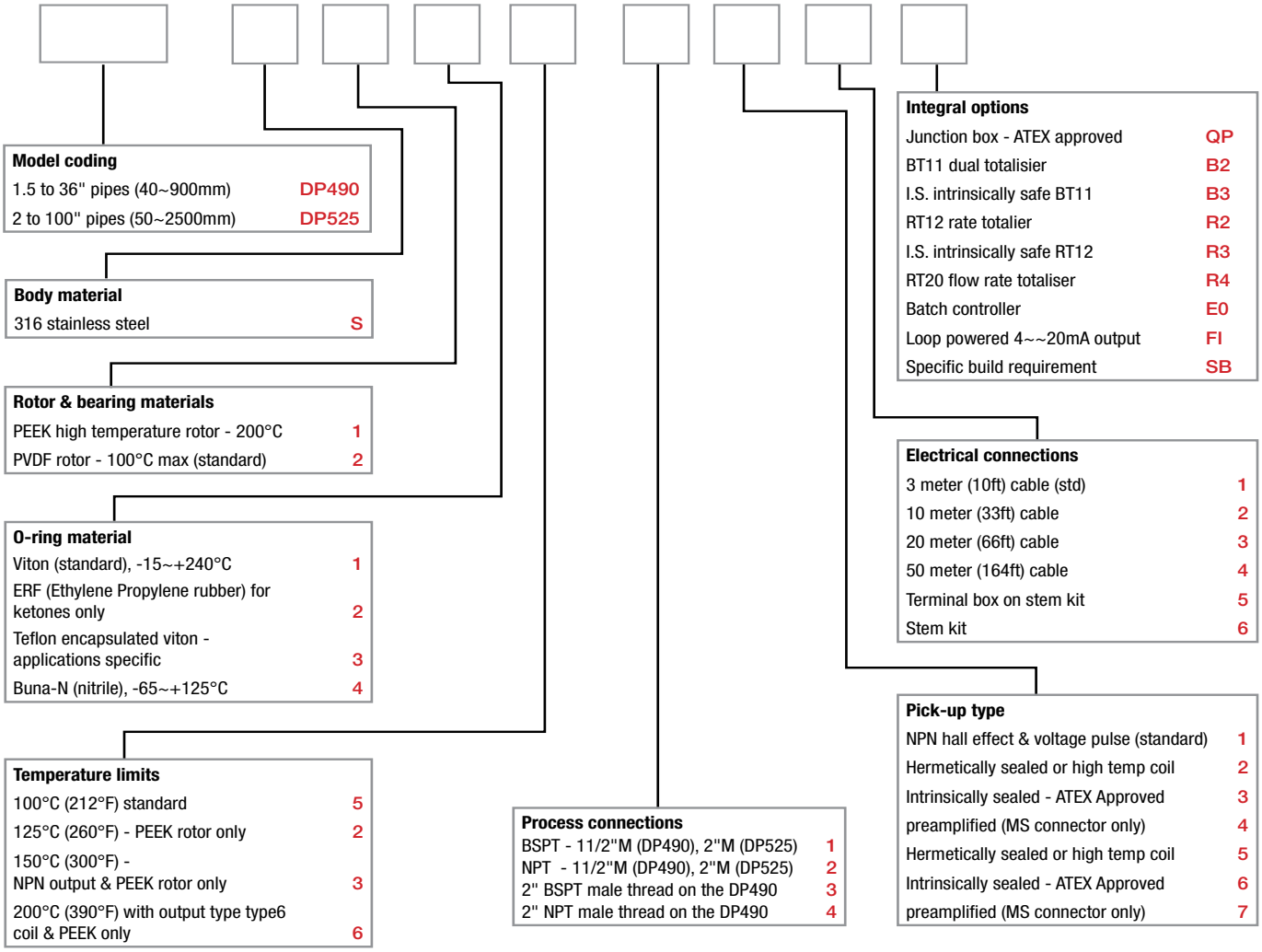
# Pelton Wheel Flowmeters

## DP series Insertion Pelton wheel flowmeters

### Options & Ordering Information




Abu Dhabi, UAE, Tel: +971 2 6796902, Fax: +971 2 6796903
Website: www.petroces.com, Email: info@petroces.com

