

POWERFAN[™]

Operating Manual

Version 2.3 (December 2013)

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1. Warning

1.1 General information and warning:

The Powerfan is a descending device for sports purposes. It may also be used as a descender device for personal protection against falls from a height. The Powerfan has been tested as a descender device with reference to EN 341:2011/1A and as a retractable type fall arrester with reference to EN 360:2002.

The certifying body is:

TÜV SÜD Product Service GmbH
TEC SPORT
Ridlerstr. 65
D-80339 München
CE 0123

Warning: Failure to adhere to the following instructions is likely to result in very serious injury or death and will invalidate any guarantee. These procedures should only be carried out by a competent person.

Assistance with any of the material contained within this manual may be obtained by contacting Dropzone at:

Dropzone (UK) Ltd
Lasham Woods
Lasham Road
Alton
GU34 5FZ

Tel: +44 (0) 1256 381 222
info@drop-zone.eu
www.powerfan.co.uk

When operated correctly the Powerfan will provide years of safe use. For the use of the Powerfan PF13 these guidelines must be used in conjunction with the *Powerfan PF13 Installation Specification* and the *Powerfan PF13 Inspection and Maintenance Manual*. For the PF20 and PF30 these guidelines must be used in conjunction with the *Powerfan PF20 & PF30 Installation Specification* and the *Powerfan PF20 & PF30 Inspection and Maintenance Manual*.

1.2 Specific warning notices:

1. The Powerfan must only be installed or removed by a competent person according to the requirements as specified by the relevant Powerfan installation specification. When the Powerfan is used in a high ropes course EN 15667-1 must be taken into account for the method of attachment of the Powerfan.
2. The Powerfan must only ever be used by a person trained and competent in the safe use of the Powerfan under the direct supervision of a competent instructor.
3. The Powerfan must never be used in an electrical storm.

4. The Powerfan must not be used for any other purpose than for the descent of a person as described in this operating procedure unless approved for such use in writing by Dropzone.
5. The Powerfan must only be used by one person at a time.
6. The Powerfan should not be used by anyone that is / has:
 - (a) Over the weight of 120kg
 - (b) Under the weight of 20kg
 - (c) Pregnant
 - (d) A heart complaint
 - (e) A spinal injury or a weak spine
 - (f) Any medical condition that may be exacerbated by the use of the Powerfan.
7. The operator must have a rescue plan to deal with any emergencies that could arise during the use of the Powerfan.
8. No alterations or additions must be made to the Powerfan without the prior written consent of Dropzone.
9. When not in use the Drope should be secured / padlocked to prevent unauthorised use.
10. It is critically important that the Drope assembly is not lengthened or shortened in any way (e.g. by inserting / adding rope, knots, slings, additional carabiners or other equipment).
11. Extremely low temperatures may adversely affect the speed of the rope rewind. The operator must verify that the rope is being rewound sufficiently fast if the activity is commenced at ground level and the Powerfan used as an auto-belay device.
12. The Powerfan must not be exposed to extreme temperatures ($-15^{\circ}\text{C} > t > 60^{\circ}\text{C}$), chemicals, sand or dirt.
13. The Powerfan must not be used in temperatures below -15°C or in temperatures above 45°C .
14. In cold temperatures (below 5°C) the rewind speed may be decreased.
15. In hot environments the device must be shielded from direct sunlight.
16. The Powerfan may only be transported in the custom wooden crate supplied by Dropzone.
17. It is essential for the safety of the user that if the Powerfan is re-sold outside the original country of destination the reseller shall provide instructions for use, for maintenance, for periodic examination and for repair in the language of the country in which the Powerfan is to be used.
18. The user must not climb above the step-off platform. This can be achieved by: Not having any hand and/or foot holds above the step-off platform. Or by the instructor instructing the user not to climb above the step-off platform and monitoring that that the user conforms to the instruction.
19. The user must not venture too far away from the vertical descent path to minimise the possibility of injury due to bumping into an object in a pendulum fall. As with point number 15, this can be achieved technically and/or by supervision.

