

# ROOTS TYPE POSITIVE DISPLACEMENT FLOW METER JA SERIES



JA (Standard type)



JAR (Zero Reset type)



JAH (High Temperature type)



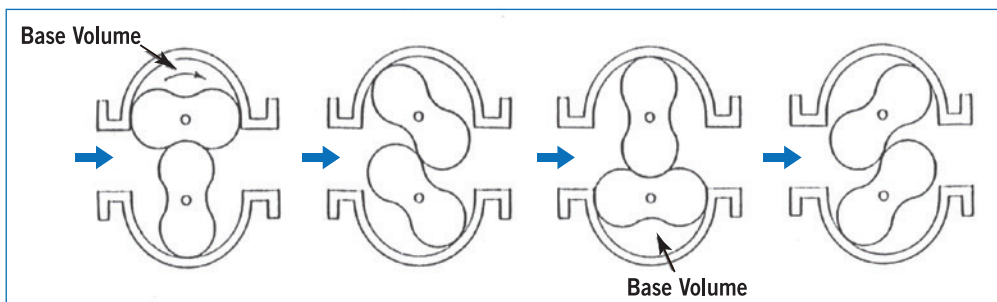
JAT (Pulse Transmitter type)

**Approvals:**



## Principle

The flow meter was designed a special two rotary of Roots for measuring the volume of liquid fluid when the fluid running into the meter pushes two Roots. The driving roots drive a magnet coupling with a direct gear. Then the magnet coupling transmits to the totalizing counts with a gear too. It comes to measure the amount of the fluid which pass to the meter.



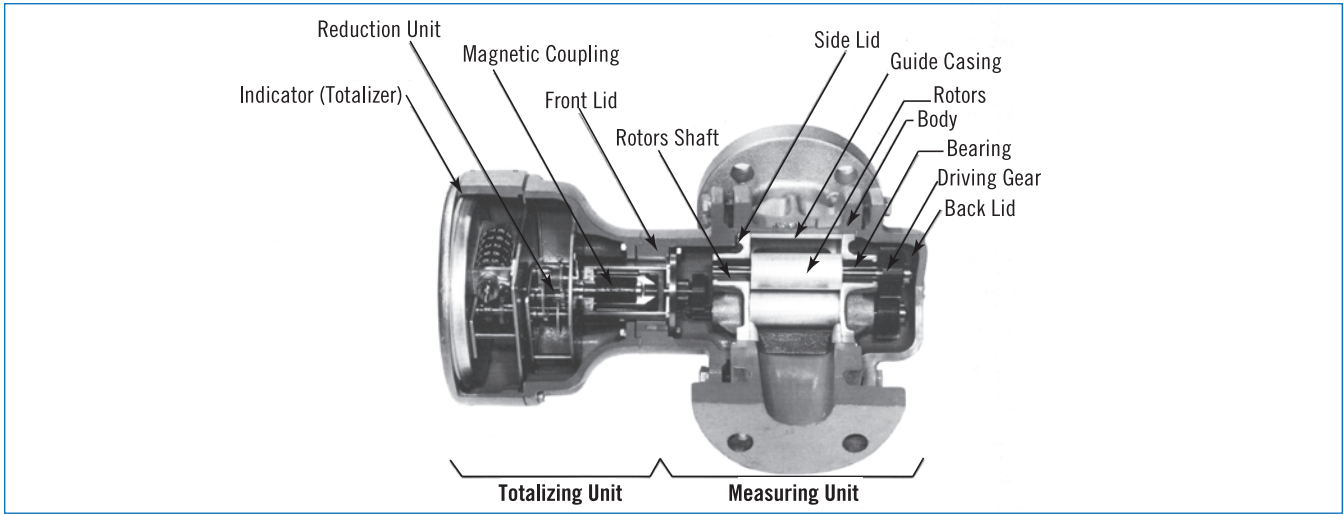
## Technical Data

- **Petroleum and Petrochemical:** For process control
  - **Chemical:** Process control; shipment of products; intake of materials
  - **Pharmaceutical & Paint:** Mixing of various types; quality control; shipment of products
  - **Food & Fat:** Mixing of ingredients, tank-to tank transfer, shipment of products
  - **Steel making & Shipbuilding:** Measuring fuel consumption of burner, diesel engine fuel
- Maximum Working Pressure:** 10 kg/cm<sup>2</sup>  
**Maximum Working Temperature:** 100°C (usual model); only JAH type up to 200°C  
**Material:** Cast Iron, Carbon Steel, SS304, SS316 are available, please refer to the Material List  
**Totalizer Counter:** 6 digital  
**Zero Reset Counter:** 5 digital  
**Accuracy:** ±0.5%  
**Signal Output (NPN):** 100 cc/pulse; 1 liter/pulse; 10 liter/pulse available on request  
 (If you select JAT pulse transmitter type, please refer to the following table for connection instructoin.)

