

= Razer ( robot ) =

Razer is a combat robot that competes on the British television series Robot Wars . It was constructed by Simon Scott and Ian Lewis from Bournemouth ; the team later expanded to include webmaster Vincent Blood . Razer was designed and constructed in 1998 to participate in the second series of Robot Wars , but subsequent modifications and improvements enabled it to remain competitive until its retirement after the second series of Robot Wars Extreme . Despite gaining a reputation for being unreliable , it was champion of the fifth series of Robot Wars , runner @-@ up in the sixth , and won the first two Robot Wars World Championships .

Razer 's weapon is a piercing arm which exerts approximately three tonnes of pressure per square inch ( 465 kg / cm<sup>2</sup> , 45 @. @ 6 MPa ) at its tip . The arm was designed to pierce opponents ' armour plating and break their internal components , rendering them impaired or immobile . This weapon was inspired by the principle of the brake press ? a piece of industrial machinery used to bend metal ? and maximises damage through the use of hydraulics . The arm is also an integral element of Razer 's winged self @-@ righting mechanism , which rolls the robot back onto its wheels if inverted . In later series of Robot Wars , an interchangeable hook was attached to the arm to lift robots immune from being pierced . The popularity of crushing and piercing weaponry in robot combat events is attributed to Razer , which inspired many imitations .

With a record of 40 wins and 6 losses ( one through concession ) in the UK Robot Wars series , Razer is recognised as one of the most successful competitors in the programme 's history . It was featured on Robot Wars merchandise including a DVD and video games , and had a pull @-@ back toy created in its image ? one of which was later modified by Ian Lewis to function as a fully radio controllable miniature version of the team 's original heavyweight machine . Razer also competed in the American television series BattleBots , winning three of its five head @-@ to @-@ head battles and the 1999 Gigabot Rumble . The team behind Razer later constructed a new combatant called Warhead specifically for this competition . After retirement , Razer appears in non @-@ combat demonstrations as part of Robo Challenge educational displays and events . It returned to active combat in the 2016 revival of Robot Wars .

= = Construction = =

= = = Origins = = =

Razer was designed and built by Ian Lewis and Simon Scott who , after watching the first series of Robot Wars , agreed that combat robots had potential to be considerably more destructive than the pioneering machines on display . Their choice of weapon was a piercing arm attached to a hydraulic ram and powered by a pump , itself powered by a motorcycle starter motor . This was based on the principle of the brake press , a piece of industrial machinery used to bend metal through progressive force .

Razer 's hydraulic system pumped pressurised liquid , as opposed to pneumatics where a force is generated by the controlled release of a pressurised gas . Razer 's arm was often said to exert nine tonnes of force ; however , it was the hydraulic ram which produced up to nine tonnes of pressure per square inch ( 1 @, @ 395 kg / cm<sup>2</sup> , 137 MPa ) at its output , and this was geared down to three tonnes per square inch ( 465 kg / cm<sup>2</sup> , 45 @. @ 6 MPa ) at the tip of the arm .

= = = Modifications = = =

This iteration of Razer competed in the second series of Robot Wars , successfully passing the Gauntlet and Trials stages of its heat before being defeated in battle by a robot called Inquisitor . The cause of Razer 's immobilisation in this fight was the shearing of nylon cush drives ? cushioning blocks designed to prevent stress fractures ? in the machine 's drive wheels ; these were replaced with more robust metal ones for future competitions . As the Robot Wars television series evolved

and grew , Razer 's design was revised and refined to counter weaknesses and take advantage of rule changes ; by series four , Lewis estimated that Razer had taken 1 @, @ 500 hours to build , at a cost of £ 1 @, @ 600 .

