

HONEYWELL RABO[®]

Rotary Gas Meter

BRIEF INFORMATION

- MAOP 290 psig, ANSI Class 125/150 Flange
- Temperature range -40 F to +140 F
- Meets ANSI B109.3 and EN12480:2015
- Measurement Canada Approval AG-0628, CRN Registration OF19987. 5
- Approvals pursuant to MID/PED/ATEX directives
- For use on dry natural gas and noncorrosive industrial gases
- Suitable for Indoor or Outdoor installation



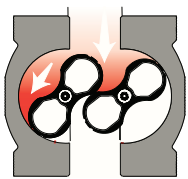
APPLICATIONS

Honeywell has combined tried and tested product features of the Elster and Instromet rotary meter product lines with new developments into a single product: the new Honeywell RABO Rotary Meter.

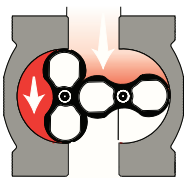
Rotary-All-By-One, "RABO," simple, all-in-one!

OPERATING PRINCIPLE

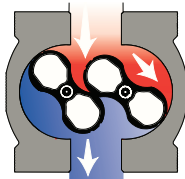
The Rotary Gas meter utilizes the rotary-type positive displacement principle of operation which makes volumetric measurements by displacing finite volumes of gas. The positive displacement occurs within a cavity formed between the meter's internal housing and its rotating impellers. The counter-rotating "figure-8" impellers turn as a result of pressure drop across the meter's inlet and outlet created as downstream gas is consumed. The rotating impellers separate the flowing gas into small, finite, volumes and are counted using a mechanical index.



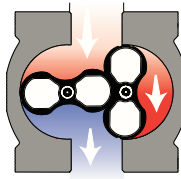
As the left impeller rotates toward the vertical position gas enters the cavity created between the impeller and the housing.



When the left impeller reaches the vertical position, a finite volume of gas is captured in the left cavity.



As the impellers continue to turn, the volume of gas in the left cavity is discharged. Simultaneously, gas is entering the space between the right impeller and housing.



After further rotation, the right impeller becomes vertical and a finite volume of gas is captured in the right cavity.

