



Doosan Infracore
Engines & Materials

Start Up Procedure (GV Gas Engine)

2008. 07. 14
ENGINES & MATERIALS B.G.
CUSTOMER SATISFACTION TEAM

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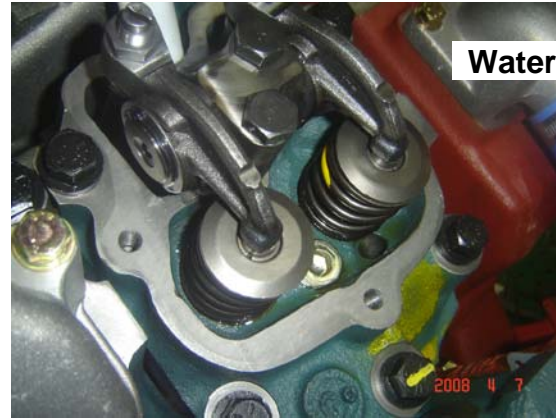
1. ENGINE TIMING
2. WIRING
3. GAS FUEL LINE
4. IDLE MODE
5. MAJOR SETTINGS
6. RATED MODE

1. ENGINE TIMING

1. Turn the engine so that #1 cylinder is at "OT" position.



[Flywheel → OT]



[#1 Cylinder → OT]

2. Timing light (optional)



1) At "OT" position,
Mark the line across damper & engine



2) Timing light Gripper at #1 cord



3) Timing Light display

1. ENGINE TIMING

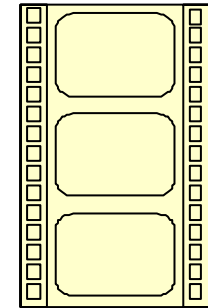
3. Install the Lambda meter



[Lambda meter]

