/ *Marley Series 10 – Series 15* Cooling Tower /

SPX **Cooling Technologies**

Balcke | Hamon Dry Cooling | Marley

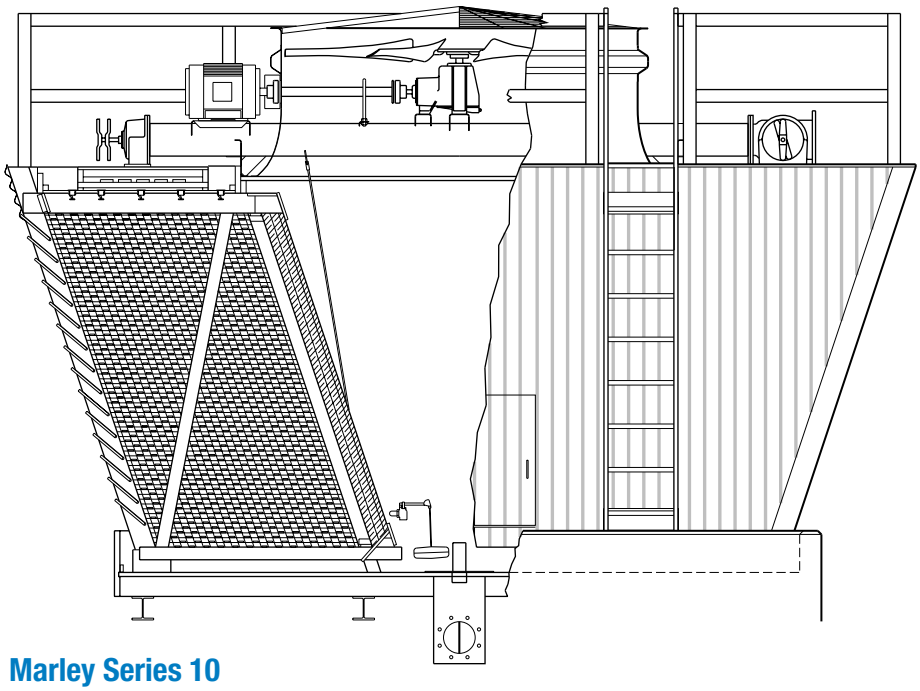
/ *The Marley Difference* /

Series 10 and Series 15 cooling towers are field constructed, splash fill, crossflow wood cooling towers, designed to serve all normal cooling water systems—as well as those “dirty water” systems which would place the long term operation of a film-fill tower in jeopardy. These tower designs have evolved from the crossflow concept of cooling towers pioneered by Marley® in 1938 and incorporate over 65 years of design advancements.

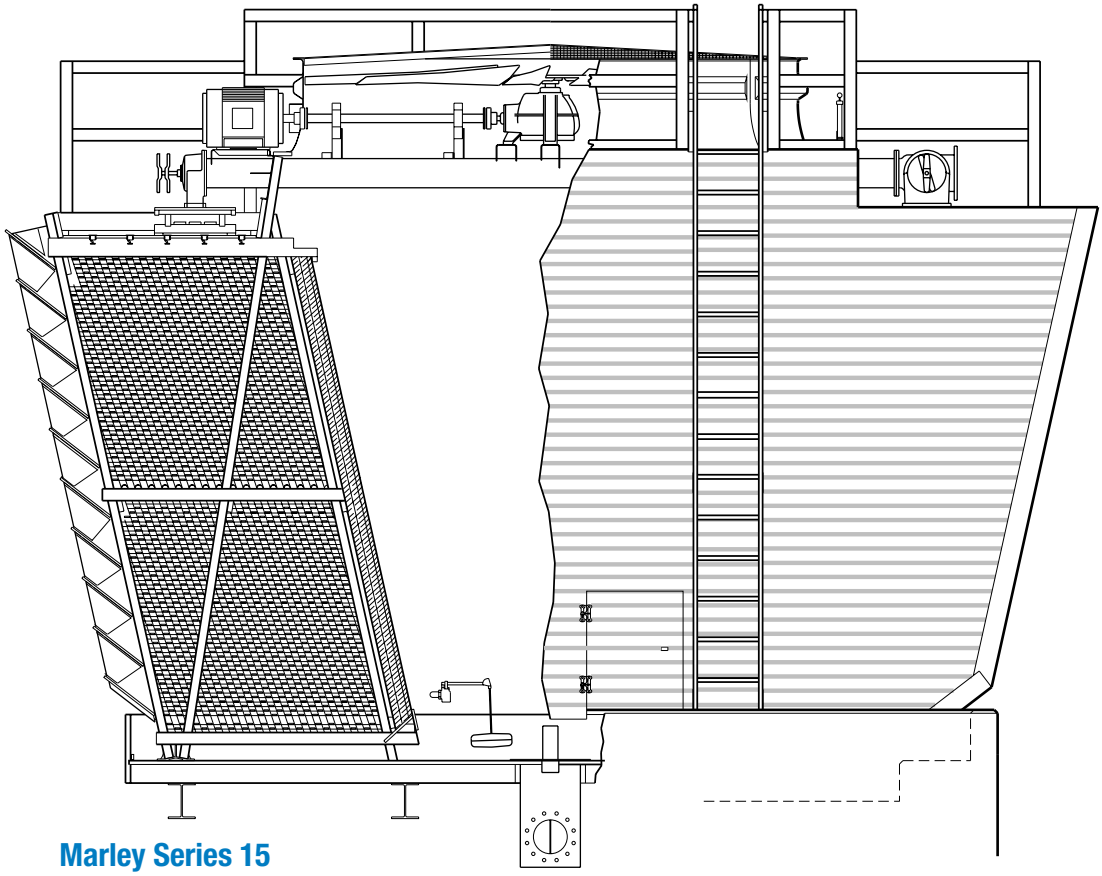
Since 1922, customers have trusted the Marley brand for high quality, dependable products. The principle reason for this reputation is our recognition that each component of a cooling tower must perform at its peak—and all work compatibly toward overall efficiency.

Accordingly, each performance-related component of a Marley cooling tower is designed and manufactured in the context of the overall cooling tower system.

