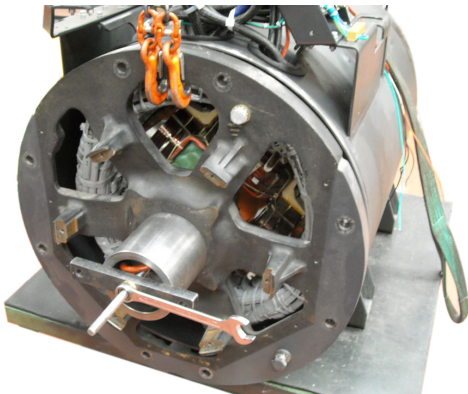


ins_ECO_019-r00

As soon as possible, remove one of the soft belts and continue inserting the rotor.



Keep an adequate support under the shaft end.



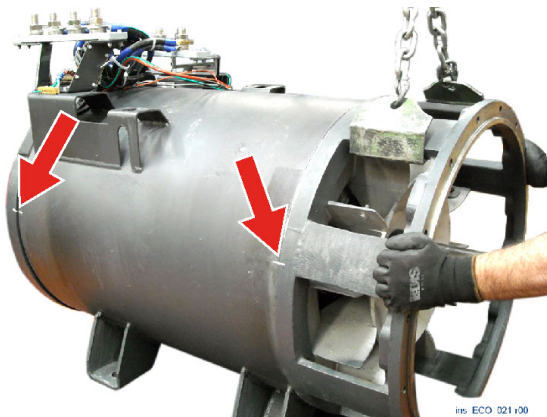
ins_ECO_020-r00

Using an appropriate lifting system, lift the back cover and put it in position.

Screw a threaded bar in the hole on the shaft.

Screw a nut on the threaded bar. Insert a cylindrical spacer, overlapped by an adequate plate, between the nut and the back cover.

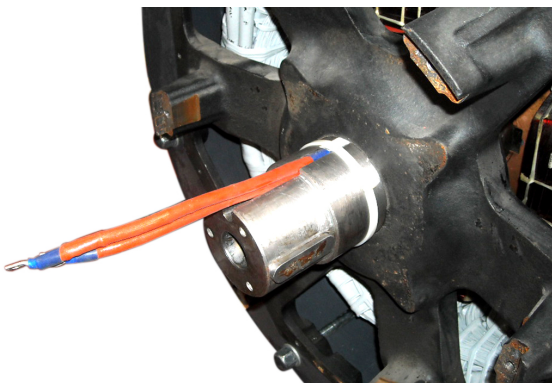
Screw the nut in to introduce the bearing in the housing of the back cover.



ins_ECO_021-r00

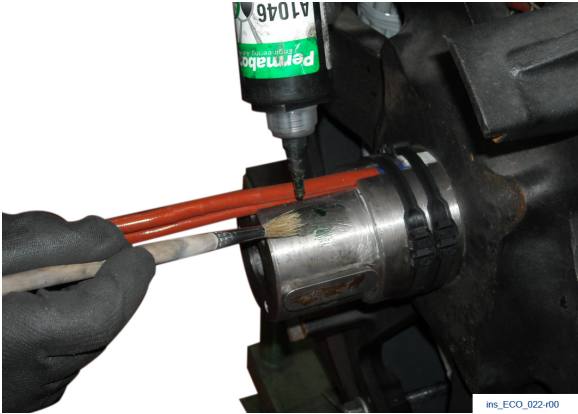
Lift the front cover and put it in position. Make sure you line up the (felt pen) marks made earlier on the covers and the frame.

Fasten the rods (for 38 - 40 Series) or the bolts (for 43 - 46 Series) to the tightening torques. See paragraph 9.6).



ins_ECO_028-r00

Fasten the cables of the main rotor to the shaft with a strap.



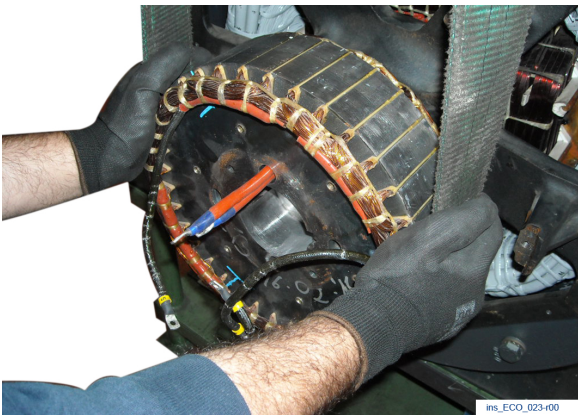
Clean the exciter rotor housing on the shaft. Remove the dirt and any residual glue.

Sprinkle it with Loctite Permabond A1046 glue or equivalent.



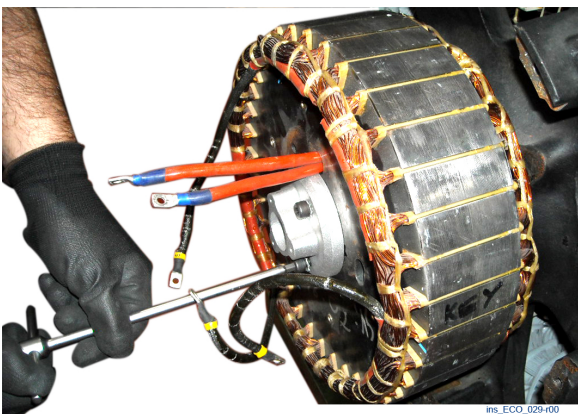
Clean the hole of the exciter rotor. Remove the dirt and any residual glue.

Sprinkle it with Loctite Permabond A1046 glue or equivalent.



Using an appropriate lifting system and a soft belt, lift the exciter rotor.

Introduce the rotor into the shaft, in its original position. Carefully observe the position of the key marked during the assembling stage.

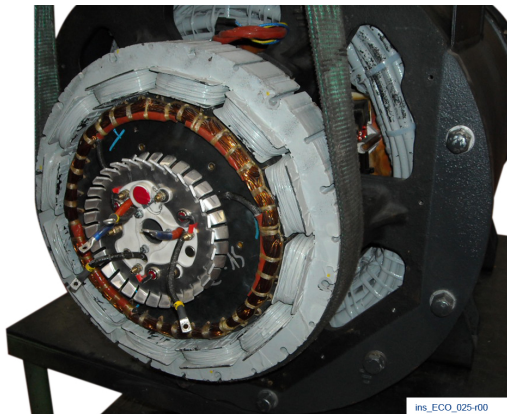


Screw the three M8 screws to 21Nm to fasten the blocking hub of the exciter rotor.



Insert the rotating diode bridge and screw in the 3 M5 screws to 3.3 Nm.

Rewire the three cables of the exciter rotor and the two cables of the main rotor in their initial configuration.



Using a soft belt lift the exciter stator.

Introduce the exciter stator in the housing with the cables positioned inward and oriented upward.









Insert the fixing bolts and screw them with a torque of 25 Nm.

Pass the yellow and blue cables of the exciter stator through the cable gland hole on the frame.

Connect them to the regulator and fasten them with appropriate straps as in the original configuration.

Reassemble the back carter, the back cover and the terminal box.

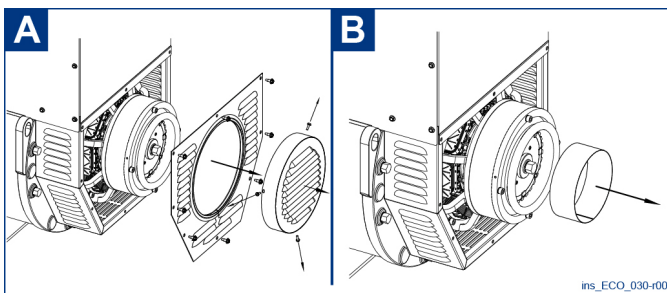
9.5.5 PMG disassembling

Type of intervention 	Operator 	Periodicity 
PPE to wear     		Materials and equipments Workshop tools.

Danger

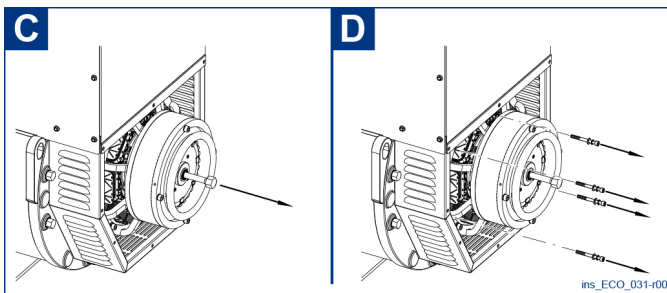


Disconnect the alternator from the power supplies. The drive motor must be off and unplugged from its power supplies.



A. Remove the protective cover and grid.

B. Re-introduce the paper spacer.











C. Loosen the central M14 rod and, without removing it completely, use as a lever on the PMG device to uncouple it from the exciter rotor.

Secure the PMG to an appropriate lifting device using a soft belt.


D. Remove the 4 M8 screws .

Use a lever to remove the PMG device from the exciter stator, being careful not to remove the exciter stator too.

9.5.6 PMG assembling (38 series)

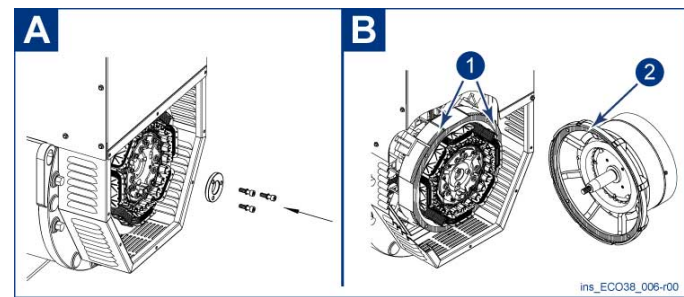
Type of intervention 	Operator 	Periodicity 
PPE to wear     		Materials and equipments Workshop tools.

Danger

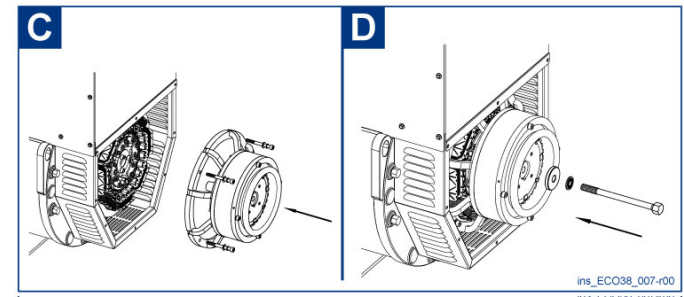


Disconnect the alternator from the power supplies. The drive motor must be off and unplugged from its power supplies.

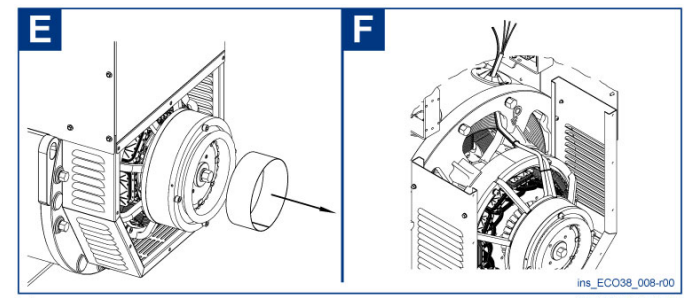
i On the 38 Series the PMG is available only on express customer request made when ordering the machine. In fact the standard machine does not envisage the possibility to assemble this accessory.



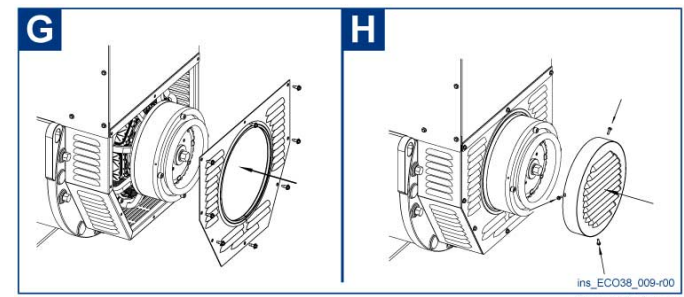
A. Center the fixing washer in the exciter rotor and screw in the three M8 screws applying a 21 Nm torque.
 B. Accurately clean the exciter stator removing the paint (1) and remove the paint on the PMG (2).



C. Match the PMG to the exciter stator and center the flange, screw in the 4 M8 screws provided applying a 25 Nm torque.
 D. Center the washer for the central rod in the rotor pack and screw in the central M14 rod applying a 120 Nm torque.











E. Remove the paper spacer.
 F. Make sure the PMG is perfectly placed in the housing by checking that the rotating part rotates freely without any interference, then pass the wires as shown in the figure and connect them to the regulator according to the diagram.



G. Insert the special IP23 back grid and screw in the 8 M6 screws applying a 9 Nm torque.
 H. Insert the IP23 protective cover and screw in the 3 M4 screws applying a 1.5 Nm torque.

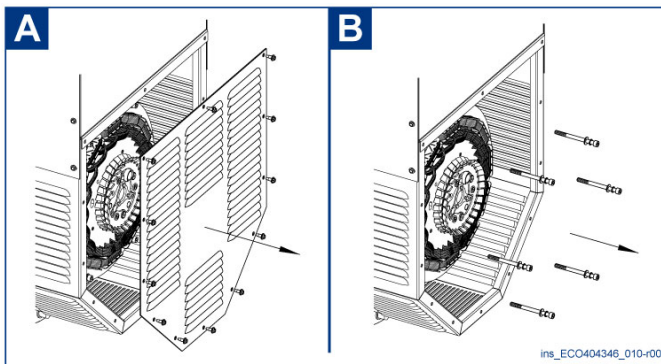
9.5.7 PMG assembling (40-43-46 series)

Type of intervention 	Operator 	Periodicity 
PPE to wear     		Materials and equipments Workshop tools.

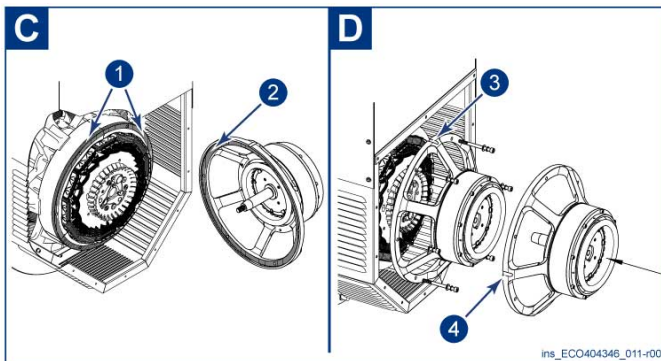
Danger



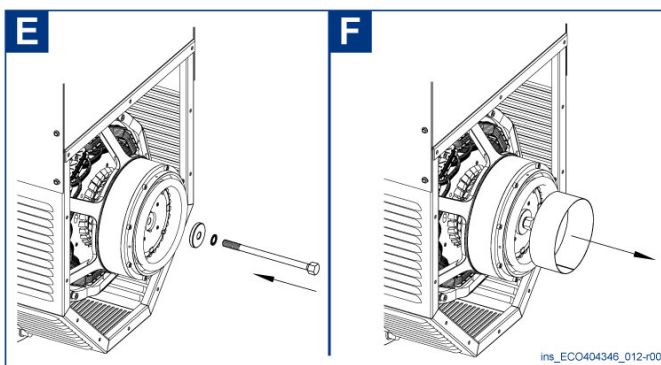
Disconnect the alternator from the power supplies. The drive motor must be off and unplugged from its power supplies.



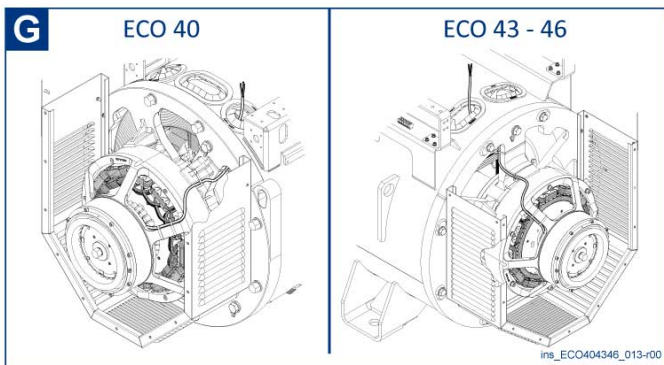
- A. Remove the IP 23 back protective cover.
- B. Remove the 6 M8 screws of the exciter stator.



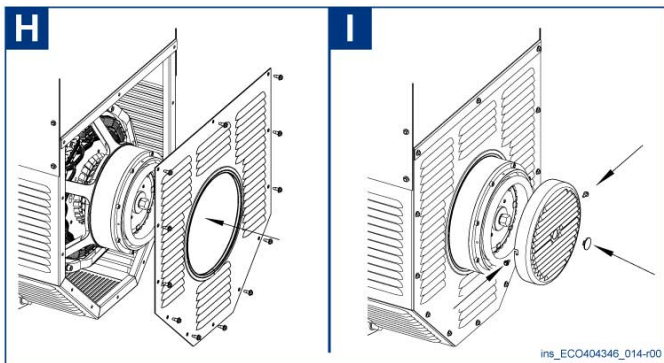
- C. Accurately clean the area indicated in the drawing of the exciter stator (1) and remove the paint from the PMG device (2).
- D. Match the PMG to the exciter stator making sure you position correctly the reference for the ECO40 (3), ECO43-46 (4) and you center the flange, screw in the 6 M8 screws provided applying a 25 Nm torque.



- E. Center the washer for the central rod in the rotor pack and screw in the central M14 rod applying a 120 Nm torque.
- F. Remove the paper spacer.











G. Make sure the PMG is perfectly placed in the housing by checking that the rotating part rotates freely without any interference, then pass the wires as shown in the figure and connect them to the regulator according to the diagram.



H. Insert the special IP23 back grid and screw in the 12 screws applying a 12 Nm torque.

I. Insert the IP 23 protective cover and screw in the 2 screws at 3.5 Nm and insert the cap nut.

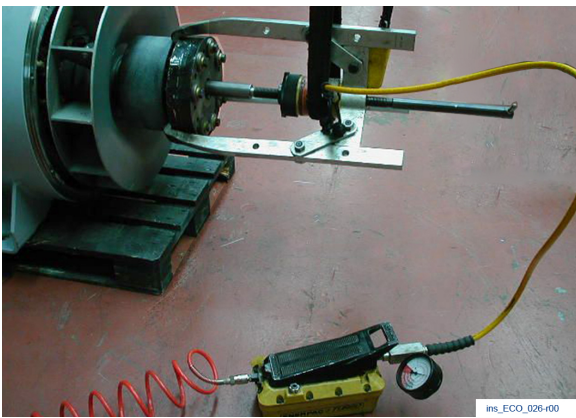
9.5.8 Removal of disc holder hub

Type of intervention 	Operator 	Periodicity 
PPE to wear     		Materials and equipments Workshop tools.

Danger



Disconnect the alternator from the power supplies. The drive motor must be off and unplugged from its power supplies.



Use an appropriate hydraulic extractor to extract the hub.
For the 43 and 46 series use an additional flange attached to the hub.







Heat the disc holder hub. Use two oxyacetylene heating torches.
Keep the extractor under pressure until full extraction of the hub.




Before reassembling the hub heat it to 250 °C for 1 hour.

9.5.9 Loss of residual magnetism (reexcitation of the machine)

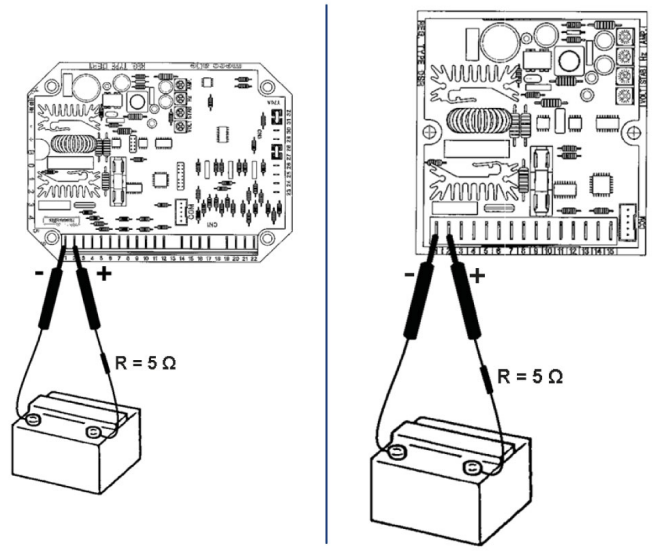
Type of intervention 	Operator 	Periodicity 
PPE to wear 		Materials and equipments Battery, electrical wires and resistance.

Danger



Disconnect the alternator from the power supplies. The drive motor must be off and unplugged from its power supplies.





The following procedure applies to the alternators equipped with an electronic regulator and must be applied in case the alternator does not self-excite (in such case, even if rotating at nominal speed, voltage is not present in the main terminal block of the alternator):



lay_ECO_002-000

- With the alternator off, remove the cover of the terminal box.
- Prepare two terminals connected to a 12 Vdc battery possibly with a 5 Ω resistance in series.
- Use the electrical diagrams provided by Mecc Alte to identify the “+” and “-” terminals of the electronic regulator.
- Start the alternator.
- Apply for an instant the two terminals to the previously identified terminals being very careful to respect the polarity (“+” terminal of the regulator with the “+” terminal of the battery, “-” terminal of the regulator with the “-” terminal of the battery).
- Use a voltmeter or the corresponding board tools to check whether the alternator generates the nominal voltage indicated on the "nameplate" of the alternator.

9.5.10 Verification and replacement of voltage regulator

Type of intervention	Operator	Periodicity
		
PPE to wear		Materials and equipments
		Workshop tools.



Danger

Disconnect the alternator from the power supplies. The drive motor must be off and unplugged from its power supplies.

The alternators are equipped with an automated voltage regulator: depending on the alternator type, the electronic regulators may be of 4 types: DSR, DSR/A, DER1, DER1/A.

The standard supply comes with the DSR on the 38 Series and the DER1/A on the 40-43-46 Series.



DER1 can be mounted on the 38 Series and DSR/A can be mounted on the 40-43-46 Series on customer request.



In case there are voltage regulation problems not ascribable to an erroneous adjustment of the VOLT, STAB, Hz and AMP potentiometers and/or to the system (fully assembled machine + load), follow the procedure below for an in-depth check of the voltage regulator.

Visual Inspection of the Regulator



Do not change the position of the VOLT, STAB, Hz and AMP potentiometers before marking their position.

In particular check for:

- Mechanical damages of various kinds.
- State of fuses.
- Undamaged state of electrical connections.
- Potential presence of burned electrical components.
- Presence of the silicone protection in the Hz and AMP potentiometers.

Check the SCR resistance and flyback diode.

Before doing this test, check that the fuse is inserted and undamaged.

- Flyback diode: it is working if the diode test performed between pin 1 and 2 has a positive result.
- SCR: it is working if a resistance of some hundred $K\Omega$ is measured between pin 1 and 8 (in the DSR) or between pin 1 and 2 (in the DER1 regulator).

A resistance measure close to zero signals a SCR failure.

A reason for the damaging of these components may be the erroneous cabling of the alternator regulator.

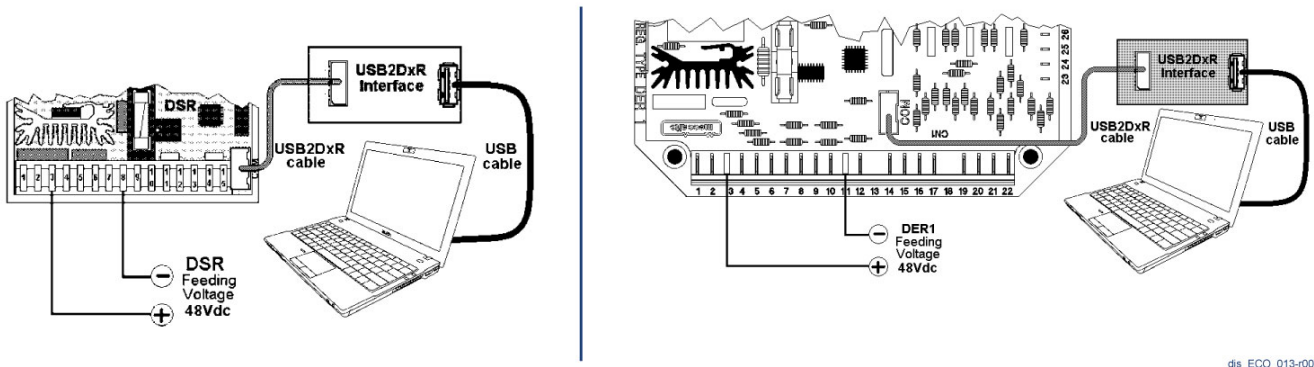
Copy the data and alarms of the regulator.

