

# Service Bulletin 32



## 1. General

|                          |   |
|--------------------------|---|
| (a) Service Bulletin No: | 32  |
| (b) Revision / Date      | 1 / 21 September 2021   |
| (c) Title:               | Quick Shut Off Valves on Duplex propane cylinders CB2901, CB2902, CB2903.   |
| (d) Description:         | Undersize CB437 flanged adaptors for Quick Shut-Off valves.   |
| (e) Applicability:       | All HAB TCs and AS 105 GD Airships EASA.AS.002<br>All HAB manufacturers   |
| (f) Effectivity:         | All owners/operators using cylinder Serial Numbers listed below if fitted with a CB437 flanged adaptor:<br><br><u>CB2901 Cylinders</u><br>B01113, B01114, B01115, B01117, B01118, B01119, B01123, B01124, B01125, B01126, B01127, B01128, B01130, B01131, B01132, B01133, B01134, B01135, B01136, B01137, B01138, B01139, B01140, B01141, B01142, B01143, B01152, B01155, B01156, B01157, B01158, B01159, B01160, B01161, B01162, B01166, B01167, B01168, B01169, B01170, B01171, B01172, B01177, B01179, B01180, B01181, B01182, B01183, B01212, B01213, B01214, B01215, B01216, B01217, B01218, B01219, B01220, B01222, B01223, B01227, B01228<br><br><u>CB2902 Cylinders</u><br>C00017, C00031, C00032<br><br><u>CB2903 Cylinders</u><br>D01751, D01752, D01753, D01754, D01761, D01762, D01763, D01764, D01765, D01766, D01767, D01768, D01769, D01770, D01771, D01772, D01773, D01777, D01778, D01779, D01780, D01781, D01782, D01783, D01784, D01785, D01786, D01787, D01788, D01789, D01790, D01791, D01792, D01793, D01794, D01795, D01796, D01797, D01798, D01799, D01800, D01801, D01802, D01803, D01804, D01805, D01806, D01807, D01808, D01809, D01810, D01811, D01812, D01814, D01815, D01816, D01817, D01822, D01824, D01825, D01826, D01827, D01828, D01829, D01830, D01831, D01832, D01833, D01834, D01835, D01836, D01837, D01838, D01839, D01840, D01841, D01842, D01844, D01845, D01846, D01847, D01848, D01849, D01850, D01851, D01852, D01853, D01854, D01855, D01856, D01857, D01858, D01859, D01860, D01861, D01862, |

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D01863, D01864, D01865, D01866, D01867, D01868, D01869, D01870, D01871, D01877, D01878, D01879, D01880, D01881, D01882, D01883, D01884, D01885, D01886, D01887, D01888, D01889, D01890, D01891, D01892, D01893, D01894, D01895, D01896, D01897, D01898, D01899, D01900, D01901, D01906, D01907, D01908, D01909, D01910, D01911, D01912, D01913, D01914, D01915, D01916, D01917, D01918, D01919, D01920, D01921, D01922, D01923, D01925, D01926, D01927, D01929, D01930, D01932, D01934, D01935, D01936, D01937, D01938, D01939, D01940, D01941, D01942, D01943, D01944, D01945, D01946, D01947, D01948, D01949, D01950, D01951, D01952, D01953, D01954, D01955, D01956, D01957, D01959, D01961, D01962, D01963, D01964, D01965, D01966, D01967, D01968, D01970, D01971, D01972, D01973, D01974, D01975, D01976, D01750

All cylinders not listed above that have been fitted with CB437 Flanged Adaptors that were released on Invoice Numbers (and Form 1 Numbers) listed below:

| Qty | Invoice No. | Form 1 No. |
|-----|-------------|------------|
| 4   | 12545       | 13397      |
| 12  | 13044       | 12691      |
| 1   | 13242       | 12585      |
| 3   | 13283       | 12683      |
| 6   | 13444       | 12638      |
| 2   | 13636       | 12726      |
| 3   | 14114       | 12933      |
| 4   | 14118       | 12945      |
| 1   | 14310       | 13044      |
| 3   | 14328       | 13051      |
| 1   | 14783       | 13214      |
| 5   | 14809       | -          |
| 1   | 14888       | 13257      |
| 3   | 14912       | 13259      |
| 3   | 14952       | -          |
| 6   | 15203       | -          |
| 4   | 15274       | 13384      |
| 2   | 15327       | 13450      |
| 1   | 15348       | 13415      |
| 4   | 15643       | 13559      |
| 1   | 15735       | 13644      |
| 1   | 15817       | 13664      |
| 1   | 15830       | 13666      |
| 2   | 15848       | 13670      |
| 4   | 15982       | 14929      |
| 2   | 16018       | 13750      |

