

SPRINKLER SPRAY PATTERNS

Refer to the General Description section before applying the spray pattern data

General Description

Information for the Sprinkler Spray Patterns provided in this document is provided in one of four methods:

- Spray Profile Pattern
- Cross Sectional Pattern
- Wall Wetting Pattern
- Average Applied Density

For each method a representative sample of a TFP sprinkler was installed and data was collected accordingly.

For the Spray Profile method, water was collected at a variety of elevations below the representative sprinkler via a turntable apparatus similar to the “10 Pan Distribution Test” described in UL199. Consequently, the profiles are a radial averaging that tend to negate the normal unevenness of the actual sprinkler spray pattern (due for example to frame arm shadow and/or pipe line shadow). This technique most reasonably lends itself to standard spray upright and pendent sprinklers, since it provides information as to how the sprinkler’s applied density varies from its center towards its theoretical outside diameter.

For the Cross Sectional method, and as the name implies, the data provides spray patterns at various sections through the representative sprinkler’s spray distribution. This technique allows for documenting complex spray distribution patterns, as in the case of standard coverage horizontal sidewall sprinklers. Studying these patterns reveals the actual contour of the upper

limit of spray as opposed to the typical spray representation of a single line on a two-dimensional graph.

For the Wall Wetting method, the representative sprinkler sample was sprayed within rooms that were equivalent in size to various coverage areas, and at corresponding flow rates. The wetting of the walls was then documented. While this type of data requires interpolation between coverage areas and flow rates, it is considered to be the best way to portray the intricacies of extended coverage and residential type sprinkler spray patterns.

For the Average Applied Density method, water was collected at a variety of elevations below the representative sprinkler via a turntable apparatus similar to the “10 Pan Distribution Test” described in UL199. However, because certain sprinklers do not discharge all of the water in a downward direction, such as Conventional “Old Style” Sprinklers that spray approximately 40% of their discharge pattern in an upward direction, the data as collected could not be used to generate traditional spray profiles. Therefore, the data is presented in a tabular fashion that documents the cumulative Average Applied Density of both the water directed downward and the water returning downward after having initially been discharged upward.

No matter what the method of data presentation, the effects of various deflector to ceiling distances, flowing pressures other than those shown, obstruction to water distribution, ventilation, and sample to sample variation are not included. The method chosen to portray the sprinkler distribution is

based on giving the sprinkler designer the quickest reference as to the overall spray pattern in a laboratory environment and may not reflect actual conditions experienced in the field.

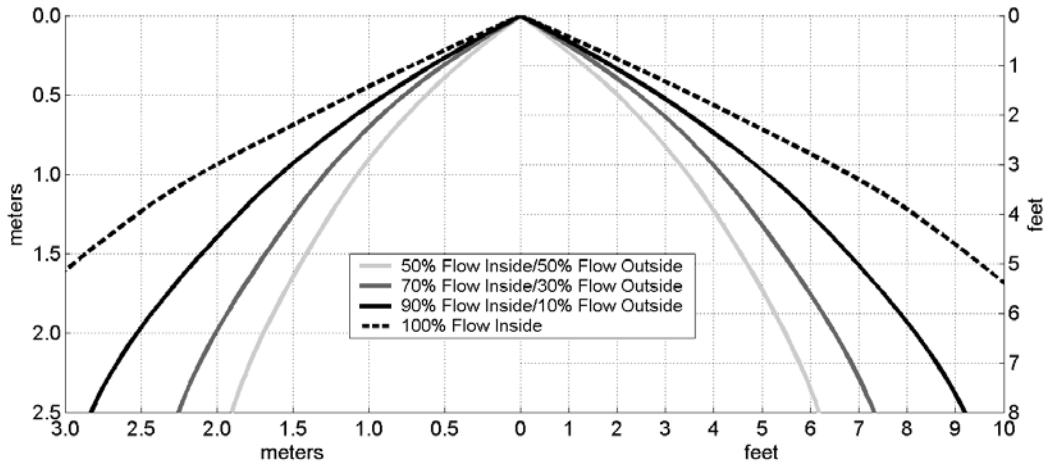
NOTICE

Sprinklers are designed and laboratory approved to meet specific spray distribution requirements. The Sprinkler Spray Pattern data provided in this document represents only a portion of the overall spray distribution characteristics used by approval laboratories for determining applicability to a specific installation standards, e.g., NFPA 13, Installation Of Sprinkler Systems. Deviation from recognized installation rules must be approved by the authority having jurisdiction.

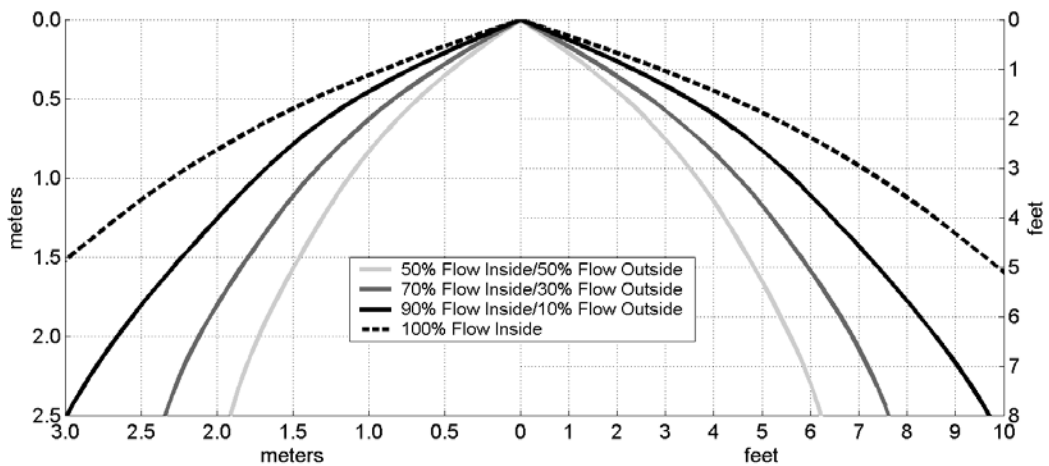
SIN	Model/Series	K-factor	Type	Data Sheet	Page
TY1121	TY-FRL	2.8 (K40)	Std. Coverage Upright	TFP130	4
TY1131	TY-FRB	2.8 (K40)	Std. Coverage Upright	TFP171	5
TY1151	TY-B	2.8 (K40)	Std. Coverage Upright	TFP151	5
TY1221	TY-FRL	2.8 (K40)	Std. Coverage Pendant	TFP130	6
TY1231	TY-FRB	2.8 (K40)	Std. Coverage Pendant	TFP171	7
TY1251	TY-B	2.8 (K40)	Std. Coverage Pendant	TFP151	7
TY1334	LFIL	4.2 (K60)	Residential Horizontal Sidewall	TFP410	34
TY2108	TY-B	3.9 (K57)	Std. Coverage Upright	TFP670	8
TY2109	TY-FRB	3.9 (K57)	Std. Coverage Upright	TFP670	8
TY2131	TY-FRB	4.2 (K60)	Std. Coverage Upright	TFP171	10
TY2149	TY-B (4mm)	3.9 (K57)	Std. Coverage Upright	TFP672	8
TY2208	TY-B	3.9 (K57)	Std. Coverage Pendant	TFP670	9
TY2209	TY-FRB	3.9 (K57)	Std. Coverage Pendant	TFP670	9
TY2231	TY-FRB	4.2 (K60)	Std. Coverage Pendant	TFP171	11
TY2234	LFIL	4.9 (K70)	Residential Pendant	TFP400	35
TY2249	TY-B (4mm)	3.9 (K57)	Std. Coverage Pendant	TFP672	9
TY3111	TY-L	5.6 (K80)	Std. Coverage Upright	TFP110	12
TY3121	TY-FRL	5.6 (K80)	Std. Coverage Upright	TFP130	13
TY313	TY-FRB	5.6 (K80)	Std. Coverage Upright	TFP172	14
TY3131	TY-FRB	5.6 (K80)	Std. Coverage Upright	TFP171	15
TY3141	TY-B (4mm)	5.6 (K80)	Std. Coverage Upright	TFP672	15
TY315	TY-B	5.6 (K80)	Std. Coverage Upright	TFP152	14
TY3151	TY-B	5.6 (K80)	Std. Coverage Upright	TFP151	15
TY3211	TY-L	5.6 (K80)	Std. Coverage Pendant	TFP110	16
TY3221	TY-FRL	5.6 (K80)	Std. Coverage Pendant	TFP130	17
TY323	TY-FRB	5.6 (K80)	Std. Coverage Pendant	TFP172	18
TY3231	TY-FRB	5.6 (K80)	Std. Coverage Pendant	TFP171	19
TY3241	TY-B (4mm)	5.6 (K80)	Std. Coverage Pendant	TFP672	19
TY325	TY-B	5.6 (K80)	Std. Coverage Pendant	TFP152	18
TY3251	TY-B	5.6 (K80)	Std. Coverage Pendant	TFP151	19
TY3311	TY-L	5.6 (K80)	Std. Coverage Horizontal Sidewall	TFP120	29
TY3321	TY-FRL	5.6 (K80)	Std. Coverage Horizontal Sidewall	TFP140	30
TY3322	TY-FRL	5.6 (K80)	Ext. Coverage Horizontal Sidewall	TFP280	36
TY3331	TY-FRB	5.6 (K80)	Std. Coverage Horizontal Sidewall	TFP176	31
TY3332	TY-FRB	5.6 (K80)	Ext. Coverage Horizontal Sidewall	TFP296	37
TY3351	TY-B	5.6 (K80)	Std. Coverage Horizontal Sidewall	TFP161	31
TY3431	TY-FRB	5.6 (K80)	Std. Coverage Vert. Sidewall (Upright)	TFP176	32
TY3431	TY-FRB	5.6 (K80)	Std. Coverage Vert. Sidewall (Pendent)	TFP176	33
TY3451	TY-B	5.6 (K80)	Std. Coverage Vert. Sidewall (Upright)	TFP161	32
TY3451	TY-B	5.6 (K80)	Std. Coverage Vert. Sidewall (Pendent)	TFP161	33

SIN	Model/Series	K-factor	Type	Data Sheet	Page
TY3531	RFII	5.6 (K80)	Std. Cov. QR Concealed Pendant	TFP181	20
TY3532	RFII	5.6 (K80)	Ex. Coverage Concealed Pendant	TFP181	20
TY3551	RFII	5.6 (K80)	Std. Cov. SR Concealed Pendant	TFP181	20
TY363	TY-FRB	5.6 (K80)	Conventional "Old Style" (Upright)	TFP667	44
TY363	TY-FRB	5.6 (K80)	Conventional "Old Style" (Pendant)	TFP667	45
TY3631	TY-FRB	5.6 (K80)	Conventional "Old Style" (Upright)	TFP666	46
TY3631	TY-FRB	5.6 (K80)	Conventional "Old Style" (Pendant)	TFP666	47
TY3641	TY-B (4mm)	5.6 (K80)	Conventional "Old Style" (Upright)	TFP663	46
TY3641	TY-B (4mm)	5.6 (K80)	Conventional "Old Style" (Pendant)	TFP663	47
TY365	TY-B	5.6 (K80)	Conventional "Old Style" (Upright)	TFP662	44
TY365	TY-B	5.6 (K80)	Conventional "Old Style" (Pendant)	TFP662	45
TY3651	TY-B	5.6 (K80)	Conventional "Old Style" (Upright)	TFP661	46
TY3651	TY-B	5.6 (K80)	Conventional "Old Style" (Pendant)	TFP661	47
TY4111	TY-L	8.0 (K115)	Std. Coverage Upright	TFP110	21
TY4121	TY-FRL	8.0 (K115)	Std. Coverage Upright	TFP130	22
TY4131	TY-FRB	8.0 (K115)	Std. Coverage Upright	TFP171	23
TY4141	TY-B (4mm)	8.0 (K115)	Std. Coverage Upright	TFP672	23
TY4151	TY-B	8.0 (K115)	Std. Coverage Upright	TFP151	23
TY4211	TY-L	8.0 (K115)	Std. Coverage Pendant	TFP110	24
TY4221	TY-FRL	8.0 (K115)	Std. Coverage Pendant	TFP130	25
TY4231	TY-FRB	8.0 (K115)	Std. Coverage Pendant	TFP171	26
TY4241	TY-B (4mm)	8.0 (K115)	Std. Coverage Pendant	TFP672	26
TY4251	TY-B	8.0 (K115)	Std. Coverage Pendant	TFP151	26
TY4322	TY-FRL	8.0 (K115)	Ext. Coverage Horizontal Sidewall	TFP280	38
TY4332	TY-FRB	8.0 (K115)	Ext. Coverage Horizontal Sidewall	TFP296	39
TY5111	ELO-231	11.2 (K160)	Std. Coverage Upright	TFP340	27
TY5131	ELO-231FRB	11.2 (K160)	Std. Coverage Upright	TFP344	27
TY5137	EC-11	11.2 (K160)	Ext. Coverage Upright	TFP220	42
TY5151	ELO-231B	11.2 (K160)	Std. Coverage Upright	TFP342	27
TY5211	ELO-231	11.2 (K160)	Std. Coverage Pendant	TFP340	28
TY5231	ELO-231FRB	11.2 (K160)	Std. Coverage Pendant	TFP344	28
TY5237	EC-11	11.2 (K160)	Ext. Coverage Pendant	TFP220	43
TY5251	ELO-231B	11.2 (K160)	Std. Coverage Pendant	TFP342	28
TY5332	SW-20	11.2 (K160)	Ext. Coverage Horizontal Sidewall	TFP230	40
TY5337	SW-24	11.2 (K160)	Ext. Coverage Horizontal Sidewall	TFP230	41
TY6137	EC-14	14.0 (K200)	Ext. Coverage Upright	TFP220	42
TY6237	EC-14	14.0 (K200)	Ext. Coverage Pendant	TFP220	43

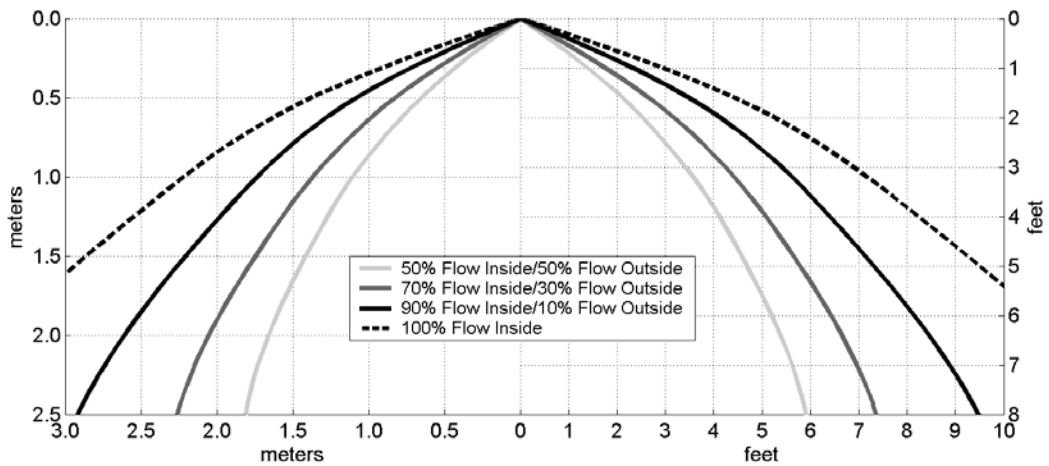
7 PSI
7.4 GPM
(0.5 Bar)
(28 LPM)



15 PSI
11 GPM
(1.0 Bar)
(41 LPM)



30 PSI
15 GPM
(2.1 Bar)
(58 LPM)



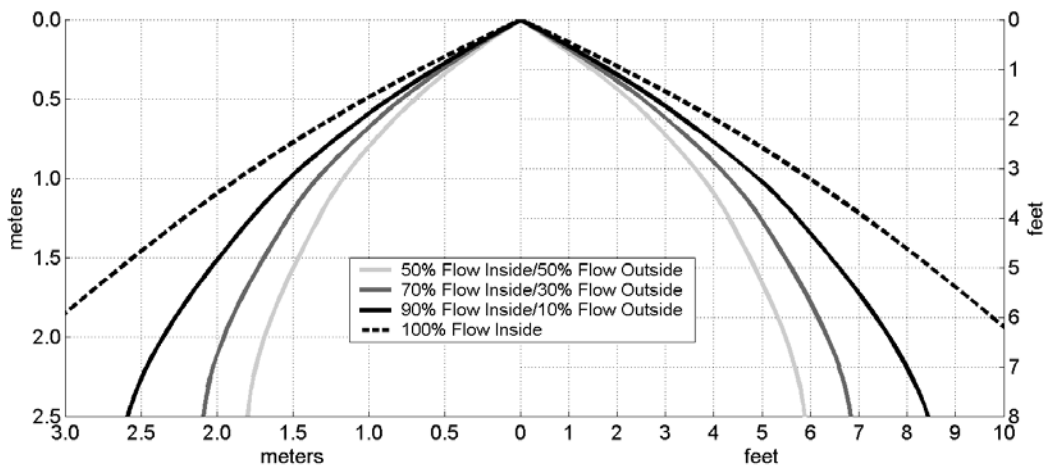
Spray Profile Patterns

Standard Coverage Upright

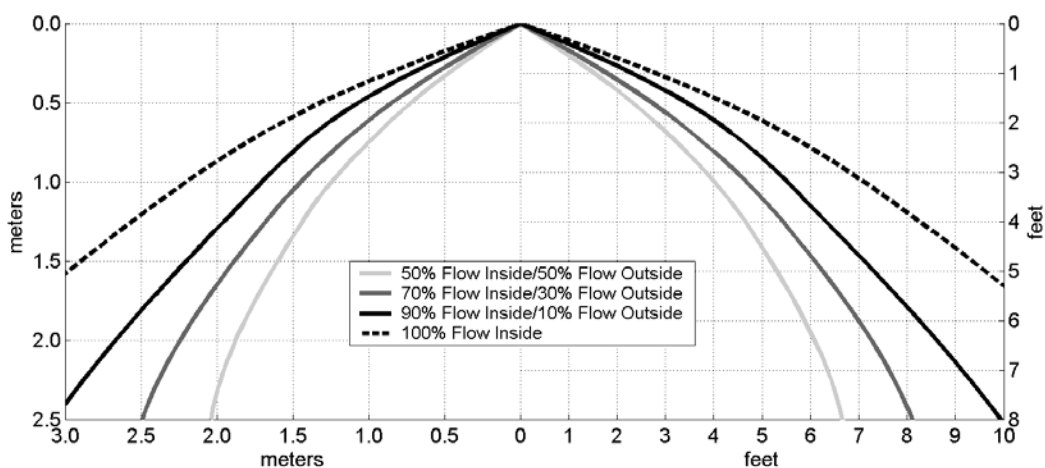
K=2.8 (K40), 7 inches (178 mm) Deflector to Ceiling

TY1121, TY-FRL

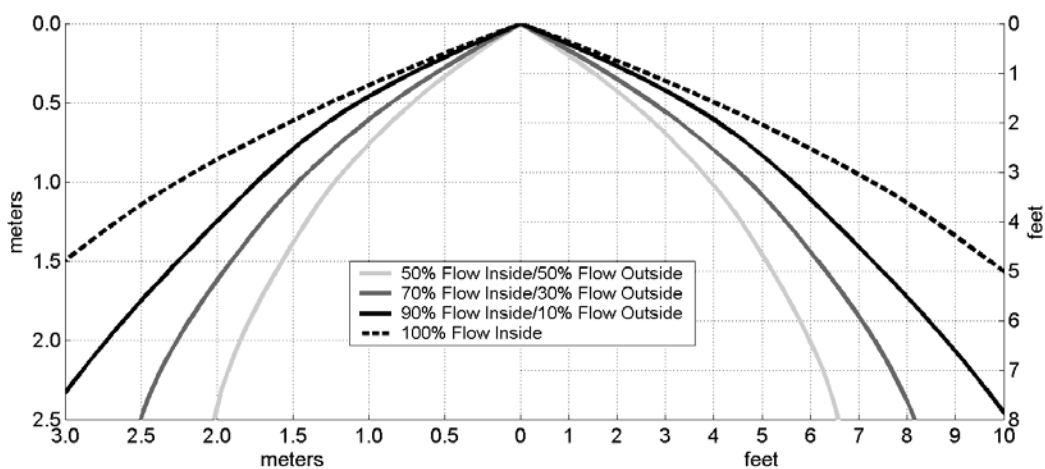
7 PSI
7.4 GPM
(0.5 Bar)
(28 LPM)



15 PSI
11 GPM
(1.0 Bar)
(41 LPM)



30 PSI
15 GPM
(2.1 Bar)
(58 LPM)



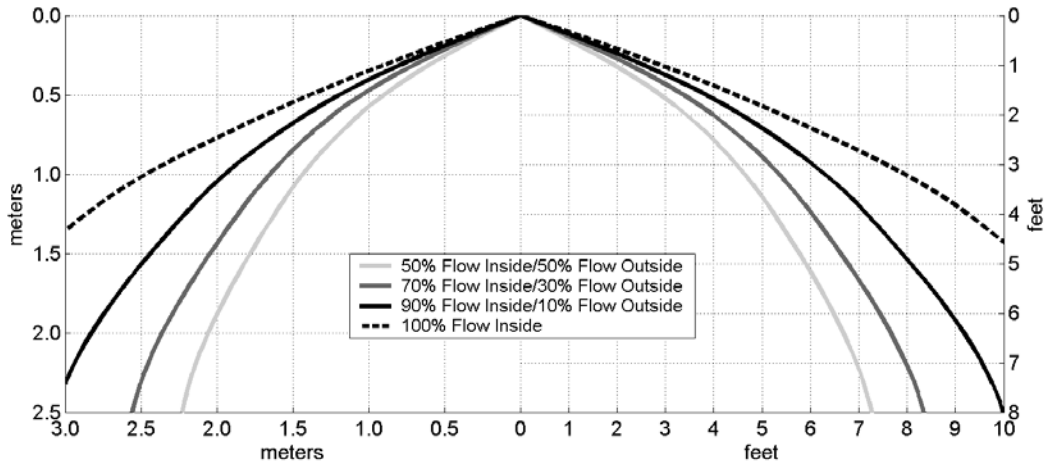
Spray Profile Patterns

Standard Coverage Upright

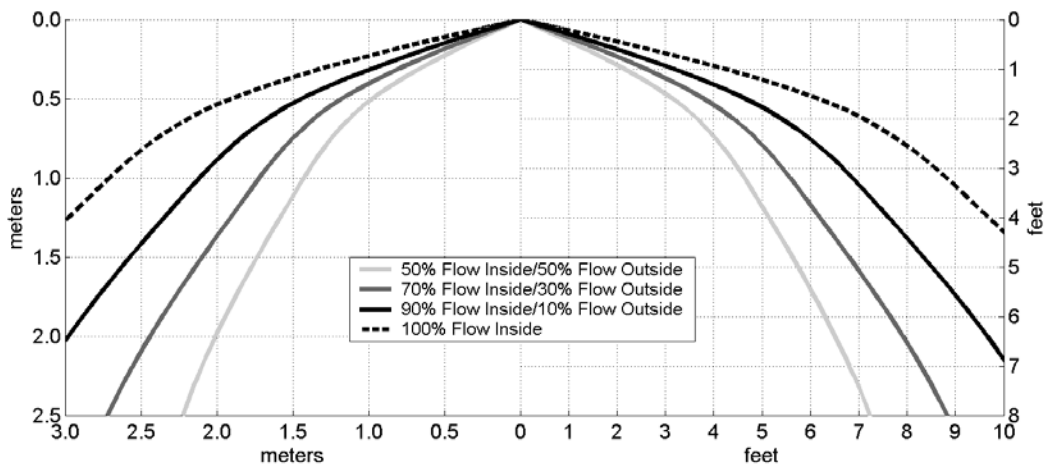
K=2.8 (K40), 7 inches (178 mm) Deflector to Ceiling

TY1131, TY-FRB
TY1151, TY-B

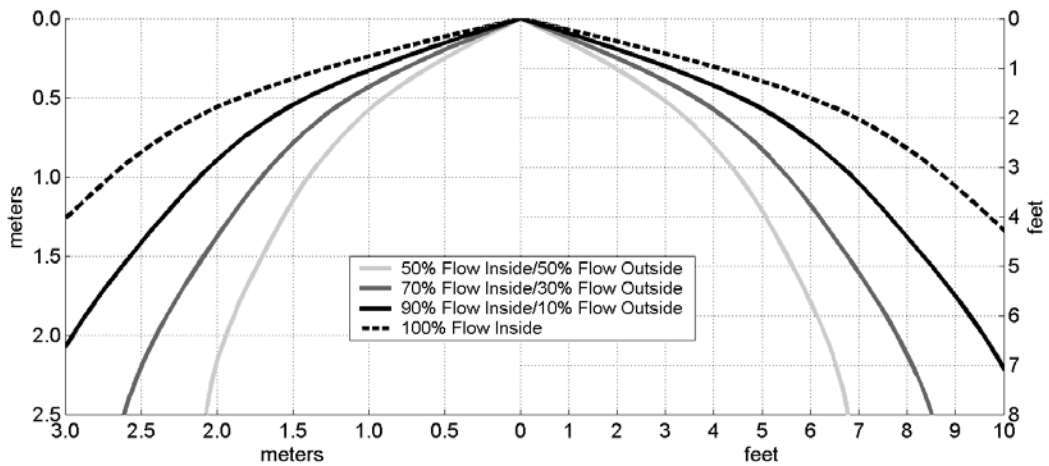
7 PSI
7.4 GPM
(0.5 Bar)
(28 LPM)



15 PSI
11 GPM
(1.0 Bar)
(41 LPM)



30 PSI
15 GPM
(2.1 Bar)
(58 LPM)



Spray Profile Patterns

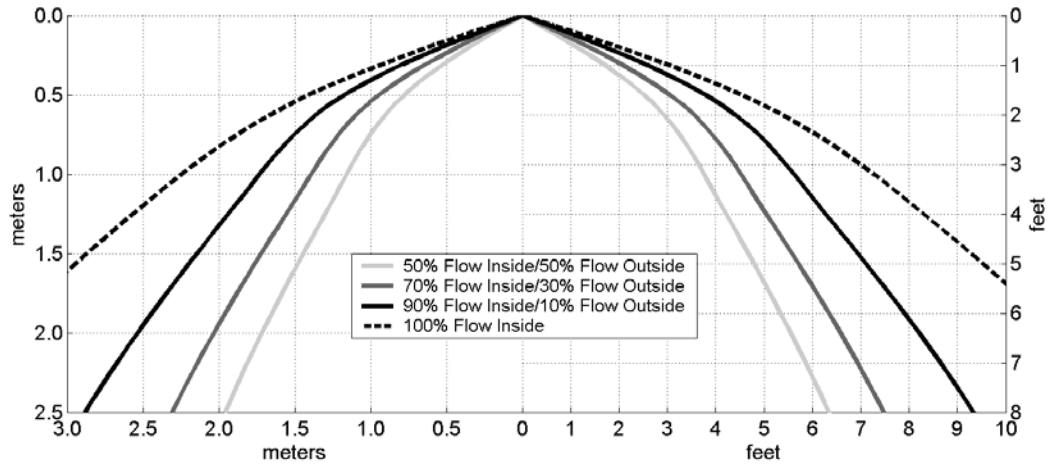
TY1221, TY-FRL

Standard Coverage Pendant

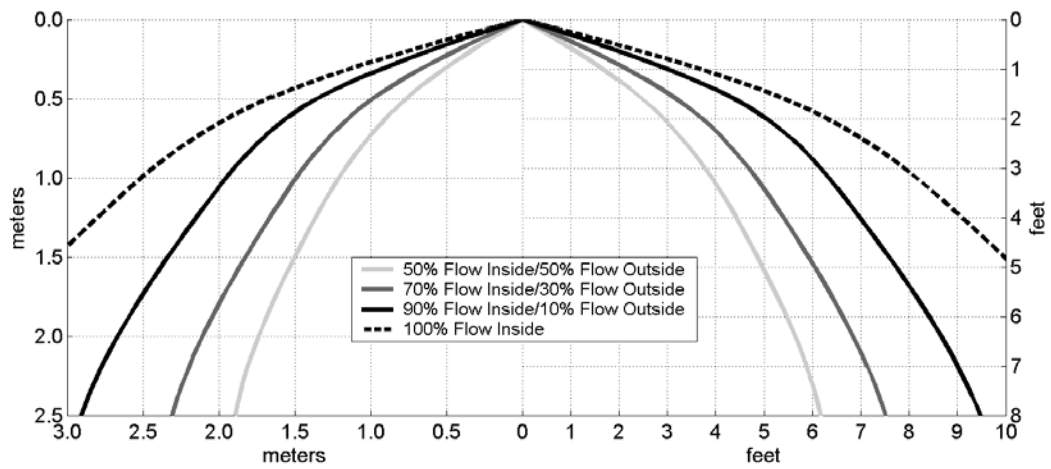
K=2.8 (K40), 7 inches (178 mm) Deflector to Ceiling

(Read the General Description section on Page 1 before applying the spray pattern data.)