To avoid creating new alarms, the copy of the data and alarms existing in the regulator (.dat and .alr files) must be made feeding the alternator with an appropriate continuous voltage, in accordance with the diagrams below.



The correct supply and operation of the software are signaled by a green LED flashing with a 1 second period. If the LED is not lit try to turn the power supply system off and restart it.

Testing on static bench (see paragraph 9.5.11, 9.5.12, and 9.5.13)



dis_ECO_013-r00

- Register the position of the VOLT, STAB, Hz and AMP potentiometers reading the L[32], L[33], L[34] and L[35] corresponding parameters and the state parameters, reading L[36], L[37], L[38] and L[39].
- Check the correct operation of the VOLT, STAB, Hz and AMP potentiometers, rotate them completely in anticlockwise and clockwise direction, the value of the L[32], L[33], L[34] and L[35] parameters must be 64 in one direction and 32760 in the other direction.
- Register the L[41] parameter; with the external potentiometer unconnected you should read a value of 16384; otherwise the external potentiometer circuit is damaged.
- Voltage regulation test: set the VOLT, STAB and Hz potentiometers to notch 6 then rotate the AMP potentiometer completely in clockwise direction. Read the L[43] and L[44] parameters.

When rotating the VOLT potentiometer in anticlockwise or in clockwise direction, the value of the L[43] parameter should respectively decrease or increase.

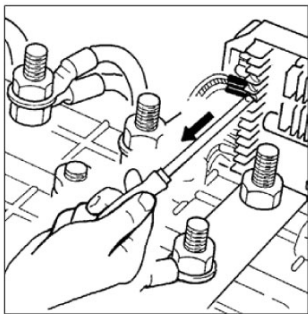
Check and confirm the following behavior: if the L[43] value is higher than the L[44] value, the bench light bulb should brighten. If instead the L[43] value is lower than the L[44] value, the light bulb should dim until it shuts off.

The light bulb represents the fictitious load connected between connectors 1 and 2 of the digital regulator.

- AMP protection test: set the STAB and Hz potentiometers to notch 6, then rotate the AMP potentiometer completely in clockwise direction; then rotate the VOLT potentiometer so as to have L[43] higher than L[44], the bench light bulb on and no active alarm.

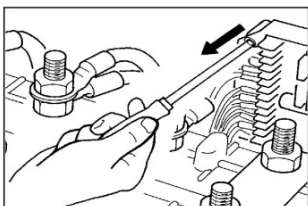
Read the L[45] parameter and set the AMP potentiometer (reading the L[35] parameter for the SN equipped regulators with a yellow tag, or L[55] for the SN-equipped regulators with a blue tag, to a lower value than the value of the previously read L[45] parameter. Check the intervention of the AMP protection (alarm 5).

Once you established that the regulator must be replaced, proceed as follows:



ins_ECO_004-r00

- Disconnect all the connection wires in the terminal block.
- Unscrew the blocking 2/4 screws of the regulator.







ins_ECO_005-r00

- Place the new regulator in the specified position.
- Fasten the new regulator with the previously collected screws.
- Reconnect all the wires to the terminal block of the regulator, using, if necessary, the diagrams provided by Mecc Alte.

In case you detect anomalous behavior please refer to the specific regulator manual or contact Mecc Alte's technical support service

9.5.11 DSR test and setup on test bench

Type of intervention 	Operator 	Periodicity 
PPE to wear 		Materials and equipments Personal computer+interface+software .

Danger



Disconnect the alternator from the power supplies. The drive motor must be off and unplugged from its power supplies. Disconnect the regulator and connect to a computer according to the diagrams below. The operations of functional checkout and parameter setting may be easier if they are performed on a test bench rather than with the regulator still inside the terminal box.

Caution



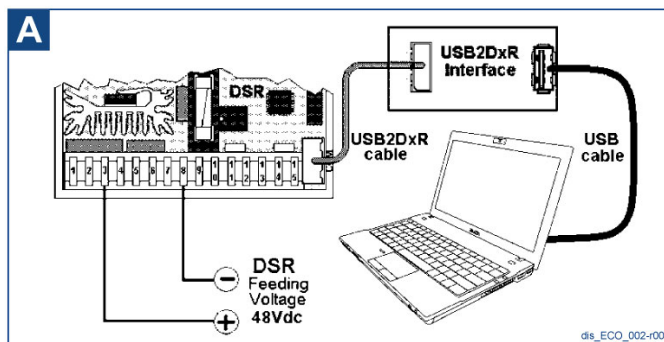
Given that some parts of the DSR which work with a high potential are not isolated, for the safety of the operator, it is necessary for the power source to be isolated from the electrical grid, for instance by a transformer.

Caution



The use of these types of connection is reserved to qualified personnel, able to assess the operational risks of high voltage and who have a full knowledge of the content of this manual.

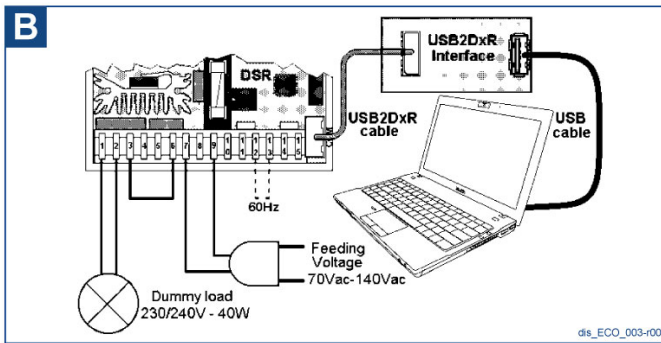
The connection diagrams of the DSR and the USB2DxR communication interface are shown in figures (A), (B) or (C) in this paragraph based on the requested function and on the available supply voltage.



DSR 48Vdc power supply for the download of the alarms without risking to change to content of the EEPROM because of the tests.

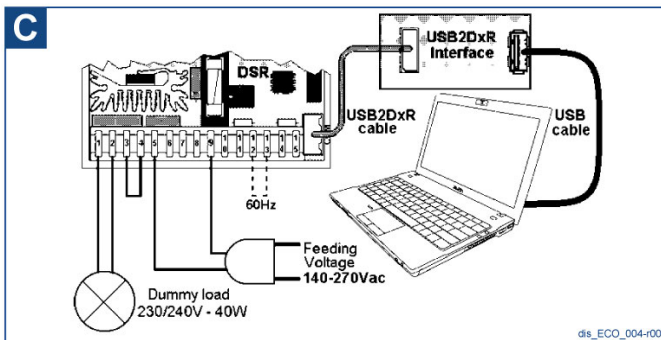


No other connections besides the power supply are needed.



DSR 70-140Vac power supply for test and setup.





i The fictitious load between terminals 1 and 2, the sensing on terminal 7 and the bridge between terminals 6 and 3 of the DSR.



DSR 140-140Vac power supply for test and setup.

i The fictitious load between terminals 1 and 2, the sensing on terminal 5 and the bridge between terminals 3 and 4 of the DSR.

9.5.12 DER1 test and setup on test bench

Type of intervention	Operator	Periodicity
		
PPE to wear 		Materials and equipments Personal computer+interface+software .

Danger



Disconnect the alternator from the power supplies. The drive motor must be off and unplugged from its power supplies. Disconnect the regulator and connect to a computer according to the diagrams below. The operations of functional checkout and parameter setting may be easier if they are performed on a test bench rather than with the regulator still inside the terminal box.

Caution



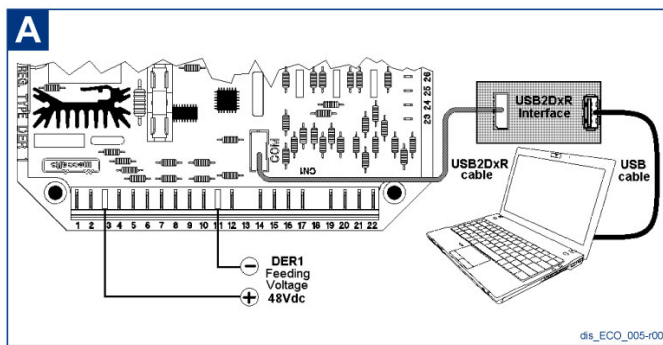
Given that some parts of the DER1 which work with a high potential are not isolated, for the safety of the operator, it is necessary for the power source to be isolated from the electrical grid, for instance by a transformer.

Caution



The use of these types of connection is reserved to qualified personnel, able to assess the operational risks of high voltage and who have a full knowledge of the content of this manual.

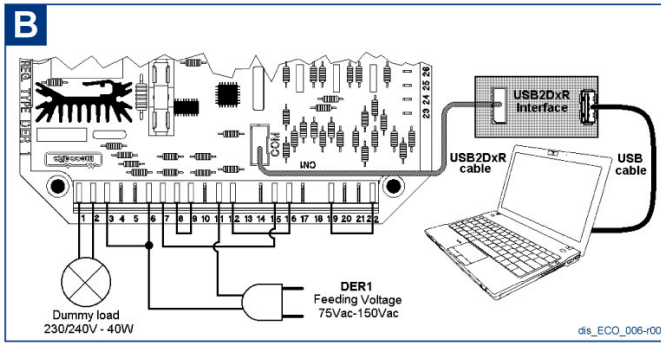
The connection diagrams of the DER1 and the USB2DxR communication interface are shown in figures (A), (B) or (C) in this paragraph based on the type of available power supplies.



DER1 48Vdc power supply for the download of the alarms without risking to change to content of the EEPROM because of the tests.

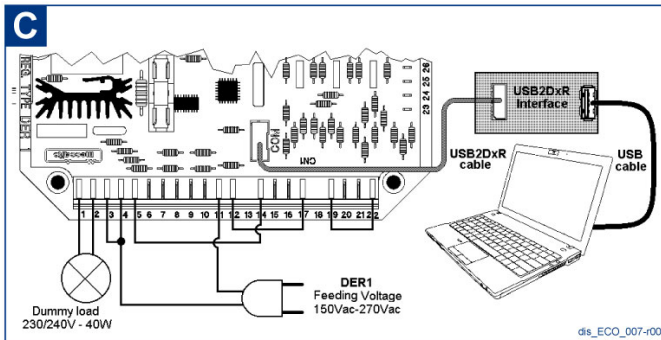


No other connections besides the power supply are needed.



DER1 75-150Vac power supply for test and setup.




i The fictitious load between terminals 1 and 2, the sensing on terminal 6 and the bridge between terminals 8 and 9, 7 and 15, 12 and 16, 19 and 22.



DER1 150-270Vac power supply for test and setup.

i The fictitious load between terminals 1 and 2, the sensing on terminal 4 and the bridge between terminals 5 and 14, 12 and 17, 19 and 22.

9.5.13 DER 2 test and setup on test bench

Type of intervention 	Operator 	Periodicity 
PPE to wear 		Materials and equipments Personal computer+software.

Danger



Disconnect the alternator from the power supplies. The drive motor must be off and unplugged from its power supplies. Disconnect the regulator and connect to a computer according to the diagrams below. The operations of functional checkout and parameter setting may be easier if they are performed on a test bench rather than with the regulator still inside the terminal box.

Caution



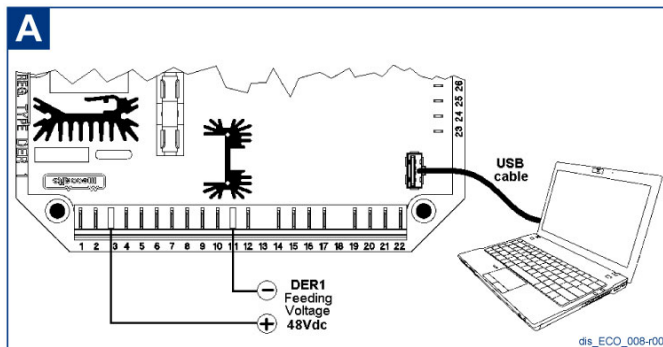
Given that some parts of the DSR which work with a high potential are not isolated, for the safety of the operator, it is necessary for the power source to be isolated from the electrical grid, for instance by a transformer.

Caution



The use of these types of connection is reserved to qualified personnel, able to assess the operational risks of high voltage and who have a full knowledge of the content of this manual.

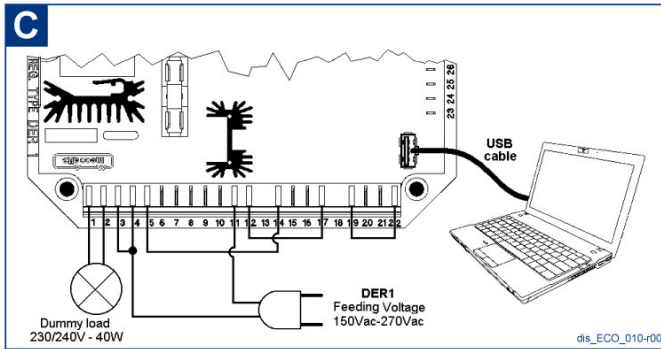
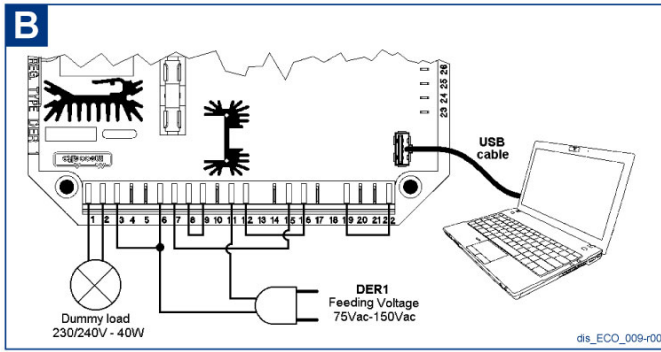
The connection diagrams of the DER2 are shown in figures (A), (B) or (C) in this paragraph based on the type of available power supplies.






DER1 48Vdc power supply for the download of the alarms without risking to change to content of the EEPROM because of the tests.




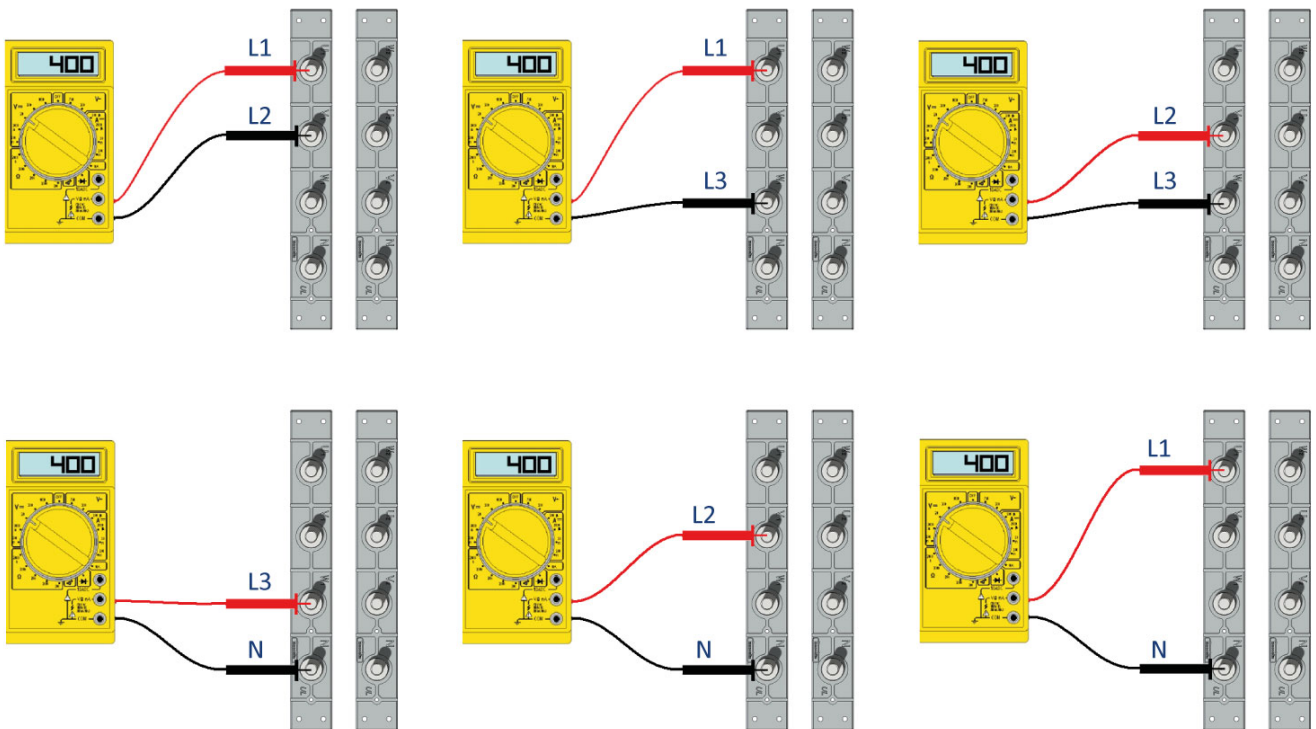
No other connections besides the power supply are needed.



9.5.14 Main stator windings voltage test

Type of intervention 	Operator 	Periodicity 
PPE to wear 		Materials and equipments Electrical tools.

Danger  Disconnect the alternator from the power supplies. The drive motor must be off and unplugged from its power supplies.



lay_ECO_003-r00

Use a multimeter to check all three phases (both L-L and L-N).

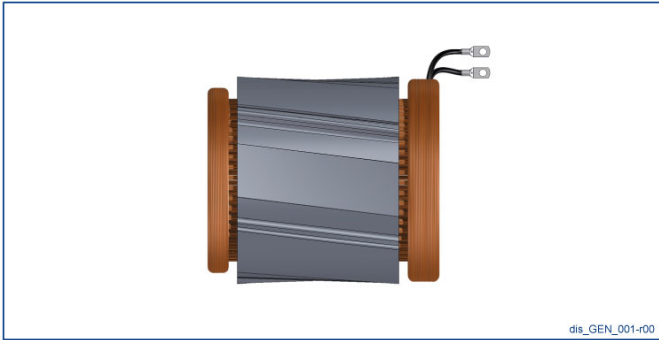
When off-load the voltage should be balanced on all three phases with a $\pm 1\%$ tolerance.

If the voltage is unbalanced, this indicates a problem in the main winding of the stator.

If instead the voltage is balanced on the three phases, then the winding of the stator does not have problems.

If the voltage is lower than 15% of the nominal voltage, there might be a problem with the regulator, in the rotating diode bridge or in the exciter winding.

9.5.14.1 Resistance/Continuity Test

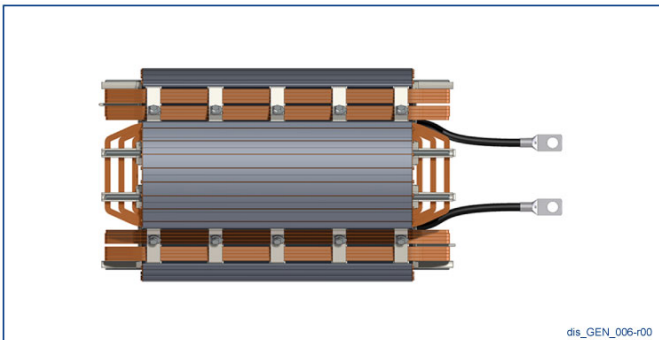


Main Stator

Use an appropriate tool to measure the phase resistance/continuity 1-2, 3-4, 5-6, 7-8, 9-10 and 11-12
Also check the resistance/continuity of the auxiliary winding between the two red wires coming out of the main stator.



For the values see paragraph 12.3.

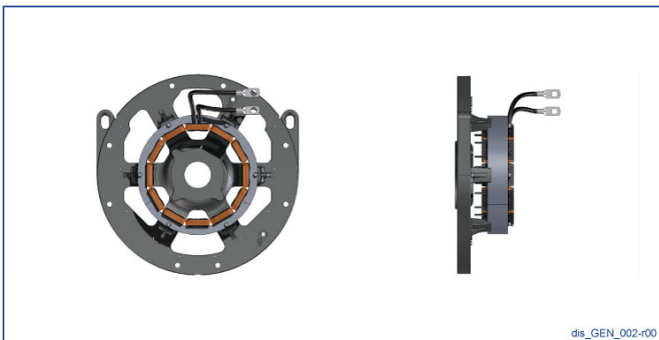


Main rotor

Measure the resistance/continuity of the main rotor using a multimeter.



For the values see paragraph 12.3.

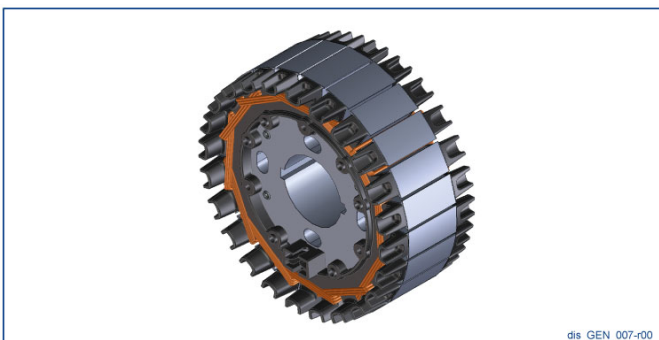


Exciter stator

Measure the resistance/continuity of the winding of the exciter stator between the positive wire (yellow) and the negative one (blue) with a multimeter.



For the values see paragraph 12.3.



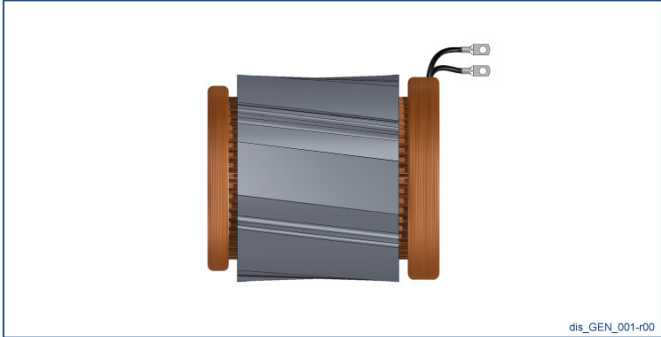
Exciter rotor

Measure the resistance/continuity of the winding of the exciter rotor between phases with a multimeter.



For the values see paragraph 12.3.

9.5.14.2 Insulation Test



Main Stator

Completely disconnect the AVR and the connection between neutral and ground before performing this test.

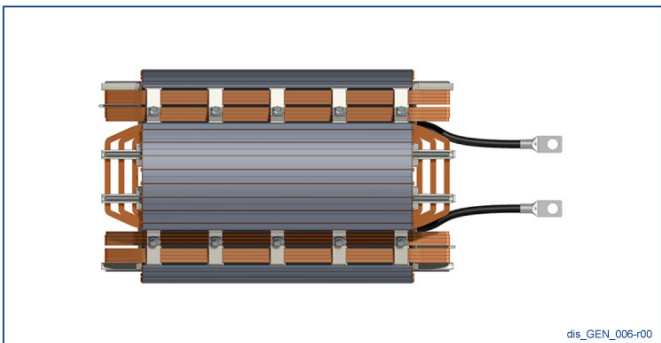
The measurement must be carried out using an insulation tester (Megger) of 500 V.

Check the insulation between phases, between phases and ground, between auxiliary and phases and between auxiliary and ground.

i For these alternators, the minimum insulation value is of 1 MΩ.

If the insulation resistance is lower, the stator must be cleaned and, if necessary, impregnated or painted again with EG43 gray paint and then dried at 50-60 °C.

If after these operations the value remains low, the stator must be rewound or replaced.



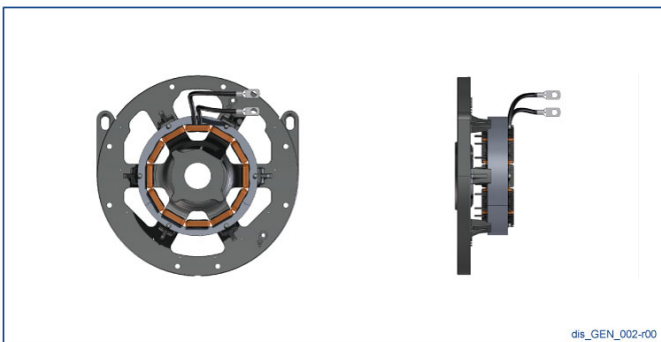
Main rotor

The insulation resistance is measured between phase and ground using an insulation tester (Megger).

i For these alternators, the minimum insulation value is of 1 MΩ.

