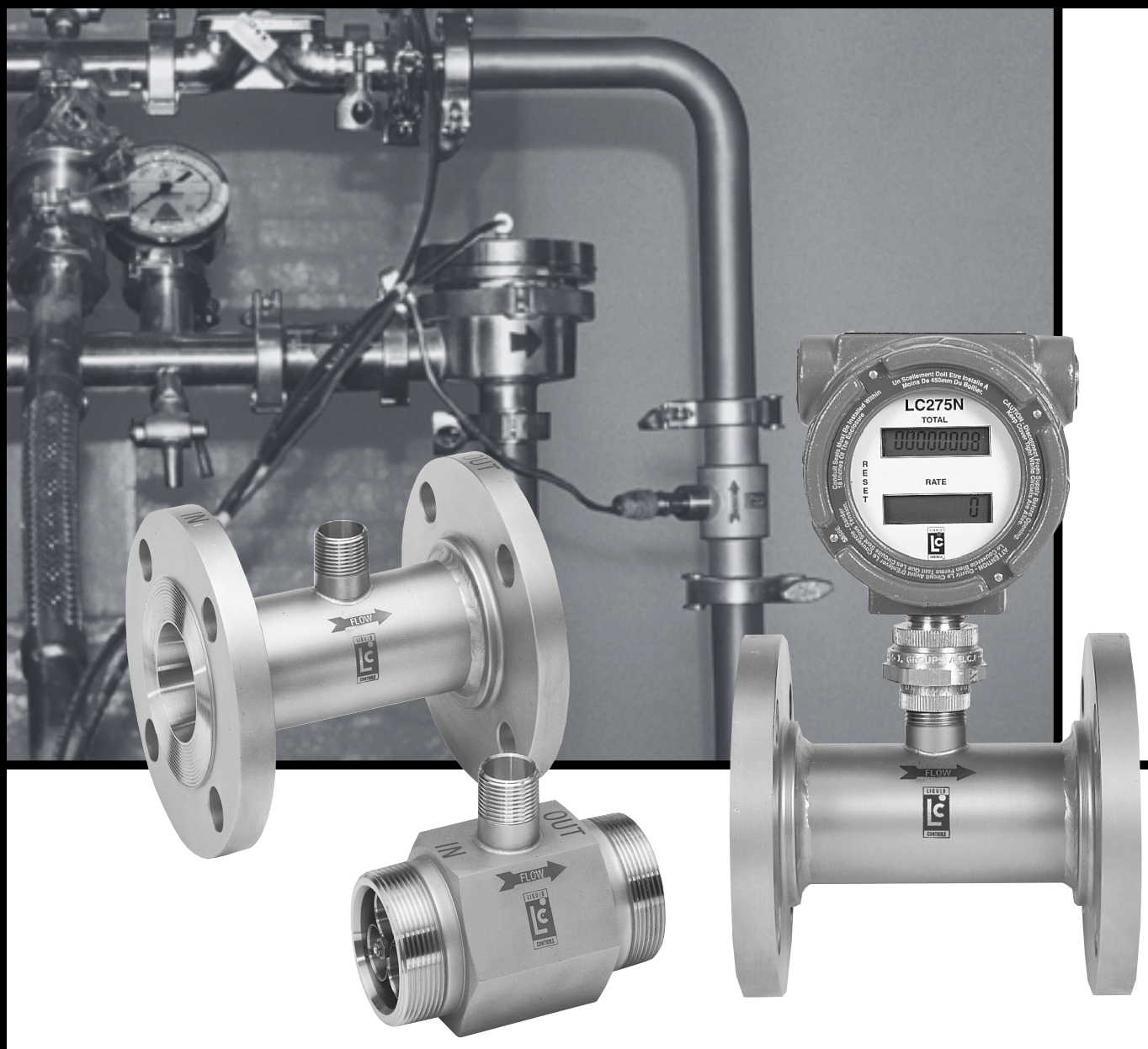
PRODUCT OVERVIEW

- *Aerospace*
- *Agriculture*
- *Chemical*
- *Cryogenic*
- *Food*
- *Gases*
- *Military*
- *Petrochemical*
- *Petroleum*
- *Pharmaceutical*
- *Pulp & Paper*
- *Utilities*

