

EDP-C2 2017

ELCTRONIC CONTROLLER

EDP CONCEPTION

EDPCONCEPTION.COM

Rv.Pid 2017

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Introduction

- **EDP-C2** consists in a complete electronic concept which allows a greater control of the working parameters resulting in an increase lifespan of the generator and the electromagnet.
- The controller is easy to install. It only needs a few connections.
- The controller adapts to most generators within a range of 180 to 300 volts DC with a maximum of 5 amps on the field.
- The current of electromagnet does not affect the controller.
- The system tolerates $\pm 14\%$ of the generator RPM variation without affecting the efficiency or broke the controller, which is very useful for the system that use hydraulic driven generators.
- The controller's display shows the voltage and the amperage applied to the electromagnet.
- The controller also shows the modulation and voltage applied to the generator's field .
- The information displayed by the controller will allow us to guide you, even at distance, for the adjustments, how to increase the efficiency and how to fix your lifting equipment.

INSTALLATION

For new installation see page 13

IMPORTANT NOTICE: The installation must be carried out by qualified personnel, voltages can reach 400 volts DC. Installation must be done by a professional. Be sure to follow the connection diagram correctly.

- 1- Fix the main casing to a solid surface without high vibration and far from the heating source.
- 2- Have the wires pass through the bottom of the casing in a way to prevent water break through.
- 3- Refer to the installation diagram to make wiring and double check if everything is connected correctly.
- 4- Do not close the generator's connection box because it is possible that F1 and F2 or F1 and F4 need to be reversed; it is better to do it in this box and also if you have coloured or numbered wires to respect.
- 5- Turn the ignition key to power up the controller without activating the generator. NOTE that the controller must stay activated during the start-up procedure to insure the good functioning of the controller. That is why it is connected to the ignition.
- 6- The controller can display the actual isolation of the electromagnetic system. This message is for information only. Press on the right arrow to see it. Now you can select the next isolation value with the upward and downward arrow. If the isolation go under the selected value, an alarm appears only to inform you of the evolution of the isolation system. The system is still working properly.
- 7- It is now time to program the system according to your system requirements; the genuine settings are for an electromagnet of 230 volts DC. Refer to page 9.
- 8- Start the engine.
- 9- Adjust the throttle to the maximum to maintain a good hydraulic pressure.
- 10- If the parameter 'unlock' is engaged, the first time you will have to press on the command or the upper arrow for 1 sec. to activate the functions. After a while without usage (TB VO TIME), you will have to repeat this step. Check for the parameters in code '72' (TB VO TIME and unlock). Press on the upper arrow and observe the activity on the screen: volts, amps, field volts and modulation.
- 11- This step must be done with a cold magnet to have a good reading of amperage for the auto-adjustment. Push on the command or the upper arrow to load and wait 'NEW SET UP' message to appear and then push on the lower arrow to drop the material. The controller adjusts automatically the magnetization (load) and the dropping (drop) by respecting the parameters voltage. He can change some parameters identify by an * . The same parameters can be changed manually later on.

Controller properties

- **EDP-C2** is activated by 24 volts manual command instead of traditional 230 volts therefore making it safer for the operator. It has his own voltage control.
- If the wires of the electromagnet disconnect, the controller will automatically lower the voltage close to 0 volts DC to protect both the operator and the equipment.
- The controller will activate the electromagnetic field amperage only when needed to prevent premature wear of the generator.
- The controller offers the possibility to increase electromagnetic efficiency by having two power levels:
 1. One called 'HIGH VOLTAGE' which can generate more voltage during a predetermined time of 1 to 15 seconds that allows you to pick up more materiel.
 2. The other is called 'LOW VOLTAGE' which is about 15% less voltage than the standard electromagnet voltage. This VOLTAGE is only used to carry objects that have already been lifted thus keeping the electromagnet cooler.
- The controller may provide two dropping modes and two loading modes (refer to the next page)

Working with the controller

With only one command button: TB SW- MODE '0'

- 4- Press briefly on the command button for less than 0.5 sec and the controller will activate the electromagnet. If you hold the command button more than 0.5 sec the dropping sequence start at the release of the button.
- 5- Each time that you press on the command button, the controller will reactivate the high voltage for a predetermined time set in the parameter 'T-HIGH VOLTAGE'
- 6- To drop the materiel, hold the command button again for more than 0.5 sec.

