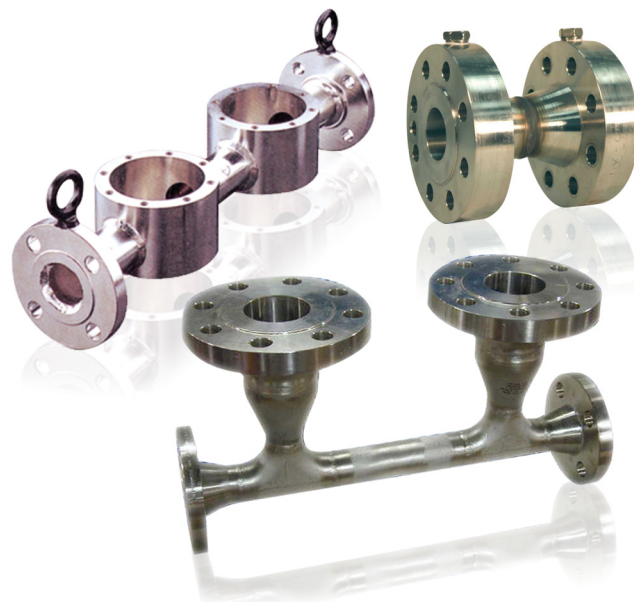


# Wedgemeter II WMC, WMF and WMP

## Differential pressure primary flow element



## Introduction

The flow element consists of a body and wedge flow restriction. This restriction creates a differential pressure in proportion to the square of the volumetric flow rate. The wedge restriction has no critical surface dimensions, or sharp edges, that will affect measurement accuracy as the result of normally expected wear.

Measures liquids, gas and steam

High accuracy  $\pm 0.5\%$  of rate

Bi-directional flow

Low Reynolds number measurement  
(as low as  $Rd 500$ )

Minimum upstream and downstream piping requirements

Standard sizes 0.5" to 24"

## PERFORMANCE SPECIFICATIONS - FLANGE CONNECTION (WMF) / PIPE TAP (WMP) / CHEMICAL TEE (WMC)

### WMP Transmitter Connections:

2 - 24 in. use - 1/2 , 3/8 , 1/4 NPT

### WMF Transmitter Connections:

3 in. RF flange (SCH 80 I.D.)

### WMC Transmitter Connections:

Chemical Tee Type - 8 hole mtg. pattern

### WEDGE Element Standard H/D Ratios:

0.2, 0.3, 0.4, 0.5, 0.6, 0.7.

(Restrictions per Model Code)

To determine H/D ratio and differential pressure, refer to Genie II sizing software.

### Process Flange Connection:

ANSI Class 150 Raised Face

ANSI Class 300 Raised Face

ANSI Class 600 Raised Face

(Contact ABB for additional end flange ratings)

### Internal Bore

Flange Style:

Standard weight pipe is the same as Schedule 40 on 4 in. thru 10 in. size.

Standard weight wall is 0.375 in. on 12 in. thru 24 in. pipe size.

Standard weight not available on 3 in. and smaller.

X-Strong wall pipe is the same as Schedule 80 on 0.5 in. thru 8 in. size.

X-Strong wall is 0.500 in. on 10 in. thru 24 in. pipe size.

(Contact ABB for information on additional pipe schedules)

### Materials of Construction

Process Wetted Parts:

Standard materials are 316 SST and carbon steel. Contact ABB for other materials.

(Carbon Steel meters 3 and below employ 316 SST Wedge restriction)

### System II Mounting Hardware (WMP Series)

3/5 Valve Manifold:

316 SST w/Teflon Packing

Impulse Lines/Fittings:

316 SST

### Chemical Tee Gasket Material (supplied with WMC)

Up to 645...F (340...C) Graphite.

Sealability per ASTM F37A (1/32) 0.50 ml/hr

(P/N 155S1043 for 2 gasket kit)

## PHYSICAL SPECIFICATIONS - FLANGE CONNECTION (WMF) / PIPE TAP (WMP) / CHEMICAL TEE (WMC)

### Accuracy:

Calibrated:

1 in. or larger:  $\pm 0.5\%$  of actual flow when operated within the calibrated range.

