About RADIKAL DARTS

Radikal Darts© is a computer controlled machine and it requires some basic care as any computer. Failing to operate the machine correctly could result in malfunction, so please read this manual before starting operation.

This document may be incomplete and subject to change without notice. Unauthorised reproduction of any of its contents is strictly forbidden. The most current version is available on the Gaelco’s website at: http://www.gaelco.com

Radikal Darts has been manufactured in accordance with European Community directives. Any changes or modifications to this machine has to be authorised by Gaelco S.A. and must be in accordance with the CE directives.

Using spear parts that do not fit specifications will void the warranty. Removal of serial numbers and/or bar codes from product or components will void the warranty as well.

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FCC Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part A of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operating in a commercial environment. This equipment uses, and can radiate radio frequency energy, if not installed and used according to the instruction manual, and may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.
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1. GENERAL INFORMATION

1.1 MANUFACTURER AND MACHINE DATA

Manufacturer: GAELCO, S.A.
Address: Escipión 11
ZIP: 08023
City: Barcelona
Country: SPAIN
Tel.: 34 93 417 36 26
Fax: 34 93 417 28 02
e-mail: info@radikaldarts.com
website: www.gaelco.com
Name of the game: RADIKAL DARTS
Model: PF-25

1.2 LEGISLATION REFERENCES

RADIKAL DARTS cumplies with the following CE regulations:

EM EMISSION

- EN 61000-3-2 (1995), Harmonics
- EN 61000-3-3 (1995), Fluctuations
- EN 55022 (1994), Continuous conducted emission (Class A)
- EN 55022 (1994), Radiated emission (Class A)

EM IMMUNITY

- EN 61000-4-2 (1995), ESD
- EN 61000-4-3 (1996) & ENV 50204 (1995), Radiated field of RF
- EN 61000-4-4 (1995), EFT burst
- EN 61000-4-5 (1995), Surges
- EN 61000-4-6 (1996), RF common mode
- EN 61000-4-8 (1993), 50 Hz H-field
- EN 61000-4-11 (1994), Dips, interruptions

ELECTRICAL SAFETY


1.3 TECHNICAL SERVICE

Gaelco S.A. or its Distributors carry out technical service.
The e-mail for technical assistance is: info@radikaldarts.com

1.4 RESPONSABILITY

Any modifications made to this machine that are not authorised in writing by the manufacturer will be considered to be at the exclusive responsibility of the operator, who must operate in compliance with the European Community directives.

In case of damage caused by a defective part, the manufacturer will assume responsibility only if the machine was defective in its original condition. However, this responsibility shall be diminished or even totally annulled if the operator or the player do not follow the instructions provided or if the operator uses spare parts that are not covered by guarantee, are not authorised in writing or do not correspond to the specified technical characteristics.

2. SPECIFICATIONS

MACHINE FACILITIES

RADIKAL DARTS is the first and the only dart machine in the market which allows to play tournaments without direct presence of a referee. This is possible because of a multimedia system patented by Gaelco S.A. The RRS (Remote Refereeing System) controls game plays held in any place of the world, at any time. The game plays are recorded by two digital cameras, then sent through Internet to a dedicated server where the information is analyzed and validated.

Gaelco’s validation software is ready for all types of tournaments regarding the number of sites.

The machine includes many other facilities, such as a panoramic 17" TFT screen on top of the cabinet, a laser device to mark the line from where the players throw their darts, and a card reader to speed up player identification in tournament mode.

RADIKAL DARTS offers the traditional and most popular dart games: X01 (301, 501, 701, 901), Cricket, Shangai, Burma Road, Tic Tac Toe and others. Each game has available all most common options to play. The machine is also prepared to organize other tournaments such as Best of 3, so managers and operators have another tool to promote dart sports and improve machine profitability.

DIMENSIONS AND WEIGHT

<table>
<thead>
<tr>
<th>width</th>
<th>depth</th>
<th>height</th>
<th>weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>665 mm</td>
<td>625 mm</td>
<td>2300 mm</td>
<td>100 Kg</td>
</tr>
</tbody>
</table>
2.1 TECHNICAL SPECIFICATIONS

**Mains supply**
Operating voltage: 220-230 VAC, 50 Hz
Power consumption: 160W

**CPU board**
RADIKAL DARTS PCB

**Controls and game facilities**
- Keyboard
- Graphic display
- START button
- 17” Twin Film Monitor (color TFT)
- CCD camera, front view
- CCD camera, vertical view
- Laser line module
- Magnetic card reader (optional)

**Remote Refereeing System (RRS)**
Server and software for accessing the RRS are provided by Gaelco S.A.

**Connection to local area network and Internet**
Ethernet RJ-45 cable, normal (not supplied with the machine)

2.2 ATTACHMENTS

- Operator’s Manual (this document) (1)
- Coin box keys (2)
- Console keys (2)
- Dart board keys (2)
- Power cord (3m) (1)
- Fixing screws (2)
3. SAFETY NOTES

In order to use RADIKAL DARTS safely, please read carefully this Manual BEFORE the installation, use or maintenance of the machine.

This Operator's Manual and other manuals delivered with the machine must be always available to the operating and service personnel.

When transporting or reselling the machine, please be sure to attach this Manual.

The RADIKAL DARTS machine has been designed for indoor use only, within residential or commercial areas, and must be used exclusively for the purpose intended.

GAELCO S.A. bears no responsibility for accidents, injury or damage resulting for unauthorized changes or improper use of the machine.

3.1 GENERAL CONSIDERATIONS

- Before operating the machine, check that it has been installed correctly and in accordance with this Manual.
- The warning notices (stickers) for the laser device must be kept in such condition that customers can read them easily.
- Before connecting the machine to the mains supply, verify that it is set for the correct voltage and that the proper fuses are already installed.
- When replacing fuses, use spare fuses of the same type and rating than the originals. The use of other material can cause serious damages on the electronic circuits or even a fire hazard. Check the Parts List to know the exact specifications.
- As the machine is controlled by a computer, it should be switched off if the mains voltage is not stable.
- Use the lateral switch, not de mains switch, when you wanto to switch off the machine.
- Do not turn ON the power switch until the machine has been installed on its dedicated place.

If there is any problem or malfunction with the machine, operation must be stopped immediately.
3.2 SAFETY PRECAUTIONS CONCERNING LOCATION

Do not place the machine where it might be an obstacle in case of emergency (i.e. close to fire extinguishers or emergency exits).

This machine has been for indoor use only, within residential or commercial spaces. Absolutely do not set up the machine outdoors or under the following conditions:

- Direct exposure to sunlight, high humidity, water contact, dust, high heat or extreme cold.
- In locations near containers holding liquids or liquid dispensing equipment. In general, precautions should be taken against spilling liquids of any kind whatsoever over the machine.
- In a place exposed to vibration. The machine must be installed on a level surface with levellers properly adjusted.
- In locations near ventilating holes. Doing so could cause internal temperature to rise excessively, resulting in equipment failure.
- Near hazardous substances

Furthermore:

- Do not run the power cord across passages where pedestrian's feet could get caught on the cord.
- Do not connect the machine to a power line that also supplies power for freezers or other power consuming and noise-making equipment.

GAELCO shall not be held responsible for any damage resulting from the failure to observe these instructions.

3.3 CLEANING

When cleaning the machine, avoid cleaners containing aggressive solvents. Please use a mild cleaner and a soft cloth.
4. HANDLING

This machine should be transported or moved with care. Failing to do so could result in injury or product damage. The machine includes a computer and some other parts which are sensible to vibration and blows. Furthermore, it is a quite heavy cabinet of about 100Kgs. So please be careful.

4.1 TRANSPORT OF THE PACKAGED UNIT

The packaged machine must be transported in a closed means of transport with sufficient carrying capacity for the gross weight of the machine, which is about 100 Kgs. The machine should remain packaged on its pallet and suitably secured to the means of transport. It is very important that the lifting forks are pushed right to the back of the wooden pallet, to give optimum stability to the load. It is not allowed to lift the packed machine with ropes or belts, as the package is not equipped with suitable lifting points for this type of transport.

4.2 STORAGE

Store the packed machine in sheltered and dry areas. Temperatures allowed: maximum +45ºC / minimum -5ºC.

4.3 RECEPTION

The packaging should be carefully inspected upon receipt to ensure that the product is delivered in good conditions. Shipping damage may void warranty. In case of shipping damage, contact your Distributor and the Transportation Carrier immediately. Please refer to section 6 for further inspection.

5. SITE CONDITION

The location for the dart machine should have a suitable, grounded electrical outlet, as well as an accessible connection to Internet or local network. The machine has a computer inside and should be powered by a dedicated circuit. If a separate circuit is not available, care should be taken to provide clean and stable voltage. Therefore it is not allowed to connect the machine to a circuit that also supplies power to freezers, motors or any other equipment that makes electrical noise or consumes a lot of power.

The floor must be even and flat. Light reflections or irregular surfaces should be avoided at the area of the throw line.

The machine should not be located where games will be interrupted by people playing through the playing area.
6. UNPACKING, ASSEMBLING & INSTALLATION

It is best to unpack the machine where it is going to be used or in a place as near as possible to this. Once the packaging is removed, the machine looks as shown in the drawing.

To place the machine on site remove the brackets that fix it to the pallet. There are four brackets, three of them marked in the drawing.

6.1 INSPECTION BEFORE ASSEMBLING

Normally, GAELCO products are ready to be assembled immediately after transporting to the location. Nevertheless, some mishandling might occur during transportation. Check the following points to ensure that the machine has been properly delivered:

- Examine the cabinet exterior for dents, chips, or broken parts
- Verify that levellers are not damaged
- Verify that the keys delivered with the machine open all doors.
- Check if all the accessories are included.
- Ensure that the power supply voltage and frequency requirements meet those of the location.
6.2 ASSEMBLING & INSTALLATION

To assemble the machine push up the target section of the cabinet until it rests on the base section, as shown in the drawing. This operation should be done carefully to keep the cabinet balanced.

