

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.

NOTE

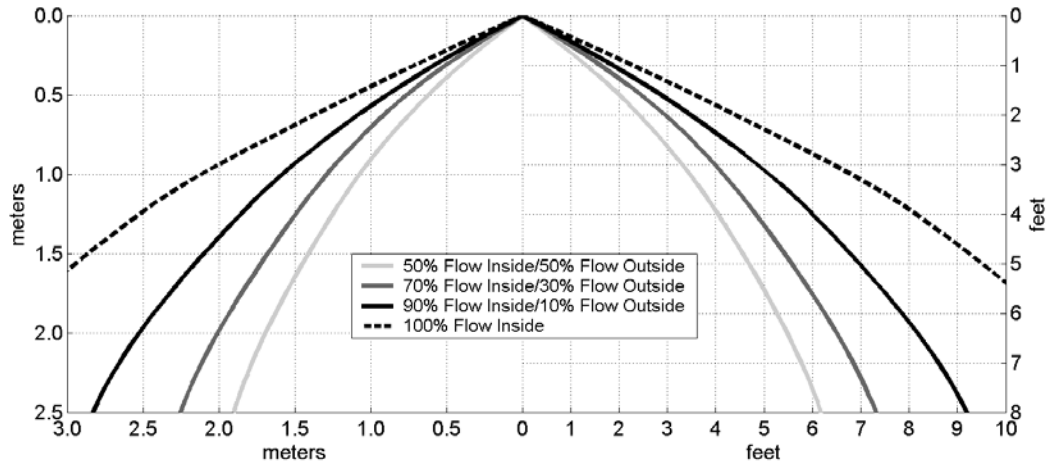
Sprinklers are designed and laboratory approved to meet specific spray distribution requirements. The Sprinkler Spray Pattern data provided in this document represents only a portion of the overall spray distribution characteristics used by approval laboratories for determining applicability to a specific 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 No.
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 Pendent	TFP130	6
TY1231	TY-FRB	2.8 (K40)	Std. Coverage Pendent	TFP171	7
TY1251	TY-B	2.8 (K40)	Std. Coverage Pendent	TFP151	7
TY1334	LFII	4.2 (K60)	Residential Horizontal Sidewall	TFP410	32
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 Pendentt	TFP670	9
TY2209	TY-FRB	3.9 (K57)	Std. Coverage Pendentt	TFP670	9
TY2231	TY-FRB	4.2 (K60)	Std. Coverage Pendent	TFP171	11
TY2234	LFII	4.9 (K70)	Residential Pendent	TFP400	33
TY2249	TY-B(4mm)	3.9 (K57)	Std. Coverage Pendentt	TFP672	9
TY3111	TY-L	5.6 (K80)	Std. Coverage Upright	TFP110	12
TY3121	TY-FRL	5.6 (K80)	Std. Coverage Upright	TFP130	13
TY3131	TY-FRB	5.6 (K80)	Std. Coverage Upright	TFP171	14
TY3141	TY-B(4mm)	5.6 (K80)	Std. Coverage Upright	TFP672	14
TY3151	TY-B	5.6 (K80)	Std. Coverage Upright	TFP150	14
TY3211	TY-L	5.6 (K80)	Std. Coverage Pendent	TFP110	15
TY3221	TY-FRL	5.6 (K80)	Std. Coverage Pendent	TFP130	16
TY3231	TY-FRB	5.6 (K80)	Std. Coverage Pendent	TFP171	17
TY3241	TY-B(4mm)	5.6 (K80)	Std. Coverage Pendent	TFP672	17
TY3251	TY-B	5.6 (K80)	Std. Coverage Pendent	TFP150	17
TY3311	TY-L	5.6 (K80)	Std. Coverage Horizontal Sidewall	TFP120	27
TY3321	TY-FRL	5.6 (K80)	Std. Coverage Horizontal Sidewall	TFP140	28
TY3322	TY-FRL	5.6 (K80)	Ext. Coverage Horizontal Sidewall	TFP280	34
TY3331	TY-FRB	5.6 (K80)	Std. Coverage Horizontal Sidewall	TFP176	29
TY3332	TY-FRB	5.6 (K80)	Ext. Coverage Horizontal Sidewall	TFP296	35
TY3351	TY-B	5.6 (K80)	Std. Coverage Horizontal Sidewall	TFP161	29
TY3431	TY-FRB	5.6 (K80)	Std. Coverage Vert. Sidewall (Upright)	TFP176	30
TY3431	TY-FRB	5.6 (K80)	Std. Coverage Vert. Sidewall (Pendent)	TFP176	31
TY3451	TY-B	5.6 (K80)	Std. Coverage Vert. Sidewall (Upright)	TFP161	30
TY3451	TY-B	5.6 (K80)	Std. Coverage Vert. Sidewall (Pendent)	TFP161	31
TY3531	RFII	5.6 (K80)	Std. Cov. QR Concealed Pendent	TFP181	18
TY3532	RFII	5.6 (K80)	Ex. Coverage Concealed Pendent	TFP181	18
TY3551	RFII	5.6 (K80)	Std. Cov. SR Concealed Pendent	TFP181	18
TY3631	TY-FRB	5.6 (K80)	Conventional "Old Style" (Upright)	TFP666	42
TY3631	TY-FRB	5.6 (K80)	Conventional "Old Style" (Pendent)	TFP666	43
TY3641	TY-B (4mm)	5.6 (K80)	Conventional "Old Style" (Upright)	TFP661	42
TY3641	TY-B (4mm)	5.6 (K80)	Conventional "Old Style" (Pendent)	TFP661	43
TY3651	TY-B	5.6 (K80)	Conventional "Old Style" (Upright)	TFP667	42
TY3651	TY-B	5.6 (K80)	Conventional "Old Style" (Pendent)	TFP667	43

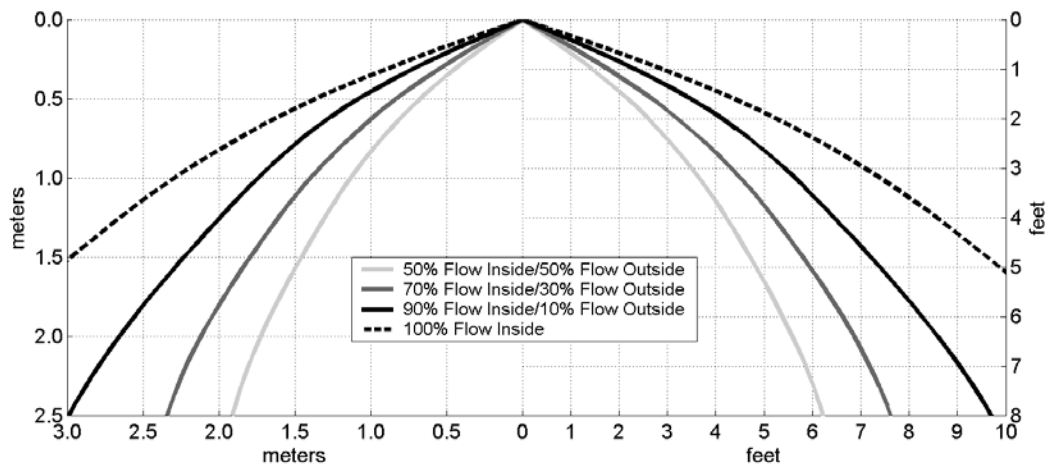
SIN	Model/Series	K-factor	Type	Data Sheet	Page No.
TY4111	TY-L	8.0 (K115)	Std. Coverage Upright	TFP110	19
TY4121	TY-FRL	8.0 (K115)	Std. Coverage Upright	TFP130	20
TY4131	TY-FRB	8.0 (K115)	Std. Coverage Upright	TFP171	21
TY4141	TY-B(4mm)	8.0 (K115)	Std. Coverage Upright	TFP672	21
TY4151	TY-B	8.0 (K115)	Std. Coverage Upright	TFP150	21
TY4211	TY-L	8.0 (K115)	Std. Coverage Pendent	TFP110	22
TY4221	TY-FRL	8.0 (K115)	Std. Coverage Pendent	TFP130	23
TY4231	TY-FRB	8.0 (K115)	Std. Coverage Pendent	TFP171	24
TY4241	TY-B(4mm)	8.0 (K115)	Std. Coverage Pendent	TFP672	24
TY4251	TY-B	8.0 (K115)	Std. Coverage Pendent	TFP150	24
TY4322	TY-FRL	8.0 (K115)	Ext. Coverage Horizontal Sidewall	TFP280	36
TY4332	TY-FRB	8.0 (K115)	Ext. Coverage Horizontal Sidewall	TFP296	37
TY5111	ELO-231	11.2 (K160)	Std. Coverage Upright	TFP340	25
TY5131	ELO-231FRB	11.2 (K160)	Std. Coverage Upright	TFP344	25
TY5137	EC-11	11.2 (K160)	Ext. Coverage Upright	TFP220	40
TY5151	ELO-231B	11.2 (K160)	Std. Coverage Upright	TFP342	25
TY5211	ELO-231	11.2 (K160)	Std. Coverage Pendent	TFP340	26
TY5231	ELO-231FRB	11.2 (K160)	Std. Coverage Pendent	TFP344	26
TY5237	EC-11	11.2 (K160)	Ext. Coverage Pendent	TFP220	41
TY5251	ELO-231B	11.2 (K160)	Std. Coverage Pendent	TFP342	26
TY5332	SW-20	11.2 (K160)	Ext. Coverage Horizontal Sidewall	TFP230	38
TY5337	SW-24	11.2 (K160)	Exr. Coverage Horizontal Sidewall	TFP230	39
TY6137	EC-14	14.0 (K200)	Ext. Coverage Upright	TFP220	40
TY6237	EC-14	14.0 (K200)	Ext. Coverage Pendent	TFP220	41

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

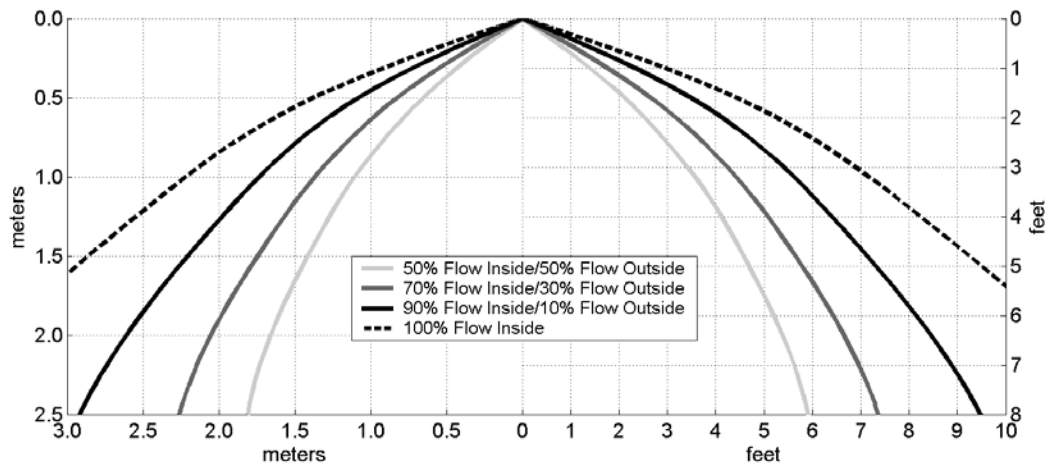
7 PSI
7.4 GPM
(0.5 Bar)
(28 LPM)



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



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



Spray Profile Patterns

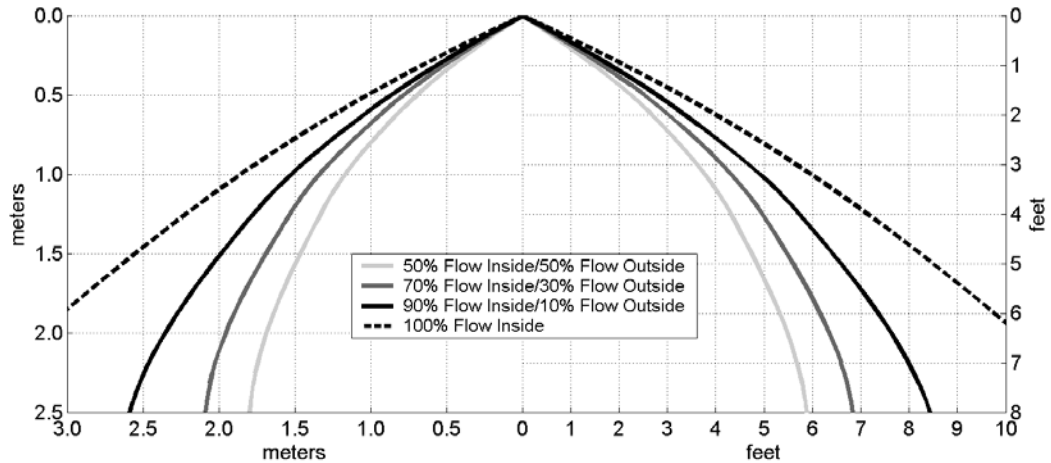
Standard Coverage Upright

K= 2.8 (K 40), 7 inches (178 mm) Deflector to Ceiling

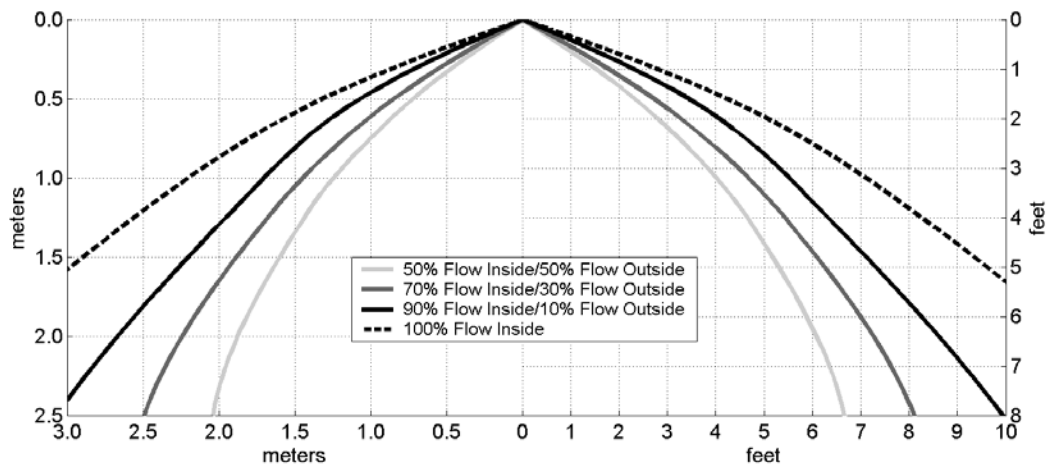
TY1121, TY-FRL

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

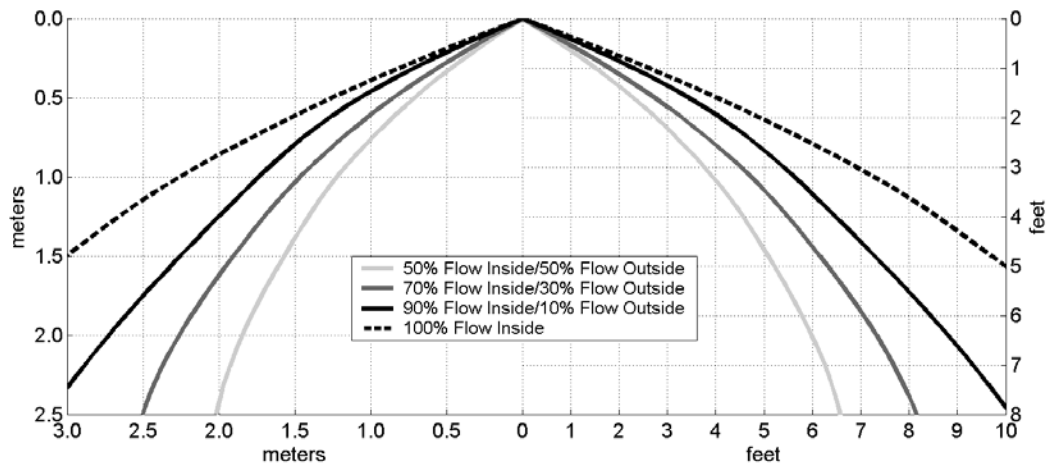
7 PSI
7.4 GPM
(0.5 Bar)
(28 LPM)



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



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



Spray Profile Patterns

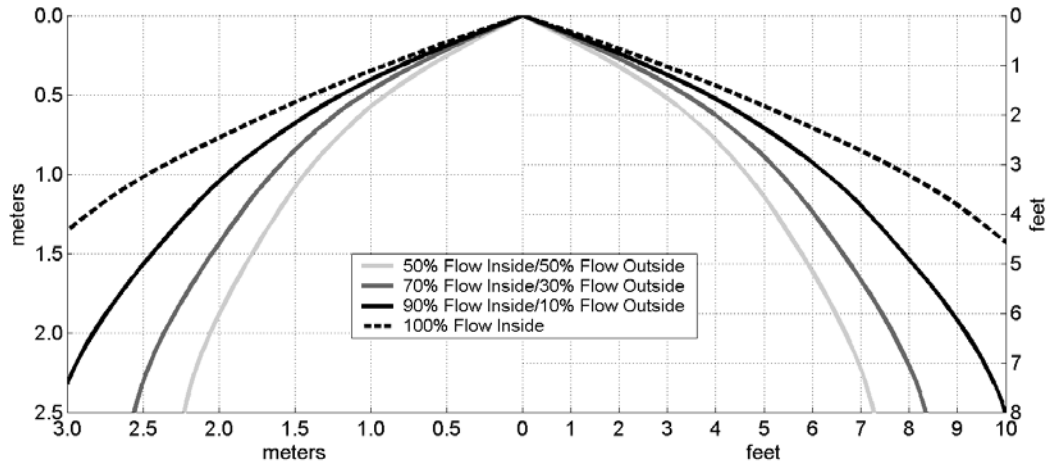
Standard Coverage Upright

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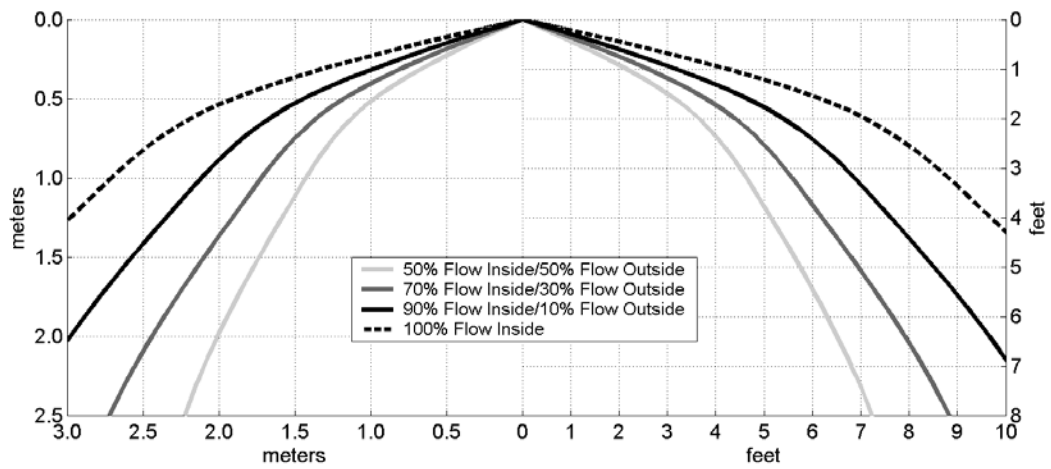
TY1131, TY-FRB
TY1151, TY-B

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

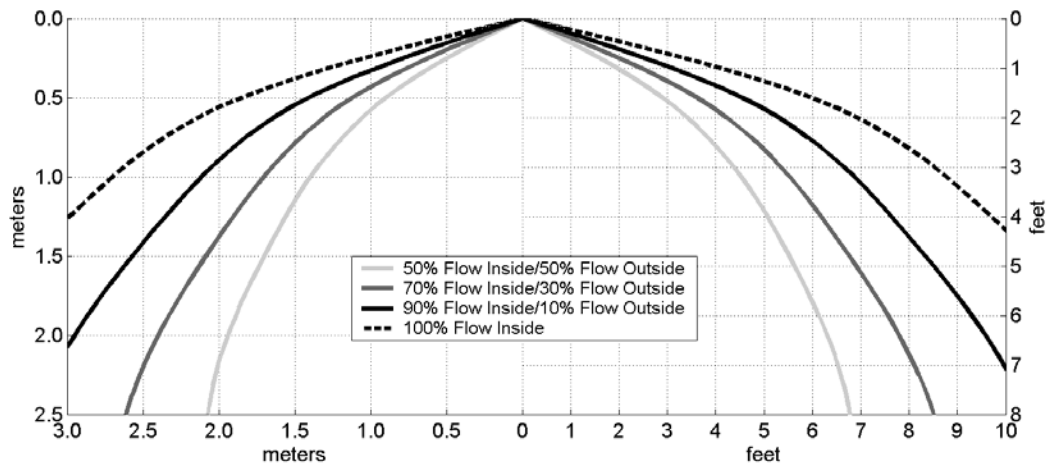
7 PSI
7.4 GPM
(0.5 Bar)
(28 LPM)



