



BirdOff is a new product from Ketrop, a leading company in bird and game repellent products. The design was mainly aimed at the nuisance caused by pigeons, although it later turned out that the system is also effective against other bird species.

INSTALLATION MANUAL

INTENDED FOR INSTALLATION COMPANIES, NOT FOR PRIVATE INDIVIDUALS

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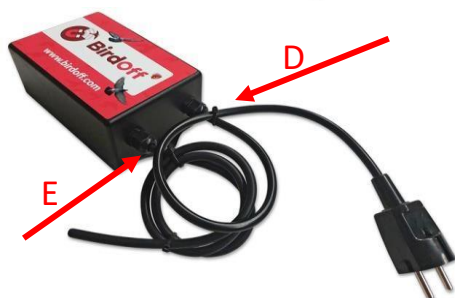
Read this installation manual carefully and keep it safe!

The available components of the BirdOff system, below in details:

Reactor



- A Voltage regulator
- B Switch with indicator light
- C Mounting holes, 1 on both sides



- D Power input with plug (230V/110V)
- E Output to insulators

Each set contains 100 insulators, all identical. The type is of your choice.



Insulator equipped with a magnet

Magnetic for any ferrous surface such as steel and metal (not aluminium).

Not applicable on round pipes.



Flat insulator

For concrete, wood or any other surface.

With the option of screwing or gluing it.



Perpendicular insulator

For concrete, wood or any other surface.

With the option of screwing or gluing it.



Insulator provided with mounting clip

For roof tiles, edges of H-beams, U-profiles, solar panels, etc., or for use on rounded surfaces such as pipes and railings with a cable tie.

✚ Standard set

✚ **Double insulated wire (10 meters / 32.81 ft)** can be used for:

1. connecting the power supply to the isolators.
2. to make wire bridges over/around metal and non-conductive elements.
3. places where contact by people (or animals) is not unlikely.
(This in connection with instructions later in this manual)



✚ **Stainless steel wire of 0.6 mm (0.024") thickness** forms primarily the connection between the insulators. Also suitable as an earth wire.



✚ **Stainless steel springs (20 pieces)**

Are used to create tensile force and reduce sagging wire during seasonal temperature fluctuations.



✚ **Warning stickers (5 pieces)**

To be placed at the entrance to the roof and/or location where the BirdOff system is installed.



✚ **Non-contact voltage tester** (for every installer, not with every set).

Do not hold it against the stainless steel wire, otherwise the voltage tester will break!

✚ Additional parts

In addition to the complete standard set, additional parts can be ordered as required:

- ✚ Reactor
- ✚ Stainless steel wire
- ✚ Springs (bag 20 pieces)
- ✚ Single insulated wire, for locations that are publicly accessible, where persons or objects may touch the wire. See page 8 for more explanation.
- ✚ Double insulated wire 10 meters (32.81 ft)
- ✚ Insulators
- ✚ Warning stickers

It is advisable to always take extra insulators and extra springs with you to the installation location. Placing insulators closer together may sometimes be necessary afterwards, other than previously planned. If the stainless steel wire is not tight, additional springs are needed. Use as few springs as possible, no more than necessary to keep the wire taut.

How much wire length and how many insulators do you need? See page 6.

Pre-inspection

- ✎ Visit the location and measure everything carefully in advance.
- ✎ Assess which materials will be needed.
- ✎ Assess which insulators can be used.
- ✎ Assess what tools will be needed.
- ✎ Investigate which birds need to be chased away.
- ✎ Assess whether it is a breeding location.

Also assess whether an earth wire needs to be installed!

On which material is a ground wire necessary?

- ✎ Bitumen / roofing felt / roofing / PVC
- ✎ Cork
- ✎ Plaster / gypsum
- ✎ Concrete
- ✎ All other non-conductive surfaces

You use the same 0.6 mm (0.024") stainless steel wire as ground wire.

Important: For **non-conductive surfaces**, **install the earth wire under the insulators** and ensure that this wire is properly tensioned and no further than 5 cm from the live wire. However, the ground wire and power wire should not become entangled with each other. To prevent this, we strongly recommend attaching the earth wire with adhesive sealant at least every 50 cm (especially under the insulators). Ultimately, you attach the ground wire to a conductive part of the building or object, such as a lightning conductor.