If the insulation resistance is lower, the rotor must be cleaned and, if necessary, impregnated and then dried at 50-60 °C.

If after these operations the value remains low, the rotor must be rewound or replaced.



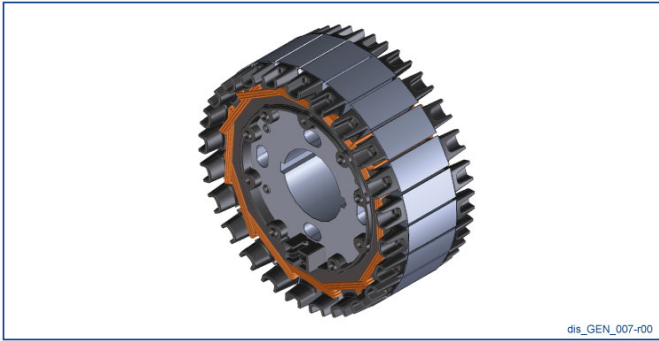
Exciter stator

The insulation resistance is measured between phase and ground using an insulation tester (Megger).

i For these alternators, the minimum insulation value is of 1 MΩ.

If the insulation resistance is lower, the stator must be cleaned and, if necessary, painted again with EG43 gray paint and then dried at 50-60 °C.

If after these operations the value remains low, then the stator must be rewound or replaced.



Exciter rotor

The insulation resistance is measured between phase and ground using an insulation tester (Megger).



For these alternators, the minimum insulation value is of 1 M Ω .

If the insulation resistance is lower, the rotor must be cleaned and, if necessary, impregnated and then dried at 50-60 °C.

If after these operations the value remains low, the rotor must be rewound or replaced.

9.6 General Tightening Torques

9.6.1 ECO38 Series

38 Series					
Application		Screw type		[Nm] ± 7% Tightening Torque	Replacement parts cat. reference
Cover rod	S	M12 X 496		100 ± 10%	28
	L	M12 X 705		100 ± 10%	
Fastening of 55 mm exciter stator (without PMG)		M8 X 70	CL. 8.8	25	10
Fastening of 55 mm exciter stator (with PMG)		M8 X 70	CL. 4.8	25	10
Fastening of exciter rotor		M8 X 30	CL. 8.8	21	163
IP2X protection of front cover		M5 X 30	CL. 4.8	3.3	39
Back Grid		M6 X 16	CL. 8.8	9	1
Terminal Block		M6 X 30	CL. 8.8	9	5
Fastening the terminal block to the frame		M6 X 16	CL. 8.8	9	
terminal box		M6 X 16	CL. 8.8	12	2, 95, 96, 97
Back cover ground wire		M10 X 20	CL. 8.8	48	7
Rotor bracket		M5 X 50	CL. 8.8	3.5	14
Fan fastening		M10 X 50	CL. 8.8	38	15
Regulator		M4 X 25	CL. 4.8	1	23
Diode bridge		M5 X 12	CL. 4.8	1.7	11
		M5 X 16	CL. 4.8	1.7	11
Flywheel					
Flywheel 11.5		M12 X 55	CL. 8.8	80	60
Flywheel 14		M12 X 30	CL. 8.8	80	60

38 Series				
Application	Screw type		[Nm] ± 7% Tightening Torque	Replacement parts cat. reference
Optional				
Fastening of paralleling device	M4 X 16	CL. 4.8	1	
Terminal block for paralleling device	M3 X 16	CL. 4.8	0.5	
Terminal block for accessories	M3 X 25	CL. 4.8	0.5	
Front IP45 air filter	M5 X 16	CL. 8.8	5	
Back IP45 air filter	M6 X 16	CL. 4.8	9	
PMG	M4 X 10	CL. 4.8	1.5	
	M8 X 90	CL. 8.8	25	
	M14 X 188		120 ± 10%	

9.6.2 ECO40 Series

40 Series					
Application		Screw type		[Nm] ± 7% Tightening Torque	Replacement parts cat. reference
Cover rod	S	M16 X 640		180 ± 10%	28
	L	M16 X 805		180 ± 10%	
Fastening of 70mm exciter stator		M8 X 90	CL. 8.8	25	10
IP2X protection of front cover		M5 X 25	CL. 4.8	3.3	39
Back Grid		M6 X 16	CL. 8.8	9	1
terminal box		M6 X 16	CL. 8.8	12	2, 95, 96, 97
Fastening the terminal block to the frame		M6 X 16	CL. 8.8	9	142
Weight on frame		M16 X 30	CL. 8.8	180 ± 10%	8
Rotor bracket		M8 X 70	CL. 8.8	18	14
Terminal Block		M6 X 35	CL. 8.8	9	5
Fan fastening		M10 X 50	CL. 8.8	40	15
Regulator		M4 X 25	CL. 4.8	1	23
Fastening of paralleling device		M4 X 16	CL. 4.8	1	
Paralleling device terminal block		M3 X 25	CL. 4.8	0.5	
Diode bridge		M5 X 25	CL. 4.8	3.3	11
		M5 X 20	Brass	3.3	11
		M5 X 25	Brass	3.3	11
Flywheel					
Flywheel 14		M16 X 45	CL. 8.8	200 ± 10%	60
Flywheel 18		M16 X 40	CL. 8.8	200 ± 10%	60

40 Series				
Application	Screw type		[Nm] ± 7% Tightening Torque	Replacement parts cat. reference
Optional				
Accessory terminal block	M3 X 25	CL. 4.8	0..5	
Front IP45 air filter	M5 X 16	CL. 8.8	5	
Back IP45 air filter	M6 X 16	CL. 8.8	9	
PMG	M5 X 10	CL. 4.8	5	
	M6 X 80	CL. 8.8	9	
	M8 X 100	CL. 8.8	25	
	M14 X 227		120 ± 10%	

9.6.3 ECO43 Series

43 Series				
Application	Screw type		[Nm] ± 7% Tightening Torque	Replacement parts cat. reference
Fastening of 80mm exciter stator	M8 X 100	CL. 8.8	25	10
Front Cover	M14 X 50	CL. 8.8	120 ± 10%	9
Back cover	M14 X 70	CL. 8.8	120 ± 10%	7
terminal box	M6 X 16	CL. 8.8	12	2, 95, 96, 97
Fastening the terminal block to the frame	M6 X 25	CL. 8.8	9	
IP2X protection of front cover	M5 X 25	CL. 4.8	3.3	39
Fastening of terminals to bearing	M6 X 45	CL. 10.9	9	140
Fastening of cable terminals	M10 X 40	CL. 8.8	48	
Fastening bridge to terminals (phase L1, L2, L3)	M10 X 50	CL. 8.8	48	141
Fastening bridge to terminals (star point)	M10 X 60	CL. 8.8	48	141
3-plate terminal block support bracket	M6 X 25	CL. 8.8	9	139
Terminal board support bracket	M8 X 40	CL. 8.8	12	139
Back grease protection ring	M12 X 85	CL. 8.8	100 ± 10%	
Front grease protection ring	M6 X 80	CL. 8.8	9	
Back V-shaped closure	M6 X 16	CL. 8.8	9	94
Fastening of exciter rotor	M8 X 35	CL. 8.8	21	13
Fastening of balancing ring	M8 X 20	CL. 8.8	21	
Back cover ground wire	M16 X 30	CL. 8.8	180 ± 10%	7
Rotor bracket	M10 X 75	CL. 8.8	35	14
Regulator	M4 X 25	CL. 4.8	1	23
Fastening of paralleling device	M4 X 16	CL. 4.8	1	
Terminal block for paralleling device	M3 X 25	CL. 4.8	0.3	
Rotating diode bridge	M5 X 25	CL. 4.8	3.3	11
	M5 X 20	Brass	3.3	11
	M5 X 25	Brass	3.3	11

43 Series				
Application	Screw type		[Nm] ± 7% Tightening Torque	Replacement parts cat. reference
Flywheel				
Flywheel 14	M16 X 55	CL. 8.8	200 ± 10%	60
Flywheel 18	M16 X 40	CL. 8.8	200 ± 10%	60
Flywheel 21	M16 X 40	CL. 8.8	200 ± 10%	60
Optional				
Accessory terminal block	M3 X 25	CL. 4.8	0.5	
Front IP45 air filter	M5 X 16	CL. 4.8	3.3	
Back IP45 air filter	M6 X 16	CL. 8.8	9	
PMG	M5 X 10	CL. 4.8	3.3	
	M6 X 80	CL. 4.8	9	
	M8 X 100	CL. 8.8	25	
	M14 X 227		120 ± 10%	
Terminal block bridge for transformer	M10 X 40	CL. 8.8	48	
	M10 X 50	CL. 8.8	48	
	M10 X 60	CL. 8.8	48	
	M5 X 20	CL. 4.8	2	
	M6 X 30	CL. 8.8	9	

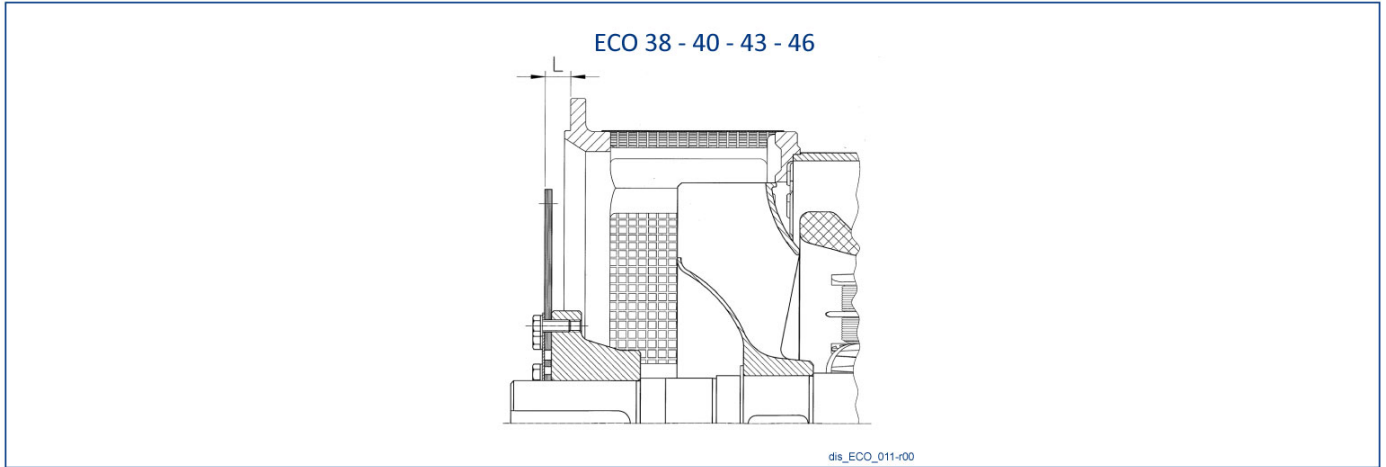
9.6.4 ECO46 Series

46 Series				
Application	Screw type		[Nm] ± 7% Tightening Torque	Replacement parts cat. reference
Fastening of 120mm exciter stator	M8 X 140	CL. 8.8	25	10
Front Cover	M14 X 70	CL. 8.8	120 ± 10%	9
Back cover	M14 X 70	CL. 8.8	120 ± 10%	7
terminal box	M6 X 16	CL. 8.8	12	2, 95, 96, 97
Fastening the terminal block to the frame	M6 X 25	CL. 8.8	9	
IP2X protection of front cover	M5 X 25	CL. 4.8	3.3	39
Fastening terminals to bearing	M6 X 45	CL. 10.9	9	140
Fastening of cable terminals	M10 X 40	CL. 8.8	48	
Fastening bridge to terminals (phase L1, L2, L3)	M10 X 50	CL. 8.8	48	141
Fastening bridge to terminals (star point)	M10 X 70	CL. 8.8	48	141
3-plate terminal block support bracket	M8 X 40	CL. 8.8	12	142
Terminal board support bracket	M8 X 35	CL. 8.8	12	142
Back grease protection ring	M6 X 85	CL. 8.8	9	
Front grease protection ring	M6 X 100	CL. 8.8	9	
Back V-shaped closure	M6 X 16	CL. 8.8	9	94
Fastening of exciter rotor	M8 X 35	CL. 8.8	21	13
Fastening of balancing ring	M8 X 20	CL. 8.8	21	
Back cover ground wire	M16 X 30	CL. 8.8	180 ± 10%	7
Rotor bracket (only 4 poles)	M10 X 80	CL. 8.8	43	14
Rotor bracket (only 6 poles)	M10 X 110	CL. 8.8	43	14
Regulator	M4 X 25	CL. 4.8	1	23
Fastening of paralleling device	M4 X 16	CL. 4.8	1	
Terminal block for paralleling device	M3 X 25	CL. 4.8	0.5	
Rotating diode bridge	M5 X 25	CL. 4.8	3.3	11
	M5 X 20	Brass	3.3	11
	M5 X 25	Brass	3.3	11

46 Series				
Application	Screw type		[Nm] ± 7% Tightening Torque	Replacement parts cat. reference
Flywheel				
Flywheel 18	M16 X 40	CL. 8.8	200 ± 10%	60
Flywheel 21	M16 X 40	CL. 8.8	200 ± 10%	60
Optional				
Accessory terminal block	M3 X 25	CL. 4.8	0.5	
Front IP45 air filter	M6 X 20	CL. 8.8	9	
Back IP45 air filter	M6 X 16	CL. 8.8	9	
PMG	M5 X 10	CL. 4.8	3.3	
	M6 X 80	CL. 4.8	9	
	M8 X 150	CL. 8.8	25	
	M14 X 267		120 ± 10%	
Terminal block bridge for transformer	M10 X 40	CL. 8.8	48	
	M10 X 50	CL. 8.8	48	
	M10 X 70	CL. 8.8	48	
	M5 X 20	CL. 4.8	2	
	M6 X 30	CL. 8.8	9	

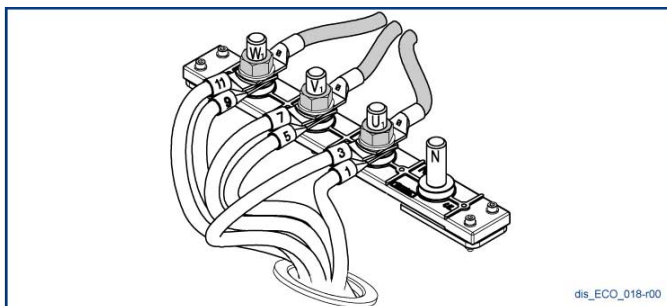
9.7 Disc Tightening Torques

In case of replacement of discs, the appropriate tightening torques are indicated here (fastening discs to hub).



Type	SAE	L	Screw size		Tightening Torques (Nm)	
			TE	TCCEI	CL. 8.8	CL. 12.9
ECO38	11 ½	39,6	M12x45-8.8	/	80 ± 7%	/
	14	25,4	M12x30-8.8	/	80 ± 7%	/
ECO40	14	25,4	M16x45-8.8	/	200 ± 10%	/
	18	15,7	M16x40-8.8	/	200 ± 10%	/
ECO43	14	25,4	M16x55-8.8	/	200 ± 10%	/
	18	15,7	M16x40-8.8	/	200 ± 10%	/
	21	0	M16x40-8.8	/	200 ± 10%	/
ECO46	18	15,7	M16x40-8.8	/	200 ± 10%	/
	21	0	M16x40-8.8	/	200 ± 10%	/

9.8 Terminal block Tightening Torques



THREAD DIAMETER Df	TYPE	TIGHTENING TORQUE (Nm)
M10 (Steel)	ECO43 ECO46	48 ± 7%
M16	ECO38	80 ± 7%
M20	ECO40	100 ± 7%

10 DSR / DER1 alarm management

The state of the active alarms is visualized at location 38 that may be read through USB.

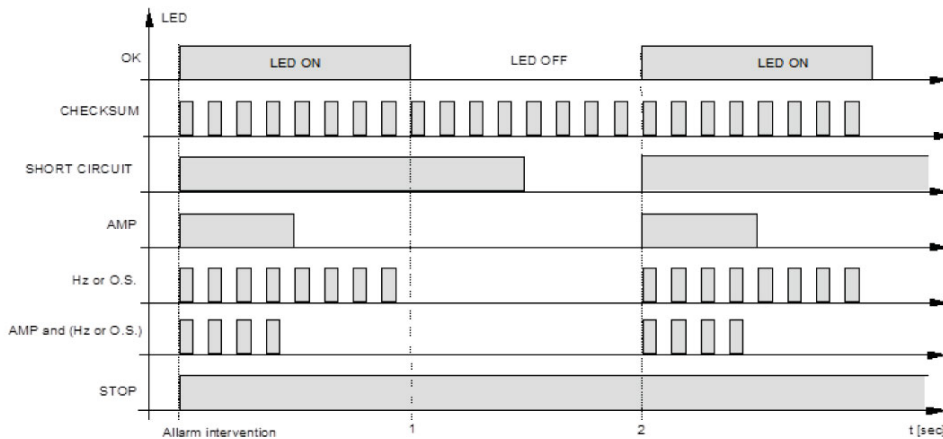
The index of the bits that present value 1 correspond to an active alarm.

If the regulator is working regularly (no active alarm) the B11 bit will result active.

N.	Event description	Action
1	EEprom Checksum	Restoring default data, Block
2	Overtoltage	APO
3	Undervoltage	APO
4	Short circuit	APO, Maximum current, Block
5	Excitation Overcurrent	APO, Reduction of Excitation Current
6	Low speed	APO, V/F Ramp
7	Overspeed	APO
8	Underexcitation /loss of excitation	APO

During normal operation a LED indicator mounted on the card flashes with a 2 second period and 50% duty cycle.

In case of intervention or signaling of any alarm there are different flashing modes available, as shown in the figure below.



dis_ECO_012-r00

10.1 DSR/DER1 digital regulator alarms

ALARM DESCRIPTION		
N.	Event description	Action
1	Erroneous EEPROM control code	It is checked on start (after the DSP reset and the launch of the peripheral devices). The actions taken are: signaling, loading default settings, saving in EEPROM and blocking the regulator. Upon restart, if EEPROM is faulty, the alarm will be repeated, otherwise the regulator will start to operate on default parameters.
2	Overvoltage	The alarm does not determine a change in the LED flash, enables APO output and is memorized. It may be caused either by anomalous operating conditions (such as overspeed or capacitive load) or by any fault in the regulator. The overvoltage alarm is activated only if the angle has already been reduced to zero and, therefore, output voltage control has been lost. Overvoltage is calculated using an appropriate window, based on the speed and it is inhibited during the transients, for 2 sec. In the calculation window the threshold is set to 5% above the nominal value.
3	Undervoltage (@ ωN)	The alarm does not determine a change in the LED flash, enables APO output and is memorized. Undervoltage is calculated using an appropriate window based on the speed (visible in the undervoltage alarm description), the threshold is set to 5% under the nominal value; it intervenes only above the intervention threshold of the low speed alarm, it basically is inhibited by it. It is also inhibited in case of intervention of the "excitation overcurrent" alarm and during transients.
4	Short circuit	The alarm is disabled under 20Hz and visualized and memorized when action is activated. Tolerated short circuit time goes from 0.1 to 25,5 seconds (programmable in 100ms steps); then the regulator, after having saved DD and TT, turns to block mode and signals the STOP status. With the "short circuit time" parameter set to zero, the block is disabled. The reduction of the angle may cause an excitation drop, with a consequent stop and subsequent restart of the regulator and then the cycle is repeated.
5	Excitation Overcurrent	This alarm's function is not only to signal a state of excess accumulation of heating of the exciter, but also an active function of elimination of the cause. There is in fact a regulation ring that takes over after a threshold is exceeded; the action determines the reduction of the excitation current and then of the output voltage. The available parameter is the "threshold", which determines, in the end, the balance value at which the system stabilizes. The alarm is signaled and memorized. For the adjustment see paragraph "Excitation overcurrent".
6	Low speed	(Immediate) Signaling and activation of the V/F ramp. This alarm also appears at start and at stop. The alarm does not trigger data saving in EEPROM. The alarm intervention threshold depends on the 50/60 jumper status (hardware or software) and on the Hz trimmer position or on the value of parameter 21. Under the threshold the V/F ramp is present.

ALARM DESCRIPTION		
N.	Event description	Action
7	Overspeed	It is visualized similarly to the low speed alarm, it does not trigger actions on control and it is memorized. The overspeed condition may cause, as in the case of capacitive load, an overvoltage. The threshold may be set through parameter 26.
8	Underexcitation /loss of excitation	The alarm does not determine a change in the LED flash, enables APO output and is memorized. The alarm condition is recognized by a underexcitation / loss of excitation observer, available for reading at location L[56]: if the value of L[56] is higher than the upper (fixed) threshold or lower than the value of the lower threshold (parameter P[27]), A-08 is activated. The alarm is inhibited during transients.

11 Problems, causes and solutions

Defect	Cause	Remedies
The alternator does not excite.	Faulty fuse.	Check the fuse and if necessary replace it.
	Faulty diodes.	Check the diodes and if necessary replace them (see paragraph 9.5.2).
	Speed too low (lower than nominal speed).	Adjust the speed to the nominal value.
	Residual magnetism too low.	Adjust the speed to the nominal value.
The alternator de-excites after excited state.	Connection cables damaged or disconnected.	Check the state and correct fastening of cables. Check the correct connection of cables using the attached drawings.
At no load low voltage	Regulator is not adjusted.	Readjust the voltage and/or stability. (see paragraph 8.1.1 and 8.2.1).
	Faulty regulator.	Replace the regulator.
	Speed lower than nominal speed.	Check the number of rotations.
	Damaged windings.	Check windings. (see paragraph 9.5.14 and 9.5.6).
At no load voltage is too high.	Regulator is not adjusted.	Readjust the voltage and/or stability. (see paragraph 8.1.1 and 8.2.1).
	Faulty regulator.	Replace the regulator.
At load, voltage is lower than nominal voltage.	Regulator is not adjusted.	Readjust the voltage and/or stability. (see paragraph 8.1.1 and 8.2.1).
	Faulty regulator.	Replace the regulator.
	Current is too high, $\cos \phi$ lower than 0.8, speed lower than 4% nominal speed.	Operating outside the standard parameter range. Adjust the alternator back to standard parameters.
	Faulty diodes.	Check the diodes and if necessary replace them (see paragraph 9.5.2).
At load, voltage is higher than nominal voltage.	Regulator is not adjusted.	Readjust the voltage and/or stability. (see paragraph 8.1.1 and 8.2.1).
	Regulator is not adjusted.	Replace the regulator.

Defect	Cause	Remedies
Unstable voltage.	Instability of the drive motor rotation speed.	Check uniformity of the drive motor rotation speed.
	"STAB" potentiometer of the regulator not adjusted.	Adjust stability of the regulator by turning the "STAB" potentiometer. (see paragraph 8.1.1 and 8.2.1).
High bearing temperature.	Scarce or too much bearing lubrication.	Check amount of grease (see paragraph 9.4.1).
	Damaged bearing.	Replace the bearing (see paragraph 9.5.8).
	Shaft Misalignment.	Check alignment (see paragraph 5.3.2).
Temperature of cooling air is high.	Ambient temperature is high.	Check the ventilation in the room to ensure correct temperature.
	Air backflow towards the machine.	Check for presence of obstructions around the machine.
	Aspiration of obstructed area.	Check the air vents.
	Heat source nearby the air vents.	Move heat source or machine.
	Air filter is clogged.	Clean or replace the air filter (see paragraph 9.3.2).
Vibration	Damaged bearings.	Replace bearings (see paragraph 9.5.8).
	Unbalancing/break of cooling fan.	Check/replace cooling fan (see paragraph 9.5.1).
	Inefficient base-attachment system.	Check attachment system.
	Misalignment between alternator and drive motor.	Check alignment between alternator and drive motor (see paragraph 5.3.2).