- **Fan Design** is optimized for the static pressure imposition and airflow requirements of the tower.
- **Fan Cylinders** and their associated eased inlets, augment fan operation.
- **Fill and Fan Combinations** are mutually supportive for maximum thermal performance in system configuration.
- **Nozzles and Water Distribution** systems provide uniform fill coverage without excessive contribution to air pressure losses.
- **The Geareducer®** provides consistently optimum fan speeds, and operates reliably in a saturated air/vapor mixture of corrosive nature.
- **Fan Motors** are designed to Marley specifications for extra demands of cooling tower duty. Motors are insulated with extra protection from moisture.
- **Driveshafts** are designed to absorb operational shock loads, thereby increasing the service life of these critical components.



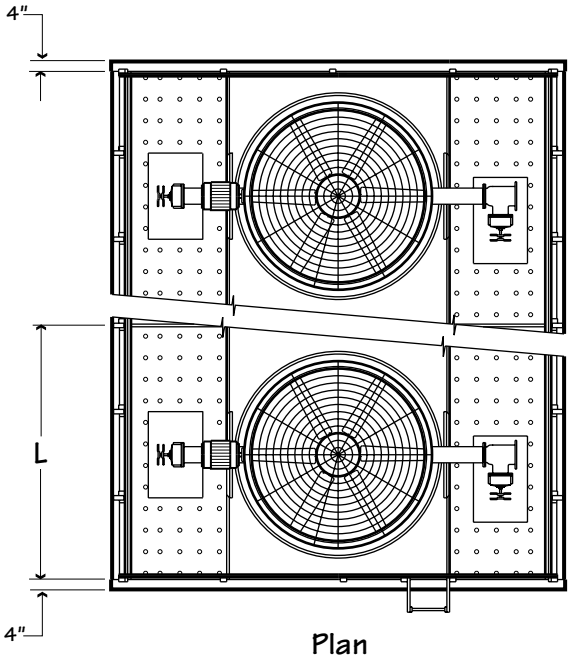
Marley Series 10



Marley Series 15

- **Lower operating costs.** Adjustable pitch fans with true airfoil blades and 98% efficient Geareducer drive assure maximum utilization of applied fan power. Computer optimized fill configurations and low pressure-drop drift eliminators afford maximum cooling with minimum power input. Gravity flow water distribution minimizes pump power requirements.
- **Lower maintenance costs.** Heavy-duty aluminum alloy fans, cast-iron Geareducers, and stainless steel driveshafts require only periodic maintenance. Low-maintenance materials are used throughout the cooling tower. Wide-spaced splash-fill helps prevent clogging. The fill area is readily accessible for cleaning.
- **Five-year drivetrain warranty.** What other manufacturer will guarantee your tower's mechanical equipment for five full years? You'll save valuable equipment maintenance dollars.
- **Proven Performance.** SPX Cooling Technologies stands by its responsibility for reliable thermal performance. We designed it. We rate it. We guarantee it!
- **Single-source parts availability.** All tower components except the electric motors are designed, manufactured, guaranteed, and stocked by Marley. You always know who to call for any parts you need. You're also assured that all components of the cooling tower will work together, because they were designed to work together!
- **Flexible Cooling Capacity.** Twenty-four tower models with capacities to 6720 GPM per fan cell, provide the flexibility to fit almost any job. Greater capacity is available with multiple fan-cells.
- **Extremely Low Drift**. XCEL®plus drift eliminators really get rid of the costly nuisance of drift spotting on objects around the tower. The corrosion resistance of PVC assures you that you'll probably never have to replace eliminators for the life of the tower.
- **Longer Service Life.** Pressure-treated Douglas fir structure and splash-fill bars, FRP fill support grids, PVC drift eliminators, and all other tower components are designed for years of service.

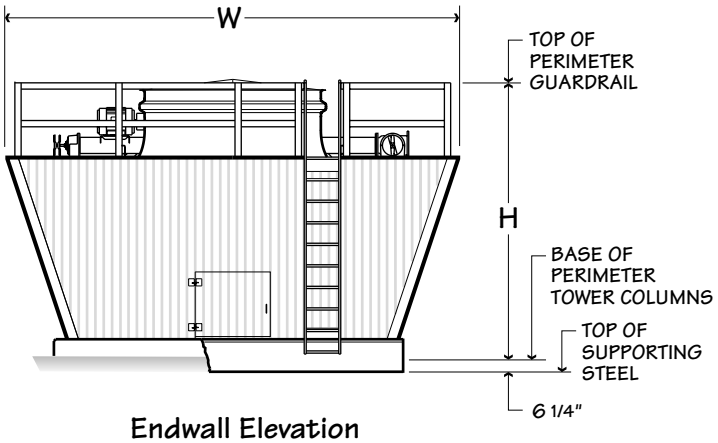
/ Series 10 Schematic /



Plan

△ C A U T I O N

The cooling tower must be located at such distance and direction to avoid the possibility of contaminated tower discharge air being drawn into building fresh air intake ducts. The purchaser should obtain the services of a Licensed Professional Engineer or Registered Architect to certify that the location of the tower is in compliance with applicable air pollution, fire, and clean air codes.