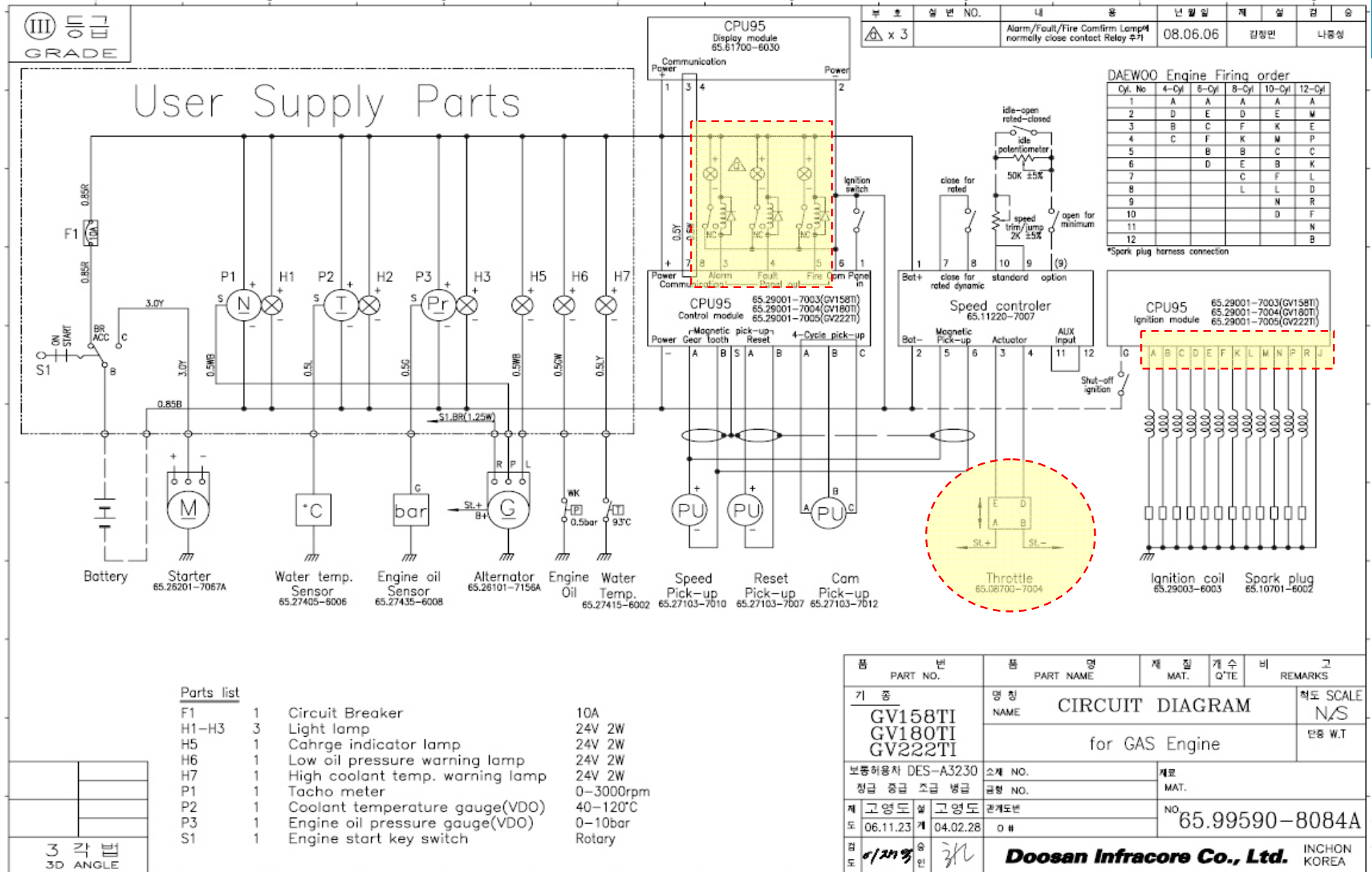


[Lambda Sensor]



◆ When no gas is supplied

2. WIRING



- Parts list**
- | | | | |
|-------|---|---------------------------------|-----------|
| F1 | 1 | Circuit Breaker | 10A |
| H1-H3 | 3 | Light lamp | 24V 2W |
| H5 | 1 | Charge indicator lamp | 24V 2W |
| H6 | 1 | Low oil pressure warning lamp | 24V 2W |
| H7 | 1 | High coolant temp. warning lamp | 24V 2W |
| P1 | 1 | Tacho meter | 0-3000rpm |
| P2 | 1 | Coolant temperature gauge(VDO) | 40-120°C |
| P3 | 1 | Engine oil pressure gauge(VDO) | 0-10bar |
| S1 | 1 | Engine start key switch | Rotary |

부호	설면 NO.	내용	년월일	제	설	검	승
△ x 3		Alarm/Fault/Fire Confirm Lamp에 normally close contact Relay 추가	08.06.06	김형민			나중성

Cyl. No	4-Cyl	6-Cyl	8-Cyl	10-Cyl	12-Cyl
1	A	A	A	A	A
2	D	E	D	E	M
3	B	C	F	K	E
4	C	F	K	M	P
5		B	B	C	C
6		D	E	B	K
7			C	F	L
8			L	L	D
9				N	R
10				D	F
11					N
12					B

