

# CONTOIL® Classic VZO 4...50

## VZO 4 and 8

### Technical data <sup>1)</sup>



- oil meter with internal threaded connections located on the bottom plate
- with mechanical roller counter, volume display in litres
- meters in US-Gallons <sup>2)</sup>
- for mounting in horizontal, vertical and inclined positions
- VZOA 4 and 8 with EEC legal verification

Option: Reed pulser 48 V

Type		VZO 4	VZO 4	VZO 8		
		<b>Q<sub>min</sub> 0.5</b>				
<b>Nominal diameter</b>	<b>mm</b>	<b>4</b>	<b>4</b>	<b>8</b>		
	inch	1/8	1/8	1/4		
Connection threads of meter	inch	1/8	1/8	1/4		
Nominal pressure	bar	25				
Temperature	T <sub>max</sub> °C	60				
Maximum flow rate	Q <sub>max</sub> <sup>3)</sup> l/h	40	80	200		
<b>Nominal flow rate</b>	<b>Q<sub>cont</sub> <sup>3)</sup> l/h</b>	<b>25</b>	<b>50</b>	<b>135</b>		
Minimal flow rate	Q <sub>min</sub> <sup>4)</sup> l/h	0.5	1	4		
Approx. starting flow rate	l/h	0.3	0.4	1.6		
Max. permissible error	±1 % of actual value <sup>4)</sup>					
Repeatability	±0.2 %					
Smallest readable amount	l	0.001	0.001	0.01		
Registration capacity	m <sup>3</sup>	100	100	1000		
Registration at Q <sub>cont</sub> until overrunning to zero	h	4 000	2 000	7 400		
Safety filter mesh size	mm	0.125	0.125	0.150		
<b>Dirt filter mesh size</b>	<b>mm</b>	<b>0.080</b>	<b>0.080</b>	<b>0.100</b>		
Volume of the measuring chamber	approx. cm <sup>3</sup>	5	5	12.5		
Weight without couplings	approx. kg	0.65	0.65	0.75		
Reed pulsers	RE 1	l/pulse	–	–	1	
	RE 0.1		–	0.1	–	
	RE 0.00125		–	0.00125	–	
	RE 0.00311		–	–	0.00311	
Pulse frequency for	RE 0.00125 <sup>5)</sup>	at Q <sub>max</sub>	Hz	–	17.777	–
		at Q <sub>min</sub>	Hz	–	0.222	–
Pulse frequency for	RE 0.00311 <sup>5)</sup>	at Q <sub>max</sub>	Hz	–	–	17.864
		at Q <sub>min</sub>	Hz	–	–	0.357

1) Manufacturer's specification, valid for the reference conditions as specified under "APPENDIX: Meter data".

2) 1 US gallon corresponds to 3.785 litres

3) For burners and engines or motors, the meter must be selected on the basis of the permanent flow rate. For higher viscosities, or if the meter is installed on the suction side, the pressure drop and any reduction in the measuring range must also be taken into consideration.

4) Max. permissible error: VZO 4 Q<sub>min</sub> 0.5: 0.5 l/h ... 2 l/h = +1 % / -2 %. VZO 4: 1 l/h ... 2 l/h = +1 % / -2 %.

5) Note: pulses of short duration!

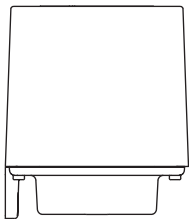
## VZO 4 and 8 with directive 2004/22/CE (MID)

Data according to type approval specifications			VZOA 4 CE	VZOA 8 CE
Temperature max.	T <sub>max</sub>	°C	50	50
Maximum flow rate	Q <sub>max</sub>	l/h	20	140
<b>Nominal flow rate</b>	<b>Q<sub>cont</sub></b>	<b>l/h</b>	<b>20</b>	<b>140</b>
Minimal flow rate	Q <sub>min</sub>	l/h	1	14
Max. permissible error	±% of actual value		1	0.5

### Pressure drop curves

See "APPENDIX: Meter data"