Turbine Meters & Accessories

LIQUID CONTROLS
A Unit of IDEX Corporation

IDEX CORPORATION



Features

Absolute Accountability In Turbine Meter Technology

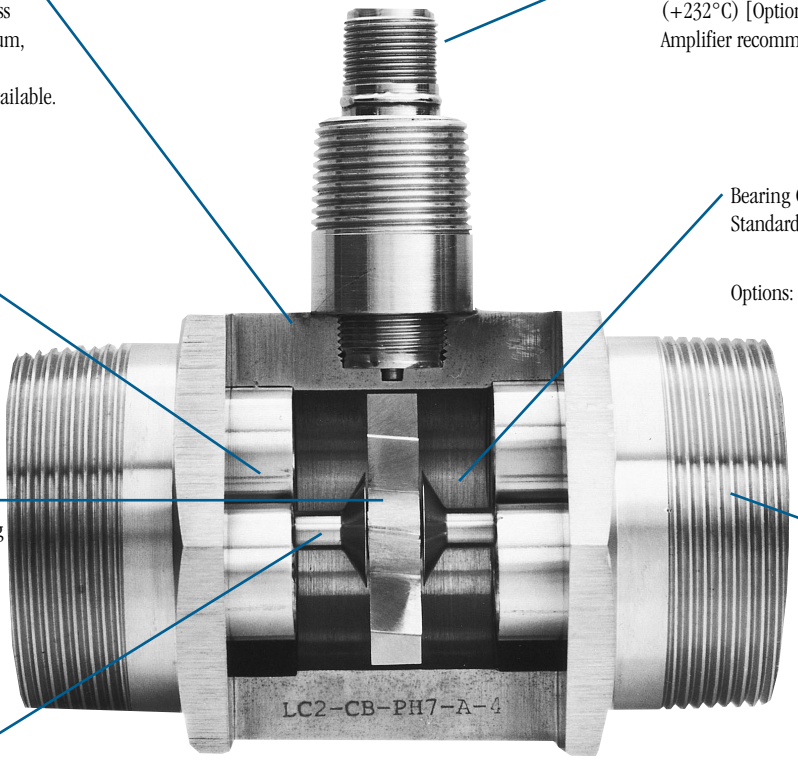
LC Turbine Meters offer unsurpassed accuracy, efficiency and service life, and meet most liquid or gas flow measurement applications. LC Turbine Meters available in stainless steel or corrosive series with a hydraulically balanced turbine rotor (no thrust bearing) and rugged, compact construction for the most accurate and reliable measurement available. Flow ranges are from 0.25 to 12,000 GPM and temperatures from -450°F (-268°C) to +1,000°F (+538°C). A wide variety of electronic instrumentation and components complete your flow needs.

Features include:

- High pressure applications.
- Custom and standard designs.
- Wide choice of bearings, including carbide
- Interfaces with manual, semiautomated or completely automated systems.
- Materials compatible with application.
- Custom design and system engineering service.
- Manufactured in USA.

Materials of Construction Include:
Standard–304 Stainless Steel
Optional–316/316L Stainless Steel, Monel, Brass, Aluminum, Alloy 20, Plastic
Note: Corrosive series materials available. Consult factory.

Pickup Coil Standard
Temperature from -450°F (-268°C) to +450°F (+232°C) [Optional to +1000°F (+538°C)]
Amplifier recommended to minimize EMI



Bearing Choices Include:
Standard: Stainless Steel or Cryo Ball Bearings
Options: Fluorosint
Carbide Sleeve Bearings

Standard with Flow Straightener both upstream and downstream for improved accuracy

Lightweight, Hydraulically Balanced Rotor. No Thrust Bearing

17-4 PH Stainless Steel Rotor Construction(Standart)
Note: For other materials, Consult Factory

