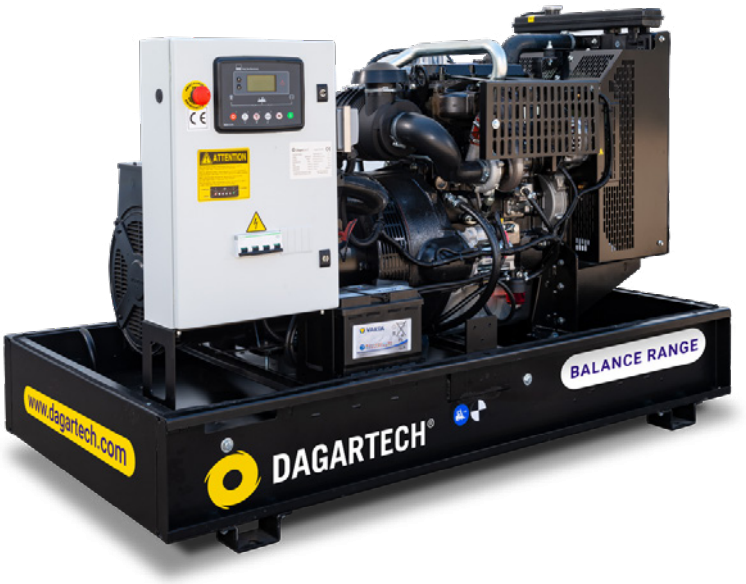
DAGARTECH®
ENERGY SOLUTIONS

60Hz (1800 rpm)



BGPW 20 ST

Emergency Balance Range

Ideal for...

INDUSTRY | RESIDENTIAL | EQUIPMENT

Weight with liquids without fuel: 600 kg

Dimensions
Plat 1K1B:
L: 1450 mm
W: 840 mm
H: 1148 mm

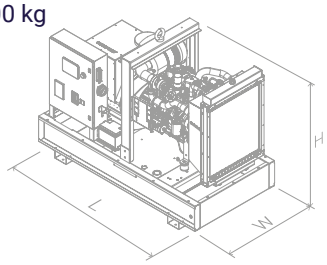


Image for orientation purposes. Dagartech reserves the right to modify the data in this technical sheet without prior notice. The weight of the equipment may vary depending on the equipment.

Diesel | EU Stage 0 | Water-cooled | Open | CE Conformity

1. General technical data

General technical data		
	Engine	**PERKINS 404A-22G**
	Alternator	**See page 3**
	Type of execution	G2
	Frequency	60Hz
	Control panel	DSE 6020 MKII
	Fuel tank (l)	70
	Sound level-Lp(A) (dB(A)@7m)	N/A (Indoor)
	Sound power-LW(A) (dB(A))	N/A (Indoor)

Power[1] (m.p. cos φ 0,8)	208/120V	220/127V	380/220V	480/277V
PRP (kVA /kW)	24 / 20	24 / 20	24 / 20	24 / 20
ESP (kVA /kW)	26 / 21	26 / 21	26 / 21	26 / 21

[1]PRP: Continuous power ("Prime Power"). ESP: Emergency Standby Power according to ISO8528-1.

Maximum active power tolerance (kW) ±5%

Voltage >	208/120V	220/127V	380/220V	480/277V
Amperage (A)	72	68	40	31

Directives and Regulations

ENVIRONMENTAL CONDITIONS STANDARD ISO 8528-1:2018: 25ºC, 100kPa and 30% relative humidity:

- **Prime Power (PRP):** Data on electrical power available at variable load without limit of hours per year. An overload of 10% is allowed for 1h out of 12. According to ISO 8528-1:2018.
- **Emergency Standby Power (ESP):** Data on electrical capacity available at variable load in case of emergency according to ISO 8528-1:2018.

The DAGARTECH Generating Set has EC labelling which includes the following directives:

- **2006/42/EC.** Machine Safety Directive.
- **EN ISO 8528-13:2016. Part 13: Safety.** Alternating current generator sets powered by reciprocating internal combustion engines.
- **2014/30/EU. Electromagnetic Compatibility Directive.**
- **2000/14/EC. Noise Emissions Directive.** Sound power levels evaluated in accordance with the procedure laid down in the directive.
- **Directive 2011/65/EU** on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS 2).

