



CHAPTER

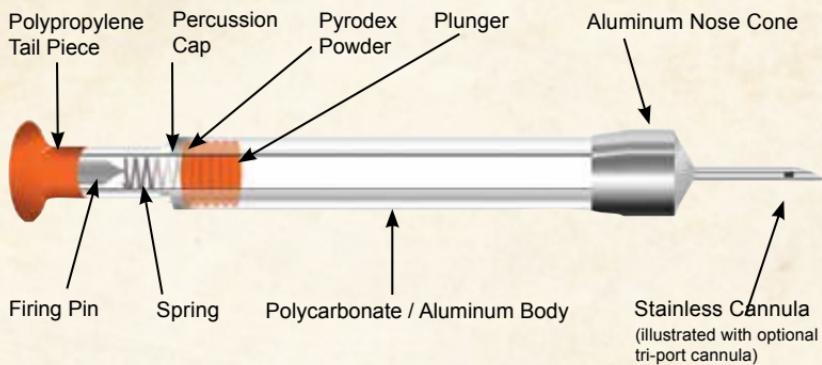
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Two black, stylized arrowheads pointing towards the center, flanking the chapter number. The arrowhead on the left is wider and has a more pronounced curve than the one on the right.

**HOW
DARTS
WORK**



Pneu-Dart disposable darts are ready to use except for the medication that needs to be loaded into them. Each dart will have the proper amount of powder to create the necessary energy to push the plunger to the end of the dart emptying the contents into the animal. A one cc dart will have much less powder than a ten cc dart. When the powder charge is detonated using the medium – rapid injection darts, the contents of the dart are emptied into the animal rapidly.



All darts, no matter who manufactures them, work in the same manner. The needle, or cannula, introduces the drug into the tissue. A medicine chamber holds the required amount of drug. There is a plunger at the back of the medicine chamber to push the drug out of the dart. Behind the plunger there is a self-contained charge to generate the energy to push the plunger to the tip of the dart, which empties the medicine chamber. Behind the charge; there is a cap used to detonate the charge which is struck by a firing pin. There is a light spring in front of the firing pin to prevent accidental detonation. When the dart comes

to a positive stop after flying through the air, the energy stored in this spring is overcome by the inertia of the firing pin. You could liken it to having a brick in the back of your pickup by the tailgate. When you slam on the brakes and come to an abrupt stop, the brick slides forward.

On the back of the dart is the tailpiece which captures the pressure of the projector so the dart is thrust out of the barrel. Its second function is to stabilize the dart's flight as well as to contain the pressure generated inside the dart so the medication will be delivered out the cannula. The higher end projectors will have rifling in the barrel to put a spin on the dart. This stabilizes the flight of the dart as it travels toward the target and provides the accuracy required for longer distances. There are currently two types of tailpieces manufactured. When placing an order for darts, you will need to specify which "type" you will need according to the projector you have. Type "P" tails are for pneumatic projectors. They have a smaller diameter tail. The firing pin safety spring is not as strong as the type "C" tailpieces. The type C darts have a larger diameter tail to engage the rifling of cartridge fired projectors, along with a slightly heavier safety spring. Again, as the dart hits the animal and comes to a positive stop, the inertia of the firing pin detonates the charge, which empties the contents of the medicine chamber.

Going back to the needle end, there is a retention device to hold the dart in the animal as the dart detonates. The fluid contained in the dart is trying to come out of the cannula all at once. All the hydraulic pressure from this wants to propel the dart back out of the animal and spray your medication into the air. The retention device on disposable Pneu-Darts is a gelatin cone that is molded onto the cannula. (There is no need to order one half or one cc darts with gelatin collars. The injection of these small volumes is complete before the dart exits the animal.) Again, injections are made rapidly. After the injection is made, the animal's body temperature