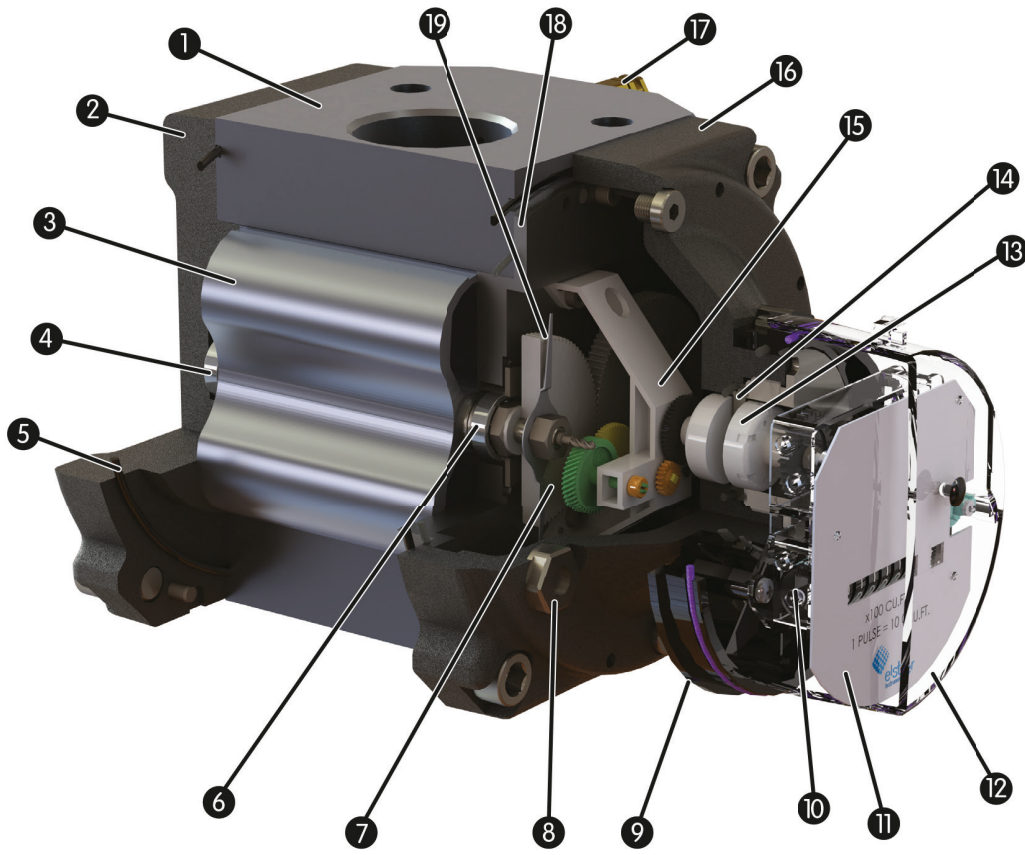
FEATURES & BENEFITS

- 5 meters sizes with capacities ranging from 3,500 up to 23,000 CFH.
- 2", 3", 4" and 6" ANSI Class 125/150 flanged connections
- High rangeability across the flow range
- Low pressure drop
- Differential pressure test ports are standard
- Two 1/4" NPT taps on inlet
- Non-lubricated and non-resettable index
- End view, rotatable index
- Heavy duty, compact design
- High impact-resistant, ultraviolet stabilized index cover
- Anodized extruded aluminum body and impellers
- Anodized forged aluminum case covers
- Permanently lubricated bearings

Options

- Pulse outputs
- Thermowell
- Index masking
- Gasket strainers
- Flange bolts and gaskets
- AMR mounting Bracket
- Differential pressure gauge kit
- Instrument Drive
- Corrector mounting bracket
- Direct mount TCI or EC350
- 1 1/2" NPT Mounting Kit

HONEYWELL RABO GAS METER CONSTRUCTION



METER CONSTRUCTION		
No.	Part Name	Material
1	Case	Extruded Aluminum, Hard-coat Anodized
2	Back Case Cover	Forged Aluminum, Hard-coat Anodized
3	Impellers	Extruded Aluminum, Hard-coat Anodized
4	Back Bearing	Stainless Steel, Permanently Lubricated, Shielded
5	O-Ring	Buna-N
6	Front Bearing	Stainless Steel, Lubricated, Shielded
7	Timing Gears	Carbon Steel
8	Sight Glasses	Aluminum Housing
9	Index Base	High Performance Polyamide (Nylon)
10	Index	Polycarbonate
11	Index Masking Plate	Aluminum
12	Index Cover	Polycarbonate, UV Resistant
13	Index Drive	Magnet
14	Pressure Plate	Stainless Steel
15	Gear Box	Polyoxymethylene
16	Front Case Cover	Forged Aluminum, Hard-coat Anodized
17	Pressure Test Ports	Brass Housing
18	Front Bearing Plate	Aluminum, Hard-coat Anodized
19	Oil Slinger	Steel
	Lubricating Oil	Shell Morlina

OPTIONS PULSE OUTPUTS

Honeywell Rotary Gas flow meters come equipped with a drive magnet as standard equipment for easy adaptability of a low frequency pulse generator. The standard E1 Pulse Type provides 1 pulse per revolution and the optional E10 Pulse Type provides 10 pulses per revolution. The pulse generators are attachable to the exterior of the index cover, and can be retrofitted or changed without opening the index. They also have sealing capability to visually detect tampering.

