

Oval Gear Flowmeter

for Low and High Viscosity Liquids



measuring
•
monitoring
•
analyzing

DON



ATEX 



- Measuring Range: 0.13 ... 9.5 GPH to 40 ... 660 GPM
- Viscosity Range: up to 1000 cP (Higher upon Request)
- Accuracy: $\pm 0.2\% \dots 1\%$ of Reading
- Material: Aluminum or Stainless Steel
- p_{max} : 1450 PSI; t_{max} : 300 °F
- Pulse Output, LCD Display, 4...20 mA, Alarms, Mechanical Totalizer



KOBOLD companies worldwide:

Order from: **C A Briggs Company**

622 Mary Street; Suite 101; Warminster, PA 18974

Phone: 267-673-8117 - Fax: 267-673-8118

Sales@cabriggs.com - www.cabriggs.com



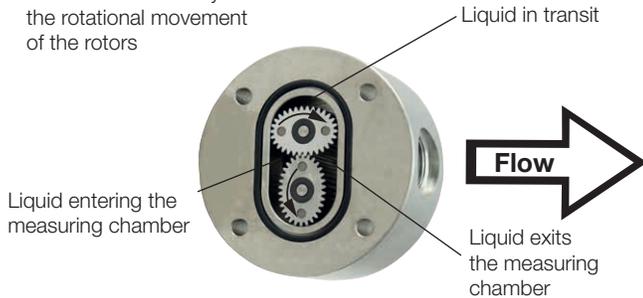
Oval Gear Flowmeter Model DON

Description

Oval gear flowmeters are categorized as positive displacement flow technology. When liquid flows through this type of positive displacement flowmeter, two oval geared rotors measure a constant volume per rotation within a precisely machined measuring chamber. With each rotation, a constant volume of liquid is measured. The rotation of the oval gears is sensed via magnets embedded within the rotors. These magnets transmit a high resolution pulse output. The output signal can be processed externally via a remote display controller or PLC or via a variety of output/display options available as accessories attached to the flowmeters.

Operation:

Liquid travels around the crescent shaped chambers created by the rotational movement of the rotors



The positive displacement flow technology allows for precise flow measurement of most clean liquids regardless of the media's conductivity. Other liquid properties also have a minimal effect on the performance of this type of meter. Flow profile conditioning is not required, as with alternative flow technology options, making oval gear installations simple to install in tight spaces and at a economical price.

Areas of Application

Suitable for viscous, non abrasive, clean liquids like:

- Petroleum
- Oil
- Chemicals
- Grease
- Fuels
- Ink
- Pastes

Aluminum body meters are compatible with fuels, fuel oils, & other lubricating liquids. In addition to lubricating media, stainless steel flowmeters are suitable for most products and chemicals.

Technical Data

Materials

DON-1

Body: Aluminum
Gears: PPS GF30/PTFE
Axles: 316L Stainless Steel

DON-2

Body
DON-x05 ... DON-x15: 316L Stainless Steel
 (DON-205 Body Cover is 316LN SS)
DON-x20 ... DON-x60: 316L/301* Stainless Steel

Gears

DON-x05 ... DON-x40: 316L Stainless Steel
DON-x45 ... DON-x60: 301* Stainless Steel

Bearing:

Carbon Graphite

Axles:

316L Stainless Steel

DON-8

Body

DON-x05 ... DON-x15: 316L Stainless Steel
 (DON-805 Body Cover is 316LN SS)

DON-x20 ... DON-x60: 316L/301* Stainless Steel

Gears:

PPS GF30/PTFE

Axles:

316L Stainless Steel

O-Rings

(Media Temperature Limits)

FKM:

-4 ... 300 °F

NBR:

-4 ... 212 °F

FEP-Clad EPDM:

5 ... 266 °F

Electrical Cover (for Cable Connection)

Standard:

Polyamide PA6 GF35 UL94 HB/VO

Optional:

316L Stainless Steel

Cable Entry:

M20 x 1.5 or 1/2" NPT Adapter

Screw Material

for Aluminum Housing:

Stainless Steel (Standard)
 Steel Coated with GEOMET® 321
 (for DON-225 and DON-825)

for Stainless Steel

Housing:

