

Oval Wheel Meter

Flowal[®]

Series

OR/ OF/ FW

Operating manual



Content

Content	1
Foreword.....	5
I. Transport, Delivery, Storage.....	5
II. Warranty	5
III. General safety instructions	5
1. Identification.....	7
2. Area of Application.....	7
3. Measuring Principle and System Design.....	7
3.1 Measuring Principle.....	7
3.2 System Design	8
3.2.1 Sensor Pick-up	8
3.2.2 Attachable electronics	10
3.2.3 Measuring chamber.....	11
4. Input	12
4.1 Measured values	12
5. Output	12
5.1 Pulse pick-up.....	12
5.2 Output signal	12
6. Characteristic Parameter	12
6.1 Reference conditions	12
6.2 Tolerated deviation.....	12
6.3 Repeatability	12
6.4 Influence of ambient temperature	12
6.5 Influence of media temperature	12
Depending on viscosity of measured media.....	12
7. Operating Conditions	13
7.1 Installation conditions.....	13
7.1.1 Installation instructions	13

- 7.1.1.1 General information 13
- 7.1.1.2 Installation 14
- 7.1.2 Start-Up Conditions 14
- 7.1.3 Exchange of sensors 15
- 7.2 Ambient Conditions 15
 - 7.2.1 Ambient temperature 15
 - 7.2.2 Storage temperature 15
 - 7.2.3 Degree of protection 15
 - 7.2.4 Electromagnetic compatibility 15
- 7.3 Process conditions 16
 - 7.3.1 State of aggregation 16
 - 7.3.2 Flow limit 16
 - 7.3.3 Viscosity 16
 - 7.3.5 Liquid temperature limits 16
 - 7.3.6 Liquid pressure limits 16
 - 7.3.7 Pressure loss 16
- 8. Constructive Design 19
 - 8.1 Model/Dimensions/Weights 19
 - 8.1.1 Flowal® OR 19
 - 8.1.2 Flowal® OF 20
 - 8.1.3 Flowal® FW 21
 - 8.2 Materials 22
 - 8.3 Process connection 22
 - 8.4 Electrical connection 23
 - 8.4.1 Electrical connection for pulse pick-up without MFE 23
 - 8.4.2 Electrical for pulse pick-up with MFE 23
- 9. Indicator 24
 - 9.1 General 24
 - 9.2 Electronic indicator 24
 - 9.3 Pulse value, K-Factor 24
- 10. Certificates and Approvals 25
- Appendix 25
- A. Troubleshooting/Error Detection 25
- B Maintenance, Cleaning, Repairs, Hazardous Substances 26
 - B.1 Maintenance, Cleaning 26
 - B.2 Repair / Hazardous Media 27

C. Form	28
C.1 Certificate of non-objection for the contractor	28
D. Certificates	30
D.1. EG-Conformity declaration	30

Foreword

I. Transport, Delivery, Storage

Always protect devices against humidity, soiling, impacts and damages

Delivery Inspection:

Check the delivery for completeness upon receipt. Compare the device data with the data on the delivery note and in the order records.

Report any in-transit damage immediately. Damage reported at a later date shall not be recognized.

II. Warranty

Please refer the contractual terms and conditions relating to delivery for the scope and period of warranty.

Warranty claims shall be conditional to correct installation and commissioning in accordance with the operating instructions of the device. The necessary installation, commissioning and maintenance work should only be carried out by qualified and authorized personnel.

III. General safety instructions

1. Oval Wheel Meters are reliable, high accurate volumetric measuring devices. They should only be used for their intended purpose. Always observe the pressure and temperature limits stated on the type plate, as well as all other technical data and safety information during device installation, start-up and operation.
2. Always observe national and international regulations concerning the operation of devices and systems under pressure.
3. Prior to installation, the operator has to ensure that the pressure bearing parts have not been damaged during transportation.
4. The devices have to be installed, operated and serviced by qualified personnel. The operator has the responsibility to ensure that the personnel have received sufficient and appropriate training. In case of doubt, please contact the manufacturer.
5. The operator must ensure that the materials used (wetted parts) of the device compared with the measured liquid are chemically resistant.

6. The gaskets or sealing elements must be handled with care according to the operating instructions.
7. Symbols used



Warning!

Failure to observe this warning can lead to injury of persons or a security risk.



Attention!

Non-compliance can lead to faulty operation or damage to the device.

1. Identification

Manufacturer	Bopp & Reuther Messtechnik Am Neuen Rheinhafen 4 67346 Speyer Phone : +49 (6232) 657-0 Fax: +49 (6232) 657-505
Type of product	Direct volumetric meter (displacement flow meter)
Product name	Oval Wheel Meter Flowal [®] , Series OR/ OF/ FW
Version number	A-EN-01280-00 Rev.A
Associated documents:	Operating manual Multifunctional electronics MFE-1, MFE-2, MFE-3 A-EN-17208-00 in the actual revision

2. Area of Application

The application area for Oval Wheel Meters of the series Flowal[®] encompasses the simple, reliable and cost-effective measurement of liquid volumes or volumetric flow rates. They have an extremely robust design and combine years of experience with state-of-the-art technologies. They can be used in various industries, e.g. mechanical engineering, plant construction, food industry, semiconductor industry, environment industry, automotive industry, etc.

Due to the available material combinations, this series is also suitable for measuring aggressive or corrosive media.

