

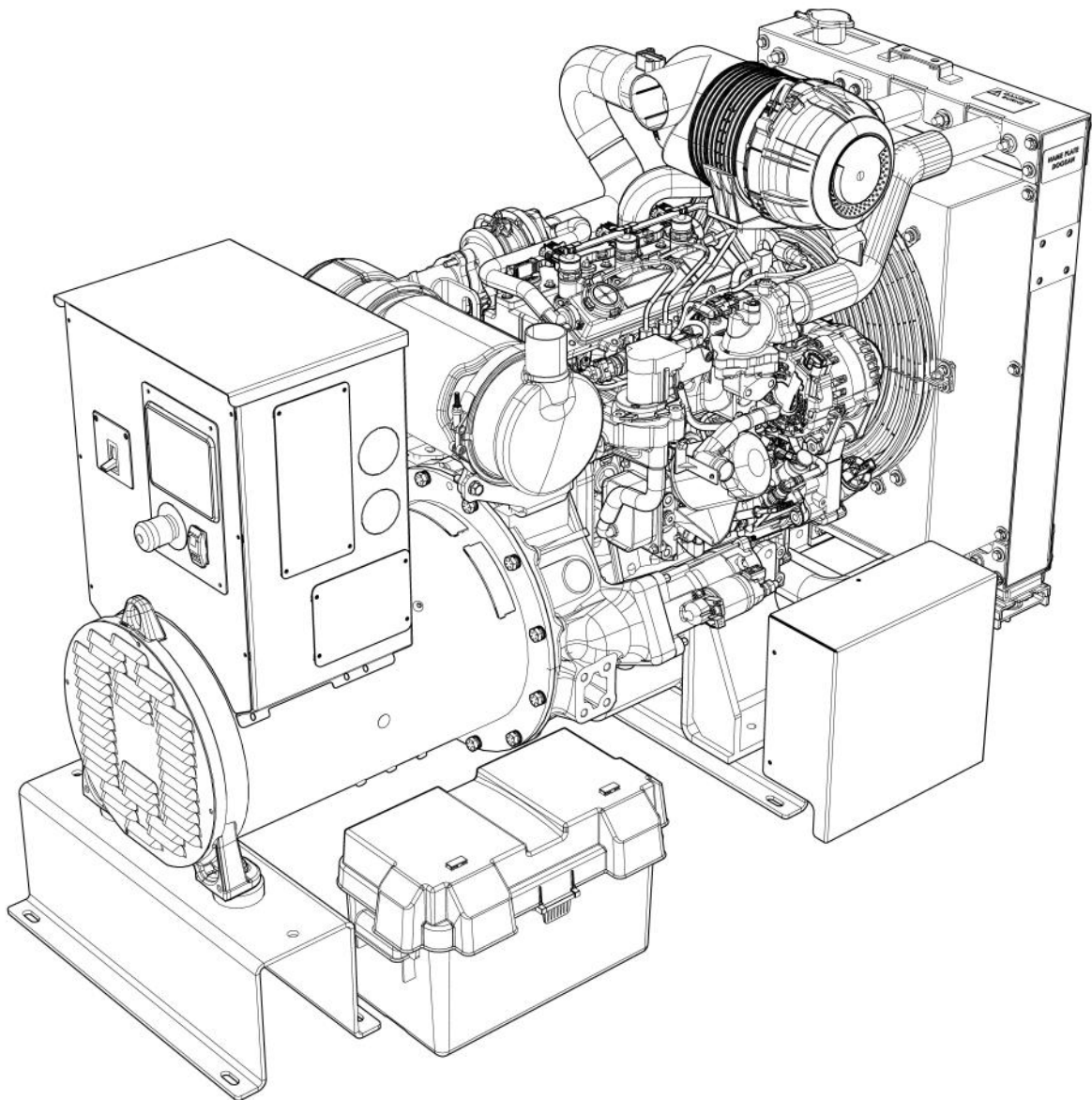
MAXFORCE 30 kW GENERATOR



Product Description

GENERATOR, MAXFORCE 30KW, DOOSAN

Operation & Parts



T90700-28

2845 W Service Rd Eagan, MN 55121

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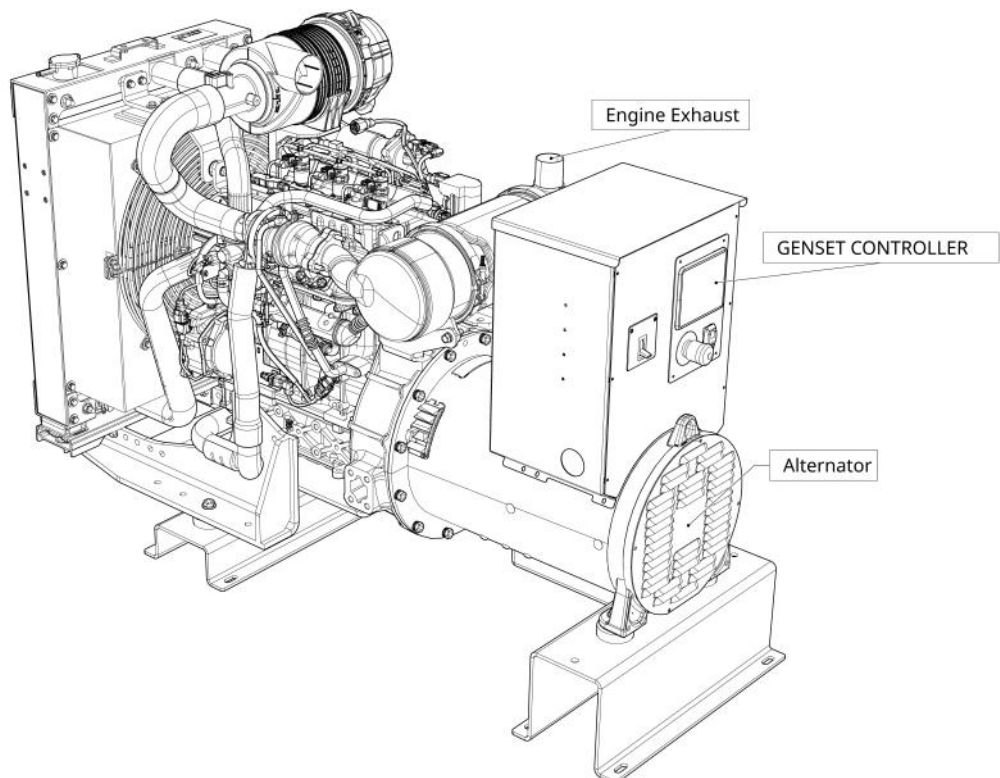
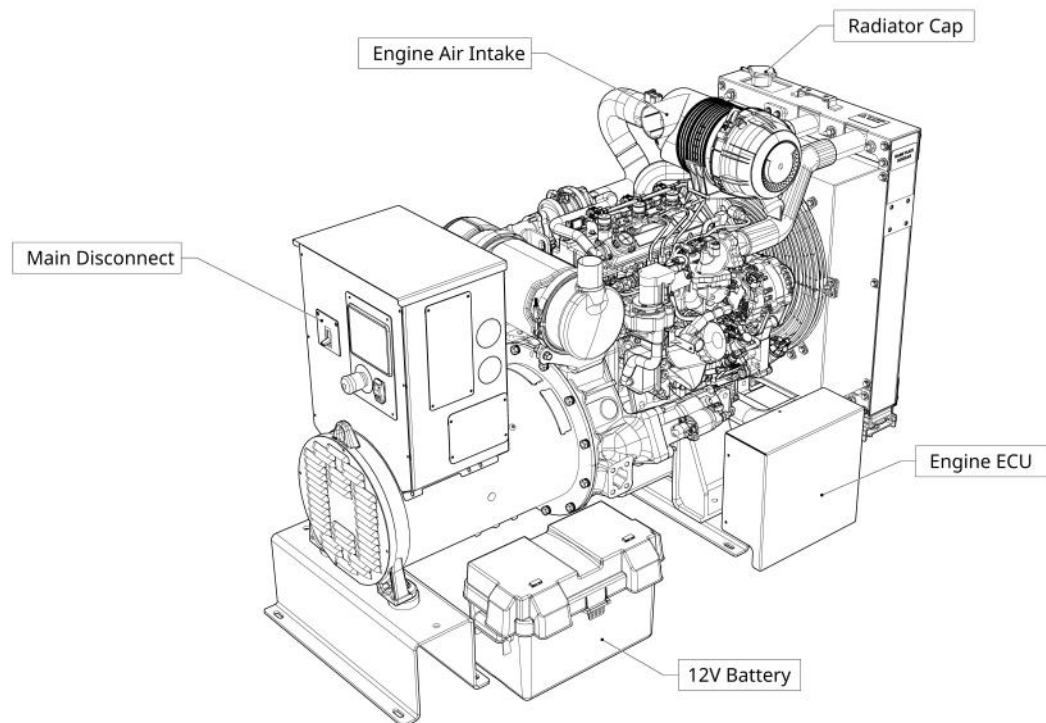
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**For parts, service, and technical assistance,
contact your equipment distributor:**