Then fasten the two sections of the cabinet, by using the screws stored in the coin box. Please proceed as follows:

1. Take the keys set.
2. Find the key for the target door and insert it in the lock. Press a bit and turn 90° anticlockwise.
3. Move away the door from the cabinet by pulling the key, as shown in drawing 1 of page 13. Pull down the door to remove it (drawing 2).
4. Open the two doors corresponding to the coin acceptor and the coin box. Turn the key 90° anticlockwise to open.
5. Remove the bolt that holds the coin box, then take the box away from its housing as shown in the pictures. You will find two screws M8X70 there, as well as other items delivered with the machine.
6. Tighten the two sections of the cabinet using the M8X70 screws.

7. There are two levellers that can be adjusted by inserting a flat screwdriver through the holes of the back base, as shown in the drawing. Tighten the locknuts of the levellers when the cabinet is level.

8. Install the target door and lock it. This door should be closed during the setup process.
6.3 DISASSEMBLY OF TARGET SECTION FROM BASE SECTION

When you have to transport the machine, and you have not access to a large van, you may need to disassemble the cabinet. In that case, please follow the procedure below.

1. If the cabinet comes from factory, remove the brackets that fix it to the pallet, then place the assembly on the ground. Then open the console door and the target door.

2. If the cabinet is already installed on site, unplug the power cord from both ends and store it in the coin box. Then open the console door and the target door.

3. Disconnect the following cables:
   - DVI cable connected to the CPU (1)
   - Power harness (2)
   - Harness connected to the contro PCB (3)

When the two sections of the cabinet are disassembled, cable 1 and harness 2 remain attached to the target section, while harness 3 goes with the base section. Therefore, cable 1 and harness 2 have to pass from the base section to the target section, through the hole shown in the above picture, while harness 3 should be pulled out to come to the base section.
3. If the cabinet is already assembled, remove the screws that fix the two sections, then fold down the target section until it rests back to back with the base section.

4. Disassemble the two sections of the cabinet. Remove the nuts that fix the hinges to the base section, then lift the target section upwards until the hinge screws come out from the base section. Move the target section over and place it on the floor, the TFT facing upwards. Two persons are needed to lift and move over the target section.

5. Protect the two sections in order to avoid any damage during transportation. Do not forget to include all items removed when disassembling the cabinet (nuts and bolts, etc.)
REASSEMBLY OF TARGET SECTION TO BASE SECTION

The process of reassembly is quite similar to that of disassembly. Please proceed in the following way, systematically:

6. Install the base section on the floor, then lift the target section and position it so that the hinge screws are aligned with the holes of the base section. Let the target section down, very carefully, so that the hinge screws get into the holes of the base section.

7. Screw up the nuts that fix the hinges, but do not tight them yet, as the cabinet has to be aligned first. Do not forget the spring washers.

8. Fix the two section of the cabinet, using the M8X70 screws, but do not tight them yet. Refer to page 14 for further information.

9. Align the back surface of the cabinet, as shown in the drawing below, then tight the fixing screws. If there is any tolerance, it will be absorbed inside the cabinet.

10. Tight the nuts that fix the hinges.

11. Connect the cables which communicate the target section with the base section, undoing the process explained in the step 2 of this procedure.

12. Level the cabinet as shown in page 14 of this Manual.
7. **SET UP**

The setting up of the machine should be done where it is going to be used. Please proceed step by step and strictly follow the instructions.

**Step 1**
Plug the power cord in the connector placed on the rear of the cabinet. The other end of the cord should be plugged in a grounded electrical outlet, providing clean and stable voltage.

**Step 2**
Plug the Ethernet cable in the RJ-45 connector. The Ethernet cable is a standard type and can be purchased at any computer shop. Refer to step 9 to know more details about how connecting the machine to a local area network and to Internet.

**Step 3**
Switch on the POWER SWITCH (position I).

**Step 4**
Switch on the switch placed at the right side of the cabinet. The red LED should turn on.

PLEASE WAIT ABOUT 2 MINUTES UNTIL THE MACHINE IS COMPLETELY INITIALIZED.

The exhibition routine will be displayed on the TFT screen when the initializing process is finished.
FAST GUIDE

This guide offers an overview of the setting up process. Complete information is available in the steps indicated at the end of each point.

1. Enter TEST menu by opening the coin door and pushing the red button of the PCB placed on the rear side. (Step 5)

2. Select Language and choose the appropriate language. (Step 6)

3. Enter Set up menu. The operator’s card and password are requested if the machine has been already allocated to the operator. If this is not the case, go ahead. Select Internet Settings to configure the connection to Internet. (Step 9)

4. Leave Set up menu and select Status to check if the Internet connection is working properly. (Step 10)

5. If the machine is new, allocate it to you. Enter Set up menu again and select Activate, then use your operator’s card or name, and your password when requested. (Step 11)

6. Select Distance to adjust the distance from the dartboard to the throw line. (Step 12)

7. Select Customize to register the location. (Step 14)

8. Start to play Games, if you like. To play Tournaments is also available, provided that a tournament is already assigned to the machine. In that case fill in the provisional entry form to be allowed to play. (Step 16)

9. The other settings will be defined according to site conditions and operator’s criteria. The Video test is for manufacturing and maintenance purposes. The Laser Test option (Step 13) can help if the automatic setting of the throw distance is hard to be done.

10. When switching off the machine, please do it following the instructions of
Step 5
Open the coin door and push the **red button** of the PCB installed at the back of the door. This PCB is shown in the picture below. The red button allows the access to **TEST** options, which are displayed in the little blue window placed on the left side of the console.

The PCB includes three more buttons, two of them for adjusting the VOLUME of the sound. The **SERVICE** button allows the technician to introduce game credits without moving the coin counter. The volume of the alarm is adjusted from the **Audio** option, as well as the coin detection sound.

![PCB Diagram](image)

The arrows (up / down) of the keyboard are used to select the options of the TEST menu. **OK** key is used to enter or validate the selection. The bent arrow key is used to go back to the previous menu.

![Keyboard Diagram](image)
The operator’s card and password are requested to use the options of the **Set up** menu. The operator’s card is also required when allocating the machine. (**Activate** option).
Step 6
Select **Language** option and press OK. Choose a language and validate with OK.

Step 7
Select **Set up** and press OK. If the machine is not allocated go to step 9.

Step 8
If the machine is already allocated to an operator, the following message will be displayed after step 7:

**Insert operator’s card**
**or operator’s name:**

Insert your **red** card as shown in the picture, or write your registered name.

Once the machine recognizes you as Operator, your 4 digits password will be requested. Please write it.

If the password is OK, you are allowed to configure the machine with the **Set up** options.

Step 9  **INTERNET SETTINGS**

In order to play **tournaments**, the machine must be connected to **Internet**. Gaelco recommends the **ADSL** connection, which includes an ADSL **router** and a dedicated **phone line** with ADSL service.

**VERY IMPORTANT**: When contracting for the ADSL service, please make clear that you want to be connected through a **router with automatic assignment of the IP address**. A personal computer is necessary for connecting up the ADSL line. RADIKAL DARTS does not use the USB port.

If the Internet connection is not available at the moment, please go to **step 12**.

The following instructions are addressed to persons with informatic knowledge, when the Internet connection is already operative.

1. Connect the machine to the network with an standard Ethernet cable (RJ-45, available at any computer shop). The RJ-45 connector is on the back of the cabinet, as shown in page 15.

2. Select **Internet Settings** on the **Set up** menu, then press OK. Three options are available: **Local Area Network / Proxy / Modem**.
3. Choose an option depending on the conditions of the Internet connection. Please follow the instructions of the diagram below and refer to the adequate procedure.

![Flowchart Diagram]

- **START**
- **YES**
  - Do you have a local network with Proxy server?
  - **YES** Follow procedure A
  - **NO** Follow procedure B

- **NO**
  - Do you have an ADSL router with automatic IP assignment?
  - **YES** follow procedure C
  - **NO** Follow procedure D

- **END**
A) You have a LAN which uses Proxy server to connect to Internet
- Select Proxy from Internet settings.
- As the machine does not detect the Proxy automatically, please set up Proxy IP address and port using numeric keys.
- Exit with OK to validate the settings. If you exit with “go back” key (bent arrow) the previous settings remain unchanged.
- Press “go back” key to leave Proxy menu.

B) You have a LAN without Proxy server
- Select Proxy from Internet settings.
- Set up the IP Proxy address to 0.0.0.0 and press OK.
- Press the “go back” key.
- Follow procedure C if the router can assign the IP address automatically. Otherwise follow procedure D.

C) You have an ADSL router with automatic IP assignment
- Select Local Area Network from Internet settings.
- Select Auto and press OK. The router will assign the IP address automatically.
- Press “go back” to leave Local Area Network menu.

D) Manual assignment of IP address:
- Select Local Area Network from Internet settings.
- Select Manual and press OK.
- Set up the IP address using numeric keys.
- Set up the default gateway using numeric keys.
- Exit with OK to validate the settings. If you exit with “go back” key (bent arrow) the previous settings remain unchanged. When you assign the IP address, the net mask will be set to default for your network class (A, B or C)
- Press “go back” to leave Local Area Network menu.

HOW TO MANAGE THE SET UP MENU:
1. Press TEST button on the coin acceptor panel: Test menu appears in the display.
2. Select Set up option using arrow keys, then confirm with OK: the message Insert operator’s card or operator’s name is displayed.
3. Insert your red card or write your registered name. When it is accepted you are prompted to enter your password. Do it to open the Set up menu.
4. Select Internet settings and make the necessary settings. Quit with OK to confirm the settings. Quitting with “go back” leaves the old settings unchanged.

Step 10 CONNECTION CHECK

To verify the Internet connection, please proceed as follows:
- Enter Test menu by pressing the TEST button above mentioned.
- Select Status and press OK.

