

Technical Service Bulletin

**1XL - ONE PERSON LIFE RAFT, ORAL INFLATION SYSTEMS
INSPECTION AND REPAIR**

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HAZARD / URGENCY RATING	
	DANGER – Injury possible if TSB not observed or followed
	WARNING – Product damage possible if TSB not observed or followed
x	CAUTION – Essential issue affecting operation, service, or parts
	INFORMATIONAL – Advisory which may be of interest

APPLICATION:

This Technical Service Bulletin applies to all TUL One Person Life Rafts, Type 1XL, NSN 4220-21-846-5885, p/n 6152.

SUMMARY:

The oral inflation tubes are to be inspected for severe deterioration/failure due to the natural aging of the neoprene tubing and/or crushing of the tubes after the raft has been folded or vacuum packed for an extended period of time. When damage is found to either of the two molded inflation tubes, the raft is to be sent to Tulmar Safety Systems for assessment and possible oral inflation system replacement. Furthermore, the **extension tube** portion of the floor oral inflation system must be replaced at regular intervals or when deterioration is found. Repair kits are available from Tulmar Safety Systems and can be serviced at customer repair centers.

IMPACT:

Deflation of the floor does not compromise the buoyancy of the raft. When inflated, the floor provides the user thermal protection from cold water temperatures and increases the stability of the raft. Repair or replacement of the Floor Oral Inflation System is therefore important, but not critical. The testing and inspection of the **Buoyancy Chamber Oral Inflation tube assembly is critical** as the inflation of the buoyancy chamber will be compromised if this oral tube assembly fails.

ACTION:

As part of the regular inspection and inflation testing of the raft, perform a **thorough** visual examination of the two molded oral inflation tubes shown in Figure A.

Particular attention is to be given to signs of cracking, splitting, deep abrasions, permanent collapsing, permanent folding and age hardening. If either of the two molded oral inflation tubes does not pass the damage assessment, the raft is to be sent to Tulmar Safety Systems for oral inflation tube replacement.

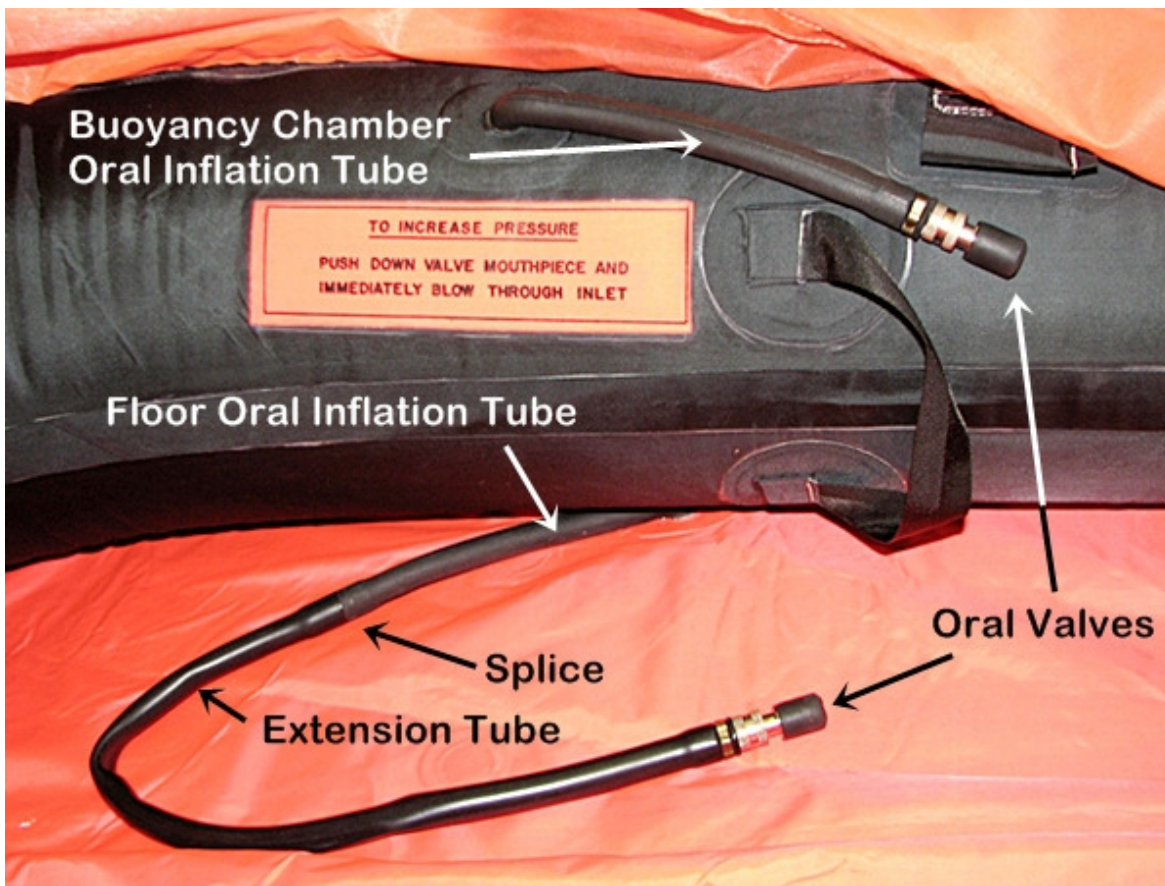


Figure A, Oral Inflation Systems



Figure B, Oral Inflation Tube with permanent fold

Figure B shows an example of an oral inflation tube that must be replaced because the tube may fail at the location of the permanent fold once the tube is forced straight or during inflated conditions.