Equipment Layout



Specifications

Generator

Watts	28,000
Volts	220 V
Phase	Three
PF	0.8
Amps	92 A
Hertz	60 Hz

Engine

Model	Doosan D18
Starting System	12 Volt
Fuel	Diesel
Oil Type	Refer to engine manual
Oil Capacity	9 QTs
Coolant Type	Refer to engine manual

Alternator

Prime kVA	49
Leads	12
Voltage Regulator Type	AVR
Excitation System	Brushless
Efficiency	88.6% @ 0.8 PF

Safety

General Safety Information

READ THE MANUAL

- Ensure any operator of this equipment has read and understands the manual before operating.
- Do not attempt to repair or modify this equipment

EQUIPMENT MISUSE HAZARD

- Equipment misuse can cause the equipment to rupture or malfunction and result in serious injury.
- This equipment is for professional use only.
- Read all instruction manuals, tags, and labels before operating the equipment.
- Use the equipment only for its intended purpose. If you are not sure, call your equipment distributor.
- Do not alter or modify this equipment. Use only genuine OEM parts.
- Check equipment daily. Repair or replace worn or damaged parts immediately.
- Comply with all applicable local, state, and national fire, electrical, and safety regulations

FUEL HAZARD

- The fuel used in this unit is combustible and when spilled on a hot surface can ignite and cause a fire.
- Do not fill the fuel tank while the engine is running or hot.

EXHAUST HAZARD

- The exhaust contains poisonous carbon dioxide which is colorless and odorless.
- Do not operate this equipment in a closed building.

FIRE AND EXPLOSION HAZARD

- Improper grounding, poor ventilation, open flames or sparks can cause a hazardous condition and result in a fire or explosion and serious injury.
- Keep the generator area free of debris, including solvent, rags and uncontained fuel.

NOISE HAZARD

- Wear hearing protection when operating this

ELECTRICAL SHOCK HAZARD

- This equipment creates high voltage that can cause fatal electric shock.
- Do not attempt to service or repair the alternator while the engine is running.
- Be sure the equipment is properly grounded according to applicable national electrical code.

Equipment Hazards & Warnings

DANGER

- Hot oil under pressure – will cause severe injury or death. Do not remove valves, caps, plugs or piping while compressor is running or pressurized.
- Hot exhaust system. Allow system to cool down before attempting to perform maintenance on engine.
- Discharge air used for breathing will cause severe injury or death. Consult your generator dealer for additional filtration to meet OSHA standards.

WARNING

- Read the operators manual before starting this unit. Failure to adhere to instructions can result in severe personal injury.
- E-stop button should only be used in the case of an emergency.
- On shutdown, close compressed air vented ball valve
- Drive belts in rotation. Switch off engine and disconnect battery before attempting to work or perform maintenance on the compressor package.
- Hoses under pressure. Relieve system pressure before disconnecting or replacing air and oil hoses.

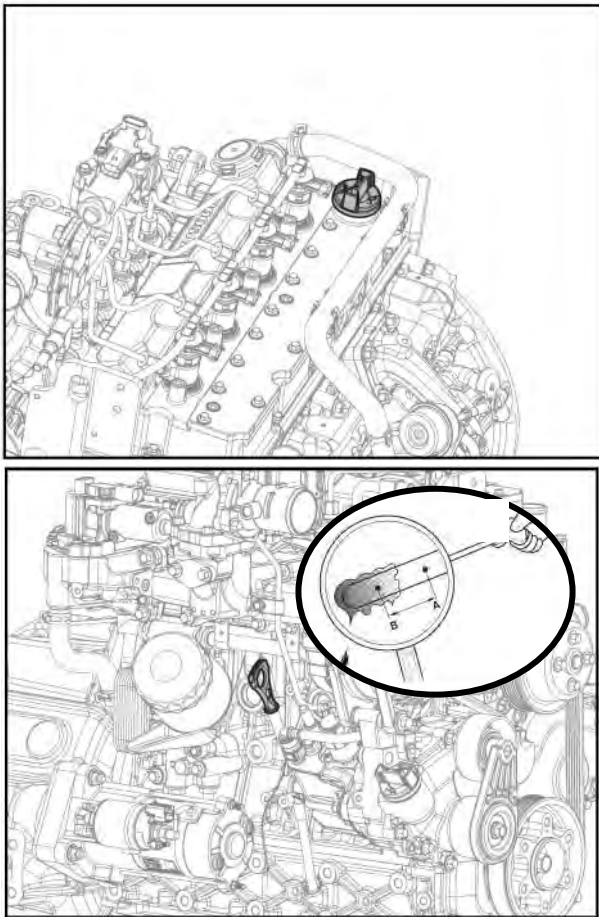
CAUTION

- To avoid electrical shock, disconnect battery prior to electrical system service
- High voltage present. Do not attempt to perform maintenance on alternator while engine is running.

