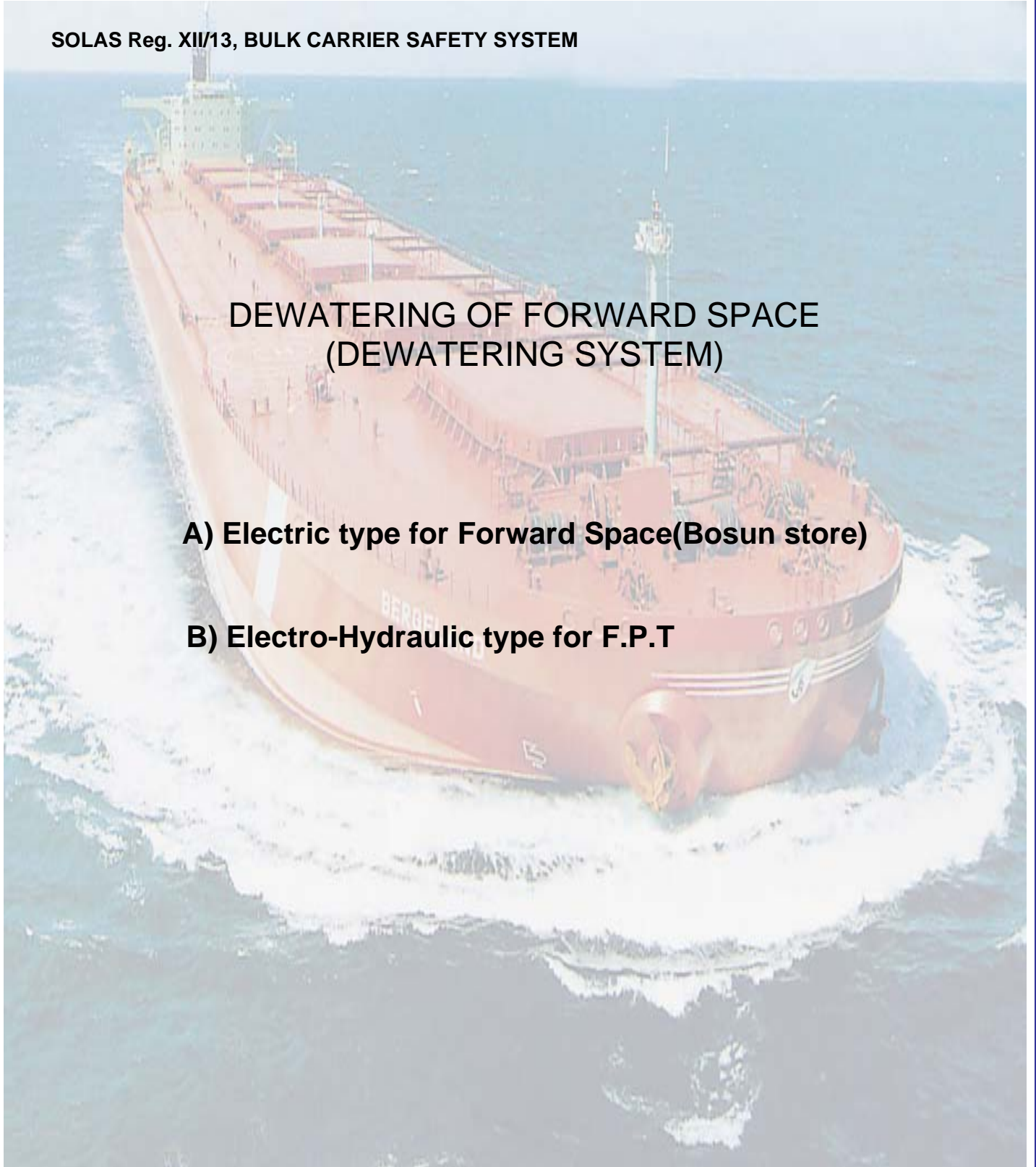


SOLAS Reg. XII/13, BULK CARRIER SAFETY SYSTEM