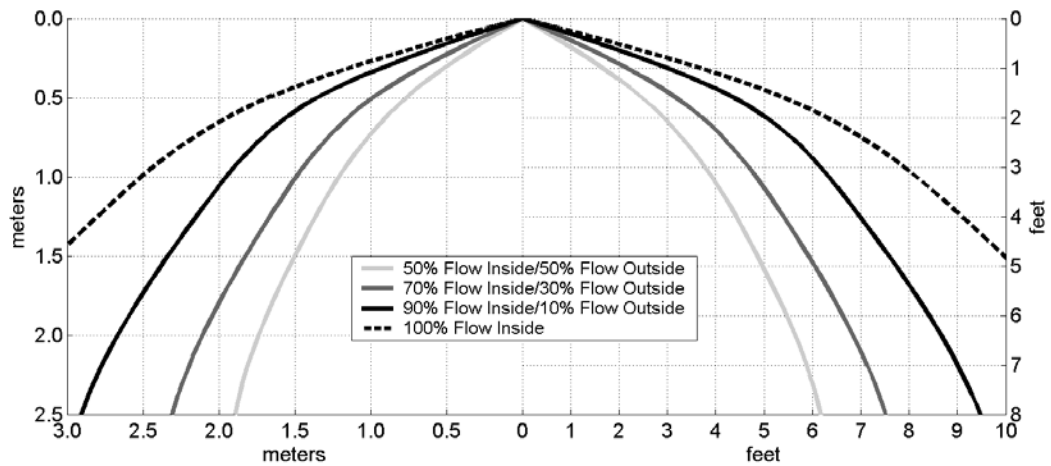
7 PSI
7.4 GPM
(0.5 Bar)
(28 LPM)



15 PSI
11 GPM
(1.0 Bar)
(41 LPM)



30 PSI
15 GPM
(2.1 Bar)
(58 LPM)



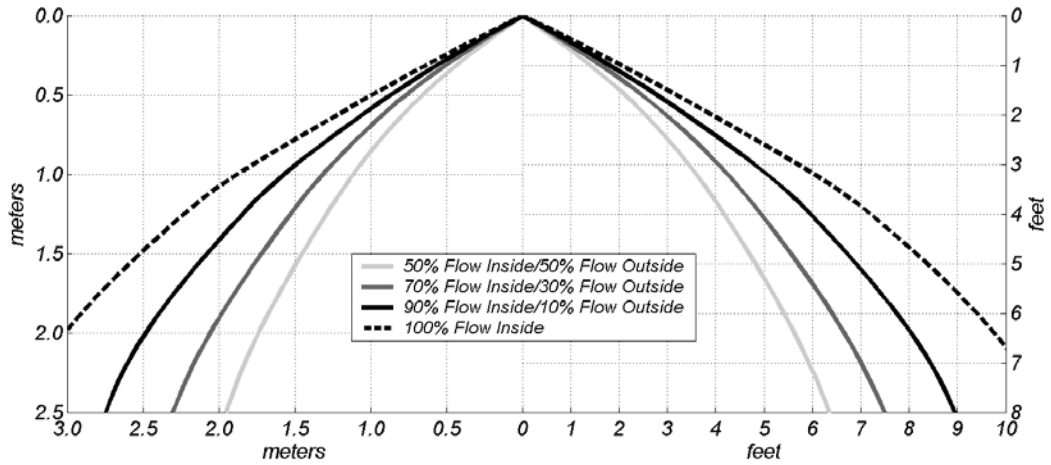
Spray Profile Patterns

Standard Coverage Pendant

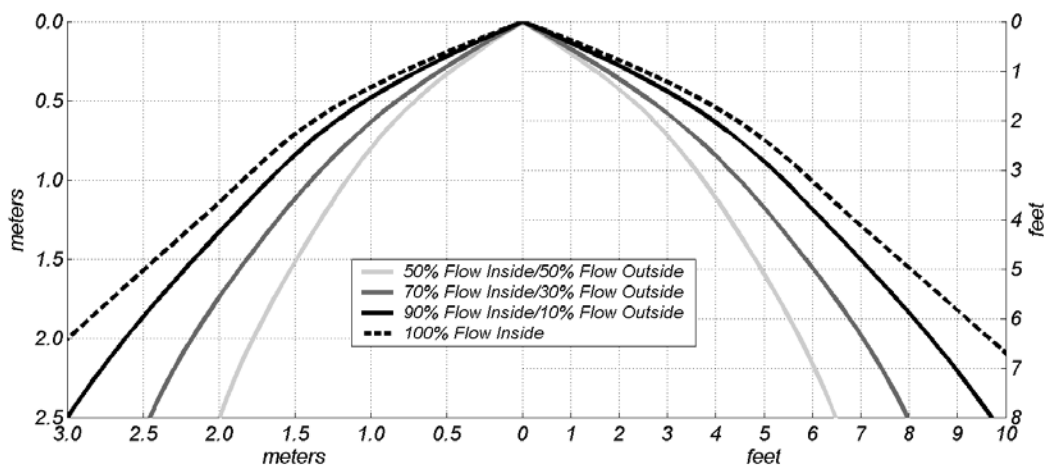
K=2.8 (K40), 7 inches (178 mm) Deflector to Ceiling

TY1231, TY-FRB
TY1251, TY-B

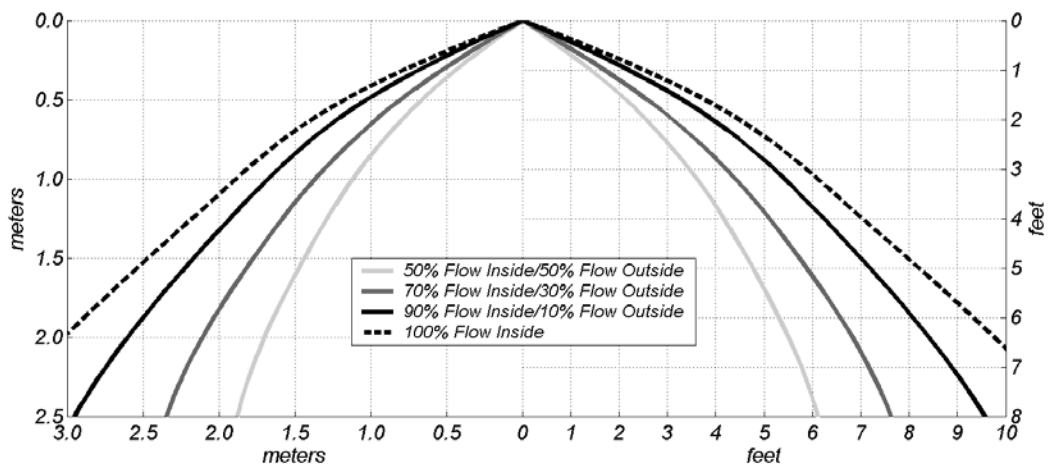
7 PSI
11 GPM
(0.5 Bar)
(40 LPM)



15 PSI
15 GPM
(1.0 Bar)
(58 LPM)



30 PSI
22 GPM
(2.1 Bar)
(82 LPM)

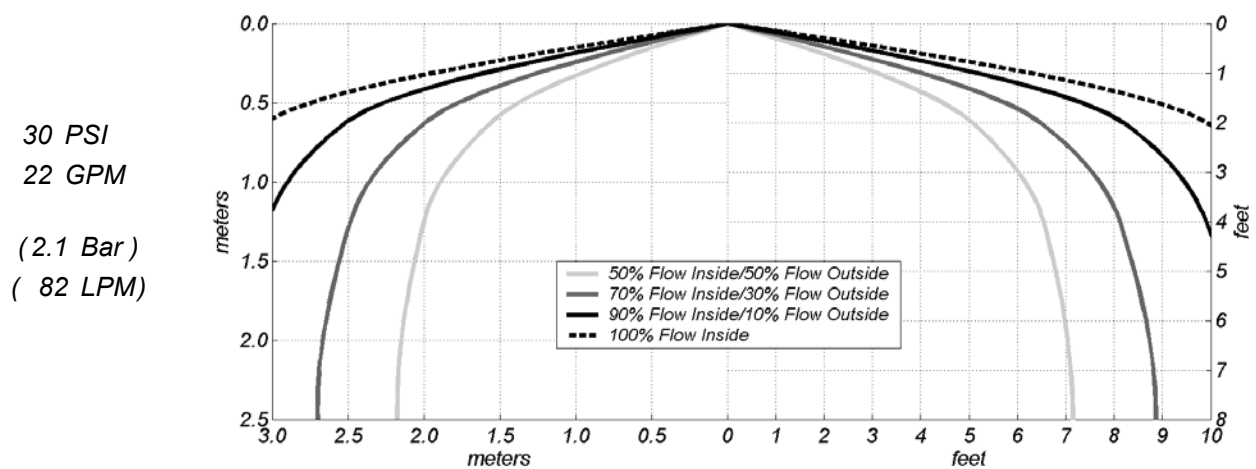
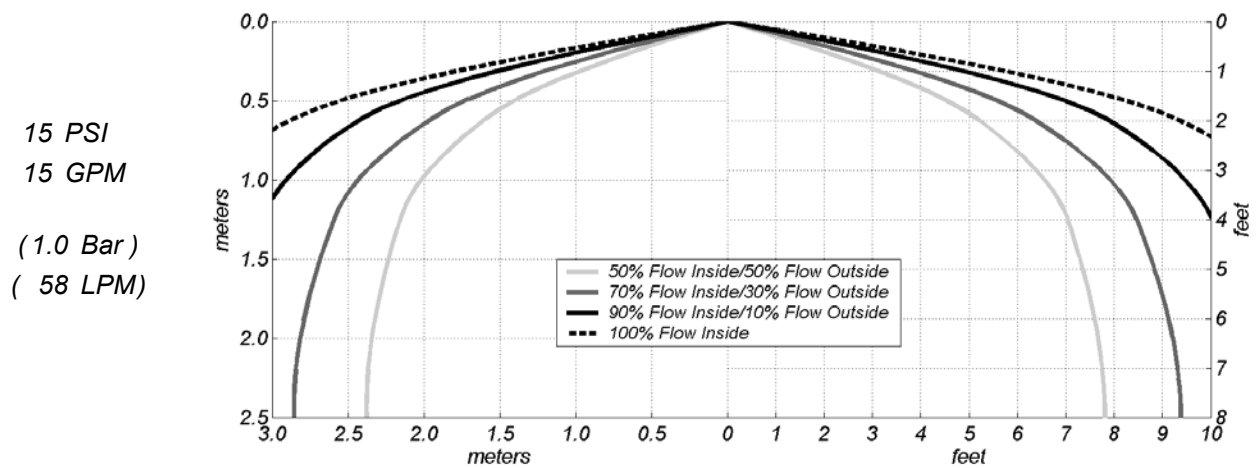
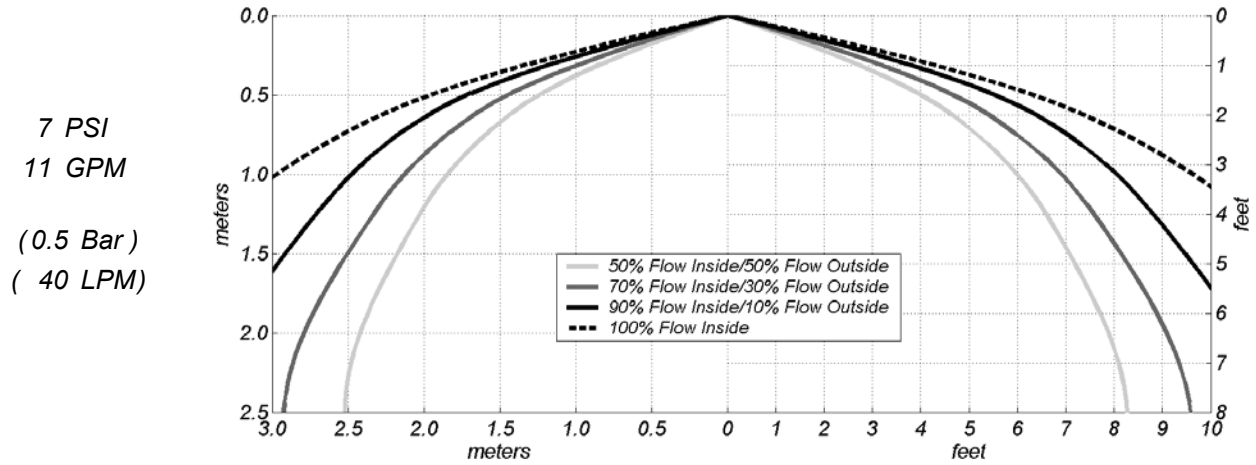


Spray Profile Patterns

Standard Coverage Upright

K=3.9 (K57), 7 inches (178 mm) Deflector to Ceiling

- TY2108, TY-B
- TY2109, TY-FRB
- TY2149, TY-B (4mm)



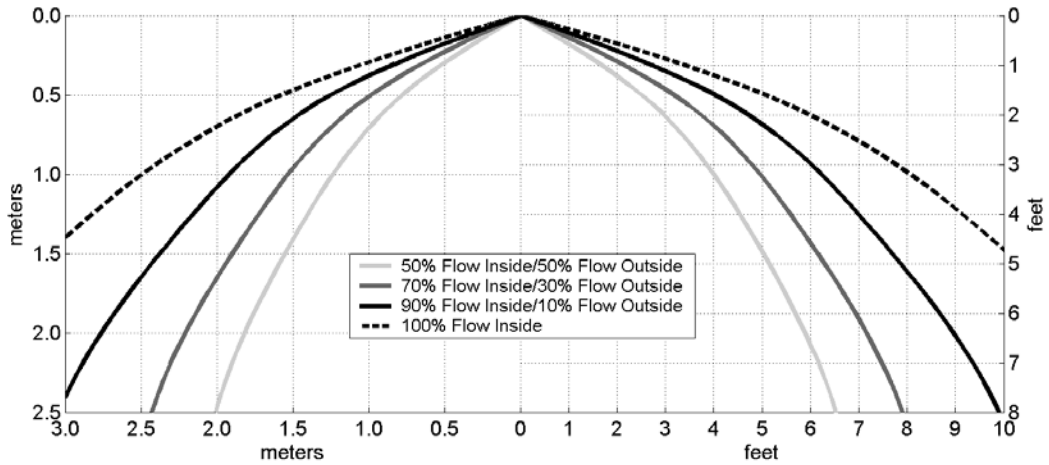
Spray Profile Patterns

Standard Coverage Pendant

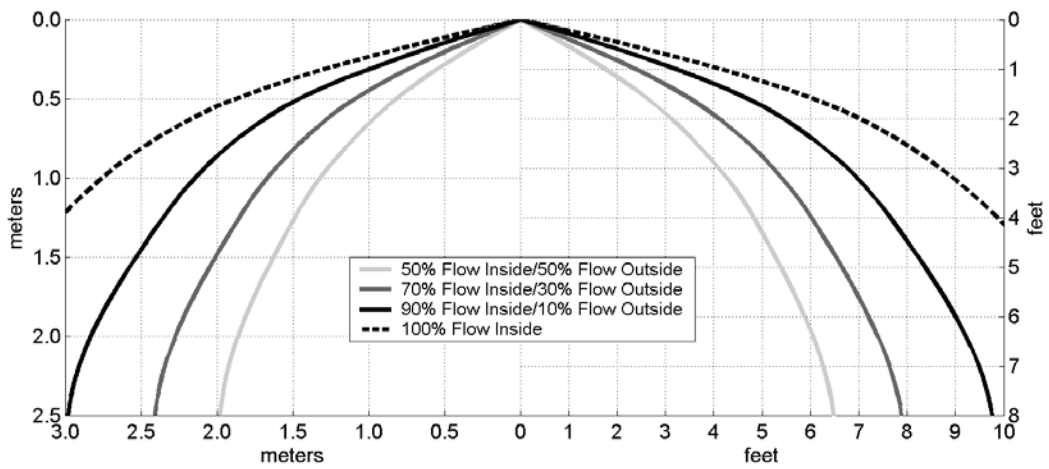
K=3.9 (K57), 7 inches (178 mm) Deflector to Ceiling

- TY2208, TY-B
- TY2209, TY-FRB
- TY2249, TY-B (4mm)

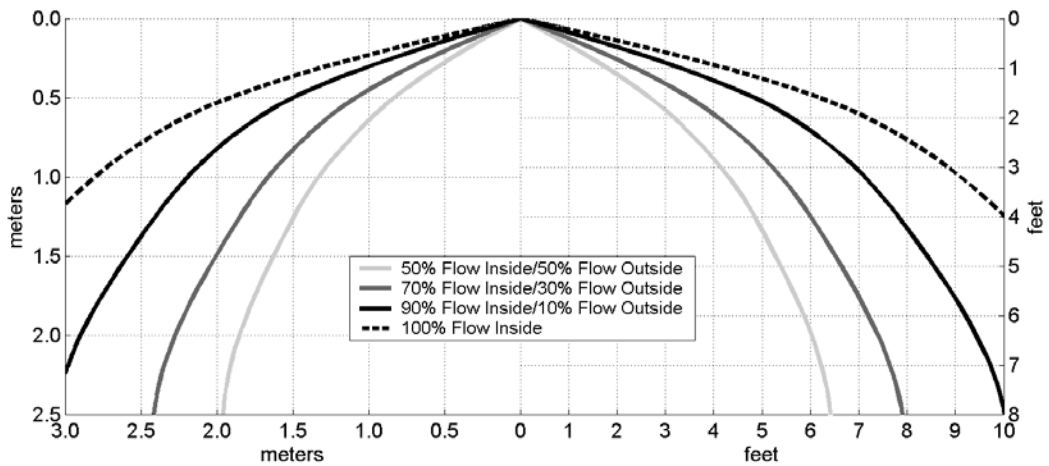
7 PSI
11 GPM
(0.5 Bar)
(42 LPM)



15 PSI
16 GPM
(1.0 Bar)
(62 LPM)



30 PSI
23 GPM
(2.1 Bar)
(87 LPM)



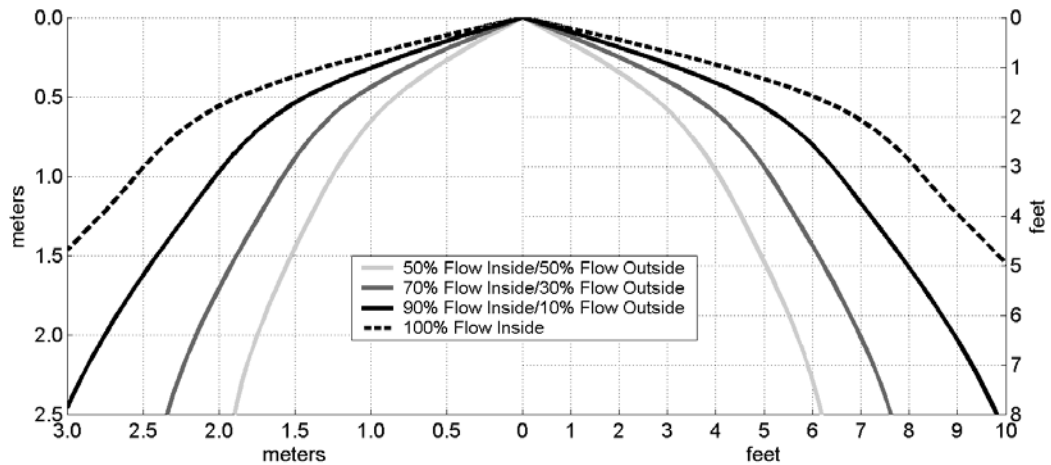
Spray Profile Patterns

TY2131, TY-FRB

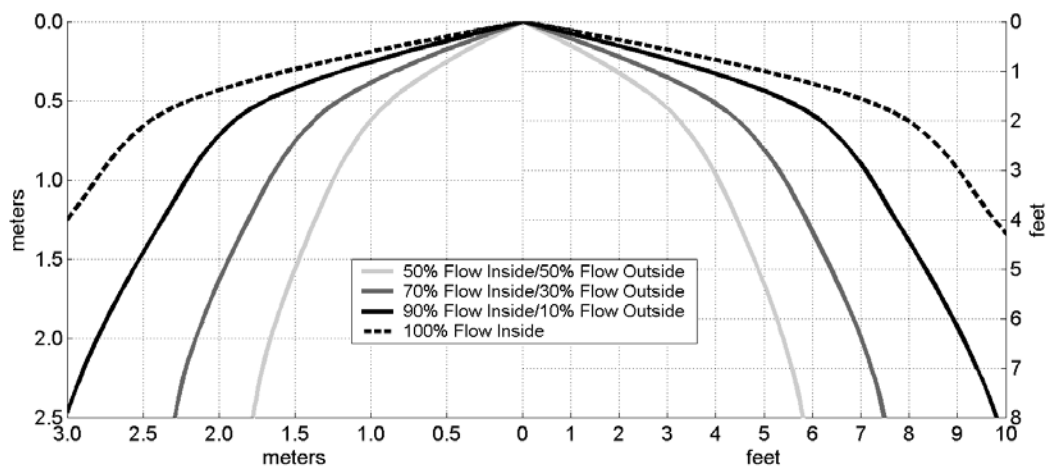
Standard Coverage Upright

K=4.2 (K60), 7 inches (178 mm) Deflector to Ceiling

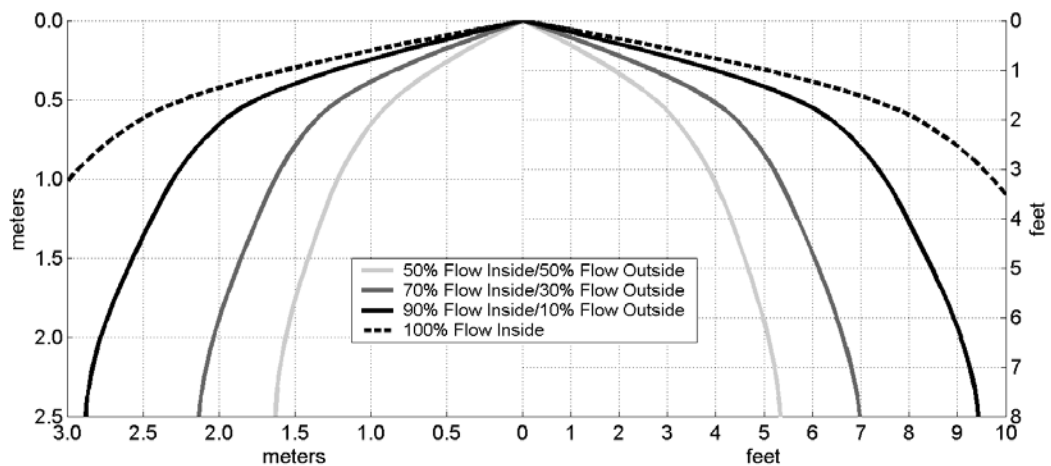
7 PSI
11 GPM
(0.5 Bar)
(42 LPM)