For assistance contact Dropzone: +44 1256 381 222; info@drop-zone.eu

20. The Powerfan must not be used in strong winds. As a guideline, the activity should be suspended if the wind speed is higher than category 6 (equivalent to higher than 49 km/h).
21. The landing area must be covered with an appropriate impact absorbing surface. The landing area is defined as a circle centered on the landing point of 4m diameter for the PF13 and 6m diameter for the PF20 and PF30. An appropriate impact absorbing surface is 400 mm deep round gravel with a particle size of 8–16 mm.

2. Terminology

Dropzone (UK) Ltd	Designers and manufacturers of the Powerfan PF13, PF20, and PF30.
Powerfan®	The name for our fan descender product range.
PF13	Model name of the Powerfan that allows a jump from up to 13 metres.
PF20	Model name of the Powerfan that allows a jump from up to 20 metres.
PF30	Model name of the Powerfan that allows a jump from up to 30 metres.
Fan Descender	A device that will safely and repeatedly control a person's descent; dissipating the potential energy by means of a fan.
Drope™	Name of the rope component of the Powerfan that is the connection point for the user.
PPE	Abbreviation of "personal protective equipment". This is the important safety equipment used in an activity.
Step-off platform	Platform from which the user steps off into simulated freefall.
Descent path	Path the falling person travels along.

3. Operation (Standard Operating Procedure)

3.1 Daily Inspection

Before use, every day, the following must be checked:

1. Overall appearance of the Powerfan. There must be no obvious signs of tampering or malicious damage caused to the machine.
2. That no foreign object or material is in any part of the Powerfan device (including snow, sticks, rope, leaves, etc.). Particular care should be made to check for any ice in any part of the device.
3. The moving parts of the Powerfan must rotate correctly and smoothly.
4. Particular care must be taken to ensure that the Drope is undamaged and that the sheath is complete along its entire length. The Drope must be fully unwound and, whilst recoiling through the instructor's fingers, attention should be paid to any anomalies in the construction of the Drope – flat spots etc.
5. The Drope should recoil correctly.
6. The descent counter correctly registers the descent during the rewind of the Drope.
7. The landing area and descent path should be clear of obstruction, obstacles or people. The proper functioning of the impact absorbing surface of the landing area must be verified, especially in cold conditions where ice may affect the ability of the surface to properly absorb impacts.
8. The PPE that is used as part of the activity must be checked and maintained according to the instructions of the manufacturer. This includes harnesses, lanyards, karabiners, and helmets (if in use).

The Powerfan must be withdrawn from use immediately should any doubt arise about its condition for safe use. If such a doubt arises the Powerfan must not be used again until confirmed in writing by a competent person that it is acceptable to do so.

Please refer to the *Powerfan PF13 Inspection and Maintenance Manual* or the *Powerfan PF20 & PF30 Inspection and Maintenance Manual* for details on the periodic examinations that need to be carried out on the Powerfan.

3.2 Preparation of the user

Users must be made aware that the decision to use the Powerfan is theirs alone. They must not be coerced or forced into participating although some gentle encouragement may be necessary!

A clear and complete description of the activity should be given to users and it should be emphasised that whilst the Powerfan is a highly engineered machine there are some inherent risks associated with the use of the device and similar such activities.

The following rules should apply to the use of the Powerfan:

1. Appropriate clothing must be worn. This will normally include training shoes or walking boots. Loose fitting shoes or shoes with high or pronounced heels are unacceptable.
2. Loose clothing (particularly scarves or ties) and other items such as jewellery must be removed from the body and/or pockets.
3. Long hair should be tied back.
4. As operating environments may vary it is the responsibility of the operator to conduct a risk assessment for their use of the Powerfan to determine whether to equip the participants with a helmet for the activity.
5. Users should always keep their legs “locked” together and bend their knees on landing.
6. The Drope must always be taut before users leave the step-off platform.
7. On installations that permit users to climb from the ground with the Powerfan acting as protective equipment against falls from a height, participants and instructors must ensure that the Drope is always taut. If the Drope fails to retract or retract fast enough then the user must stop climbing immediately and if necessary descend.
8. Under no circumstances must the user pull down on the Drope as this will introduce slack Drope into the system with potentially catastrophic consequences.
9. Users must not jump off the step-off platform but instead step forward into space in a controlled fashion.
10. Once users have made the decision to step off the step-off platform they must resist any temptation to grab hold of something at the last moment.

