



CYPRES 2
Reliability made in Germany

Aircrew CYPRES 2 User's Guide

United States

CYPRES 2
Reliability made in Germany



Aircrew CYPRES 2

User's Guide

- english version -

Dieses Handbuch ist in Deutsch erhältlich.
Este manual está disponible en español.

Congratulations on your choice of CYPRES, the surely safest and most accurate Automatic Activation Device currently available.

Like most airmen, you probably assume you will always have the opportunity to deploy your canopy yourself, and that situations requiring use of an automatic activation device always happen to others. We do hope that you will always do it yourself, and that your CYPRES will never have to take action to save your life.

Should CYPRES ever decide to activate your canopy, it will most likely justify that you haven't left your safety to chance.

Airtec GmbH & Co. KG Safety Systems

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What an Aircrew CYPRES 2 is

The Aircrew CYPRES 2 is an Automatic Activation Device for the needs of the staff of an aircraft.

It initiates the opening of the emergency parachute, if an airman has bailed out from his aircraft, is below approx. 13.000 feet and has a vertical speed of more than 35 meters per second (that equivalent approx. 6.900 feet per minute).

The Aircrew CYPRES 2 does its job by severing the closing loop allowing the spring loaded pilotchute to push away the flaps of the container and to jump out into the slipstream and initiate the canopy opening.

1. Function

1.1 How the Aircrew CYPRES 2 works

The processing unit contains a factory-programmed microprocessor that is capable of real-time calculations of the airman's altitude and rate of descent based on barometric pressure.

By monitoring this data, certain criteria are generated from which conclusions are drawn. Should the conclusion be that the airman is lower than 13.000 feet and in freefall the processing unit triggers the release unit to open the canopy container.

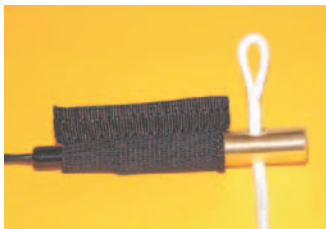
The release unit (cutter) system for the canopy container is completely independent of the rig's primary system, because it does not pull the ripcord pin out of the closing loop, but rather cuts the loop inside the canopy container to release the pilot chute.

Opening a canopy container by severing the closing loop is a method invented and patented by the founder of Airtec, Helmut Cloth, in 1987.

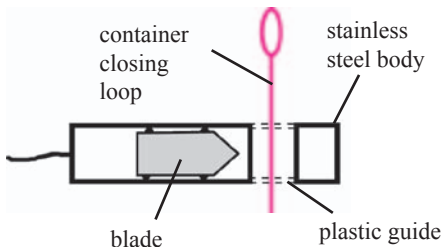
The CYPRES' canopy activation system has these advantages:

- The canopy container can be opened in two different ways. One method is used by the airman pulling the canopy's release handle. The other method is used by CYPRES when it cuts the closing loop.
- Mechanical components are reduced to a single movable piston in the release unit.
- The activation system is located inside the canopy container where it is not exposed to excessive shock or other adverse influences.
- The system is unobtrusive and can be installed so that it is undetectable from the outside.

Release unit (cutter) with elastic keeper



Functional diagram:



The distance which the piston moves in case of an activation is approx. 5 mm.

The release unit (cutter) is completely self-contained and specifically developed for CYPRES. In the event of activation, nothing escapes or is expelled.

During an 18 month long investigation by BAM (Bundesanstalt für Materialprüfung), Berlin, 99 release units were tested. The result is that BAM and the U.S. DOT have classified the CYPRES as being non-hazardous.

Due to its high reliability and other properties, the CYPRES release unit is currently being used in aerospace applications (satellites).

1.2 Components

The Aircrew CYPRES 2 consists of a control unit, a processing unit with the attached release handle cable housing and one release unit (cutter) for a 1-pin canopy container or two release units (cutters) for a 2-pin canopy container.



control unit



processing unit



Please do not:

- pull
- lift
- carry or
- throw CYPRES by the cables



release unit
(cutter)

1.3 Power supply

No attention is needed to the power supply of the Aircrew CYPRES 2.

The unit is designed to function from the date of manufacture until the first maintenance, from the first maintenance to the second maintenance and from the second maintenance until the end of life without limitations.

If an Aircrew CYPRES 2 should cease to function due to a faulty power supply prior to the maintenance due date, Airtec will take care of this with the highest priority.



2. How to handle the Aircrew CYPRES 2

2.1 How to use it

The Aircrew CYPRES 2 is dedicated to assist an airman in the emergency situation after a bail out from his aircraft or an unintentional fall out of the aircraft (working at open tailgate etc). The primary action for the airman is to pull the ripcord handle of the emergency parachute. If this should not be possible for whatever reason, the Aircrew CYPRES 2 can step in and help.

