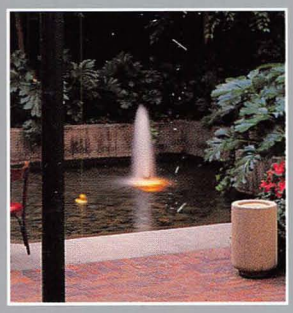
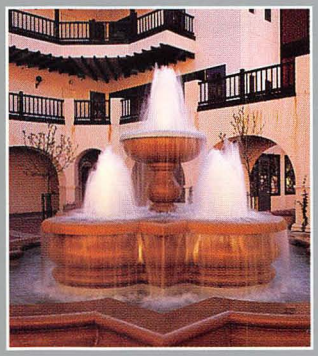
HYDREL

FOUNTAIN EQUIPMENT

COMPONENTS
SYSTEMS
& SERVICES

WATER EFFECTS
Enhancing Man's Environment





No other element is so singularly inviting to man as water. Something inherent in our nature draws us compellingly to seashores, lakes and streams. We stand in awe before great waterfalls, delight in tumbling mountain brooks. Painters instinctively introduce water into their landscapes, and poets create vivid images with such words as cascade,torrent, whirlpool, splash, shower and surf. Water in repose suggests tranquility and rest. In motion, we are fascinated by its power and sounds and endlessly changing patterns. It signifies coolness and refreshment, beauty and delight, even sustenance itself.

Today, contemporary designers skillfully employ water and light to create an ideal mood or atmosphere for virtually any setting. They mirror and complement the serenity of a locale with quiet reflective pools or gently flowing fountains, or add action and movement with tumbling cascades or vertical displays. They may soften ambient noise with the murmur of a stream, or heighten excitement with the rushing sounds of waterfalls. They fashion an aura of coolness with misting sprays, and crown their designs with the shimmer and color of underwater and landscape lighting.

As a leading designer and manufacturer of fountain equipment and lighting for over forty-five years, Hydrel offers this catalog as an aid, check-list and workbook to simplify the creation of enduringly beautiful water effects.

CONTENTS

DESIGN CONSIDERATIONS

Most successful water effects tend to be in harmony with their settings. Such factors as the topography, climate, surrounding architectural entities, pedestrian traffic, etc., must all be considered. The type of pool or reservoir and its space constraints will obviously influence the design of the display, as will local codes and the availability of appropriate materials. Nevertheless, the range and variety of contemporary components allows an unprecedented freedom of creativity in designs.

In general, water effects can be classified as "Moving" or "Still." "Still" units employ reflecting pools, ponds and lakes to suggest tranquility in passive areas or formality in action areas. "Moving" categories included such features as waterfalls and pressurized jets. The form of a waterfall, related to the volume of water available and to the amount of aeration, may range from a thin, unbroken sheet of water to an array of large cascading waterways, sometimes even in tiers. Pressurized jets provide a clear column, an aerated mass, a soft spray or even a sheet of water, and may assume such esoteric configurations as full spherical sprays, "mushroom" jets, spray rings and the like.

As a happy bonus, underwater lighting introduces another dramatic dimension to water, moving or still. It adds shimmer and brilliance to aerated water, which is highly reflective and therefore easily lighted. Pools that in darkness would be simply opaque, glow with depth and luminosity when lighted. And a veritable rainbow of colored lenses can create a nighttime fairyland of motion and color. With water, light, color, motion, sound and feel ... plus his own imagination, the contemporary designer of water effects can fashion a living display of enduring and universal enchantment.

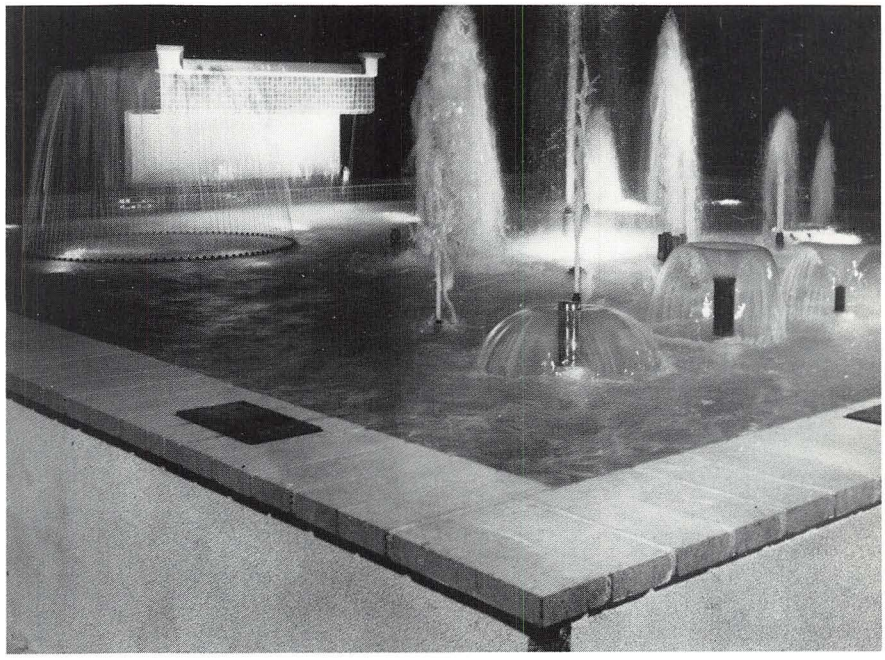
EQUIPMENT

Hydrel has been a leading designer, manufacturer and supplier of fountain equipment for over forty-five years. Our comprehensive line of components includes many which have become standards in the industry... spray rings, aerated jets, cascading jets, smooth bore jets, mushroom jets, spray jets and peacock jets, available in a variety of sizes and combinations. Most of this stock is available "off-the-shelf", and in-plant facilities routinely make custom adjustments or adaptations of basic units. In addition, we maintain the industry's widest selection of underwater and architectural lighting equipment, and a wide variety of pumping and water control units as well.

HYDREL SERVICES

In conjunction with an unsurpassed selection of components, Hydrel offers expert design support for architects and designers. We can supply the mechanical and electrical systems to support their concepts, and even fabricate custom components to meet specific needs. Moreover, we provide a complete testing and demonstration capability in our own 2,000 sq. ft. outdoor pool. This unique facility is equipped with a preplanned system of pumps, valves, fountains, water falls, lighting fixtures and other components, and allows our engineers to interchange or combine units to preview and evaluate their performance, appearance and compatibility.

Our engineering staff is also uniquely qualified to take full design and implementation responsibility for water effects of any scope, including underwater and architectural lighting.



No other company in our industry can offer such integrated services in the production of water effects.

Our policies, facilities and expertise encompass all phases of this field. Our well-earned experience and reputation is your assurance of total and enduring satisfaction.

HYDREL

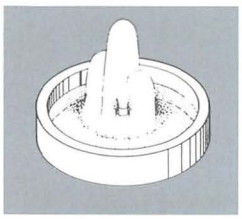
General Guidelines for Fountain Layouts and Selection of Equipment

The size of a pool or reservoir and the size of its water effect are interrelated. The pool must contain a sufficient volume of water to meet the requirements of the effect, and be large enough to contain the splash or wave action it produces. This splash pattern will be approximately as wide as its height, so the pool's minimum diameter should be twice the height of the effect. In addition, jets, fountains and waterfalls require that both flow rates and pressures be adequate to produce the visual effect desired.

Waterfalls have unique flow requirements. A weir depth of ¼" requires a flow of 10 GPM per linear foot of weir. A depth of ½" needs 20 GPM; and a depth of ¾", 30 GPM. The total height of a weir should not exceed the distance from its base to the pool's edge.

For your convenience, 1 cu. ft. of water = 62.4 lbs. (28.3 Kgs.) and 7.48 U.S. Gallons (28.3 Liters) • 1 Meter = 3.28 Ft.

STEP 1 • Determine the effect desired

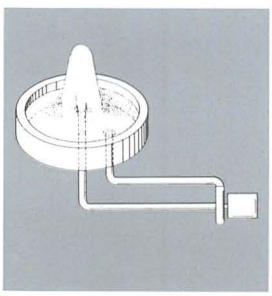


Consider the size of the effect in relation to the size of the pool, the site and surroundings. Most fountain pools are 18" deep, so be sure to provide a sufficient volume of water to produce the effect satisfactorily. (See figures above).

Step 2 • Define size, shape & depth of your pool

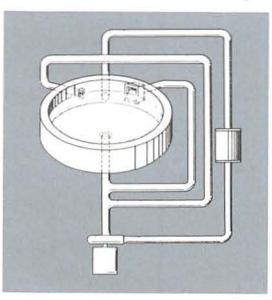
This planning should involve such factors as the pool configuration most suitable for the site, as well as pool location and orientation, the materials you wish to use, the available water supply, etc.

STEP 3 • Choose the proper pump and piping



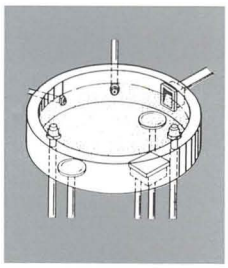
The nature of the effect, the elevations, piping distances, fittings and valves will determine the size of the pump required. Large fountains normally use centrifugal turbines or flooded end pumps, while less expensive, easier to install submersible pumps are specified for smaller effects. For computing pressure, 2.3 Ft. of head is equal to one PSI; 1 Meter of head to 1.4 PSI. **Piping Size:** If 100' of pipe is required to reach pool center, 100 GPM requires a 3" pipe; 200 GPM a 4" pipe; and 300 GPM, a 6" pipe. (For flow of 5 FPS). A 3" pipe provides a flow of 5 FPS maximum, 4" or larger pipe, 10 FPS maximum. **Gravity Return Piping** is usually sized for flow of 2 FPS or less. Sizing is critical, and unusually long runs or changes in elevation must also be considered. **Return Piping:** 3" diameter or less; 5 FPS. 4" or more, 7 FPS maximum. **Gravity Drains and Overflows:** 5 FPS maximum.

STEP 4 • Choose your filters



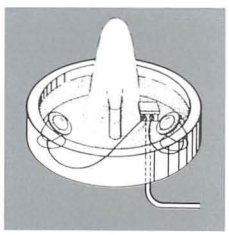
Water clarity and condition is important in all fountains, and most of them use a small recirculating pump and sand filters, with skimmers or floor drains returning the water to the filters. This action can be independent of the water effect. A high rate sand filter area for each 1000 cubic feet of pool area, is normally recommended for larger fountains, with the filter supplied by an independent pump. For filters 30" in dia. or less, this is usually included. Many smaller fountains rely upon the pump filter screen for water clarity, and are simply drained when necessary. When chemical addition is desirable, metering pumps with hypochlorite systems may be used. A reliable pool service to monitor and maintain water clarity and chemistry is often the simplest answer to water treatment concerns.

STEP 5 • Define and locate plumbing for pump and filter systems; locate sensors, lights and junction boxes to be in the pool



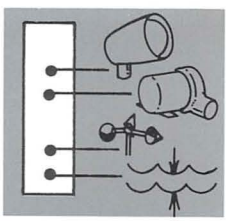
Pumping systems often need antivortex plates for inlet lines, shut-off and flow control valves, and strainers. Filter systems include antivortex plates, inlet fittings, skimmers and vacuum fittings. The electrical systems normally include underwater junction boxes, low water cut-off sensors, water make-up and wind sensors, timers and lighting fixtures.

STEP 6 • Determine your lighting requirements



Lighting may provide overall pool lighting, illuminate key elements and create visual contrast between elements. Underwater units should be located about 2" below the water surface, and may up-light jets, spray rings, cascades, etc. Flood lights accent above-water elements or provide safe area illumination. (See Hydrel's Underwater Lighting Catalog).

STEP 7 • Define the controls



Controls may include such elements as timers for pumping, lighting and filtering operations, as well as motor starters for the pump, water make-up, low water cut-offs and various valves. Weigh the merits of both electro-mechanical and microprocessor controls in this respect.

STEP 8 • Consolidating & locating the equipment

Simple fountains with submersible pumps require a small panel mounted in any suitable location. Larger water effects, pumps, timers, microprocessor controls, electrical panels, fuses, filtration and water conditioning elements and other controls are consolidated and installed in a small building or vault, or on a fenced pad. Local building codes govern location, ventilation, access, etc. See following pages for installations. GFI's to be included in your plans, and no circuit to carry more than four fixtures or 1000 watts.

SYSTEMS • Once the basic design is settled, systems to produce and maintain the display must be worked out. These systems include: **1. The Pumping Systems,** with the jets or water diffusion plates to create the effect; plus the pump water inlet and the required valves and plumbing. **2. The Filtration System,** to keep the water invitingly clean with a recirculating pump, skimmer, vacuum lines, valves and plumbing. (Here elements to provide chemical water treatment are often included). **3. The Electrical Systems,** with sensors to maintain water levels and shut down electrical equipment when water levels are inadequate. Sensors can also shut down or reduce the size of water effects in high winds. Mechanical or microprocessor controls, timers, motor starters, contactors and underwater lighting units are also included.

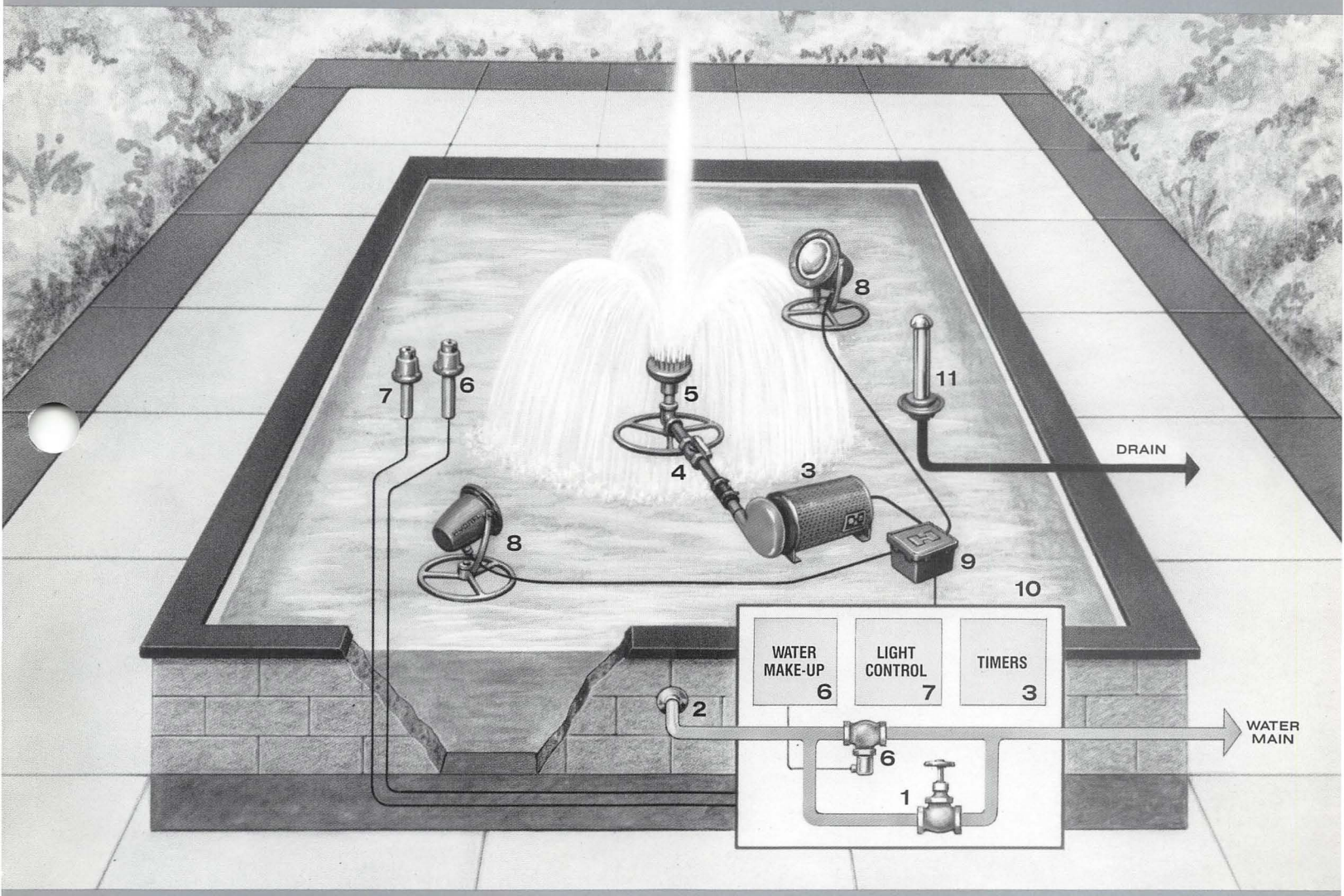
The following three pages illustrate typical component arrangements for a simple fountain with a submersible pump, a large fountain, a waterfall, and illustrations of typical equipment locations.

WATER EFFECTS ARE EASY!

Each project is unique, but fountain technology has evolved over many centuries and the basic principles are well understood, and they apply to nearly all installations. Contemporary components and materials make dramatic effects easily achievable, and offer you virtually unlimited possibilities in design and in long, trouble-free performance as well.

Small effects can be achieved with one of the fountain kits shown in this catalog. Larger, more complex systems are often handled by design firms which assume responsibility for the complete project. Hydrel engineers work constructively with such firms, and our comprehensive line of components simplifies both the planning and the implementation of the effect.

If you prefer to work directly with Hydrel engineers for hydraulic and electrical systems, we offer forty-five years of experience in creating many of the foremost water effects in the world today, and a cooperative, innovative approach to meeting your specific needs. You will find our computer-guided design services particularly helpful. We have a sales representative in your area, who is backed by the full resources of Hydrel.



A SMALL FOUNTAIN WITH A SUBMERSIBLE PUMP

This illustration shows the typical components of a simple, single-effect lighted fountain. The hydraulics must be capable of providing the flow required by the jet, and the power supplied to the electrical control box must be adequate to meet the needs of all electrical components. To contain the water from the effect, the pool's minimum width should be twice the height of the effect. Penetrations are required for the water inlet, drain and electrical conduit.

(1) Water from the main enters through a manually operated gate valve and inlet **(2).**

(3) The submersible pump recirculates the pond water through the effect and its self-contained filter screen.

(4) A small ball valve provides manual control for the effect height.

(5) The jet head for the effect is base mounted.

