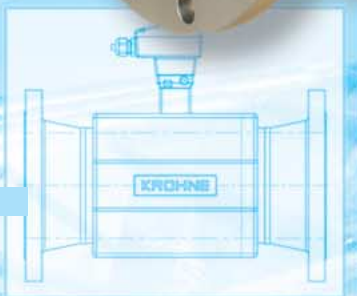


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## **ALTOSONIC III**

### **3-Beam ultrasonic flowmeter for custody transfer of liquid hydrocarbons**

- **Designed for custody transfer of light products**
- **Long-term stability and high reliability**
- **Eliminates maintenance**
- **Non-intrusive**
- **No wear**
- **No pressure loss**
- **Bi-directional**
- **Compliant with OIML R-117, API**



Electromagnetic flowmeters

Variable area flowmeters

Mass flowmeters

**Ultrasonic flowmeters**

Vortex flowmeters

Flow controllers

Level measuring instruments

Pressure and temperature

Heat metering

Communications technology

Switches, counters, displays and recorders

Engineering systems & solutions



# ALTOSONIC III

**3-Beam ultrasonic flowmeter for custody transfer of liquid hydrocarbons**

**Eliminates maintenance**



## **KROHNE is innovation**

The introduction of the ALTOSONIC V, the highly accurate, five-beam liquid ultrasonic flowmeter in the 1990's for multiple products was a true revolution in the flow market for custody transfer and master metering.

Over the past years ultrasonic flowmeters have gained full acceptance and have become the fastest growing flow metering technology in the world. KROHNE's UFM 3030, the first truly universal and easy to use ultrasonic flowmeter for process applications, created a breakthrough in the widespread application of ultrasonic flowmeters worldwide.

## **Introducing ALTOSONIC III**

Now, KROHNE is proud to introduce the ALTOSONIC III, an innovative and economical solution for custody transfer of light oil products. The 3-beam ALTOSONIC III is the outcome of our revolutionary development of liquid multiple beam ultrasonic flowmeters. It combines innovative technology with long-term experience to guarantee superior performance at an attractive price.

## **KROHNE is experience**

The ALTOSONIC III is the result of years of experience in the field with ultrasonic flowmeters for custody transfer including fiscal metering for a very wide range of applications.

25 Years ago KROHNE was already one of the pioneers in ultrasonic flow metering. In line with our vision, we continue to develop and perfect a wide range of single and multiple beam ultrasonic flowmeters for liquids and gases. Since 1980 over 30,000 KROHNE ultrasonic flowmeters have been installed showing reliable and trouble-free operation.

## **KROHNE is quality**

It is KROHNE's policy to calibrate each flowmeter that leaves our factory by means of wet calibration to guarantee the highest possible accuracy and quality. Therefore KROHNE owns accredited calibration rigs that comply with the most stringent demands (according to IEC-ISO 17025).

## **ALTOSONIC III**

**The flow metering solution for the oil and petrochemical industry**

- Custody transfer of light hydrocarbon products
- Fiscal metering
- Duty metering (with the ALTOSONIC V as reference meter)
- Allocation metering
- Pipeline leak detection

### **Fields of application**

- Refineries
- Pipeline systems for refined products
- Terminal loading and offloading of refined products
- Truck and rail loading



# ALTOSONIC III

## eliminates maintenance in flow metering



### A cost effective ultrasonic flowmeter concept for custody transfer

- Excellent repeatability
- Reliable flow measurement with long-term stability
- Large dynamic range: measures from zero flow up to 20 m/s.
- Light, compact and robust flowmeter
- Bi-directional
- Compliant with OIML R-117 and API
- Integrated diagnostics

### ALTOSONIC III

#### The alternative for conventional flowmeters

The ALTOSONIC III offers decisive advantage over mechanical flowmeters like turbine meters and PD meters.

- **No obstructions in the pipeline**  
ALTOSONIC III has no parts protruding the flow, in other words no risks of flow obstruction or blockage.
- **No moving parts**  
ALTOSONIC III has not a single internal moving part that can break down or suffer neither from wear caused by corrosive or abrasive fluids, gas and solids or from build-up like wax. This means maintenance-free and excellent long term stability.
- **No filters**  
For ALTOSONIC III filters are not required, which results in costs savings on regular inspection, maintenance and cleaning of filters and no additional pressure drop.
- **Low pressure drop**  
Unrestricted flow means no loss of pressure. Reducing pressure drop means smaller pump capacity, improved pipeline efficiency, and savings on energy costs.
- **Minimal maintenance**  
and substantial savings in cost of ownership.