304 Stainless Steel Support Shaft & Cones (Standard) Does Not Turn

Standard End Fittings Include:
Male NPT Standard
37° Flare Standard
ANSI Flange Standard
Sanitary Optional
(For Others Including High Pressure, See Description Chart)

Typical Application for Liquids & Gases

Acetylene (Consult Factory)
Air
Anhydrous Ammonia
Argon
Brine
CNG
Cryogenic
CO_2
Freon
Gasoline
Helium
Hydrogen
LNG
LPG
Mercaptans
Methane
Nitrogen
Nitrous Oxide
Oxygen
Steam (Consult Factory)
Water, DI
Water, Fresh
Water, Salt

Explosion Proof Rate And/Or Totalizer Indicators

Model LC200N - RATE
A battery powered industrial Remote Rate Indicator device that provides Flow Rate in any engineering unit. Rate is displayed via an 8-digit Liquid Crystal Display. Selection of the Reset Function is accomplished externally by magnetic field to maintain unit integrity while permitting complete operational control in hazardous environments. Auxiliary digital factored pulse output is standard.

Model LC150N-TOTAL
A battery powered Industrial Remote Totalizer that provides Flow Totalization in any engineering unit. Total is displayed via an 8-digit Liquid Crystal Display. Reset of the Totalizer is accomplished externally by a magnetic field to retain unit integrity while permitting complete operational control in hazardous environments. Auxiliary digital factored pulse output is standard.

Model LC275N-RATE/TOTAL
A battery powered device providing flow totalization and rate in any engineering unit. Total and Rate are displayed via two 8-digit Liquid Crystal Displays.

The totalizer Reset Function is accomplished externally by a magnetic field to retain unit integrity while permitting complete operational control in hazardous environments. In addition, the LC275N provides one analog interface output. The 4-20mA loop control extracts no power from the loop.

- DC powered by internal AA Lithium battery
- FM approved and CSA certified, Class I, Group B, C & D and Class II, Group E, F & G, Nema 4
- Direct mounted to Flow Meter
- Fully programmable, field calibration via BCD switches

Model LC300N-RATE/TOTAL
An industrial counter providing rate and flow totalization in any engineering unit. Unit features 10-point linearization with 1 pulse and 1 analog output. Can be battery, loop or VDC powered.

Model LC200N - Rate

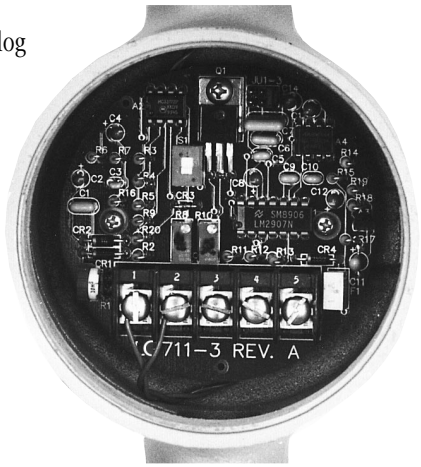
Model LC150N - Totalizer

Model LC275N - Rate/Totals Indicator

Model LC300N - Rate/Totals Indicator

Explosion Proof Transmitters & Amplifiers

Model LC711-3
A meter-mounted 3-wire Analog Transmitter designed to linearly convert a frequency input to an equivalent voltage output whose level is switch selectable @ 0-5V/0-10V.