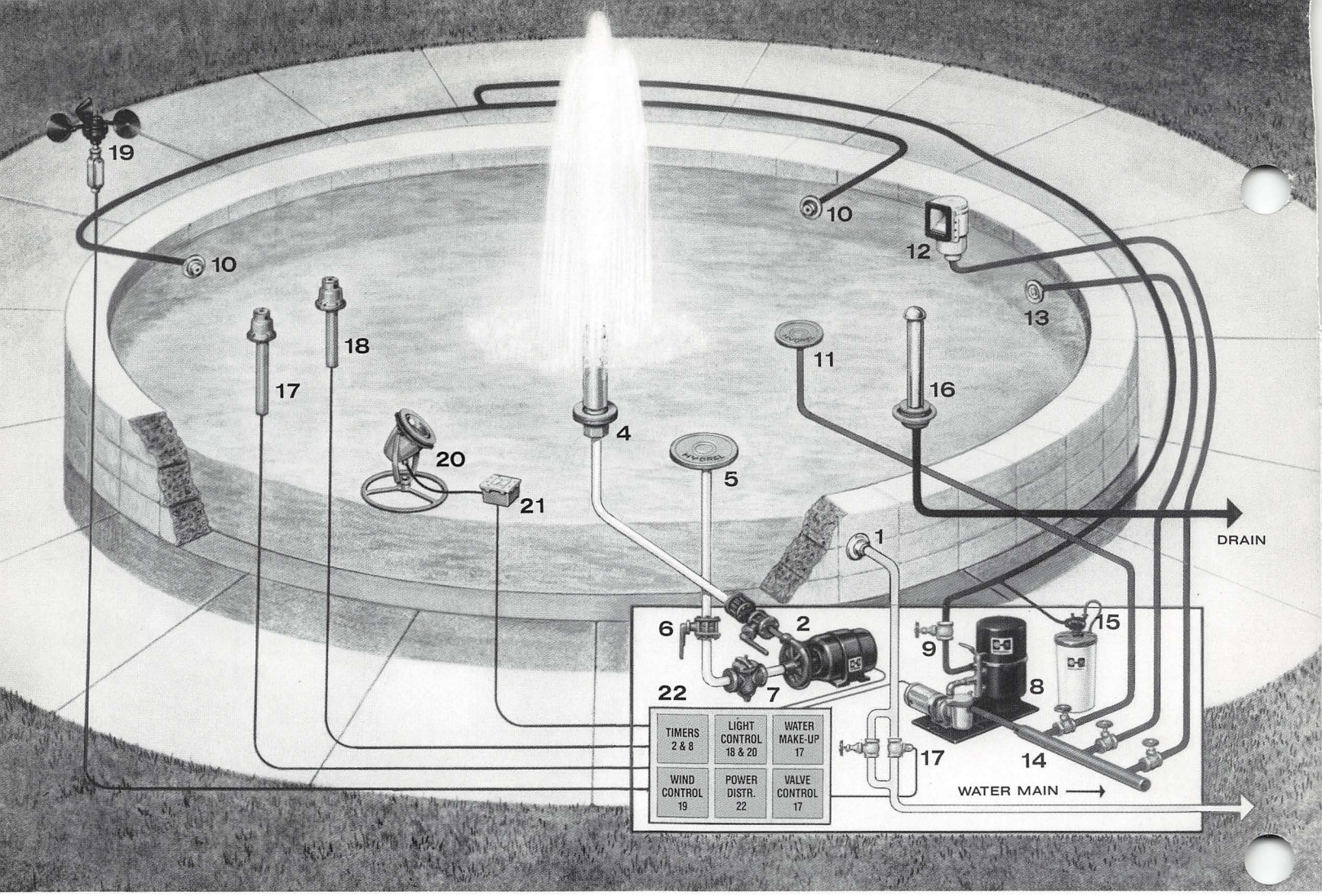
(6) A water makeup unit consists of a sensor, solenoid actuated valve, and control circuitry to add water lost by evaporation. This is set to maintain levels between two depths. Simple float valves are also available for this.

(7) A low water cutoff (LWC-1) senses the water level and turns power off when the underwater lights are not submerged. A number of lights may be protected by this unit. Some underwater lights have self-contained LWC's.

(8) The underwater lights are base mounted, and wired into an underwater junction box **(9)**, with the pump.

(10) The junction box is conduit connected to the control box, which contains the timer for pump control and the lighting controls.

(11) Overflow drain removes rain or excess water; may also be unscrewed to drain pool.



A LARGE FOUNTAIN...

This diagram illustrates the various circuits and components commonly used in a large fountain, including a centrifugal flooded end pump, a filtration and water treatment system, various sensors, underwater lighting and electrical controls.

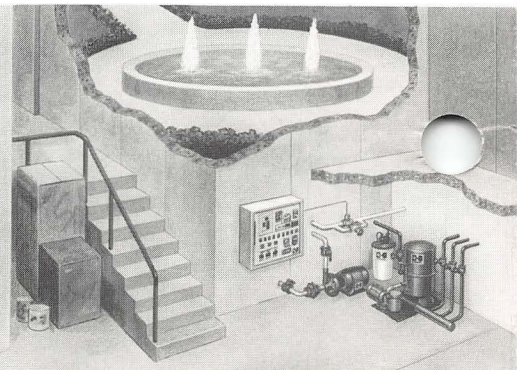
PUMP SECTION – Water is supplied to the pool via a main line and inlet (1), which is controlled by a gate valve for initial filling of the pool. A centrifugal end pump (2) recirculates water through a butterfly valve (3) for adjustment and a jet (4). Water from the jet is contained in the pool and returned to the pump via an anti-vortex plate (5), butterfly isolation valve (6), and strainer (7), for removal of coarse material and protection of the pump.

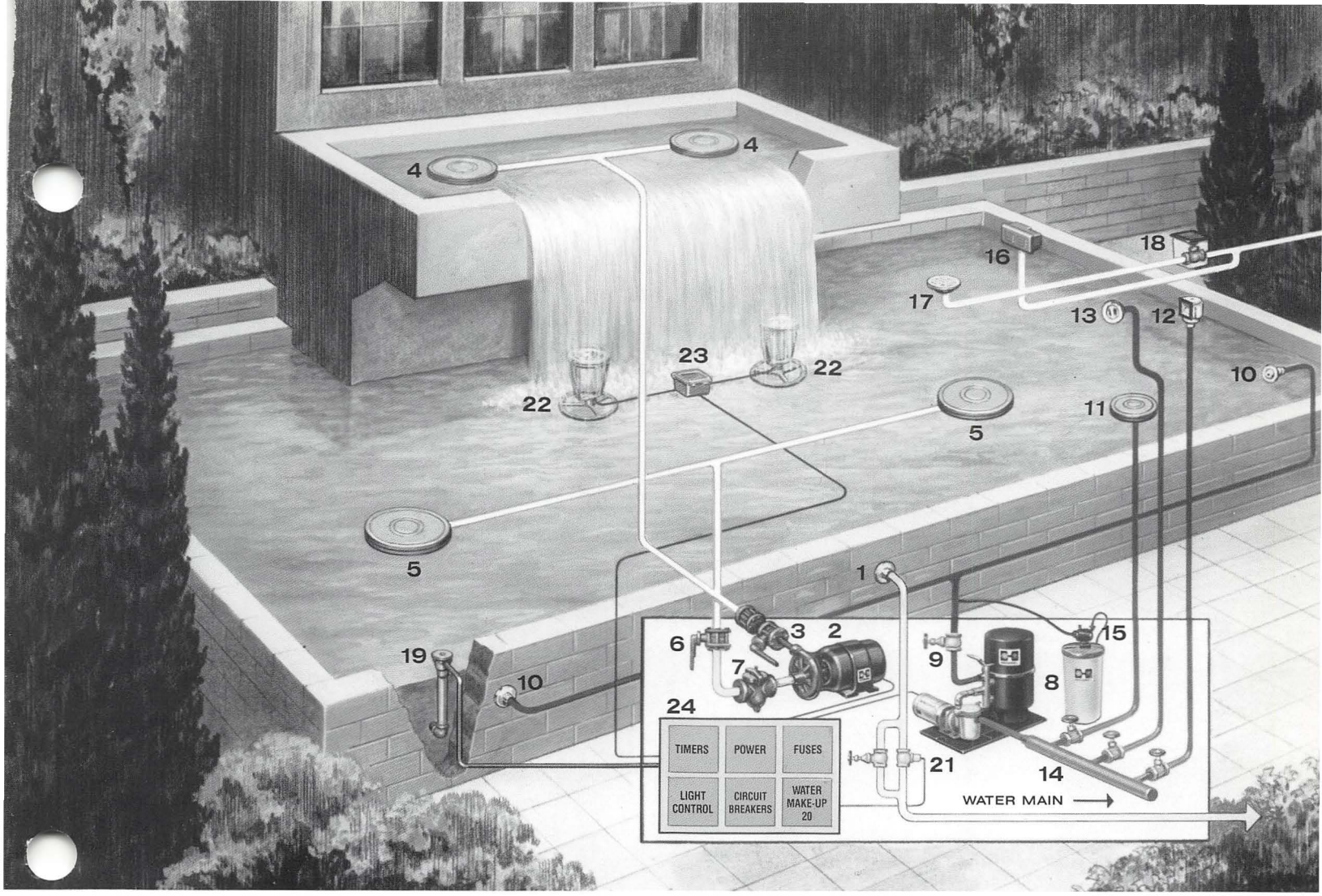
FILTER SECTION – Water is filtered by a sand filter (8), which includes a self-priming pump independent from the main fountain group. Water is returned through a gate isolation valve (9) through adjustable inlets (10), which can be directed to create turbulence in desired areas. Water is returned to the filters via an anti-vortex plate (11), surface skimmer (12), and a vacuum fitting (13); which are connected to a manifold (14). These lines each have isolation gate valves. The manifold is connected to the strainer on a small self-priming pump which recirculates the water from the pool through the filter. Chemical addition is accomplished by use of a small metering pump (15) and tank to supply hypochlorite solution. An overflow drain (16) is set to eliminate rainwater, etc., to prevent overflow. The upper section can be unscrewed to completely drain the pool.

ELECTRICAL CONTROL SECTION – An electric water makeup control replaces water lost to evaporation, splashing, etc. This sensor and control actuate a solenoid valve (17) on the main water line to maintain water level. A low water cutoff control (18) monitors water level and cuts off electrical power to lighting fixtures if they are not immersed. A wind control (19) monitors wind conditions and can shut down or reduce the flow to the jet at preset wind conditions. The underwater lighting fixture (20) is a base mounted unit connected to an underwater junction box (21) by underwater cable. The junction box is conduit-connected to the control box, and completely potted to prevent leakage. The light is controlled by a timer or sequencer. The main control box (22) houses the timers, light controls, water makeup and wind controls. In addition, it is the center for power distribution to various components and contains circuit breakers, fuses, motor starters, etc.

FOUNTAIN PUMPING, FILTRATION AND CONTROL EQUIPMENT is normally grouped in an area near the pool, and the location of this area depends upon the fountain site, the availability of space, climactic conditions, aesthetics, the location of the water main, etc. Shown at right are typical solutions. If it is necessary to house the equipment at a considerable distance from the fountain, piping loss can necessitate the use of larger piping or greater pumping capacity.

VAULTS may be poured concrete or prefabricated units of concrete or fiberglass. Your contractor can usually form poured concrete units to meet site requirements and satisfy local codes.





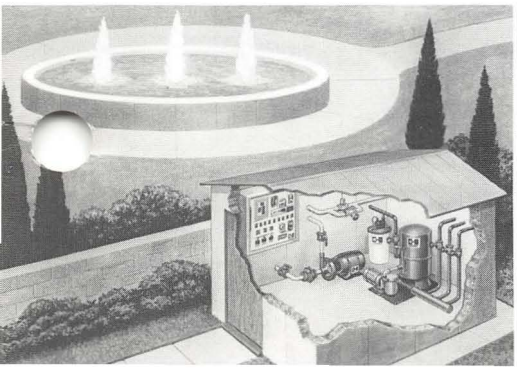
A WATERFALL...

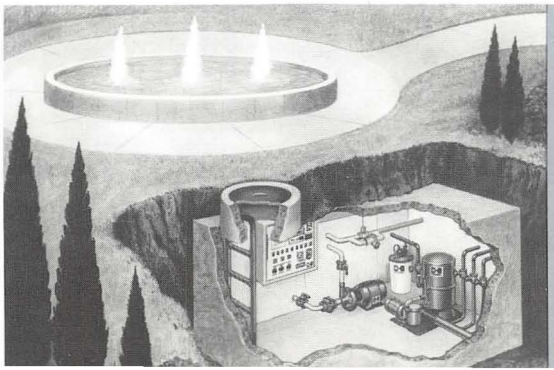
This diagram illustrates the circuits and components that are commonly used in the daily operation of a typical waterfall; including a centrifugal flooded end pump, a filtration and water treatment system, underwater lighting and the necessary electronic sensors and controls.

PUMP SECTION – Water is supplied via a main line and inlet (1) which is controlled by a gate valve for initial filling at the pool. A centrifugal end pump (2) recirculates water through a butterfly valve (3) for adjustment to diverter plates (4) located in the upper pool which evenly spread the water for smooth flow over the weir (waterfall). Water from the lower pool is returned to the pump via antivortex plates (5), a butterfly isolation valve (6) and a strainer (7), for removal of coarse material and protection of the pump.

FILTER SECTION – Water is filtered by a sand filter (8), which includes a self-priming pump independent from the main fountain group. Water is returned through a gate isolation valve (9) and, adjustable inlets (10), which can be directed to create turbulence in desired areas. Water enters the filter via an anti-vortex plate (11), surface skimmer (12), and a vacuum fitting (13); all connected to a manifold (14). Each of these lines has an isolation gate valve. The manifold is connected to the strainer on a small self-priming pump which recirculates the water from the pool through the filter. Chemical addition is accomplished by use of a small metering pump (15) on a tank which supplies hypochlorite solution. An overflow drain (16) is set to eliminate rainwater, etc., to prevent overflow. The pool can be drained via the floor drain (17), which is controlled by a valve in the valve box.

ELECTRICAL CONTROL SECTION – An electronic water makeup control replaces water lost to evaporation, splashing, etc. This sensor (19) and control (20) actuates a solenoid valve (21) on the main water line to maintain water level. Probes in the sensor are set to detect high and low water limits. The underwater lighting fixtures (22) are base mounted and connected to an underwater junction box (23) by underwater cable. The junction box is conduit-connected to the control box (24), and completely potted to prevent leakage. The fixtures contain integral low water cutoffs. The lights are controlled by a timer or sequencer. The main control box (24) houses the timers for valve and pump operation, light controls, and water makeup controls. In addition, it is the center for power distribution to various components and contains circuit breakers, fuses, motor starters, etc.

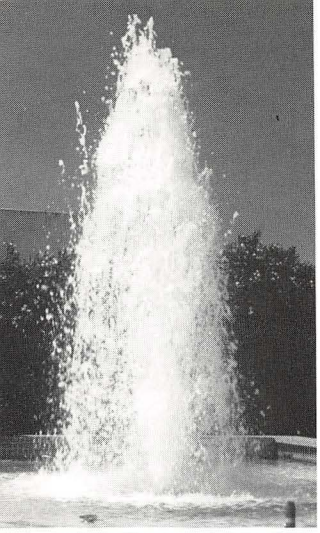




ILLUSTRATED AT LEFT ARE:

- A TYPICAL BASEMENT INSTALLATION
- A SMALL SHED on a CONCRETE PAD
- AN UNDERGROUND CONCRETE VAULT

For the simplest fountains, the pump station is often installed on a concrete pad and protected by a fence or a shed.

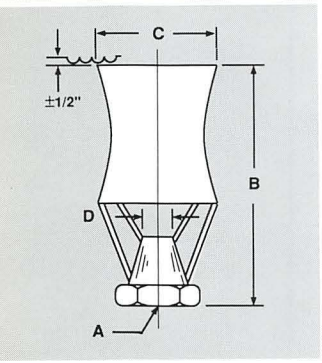


• FOUNTAIN COMPONENTS

CASCADE JETS • These fixtures produce a highly aerated, conical water pattern. The line pressure sustains the central core of the cone, while the outer surface gradually tapers from peak to base. The frothy texture of the plume is highly reflective and creates a most dramatic effect when lighted.

SPECIFICATIONS • **JET:** Shall be cast bronze with machined orifice. **FINISH:** Shall be natural bronze. • **JET BASE:** Female NPT threads. **JET LOCATION:** Plus or minus ½ inch from water level.

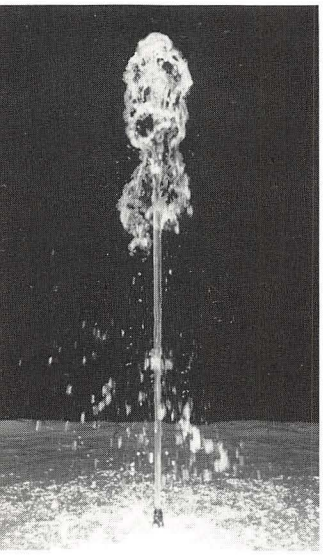
PART NUMBER	DIMENSION			
	A	B	C	D
CAS-75	3/4" NPT	4-7/8"	2"	27/64"
CAS-150	1-1/2" NPT	9"	3-1/2"	23/32"
CAS-300	3" NPT	14"	7"	1-1/4"



PART NUMBER CAS-75	12' HEAD Ht. Dia. GPM	19' HEAD Ht. Dia. GPM	23' HEAD Ht. Dia. GPM	32' HEAD Ht. Dia. GPM	35' HEAD Ht. Dia. GPM	46' HEAD Ht. Dia. GPM	49' HEAD Ht. Dia. GPM
	2' 8" 10	3' 1' 15	4'6" 1'6" 18	6' 2' 22	7'6" 2'6" 24	9' 3' 26	11' 3' 28

PART NUMBER CAS-150	12' HEAD Ht. Dia. GPM	19' HEAD Ht. Dia. GPM	25' HEAD Ht. Dia. GPM	35' HEAD Ht. Dia. GPM	44' HEAD Ht. Dia. GPM	50' HEAD Ht. Dia. GPM	56' HEAD Ht. Dia. GPM
	2' 1" 35	4' 1'6" 45	6' 2' 53	8' 2'6" 60	10' 3' 65	13' 3'6" 77	15' 4' 80

PART NUMBER CAS-300	42' HEAD Ht. Dia. GPM	49' HEAD Ht. Dia. GPM	63' HEAD Ht. Dia. GPM	83' HEAD Ht. Dia. GPM	102' HEAD Ht. Dia. GPM	125' HEAD Ht. Dia. GPM
	8' 3'6" 180	10' 4' 200	15' 5' 230	20' 6' 280	25' 7' 320	30' 8' 345



SMOOTH BORE JETS • Fixed and Adjustable Position

DESCRIPTION:

These units feature heavy duty Smooth Bore nozzles designed to produce a high, straight stream of water with minimal tearing within a designated height.

The Adjustable unit can be adjusted through a wide range of angles by means of a ball and swivel base.

ADJUSTABLE SMOOTH BORE PART. NO.	FIXED SMOOTH BORE PART. NO.	FLOW CHARACT.	SPRAY HEIGHT									
			10'	20'	30'	40'	50'	60'	70'	80'	90'	100'
ASB-100	FSB-10	GPM	12	18	22	24						
		HD	14	27	40	53						
ASB-150	FSB-15	GPM	30	45	56	66						
		HD	14	27	40	53						
ASB-200	FSB-20	GPM	52	81	104	120	135					
		HD	14	27	40	53	66					
ASB-300	FSB-30	GPM	62	103	145	180	205	225	240			
		HD	14	27	40	53	66	80	93			
N/A	FSB-40	GPM	105	185	250	305	350	385	405	445	465	
		HD	14	27	40	53	66	80	93	105	120	
N/A	FSB-50	GPM	285	310	440	525	600	670	740	785	825	885
		HD	14	27	40	53	66	80	93	105	120	136

ADJUSTABLE

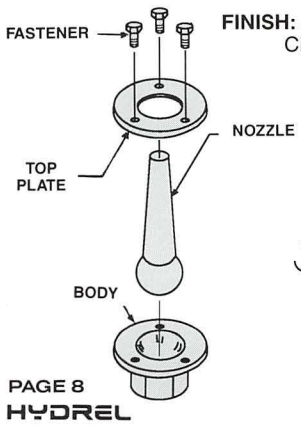
SPECIFICATIONS:

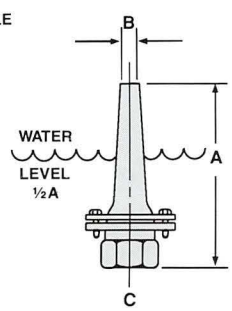
JET: Shall be cast bronze with machined inner surface.