0.5 in.:  $\pm 0.75\%$  of actual flow when operated within the calibrated range.

Uncalibrated:

$\pm 5.0\%$  of actual flow when using nominal  $K_d^2$  from sizing program. Applies to bi-directional flow.

Bi-directional:

Same as above when  $K_d^2$  designated as reverse flow coefficient.

Repeatability:  $\pm 0.2\%$

### Temperature and Pressure Rating:

Chemical-Tee Instrument Connection: Chemical-Tee MWP is 300 psi max. or the end flange rating per ANSI B16.5, whichever is lower.

Flanged Instrument Connection: MWP is per ANSI B16.5.

Pipe Tap Connection: MWP is per ANSI B16.5

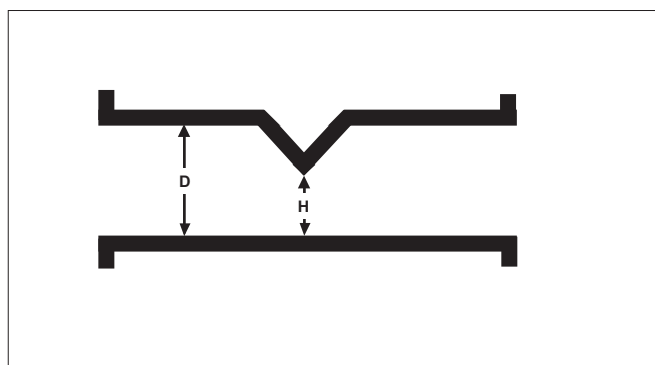
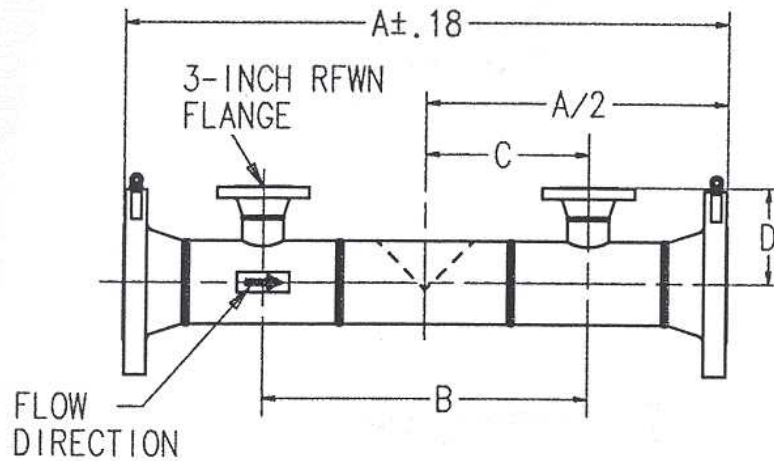


Fig. 1 Wedge profile

## SERIES WMF, RFWN - WEDGE DIMENSIONS AND WEIGHTS

### Sizes 1-1/2, 2 and 3

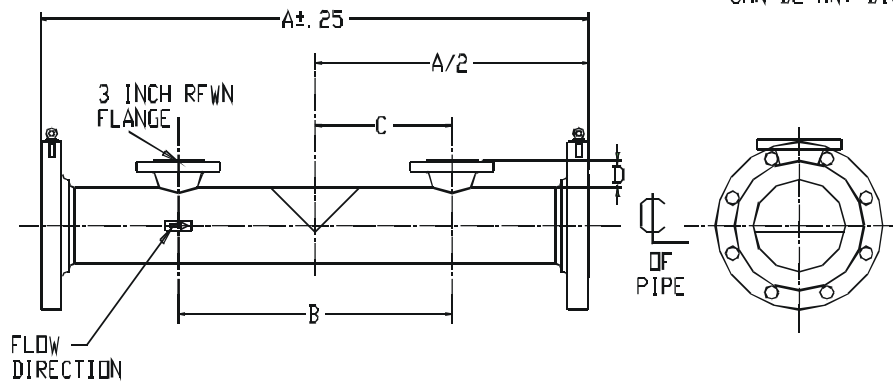


Pipe Size	A Dim			B Dim	C Dim	D Dim			Approximate Weight Lbs		
	Flange Rating					Flange Rating			Flange Rating		
	150	300	600			150	300	600	150	300	600
1.5	20.86	21.37	22	11.5	5.75	8.18	8.43	8.37	55	61	71
2	21.5	22	22.75	11.5	5.75	8.5	8.75	9.12	62	70	84
3	24.5	25.25	26	12.25	6.13	6.13	6.56	6.88	78	92	102