# Axial Turbine Flowmeters

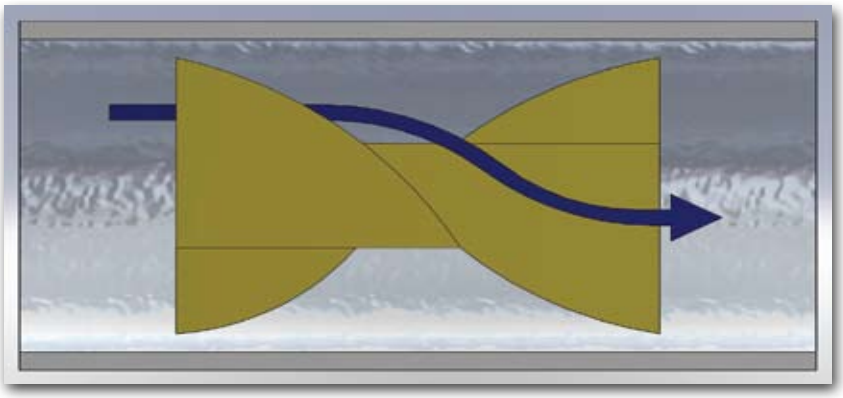
## Axial turbine flowmeters - principle of operation

**Principle of operation**

Axial turbines can be likened and tend to look like marine propellers housed in a tube which is the flowmeters body. Instead of being driven, they rotate freely with the flow of fluid as it passes over them. Helix turbines and fan type blades are also commonly used.

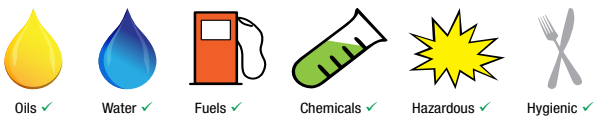
They tend to operate best at relatively high rotational speeds and on low viscosity media, although they demonstrate a degree of viscosity independence when used at the higher end of their flow range. If the turbine is made from a magnetic material then their high rotational speed can be harnessed to generate an output signal via an inductive pick-up without the need for an external power source. Optical and Hall effect pick-ups also used in some designs.

With a non-contacting pick-up and a simple cylindrical body axial turbines can easily be designed to take very high pressures in the thousands of Bar. Their design tends to preclude going down to very low flow rates but theoretically there is no limit to how big they can get.



Principle of Axial Turbine flow movement

**Media application guide**



# Axial Turbine Flowmeters

## TM, 01A & 01N series low cost turbine flowmeters

### TM series LCD turbine flow meters

TM meters are an excellent low cost turbine in PVC for water applications. Sizes up to 4” and flow rates up to 760L/min. LCD readout with flow rate, accumulated total and batch totals. Permanent field calibration feature. Accuracy is ±3%.

TM series with NPT thread adaptors

TM 3 or 4" series with ANSI 150lb flange

TM series with SOC80 pipe fitting

- Economically priced
- Easy to install
- Lithium Battery life of 5 years
- Display of flow rate & 2 totals

### Options & Ordering Information

| Part number | NPT threaded | ANSI 150lb flanged | Size | Flow rate l/min | Pressure bar (at 23°C) |
|---|---|---|---|---|---|
| TM050 | -N | | 1/2" | 3.8 - 38 | 10.2 |
| TM075 | -N | | 3/4" | 7.6 - 76 | 10.2 |
| TM100 | -N | | 1" | 19 -190 | 10.2 |
| TM150 | -N | | 1.1/2" | 38 -380 | 10.2 |
| TM200 | -N | | 2" | 76 -760 | 10.2 |
| TM300 | -N | -F | 3" | 151-1514 | 10.2 |
| TM400 | -N | -F | 4" | 227-2271 | 10.2 |

Further dimensional information on request

### 01A & 01N series LCD turbine flowmeters

01A and 01N meters are super low cost turbines in aluminium and nylon for fuel and water applications. Flow rates up to 100L/min. LCD readout with accumulated total and batch totals make these meters excellent value. Accuracy is ±5%.


