



WARMUX NEXT

Player's manual
turn-based worm artillery for the ZX Spectrum Next



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BEFORE YOU START

This manual describes a development version of the game. The numbers (damage, ammunition, times) are taken straight from the game's code, which in turn takes them from the original Warmux's settings. If the game behaves differently from what is written here, it is most likely a bug, and worth reporting.

1. Quick start

Warmux Next is a port of *Warmux* (formerly *Wormux*) to the ZX Spectrum Next. Two teams of worms take turns trying to finish each other off. Every explosion bites a piece out of the landscape, so every crater changes where you can walk, where you can jump and what is still covering you.

What you need

- A ZX Spectrum Next with 2 MB of memory, or an emulator (CSpect, ZEsarUX).
- The file **warmux.nex**. Just run it; there is nothing to install.
- An SD card, if you want the game to remember its settings and the score (the file **WARMUX.SAV**). Without one you play the same, only nothing is saved.

A first match in a minute

1. On the title screen, press any key.
2. In the menu, go down with **S** to **START GAME** and press **SPACE**. By default it is a match against the computer (level VETERAN) on the ISLAND map, three worms a side and 60 seconds a turn.
3. You play the **pink team** (Gnu) and you go first. The worm whose turn it is has a white arrow over its head.
4. Aim with **W** **S**, hold **SPACE** (it charges the power) and let go. The bazooka fires.
5. Press **E** to open the weapon list and pick something else.
6. You can go back to the menu at any time with **BREAK** (**CAPS SHIFT** + **SPACE**).

The aim of the game

The team with the last worm standing wins. A worm dies when its energy drops to zero, or when it falls into the sea (the bottom edge of the screen). Every worm starts with **100 points of energy** and can never have more.

2. The main menu



The main menu. At the bottom: wins and losses at the chosen level.

ROW	VALUES
GAME	VS COMPUTER / TWO PLAYERS (two players at one keyboard)
OPPONENT	ROOKIE / VETERAN / MASTER. With two players it shows "-" and cannot be changed.
MAP	ISLAND, DESERT, BANKIZ, COUNTRY, PILLARS, OKTOPUS, FROG, MOON-4M, BIRDS, FARM, ICEBERGS
WORMS	1, 2 or 3 worms a side
TURN	30 / 45 / 60 / 90 / 120 seconds a turn
CONTROLS	a screen listing the keys
START GAME	starts the match

Working the menu

W or Q	up a row
S or A	down a row
O / P	previous / next value on the row (values wrap round)
SPACE	on a setting: the next value; on CONTROLS: opens the key list; on START GAME: starts the match

So the whole menu can be worked with **SPACE** alone. The CONTROLS screen closes with any game key (O, P, Q, W, E, A, S, SPACE).

Score and saving

- Against the computer the bottom line of the menu shows **WON / LOST**, separately for each level. With two players it shows **WINS pink : blue**.
- The result and the menu settings are written to the SD card when a match ends with a winner. A match left with BREAK is not counted and its settings are not saved.

The teams

TEAM	COLOUR	WORMS	PLAYED BY
Gnu	pink	LINUX, HURD, EMACS	you, or player 1; always goes first
Thunderbird	blue	GIBSON, TRAIN, FORD	the computer, or player 2

With fewer worms, the first names on the list play. The worms are placed at random: anywhere they fit with solid ground under their feet, which includes a ledge in a cave or the floor of a tunnel. No two matches start the same.

3. Controls

In a turn

KEY	WHAT IT DOES
O P	walk left / right, turning the worm that way. Steps up to 13 pixels are climbed by themselves.
Q	jump forwards (about 32 px high)
A	backflip (about 52 px high, backwards)
W S	aim up / down, a degree at a time, from straight up to straight down
SPACE	fire. For weapons that charge, hold and let go; the rest fire at the press.
E	opens and closes the weapon list
R	hands the turn to another worm of your team (only before this one has done anything). With the girder in hand it turns the girder instead.

arrows ← →

(CAPS SHIFT + 5 / 8; plain 5 / 8 work too)

look around the map. When you let go, the camera comes back by itself.

BREAK

(CAPS SHIFT + SPACE)

the question "LEAVE THE MATCH?": **SPACE** = yes, back to the menu; **Q** (or another game key) = no, play on. While the question is up the game stands still – it is the only pause the game has.

In the weapon list

W / **Q**

up a weapon

S / **A**

down a weapon

SPACE

takes the marked weapon and closes the list

E

closes the list

Weapons with a cursor

The air raid, the anvil, the teleport, the homing missile and the girder are not aimed along a line but at a place. With one of them in hand, a cursor appears:

O **P**

cursor left / right (the screen follows it)

Q **A** or **W** **S**

cursor up / down – whichever pair your fingers prefer

SPACE

confirms the place (the homing missile first locks its target, see The arsenal)

R

girder only: turns the girder by a sixth of a half turn

JOYSTICK

A Kempston joystick only works walking left/right and firing. Aiming, jumping and moving through the menu are not on it, so the game cannot be played without the keyboard.



