Operating Manual

Ultrasonic Generator

Cobra XL

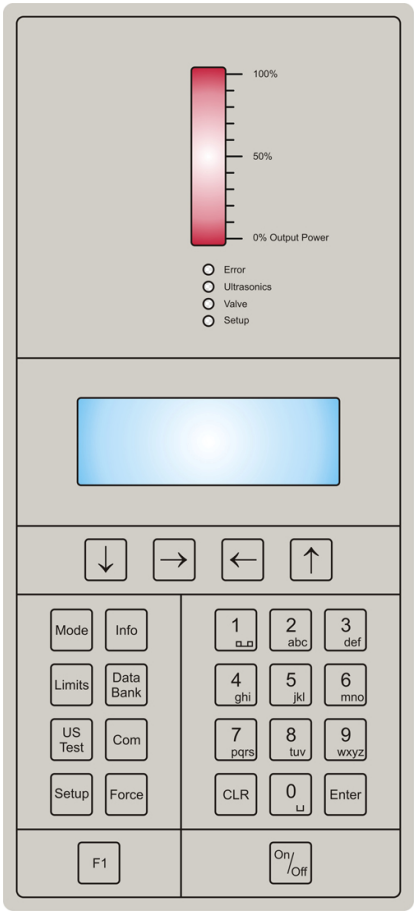

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Table of Contents

1 Safety Instructions

The design of the generator conforms to the current state of engineering and is safe to use.

The parts and the complete unit are subject to continual inspection by our quality assurance department.

The generator is intended exclusively for the ultrasonic welding of thermoplastic materials. Any other use is regarded as inconsistent with the intended purpose, and is undertaken at the user's own risk.
The manufacturer is not liable for any resultant damage.

Before you are using this generator the first time you must read this instruction manual carefully.
In case of lack of knowledge of the user, malfunction on the unit can result in damage.
Always keep this instruction manual next to the unit.

Do not make any modifications witch might endanger safety without permission of the manufacturer.

Work on the unit may only performed by reliable staff.

ATTENTION !!!

Before you open the cover of the generator you must remove all connections.

Do not touch any part inside of the generator before all LED on the main board are dark. The capacitors are still loaded for some time after power off.

See chapter POSITION FUSES AND LED for the position of the LED.

ATTENTION !!!

Be sure to fit the power connection with a grounded connector.

2 Technical Data

Pos	Function	Specs
1	Input Voltage	190 - 265 V AC / 50-60 Hz
2	Size	H 280 x W 125 x L 420
3	Line Filter	Integrated
4	Weight of 35 KHz 600 & 900W	7.5 kg
5	Weight of 20 kHz 1000 & 1500W	7.5 kg
6	Weight of 20 kHz 2000 & 3000 W	8.0 kg
7	Colour	RAL 3020 red
8	Display	4 x 20 Characters with backlight
9	LED Bar	20 LED with Peak Memory for Output power
10	LED	4 LED for Status
11	Keyboard	24 Keys plus on/off
12	Microcontroller Generator	16 bit / 20 MHz
13	Microcontroller Controller	16 bit / 16 MHz
14	AD / DA Converter	12 bit
15	Power Measuring	Real Time
16	Frequency Range	19700 - 20150 Hz, 34700 - 35150 Hz
17	Auto tuning	Real time
18	Nominal Output power	600, 900 W at 35 kHz
19	Nominal Output power	1000, 1500, 2000, 3000 W at 20 kHz
20	Maximum Output power	10 % above nominal Power
21	Constant Amplitude	205 -265 V AC
22	Internal Amplitude	60 to 100% at 5 % steps
23	Time Mode	0.005 - 9.999s
24	US Stop Mode	Integrated
25	Time Trigger	0 - 9.999s
26	Controller for Welding Press	Dual Palm Button & Pneumatic Press
27	Parts and Reject Counter	999999999
28	Inputs	Opto coupler 20 - 28 V DC / max. 7 mA
29	Integrated Power Supply	24V DC / 400 mA stabilized & short circuit protected
30	Outputs	Opto coupler 22 - 26 V DC / 250 mA short circuit protected
31	Emergency Stop	Message in Display
32	Error Message	Display / Hardware Output
33	Interface for PLC	Various digital Input and Output
34	Data Bank	99 Memories
35	Software Update	BDE Interface
36	Buzzer	Confirmation Of Keyboard & Error Message
37	Connectors	All Standard D SUB
38	Pin Code	4 digit to protect access to parameters
39	Main Power Switch	On the back Panel
40	Languages	E,D,SP,F,I,P,S,DK,N,SF;NL,CZ,PL,RO,SLO,H,TR
41	Service Program	Hardware Test for all Input & Output
42	Temperature	-5°C ~ 45°C / Stock -20°C ~ 60°C
43	Design & Production	Switzerland

3 Power on Message

All LED will be alight during Power on. After some time the following display will be shown.

Generator Init

Made in Switzerland www.apsonic.com Cobra XL 20 – 1500 Version V 1.1

123456789	TM / 99	Welded Parts	Mode / Data Bank Number
1.000s	50 %	Weld Time	Power
123456789	50 %	Rejects	Power Maximum
----------	20.00kHz	----------	Frequency

The power on routine will take about 7 s until it is executed. As soon as you can see the Welding Results in the Display, then the unit is ready for the next Welding Cycle.

Output 5 on X3 Pin 12 **READY** will be activated at the same time.

4 Key Functions

Mode	Select Welding Mode
Limits	Select Limits Menu
US – Test	US – Test
Setup	Select Setup Mode Menu
Data Bank	Select Data Bank Menu
Info	Select Information Menu
COM	Select Communication Menu
Force	Select Proportional Valve Menu
F1	Select Special Function Menu
CLR	Clear Error Message, Counter, Character Press key for 1 s to clear the whole line, Scrolling through the saveed data in the Data Bank Menu
Enter	Confirm any numeric Input
←	Scrolling to the left within a line / select a fix value within the line
→	Scrolling to the right within a line / select a fix value within the line
↑	Scrolling up within a menu
↓	Scrolling down with a menu
0	Input parameter / 0 ; space
1	Input parameter / 1 ; . ; - ; : ; /
2	Input parameter / 2 ; a; b ; c ; A ; B ; C
3	Input parameter / 3 ; d ; e ; f ;D ; E : F
4	Input parameter / 4 ; g ; h ; i ; G ; H ; I
5	Input parameter / 5 ; j; k ; l ; J ; K ; L
6	Input parameter / 6 ; m ; n ; o ; M ; N ; O
7	Input parameter / 7 ; p ; q ; r ; s ; P ; Q ; R ; S
8	Input parameter / 8 ; t ; u ; v ; T : U ; V
9	Input parameter / 9 ; w ; x ; y ; z ; W ; X ; Y : Z
on / off	Power Switch (for details see chapter power switch)

5 Welding Cycle of a Press in CE Mode

Press to the dual palm button within 300 ms. The horn will move downward. Keep the buttons pressed until the **SAFETY SWITCH** is reached.
After the **SAFETY SWITCH** is activated the **TRIGGER (Time or Pressure)** starts. After the **TRIGGER** is elapsed the welding will start. After the **WELD TIME *** is elapsed the horn will stay on the part until the **HOLD TIME** is elapsed.
Then the horn will go back to the home position.

Press CLR to or activate Input 7 RESET to abort the cycle at any time.

Press **CLR** to or activate **Input 7 RESET** to reset an ERROR. The next start will reset the ERROR automatically.

* The Welding Time is depending on the selected Mode.

5.1 Option 1 : SYSTEM INIT US PULSE TIME = ON

After the **HOLD TIME** you can set a delay time (**DELAY US PULSE**). If the delay time is elapsed the Ultrasonics will be activated one more time. The time can be set in the menu **US PULSE TIME**.
This pulse is used to remove a part that is sticking on the horn.