2. Engine specifications

2.1. General technical data of the engine	**Make and model**	**PERKINS 404A-22G**	
	r.p.m.	1800	
	Maximum ESP power (kWm)	23,9	
	Power PRP (kWm)	21,6	
	Fuel	Diesel	
	No. of cylinders	4 cylinders	
	Cylinder capacity (c.c.)	2216	
	Compression ratio	23,3:1	
	Cooling system	Water-cooled	
	Type of regulation	mechanical	
	Type of engine/injection/suction	Diesel/indirect/natural	
2.2. Fuel	Type of fuel	Diesel	
	Fuel tank capacity	70	

2.3. Consumption and autonomy	**Consumption (l/h)**		**Autonomy (h)**	
	PRP	**ESP**	**PRP**	**ESP**
50%	3,5	-	20	-
75%	4,8	-	14,6	-
100%	6,2	6,9	11,3	10,1

2.4. Cooling system	Fan flow (m³/min)	29,4	
	Fan power consumption (kW)	0,4	
	Radiator back pressure (TBA)	9,3	
	Total refrigerant capacity (l)	kPa	
2.5. Lubrication system	Oil capacity (l)	10,6	
2.6. Intake system	Combustion air intake flow (m³/min)	2,49	
2.7. Starter system	No. of batteries	1	
	Battery characteristics	12V 60Ah	
	Start-up voltage (V)	12V	
2.8. Exhaust system	Exhaust gas flow (m³/min)	4,34 [PRP]	4,76 [ESP]
	Exhaust gas temperature (ºC)	440º [PRP]	510º [ESP]
	Exhaust outside diameter (mm)	2" - Ø50mm	
	Max. exhaust back pressure (kPa)	10,2	

- **4 cylinders 4-stroke diesel engine online** with mechanical regulation mechanical by means of a fuel pump, original from the manufacturer.

Emissions compliance
EU Stage 0

- **Direct injection and suction system natural.** Original manufacturer's particle separator filter.

- **Refrigeration through cooling liquid**, fully distributed in the closed circuit run by an engine driven pump, tropicalised radiator, original from the engine manufacturer.
- **Crankshaft-driven pump lubrication system.** The filter is a full-flow insert cartridge, front housing, original from the engine manufacturer.
- **Air intake system for turbo-fed combustion** with two-stage filter, original from the engine manufacturer.
- **Electric motor starting system, battery** (no maintenance) **with disconnector and load alternator driven by the starter** 12V, original elements from the engine manufacturer.

Exhaust attenuation level
-10dB(A)

3. Alternator specifications

3.1. General technical data for the alternator

Make and model	208/120V STAMFORD S0L2-P	220/127V STAMFORD S0L2-P	380/220V STAMFORD PI144D	480/277V STAMFORD S0L2-P
No. of poles	4	4	4	4
Insulation class	H	H	H	H
No. of threads	12	12	12	12
Mechanical protection index	IP23	IP23	IP23	IP23
Voltage Regulator (AVR)	AS540	AS540	AS480	AS540
Voltage regulation	±1%	±1%	±1%	±1%
ESP power 27ºC (kVA)	34,8	36,9	25,9	39,6
Power PRP 40ºC (kVA)	31,7	33,6	23,5	36
No. of phases	3	3	3	3
Power factor (cos φ)	0,8	0,8	0,8	0,8
		Performance η (%)		
50%	90,4%	0,904	N/A	0,902
75%	89,5%	0,894	N/A	0,894
100%	87,2%	0,872	0,852	0,871
110%	85,9%	0,858	0,845	0,858

- **Brushless 4-pole alternator.** Robust mechanical structure with easy access to connections and components. Insulation class H, coil pitch 2/3 and self-excited AVR.
- **Protection with premium epoxy resins.** High voltage parts are impregnated under vacuum, which always means very good insulation.

Standard regulations
that the alternator fulfils:

AS 1359 | IEC 34-1 1 | BS EN 60034-1 | VDE 0530 | BS 5000 | CAN/CSA-C22.2-100 | NEMA MG1-32.

Low wave distortion:

- **THD (100% load) = 2%**
- **THF < 2%**

Complies with: EN61000-6-3, EN61000-6-2 regarding radio interference.