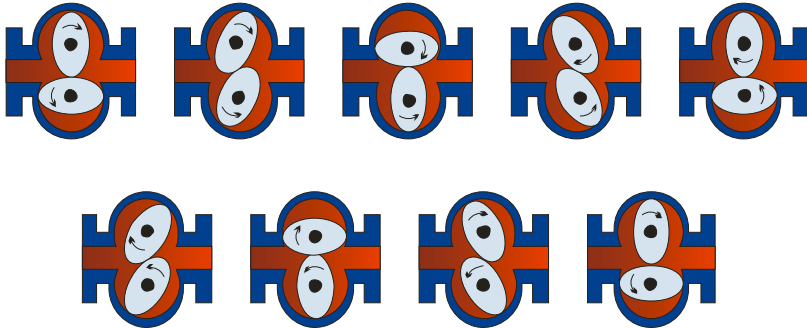
3. Measuring Principle and System Design

3.1 Measuring Principle

Oval Wheel Meter belong to the group of direct volumetric meters for liquids with movable partition walls (displacement flow meters).

The Oval Wheel Meter consists of a measurement chamber housing with two pivoted oval wheels which are toothed and roll off each other in counter-rotations.

The diagram displays oval wheel movement during the measurement process.



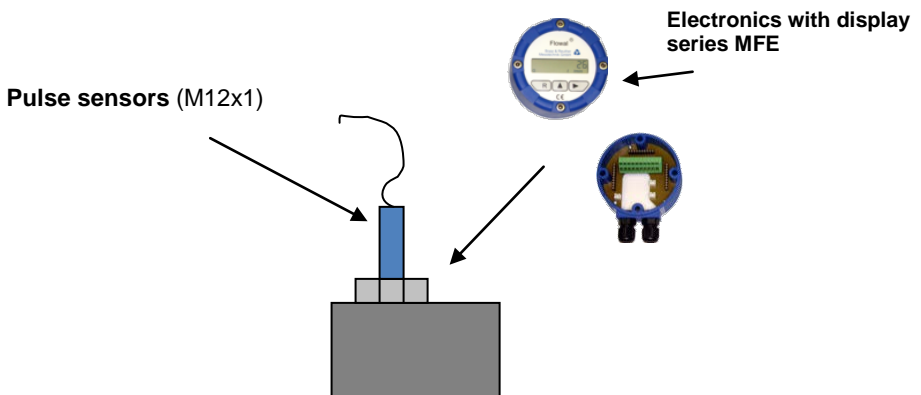
Each revolution the oval wheels displace a discrete volume of liquid (defined by the space between the oval wheel and measurement chamber) through the chamber.

For measurement purposes, the rotation of the oval wheels is transmitted to a mechanical counter and/or a pulse pick-up via a magnet coupling and gear device.

3.2 System Design

Oval Wheel Meter Flowal[®] consists of the following main components:

- measuring transducer (measuring chamber with oval wheels)
- pulse sensors/ electronic with display



3.2.1 Sensor Pick-up

Reed-contact RM (M12x1):

e.g. for connection to evaluation electronics or a PLC of the user

max. switching capacity 10W
max. switching current 0,5A
max. switching voltage 100V

Magnetic field sensor N1 / P1 (NPN / PNP; M12x1):

e.g. for connection to evaluation electronics or a PLC or of the user;
Sensor must be powered with 10-30 VDC. 3m connection with PVC cable
3 x 0.34 mm². 2 LEDs on the sensor for supply and contact.

Code N1: NPN
Code P1 PNP

High temperature sensor PT (PNP; M12x1):

supply 10...36 VDC
mass
signal

protection IP 67 (with plug)

working temperature -40 ... 125°C

Namur:

supply nom. 8.2 VDC (Namur)




Installation note:

Screw the sensor to stop and then turn back as far as can be detected up signals (eg, control of flashing LED on the connector).

3.2.2 Attachable electronics

Multifunctional Electronics (Sensor REED)

Variants	Standard	
battery-powered display	M1	MFE1
battery-powered display, pulse output	M2	MFE2
pulse output, current output 4-20mA, PT 1000 input, 2 nd signal input for forward and return flow detection (with 2 nd sensor), memory for density and correction factor, powered directly by the current loop	M3	MFE3

See Operation manual Multifunctional electronics MFE 1, 2 and 3 A-DE-17208-00 in the actual revision.

3.2.3 Measuring chamber

Overview: Dates of measuring chamber depending on the pick-up, and counter size

Oval wheels: stainless steel – max. 350 mPa•s*

* with Newtonian flow properties

Type OR/OF FW	Measuring range	n_{\max}		Pulse Pick-Up		
				Reed RM		
				Imp/n	Imp/l	Hz _{max}
015	0,1 - 1	1150	1550	2	~3100	50
03	0,2 - 2	333,3	667	2	~667	22,2
06	0,5 - 5	166	832	2	~333	27,8
1	1 - 10	83	416	2	~166	27,7
2	1 - 30	50	1500	2	~100	50
5	5 - 50	20	1000	2	~40	33,4
10	10 - 100	10	1000	2	~20	33,4
50	30 - 300	2	600	2	~4	20
115	70 - 650	0,87	574	2	~1,7	18,4

Oval wheels: PEEK – max. 50 mPa•s

Type OR/OF	Measuring range	n_{\max}		Pulse Pick-up		
				Reed RM		
				Imp/n	Imp/l	Hz _{max}
015	0,03 - 1	1550	1550	2	~3100	50
06	0,5 - 7	166	1165	2	~333	27,8
1	1 - 15	83	1245	2	~166	27,8
2	1 - 30	50	1500	2	~100	50
5	5 - 60	20	1200	2	~40	33,4
10	10 - 120	10	1200	2	~20	33,4
50*	15 - 300	2	600	2	~4	20
115*	35 - 700	0,85	600	2	~1,7	19,8

*TK PET

4. Input

4.1 Measured values

Volume and volume flow

5. Output

5.1 Pulse pick-up

Original pulses (e.g. see 3.2.1.)

