Wave 300 XL mode of operation, Set-up & Applications short

maytronics | Exceptional Pool Experience

Agenda

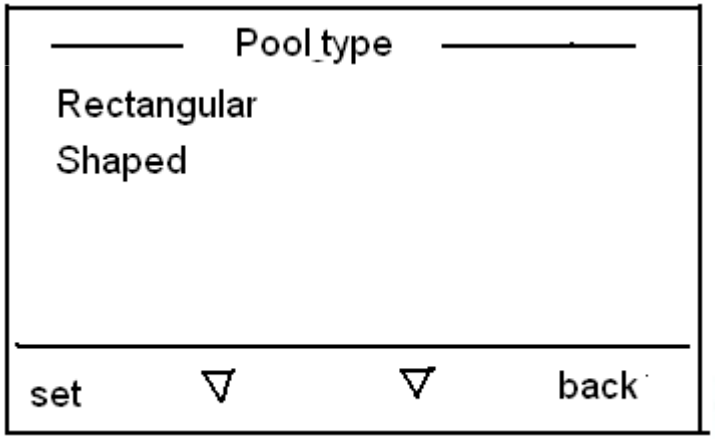
- Introduction of navigation system components
- Characteristics of the different scanning & navigation modes
- WAVE installation:
  - Modes (selecting the right mode)
  - Case studies (real-life examples)

Navigation Sys. components

- Compass - Keeps absolute direction relative to earth
- XL Gyroscope - keeps direction relative to starting point
- Accelerometer/ Inclinometer - Wall detection and angels Measurement sensor
- All 3 components - Compass, gyroscope and Accelerometer / Inclinometer are in the Navigation box

Two navigation modes

- Shape: For free shape pools
- Rectangular: 90° between all pool walls



Rectangular

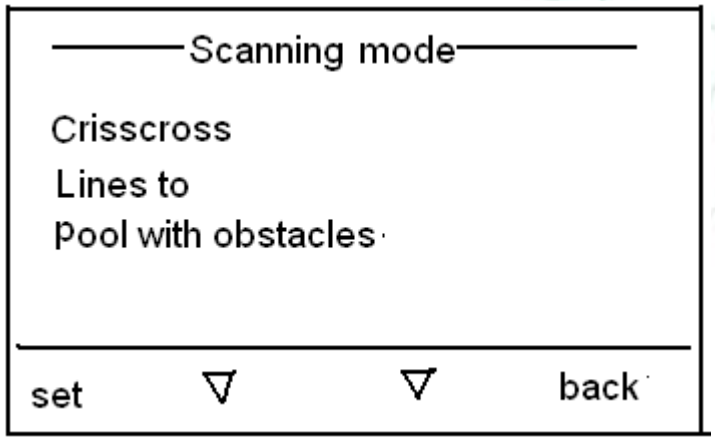
- Recommended for pools with 90° between all pool walls
- Wave navigates with the gyro
  - Gyro heading corrects the robot according to every wall that it meet
- As soon as the Wave hits the wall, it straighten it self Vertically to the wall. Than gyro corrects its heading direction according to the wall orientation. This will happen on every wall
- The compass is not involved in the scanning

Shape mode

- Recommended for free shape pools or pools with sharp slops
- Wave navigates with the gyro
- The gyro keeps the original direction, the original direction is the direction that the Wave comes out from the first wall
- Every 10 min:
  - Gyro direction heading is being corrected according to the compass average reading

Three scanning modes

- Crisscross scan - Recommended option for pools without constraints
- Lines to scan - Recommended when there are constraints
- Pools with obstacles - Recommended when there is an obstacles in the pool