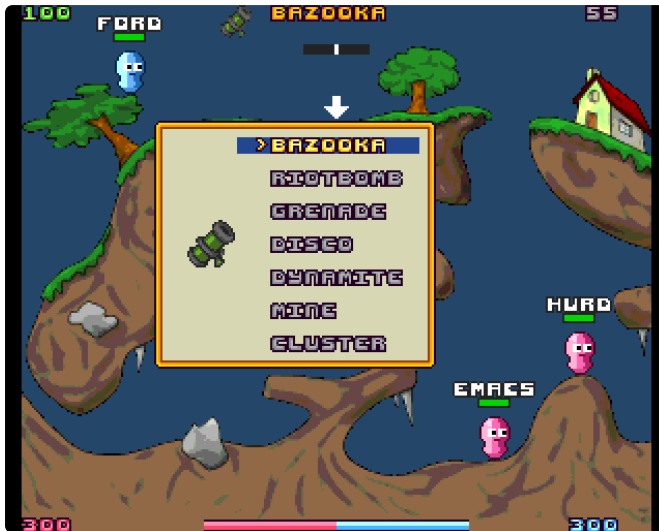
BREAK during a match: SPACE = back to the menu, Q = play on.

4. What is on the screen



- 1 **Energy of the worm whose turn it is** (0–100).
Green over 52, amber 27–52, red under 27.
- 2 **The weapon in hand:** icon, name and the team's remaining ammunition (in cyan; not shown for weapons with an unlimited stock).
- 3 **Time left in the turn**, in seconds. Turns red under 10 seconds.
- 4 **The wind.** A mark in the middle and up to 4 segments on the side the wind blows towards. The more segments, the stronger.
- 5 **The arrow** over the worm whose turn it is.
- 6 **The crosshair.** While charging it moves away from the worm, showing the power. The sniper rifle and the railgun replace it with a laser.
- 7 **Name and energy** of every worm (the colour of the name is the team; the bar has 8 segments).
- 8 **The teams' total energy:** the pink team on the left, the blue on the right.
- 9 **Who is ahead:** two bars meeting in the middle. At a glance you can see which side is winning.

The weapon list



The weapon list (key E): on the left, a large icon of the weapon under the cursor.

A weapon that has run out can still be selected, but not fired: the game switches to the next weapon you still have instead. The list cannot be opened while something is in the air, between two shots of one weapon or while a tool is in use.



A weapon with a limited stock shows how many are left on the top line.

5. How a turn goes

The order

The teams take strict turns, and each team takes its living worms in order (with three a side: LINUX, GIBSON, HURD, TRAIN, EMACS, FORD...). The pink team always starts. The first turn is calm; from the second on the wind changes.

Time

- The turn clock only runs while you are aiming. It stops as soon as something is in the air (a shot, fragments, air-raid bombs).
- It also runs with the weapon list open and while a tool is in use (jetpack, rope...).
- When the time runs out, the turn passes to the other side at once. A charge you were building is lost and nothing is fired.

Aiming and charging

- Weapons that **charge** (bazooka, grenades, the thrown animals...): hold **SPACE**, the crosshair moves out, and let go. Full power comes after about 1.5 seconds and grows no further. It never fires by itself.
- If you let go too soon (under an eighth of full power), nothing is fired and nothing is spent.
- Weapons that **do not charge** (gun, rifle, dynamite, mine, the cursor weapons, the tools...) go off the moment **SPACE** goes down.

After firing

- The gun, the shotgun and the M16 get **two shots** a turn, the flamethrower five bursts. In between you are back to aiming and the clock runs again.

- After the last shot you have **2 seconds to retreat**: you can walk and jump, but not fire. Then the game waits for everything to land and go off, and 1 second more.
- If your worm dies during its turn (drowns, falls, poison), the turn ends.

TOOLS DO NOT END THE TURN

The blowtorch, airhammer, jetpack, rope, girder and low gravity are **tools**: after using one, the turn is still yours and you can fire another weapon. While a tool is in use you cannot pick another weapon. Skip turn, on the other hand, ends the turn at once.

Picking a worm (R)

At the start of the turn, before the worm has walked, jumped or fired, you can press **R** to hand the turn to the next living worm of your team. The team's order moves with it: next time, the worm after the one you chose plays.

6. The world and its dangers

Terrain

The world is two screens wide (512 × 256 pixels) and exactly one high. The terrain is the picture and the collision mask at once: what you see is what is solid. Every explosion digs a crater.

Wind

The wind changes between turns (by a random amount, up to a strength of 100 either way), and the gauge under the weapon's name shows it. It pushes **rockets** (bazooka, cluzooka, homing missile) and an **open parachute** the most; bullets, the shotgun, the flamethrower, the disco grenade and the bounce ball moderately. The grenade, cluster bomb, dynamite, mine, air-raid bombs and anvil hardly feel it. It does not touch worms, crates or Super Tux at all.

