



Northwest Marine Technology Inc.

Fish Marking and Tagging Systems

www.nmt.us

2010 Product Catalog



Corporate Office: 360-468-3375 office@nmt.us

Biological Support: 360-596-9400 biology@nmt.us



Our Mission

“We are here to invent and manufacture the best possible instruments, systems and methods for purposes of fisheries research and management, and then to encourage and facilitate their broadest possible use.”

Keith B. Jefferts, President

Front Cover: The VI Alpha Tag is one of Northwest Marine Technology’s unique systems for individual identification. This tag has been used successfully in a wide variety of fish, amphibians, and reptiles.

Table of Contents

About Northwest Marine Technology	2
Decimal Coded Wire Tags, Equipment, and Supplies	
DCWT Product Information	3
DCWT Code Formats	4
DCWT Prices and Information	5-6
Tag Injection Equipment	7
Tag Injection Equipment Prices	8
Spare and Replacement Parts	9
Accessories	10
Tag Detection Equipment	11-12-13
Equipment Rental	14
Individual Fish Counter	15
Visible Implant Elastomer Tags	16-17-18-19
Visible Implant Alpha Tags	20-21
AutoFish System	22
Ordering Information	23
Sole Source Letter	24
Warranty and Bank Information	back cover

Prices effective January 1, 2010

About Northwest Marine Technology, Inc.

Northwest Marine Technology (NMT) was founded in 1971 by Dr Keith Jefferts to solve the problem of tagging salmonids. Researchers and fishery managers needed a tag to identify hundreds of salmon stocks each year without adversely affecting survival. The Decimal Coded Wire Tag (DCWT) filled this need and is still a critical part of managing Pacific Northwest fisheries.

NMT values our role in fisheries research and management, stock enhancement, and studies where marking and tagging systems are needed. The Decimal Coded Wire Tag, Visible Implant Elastomer, and Visible Implant Alpha tags are manufactured and distributed by NMT for broad uses on many species.

We have a proud tradition of providing the highest quality products and customer service. We are committed to the fisheries throughout the world and appreciate your business. If you have any questions, comments or concerns, please feel free to contact us.



Christine Lipsky (above) and the crew at NOAA Maine Field Station have tagged hundreds of thousands of Atlantic salmon over several years using NMT products including Visual Implant Elastomer.

Decimal Coded Wire Tags (DCWT)



This tag has revolutionized the way salmon are managed along the Pacific coast and has provided a tool that benefits many other fisheries as well.

The decimal coded wire tag is very small (0.25 mm x 1.1 mm) biologically inert, and can hold large amounts of data. Current coding technique provides up to 1 million codes for our standard tag format (photo above) and many more codes for our sequential tag format.

Very small animals can be tagged with DCWT. At recapture, a tagged animal is identified using NMT's electronic detection equipment that can sense the tag's magnetism. The tag may then be extracted, decoded, and matched to that particular animal's release records.

DCWTs have been successfully applied to a wide variety of species, including marine and freshwater fishes, lobsters, crabs, mussels, clams, prawns, eels, shrimp, polychaetes and meal worms. DCWT come in three lengths and five data formats (descriptions on page 4).

NMT biologists are available to provide expert advice regarding technique and target DCWT implantation sites. Please call (360-596-9400) or e-mail (biology@nmt.us) for assistance.



DCWT Formats

The tag formats described below should only be cut in the size intended otherwise the tags may be impossible to decode when recovered from the test animals.

Standard – (0.25 mm x 1.1 mm) This is the most common tag used. It provides data to identify batches of animals. The batch code is created using 3 two-digit “words” (Agency, Data1 and Data2).

Half-length – (0.25 mm x 0.5 mm) This tag format provides data to identify batches of animals. This batch code includes five words (Agency, Data1, Data2, Data3 and Data4). Half-length tags are used when animal size cannot accommodate a larger tag. Whenever possible, larger tags should be used as they increase magnetic detection.

One-and-a-half-length – (0.25 mm x 1.6 mm) This tag format includes the same information as the Standard tag format, but provides better magnetic detection because it is larger.