4. Frame Specifications

- Unit mounted on **electro-welded high-resistance steel frame**, painted with epoxy-polyester powder paint.
- Connection of the assembly to the frame by means of **anti-vibration dampers.**
- **Fuel tank located on the frame itself**. The engine is equipped with a measuring gauge and fuel system.
- **Tested in a saline mist chamber according to ASTM B-117-09, resistance 500h.**

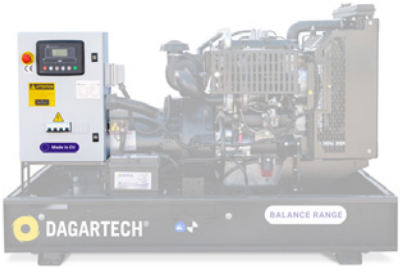
6. Control panel

6.1. Main elements of the control panel

- Protection panel, distribution with **automatic control module** which allows you to work in manual, automatic or signal mode.
- **Emergency stop button**.
- **Deep Sea Electronics battery charger**, designed to be permanently connected to the battery and maintain 100% of the charge. The charger switches to float mode when charging is complete:

Model	DSE 9150 12V, 3A

- **Protections:**
  - **4-pole magnetothermic protection** against overloads and short circuits.
  - **Protection fuses** for the control set.



6.2. Protection switch

208/120V	**Chint 80A 4P**
220/127V	**Chint 80A 4P**
380/220V	**Chint 40A 4P**
480/277V	**Chint 32A 4P**

6.3. Control module

Model	DSE 6020 MKII

1. Alarm indicator
2. Transfer to the generator (manual mode)
3. **Start engine (manual mode)**
4. Silence alarm
5. Automatic mode
6. Test mode
7. Manual mode
8. **Genset stop**
9. Main network transfer (manual mode)
10. Navigation keyboard
11. Main status and instrument display

DSE 6020 MKII DEEP SEA control card, with mains grid monitor. The genset will automatically start up when detecting a fault in the electric power network and it will turn off automatically as well, when the electrical supply is re-established.

It can also work in manual mode and by signal. It allows you to monitor a wide range of generator parameters and display information alerts, status and alarms.

The module includes USB communication ports, 4 configurable digital inputs, 3 analog inputs, 6 configurable outputs, emergency stop button, 8-35 V battery charger.

It has 132x64p illuminated LCD display with 4 lines of text, 5-key navigation through menus, programmable clocks and alarms, reading and displaying parameter values, including RMS values.

The entire module is easily configurable via PC using the DSE specific software configuration. Different operating modes: AUTOMATIC mode, MANUAL mode, SIGNAL mode and TEST mode.

Other alternative configurations are available upon request to extend the capabilities of the operation modes.

Environmental Tests that the module complies with:

BS EN 61000-6-2 (electromagnetic compatibility) | BS EN 61000-6-4 (electromagnetic compatibility) | BS EN 60950 (electrical safety) | BS EN 61000-6-2 (temperature) | BS EN 60068-2-6 (vibrations) | BS EN 60068-2-27 (shock)

6. Control panel

	(Standard)	(Option)
6.3. Control module		
Model	**DSE 6020 MKII**	**DSE 7320 MKII**
Operating modes		
STOP mode	✔	✔
MANUAL mode	✔	✔
TEST mode	✔	✔
AUTO mode	✔	✔
Module configuration options		
PC	✔	✔
Group readings		
Generator voltage (F-F)	✔	✔
Generator voltage (F-N)	✔	✔
Generator current (A)	✔	✔
Generator frequency	✔	✔
Generator load F-N (kW / kVA / kVAr)	✔	✔
Total generator load (kW / kVA / kVAr)	✔	✔
Average generator power factor	✔	✔
Accumulated generator load (kW, kVAh, kWh, kVAh)	✔	✔
Network readings		
Network voltages (ph-N)	✔	✔
Network voltages (ph-ph)	✔	✔
Network frequency	✔	✔
Network current (A)	■	■
Network load ph-N (kW / kVA / kVAr)	■	■
Total network load (kW / kVA / kVAr)	■	■
Engine readings		
Coolant temperature	✔	✔
Oil pressure	✔	✔
Engine fuel level	✔	✔
Engine battery volts	✔	✔
Engine speed	✔	✔
Engine run time	✔	✔

Ask us for further readings in generating sets equipped with electronically managed engines and DSE 7320MKII control module.

Do you want a superior performance control module?

Contact us and tell us what you need.

✔ Includes ■ Optional

✕ Not available ⓘ Consult

Readings available at control module level.

Confirm the availability of these readings for this generator and engine.