With only one command button: TB SW- MODE '1'

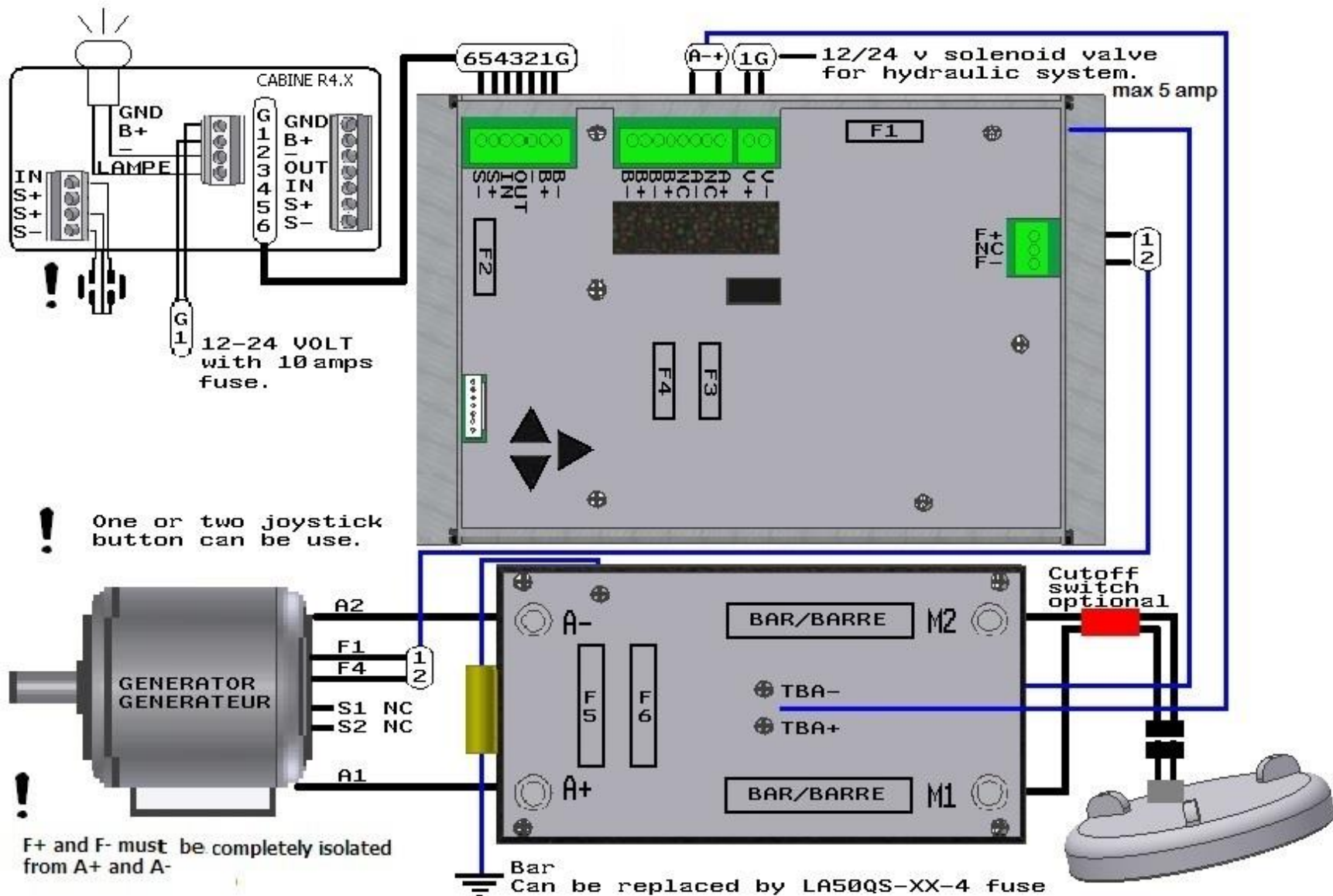
- 1- Press briefly on the command button for less than 0.5 sec and the controller will activate the electromagnet. If you hold the command button more than 0.5 sec, the electromagnet will drop the material at the same time the button is released.
- 2- Mode 1 and 2 .Press again briefly and the dropping sequence will start instantly. If you hold button during dropping cycle the (holds dropping) parameter are applied.