Sequential – (0.25 mm x 1.1 mm) In addition to 3 two-digit words, this tag includes a unique sequential number for each tag. This tag is ideal for identifying small batches or individuals when the batch size is unknown before tagging begins.

Agency Only – (0.25 mm x 1.1 mm) This tag is batch coded with only the Agency word and is designed for projects where the information required is related to the presence or absence of a tag in a specimen.

Decoding DCWTs

NMT provides detailed written instructions to guide new users in the technique of reading DCWTs. In addition, our technicians are available to assist you in learning to decode tags or in deciphering tags damaged during extraction.

DCWT – Prices

Refunds – There are no refunds on orders of coded wire tags.

Standard, Half-length, One-and-a-half-length & Sequential Formats

Quantity*	90-Day Delivery	30-Day Delivery
2,000 – 9,000	\$152/1,000	\$166/1,000
10,000 – 99,000	\$105/1,000	\$116/1,000
100,000 – 999,000	\$95/1,000	\$108/1,000
1,000,000 and over	\$90/1,000	\$100/1,000

*Minimum order – 2,000 tags

Agency Only Format

Quantity**	90-Day Delivery	30-Day Delivery
100,000 and over	\$39/1,000	\$43/1,000

**Minimum order – 100,000 tags

Precut DCWTs ***Minimum order – 200 tags

The tags will arrive ready to use. Single ShotTag Injector sold separately.

Quantity	Cost
sold in increments of 100-----	\$36/100



photo courtesy of Branson Williams

Precut DCWT can be used with a single shot injector (shown above) for small scale studies and for feasibility studies of the Decimal CodedWire Tag.

Single Shot Tag Injector-----	\$110
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DCWT – Additional Information

Delivery – An order that requires a guaranteed delivery in less than 90 days will be priced as a 30-day order

Small Data Groups – Any data group that is smaller than 10,000 tags will be charged at the 2,000 – 9,000 price without regard to the total quantity of tags ordered.

Special Spooling – Standard packaging is 10,000 tags per spool. If nonstandard spooling is required, each additional spool will carry a surcharge of \$60. The minimum number of tags per spool is 2,000.

Quantity Pricing – Quantity pricing will apply to any single order. A single order consists of one billing address, one shipping address and one invoice per shipment. The order may include both 30-Day and 90-Day items.

T13 Detectors at Cowlitz Hatchery

Cowlitz Salmon Hatchery is one of the biggest salmon producing hatcheries in the world, and is undergoing a remodel of colossal proportions. The hatchery is designed to sustain salmon runs of 17,000 spring Chinook, 8,300 fall Chinook, and 25,000 Coho on the Cowlitz River in southwestern Washington, USA. The hatchery handles and sorts many thousands of adults each year, and the new separator will make this process much more efficient.

The separator now includes two T13 Coded Wire Tag detectors, which are large enough for the very biggest fish, and sturdy enough to accommodate live adults.



DCWT Injection Equipment

A MKIV Tagging Unit includes a MKIV Tag Injector and a Quality Control Device (QCD) shown below being used during a project in Finland.



The MKIV is used to implant DCWTs into animal tissue and the QCD verifies the tag's presence. This equipment is ideal for stand alone tagging or for integration into a large-scale tagging system.



The Handheld Multishot Tag Injector (left) is a practical alternative for research projects that require tagging animals in the field where a lack of electricity or harsh conditions make the MKIV impractical.

The Coded Wire Tag Project Manual is available as a download at www.nmt.us and provides guidelines on planning and conducting projects using DCWT and associated equipment.