Razer 's four @-@ wheeled drive train used a skid @-@ steering arrangement , whereby the wheels on one side of the robot rotated faster than those on the other to turn the machine . Also , the weight of the robot was biased towards the rear so that its weapon stayed facing its opponent as Razer turned . However , the solid rubber rear wheels used in series two provided too much traction and were reluctant to ' swing ' the machine . For the third series , Razer used custom @-@ made aluminium drive wheels which incorporated rollers , reducing the amount of force required for simultaneous forward and sideways movement . These wheels were later upgraded with a stronger titanium construction , whilst the level of oversteer in the drive system was reduced through the implementation of an electronic gyroscope . For the series Robot Wars Extreme II , Razer 's rubber front wheels were replaced with metal ones bearing small spiked protrusions .

Whereas competitors in the first series of Robot Wars had largely featured passive weapons , the second series saw a greater number of robots ? including the series champion , Panic Attack ? using lifting and flipping weapons designed to overturn an opponent . Lewis and Scott noted that when Razer was overturned with its piercing arm fully upright , the robot was more than halfway towards naturally rolling back onto its wheels . Therefore , rather than equipping Razer with a powered mechanism for righting itself when inverted , two wings were attached to the arm . Tensioned via cables , the wings opened when the arm was fully raised , levering Razer back onto its wheels . The unique design provided Razer with a " victory salute " ? raising its claw and wings whilst standing on its tail ? but had the downside of putting the machine over the weight limit of 79 @. @ 4 kilograms ( 175 lb ) . To redress the balance , approximately 450 holes were drilled in the robot 's metalwork .

From series five of Robot Wars onwards , the weight limit for heavyweight competitors was increased to 100 kilograms ( 220 lb ) . This allowed for improvements to the chassis and bodywork of Razer including new titanium outriggers , and 2 @. @ 5 @-@ millimetre ( 0 @. @ 098 in ) thick armour panels versus 1 @-@ millimetre ( 0 @. @ 039 in ) before . The most noticeable alteration to this version of Razer was a redesigned front scoop . This enclosed the front wheels to reduce side @-@ on impact damage , and greatly decreased the robot 's ground clearance to reduce its vulnerability to being flipped , whilst also making it easier to get underneath opponents to crush them . This iteration of Razer won the first Robot Wars Extreme All @-@ Stars championship and series five of Robot Wars , alongside mounting a successful defence of its World Champion title . By the time of Razer 's Robot Wars Extreme II appearances , the machine weighed 92 kilograms ( 203 lb ) , was 1 @. @ 14 metres ( 3 @. @ 7 ft ) long , and reached a top speed of 11 miles per hour ( 18 km / h ) .

= = Combat history = =

For details of the television series and their formats , see Robot Wars and BattleBots .

= = = Series 2 ? 4 and BattleBots = = =

Razer made its debut in the fourth heat of series two of Robot Wars , which was viewed by almost six million people on BBC Two . It had been finished late the night before the recording . Radio interference caused Razer to be hard to control in the Gauntlet stage of the competition , but it successfully navigated the obstacle course and progressed to the Trial . This phase was a robotic football match , wherein Razer scored the first goal to reach the heat semi @-@ final . Its opponent for this one @-@ on @-@ one battle was Inquisitor , a box @-@ shaped robot equipped with a rotating flail . Whilst Razer made the stronger start , crumpling Inquisitor 's flail support , the crush drives in its motors sheared after an impact on the arena floor . This rendered Razer immobile and ended a promising run . Despite its relatively early exit from the competition , Razer won the Best Design award for series two . After series two , Vincent Blood joined the Razer team after being

taken up on his offer to create a basic website for Razer .

Before series three of Robot Wars , Razer was entered into the American robot combat programme BattleBots in Los Angeles after the team won an international scholarship along with fellow British robots , Killerhurtz and Mortis . Razer 's first battle was against Voltarc . It flipped Razer , but Lewis self @-@ righted and Scott pierced Voltarc 's armour . Razer was given the victory on a crowd 's vote . Its next fight was against Agrippa , which Razer defeated by crushing through its opponent 's electrical system . Razer 's next adversary , Tazbot , beat it after flipping it onto the arena saws which severed a cable and left Razer unable to self @-@ right . Razer dropped into the " best of the rest " competition . Therein it faced Kill @-@ O @-@ Amp which was defeated after Razer pulled a wheel off before crushing its opponent 's battery . It then faced Rhino in the next round , losing after Rhino 's spike pierced Razer 's armour , breaking the starter solenoid and knocking the radio switch into the off position . This also sent Razer into an uncontrolled spin , requiring Lewis to enter the arena to manually power Razer down . Finally , Razer competed in the 13 robot Gigabot Rumble . After the time limit expired , five robots including Razer were still mobile and the result went to an audience vote . After the crowd voted in their favour , Razer became the 1999 Gigabot Rumble Champion .