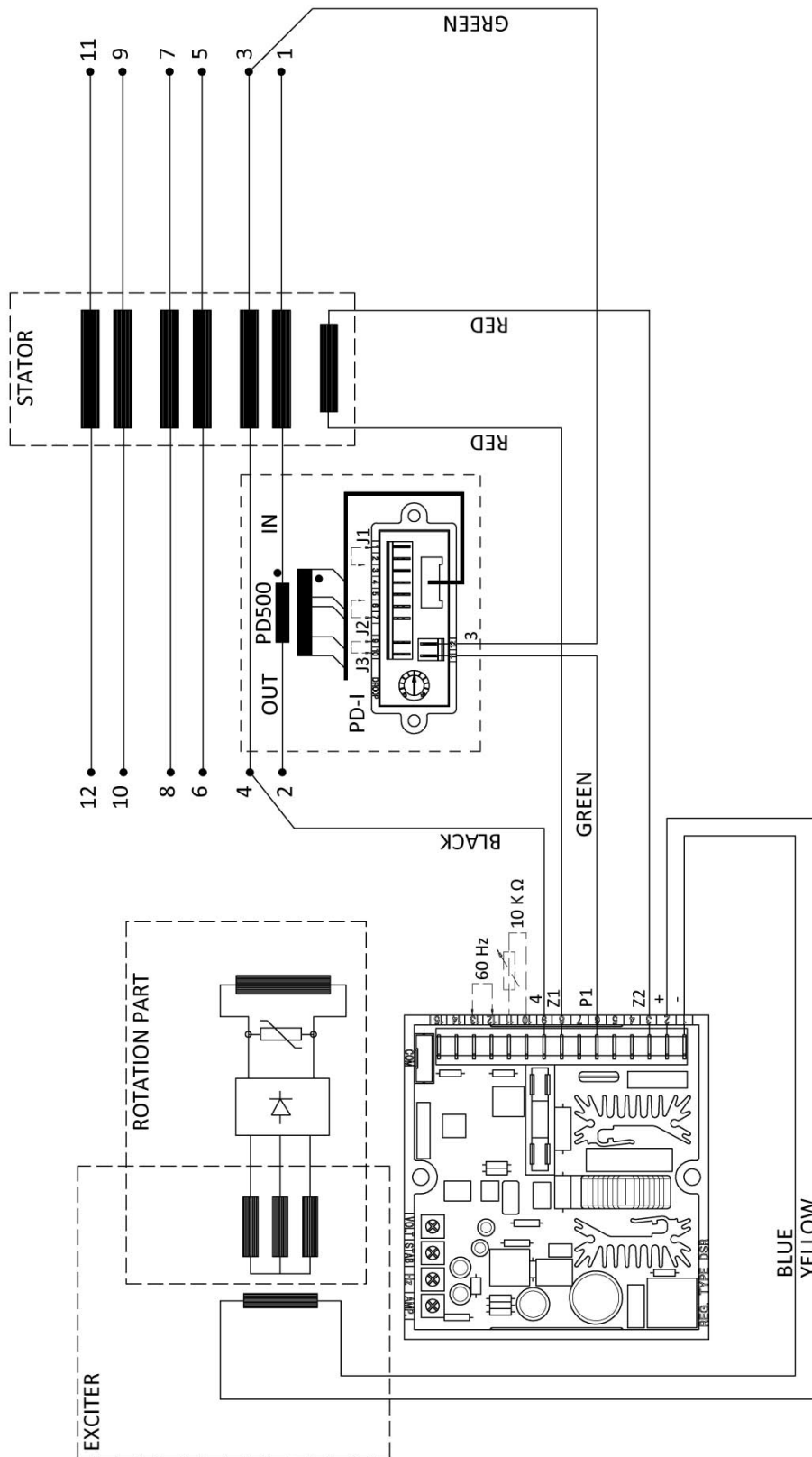
For any other anomaly please contact the reseller, in the authorized service centers or directly at Mecc Alte.

12 Electrical diagrams

Regulator type	Connection	Drawing No.
DSR	12 terminals - single-phase reference	SCC0062
DSR	12 terminals - single-phase reference	SCC0063
DSR	12 terminals - single-phase reference	SCC0064
DER1	12 terminals - single-phase reference	SCC0161
DER1	12 terminals - single-phase reference	SCC0160
DER1	12 terminals - three-phase reference	SCC0159
DER1	12 terminals - three-phase reference	SCC0158
DER1	12 terminals - single-phase reference	SCC0202
DER1	12 terminals - ZIG-ZAG connection, single-phase reference	SCC0203
DSR	12 terminals - with PMG, single-phase reference	SCC0155
DER1	12 terminals - with PMG, single-phase reference	SCC0231
DER1	12 terminals - with PMG, single-phase reference	SCC0232
DER1	12 terminals - with PMG, three-phase reference	SCC0234
DER1	12 terminals - with PMG, three-phase reference	SCC0235
SR7	6 terminals - single-phase reference	A2544
UVR6	6 terminals - single-phase reference	A2550
SR7	12 terminals - single-phase reference	A2545
UVR6	12 terminals - single-phase reference	A2549
UVR6	6 terminals - three-phase reference	A2548
UVR6	12 terminals - three-phase reference	A2552
SR7	12 terminals - ZIG-ZAG connection, single-phase reference	SCC0055
UVR6	12 terminals - ZIG-ZAG connection, single-phase reference	SCC0054

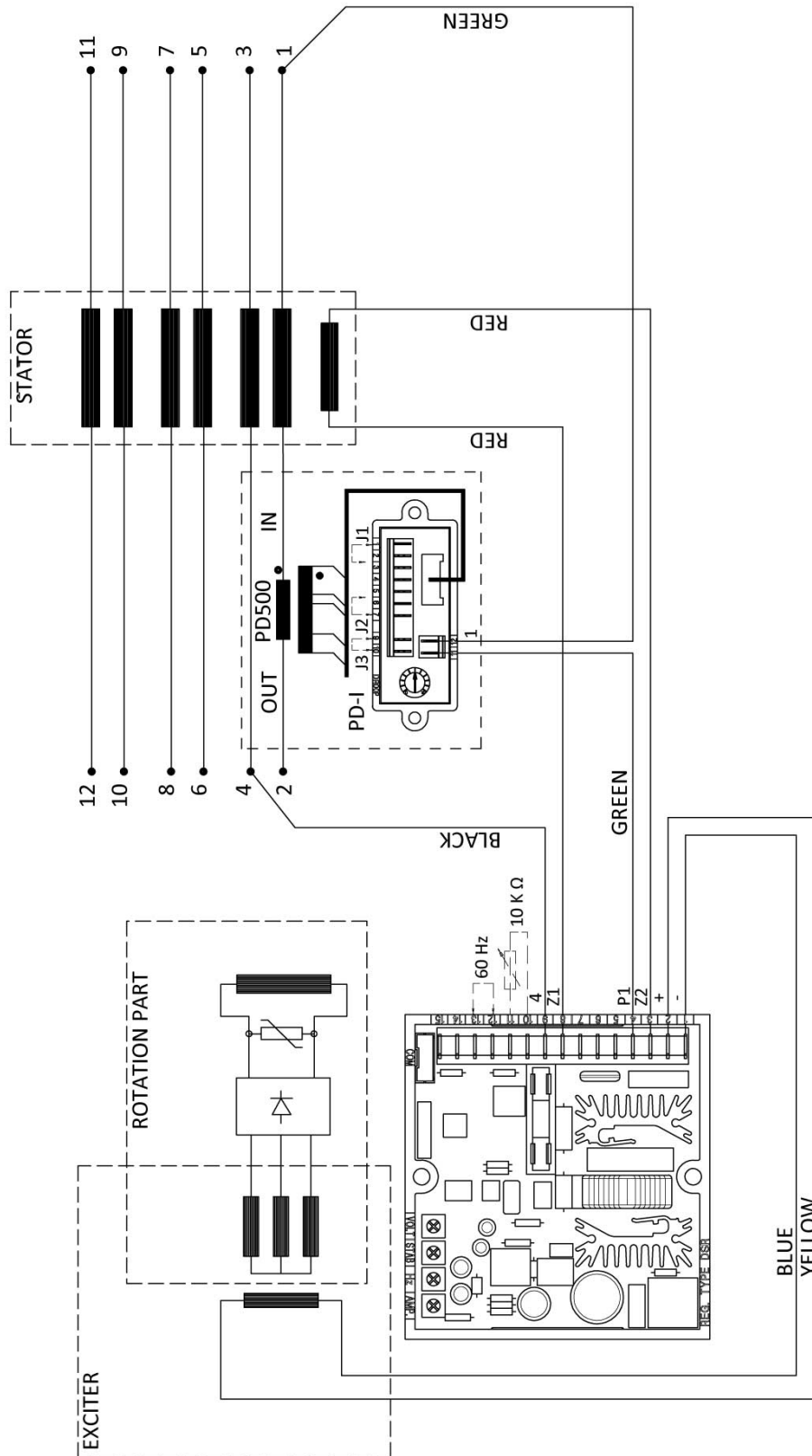
12.1 DSR digital regulator electrical diagrams

SCC0062: Alternators with 12 terminals with reference on half phase from 70 V to 140 V.



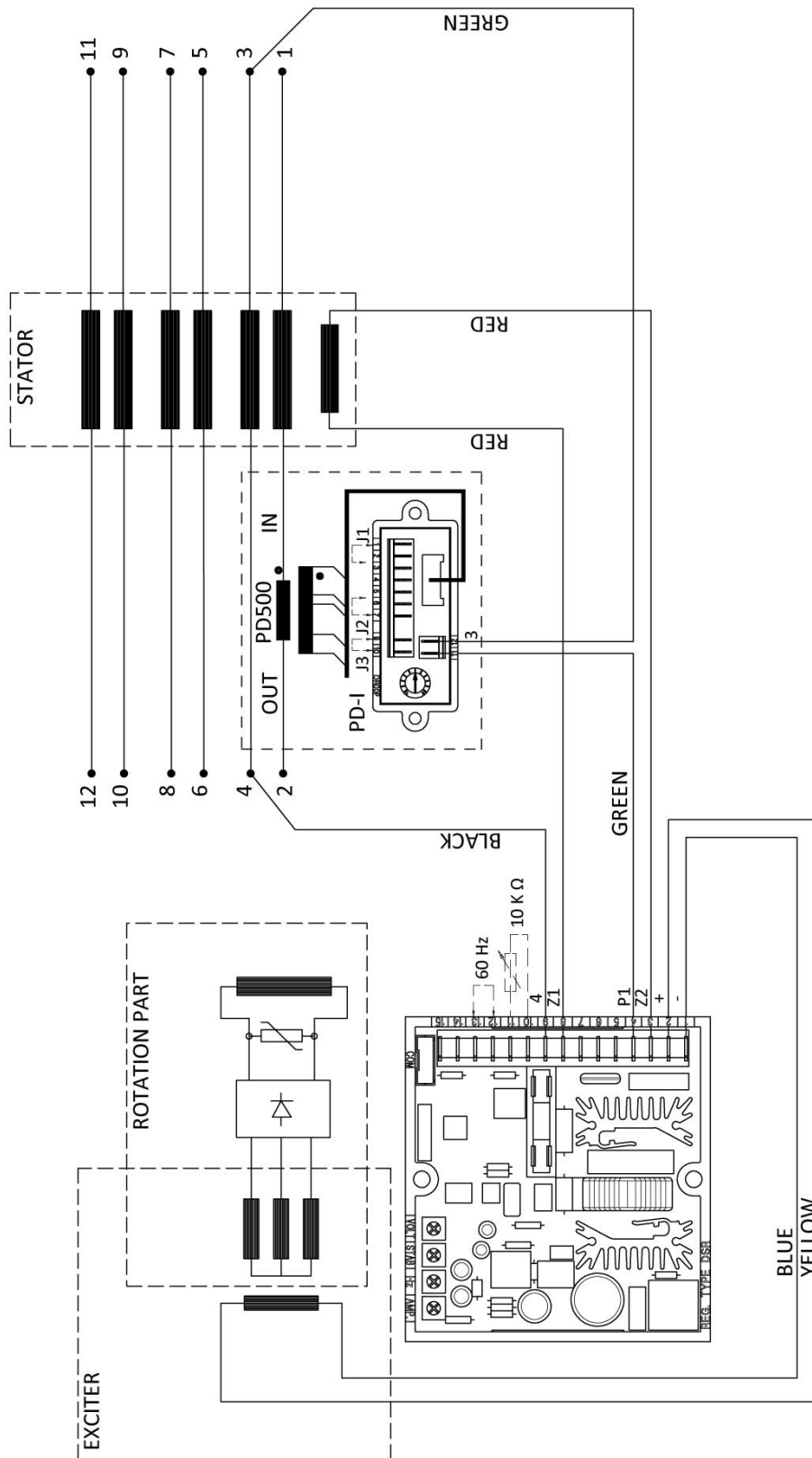
sd1_SCC0062-00_001-r00

SCC0063: Alternators with 12 terminals for star or delta connections, reference on the entire phase from 140 V to 280 V.



sch_SCC0063-03_001-00

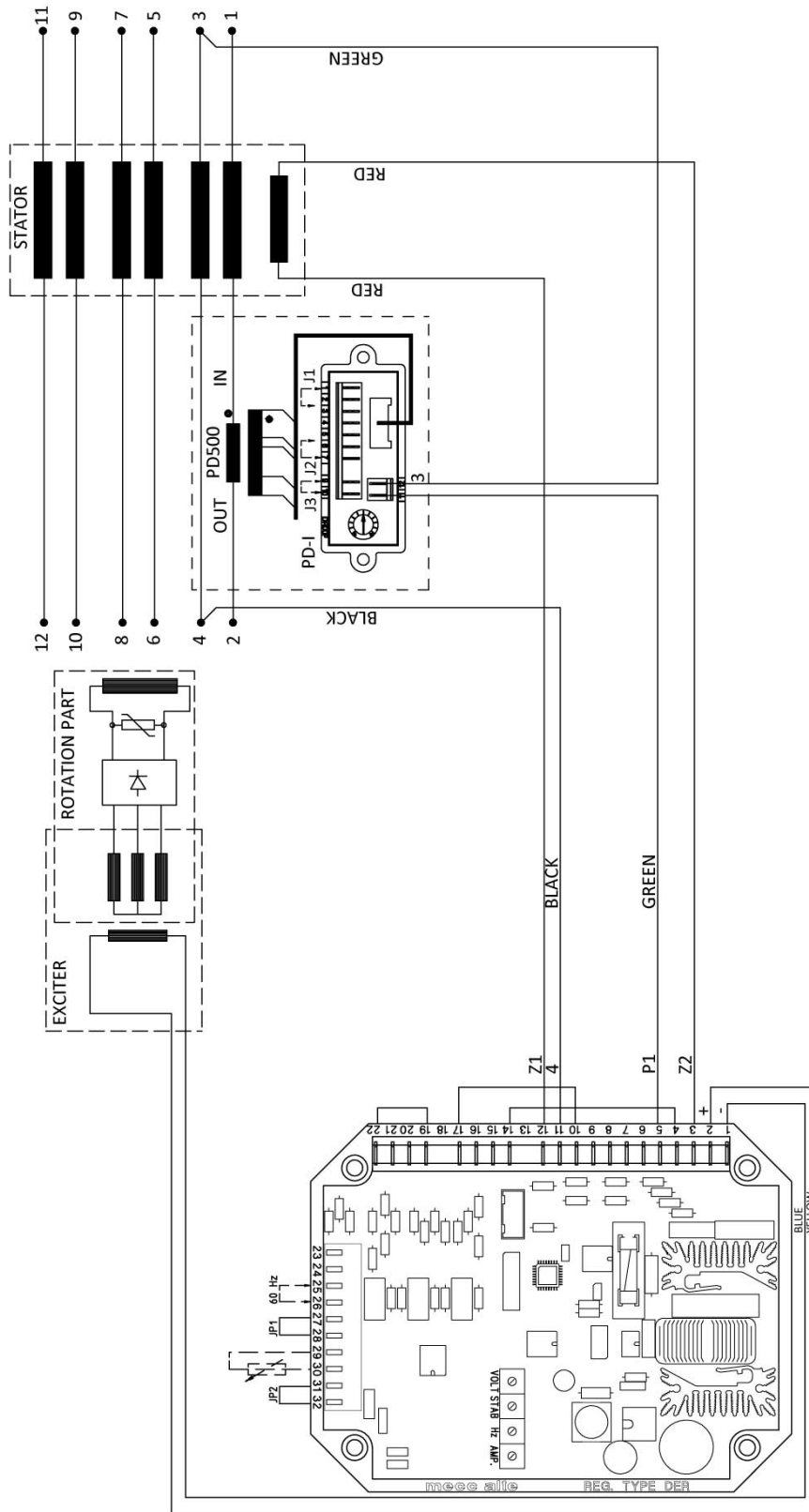
SCC0064: Alternators with 12 terminals with reference on half phase from 140 V to 280 V.



sch_SCC0064-03_001-00

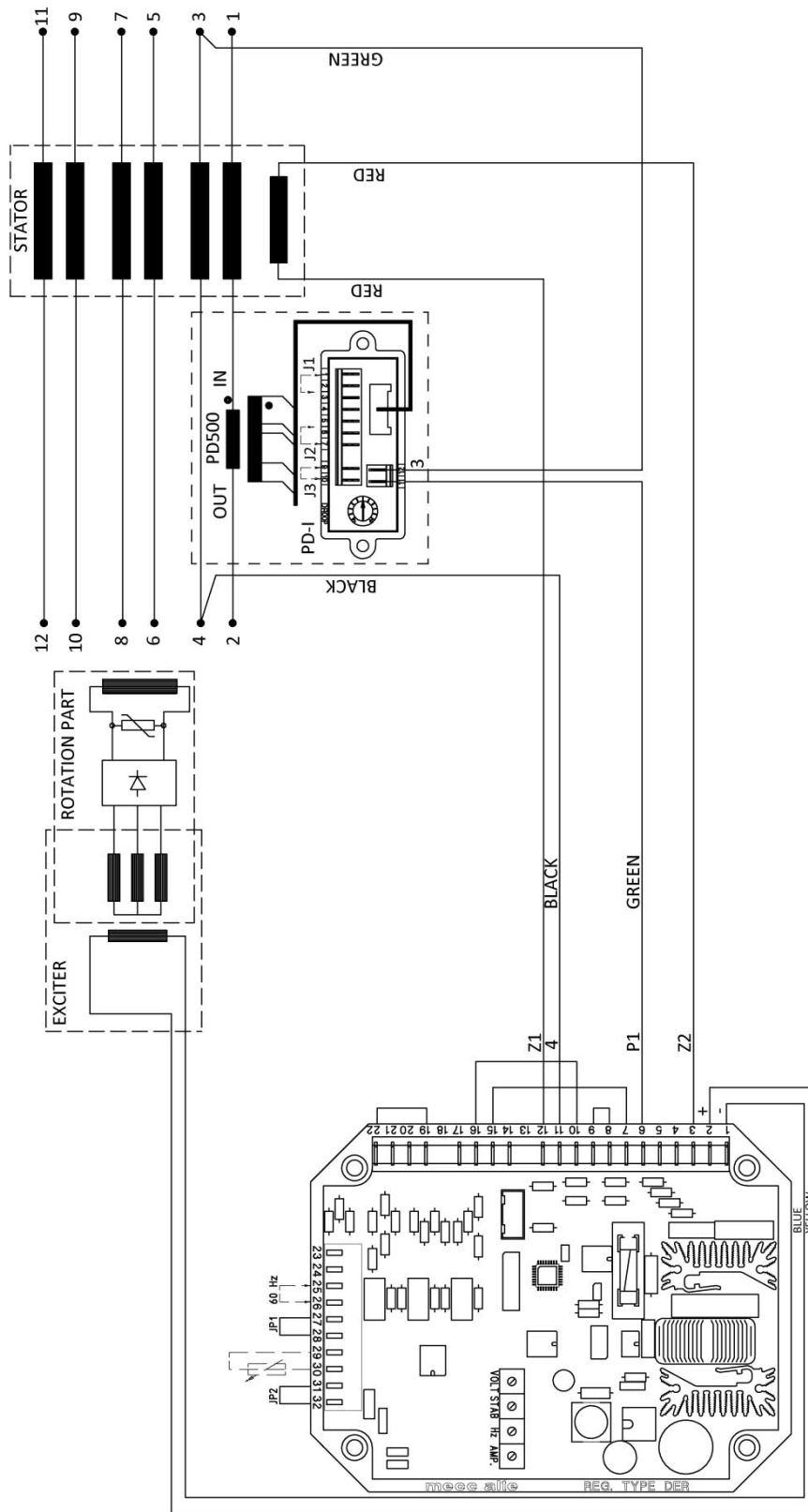
12.2 DER 1 digital regulator electrical diagrams

SCC0161: Alternators with 12 terminals, 150 V - 300 V single-phase sensing.



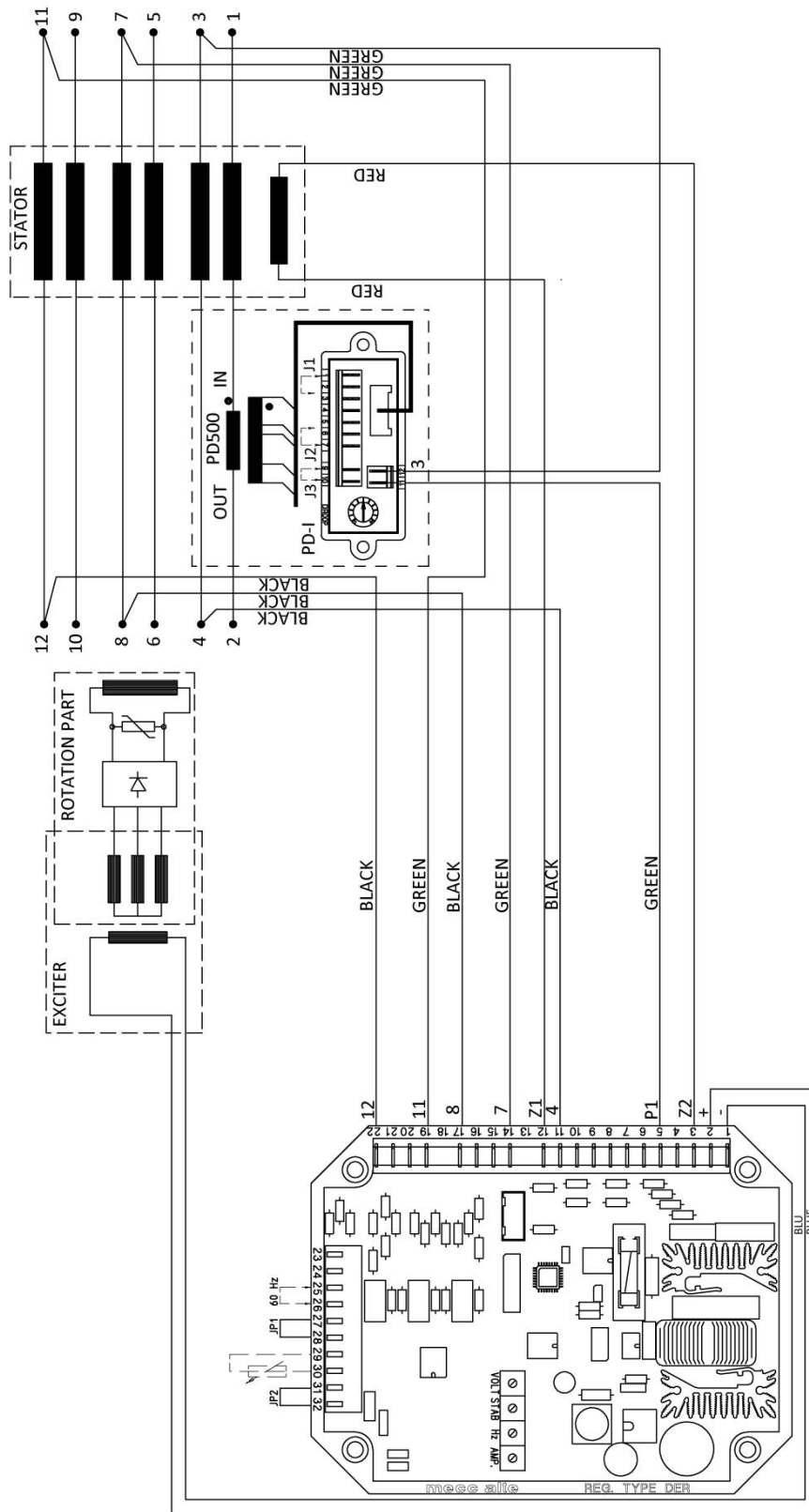
sch_SCC0161-03_001-r00

SCC0160: Alternators with 12 terminals, single-phase reference from 75 V to 150 V.