### Sizes 4 - 24

DRAWING APPLIES ONLY TO THE FOLLOWING CATALOG NO  
W M F \* \* \* \* \* A \* \* \* \* \* \* \*

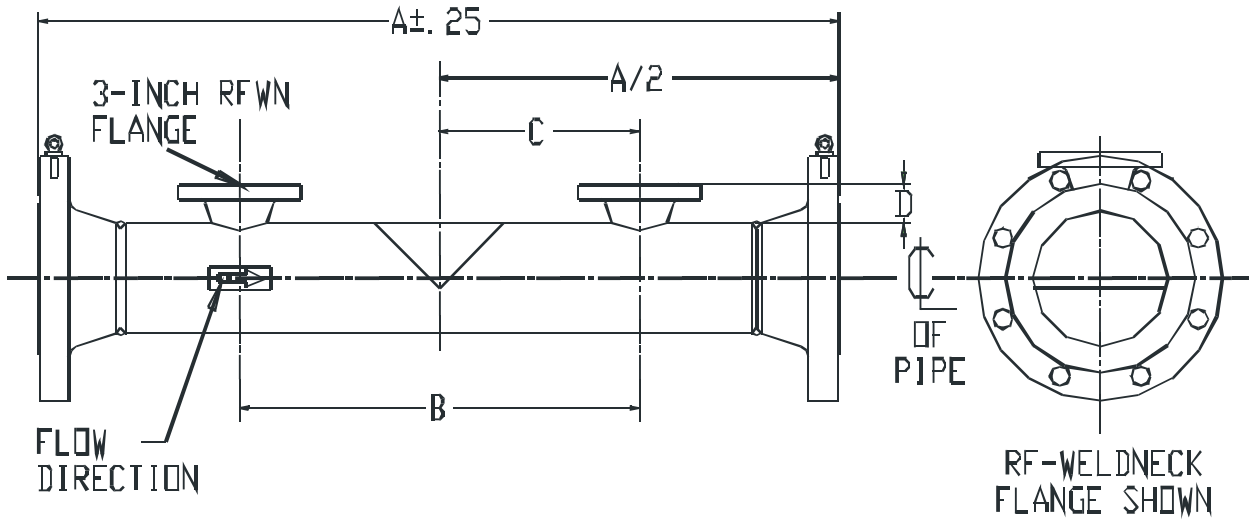
\* CAN BE ANY DIGIT



PIPE SIZE	"A" DIM	"B" DIM	"C" DIM	"D" DIM MAX (REF) FLANGE RATING			APPRX WGT. LESS FLANGE RATING		
				150	300	600	150	300	600
				4	30.00	15.00	7.50	2.75	3.12
6	34.00	18.00	9.00	2.75	3.12	3.50	105	155	215
8	36.00	20.50	10.25	2.75	3.12	3.50	140	205	320
10	38.00	23.50	11.75	2.75	3.12	3.50	205	265	460
12	44.00	26.50	13.25	2.75	3.12	3.50	275	380	
14	46.00	28.00	14.00	2.75	3.12	3.50	345	505	
16	49.00	30.50	15.25	2.75	3.12	3.50	460	570	
18	52.00	33.50	16.75	2.75	3.12	3.50	510	760	
20	56.00	37.00	18.50	2.75	3.12	3.50	595	905	
24	62.00	42.00	21.00	2.75	3.12	3.50	825	1015	