The operation method of the Aircrew CYPRES 2 is very safe and simple. It's only armed when the arming cable is pulled out. In this condition it will permanently monitor the situation and initiate the canopy opening in case it detects a vertical speed higher than 35m/s (6.900 ft/min) below an altitude of 4.000m (13.000 ft) above sea level. These two parameters have to be fulfilled to make the unit activate. After arming, the unit stays on for 14 hours or until the cable is pushed back in again. When the arming cable is inserted, the unit is off (disarmed). In this condition the Aircrew CYPRES 2 will not interfere with all possible flight scenarios or pressure chamber situations.

The Aircrew CYPRES 2 can be operated in two different ways:

1. manual arming by handle (airmen working in the plane at the door or open tailgate etc).

The emergency parachute is equipped with a manual handle at the end of the arming cable. When the situation requires an arming of the Aircrew CYPRES 2 (tailgate opening, upcoming work at open door), this handle has to be pulled at least 5 centimeters out of the cable housing. Now the unit is armed. This is indicated by a „0“ in the display. When the work is finished (no further protection needed) the arming cable has to be pushed back into the housing to switch the unit off (display goes blank). The unit is now disarmed again.

2. static line (for pilots or airmen who are permanently seated).

The emergency parachute is equipped with a static line at the end of the arming cable. The static line is connected by a shackle with the seat (or other suitable spots). It has to be connected when the pilot takes seat. The arming cable stays inserted completely and the static line stays connected all times during flight. In case of an emergency bail out, the static line will automatically arm the Aircrew CYPRES 2 by pulling out the arming cable.

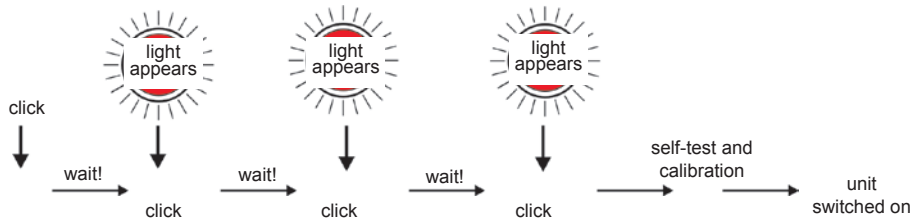
2.2 How to check the operativeness

Please check the operativeness of the Aircrew CYPRES 2 prior to the first flight of the day. This is achieved by a selftest, which has to be done on the ground before boarding. The selftest is started by pressing the push button on the control unit four times as described below in the illustration. After the switch on procedure you will see a „10“ in the display, followed by a countdown to „0“. Between „1“ and „0“ the unit will show the actual ambient air pressure in hpa. The „0“ is displayed for 2 seconds, confirming a positive selftest. Operativeness is given. Then the unit shuts down automatically.

Please take this opportunity to check the proper position of the arming cable.

If the selftest should detect any irregularities, the display would not show the „0“ but a four digit error code like „1111“ or „2222“ etc. In this case, the operativeness is not given. Please contact your service point or Airtec directly.

Error codes are explained in chapter 7.



3. Access to unit information

The Aircrew CYPRES 2 provides an easy way to view

1. the activation counter,
2. the units serial number,
3. the next maintenance date*

When the 0▼ appears at the end of the switch-on procedure press the button immediately and keep it pressed.

Each value is displayed for 5 seconds, then the next value shows up.

You can stop the information sequence whenever you want by just letting go of the button.

* After the 8 year maintenance has been performed, the words 'maint. no' and the date of the total lifetime (end of life) is shown.

1. display of the activation counter



2. display of the serial number



3. next maintenance due in 09 / 2016



4. Changing the release unit(s)

After an activation the release unit can be changed by your rigger packer via the plug-and-socket connection.

Disconnecting the release unit:

Hold plug and socket by their aluminium grips and pull them apart using a smooth straight motion.

Do not twist!



1-pin Cutter



Connecting the release unit(s):

Hold plug and socket by their aluminium grips. Place the plug directly in front of the socket and connect them by pushing together with a smooth straight motion until it is completely seated.

Do not twist!



It is easy to change a 1-pin CYPRES to a 2-pin or CYPRES or vice-versa, by swapping cutter types.