Falling

Landing faster than 15 m/s costs a worm 2 points for every m/s over that. A free fall of up to about 60 pixels does not hurt; a twelve-metre fall (192 px) costs about 20 points. Every bounce counts separately, and it applies to every worm, not just the one whose turn it is. The parachute takes the pain out of a fall (see The arsenal).

The sea and the edges of the map

- **The bottom edge of the screen is the sea.** A worm that falls below it drowns at once, with no explosion. Crates and shots vanish there.
- **The sides of the world:** beyond the left and right edges there is nothing to stand on. A worm that walks, flies or is blown out there falls until it ends up in the sea.
- **There is no ceiling.** Whatever flies above the screen is not shown, but comes back down. Whoever goes up high also comes down from high – and the landing hurts.

Explosions and death

- An explosion hurts everyone in reach, **your own worms and the shooter included**. The damage falls off with distance from the centre (measured to the middle of the worm's body).
- An explosion throws worms away from itself, and always a little upwards.

- Shots stop against worms (except the one firing). Bodies are an obstacle.
- A worm with no energy left burrows into the ground and explodes (10 points, a small crater). That can set off a chain reaction. A drowned worm does not explode.

Poison

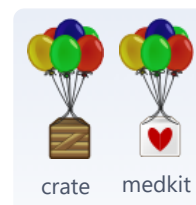
- **The syringe** poisons a worm: **10 points at the start of each of the next 10 turns** (both sides' turns count).
- **The polecat** poisons everyone who stands close to its farts: **5 points every turn, for good**.
- Poison can kill. There is no cure; a medkit does not clear it. A new poisoning replaces the old one.
- Poison is not shown on screen at all – you can only tell from the energy dropping at the start of a turn.

Sudden death

After **10 minutes** of play every living worm starts losing **5 points at the start of every turn**, so that the match ends one day. The game gives no warning. Time spent with the BREAK question up does not count.

7. Crates and medkits

- At every change of turn (except the first) there is about a 29% chance that a crate comes down on balloons, unless there is one on the map already. The camera follows it.
- Half the crates are **medkits** (+25 energy, up to 100 at most), half are **weapon crates** (a random weapon with a limited stock, 1–3 of it).
- **Any** worm that comes within 12 px of a crate takes it, even in the other side's turn and even while the crate is still falling. A label over the worm shows what it got ("MEDKIT", "ANVIL +1"...); a weapon goes to its team.
- A crate takes 20 points of damage. If you blow it up, it explodes (up to 30 points) and gives nothing.



COUNT WEAPONS A CRATE CAN HOLD

- | | |
|---|---|
| 1 | riot bomb, disco grenade, cluster bomb, shotgun, sniper rifle, air raid, M16, bounce ball, anvil, low gravity, railgun, flamethrower, football bomb, jetpack, gnu, polecat, Super Tux |
| 2 | dynamite, baseball bat, teleport, cluzooka, parachute, homing missile, blowtorch, airhammer, rope |
| 3 | girder |

Weapons with an unlimited stock (bazooka, grenade, mine, gun, slap, suicide, skip turn, syringe) never come in crates.

8. End of the match

When one team has no living worm left, the match is over and goes into the menu's score:

- The top line of the screen turns into a gold **GNU WINS**, **THUNDERBIRD WINS** or **DRAW** (both last worms lost at once, say to one explosion).
- Control stops. Once the last explosions and falls are over (1 to 5 s), a **GAME OVER** window comes up with the result.
- **Any key** (or the joystick's button) goes back to the menu. A key held since the last turn does not count: let go and press again. BREAK works even before the window is up.



The window a match ends in.

9. The arsenal

The game has all 35 weapons of the original Warmux. This chapter puts them in groups by how they are worked; the number #7 by each one is its place in the weapon list (key **E**).

LABEL	MEANING
CHARGE	hold SPACE , the crosshair moves out, and let go; the longer, the stronger (full power in 1.5 s)
PRESS	goes off the moment SPACE goes down, nothing to charge
CURSOR	aimed at a place with the cursor (O/P and Q/A or W/S), SPACE confirms
HOLD SPACE	works while SPACE is held; letting go ends it
AUTOMATIC	not fired; it goes off by itself when the moment comes (parachute)
TOOL	the turn goes on after using it; you can still fire
AMMO 3	how many the team has at the start of the match (∞ = unlimited); the stock is shared by the whole team
CRATE +2	how many a crate adds when it holds this weapon
50	the most damage it does (in energy points; a worm has 100). For blasts this is at the centre, falling off towards the edge.

Distances are in the game's pixels: a worm is about 21 px tall, the screen is 320 × 256 px and the whole world 512 × 256 px.

