



**GYS**

Last update: **03.04.12**

Version : **V3**



## **INSTRUCTION MANUAL**

### **FOR SPOT WELDING**

#### **MACHINES**

**GYSPOT 32D.C**

**GYSPOT 32D.X**

Congratulations for the selection of this product which has been designed with great care ; Before installing and using the product, please read carefully the following recommendations of safety in order to avoid accidents to the users and damages of the welding process.

GYS can't be responsible for the damages occurred to persons or things, which derive from the use of the machine in following circumstances:

- Modification or neutralization of safety elements
- Non respect of the recommendations written in the manual instruction.
- Modification of the characteristics on the product
- Use of the accessories, which are different from the ones delivered by GYS.

## **I / PRESENTATION**

This product has been designed to carry out the following operations in car body workshop:

- Spot welding machine on sheet metals with pneumatic pliers (except GYSPOT P230, P400),
- Welding of sheet metals with gun
- Welding of nails, rivets, discs and pins.
- Suppression of bumps and impacts ( impact of hail with the option "quick repair").

## **II / SAFETY STANDARDS AND GENERAL PRECAUTIONS**

### **GENERALITIES**

1. Before disassembling the product's body, plug out the lead cable.
2. The operators must have the appropriate qualification.
3. The operations of servicing can only be controlled by qualified technicians.
4. The operator is responsible for respect of the car manufacturers recommendations, concerning the protection of electrical and electronic procedures ( car computer, car radio, alarm, air bag, etc...)
5. Before an operation of servicing, the power supply with compressed air must be cut off and off loaded.
6. The electrodes, arms, and the other secondary conductors can reach a very high temperature and remain hot very long after having stopped the machine. Be careful: high risk of burns.
7. It is necessary to make a regular preventive maintenance.

### **ELECTRICITY**

1. Check that the unity must be connected to the earth coupler and that the connection to the earth is in good condition.
2. Check that the work bench is connected to the earth coupler.
3. Make sure that the operator has no contact with the metal parts to be welded without any protection or with wet clothes.
4. Avoid to be in contact with the welding part.
5. Don't make spot welding operations in very wet areas or on a wet floor.
6. Don't weld with worn out cables. Check that there is no default with the isolation with stripped cables or with loose connections.
7. Switch off the unit before replacing the electrodes..
8. Before controlling or repairing, please disconnect the unit directly to the level of the plug.

### **PROTECTION OF EYES AND BODY**

1. During the welding process, the process must be protected from the eventual flashes of the electrical arc with protection clothes like leather gloves, welding aprons, safety shoes, welding helmets or glasses for filtering radiations and projections. As well during operations of rubbing and hammering, the operator must protect his eyes.
  2. The force of tightening of the clamp can reach 500 daN. Keep away all body parts from the mobile elements to avoid risks of tightening.
  3. Don't keep rings, watches, or jewellery, which are current lead and can create burns.
  4. All the protection board must be in good condition and maintained in place.
- Protect the environment near the product against projections and reflections.

## **SMOKES AND GAZ**

Welding operations can cause the emission of toxic smokes and harmful metallic dusts. The welding material must be degreased and cleaned in order to limit the toxic gas during the welding process.

## **FIRE**

1. Check that the sparks don't cause fire especially near inflammable material.
2. Check that fire extinguishers are not too far from the operator.
3. Leave the product in a place with air movers.
4. Don't weld neither on containers of combustibles and lubricants, even empty, nor on containers with inflammable material..
5. Don't weld in an atmosphere full with inflammable gas or fuel steam..

## **ELECTRO-MAGNETIC COMPATIBILITY**

Near the spot welding, check :

- there is neither no other power supply cable nor control lines, nor phone cables, nor radio or TV reception appliances, nor watches, nor mobile phones, nor magnetic cards, nor computers or any other electronic appliance.
- there is in the surroundings (minimum 3 metres of each point of the product) no persons using active medical appliances (pacemakers, acoustic prosthetics).

Make supplementary protections if other products are used in the same environment

## **III / CE certification**

This product has been designed with respect of the European regulation .

- Low voltage directive 2006/95/EC of 12.12.2006.
- « EMC » directive (Electromagnetic Compatibility) 2004/108/EC of 15.12.2004.
- Machinery directive 98/37/EC of 22.06.98.

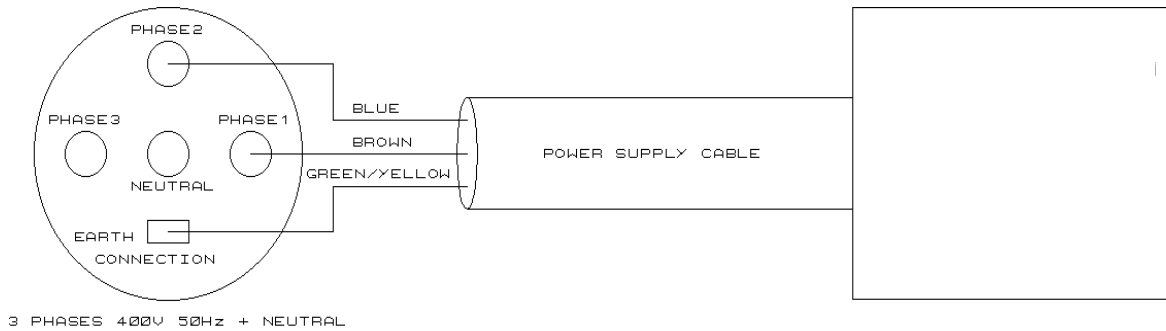
and therefore are in compliance with the European harmonized standards:

- EN 62135-1
- EN 62135-2
- EN 60204-1

## **IV / CONNECTIONS OF POWER SUPPLY CABLES**

### **Electricity :**

Two phases 400V 50Hz . Use of the PHASE 1, PHASE 2 and EARTH CONNECTION on a 3 phases plug.



