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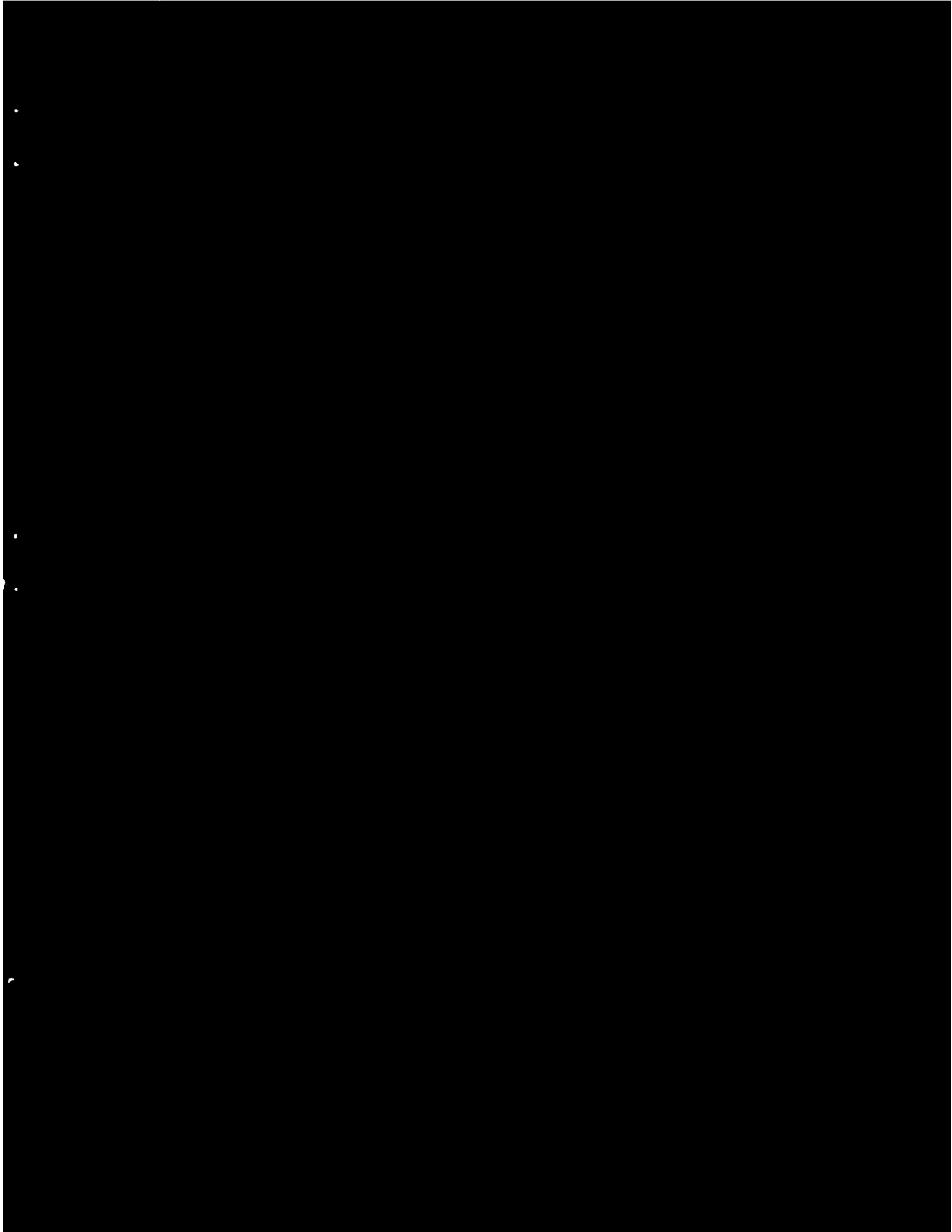
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Implantable Transponder

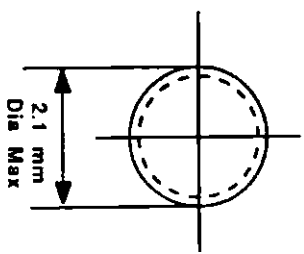
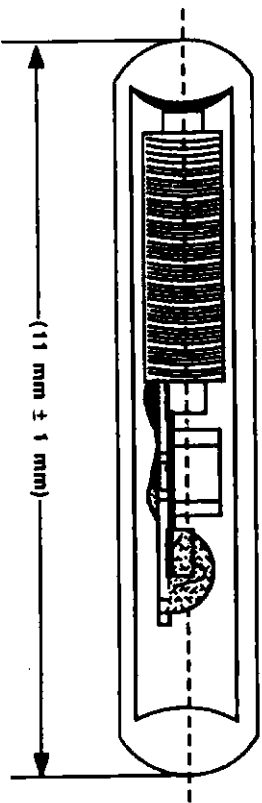
Product Description:

The Implantable Transponder is a passive radio-frequency identification tag, designed to work in conjunction with a compatible radio-frequency ID reading system. The transponder consists of an electromagnetic coil and microchip sealed in a tubular glass enclosure. The chip is preprogrammed with a unique ID code that cannot be altered; over 34 billion individual code numbers are available. When the transponder is activated by a low frequency radio signal, it transmits the ID code to the reading system. Independent testing has shown the transponder to be safe and easy to implant.

Although specifically designed for implanting in animals, this transponder can be used for other applications requiring a micro-sized identification tag.



Specifications:



Future Shock: 'Biochip' Science Fiction

By Teresa Allen

1/1 member writes

Don't reach for your wallet at the

check-out counter.

After your food items have been priced,

called and bagged, simply pass your hand

over the computer code scanner used on

the scanner, and the bill will be auto-

matically deducted from your checking

account.

Or consider this: A powerful "biochip"

makes from living protein that, once sur-

geally implanted in the brain, could

make it possible to program or "upload"

the mind — without having ever cracked

open a book.

Impossible? The plot of a science fic-

tion novel?

The technology, to accomplish such

far-reaching goals, is already here or, as in the

case of the living biochip, in the process

of being developed, says Tim Willard, ex-

ecutive of the World Future Society.

By Willard, managing editor of

the World Future Society's bi-

monthly magazine called "Future,"

said the technology behind such a

biochip is "very uncomplicated"

and with a little refinement, could be

used in a variety of human applica-

tions.

"Conceptually, a number could be

assigned at birth and go with a per-

son throughout his," Willard said.

Most likely, he added, it would be

implanted on the back of the right or

left hand for convenience, "so that it

would be easy to scan."

The macrochip targeted for use by the humans society is made by **Intem (ID)** firm in Colorado and marketed by **Intem** firm in Southern California. Already the chip is being used to trace the health history of swine and cattle, identify race of horses in Europe and monitor the migration pattern of salmon in the Northwest, according to Deaton President Jim Seller.

In another fisheries application, salmon on injected with the chip are scanned as they pass through dam sites "to assure environmentalists they are not being channeled up in the (dam) turbines," Seller said.

Other applications could include identifying pets for health insurance purposes and identifying animal research subjects in lieu of clipping ears and toes.

While there are "10,000 ideas to explore" when it comes to the chip's potential, Seller said Deaton is only concerned with animal identification and is not considering future, back page.

Future

From page A1

...sidering human application.

"There's no need to (apply the technology to humans)," he said.

"The human fingerprint is unique. Animals don't have a unique identity."

But Willard, managing editor of the World Future Society's bi-monthly magazine called "Future," said the technology behind such a biochip is "very uncomplicated" and with a little refinement, could be used in a variety of human applications.

"Conceptually, a number could be assigned at birth and go with a person throughout his," Willard said.

Most likely, he added, it would be implanted on the back of the right or left hand for convenience, "so that it would be easy to scan."

"It could be used as a universal identification card that would replace credit cards, passports, that sort of thing," Willard said. "At the check-out stand at a supermarket, you would simply pass your hand over a scanner and your bank account would automatically be debited."

More importantly, Willard said, "it could be programmed to replace a medical alert bracelet. For example, at the scene of an accident, a medic could scan the person to find out his or her recent medical history, whether a reactor to get in touch with the person was unresponsive. If the person was especially valuable, it could be especially valuable."

In another application, such a microchip could replace the need for house or car keys.

Within 10 to 20 years, the "regulation" will be out-classed by a biochip made out of living protein, according to Willard.