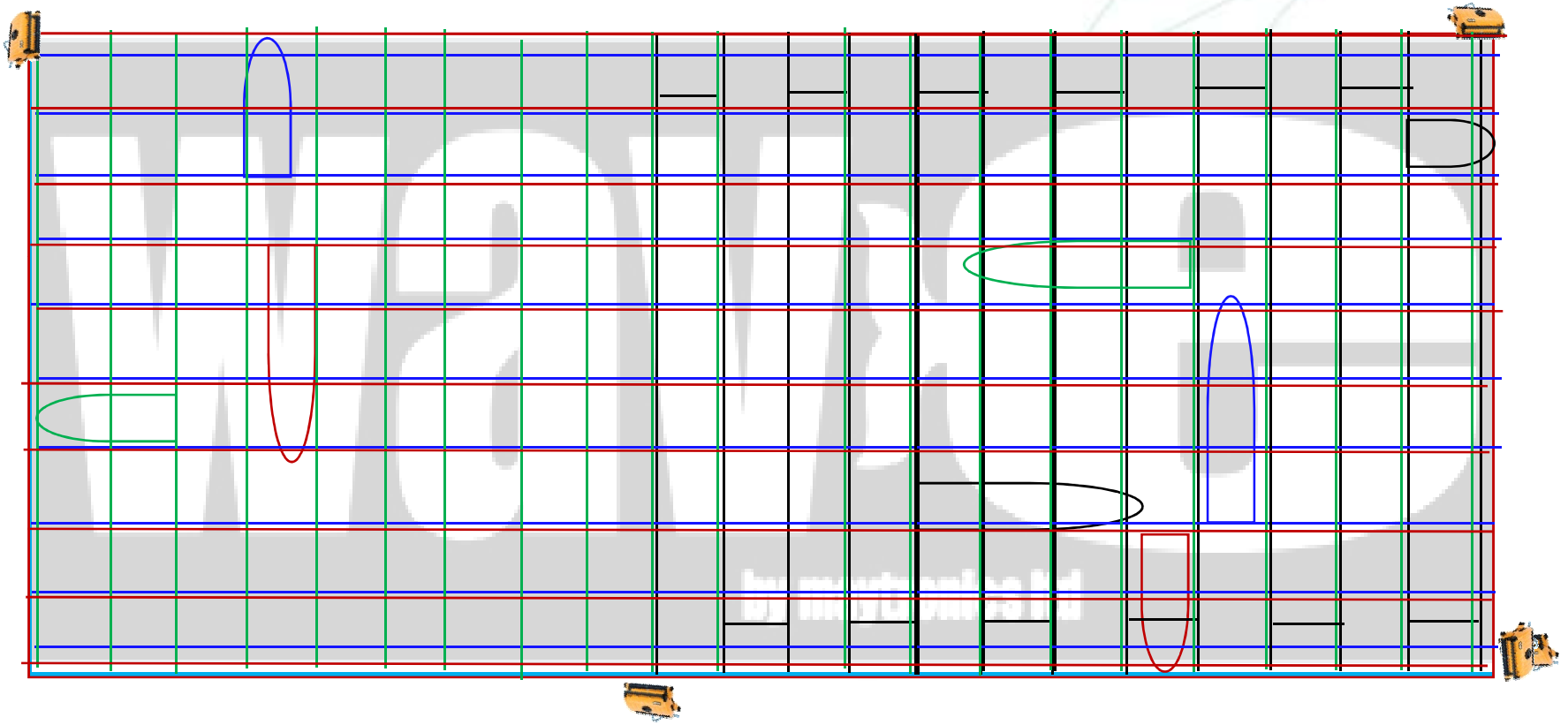


Crisscross scanning

Recommended option for pools without constraints

- Crisscross scan ensures full cover of the pool
- The customer can choose the following lines direction: to the left or to the right
- The customer has an option to change line spacing
- Wave is searching for side wall every 11 lines by moving 3m back & forth perpendicular
- When the Wave aligns to the side wall it complete to cover the area near the side wall
- Then the Wave tern 90° and start to clean the pool on the Cross direction
- There is no limited numbers of crisscross cycles, the Wave will work until the fine cycle time is finish

crisscross



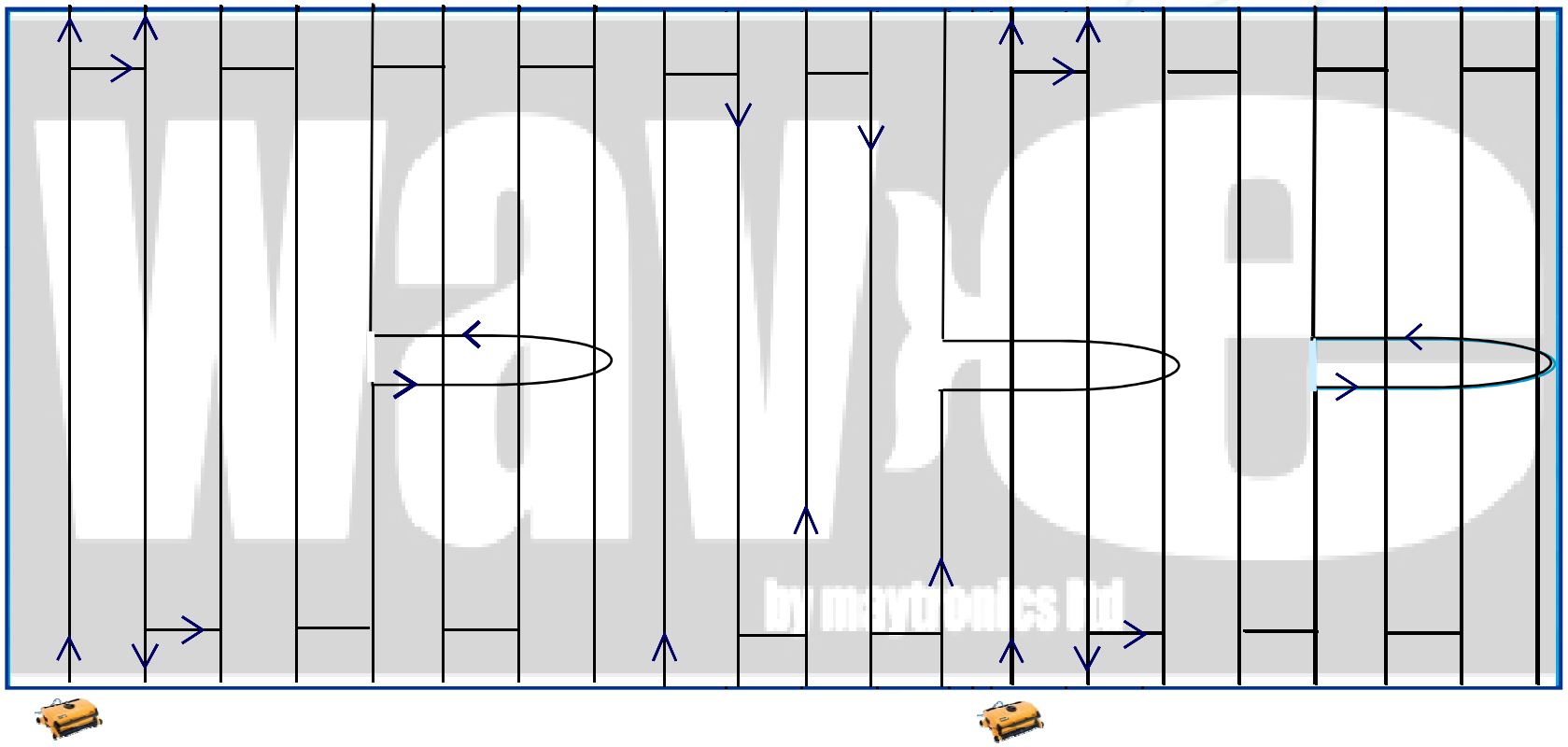
Lines to scanning

Recommended for constraints such as:
pool with a diving area, short operation time, etc.

- Short scanning cycle time for single cover of point
  (end when reaching the side wall)
- The customer can choose the following lines direction: to the left or to the right
- The customer has an option to change line spacing

- Wave is searching for side wall every 11 lines by moving 3m
  back & forth perpendicular
- When the Wave aligns to the side wall it complete to cover the area near the side wall and than it finish its cycle and stops