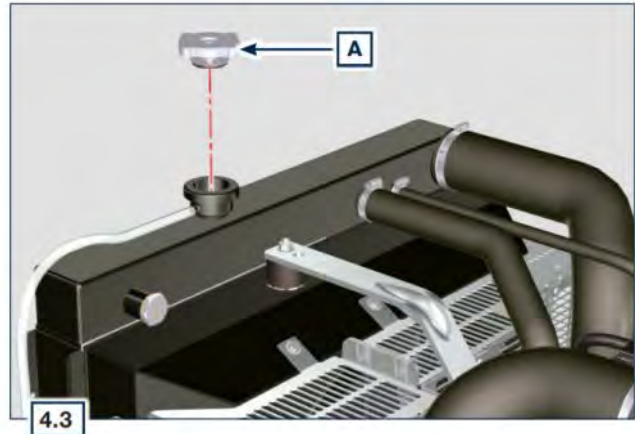
Operation

Pre-Start Up Inspection

Before starting generator, check the oil level in the engine. The oil level in the engine should be between the low and high marks on the engine oil dipstick (B). If the engine is low on oil, add oil to the engine at either cap A or C. Check the oil on the oil dipstick again after filling to ensure it is at the proper level.



Engine oil fill level



Radiator cap location

CAUTION

- Do not remove the radiator cap when engine is hot!

Check the coolant level in the engine radiator. The coolant level should be visible once the radiator cap is removed.

Visually inspect all hoses and belts for cracks or damage. Remove any tools, rags, or other material resting on the engine alternator. Verify the main disconnect breaker is in the OFF position.

Starting Procedure

Start the engine using the green START button on the control panel. The digital display will initiate the start sequence for the engine. The engine will automatically raise from idle speed to an operating speed of 1800 rpm. Allow engine to warm up 2-5 minutes before any load is applied. Switch the main disconnect breaker to the ON position.

Shutdown procedure

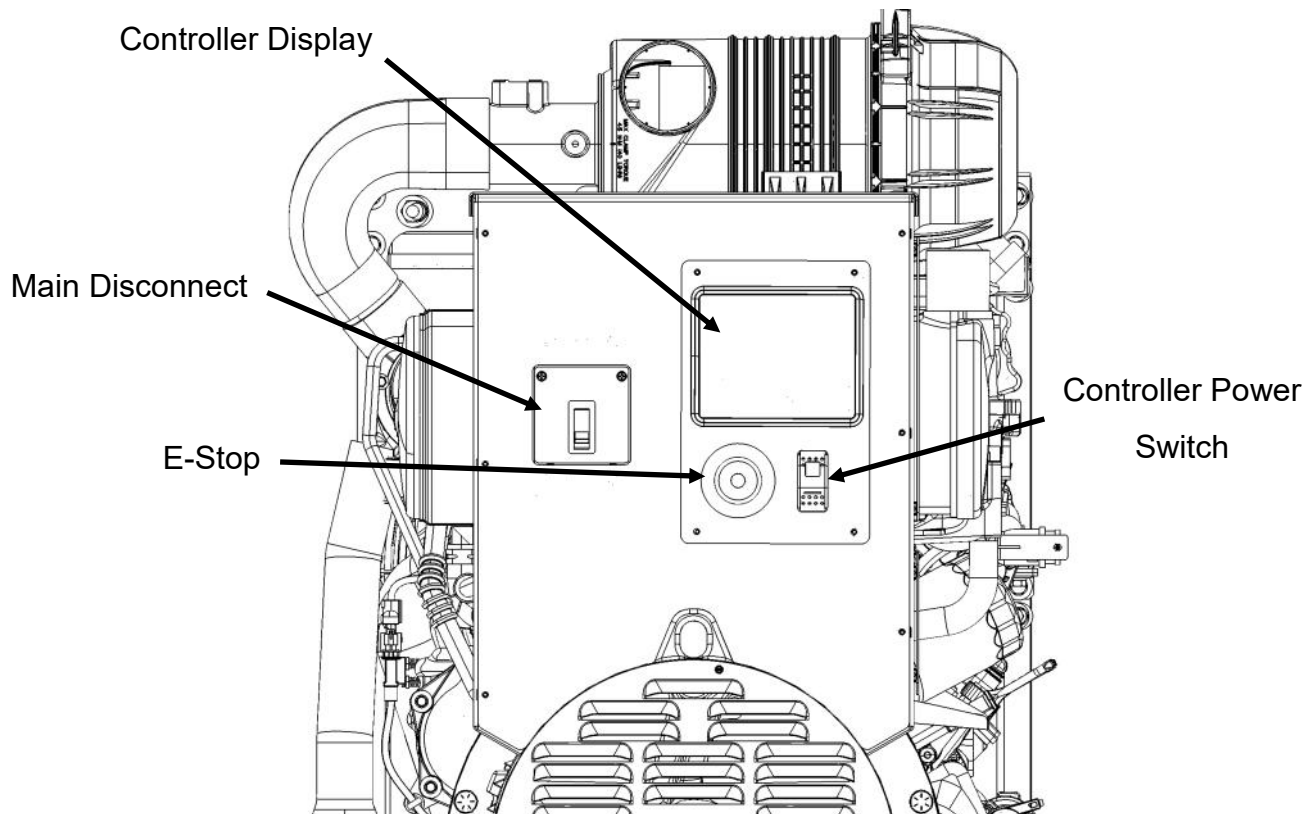
After shutting down electrical equipment, switch the main breaker to the OFF position. Allow the engine to idle for 1-2 minutes. Shut the engine down using the red STOP button on the controller. The controller will initiate a soft shutdown sequence for the engine.

