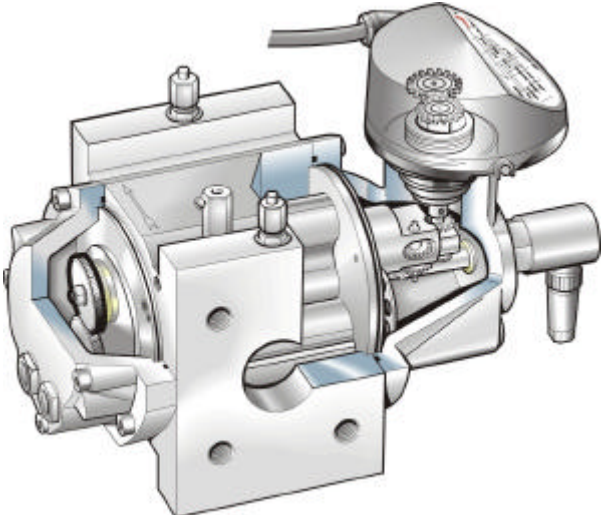


## RVG

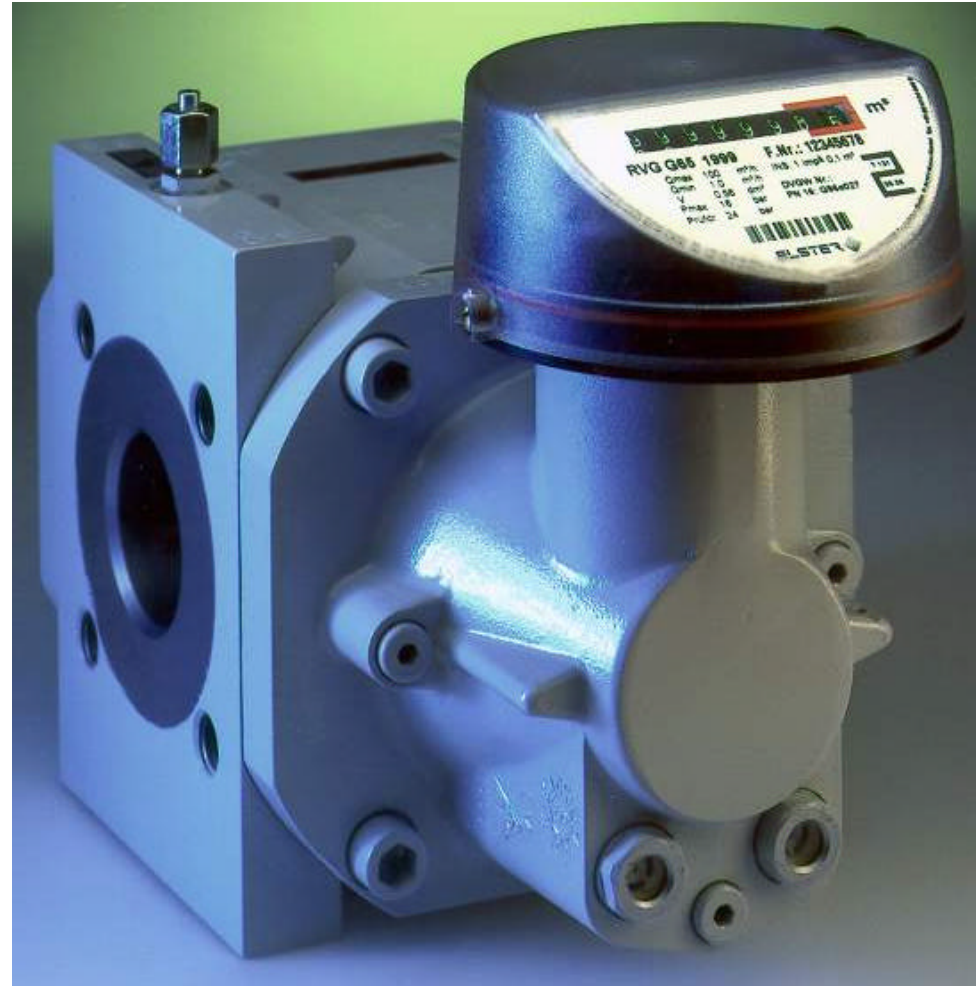


## Content

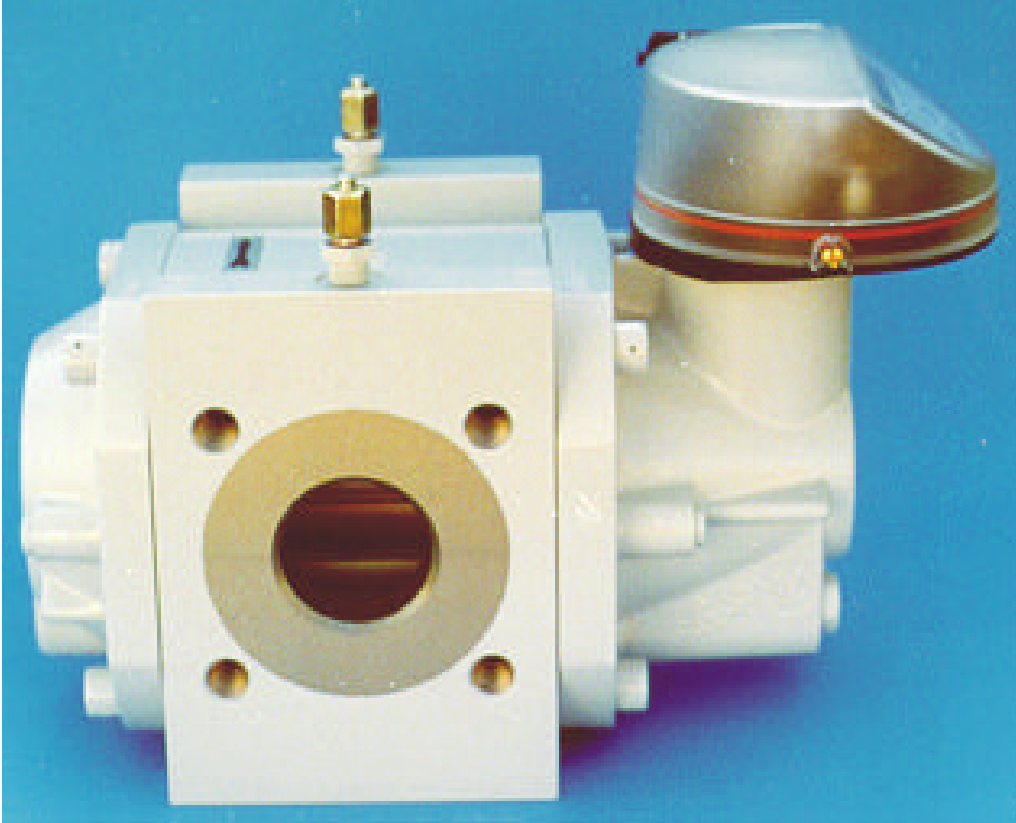
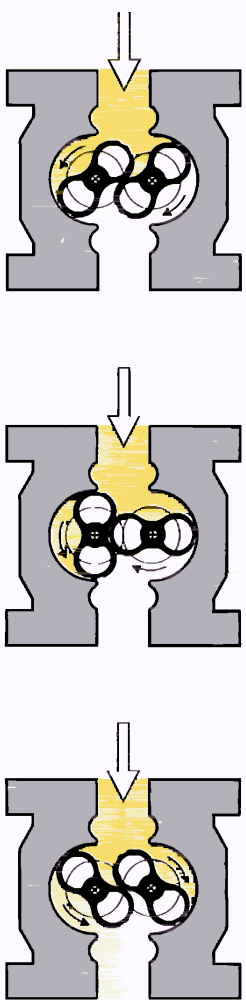
- **RVG Rotary Volume Gasmeters**
  - ESTER/AMCO Manufacturers
  - Working Principle and Product Range
  - Rangeability
  - Start-up Flow Rate
  - Index and Index Options
  - Serviceability
  - Adaption to different Flow Directions
  - RVG with double direction index S1D
  - System Capabilities: RVG with EK-90
  - RVG Comparisons
  - New: RVG G10-G25 Aluminium