### **Protection of the line**

Circuit breaker 32A with D curve or delayed fuses 32A.

### **Case of dysfunction :**

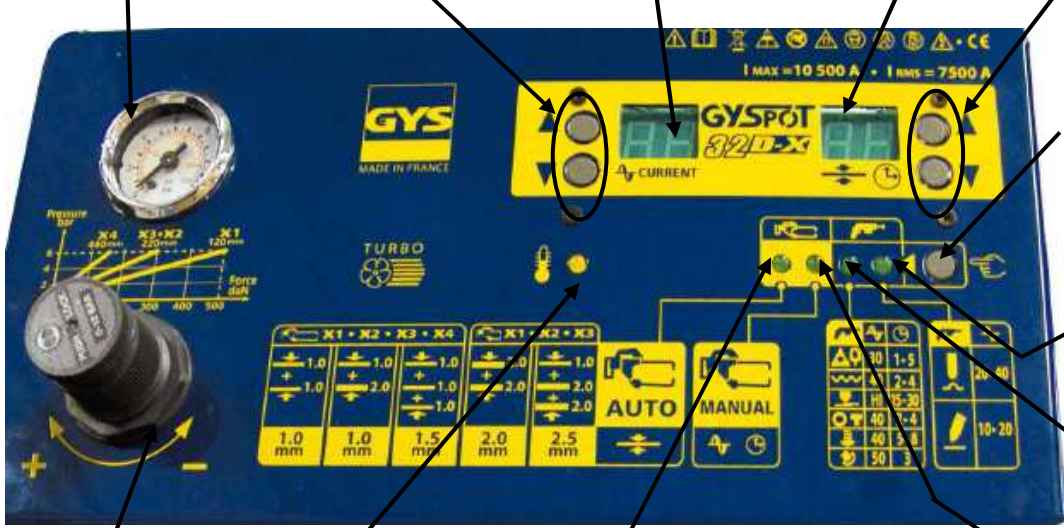
If the product releases the circuit breaker of the protection of installation, please check that you have the right breaker size (32 A or more and D curve absolutely).

### **Compressed air :**

Connect a compressed air pipe to the purifier behind the product. The service pressure can't be over 8 bar. The product can't be used on an air network with a pressure less 3 bar.

## V/ DESCRIPTION OF THE MACHINE

*Front side :*

Indicator of air pressure	Button of welding current adjustment.	Indicator of welding current	Indicator of time or steel plate thickness.	Button of time or sheet thickness adjustment.	
					<p>Button of tool and mode selection.          Clamp automatic mode.          Clamp manual mode.          Single side gun mode.          Carbon pen shrinking</p>
					<p>Mode D :          - Smoothing of bumps.          - Procedure to swag with a graphite pen.</p>
					<p>Mode C :          - Welding of studs, rivets, nails and bolts.          - Withdrawal of impact of hail.          - Dent puller</p>
Adjustment of air pressure.	Yellow indicator of thermal protection	Mode A : Welding with the clamp in automatic mode. The user shall enter the reference steel plate thickness.		Mode B : Welding with the clamp in manual mode. The user shall select the welding intensity and the welding time.	

*Back side:*

Circuit breaker on/off.				Air purifier with incoming joint of compressed air.																																
	<p>400 V / 2 ~ / 32A (D)</p> <table border="1"> <tr><td colspan="2">GYS - www.gys.fr</td></tr> <tr><td colspan="2">53940 Saint-Berthevin - Laval - FRANCE</td></tr> <tr><td>GYSPOT 32 D.X</td><td>N°</td></tr> <tr><td>EN 50 063</td><td></td></tr> <tr><td>U<sub>1N</sub></td><td>2~ 50 Hz 400 V</td></tr> <tr><td>S<sub>p</sub></td><td>12 kVA (S<sub>10</sub> 17 kVA)</td></tr> <tr><td>S<sub>max</sub></td><td>60 kVA</td></tr> <tr><td>U<sub>20</sub></td><td>10,8 V</td></tr> <tr><td>I<sub>2 cc</sub></td><td>7,5 kA</td></tr> <tr><td>e</td><td>120 mm</td></tr> <tr><td>l</td><td>120 mm à 440 mm</td></tr> <tr><td>F<sub>max</sub></td><td>5000 N à 1500 N</td></tr> <tr><td>P<sub>1</sub></td><td>8 bar</td></tr> <tr><td>IP 21</td><td>100 kg</td></tr> <tr><td colspan="2">I<sub>max</sub> 10 500 A</td></tr> <tr><td colspan="2">I<sub>rms</sub> 7 500 A - Duty Cycle 1%</td></tr> </table>			GYS - www.gys.fr		53940 Saint-Berthevin - Laval - FRANCE		GYSPOT 32 D.X	N°	EN 50 063		U <sub>1N</sub>	2~ 50 Hz 400 V	S <sub>p</sub>	12 kVA (S <sub>10</sub> 17 kVA)	S <sub>max</sub>	60 kVA	U <sub>20</sub>	10,8 V	I <sub>2 cc</sub>	7,5 kA	e	120 mm	l	120 mm à 440 mm	F <sub>max</sub>	5000 N à 1500 N	P <sub>1</sub>	8 bar	IP 21	100 kg	I <sub>max</sub> 10 500 A		I <sub>rms</sub> 7 500 A - Duty Cycle 1%		
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## **VI / COOLING AND THERMAL PROTECTION**

The cables are cooled with compressed air. The cooling process can be permanent if the red switch is on Manual position or permanent except during the welding cycle if the red switch is on Automatic position. A thermal protection forbid the use of the product in case of overheating (yellow indicator on the front side).

**Recommendation :** When you use it intensively, you should cool the cables continuously with compressed air .

## **VII / WELDING WITH THE SINGLE SIDED WELDING GUN**

- Connect the ground pad to the spade terminal of the generator.
- Fix firmly the ground pad near the place to be welded as possible.

