

Automatic fly control for beef cattle. Each animal receives one measured dose of spray as it walks through an opening on its normal trip to water or mineral.

De-Fly is a 12 volt controller that turns a standard spot sprayer into an automatic walk-through applicator. The customer builds the opening from their own gates, panels or posts and supplies the tank, pump and nozzles. De-Fly supplies the detection, timing and control: two photo eyes detect each animal, the controller runs the pump for a set time, and it will not spray again until the opening is clear. Cattle treat themselves daily without gathering, penning or chute work.



- **One dose per animal, in either direction.** Two photo eyes cover entry and exit. An animal that stops in the opening is limited to the maximum spray time and is not sprayed again.
- **Uses equipment the customer already buys.** Runs any 12 volt diaphragm pump and any nozzle bodies. A 25 gallon 12 volt spot sprayer package covers tank, pump and hose.
- **Off-grid.** 12 volt battery with a solar maintainer. Controller draw is about 1.5 amp hours per day. No internet, cell service or subscription.
- **Set up from a phone.** The controller broadcasts its own WiFi network. Settings, test spray, head count and firmware updates are handled from a phone browser. No app to install.
- **Mounting system for any frame.** Clamps for round pipe, square tube, T-posts, round posts and flat surfaces hold the nozzles and photo eyes at the correct height and angle.

Who it is for

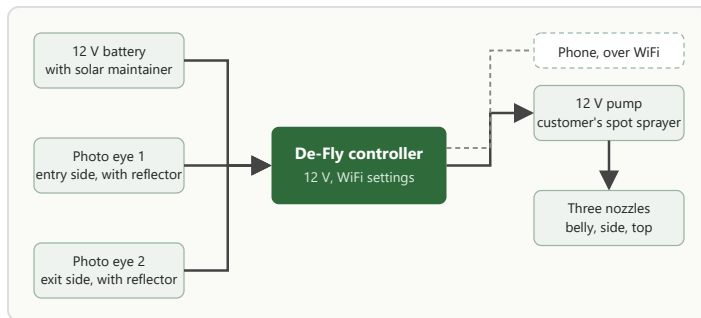
Cow-calf and stocker operations that want daily fly and insect coverage on pasture cattle without the labor of gathering. The unit is typically installed at a water point, mineral station or lane that cattle pass through every day. One controller covers one opening; there is no limit on herd size.

De-Fly applies insecticide that the customer selects and mixes according to the product label. It is a delivery system and does not treat, diagnose or prevent any specific disease.

What is in the box

Item	Description
De-Fly controller	Weather-resistant enclosure with labeled screw terminals for battery, pump and photo eyes
Two photo eyes with reflectors	12 volt retroreflective sensors, one for each end of the spray zone, pre-wired for the controller
Documentation	Owner's manual, wiring diagram and recommended buy list, printed and as PDF

System layout



Power, pump and photo eyes wire to the controller's terminals with 16 gauge wire. The pump is switched through the controller's 10 amp relay with an inline fuse on the battery lead.

Operating sequence

1. An animal breaks a photo eye beam at either end of the opening.
2. The controller waits a short start delay so the animal is under the nozzles.
3. The pump runs while the beam is blocked, then continues for a set time after the animal clears the beam to cover the hindquarters.
4. Spray is limited to a maximum time per animal, so an animal standing in the opening does not drain the tank.
5. The controller re-arms only after the opening has been clear for the re-arm time. Cattle in single file each receive their own dose. An animal is not sprayed a second time at the exit eye.

Adjustable from a phone: start delay (0.5 s), spray after clear (1 s), maximum spray time (2.5 s), re-arm time (2 s) and trigger delay (150 ms). Factory settings shown. The control page also provides a test spray button, an enable switch, a beam indicator and a head counter.

Specifications

Power	12 volt DC. About 1.5 amp hours per day standby plus pump run time. Recommended supply: 18 amp hour or larger battery with a 10 to 20 watt solar maintainer.
Pump output	Relay contact rated 10 amps at 12 volts. Suits 12 volt diaphragm pumps used in spot sprayers. Customer supplies an inline fuse sized to the pump, typically 7.5 amps for a 1 GPM pump.
Detection	Two 12 volt retroreflective photo eyes with reflectors, mounted up to about 6 feet apart at cattle chest height (24 to 30 inches). Both eyes act as one detector.
Controls	Built-in WiFi access point. Any phone, tablet or laptop browser. No internet connection, cell service, account or app required. Settings are stored in the controller.
Updates	Firmware updates are loaded from a phone over the same WiFi connection.
Enclosure	Weather-resistant enclosure with labeled screw terminals. Mount out of direct spray and where cattle cannot reach it.
Chemical	Compatible with water-based and oil-based livestock sprays labeled for beef cattle. The customer follows the product label, including withdrawal intervals.