Signal	Cable Wire	Max. Transfer Distance	Function / Color
Pulse NPN	3 Wires ø0.75mm x 3C	60M	+24/+12 VDC power input.../ Brown Out Signal...../ Black 0V (GND)...../ Blue



## Constructoin Diaphragm



### Material List of Measuring Unit



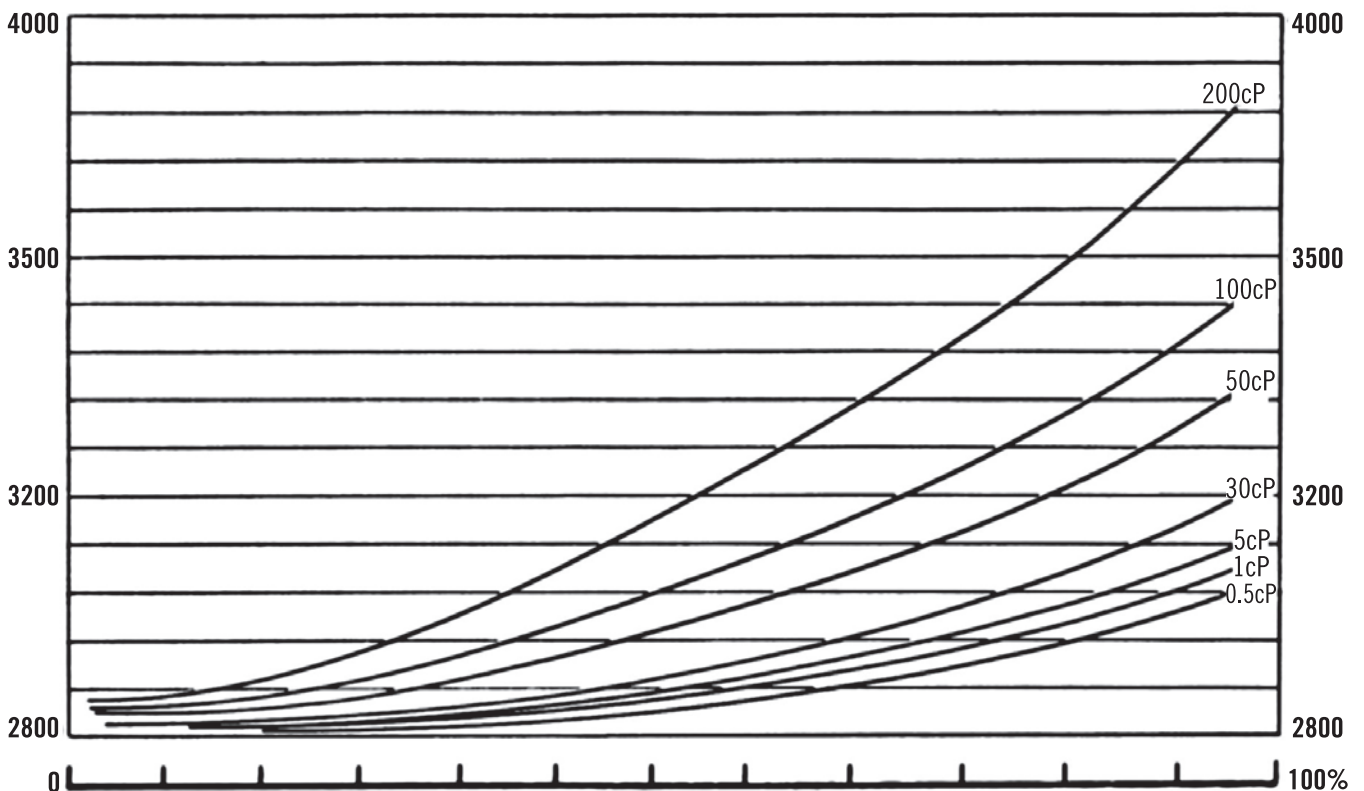
#### Selection 1: Body Material

Option Item	Body Material
1	Cast Iron
2	Carbon Steel
3	SS304
4	SS316

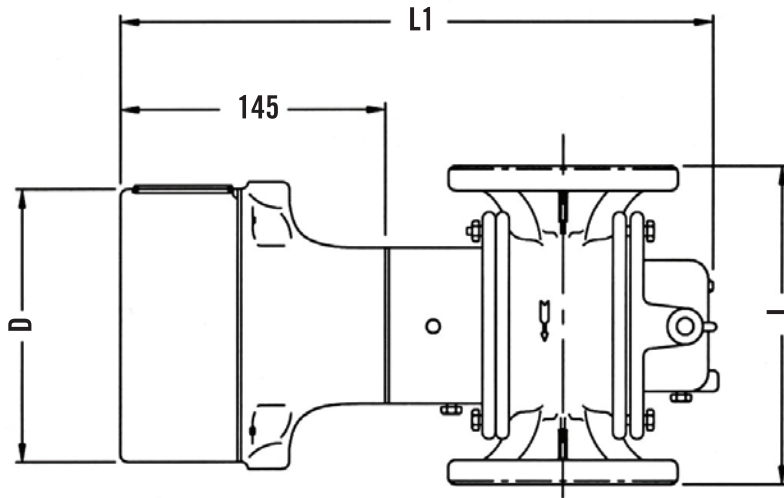
#### Selection 2: Inner Material

Option Item	Inner Housing	Roots	Roots Shaft	Driving Gear	Other
A	Bronze	Aluminum	S.S	S.S	SS304
B	Bronze	Bronze	S.S	S.S	SS304
C	Bronze	SS304	SS304	SS304	SS304
D	SS304	SS304	SS304	SS304	SS304
E	SS316	SS316	SS316	SS316	SS316

### Pressure Loss Curves



## Dimensions



**Standard Type**  
(For JA / JAR Series)