Stainless Steel (Standard)
 Steel Coated with GEOMET®321
 (optional) for Higher Pressure Rating
 (See Order Details)

Accuracy**

DON-x05...DON-x15:

± 1% of Reading

DON-x20...DON-x60

SS Rotors:

± 0.5% of Reading; ± 0.2% of Reading
 with Optional Z3/E3 Electronics with
 Linearization Function

PPS Rotors:

± 1% of Reading; ± 0.5% of Reading
 with Optional Z3/E3 Electronics with
 Linearization Function

Option M4:

± 1% of Reading

Additional Inaccuracy

for Analog Outputs:

± 0.15% of Full Scale

(Better Accuracies for Higher Viscosities Available upon Request)

Repeatability:

± 0.03 % Typical

Protection Class:

IP 66/67 (IP 65 for M4)

Media Temperature

Options ..Lx, ..Zx, ..M4:

-4 ... 176 °F

DON-1/DON-8 Max:

176 °F (PPS Rotors)

Pulse Out or Option ..Zx

with Cooling Fins:

-4 ... 250 °F

Option ..T0:

-4 ... 300 °F

Ambient Temperature

Option M4:

-4 ... 176 °F,
 32 ... 140 °F

Cable Entry:

M20 x 1.5 or 1/2" NPT Adapter

* Closest AISI Equivalent to 1.3955 Stainless Steel

** Reference Conditions: DON-x05...x20 (Mineral Oil, 10 cSt, 68 °F, 75 PSIG)
 DON-x25...x60 (Mineral Oil, 3 cSt, 68 °F, 14 PSIG)
 Accuracy data is valid for given viscosities and higher



ATEX-Approval

(Options E1/E2/E3/E4/E5): II 2G Ex ia IIC T4 Gb (-20 °C ≤ Ta ≤ +60 °C)

(Options HE, DE, BE, KE, GE, LE, RE):

II 2G Ex db IIC T4/T6 Gb
I M2 Ex db I Mb

IECEX-Approval

(Options E1/E2/E3/E4/E5): Ex ia IIC T4 Gb

(Options HE, DE, BE, KE,

GE, LE, RE): Ex db IIC, Ex db I Mb

Maximum Pressure (Threaded Models)

Model	Maximum Pressure (PSI)			
	DON-1	DON-2/8	DON-1 (Option-M4)	DON-2/8 (Option-M4)
DON-x05	925	1450	-	-
DON-x06			-	-
DON-x10			-	-
DON-x15			-	-
DON-x20	580	1000*	580	580
DON-x25		870*		
DON-x30		725		
DON-x35	580	725		435
DON-x40	230	230	230	230
DON-x45				
DON-x50				
DON-x55				
DON-x60				

With flanges: Maximum pressure rating as above or as per flange rating, whichever is lower.

* Max pressure of 1450 psi possible with steel screws (see order details)

Output Types

Reed Switch Pulse Output (..R0/RE)

The reed switch output is a two wire, normally open, SPST, voltage free contact ideal for installations without power or for use in hazardous area locations where Intrinsically Safe (I.S.) is required.

Note: when using the reed switch output, the liquid temperature must not change at a rate greater than 18 °F per minute.

Average switching life of reed contact (MTTF):

Max. Load (100 V / 10 mA) 5 x 10⁵ switching cycles

Min. Load (<5 V / 10 mA) 5 x 10⁸ switching cycles

Power supply: max. 30 V_{DC}, max. 200 mA

Hall Sensor Pulse Output (..H0/HE)

In the electronics options H0/HE, a Hall Effect sensor is combined with an active push-pull output. The signal output is actively switched either to +Vs or to ground. No additional external circuit is required (e.g. pull-up resistor). The "high" signal is approximately equal to the supply voltage +Vs and the "low" signal is approximately 0 V. The electronic utilizes a 3-wire connection with an external supply voltage of 8...30 V_{DC}. The electrical load may be optionally connected to the supply voltage or to GND. Maximum output current (current source or sink): 100 mA (short circuit protected). In addition to the Hall sensor, this option is equipped with a Reed switch which works the same as option R0/RE.

No responsibility taken for errors; subject to change without prior notice.