Compared to the microchips of today, "it will be infinitely smaller and more information," he said. But the potential for "a range of functions that will boggie out minds" carries with it the danger of abuse — particularly over the issue of privacy.

A human macrochip identification system, Willard said, "would work best with a highly centralized computer system where one identification number would gain access to medical and academic records, home security — all kind of things. But under the arrangement, as you can imagine, the security risks are somewhat intense."

But just suggest something like an implant in humans and the social outcry is tremendous," Willard said. "While people over the years may have grown accustomed to artificial body parts, there is definitely a strong aversion to things being implanted. It's the Big Brother is watching concept. People would be afraid that all of their thoughts and movements were being monitored. It wouldn't matter if the technology was there or not. People would still worry."

Even the idea of implanting dogs and cats with identifying microchips — as the Martin Human Society announced it would do last May — "is a concept we're hardly new," said Diane Alverno, director of the Nevada animal shelter.

"We want to make sure it's rights for the animals, and that the community is willing to accept this new technology," she added. The chip, about the size of a grain of rice, is implanted with an identification number that corresponds to the name, address and telephone number of its owner. The identification pops up on a screen when the animal is scanned by a computer wand. It is the first animal implant in the country to use the system.

One person telephoned the society to say she felt the implants were "unnatural" and weird.

"And there's no doubt about it — in-jecting an animal with a computer chip is a pretty unnatural thing to do," Alverno told the caller.

"But it's also unnatural, obvious really, that 10 million stray animals are destroyed in the country every year."

Journal in a Nutshell

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"People tend to be romantic about their independence and privacy, but the reality is that most information pertaining to education, credit history, whatever, is readily available to just about anyone who asks. Any one who has ever gone through a credit check knows this."

Another futurist found the concept of macrochip implantation in "Personally, I have problems with it. If it's ever used on humans, it won't be very widespread. People would end up practicing some civil rights," he said.

Martha Kegel, associate director for the American Civil Liberties Union for Northern California, expressed concern about how medical and other private records would be kept from "inquiring minds." It such a system existed.

"It reminds me of tattooing concentration camp victims in World War II," said Robert Mittman of the Institute for the Future — a non-profit research and consulting firm in Menlo Park.

He said there were better methods of identifying people than "violating the integrity of their skin."

Journal in a Nutshell

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Microchip 'tags' will point to pets' owners

By NIKI GERVAANTES
Copy News Service

LOS ANGELES — Computer-compatible cats and canines are about to be unleashed in Los Angeles.

In a novel attempt at reducing an overwhelming population of lost dogs and cats, the Los Angeles City Council yesterday voted to implant some pets with microchips programmed with identification information.

Beginning in March, the high-tech ID tags will be implanted in the estimated 14,000 pets adopted each year from the city's six animal shelters. Animal control officials will also start a campaign urging all pet owners to go to city shelters and have the chips put into their dogs and cats.

The cost? About \$4.50. And it hardly hurts.

"It's just like getting a shot," assured Robert Rush, general manager for the city's Animal Regulation Department. "We use a syringe. It's quite easy. We're talking seconds here."

Council members did vote 10-3, however, to put the bite on pet owners by raising impound fees to help pay for the \$123,000-a-year program. The cost of claiming a

lost dog from a city shelter will jump from the current \$10.50 to \$25 the first time, \$35 the second and \$45 each time after that. The redemption fee for cats will rise from \$8.50 to \$13.50.

The sterilized glass microchips will be placed just beneath the skin on the back of the neck for dogs and cats. An ID number on the chip will pop up on hand-held scanners and then feed into a computer loaded with the name, address and telephone number of the pet's owners.

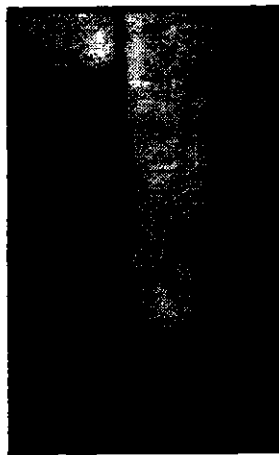
"You know how the scanners work in grocery stores?" Rush said. "It's the same technology. It just hasn't been applied to this kind of thing. But the city of Los Angeles has always been out in the front of things."

Los Angeles' microchip program is the first in a big city. Only one other jurisdiction — a small town in Marin County — uses the implants. Rush estimated the city will be able to return 13,000 more pets

thanks to the microchips. Last year, only 5,700 of the 90,000 pets at city animal shelters were claimed by owners. About 14,000 were adopted by new owners.

City shelters get as many as 40,000 calls a year from owners looking for lost pets. Most owners don't know where shelters are located, and one reason many pets go unclaimed is that they are returned by good Samaritans to shelters in far-flung parts of the sprawling metropolis.

Vets chip in for pets



Under the skin: The microchip ID implant is the size of a grain of rice.

Tiny implants can provide foolproof ID

By MARK SAUER
Staff Writer

Our precious pet iguana has turned up missing, and the guy down the street is suddenly showing off a new reptile that looks suspiciously familiar. Now, how would you be able to positively ID an iguana?

With a microchip, of course. Veterinarians in San Diego and across the country are implanting microchips under the skin of pets and exotic animals as a foolproof method for positive identification. Dr. Bob Stonebreaker, a Del Mar veterinarian, reports that the microchipping of all ostriches and emus in San Diego County is virtually complete.

"It was a big job: must have been a couple thousand or more to do," said Stonebreaker, who breeds the giant birds as a sideline.

The veterinarian said "a lot of ostrich rustling occurs in this county. These birds are worth a lot of money, and this is a sure-fire way people can ensure their birds are permanently ID'd."

Dr. Jeff Jenkins, meanwhile, has been targeting pot-bellied pigs. "You can't tattoo 'em — their skin is black," noted Jenkins, a Mission Valley vet who specializes in birds and exotic pets, including reptiles and the popular pigs.

"Besides, tattoos can be altered. The microchip solves the problem." About the size of a grain of rice, the microchip is implanted by means of a simple injection, no anesthesia required. It contains an ID number that is read by a hand-held scanner; the number is matched to the animal owner's file at the chip company.

The chip, which is harmless to the animal, lasts for decades and need never be disturbed. There is no power supply or any moving parts to worry about. Many dogs who slip their col-



UNUSUAL INJECTION: WIZZARD, AN ALPINE GOAT, GETS A MICROCHIP IMPLANT FROM ANIMAL TECHNICIAN KIM WILLIAMS. ZOO WORKER BOB SHAW ASSISTS. AND CATHERINE YARBER OBSERVES.

See implants on Page C-5

'Eye in sky' to track kids a teen horror

By Charles Kelly
The Arizona Republic

Jack Dunlap envisions his eye in the sky as a way to rescue snatched children, but it sounds like a teen-age nightmare.

You, Joe Teen-Ager, have a computer chip buried in your body, and a satellite in the sky tracks you wherever you go: to your girlfriend's house, to the local poolroom or to the beer party in the desert.

Whenever Mom or Pop get worried, the police are dialed and asked to track you down on their computers.

Of course, Dunlap didn't come up with his KIDSCAN idea so that it could bird-dog teen-agers.

The system is supposed to help find children who have been "picked up, transported, molested, abused, raped and murdered," he says.

Dunlap, who runs Arizona West Film Productions Inc. in Tucson and works as a private investigator when the film business gets slow, thinks he has hit on a lifesaver.

"The most important thing is to save the children," he says.

KIDSCAN would get a computer chip



Steve Marcus/Special for The Arizona Republic
Jack Dunlap says his KIDSCAN system, if developed, would help parents locate children who were missing. He is flanked by Eloise M. Yarnes (left) and Lorna R. Lujan at Tucson's Optical Electronics Inc., which will build a KIDSCAN prototype if Dunlap can finance it.

planted under the skin and an identification number.

The chip would transmit a signal that would bounce off a satellite and be picked up by police on a computer-screen map.

A parent with a missing child could call

— See B2A, page B3

Idea of tracking kids via chips could be teen nightmare

— B2A from page B1.

cause some troubling privacy problems, said Louis Rhodes, director of the Arizona chapter of the American Civil Liberties Union.

The police could use the system to enforce curfew laws or trace the movements of teen-agers who had not agreed to such scrutiny, he said.

"It's always dangerous to have so much information given to the police," Rhodes said.