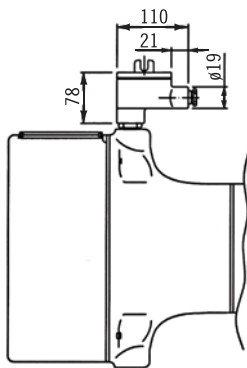
### Dimensions for Standard Flow Range-mm

Size	D	L	L1 (Note. 1)
1"JA-25A	180	200	325
1½"JA-40A	180	200	325
2"JA-50A	180	250	375
3"JA-80A	180	325	430

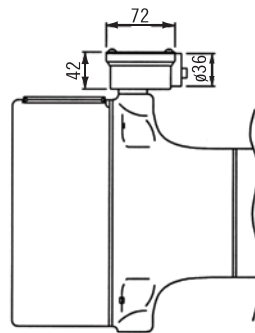
### Dimensions for High Flow Range-mm

Size	D	L	L1 (Note. 1)
1½"JA-40A	180	250	375
2"JA-50A	180	325	430

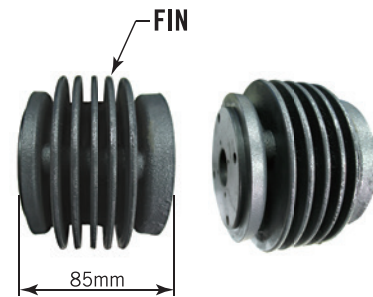
**Note. 1**  
Length "L1" has to add 85mm for JAH (high temperature) type.



**Explosion Proof Type**  
(For JAT Series)



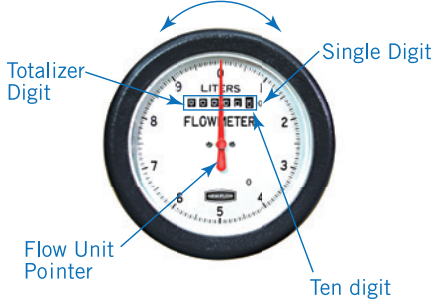
**Weather Proof Type**  
(For JAT Series)



**High Temperature type**  
(For JAH Series)

## Function

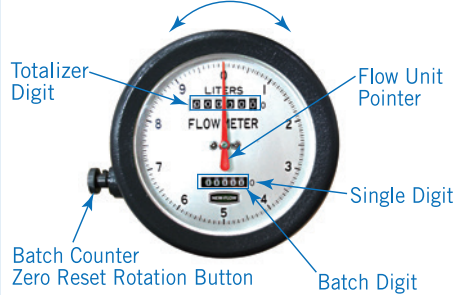
Indicating diameter can be rotated for 90°, 180° and 360°