5.2 Option 2 : SYSTEM INIT PRESS POSITION = DOWN

The horn will stay on the part after the welding, in case of an error during welding. Press **CLR** to return the press to its home position. An error will be displayed.

Press **CLR** to reset an ERROR.

5.3 Option 3 : BLOW

As on the back stroke the **SAFETY SWITCH** will open, the **BLOW WAITING TIME** will start. After the **BLOW WAITING TIME** is elapsed, **OUPTUP 8** on X3 Pin 15 will be activated for the set **BLOW TIME**.
The same signal is on **OUTPUT 9** on X6 Pin 3.

The option 1-3 can be activated in the **SYSTEM INIT MENU**.

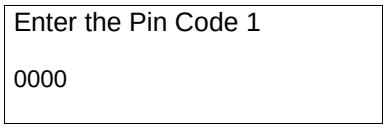
6 Indicators

LED Bar red	Output Power	Output Power in 5 % steps. After welding, the maximum power is indicated by a LED.
LED red	Error	Alight in case of an error.
LED green	Ultrasonics	Alight if Ultrasonic is on.
LED green	Valve	Alight if valve output is active.
LED yellow	Setup	Alight if SETUP mode is active. Blinking if SYSTEM INIT mode is active.

7 Pin Code

7.1 Pin Code 1

To prevent access to the unit for unauthorized user there is a pin code. The system will automatically lock itself again after 10 minutes or after a power on/off.

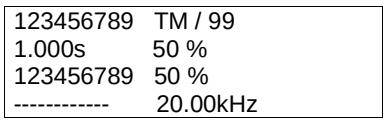


Enter the pin code / Standard = 9928 **Enter**

If the pin code in the **SYSTEM INIT MENU = 0000,** then there is no request for the pin code.

The pin code 1 is active in all menus except in the **SYSTEM INIT MENU**.

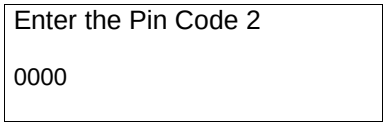
Press the **Setup** key to return to the welding menu. The **LED SETUP** is off.



Press the **CLR** key or power on/ff to lock the generator.

7.2 Pin Code 2

To prevent access to the unit for unauthorized user there is a pin code. The system will automatically lock itself again after 10 minutes or after a power on/off.

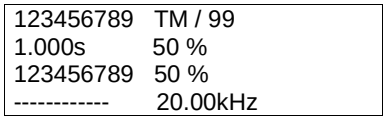


Enter the pin code / Standard = 8828 **Enter**

If the pin code in the **SYSTEM INIT MENU = 0000,** then there is no request for the pin code.

The pin code 2 is only active in the **SYSTEM INIT MENU**.

Press the **Setup** key to return to the welding menu. The **LED SETUP** is off.



The generator is automatically locked.

8 Setup

This function can be used to adjust horn and fixture. The press will come done without activating the Ultrasonics.

Press the **SETUP** Key to activate the **SETUP MODE**.

Enter the Pin Code 1 0000	Enter the pin code / Standard = 9928 **Enter**

The yellow LED is alight if the **SETUP MODE** is active.

Press to the dual palm button within 300 ms. The horn will move downward. Keep the buttons pressed until the safety switch is reached. After the safety switch is reached then the display will be updated with the measured values. If you press the buttons again, then the horn will go back to the home position.

This is valid for **START MODE** Manual and Impulse.

In the **START MODE** automatic the valve is activates as long as Input 1 START 1 is activated. After the safety switch is reached then the display will be updated with the measured values.

Setup 1111ms	Down Speed Time

Press the **SETUP** Key again to return to the **WELDING MODE**.

The Down Speed Time is reflecting the down speed. So you can adjust the down speed on a speed throttle without scale. Please mind that you need to have the same stroke if you compare the down speed time. The time is getting long if the stroke is bigger or the down speed is higher.

9 US-Test

If you are pressing **US – TEST** an ultrasonic pulse will be activated. The minimum pulse time is 300 ms. After 5s the generator is automatically switching off.

ATTENTION !!!

Do not touch the horn during the US-Test.

9.1 Frequency range while tuning

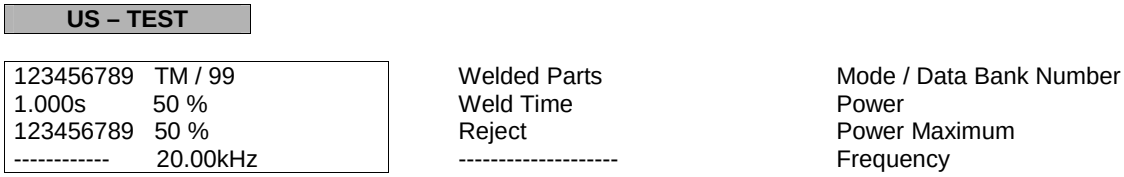
20 kHz 20.000 – 20.050 Hz
35 kHz 35.000 – 35.050 Hz

A new horn should be tuned within this range at 20 degree Celsius.

9.2 Frequency range during production

20 kHz 19.700 – 20.150 Hz *
35 kHz 34.700 – 35.150 Hz *

* Booster 1:1.5 al and horn diameter 30mm and a gain of 1:1



10 Amplitude Table

Depending on the output power each generator has different output amplitude. The output amplitude has a tolerance of + / - 2 %. The output amplitude of the horn is also depending on the output amplitude of the converter. The output amplitude of the converter has a tolerance of + / - 10 % .

Type	Basic Output Amplitude with Booster V1:1 & Horn V1:1
35 – 600	3 75 um
35 – 900	5.00 um
20 – 1000	6.50 um
20 – 1500	8.50 um
20 – 2000	9.00 um
20 – 3000	10.00 um

11 Welding Mode Menu

Welding Modes Time Mode	Cursor left, right Time Mode / US Stop Mode

11.1 Time Mode

Welding with constant Time

11.2 US – Stop Mode

Welding over Time by external Sensor

11.3 Power Mode

Continuous welding

Limits : Power Maximum & Power Minimum

The Power Mode is possible if in the SYSTEM INIT start mode = Hand active is.

12 Welding Parameter Time Mode

Time Mode Weld Time 1.000s	**0-9**, Confirm with **ENTER** 0.005 – 9.999s
Time Mode Amplitude 100%	Cursor left, right 60 – 100 %
Time Mode Trigger 1.0bar / 1.000s	**0-9**, Confirm with **ENTER** 0.1 - 9.9 bar / 0.000 – 9.999 s
Time Mode Hold Time 1.000s	**0-9**, Confirm with **ENTER** 0.000 – 9.999s
Time Mode After Pulse Delay 0.300s	**0-9**, Confirm with **ENTER** 0.000-9.999s / Off
Time Mode After Pulse 0.005s	**0-9**, Confirm with **ENTER** 0.005 – 1.000 s / Off
Time Mode Welded Parts 123456789	Reset with **CLR**
Time Mode Rejected Parts 123456789	Reset with **CLR**

13 Welding Parameter US-Stop Mode

US – Stop Mode Control Time 1.000s	**0-9**, Confirm with **ENTER** 0.005 – 9.999s
US – Stop Mode After Weld Time 0.000s	**0-9**, Confirm with **ENTER** 0.000 – 9.999s
US – Stop Mode Amplitude 100%	Cursor left, right 60 – 100 %
US – Stop Mode Trigger 1.0bar / 1.000s	**0-9**, Confirm with **ENTER** 0.1 - 9.9 bar / 0.000 – 9.999 s
US – Stop Mode Hold Time 1.000s	**0-9**, Confirm with **ENTER** 0.000 – 9.999s
US – Stop Mode After Pulse Delay 0.300s	**0-9**, Confirm with **ENTER** 0.000-9.999s / Off
US – Stop Mode After Pulse 0.005s	**0-9**, Confirm with **ENTER** 0.005 – 1.000 s / Off
US – Stop Mode Welded Parts 123456789	Reset with **CLR**
US – Stop Mode Rejected Parts 123456789	Reset with **CLR**