An automatic check is done periodically. Depending on the actual status of the connection, the message will be Machine connected or Machine not connected.
Step 11 MACHINE ALLOCATION

Once the machine is installed and ready to work, it is time to activate the connection with Gaelco’s server. When the machine is new, the CPU uses to be programmed in Production mode. In that case proceed as follows:

- Enter Set up menu.
- Select Activate and press OK
- Insert your operator’s card as requested by the machine.
- Write your password and press OK

The server will register the machine if the operator’s data are correct and the Internet connection is operative. As soon as the message Machine activated appears, the machine is allocated to you. Since then, only you will be allowed to set up the machine and adjust some customized parameters, using your own operator’s card and password.

Step 12 THROW LINE DISTANCE

RADIKAL DARTS uses an automatic system for controlling the throw line distance. The toe line mark is a laser line displayed on the floor. A digital camera detects the line, checking if there is any infringement during the game play. The procedure to set up the system is the following:

1. Enter Set up menu, select Distance and press OK. This turns on the laser line.

![Diagram of the throw line]

NEVER LOOK STRAIGHT TO THE LASER DEVICE INSIDE THE CABINET, AS EYES COULD BE DAMAGED

THROW LINE

2,14m
2. Check the laser line is at a distance of 2.14 meters (about 7 feet) measured from the base of the cabinet, as shown in the drawing. The actual distance between the throw line and the face of the target will be 2.44 meters (8 feet). The machine should be installed on a level surface.

3. Look at the TFT screen and watch the grey window with two violet marks. The laser line should appear as a white, flickering line in the middle of those two marks. Level the cabinet until the white line is centered as shown in the picture below. There are two levellers that can be adjusted by inserting a flat screwdriver through the holes of the back base. Once the line is centered, tighten the locknuts of the levellers using a wrench.

4. When the distance is already adjusted, push OK and wait for the automatic set up. The process takes few seconds and ends with the following message: **Completed, 0 errors, Threshold=XX.X**

```
PLEASE DO NOT INTERFERE THE LASER BEAM WITH ANY PART OF YOUR BODY WHEN THE MACHINE IS TUNING THE THROW LINE DISTANCE. AVOID LIGHT REFLECTIONS OVER THE THROW LINE AREA, AS LINE DETECTION COULD BE AFFECTED BY. IT IS RECOMMENDED TO MAKE THIS ADJUSTMENT UNDER THE SAME LIGHT CONDITIONS HELD DURING THE GAME PLAY.
```

5. The message **Laser setting up error** might be displayed if the automatic set up fails. In that case try again watching the above recomendations. The band delivered with the machine should be used if the number of errors is higher than 5. Stick the band on the floor, along the throw line. The purpose of it is to improve the reflection of the laser line. Try again and check if the number of errors is lower than 5.

6. The line detection is satisfactory when the number of errors is lower than 5 and the **Threshold** is higher than 4.

7. Press the “go back” key (bent arrow) to leave the menu.
Step 13  LASER TEST

When playing, the laser line uses to flick at a rate of 1 time per second, aproximately. If the laser line flicks very fast, it shows that the line detection is critical. In that case would be convenient to perform the Laser Test to see what is wrong.

The Laser Test allows you to check the actual performance of the laser line detection, by means of a graphic displayed on the TFT screen. The attached graphics show two typical examples of line detection. The left image belongs to a throw line which is being detected properly. As you can see, the signal keeps a good level all along the line, with regards to the reference level.

On the other hand, the right image belongs to a throw line which is hard to detect. In this case the signal is close to the reference level, showing a rather poor detection, while the segment under the reference level gives some clue about an eventual problem in that area (bad reflection, solid interference or whatever).

WARNING ABOUT LIGHTING CONDITIONS

When the site where the machine is installed remains dark all time, it is recommended to remove the red filter of the front camera.

Store the filter for a later use in the case the machine is moved to a lighted site.
Step 14  OTHER SETTINGS OF THE SET UP MENU

The complete Set up menu includes the following options:

- Internet settings
- Date / Time set up
- Coin acceptor
- Game parameters
- Distance
- Customize
- Activate

Some of these options have been considered in previous adjustments. The rest of them would be used to make the final adjustments when the machine is already functioning.

CUSTOMIZE

The machine can be allocated to a site, besides to the operator. To make it select Customize, press OK and fill the entry form:

- Site: (site name)
- City:
- County: (choose one from the menu)
- Country:

COIN CONTROLLER SET UP

The Coin acceptor menu is used to select the currency. The Free Play option allows to play without inserting coins, for exhibition or service purposes. Bonus credits are also possible.

- Free Play
- Euro
- Sterling Pound
- US Dollar
- Bonus 1 in:
  - bonus:
- Bonus 2 in:
  - bonus:

The menu for determining the coin controller type is displayed after selecting the currency:

- Mechanical
- Electronic
- Bill acceptor
- Mechanical an bill acceptor
The set up per channel of each coin controller is programmed at the factory and can not be modified. The attached table shows the programming for euros of an electronic coin controller:

<table>
<thead>
<tr>
<th>Coin Control C-120</th>
<th>Coin 1</th>
<th>Coin 2</th>
<th>Coin 3</th>
<th>Coin 4</th>
<th>Coin 5</th>
<th>Coin 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>currency: euro</td>
<td>2.00€</td>
<td>1.00€</td>
<td>0.50€</td>
<td>0.00€</td>
<td>0.20€</td>
<td>0.10€</td>
</tr>
</tbody>
</table>

The operator can program extra credits (bonuses) to provide incentives for playing further. In the example below, when the player insert coins for 5 credits, he gets one additional free credit. If the coins pay 10 credits, the bonus would be 3 extra credits.

- **Bonus 1 in:** 5
  - **bonus:** 1
- **Bonus 2 in:** 10
  - **bonus:** 3

When no bonus are available, all lines must be set to zero.

**PRICE PER CREDIT AND NUMBER OF ROUNDS**

Price per credit is programmed at the factory. When you want to change it, select **Game parameters** option and press **OK**.

Suppose that you want to change the price per credit for the 301 game. The programmed price is shown at the right side, 0,50 euros in the example below.

- **301**
  - **0.50**

If you want to program 1 euro instead of 0.50, just write 100. If some mistake occurs, you can follow through until **1.00** is displayed, then leave the menu by pressing the “go back” key (bent arrow).

The **Rounds** option is at the end of the **Game parameters** menu. This option is used to determine the number of rounds allowed for a game. If there is no limit, the counter is set to zero.

Use the “go back” key to leave the menu.

**DATE / TIME SET UP**

The date is automatically set up when the machine connects to the server through Internet. However, it could be necessary to make the set up manually in some specific cases. For example, if the local time of the site is different from the local time of the server, or if there is an eventual lost of data. The option **Date / Time set up** will be used in such circumstances.
Step 15  FINAL ADJUSTMENTS

The TEST menu includes other adjustments that can be done when the main Set up is completed or whenever you want.

AUDIO SETTINGS

The Audio menu offers the following options:

- **Sound Test**: Samples of sound can be tested.
- **Micro Test**: The signal from the microphone is shown in the display.
- **Exhibition sound**: The exhibition sound is always activated.
  - **Always**: The exhibition sound is always activated.
  - **Random**: The exhibition sound is activated at random.
  - **Never**: The exhibition sound is eliminated.
- **Alarm level**: Programmable from 00 to 99 by means of the keyboard.
- **Credit level**: Programmable from 00 to 99 by means of the keyboard.

IN / OUT DEVICES

The In/Out menu allows to check the following devices:

- **Dartboard Test**: Every segment of the target head is tested by pressing it. The identification of each segment is shown in the display.
- **Keyboard Test**: Each key is identified in the display when pressed.
- **Card Test**: This option allows to check the card reader operation when inserting an authorised card.

HALOGEN LAMP BRIGHNESS (TARGET LIGHTING)

The Halogen lamp option allows to adjust the light which illuminates the target. The light level goes from 00 to 99, programmed through the keyboard.

PASSING FROM ONE ROUND TO THE NEXT

The Remove darts option allows two working modes. In Automatic mode, the machine is ready for the next round as soon as darts are removed. When the machine is in Manual mode, it is necessary to press the START button after removing darts.
VIDEO TEST
The Video test is only for manufacturing and maintenance purposes.

To go back to the main menu, press the bent arrow key as many times as necessary until the Radikal Darts logotype is displayed.

Customer Support - CPU programmed in Test mode
If the machine fails to operate properly, and depending on the decision of the Customer Support, you may receive a new CPU programmed in Test mode. This CPU is used to check the machine and it can be allocated to you as spare unit through Internet, provided that problems are eliminated after installing it and the original CPU is already allocated to you. The server will ask for the ID number of the original CPU to be replaced. If everything is correct, the new CPU will be activated for you with the same features and data than the original CPU.

The ID number of the CPU to be replaced is shown through the window implemented in the box, as shown in the picture below.

The replacement process is the following:
- Check that the Internet connection is working.
- Enter Set up menu.
- Select Activate and press OK.
- Insert your operator’s card, then your password, as requested by the machine.
- Write the identification number (ID) of the rejected CPU.
- If the ID is accepted and belongs to you as operator, the new CPU imports from the server all stored data corresponding to the removed CPU. The new CPU is then allocated to you, keeping all features of the original one.
Paso 16  PLAYING THE FIRST TIME

Two requisites should be complied in order to play tournaments:

1) At least one tournament should be already assigned to the machine,
2) Internet connection must be operative.

If any of these two conditions can not be fulfilled, the use of the machine will be limited to games and local tournaments. A detailed description about how to play is offered in next sections. However, if the machine complies the conditions to play tournaments, you can go ahead following the instructions below:

• Enter main menu.
• Select Tournaments and press OK.
• Select a tournament and press OK.
• Select Provisional entry form and press OK.
• Fill in the entry form:
  
  ID: (+OK) (no letters, no spaces, no dots)
  Nick: (+OK)
  Mobile number: (+OK)

• Press OK to accept data.