Lines to Right scanning



Pool with obstacle scanning

Recommended for pools with obstacle,
the cable might twist around

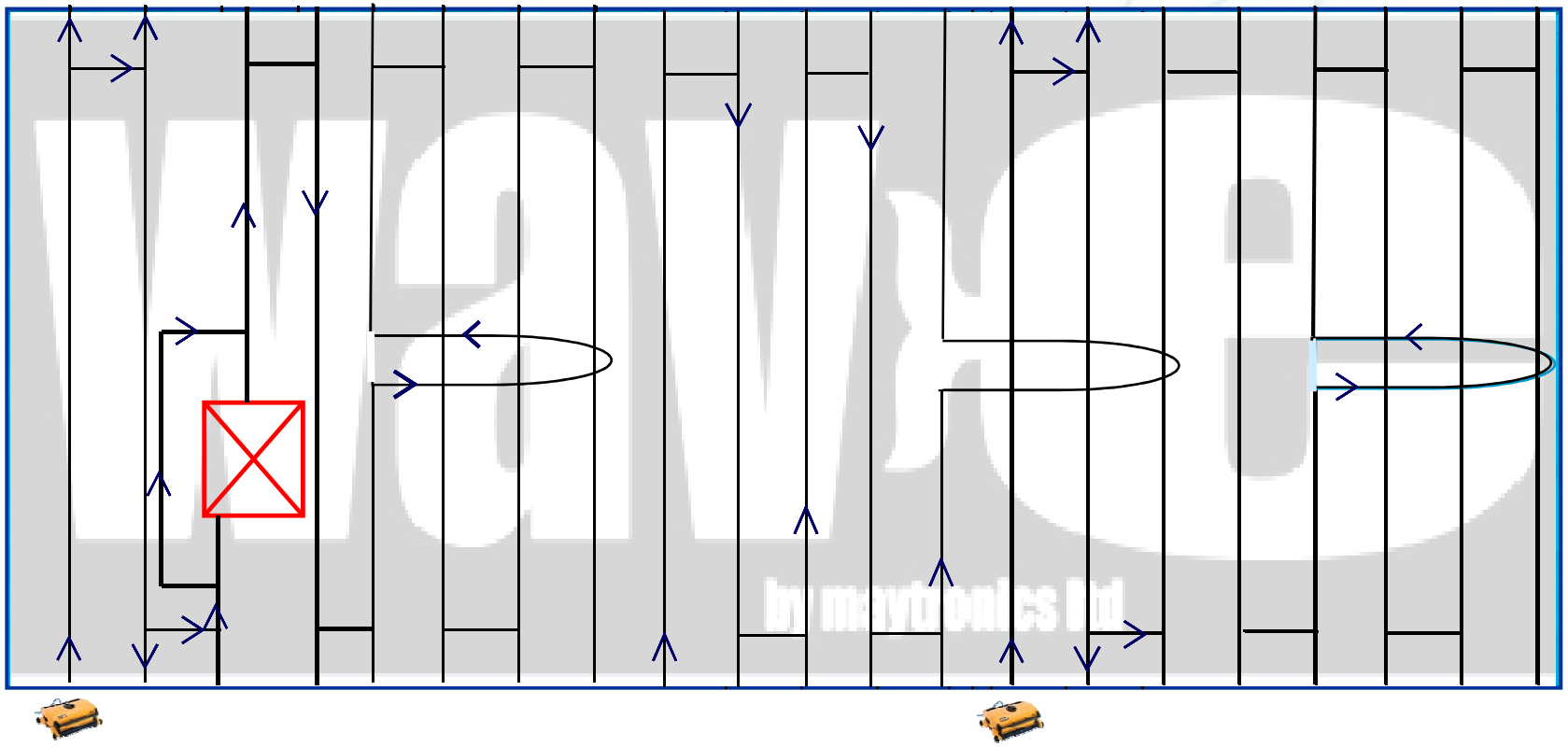
- The pool with obstacle scan work the same as the lines to scan with a small different:

  When the Wave hit the obstacle on the short direction between the wall and the obstacle it will go back, make a turn, and continue the scanning on the long direction between the obstacle and the wall

Three lines spacing

- Fine spacing - the distance between the Wave lines is about 30cm
- Medium spacing - the distance between the Wave lines is about 60cm
- Coarse spacing - the distance between the Wave lines is about 120cm
- The distance changed a little, depend on the pools surface and the pool slop direction

Pool with obstacle scanning



WAVE installation

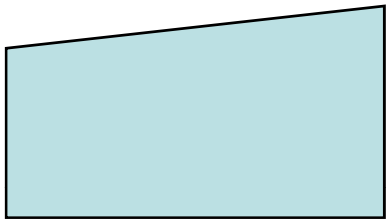
- quick instructions for rectangular pools only:
  - Identify if the pool is a shape or rectangular pool
  - Locate the Wave Caddy in a point where cable length can reach all pool's area
  - Press the batten **POOL,** the robot will drive into the pool automatically
  - Press the too green battens to **START** the Wave, the Wave will ask you to choose the pool length. You will choose your pool length and the Wave will adjust it self to the nearest wall and will start to work automatically
  - The Wave will use the default modes as follow:

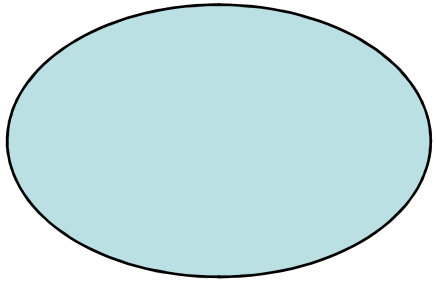
1. scan mode crisscross to the right
2. Navigation mode rectangular
3. lines spacing mode is "medium"
4. Cycle time according to the pool length

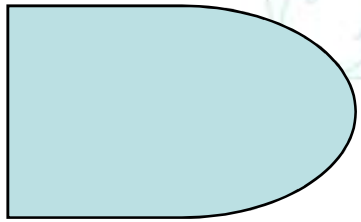
WAVE installation

- Full instructions
- Identify if the pool is a shape or rectangular pool
  - Locate the Wave Caddy in a point where cable length can reach all pool's area
  - Choose the pool that you want to use on the MMI-A,B,C,D
  - Choose the pool length (m) - 25,30,35,40,50,60
  - Choose the cycle time (hr) - 1,2,3,4,5,6,7,8
  - Choose navigation mode - Rectangular, Shape
  - Choose the scan mode -Crisscross, lines to scan, pool with obstacles
  - Choose the direction that the Wave will move to - left, right
  - Choose if you want a delay time (hr) - 0,1,2,3,4,5,6
  - Choose the lines spacing - fine, medium, coarse
  - Press POOL and let the Wave go into the pool
  - Press the tow green battens to **START** the robot on the pool name that you made the set up on

Free shaped pools - without 90° walls







Navigation Mode

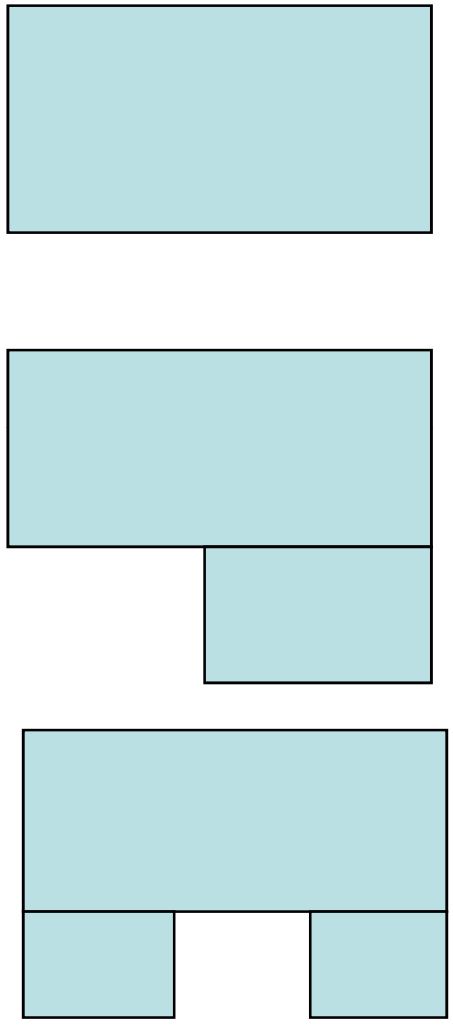
- Shape

Scanning mode

- Crisscross: recommended
- Lines to left / right:

  For short scanning; pool; deep diving area (see example)
- Robot must be placed in same permanent location

Rectangular Pools Shape (90° between walls)



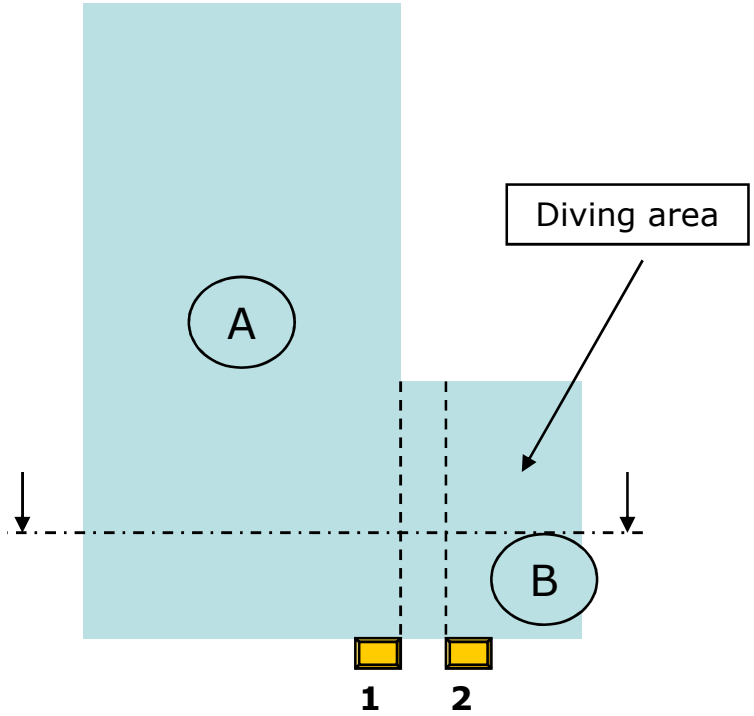
Navigation Mode

- Rectangular : Suits most pools

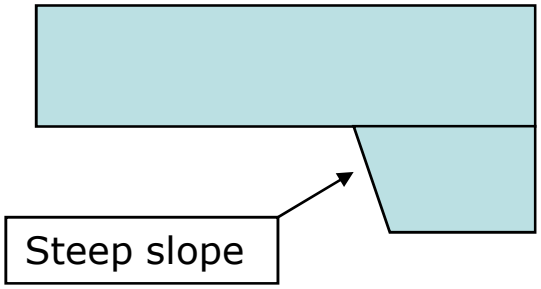
Scanning Path

- Crisscross: recommended
- Lines to Left / Right: where fast scanning is required; deep diving area (see example)
  - Robot must be placed in same permanent location

Pool with deep diving area



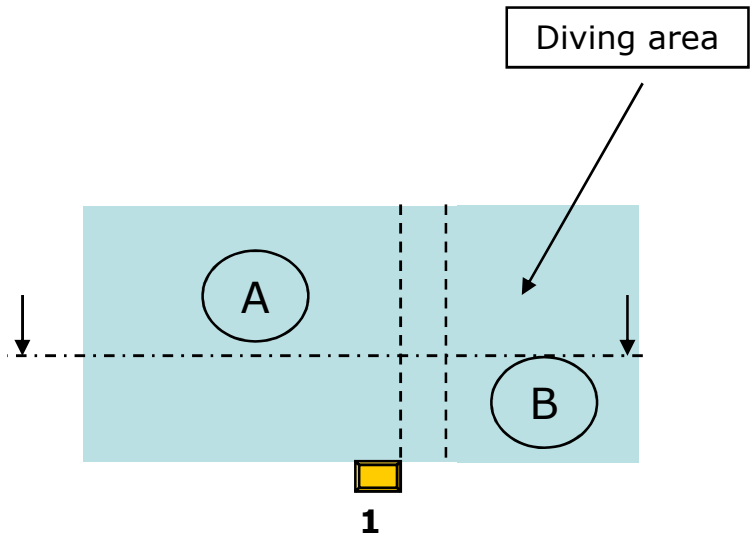
Section view



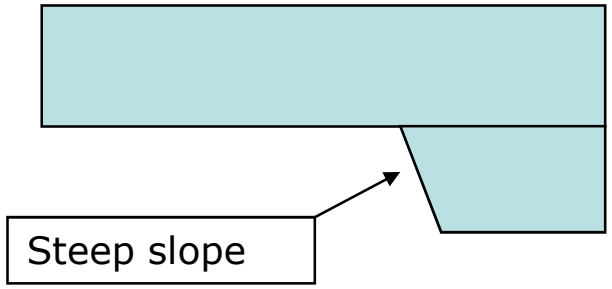
If robot can't climb slope, split the pool into two sections:

Position the robot at point 1
Program the scanning mode to *Lines to Left*
When cleaning is completed, position it at point 2
Program B scanning path to *Lines to Right*