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



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



Spray Profile Patterns

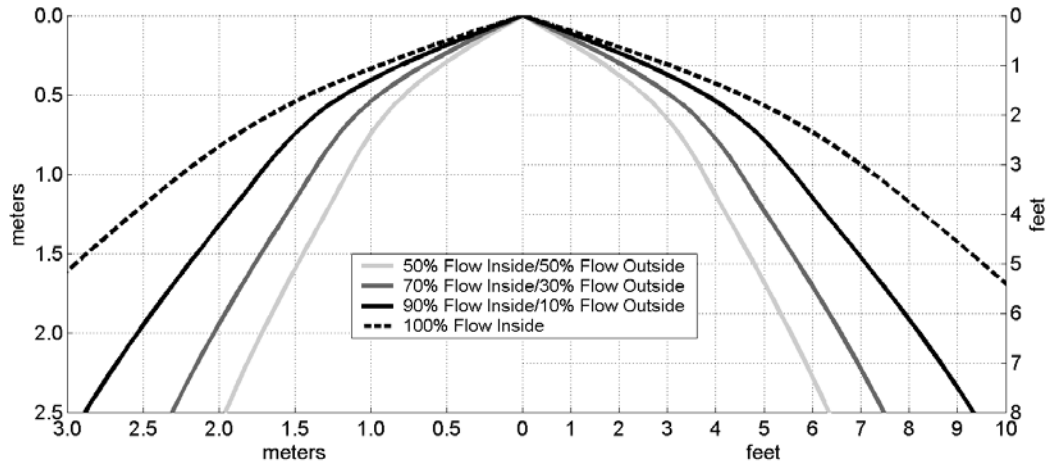
Standard CoveragePendent

K= 2.8 (K 40), 7 inches (178 mm) Deflector to Ceiling

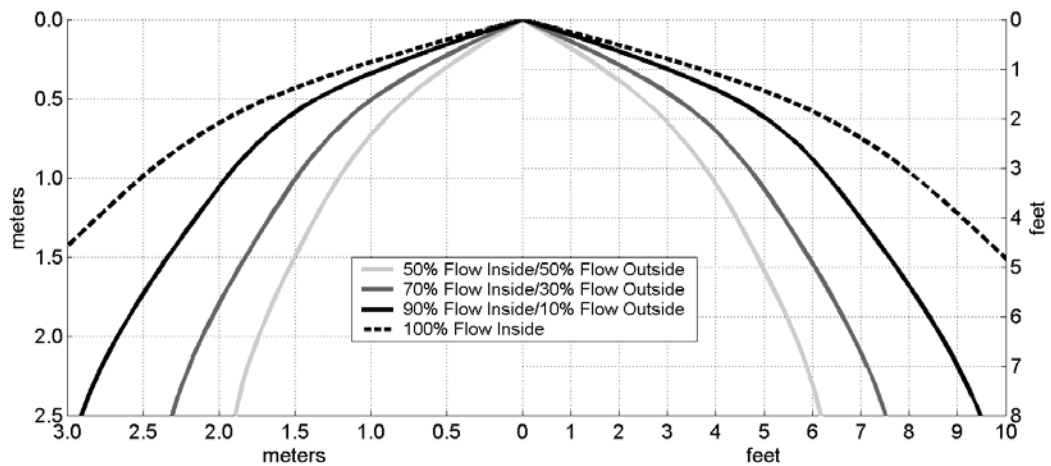
TY1221, TY-FRL

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

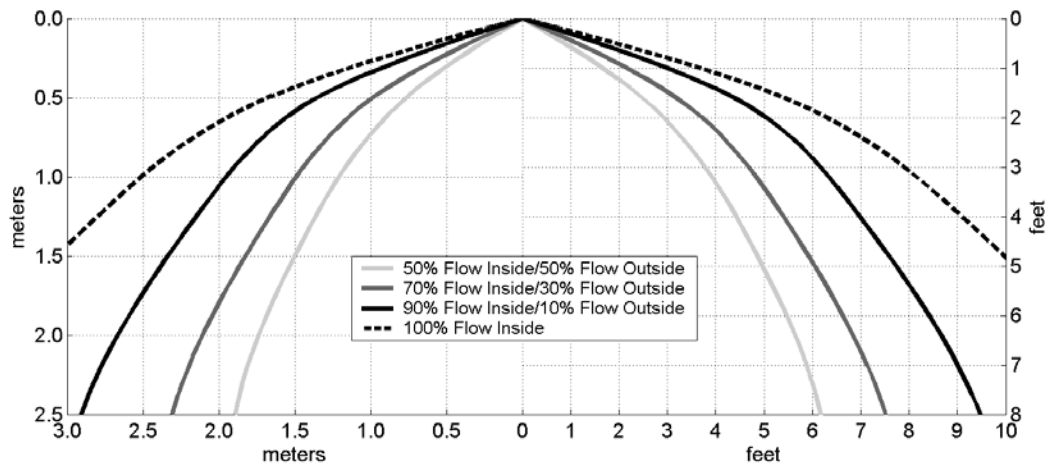
7 PSI
7.4 GPM
(0.5 Bar)
(28 LPM)



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



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



Spray Profile Patterns

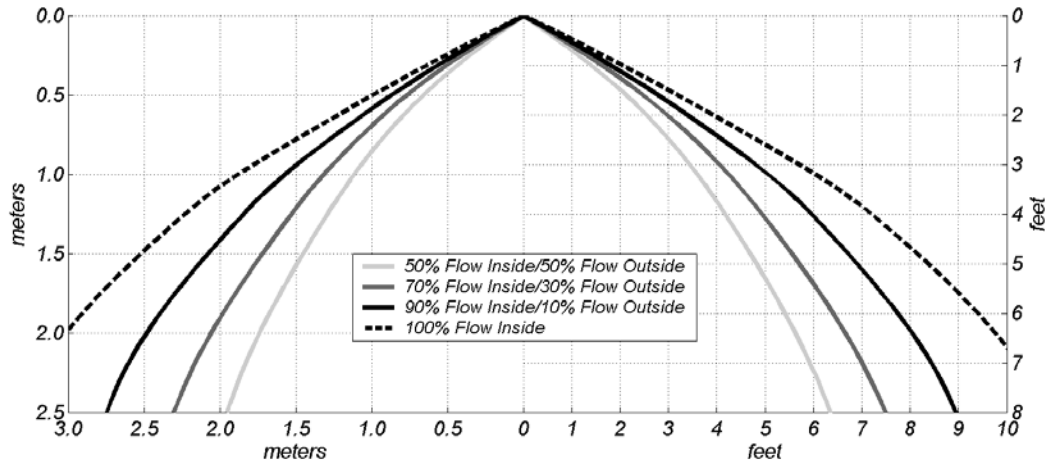
Standard CoveragePendent

K= 2.8 (K 40), 7 inches (178 mm) Deflector to Ceiling

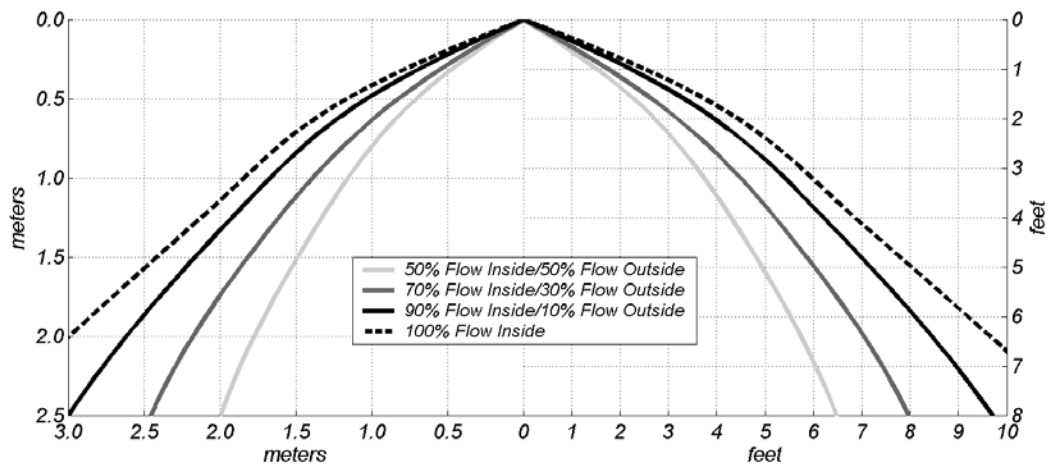
TY1231, TY-FRB
TY1251, TY-B

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

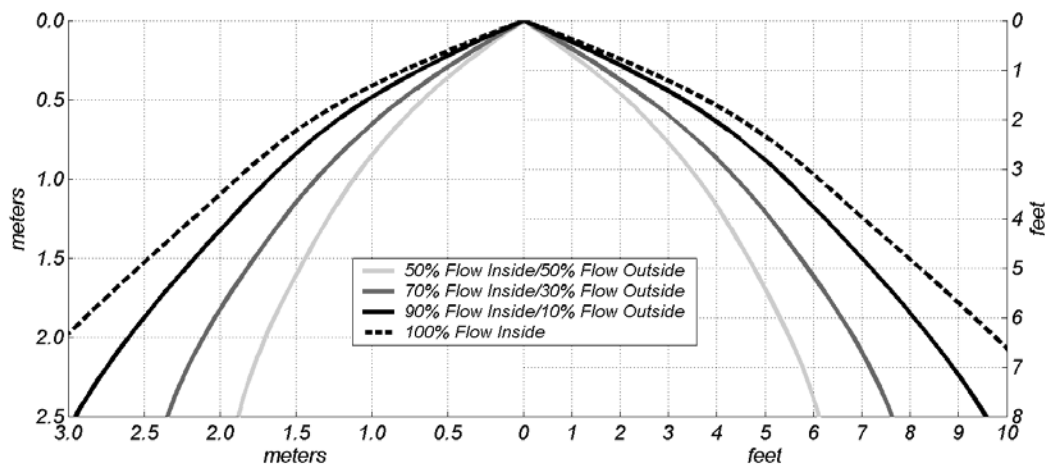
7 PSI
11 GPM
(0.5 Bar)
(40 LPM)



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



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



Spray Profile Patterns

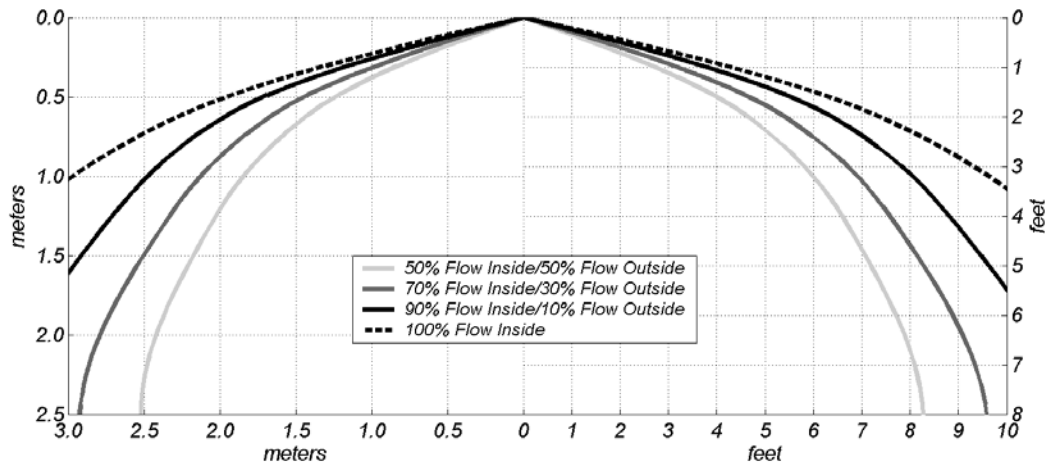
Standard Coverage Upright

$K = 3.9$ ($K 57$), 7 inches (178 mm) Deflector to Ceiling

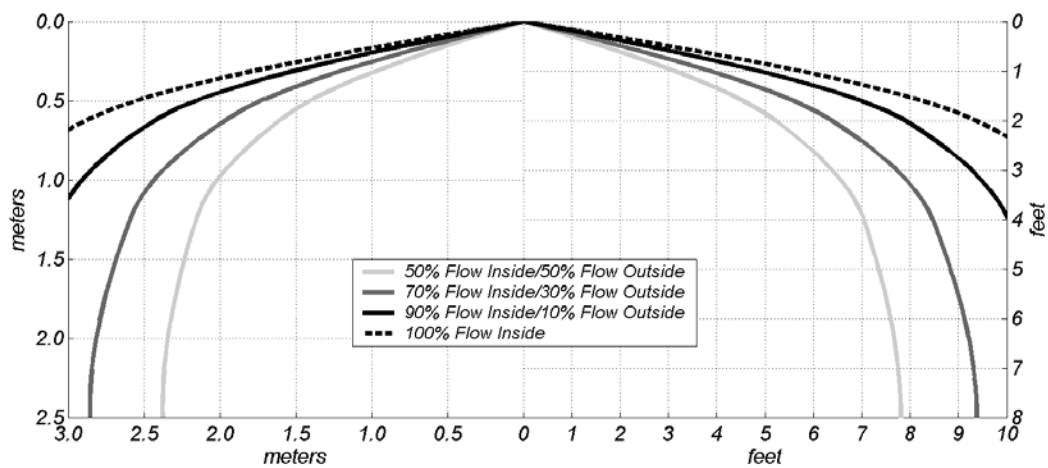
TY2108, TY-B
TY2109, TY-FRB
TY2149, TY-B (4mm)

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

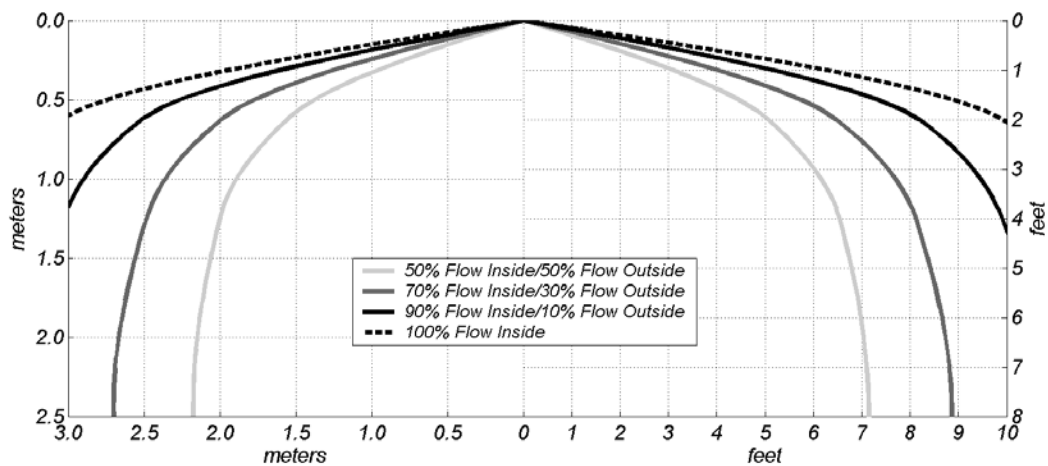
7 PSI
11 GPM
(0.5 Bar)
(40 LPM)



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



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



Spray Profile Patterns

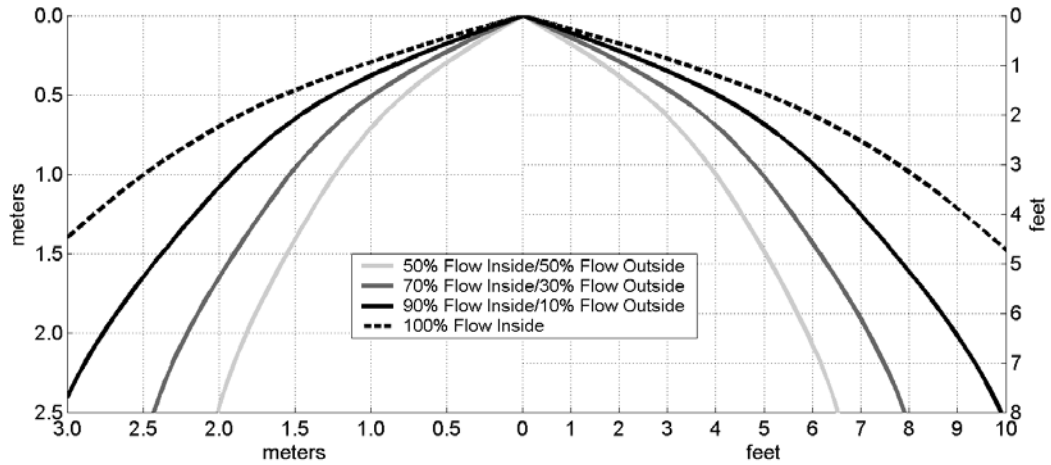
Standard Coverage Pendant

$K = 3.9$ ($K 57$), 7 inches (178 mm) Deflector to Ceiling

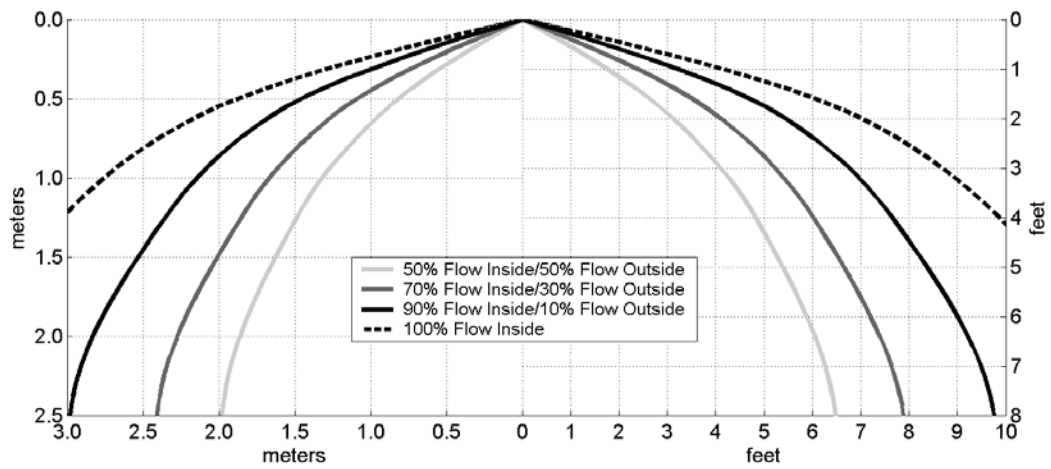
TY2208, TY-B
TY2209, TY-FRB
TY2249, TY-B (4mm)

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

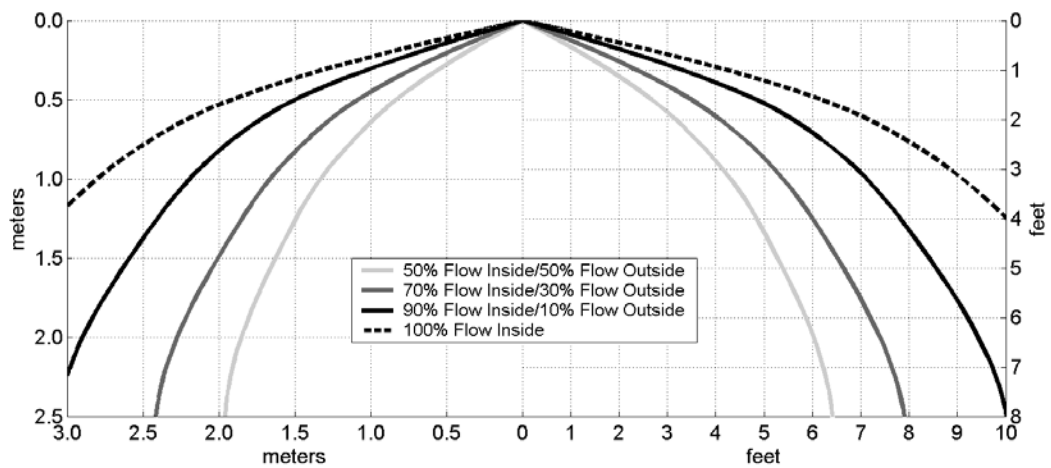
7 PSI
11 GPM
(0.5 Bar)
(42 LPM)



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



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



Spray Profile Patterns

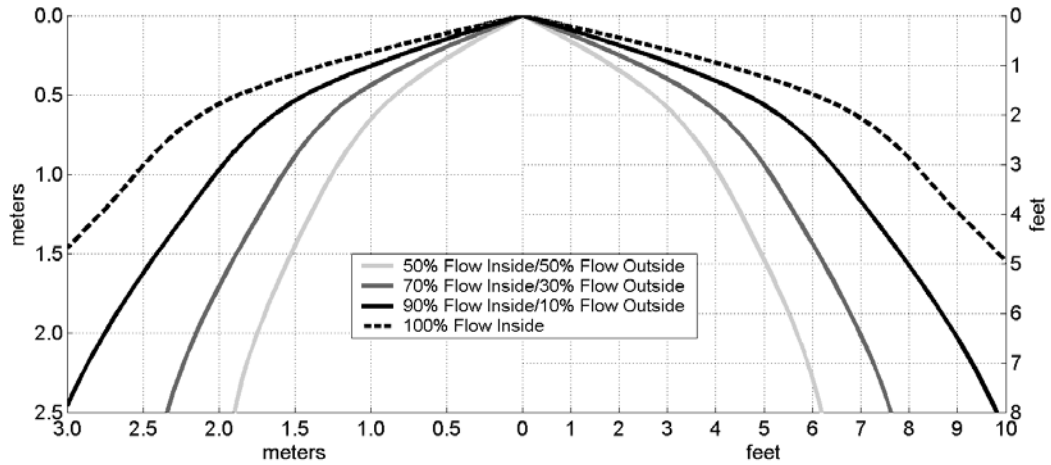
Standard Coverage Upright

$K = 4.2$ ($K 60$), 7 inches (178 mm) Deflector to Ceiling

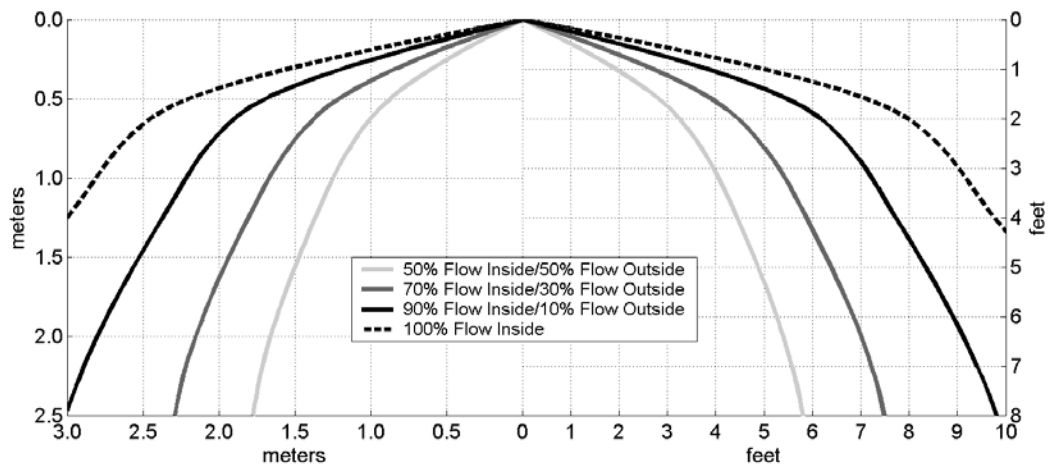
TY2131, TY-FRB

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

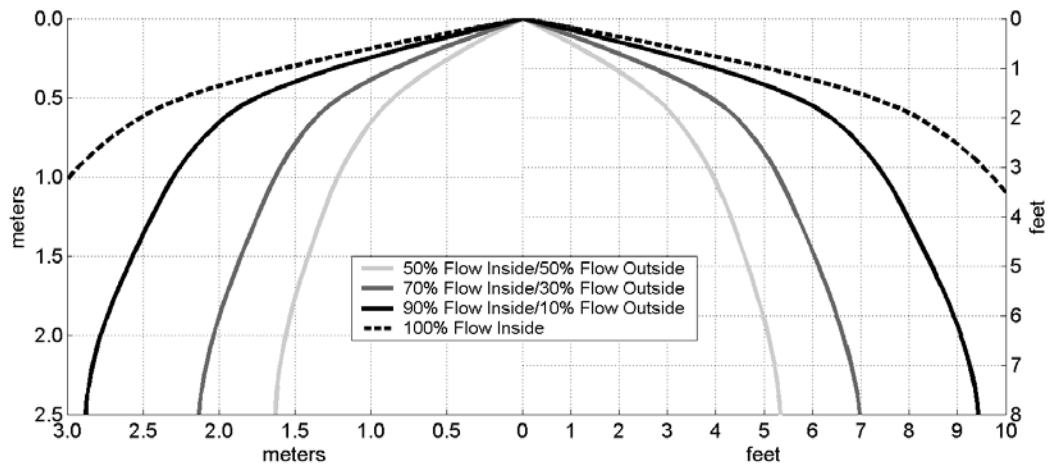
7 PSI
11 GPM
(0.5 Bar)
(42 LPM)