14 Welding Parameter Power Mode

Power Mode Measuring Delay 0.500s	**0-9**, Confirm with **ENTER** 0.005 – 9.999s
Power Mode Hold Time 1.000s	**0-9**, Confirm with **ENTER** 0.000 – 9.999s
Power Mode Amplitude 100%	Cursor left, right 60 – 100 %
Power Mode Welded Parts 123456789	Reset with **CLR**
Power Mode Rejected Parts 123456789	Reset with **CLR**

15 Information Menu

Information Project Audi A8 Glove Box	**0-9**, Confirm with **ENTER**
Information Lot Number 123456789	**0-9**, Confirm with **ENTER**
Information Horn Number 123456789	**0-9**, Confirm with **ENTER**
Information Horn Gain 2.0	**0-9**, Confirm with **ENTER**
Information Booster Gain 2.0	**0-9**, Confirm with **ENTER**
Information Amplitude calculated 33 um	This value is calculated. Can not be edited. If data of gain booster and horn is incorrect then the calculated value Is wrong.
Information Converter Number 123456789	**0-9**, Confirm with **ENTER**
Information Jig Number 123456789	**0-9**, Confirm with **ENTER**
Information Pressure Press 2.2bar	**0-9**, Confirm with **ENTER**
Information Setting Throttle 2.5	**0-9**, Confirm with **ENTER**
Information Down speed Time Press 9.999s	**0-9**, Confirm with **ENTER**
Information Stroke Press 100mm	**0-9**, Confirm with **ENTER**
Information Height adjustment 300m m	**0-9**, Confirm with **ENTER**

16 Data Bank Menu

Data Bank Save Data Audi A8 Glove Box 33	**0-9**, Confirm with **ENTER** Cursor left, right, up, down Data Bank 01-99
Data Bank Load Data Audi A8 Glove Box 33	**0-9**, Confirm with **ENTER** Cursor left, right, up, down, CLR Data Bank 01-99
Data Bank Delete Data Audi A8 Glove Box 33	**0-9**, Confirm with **ENTER** Cursor left, right, up, down, CLR Data Bank 00-99

The Data Bank has 99 memories. The first Data bank number is 01. The number 00 is not valid.

The active Databank will be displayed in the LCD Display.

123456789 TM / 99 1.000s 50 % 123456789 50 % ---------- 20.00kHz	Welded Parts Weld Time Reject ----------	Mode / Data Bank Number Power Power Maximum Frequency

16.1 Save Data

The next empty Data Bank will be displayed. The number can be over written anytime. Press **ENTER** to save the data. The message **DATA SAVED** will be displayed. If the Data Bank is not empty the Message **OVERWRITING DATA ?** will be displayed. Press **ENTER** to over write or enter a new number.

Press the key **Data Bank** to go back to the Welding Menu.

16.2 Load Data

The next empty Data Bank will be displayed. The number can be over written anytime. Press **ENTER** to save the data. The message **DATA SAVED** will be displayed. If the Data Bank is not empty the Message **OVERWRITING DATA ?** will be displayed. Press **ENTER** to over write or enter a new number.

With the key **CLR** you can scroll through the saved data.

Press the key **Data Bank** to go back to the Welding Menu.

16.3 Delete Data

The last used Data Bank will be displayed. If you want to delete an other memory please enter the number and confirm by **ENTER**.

With the key **CLR** you can scroll through the saved data.

Press the key **Data Bank** to go back to the Welding Menu.

If you enter the number 00, then all data banks will be deleted.

17 Special Function Menu

Press **F1** to activate the Special Function Menu. The LED Setup will alight**.** Press **F1** to return to the Welding Menu.

Special Function Delay Blow Time 0.000s	**0-9**, Confirm with **ENTER** 0.000 – 9.999s
Special Function Blow Time 0.0000s	**0-9**, Confirm with **ENTER** 0.000 – 9.999s

17.1 Blow

When the **SAFETY SWITCH** will open in the back stroke, then the **DELAY BLOW TIME** will start. After the time is elapsed the **OUTPUT 8** at X3 Pin 15 will be activated for the set **BLOW TIME**.
The function **BLOW** must be activated in the SYSTEM INIT Menu.

At **OUTPUT 9 BLOW** at X6 Pin 3 the function is always active.

18 System Init Menu

In the SYSTEM INIT Menu you can change the settings of the machine parameter.

Attention !!!

Wrong settings can influence the welding result

All LED will alight during Power on. After some time the following display will be shown.

Generator Init

Made in Switzerland www.apsonic.com Cobra XL 20 – 1500 Version V 1.1

Press **SETUP** key for System Init Menu

123456789	TM / 99
1.000s	40 %
123456789	50 %
----------	20.00kHz

Parts	Mode / Data Bank Number
Welding Time	Power
Rejects	Power Maximum
----------	Frequency

Press **SETUP** key for System Init Menu during Power on to get into the SYSTEM INIT Menu. The LED SETUP is blinking.

Enter Pin Code 2 0000

Enter the pin code / Standard = 8828 **Enter**

Press **SETUP** key to return to the Welding menu. The LED Setup is off

123456789	TM / 99
1.000s	50 %
123456789	60 %
----------	20.00kHz

The generator is automatically locked,

System Init Start Mode Manual	Cursor left, right Manual / Impulse / Automatic Hand Unit / Hand Unit Time
System Init After Pulse Off	Cursor left, right on / off
System Init Press Position Up	Cursor left, right Up / Down
System Init Home Position off	Cursor left, right on / off
System Init Part in Position Off	Cursor left, right on / off
System Init Output 8 Ultrasonics active	Cursor left, right Ultrasonics active / Blow active
System Init Language English	Cursor left, right German / English
System Init Soft start 20	**0-9**, Confirm with **ENTER** 02-30
System Init Feedback Control 030	**0-9**, Confirm with **ENTER** 020-500
System Init Pin Code 1 9928	Cursor left, right 0000 = Off
System Init Pin Code 2 8828	Cursor left, right 0000 = Off
System Init Buzzer Off	Cursor left, right Off / on / Error message

18.1 Start Mode

The start mode for a CE press is always MANUAL. It can not be changed.

For automation please check chapter AUTOMATION.

18.2 After Pulse

Settings : on / off

After the welding you can activate an **AFTER PULSE** (see page 7 for details)

Press →← to select

Standard Setting : off

18.3 Amplitude

Settings : Internal / External

The amplitude can be selected internal over the keyboard or from external via an analogue signal.

External 1V = 60 %, 2V = 65 %, …… 9V = 100 %

Press →← to select

Standard Setting : Internal

This setting can influence the welding result.

18.4 Press position

Settings : up / down

After an Error the press will return to its home position or it will stay on the welded part. For details see chapter Welding Cycle of a CE press.

Press →← to select

Standard Setting : up

18.5 Home Position

Settings : on / off

If there is no home position sensor in the press you need to select off. For a CE Press there is a must of a home position sensor.

Standard Setting : on

18.6 Part in Position

Settings : on / off

If you have a part detection sensor in the jig you need to select on. If you start the welding cycle and there is not part in the jig the press will not come down. The error NO PART will be displayed. If set to off, then this input is not checked.

Press →← to select

Standard Setting : Off

18.7 Output 8

Settings : Ultrasonics active/ Blow active

The OUTPUT 8 is either active if US ON or BLOW VALVE.

Press →← to select

Standard Setting : Ultrasonics active

18.8 Language

Settings : E,D,SP,F,I,P,S,DK,N,SF;NL,CZ,PL,RO,SLO,H,TR

Select language of user interface.