MODEL	DESCRIPTION
IN-S10	8' cable
IN-S10A	14" length cable for Itron AMR connection
IN-S11	1 connector
IN-S12	2 connectors
IN-S11P	Pulser cable for Dresser™ model 5 prover

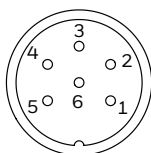
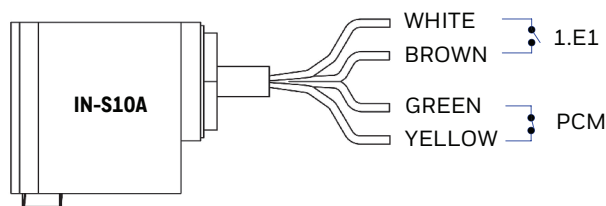
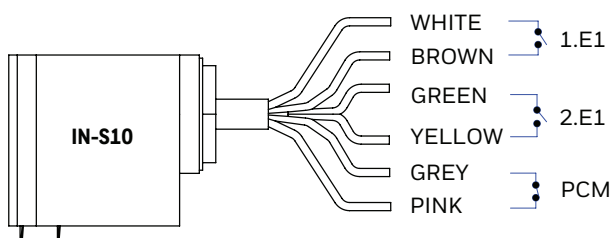
All models, except IN-S10A, include 2 independent switches and a tamper circuit. Pulse value is 10 acf (0.28 x am³) for all meter sizes. IN-S11 and IN-S12 come with mating connector, no cable included. The standard pulse value is 10 acf for 3.5M, 5.5M, 9M, and 14M. The standard pulse value is 100 acf for 23M.

TECHNICAL SPECIFICATIONS				
DESCRIPTION	Min	Typ.	Max.	Unit
Voltage (U)	1		24	V
Current (I)	2		25	mA
Power (P)			250	mW
Static Contact Resistance			200	mΩ
Insulation Resistance	10 ⁹			Ω
Breakdown Voltage	100		100	VDC
Switching Time Including Bounce		0.5		ms
Release Time		0.1		ms

Temperature range: -40°C ... +70°C

IP-Class: IP67

Explosion protection: Ex II 2 G EEx ia 2C T4



PULSER PIN-OUT CONNECTIONS			
CONNECTORS	1.E1	2.E1	PCM
IN-S11	1 + 2	5 + 6	3 + 4
IN-S12	1 + 2 (Back)	1 + 2 (Front)	3 + 4 (Front)



Pulse Output



IN-S10, IN-S10A, IN-S11, and IN-S12 pulse output connections



Pulser cable for transfer prover



Corrector Mounting Bracket



AMR Mounting Bracket

DIRECT MOUNT TCI OR EC350

The RABO meter can be shipped by the factory with either a Honeywell Mercury Instruments Temperature Compensation Index (TCI) or an Electronic Volume Corrector (EC350) directly mounted to it, with or without an Automated Meter Reading (AMR) device attached to it.

The TCI is an advanced, yet simple to use, electronic temperature compensating index. The TCI is the market leader throughout the US and Canada for electronic temperature compensation on integrally mounted rotary meter applications.

The RABO meter can be fitted with the EC350, which is Honeywell's latest Gas Volume Corrector platform that corrects for pressure, temperature and supercompressibility factors. The EC350 provides highly accurate and stable pressure measurement, long battery life, increased audit trail memory, and options for internal cellular communications.



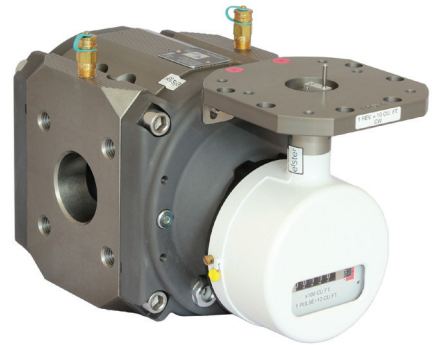
RABO with TCI



RABO with Direct-mount EC350 corrector

INSTRUMENT DRIVE

- Provides an output shaft to drive instruments
- Accepts known instruments via industry standard mounting plate
- CW shaft rotation
- 1:1 gear ratio
- Replaceable breakaway feature for drive dog
- <0.1% effect on accuracy at Q_{min}
- Able to retrofit in the field