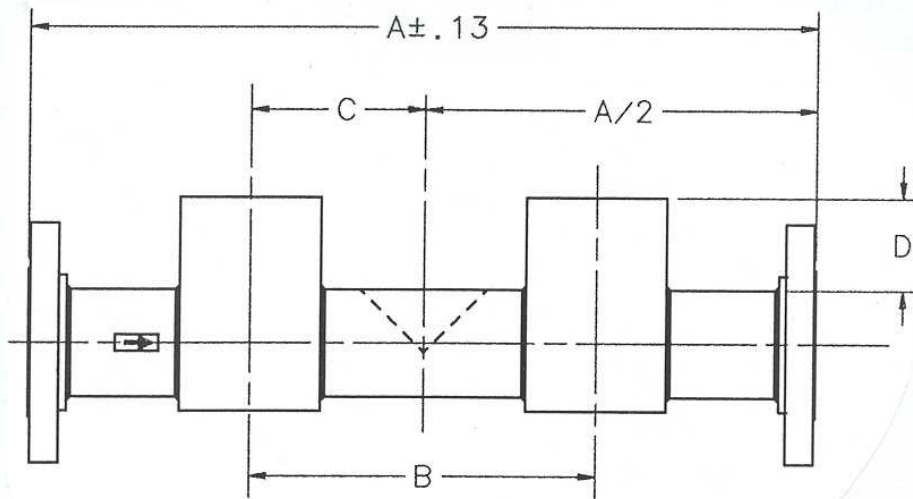
DRAWING APPLIES ONLY TO THE FOLLOWING CATALOG NO  
W M F \* \* \* \* \* B \* \* \* \* \*

\* CAN BE ANY DIGIT



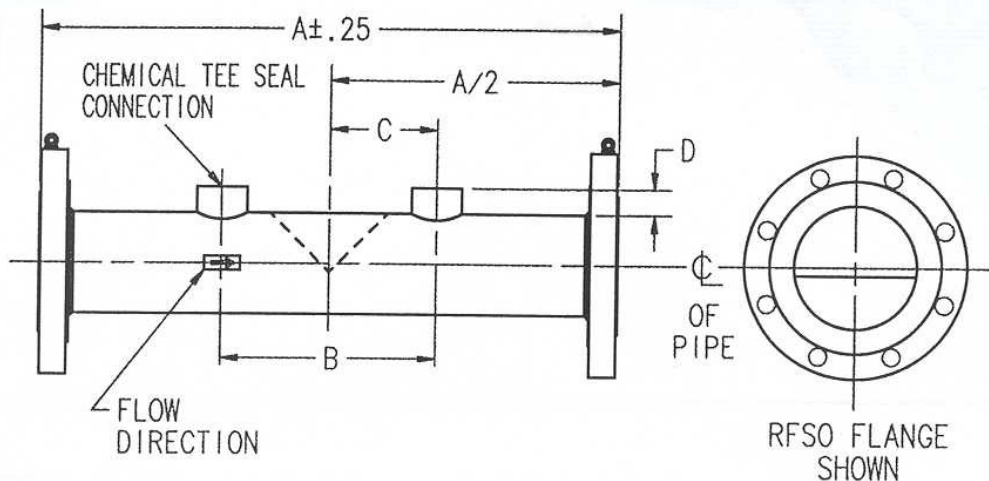
PIPE SIZE	"A" DIM FLANGE RATING			"B" DIM	"C" DIM	"D" DIM MAX (REF) FLANGE RATING			APPROX WGT. LESS FLANGE RATING		
	150	300	600			150	300	600	150	300	600
4	35.50	36.25	38.00	15.00	7.50	2.75	3.12	3.50	135	150	175
6	40.50	41.25	43.25	18.00	9.00	2.75	3.12	3.50	160	210	270
8	43.00	43.75	46.00	20.50	10.25	2.75	3.12	3.50	210	265	365
10	45.00	46.25	49.50	23.50	11.75	2.75	3.12	3.50	270	345	525
12	52.00	53.25	55.75	26.50	13.25	2.75	3.12	3.50	350	480	
14	55.00	56.25	58.50	28.00	14.00	2.75	3.12	3.50	410	610	
16	58.00	59.50	62.50	30.50	15.25	2.75	3.12	3.50	500	755	
18	62.00	63.50	66.00	33.50	16.75	2.75	3.12	3.50	580	870	
20	66.37	67.75	70.50	37.00	18.50	2.75	3.12	3.50	700	1100	
24	73.00	74.25	77.50	42.00	21.00	2.75	3.12	3.50	955	1310	