• Make a photography of your face following the instructions displayed on the screen. Press the flashing button as many times as necessary until the take is good enough, then press OK to accept the photography.
  
  If everything is correct, the machine will welcome you. Your ID number will be requested next time you want to play a tournament.

• Use the SERVICE button to enter credits, then start to play. Credits given by SERVICE facility are not computed for the tournament.

Chapter 10 explains how to play tournaments. Further information can be consulted on the machine, if you enter General Information menu and select About tournaments. Remember that OK key must be pressed whenever you want to confirm a selection.
Step 17  SWITCHING OFF THE MACHINE

Radikal Darts is a computer controlled machine, so it requires some basic care as any computer. Please use the lateral switch, not the mains switch, when you want to switch off the machine.

The switch off process must be always done in the following way:

Press the LATERAL SWITCH, so the red LED turns off. The message **Shutdown system** will remain in the display for a few seconds until the system is completely shot down. This is the normal way to switch off the machine.

The mains switch can be always on. However, it can be used for a complete switch off when the machine has to be moved to another place or the mains voltage is not stable.
8. GENERAL INFORMATION

Information about games and other topics can be accessed from the main menu, which is entered by pressing any key when the TFT screen shows the exhibition routine. At this time, the display presents the Radikal Darts logo or the message INSERT CARD or INSERT COIN, alternatively.

![Radikal Darts Logo / INSERT CARD]

The main menu offers the following options,

- General information
- Games
- Tournaments / Production / Test / Machine not connected
- Local tournaments

The arrow keys (up / down) allow to select an option, while pressing the OK key opens the menu of the selected option.

The “go back” key (bent arrow) allows to leave the option.

The third line of the main menu may display up to 4 different messages, depending on the actual condition of the machine.

- **Tournaments** is displayed when the machine is ready to play tournaments.
- **Production** is displayed when the CPU of the game is new and it is pending to be allocated to the operator.
- **Test**: is displayed when the machine has a CPU programmed for testing the game. Please refer to page 32 if you need further information.
- **Machine not connected** appears if the machine can not communicate with the server.
If you select **General information** and press **OK**, the following menu is displayed,

- **Scoreboards**
- **Personal rating**
- **About dartboard**
- **About tournaments**
- **About other competitions**
- **About games**

Arrow keys (up / down) are used to select the topic. The information about each topic is displayed when pressing **OK**.

### 8.1 GENERAL INFORMATION \ SCOREBOARDS

To get access to the scoreboards of a tournament, two conditions should be fulfilled: 1) the machine must be **activated** for that specific tournament, and 2) the machine must be connected on line to **Internet**. The process of consultation is the following:

Select **Scoreboards**, then press **OK**. The list of available tournaments is shown, for example,

- **Cricket Fun**
- **Caribe 501**

Select a tournament, then press **OK**. A list of available categories is shown, for example,

- **General**
- **Master**
- **Women**
- **Gen_local**
- **Wom_local**

Select one category, then press **OK**. The scoreboard is shown, for example,

<table>
<thead>
<tr>
<th>Cricket Fun</th>
<th>MPR</th>
<th>PPJJ</th>
</tr>
</thead>
<tbody>
<tr>
<td>001 Samuray</td>
<td>P3.56</td>
<td>05</td>
</tr>
<tr>
<td>002 Ike</td>
<td>3.10</td>
<td>05</td>
</tr>
<tr>
<td>003 Mel</td>
<td>I3.04</td>
<td>05</td>
</tr>
</tbody>
</table>

etc.

In this example, the scoreboard ranking is according to marks per round (MPR). On the other hand, a minimum of 5 games should be played (PPJJ) in order to get access to the general ranking of the tournament.
The average score is computed from the 5 best scores achieved by the player, provided that all of them have been validated. If a P is ahead the average score, and the message Provisional flicks on the display, this means that one or more scores, among the top 5, are pending for validation. Therefore the actual average is not computed yet.

If an I is ahead the average score, and the message Invalidated flicks on the display, this means that one or more scores have been invalidated.

If the average score has no letter ahead, this means that all computed scores have been validated. Therefore the average have been already certified by the RRS and counts for awards.

Detailed information can be obtained by pressing OK. The machine downloads the player’s data from the server and displays his top ten games, for example,

<table>
<thead>
<tr>
<th></th>
<th>Nickname</th>
<th>Date</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.29</td>
<td>site name</td>
<td>01.07.04</td>
<td>22:36</td>
</tr>
<tr>
<td>3.13</td>
<td>site name</td>
<td>30.06.04</td>
<td>01:54</td>
</tr>
<tr>
<td>3.09</td>
<td>site name</td>
<td>130.06.04</td>
<td>01:21</td>
</tr>
<tr>
<td>2.89</td>
<td>site name</td>
<td>29.06.04</td>
<td>20:40</td>
</tr>
</tbody>
</table>

etc.

In this case there is an invalidated game. If the player would like to know the cause, he should select the corresponding line and press OK. A short message will explain the cause of invalidation, for example “manually scored points” or whatever.

To return to the main menu press the “go back” key as many times as necessary.

NOTE

The scoreboard shown in the TFT is coded as follows:
Validated scores are displayed in BLACK, provisional scores are displayed in BLUE and invalidated scores are displayed in RED.

If there is an invalidated score and the player disagrees with the referee decision, he or she can make opposition within a term of 5 days after the game’s date, by sending an e-mail to the address infodarts@radikaldarts.com indicating his or her claims. The opposition process is explained in the section 8.4.6.
8.2 GENERAL INFORMATION \ PERSONAL RATING

**Personal rating** option allows to know the average points per dart of a player. In order to get access to the information, it is necessary to note the ID number. Pressing OK makes the connection with the server, which sends the following data:

*(Player’s nickname) rating = XX.X*

Press OK to leave the option and return to the main menu.

8.3 GENERAL INFORMATION \ DARTBOARD

Information about dartboard is displayed on the TFT screen when you select **About dartboard** and press **OK**.

If you press **OK** again, the following message is shown both on the TFT screen and display

**Player throws 3 darts at 2.44 meters distance.**

If Double Bull is on, the inner bull is worth 50 and outer bull 25.

If Double Bull is off, inner and outer bull are worth 50.
8.4 GENERAL INFORMATION \ TOURNAMENTS

Information about tournaments is available if the machine is activated and connected to Internet. Pressing **OK** after selecting **About tournaments** opens the following menu,

- Legal
- How to play
- Entry form
- Fill the entry form
- Validation process
- Opposition process

8.4.1 TOURNAMENTS \ LEGAL

Pressing **OK** from **Legal** displays the information below,

**Players must be 18 years old or over to take part in tournaments.**

Compulsory to enter the following data correctly: Nickname, ID number and mobile number. It will not be possible to take part in tournaments if this information is not fulfilled.

Every Tournament will have its own game decided by the Organization.

Tournament duration will also be determined by the Organization. All this information will be displayed in the machine at every moment.

Game play is video recorded by the machine, the Remote Refereeing System will validate the results.

8.4.2 TOURNAMENTS \ HOW TO PLAY

Pressing **OK** from **How to play** displays the following text,

**To take part in a tournament the player has to fulfill the entry form.**

A provisional entry form is available through the Tournaments menu.

A player who has filled the provisional entry form will be able to enter Tournament mode with his ID number.
8.4.3 TOURNAMENTS \ ENTRY FORM

Pressing OK from Entry form displays the following information,

An entry form has to be fulfilled to enter Tournaments.

All players can ask for their own ID card in order to be identified by the machine and get access to the personal rating.

Players without ID card will be able to identify themselves through ID number.

You can fill the entry form now and will receive your ID card in your address.

Press OK to fill the entry form.

When pressing OK again, the message below will be shown on the TFT screen:

You must fill in all data correctly
on order to validate

Follow instructions on the display
next to the keyboard

Next step will be to fill the entry form shown on the display,

ID number:
Name:
Surname:
Date of birth: _ _ / _ _ / _ _ _ _
Nick:
Address
Street:
Number: (*)
Floor: (*)
Door: (*)
City:
ZIP:
Country:
Mobile:

(*) These entries are alphanumeric. To write a number press the corresponding key as many time as necessary, until the number appears.
The entry form is completed with a photography of the player, following the instructions below,

1) Look at the camera  
2) Press flashing button to make a photo  
3) If you want another take, press the button again  
4) Press OK key to accept photo

Please be aware to actually look at the camera, not at the screen where the image is displayed. The process ends when you accept the take.

8.4.4 TOURNAMENTS \ FILL THE ENTRY FORM

If you select Fill the entry form and press OK, the entry form is presented directly.

8.4.5 TOURNAMENTS \ VALIDATION PROCESS

Pressing OK from Validation process displays the following information,

In General Scoreboards, results in black are valid while results in blue indicate that there is one or more games pending for validation. Results in red indicate invalidated games and/or in opposition process.

If there is no opposition, an invalidated result will be null after 5 days from game play date.

8.4.6 TOURNAMENTS \ OPPOSITION PROCESS

Pressing OK from Opposition process displays the information below,

If there is an invalidated result, the player can know the cause by selecting the result and pressing OK.

If the player disagrees, will be able to make opposition to the referee decision during 5 days after the play game date.  
To begin the opposition process, the player has to send an e-mail to the following address indicating his claims: infodarts@radikaldarts.com

In case there is not opposition in the 5 days after the game play date, the result will be invalidated at all means.  
Once the Opposition Process is over, the decision of the Organization will be unappealable.
8.5 GENERAL INFORMATION \ ABOUT OTHER COMPETITIONS

The option **About other competitions** is selected from the **General information** menu. There are four local tournaments available. When pressing **OK**, a brief explanation of each competition will be displayed.

**BEST OF ONE**
Single elimination tournament, best of one format with repechage system. Number of players from 4 to 16. Choose among all available games to play. First round losers have a second chance. The first round winner and the player who comes through the repechage system are drawn into the Final round. In the Final round, the player who comes through the repechage has to win two consecutive games to be the winner, while the top player of the first round only needs to win one game.