RABO with Instrument Drive

THERMOWELL

316 SS, 0.25" Bore Model

MODEL

1/4" NPT with Gland



Thermowell

INDEX MASKING

MASK

4 X 1,000 CF

5 X 100 CF (Std)

5 X 1,000 CF

6 x 10 CF

6 x 100 CF

Blank



Index Masking Plate

OPTIONS

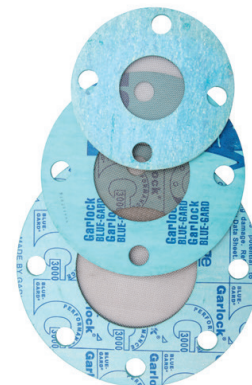
GASKETS, STRAINERS, BOLTS

Gaskets and bolts are necessary for mounting a meter in the gas line. Gaskets and strainers are high quality Garlock® BLUE-GARD® Style 3000, and Grade 5 bolts are Xylan® coated for increased corrosion resistance and reduced friction. Gasket strainers are an effective way to protect the meter and downstream equipment from weld slag and other debris in the gas system.

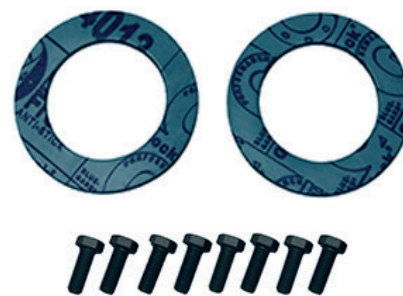
TECHNICAL SPECIFICATIONS

Gasket Strainer	2" ANSI 125/150	Full Face*	80
Gasket Strainer	3" ANSI 125/150	Full Face*	80
Gasket Strainer	4" ANSI 125/150	Full Face*	80
Gasket Strainer	6" ANSI 125/150	Full Face*	80
Gasket Strainer	2" ANSI 125/150	Ring	40
Gasket Strainer	3" ANSI 125/150	Ring	40
Gasket Strainer	4" ANSI 125/150	Ring	40
Gasket Strainer	6" ANSI 125/150	Ring	40
Gasket Strainer	2" ANSI 125/150	Ring	20
Gasket Strainer	3" ANSI 125/150	Ring	20
Gasket Strainer	4" ANSI 125/150	Ring	20
Gasket Strainer	6" ANSI 125/150	Ring	20
Gasket Strainer	2" ANSI 125/150	Full Face*	20
Gasket Strainer	3" ANSI 125/150	Full Face*	20
Gasket Strainer	4" ANSI 125/150	Full Face*	20
Gasket Strainer	6" ANSI 125/150	Full Face*	20
Gasket & Bolts	2" ANSI 125/150	Ring	N/A
Gasket & Bolts	3" ANSI 125/150	Ring	N/A
Gasket & Bolts	4" ANSI 125/150	Ring	N/A
Gasket & Bolts	6" ANSI 125/150	Ring	N/A

*Not rated for full MAOP of the meter.