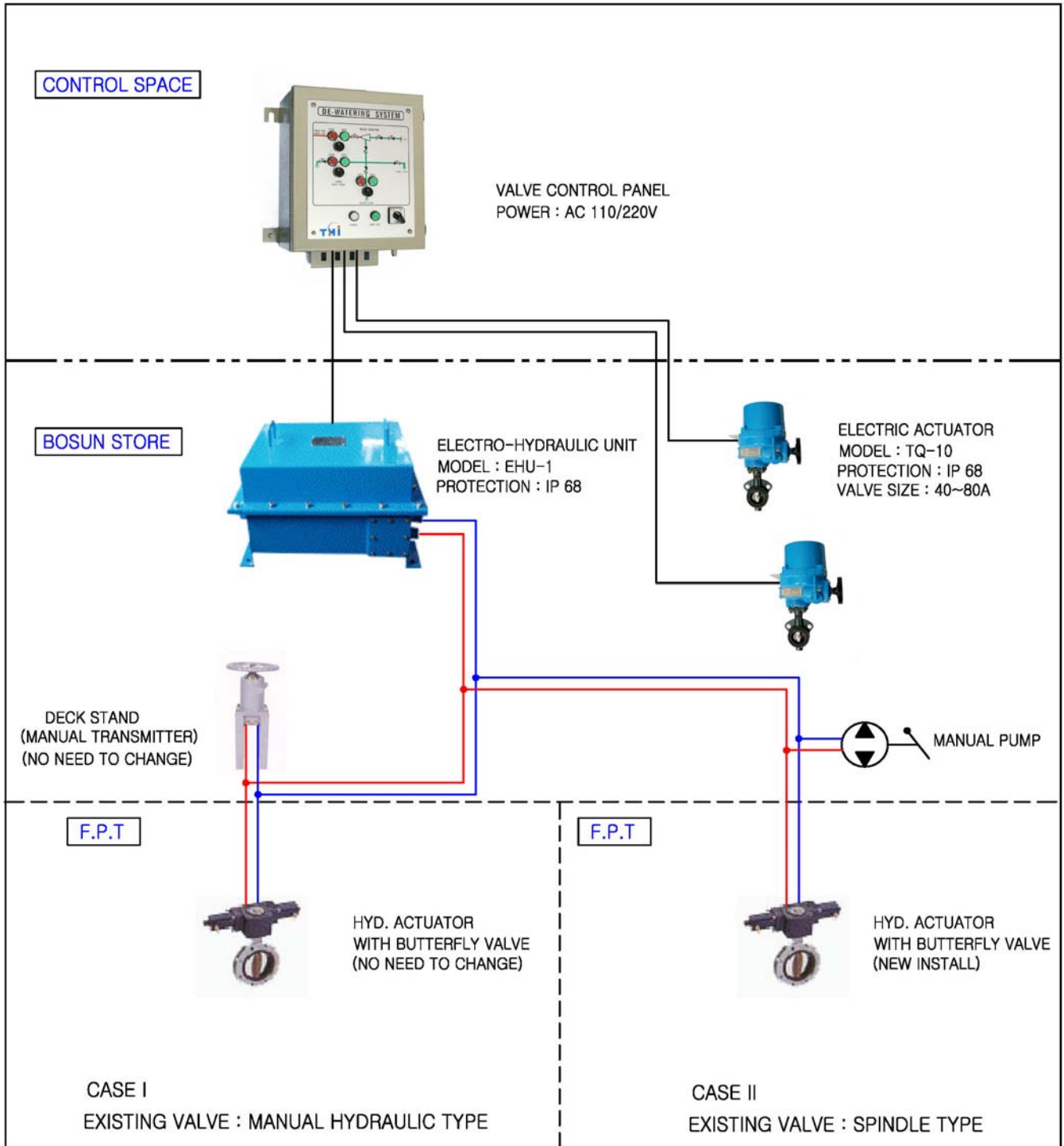
**DEWATERING OF FORWARD SPACE
(DEWATERING SYSTEM)**

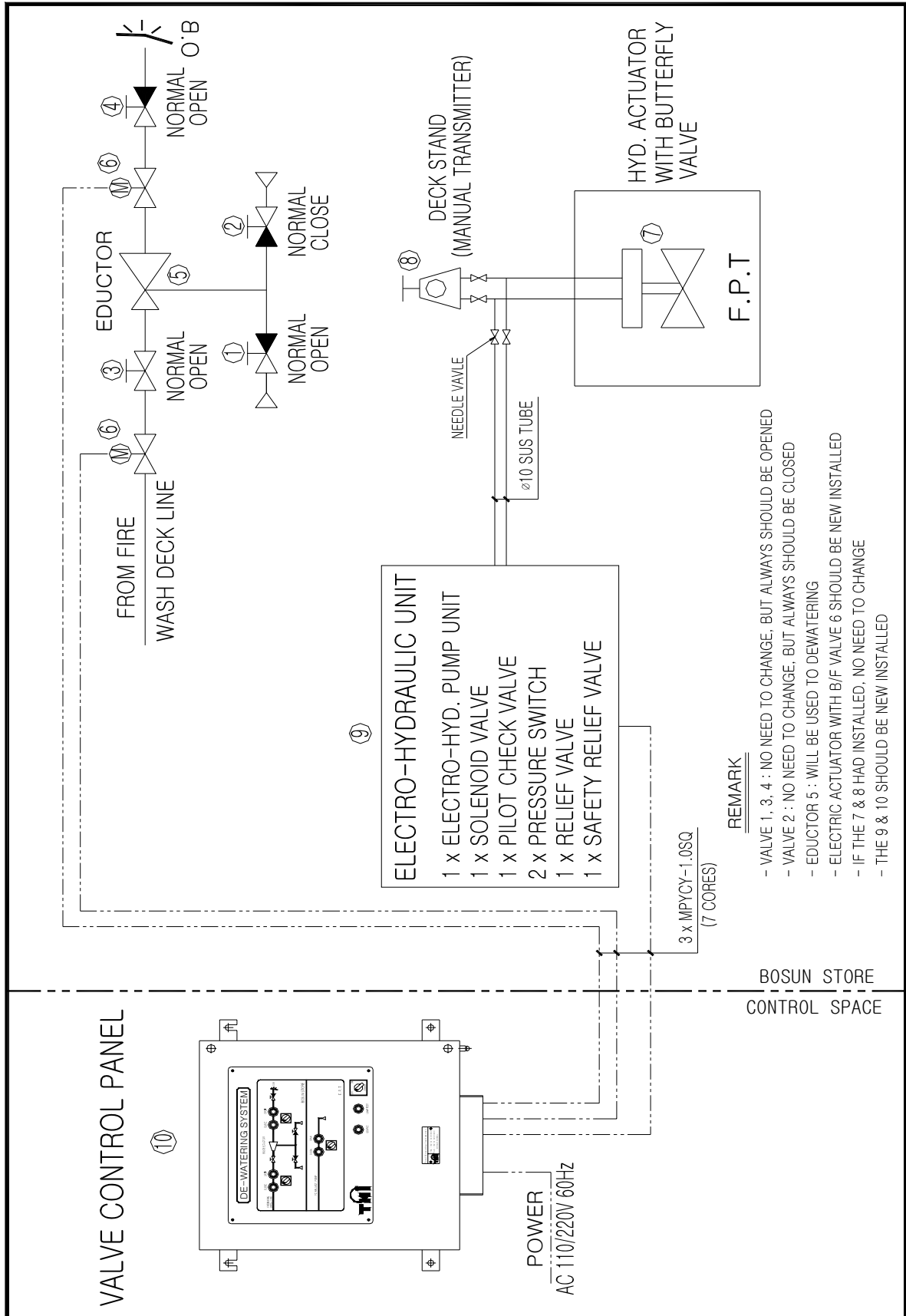
- A) Electric type for Forward Space(Bosun store)**
- B) Electro-Hydraulic type for F.P.T**