All the weapons at a glance

#	IN GAME	NAME	USE	AMMO	CRATE	DAMAGE
1		BAZOOKA	Bazooka	charge	∞	– 50
2		RIOTBOMB	Riot bomb	charge	3	+1 0 (crater)
3		GRENADE	Grenade	charge	∞	– 50
4		DISCO	Disco grenade	charge	1	+1 80
5		DYNAMITE	Dynamite	press	2	+2 75
6		MINE	Mine	press	∞	– 50
7		CLUSTER	Cluster bomb	charge	3	+1 20 + 5×20
8		GUN	Gun	press	∞	– 2 × 25
9		SHOTGUN	Shotgun	press	2	+1 2 × 4×10
10		SNIPER	Sniper rifle	press	1	+1 75
11		BASEBALL	Baseball bat	press	2	+2 0 (landing)
12		AIR RAID	Air raid	cursor	1	+1 4 × 30
13		TELEPORT	Teleport	cursor	2	+2 –
14		CLUZOOKA	Cluzooka	charge	3	+2 25 + 5×20
15		M16	M16	press	2	+1 2 × 5×5
16		SLAP	Slap	press	∞	– 5
17		BOUNCE	Bounce ball	press	1	+1 50
18		SUICIDE	Suicide	press	∞	– 20 (around)
19		SKIP	Skip turn	press	∞	– –
20		ANVIL	Anvil	cursor	1	+1 200
21		LOWGRAV	Low gravity	press, tool	3	+1 –
22		CHUTE	Parachute	automatic	2	+2 –
23		RAILGUN	Railgun	press	1	+1 50 each
24		HOMING	Homing missile	cursor, charge	1	+2 50
25		TORCH	Blowtorch	press, tool	3	+2 –
26		HAMMER	Airhammer	hold SPACE, tool	3	+2 –
27		GIRDER	Girder	cursor, tool	3	+3 –
28		SYRINGE	Syringe	press	∞	– 10 × 10 turns
29		FLAMER	Flamethrower	press	2	+1 25 × 3
30		FOOTBOMB	Football bomb	charge	1	+1 up to 7×60
31		JETPACK	Jetpack	press, tool	3	+1 –
32		GRAPPLE	Grappling rope	hold SPACE, tool	7	+2 –
33		GNU	Gnu	charge	1	+1 80
34		POLECAT	Polecat	charge	1	+1 10 + poison
35		SUPERTUX	Super Tux	press	1	+1 120

Rockets

Charged: hold SPACE and let go. They go off where they hit. The wind pushes them harder than anything else.



BAZOOKA

#1 CHARGE AMMO ∞ 50

Use Aim with **W** **S**, hold **SPACE** and let go. The longer you hold, the further the rocket goes (full power in 1.5 s).

Effect The rocket does not bounce; it goes off where it hits: up to 50 points, radius 32 px (about one and a half worm heights). The blast throws worms a good way.

Tip The wind pushes the rocket hard – in a strong wind, aim into it.



RIOTBOMB Riot bomb

#2 CHARGE AMMO 3 CRATE +1 0 (CRATER)

Use Like the bazooka: aim, hold **SPACE**, let go.

Effect **No damage and no push** – it only digs a huge crater (radius 50 px, the biggest of any weapon). The original is the same: it "doesn't make any damage but makes a big hole".

Tip Dig the ground out from under an enemy: they fall, and if the sea is below, they drown. Also good for opening a way through or knocking down cover.



CLUZOOKA

#14 CHARGE AMMO 3 CRATE +2 25 + 5×20

Use Like the bazooka: aim, hold **SPACE**, let go.

Effect A rocket with a cluster warhead. It goes off **1 second after launch** (if it hits something sooner, it stays there and waits out the second): 25 points, radius 12 px. Then it scatters 5 fragments like the cluster bomb, 20 points each.

Tip The warhead bursts in the air, so at longer range the fragments rain down on the target. The wind pushes it like the bazooka.



HOMING Homing missile

#24 CURSOR CHARGE AMMO 1 CRATE +2 50

Use **Two steps.** 1) Move the cursor onto the target and press **SPACE** – the target locks (a blip), nothing is fired. 2) Then aim and charge as with the bazooka.

Effect The missile first flies where you sent it (up to 1 s, depending on the throw), then turns straight for the locked spot and speeds up. It goes off on impact: 50 points, radius 32 px.

Tip Fire it up over the obstacles and it finds the rest of the way itself. There must be no rock between where it turns and the target, though.

Careful *It homes on a place, not a worm – if the target walks away, the missile does not know.*



Grenades, bombs and charges

They bounce, and go off when their timer runs out, not when they land. The timer cannot be changed; each has its own.



GRENADE

#3 CHARGE AMMO ∞ 50

Use Aim, hold **SPACE**, let go.

Effect It bounces off the ground and goes off **3 seconds after the throw**, wherever it is: up to 50 points, radius 30 px. The wind hardly moves it.

Tip Throw it behind cover, into a hole or a cave where a rocket cannot reach.



DISCO Disco grenade

#4 CHARGE AMMO 1 CRATE +1 80

Use Like the grenade.

Effect A bigger grenade: it bounces less and goes off **after 5 seconds**, up to 80 points, radius 50 px.