Gasket Strainers



Gasket and Bolt Kits

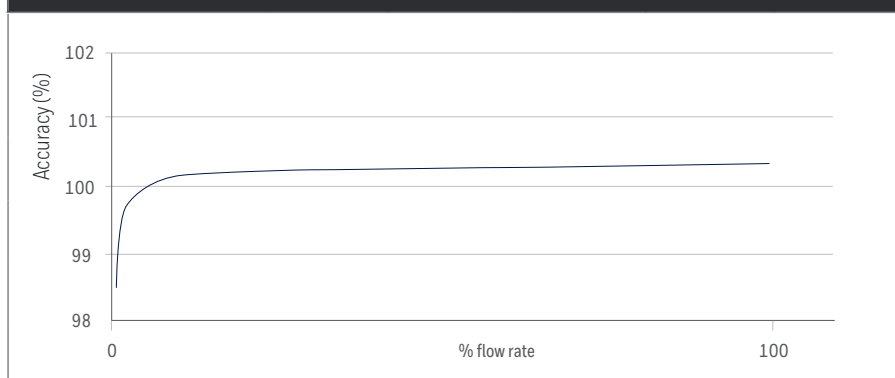
HONEYWELL RABO GAS METER PERFORMANCE

PERFORMANCE

	Units	3.5M/G65	5.5M/G100	9M/G160	14M/G250	23M/G400
Rangeability		90:1	160:1	160:1	160:1	160:1
Start Rate	acfh [am3/h]	1.3 [0.04]	0.9 [0.03]	2.5 [0.07]	2.5 [0.07]	3.6 [0.10]
Stop Rate	acfh [am3/h]	1.1 [0.03]	0.8 [0.02]	1.9 [0.05]	2.3 [0.07]	3.3 [0.09]
Flow Rate at 1/2" w.c. DP, Gas	acfh [am3/h]	2,715 [77]	4,074 [115]	5,722 [162]	6,740 [191]	7,400 [210]
Differential Pressure at 100% Flow Rate	in. w.c. [mBar]	1.46 [3.64]	1.23 [3.06]	1.70 [4.23]	2.65 [6.60]	3.9 [9.80]
Pulse outputs (English / metric)	acf / m ³	10 / 1.0	10 / 1.0	10 / 1.0	10 / 1.0	100 / 1.0

Note: Values are for air, except Flow rate at 1/2" w.c.DP, which are natural gas values.

ACCURACY CURVE



RABO SIZING CHART

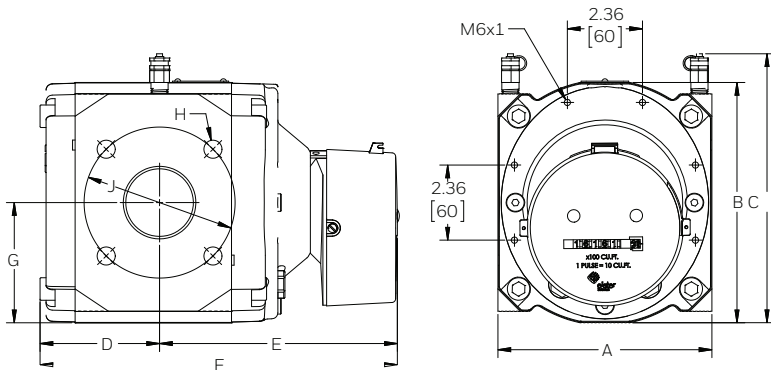
Using the chart below, select the appropriate meter by using the Maximum Instantaneous Flow Rate (scfh) and the Minimum Operating Pressure (psig) at any given point in time.

Example: A flow rate of 25,000 scfh and an operating pressure range of 75-100 psig would require a 5.5M meter based on a 75 psig minimum inlet pressure.