Hall Sensor Pulse Output (..HU)

Like option H0, except an NPN output in place of the push-pull output and a supply voltage of 5-30 V_{DC}.

Hall Sensor Pulse Output, (..B0/BE)

Like options H0/HE; however with bipolar sensors and alternating polarized magnets. This option is used for pulsating flow, but is not equipped with a Reed switch and has half the k-factor value as compared to H0/HE.

High-Resolution Hall Sensor Pulse Output, (..G0/GE, ..K0/KE)

Like options H0/HE; the models DON-x05 and DON-x10 can be supplied with four times the pulse count per volume unit and models DON-x05...x20 with double the amount of pulses (K0/KE) (see table «Output Pulse Resolution» on the following pages).

Quadrature Hall Effect Pulse Output (..D0/DE)

The DON with option D0/DE provides two independent Hall sensors. They are arranged to give separate outputs out of phase with one another.

The QUAD output is mostly suitable for detecting bidirectional flows (detection of flow direction) or where a redundant signal is desirable. Maximum output current per channel (current source or sink): 100 mA (short circuit protected).

Analog Output (..L0/LE)

The options L0 and LE (Ex) are available with a loop-powered 4-20 mA output. The loop must be powered with an external, 16...32 V_{DC} power supply. The maximum resistance of the series loads (PLC analog input/display electronics) depends on the magnitude of the supply voltage and can be calculated as follows:

$$\text{Max. load [Ohm]} = (+Vs - 9 V_{DC}) / 0.02 \text{ A } [\Omega]$$

$$\text{Example: } +Vs = 32 V_{DC} \Rightarrow \text{max. load} = 1150 \Omega$$

$$+Vs = 16 V_{DC} \Rightarrow \text{max. load} = 350 \Omega$$

The load can be inserted at any point in the current loop, observing correct polarity.

Mechanical Totalizer (..M4)

The DON-x20 .. through DON-x60 .. are available with a 4-digit resettable totalizer and indication of accumulated total value. The motion of the rotors is transmitted to the mechanical register totalizer via an interfacing reduction gear train and dynamic seal assembly. Option M4 is also optionally available in liters.

Body Material:	Enameled Die-cast Aluminum, Powder-coated
Protection:	IP 65
Ambient Temp:	32...140 °F
Media Temp:	-4...176 °F

Recommended Filtration Requirements:

DON-x05 ... DON-x15 < 75 µm (200 mesh)

DON-x20 ... DON-x35 < 150 µm (100 mesh)

DON-x40 ... DON-x60 < 350 µm (45 mesh)



Oval Gear Flowmeter Model DON

Electronic with LCD Display

Model	..Z1	..Z2	..Z3	..ZE	..ZB	..E1	..E2	..E3	..E4	..E5
Function	Dual Totalizer	Batching Unit	Rate/Totalizer			Dual Totalizer	Batching Unit	Rate/Totalizer	Rate/Totalizer	Rate/Totalizer
Power Supply										
External (also for Backlighting)	5 - 28 V _{DC}	12 - 28 V _{DC}	5 - 28 V _{DC}	9 - 28 V _{DC}	-	$U_i = 28 \text{ V}$ $I_i = 100 \text{ mA}$ $P_i = 0.7 \text{ W}$				
Battery-Operation (Outputs Inactive) ²⁾	yes	no	yes	yes	yes	yes	no	yes	no	no
Battery Included in Shipment ³⁾	yes	-	yes	no	yes	yes	-	yes	-	-
LCD Display										
Selectable Units	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Decimal Point	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Accumulative Total	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Resettable Total	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Linearization	yes	no	yes	yes	yes	yes	no	yes	yes	yes
Rate Display	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Backlighting	yes	yes	yes	yes	no	no	no	no	no	no
Input										
Sensors	Hall Sensor/Reed Switch					Reed Switch				
Outputs										
4-20 mA	no	no	yes	no	no	no	no	yes	yes (HART®)	yes
Flow Rate Alarm Min./Max.	no	no	NPN/PNP/ Push-Pull	no	no	no	no	no	no	with optocoupler
Batch End & Control	no	yes	no	no	no	no	yes	no	no	no
Pulse Output	no	no	Push-Pull	Push-Pull	no	no	no	no	no	with optocoupler
2 x SPDT Relays ¹⁾	no	yes	option	no	no	no	with optocoupler	no	no	
Installation										
IP 65	yes	yes	yes	IP 66/67	IP 66/67	yes	yes	yes	yes	yes
Cable Entries	M20x1.5 or 1/2" NPT									
Media Temperature Range (Cooling Fin Option: max. 250 °F)	-4...176 °F									
Ambient Temperature Range	-4...176 °F					32...140 °F				
Housing Material	PA6 GF35 UL94 HB/VO/PC UL94 V-2									
ATEX Approval	no					yes				