Note The original plays a tune while it waits; this one waits quietly.



CLUSTER Cluster bomb

#7 CHARGE AMMO 3 CRATE +1 20 + 5×20

Use Aim, hold **SPACE**, let go.

Effect It bounces, goes off after 3 seconds (20 points, radius 20 px) and throws **5 fragments** upwards in a fan. Each goes off when it lands on the ground: 20 points, radius 10 px. Fragments fly through worms and only go off on the ground.

Tip Best against a group of worms or one in a pit.



FOOTBOMB Football bomb

#30 CHARGE AMMO 1 CRATE +1 UP TO 7×60

Use Aim, hold **SPACE**, let go.

Effect It bounces a lot, goes off after 5 seconds (60 points, radius 40 px) and splits into **2 balls**. Each has its own 5 s, goes off (60 points, radius 20 px) and splits into 2 more. Up to 7 explosions in all; the whole show takes about 15 seconds.



BOUNCE Bounce ball

#17 PRESS AMMO 1 CRATE +1 50

Use Not charged: thrown at a fixed speed along the aim the moment **SPACE** goes down.

Effect It speeds up on every bounce. It goes off **after 10 seconds**: 50 points, radius 20 px, hardly any push.





DYNAMITE

#5 PRESS AMMO 2 CRATE +2 75

Use **SPACE** puts it down at your feet – it is not thrown or aimed. Then run.

Effect The fuse burns for **5 seconds**, then: up to 75 points, radius 40 px, a big push.

Tip The turn does not end until it goes off, and you can walk and jump the whole time. Put it next to an enemy and get at least three worm-lengths away.



MINE

#6 PRESS AMMO ∞ 50

Use **SPACE** puts it down at your feet. That ends the turn; you have 2 seconds to walk away.

Effect It arms after 2 seconds. Then, when **any** worm comes within 16 px (about a worm's length), it blinks red and goes off a second later: 50 points, radius 22 px. It stays on the map for later turns.

Careful Your own mine hurts you too. There can be at most 4 mines on the map – a fifth is not laid, but the turn is used up anyway.



Guns

Not charged: they fire the moment SPACE goes down. The gun, shotgun and M16 get two shots a turn, the flamethrower five bursts.



GUN

#8 PRESS AMMO ∞ 2 × 25

Use Each press of **SPACE** fires one bullet. You get **two shots** a turn; the second can go once the first has landed (you can re-aim in between).

Effect The bullet is fast and drops only a little. A hit on a worm: 25 points.



SHOTGUN

#9 PRESS AMMO 2 CRATE +1 2 × 4×10

Use Like the gun: two presses of **SPACE** a turn. One unit of ammo is one turn of two shots.

Effect Each shot is **4 pellets** with a little spread, 10 points a hit – up to 40 a shot at close range, 80 a turn.

Tip The closer you are, the more pellets land.



M16

#15 PRESS AMMO 2 CRATE +1 2 × 5×5

Use Two presses of **SPACE** a turn, each a burst of 5 bullets.

Effect Bullets with a little spread, 5 points each – at most 50 a turn.

Note The original fires while the key is held; here it is two presses of five.



SNIPER Sniper rifle

#10 PRESS AMMO 1 CRATE +1 75

Use Instead of a crosshair there is a **laser** (dots out to 200 px) showing exactly where the bullet will go. **SPACE** fires.

Effect The bullet flies straight, untouched by gravity. A hit: **75 points**, a small crater, no push.

Note The 75 is the original's figure. The original only allows it from the 2nd round, though, and here it can be used from the start (not yet done).



RAILGUN

#23 PRESS AMMO 1 CRATE +1 50 EACH

Use A laser like the sniper rifle's; **SPACE** fires.

Effect The beam crosses up to 200 px in an instant and **goes through every worm** on the line – each takes 50 points. Where it meets the ground (or at the end of its reach) it goes off: another 50 points, a small crater.

Tip Line the enemies up.



FLAMER Flamethrower

#29 PRESS AMMO 2 CRATE +1 25 × 3

Use **Five presses** of **SPACE** a turn, each sending 5 flames. The next press works once the last flames have landed.

Effect Flames are slow and short-ranged (they fall), 3 points a hit – at most 75 a turn. They do not burn the shooter.

Note The original fires while the key is held.



From the sky

Aimed at a place with the cursor, not along a line.



AIR RAID

#12 CURSOR AMMO 1 CRATE +1 4 × 30

Use Pick the spot with the cursor (**O** **P** and **Q** **A** or **W** **S**) and press **SPACE**. **O** **P** also turn the worm – the plane comes in from behind it and flies the way the worm faces.

Effect The plane crosses the top of the map and drops **4 bombs**: the first lands on the cursor, the rest after it along the flight. Each up to 30 points, radius 32 px.

Careful The bombs hit anybody, your own worms included.





ANVIL

#20 CURSOR AMMO 1 CRATE +1 200

Use Pick a spot above the enemy with the cursor and press **SPACE**.