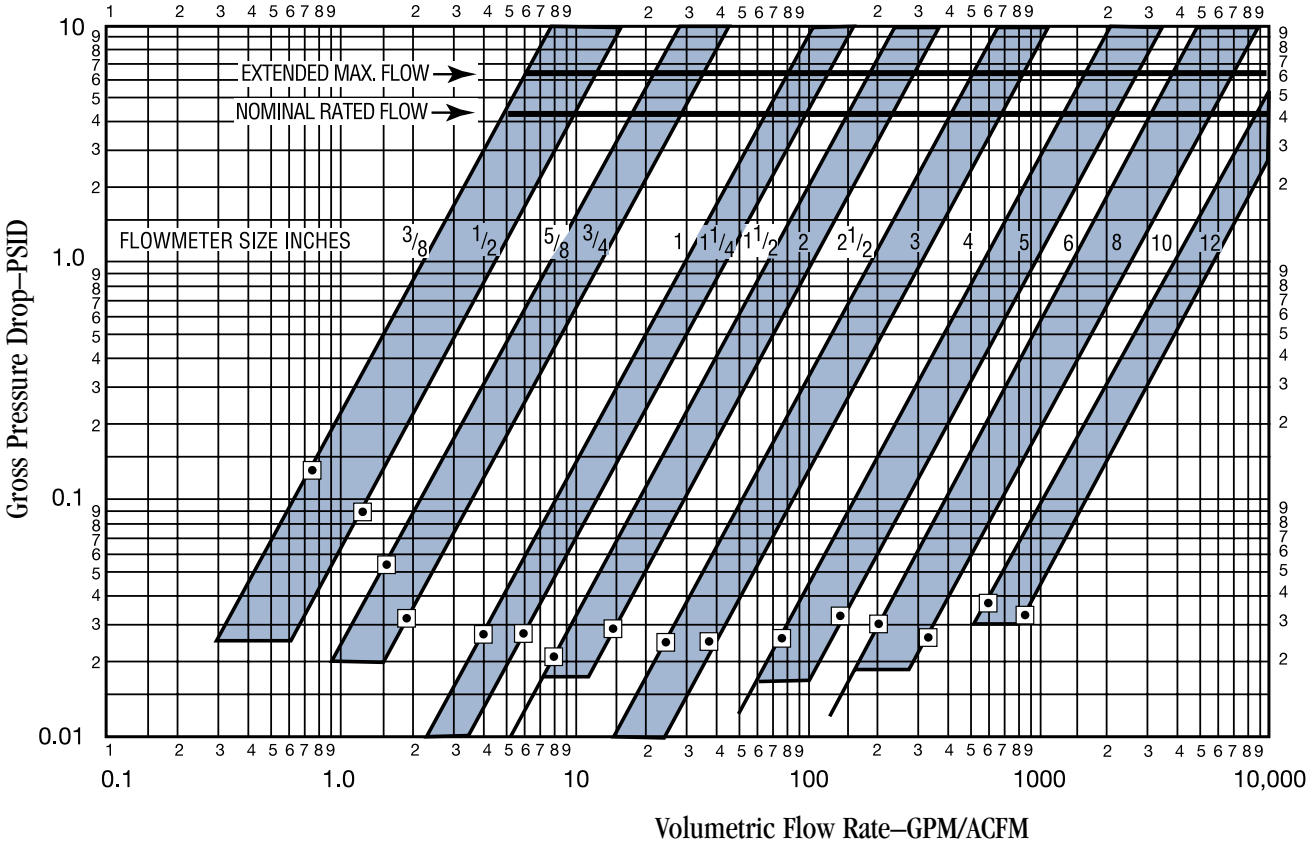
Model LC712-2
A meter mounted true 2-wire loop powered Analog Transmitter designed to linearly convert a frequency input to an equivalent 4-20mA current output.

Model LC714
A meter-mounted device that amplifies and conditions low-amplitude signals such as those developed by a magnetic pickup coil. The amplitude of the squarewave output equals the input supply voltage.

- FM approved and CSA certified, Class I, Group B, C & D and Class II, Group E, F & G, Nema 4
- Direct mounted to Flow Meter

Gross Pressure Drop Caracteristics

Data Based on H_2O for Liquids/Air for Gases



⊙ = Min. Linear Flow

For estimating pressure drop on liquids other than water at room temperature:

$$P = \Delta \text{Visc}^{*}\ (\text{Cpse})^{1/4} \times \text{Sp. Gr.}^{3/4} \times \Delta PH_2O$$

(Corrected) (from Curve)

* Absolute Visc (C'poise) = Kinematic Visc (C'stokes) x Sp. Gr.