15 PSI
16 GPM
(1.0 Bar)
(62 LPM)



30 PSI
23 GPM
(2.1 Bar)
(87 LPM)



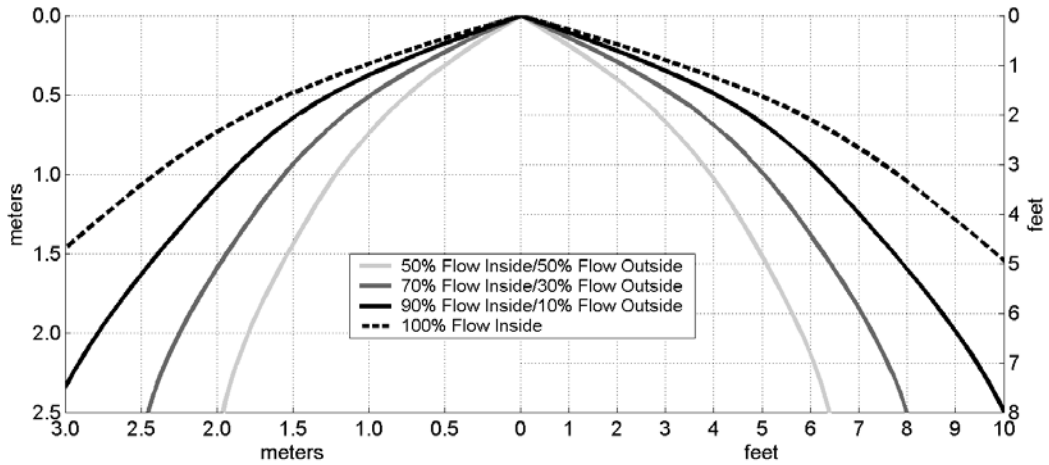
Spray Profile Patterns

TY2231, TY-FRB

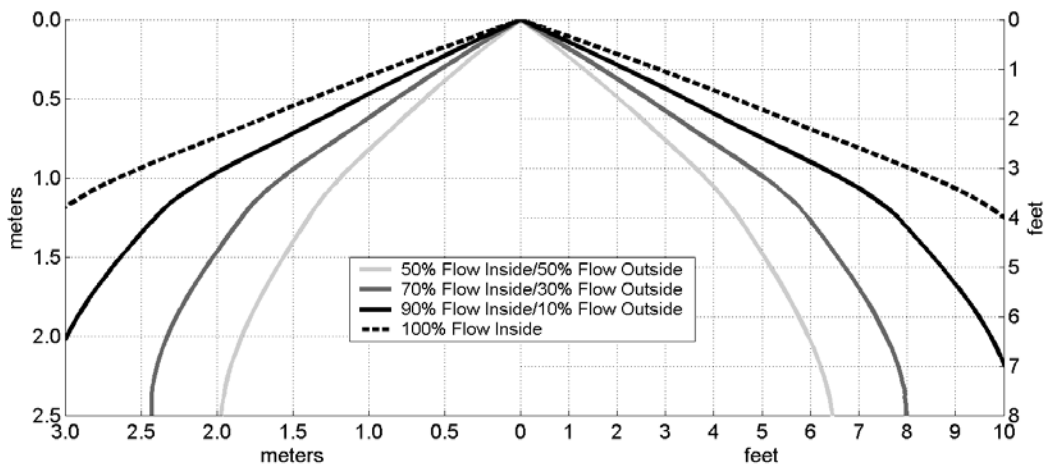
Standard Coverage Pendant

K=4.2 (K60), 7 inches (178 mm) Deflector to Ceiling

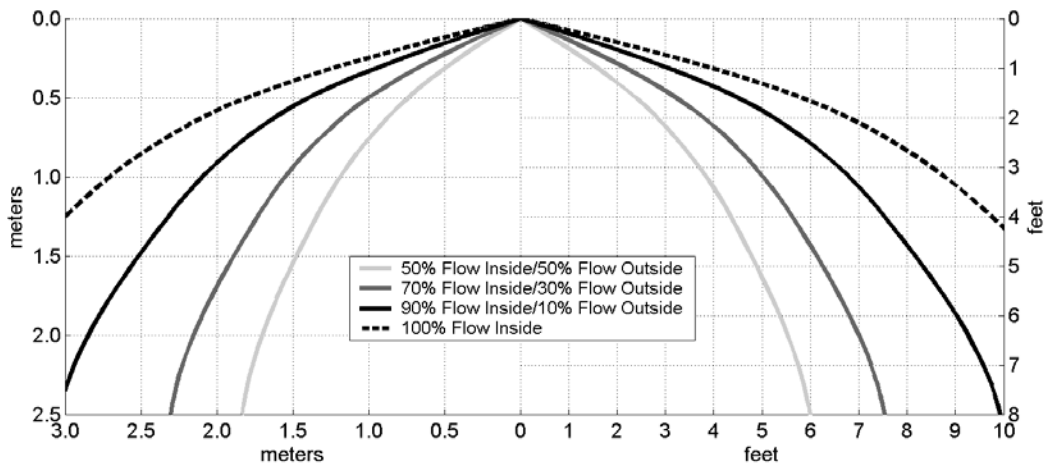
7 PSI
15 GPM
(0.5 Bar)
(56 LPM)



15 PSI
22 GPM
(1.0 Bar)
(82 LPM)



30 PSI
31 GPM
(2.1 Bar)
(120 LPM)



Spray Profile Patterns

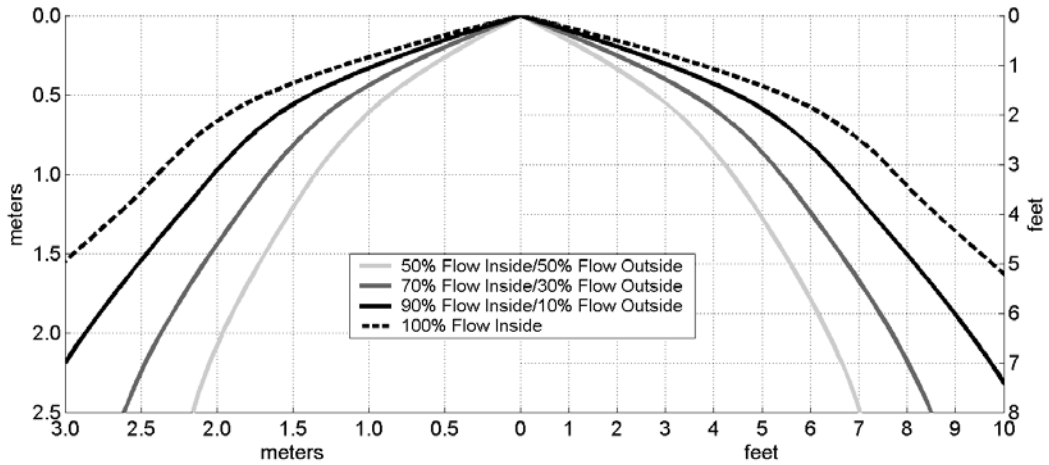
TY3111, TY-L

Standard Coverage Upright

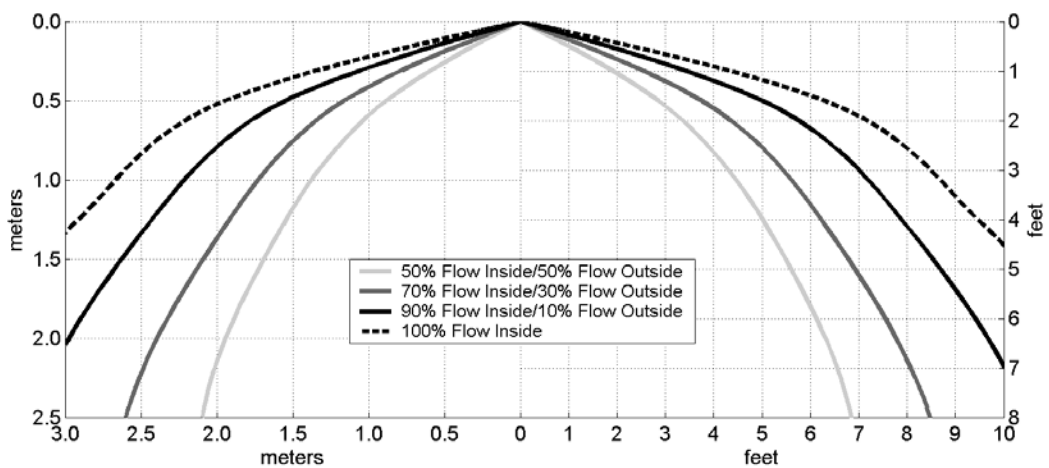
K=5.6 (K80), 7 inches (178 mm) Deflector to Ceiling

(Read the General Description section on Page 1 before applying the spray pattern data.)

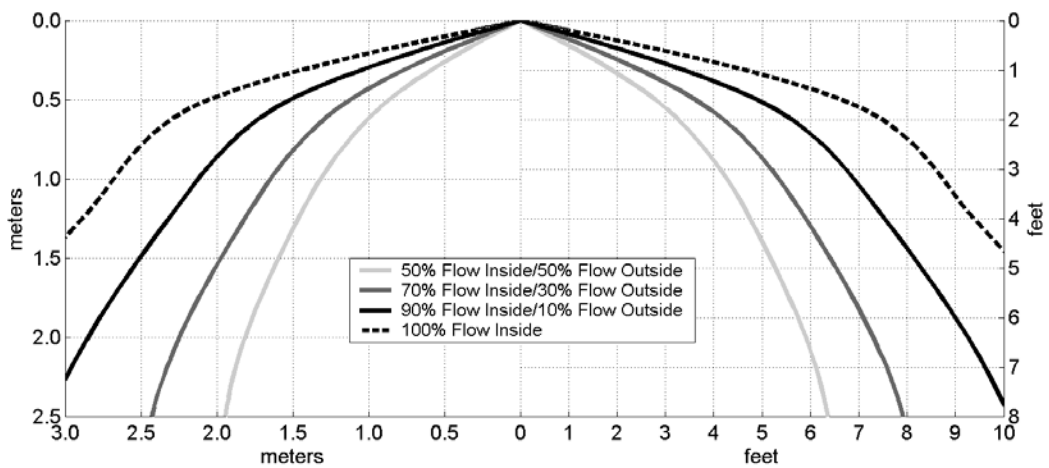
7 PSI
15 GPM
(0.5 Bar)
(56 LPM)



15 PSI
22 GPM
(1.0 Bar)
(82 LPM)



30 PSI
31 GPM
(2.1 Bar)
(120 LPM)



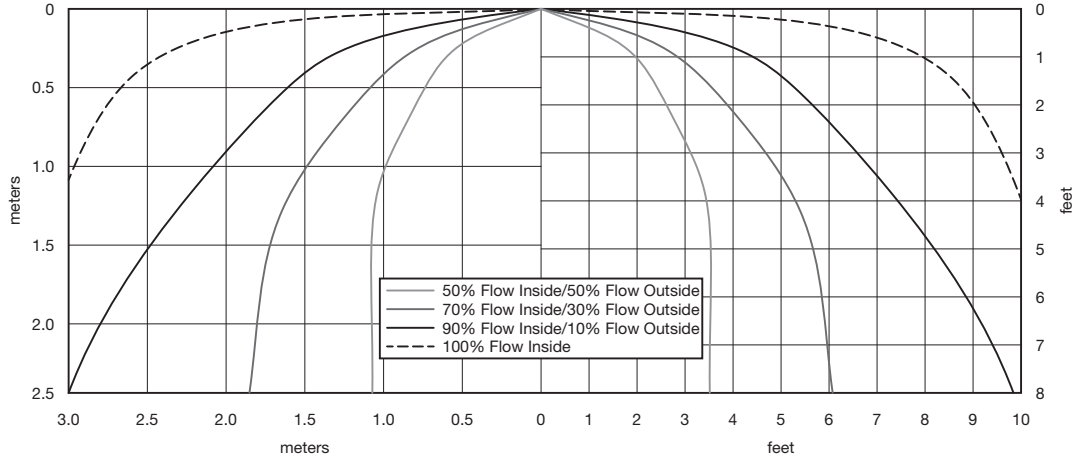
Spray Profile Patterns

Standard Coverage Upright

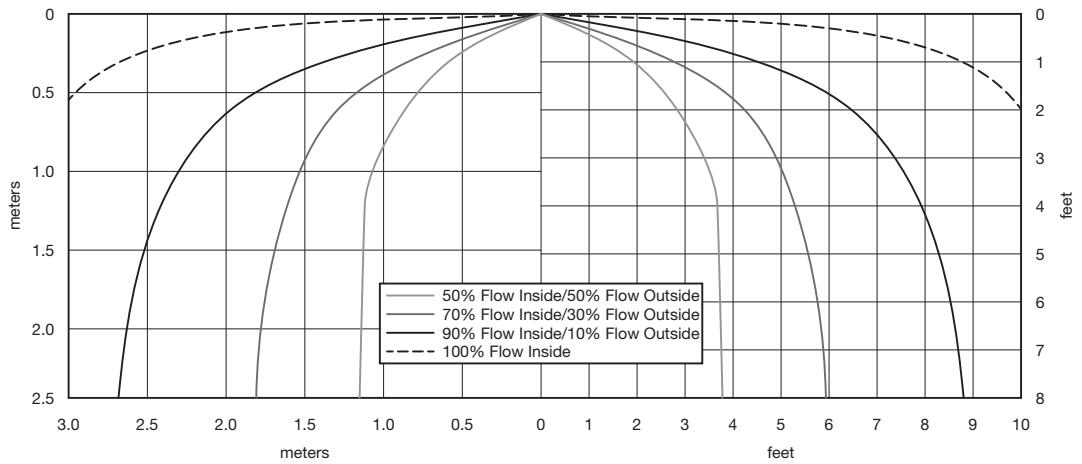
K=5.6 (K80), 7 inches (178 mm) Deflector to Ceiling

TY3121, TY-FRL

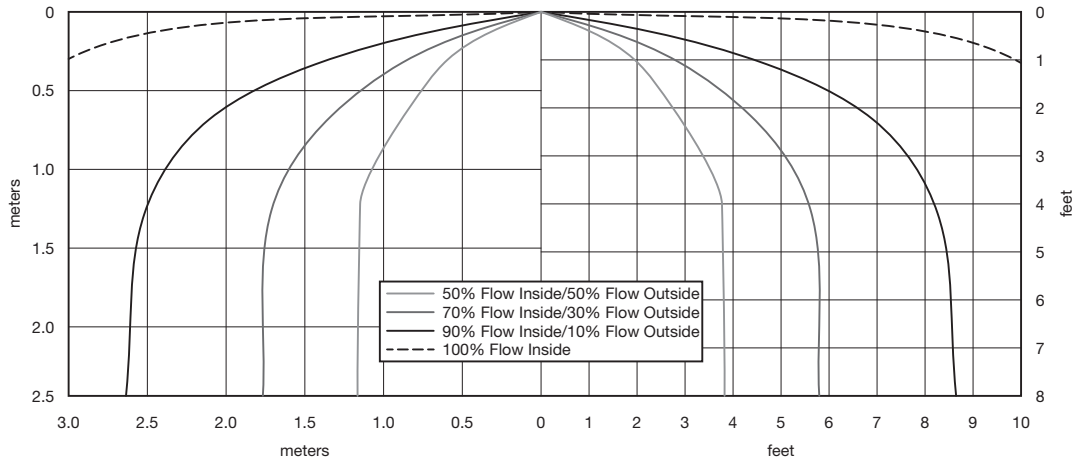
**7 PSI
15 GPM
(0.5 BAR)
(56 LPM)**



**15 PSI
22 GPM
(1 BAR)
(82 LPM)**



**30 PSI
30 GPM
(2.1 BAR)
(114 LPM)**



Spray Profile Patterns

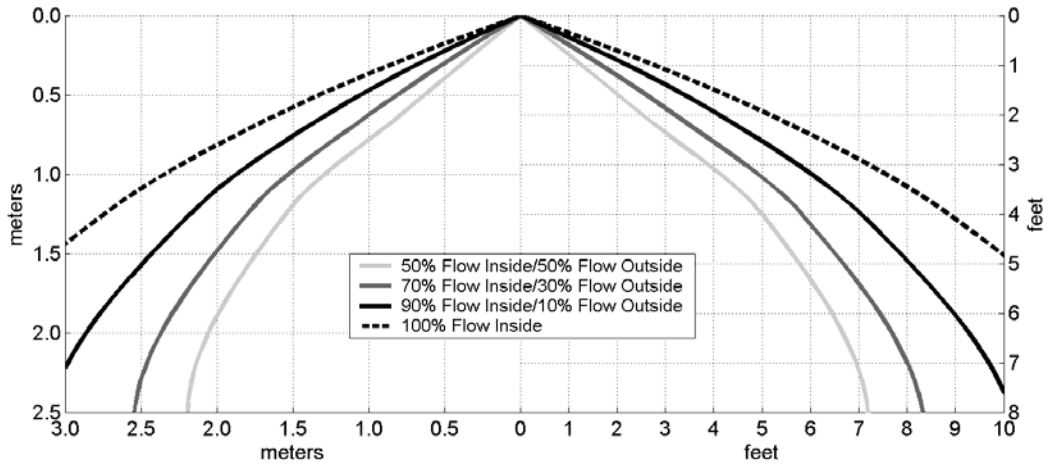
TY313, TY-FRB
TY315, TY-B

Standard Coverage Upright

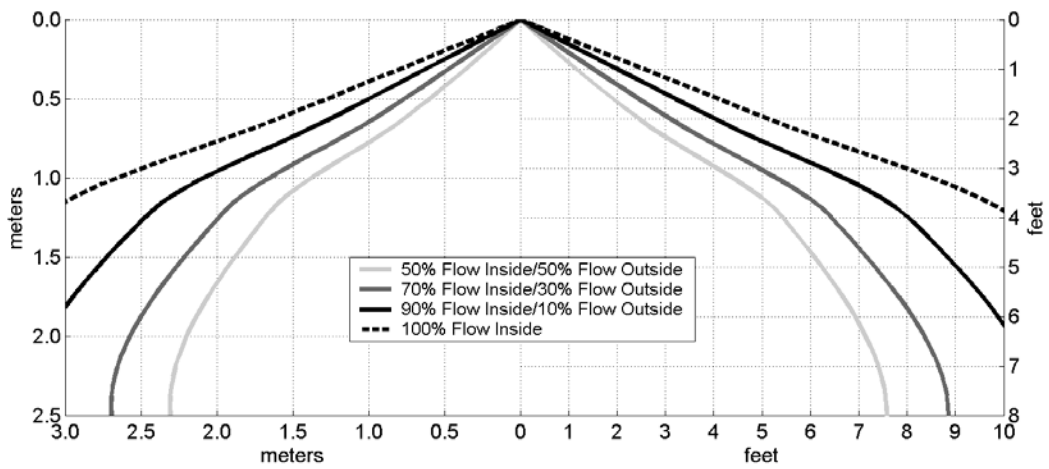
K=5.6 (K80), 7 inches (178 mm) Deflector to Ceiling

(Read the General Description section on Page 1 before applying the spray pattern data.)

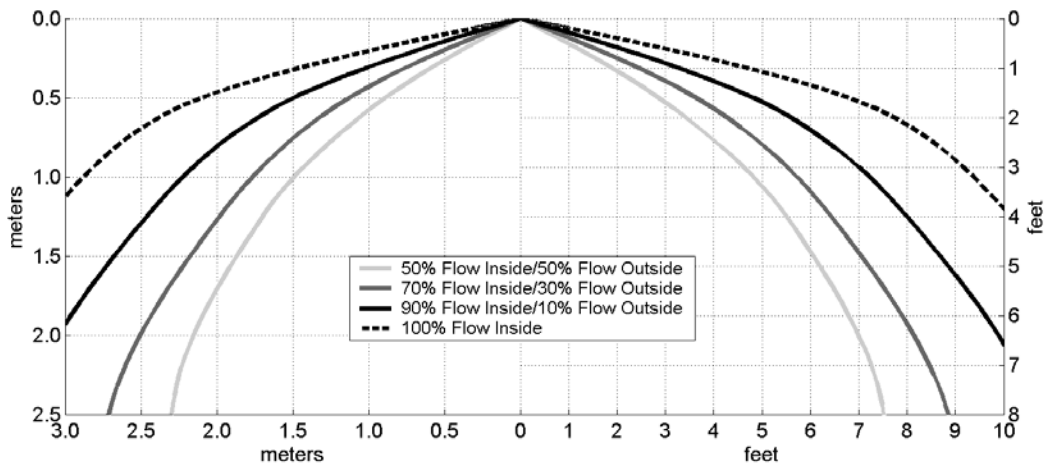
7 PSI
15 GPM
(0.5 Bar)
(56 LPM)



15 PSI
22 GPM
(1.0 Bar)
(82 LPM)



30 PSI
31 GPM
(2.1 Bar)
(120 LPM)



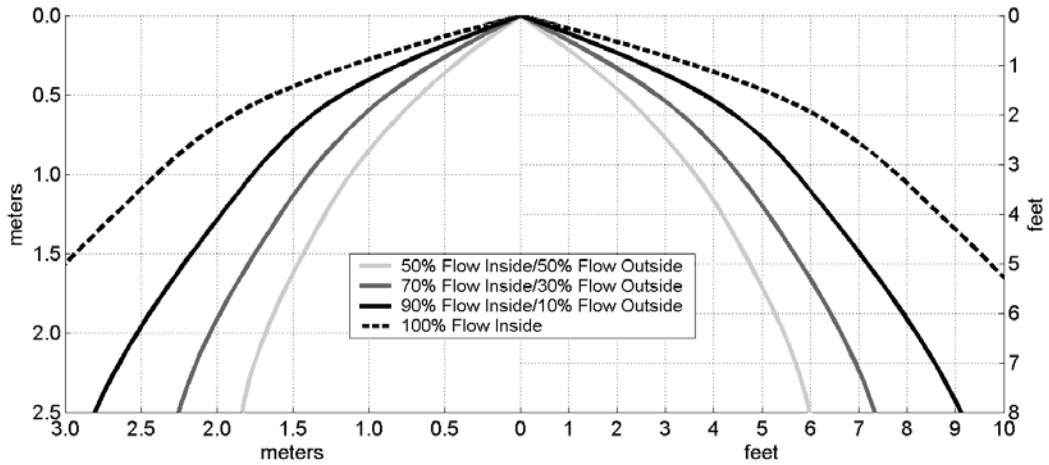
Spray Profile Patterns

Standard Coverage Upright

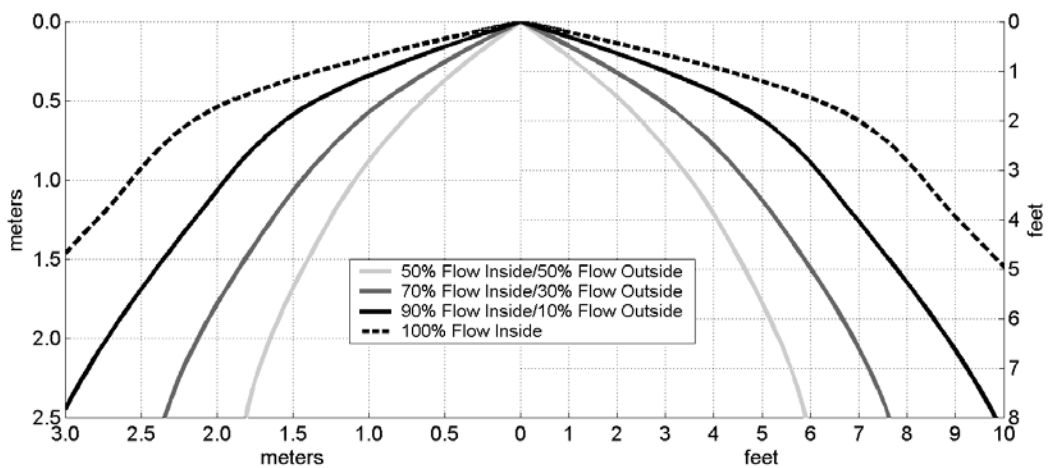
K=5.6 (K80), 7 inches (178 mm) Deflector to Ceiling

- TY3131, TY-FRB
- TY3141, TY-B (4mm)
- TY3151, TY-B

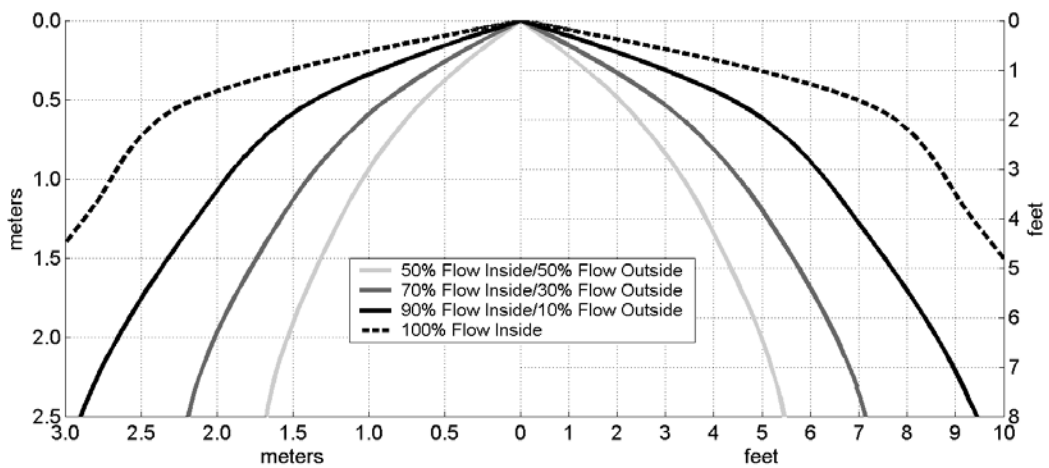
7 PSI
15 GPM
(0.5 Bar)
(56 LPM)



15 PSI
22 GPM
(1.0 Bar)
(82 LPM)



30 PSI
31 GPM
(2.1 Bar)
(120 LPM)



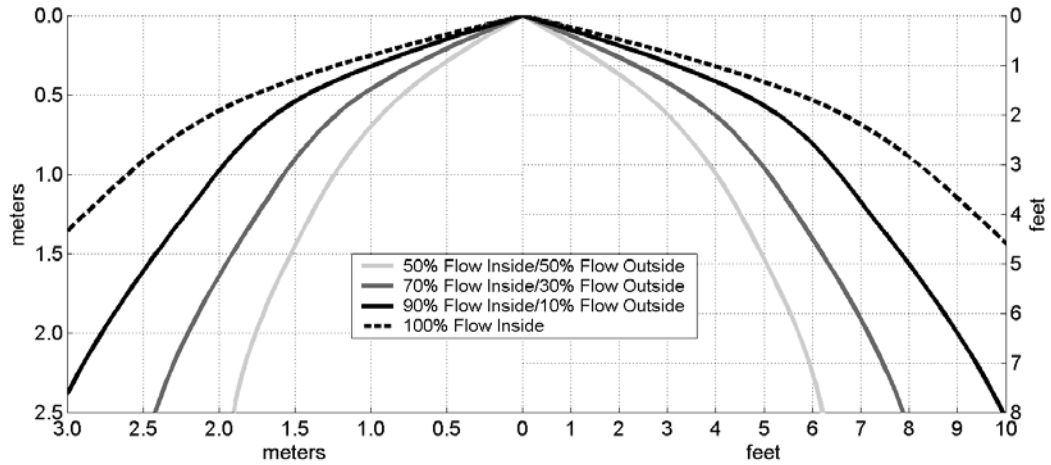
Spray Profile Patterns

TY3211, TY-L

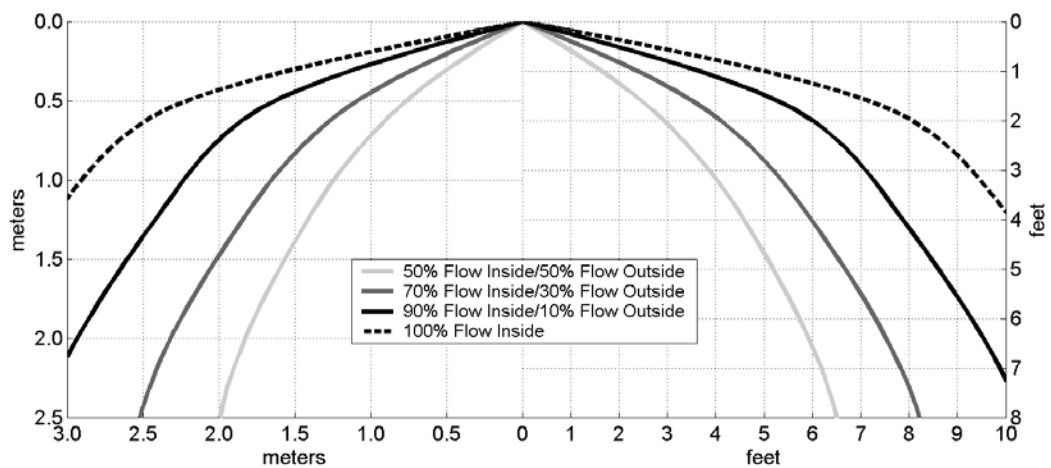
Standard Coverage Pendant
K=5.6 (K80), 7 inches (178 mm) Deflector to Ceiling

(Read the General Description section on Page 1 before applying the spray pattern data.)

