



Pneumatic Double Acting Automated Ball Valve Package

Series 77
Sanitary End
3-Piece Ball Valve

Sizes 1/2"-4"

800/1000 PSI WOG (by size)

Available in 316L

Cavity Filled and Non-Cavity Filled

Sanitary Clamp Ends or
Tube OD Ends

Tube Pipe Design

Superior Live Loaded Packing
System

Blowout Proof Stem w/
Dual Anti-Static Devices

PTFE Seats standard

Pyramidal Stem Seal Design

STANDARDS

Design	ANSI/ASME B16.34
End Connections	ANSI/ASME BPE-1997/2000
Pressure Testing	API 598
Mounting	ISO 5211
Marking System for Valves	MSS SP-25, ISO 5209
CE Approval	PED 97/23/EC Module H
Safety Integrity	IEC 61508:2010; SIL 3
Material Certification	EN 10204-3.1 MTR
Quality Assurance	ISO 9001:2015



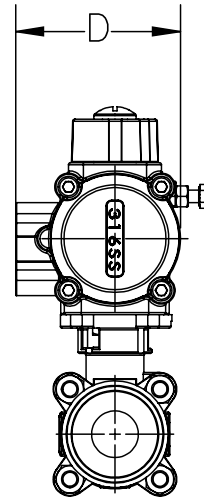
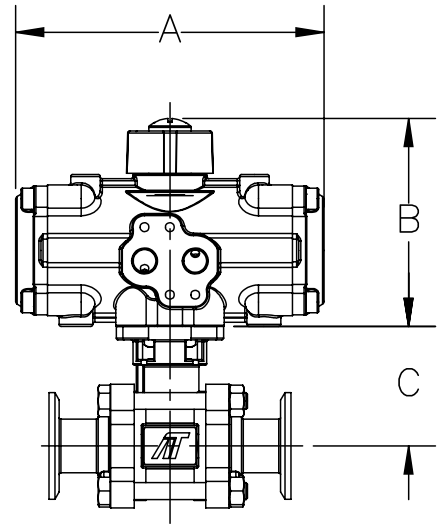
PAINLESS STAINLESS

Direct Mount to TRIAC® S2 Series
Stainless Steel Actuator

DIMENSIONS (IN)

VALVE SIZE	A	B	C	D	VALVE Cv
1/2"	5.75	3.88	1.66	3.07	10
3/4"	5.75	3.88	1.89	3.07	30
1"	5.75	3.88	2.23	3.07	65
1-1/2"	6.81	4.49	3.05	3.58	200
2"	8.03	5.30	3.35	4.42	410
2-1/2"	10.63	6.32	4.28	5.31	600
3"	10.63	6.32	4.63	5.31	1,050
4"	10.63	6.32	5.22	5.31	1,900

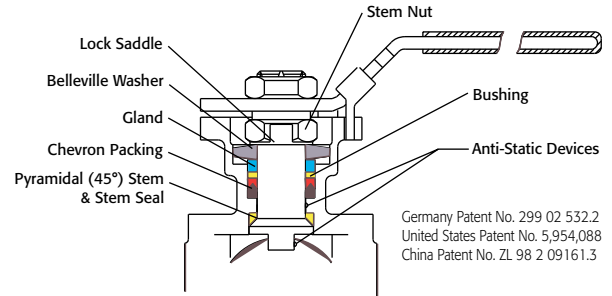
DIMENSIONS SHOWN ARE FOR ASSEMBLIES SIZED FOR 80 PSI SUPPLY



SERIES 77 Sanitary Ends Direct Mount "Painless Stainless"

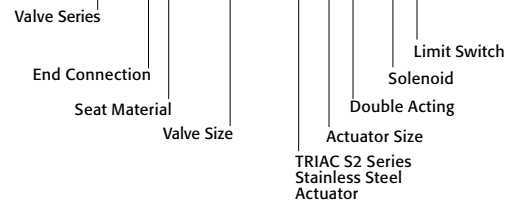
SIZED FOR 80 psi AIR SUPPLY	
SIZE	MODEL
1/2"	77-C1-050/S21D-XX
3/4"	77-C1-075/S21D-XX
1"	77-C1-100/S21D-XX
1-1/2"	77-C1-150/S22D-XX
2"	77-C1-200/S23D-XX
2-1/2"	77-C1-250/S24D-XX
3"	77-C1-300/S24D-XX
4"	77-C1-400/S24D-XX