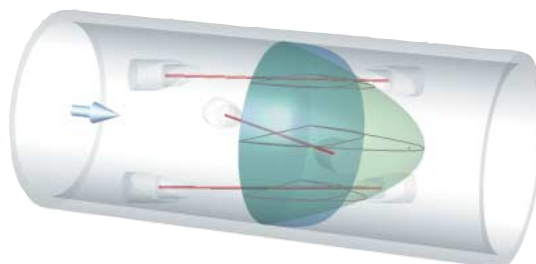
### Multi-channel ultrasonic flow measurement



Like all KROHNE ultrasonic flowmeters, ALTOSONIC III operates by the transit-time differential method. The measurement principle is based on a simple physical principle. Imagine two canoes crossing a river diagonally, one with the flow and one against the flow. Naturally the canoe that is travelling with the flow will reach the opposite side sooner than the canoe that is travelling upstream. Acoustic signals behave in a comparable way.

By means of patented ultrasonic transducers, the transit time of acoustic signals that travel upstream and downstream are measured. The difference in transit time is proportional to the mean liquid flow velocity and is transformed into an output signal and display of volumetric liquid flow rates.

The 3 measuring beams of the ALTOSONIC III make a 3-dimensional cross-section of the velocity distribution, or flow profile of the medium that flows through the flow sensor. These measuring beams are positioned such that the influence of the flow profile is strongly reduced.



**ALTOSONIC III Ultrasonic flowmeter**

<b>Versions</b>	ALTOSONIC III is available in a separate and in a compact version and consists of a UFS III ultrasonic flow sensor combined with a UFC III ultrasonic flow converter to make a complete flowmeter. Both the sensor and converter are approved for use in hazardous areas.		
	ALTOSONIC III C (compact)	● UFC III C flow converter directly mounted on UFS III C flow sensor	
	ALTOSONIC III F (separate)	○ UFC III F flow converter remotely mounted from UFS III F flow sensor	
<b>Performance</b>	Measurement functionality	Standard actual volume	
	Measuring range	0 to 20 m/s (0 ft/s to 66 ft/s), higher flow velocities on request	
	Linearity	< ± 0.15% of measured value (under reference conditions)	
	Repeatability	< ± 0.05%	
	Uncertainty	< ± 0.027% conforms to API standard	
	Viscosity	Up to 10 cSt for standard operation. For higher viscosities contact KROHNE	
	Zero stability	< 1 mm/s	
	Process conditions	Maximum solid particle content < 5% (by volume) Maximum gas content < 2% (by volume)	
<b>Approvals</b>	Custody transfer	OIML R-117 Class 0.3 ANSI/API MPMS 5.8-2004 API MPMS Chapter 5 Section 8, Measurement of Liquid Hydrocarbons by Ultrasonic Flowmeters Using Transit Time Technology	
	EEx zone 1 (ATEX)	ALTOSONIC III/C-EEx	II 2 G EEx d [ib] IIC T6 ... T3 or II 2 G EEx de [ib] II C T6 ... T3
		UFS-III/F-EEx	II 2 G EEx ib IIC T6 ... T3
		UFC-III/F-EEx	II 2 G EEx d [ib] IIC T6
	FM	FM Class I, Div. 1 & 2, Groups B, C & D	
		FM Class II, Div. 1, Groups E, F & G and Div. 2, Groups F & G	
		FM Class III, Div. 1 & 2	
CSA	CSA Class I, Div. 1 & 2, Groups A, B, C & D		
	CSA Class II, Div. 1 & 2, Groups E, F & G		
	CSA Class III, Div. 1		

● Standard ○ Optional - On request

**Temperature Limits**

°C	Process temp.		Ambient temp.	
	min.	max.	min.	max.
<b>Compact</b>	-25°C	140°C	-40°C	70°C
<b>Separate</b>	-25°C	180°C	-40°C	70°C

°F	Process temp.		Ambient temp.	
	min.	max.	min.	max.
<b>Compact</b>	-13°F	284°F	-40°F	158°F
<b>Separate</b>	-13°F	356°F	-40°F	158°F

**Ultrasonic flow sensor UFS III**

Nominal diameter [inch]	ASME B16.5											ASME B16.47, A				
	2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	28"	32"	36"	40"
Pressure class	150 lbs RF	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	300 lbs RF	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	600 lbs RF/RTJ	○	○	○	○	○	○	○	○	-	-	-	-	-	-	-
	900 lbs RF/RTJ	○	○	○	○	○	○	○	-	-	-	-	-	-	-	-

Pressure rating according to ASME B16.5 Group 2.3 materials. Other combinations of diameter/pressure class are available on request.