SIZING CHART											
Model		3.5M/G65		5.5M/G100		9M/G160		14M/G250		23M/G400	
psig	[Barg]	Corrected Capacity in scfh [sm ³ /h]									
0.25	[0.0]	3,500	[100]	5,500	[160]	9,000	[250]	14,000	[400]	23,000	[650]
2	[0.1]	3,900	[110]	6,100	[170]	10,000	[280]	15,600	[440]	25,300	[715]
5	[0.3]	4,600	[130]	7,200	[200]	11,900	[340]	18,400	[520]	30,400	[850]
10	[0.7]	5,800	[160]	9,100	[260]	14,900	[420]	23,200	[660]	38,100	[1,070]
20	[1.4]	8,200	[230]	12,800	[360]	21,000	[590]	32,700	[930]	53,700	[1,510]
30	[2.1]	10,500	[300]	16,600	[470]	27,100	[770]	42,200	[1,190]	69,300	[1,930]
40	[2.8]	12,900	[370]	20,300	[570]	33,200	[940]	51,700	[1,460]	84,800	[2,370]
50	[3.4]	15,300	[430]	24,000	[680]	39,300	[1,110]	61,200	[1,730]	100,400	[2,810]
60	[4.1]	17,700	[500]	27,800	[790]	45,500	[1,290]	70,700	[2,000]	116,300	[3,250]
75	[5.2]	21,200	[600]	33,400	[950]	54,600	[1,550]	85,000	[2,410]	139,500	[3,920]
100	[6.9]	27,200	[770]	42,700	[1,210]	69,900	[1,980]	108,700	[3,080]	178,600	[5,000]
150	[10.3]	39,100	[1,110]	61,400	[1,740]	100,400	[2,840]	156,300	[4,430]	256,700	[7,200]
175	[12.1]	45,000	[1,270]	70,700	[2,000]	115,700	[3,280]	180,000	[5,100]	296,700	[8,290]
250	[17.2]	62,800	[1,780]	98,700	[2,790]	161,500	[4,570]	251,300	[7,120]	412,700	[11,580]
290	[20.0]	72,300	[2,050]	113,700	[3,220]	186,000	[5,270]	289,300	[8,190]	475,300	[13,300]

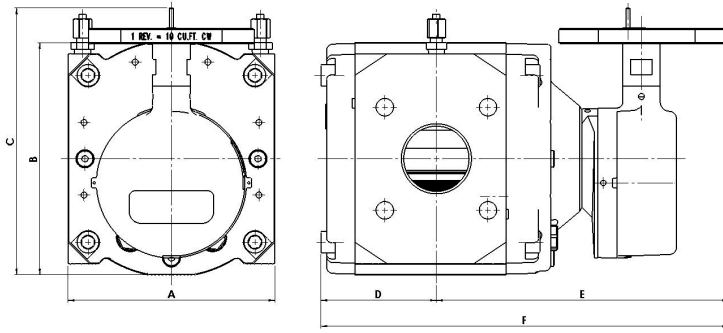
Note: All capacities are based on 14.4 psia atmospheric pressure, 14.73 psia base pressure, and 60° F base temperature.

RABO-STANDARD COUNTER: DIMENSIONS WEIGHTS



DIMENSIONS AND WEIGHTS												
Units		3.5M/G65		5.5M/G100		9M/G160		14M/G250		23M/G400		
A	in. [mm]	6.75	[171]	6.75	[171]	9.5	[241]	9.5	[241]	9.5	[241]	
B	in. [mm]	7.56	[192]	7.56	[192]	10.08	[256]	10.08	[256]	11.03	[280]	
C	in. [mm]	8.63	[219]	8.63	[219]	10.75	[273]	10.75	[273]	12.40	[315]	
D	in. [mm]	3.78	[96]	5.43	[138]	5.16	[131]	6.14	[156]	7.48	[190]	
E	in. [mm]	7.52	[191]	9.17	[233]	10.67	[271]	11.65	[296]	12.60	[320]	
F	in. [mm]	11.26	[286]	14.61	[371]	15.83	[402]	17.76	[451]	20.08	[510]	
G		3.78	[96]	3.78	[96]	5.04	[128]	5.04	[128]	5.51	[140]	
Nom. Pipe Size*	in. [mm]	2		3		3		4		4/6		
Bolt Size, H		5/8" - 11		5/8" - 11		5/8" - 11		5/8" - 11		5/8" - 11 / 3/4" - 10		
# Bolts / Flange		4		4		4		8		8		
Bolt Circle, J	in. [mm]	4.75	[121]	6	[152]	6	[152]	7.5	[191]	9.42	[240]	
Shipping Weight	lbs. [kg]	29.8	[14]	37.7	[17]	73.9	[34]	82.3	[37]	97.9	[44]	
Carton Size	in. [mm]	18.3L x 10.6W x 12.6H				23.6L x 13.0W x 13.4H				24.8L x 13.4W x 15.0H		
		465L x 270W x 320H				600L x 330W x 340H				630L x 340W x 380H		