3.3 Attachment to the Drope™

The Powerfan must be used with a sit harness or a full body harness or a combination of a sit harness and chest harness. The harnesses must conform to EN 12277, EN 361, or ASTM F1772 - 99.

A front or rear attachment is permitted. In all instances a shock absorbing lanyard conforming to EN 355 must be connected between the Harness and the end of the Drope (See Figure 1 in the Appendix).

The connectors used (karabiners and maillons) must conform to EN 12275. The karabiner used should be the triple action aluminium variety.

The end of the Drope should attach directly to the shock absorbing lanyard (with the supplied maillon) and the shock absorbing lanyard directly to the fall arrest attachment point of the harness (with the supplied karabiner) unless otherwise instructed in writing by Dropzone.

3.4 Commencing the activity at height

Users must remain within a secure area or attached to an appropriate attachment point until they are securely fastened to the Drope, and the landing area and descent path have been verified and cleared for descent.

Users should approach the edge of the step-off platform only when instructed to do so.

Users should not leap, dive or jump off the step-off platform but instead step off in a steady controlled manner into space. Before stepping off they should ensure the Drope is taut.

3.5 Commencing the activity on the ground

Once the user has been correctly attached to the Drope they must not commence climbing until instructed to do so. The instructor must only instruct the user to commence climbing when the landing area and the descent path of the user has been verified and cleared for descent. The instructor must ensure that the landing area and the descent path are kept clear of all foreign objects and other persons during the activity.

The user must climb steadily to the top ensuring that the Drope is taut at all times. If the Drope becomes slack they must cease climbing until the Drope has caught up with them. In the event that the Drope fails to retract or retract fast enough the user should return to the ground by downclimbing.

3.6 Landing and disconnection of the user

Users should be instructed land on their feet and to bend their knees slightly to help absorb the impact on landing. The instructor must disconnect the user and ensure that the Drope and karabiner are not snagged on anything before letting the Drope retract or attaching the next user. The Drope must be released directly below the Powerfan so that it does not swing around and rub or get snagged on any surrounding objects during rewind.

3.7 Using the Powerfan® as a descender device in a rescue

The operator must have a rescue plan in place with which the instructors and if necessary the users are familiar that describes clearly how the Powerfan is used in the event of a rescue. As every installation and usage type is potentially different the operator must have a rescue plan in place specific to their setup. The following points regarding the use of the Powerfan must be considered:

1. If the Powerfan is used as a descending device in a rescue the user must be able to connect themselves or be connected to the device from a secure position.
2. The landing area must be designed to allow a soft landing. This can be achieved by using an impact absorbing landing surface.

4. Maintenance

4.1 Recording of maintenance actions

The Powerfan contains an integral descent counter (Item 8 in Figure 2 (PF13) or Figure 3 (PF20 & PF30) in the Appendix). The Powerfan must be registered at the Powerfan administration website:

<http://www.powerfan.co.uk/administration>

A counter reading must be submitted at least once every two months on the above website. It is recommended, though, that a counter reading be submitted once a month. The website alerts the operator when routine maintenance actions are due.

Consult the *Online Administration User Guide* for instructions on signing up and using the administration website.

4.2 Replacement intervals for consumables

The maximum useable life of the Drope is 20,000 descents or one year (whichever occurs soonest). The maximum useable life of the rewind spring is 17,000 descents or one year (whichever occurs soonest). Some earlier models have a replacement interval of 12,000 descents rather than 17,000 descents. The Powerfan administration website is set up to display the correct interval for your model so please consult the information there.

Only genuine replacement parts may be used. These are only supplied directly by Dropzone or through its nominated distributors.

4.3 Servicing, repair and product life

Every 250,000 descents or two years (whichever occurs the soonest) the Powerfan must undergo a complete service by Dropzone or by an authorised service centre.

Any repairs must be undertaken by a competent person in accordance with the instructions of the Inspection and Maintenance manual of the device (PF13 or PF20 & PF30). Any other repairs may only be carried out by Dropzone or an authorised service centre.