6. Control panel

	(Standard)	(Option)
6.3. Control module		
Model	**DSE 6020 MKII**	**DSE 7320 MKII**
Engine protections		
High water temperature	✔	✔
Low oil pressure	✔	✔
Low water level	✔	✔
Fuel reserve by sensor	✔	✔
Second fuel tank control	✔	✔
Shutdown failure	✔	✔
Battery voltage failure	✔	✔
Battery charge alternator failure	✔	✔
Overspeed	✔	✔
Underfrequency	✔	✔
Failure to start	✔	✔
Emergency stop	✔	✔
Maintenance notice	✔	✔
Maintenance Alert	✔	✔
Alternator protections		
High frequency	✔	✔
Low frequency	✔	✔
High voltage	✔	✔
Low voltage	✔	✔
Short circuit	✕	✔
Asymmetry between phases	✕	■
Incorrect phase sequence	✕	✔
Reverse power	✕	✔
Breaker Trip 4 poles	■	■
Overpressure alarm	✔	✔
Counters		
Hour meter	✔	✔
Kilowatt meter	✔	✔
Starter counter	✔	✔

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Readings available at control module level.

Confirm the availability of these readings for this generator and engine.

Ask us for further readings in generating sets equipped with electronically managed engines and DSE 7320MKII control module.

6. Control panel

6.3. Control module

Model	(Standard) DSE 6020 MKII	(Option) DSE 7320 MKII
Communications		
RS232	✕	✔
RS485	✕	✔
USB communication port	✔	✔
Modbus IP	■ DSE 855/890/891	■ DSE 855/890/891
Modbus RS 485	■ DSE 855/890/891	✔
PC Software (Mimic)	✔	✔
GSM/GRPS MODEM	■ DSE 890	■ DSE 890
Remote display < 1km	✕	■ DSE 2520
Remote monitoring	■ DSE 855/890	■ DSE 855/890
Input expansion	✕	■ DSE 2130 8 inputs
Output expansion	✕	■ DSE 2157 8 inputs
SNMP protocol	■ DSE 892	■ DSE 892
Services		
Configurable alarm history	50	250
External start	✔	✔
Start-up inhibition	■	■
Network Failure Start	✔	✔
Activation of group counter	✔	✔
Activation of grid and group counter	✔	✔
Control of fuel transfer	✔	✔
Motor temperature control	✔	✔
Forced group operation	✔	✔
Free programmable alarms	✔	✔
Group start function in test mode	✔	✔
Free programmable outputs	✔	✔
Multilingual	Symbols	✔
Special applications		
GPS localisation	■ DSE 890	■ DSE 890
Calendar scheduler	✔	✔
DSE configuration suite via PC	✔	✔
Front panel module configuration with PIN	✔	✔
Alternative work	✕	✔
Programmable PLC	✕	✔
Power save mode	✔	✔
Alternative configurations	✔	✔
Dummy load control / load shedding	✕	✔ 5 Stage dummy load

Do you want a superior performance control module?

Contact us and tell us what you need.

Ask us for further readings in generating sets equipped with electronically managed engines and DSE 7320MKII control module.

✔ Includes ■ Optional
✕ Not available ⓘ Consult

Readings available at control module level.

CONFIRM THE AVAILABILITY OF THESE READINGS FOR THIS GENERATOR AND ENGINE.

7. Standard Scope of Delivery

Engine

- **PERKINS 404A-22G Diesel Engine,** 1800 rpm water cooled.
- With **mechanical regulation.**
- **Protection from hot parts.**
- Electric motor starting system, **battery (maintenance-free) with switch** and load alternator driven by **starter motor of 12V**.
- **Industrial exhaust silencer of -10d(BA)**.

Alternator

- **12-Wire, 4-pole brushless STAMFORD S0L2-P alternator** with electronic voltage regulation type AVR (AS540).
- With IP23 protection level.
- **Insulation class H**.

Bench

- **Electro-welded bench** of high-strength steel.
- Painted with electrostatic epoxy-polyester powder paint.
- **Anti-vibration dampers** from the engine block to the bench.
- **Fuel tank with capacity of 70 litres,** located on the bedplate itself. Equipped with **cleaning record** (models > 75kVA) to facilitate maintenance work.
- **With measuring gauge** and installation of fuel to the engine.
- **Liquid** drainage connection to the outside (models > 75kVA).
- **Tested in a salt spray chamber according to ASTM B-117-09 (500h resistance).**

Control panel

- **DeepSea Electronics automatic control module DSE 6020 MKII** which allows you to work in manual, automatic or signal mode.
  - It offers multiple event logging and is fully configurable through DeepSea Electronics' free-access specific configuration software.
  - Three-phase network and group detection with measurement for configurations upon network failure.
- DeepSea Electronics battery charger **DSE 9150 12V, 3A**. Designed to be permanently connected to the battery and maintain 100% of the charge. The charger switches to float mode when charging is complete.
- **Protections:**
  - 4-pole magnetothermic protection against overloads and short circuits.
  - Protection fuses for the control set.

