



MILITARY AND POLICE K9

Protective Equipment Performance Analysis

A Design Research Report

Abstract

Canines serve a crucial function in our modern military and police force, frequently undertaking dangerous tasks that can lead to their injury or death. This report investigates the nature of these injuries as well as existing K9 protective equipment's effectiveness and features in order to guide the design of new protective equipment.

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Contents

Introduction	2
Aim.....	2
Background Information	2
The Roles of Working K9s	2
Causes of Death & Injury for MWDs & LEO K9s	2
Product Benchmarking	3
Product Positioning Map	3
Existing Service K9 Equipment	4
Standout Products Criteria Comparison	5
VestGuard K9 Body Armour.....	5
Working K9 Tracking Harness	5
Elite K9 Tex-10 Vest	5
Ruff Wear Swamp Cooler Vest	5
Sabre Mako K9 Harness	5
Research & Methodology	6
Archival Observations	6
Survey	6
Interview.....	6
Analysis and Findings	7
Archival Observations	7
K9 Behaviour	7
Equipment Used.....	7
Type of Situation.....	7
Environment.....	7
Survey Results	8
Harness Design and Features	8
Findings & Design Implications	9
Protective Features.....	9
Tactical Features	10
Conclusion	11
References.....	12
AI Usage Statement.....	13
Authenticity Statement	13
Appendices	14
Survey Results	14
Interview Transcript	17
Benchmarking Product Notes	22

Introduction

Aim

The objective of this report is to build an in-depth understanding of the systems in which military and police K9s operate, in order to design improved K9 protective equipment. This involves; analysing statistics surrounding the injury and death of military working dogs and law enforcement K9s, benchmarking and comparing existing K9 protective equipment as well as primary research aiming to corroborate the aforementioned sections and further drive the direction of subsequent K9 protective equipment designs.

Background Information

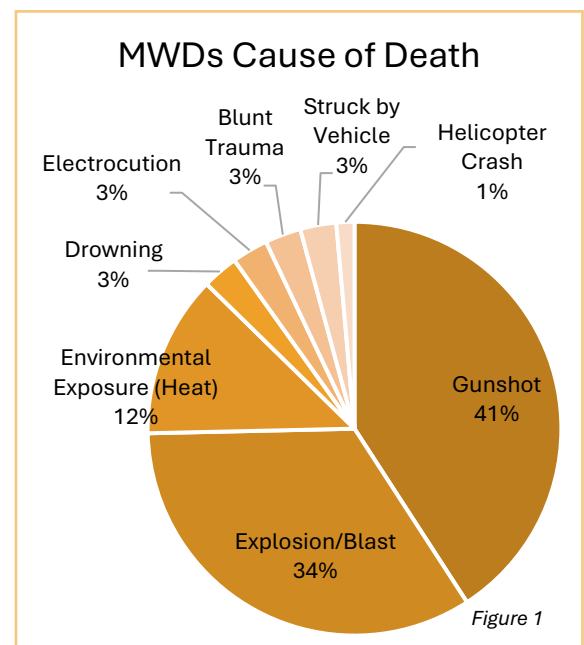
MOLLE – Modular Lightweight Load-Carrying Equipment, **MWD** – Military Working Dog, **LEO** – Law Enforcement Officer, **K9** - Canine, **KIA** – Killed In Action, **Mil-spec** – Military Specifications, **PPE** – Personal Protective Equipment

The Roles of Working K9s

Working canines play a vital role in modern military and law enforcement operations, working alongside their handlers and often being assigned tasks that are too dangerous for humans. These highly trained dogs are utilized in a variety of tasks. These include but are not limited to; explosive and drug detection, tracking, search and rescue, patrol and the apprehension of suspects. They are also employed in an array of environments ranging from urban door-to-door situations to jungle, mountainous or aquatic locations. Their unique ability to detect scents, navigate challenging terrain and execute orders makes them invaluable assets to both military personnel and law enforcement officers.

Causes of Death & Injury for MWDs & LEO K9s

Considering the dangerous working environment of MWDs and LEO K9s, serious injury or death is relatively common – yet rarely reported or recorded, therefore there is limited data surrounding this topic. An article covering ‘K9s Killed in the Line of Duty’ details 95 United States police K9s that died during service between the years 2011 and 2015. Heat exhaustion was the highest cause of death at 33%. This is followed by death by gunfire at 22%, vehicular collision at 20% and notably low, stabbings at 5%. The report further states that K9 heat related deaths tended to spike during the summer period of each year whereas other deaths remained constant (Barberi et al., 2019). A similar Georgia State University study analysing the cause of death for 405 LEO K9s from 2000-2023 provided similar results with a larger dataset. They found the highest cause of death to be gunfire at 31.3% followed closely by heatstroke at 21.5% and vehicular incidents at 19.2%. Stabbings and assaults also made up 6% of all K9 deaths in this time frame (Wise, 2014).



Military working dogs face significantly riskier situations when compared to LEO K9s, they often operate in much harsher conditions and environments. A study analysing 92 MWDs KIA during Operations Enduring Freedom & Iraqi Freedom found a large majority (77.2%) of these deaths were a result of physical injury instead of disease. Of these deaths, 74.65% can be attributed to ballistic injuries from gunshots or explosions, these can be seen in figure 1 on the right (Miller et al., 2018).

Another investigation with similar results was conducted on 33 MWDs. Fatal injuries consisted of; 15 from haemorrhages (45.5%), 7 from head trauma (21.2%) and 5 from catastrophic tissue destruction (15.2%). The most common method of injury were gunshot wounds or explosions, with 46.6% of haemorrhage and 71.4% of head trauma wounds being caused by gunshot injuries. Whereas 26.6% of haemorrhage and 80% of tissue destruction injuries were due to explosive events (Storer et al., 2024). This investigation also established that blunt and penetrating trauma was 13.38 times more likely to kill a K9 than blunt force trauma. However, civilian dogs have a higher survival rate when experiencing penetrating wounds

(96.5%) over blunt force injuries (89.5%). This can be contributed to the less severe penetrating injuries amongst civilian dogs, majority being bite wounds (71.3%) (Storer et al., 2024).

Furthermore, a United States government defence report evaluating aero-medically evacuated MWDs identifies the location and type of injury amongst the evacuated K9s. This report states that amongst penetrating battle injuries, 40% occurred on the extremities of the K9 and 20% each on the head, chest and pelvis area. When analysing the aetiology of these injuries, a vast majority (76%) were due to gunshots and the remaining 24% consisted of improvised explosives and shrapnel (Butler et al., 2021).

Product Benchmarking

Product Positioning Map

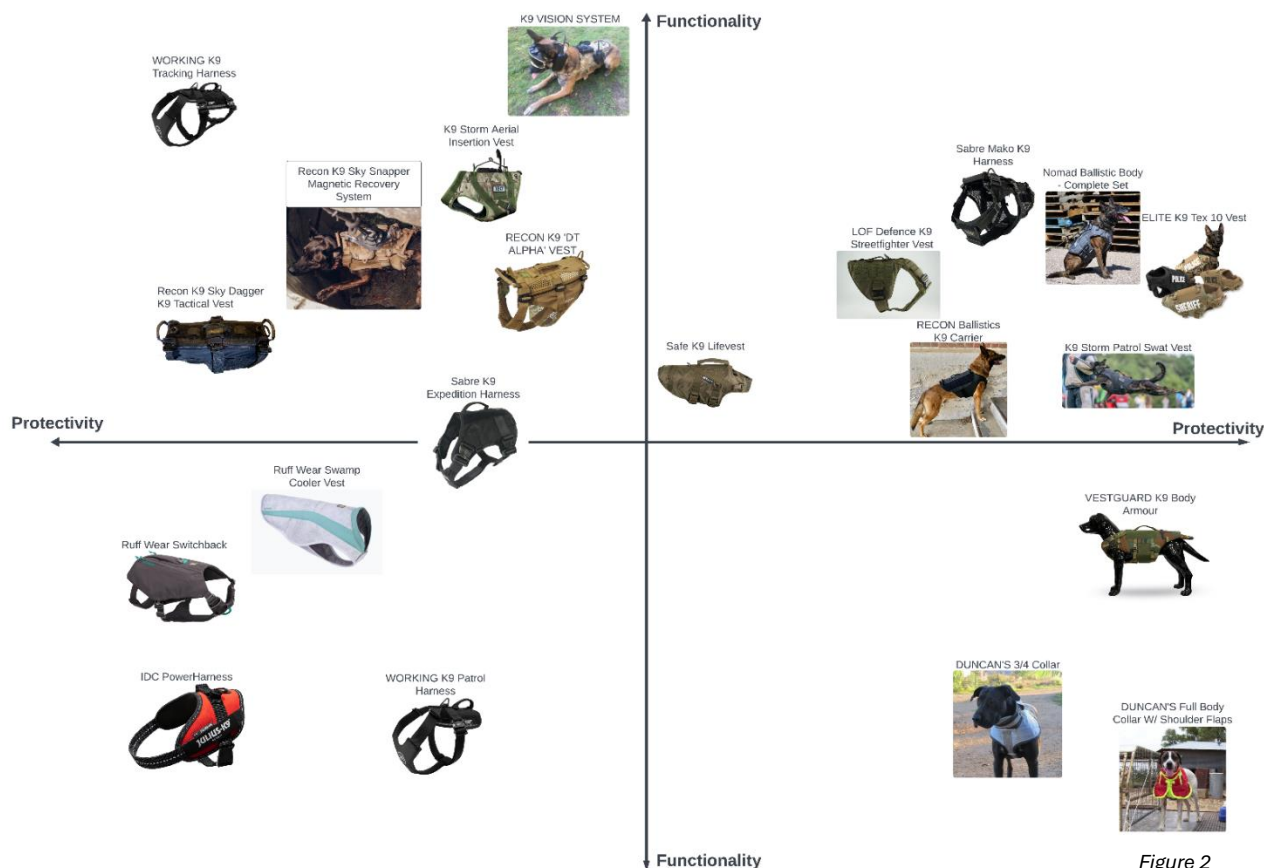


Figure 2

A comprehensive range of harnesses and vests were arranged on a product positioning map (*figure 2*) in order to identify potential gaps in the market. This analysis focuses on comparing the functionality and protectivity of the products. In this context, functionality refers to the tactical capabilities, situational adaptability and modularity of each device. Protectivity on the other hand, refers to how effective the product is at protecting the K9 wearing it. The map displays a variety of civilian, military and tactical spec harnesses and vests – with each product's intended situation of use influencing its position on the map.

Civilian spec, protective harnesses and collars for hunting K9s can be found on the bottom right corner as they offer minimal tactical features yet have high protectivity from blunt & penetrating injuries. In contrast, mil-spec, operation-focused harness provides advanced yet often situation-specific harnesses that focuses on assisting the K9 rather than protecting it, a good example of this is the K9 Vision System.