For a detailed overview, see the dimensions and weights tables in this datasheet.

<b>Versions</b>	UFS III C (compact)	● UFC III C flow converter directly mounted on UFS III C flow sensor.
	UFS III F (separate)	○ UFC III F flow converter remotely mounted from UFS III F flow
<b>Materials used</b> Other materials (e.g. Duplex) available on request	Flanges	● Stainless steel AISI 316 L (1.4404)
	Measuring tube	● Stainless steel AISI 316 L (1.4404)
	Housing	● Stainless steel AISI 316 L (1.4404)
	Connection box	● Stainless steel AISI 316 L (1.4408)
<b>Finish</b> Other finishes on request	Blasted	●
	Offshore paint system, silver	○
<b>Calibration</b>	6 points, 1 point 3 repeats, with water	●
	According to OIML: 6 points, each point 3 repeats, with water	○
<b>Calibration options</b>	Witnessed calibration	○
	RVA certificate	○
	Calibration with hydrocarbon	○
<b>Protection category</b> to IEC 529	IP 67 / IP 66 eq. NEMA 4/4X / 6	●
<b>Sensor cable connection</b> for separate versions only	M20 x 1,5	●
	1/2" NPT	○
	PF 1/2	○
<b>Sensor cable length</b> for separate versions only Cable type MR06, O.D. = 11 mm / 0.43"	5 m / 15 ft	●
	10 m / 30 ft	○
	15 m / 45 ft	○
	20 m / 60 ft	○
	25 m / 75 ft	○
	30 m / 90 ft	○

● Standard ○ Optional - On request

**Inlet flow conditioner and outlet section**

The flow sensor is delivered as standard with a 10D inlet flow conditioner. For optimal performance the flow sensor and flow conditioner are calibrated together. The flow sensor has to be installed with a straight outlet section with a minimum length of 5D.

Nominal diameter [inch]	ASME B16.5												ASME B16.47, A			
	2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	28"	32"	36"	40"
<b>Pressure class</b>	150 lbs RF															
	300 lbs RF															
	600 lbs RF/RTJ															
	900 lbs RF/RTJ															

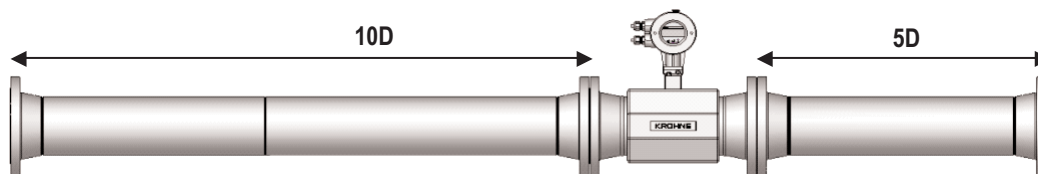
Pressure rating according to ASME B16.5 Group 2.3 materials.

For a detailed overview, see the dimensions and weights section of this datasheet.

<b>Materials used</b>	Flange / Tube	● Carbon steel ASTM A105 / Carbon steel ASTM A106
Other materials (e.g. Duplex) available on request		○ Stainless steel AISI 316 L (1.4404)
<b>Finish*</b>	Silver	●
Other paint systems on request	Offshore paint system, silver	○

● Standard ○ Optional - On request

**Typical flowmeter configuration**



**Installation**

<b>General</b>	For specific information please consult the operating and installation instructions or contact KROHNE.
<b>Position</b>	The flowmeter can be installed in a horizontal or vertical position. In a horizontal pipeline ensure that the acoustic channels are always in the horizontal plane.
<b>Completely filled flow sensor</b>	Install the UFS III ultrasonic flow sensor at a location where it will be completely filled under all circumstances, including at zero flow velocity.
<b>Flow conditioning</b>	Standard a 10D inlet section with ISO tube bundle flow conditioner must be installed upstream of the flowmeter. After the meter a straight outlet section of 5D should be installed.
<b>Zero checking</b>	Zero setting is not required with ultrasonic flowmeters. For zero checking it is advised to install shutoff valves before or after the flow sensor.
<b>Cavitation</b>	At operation sufficient backpressure is required to prevent cavitation