JET BASE: NPT thread.

ADJUSTMENT: Three silicone bronze or stainless steel fasteners retain a top locking ring which sets a ball and socket swivel base assembly at any angle within 15° of vertical.

FINISH: Shall be natural bronze. Chrome plating available on special order (Add "CP" suffix).





PART NUMBER	DIMENSIONS		
	A	B	C
ASB-100	5-1/4"	3/8"	1"
ASB-150	6-3/4"	5/8"	1-1/2"
ASB-200	8"	7/8"	2"
ASB-300	11-1/4"	1-1/8"	3"

FIXED

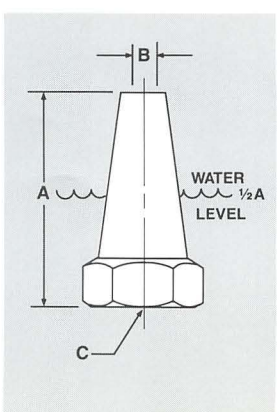
SPECIFICATIONS:

JET: Shall be cast bronze with machined inner surface.

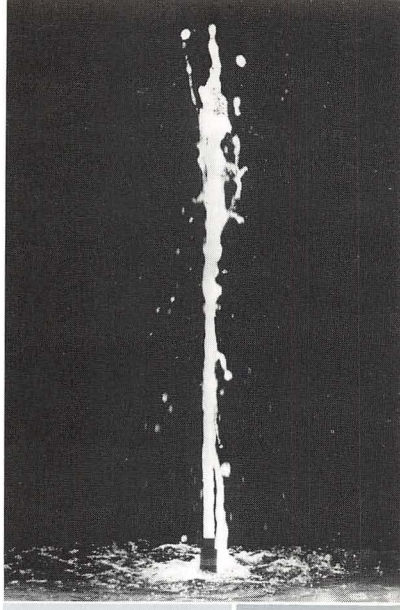
JET BASE: NPT thread.

FINISH: Shall be natural bronze. Chrome plating is available on special order. (Add "CP" suffix).

PART NUMBER	DIMENSIONS		
	A	B	C
FSB-10	4-1/2"	3/8"	1"
FSB-15	5-1/2"	5/8"	1-1/2"
FSB-20	6-1/2"	7/8"	2"
FSB-30	10-1/2"	1-1/8"	3"
FSB-40	11-1/2"	1-1/2"	4"
FSB-50	13-1/2"	2"	5"



AERATING JETS, ADJUSTABLE



These fixtures produce a column of aerated water which is highly reflective and easily enhanced with lighting. The inner nozzle is surrounded by an adjustable outer shell which can be set to provide different rates of aeration.

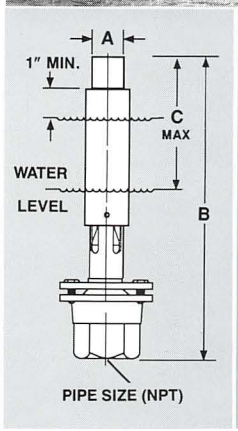
SPECIFICATIONS:

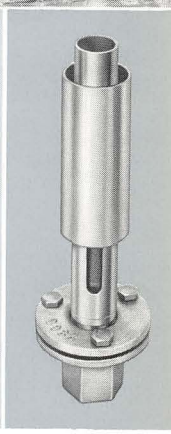
JET: Outer shell and main jet shall be constructed of heavy brass stock. The main jet is slotted and the outer shell is retained by set screws to adjust the aeration level. The body and locking ring are cast bronze.

JET BASE: Shall be cast bronze ball and socket construction with brass locking plate retained by three silicone brass or stainless steel fasteners. Base is female NPT threads.

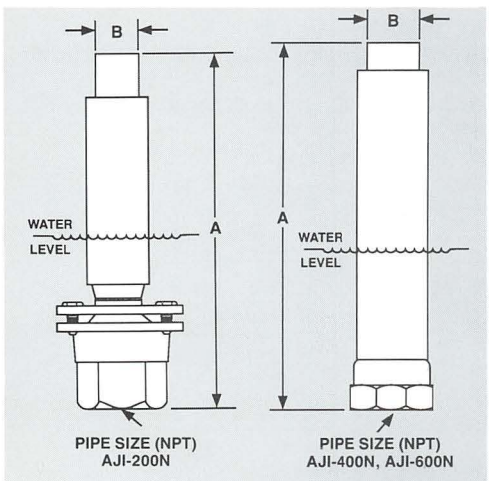
FINISH: Shall be natural brass and bronze.

PART NUMBER	A DIM.	B DIM.	C DIM.	PIPE SIZE	REQUIREMENTS	SPRAY HEIGHT															
						2'	3'	4'	5'	6'	8'	10'	12'	15'	20'	25'	30'	35'	40'	45'	50'
AJ-500	1/2"	7-1/2"	2-1/2"	1/2"	GPM	3.5	4	4.5	5	5.5	6										
					Head	15	18	24	31	35	46	55									
AJ-750	3/4"	8-1/2"	2-3/4"	3/4"	GPM	4.5	5.5	6	7	8	9	10									
					Head	15	18	20	24	29	35	44									
AJ-1000	1"	10-1/2"	3-1/2"	1"	GPM			9.5	10	11	12	14	15								
					Head			24	29	31	39	48	58								
AJ-1250	1-1/4"	12-1/2"	4"	1-1/4"	GPM			10	12	14	17	19	21								
					Head			15	18	24	41	48	59								
AJ-1500	1-1/2"	14-1/2"	5"	1-1/2"	GPM				21	23	25	28	31	34	37	58	71	80			
					Head				18	24	32	41	46	55	69	83	89	100			
AJ-2000	2"	17-1/4"	5-1/4"	2"	GPM				22	25	34	40	44	50	58	62	70	78	85		
					Head				24	30	38	44	52	60	72	80	88	96	104		
AJ-2250	2-1/4"	19"	5-1/2"	2-1/2"	GPM					28	35	40	44	51	61	72	88	93	100		
					Head					28	35	41	45	56	69	80	89	95	101		
AJ-2500	2-1/2"	20-3/4"	6-1/2"	2-1/2"	GPM					42	52	60	64	70	90	98	106	112	118	125	145
					Head					29	39	45	52	60	75	86	91	99	103	107	114
AJ-2750	2-3/4"	21-1/2"	8"	3"	GPM					58	65	69	73	90	100	115	135	148	170	177	180
					Head					33	43	46	51	60	71	80	88	97	105	110	115





WATER LEVEL INDEPENDENT AERATION JET



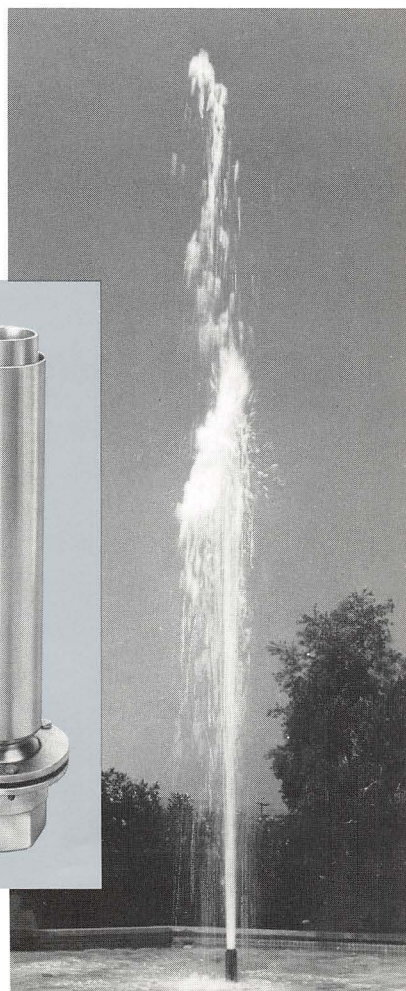
These units produce a column of highly aerated water which reflects light effectively. It consists of an outer sleeve which provides an air passage, and a perforated inner nozzle. It is unaffected by minor changes in water levels.

SPECIFICATIONS:

JET: The outer shell and main jet shall be constructed of heavy brass stock.

JET BASE: The jet base and retainer shall be cast bronze. AJI-400N and AJI-600 shall be fixed and have female NPT threads. AJI-200N shall be of cast bronze ball and socket construction, with a brass locking plate retained by three silicone brass or stainless steel fasteners for adjustment. The base is female, NPT threaded.

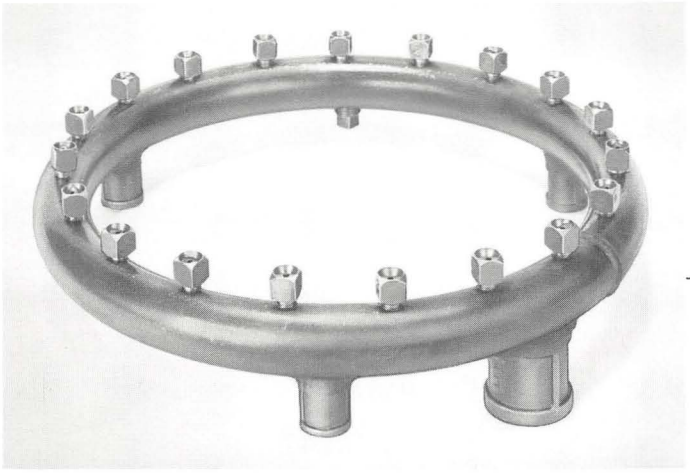
FINISH: Shall be natural brass and bronze.



PART NUMBER	DIMENSIONS			FLOW CHARACT.	SPRAY HEIGHT									
	A	B	NPT		10'	20'	30'	40'	50'	60'	70'	80'	90'	100'
AJI-200N	17-1/4"	2"	2"	HD	20	28	40	50	75	90	107	115	125	144
				GPM	65	110	150	198	280	330	360	385	415	460
AJI-400N	22"	3.5"	4"	HD		35	50	70	85	95	105	120	140	175
				GPM		205	250	350	400	440	465	485	550	600
AJI-600N	24"	5"	6"	HD			43	55	68	85	CONSULT FACTORY			
				GPM			495	570	600	710				

FOUNTAIN SPRAY RINGS, Adjustable Position Jets

Hydrel Spray Rings are constructed of red brass pipe and sized to provide maximum efficiency. They are fitted with precision-tapered bore,brass jets and a brass flush-out plug, and are complete with adjustable height legs, connecting hose coupling and clamps. The Adjustable Jet Spray Ring models permit an angle adjustment of the jets up to 15⁰ from vertical.



Water patterns available are: Vertical Fall, Inside Fall, Outside Fall, Cross Fall and Cross Pattern.

The maximum height of the water pattern from the ring may be determined from the charts below.

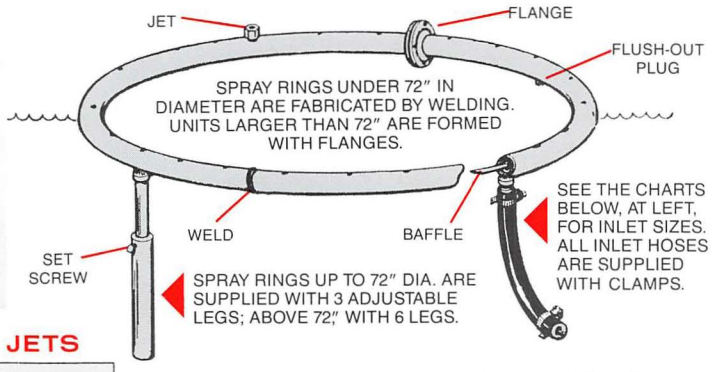
SPECIFICATIONS:

RING: Red brass pipe, fitted with brass jets and flush-out plug.

JETS: Brass, tapered smooth bore NPT base. (Other models are available upon request).

RING SUPPORT: Depending upon the size of the ring, 3 to 6 adjustable legs of red brass pipe. Flange not required for 3 leg units.

RING: Location: At or above water level. Jets above wave action.



For special applications, Hydrel builds rings of virtually any size and dimension, and to accommodate any type of nozzle.

FOUNTAIN SPRAY RINGS • FIXED POSITION JETS

PART NUMBER	RING DIA.	PIPE SIZE	NO. JETS	INLET SIZE	JET ORIFICE	REQUIREMENTS	SPRAY HEIGHT 2'	3'	4'	5'	6'	8'	10'	12'	14'	16'
FSR-6	6"	3/4"	14	3/4"	.093	GPM	5	6	7	8	10					
						Head	4	5	6	8	10					
FSR-8	8"	3/4"	22	3/4"	.093	GPM	7	8	9	10	12					
						Head	4	5	6	8	10					
FSR-12	12"	1"	24	1"	.093	GPM	7.5	9	10	12	14					
						Head	4	5	6	8	10					
FSR-14	14"	1-1/4"	32	1-1/4"	.093	GPM	8	10	12	14	16					
						Head	4	5	6	8	10					
FSR-16	16"	1-1/4"	38	1-1/4"	.093	GPM	9	11	14	16	19					
						Head	4	5	6	8	10					
FSR-18	18"	1-1/4"	42	1-1/4"	.093	GPM	10	13	16	18	22					
						Head	4	5	6	8	10	11	15	18		
FSR-24	24"	1-1/4"	56	1-1/4"	.093	GPM	11	15	18	21	24	28	30	33		
						Head	4	5	6	8	10	11	15	18		
FSR-30	30"	1-1/4"	69	1-1/4"	.093	GPM	15	20	24	28	30	34	38	41	48	54
						Head	4	5	6	8	10	11	15	18	22	26
FSR-36	36"	1-1/4"	83	1-1/4"	.093	GPM	18	23	29	32	35	41	44	48	57	63
						Head	4	5	6	8	10	11	15	18	22	26
FSR-48	48"	1-1/4"	110	1-1/4"	.093	GPM	24	31	39	43	47	55	59	65	77	85
						Head	4	5	6	8	10	11	15	18	22	26
FSR-54	54"	1-1/4"	123	1-1/4"	.093	GPM	28	37	45	50	54	60	66	70	84	94
						Head	4	5	6	8	10	11	15	18	22	26
FSR-60	60"	1-1/4"	138	1-1/4"	.093	GPM	31	43	50	55	59	65	71	76	89	100
						Head	4	5	6	8	10	11	15	18	22	26
FSR-72	72"	1-1/2"	124	1-1/2"	.125	GPM	40	49	60	68	76	87	95	108	120	135
						Head	4	5	6	8	10	11	15	18	22	26
FSR-120	120"	1-1/2"	206	1-1/2"	.125	GPM	78	98	128	148	169	189	201	220	240	260
						Head	4	5	6	8	10	11	15	18	22	26

FOUNTAIN SPRAY RINGS • ADJUSTABLE JETS

PART NUMBER	RING DIA.	PIPE SIZE	INLET SIZE	JET ORIFICE	REQUIREMENTS	SPRAY HEIGHT 3'	4'	5'	6'	7'	8'	'9	10'	11'	12'	13'	14'	15'
ASR-24N	24"	1-1/4"	38	.110	GPM	16	20	22	24	27	29	31	33	35	37	39	41	44
					Head	5	6	8	9	11	12	14	15	17	18	20	21	23
ASR-30N	30"	1-1/4"	48	.110	GPM	20	24	27	30	33	36	39	42	45	47	49	51	53
					Head	5	6	8	9	11	12	14	15	17	18	20	21	23
ASR-36N	36"	1-1/4"	56	.110	GPM	24	29	32	36	39	42	46	49	52	55	58	61	64
					Head	5	6	8	9	11	12	14	15	17	18	20	21	23
ASR-48N	48"	1-1/4"	75	.110	GPM	32	38	43	48	53	58	62	65	70	75	80	84	88
					Head	5	6	8	9	11	12	14	15	17	18	20	21	23
ASR-60N	60"	1-1/4"	95	.110	GPM	40	49	55	61	67	73	78	83	88	93	98	103	108
					Head	5	6	8	9	11	12	14	15	17	18	20	21	23
ASR-72N	72"	1-1/4"	114	.110	GPM	49	58	66	73	80	87	94	100	107	114	121	128	135
					Head	5	6	8	9	11	12	14	15	17	18	20	21	23
ASR-96N	96"	2"	54	.172	GPM	75	81	87	92	97	102	108	113	119	130	135	146	157
					Head	5	6	8	9	11	12	14	15	17	18	20	21	23
ASR-120N	120"	2"	60	.203	GPM	114	120	132	138	150	156	168	174	186	198	210	216	222
					Head	5	6	8	9	11	12	14	15	17	18	20	21	23
ASR-144N	144"	3"	72	.203	GPM	137	144	158	167	180	187	201	209	223	238	252	260	266
					Head	5	6	8	9	11	12	14	15	17	18	20	21	23
ASR-168N	168"	3"	72	.203	GPM	137	144	158	167	180	187	201	209	223	238	252	260	266
					Head	5	6	8	9	11	12	14	15	17	18	20	21	23
ASR-192N	192"	3"	72	.234	GPM	209	216	230	238	252	266	281	302	317	338	360	367	382
					Head	5	6	8	9	11	12	14	15	17	18	20	21	23
ASR-216N	216"	3"	72	.234	GPM	209	216	230	238	252	266	281	302	317	338	360	367	382
					Head	5	6	8	9	11	12	14	15	17	18	20	21	23

SMALL ADJUSTABLE JETS

The ASB Type Jets are small, tapered, adjustable, smooth bore nozzles, designed for use with spray rings or other installations; to produce curved or arched columns of clear water not to exceed 12 ft. in height.

SPECIFICATIONS:

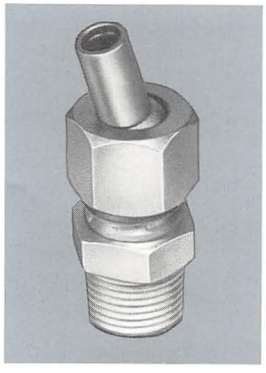
NOZZLE: machined brass with a tapered orifice.

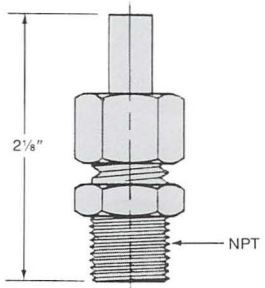
NOZZLE BASE: Male NPT threads.

ADJUSTMENT: Shall be adjustable 15⁰ from the vertical position in both directions for ASB-013-110. The ASB-038's shall be adjustable 15⁰ from the vertical in a 360° axis.

FINISH: Shall be natural brass.

