

- The system of choice for aerospace hydraulic tubing repair
- Approved by Boeing, Airbus, major airlines, and all branches of the U.S. military
- The new tube fitting performance standard



*Powering Business Worldwide*

# Rynglok Fittings Design Features

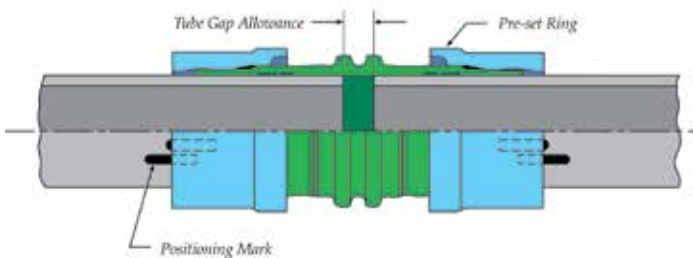
## A Complete Line of Aerospace Permanent, Separable & Specials Fittings

- Accommodates all tubes . . . all thicknesses
- Capable of joining any combination of tubing materials
- Accommodates tube float up to .40 inches
- All metal 6A1-4V titanium alloy construction
- Zero leakage with no elastomeric seals
- Provides a thermal range of from -65°F to +450°F without thermal hysteresis effects
- Unaffected by long term exposure to high temperature aerospace fluids
- Exceeds tension strength requirements of Boeing BPS-F-142
- Provides torsion strength comparable to that of aerospace tube
- Exceeds flexure requirements of MIL-F-85421 and MIL-F-85720
- Exceeds burst and impulse capability of aerospace tube
- Passes 15 minute fire test with type IIIb low flow rates and vibration per AS1055B
- Provides excellent high current lightning strike capability

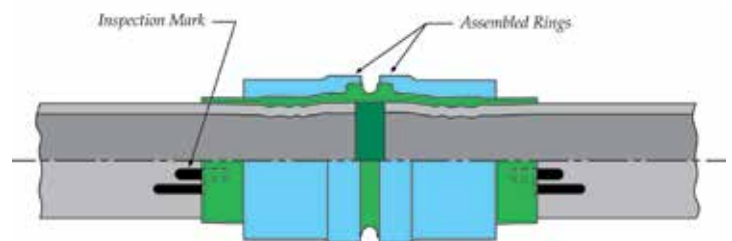


- Approved for repair by all major commercial aircraft manufacturers
- Approved for repair by all branches of U.S. Military  
NAVAIR 01-1A-8  
USAF T.O. 1-1A-8  
NAVAIR 01-1A-20
- Offers a wide variety of fitting configurations incorporated into the U.S. Government distribution system
- National Stock Number cross-reference list available upon request

**Before Assembly**



**After Assembly**



## Performance Verification Testing

The superior capability of Eaton's Rynglok tube joints has been successfully demonstrated in over 6,000 tests for sealing integrity, flexure fatigue, pressure impulse, burst strength, tensile strength, resistance to torsion, fire and lightning strike conductivity.



Even after undergoing torsion, fire, stress corrosion, impulse, flexure, and thermal shock testing, the Rynglok tube joints exceed the burst strength of the tubing.



Rynglok fitting strength often exceeds the torsional strength of the tubing.

Eaton's Rynglok design makes it possible to exceed lightning strike requirements by conducting high surface currents "spark free".

The continuous metal contact insures very low electrical resistance which prevents sparking in critical applications such as aircraft fuel tanks.



### Lightning Strike — Spark-Free Connection

### Rynglok Saves Time and Money

Rynglok simplifies inventory and logistics requirements for both production and repair applications. Rynglok is capable of handling the numerous classes of fluid systems found in the aerospace industry. Rynglok fittings are not sensitive to type of tubing used, or wall thicknesses.

Rynglok's simplified repair method greatly reduces repair time. The system is not time sensitive and the installation tool head does not require 360 degree access around the tube to be repaired. With Rynglok there is no need to disconnect long runs of tubing to complete the repair.

Rynglok has proven its superior capabilities to repair tube at all pressure ratings used in military and commercial aircraft.



#### The Rynglok Advantage

- One titanium fitting for all tube materials
- No need for different aluminum, CRESS or titanium fittings
- One titanium fitting for all wall thicknesses
- No need for different 3000, 4000 and 5000 psi fittings

The chart below shows that the pressure rating of the Rynglok fitting exceeds that of a standard aerospace tube.

