

A bulletin from Icarus Canopies:

Product Safety Bulletin #20011004
Crossfire Safety Bulletin #2

Limited quantity of canopies grounded until further notice
Limited quantity of canopies subject to S&TA approval before use

Date of Notice: **October 04, 2001**

Effective: **Immediately**

Applicability: Attached lists of Icarus Crossfire Canopies

Compliance: Mandatory or Subject to S&TA approval

Restriction: **Attached list of canopies known to have manufacturing tolerance issues are grounded until further notice.**

Subsequent list of Crossfire's which may be affected are subject to S&TA or DZO approval for before use.

Exclusions: European Built Crossfire's are not affected
(as attached to this bulletin)

Canopies approved for use by S&TA's

Resolution: Canopies to be certified as being within manufacturing tolerance standards and/or repaired if necessary

Information: Refer Attached Document

Additional Information: Contact:

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Background:

Since our Safety Bulletin dated September 14, 2001 we have received several calls from Crossfire owners reporting instability with their canopy.

With these incidents coming to light, we feel it necessary to issue a more specific warning with regards to canopies which may be affected and a mandatory grounding of those parachutes known to be affected by the anomaly as detailed in Safety Bulletin #20010914 dated Sept 14. (Refer attached for serial number listings).

Required Action:

Grounded Canopies (attached as annex two to this safety bulletin) Parachutes with serial numbers attached to this list that are known to have an anomaly are grounded until further notice. Refer attached serial number list titled Grounded Canopies for further details.

Limited Grounding Subject to S&TA and/or DZO approval (attached as annex three to this safety bulletin)

Crossfire's on the list of canopies deemed as POTENTIALLY AFFECTED are subject to S&TA and/or DZO approval before flight.

S&TA's must be familiar with the skydivers jumping the potentially affected Crossfire's (refer attached list) and ensure that the jumper is experienced and capable of making decisions regarding the reliability of his or her parachute. Additionally, they must have done a minimum number of jumps to have PREVIOUSLY flown the canopy in turbulent conditions and on front risers. They must meet these requirements and have not experienced any anomaly on their canopy in order for the canopy to be approved for flight.

Attached (annex one) is a detailed explanation to ensure S&TA's, DZO's and users are well-informed and capable of making educated decisions.

This bulletin and the canopy serial number lists are also available to view on our website www.icaruscanopies.com.

For more information contact:

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Annex One
Overview:

Following is a detailed explanation to ensure a good understanding of the problem and to avoid bias or misinterpretation.

The Icarus Crossfire was designed to be the highest performing non-cross braced canopy available, able to achieve realms of flight previously considered impossible on non-cross braced parachutes with a lot of effort being put into the smoothest openings available. It's fair to say that it's lived up to that claim.

During the canopy's testing program and subsequent release there were no anomalies apparent with the design. When we learned that some canopies in the field started to experience buffeting we implemented a minor change to the canopy's trim in January 2001 and production continued.

Contrary to some statements made in various public forums there have been no changes made to the canopy's nose design or the planform shape.

Since the trim was modified, we documented a few isolated incidents of instability on Crossfire's. Upon inspecting these canopies, each was confirmed to be the result of manufacturing the canopy out of tolerance.

Upon re-building or reworking the affected canopies, the anomaly disappeared.

With the high number of canopies in the field operating normally we did not feel it was widespread, and saw it as a limited quality issue. Testing and investigating was underway.

After the incident at the Pond Swooping Nationals, additional calls were received about instability and buffeting on some canopy's prompting our service bulletin of Sept 14 urging caution on front risers.

The problem:

The Icarus Crossfire is a high performance, constant cell aspect ratio, fully surface shaped, truly elliptical, inflatable wing. The issue with such modern designs is they are far more susceptible to trim and wing shape variances than is the case with older design canopies. This appears to be the crux of this issue.

Upon inspecting canopies that experienced buffeting or instability, inconsistent manufacturing tolerances are apparent in each of them.

Safety bulletin #20010914 Sept 14 was applied to Crossfire's built from the specific location where these tolerance issues were apparent. Also listed on the bulletin were canopies that had the old trim specifications irrelevant of their origin of manufacture.

During subsequent testing we have discovered parachutes with lesser degrees of manufacturing tolerance issues that experience these anomalies hence we expanded our warning (October 01) to include additional parachutes. Excluded are those Crossfire's built from our European facility, none of which have experienced any known anomaly or have any known tolerance issues.

Putting this in perspective:

Since the canopy's trim was modified Jan '01 we are yet to experience any problems with any canopies built at our European facility.