TMI's DEWATERING SYSTEM as IACS UI SC 179 were designed for discharge of water from ballast tank & forward dry space to overboard as SOLAS Reg. XII/13.
 There are two kinds of system

- ELECTRO-HYDRAULIC TYPE : EHU-1
- ELECTRIC MOTOR TYPE : TQ-10





A) Electric type for Bosun Store & Forward Space

TQ-10 actuator is a engineered products which has been designed for remote controlling of the quarter turn(90°) Rotary Valve or same operating principle equipment.

Specification of System :

- Model: TQ-10
- Power supply : AC220V / 60Hz, 25W
- Electric connection : 6cores cable
- Protection : IP68
- Valve type : Butterfly
- Valve size : 40A ~ 80A
- Manual override and open/close indicator

Application & Installation Condition :

This system is applied where the bilge eductor had installed to discharge of Forward space's bilge.

Using the existing eductor(pumping) arrangement as it is, this system will discharge to overboard by remote control the valve which is installed on "Eductor driving water line"

Feature

- Easy to install & Simple to operating
- Lowest installation cost
- IP 68 as rule requirements



B) Electro-Hydraulic type for F.P.T

The Electro-Hydraulic Unit : EHU-1

EHU-1 - Electro-hydraulic unit were consisted with well known Hydraulic pump, motor, solenoid valve, etc. and Protection of Unit was designed properly to IP68.

If the existing Valve is a Manual Hydraulic (Hydraulic Transmitter) Type, the valve can be remotely controlled with EHU-1 without any modification of existing device.

Specification of System :

- Model : EHU-1
- Including :
 - 1set of Electro-Hydraulic Power unit
 - 1set of Solenoid valve
 - 2sets of Pressure switch
 - 1set of Safety Relief Valve
 - 1set of Pressure Relief Valve
 - 1set of Pilot Check valve
- Power supply : AC220V / 60Hz, 500W
- Electric connection : 7cores cable
- Hyd. Connection : 2 x G1/4"
- Protection : IP68
- Setting pressure: 85bars(adjustable)
- Note;

If the existing Valve is a Spindle-Rod type, the Existing Valve should be changed to Hydraulic Actuator with B/F valve and the Stationary hand pump should be installed for Em'cy operation.



Feature

- Easy to install & maintain and simple to operating
- No need to change the valve & actuator if the exist valve is a Manual Hyd. type for F.P.T
- Lowest cost for installation
- IP 68 as rule requirements



Korea Testing Laboratory
222-13, Guro-Dong Guro-Gu Seoul 152-848 korea Tel.:+82-2-860-1114 Fax:+82-2-860-1116 <http://www.ktl.re.kr>

TEST REPORT

Ref. Report No.

R1454-206/18-AUG-2004

Name and address of the applicant

- TMI Co.
- 958-1, Gamjeon-dong, Sasang-gu, Busan,
Korea

Standard / Test regulation

- KS C IEC 60529 (2002)
- IEC 60529 (2001)

Test result

- **IP68**

Incoming date : 19 JULY 2004

Test date : 18 AUG 2004

Test item(s)

- **Electro-Hydraulic Unit**

Model/type ref.

- EHU-1 (AC 220 V, 60 Hz)

Manufacturer

- TMI Co.

Additional information

- 25.5 °C, RH 63 %

Issue date : 19 AUG 2004

This test report only responds to the tested sample and shall not be reproduced except in full without written approval of the Korea Testing Laboratory.