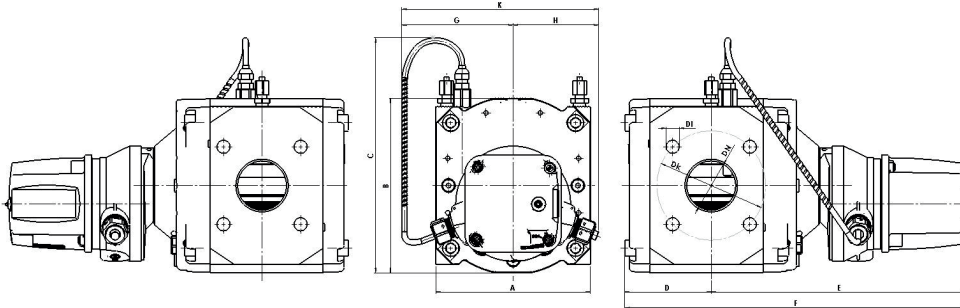
RABO-ID: DIMENSIONS WEIGHTS



DIMENSIONS AND WEIGHTS

	Units	3.5M/G65		5.5M/G100		9M/G160		14M/G250		23M/G400	
A	in. [mm]	6.75	[171]	6.75	[171]	9.5	[241]	9.5	[241]	9.5	[241]
B	in. [mm]	7.56	[192]	7.56	[192]	10.08	[256]	10.08	[256]	11.09	[280]
C	in. [mm]	8.78	[223]	8.78	[223]	11.30	[287]	11.30	[287]	12.95	[330]
D	in. [mm]	3.78	[96]	5.43	[138]	5.16	[131]	6.14	[156]	7.48	[190]
E	in. [mm]	9.53	[242]	11.23	[285]	12.72	[323]	13.67	[347]	14.62	[371]
F	in. [mm]	13.31	[338]	16.66	[423]	17.88	[454]	19.81	[503]	22.10	[561]
Shipping Weight	lbs. [kg]	32.3	[15]	40.2	[19]	76.4	[35]	84.8	[39]	100.4	[46]
Carton Size	[in.]	18.3L x 10.6W x 12.6H		18.3L x 10.6W x 12.6H		23.6L x 13.0W x 13.4H		23.6L x 13.0W x 13.4H		24.8L x 13.4W x 15.0H	
	[mm]	465L x 270W x 320H		465L x 270W x 320H		600L x 330W x 340H		600L x 330W x 340H		630L x 340W x 380H	