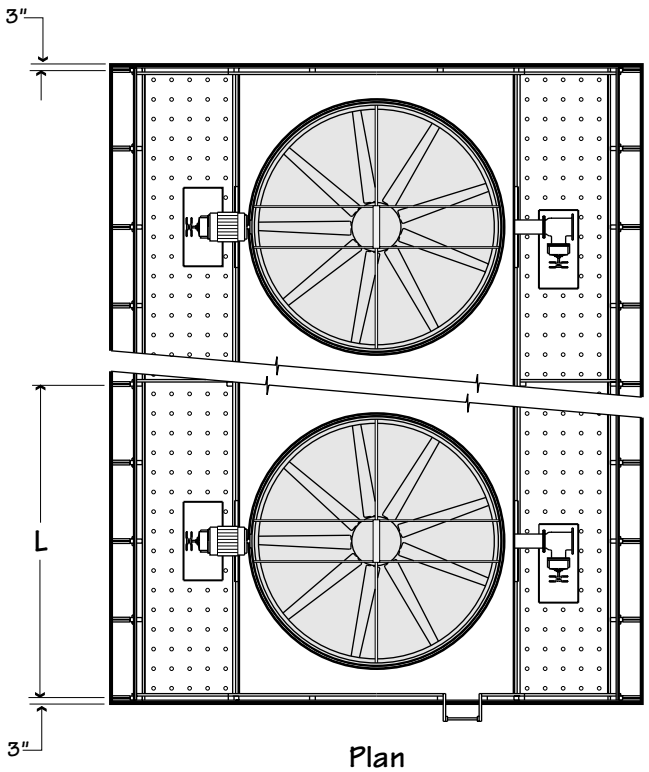


Endwall Elevation

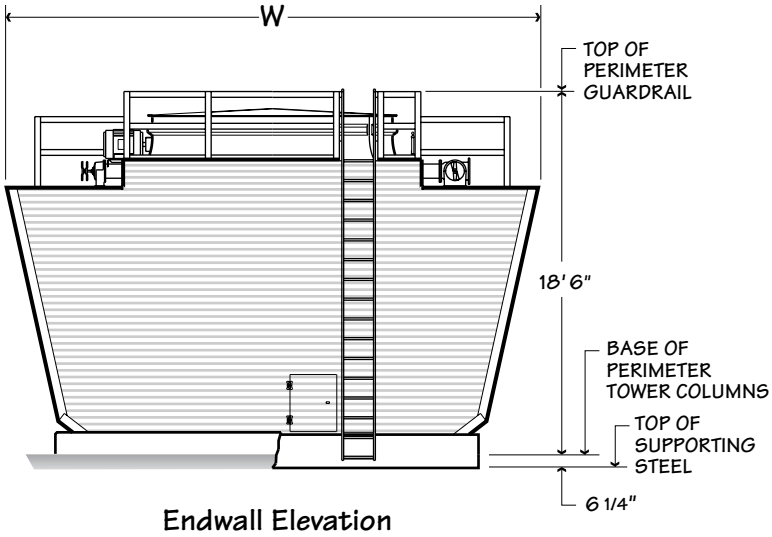
Tower Model Note 1	GPM per Cell	Dimensions			
		L	W	H	Fan diameter
361-101	135-1000	8'-0"	19'-2"	10'-10 ¼"	72"
362-101	165-1235	8'-0"	21'-2"	10'-10 ¼"	72"
363-101	135-1000	8'-0"	19'-2"	12'-10 ¼"	72"
364-101	165-1235	8'-0"	21'-2"	12'-10 ¼"	72"
365-101	190-1455	8'-0"	23'-2"	12'-10 ¼"	72"
366-101	205-1500	12'-0"	21'-2"	10'-10 ¼"	96"
367-101	245-1850	12'-0"	23'-2"	10'-10 ¼"	96"
368-101	205-1500	12'-0"	21'-2"	12'-10 ¼"	96"
369-101	245-1850	12'-0"	23'-2"	12'-10 ¼"	96"
370-101	285-2185	12'-0"	25'-2"	12'-10 ¼"	96"
371-101	270-2000	16'-0"	21'-2"	12'-10 ¼"	96"
372-101	325-2465	16'-0"	23'-2"	12'-10 ¼"	96"
373-101	380-2910	16'-0"	25'-2"	12'-10 ¼"	96"
374-101	340-2500	20'-0"	23'-2"	12'-10 ¼"	120"
375-101	410-3080	20'-0"	25'-2"	12'-10 ¼"	120"
376-101	475-3640	20'-0"	27'-2"	12'-10 ¼"	120"

Note

1. The last number of the model indicates number of cells. Change as appropriate for your selection.
2. Overall length of the tower is: ***fan cells* × *L* + *8***. Primary engineering data is per cell.
3. Tower installations with an elevation of 20'-0" or more from top of the tower fan deck to the grade or roof level require a safety cage on the tower ladder in accordance with OSHA standards. Safety cage is an available option.
4. All tower installations require a minimum of 4'-0" from the tower endwall to any vertical obstruction at the tower ladder location.
5. **Use this bulletin for preliminary layouts only. Do not use for construction.** Obtain current drawings from your Marley sales representative.



Plan



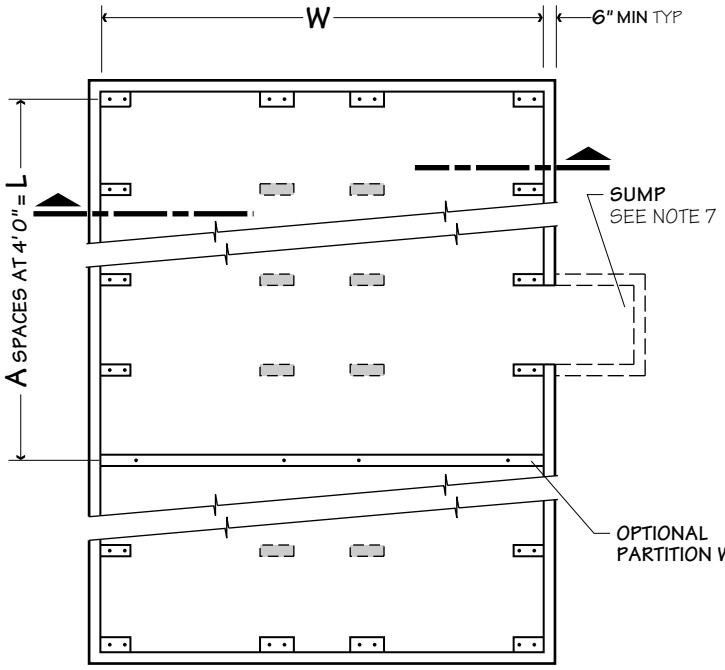
Endwall Elevation

Tower Model Note 1	GPM per Cell	Dimensions		
		L	W	Fan diameter
451-201	201-2400	12'-0"	25'-0"	120"
452-201	270-3200	16'-0"	27'-0"	144"
453-201	340-4000	20'-0"	29'-0"	168"
454-201	410-4800	24'-0"	29'-0"	168"
456-201	285-3360	12'-0"	29'-0"	120"
457-201	380-4480	16'-0"	31'-0"	144"
458-201	475-5600	20'-0"	33'-0"	168"
459-201	570-6720	24'-0"	33'-0"	168"

Note

1. The last number of the model indicates number of cells. Change as appropriate for your selection.
2. Overall length of the tower is: **fan cells × L + 6**. Primary engineering data is per cell.
3. Tower installations with an elevation of 20'-0" or more from top of the tower fan deck to the grade or roof level require a safety cage on the tower ladder in accordance with OSHA standards. Safety cage is an available option.
4. All tower installations require a minimum of 4'-0" from the tower endwall to any vertical obstruction at the tower ladder location.
5. **Use this bulletin for preliminary layouts only. Do not use for construction.** Obtain current drawings from your Marley sales representative.