After the two oral inflation tubes have passed visual inspection and inflation testing, the Floor Oral Inflation Extension Tube is to be assessed. One of the following courses of actions will take place;

- A) All rafts with an unmarked extension tube must have the extension tube replaced with an appropriate repair kit, or
- B) The extension tube falls within age control limits but exhibits deterioration, therefore needs to be replaced with an appropriate repair kit, or
- C) The extension tube falls within age control limits, and it does not exhibit deterioration, therefore is deemed acceptable for continued service.

Pre-assembled repair kits include a new rubber tube, pre-glued brass splice coupling at one end and a pre-crimped oral inflation valve at the other. Part number and Mfg Date are marked as shown in Figure C.



Figure C, Extension Tube Repair Kit

EXTENSION TUBE AGE CONTROL LIMIT:

Verify the extension tube for any MFG DATE or part number markings. Extension tubes **without any markings must be replaced** with an appropriately sized repair kit. Proceed to the **Repair Kit Selection** section.

Extension tubes with **only** a MFG DATE marking implies a newer and complete oral inflation assembly had been installed. Any extension tube of this type with a marked mfg date older than 7 years **must be replaced** with the 1st repair kit. Obtain a 1st repair kit (Tulmar p/n 3432-001) and proceed to the **Repair Instructions** section.

Extension tubes with **both** PART NUMBER and MFG DATE markings as shown in Figure C implies a repair kit had been installed. Any extension tube of this type with a marked mfg date older than 7 years **must be replaced** with the next sized repair kit. Refer to the part number column in Table 1 to determine the current repair kit installed, obtain the successive larger sized repair kit and proceed to the **Repair Instructions** section.

NOTE: Any extension tube exhibiting significant deterioration must be replaced even if it has not reached its 7 year age limit. Determine the required sized repair kit as outlined above.

REPAIR KIT SELECTION:

Three different sized repair kits are available. Each time a repair kit is installed, the oral inflation tube segment will be shortened by 1 inch, therefore to maintain the overall length of the floor oral inflation system, it is important to use the appropriate repair kit. Original length extension tubes will be replaced with the 1st repair kit, 1st repair kits will be replaced by the 2nd repair kit, and so on. After the third repair kit has reached its end of life, the raft is to be sent to Tulmar for complete floor oral inflation system replacement.

<u>Extension Tube/Repair Kit</u>	<u>Part Number</u>	<u>Length of rubber extension tube (ref)</u>
Original/previously changed extension tube	No markings	See below
Original extension tube	only Mfg Date marked	17.25 inches (438mm)
1 st repair kit (1 st oversize)	3432-001	18.25 inches (464mm)
2 nd repair kit (2 nd oversize)	3432-002	19.25 inches (489mm)
3 rd repair kit (3 rd oversize)	3432-003	20.25 inches (514mm)

Table 1, Oral Tube Extensions

Repairing original oral inflation systems

Floor oral inflation systems may have been repaired prior to this Technical Service Bulletin, and as such, the oral inflation tube portion may have already been shortened. It will be necessary to first measure the length of the oral inflation tube in order to determine the appropriate repair kit. The length of the original oral inflation tube is 7 inches measured from the outside of the 90° elbow, as shown in Figure D.

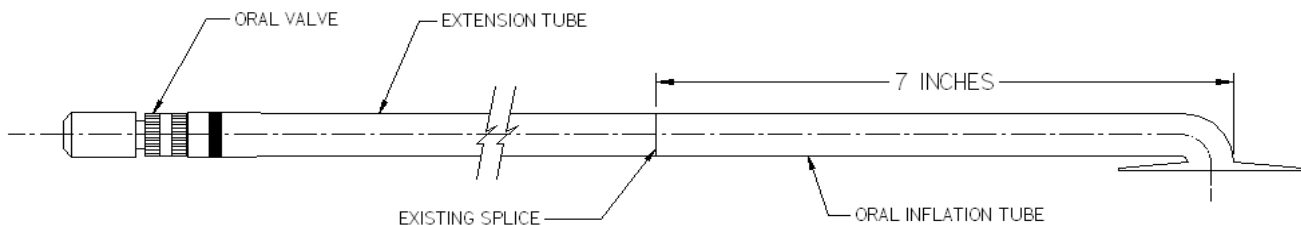


Figure D, Length of Original Oral Inflation Tube

If the oral inflation tube measures 7 inches as shown above (+/- 1/2 inch), obtain the 1st repair kit and proceed to the **Repair Instructions**.