**BEST OF ONE - DIRECT KO**
This tournament is played the same as the Best of One tournament, but players are eliminated on a straight knockout basis.

**BEST OF THREE**
Single elimination tournament, best two out of three format with repechage system. Number of players from 4 to 16. If a player wins the first two games, the third game will not be played. First round losers have a second chance. The first round winner and the player who comes through the repechage system are drawn into the Final round. Rules for the final round are the same as for the Best of One format.

**BEST OF THREE - DIRECT KO**
This tournament is played the same as the Best of Three tournament, but there is no second chance for losers.

8.6 GENERAL INFORMATION \ ABOUT GAMES

Information about games is available from **About games** when pressing **OK**. Please refer to chapter 9 for details about each game.
9. GAMES

The **Games** prompt is displayed on the screen when the player inserts a coin. Pressing **OK** opens the menu and shows all available games. The price of each one is indicated on the right side.

<table>
<thead>
<tr>
<th>Game</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>301</td>
<td>0.50</td>
</tr>
<tr>
<td>Team 301</td>
<td>0.50</td>
</tr>
<tr>
<td>501</td>
<td>1.00</td>
</tr>
<tr>
<td>Team 501</td>
<td>1.00</td>
</tr>
<tr>
<td>701</td>
<td>1.50</td>
</tr>
<tr>
<td>901</td>
<td>2.00</td>
</tr>
<tr>
<td>Cricket</td>
<td>1.00</td>
</tr>
<tr>
<td>Team Cricket</td>
<td>1.00</td>
</tr>
<tr>
<td>Cricket Cut Throat</td>
<td>1.00</td>
</tr>
<tr>
<td>Wild Card</td>
<td>1.00</td>
</tr>
<tr>
<td>High Score</td>
<td>1.00</td>
</tr>
<tr>
<td>Low Score</td>
<td>1.00</td>
</tr>
<tr>
<td>Shangai</td>
<td>1.00</td>
</tr>
<tr>
<td>Burma road</td>
<td>0.50</td>
</tr>
<tr>
<td>Tic Tac Toe</td>
<td>1.00</td>
</tr>
</tbody>
</table>

The arrow keys are used to choose a game, by scrolling up and down. The **OK** key makes the selection.
9.1 GAMES ‘01 (301 - 901)

All players start with 301, 501, 701 or 901 points and attempt to reach exactly zero. If a player scores more than the total required to reach zero, the player “busts” and the score returns to the score that was existing at the start of the turn. Each ‘01 game can be played according to the following formats:

Open In / Open Out
Open In / Double Out
Open In / Master Out
Double In / Double Out
Master In / Master Out

Open In
The score begins when any number is hit.

Open Out
The player finishes the game with a hit on any number that reduces the score to exactly zero. If a player scores more than the total to reach zero, the player “busts” and the score returns to the score that was existing at the start of the turn.

Double In
To start, the player must hit in the double’s ring or a double Bull’s Eye. No score will be counted until this condition is met.

Double Out
To win, the player must hit a number in the double’s ring or a double Bull's Eye that reduces the score to exactly zero.

Master In
To start, the player must hit a number in the double’s ring, a double Bull’s Eye or a number in the triple’s ring. No score will be counted until this condition is met.

Master Out
To win, the player must hit a number in the double’s ring, a double Bull’s Eye or a number in the triple’s ring that reduces the score to exactly zero.

Furthermore, there are the following options,

**Number of players**  (from 1 to 8)
**Double Bull’s Eye**  (yes or not)
**Last chance**  (yes or not)
**Insert names**  (up to 8 players)
**Instructions**

Arrow keys (left-right) are used to define the status of **Double Bull’s Eye** and **Last chance** options.
Some further information about ‘01 games is shown when selecting the Instructions option,

- **Number of players.** From 1 to 8.
- **Double Bull’s Eye.** When this option is activated (yes) the inner Bull’s Eye will count 50 points, while the outer Bull’s Eye will count 25 points. When it is not activated (no) the inner and the outer Bull’s Eye will count 50 points.
- **Last chance.** The player who closes the game must wait until all the opponents finish the round.

**TEAM 301 / TEAM 501**

Team games have two additional rules,

- A player can close and win if the score of his or her partner is lower than the combined score of the opponent team.
- A player is “frozen” when his score is 1 point (2 points in Double out or Master out) and his partner’s score is higher than the combined score of the opponent team.

**9.2 CRICKET GAMES**

RADIKAL DARTS allows to play the following Cricket games:

- **Cricket**
- **Team Cricket**
- **Cricket Cut Throat**
- **Low Ball**
- **Wild Card**

The object of the Cricket game will be to close the numbers 20, 19, 18, 17, 16, 15 and Bull’s Eye in any order. The player that closes all numbers and the Bull’s Eye first, and has a greater or equal point score, wins.

To close a turn, a player has to score three of a number to own it.

A number is scored when the player closes it and the opponent does not.

In the Team Cricket game, a player can close and win if the total scoring of his team is higher than the total scoring of the opponent team.

A team scores when their players close a number that has not been closed by the opponent team.

A player is “frozen” if, after closing all numbers, the score of his team is lower than the score of the opponent team.
Cut Throat Cricket is played the same as Cricket except when a player opens a number an begins scoring, the points are given to all opponents that do not have that number closed. The winner is the player who opens all numbers and has lower or equal score than the rest of participants.

Low Ball Cricket is played the same as Cricket except that the numbers are 1,2,3,4,5,6, and the Bull's Eye.

Wild Card Cricket is played the same as Cricket except the numbers 7 through 20 are used. All numbers unmarked will randomly change after every turn. The winner is the first player to open all numbers and have the highest or equal score.

The option Score difference applies for all Cricket games and defines the maximum score difference between two players. Pressing OK makes the selection and it is possible to choose No (no limit) or 200 (200 points).

9.3 HIGH SCORE

High Score is a game where the player with the highest score at the end of 8 rounds, wins. Play begins at zero and the total of player’s three darts is added to the previous total, each round.

9.4 LOW SCORE

Low Score is a game where the winner is the player with the lowest score at the end of 8 rounds. Players start with zero points an add to their score with each throw. A missed dart is penalized with 50 points.

9.5 SHANGAI

There is a maximum of 7 rounds for the Shangai game. Each player has to proceed for score around the board from 1 through 20. Shangai is thrown if a player hits three consecutive numbers of different level (single, double, triple) in any order and in the same turn. Players with a throw still remaining on that round may attempt to throw a Shangai for the draw. Otherwise, the player who gets the most scores wins.

9.6 BURMA ROAD

Burma Road is a game where each player throws in turn for the following numbers, in this order -15, 16, double (any) 17, 18, triple (any), 19, 20 and Bull’s Eye. Players start the game with 40 points.

The current target must be scored with at least one dart. If of all three darts miss the current target, the player’s score is halved (rounding up).

The winner is the player with the highest score at the end of the game.
9.7 TIC TAC TOE

The object of this game is getting a tic tac toe just like the regular game by having three X’s or O’s in a row horizontally, vertically or in diagonal. To close a number, four of that number must be scored. Doubles and Triples count as two or three scores.

SPECIAL OPTIONS

WARM UP THROWS

Before to begin the game, the machine allows to throw no more than 8 darts per turn, as a facility for warming up. Players can obviate this facility or make a partial use of it. The game begins as soon as the START button is pressed.

THROWING ORDER

The order of throwing can be modified at will, by pressing the START button before to begin the game. For example, if there are three players A, B and C, the order of throwing changes to B, C, A when the START button is pressed. Pressing again makes the order rotate to C,A,B, and so on.

REPETITION OF THE LAST GAME

When a game is finished, it is possible to play it again keeping the game parameters if the START button is pressed; otherwise the OK key is used to exit. It is also possible to enter new players.

When a game is repeated, the throwing order is automatic, from lower score to higher score.

The last game repetition is available for games and tournaments, but not for other competitions like local tournaments.

CANCELED THROWS

Up to three throws can be canceled in a game, provided it is not for a tournament. When the cancelation is justified, it will be done by removing the dart an pressing the “go back” key (bent arrow).
10. TOURNAMENTS

Two requisites should be complied in order to play tournaments,

1) At least one tournament should be already assigned to the machine.
2) Internet connection must be operative.

Tournaments option is available on the main menu if the machine meets the above conditions. The message Not connected may appear if the Internet connection fails. When the machine is in exhibition mode, the main menu will be displayed by pressing any key,

General information
Games
Tournaments
Local tournaments

(please see the note at the bottom of this page)

The Tournaments menu is selected with the arrow keys, scrolling up and down. The menu of the available tournaments will be displayed when the OK key is pressed. For example,

Cricket Fun
Caribe 501

The participation menu is displayed after selecting a tournament and pressing OK,

Introduce ID number
Provisional entry form
Get card
Rules

If the player is a current participant of the tournament, he just needs to introduce his ID number to get access and play. Otherwise, if it is the first time he plays in that tournament, he must fill in the provisional entry form to be accepted as a participant.

NOTE

- Tournaments is displayed when the machine is ready to play tournaments.
- Production is displayed when the CPU of the game is new and it is pending to be allocated to the operator.
- Test: is displayed when the machine has a CPU programmed for testing the game. Please refer to page 32 if you need further information.
- Machine not connected appears if the machine can not communicate with the server.
Pressing **OK** opens the following entry form,

**ID:** (+OK) (no letters, no spaces, no dots)
**Nick:** (+OK)
**Mobile number:** (+OK)

All entries should be completed. Data are accepted by pressing **OK**. To complete the entry form it is necessary to take a photography of the player, according to the following instructions,

1) **Look at the camera**
2) **Press the flashing button to take photo**
3) If you want another take, press the button again
4) **Press OK to accept the photo**

Steps 1 and 2 can be repeated as many times as necessary, until the take is good enough. The previous take is shown in the LEFT frame of the screen, while the RIGHT frame shows the image caught by the camera in that moment. In order to have a good take, the player should look directly **at the camera**, not at the screen. The photography is accepted by pressing the **OK** key. When it is done, the machine displays a welcoming message and opens the following menu,

**Add new player** (if anyone else wants to participate)
**Play** (to play immediately)
**Personal scoring** (for those players who already have it)

The **Play** option allows to play immediately, if the player inserts the coin.