Press →← to select

Standard Setting : English

18.9 Soft start

Settings : 2 - 30

This parameter is changing the time until the maximum amplitude is reached when starting the horn.

2 = slow / 30 = fast

Press **1 - 9** for the settings and confirm with **ENTER**

Standard Setting : 20

This setting can influence the welding result.

18.10 Feedback Control

Settings : 010 - 500

With this parameter you can set the speed that the generator is controlling the amplitude. In application above 80 % it can be useful to set it a bit higher. This will help to reduce the risk to run in to an Overload.

Press **1 - 9** for the settings and confirm with **ENTER**

Standard Setting : 20

This setting can influence the welding result.

18.11 Pin Code 1

Settings : 9928

The settings can only be changed after entering the access code.

Press **1 - 9** for the settings and confirm with **ENTER**

Standard Setting : 9928 0000 = Code not active

18.12 Pin Code 2

Settings : 8828

The settings can only be changed after entering the access code.

Press **1 - 9** for the settings and confirm with **ENTER**

Standard Setting : 8828 0000 = Code not active

18.13 Buzzer

Settings : on / off / Error message

With this setting you can activate a buzzer. The buzzer will confirm a pressed key or an error.

Press → ← to select

Standard Setting : off

19 Standard Init

With a **STANDARD INIT** the generator will put back to factory settings. This can be done after a software hang up, a software update or if you want to have the factory settings again.

Attention !!!

All parameter and settings will be lost. The data bank will be not deleted.

Press the key ↑ during power on to execute a **STANDARD INIT**.

Standard Init All Data will be lost ! Press ENTER to Execute or CLR to Cancel

Enter / CLR

Generator Init

123456789	TM / 99
1.000s	50 %
123456789	60 %
----------	20.00kHz

20 Error Message

Press **CLR** or activate Input 7 **RESET** to clear an ERROR. The next welding cycle will clear an ERROR too.

If set **PRESS POSITION = DOWN** in the SYSTEM INIT Menu then the horn will stay on the part. Press **CLR** to reset.

Error Message EMERGENCY STOP	- Emergency Stop(Pin 1 und Pin 2 an X1) not closed - Short on the 24V for input & output - 24 V supply defect
Error Message Home Position Number : 1	Home Position sensor defect or not connected
Error Message Safety Switch Number : 2	Safety Switch sensor defect or not connected
Error Message Generator not ready Number : 3	- Power supply from oscillator defect or not connected - Oscillator Board defect
Hardware Error Valve Control Number : 4	- Safety Switch sensor activated or defect - Valve Output defect *
Error Message No Part Number : 5	No part in the fixture or part sensor not connected or defect
Error Message Number : 6	No Function
Error Message Number : 7	No Function
Error Message Hardware Error 8 Number : 8	- Memory Error / Please execute STANDARD INIT - RS 485 defect - DIP Switch 1 on the oscillator on
Hardware Error Supply +15V Number : 9	*

Hardware Error Supply -15 V Number : 10	*
Hardware Error Phase Voltage Number : 11	*
Hardware Error DC Converter V Number : 12	*
Hardware Error DC Converter C Number : 13	*
Hardware Error Line Voltage Number : 14	*
Hardware Error DC Offset Number : 15	*
Error Message Frequency Maximum Number : 16	- Horn defect or not proper tuned - RF cable not connected or defect
Error Message Frequency Minimum Number : 17	- Horn defect or not proper tuned - RF cable not connected or defect
Error Message Converter Voltage Number : 18	- Welding Pressure too high - Horn, Booster, Converter or RF Cable defect
Error Message Energy too low Number : 19	Energy to low in Time or Distance Mode
Error Message Energy too high Number : 20	Energy to high in Time or Distance Mode
Error Message Time Underflow Number : 21	Time to small in Energy or Distance Mode

Error Message Time Underflow Number : 22	- US – Stop Signal to late or not activated - Energy not reached in Energy Mode - Distance not reached in Distance Mode
Error Message Time Overflow Number : 23	Time to long in Energy or Distance Mode
Error Message Power too low Number : 24	Power too low in Power Mode
Error Message Power to high Number : 25	Power too high in Power Mode
Error Message Generator Overload Number : 26	- Generator output Power to small - Welding Pressure too high - Amplitude too high
Error Message Power Measuring Number : 27	Power Measuring out of Range
Error Message US interrupted Number 28	
Error Message Cycle interrupted Number 29	Interrupt of the welding Cycle by pressing the key CLR or a signal at X3 Pin or X2 Pin 3 (Reset)
Error Message Quantity reached Number : 30	The quantity required is reached
Error Message Time Overflow Number : 31	
Error Message Time Underflow Number : 32	
Error Message Distance to large Number : 33	Distance too large in Distance Mode

Error Message Distance too small Number : 34	Distance to small in Distance Mode
Error Message Energy too high Number : 35	Energy too high in Travel Mode
Error Message Energy too low Number : 36	Energy too low in Travel Mode
Error Message Output 1 - 8 Number : 37	Outputs 1 – 8 overloaded or defect
Error Message Output 9 - 16 Number : 38	Outputs 9 - 16 overloaded or defect
Error Message Start 2 Number : 99	- Dual Palm button not correct connected - Input 2 Start 2 not active

* In case of a HARDWARE ERROR you must contact with the supplier.

21 Input and Output

21.1 Inputs

Connection :	Opt coupler
Voltage :	20 – 28 V DC
Currant :	Maximum 7 mA

21.2 Outputs

Connection :	Opt Coupler
Voltage :	23 – 25 V DC short circuit protected
Currant :	Maximum 250 mA each output

The maximum load to the internal 24V power supply is 400 mA. The output voltage is stabilized and short circuit protected.

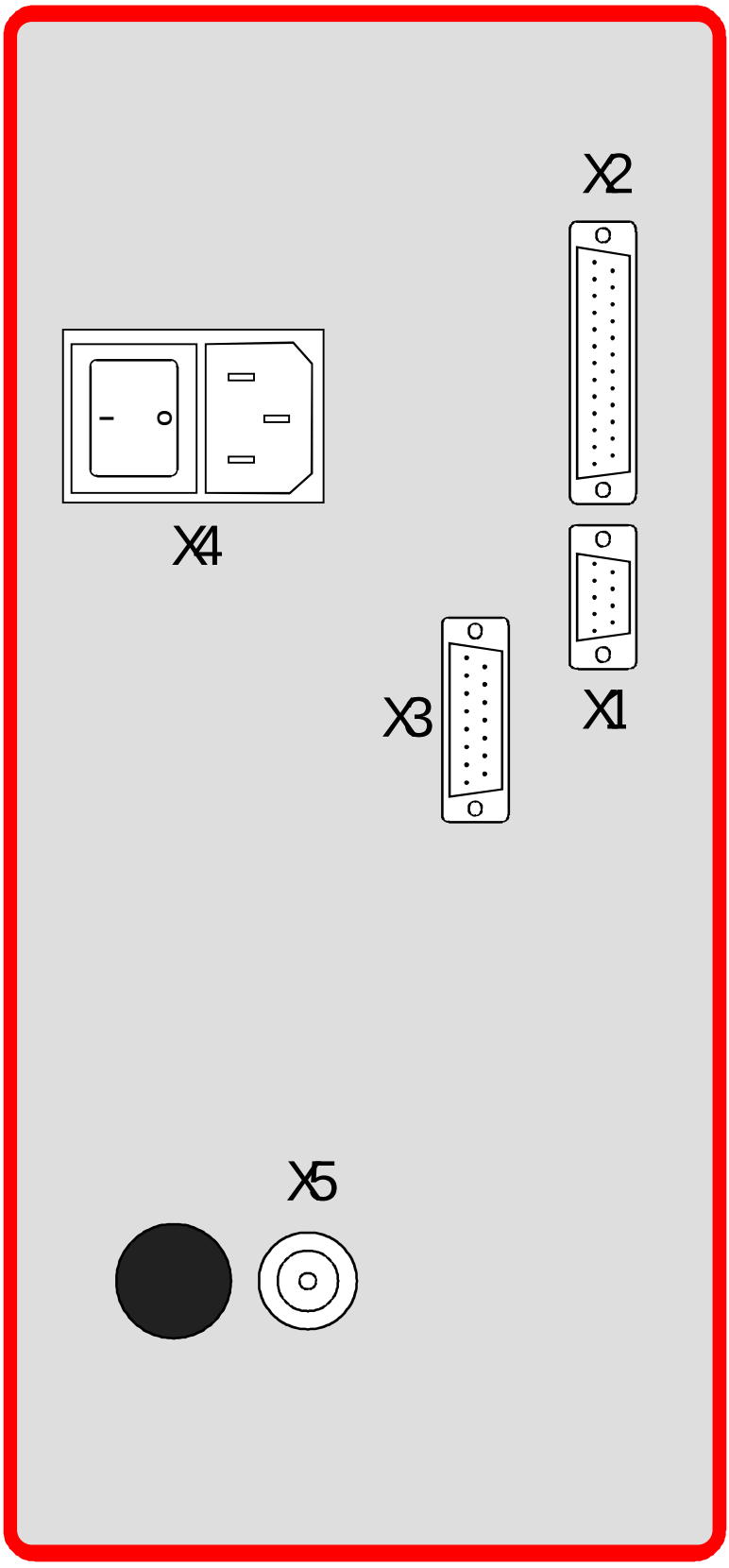
Each output is short circuit protected.
In case of a short the message **Output 1-8 or Output 9-16** will be displayed.