**Ultrasonic flow converter UFC III**

<b>General</b>	The converter is fully digital. Measured values are obtained using DSP (Digital Signal Processing) to ensure accurate and highly repeatable measurements.	
<b>Versions</b>	UFC III C (compact)	<input checked="" type="radio"/> UFC III C flow converter directly mounted on UFS III C flow sensor.
	UFC III F (separate)	<input type="radio"/> UFC III F flow converter remotely mounted from UFS III F flow sensor.
<b>Materials used</b>	Converter housing	<input checked="" type="radio"/> Stainless steel AISI 316 L (1.4408)
<b>Finish</b>	Blasted	<input checked="" type="radio"/>
	Other paint systems on request Offshore paint system, silver	<input type="radio"/>
<b>Protection category</b> to IEC 529	IP 67 / IP 66 eq. NEMA 4/4X / 6	<input checked="" type="radio"/>
<b>Overall functionality / Measurements available</b>	Actual volume flow rate (continuous measurement) in m <sup>3</sup> , liters, US gallons, Bbl or user defined volume unit per hour, minute, second, or user defined time unit Flow direction (forward or reverse) Velocity of sound in m/s or ft/s, per acoustic channel Signal attenuation (in dB), per acoustic channel Self diagnostics, e.g. velocity of sound within range, reliability of received acoustic signal, flow sensor not filled Errors (flashing display and error code)	
<b>Local display</b>	Operation	Cover removed: All display operations, including changing of settings and parameters can be done by using the push buttons. Cover in place: Measured values and (error) messages can be viewed. Resetting of errors is still possible using a hand-held bar magnet.
	Units	Actual flowrate in liter/s, m <sup>3</sup> /h, US gall/min or user-defined unit (e.g. US million gall/day).
	3-field LCD	The converter has a backlit local display with 3 push buttons. 1st line 8 character 7 segment alphanumeric display and symbols for key acknowledgement 2nd line 10 character, 14 segment text display 3rd line 5 markers to identify display in measuring mode
<b>Languages</b>	English (GB)	<input checked="" type="radio"/>
	English (US)	<input type="radio"/>
	German	<input type="radio"/>
	French	<input type="radio"/>
<b>Galvanic isolation</b>	All inputs and outputs are galvanically isolated from the power supply, but not from each other	
<b>Time constant</b>	0.025 - 99 seconds (programmable in increments of 0.01; 0.1 and 1.0 seconds)	
<b>Low-flow cut-off</b>	Cut-off active value 1 - 19% programmable in increments of 1%	
	Cut-off de-active value 2 - 20%	
<b>Power supply</b>	Power consumption approx. 10 VA (AC) or approx. 10 W (DC)	
		<input checked="" type="radio"/> Mains supply 100 – 240 V AC (48-63 Hz) +10% / -15% <input type="radio"/> Low voltage supply 24 V (AC or DC), AC: -10% / +15% , DC: 18 - 35 V
<b>Cable connection</b> (for power supply and signal cables)	M20 x 1,5	<input checked="" type="radio"/>
	1/2" NPT	<input type="radio"/>
	PF 1/2	<input type="radio"/>

Standard    Optional   - On request

**Outputs**

<b>Current output</b>	<b>Function</b>	Actual volume flow rate (continuous measurement)	
		Flow direction indication (forward or reverse)	
		Velocity of Sound (VOS)	
		Transducer signal amplification	
<b>Settings</b>	Q = 0 %	0 - 16 mA programmable in increments of 1 mA	
	Q = 100 %	4 - 20 mA	
<b>Connection</b>	Passive	External voltage 18 - 24 V DC, load ≤ 680 Ohm, (current limit 22 mA)	
<b>Pulse output</b>	<b>Function</b>	Dual pulse output, 90° or 180° phase shifted from each other	
		Pulse per volumetric unit (m <sup>3</sup> , liters, U.S. gallons, Bbl or user defined volume unit)	
	<b>Settings</b>	Pulse/unit (max. 1500Hz) (ex ample: 1000 pulses/barrel)	
		Pulse duty cycle	50%
<b>Connection</b>	Passive mode connection to electronic counter (EC). External voltage ≤ 19 - 32 V DC / I ≤ 150 mA		
<b>Status output</b>	<b>Function</b>	Diagnostics alarm path errors, all errors	
		Flow direction indication (forward or reverse)	
		Alarm trip point (high and low) based on actual volume flow rate	
	<b>Settings</b>	On or Off	
<b>Connection</b>	Passive mode connection to electronic input. External voltage ≤ 19 - 32 VDC / I ≤ 150 mA		

**Electrical connections**

Please refer to the instruction manual in the Download Center of the KROHNE internet site on [www.krohne.com](http://www.krohne.com) for detailed information on how to connect signal inputs and outputs.