5.2 Output signal

Output signals are dependent of the used evaluation system; see operating manual Multifunctional electronics MFE 1, 2 and 3 A-DE-17208-00 in the actual revision.

M2 / MFE2: scalable pulses

M3 / MFE3: scalable pulses, current output 4-20mA

6. Characteristic Parameter

6.1 Reference conditions

All oval wheel counters are calibrated at test benches approved for fiscal metering with the following reference conditions:
pressure: 2 to 7 bar, temperature: 20°C
liquid: 3 mPa·s

6.2 Tolerated deviation

± 0,5% of measured value with standard calibration

6.3 Repeatability

< 0,05%

6.4 Influence of ambient temperature

included in the measuring deviation

6.5 Influence of media temperature

Depending on viscosity of measured media

7. Operating Conditions

7.1 Installation conditions

7.1.1 Installation instructions



Warning!

Before mounting and operating the device, carefully read and observe the installation instructions.

Before mounting or disassembling the device, **depressurize** and **cool down the system**.

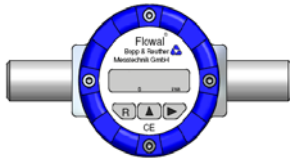
7.1.1.1 General information

- Only trained personnel who have been authorized by the system operator are allowed to perform assembly, electrical installations, commissioning, maintenance and operation. You must have read and understood the instructions and follow their instructions strictly.
- Bopp & Reuther Oval Wheel Meters are precision flow meters. Inlet and outlet are covered with protective caps against foreign substances. Remove caps shortly before putting the device into operation.
- As indicated on the type plate parameters are maximum values and must not be exceeded. Operating parameters are specified in the contract documents. If you want to use the device under differing operating conditions, consult Bopp & Reuther Messtechnik GmbH indicating the factory number.
- Install the Oval Wheel Meter in the pressure pipe behind the pump (approximately 3 m liquid column pressure drop for nominal flow rate).
- Install the Oval Wheel Meter in such a way, that it remains filled with liquid also in non-operating condition.
- To avoid measuring inaccuracies due to gas bubbles or contamination, preventive measures must be taken (e.g. gas separator or type N strainer)..
- Oval Wheel Meters intended for liquid food products must be cleaned thoroughly before putting them into operation (see Maintenance and Cleaning).

7.1.1.2 Installation

- Remove any impurities from the pipework. When doing so, replace the Oval Wheel Meter with a suitable piece of piping.
- Do not remove the caps on the in- and outlet of the Oval Wheel Meter until the device is being installed to prevent the penetration of foreign substances.
- Any flow direction, if applicable note the arrow on the housing of the Oval wheel meter
- The housing cover of the Oval Wheel Meter is to be placed vertically so that the axes of the Oval Wheel are in a horizontal position independent of the position of the pipe.
- The Oval Wheel Meter must be installed free from strain.

Oval Wheel Meter correct installed



Horizontal pipework



Vertical pipework

Wrong!



7.1.2 Start-Up Conditions



Attention!

Start up the Oval Wheel Meter with slowly increasing flow.

7.1.3 Exchange of sensors

The sensors (for the pulse pick, if applicable for temperature measurement) can be exchanged under operating conditions.



Warning!

Depending on the temperature risk of burns.

7.2 Ambient Conditions

7.2.1 Ambient temperature

Depending on used electronics.

7.2.2 Storage temperature

+10 C to +55° C

7.2.3 Degree of protection

IP 65

According to IEC 529 / EN 60529

7.2.4 Electromagnetic compatibility

According to Guideline EMV 2004/108/EG (EMV-Guideline)

EN 61000-6-2 Immunity for industrial environments

EN 61000-6-3 Immunity residential area

7.3 Process conditions

7.3.1 State of aggregation

Suitable for liquids

7.3.2 Flow limit

Depending on the measuring chamber, see 3.2.3 Measuring Chamber

7.3.3 Viscosity

0,3 - 350 mPa·s

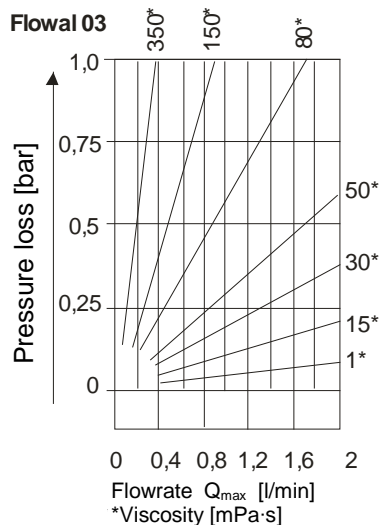
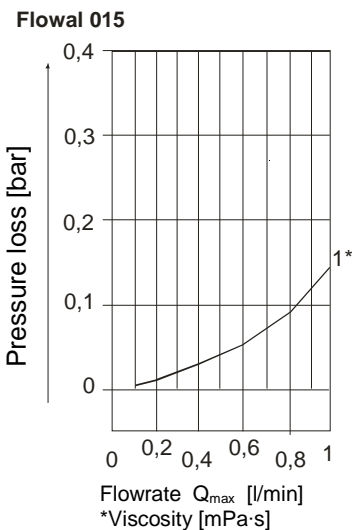
7.3.5 Liquid temperature limits