DCWT Injection Equipment – Prices

Discounts on orders of 10 or more each of these items

MKIV Tagging Unit ----- 31,800

MKIV Tag Injector with accessories
Quality Control Device with accessories

MKIV Tag Injector ----- \$21,700

MKIV Tag Injector
Touch or foot switch
Transit case
3 non-custom head molds
3K Agency wire for training

Tool kit
Instruction manual
Power supply
1 pkg of 5 needles

Quality Control Device (QCD) ----- \$12,600

QCD for the MKIV
Transit case

Interconnect cable
Instruction manual

Handheld Multishot Tag Injector ----- \$7,350

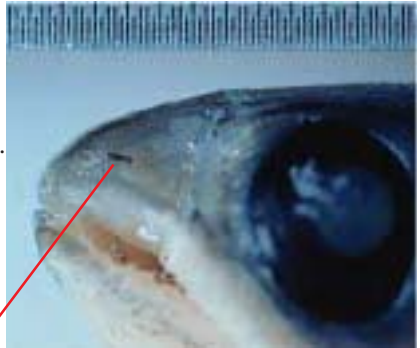
Tool kit
3K Agency wire for training

Transit case
1 pkg of 5 needles

Instruction manual

Each year, more than 40 million salmonids are tagged with Decimal Coded Wire Tags.

The resulting data are used to manage fisheries and address research questions.



This photo shows a fish with part of the snout cut away to reveal the standard 1.1mm Decimal Coded Wire Tag.

DCWT Supplies – Prices

Spare and Replacement Parts

For the MKIV Tag Injector

Battery Adaptor Cable -----	\$94
Cutter -----	\$1,960
Drive Roller Set-----	\$175
Foot Switch or Touch Switch-----	\$240
5 Etched or Non-Etched Needles -----	\$118
20 Etched or Non-Etched Needles-----	\$448
Needle Carrier with Nut -----	\$747
Needle Nut -----	\$15
Needle Carrier Clamp -----	\$145
Needle Support Tube with Protector -----	\$90
24V Power Supply-----	\$390
Drive Roller Puller-----	\$70
MKIV Tool Kit-----	\$400

For the Quality Control Device

Filter -----	\$47
Filter Gasket -----	\$10
Filter Gasket Assembly -----	\$275
Interconnect Cable-----	\$210
Solenoid Valve-New -----	\$225

For the Handheld Multishot Tag Injector (MSCWT)

Cut Lever with Alignment Pin-----	\$307
Cutter -----	\$2,163
Drive Roller -----	\$100
Field Kit -----	\$290
5 Etched or Non-Etched Needles-----	\$118
20 Etched or Non-Etched Needles-----	\$448
Needle Support Tube -----	\$46
Push Wire Replacements -----	\$19

DCWT Accessories – Prices

Accessories for DCWT Equipment

DCWT Detection Standard -----	\$5
Wand Shield (Titanium Tip) -----	\$150
Wand Holster -----	\$45
Head Mold Base -----	\$20
Head Mold (for non-custom sizes and species) -----	\$105
Custom Head Mold fromsupplied specimen -----	\$715
MagniViewer -----	\$200
Illuminator -----	\$300
Tag Reading Jigwith 2 Pencils -----	\$200
Tag Reading Pencils -----	\$60
Wire Cutting (per 100 tags, includes mounting)-----	\$20

Accessories for the R Series Detector

Aluminum Tubular Legs -----	\$700
Diverter Gate Only -----	\$7,000
Quad Counter for Gate -----	\$1,650
Counter Cable -----	\$212
Power Supply -----	\$286
Counter Only -----	\$638

Equipment Upgrades and Repairs

MKIV Quality Control Device ----- \$2,500
Install the mechanical flapper gate in 2.5 inch
QCD. Includes a new 24V Power Supply.

V-Detector ----- \$860
Install the most current version of electronics,
conduct thorough inspection and cleaning.

Handheld Wand Detector ----- \$2,650
Repair damaged casings, conduct thorough inspection and cleaning.
Install Wand Shield (add \$150)

RDetector electronics upgrade ----- \$1,500

DCWT Tag Detection Equipment

To detect tags in recaptured animals, NMT offers the Handheld Wand Detector, the V-Detector, and Tunnel Detectors.

The detectors can detect and help locate the tag but they do not read the code.



The Handheld Wand Detector (above) is portable and the most popular for detecting Decimal CodedWire Tags in animals in the field. The Handheld Wand Detector includes holster, transit case, and DVD instructions.



The V-Detector (shown left) requires a stable surface and the sample is moved through the sensory region.

