



## **Veterinary List of Recommended Microchip Implantation Sites**

Update - October 1999

### Introduction

Issues pertaining to microchip technology (i.e., communication protocol) have been the thrust of standardization efforts in recent years; initially by microchip user groups and then through the International Standards Organization (ISO).

Fortunately, these efforts have resulted in the adoption of global standards (i.e., ISO 11784 and 11785) that have facilitated wide spread implementation of microchip identification thanks to stronger marketplace confidence. However, despite these standardization efforts, the identification network is ineffective if the reader and microchip cannot come in close enough proximity to communicate with one another, thereby providing the animal's unique identification number. To optimise this interaction, the international veterinary community has been diligently working on standardized microchip implantation sites for various species of animals.

This document details both recommended implantation sites as well as providing information on geographic and species variations (where they exist). Beginning with dogs and cats, it also provides information on agricultural animals, other mammals, amphibians, avians and reptiles. There is also a section providing recommendations on ensuring the proper function of the microchip reader, which is an integral, and often overlooked, component of the overall microchip identification system.

Please disseminate this information to your membership, thereby increasing user awareness and adoption of these standards. Cooperatively, we can ensure the viability of this technology well into the future.

Standardization of microchip implantation sites is essential to the overall integrity of a radio frequency identification (RFID) system. This is especially relevant to FDX based communication protocols since their effective interrogation distance, the distance between reader and transponder, is relatively short. However, although standardized implantation sites are critical, one cannot overlook the importance of a functional reader in the identification of an implanted transponder - without this, the system fails. The following points are the recommendations of the World Small Animal Veterinary Association (WSAVA) Microchip Subcommittee for implantation sites in small (companion) animals. Attached to this document are suggestions regarding enhancing reader performance as well as currently recommended implantation sites in species other than small (companion) animals. It is up to the individual veterinarian to assess the need for the use of a local anaesthetic. Aseptic technique, as with any injection, is recommended.

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## Micorchip implantation sites for small (companion) animals

### Canine and Feline

In the canine and feline, there are two currently recognized implantation sites in use:

a) The transponder (microchip) is implanted subcutaneous on the dorsal midline just cranial to the shoulder blades or scapula. This is the standard implantation site in all countries (including the United Kingdom [Wales, Scotland, England, and Northern Ireland] and the Republic of Ireland) excluding those of Europe.

b) The transponder (microchip) is implanted subcutaneously in the midway region of the left neck. This is the standard implantation site in continental Europe (excluding the United Kingdom and the Republic of Ireland - see above).

Until one common global site can be agreed upon, it is imperative that scanning concentrate on the implantation site commonly used in that geographic locale. Should an animal scan negative, it is strongly recommended that the alternative site in use, as defined above, also be scanned.

### Recommended implantation sites in other species of animals.

In bilaterally symmetrical species, microchips should be implanted on the left side (unless used as an aid in the identification of sex - in this case males are implanted on the left, females on the right where applicable).

#### Mammals:

Equine: in the equine, there are two recognized implantation sites currently in use.

a) The microchip is implanted within the nuchal ligament in its middle third or at the halfway point between the ears and the withers. This is the recommended implantation site in all countries except Australia.

b) The microchip is implanted in the musculature of the left neck or the anterior injection triangle. Clipping of the hair, local anaesthetic and aseptic technique is required. This is the recommended implantation site in Australia. Due to the use of two implantation sites, please review and follow the scanning procedures as discussed previously under canine and feline.

**Agricultural Animals** The implantation site for the bovine, ovine, porcine and caprine or other species used for meat production is subcutaneously at the base of the left ear on the scutiform cartilage. It is strongly recommended that any implanted food producing animal should carry an external identifier to indicate that a microchip is present so that it can be recognised and recovered at slaughter. Local trade or government guidelines must govern the use of implanted microchips in food producing species as in some situations their use may not be permitted.

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Elephants: Subcutaneously on the left side of the tail in the main caudal fold.

Hyrax and Loris: Subcutaneously on the left side of the intralumbar area.

Alpacas (as per Australia): Subcutaneously midway on the left neck of top of the head behind the left ear.

Other mammals: If the adult length is >17 cm from the backbone (spine) to the shoulder blade - subcutaneously at the base of the left ear. If <17 cm - subcutaneously between the shoulder blades.