## ELSTER/AMCO Manufacturers

04/02df



## Working Principle



## Product Range - Rangeability - Accuracy

- Size: G10 to G25 Aluminium (up to 40 m<sup>3</sup>/h = 1.400 cft/h)
- threaded connection. Rangeability up to 1:30 (G10) to 1:80 (G25)
- Size: G16 to G250 (up to 400 m<sup>3</sup>/h = 14.000 cft/h)
  - G16 to G65 with flanges 2", F/F=171mm (identical meters for Elster)
  - G100 with flanges 3", F/F=171mm
  - G160 with flanges 3" or 4", F/F=241mm
  - G250 with flanges 4", F/F=241mm
- Pressure rating PN16 or ANSI150 (up to 20 bar, 280 psig)
- Aluminium housing
- Accuracy  $\pm 1\%$  from  $2 \cdot Q_{\min}$  to  $Q_{\max}$
- Rangeability up to 1:160 for G65 and above with 100% certified accuracy of  $\pm 2\%$  at  $Q_{\min}$

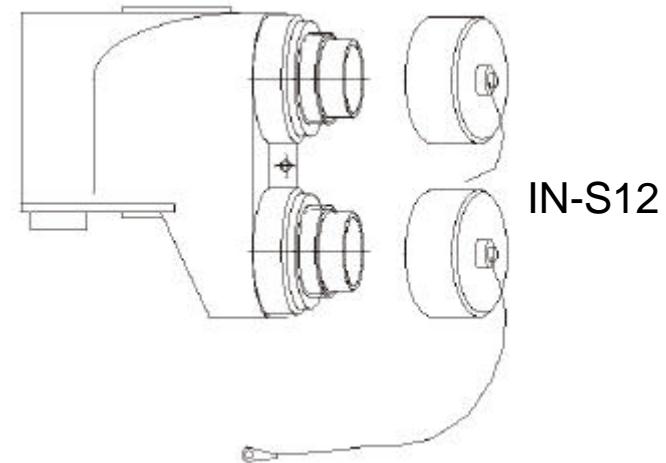
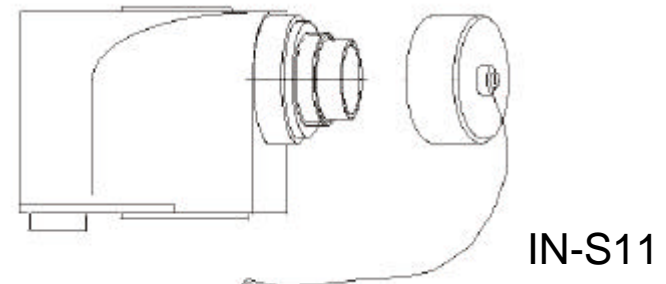
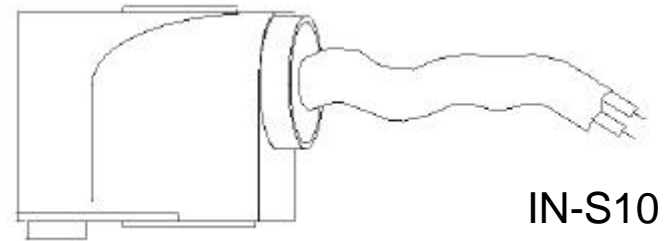
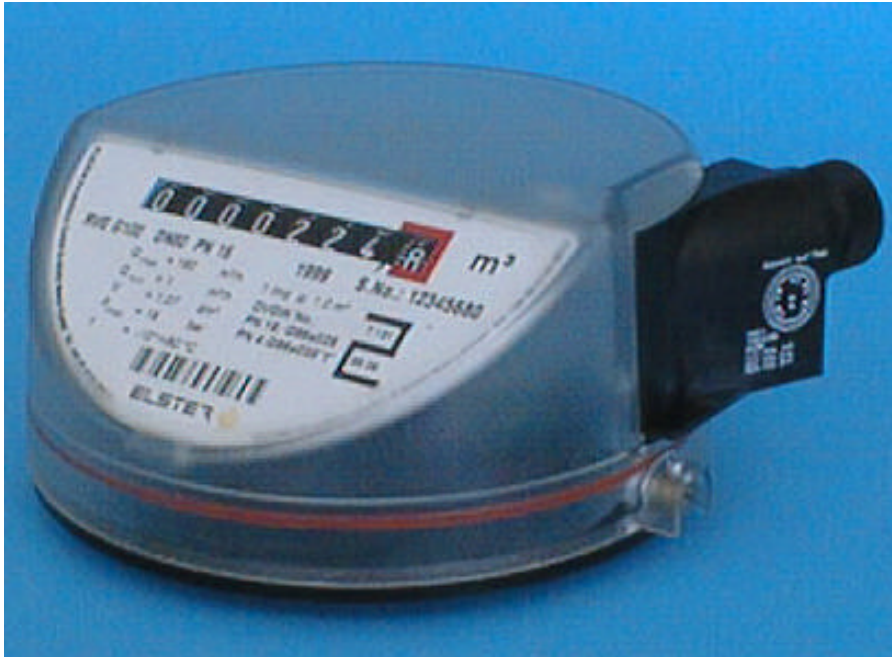
## ELSTER RVG Start-up Flow Rate

Meter Size ( $Q_{max}$ )	Start up Flow Rate Range $m^3/h$ (cft/h)	$\emptyset$ Start up Flow Rate $m^3/h$ (cft/h)	Measurement Range $\emptyset$	Error Range
<b>G16</b> (25 $m^3/h$ ) (875 cft/h)	0.01 - 0.06 (0.35 - 2.1)	0.030 (1.05)	1:833	-49 % to -10 %
<b>G25</b> (40 $m^3/h$ ) (1,400 cft/h)	0.01 - 0.06 (0.35 - 2.1)	0.030 (1.05)	1:1333	-49 % to -10 %
<b>G65</b> (100 $m^3/h$ ) (3,500 cft/h)	0.01 - 0.06 (0.35 - 2.1)	0.030 (1.05)	1:3333	-49 % to -10 %
<b>G100</b> (160 $m^3/h$ ) (5,600 cft/h)	0.03 - 0.07 (1.05 - 2.45)	0.045 (1.58)	1:3556	-47 % to -19 %
<b>G160</b> (250 $m^3/h$ ) (8,750 cft/h)	0.1 - 0.12 (3.5 - 4.2)	0.110 (3.85)	1:2272	-43 % to -23 %
<b>G250</b> (400 $m^3/h$ ) (14,000 cft/h)	0.16 - 0.65 (5.6 - 22.7)	0.298 (10.43)	1:1342	-19 % to -8 %

**Note:** Tests were performed with 5 meters per size.  
Measurements of competitor's meters did not meet leaflet values



## Index and retro-fittable LF options

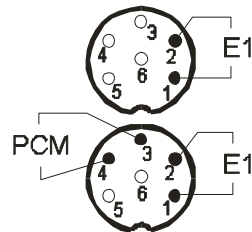
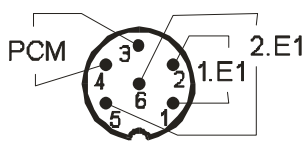