The V-Detector comes with a sturdy transit case and splash guard. This instrument is portable and powered with a 9V battery.

DCWT Tag Detection Equipment

NMT's Tunnel Detectors are ideal for scanning large numbers of fish for DCWF.



The T4 Detector (left) is NMT's smallest tunnel detector.

This detector can be used alone or as a quality control device with the MKIV Injector.

The T4 is able to sort tagged fish from untagged fish and is also able to count the number of fish tagged. This unit also works well in remote locations with a 18V battery supply.



The R Series detectors: R8000 and R9500, have been used effectively for tag recovery in the field, at fish processing plants, and at hatcheries to quickly separate tagged from untagged fish.

The T13 Detector



The T13 is NMT's largest tunnel detector. The inside dimension of the oval tunnel is 7.5 inches by 13 inches.

The detector can be mounted on an accessory trailer or permanently installed. For diverting fish the T13 requires a diverter gate which includes the control box and counter

Detection Equipment prices

V-Detector -----	\$5,000
Handheld Wand Detector -----	\$5,000
R Series Detector R8000-----	\$14,200
R Series Detector R9500-----	\$17,500
R Series Diverter Gate with Dual Counter-----	\$7,500
Quad Counter for R8000 or R9500-----	\$1,400
T4 Detector with legs & funnel -----	\$9,000
T4 Diverter Gate& Control Box -----	\$3,600
T13 Detector with Control Box-----	\$75,000
T13 Diverter Gatewith Counter -----	\$10,000

DCWT Equipment Monthly Rental

MKIV Tagging Unit -----	\$2,520
MKIV Tag Injector-----	\$2,110
Quality Control Device(QCD) -----	\$1,000
Handheld Multishot Tag Injector-----	\$620
V-Detector -----	\$415
Handheld Wand Detector-----	\$415
R Series Detector R8000-----	\$1,480
R Series Detector R9500-----	\$1,750
Diverter Gate with DualCounter-----	\$740
T4 withGate -----	\$1,425
T4 without Gate-----	\$1,020

Terms of NMT Equipment Rental

Rentals are subject to equipment availability One month minimum.

Purchase Option – 90% of the rental payments can be applied toward the current purchase price. Call NMT for further details (360-468-3375)

Top Notch Service



At Northwest Marine Technology we are proud of our products, but we know that this isn't enough to make your tagging project a success.

We offer free biological consulting to help select the most appropriate tags and equipment, and to help you learn new tagging methods and techniques.

If you have a technical question about your equipment, you can talk directly with the people who have developed and built it. They also have plenty of tips for smooth operation and maintenance.

The Individual Fish Counter



The Individual Fish Counter was developed to solve the problem of accurately counting manually processed fish. It's ideal for vaccinating, tagging, fin clipping, or any research project that depends on accurate counts of hand processed fish or other aquatic species.

The Individual Fish Counter uses advanced optical sensors to accurately count fish as small as 0.5 grams and as large as 40 grams as they pass through the funnel (photo above). Up to 12 Individual Counting Station funnels can be attached to the Main Control System.

The Main Control System maintains individual counts for each station and a total count. It also has a target count alarm that is useful for research group studies or populating tanks and ponds.



Main Control System-----\$2,000

Individual Counting Stations----\$800 each

Monthly Rental of Main Control with 4 stations-----\$415

Visible Implant Elastomer



Visible Implant Elastomer (VIE) tags provide the solution when an externally visible, but benign tag is needed. VIE is a biologically compatible material that is injected into an animal as a liquid and then cures into a pliable solid.

Detection of the fluorescent tags is greatly enhanced by using the VI Light.

VIE is available in six colors that fluoresce with the VI Light (red, orange, yellow, blue, pink and green) and four colors that do not fluoresce (white, purple, brown, and black).



VIE tags have been successfully applied to many species of fish, crustaceans, reptiles, and amphibians.