### 10.1 GAME INSTRUCTIONS

To know the rules of each available tournament, go to **Rules** option and press **OK**, then select the your tournament.
10.2 PLAYER’S CARD

The player’s card allows a fast access to all available tournaments at RADIKAL DARTS machines. If a player wants to have this facility, he or she can get it through the option Get card. When this option is selected by pressing OK, the player must fill in the following entry form,

ID:
Name:
Surname:
Birth date: _ _ / _ _ / _ _ _ _
Nickname:
Address
Street:
No.:
Floor:
Door:
City:
ZIP:
Country:
Mobile:

When all data are accepted by the player, the machine gives the instructions to take a photography for identification. A detailed explanation of the process is offered in the previous page.

11. OTHER COMPETITIONS

RADIKAL DARTS allows to play local tournaments that can be held without the support of the Remote Refereeing System. Therefore it is not necessary the connection to Internet. To get access to the available formats, go to the main menu, select Other competitions and press OK. The formats are,

Best of One
Best of One - direct KO
Best of Three
Best of Three - direct KO

Any game can be choosed for these local tournaments, except Team 301, Team 501 and Team Cricket. The rules of each tournament are explained in section 8.5 of this Manual.
1. Enter main menu, then select Tournaments
2. Select a tournament, push OK
3. Select a game and push OK
4. If appropriate, select a game modality and push OK (Open In / Open Out, etc.)
5. The game parameters can be changed (Number of players, Double bullseye, Last chance).
6. Insert the name of at least 4 players. 0+ID number can be used instead of name.
7. INSERT COIN and push OK to start the competition

FURTHER INFORMATION:
Select General Information and push OK if you have any doubt about the rules or change parameters.

CONTROLS:
- ⬆️ → ➥ ← ⬇️
- START
- OK
- go back/exit
- accept
- change parameters
- go to select

INFORMATION ABOUT SCOREBOARDS
Select General Information and push OK.
Select Scoreboards and push OK.
Select the tournament or go to Personal and write your ID number.

P means that the score is pending for validation.
I means invalidated (the player can get further explanation by pushing OK).
12. MAINTENANCE

Technical service and maintenance must be carried out by qualified staff.

No modifications shall be made to the machine, unless these have been approved by the manufacturer in writing. Fail to observe this requirement may cause damage to the equipment and will automatically render the guarantee null and void. Do not attempt to repair the CPU. It contains sensitive chips that could easily damaged. Always return the CPU to your nearly Distributor for any repairs.

If a task needs to be performed and it is not described in this Manual, please contact the Distributor for instructions. The manufacturer declines any liability for damages and injuries at the machine arising from fail to comply with this requirement.

12.1 TARGET SEGMENTS

To access target segments, for cleaning or replacement purposes, please proceed as follows:

1. Remove the target door as shown in page 13 of this manual.

2. Turn slide latches that fix the target panel (see left drawing below)

3. Take down the target panel as shown in the right drawing below.
4. Clean or replace segments, to your convenience.

5. Install the segments in the spider, paying attention to the observations offered in the next point (12.2). The best way to avoid mistakes is to begin at the sector close to the mark of the spider, using the RED color, then assemble the other segments systematically.

6. Rise the target panel and fix it with the slide latches.

7. Assemble the target door and lock it.

**12.2 REPLACEMENT OF THE SPIDER**

Please pay attention to the spider position at the time to replace it. The mark shown in the drawing should be oriented upwards when the target panel is already assembled in the cabinet, fixed with the slide latches.

Segments will be fit into sectors starting with the one closest to the spider mark (triple, RED color), then following with the rest.
12.3 HALOGEN LAMP REPLACEMENT

When it is time to replace the halogen lamp, please proceed as follows:

1. Remove the screws that fix cover of the TFT screen, then take the cover out.

2. Take down the TFT screen as shown in the drawing below. Please be careful.
GAELCO - RADIKAL DARTS

3. Remove the screws and take the bracket out, as shown in the drawing. Then remove the lamp.

![Diagram showing the removal of screws and bracket]

4. Install the lamp and assemble the other elements, undoing the previous steps.

12.4 CAMERA MAINTENANCE

RADIKAL DARTS uses two digital cameras. One of them faces the player and the toe line mark, while the other faces the target. Both cameras collect information for the Remote Refereeing System (RRS) and therefore should be kept in good conditions.

CLEANING

Depending on the environmental conditions of the site, the operator will decide how often shall the cameras be cleaned. Anyway, two months would be the maximum span of time between an action and the next. Please use a clean, soft cloth, slightly damp with the cleaner. Never use paper towels or rough clothes that could scratch the surface of the lenses, and avoid cleaners containing aggressive dissolvents. A neutral glass cleaner would be proper for cleaning the lenses. However, if the red filter of the front camera is already mounted, the ideal product would be an antistatic cleaner, special for plastics. If not available, please use a liquid soap dissolved in water.
REPLACEMENT

If a camera needs to be replaced, please make sure to use a spare camera of the same type, as there are two and both look the same. The front camera is marked with a RED sticker, while the target camera is marked with a GREEN sticker. The initial procedure to replace cameras is the same as for replacing the halogen lamp.

Front camera

To replace the front camera proceed as follows:

1. Remove the screws that fix the camera assembly as shown in the drawing below. Disconnect the cable and remove the assembly.

2. Remove the screws that fix the camera to the bracket and install a new camera marked with red sticker.

3. The front camera is mounted in such a way that the connector is on the left side (rear view) as shown in the drawing next page. The groove must face down. The camera is fixed by means of bakelite washers screwed to the plastic bracket.

4. Connect the cable BEFORE to install the camera assembly. Do not forget the foam ring which is mounted around the lens.
5. Mount the camera assembly on the metallic support, the groove facing down. Put the lower screws first, as they do not fix the camera but work as pivots. Put the upper screws but do not tighten them until the camera is centered in relation to the laser line (toe line mark). This centering is done through the Laser test.

6. Adjust the inclination of the camera until the laser line is centered between the two violet marks, as shown in the right picture below, then tighten the upper screws.

**Target camera**
To replace the target camera proceed as follows:

1. Remove the two nuts which fix the camera assembly to the chassis. Disconnect the cable.

2. Remove the four screws that fix the camera to the bracket and install the new camera, marked with green sticker.

3. Assemble the camera to the bracket, fixing it with the bakelite washers. The connector is in the opposite side of the chamfer, as shown in the drawing.
4. Fix the camera assembly by the nuts. The chamfer should be oriented towards the player.

FOCUS ADJUSTMENT

The focus comes adjusted from the factory and should not be tuned again when replacing a camera. However, if the image quality is affected, further tuning can be done in the following way:
1. Loose the screw that locks the lens (see the picture of page 54)
2. Enter TEST mode from the PCB installed on the rear of the coin door, then select Video, then Camera test.
3. Focus the camera looking at the laser line.
4. Lock the lens when the camera is already focused.

The target camera can not be adjusted when it is mounted on the chassis. So, the tuning must be done by trial and error, adjusting the lens when the camera is removed, then checking the result when the camera is installed.

12.5 THROW DISTANCE TEST

It is convenient to check the laser line periodically, as some external variables may change in time (floor condition, site illumination, etc.). This check must be done every time the machine is moved, since just a little displacement from the original site can produce a big change.

The test is done in the following way:
1. Enter TEST mode from the PCB installed on the rear of the coin door.
2. Select Test láser and press OK.
3. The line detection threshold is shown in the display, as well as deviation with regards to the previous adjustment, for example: Threshold: 7.64    dy:-1
   In this example, the threshold would be acceptable if the site is illuminated. However, it should be higher if the site is dark. On the other hand, the laser line is a bit displaced in relation to the previous adjustment. The ideal case would be no deviation at all (dy=0) but a deviation of 1 is still acceptable. A deviation higher than 2 will avoid to play tournaments, requiring to adjust the throw distance by using the Distance option of Setup menu.
12.6 TROUBLESHOOTING GUIDE

1) The machine does not start when switching on
   • Check the LED of the lateral switch. It should be on.
   • If the LED is off, tilt the switch to the other position and check if the LED turns on.
   • If the LED is off in either position of the lateral switch, check the mains switch placed on the rear of the cabinet. That switch should be in position “I”.
   • If the mains switch is pressed in position “I” but the LED is off in either position of the lateral switch, check the connections of the mains cable at both ends.
   • If the connections look good, check the mains voltage at the outlet.
   • If the mains voltage is correct, open the console and check the +5VDC voltage at the PSU connector. This check should be carried out by a qualified technician.

2) The machine does not allow to fill the entry form
   • Please refer to point 5.

3) The machine does not allow to play tournaments
   • Please refer to point 5.

4) Game data are not updated
   • Please refer to point 5.

5) There is no connection to Internet
   The machine attempts to connect with the server when the Initializing process is done. If the connection fails, this will be shown in the main menu, as follows:

   General information
   Games
   Machine not connected
   Local tournaments

   The message **Machine not connected** means that Internet connection has been not possible when switching on the machine. However, it might happen that the machine is properly connected in the beginning but the connection is missed later. In that case, the problem will be detected when a player tries to fill in the entry form or wants to play a tournament.

   The following instructions are useful when the machine has been working previously, connected to Internet. If it is not the case, please refer to section 6 in this manual.

   • Check the connections of the Ethernet cable, at both ends (machine and router).

   • Check the configuration of the router. It should be configured in multiuser mode, with automatic assignment of IP address.