/ Series 10 Concrete Basin /



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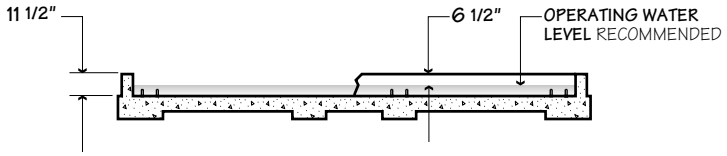
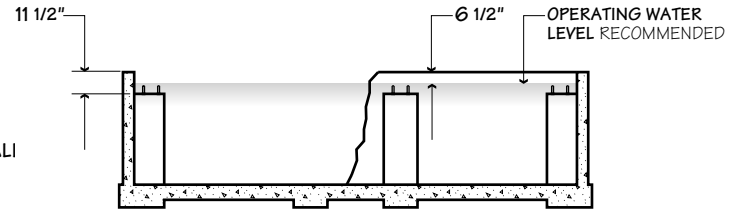


Section–Flat Slab Basin

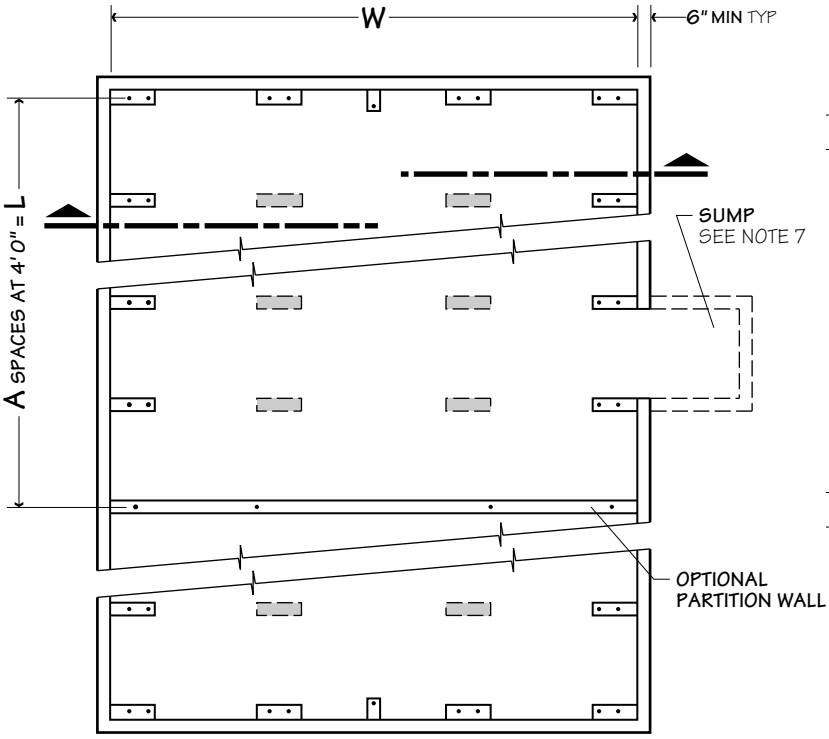


Section–Deep Basin

Tower Model Note 4	Dimensions			Operating Weight lb	
	L	W	A	Single Fan Cell	Each Cell Add
361-101	8'-0"	15'-0"	2	9,240	7,880
362-101	8'-0"	17'-0"	2	10,660	9,160
363-101	8'-0"	13'-0"	2	11,210	9,580
364-101	8'-0"	15'-0"	2	12,690	10,780
365-101	8'-0"	17'-0"	2	14,210	12,140
366-101	12'-0"	17'-0"	3	13,380	11,820
367-101	12'-0"	19'-0"	3	15,440	13,740
368-101	12'-0"	15'-0"	3	16,260	14,370
369-101	12'-0"	17'-0"	3	18,340	16,170
370-101	12'-0"	19'-0"	3	20,540	18,210
371-101	16'-0"	15'-0"	4	20,280	18,400
372-101	16'-0"	17'-0"	4	23,010	20,840
373-101	16'-0"	19'-0"	4	25,870	23,560
374-101	20'-0"	17'-0"	5	25,700	23,650
375-101	20'-0"	19'-0"	5	29,060	26,700
376-101	20'-0"	21'-0"	5	32,580	30,100

Note

1. **Use this bulletin for preliminary layouts only. Do not use for construction.** Obtain current drawings from your Marley sales representative.
2. Tower weight is total wet operating weight of tower only excluding water in concrete basin.
3. Purchaser to design, construct and furnish concrete basin complete to suit the general dimensions of current Marley drawings.
4. Last number of model indicates number of cells. Change as appropriate for your selection. Primary engineering data is per cell.
5. All anchor bolts complete with nut and washer will be furnished by others. Bolts are to be ½" diameter with 1½" all thread projection.
6. Maintain no less than 2'-0" of clear space at tower endwalls for construction purposes. Louvered faces must have unobstructed air supply. If obstructions exist nearby, consult your Marley sales representative.
7. Other contractors or purchaser must design, locate, construct, and furnish sump(s) and overflow(s) to suit requirements. The sump(s) should be designed according to the pump manufacturer's recommendations. Other design sources: ANSI/HI specifications 1.1-1.5 for centrifugal pumps, 2.1-2.5 for vertical pumps, and 9.8 for pump intake design.