The product life of the Powerfan is ten years. The product life may however be extended at the discretion of Dropzone after an end-of-life inspection and service conducted by Dropzone or by an authorised service centre.

Consult the *Powerfan PF13 Inspection and Maintenance Manual* for comprehensive details on all inspection and maintenance procedures for the Powerfan PF13 and the *Powerfan PF20 & PF30 Inspection and Maintenance Manual* for the Powerfan PF20 and Powerfan PF30.

5. Appendix

Figure 1: Powerfan® PF13 and PF30 with Drope™

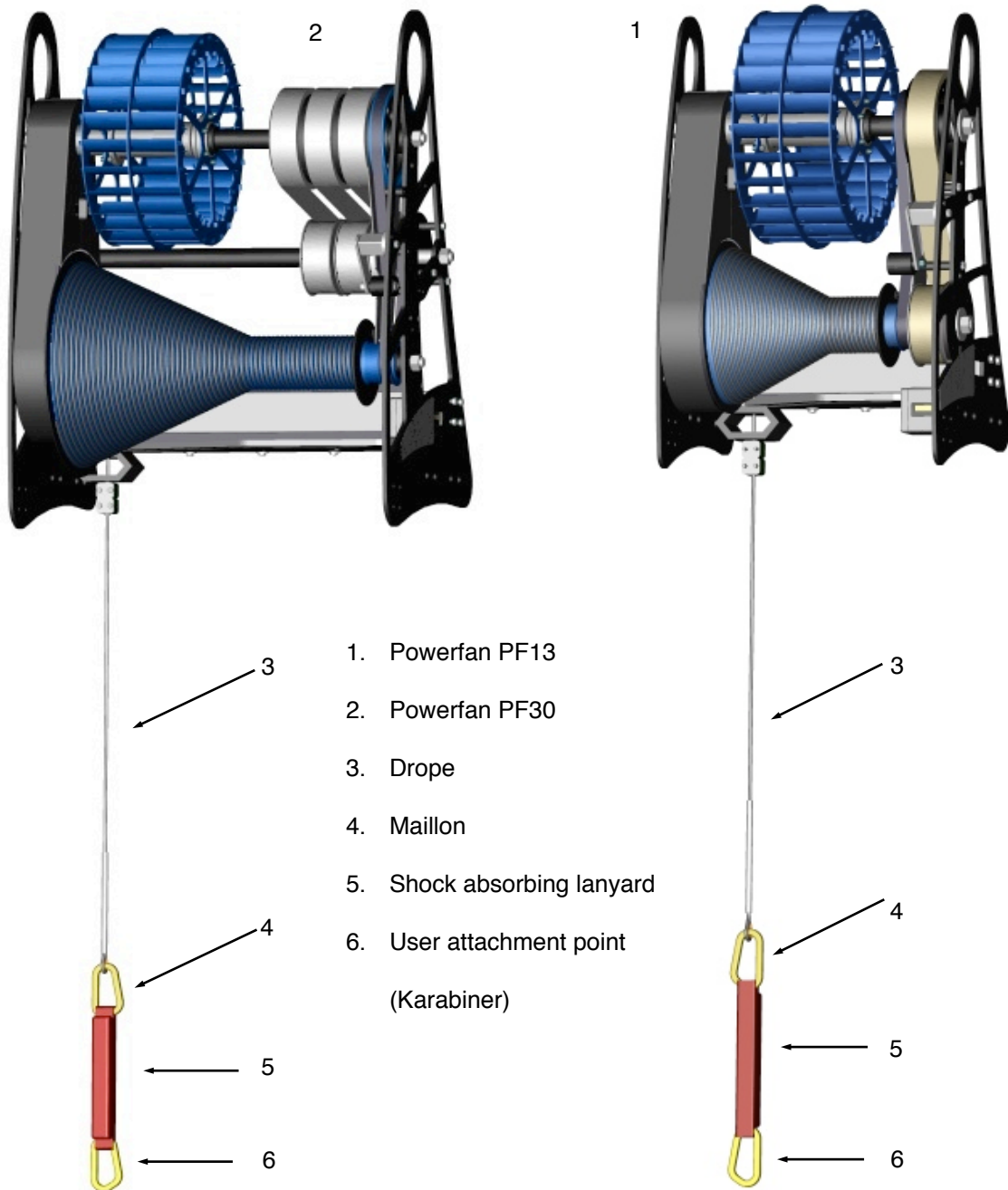


Figure 2: Powerfan® PF13 with belt guard retracted

- | | |
|------------------------|----------------------------|
| 1. Upper spring drum | 9. Small flange |
| 2. Upper rewind pulley | 10. Rope drum |
| 3. Rewind spring | 11. Lower guide plate |
| 4. Rewind belt | 12. Rubber stop block |
| 5. Tensioner | 13. Drope clamp assembly |
| 6. Lower rewind pulley | 14. Retractable belt guard |
| 7. Side plate | 15. Drive belts |
| 8. Descent counter | 16. Flexible draw latch |

