-	

4) Mechanical & Pneumatic Interface

The engine has a mechanically operated throttle actuation system. It utilizes a patented 50mm “shaftless” throttle body design unique for all EdgePerformance engines. It is constructed with a “return to full open” spring, allowing the engine to go to full throttle in case the throttle cable would fail. Ideally, we use a 1.6mm 7x7 or 7x19 steel throttle cable with a 6-7mm sleeve. Alternatively, one can use a vernier style push-pull cable with some light modification to the throttle swivel arm. The throttle throw from idle to full throttle is close to 51mm, slightly less than a stock Rotax engine. Ensure that there is throttle stop limits on the idle side especially where one pulls to idle, to ensure that that throttle cable is not over stressed which can ultimately result in ground incidents or in flight WOT. The throttle body has a M5 allen idle set screw with an 8mm locking nut. Warm up the engine, adjust the idle to 1600-1800rpm ensuring it runs smooth. When adjusting the idle set screw, hold the allen screw with a 4mm allen wrench, unlock the locking nut and adjust until desired idle rpm is reached. While holding the allen screw fixed with the allen key, gently secure the locking nut. There is also an idle bleed screw which should be used for fine tuning of the idle. As the idle comes pre-set from factory, normally only small adjustments should be made on the idle bleed screw before adjusting the mechanical idle set screw. If one makes significant adjustments on the idle set screw (more than 200rpm) the TPS 0% voltage should be recalibrated in the software. Consult with EdgePerformance or one of EdgePerformance dealers for assistance with this.



The TPS is programmed to be linear, in comparison to the Rotax iS engines. Therefore 35-40% throttle is closer to 75-85% on the iS engines which use a non-linear TPS curve.

The intake manifold plenum has a 4mm brass barb fitting opposite to IAT\MAP sensor , which shall connect to the boost reference port on the fuel pressure regulator. One can also tee into this line if one wants to install a standalone MAP gauge. It is however very important that this hose does not get pinched by tight zip ties or rubs\chafes against sharp objects as it will affect the air-to-fuel ratio.

Intercooling

When installing an intercooler there are several important points to pay attention to. We will address some of them below. Our testing has shown that a 10°C increase in IAT can result in a 5HP power loss. So, if one has an IAT of 80°C compared to 50°C one has already lost 15HP. So, it quickly becomes clear how much proper intercooling will affect the final engine power output.

The intercooler supplied with the engines are adequate, and they are the same ones as supplied for the 915\916iS engines. But it cannot just be plumbed inside the engine cowling space without any ducting. Ideally one should have a fairly large dedicated NACA inlet, or other suitable air inlet which guide the air to the intercooler core. It is also very important that this ducting is properly sealed with rubber seals against the intercooler core to ensure that all the cold outside air is forced to pass through the intercooler core.

Depending on the pressurization inside the engine cowlings, it can in certain applications be necessary to have dedicated baffling leading the air passing through the intercooler out of the cowling. Inside an ideal cowling there should be low pressure which helps with cooling air scavenging.

Ideally one should try to achieve an IAT of 40-50°C in cruise and not exceeding 65-70°C during high power settings. The critical IAT limit is 80°C. When reaching this limit, the ECU will start to taper off the boost to further prevent engine damage and detonation. The ignition timing retards, and fuel is added to help cool the induction air charge, which in turn results in a less efficient running engine. But again, the lower the IAT, the more power the engine will create and the more efficient it will operate.