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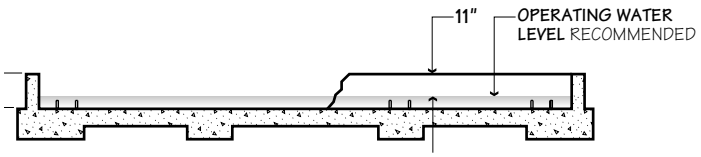
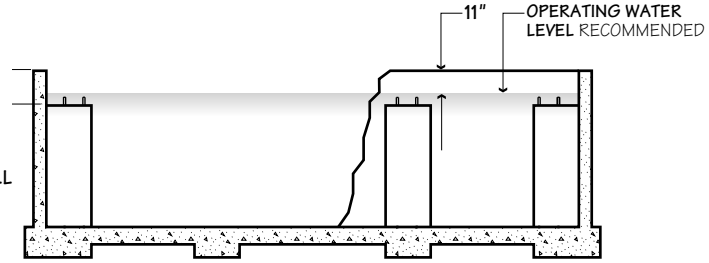


Section–Flat Slab Basin



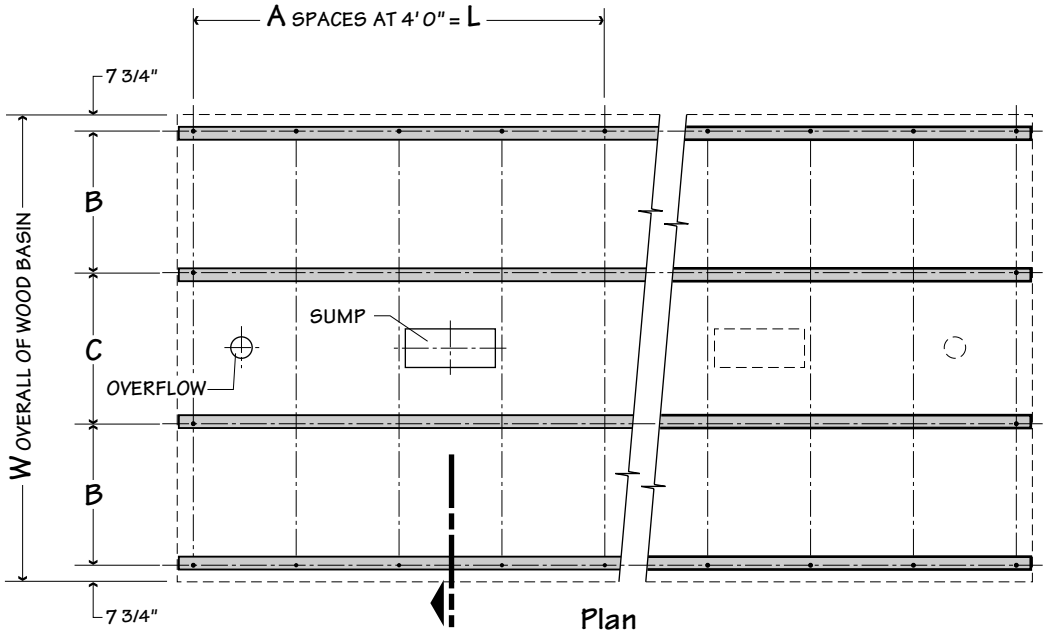
Section–Deep Basin

Tower Model Note 4	Dimensions			Operating Weight lb	
	L	W	A	Single Fan Cell	Each Cell Add
451-201	12'- 0"	18'- 0"	3	28,560	26,460
452-201	16'- 0"	20'- 0"	4	36,280	33,440
453-201	20'- 0"	22'- 0"	5	45,140	41,850
454-201	24'- 0"	22'- 0"	6	52,410	48,900
456-201	12'- 0"	22'- 0"	3	35,060	32,460
457-201	16'- 0"	24'- 0"	4	44,820	41,520
458-201	20'- 0"	26'- 0"	5	55,660	51,900
459-201	24'- 0"	26'- 0"	6	64,960	60,960

Note

1. **Use this bulletin for preliminary layouts only. Do not use for construction.** Obtain current drawings from your Marley sales representative.
2. Tower weight is total wet operating weight of tower only excluding water in concrete basin.
3. Purchaser to design, construct and furnish concrete basin complete to suit the general dimensions of current Marley drawings.
4. Last number of model indicates number of cells. Change as appropriate for your selection. Primary engineering data is per cell.
5. All anchor bolts complete with nut and washer will be furnished by others. Bolts are to be ⅝" diameter with 1½" all thread projection—partition wall anchor bolts must have 3½" projection.
6. Maintain no less than 2'-0" of clear space at tower endwalls for construction purposes. Louvered faces must have unobstructed air supply. If obstructions exist nearby, consult your Marley sales representative.
7. Other contractors or purchaser must design, locate, construct, and furnish sump(s) and overflow(s) to suit requirements. The sump(s) should be designed according to the pump manufacturer's recommendations. Other design sources: ANSI/HI specifications 1.1-1.5 for centrifugal pumps, 2.1-2.5 for vertical pumps, and 9.8 for pump intake design.

/ Series 10 Wood Basin Support /



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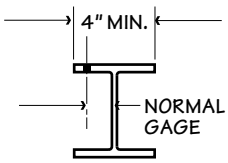
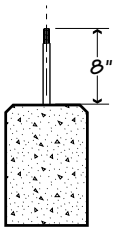