For estimating pressure drop on gases at densities other than 1Lb/Ft³:

ΔP = (Density in lbs./Ft³) x ΔP on Chart

MODEL DESCRIPTION CHART

LC 1/4 -MB-NL-A-4-HTX

Bearing Type
MB=Metal Ball
CB=Cryo Ball
CS=Carbide Sleeve
FS=Fluorosint Sleeve

Rotor Type
NL =304 Nickel Liquid
PHL =17-4PH Liquid
PH7 =17-4PH-SS7 Degree
PH12=17-4PH-SS12 Degree
PH15=17-4PH-SS15 Degree

Endfitting Type
A =NPT
FA=FNPT
B =AN Flare
C =150CS
D =150SS
E =300CS
F =300SS
J =600CS
K =600SS
G =Sanitary
H =High Pressure
I =Tube Fitting
W = Water

Material
4 =304SS
4L=304LSS
6 =316SS
6L=316LSS

Coil Options
Blank = Standard
HT = Hi-Temp
RF = Mod. Carr.

Boss Options
X = Boss
Blank = No Boss

Specifications for Liquids

- Linearity: ±.5% Standard.
- Linearity: ±.25% over specified flow range. (Consult Factory)
- Repeatability ±.05% Standard.
- Repeatability: ±.02% over specified range.(Consult Factory)
- Temperature: -450°F (-268°C) to +1000°F (+538°C)
- Materials: Standard LC Turbine Flowmeters are constructed of 300 Series stainless steel. A variety of other materials are available to satisfy most applications including CPVC for corrosive applications.
- Electrical Output: A minimum of 30 mV peak to peak at the bottom of the nominal rated flow range.
- Pressure Drop: 4 psi at nominal rated flow range.
- End Fittings: Include AN Series 37 deg. Flare Tube (MS-33656), NPT, ANSI Flanged and Sanitary End Fittings Available. Other end fittings available on request.
- Operating Pressure: Accommodates unlimited pressure depending on end fittings.
- Calibration: LC Turbine Flowmeters furnished with standard fluid calibration and meter factor. Special calibrations available.
- Flow Ranges: From 0.25 to 12,000 GPM (45,420 LPM).

Specifications for Gases

- Linearity: ± 1.0% over full range
- Repeatability: ± .25%
- Temperature Range -450°F (-268°C) to +750°F (+399°C)

Liquid Sizing Chart

NOMINAL METER SIZE	NOMINAL FLOW RANGE U.S. Gallons Per Minute			METER "K" FACTOR PULSES/U.S. GAL.▫
	MINIMUM REPEATABLE	MINIMUM LINEAR	NOMINAL MAXIMUM	
1/4	0.25	0.5	2.5	15,000
3/8	0.35	0.75	5	3160
1/2	0.6	1.25	9.5	3160
5/8	0.9	1.75	16	1875
3/4	1.75	2.5	29	1035
1	3	4	60	500
1-1/4	4	6	93	322
1-1/2	6	8	130	230
2	12	15	225	133
2-1/2	15	25	400	75
3	30	40	650	46
4	50	75	1250	21
5	100	140	2000	9.0
6	125	200	2900	5.5
8	280	330	5200	2.4
10	550	650	8000	5.95*
12	800	900	12000	5.95*

*Rim Type Rotor

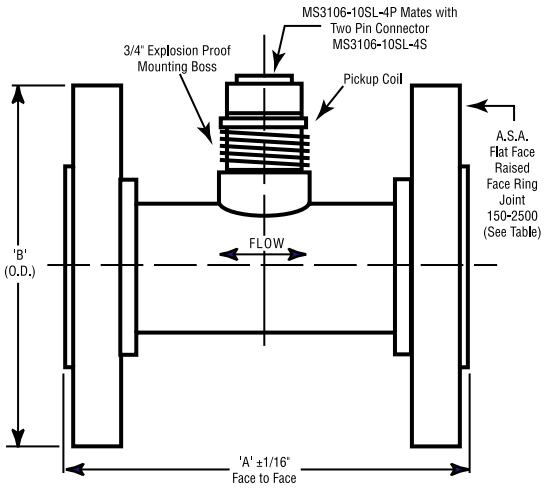
▫ Approximate value

Gas Sizing Chart

FLOW RANGE (ACFM) (MAGNETIC PICKUP)		
METER SIZE	MINIMUM LINEAR	MAXIMUM LINEAR
1/4	0.35	3.5
3/8	0.75	5.0
1/2	1	10.0
5/8	2.0	20.0
3/4	2.5	28.0
1	4.0	60
1 1/4	6.0	100
1 1/2	8	130
2	15	250
2 1/2	25	450
3	40	650
4	75	1200
5	150	1800
6	250	2900
8	330	5000
10	650	7500
12	900	12000