Pool with deep diving area 2

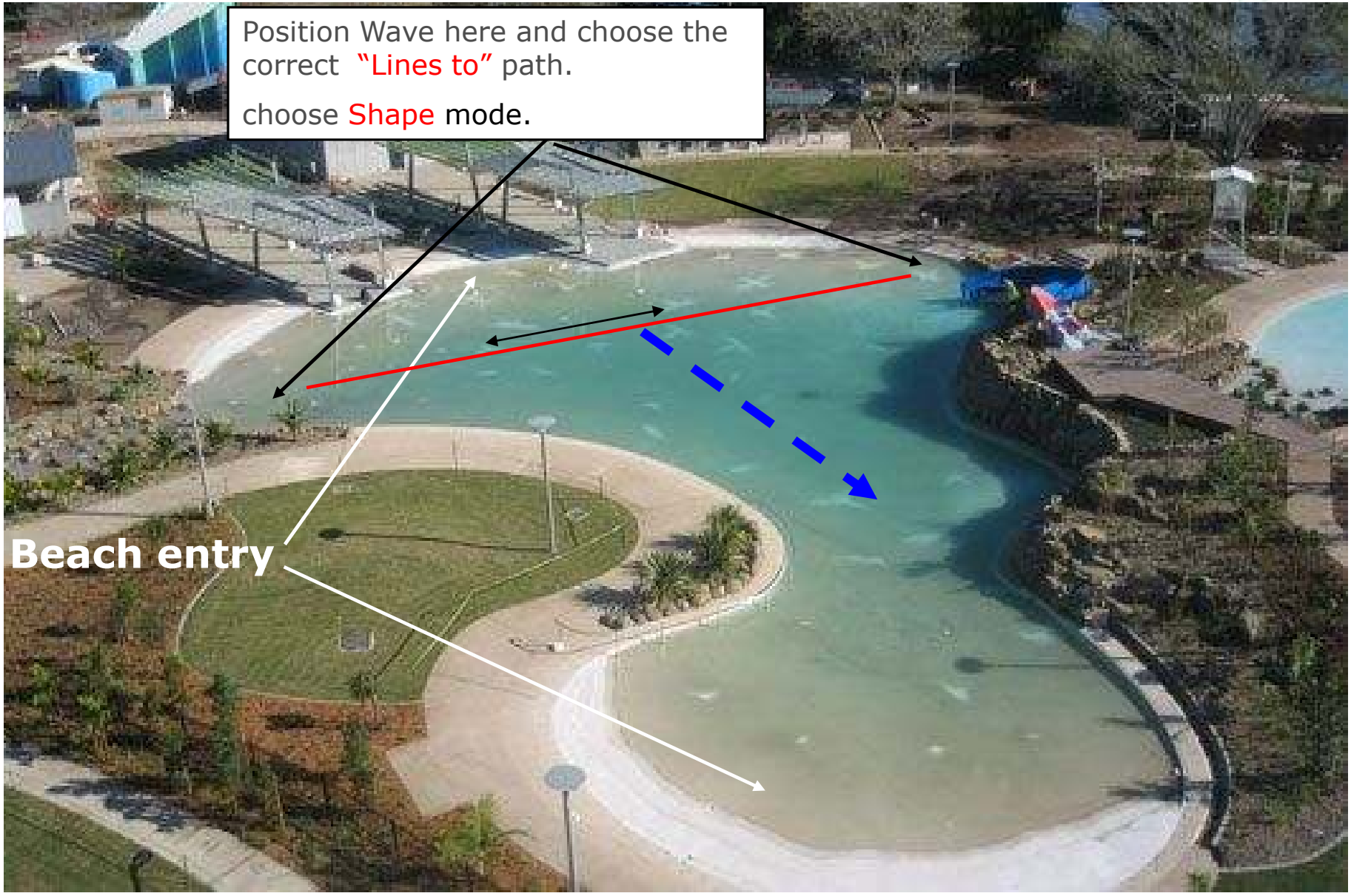


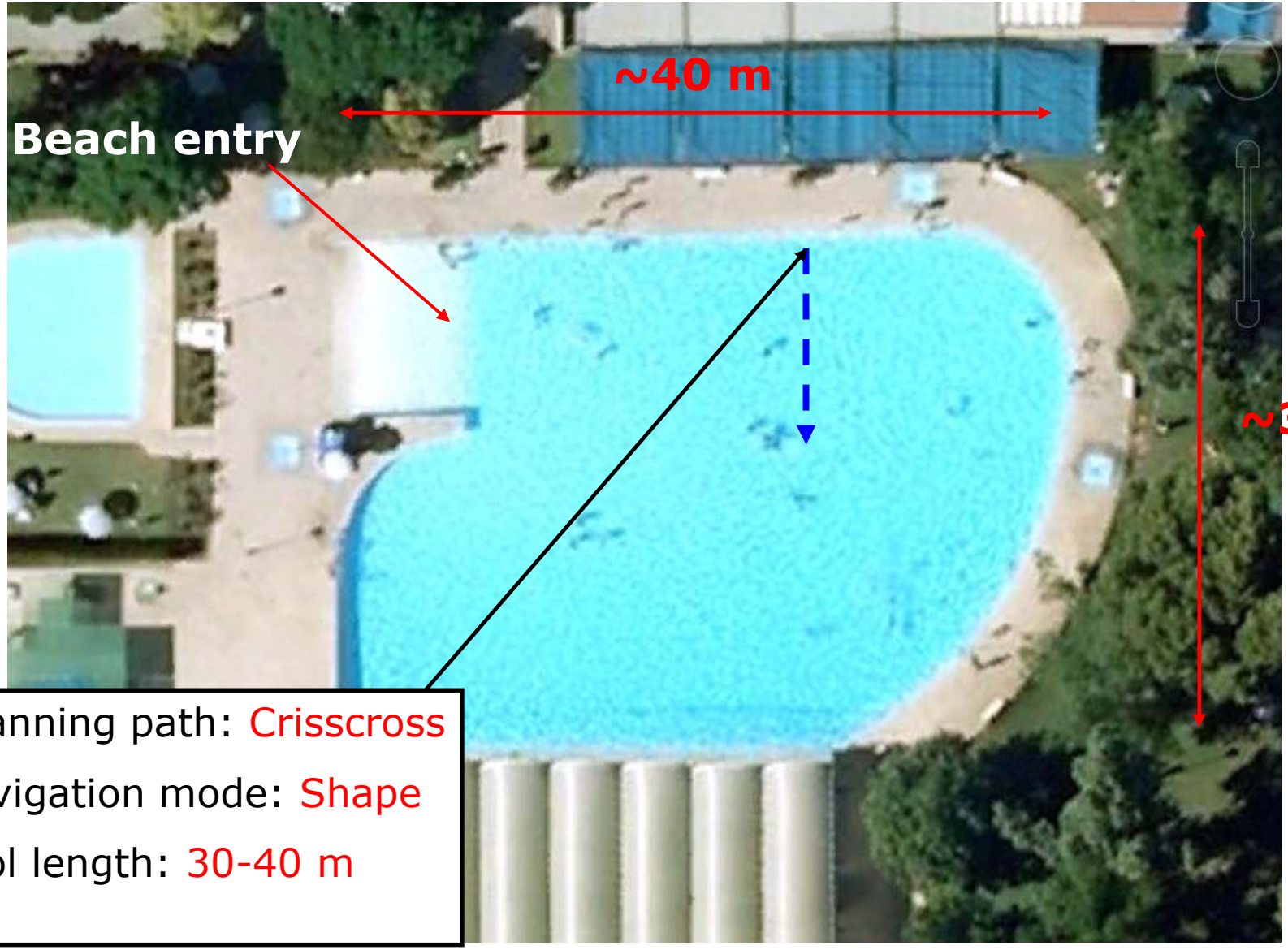
Section view



If robot can't climb slope-

Position the robot at point 1
Program the scanning mode to *Crisscross to Left*
When the robot will finish section A it will tern 90 degree, drive to the diving area and will continue the scanning in the diving area until the cycle time will finish.