IN-S10

IN-S11

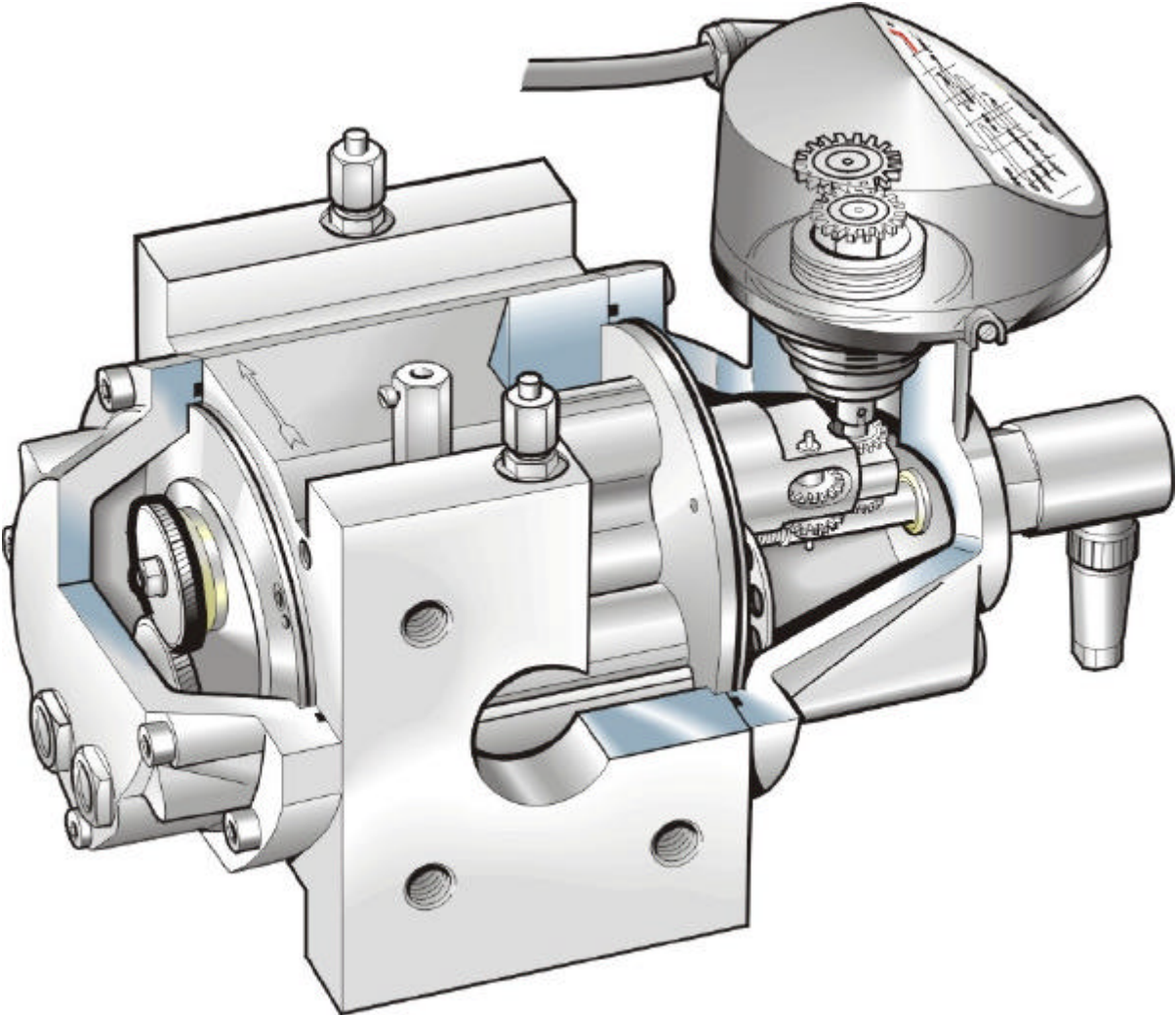
IN-S12

- 1. E1: white - brown
- 2. E1: green - yellow
- PCM: gray - pink



View on soldering side of female plug

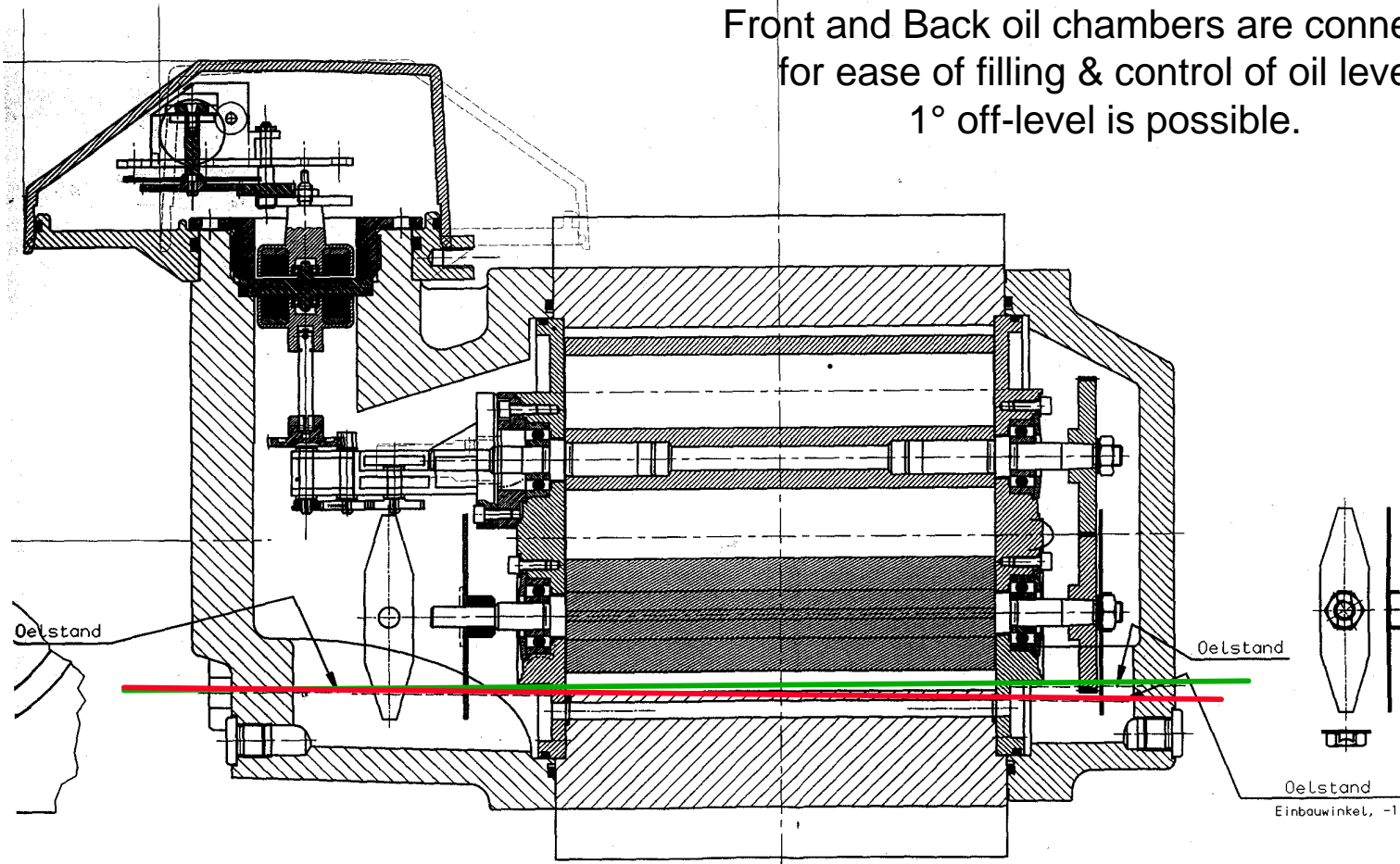
## Poster



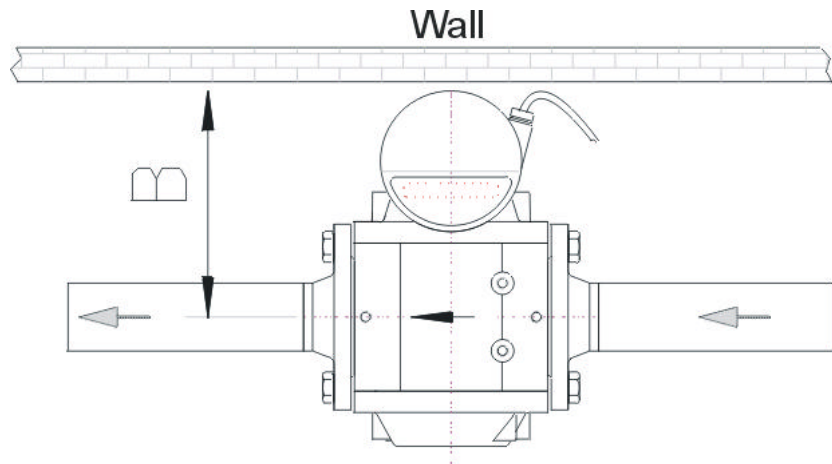
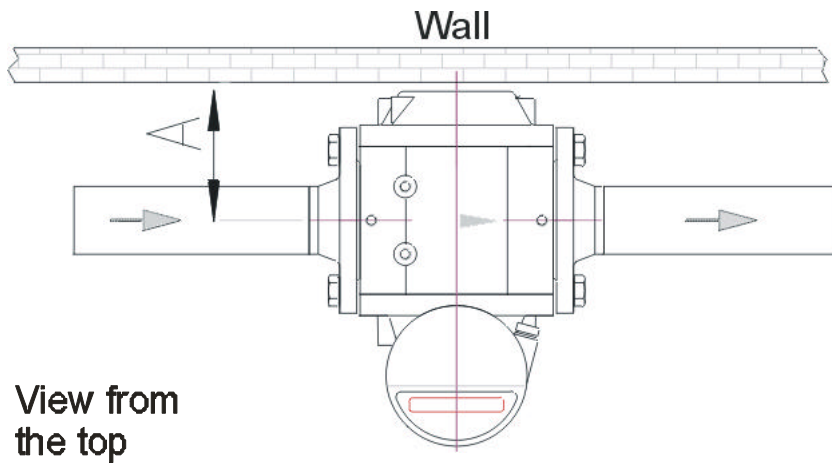


## Serviceability

Front and Back oil chambers are connected for ease of filling & control of oil level.  
1° off-level is possible.



## Adaption to different Flow Directions



Elster RVG with index S1 can be adapted to four directions of flow without changes on the meter due to the unique 350° rotatable S1 index:

- Horizontal left-to-right
- Horizontal right-to-left
- Vertical Top-to-Bottom