SIZED FOR 60 psi AIR SUPPLY	
SIZE	MODEL
1/2"	77-C1-050/S21D-XX
3/4"	77-C1-075/S21D-XX
1"	77-C1-100/S21D-XX
1-1/2"	77-C1-150/S23D-XX
2"	77-C1-200/S23D-XX
2-1/2"	77-C1-250/S24D-XX
3"	77-C1-300/S24D-XX
4"	77-C1-400/S25D-XX



Germany Patent No. 299 02 532.2
United States Patent No. 5,954,088
China Patent No. ZL 98 2 09161.3

SAMPLE PART #
77-C1-100/S21D-XX



See valve part number matrix for complete part number and options.

OPTIONS			
DESCRIPTION	SUFFIX	DESCRIPTION	SUFFIX
Type 4 Aluminum Solenoid	A	Type 4 Aluminum Limit Switch	A
Type 7 Aluminum Solenoid	B	Type 7 Aluminum Limit Switch	B
Type 4 Stainless Solenoid	Q	Type 4 Stainless Limit Switch	Q
Type 7 Stainless Solenoid	M	Type 7 Stainless Limit Switch	M

Other options available - call for details
Actuators are sized based on clean/clear fluid.

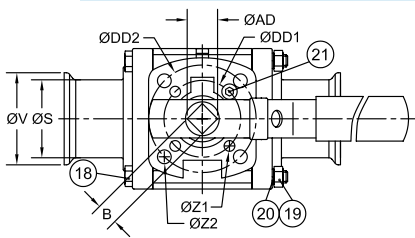
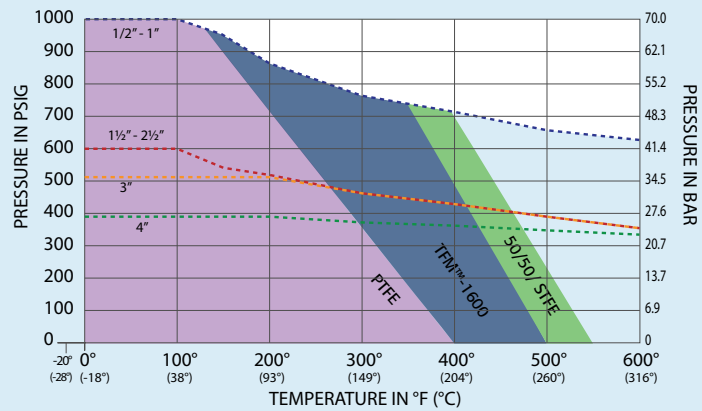


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Pressure vs. Temperature | Series 77 Body/End Cap/Seat Pressure Ratings

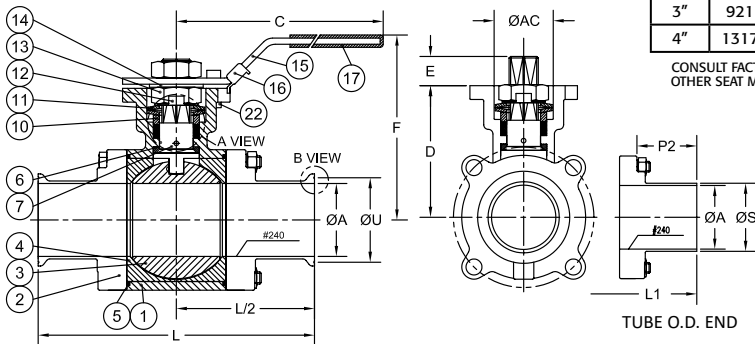
Temp	Pressure			
	1/2" - 1"	1 1/2" - 2 1/2"	3"	4"
-20°	1000	600	507	393
100°	1000	600	507	393
150°	946	539	507	393
200°	861	516	507	393
300°	778	467	467	382
400°	713	429	429	378
500°	665	396	396	352
600°	625	366	366	334



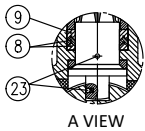
Breakaway Torques for PTFE

Size	Non-Cavity Filled	Cavity Filled
1/2"	80	95
3/4"	90	100
1"	142	160
1-1/2"	319	410
2"	390	490
2-1/2"	806	1010
3"	921	1075
4"	1317	1400