PART NUMBER	CONN. NPT	ORIFICE DIA.	NOZZLE LENGTH	REQUIREMENTS	SPRAY HEIGHT 2'	4'	6'	8'	10'	12'
ASB-013-110	1/8	.110	7/8"	GPM	.45	.52	.65	.76	.88	1.0
				Head	4	6	9	12	15	18
ASB-038-156	3/8	.156	2-1/2"	GPM	.63	1	1.3	1.4	1.6	1.8
				Head	4	6	9	12	15	16
ASB-038-187	3/8	.187	2-1/2"	GPM	1	1.7	2	2.2	2.7	3.1
				Head	4	6	9	12	15	16





ASB-038-156 • ASB-038-187

NOTE: Hydrel reserves the right to change any specifications without notice

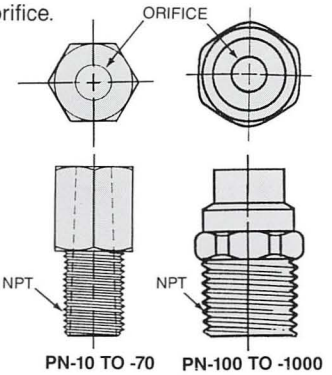
PN TYPE JETS • These jets are small, inexpensive, tapered smooth bore nozzles, designed for use with spray rings or other installations where straight clear columns of water are desired, at heights up to 12 ft.

NOTE: The maximum efficient height varies with the orifice size, and for best results, the larger "PN" jets should be used for higher streams.

SPECIFICATIONS:

JET: Shall be machined brass with tapered orifice.

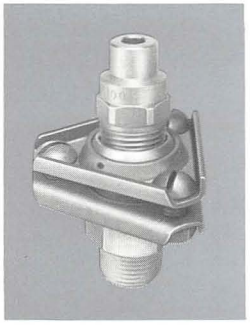
JET BASE: Male NPT threads.



PN-10 TO -70 PN-100 TO -1000

PART NUMBER	PIPE CONN.	ORIFICE DIA.	NOZZLE LENGTH	REQUIREMENTS	SPRAY HEIGHT 2'	4'	6'	8'	10'	12'
PN-10	5/16-18	.093	3/4"	GPM	.25	.4	.5	.55	.6	.65
				Head	3	6	9	12	14	17
PN-20	5/16-18	.125	3/4"	GPM	.4	.7	.9	1.0	1.1	1.2
				Head	3	6	9	12	14	17
PN-40	1/4"	.156	1"	GPM	.63	.95	1.2	1.3	1.5	1.7
				Head	3	6	9	12	14	17
PN-55	1/4"	.172	1"	GPM	1.4	1.5	1.7	1.9	2.1	2.5
				Head	3	6	9	12	14	17
PN-70	1/4"	.203	1"	GPM	1.1	1.7	2.1	2.4	2.7	2.9
				Head	3	6	9	12	14	17
PN-100	3/8"	.234	1-1/4"	GPM	1.6	2.4	2.9	3.4	3.8	4.1
				Head	3	6	9	12	14	17
PN-120	3/8"	.250	1-1/4"	GPM	1.9	2.8	3.4	4.0	4.5	4.8
				Head	3	6	9	12	14	17
PN-200	1/2"	.328	1-1/2"	GPM	3.2	4.7	5.7	6.5	7.4	8.1
				Head	3	6	9	12	14	17
PN-350	3/4"	.438	2"	GPM	5.5	7.8	10.0	11.4	14.0	17.1
				Head	3	6	9	12	14	17
PN-1000	1"	.750	2-3/4"	GPM	15.8	21	26	31	34	37
				Head	3	6	9	13	14	17

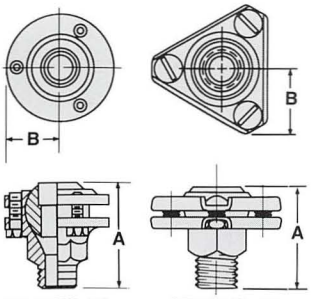
ADJUSTABLE FLANGES • Designed for use with the "PN" Jets where universal adjustability is required, these units are also used with other small diameter jets which require adjusting. They provide a maximum adjustment of 20° from the vertical axis.



SPECIFICATIONS:

BODY: Shall be machined brass ball and socket. The base socket is supplied with male NPT threads, and the ball assembly with female NPT threads.

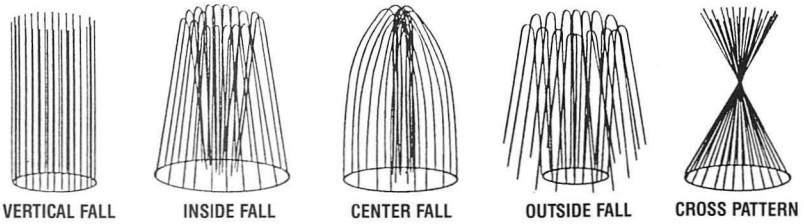
ADJUSTMENT: Three silicone bronze or stainless steel fasteners retain a top locking plate to the base plate, and permit an adjustment of up to 20° from the vertical axis.



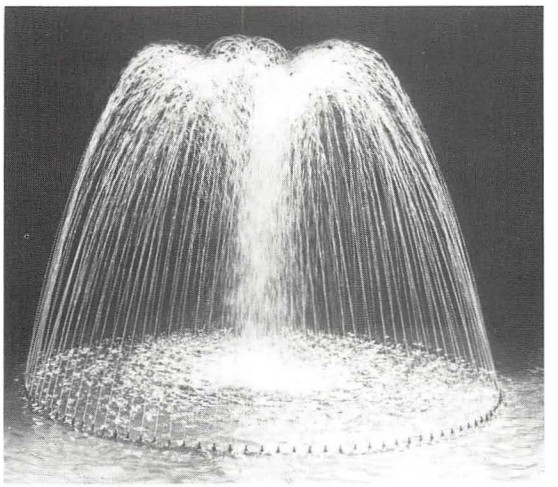
AF-17 TO -19 AF-10 TO -16

PART NUMBER	INLET NPT (MALE)	OUTLET NPT (FEMALE)	DIMENSIONS A	B
AF-10	1/4"	1/8"	1-1/4"	3/4"
AF-11	1/4"	1/4"	1-9/16"	1"
AF-12	3/8"	1/4"	1-9/16"	1"
AF-13	3/8"	3/8"	1-9/16"	1"
AF-14	1/2"	3/8"	1-9/16"	1"
AF-15	1/2"	1/2"	2 - 3/8"	1-1/2"
AF-16	3/4"	3/4"	3 - 1/2"	1-1/2"
AF-17	1"	1"	3 - 1/2"	1-13/16" Rad.
AF-18	1-1/4"	1-1/4"	5 - 1/8"	1-13/16" Rad.
AF-19	1-1/2"	1-1/4"	5 - 1/4"	1-13/16" Rad.

SPRAY PATTERNS • Illustrated are five commonly used water patterns. Actual photos show rings with inside and vertical falls. Each jet is illustrated below to show the tight, laminar stream required for beautiful spray ring applications.

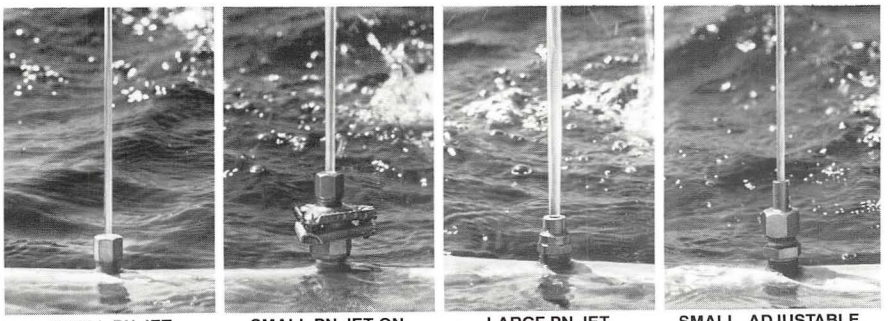


VERTICAL FALL INSIDE FALL CENTER FALL OUTSIDE FALL CROSS PATTERN



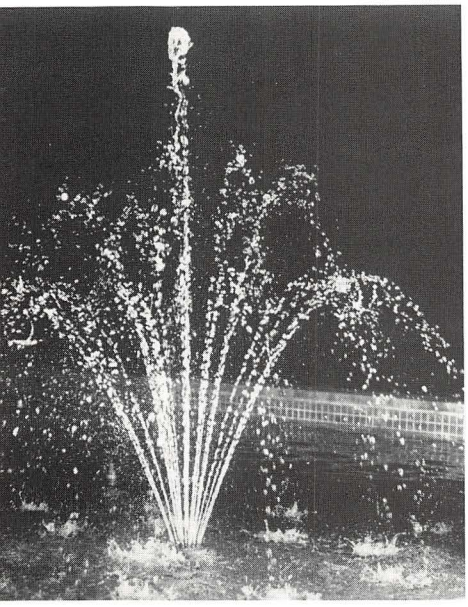
INSIDE FALL

OUTSIDE FALL



SMALL PN JET | SMALL PN JET ON ADJUSTABLE FLANGE | LARGE PN JET | SMALL, ADJUSTABLE SMOOTH BORE JET

FLEUR-DE-LIS JETS • These fixtures produce a graceful multiple tiered pattern of distinct streams to create a flower effect. They are equally effective when used as single units or as separate elements of more elaborate fountain designs.

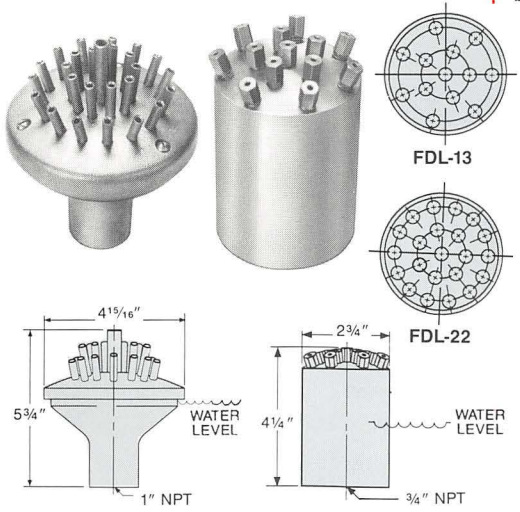


SPECIFICATIONS: (FDL-13 & 22)

JET: Single piece brass with threaded nozzle.

JET BASE: Shall be ¾″ female NPT threads.

FINISH: Shall be natural brass.



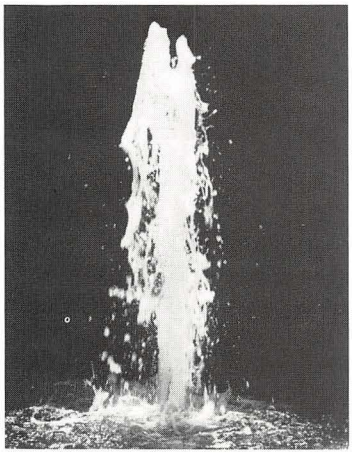
SPECIFICATIONS: (FDL-26)

JET: 2-piece bronze construction. Top section contains pressed-in-place brass nozzles, and is retained in the base section by three silicone brass or stainless steel fasteners.

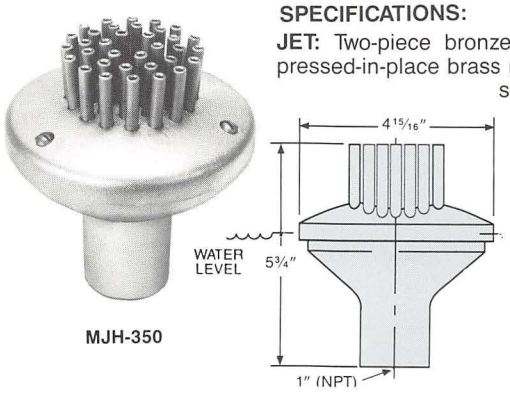
JET BASE: Shall be 1″ female NPT threads.

FINISH: Shall be natural brass and bronze.

PART NUMBER	PIPE SIZE	NO. OF JETS	REQUIREMENTS	DIMENSIONS 1'	2'	3'	4'	5'	6'	7'	8'	9'	10'
FDL-26	1"	26	GPM			16	19	23	26	28	30	34	38
			Head			5	6	7	8	10	12	14	17
			Spray Dia.			5'	6'	7'	8'	9'	11'	12'	14'
FDL-13	3/4"	13	GPM	3	5	7	8	10	11	12	13	15	17
			Head	2.5	4	5	10	12	14	15	18	20	22
			Spray Dia	2'	3'	4'	7'	9'	10'	11'	13'	15'	17'
FDL-22	3/4"	22	GPM	7	9	10	12	13	14	15	16	17	19
			Head	5	8	11	12	14	16	17	19	23	25
			Spray Dia	3'	5'	7'	8'	10'	11'	12'	14'	16'	18'



MULTI-JET HEAD • A cluster of 34 jets positioned vertically in an arrangement to produce a compact multi-stream column of water.



MJH-350

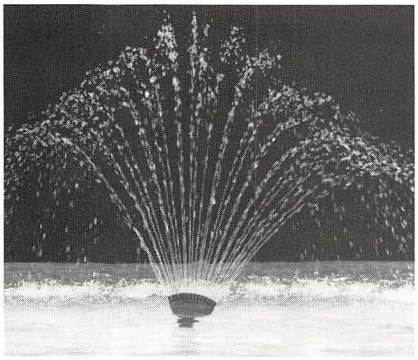
SPECIFICATIONS:

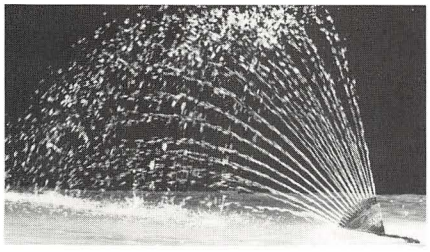
JET: Two-piece bronze construction, with the top section containing pressed-in-place brass nozzles. These sections are retained in the base sections by three silicone brass or stainless steel fasteners, with a gasket between the sections.

JET BASE: Shall be 1″ female NPT threads.

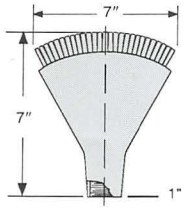
FINISH: Shall be natural brass and bronze.

PART NUMBER	PIPE SIZE	NO. OF JETS	REQUIREMENTS	DIMENSIONS 1'	2'	3'	4'	5'	6'	7'	8'	9'	10'
MJH-350	1"	34	GPM	20	23	28	33	35	38	40	42	45	48
			Spray Dia.	3	4	6	7	9	10	12	14	16	20

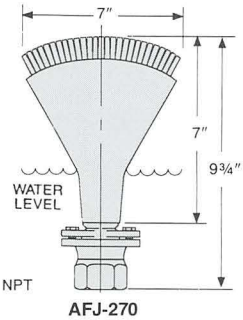




FAN JET, Fixed and Adjustable • These fixtures use vertically aligned rows of jets to produce a fan-like pattern of distinct water streams. They are available as either fixed base or adjustable units. Their adjustability from a vertical axis creates very interesting patterns.



FFJ-170



AFJ-270

SPECIFICATIONS:

JET: Fan-shaped bronze casting with brass nozzles pressed in position.

JET BASE: FIXED: Female 1″ NPT threads. • **ADJUSTABLE:** Ball and socket construction with brass locking plate retained by three silicone or stainless steel fasteners and female 1¼″ NPT threads.

FINISH: Shall be natural brass and bronze.

HEIGHT OF FAN JET	FAN SPRAY WIDTH	G.P.M.	HEAD	THROW IN FEET	DEGREE FROM HORIZONTAL
18"	8'	25	5	5	30 Degrees
24"	10'	30	10	10	30 Degrees
30"	12'	35	15	15	30 Degrees
24"	8'	25	5	5	45 Degrees
36"	16'	30	10	10	45 Degrees
48"	20'	35	15	15	45 Degrees
36"	15'	30	10	5	60 Degrees
72"	25'	40	15	10	60 Degrees

UMBRELLA JET • This jet produces a thin, clear sheet of water which falls in a circular pattern to create an attractive, semi-transparent "dome" of water, an effect which can be enhanced beautifully by night lighting. Nozzles are available in four sizes.

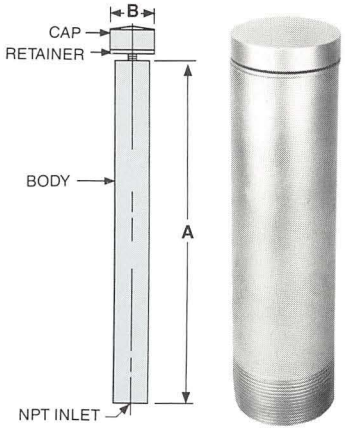
SPECIFICATIONS:

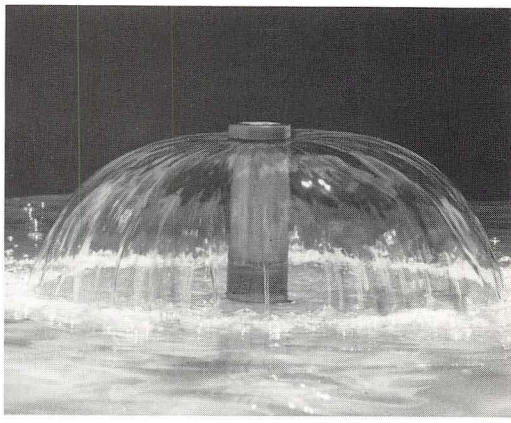
JET: Shall be red brass pipe. The cap is machined brass.

RETAINER: The brass retainer is threaded on the retainer rod. Water rising up the pipe impinges on the underside of the retainer and spreads outward in an umbrella-shaped pattern. Both the thickness of the sheet of water and the diameter of the "umbrella" can be adjusted by raising or lowering the retainer. It is locked in position by the cap.

FINISH: All parts are chrome plated. Natural brass available on special order.

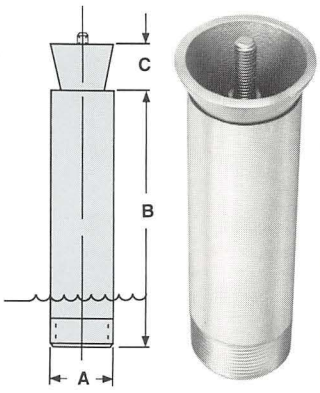
PART#	GPM	HD	DIA	HT	A	B	INLET
UBJ-100	6	6	18"	12	18	1 1/2"	1" MALE
UBJ-150	15	6	24"	12	18	1 3/4"	1 1/2" MALE
UBJ-200	20	6	30"	12	18	2 3/8"	1 1/2" FEMALE
UBJ-300	26	6	36"	12	18	3 1/2"	1 1/2" FEMALE

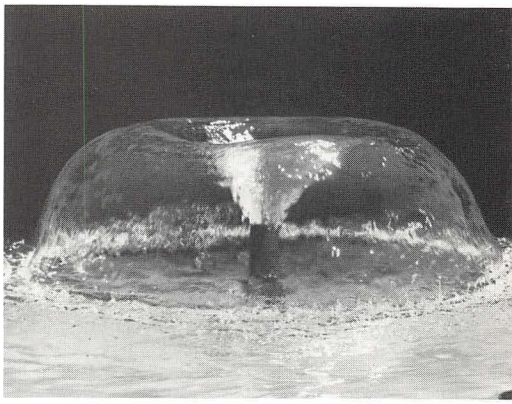




MUSHROOM JET • This jet produces a clear, unbroken sheet of water falling in a circular pattern. Increased pressures can create a broken sheet for larger diameters. This pattern is especially attractive when lighted. Nozzles available in five sizes with control cones of 25⁰ or 35⁰ to adjust the thickness of the sheet.

