Type Approval Certificate

This is to certify that the undernoted products have been tested with satisfactory results in accordance with the relevant requirements of the LR Type Approval System.

This certificate is issued to:

PRODUCER	ABO valve, s.r.o. Dalimilova 285/54 78335 Olomouc Czech Republic
DESCRIPTION	Double eccentric lug or wafer type butterfly valves for installation between EN/ANSI/JIS flanges. Top flange acc. to ISO 5211 allows connection of various actuators.
TYPE	2E-5
RATINGS	Operating pressure: up to 50 bar PTFE seat DN 50 – DN 400, PN 50 / 40 / 25 / 16 / 10, ANSI class 300 / 150, Metal/Metal seat DN 50 – DN 400, PN 25 / 16 / 10, class 300 / 150, Fire Safe seat DN 50 – DN 200, PN 40 / 25 / 16 / 10, class 300 / 150 Temperature range: -100 to +500°C (depending on pressure, medium and material) Body material: 1.1156, 1.0619 or 1.4408
STANDARDS	Lloyd's Register Rules and Regulations for the Classification of Ships, 2011 Design according to EN 593, API 609, DN 50 - DN 400 Tightness check acc.: EN 593, EN 12266-1, ISO 5208, API 598, ANSI/FCI 70-2; EN ISO 10497 and API 607
RESTRICTIONS	Only ductile materials have to be used for systems containing flammable liquids above 7 bar or ship side valves.

Certificate No.	12/20001
Issue Date	11 January 2012
Expiry Date	10 January 2017
Sheet	1 of 2

Torsten Schröder
Hamburg Design Support Centre
Lloyd's Register EMEA

Lloyd's Register EMEA
71 Fenchurch Street, London EC3M 4BS

APPLICATION

As shut-off or regulating valve in high performance applications for installation on ships and offshore installations classed or intended for Classification with Lloyd's Register allowable systems. They have to be installed to the attending surveyor's satisfaction for:

1. Shipside valves provided the valve is bolted to the shipside connection in such way that the section of pipe immediately inboard of the valve can be removed
2. Sea water, fresh water and water ballast systems
3. Cargo Lines as "in-line" valves on oil and chemical tankers and on liquefied gas carriers (depending on pressure, temperature, medium and material)
4. As "in-line" valves in lubricating or oil fuel piping systems in low fire risk compartments of cargo vessels and metal or fire safe seated versions also as outlet valve on deep tanks
5. Bilge suctions (in association with a metal non return valve) of cargo vessels, but resiliently seated types in low fire risk compartments only
6. As pump suction valves from the main bilge line only where the valve is located in the immediate vicinity of the pump. The valve is to be fitted in conjunction with a metal non-return valve, which is to be on the bilge main side of the butterfly valve.
7. Sanitary, black and grey water
8. Inert gas
9. Air piping (except as stop valves for air receivers) having a working pressure not greater than 7 bar
10. only metal or fire safe seated versions for pump isolating valves in systems containing flammable liquids
11. Isolating valves in fire mains with metal or fire safe seated versions

"This Certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register EMEA of any modification or changes to the equipment in order to obtain a valid certificate."
The attached Design Appraisal Document No. ENS 27477-12, Issue No. 0 dated 11 January 2012 and its supplementary Type Approval Terms and Conditions form part of this Certificate.

Certificate No. 12/20001

Issue Date 11 January 2012

Expiry Date 10 January 2017

Sheet 2 of 2

Torsten Schröder
Hamburg Design Support Centre
Lloyd's Register EMEA

Lloyd's Register EMEA
71 Fenchurch Street, London EC3M 4BS

Lloyd's Register Marine Design Appraisal Document

Lloyd's Register EMEA
Hamburg Design Support Centre
Am Sandtorkai 41
20457 Hamburg, Germany
Telephone +49 (0)40 328107 - 0 Fax +49 (0)40 328107 - 480
Email: hamburg-design-support@lr.org

Date
11 January 2012

Quote this reference on all future communications
HPC 1110099/27477-12/TS/HR

THE LLOYD'S REGISTER'S TYPE APPROVAL SYSTEM, 2002
ISSUED TO: ABO VALVE S.R.O.
FOR: BUTTERFLY VALVES TYPE 2E-5
TYPE APPROVAL CERTIFICATE NO. 12/20001

The undernoted documents have been reviewed for compliance with the requirements of the Lloyd's Register's Type Approval System, 2002 and this Design Appraisal Document forms part of the Certificate.