End Flanged (ANSI B16.5) SIZES (1/2" - 12")

Meter size is based on nominal inside diameter of pipe.
For installation dimensions for sizes larger than 6", consult factory.
For proper matching always specify inside diameter of mating pipe.
Special flanges can usually be provided to specification.
For hazardous areas, pick up coils with explosion proof housing can be provided.
All Flowmeters 1/2" and smaller will be provided with 1/2" End Connections unless otherwise specified.

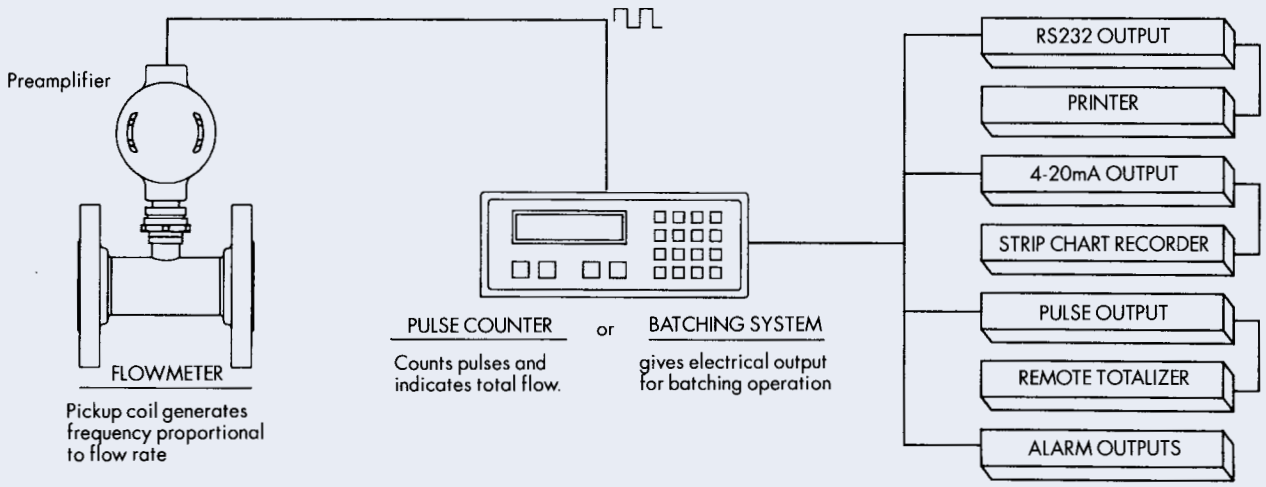


IMPORTANT: Dimensions shown are NOT for construction use. Consult factory when certified Engineering Prints are required.

Installation Dimensions (INCHES)