The mount range holds the nozzle bodies and photo eyes on whatever the opening is built from. Every nozzle mount has the same slot: the 3/8 in neck of the nozzle body slides in from the side and is secured by the body's own nut. Sensor versions have a 3/4 in hole for the M18 photo eye. Mounts are printed in UV-stable ASA with chamfered edges and reinforced joints. Clamp hardware is standard stock and is not included.

Straight

Nozzle plate level with the block. Sprays straight away from the rail or post. On a horizontal rail, rotate the clamp to set the spray angle.

Side45

Short arm off the side of the block with the plate tilted 45 degrees. Sprays up or down from a vertical post with the nozzle body clear of the post.

Post45

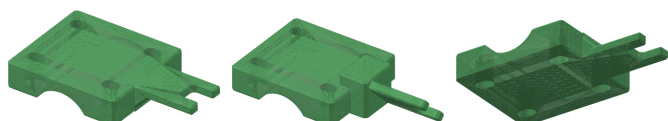
Arm off the end of the block, along the post, 45 degrees up or down. Alternative angled version for smaller posts.

Sensor

Any Straight mount with a 3/4 in hole for the photo eye in place of the nozzle slot.

Pipe Clamp

Round pipe, tube gates, corral panels, pipe fence



Straight

Side45

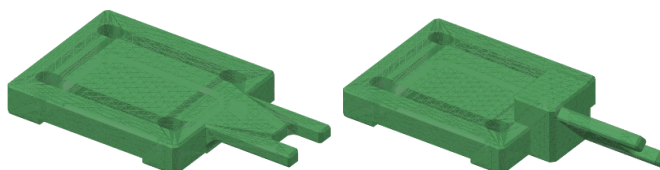
Underside

A saddle block that cradles the pipe and is held by two U-bolts. The U-bolt slots are elongated to accept common U-bolt widths. On a horizontal rail the Straight version covers all three nozzle positions: rotate the clamp on the rail to the required angle, then tighten.

Sizes 1-5/8, 1-3/4, 2, 2-3/8 and 2-7/8 in pipe
Hardware Two U-bolts with nuts and washers (not included)
Versions Straight, Side45, Post45, Sensor
Price \$22 MSRP; \$26 for 2-3/8 and 2-7/8 in

Square Tube Clamp

Square tube gates and panels



Straight

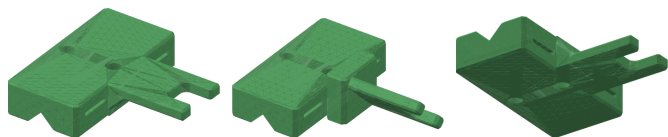
Side45

The same saddle design for square tube. A shallow recess locates the block on the tube and two square U-bolts hold it. Mounting on the top, side or bottom face of a horizontal rail gives a downward, level or upward spray without an angled part.

Sizes 1-1/2 and 2 in square tube
Hardware Two square U-bolts with nuts and washers (not included)
Versions Straight, Side45, Post45, Sensor
Price \$20 MSRP

Strap Mount

Round posts of any size, odd pipe, wood posts



Straight

Post45

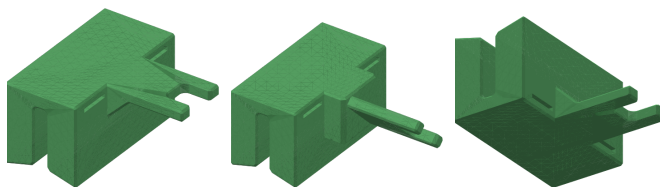
Underside

A general-purpose block with a V-groove that seats on round posts of any diameter. Two band slots run through the block for stainless hose clamps or banding. Two holes accept lag screws for direct mounting to a wood post or board.

Sizes One size
Hardware Two hose clamps or 1/2 in banding, or two 1/4 in lag screws (not included)
Versions Straight, Post45, Sensor
Price \$18 MSRP

T-Post Mount

Studded steel T-posts



Straight

Side45

Underside

Designed around the standard studded T-post profile. The block straddles the stem on the back of the post and its angled underside seats on the wing tips, so it centers itself and does not rock. Bands pass through the block above the stem and around the studded face.

Sizes Fits 1.25 lb and 1.33 lb posts
Hardware Two hose clamps or 1/2 in banding (not included)
Versions Straight, Side45, Sensor
Price \$24 MSRP

Flat Mount

Flat steel, boards, walls, existing brackets



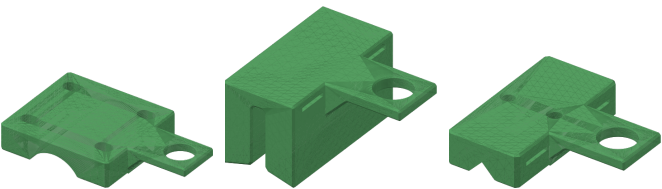
Straight Offset Angled 37 Offset Sensor

Bolt-on brackets for any flat surface. The Offset bracket holds the nozzle 2-1/4 in off the surface and sprays straight out. The Angled bracket sprays 37 degrees up or down depending on orientation. The Offset Sensor bracket carries a photo eye.