   • If the previous checks do not help and the problem remains unsolved, it would be convenient to check the connection directly, by using a personal computer ready to be connected on line.
10. PARTS LIST

10.1 COIN DOOR

<table>
<thead>
<tr>
<th>CODE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SCREW DIN 7981 4X25</td>
</tr>
<tr>
<td>2</td>
<td>DAR-432 LEG LEVELLER A742116</td>
</tr>
<tr>
<td>3</td>
<td>DAR-431 SCREW DIN 7981 3.5X15</td>
</tr>
<tr>
<td>4</td>
<td>DAR-431 BRACKET</td>
</tr>
<tr>
<td>5</td>
<td>DAR-520 LOWER PLASTIC RASCAL</td>
</tr>
<tr>
<td>6</td>
<td>DAR-410 DOUBLE MINI DOOR</td>
</tr>
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</table>

![Diagram of the coin door]
## 10.2 CARD READER AND KEYBOARD

<table>
<thead>
<tr>
<th>CODE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DAR-300 CONSOLE</td>
</tr>
<tr>
<td>2</td>
<td>DAR-310 KEYBOARD</td>
</tr>
<tr>
<td>3</td>
<td>DAR-580 RASCAL - INSTRUCTIONS</td>
</tr>
<tr>
<td>4</td>
<td>DAR-590 COVER, card reader</td>
</tr>
<tr>
<td>5</td>
<td>-- SCREW DIN965 M5X20</td>
</tr>
<tr>
<td>6</td>
<td>DAR-321 CARD READER</td>
</tr>
<tr>
<td>7</td>
<td>DAR-223 BRACKET, card reader</td>
</tr>
<tr>
<td>8</td>
<td>-- SPRING WASHER DIN127 M3</td>
</tr>
<tr>
<td>9</td>
<td>-- SCREW DIN7985 M3X6</td>
</tr>
<tr>
<td>10</td>
<td>-- DENT WASHER DIN6798A 5,2</td>
</tr>
<tr>
<td>11</td>
<td>DAR-325 MICROPHONE PCB</td>
</tr>
<tr>
<td>12</td>
<td>-- LOCKNUT DIN985 M5</td>
</tr>
</tbody>
</table>

![Diagram of card reader and keyboard components]
# 10.3 Console Parts

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DAR-570 LAŠER WINDOW, metacrilate</td>
</tr>
<tr>
<td>2</td>
<td>-- FLAT WASHER DIN125 M3</td>
</tr>
<tr>
<td>3</td>
<td>-- SPRING WASHER DIN127 M3</td>
</tr>
<tr>
<td>4</td>
<td>-- NUT DIN934 M3</td>
</tr>
<tr>
<td>5</td>
<td>DAR-310 ANTI-VANDAL KEYBOARD</td>
</tr>
<tr>
<td>6</td>
<td>-- SCREW UM1001 M4X10</td>
</tr>
<tr>
<td>7</td>
<td>DAR-226 BRACKET, keyboard</td>
</tr>
<tr>
<td>8</td>
<td>DAR-430 HINGE, console</td>
</tr>
<tr>
<td>9</td>
<td>-- SCREW DIN7505A 4X16</td>
</tr>
<tr>
<td>10</td>
<td>-- SCREW DIN7505A 3.5X20</td>
</tr>
<tr>
<td>11</td>
<td>-- SCREW DIN7505B 4X13</td>
</tr>
<tr>
<td>12</td>
<td>DAR-320 DISPLAY PCB</td>
</tr>
<tr>
<td>13</td>
<td>DAR-560 DISPLAY FILTER</td>
</tr>
<tr>
<td>14</td>
<td>DAR-440 BRACE, console</td>
</tr>
<tr>
<td>15</td>
<td>-- SCREW DIN7985 M4X35</td>
</tr>
<tr>
<td>16</td>
<td>-- SCREW DIN7505B 4X13</td>
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<tr>
<td>17</td>
<td>DAR-227 WASHER LOCK</td>
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<td>18</td>
<td>-- LOCKNUT DIN985 M4</td>
</tr>
<tr>
<td>19</td>
<td>DAR-315 START BUTTON</td>
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<tr>
<td>20</td>
<td>-- SCREW DIN7505B 4X13</td>
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<tr>
<td>21</td>
<td>DAR-360 LOUDSPEAKER 4&quot; / 4 OHM / 60W / 2 VIAS</td>
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![Diagram of console parts](image)
10.4 CPU & PSU

<table>
<thead>
<tr>
<th>CODE</th>
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<tbody>
<tr>
<td>1 DAR-355</td>
<td>PSU ATX-300W</td>
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<tr>
<td>2</td>
<td>SCREW UM1001 M6X16</td>
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<tr>
<td>3 DAR-470</td>
<td>CONNECTOR RJ45</td>
</tr>
<tr>
<td>4 DAR-224</td>
<td>PSU BRACKET</td>
</tr>
<tr>
<td>5 DAR-486</td>
<td>EPDM STRIP</td>
</tr>
<tr>
<td>6 DAR-461</td>
<td>SWITCH PROTECTOR</td>
</tr>
<tr>
<td>7 DAR-435</td>
<td>LOCK, console</td>
</tr>
<tr>
<td>8 DAR-222</td>
<td>SWITCH BRACKET</td>
</tr>
<tr>
<td>9 DAR-460</td>
<td>SWITCH</td>
</tr>
<tr>
<td>10 --</td>
<td>SCREW DIN7505B 4X13</td>
</tr>
<tr>
<td>11 --</td>
<td>SCREW DIN7505A 3.5X20</td>
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<tr>
<td>12 DAR-357</td>
<td>CPU RADIKAL DARTS</td>
</tr>
<tr>
<td>13 --</td>
<td>SCREW DIN7505B 4X13</td>
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<tr>
<td>14 --</td>
<td>SCREW ISO7380 M5X10</td>
</tr>
<tr>
<td>15 DAR-250</td>
<td>LÁSER</td>
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## 10.5 CABINET UNION

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<tbody>
<tr>
<td>1</td>
<td>DAR-438 HINGE</td>
</tr>
<tr>
<td>2</td>
<td>FLAT WASHER DIN9021 M10</td>
</tr>
<tr>
<td>3</td>
<td>SPRING WASHER DIN127 M10</td>
</tr>
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<td>4</td>
<td>NUT DIN934 M10</td>
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</table>

![Diagram of cabinet union components]
### 10.6 MISCELANEOUS

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<tr>
<td>1</td>
<td>SCREW DIN7505A 4X30</td>
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<tr>
<td>2</td>
<td>TRANSPORT STOPPER</td>
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<td>3</td>
<td>SCREW DIN7982 4,8X10</td>
</tr>
<tr>
<td>4</td>
<td>SCREW DIN7505B 4X13</td>
</tr>
<tr>
<td>5</td>
<td>VENTILATION GRILL</td>
</tr>
<tr>
<td>6</td>
<td>DC FAN 80X80</td>
</tr>
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</table>

![Diagram of equipment with labeled parts 1 to 6]
### 10.7 TARGET DOOR

<table>
<thead>
<tr>
<th>CODE</th>
<th>DESCRIPTION</th>
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</thead>
<tbody>
<tr>
<td>1 DAR-436</td>
<td>LOCK, target door</td>
</tr>
<tr>
<td>2 DAR-130</td>
<td>DOOR</td>
</tr>
<tr>
<td>3 DAR-510</td>
<td>DOOR COVER</td>
</tr>
<tr>
<td>4 DAR-238</td>
<td>PLATE</td>
</tr>
<tr>
<td>5 --</td>
<td>SCREW DIN7505B 4X13</td>
</tr>
<tr>
<td>6 DAR-530</td>
<td>TFT COVER</td>
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### 10.8 TARGET DOOR FIXINGS

<table>
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<tr>
<th>CODE</th>
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<tbody>
<tr>
<td>1</td>
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<td>SCREW DIN912 M8X70</td>
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<tr>
<td>3</td>
<td>SPRING WASHER DIN127 M8</td>
</tr>
<tr>
<td>4</td>
<td>DAR-600 TARGET HEAD ASSEMBLY</td>
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<tr>
<td>5</td>
<td>DAR-237 LOCK PLATE</td>
</tr>
<tr>
<td>6</td>
<td>SCREW DIN7505B 4X13</td>
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<tr>
<td>7</td>
<td>BHL-06-01 FIXING, control PCB</td>
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<tr>
<td>8</td>
<td>DAR-353 CONTROL PCB</td>
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</table>

![Diagram of target door fixings](image)
# 10.9 TARGET PARTS

<table>
<thead>
<tr>
<th>CODE</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>1</td>
<td>DENT WASHER DIN6798A M5</td>
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<tr>
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</tr>
<tr>
<td>3</td>
<td>SENSOR PCB</td>
</tr>
<tr>
<td>4</td>
<td>MATRIX CUSHION, neoprene</td>
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<tr>
<td>5</td>
<td>SPIDER</td>
</tr>
<tr>
<td>6</td>
<td>SCREW DIN7981 4,8X19</td>
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<tr>
<td>7</td>
<td>SCREW DIN7505A 2,1X10</td>
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<td>8</td>
<td>SENSOR PKS1-4A1</td>
</tr>
<tr>
<td>9</td>
<td>INSERT M5</td>
</tr>
<tr>
<td>10</td>
<td>WOOD FRAME, target</td>
</tr>
<tr>
<td>11</td>
<td>CATCH RING SEGMENTS, black</td>
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<tr>
<td>12</td>
<td>INSERT M4</td>
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<tr>
<td>13</td>
<td>SCREW ISO7380 M4X18</td>
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<tr>
<td>14</td>
<td>BACK WOOD, target</td>
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<tr>
<td>15</td>
<td>SPACER, silicone</td>
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<tr>
<td>16</td>
<td>SPACER</td>
</tr>
<tr>
<td>17</td>
<td>SLIDE LATCH</td>
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<td>18</td>
<td>SCREW DIN966 M5X30</td>
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<tr>
<td>19</td>
<td>HINGE, target</td>
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</tbody>
</table>

![Diagram of target parts]
### 10.10 DART HEAD (SPIDER & SEGMENTS)