Detective Charles Marino, a veteran of the missing-persons division of

the Phoenix Police Department, acknowledged that some parents would be concerned about the "Big Brother" aspects of KIDSCAN.

But the concept is attractive, Marino said.

"Any technology that can be used to detect missing children and children that are in danger would be welcomed," he said.

Dunlap's project is just in the talking stage. He's trying to raise money to have a prototype built.

At one time, he said, he had some Pennsylvania investors prepared to

He received encouragement from employees of Martin Marietta Energy Systems Inc., which runs the Oak Ridge National Laboratory, in Oak Ridge, Tenn.

Dunlap said officials there first told him they would build the prototype, then backed out.

"It was like a James Bond movie," Dunlap said. "It was like they had been told to shut up and stay away from it."

When the lab people sidestepped the project, his financial agents made

Joe Culver, a lab spokesman, said "This sort of knocked me for a loop." "It was really weird," Dunlap said.

Others were not so sure. Dunlap said there wasn't anything weird about it. Lab people did speak to Dunlap about a microchip they are developing, he said. Scientists want to put the chip on "killer bees" to track them as they sweep up into the United States from Mexico.

But the chip hasn't been fully tested, Culver said, so the lab can't make a commitment to Dunlap.

"It's very premature," Culver said.

Implants

C-5

Microchips are sure-fire way to identify pets

Continued from C-1

Jars and escape are caught and then destroyed at pounds and animal shelters because there was no way to locate the owners, Stonebreaker said. Microchips can solve that problem, and shelters here and elsewhere have taken to scanning strays in an effort to locate owners.

In the chips

The microchips are placed in standard places on animals, Stonebreaker said: above the left shoulder blade in four-legged animals; over the left breast muscle in exotic birds; and behind the left neck muscle in very large birds.

"The microchips are undetectable without a scanner," said Stonebreaker. "They can be seen by X-ray, however."

Although several companies here and in Europe manufacture and sell microchips and scanners, the most popular model is made by American Veterinary Identification Devices (AVID), a company based in the town of Norco, near Riverside.

After a decade of development, AVID's microchips have been available to the public for about two years, said Army Havey, marketing director for the company. The scanners needed to read

an animal's ID number off the chip cost \$1,250 apiece, said Havey. That cost could be a reason microchips have yet to really catch on among veterinarians. When a vet becomes the first in his community to buy a scanner, however, AVID sends along a second one at little or no cost so the local animal shelter will be able to take advantage of the technology.

Pet owners are charged between \$15 and \$40 to have microchips implanted in their animals, Havey said. (Stonebreaker, who charges \$35 for the service, said the chips themselves cost about \$8.50.)

Havey said the chips have been especially popular with people who own horses and other farm animals, because branding is expensive. Brands also can fade or be altered, and they generally aren't recognized over state, or even county, lines.

Veterinarians at the San Diego Zoo have found microchips to be useful in distinguishing between reptiles, birds, bats and certain hoofed animals that are difficult to tell apart, said spokesman Jeff Jouett.

"When you buy a pig from me, it comes microchipped," said Collette O'Grady of Fallbrook, who breeds Vietnamese pot-bellied pigs as pets. "Farm pigs usually have ear tags or tattoos. But since I'm breeding quality pets, I use microchips. People don't want an ugly tag," O'Grady said. "People who take their pigs to show routinely use microchips to identify them these days."

Pets

FROM PAGE A9

Only one other jurisdiction — a small town in Marin County — uses the implants.

Rush estimated the city will be able to return 13,000 more pets thanks to the microchips. Last year, only 5,700 of the 90,000 pets at city animal shelters were claimed by owners. About 14,000 were adopted by new owners. The rest were destroyed, Rush said.

City shelters get as many as 40,000 calls a year from owners looking for lost pets. Most owners don't know where shelters are located and one reason many pets go unclaimed is they are returned by good Samaritans to shelters in far-flung parts of the sprawling metropolis.

Lost identification

Pets also often lose their ID tags when lost. Microchips remedy that problem. The program also provides a central computer listing of all pets that can be used by each shelter, Rush said.

"It's not unusual for a pet lost at the beach to end up in east (San Fernando) valley," he said. "People don't know where to call for them."

Although the increased fee approved Friday can be waived for senior citizens and low-income residents, several council members worried that the hike would discourage pet owners from claiming their dogs and cats.

"Raising the fees makes it harder to get animals out of the shelter," said Westchester-area City Councilwoman Ruth Galanter.

A novel ID: Implant plan for pets OK'd

By Niki Cervantes
ORLEY NEWS SERVICE

Computer-compatible cats and canines are about to be unleashed in Los Angeles.

In a novel attempt at reducing an overwhelming population of lost dogs and cats, the Los Angeles City Council voted Friday to implant some pets with microchips programmed with identification information.

Beginning in March, the high-tech ID tags will be implanted on the estimated 14,000 pets adopted each year from the city's six animal shelters. But animal control officials also will start a campaign urging all pet owners to go to city shelters and have the chips put in their dogs and cats.

The cost? About \$4.50. And it hardly hurts. "It's just like getting a shot," saured Robert Rush, general manager for the city's Animal Regulation Department. "We're talking seconds here."

Council members did vote 10-3, however, to put the bite on pet owners by hiking impound fees to help pay for the 123,000-a-year program. Claiming a lost dog from a city shelter will jump from the current \$10.50 to \$25 the first time, \$35 the second and \$45 each time after that. The re-

You know how the scanners work in grocery stores? It's the same technology.

— Robert Rush, Animal Regulation Department, City of Los Angeles

demption fee for cats will rise from \$8.50 to \$13.50.

The sterilized glass microchips will be placed just beneath the skin on the back of the neck for dogs and cats. An ID number on the chip will pop up on hand-held scanners and then feed into a computer loaded with the name, address and telephone number of the pet's owners.

Grocery scanners

"You know how the scanners work in grocery stores?" Rush said. "It's the same technology. It just hasn't been applied to this kind of thing. But the city of Los Angeles has always been out in the front of things."

PETS/A10

Animal control officials introduce microchip implants for pets.

By RICHARD BAROOS
Sun Staff Writer

DEVORE — Pin-sized microchips are being implanted in cats and dogs to save them from untimely deaths at county-operated animal shelters.

"It's permanent identification for your animal," animal control supervisor John Papp said Wednesday, when the first electronic data tag was implanted in a dog named Nabos.

The dog didn't even flinch as the tiny chip vanished between his shoulder blades.

Chips are available to any pet owner willing to pay \$20. Because of the fee, the voluntary program won't cost taxpayers a cent, said Papp.

Animal control officers will

implant chips at county shelters in Big Bear Lake and Devore. It's cheap insurance, said Papp, shelter overseer.

Strays are kept at county shelters at least three days so owners can claim them. But only 25 percent of the dogs — and 1 percent of cats — get reunited with their owners. The rest are put to death unless adopted.

The new tags are supposed to improve all that. Each carries a name-digit number referring to authorities to the owner's address and phone.

Strays will be checked twice with a hand-held electronic scanner, Papp said.

Dozens of similar tagging programs are being conducted throughout the nation. Among the closest locations are Riverside and Orange counties.

In San Bernardino County, dog owners who buy microchips still must purchase regular li-

censes. The electronic option offers added advantages.

"Somebody isn't going to be able to steal your dog, take the tag off, and claim the dog is their own," Papp said.

And vicious animals will be injected with the electronic tags to help persuade their owners to keep them locked up.

"If a (vicious) dog is picked up, we'll know right off the bat. And if the owners have two anti-mals, they can't pull a switch on us. We'll know right off which animal was out."

The tags are manufactured by AVID, a Norco-based firm. because its scanners read three of the four chips in use in the United States, said Papp.

The tags won't please everyone, said Scott Gragson, AVID's national sales manager.

"Anybody who doesn't want their animal traced back to them won't like this."

The microchip is smaller than a dime and is implanted between the shoulder blades of an animal.

Microchip implantations are available at Devore Animal Shelter, 1977 Shelter Way, Devore. Hours are 10 a.m. to 6:30 p.m. weekdays and 10 a.m. to 5 p.m. weekends.

CHIPPING IN



HIGH TECH TAGS

Ken Hey holds down Apollo, the cat, while Scott Gragson, injects a microchip for identification purposes. Gragson is a national sales manager for AVID, the company that makes the microchips.