PART NUMBER	PLUG	'A' DIM	'B' DIM	'C' DIM	CHARACTERISTICS	SPRAY DIAMETER 1'	2'	3'	4'	5'	6'	7'	8'	9'	10'	12'	14'	16'
MJ-1525	25°	1½"	6"	1⅛"	GPM SPRAY HT. HEAD FT.	18 14" 2.3	25 18" 3											
MJ-1535	35°	1½"	6"	1"	GPM SPRAY HT. HEAD FT.		25 12" 2	35 20" 3.3										
MJ-2025	25°	2"	8"	1¼"	GPM SPRAY HT. HEAD FT.		35 14" 2.3			45 24" 4								
MJ-2035	35°	2"	8"	1"	GPM SPRAY HT. HEAD FT.			40 12" 2				60 20" 3.3						
MJ-3025	25°	3"	12"	1⅝"	GPM SPRAY HT. HEAD FT.					100 24" 4					160 40" 6.6			
MJ-3035	35°	3"	12"	1⅜"	GPM SPRAY HT. HEAD FT.						130 20" 3.3					170 36" 6		
MJ-4025	25°	4"	12"	1⅝"	GPM SPRAY HT. HEAD FT.							170 30" 5				240 48" 8		
MJ-4035	35°	4"	12"	1⅜"	GPM SPRAY HT. HEAD FT.								190 24" 4				250 40" 6.6	
MJ-6025	25°	6"	18"	1⅝"	GPM SPRAY HT. HEAD FT.								220 36" 6				300 54" 99	
MJ-6035	35°	6"	18"	1¼"	GPM SPRAY HT. HEAD FT.									250 30" 5				350 48" 8





SPECIFICATIONS:

JET: Shall be of red brass pipe with male NPT threads at the base.

CONE: Shall be cast and machined bronze, providing cone angles at 25⁰ or 35⁰ with threaded centers.

CONE ADJUSTMENT: Cones are threaded on retainer rods and positioned to provide the desired sheet thickness. The cone is locked in place by a stainless steel nut.

FINISH: Natural brass and bronze. Chrome plating available on special order. (Add "CP" suffix).

BUBBLER JETS • Bubbler jets produce tumbling mounds of highly aerated water, and are often used around the periphery of higher jets or where there is a wind problem. Air is asperated directly into the water stream via a valved pipe with its entrance located above the water and outside the fall of the jet. The jet is positioned below the water surface.

SPECIFICATIONS:

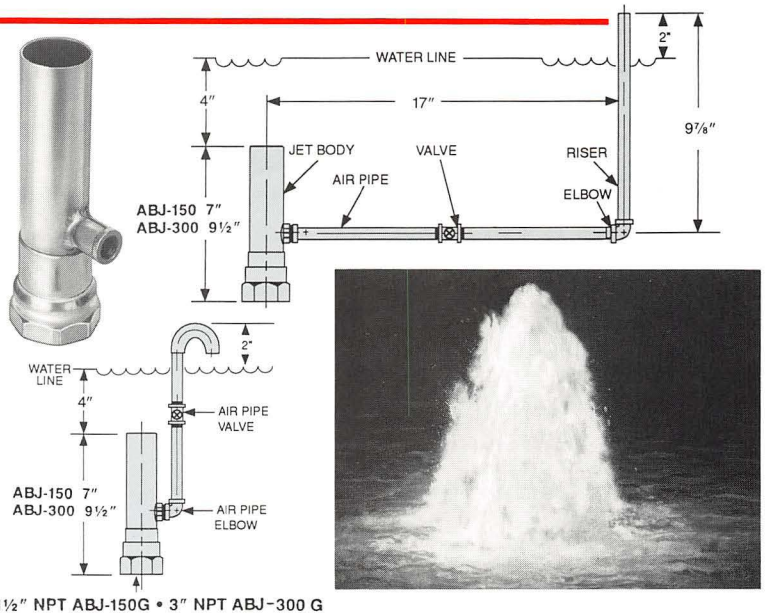
JET: Shall be tubular brass construction.

JET BASE: Shall be copper with female NPT threads.

AERATION SYSTEMS: Shall consist of ⅜" (ABJ-150) or ½" (ABJ-300) red brass pipe with a lever valve and elbow. (See line illustrations at right for typical installations).

FINISH: Shall be natural brass and copper. Chrome plating is available on special order. (Add "CP" suffix).

PART NO.	PIPE SIZE (FEM)	SPRAY HEIGHT	SPRAY DIA.	G.P.M.	HEAD	JET LENGTH
ABJ-150	1 1/2"	18"	18"	50	10'	7"
ABJ-300	3"	42"	30"	125	25'	9 1/2"



1½" NPT ABJ-150G • 3" NPT ABJ-300 G

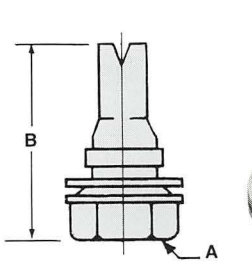
ADJUSTABLE SPRAY JETS

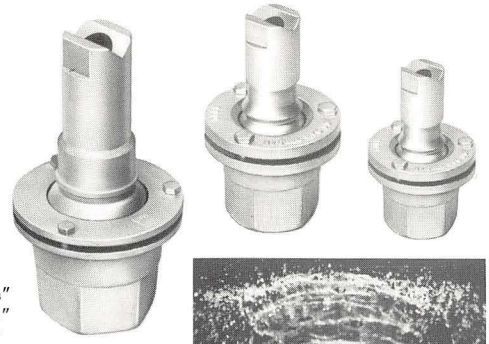
The Fan Jet Series spray nozzles provide a flat spray pattern with moderately small spray particles. This versatile jet can be adjusted up to 15⁰ off vertical to create a variety of effects.

SPECIFICATIONS:

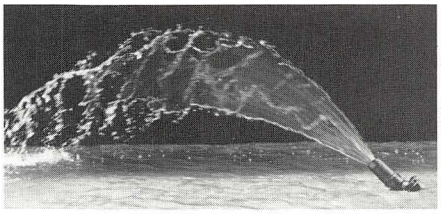
JET: Main jet shall be constructed of heavy brass.

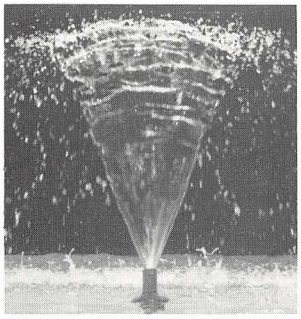
JET BASE: Ball and socket construction of cast bronze, with a brass locking plate retained by three silicone brass or stainless steel fasteners for adjustment. Base is female, NPT threaded.





ASJ-75 A=¾″ NPT • B=3⅝″
ASJ-150 A=1½″ NPT • B=5¼″
ASJ-300 A=3″ NPT • B=11″





	HEAD	7'	12'	23'	35'	46'
PART NO. ASJ-75	HT.		6'	12'	15'	18'
	GPM		7	10	12	14
	WIDTH		6'	11'	14'	16.8'
PART NO. ASJ-150	HT.	4 1/2'	7 1/2'	14'	18'	20'
	GPM	16	21	29	36	41
	WIDTH	9'	17'	26'	28'	29'
PART NO. ASJ-300	HT.	5 1/2'	9'	16'	19 1/2'	21'
	GPM	41	53	75	92	106
	WIDTH	10'	17 1/2'	27 1/2'	30'	31'

CRYSTAL CYPRESS JETS

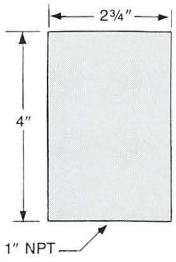
These jets are designed for very shallow fountains, and decks without water. People may interact with the spray with a minimal danger of tripping over the jet. Once installed, they are virtually vandal proof. The IAC-350, installed above water or in waterless decks, will produce a smooth bore effect, while an underwater installation creates frothy cascade effects similar to our CAS Series of jets.

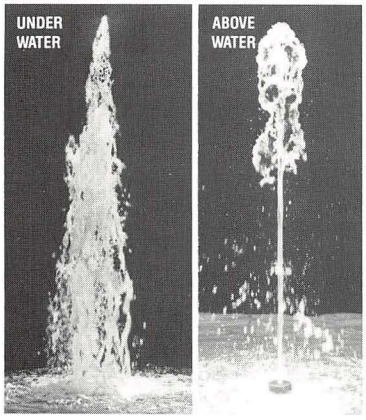
SPECIFICATIONS:

JET: Outer housing shall be brass and bronze.

JET BASE: Shall be 1″ NPT female threads.

FINISH: Shall be natural brass.





PART NO. IAC-350	SPRAY HT.	2'	4'	6'	8'	10'	12'
ABOVE WATER	GPM	6	8	10	12	14	18
	HEAD	3'	6'	9'	12'	14'	17'
UNDER WATER	GPM	5	8	15	24	26	28
	HEAD	14'	19'	26'	31'	35'	40'

CHAMPAGNE JETS

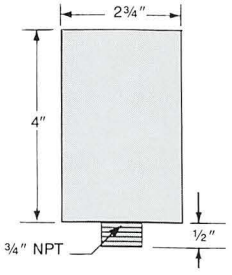
Designed for very shallow fountains, and decks without pools. People may interact with the spray with a minimal danger of tripping over the jet. Once installed, these units are virtually vandal proof. The IA-350, installed above water or in waterless decks, produces a slender cascade effect. The same unit underwater creates a frothy, reflective column.

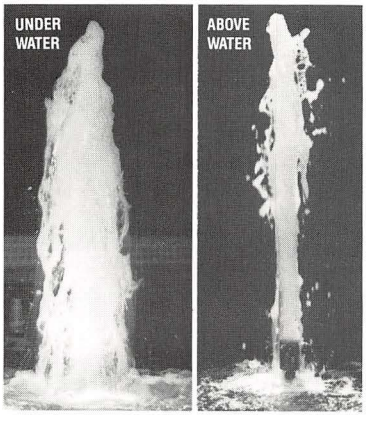
SPECIFICATIONS:

JET: Shall be of brass stock.

JET BASE: Shall be ¾″ NPT male threads.

FINISH: Shall be natural brass.





PART NO. IA-350	SPRAY HT.	2'	4'	6'	8'	10'	12'
ABOVE WATER	GPM	15	27	40	45	55	65
	HEAD	14'	19'	30'	39'	48'	64'
UNDER WATER	GPM	6	8	10	15	19	25
	HEAD	18'	23'	27'	35'	42'	48'

DIAMOND FIESTA JETS

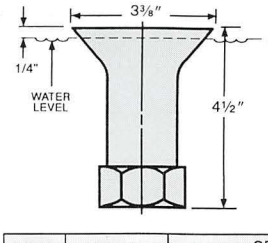
This fixture produces a brilliant shower of water droplets which can be highly reflective, particularly in sunny areas. The display is characterized by an unusual radiance, which can be dramatically emphasized with appropriate lighting.

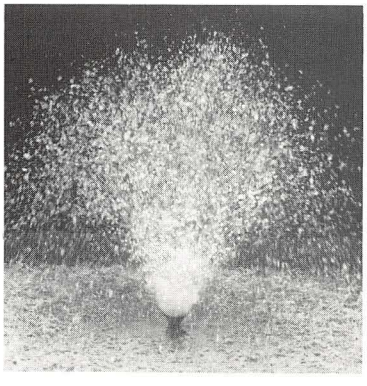
SPECIFICATIONS:

JET: Shall be cast bronze.

JET BASE: 1½″ NPT female threads.

FINISH: Shall be natural bronze.

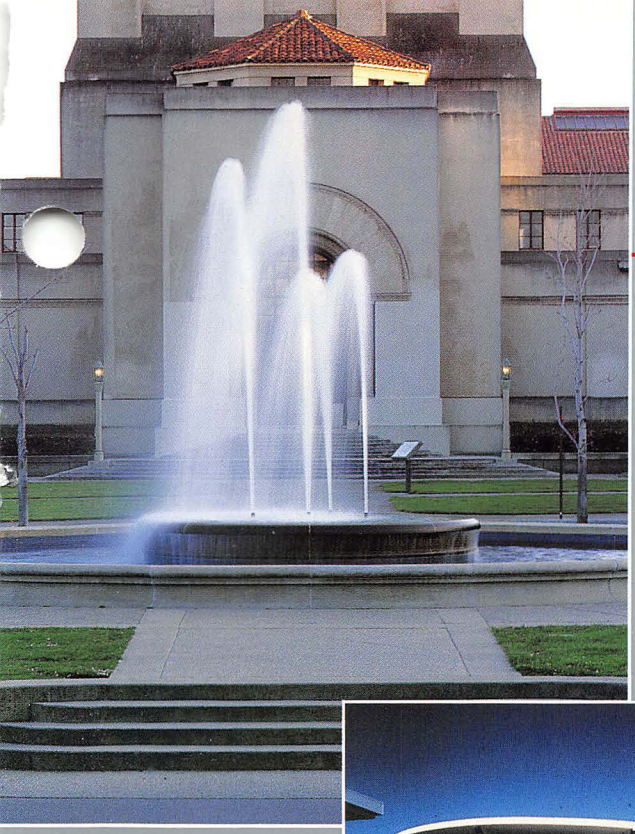




PART NO.	FLOW CHARACT.	SPRAY HEIGHT 2'	3'	4'	5'	6'	7'	8'	9'
DFJ-150	GPM	65	75	85	95	105	CONSULT FACTORY		
	HEAD	3'	4'	6'	7'	8'			
	SPRAY DIA.	4'	6'	9'	10'	12'			

A Gallery OF FOUNTAINS

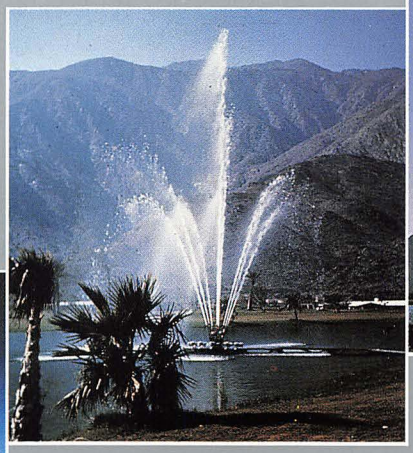
illustrating a dramatic array of water effects to enhance virtually any setting, with a listing of the components used for each.



SMOOTH BORE JETS

produce high, straight streams of water with minimal "tearing" to create effects of height, grace and simplicity.

Three FSB 30s and one FSB 50 in a 22,000 gal. pool. A 20 HP pump provides 60 ft. of head at 960 GPM, to achieve heights of 40 ft. Lighting: 8 1000W 4427-5 and 16 116W 4415 fixtures.

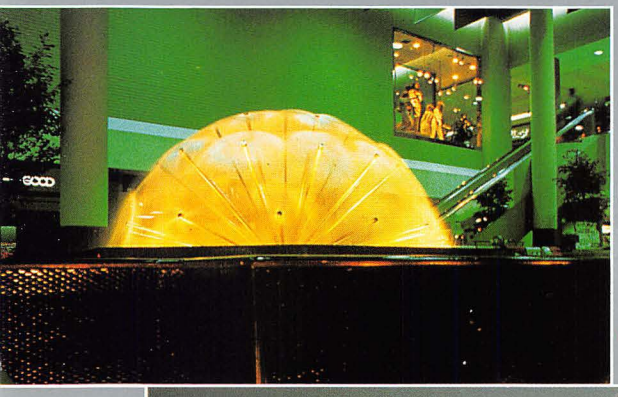


Our Multijet Head MJH 1807 produces a height of 40 ft. with a 105 ft. head. A 40 HP pump delivers 1190 GPM from the lake. Lighting: 5 1000W 4427-5 fixtures.

Three 700 HP turbine pumps power this custom jet to heights of 550 feet above the lake's surface.

A 35 ft. spray is created by this custom fountain using ASB-100 jets, and a 15 HP pump in a 22,000 gal. pool. Lighting by six 1000W 4427-5 fixtures.

PEACOCK FOUNTAINS create lacy, shimmering spheres of water that maintain their precise and pleasing contours while staying in constant motion.



This Full Spherical Peacock Jet, PS 1808-253, powered by a 5 HP pump, provides 19 ft. of head and 630 GPM from a 10,800 gal. pool. Lighting by ten 4424-5 fixtures.

This half sphere Peacock Jet, PH 1006-631, uses a 1 HP pump in a 400 gal. pool to provide 80 GPM and 13 ft. of head. Lighting by six 250W 4418-5 fixtures.

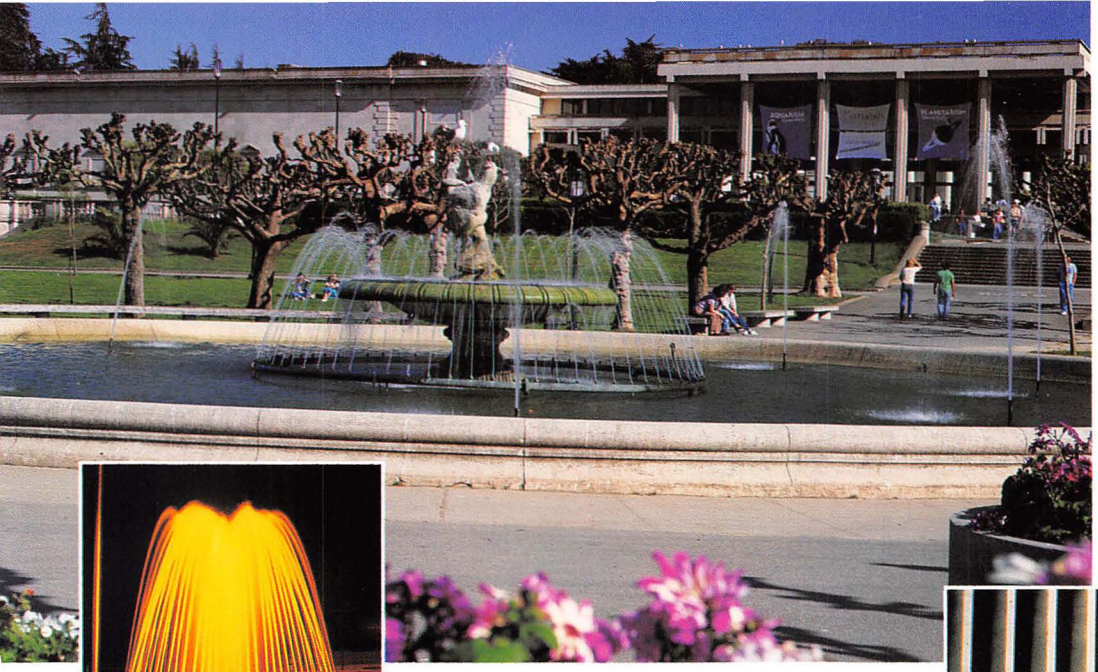
Eight Full Spherical Peacock Jets of assorted sizes (PS 2412-379, PS 1808-253, PS 1005-061, PS 1003-029) are powered by a 20 HP pump providing 2700 GPM and 27 ft. of head. Lighting: 25 300W 4424-5 fixtures.