In the case of a single sided spot welding process, leave always the ground pad on the metal sheet that is not in contact with the welding electrode ( in order to make the current circulate in the two plates to be welded).

- select the mode to be used and adjust with the values written on the charts chapter IX.

**Blinking of the displays :**

the displays can blink because of 2 reasons:

- The thermal protection is activated because the station is too hot.
- The selected mode is incompatible with the tool already used.

This happens if the user presses the trigger of the single sided gun when the mode clamp is selected on the control panel.

## **VIII / USE OF THE PNEUMATIC CLAMP**

Select the function mode :

**1 - Mode A:** Welding with the clamp in automatic mode (thickness to be selected)

*Proposed parameters for welding 2 pieces of galvanised steel with the clamp*

Reference sheet thickness	Intensity	Time in périods	Pulsations	Forc in daN C clamp	Forc in daN X clamp arms length 120 mm
0.6 mm	HI	12	1	160	160
0.8 mm	HI	16	1	180	180
1.0 mm	HI	20	1	250	250
1.2 mm	HI	24	1	280	280
1.5 mm	HI	28	1	300	300
1.8 mm	HI	34	1	300	350
2.0 mm	HI	40	1	300	400
2.5 mm	HI	50	1	<b>300</b>	<b>450</b>
3.0 mm	HI	80	4	300	450

Table of reference sheet thickness:

+	1.0	+	1.0	+	1.0	+	2.0	+	1.0
+	1.0	+	2.0	+	1.0	+	2.0	+	2.5
+	1.0	+	1.0	+	1.0	+	2.0	+	1.5
+	1.0	1.0	1.5	2.0	2.5				

**2 - Mode B:** Welding with the clamp in manual mode (intensity and duration of welding shall be selected)

*Intensity and time adjustment table:*

Intensity	high	Welding Time in periods	0.....50
Intensity	99	Welding Time in periods	0.....50
Intensity	98	Welding Time in periods	0.....50
Intensity	---	Welding Time in periods	0.....50
Intensity	41	Welding Time in periods	0.....50
Intensity	40	Welding Time in periods	0.....50
Clamp ajustment	AF		--

If "AF" clamp adjustment mode is selected, the clamp remains closed until the user presses the trigger

Blinking of the displays:

As for the welding gun mode, the display blinks when the machine is in thermal protection or if the selected mode is inappropriate.

Cautions:

**When using the clamp, the ground cable of the single sided gun must be disconnected from the car body.**

- ✓ The electrodes must be regularly sharpened.
- ✓ Blow off regularly the dehumidifying filter on the back side of the product. Please adjust with a medium pressure of 6 bars.

**IX : RECOMMENDED ADJUSTMENTS FOR BODY CAR WORKSHOP**

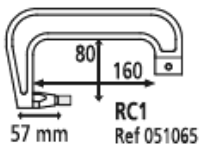
(only indicative and to modulate depending on the type and the thickness of the sheets)

TOOL	OPERATION	MODE	POWER	TIMER
Gun	Single-side welding	C	HI	10 to 30
Gun	Tails welding	C	70	5 to 8
Gun	Nails and rivets welding	C	60	2 to 4
Gun	Star welding (sliding hammer)	C	50	1 to 5
Gun	Ring welding	C	60	2 to 4
Gun	Wavy wire (dent pulling)	C	60	2 to 4
Gun	Smoothing of bumps	D	20 to 40	
Gun	Shrinking with carbon pen	D	20 to 40	
Pneumatics clamp	Welding 2 pieces of steel sheet : reference steel thickness less than 2.5	1 pulsation	HI	10 to 50
Pneumatics clamp	Welding 2 pieces of steel sheet : reference steel thickness more than 2.5	4 pulsations	HI	52 to 96

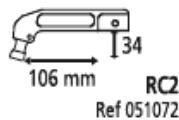
**X: C clamp arms :**

Setting recommendations for welding mild steel sheets:

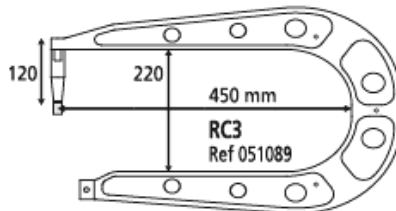
Sheets thickness in mm	Arm type	Minimum air pressure (bars)	Suggested force (daN)
From 0,4 to 1	C1-C2-C3-C4	3 to 4	100 to 200
1 to 2	C1-C2-C3	4 to 6	150 to 300
2 to 3	C1-C2-C3	6 to 8	250 to 350



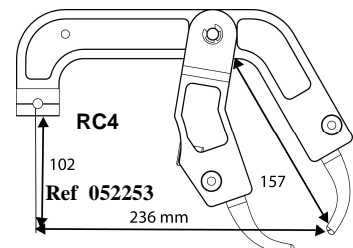
**8 bar / 300 daN**



**8 bar / 300 daN**



**8 bar / 300 daN**



**5,5 bar / 120 daN**

Tilt electrode: 15°

## **XII / X clamp arms :**

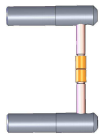
Recommended clamping for welding galvanised steel with X clamp:

Sheet thickness in mm	Suggested Force in daN	Arm length inmm	Minimum air pressure in bars
From 0,4 to 0,8	100 to 200	120	2 to 3
From 0,4 to 0,8	100 to 200	220	2 to 4
From 0,4 to 0,8	100 to 200	440	5 to 7
From 1 to 2	150 to 300	120	3 to 3,5
From 1 to 2	150 to 300	220	3 to 6
From 1 to 2	150 to 200	440	6 to 7
More than 2	300 to 500	120	4 to 7
More than 2	230 to 300	220	6 to 8

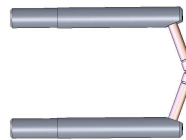
Set of X arms with a useful height of 120mm