**Ex-connection (standard)**


I	Common ground
P1	Pulse, frequency output
P2	Pulse, frequency output 90 or 180 degrees phase shifted from P1
S	Status output
I/C	0(4) ... 20mA current output
N / L~	Neutral power supply
L / L~	Live power supply

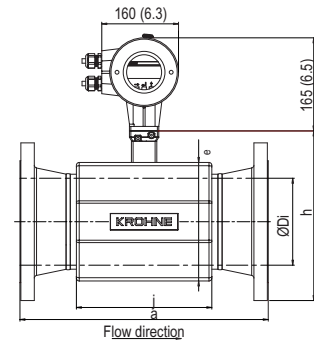
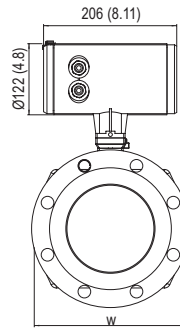
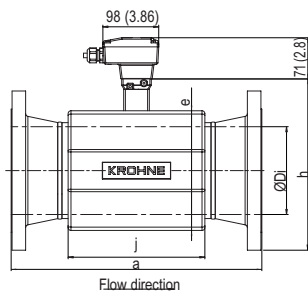
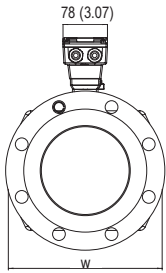
**Sizing**

Choosing the correct size is very simple due to the extremely wide range of possible velocities. Typical flowrates for 1 m/s (3,3 ft/s) and 10 m/s (33 ft/s) are specified in the attached table. Pending on the application the ALTOSONIC III has a virtually unlimited flow velocity range.

Nominal diameter	1 m/s	10 m/s	1 m/s	10 m/s	1 m/s	10 m/s
	3.3 ft/s (m <sup>3</sup> /h)	30 ft/s (m <sup>3</sup> /h)	3.3 ft/s (GPM)	30 ft/s (GPM)	3.3 ft/s (BBL/hr)	30 ft/s (BBL/hr)
2"	7	73	32	321	46	459
3"	16	164	72	723	103	1033
4"	29	292	129	1285	184	1836
6"	66	657	289	2891	413	4132
8"	117	1167	514	5140	735	7345
10"	182	1824	803	8032	1148	11477
12"	263	2627	1157	11565	1653	16527
14"	358	3575	1574	15742	2249	22495
16"	467	4670	2056	20561	2938	29381
18"	591	5910	2602	26022	3719	37186
20"	730	7297	3213	32126	4591	45908
24"	1051	10507	4626	46261	6611	66108
28"	1430	14301	6297	62967	8998	89980
32"	1868	18679	8224	82243	11752	117525
36"	2364	23641	10409	104088	14874	148742
40"	2919	29186	12850	128504	18363	183632



**Dimensions and weights**



Dimensions in mm (inch)

