

CYPRES



CYPRES

Aircrew CYPRES 2 User's Guide

- english version -

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 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 airmen 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 pilot chute 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 jumper'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 jumper is lower than 13.000 feet and in freefall the processing unit triggers the release unit to open the canopy container.

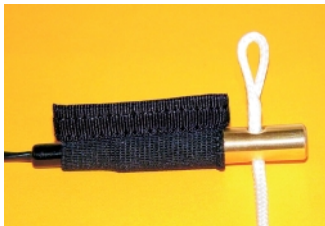
The release unit (cutter) system for the canopy container is completely independent of the rig's primary system, because it does not pull the ripcord pin out of the closing loop, but rather cuts the loop inside the canopy container to release the pilot chute.

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

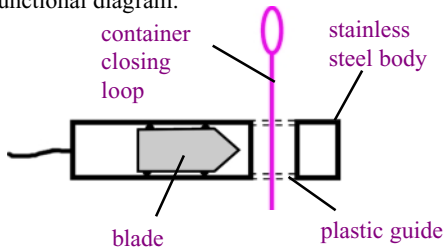
The CYPRES' canopy activation system has these advantages:

- The canopy container can be opened in two different ways. One method is used by the jumper 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 airmen in the exciting situation that occurs after he had to bail out from his aircraft. When falling towards the surface and not being too high he should grab for the ripcord handle of his emergency parachute, pull it, and by that open the emergency canopy.

If he is aware enough, knows what to do and physically not disabled he most likely will take this action.

If he, because of one or another reason, is somehow disabled the Aircrew CYPRES 2 can help him.

All he has to do is to activate the Aircrew CYPRES 2 by pulling on the orange activation cushion for five centimeters or more before he leaves the aircraft's body. After that the Aircrew CYPRES 2 will permanently monitor his situation and open his canopy container, allowing his parachute to deploy, in case he himself does not do it. The

Aircrew CYPRES 2 will do it only below 13.000 feet because the air might be too thin and the temperature too cold higher than that.

Have the orange activation cushion which is fastened by velcro in this original position at all times except when the emergency situation occurs.

Of course you may practice to pull on the orange activation cushion whenever you want to do that. Simply bring it back into its original position after your trial.

To place it in its original position means that the yellow cable which is attached to the orange cushion has to be inserted in its metal cable housing and the orange cushion itself is fastened with its female velcro pad to the corresponding male velcro pad at the left main lift web.

If you are a member of the aircraft crew and e.g. have to work during flight near to an open door or ramp you might want to have the Aircrew CYPRES 2 being ready for action (“sharp”).

In that case you can pull the orange cushion. Pull it until you have cushion and yellow cable separated from your rig. Store it somewhere in the aircraft or inside your suit.

The Aircrew CYPRES 2 is now “sharp“. That means, if you now fall out and reach below 13.000 feet and exceed a vertical speed of 35 meters per second (equivalents 6.900 feet per minute) it will open your parachute container.

This “sharp“ status will continue until you insert the yellow cable into its housing and bring the orange cushion back into its original position. Doing this generates the Aircrew CYPRES 2 to be “unsharp“ again. If you don't do that and 14

hours have past, then it switches from “sharp“ to “unsharp“ automatically. This is just a safety property, to prevent it from remaining “sharp“ for ever.

If you should have the need to keep it “sharp“ for longer than 14 hours, you can insert the yellow cable completely and pull it again. By that, you trigger another 14 hours of “sharp“.

You can do this at any time.

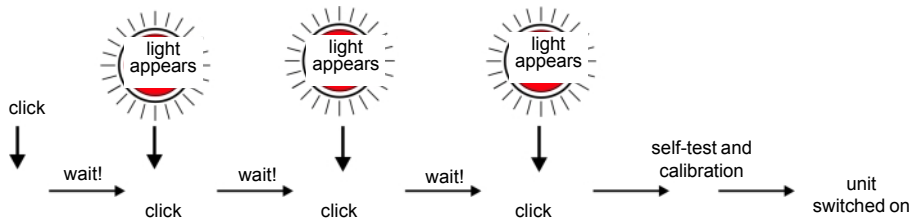
2.2 How to check the operativeness

If you want to check, if the operativeness of an Aircrew CYPRES 2 is given, you can do that by having the unit executing a selftest. That has to be done on the ground.