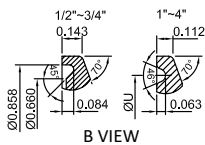
CONSULT FACTORY FOR OTHER SEAT MATERIALS



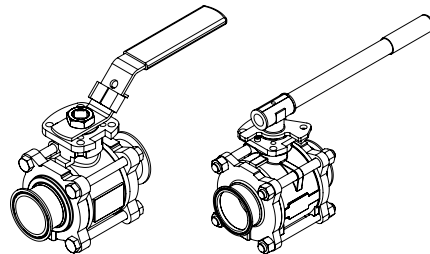
TUBE O.D. END



A VIEW



B VIEW



BENT HANDLE
SIZES 1/2" - 2"

PIPE HANDLE
SIZES 2-1/2" - 4"

MATERIALS LIST

NO.	PART NAME	QTY.	MATERIAL
1	BODY	1	ASTM A351 GRADE CF3M
2	END CAP	2	ASTM A351 GRADE CF3M
3	BALL	1	ASTM A276 GRADE CF3M
4	SEAT	2	PTFE
5	JOINT GASKET	2	PTFE
6	STEM SEAL	1	PTFE
7	STEM	1	ASTM A276 SS 316L
8	GLAND PACKING	1	PTFE
9	GLAND WASHER	1	RTFE
10	GLAND BUSHING	1	AISI 304
11	BELLEVILLE WASHER	2	AISI 301
12	LOCK SADDLE	1	AISI 304
13	STEM NUT	2	AISI 304
14	STEM WASHER	1	AISI 304
15	HANDLE	1	AISI 304
16	HANDLE LOCK	1	AISI 304
17	HANDLE SLEEVE	1	VINYL
18	BODY BOLT	#	**
19	BODY BOLT NUT	&	##
20	WASHER	&	AISI 304
21	STOP BOLT	1	AISI 304
22	BOLT NUT	1	AISI 304
23	ANTI-STATIC DEVICE	2	AISI 316

FOR 1/2"-3" - 4 PCS; FOR 4" - 6 PCS
& FOR 1/2"-2" - 4 PCS; FOR 2-1/2"-3" - 8 PCS; FOR 4" - 12 PCS
**FOR 1/2"-2" - ASTM A193 GRADE B8; FOR 2-1/2"-4" - ISO 3506-1 A2-70
FOR 1/2"-2" - ASTM A194 GRADE 8; FOR 2-1/2"-4" - ISO 3506-2 A2-70

DIMENSIONS (IN)

Tube O.D. according to ASME BPE 1997/2000

SIZE	A	B	C	D	DD1	DD2	E	F	L	L1	P2	S	U	V	Z1	Z2	AC	AD	(LBS)	ISO 5211
1/2"	0.37	0.354	5.47	1.66	1.417	1.654	0.25	3.03	3.51	5.50	1.92	0.50	-	0.99	0.24	0.24	0.92	0.430	1.5	F03/F04
3/4"	0.62	0.354	5.47	1.89	1.417	1.654	0.27	3.27	4.00	5.75	1.96	0.75	-	0.99	0.24	0.24	0.92	0.430	1.8	F03/F04
1"	0.87	0.433	6.50	2.23	1.654	1.969	0.44	3.74	4.51	6.25	2.00	1.00	1.71	1.99	0.24	0.28	1.14	0.563	2.7	F04/F05
1-1/2"	1.37	0.551	8.47	3.05	1.969	2.756	0.56	5.00	5.52	7.50	2.23	1.50	1.71	1.99	0.28	0.34	1.54	0.744	7.0	F05/F07
2"	1.87	0.551	8.47	3.35	1.969	2.756	0.56	5.28	6.26	8.50	2.46	2.00	2.20	2.52	0.28	0.34	1.54	0.744	9.8	F05/F07
2-1/2"	2.37	0.669	11.81	4.28	2.756	4.016	0.67	6.54	6.85	9.75	2.55	2.50	2.78	3.05	0.34	0.47	2.07	0.885	19.6	F07/F10
3"	2.87	0.669	14.57	4.63	2.756	4.016	0.71	6.93	7.61	10.50	2.69	3.00	3.28	3.58	0.34	0.47	2.07	0.885	25.9	F07/F10
4"	3.83	0.748	14.57	5.22	2.756	4.016	0.67	7.48	8.90	12.50	3.14	4.00	4.34	4.68	0.34	0.47	2.07	0.885	47.4	F07/F10