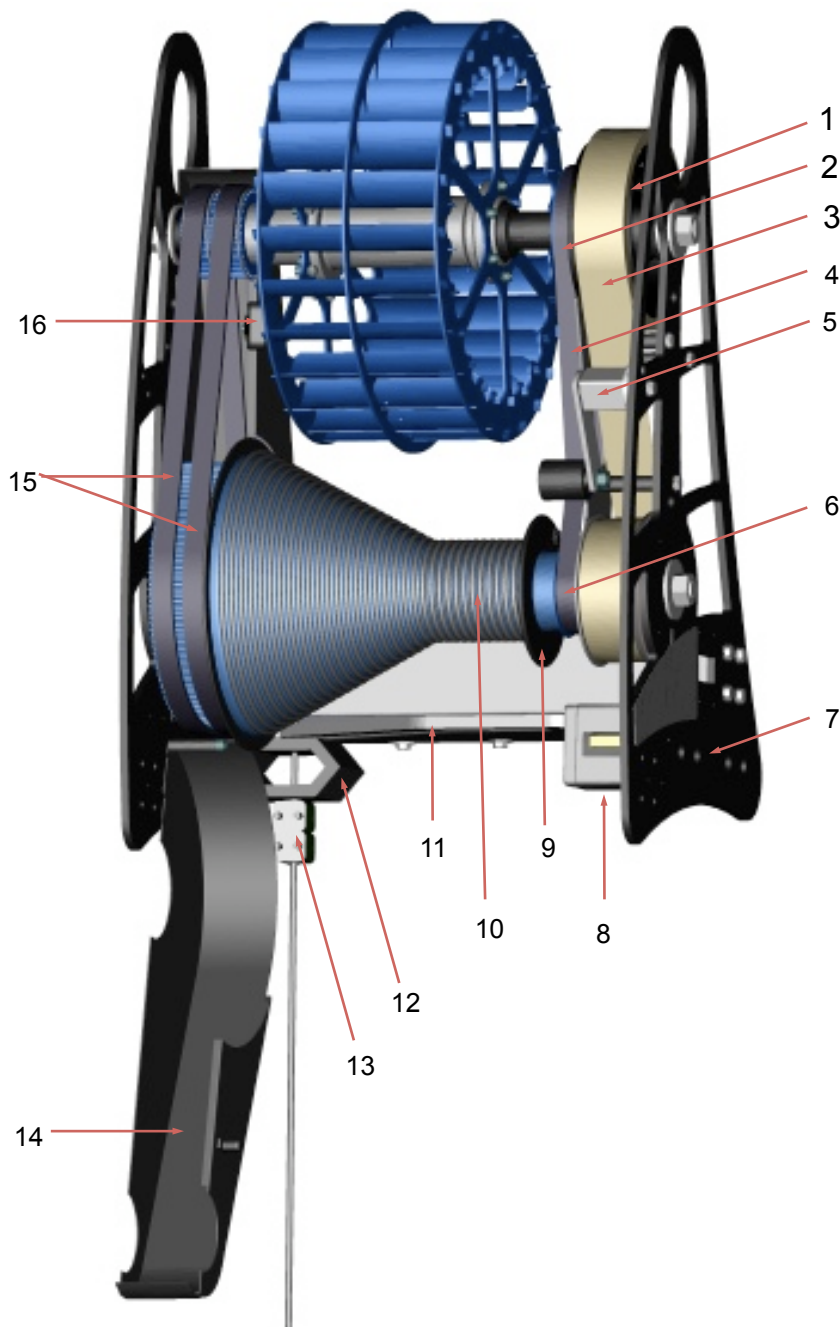


Figure 3: Powerfan® PF30 with belt guard retracted

- | | |
|------------------------|----------------------------|
| 1. Upper spring drum | 9. Small flange |
| 2. Upper rewind pulley | 10. Rope drum |
| 3. Rewind springs | 11. Lower guide plate |
| 4. Rewind belt | 12. Rubber stop block |
| 5. Tensioner | 13. Drope clamp assembly |
| 6. Lower rewind pulley | 14. Retractable belt guard |
| 7. Side plate | 15. Drive belts |
| 8. Descent counter | 16. Flexible draw latch |