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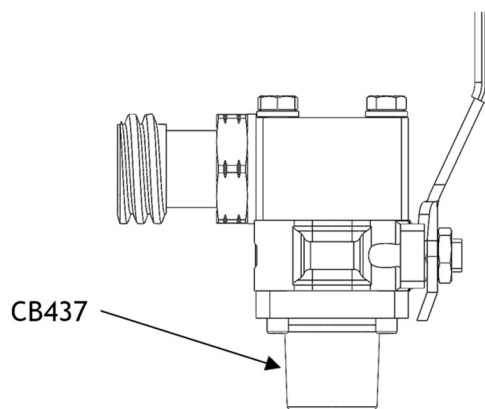


|   |                   |       |
|---|-------------------|-------|
| 3 | 16217             | 13844 |
| 1 | 16237             |       |
| 3 | 16354             | 13880 |
| 2 | 16401             | 13944 |
| 6 | 16439             | 13924 |
| 3 | 16573             | 13979 |
| 1 | 16615             | 13995 |
| 1 | 16702             | 14029 |
| 1 | 16708             | 14027 |
| 3 | 16773             | 14115 |
| 2 | 16808             | -     |
| 5 | 16898             | 14091 |
| 2 | 16956             | 14126 |
| 1 | 16981             | 14160 |
| 8 | 17044             | 8983  |
| 1 | 17153             | 14211 |
| 1 | 17170             | 14255 |
| 8 | 13740/13933       | 12843 |
| 4 | 15309/15311       | 14024 |
| 1 | 16510/16640/16641 | 14000 |

NOTE: Affected Flanged Adaptors are not visually identifiable by surface finish or type of part marking. The details above must be used as the means of affected part identification.

**Note:** Applicability= All types and variants to which the change can be applied.  
Effectivity= Actual CN or group of CN's to which the bulletin has been/will be applied.

Two batches of CB437 Flanged Adaptors for Quick Shut-Off (QSO) valves have been supplied with undersized threads.



When the minimum sized adaptors are combined with cylinder bosses at maximum tolerance dimension the thread can bottom out in the cylinder boss.

Although the required installation torque values can be achieved the unscrewing torque may be undesirably low. In extreme cases the adaptor may be unscrewed by hand.

This condition, if not detected and corrected, could result in an uncontrolled release of liquid propane which in turn could result in a fire hazard that could damage the balloon and its envelope, ultimately leading to a forced emergency landing, during which balloon occupants and persons on the ground could be injured.

### **3. Compliance (Category)**

Required on receipt of this bulletin.

### **4. Consequences of Non-Compliance (Possible)**

Uncontrolled leak of LPG fuel.

### **5. Accomplishment Instructions**

Affected cylinders are prohibited from further flight.

Affected cylinders must be checked for leaking around the interface between the QSO valve Flanged Adaptor and the cylinder boss using leak detector fluid within 24 hours of receipt of this bulletin. Any cylinders found to be leaking should be emptied of fuel immediately. A pilot may carry out this inspection. A satisfactory leak check **does not** release the cylinder to service.

Cylinders found not to be leaking may be subject to a Torque Test. Satisfactory completion of the Torque Test allows the return of the cylinder to service until 31/01/2022. The Torque Test must be carried out by a Part-66 inspector or approved equivalent. Details of the Torque Test are included in document CBL/TN/DCB/3287.

Final rectification action must be applied to all affected cylinders before 31/01/2022. Rectification action requires the replacement of the Flanged Adaptor. We anticipate that replacement Flanged Adaptors will be available by 11/10/2021. Replacement Flanged Adaptors can be identified at issue G or later. Rectification action requires the cylinder to be emptied of LPG.