Pneumatic Spring Return Automated Ball Valve Package

Series 77
Sanitary End
3-Piece Ball Valve

- Sizes 1/2"-4"
- 800/1000 PSI WOG (by size)
- Available in 316L
- Cavity Filled and Non-Cavity Filled
- Sanitary Clamp Ends or Tube OD Ends
- Tube Pipe Design
- Superior Live Loaded Packing System
- Blowout Proof Stem w/ Dual Anti-Static Devices
- PTFE Seats standard
- Pyramidal Stem Seal Design

STANDARDS

Design	ANSI/ASME B16.34
End Connections	ANSI/ASME BPE-1997/2000
Pressure Testing	API 598
Mounting	ISO 5211
Marking System for Valves	MSS SP-25, ISO 5209
CE Approval	PED 97/23/EC Module H
Safety Integrity	IEC 61508:2010; SIL 3
Material Certification	EN 10204-3.1 MTR
Quality Assurance	ISO 9001:2015



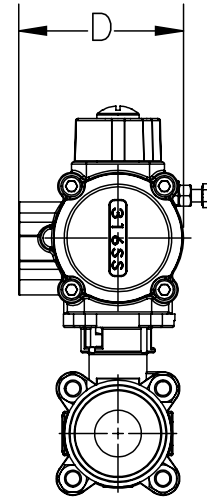
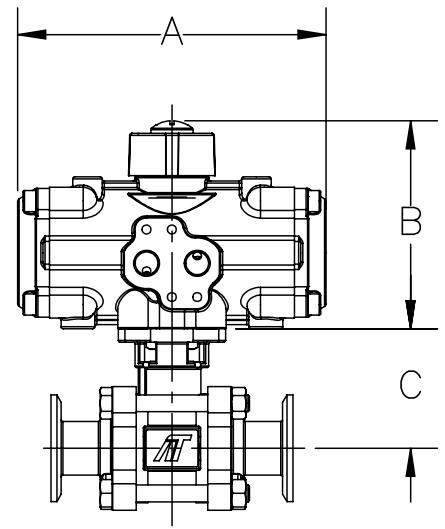
PAINLESS STAINLESS

Direct Mount to TRIAC® S2 Series
Stainless Steel Actuator

DIMENSIONS (IN)

VALVE SIZE	A	B	C	D	VALVE Cv
1/2"	5.75	3.88	1.66	3.07	10
3/4"	5.75	3.88	1.89	3.07	30
1"	6.81	4.49	2.23	3.58	65
1-1/2"	8.03	5.30	3.05	4.42	200
2"	10.63	6.32	3.35	5.31	410
2-1/2"	11.89	7.14	4.28	6.12	600
3"	11.89	7.14	4.63	6.12	1,050
4"	15.51	7.83	5.22	6.75	1,900

DIMENSIONS SHOWN ARE FOR ASSEMBLIES SIZED FOR 80 PSI SUPPLY



SERIES 77 Sanitary Ends Direct Mount "Painless Stainless"

SIZED FOR 80 psi AIR SUPPLY	
SIZE	MODEL
1/2"	77-C1-050/S21S-XX
3/4"	77-C1-075/S21S-XX
1"	77-C1-100/S22S-XX
1-1/2"	77-C1-150/S23S-XX
2"	77-C1-200/S24S-XX
2-1/2"	77-C1-250/S25S-XX
3"	77-C1-300/S25S-XX
4"	77-C1-400/S26S-XX

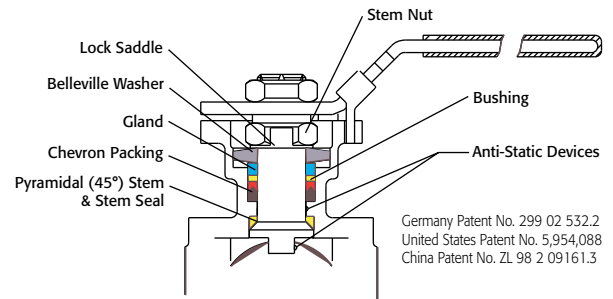
SIZED FOR 60 psi AIR SUPPLY	
SIZE	MODEL
1/2"	77-C1-050/S22S4-XX
3/4"	77-C1-075/S22S4-XX
1"	77-C1-100/S23S4-XX
1-1/2"	77-C1-150/S24S4-XX
2"	77-C1-200/S24S4-XX
2-1/2"	77-C1-250/S26S4-XX
3"	77-C1-300/S26S4-XX
4"	77-C1-400/S27S4-XX

For spring return assemblies, all 80 psi assemblies will have 5 springs, and all 60 psi assemblies will have 4 springs (indicated by the 4-XX).