SPRAY RINGS

create delicate, sparkling streams of water in intricate patterns and endless combinations. They can be equally effective in both small, intimate settings and the largest, most complex installations.

This CSR-24 Center Fall Spray Ring accentuating a statue, is surrounded by eight AJ-1250 Aerating Jets. A 5 HP pump provides 40 ft. of head, 350 GPM and heights of 6 to 8 ft.

A CSR-288 Spray Ring combines with various Cascade Jets in a sequenced operation. A 75 HP pump provides 83 ft. of head and 2484 GPM from a 112,500 gal. pool. Lighting: 3 500W 4424-5 and 28 300W 4415-5 Quartz Halogen fixtures.



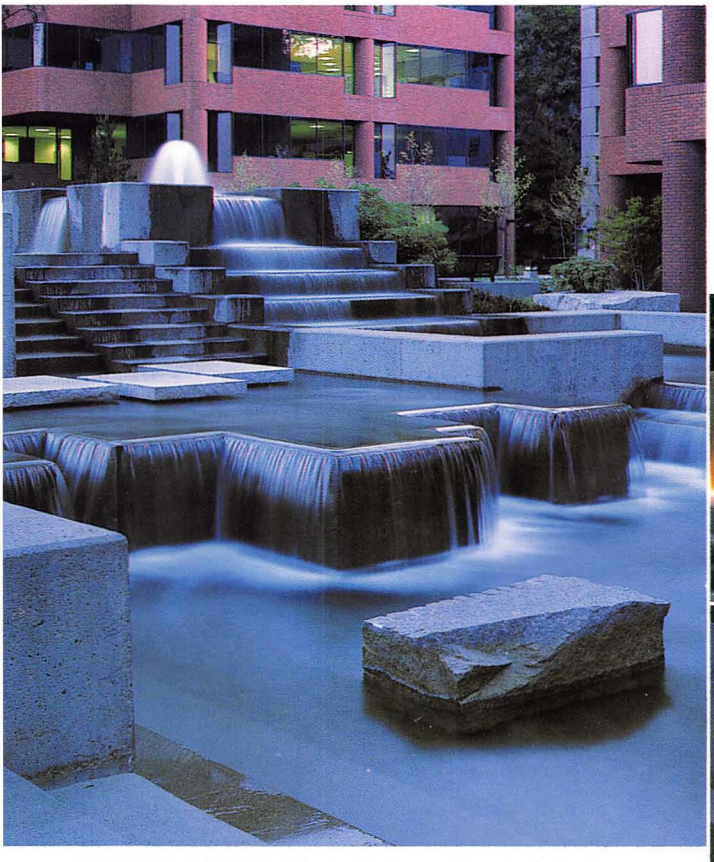
An ASR-144 & ASR-72 Spray Ring, with a 3 HP pump providing 14 ft. of head and 190 GPM from a 4,500 gallon pool.

A 40-jet custom Spray Ring creates this unique flower-like pattern. A 3 HP pump supplies 25 ft. of head and 190 GPM from a 3,000 gallon pool.

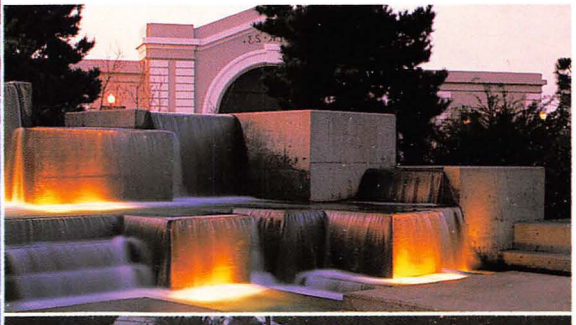
WATERFALLS

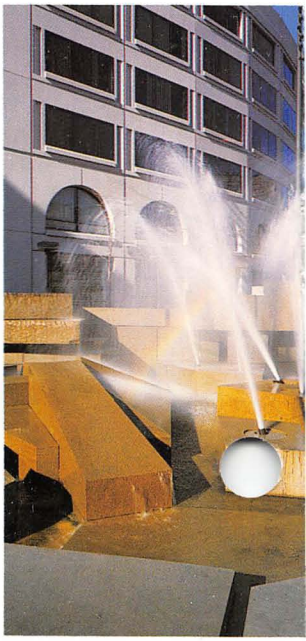
may be anything from changing streams tumbling over natural rocks to controlled, transparent sheets of water flowing over skillfully arranged geometric shapes. Suggesting either power or tranquility, waterfalls are unfailingly appealing, and provide us with some of the most dramatic effects thoughtful designers can create.

Skillfully arranged lighting is a vital element in this waterfall design. In each section, three 4422-5 fixtures, 1½ feet apart, provide the ideal illumination.



The smooth, ¼ inch sheet of water flowing over the weirs is visually fascinating in this symphony of waterfalls. Hydrel components include AFV-20 Anti Vortex plates and 4422-5 underwater lighting fixtures.

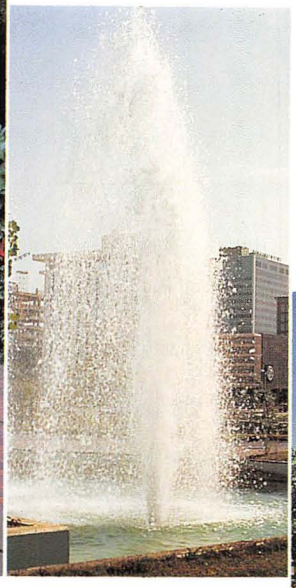


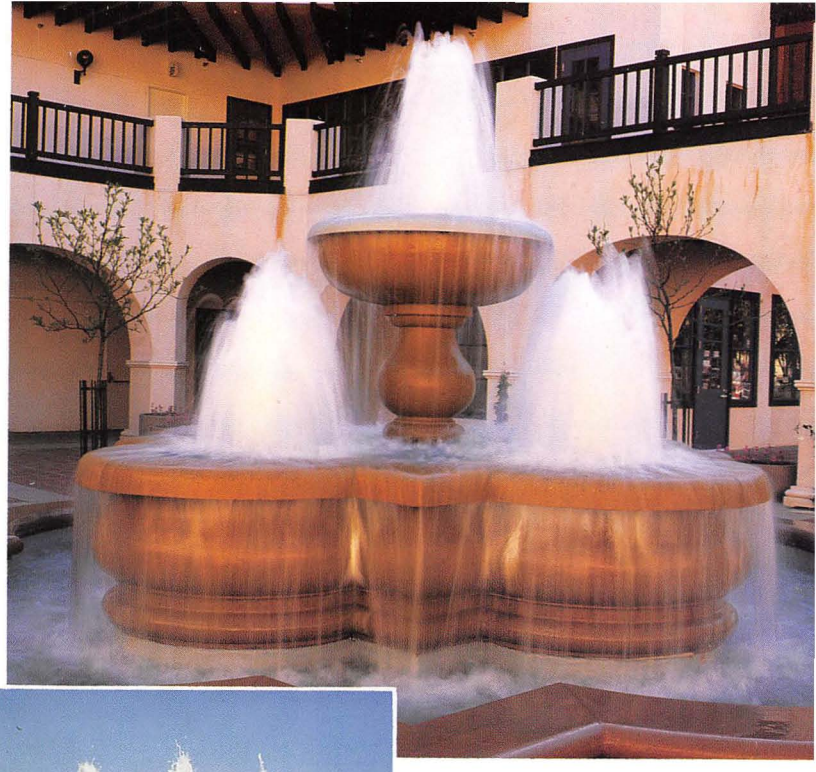


CASCADE JETS create luminous, frothy columns of water that are especially beautified by either natural sunlight or skillfully designed underwater lighting.

A simple atrium fountain with a single CAS-75 jet. A ⅓ HP pump provides 16 ft. of head and 13 GPM from a 4,000 gal. pool. Lighting: One 250W quartz fixture.

A CAS-150 jet, with a 2½ HP pump providing 58 ft. of head and 50 GPM from a 600 gal. pool. Lighting: Two 500W quartz fixtures.



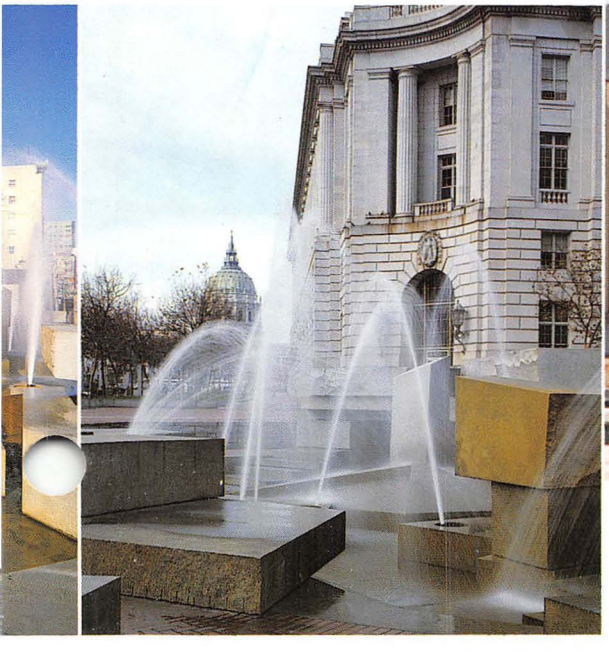


Five CAS-150 jets in a tiered bowl create this unique effect. A 3 HP pump provides 43 ft. of head and 160 GPM from a 12,000 gallon pool. Lighting: 5 250W and 4 116W 4415-3 fixtures. Heights are 3 feet.

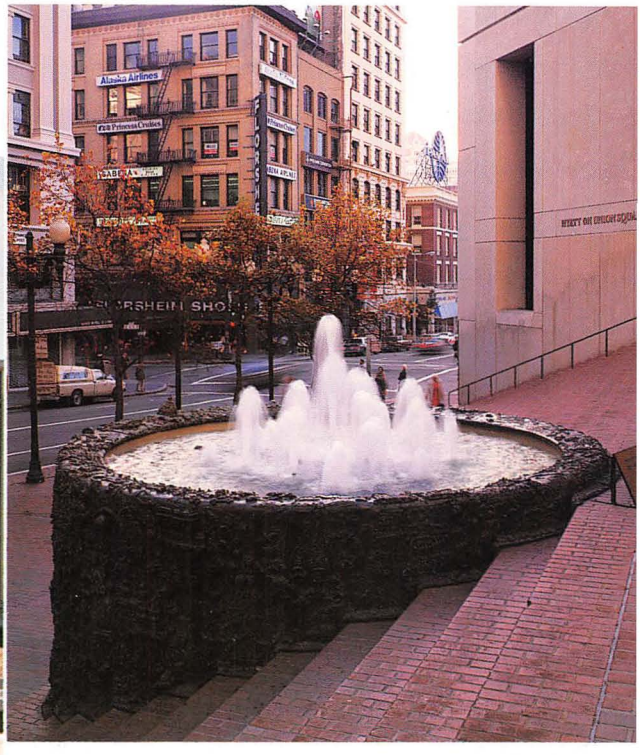
Six CAS-300 Cascade Jets, supplied by a 50 HP pump, rise dramatically to heights of 20 feet. The jets use 1680 GPM with 83 ft. of head.

AERATING JETS produce columns of bubbling, aerated water which are highly reflective and react with both sunlight and underwater lighting for an appealing visual aspect. The inner nozzle is surrounded by an adjustable outer shell which can be set to produce the desired rate of aeration.

These AJ-3000 Aerating Jets are located in a busy pedestrian traffic area in San Francisco's United Nations Plaza.



An AJ-2000 & 8 AJ-1500 Aerating Jets in a 15,000 gal. pool. A 10 HP pump provides 330 GPM and 92 ft. of head. Lighting: 8 500W 4421-5 and 2 1000W 4427-5 quartz fixtures.



Frothy, tumbling columns of aerated water, created by fifteen AJI-1500 Aerating Jets, complement this 2,000 gallon sculptured pool. A 3 HP pump supplies 315 GPM and 28 ft. of head. The lighting is provided by fifteen 250 4418-5 fixtures.

MUSHROOM JETS, with their distinctive and decorative design, add visual interest to those indoor and outdoor pools where low contours and gentle motion are appropriate.

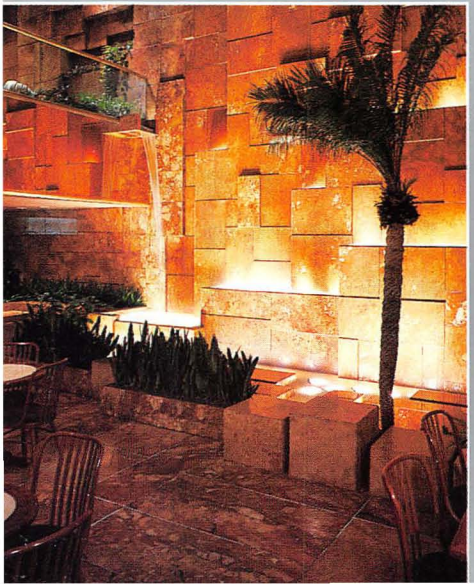
Three lighted MJ-2035 mushroom jets grace this magnificent atrium. A 1 HP pump provides 120 GPM and 21 feet of head in the 8,000 gallon pool.

Four MJ-2025 Mushroom Jets utilize a 1½ HP pump which supplies 140 GPM at 24 ft. of head. The jets in this 3,400 gallon pool are lighted by four 4418-5 fixtures.

The circular contours of a single mushroom jet is the perfect focal point for this peaceful setting. A 1 HP pump provides 100 GPM at 22 feet of head. Lighting: Two 250W 4418-5 fixtures.

CUSTOM SEQUENCED FOUNTAINS

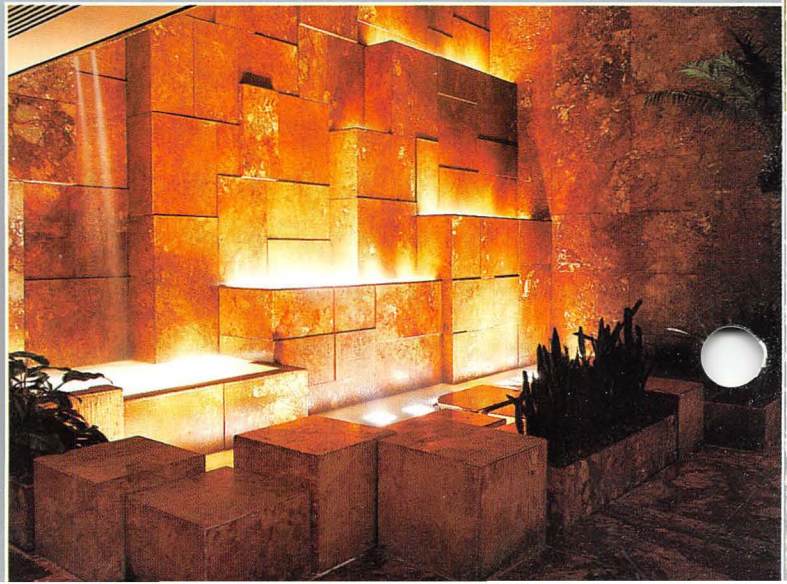
provide water flow in ever-changing patterns. Turbulent water reflects light beautifully to add a special magic to nighttime viewing.



ATRIUM FOUNTAINS

can be especially inviting, for they bring the pleasing sights and sounds of flowing water to unexpected settings.

Two views illustrating how water in motion adds life and its own soothing murmur to these appealing settings in New York's celebrated Trump Towers. Lighting is provided by our strategically located 4422-5 LV fixtures.



COMPLETE FOUNTAIN KITS AND ASSEMBLIES for Small Pools

AQUAHUE FOUNTAIN MINI-KITS for small pools

Our AH-101 Aquahue Fountain Kits offer a choice of four jets for use in small pools or ponds. The Cascade Jet produces a mound of highly aerated water; the Aerating Jet a straight frothy stream; the Smooth Bore a straight stream; and the Mushroom, a dome-shaped film of water. The jets are powered by a 1/8 HP submersible pump. Lighting is provided by a 150W underwater fixture, with your choice of a Clear, Blue, Red, Green or Amber lens. To maintain pool water levels, a float valve makes up water lost to evaporation, and an overflow drain removes excess water due to rain, etc. For easy installation, the kits are complete with junction boxes, manifolds, and easy to follow drawings.

SPECIFICATIONS:

JETS: Smooth Bore & Cascade: Cast bronze. Mushroom: Red brass body with bronze cone. Aerator: Cast bronze body with a red brass outer shell.

PUMP: 1/8HP, 120V submersible with brass suction screen.

MANIFOLD: Red brass pipe.

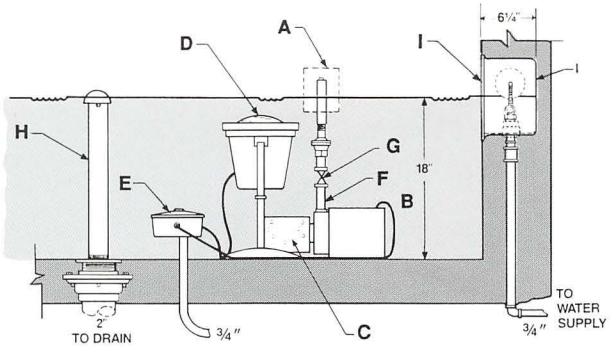
VALVE: Cast bronze with height control.

OVERFLOW: Chrome plated red brass pipe.

WATER MAKE-UP: Niche mounted float valve.

See Page 8 for the water effects produced by the Cascade and Smooth-Bore Jets; Page 9 for the Aerating Jet, Page 13 for the Mushroom.

Refer to the table of contents for information on the various other components of these kits.



A single jet producing a straight stream of water 5 ft. high. Effective used singly in a small pool, or in combinations of several jets in large pools or ponds.

SPRAY HT.: 8 Ft. Max. • POOL DIA.: 15 Ft. Min. • Required Water Depth: 18"

A. Specified Jet.
B. 1/8HP 115V Submersible Pump.
C. Brass Suction Screen.
D. 150W Underwater Light with lens color as specified: Red, Blue, Green, Amber. Clear lamp by others.
E. Bronze underwater Junction Box with watertight pressure bushings (2), and ¾" NPT hub in bottom.
F. One complete Brass Manifold.
G. One Brass Height Control Valve.
H. One Overflow Standpipe & Drain.
I. One Float Valve in niche with chrome plated bronze Face Plate, plus 1 set of installation drawings.

THE AH-120 AQUAHUE FOUNTAIN KIT offers a 16" Dia. Spray Ring which produces a vertical "column" effect ideal for pools in confined areas. (May be used singly in small pools or combined with several others in larger pools). The ring is powered by a 1/3HP Submersible Pump, and lighted by a 300W underwater fixture with your choice of a Clear, Red, Blue, Green or Amber lens. Pool water levels are maintained by a float valve (not in kit), to replace water lost to evaporation; and by an overflow drain (not in kit), to remove excess water added by rain. The kit includes a junction box and manifold to simplify installation, plus easy to follow drawings.