Photo by DAVID CHAMBERLAIN for the Sun

T H E O R A N G E C O U N T Y
Register

Friday, January 8, 1993

The Orange County Register

Metro

NEWS FOCUS

Microchip implants aren't the perfect pet ID

By Debra Warner
The Orange County Register

James Patanella had a happy reunion with his dog Bear on Tuesday. The shaggy sheepdog mix was lost, but the Orange County Animal Shelter traced Patanella by reading a microchip implanted between the dog's shoulder blades.

"Before I even knew he was missing, I had a message on my phone machine," said Patanella, of Garden Grove.

A happy story — the kind microchipping companies love to tell. Tiny chips implanted in pets help

animal-control officers reunite lost or stolen animals with their owners.

But Bear's rescue was not as assured as it sounds. With three incompatible types of microchips on the market, he could have ended up at a shelter equipped with an incompatible scanner and been put to death — one of millions of pets killed each year for lack of identification.

Microchips, which cost up to \$70 for insertion and lifelong registry, can save lives, solve legal disputes over ownership and even

Please see PETS/2



Daniel A. Anderson/The Orange County Register

James Patanella of Garden Grove is reunited with his sheepdog mix, Bear, on Tuesday at the Orange County Animal Shelter after shelter workers identified him by scanning a microchip implanted between Bear's shoulder blades. The dog was not wearing other identification when he was lost.

Register

PETS: Some experts want unified ID system

FROM 1

prevent fraud in petbred registries, animal welfare and industry experts say.

But they're not foolproof alternatives to the low-tech collar tag.

"It's very important that the companies and the veterinarians be real straightforward with people and be clear about what they're buying," said Dr. John Hamill of Laguna Beach, president of the California Veterinarian Medical Association.

Take Patanella, for example.

"My understanding is that the state of California would scan every animal they bring in. If I ever move, it would still work, because they would call the vet," Patanella said.

That's not the case.

Patanella could move to an area with a shelter that does no scanning or one that chooses a different microchip system. Some shelter directors said it's impractical to check each dog and cat with several scanners.

"We're talking about large numbers of animals, and people who have a lot to do," said Kathy Jenks, director of the Ventura County Department of Animal Regulation. "We're all overworked and underpaid."

Pat Miller, director of operations for the Marin Humane Society, said, "I'm not willing to ask my staff to scan with two or three scanners." Last spring, the National Animal Control Association, members of which include animal shelters and humane societies, suggested a boycott of microchips until the companies agree to share enough information so any chip

66 So you're giving up the benefit of this wonderful technology so you can all read the one that's inferior. I think it would be better to have a side-by-side testing by all shelters or other organizations. The best technology will win. 99

InfoPet senior account executive Lindy Harrison

could be read by any scanner.

"The companies have paid lip service, but there hasn't been any real effort toward compatibility. They're out there selling like crazy and hoping the other guys will go broke," said Edward Prince, editor of the National Animal Control Association News, based in suburban Seattle.

Hamill is more optimistic that the microchip industry will develop a statewide and eventually an international standard.

"I believe the companies will ultimately see it's good business to cooperate," he said, adding that a universal scanner could open new markets.

Registries for purebred dogs or cats, for example, might require microchips for their members if they were assured that the animals could be identified anywhere. In pet stores, the chips could function as bar codes for grocery items. Dr. Hannis Stoddard, the veterinarian who founded American Vet-

erinary Identification Devices, or AVID, in Norco, and Darryl Yurek, founder of Destron-IDI in Boulder, Colo., said they do want to develop a standard system.

Not so with the third company, InfoPet Identification Systems. A spokeswoman said her company's chips and scanners work from a farther distance. Animals can simply be walked past a scanner rather than examined closely with a handheld scanner, said Lindy Harrison, an InfoPet senior account executive.

"So you're giving up the benefit of this wonderful technology so you can all read the one that's inferior," Harrison said. "I think it would be better to have a side-by-side testing by all shelters or other organizations. The best technology will win."

Microchips came on the pet scene in 1967, when International InfoPet Systems, based in Agoura Hills, started marketing a chip made by Destron-IDI.

In 1991 the market got hot and hairy. InfoPet changed hands and became InfoPet Identification Systems, and the new owners, based in Minnesota, started carrying a different type of chip, made by German company Trovan. Destron-IDI started marketing its own chips. And AVID entered the fray with a third type of chip.

Two years later, the result is what one industry observer describes as a "mosaic of technology." Orange County, for example, uses an AVID scanner. Ventura County uses InfoPet, and Los An-

More on microchips

Microchips are the size of a long rice grain and cannot be seen or felt once implanted.

Microchips can be implanted in dogs, cats, birds and other animals — usually in the neck or shoulder-blade area.

Microchips do not transmit radiation or affect the animal's health.

A microchip scanner reads the chip's radio wave, which shows the animal's individual identification number. The microchip reg-

istry lists either the veterinarian or animal shelter that implanted the chip, which keeps records of the animal and its owner; for an additional fee, the registry keeps up-to-date information on the owner's location.

For more information on microchips, contact your veterinarian. Implantation usually costs \$15 to \$35. Contact your local animal shelter to see which, if any, type of microchip it scans for. Most Orange County shelters scan for American Veterinary Identification Devices (AVID) microchips.

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istry lists either the veterinarian or animal shelter that implanted the chip, which keeps records of the animal and its owner; for an additional fee, the registry keeps up-to-date information on the owner's location.

Old-fashioned way

Although new technology offers promising means of permanent identification, a pet owner can never go wrong with the old-fashioned identification tag attached to a collar around the pet's neck. For cats, such tags should be attached to an elastic safety collar.

A stranger who finds your pet cannot read a microchip but can read a tag and call you or return your lost pet immediately.

Order forms for identification tags are available at veterinary offices and pet stores. The tags cost about \$5. The tag can include a friend's or relative's phone number in case you can't be reached.

The Animal Assistance League of Orange County offers tags. Send a check or money order for \$4 to Animal Assistance League, Box 38, Midway City, Calif. 92655. Include your name and address. An order form will be mailed.

important thing, they say, is that even with multiple systems hundreds of lives have been saved.

"If people have to buy a second chip, so what?" Ventura County's Jenks said.

"We can't wait to try to save animals. We need to do something now," Hamill said.

That's fine as long as buyers know about the microchip's limitations, Prince said.

"Yes, a microchip can help recover their pet," he said. "But these ads that say your animal can be picked up anywhere and identified in three seconds? No, that's not the case."

ges County does not scan at all.

"We're caught between two technologies," said Frank Andrews, director of Los Angeles County Animal Care and Control. "We're holding off until questions on compatibility are solved."

Orange County veterinarians sell AVID chips and most area shelters use AVID scanners. AVID recently donated 5,000 microchips, which the Orange County Animal Shelter will implant in the first 5,000 animals adopted this year.

"We have a pretty good situation at our animal shelter, but if you go on vacation (with your pet) or if you move, that will not be the case," Hamill said.

InfoPet plans to go head-to-head against AVID in direct marketing to Orange County veterinarians this year, Harrison said.

At worst, microchips could go the way of animal tattooing, another permanent-identification tech-

Microchip becomes new pet tag

Rice-size implants have info to help locate owner

By Anne Sciatar
News staff writer

Most pet owners know the battery of shots that can keep their dog or cat healthy: rabies, distemper, feline leukemia or parvo virus.

But not many know about the newest injection that can save their pet's life.

It's not medicine, but a microchip the size of a grain of rice that can be implanted under the animal's skin. The chip carries an identification number that can be used to locate the pet's owner.

The microchip is read with a hand-held scanner that is passed over the body of the animal. When the chip is located, the screen of the scanner displays a nine-digit number that can be used to search a national data bank and find the pet's home.

"You can't imagine how many times we've had people call and say, 'I was washing my dog and he got away without a collar,'" said Carole Conley, director of development for the Greater Birmingham Humane Society, 1713 Lamb Ave.

Without a collar or tags, animals risk being picked up by Rabies Control, the Birmingham agency that collects strays. Because of space limitations, unidentified animals are kept there for only three to seven days, she said. After that, they are put to sleep.

Ms. Conley said although the non-profit organization has had the scanner for more than a year, the chip has been responsible for only one canine homecoming so far.

"We check every animal that comes through the door, but I think it's because people don't know that this is available," she said.