Nominal diameter	ANSI 150 lbs dimensions in mm						Approx. weight in kg*	ANSI 150 lbs dimensions in inch						Approx. weight in lbs*
	a	Di	h	j	e	w		a	Di	h	j	e	w	
2"	290	49.2	180	139	100	150	14	11.42	1.94	7.09	5.47	3.94	5.91	31
3"	330	73.7	215	170	130	200	26	12.99	2.90	8.45	6.69	5.12	7.87	57
4"	380	97.2	247	190	155	220	33	14.96	3.83	9.74	7.48	6.10	8.66	73
6"	440	154.1	301	240	210	270	45	17.32	6.07	11.84	9.45	8.27	10.63	99
8"	600	202.7	358	370	260	370	72	23.62	7.98	14.09	14.57	10.24	14.57	159
10"	640	254.5	417	415	315	420	105	25.20	10.02	16.41	16.34	12.40	16.54	231
12"	710	304.7	480	465	365	470	145	27.95	12.00	18.91	18.31	14.37	18.50	320
14"	770	336.5	522	495	395	500	179	30.31	13.25	20.53	19.49	15.55	19.69	395
16"	830	387.3	579	550	445	550	221	32.68	15.25	22.78	21.65	17.52	21.65	487
18"	900	438.1	623	595	500	600	256	35.43	17.25	24.53	23.43	19.69	23.62	564
20"	950	484.0	680	645	550	650	335	37.40	19.06	26.78	25.39	21.65	25.59	739
24"	1080	579.6	788	745	650	750	500	42.52	22.82	31.03	29.33	25.59	29.53	1102
28"	1140	691.2	896	865	750	870	577	44.88	27.21	35.28	34.06	29.53	34.25	1272
32"	1260	792.8	1014	955	855	960	786	49.61	31.21	39.91	37.60	33.66	37.80	1733
36"	1400	884.4	1118	1055	955	1060	1136	55.12	34.82	44.03	41.54	37.60	41.73	2504
40"	1500	986.0	1230	1150	1055	1150	1359	59.06	38.82	48.41	45.28	41.54	45.28	2996

Inner diameters based on schedule standard.

\*Approx. weight of flow sensor in separate (F) version.  
For compact (C) version: add 6.4 kg (14.1 lbs).

Weight converter incl. wallmount separate (F) version: 14 kg (30.9 lbs).

a = flange to flange      j = length housing  
Di = inner diameter      e = height housing  
h = height flow sensor      w = width housing

Nominal diameter	ANSI 150 lbs dimensions in mm						ANSI 150 lbs dimensions in inch					
	10D inlet spoolpiece			5D outlet spoolpiece			10D inlet spoolpiece			5D outlet spoolpiece		
	a	Di	weight in kg	a	Di	Approx. weight in kg	a	Di	weight in lbs	a	Di	Approx. weight in lbs
2"	508	54.8	8	254	54.8	6	20.00	2.16	17.6	10.00	2.16	13
3"	762	77.9	20	381	77.9	13	30.00	3.07	44.1	15.00	3.07	29
4"	1016	104.7	32	508	104.7	18	40.00	4.12	70.5	20.00	4.12	40
6"	1524	158.7	65	762	158.7	31	60.00	6.25	143.3	30.00	6.25	68
8"	2032	206.3	125	1016	206.3	60	80.00	8.12	275.6	40.00	8.12	132
10"	2540	260.2	190	1270	260.2	89	100.00	10.24	418.9	50.00	10.24	196
12"	3048	309.6	325	1524	309.6	141	120.00	12.19	716.5	60.00	12.19	311
14"	3556	339.8	490	1778	339.8	197	140.00	13.38	1080.3	70.00	13.38	434
16"	4064	390.6	560	2032	390.6	255	160.00	15.38	1234.6	80.00	15.38	562
18"	4572	441.4	700	2286	441.4	307	180.00	17.38	1543.2	90.00	17.38	677
20"	5080	489.0	1080	2540	489.0	431	200.00	19.25	2381.0	100.00	19.25	950
24"	6096	590.6	1425	3048	590.6	615	240.00	23.25	3141.6	120.00	23.25	1356
28"	7112	695.4	1725	3556	695.4	766	280.00	27.38	3803.0	140.00	27.38	1689
32"	8128	797.0	2400	4064	797.0	1054	320.00	31.38	5291.1	160.00	31.38	2324
36"	9144	898.6	3055	4572	898.6	1338	360.00	35.38	6735.2	180.00	35.38	2950
40"	10160	996.0	4235	5080	996.0	1895	400.00	39.21	9336.6	200.00	39.21	4178