**SERIES WMC. RFSO - WEDGE DIMENSIONS AND WEIGHTS**  
**SIZES 1/2 - 3**



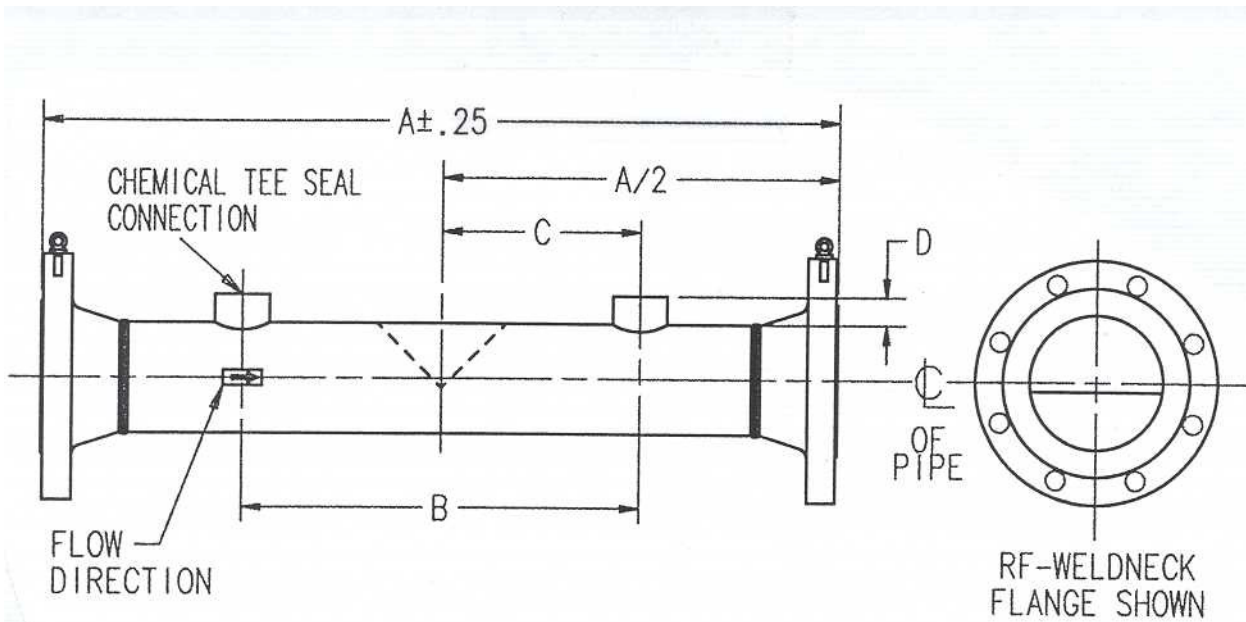
Pipe Size	"A" Dim	"B" Dim	"C" Dim	"D" Dim	Approximate Weight Lbs		
					Flange Rating		
					150	300	600
0.5	18	6.5	3.25	1	23	23	23
1	19	7.06	3.53	1.5	26	29	30
1.5	20	8	4	1.86	43	49	51
2	21	8.38	4.19	2.25	51	55	59
3	24	10.35	5.19	2.75	69	79	84

**SIZES 4 - 24**



Pipe Size	"A" Dim	"B" Dim	"C" Dim	"D" Dim	Approximate Weight Lbs		
					Flange Rating		
					150	300	600
4	30	15	7.5	0.81	70	90	115
6	34	18	9	0.81	90	140	185
8	36	20.5	10.25	0.81	125	180	270
10	38	23.5	11.75	0.81	180	250	420
12	44	26.5	13.25	0.81	260	365	
14	46	28	14	0.81	330	480	
16	49	30.5	15.25	0.81	445	545	
18	52	33.5	16.75	0.81	495	725	
20	56	37	18.5	0.81	580	880	
24	62	42	21	0.81	810	985	