COMMENTS

1. The relevant materials are to be made and tested in accordance with the "Rules for the Manufacture, Testing and Certification of Materials".

2. Materials for Class I and Class II piping systems are to be produced at a works approved by Lloyd's Register.

3. Materials for Class III piping systems are to be manufactured and tested in accordance with the requirements of acceptable national specifications. The manufacturer's test certificate (3.1) will be acceptable and is to be provided for each consignment of material.

4. Shell strength test is required for each valve in accordance with Pt. 5, Ch. 12, Section 8 of the Rules for Ships.

5. For pressure-temperature ratings the producer's conditions and recommendations are to be adhered to.

6. The manufacturer's maintenance and fitting instruction is to be sought.

TEST REPORTS

PRA1100654/1	Lloyd's Register Prague visit report for Type Approval	07.09.2011
-	LR Type Approval – Testing report for shell strength and leak test, seat leak test incl low and high pressure closure types 5470, 5690, and 5590	07.09.2011
-	LR Type Approval – Testing report / shell strength and leak test, seat leak test incl low and high pressure closure for design fire safe types 5580B, 5582B	07.09.2011
11.0431-32	Fire-safe test for double eccentric butterfly valve type 2E-5 5580 DN 50 (NPS2'') class 150 according to EN ISO 10497 (January 2011) and API Standard 607, 6th Edition (September 2010) at Physical – technical testing institute, Ostrava-Radvanice	17.10.2011
11.0432-32	Fire-safe test for double eccentric butterfly valve type 2E-5 5580 DN 100 (NPS4'') class 150 according to EN ISO 10497 (January 2011) and API Standard 607, 6th Edition (September 2010) at Physical – technical testing institute, Ostrava-Radvanice	17.10.2011

FINAL ACCEPTANCE OF ACTUAL ITEM(S) DEPEND(S) ON SATISFACTORY SURVEY AND TESTING

Lloyd's Register EMEA
is a member of the Lloyd's Register Group

Lloyd's Register EMEA
Hamburg Design Support Centre
Am Sandtorkai 41
20457 Hamburg, Germany
Telephone +49 (0)40 328107 - 0 Fax +49 (0)40 328107 - 480
Email: hamburg-design-support@lr.org

Date
11 January 2012

Quote this reference on all future communications
HPC 1110099/27477-12/TS/HR

APPROVAL DOCUMENTATION

Form LR6606	Approval Service – Request for Quotation	26.09.2011
-	LR Type Approval testing program, rev 02B	31.08.2011
-	Double offset butterfly valves series 2E-5 / technical data	-
-	Instruction for installation of ABO butterfly valves Series 2E-5	01.05.2011
-	Operating instructions for ABO valves, series 2E-5	2011
70082-1, rev. A	Double-eccentric valve with Fire-Safe seal, DN 50 - 200	23.09.2011
Assembly, rev. A	Double-eccentric valve with Metal-Metal seal, DN 50 - 125	18.02.2011
Assembly, rev. A	Double-eccentric valve with Metal-Metal seal, DN 150 - 400	21.02.2011
Assembly, rev. A	Double-eccentric valve with PTFE seal, DN 50 - 125	18.02.2011
Assembly, rev. A	Double-eccentric valve with PTFE seal, DN 150 - 400	18.02.2011
QMS-714 Annex 1	Butterfly valves – Maximum allowable closure test leakage rate acc. to Standards with test fluid water	29.08.2011
QMS-714 Annex 2	Butterfly valves – Maximum allowable closure test leakage rate acc. to Standards with test fluid air, nitrogen	29.08.2011
QMS-714 Annex 3	Pressure equipment	07.09.2011
QMS-713 Annex 7	Inspection and test program 11-100-002	03.08.2011
QMS-713 Annex 7	Inspection and test program 11-100-004	07.09.2011
-	Declaration of conformity according to Directive 97/23/EC	30.09.2009
516/08/06/05/0	EC certificate 97/23/EC for ABO valve series 2E-5	11.09.2008
AT-05209/0	ISO 9001 QMS certificate	17.06.2009
-	Set of calibration certificates for measuring devices	-
FTZU 11 E 0028	Certificate about fire testing of butterfly valves 2E-5-5580 according EN ISO 10497:2010 and API Standard 607, 6th (September 2010) by Physical Technical Testing Institute, Ostrava-Radvanice	31.10.2011