- Vertical Bottom-to-Top

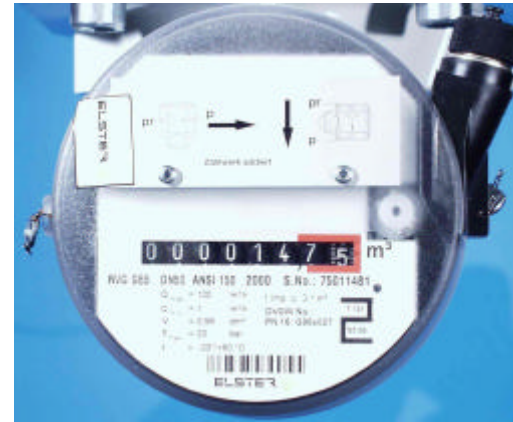
	DN	A in mm	B in mm
G16 - G65	50	120	185
G100	80	170	235
G160	80	200	245
G250	100	230	275

**RVG with double direction index S1D**



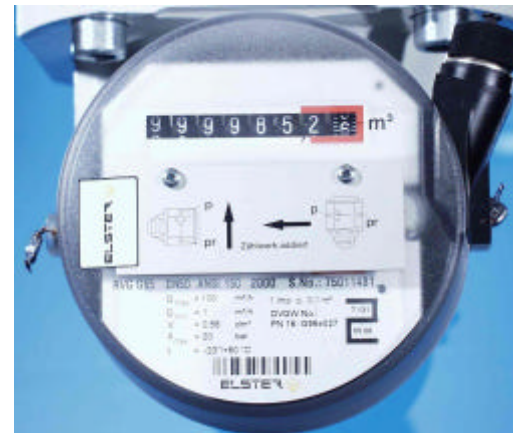
Flow direction:  
left-right  
or  
top-bottom

upper index  
covered



Flow direction:  
right-left  
or  
bottom-top

lower index  
covered

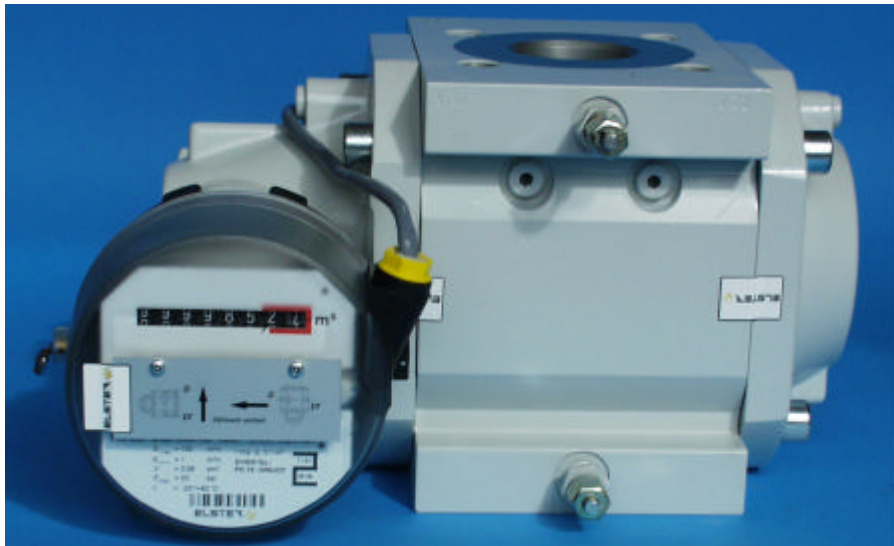


Picture shows RVG G65 with S1D,  
Aluminium-housing and LF-pulsar IN-S11.  
IN-S11 sealed with seal wire and seal S5.  
(Non fiscal measurement: Adhesive user seal  
like used at the index cover plate)

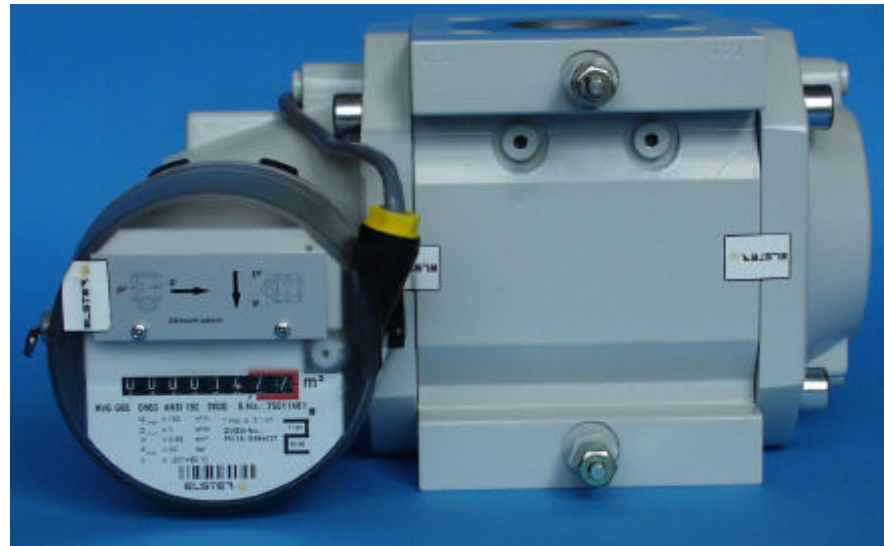
Sealing of the index cover plate with adhesive  
user seal