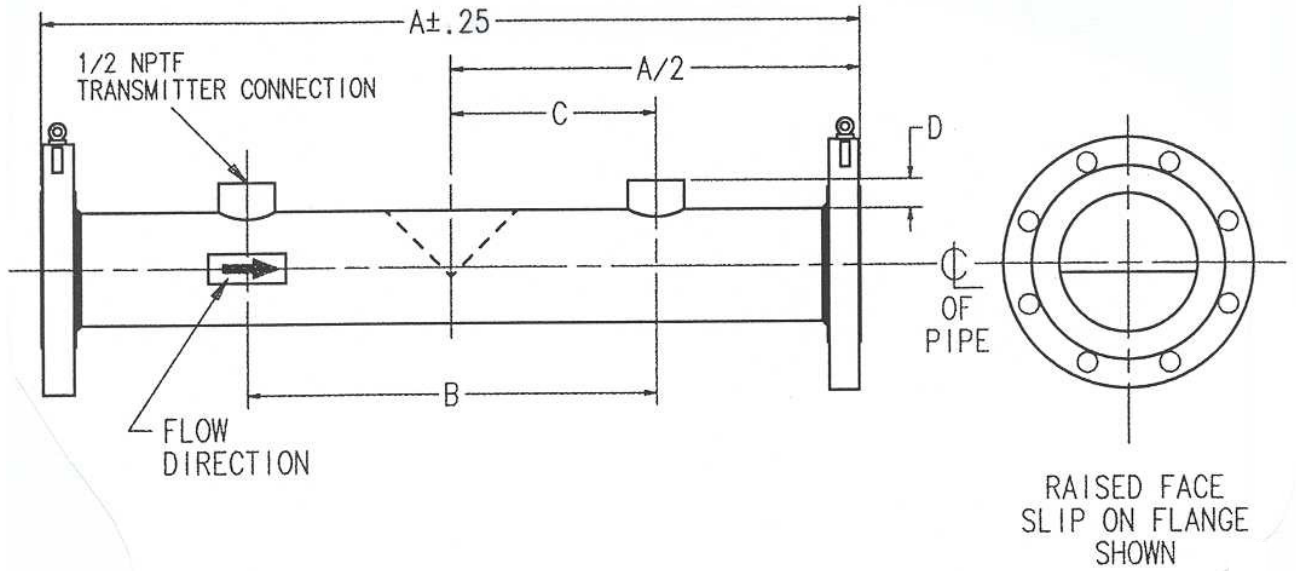
## SERIES WMC, RFWN - WEDGE DIMENSIONS AND WEIGHTS SIZES 4 - 24



Pipe Size	"A" Dim Flange Rating			"B" Dim	"C" Dim	"D" Dim	Approximate Weight Lbs		
	150	300	600				Flange Rating		
	150	300	600				150	300	600
4	35.5	36.25	38	15	7.5	0.94	65	75	110
6	40.5	41.25	43.25	18	9	0.94	90	130	195
8	43	43.75	46	20.5	10.25	0.94	115	175	285
10	45	46.25	49.5	23.5	11.75	0.94	165	280	450
12	52	53.25	55.75	26.5	13.25	0.94	235	380	
14	55	66.25	58.5	28	14	0.94	310	625	
16	58	59.5	62.5	30.5	15.25	0.94	410	640	
18	62	63.5	66	33.5	16.75	0.94	500	810	
20	66.37	67.75	70.5	37	18.5	0.94	630	1005	
24	73	74.25	77.5	42	21	0.94	870	1190	