With two command button: TB SW- MODE '2'

- 1- Press briefly on the command button (less than 0.5 sec.) and the controller will activate the electromagnet.
- 2- Press a second command button to drop the materiel. If you hold this button during dropping cycle the (holds dropping) parameter are applied.

This button will be connected to 'TB IN'.

To enable or disable TB IN enter access code 102.



Programming of the parameters

Press the right arrow during 2 second . With the help of the two others arrows, select code '42' for the main parameters or the code '72' for the auxiliaries input and output.

- Press on the right arrow
- Use upward or downward arrows to scroll through the parameters.
- When you see the parameter that you would like to adjust press right arrow.
- Use the upward or downward arrows to change the value settings.
- Then, press on the right arrow; this will confirm the changes.
- To exit the programming mode, press on the downward arrows as many time as it takes to come back to the main menu.

Parameters description and original settings in parenthesis

If you come across this drawing  , it means that you can try some settings for the dropping before accepting them with the right arrow.

ACCES CODE 42

- **LANGUAGE**
Language used on the screen (English)
- **HIGH VOLTAGE**
Voltage to the electromagnet when lifting material
From 200 to 260 volts DC (240 volts)
- **T-HIGH VOLTAGE**
Time in which high voltage will be activated from 1 to 5 seconds (6)
- **LOW VOLTAGE**
Voltage for transport of material from 180 to 240 volts DC(220 volts DC)
- **MAXIMUM TIME.**
Maximum charging time from 1 to 10 minutes or inactive (10)
- **GENERATOR AMP.**
Alarm amperage from 15 to 200 amps max . (200)
- **AUTO PARAMETERS FOR DROPPING**
The controller will apply, by itself, the best dropping parameters to accomplish the work efficiently.

- **START RAMP**

% to which dropping slows down from 1 to 70 % (10%) *

Change positively or negatively the numbers to obtain the best dropping as possible .



- **DROPPING**

Dropping from 0 to 20 SEC. (1%)*

Change positively or negatively the number to obtain the best dropping as possible.



HOLDS DROPPING SWITCH

These parameters are activated by holding the dropping command button during the dropping cycle

- **HOLDS DROPPING**

Dropping from 0 to 20 SEC. (1%)*

Hold dropping command to use this parameter.

0 = disable cleaning cycle

Change positively or negatively the number to obtain the best dropping as Possible .



* These parameters will change with the auto-adjustment

INPUT/OUTPUT (CODE '72')

- 'TB SW-' MODE -Mode '0': First impulsion (-0.5 sec) active magnetization. Every short impulsion that fallows reactivates the high voltage. A long impulsion (+ 0.5 sec) active the demagnetization.
-Mode '1': First impulsion (-0.5 sec) activates the magnetization. The second impulsion (-0.5 sec) deactivates the dropping. A long impulsion (+0.5 sec) deactivates the magnetization completely.
-Mode '2': A first impulsion (-0.5 sec) activates the magnetization and a second impulsion (-0.5 sec) active the demagnetization .

THE ORIGINAL SETTING IS MODE '2'

- 'TB VO' -hydraulic valve: output activates the hydraulic flow with a minimum time of 1 to 60 minutes or infinite.
-Magnet selection uses this for magnet selection after complete magnet dropping cycle on multiple magnet system like spreader .Use with optional X BOARD .

THE ORIGINAL SETTING IS 10 MINUTES.

- TB IN To enable or disable TB IN enter access code 102.

To put the parameters back to their default settings

Press for 1 second on the right arrow.

After, with the help of the other two arrows, select '0' and press one time on the right arrow.

