S. P. Nozzles

C. E. Shepherd Co. Cooling Tower Components

Counter Flow S. P. Nozzle

S. P. Nozzle

The C. E. Shepherd Square Pattern Nozzle, or SP Nozzle, maximizes water contact to the heat transfer media (fill). Water exits the nozzle in a uniform downspray of fluidized water particles in a large surface to volume ratio. Unlike nozzles that disperse water in a circular pattern, the SP Nozzles is configured to mirror the footprint of straight sided industrial cooling towers, assuring coverage for all areas of the fill while significantly reducing water shedding on the side, partition and end walls. With proper installation, the SP Nozzles are pitched to produce overlapping individual sprays from adjacent nozzles. This design, in concert with the engineered spray of uniformly sized water droplets, achieves ideal distribution over the fill and in turn, assures maximum heat transfer within the fill system itself.

While snap-together nozzle designs often fail at the splash plate creating heavy streams of water that erode PVC fill and negatively impact the thermal efficiency of the tower, the Shepherd SP Nozzle is welded at each connection point between the SP Nozzle body and the target plate. This superior design assures long-term durability of the nozzle, minimizes erosion of the fill and contributes to tower efficiency.

Customize the SP Nozzle for outstanding performance in a myriad of configurations with our line of accessories. Color-coded, interchangeable orifices make flow adjustment a snap. Pipe and wood thread extensions and saddle pipe adaptors, available with your choice of male/female threaded ends, accomodate virtually any size lateral line.

4" Nozzle Extension
Saddle Pipe Adaptors
Color-coded Snap-in Orifices

Adaptors:

4" Laterals NOZADPT04
6" Laterals NOZADPT06
8" Laterals NOZADPT08
10" Laterals...NOZADPT10

Color-Coded Snap-In Orifices:

3/4" .....Brown
7/8" .....White
1" .....Yellow
1-1/8" .....Red
1-1/4" .....Black
1-3/8" .....Blue
1-1/2" .....Gray

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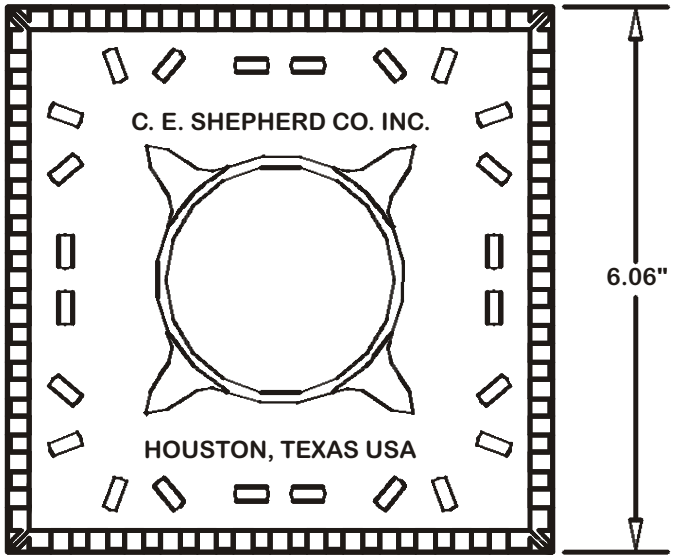
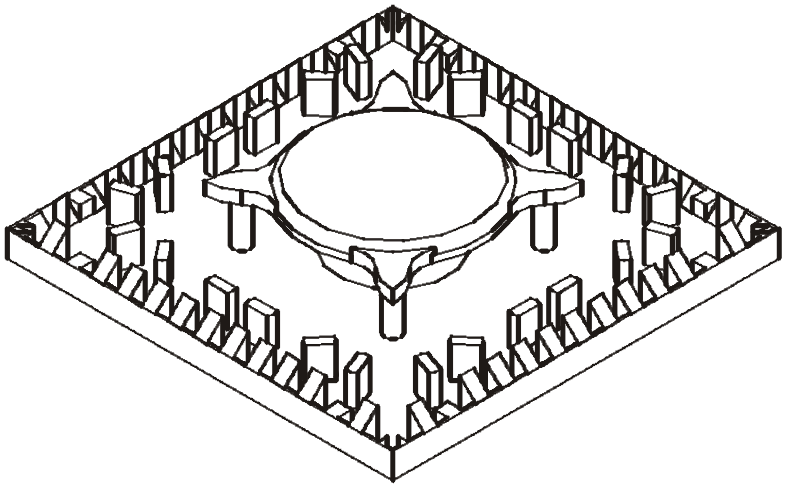
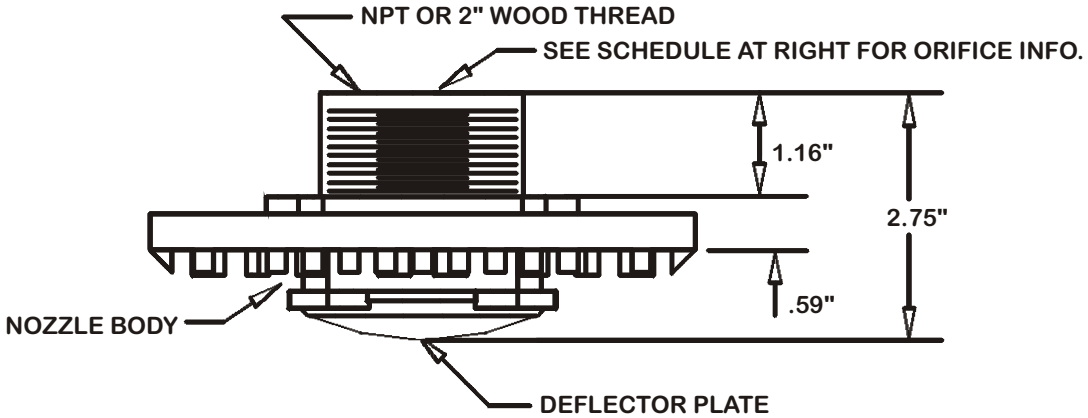