01A series


01N series

- Economically priced
- Aluminium and Nylon designs
- Easy to replace AAA batteries (x2)
- Accumulative and Batch totals

### Options & Ordering Information

| Part number | Size | Flow rate l/min | Pressure bar | Length mm | Height mm | Width mm |
|---|---|---|---|---|---|---|
| 01A31GM | 1" NPT | 3 - 30 GPM | 21 | 102 | 51 | 63 |
| 01A31LM | 1" NPT | 10 - 100 LPM | 21 | 102 | 51 | 63 |
| 01A12LM | 1" BSPT | 10 - 100 LPM | 21 | 102 | 51 | 63 |
| 01A52LM | 1" BSPP | 10 - 100 LPM | 21 | 102 | 51 | 63 |
| 01N31GM | 1" NPT | 3 - 30 GPM | 10.2 | 102 | 51 | 63 |
| 01N31LM | 1" NPT | 10 - 100 LPM | 10.2 | 102 | 51 | 63 |
| 01N12LM | 1" BSPT | 10 - 100 LPM | 10.2 | 102 | 51 | 63 |

Dimensions are for reference only and may vary by model.

Abu Dhabi, UAE, Tel: +971 2 6796902, Fax: +971 2 6796903
Website: www.petroces.com, Email: info@petroces.com

# Axial Turbine Flowmeters

## A1 commercial grade LCD turbine flowmeters

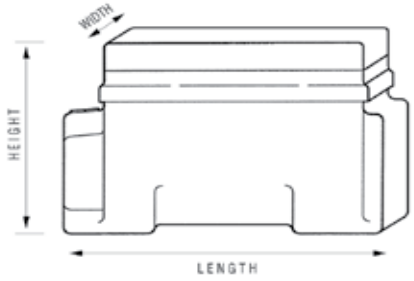
A1 commercial grade meters are low cost turbines in aluminium and nylon for fuel and water applications. Flow rates up to 1135L/min. LCD readout with flow rate, accumulated total and batch totals and permanent field calibration feature make these meters excellent value. Accuracy is ±1.5%.

A1 series Aluminium

A1 series Nylon

- Economically priced
- Aluminium and Nylon designs
- Battery powered
- Display of flow rate & 2x totalizers

### Dimensional Information




| Model | Flow rate l/min | Pressure bar | Length mm | Height mm | Width mm |
|---|---|---|---|---|---|
| A025 | 11 | 21 | 102 | 63 | 51 |
| A100 | 11 - 190 | 21 | 102 | 63 | 51 |
| A200 | 114 - 1135 | 21 | 152 | 114 | 76 |
| N025 | 11 | 10.2 | 102 | 63 | 51 |
| N100 | 11 - 190 | 10.2 | 102 | 63 | 51 |

Dimensions are for reference only and may vary by model.

### Options & Ordering Information

**Product identifier**
Commercial grade electronic digital meter — A1

**Electronic choice**
Two totals (one resettable, one cumulative), factory calibration in gallons and litres, two user calibrations and flowrate — 09

**Calibration**
Gallons / minute (NPT only) — GM
Litres / minute (ISO only) — LM

**Turbine material and size**
Aluminium – Low flow 1" — A025
Aluminium – 1" — A100
Aluminium – 2" — A200
Nylon – Low flow 1" — N025
Nylon – 1" — N100

**Packaging**
Standard low flow – 1" — A1
Standard – 2" — A2
Low Flow – 1" turbine only — B1
2" turbine only — B2

**Fitting type**
NPT (Female) — N
BSPT (Female) — I
BSPP (Female) - available on A025 and A100 turbines only — B

Abu Dhabi, UAE, Tel: +971 2 6796902, Fax: +971 2 6796903
Website: www.petroces.com, Email: info@petroces.com

# Axial Turbine Flowmeters

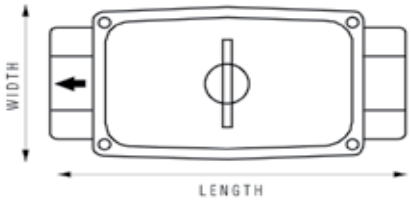
## G2 series industrial LCD turbine flowmeters

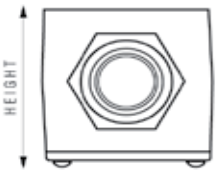
G2 series industrial turbines are a cost effective range of turbines available in a wide range of materials and connection types. Flows from 4 to 760 l/min and a wide fluid compatibility offering make these the perfect choice for any industrial flow metering requirement. Accuracies range from +/-0.75% on larger models to +/-1.5% on smaller models.