Other equipment

- **Emergency stop button.**
- **Reinforced pole** centrally-mounted (units > 75kVA).

*CHECK THE SPECIFICATION ACCORDING TO THE MODEL.

8. Featured options available

Do you need to include some options to the standard equipment of this generator set to make it the perfect genset for you? We offer you three complete Kits with which to customize your Balance generator set quickly and easily.

KIT 1: Network failure

Adding an engine heater to your equipment will ensure that your generator set starts without problems in the event of any failure in the electrical network, and without the cold or humidity becoming a problem.

THE READINGS AND ALARM KIT IS INCLUDED IN THE SCOPE STANDARD SUPPLY OF EQUIPMENT STARTING AT 275KVA POWER.

KIT 2: Readings & Alarm

Your generator set can provide you with very useful information before any breakdown, maintenance work or, simply, during its operation.

If this is an important aspect for you, do not hesitate to include this Kit in your equipment, which has:

- **Radiator level alarm sensor.**
- **Oil pressure reading sensor.**
- **Temperature reading sensor.**

KIT 3: Exhaust installation

If you need a versatile solution for the evacuation of gases from your installation to the outside, choose this kit, equipped with 2 clamps and 3 meters of galvanized steel hose.

KIT 4: CE

If your generator is going to be installed in unregulated markets, we offer you this kit as an option. Includes protection of hot parts (hot plates).

Included in the standard scope of supply for European markets.

Check the availability of these options according to the model and, if you do not find what you are looking for, please contact us. We have many more options to offer you.

9. Even more options

If you're looking for other features to complete your machine, don't worry.

Below we detail many of the options from the Balance range that we make available to you to turn your unit into a unique machine.

24 hour tank

AUTONOMY OPTIONS

Increase the autonomy of your generator up to 48 hours, including special tanks

You can choose between **different integrated tanks to increase the autonomy of the unit up to 48 hours** of operation.

You can also incorporate automatic fuel transfer systems for supply from external tanks.

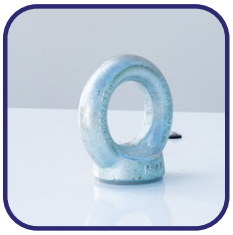
	Capacity (l):		24h tank - 160 l		48h tank - Consultar l	
% load	Consumption (l/h)		Autonomy (h)		Autonomy (h)	
Power	PRP	ESP	PRP	ESP	PRP	ESP
50%	3,5	-	45,7	-	N/A	-
75%	4,8	-	33,3	-	N/A	-
100%	6,2	6,9	25,8	23,2	N/A	N/A

Fuel particle separator filter

ENGINE - ALTERNATOR OPTIONS

- Electronic engine regulation/management (for models with mechanical regulation)
- Fuel particle separator filter.
- Manual oil drainage pump.
- 6-way fuel valve kit.
- Alternator anti-condensation resistors.
- Alternator superior impregnation systems.
- AVR MX341 + PMG ± 1% STAMFORD.
- AVR MX321 + PMG ± 0.5% STAMFORD.

9. Even more options



Central lifting point

MECHANICAL OPTIONS

- Retention tray (see change of dimensions).
- Liquid leakage probe (requires retention tray).
- SilentBlocks for levelling.
- Damping - anti-vibration springs.
- Lifting point (in models < 85kVA).