The injection of the chip costs \$25 and can be performed quickly and painlessly at four veterinarians' offices in the Birmingham area.

AVID, the California company that markets the microchip, charges \$35 to list an owner's

See Microchip, Page 26A



NEWS STAFF PHOTO/EDUARD BRONCHAC

Holly Hill, a veterinarian technician, scans Tess for an indentifying microchip implanted into the dog.

Microchip

From Page 23A

name and address — the registration covers all pets the person owns in his or her lifetime.

The injectable chip has been used for nearly 10 years in laboratory animals and aquariums, said AVID president Dr. Hanns Stoddard, and marine biologists in the Northwest use it to track endangered salmon. The American Kennel Club may soon use the chip in place of the identification tattoo worn by many AKC-registered dogs, and the San Diego zoo has already injected \$20 million worth of animals, an AVID spokesman said.

More than 2.5 million animals carry the microchip, and nearly 500 humane societies across the country have scanners, Stoddard said.

Home wood veterinarian Dr. Charles Becker was the first to bring the microchip system to Birmingham. He donated a scanner — worth about \$1,000 — to the Greater Birmingham Humane Society, and Walker County and Vestavia Hills animal shelters followed suit and purchased scanners.

The chip can help lost pets find their way home, but it can also help settle disputes over ownership, said Humane Society Executive Director Beth Kellogg. "I think it's great because not only do you have a permanent form of ID, but you can prove it's your animal."

Mrs. Kellogg's dog Tess has the microchip implant, along with an AKC tattoo and traditional dog tags. Veterinarians and animal control workers stress that the implant is a supplement but not a replacement for traditional identification tags.

The AVID microchip implant is available in the Birmingham area at Becker Animal Clinic, Vestavia Hills Animal Clinic, Sunlion Animal Clinic and Alford Avenue Veterinary Hospital. For more information, contact the Greater Birmingham Humane Society at 780-7281.

Identification implant chip can help rescue lost pets

Weak in and weak out, I tell you about products that are, or soon will be, vying for a chunk of our psyches.



GADGET GURU

ANDY PAROH

I don't know the service exists. I'm talking about the AVID microchip and PETrac. These work together to provide a permanent identification system for pets. Here's how it works:

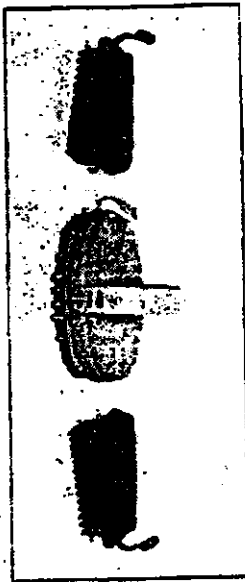
PETrac is a national computer network designed to expedite the return of lost or stolen pets. It uses the AVID microchip — a tiny integrated circuit slightly larger than a grain of rice that is implanted under a dog or cat's skin at the base of the neck.

Chip identifies pet

The module is encoded with an identification number that can be cross-referenced to the pet's owner or veterinarian. Unlike a tag or collar-secured name plate, it cannot fall off.

If the pet gets lost and ends up in an animal control center, the attendant can pass a scanner over the pet's shoulder. If the pet has a PETrac implant, its identification number will appear on the scanner's digital display. The folks at the animal control center can call a toll-free number and learn the owner's and/or veterinarian's name and number.

You may not think this is a big deal. But when you consider that one out of every three family pets will be lost, and only about 10



FLEA FIGHTERS: White pet is brushed, flea shampoo or dip is evenly dispersed through tiny holes in the thick bristles.



COLLAR OF LIGHT:

Battery-operated color features a series of flashing red lights.

percent of lost pets are ever reunited with their owners, this plan makes a lot of sense.

The cost is reasonable, too. A one-time charge of about \$50 includes the cost of the electronic module and inclusion in the PETrac national register. If the family moves, a change of address can be made at no charge.

Donated to shelters

What really makes this pro-

gram good is that scanners are donated, at no cost, to animal shelters. There is one catch: The shelter has to promise, in writing to the manufacturer, that its staff will scan each pet upon arrival, or at least prior to euthanasia, placement or sale, and promptly notify the owner. The scanning process takes less than 10 seconds.

The system does work. A test program on an Air Force base in Misawa, Japan, achieved phenomenal success in its first year. The year before the program was begun, 180 animals were euthanized. During the program's first year, that number was reduced to 15.

For the names of veterinarians who can implant the AVID microchip in your pet, call (800) 336-AVID from 10:30 a.m. to 9 p.m. or write to AVID, 3179 Hammer, Suite 5, Norco, Calif. 91760

Illuminated collar

A novel way to ensure your pet's safety is with the Protect-a-Pet. This is an illuminated collar that makes your pet visible at night.

The Protect-a-Pet is a clear plastic collar that features a series of enclosed red lights that flash sequentially. It runs on three button-type batteries, has



HIGH-TECH ID: Scanner shows the ID number implanted in a module in dog's shoulder.

Inside this thick-orsted plastic brush is a reservoir for flea shampoos or dips. White brushing, the shampoo evenly disperses through tiny holes in the bristles. It sells for \$10 at pet stores.

Have a question? Write: Gadget Guru, 95 White Bridge Rd., Suite 503, Nashville, Tenn. 37205. Fax number: (615) 356-9596.

Summer time is flea and tick season, and most pet owners know that applying sprays or powders to a dog can be more difficult than it sounds. That is, unless you have the Brush-Eze.

T H E O R A N G E C O U N T Y
Register

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**The ramifications of
 microchip pet implants**

Often things begun with the best intentions are easily transformed into procedures that are less than desirable ["Microchip implants aren't the perfect pet ID," news, Jan. 8].

Implanting microchips in our animals sounds reasonable enough. We own our pets. If they are

lost, we have a better chance of finding them if they are picked up by animal shelters that are equipped with scanners.

However, it seems to me that we are in the beginning stages of a larger experiment. Suppose these chips could be enhanced to emit radio waves that are readable at greater distances? We would then have a tracking device. Suppose we implanted microchips in our littlest children in case they are lost or stolen. We already have programs to fingerprint them, why not implant them? But in the process of protecting them, aren't we, in effect, declaring ownership of them? At what age would we declare that person sovereign? Perhaps it would be decided to leave the chips in place to aid in census taking or some other benign purpose.

We could conceivably have the beginnings of a whole society of people registered by some agency and traceable anywhere in the world. Perhaps we could find dead-beat fathers; perhaps we could all be monitored for our movements and associations.

Suppose those chips were further enhanced to receive? What kind of messages might be programmed into an individual? And from whom? This may sound like paranoia or science fiction, but the technology isn't that far away. Implanting sounds like a good idea when we're talking about dogs. What will we say when it's suggested for humans?

Linda Stearns
 Justin



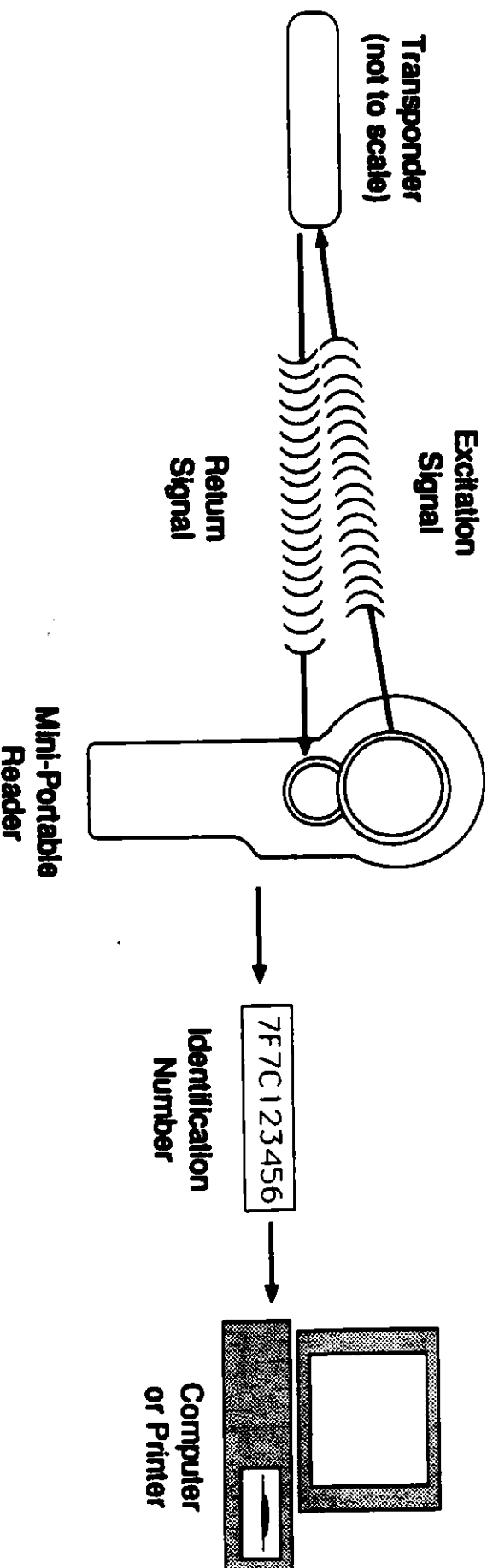
- Proven technology
- Solid customer base
- Experienced management
- Exciting growth potential
- Low-cost manufacturing capability