Effect The anvil drops from the top of the map straight down over the cursor. Whoever it lands on takes **200 points** – certain death. There is no blast: a worm standing next to it gets nothing. If there is rock above the target, it lands on the rock.

Careful It hits anybody, your own worm included.



Close up

Nothing leaves the hand: the weapon hits whatever is right in front of the worm along the aim. The turn ends even on a miss.



BASEBALL Baseball bat

#11 PRESS AMMO 2 CRATE +2 0 (LANDING)

Use Stand right next to the enemy (the reach is only 18 px from the hand), face them, set the direction of the hit with **W/S** and press **SPACE**.

Effect The bat sends the first worm along the aim flying at 25 m/s. **It does no damage itself** (as in the original) – the landing hurts, and whoever ends up in the sea drowns.

Tip Aim up and out, towards the water or the edge of the map.

Careful The turn ends even if you miss.



SLAP

#16 PRESS AMMO ∞ 5

Use Right up to the enemy (reach 10 px), aim, **SPACE**.

Effect 5 points and a light shove along the aim. At the edge of a cliff that may be enough.



SYRINGE

#28 PRESS AMMO ∞ 10 × 10 TURNS

Use Stand right next to the enemy (reach 18 px), face them, aim and press **SPACE**.

Effect Nothing happens at once. The worm hit is **poisoned**, though: at the start of each of the next 10 turns (both sides' turns count) it loses 10 points – up to 100 in all, so it can kill.

Careful The turn ends even on a miss. Poison is not shown on screen at all – you can only tell from the energy dropping at the start of turns. There is no cure.

Note In the original the syringe cures a poisoned team-mate; here it only ever poisons.



SUICIDE

#18 PRESS AMMO ∞ 20 (AROUND)

Use **SPACE** – **no confirmation**.

Effect Your worm dies at once and a charge goes off where it stood: up to 20 points to the worms around, radius 40 px.

Careful Careful in the weapon list: select it and press SPACE, and the worm is gone.

Animals

While an animal is out, your worm cannot move and the turn clock stands still.



GNU

#33 CHARGE AMMO 1 CRATE +1 80

Use Throw it like a grenade: hold **SPACE**, let go.

Effect Once it lands it hops the way you threw it (every 0.6 s), turning back when it hits something. **6 seconds after the throw** it goes off: 80 points, radius 40 px.

Note In the original a second SPACE sets it off early; here it always goes off after 6 s.



POLECAT

#34 CHARGE AMMO 1 CRATE +1 10 + POISON

Use Throw it. While it hops, press **SPACE** – it starts farting (at once, then every half second).

Effect Every worm whose middle is within 24 px of it – yours too – is **poisoned: 5 points at the start of every turn, for the rest of the match**. After 6 seconds the polecat goes off (10 points, radius 40 px).

Careful No SPACE, no farting. The poison is not shown and cannot be cured.



SUPERTUX Super Tux

#35 PRESS AMMO 1 CRATE +1 120

Use Not charged: **SPACE** sends him off along the aim. You steer him in flight: **O** turns anticlockwise, **P** clockwise.

Effect He flies at a steady speed, untouched by gravity or wind. He goes off on hitting anything (except you) or after 20 seconds: **120 points**, radius 36 px.

Tip There is time to steer – the turn clock stands still while he flies.



Tools and movement

Most of these are tools: after using one the turn is still yours and you can fire something else. The teleport and skip end the turn.



TELEPORT

#13 CURSOR AMMO 2 CRATE +2

Use The cursor shows where the middle of the worm will be. **SPACE** confirms.

Effect The worm vanishes for 1 second (a spark crosses over) and appears at the target; with nothing under it, it falls. Then the turn ends (about 1 s is left to move).

Careful If the worm would not fit there (in the ground, in another worm, off the map), the game blips and nothing happens – nothing is spent either.



JETPACK

#31 PRESS TOOL AMMO 3 CRATE +1

Use **SPACE** switches it on. Hold **W** to rise; in the air **O**/**P** push sideways (on the ground they walk as usual). Another press of **SPACE** switches it off.

Effect There are **3 seconds of thrust** in the tank (it burns only while W, or O/P in the air, are held). When it runs dry the jetpack switches off and the worm falls. A tool: the turn goes on.

Tip Short dabs of W, keep an eye on where the worm is, and land before the fuel is gone.

Careful **The world has no ceiling, and the screen does not scroll up.** Hold W for long and the worm leaves the screen and then falls from a great height: even 1 s of thrust straight up costs about 28 points on landing, the full 3 s is certain death. If that was the team's last worm, the match is over.



GRAPPLE Grappling rope

#32 HOLD SPACE TOOL AMMO 7 CRATE +2

Use Aim at rock (not at empty sky) and **press and hold SPACE**: the rope shoots out and catches. As long as SPACE is held, you hang: **W** shortens the rope (climbing), **S** lets it out, **O**/**P** swing. **Let go of SPACE** and you let go, flying off with the swing's speed.