¹⁾ Replaces solid state outputs, for details see ZOK Datasheet

²⁾ Battery operation only acceptable with reed switch sensor "Rx"

³⁾ Options Z6, Z7, Z8, and Z9 are shipped without batteries

Order from: **C A Briggs Company**

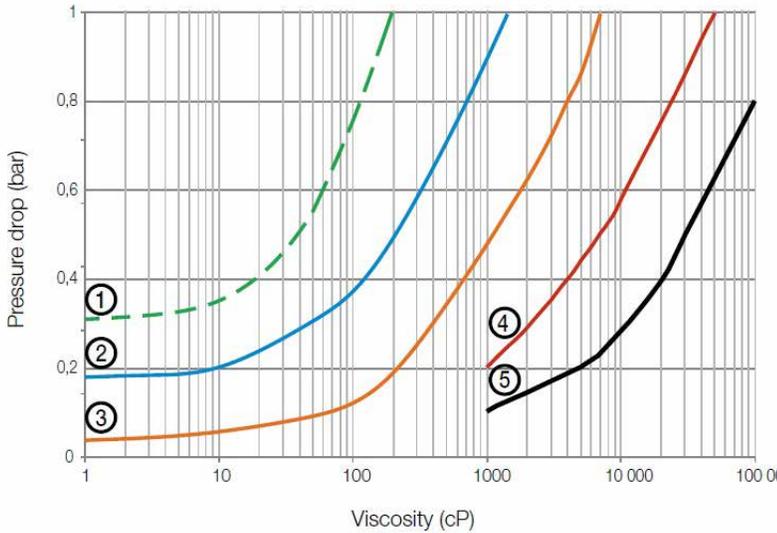
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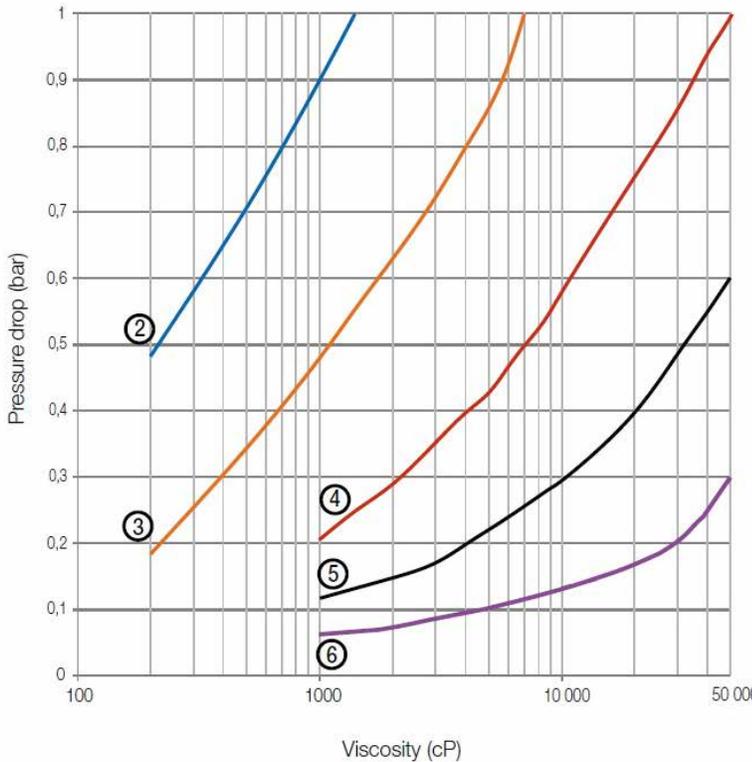
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DON Pressure Drop Versus Viscosity Curves