**G2 in Stainless Steel** - model S
**G2 in High pressure Stainless Steel** - model H
**G2 in Aluminium** - model A
**G2 in Brass** - model B

**G2 in PVC** - model C
**G2 in PVDF -** model P

**G2 in Stainless Steel ANSI flanged** - model ST
**G2 in Stainless Steel with hygienic Tri-Clover connections -** model ST




### Dimensional Information

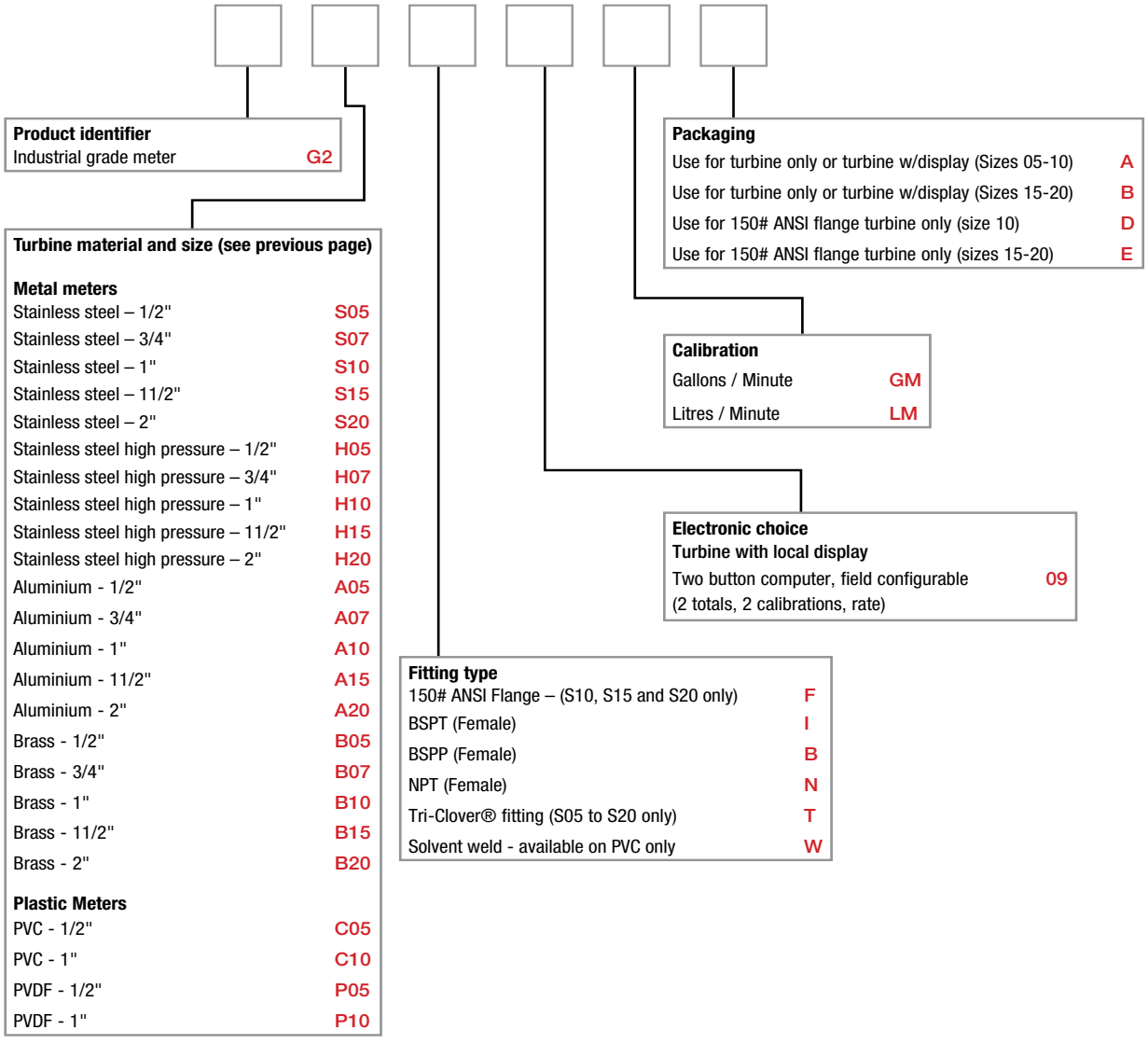
| Model | Size | Flow rate l/min | Max pressure bar | Length mm | Height mm | Width mm | Model | Size | Flow rate l/min | Max pressure bar | Length mm | Height mm | Width mm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A05 | 1/2" | 3.8 - 38 | 21 | 107 | 46 | 51 | H20 | 2" | 76 - 760 | 207 | 160 | 81 | 84 |
| A07 | 3/4" | 7.6 - 76 | 21 | 109 | 51 | 51 | P05 | 1/2" | 3.8 - 38 | 10.2 | 185 | 81 | 53 |
| A10 | 1" | 19 -190 | 21 | 114 | 56 | 51 | P10 | 1" | 19 - 190 | 10.2 | 206 | 84 | 71 |
| A15 | 1.1/2" | 38 -380 | 21 | 135 | 71 | 68 | S05 | 1/2" | 3.8 - 38 | 102 | 107 | 46 | 51 |
| A20 | 2" | 76 -760 | 21 | 160 | 81 | 84 | S07 | 3/4" | 7.6 - 76 | 102 | 109 | 51 | 51 |