Effect Reach 200 px. Each catch costs 1 of 7. A tool: the turn goes on and you can throw the rope again.

Careful A quick tap of SPACE catches and lets go at once – it looks as if nothing happened, and a rope is gone. With nothing solid in reach the game only blips (nothing spent).



CHUTE Parachute

#22 AUTOMATIC AMMO 2 CRATE +2

Use **It is not fired** – SPACE does nothing with it. Keep it selected (in hand) and jump or walk off a high cliff. It **opens by itself** once the worm is falling at 15 m/s – the speed at which a landing would start to hurt.

Effect Opening costs one. The worm stops and sinks slowly (about 2 m/s) without harm; the parachute closes on landing. The wind pushes it hard and it cannot be steered. The turn goes on.

Tip How high: walking off an edge you need a drop of about 67 px (three worm heights); after a **Q** jump about 36 px below the take-off; after an **A** backflip about 17 px. From lower it does not open – but a fall like that does not hurt anyway.

Careful It only saves the worm whose turn it is, and only with the parachute in hand. A worm thrown by a blast during the enemy's turn is not saved.





LOWGRAV Low gravity

#21 PRESS TOOL AMMO 3 CRATE +1

Use Select it and press **SPACE** **once**. You hear a shot sound – and nothing else. You see the effect when you jump.

Effect Until the end of the turn your worm has only 0.4 of normal gravity. A **Q** jump rises about 80 px instead of 32, an **A** backflip about 130 px instead of 52, and falls hurt much less (unhurt from about 150 px). Walking is the same. A tool: the turn goes on and you can still fire.

Tip Low gravity first, then jump across a gap or up to a high ledge, and fire from there.

Careful Nothing on screen changes (no icon, no helmet as in the original). A second **SPACE** in the same turn wastes another one.



TORCH Blowtorch

#25 PRESS TOOL AMMO 3 CRATE +2

Use **SPACE** lights it. Then walk (**O**/**P**): every 0.2 s it burns a hole (radius 13 px) ahead of the worm along the aim, so the worm walks through rock. **W**/**S** decide whether the tunnel climbs or drops. Another press of **SPACE** puts it out.

Effect At most 20 holes (4 s of walking), then it goes out by itself. No damage. A tool: the turn goes on.



HAMMER Airhammer

#26 HOLD SPACE TOOL AMMO 3 CRATE +2

Use **Hold SPACE**: every tenth of a second it digs a hole under the feet (radius 8 px) and the worm sinks into it. Let go and it stops.

Effect At most 20 holes (2 s). No damage. You cannot walk or aim while digging. A tool: the turn goes on.

Tip Quick cover: dig in so the enemy has no straight line to you.



GIRDER

#27 CURSOR TOOL AMMO 3 CRATE +3

Use A cursor appears with a preview of the girder (7 dots). Move it (**O**/**P**, **Q**/**A** or **W**/**S**) into open air, turn it 30° at a time with **R** (6 positions, starting level) and press **SPACE** to put it down.

Effect A solid bar of rock 50 × 10 px that can be stood on: a bridge over a gap, a roof against an air raid, a wall. A tool: the turn goes on, and while you have stock you can lay more.

Careful The cursor starts right on your worm, so **SPACE** on the spot always just blips – move it away first. The girder must not touch the ground or any worm (yours included); otherwise the game blips and spends nothing.



SKIP Skip turn

#19 PRESS AMMO ∞

Use **SPACE**.

Effect The turn ends at once, with no time to walk away.

10. The computer opponent

- The computer plays the blue team and aims with the same physics (wind, gravity) the game works out for you. It presses the same keys a player does.
- The levels **ROOKIE**, **VETERAN** and **MASTER** differ only in accuracy: it adds a random error to the shot it has found, about 3.6° for the rookie, 1.8° for the veteran and 0.9° for the master.
- It only uses the **bazooka**, **grenade**, **cluster bomb**, **gun** and **shotgun** (the gun up to about 15 m, the shotgun up to about 6 m), and only while it has ammunition for them. It never takes the tools or the other weapons.
- It picks the shot that hurts the other side most and its own least. When it has no good shot, it first walks a metre or four towards the nearest enemy (or away, if too close) and thinks again. It never walks off a ledge that would hurt, nor into the sea.
- Before it starts thinking it waits a moment for everything to settle and the camera to arrive. A short pause at the start of its turn is normal.

11. Tips and tricks

- The sea is the strongest weapon of all. A blast, the bat or a riot bomb under an enemy at the edge of the island sends them into the water, and that is the end whatever their energy.
- Stay further from your own blast than its radius: about one and a half worm heights for the bazooka, nearly two for dynamite.
- In a strong wind, pick the grenade or the rifle: the wind hardly moves them, while it bends a rocket.
- A tool and a weapon in one turn: torch your way through, fly over with the jetpack or swing across on the rope – and only then fire.
- Dynamite does not end the turn until it goes off. Put it down and you have the whole 5 seconds to get away.
- At the start of the turn, use R to pick the worm with the best view of the enemy.
- Any worm takes a crate, even in the other side's turn – a crate next to the enemy is more theirs than yours.
- The anvil will not reach a worm hidden under rock. For that, use a grenade, a homing missile from above, or Super Tux.
- After 10 minutes sudden death begins (–5 for everyone every turn). Whoever is ahead on energy can afford to play safe.