- ① Standard Rotors 100% of Full Scale
- ② Standard Rotors 50% of Full Scale
Special Cut Rotors 100% of Full Scale
- ③ Standard Rotors 25% of Full Scale
Special Cut Rotors 50% of Full Scale
- ④ Special Rotors 25% of Full Scale
- ⑤ Special Rotors 10% of Full Scale



- ② Standard Rotors 50% of Full Scale
Special Cut Rotors 100% of Full Scale
- ③ Standard Rotors 25% of Full Scale
Special Cut Rotors 50% of Full Scale
- ④ Special Cut Rotors 25% of Full Scale
- ⑤ Special Cut Rotors 10% of Full Scale
- ⑥ Special Cut Rotors 5% of Full Scale

Pressure Drop Limit Versus Flowrate

The curves above represent the pressure drop for standard cut oval rotors. Special cut rotors, option "Y" have alternate tooth relief which effectively reduces the pressure drop by 50%. When sizing a meter, be sure your selection falls below the 1 bar (14.5 PSI) maximum allowable pressure drop line on the graph.



Maximum Flowrate Multiplier (for Higher Viscosities)

Viscosity (cPs)	Standard Rotor	Special Cut Rotor
≤ 1,000	1	1
≤ 2,000	0.5	1
≤ 4,000	0.42	0.84
≤ 6,000	0.33	0.66
≤ 8,000	0.25	0.5
≤ 30,000	0.15	0.3
≤ 60,000	0.12	0.25
≤ 150,000	0.1	0.2
≤ 250,000	0.05	0.1
≤ 1,000,000	0.025	0.05

Special Cut Rotors for Higher Viscosities

For viscosities > 1000 cP, special cut rotors (option: "Y") are normally required to keep the maximum pressure drop from exceeding acceptable levels. This option applies to DON-x15 and larger sizes. For higher viscosities, the flowmeter max. flowrate is derated according to the table above.

Example:

DON-x25G measuring viscous oil at 8000 cP:

max. flow of 40 GPM x 0.5 = 20.0 GPM new max. flow rate.

Noise Level (in dB) at Full Scale

Size	PPS Gears	SS Gears
x25	83	91
x30	84	93.1
x35	83.5	95
x40	85.4	96
x45	87.5	98
x50	86.1	99.4
x55	86.1	98.1
x60	85	99

Information Required for Order:

To ensure proper operation, this product requires a completed application guide form to be submitted with any order. Please refer to the 'documentation' tab on the bottom of the product page for this product on our website in order to obtain the correct form. You can also contact your KOBOLD representative for this form.

Nominal Output Pulse Resolution*

Model	Flow Range (GPM)	Pulse per Gallon					
		Reed Switch Rx	Hall Sensor Hx	Hall Sensor Bx	Quadrature-Hall Sensor Dx	Hall Sensor, High-Resolution Gx	Hall Sensor, High-Resolution Kx
DON-x05	0.13...9.5 GPH	10107	10107	---	10107	42851	20214
DON-x06	0.5...9.5 GPH	10107	10107	---	-	-	-
DON-x10	0.5...27 GPH	4020	4020	---	4020	16080	8040
DON-x15	4...145 GPH	1329	2657	1329	2657	---	5315
DON-x20	0.26...10.6	310	617	310	617	---	---
DON-x25	2.6...40	98	394	98	197	---	---
DON-x30	4.0...66	51	208	51	102	---	---
DON-x35	8.0...120	24.2	96.5	24.2	51.1	---	---
DON-x40	13...150	18.5	74.2	18.5	37.1	---	---
DON-x45	10...200	9.7	39.0	9.7	19.5	---	---
DON-x50	13...260	5.7	22.3	5.7	11.4	---	---
DON-x55	20...400	3.97	15.9	3.97	7.95	---	---
DON-x60	40...660	2.12	8.71	2.12	4.35	---	---

*The output resolution values listed in the above table are only approximate values. The exact output resolution value is noted within the calibration certificate delivered with each flowmeter.