Tube O.D. (inch)	Titanium Rynglok Fitting Pressure Rating (psi)
3/16	8,000
1/4	8,000
5/16	8,000
3/8	8,000
1/2	8,000
5/8	8,000
3/4	8,000
7/8	4,000
1	5,000
1 - 1/4	4,000
1 - 1/2	2,500

# Rynglok Tooling

## Rynglok Installation Tooling

- One tube diameter - Any tube - One tool. One Rynglok tool assembles all Rynglok fittings for a given tube diameter
- Universal tools accommodate both forward (push) and reverse (pull) installation
- Small tool envelope accommodates installation and repair of high density aircraft systems
- Minimal tool head wear
- No tool assembly required
- Rynglok tools require only 180 degree access to make repairs. Time consuming line disconnection to accommodate 360 degree access is eliminated
- Minimal operator training required
- Tools are constructed of safe low-stressed ductile material
- Time is not a factor in the assembly process
- Rynglok assembly is simple, repeatable, reliable and safe

## Rynglok Tool Kits

Tool kits for the Rynglok Tube Fitting System can be customized to accommodate your specific requirements.

The kit shown (RTSK8-02-002) includes everything needed to repair any size tube between 3/16" and 1 - 1/2" diameter.



## Rynglok Universal Tools



**PULL**

**Reverse Mode: Ring is being pulled**



**PUSH**

**Forward Mode: Ring is being pushed**

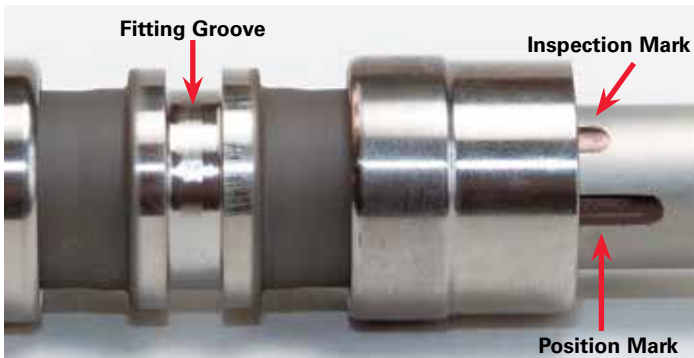
# Rynglok Fitting System Installation Sequence

## 1. Mark the Tube



Position the marking gage on the end of the cut tube. Use a suitable marking pen to make the position and inspection marks.

## 2. Position the Fitting



Place the fitting on the tube within the limits of the positioning mark.

## 3. Position the Tool



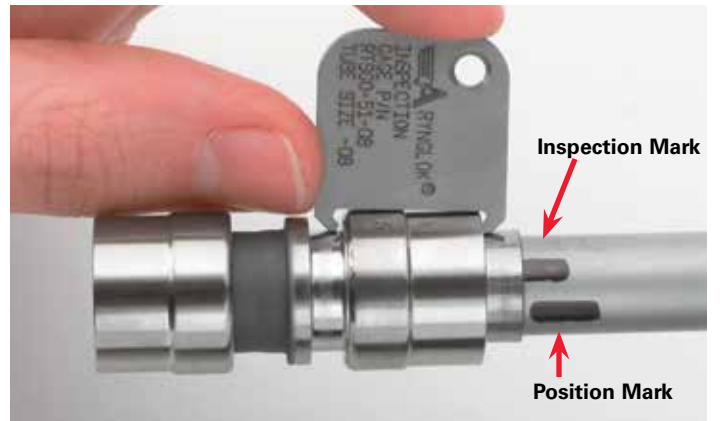
When using the tool in the reverse mode as shown, position the tool onto the fitting with the tube side of the ring nested into the moveable jaw. If positioned properly, the front end of the tool will be in the fitting groove. Make sure that the fitting is bottomed into the tool.

## 4. Swaging the Fitting



To swage the fitting, apply pressure. Upon completion of swaging, release the pressure, the moveable jaw will return to the original position.