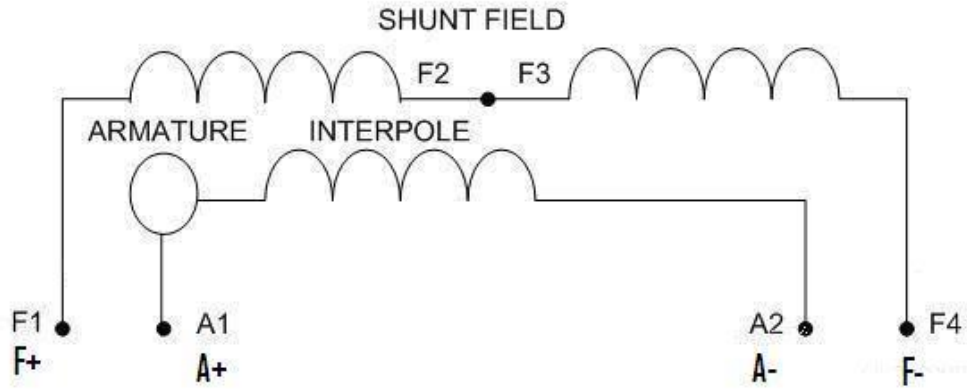
Fuse replacement

FUSE NO.1	MDL 1 AMP 250 V
FUSE NO.2	AGC 4 AMP 250 V
FUSE NO.3	ABC-SHF 5 AMP 250 V CERAMIC
FUSE NO.4	ABC-SHF 5 AMP 250 V CERAMIC
FUSE NO.5	ABC-SHF 5 AMP 250V MAX 5 AMP
FUSE NO.6	ABC-SHF 5 AMP 250V MAX 5 AMP

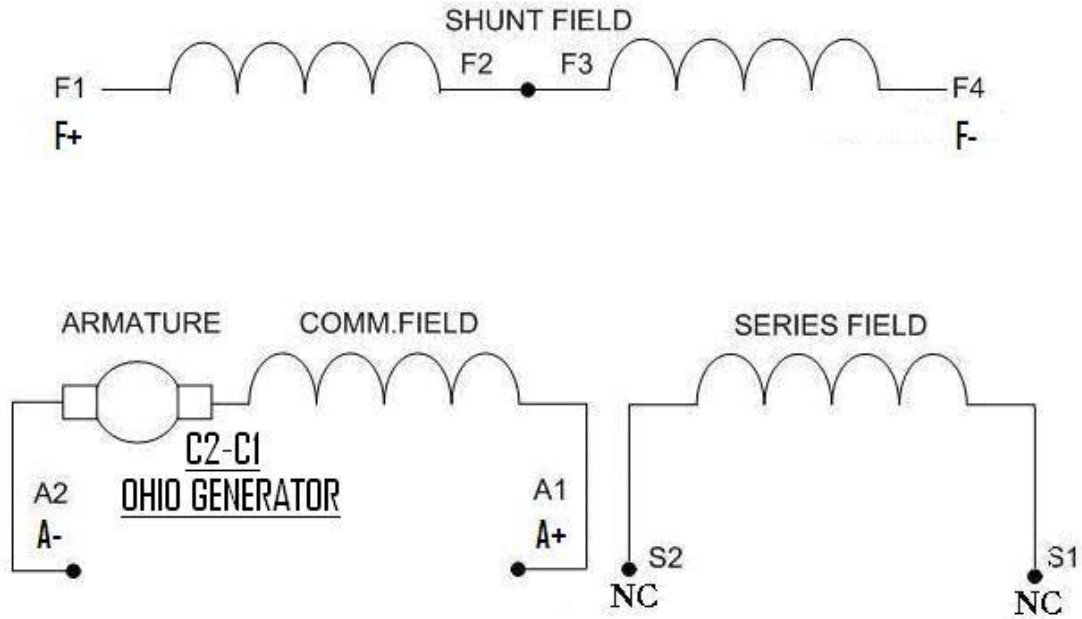
WARNING: Do not replace ceramic fuses by glass fuses because the glass fuses could literally explode under that kind of voltage.

By doing so, it could be really dangerous for the eyes and the electric circuits.