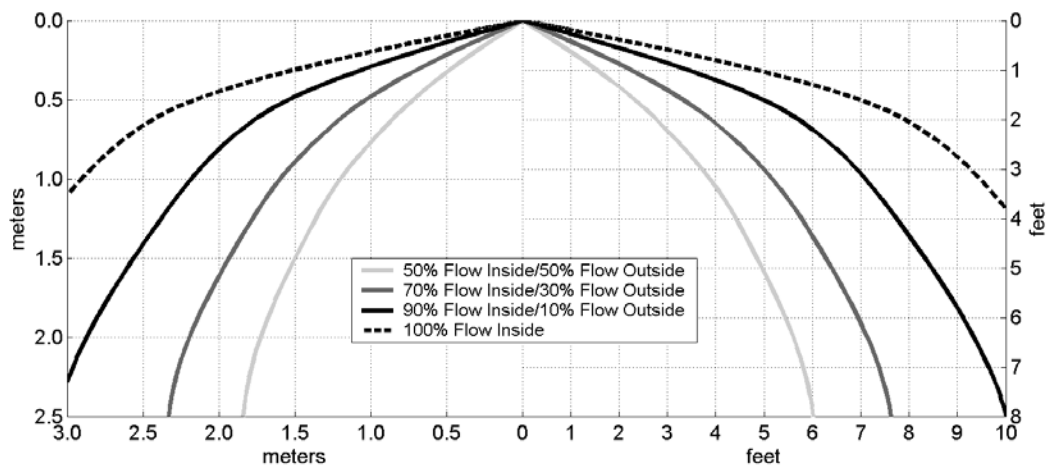
7 PSI
15 GPM
(0.5 Bar)
(56 LPM)



15 PSI
22 GPM
(1.0 Bar)
(82 LPM)



30 PSI
31 GPM
(2.1 Bar)
(120 LPM)

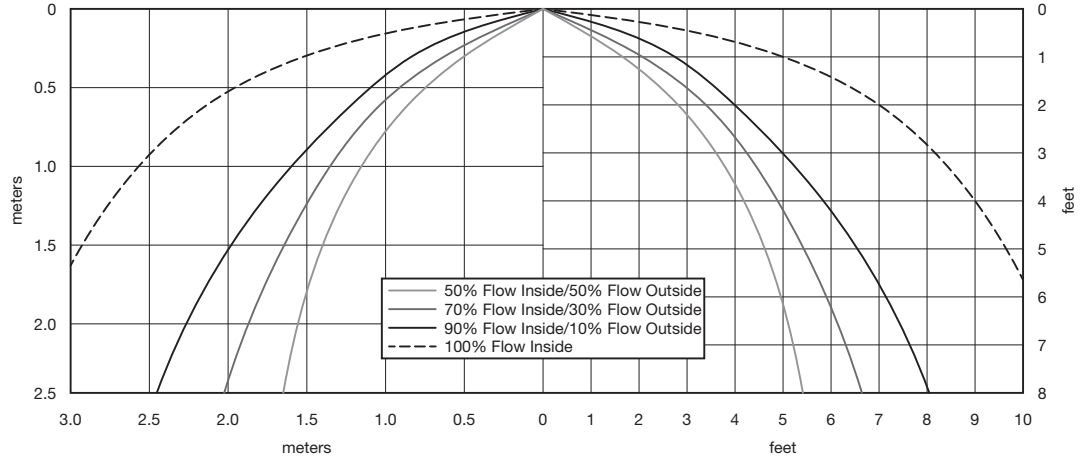


Spray Profile Patterns

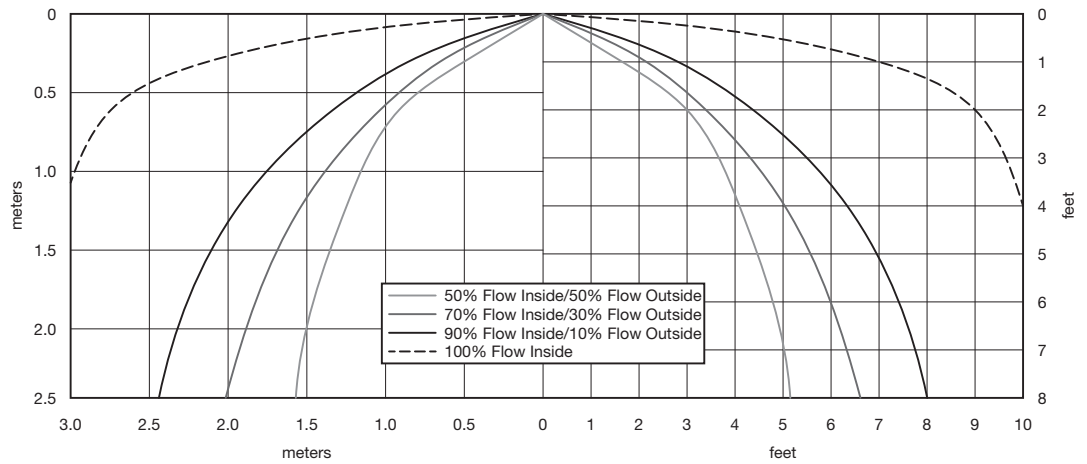
TY3221, TY-FRL

Standard Coverage Pendant
K=5.6 (K80), 7 inches (178 mm) Deflector to Ceiling

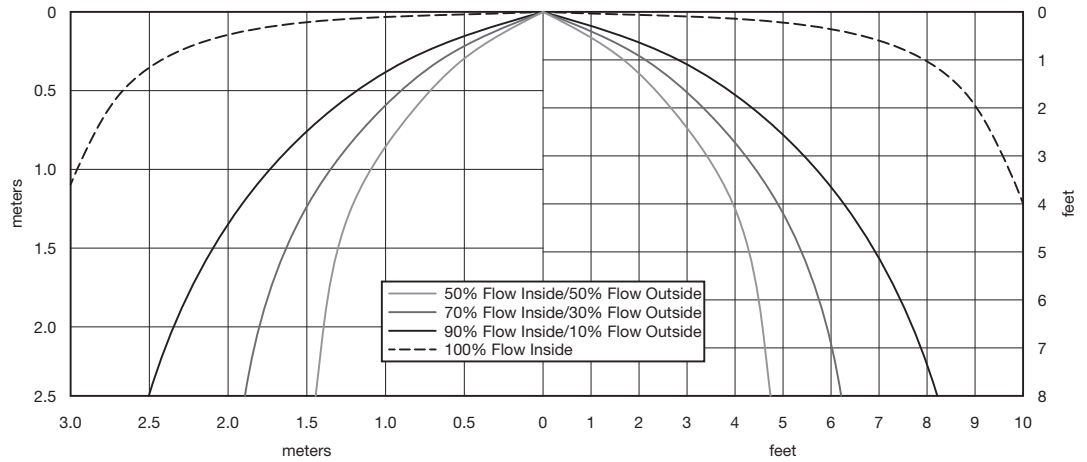
7 PSI
15 GPM
(0.5 BAR)
(56 LPM)



15 PSI
22 GPM
(1 BAR)
(82 LPM)



30 PSI
30 GPM
(2.1 BAR)
(114 LPM)



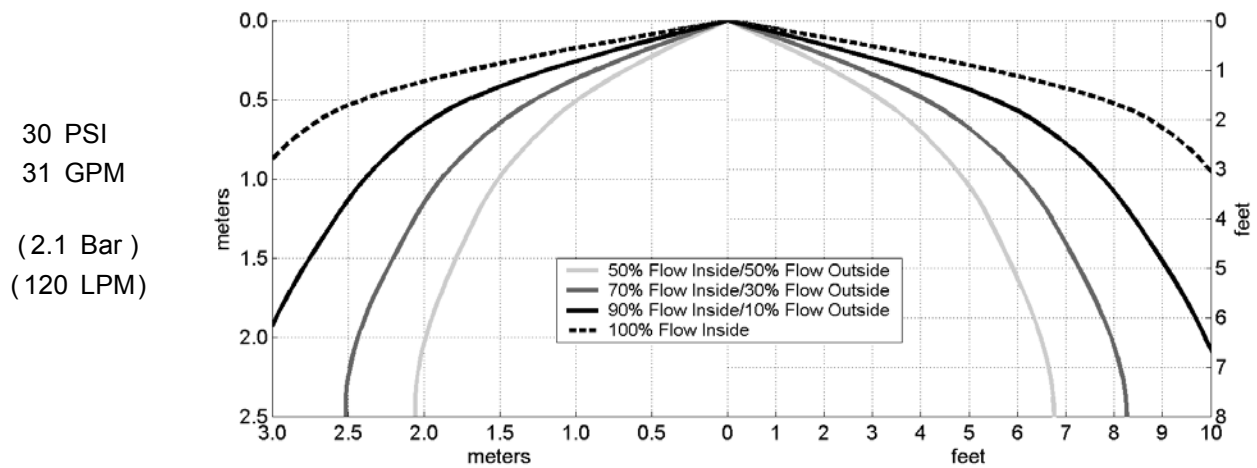
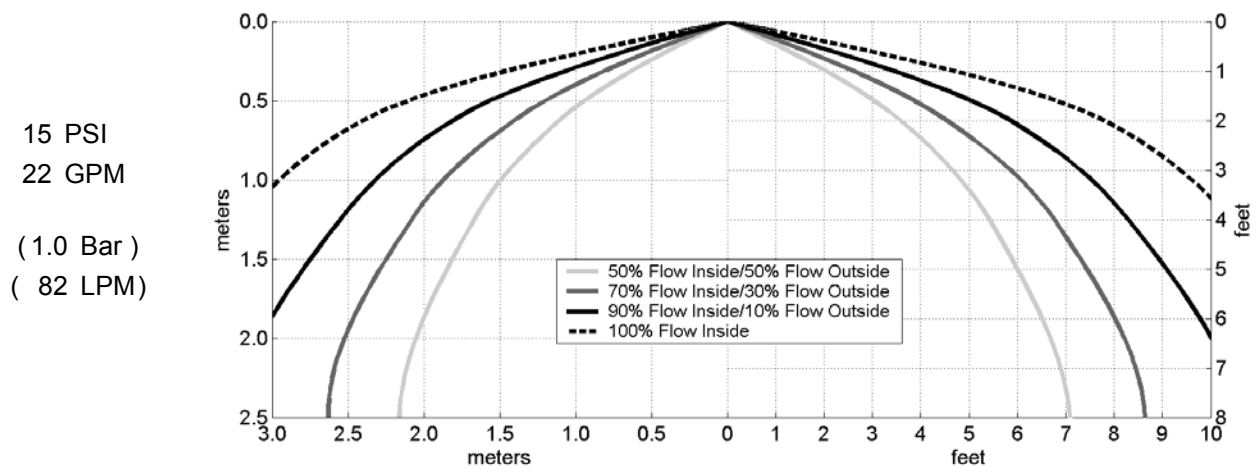
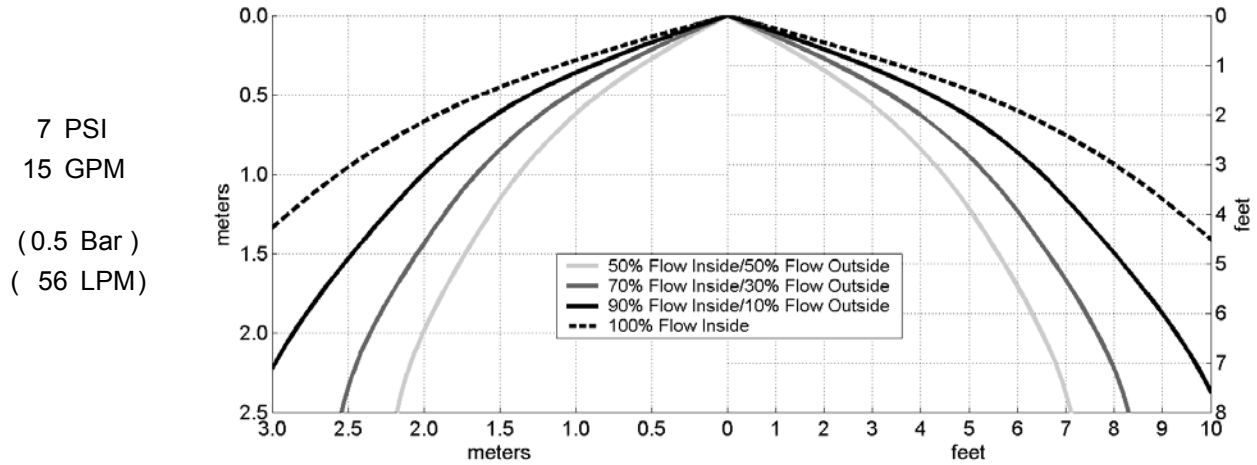
Spray Profile Patterns

TY323, TY-FRB
 TY325, TY-B

Standard Coverage Pendant

K=5.6 (K80), 7 inches (178 mm) Deflector to Ceiling

(Read the General Description section on Page 1 before applying the spray pattern data.)



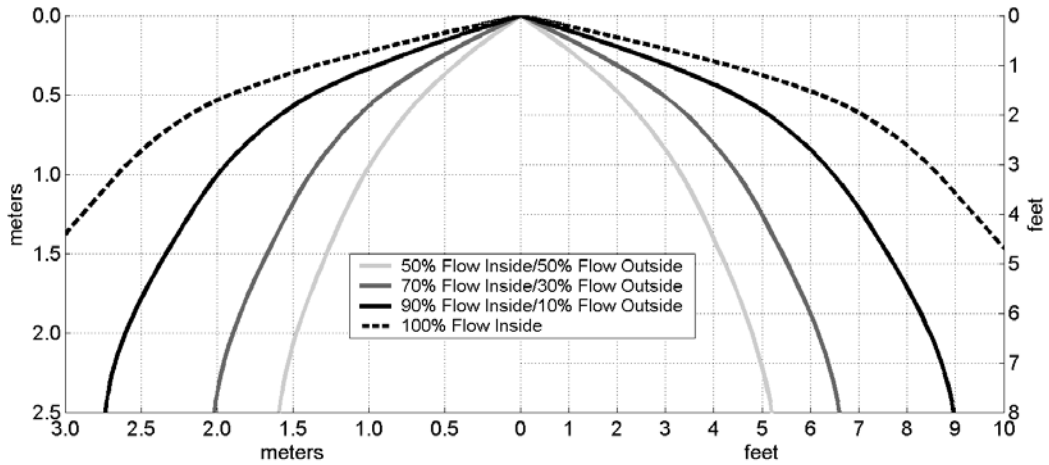
Spray Profile Patterns

Standard Coverage Pendant

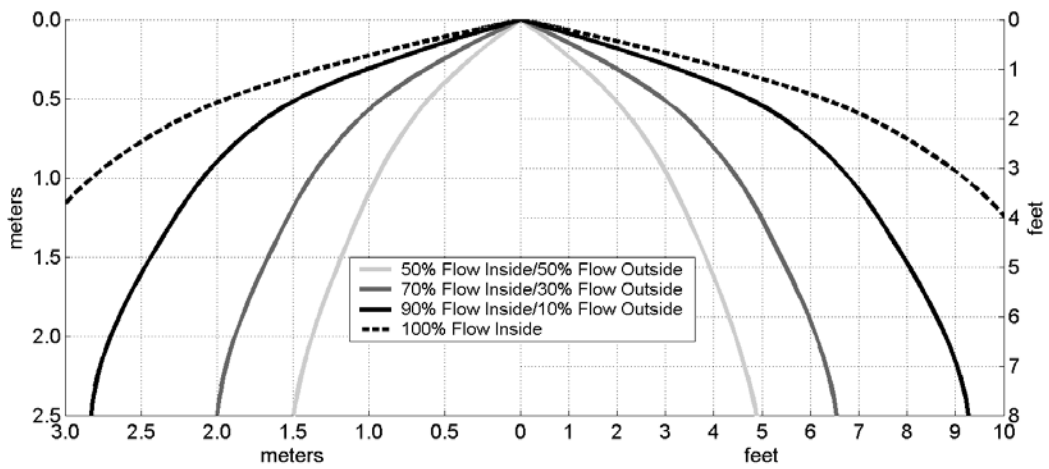
K=5.6 (K80), 7 inches (178 mm) Deflector to Ceiling

- TY3231, TY-FRB
- TY3241, TY-B (4mm)
- TY3251, TY-B

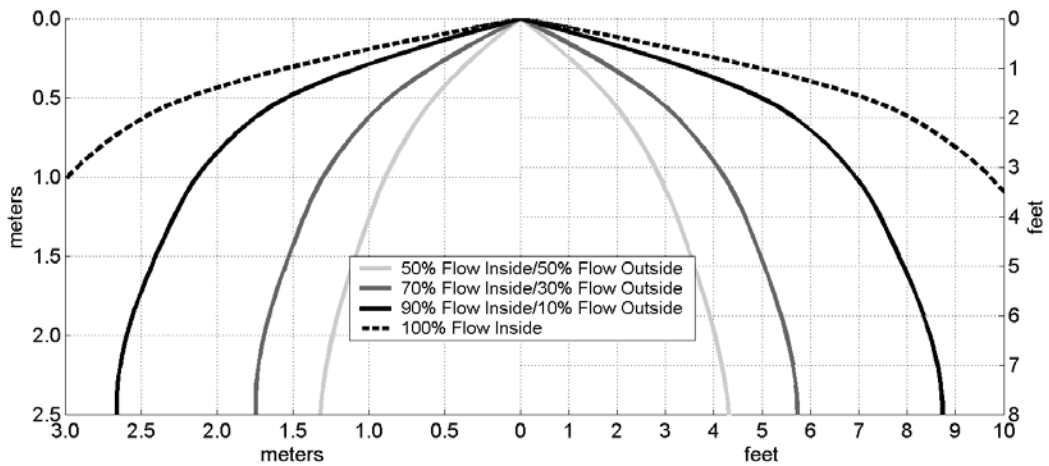
7 PSI
15 GPM
(0.5 Bar)
(56 LPM)



15 PSI
22 GPM
(1.0 Bar)
(82 LPM)



30 PSI
31 GPM
(2.1 Bar)
(120 LPM)



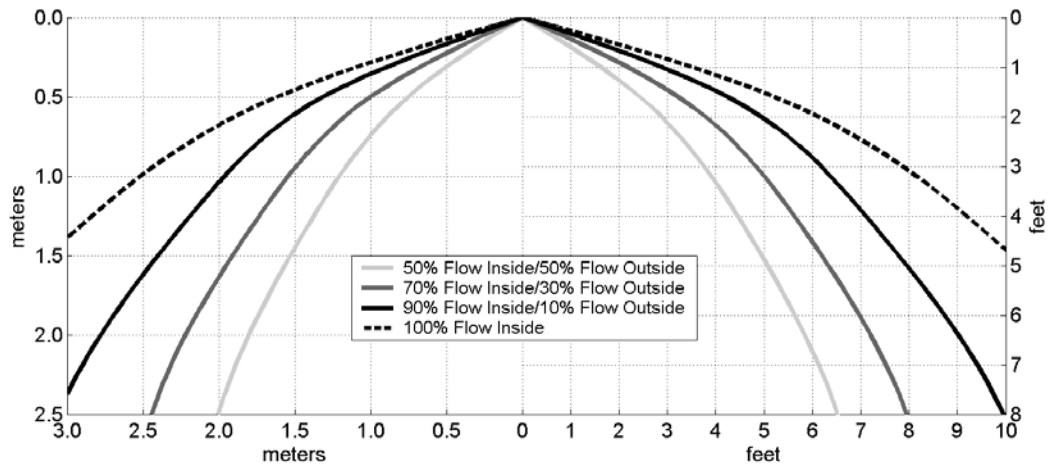
Spray Profile Patterns

Standard Coverage Concealed Pendant
K=5.6 (K80), 7 inches (178 mm) Deflector to Ceiling

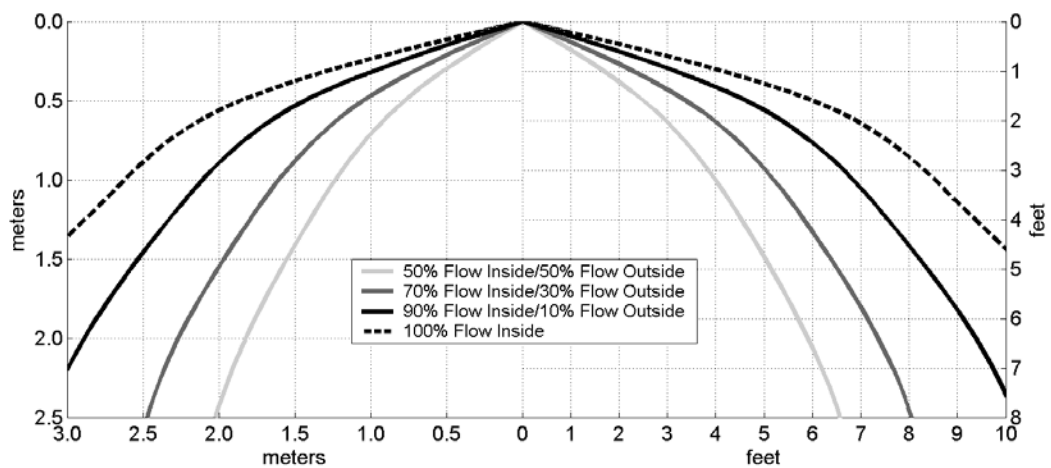
- TY3531, RFI
- TY3532, RFI (EC)
- TY3551, RFI

(Read the General Description section on Page 1 before applying the spray pattern data.)