If the short is removed you can clear the error by pressing any key.

ATTNETION !!!

Do you use only shielded cables and connectors !

22 Connection



23 Connection X1 Start

23.1 Connection Start X1 9-pin SUB-D female

Pin	Signal
1	Emergency
2	Emergency
3	24 V DC if 1 & 2 are closed
4	Input 1 Start 1
5	Input 2 Start 2
6	Input 3 Dual palm button
7	Input 6 Part detection
8	GND 24
9	GND 24

Pin 1 & 2
Connection for Emergency Stop. Must be closed.
If not closed the message EMERGENCY will be displayed.

Pin 3
24V DC will be supplied if Pin 1 & 2 are closed.

Pin 4 & 5
Input for Dual Palm Button. 4 = normally open, 5 = normally closed. The buttons must have two independent contacts. 1x NO & 1 x NC

Both inputs must switch over with in 300 ms, otherwise the cycle will not start of safety reason.

For the modes **AUTOMATIC, HAND UNIT and HAND UNIT TIME** you need only input start 1. An impulse of 100ms will start the cycle. In case of HAND UNIT the ultrasonic is active as long as input START 1 is activated.

In case of using an external 24V supply you need to connect the GND24 PIN 8 & 9 with the ground of the external supply.

Pin 6
The input DUAL PLAM BUUTON must be open to run the generator in the CE conform Mode.

ATTENTION !!!

In the following Modes there is no support for safe operation of a welding press. The user is responsible to take action for safety of the system.

If you want to use the unit in the following modes **IMPULSE, AUTOMATIC, HAND UNIT & HAND UNIT TIME** Pin 6 & Pin 3 must be connected. The unit is not safe without external safety setups.
Not CE.

Pin 7
The Input PART DETECTION is active if 24V is supplied. In the SYSTEM INIT Menu PART DETECTION = ON must be set. If there is no part in the Jig the Error NO PART will be displayed.

Pin 8 & 9
GND 24 V

24 Connection X2 Press

24.1 Connection Press X2 25-pin SUB-D female

Pin	Signal
1	Output 1 Valve
2	NC
3	Input 7 Reset
4	Output 2
5	Input 4 Safety Switch
6	Output 3 Error Overload
7	Input 8
8	Output 4 Error Message general
9	Input 15 US – Stop digital
10	Output 5 Ready
11	Input 9
12	NC
13	Input 5 Home Position
14	NC
15	NC
16	NC
17	NC
18	NC
19	24 V
20	24 V
21	GND 24
22	GND 24
23	NC
24	NC
25	NC

Pin 1
The Output 1 **VALVE** is supplying 24V if active. The Output 1 **VALVE** is controlling the valve of a pneumatic press.

Pin 2
NC

Pin 3
The Input 7 **RESET** must have 24V to activate. The welding cycle will be interrupted and an ERROR will be activated.

Pin 4
The Output 2

Pin 5
The Input 4 **SAFETY SWITCH** must have 24V to activate. If the Input 4 **SAFETY SWITCH** is activated you can release the dual palm buttons. The TRIGGER will be started.

Pin 6
The Output 3 **OVERLOAD** is supplying 24V if active. The Output 3 OVERLOAD is active in case on an generator overload. Press the key CLR or activate Input 7 RESET to reset the error.

Pin 7
The Input 8. No function.

Pin 8
The Output 4 **ERROR** is supplying 24V if active. The Output 4 ERROR is active in case on an any error. Press the key **CLR** or activate Input 7 **RESET** to reset the error.

Pin 9
The 15 Input **US-STOP** must have 24 V to activate. The Input 15 US-STOP is in a OR Connection with US-STOP on X3.

The **US–STOP** is only active if mode is US- STOP. Use switch or PNP Sensor.
For switch off horn – knife contact you need to use US –STOP on X3

Pin 10
The Output 5 **READY** is supplying 24V if activated. The Output 5 **READY** is active if the unit is ready for the next welding cycle.

Pin 11
The Input 9

Pin 12
NC

Pin 13
The Input 5 **HOME POSITION** must have 24V to activate. Your system must have a Home Position Sensor.
If there is no Home Position Sensor you need to set **HOME POSTION=OFF** in the SYSTEM INIT Menu.

Pin 14
NC

Pin 15
NC

Pin 16
NC

Pin 17
NC

Pin 18, 23 & 24
NC

Pin 19 & 20
24 V DC

Pin 21 & 22
GND

25 Connection X3 Interface 1

25.1 Connection Interface 1 X3 15 pin SUB-D female

Pin	Signal
1	24 V
2	GND 24
3	Input US - Stop +
4	NC
5	Input 7 Reset
6	Input 15 US Stop digital
7	Input 6 Part detection
8	Output 6 Home Position
9	24 V
10	GND 24
11	Input US - Stop -
12	Output 5 Ready
13	Output 4 Error General
14	Output 7 Safety Switch
15	Output 8 US on / Blow

Pin 1 & 9
24V DC

Pin 2 & 10
GND 24 V

Pin 3
The Input **US-STOP +** must have 24V to activate the **US-STOP** . The Input **US-STOP –** must be connect to GND at the same time.

The Input **US–STOP** is only active in the **US–STOP** Mode. The welding cycle will be interrupted and an ERROR will be activated.

Pin 4
NC

Pin 5
The Input 7 **RESET** must have 24 to be activated. The welding cycle will be interrupted and an ERROR will be activated.

Pin 6
The 15 Input **US - STOP** must have 24 V to activate. The Input 15 US-STOP is in a OR Connection with US-STOP on X3.

The US – STOP is only active if mode is US- STOP. Use switch or PNP Sensor. For switch off horn – knife contact you need to use US –STOP on X3

Pin 7
The Input 6 **PART DETECTION** must have 24 V to be activated. In the SYSTEM INIT Menu PART DETECTION = ON must be set. If there is no part in the Jig the Error NO PART will be displayed.

Pin 8
The Output 6 **HOME POSITION** is supplying 24V if activated. The output is indicating that the press is in home position.

Pin 11
The Input **US–STOP–** must be connecting to GND to be activated. The input **US–STOP+** must be connected to 24V at the same time.