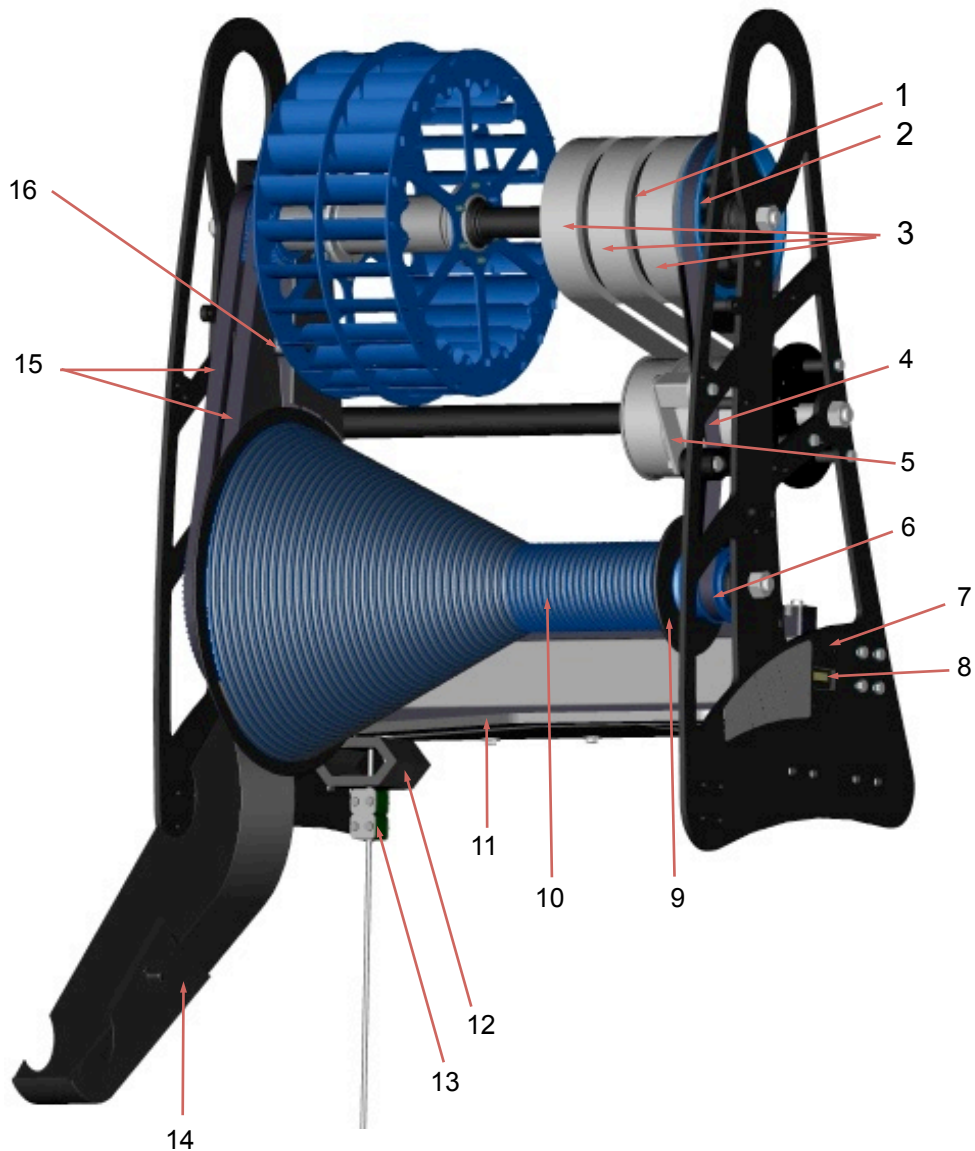


Figure 4: Identification markings on the Powerfan®

Each Powerfan has a label on its side. This label displays:

1. Name and contact details of the manufacturer
2. Product category
3. Model number
4. Serial number
5. Place for affixing record of services carried out on the device
6. Date of manufacture (month & year)
7. Date by which the next service is due (month & year).
8. Other notices and usage restrictions. This information is also present in the product manuals.