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



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



Spray Profile Patterns

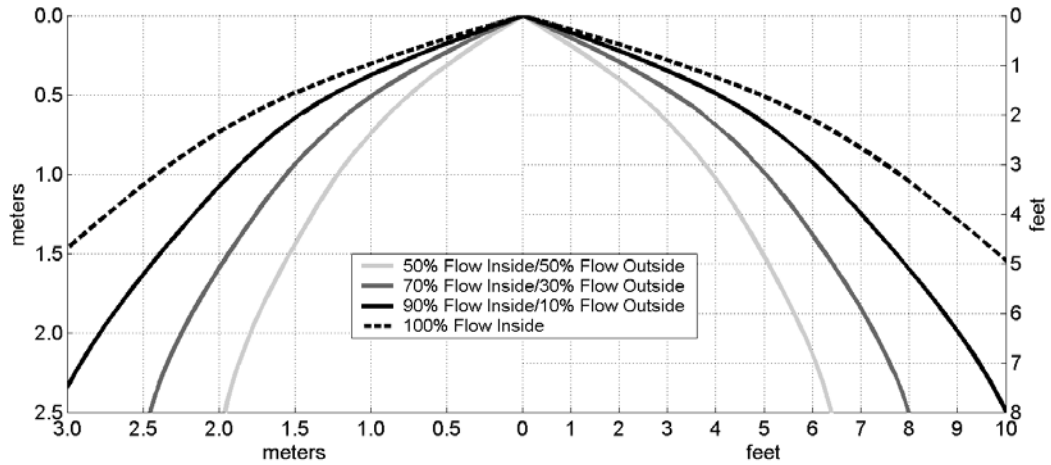
Standard CoveragePendent

K= 4.2 (K 60), 7 inches (178 mm) Deflector to Ceiling

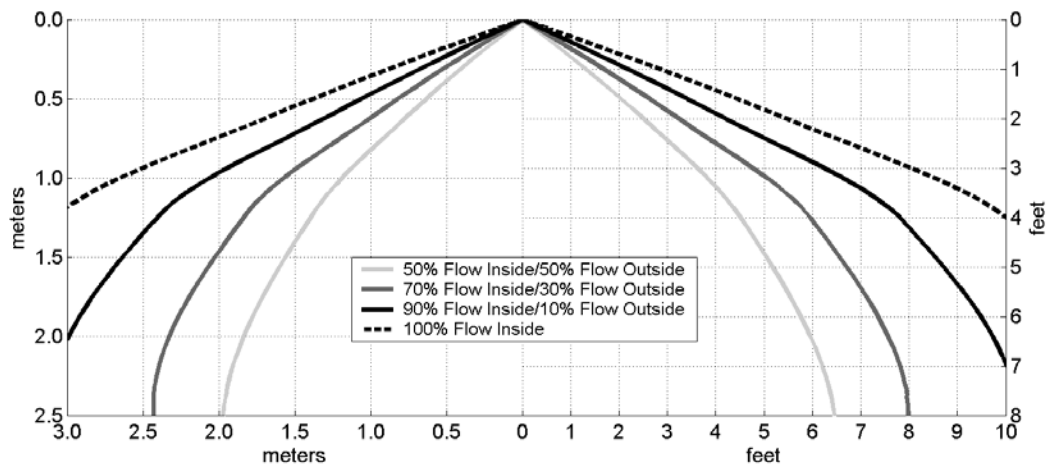
TY2231, TY-FRB

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

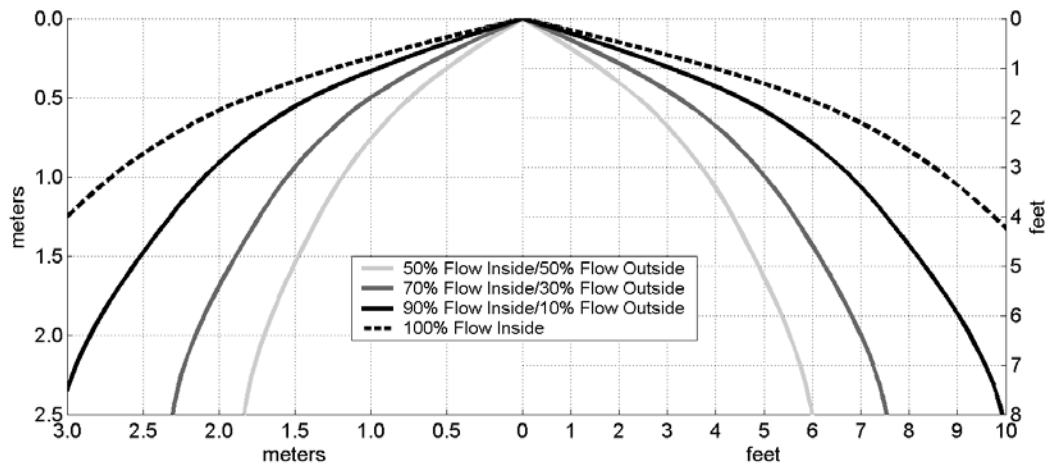
7 PSI
15 GPM
(0.5 Bar)
(56 LPM)



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



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



Spray Profile Patterns

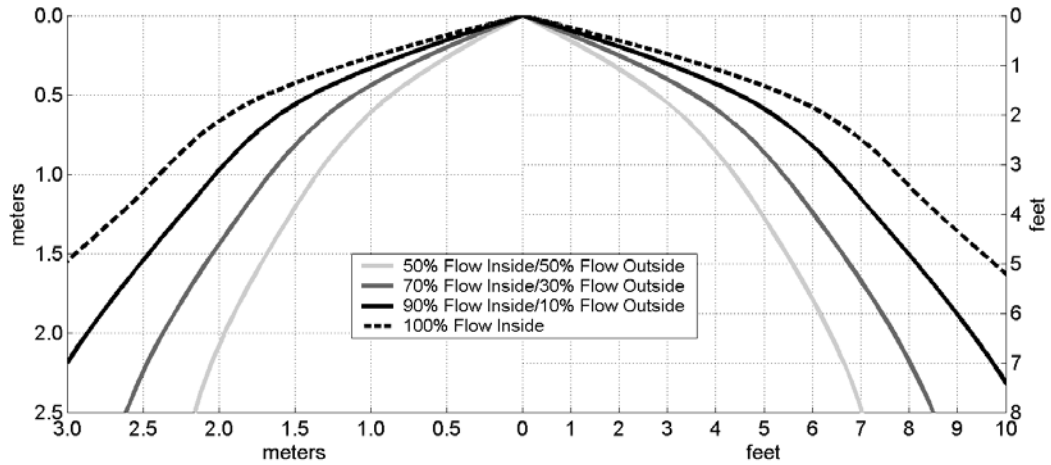
Standard Coverage Upright

K= 5.6 (K 80), 7 inches (178 mm) Deflector to Ceiling

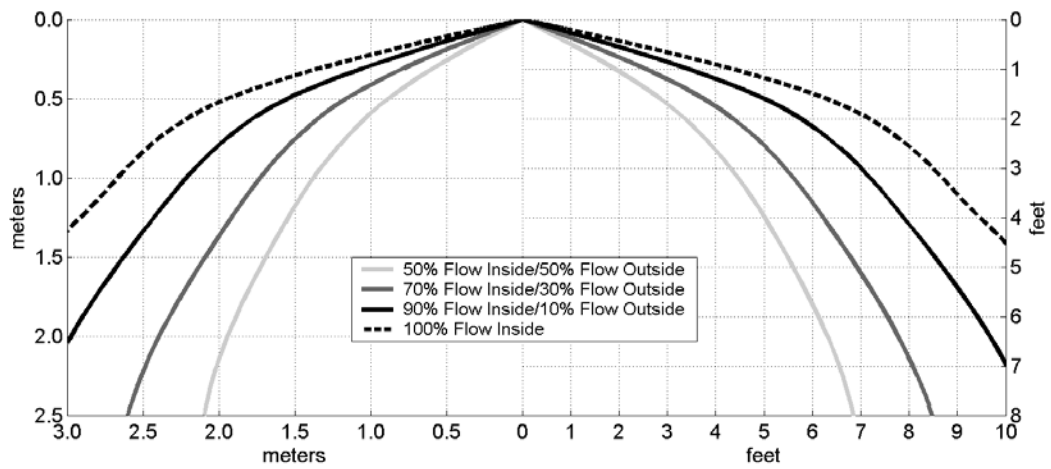
TY3111, TY-L

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

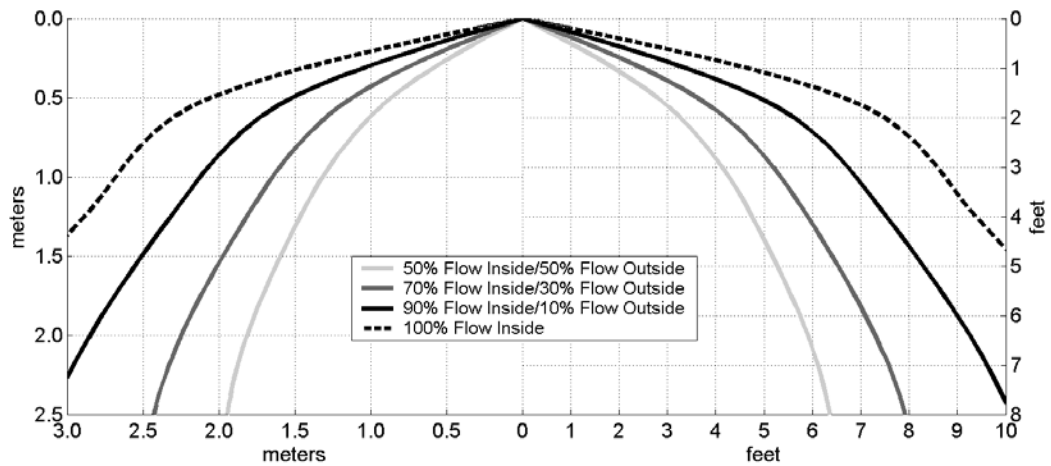
7 PSI
15 GPM
(0.5 Bar)
(56 LPM)



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



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



Spray Profile Patterns

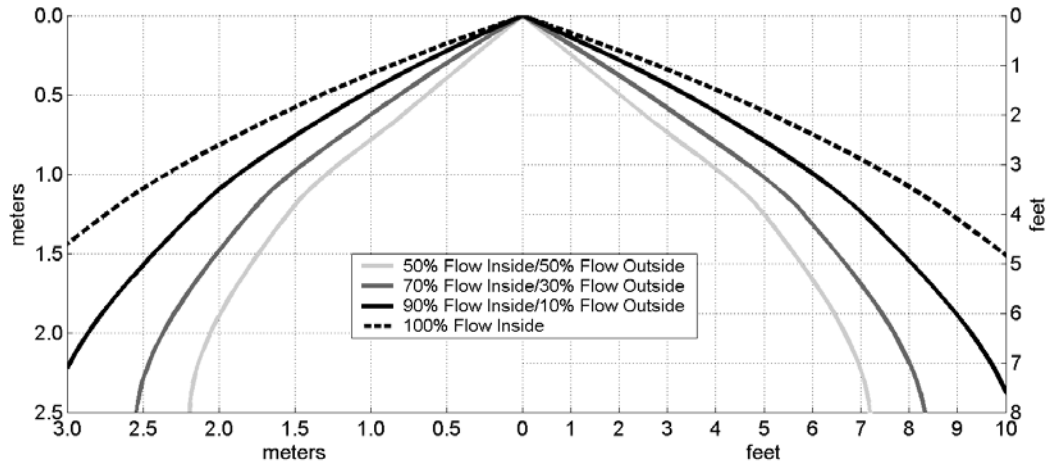
Standard Coverage Upright

K= 5.6 (K 80), 7 inches (178 mm) Deflector to Ceiling

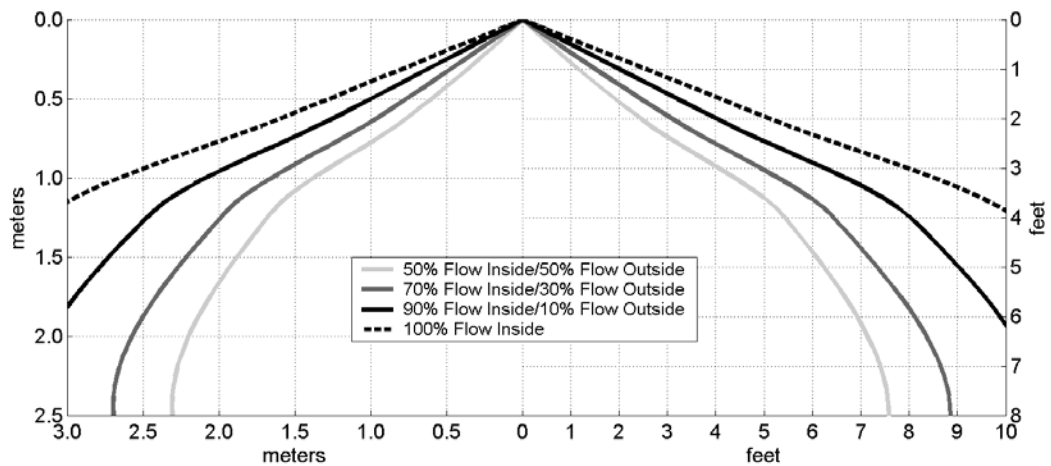
TY3121, TY-FRL

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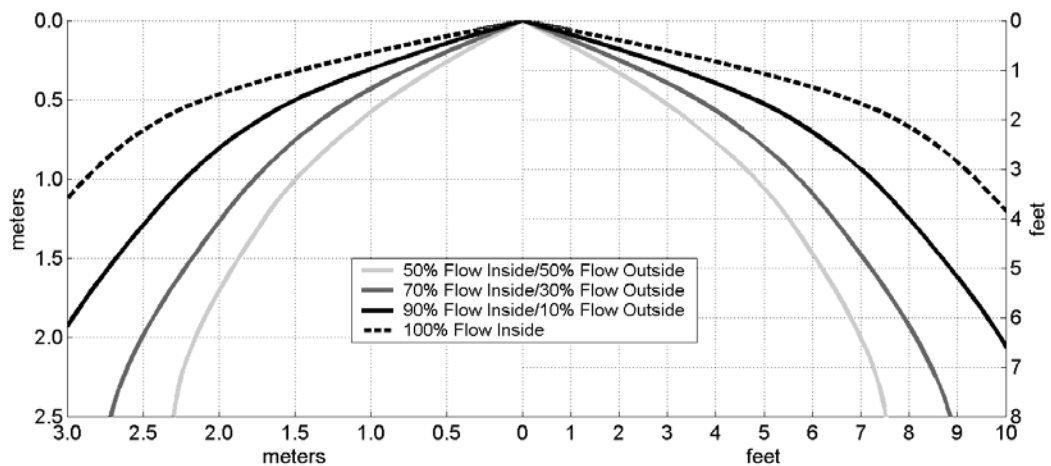
7 PSI
15 GPM
(0.5 Bar)
(56 LPM)



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



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



Spray Profile Patterns

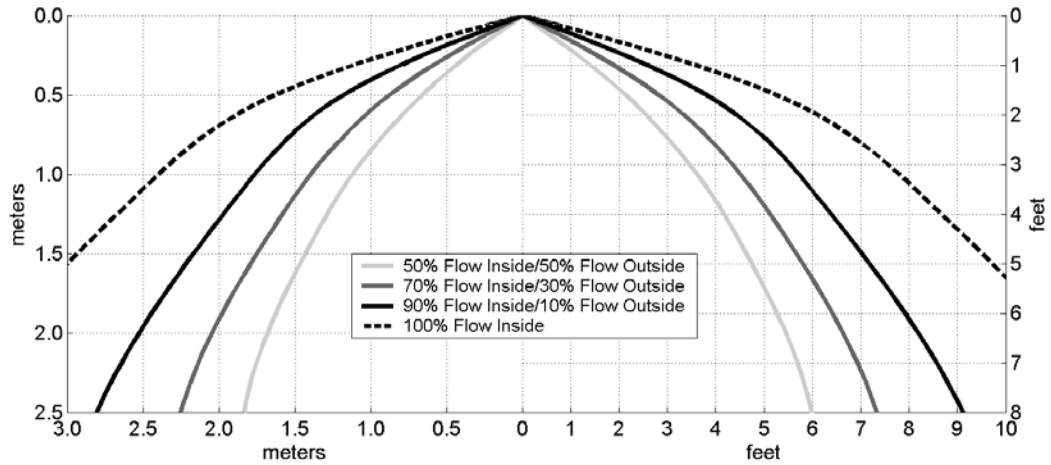
Standard Coverage Upright

K= 5.6 (K 80), 7 inches (178 mm) Deflector to Ceiling

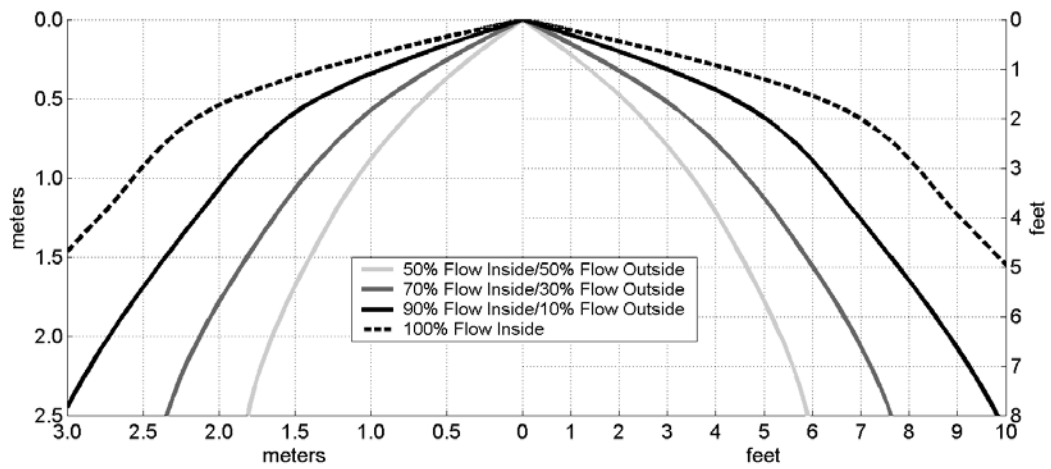
TY3131, TY-FRB
TY3141, TY-B (4mm)
TY3151, TY-B

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

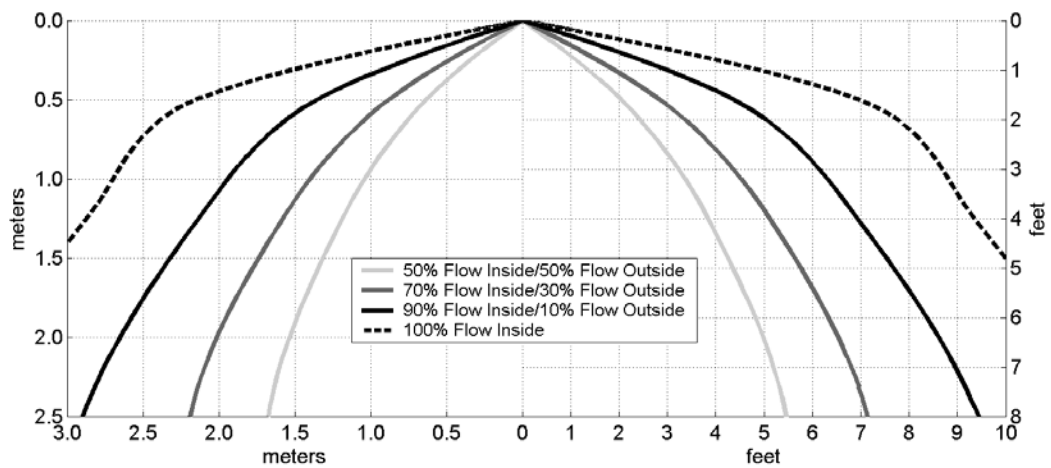
7 PSI
15 GPM
(0.5 Bar)
(56 LPM)