ORIFICE SCHEDULE			
COLOR	DIAMETER	PIPE THREAD P/N	WOOD THREAD P/N
BROWN	3/4"	034CNTRFLPPPT	034CNTRFLPPWT
WHITE	7/8"	078CNTRFLPPPT	078CNTRFLPPWT
YELLOW	1"	100CNTRFLPPPT	100CNTRFLPPWT
RED	1-1/8"	118CNTRFLPPPT	118CNTRFLPPWT
BLACK	1-1/4"	114CNTRFLPPPT	114CNTRFLPPWT
BLUE	1-3/8"	138CNTRFLPPPT	138CNTRFLPPWT
GRAY	1-1/2"	112CNTRFLPPPT	112CNTRFLPPWT



LET	DATE	BY	REV

DIMENSIONS IN INCHES UNLESS NOTED

TOLERANCES UNLESS NOTED:

FRACTIONAL + or - 1/64

DECIMAL + OR - .XX .03 .XXX .005 .XXXX .0005

ANGULAR +/- 1/2°

FILE PR

C.E. SHEPHERD Co. Inc.

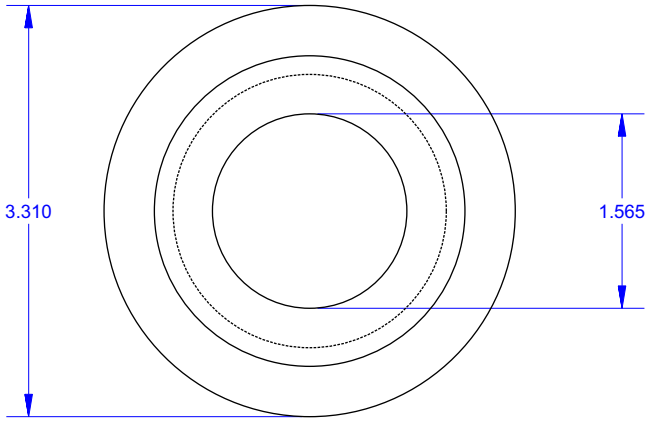
2221 CANADA DRY ST. HOUSTON, TEXAS 77023

DWN BY JS | DATE 11-29-01 | REV LET | SCALE 1:1

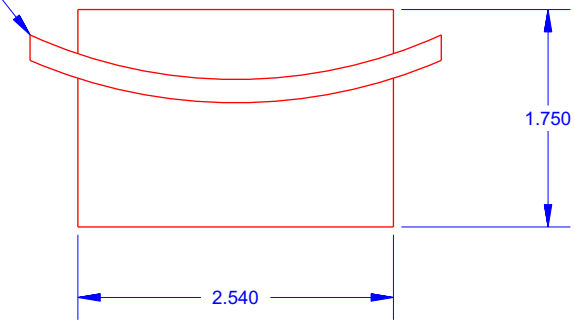
APPD BY | DATA EMBODIED PROPRIETARY INFORMATION WHICH IS CONFIDENTIAL PROPERTY | Sht.