## Vertical Installation

Readable from front



Bottom to Top

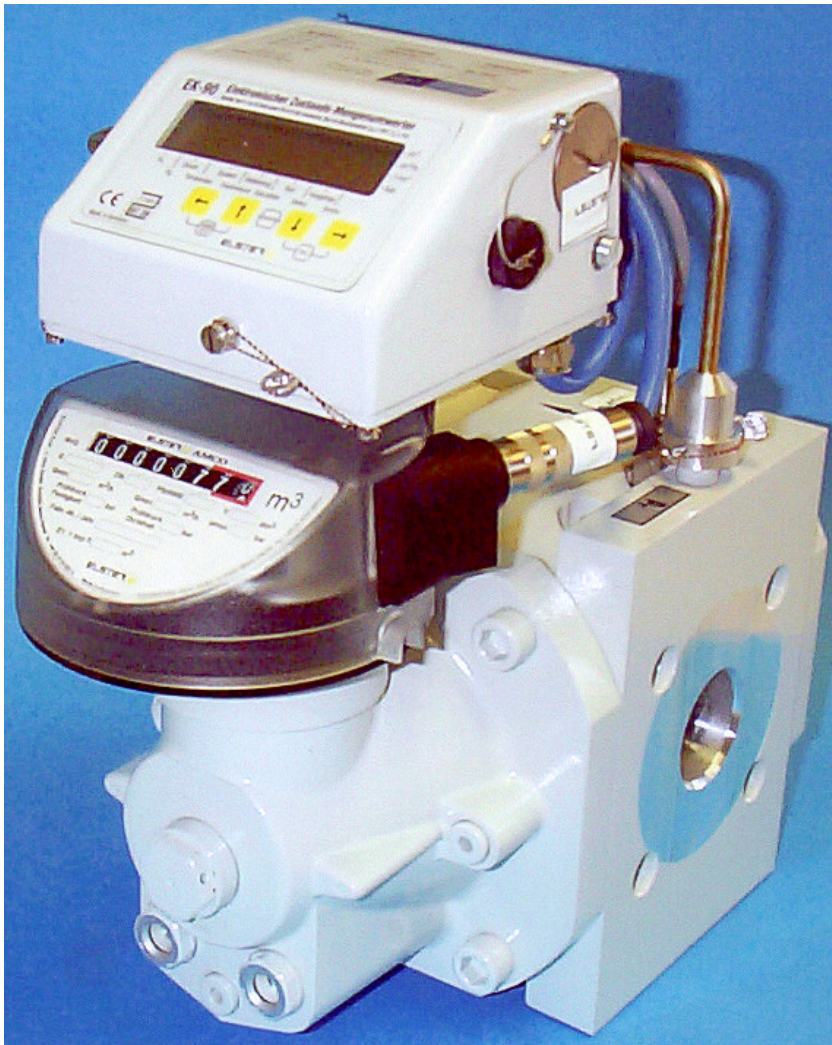


Top to Bottom

The axis of the mechanical rollers should be horizontal



## System Capabilities



- Standard: two pressure take offs for  $\Delta p$  or  $p_{ref}$  of a volume corrector
- Standard: 6 mm pipe connection (ERMETO) for easy connection to volume corrector
- Standard: two dummy plugs for later insertion of temperature thermowells
- Standard: attachment bores for ELSTER VC EK-88 and EK-90

## Weight Comparison Diaphragm-RVG-TRZ-QA

All weights in kg

Size	Diaphr. Steel	RVG Aluminium	RVG GGG-40	TRZ GGG-40	QA Aluminium
G10	5.1	3.5	-	-	1
G25	10.6	12	22	14	1
G40	30	12	22	14	1
G65	44	12	22	14	1.3
G100	130	16	33	21	4
G160	(160)	32	64	21	4
G250	(200)	37	72	28	6.5



## System Comparison Diaphragm-Rotary-Turbine

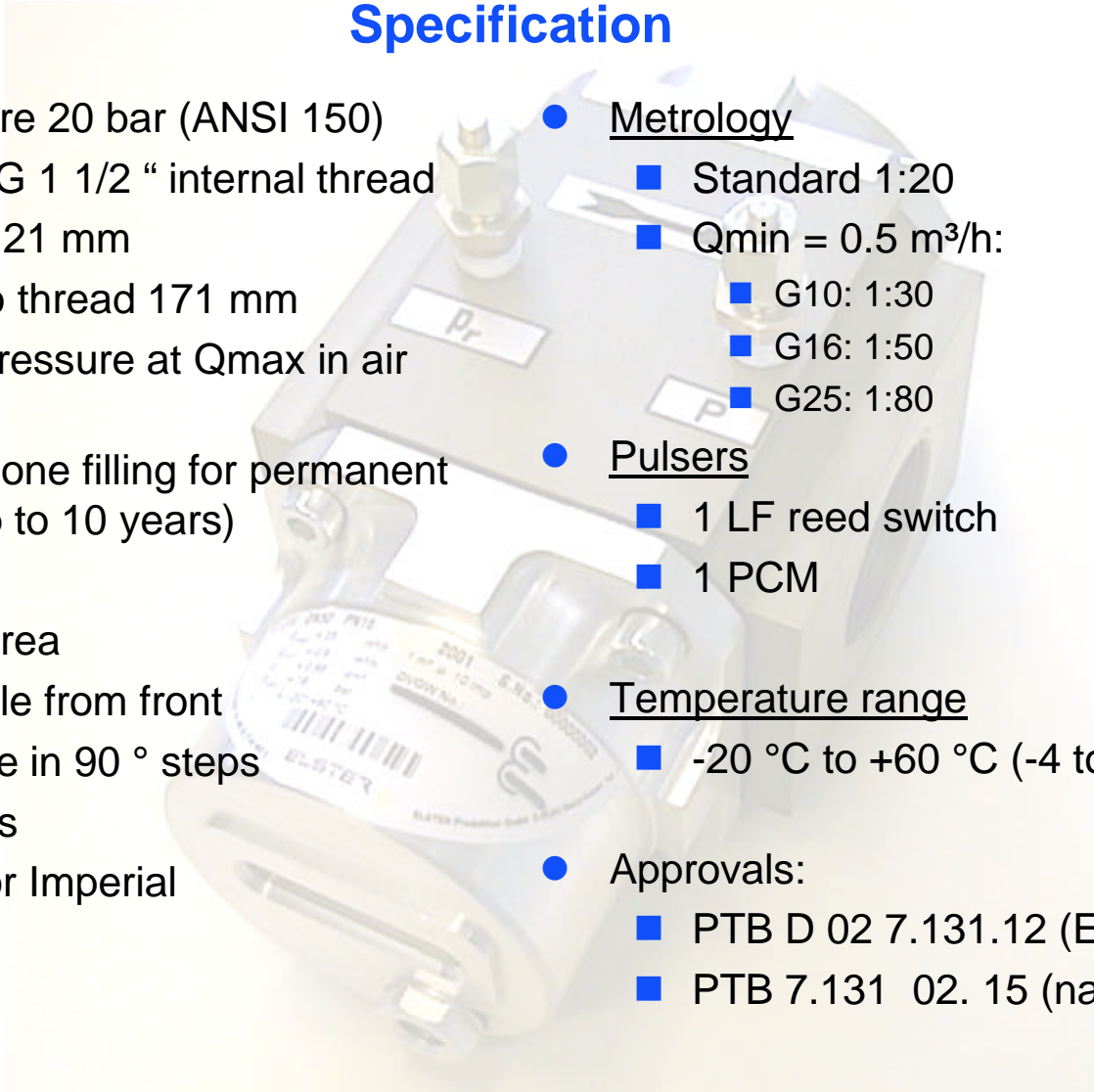
Criterion	Diaphr	Rotary	Turbine	Ultrasonic
Dimension	large	small	small	Small
Weight	large	medium	small	small
Maintenance	free	medium	small	free
Recalibration in Germany	16 Y.	16 Y.	8 or 12 Y.	5 Y.
Sensitivity against dirt	no	medium stop	small some error	small
After-running in stop and go operation	no	no	yes	no
Pressure pulsation at Start/Stop operation	no	yes, large	no	no
Noise	medium	large	small	no
Accuracy $Q_{\min} - 0.2 Q_{\max}$ $0.2 Q_{\max} - Q_{\max}$	$\pm 3 \%$ $\pm 2 \%$	$\pm 2 \%$ $\pm 1 \%$	$\pm 2 (\pm 1) \%$ $\pm 1 (\pm 0,5) \%$	$\pm 2 (\pm 1) \%$ $\pm 1 (\pm 0,5) \%$
Straight inlet pipe required	no	no	yes, approval acc. TR G13	Yes, 10 DN
Rangeability at low pressures	large >> 1:160	medium appr. 1:20 to 1:160	small appr. 1:10 to 1:30	dependent on size