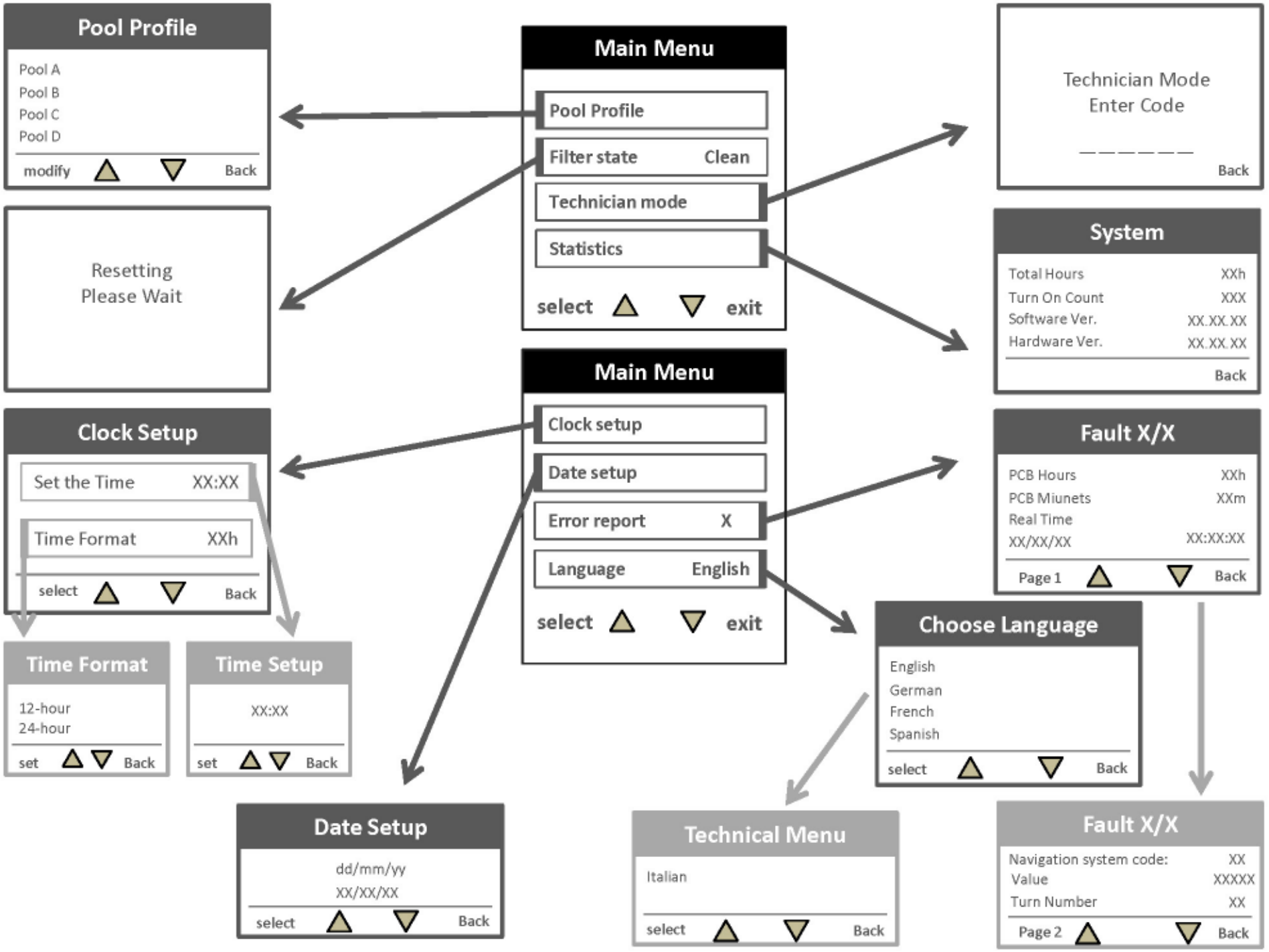

Position Wave here and choose the correct "Lines to" path.
choose Shape mode.
Beach entry