dissolves this gelatin collar and the dart simply falls out of the animal. The time it takes for the dart to fall out can vary due to conditions; the location of the injection site and the animal's movement to name a few. It might take five minutes, or it might take thirty minutes. I am usually ten miles down the road at another pasture when the dart falls out. If I see one lying on the ground upon revisiting a pasture, I'll pick it up; otherwise, I don't worry about it. It's not to say that by some freak incident you could get a flat tire on your ATV or a calf could step on it and it could become lodged between the toes of the hoof. Out of hundreds that have laid out in my pastures and in my lots over the years, I have never had such an incident. Some spent darts I pick up will have stayed outdoors in the elements a long time. They will be crumpled up and flattened out from the cattle walking on them and also show corrosion of the aluminum, along with a faded color of the tailpiece.

The exception for hunting the darts in the field is when sedating or tranquilizing drugs are being used. I want these darts disposed of in a proper manner, such as a bio-hazard waste bin at the local hospital. If I think there is a chance the dart might fall from an animal in a situation where it could take a great deal of time to recover it, I'll use a dart with a wire barbed needle. When you find the animal, you'll find the dart and surgically remove it. Of course you won't want to administer antibiotics with a barbed needle, for the spent dart will never fall out!

If you find a dart that has struck an animal and you want to make certain the medicine chamber has emptied, there is no need to break the dart or saw it in half. Simply take your 19 gauge fill needle and insert it into the dart's cannula just like you did when you loaded the dart with medicine. You should find that you will not be able to go into the dart's medicine chamber as your fill needle contacts the plunger slightly past the length of the dart's cannula.

NOTES

Drugs with a heavy viscosity are difficult to draw from the “nurse” bottle with the 19 gauge dart fill needle attached to your hand syringe. You would save a lot of time and make life easier on yourself if you would draw the required amount of drug into your fill syringe by using a three-quarters of an inch by 14 gauge needle. Once you have accomplished this, you can change out the 14 gauge to the 19 gauge and then proceed to fill your dart by inserting the hypodermic needle into the medicine chamber of the dart through the dart cannula. You will want to be holding the dart with the nose up and the tail down while filling.

When you are transferring drugs from the loading syringe into the dart, refrain from pushing the plunger on your fill syringe too fast. The air in the medicine chamber must have time to escape around the hypodermic needle as the air in the chamber is being displaced by the drug.

If you have inserted a loaded dart into your projector, and find yourself for some reason not shooting the dart, you can retrieve your drugs from it.

Carefully push the dart out of the barrel with a cleaning rod. Hold the dart with the tail up and cannula down. Insert your fill needle into the dart cannula just to where the tip of the fill needle is at the bottom of the medicine chamber and slowly pull the plunger back on the hand syringe. You should recover ninety to one hundred percent of the drug which could be put back into a vial for later use.

If for some reason you miss an animal and the dart slides along the ground through the grass and does not come to a positive stop, chances are the dart didn’t detonate. If you can find this dart, you can retrieve your drugs by the manner mentioned above.

I have heard that once you have emptied a dart by hand, that some people flush the inside of the medicine chamber with water so they can reuse the undetonated dart. I throw the dart away. A small amount of drug left in the dart over time could dry, leaving a residue within the drug chamber and thereby hindering the ability for the plunger to be displaced with the same effectiveness. This, in turn, leaves you with a defect dart. I want to make sure that when I shoot a dart into an animal it deploys the drug.

Pneu-Dart is currently manufacturing the $\frac{1}{2}$, 1, and $1\frac{1}{2}$ cc darts that have a transparent polymer body. These are nice! The plungers are a bright color. You can see the plunger at the rear of the medicine chamber as you fill the dart. With a pair of field glasses you can see the plunger at the nose of the dart post detonation while it's still in the animal. The polymer bodies are tougher than the aluminum-bodied dart. I have been told that eventually all the dart capacities will be manufactured in this manner, but it will be some time before they hit the market. It will be an arduous undertaking and I am sure the company will perform extensive testing prior to releasing this new development. These new design darts should shoot very similar to the aluminum-bodied darts that you are accustomed too.