Products that offer low protection and functionality consists primarily of civilian spec harnesses and vests. Whilst these products offer some practical features such as the cooling features in the Ruff Wear Swamp Cooler Vest and the Switchback storage options, they are less durable and offer less protection to the user. Corresponding mil-spec options offer similar tactical and protective features, however, are constructed with more durable and robust materials. Alternatively, some military spec products offer both high levels of protection and functionality as they tend to focus more on the protective aspect and often sacrifice the situational adaptability and tactical features that can be found in other less protective products.

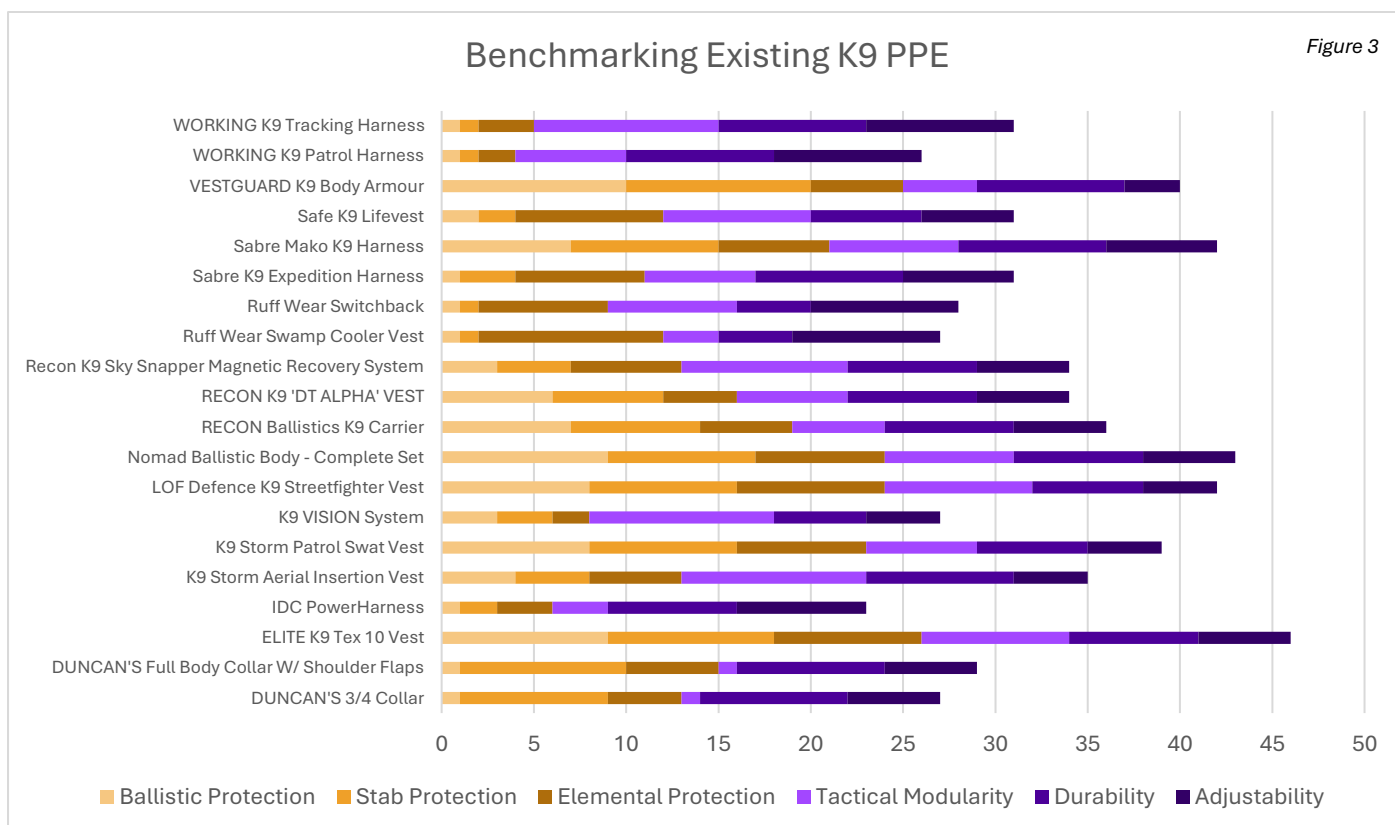
Existing Service K9 Equipment

K9 protective and tactical equipment are used in military, police and civilian settings to protect K9s working in high-risk environments. The market currently offers a variety of products, each designed for specific scenarios and applications. These products can be primarily classified into protective or tactical gear, with some serving both purposes. They can then be further separated by 'protection areas', with majority of products focusing on the main body and neck of the K9s. Although eye, ear and paw protection products exist, they are less common and often only used in specific scenarios. Thus, they will be omitted from this section of the report and the benchmarking process will only focus on protective, tactical and civilian spec harnesses and vests.

Six significant criteria points were selected in order to compare product performance: ballistic protection, stab protection, elemental protection, tactical modularity, durability and adjustability. Each product was then given a rating on a scale from one to ten. This was based off any publicly available information on the websites selling these products.

PRODUCTS	Ballistic Protection	Stab Protection	Elemental Protection	Tactical Modularity	Durability	Adjustability
DUNCAN'S 3/4 Collar	1	8	4	1	8	5
DUNCAN'S Full Body Collar W/ Shoulder Flaps	1	9	5	1	8	5
ELITE K9 Tex 10 Vest	9	9	8	8	7	5
IDC PowerHarness	1	2	3	3	7	7
K9 Storm Aerial Insertion Vest	4	4	5	10	8	4
K9 Storm Patrol Swat Vest	8	8	7	6	6	4
K9 VISION System	3	3	2	10	5	4
LOF Defence K9 Streetfighter Vest	8	8	8	8	6	4
Nomad Ballistic Body - Complete Set	9	8	7	7	7	5
RECON Ballistics K9 Carrier	7	7	5	5	7	5
RECON K9 'DT ALPHA' VEST	6	6	4	6	7	5
Recon K9 Sky Snapper Magnetic Recovery System	3	4	6	9	7	5
Ruff Wear Swamp Cooler Vest	1	1	10	3	4	8
Ruff Wear Switchback	1	1	7	7	4	8
Sabre K9 Expedition Harness	1	3	7	6	8	6
Sabre Mako K9 Harness	7	8	6	7	8	6
Safe K9 Lifevest	2	2	8	8	6	5
VESTGUARD K9 Body Armour	10	10	5	4	8	3
WORKING K9 Patrol Harness	1	1	2	6	8	8
WORKING K9 Tracking Harness	1	1	3	10	8	8

The table to the right as well as figure 3 below provides practical visual representation into which products perform the best overall, as well as each products individual strengths and weaknesses. This identifies aspects of certain products that are beneficial in future design efforts as well as product shortcomings to avoid. Mil-spec equipment performed the best overall with the Elite K9 Tex 10 Vest being the overall best performer. In contrast, the IDC PowerHarness was the worst overall but scored highly in durability & adjustability – both important features to be considered in future products.



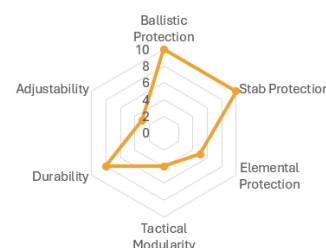
Standout Products Criteria Comparison

In order to effectively compare existing products, the information from the previous section was mapped into a Radar Chart for easy visual representation. A diverse range of products were chosen to be compared, showing the effectiveness and different capabilities of the products. The following five products were chosen as they each have a distinct use-case, resulting in each product having different strengths and weaknesses. This will help influence future design as the key strengths identified can be implemented in any future designs.

VestGuard K9 Body Armour

This mil-spec vest was the most protective of the products analysed, covering majority of the K9 with high levels of stab, ballistic and shrapnel protection. However, it was less adaptable, only offering quick release and grab/drag handles as tactical features (*Canine K-9 Body Armour Vest*, 2015).

VESTGUARD K9 Body Armour



Working K9 Tracking Harness

This mil-spec harness focuses on durability and functionality over protection, featuring heavy duty materials and modern technology. Its more ergonomic design and straps allows for a full range of motion for the K9. Its features include, integrated GPS tracking, MOLLE panels and integrated carry handles (*Tracking Harness*, 2021).

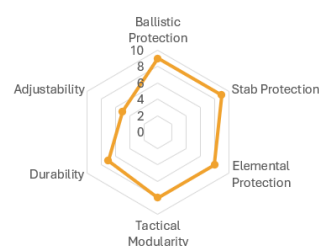
WORKING K9 Tracking Harness



Elite K9 Tex-10 Vest

This vest was the best all-round design of the aforementioned products. It features full belly, chest and side ballistic and stab-proof protection with 3D Spacer mesh for cooling & padding. Additionally, a variety of tactical features such as multiple grab and clip points, wireless camera mounting, quick-release points and ID badge attaching points – useful for identifying the K9 or using high-vis (*TEX 10 Ballistic Vest*, 2024).

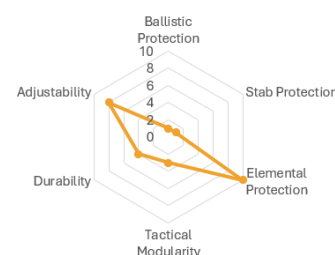
ELITE K9 Tex 10 Vest



Ruff Wear Swamp Cooler Vest

This civilian-spec vest is designed to keep K9s cool in hot environments using its lightweight, multilayered, SWAMP COOLER™ TECH which promotes evaporative cooling (*Swamp Cooler™ Dog Cooling Vest*, 2024). Whilst not providing any significant ballistics or stab protection, the device is very adjustable with secure straps that hold the vest in place in movement.

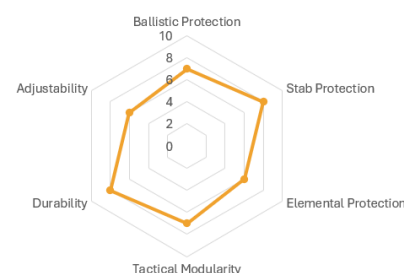
Ruff Wear Swamp Cooler Vest



Sabre Mako K9 Harness

This multi-functional, protective harness is built for durability and tactical versatility. It features a sleeve for optional armour panels or cold packs as well as metal leash attachment points, MOLLE strips and exterior Velcro for high-vis or ID patches. The device is relatively adjustable but comes in multiple sizes, the durable materials also provide decent environmental protection (*MAKO K9 Harness*, 2021).

Sabre Mako K9 Harness



Research & Methodology

Methodological triangulation was used to get an array of quantitative and qualitative data in order to cross-verify the experiences of the research participants. Archival observations in the form of publicly available police and military K9 bodycam and other footage was analysed, providing a better understanding of the contexts in which K9s are used. A relatively broad survey was then conducted with the aim of collecting background information that would drive the direction of further interviews. Finally, for an in-depth understanding, an interview was conducted with a current Queensland Police K9 Handler, with the survey responses affecting the questions asked.