FIELD REVERSING SHUNT MOTOR



**DC GENERATOR CONNECTION DIAGRAM
COMPOUND WOUND SHORT CONNECTION**



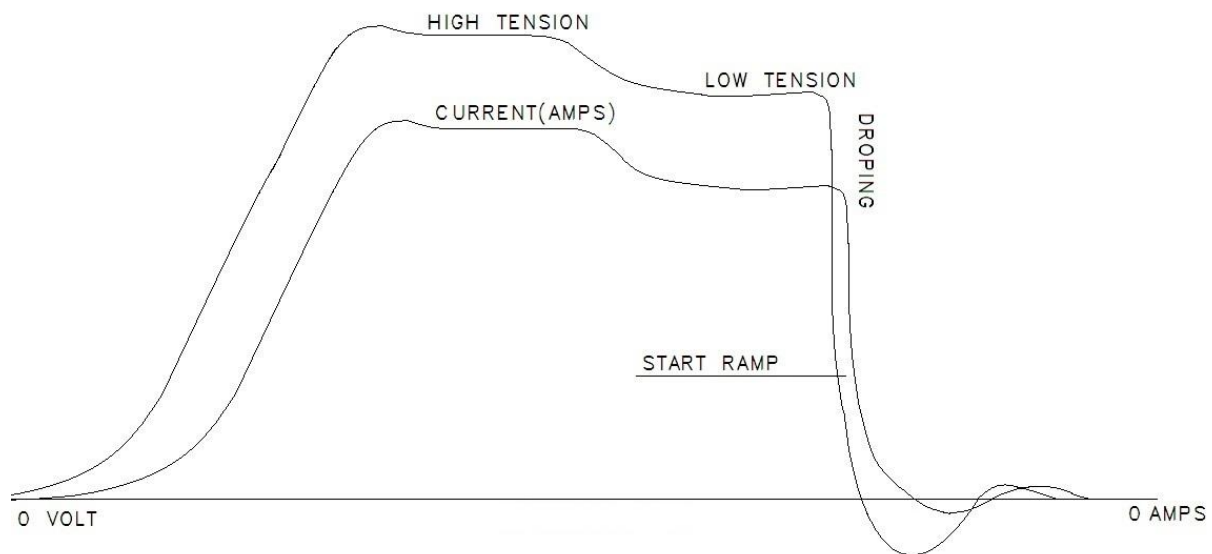
NOTICE C: 1

The power conductors must be of proper size to resist the load.

Use the following diagram for conductor size:

<u>AMP</u>	<u>AWG</u>	<u>IEC</u>
0 to 20	12	4mm
20 to 30	10	6mm
30 to 45	8	10mm
45 to 75	6	16mm
76 to 125	4	25mm

VOLTAGE AND CURRENT GRAPHIC



How to calculate the pulley size to reach the maximum power
The RPM must be 10% maximum faster than the generator specification

NEW INSTALLATION

- **For a generator of 1750 RPM : 180 to 230 volts DC field**

Diameter of the drive pulley divided by 1750 RPM multiplied by the MAXIMUM RPM of the engine equal the diameter of the generator`s pulley.

$$D / 1750 \text{ RPM} \times \text{engine RPM}$$

- **For a generator of 2500 RPM : 230 volts DC field**

Diameter of the drive pulley divided by 2500 RPM multiplied by the MAXIMUM RPM of the engine equal the diameter of the generator`s pulley.

$$D / 2500 \text{ RPM} \times \text{engine RPM}$$

- **For a generator of 3450 RPM : 180 to 230 volts DC field**

Diameter of the drive pulley divided by 3450 RPM multiplied by the MAXIMUM RPM of the engine equal the diameter of the generator`s pulley.

$$D / 3450 \text{ RPM} \times \text{engine RPM}$$

EXISTING INSTALLATION

Note: **CHOOSE THE EASIEST PULLEY TO CHANGE**

- **Calculation of the drive pulley**

The RPM written on the generator`s name plate multiplied by the diameter of the drive pulley.

- **Calculation of the generator`s pulley**

The actual RPM divided by the RPM written on the generator`s name plate multiplied by the diameter of the generator`s pulley.