**Dimensions and weights**

Nominal diameter	ANSI 300 lbs dimensions in mm						Approx. weight in kg*	ANSI 300 lbs dimensions in inch						Approx. weight in lbs*
	a	Di	h	j	e	w		a	Di	h	j	e	w	
2"	300	49.2	185	139	100	150	15	11.81	1.94	7.28	5.47	3.94	5.91	33
3"	350	73.7	224	170	130	200	30	13.78	2.90	8.83	6.69	5.12	7.87	66
4"	400	97.2	260	190	155	220	42	15.75	3.83	10.24	7.48	6.10	8.66	93
6"	470	146.4	320	240	210	270	69	18.50	5.76	12.59	9.45	8.27	10.63	152
8"	620	193.7	377	370	260	370	115	24.41	7.63	14.84	14.57	10.24	14.57	254
10"	670	247.6	436	415	315	420	156	26.38	9.75	17.16	16.34	12.40	16.54	344
12"	750	298.4	499	465	365	470	213	29.53	11.75	19.66	18.31	14.37	18.50	470
14"	810	325.6	547	495	395	500	290	31.89	12.82	21.53	19.49	15.55	19.69	639
16"	870	376.4	604	550	445	550	358	34.25	14.82	23.78	21.65	17.52	21.65	789
18"	940	417.2	661	595	500	600	482	37.01	16.43	26.03	23.43	19.69	23.62	1063
20"	1000	468.0	718	645	550	650	578	39.37	18.43	28.28	25.39	21.65	25.59	1274
24"	1110	569.6	839	745	650	750	811	43.70	22.43	33.03	29.33	25.59	29.53	1788
28"	1300	661.2	950	865	750	870	1223	51.18	26.03	37.41	34.06	29.53	34.25	2696
32"	1440	752.8	1058	955	855	960	1714	56.69	29.64	41.66	37.60	33.66	37.80	3779
36"	1580	854.4	1169	1055	955	1060	2131	62.20	33.64	46.03	41.54	37.60	41.73	4698
40"	1580	946.0	1204	1150	1055	1150	2100	62.20	37.24	47.41	45.28	41.54	45.28	4630

Inner diameters based on schedule standard.

\*Approx. weight of flow sensor in separate (F) version.

For compact (C) version: add 6.4 kg (14.1 lbs).

Weight converter incl. wallmount separate (F) version: 14 kg (30.9 lbs).

a = flange to flange

j = length housing

Di = inner diameter

e = height housing

h = height flow sensor

w = width housing

Nominal size	ANSI 300 lbs dimensions in mm						ANSI 300 lbs dimensions in inch					
	10D inlet spoolpiece			5D outlet spoolpiece			10D inlet spoolpiece			5D outlet spoolpiece		
	a	Di	weight in kg	a	Di	weight in kg	a	Di	weight in lbs	a	Di	weight in lbs
2"	508	53.9	10	254	53.9	7	20.00	2.12	22.0	10.00	2.12	15
3"	762	77.9	24	381	77.9	16	30.00	3.07	52.9	15.00	3.07	35
4"	1016	104.7	40	508	104.7	26	40.00	4.12	88.2	20.00	4.12	57
6"	1524	154.1	95	762	154.1	54	60.00	6.07	209.4	30.00	6.07	119
8"	2032	206.4	150	1016	206.4	84	80.00	8.13	330.7	40.00	8.13	185
10"	2540	257.4	250	1270	257.4	137	100.00	10.13	551.2	50.00	10.13	302
12"	3048	307.0	390	1524	307.0	204	120.00	12.09	859.8	60.00	12.09	450
14"	3556	339.8	500	1778	339.8	270	140.00	13.38	1102.3	70.00	13.38	595
16"	4064	387.3	710	2032	387.3	376	160.00	15.25	1565.3	80.00	15.25	829
18"	4572	434.9	1000	2286	434.9	509	180.00	17.12	2204.6	90.00	17.12	1122
20"	5080	482.6	1280	2540	482.6	672	200.00	19.00	2821.9	100.00	19.00	1482
24"	6096	581.1	2065	3048	581.1	1047	240.00	22.88	4552.6	120.00	22.88	2308
28"	7112	679.4	3023	3556	679.4	1543	280.00	26.75	6664.6	140.00	26.75	3402
32"	8128	781.0	3995	4064	781.0	2035	320.00	30.75	8807.5	160.00	30.75	4486
36"	9144	876.3	5635	4572	876.3	2877	360.00	34.50	12423.1	180.00	34.50	6343
40"	10160	976.0	6665	5080	976.0	3103	400.00	38.43	14693.9	200.00	38.43	6841