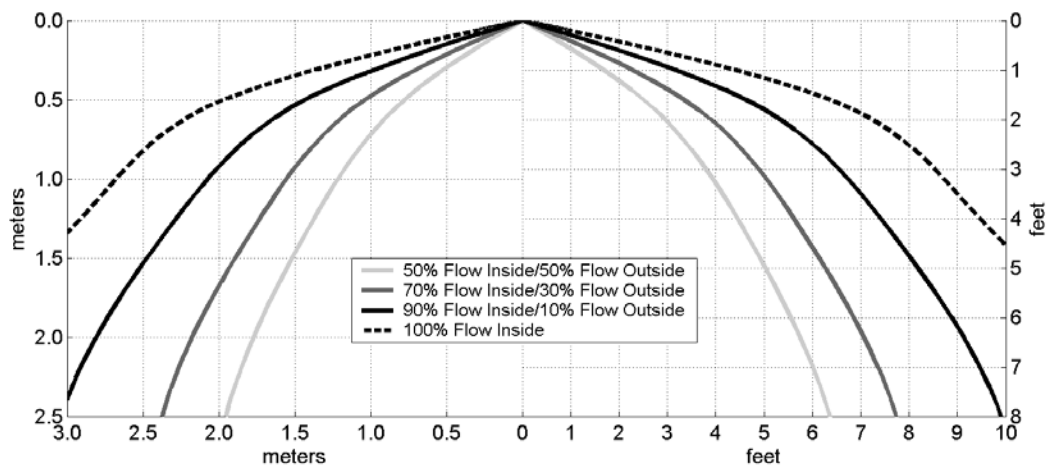
7 PSI
21 GPM
(0.5 Bar)
(80 LPM)



15 PSI
31 GPM
(1.0 Bar)
(120 LPM)



30 PSI
44 GPM
(2.1 Bar)
(170 LPM)

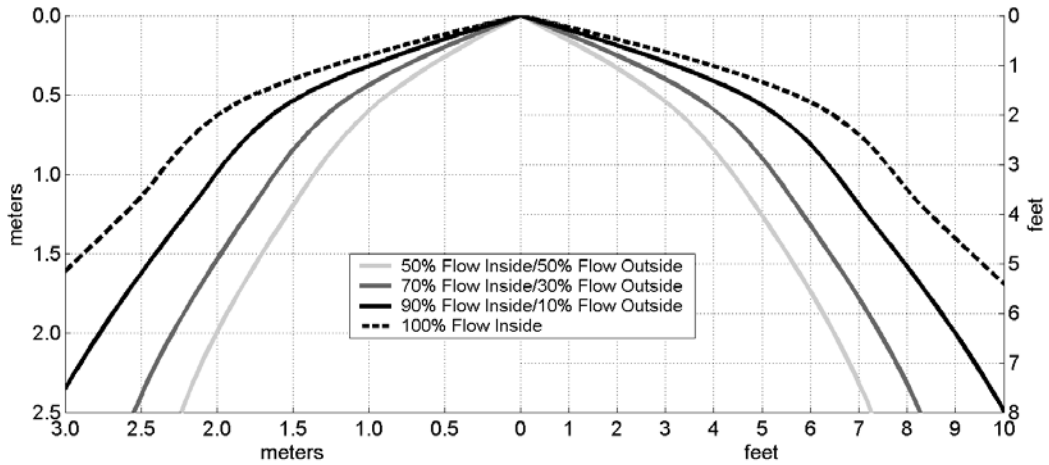


Spray Profile Patterns

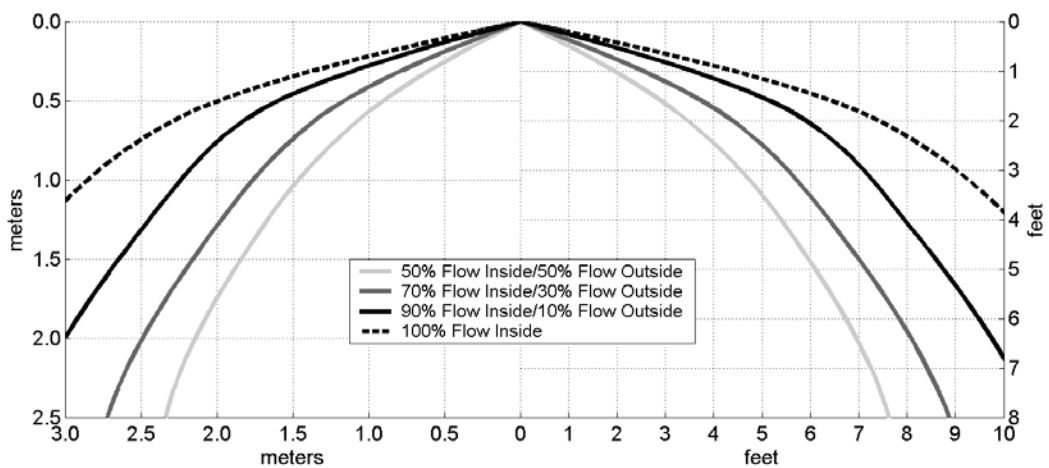
TY4111, TY-L

Standard Coverage Upright
K=8.0 (K115), 7 inches (178 mm) Deflector to Ceiling

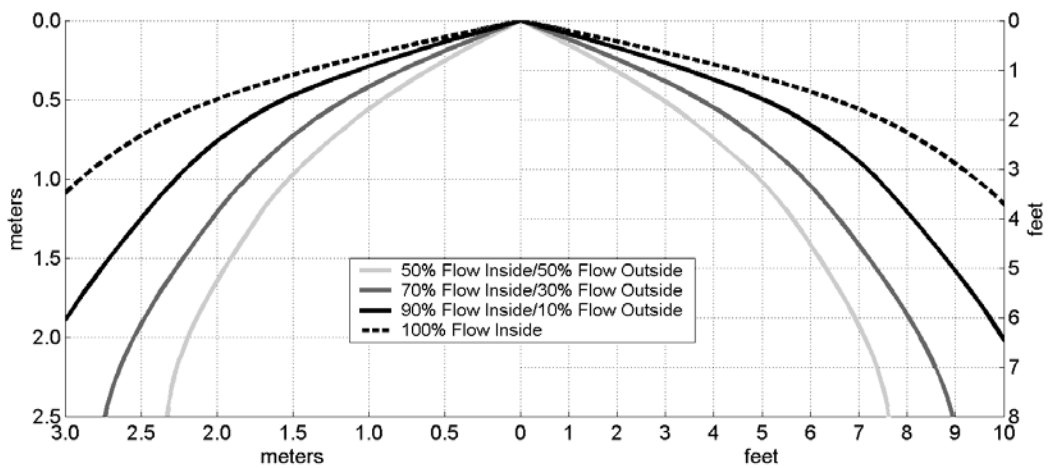
7 PSI
21 GPM
(0.5 Bar)
(80 LPM)



15 PSI
31 GPM
(1.0 Bar)
(120 LPM)



30 PSI
44 GPM
(2.1 Bar)
(170 LPM)



Spray Profile Patterns

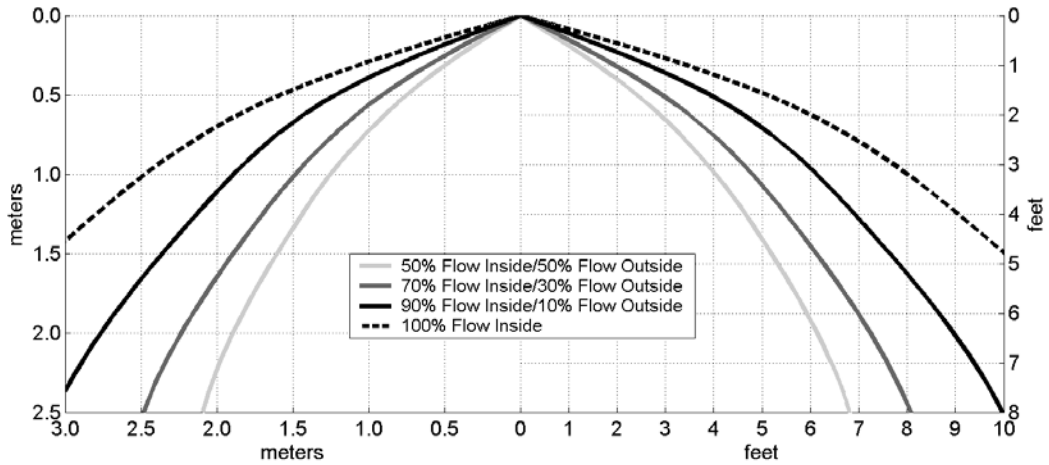
Standard Coverage Upright

K=8.0 (K115), 7 inches (178 mm) Deflector to Ceiling

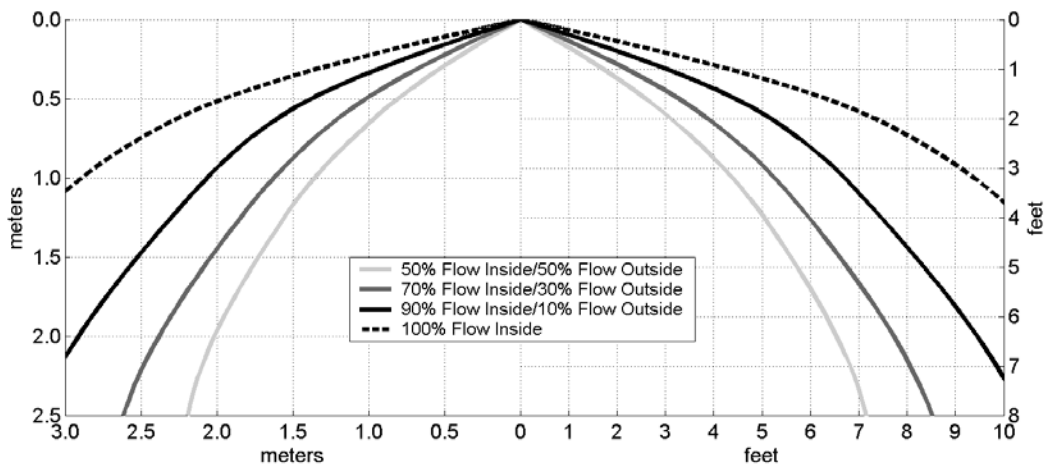
TY4121, TY-FRL

(Read the General Description section on Page 1 before applying the spray pattern data.)

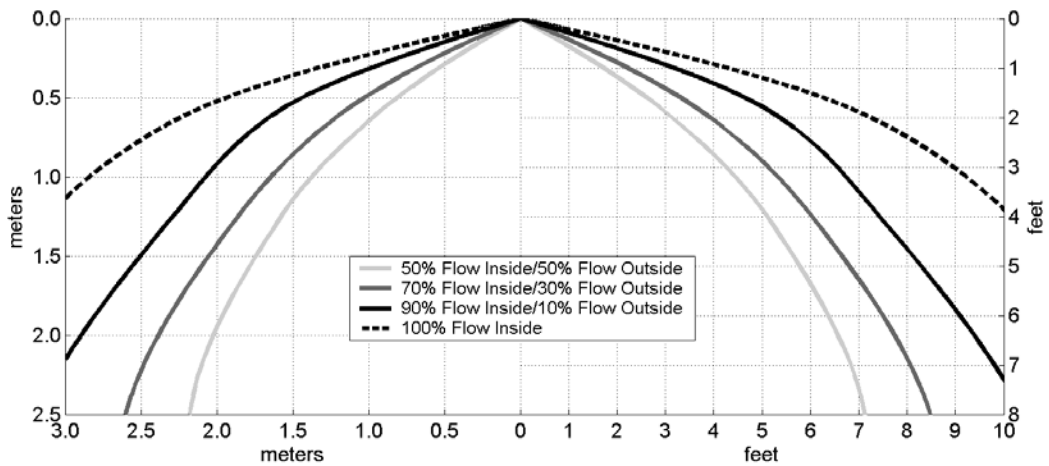
7 PSI
21 GPM
(0.5 Bar)
(80 LPM)



15 PSI
31 GPM
(1.0 Bar)
(120 LPM)



30 PSI
44 GPM
(2.1 Bar)
(170 LPM)



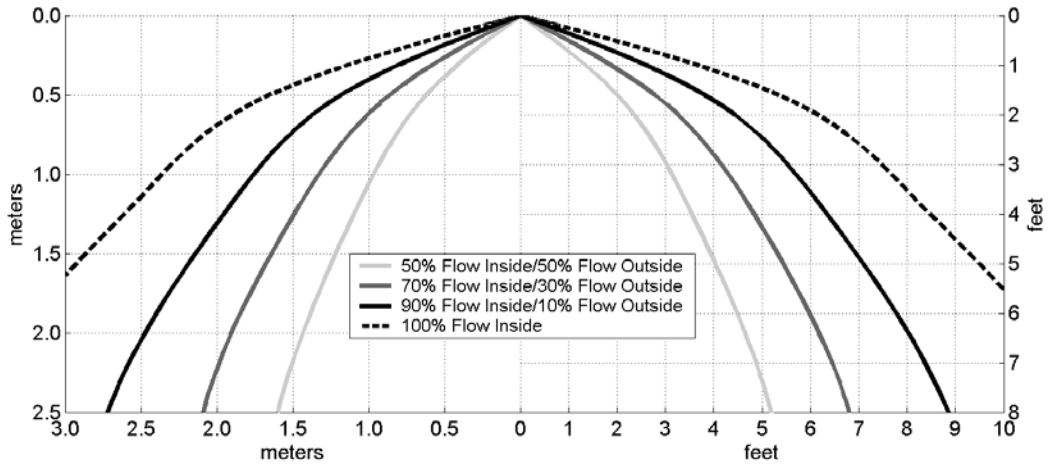
Spray Profile Patterns

Standard Coverage Upright

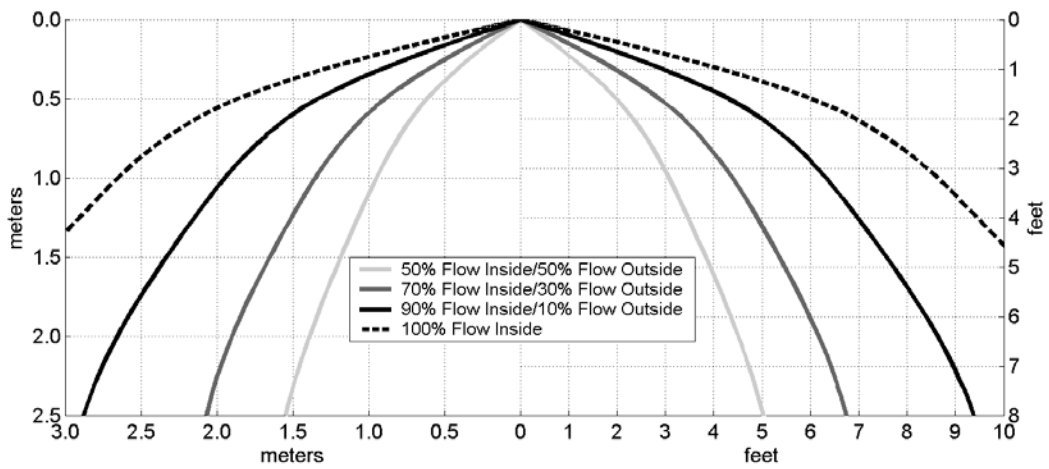
K=8.0 (K115), 7 inches (178 mm) Deflector to Ceiling

- TY4131, TY-FRB
- TY4141, TY-B (4mm)
- TY4151, TY-B

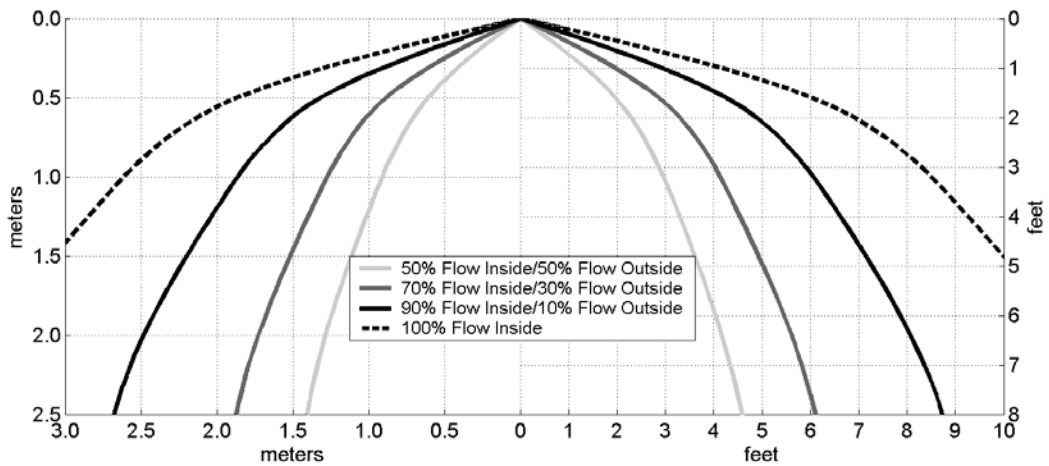
7 PSI
21 GPM
(0.5 Bar)
(80 LPM)



15 PSI
31 GPM
(1.0 Bar)
(120 LPM)



30 PSI
44 GPM
(2.1 Bar)
(170 LPM)



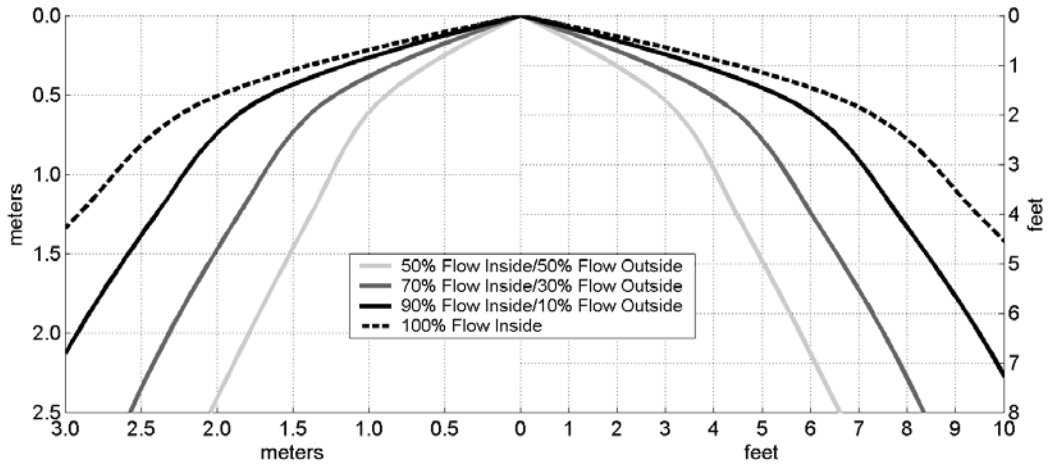
Spray Profile Patterns

TY4211, TY-L

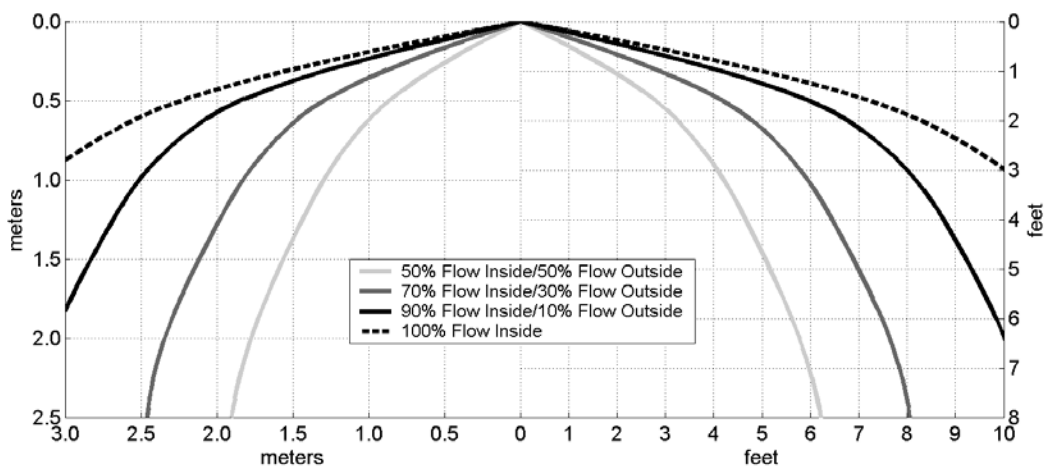
Standard Coverage Pendant
K=8.0 (K115), 7 inches (178 mm) Deflector to Ceiling

(Read the General Description section on Page 1 before applying the spray pattern data.)

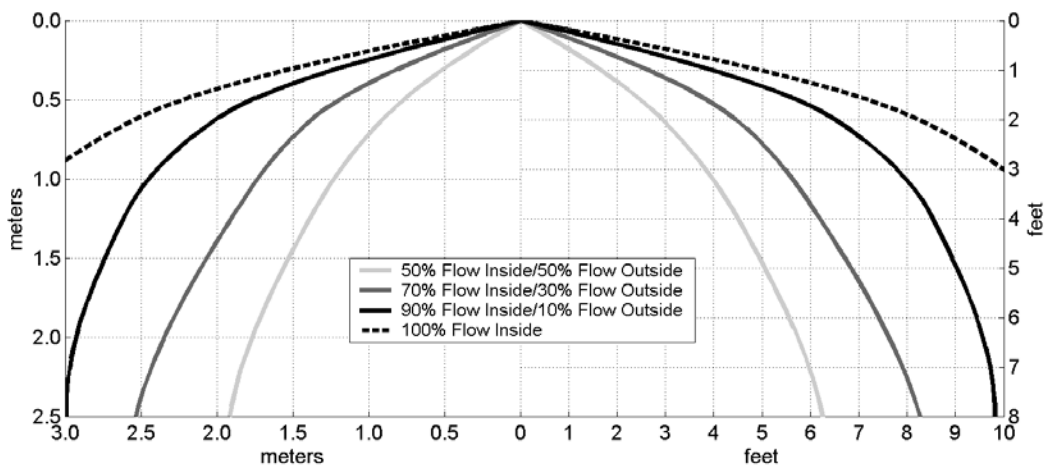
7 PSI
21 GPM
(0.5 Bar)
(80 LPM)



15 PSI
31 GPM
(1.0 Bar)
(120 LPM)



30 PSI
44 GPM
(2.1 Bar)
(170 LPM)

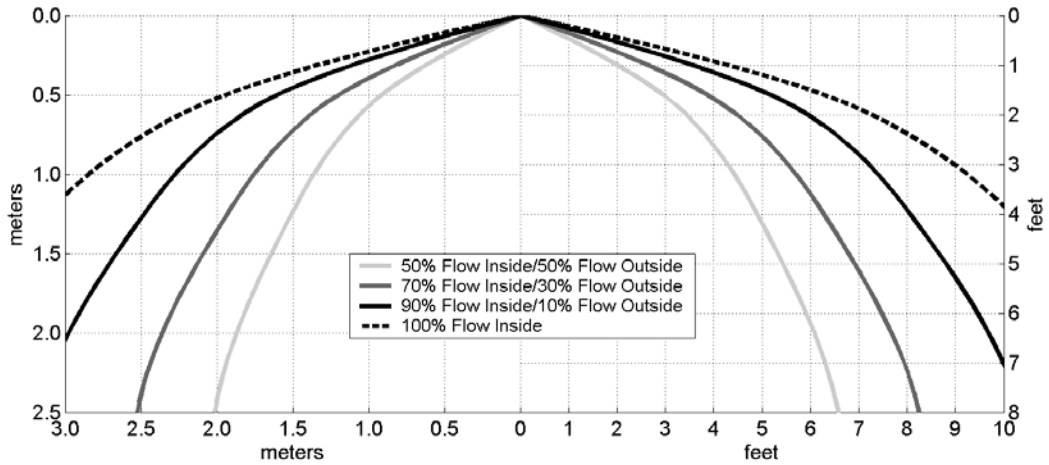


Spray Profile Patterns

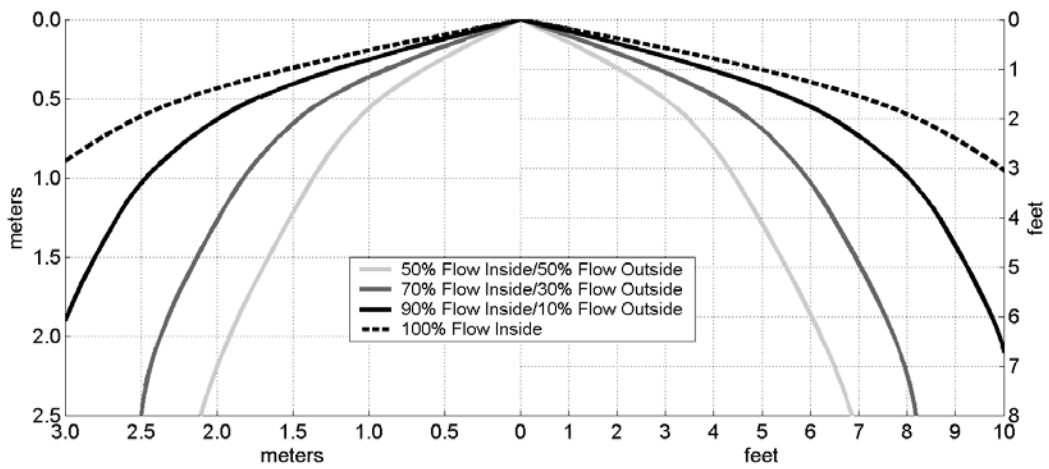
TY4221, TY-FRL

Standard Coverage Pendant
K=8.0 (K115), 7 inches (178 mm) Deflector to Ceiling

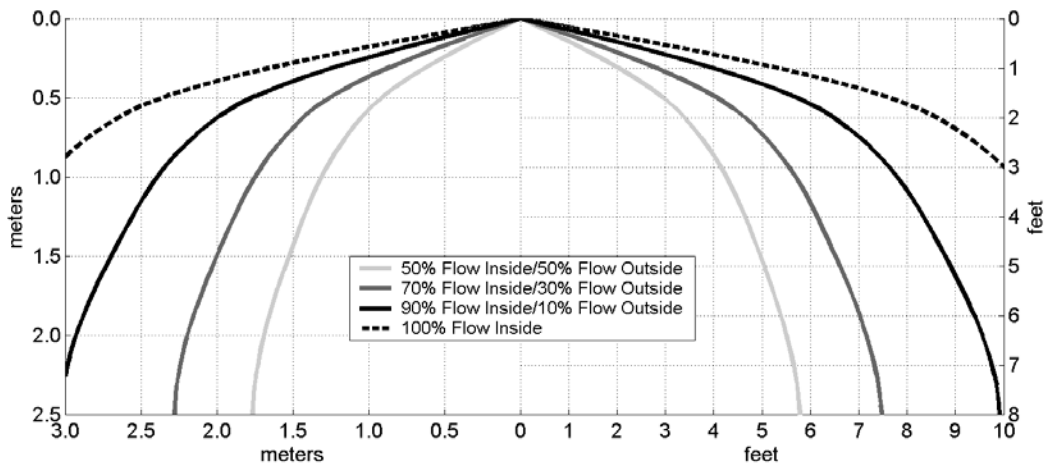
7 PSI
21 GPM
(0.5 Bar)
(80 LPM)