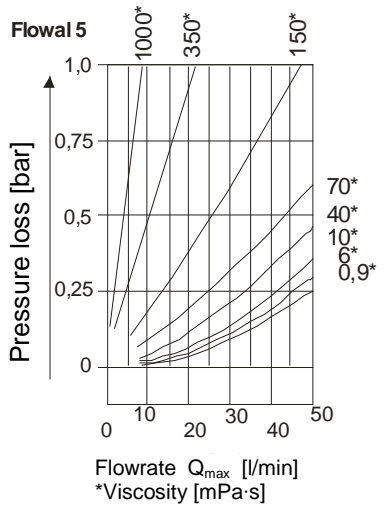
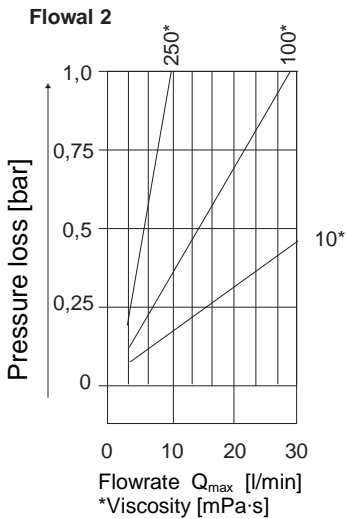
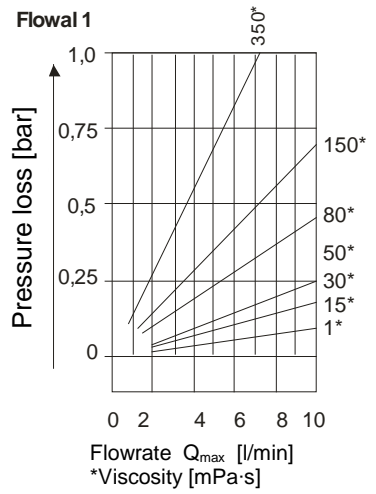
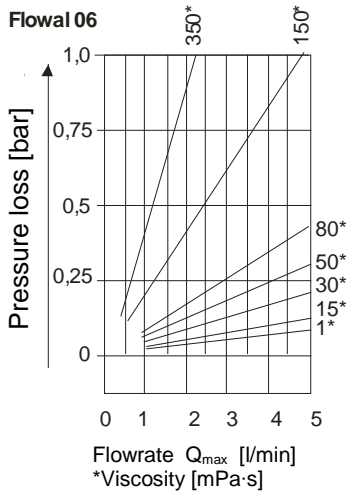
Depending on the sensor

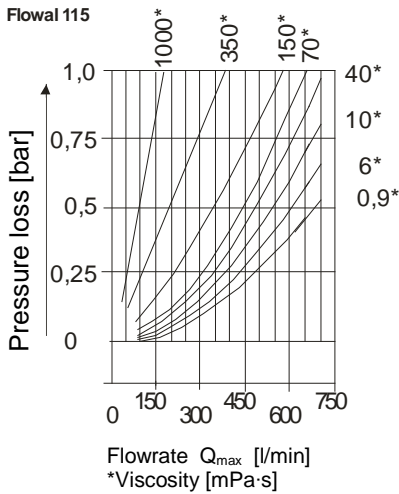
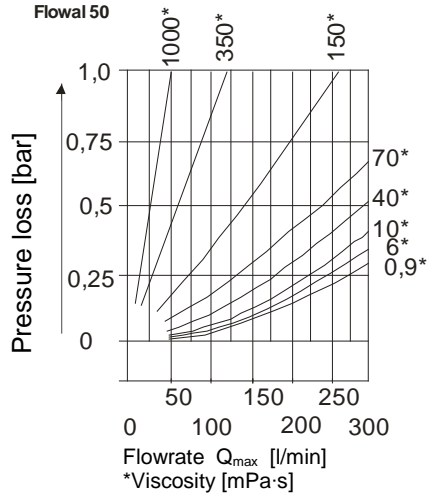
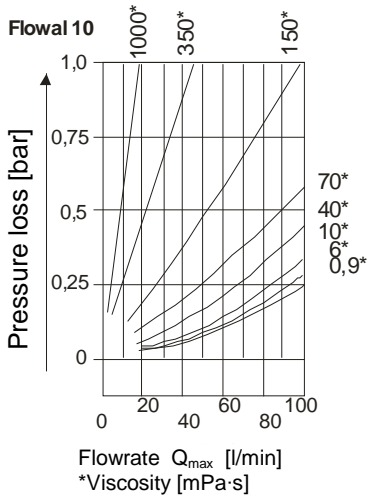
7.3.6 Liquid pressure limits

Depending on the material combination

7.3.7 Pressure loss







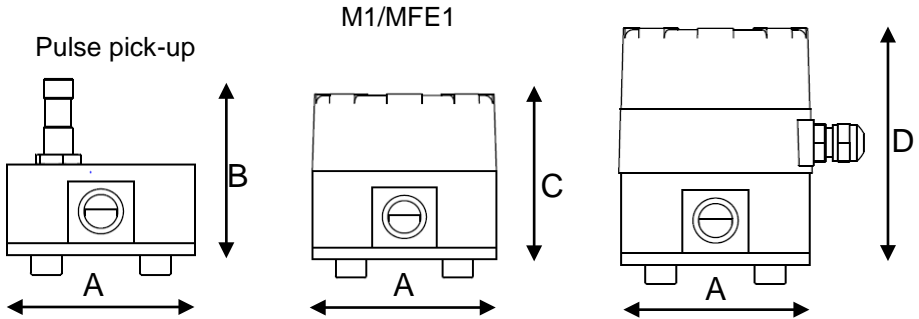
8. Constructive Design

8.1 Model/Dimensions/Weights

8.1.1 Flowal® OR

Multifunctional electronics

M2/M3/MFE2/MFE3



Type	A (mm)	C (mm)	B _{max} *, D (mm)	Installation dimension (mm)	PP1PK (kg)	AL1PK (kg)	SS1PK (kg)	SS1SS (kg)	PV1PK (kg)
OR015	78	70	96	73				1,5	
OR06	78	75	101	73				2,2	
OR1	78	85	111	73				2,4	
OR2	99	93	120	90				2,7	
OR5	112	98	125	105				4,2	
OR10	112	125	152	105				5,6	
OR50	220	165	192	184	-		26,5	31	-
OR115	260	198	225	196	-		50	55	-