Manual Elastomer Injection System

VIE tags can be purchased in a variety of kits to suit project designs. Elastomer material has a recommended shelf life of one year

Master Kit ----- \$1,165

2 Manual Elastomer Injectors
10 units of elastomer (6 cc each)
Mixing and injecting supplies
VI Light
Field carrying case

Four Color Kit ----- \$535

1 Manual Elastomer Injector
4 units of elastomer (6 cc each)
Mixing and injecting supplies
VI Light
Field carrying case

Single Color Kit ----- \$252

1 Manual Elastomer Injector
1 unit of elastomer (6 cc)
Mixing and injecting supplies
VI Light
Field carrying case

Trial Pack of Elastomer ----- \$42

1cc of elastomer
Mixing and injecting supplies

Refill kit: Mixing supplies & 1 color (6cc) ----- \$110

Syringes: 0.3 cc injection ----- pack of 20 ----- \$10

Manual Elastomer Injector ----- \$32

VI Light ----- \$120

The Visible Implant Elastomer Project Manual is available at www.nmt.us and provides guidelines on planning and conducting projects using VIE.

Air Driven Injection System

Experiments that require the tagging of many animals (5,000+) with VIE can save effort using NMT's Air Driven Elastomer Injection System.



This system includes a main controller box, power supply handpiece, input air hose, and VI Light.

The user must provide an air compressor that supplies a minimum of 60 psi (3-4.3 Bar).



Several individual machines can be connected through a custom hosing system and run from a single compressor.

This system has been used successfully in very large tagging projects for both fish and shrimp.



VIE has been used to evaluate Atlantic Salmon at NOAA fisheries Maine Field Station

The elastomer material and supplies for injection are sold in increments of 1,000 marks. NMT supplies the marks for this system by way of a token. When inserted into the machine this token allows the user to make the number of injections purchased. Tags can be downloaded from the token onto various machines.

Air Driven Elastomer Injection System Prices

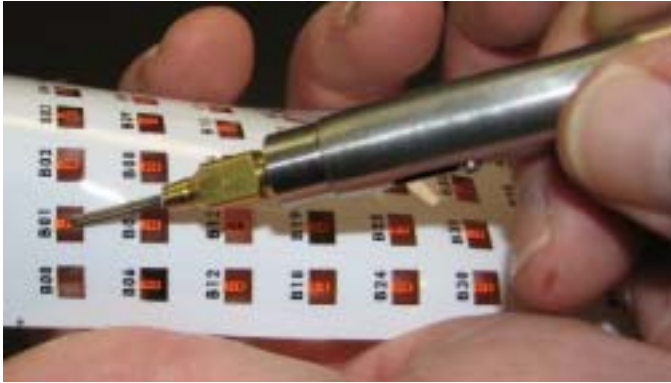
Air Driven Elastomer Injection System ----- \$5,500
Monthly Rental of this system ----- \$415

Quantity	Price
5,000 - 9,000	\$163/1,000
10,000-99,000	\$126/1,000
100,000 - 999,000	\$105/1,000
1,000,000+	\$87/1,000

Visible Implant Alpha Tag

Alpha tags are used to identify individual animals. They are small fluorescent tags with an alphanumeric code. VI Alpha tags are implanted subcutaneously but remain externally visible. The tag readability and detection are greatly enhanced with the VI Light.

NEW FOR 2010



NMT has redesigned the VI Alpha Tag and injector for 2010.

These new tags are quick and easy to load into the injector. They are thinner and more uniform in thickness.

The tags are 1.2mm x 2.7mm and are available in red, yellow, orange, and green backgrounds.

The new injector is very sharp and the needles can be inexpensively replaced. Existing injectors can be modified with a replacement needle to accommodate the new tags.

The new tags are pushed into the injector and snapped off of the sheet. This system is much faster and easier to use than the soft VI Alpha tag.

VI Alpha Tag Prices

VI Alpha tags are sold in increments of 100. Please specify color when ordering.

Quantity	Price
100 - 900	\$.75 each
1,000 - 4,900	.70 each
5,000 +	.65 each

VI Alpha Starter Kit ----- \$295

100 VI Alpha tags
Injector
Replacement Needle and Shim
VI Light(7 LED)

VI Alpha Injector ----- \$130

VI Light (7 LED) ----- \$120

Replacement Needle and Shim ----- \$25



Please contact Biological Services (360-596-9400) **biology@nmt.us** for a discussion on how the NEW VI Alpha tag can help your next tagging project.