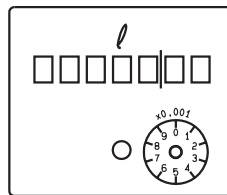
### Dimensions in mm



height = 78  
width = 68  
depth = 68

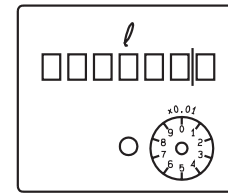
### Dial

VZO 4



66144a

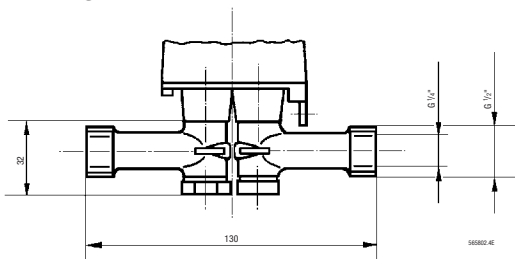
VZO 8



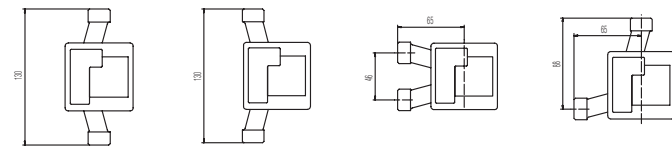
66144b

Detailed dimensional drawings in "APPENDIX: Meter data"

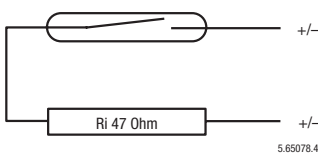
### Mouting kit for VZO 8



Order No. 81130: some possible mounting positions



### RE Pulsers



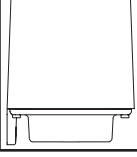
Switching element:  
Switching voltage:  
Switching current:  
Quiescent current:  
Switching power:  
ON-time:

Temperature:  
Protection class:

Connections:

- Reed switch with dry contact (inert gas)
- Max. 48 VAC/DC, Protection class III (SELV)
- Max. 50 mA
- Open Contact
- Max. 2 W
- VZO 4-RE 0.00125: 30...70 % (17...39 ms bei 80 l/h)
- VZO 4-RE 0.1: 40...60 %
- VZO 8-RE 0.00311: 30...70 % (17...39 ms bei 200 l/h)
- VZO 8-RE 1: 40...60 %
- Ambient -10 ... +60 °C
- IP 50 (IEC 60529) against harmful dust deposits
  - Option: IP 54 additional against splashing water
- On plug connector with cable, 3,5 - 5 mm Ø

### Ordering specifications

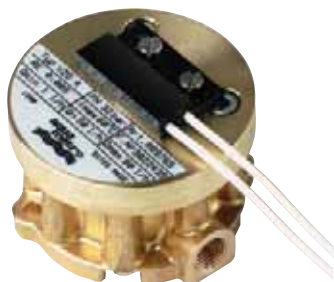
	Type	Order No.	Type	Order No.
	VZO 4	92680	VZO 8	92630
	VZO 4 RE 0.00125	89763	VZO 8 RE 0.00311	89733
	VZO 4 RE 0.1	89761	VZO 8 RE 1	89731
	VZO 4 Q <sub>min</sub> 0.5	92678		
	VZOA 4 CE	93668	VZOA 8 CE	93669
<b>Modification</b>	Increased Protection (IP 54)			80368

### Special versions with FPM fluoroelastomer gaskets

VZO 4 V                                    Order No. 92487  
VZO 4 V - RE 0.1                        Order No. 92489

## VZO 4 and 8 OEM

### Technical data 1)



- fuel oil meters for OEMs (original equipment manufacturers), to be mounted under the burner cover
- meters with lateral internal threaded connections
- with 230 V Reed pulser to display measurement values on remote totaliser or on burner control unit
- for mounting in horizontal, vertical or inclined positions

Type		VZO 4 OEM	VZO 8 OEM	
<b>Nominal diameter</b>	<b>mm</b>	<b>4</b>	<b>8</b>	
	inch	1/8	1/4	
Connection threads of meter	inch	1/8	1/4	
Nominal pressure	bar	32	25	
Temperature	T <sub>max</sub> °C	60	60	
Maximum flow rate	Q <sub>max</sub> <sup>2)</sup> l/h	80	200	
<b>Nominal flow rate</b>	<b>Q<sub>cont</sub><sup>2)</sup> l/h</b>	<b>50</b>	<b>135</b>	
Minimal flow rate	Q <sub>min</sub> <sup>3)</sup> l/h	1	4	
Approx. starting flow rate	l/h	0.4	1.6	
Max. permissible error		±1 % of actual value <sup>3)</sup>		
Repeatability		±0.2 %		
Safety filter mesh size	mm	-	0.150	
<b>Dirt filter mesh size</b>	<b>mm</b>	<b>0.080</b>	<b>0.100</b>	
Volume of the measuring chamber	approx. cm <sup>3</sup>	5	12.5	
Weight	approx. kg	0.65	0.75	
Reed pulsers	RE	l/pulse	0.005	0.0125
Pulse frequency	at Q <sub>max</sub>	Hz	4.444	4.444
	at Q <sub>min</sub>	Hz	0.056	0.089