15 PSI
31 GPM
(1.0 Bar)
(120 LPM)



30 PSI
44 GPM
(2.1 Bar)
(170 LPM)

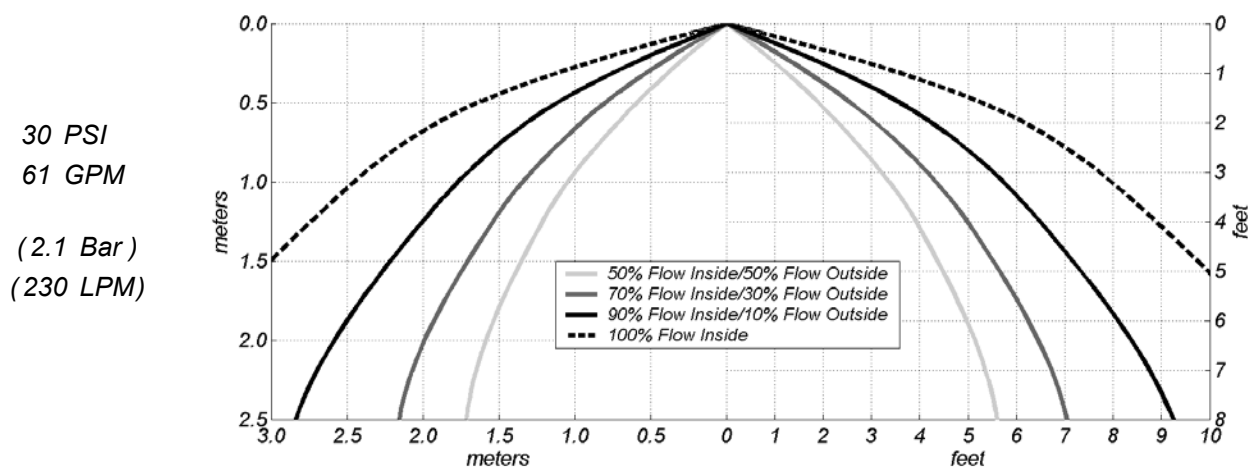
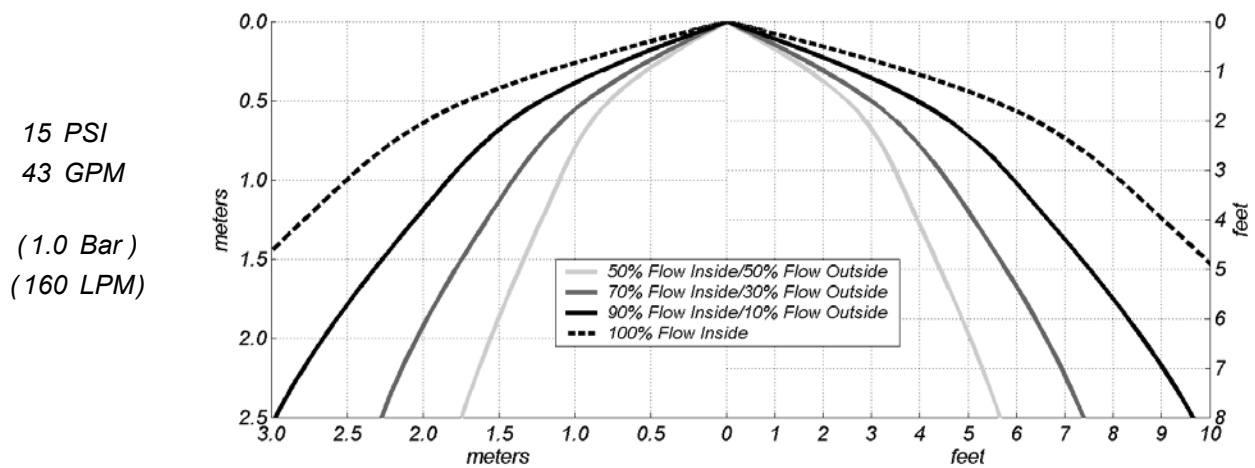
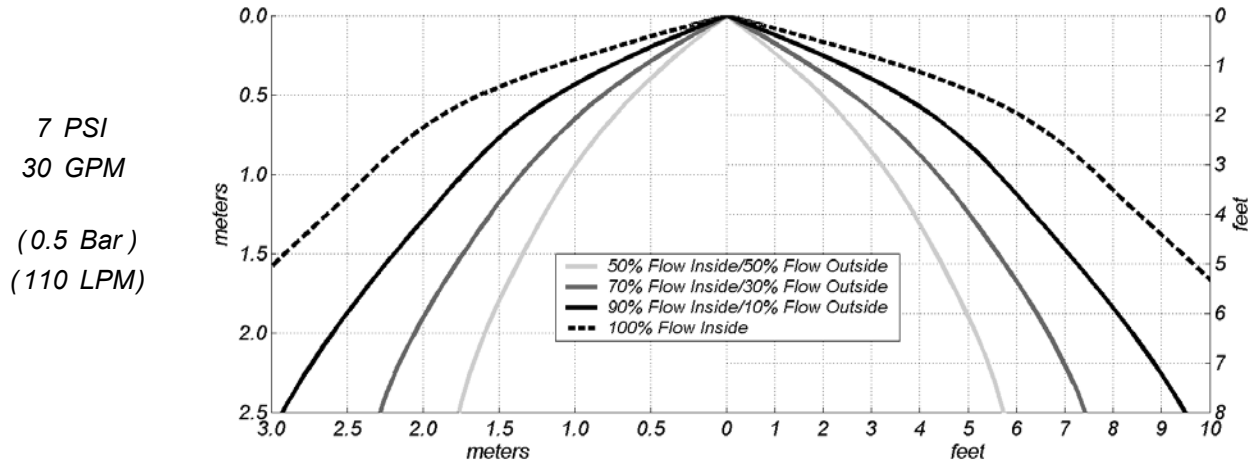


Spray Profile Patterns

Standard Coverage Pendant

K=8.0 (K115), 7 inches (178 mm) Deflector to Ceiling

- TY4231, TY-FRB
- TY4241, TY-B (4mm)
- TY4251, TY-B



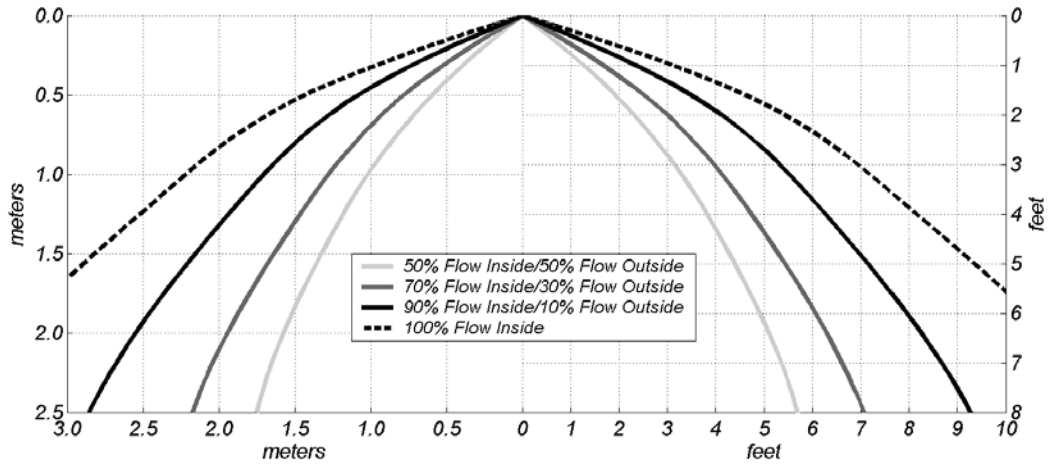
Spray Profile Patterns

Standard Coverage Upright

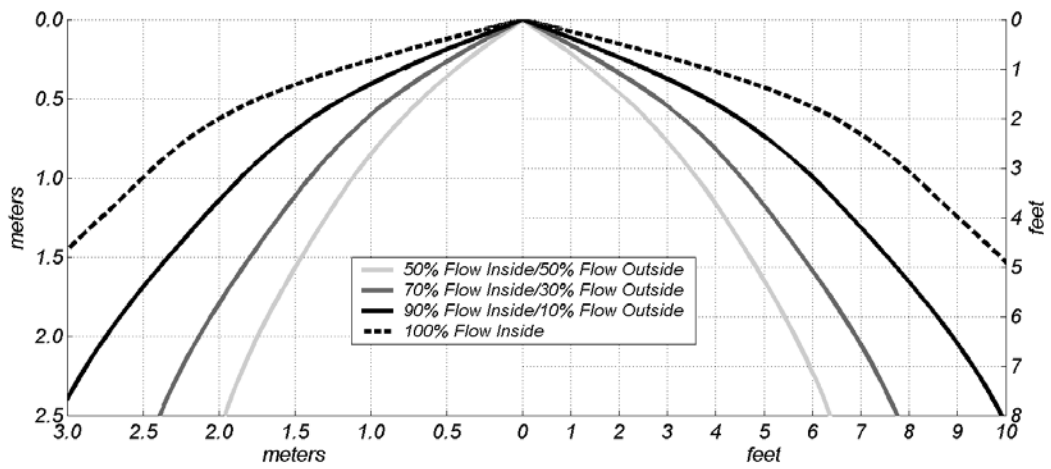
K=11.2 (K160), 7 inches (178 mm) Deflector to Ceiling

- TY5111, ELO-231
- TY5131, ELO-231FRB
- TY5151, ELO-231B

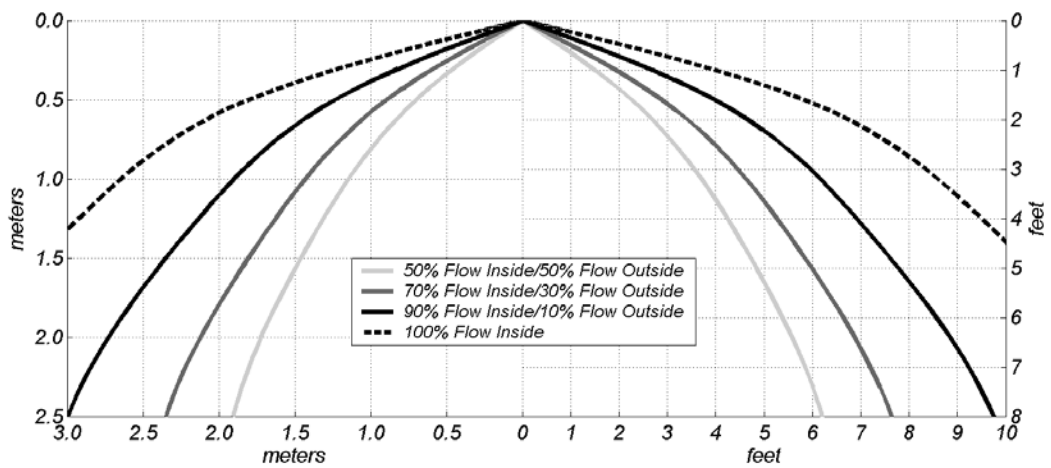
7 PSI
30 GPM
(0.5 Bar)
(110 LPM)



15 PSI
43 GPM
(1.0 Bar)
(160 LPM)



30 PSI
61 GPM
(2.1 Bar)
(230 LPM)

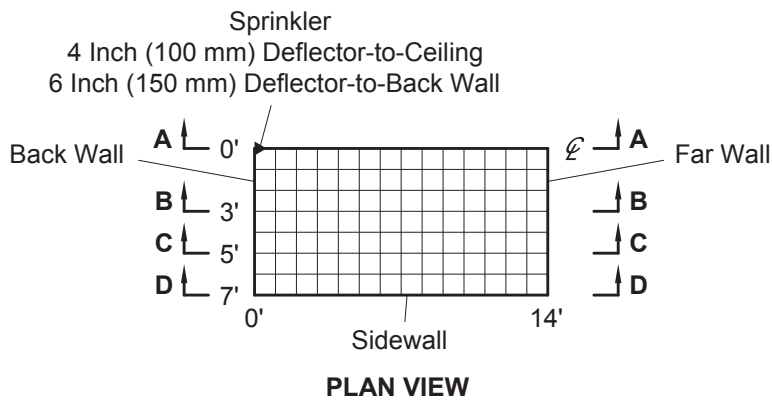
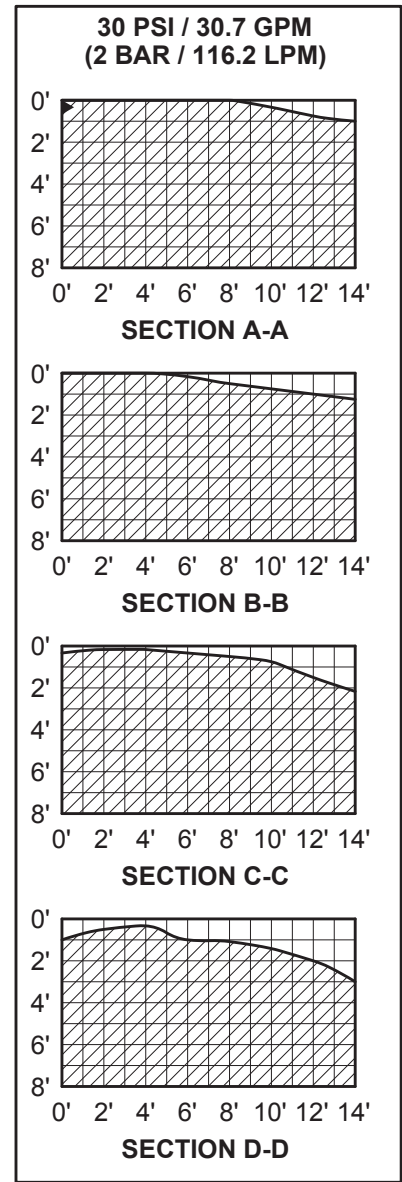
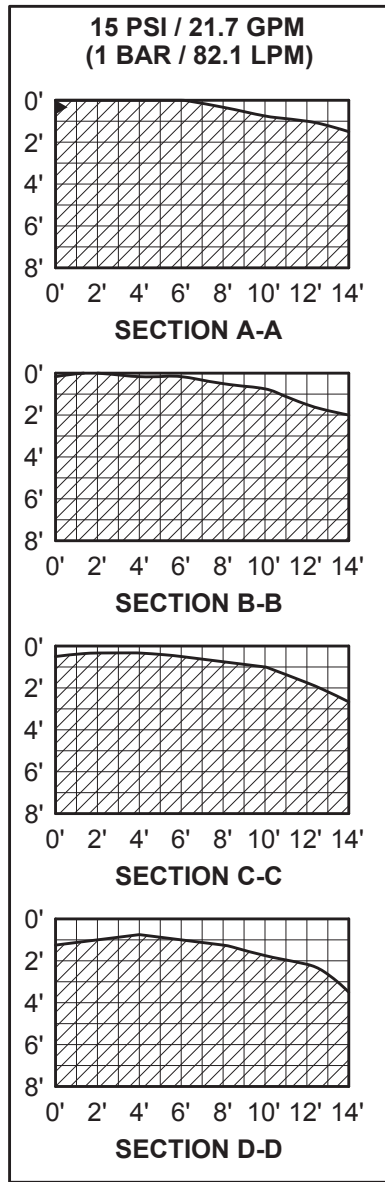
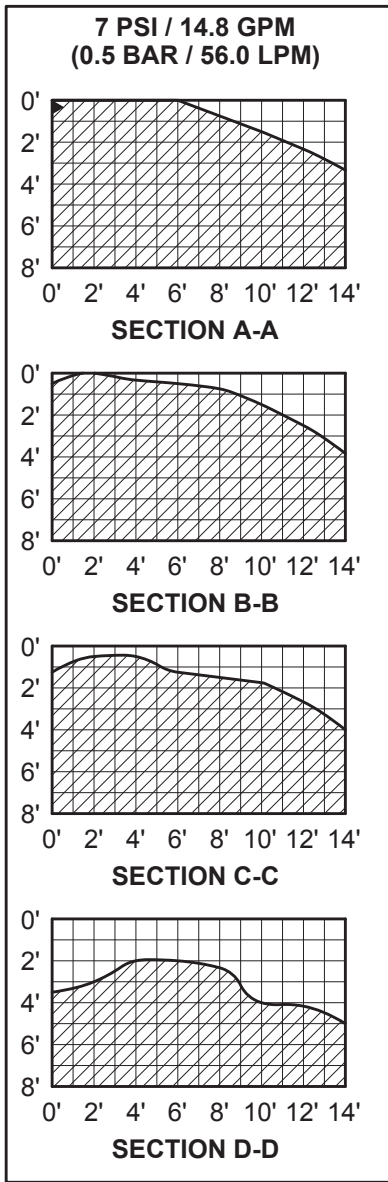


Spray Profile Patterns

Standard Coverage Pendant

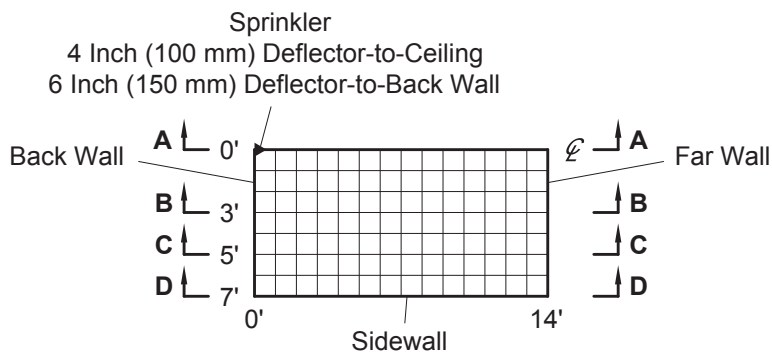
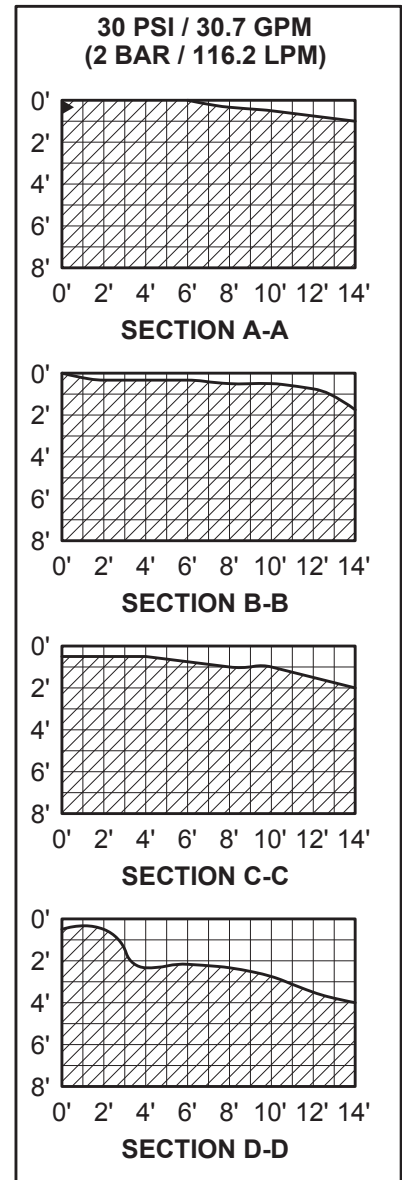
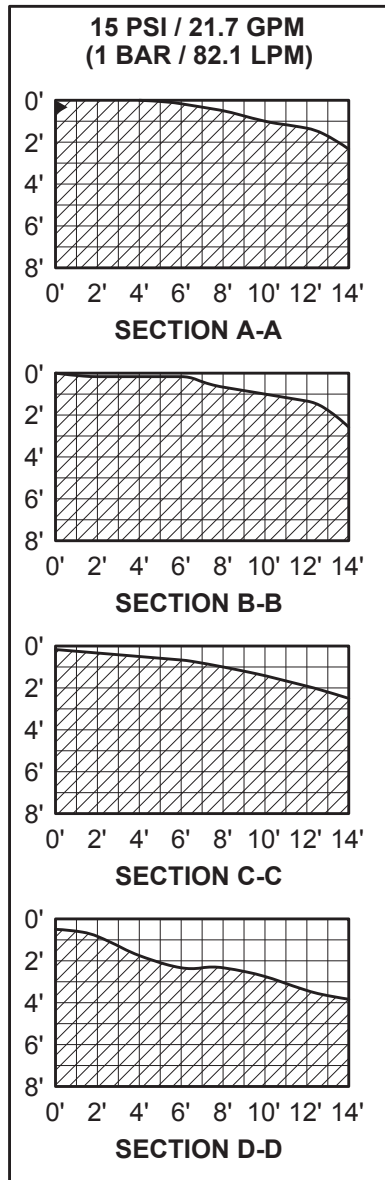
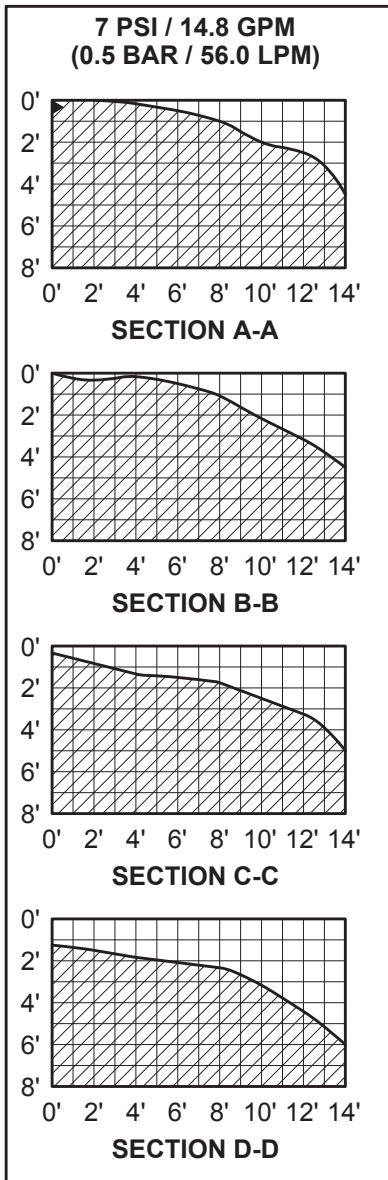
K=11.2 (K160), 7 inches (178 mm) Deflector to Ceiling

- TY5211, ELO-231
- TY5231, ELO-231FRB
- TY5251, ELO-231B



CROSS SECTIONAL PATTERNS

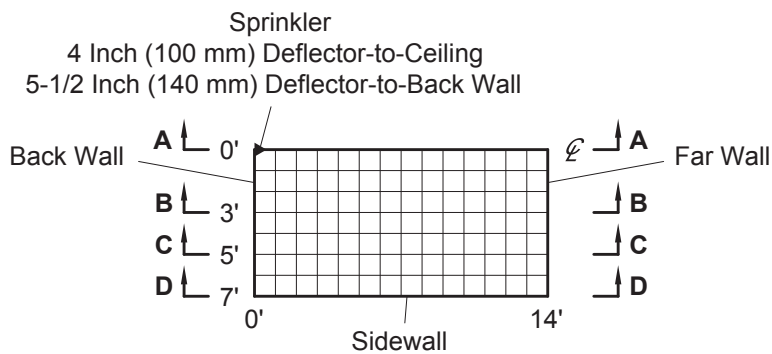
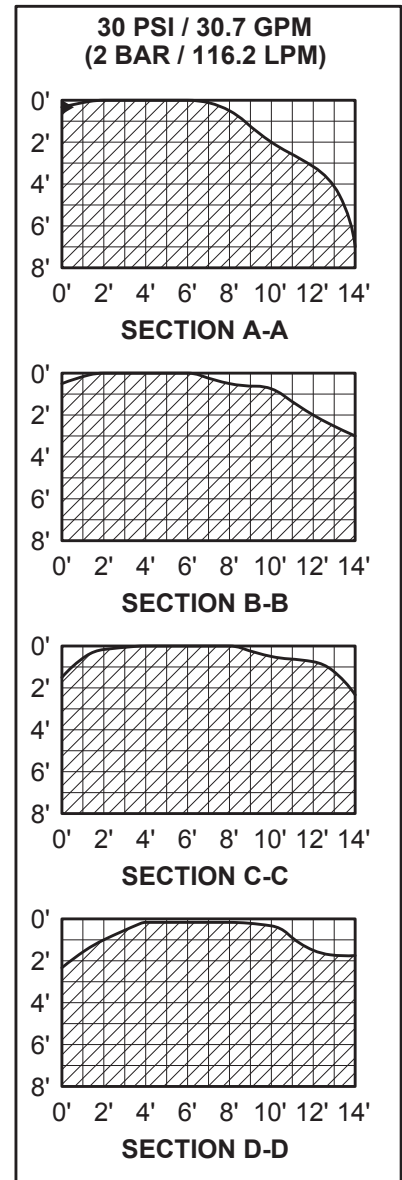
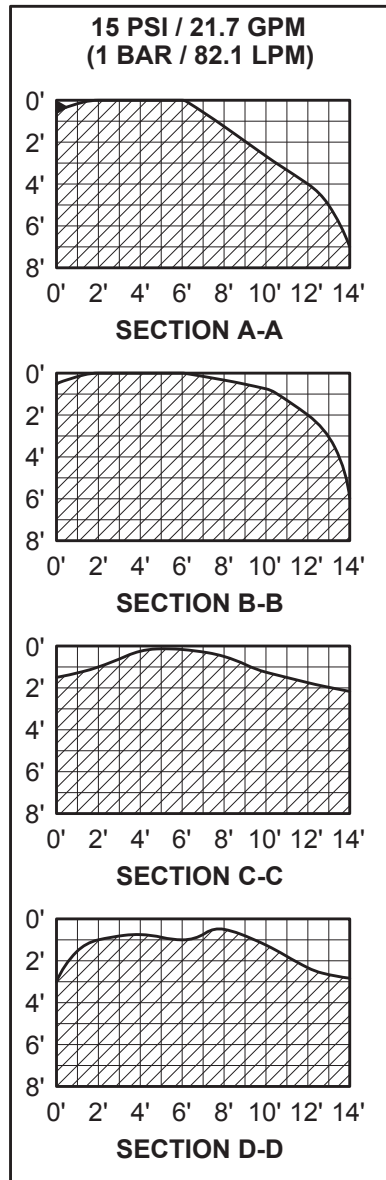
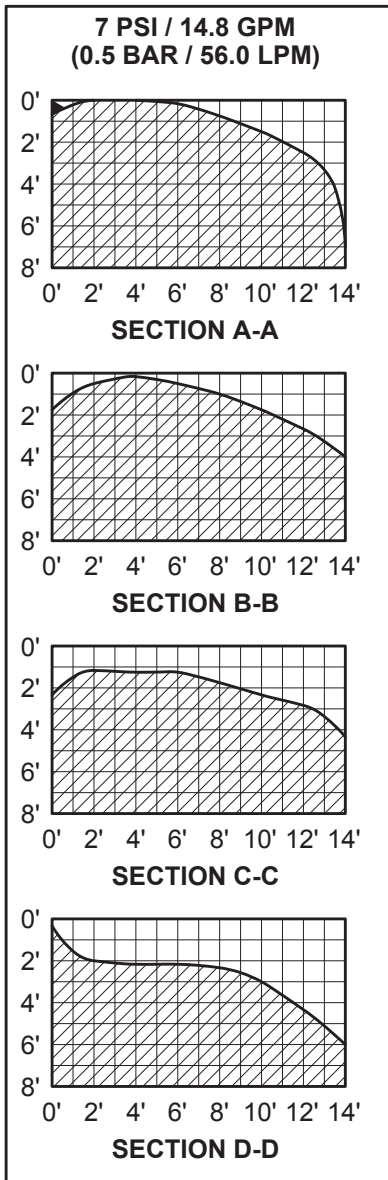
K=5.6 (K80), Standard Coverage
Horizontal Sidewall Sprinkler
SIN TY3311, Series TY-L