NOTICE

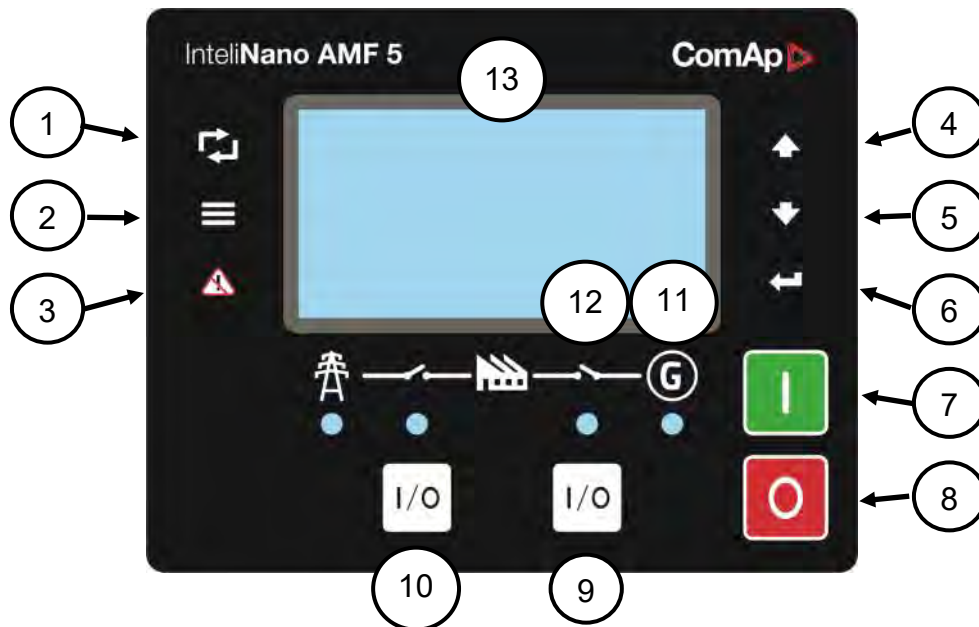
On Shutdown

The red E-STOP pushbutton should only be used to shut down the generator in an emergency.

Control Panel Layout



Controller Layout



Position	Description
1	MODE button. Use this button to cycle modes and to navigate in the interface. The Mode button is used as the Right button in most cases.
2	PAGE button. Use this button to switch over display pages.
3	FAULT RESET button. Use this button to acknowledge alarms. Inactive alarms will disappear immediately and status of active alarms will be changed to "confirmed" so they will disappear as soon as their reasons dismiss.
4	UP button. Use this button to move up or increase value.
5	DOWN button. Use this button to move down or decrease value.
6	ENTER button. Use this button to finish editing a setpoint or moving right in the history page.
7	START button. Works in MAN mode only. Press this button to initiate the start sequence of the engine.
8	STOP button. Works in MAN mode only. Press this button to initiate the stop sequence of the Gen-set. Repeated pressing of button will cancel current phase of stop sequence (like cooling) and next phase will continue.
9	Not Used
10	Not Used
11	GENERATOR status indicator. There are two states – Gen-set OK (indicator is green) and Gen-set failure (indicator is red). Green LED is on if the generator voltage and frequency is present and within limits. Red LED starts flashing when Gen-set failure occurs. After FAULT RESET button is pressed, Red LED goes to steady light (if an alarm is still active) or is off (if no alarm is active).
12	GCB Status . Green LED is on if GCB is closed. It is driven by GCB CLOSE/OPEN output or by GCB feedback signal.
13	Graphic B/W display

Maintenance

Engine Maintenance — Doosan D24

Item	Check	Replace	Replacement Part Number
Engine Oil	DAILY	500 Hrs.	SEE BELOW CHART
Engine Oil Filter	-	500 Hrs.	V90700-85
Engine Fuel Pre Filter	500 Hrs.	500 Hrs.	V90701-98
Engine Fuel Main Filter	500 Hrs.	500 Hrs.	V90700-90
Engine Air Filter (Primary)	100 Hrs.	500 Hrs.	V90700-91
Engine Air Filter (Secondary)	100 Hrs.	500 Hrs.	V90700-92

Maintenance Kits

Item	Kit Number
Doosan D18 Engine Maintenance Kit (Bi-Annual) Includes: 10W-30 oil, oil filter, air filter (primary and secondary), fuel filter	S90700-22

Recommended Oil		
Viscosity	SAE	15W-40 (-15° C ÷ +50° C) 10W-30 (-25° C ÷ +40° C) 10W-40 (-25° C ÷ +50° C) 5W-30 (-30° C ÷ +40° C) 0W-40 (-40° C ÷ +50° C)

Troubleshooting

Engine

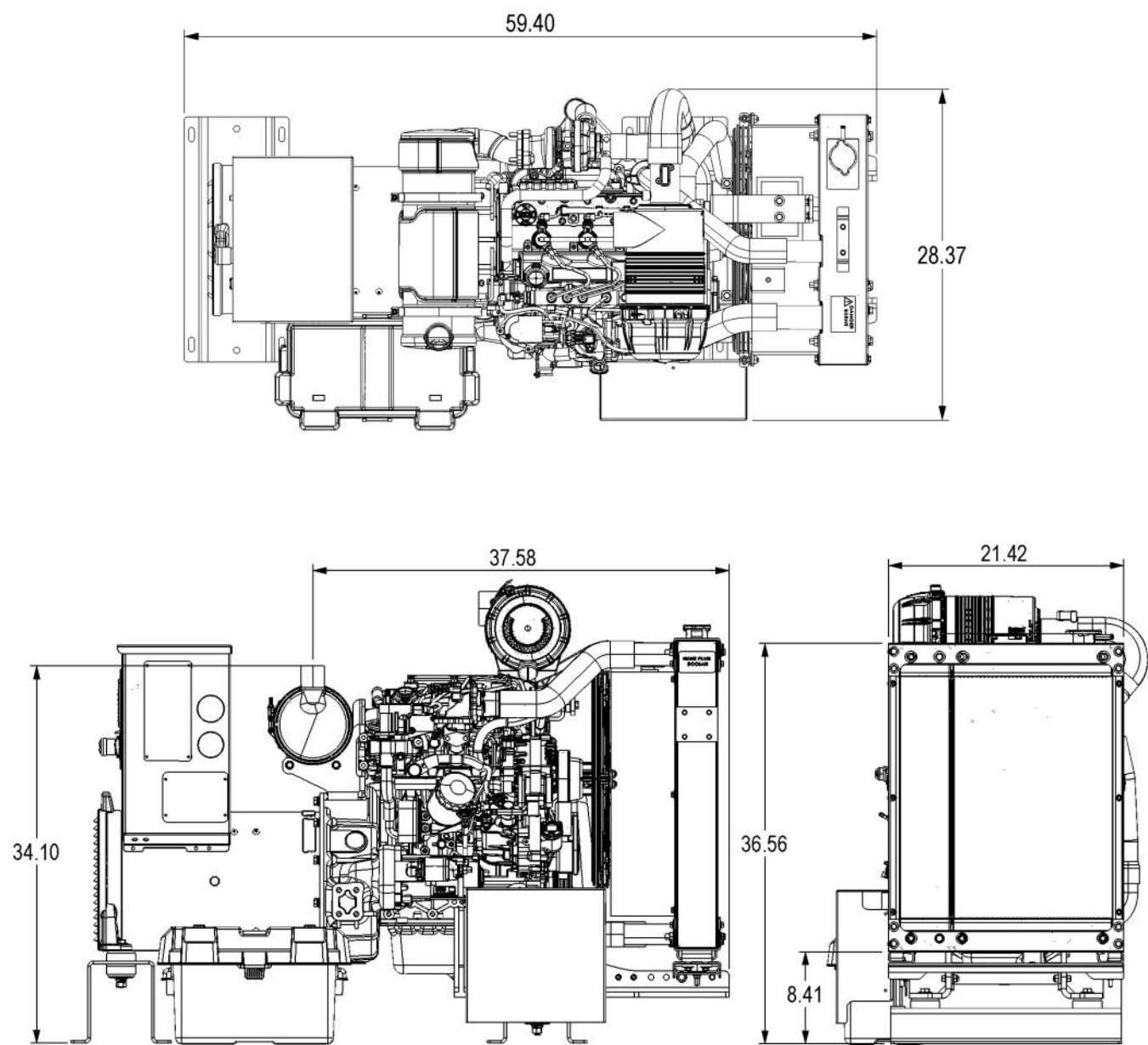
Problem	Cause	Solution
The engine does not start	Sulphated battery terminals corroded	Clean the battery terminals
	Battery voltage too low	Recharge or replace battery
	Low fuel level	Refuel
	Frozen fuel	Contact dealer
	Clogged fuel filter	Replace with a new filter
	Air suction in fuel system	Contact dealer
	Clogged air filter	Replace with a new filter
	Clogged pipes	Contact dealer
	Open fuse	Relace with a new fuse
	Intake or exhaust system clogged	Contact dealer
Engine doesn't rev up	Safety protocol in starting	Wait some seconds
RPM instability at idle speed	Clogged fuel pipes	Contact dealer
Low idle speed	Clogged fuel pipes	Contact dealer
	Poor quality fuel	Clean the tank and refuel with quality fuel
Blue smoke	High oil sump level	Replace the engine oil
	Clogged air filter	Replace with a new filter
Excessive fuel consumption	Clogged air filter	Replace with a new filter
	High oil sump level	Replace the engine oil
Engine lost its initial performance	Clogged air filter	Replace with a new filter
	Clogged fuel pipes	Contact dealer
	Cheap fuel	Clean the tank and refuel with quality fuel
	High oil sump level	Replace the engine oil
Slow acceleration	Clogged fuel filter	Replace the fuel filter
Engine jerking	Clogged fuel pipes	Contact dealer
Engine overheats	Insufficient coolant level	Fill up to the level
	High oil sump level	Replace the engine oil
	Clogged radiator	Clean the radiator