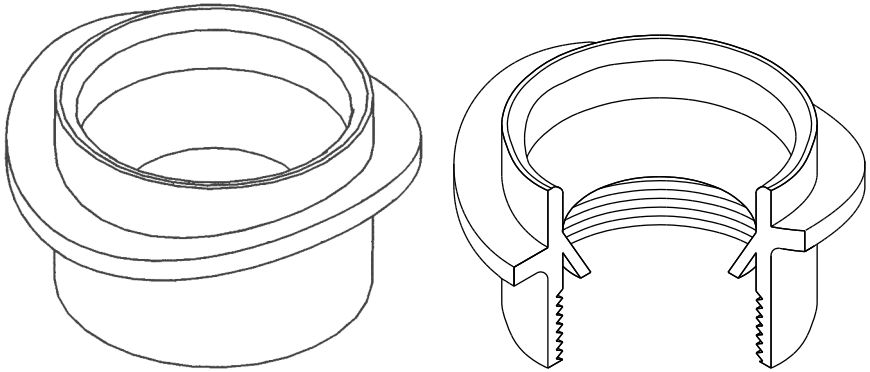
TITLE: COUNTER FLOW (SP) NOZZLE

MATERIAL: ABS OR POLYPROPYLENE | D | 10222



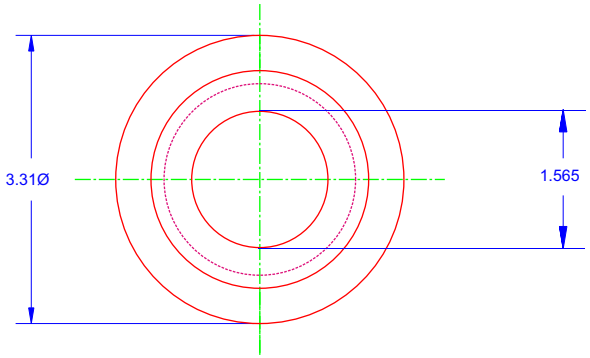
SADDLE RADIUS TO MATCH PIPE
RADIUS WILL BE 4",
SADDLE THICKNESS IS 3/16"

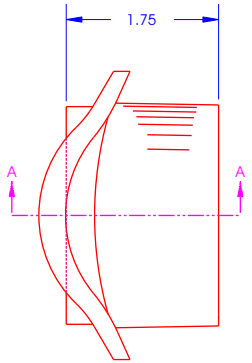




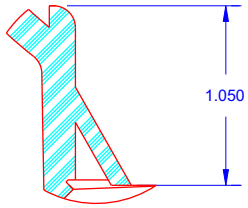
LET	DATE	BY	REV

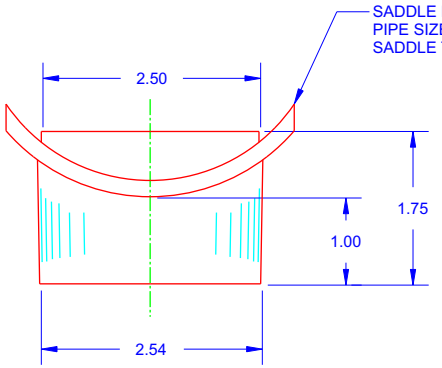
DIMENSIONS IN INCHES UNLESS NOTED	C.E. SHEPHERD Co. Inc.
TOLERANCES UNLESS NOTED:	2221 CANADA DRY ST. HOUSTON, TEXAS 77023
FRACTIONAL + or - 1/64	DWN BY JLS · DATE 12-3-01 · REV LET · SCALE NONE
DECIMAL .XX .03 + OR - .XXX .005 .XXXX .0005	APPR BY · DATA EMBODIED PROPRIETARY INFORMATION WHICH IS CONFIDENTIAL PROPERTY · Sht 2 OF 2
ANGULAR +/- 1/2°	TITLE: SP NOZZLE PIPE ADAPTER - ISOMETRIC
FILE IM	MATERIAL ABS · B · 10211

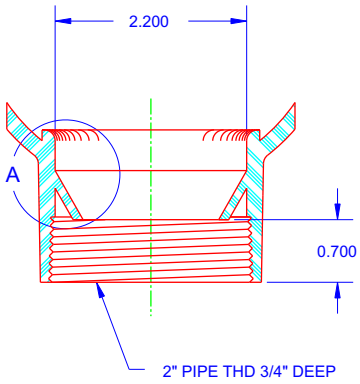




DETAIL A
SCALE= 2:1







SECTION A-A

LET	DATE	BY	REV

DIMENSIONS IN INCHES UNLESS NOTED

TOLERANCES UNLESS NOTED:

FRACTIONAL + or - 1/64

DECIMAL .XX .03
+ OR - .XXX .005
.XXXX .0005

ANGULAR +/- 1/2°

FILE IM

C.E. SHEPHERD Co. Inc.
2221 CANADA DRY ST. HOUSTON, TEXAS 77023

DWN BY	DATE	REV LET	SCALE
ALB	10-25-93		NONE

APPR BY

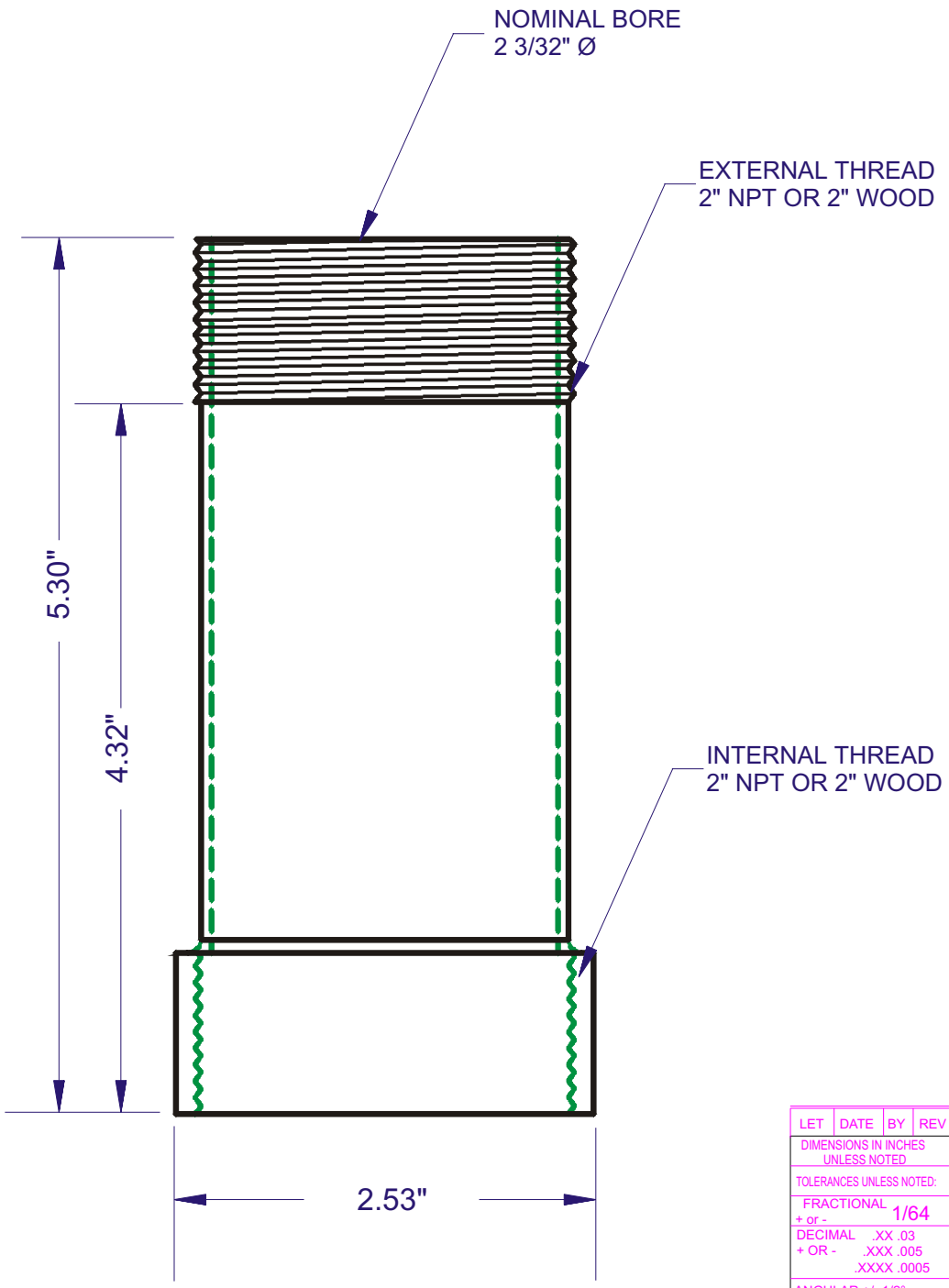
DATA EMBODIED PROPRIETARY INFORMATION WHICH IS CONFIDENTIAL PROPERTY

Sht. 1 OF 2

TITLE: COUNTERFLOW SP NOZZLE PIPE ADAPTER

MATERIAL: ABS

B 10211



LET	DATE	BY	REV

DIMENSIONS IN INCHES UNLESS NOTED

TOLERANCES UNLESS NOTED:

FRACTIONAL + or - 1/64

DECIMAL + OR - .XX .03 .XXX .005 .XXXX .0005

ANGULAR +/- 1/2°

FILE

C. E. SHEPHERD Co. Inc.

2221 CANADA DRY ST. HOUSTON, TEXAS 77023

DWN BY JLS | DATE 10-15-03 | REV LET | SCALE 1:1

APPR BY | DATA EMBODIED PROPRIETARY INFORMATION WHICH IS CONFIDENTIAL PROPERTY | Sht.

TITLE: 4" SP NOZZLE EXTENSION

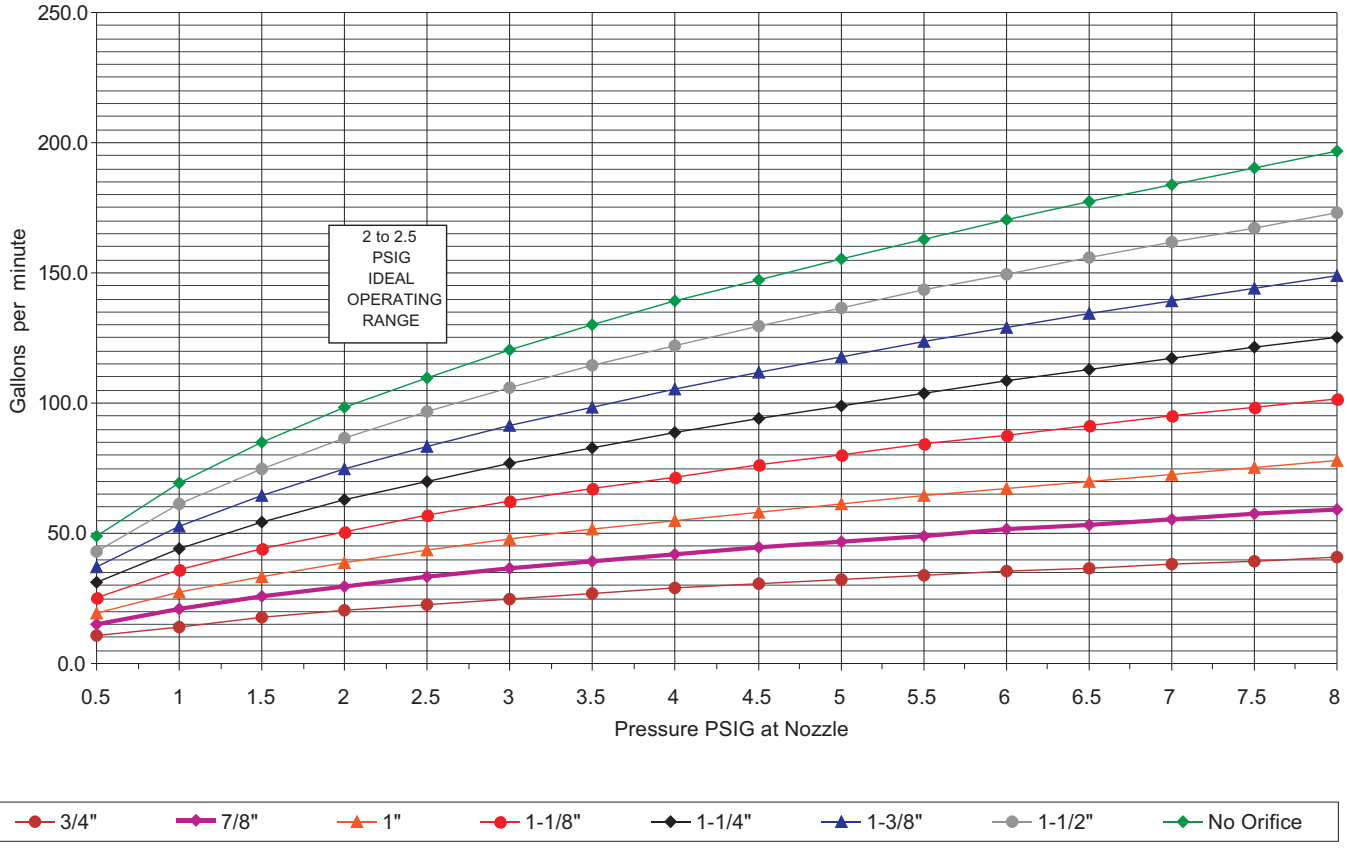
MATERIAL: POLYPROPYLENE

A 101503

C. E. Shepherd Company

Output Capacity

C.E. Shepherd Company S.P. Nozzle for Counter Flow Cooling Towers



C. E. Shepherd Company certifies that SP Nozzles will perform in a manner consistent with the technical data provided. This information was compiled using independent testing, under controlled conditions, and is believed to be accurate and reproducible within the industry standards though ultimate performance of the nozzles in a specific installation may vary slightly due to inherent differences in each tower.