- Sizes** Two 1/4 in mounting holes
- Hardware** Two 1/4 in bolts or lag screws (not included)
- Versions** Straight Offset, Angled 37, Offset Sensor
- Price** \$12 MSRP

Sensor Mounts

For the De-Fly photo eyes



Pipe Clamp Sensor T-Post Sensor Strap Sensor

Every Straight mount is also available with a 3/4 in hole in place of the nozzle slot. The M18 barrel of the photo eye passes through the hole and is secured by its two nuts. The eye and its reflector mount with the same hardware as the nozzle mounts.

- Sizes** All pipe, square tube, strap, T-post and flat versions
- Hardware** Same as the matching nozzle mount
- Versions** Straight Sensor
- Price** Same as the matching nozzle mount

Recommended installation

Three nozzles on one side of the opening: a low nozzle aimed 45 degrees up at the belly, a mid-height nozzle aimed straight across the side, and a high nozzle aimed 45 degrees down across the back. Each animal has one side treated on the way in and the other side on the way out. Starting heights for mature beef cattle are 16 to 20 in, 30 to 36 in and 60 to 66 in, adjusted after observing the first animals through.

The two photo eyes mount on the nozzle side at 24 to 30 in, one just outside each end of the nozzle run, with reflectors directly across the opening.

Frame	Mounts for one opening
Horizontal pipe rails	3 Pipe Clamp Straight, 2 Pipe Clamp Sensor
Vertical pipe posts	1 Pipe Clamp Straight, 2 Pipe Clamp Side45, 2 Pipe Clamp Sensor
Square tube panels	3 Square Tube Straight, 2 Square Tube Sensor
T-posts	1 T-Post Straight, 2 T-Post Side45, 2 T-Post Sensor
Wood posts	1 Strap Straight, 2 Strap Post45, 2 Strap Sensor

Price list

Product	Contents	MSRP	Dealer
De-Fly controller kit	Controller, two photo eyes with reflectors, documentation	\$399	[DEALER PRICE]
Pipe Clamp, 1-5/8, 1-3/4 or 2 in	Straight, Side45, Post45 or Sensor	\$22	[DEALER PRICE]
Pipe Clamp, 2-3/8 or 2-7/8 in	Straight, Side45, Post45 or Sensor	\$26	[DEALER PRICE]
Square Tube Clamp, 1-1/2 or 2 in	Straight, Side45, Post45 or Sensor	\$20	[DEALER PRICE]
Strap Mount	Straight, Post45 or Sensor	\$18	[DEALER PRICE]
T-Post Mount	Straight, Side45 or Sensor	\$24	[DEALER PRICE]
Flat Mount	Straight Offset, Angled 37 or Offset Sensor	\$12	[DEALER PRICE]
Mount set, pipe rail	3 Pipe Clamp Straight, 2 Pipe Clamp Sensor, one pipe size	\$110	[DEALER PRICE]
Mount set, T-post	1 T-Post Straight, 2 T-Post Side45, 2 T-Post Sensor	\$120	[DEALER PRICE]

Prices in US dollars. Custom pipe sizes are available on request.

Merchandising: what the customer supplies

Everything else in the installation is standard farm store inventory. The owner's manual directs the customer to these items by aisle, so a De-Fly sale typically adds the following from existing stock:

Item	Notes
25 gallon 12 volt spot sprayer	Covers the tank, pump and hose in one purchase. The 15 gallon version suits smaller herds.
Nozzle bodies, caps, tips and hose fittings	Three 3/8 in hose barb bodies (one with a check valve), three caps, three tips, tees and clamps sized to the sprayer hose.
12 volt battery and solar maintainer	18 amp hour or larger battery; 10 watt or larger maintainer with charge controller.
Fuse holder, 16 gauge wire, U-bolts or hose clamps	Automotive and hardware aisles.

Support and warranty

Each kit ships with an owner's manual covering installation, wiring, phone setup, first run with water, chemical use and troubleshooting. Technical support for dealers and customers is by phone and email. Firmware updates are free. Warranty: [WARRANTY TERMS].

Ordering

PHONE

[PHONE]

EMAIL

[EMAIL]

WEB

[WEBSITE]

Minimum order: [MINIMUM ORDER]. Lead time: [LEAD TIME]. Shipping: [SHIPPING TERMS].