**Standard Type**  
**Totalizer Digit & Flow Unit Pointer**

- **For the single-digit indication:**  
When the flow meter starts using, the flow unit pointer will be running clockwise from "0", if the flow unit pointer has pointed to 3, it means the flow rate is 3 Liter.
- **For the ten-digit indication:**  
If the flow unit pointer has passed the scale "0,1,2.. 9 to 0" by running clockwise in a circle, the ten-digit will be shown 1, and it means the flow rate is 10 Liter.
- **For the rest indication:**  
the rest may be deduced by analogy.

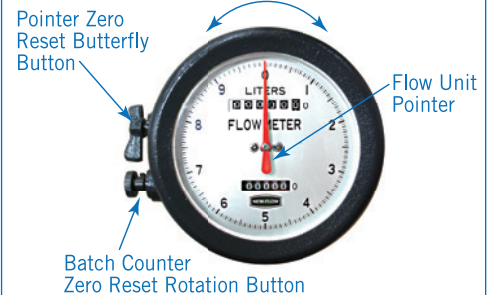
Indicating diameter can be rotated for 90°, 180° and 360°



**Zero Reset Type**  
**With Batch Counter**

- Totalizer digit cannot be reset to zero.
- Batch digit can be reset to zero.

Indicating diameter can be rotated for 90°, 180° and 360°



**Zero Reset Type**  
**With Batch Counter & Pointer**

- **Pointer zero reset & Batch counter zero reset (only for zero reset JAR type)**

When the pointer pass or stays on the scale of 1, the first number of batch will be shown 1, and it means the flow rate is 1 Liter. But, if the flow rate < 1 Liter, the first number of batch digit remains at 0 location. The maximum flow rate will be 99999 Liter < 100 m³.

Flow Range Table (L/H- liter per hour)

			Water		Chemicals	Petrochemicals		
Type number	Diameter (mm)	viscosity terms	80 °C less normal temp. water	80~120 °C high temp. water	Concentrated sulfuric acid, nitric acid	Plasticizer 50cp	Tar 500cp	Polyester 2000cp
JA	25	Normal Intermittent	800~ 3,500	800~ 3,000	800~ 3,000	800~3,500	800~4,000	800~4,000
		Normal Continuous	800~ 2,500	800~ 2,000	800~ 2,500	800~3,000	800~3,000	800~3,000
		Maximum	5,500	4,000	4,000	4,000	4,500	4,500
JA	40	Normal Intermittent	1,000~ 5,000	1,000~ 4,000	1,000~ 6,000	1,000~ 6,000	1,000~ 6,000	1,000~ 5,000
		Normal Continuous	1,000~ 4,000	1,000~ 3,000	1,000~ 5,000	1,000~ 5,000	1,000~ 5,000	1,000~ 4,000
		Maximum	6,000	5,000	7,000	7,000	7,000	5,500
JA	50	Normal Intermittent	1,500~ 9,000	2,000~ 8,000	1,000~ 6,000	1,000~ 12,000	1,000~ 12,000	1,000~ 10,000
		Normal Continuous	1,500~ 7,000	2,000~ 6,000	1,000~ 5,000	1,000~ 10,000	1,000~ 10,000	1,000~ 7,500
		Maximum	10,000	9,000	7,500	12,000	12,000	12,000
JA	80	Normal Intermittent	3,500~ 25,000	5,000~ 21,000	3,500~ 21,000	3,000~ 22,000	3,000~ 22,000	3,000~ 20,000
		Normal Continuous	3,500~ 20,000	5,000~ 18,000	3,500~ 18,000	3,000~ 20,000	3,000~ 20,000	3,000~ 18,000
		Maximum	25,000	25,000	25,000	25,000	25,000	22,000