OPTIONS

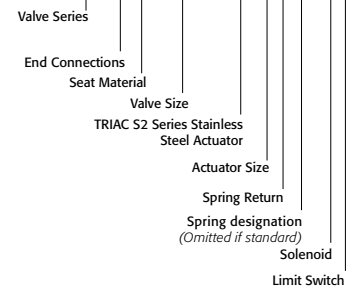
DESCRIPTION	SUFFIX	DESCRIPTION	SUFFIX
Type 4 Aluminum Solenoid	A	Type 4 Aluminum Limit Switch	A
Type 7 Aluminum Solenoid	B	Type 7 Aluminum Limit Switch	B
Type 4 Stainless Solenoid	Q	Type 4 Stainless Limit Switch	Q
Type 7 Stainless Solenoid	M	Type 7 Stainless Limit Switch	M

Other options available - call for details
Actuators are sized based on clean/clear fluid.



Germany Patent No. 299 02 532.2
United States Patent No. 5,954,088
China Patent No. ZL 98 2 09161.3

SAMPLE PART # 77-C1-100/S23S4-XX



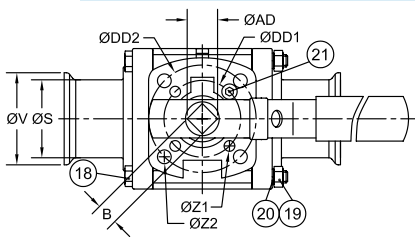
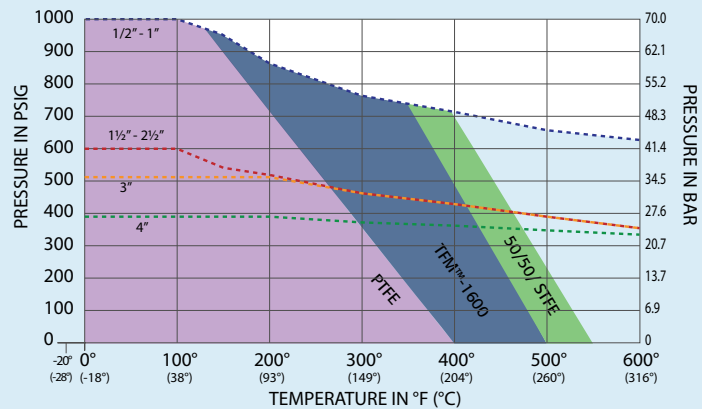
See valve part number matrix for complete part number and options.



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Pressure vs. Temperature | Series 77 Body/End Cap/Seat Pressure Ratings

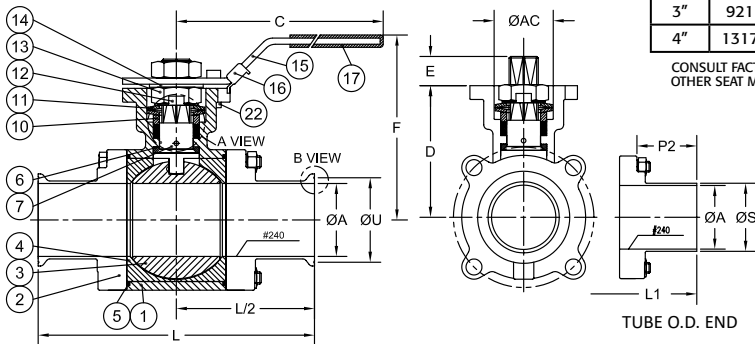
Temp	Pressure			
	1/2" - 1"	1 1/2" - 2 1/2"	3"	4"
-20°	1000	600	507	393
100°	1000	600	507	393
150°	946	539	507	393
200°	861	516	507	393
300°	778	467	467	382
400°	713	429	429	378
500°	665	396	396	352
600°	625	366	366	334