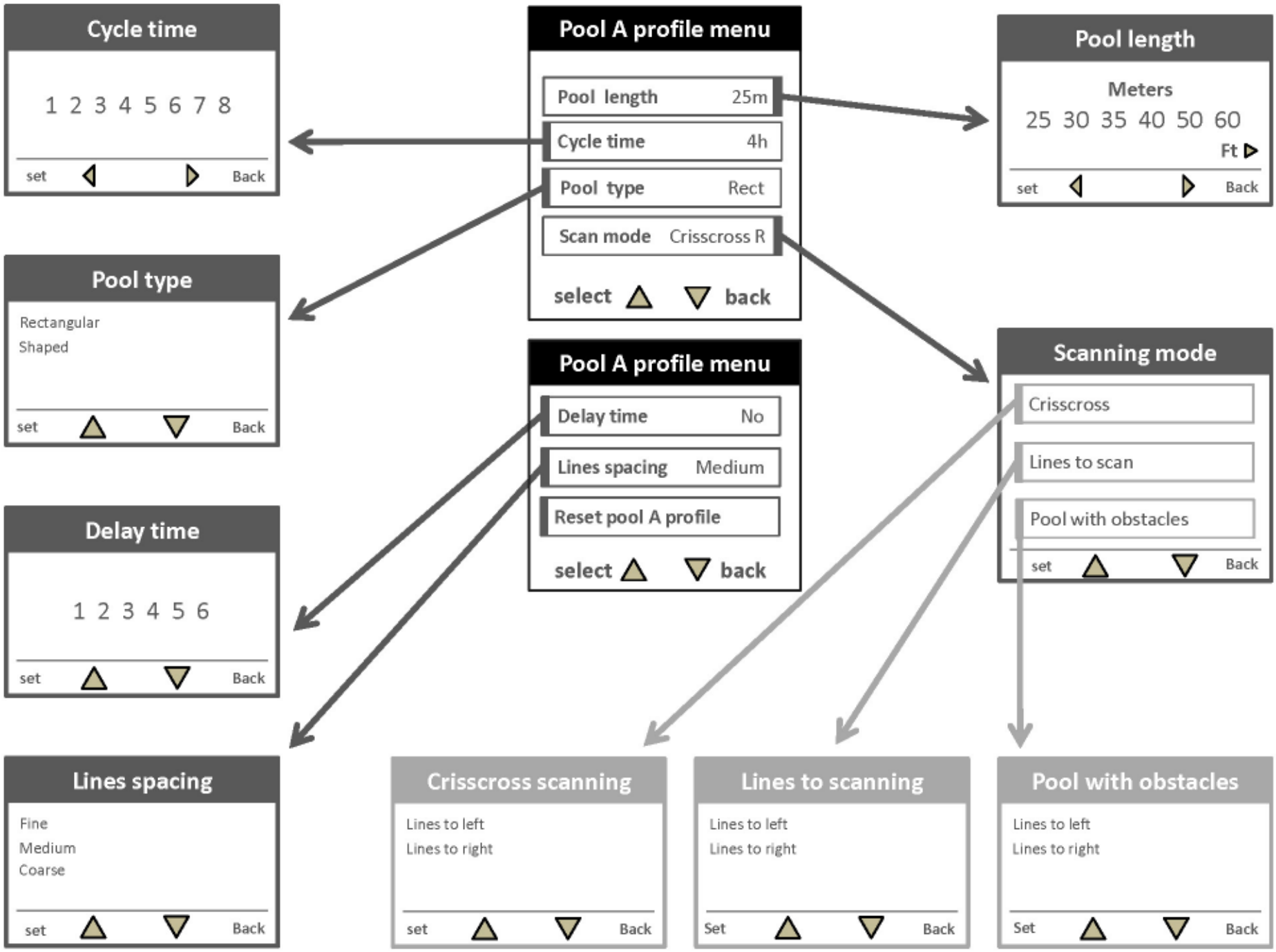


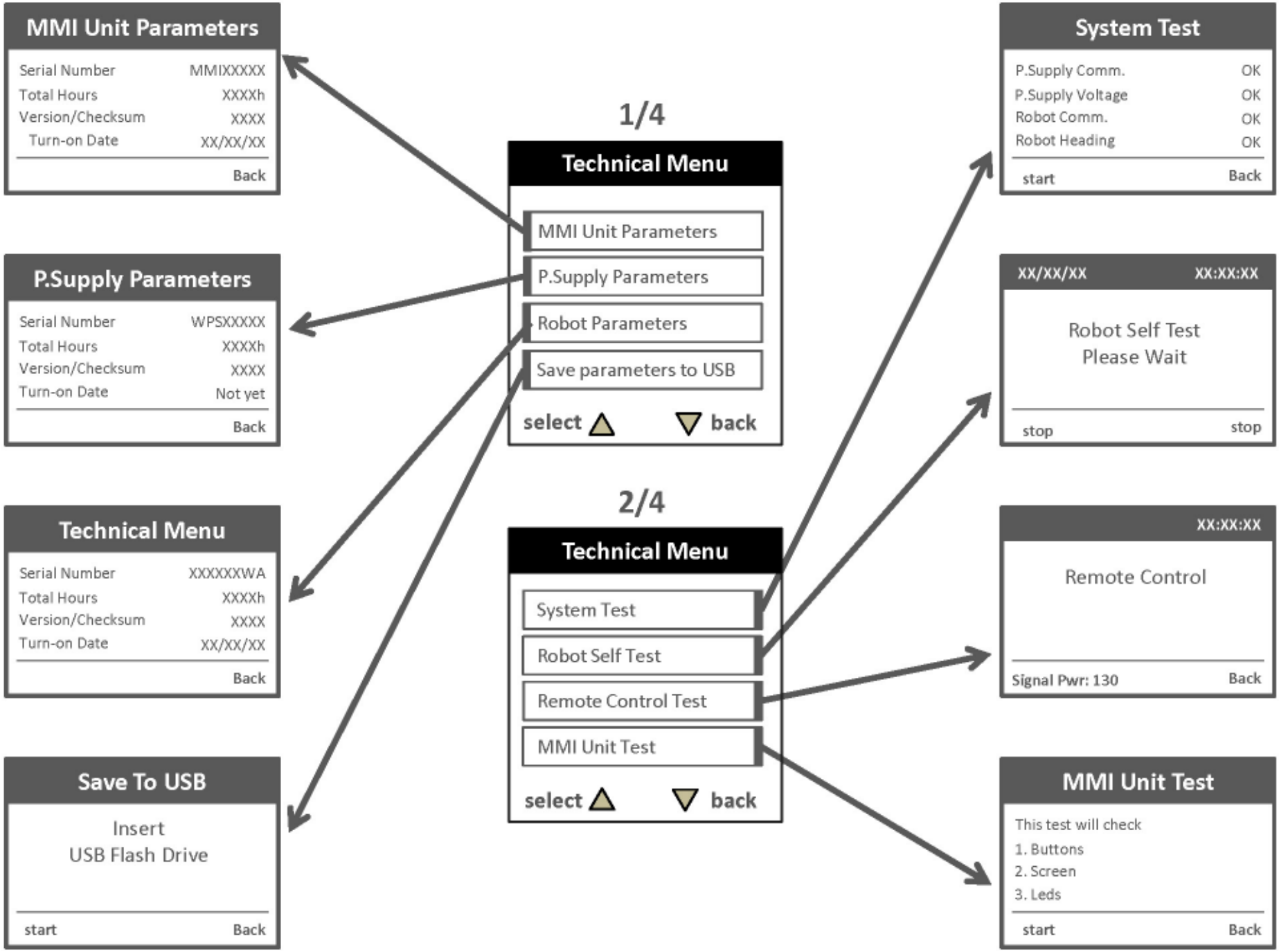
Scanning path: Crisscross

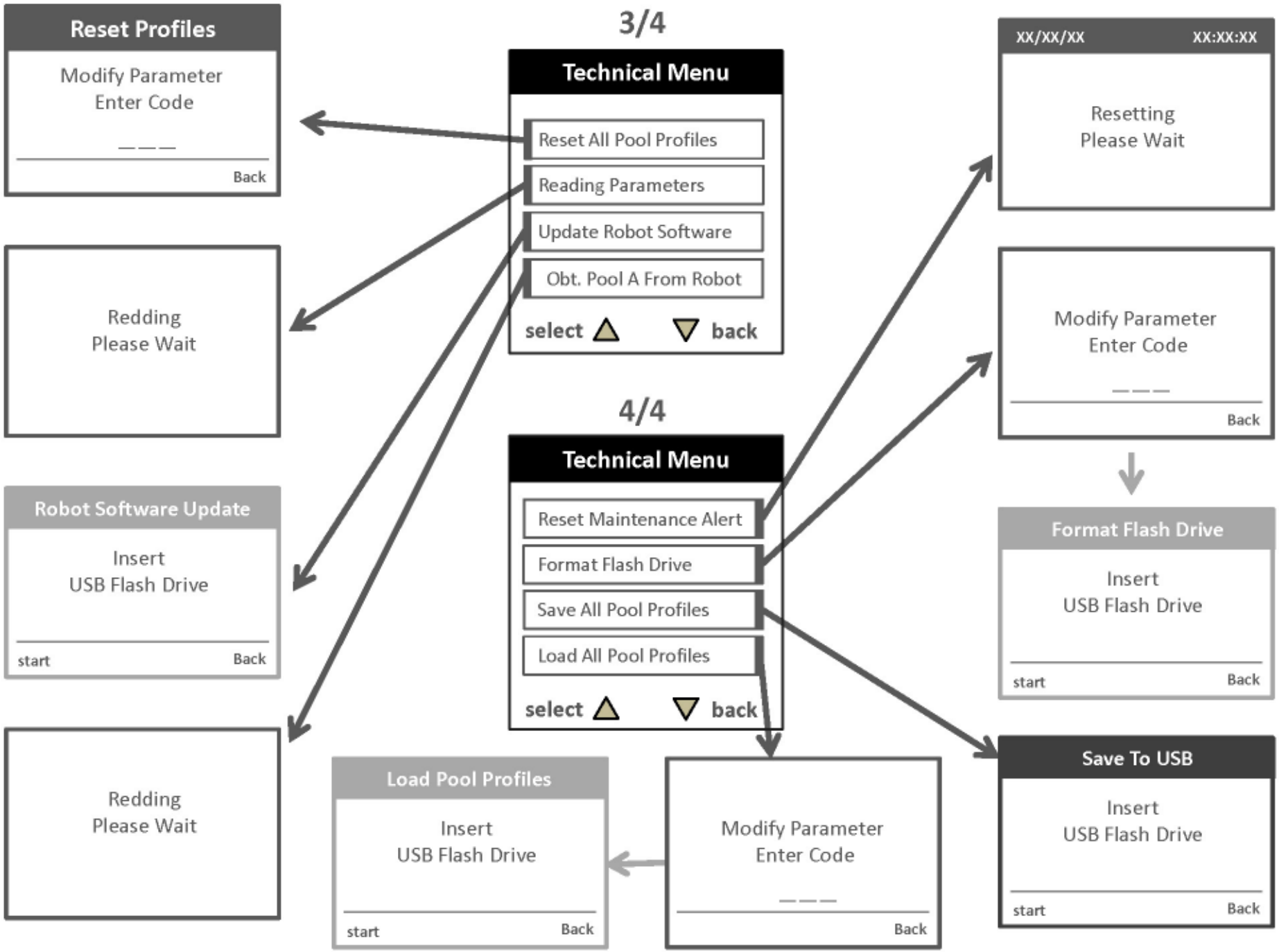
Navigation mode: Shape

Pool length: 30-40 m


Pool Profile
Pool A
Pool B
Pool C
Pool D
modify
Back
Main Menu
Pool Profile
Filter state Clean
Technician mode
Statistics
select
exit
Technician Mode
Enter Code
Back
Resetting
Please Wait
System
Total Hours XXh
Turn On Count XXX
Software Ver. XX.XX.XX
Hardware Ver. XX.XX.XX
Back
Main Menu
Clock setup
Date setup
Error report X
Language English
select
exit
Clock Setup
Set the Time XX:XX
Time Format XXh
select
Back
Fault X/X
PCB Hours XXh
PCB Miunets XXm
Real Time
XX/XX/XX XX:XX:XX
Page 1
Back
Time Format
12-hour
24-hour
set
Back
Time Setup
XX:XX
set
Back
Choose Language
English
German
French
Spanish
select
Back
Date Setup
dd/mm/yy
XX/XX/XX
select
Back
Technical Menu
Italian
select
Back
Fault X/X
Navigation system code: XX
Value XXXXX
Turn Number XX
Page 2
Back


Cycle time
1 2 3 4 5 6 7 8
set
Back
Pool A profile menu
Pool length 25m
Cycle time 4h
Pool type Rect
Scan mode Crisscross R
select
back
Pool length
Meters
25 30 35 40 50 60
Ft
set
Back
Pool type
Rectangular
Shaped
set
Back
Pool A profile menu
Delay time No
Lines spacing Medium
Reset pool A profile
select
back
Scanning mode
Crisscross
Lines to scan
Pool with obstacles
set
Back
Delay time
1 2 3 4 5 6
set
Back
Lines spacing
Fine
Medium
Coarse
set
Back
Crisscross scanning
Lines to left
Lines to right
set
Back
Lines to scanning
Lines to left
Lines to right
Set
Back