Please do not tamper with this display. Doing so will void the product guarantee.

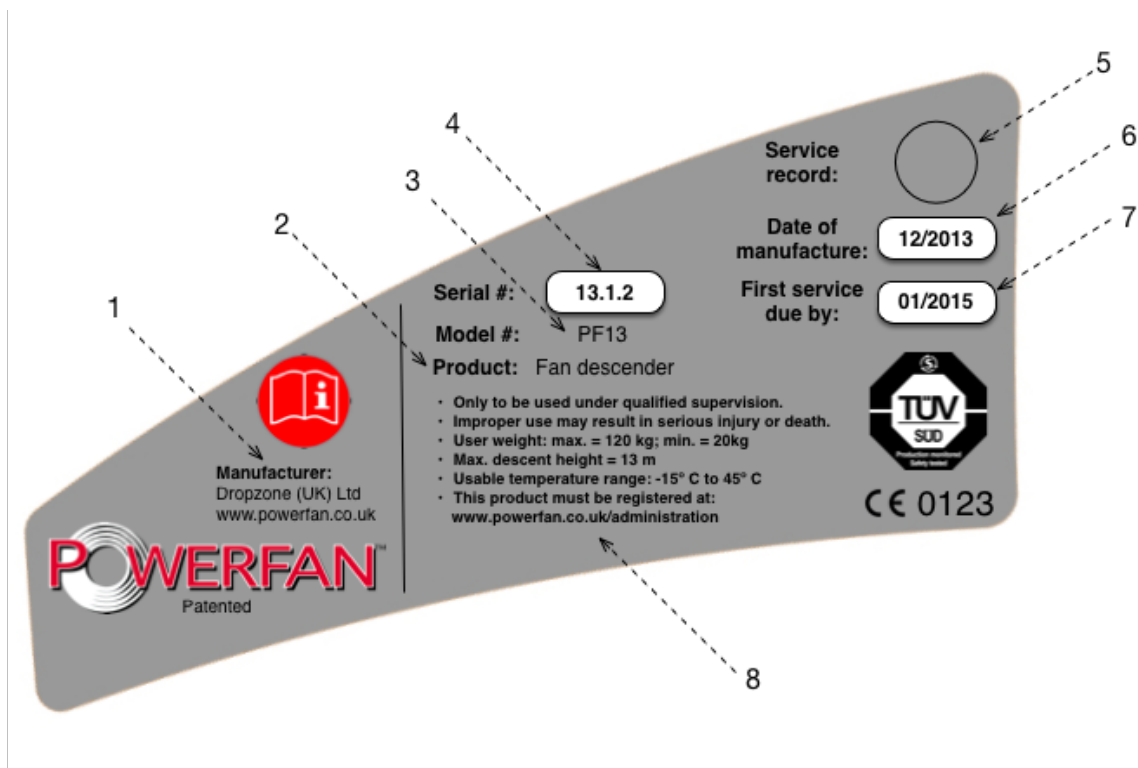


Figure 5: Identification markings on the Drope™

Each Drope is identified by a unique serial number printed inside the protective sleeve on the sewn end.

The serial number (1) is made up of the following components:

2. Prefix
3. Material traceability code
4. Date of manufacture (DDMMYY)
5. Unit number