2-pin Cutter



Notes:

1. CYPRES 1 field replaceable cutters (no aluminum grip) can be used with CYPRES 2. (CYPRES 2 is equivalent to Aircrew CYPRES 2 concerning the release units.) They will function properly. CYPRES 2 cutters (identified by aluminum grip) can be used with any CYPRES 1 with the field replaceable cutter connector. They function properly.
2. Release units (cutters) are numbered via a heat shrink tubing placed on the cable. This number identifies the cutter. A table of cutter numbers with the corresponding dates of manufacture is available at www.cypres.cc
3. To disconnect a 3-pin cutter, ALWAYS and ONLY detach the connector attached to the processing unit. Always change the complete 3-pin cutter - don't separate and use segments in other containers!

5. Water contact

Because of its arming cable, the Aircrew CYPRES 2 is not waterproof.

If an Aircrew CYPRES 2 had a water contact, please send it in for a free inspection.

6. Important notes for users

- CYPRES 2 is shielded against radio-transmitter signals. Extreme concerted efforts have been taken to protect the Aircrew CYPRES 2 from „radio pollution“. Although the extraordinary shielding system of the Aircrew CYPRES 2 has been investigated thoroughly, it is impossible to have 100% protection. It is still recommended to avoid strong radio-transmitters. Please contact Airtec if you have questions.
- A release unit that has activated builds up a high internal pressure and will remain pressurized. Never attempt to open it by force. It can, however, be stored safely for an indefinite period of time, provided that it has not been damaged.

7. Error Display

If any irregularities are detected during selftest, the Aircrew CYPRES 2 shows a number on the display. The error code is displayed until the unit is switched off manually or by the automatic shut off after 14 hours running-time. During error display the arming cable is out of function.

Error code number / error code description:

1111 One or both of the attached release units are not correctly electrically connected to the unit. The reason may be a cable break, the cutter plug could be disconnected, or the release unit(s) may have activated.

2222 Excessive variations in ambient air pressure have been measured during the self-test period. The unit is unable to obtain consistent values for the ambient air pressure at ground level. Possible reasons could be that an attempt to switch CYPRES on has been made in a car driving uphill or downhill, in an elevator or in a flying aircraft.

The switch-on procedure can be performed several times after a „3333“ error was displayed. If the 0^v is displayed, the unit has successfully gone through the self-test.

7777 Indicates low battery condition. Please contact Airtec or SSK prior to next use.

Additional error codes for units produced / serviced on or after January 2013.

P do Power Down

CHS Checksum Error

PSE Pressure Sensor Error

After one of these three error displays appears, the unit switches off. At all following switch ons the unit will display the error code again and then switches off. Please discontinue use and send the unit in for service.

If other error codes appear in the display, if the unit switches itself off and can not be switched on again, if the unit does not switch off after 14 hours, if there is no red light when the button is pressed, or if anything else unusual occurs please record the error code and contact Airtec or SSK before further use!

Every technical device can fail. So everything imaginable can happen with the CYPRES, including, but not limited to: displaying a status which is not true, failing to function, or functioning at a wrong moment or at a wrong occasion. If you or your friends or family are not willing to accept these uncertainties and risks, then please don't use CYPRES.

8. Installation

All pilot and crew rigs that are given free for the installation of an Aircrew CYPRES 2 have been at Airtec in Bad Wünnenberg, Germany for a thoroughly investigation. In this procedure extensive testing of the function by an installed Aircrew CYPRES 2 has been executed and the installation instructions have been defined in conjunction with the harness and container manufacturer.

Under no conditions deviation from these instructions are allowed.

When the unit is inserted into its housing in the rig the control unit cable and cutter cable must be placed without tension. Excess cable is stowed in the flat part of the pocket underneath the velcro-adjustable flap. If you have to stow both, the thinner cutter cable and the thicker control unit cable, be sure to place the thicker cable so that it lays on top of the thinner one. Cables should be placed in a circle in order to avoid twists. Always avoid pulling, bending, twisting or kinking the cables.

right



wrong



9. Technical service

The extremely reliable function of CYPRES is based on 4 facts: exclusive use of carefully pre-treated and approved parts, strict detailed manufacturing procedures, continuous quality control and monitoring through the manufacturing process, and regular periodic technical service (maintenance). In deviation of the 4 and 8 years maintenance cycle of the normal skydiving CYPRES the Aircrew CYPRES 2 needs a maintenance only after 5 and 10 years after the date of manufacture. There are 4 primary reasons for the maintenance:

1. Deviations between nominal and actual values are corrected to ideal values. Every detail is observed. It is common that signs of wear and tear are corrected.
2. The technical condition of each unit is analyzed. The fact that a very high percentage of units are returned for the periodic maintenance gives the ability to see statistical trends and to predict potential problems at a very early stage. The advantage: often it's possible to prevent situations by modifications during the maintenance procedures, rather than having to fix problems with downtime later.
3. Experience shows that during the time between the maintenances changes and improvements do happen. Applicable updates are performed during maintenance. Such updates may have the background of technical improvements, or enhancement of knowledge, or may result from environmental changes, which Airtec is always researching and taking into consideration.
4. The most important part of the maintenance is the individual pre-adjustment of each unit for the next period of usage. A unit will not be returned before a high confidence level is reached regarding the prediction of the unit's proper function for the next years of use.