DESTRON/IDI



How Dual-Coil Technology Works

In traditional passive radio frequency identification systems, a transponder passing within range of a reader is powered by the excitation signal emitted by the coil in the reader. The same coil then picks up the low-power signal returned by the transponder. With Destron/IDi's new advanced dual-coil technology, two different coils are used, one for sending the excitation signal and a second one for picking up the transponder's return signal. This allows the second coil to be tuned specifically to the return signal frequency. The result is greater receiver sensitivity and improved read range.



Most people are familiar with the laser scanning of bar codes in supermarkets to identify goods at the check-out line, and bar codes used by the postal service to automatically identify packages and letters. Destron/IDI's electronic identification system provides essentially the same capability for the identification of animals, where an ID system using labels is not practical.

There are two basic differences between electronic identification and bar code technology: how the ID number is read and how it is stored. Electronic identification uses a common low-power radio signal to read an ID number stored in a tiny electronic circuit rather than laser light to read a label. Electronic ID based on these radio signals is also referred to as radio frequency identification, or RFID. These low-frequency radio waves, unlike light, can penetrate all solid objects except those made of metal. Therefore, use of electronic ID allows the number to be stored inside the animal, where it is permanent and is not subject to being lost or altered, or becoming worn and unreadable like an external dog tag.

The tiny electronic device used to store the electronic ID number is called a transponder. Destron/IDI's transponders come in three sizes (see Figure 1), the smallest of which is about the size of an uncooked grain of rice. All of the transponders are easily injected into an animal, similar to the delivery of ordinary vaccines. The device then remains with the animal for life, where it provides the animal's unique ID number any time it is scanned by a compatible electronic ID reading system. Most Destron/IDI reading systems, or scanners, send a signal using a frequency of 125 kHz, much lower than the frequencies used in AM medium-wave broadcasting. The power of the radio signal sent by the scanner is less than one one-thousandth of a watt (one milliwatt), which

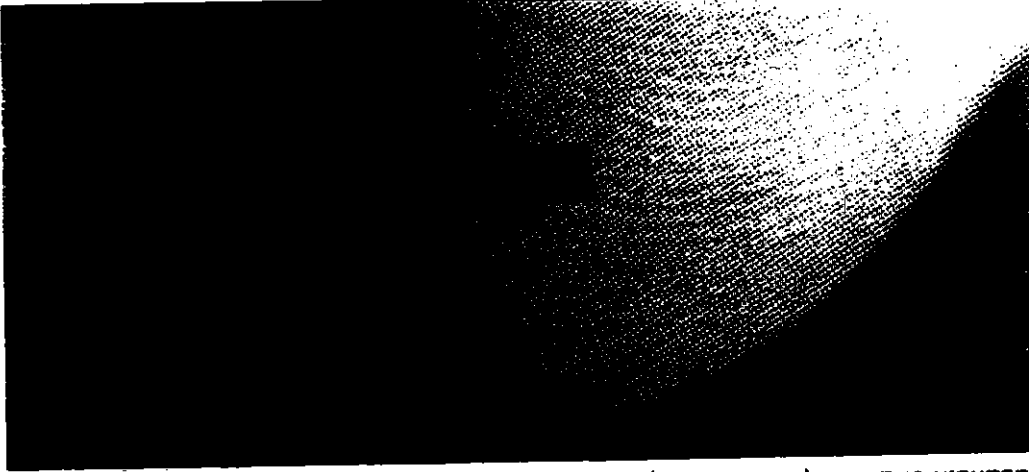
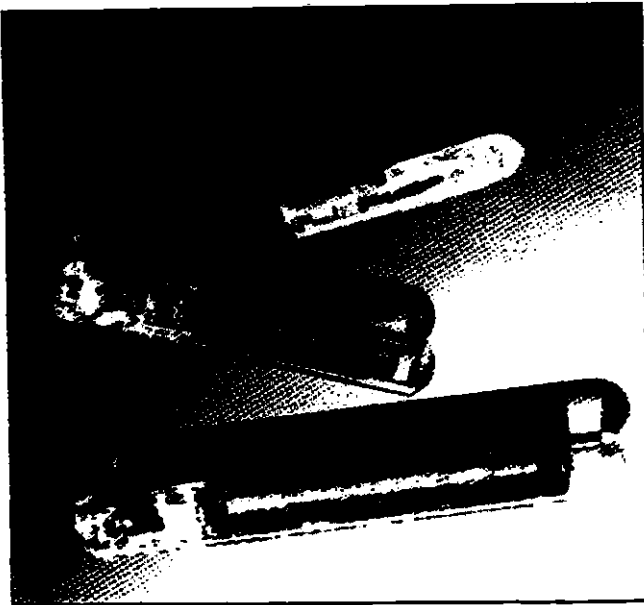


Figure 2. Microchip on human finger

Destron/IDI's transponders are passive devices, meaning that the transponder carries no battery and remains inactive most of the time. The transponder's tiny electronic circuit is energized by the low-power radio beam sent by a compatible reading device. The transponder sends the ID number as a radio signal back to the scanner, which then decodes the number and displays it on a small screen similar to that on an electronic calculator. Since the transponder contains no battery there is nothing to wear out.

is far less than the power transmitted by a child's two-way radio (walkie-talkie). Destron/IDI scanners are approved by the FCC in the U.S. and by similar organizations in other countries (PTTs) to operate as low-power radio-frequency devices not requiring site licensing.

Figure 1. Destron/IDI transponders



Therefore, small transponders are available with one end sheathed in a polypropylene shell as shown in Figure 4. This coating offers a surface with which fibrous connective tissue begins to bond within 24 hours of the injection. Destron recommends this configuration of the transponder whenever migration is a concern or with subcutaneous (under-the-skin) injections, such as those done in dogs and cats.

In dogs and cats, the transponder is injected in a standard site which is in the scruff of the neck between the shoulder blades (scapula). In horses, the standard injection site is on the left side of the animal in the middle third of the neck, just below the long hairs of the mane. For these injections, each transponder comes pre-packed inside a needle, and this assembly is packaged in a pre-sterilized plastic envelope. Each needle is discarded after one-time use. This prevents the spread of infection, and insures that the needle is factory sharp so as to cause minimum discomfort to the animal.

Numerous studies have been performed on a wide variety of animal species to demonstrate the safety of the transponder. These studies have involved mammals, birds, fish, and reptiles which have shown no adverse reactions to the transponder, either biological or behavioral. Many of these studies have been documented in published papers.

While Destron pioneered injectable transponders for animals in 1985, electronic identification technology in general was already well established before that time. Applications included external electronic ID for animals (ear tags, electronic collars, etc.), identification of people for access to buildings or restricted areas and identification of manufactured goods, machine tools, and other items in a factory environment.

Destron/IDI RFID systems are sold worldwide through distributors to the livestock, companion animal, laboratory animal, and fish and wildlife markets. More than two million animals have been injected with transponders manufactured by Destron/IDI. The Company is headquartered in Boulder, Colorado and is publicly traded on the NASDAQ and Vancouver stock exchanges.