SPECIFICATIONS:

RING: Red brass pipe, fitted with brass jet and flush-out plug.

JETS: Brass, tapered smooth bore.

RING SUPPORT: Adjustable leg, red brass pipe.

RING: Location: At or above water level, Jets above water action.

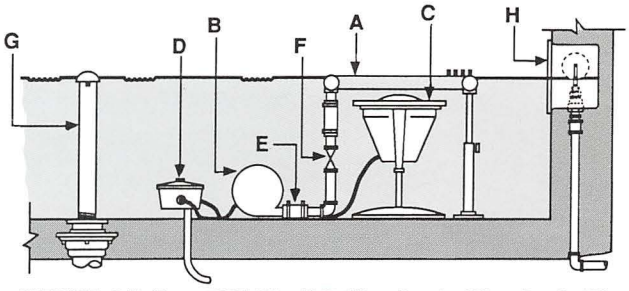
PUMP: 1/3HP, 120V Submersible Pump with brass suction screen.

MANIFOLD: Red brass pipe.

VALVE: Cast bronze with height control.

OVERFLOW: Chrome plated red brass pipe.

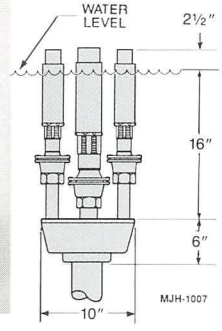
WATER MAKE-UP: Niche mounted float valve.



SPRAY HT.: 6 Ft. Max. • POOL DIA.: 10 Ft. Min. • Required Water Depth: 16"

A. One 16" dia. Spray Ring with vertical fall spray pattern.
B. One 1/3HP bronze Submersible Pump with brass suction screen.
C. One 300W Underwater Light, Lens color: (Specify) Red, Blue, Green, Amber, or Clear lamp (by others).
D. One bronze underwater Junction Box with watertight bushings and ¾" NPT hub in bottom.
E. One complete brass Manifold.
F. One Brass Height Control Valve. One set of installation drawings.
G. One Overflow Standpipe & drain.
H. One Float Valve in niche with chrome plated bronze face plate. One set of installation drawings.

NOTE: Items "G" & "H" are optional items.



MJH-1007 JET POD ASSEMBLY

This unit consists of a 10" dia. bronze pod with one 2" dia. center aerating jet and six 1½" dia. peripheral aerating jets. It produces an effect of substantial mass, ideal for distance viewing in larger pond and lake installations. The pod chamber is heavy cast bronze, while the jets are cast bronze and brass.

Other jet pod combinations can be developed for customized applications.

PART NO.	INLET NPT	STREAM HEIGHT	10'	15'	20'	25'	30'
MJH-1007	4" Threaded	SPREAD	20	25	29	34	26
		GPM	182	218	244	284	310
		HEAD	44	60	72	80	88

AS-120 SPRAY RING WITH TUBE LIGHTING

This unique unit combines a spray ring and our 4418 light to create a simple but pleasing water effect.

SPECIFICATIONS:

LIGHT FIXTURE: 4418-3 (Less niche).

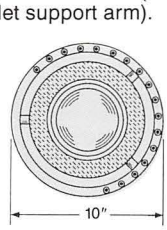
TUBE: 8" dia. x 16" ABS, slotted at 120° Length can be specified.

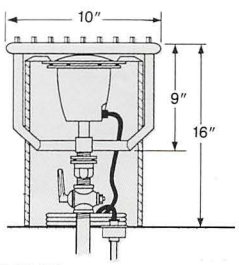
CSFR-10: 10" Dia. customer fixed spray.

SUPPORT/INLET: Three at 120° (2 support arms, 1 inlet support arm).

VALVE: 1¼" level cock valve.

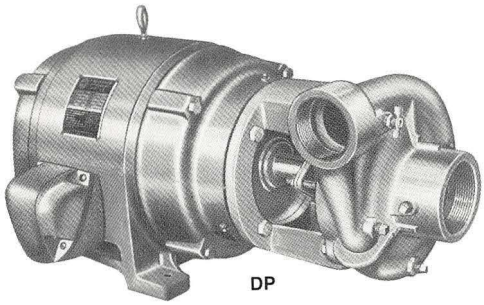
JUNCTION BOX and LIGHT FIXTURE LAMP: By others.





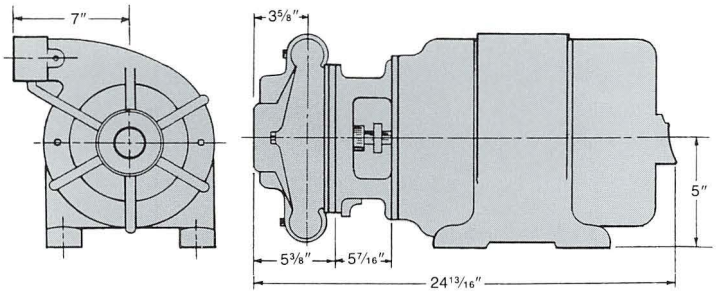
NOTE: Hydrel reserves the right to change any specification without notice

THE SERIES "DP" SINGLE STAGE SUCTION CENTRIFUGAL TYPE PUMPS



DP

These heavy duty industrial pumps have been designed to maintain top performance under a continuously full load. They are housed in a dry location pump pit or pump house. Units DP-300 through DP-1000 will require external pump starters.



Discharge port may be mounted in any one of four positions, 90° apart.

ORDERING INFORMATION:

DP – 750B / 230 / 3
HORSEPOWER
VOLTAGE PHASE

DP-300A 3 HP, 1∅	DP-750A 7.5 HP, 1∅
DP-300B 3 HP, 3∅	DP-750B 7.5 HP, 3∅
DP-500A 5 HP, 1∅	DP-1000A 10 HP, 1∅
DP-500B 5 HP, 3∅	DP-1000B 10 HP, 3∅

For complete details on these and other Hydrel products, write or call for the Specification Sheet describing the unit being considered.

SPECIFICATIONS:

HOUSING: Shall be cast iron • **IMPELLER:** Shall be cast iron.

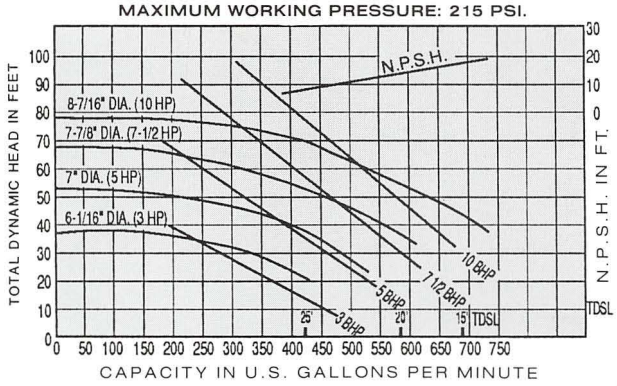
VOLUTE: Shall be machined cast iron. Discharge to be mounted in any of four positions for convenient piping.

SUCTION & DISCHARGE: 3″ FPT discharge; 4″ FPT suction.

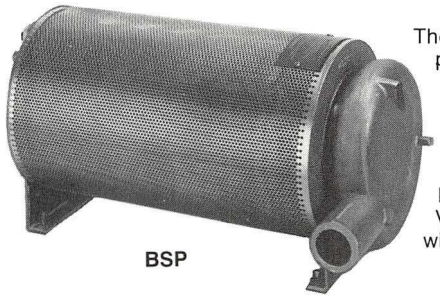
MOTOR: Shall be NEMA standard, close coupled to the pump. 3 HP single phase (A) comes standard in 115/230V. 5 to 10 HP, single phase (A), comes standard 230V. 3 to 10 HP, three phase (B), comes standard 230/460V. For other voltages that are available, contact the factory.

SEAL: Shall be adjustable packing gland with extra deep stuffing box. The shaft is protected through the stuffing box by stainless steel sleeve.

MAXIMUM WORKING PRESSURE: 215 PSI.



THE "BSP" SERIES SUBMERSIBLE PUMPS



BSP

These units offer the demanding performance required of water effect equipment, plus ease of installation. They feature bronze, brass and stainless steel construction for long life. The oil-filled motor is built for continuous operation. Versatile discharge mountings will accommodate a wide range of location requirements.

SPECIFICATIONS:

HOUSING: Shall be cast bronze with brass suction screen (⁵⁄₆₄″ mesh, 12″ length on BSP-33 & 50, 12⅞″ length on BSP-75, 100).

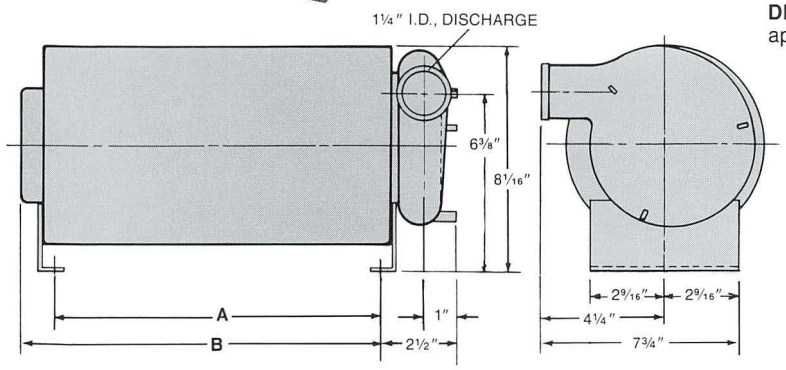
SEAL: Shall be ceramic, carbon submersible pump seals.

MOTOR: Shall be 120V, 60 Hz, single phase, permanent split capacitor motor (no requirement for starting device). Oil filled with diaphragm pressure equalizer. Stainless steel parts. Automatic thermal and current overload protection.

CORD: Shall be 16-3ST submersible cord, 12 feet in length.

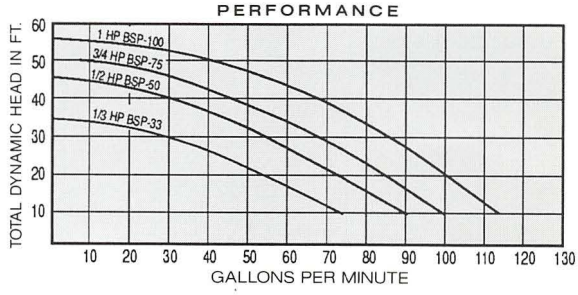
MOUNTING: Secured by four bolts for stable placement in pool.

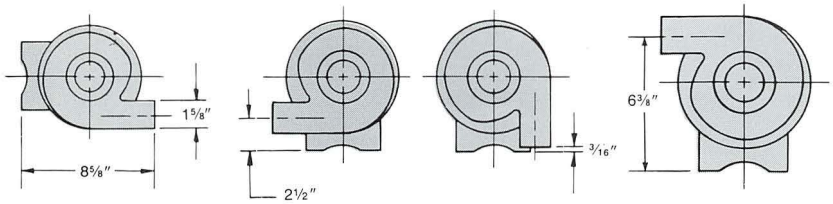
DISCHARGE: Mount discharge port in any one of four positions, 90° apart. 1⅝″ I.D. (BSP-33 & 50) or 1⅞″ I.D. (BSP-75, 100) hose and clamp to be used for outlet connection.



PART NO.	H.P.	CYCLE	VOLT	PHASE	LENGTH-A	LENGTH-B
BSP-33	1/3	60	115	1	11-1/8"	14-7/8"
BSP-50	1/2	60	115	1	11-1/8"	14-7/8"
BSP-75	3/4	60	115	1	12"	15-3/4"
BSP-100	1	60	230	1	12"	15-3/4"

PERFORMANCE





NOTE: Hydrel reserves the right to change any specification without notice

Pumps and Motors U.L. Listed

THE "DPS" SERIES SELF PRIMING PUMPS

These units, designed for long trouble-free life and continuous operation, do not require pit installation. They feature a 2 pc. cast bronze assembly, with volute and strainer as one unit coupled directly to the motor.

SPECIFICATIONS:

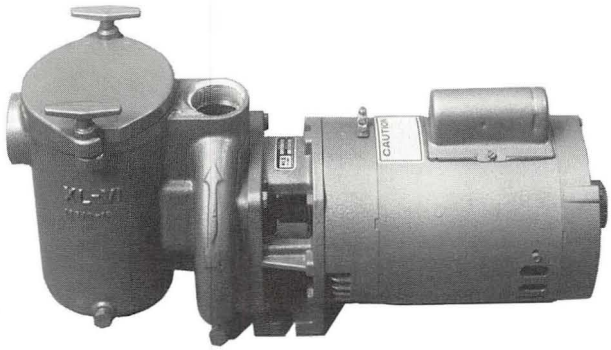
HOUSING: Shall be cast bronze.

STRAINER & VOLUTE: Shall be integral cast bronze with 1½" discharge. Suction connection: 1½" NPT (DSP-33 , 50, 75, 100), 2" NPT (150, 200, 300). Strainer body: 5⅛" by 7½" deep with fiberglass cover secured by "T" bolts, neoprene gasket and styrene strainer basket with no less than eight times the open area of the suction connection.

IMPELLER: Shall be cast bronze.

MOTOR: Shall be ⅓HP, ½HP, ¾HP, 1HP, 1½HP; 2HP, 120/240V or 3HP, 240V only, 60 Hz, single phase, thermal and current overload protection, capacitor type with silver raced, centrifugally operated disconnecting switch, heavy duty, double sealed, self lubricating bearings, 3450 RPM.

For other voltages or 50 Hz, contact the factory.

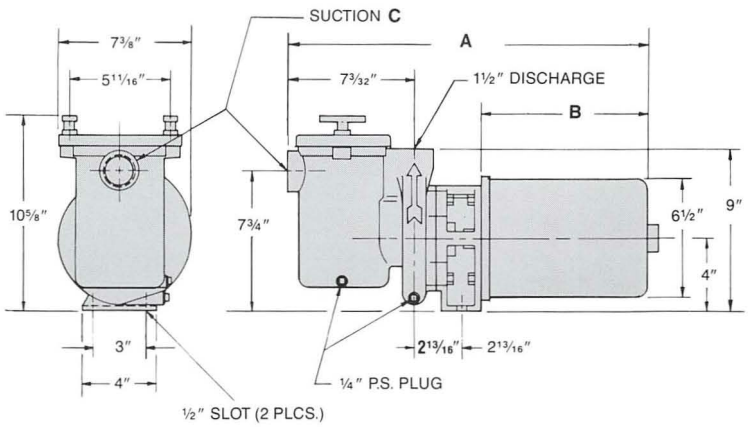


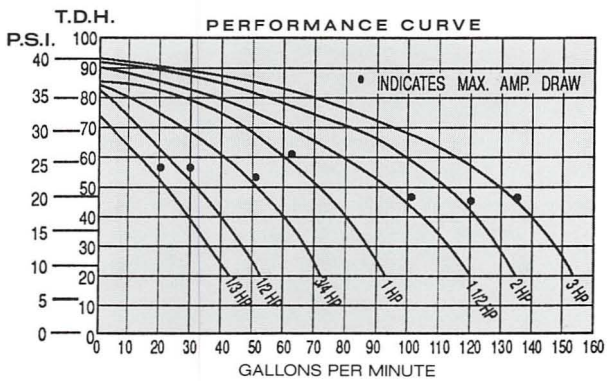
DPS

PART NO.	H.P.	VOLTS	A	B	C
DPS-33	1/3	115 230	19 11/16"	9"	1 1/2"
DPS-50	1/2	115 230	20 15/32"	9 13/16"	1 1/2"
DPS-75	3/4	115 230	20 15/32"	9 13/16"	1 1/2"
DPS-100	1	115 230	21 15/32"	10 13/16"	1 1/2"
DPS-150	1 1/2	115 230	22 3/8"	11 23/32"	2"
DPS-200	2	115 230	22 3/8"	11 23/32"	2"
DPS-300	3	— 230	22 3/8"	11 23/32"	2"

GENERAL NOTES:

1. Install pump in a cool, dry, well-ventilated location away from pool heaters.
2. Pump should be firmly mounted and isolated from foreign vibrations to prevent bearing failures.
3. Allow 6" (152.4 mm) minimum clearance behind motor for servicing.
4. Motor overheating may be caused by voltage drop or excessive voltage. Be sure that wire size and voltage input is properly regulated.
5. Pump volute can be located a maximum of 12" above water level with a required check or foot valve.





"ESP" SERIES FRACTIONAL HORSE-POWER PUMPS SUBMERSIBLE/DRY

These units are small fraction horsepower pumps for use in smaller fountains, and may be operated submerged or in open air. Brass and stainless steel construction protect them against corrosion; and the motors run in oil, eliminating the need for lubrication.

SPECIFICATIONS:

HOUSING: Shall be heavy duty gauge stainless steel with rugged brass cover.

IMPELLER: Shall be molded nylon.

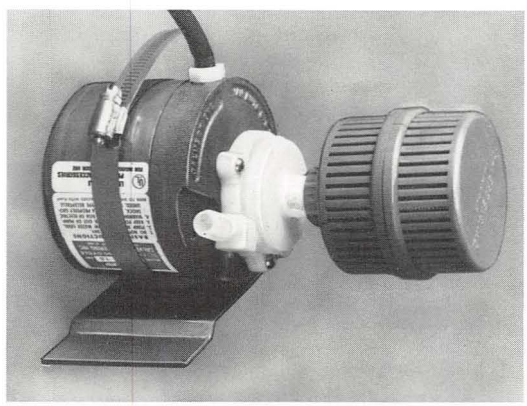
MOTORS: Run in oil, work in any position. 115V, 60 Hz, (220V, 50/60 Hz available).

CORD: 5½ ft. 16-3 submersible cord.

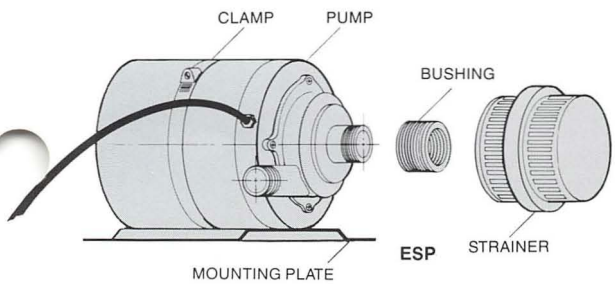
SEALS: Shall be double BUNA-N at motor shaft.

FOR MODELS ESP-2C:
INLET: ½" Male NPT • **OUTLET:** ¼" Male NPT.

FOR MODELS ESP 3C, 4C, 5C:
INLET: ¾" Male NPT • **OUTLET:** ½" Male NPT.