Oval Gear Flowmeter Model DON



Order Details (Example: DON-105G N1 1 L0 N 0)

Measuring Range	Housing/Rotor Material ⁴⁾			Connection	O-ring Material	Electronic/ Display	Cable Entry	Option
	Aluminum with PPS Rotor	Stainless Steel	Stainless Steel with PPS Rotor					
0.13...9.5 GPH	DON-105G..	-	-	..N1.. = 1/8" NPT ..R1.. = G 1/8	..1.. = FKM ..3.. = FEP Coated EPDM ..4.. = NBR	..R0.. = Reed Switch Pulse Output ..RE.. = Reed Switch Pulse Output ATEX (Exd) ..H0.. = Hall Sensor (Push-Pull) / Reed Switch Pulse Output ..HE.. = as H0 + ATEX ..HU.. = NPN Pulse Output (Hall/Reed), 5-30 V _{oc} ..B0 ⁹⁾ .. = For Pulsating Flow ..BE ⁹⁾ .. = B0 + ATEX (Exd) ..K0 ⁹⁾ .. = High Resolution Hall Sensor (x2)(Push-Pull) ..KE ⁹⁾ .. = as K0 + ATEX (Exd) ..G0 ²⁾ .. = High Resolution Hall Sensor (x4)(Push-Pull) ..GE ²⁾ .. = as G0 + ATEX (Exd) ..DO ¹¹⁾ .. = Quad. Hall Sensor 2 Phased Outputs (Push-Pull) ..DE ¹¹⁾ .. = as D0 + ATEX (Exd) ..L0.. = 4...20 mA Loop Powered Analog Output ..LE.. = as L0 + ATEX (Exd) ..T0 ⁹⁾ .. = Hall Sensor (Push-Pull) / High-Temp 300 °F Max. ..Z1.. = Dual LCD Totalizer (ZOK-Z1) ..Z2.. = Batching Unit LCD (ZOK-Z2) ..Z3.. = LCD Totalizer, Rate, Outputs: 4-20 mA, Alarm, Pulse (ZOK-Z3) (Impulses not for Battery Supply) ..Z6.. = Z1 + B0 ..Z7.. = Z3 + B0 ..Z8.. = Z1 + D0 ..Z9.. = Z3 + D0 ..ZE.. = LCD Rate/Total (ZOE with External Supply / with Battery) ..ZB ⁹⁾ .. = LCD Rate/Total (ZOE Without External Supply / with Battery) ..E1 ⁹⁾ .. = as Z1 + ATEX/IECEx (Exi) ..E2 ⁹⁾ .. = as Z2 + ATEX/IECEx (Exi) ..E3 ⁹⁾ .. = as Z3 + ATEX/IECEx (Exi) (Without Switching or Pulse Outputs) ..E4 ⁹⁾ .. = E3 + HART [®] ..E5 ⁹⁾ .. = E3 + Pulse or Switching Outputs with 4-20 mA ..M4 ⁹⁾ .. = Mechanical Totalizer, 4-Digit	..M.. = M20 ..N.. = 1/2" NPT ..S7.. = M20 with Cooling Fin ..T7.. = 1/2" NPT with Cooling Fin ..0.. = Without	..0 = Without ..Y ¹²⁾ = Special Request
0.5...9.5 GPH	-	DON-206G..	DON-806G..	..N1.. = 1/8" NPT ..R1.. = G 1/8				
0.5...27 GPH	DON-110G..	DON-210G..	DON-810G..	..N2.. = 1/4" NPT ..R2.. = G 1/4				
4...145 GPH	DON-115G..	DON-215G..	DON-815G..	..N3.. = 3/8" NPT ..R3.. = G 3/8				
0.26...10.6 GPM	DON-120G..	DON-220G..	DON-820G..	..N4.. = 1/2" NPT ..R4.. = G 1/2 ..P4 ⁵⁾ .. = 1/2" NPT (1450 psi) ..H4 ⁵⁾ .. = G 1/2 (1450 psi)				
2.6...40 GPM	DON-125G..	DON-225G..	DON-825G..	..N6.. = 1" NPT ..R6.. = G 1 ..A6.. = 1" 150 lb ANSI Flange ..B6.. = 1" 300 lb ANSI Flange ..F6.. = DN25 PN40 DIN Flange ..P6 ⁵⁾ .. = 1" NPT (1450 psi) ..H6 ⁵⁾ .. = G 1 (1450 psi)				
4.0...66 GPM	DON-130G..	DON-230G..	DON-830G..	..N8.. = 1 1/2" NPT ..R8.. = G 1 1/2 ..A8.. = 1 1/2" 150 lb ANSI Flange ..B8.. = 1 1/2" 300 lb ANSI Flange ..F8.. = DN40 PN40 DIN Flange				
8.0...120 GPM	DON-135G..	DON-235G..	DON-835G..	..N9.. = 2" NPT ..R9.. = G 2 ..A9.. = 2" 150 lb ANSI Flange ..B9 ¹⁾ .. = 2" 300 lb ANSI Flange				
13...150 GPM	DON-140G..	DON-240G..	DON-840G..	..F9.. = DN50 PN16 DIN Flange ..C9.. = DN50 PN40 DIN Flange				
10...200 GPM	DON-145G..	DON-245G..	DON-845G..	..NB.. = 3" NPT ..RB.. = G 3 ..AB.. = 3" 150 lb ANSI Flange				
13...260 GPM	DON-150G..	DON-250G..	DON-850G..	..FB.. = DN80 PN16 DIN Flange				
20...400 GPM	DON-155G..	DON-255G..	DON-855G..	..NC.. = 4" NPT ..RC.. = G 4 ..AC.. = 4" 150 lb ANSI Flange				
40...660 GPM ¹⁰⁾	DON-160G..	DON-260G..	DON-860G..	..FC.. = DN100 PN16 DIN Flange				