PLAN VIEW

CROSS SECTIONAL PATTERNS

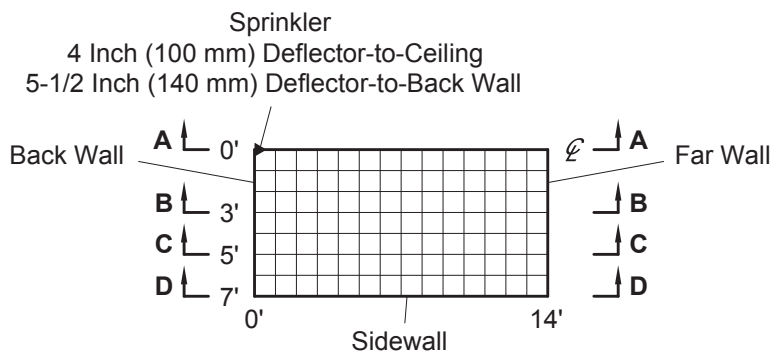
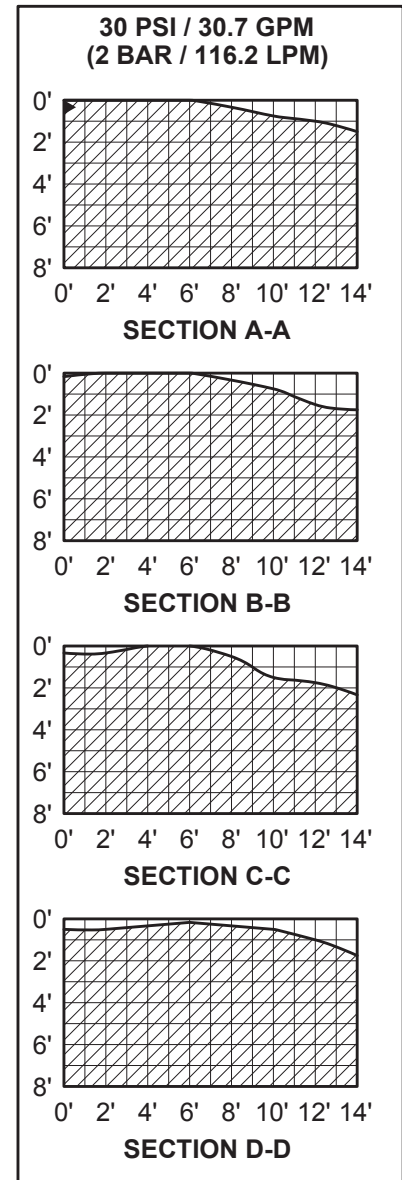
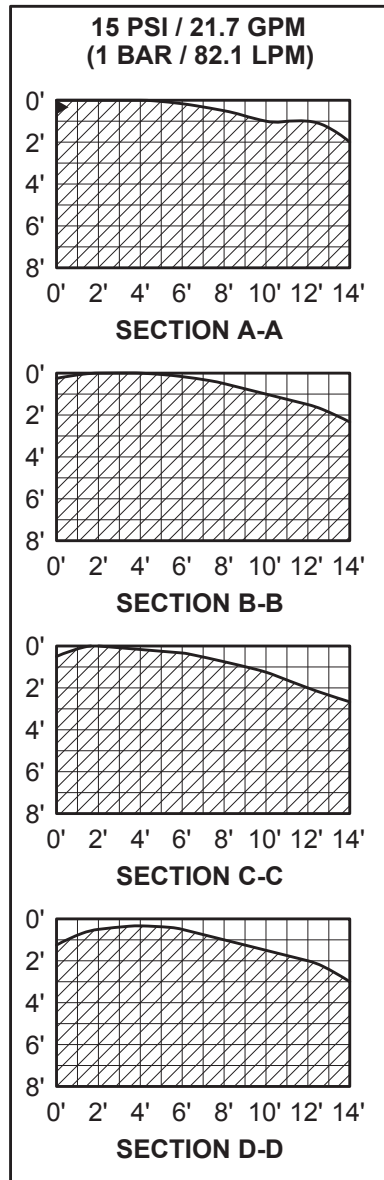
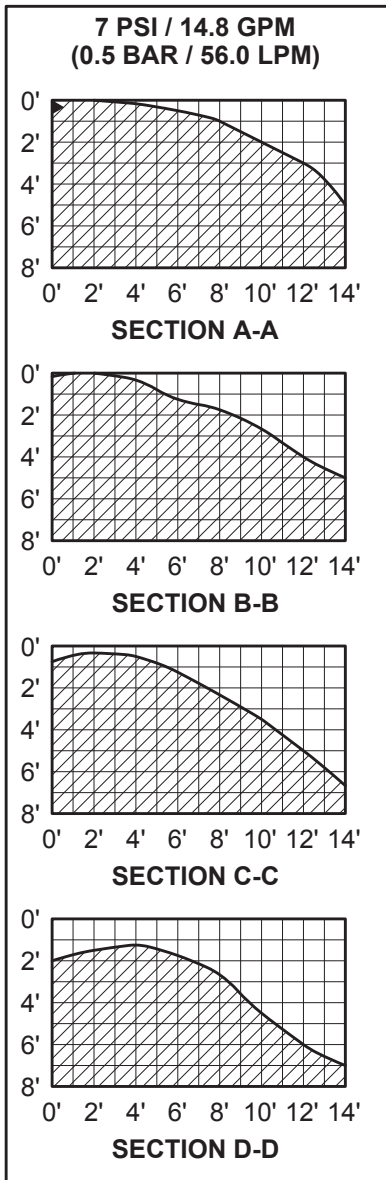
K=5.6 (K80), Standard Coverage
Horizontal Sidewall Sprinkler
SIN TY3331, Series TY-FRB
SIN TY3351, Series TY-B



PLAN VIEW

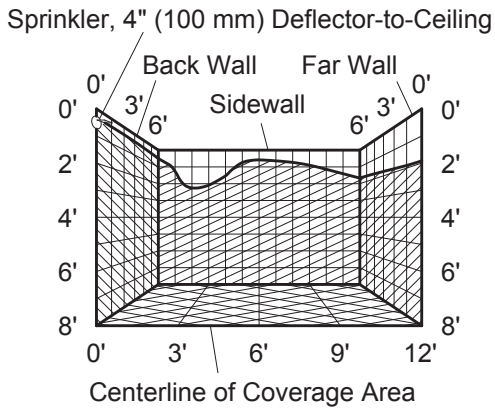
CROSS SECTIONAL PATTERNS

K=5.6 (K80), Standard Coverage
Vertical Sidewall Sprinkler (Installed in Upright Position)
SIN TY3431, Series TY-FRB
SIN TY3451, Series TY-B

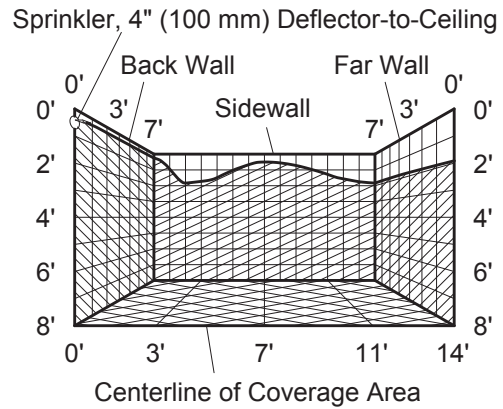


CROSS SECTIONAL PATTERNS

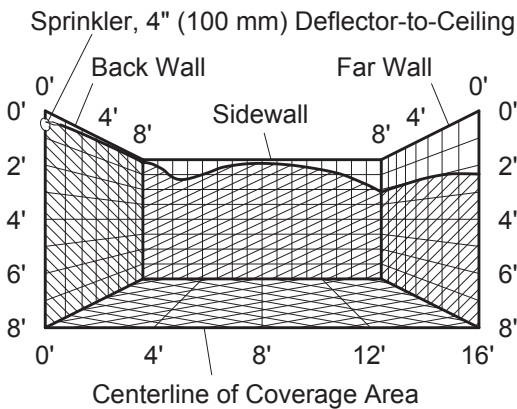
K=5.6 (K80), Standard Coverage
Vertical Sidewall Sprinkler (Installed in Pendent Position)
SIN TY3431, Series TY-FRB
SIN TY3451, Series TY-B



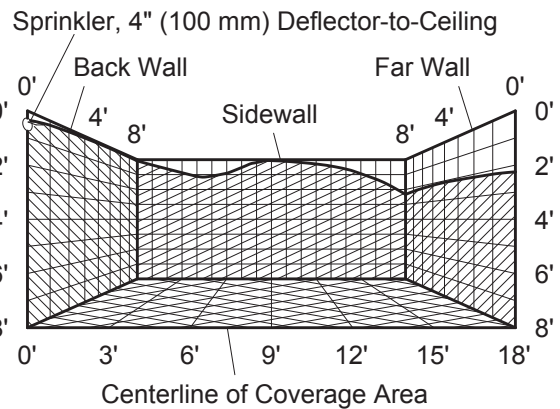
12' x 12' (3.7 m x 3.7 m) Maximum Coverage Area
12 GPM (45.4 LPM) Flow



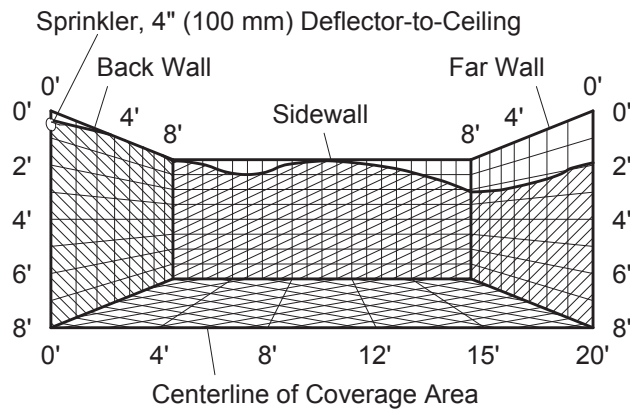
14' x 14' (4.3 m x 4.3 m) Maximum Coverage Area
14 GPM (53.0 LPM) Flow



16' x 16' (4.9 m x 4.9 m) Maximum Coverage Area
16 GPM (60.6 LPM) Flow



16' x 18' (4.9 m x 5.5 m) Maximum Coverage Area
19 GPM (71.9 LPM) Flow



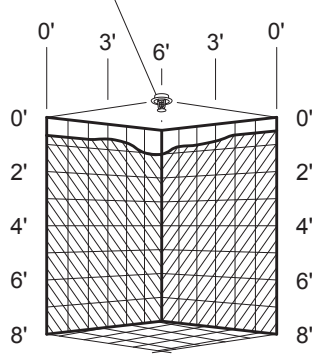
16' x 20' (4.9 m x 6.1 m) Maximum Coverage Area
23 GPM (87.1 LPM) Flow

WALL WETTING PATTERNS

K=4.2 (K60), Residential
Horizontal Sidewall Sprinkler
SIN TY1334, Series LFII

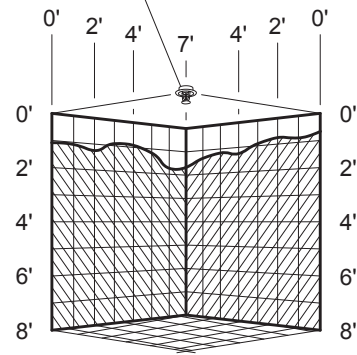
(Read the General Description section on Page 1 before applying the spray pattern data.)

Sprinkler, 2" (50 mm) Deflector-to-Ceiling



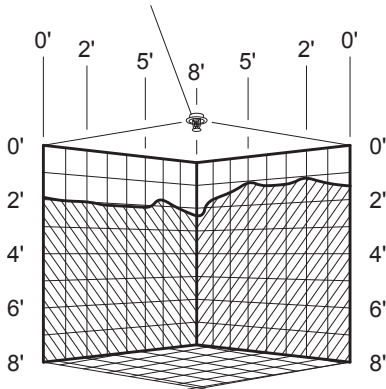
12' x 12' (3.7 m x 3.7 m) Maximum Coverage Area
13 GPM (49.2 LPM) Flow

Sprinkler, 2" (50 mm) Deflector-to-Ceiling



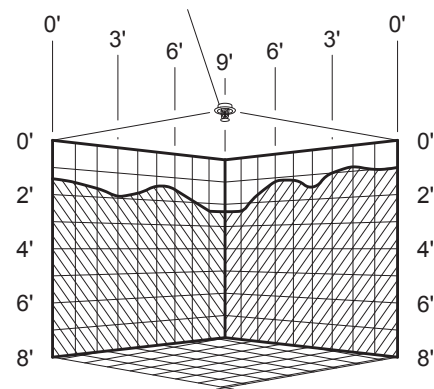
14' x 14' (4.3 m x 4.3 m) Maximum Coverage Area
13 GPM (49.2 LPM) Flow

Sprinkler, 2" (50 mm) Deflector-to-Ceiling



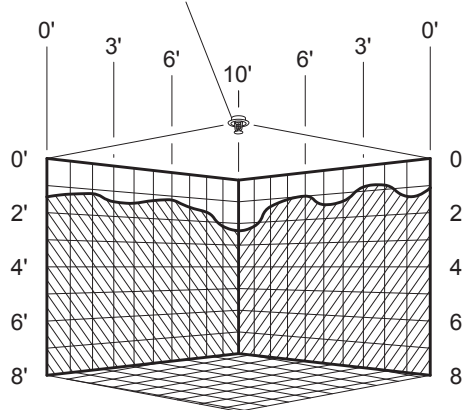
16' x 16' (4.9 m x 4.9 m) Maximum Coverage Area
13 GPM (49.2 LPM) Flow

Sprinkler, 2" (50 mm) Deflector-to-Ceiling



18' x 18' (5.5 m x 5.5 m) Maximum Coverage Area
17 GPM (64.3 LPM) Flow

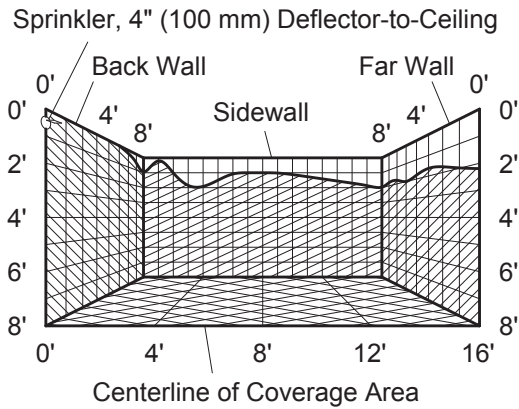
Sprinkler, 2" (50 mm) Deflector-to-Ceiling



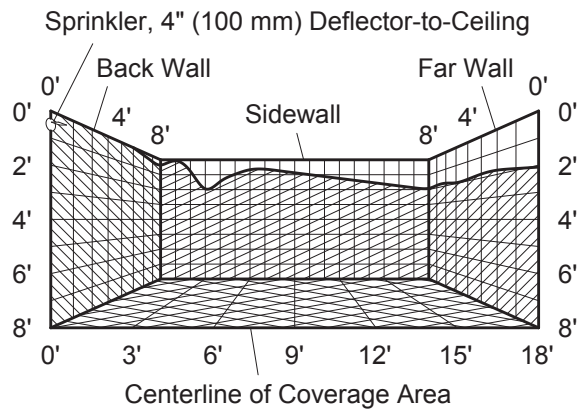
20' x 20' (6.1 m x 6.1 m) Maximum Coverage Area
20 GPM (75.7 LPM) Flow

WALL WETTING PATTERNS

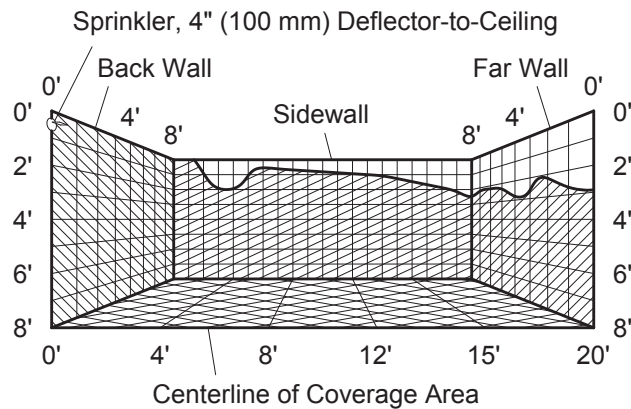
K=4.9 (K70), Residential
Pendent Sprinkler
SIN TY2234, Series LFII



16' x 16' (4.9 m x 4.9 m) Maximum Coverage Area
26 GPM (98.4 LPM) Flow



16' x 18' (4.9 m x 5.5 m) Maximum Coverage Area
29 GPM (109.8 LPM) Flow

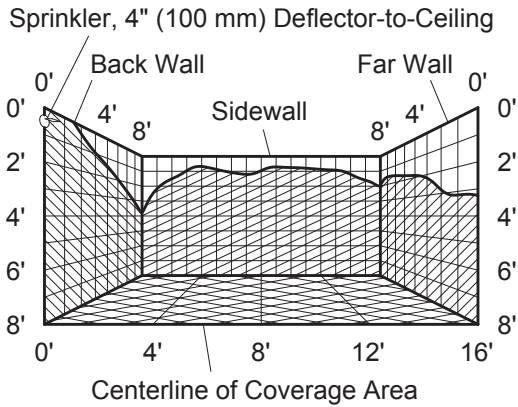


16' x 20' (4.9 m x 6.1 m) Maximum Coverage Area
33 GPM (124.9 LPM) Flow

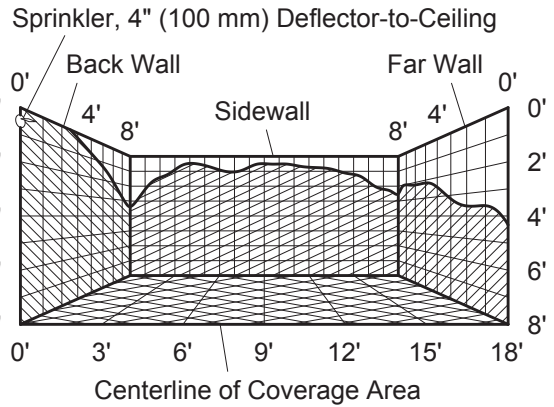
WALL WETTING PATTERNS

K=5.6 (K80), Extended Coverage
Horizontal Sidewall Sprinkler
SIN TY3322, Series TY-FRL

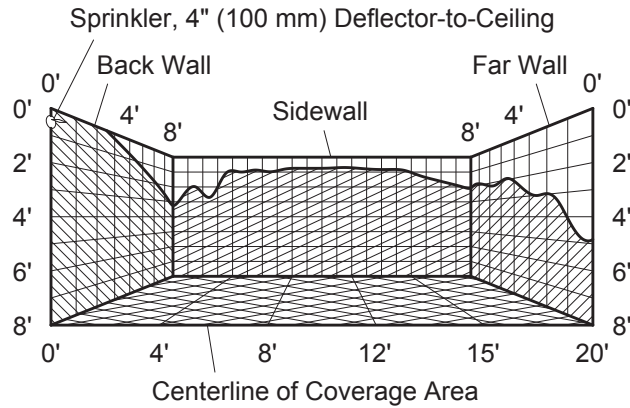
(Read the General Description section on Page 1 before applying the spray pattern data.)



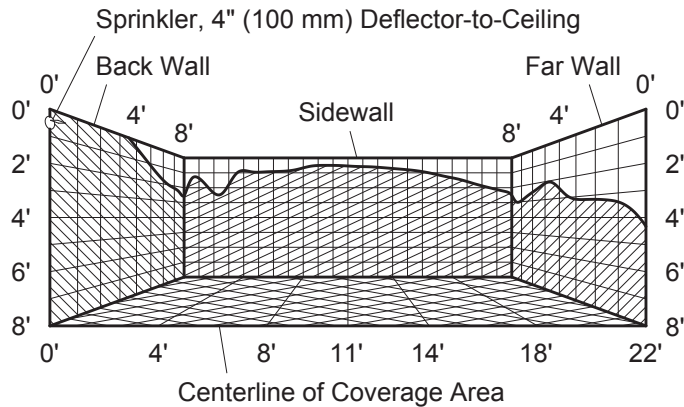
16' x 16' (4.9 m x 4.9 m) Maximum Coverage Area
26 GPM (98.4 LPM) Flow



16' x 18' (4.9 m x 5.5 m) Maximum Coverage Area
29 GPM (109.8 LPM) Flow



16' x 20' (4.9 m x 6.1 m) Maximum Coverage Area
32 GPM (121.1 LPM) Flow



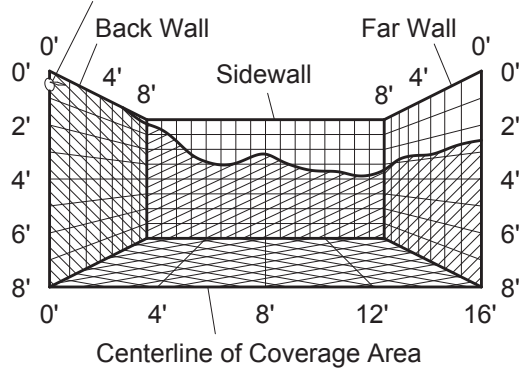
16' x 22' (4.9 m x 6.7 m) Maximum Coverage Area
35 GPM (132.5 LPM) Flow

WALL WETTING PATTERNS

K=5.6 (K80), Extended Coverage
Horizontal Sidewall Sprinkler
SIN TY3332, Series TY-FRB

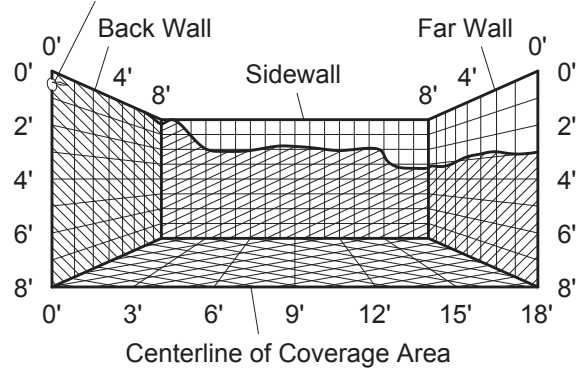
(Read the General Description section on Page 1 before applying the spray pattern data.)

