



TEIKOKU USA INC
CHEMPUMP

PUMPS DESIGNED AND DOCUMENTED FOR LETHAL SERVICE

Chempump personnel have conducted an extensive search for design criteria of pumps for use in lethal service applications. Chempump has been unable to locate any such standard therefore, in the absence of an industry standard for lethal service pumps Chempump will design, manufacture and document pumps designated for lethal service to paragraph UW02 of Part UW of Section VIII and Section III of the ASME code. Section VIII covers the construction of pressure containing vessels for lethal service; Section III covers the construction of the pump.

Pumps documented for lethal service shall meet the following criteria:

Definition:

It is the responsibility of the User to advise Chempump that the equipment is for use in Lethal Service.

Design:

To Section III, Class III of the ASME Code

Welding:

Welders qualified to Section IX of the ASME Code
Welding to Section III and paragraph UW-2 of part UW of Section VIII of the ASME Code

Non-Destructive:

All NDE testing shall be in Accordance with Section V of the ASME Code.

Examination (NDE)

Chempump has combined all these design, manufacturing and documentation requirements into a procedure (A-24498) for pumps being used in lethal service applications. The following pages contain this procedure.



CHEMPUMP
A DIVISION OF TEIKOKU USA INC.
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Chempump Procedure

A-24498

Lethal Service Design Criteria

Crane Co.
Chempump Div.

Rev. 0	Rev. 1	Rev 2.	Rev 3.	Rev 4.	Rev 5.
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REVISION RECORD

A-24498

Rev	Description	Remarks
1	Revised Sect 2, Par 7: Added "Stator Assemblies should include Ductor Seal or ASME type lead connector"	QA Request
2	Paragraph 2.02 added "ASTM E94 and E446 Acceptance Level 2".	QA Request

1.0 PURPOSE

- 1.1 Chempump personnel have conducted an extensive search for design criteria of pumps for use in lethal service applications. Chempump has been unable to locate any standard lethal service design guidelines. Chempump will therefore detail, in this document, the standards by which Chempump will design and manufacture pumps for which Chempump's customers have specified that the pump's application is for lethal service.

2.0 CHEMPUMP PROVISION OF LETHAL SERVICE PUMPS

1. All pressure boundary castings (Pump Casing, Adapter and Rear Bearing Housing) must be X-ray quality with material certification required.
2. All pressure boundary casings must be Radiographically tested and results must meet ASTM E94 and E446 Acceptance Level 2.
3. Stator bands are to be fabricated from SMLS pipe and not rolled and welded plate stock.
4. All primary and secondary pressure retaining welds must be performed by ASME qualified welders and procedures.
5. All pressure retaining threaded connections must be back welded by qualified welders.
6. All pressure retaining welds will be Liquid Penetrant tested by qualified personnel.
7. Stator assemblies will be Pneumatically tested to a-qualified procedure. Stator assemblies should include a Ductor Seal or ASME type Lead Conector.
8. Pump assemblies will be Hydrostatically tested to a qualified procedure.
9. All stator and pump assemblies will be Helium Mass Spectrometer tested to a qualified procedure.
10. All external circulation lines will be tubing with tube fittings back welded with Liquid Penetrant NDE as standard.
11. Optional pump casing and rotor cavity drain and stator flush & drain connections are not required for Chempump acceptance. If requested by customer the design will be supplied to the customer for their approval.
12. Customer's approval of this procedure must occur in writing prior to purchase order

receipt or must be contained in the body of the purchase order.