Note: **The direction of rotation has no importance.**

Note: **THE BELTS TO USE ARE OF TYPE ‘ C’
(.625 INCHES)**

GENERATOR’S POWER IN KW	NUMBER OF BELTS
10 to 15 KW	2
15 to 33 KW	3
33 to 35 KW	4

MEMORY ALARM DISPLAY

Up to 62 alarms can be memorized. Pressing and holding the lower arrow for 1 second will allow you to visualize all alarms memorized. Use the lower arrow again to visualize the oldest alarm and the highest arrow to visualize the most recent ones.

When you are done, close the menu by pressing on the right arrow.

The maximum of second value is 255 ex. Overload at 300 amps

The value = 255 amps.

Alarms description

The digital indicator will display the controller abnormalities only as a help indicator. However, it's important to verify the abnormalities indications to find the proper cause. List of possible abnormalities:

- " ?? FIELD TEST??" - The field winding test are not good check F+,F- connection, be sure the generator are stopped and make power off 15sec.
- " NO LOAD " - Verify the magnet`s connections.
- " OVER LOAD " - Verify for the magnet`s insolation.
- " CT TROUBLE " - The current`s transformer is bad or disconnected.
Or short-circuit on magnet cable.
- " RPM LOW " - The speed is too low : check for slippery straps or any mechanical problem. Check fuse 5,6,3,4
- " BRUSHES " - The brushes are to short or they don`t move freely in the brush holder.
- " SHORT-CIRCUIT " - The wire could have been jammed or you may have conductive debris at the entrance of the magnet.
- " SWAP TB A+,A- " - Swap TB A+ and TB A-.
- " TIME OUT " - The magnet have been under voltage for too long and have reach the chosen parameter.
- " HIGH VOLTAGE " - This message appears when a wire of the magnet as a bad connection or a faulty magnet.
- After this alarm, the power must be shut off for a requested 30 seconds.
- " SWAP A+,A- " - Swap the connection on the fuse holder.
- " OVERHEAT " - The inside temperature of the controller is too high.
- " !! RESET !!" - Bad power or power failure, it is important to find the trouble : FIX IMMEDIATLY.

"F-A NOT ISOLATED" - The field and armature winding seem not be good
Very dangerous for the controller!!

TROUBLE SHOOTING

Problems frequently encountered:

Proper voltage is not reached or there is a bad magnetization - demagnetization

Cause

- Insufficient speed.
- Slippery belts.
- Bad connections.
- The generator is too small.
- Faulty brushes.
Check for faulty fuses
F5,F6,F3,F4

The voltage won't go over 50volts

- Check for faulty brushes.
- Check for faulty fuses.

The voltage is good but there is a lack of amperage or the magnet doesn't lift enough material

- Bad connection.
- Check the resistance of the magnet.

The amperage is to high

- Check the resistance of the magnet.

The output voltage is unstable

- Check if the RPM is too fast.