The maintenance has to be performed 5 years and 10 years after the original date of manufacture. The earliest possible date for the Aircrew CYPRES 2 maintenance is 6 months early, the latest 6 months after the month of manufacture.

A delayed maintenance has no advantage. It does not save any cost, nor will the total lifetime of the unit be extended. It's smart to choose a suitable time during the 13 month window for sending the unit in for maintenance, rather than waiting until the last possible moment.

Because of the 178,000+ maintenance procedures performed to date on CYPRES, and changes incorporated into the design of CYPRES 2, Airtec has determined that it is possible to extend the maintenance window to 13 months on Aircrew CYPRES 2. This long maintenance window gives you more freedom, and avoids maintenance downtime at the wrong time.

At any time it's possible to check the date of the next maintenance by holding the button down at the last click of the switch-on procedure until you see 'next maint. in month / year'.

If the unit enters 6 months before maintenance due date, the maintenance date (next maint. in month / year) will automatically be shown at each selftest. 6 months after the due date the display will change to: 'next maint. now'.



All displayed dates are only a reminder. Please choose a suitable date during the 13 month time frame for a convenient performance of the maintenance. According to experience, the number of maintenances and the necessary time to do them increases February-May. For quicker service, a date between June and January is a better choice.

After the 10-year maintenance, Aircrew CYPRES 2 should be airworthy until the end of life. The expected lifetime of Aircrew CYPRES 2 is 12 years from date of manufacture.

Please contact your local CYPRES dealer concerning the maintenance. Please contact Airtec when you don't know who that is.

The CYPRES Service Center for the USA, Canada, South America and other Western Hemisphere countries is:

SSK Industries, Inc.,
1008 Monroe Road
Lebanon, OH 45036 - USA
Tel: ++ 1 513 934 3201
Fax: ++ 1 513 934 3208
email: info@cypres-usa.com
www.cypres-usa.com



10. Repacking of the parachute

You should definitely take advantage of the CYPRES closing loop and disc system.

Previous closing loops - made by old suspension lines or Kevlar or Darcron or Spectra or Optima - were thick and not very slippery and not very flexible.

On container openings, when circumstances are unfortunate, these loops can be squeezed between the grommets.

That may cause a delay of the opening or even avoid the opening at all for some seconds.

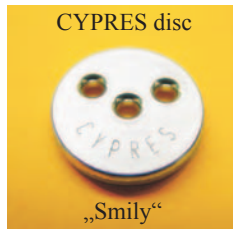
Fatalities did happen because of that.

Airtec has improved the closing loop system.

This is the result:



- extremely flexible
- extremely slippery
- breaking strength: 450 lbs
- diameter: 1,8 mm



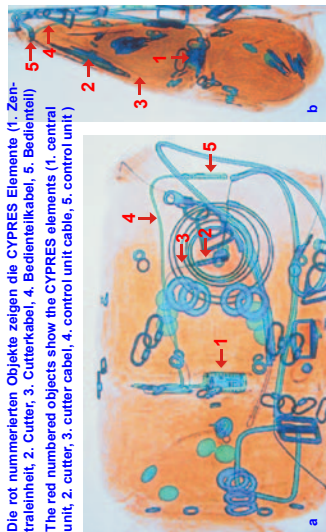
- no sharp edges
- minimal loop tearing

The CYPRES closing loop is far safer than previous loops because:

- the extra thin, flexible and slippery loop material reduces the possibility of the loop jamming in the grommets dramatically
- loop tearing is extremely reduced, because the fastening disc has no sharp edges
- the tensile strength is far greater (in excess of 440 lbs) than with former loops
- the extremely thin material which is impregnated with silicone reduces the pull force which is required to pull the ripcord up to 50% (although the tension on the container remains the same)

11. Regarding Air Travel

A CYPRES equipped rig may be transported in freight and passenger airplanes without restrictions. All its components (e.g. measuring technique, electronics, power supply, loop cutter, control unit, plugs, cables, casing) as well as the complete system, contain parts and materials that are approved by U.S. DOT and other agencies world-wide and are not subject to any transport regulations. Because of the size of a rig we recommend to check it in as normal luggage and to not take it on board as hand luggage. In case of questions or objections of the security personnel, please use the card shown on the right which you'll find in the back cover of this book. The card shows an X-ray of a complete skydiving rig with CYPRES 2. Depending on type and design of the rig the X-ray on the security's screen may vary.



original card located in the back cover

If you've lost the card, you can get a new one from Airtec or SSK.