The Input **US–STOP** is only active in the **US–STOP** Mode. The welding cycle will be interrupted and an ERROR will be activated.

This function can be used to cut fabric & films. Connect a insulated knife to this pin.

Pin 12
The Output 5 **READY** is supplying 24 if activated. The Output is indicating that the unit is ready for the welding cycle.

Pin 13
The Output 4 **ERROR GENERAL** is supplying 24V is activated. The output is indicating an ERROR in the system or during the welding. Press CLR, activate Input 7 RESET ort he next welding cycle will reset the ERROR.

Pin 14
The Output 7 **SAFETY SWITCH** is supplying 24V if activated. The output is indication the status of the SAFETY SWITCH. The system must have a SYFETY SWITCH.

Pin 15
The Output 8 **US ON or BLOW** is supplying 24 V if activated. The function must be selected in the SYSTEM INIT Menu.

OUTPUT 8 = US ON then the Output is activated as long as the ultrasonic is active. **OUTPUT 8 = BLOW**. For Details see Special Function Menu.

26 Connection X4 Line

26.1 Connection Line X4 C13 / C15

Pin	Signal
1	Phase
2	Neutral
3	Ground

Pin 1 & 2
230 V AC Tolerances see chapter **TECHNICAL DATA**
Connection Value see **chapter FUSES**

Pin 3
The generator must be connected to GROUND.

27 Connection X5 RF Output

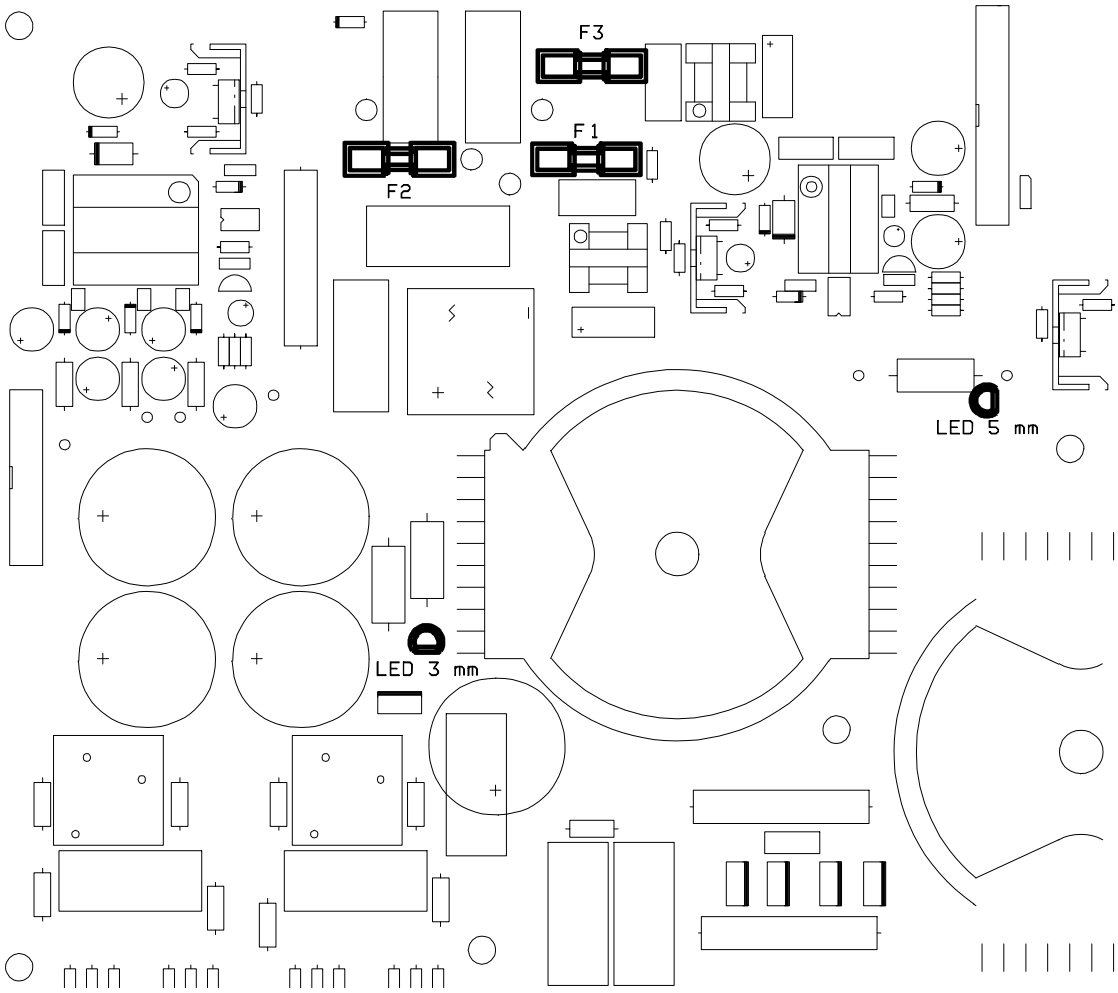
27.1 Connection RF Output X5 Lemo 1/2

Pin	Signal
1	RF Output
2	Ground

Pin 1
Attention high voltage on this Pin. Do not remove the connector when in use.

Pin 2
Ground

28 Position Fuses and LED



29 Fuses

Fuse	Type	Value
F1	all	3.15 AT

Fuse	Type	Value
F2	35-600	4 AT
F2	35-900	6.3 AT
F2	20-1000	6.3 AT
F2	20-1500	8 AT
F2	20-2000	10 AT
F2	20-3000	16 AT

Fuse	Type	Value
F3	all	3.15 AT

Please make sure the main switch on the back is on and the power cord is connected.

Check F1 if the LED diameter 5 mm on the power board is not alight.

Please make sure the on/off on the front panel is activated

Check F2 is the LED diameter 3 mm red on the power board is not alight.
Check F3 is no LED on the oscillator board is alight.

F1 – F3 are located below the oscillator board. See chapter POSITION FUSES AND LED.

Remove 2 piece of M4 to remove frame with oscillator board.

ATTENTION !!!

Before opening the generator housing you must disconnect all connections.

Do not touch inside the generator housing before all LED's on the power board are dark. Some Capacitors can be loaded for some minutes after disconnecting the power.

30 Automation

30.1 Safety Issue

ATTENTION !!!

The safety of the system in the Automation Modes must be controlled by an external controller.

If the generator is controlled by an external controller then start mode can be changed to Impulse, Automatic, Hand or Hand Time.

The system in these modes is not save to use. The safety features in these modes must by taken care from a external controller.

To change the generator to these modes you need to follow the following instructions.

1. Connect Pin 3 & Pin 6 on X1 1
2. Change the Start Mode in the SYSTEM INIT Menu

All LED will alight during Power on. After some time the following display will be shown.

Generator Init

Made in Switzerland www.apsonic.com Cobra XL 20 – 1500 Version V 1.1	Press **SETUP** during Power on

123456789 TM / 99	Welded Parts	Mode / Data Bank Number
1.000s 50 %	Weld Time	Power
123456789 60 %	Reject	Power Maximum
---------- 20.00kHz	----------	Frequency

Press **SETUP** key for System Init Menu during Power on to get into the SYSTEM INIT Menu. The LED SETUP is blinking.

Enter the Pin Code 2 0000	Enter the pin code / Standard = 8828 **Enter**
System Init Start Manual	Cursor left, right Manual / Impulse / Automatic Hand Unit / Hand Unit Time

Press **SETUP** key to return to the Welding menu. The LED SETUP gets dark.

30.2 Impulse Mode

Both dual palm buttons must be pressed with in 300ms. The welding cycle will now start automatically.
This function is in connection with a welding press or an actuator.

30.3 Automatic Mode

An Impulse of 100 ms on **START 1** Pin 4 on X1 will start the welding cycle.
This function is in connection with a welding press or an actuator.