Breakaway Torques for PTFE

Size	Non-Cavity Filled	Cavity Filled
1/2"	80	95
3/4"	90	100
1"	142	160
1-1/2"	319	410
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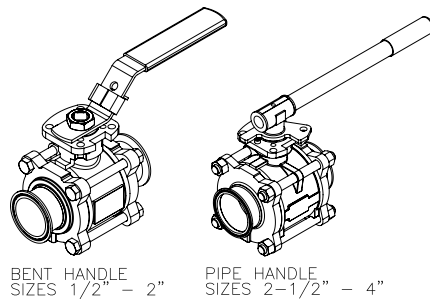
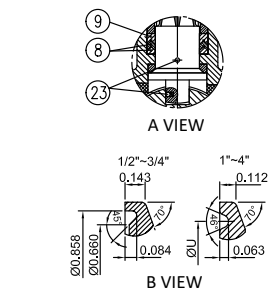
CONSULT FACTORY FOR OTHER SEAT MATERIALS



MATERIALS LIST

NO.	PART NAME	QTY.	MATERIAL
1	BODY	1	ASTM A351 GRADE CF3M
2	END CAP	2	ASTM A351 GRADE CF3M
3	BALL	1	ASTM A276 GRADE CF3M
4	SEAT	2	PTFE
5	JOINT GASKET	2	PTFE
6	STEM SEAL	1	PTFE
7	STEM	1	ASTM A276 SS 316L
8	GLAND PACKING	1	PTFE
9	GLAND WASHER	1	RTFE
10	GLAND BUSHING	1	AISI 304
11	BELLEVILLE WASHER	2	AISI 301
12	LOCK SADDLE	1	AISI 304
13	STEM NUT	2	AISI 304
14	STEM WASHER	1	AISI 304
15	HANDLE	1	AISI 304
16	HANDLE LOCK	1	AISI 304
17	HANDLE SLEEVE	1	VINYL
18	BODY BOLT	#	**
19	BODY BOLT NUT	&	##
20	WASHER	&	AISI 304
21	STOP BOLT	1	AISI 304
22	BOLT NUT	1	AISI 304
23	ANTI-STATIC DEVICE	2	AISI 316

FOR 1/2"-3" - 4 PCS; FOR 4" - 6 PCS
 & FOR 1/2"-2" - 4 PCS; FOR 2-1/2"-3" - 8 PCS; FOR 4" - 12 PCS
 **FOR 1/2"-2" - ASTM A193 GRADE B8; FOR 2-1/2"-4" - ISO 3506-1 A2-70
 ## FOR 1/2"-2" - ASTM A194 GRADE 8; FOR 2-1/2"-4" - ISO 3506-2 A2-70



DIMENSIONS (IN)

Tube O.D. according to ASME BPE 1997/2000

SIZE	A	B	C	D	DD1	DD2	E	F	L	L1	P2	S	U	V	Z1	Z2	AC	AD	(LBS)	ISO 5211
1/2"	0.37	0.354	5.47	1.66	1.417	1.654	0.25	3.03	3.51	5.50	1.92	0.50	-	0.99	0.24	0.24	0.92	0.430	1.5	F03/F04
3/4"	0.62	0.354	5.47	1.89	1.417	1.654	0.27	3.27	4.00	5.75	1.96	0.75	-	0.99	0.24	0.24	0.92	0.430	1.8	F03/F04
1"	0.87	0.433	6.50	2.23	1.654	1.969	0.44	3.74	4.51	6.25	2.00	1.00	1.71	1.99	0.24	0.28	1.14	0.563	2.7	F04/F05
1-1/2"	1.37	0.551	8.47	3.05	1.969	2.756	0.56	5.00	5.52	7.50	2.23	1.50	1.71	1.99	0.28	0.34	1.54	0.744	7.0	F05/F07
2"	1.87	0.551	8.47	3.35	1.969	2.756	0.56	5.28	6.26	8.50	2.46	2.00	2.20	2.52	0.28	0.34	1.54	0.744	9.8	F05/F07
2-1/2"	2.37	0.669	11.81	4.28	2.756	4.016	0.67	6.54	6.85	9.75	2.55	2.50	2.78	3.05	0.34	0.47	2.07	0.885	19.6	F07/F10
3"	2.87	0.669	14.57	4.63	2.756	4.016	0.71	6.93	7.61	10.50	2.69	3.00	3.28	3.58	0.34	0.47	2.07	0.885	25.9	F07/F10
4"	3.83	0.748	14.57	5.22	2.756	4.016	0.67	7.48	8.90	12.50	3.14	4.00	4.34	4.68	0.34	0.47	2.07	0.885	47.4	F07/F10