IMPORTANT: cleaning first!

Remove droppings and dirt such as old nesting material.

Can the nests be removed?

Check or have checked whether the nuisance birds belong to protected species.

Safety

Safety regulations

- ✎ It is mandatory to work in accordance with the safety regulations of the country or region where the work takes place.
- ✎ Before installing the BirdOff system, first check the environment and surface.
- ✎ Assembly, cleaning, maintenance and repair of the BirdOff and all parts may only be carried out by trained or qualified personnel.
- ✎ Make sure that there are no unauthorized persons or animals in the vicinity of the workplace.
Above all, **never** allow children!
- ✎ Make sure that no one touches the BirdOff system. If necessary, place warning signs to deny unauthorized persons access to the work area.
- ✎ **Never** allow yourself to be distracted while working!
- ✎ Work with the prescribed safety materials, such as fall protection.

Electricity

- ✦ The BirdOff System is electrically powered and you may experience a shock when touched.
- ✦ Always be aware of your surroundings.
- ✦ Wear appropriate clothing when testing the Bird Off system while there is voltage.
- ✦ If you are going to perform maintenance, switch off the BirdOff system.



Installation

Calculate first, then install!

Do not use more than 100 insulators per set.

The total system length may be a maximum of 200 linear meters (656 ft), from reactor to first insulator until the entire circuit is completed again to the first insulator (including the double insulated wire from the reactor).

See the next page for the distances between insulators.

Attention: The strength of the magnetic field decreases with single insulated wire, but also the length of the system, up to a maximum of 100 meters (328 ft). For example, if using 50 m (164 ft) insulated wire, calculate this as 100 m (328 ft) system length. In this case, 80 m (262.5 ft) of system length remains for uninsulated wire. In the calculation, do not forget that you must include the length of the double-insulated wire in the total system length. So the more double insulated wire you use, the less uninsulated and/or single insulated wire you can use.

MORE ABOUT THE INSULATORS:

Insulator with magnet

- ✦ Place these where they are needed. You can also move it afterwards, provided the wiring has already been installed.

Insulator (flat/angled)

- ✦ When screwed, also use sealing rings (also under insulators).
- ✦ Chipboard screw for wood, concrete screw for concrete and self-drilling screws for metal.
- ✦ Gluing is possible with the correct adhesive sealant, after pre-treatment with a primer.
- ✦ Gluing can be done on all surfaces.

Ask us what type of primer and adhesive sealant can be used.

Insulator with mounting clip

- ✦ Can be mounted on edges of steel profiles, solar panels or roof tiles.
- ✦ In some applications a cable tie may be necessary, for example on round pipes.
- ✦ If the surface is made of stone, concrete or a non-conductive surface, also install a ground wire under the insulator.

THE EXCEPTION: PIGEONS!

In case of deterring pigeons, we recommend applying a **double line** (from the same system) on the roof edge, as shown in the image below. This is because pigeons appear to be less sensitive to this system. Only when the surface is so narrow that the minimum required distance of 5 cm (or 2") between the lines is not feasible, you are limited to applying a single line.

Attention: only use 1 of the same reactor to create a double line as a pigeon repellent.

Never use 2 different reactors to make a double line.



Mutual distances of the insulators

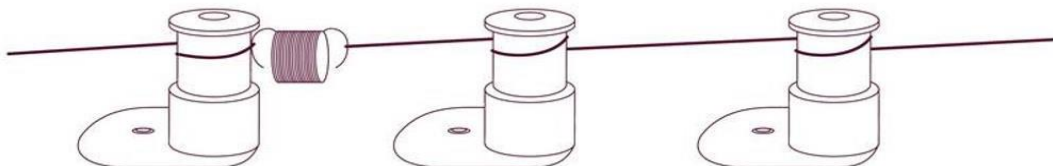
- ✓ Distance between the insulators: maximum 200 cm (6.56 ft), minimum 100 cm (3.28 ft).
The electromagnetic fields may overlap, which will happen if the distance is less than 200 cm (6.56 ft).
- ✓ Preferably place insulators in the corner. If this is not possible, then at a reasonable distance from the corner on both sides in the same way.
- ✓ If you are going to install 2 lines next to each other, insulators can be close to each other. But definitely do not place them closer together than 5 cm (2").