From series three of Robot Wars , the Gauntlet and Trial stages of each heat were dropped , with the whole of the main competition formed around direct combat . Razer 's first battle of the series was against Backstabber . Scott lowered Razer 's arm into an extrusion on Backstabber , and Lewis pushed their opponent into the ' pit ' , an open hole in the arena floor . In the second round , despite causing damage to Aggrobot , Razer lost due to a mechanical failure : the valve which controls the direction of hydraulic fluid in the arm jammed , causing Razer 's arm to raise to its full height and refuse to lower . With its rear wheels off the ground , Razer was weaponless and immobile , and eliminated early from the main competition once more . Outside of the main UK championship , Razer won the concurrent Pinball Warrior Tournament side event and retained the Best Design award .

Immediately after filming series three , Razer participated in the International Championship . Following forfeiture by Prometheus , its scheduled first opponent , Razer beat the Dutch representative Techno @-@ Lease and Irish entrant Diotoir to win the tournament . Razer also fought in the direct @-@ to @-@ video First World Championship , representing England . Victories over the Scottish robot All Torque and fellow English entrants Chaos 2 , 101 and Behemoth saw Razer win the tournament and its associated title .

In the first round of its series four heat , Razer progressed alongside Robochicken from a three @-@ way battle in which Velocirippa was eliminated . In its next battle against Milly @-@ Ann Bug , Razer methodically removed all of its opponent 's wheels , rendering Milly @-@ Ann Bug unable to move . In a post @-@ battle interview with host Craig Charles , Blood likened this attack to " pulling the legs off a spider " . Early on in its heat final against Pussycat , Razer malfunctioned . Stuck in forward drive , it careered into the arena side wall with the rear wheels spinning but unable to steer . Pussycat severely damaged the back end and wheels of Razer , until Dead Metal of the house robots pitted the machine . Although Scott and Blood were gracious in defeat , Lewis turned his back on the fight , left the control booth immediately afterwards , and refused to be interviewed by Craig Charles . Lewis accused the Pussycat team of breaking a gentlemen 's agreement that both teams would not seriously damage the other 's machine . However , Team Pussycat were unaware that Razer was immobilised . Razer also took part in the Pinball Warrior and Sumo Basho side tournaments of series four ; its performances were underwhelming in both events , scoring 95 points in the former having abandoned the run partway through to attack Sir Killalot , and lasting less than five seconds in the latter .

= = = Southern Annihilator ? Series 5 = = =

Razer 's next appearance came in a Robot Wars Christmas special called the Southern Annihilator . Six robots fought at the same time until one was eliminated , either through immobilisation or judges ' decision . The remaining five robots then fought again , eliminating another , and so on until

one robot remained and was declared the winner . Razer outlasted Vercingetorix , Spawn of Scutter , Behemoth and Attila the Drum to set up a final against Onslaught . An attack by Razer 's arm on one of Onslaught 's rear wheels saw its adversary shed a tyre , lose grip , and drive into an area patrolled by Matilda . The house robot flipped Onslaught onto its side , rendering it immobile . Assured of victory , Razer attacked and badly damaged Matilda 's bodywork and rear shell .