## 5. Inspect the Installation



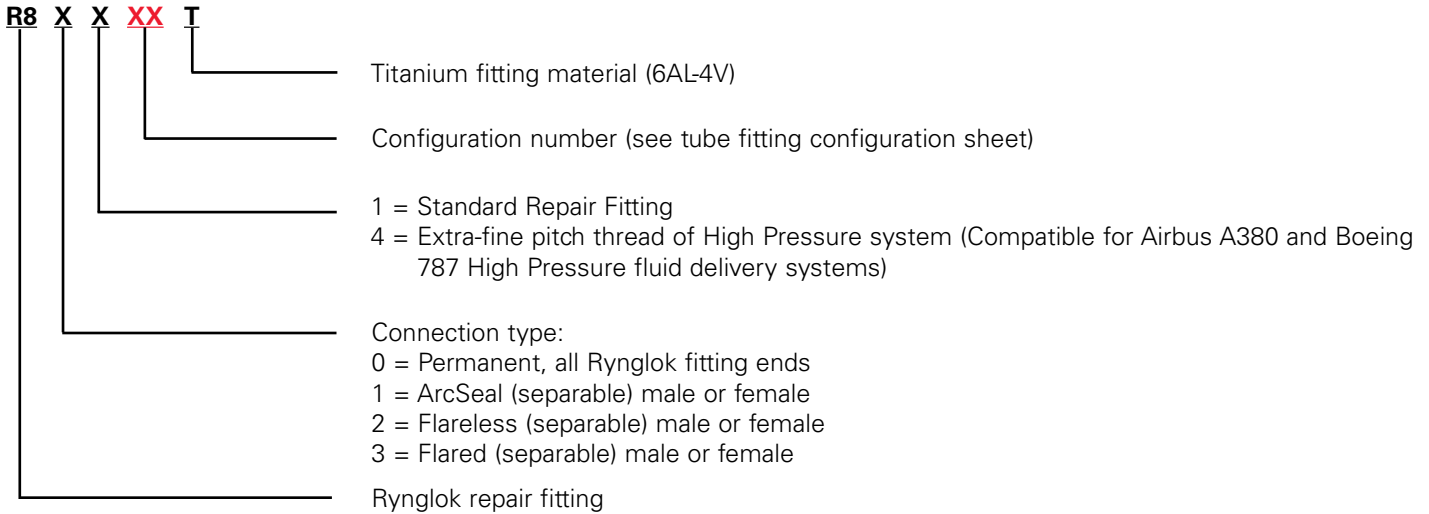
Visually inspect that the ring is fully advanced onto the fitting using the inspection gage. Be sure to verify that the edge of the fitting is within the limits of the inspection mark.

The above steps are repeated for each leg of the Rynglok fitting.

For a more detailed outline of the Rynglok installation sequence see our installation bulletin, TF100-67.

# Rynglok Fitting Part Number System and How to Order

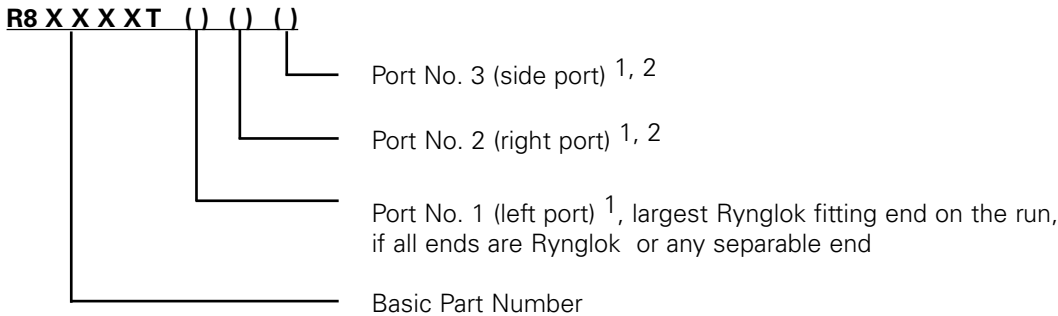
## Basic Part Number Designation



Example: **R81103T**

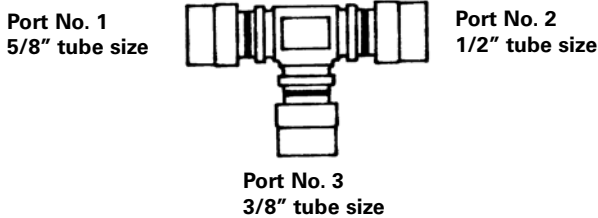
Rynglok repair fitting, female ArcSeal (separable) to Rynglok fitting in the 90° elbow configuration.