Tested and reported by

CHANG-HO, KIM

Reviewed by

WOO-SUP, LEE

KOREA TESTING LABORATORY

KOREAN REGISTER OF SHIPPING

*Certificate*NO. : BSNEM-0481-04
JOB ID NO. : BSN-E0596-04Date : 1 June 2004

This Certificate is issued to Messrs. Total Measuring Instruments Co., to certify that the undersigned Surveyor did at their request attend at their works, Busan city, on the 31 May 2004 and subsequently for the purpose of examining and testing

One(1) set of Electro-Hydraulic Unit for Valve Actuator of Dewatering
System

in accordance with the requirements of the Rules of the Korean Register of Shipping and found satisfactory.

Intended for : Stock

Particulars :

Model No. EHU-1

Applicable Code SOLAS Reg.XII/13.1 and IACS UI SC179

Testing and Inspection :

Costruction inspection	Good
Function test	Good
Insulation resistance test	Good
Underwater test for 24 hours/IP68 proof test(T.P:0.125MPA)	Good

For identification, inspection mark and test number were stamped as follows : -


BSNEM-0481
1-6-04

Surveyor (Won-Dae Jung)
KOREAN REGISTER OF SHIPPING

This Certificate is a representation only that the item of material, equipment or any other item covered by this Certificate has been examined for compliance with the Rule Requirement of this Society. Nothing contained in this Certificate or in any Report issued in contemplation of this Certificate shall be deemed to relieve any customers of this Society or other entity of any warranty expressed or implied.



Korea Testing Laboratory
222-13, Guro-Dong Guro-Gu Seoul 152-848 Korea Tel.:+82-2-860-1114 Fax:+82-2-860-1116 <http://www.ktl.re.kr>

TEST REPORT

Ref. Report No.

R1454-205/18-AUG-2004

Name and address of the applicant

- TMI Co.
- 958-1, Gamjeon-dong, Sasang-gu, Busan,
Korea

Standard / Test regulation

- KS C IEC 60529 (2002)
- IEC 60529 (2001)

Test result

- IP68

Incoming date : 19 JULY 2004

Test date : 18 AUG 2004

Test item(s)

- Electric Actuator

Model/type ref.

- TQ-10 (AC 220 V, 60 Hz)

Manufacturer

- TMI Co.

Additional information

- 26.0 °C, RH 61 %

This test report only responds to the tested sample and shall not be reproduced except in full without written approval of the Korea Testing Laboratory.

Tested and reported by

CHANG-HO, KIM

Reviewed by

WOO-SUP, LEE

KOREA TESTING LABORATORY

KOREAN REGISTER OF SHIPPING



Certificate

NO. : BSNEM-0624-04

Date : 16 July 2004

JOB ID NO. : BSN-E0764-04

This Certificate is issued to Messrs. Total Measuring Instruments Co.,to certify that the undersigned Surveyor did at their request attend at their works, Busan city, on the 15 July 2004 and subsequently for the purpose of examining and testing

One(1) set of Electric Type Valve Actuator for Dewatering System

in accordance with the requirements of the Rules of the Korean Register of Shipping and found satisfactory.

Intended for : Stock

Particulars :

Model No. TQ-10 Series

Applicable Code SOLAS Reg.XII/13.1 and IACS UI SC179

Construction Electric actuator for valve remote control in dewatering system

Testing and Inspection :

Costruction inspection Good


Function test Good

Insulation resistance test Good

Underwater test for 24 hours/IP68 proof test(T.P:0.125MPA) Good

For identification, inspection mark and test number were stamped as follows : -

 BSNEM-0624
16-7-04

(193)

Surveyor (Won-Dae Jung)
KOREAN REGISTER OF SHIPPING

This Certificate is a representation only that the item of material, equipment or any other item covered by this Certificate has been examined for compliance with the Rule Requirement of this Society. Nothing contained in this Certificate or in any Report issued in contemplation of this Certificate shall be deemed to relieve any customers of this Society or other entity of any warranty expressed or implied.