1) Manufacturer's specification, valid for the reference conditions as specified under "APPENDIX: Meter data".

2) For burners and engines or motors, the meter must be selected on the basis of the permanent flow rate. For higher viscosities, or if the meter is installed on the suction side, the pressure drop and any reduction in the measuring range must also be taken into consideration.

3) Max. permissible error: VZO 4 OEM: 1 l/h ... 2 l/h = +1 % / -2 %.

### Safety precaution

When connecting the Reed pulser to a low-voltage power source (50...250 VAC/DC), the specialist installing the equipment is responsible for ensuring that all local regulations are observed (e.g. regulations for electrical installations, personnel safety).

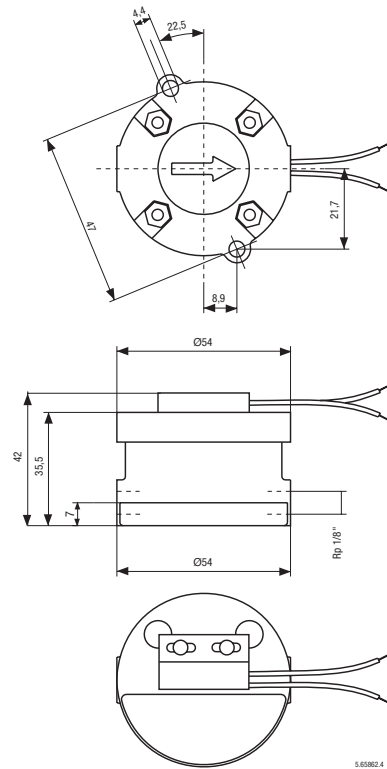
Avoid disturb of electromagnetically fields.

### Pressure drop curves

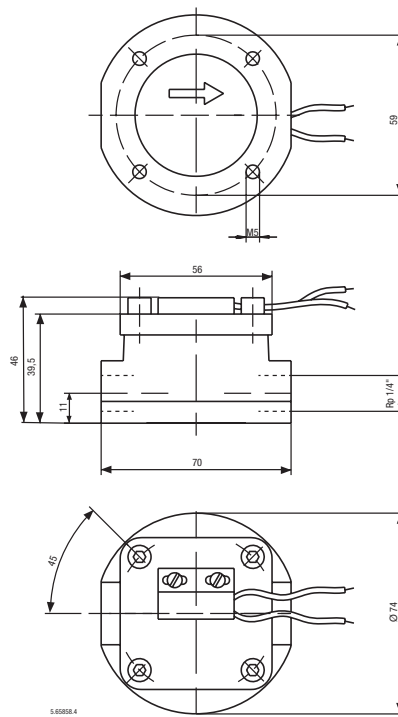
See "APPENDIX: Meter data"

## Dimensions in mm

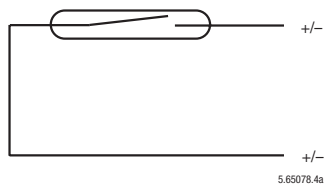
### VZO 4 OEM



### VZO 8 OEM



## RE Pulsers



Switching element:  
Switching voltage:  
Switching current:  
Quiescent current:  
Switching power:  
ON-time:  
Temperature:  
Protection class:  
Connections:

- Reed switch with dry contact (inert gas)
- max. 230 V AC/DC
- max. 50 mA
- Open Contact
- max. 3 VA
- 40...55%
- Ambient -10 ... +60 °C
- IP 65 (IEC 60529) against dust and water-jets
- Cable cross section  $2 \times 0.5 \text{ mm}^2$ , length 480 mm