## SERIES WMP, RFSO - WEDGE DIMENSIONS AND WEIGHTS

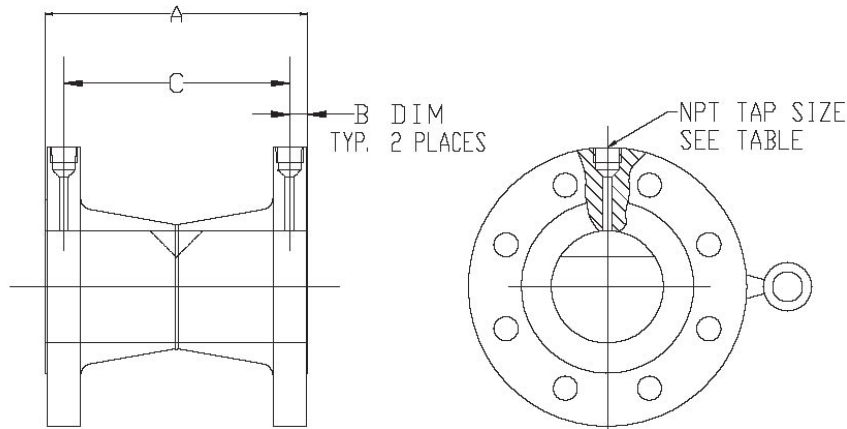
SIZES 8 - 24



Pipe Size	"A" Dim	"B" Dim	"C" Dim	"D" Dim	Approximate Weight Lbs		
					Flange Rating		
					150	300	600
8	36	20.5	10.25	0.94	95	145	240
10	38	23.5	11.75	0.94	160	210	370
12	44	26.5	13.25	0.94	215	325	
14	46	28	14	0.94	290	440	
16	49	30.5	15.25	0.94	410	510	
18	52	33.5	16.75	0.94	445	685	
20	56	37	18.5	0.94	540	930	
24	62	42	21	0.94	750	940	

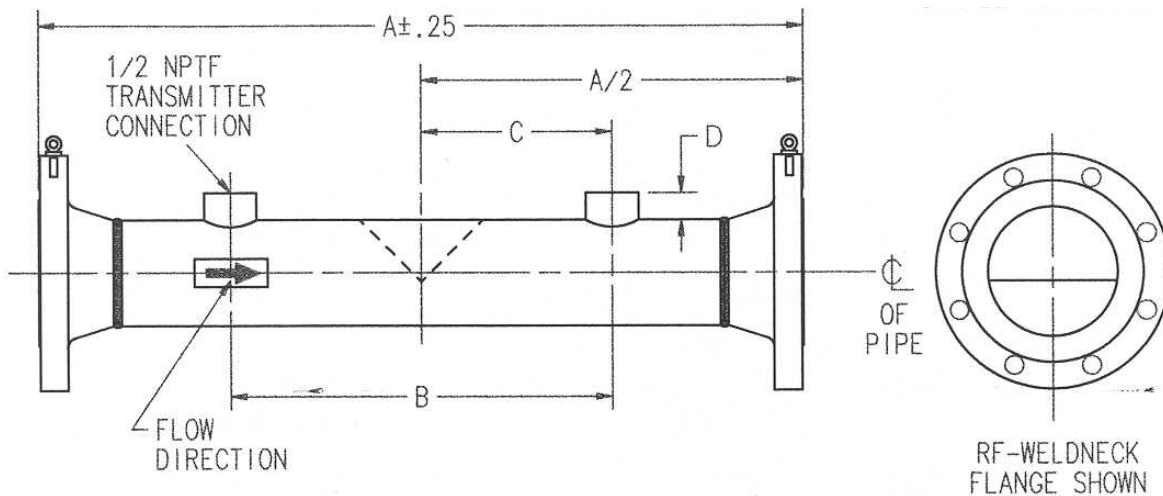
**SERIES WMP, RFWN  
WEDGE DIMENSIONS AND WEIGHTS**

**SIZES 2 - 6**



Pipe Size	"A" Dim			"B" Dim			"C" Dim			NPT Tap Size			Approximate Weight. Lbs		
	Flange Rating			Flange Rating			Flange Rating			Flange Rating			Flange Rating		
	150	300	600	150	300	600	150	300	600	150	300	600	150	300	600
2	5	6.75	6.75	0.44	0.94	0.94	4.13	4.87	4.87	1/4	1/2	1/2	14	27	36
3	5.5	7	7	0.52	0.94	0.94	4.44	5.12	5.12	3/8	1/2	1/2	25	23	52
4	7.5	8.75	10	0.5	0.94	0.94	6.5	6.87	8.12	3/8	1/2	1/2	35	66	76
6	10	10.87	12.75	0.56	0.94	0.94	8.8	9	6.87	3/8	1/2	1/2	54	106	110