Arms made of aluminium and electrodes made of copper

**RX1:** Useful length 120 mm



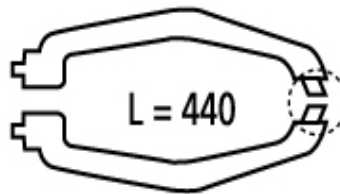
**RX3:** Useful length 220 mm, 20° tilt electrodes



**RX2:** longueur utile 220 mm, 30 + 85 mm  
assymetrical electrodes



**RX4:** Useful length 440 mm



## **XIII / MAINTENANCE**

### Replacement of the X clamp arms:

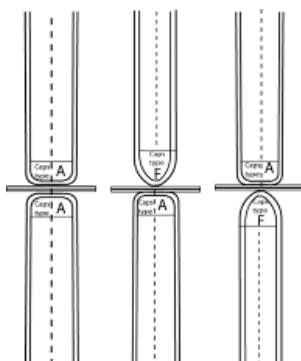
- Adjust and tighten the arms of the clamp after having put the electrodes perfectly in line (torque: 15 Nm).

- Select the clamp adjustment function to check that the electrodes are in line.

This function is accessed in the manual clamp mode (B mode). « AF » has to be selected.

#### ✓ **Replacement of the caps/electrodes:**

- To guarantee an efficient welding spot, it is necessary to replace the caps every 200 spots, using the dedicated caps key.
- It is forbidden to grind the caps.
- Assemble the caps with copper grease (ref. 050440)
- A type caps (ref. 049987)
- F type caps (ref. 049970)
- Bevelled caps (ref. 049994)
- Several combinations are possible :





✓ **Cleaning or replacement of the welding tools**

Any welding tool is degraded after a certain period of use. However all tools must stay clean in order to get the best performance of the unit. When using the unit in pneumatic clamp mode, check the good state of the CAPS electrodes (flat, rounded or bevelled). If this is not the case, clean them with sandpaper (fine grain) or replace them (see reference on the unit).

All moving parts of machinery suffer constraints on their uses. Although monitoring is no screw loose, this could degrade the quality of welds. If so, re-tighten.

For a use in gun mode, it is necessary to check the state of the tools: stars, single side electrode, carbide electrode ... and if they look in bad condition clean or replace them.

The anti-dust filter at the back of the unit must regularly be cleaned to avoid the overheating of the generator.

✓ **Purging of the pneumatic filter**

Regularly drain the dehumidifier filter placed on the rear side of the unit.

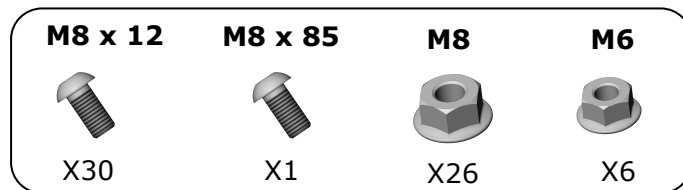
✓ **Generator maintenance**

The maintenance and the repair of the current generator must be done by an appointed and GYS trained technician. Any maintenance operation done by another person will cancel the warranty conditions. GYS cannot be held responsible for damages or accidents which happen subsequently to operations performed by people exterior to GYS.