Alternator

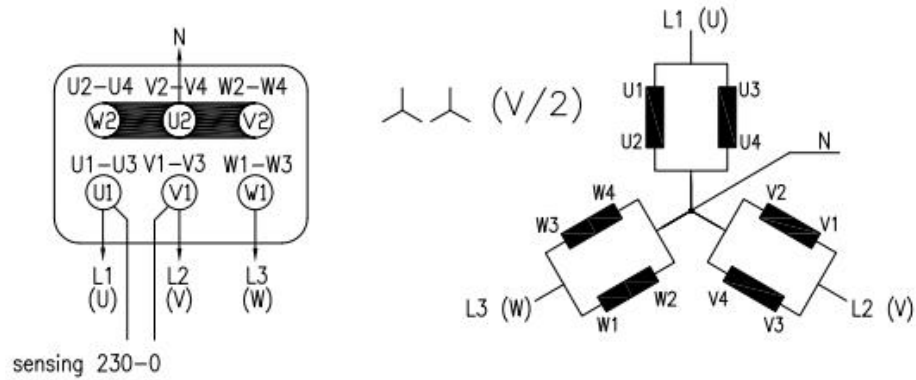
Problem	Cause	Solution
NO VOLTAGE	Faulty AVR	Check the fuse Replace the AVR
	Faulty rectifier bridge and/or surge suppressor	Check rectifier bridge
	Faulty stator exciter	Contact dealer
	Main winding fault	Contact dealer
	Demagnetized machine	Contact dealer
	Broken connections	Check all connections
	Reference voltage is not set at desired value	Adjust voltage with potentiometer «V» on the AVR;
	Under-frequency protection not properly adjusted	Check / adjust, the value of under-frequency protection for 50Hz (60Hz) nominal frequency.
LOW VOLTAGE	Engine speed low	Check the engine speed (voltage frequency)
	Faulty AVR	Replace the AVR
	Reference voltage is not set at desired value	Adjust voltage with potentiometer «V» on the AVR
	Sensing connection open circuit	Check the sensing connections
HIGH VOLTAGE	Faulty AVR	Replace the AVR
UNSTABLE VOLTAGE	AVR stability incorrectly set	Check the correct Dip switches position, adjust stability with ST trimmer
	Engine speed unstable	Check with the frequency meter if there are oscillations in engine speed
	Faulty AVR	Replace the AVR

Technical Data

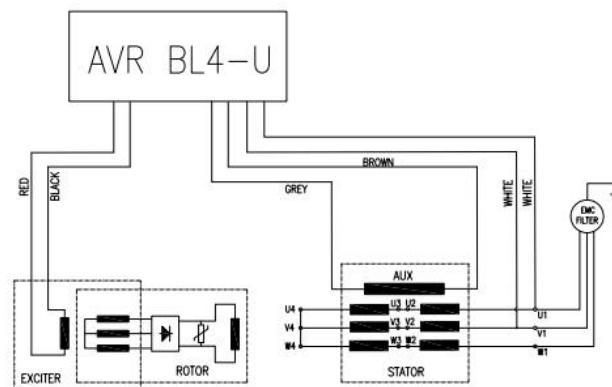
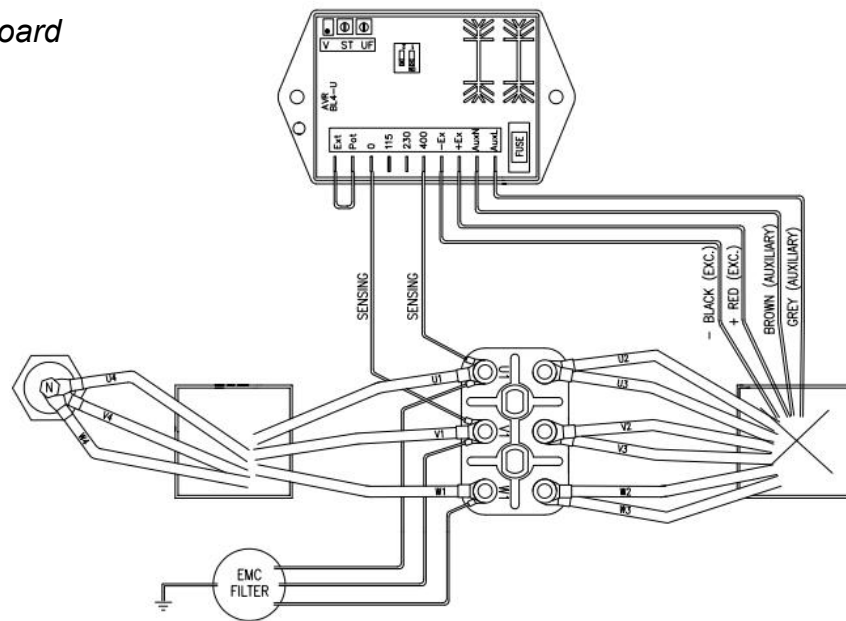
Generator Dimensions