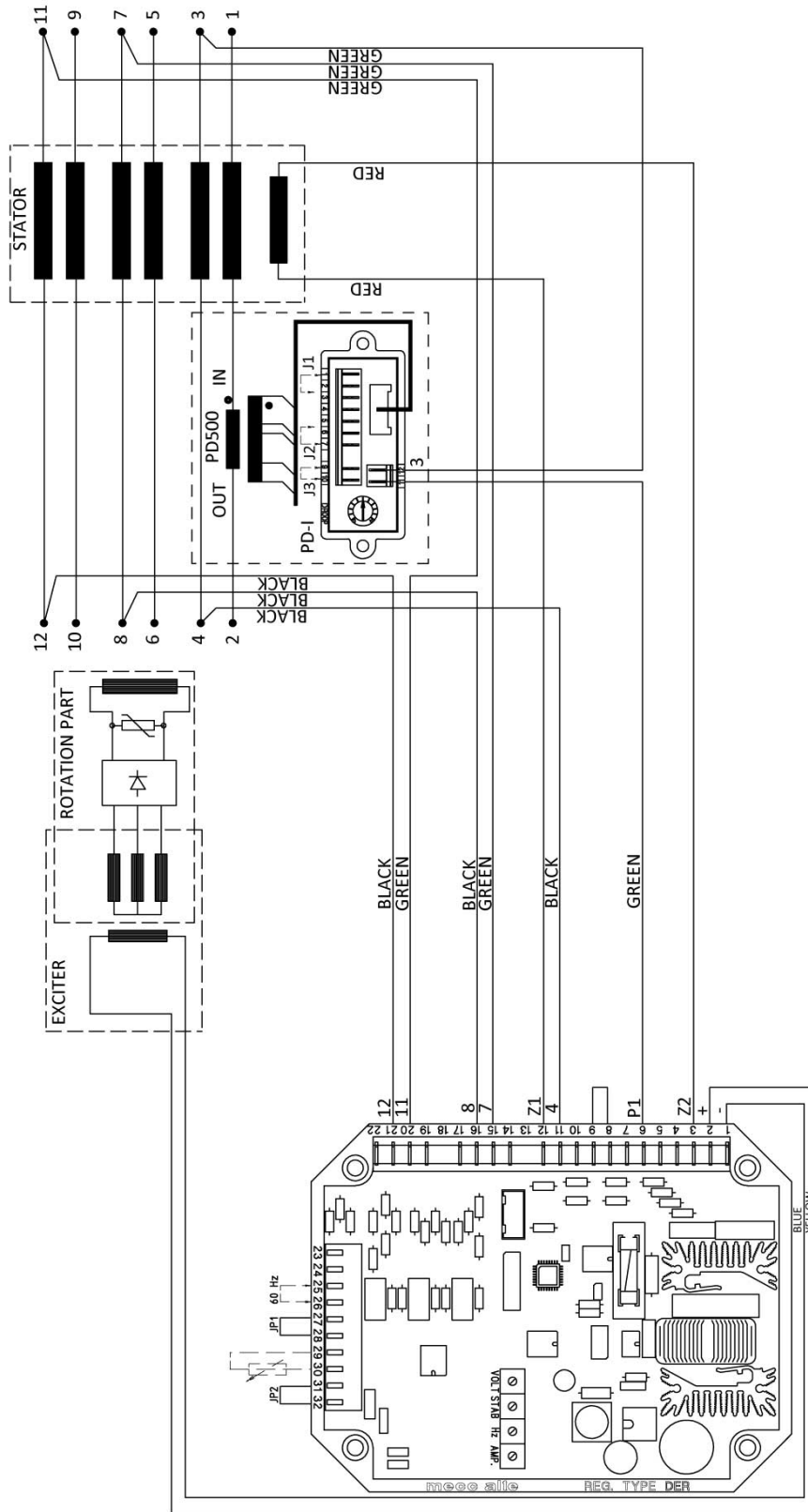
ser_SCC0160_03_001-r00

SCC0159: Alternators with 12 terminals, three-phase reference from 150 V to 300 V.



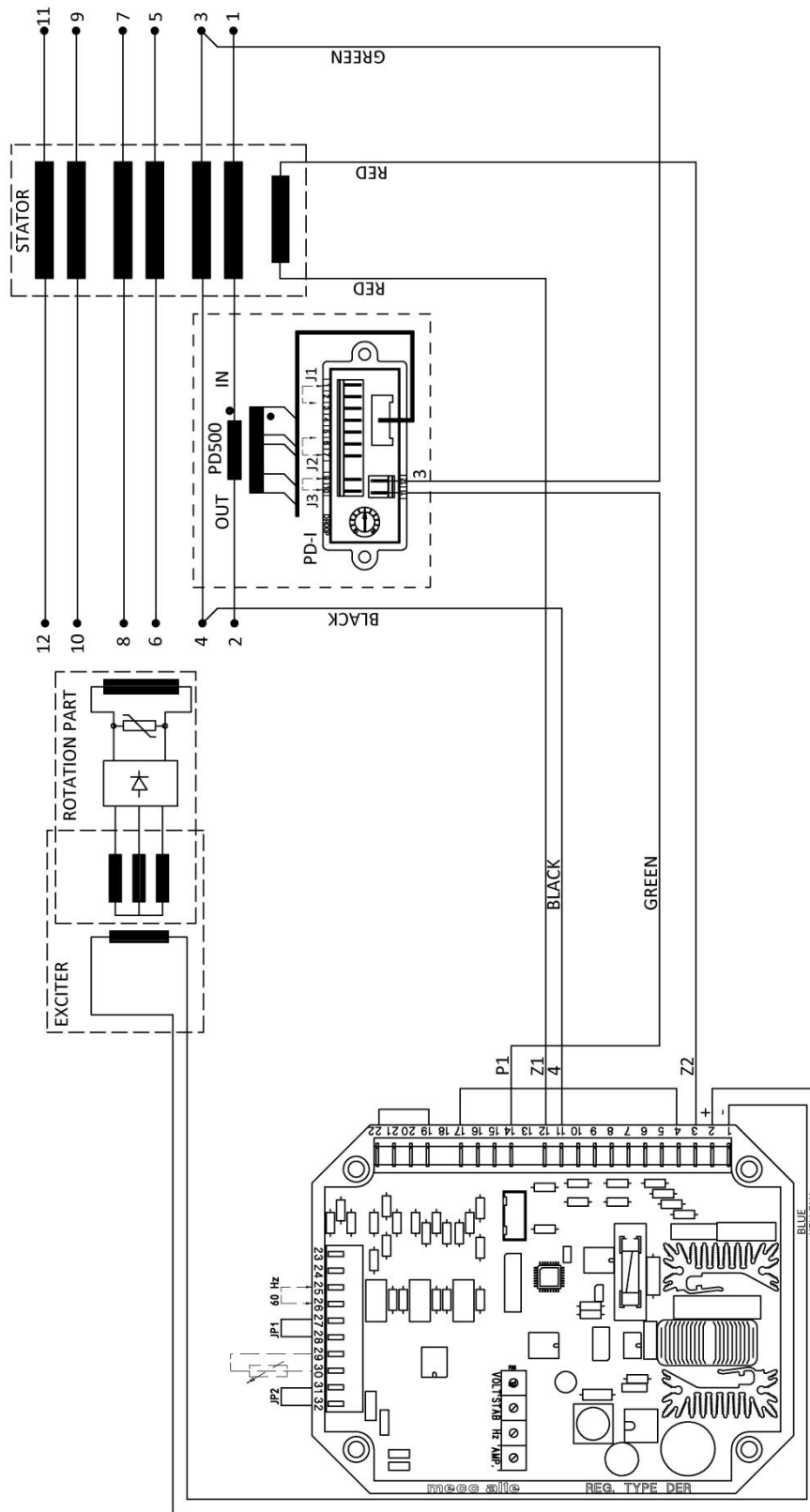
ser_SCC0159-05_001-r00

SCC0158: Alternators with 12 terminals, three-phase reference from 75 V to 150 V.



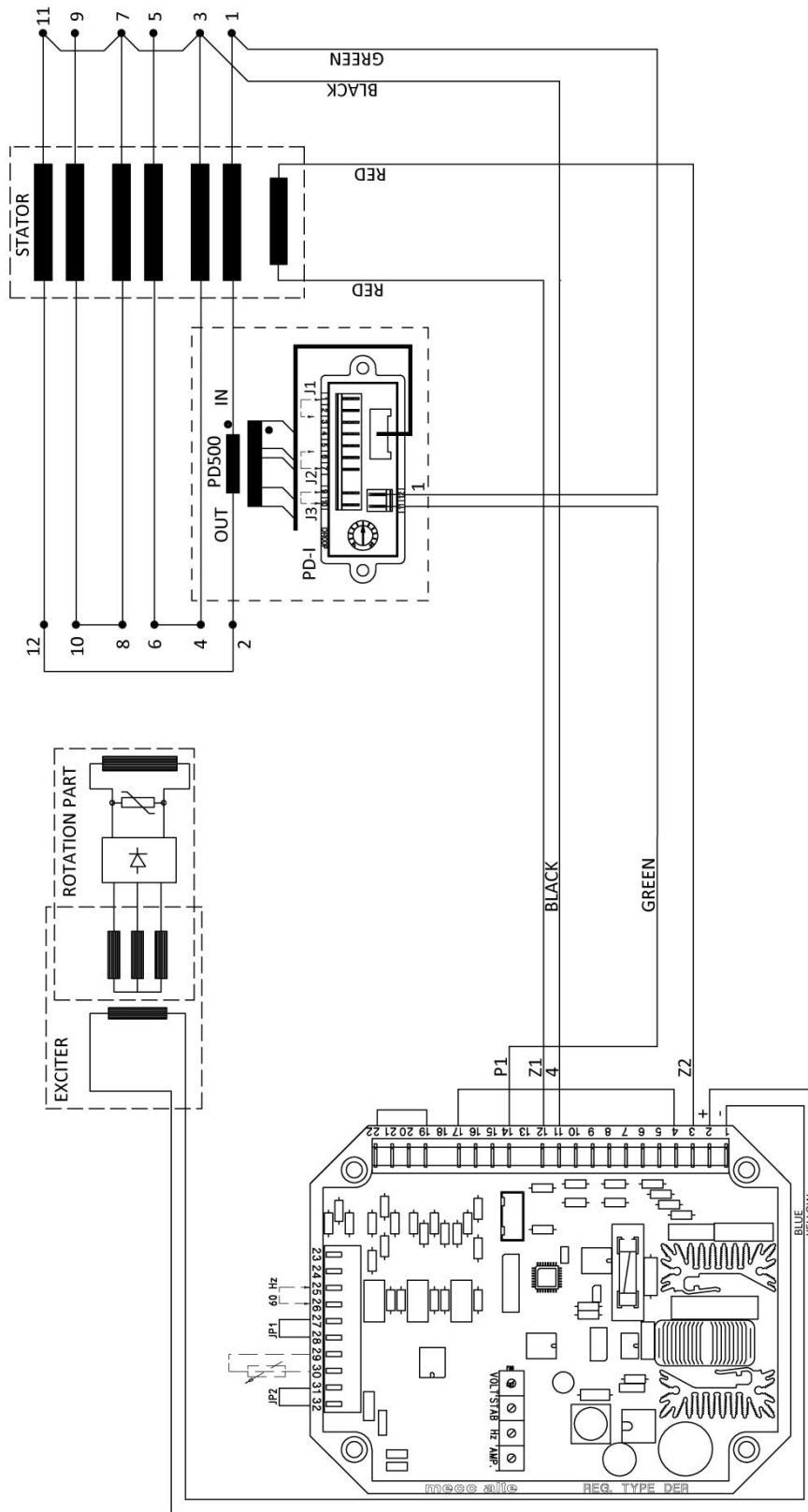
scr_SCC0158-05_001-r00

SCC0202: Alternators with 12 terminals, single-phase reference from 300 V to 600 V.



ser_SCC0202-01_001-r00

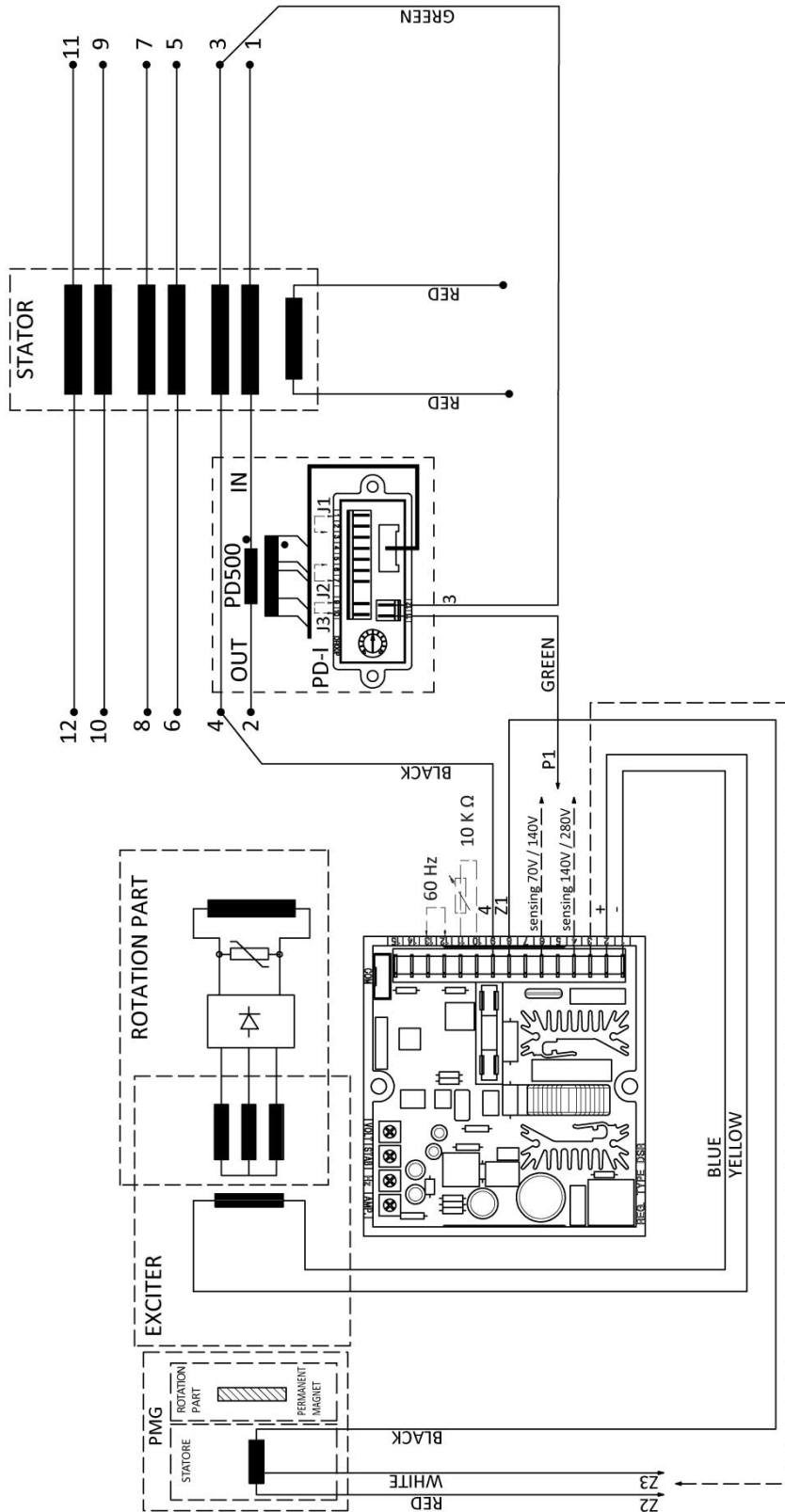
SCC0203: Alternators with 12 terminals, ZIG-ZAG connection, single-phase reference from 300 V to 600 V.



ser_SCC0203-01_001-r00

12.3 Electrical diagrams with PMG

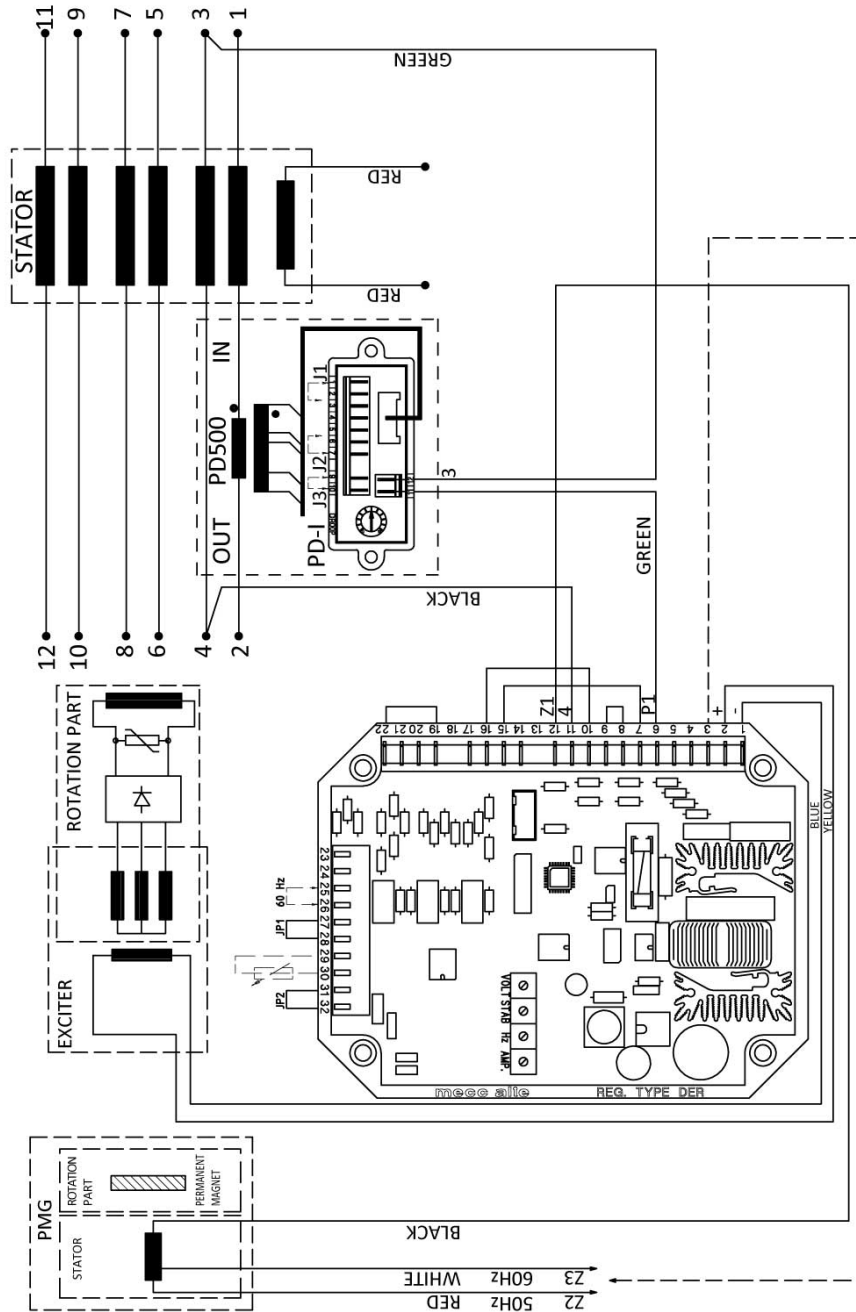
SCC0155: Alternators with 12 terminals, with PMG, DSR regulator. (Terminal 4: reference from 140V to 280V, terminal 6: reference from 70V to 140V).



sch_SCC0155-01_001-r00

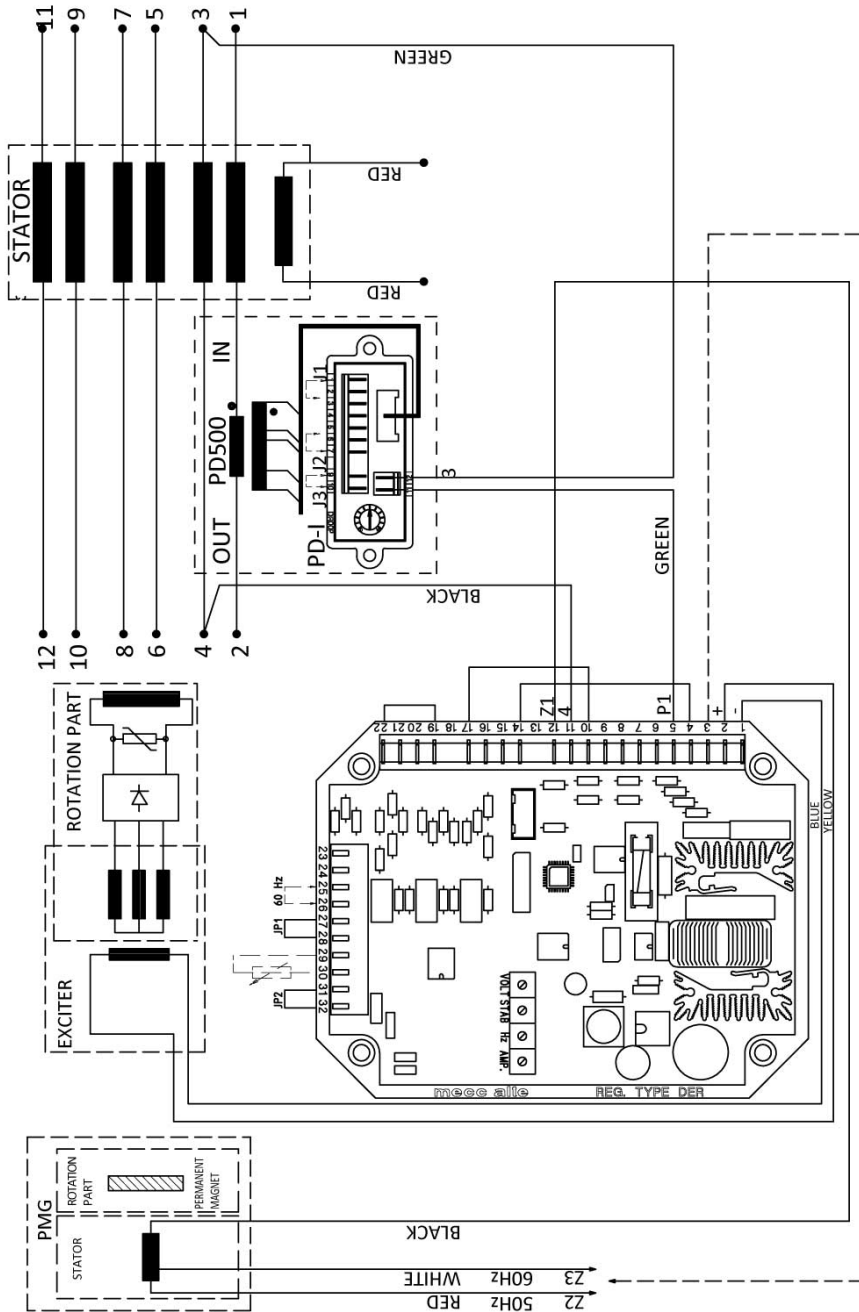
SCC0231: Alternators with 12 terminals, with PMG, DER1 regulator, single-phase reference from 75V to 150V.