*B_{max} depending on sensor

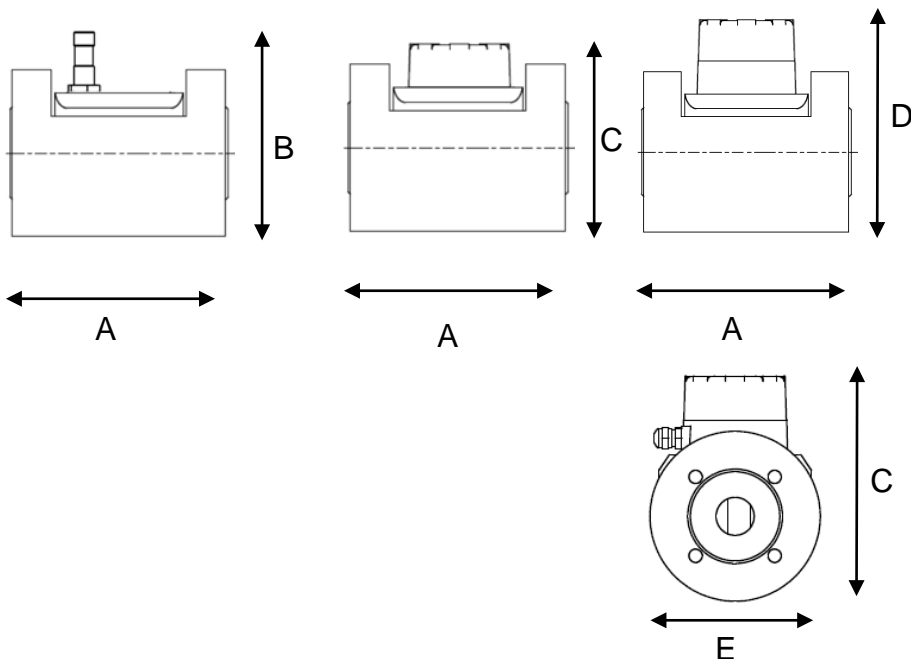
8.1.2 Flowal® OF

Multifunctional electronics

M2/M3/MFE2/MFE3

M1/MFE1

Pulse pick-up

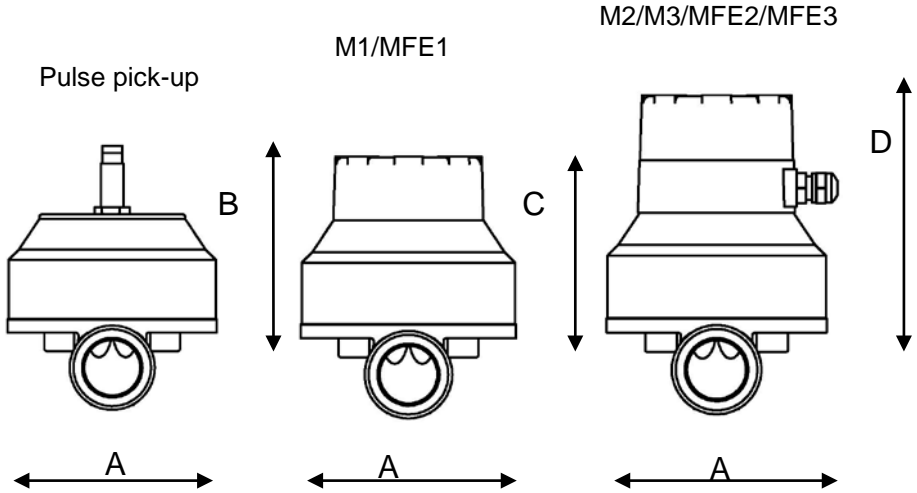


Type	A (mm) Installation dimension	C (mm)	B _{max} *, D (mm)	E (mm)	PP1PK (kg)	AL1PK (kg)	SS1PK (kg)	SS1SS (kg)	PV1PK (kg)
OF2	140	108	135	95				6,5	
OF10	170	153	180	130				15	
OF50	184	165	192	220	-		26,5	31	
OF115	196	243	270	260	-		50	55	-

*B_{max} depending on sensor

8.1.3 Flowal® FW

Multifunctional electronics



Type	A (mm)	C (mm)	B _{max} *, D (mm)	Installation dimension (mm)	AL1PK (kg)	AL1SS (kg)	SS1PK (kg)	SS1SS (kg)
FW03	78	91	118	86				2,2
FW06	78	98	125	86				2,4
FW1	78	108	135	86				2,7
FW5	111	136	163	152				4,2
FW10	111	163	190	152				5,6

*B_{max} depending on sensor

8.2 Materials

Code	Housing	Oval wheel	Sleeve bearing	Axle	seals
PP1PK	PP	PEEK	-	stainless steal	Viton
AL1PK	Alu	PEEK	-	stainless steal	Viton
SS1PK	stainless steal	PEEK(*PET)	-	stainless steal	Viton
SS1SS	stainless steal	stainless steal	coal	stainless steal	Viton
PV1PK	PVDF	PEEK	-	Hastelloy	EPDM

PEEK: Polyetheretherketone

PP: Polypropylene

PVDF: Polyvinylidenefluoride

*PET: Polyethyleneterephthalate (Flowal 50, 115)