We have manufactured close on 1000 Crossfire's to date. Of these, the majority (approx 600) have been produced at our European facility (those excluded from this bulletin). The balance (subject to this bulletin) were produced in the USA plus a handful from New Zealand.

We estimate the European built Crossfire's will have done a combined total of between 100,000 and 200,000 jumps to date without experiencing any anomaly that we are aware of. Certainly a conclusive result by anyone's standards.

Our European facility is unique in the fact that it produces canopies to NATO's AQAP and ISO9000 quality assurance procedures. Their quality systems and manufacturing procedures set a standard in our industry. The quality inspection process that canopies go through during and after they are manufactured insure that each piece of a canopies construction fits to within very exacting tolerances.

This offers a significant insight into the relation between the anomaly and manufacturing tolerances.

How many canopies may be affected?

When we calculate the percentages from the respondents to our Safety Bulletin of Sept 14, between 5% and 7% of the 380 canopies on the bulletin have experienced issues or between 1.9% and 2.7% of the total number of Crossfire's produced.

Once again we request that ALL Crossfire owners who have not yet responded to please contact our office or email crossfire@icaruscanopies.com so that we can complete an accurate record of all canopies.

Note: The majority of the NON-European built canopies that we have inspected have been produced within adequate tolerances. We are NOT implying that all the NON-European built canopies have unacceptable manufacturing tolerances.

What about other Icarus Canopies?

As overviewed previously, it has become apparent that the Crossfire requires exacting manufacturing standards. Other canopies in our range are not affected in the same way by such tolerance issues.

Note: Where we choose to manufacture our products has been changed and we do NOT see this issue as ongoing.

What Icarus is doing to resolve the situation:

At present we have a joint American-European team working in Europe consisting of test jumpers, riggers and Aeronautical Engineers.

Initially we have commenced the identification of each manufacturing inconsistency that exists in each parachute we have that experiences the anomaly. We are then test jumping each parachute and then slowly correcting the defects so we can accurately measure the points at which these inaccuracies create the anomaly.

This is more difficult than it may appear due to the compounding effect that can be created if several minor inconsistencies are all apparent in the one canopy. Any one or two minor (or major) inconsistencies may not have any affect. However, when several small tolerance issues are combined the anomaly may become apparent.

As a result we must be confident that we have identified each and every variable, individually and combined which creates the anomaly.

Once completed, we are endeavoring to produce a set of measuring standards by which the canopies can be compared. Canopies within the specifications will be approved for use. Those that fall outside these specifications will be repaired or replaced.

Additional to this process it is apparent that the Crossfire design, like any high performance piece of equipment, requires accuracy in its construction and therefore does not leave a lot of margin for mistakes.

As a result we are also experimenting with other minor adjustments that will ensure the rigidity in parachutes even if tolerance issues exist. This is proving very successful and may be applied to all Crossfire's in the field and subsequent Crossfire's that we manufacture. We are currently having success with trim options that appear to stabilize even the most affected canopies.

While we are achieving positive results, additional testing is being conducted before we are prepared to conclude our results.

New Canopies:

Whilst we are confident of the reliability of Crossfire's produced within tight tolerances (including all of those from our European facility) we are also investigating possible modifications to the panel shaping to allow for an additional safety margin in the manufacturing process.

Recommendation:

We know that most of the Crossfire's out there are solid canopies. We feel the balance is to let everybody know all the information we have available. Let people know the most likely affected serial numbers. Ask people to stay off front risers down low and avoid jumping in turbulent conditions.

A note on turbulence: Turbulence is a major factor in skydiving which kills or injures many skydivers every year. Pilots and Aeronautical Engineers will know the full extent of how serious turbulence can be. Do not underestimate how serious it can be regardless of the canopy you jump.

The majority of experienced Crossfire pilots know their canopies are safe. They have jumped them in countless meteorological conditions and performed countless riser maneuvers, others will not be sure and some will know their canopies are affected.

If you are in doubt or have limited experience on your canopy, then don't jump your canopy until we resolve this issue as a precautionary measure.

Actions:

Limited Grounding Subject to S&TA and/or DZO approval (attached as annex three)

We have detailed this information to offer Crossfire users, S&TA's and DZO's the necessary information to make educated decisions.