30.4 Hand Mode

Ultrasonics is active as long **START 1** Pin 4 on X1 is activated.
This function is in connection with a hand welder or a converter. The valve output is active.

30.5 Hand Mode Time

An Impulse of 100 ms on **START 1** Pin 4 on X1 will start the welding cycle. The weld time can be set in the menu according to the set welding mode.
This function is in connection with a hand welder or a converter only. The valve output is active.

31 Power on Switch

The unit has a main power switch on the back panel. If the main switch is off, then the unit completely disconnected from the power line.

On the front panel is a power on key. The key on the front panel is only active if the main power switch is on.

The key on the front panel can be bypassed by a jumper on the front board. In this case the unit can be switch on by the main power switch only

32 BDE Interface

On the front board there is a 6 pin BED interface. This interface can be used to update the software of the generator.

33 Service Menu

In the Service Menu you can check all input & out put of the generator.

ATTENTION !!!

The Service Menu should only be used by trained personal. Malfunction can cause damage to the generator.

33.1 Activation of the Service Menu

Press **SETUP** to enter the Service Program. The LED Setup is alight.

Enter the Pin Code 1
0000

Enter the pin code / Standard = 8080 **CLR**

33.2 Deactivation of the Service Menu

Press **SETUP** to go back to the welding Menu. The LED Setup is off.

123456789	TM / 99
1.000s	50 %
123456789	50 %
----------	20.00kHz

The generator is locked

33.3 Service Menu Inputs & Outputs

Service Menu Input 1 Start 1 0	Cursor down
Service Menu Input 2 Start 2 0	Cursor up , down
Service Menu Input 3 Dual Palm Button 0	Cursor up , down
Service Menu Input 4 Safety Switch 0	Cursor up , down
Service Menu Input 5 Home Position 0	Cursor up , down
Service Menu Input 6 Part Detection 0	Cursor down
Service Menu Input 7 Reset 0	Cursor down
Service Menu Input 8 Proportional Valve 0	Cursor up , down
Service Menu Input 9 DTM active 0	Cursor up , down
Service Menu Input 10 Data Bank 1 0	Cursor up
Service Menu Input 11 Data Bank 2 0	Cursor up , down
Service Menu Input 12 Data Bank 3 0	Cursor up , down

Service Menu Input 13 Data Bank 4 0	Cursor up , down
Service Menu Input 14 Generator ready 0	Cursor up , down
Service Menu Input 15 US Stop digital 0	Cursor up , down
Service Menu Input 16 Input 24V 0	Cursor up , down
Service Menu Input 17 US-Stop 0	Cursor up , down
Service Menu Analogue Input 1 Trigger 0.0 bar	Cursor up , down
Service Menu Analogue Input 2 Amplitude 100%	Cursor up , down
Service Menu Analogue Input 3 10.00V	Cursor up , down
Service Menu Analogue Input 4 10.00V	Cursor up , down
Service Menu Analogue Input 5 24V external 24.00V	Cursor up , down
Service Menu Analogue Input 6 +15V Front panel +15.00V	Cursor up , down
Service Menu Analogue Input 7 - 15V Fontanel -15.00V	Cursor up , down
Service Menu Analogue Input 8 5 V Front panel 5.00	Cursor up , down

Service Menu Output 1 Valve Off	Cursor up , down Cursor left, right
Service Menu Output 2 Speed Reduction Off	Cursor up , down Cursor left, right
Service Menu Output 3 Error Overload Off	Cursor up , down Cursor left, right
Service Menu Output 4 Error General Off	Cursor up , down Cursor links, right
Service Menu Output 5 Ready Off	Cursor up , down Cursor left, right
Service Menu Output 6 Home Position Off	Cursor up , down Cursor left, right
Service Menu Output 7 Safety Switch Off	Cursor up , down Cursor left, right
Service Menu Output 8 US on / Blow Valve Off	Cursor up , down Cursor left, right
Service Menu Output 9 Blow Valve Off	Cursor up , down Cursor left, right
Service Menu Output 10 Off	Cursor up , down Cursor left, right
Service Menu Output 11 Data Bank 2 Off	Cursor up , down Cursor left, right
Service Menu Output 12 Off	Cursor up , down Cursor left, right

Service Menu Output 13 Off	Cursor up , down Cursor left, right
Service Menu Output 14 Off	Cursor up , down Cursor left, right
Service Menu Output 15 Off	Cursor up , down Cursor left, right
Service Menu Output 16 Off	Cursor up , down Cursor left, right
Service Menu Analogue Output 1 Proportional Valve 5.00V	Cursor up , down Cursor left, right **0-9**, Confirm with **ENTER**
Service Menu Analogue Output 2 5.00V	Cursor up , down Cursor left, right **0-9**, Confirm with **ENTER**
Service Menu Analogue Output 3 5.00V	Cursor up , down Cursor left, right **0-9**, Confirm with **ENTER**
Service Menu DTM 999.99mm	Cursor up , down
Service Menu Total Cycles 999999999	Cursor up

34 Encyclopedia

34.1 After Pulse Time

The after pulse time is used to shake of a part that is sticking on the horn after welding.

34.2 After Pulse Delay

The after pulse time is starting after the hold time. The after pulse time is to make sure that the horn is no longer on the part before the after pulse is activated.

34.3 Amplitude

The amplitude is the movement on the horn surface. The amplitude is depending on the output power of the power supply, Generator setting (60 – 100%) Gain Booster und Gain of the horn. The amplitude is chosen depending on the material to weld. The best amplitude to weld you can get from the supplier of the raw material. The amplitude is measured in micro meter. The value is peak. Typical amplitude values are 10 – 60 micro meter.

The generator is calculating the output amplitude. You must make sure that the settings of booster gain and horn gain are correct.

34.4 Amplitude Values Guideline

Material	Typ3	Guideline in [um]
ABS	amorphous	15 - 30
CA	Semi crystalline	20 - 35
PA	Semi crystalline	35 - 55
PBTP	Semi crystalline	40 -50
PC	amorphous	25 - 40
PE	Semi crystalline	25 - 60
PETP	Semi crystalline	45 - 55
PMMA	amorphous	20 - 35
POM	Semi crystalline	40 - 50
PP	Semi crystalline	30 - 60
PPO	amorphous	25 - 40
PS	amorphous	15 - 30
PVC hard	amorphous	20 - 40
PVC soft	amorphous	25 - 40
SAN	amorphous	15 - 30
SB	amorphous	20 - 35

34.5 Automation

In case that the generator is used in automation you need to disconnect the dual palm buttons. All safety regulation must be controlled by an external controller

34.6 Blow

At output 8 BLOW you can connect a solenoid valve. After the welding an impulse will be activated to bow out the part of the jig. The impulse is activated after blow delay waiting time.

34.7 Booster

The booster is amplifying the amplitude produced by the converter. The gain on the booster is fix.
Standard Booster : 1:1, 1:1.5; 1:2, 1:2.5, 1:3.
The booster is tuned to the resonant frequency. Do not modify anything on the booster. Boosters are made of titanium or aircraft grade aluminum.
Make sure that the horn stud can not touch the bottom of the thread in the booster. Thread Converter = M16. Thread Horn = M12.

34.8 Control Time

The control time is used in US- STOP and TRAVEL. If the sensor in US-Stop Mode ort he set travel in the travel mode is not re4ached in the set time you will get an error. The welding will stop automatically after the control time is reached.

34.9 Converter

The converter is transferring an electrical voltage to a mechanical vibration. The converter is tuned to resonant frequency. Do not modify anything on the converter. The stud M16 is part of the converter an can not be taken off. If the temperature on the converter body is reaching 50 degree Celsius you must use a cooling.

Too high temperature can destroy the converter.

34.10 Converter Number

Serial Number of the converter.