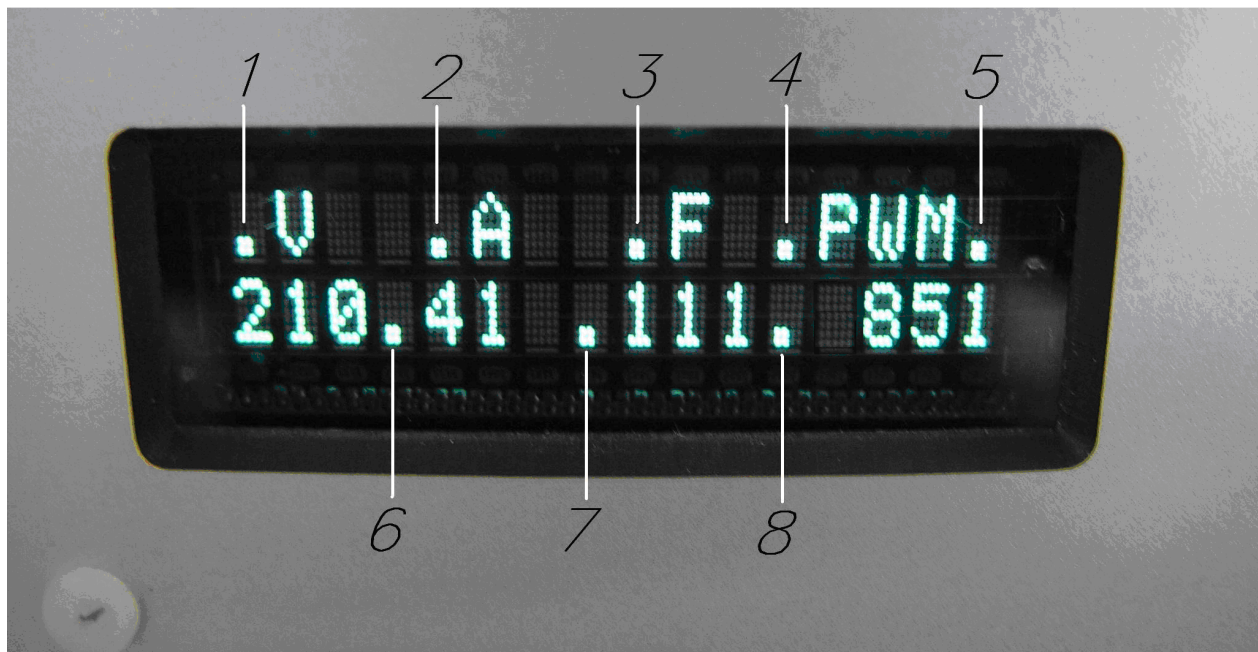
The demagnetization is not constant

- Verify the brushes.
- Insufficient speed

The demagnetization doesn't occur

- Check the polarities.
When the magnet is activated, the letters 'V' and 'A' should be written in the same character size (capital or lowercase letters) at the same time of the 'F' on the screen.

SIGNAL INDICATORS AND DESCRIPTION



- 1- MANUAL COMMAND
- 2- IGBT POSITIVE
- 3- IGBT NEGATIVE
- 4- PWM ACTIVE
- 5- CYCLE
- 6- INPUT
- 7- V OUT
- 8- OUTPUT
- V- POSITIVE VOLTAGE ARMATURE
- v - NEGATIVE VOLTAGE ARMATURE
- A- POSITIVE AMPERAGE
- a - NEGATIVE AMPERAGE
- F - POSITIVE VOLTAGE OF THE FIELD
- f - NEGATIVE VOLTAGE OF THE FIELD



PRODUCT GUARANTEE

Products manufactured by EDP Conception (hereinafter the "**Manufacturer**") are guaranteed against defects in design, manufacturing, labour and materials for a period of one year from the date of purchase (hereinafter the "**Guarantee Period**"), but only in cases of normal and proper use of the product by the purchaser and if the conditions contained herein are met (hereinafter the "**Guarantee**"). Only products sold by an authorized distributor of the Manufacturer (hereinafter the "**Distributor**"), will be covered by this Guarantee.

The Guarantee is applicable only to the original purchaser of the product and is transferable to a subsequent purchaser only with the written consent of the Manufacturer.

All defective products giving rise to the application of the Guarantee will be replaced or repaired at the expense and at the sole discretion of the Manufacturer at a service center authorized by the Manufacturer (hereinafter the "**EDP Service Center**"). Replacement or repair parts provided by the Manufacturer will be equivalent, in terms of performance and reliability, to the original parts and will remain covered by the Guarantee for the Guarantee Period remaining on the day of replacement.

The Manufacturer provides no guarantee with respect to losses or damages to the product which are attributable to misuse, improper installation of the product, accident, abuse, negligence, misconduct on the part of the purchaser, force majeure, excessive use, unauthorized modification, stress or unusual electrical interference, use in inappropriate environmental conditions, an accessory to the product or any other fault, damage or defect not covered under the terms of the Guarantee.

The Manufacturer is not liable for and provides no guarantee regarding any fault and/or damage arising directly or indirectly from delivery, transportation, removal, relocation, installation, maintenance or repair of the products or accessories thereto made by a Distributor or a service provider other than a EDP Service Center authorized by the Manufacturer. Moreover, all products' accessories are not covered by the Guarantee. The Manufacturer assumes no liability for any damages to the products that are caused by accessories thereto.