8.3 Process connection

Flowal®	
OR	Female threads G¼, G½, G¾, G1, G2
OF	Flanges DIN DN15/25/50; ANSI ½"/1"/2"
FW	Female threads G½, G1, stainless steal

DN15, PN40 (DIN EN 1092-1 form B1)

DN25, PN40 (DIN EN 1092-1 form B1)

DN50, PN40 (DIN EN 1092-1 form B1)

Flanges ½" ANSI 150 lbs

Flanges 1" ANSI 150 lbs

Flanges 2" ANSI 150 lbs

Flangse ½" ANSI 300 lbs

Flanges 1" ANSI 300 lbs

Flanges 2" ANSI 300 lbs

8.4 Electrical connection


8.4.1 Electrical connection for pulse pick-up without MFE

Magnet field sensor NPN



Magnetic field sensor PNP



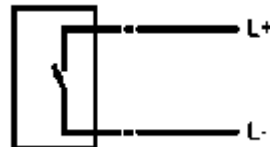
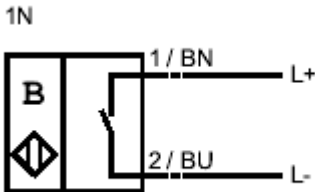


Attention!

When installing in hazardous areas, each national installation regulations must be observed (for Germany: EN 60079-14 and VDE 0165).

Namur-Sensor A1
RM

Reedsensor R1,



8.4.2 Electrical for pulse pick-up with MFE

See operating manual Multifunctional electronics MFE 1, 2 and 3 A-DE-17208-00 in the actual revision.


9. Indicator

9.1 General

The Oval Wheel Meter series Flowal[®] are set at the factory on request to the operating conditions specified in the order. The values which are set in the electronic display are shown in the attached data sheet configuration.

9.2 Electronic indicator

The electronic indicator Type MFE1, MFE2 or MFE3 (Code: M1, M2, M3) evaluates the original impulses of an Oval Wheel Meter in a quantity or flow indicator. The indicator is an LC Display.

Multifunctional electronic	Standard	
battery-powered display	M1	MFE1
battery-powered display, pulse output	M2	MFE2
pulse output, current output 4-20mA, PT 1000 input, 2 nd signal input for forward and return flow detection (with 2 nd sensor), memory for density and correction factor, powered directly by the current loop	M3	MFE3

(See operating manual Multifunctional electronics MFE 1, 2 and 3 A-DE-17208-00 in the actual revision.)

9.3 Pulse value, K-Factor

The volume or the flow rate is calculated using a multiplication of the pulses generated with the device-specific K-factor.

For devices that are supplied with calibration, you receive a test certificate with your device, the device-specific pulse factor (K factor) in pulses per liter will be listed. This K factor is also specified on the device. If the device is supplied without calibration, the standard K factor should be used (see 3.2.3).

10. Certificates and Approvals

Electromagnetic compatibility acc. DIN EN 61000-6-2, DIN EN 61000-6-3

Pressure equipment directive:

The Oval Wheel Meter series Flowal[®] are suitable in accordance with Pressure Equipment Directive 97/23/EG for fluids in group 1

Classification acc. Article 3, §3 (according to good engineering practice, designed and manufactured)

CE Mark:

The measuring system fulfills the legal requirements of the EC Directives 2004/108/EG and 94/9/EG including all published revisions or amendments to date. Bopp & Reuther Messtechnik GmbH confirms successful device testing and affixing of the CE Mark.

Appendix

A. Troubleshooting/Error Detection

The Oval Wheel Meter series Flowal[®] operates maintenance-free. If a fault occurs or there is suspicion of an incorrect message, check the installation conditions as stated in section 7.



Warning!

Always observe local regulations and all the safety instructions in these operating instructions when working at the electrical connections.

General:

If the fault cannot be detected, please contact the service department of Bopp & Reuther Messtechnik GmbH or return the device for repair work to Bopp & Reuther Messtechnik GmbH (see Appendix B2).

B Maintenance, Cleaning, Repairs, Hazardous Substances**B.1 Maintenance, Cleaning**

If the Oval Wheel Meter will not be in operation for a longer period of time, it has to be dismantled, thoroughly cleaned and conserved with acid-free oil. Oval Wheel Meters used for liquid food may not be preserved in this way. In- and outlet are to be covered with caps. Make sure to store the Oval Wheel Meter in a dry room.

Cleaning of the Oval Wheel Meters

The oval wheels have to be dismantled if the pipes are flushed with hot water.

- Loosen the screws on housing cover, lift housing cover with pressure screws, pull off oval wheels from axle, handle with great care, do not place on stone floors, use support made of wood or rubber material.
- When mounting, put on the oval wheels toothed in, i.e. in a way that the M marks on the wheel face each other. Turn the oval wheel manually to make sure they are properly inserted (once). When inserting the gaskets, make sure it fits precisely.

B.2 Repair / Hazardous Media

Before sending the Oval Wheel Meter to Bopp & Reuther Messtechnik GmbH, make sure to observe the following:

- Attach a note describing the malfunction, state the application field and the chemical/physical properties of the media (please find the respective form in appendix)
- Remove all residues of the media and pay special attention to sealing grooves and slits. This is of extreme importance if the medium is hazardous to health, i.e. caustic, toxic, carcinogenic or radioactive etc.
- Please do not return the device if you are not perfectly sure that all media hazardous to health have been cleaned off.

Costs incurred due to inadequate cleaning of the device and possible costs for disposal and/or personal injuries (causticization etc.) will be billed to the operating company.