Section–Steel Beam

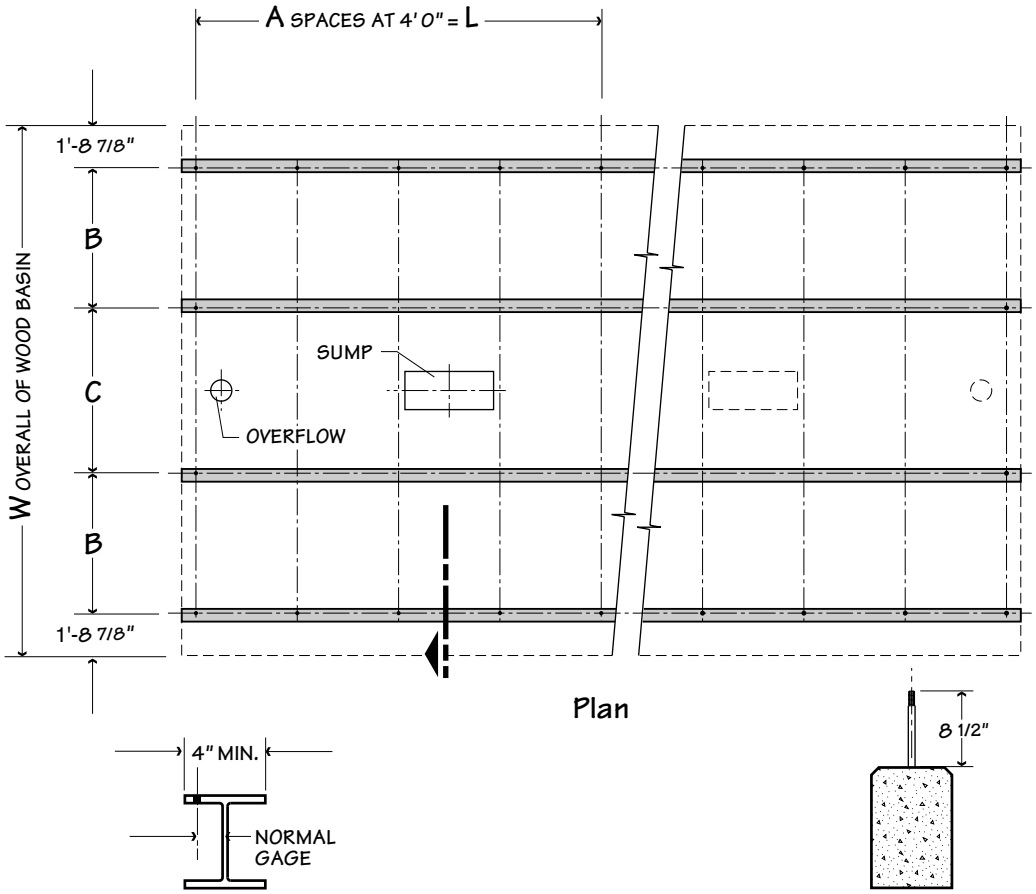


Section–Concrete Beam

Tower Model	Dimensions					Operating Weight lb	
Note 4	L	W	A	B	C	Single Fan Cell	Each Cell Add
361-101	8'-0"	15'-5½"	2	5'-1"	4'-0"	13,980	11,880
362-101	8'-0"	17'-5½"	2	6'-1"	4'-0"	15,990	13,660
363-101	8'-0"	14'-1½"	2	5'-1"	2'-8"	15,520	13,240
364-101	8'-0"	16'-1½"	2	6'-1"	2'-8"	17,640	14,960
365-101	8'-0"	18'-1½"	2	7'-1"	2'-8"	19,720	16,800
366-101	12'-0"	17'-5½"	3	5'-1"	6'-0"	20,960	18,570
367-101	12'-0"	19'-5½"	3	6'-1"	6'-0"	23,880	21,270
368-101	12'-0"	16'-1½"	3	5'-1"	4'-8"	23,240	20,610
369-101	12'-0"	18'-1½"	3	6'-1"	4'-8"	26,220	23,190
370-101	12'-0"	20'-1½"	3	7'-1"	4'-8"	29,240	25,980
371-101	16'-0"	16'-1½"	4	5'-1"	4'-8"	29,390	26,760
372-101	16'-0"	18'-1½"	4	6'-1"	4'-8"	33,260	30,240
373-101	16'-0"	20'-1½"	4	7'-1"	4'-8"	37,230	33,960
374-101	20'-0"	18'-1½"	5	5'-1"	6'-8"	38,300	35,400
375-101	20'-0"	20'-1½"	5	6'-1"	6'-8"	42,940	39,650
376-101	20'-0"	22'-1½"	5	7'-1"	6'-8"[no]	48,100	44,550

Note

1. **Use this bulletin for preliminary layouts only. Do not use for construction.** Obtain current drawings from your Marley sales representative.
2. Operating weights include 5" of water in the collection basin. This is the recommended operating water level. Total collection basin depth is 11⅛".
3. Purchaser to design, construct and furnish tower support complete to suit the general dimensions of current Marley drawings.
4. Last number of model indicates number of cells. Change as appropriate for your selection. Primary engineering data is per cell.
5. If steel beams are used, they must include ⅝" diameter holes to accept ½" diameter anchor bolts provided.
6. If concrete beams or walls are used, ½" diameter anchor bolts with 8" projection and 2" minimum thread must be provided by the contractor or purchaser. Bolts must be imbedded in the concrete.
7. Maintain no less than 2'-0" of clear space at tower endwalls for construction purposes. Louvered faces must have unobstructed air supply. If obstructions exist nearby, consult your Marley sales representative.
8. Except for "**W**" overall of wood basin, all dimensions are to the centerline of the anchor bolts.