DSE 2157

DSE 334 network surveillance

COMMUNICATION OPTIONS

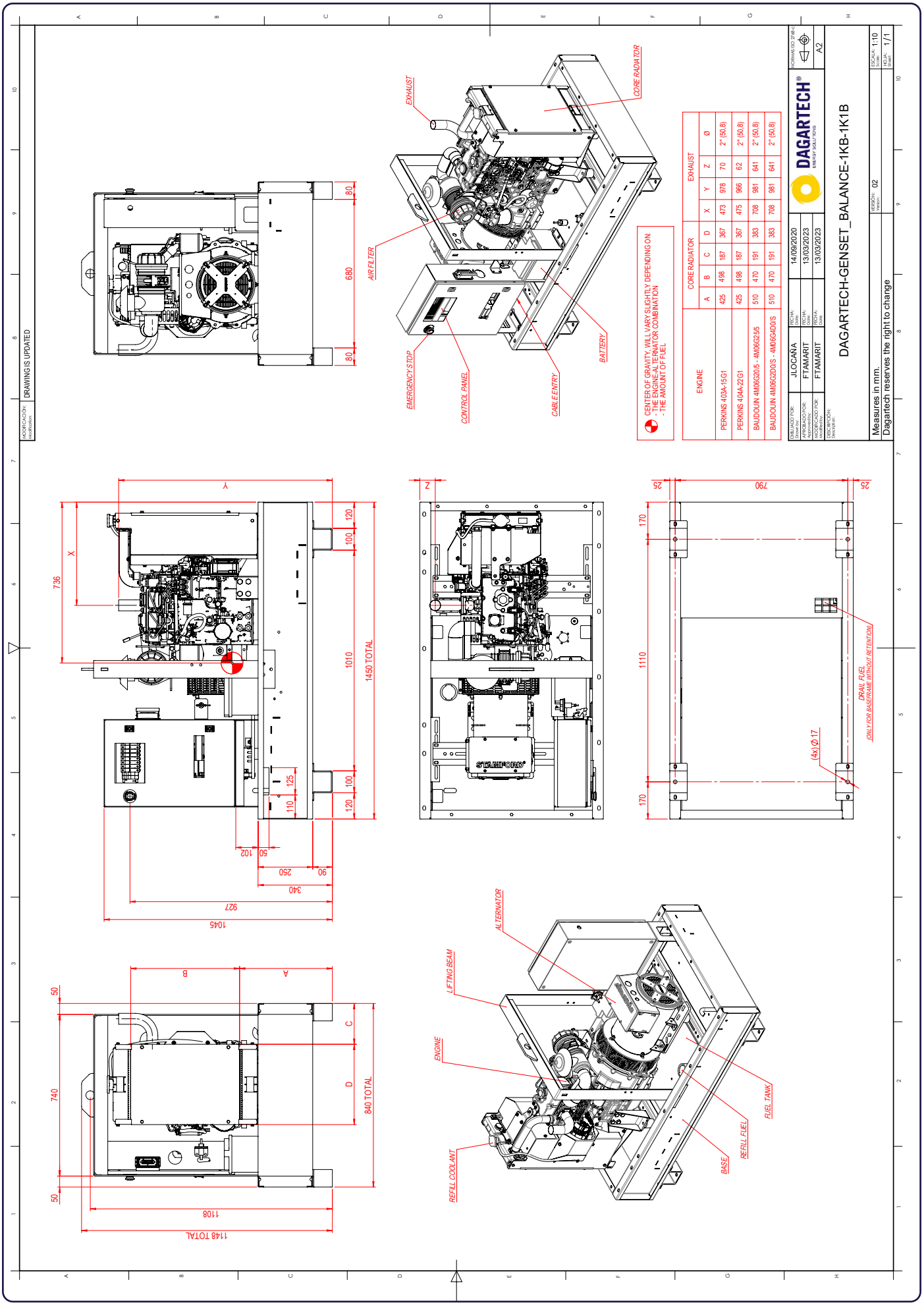
- Supplement to the DSE 7320 MKII control board (for models with the DSE 6020 MKII control board in the standard scope of supply).
- DSE 2157 8 potential free output (requires DSE 7320MKII).
- DSE 2130 8 inputs (requires DSE 7320MKII).
- DSE 2548 8 LED diodes (requires DSE 7320MKII).
- GSM modem (RS232) (requires DSE 7320MKII).
- DSE 855.
- DSE 890 webnet.
- DSE 7420 module.
- DSE 334 network surveillance.

Socomec
motorised switchboard

POWER OPTIONS

- Supplement to the Schneider circuit breaker.
- Differential protection.
- As an option, you can include a switch cabinet attached to the generating set.
  - Switching with Schneider contactors. 25 to 125 A.
  - Socomec motorised switches: ≥ 125A.

CHECK THE AVAILABILITY OF THESE OPTIONS DEPENDING ON THE MODEL



ENGINE	CORE RADIATOR				EXHAUST		
	A	B	C	D	X	Y	Z	Ø
PERKINS 403A-15G1	425	498	187	367	473	978	70	2" (50.8)
PERKINS 404A-22G1	425	498	187	367	475	965	62	2" (50.8)
BAUDOUIN 4M06G20/5 - 4M06G25/5	510	470	191	383	708	981	641	2" (50.8)
BAUDOUIN 4M06G20/0S - 4M06G40/0S	510	470	191	383	708	981	641	2" (50.8)