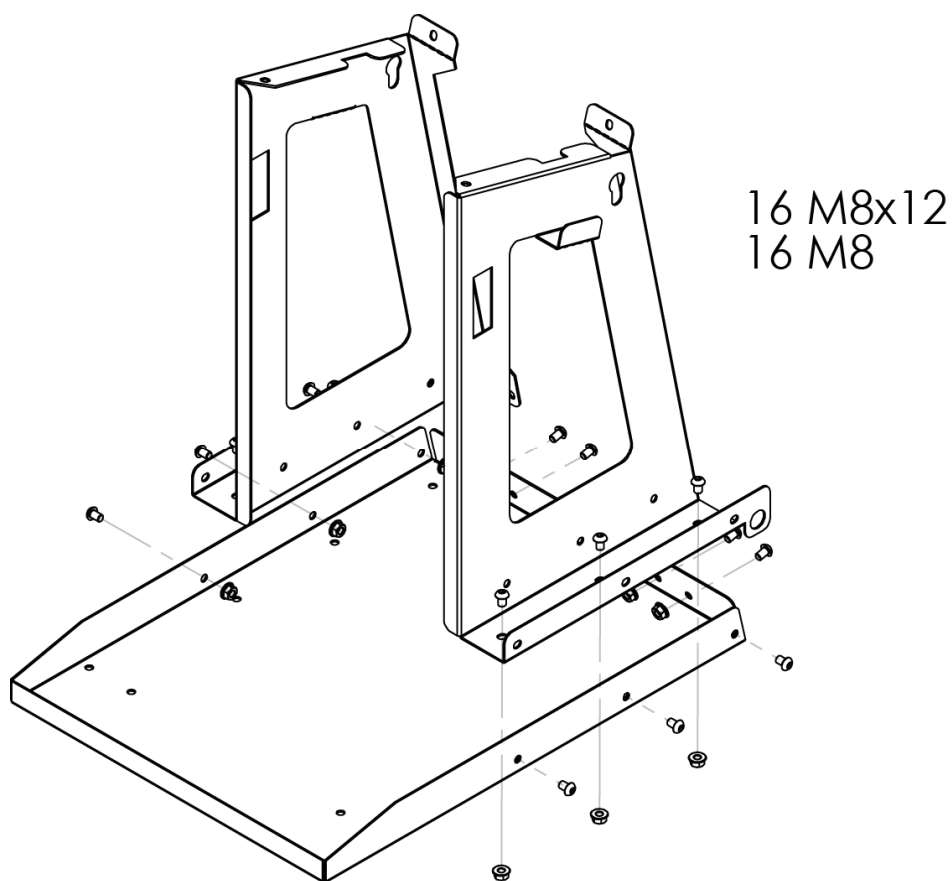
**XIV / CHARACTERISCTICS**

<b>ELECTRICAL CHARACTERISTICS</b>	
Nominal input voltage : U1N	400V 3 ~ 50/60Hz
Permanent input current : I1N	32
Power at 50% duty factor : S50	17 kVA
Permanent input power : Sp	12 kVA
Maximum welding input power : Smax	60 kVA
Secondary voltage :U2d	12 V.A.C
Maximum short-circuit output current : I2cc	7 800A
Maximum regulated welding current	7 500A
Circuit Breaker	32 Amp D curve
Duty cycle	0.5%
<b>THERMAL CHARACTERISTICS</b>	
Ambiant temperature Range	+5°C +45°C
Transport and storage Temperature range	-25°C up to +70°C
Hygrometry	80 %
Altitude	2000m
Thermal protection by thermistor on the diode bridge	70 °C
<b>MECHANICAL CHARACTERISTICS</b>	
Protection degree	IP21
Width	590 mm
Height	760 mm
Depth	1890 mm
Weight	98 kg
Welding clamp cable length	2 200 mm
Welding clamp cable cross-section	200 mm <sup>2</sup>
Single-sided welding gun cable length	2 600 mm
Single-sided welding gun cable cross-section	150 mm <sup>2</sup>
Earth cable length	2600 mm
Earth cable cross-section	150 mm <sup>2</sup>
<b>PNEUMATICS CHARACTERISTICS</b>	
Minimum force : Fmin	100 daN
Maximum force F with C clamp : Fmax	300 daN
Maximum force F with C clamp with RC4 arm	120 daN
Maximum force F with X clamp and 440 mm arms	150 daN
Maximum force F with X clamp and 120 mm arms	500 daN