			Petroleum							
Name of applicable fluid (reference)			Liquid	Gasoline	Kerosene	Light oil A-heavy oil (high temp)	A-heavy oil	C-heavy oil	C-heavy oil	High viscosity fluid
Type number	Diameter (mm)	viscosity terms	0.1 CP~	0.5~	2~	5~	10~	150~	500~	2000~
JA	25	Normal Intermittent	1,000~ 3,500	600~ 5,000	500~ 5,000	500~ 6,000	500~ 6,000	500~ 6,000	500~ 5,000	500~ 4,500
		Normal Continuous	1,000~ 3,000	600~ 4,000	500~ 4,000	500~ 5,000	500~ 5,000	500~ 5,000	500~ 4,000	500~ 3,500
		Maximum	5,000	6,500	6,500	7,000	7,000	7,000	6,000	5,000
JA	40	Normal Intermittent	1,000~ 4,500	1,000~ 5,500	800~ 6,000	500~ 6,000	500~ 7,000	500~ 7,000	500~ 6,000	500~ 5,500
		Normal Continuous	1,000~ 3,500	1,000~ 4,000	800~ 5,000	500~ 5,000	500~ 6,000	500~ 6,000	500~ 5,000	500~ 4,500
		Maximum	6,000	6,000	7,000	7,000	8,000	8,000	7,000	6,000
JA	50	Normal Intermittent	2,000~ 10,000	2,000~ 10,000	1,500~ 12,000	800~ 12,000	800~ 12,000	1,000~ 12,000	1,000~ 12,000	1,000~ 10,000
		Normal Continuous	1,000~ 8,000	2,000~ 8,500	1,500~ 10,000	800~ 10,000	800~ 10,000	1,000~ 10,000	1,000~ 10,000	1,000~ 9,000
		Maximum	12,000	12,000	13,000	13,000	13,000	12,000	12,000	11,000
JA	80	Normal Intermittent	3,500~ 20,000	3,000~ 20,000	3,000~ 22,000	3,000~ 23,000	3,000~ 23,000	3,000~ 23,000	3,000~ 20,000	3,000~ 19,000
		Normal Continuous	3,500~ 17,000	3,000~ 17,000	3,000~ 19,000	3,000~ 20,000	3,000~ 20,000	3,000~ 20,000	3,000~ 19,000	3,000~ 17,000
		Maximum	22,000	22,000	25,000	27,000	27,000	27,000	25,000	22,000

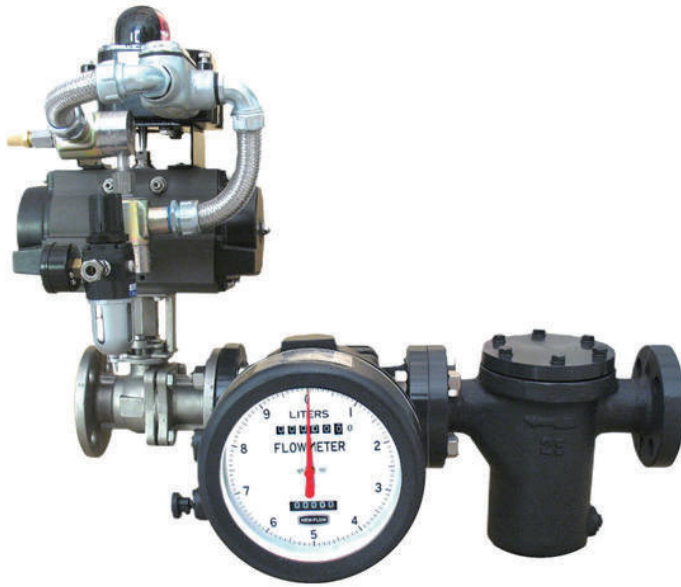
NOTE. If your request size is bigger than DN80 or the flow range is higher than 25m³/hr (our option special flow range is 30m³/hr), please consult the factory.

Ordering Information

Code	Model	Code	Body Material
JA	Standard Type		(1) Cast Iron (2) Carbon Steel (3) SS304 (4) SS316
JAR	Zero Reset Type		Code Inner Material (Housing-Roots)
JAH	High Temperature Type		(A) Bronze-Aluminum (B) Bronze-Bronze (C) Bronze-SS304
JAT	Pulse Transmitter Type		(D) SS304-SS304 (E) SS316-SS316
	Code Connection Size		Code Indicator Housing Unit— only for JAT type
	(1) 1" (2) 1½" (3) 2" (4) 3"		(1) Weather proof type (2) Explosion proof type
	Code Flange Rating		(3) Without
	(A) JIS 10K (B) JIS 20K		Code Signal Output (NPN)—only for JAT type
	(C) ANSI 150# (D) ANSI 300#		(1) 100 cc/pulse (2) 1 liter/pulse
	(E) PN10 (F) PN16		(3) 10 liter/pulse (4) Without
			Complete Ordering code



### Standard Control System Mode



With Pulse Transmitter