Please ask our customer service for help and advice if your Oval Wheel Meter does not work properly:

Bopp & Reuther
Messtechnik GmbH
Service
Am Neuen Rheinhafen 4
67346 Speyer
Telefon: +49 (6232) 657-402
Fax: +49 (6232) 657-561

Bopp & Reuther
Messtechnik GmbH
Werkstatt Karlskron
Münchener Str. 23
85123 Karlskron
Gewerbegebiet Brautlach, an der B 13
Telefon: +49 (8450) 928330
Fax: +49 (8450) 928332
Mobile: +49 (172) 638 5022

C. Form

C.1 Certificate of non-objection for the contractor

Unbedenklichkeitsbescheinigung für Auftragnehmer /
 Certificate of non-objection for contractor/ Fiche de Renseignements /
 Confirmación de no objeción para mandatarios

Kunde / Client / Client / Cliente:

Auftragsnr. / Lieferschein: Order No.: / Delivery note: No. d' ordre / Bordereau de livraison: N° da encomenda / Guia de Remessa:	Datum: Date: Date: Data:	Gerätetyp und Gerätenr.: Meter type and Serial No.: Compteur / No. de série :
.....
Auftragstext / Order text / Caractéristiques / Características:		

ATTENTION - GEFAHREN - HINWEISE - ATTENTION - ATENÇÃO

Letzter Stoff / Last medium / Dernier liquide mesuré / Último fluido medido:	Eigenschaften angeben! z.B. ätzend, brennbar, giftig ... State characteristics! i.e. corrosive, flammable, toxic ... Identification des dangers! p.e. corrosif, inflammable, toxique ... Indicar características, como p.ex. corrosivo, inflamável, venenoso
Gerät entleert / Unit drained / Vidangé complètement / Aparelho completamente esvaziado? ja / yes / oui / sim nein / no / non / não <input type="checkbox"/> <input type="checkbox"/>	
Spülung mit / drained with / liquide de rinçage / Líquido usado para a lavagem:	
Restverschmutzung / rest of medium / impuretés restantes / Sujidade remanescente? ja / yes / oui / sim nein / no / non / não <input type="checkbox"/> <input type="checkbox"/>	

SCHUTZMASSNAHMEN - PROTECTION MEASURES - MESURES DE PROTECTION - MEDIDAS DE PROTECÇÃO

	ja / yes / oui / sim	nein / no / non / não
Handschuhe / gloves / gants / luvas	<input type="checkbox"/>	<input type="checkbox"/>
Schutzanzug / protection suit/ tenue de sécurité / vestuário de protecção	<input type="checkbox"/>	<input type="checkbox"/>
Gestellbrille / eye glasses / lunettes / Óculos de protecção	<input type="checkbox"/>	<input type="checkbox"/>
Korbbrille und Gesichtsschutz / Glasses with face protection / Lunettes avec protection du visage / Óculos com protecção para o rosto	<input type="checkbox"/>	<input type="checkbox"/>
Atemschutz / respirator / appareil respiratoire / Aparelho respiratório	<input type="checkbox"/>	<input type="checkbox"/>
Mit Absaugungsarbeiten / extractor cowl / travailler sous hotte aspirante / Trabalhar com aspiração	<input type="checkbox"/>	<input type="checkbox"/>
Besondere Schutzmaßnahmen / special protection / mesures de protection Particulieres / medidas especiais de protecção		
Bitte angeben / please state / à préciser / Favor indicar		
.....		
.....		
Beauftragter / Mandatory / Mandataire / Mandatario: Name in Druckbuchstaben / name in printed letters / nom en lettres capitales / Encarregado (Nome em maiúsculas)		
.....		
Ort und Datum / place and date / lieu et date / Local de data:	Unterschrift / signature / signature / assinatura:	
.....	

D. Certificates

D.1. EG-Conformity declaration



EG-Konformitätserklärung
EC-Conformity declaration
Déclaration de conformité CE

- Hiermit erklären wir, Bopp & Reuther Messtechnik GmbH, Am Neuen Rheinhafen 4, 67346 SPEYER dass die nachfolgend bezeichnete Baueinheit aufgrund ihrer Konzipierung und Bauart sowie in der von uns in Verkehr gebrachten Ausführung den einschlägigen grundlegenden Sicherheits- und Gesundheitsanforderungen der zutreffenden EG-Richtlinien entspricht.

Bei einer nicht mit uns abgestimmten Änderung der Baueinheit verliert diese Erklärung ihre Gültigkeit.

- We Bopp & Reuther Messtechnik GmbH, Am Neuen Rheinhafen 4, 67346 SPEYER, herewith confirm that the unit mentioned below complies with the basic safety and health requirements of the relevant EC directives concerning design, construction and putting the model into circulation. This declaration is no longer valid if the unit is modified without our agreement.

- Par la présente, nous, Bopp & Reuther Messtechnik GmbH, Am Neuen Rheinhafen 4, 67346 SPEYER, déclarons que les appareils décrits ci-dessous, en raison de leur conception et de leur construction ainsi que sous la forme sous laquelle nous les commercialisons, correspondent aux exigences de sécurité et de santé publique conformément à la réglementation CE qui les concerne. Toute modification des appareils sans notre accord entraîne la perte de validité de cette déclaration de conformité.