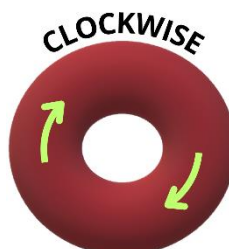
In the picture above, the insulators are about 180 cm (6 feet) apart.

Installing the insulators

- ✓ The feet of the insulators must point in the same direction.



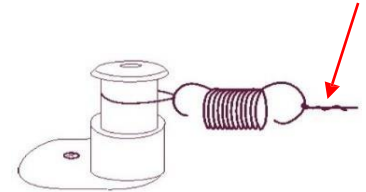
Please note: there is only one correct direction for installation: **clockwise!**



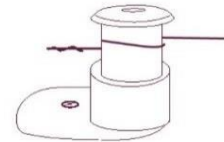
- ✎ The insulators should be placed at approximately an even height on the surface.
- ✎ The idea is that the wire always fits snugly against the bottom of the thickened part of the insulator. If the wire is pulled from a lower insulator to a higher insulator, the wire may not fit neatly against the edge. Then use a double insulated wire to make a wire bridge.

Wiring an insulator

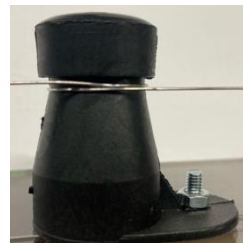
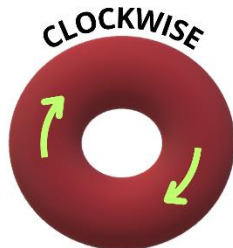
- ✎ Always work from left to right when installing the wire (clockwise).
- ✎ Make a ring with stainless steel wire around the first insulator and hook the spring to it. Then slide the wire through the other loop of the spring and give it 3 to 5 tight turns as shown without the wire sticking out.



- ✎ When unwinding the thread, the thread must be kept taut.
- ✎ Stretch the spring.
- ✎ Each wire should **always** be wrapped **clockwise** around the narrowest part of the insulator, just below the wider top part of the insulator, as shown in the picture below.



- ✎ Regardless of whether you work horizontally, vertically or upside down (such as under the eaves, for example), **always** turn the thread **clockwise from your point of view**.
- ✎ **NEVER** twist wire around an insulator more than once, always clockwise. An exception applies to the insulator where the circuit begins and ends, where more windings are necessary because of the fastening.
- ✎ Wind the wire as short as possible against the bottom edge of the thicker top part of the insulator.



T connections

- ✎ Lines that run perpendicular to a main wire start at an insulator.
- ✎ Always use a spring on both sides.
- ✎ Always make a closed circle! Clockwise.



Wire bridges

- ✦ If the wire has to go over or around an object, it may be wise to make a wire bridge with double-insulated wire.
- ✦ Always try to mount the double insulated wire through a spring and twist the stripped wire around the stainless steel wire or use a press sleeve.



Use the single insulated wire

- ✦ To prevent people from experiencing a shock, it is possible to place replacing the stainless steel wire with a single insulated wire. The electromagnetic field is created with a single insulated wire locally reduced by approximately 50%.



Use of single insulated wire or plastic cable sheathing

- ✦ If the stainless steel wire comes too close to an obstacle (less than 3 cm), provide the stainless steel wire with a cable sheath or replace the stainless steel wire with a single insulated wire. Make sure that the sheath cannot shift and an open side should always be as far away from the object as possible.

Connect wires

- ✦ It is allowed to connect a stainless steel wire together, but in the manner shown in the image below. Do this as little as possible.
- ✦ It is also possible to connect the stainless steel wire by placing a spring in between.