*Spark plug harness connection

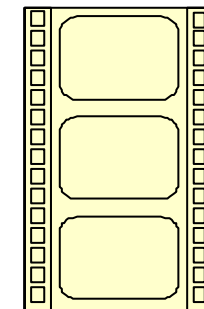
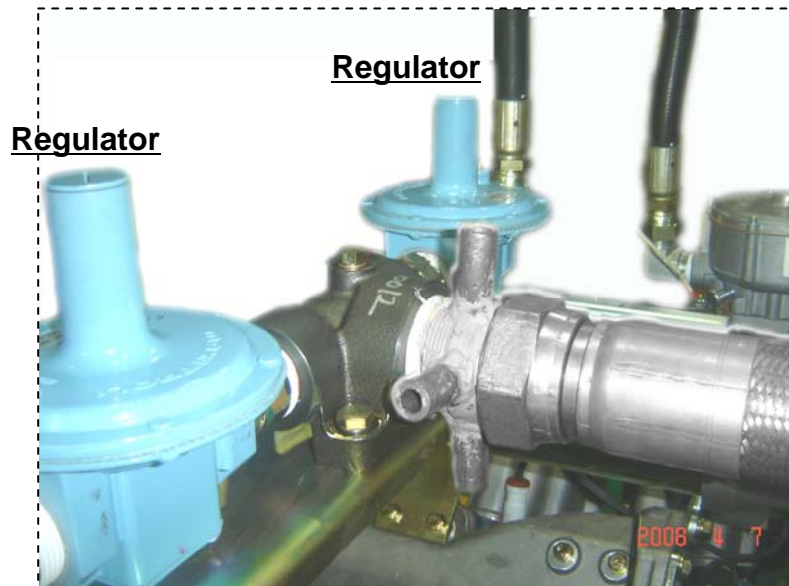
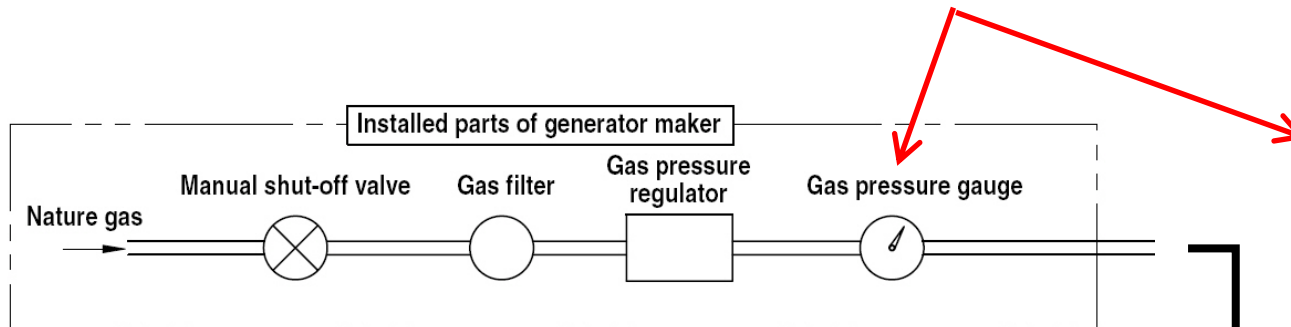
품	변	품	명	제	질	개	수	비	고
PART NO.		PART NAME		MAT.		Q'TE			REMARKS
기	종	명	칭					척도 SCALE	
GV158TI		CIRCUIT DIAGRAM						N/S	
GV180TI								단종 W.T	
GV222TI								for GAS Engine	
보통	용차	DES-A3230	소	재	NO.			계	
형급	중급	조급	병급	급형	NO.			MAT.	
계	고	영도	설	고	영도	계	도	NO.	
도	06.11.23	개	04.02.28	0 #			65.99590-8084A		
검	도	0/20%	승	인			Doosan Infracore Co., Ltd.		INCHON KOREA

3 각 뷰
3D ANGLE

3. GAS FUEL LINE

1. INLET GAS PRESSURE

- Make sure that gas inlet pressure before regulator is **400 ~ 700mmAq (0.7 ~ 1.0 psi)**