set_SCC0231-01_001-00

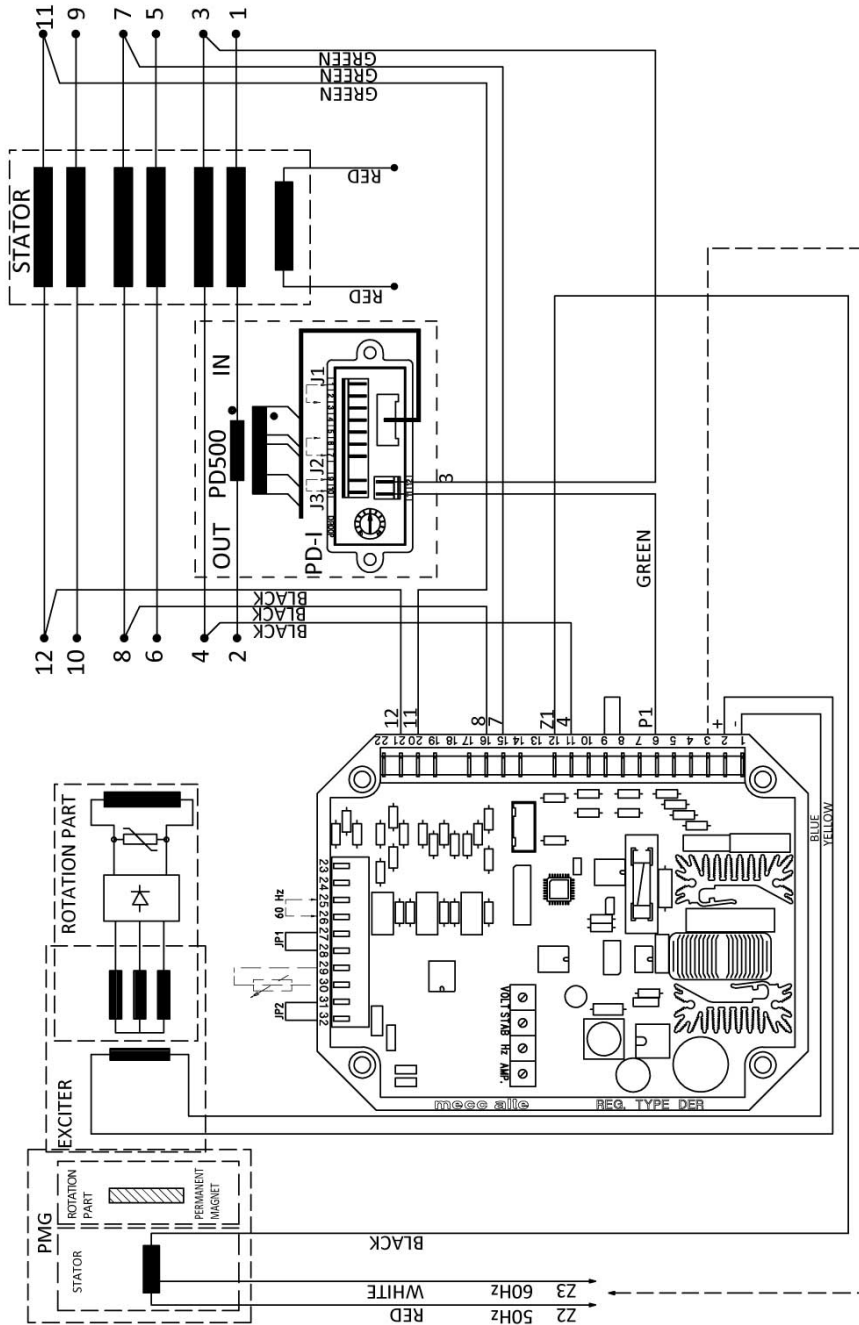


SCC0232: Alternators with 12 terminals, with PMG, DER1 regulator, single-phase reference from 150V to 300V.

sch_SCC0232-01_001-r00



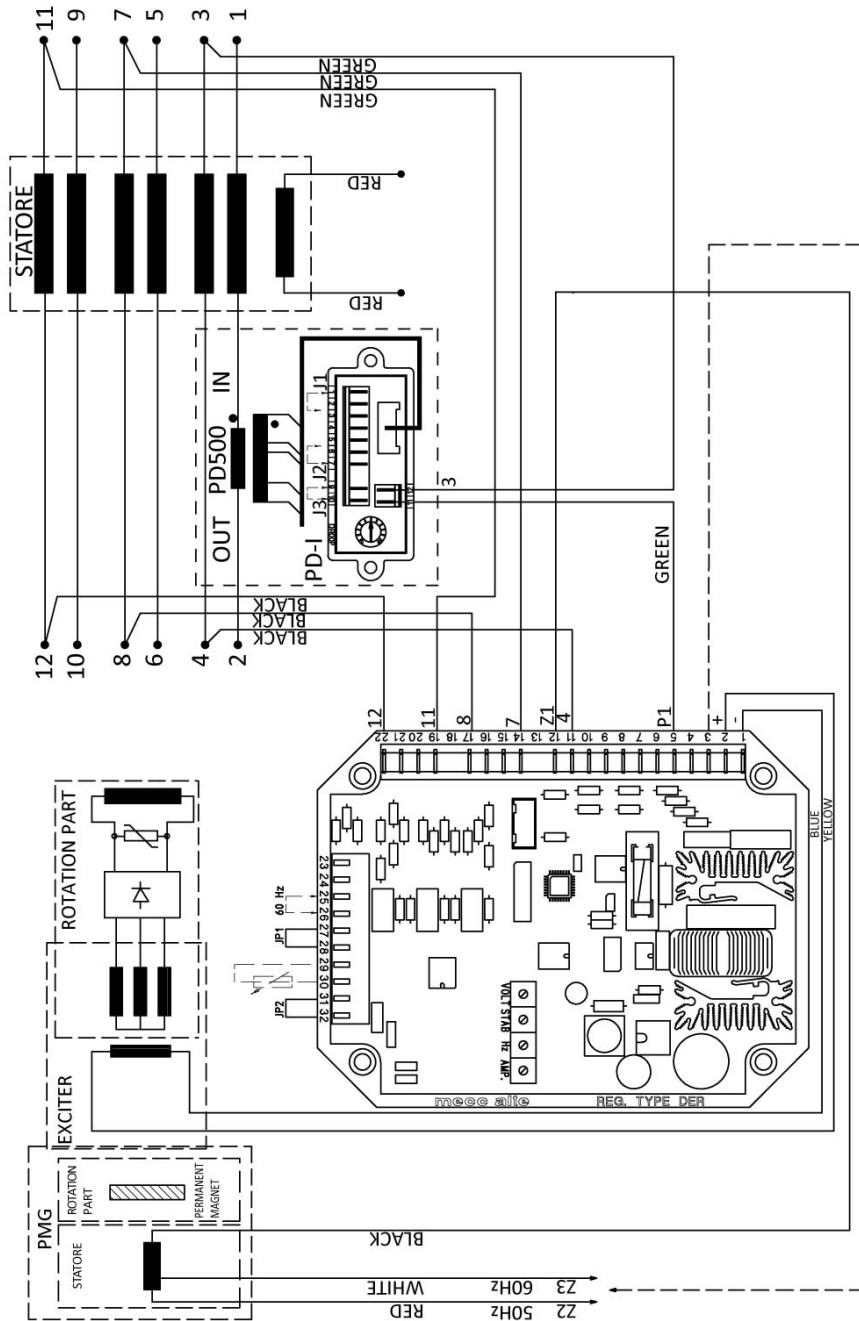
SCC0234: Alternators with 12 terminals, with PMG, DER1 regulator, three-phase reference from 75V to 150V.



sch_SCC0234-01_001-r00

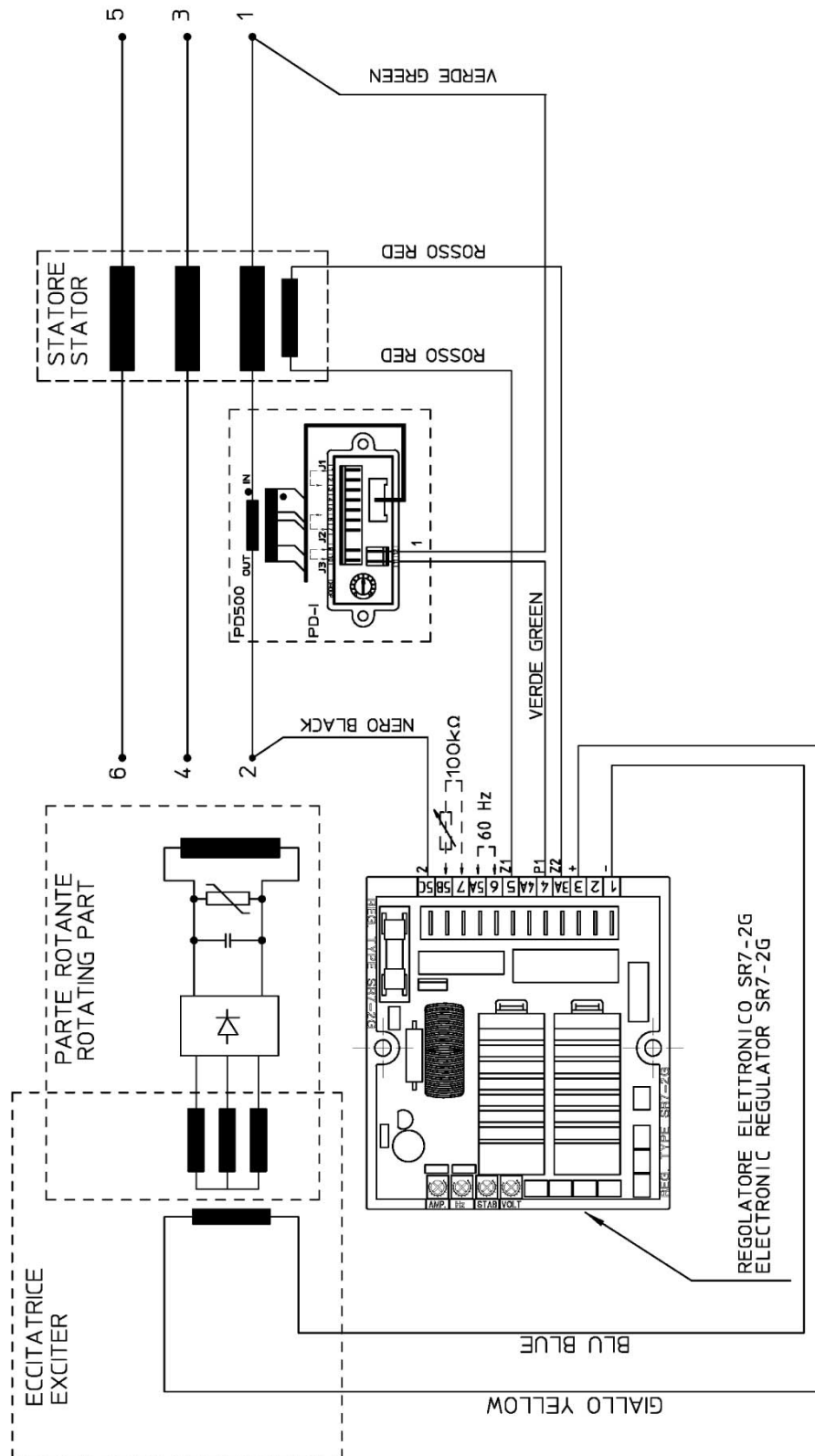
SCC0235: Alternators with 12 terminals, with PMG, DER1 regulator, three-phase reference from 150V to 300V.

sch_SCC0235-01_001-r00



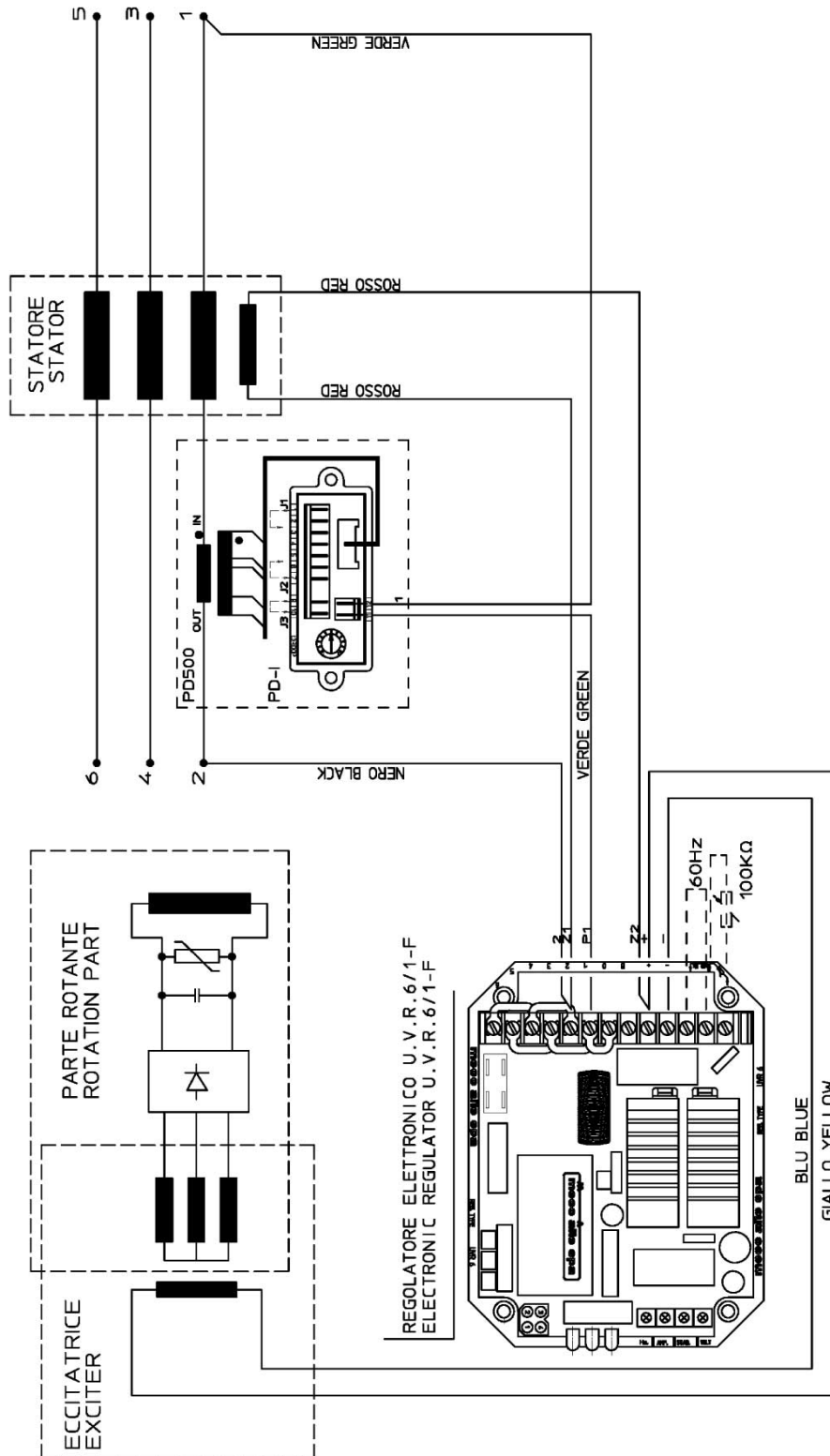
12.4 Electrical diagrams with UVR6 - SR7 regulators

A2544: Alternators with 6 terminals, with SR7 analog regulator.



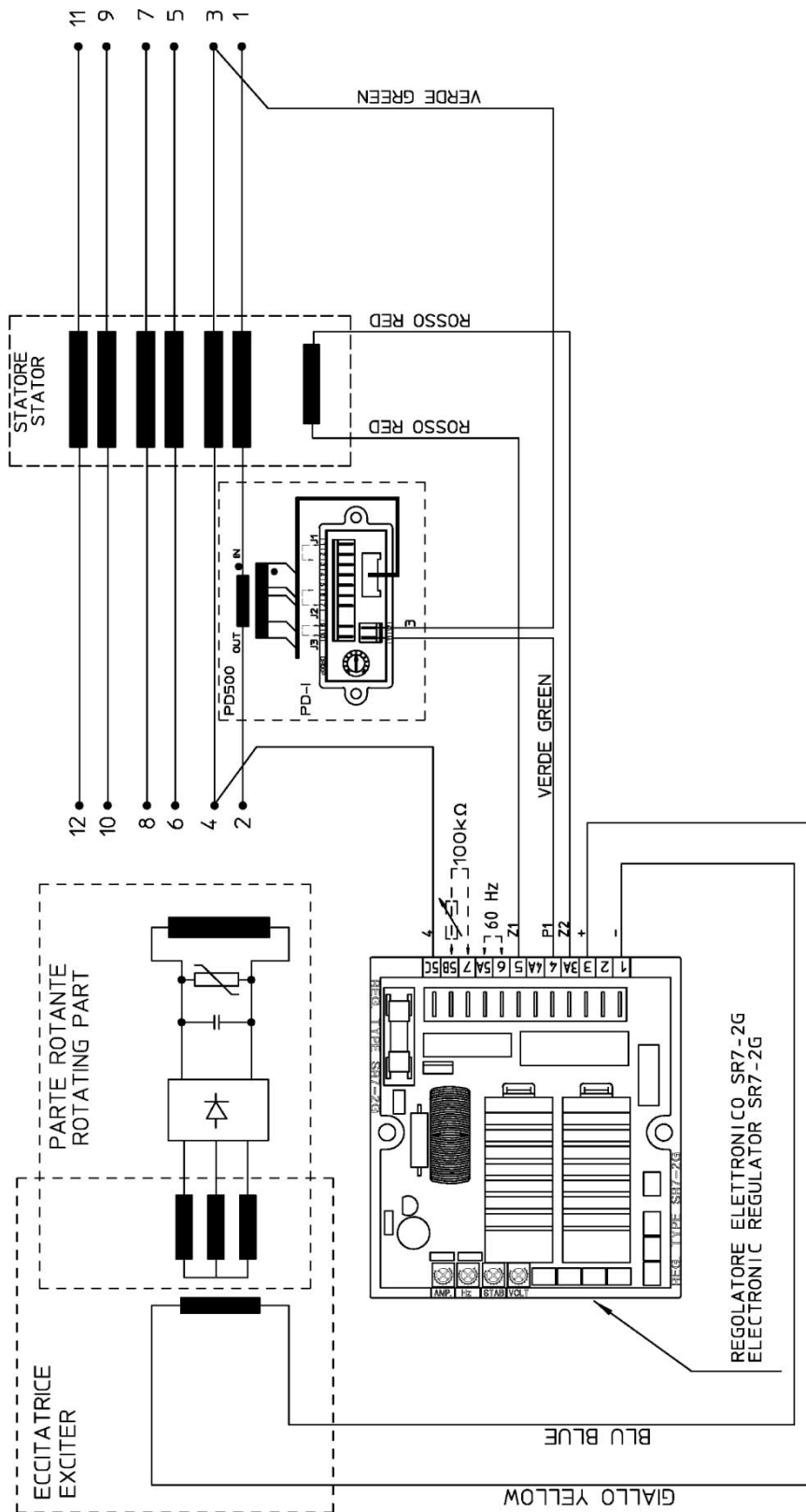
sch_A2544-04_001r00

A2550: Alternators with 6 terminals, with UVR6 analog regulator.



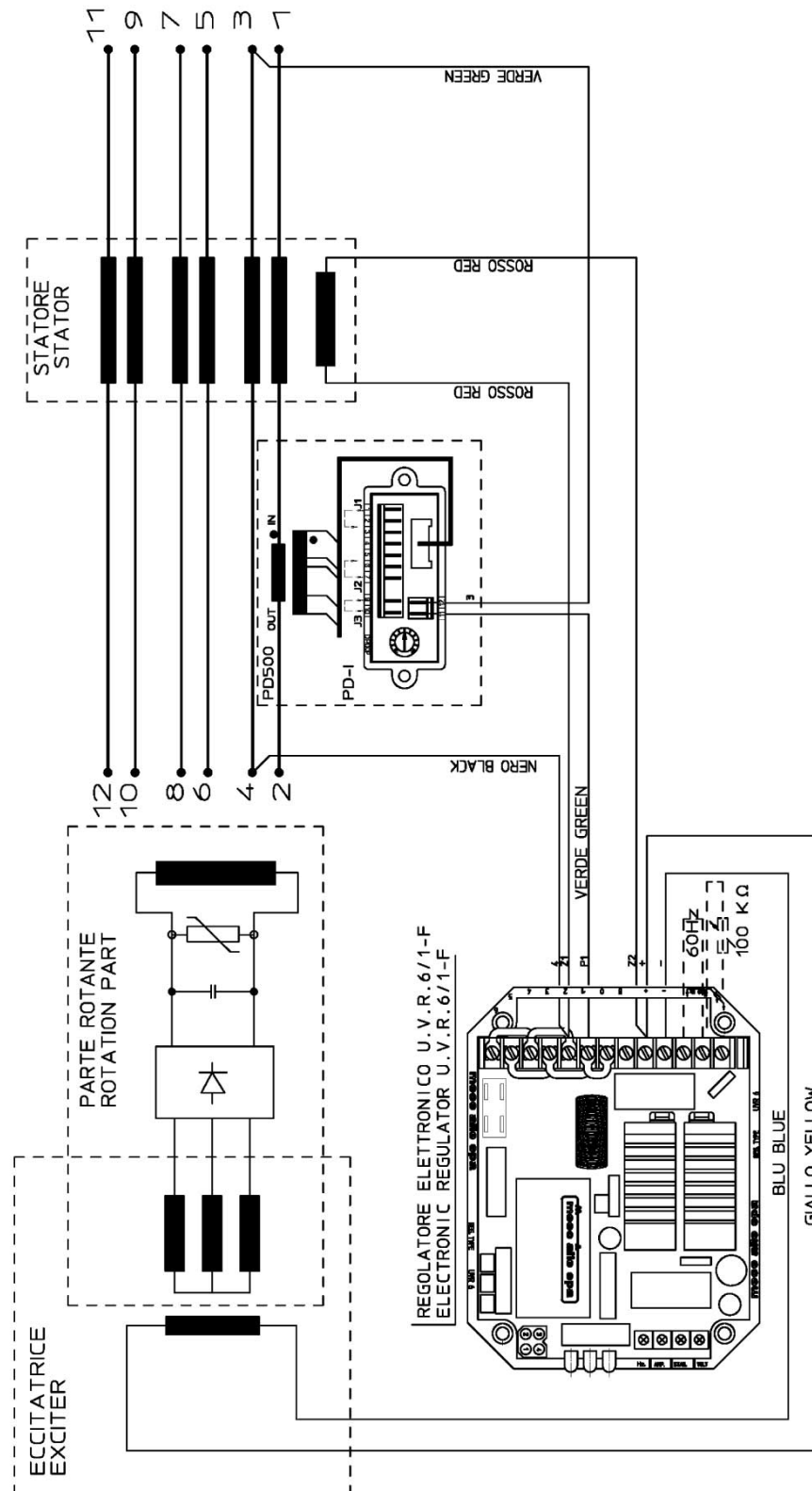
sep_A2550_04_001-r00

A2545: Alternators with 12 terminals, with SR7 analog regulator.



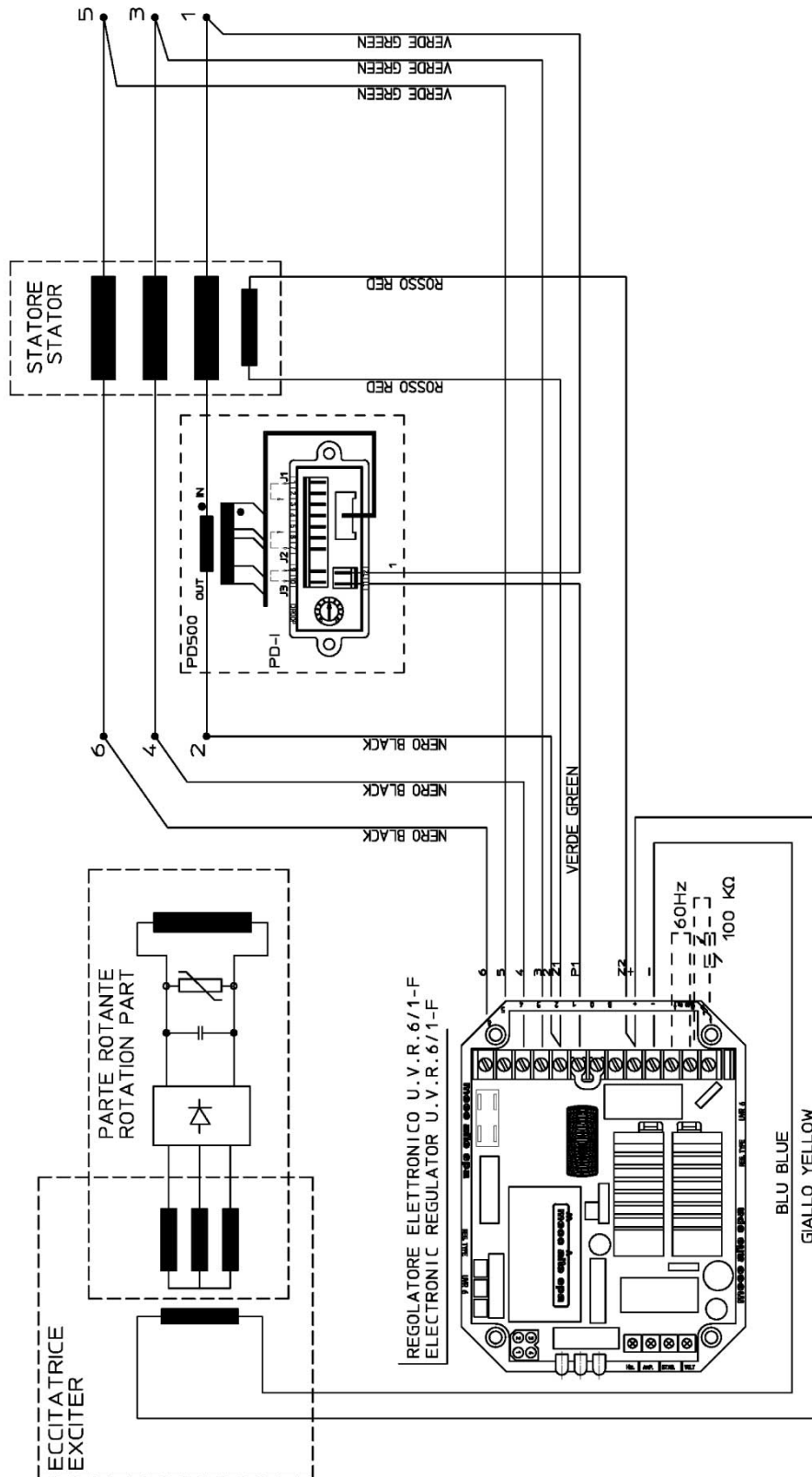
ser_A2545-04_001-00

A2549: Alternators with 12 terminals, with UVR6 analog regulator.