We recommend to S&TA's and DZO's that they are familiar with the skydivers jumping the potentially affected Crossfire's (refer attached list) and ensure that the jumper is experienced and capable of making decisions regarding the reliability of his or her parachute. Additionally, they must have done a minimum number of jumps to have PREVIOUSLY flown the canopy in turbulent conditions and on front risers. Should they meet these requirements and have not experienced any anomaly on their canopy then we see it as most appropriate that you and the jumper make an educated decision based on this body of information. Should they have limited experience either as a skydiver or on the canopy then we recommend temporarily grounding their canopy as a precautionary measure until such time as we can approve it for use or modify it if necessary.

Additionally the parachutes attached to this list that are known to have an anomaly are grounded until such time as we can approve them, alter them or replace them. (Attached as annex two).

If your canopy is on the list of grounded canopies please contact Icarus Canopies. We will work with you as much as possible and practical to ensure minimal disruption to your jumping. If your canopy is not on the list but you do detect flight anomalies please get in contact with us.

Note: Should our investigations offer any greater cause for concern we will not hesitate in implementing more stringent directives.

Trim Modifications: (attached as annex four)

Also attached is a list of canopies that are required to be returned to Icarus Canopies for a trim modification. These are canopies which have the old trim specifications.

Note: if your canopy has been re-lined since January 2001 it will have been fitted with the new trim and a re-trim is not needed.

Spectra Line - Line Set Change Required to VECTRAN:

Any Crossfire's with Spectra line require a change to Vectran. Spectra line does shrink rapidly and may create issues as it ages.

Note: Vectran is mandatory due to its superior trim qualities

Contact Icarus Canopies for details.

Closing Note:

Icarus Canopies has enjoyed tremendous growth over the past couple of years. We have secured a market position which seemed impossible two years ago. We have achieved this by going the extra mile for our customers and by designing some of the most revolutionary canopies the industry has seen in a long time. We have invested a significant amount of time and money to achieve this position and we are not about to ignore our responsibilities as a leading canopy manufacturer.

We are not infallible, as no company is, nor are we a giant corporation with unlimited resources. Our goals extend well beyond our current market position and we fully intend to be around to realize them.

We appreciate your support and understanding and will do all in our power to fully resolve this situation as rapidly as possible.

Should you have any questions please don't hesitate to contact:

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Annex Two
Grounded Canopies

Crossfire's with the serial numbers as listed below are grounded until further notice pending evaluation and approval or modification by Icarus Canopies

8139
8160
8186
8244
96612851
96612861
96612876
96612909
96612998
96613020
96613031
96613054
96613138
96613156
96613183
96613226
96613258
96613278
96613280

Annex Three

Canopies subject to S&TA approval before use

Crossfire's with the serial numbers as listed below are subject to S&TA approval before use.

8132 96612835 96612929 96612982 96613100
96613152 96613224 96613277 96912365
8138 96612836 96612931 96612983 96613101
96613153 96613225 96613282 96912367
8148 96612848 96612932 96612994 96613102
96613154 96613227 96613283 96912368
8178 96612852 96612933 96612995 96613103
96613155 96613228 96613284
8251 96612854 96612937 96612997 96613104
96613157 96613229 96613285
8259 96612855 96612938 96613008 96613105
96613158 96613230 96613286
8432 96612859 96612939 96613012 96613106
96613159 96613231 96613306
8433 96612860 96612941 96613013 96613107
96613165 96613232 96613317
8434 96612862 96612943 96613014 96613110
96613166 96613233 96613318
8435 96612865 96612944 96613015 96613111
96613167 96613234 96613319
8436 96612866 96612945 96613016 96613112
96613168 96613235 96613321
8438 96612871 96612946 96613019 96613113
96613169 96613236 96613322
92912345 96612872 96612947 96613028 96613114
96613170 96613238 96613323
94112350 96612873 96612948 96613032 96613116
96613171 96613239 96613324
94812367 96612874 96612949 96613033 96613118
96613176 96613243 96613325
96612340 96612875 96612950 96613034 96613123
96613177 96613244 96613326
96612790 96612877 96612951 96613042 96613124
96613178 96613245 96613327
96612801 96612878 96612952 96613043 96613125
96613184 96613247 96613328
96612802 96612879 96612953 96613044 96613126
96613185 96613248 96613329
96612803 96612880 96612954 96613045 96613127
96613186 96613249 96613330
96612804 96612881 96612955 96613046 96613128
96613187 96613250 96613331
96612805 96612882 96612960 96613047 96613129
96613188 96613251 96613332
96612806 96612883 96612961 96613048 96613130
96613189 96613252 96613333
96612807 96612896 96612965 96613049 96613131
96613194 96613253 96613334
96612808 96612897 96612966 96613050 96613132
96613195 96613255 96613335
96612809 96612898 96612967 96613051 96613136
96613196 96613257 96613337
96612810 96612899 96612968 96613068 96613137