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



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



Spray Profile Patterns

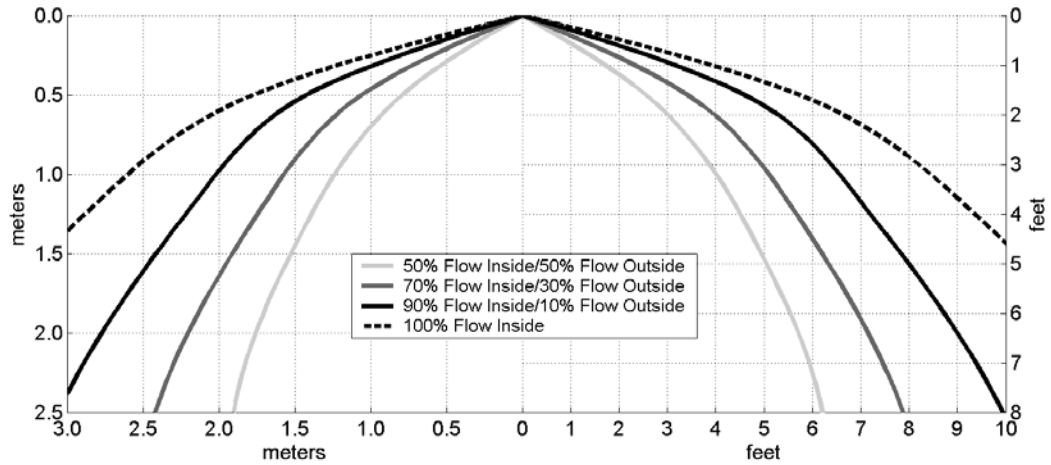
Standard CoveragePendent

K= 5.6 (K 80), 7 inches (178 mm) Deflector to Ceiling

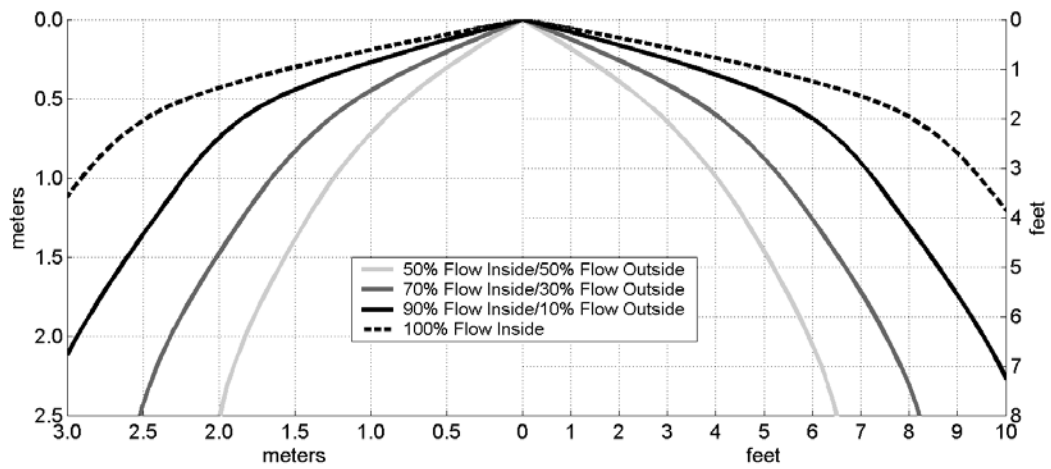
TY3211, TY-L

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

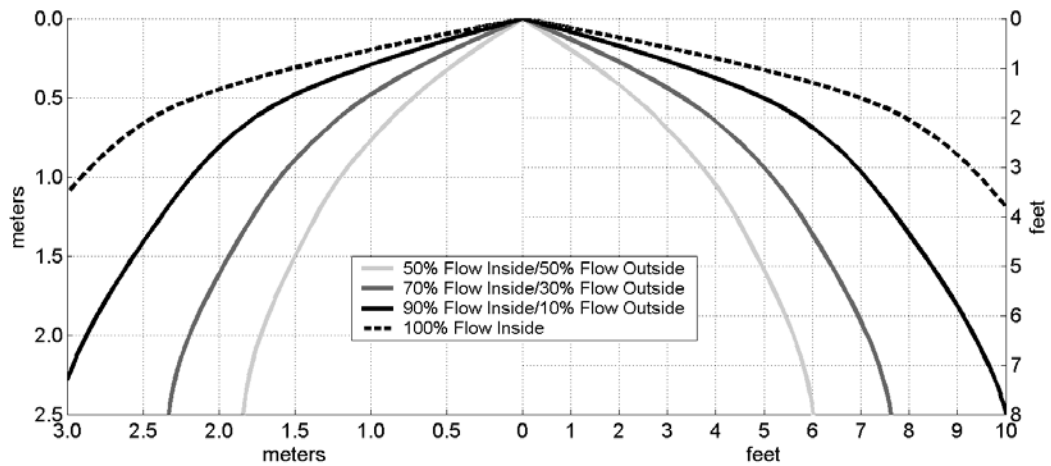
7 PSI
15 GPM
(0.5 Bar)
(56 LPM)



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



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



Spray Profile Patterns

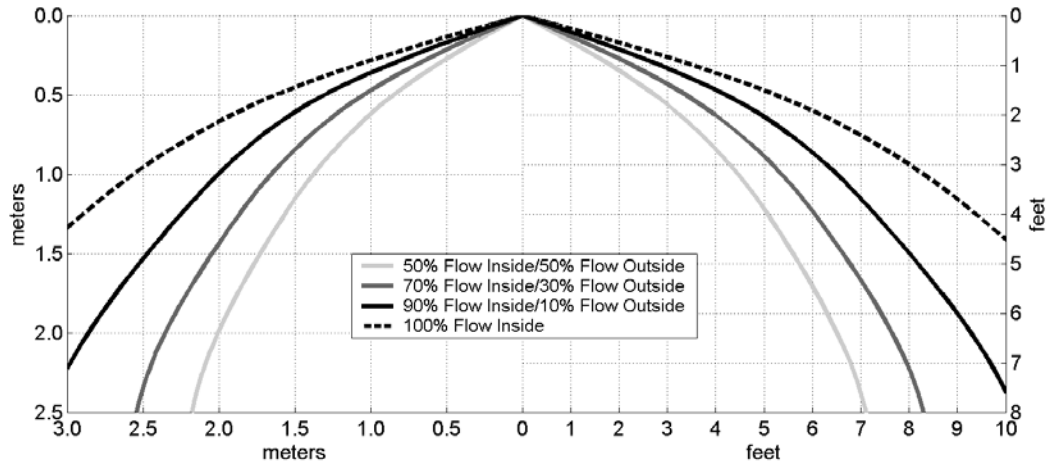
Standard CoveragePendent

K= 5.6 (K 80), 7 inches (178 mm) Deflector to Ceiling

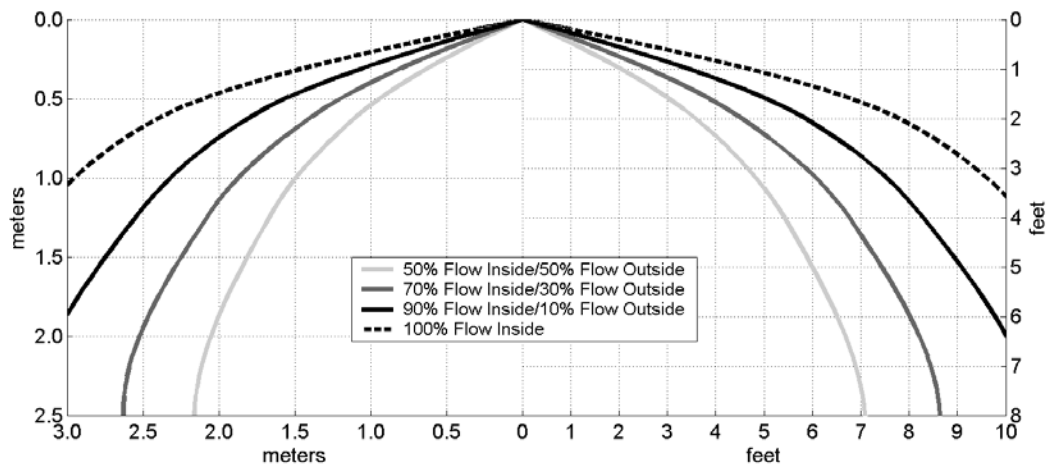
TY3221, TY-FRL

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

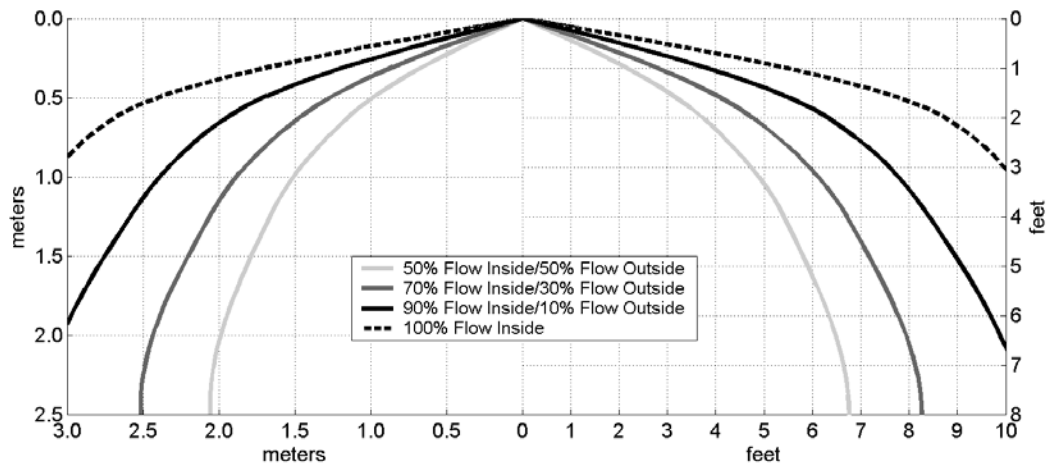
7 PSI
15 GPM
(0.5 Bar)
(56 LPM)



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



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



Spray Profile Patterns

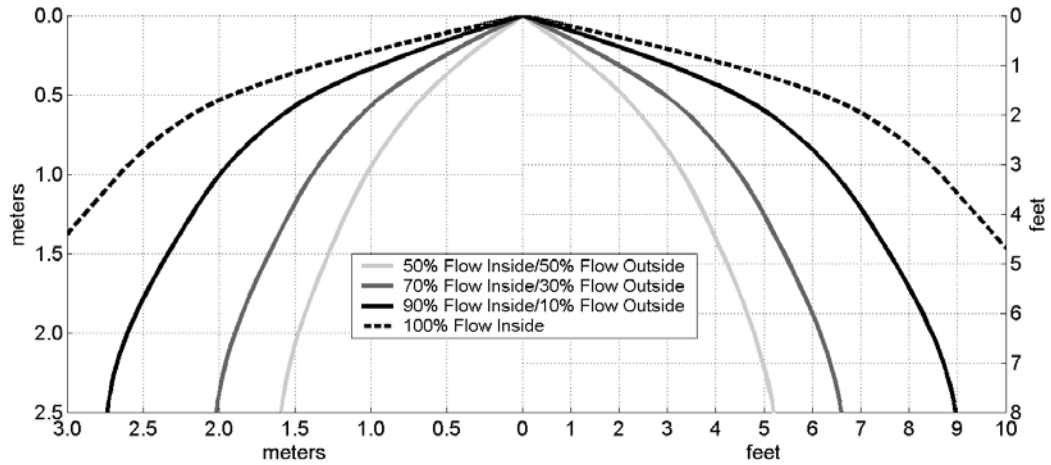
Standard CoveragePendent

K= 5.6 (K 80), 7 inches (178 mm) Deflector to Ceiling

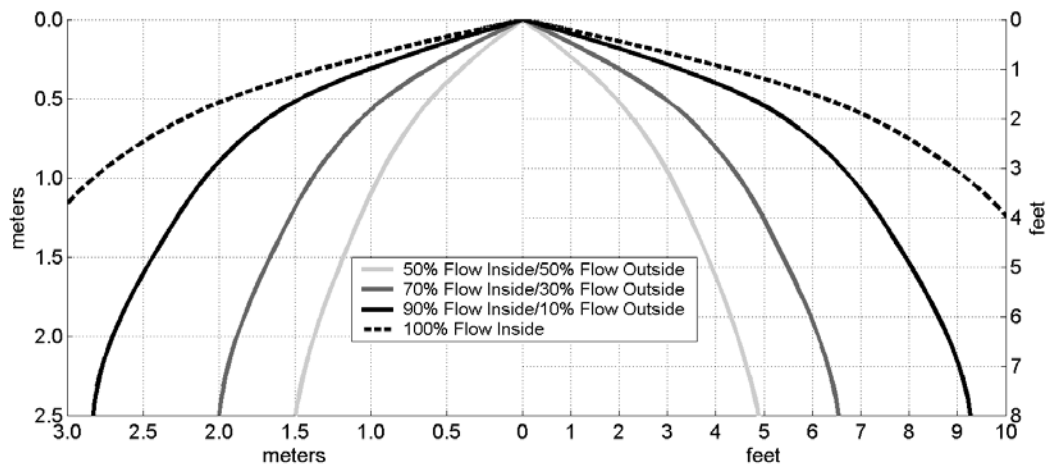
TY3231, TY-FRB
TY3241, TY-B (4mm)
TY3251, TY-B

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

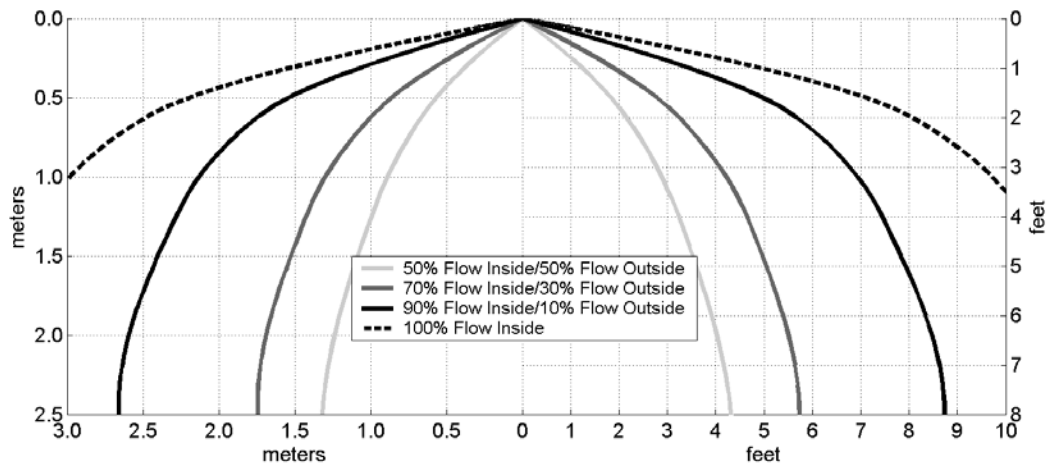
7 PSI
15 GPM
(0.5 Bar)
(56 LPM)



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



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



Spray Profile Patterns

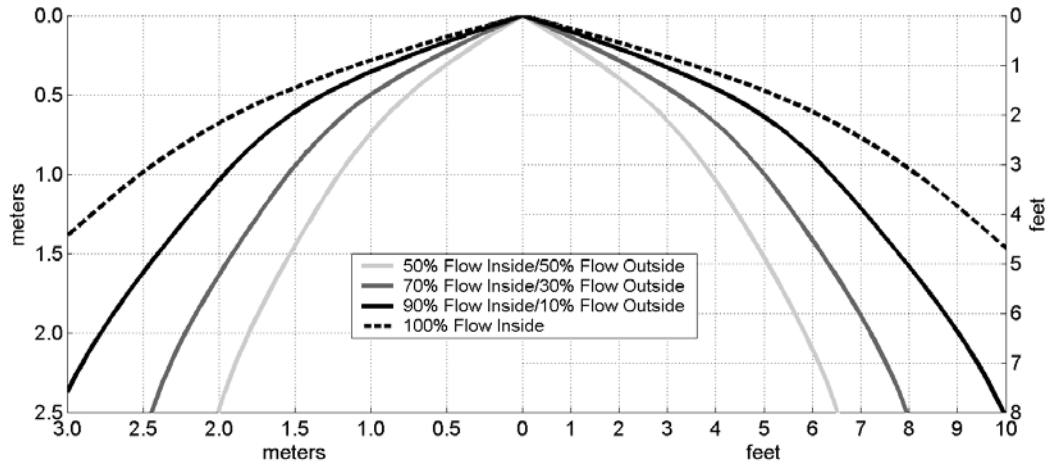
Standard Coverage Concealed Pendent

K= 5.6 (K 80), 7 inches (178 mm) Deflector to Ceiling

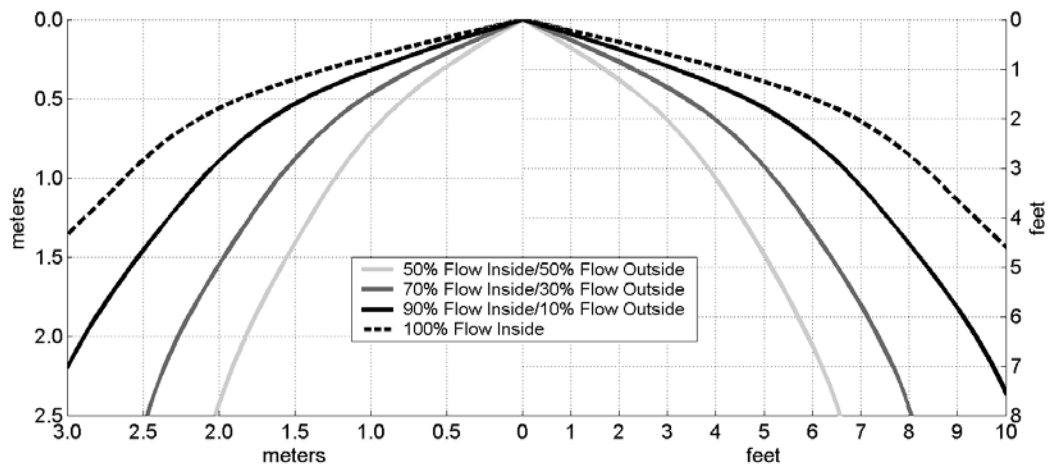
TY3531, RFI
TY3532, RFI (EC)
TY3551, RFI

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

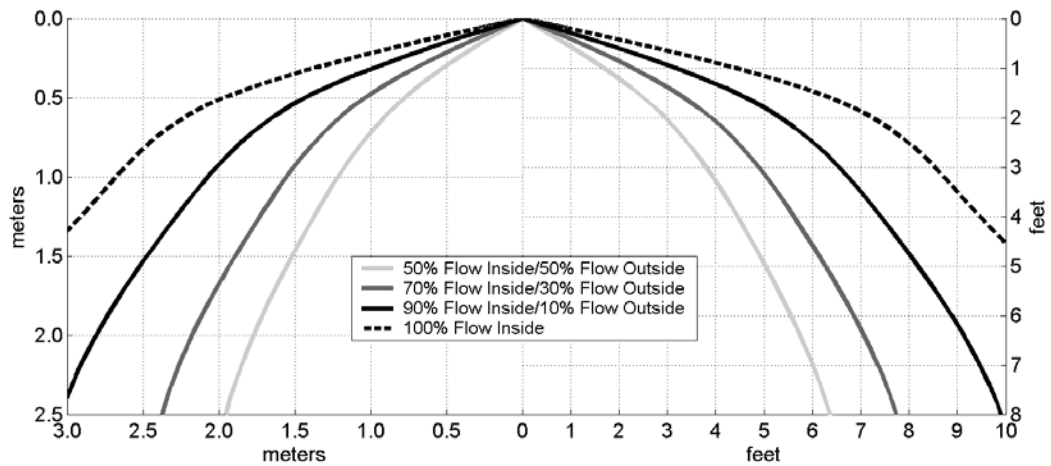
7 PSI
21 GPM
(0.5 Bar)
(80 LPM)



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



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



Spray Profile Patterns

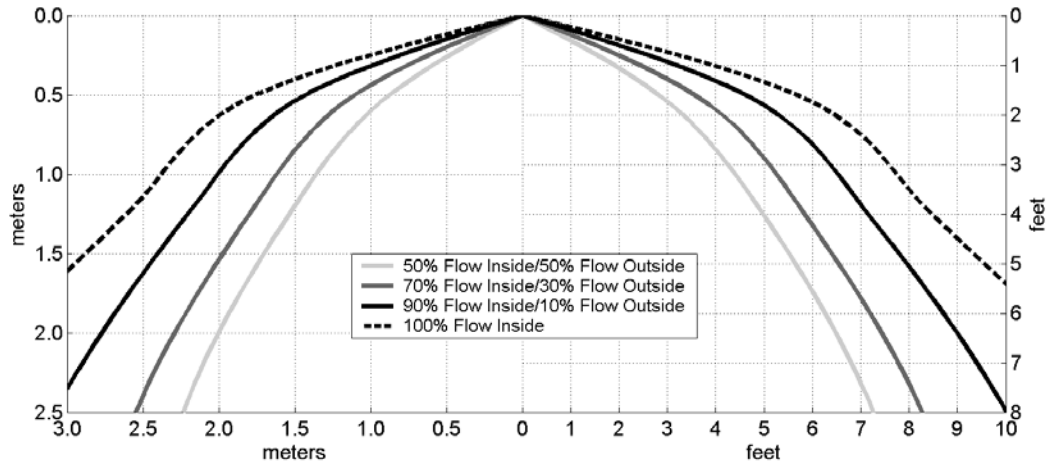
Standard Coverage Upright

K = 8.0 (K 115), 7 inches (178 mm) Deflector to Ceiling

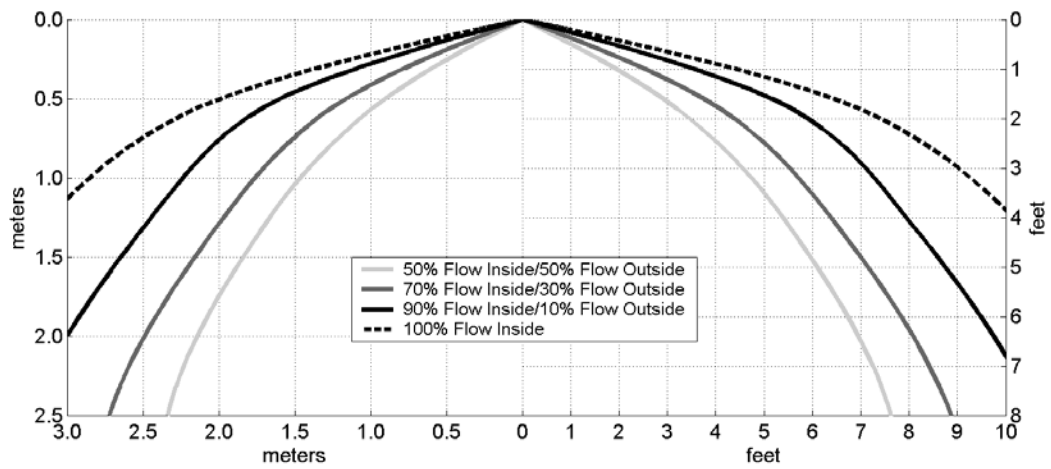
TY4111, TY-L

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

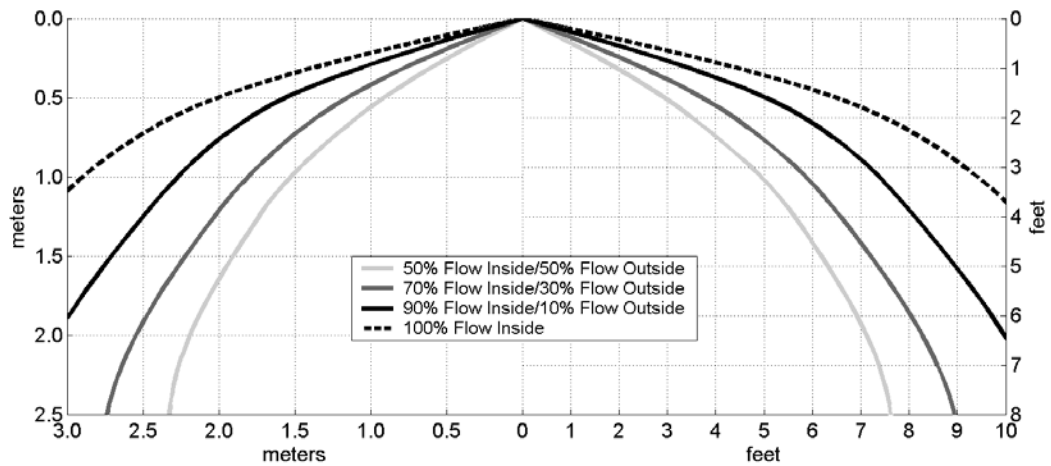
7 PSI
21 GPM
(0.5 Bar)
(80 LPM)