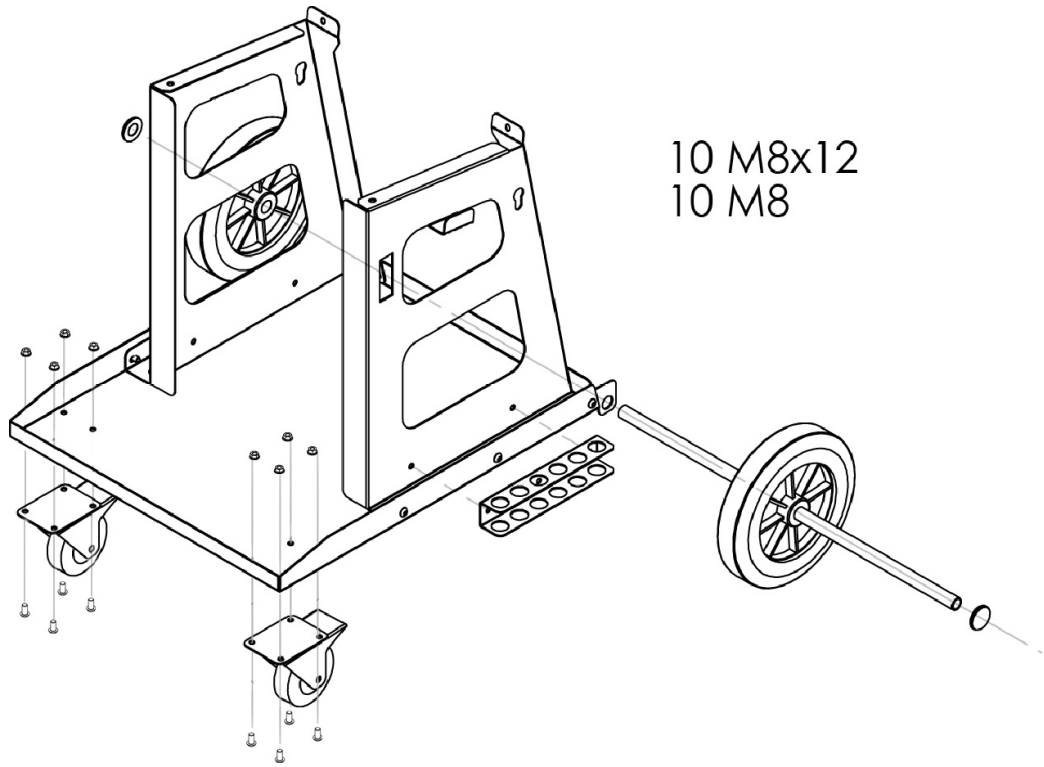
**XV / TROLLEY ASSEMBLY**



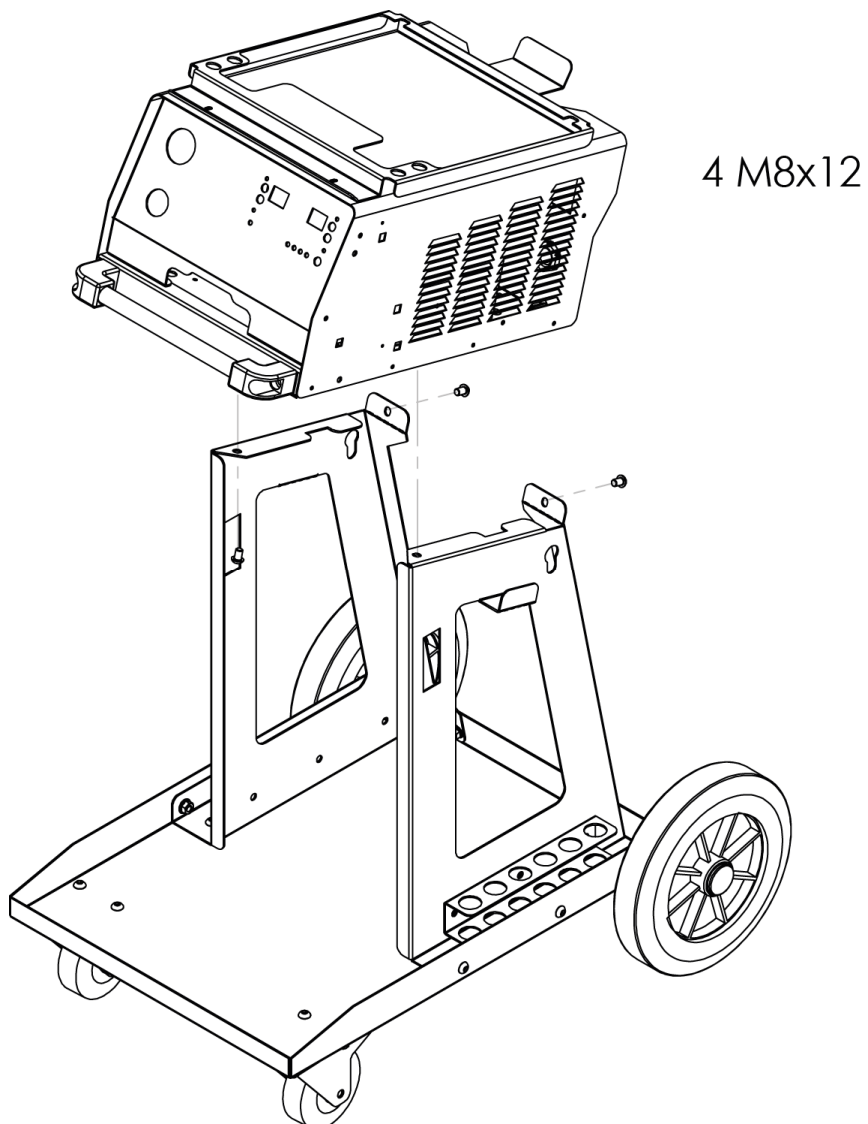
**1**



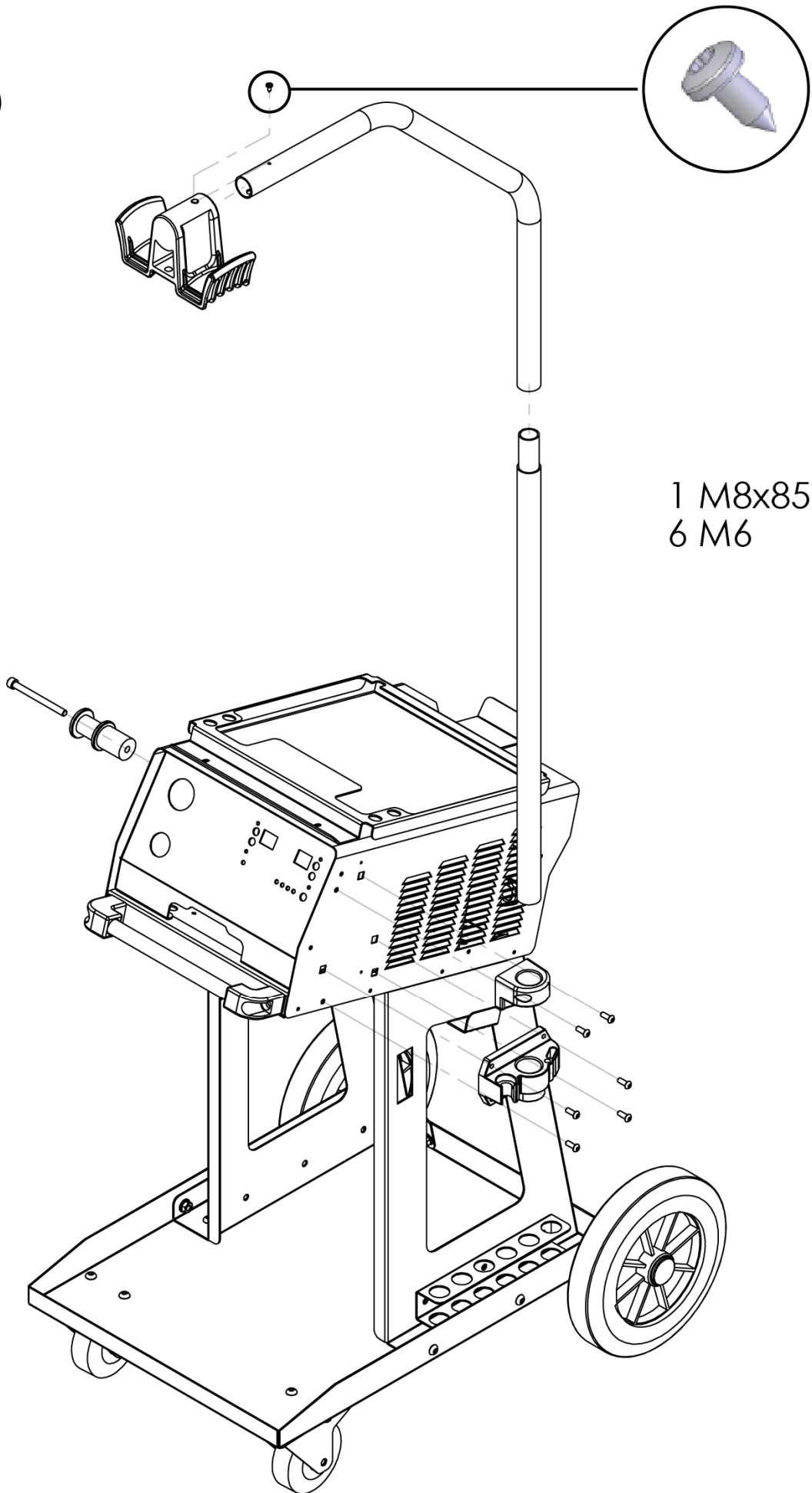
