

# TYPE APPROVAL CERTIFICATE

**This is to certify:****That the Flowmeter**

with type designation(s)

**CONTOIL ® VZO, CONTOIL ® VZOA**

Issued to

**Aquametro Oil & Marine AG**  
**Therwil, BL, Switzerland**

is found to comply with

**DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems****Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**

Type:	Temperature range:	Max. working press.:	Sizes:
<b>CONTOIL ® VZO</b>	<b>up to 130°C or 180°C</b>	<b>up to 40 bar</b>	<b>DN15, DN20, DN25, DN40 and DN50</b>
<b>CONTOIL ® VZOA</b>	<b>up to 130°C or 180°C</b>	<b>up to 40 bar</b>	<b>DN15, DN20, DN25, DN40 and DN50</b>

Issued at **Hamburg** on **2018-06-21**This Certificate is valid until **2020-03-06**.for **DNV GL**DNV GL local station: **Augsburg**Approval Engineer: **Andrii Pishchanskyi**

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**Olaf Drews**  
**Head of Section**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.



Job Id: **262.1-026557-1**  
Certificate No: **TAP00001B4**

## Product description

Rotary piston flowmeter consists of the following main assembly units:

Assembly unit	Material	Remark
Body	EN-GJS-400-15 (5.3106)	Nodular cast iron of the ferritic type. Use for flange connection FL DN15-50
	GX5CrNiMo19-11-2 (1.4408)	Stainless steel. Used for flange connection FL
Measuring chamber	CuZn40Pb2 (CW617N)	Copper alloy. Used for DN15-DN40
	X2CrNiMo18-14-3 (1.4435)	Stainless steel. Used for DN15-DN50
	CuAl10Fe5Ni5-C (CC333G)	Copper alloy. Used for DN50 solely
Measuring chamber cover	CuAl10Fe5Ni5-C (CC333G)	Copper alloy. Used for DN50 solely
	CuZn40Pb2 (CW617N)	Copper alloy. Used for DN15-DN40
	X2CrNiMo18-14-3 (1.4435)	Stainless steel
Separating plates	X2CrNiMo18-14-3 (1.4435)	Stainless steel
	100MnCrW4 (1.2510)	Tool steel
Gasket	FEP	Up to 180°C
	FPM (FKM)	Up to 180°C
Rotary piston	EN AW-6082T (3.2315)	Aluminium alloy. Used for DN25-50.
	EN AW-6026 (AlSiMgBi)	Aluminium alloy. Used for DN15-20.

## Application/Limitation

The flowmeters of types CONTOIL ® VZO, CONTOIL ® VZOA are approved for fuel oil, lubricating oil and hydraulic oil systems. There are two modification of the casing as following:

Designation	Description
FL	Flange connection according to EN 1092-2, ASME B16.5 or JIS B2220.
RC	Threaded end connection according to ISO 228-1.

For RC casing modification a pressure-tight joint at threaded ends shall be effected by compressing two tightening surfaces outside the threads and by interposing an appropriate seal as per manufacturer's instructions. Reference is made to DNVGL-RU-SHIP Pt.4 Ch.6 Sec.9 5.2.6.

The selection and installation of a flowmeter shall be as per the manufacturer's instructions.

## Type Approval documentation

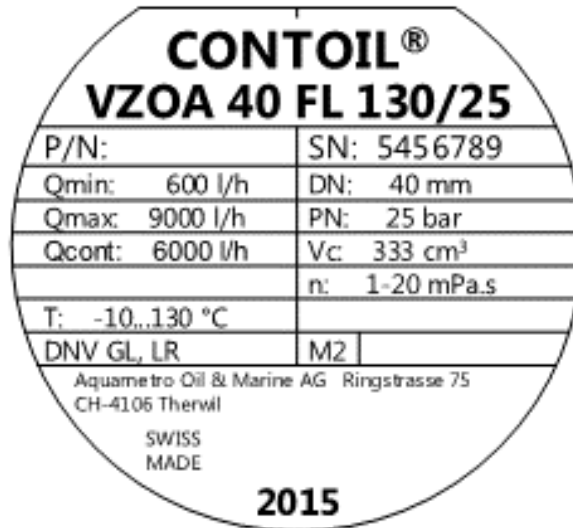
### Tests carried out

1. Vibration test;
2. Fire endurance test;
3. Burst pressure test.

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## Marking of product

For traceability to this type approval the products are to be marked with:



## Periodical assessment

A condition for retention of the TA certificate in its validity period is that periodical assessments are successfully carried out. The objective of the periodical assessment is to verify that the conditions for the TA have not been altered. Periodical assessments for type approval is required after two years (+/- 90 days) and after 3.5 years (+/- 90 days).

Refer to DNVGL Class Programme CP-0338 for the scope of the periodical assessment.