Install the reactor

- ✦ High-voltage wire, intended to connect to the stainless steel wire at the nearest insulator, is attached to the reactor. Strip this and connect as described previously. Preferably through a spring on this insulator, which then forms both the beginning and the end of the circuit. The circuit can only function if the wiring is installed clockwise.
- ✦ Connect the plug of the reactor to an **earthed** socket (110V / 230V), as close as possible to an insulator and attach the reactor to a surface in a waterproof or non-waterproof housing.
- ✦ Avoid using an extension cord between the socket and the reactor. If there is no other option, use an extension cord with an **earthed connection**.
- ✦ Hang the reactor high up so that no one can turn it or unplug it.



Set voltage regulator

- ✎ Turn the voltage regulator so that the non-contact voltage tester flashes with sound at a distance of at least 90 cm (2,95 ft) from the top of an insulator.

When mounting on the side, the same test distance applies in the lateral direction and when mounting on a bottom side, the same test distance applies in the downward direction.

Multiple systems at the same location

If you are installing more than one BirdOff system in the same location, keep the following in mind:

- ✎ Install each BirdOff system separately!
- ✎ 1 reactor on 1 system, never multiple.
The reactors can be damaged if several of them are connected to the same wiring as the frequency from the devices is never exactly the same.
- ✎ When installing multiple systems next to each other, we recommend keeping the grounding wires of each system separate, so do not connect them directly to each other.
- ✎ The minimum distance between 2 independent BirdOff systems is 2 meters (6.56 ft), shorter distances may cause disruptions. This applies to both the wiring and the insulators.

What is the maximum system length?

As previously indicated, the maximum system length is 200 linear meters (656 ft).

Important to remember:

- ✎ You need approximately 200 meters (656 ft) of wire length, due to the revolutions, wire bridges and windings.
- ✎ You may use a maximum of 100 insulators.
- ✎ If you make double lines, make sure that the insulators of one line and the other are at least 5 cm apart.
Due to loss of power, you should double the length of the single insulated wire compared to the uninsulated wire, as described on page 3.

Testing

Check

- ✎ Every installer receives a contactless voltage tester, with which the magnetic field can be detected.
- ✎ The closer to an insulator, the greater the intensity of the magnetic field (EMF).
- ✎ Measure several insulators, especially the insulators furthest from the reactor.
- ✎ Measure the circuit at several points. Be careful not to let the voltage tester touch the stainless steel wire!

PROBLEM: No EMF (electromagnetic field) is detected.

More often the solution is closer than you think. First ask yourself the following questions and check:

- ✍ Is there power coming from the socket?
- ✍ Was a grounded socket used?
- ✍ Has the earth leakage circuit breaker (safety switch) tripped?
- ✍ Is the reactor connected to the socket?
- ✍ Is the reactor voltage regulator set correctly?
- ✍ Is the circuit mounted clockwise?
- ✍ Is the LED indicator lit?
- ✍ Is there a short circuit somewhere in the wire path (including the insulators and wire bridges)?
- ✍ Is a ground wire missing in case of concrete, stone or other non-conductive surface?
- ✍ Were more than 100 insulators used? Then our advice was not followed! Less is allowed.
- ✍ If the insulators are closer together, the total wire length must be adjusted accordingly. For example, if insulators are 1 meter (3.28 ft) apart, the maximum wire length is 100 m (328 ft).

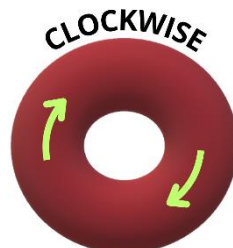
PROBLEM and SOLUTION: What do you do in case of a possible short circuit?

- ✍ If the stainless steel wire touches an object other than an insulator, a short circuit will occur. The reactor automatically switches itself off in the event of a short circuit; the system then no longer works.
- ✍ Turn off the reactor or unplug it and check everything for a short circuit or possible debris on the wire.
- ✍ Solve short-circuit problems by installing cable sleeving or otherwise installing a wire bridge.

PROBLEM: Aren't the birds being repelled?

Birds are not chased away, even though a magnetic field is measured.