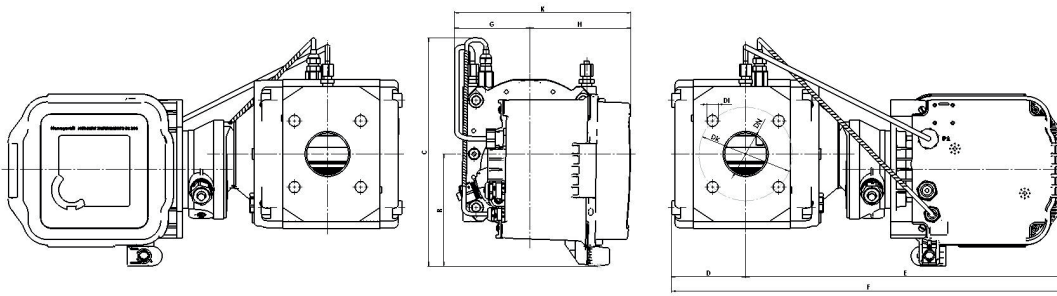
RABO-TCI: DIMENSIONS WEIGHTS



DIMENSIONS AND WEIGHTS

	Units	3.5M/G65		5.5M/G100		9M/G160		14M/G250		23M/G400	
A	in. [mm]	6.75	[171]	6.75	[171]	9.5	[241]	9.5	[241]	9.5	[241]
B	in. [mm]	7.56	[192]	7.56	[192]	10.08	[256]	10.08	[256]	11.03	[280]
C	in. [mm]	10.24	[260]	10.24	[260]	12.76	[324]	12.76	[324]	13.71	[348]
D	in. [mm]	3.78	[96]	5.43	[138]	5.16	[131]	6.14	[156]	7.48	[190]
E	in. [mm]	11.18	[284]	12.83	[326]	14.33	[364]	15.31	[389]	16.26	[413]
F	in. [mm]	14.96	[380]	18.27	[464]	19.49	[495]	21.46	[545]	23.74	[603]
G	in. [mm]	4.92	[125]	4.92	[125]	4.92	[125]	4.92	[125]	4.92	[125]
H	in. [mm]	3.74	[95]	3.74	[95]	3.74	[95]	3.74	[95]	3.74	[95]
K	in. [mm]	8.66	[220]	8.66	[220]	8.66	[220]	8.66	[220]	8.66	[220]
Shipping Weight	lbs. [kg]	32.8	[15]	40.7	[19]	76.9	[35]	85.3	[39]	100.9	[46]
Carton Size	[in.]	22L x 12W x 16H				28L x 16W x 19H					
	[mm]	559L x 305W x 153H				711 x 406 x 483H					

RABO-EC350 CORRECTOR: DIMENSIONS WEIGHTS



DIMENSIONS AND WEIGHTS

	Units	3.5M/G65		5.5M/G100		9M/G160		14M/G250		23M/G400	
C	in. [mm]	11.42	[290]	11.42	[290]	13.00	[330]	13.00	[330]	13.95	[354]
D	in. [mm]	3.78	[96]	5.43	[138]	5.16	[131]	6.14	[156]	7.48	[190]
E	in. [mm]	16.22	[412]	17.87	[454]	19.37	[492]	20.35	[517]	21.30	[541]
F	in. [mm]	20.00	[508]	23.31	[592]	24.53	[623]	26.50	[673]	28.78	[731]
G	in. [mm]	3.86	[98]	3.86	[98]	5.12	[130]	5.12	[130]	5.12	[130]
H	in. [mm]	5.12	[130]	5.12	[130]	5.12	[130]	5.12	[130]	5.12	[130]
K	in. [mm]	8.98	[228]	8.98	[228]	10.24	[260]	10.24	[260]	10.24	[260]
R	in. [mm]	5.71	[145]	5.71	[145]	5.71	[145]	5.71	[145]	5.71	[145]
Shipping Weight	lbs. [kg]	36.0	[17]	48.0	[22]	83.0	[38]	94.0	[43]	109.6	[50]
Carton Size	[in.]	22L x 12W x 16H				28L x 16W x 19H		30L x 16W x 19H			
	[mm]	559L x 305W x 153H				711 x 406 x 483H		762 x 406 x 483H			

ORDERING INFORMATION

Meter Model

Standard Counter
Instrument Drive
TCI - Direct Mount
EC350 - Direct Mount

Options

- Index Masking
- Custom Badge
- Thermowell
- Pulser
- Gasket Strainer
- Gasket and Bolt
- 1 1/2" NPT Mounting Kit *
- Measurement Canada Sealing
- Metric Index
- Mounting brackets for corrector or AMR device
- Pulser Type - E1 or E10

* Only available in certain applications

For more information

To learn more about Honeywell
Honeywell's Gas Solutions, visit
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Gas Metering and Regulation
or contact your Honeywell representative

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BR-20-03-ENG | 02/20
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ISO 9001
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THE
FUTURE
IS
WHAT
WE
MAKE IT

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