It next took part in the All @-@ Stars tournament of Robot Wars Extreme , beating Gemini , Behemoth and Firestorm 3 to establish a grand final against Tornado . In their first competitive encounter , Razer repeatedly pierced Tornado 's low , flat body , eventually breaking their drive chain . Tornado was immobilised , and Razer won a second consecutive trophy . Its only other battle in Extreme was a grudge match with Pussycat , in response to the accusation that the Pussycat team had broken an agreement with the Razer team during their series four heat . Razer punctured Pussycat 's body and lifted it with the arm but Pussycat fell and escaped . In doing so , Pussycat impacted the front wheel of Razer and rendered it immobile . Ian Lewis of Team Razer competed in a seven @-@ way melee featuring antweight robots ? miniature machines that weighed less than 150 grams ( 5 @. @ 3 oz ) and fitted into a four @-@ inch ( 10 @. @ 16 cm ) cube . Lewis 's robot for this battle was Razzler , a modified Razer toy .

Razer 's next tournament was the Second World Championship . Its title defence began with qualification from a melee against Diotoir , Flensburger Power and The Revolutionist . It then beat fellow English representative Tornado in the semi @-@ final before facing walking robot DrillZilla in the final . Unable to pierce DrillZilla 's 10 millimetres ( 0 @. @ 39 in ) thick armour , Razer concentrated on inflicting cosmetic damage to its opponent 's legs . This proved enough to secure victory on a judges ' decision , enabling Razer to retain its World Champion title .

On a 12 @-@ battle victory streak , Razer fought in the eleventh heat of the fifth series of Robot Wars . Therein , it defeated Big Nipper , Widow 's Revenge ? a machine reportedly constructed by the Razer team 's wives ? and Rick to reach its first series semi @-@ final . Their next opponent was Spawn Again , which was armed with a pneumatic flipper . Equipped with a new lower front wedge , Razer was able to get underneath Spawn Again and crush it until it broke down . In the quarter finals , Razer faced S3 , a cylindrical robot with a vertical spinning blade . Razer 's arm sliced into S3 's weapon controls , stopping the disc , which allowed Razer to dominate the fight and win on a judges ' decision .

Team Razer faced Firestorm 3 in their first battle of the series grand final , in a rematch from the All @-@ Stars semi @-@ final from earlier that year . Whilst victory in that battle had been relatively straightforward , Firestorm 3 had increased the thickness of its armour for this battle to make it harder for Razer to inflict major damage . This tactic almost worked : Razer was unable to completely immobilise the robot . The fight ended in a close judges ' decision ? in Razer 's favour . Victory handed Razer a place in the series five grand final against Bigger Brother , rebuilt after being heavily damaged by Hypno @-@ Disc in its previous battle . Razer gripped Bigger Brother early in the battle , causing damage to its opponent 's drive chain from which Bigger Brother never recovered . The final ended in a stalemate and went to the judges ; their decision came back in favour of Razer . Along with the UK Championship , Razer also took home a third Best Design award .

= = = Series 6 = = =

Coming into series six as reigning champion , Razer started its title defence by qualifying from a four @-@ way melee . It then defeated the pyramid @-@ shaped robot Cyrax on a judges ' decision to set up a heat final against Raging Reality . It pushed its opponent towards Matilda 's flywheel , which ripped off an entire side panel and caused Raging Reality to break down . This saw Razer reach the semi @-@ finals for a second consecutive series . Against Wild Thing , Razer damaged one of its opponent 's exposed drive wheels , hampering its movement . Subsequently , Razer grasped it with the arm and dropped Wild Thing into the pit . Razer next fought Dantomkia , which was armed with a pneumatic flipping arm . Although Razer was the early aggressor , Dantomkia retaliated by pushing Razer into the arena wall . The rest of the battle was similarly even , with

Razer 's more potent attacks being matched by Dantomkia 's pushing power . The judges decided that Razer should move on to a second series final .