To qualify for the Guarantee, the purchaser must return the defective product to the Distributor where the purchase was made, or if it is not an EDP Services Center, in an EDP Service Center authorized by the Manufacturer.

The Manufacturer will not cover costs incurred for transportation or labour (other than the repair itself) during the execution of the Guarantee.

During the period of repair or replacement of the defective product covered by the Guarantee, the Manufacturer will not assume any liability arising directly or indirectly from any damages which may be suffered by the purchaser in connection with the product's unavailability, including any loss of income or enjoyment of the product.

Other than the Guarantee provided for herein, the Manufacturer shall not be liable for any guarantee offered by a third party, with the exception of, and without limiting the generality of the foregoing, any guarantee provided by the legislation in force in the province of Quebec.

The Guarantee offered covers only the repair, replacement or refund of the purchase price to the purchaser, the whole at the sole discretion of the Manufacturer.

The Guarantee will enter into force upon receipt by the Manufacturer of this document duly completed, which must be returned within thirty (30) days from the date of purchase, accompanied by a copy of the purchase invoice, by mail, fax or email at:

Address : 2883, boul. Trudel-Est, C.P. 2035
St-Boniface (Québec) G0X 2L0
Canada

Facsimile : 819.535.6247

Email : info@edpconception.com

Note that the product's serial number is embedded on the right side of the display module.

Beneficiary : _____
Product's name : _____
Product's serial number : _____
Date of purchase (DD/MM/YYYY): ____ / ____ / _____
Signature : _____

If the purchaser fails to return the completed form along with a copy of the original purchase invoice, the Manufacturer will offer a Guarantee limited to one year from the date the product was sold by the Manufacturer to the Distributor.

Service instruction:

Call your EDP authorised dealer to receive a request for service (RS) number before shipping. Be sure to check your entire system before shipping your unit. Units received that are in good working condition will be returned with a service fee to cover inspection and return shipment.

Effective date: December 20, 2011.

EDP CONCEPTION
www.edpconception.com

Important notice :

Security warning

The controller is only a portion of the electro mechanic lifting system and electromagnet therefore precautions must be taken around the system by the user to insure the safety of all users and workers. In this type of system, if the controller fails, as a bad wire, a bad fuse, generator malfunction, etc., these circonstance may cause the load to suddenly drop and cause serious injuries and even death.

EDP CONCEPTION can not be responsable for these accidents.

NOTE A: 1

Important notice:

A voltage of 0 to 24 volts DC may be found at the output of the controller when the generator is running even if the manual command is not activated. This voltage is due to the magnetic activity coming from the generator.

PARAMETERS	POSSIBLES SETTINGS	DEFAULT SETTING					NOTE
CODE '42'	GENERAL						
LANGUAGE	English or French	English					
HIGH VOLTAGE	220 to 260 V	240 V					
T-HIGH VOLTAGE	1 to 15 secs	6 secs					
LOW VOLTAGE	180 to 240 V	220 V					
MAXIMUM TIME	Inactive ,1 to 10 mins	10					
AMP. GENERATOR	15 to 200 Amps	200					
AUTO PARAMETER DROPPING	Active or Inactive	Active					
RAMP START	1 to 70%	10%					
DROPPING AMPS	0 to 20 %	1 %					
HOLDS DROPPING							
DROPPING AMPS	0 to 20 %	1 %					
CODE '72'	INPUT/OUTPUT						
" TB SW- " MODE	Mode 0,Mode 1,Mode 2	Mode 2					
" TB VO " MODE	Selection,1 to 60 min,No limit	10 min					

PARAMETERS	POSSIBLES SETTINGS	DEFAULT SETTING					NOTE
CODE ' TECHNICIAN X 2+102'	TECHNICIAN ONLY						
CLEANING	1 to 40	10					
PWM START	0 - 900	700					
PWM 1'DROP	0 - 900	700					
TEMP. WIRE CUT	1 to 20/20 sec	5					
OFFSET TEMPERATURE	20 to 60	41					
MINIMUM ISOLATION	500K to 2K or Inactive	Inactive					