#### Amphibians

The microchip is to be implanted into the lymphatic cavity. The implantation site should be sealed with tissue glue.

#### Avians

>5.5 kg adult weight and/or long-legged: subcutaneously at the base of the neck. <5.5 kg. adult weight: intramuscularly in the left pectoral muscle. Direct the implanter in a caudal (downward) direction. Use tissue glue and digital pressure or a suture to seal the implantation site.

#### Exception to above

Ratites: up to four days old - implanted in the piping muscle behind the head on the left

Older birds - subcutaneously in the left thigh

Emu: implanted in the dorsal midline in the s/c lump (Australia)

Penguins and vultures: subcutaneously at the base of the neck.

#### Fish

>30 cm in length: on the left side at the anterior base of the dorsal fin. <30 cm in length: on the left side into the coelomic cavity.

#### Reptiles

Chelonians: left hind limb socket. Use a subcutaneous site in small chelonians, an intramuscular technique in large species as well as small species with thin skin. The implantation site should be sealed with tissue glue. Hibernating species should be implanted several weeks before the end of their active season in order to allow healing before hibernation.

Crocodylians: subcutaneously anterior to the nuchal cluster.

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Lizards: >12.5 cm snout to vent length - subcutaneously in the left inguinal region. <12.5 cm snout to vent length - intracoelomic.

Snakes: subcutaneously on the left side of the neck, twice the length of the head from the tip of the nose.

Note: Special recommendations have been made for implantation sites to be used in particular applications. It is recommended that primates kept in cages should be implanted intramuscularly in the back of the right forearm so that the microchips can be conveniently read while the animal grips the bars of its cage. Similarly, the recommendation is that big cats should be implanted in the shoulder region so that they can be read as they walk backwards and forwards while brushing against the bars of their cage. Such sites are different from implantation sites used by other operators. These sites should only be used in animals which, after implantation, will stay in one facility where the sight of the microchip is known to all operators and there is no risk of the microchip being missed by an operator failing to scan the unusual location.

### Enhancing Reader Performance

An often-overlooked factor in reader (scanner) performance is the user. How the user cares for and applies the reader can dramatically impact on reader performance. Fortunately, it is an area over which we, as users, have complete control, regardless of the manufacturer, and therefore can eliminate as a causative factor of poor performance.

Ensure that the reader in use is compatible with the communication protocols in use in your geographic locale (i.e., forward and backward compatible).

Familiarize yourself with and follow the manufacturer's recommendations regarding reader care and scanning technique. When evaluating for the presence of a microchip, scanning should begin at the standardized site of microchip implantation in that species and geographic locale. If a microchip is not immediately identified, scanning should encompass a larger area and be done in slowly expanding concentric circles. Some manufacturers recommend a figure-eight pattern. Scanning should be done with the reader touching, or brushing, the animal's fur. Read distance can be slightly affected by the orientation of the microchip in relationship to the reader, and its impact will vary based on reader and microchip design. Fortunately, this rarely affects routine reader use. Although one cannot visualize the actual position of the implanted microchip relative to the reader during scanning, we can take advantage of this principle by slightly rocking the reader from side to side during the scanning process if the reader design allows.

To ensure that an implanted animal is identified, the scanning procedure should be done for a minimum of 10 seconds (longer if possible) and on two consecutive occasions before an animal is declared negative for the presence of a microchip. If possible, repeat the scanning process using a different reader. Fortunately this is rarely necessary, being

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the exception rather than the norm. As mentioned earlier, all recognized implantation sites should be scanned.

Battery charge is also important for portable, hand-held reader function.

Ensure batteries are always fully charged and that the manufacturer's directions for battery care are followed closely.

Readers emit and receive electromagnetic energy and therefore can be affected by other electronic equipment or metallic objects. In this regard, shelters and veterinary clinics can be regarded as "hostile environments" due to the presence of computer terminals, fluorescent lights and stainless steel tables to mention a few. Try to maintain a distance of at least one meter (three feet) from electronic equipment. Ideally, one should not scan on stainless steel tables and remember to remove metal collars from the animal prior to scanning.

All implanted animals should be scanned annually to ensure proper function and location of the microchip.

Finally, all manufacturers and distributors provide support services for their products. Check the reader's performance frequently for read rate and range using a microchip that has not been implanted. Don't risk the use of a reader if its performance is in doubt. Instead, call the manufacturer or distributor for hardware support.

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