2221 Canada Dry Street Houston, Texas 77023 USA

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Revision Date: 03/05/2004

C. E. Shepherd Company

Distance from Centerline

C. E. Shepherd SP Nozzles (Brown Orifice - 3/4" Diameter) for Cross Flow Cooling Towers

C. E. Shepherd Company certifies that SP Nozzles will perform in a manner consistent with the technical data provided. This information was compiled using independent testing, under controlled conditions, and is believed to be accurate and reproducible within the industry standards though ultimate performance of the nozzles in a specific installation may vary slightly due to inherent differences in each tower.

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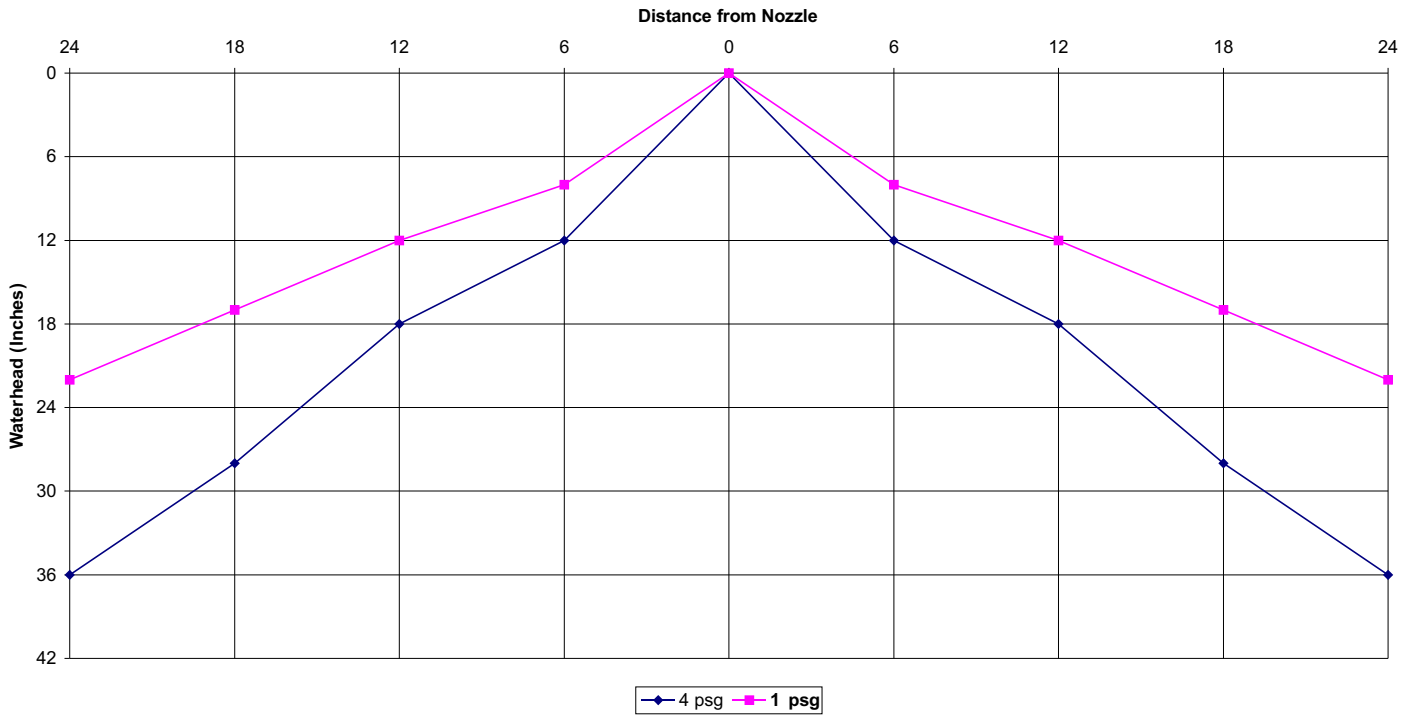
Revision Date: 05/20/2003