| B05 | 1/2" | 3.8 - 38 | 21 | 107 | 46 | 51 | S10 | 1" | 19 - 190 | 102 | 114 | 56 | 51 |
| B07 | 3/4" | 7.6 - 76 | 21 | 109 | 51 | 51 | S15 | 1.1/2" | 38 - 380 | 102 | 135 | 71 | 68 |
| B10 | 1" | 19 -190 | 21 | 114 | 56 | 51 | S20 | 2" | 76 - 760 | 102 | 160 | 81 | 84 |
| B15 | 1.1/2" | 38 - 380 | 21 | 135 | 71 | 68 | S10F | 1" | 19 - 190 | Flange | 171 | 108 | 108 |
| B20 | 2" | 76 -760 | 21 | 160 | 81 | 84 | S15F | 1.1/2" | 38 - 380 | Flange | 203 | 127 | 127 |
| C05 | 1/2" | 3.8 - 38 | 10.2 | 185 | 81 | 53 | S20F | 2" | 76 - 760 | Flange | 241 | 152 | 152 |
| C10 | 1" | 19 - 190 | 10.2 | 206 | 84 | 71 | S05T | 1/2" | 3.8 - 38 | Flange | 127 | 51 | 46 |
| H05 | 1/2" | 3.8 - 38 | 10.2 | 107 | 46 | 51 | S07T | 3/4" | 7.6 - 76 | Flange | 127 | 51 | 51 |
| H07 | 3/4" | 7.6 - 76 | 10.2 | 109 | 51 | 51 | S10T | 1" | 19 - 190 | Flange | 140 | 51 | 56 |
| H10 | 1" | 19 - 190 | 10.2 | 114 | 56 | 51 | S15T | 1.1/2" | 38 - 380 | Flange | 165 | 68 | 71 |
| H15 | 1.1/2" | 38 - 380 | 10.2 | 135 | 71 | 68 | S20T | 2" | 76 - 760 | Flange | 178 | 84 | 81 |