Sprinkler, 4" (100 mm) Deflector-to-Ceiling



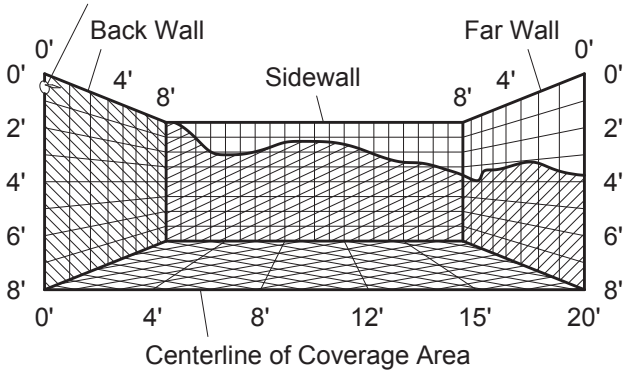
16' x 16' (4.9 m x 4.9 m) Maximum Coverage Area
27 GPM (102.2 LPM) Flow

Sprinkler, 4" (100 mm) Deflector-to-Ceiling



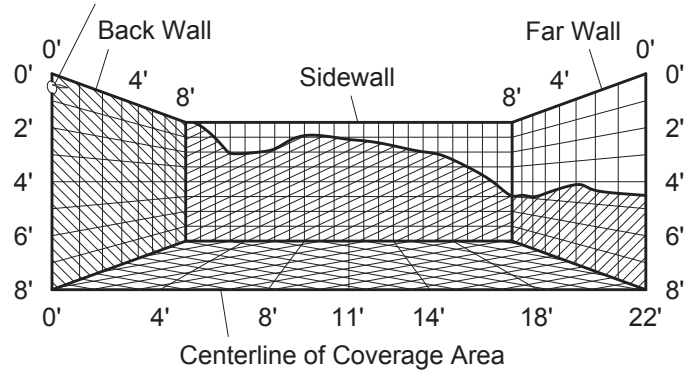
16' x 18' (4.9 m x 5.5 m) Maximum Coverage Area
30 GPM (113.6 LPM) Flow

Sprinkler, 4" (100 mm) Deflector-to-Ceiling



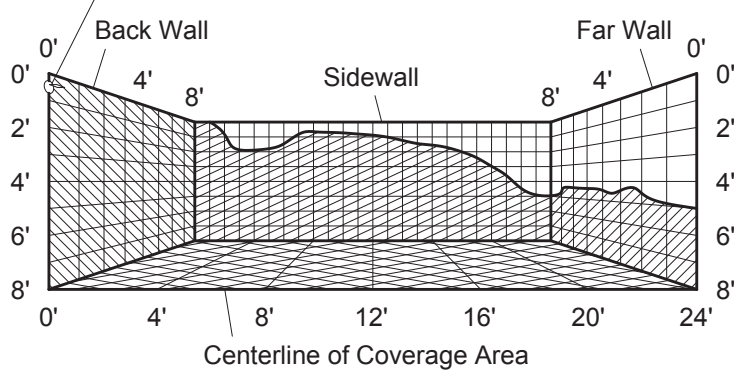
16' x 20' (4.9 m x 6.1 m) Maximum Coverage Area
34 GPM (128.7 LPM) Flow

Sprinkler, 4" (100 mm) Deflector-to-Ceiling



16' x 22' (4.9 m x 6.7 m) Maximum Coverage Area
37 GPM (140.0 LPM) Flow

Sprinkler, 4" (100 mm) Deflector-to-Ceiling

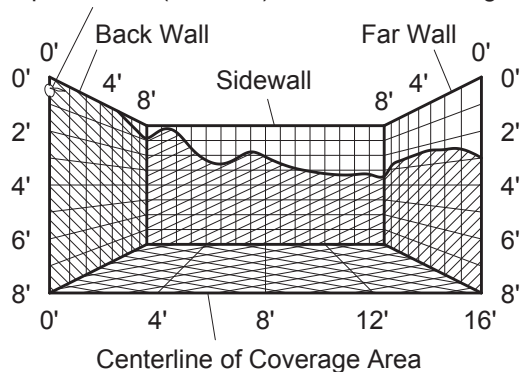


16' x 24' (4.9 m x 7.3 m) Maximum Coverage Area
44 GPM (166.5 LPM) Flow

WALL WETTING PATTERNS

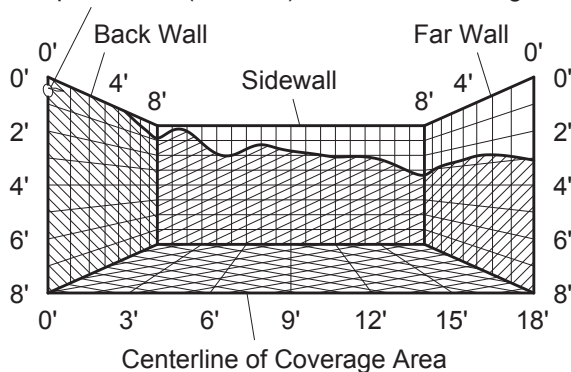
K=8.0 (K115), Extended Coverage
Horizontal Sidewall Sprinkler
SIN TY4322, Series TY-FRL

Sprinkler, 4" (100 mm) Deflector-to-Ceiling



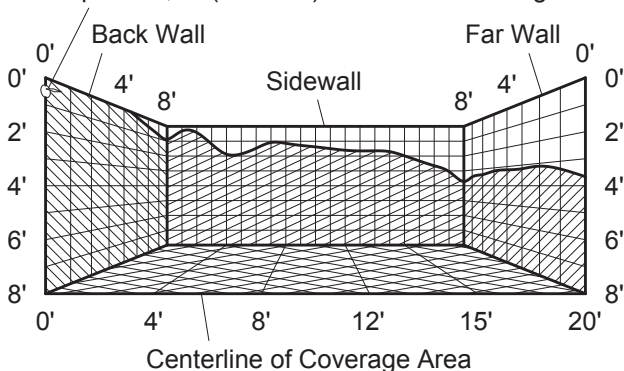
16' x 16' (4.9 m x 4.9 m) Maximum Coverage Area
26 GPM (98.4 LPM) Flow

Sprinkler, 4" (100 mm) Deflector-to-Ceiling



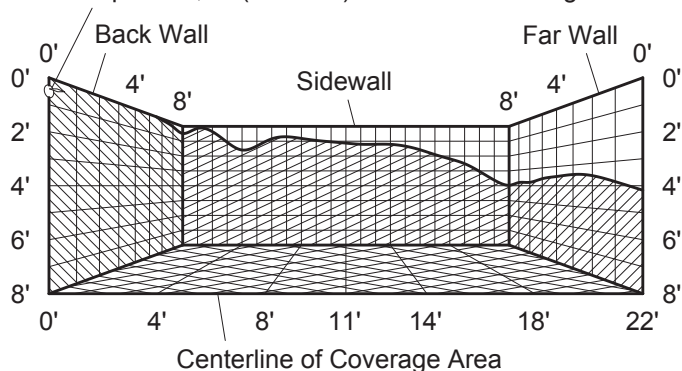
16' x 18' (4.9 m x 5.5 m) Maximum Coverage Area
29 GPM (109.8 LPM) Flow

Sprinkler, 4" (100 mm) Deflector-to-Ceiling



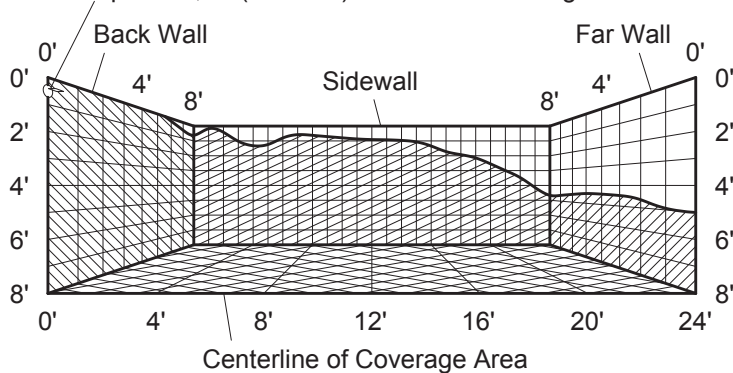
16' x 20' (4.9 m x 6.1 m) Maximum Coverage Area
32 GPM (121.1 LPM) Flow

Sprinkler, 4" (100 mm) Deflector-to-Ceiling



16' x 22' (4.9 m x 6.7 m) Maximum Coverage Area
35 GPM (132.5 LPM) Flow

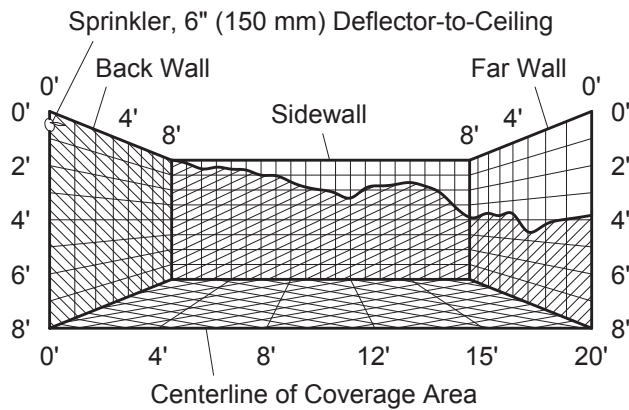
Sprinkler, 4" (100 mm) Deflector-to-Ceiling



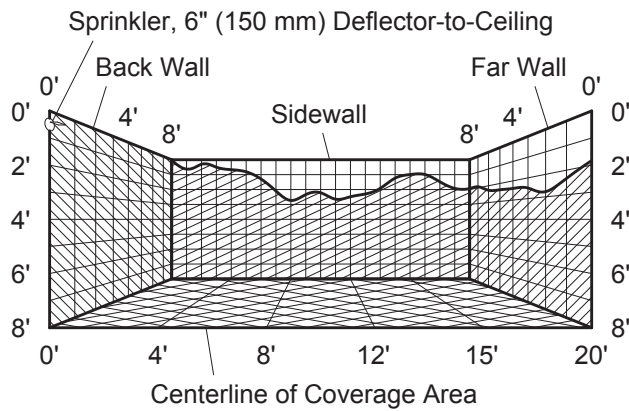
16' x 24' (4.9 m x 7.3 m) Maximum Coverage Area
39 GPM (147.6 LPM) Flow

WALL WETTING PATTERNS

K=8.0 (K115), Extended Coverage
Horizontal Sidewall Sprinkler
SIN TY4332, Series TY-FRB



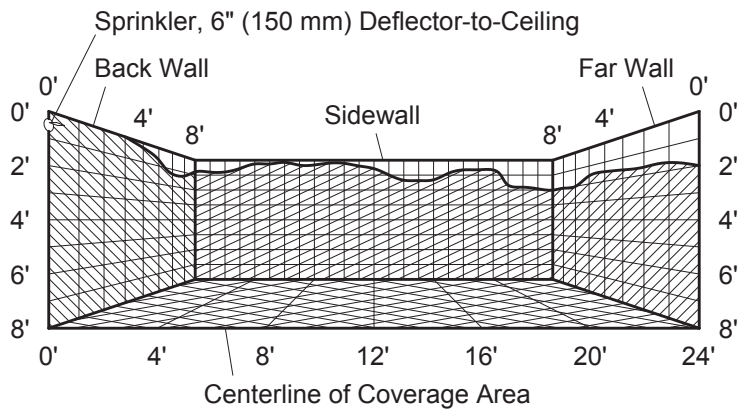
16' x 20' (4.9 m x 6.1 m) Maximum Coverage Area
48 GPM (181.7 LPM) Flow



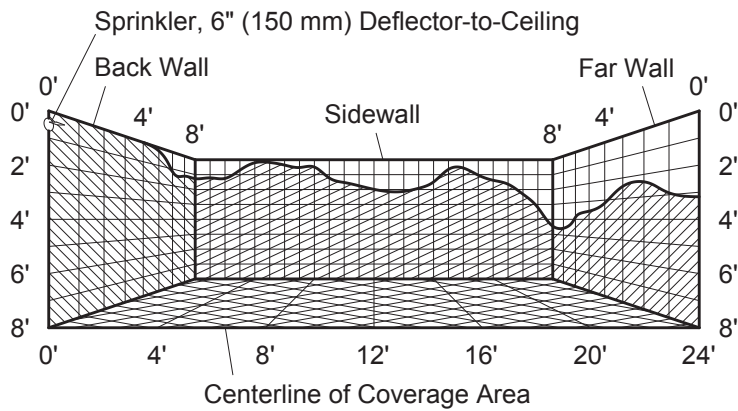
16' x 20' (4.9 m x 6.1 m) Maximum Coverage Area
64 GPM (242.2 LPM) Flow

WALL WETTING PATTERNS

K=11.2 (K160), Extended Coverage
Horizontal Sidewall Sprinkler
SIN TY5332, Model SW-20



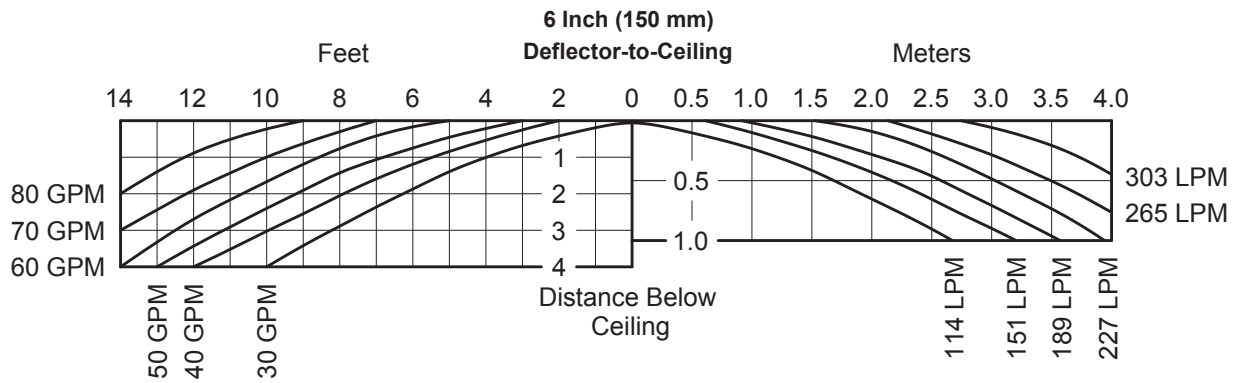
16' x 24' (4.9 m x 7.3 m) Maximum Coverage Area
58 GPM (219.5 LPM) Flow



16' x 24' (4.9 m x 7.3 m) Maximum Coverage Area
77 GPM (291.4 LPM) Flow

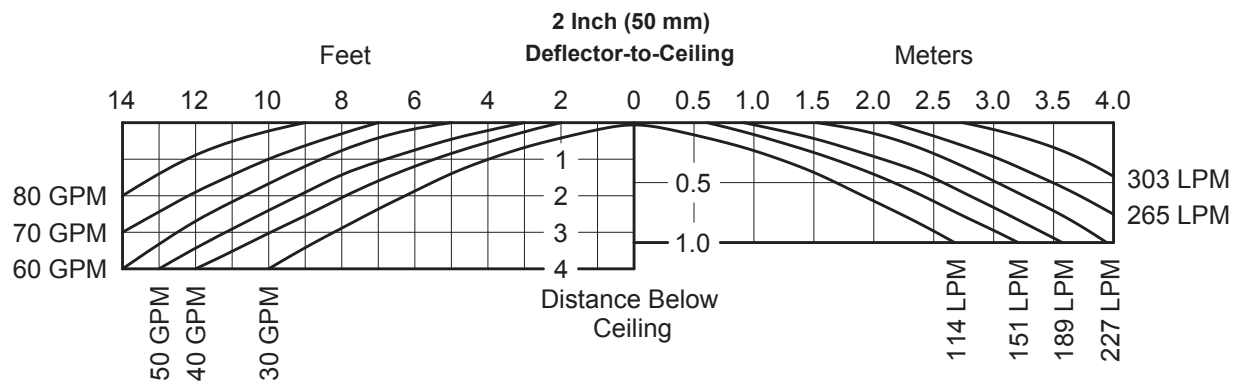
WALL WETTING PATTERNS

K=11.2 (K160), Extended Coverage
Horizontal Sidewall Sprinkler
SIN TY5337, Model SW-24



SPRAY PROFILE PATTERNS

Extended Coverage Upright
 SIN TY5137, Series EC-11, K=11.2 (K160)
 SIN TY6137, Series EC-14, K=14.0 (K200)



SPRAY PROFILE PATTERNS

Extended Coverage Pendent
 SIN TY5237, Series EC-11, K=11.2 (K160)
 SIN TY6237, Series EC-14, K=14.0 (K200)

Sprinkler
Deflector-to-Ceiling:
7 Inches (178 mm)

7 PSI / 14.8 GPM
(0.5 BAR / 56.0 LPM)

Radius from Sprinkler, Feet

		℄	1'	2'	3'	4'	5'	6'	7'	8'	9'	10'
Distance Below Ceiling, Feet	1'	0.08	0.26	0.38	0.16	0.11	0.05	0.02	0.01	0	0	0
	2'	0.21	0.12	0.33	0.12	0.07	0.07	0.05	0.02	0.01	0	0
	4'	0.21	0.12	0.32	0.11	0.06	0.04	0.03	0.03	0.03	0.02	0.01
	8'	0.08	0.10	0.23	0.11	0.04	0.03	0.02	0.02	0.02	0.02	0.01

Collection Density, GPM/ft²
(1 GPM/ft.² = 40.74 mm/min.)

Sprinkler
Deflector-to-Ceiling:
7 Inches (178 mm)

15 PSI / 21.7 GPM
(1 BAR / 82.1 LPM)

Radius from Sprinkler, Feet

		℄	1'	2'	3'	4'	5'	6'	7'	8'	9'	10'
Distance Below Ceiling, Feet	1'	0.14	0.14	0.40	0.29	0.19	0.10	0.05	0.02	0.01	0.01	0
	2'	0.15	0.09	0.26	0.23	0.15	0.09	0.06	0.05	0.03	0.01	0.01
	4'	0.22	0.13	0.23	0.25	0.12	0.07	0.05	0.04	0.03	0.03	0.02
	8'	0.11	0.10	0.11	0.26	0.09	0.06	0.04	0.03	0.02	0.03	0.02

Collection Density, GPM/ft²
(1 GPM/ft.² = 40.74 mm/min.)

Sprinkler
Deflector-to-Ceiling:
7 Inches (178 mm)

30 PSI / 30.7 GPM
(2 BAR / 116.2 LPM)

Radius from Sprinkler, Feet

		℄	1'	2'	3'	4'	5'	6'	7'	8'	9'	10'
Distance Below Ceiling, Feet	1'	0.23	0.15	0.24	0.47	0.25	0.19	0.09	0.04	0.02	0.01	0
	2'	0.22	0.13	0.12	0.39	0.17	0.15	0.11	0.07	0.04	0.02	0.01
	4'	0.16	0.11	0.08	0.25	0.18	0.11	0.09	0.06	0.04	0.03	0.02
	8'	0.20	0.13	0.08	0.16	0.27	0.11	0.08	0.06	0.04	0.03	0.02

Collection Density, GPM/ft²
(1 GPM/ft.² = 40.74 mm/min.)

AVERAGE APPLIED DENSITIES

K=5.6 (K80), Conventional "Old Style" Sprinkler (Installed in Upright Position)
SIN TY363, Series TY-FRB
SIN TY365, Series TY-B

Sprinkler
Deflector-to-Ceiling:
7 Inches (178 mm)

7 PSI / 14.8 GPM
(0.5 BAR / 56.0 LPM)

Radius from Sprinkler, Feet

		℄	1'	2'	3'	4'	5'	6'	7'	8'	9'	10'
Distance Below Ceiling, Feet	1'	0.89	0.62	0.25	0.13	0.08	0.04	0.02	0.01	0	0	0
	2'	0.13	0.26	0.18	0.12	0.10	0.07	0.03	0.02	0.01	0	0
	4'	0.04	0.08	0.11	0.09	0.08	0.07	0.06	0.04	0.02	0.01	0
	8'	0.04	0.04	0.06	0.06	0.06	0.05	0.04	0.04	0.03	0.02	0.01

Collection Density, GPM/ft²
(1 GPM/ft.² = 40.74 mm/min.)

Sprinkler
Deflector-to-Ceiling:
7 Inches (178 mm)

15 PSI / 21.7 GPM
(1 BAR / 82.1 LPM)

Radius from Sprinkler, Feet

		℄	1'	2'	3'	4'	5'	6'	7'	8'	9'	10'
Distance Below Ceiling, Feet	1'	1.31	0.85	0.31	0.17	0.10	0.06	0.04	0.02	0.01	0.01	0
	2'	0.32	0.41	0.24	0.16	0.12	0.08	0.05	0.03	0.02	0.01	0.01
	4'	0.11	0.15	0.16	0.13	0.11	0.09	0.07	0.06	0.03	0.02	0.01
	8'	0.08	0.09	0.11	0.10	0.09	0.07	0.06	0.05	0.07	0.03	0.02

Collection Density, GPM/ft²
(1 GPM/ft.² = 40.74 mm/min.)

Sprinkler
Deflector-to-Ceiling:
7 Inches (178 mm)

30 PSI / 30.7 GPM
(2 BAR / 116.2 LPM)

Radius from Sprinkler, Feet

		℄	1'	2'	3'	4'	5'	6'	7'	8'	9'	10'
Distance Below Ceiling, Feet	1'	1.95	1.26	0.45	0.24	0.14	0.08	0.05	0.03	0.01	0.01	0
	2'	0.44	0.54	0.33	0.19	0.17	0.12	0.07	0.04	0.02	0.01	0.01
	4'	0.18	0.24	0.23	0.18	0.14	0.12	0.09	0.07	0.04	0.03	0.01
	8'	0.15	0.15	0.16	0.16	0.13	0.11	0.09	0.07	0.05	0.04	0.03

Collection Density, GPM/ft²
(1 GPM/ft.² = 40.74 mm/min.)

AVERAGE APPLIED DENSITIES

K=5.6 (K80), Conventional "Old Style" Sprinkler (Installed in Pendent Position)
SIN TY363, Series TY-FRB
SIN TY365, Series TY-B

Sprinkler
Deflector-to-Ceiling:
7 Inches (178 mm)

7 PSI / 14.8 GPM
(0.5 BAR / 56.0 LPM)

Radius from Sprinkler, Feet

		℄	1'	2'	3'	4'	5'	6'	7'	8'	9'	10'
Distance Below Ceiling, Feet	1'	0.25	0.21	0.24	0.21	0.16	0.08	0.04	0.02	0.01	0	0
	2'	0.26	0.18	0.18	0.14	0.08	0.10	0.07	0.03	0.01	0.01	0
	4'	0.15	0.17	0.12	0.13	0.06	0.05	0.04	0.04	0.05	0.04	0.02
	8'	0.12	0.15	0.11	0.10	0.04	0.03	0.03	0.02	0.02	0.02	0.02

Collection Density, GPM/ft²
(1 GPM/ft.² = 40.74 mm/min.)

Sprinkler
Deflector-to-Ceiling:
7 Inches (178 mm)

15 PSI / 21.7 GPM
(1 BAR / 82.1 LPM)

Radius from Sprinkler, Feet

		℄	1'	2'	3'	4'	5'	6'	7'	8'	9'	10'
Distance Below Ceiling, Feet	1'	0.22	0.22	0.22	0.25	0.21	0.13	0.05	0.03	0.01	0.01	0
	2'	0.20	0.18	0.15	0.20	0.12	0.10	0.09	0.06	0.03	0.01	0.01
	4'	0.16	0.17	0.10	0.16	0.09	0.06	0.05	0.04	0.04	0.04	0.03
	8'	0.17	0.18	0.09	0.14	0.08	0.05	0.04	0.03	0.03	0.02	0.02

Collection Density, GPM/ft²
(1 GPM/ft.² = 40.74 mm/min.)

Sprinkler
Deflector-to-Ceiling:
7 Inches (178 mm)

30 PSI / 30.7 GPM
(2 BAR / 116.2 LPM)

Radius from Sprinkler, Feet

		℄	1'	2'	3'	4'	5'	6'	7'	8'	9'	10'
Distance Below Ceiling, Feet	1'	0.28	0.22	0.22	0.31	0.26	0.22	0.12	0.05	0.02	0.01	0.01
	2'	0.24	0.18	0.12	0.23	0.18	0.15	0.13	0.09	0.05	0.03	0.02
	4'	0.23	0.18	0.09	0.18	0.15	0.11	0.09	0.07	0.05	0.05	0.04
	8'	0.29	0.19	0.09	0.16	0.15	0.11	0.08	0.05	0.04	0.03	0.03

Collection Density, GPM/ft²
(1 GPM/ft.² = 40.74 mm/min.)

AVERAGE APPLIED DENSITIES

K=5.6 (K80), Conventional "Old Style" Sprinkler (Installed in Upright Position)
SIN TY3631, Series TY-FRB
SIN TY3641, Series TY-B (4 mm)
SIN TY3651, Series TY-B

Sprinkler **7 PSI / 14.8 GPM**
(0.5 BAR / 56.0 LPM)
Deflector-to-Ceiling:
7 Inches (178 mm) Radius from Sprinkler, Feet

		∅	1'	2'	3'	4'	5'	6'	7'	8'	9'	10'
Distance Below Ceiling, Feet	1'	0.20	0.33	0.24	0.10	0.07	0.06	0.04	0.03	0.03	0.01	0.01
	2'	0.09	0.11	0.20	0.12	0.07	0.05	0.04	0.04	0.03	0.02	0.01
	4'	0.04	0.04	0.11	0.09	0.07	0.05	0.04	0.04	0.03	0.02	0.02
	8'	0.03	0.03	0.07	0.07	0.05	0.05	0.04	0.03	0.03	0.02	0.02

Collection Density, GPM/ft²
(1 GPM/ft.² = 40.74 mm/min.)

Sprinkler **15 PSI / 21.7 GPM**
(1 BAR / 82.1 LPM)
Deflector-to-Ceiling:
7 Inches (178 mm) Radius from Sprinkler, Feet

		∅	1'	2'	3'	4'	5'	6'	7'	8'	9'	10'
Distance Below Ceiling, Feet	1'	0.22	0.40	0.30	0.14	0.09	0.08	0.05	0.03	0.03	0.02	0.01
	2'	0.10	0.12	0.25	0.17	0.11	0.09	0.06	0.04	0.03	0.02	0.02
	4'	0.10	0.05	0.12	0.12	0.11	0.10	0.06	0.04	0.03	0.02	0.02
	8'	0.06	0.05	0.09	0.11	0.10	0.10	0.07	0.05	0.03	0.03	0.02

Collection Density, GPM/ft²
(1 GPM/ft.² = 40.74 mm/min.)

Sprinkler **30 PSI / 30.7 GPM**
(2 BAR / 116.2 LPM)
Deflector-to-Ceiling:
7 Inches (178 mm) Radius from Sprinkler, Feet

		∅	1'	2'	3'	4'	5'	6'	7'	8'	9'	10'
Distance Below Ceiling, Feet	1'	0.26	0.54	0.40	0.21	0.15	0.15	0.09	0.06	0.04	0.02	0.02
	2'	0.15	0.15	0.30	0.23	0.17	0.16	0.09	0.06	0.04	0.03	0.02
	4'	0.18	0.10	0.14	0.20	0.19	0.18	0.12	0.07	0.04	0.03	0.02
	8'	0.13	0.11	0.12	0.16	0.15	0.16	0.12	0.07	0.04	0.03	0.02

Collection Density, GPM/ft²
(1 GPM/ft.² = 40.74 mm/min.)

AVERAGE APPLIED DENSITIES

K=5.6 (K80), Conventional "Old Style" Sprinkler (Installed in Pendent Position)
SIN TY3631, Series TY-FRB
SIN TY3641, Series TY-B (4 mm)
SIN TY3651, Series TY-B