Operators with an urgent requirement for continued operation of cylinders that fail the torque check may comply with the bulletin by replacing the QSO valve with a handwheel valve part No CB0824-0001 (this part has a Rego-type hose connection).

### **6. Materials** See CBL/TN/DCB/3287

### **7. Other Publications Affected** None

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8. *Mass (Weight)/Balance*: Not Affected

9. *Maintenance and Operating Instructions* Not Affected

## 10. *Additional Information*

Once the supply of rectification materials is assured, the original purchasers of affected cylinders will be contacted to arrange rectification action and this bulletin will be raised in issue.

Organisations and individuals to whom Form 1s have been issued will be contacted directly.

Cameron Balloons are urgently acquiring parts and tooling and preparing accomplishment instructions and a rectification plan for the return of these cylinders to service.

Compiled by:

Notes:

Date: 21/09/2021

Name: D J Cameron

## 11. *Design Organisation Approval*

### Statement of Compliance Verification

I hereby confirm that the instructions identified in this bulletin provide for practical and well-defined installation/inspection methods and when accomplished the product is in conformance with approved design data.

Signed, for and on behalf of Cameron Balloons Ltd.

Office of Airworthiness (not to be signed by form compiler)

Date: 21-09-21

Name: D C Boxall

### Approval Statement

I hereby confirm that these instructions are in compliance with all the applicable airworthiness requirements. The technical content of this document is approved under the authority of DOA nr UK.21J.0140

Signed, for and on behalf of Cameron Balloons Ltd.

Head of Design



Company Stamp

Date: 21-09-21

Name: D A Cameron





The technical content of this document is approved under the authority of the DOA ref. UK.21J.0140

## 1. INTRODUCTION

- 1.1.1 This document contains details of the Torque Test referred to in SB32 to allow cylinders with Flanged Adaptors identified in Section F of the bulletin to remain in service for a limited period.
- 1.1.2 The Torque Test applies an unscrewing torque of 90 Nm to the Flanged Adaptor (80% of the minimum installation torque).
- 1.1.3 Completion of the Torque Test must be carried out by a Part-66 engineer or equivalent approved by the state of registration of the aircraft.

## 2. TORQUE TEST

### 2.1 Torque Test for Empty Cylinders

- 2.1.1 Equipment Required:
  - Flanged Adaptor Installation Tool
  - Torque wrench, minimum capacity 100 Nm
  - 10 mm socket or spanner.
  - Leak detector spray
- 2.1.2 To check the unscrewing torque on a cylinder empty of fuel, the following procedure applies:
  1. Ensure the cylinder is completely empty and vented to zero pressure.
  2. Remove the four M6 retaining bolts holding the QSO assembly to the Flanged Adaptor and remove the QSO assembly.
  3. Make an alignment mark on the thread of the Flanged Adaptor and the cylinder boss to assist in observing rotation.



Figure 1 - Alignment marking on thread and boss

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4. Fit the Flanged Adaptor installation tool onto the Flanged Adaptor. Smoothly and progressively apply a torque of up to **90Nm** with the Torque Wrench. Do not jerk the wrench or the set torque may well be exceeded.
5. If the Flanged Adaptor rotates the cylinder has failed the Torque Test and must be removed from service.
6. If the Flanged Adaptor does not rotate re-assemble the QSO assembly onto the flange and perform a Pneumatic Leak Test on the cylinder [Flight Manual Supplement 7.52].
7. If the cylinder passes both the Torque Test and the Pneumatic Leak Test, then it may be released to service. Make a log-book entry or complete other release paperwork (e.g. Form 1) See section 3.

## 2.2 Torque Test for Cylinders Containing Fuel

2.2.1 This test may also be used for empty cylinders where a Flanged Adaptor installation tool is not available.

2.2.2 Testing of cylinders containing fuel must be carried out outside. Operators must wear suitable eye protection.

2.2.3 Equipment Required:

- Torque wrench, minimum capacity 100 Nm
- 45 mm or 1 ¾ inch 'Crow's Foot' spanner (e.g. Stahlwille 03501064 1/2" x 1 1/2" 'Crow's Foot' Spanner)
- Extension drive
- Padding (closed cell foam, cardboard, or rags) to protect the top of the cylinder in case of the spanner slipping.