Archival Observations

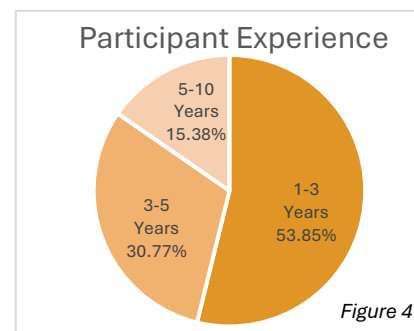
Due to the specialized and often covert and dangerous scenarios that military and law enforcement K9s operate, it is not possible to conduct in-person observations – instead, archival observations of publicly available videos were performed. Whilst somewhat limiting, these observations provide valuable insight from a covert non-participant observers’ perspective on the contexts in which K9s are utilized. Another limiting factor was the nature of the bodycam footage – sourced from publicly available videos uploaded to YouTube by United States police agencies – with much of the footage was grainy, unstable and/or poorly lit making it difficult to interpret the events happening. Four categories were selected for observations; K9 behaviour, equipment used, type of situation and environment. Eighteen separate incidents were then analysed 4 times, once for each category – allowing more accurate classifications in each category.

Survey

Initially, the survey was used to collect background information to guide the interview questions and design decisions. The survey targets participants within Australia with experience working with MWD and LEO K9s. The survey aims to establish the roles of Working K9s and their service-related injuries, as well as to identify the features, limitations and effectiveness of equipment currently or previously used in the industry.

Survey Topic:	K9 Tactical & Protective Harness Research
No. of Participants:	13
Survey Form:	Online via. Google Forms
No. of Questions:	13

The survey was split into four sections: participant history, harness design & features, usability & comfort, and a final open-ended long-answer questions. The first three sections only consisted of multiple choice and linear scale questions so as to not fatigue the participants early in the survey. These questions also provided somewhat limited yet beneficial numeric data for a quantitative analysis. The open-ended long-answer questions were strategically placed at the end of the survey, with the previous questions adding context to the project and guiding participants to more relevant responses. However, these questions were optional which resulted in limited responses.



The survey was distributed via email and social media to a variety of active or retired professional K9 trainers, police officers and military personnel. Majority of the participants were Australian or American – however, the survey was left anonymous to encourage participation so not all participant information is available. Figure 4 shows the experience levels of the 13 survey participants.

Interview

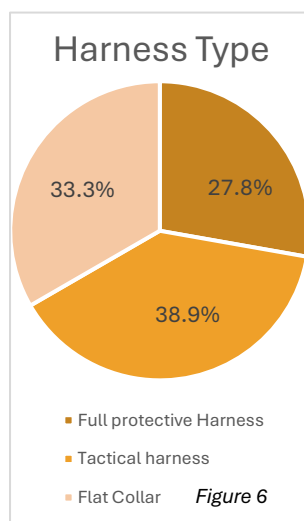
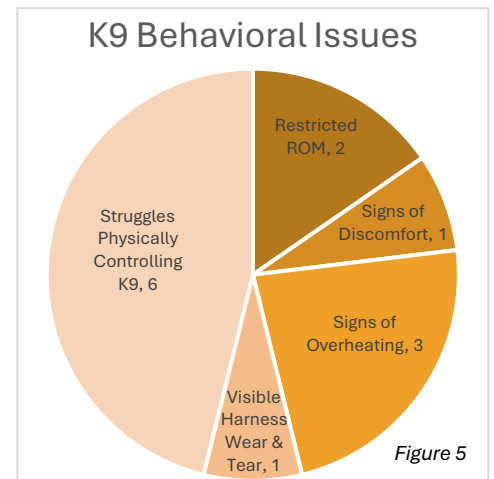
A semi-structured interview was conducted on a Queensland Law Enforcement Officer and K9 Handler via a phone call. For documentation purposes, the interview was recorded a transcript was made with a combination of Descript AI and manual editing. Relevant sections of this transcript were referenced throughout the report to support statistics or design implications. Questions aimed at establishing the interviewee’s experience working with LEO K9s, what equipment was used and how as well as the participants input into design features of specific equipment. The interview also provided important context in which Australian police officers implement K9s.

Analysis and Findings

Archival Observations

K9 Behaviour

The most common behavioural issue identified during the observation process was that approximately 35% of K9 handlers struggled to physically control their K9 during the apprehension of suspects (figure 5). This typically took place after the suspect had surrendered to the K9 and the officer struggles to detach and move the K9. Signs of overheating and discomfort were also apparent in 23.5% of the situations, all of these took place during the daytime and involved either full-protective or tactical harnesses.



Equipment Used

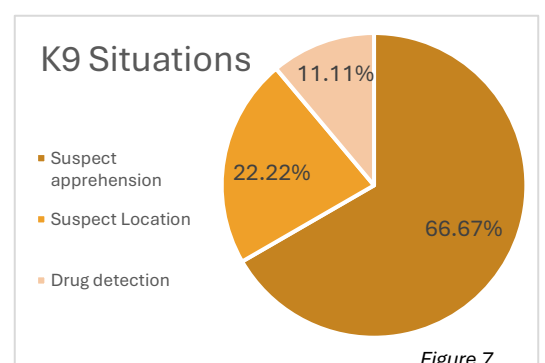
The most common type of harness used was the basic tactical harness, followed closely by the flat collar – with the full-protective style harnesses coming in last, only being implemented by 5 of the 18 K9s (figure 6). Flat collars were most commonly used when the K9 officer was arriving at an urgent scene (e.g. fleeing suspect) and did not have time to fully equip a harness before deploying the K9. This affected the K9 handlers' ability to physically control their K9 as they had less points of contact to restrain the dog.

Notably, during the interview section of research the LEO K9 officer describes his use of harnesses, *"I won't put the harness on until we pull up to a job. So, if we go track or do a building search or something, I will put it on him when he gets out of the truck. Then I'll take it off him when and put it in the back of the truck when we're ready to go to the next job. Some handlers will put the harness on the dog for the whole shift, there's no sort of right or wrong. I tend to not, it's more of a thing cos of my style of dog"*

Reflective materials and K9 bodycams were also present during 3 of the 18 scenarios, with reflective materials being used to identify the police K9 so as not to mistake the K9 with a civilian animal. Quick release mechanisms were used once, when a suspect had managed to grab a hold of the K9's vest and was attempting to attack the K9. A K9 radio system was also used in one suspect tracking and apprehension situation, when the K9 was required to enter a building that officers could not access, the radio was used to give the K9 basic commands.

Type of Situation

K9s were mainly used for locating or apprehending suspects – with only 2 of the 18 incidents showing detection work (figure 7). Location of suspects refers to the tracking and finding of the suspect – whilst similar, apprehension refers to the take-down or capture of a fleeing suspect. This is often more physically demanding for the K9 with some suspects fighting back. 12 of the 18 suspects attempted to resist arrest and fight the K9. Of these, 4 possessed a knife or pointed object and 3 possessed a firearm, the remaining 5 suspects attempted to fight the K9 off with their hands.



During the interview process the police K9 handler recounted a recent situation, *"I attended a domestic violence situation, and the offender had left on foot from the location prior to police being there. He was observed leaving by witnesses. He was on outstanding other matters, wanted by police also. So, I deployed the police dog, locate (and) tracked (him) through suburban streets, then into parkland where my dog located the offender hiding in long shrubby grass. We were able to challenge the offender to come out and take him into custody."*

Environment

The K9s were predominantly used in a mix of urban and forested environments. 61.11% took place in urban/semi-urban environments, mostly consisting of residential neighbourhoods, houses and small parks. The forested environments were 27.78% of environments and 11.11% of situations involved waterways (canals, dams, rivers, etc.).

Survey Results

Survey results show that military and police K9s are used for a variety of jobs, with a majority of participants employing K9s for; patrol (76.9%), detection (61.5%), attack/protection (69.2%), tracking (53.8%) and crowd control purposes (61.5%). Additionally, 91.7% of participants reported using K9s in urban environments and 75% in forested areas. Although desert,

In which environments do you typically use the harness?
12 responses

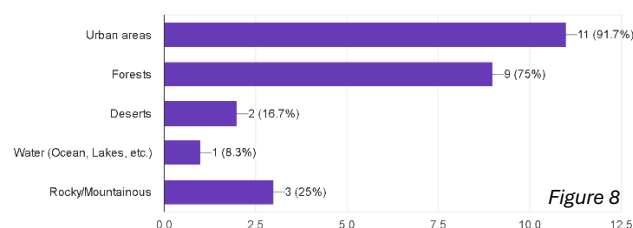


Figure 8

Harness Design and Features

Participants state that the most important areas of the K9 to protect is the neck (92.3%) and chest (76.9%) region. Contrarily, protecting areas such as the K9's extremities, hearing, and vision were considered relatively nonessential (figure 9). Notably, the back, flank and head of the K9s were considered more important than extremities, but less so than the chest and neck region (figure 9).

When asked about important vest features; stab protection, GPS tracking and lightweight properties were all deemed important by 12 of the 13 participants. Similarly, cooling or heating as well as ease of use were considered important features by 10 of the 13 participants. This correlates to the equipment being used, with a majority reportedly either currently or previously implementing; high-visibility, k9 bodycam, gps tracking, cooling, tactical storage or stab resistant equipment for K9s (figure 10). When asked to grade the importance of the ease of donning and doffing the harness on a scale from one to five (five being very important), the participants gave an average score of approximately 3.5 out of 5.

Participants were asked to list the names of any products or brands of K9 protective equipment they have experience with, these products were then added to the previous benchmarking section of the report. Finally, participants were given an open-ended question asking for final comments. Participants primarily used this section to state any design suggestions that they had. These included; a remote quick release function, waterproofing, breathability, GPS tracking, metal materials and protectivity recommendations.

Only one of the survey participants agreed to partake in the interview process, however, he had the most experience of all the survey participants. This was a Queensland Police Officer and K9 Handler. When asked for suggestions designing a K9 Protective vest in the survey, he responded, "Water resistant, Strong, Light, Metal harness buckles, Material which breaths. Stab proof if possible and not too heavy. Area for small GPS to be placed." Additionally, when question on design features in previous products that he would avoid, he responded, "long as they have metal clips and ability to tighten firm to prevent slippage on the Dog."