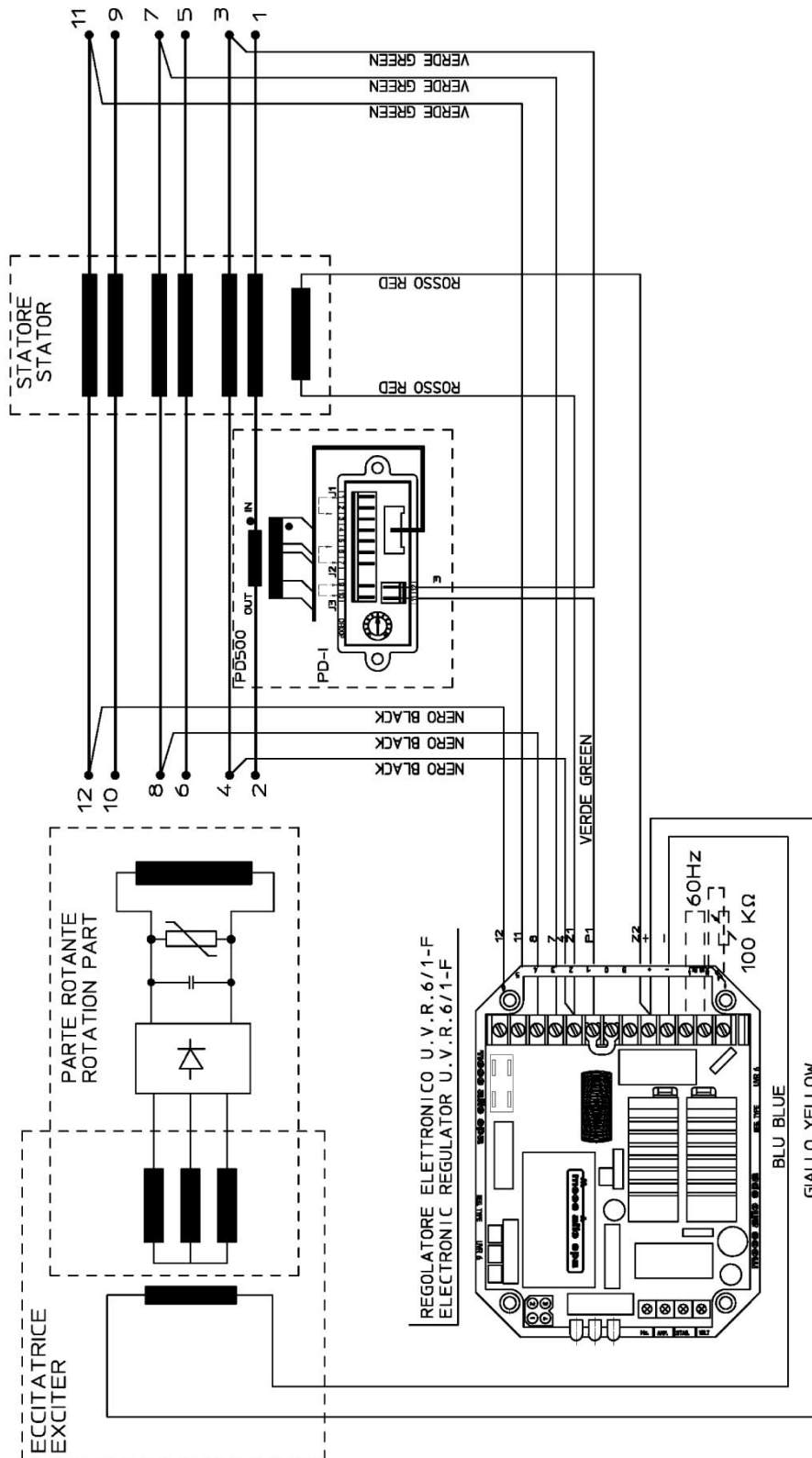
sef_A2549-04_001-00

A2548: Alternators with 6 terminals, three-phase reference with UVR6 analog regulator.



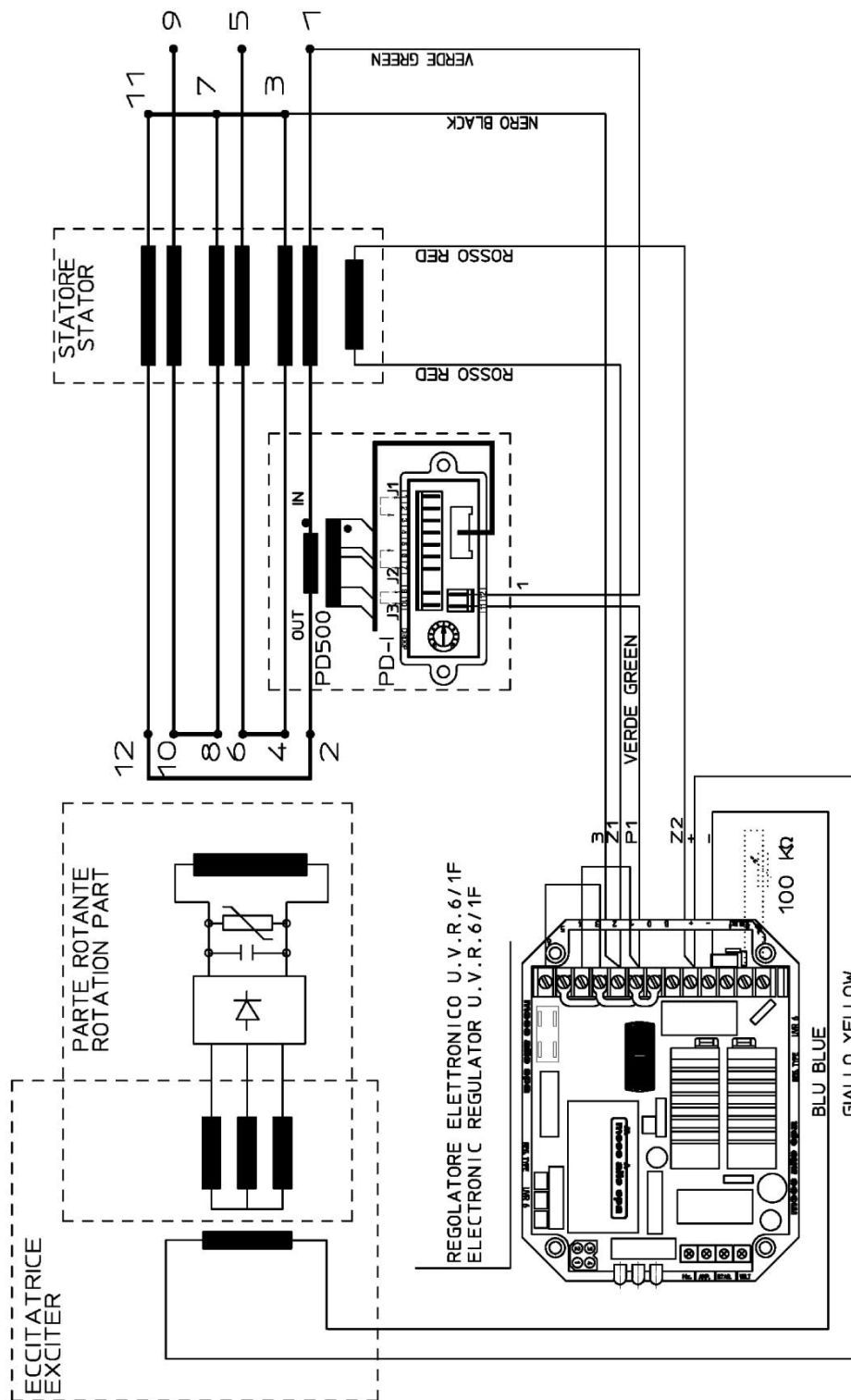
sep_A2548_05_001-00

A2552: Alternators with 12 terminals, three-phase reference with UVR6 analog regulator.



sep_A2552_04_001-r00

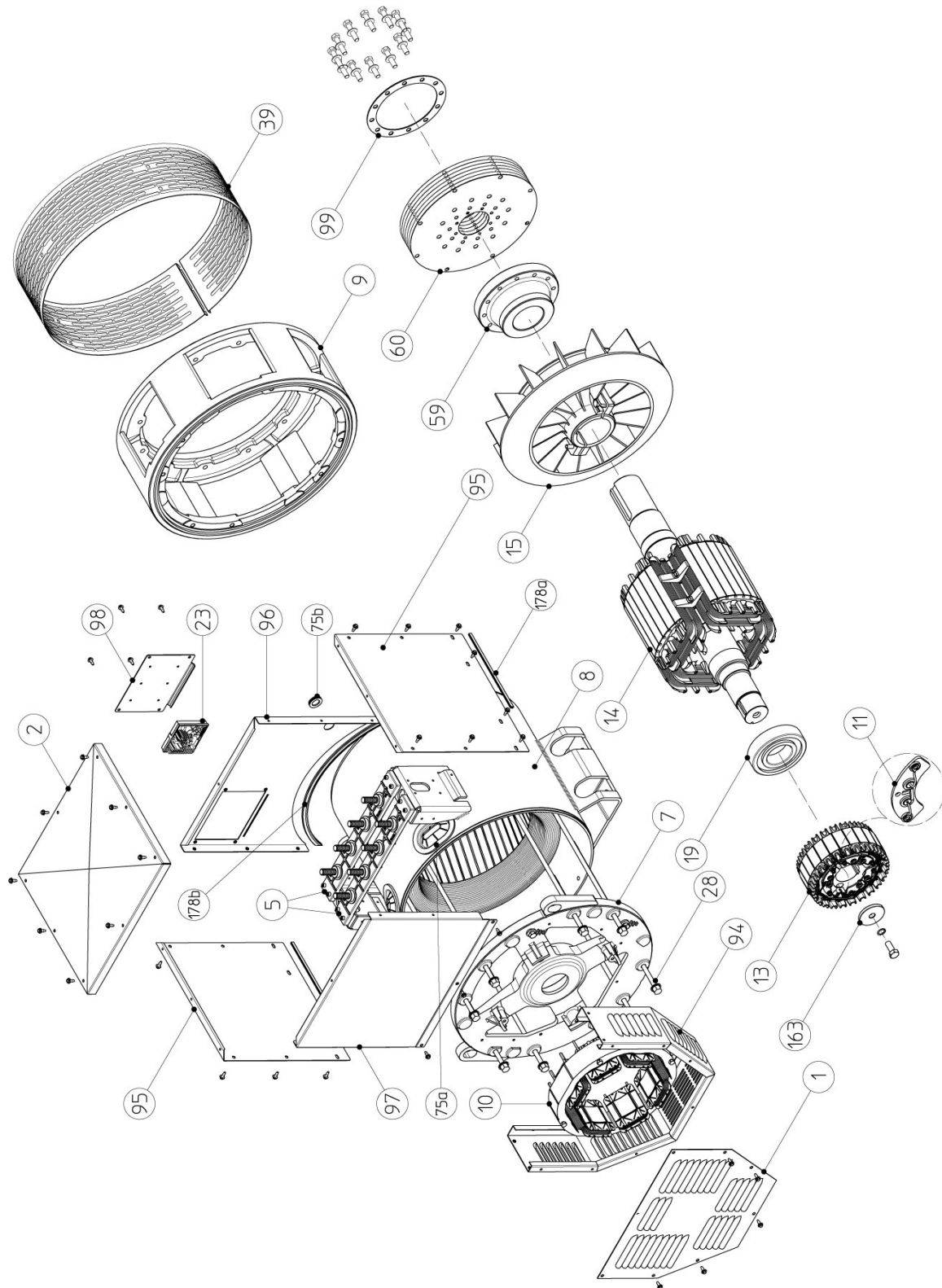
SCC0054: Alternators with 12 terminals (ZIG ZAG connection), with UVR6 analog regulator.



setl_SCC0054-01_001-r00

13 Replacement parts

13.1 ECO 38A Construction type MD35



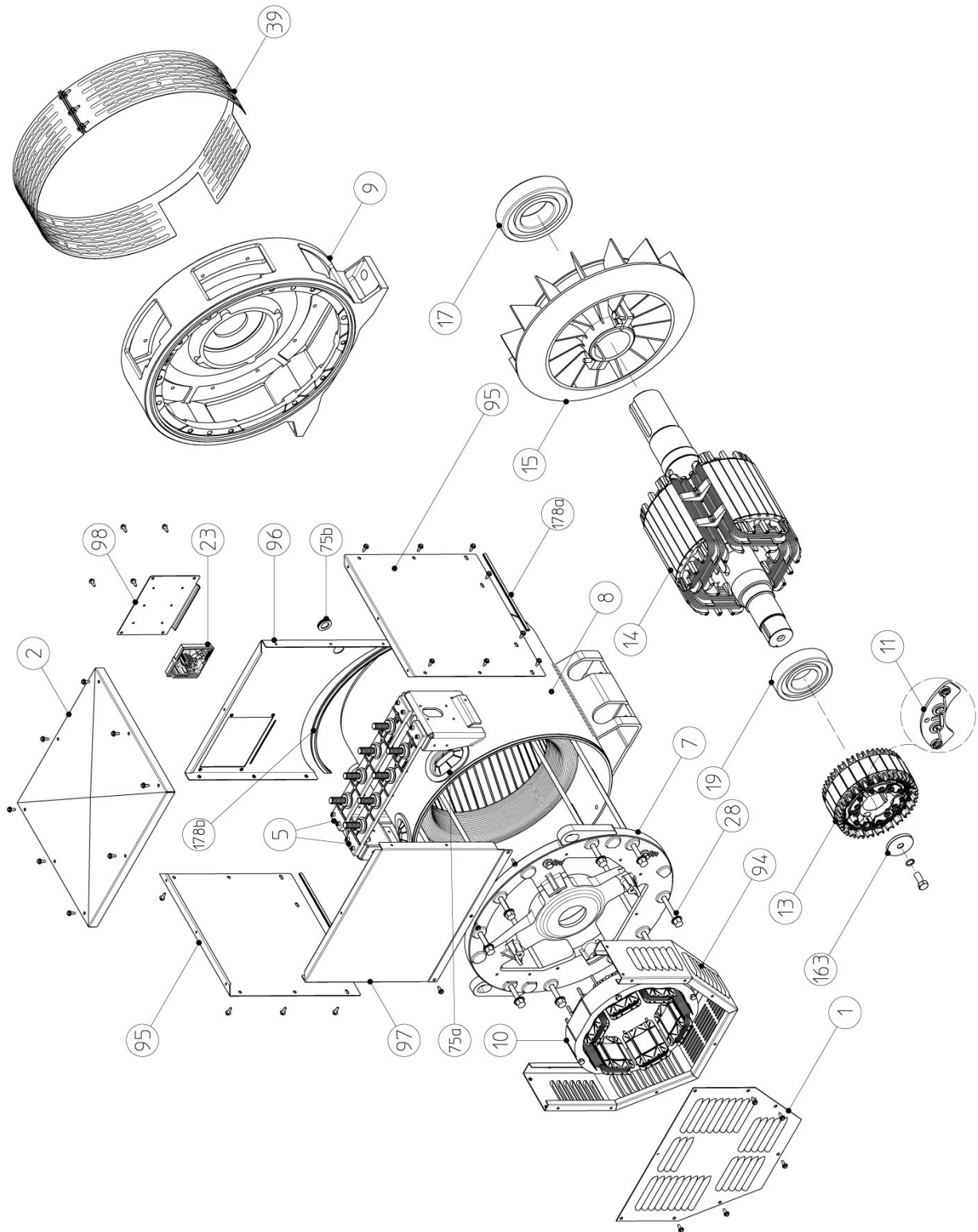
Rev_A9461-00_ECO38A_MD35_001-00

ECO 38 List of replacement parts

Item	Name	
1	Back latch	
2	Protective cover	
5	U1-V1-W1 use terminal block	
	U2-V2-W2 use terminal block	
7	Back cover	
8	Frame with stator	
9	Front Cover MD35	SAE 0.5
		SAE 1
		SAE 2
		SAE 3
10	Exciter stator	
11	Rotating diode bridge	
13	Exciter rotor	
14	Rotating Inductor	
15	Fan	
19	Back bearing	
23	DSR Electronic Regulator	

Item	Name
28a	Cover rod S
28b	Cover rod L
39	Single-bearing protective net
59	Flywheel disc holder hub 14-11 1/2
60	SAE Discs 14
	SAE Discs 11 1/2
75a	Cable gland rubber washer
75b	Cable gland rubber washer DG 21
94	Back carter
95	Terminal block side panel
96	Terminal block front panel
97	Terminal block back panel
98	Regulator holder panel
99	Disc blocking ring
163	Blocking washer
178a	EPDM rubber profile size 8.5x5.5mm
178b	UL EPDM+SP reinforced profile size 15.6x8.4mm

13.2 ECO 38A Construction type B3B14



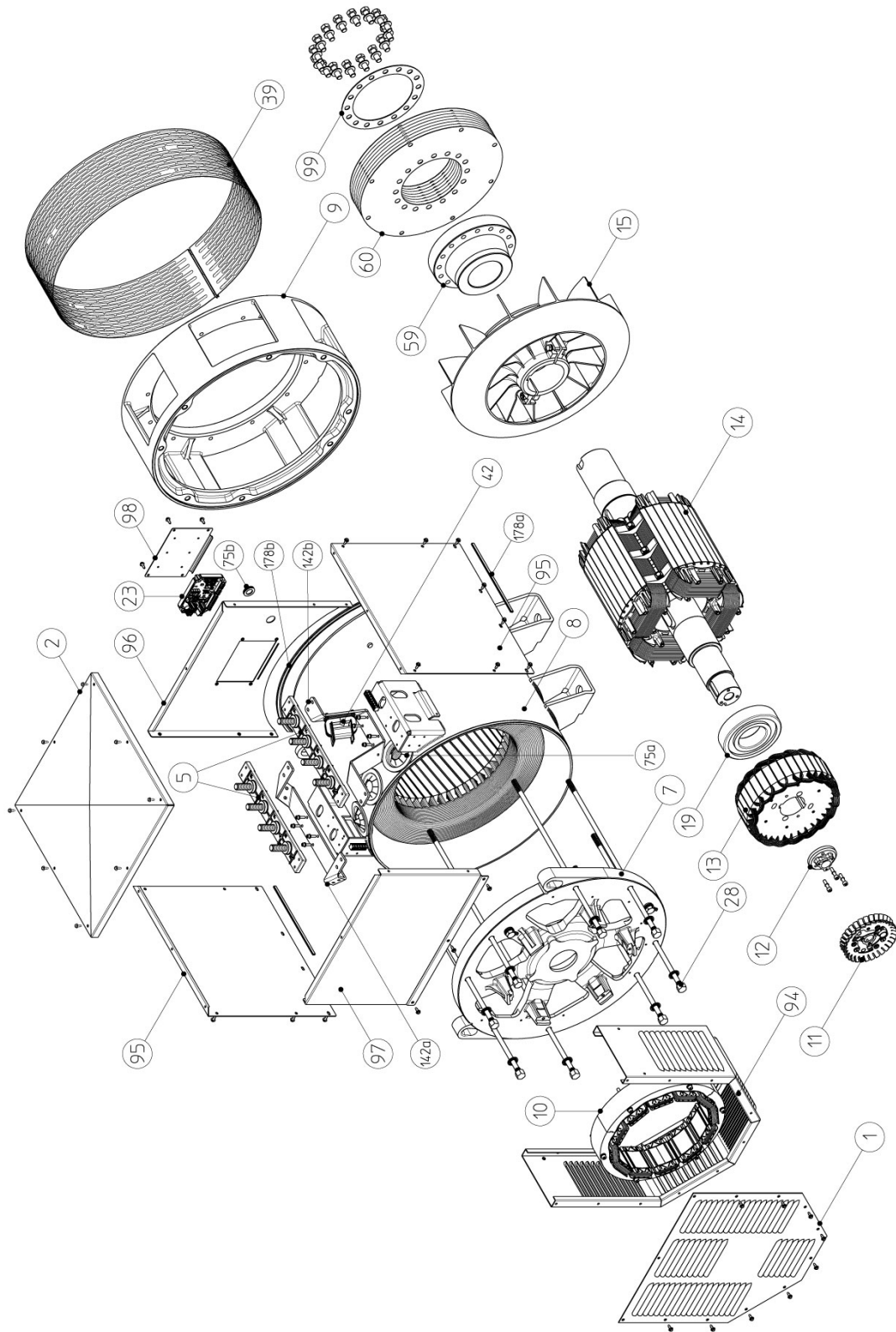
Tav_A9403-00_ECO38A_B3B14_001-00

ECO 38 List of replacement parts

Item	Name
1	Back latch
2	Protective cover
5	U1-V1-W1 use terminal block
	U2-V2-W2 use terminal block
7	Back cover
8	Frame with stator
9	Front Cover B3B14
10	Exciter stator
11	Rotating diode bridge
13	Exciter rotor
14	Rotating Inductor
15	Fan
17	Front bearing
19	Back bearing
23	DSR Electronic Regulator

Item	Name
28a	Cover rod S
28b	Cover rod L
39	Double-bearing protective net
75a	Cable gland rubber washer
75b	Cable gland rubber washer DG 21
94	Back carter
95	Panel on terminal block side
96	Terminal block back panel
97	Terminal block back panel
98	Regulator holder panel
99	Disc blocking ring
163	Blocking washer
178a	EPDM rubber profile size 8.5x5.5mm
178b	UL EPDM+SP reinforced profile size 15.6x8.4mm

13.3 ECO 40B Construction type MD35



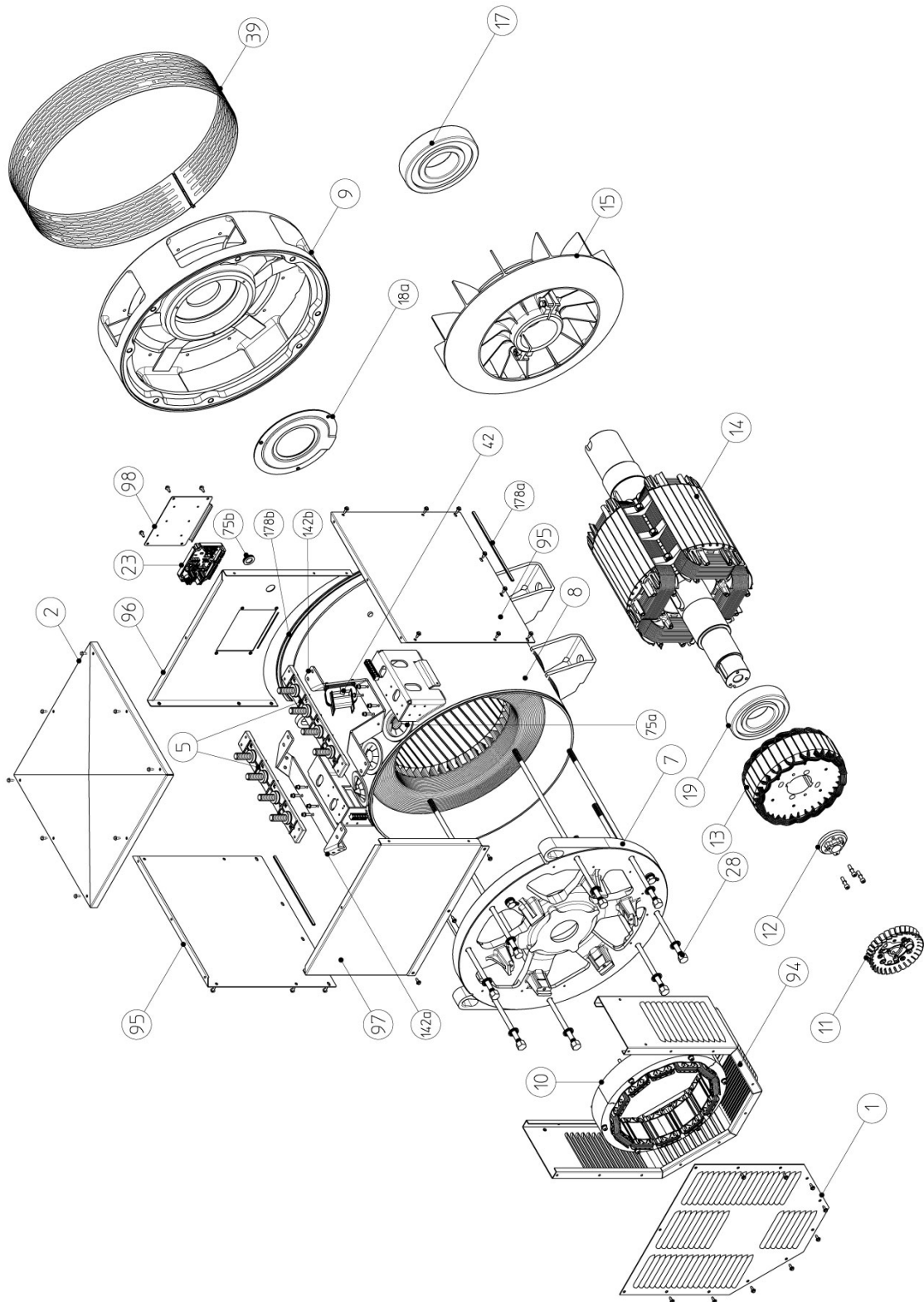
Tab. A 0996-00_ECO40A_MD35_001-00

ECO 40 List of replacement parts

Item	Name	
1	Back latch	
2	Protective cover	
5	U2-V2-W2 use terminal block	
	U2-V2-W2 use terminal block	
7	Back cover	
8	Frame with stator	
9	Front Cover MD35	SAE 1
		SAE 0.5
		SAE 0
		SAE 00
10	Exciter stator	
11	Rotating diode bridge	
12	Exciter blocking hub	
13	Exciter rotor	
14	Rotating Inductor	
15	Fan	
19	Back bearing	
23	DER1 Electronic Regulator	
28a	Cover rod S	