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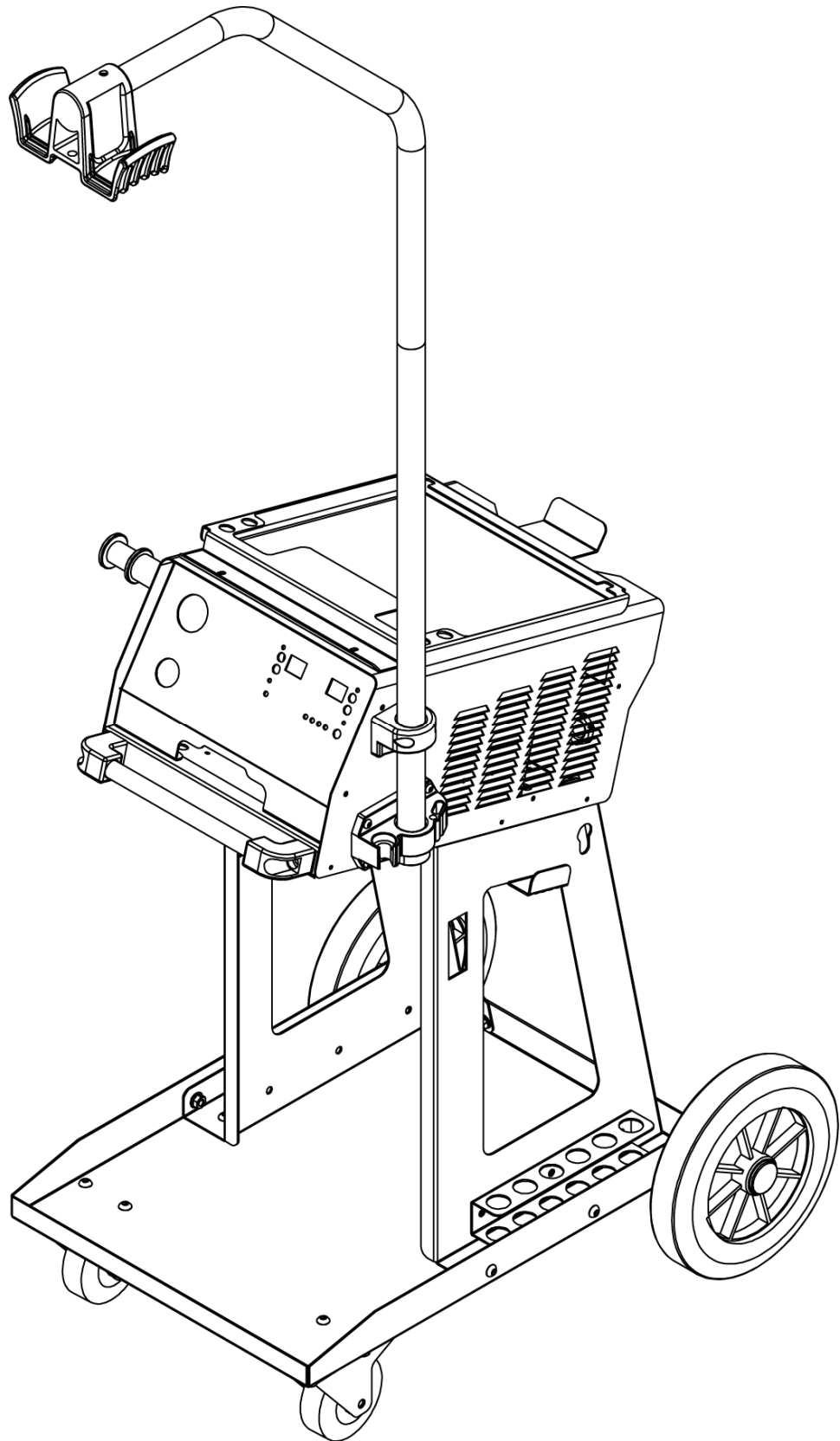
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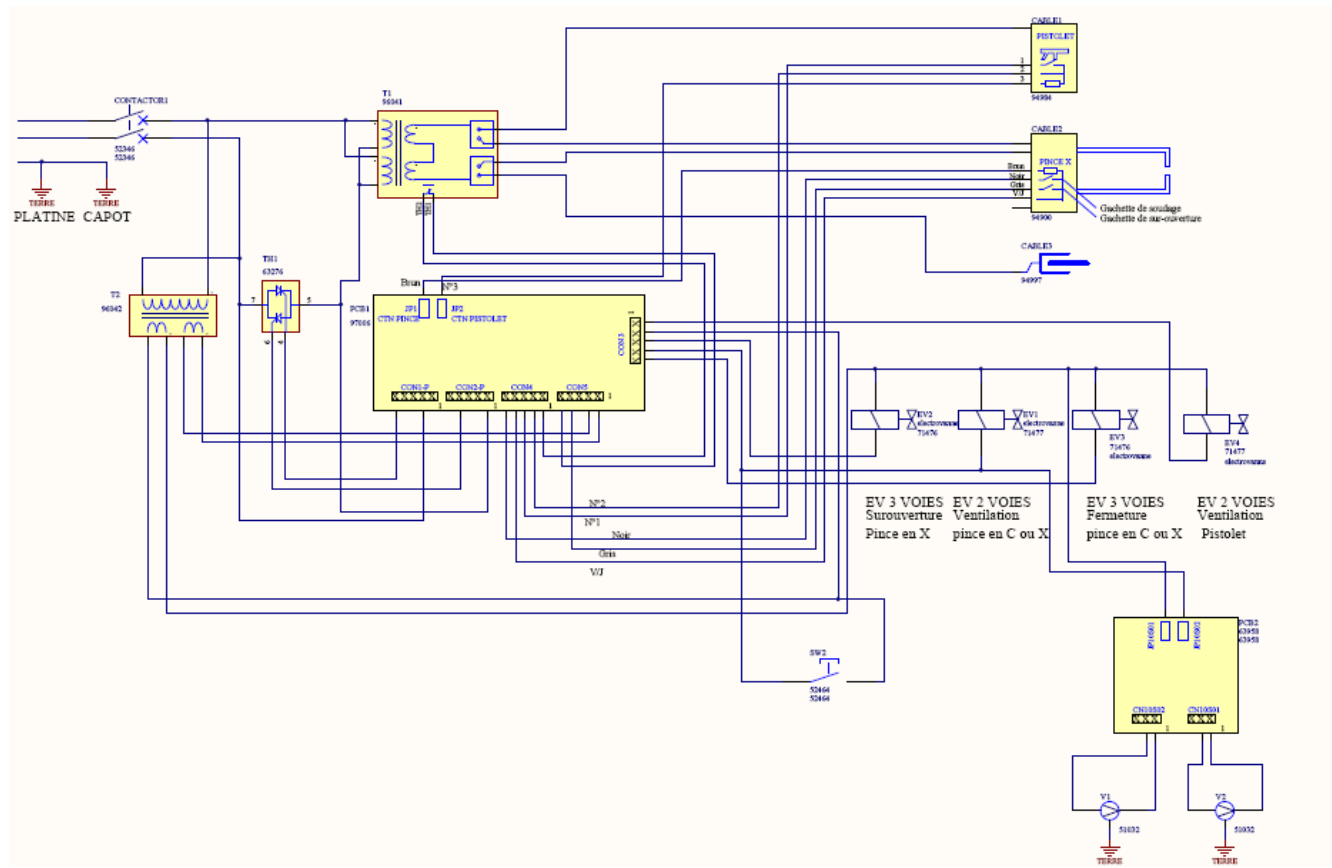