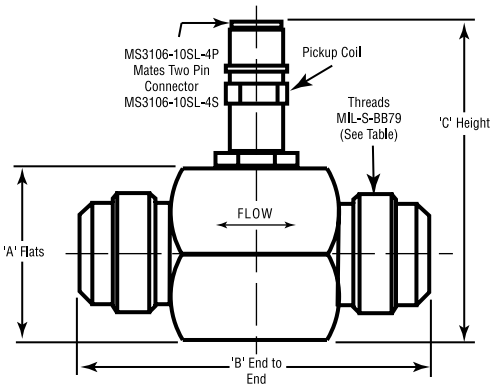
LINE	150#ANSI		300#ANSI		400#ANSI		600#ANSI		900#ANSI		1500#ANSI		2500#ANSI	
SIZE	A	B	A	B	A	B	A	B	A	B	A	B	A	B
1/2	5	3 1/2	5	3 3/4	5	3 3/4	5	3 3/4	7	4 3/4	7	4 3/4	7	5 1/4
5/8	5 1/2	3 1/2	5 1/2	3 3/4	5 1/2	3 3/4	5 1/2	3 3/4	7	4 3/4	7	4 3/4	7	5 1/4
3/4	5 1/2	3 7/8	5 1/2	4 5/8	5 1/2	4 5/8	5 1/2	4 5/8	7	5 1/8	7	5 1/8	7	5 1/2
1	5 1/2	4 1/4	5 1/2	4 7/8	5 1/2	4 7/8	5 1/2	4 7/8	8	5 7/8	8	5 7/8	8	6 1/4
1 1/4	6	4 5/8	6	5 1/4	6	5 1/4	6	5 1/4	8	6 1/4	8	6 1/4	8	7 1/4
1 1/2	6	5	6	6 1/8	6	6 1/8	6	6 1/8	9	7	9	7	9	8
2	6 1/2	6	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	6 1/2	9	7	9	7	9	8
2 1/2	7	7	7	7 1/2	7	7 1/2	7	7 1/2	10	9 5/8	10	9 5/8	10	10 1/2
3	10	7 1/2	10	8 1/4	10	8 1/4	10	8 1/4	10	9 1/2	10	10 1/2	11	12
3 1/2	12	8 1/2	12	9	12	9	12	9	-	-	-	-	-	-
4	12	9	12	10	12	10	12	10 3/4	12	11 1/2	12	12 1/4	12	14
5	14	10	14	11	14	11	14	13	14	13 3/4	14	14 3/4	14	19
6	14	11	14	12 1/2	14	12 1/2	14	14	14	15	14	15 1/2	16	19

Typical Arrangement of Flowmeter Readouts



MS Flared Tube SIZES (1/4" - 2")

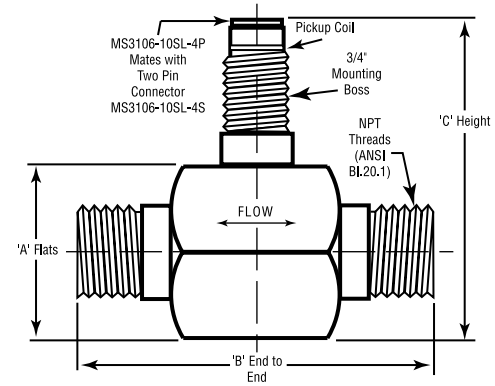
LINE SIZE	DIMENSIONS (inches)			END CONNECTIONS	APROX. WT
	A	B	C	FLARED TUBE	LBS/Kg
1/4-1/2	1 1/8	2 5/8	3	3/4-16UNF-3A	.38/.173
5/8	1 1/8	2 3/4	3	7/8-14UNF-3A	.75/.341
3/4	1 5/8	3 1/4	3 1/2	1 1/16-12UN-3A	.75/.341
1	1 5/8	3 1/2	4	1 5/16-12UN-3A	1.3/.627
1 1/4	2	3 7/8	4 3/8	1 5/8-12UN-3A	1.75/.795
1 1/2	2 1/8	4 3/8	4 5/8	1 7/8-12UN-3A	2.31/1.05
2	2 3/4	4 3/4	5 3/8	2 1/2-12UN-3A	3.0/1.36



IMPORTANT: Dimensions shown are NOT for construction use. Consult factory when certified Engineering Prints are required.