## RVG G10-G25 Rotary Piston Meter

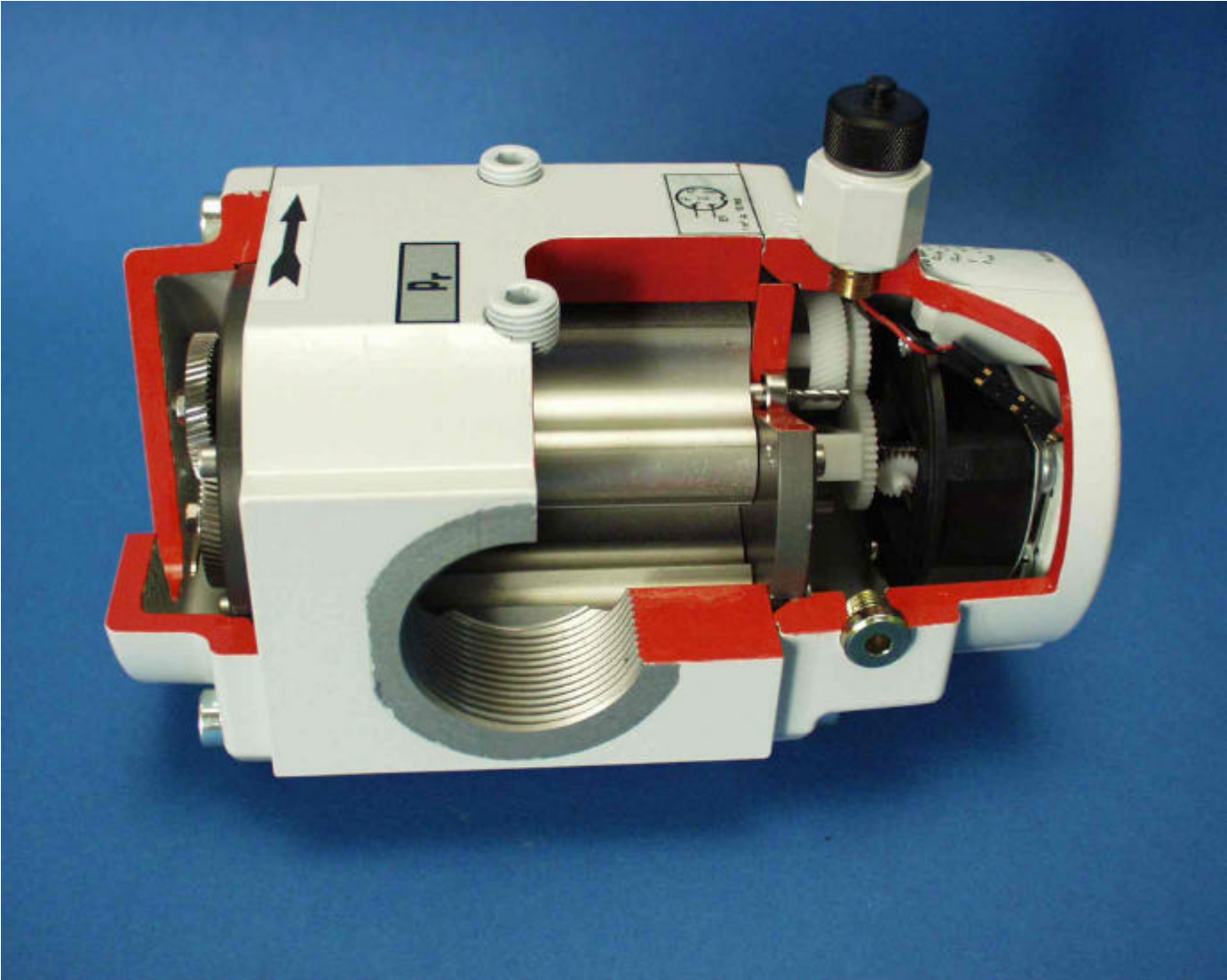


## RVG G10-G25 Specification

- Max. pressure 20 bar (ANSI 150)
- Connection G 1 1/2 " internal thread
- Dimension 121 mm
- Adaptable to thread 171 mm
- Differential pressure at Qmax in air < 2.4 mbar
- Lubrication (one filling for permanent operation up to 10 years)
- Index
  - in gas area
  - Readable from front
  - Turnable in 90 ° steps
  - 8 Rollers
  - Metric or Imperial
- Metrology
  - Standard 1:20
  - Qmin = 0.5 m<sup>3</sup>/h:
    - G10: 1:30
    - G16: 1:50
    - G25: 1:80
- Pulsers
  - 1 LF reed switch
  - 1 PCM
- Temperature range
  - -20 °C to +60 °C (-4 to 140 °F)
- Approvals:
  - PTB D 02 7.131.12 (EWG)
  - PTB 7.131 02. 15 (national)



## RVG G10-G25 cut-away model



## RVG G10-G25 PTB EEC type approval

Physikalisch-Technische Bundesanstalt  
Braunschweig und Berlin



EWG-Bauartzulassung  
EEC type-approval certificate

Zulassungsinhaber:  
Issued to: Elster Produktion GmbH  
55252 Mainz-Kastel

Rechtsbezug:  
In accordance with: § 13 des Gesetzes über das Meß- und Eichwesen (Eichgesetz)  
vom 23. März 1992 (BGBl. I S. 711)  
Council Directive: 71/318/EWG

Bauart:  
In respect of: Drehkolbengaszähler

Zulassungszeichen:  
Approval mark:   


Gültig bis:  
Valid until: 31.01.2012

Anzahl der Seiten:  
Number of pages: 4

Geschäftszeichen:  
Reference No.: 1.33 - 01074518  
1.33-3271.3-ELS-E12

Im Auftrag  
By order:   
H. Krebs



Braunschweig, 14.01.2002

Siegel  
Seal

Physikalisch-Technische Bundesanstalt



Anlage zur EWG-Bauartzulassung

Annex to EEC type-approval certificate  
vom 14.01.2002, Zulassungszeichen:  
dated 14.01.2002, Approval mark:

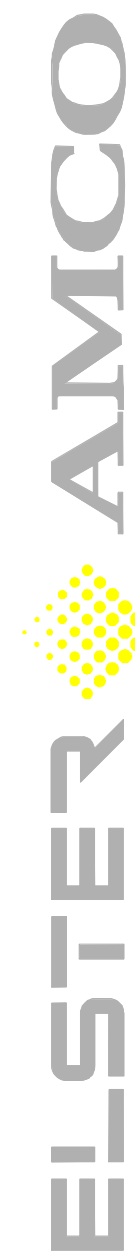
  


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Page 3 of 4 pages

### 3. Technische Daten

DN mm	G	Q <sub>max</sub> m <sup>3</sup> /h	Q <sub>min</sub> m <sup>3</sup> /h			V dm <sup>3</sup>	p <sub>max</sub> bar
			1 : 20	1 : 10	1 : 5		
25	10	16	0,8	1,6	3,2	0,2	20
25	16	25	1,3	2,5	5	0,2	20
25	25	40	2	4	8	0,2	20
32	10	16	0,8	1,6	3,2	0,2	20
32	16	25	1,3	2,5	5	0,2	20
32	25	40	2	4	8	0,2	20
40	10	16	0,8	1,6	3,2	0,2	20
40	16	25	1,3	2,5	5	0,2	20
40	25	40	2	4	8	0,2	20

Merkmale zur Bauart sowie ggf. inhaltliche Beschränkungen, Auflagen und Bedingungen sind in der Anlage festgelegt, die Bestandteil der EG-Bauartzulassung ist. Hinweise und eine Rechtsbehelfsbelehrung befinden sich auf der letzten Seite der Anlage.  
Characteristics of the instrument type approved, restrictions as to the contents, special conditions and approval conditions, if any, are set out in the Annex which forms an integral part of the EEC type-approval certificate. For notes and information on legal remedies, see last page of the Annex.





## RVG G10-G25 PTB approval under German law

**Physikalisch-Technische Bundesanstalt**  
Braunschweig und Berlin



**Innerstaatliche Bauartzulassung**  
*Type-approval certificate under German law*

Zulassungsinhaber:  
*Issued to:* Elster Produktion GmbH  
55252 Mainz-Kastel

Rechtsbezug:  
*In accordance with:* § 13 des Gesetzes über das Meß- und Eichwesen (Eichgesetz)  
vom 23. März 1992 (BGBl. I S. 711)

Bauart:  
*In respect of:* Drehkolbengaszähler

Zulassungszeichen:  
*Approval mark:* 7.131  
02.15

Gültig bis:  
*Valid until:* unbefristet

Anzahl der Seiten:  
*Number of pages:* 4

Geschäftszeichen:  
*Reference No.:* 1.33 - 01074522  
1.33-3271.3-ELS-N15

Im Auftrag  
*By order:*  
  
H. Krebs



Braunschweig, 11.01.2002

Siegel  
*Seal*

**Physikalisch-Technische Bundesanstalt**  
**Anlage zur innerstaatlichen Bauartzulassung**



*Annex to type-approval certificate under German law*

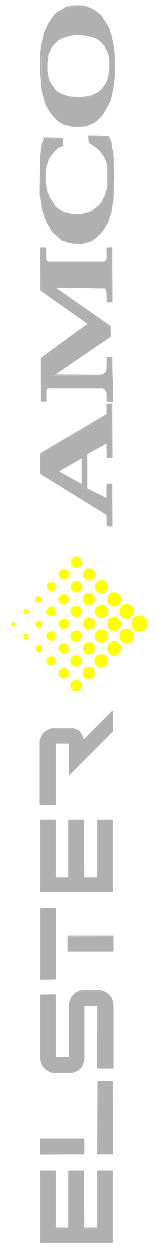
vom 11.01.2002, Zulassungszeichen:  
*dated 11.01.2002, Approval mark:*

7.131  
02.15

Seite 3 von 4 Seiten  
*Page 3 of 4 pages*

### 3. Technische Daten

DN mm	Größe G	Q <sub>max</sub> m <sup>3</sup> /h	Q <sub>min</sub> m <sup>3</sup> /h				V dm <sup>3</sup>	p <sub>max</sub> bar
			1: 80	1: 65	1: 50	1: 30		
25	10	16	-	-	-	0,5	0,2	20
25	16	25	-	-	0,5	0,8	0,2	20
25	25	40	0,5	0,6	0,8	1,3	0,2	20
32	10	16	-	-	-	0,5	0,2	20
32	16	25	-	-	0,5	0,8	0,2	20
32	25	40	0,5	0,6	0,8	1,3	0,2	20
40	10	16	-	-	-	0,5	0,2	20
40	16	25	-	-	0,5	0,8	0,2	20
40	25	40	0,5	0,6	0,8	1,3	2,2	20



Merkmale zur Bauart sowie ggf. inhaltliche Beschränkungen, Auflagen und Bedingungen sind in der Anlage festgelegt, die Bestandteil der innerstaatlichen Bauartzulassung ist. Hinweise und eine Rechtsbehelfsbelehrung befinden sich auf der letzten Seite der Anlage.  
*Characteristics of the instrument type approved, restrictions as to the contents, special conditions and approval conditions, if any, are set out in the Annex which forms an integral part of the type-approval certificate under German law. For notes and information on legal remedies, see last page of the Annex.*



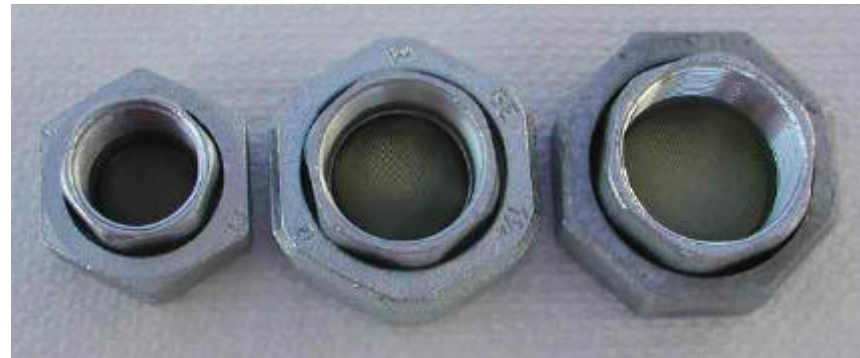
## RVG G10-G25 Meter without special connections