What kind of equipment have you used with K9s? (select all applicable options)
13 responses

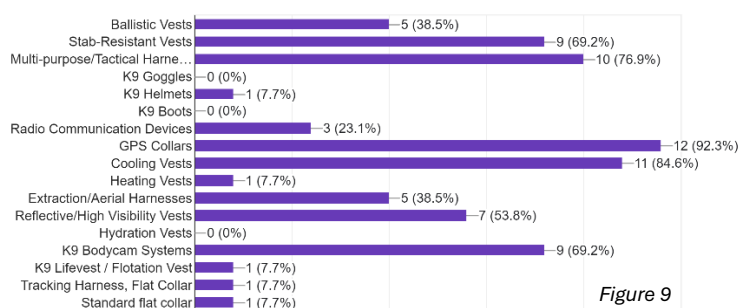


Figure 9

What kind of equipment have you used with K9s? (select all applicable options)
13 responses

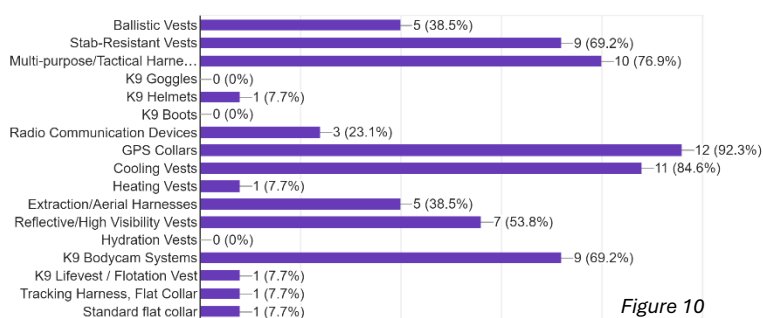
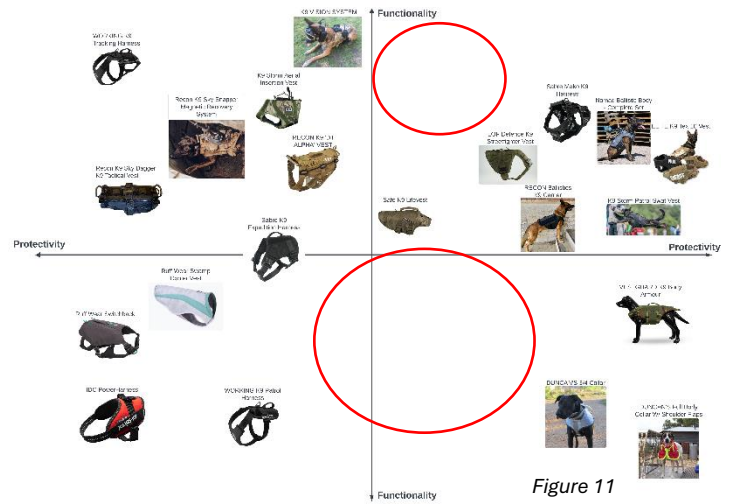


Figure 10

Findings & Design Implications

The benchmarking section of this report heavily influences the general purpose of future designs. Using the product positioning map, I identified 2 distinct gaps in the market: highly functional & moderately protective equipment and low functionality, moderate protectivity equipment. These are highlighted with red circles in figure 11 on the right. Since the target demographic for this product is military and police K9s, the lower-functionality equipment will not be considered. This narrows our design options to a highly functional and tactical harness with medium to high protectivity.



Urban, semi-urban and forested regions were the most common throughout the studies and are also relevant to the Australian geography. This is supported by the interviewee, when asked to describe what environments he encounters, the Rockhampton LEO stated, *"We're a decent little regional town... surrounded by rural land... It's not unheard of for one moment to be tracking through suburbia here, and the next out in the rural area."* Aquatic environment and situations causing the K9 to get wet were also relatively common. Thus, the material of the product must be durable enough to withstand common tears from branches or nails, whilst being suitable for aquatic use, not absorbing excessive water weight. Materials such as; neoprene, different nylons and Hypalon matches this criteria.

Overheating was a continuous issue throughout my research process, with many different products trying to mitigate this issues with varying levels of success. This problem is even more prevalent in Queensland due to our unforgiving weather; *"The Rocky heat... or the Queensland heat is a huge factor too here... (it's) so hot in summer, that's always something we've got to take into consideration."* Heat is a significant factor when it comes to controlling the dogs safety, health and workloads; *"If it's a really hot night... you'll monitor the dog, how he's performing.... You might stop it due to the dog safety or health. Or a cooler night through winter, they can go up to an hour depending on the condition... (if it's the) middle of summer... (or) the middle of the day, you're probably not gonna even deploy 'cos it's just not safe for the dog."* There are also minimal existing technologies being implemented to monitor the K9s body temperature for overheating – with none of the benchmarked products including this feature. The officer describes this process as *"done by eye. What kind of changes in your dog's behaviour and condition... basing it off yourself too... dogs with a really big working drive... are the ones you need to be careful of."* Whilst each dog may behave differently, quantitative measurements such as body temperatures can assist the handler with monitoring the dog's health. This could consist of off-the-shelf smart thermometers being integrated into the product. Additionally, breathable materials should be implemented to prevent overheating. Whilst not common, K9s can also be implemented in snowy & icy environments. Optional heat retention should be considered for these scenarios.

Protective Features

The most common injuries identified consisted of ballistic, stab, overheating and vehicular injuries. Although ballistic related injuries were relatively rare amongst Australian police K9s, it is one of the most common injury-types amongst MWDs and American police K9s. When the Australian Police K9 Handler was questioned on the need for ballistic or stab protection he stated, *"certain areas or states might have more jobs like sieges. They might want something with more protection."* Thus, ballistics and stab protection – while not always necessary – should be available to protect K9s entering scenarios involving firearms or explosives.

Stab and penetrating injuries are some of the most common injuries amongst K9s. These occur either from physical attacks from suspects or sharp objects in the environment. These injuries, especially to the body, neck or head area of the K9, can often be life threatening, *"The more serious (injuries) I know of, it would be, the stabbing incidents."* Minor injuries cut and penetrating injuries to the extremities of the K9 are also very common, *"(in the past, my K9s have received) minor cuts or grazes from jumping over fences or jumping up onto items, to search. Maybe It's a small cut or something... Other things, like... torn claws or things like that. (The) dog might've got a claw caught on the fence or torn it on tracking or something like that."* These kinds of injuries are often not life-threatening - not requiring protective equipment. Stab protection is more likely to be used in law enforcement situations. Although stab protection is generally lighter and less restrictive than ballistics protection, some users may choose the more protective ballistics option.

Tactical Features

To prepare for possible injuries, the officer interviewed described carrying a small medical kit on his vest and in his vehicle, *“Yeah, I got a basic one (medical kit)... a bit of flush, a bandage...(for) if I need to apply pressure or something like that.. It would be (for) getting the dog to vet care as quick as possible.”* This small addition could be the difference between the K9 dying or surviving and injury. A dedicated compartment for medical items could be integrated into the harness design, allowing the handler quick access.

Whilst many of the existing product's feature MOLLE webbing to attach equipment, no mil-spec products offer secure, internal storage for loose items or prevent items from flapping and hindering K9s mobility. When the interviewee was asked what features he would like included in a harness, he stated, *“the ability to have a pouch... properly built in, so we don't have to attach it (a GPS) ourself... one less thing to be... flapping around or detach or catch on something.”* This provides handlers with the flexibility to securely store any items they desired, such as medical supplies, GPS devices and more.

When questioned on the need for radio equipment to communicate with the K9 when its out of sight, the interviewee responded, *“I know there's specialised police areas that may do that but for what I do, no... everything's done where you got control of your dog, he can see you and you can see him. And that comes down to, obedience. I know people like the army do delve into that side where they're using e-collars and stimulus to steer the dogs into areas where they might not be going, but yeah I don't do any of that.”* Whilst beneficial in certain situations, generic radio systems can be too bulky on the K9 and interfere with its range of motion. Subtle, integrated radio systems could be implemented to communicate with the K9 when necessary – similar to existing e-collars.

A variety of quick-release mechanisms are used in existing products for emergency release, rapid deployment and general ease of use. Remote, wireless quick-release systems exist, however are not commonly implemented in K9 harnesses. When interviewed about this system the officer responded, *“(remote release) would be very beneficial, (it) makes it easier to... get out of it quickly... But obviously it needs to be sturdy and not accidentally release itself if it gets caught on a bush or something.”* Whilst this feature may protect the K9 if it gets stuck, it is important to ensure it doesn't malfunction and detach accidentally.

Bodycams are also very common in the police force and military; they are used to document or live-stream encounters. Whilst K9-mounted cameras are not common in the Australian police force, *“We run our own body camera on ourselves. Because the dogs... 99 percent of the time, within distance of arms... Theres probably no need on our end. But different agencies may require that, and... when they're getting sent into a search area where the handler may not be entering themselves.”* In this situation, a live video feed of the K9s point of view can help the handler give instructions or locate targets. Civilian equivalent of this would be go-pro mounts for dog vests, however this would be too bulky for a tactical scenario. Existing helmets with integrated cameras are more common than vest mounted cameras. However, there are aforementioned products that contain integrated cameras.

The most common K9 involved situations/duties that were identified primarily consists of; patrolling, attack or protection, tracking and detection work. When interviewed about K9 duties, the officer stated he had experience, *“(with the) detection style... (its searching for) things like firearms, drugs, explosives, things like that... the tracking, the general purpose, (includes) more tracking, bite work and apprehending offenders, and locating people...”* Each one of these situations will require different equipment. Detection work often requires more control over the K9 whilst providing it with less protection. Whereas, K9s apprehending offenders or in explosive detection may require extra protection to protect the K9.

When the officer interviewed was asked to assess the viability of removable, modular protection, he stated, *“if you had ability to put extra protection down the side of the dog, and around those vital areas... that definitely would help. (If) you also have the option to not have it on... if you're deploying for a missing... dementia patient, who's got no warnings for being violent... You're not going to need that protection stuff on your dog. But if you're deploying for some guy who's just stabbed someone and run off in bushland... There's much higher risk of them using an edged weapon on yourself or your dog... being able to drop parts off and add parts on would be pretty cool.”* This modularity allows the handler to read the situation and modify their equipment to match – increasing K9 effectiveness across the board. Modular attachment options include but are not limited to; ballistic panels, stab-proof panels, flotation devices, elemental protection (cooling or heating), high-visibility ID panels and more.

Conclusion

In summary, the product benchmarking section of this report identifies a key market opportunity in which a new harness design aims to address. The product positioning map reveals there is currently a gap in the market for a highly functional, tactical and adaptable harness with medium to high protectivity. A product that is highly adaptable to different situations that military and police K9s might encounter, offering a range of protection and tactical capabilities.

When analysing existing studies and statistics into the injury and death of military working dogs and law enforcement K9s, heat exhaustion, gunshot and other ballistics, stab and vehicular incidents were the most common causes for injury or death. This was further supported by the independent research conducted – consisting of the archival observation, survey and interview. The independent research also established the most common location of injuries on K9s, highlighting the critical areas to protect: the neck, chest, flank and vital organs of the K9.

The resulting design should consist of a highly modular and adaptable harness built for various environments and situations. It should be constructed with durable and environmentally protective materials, and incorporate key features such as; ballistic, stab and blunt force protection, heat mitigation, GPS tracking and tactical modularity. Other innovative features identified include, integrated radio communication and cameras and remote quick release mechanisms. To ensure versatility across operational contexts, the ability to easily add or remove these features are essential. This design might consist of; a base harness – similar to the Julius IDC harness, which allows additional features and panels to be attached.

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AI Usage Statement

I have used Generative AI (ChatGPT and DeScript) in this report to assist me in various ways. DeScript AI was used to transcribe the interview audio file and ChatGPT AI was used when conducting general research as well as for better wording, spelling and grammar.