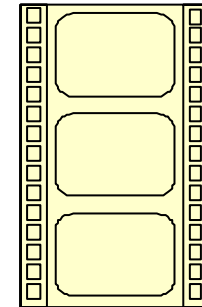
◆ **Gas flow rate**

4. IDLE MODE

1. Key on & CPU-95

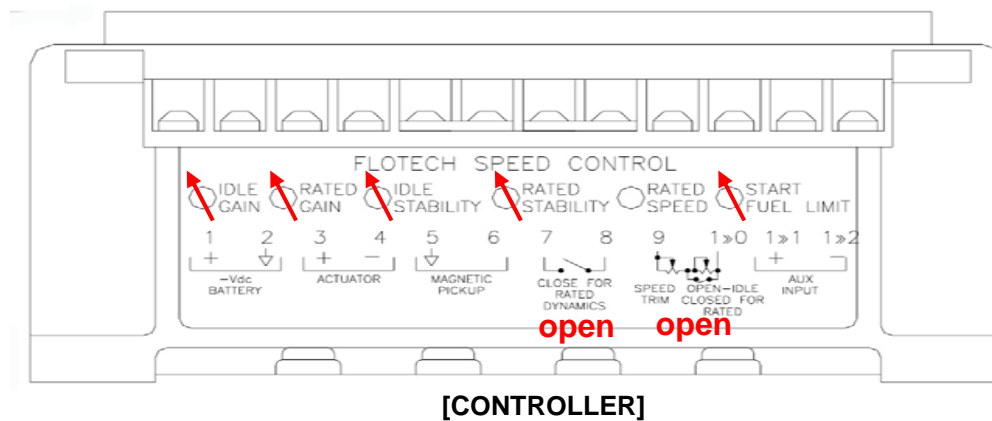


- V8 : H4A160.FX #001
- V10 : J4H160.FX #001
- V12 : L4B160.FX #001



2. Controller setting (IDLE MODE)

- Set five (5) volumes to 11 O'clock
- Terminal (7-8) is open.
- Terminal (9-10) is open.



4. IDLE MODE

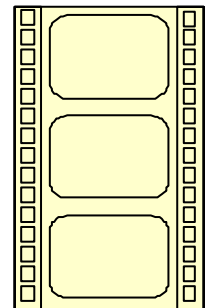
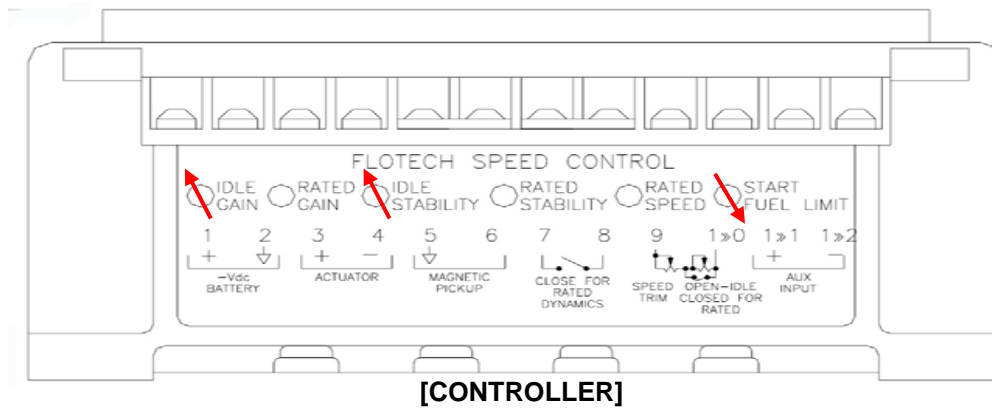
3. IDLE & CPU-95

- Start up the Engine



4. Stability at IDLE MODE

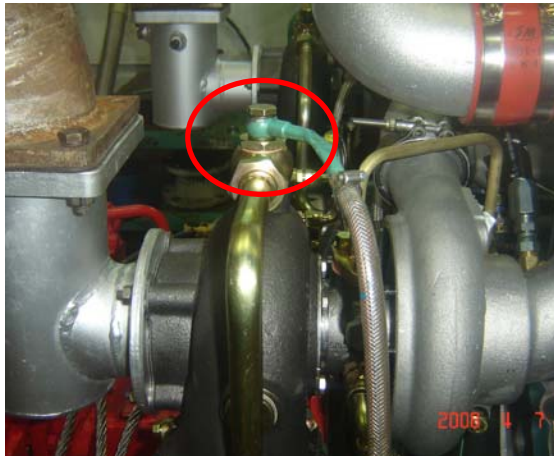
- If it's difficult to start up, turn "START FUEL LIMIT" to 5 O'clock
- The normal idle rpm is 900~1000rpm (60% of rated rpm)
- For Engine stability, adjust "IDLE GAIN" & "IDLE STABILITY"



1. ENGINE TIMING

5. Air venting from Turbocharger & Water Pump

- At idle speed, drain the air from turbocharger & water pump.