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



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



Spray Profile Patterns

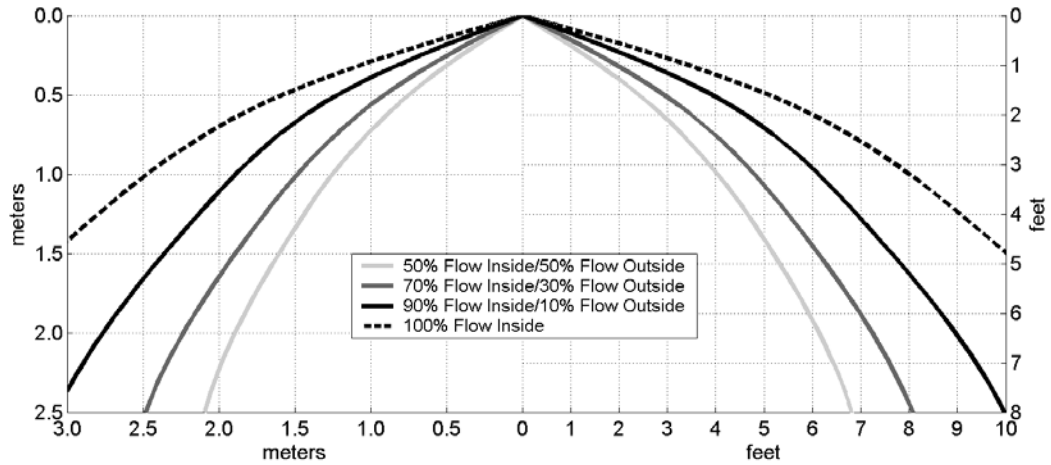
Standard Coverage Upright

K = 8.0 (K 115), 7 inches (178 mm) Deflector to Ceiling

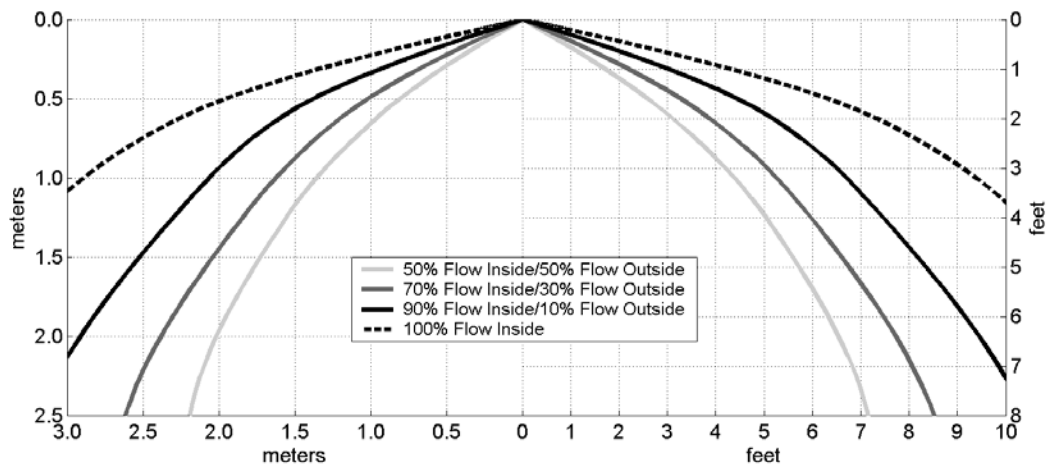
TY4121, TY-FRL

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

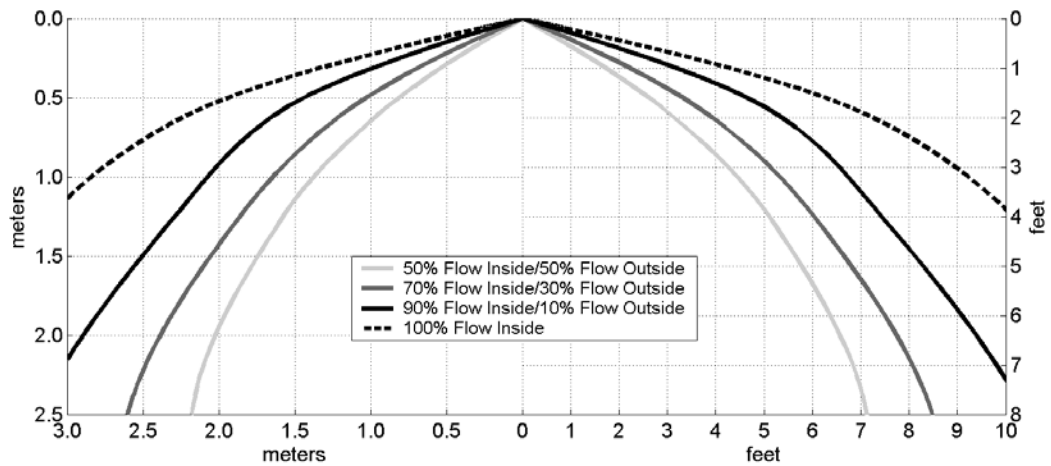
7 PSI
21 GPM
(0.5 Bar)
(80 LPM)



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



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



Spray Profile Patterns

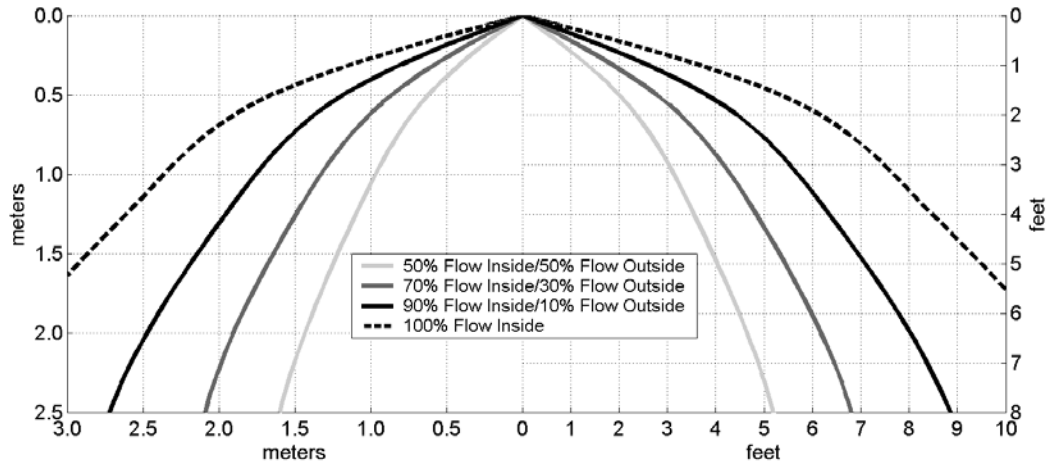
Standard Coverage Upright

K= 8.0 (K 115), 7 inches (178 mm) Deflector to Ceiling

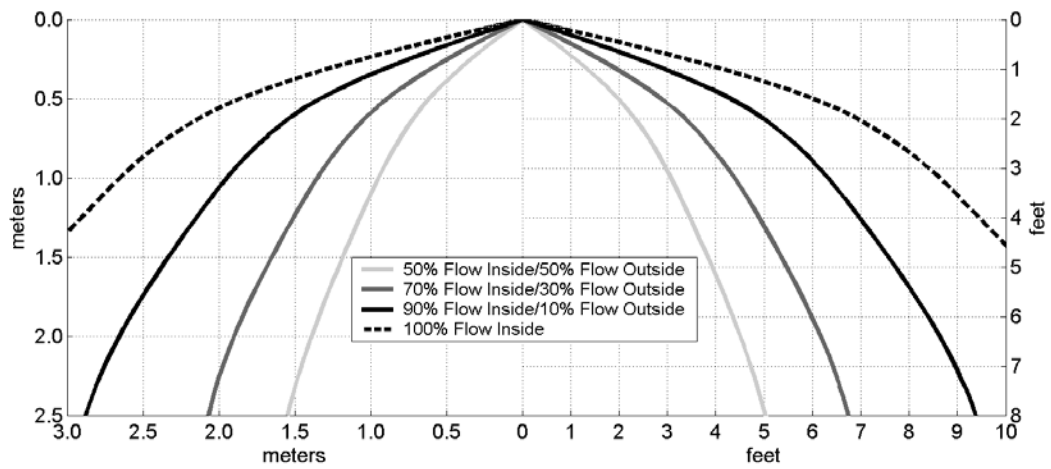
TY4131, TY-FRB
TY4141, TY-B (4mm)
TY4151, TY-B

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

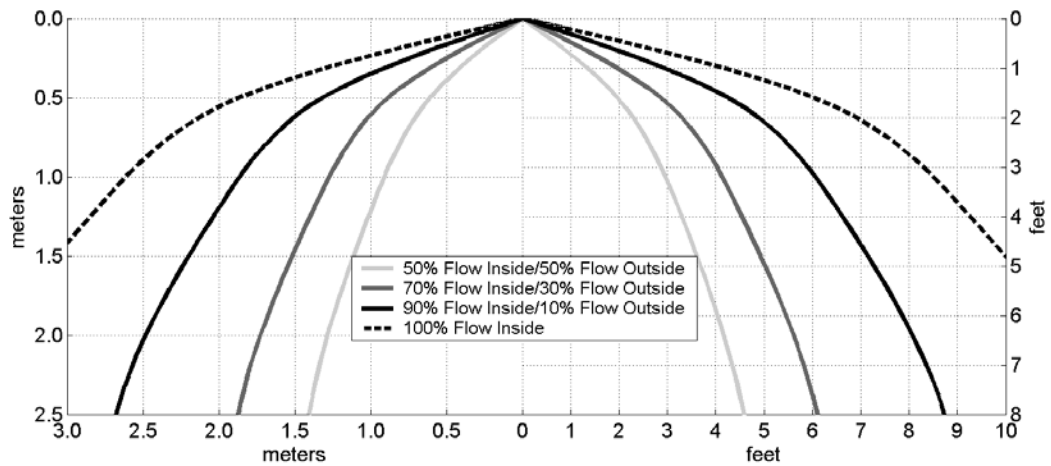
7 PSI
21 GPM
(0.5 Bar)
(80 LPM)



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



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



Spray Profile Patterns

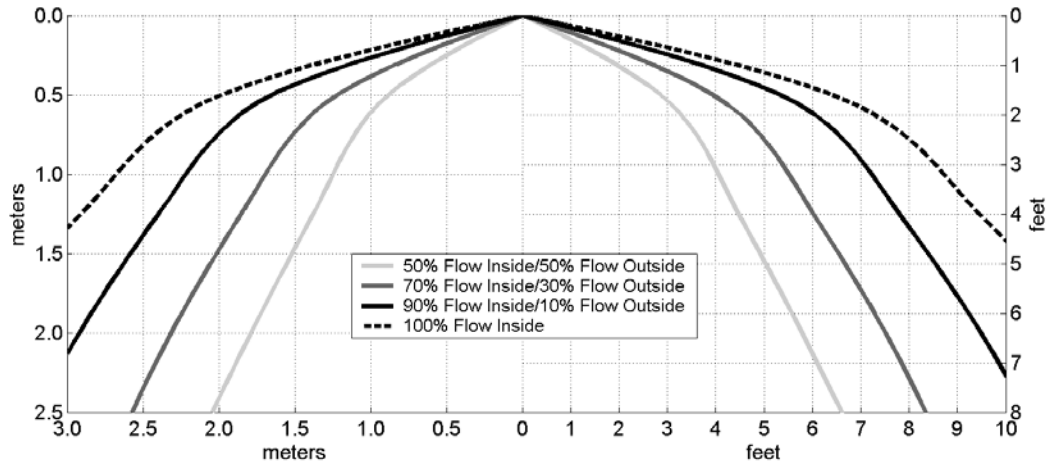
Standard CoveragePendent

K= 8.0 (K 115), 7 inches (178 mm) Deflector to Ceiling

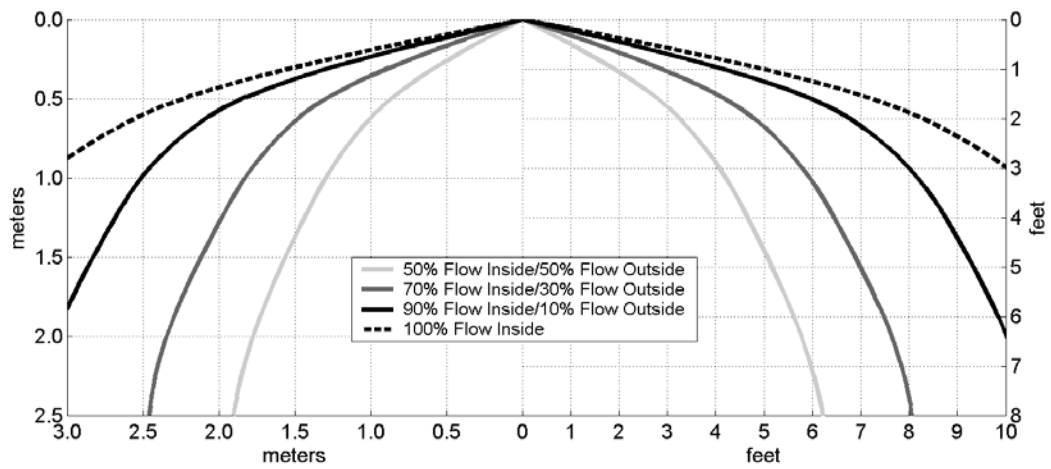
TY4211, TY-L

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

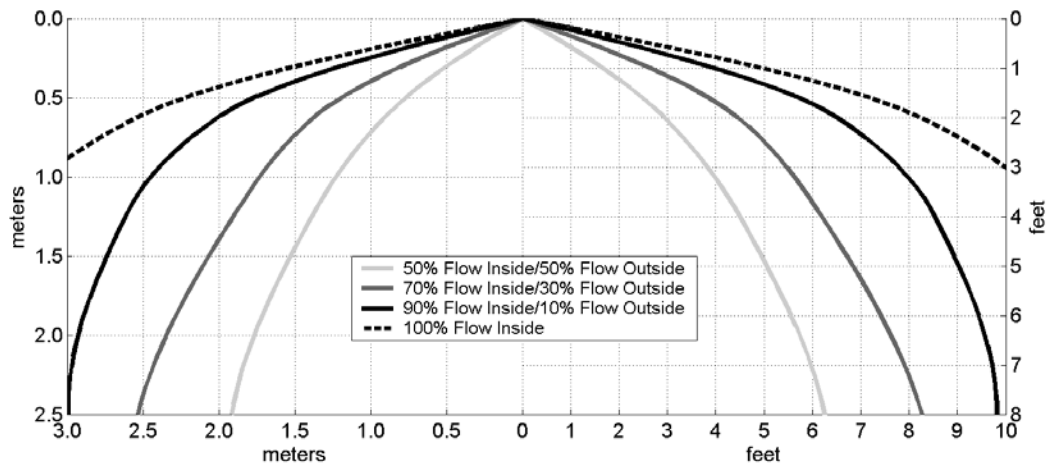
7 PSI
21 GPM
(0.5 Bar)
(80 LPM)



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



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



Spray Profile Patterns

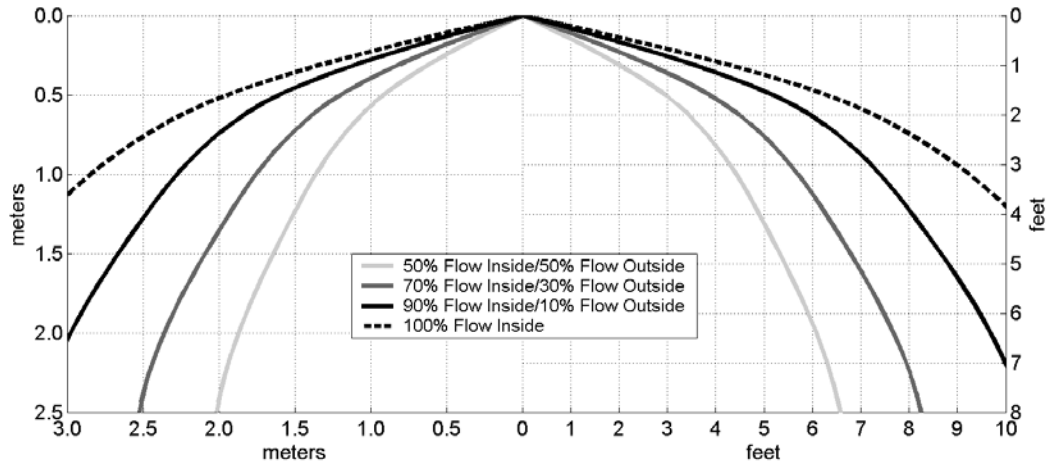
Standard CoveragePendent

K= 8.0 (K 115), 7 inches (178 mm) Deflector to Ceiling

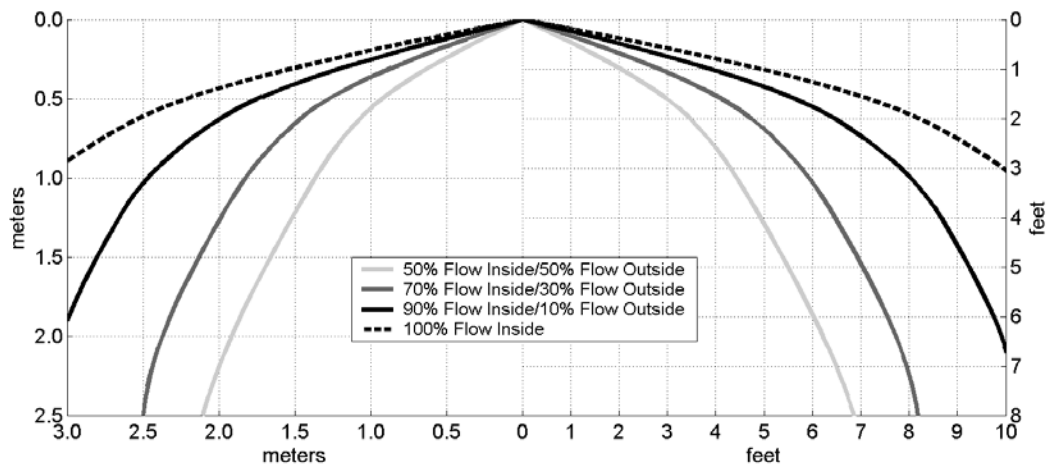
TY4221, TY-FRL

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

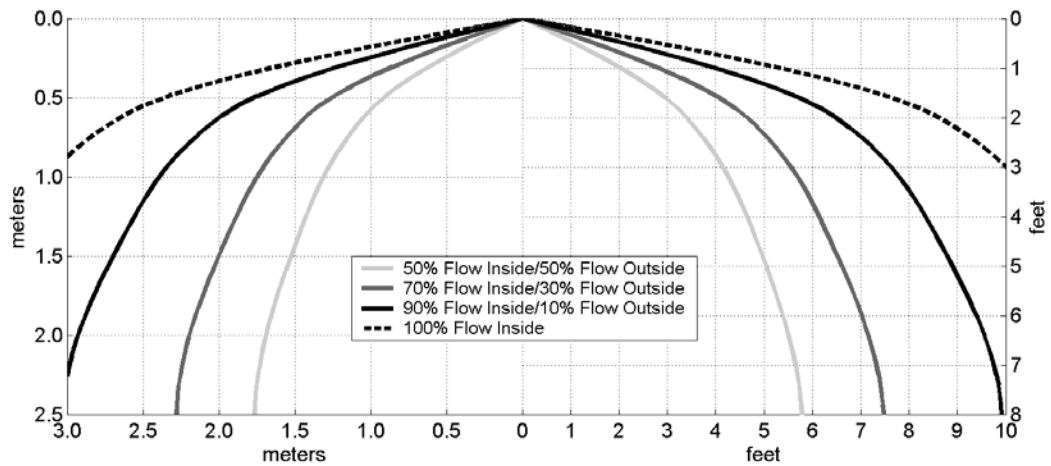
7 PSI
21 GPM
(0.5 Bar)
(80 LPM)