Torsten Schröder
Senior Surveyor
Engineering Systems
Hamburg Design Support Centre
Lloyd's Register EMEA
T +49 (0)40 328107-463
E torsten.schroeder@lr.org

Lloyd's Register EMEA
Hamburg Design Support Centre
Am Sandtorkai 41
20457 Hamburg, Germany
Telephone +49 (0)40 328107 - 0 Fax +49 (0)40 328107 - 480
Email: hamburg-design-support@lr.org

Date
11 January 2012

Quote this reference on all future communications
HPC 1110099/27477-12/TS/HR

Supplementary Type Approval Terms and Conditions

Type Approval certifies that a representative sample of the products referred to herein have been found to meet the applicable design criteria for the use specified herein. It does not mean or imply approval for any other use, nor approval of any products designed or manufactured otherwise than in strict conformity with the said representative sample.
Type Approval is based on the understanding that the manufacturer's recommendations and instructions and any relevant requirements of the Rules and Regulations are complied with.
Type Approval does not eliminate the need for normal inspection and survey procedures required by the Rules and Regulations.
Lloyd's Register EMEA reserves the right to cancel or withdraw this Type Approval Certificate in accordance with the LR Type Approval System Procedure.

Part 1
Subject: Valves
Product: Butterfly Valves

Producer/Licence No.	Description of Product				Cert. No.
	Type	Details of Approval	Application	Remarks	
ABO valve, s.r.o. Dalimilova 285/54 78335 Olomouc Czech Republic	2E-5	Double eccentric lug or wafer type butterfly valves for installation between EN/ANSI/JIS flanges. Top flange acc. to ISO 5211 allows connection of various actuators. **Ratings:** Operating pressure: up to 50 bar PTFE seat DN50 – DN400, PN 50/40/25/16/10, ANSI class 300 / 150, Metal/Metal seat DN 50 – DN 400, PN25/16/10, class 300 / 150, Fire Safe seat DN 50 – DN 200, PN40/25/16/10, class 300 / 150 Temperature range: -100 to +500°C (depending on pressure, medium and material) Body material: 1.1156, 1.0619 or 1.4408 **Standards:** Lloyd's Register Rules and Regulations for the Classification of Ships, 2011 Design according to EN 593, API 609, DN 50 - DN 400 Tightness check acc.: EN 593, EN 12266-1, ISO 5208, API 598, ANSI/FCI 70-2; EN ISO 10497 and API 607	As shut-off or regulating valve in high performance applications for installation on ships and offshore installations classed or intended for Classification with Lloyd's Register allowable systems. They have to be installed to the attending surveyor's satisfaction for: 1. Shipside valves provided the valve is bolted to the shipside connection in such way that the section of pipe immediately inboard of the valve can be removed 2. Sea water, fresh water and water ballast systems 3. Cargo Lines as "in-line" valves on oil and chemical tankers and on liquefied gas carriers (depending on pressure, temperature, medium and material) 4. As "in-line" valves in lubricating or oil fuel piping systems in low fire risk compartments of cargo vessels and metal or fire safe seated versions also as outlet valve on deep tanks 5. Bilge suctions (in association with a metal non return valve) of cargo vessels, but resiliently seated types in low fire risk compartments only 6. As pump suction valves from the main bilge line only where the valve is located in the immediate vicinity of the pump. The valve is to be fitted in conjunction with a metal non-return valve, which is to be on the bilge main side of the butterfly valve. - See next page -	Expires: 10 January 2017	12/20001

Part 1
Subject: Valves
Product: Butterfly Valves

Producer/Licence No.	Description of Product				Cert. No.
	Type	Details of Approval	Application	Remarks	
ABO valve, s.r.o. Dalimilova 285/54 78335 Olomouc Czech Republic	2E-5	See page 1	continue 7. Sanitary, black and grey water 8. Inert gas 9. Air piping (except as stop valves for air receivers) having a working pressure not greater than 7 bar 10. only metal or fire safe seated versions for pump isolating valves in systems containing flammable liquids 11. Isolating valves in fire mains with metal or fire safe seated versions	Expires: 10 January 2017	12/20001