C. E. Shepherd Company

Distance from Centerline

C. E. Shepherd SP Nozzles (Yellow Orifice - 1" Diameter) for Cross Flow Cooling Towers



C. E. Shepherd Company certifies that SP Nozzles will perform in a manner consistent with the technical data provided. This information was compiled using independent testing, under controlled conditions, and is believed to be accurate and reproducible within the industry standards though ultimate performance of the nozzles in a specific installation may vary slightly due to inherent differences in each tower.

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Revision Date: 05/20/2003

C. E. Shepherd Company

Distance from Centerline

C. E. Shepherd SP Nozzles (Black Orifice - 1-1/4" Diameter) for Cross Flow Cooling Towers

C. E. Shepherd Company certifies that SP Nozzles will perform in a manner consistent with the technical data provided. This information was compiled using independent testing, under controlled conditions, and is believed to be accurate and reproducible within the industry standards though ultimate performance of the nozzles in a specific installation may vary slightly due to inherent differences in each tower.

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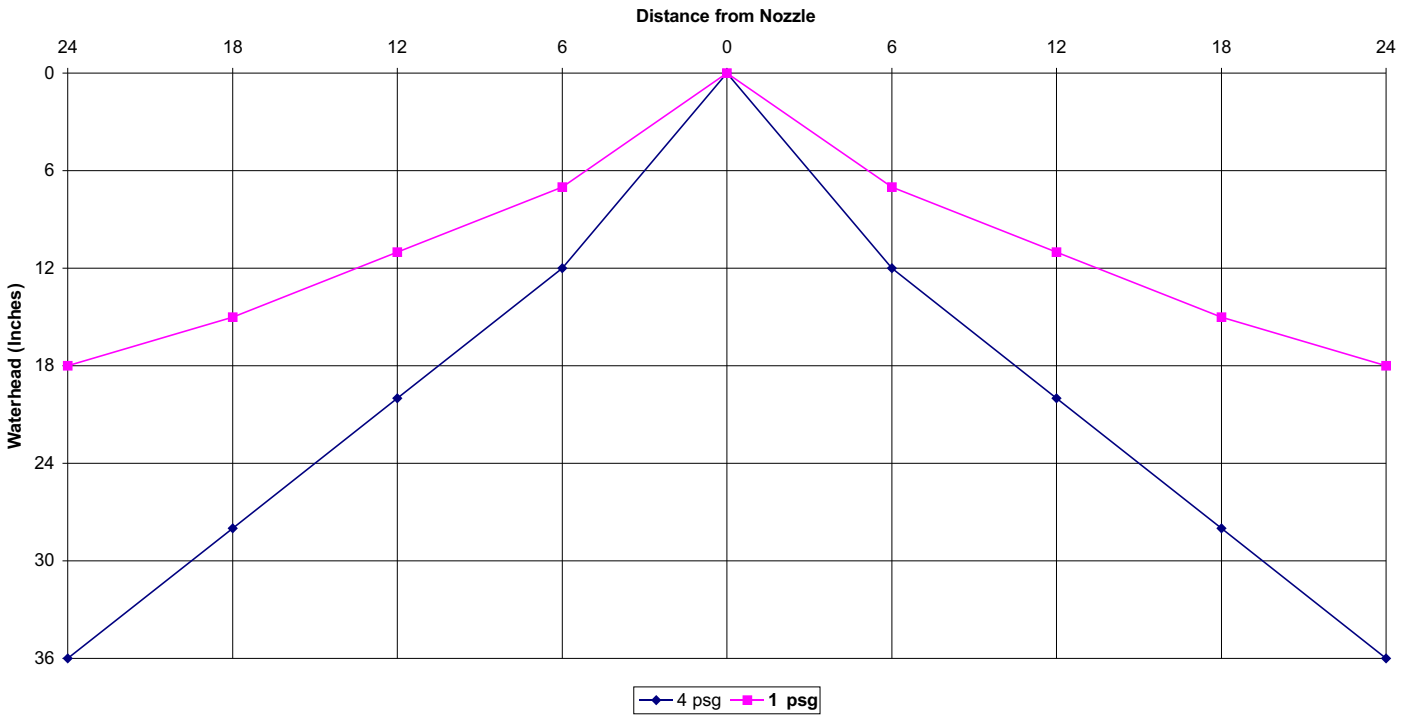
Revision Date: 05/20/2003