## How To Order



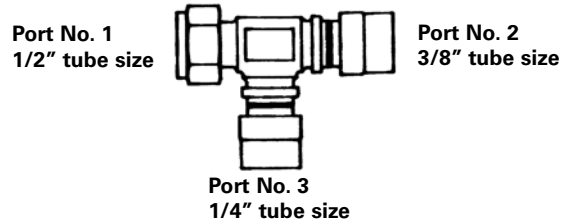
Example: **R80154T100806**

Rynglok repair fitting, reducing tee, all legs permanent.



Example: **R81154T080604**

Rynglok repair fitting, reducing tee, with female ArcSeal separable.



<sup>1</sup> Tube size is specified in 1/16" increments, (i.e., 08 = 8/16ths or 1/2")

<sup>2</sup> Port 2 and 3 only required for reducer fittings

Note: Port numbering system is in accordance with AIR 1590.



# Rynglok Tube Fitting Configuration

	PERMANENT TO PERMANENT	PERMANENT TO ARCSEAL™				PERMANENT TO "MS" FLARELESS				EXTRA FINE THREAD, HIGH PRESSURE FLARELESS <small>**Fittings for use on the Airbus A380 and Boeing 787 5080-psi High-pressure fluid delivery systems</small>				PERMANENT TO "AN" FLARED			
		MALE AS85421/1 OR AS85720/1	MALE BULKHEAD AS85421/2	FEMALE MATES WITH AS85421 & AS85720	MALE MSC33514	MALE BULKHEAD MSC33515	FEMALE NAS 1760 MODIFIED	MALE EN6123 & AS5827	MALE BULKHEAD AS5828	FEMALE	MALE AS4395 (MS33656)	MALE BULKHEAD AS4396 (MS33657)	FEMALE AS1708	MALE AS4395 (MS33656)	MALE BULKHEAD AS4396 (MS33657)	FEMALE AS1708	
UNION																	
Non-Reducer	R8010T()	R8112T()	R8114T()	R8110T()	R8212T()	R8210T()	R8242T()	R8244T()	R8240T()	R8312T()	R8314T()	R8310T()	R8312T()	R8314T()	R8310T()		
Reducer	R8015T()	R8117T()	R8119T()	R8115T()	R8217T()	R8215T()	R8247T()	R8249T()	R8245T()	R8317T()	R8319T()	R8315T()	R8317T()	R8319T()	R8315T()		
45° ELBOW																	
Non-Reducer	R80102T()	R81122T()	R81142T()	R81102T()	R82122T()	R82102T()	R82422T()	R82442T()	R82402T()	R83122T()	R83142T()	R83102T()	R83122T()	R83142T()	R83102T()		
Reducer	R80152T()	R81172T()	R81192T()	R81152T()	R82172T()	R82152T()	R82472T()	R82492T()	R82452T()	R83172T()	R83192T()	R83152T()	R83172T()	R83192T()	R83152T()		
90° ELBOW																	
Non-Reducer	R80103T()	R81123T()	R81143T()	R81103T()	R82123T()	R82103T()	R82423T()	R82443T()	R82403T()	R83123T()	R83143T()	R83103T()	R83123T()	R83143T()	R83103T()		
Reducer	R80153T()	R81173T()	R81193T()	R81153T()	R82173T()	R82153T()	R82473T()	R82493T()	R82453T()	R83173T()	R83193T()	R83153T()	R83173T()	R83193T()	R83153T()		
TEE (Separable on Run)																	
Non-Reducer	R80104T()	R81124T()	R81144T()	R81104T()	R82124T()	R82104T()	R82424T()	R82444T()	R82404T()	R83124T()	R83144T()	R83104T()	R83124T()	R83144T()	R83104T()		
Reducer	R80154T()	R81174T()	R81194T()	R81154T()	R82174T()	R82154T()	R82474T()	R82494T()	R82454T()	R83174T()	R83194T()	R83154T()	R83174T()	R83194T()	R83154T()		
TEE (Separable on Side)																	
Non-Reducer	R81126T()	R81146T()	R81166T()	R81106T()	R82126T()	R82106T()	R82426T()	R82446T()	R82406T()	R83126T()	R83146T()	R83106T()	R83126T()	R83146T()	R83106T()		
Reducer	R81176T()	R81196T()	R81156T()	R81156T()	R82176T()	R82156T()	R82476T()	R82496T()	R82456T()	R83176T()	R83196T()	R83156T()	R83176T()	R83196T()	R83156T()		

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