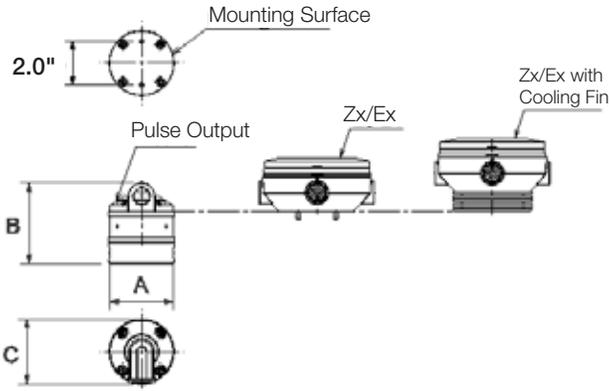
¹⁾ Only for DON-x35; ²⁾ Only for DON-x05 and DON-x10; ³⁾ Without Backlighting; ⁴⁾ Replace 'G' with 'H' to Order LPM (LPH); ⁵⁾ With Steel Screws, Only for DON-2... and DON-8...; ⁶⁾ Only for DON-x20...DON-x60; see M4 Option Description for Details on Minimum Incremental Volume Unit per Model Number; Please Specify Flow Direction when Ordering, (Possible Flow Directions: Bottom to Top, Left to Right, or Right to Left); ⁷⁾ Only for Electronic Options -Zx/-Ex, not for DON-1... and DON-8...; ⁸⁾ Only for DON-2; ⁹⁾ Only for DON-x05, -x10, -x15 Without Reed Switch; ¹⁰⁾ Calibrated up to 500 GPM. Higher Flow Rate Calibration on Request; ¹¹⁾ Not for DON-x06; ¹²⁾ Specify in Writing which Option(s) to Add. Special Cut Rotors for Higher Viscosities: Not for DON-x05...DON-x10, Check Valve: From DON-x30..., and any other Non-Standard Request



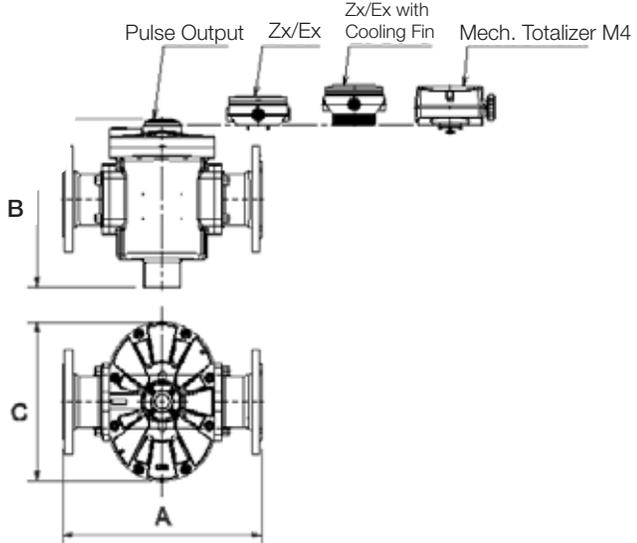
Oval Gear Flowmeter Model DON

Dimensions DON-1(2/8)...