Your Name: Zachary Cooper

Student Number: n10752587

Date: 1/09/2024

Authenticity Statement

This is to certify that to the best of my knowledge; the content of this report is my own work. This report has not been submitted for any subject or for other purposes. I certify that the intellectual content of this report is the product of my own work and that all the assistance received in preparing this report and sources have been acknowledged.

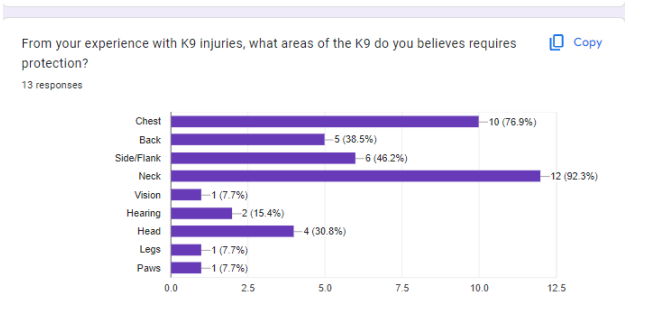
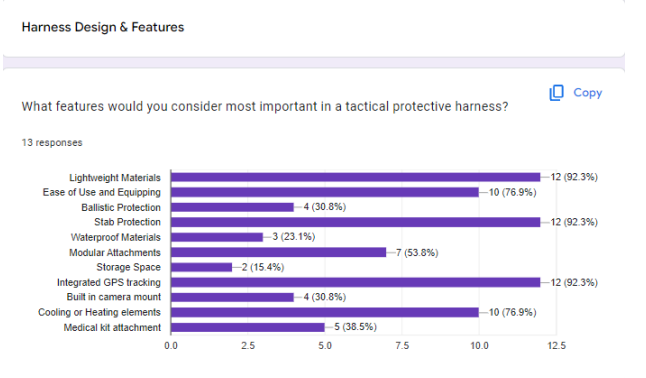
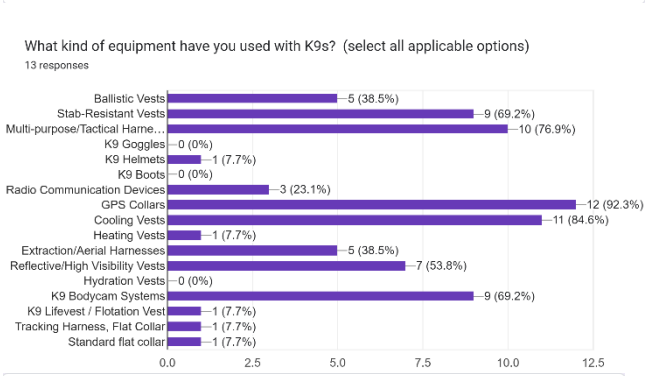
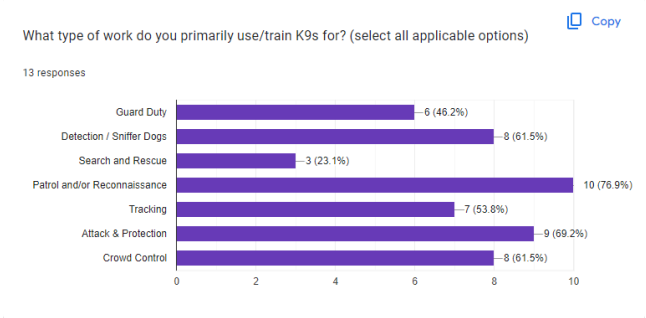
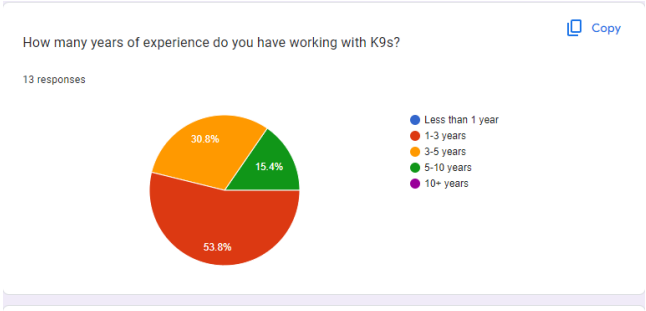
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Student Number: n10752587

Date: 1/09/2024

Appendices

Survey Results

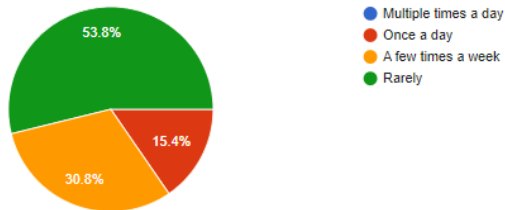


Usability and Comfort

How frequently do you adjust the harness on your K9?

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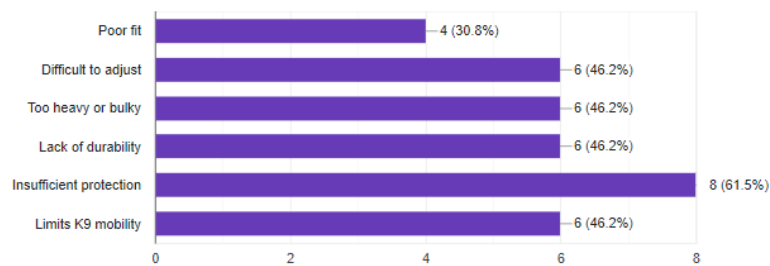
13 responses



What difficulties have you encountered with previous harnesses on your K9? (select all applicable options)

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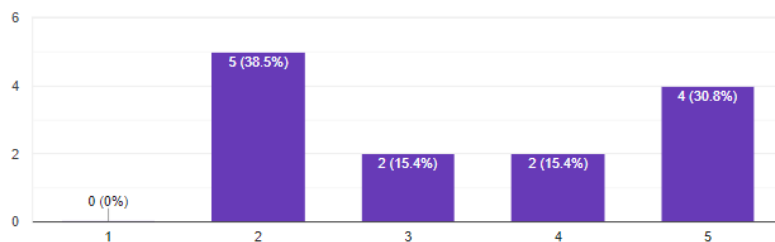
13 responses



How important is the ease of donning and doffing the harness?

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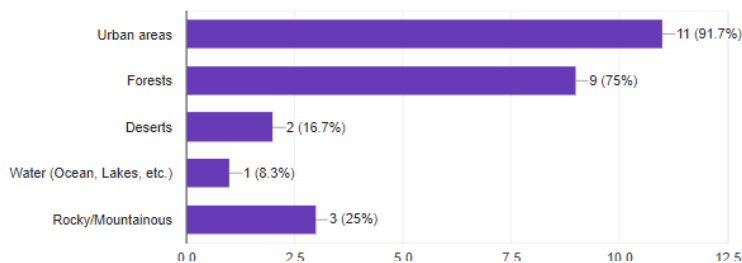
13 responses



In which environments do you typically use the harness?

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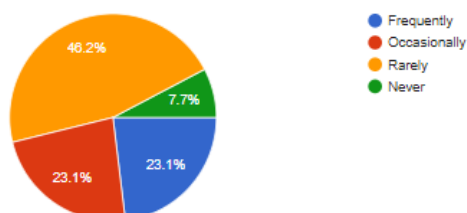
12 responses



How frequently does your K9 encounter water during operations?

 Copy

13 responses



What specific brands or models of harnesses and/or other K9 protective gear have you used in the field?

Please list as many as you'd like.

9 responses

CaliberDog Harness
K9 storm patrol vest
"safe" k9 life-vest
Julius K9 IDC Powerharness, Elite K9 Tactical Harness
Working K9 Tracking Harness
Sabre Harness, Standard seat belt tracking harness, Flat Dog Collar
Sabre Mako K9 Harness
Seatbelt harness for in car. Generic brands.
Sabre Patrol Collar

From the previous list, are there any that you prefer or avoid? If so, why?

2 responses

IDC Powerharness, minimal protective elements for the K9
No as long as they have metal clips and ability to tighten firm to prevent slippage on the Dog.

Any other comments or suggestions for designing the ideal tactical protective harness for K9s?

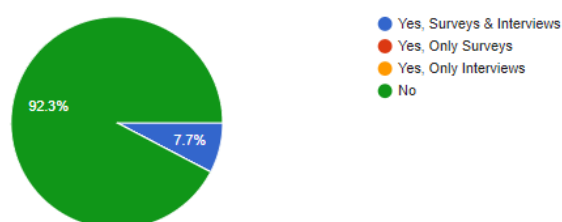
6 responses

Remote quick release can be helpful for getting the K9 out of high-risk situations if they get stuck.
working in aquatic scenarios, K9 paws and legs often get injured by sharp submerged objects.
needs to be protective without limiting K9 mobility.
Water resistant, Strong, Light, Metal harness buckles, Material which breaths. Stab proof if possible and not to heavy. Area for small GPS to be placed,
Waterproof, GPS tracking. Protective yet light weight.
Breathable to prevent overheating, possibly stab proof

Would you like to participate in future surveys or interviews?

 Copy

13 responses



Interview Transcript

I: Hey, good morning, it's Zach. How are you?

P: Good, thanks.

I: Alright, thank you for agreeing to participate for this interview too. I really appreciate it.

P: No problem, did you see the survey response I gave

I: Yes I did. That was very helpful. Thank you. So I think I'll start by telling you about the project I'm working on... I'm designing canine protective harnesses and vests. it's still fairly open ended I haven't selected, any specific features or designs yet. I'm really just trying to get your insight, about your working experience with canines today. So maybe if we could start by you telling me kind of what roles you've worked with canines? What kind of jobs you've done with them?

P: Yeah, so I've been a dog handler now. I'll be coming up to 10 years next year. I've done both detection dog work, which I had two Labradors. And then I've gone across to What they call general purpose now, which is tracking and apprehension of offenders. I've done both sort of sides of Our sort of, what we do in the police in Queensland, they're both very different fields of work. The detection style is more employing for things like firearms, drugs, explosives, things like that. and then obviously the tracking, the general purpose, more tracking and bite work and apprehending offenders, and locating people...

I: Okay, and was that all with the Rockhampton police?

P: Yeah mate

I: Alright, and yeah, I imagine that would be a mix of the urban, Rockhampton city area, as well as more rural jobs as well?

P: Were a decent little sized regional town... surrounded by rural land. Its not unheard of for one moment to be tracking through suburbia here, and the next out in the rural area either. And with the detection dog work. You could be searching a house in town or on land outside of town. Depending on the job and what their looking for. It's a Pretty mixed bag of areas you can be searching... I guess the Rocky heat. Or the Queensland heat is a huge factor too here, which is so hot in summer, that's always something we've got to take into consideration.

I: When you changing from working in urban environments to out in the country. Are you using the same harness? Or do you have specific equipment for different environments?

P: I used the same harness if I'm tracking in town to tracking out property or somewhere like that. and that was same... when I was doing detection dog work, I would pretty much use the same harness. The only thing I might have done different was if I was searching around like a dam or something like that for detection dog work I may have opted towards the basic style, seatbelt style harness. just because it's, if they're going to get wet, it's less material to get wet, which they're going to be lighter. That's the only thing I would change on them, but it's more in the detection dog side of things. For what I do now, I just stick to his same harness, he knows it and at least I know it too

I: Do you think it would be beneficial to have a harness tailored to, like out in the bush and then one more tailored to city work?