Dimensions are for reference only and may vary by model

# Axial Turbine Flowmeters

## G2 series industrial LCD turbine flowmeters

### Options & Ordering Information



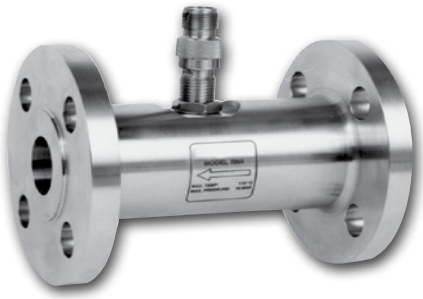
# Axial Turbine Flowmeters

## RN3, 4 & 7 Stainless Steel turbine flowmeters

These high quality turbines may be used on liquids such as water, light oils, solvents and low viscosity chemicals. Suitable for batching, flowrate monitoring and process controlling they are designed to work with a variety of LCD displays or programmable controllers. Specialised versions such as ATEX approved and sub sea spec available.

The turbines are made entirely of 316 stainless and the rotors are machined from solid, making them almost indestructible. Sleeve bearings provide reliable performance with longevity.

RN3 - threaded connections


RN4 - flanged connections


RN7 - hygienic connections

### Technical Information

| | |
|---|---|
| **Linearity:** | Better than +/- 0.5% of reading |
| **Repeatability:** | +/-0.1% of reading |
| **Pressure drop:** | 0.5 bar at maximum flow |
| **Maximum over range:** | Up to 120% of the maximum flow rate for short durations |
| **Maximum working:** | 35 bar (special connections available up to 670 bar) |
| **Temperature range:** | Standard pickoff -30°C to 110°C, IS pick-off -30°C to 110°C, High temp. -30°C to 232°C |
| **Threaded connections:** | BSP, NPT |
| **Hygienic connections:** | RJT, TRI-CLAMP, IDF, & ISS |
| **Flanged connections:** | ANSI 150, ANSI 300, DIN PN16, PN25, BS10 Table D ,Table E. For further connections consult factory |
| **Body:** | 316 stainless steel |
| **Sleeve bearings:** | Standard - carbon graphite filled PTFE (max temp. 180°C) Optional tungsten carbide (max temp. 300°C) |
| **Thrust balls/plate:** | Tungsten carbide or ceramic |
| **Rotor:** | 431stainless steel or ferralium |
| **Rotor shaft:** | Tungsten carbide |
| **Hangers:** | 316 stainless steel |
| **Circlips:** | 316 stainless steel |

### RN3 Dimensions

| Model Number | Thread BSP | L mm | Dia mm | Weight kg |
|---|---|---|---|---|
| RN3/10 | 3/8" | 82.6 | 38.0 | 0.3 |
| RN3/15 | 1/2" | 82.6 | 50.0 | 0.5 |
| RN3/20/5 | 3/4" | 82.6 | 50.0 | 0.5 |
| RN3/20/8 | 3/4" | 82.6 | 50.0 | 0.5 |
| RN3/25/15 | 1" | 90.5 | 63.5 | 1.0 |
| RN3/25 | 1" | 90.5 | 63.5 | 0.8 |
| RN3/32 | 11/4" | 110.0 | 75.0 | 1.6 |
| RN3/40 | 11/2" | 116.7 | 76.2 | 1.7 |
| RN3/50 | 2" | 154.0 | 89.0 | 3.1 |
| RN3/65 | 3" | 170.0 | 95.0 | 3.5 |

### RN4 Dimensions

| Model Number | Flange Size mm | L mm | Weight kg |
|---|---|---|---|
| RN4/20/5 | 20 | 139.7 | 2.0 |
| RN4/20/8 | 20 | 139.7 | 2.0 |
| RN4/25/15 | 25 | 139.7 | 2.2 |
| RN4/25 | 25 | 139.7 | 2.7 |
| RN4/32 | 32 | 145.0 | 3.9 |
| RN4/40 | 40 | 152.4 | 6.5 |
| RN4/50 | 50 | 165.1 | 8.4 |
| RN4/80 | 80 | 250.0 | 14.5 |
| RN4/100 | 100 | 300.0 | 16.5 |
| RN4/150 | 150 | 360.0 | 16.5 |

### RN7 Dimensions

| Model Number | Triclamp Size | L mm | Weight kg |
|---|---|---|---|
| RN7/15/2 | 1" | 127 | 1.1 |
| RN7/20/5 | 1" | 127 | 1.1 |
| RN7/20/8 | 1" | 127 | 1.0 |
| RN7/25/15 | 11/2" | 127 | 0.9 |
| RN7/25 | 11/2" | 127 | 2.3 |
| RN7/40 | 2" | 155 | 3.2 |
| RN7/50 | 21/2" | 216 | 5.0 |
| RN7/80 | 3" | 300 | 8.0 |

Abu Dhabi, UAE, Tel: +971 2 6796902, Fax: +971 2 6796903
Website: www.petroces.com, Email: info@petroces.com