The selftest is generated by a normal CYPRES switch on procedure at the pushbutton of its control unit; means click the push button, wait for the red light to appear, confirm the red light by clicking and repeat that two more times (see the illustration).

When you have executed the switch on procedure, you'll see a "10" on the display and then a counting down to "0". Between "2" and "0" the unit will interrupt and show the actual ambient airpressure in hPa (that is equivalent to millibars). It most likely will be a value between 700 and 1050.

hPa is the pressure scale that the Aircrew CYPRES 2 works with.



After you have seen the "0" on the display, the selftest has been successfully executed, stating that the unit is ready for work.

The unit now shuts down and the display will go blank again within two seconds. The test is finished. **Operativeness is given.**

If the selftest ends before the countdown has reached "0", the display will show some figure like "1111" or "2222" or "3333" or so for 2 seconds and then shut off. In that case the unit is not ready for work.

The operativeness is not given.

You can find an explanation for the error codes under chapter 7.

We expect the unit to work if the selftest is done or is not done and the experiences with our CYPRES do affirm this standpoint.

Because of liability reasons we kindly ask you to do this check before every flight. At the same occasion assure that the orange activation cushion is in its original position.

3. Access to unit information

If you do the switch on procedure and keep the pushbutton in the control unit pressed down permanently from your last click, you will - after the selftest has ended - see that:

- 1) the display goes blank for half a second,
- 2) the serial number is shown for 5 seconds,
- 3) the display goes blank for half a second,
- 4) the month and year of the next maintenance due date is shown for 5 seconds,
- 5) finally, the unit shuts off.

display of the serial number



next maintenance due in 05 / 2007



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 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 corresponding dates of manufacture will be available at www.cypres.cc.
3. Use a one-pin cutter in a one-pin container and a two-pin cutter in a two-pin container.
4. A CYPRES cutter has a lifetime. It is as long as the lifetime of the unit that it belongs to.

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 there is an error condition detected during the functioning test, Aircrew CYPRES 2 displays a number on the display for approx. 2 seconds, then it switches itself off. (Display goes blank).

Error code number / error code description:

1111

or

2222

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.

3333

Excessive variations in ambient air pressure have been measured during the functioning 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 the Aircrew CYPRES 2 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 is displayed, the unit is fully functional and can be used.

If other than these three described numbers appear in the display, or if the unit switches itself off and can not be switched on again, please contact Airtec or SSK.

Please record the error code number!

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 pretreated 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 50,000+ 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.

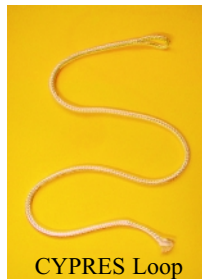
On container openings, when circumstances are unfortunate, these loops can be squeezed between the grommets.

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

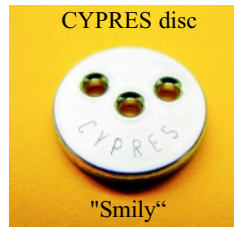
Fatalities did happen because of that.

Airtec has improved the closing loop system.

This is the result:



- extremely flexible
- extremely slippery
- breaking strength: 450 lbs
- diameter: 1,6 mm



- no sharp edges
- minimal loop tearing

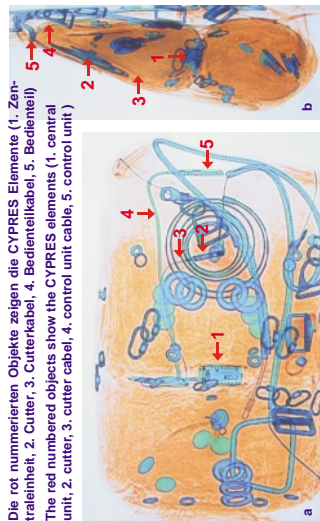
The CYPRES closing loop is far safer than previous loops because:

- 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)
Functioning period (once activated by pulling the orange activation cushion):.....	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
- 2 1-pin Loops
- 1 pull up
- 1 disc

For 2-pin Aircrew CYPRES 2:

- 1 metal ripcord cable housing for the activation handle
- 2 Loops
- 2 pull ups
- 2 discs

Trade Marks

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Further informations can be found at:
www.cypres.cc

Printed on chlorine-free bleached paper.

The sky is not the limit.

The ground is.