P: Maybe if you were solely metropolitan, for any regional squad, probably not. we just, run with what we normally run with, instead of changing it all the time. You're always going to favour one more than the other and that comes down to each handler but that's my opinion. others might disagree with that.

I: What is the main purpose of the harness, to control the K9? Or Do you attach Any equipment onto it, or is it also meant to be protective for the K9?

P: so the one I use is basically just to control the dog and, I have a GPS which I've got in a pouch attached to his flat collar, but I know that other handle his use. Like have like their GPS in a pouch attached to their harnesses too. so yeah so there's definitely there's ab importance of having somewhere for a small GPS unit to be because we're all using those, as a safety measure, if something was to go wrong and the dog gets away from you, and we can locate a dog. Or if something was to happen to us, and we need assistance the crews can see where you are we can at least try and get to you. when it comes to protection it's obviously a helpful thing, but be wen gotta be careful of weight, how much it would

fatigue the dog, how hot it would be... I know there are stab resistant vests/harnesses which something like that would be ideal for, Put on to a dog, more so than a tracking harness. if you were at a siege situation where the offenders, we've got them surrounded and you believe they could be armed with a knife or screwdrivers something like that. That's ideal. But yeah, it's just for your everyday trip, for me, it's more just keeping it light enough to be able to track and not get overheated or anything.

I: With the overheating issue. What kind of hours do you work with the K9 and what kind of breaks do you have throughout the day?

P: we do a 10 hour shift, 8-10 hours. The dog might only work anywhere from, it depends on the job. if you pull up and an offender's run away, you might get your dog only working for 3 or 5 minutes. Locate the offender only a couple of doors down hiding. Or, you could be tracking up to 30 40 minutes. I guess what you've always got to take into account is You always got to read your dog and be mindful of the conditions. If It's a really hot night, you might only work your dog... you'll monitor the dog, how he's performing. You might, stop tracking or building search or whatever you're doing area searching. You might stop it. Due to the dog safety or health. Or a cooler night through winter, they can go up to an hour depending on the condition. it all comes to your management for your dog, caring for and watching the dog. If the middle of summer, and it's the middle of the day, you're probably not gonna even deploy cos its just not safe for the dog. Whereas if it's the middle of summer during evening, and you haven't got the hot sun down but it's a warm night, you might deploy, and monitor his condition through watching him.

I: that was my second question, is all that monitoring just done by, your eye? Or do you use medical detection technology to help you?

P: Its just done by eye. What kind of changes your dog's behaviour and condition. Just knowing your dog, basing it of yourself too, if it a really humid hot night your only going to get a short working span out of your dog and probably yourself too really. But yeah, its all done by just watching your dog and knowing his needs and, what style a dog he is. some dogs will sort of go, no, I'm done, that's enough. But there's other dog's with a really big working drive. They're the ones you have to be careful of, they might be showing signs, but they might also... because they love working, just want to push on. They're the ones you've got to, we'll call it there and we'll look after them and make sure the care is given to them.

I: what does the dog do when you're not working? Is it at the police station or in the car?

P: On shift when he's not working, like we're just patrolling or doing planned patrols, he'll be in the back of the truck in his cage. he'll ride along anywhere I go, during the shift. You might do a bit of training with him, like a training track or obedience or a building search... on days off, he lives at home with me. I look after him.

I: Oh right, is that common for the dogs to live with handlers?

P: Yeah, it depends on where you are. I think most states do that. Even corrections and all that do that. I'm not sure about Border Force though. I'm not sure if Border Force might leave their dogs in a kennel complex. I know most law enforcement, states take their dogs home. That's so we look after them and care for them. It also provides us with the ability to be recalled to duty to be recalled to duty and attend a job. So there's no Time delay.

I: Yeah. So, yeah. Right. I didn't realise that. That's, that's pretty cool. So its basically your dog then.

P: Yeah. Yeah, yeah, yeah. The police own him, but in a way, he's your dog,

I: would you say it's common for dogs to, run away or go missing?

P: No, there's obviously been probably situations of that, like, if they're in, like, in work mode and got that desire to keep going that could be something that happens. The whole idea of having the GPS on him now to, if need be, we can locate the. If you drop tracking line or snapped it's not a very common thing, no. not really

I: have you used radio equipment to give the dogs commands if they're out of sight?

P: no. I know there's specialised police areas that may do that but for what I do, no. its basically, everything done where you got control of your dog, he can see you and you can see him. And that comes down to, obedience. I know people like the army do delve into that side where they're using e-collars and stimulus to steer the dogs into areas where they might not be going, but yeah I don't do any of that.

I: how about canine body cam systems? Have you used any of those?

P: No I haven't, we run our own body camera on ourselves. Because the dogs always, 99 percent of the time, withing distance of arms. Were on top of the dog in a way. Theres probably no need on our end. But different agencies may require that, and maybe when they're getting sent into a search area where the handler may not be entering themselves.

I: Do you mind if we talk about previous k9s you've worked with. Maybe injuries they've experienced.

P: That's fine, I've had Three police dogs, I've had two detection dogs... I lost one of my detection dogs, but she had like a, a liver failure, which was possibly... hereditary, we're not sure. But, Injury wise, they've all been pretty good, minor cuts or grazes from, jumping over fences or jumping up onto items, to search. Maybe It's a small cut or something. Other than that I've been really, really lucky with My dogs. They've never really have never anything major of other than that... you wouldn't say its an injury from a work environment. Unfortunately, got really ill and we had to put her down. Yeah, I haven't had any really major injuries to the dogs.

I: do you know any, stories from co workers, anything that's happened to them?

P: I believe that at least one or two dogs have been, unfortunately, stabbed by offenders, whilst trying to track and apprehend them. So, there is always that danger of an offender doing something like that to a dog. That's on the high scale of Pretty bad injury. Only other things, like, you know, torn claws or things like that. Dog might've got a claw caught on fence, or torn it on tracking or something like that. The more serious ones I know of, it would be, the stabbing incidents. But I only know of one or maybe possibly two of those in my time. It's always a risk. Yeah,

I: all right. do you carry like a canine medical kit for them?

P: Yeah, I got a basic one, like, a bit of flush, a bandage... if I need to apply pressure or something like that. That's about it. it would be getting the dog to vet care as quick as possible.

I: Is that just carries in your truck or on your person?

P: I can strap it to my vest. I also can have it in the truck. I try and keep something on my vest in case something happens on the field, but I always have more in the truck if I need them.

I: I was looking at some of the products you listed on the survey, you said you worked with the company Sabre?

P: yeah. I've used the sabre harness, I don't know what model it was more basic. I've also used the Julius K9 harness. That's more basic you can buy them at pet shops and things like that, online too. And then basic seatbelt, webbing style harnesses that wraps around them with the clip or Velcro underneath. That's more for detection dogs.. The sabre harness is more what I used for my current dog. I find it needs... firm control of the body, doesn't slip on them. Its got wraps underneath and through the front of them, crossing over to if you have to lift them up... its not going to slip or caught or something.

I: With it coming off easily. I've seen harnesses with quick release technologies to help the dog get unstuck in sticky situations. Is that something that you think would be useful in your work?

P: as long as... I've spoke about the clips being metal (in the survey), the metal clips are more durable and wont break or wear... But, having something quick release... would be very beneficial, makes it easier to you know if you have to get out of it quickly. You can. But obviously it needs to be study and not accidently release itself if it gets caught on a bush or something.

I: are there any, features you would add or change with the equipment to make it more useful?

P: not particularly, probably just the ability to have a pouch... we've sort of only gone to having GPS' on our dogs over the last 2 years or so, That was never something I thought about. Like, somewhere on the harness, so it can be properly built in, so we don't have to attach it ourself. That would be handy. There's one less thing to be, I guess, what could be flapping around or detach or catch on something. But everyone's gonna be different. If your sort of like, certain areas or states might have more jobs like sieges. They might want something with more protection because they're not tracking as much maybe. Whereas, it's a bit of a fine line, like you want the protection and that, but the something where dog can work freely and not overheating.

I: Ill tell you a little bit about the kind of concept I have at the moment, maybe you can give me some advice... if you think it'll work? I wanted to create, a modular harness where it has that very basic, harness that straps to the body, but then you could also attach, GPS or stab proof panels and that kind of thing. That way you have one harness for multiple jobs more adaptable... Do you think, that kind of design will be more useful in your line of work? Where you can change the use case quickly?

P: yeah, that would be helpful, definitely. Like if you had ability to put extra protection down the side of the dog, and around those vital areas... that definitely would help. Then you also have the option to not have it on... like if you're deploying for a missing... a missing dementia patient, who's got no warnings for being violent, they're just confused and lost. Your not going to need that protection stuff on your dog. But if your deploying for some guys who's just stabbed someone and rand run off in bushland, well, it's a different story. There's much higher risk of them using an edged weapon on yourself or your dog. I guess, being able to drop parts off and add parts on would be pretty cool. I guess its just how it all comes together for you like building something like that.

I: And how does your canine adjust to new gear? Like, do you have to put it through a whole new training with the new gear or does it adapt quickly?

P: Uhh, no depending on what it is, he's pretty good. if I put a different harness on him, and fit it to him properly. it wouldn't be too much of a problem to him. But I guess it will come down to. They're no different to humans, if you put different shoes on they'll feel different but you'll get used to it. As long as it fits correctly and that side of things it shouldn't be an issue.

I: Okay. to wrap this interview up. Could you walk me through, step by step, either an average or maybe like a recent situation that you had to use a canine in?

P: I had attended a domestic violence situation and the offender had left on foot from the location prior to police being there. He was observed leaving by witnesses. He was on outstanding other matters, wanted by police also. So, I deployed the police dog, located, tracked through suburban streets then into parkland where my dog located the offender hiding in long shrubby grass. We were able to challenge the offender to come out and take him into custody. Yeah so police dog did all that work and located him whereas we wouldn't have been able to locate him where he was. So yeah, They're vital for what we do, I guess. That's just one example where he tracked and located them.

I: Did the canine, get physical with the suspect at all?

P: No, they're trained to apprehend and bite if need be. But where possible, we don't want that happening unless its required for the safety of the officer or police dog. But majority of times, we'll just locate offenders, challenge them and a lot of the time the offender will comply to out directions. And lay on the ground and be taken into custody by the ground crew, other officers...

I: how do you interact with your canine equipment throughout the day? do you put it on your dog in the morning and then don't adjust it, until the end of shift?

P: no, when I'm on shift, I'll put his flat collar on him, so he'll have his collar on while he's in the back of the truck. I won't put the harness on until we like pull up to a job. So if we go track or do a building search or something I will put it on him when he gets out of the truck. Then ill take it off him when and put it in the back of the truck when were ready to go to the next job. Some handlers will put the harness on the dog for the whole shift, there's no sort of right or wrong. I tend to not, its more of a thing cos of my style of dog, if he can get to something to chew on... he will. So to keep the harness protected I don't leave it on him, hell try and chew on it if he's bored. So yeah.