Figure 2 - 'Crow's Foot' Spanner

**NOTE:** Use of a 'Crow's Foot' adaptor requires an adjustment factor to be calculated for the torque wrench, see Appendix A. If the torque wrench is held at 90° to the centreline of the 'Crow's Foot' no adjustment factor is required. 90° to the centreline of the 'Crow's Foot' is a good location for the 'Crow's Foot' in this application.

2.2.4 To check the unscrewing torque on a cylinder with fuel, the following procedure applies:

1. Make an alignment mark on the thread of the Flanged Adaptor and the cylinder boss to assist in observing rotation.
2. Fit the padding material over the top of the cylinder.
3. Secure the cylinder either by strapping it to a fixed object or by having a second person hold it.
4. Fit the 'Crow's Foot' over the flange of the flange adaptor.

**WARNING:** Do not apply torque to the Ball Valve or the Aluminium Mounting Block.

5. Calculate the Torque adjustment factor required for the 'Crow's Foot' position used (See Appendix A).

**NOTE:** The outlet fitting of the QSO assembly will prevent full engagement of the 'Crow's Foot', but sufficient engagement should be possible to apply the required torque.

6. Using one hand to apply force to the torque wrench and one hand to steady the upper end of the extension drive or end of the torque wrench. Smoothly and progressively apply a torque of up to **90Nm** with the Torque Wrench. Do not jerk the wrench or the set torque may well be exceeded.
7. If the Flanged Adaptor rotates the cylinder has failed the Torque Test and must be removed from service.
8. If the Flanged Adaptor does not rotate perform a Pneumatic Leak Test on the cylinder [Flight Manual Supplement 7.52
8. If the cylinder passes both the Torque Test and the Pneumatic Leak Test, then it may be released to service. Make a log-book entry or complete other release paperwork (e.g. Form 1) See section 3.

### 3. RELEASE STATEMENT

3.1.1 The following statement should be used to release the cylinders to service:

The SB32 torque check CBL/TN/DCB/3287 Issue A has been performed on cylinder number(s) XXXXX. This / These cylinders are released to service until 31-January-2022.

### APPENDIX A: CALCULATION OF TORQUE ADJUSTMENT FACTOR

When you put an adaptor on a torque wrench (e.g. a 'Crow's Foot') that extends its length the torque applied to the fastener increases as the lever arm extends. This calculation will work out what value you should set into the wrench to achieve the required fastener torque.

The following formula has is used:

$$M1 = M2 \times L1 / L2$$

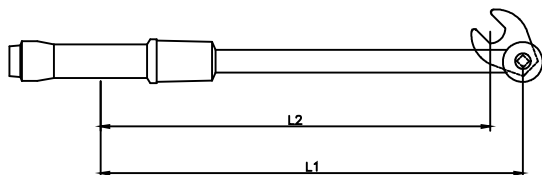
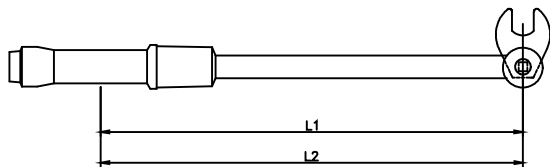
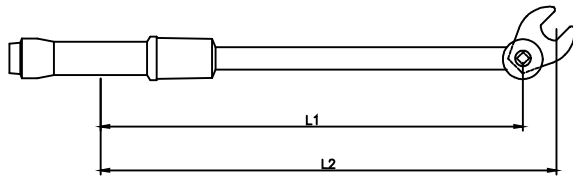
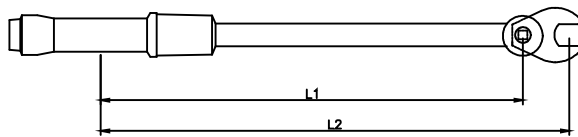
Where:

M1 is the torque setting of the wrench

M2 is the actual torque applied to the nut

L1 is the normal length of the wrench

L2 is the extended length of the wrench



Note that when the 'Crow's Foot' is at 90° to the torque wrench  $L1 = L2$ , so no correction factor is required.