5) Fuel System

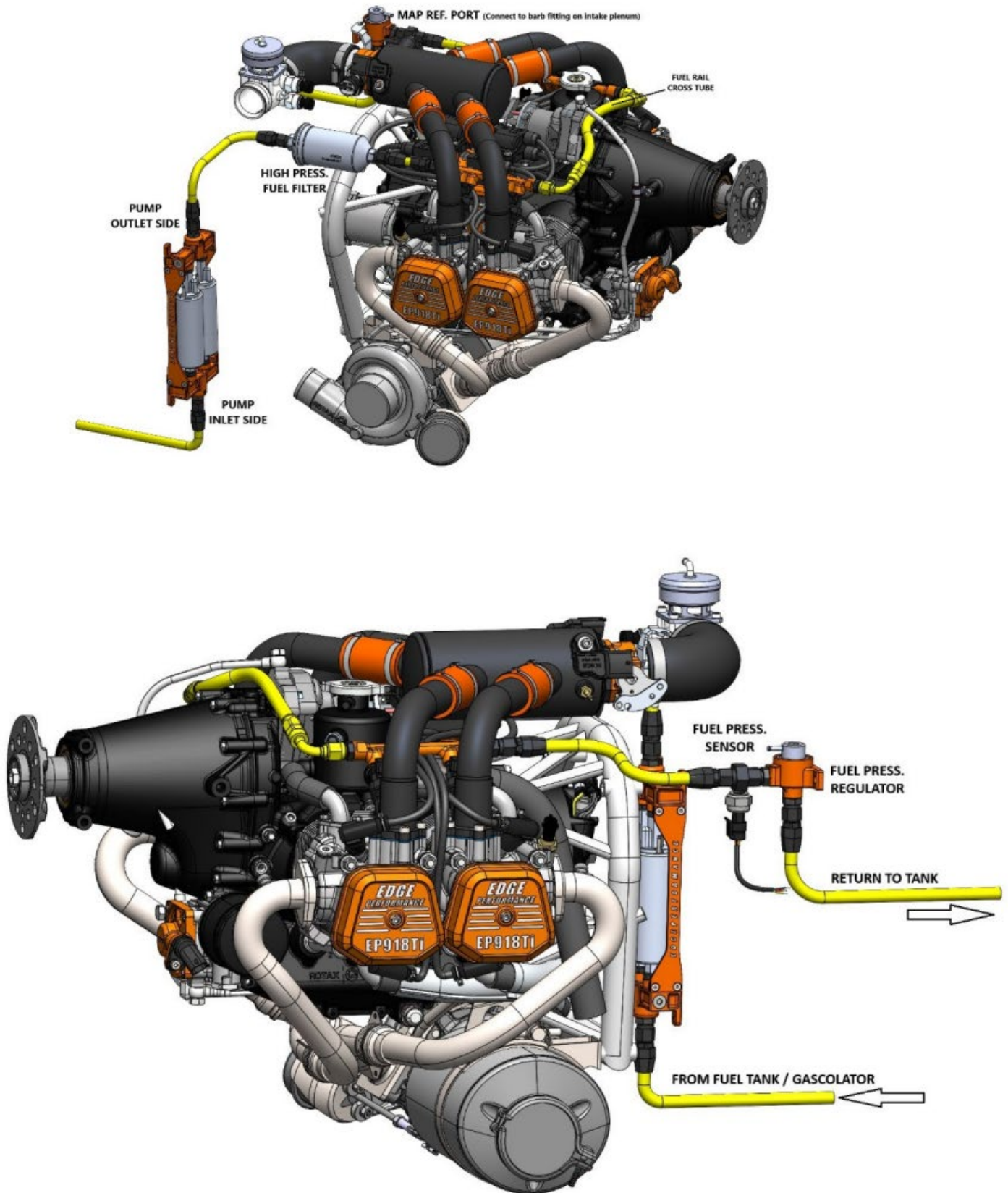
The engines are delivered with a set of dual high pressure fuel pumps. These have built in check valves and are designed with dual O-ring seals on all connections. They have 6/32 terminals and power and ground from the 4-pin fuel pump connector connects via ring terminals. The screws are fairly thin and fragile, so do not use a lot of force when securing the ring terminals. Excessive torque on the terminal stud nuts can result in them shearing off. The pumps are self-priming and can lift approx. 60cm with no issues, but it is good practice to always have the pumps installed as low below the fuel tanks as possible. The fuel plumbing from the fuel source to the inlet port of the dual pumps should not have a smaller inside diameter than 8mm (5/16"). And with as few fittings as possible to not restrict the fuel supply. Also, the use of banjo fittings should be avoided at all costs on the low-pressure suction side on any fuel injection high flow fuel systems. This can lead to pump fuel starvation, cavitation and premature wear and failure of the fuel pumps.

With the engines there are AN6 hose end fittings and AN6 PTFE braided hose which should be used on the high-pressure side of the fuel system. Meaning from the pump outlet to the fuel rail, from the other fuel rail to the inlet of the fuel pressure regulator. As for the airframe fuel system, consult with the aircraft manufacturer and supplement with the Rotax 916iS IM. If using a gascolator, it should be a high-pressure, low restriction type intended for high flow fuel injection systems. As small amounts of water droplets in the fuel system on EFI engines will not cause "carburetor icing", we rarely install gascolators. All planes should have drain valves on all fuel tanks, and any water droplets not drained out from the fuel system will be consumed by the engine without any pilot notice.

The fuel system is operating at 3Bar (45PSI) with one pump ON and the engine OFF. With two pumps ON the fuel pressure will rise slightly, which is normal. The ECU having fuel pressure input will compensate the injector PWM signal for abnormal changes in fuel pressure. The fuel pressure regulator has a boost reference port so that the fuel pressure rises and falls with manifold pressure. This is normal. If a pump would start to go bad or a fuel filter would start to become contaminated and restrictive, the ECU will notice this and correct the injector opening times, ensuring correct air-to-fuel ratio. But one should always monitor fuel pressure with the engine OFF before start-up, on run-up and in-flight to be able to diagnose at an early point if something is about to fail.

The included Bosch high pressure fuel filter installs between the fuel pump outlet and the fuel rail inlet. The filter can be installed both inside the airframe or in the engine compartment. This filter is equivalent to the Rotax iS fuel filter and should be replaced at 25 hrs., then every 200 hours, or if contaminated.

Typical fuel line diagram FWF



Typical fuel line diagram airframe