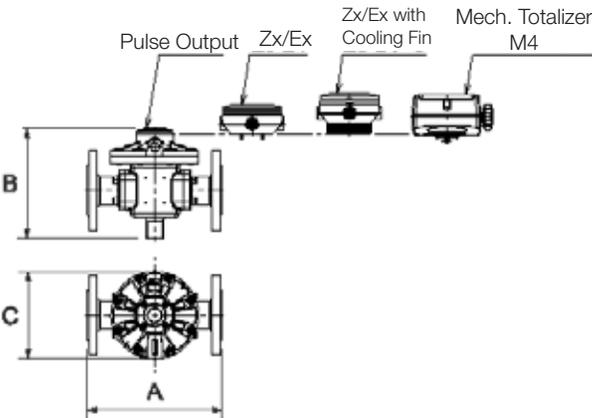
DON-x05...DON-x15



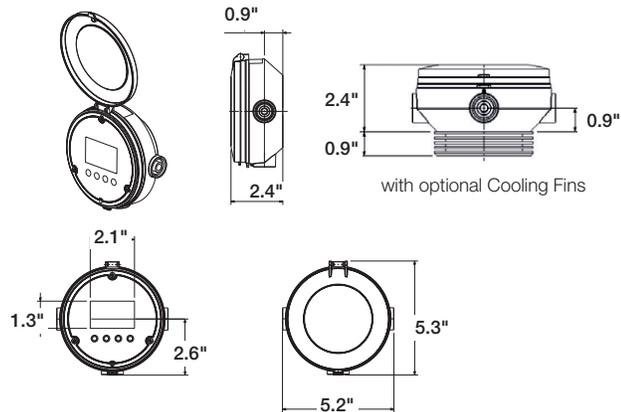
DON-x45...DON-x60



DON-x20...DON-x40



Electronic with LCD Display Zx/Ex



Dimensions* DON-1(2/8).... (± 0.08")

Model	A		B			C		
	Thread Connection	Flange Connection	Pulse Output	Zx/Ex	Mechanical Totalizer M4	Pulse Output/Lx	Zx/Ex	Mechanical Totalizer M4
DON-x05	2.67"	-	3.62"	5.16"	-	2.83"	5.28"	-
DON-x06	(2.67")	-	(3.62")	(5.16")	-	(2.83")	(5.28")	-
DON-x10	2.67"	-	3.62"	5.16"	-	2.83"	5.28"	-
DON-x15	2.67"	-	3.89"	5.43"	-	2.83"	5.28"	-
DON-x20	4.33"	-	4.13" (3.98")	5.28" (5.12")	7.17" (7.01")	4.41"	5.28"	6.50"
DON-x25	6.93"	9.33"	5.36"	6.50"	7.64"	4.72"	5.28"	6.69"
DON-x30	7.40"	9.92"	6.54"	7.68"	8.78"	6.42"	6.42"	7.88"
DON-x35	8.34"	10.90"	6.77"	7.92"	9.61"	7.09"	7.09"	7.88"
DON-x40	8.34"	10.90"	9.69"	10.83"	11.77"	7.09"	7.09"	7.88"
DON-x45	10.50"	13.90"	9.13"	10.28"	11.18"	9.37"	9.37"	9.41"
DON-x50	11.60"	15.00"	9.02"	10.16"	11.89"	11.41"	11.41"	11.41"
DON-x55	11.60"	15.30"	10.80"	11.93"	13.66"	11.41"	11.41"	11.41"
DON-x60	12.60"	16.30"	13.80"	14.96"	16.70"	13.03"	13.03"	13.03"

*Dimensions for DON-2/8... are specified in () only when they are different from DON-1...

Order from: **C A Briggs Company**

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No responsibility taken for errors; subject to change without prior notice.