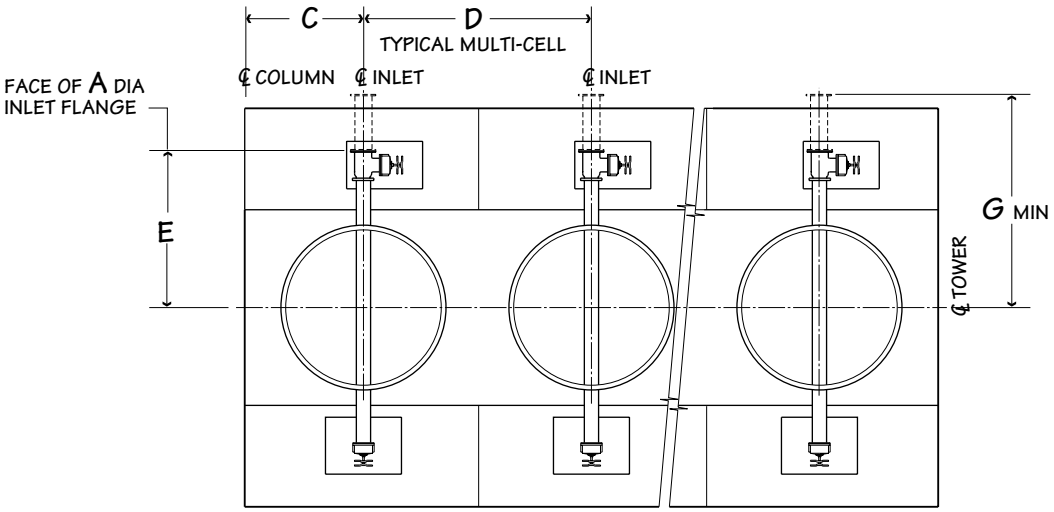
Section–Steel Beam

Section–Concrete Beam

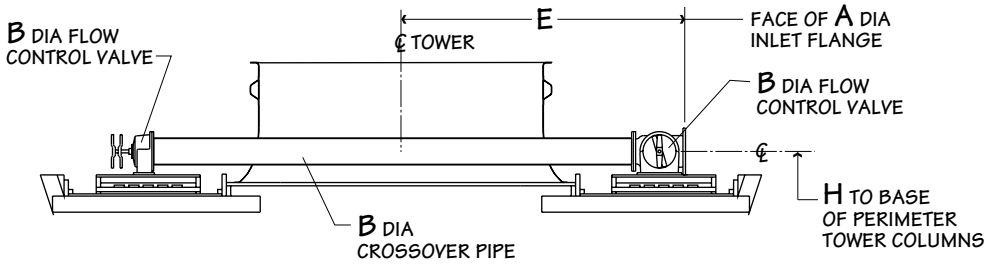
Tower Model	Dimensions					Operating Weight lb	
Note 4	L	W	A	B	C	Single Fan Cell	Each Cell Add
451-201	12'-0"	19'-2"	3	5'-6"	4'-8¼"	37,280	34,110
452-201	16'-0"	21'-2"	4	5'-6"	6'-8¼"	48,700	44,720
453-201	20'-0"	23'-2"	5	5'-6"	8'-8¼"	61,860	57,300
454-201	24'-0"	23'-2"	6	5'-6"	8'-8¼"	72,220	67,440
456-201	12'-0"	23'-2"	3	7'-6"	4'-8¼"	45,560	41,730
457-201	16'-0"	25'-2"	4	7'-6"	6'-8¼"	59,560	54,880
458-201	20'-0"	27'-2"	5	7'-6"	8'-8¼"	75,220	69,950
459-201	24'-0"	27'-2"	6	7'-6"	8'-8¼"	88,090	82,620

Note

1. **Use this bulletin for preliminary layouts only. Do not use for construction.** Obtain current drawings from your Marley sales representative.
2. Operating weights include 1" of water in the collection basin. This is the recommended operating water level. Total collection basin depth is 1'-1¾".
3. Purchaser to design, construct and furnish tower support complete to suit the general dimensions of current Marley drawings.
4. Last number of model indicates number of cells. Change as appropriate for your selection. Primary engineering data is per cell.
5. If steel beams are used, they must include ⅝" diameter holes to accept ¾" diameter anchor bolts provided.
6. If concrete beams or walls are used, ¾" diameter anchor bolts with 8½" projection and 1½" minimum thread must be provided by the contractor or purchaser. Bolts must be imbedded in the concrete.
7. Maintain no less than 2'-0" of clear space at tower endwalls for construction purposes. Louvered faces must have unobstructed air supply. If obstructions exist nearby, consult your Marley sales representative.
8. Except for "**W**" overall of wood basin, all dimensions are to the centerline of the anchor bolts.