# Axial Turbine Flowmeters

## RN3, 4 & 7 Stainless Steel turbine flowmeters

### Options & Ordering Information

| Product identifier | |
|---|---|
| Stainless steel turbine flow meter | RN |

| Connection type | |
|---|---|
| BSP male threaded | 3 |
| Flanged | 4 |
| Hygienic | 7 |

| Pipe size | Flow range l/min | | |
|---|---|---|---|
| 1/2" | 1.2-10 | 15/1 | |
| 1/2" | 2 -20 | 15/2 | |
| 3/4" | 5 - 50 | 20/5 | |
| 3/4" | 8 - 80 | 20/8 | |
| 1" | 15 - 150 | 25/15 | |
| 1" | 25 - 250 | 25 | |
| 11/4" | 45 - 450 | 32 | |
| 11/2" | 67 - 670 | 40 | |
| 2" | 110 - 1100 | 50 | |
| 3" | 225 - 2250 | 65 | RN3 only |
| 3" | 225 - 2250 | 80 | RN4 only |
| 4" | 450 - 4500 | 100 | RN4 only |
| 6" | 900 - 9000 | 150 | RN4 only |

| Flange code (for RN4 only) | |
|---|---|
| ANSI 150 | B |
| ANSI 300 | C |
| ANSI 600 | I |
| ANSI 900 | J |
| ANSI 1500 | K |
| ND 16 | N |

Other special connection types available on request.

| Max pressure | | |
|---|---|---|
| 35 Bar | | (blank) |
| RN3 only | 345 Bar | HP |

Higher pressure requirements can be catered for on request.

| Pick up options | |
|---|---|
| mV sinewave | (blank) |
| mV sinewave ATEX approved | EX |
| mV sinewave high temp (232°C) | HT |
| Squarewave pulse | PPW |
| 4-20mA analogue | FC7 |

Special design for high pressure (500 bar) and fitted with pressure & temperature test points.

Contact us for non standard requirements.

Recommended Instruments: FBT11, FRT12, FEB10

# Axial Turbine Flowmeters

## RN3 & 4 Stainless Steel turbine flowmeters for Subsea applications

We supply & design a wide range of standard and custom produced subsea flowmeters. They are suitable for use on low to medium viscosity fluids with a wide range of threaded or flanged connections. Constructed from 316 stainless or other materials as designated by the customer such as duplex or incolloy, these flow meters have been fitted extensively into the market place for many years.
Depths of up to 4000 metres are possible, with 4-20 mA or pulse output options. Our latest 4-20 mA pick up offering — this can be calibrated or scaled in house without the need of removing any parts of the pick up.

RN3 subsea version with amplified pulse pick up and Seacon connector

- Submersible up to 4000m
- 316 Stainless Steel construction
- Duplex or Incolloy material on request
- Pulse or analogue outputs

**Typical applications**
In the oil and gas industry, including Hydraulic system monitoring, fluid control diagnostic work, subsea network, risers, blow out preventers, water/chemical injection, ROV's and pipe laying systems.

Our subsea range of turbines provide an accuracy level of ±0.5% (of reading) and a repeatability figure of ±0.1% and can be supplied with Seacon, Burton or any other customer specific connector as required. They are exceptionally reliable and have a proven track record in the field.

### Options & Ordering Information

| Product identifier | |
|---|---|
| Stainless steel turbine flow meter | RN |

| Connection type | |
|---|---|
| BSP male threaded | 3 |
| Flanged | 4 |

*NPT or BSP Female threaded options also available on request.

| Pipe size | Flow range (l/min) | |
|---|---|---|
| 1/2" | 1.2-10 | 15/1 |
| 1/2" | 2-20 | 15/2 |
| 3/4" | 5-50 | 20/5 |
| 3/4" | 8-80 | 20/8 |
| 1" | 15-150 | 25/15 |
| 1" | 25-250 | 25 |
| 11/4" | 45-450 | 32 |
| 11/2" | 67-670 | 40 |
| 2" | 110-1100 | 50 |
| 3" | 225-2250 | 65 |
| 4" | 450-4500 | 100 |
| 6" | 900-9000 | 150 |

| Flange code (for RN4 only) | |
|---|---|
| ANSI 150 | B |
| ANSI 300 | C |
| ANSI 600 | I |
| ANSI 900 | J |
| ANSI 1500 | K |
| PN 16 | N |

Other special connection types available on request.

| Pick up options | |
|---|---|
| mV sinewave | (blank) |
| Squarewave pulse with subsea connector | PPW/SP4 |
| 4-20mA analogue with subsea connector | FC7/SP2 |

Seacon connectors supplied as standard. Others can be supplied on request.

| Max pressure | |
|---|---|
| 35 Bar | (blank) |
| 345 Bar | HP |

Higher pressure requirements can be catered for on request.