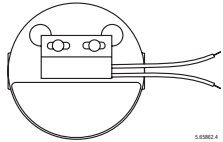
## Remote totaliser for VZO 4 OEM



Power supply:  
Pulse value (input):  
Smallest readable amount:  
Registration capacity:  
Registration:  
Panel cut-out:  
Installation depth:

- 230 V, 50/60 Hz
- 0.005 l
- 0.005 l
- 10 000 l
- at Q before return to zero 200 h
- $27 \times 14.4 - 0/+ 0.2 \text{ mm}$
- 56 mm

## Ordering specifications

Type	Description	Order No.
	VZO 4 OEM-RE 0.005	89765
	VZO 8 OEM-RE 0.0125	89771

## VZO 15 ... 50

### Technical data <sup>1)</sup>



- Volume display on roller counter, in litres
- fuel oil meter with threaded or flanged ends
- for horizontal, vertical or inclined mounting

Option: Reed pulser or RV / IN pulser

Versions available on request:

- different flange drillings, such as ANSI, JIS
- meters in US gallons <sup>2)</sup> (option)

Type			VZO 15	VZO 20	VZO 25	VZO 40	VZO 50
<b>Nominal diameter</b>	<b>DN</b>	<b>mm</b>	<b>15</b>	<b>20</b>	<b>25</b>	<b>40</b>	<b>50</b>
		inch	1/2	3/4	1	1 1/2	2
Installation length		mm	165	165	190	300	350
Nominal pressure with threaded ends	PN	bar	16				
	with flanges	PN	bar	25, 40			
Maximum temperature	T <sub>max</sub>	° C	130, 180				
Maximum flow rate	Q <sub>max</sub> <sup>3)</sup>	l/h	600	1500	3000	9000	30000
<b>Nominal flow rate</b>	<b>Q<sub>cont</sub> <sup>3)</sup></b>	<b>l/h</b>	<b>400</b>	<b>1000</b>	<b>2000</b>	<b>6000</b>	<b>20000</b>
Minimal flow rate	Q <sub>min</sub>	l/h	10 <sup>4)</sup>	30	75	225	750
Approx. starting flow rate		l/h	4	12	30	90	300
Max. permissible error			±1 % of actual value				
Repeatability			±0.2 %				
Safety filter mesh size		mm	0.400	0.400	0.400	0.800	0.800
<b>Dirt filter mesh size</b>		<b>mm</b>	<b>0.250</b>	<b>0.400</b>	<b>0.400</b>	<b>0.600</b>	<b>0.600</b>
Volume of the measuring chamber		approx. cm <sup>3</sup>	12	36	100	330	1200
Housing finish			enamelled red RAL 3013				
Weight with threaded ends <sup>5)</sup>		approx. kg	2.2	2.5	4.2	17.3	–
	with flanges PN 25	approx. kg	3.8	4.5	7.5	20.3	41.0
	with flanges PN 40	approx. kg	4.4	5.5	7.8	20.5	42.0
Smallest readable amount		l	0.01	0.1	0.1	0.1	1
Registration capacity		m <sup>3</sup>	1000	10000	10000	10000	100000
Registration time at Q <sub>cont</sub> until overrunning to zero		h	2500	10000	5000	1667	5000
Pulse values of pulsers:							
IN inductive according to IEC 60947-5-6		l/pulse	0.01	0.01	0.1	0.1	1
RV Reed		l/pulse	0.1	1	1	1	10
RV Reed		l/pulse	1	–	–	10	100
Pulse frequency IN	at Q <sub>max</sub>	Hz	16.667	41.667	8.333	25.000	8.333
	at Q <sub>min</sub>	Hz	0.278	0.833	0.208	0.625	0.208

1) Manufacturer's specification, valid for the reference conditions as specified under "APPENDIX: Meter data".

2) 1 US gallon corresponds to 3.785 litres

3) For burners and engines or motors, the meter must be selected on the basis of the permanent flow rate. For higher viscosities, or if the meter is installed on the suction side, the pressure drop and any reduction in the measuring range must also be taken into consideration.

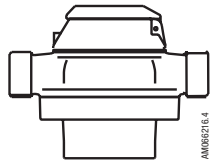
4) Min. flow rate VZO 15 with IN-pulser: 15 l/h

5) Weight without couplings.