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



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



Spray Profile Patterns

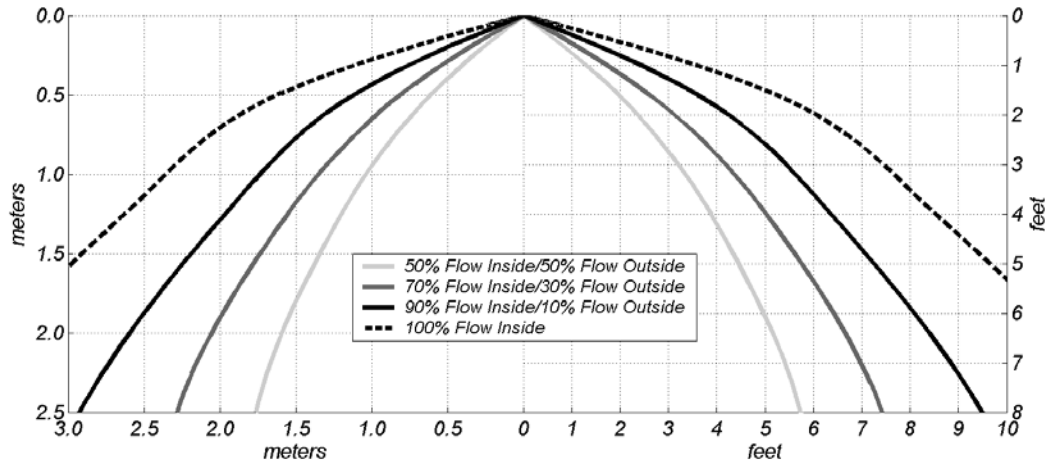
Standard CoveragePendent

K= 8.0 (K 115), 7 inches (178 mm) Deflector to Ceiling

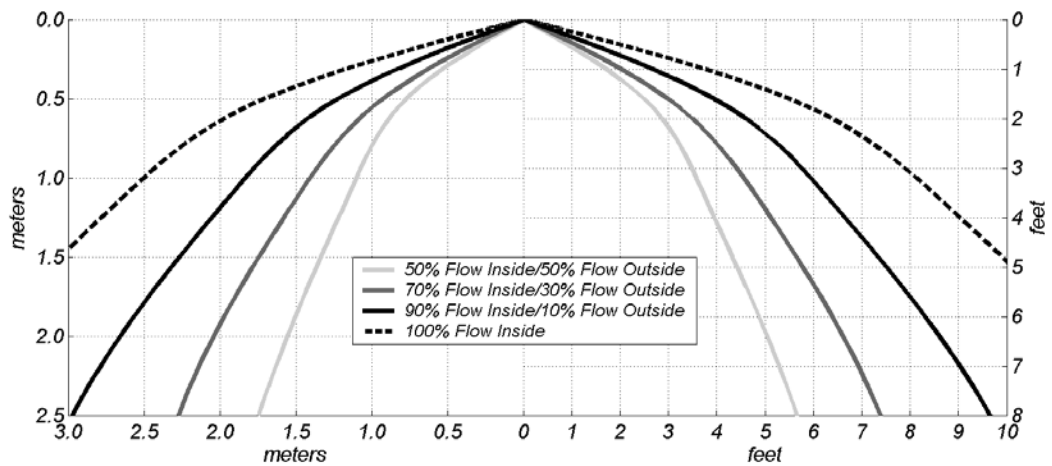
TY4231, TY-FRB
TY4241, TY-B (4mm)
TY4251, TY-B

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

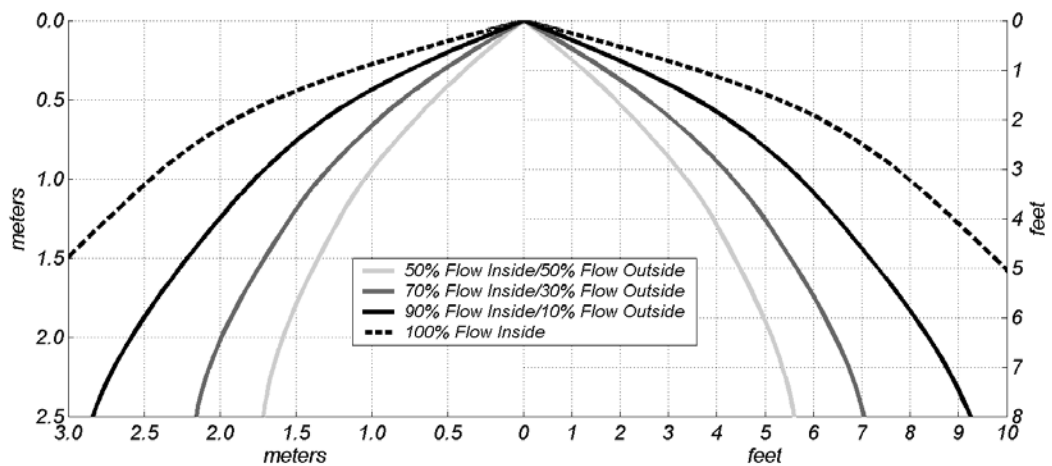
7 PSI
30 GPM
(0.5 Bar)
(110 LPM)



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



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



Spray Profile Patterns

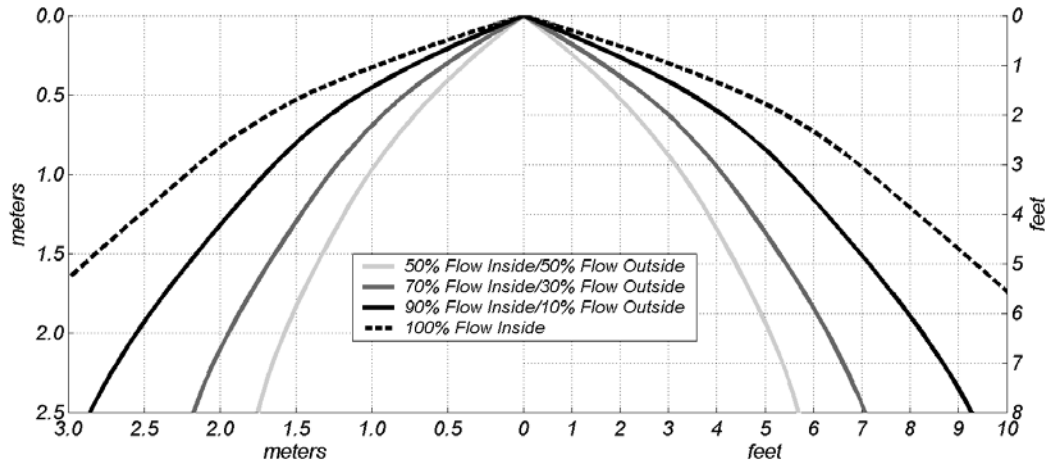
Standard Coverage Upright

$K = 11.2$ ($K 160$), 7 inches (178 mm) Deflector to Ceiling

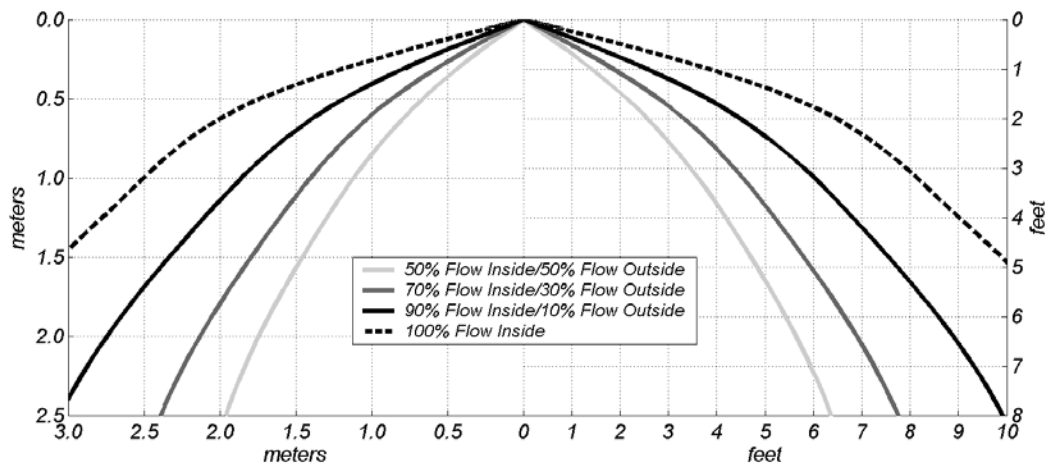
TY5111, ELO-231
TY5131, ELO-231FRB
TY5151, ELO-231B

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

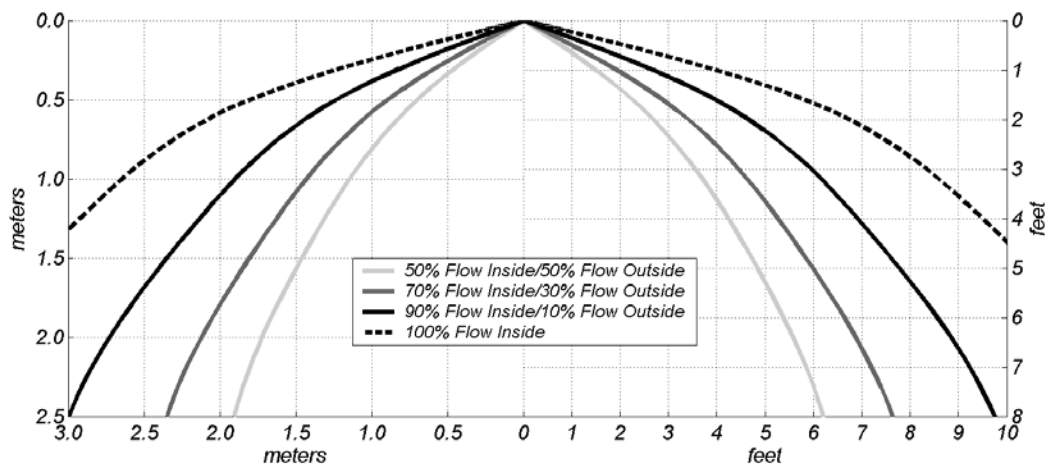
7 PSI
30 GPM
(0.5 Bar)
(110 LPM)



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



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



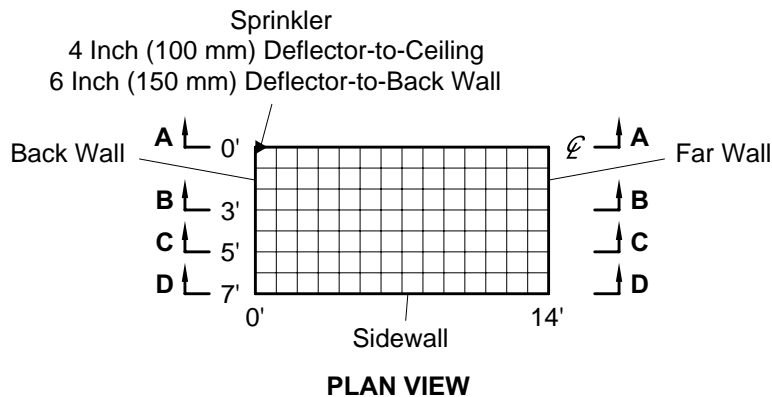
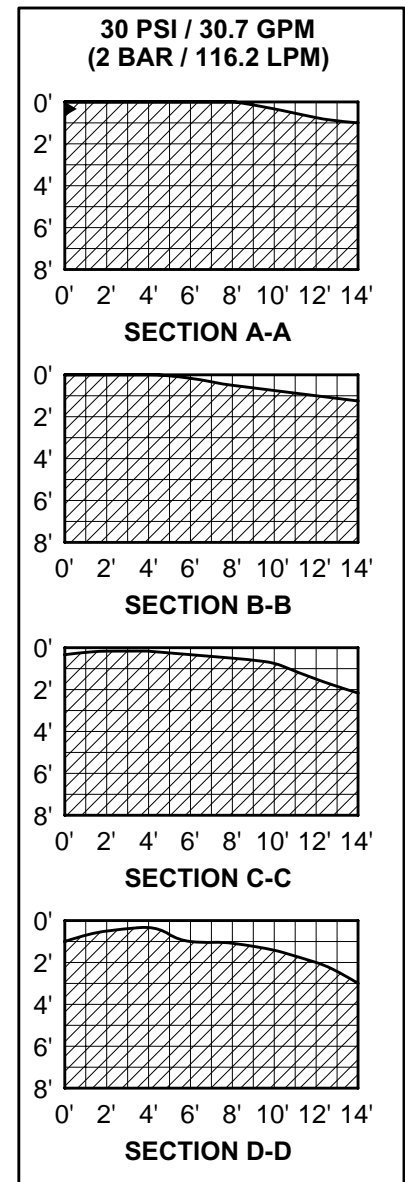
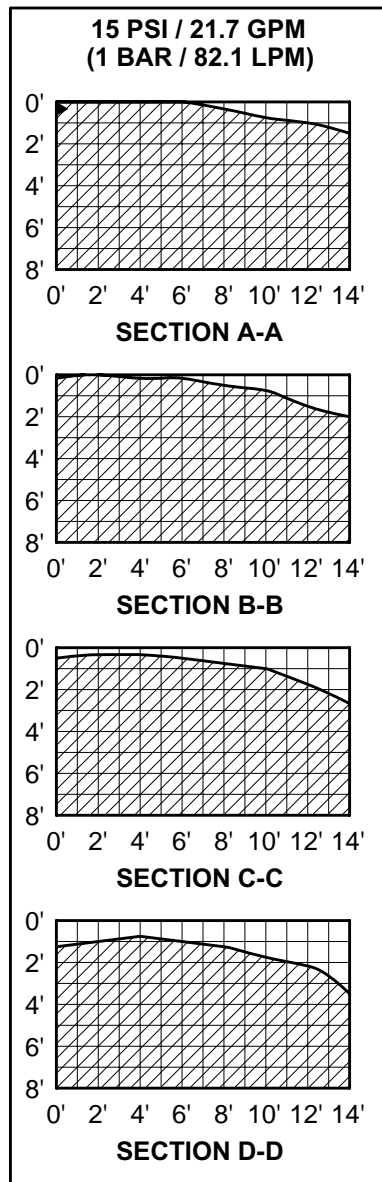
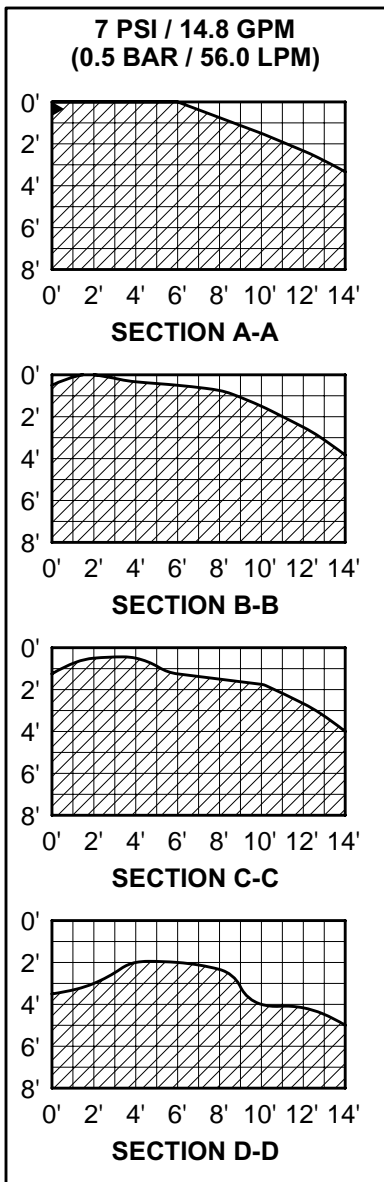
Spray Profile Patterns

Standard Coverage Pendant

$K = 11.2$ ($K 160$), 7 inches (178 mm) Deflector to Ceiling

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

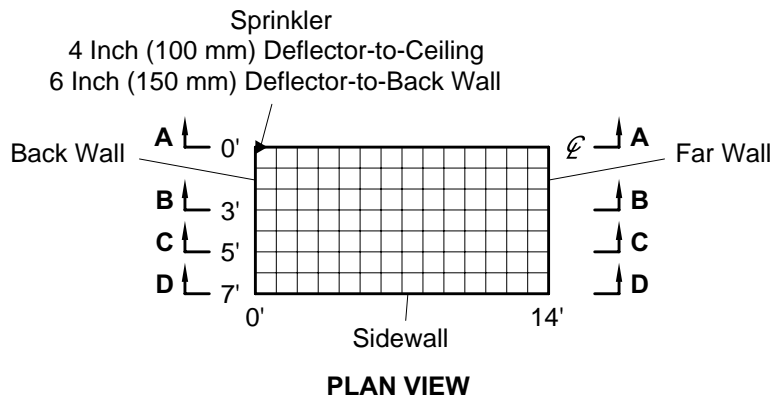
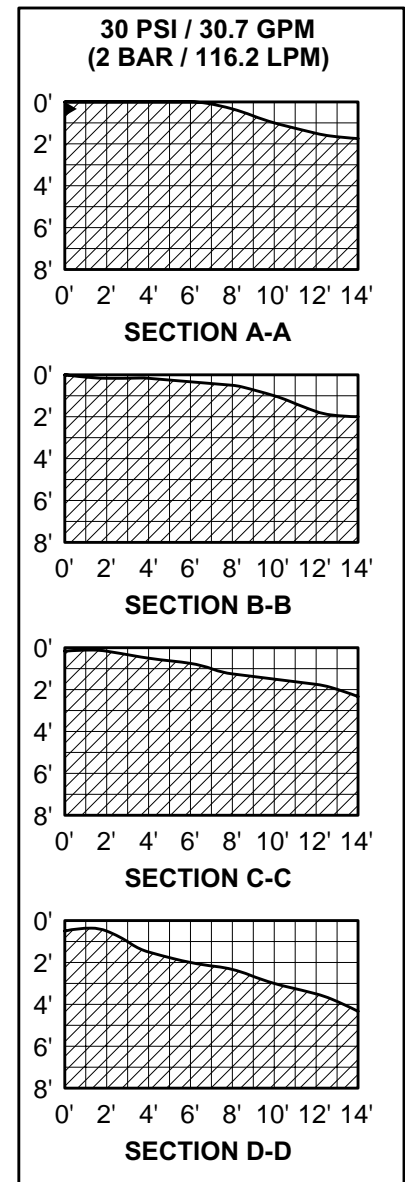
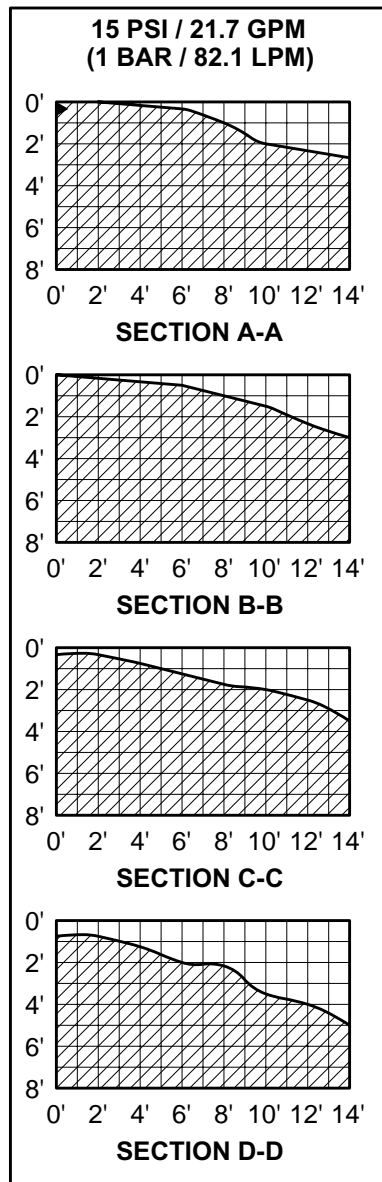
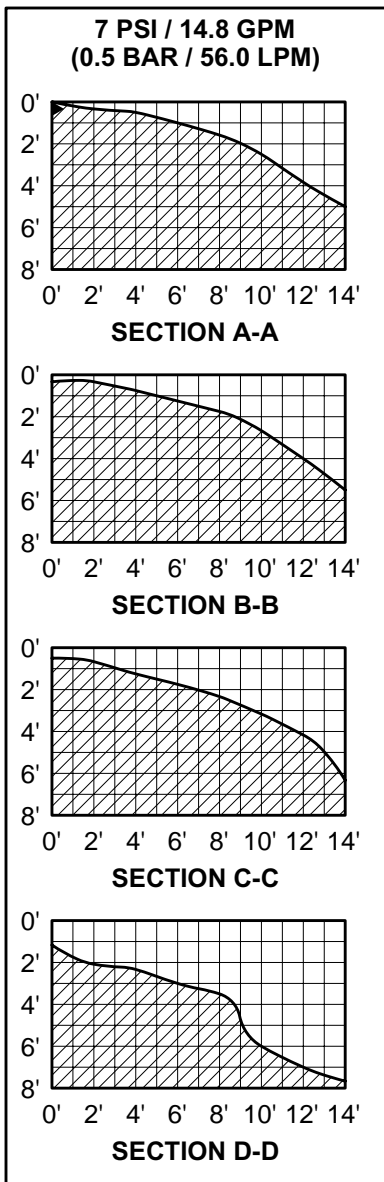
(Refer to the General Description section on Page 1 before applying the spray pattern data.)