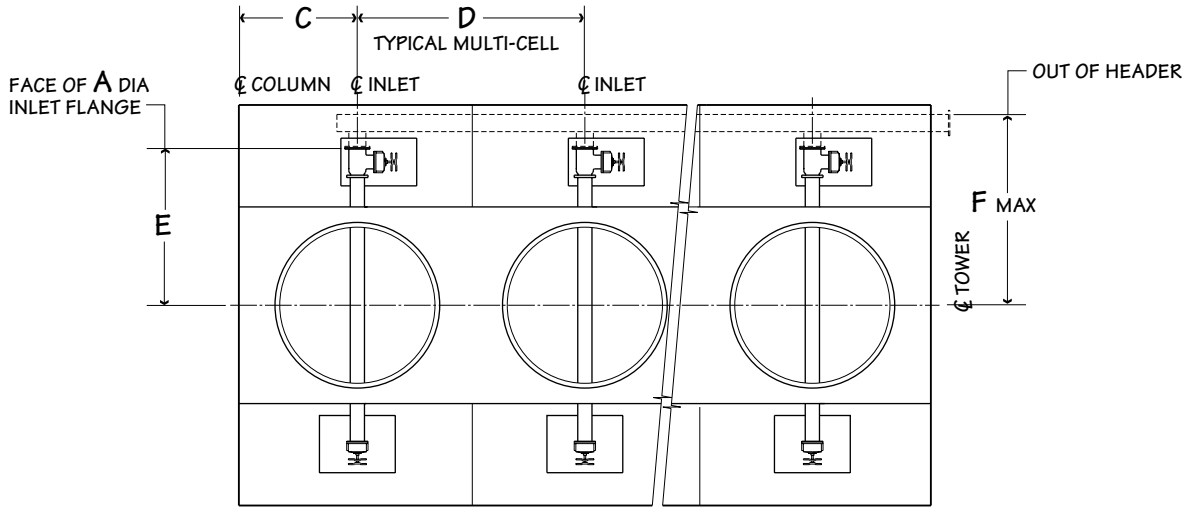


Typical Plan–Side Inlet

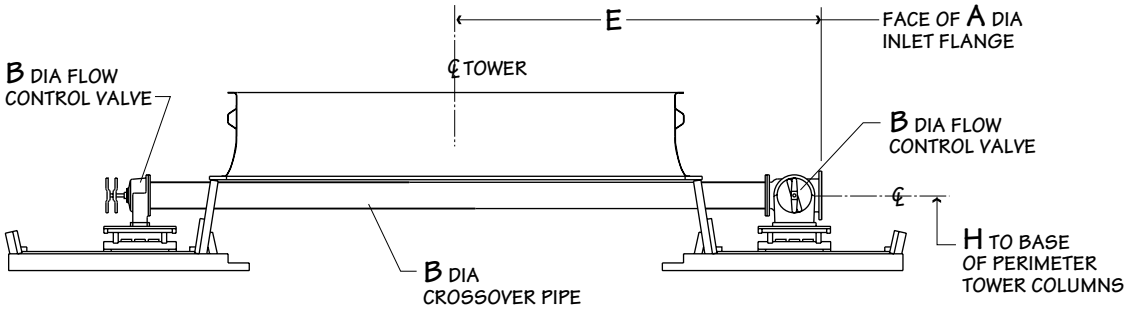


Section–Series 10 Distribution System

Tower Model	GPM per Cell	Dimensions							
		A	B	C	D	E	F	G	H
361-101	135-1000	8"	6"	4'-0"	8'-0"	7'-1"	8'-10 ¾"	10'-7"	7'-10 ½"
362-101	165-1235	8"	6"	4'-0"	8'-0"	7'-1"	9'-10 ¾"	11'-7"	7'-10 ½"
363-101	135-1000	8"	6"	4'-0"	8'-0"	7'-1"	8'-10 ¾"	10'-7"	9'-10 ½"
364-101	165-1235	8"	6"	4'-0"	8'-0"	7'-1"	9'-10 ¾"	11'-7"	9'-10 ½"
365-101	190-1455	8"	6"	4'-0"	8'-0"	7'-1"	10'-10 ¾"	12'-7"	9'-10 ½"
366-101	205-1500	10"	8"	6'-0"	12'-0"	8'-2"	9'-10 ¾"	11'-7"	7'-10 ½"
367-101	245-1850	10"	8"	6'-0"	12'-0"	8'-2"	10'-10 ¾"	12'-7"	7'-11 ½"
368-101	205-1500	10"	8"	6'-0"	12'-0"	8'-2"	9'-10 ¾"	11'-7"	9'-11 ½"
369-101	245-1850	10"	8"	6'-0"	12'-0"	8'-2"	10'-10 ¾"	12'-7"	9'-11 ½"
370-101	285-2185	10"	8"	6'-0"	12'-0"	8'-2"	11'-10 ¾"	13'-7"	9'-11 ½"
371-101	270-2000	10"	8"	8'-0"	16'-0"	8'-2"	9'-10 ¾"	11'-7"	9'-11 ½"
372-101	325-2465	10"	8"	8'-0"	16'-0"	8'-2"	10'-10 ¾"	12'-7"	9'-11 ½"
373-101	380-2910	10"	8"	8'-0"	16'-0"	8'-2"	11'-10 ¾"	13'-7"	9'-11 ½"
374-101	340-2500	12"	10"	10'-0"	20'-0"	9'-2¼"	10'-10 ¾"	12'-7"	10'-0 ½"
375-101	410-3080	12"	10"	10'-0"	20'-0"	9'-2¼"	11'-10 ¾"	13'-7"	10'-0 ½"
376-101	475-3640	12"	10"	10'-0"	20'-0"	9'-2¼"	12'-10 ¾"	14'-7"	10'-0 ½"



Typical Plan–End Inlet



Section–Series 15 Distribution System

Tower Model	GPM per Cell	Dimensions							
		A	B	C	D	E	F	G	H
451-201	201-2400	10"	8"	6'-0"	12'-0"	9'-0 ½"	10'-9"	13'-6"	14'-5 ¾"
452-201	270-3200	10"	8"	8'-0"	16'-0"	10'-0 ½"	11'-9"	14'-6"	14'-5 ¾"
453-201	340-4000	12"	10"	10'-0"	20'-0"	11'-4 ½"	12'-9"	15'-6"	14'-4 ¾"
454-201	410-4800	12"	10"	12'-0"	24'-0"	11'-4 ½"	12'-9"	15'-6"	14'-4 ¾"
456-201	285-3360	10"	8"	6'-0"	12'-0"	9'-0 ½"	12'-9"	15'-6"	14'-5 ¾"
457-201	380-3690	10"	8"	8'-0"	16'-0"	10'-0 ½"	13'-9"	16'-6"	14'-5 ¾"
457-201	3691-4480	12"	8"	8'-0"	16'-0"	10'-6 ½"	13'-9"	16'-6"	14'-5 ¾"
458-201	475-5600	12"	10"	10'-0"	20'-0"	11'-4 ½"	14'-9"	17'-6"	14'-4 ¾"
459-201	570-5300	12"	10"	12'-0"	24'-0"	11'-4 ½"	14'-9"	17'-6"	14'-4 ¾"
459-201	5301-6720	14"	10"	12'-0"	24'-0"	11'-4 ½"	14'-9"	17'-6"	14'-4 ¾"

Note

1. **Use this bulletin for preliminary layouts only. Do not use for construction.** Obtain current drawings from your Marley sales representative.
2. Pumping head contributed by the tower is static lift "**H**". Actual pumping head will vary according to tower circulating GPM. Total pumping head will be furnished at time of proposal.
3. Header should be located opposite fan motor when possible for better distribution of tower loads.
4. Supports on tower for header and crossover pipe are part of the tower design. Riser piping must be supported externally.
5. Marley piping terminates at the face of a cast iron flat face flange. Inlet and bolt circle dimensions conform to class 125 lb. ANSI specifications.
6. If your application requires a bypass system, recommended location is through tower endwall into plenum area. Review of the system by SPX Cooling Technologies engineering is required.

/ Additional Services /

SPX Cooling Technologies is dedicated to satisfying the needs of our customers—needs which begin far in advance of the actual purchase of a new Marley cooling tower, and vary over the operating lifetime of the project. Here is a partial listing of the additional services offered by SPX Cooling Technologies to help you do your job most effectively:

Application/Sizing/Layout Services—Sales Engineers are trained to help you choose the proper type and size of cooling tower, and will guide you in its appropriate location on site. They will also help you write the specifications for its purchase. As the only manufacturer who makes all types of cooling products, SPX Cooling Technologies can offer you a wide range of options to meet your requirements.

Construction Service—We can supply supervision only—or a complete, experienced crew to handle construction.

Parts Service—We maintain a stock of spare parts specific to your Marley tower.

Maintenance Service—In addition to providing complete instructions and continuing guidance, we will provide as much "hands on" maintenance as you require, or will recommend a local service contractor for your consideration.

Condition Inspection Service—From time to time, for your peace of mind, our engineers can give your tower a thorough inspection to evaluate its current condition. This usually allows you to foresee and forestall problems before they become serious.

Reconstruction Service—Due to operating or atmospheric conditions, or age, sooner or later your tower will be in need of repairs above and beyond those categorized as normal maintenance. Our reconstruction service can return your tower to as new condition

Performance Improvement Service—Systems served by cooling towers grow in response to demand for the product produced by that system. Most customers find that they could produce more product if the cooling tower could deliver colder water. Fortunately, cooling tower technology advances with time, and we can apply this increased technology to upgrade your tower's thermal performance.

Tower Replacement Service—Occasionally, customers will benefit from replacing an installed tower, rather than refurbishing it. SPX Cooling Technologies stands ready to assist you in that endeavor—and, in most cases, the replacement will require little or no change to your concrete basin or support structure.

SPX Cooling Technologies
Balcke | Hamon Dry Cooling | Marley

7401 W 129 Street // Overland Park, KS USA 66213 // +1 913 664 7400 // spxcooling@ct.spx.com // **www.spxcooling.com**

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