12. Tester's checklist

What to check when testing. Each line says what the game should do, according to its code and to the original. If something else happens, that is a bug – note the map, the weapon and exactly what happened.

General

AREA	WHAT YOU SHOULD SEE
☐ End of match	When one side's last worm dies, a gold GNU WINS / THUNDERBIRD WINS (or DRAW) at the top; once things have gone off (1–5 s) the GAME OVER window; any key goes back to the menu, where the score has gone up. A key held from the last turn does not count.
☐ BREAK in a match	The LEAVE THE MATCH? question, the game stands still; SPACE leaves, Q plays on.
☐ R at the start of a turn	Hands the turn to the team's next worm; after the first step it no longer works.
☐ Crate / medkit	Comes down on balloons, any worm in reach takes it, a label over the worm; a medkit gives +25 (max 100).
☐ Falls and the sea	A fall from a great height costs energy; the bottom edge of the screen means drowning.
☐ Wind	Calm on the 1st turn, then it changes; it bends rockets a lot, grenades hardly at all.
☐ Turn time	Under 10 s the clock turns red; when it runs out the turn passes to the enemy.

Weapons (in list order)

WEAPON	WHAT YOU SHOULD SEE
☐  1. BAZOOKA	The rocket flies in an arc, visibly bent by the wind, and explodes on impact leaving a crater.
☐  2. RIOTBOMB	A direct hit on a worm takes nothing off (by design); a large crater appears.
☐  3. GRENADE	Bounces and explodes about 3 s after the throw.
☐  4. DISCO	Explodes about 5 s after the throw, big crater.
☐  5. DYNAMITE	Lies at the feet, the fuse burns down, explodes after 5 s.
☐  6. MINE	Armed after 2 s; a worm coming near sets it off, it blinks and explodes.
☐  7. CLUSTER	After 3 s, a burst and 5 fragments that explode on the ground.
☐  8. GUN	Two shots a turn, 25 points a hit.
☐  9. SHOTGUN	Four pellets a shot, two shots a turn.
☐  10. SNIPER	The laser shows the path, the bullet flies straight, 75 points.
☐  11. BASEBALL	The worm hit flies off; damage only from landing or drowning.
☐  12. AIR RAID	The plane comes in from behind the worm; the first bomb lands on the cursor.
☐  13. TELEPORT	The worm vanishes and reappears at the cursor; into rock it only blips.
☐  14. CLUZOOKA	About 1 s into the flight: a burst and 5 fragments.
☐  15. M16	Two bursts of 5 bullets.
☐  16. SLAP	5 points and a small shove.
☐  17. BOUNCE	The ball bounces faster and faster and explodes after 10 s.

☐		18. SUICIDE	The worm dies; the blast hurts those nearby.
☐		19. SKIP	The turn passes to the enemy at once.
☐		20. ANVIL	Falls straight down over the cursor; a hit is 200 points, nothing to bystanders.
☐		21. LOWGRAV	After using it the worm jumps much higher; the turn goes on.
☐		22. CHUTE	Opens by itself on a fall from a high cliff, lands unhurt, stock – 1.
☐		23. RAILGUN	The beam passes through several worms, each loses 50.
☐		24. HOMING	After locking and firing, the missile turns towards the target after a moment and accelerates.
☐		25. TORCH	Burns a tunnel while walking, in the direction of the aim.
☐		26. HAMMER	With SPACE held, the worm digs itself down.
☐		27. GIRDER	The preview turns with R, the girder laid is solid, the turn goes on.
☐		28. SYRINGE	0 at once; then –10 at the start of every turn for 10 turns.
☐		29. FLAMER	Five bursts of 5 flames, short range.
☐		30. FOOTBOMB	Three waves of explosions, the balls splitting each time.
☐		31. JETPACK	Rises with W, fuel runs out after 3 s of thrust, the turn then goes on.
☐		32. GRAPPLE	Hangs while SPACE is held, W/S change the length, O/P swing, letting go flies.
☐		33. GNU	Hops the way it was thrown, turns at obstacles, explodes after 6 s.
☐		34. POLECAT	Farts after SPACE; whoever was close loses 5 every turn.
☐		35. SUPERTUX	Steers with O/P; explodes on impact or after 20 s.

Credits

Programming: **Shrek / MB Maniax**. Original game: **Warmux** (GPL-2.0) – the maps, the weapon settings and the pictures come from it. Music: *Black Tide* by NoTrust (ProTracker 3). In-game font: geebeeyay 8×8 by Zingot Games (CC BY 4.0).