12. Technical Data

for the Aircrew CYPRES 2 excluding the ripcord housing for the activation handle:

Length, width, height of the processing unit:	approx. 85 x 43 x 32 mm
Length, width, height of the control unit:	approx. 65 x 18 x 6,5 mm
Length, diameter of the release unit:	approx. 43 x 8 mm
Cable length of the release unit:	approx. 500 mm
Cable length of control unit:	can vary standard approx. 1.000 mm
Volume	standard approx. 144 cm ³
Weight:	standard approx. 199 grams
Activation altitude:	approx. 13.000 feet and below
Activation speed:	approx. 35 m/s (6,900 feet/min)
Storage temperature:	+71° to -50° Celsius
Working temperature:	+63° to -32° Celsius *
Maximum allowable humidity:	up to 98 % rel. humidity
Operating range below / above sea level:	-1,600 feet to +65,500 feet (-500 m to +20.000 m)
Minimum operating altitude:	200 m / + deployment distance of parachute in use
Functioning period (once activated by pulling the arming cable):	14 hours
Maintenance:	5 and 10 years from date of manufacture
Power supply:	lifetime warranty**
Total lifetime:	12 years from date of manufacture***

* These temperature limits do not mean the outside (ambient) temperatures but rather temperatures inside the processing unit. Therefore, these limits won't have any meaning until the processing unit itself has reached the temperatures in question.

** If required maintenance has been performed.

*** Anticipated, according to the present knowledge base.

13. Warranty

Technical defects that show up during the first 2 years from the date of manufacture will be repaired by the manufacturer at no cost.

The manufacturer reserves the right to decide whether the unit will be repaired or replaced. Neither repair nor replacement will change the original warranty period of 2 years from original DOM.

When an Aircrew CYPRES 2 unit is returned to the manufacturer or service center, it must be packed in the original box, or an equivalent shipping package.

No claims will be accepted if the unit has been damaged or has been opened by an unauthorized individual, or if an opening of the processing unit, release unit (cutter), or control unit has been attempted.

14. Disclaimer

In designing and manufacturing CYPRES, the aim of Airtec GmbH is that the device should never cause an accidental canopy opening, but should open a canopy container at an appropriate altitude when the activation criteria are met.

All investigations and experiments performed during the product's development, and all laboratory and field tests accompanying trial and production phases have shown to date that CYPRES meets both requirements.

However, the occurrence of a malfunction cannot be excluded. We accept no responsibility for damages and consequences resulting from any malfunction.

Airtec GmbH also accepts no responsibility for damages or problems which are caused by the use of non original Airtec parts and supplies.

The use of CYPRES does not automatically prevent injury or death. Risk can be reduced by assuring that each component has been installed in strict compliance with the manufacturer's instructions, by obtaining proper instruction in the use of this

system, and by operating each component of the system in strict compliance with this User's Guide.

Automatic activation devices (AADs) sometimes fail to operate properly, and sometimes activate when they should not, even when properly installed and operated. Therefore the user risks serious injury or even death to themselves and others during each use.

By using or allowing others to use CYPRES, you acknowledge that you accept responsibility for the proper use of the device, as well as accepting the consequences of any and all use of this device.

Airtec GmbH, their Dealers, Service Centers, and Agents total and complete responsibility is limited to the repair or replacement of any defective device.

CYPRES is strictly a backup device, and is not intended to replace proper training or timely execution of appropriate emergency procedures.

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16. Packing List

In addition to the Aircrew CYPRES 2 unit and the user's guide, the following items will be delivered:

For 1-pin Aircrew CYPRES 2:

- 1 metal ripcord cable housing for the activation handle
- 1 arming cable
- 1 running loop channel
- 2 1-pin loops
- 1 pull up
- 1 disc

For 2-pin Aircrew CYPRES 2:

- 1 metal ripcord cable housing for the activation handle
- 1 arming cable
- 1 running loop channel
- 2 1-pin loops
- 2 pull ups
- 2 discs

For 3-pin Aircrew CYPRES 2:

- 1 metal housing for arming cable
- 1 arming cable
- 1 running loop channel
- 2 1-pin loops
- 1 running loop
- 2 pull ups
- 1 disc

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Further informations can be found at:

www.cypres.cc

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