### Pressure drop curves

See "APPENDIX: Meter data"

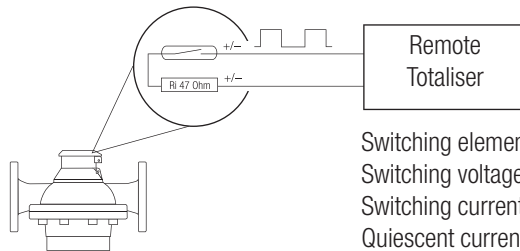
## Dimensions

Type	mm	VZO 15	VZO 20	VZO 25	VZO 40	VZO 50
	Length	165	165	190	300	350
	Width	105	105	130	210	280
<b>Typ ... 130 °C</b>						
	Height	106	115	142	235	291
	Height -RV	130	139	166	259	315
	Height -IN	185	194	221	273	329
<b>Typ ... 180 °C</b>						
	Height	147	156	183	235	291
	Height -RV	171	180	207	259	315
	Height -IN	225	234	261	313	369

Detailed dimensional diagrams in "APPENDIX: Meter data".

## RV Pulsers

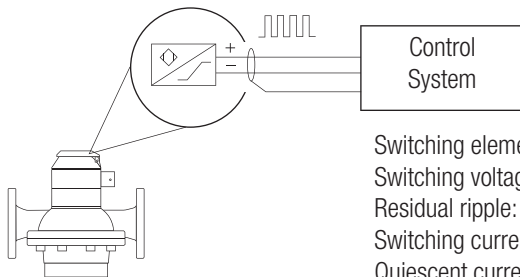
This type of pulser is integrated into the roller counter and thus is especially appropriate for remote totalisation. For other applications the IN inductive pulser is preferable.



- |                      |                                                    |
|----------------------|----------------------------------------------------|
| Switching element:   | • Reed switch with dry contact (inert gas)         |
| Switching voltage:   | • max. 48 VAC/DC, Protection class III (SELV)      |
| Switching current:   | • max. 50 mA ( $R_i = 47 \Omega / 0.5 \text{ W}$ ) |
| Quiescent current:   | • Open Contact                                     |
| Switching power:     | • max. 2 W                                         |
| ON-time:             | • 50 % $\pm$ 10 %                                  |
| Temperature:         | • Ambient -10...+70 °C                             |
| Protection class:    | • IP 65 (IEC 60529) against dust and water-jets    |
| Connections:         | • Cast-in cable, length 3 m                        |
| Cable cross section: | • 2 x 0.14 mm <sup>2</sup>                         |

## IN Pulsers

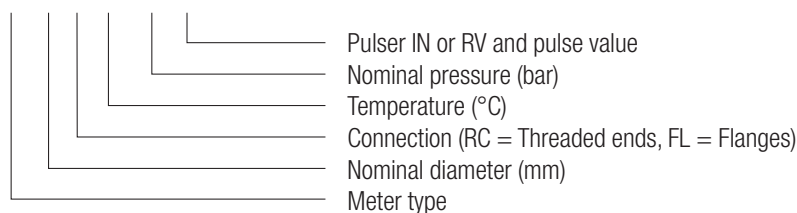
Pulser for industrial applications. Supplied with plug-in pulser sensor.



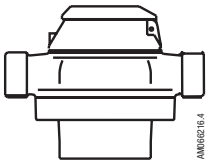
- |                      |                                                                                                                                                                                             |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Switching element:   | • Inductiv slot initiator according to IEC 60947-5-6                                                                                                                                        |
| Switching voltage:   | • 5...15 VDC                                                                                                                                                                                |
| Residual ripple:     | • max. 5 %                                                                                                                                                                                  |
| Switching current:   | • >3 mA at 8 VDC / 1 k $\Omega$                                                                                                                                                             |
| Quiescent current:   | • <1 mA at 8 VDC / 1 k $\Omega$                                                                                                                                                             |
| ON-time:             | • 50 % $\pm$ 10 %                                                                                                                                                                           |
| Ambient temperature: | • -10...+70 °C                                                                                                                                                                              |
| Protection class:    | • IP 65 (IEC 60529) against dust and water-jets                                                                                                                                             |
| Connections:         | • Pulser supplied with special plug. Required cable min. 2 x 0.35 mm <sup>2</sup> and 4...6 mm external diameter or the cable is already mounted if the option "Order No. 80019" is chosen. |
| Option:              | • Cable mounted, 2 x 0.5 mm <sup>2</sup> , PVC black, length 3 m (Order No. 80019)                                                                                                          |