- ✍ Is the wire installed **clockwise** everywhere and is the entire circuit closed?
- ✍ Is there a short circuit due to an object (branch, snow, etc.) that comes into contact with the wire?



If the clockwise operation is not done correctly, the birds will not perceive the EMF as intended. Check and repair this as soon as possible. In case a short circuit is the reason, see previous paragraph.

TIP: For repelling of pigeons, practice shows that double lines have the most effect. This is because pigeons are less sensitive to EMFs. The optimal distance between the lines is up to 30 cm (approx. 1 foot). Make sure that the distance between them is never less than 5 cm (2").

PROBLEM and SOLUTION: Could there be a FAILING reactor?

How do you check if the reactor produces an EMF?

- ✎ Make sure that the high voltage wire from the reactor output is disconnected from the stainless steel wire.
- ✎ Check with the non-contact voltage tester or a gauss meter whether they respond when held close to the reactor. Reactor must be on.
- ✎ Are the batteries of the voltage tester empty?

Maintenance contract

We supply the BirdOff system and this manual.

If you, as an installer, are also the customer/buyer of this product, we recommend that you inform your own customer or client that it is advisable to have the BirdOff system checked regularly.

Although the system is durable, it may become damaged and/or malfunction due to weather conditions or incorrect installation.

For that reason, it may be wise to offer your customer a maintenance contract.

Discuss this with your customer in a timely manner!

Technical specifications

The reactor has an IP65 protection class rating.

✎ DIMENSIONS AND WEIGHT

Size reactor:	19 x 10 x 6 cm (7.48 x 3.94 x 2.36")
Weight reactor:	585 g (20.64oz)
Size insulator:	4 x 2,7 x 4,5 cm (1.57 x 1.06 x 1.77")
Weight insulator:	13 g (0.46oz)

✎ POWER INPUT AND PROTECTION CLASS

Classification:	IP65
AC voltage input	110/220 volt
Nominal current:	0,311 A
Power / Consumption	25 Watt (average)

✎ OTHER CHARACTERISTICS

Type of current:	continuous and symmetrical
Power control:	external, potentiometer
Primary current:	0.100 A (average)
Secondary voltage:	1,000 Volts
Secondary current:	0.014 A (average)

EU Declaration of Conformity

12

EU DECLARATION OF CONFORMITY FOR THE LOW VOLTAGE DIRECTIVE AND EMC DIRECTIVE

(Directives 2014/35/EU and 2014/30/EU)

Supplier: Im- en Export Frijters Rijsbergen BV,
Address: Smokstraat 2, 4891 ZK Rijsbergen, The Netherlands,

hereby declares that the BirdOff, with the product identification types TEP35728A-01E and built from 2023, are in accordance with the requirements of the following guidelines:

- Low Voltage Directive (2014/35/EU)
- EMC Directive (2014/30/EU)

and the applicable amendments and that the following harmonized standards on the safety of electrical equipment have been applied:

- EN IEC 55014-2: 2021 - Electromagnetic compatibility - Requirements for household appliances, electric tools and similar equipment - Part 2: Immunity.
- EN IEC 60204-1: 2018 - Safety of machinery - Electrical equipment of machines - Part 1: General requirements
- EN IEC 61000-6-2: 2019 - Electromagnetic compatibility (EMC) – Part 6-2: General standards - Immunity for industrial environments
- EN IEC 61000-4-3: 2020 - Electromagnetic compatibility (EMC) - Testing and measurement techniques – Radiated, radio frequency, electromagnetic fields - Immunity test
- EN IEC 61000-6-4:2019 - Electromagnetic compatibility (EMC) – Part 6-4: General standards - Emission standard for industrial environments
- CISPR 32 - Electromagnetic compatibility emissions

Rijsbergen, April 2, 2024



A. Frijters
(Director)



Disclaimer

BirdOff is a registered trademark.

Supplier expects the installer to be familiar with safety regulations, working at heights and connecting electricity.

This installation manual is not intended for private individuals but for skilled installers.

The supplier is not liable for agreements made between the client and the installer. The supplier's responsibility is limited to supplying the BirdOff system and this manual.

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