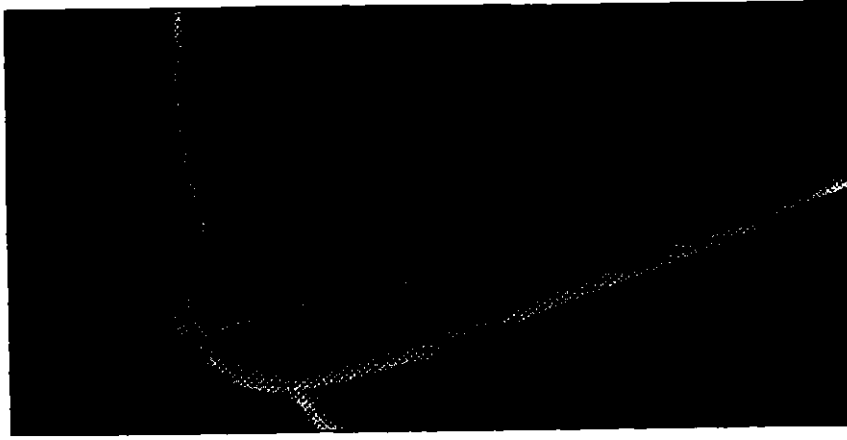


Figure 4. Photomicrograph of transponder with anti-migration tip

The transponders are cylindrical, with the smallest measuring 11 mm in length and 2.1 mm in diameter. Inside are only three components. The first is a computer microchip (custom integrated circuit) which is shown in Figure 2 on a human finger. This microchip contains the unique ID number assigned to the transponder, and all of the electronic circuitry necessary to send the number to the scanner when it receives the scanner radio signal.

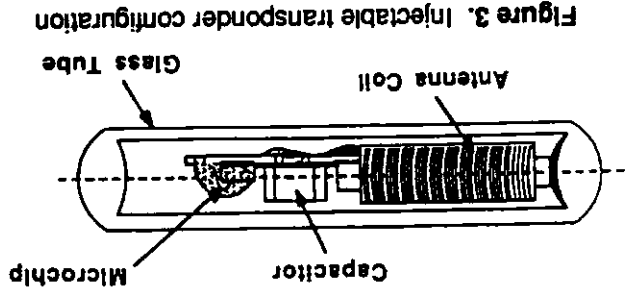


Figure 3. Injectable transponder configuration

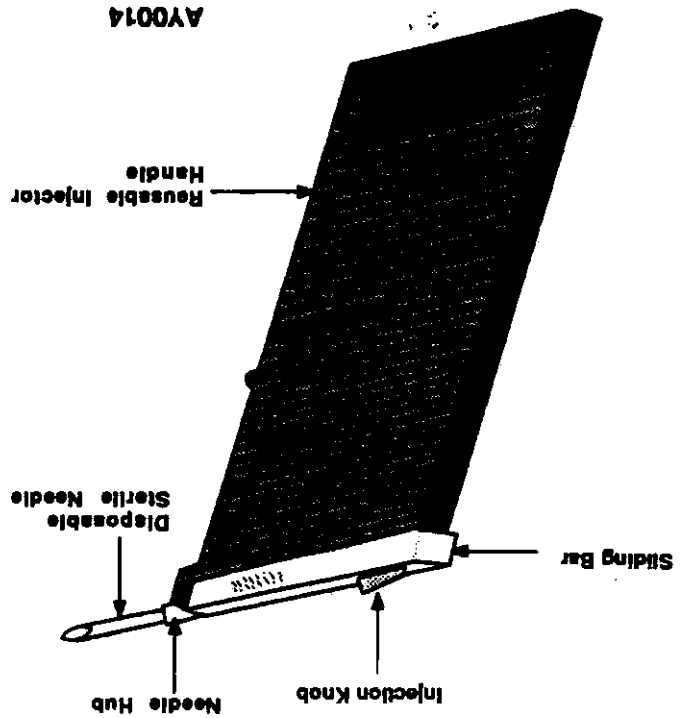
The second component of the transponder is a coil of copper wire wound around a ferrite (iron) core. This functions as a tiny radio antenna to pick up the signal from the scanner, and to send the encoded ID number from the microchip back to the scanner. The third component is a capacitor used for tuning. The internal structure of the transponder is shown in Figure 3.

Each transponder's unique ID number is encoded into it during the manufacturing process. A laser etches this code onto the surface of the microchip prior to transponder assembly and encapsulation in glass. Once the number is encoded it is impossible to alter. Encoding the number itself uses 35 bits of information which allows 34 billion possible ID numbers.

The outside of the transponder is a soda lime glass which has been specially selected for known biocompatibility. During manufacture, this glass is hermetically sealed so it is not possible for any moisture from the host animal's body fluids to reach the electronics inside.

While glass is biochemically inert it is also very smooth, which, in rare instances could allow the transponder to move around in the animal's body once injected.

Injection System Model AY0014

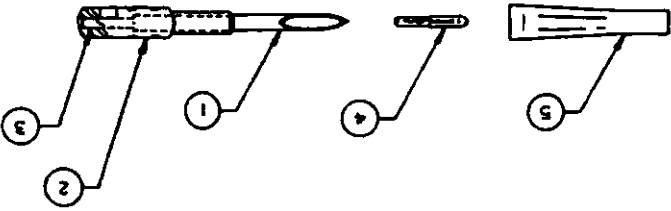


Features

- ▶ Proven technology has been in use for five years, with over a half million small animals injected.
- ▶ Light-weight, pistol-grip style allows easy control of needle insertion.
- ▶ Pre-packaged sterile needle including small injectable transponder eliminates the need for manual sterilization.
- ▶ Sterility is maintained because injector push-rod does not directly contact sterile transponder.
- ▶ Small injectable transponder comes with a proven, patented anti-migration tip.
- ▶ Reusable injection handle is made from durable, easy-to-clean material.
- ▶ Injection handle is designed for both right-handed and left-handed users.
- ▶ Provides positive, permanent identification for the life of the animal.
- ▶ Transponder assembly supplied sterile with barcode printout of the unique number. One assembly per sterile pouch.

Description

The Lifechip™ Transponder Injection System consists of a reusable injector handle and a sterile needle assembly which contains a small injectable transponder. The system is designed to maximize convenience and ease of use while minimizing discomfort at the injection site. Injecting a small transponder with the Lifechip system ensures that the animal can be identified electronically with its own unique, ten-digit alphanumeric code. The code is programmed into the injectable transponder, which is packaged as part of the sterile needle assembly. The identification code is easily read with a compatible reader manufactured by Destron/IDL.



TX1412L - Transponder Assembly

Specifications

- 1. Stainless steel needle
 - 2. Polypropylene needle guide
 - 3. Polypropylene drive pin
 - 4. Lifechip transponder with anti-migration tip
 - 5. Protective plastic sheath
 - 6. Not shown - sterile pouch and barcode label
- Needle assembly dimensions: 1.86" by .288" (47.34 mm by 7.32mm)
- Transponder dimensions: 0.43" by 0.08" (11 mm by 2.1 mm)
- Injector needle size: Approximately 12-gauge
- Needle assembly temperature: -40° to 158° F (-40° to 70° C) operating and storage
- Transponder housing: Bio-compatible glass with a polypropylene anti-migration cap.
- Transponder operating frequency: 125kHz

**Handi Reader
Model HS5600L1**



Display: 16-character LCD
0.20" (0.52 cm) character height

Batteries: Two 9-volt alkaline
(500 minimum readings)

Operating ranges: Temperature 32° to 122° F (0° to 50° C)
Humidity 10% to 90% (noncondensing)
Shock 20 g

Dimensions: 10.25" x 5.00" x 5.50"
(26.04 cm x 12.70 cm x 13.97 cm)

Weight: 1.43 lbs (0.65 kg)

Operating frequencies: Scanner exciter 125 kHz
Transponder response 12.5 kHz and 15.63 kHz

Read speed: 120 msec maximum

Features:

- **Low Cost.** The Handi Reader is the most economical reader on the market.

- **Easy to Use.** The push of a button turns the power on and begins the scanning function.

- **Portable.** The entire one-piece unit weighs just over one pound (0.65 kg) and is easily carried and operated with one hand.

- **Replaceable Batteries.** You'll never need to wait for the Handi Reader to recharge - it uses two standard 9-volt batteries that are easy to replace.

- **Durable.** A tough, water-resistant outer shell makes the Handi Reader perfect for indoor or outdoor use.

- **Automatic Shutdown.** The Handi Reader automatically shuts down when left unused for one minute, prolonging battery life.