- **Bezeichnung der Baueinheit /**
 Description of the unit /
 Description de l'équipement

Ovalradzähler
 Ovalwheel Meter
 Compteur à roues ovales

EG-Richtlinie / EC-directive / Directive CE	Typ der Baueinheit / Type of unit / Type d'équipement	Mögliche Anbaugeräte / Possible additional units / Equipements complémentaires possibles			Benannte Stelle / Notified Body / Organisme Notifié
		Transmitter: UST (-I-, D-, -X, -10, -11) ^(*) Professional 1 Electronical local indicator: MFE, EZ, EZD, Industrial 1/2	Pulse pick-up: AG41,42, 43, 44, 45 with preamplifier: PV 11	Pulse pick-up AG19(D), AG20, AG52, AG54, AG 55, IG1/2, A1 Mechanical local indicator / Preset Counter: R7, E, D, M5, MSV, MSBV ^(*)	
EMV / EMC/ CEM 2004/108/CE		x	x	x ⁽¹⁾	-
ATEX 95 94/9/CE	x ⁽²⁾	x	x	x ⁽²⁾	0123
DGRL /PED / DESP 97/23/CE	x ⁽³⁾				0036

(*) incl. accessories NK, EZ, SP2, SP22, P2, P22 (**) even wall mounted

- **Anmerkungen / Remarks / Remarques :**

(1) **nur für Impulsgeber anwendbar** / applicable only for pulse pick-up / applicable uniquement pour émetteurs d'impulsions. **Auch für** / also for / aussi pour AG53, N1

(2) **Ex-Schutz / explosion protection / protection atmosphères explosives**

- **Beachtung des nicht elektrisches Ex-Schutzes** / Fulfilling of non- electrical explosion protection requirements / protection contre les explosions pour les matériels non électriques

Die Bewertung der Zündgefahr durch eine entsprechende Risiko-Analyse zeigt, dass bei bestimmungsgemäßem Betrieb keine eigene potentielle Zündquelle vorhanden ist. Die in diesem Dokument aufgeführten Geräte entsprechen den Anforderungen der DIN EN 13463-1 und können in

CE-ORZ, Ausgabe / Version 5, 2010/12/08

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explosions-gefährdeten Bereichen verwendet werden, welche Betriebsmittel der Kategorie 2 erfordern. Da diese Geräte keine eigene Energiequellen aufweisen, welche zu einer Temperaturerhöhung führen würden, ist für die max. Oberflächentemperatur die Messtofftemperatur maßgebend.

The evaluation of hazards of ignition by means of a risk analysis shows that there is no own potential source of ignition during normal operation. The instruments mentioned in this document comply with the requirements of DIN EN 13463-1 and can be used in hazardous ambience requiring devices of category 2. As these devices have no own energy sources, leading to an increase in temperature, the liquid temperature can be taken as surface temperature.

La vérification des sources de danger au moyen d'une analyse de risque a montré que, dans le cadre d'emploi prévu, aucune source d'inflammation potentielle n'est présente. Les appareils cités dans ce document remplissent les exigences de la norme DIN EN 13463-1 et peuvent être utilisés dans des zones soumises à des risques d'explosion nécessitant des appareils de la catégorie 2. Comme ces appareils ne disposent pas de source d'énergie propre pouvant conduire à une augmentation de température, c'est la température du produit qui est à prendre en compte comme température maximum de surface.

- **Ex-Schutz für andere mögliche Anbaugeräte** / explosion protection for other possible additional units / Protection atmosphères explosives pour d'autres équipements complémentaires possibles :

Impulsgeber / Pulse pick-up / émetteurs d'impulsion :
AG41, AG42, AG43, AG44, AG45, AG50, R1, R3, RM, RA

Die EN 60079-11, Elektrische Betriebsmittel für explosionsgefährdete Bereiche – Eigensicherheit „i“, beschreibt in Artikel 5.7 a), dass: „Passive Bauelemente, z.B. Schalter,...“ als „einfache elektrische Betriebsmittel“ zu betrachten sind. Die für einfache elektrische Betriebsmittel aufgeführten Besonderen Aspekte werden ebenso eingehalten, wie in den Abschnitt 5.7 der EN 60079-11 beschrieben.

The EN 60079-11, Explosive atmospheres: Equipment protection by intrinsic safety "i", describes in art. 5.7a) that "passive elements e.g. contacts..." have to be considered as simple products. The special requirements applying to simple electrical products as described in § 5.7 of EN60079-11 are fulfilled.

La norme EN 60079-11, Atmosphères explosives : Protection de l'équipement par sécurité intrinsèque "i" décrit dans l'article 5.7a) que « les éléments passifs tels que contacts... » sont à considérer comme des produits électriques simples. Les exigences s'appliquant aux produits électriques simples ainsi que décrites au paragraphe 5.7 de la norme EN 60079-11 sont remplies.

(3) **Angaben bezüglich Druckgeräte Richtlinie** / Parameters concerning PED / Paramètres concernant la DESP

- **Angewendete Module für die Konformitätsbewertung** /

Applied modules for the conformity assessment /
Modules appliqués l'évaluation de la conformité (DN >25 mm)

- **Klassifizierung** / Classification / Classification

- **Fluid Kategorie** / Fluid category / Dangersité du fluide

- **Diagramm** / Diagramm / Tableau

- **Angewandte Kategorie** / Category beeing used / Catégorie de risque appliquée

B + C1

Rohrleitungsteil / Pipe/
Tuyauterie

Gruppe / Group /
Groupe **1**

II / 6

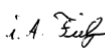
III (DN > 25)

§3, Abs. 3 (DN ≤ 25)

- **Folgende Richtlinien sind bei der vorliegende Baueinheiten nicht Anwendbar** / the following directives do not apply to the above equipment / les directives suivantes ne s'appliquent pas à ces appareils:
2006/42/CE (MD), 2006/95/CE (LVD)

- **Angewandten Normen oder technische Spezifikationen** / Applied standards or technical rules / Normes ou spécifications techniques employées: EN61000-6-2, EN 61000-6-3, EN 60079-0, EN 60079-11, EN 60079-1, EN 1127-1, EN13463-1, DIN EN 10213-1, AD-Merkblätter


Dr. J. Ph. Herzog


i. A. D. Fiebig

CE-ORZ, Ausgabe / Version 5, 2010/12/08