Nominal diameter	ANSI 600 lbs dimensions in mm						Approx. weight in kg*	ANSI 600 lbs dimensions in inch						Approx. weight in lbs*
	a	Di	h	j	e	w		a	Di	h	j	e	w	
2"	320	49.2	185	139	100	150	17	12.60	1.94	7.28	5.47	3.94	5.91	37
3"	370	73.7	224	170	130	200	33	14.57	2.90	8.83	6.69	5.12	7.87	73
4"	440	97.2	270	190	155	220	53	17.32	3.83	10.62	7.48	6.10	8.66	117
6"	530	131.8	339	240	210	270	111	20.87	5.19	13.34	9.45	8.27	10.63	245
8"	660	189.1	396	370	260	370	165	25.98	7.44	15.59	14.57	10.24	14.57	364
10"	770	233.0	468	415	315	420	272	30.31	9.17	18.41	16.34	12.40	16.54	600
12"	830	273.8	518	465	365	470	359	32.68	10.78	20.41	18.31	14.37	18.50	791
14"	880	305.6	556	495	395	500	423	34.65	12.03	21.91	19.49	15.55	19.69	933
16"	960	346.4	623	550	445	550	603	37.80	13.64	24.53	21.65	17.52	21.65	1329

Nominal diameter	ANSI 600 lbs dimensions in mm						ANSI 600 lbs dimensions in inch					
	10D inlet spoolpiece			5D outlet spoolpiece			10D inlet spoolpiece			5D outlet spoolpiece		
	a	Di	weight in kg	a	Di	weight in kg	a	Di	weight in lbs	a	Di	weight in lbs
2"	508	52.5	11	254	52.5	9	20.00	2.07	24.3	10.00	2.07	20
3"	762	77.9	26	381	77.9	19	30.00	3.07	57.3	15.00	3.07	42
4"	1016	102.3	55	508	102.3	38	40.00	4.03	121.3	20.00	4.03	84
6"	1524	146.4	140	762	146.4	92	60.00	5.76	308.6	30.00	5.76	203
8"	2032	193.7	250	1016	193.7	154	80.00	7.63	551.2	40.00	7.63	340
10"	2540	242.8	445	1270	242.8	268	100.00	9.56	981.1	50.00	9.56	591
12"	3048	295.3	570	1524	295.3	339	120.00	11.62	1256.6	60.00	11.62	747
14"	3556	325.4	760	1778	325.4	432	140.00	12.81	1675.5	70.00	12.81	952
16"	4064	373.1	1105	2032	373.1	618	160.00	14.69	2436.1	80.00	14.69	1362

Nominal diameter	ANSI 900 lbs dimensions in mm						Approx. weight in kg*	ANSI 900 lbs dimensions in inch						Approx. weight in lbs*
	a	Di	h	j	e	w		a	Di	h	j	e	w	
2"	380	49.2	210	139	100	150	27	14.96	1.94	8.27	5.47	3.94	5.91	60
3"	420	66.7	240	170	130	200	46	16.54	2.63	9.45	6.69	5.12	7.87	101
4"	470	87.3	279	190	155	220	69	18.50	3.44	10.99	7.48	6.10	8.66	152
6"	570	131.8	352	240	210	270	138	22.44	5.19	13.84	9.45	8.27	10.63	304
8"	750	169.1	422	370	260	370	256	29.53	6.66	16.59	14.57	10.24	14.57	564
10"	840	213.0	487	415	315	420	385	33.07	8.39	19.16	16.34	12.40	16.54	849
12"	920	263.8	544	465	365	470	507	36.22	10.39	21.41	18.31	14.37	18.50	1118

Nominal diameter	ANSI 900 lbs dimensions in mm						ANSI 900 lbs dimensions in inch					
	10D inlet spoolpiece			5D outlet spoolpiece			10D inlet spoolpiece			5D outlet spoolpiece		
	a	Di	weight in kg	a	Di	weight in kg	a	Di	weight in lbs	a	Di	weight in lbs
2"	508	49.3	22	254	49.3	19	20.00	1.94	48.5	10.00	1.94	42
3"	762	73.7	40	381	73.7	30	30.00	2.90	88.2	15.00	2.90	66
4"	1016	97.2	70	508	97.2	51	40.00	3.83	154.3	20.00	3.83	112
6"	1524	146.4	165	762	146.4	116	60.00	5.76	363.8	30.00	5.76	256
8"	2032	182.6	350	1016	182.6	231	80.00	7.19	771.6	40.00	7.19	509
10"	2540	230.2	580	1270	230.2	371	100.00	9.06	1278.7	50.00	9.06	818
12"	3048	280.9	815	1524	280.9	514	120.00	11.06	1796.8	60.00	11.06	1133