## RVG G10-G25 Thread connection 1½"

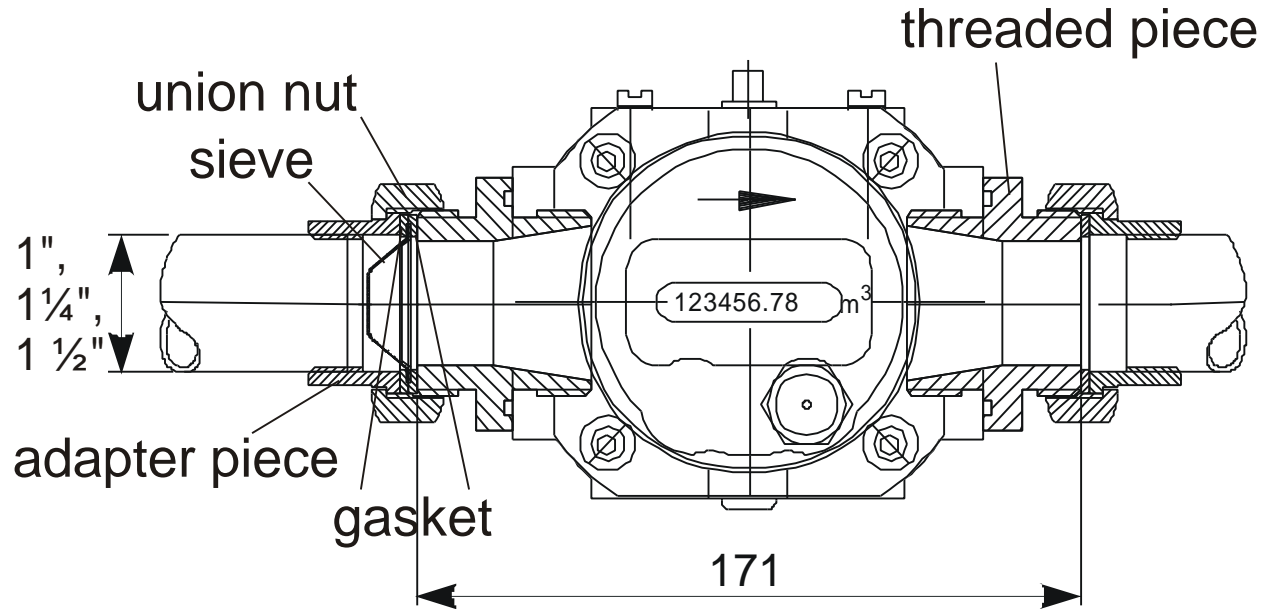


Thread piece and connection parts for 1" pipe



Connections for 1", 1 1/4" and 1 1/2" pipes with outside thread

**RVG G10-G25**  
**Thread connection**



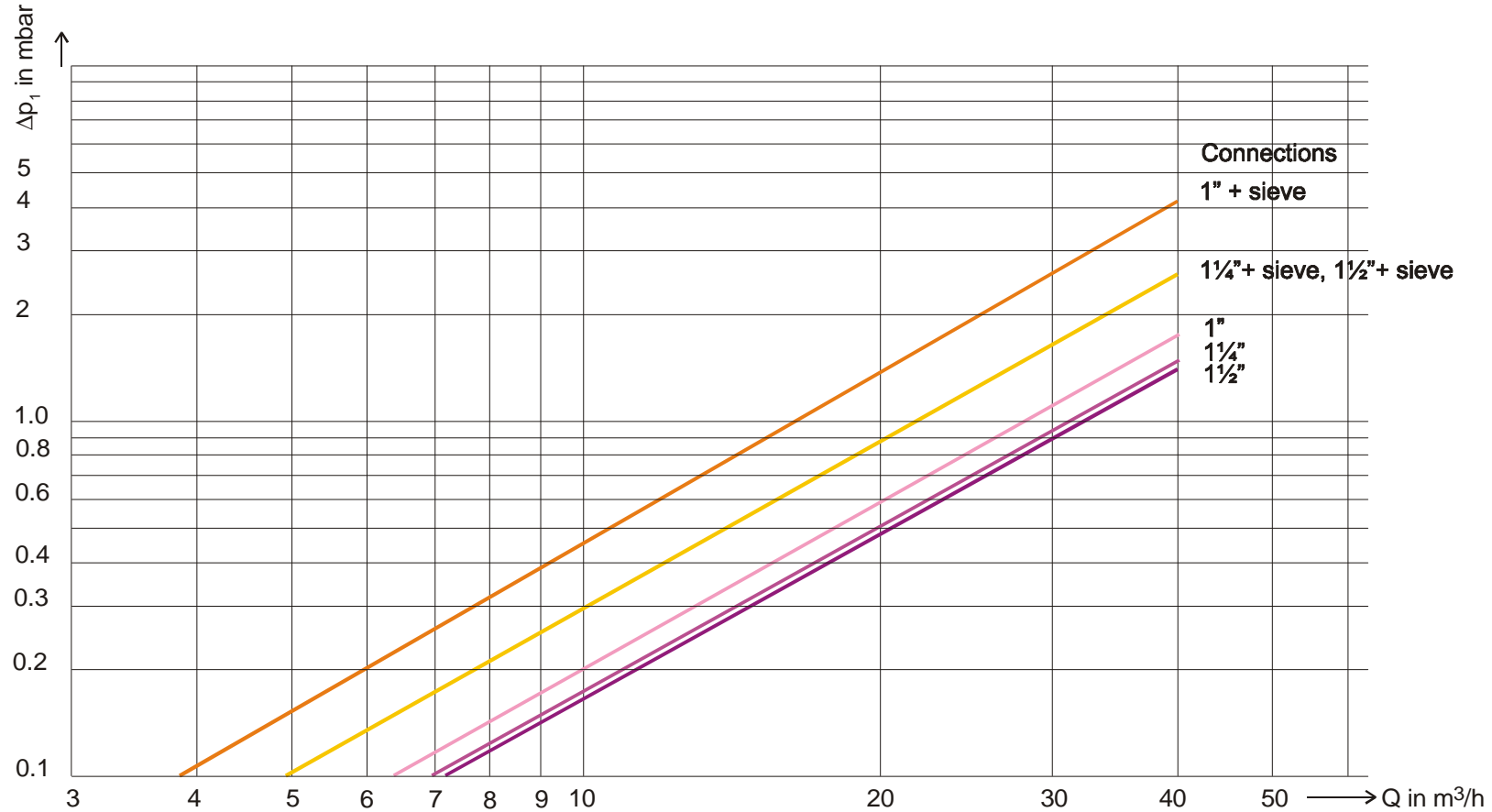
**Connection set for pipe with outside thread:**  
containing

- 3 x gasket**
- 1 x sieve**
- 2 x adapter piece**
- 2 x union nut**

**Standard delivery RVG G10-G25:**

- 2 x threaded piece** for 1" pipe with outside thread 1 1/2"  
or for 1 1/4" pipe with outside thread 2"  
or for 1 1/2" pipe with outside thread 2 1/4"
- and 2 x O-ring** 53 x 2.5

## RVG G10-G25 Pressure loss at atmospheric pressure

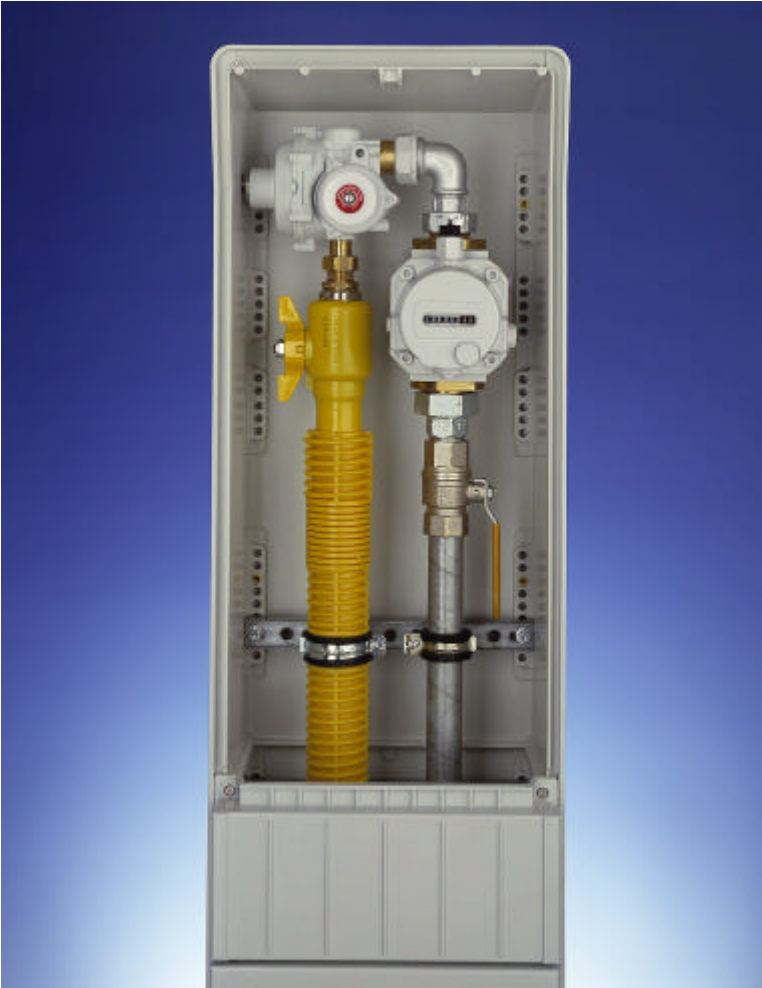


## RVG G10-G25 with EK210





## RVG G10-G25 with M2R







## RVG G10-G25 with MR25



## RVG with profipress G connections



## Quality in every Detail

Both Rotary Gas Meters and Turbine Gas Meters from ELSTER