CROSS SECTIONAL PATTERNS

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

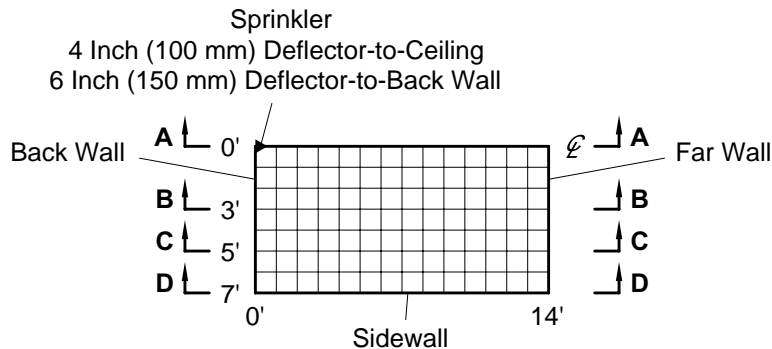
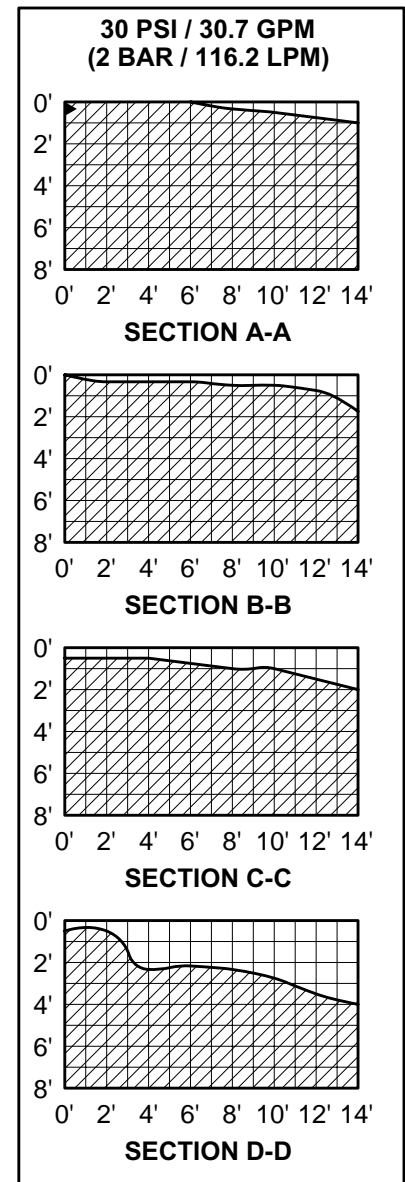
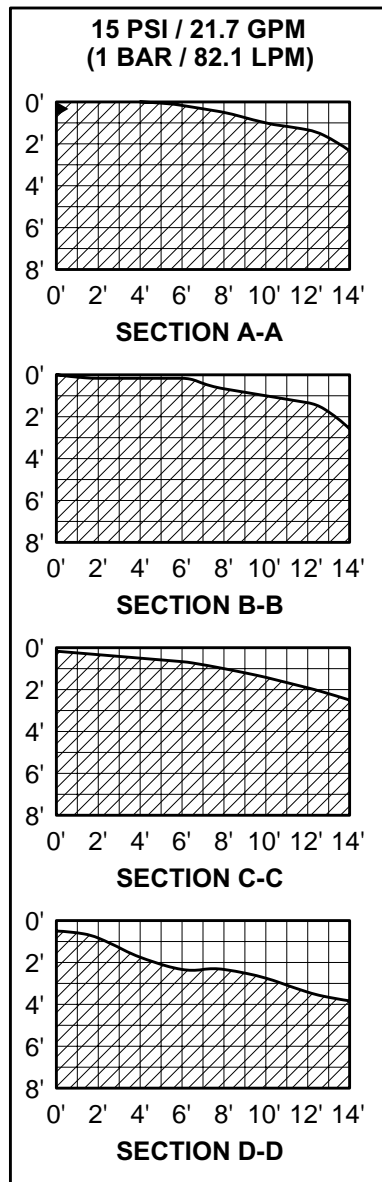
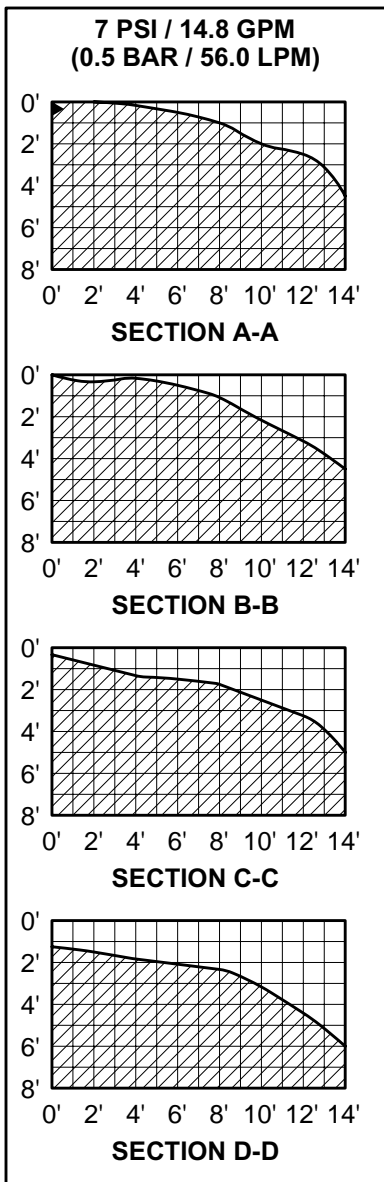
(Refer to the General Description section on Page 1 before applying the spray pattern data.)



CROSS SECTIONAL PATTERNS

K=5.6 (K80), Standard Coverage
Horizontal Sidewall Sprinkler
SIN TY3321, Series TY-FRL

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

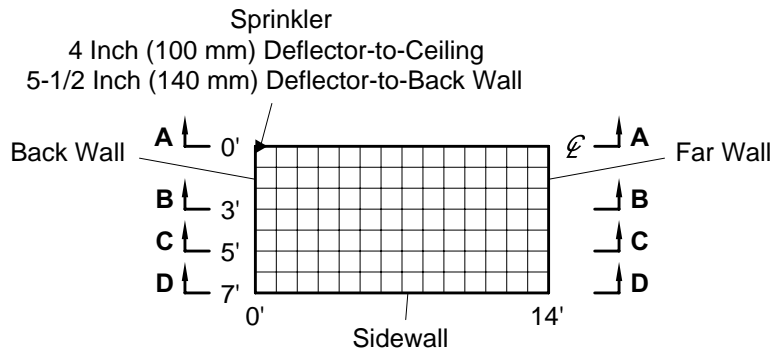
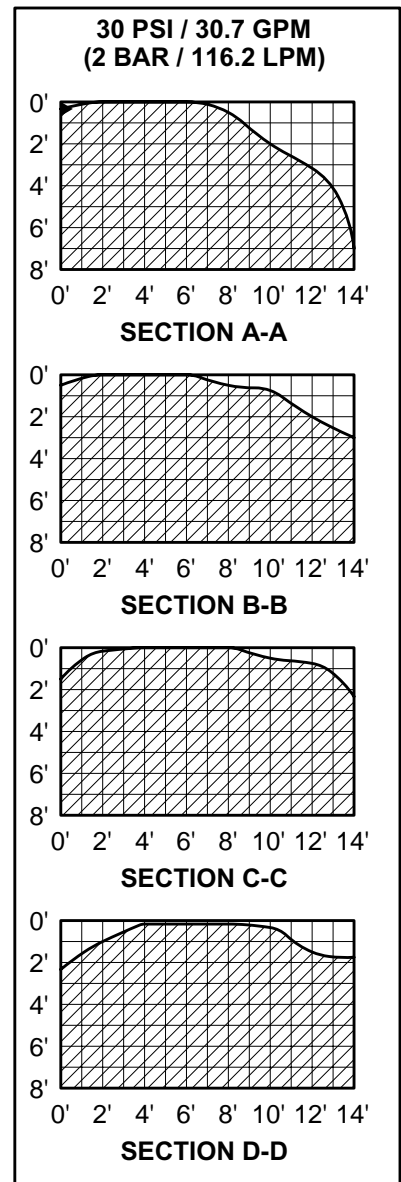
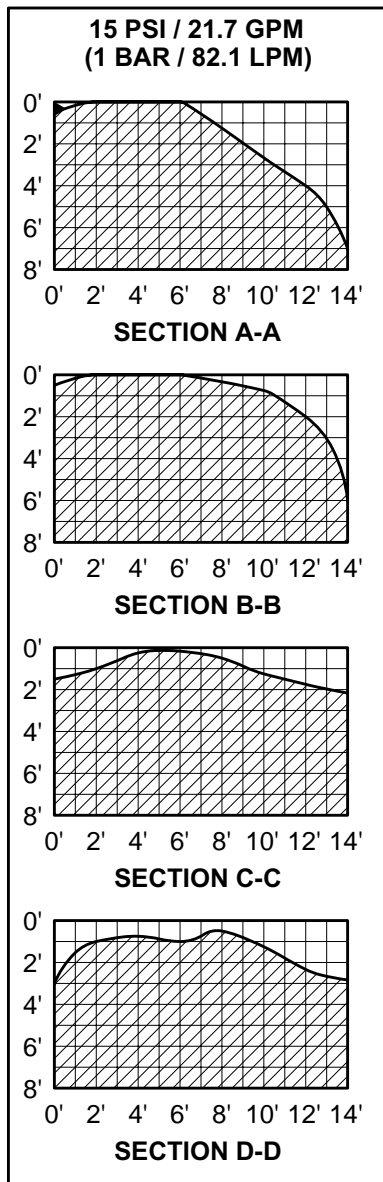
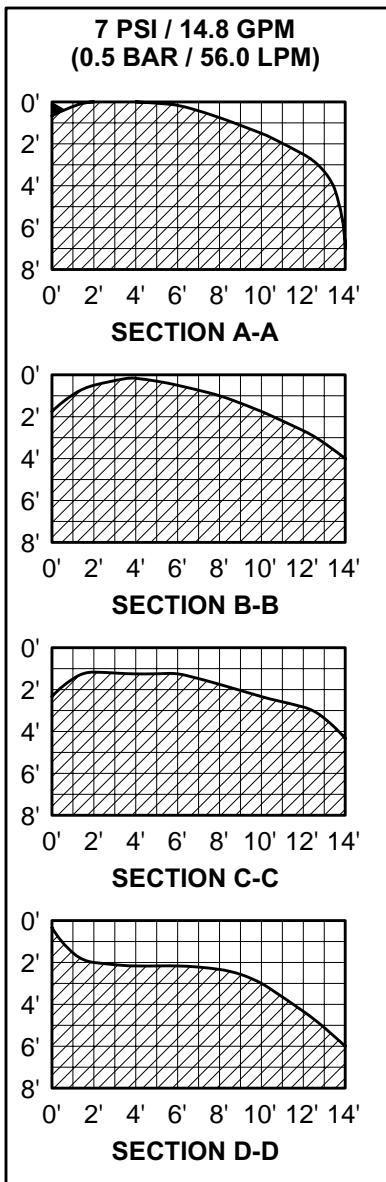


PLAN VIEW

CROSS SECTIONAL PATTERNS

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

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

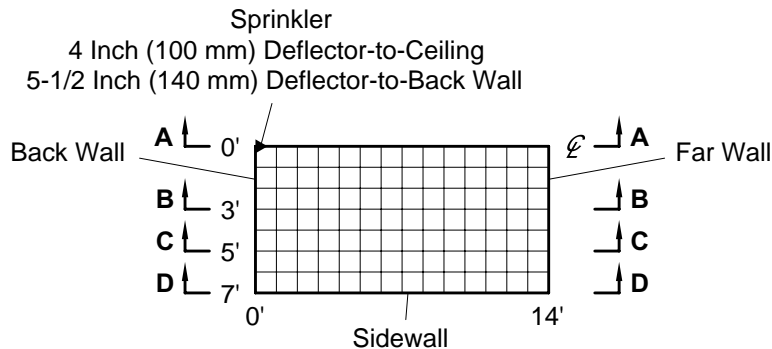
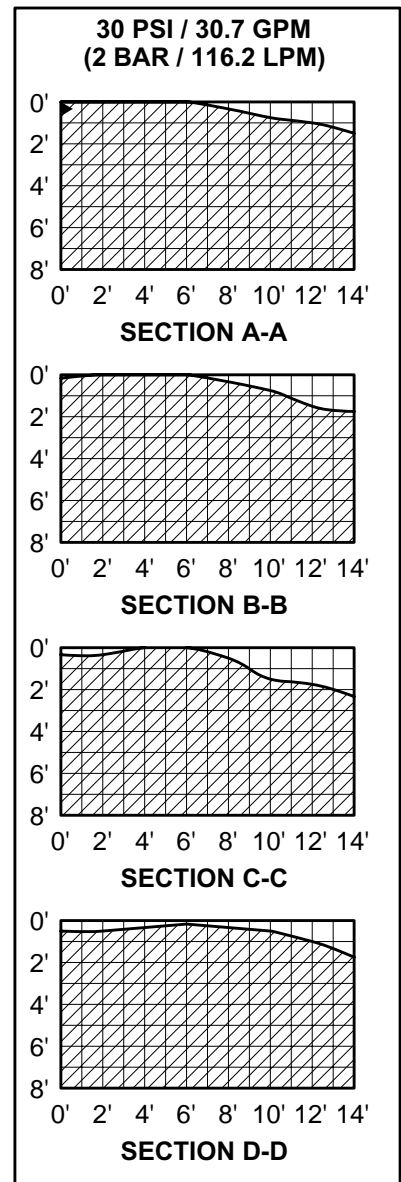
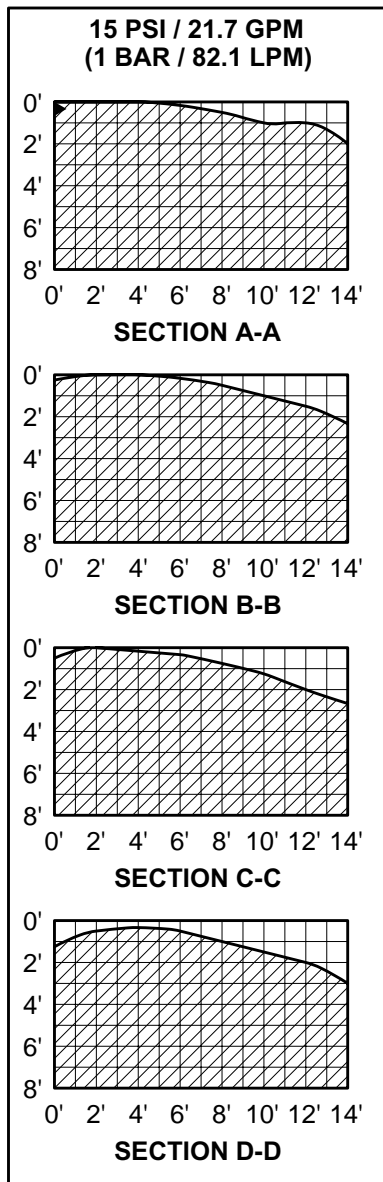
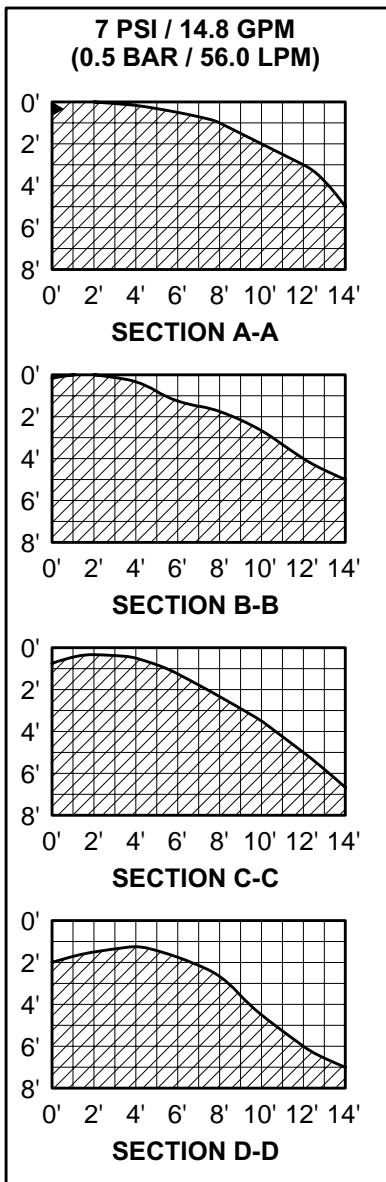


PLAN VIEW

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

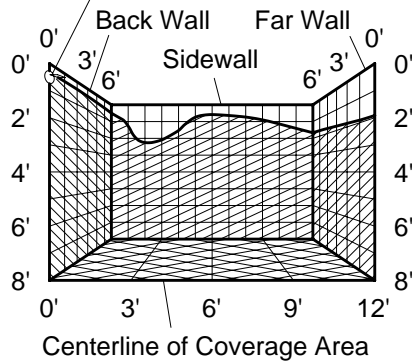
(Refer to the General Description section on Page 1 before applying the spray pattern data.)

**PLAN VIEW****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

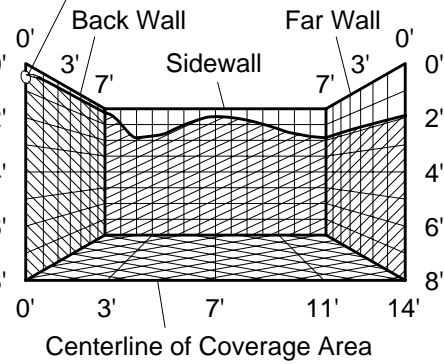
(Refer to the General Description section on Page 1 before applying the spray pattern data.)

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



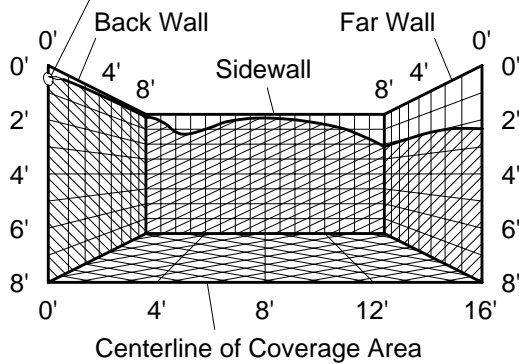
12' x 12' (3.7 m x 3.7 m) Maximum Coverage Area
12 GPM (45.4 LPM) Flow

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



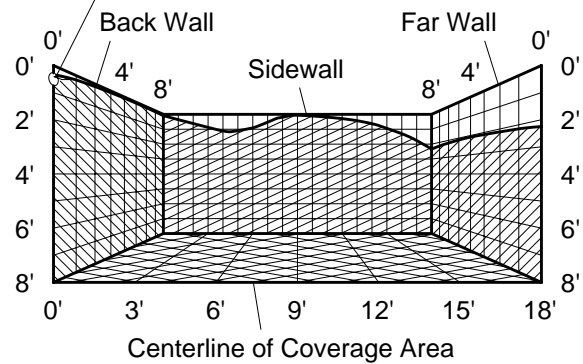
14' x 14' (4.3 m x 4.3 m) Maximum Coverage Area
14 GPM (53.0 LPM) Flow

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



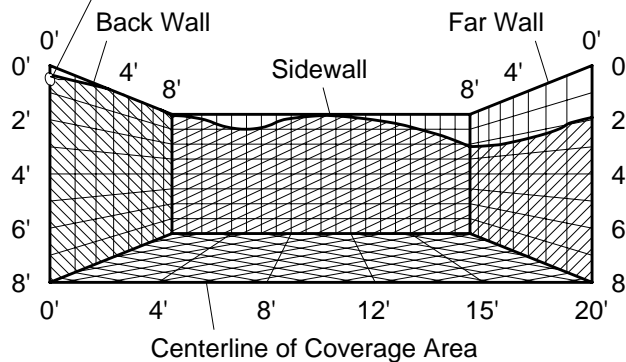
16' x 16' (4.9 m x 4.9 m) Maximum Coverage Area
16 GPM (60.6 LPM) Flow

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



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

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



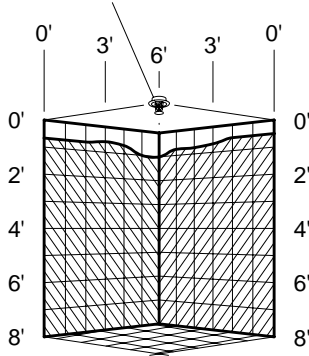
16' x 20' (4.9 m x 6.1 m) Maximum Coverage Area
23 GPM (87.1 LPM) Flow

WALL WETTING PATTERNS

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

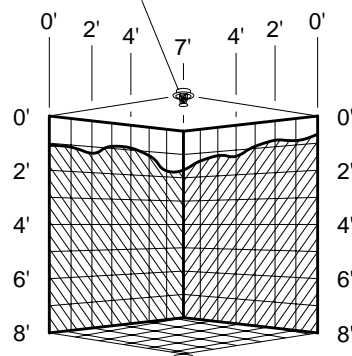
(Refer to the General Description section on Page 1 before applying the spray pattern data.)

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



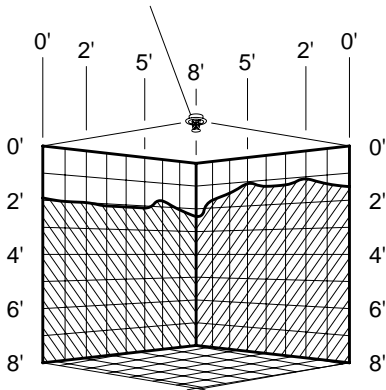
12' x 12' (3.7 m x 3.7 m) Maximum Coverage Area
13 GPM (49.2 LPM) Flow

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



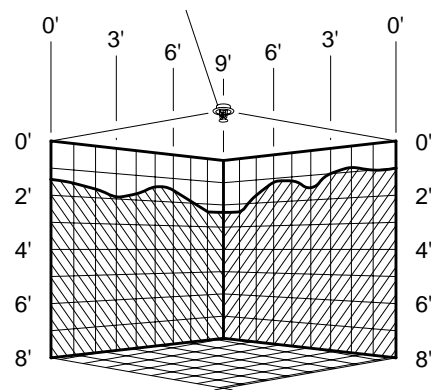
14' x 14' (4.3 m x 4.3 m) Maximum Coverage Area
13 GPM (49.2 LPM) Flow

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



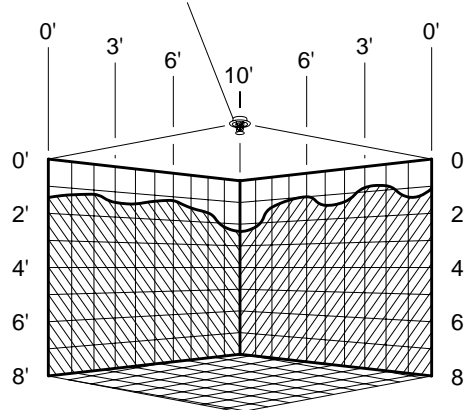
16' x 16' (4.9 m x 4.9 m) Maximum Coverage Area
13 GPM (49.2 LPM) Flow

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

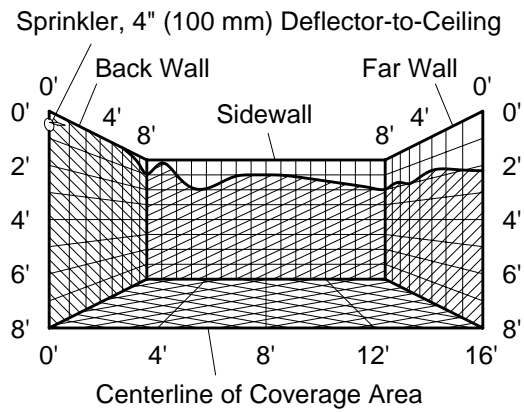


20' x 20' (6.1 m x 6.1 m) Maximum Coverage Area
20 GPM (75.7 LPM) Flow

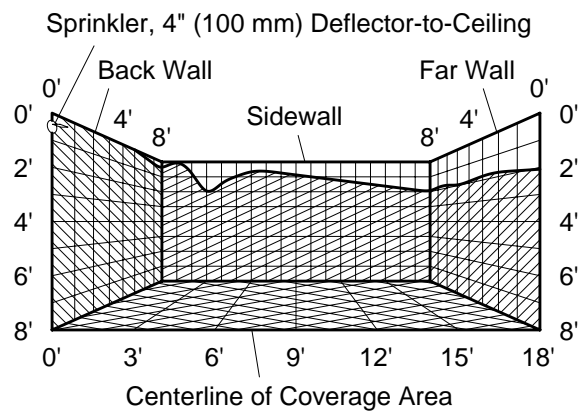
WALL WETTING PATTERNS

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

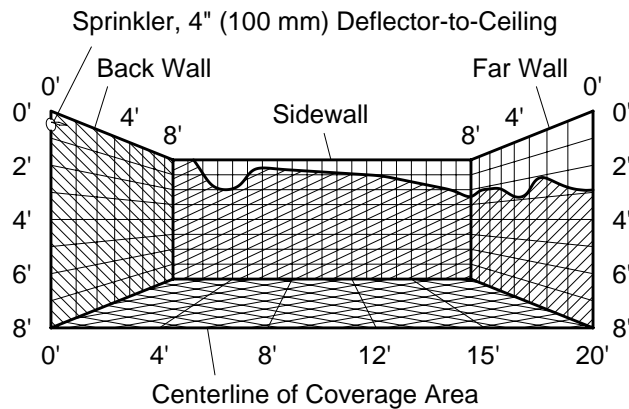
(Refer to the General Description section on Page 1 before applying the spray pattern data.)