**SIZES 8 - 24**



Pipe Size	"A" Dim			"B" Dim	"C" Dim	"D" Dim	Approximate Weight Lbs		
	Flange Rating						Flange Rating		
	150	300	600				150	300	600
8	43	43.75	46	20.5	10.25	0.94	115	175	285
10	45	46.25	49.5	23.5	11.75	0.94	165	280	450
12	52	53.25	55.75	26.5	13.25	0.94	235	380	
14	55	66.25	58.5	28	14	0.94	310	625	
16	58	59.5	62.5	30.5	15.25	0.94	410	640	
18	62	63.5	66	33.5	16.75	0.94	500	810	
20	66.37	67.75	70.5	37	18.5	0.94	630	1005	
24	73	74.25	77.5	42	21	0.94	870	1190	



Ordering information

Wedgemeter II	Model Code	<u>W</u>	<u>M</u>								
		01 - 02			03	04	05	06	07	08	09
<b>Transmitter Connection</b>											
Chemical Tee (1/2 thru 24" pipe size only)				C							
3" Flanged (1-1/2 thru 24" pipe size only)				F							
Pipe Tap (1 thru 24" pipe size only)				P							
<b>Pipe Size</b>											
1/2" (N/A with WMF, WMP)				0	5						
1" (N/A with WMF)				0	1						
1-1/2" (N/A with WMI)				1	5						
2.0" (N/A with WMI)				0	2						
3.0" (N/A with WMI)				0	3						
4.0" (N/A with WMI)				0	4						
6.0" (N/A with WMI)				0	6						
8.0" (N/A with WMI)				0	8						
10" (N/A with WMI)				1	0						
12" (N/A with WMI)				1	2						
14" (N/A with WMI)				1	4						
16" (N/A with WMI)				1	6						
18" (N/A with WMI)				1	8						
20" (N/A with WMI)				2	0						
24" (N/A with WMI)				2	4						
<b>H/D Ratio</b>											
0.2 (N/A 4" and above)					2						
0.3					3						
0.4					4						
0.5					5						
<b>Material</b>											
Carbon Steel (N/A with WMI)					1						
316/316L					2						
Hastelloy C (N/A with WMI) N/A > 14"					3						
Monel (N/A with WMI) N/A > 14"					4						
<b>Flanged Rating</b>											
ANSI 150									1		
ANSI 300									2		
ANSI 600 (N/A 12" and above or WMC)									3		
<b>Flange Style</b>											
RFSO Standard Face (N/A with WMF 1-1/2" - 3", WMI, WMP 1/2" - 6")										A	
RFWN Standard Face (N/A with WMC 1/2" - 3")										B	

Standard Product =

Model Number WM _____ 01 - 09	—	—	—	—	—	—	—
	10	11	12	13	14	15	16
<b>Pipe Schedule</b>							
Standard N/A with 3" pipe & below	1						
X-Strong	2						
<b>Hydro Static Testing</b>							
W/O Certificate	1						
With Certificate	2						
<b>Material Certificates</b>							
None		0					
Material Certificates		1					
PMI		2					
Combination of 1 and 2 above		3					
<b>Welding Standard</b>							
ASME B31.3 NORMAL SERVICE				B			
ASME B31.3 CYCLIC SERVICE				C			
ASME B31.3 CATEGORY D SERVICE				D			
ASME B31.3 CATEGORY M SERVICE				M			
PED B3.1 SEP Level (Requires MTL Cert code 3)				P			
PED B3.1 Category I Module A (Req. MTL Cert code 3)				R			
<b>NDE Testing</b>							
NONE					0		
XRAY OR DYE PENT. RANDOM (must have chosen ASME B31.3 welding option B)					A		
XRAY OR DYE PENT. 100% (must have chosen ASME B31.3 welding option B)					B		
XRAY-DYE PEN OR MAG PARTICLE 100% (must have chosen ASME B31.3 welding option C OR D)					D		
<b>Transmitter Mounting (Table C)</b>							
None						0	
System I (N/A with WMP, WMC 1/2" - 1")						1	
System II with 3 Valve Manifold (WMP only)						2	
System II with 5 Valve Manifold (WMP only)						3	
System I or II, Mounting Bracket Only						4	
Special Configuration (refer to Process data sheet for details)						9	
<b>Calibration</b>							
6 Point Water Calibration							1

Standard Product =

Notes

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