

THERMOMETER POCKETS A CAUTIONARY TALE

BY

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Formerly, thermometer pockets have been regarded as fairly insignificant items of equipment to which little, if any, special attention needed to be given. Recently, however, two major boiler-room fires caused by the inadvertent removal of thermometer pockets from pressurized systems have demonstrated their potential lethality. In the latest fire attributable to this cause, three lives were lost.

In this latter case, the pocket that was removed was non-standard, it having been manufactured from a half-inch mild-steel bolt. The original pocket had not been replaced after the pipe to which it had been fitted had undergone a pickling and cleaning process during the ship's refit. No securing device was fitted to this non-standard pocket and the hole that had been drilled in it was of sufficient size to take only the glass stick insert and not the protective steel sheath of the thermometer. Breakage of the glass stick insert and the subsequent attempts to remove the broken stub led directly to the fire and its tragic consequences.

Current Safety Precautions

The safety requirements to prevent the inadvertent removal of thermometer pockets from pressurized systems are contained in Naval Engineering Standards; these are summarized as follows:

- (a) For high-pressure systems, high-temperature systems, or systems containing flammable liquids, thermometer pockets should be seal welded or brazed into the pipe or equipment.
- (b) For low-pressure (below 23 bar/350 psi) systems, low-temperature (below 150°C) systems, or systems containing toxic fluids, thermometer pockets should be secured by using a proprietary thread sealant.

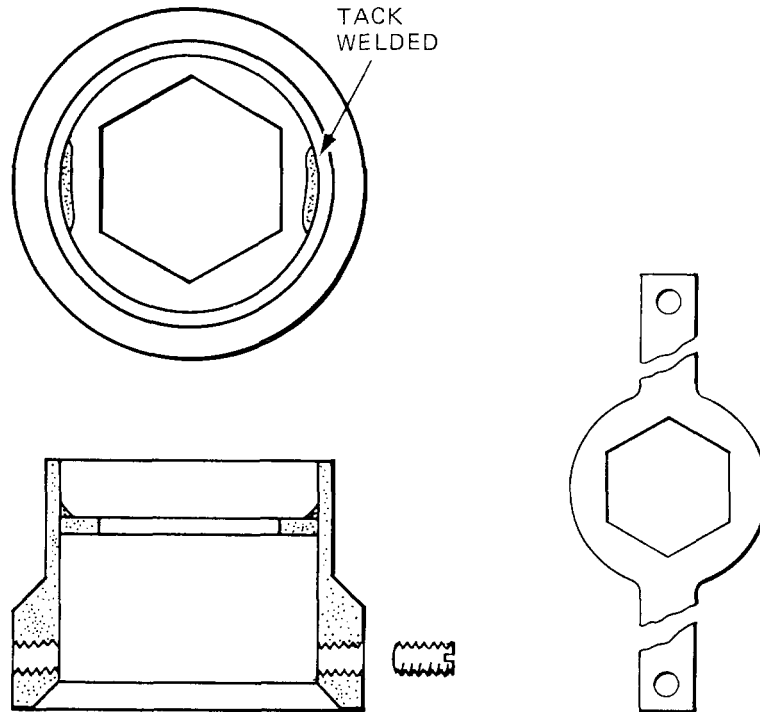


FIG. 1

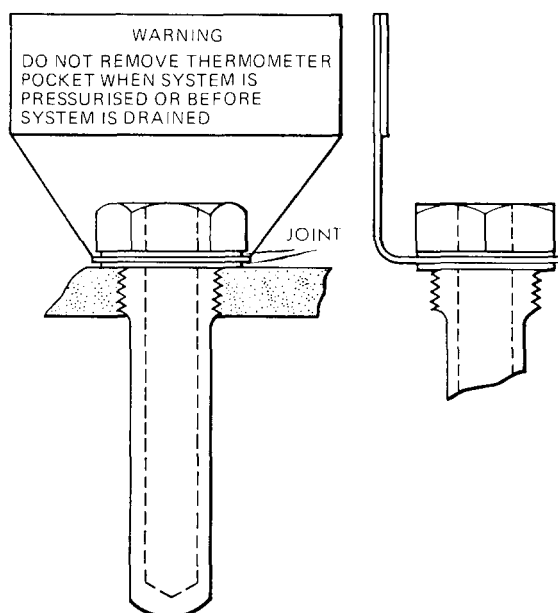


FIG. 2

Retrospective Action

Undoubtedly, a number of thermometer pockets presently in service do not meet the foregoing safety requirements. Arrangements are, therefore, currently in hand to ensure that any deficiencies are rectified at an early date. The programme of retrospective action includes methods to deal with those thermometer pockets where seal welding or brazing is not suitable because distortion may occur, or because seal welding or brazing is simply not feasible due to the location of the pocket. The programme provides in these cases for the fitting of one of the alternative locking devices shown in FIG. 1, and for locking devices

to be identified by the fitting of a warning plate (FIG. 2) and by painting the pocket head in a distinctive colour scheme of yellow on black.

The Future

In order to publish more widely the dangers of misuse of liquid-in-glass thermometers and the particular dangers that can arise from the inadvertent removal of pockets from pressurized systems, *BR 3000* and *BR 3001* are in the process of amendment.

Also, an investigation is being carried out by D.G. Ships to determine whether liquid-in-glass type thermometers might be replaced by other temperature measuring devices and whether the number of thermometer pockets currently fitted to equipments might be reduced. To these ends, ship trials of digital thermometers and clamp-on dial thermometers will start shortly.

Conclusions

The vulnerability of liquid-in-glass thermometers and the potential dangers of misuse of thermometer pockets have been graphically illustrated by recent boiler-room fires.

Although action is being taken to provide for alternative methods of securing thermometer pockets currently in service, the danger of further accidents occurring will exist until all pockets meet the requirements of Naval Engineering Standards.