Pool with obstacles
Lines to left
Lines to right
Set
Back


MMI Unit Parameters
Serial Number MMIXXXXX
Total Hours XXXXh
Version/Checksum XXXX
Turn-on Date XX/XX/XX
Back
P.Supply Parameters
Serial Number WPSXXXXX
Total Hours XXXXh
Version/Checksum XXXX
Turn-on Date Not yet
Back
Technical Menu
Serial Number XXXXXXWA
Total Hours XXXXh
Version/Checksum XXXX
Turn-on Date XX/XX/XX
Back
Save To USB
Insert
USB Flash Drive
start
Back
1/4
Technical Menu
MMI Unit Parameters
P.Supply Parameters
Robot Parameters
Save parameters to USB
select
back
2/4
Technical Menu
System Test
Robot Self Test
Remote Control Test
MMI Unit Test
select
back
System Test
P.Supply Comm. OK
P.Supply Voltage OK
Robot Comm. OK
Robot Heading OK
start
Back
XX/XX/XX
XX:XX:XX
Robot Self Test
Please Wait
stop
stop
XX:XX:XX
Remote Control
Signal Pwr: 130
Back
MMI Unit Test
This test will check
1. Buttons
2. Screen
3. Leds
start
Back


Reset Profiles
Modify Parameter
Enter Code
___
Back
3/4
Technical Menu
Reset All Pool Profiles
Reading Parameters
Update Robot Software
Obt. Pool A From Robot
select
back
XX/XX/XX
XX:XX:XX
Resetting
Please Wait
Redding
Please Wait
Modify Parameter
Enter Code
___
Back
Robot Software Update
Insert
USB Flash Drive
start
Back
4/4
Technical Menu
Reset Maintenance Alert
Format Flash Drive
Save All Pool Profiles
Load All Pool Profiles
select
back
Format Flash Drive
Insert
USB Flash Drive
start
Back
Redding
Please Wait
Load Pool Profiles
Insert
USB Flash Drive
start
Back
Modify Parameter
Enter Code
___
Back
Save To USB
Insert
USB Flash Drive
start
Back