Product Description:

The DestrON/IDI Handi Reader is a compact, one-piece device that reads identification numbers from compatible radio frequency identification (RFID) tags. DestrON/IDI's RFID tags are injectable transponders used for the identification of dogs, cats, birds, horses and other companion animals.

The Handi Reader energizes passive transponders with an excitation signal of 125 kHz, decodes the return signal and displays the identification number on a 16-character liquid-crystal display window. To ensure efficient operation, the reader also emits a beep and flashes a red LED to signal that a compatible transponder has been detected.

The microprocessor-based Handi Reader incorporates advanced surface-mount components and is powered by standard, replaceable 9-volt batteries.

Specifications:

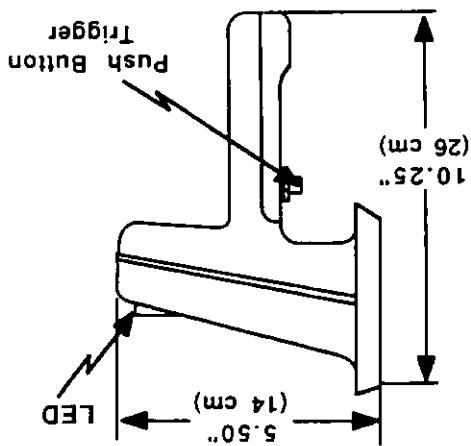
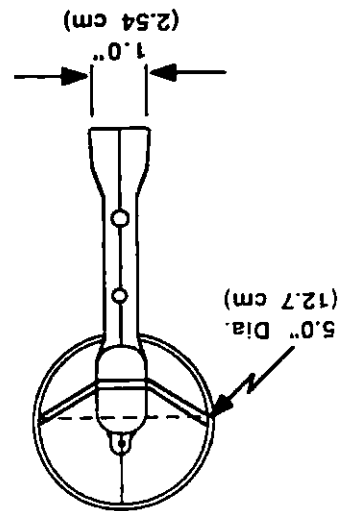
Typical read distances:

TX1400L1	small	3.00" (7.62 cm)
TX1410L1	medium	4.50" (11.43 cm)
TX1408L1	large	6.00" (15.24 cm)

(in a benign noise environment with optimal orientation of transponder to reader at 77° F (25° C))



Specifications:



How to order:

Order the Handi Reader Model HS5600L1 from your Destron/DI distributor. The Handi Reader comes with two 9-volt batteries, a transponder test piece, and a complete set of operating instructions.

For more information or to comment on lifechip products manufactured by Destron/DI, contact your local distributor listed below:

Warranty: Destron/DI products are warranted against defects in materials and workmanship, under normal use and service, for one (1) year from the date of shipment. This warranty will not apply if adjustment, repair, or parts replacement is required because of accident; neglect; misuse of electric power, air conditioners, or humidity control; damage during transportation; or causes other than ordinary use. This warranty is void if seals to the electronic components are not intact. Destron/DI's sole responsibility under this warranty shall be, at its option, to either repair or replace any product which fails during the warranty period.

This device involves technology covered by U.S. Patents #4,730,188, 5,041,826 and 5,166,676. Other patents pending.

Specifications subject to change without notice.

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DESTRON/IDI

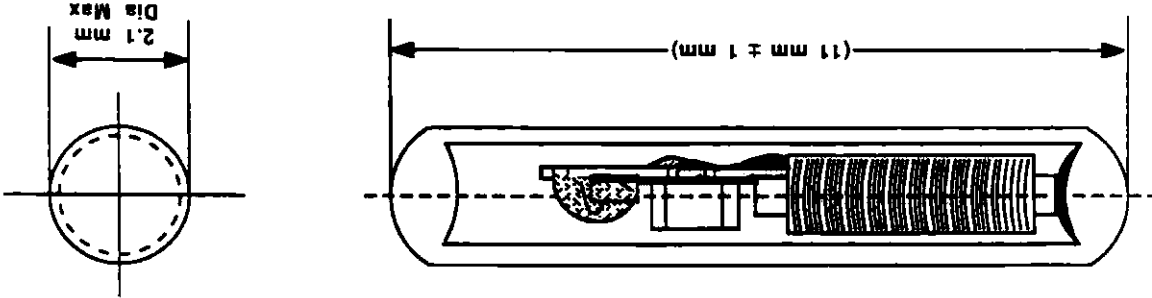
Injectable Transponder TX1400L Small Size

Product Description:

The injectable Transponder is a passive radio-frequency identification tag, designed to work in conjunction with a compatible radio-frequency ID reading system. The transponder consists of an electromagnetic coil, tuning capacitor, and microchip sealed in a cylindrical glass enclosure. The chip is pre-programmed with a unique ID code that cannot be altered; over 34 billion individual code numbers are available. When the transponder is activated by a low-frequency radio signal, it transmits the ID code to the reading system.

Although specifically designed for injecting in animals, this transponder can be used for other applications requiring a micro-sized identification tag.

Specifications:



Dimensions (nominal): 11 mm by 2.1 mm (0.43" by 0.08")

Housing: Bio-compatible glass

Average weight: 0.06 g (0.002 ounces).

Temperature range: -40 to 70°C (-40 to 158°F), operating and storage

Read range with the HS5105L Mini-Portable Reader:

(In a benign noise environment with optimal orientation of transponder and scanner)
Maximum: 10 cm (4")

Read speed: Approximately 1 meter per second

Vibration:

Sinusoidal: 1.5 mm (0.06") peak-to-peak, 10 to 80 Hz, 3 axis
Sinusoidal: 10 g peak-to-peak, 80 Hz to 2 kHz, 3 axis

Injector needle size: About 12 gauge

Operating frequency: 125 kHz



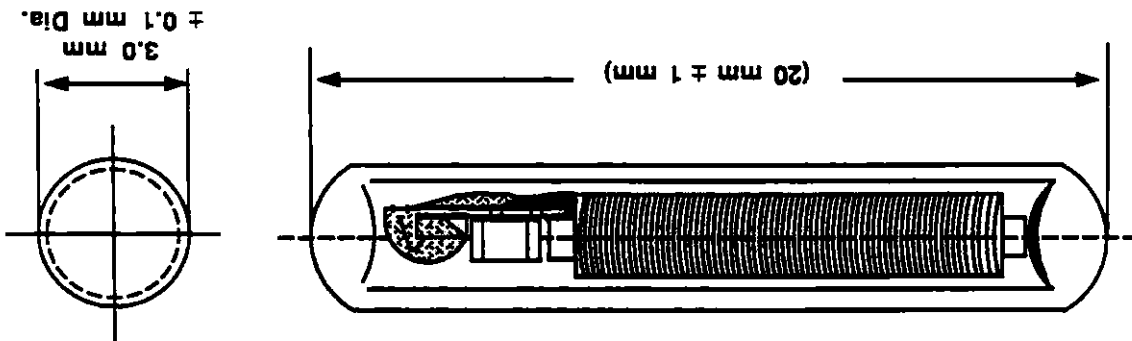
Injectable Transponder
TX1410L2
Medium Size

Product Description:

The Injectable Transponder is a passive radio-frequency identification tag, designed to work in conjunction with a compatible radio-frequency ID reading system. The transponder consists of an electromagnetic coil, tuning capacitor, and microchip sealed in a cylindrical glass enclosure. The chip is pre-programmed with a unique ID code that cannot be altered; over 34 billion individual code numbers are available. When the transponder is activated by a low-frequency radio signal, it transmits the ID code to the reading system.

Although specifically designed for injecting in livestock, this transponder can be used for other animal and nonanimal applications.

Specifications:



Dimensions (nominal): 20 mm by 3.0 mm (0.78" by 0.11")

Housing: Bio-compatible glass

Average weight: 0.23 g (0.008 ounces).

Temperature range: -40 to 70°C (-40 to 158°F), operating and storage

Read range with the Model HSS105L2 Mini-Portable Reader:

(in a benign noise environment with optimal orientation of transponder and scanner)

Typical	22.9 cm (9")
Minimum	20.3 cm (8")

Read speed: 3 meters per second

Vibration:

Sinusoidal: 1.5 mm (0.06") peak-to-peak, 10 to 80 Hz, 3 axis
Sinusoidal: 10 g peak-to-peak, 80 Hz to 2 kHz, 3 axis

Injector needle size: About 8 gauge (Destron part # 445-0012-00)

Operating frequency: 125 kHz