



SUBJ: Fuselage – Bulkhead Fittings

This is information only. Recommendations aren't mandatory.

Introduction

This Special Airworthiness Information Bulletin alerts you of an airworthiness concern regarding the installation of bulkhead universal fittings in a hydraulic pump port.

Background

The FAA received reports of leaking hydraulic fluid due to improper installation of bulkhead universal fittings when installed in a hydraulic pump pressure port. The bulkhead universal fittings were turned in too far or not far enough causing the o-ring to contact the fitting threads resulting in o-ring damage and failure.

While superseding standards and specifications exist, this SAIB refers to the installation of standard parts that resulted in the reports of leaking hydraulic fluid. The standard design installation of a bulkhead universal fitting into a port includes specific procedures to assure that the fitting is positioned so that the o-ring is located between, rather than on either of the two threaded portions of the universal fitting. These installation procedures are applicable, unless superseded by the Instructions for Continued Airworthiness for a specific airplane.

Standard designs for installation of a bulkhead universal fitting (flared, flareless, and straight threaded connectors) into a port utilize an AN6289 nut with a recess for a back up retainer for the o-ring. The use of an AN924 nut should no longer be proposed as a standard design for a new or modified installation of a bulkhead universal fitting into a port. The use of an AN924 nut instead of an AN6289 nut with a backup ring was initially included within the standard design per AND10064 (for flared tube and straight threaded connectors) for fuel and engine oil applications only. The use of an AN924 nut on a bulkhead universal fitting installed in a port became inactive for design in 1955 via AND10064. Refer to the attached excerpt from AND10064.

The use of an AN924 nut instead of an AN6289 nut with a backup ring was initially included within the standard design per MS33566 (for flareless tube and straight threaded connectors) with nominal use identified for aircraft engine fluid connections. The use of an AN924 nut on a bulkhead universal fitting installed in a port became inactive for design in 1975 via MS33566. Refer to the attached excerpt from MS33566.

Previously approved installations using an AN924 nut that have acceptable in-service performance remain approved and remain acceptable.

While acceptable performance of the AN924 nut on a bulkhead universal fitting installed in a port in low pressure hydraulic systems is known to have been achieved, un-acceptable performance in medium or high pressure systems is expected. Refer to ARP 4752 Aerospace – Design and Installation of Commercial Transport Aircraft Hydraulic Systems and AS4716 (R) Gland Design, O-Ring and Other Elastomeric Seals for additional seal information and general rule information that o-rings operating above 1500 psi should utilize backup rings.

Installations of an AN924 nut on a bulkhead universal fitting installed in a port without acceptable in-service performance warrants review and consideration for a design change.

MS21344 installations and MS33566 installations (with AN6289 nut with MS28773 backup retainer) of a bulkhead universal fitting in a port is accepted by the FAA as a standard design for fluid pressures up to 3000 psi.

Fitting design evolution continues. AS33566 retains the use of bulkhead universal fittings with an AN6289 nut and MS28773 retainer into a port and consequently is an accepted standard design. The FAA has also received reports that AS5440 includes information for the design authority to preempt the use of bulkhead universal fittings due to their problematic service history. Refer to AS5440.

Recommendations

We recommend that you do the following:

- Verify via the current parts catalog and applicable service bulletins whether the installation requires an AN6289 nut with MS28773 backup retainer or an AN924 nut prior to installation. You should not substitute an AN924 nut for an AN6289 nut with MS28773 backup retainer unless the substitution is approved.
- Install bulkhead universal fitting in a port in accordance with the manufacturer's instructions such as the applicable maintenance manual or service bulletin. If the manufacturer's information does not include these instructions, refer to the installation instructions found in MS21344 or MS33566 or superseding SAE Aerospace Standard.