Alternator Wiring—High Voltage

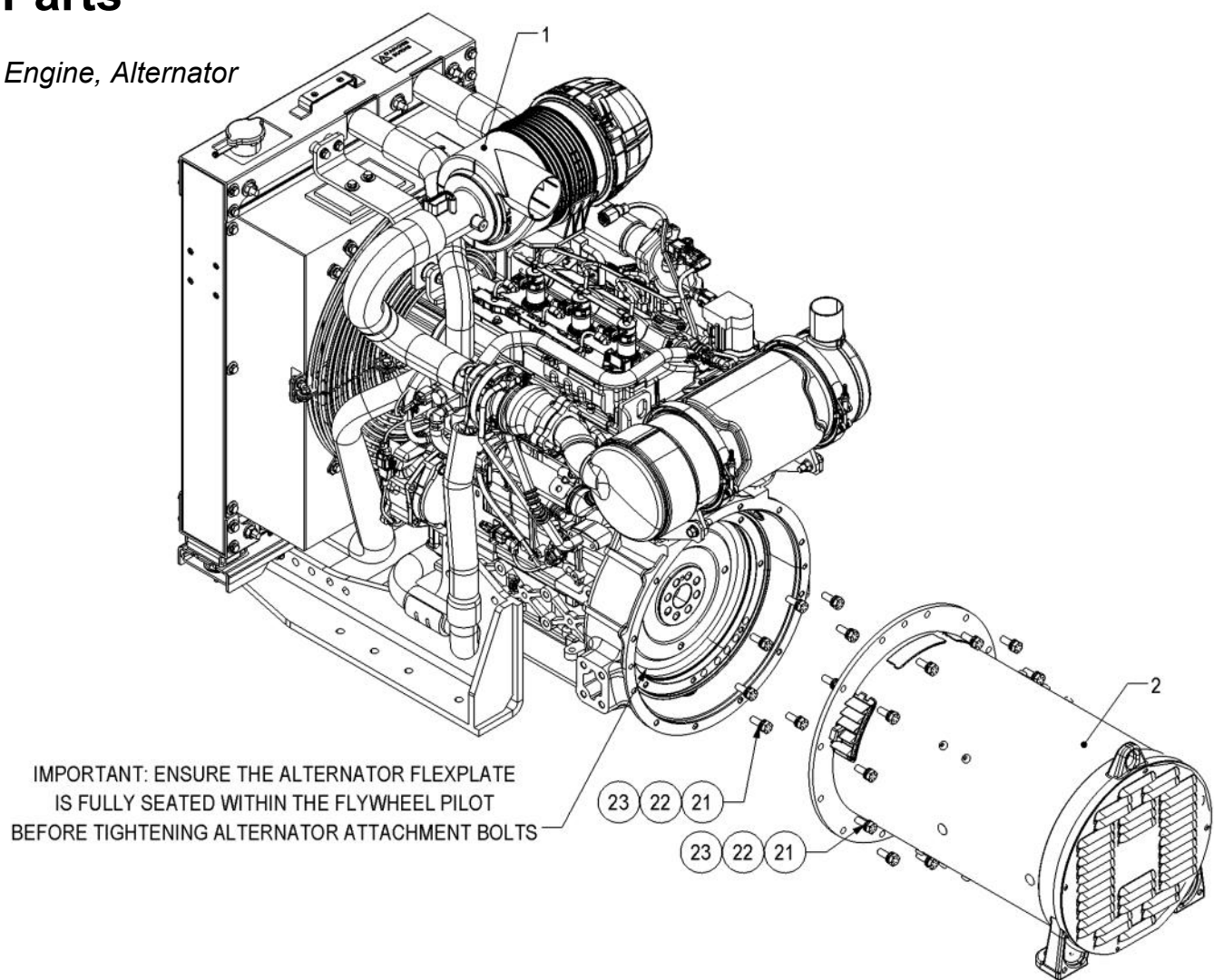


Alternator Wiring—AVR Board

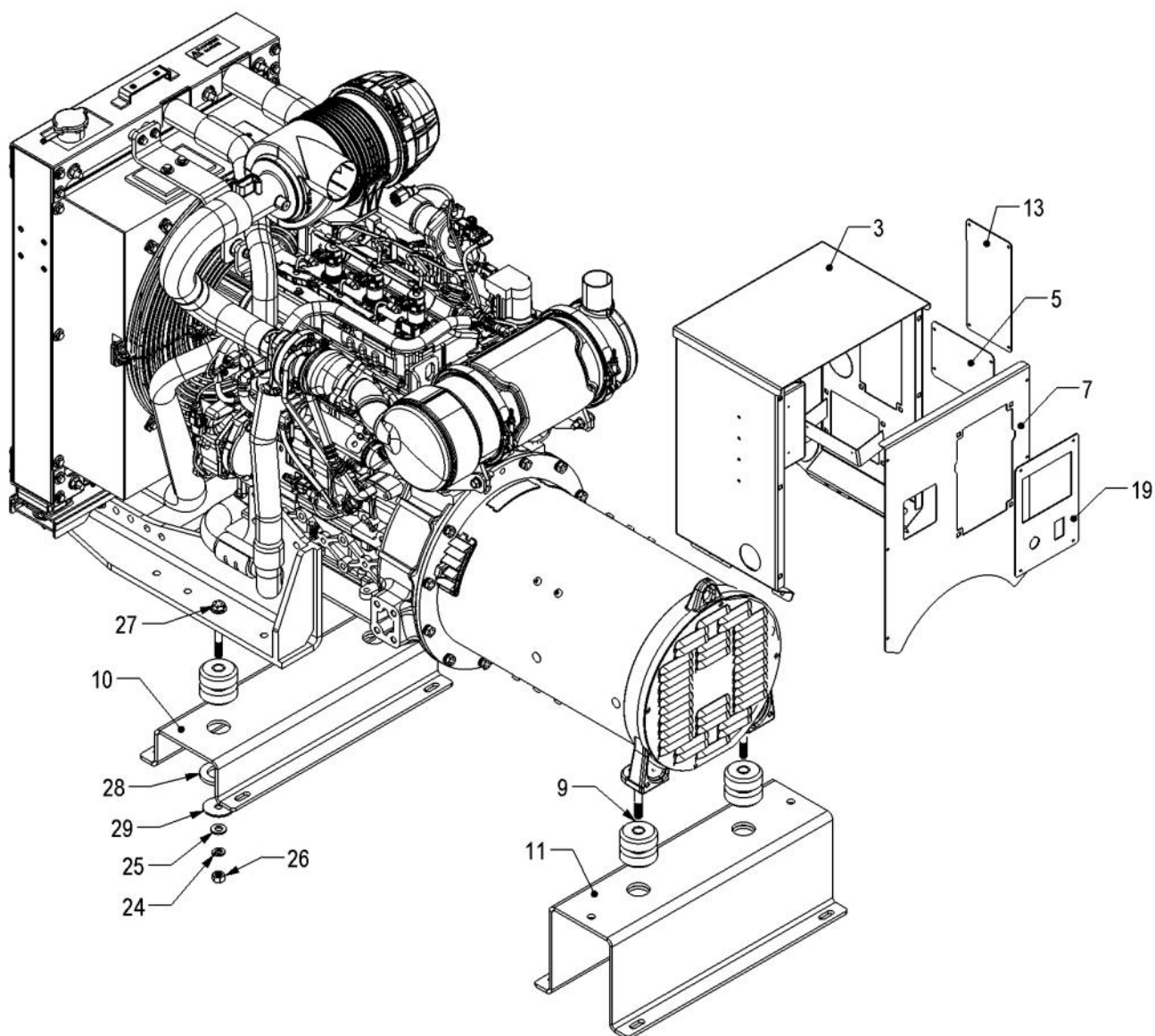


Parts

Engine, Alternator



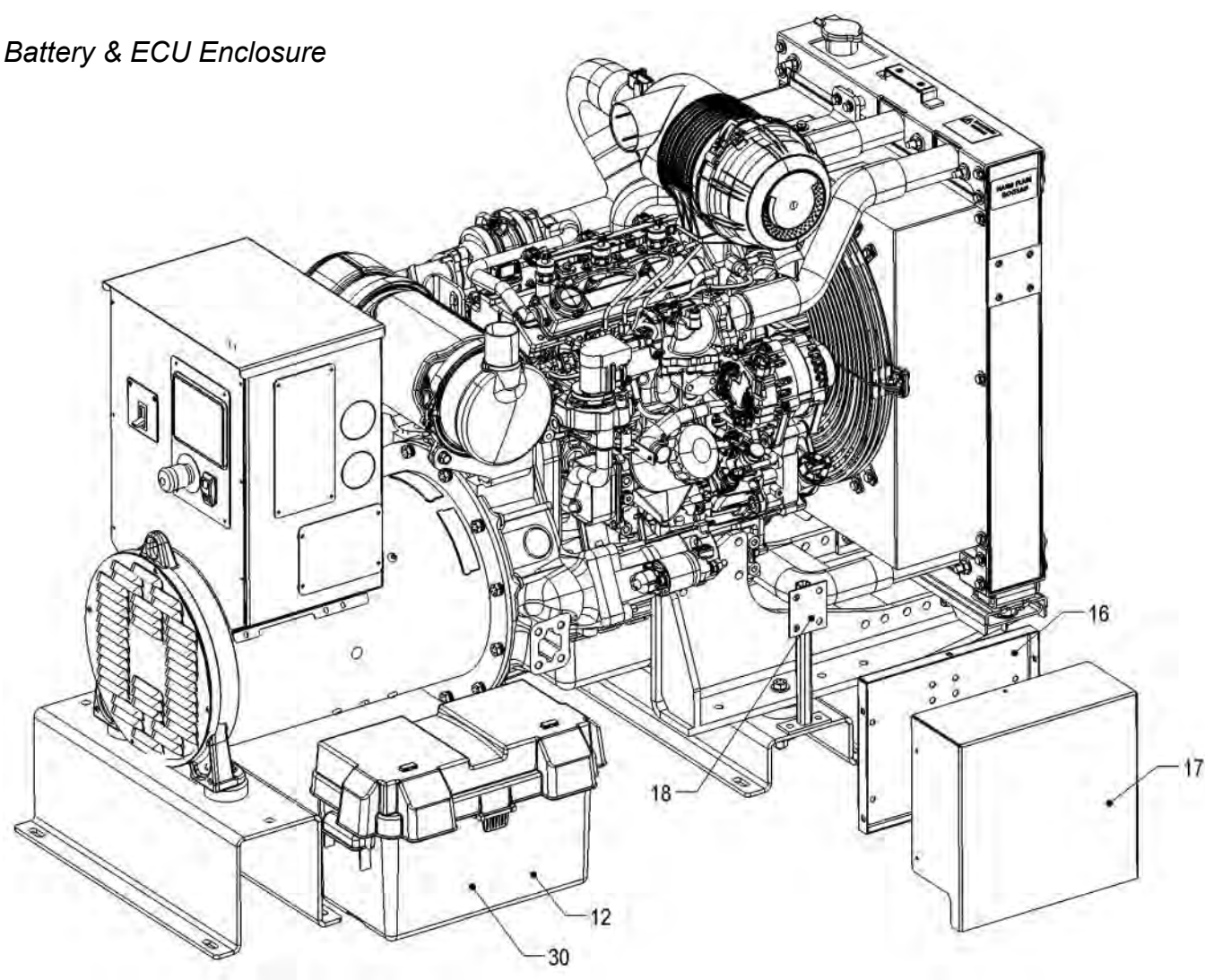
Ref.	Part no.	Description	Qty
1	V90700-95	DOOSAN D18 ENGINE	1
2	V90700-05	ALTERNATOR	1
21	V90799-17	FLAT WASHER	20
22	V90799-18	SPLIT LOCK WASHER	20
23	V90799-27	HEX BOLT	20



Ref.	Part no.	Description	Qty
3	C90700-34	GENERATOR DISCONNECT PANEL	1
5	C90700-37	AVR COVER PLATE	1
7	C90701-23	GEN DISCONNECT PANEL, FRONT PNL, COMAP	1
9	V90700-68	VIBRATION ISOLATOR	4
10	C90701-22	FRONT ENGINE MOUNT	1
11	C90701-21	REAR ALTERNATOR MOUNT	1
19	C90701-37	COMAP CONTROLLER FACEPLATE	1
24	V90799-11	SPLIT LOCK WASHER	4
25	V90799-12	FLAT WASHER	8
26	V90799-13	HEX NUT	4
27	V90799-38	HEX BOLT	4
28	C90700-64	VIBRATION ISOLATOR INNER WASHER	4
29	C90700-65	SNUBBING WASHER, VIBRATION ISOLATOR	4

Parts — Cont.