[Turbocharger]



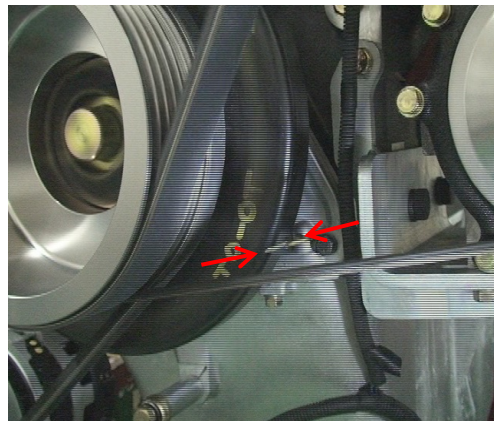
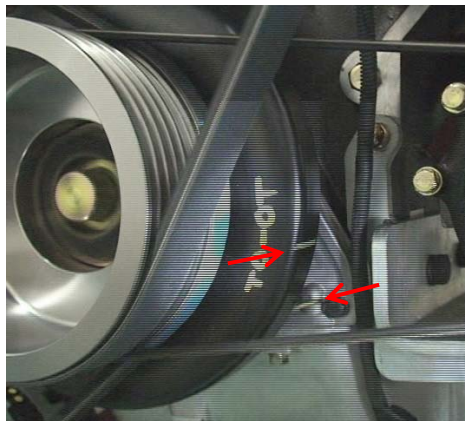
[Water Pump]

5. MAJOR SETTING

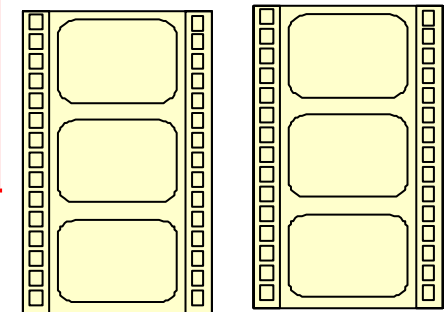
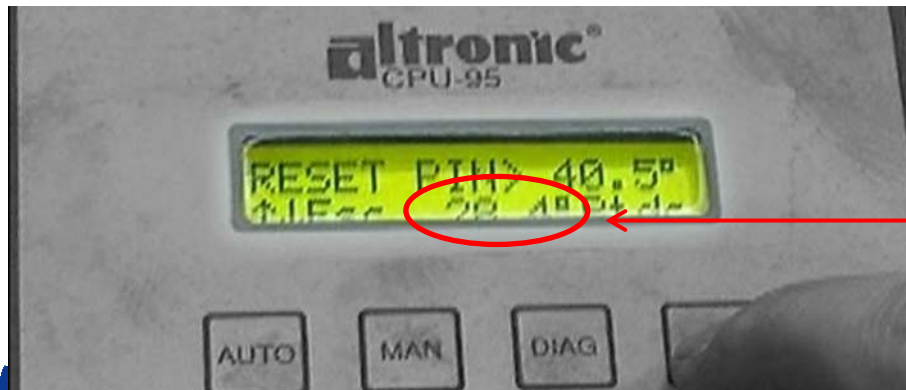
★ SPARK TIMING, IGNITION TIMING & OVERSPEED should be set at IDLE MODE

1. ACTUAL SPARK TIMING

1) by changing the value of timing light, align the mark between damper and engine body.



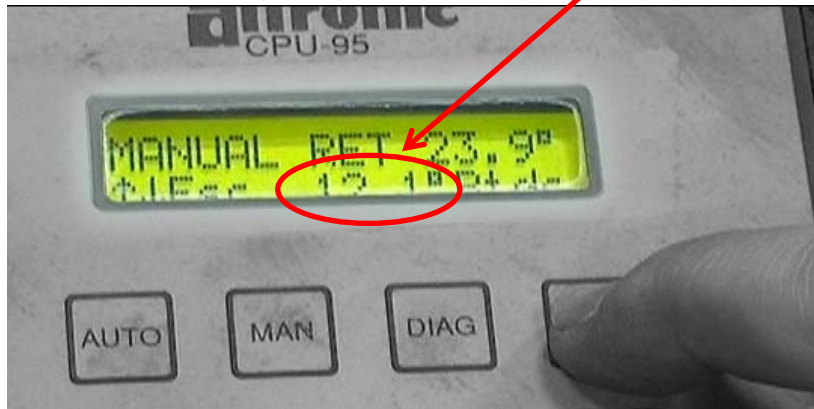
2) CPU-95 → SETUP → NEXT (3times) → **Set the value** → ESC.