If the oral inflation tube measures approximately 6 inches, get the 2nd repair kit and follow the repair instructions.

When the oral inflation tube measurement around 5 inches, repair the oral inflation system using the 3rd repair kit

If the oral inflation tube measures 4 1/2 inches or less, the raft is to be sent to Tulmar for complete floor oral inflation system replacement.

REPAIR INSTRUCTIONS:

NOTE: Neoprene adhesive and toluene/naphtha will be required to perform this repair. Read the applicable MSDS information. The adhesive required is a two-part neoprene adhesive, self-curing, conforming to specification MIL-A-5540, Class 2 or 5. The mixing ratio of the adhesive shall be as per the manufacturer's instructions.

- 1) Cut the molded oral inflation tube 1 inch (25mm) from the existing splice, ensuring the remainder of the oral inflation tube is not damaged (see Figure E). The removed extension tube can be discarded or disassembled to recuperate the oral valve and brass coupling.

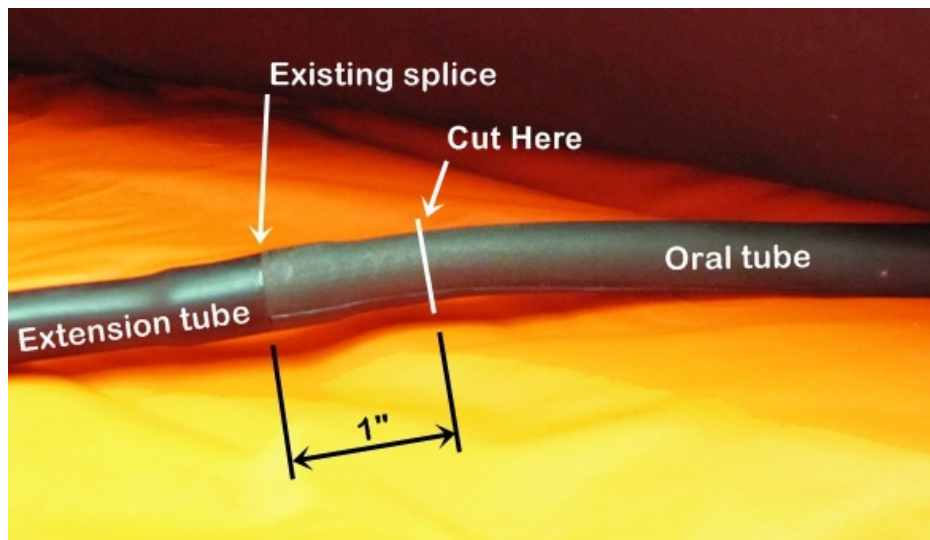


Figure D, Cutting off the damaged or time expired extension tube

- 2) Prepare the brass coupling on the repair kit extension by cleaning the outer surface with a clean lint free pad dampened (not dripping) with naphtha or toluene.

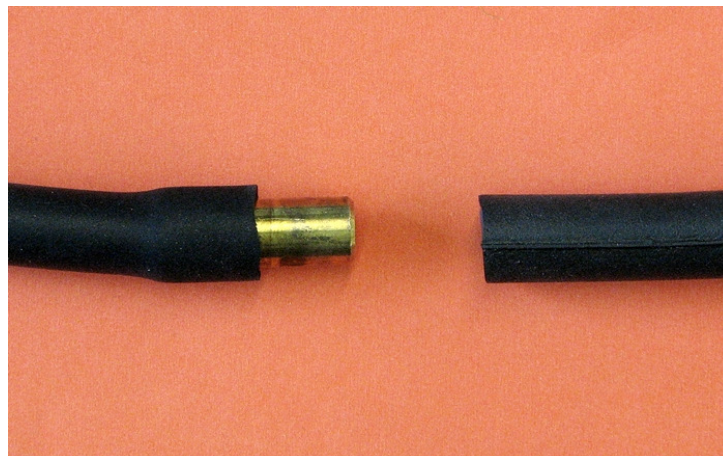


Figure E, both mating surfaces cleaned for gluing

- 3) Clean the inside surface of the trimmed back inflation tube in the same fashion.
- 4) Allow sufficient evaporation of the cleaning solvent before application of the adhesive.
- 5) Apply two thin coats of adhesive to each of the prepared mating surfaces, being careful not to apply too much adhesive inside the tube. Allow the first coat to become tacky before applying the next.
- 6) While the second coat is still wet, slide the brass coupling of the new extension tube into the existing oral tube end.
- 7) Remove any excess adhesive which may have squeezed out from the splice.
- 8) Ensure the assembly does not separate before it sets. A piece of tape can be used to hold the new splice together until it sets.
- 9) After the adhesive has cured **a minimum of seven days**, test the tube and oral inflation valve for leaks. If no leaks are found, the repair is complete and the raft may be returned to service.

CONTACT:

For further information, please call Tulmar's Repair & Overhaul Manager at 613-632-1282