96613197	96613259	96613345		
96612811	96612900	96612969	96613085	96613139
96613198	96613260	96613346		
96612812	96612904	96612970	96613087	96613140
96613199	96613261	96613347		
96612813	96612905	96612971	96613088	96613141
96613200	96613263	96712347		
96612814	96612908	96612972	96613089	96613142
96613201	96613264	96712357		
96612815	96612910	96612973	96613091	96613143
96613202	96613265	96712364		
96612816	96612911	96612974	96613092	96613144
96613203	96613267	96812349		
96612817	96612912	96612975	96613093	96613145
96613204	96613269	96812356		
96612818	96612914	96612976	96613094	96613146
96613205	96613270	96912348		
96612819	96612919	96612977	96613095	96613147
96613206	96613271	96912355		
96612820	96612924	96612978	96613096	96613148
96613215	96613272	96912358		
96612821	96612926	96612979	96613097	96613149
96613221	96613273	96912360		
96612822	96612927	96612980	96613098	96613150
96613222	96613275	96912362		
96612823	96612928	96612981	96613099	96613151
96613223	96613276	96912363		

Annex Four
Canopies requiring re-trim

Crossfire's with the serial numbers as listed below require a re-trim by Icarus Canopies before 31 October 2001.

Contact Icarus Canopies for details.

8132	50212674	96212746	50112607	50312657
8138	50212677	96212749	50112613	50312666
8139	50212689	96212752	50112619	50312675
8148	50212701	96312732	50112622	50312684
8178	50212701	96312738	50112646	50312705
8186	50212707	96312741	50112667	50312705
8244	50212707	96312747	50112676	50312717
8251	50212722	96312750	50112679	50312729
8259	50312558	96312753	50112685	96112739
8432	50312570	96312759	50112694	96112748
8433	50312576	96312765	50112703	96112751
8434	50312579	96312795	50112718	96112754
8435	50312600	96312807	50112727	96112766
8436	50312615	96312810	50212560	96112784
8438	50312618		50212560	96112793
50112562	50312621		50212572	96112796
50112574	50312624		50212575	96112808
50112580	50312630		50212617	96112811
50112586	50312648		50212623	96212737
50112601	50312654		50212659	96212740

Annex Five

Canopies approved for full use

Crossfire's with the serial numbers as listed below are NOT subject to this Safety Bulletin.

Note: Due to the quantity of serial numbers involved, the serial numbers below are listed in ranges (i.e. from & to).

ANY & ALL serial number listed WITHIN these ranges of serial numbers applies.

Serial Number Ranges

From To

94312960	94313148
96112742	96112799
96112835	96112898
96112904	96112909
96112911	96112994
96113000	96113095
96113101	96113192
96113201	96113224
96212743	96212755
96212770	96212776
96212785	96212791
96212794	96212800
96212803	96212836
96212842	96212896
96212908	96212998
96213001	96213096
96213102	96213199
96213202	96213240
96312756	96312761
96312763	96312894
96312915	96312993
96313002	96313097
96313106	96313185
96313200	96313223



Sascha Arndt

Barcelona, 19.10.01

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Icarus Canopies Crossfire Safety Bulletin #2

In Europa gefertigte Crossfire sind vom Safety Bullentins #2 nicht betroffen.

Dies bezieht sich auf hier aufgeführte Seriennummern:

Von	Bis	Von	Bis
94312960	94313148	96113000	96113095
96112742	96112799	96113101	96113192
96112835	96112898	96113201	96113224
96112904	96112909	96212743	96212755
96112911	96112994	96212770	96212776
Von	Bis	Von	Bis
96212785	96212791	96212908	96212998
96212794	96212800	96213001	96213096
96212803	96212836	96213102	96213199
96212842	96212896	96213202	96213240

Von	Bis	Von	Bis
96312756	96312761	96313002	96313097
96312763	96312894	96313106	96313185
96312915	96312993	96313200	96313223

Besitzer von Icarus Crossfire welche nicht mit den hier aufgeführten Seriennummern übereinstimmen, bitte unverzüglich Icarus Canopies Europe kontaktieren.

Icarus Canopies Europe untersagt die Benutzung aller Crossfire Hauptkappen welche nicht mit den hier aufgeführten Seriennummern übereinstimmen.

Sascha Arndt
ICARUS CANOPIES EUROPE