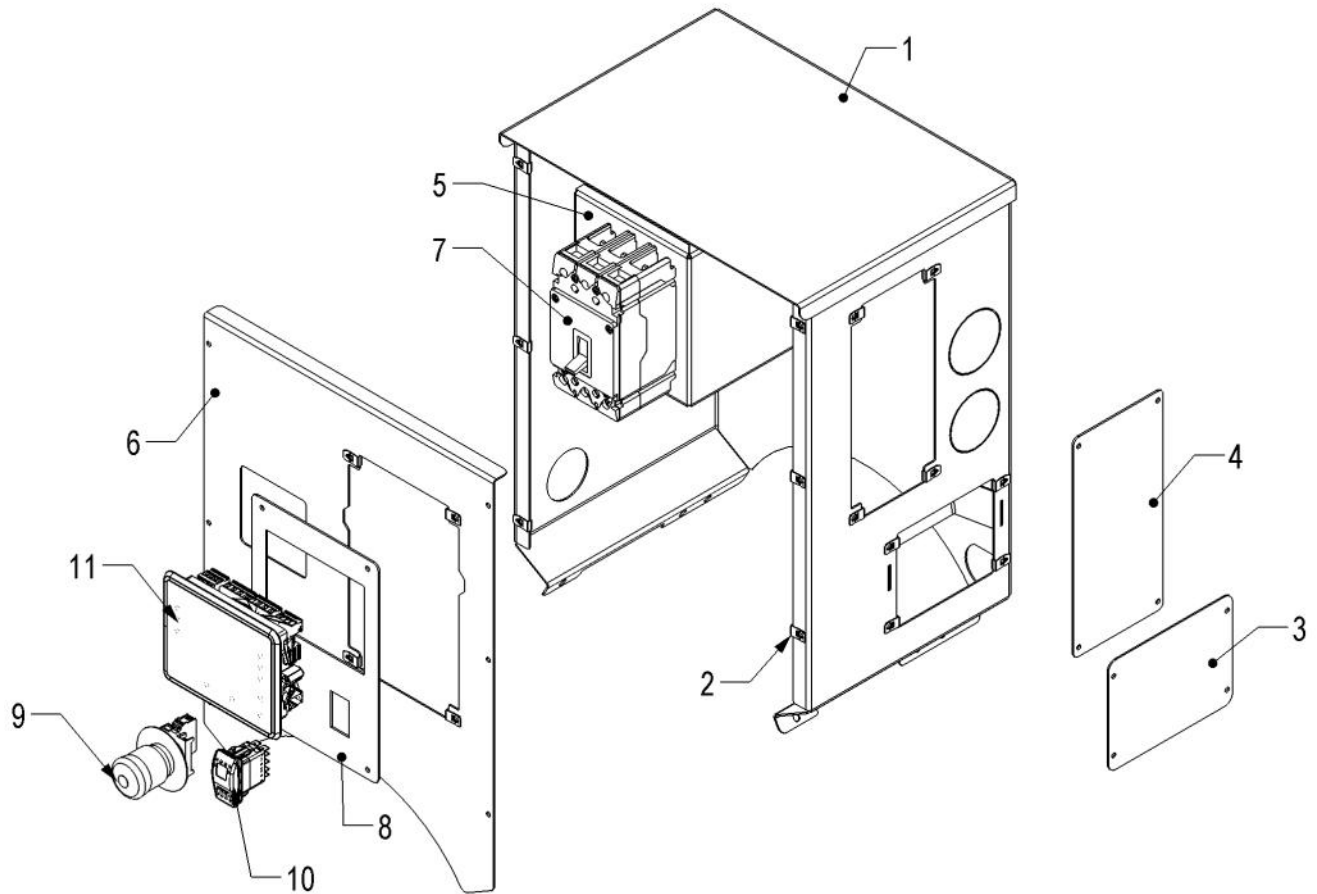
Battery & ECU Enclosure



Ref.	Part no.	Description	Qty
12	V90700-11	BATTERY BOX, 31 SERIES, POLY	1
16	C90700-71	ECU ENCLOSURE, BACK PLATE, DOOSAN	1
17	C90700-72	ECU ENCLOSURE, COVER, DOOSAN	1
30	V90700-10	BATTERY	1

Parts — Cont.

Control Box Assembly



Ref.	Part No.	Description	Qty
1	C90700-34	GENERATOR DISCONNECT PANEL WELDMENT	1
2	V90700-36	CLIP ON NUT	18
3	C90700-37	AVR COVER PLATE	1
4	C90700-38	CONTROLS FACEPLATE, BLANK	1
5	C90700-76	BREAKER MOUNT PLATE	1
6	C90701-23	GEN DISCONNECT PANEL, FRONT PNL, COMAP	1
7	PD3100	CIRCUIT BREAKER, 100A	1
8	C90701-37	COMAP CONTROLLER FACEPLATE	1
9	M22-PVT	C-H EMERGENCY STOP	1
10	V71300-14	ROCKER SWITCH	1
11	V90701-45	GENSET CONTROLLER	1

Notes

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Warranty

MaxForce warrants all equipment listed in this manual which is manufactured by MaxForce and bearing its name to be free from defects in material and workmanship on the date of sale by MaxForce or authorized distributor to the original purchaser for use. With the exception of any special extended or limited warranty published by MaxForce, MaxForce will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by MaxForce to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with MaxForce's written recommendations.

This warranty does not cover, and MaxForce shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, accident, tampering, or substitution of non-MaxForce component parts. Nor shall MaxForce be liable for malfunction, damage or wear caused by the incompatibility of equipment with structures, accessories, equipment or materials not supplied by MaxForce, or the improper design, manufacture, installation, operation or maintenance or structures, accessories, equipment or materials not supplied by MaxForce.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized MaxForce distributor for verification of the claimed defect. If the claimed defect is verified, MaxForce will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor and transportation.

MaxForce's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

MaxForce makes no warranty, and disclaims all implied warranties of merchantability and fitness for a particular purpose in connection with accessories, equipment, materials or components sold but not manufactured by MaxForce. These items sold, but not manufactured by MaxForce (such as electric motors, gas engines, switches, hose, hydraulic components, etc.) are subject to the warranty, if any, of their manufacturer. MaxForce will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will MaxForce be liable for indirect, incidental, special or consequential damages resulting from MaxForce supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of MaxForce, or otherwise.

All written and visual data contained in this document reflect the latest product information available at the time of publication. MaxForce reserves the right to make changes at any time without notice.

Component Manufacturer Warranties– MaxForce Generators

	Standard Warranty	Major Components
Engine		
Doosan (Hyundai, Hyundai Infracore)	3 years, or 3000 hrs	5 years, or 5000 hrs

Alternator		
Sincro	18 months from invoice, or 12 months from	

Note: All warranty periods are from point of sale unless otherwise noted.