34.11 Cutting of Synthetic Textiles

Cutting with Ultrasonic has the big advantage that you get a sealed edge after cutting. Compared to a cut with a hot knife the cutting edge will stay soft.
In most cases a flat horn is used against a cutting knife. In some case the horn shape is built as a knife.

To reduce the wear of horn and knife the cutting is done in the US – STOP Mode. The knife is mounted insulated from the press. A cable from the knife is connected with X3. The Ultrasonics will stop as the horn will touch the knife.

34.12 Cutting of food

The cutting of food with ultrasonic has the advantage that you can get a clear cut. The build up of food on the knife is reduced to a minimum.
The horn is designed to a knife.

Typical application : Cheese, Cake, Pizza, Pasta, Chocolate

34.13 Data Bank

In the data bank you can store up to 99 parameter set.

34.14 Design of the welding line

It is very important that you have a good design of the welding area. Mostly there is an energy director design or butt joint design. It is very important that you have sharp edges on the energy director and on butt joint. The sharp edges will help to bring the energy into the part..

If you welding films or non woven then you do not need a joint design. In this case the horn has some lines or a knurled surface. This surface will help to bring the energy into the part.

34.15 Down Speed Time Press

The down speed Time press is measured in the SETUP Mode. The Time is depending on the length of the stroke, Pressure and setting of the Speed Throttle. The Down Speed Time Press is measured between start and reaching the safety switch.

34.16 Dual Palm Button

The press is equipped with dual palm button. If you release the palm button before reaching the safety switch the press. The button must be pressed within 300 ms.
After each welding the palm button are tested. If a button got a problem the cycle will not start. You need to replace the button first.

34.17 Emergency Stop

If you press the emergency stop button then the welding will stop and the power off the press will be shout down. The 24V supply in the generator will switched off as well. In the display you will get the message EMERGENCY STOP.

34.18 Energy

The supplied energy to the part is measured by the generator. The Energy is calculated by time versus power in Ws.

34.19 Gain Booster

You need to enter the gain of the booster. If the setting is wrong, then the calculated output amplitude is not correct.

34.20 Gain Horn

You need to enter the gain of the horn. If the setting is wrong, then the calculated output amplitude is not correct.

34.21 Height Adjustment

Set height of the Welding press

34.22 Hold Time

The horn will stay under pressure on the part during the hold time. The hold time is used to cool off the welded part. If the hold time is to short you might get a bad welding result.

34.23 Home Position

The press has got an home position sensor to make sure the press in back to home position after welding. If the press is not in the home position at start impulse you will get an error.

34.24 Horn (Sonotrode)

The horn or Sonotrode is the welding tool. The horn is tuned to the resonant frequency. Modification should only be done by trained stuff. Wrong modification can end in destroying the horn or the generator. Horns are made of titanium, aircraft grade aluminum or harden steel. The stud on the horn is M12. The stud is part of the horn and can not be removed. The shape of the horn is influencing the welding result.

34.25 Horn Number

Part Number of the horn

34.26 Jig (Fixture)

The jig will holt the part in position fort he welding. It is important the jig is fitting exactly to the part. The welding line must be supported on the whole part.

34.27 Jig number

Part Number Jig.

34.28 Measuring Delay

The measuring delay is only active in the Power Mode. Die Power Limits are only active after the measuring delay. This is necessary because at the start the power minimum is always reached.

34.29 Overload

In case of an overload then the generator does not have enough output power.

To reduce the power consumption you can reduce the pressure or the amplitude. If this does not help you need to use a generator with more output power.

34.30 Parts Counter

The parts counter is counting the good welds. In case of an error the Reject counter will count it.

34.31 Pin Code

To change the welding and machine parameter you need to enter a pin code. The service program is also locked by a pin code.

34.32 Pressure Press

Set Pressure on the Welding Press. The pressure is influencing the welding result. More pressure is giving a stronger weld. To much pressure can reflect in markings on the part.

34.33 Problems with the welding

Bad welding can have many reasons.

- Wrong design of the welding area
- Wrong raw material
- Recycled material
- Too much water in the part
- Too much glass in the part
- Too much other additive in the part
- Wrong amplitude
- Bad amplitude on the horn surface, not even
- Jig does not support the part well
- Wrong welding parameter
- Pressure to high

34.34 Project

Here you can set the project name.

34.35 Power

The output power is displayed on the LED bar on the front panel. After the welding the maximum power is shown with one LED. In the LCD display you see maximum power and the power at the end of the welding.

34.36 Power Maximum

In the force profile menu you can set a maximum power value. If this value is reached the welding pressure will be reduced to the set pressure automatically. This will help to reduce the risk to get an overload of the generator. Mostly you with semi crystalline material that need a high trigger force.

34.37 Quality Control

In each mode you can set limits. If the limits are exceed you will get an error.

34.38 Reject

The reject counter is counting all bad welds.

34.39 Reset

The Input 7 RESET is use to quit an Error or the active Cycle. The key CLR has the same function.

34.40 Safety Switch

The press is equipped with a safety switch. The safety switch is mounted so, that the safety switch is will activated at 6mm before the end of the maximum stroke. This is for safety reason. If you release the palm button before reaching the safety switch the press will return to the home position.
The function of the safety switch is tested after each welding. In case the switch got a problem you can no longer start a cycle. You need to replace the safety switch first.
If Trigger =Timer then the Trigger time will start after reaching the safety switch. If Trigger = Pressure then the welding will start reaching the set pressure and the safety switch.

34.41 Service Program

In the service program you test all inputs and outputs of the generator. This must be done by trained stuff only.

34.42 Speed Reduction Valve

In a press with a linear encoder you can activate the speed reduction valve over a set travel. The value can be set in the SPECIAL FUNCTION MENU. The valve must be connected at Output 2 PIN 8 of ST 5 on the trigger board TIP 002..
In a press without linear encoder you have to add an extra switch to the press. The switch must be connected to ST8 on the trigger board TIP002. The valve must be connected to the ST9 on the trigger board TIP002. The trigger board TIP002 is inside of the press.

34.43 Speed Throttle

The setting of the Speed throttle is influencing the horn down speed. The down speed has influence to the welding result.

34.44 Stroke Press

Set stroke of the actuator. The stroke should set that you can easily load the part to the jig. If the stroke is to long you will have a longer cycle time.

34.45 Welding

The welding will be influenced by the following parameters.

- Amplitude
- Pressure
- Down Speed
- Trigger
- Weld Time

The weld time is depending on the set welding mode.

34.46 Welding Modes

The generator is supporting different welding modes. The welding parameters are depending on the set mode.

- Time Mode set Weld Time
- US Stop Mode by external sensor
- Hand continuous

34.47 Welding continuous

Welding of Films, Fabrics, Non Woven and coated Carton. In the continuous welding you can have a fix horn or a rotating horn. The anvil is either fix or rotating too.
With continuous welding you can be waterproof and airtight seals.

Typical application : Filter, outdoor cloths, awnings

34.48 Welding of rigid Parts

Welding of two rigid part. The pars must be designed for Ultrasonic Welding. The parts will have an energy director or a shear joint. Both parts should be made with the same material. In some case similar materials can be welded.

Typical applications : Welding of Display window on Mobile Phone, Welding of cigarette

34.49 Welding Staking

In staking the lower part must have a pin coming out of the part. The upper part has a hole. The pin is overlooking the hole of the upper part. The pin will be welded down by the horn to a rivet. The upper part can be any material.

Typical applications : Door panel of car, Bumper of car, IP of car

34.50 Trigger

The Trigger will start the ultrasonic. The trigger can be a timer or a pressure sensor. This can be set in the SYSTEM INIT Menu. In case of the timer, the delay time will start after reaching the safety switch. In case of a pressure sensor the welding will start after the safety switch and the set pressure is reached. The trigger is influencing the welding result.