Reaching the grand final meant defeating the axe @-@ wielding robot Terrorhurtz . Razer avoided the axe and lowered its arm into Terrorhurtz 's polycarbonate armour panels . Terrorhurtz lined up for another strike , but Razer slid its wedge underneath Terrorhurtz 's chassis . It buried the arm into its opponent , carried Terrorhurtz to the pit release button , and dropped it into the pit . Only Tornado stood between Razer and a successful title defence . After twice losing to Razer that year , the developers of Tornado had constructed a large metal frame equipped with a rotating blade . Controversially qualifying as an " interchangeable weapon " , the size of this framework prevented Razer 's claw from reaching Tornado 's chassis . Team Razer responded by attaching a lifting hook to the front of the arm before the fight . Although Razer would still not be able to pierce Tornado , it could lift it by the framework . In the battle , Tornado used its superior pushing power to slam Razer into the arena wall and the house robots . Near the end of the fight , Razer managed to lift Tornado up and push it over the pit , but the size of the additional framework prevented Tornado from falling in . After a 45 minute discussion , the judges ruled in favour of Tornado becoming the new UK champion .

= = = Extreme II = = =

Although it had lost its UK title , Razer still reigned as champion of the Extreme All @-@ Stars tournament . Its first battle to defend this title was against twice UK champion Chaos 2 and dual @-@ spinner 13 Black . Razer and 13 Black joined forces to eliminate Chaos 2 , in what was its last ever fight on Robot Wars . Razer 's next battle against Spawn Again was a rematch from the series five semi @-@ finals . Razer was again the aggressor : it repeatedly punctured Spawn Again 's body panels , prompting its constructors to seek safety by driving themselves into the pit . Razer 's next battle was one @-@ on @-@ one versus 13 Black . Following an impact with the arena wall , 13 Black stopped spinning for long enough that Razer could lift it with the arm and lower it into the pit . In the All @-@ Stars grand final , Razer faced Firestorm 4 . Razer manoeuvred its wedge underneath Firestorm 4 , lowered the arm and immobilised its opponent . Razer was All @-@ Stars champion for a second time running .

The European Championship was Razer 's next ? and final ? televised tournament , for which it qualified as reigning World Champion . It defeated Dutch champions Pulveriser to set up a semi @-@ final against Tornado . Razer 's adversaries attached the anti @-@ crusher frame used in their previous meeting in the series six grand final ; the Razer team installed a revised version of the lifting hook . Tornado was the early aggressor , until Razer picked it up with the hook and dragged it towards the pit . The size of Tornado 's framework made it difficult for Razer to drop it in , and the strain of lifting Tornado burnt out Razer 's drive motors . Razer was immobile at the end of the match , but the result went to a judges ' decision . They awarded victory to Razer for being in control of the fight , but in a split decision the team decided this was unfair and conceded to Tornado , who beat Philliper 2 in the final to claim the European title .

= = Retirement = =

After five years of appearing on BBC channels , the seventh regular series of Robot Wars was broadcast by Five . Razer did not participate and , following the cancellation of the series , was retired from combat . The team then started to hire apprentices to help them in independent robotics demonstrations . Razer now appears in non @-@ combat demonstrations at displays and events organised by Robo Challenge , a robotics demonstration company .

Razer returned to action for the 2016 revival of Robot Wars , in which it was eliminated in the first round .

= = Impact = =

Team Razer was acknowledged for having devised and popularised the crushing and piercing arm weapon . Razer 's success spawned a number of imitations : Suicidal Tendencies , Ming 3 and Tiberius are amongst the other heavyweight robots to have adopted such a weapon , whilst the featherweight robot Venom is a scaled @-@ down replica of Razer . In 2001 , Razer appeared in cartoon form on the front cover of the seventeenth issue of Robot Wars Magazine . It was also included in the Robot Wars video games . The version of Razer which competed in the fourth series of Robot Wars was used as the model for a pull @-@ back toy powered by friction motors . This was sold alongside a model stunt ramp and barrels . A small metal toy based on Razer was available as part of the Robot Wars minibots range and , alongside Chaos 2 and Hypno @-@ Disc , Razer was one of three competitor robots chosen to appear on a personalised DVD as part of the Robot Wars Ultimate Warrior Collection series .