I: All right, so it's not like a overheating issue in the car?

P: No, So like I said, there's quite a lot of handlers that leave the harness on their dogs for the shift, so they're right to quickly catch em and go to the next job. I just, in my situation when he gets bored he tries to get to it. Its just better to leave it off, it takes me all of a couple of seconds to slide it off his head and button it up. Were pretty quick at doing it now, so for me that's the better option for myself and the dog I work with.

I: I think that's all the questions I have for now. that was very helpful, thank you.

P: No worries, I hope I was able to help with your harness, best of luck with your project.

I: if I have any more questions, would I be able to email you later this week?

P: If you think of anything you or you want to reach out to just shoot me an email.

I: Alright, thank you so much, and I appreciate your help.

P: No worries mate, thank you bye.

I: Thanks, bye.

Benchmarking Product Notes

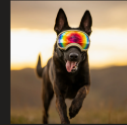
BENCHMARKING EXISTING PRODUCTS:

CIVILIAN SPEC DOG GOGGLES & EAR PRO. - <https://www.rexspecs.com>

Rex Specs Goggles provide stable, secure eye protection for your dog. Rex Specs are used by professional working dogs deploying from helicopters, simple sunny day strollers, bird flushing hunting dogs and motorcycle riding pup alike. Wherever and whatever your adventure is, Rex Specs have your dog covered.

Product Details:

All lenses, including clear lenses, provide UVA/UVB protection, blocking 99.9% of harmful UV rays
Impact resistant lenses are replaceable and interchangeable
The dynamic strap system allows for a secure fit without hindering the dog's range of motion or performance
The singular spherical lens design optimizes the field of view and space within the frame for comfort during longer durations of wear
Vented frame drains quickly for use in water and provides ample air flow to limit fogging
The frame is flexible, durable and edged with foam for full protection from debris



REXSPEC GOGGLES - <https://www.rexspecs.com/products/goggle-v2>

Rex Specs Ear Pro by Zeteo Tech was developed specifically to protect military working dogs from temporary and permanent hearing loss that can arise from noise exposure. Whether on a mission, at the range, on a motorcycle, or at an AC/DC concert — Rex Specs Ear Pro will protect your dog's ears and can limit your dog's hearing damage over time.



K9 BODYCAM CAMERAS

<https://reconk9.com>

<https://www.shelleyes.com/bodycameras/4g-helmet-camera/>

K9 CIVILIAN SPEC GOPRO CAMERA

<https://gopro.com/en/au/shop/mounts-accessories/fetch-dog-harness/ADOGM-001.html>

K9 COOLING VEST

<https://ruffwear.eu/products/swamp-cooler-dog-cooling-vest>

When shade is low and the mercury is high, dogs can count on the Swamp Cooler to help get them outside. Strategic material choices and design offer solutions for the challenges that warm-weather exploring presents. The light-colored fabric reflects solar radiation and provides shading while wetting the vest activates our Swamp Cooler™ Tech for that refreshing, just-stepped-out-of-a-lake feeling also known as evaporative cooling. Just give it a soak, put it on your dog, and go. When it dries, re-soak it to recharge it.

The Swamp Cooler Vest includes side-release buckles for easy on/off and a lead portal so it can be worn over a harness – topping off the essential features to make it our highest-coverage cooling option in the Swamp Cooler™ Collection.



What's New: We updated the external air mesh for improved abrasion resistance and improved water absorption, and we developed a new construction that retains more water in high-exposure zones on the vest for a longer charge.

UPF 50+ COVERAGE

SWAMP COOLER™ TECH - Three-layer construction absorbs water and promotes evaporative cooling.

Relaxed Fit for maximum shade with UPF 50+ coverage and side-release buckles for easy on/off

Wicking outer layer reflects heat and facilitates evaporation

Absorbent middle layer stores water for evaporation

Mesh lining keeps dog dry and comfortable

Leash portal on back is compatible with most harnesses

Reflective trim for visibility in low-light conditions and light loop for attaching The Beacon™

RUFFWEAR SWITCHBACK DOG HARNESS

The Switchbak Harness has the padded comfort of an everyday dog harness with handle, plus the bonus functionality carrying small essentials. The two low-profile zippered pockets have room to stash those day-to-day necessities like pick-up bags, a leash, or some treats.

It features two leash attachment options: a V-ring centered on the back and a reinforced webbing loop at the chest, great for redirecting dogs that pull on leash. Dial in the right fit with high adjustability and a padded belly strap - critical for stable gear carry and when giving a little boost with the low-profile handle. All in all, the Switchbak melds comfort and convenience into a performance harness ready for both town and trail.



K9 TACTICAL AND PROTECTIVE EQPMT. - <https://k9storm.com>

K9 STORM PATROL SWAT VEST - <https://k9storm.com/shop-usd?store-page=Patrol-Swat-Vest-p173305180>

We conducted a major heat study that PROVED that wearing a K9 Storm Ballistic Vest in hot conditions has zero effect on your dog's internal body temperature.

New Ultra-Light Ballistic Panels, Patrol Swat Vest ballistic panels weigh, on average, only 1.5 lbs. Our panels are now only an 1/8" thick.

K9 STORM AERIAL INSERTION VEST - <https://k9storm.com/shop-usd?store-page=Aerial-Insertion-Vest-p173304154>

The Aerial Insertion Vest has built-in flotation, eliminating the need for additional flotation devices.

Patented-Load Bearing Harness System

Platform for Advanced K9 Storm Electronics

The K9 Storm Aerial Insertion Vest provides the perfect stable base for advanced tactics such as integration of the Intruder Camera System or Commander Communication Device.



<https://www.lofdefence.ca/k9>

K9 streetfighter vest - <https://www.lofdefence.ca/streetfighter-k9-vest>

Flotation assist panels, Ballistic Ivl2 and 3A

Outlast Thermal Management Systems™ (Body Temperature Regulating Fabric)

Interchangeable ballistic panels

Harness and armour are positively buoyant

Compatible with a number of LOF products

Quick and easy to don & doff

Precision manufacturing with quality control built into every process of production

Maximum weight: 4.4 lbs

Upgrades options available for NIJ 0115.00 - SX2 or SX3 Spike // Cut Resistant armour and NIJ 0101.06 - GX2 or GX3A Ballistic armour

Specially tailored sizing options available

Available in MultiCam, MultiCam Black, Black, Navy Blue, Ranger Green, Wolf Grey, Coyote Brown and Blaze Orange



<https://www.rayallen.com/gear/harnesses/tactical/>

Nomad Ballistic Body™ - Complete Set - <https://www.rayallen.com/nomad-ballistic-complete/>

PRODUCT FEATURES

- Adjustable to fit different dog sizes and breeds
- Laser cut MOLLE (PALS system) with VELCRO® component
- All attachment points are located in the same places as our other I.H.S. gear
- Available in NIJ compliant Level 2A and Level 3A performance
- Made in USA, designed by dog people

BENEFITS FOR HANDLER

- Economically friendly and customizable because all attachment pieces fit one Nomad frame with no need to purchase a new piece every time
- Easy on/off for rapid deployment

BENEFITS FOR K9

- Will not dig into skin or chest while running/working
- Built from lightweight material so your dog can perform at top speed



VEST GUARD K9 BODY ARMOUR - <https://www.vestguard.co.uk/canine-k-9-body-armor-vest.html>

Features

Specially designed and manufactured body armour for man's best friend for protection during high threat tactical situations
Easy quick click and release system with plenty of adjustment
Top evacuation grab/drag handle in the event of an emergency
Two velcro badge patches
Water and oil resistant
Protection Options
Independent testing to conform with UK and International standards
NIJ level II (2) - 9mm, 0.357 Magnum and shotguns
Stab - In house tested protection against most common knife attacks
STANAG 2920 V50 fragmentation protection



NIJ level IIIA (3a) - Protection against high velocity 9mm, 0.357 SIG, 0.44 Magnum and shotguns

Stab - In house tested protection against most common knife attacks

STANAG 2920 V50 fragmentation protection

Sizing

Bespoke made to fit individual canine body shapes

Materials

Outer Cordura texturized nylon (BS 2861)

Flame Resistant (BS 6941:2003)

RECON K9 SKY SNAPPER MAGNETIC RECOVERY SYSTEM - <https://reconk9.com/products/sky-snapper-magnetic-recovery-system>

Recon K9 is the only domestic supplier for the NVISOL magnetic retrieval system from the Israeli based NVISOL company. Allows the recovery of your K9 from sub-terrain structures by lowering the receiver to a self-homing catch plate.

- An Operational Enabler - Automatic self-homing and connecting device
- Ability to lift carriage, in weights of up to 1500 KG (3300 lbs)
- Versatile & modular - can mount to any object, by screws, MOLLE... suitable for connecting & lifting K-9, robots etc
- Perfect solution for the extraction of objects & K9s, which lack the ability to connect themselves
- A drone mounting solution, for extraction of objects without risking operators



Recon K9 DAGGER K9 TACTICAL VEST COMPLETE KIT - <https://reconk9.com/products/dagger-k9-tactical-vest>

The Dagger vest is our newest version of K9 tactical vests from Recon K9. This product follows our commitment to proven excellence and reliability in the field. After countless deployments, missions, and urban tracks, we've streamlined the Dagger vest to be the most capable, proficient, and advanced vest to date. It includes adjustable messenger sling, expansion panels, and deluxe leg straps for repelling & fast roping.

Features Include:

- Air-rated Cobra Buckles w/ neoprene covers to eliminate noise signature
- Single YKK robust zipper (neck to tail orientation)
- 4-way stretch Mil-Spec Spandura for body-glove fit
- Padded air-mesh upper, sternum plate, and stomach guard
- Reinforced soft loops for tensile strength over 5,000lbs
- 3 handles for lifting, hoisting and overall control
- Camera Mount ready
- Stow-flap allows you to cover your luggage handle, or stow the 5-point daisy chain to eliminate snag hazard (daisy chain not included)
- Messenger Sling & Deluxe Leg Straps, & Expansion panels included in kit



RECON K9 GOGGLEHELM CS-1 - <https://reconk9.com/collections/tactical/products/copy-of-k9-helm-cs-1-gogglehelm>

No soldier or tactical law enforcement would enter a hostile situation without the appropriate head protection or bump helmet. Nor should your working K9. The CS-1 GoggleHelm offers the ultimate in protection and versatility.

The CS-1 GoggleHelm offers excellent flexibility and ventilation for military and police canines. Features include wrap-around eye protection, 6061 aluminum side mounting plates for detachable muzzles, a low-profile removable picatinny rail, and an internally routed Biothane collar for secure retention. The Exclusive K9 Helm Muzzle is a 12oz bridle leather reinforced with 8 layers of Tegril for the ultimate in lightweight strength and versatility in the nose cone. Stainless Steel hardware is used to secure the muzzle along with self-aligning rails for the ultimate fit and security.