For Further Information Contact

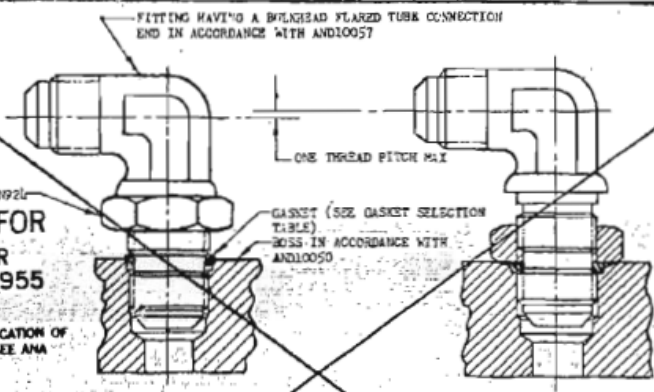
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INACTIVE FOR DESIGN AFTER 10 OCTOBER 1955
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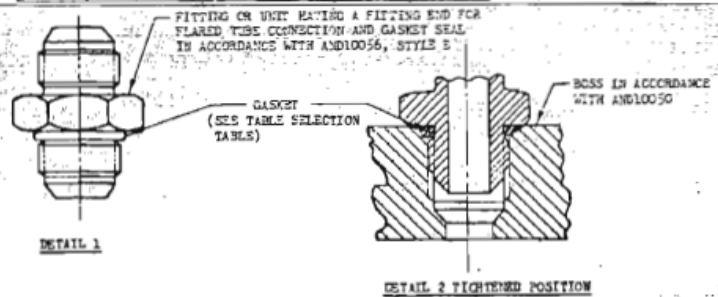


POSITIONING TYPE UNIVERSAL FITTING INSTALLATION SUITABLE FOR NOMINAL OPERATING PRESSURES UP TO AND INCLUDING 1000 PSI
PROCEDURE FOR INSTALLATION OF UNIVERSAL FITTINGS:

1. ASSEMBLE NUT AN92L ON FITTING END AND RUN ALL THE WAY BACK TO CLEAR GASKET GROOVE.
2. LUBRICATE GASKET IN APPROPRIATE LIQUID. (SEE TABLE)
3. PLACE GASKET IN GASKET GROOVE.
4. RUN NUT DOWN UNTIL IT CONTACTS THE GASKET AND MAINTAIN THIS CONTACT DURING POSITIONING TO PREVENT CUTTING THE GASKET ON THE FITTING THREAD.
5. SCREW FITTING INTO BOSS UNTIL GASKET CONTACTS THE BOSS.
6. SCREW FITTING IN AN ADDITIONAL 180°. ANY FURTHER POSITIONING OF THE FITTING MUST BE ACCOMPLISHED BY TURNING THE FITTING IN 90° TO AN ADDITIONAL 270° OR BY BACKING OUT UP TO 45°.
7. TIGHTEN LOCK NUT LIGHTLY.
8. ASSEMBLE FLARED TUBE TO FITTING.
9. TIGHTEN LOCK NUT AGAINST BOSS.

NOT TO BE USED IN HYDRAULIC OR PNEUMATIC SYSTEMS. SEE SHEET 3 FOR HYDRAULIC AND PNEUMATIC SYSTEM USAGE.

GASKET SELECTION TABLE		
APPLICATION	AN OR NS NO.	APPROPRIATE LUBRICATING LIQUID
ENGINE OIL	AN590	ENGINE OIL
FUEL	MS9512	APPLICABLE FUEL



NON-POSITIONING TYPE FITTING INSTALLATION SUITABLE FOR NOMINAL OPERATING PRESSURES UP TO AND INCLUDING 1000 PSI
PROCEDURE FOR INSTALLATION OF AND10056 FITTING END, STYLE B.

1. LUBRICATE THE GASKET IN APPROPRIATE LIQUID (SEE TABLE).
2. INSTALL GASKET ON THE FITTING AS SHOWN IN DETAIL 1.
3. SCREW THE FITTING ASSEMBLY INTO THE BOSS UNTIL IT BOTTOMS TIGHTLY ON THE BOSS AS SHOWN IN DETAIL 2.

GASKET SELECTION TABLE		
APPLICATION	AN OR NS NO.	APPROPRIATE LUBRICATING LIQUID
HYDRAULIC	AN6290	MIL-G-5506 OR PETROLATUM
ENGINE OIL	AN920	ENGINE OIL
FUEL	MS9512	APPLICABLE FUEL
PNEUMATIC	AN6290	MIL-G-1363

AIR FORCE-NAVY AERONAUTICAL DESIGN STANDARD
FITTINGS, INSTALLATION OF FLARED TUBE, STRAIGHT THREADED CONNECTORS

AND10064
 SHEET 2
 NOT A PART NUMBER

APPROVED 1 Nov 45, REVISED 17 Nov 46, 15 Mar 47, 10 Sep 47, 13 Jun 48, 5 Feb 52, 617 Nov 54, 710 Oct 55