# Axial Turbine Flowmeters

## TP Turbopulse series Turbine flowmeters

The TP turbopulse turbine series measures flow of low viscosity liquids from 100 to 7,000,000 litres/hr in a range of sizes from 1/2" to 20" (12mm-500mm).
The TP series have an axial rotor and flow guides, to be installed in straight sections of pipe either horizontal or vertical so that the flow is conditioned. The TP series have Exd & Intrinsically Safe (I.S) approvals.

- Massive flow capacity up to 20" pipe size
- ATEX EEx ia & EEx d designs
- Options for custody transfer
- Directly mounted display & batch controller options

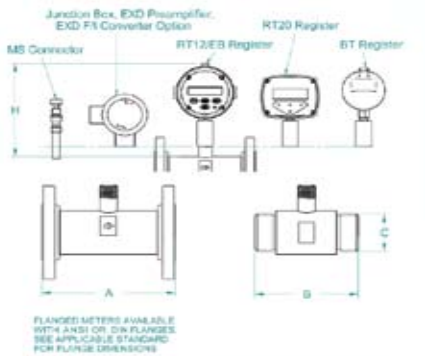
### Technical Information

| | |
|---|---|
| **Nominal sizes** | 12-500mm (1/2"-20") |
| **Accuracy @ 1cp** | ± 0.5% or (10.1 turndown) |
| **Temperature range** | -40~+240°C (-40~+460°F) |
| **Maximum pressure** | |
| **316 stainless steel** | 250 bar (3680 psi) 10cst max. |
| **high pressure SS** | 400 bar (5580 psi) 68cst max. |
| **Protection class** | IP66/67 (NEMA4X), optional Exd IIB T6 or I.S |
| **Electrical** | |
| **standard output** | Pick-off Coil |

### Flow ranges

| Size | Model | litre/hr |
|---|---|---|
| 1/2" | TP010 | 100-1100 |
| 3/4" | TP012 | 220-2200 |
| 3/4" | TP015 | 400-4000 |
| 3/4" | TP020 | 800-8000 |
| | | **m3/hr** |
| 1" | TP025 | 1.6-16 |
| 11/2" | TP040 | 3.4-34 |
| 2" | TP050 | 6.8-68 |
| 3" | TP080 | 13-135 |
| 4" | TP100 | 27-270 |
| 6" | TP150 | 55-550 |
| 8" | TP200 | 110-1100 |
| 10" | TP250 | 190-1900 |
| 12" | TP300 | 270-2700 |
| 16" | TP400 | 400-4000 |
| 20" | TP500 | 700-7000 |

### Dimensional Information




| Option fitted | H |
|---|---|
| RT12/EB Register | 210mm |
| RT20 Register | 189mm |
| BT Register | 190mm |
| EX junction Box | 150mm |
| MS connector | 118mm |
| MS connector | 138mm |

### Flanged meters

| Model | A |
|---|---|
| TP010 | 127mm (5.0") |
| TP012 | 127mm (5.0") |
| TP015 | 127mm (5.0") |
| TP020 | 127mm (5.0") |
| TP025 | 152mm (6.0") |
| TP040 | 178mm (7.0") |
| TP050 | 197mm (7.8") |
| TP080 | 254mm (10.0") |
| TP100 | 356mm (14.0") |
| TP150 | 368mm (14.5") |
| TP200 | 457mm (18.0") |
| TP250 | 457mm (18.0") |
| TP300 | 457mm (18.0") |
| TP400 | 610mm (24.0") |
| TP500 | 610mm (24.0") |

### Threaded meters

| Model | B | C |
|---|---|---|
| TP010 | 64mm (2.5") | 1/2" BSP or NPT |
| TP012 | 64mm (2.5") | 3/4" BSP or NPT |
| TP015 | 64mm (2.5") | 3/4" BSP or NPT |
| TP020 | 83mm (3.3') | 3/4" BSP or NPT |
| TP025 | 89mm (3.5") | 1" BSP or NPT |
| TP040 | 115mm (4.5") | 11/2" BSP or NPT |
| TP050 | 133mm (5.5") | 2" BSP or NPT |

Abu Dhabi, UAE, Tel: +971 2 6796902, Fax: +971 2 6796903
Website: www.petroces.com, Email: info@petroces.com