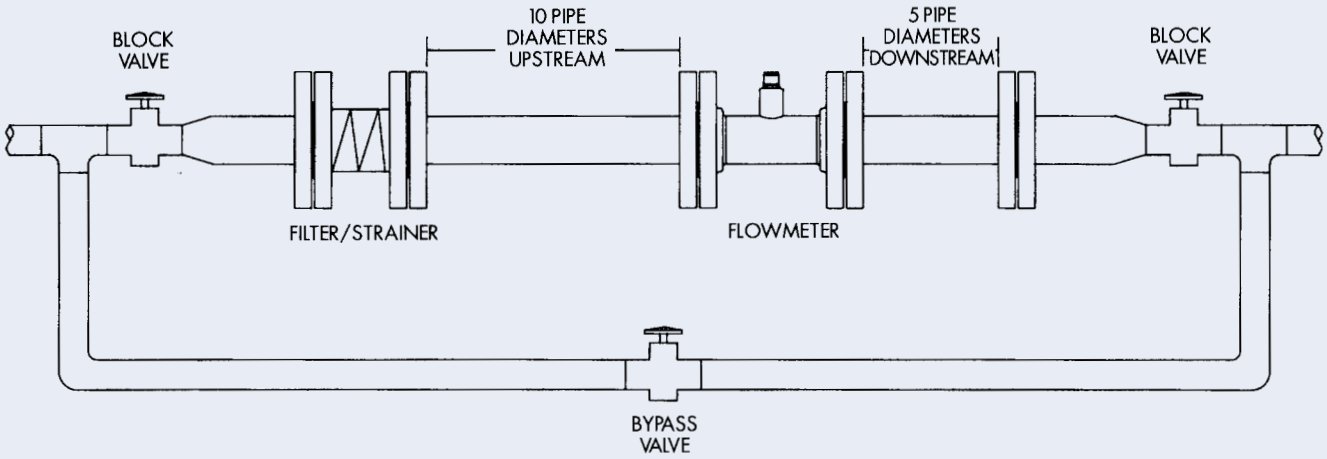
Male NPT SIZES (1/4" - 3")

LINE SIZE	DIMENSIONS (inches)			END CONNECTIONS	APPROX. WT
	A	B	C	MNPT	LBS/Kg
1/4-1/2	1 1/8	3	3	1/2	.38/.173
5/8	1 1/8	3	3	1/2	.75/.341
3/4	1 5/8	3 1/4	3 1/2	3/4	.75/.341
1	1 5/8	3 1/2	4	1	1.3/.627
1 1/4	2	3 7/8	4 3/8	1 1/4	1.75/.795
1 1/2	2 1/8	4 3/8	4 5/8	1 1/2	2.31/1.05
2	2 3/4	4 3/4	5 3/8	2	3.0/1.36
2 1/2	3 1/4	6 1/16	5 3/8	2 1/2	5.5/2.50
3	3 1/2	10	5 5/8	3	10/4.54



IMPORTANT: Dimensions shown are NOT for construction use. Consult factory when certified Engineering Prints are required.

Typical Flowmeter System Installation



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Backed By Our Worldwide Reputation For Quality, Accuracy and Advanced Design.

WARRANTY:
The seller's products are warranted against defects in material or workmanship for a period of (1) year from date of LC invoice. Seller's obligations, as set forth below, shall apply only to failure(s) to meet the foregoing obligations provided that Seller is given written notice within thirty (30) days of any occurrence from which a claim of defect arises. In the event that a factory inspection by Seller's or it's designee(s) supports the validity of a claim at the discretion of Seller, repair, replacement, or refund shall be the sole remedy for defect and shall be made, free of charge, Ex-works factory. In no event shall Seller be liable for any special consequential, incidental, indirect or exemplary damages arising out of warranty, contract tort (including negligence) or otherwise, including but not limited to, loss of profit or revenue, loss of use of the product or any and all associated products and/or equipment, cost of substitute goods or services, down-time costs or claims of or by Purchaser's clients or customers. In any event, the total liability of Seller for any and all claims arising out of or resulting from the performance, non-performance or use of the product shall not exceed the purchase price of the individual product giving rise to the claim. All other guaranties, warranties, conditions and representations either express or implied, whether arising under any statute, common law, commercial usage or otherwise are excluded. Electronic products require installation, start-up and servicing by local factory-trained service representatives. In the absence of installation, start-up and servicing of electronic products by Seller trained service representatives, this warranty is null and void. Seller's obligations as set forth above shall not apply to any product, or any component or part thereof, which is not properly installed, used, maintained or repaired, or which is modified other than pursuant to Seller's instructions or approval.

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