Item	Name
28b	Cover rod L
28c	Cover rod VL
39	Single-bearing protective net
42	Paralleling device
59	Flywheel disc holder hub 14-11 1/2
60	SAE 14 Discs
	SAE 18 Discs
75a	Cable gland rubber washer
75b	Cable gland rubber washer DG 21
94	Back carter
95	Panel on terminal block side
96	Terminal block back panel
97	Terminal block back panel
98	Regulator holder panel
99	Disc blocking ring
142a	Left support bracket
142b	Right support bracket
178a	EPDM rubber profile size 8.5x5.5mm
178b	UL EPDM+SP reinforced profile size 15.6x8.4mm

13.4 ECO 40B Construction type B3B14



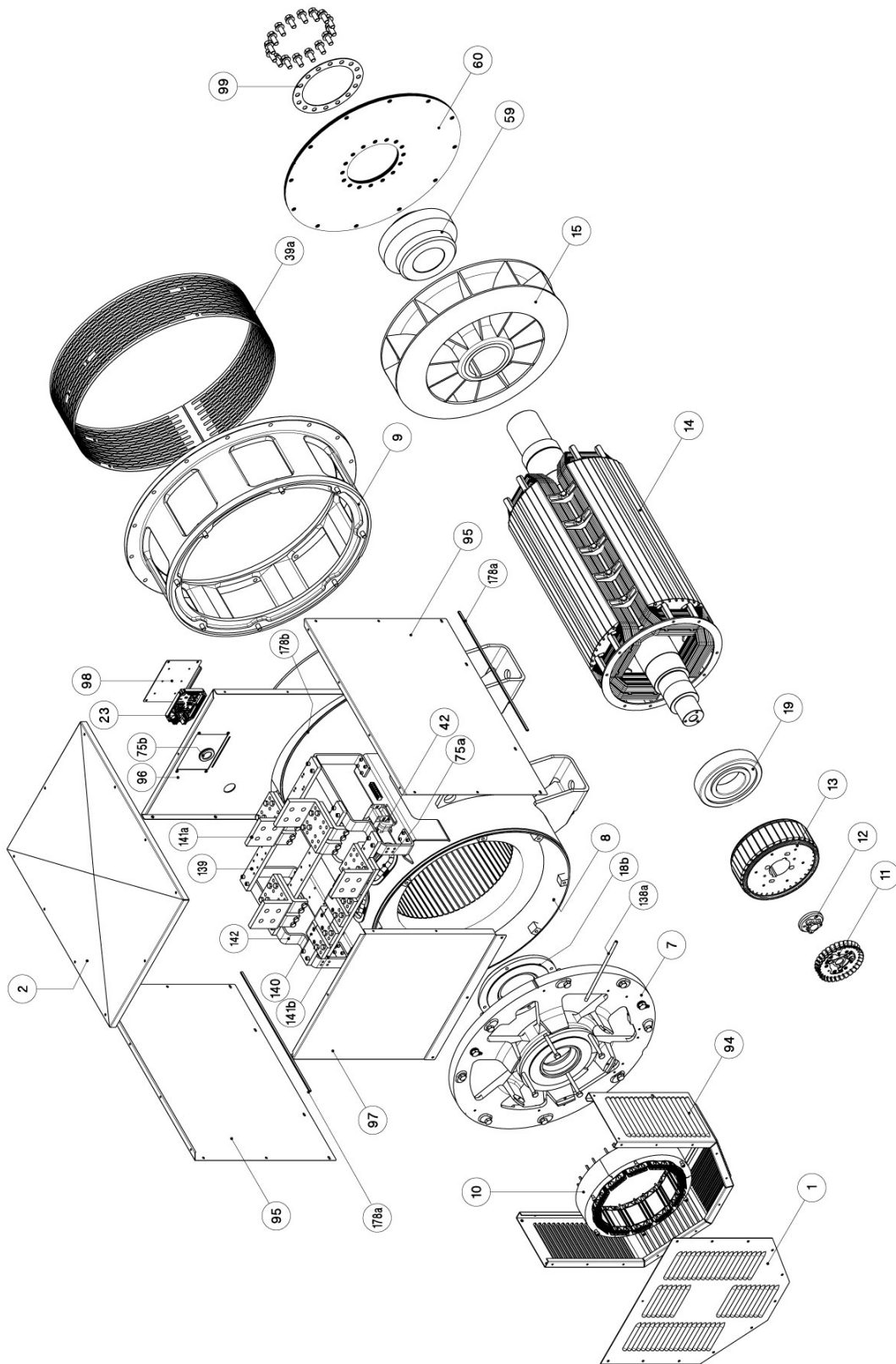
Tel_A604-00_ECO40A_B3B14_001-00

ECO 40 List of replacement parts

Item	Name
1	Back latch
2	Protective cover
5	U2-V2-W2 use terminal block
	U2-V2-W2 use terminal block
7	Back cover
8	Frame with stator
9	Front Cover B3B14
10	Exciter stator
11	Rotating diode bridge
12	Exciter blocking hub
13	Exciter rotor
14	Rotating Inductor
15	Fan
17	Front bearing
19	Back bearing
23	DER1 Electronic Regulator
28a	Cover rod S

Item	Name
28b	Cover rod L
28c	Cover rod VL
39	Double-bearing protective net
42	Fastening of paralleling device
75a	Cable gland rubber washer
75b	Cable gland rubber washer DG 21
94	Back carter
95	Panel on terminal block side
96	Terminal block back panel
97	Terminal block back panel
98	Regulator holder panel
99	Disc blocking ring
142a	Left support bracket
142b	Right support bracket
178a	EPDM rubber profile size 8.5x5.5mm
178b	UL EPDM+SP reinforced profile size 15.6x8.4mm

13.5 ECO 43A Construction type MD35



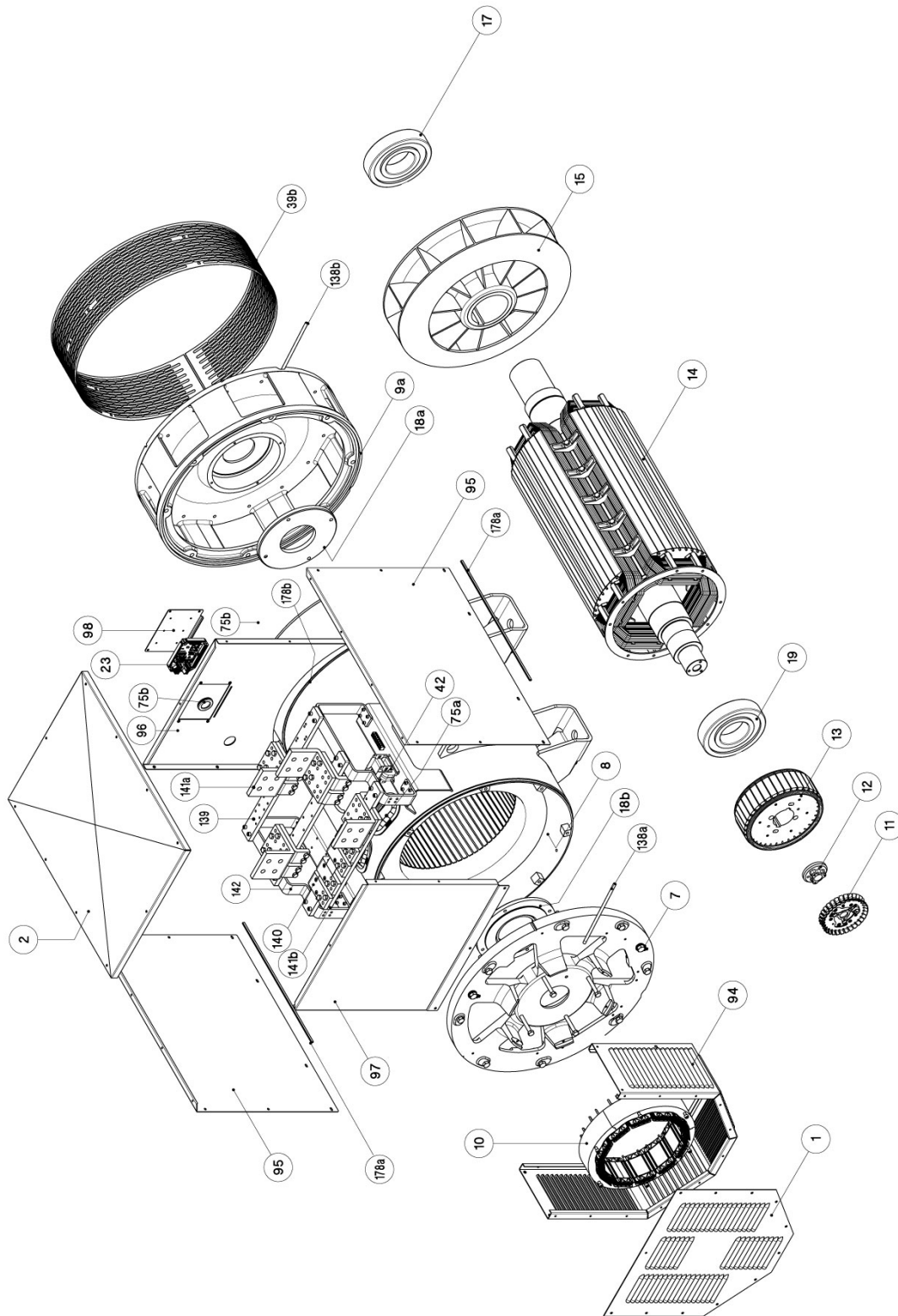
Tav_A5209-01_ECO43A_MD35_001-r00

ECO 43 List of replacement parts

Item	Name	
1	Back latch	
2	Protective cover	
7	Back cover	
8	Frame with stator	
9	Front Cover	MD35 SAE 0
		MD35 SAE 00
10	Exciter stator	
11	Rotating diode bridge	
12	Exciter blocking hub	
13	Exciter rotor	
14	Rotating Inductor	
15	Fan	
17	Front bearing	
18a	Internal front flange	
18b	Internal back flange	
19	Back bearing	
23	DER1/A Electronic Regulator	
39a	Single-bearing protective net	
42	Fastening of paralleling device	

Item	Name
59	Flywheel disc holder hub 21
	Flywheel disc holder hub 18
60	SAE 21 Discs
	SAE 18 Discs
75a	Cable gland rubber washer
75b	Cable gland rubber washer DG29
94	Back carter
95	Panel on terminal block side
96	Terminal block back panel
97	Terminal block back panel
98	Regulator holder panel
99	Disc blocking ring
138a	Back lubricator tube
139	Terminal board support bracket
140	Aluminum terminal
141a	Aluminum bridge
141b	Aluminum connection bar
142	Support bracket
178a	EPDM rubber profile size 8.5x5.5mm
178b	UL EPDM+SP reinforced profile size 15.6x8.4mm

13.6 ECO 43A Construction type B3B14



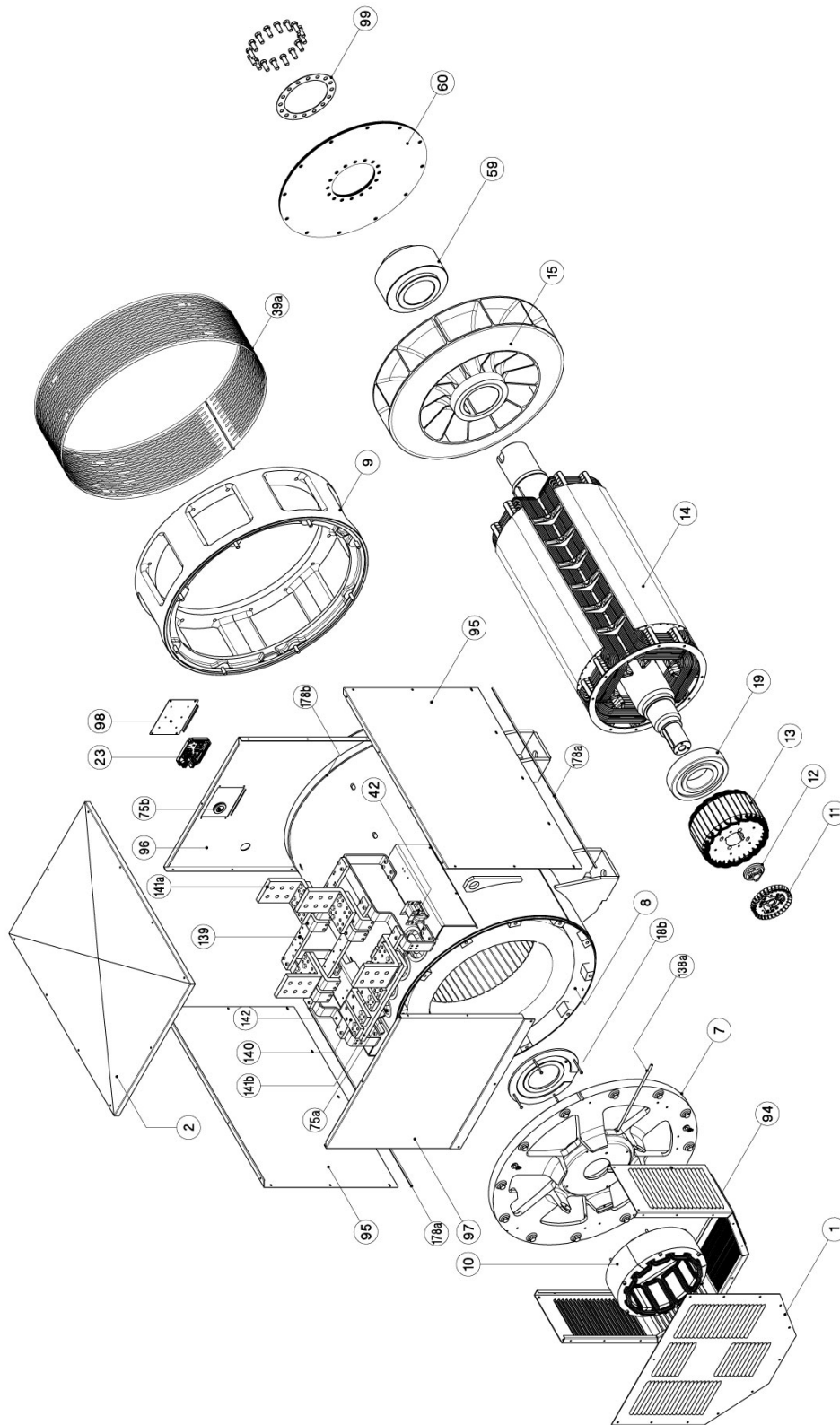
Tav_A 6271-01_ECO43A_B3B14_001-000

ECO 43 List of replacement parts

Item	Name
1	Back latch
2	Protective cover
7	Back cover
8	Frame with stator
9a	Front Cover B3B14
10	Exciter stator
11	Rotating diode bridge
12	Exciter blocking hub
13	Exciter rotor
14	Rotating Inductor
15	Fan
17	Front bearing
18a	Internal front flange
18b	Internal back flange
19	Back bearing
23	DER1/A Electronic Regulator
39a	Single-bearing protective net
39b	Double-bearing protective net

Item	Name
42	Fastening of paralleling device
75a	Cable gland rubber washer
75b	Cable gland rubber washer DG29
94	Back carter
95	Panel on terminal block side
96	Terminal block back panel
97	Terminal block back panel
98	Regulator holder panel
138a	Back lubricator tube
138b	Front lubricator tube B3B14
139	Terminal board support bracket
140	Aluminum terminal
141a	Aluminum bridge
141b	Aluminum connection bar
142	Support bracket
178a	EPDM rubber profile size 8.5x5.5mm
178b	UL EPDM+SP reinforced profile size 15.6x8.4mm

13.7 ECO 46A Construction type MD35



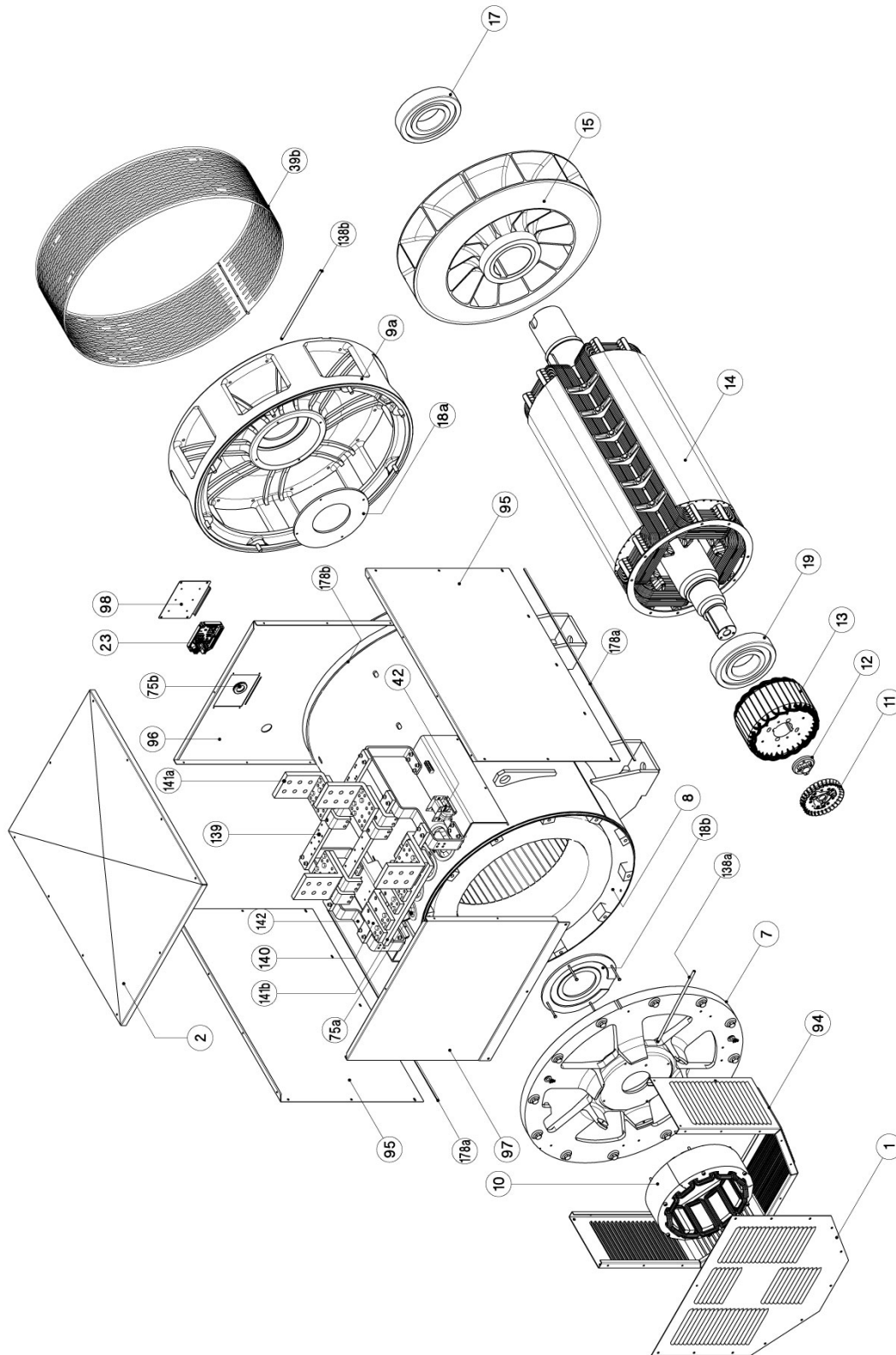
Ten_A8272-01_ECO46A_MD35_001-00

ECO 46 List of replacement parts

Item	Name	
1	Back latch	
2	Protective cover	
7	Back cover	
8	Frame with stator	
9	Front Cover	MD35 SAE 0
		MD35 SAE 00
10	Exciter stator	
11	Rotating diode bridge	
12	Exciter blocking hub	
13	Exciter rotor	
14	Rotating Inductor	
15	Fan	
17	Front bearing	
18a	Internal front flange	
18b	Internal back flange	
19	Back bearing	
23	DER1/A Electronic Regulator	
39a	Single-bearing protective net	
39b	Double-bearing protective net	
42	Fastening of paralleling device	

Item	Name
59	Flywheel disc holder hub 21
	Flywheel disc holder hub 18
60	SAE 21 Discs
	SAE 18 Discs
75a	Cable gland rubber washer
75b	Cable gland rubber washer DG29
94	Back carter
95	Panel on terminal block side
96	Terminal block back panel
97	Terminal block back panel
98	Regulator holder panel
99	Disc blocking ring
138a	Back lubricator tube
139	Terminal board support bracket
140	Aluminum terminal
141a	Aluminum bridge
141b	Aluminum connection bar
142	Support bracket
178a	EPDM rubber profile size 8.5x5.5mm
178b	UL EPDM+SP reinforced profile size 15.6x8.4mm

13.8 ECO 46A Construction type B3B14



TbV_A9274-01_ECO46A_B3B14_001-r00

ECO 46 List of replacement parts

Item	Name
1	Back latch
2	Protective cover
7	Back cover
8	Frame with stator
9a	Front Cover B3B14
10	Exciter stator
11	Rotating diode bridge
12	Exciter blocking hub
13	Exciter rotor
14	Rotating Inductor
15	Fan
17	Front bearing
18a	Internal front flange
18b	Internal back flange
19	Back bearing
23	DER1/A Electronic Regulator
39b	Double-bearing protective net

Item	Name
42	Paralleling device
75a	Cable gland rubber washer
75b	Cable gland rubber washer DG29
94	Back carter
95	Panel on terminal block side
96	Terminal block front panel
97	Terminal block back panel
98	Regulator holder panel
138a	Back lubricator tube
138b	Front lubricator tube B3B14
139	Terminal block support bracket
140	Aluminum terminal
141a	Aluminum bridge
141b	Aluminum connection bar
142	Support bracket
178a	EPDM rubber profile size 8.5x5.5mm
178b	UL EPDM+SP reinforced profile size 15.6x8.4mm

14 Dismantlement and disposal

To dispose of the alternator or its components you will have to recycle it, keeping in mind the nature of its various components (for instance: metals, plastic parts, rubber, oil and so on).

You will have to designate specialized companies for this purpose and , however, observe the waste management applicable laws.



Most of the materials used in the alternators can be recycled by specialized waste management companies. The instructions contained in this chapter are recommendations to follow for environmentally sound disposal; the user has the responsibility of observing local regulations.



For indicative percentages of the materials used in Mecc Alte alternators see paragraph 2.3.9.

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