

Technical Directive

Originator	Date of Issue	EIC/CMC	Expiry Date
MMES / HM&E	13/02/98		13/02/99

Subject
INTRODUCTION OF MECHANICAL SWAGE PIPE FITTINGS - "PYPLOK"

Applicability
ALL RAN SURFACE VESSELS

References
A. DMCME Minute No. 580/96 dated 20 Dec. 96 (Notal)
B. Mil-Std-777E Schedule Of Piping, Valves, Fittings, and Associated Piping Components for Naval Surface Ships.

INFORMATION

1. Currently, repairs to onboard piping systems are carried out by either specialised welders, fitters or plumbers using either welded, Silbraz or flanged joint methods. During these operations, fire safety is provided by fire sentries. To simplify some of these manpower intensive procedures, an investigation has been undertaken into the suitability of Mechanical Swage Fittings of similar material to the parent system for piping systems up to, and including, 1.5 inch NPS or 38 millimetre (mm).
2. DMCME at Reference A, have granted approval for the use of Mechanically Attached Fittings (MAFs) in the form of PYPLOK Type II, (without the use of Fire Insert Sleeves), for the repair of nominated piping systems. This method is quicker to install, reduces the number of installation personnel, removes the requirement for fire sentries and is cost effective.

Definitions

3. The following definitions shall apply:
 - a. Type II fittings - PYPLOK DM Series 3750 PSI rating, with a fire rating temperature range of between -65°F to 400°F.
 - b. Fire Hazardous Areas FHA - These are defined in Reference B, as "spaces containing flammable liquid hazards that require fixed halon or any other fire extinguishing replacement system."
 - c. CRES - Corrosion Resistant Steel.
 - d. CuNi - Copper Nickel.
 - e. DAA - Design Approval Authority.
 - f. IPS - Internal Pipe Size.

Technical Directive

- g. PSI - Pounds Per Square Inch.
- h. TEM - Technical Equipment Manual.

Applicability

4. This instruction is applicable to HMA Surface Ships, and their attached Support Craft. It is not applicable to HMA Submarines.

Approved Applications

- 5. MAFs are approved for use, subject to the following criteria;
 - a. Size : Up to 1.5 inch or 38mm NPS
 - b. Material : CRES, Carbon Mild Steel, 90/10 CuNi, 70/30 CuNi, Copper
 - c. Pressure/Temperature: As per manufacturer's data sheet for respective material.
- 6. Type II PYPLOK fittings (without a Fire Insert Sleeve), are approved for use in a system where one or more components are fire rated below that of the PYPLOK fittings. The exception to this criteria is for HP Steam operating at a pressure of 600 PSIG and a temperature of greater than 750°F.

Note: To determine the fire rating of components within FHAs, an onboard assessment is to be conducted. If there is any doubt on the suitability of PYPLOK the system DAA is to be consulted.

7. Pipe runs that transit FHAs, that do not have components fire rated less than PYPLOK in that space, shall be fabricated from continuous or mechanically jointed connections within the transient area.

PYPLOK Repair Procedure

- 8. The procedure for replacement of a defective Weld, Silbraz or Flanged joint is :
 - a. Select the applicable PYPLOK fitting using the information in supplied documentation, and
 - b. Install the PYPLOK fitting with the use of a hydraulically actuated hand held axial swaging tool, in accordance with manufacturer's instructions by an accredited operator.

ACTION

9. In accordance with the Enclosures, PYPLOK Type II fittings in either CRES, Carbon Mild Steel, 90/10 CuNi, 70/30 CuNi or Copper may be utilised in the nominated systems meeting the system component fire rating criteria.

Technical Directive

10. Configuration of the system i.e. bends, elbows, tees, couplings etc. shall remain extant. Changes to existing configuration shall be approved by the system DAA prior to installation.
11. Ships staff are to request FIMAs to undertake repairs as necessary. A sufficient level of documentation is to be provided with the request to allow FIMAs to identify and source PYPLOK fittings to effect repairs.
12. The installation of PYPLOK fittings shall only be carried out by accredited personnel.

Special Precautions

13. To minimise possibility of damage :
 - a. tooling is to be stored in a secure cool dry place, and
 - b. fittings are to be stored in a cool dry place.

Training

14. Initial training will be provided by the supplier, Deutsch Metal Components, to qualify nominated staff within FIMA National, FIMA Waterhen, FIMA Cairns, FIMA Darwin & FIMA Stirling as accredited operators, as well as trainers. These personnel, will in turn train selected ship's staff. Only three accredited personnel are required onboard ship; two junior sailors, AB or LS, one MT and one ET (Weapons), plus one PO, either MT or ET (Weapons). On completion of training, the conducting FIMA will be responsible for the completion of Form PE5, and arranging the issue of Deutsch Metal Components Accreditation Cards. Training Manuals will be issued by the supplier to personnel undertaking training.
15. The EDP course number for PYPLOK training is 401156.
16. Each FIMA is to maintain a record of all training conducted. Similarly, each ship is to maintain a record of accredited personnel onboard.

For Material Managers - General Components (GC) / Machinery & Plant (MP)

17. The initial implementation strategy for this equipment will be to issue FIMA National, FIMA Waterhen, FIMA Cairns, FIMA Darwin and FIMA Stirling with the following items;
 - a. Full Kit - (Range ¼" - ¾" IPS) - P/N DLT40PYKT3800, DSN# 5130-66-135-9033,
 - b. Full Kit - (Range 1" - 1½" IPS) - P/N DLT55PYKT3800, DSN# 5130-66-135-9034,
 - c. Pump Unit - P/N DLT05MAPM1000, DSN# 4320-66-135-9032, and
 - d. Gauge Line Kit - P/N DLT10PYKT3700, DSN# 5130-66-135-9037.

Technical Directive

18. Until further direction from MMES, only FIMAs shall demand from naval stores, PYPLOK equipment or fittings.

Note 1: This equipment is unique and shall be sole sourced through Deutsch Metal Components, California, USA. The local factory representative is Mr Kevin Connor, Deutsch Metal. Components, Sydney Phone. (02) 9543-1701. Facsimile (02) 9543-1684.

Note 2: The official agent in Australia is Mr. David Morrison, Prochem Pipeline Products Sydney Phone (02) 9727 0044. Facsimile (02) 9728 6766, Perth Phone (08) 9548 7777, Facsimile (08) 9351 8170.

Note 3: Only one Full Kit - (Range ¼" - ¾" IPS) including Pump Unit and Gauge Line Kit will be initially supplied to FIMAs. The full Kit (Range 1" - 1½" IPS) is only to be supplied when FIMAs have a demand for repairs.

Documentation

19. Enclosures 1-2 will only be supplied initially to FIMAs. Further action is being progressed by MMES to finalise the Enclosures as a TEM with a wide distribution.

Maintenance

20. The planned maintenance schedule for the tooling is being developed by MMES.

21. This directive will be incorporated into ABR 5225 and ABR 5505.



G. R. COOKE
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for Superintendent Ships Logistics Office

Enclosures:

1. RAN listing of System environment / PYPLOK fitting material. (FIMAs only)
2. Catalogue of Deutsch Metal Components list of PYPLOK fittings and tooling with their respective NSN numbers. (FIMAs only)
3. Catalogue of Deutsch Metal Components PYPLOK - DLT Series Tooling. (FIMAs only)
4. Catalogue of Deutsch Metal Components PYPLOK - DM Series Fittings. (FIMAs only)