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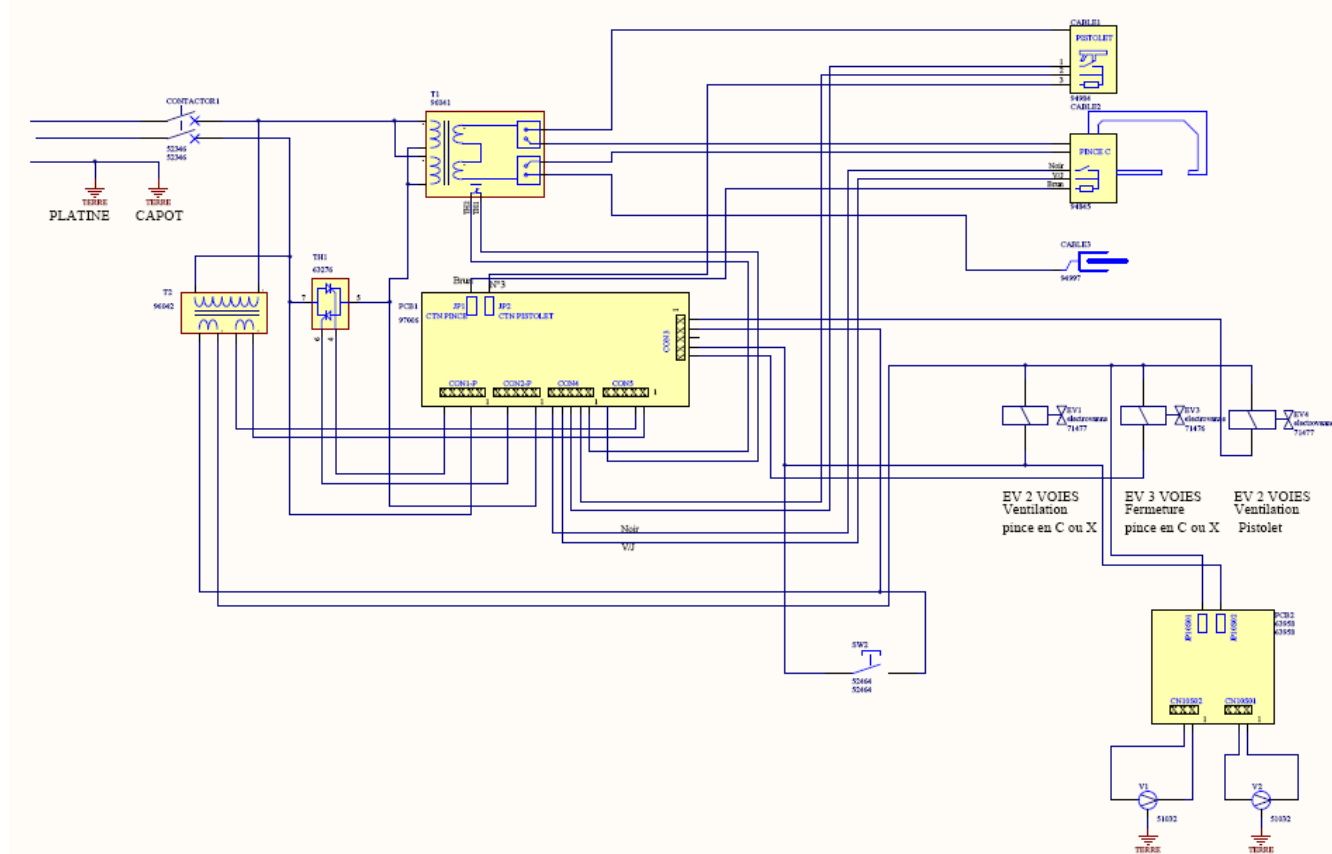


# XVI / Electrical schematics




## 32D-X :



## 32D-C :



**XVII – Symbols**

	<p>Caution! Read the user manual before use</p>
	<p>Separate collection required – Do not throw in a domestic dustbin</p>
	<p>Do not use in the open air. Do not use the product under water projections. IP21.</p>
	<p>People wearing pace-makers should not approach this product. Risk of interference and disturbance of pace-makers near of the product.</p>
	<p>Caution! Strong magnetic field. People wearing active or passive implants must be informed.</p>
	<p>Use eye protection or wear safety glasses.</p>
	<p>Body protection must be worn.</p>
	<p>Hand protection must be worn. Risk of burns.</p>