5. MAJOR SETTING

2. IGNITION TIMING

1) CPU-95 → TIMING → (↑) 2 times → 12.1 → ESC.

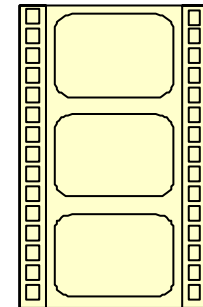
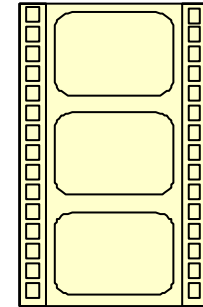


2) With the timing light, check the ignition timing 12.1 degree.

3. OVERSPEED

1) CPU-95 → SETUP → NEXT (2times) → OVERSPEED SET → ESC.

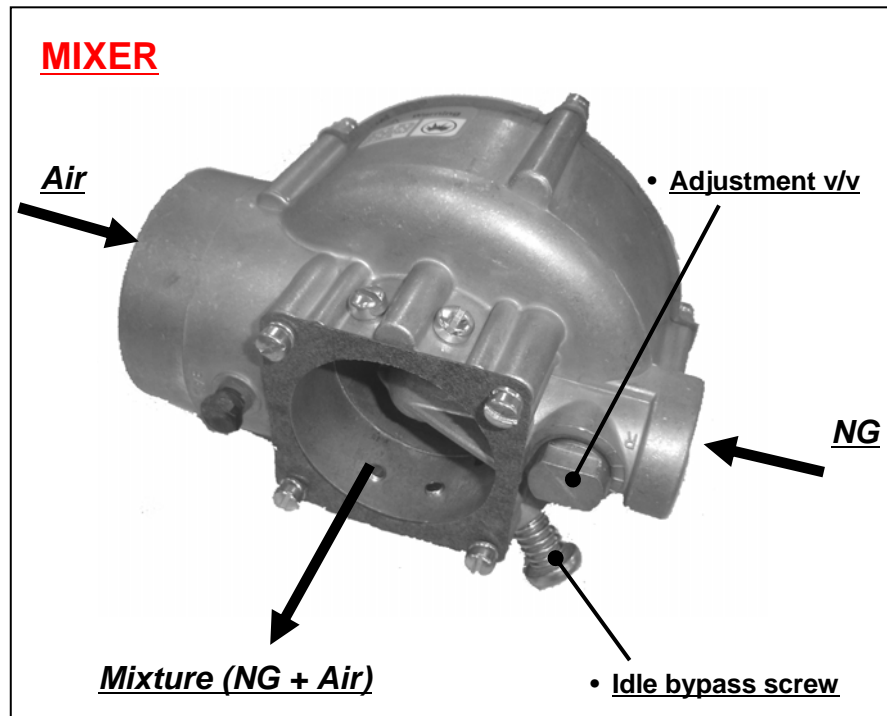
- For 1500 rpm Engine → overspeed 1800
- For 1800 rpm Engine → overspeed 2100



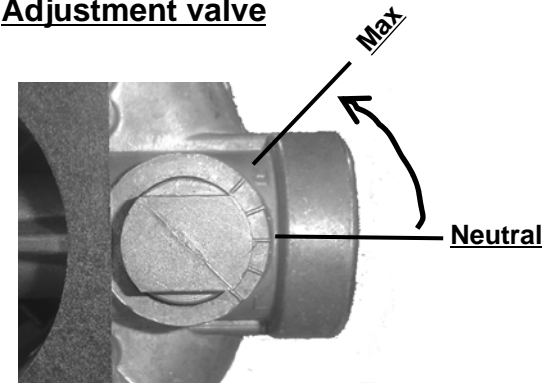
6. RATED MODE

2. Load Test & Air equivalence ratio (λ)

- Apply the load incrementally to reach the rated load.
- Check Air equivalence ratio (λ) by lambda meter
- Set $\lambda = 1$ by adjusting the valve of the Mixer



• Adjustment valve



Lean burn operation

- Normally, throttle valve should be neutral position.
- To decrease the Air equivalence ratio (λ) turn the valve to Max. position (marked "R")

Doosan Gas Generator
 $\lambda = 1.00$