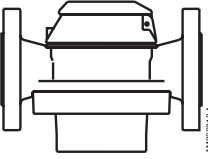
## Type designation key

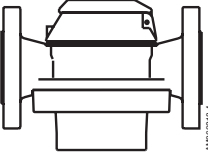
VZO 25 FL 130/25-IN 0.1

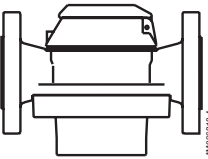


## Ordering specifications

Threaded ends, PN 16	Type 130 °C		Type 130 °C	
		Order No.		Order No.
	VZO 15 RC 130/16	92041	VZO 25 RC 130/16	92057
	VZO 15 RC 130/16-RV 0.1	92042	VZO 25 RC 130/16-RV 1	92058
	VZO 15 RC 130/16-RV 1	92043	VZO 25 RC 130/16-IN 0.1	91913
	VZO 15 RC 130/16-IN 0.01	91900		
	VZO 20 RC 130/16	92047	VZO 40 RC 130/16	92004
	VZO 20 RC 130/16-RV 1	92048	VZO 40 RC 130/16-RV 1	92018
	VZO 20 RC 130/16-IN 0.01	91902	VZO 40 RC 130/16-IN 0.1	91906

Flanges, PN 25	Type 130 °C		Type 130 °C	
		Order No.		Order No.
	VZO 15 FL 130/25	92044	VZO 40 FL 130/25	92005
	VZO 15 FL 130/25-RV 0.1	92045	VZO 40 FL 130/25-RV 1	92020
	VZO 15 FL 130/25-RV 1	92046	VZO 40 FL 130/25-IN 0.1	91907
	VZO 15 FL 130/25-IN 0.01	91910		
	VZO 20 FL 130/25	92049	VZO 50 FL 130/25	92007
	VZO 20 FL 130/25-RV 1	92050	VZO 50 FL 130/25-RV 10	92024
	VZO 20 FL 130/25-IN 0.01	91903	VZO 50 FL 130/25-IN 1	91909
	VZO 25 FL 130/25	92059		
	VZO 25 FL 130/25-RV 1	92060		
	VZO 25 FL 130/25-IN 0.1	91914		

Flanges, PN 25	Type 180 °C		Type 180 °C	
		Order No.		Order No.
	VZO 15 FL 180/25	92250	VZO 40 FL 180/25	92274
	VZO 15 FL 180/25-RV 0.1	92251	VZO 40 FL 180/25-RV 1	92275
	VZO 15 FL 180/25-RV 1	92252	VZO 40 FL 180/25-IN 0.1	92276
	VZO 15 FL 180/25-IN 0.01	92253		
	VZO 20 FL 180/25	92258	VZO 50 FL 180/25	92280
	VZO 20 FL 180/25-RV 1	92259	VZO 50 FL 180/25-RV 10	92281
	VZO 20 FL 180/25-IN 0.01	92260	VZO 50 FL 180/25-IN 1	92282
	VZO 25 FL 180/25	92264		
	VZO 25 FL 180/25-RV 1	92265		
	VZO 25 FL 180/25-IN 0.1	92266		

Flanges, PN 40	Type 180 °C		Type 180 °C	
		Order No.		Order No.
	VZO 15 FL 180/40	92254	VZO 40 FL 180/40	92277
	VZO 15 FL 180/40-RV 0.1	92255	VZO 40 FL 180/40-RV 1	92278
	VZO 15 FL 180/40-RV 1	92256	VZO 40 FL 180/40-IN 0.1	92279
	VZO 15 FL 180/40-IN 0.01	92257		
	VZO 20 FL 180/40	92261	VZO 50 FL 180/40	92283
	VZO 20 FL 180/40-RV 1	92262	VZO 50 FL 180/40-RV 10	92284
	VZO 20 FL 180/40-IN 0.01	92263	VZO 50 FL 180/40-IN 1	92285
	VZO 25 FL 180/40	92267		
	VZO 25 FL 180/40-RV 1	92268		
	VZO 25 FL 180/40-IN 0.1	92269		

DN 15 only when the plant has a dirt filter with a max. 0.1 mm mesh size.

<b>Modification VZO</b>	For marine type approval (e.g. GL, LRS, DNV)	96295
<b>Option / Accessory</b>	Cable mounted on IN	80019