RECON BALLISTICS K9 CARRIER - <https://reconk9.com/products/recon-ballistic-k9-carrier>

Our ballistic K9 carrier does away with the large, oversized, heavy "blanket" idea that most handlers associate with K9 ballistics. We've designed a sleek, ergonomically contoured carrier that allows a working dog to focus on the task at hand vs. getting worn out from the weight & heat of other vests.

Features:

- Seamless integrated molle & ID panels
- (2) molded mini handles & (1) center luggage handle
- Camera mount ready
- Soft loops for quiet approach rated over 3,500lbs tensile strength
- 1,000 denier Cordura body with Trelleborg deck
- Berry compliant & Made in the USA
- Protection Levels

NIJ Level I Spike (1.3lbs) / NIJ Level II (4lbs) / Level IIIA (4.6lbs) /

NIJ IIIA Ultra-lite (3lbs)



TEX 10 Ballistic Vest - Large with Spike package

We've got your K-9 partner covered with our K-9 armor. With improved comfort, mobility and reduced weight, the TEX 10 K-9 armor offers outstanding functionality.

The vest features dual crowd control handles, two D-Rings for short or long leads, MOLLE webbing for attaching flashlights and tracking devices, as well as optional left, right, and front ID tags.

Made from durable nylon material, the K-9 vest has three buckles for ease of getting into, adjusting and removing. This K-9 vest provides maximum coverage to the vital organs.

Standard Features:

- Front and side ID badge attachment points
- Belly and chest coverage
- Wireless camera mount system
- Chest and side adjustment and release points
- D-Rings for short or long leads
- Dual point crowd control handles
- 3-Dimensional Spacer Mesh Lining for comfort and cooling
- Multiple sizes fitting a range of breeds

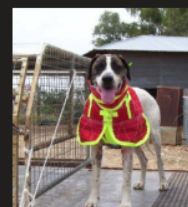


K9 HUNTING PPE COLLAR/VESTS

<https://www.duncanspidogcollars.com.au/category/Chest-Plate-Collars>

The aim is to design a k9 harness and PPE for use in military, police and hunting scenarios. The harness/vest will not only improve the effectiveness of k9's in their roles, but will also be easily adjustable (thru mass customisation and modularity) to suit different scenarios.

Eg. Attachable ballistic/stab protection, easily removable/replaceable eye & ear protection, high-vis markings, etc.



DarkFighter K9 Helmet - Gen 4

The **DarkFighter K9 Helmet** is engineered to deliver exceptional protection and comfort for your K9 partner across various mission scenarios. Key features and benefits include:

- **Ultimate Protection and Comfort:**
 - Designed with a lightweight structure, weighing under 400g (0.88 lb), to minimize fatigue during prolonged operations.
 - Offers a wide range of adjustment options, ensuring a snug, secure fit for maximum safety and comfort.
- **Versatile and Modular Design:**
 - Adaptable to various environments, whether navigating rugged terrain, helicopter boarding, or search operations.
 - Equipped with modular enhancements, including muzzle adapters, helmet light/camera mounts, and customizable padding.
 - Compatible with **DarkMesh** K9 cameras and includes a Velcro panel for integrating additional electronic equipment.
- **Superior Eye and Ear Protection:**
 - Features durable, impact-resistant polycarbonate lenses rated UV400 for superior eye protection in harsh conditions.
 - The spherical lens design offers an excellent field of view, maintaining your dog's awareness of its surroundings.
 - Desensitizing your K9 to the helmet enhances safety across diverse operational scenarios.
- **Quick and Easy Upgrades:**
 - The modular design allows for fast, easy upgrades and adaptability in the field.
 - Choose from quick-release muzzles like Protection, Baskerville, and Agitation Leather models, each padded for comfort.
 - Muzzles can be installed or removed in under 10 seconds, providing flexibility during missions.
- **Complete Kit for Immediate Deployment:**
 - The kit includes a MOLLE tactical bag, **DarkFighter K9** helmet, clear and smoke lenses, padding set, and a choice of rubber or Cordura chin strap with a Cobra buckle.
 - Comes with an instruction sheet for easy setup and deployment.
- **Mission-Ready Protection:**
 - Ensures your K9 is fully protected and ready for any situation, prioritizing both safety and performance.
 - A comprehensive solution for safeguarding your most valuable asset, keeping them comfortable and effective on every mission.



Safe K9 Life Jacket

A dog life jacket developed for service dogs and working dogs. Designed for your dog to feel safe in the water - and the life jacket also promotes correct swimming technique. Even a dog that is used to it and a good swimmer should use a life jacket!

The Safe K9 life jacket helps keep your dog afloat. Around the neck there are floating elements to help the dog keep its head above water. A sturdy handle and strong buckles on the chest make it possible to lift the dog out of the water. The soft floating elements help the dog to develop good swimming technique, and to get optimal effects of swimming training. The side rings can be adjusted to shape how the dog swims and possibly add resistance. This can be useful in rehabilitation training. A long line can be attached to the back ring if you are out on the water in a boat, canoe or SUP - and want good control over your dog. The life jacket also has a pocket with a zipper for storing leashes or other things at the back of the life jacket.

The Safe K9 life jacket is adjustable around the neck and chest. The life jacket is easy to put on after being adjusted on first use. Two straps under the chest distribute the weight evenly if the dog needs to be lifted out of the water. Mesh on the underside allows water to easily drain out of the life jacket and thereby prevents water from remaining and weighing the dog down when it comes ashore.

The **Nonstop Defense Safe K9** life jacket is available in sizes 5-8 in green.

Characteristics:

- Floating elements
- Heavy-duty ripstop
- Mesh under the belly
- D-rings
- Stable and safe handle on the back
- Pocket with zipper at the back of the life jacket
- Buckles in polymer

Working K9 Tracking Harness - <https://www.workingk9.se/en/products/tracking-harness>

The **Tracking Harness** is a high-performance, tactical dog harness designed for durability and functionality, crafted from military-grade materials and climbing-rated hardware. This harness is ideal for Military Working Dogs (MWD), Law Enforcement (LEO), and Search and Rescue (SAR) dogs, providing a superior range of motion and airflow compared to traditional vests.

Key Features:

- **Durable Construction:** Made with heavy-duty mil-spec webbing, the same type used in parachute harnesses, offering quick-drying, mold and mildew resistance, and strength rated up to 7,000 lbs.
- **ISC Klick-Lock Buckles:** These secure buckles require both sides to be depressed to release, preventing accidental unclipping and ensuring maximum safety.
- **Rear Chest Strap:** Enhances tracking capabilities, allows safe lifting, and prevents the dog from escaping the harness.
- **Ergonomic Design:** The shoulder straps and large padded chest piece are tailored for bite work and training, particularly beneficial for apprehension, personal protection, and Schutzhund (IPO) dogs.
- **Integrated Handle:** A robust handle provides complete manual control, enabling the handler to lift the dog over obstacles.
- **Molle and Velcro Panels:** 5" x 4" panels on each side for attaching accessories, pouches, or ID patches.

Materials and Ratings:

- **ISC Klick-Lock Buckles:** Rated to +1800kg.
- **Mil-Spec Webbing:** Rated to approximately 3200kg.
- **V-Ring Clip-in Points:** Rated to +2700kg.

Safe K9 Lifevest



RECON K9 DT ALPHA TACTICAL HARNESS - https://reconk9.com/products/dt-alpha-tactical-k9-vest-complete-kit?_pos=2&_sid=72ba2589f&_ss=r

The **DermalTac Alpha** is your K9's tactical "second skin". This state of the art, modular vest is comprised of 1,000 denier, hydrophobic Squadron® laminate. The silhouette of the vest has been laser cut providing optimal air-flow throughout the vest while eliminating weight wherever possible.

What makes this vest truly unique and one of the most modular and versatile vests available is the ability to quickly don a ballistic coverlet in seconds. Utilizing strategically placed rare-earth magnets, aligning and applying ballistics is a snap. Choose from varying NIJ threat levels to best suit your needs and requirements.

FEATURES:

- 1,000 denier Hydrophobic Squadron® Laminate Exterior
- Ergonomic, articulating spinal pad to create air flow & keep payload off dog's back
- Laser cut to provide maximum air-flow & weight reduction
- Stowable **center** luggage handle
- Integrated camera & beacon receiver mounts cut seamlessly into body of vest
- Modular design allows for the addition of ballistic or floatation coverlets that apply in seconds
- **Full Kit includes:** Messenger Sling, Swiss Seat, & .5" & 1" expansion panels



WORKING K9 PATROL HARNESS - <https://www.workingk9.se/en/products/patrol-harness>

The ergonomic shoulder straps and large padded chest piece are perfect for apprehension, bite work, and training, as they help protect the dog when pulling. A large integrated handle gives control of the dog. Velcro covered Molle on the left and right sides of the harness allows the handler to attach accessories, pouches or affix ID patches.

This harness has not been strength rated for rappelling.

Heavy Duty Mil-Spec Webbing

We use the same type of webbing the military uses for construction of their parachute harnesses throughout the entire harness design, which sheds water and dries quick rated to hold approximately 3200kg.

ISC Klick-Lock Buckle

Klick-Lock Buckle is redundant, meaning both sides have to be depressed to release the buckle and the release buttons are recessed which prevents accidental **unclippings**.

Integrated Handle

Our large handle gives you complete manual control of your dog, and can be used to lift the dog over obstacles

Padded Chest Plate

Padding at the center of the chest provides comfort and safety for the K9.

Double Pass Buckles

Unlike some harness designs, we don't just rely on Velcro to hold the harness together. We double pass the webbing through adjustable strength rated buckles at every major stress point and only use Velcro in areas where its structurally appropriate.

Molle and Velcro

The 5" wide x 4" tall Molle Panels we sew onto each side allow the handler to attach accessories and pouches to the harness, while the integrated Velcro allows for department or unit patches to be easily attached.



K9 Vision System

Description

K9 Vision System FULL VERSION

SKU KVPV4

Contact us for government Department bulk orders

Prices subject to change according to international currency. Contact us before purchasing

1 x K9 vision mask with camera and headphones integration system, delivered with one spare screen and 2 LED integrated

1 x Low light dog's vision camera 170 degree field of view

1 x Low light rear vision camera 170 degree field of view

1 x COFDM transmission video system with local recording and battery

1 x reception system with carry bag and tablet holder

2 x chargers

1 x set of COFDM antennas

1 x digital audio transmission system including:

1 x transmitter with integrated battery

1 x charge

1 x lightweight communication headset

1 x receiver with integrated battery and 1 extension Y and 2 headphone panels and connectors, channel settings and audio volume settings

2 x chargers or 1 double charger for receivers

1 x plastic transport **cas**

3 x UHF antennas

1 x Cordura collar with 3 waterproof pockets to hold 2 digital radio receivers and 1 COFDM video transmitter

1 x extensible concealment (turtleneck type) to cover all the equipment

1 x training kit (option)

1 x transport bag for the whole kit

1 x 360 degree camera with Cordura housing and 4 Amp battery