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

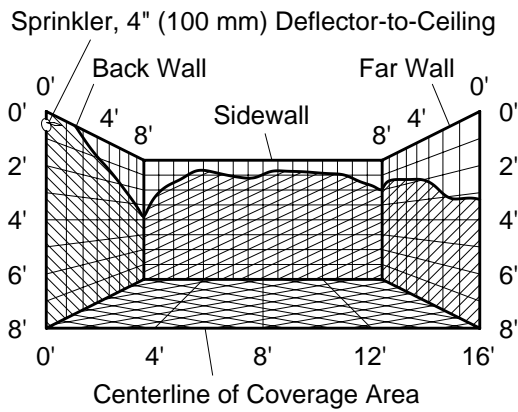


16' x 20' (4.9 m x 6.1 m) Maximum Coverage Area
33 GPM (124.9 LPM) Flow

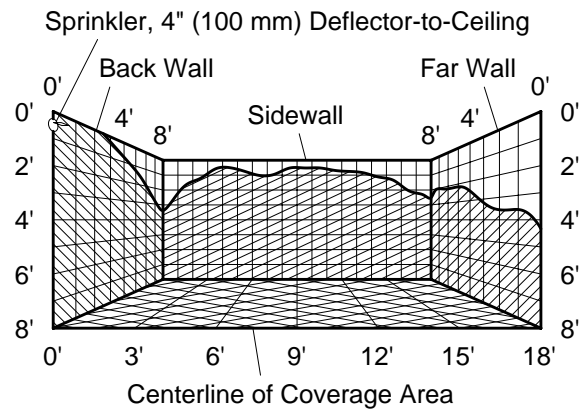
WALL WETTING PATTERNS

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

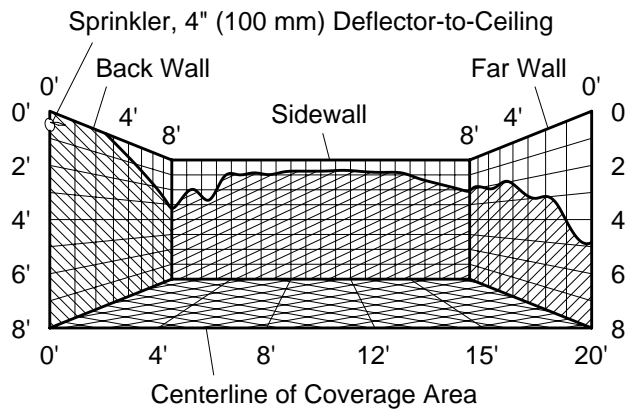
(Refer to the General Description section on Page 1 before applying the spray pattern data.)



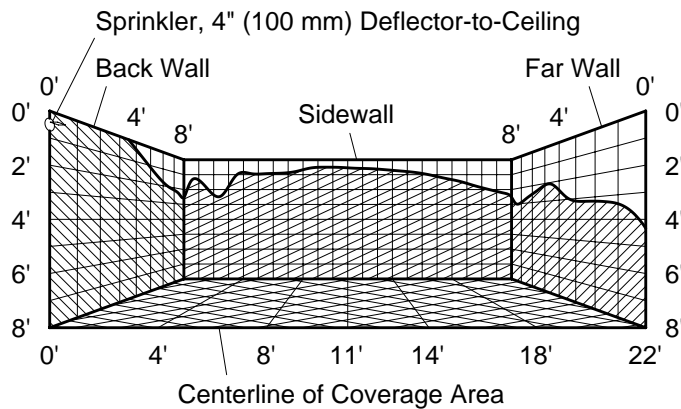
16' x 16' (4.9 m x 4.9 m) Maximum Coverage Area
26 GPM (98.4 LPM) Flow



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

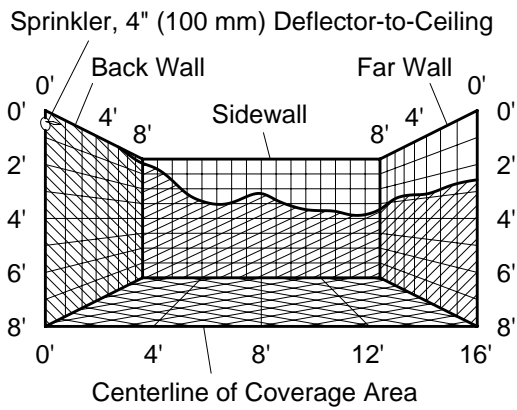


16' x 22' (4.9 m x 6.7 m) Maximum Coverage Area
35 GPM (132.5 LPM) Flow

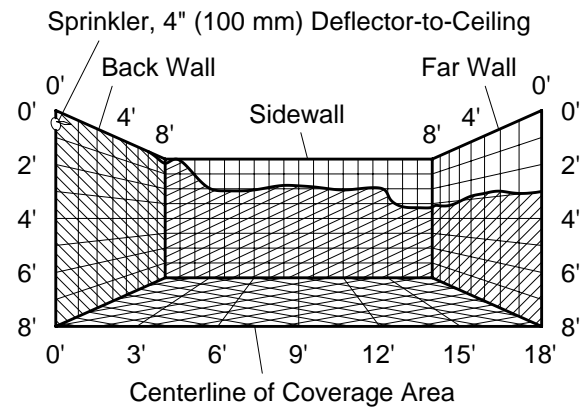
WALL WETTING PATTERNS

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

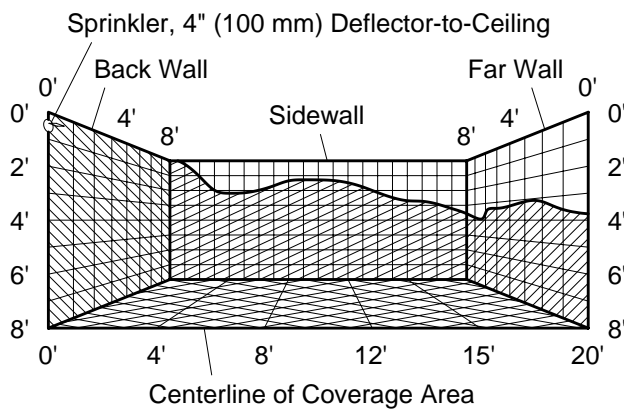
(Refer to the General Description section on Page 1 before applying the spray pattern data.)



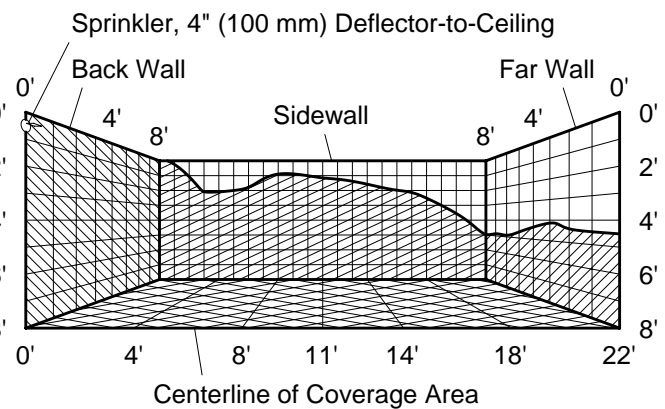
16' x 16' (4.9 m x 4.9 m) Maximum Coverage Area
27 GPM (102.2 LPM) Flow



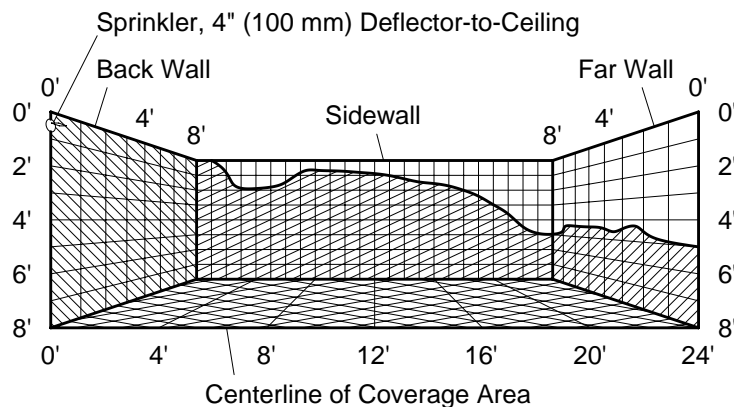
16' x 18' (4.9 m x 5.5 m) Maximum Coverage Area
30 GPM (113.6 LPM) Flow



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



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



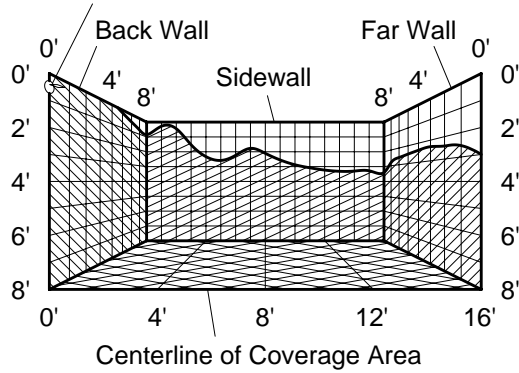
16' x 24' (4.9 m x 7.3 m) Maximum Coverage Area
44 GPM (166.5 LPM) Flow

WALL WETTING PATTERNS

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

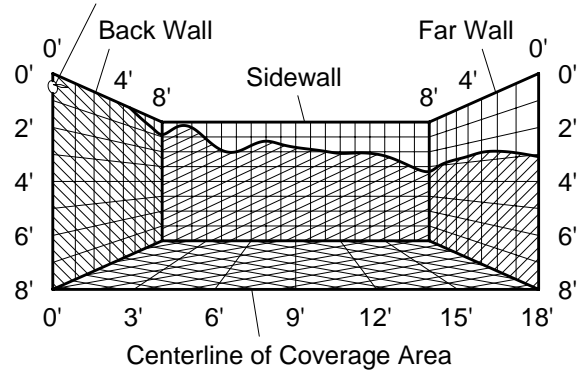
(Refer to the General Description section on Page 1 before applying the spray pattern data.)

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



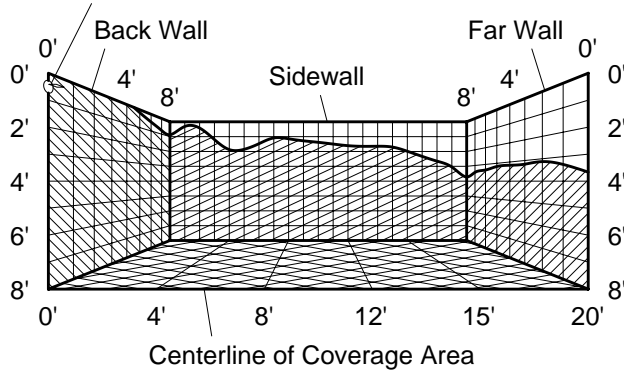
16' x 16' (4.9 m x 4.9 m) Maximum Coverage Area
26 GPM (98.4 LPM) Flow

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



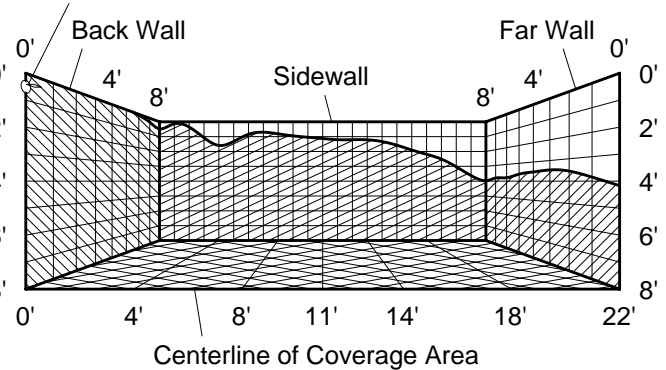
16' x 18' (4.9 m x 5.5 m) Maximum Coverage Area
29 GPM (109.8 LPM) Flow

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



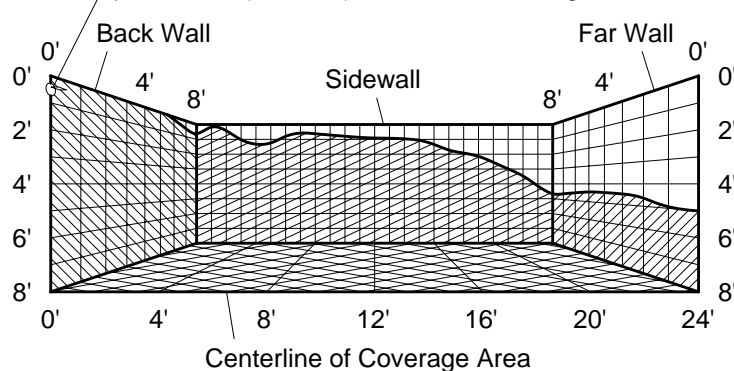
16' x 20' (4.9 m x 6.1 m) Maximum Coverage Area
32 GPM (121.1 LPM) Flow

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

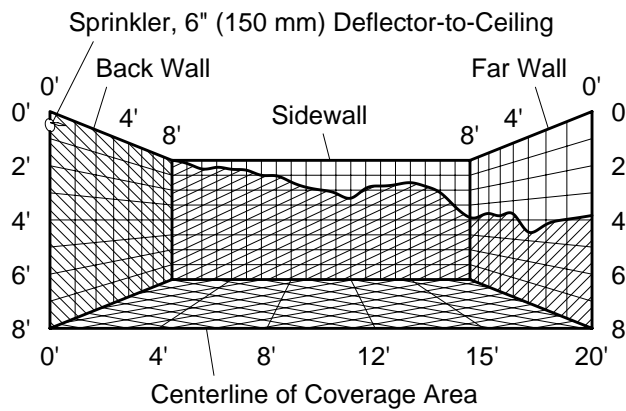


16' x 24' (4.9 m x 7.3 m) Maximum Coverage Area
39 GPM (147.6 LPM) Flow

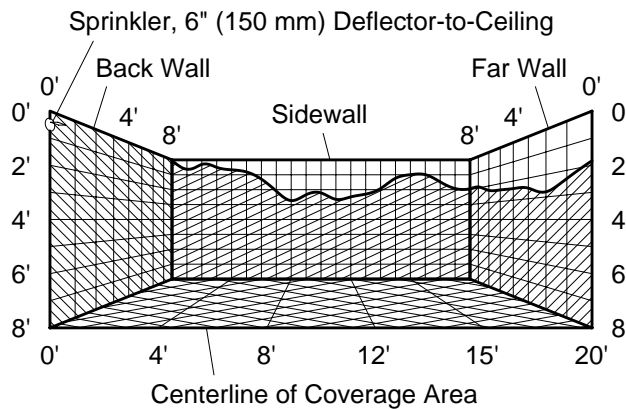
WALL WETTING PATTERNS

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

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



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

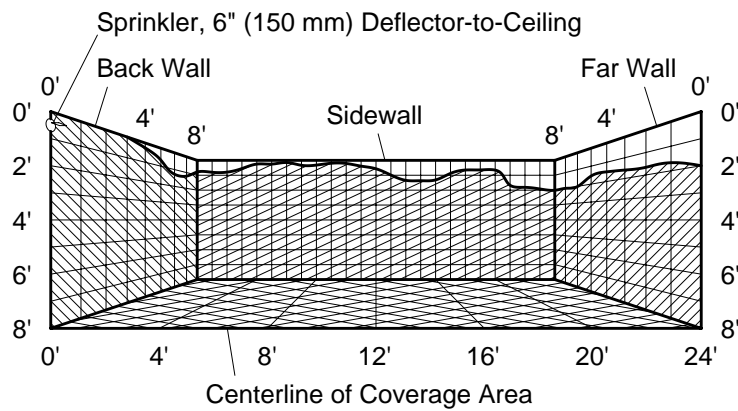


16' x 20' (4.9 m x 6.1 m) Maximum Coverage Area
64 GPM (242.2 LPM) Flow

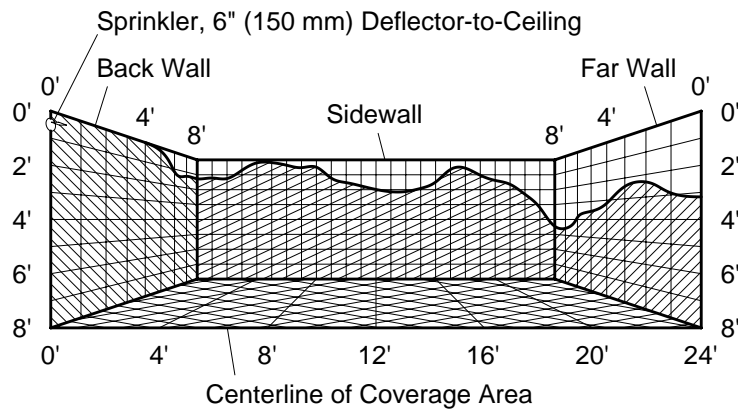
WALL WETTING PATTERN

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

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



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

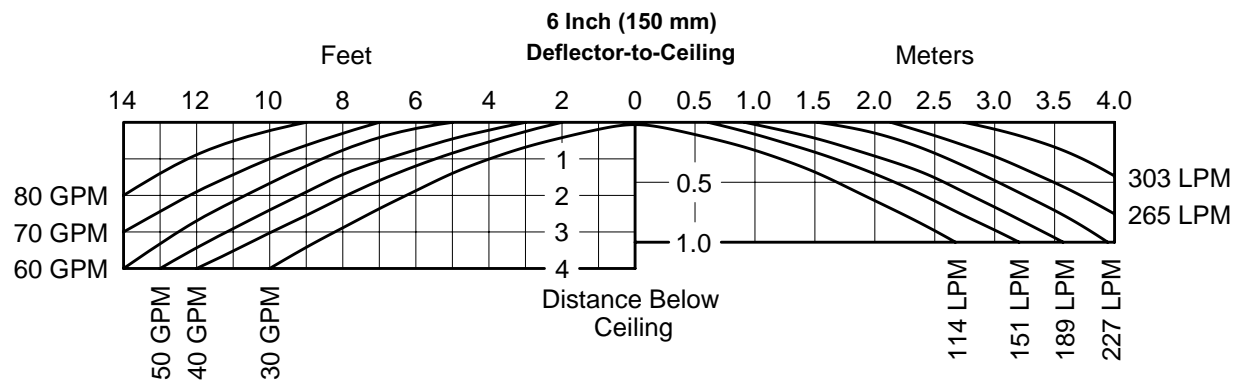


**16' x 24' (4.9 m x 7.3 m) Maximum Coverage Area
77 GPM (291.4 LPM) Flow**

WALL WETTING PATTERN

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

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



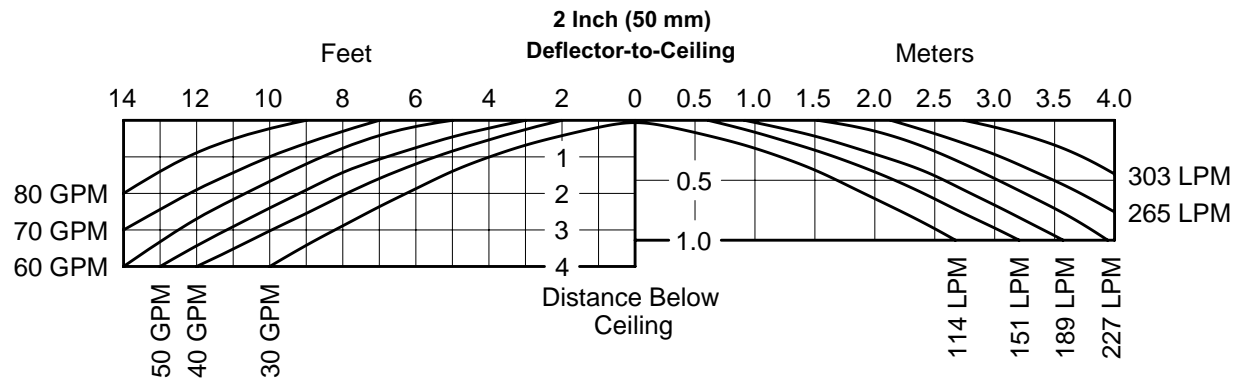
SPRAY PROFILE PATTERNS

Extended Coverage Upright

SIN TY5137, Series EC-11, K=11.2 (K160)

SIN TY6137, Series EC-14, K=14.0 (K200)

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



SPRAY PROFILE PATTERNS

Extended Coverage Pendent

SIN TY5237, Series EC-11, K=11.2 (K160)

SIN TY6237, Series EC-14, K=14.0 (K200)

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

Sprinkler		7 PSI / 14.8 GPM (0.5 BAR / 56.0 LPM)										
Deflector-to-Ceiling:		Radius from Sprinkler, Feet										
7 Inches (178 mm)		0'	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/ft ² (1 GPM/ft. ² = 40.74 mm/min.)												

Sprinkler		15 PSI / 21.7 GPM (1 BAR / 82.1 LPM)										
Deflector-to-Ceiling:		Radius from Sprinkler, Feet										
7 Inches (178 mm)		℄	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/ft. ² (1 GPM/ft. ² = 40.74 mm/min.)												

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

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

Sprinkler		7 PSI / 14.8 GPM (0.5 BAR / 56.0 LPM)										
Deflector-to-Ceiling:		Radius from Sprinkler, Feet										
7 Inches (178 mm)		0'	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/ft ² (1 GPM/ft. ² = 40.74 mm/min.)												

Sprinkler		15 PSI / 21.7 GPM (1 BAR / 82.1 LPM)										
Deflector-to-Ceiling:		Radius from Sprinkler, Feet										
7 Inches (178 mm)		ℓ	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/ft. ² (1 GPM/ft. ² = 40.74 mm/min.)												

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