C. E. Shepherd Company

Distance from Centerline

C. E. Shepherd SP Nozzles (Gray Orifice - 1-1/2" Diameter) for Cross Flow Cooling Towers



C. E. Shepherd Company certifies that SP Nozzles will perform in a manner consistent with the technical data provided. This information was compiled using independent testing, under controlled conditions, and is believed to be accurate and reproducible within the industry standards though ultimate performance of the nozzles in a specific installation may vary slightly due to inherent differences in each tower.

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Revision Date: 05/20/2003

C. E. Shepherd Company

Flow Rates

Shepherd SP Nozzle for Counter Flow Cooling Towers

	NOZZLE SIZE			
PSIG	3/4"	1"	1-1/4"	1-1/2"
0.5	10.20	19.40	31.30	43.20
1.0	14.40	27.50	44.30	61.10
1.5	17.70	33.60	54.30	74.90
Ideal 2.0	**20.40**	**38.80**	**62.70**	**86.40**
2.5	**22.80**	**43.40**	**70.10**	**96.60**
3.0	25.00	47.60	76.70	105.90
3.5	27.00	51.40	82.90	114.30
4.0	28.90	54.90	88.60	122.20
4.5	30.60	58.30	94.00	129.70
5.0	62.30	61.40	99.10	136.70
5.5	33.90	64.40	103.90	143.30
6.0	35.40	67.30	108.50	149.70
6.5	36.80	70.00	113.00	155.80
7.0	38.20	72.70	117.20	161.70
7.5	39.50	75.20	121.30	167.40
8.0	40.80	77.70	125.30	172.90
8.5	42.10	80.10	129.20	178.20
9.0	43.30	82.40	132.90	183.40
9.5	44.50	84.60	136.60	188.40
10.0	45.70	86.80	140.10	193.30
10.5	46.80	89.00	143.60	198.00

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C. E. Shepherd Company

Feed Water Distribution

Shepherd SP Nozzle for Counter Flow Cooling Towers

Orifice Size #3 - (3/4" Diameter)					
1.05%	1.12%	2.63%	1.62%	1.33%	1.30%
1.77%	2.29%	5.92%	5.29%	2.00%	1.38%
2.00%	4.70%	3.99%	4.08%	5.75%	2.27%
2.36%	6.04%	3.49%	4.08%	5.50%	2.17%
1.08%	1.58%	5.89%	7.16%	2.04%	0.88%
0.66%	1.58%	1.22%	1.35%	1.52%	0.92%

Orifice Size #5 (1-1/4" Diameter)					
0.95%	1.38%	2.83%	2.12%	1.83%	0.87%
1.69%	3.24%	3.48%	3.90%	3.67%	1.47%
2.20%	4.08%	5.48%	5.33%	3.75%	2.50%
2.43%	3.57%	5.26%	5.03%	4.65%	2.47%
1.60%	3.04%	4.28%	3.52%	2.74%	0.86%
1.00%	1.10%	2.62%	2.38%	1.80%	0.90%

Orifice Size #4 - (1" Diameter)					
1.27%	1.07%	2.43%	2.03%	1.26%	1.14%
5.30%	3.40%	4.25%	4.45%	3.56%	1.42%
1.99%	4.65%	4.87%	4.93%	4.38%	1.96%
2.66%	4.38%	4.37%	4.68%	4.85%	2.66%
1.38%	2.29%	5.40%	5.34%	2.03%	0.84%
1.19%	1.40%	1.19%	1.59%	1.23%	1.22%

Orifice Size #6 (1-1/2" Diameter)					
3.62%	2.13%	2.86%	2.12%	2.00%	3.68%
1.67%	3.80%	2.63%	3.40%	3.79%	2.23%
1.88%	3.90%	2.67%	2.52%	2.90%	2.23%
2.18%	3.36%	3.23%	3.38%	3.40%	2.51%
1.89%	3.85%	3.48%	2.90%	3.73%	1.29%
3.62%	1.49%	2.09%	2.18%	1.85%	3.56%

Data for charts:

- Line Pressure: Orifices 3, 4 & 5 were tested at 2 PSIG. Orifice 6 as tested at ½ PSIG.
- Distance from orifices to test grid: 18”
- Overall grid size: 32” x 32”
- Cell size: 5.33” x 5.33”

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End of Section

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