<table>
<thead>
<tr>
<th>CODE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 DAR-665</td>
<td>SPRING, INNER BULL</td>
</tr>
<tr>
<td>2 DAR-636</td>
<td>SEGMENT, INNER BULL RED</td>
</tr>
<tr>
<td>3 DAR-635</td>
<td>SEGMENT, OUTER BULL BLUE</td>
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<tr>
<td>4 DAR-634</td>
<td>SEGMENT, INNER SINGLE (RED=DAR-634R / BLUE=DAR-634B)</td>
</tr>
<tr>
<td>5 DAR-633</td>
<td>SEGMENT, TRIPLE (RED=DAR-633R / BLUE=DAR-633B)</td>
</tr>
<tr>
<td>6 DAR-632</td>
<td>SEGMENT, OUTER SINGLE (RED=DAR-632R / BLUE=DAR-632B)</td>
</tr>
<tr>
<td>7 DAR-631</td>
<td>SEGMENT, DOUBLE (RED=DAR-631R / BLUE=DAR-631B)</td>
</tr>
<tr>
<td>8 DAR-610</td>
<td>SPIDER, WHITE</td>
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</tbody>
</table>

![Diagram of dart head with numbers 1 to 8 corresponding to the table entries](image-url)
## 10.11 TFT ASSEMBLY

<table>
<thead>
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<th>CODE</th>
<th>DESCRIPTION</th>
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</thead>
<tbody>
<tr>
<td>1 DAR-229</td>
<td>TFT HOUSING, metal</td>
</tr>
<tr>
<td>2 DAR-266</td>
<td>EPDM RING, front camera</td>
</tr>
<tr>
<td>3 --</td>
<td>SCREW DIN912 M4x16</td>
</tr>
<tr>
<td>4 DAR-445</td>
<td>BRACE, TFT</td>
</tr>
<tr>
<td>5 --</td>
<td>FLAT WASHER DIN125 M4</td>
</tr>
<tr>
<td>6 DAR-350</td>
<td>TFT</td>
</tr>
<tr>
<td>7 DAR-230</td>
<td>TFT COVER, metal</td>
</tr>
<tr>
<td>8 --</td>
<td>BUTTERFLY NUT DIN315 M5</td>
</tr>
<tr>
<td>9 --</td>
<td>LOCKNUT DIN985 M4</td>
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</table>
## 10.12 TFT COVER

<table>
<thead>
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<th>CODE</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>1</td>
<td>SCREW ISO7380 M5X10 BLACK</td>
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<tr>
<td>2</td>
<td>DAR-230 TFT FRAME, metal</td>
</tr>
<tr>
<td>3</td>
<td>DAR-265 RED FILTER, front camera</td>
</tr>
<tr>
<td>4</td>
<td>-- SCREW DIN965 M3X6 NEGRO</td>
</tr>
<tr>
<td>5</td>
<td>DAR-540 METACRILATE COVER, TFT</td>
</tr>
<tr>
<td>6</td>
<td>DAR-545D PLAKENE COVER - RIGHT</td>
</tr>
<tr>
<td>7</td>
<td>-- FLAT WASHER DIN9021 M5</td>
</tr>
<tr>
<td>8</td>
<td>-- BUTTERFLY NUT DIN315 M5</td>
</tr>
<tr>
<td>9</td>
<td>-- LOCKNUT DIN985 M5</td>
</tr>
<tr>
<td>10</td>
<td>DAR-545I PLAKENE COVER - LEFT</td>
</tr>
</tbody>
</table>

![Diagram of TFT Cover components](image-url)
## 10.13 TFT PARTS

<table>
<thead>
<tr>
<th>CODE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 DAR-231</td>
<td>LEFT BRACKET, TFT</td>
</tr>
<tr>
<td>2 DAR-350</td>
<td>TFT</td>
</tr>
<tr>
<td>3 DAR-232</td>
<td>RIGHT BRACKET, TFT</td>
</tr>
<tr>
<td>4     --</td>
<td>SCREW DIN912 M5X10</td>
</tr>
<tr>
<td>5     --</td>
<td>SCREW DIN7985 M3X8</td>
</tr>
<tr>
<td>6     --</td>
<td>DENT WASHER DIN6798A M3</td>
</tr>
<tr>
<td>7 DAR-351</td>
<td>INVERTER PCB (TFT)</td>
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<td>8     --</td>
<td>SCREW DIN7985 M3X5</td>
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<tr>
<td>9 DAR-234</td>
<td>INVERTER COVER, metat</td>
</tr>
<tr>
<td>10    --</td>
<td>SCREW DIN7985 M3X5</td>
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![Diagram of TFT parts](image-url)
### 10.14 HALOGEN LAMP & FRONT CAMERA

<table>
<thead>
<tr>
<th>CODE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DAR-229 TFT HOUSING</td>
</tr>
<tr>
<td>2</td>
<td>DAR-262 SCREW DIN912 M4X10</td>
</tr>
<tr>
<td>3</td>
<td>DAR-262 BRACKET, front camera</td>
</tr>
<tr>
<td>4</td>
<td>DAR-261 FRONT CAMERA</td>
</tr>
<tr>
<td>5</td>
<td>DAR-263 SCREW UM1001 M4X8</td>
</tr>
<tr>
<td>6</td>
<td>DAR-263 BAKELITE WASHER</td>
</tr>
<tr>
<td>7</td>
<td>DAR-263 FLAT WASHER DIN125 M4</td>
</tr>
<tr>
<td>8</td>
<td>DAR-352 INTERCONNECTION PCB</td>
</tr>
<tr>
<td>9</td>
<td>DAR-352 SCREW DIN7985 M3X5</td>
</tr>
<tr>
<td>10</td>
<td>DAR-290 CALORIC FILTER, halogen lamp</td>
</tr>
<tr>
<td>11</td>
<td>DAR-450 HALOGEN LAMP 12V 50W 60º</td>
</tr>
<tr>
<td>12</td>
<td>DAR-233 BRACKET, halogen lamp</td>
</tr>
<tr>
<td>13</td>
<td>DAR-263 SCREW DIN7985 M4X6</td>
</tr>
<tr>
<td>14</td>
<td>DAR-450 SCREW UM1001 M6X20</td>
</tr>
</tbody>
</table>

![Diagram of halogen lamp and front camera setup]
<table>
<thead>
<tr>
<th>CODE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DAR-229 TFT HOUSING</td>
</tr>
<tr>
<td>2</td>
<td>DAR-550 METACRILATE COVER, halogen lamp</td>
</tr>
<tr>
<td>3</td>
<td>-- FLAT WASHER DIN125 M4</td>
</tr>
<tr>
<td>4</td>
<td>-- SPRING WASHER DIN127 M4</td>
</tr>
<tr>
<td>5</td>
<td>-- NUT DIN934 M4</td>
</tr>
<tr>
<td>6</td>
<td>DAR-272 BRACKET, target camera</td>
</tr>
<tr>
<td>7</td>
<td>-- FLAT WASHER DIN125 M4</td>
</tr>
<tr>
<td>8</td>
<td>-- SPRING WASHER DIN127 M4</td>
</tr>
<tr>
<td>9</td>
<td>-- NUT DIN934 M4</td>
</tr>
<tr>
<td>10</td>
<td>DAR-271 TARGET CAMERA</td>
</tr>
<tr>
<td>11</td>
<td>DAR-263 BAKELITE WASHER</td>
</tr>
<tr>
<td>12</td>
<td>-- SCREW UM1001 M4X8</td>
</tr>
</tbody>
</table>
14. WIRING DIAGRAM

Technical service and maintenance must be carried out by qualified staff.

No modifications shall be made to the machine unless these have been approved by the manufacturer in writing. Failure to observe this requirement may cause damage and will automatically render the guarantee null and void.

Do not attempt to repair the CPU. It contains sensitive chips that could easily damaged. Always return the CPU to your distributor for any repairs.

If any task needs to be performed which is not described in this manual, please contact the distributor for instructions. The manufacturer declines any liability for damage and injury arising from failure to comply with this requirement.

14.1 PCB LAYOUTS

Considering that the wiring diagram of the RADIKAL DARTS machine is quite complex, the layout of the related PCBs would be helpful when tracking the wires which connect one PCB to other. Please refer to the following layouts when consulting the general diagram placed at the end of this section.

INTERCONNECTION PCB (DAR-352)

<table>
<thead>
<tr>
<th>CONNECTOR</th>
<th>CONNECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>JP1</td>
<td>CPU</td>
</tr>
<tr>
<td>JP2</td>
<td>POWER SUPPLY</td>
</tr>
<tr>
<td>JP3</td>
<td>TFT SIGNALS</td>
</tr>
<tr>
<td>JP4</td>
<td>TFT POWER SUPPLY</td>
</tr>
<tr>
<td>JP5</td>
<td>TARGET CAMERA</td>
</tr>
<tr>
<td>JP6</td>
<td>FRONT CAMERA</td>
</tr>
<tr>
<td>JP8</td>
<td>HALOGEN LAMP</td>
</tr>
</tbody>
</table>
TEST PCB  (DAR-354V)

<table>
<thead>
<tr>
<th>CONNECTOR</th>
<th>CONNECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>JP1</td>
<td>TARGET CONTROL</td>
</tr>
<tr>
<td>JP3</td>
<td>COIN ACCEPTOR</td>
</tr>
</tbody>
</table>

TARGET CONTROL PCB  (DAR-353)

<table>
<thead>
<tr>
<th>CONNECTOR</th>
<th>CONNECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>JP1</td>
<td>SWITCH MATRIX</td>
</tr>
<tr>
<td>JP2</td>
<td>DART SENSOR (FILM)</td>
</tr>
<tr>
<td>JP3</td>
<td>DART SENSOR (CERAMIC)</td>
</tr>
<tr>
<td>JP4</td>
<td>CPU &amp; TEST</td>
</tr>
</tbody>
</table>
FRONT PCB OF THE CPU  (FRONTDAR)