AutoFish System

An Innovative Approach to Fish Handling

The AutoFish System uses advanced technology to sort and process salmonids at a hatchery. The fish are first measured and sorted, then their adipose fins are clipped or they are decimal coded wire tagged, or both. The fish return to the pond, never having been dewatered, anesthetized, or handled by humans. AutoFish can mark and tag more than 60,000 fish per day.



SCT6 –Sort, Clip, and Tag with six automated processing lines, two manual tagging units, and room for manual markers all contained in a 44’ 5th wheel aluminum trailer -----**\$1,280,000**

Three year extended warranty can be added to the standard one year warranty foran additional-----**\$100,000**

NMT Manual Tagging Trailer-----**\$380,000**
Mobile wet lab.

AutoFish is currently available for sale in North America only. For more information contact Dave Knutzen (360-596-9400) or (dave.knutzen@nmt.us).



Ordering Products From NMT

NMT's Tax Identification Number: 22-1935793

First time buyers and customers with detailed orders, code requirements or questions are encouraged to call for assistance. To place an order, or if you have any questions or problems relating to our products, please contact Customer Service by phone (360-468-3375), fax (360-468-3844) or e-mail (office@nmt.us) 7:00 am until 5:00 pm PacificTime, Monday through Friday

For our customers in Asia, please direct all inquires to Mr Yong Huang by phone (425-456-0101) cell (425-891-8273) fax (425-456-0303) or e-mail (yong.huang@nmt.us)

NMT accepts VISA, MasterCard, checks drawn on US banks in US dollars, bank transfers, and purchase orders. Purchase orders are only accepted from academic institutions and government agencies. Terms are Net 30. A finance charge of 1.5% per month (18% per annum) will be assessed on all past due accounts. Specifications and prices are subject to change without notice.

Sales and Technical Support

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Biological Support E-mail: (biology@nmt.us)

AutoFish System E-mail: (dave.knutzen@nmt.us)

Sole Source Letter

To Whom It May Concern:

This letter serves as a sole source document for products manufactured by Northwest Marine Technology (NMT).

Decimal Coded Wire Tags (DCWTs), DCWT injection equipment, DCWT detection equipment and parts and repair for injection and detection equipment are manufactured and distributed solely by NMT. Each group of tags is made for a specific agency containing a unique batch or individual code. NMT's detection equipment is protected by U.S. patent (5134370).

The Visible Implant Elastomer (VIE) tagging system utilizes a specially developed, biocompatible and medical grade elastomer material that provides externally visible, internal marks. The elastomer material and the equipment to inject elastomer is manufactured by NMT and protected by U.S. patent (5,324,940).

The Visible Implant Alphanumeric Tag is a pliable, fluorescent tag and has a coding scheme of three alphanumeric characters. This tag is manufactured by NMT and protected by U.S. patent (5,324,940).

The AutoFish System is manufactured exclusively by NMT. This system is protected by U.S. patents (5,816,196 and 6,145,476).

To the best of our knowledge, no other vendor manufactures and distributes these or similar items. Please let me know should you need further details.

Sincerely,



L. N. Thang for CEO

All equipment and parts offered for sale by Northwest Marine Technology are fully guaranteed for one year following the invoice date against failure caused by defective material or workmanship.

Within the guarantee period, NMT will repair or replace at its discretion and free of charge, F.O.B. Shaw Island, Washington, all defective parts or defects in workmanship. This does not apply to parts or materials experiencing normal wear and tear; nor does this apply to NMT equipment used with tags or parts that NMT has not tested and approved for use in NMT equipment.

NMT is not liable for (i) consequential damages; (ii) incidental damages, or (iii) implied warranties of merchantability or fitness for a particular purpose.

No other warranty, express or implied, is made.

Freight quotes are available upon request.
Shipments are F.O.B. Shaw Island, WA.

NMT's Tax Identification Number: 22-1935793