ESP

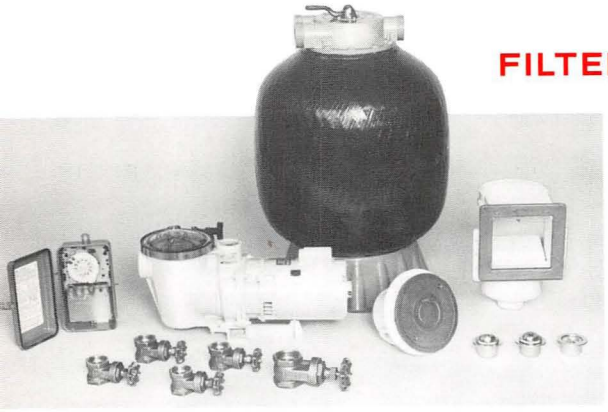


GALLONS PER HOUR (GPH)

PART NO.		AMPS	1 FOOT	3 FEET	5 FEET	9 FEET	13 FEET	HEAD	WEIGHT	SIZE
ESP-2C	BRASS AND STAIN-LESS STEEL	1.5	320	260	200	140	—	12	5 3/4 lbs.	3 3/4"x4 1/2"
ESP-3C		2.0	580	485	390	320	260	15	8 1/4 lbs.	4 1/4"x6 1/4"
ESP-4C		2.5	900	720	620	425	390	17	8 1/2 lbs.	4 1/4"x6 1/4"
ESP-5C		3.2	1200	980	840	660	540	20	9 1/2 lbs.	4 1/4"x6 1/4"

BASED ON UNRESTRICTED DISCHARGE LINE

Pumps and Motors U.L. Listed



FILTERS, SKIMMERS, COMPONENTS AND VALVES

Hydrel provides the highest quality hydraulic and electrical components, all rigorously tested to support your water effects

HYDREL FILTRATION KITS

are designed to ensure a clean pool as well as to minimize maintenance. Not only does clear, sparkling water enhance any water effect visually, it can also be absolutely vital to the smooth functioning of many fixtures and to components with smaller orifices. Hydrel Filtration Kits typically consist of a sand filter, a pump, and the valving and necessary fittings. To handle pools up to 2,500 square feet in area and 1.5 feet in depth, four sizes are available. The chart below lists the specific timer, valve and motor starter requirements for each complete system.

KIT NO. (INCL. FILTER, PUMP & VALVE)	*SURFACE AREA OF FOUNTAIN (FT^2)	SKIMMERS REQUIRED	ANTI-VORTEX	EYEBALL FITTINGS	VACUUM FITTINGS	1 1/2" VALVES	ADDITIONAL EQUIPMENT INCLUDED**
HRP-21-50 FK	0 TO 500	1 SK-302 BZ	1 AVF-8S2B	1 EF-150	1 VF-150	5 GTVS-150	1- Timer, ITC-2
HRP-21-75 FK	500 TO 1000	1 "	1 "	2 "	1 "	5 "	1- 2" Check, CKVS-200 • 1- Timer, ITC-2 1- 2" Valve, GTVS-200
HRP-25-100 FK	1000 TO 1500	2 "	1 "	3 "	2 "	7 "	1- 2 1/2" Check, CKVS-250 • 1- Motor Starter, MS-100 1- 2 1/2" Valve, GTVS-250 • 1- Timer ITC-2
HRP-31-150 FK	1500 TO 2500	2 "	2 "	4 "	2 "	8 "	1- 3" Check, CKVS-300 • 1- Motor Starter, MS-150 1- 3" Valve, GTVS-300 • 1- Timer ITC-2

*Based on 1.5′ depth of fountain. **All line sizes 1½″ except at filter inlets and outlets where they are the same size as the check valve.

HIGH RATE SAND FILTER, HRP SERIES

These filters ensure clean pool water and reduce maintenance to a minimum. They effectively filter down to 35 microns, and remove silt, sand, algae, etc. to provide crystal clear water. The units are provided with a fiberglass tank and a Noryl self-priming pump, fitted with an integral strainer. A multiport valve permits convenient backflushing.

SPECIFICATIONS:

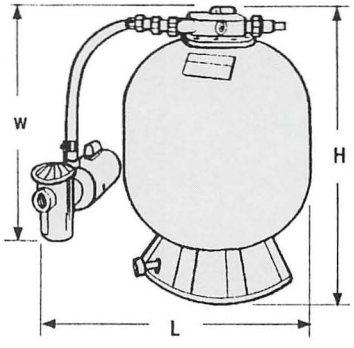
TANK: Shall be one-piece fiberglass construction with an integral air relief valve.

PUMP: Shall be Noryl self-priming type with an integral strainer, available with ½, ¾, 1 or 1½HP 120/230V 60 Hz single phase motor.

MANIFOLD: Shall be provided to interface pump and tank, complete with a multi-port valve for backflushing. (Hose and piping by others).

MEDIA: Shall be Number 20 Silica Sand. (Provided by others).

PUMP SUCTION, DISCHARGE AND WATER PORTS: HRP-21-50, HRP-21-75 and HRP-25-100 shall be 1½″ NPT. HRP-31-150 shall be 2″ NPT.



Part No.	Media	Recommended Quantity Filter Media Cu. Ft.	Filter Area Sq. Ft.	6 Hr. Filter Capacity U.S. Gal.	8 Hr. Filter Capacity U.S. Gal.	12 Hr. Filter Capacity U.S. Gal.	Recommended U.S. G.P.M.	Pipe Size		Max. Dimensions		
								Tank Inlet	Tank Outlet	W	H	L
HRP-21 1/2 HP	No.20 Grade silica sand	2.0	2.4	9,000	12,000	18,000	25	1 1/2"	1 1/2"	21 1/2"	31"	38"
HRP-21 3/4 HP	No.20 Grade silica sand	2.0	2.4	17,280	23,040	34,560	48	1 1/2"	1 1/2"	21 1/2"	31"	38"
HRP-25 1 HP	No.20 Grade silica sand	3.0	3.40	24,480	32,640	48,960	68	1 1/2"	1 1/2"	25 1/2"	35"	42"
HRP-31 150 HP	No.20 Grade silica sand	5.5	5.25	37,440	49,920	74,880	104	2"	2"	31 1/2"	39"	42"

SURFACE SKIMMERS

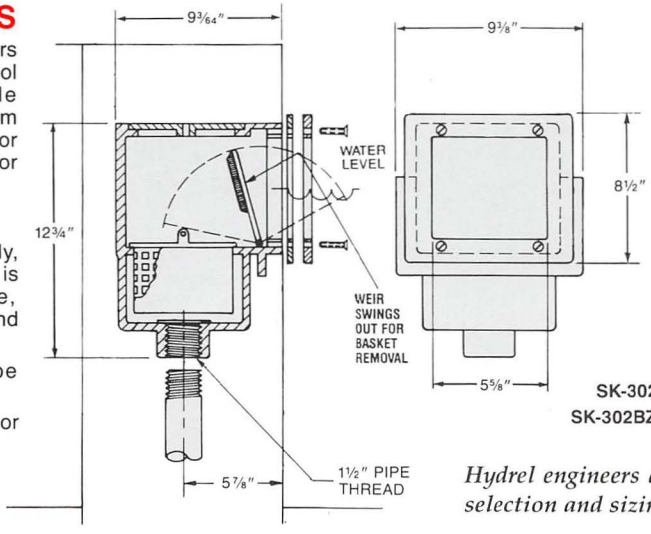
The SK-302 and SK-302BZ skimmers remove floating debris from the pool surface and trap it in a removable plastic basket which is accessible from the front of the skimmer. No cutting or finishing of the decking is required for installation.

SPECIFICATIONS:

MATERIALS: Shall be ABS body, cover, weir and basket. Face plate is white ABS (SK-302) or bronze, (SK-302BZ), with gaskets, screws, and drilled mounting flange.

DRAIN: Shall be 1½″ straight pipe thread.

FASTENERS: Shall be stainless steel or silicone bronze.



SK-302
SK-302BZ

Hydrel engineers are available to assist you in the selection and sizing of all fixtures and components.

VACUUM FITTINGS VF-150H

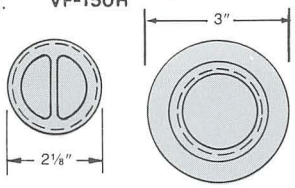
This unit is used in pool walls to provide a connection for a 1½" pool vacuum cleaner. It may also be used as a drain in the pool floor. Provided with a flush, gasketed plug.

SPECIFICATIONS:

BODY: Shall be cast bronze, chrome plated with 1½ " female NPT threads.

PLUG: Shall be cast bronze, chrome plated with plastic gasket.

VF-150H

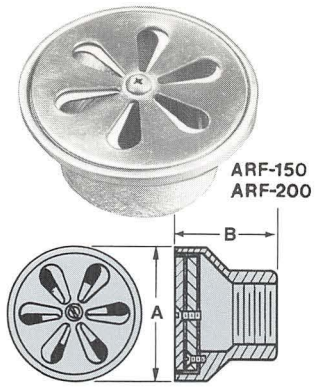


ADJUSTABLE INLET FITTINGS, ARF SERIES

Using only a screwdriver, these units can be set to regulate and balance the flow of water into a pool. Used in conjunction with a water make up system to fill pools.

Bodies are cast bronze, chrome plated, with 1½" or 2" female NPT base. NPT base. Natural Bronze available. Add suffix "BZ" to part no.

ARF-150 - 1½" NPT (A=3½", B=1⅝")
ARF-200 - 2" NPT (A=4", B=1¾")



ANTI-VORTEX DIFFUSION PLATE ASSEMBLIES

It is desirable to place an anti-vortex plate assembly over a sump to prevent water vortexing as it is drawn into the suction line. These units may also be run in reverse to evenly diffuse water for reflecting pools and falls. They are constructed of cast bronze and copper. (The 8" units are cast bronze and cycolac).

PART NUMBER	INLET, NPT	1 ½"	2"	2 ½"	3"	4"	6"	8"	CONNECTION (2)		OPTIONS (3)		
(SUMP D"-Inlet NPT)	GPM MAX.(1)	30	50	75	100	200	450	800	COUPLE	FLANGE	WS	MCR	TT
AVF 8"S-NPT	100	•	•	•	•				•		•		•
AVF 12"S-NPT	440	•	•	•	•	•	•		•	•	•	•	•
AVF 20"S-NPT	800				•	•	•	•	•	•	•	•	•
AVF 24"S-NPT	800				•	•	•	•		•	•	•	•

NOTES:

1. Data based on standard water depth of 14 to 18 inches.
2. AVF-8S2B plastic sump, 100 GPM max. with 2" inlet for use in small pools and filter systems.
3. WS = Waterstop • TT = Tile Tray MCR = Membrane clamping ring
4. Check for availability of 8" couple and flange.

AVF-20S

ORDERING INFORMATION

(Contact factory for pricing and availability)

AVF-20S/MCR-4

SUMP OPTIONS INLET

ADJUSTABLE EYEBALL INLET FITTING • EF-150

Used to return filtered water to the pool and to create turbulence in desired areas. It permits a maximum stream deflection of 45°; and recommended flow rates vary from 14 GPM@ 5 psi, to 24 GPM @ 15 psi, with velocities in the 10-15 ft./sec. range. Cast iron and chrome plated.

SPECIFICATIONS:

MATERIAL: Shall be cast bronze.

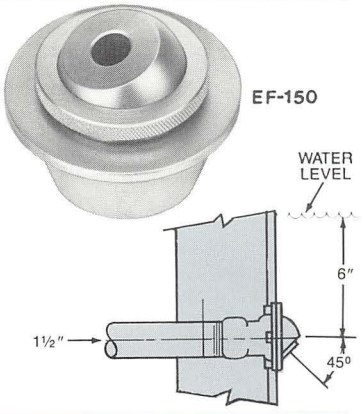
FINISH: Shall be chrome plated. Natural bronze is available at additional cost. (Add suffix "BZ").

ORIFICE: ½" standard. For other available sizes, see the chart at right.

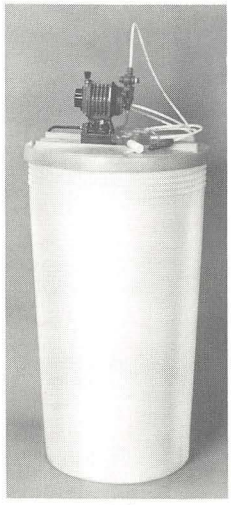
Theoretical Discharge in G.P.M. for Round Hole Adjustable Inlet Fittings (Rule of Thumb Estimate 80% of Theoretical Values)

PRESSURE AT FITTING	1/4"	3/8"	STANDARD 1/2"	3/4"	1"
5	4	10	18	38	64
10	6	13	24	54	94
15	7	17	29	65	116

Guard Against A Too High Velocity—Better to Use 2 or More Fittings Than to Have Extreme Velocity (Suggest 10-15 ft. per sec.)



PRECISION CHEMICAL FEEDER HYC-1



HYC-1

Provides an accurate method for adding hypochlorite, soda ash, aluminum phosphate or muriatic acid solutions to pool water for the control of organic or inorganic contaminants.

SPECIFICATIONS:

TANK: Shall be 50 gal. Polyethylene tank, 22¾" diameter by 39" high.

PUMP: Shall be positive displacement diaphragm type. Motor: 115V, 1.3 Amp., 60 Hz, shaded pole, fully enclosed.

TUBING & VALVES: Furnished with plastic fittings, 8 foot discharge and 4 ft. suction tubing, plus a foot valve and back check valve.

BRONZE GATE VALVES GTVS SERIES

Ideal for isolation service on filtration, drain and suction lines with the seating perpendicular to the line of flow. These valves are used fully open or fully closed, and are not recommended for throttling.

SPECIFICATIONS:

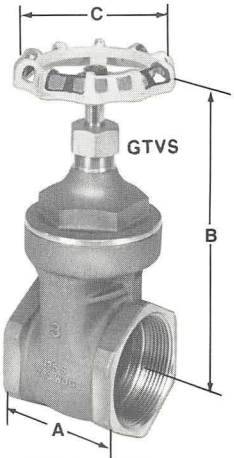
BODY: Shall be cast bronze with rising stem and screwed bonnet of brass.

PORTS: Shall be NPT threads of specified diameters.

ACTUATORS: Full opening of valve requires four turns of handwheel. One turn allows approx. 25% flow. Discs are standard bronze construction.

WORKING PRESSURE: Shall be 200 lbs., non-shock.

ASTM CLASSIFICATION: B-62.

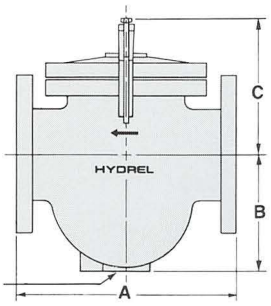


GTVS-75	¾" NPT
GTVS-100	1" NPT
GTVS-125	1¼" NPT
GTVS-150	1½" NPT
GTVS-200	2" NPT
GTVS-250	2½" NPT
GTVS-300	3" NPT

	Size, Inches	75	100	125	150	200	250	300
		3/4	1	1 1/4	1 1/2	2	2 1/2	3
A	End To End	2 3/8	2 3/4	3 1/16	3 3/8	3 3/4	4 3/8	5 1/8
B	Center Of Opening To Top Of Handwheel Open	4 3/4	5 9/16	6 1/4	7 3/16	8 1/8	9 7/8	11 3/16
C	Diameter Of Handwheel	2 3/4	3 1/8	3 1/2	4	4 1/2	5	5 1/2

NOTE: Hydrel reserves the right to change any specification without notice

FLANGED LINE STRAINER, LSF SERIES



The LSF Series of Flanged Line Strainers provide "in-line" protection to prevent clogging of pumps, nozzles and other elements of the hydraulic system

SPECIFICATIONS:

BODY: Cast iron construction, gasketed cover and cast iron clamp.

BASKET: To be perforated, heavy gauge brass or stainless steel for medium to coarse straining (LSF-30 & 40 are 1/8" perforations, others are 5/32").

SIZE	2"	2 1/2"	3"	4"	6"	8"	10"	12"
"A"	8 5/8	7 9/16	8 3/4	11 3/16	14	17 1/8	21 3/4	25 1/4
"B"	6	5 5/8	5 3/4	8	12 3/4	15 1/2	16 5/8	25
"C"	5 5/8	5 5/8	6 3/4	7 1/2	9 3/4	11	14	15
"D"	1/2	3/4	3/4	1	1 1/4	1 1/2	1 1/2	2
Weight	31	32	40	66	131	212	356	550

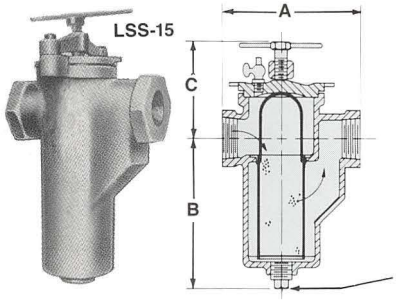
Larger Sizes Available

WORKING PRESSURE: Shall be 60 psi for LSF 30-40, 40 psi for LSF 60-100, 150 psi for LSF 120.

PORTS: Shall be smooth faced, flanged

DRAIN: Furnished plugged.

LSF-20: 2" NPT • LSF-25: 2.5" NPT • LSF-30: 3" NPT • LSF-40: 4" NPT
LSF-60: 6" NPT • LSF-80: 8" NPT • LSF-1000: 10" NPT • LSF1200: 12" NPT



LSS-15: 1½" NPT
LSS-20: 2" NPT
LSS-25: 2½" NPT
LSS-30: 3" NPT

PUMP STRAINER, LSS SERIES

• With extremely large capacity strainers, these units are ideal for use in lines where long periods between cleaning is desired. "In-line," with entrances and discharge openings at the same level. In 1½" through 3" with screwed connection.

SPECIFICATIONS:

BODY: Shall be cast iron construction with a gasketed, machined seat for basket. A hand operated clamping assembly seals the unit and swings away for easy basket removal.

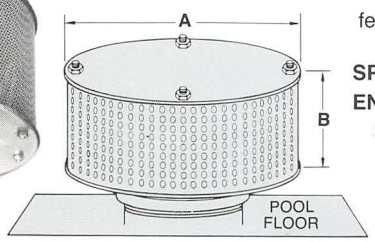
BASKET: Stainless steel, .057" perforated.

PART NO.	1 1/2"	2"	2 1/2"	3"
"A"	7 15/16	7 15/16	12 1/2	12 1/2
"B"	9 3/4	9 3/4	13 5/8	13 5/8
"C"	4 3/4	4 3/4	8 1/4	8 1/2
"D"	3/4	3/4	1	1
Weight	25	25	65	65
Basket Area in Sq. In.	53	53	144	144

SUCTION SCREEN

• Suction screens are used to prevent the clogging of pumps, nozzles and other elements of a fountain's hydraulic system. The screens feature heavy brass sheet end plates, and a perforated brass screen with a threaded collar that fits a male NPT suction line connection.


SS-200



SPECIFICATIONS:

END PLATES: To be heavy brass sheet.

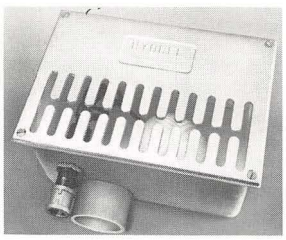
SCREEN: Shall be perforated brass.

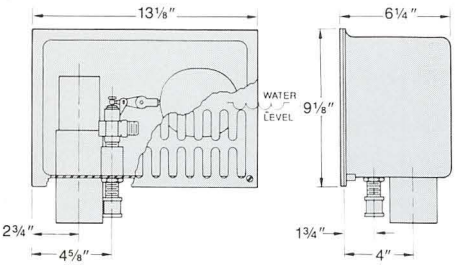
HARDWARE: Shall be stainless steel screws, female NPT fitting brazed to brass end plates.

PART NO.	CAPACITY GPM MAX.	DIMENSIONS A	DIMENSIONS B	FEMALE CONNECTION SIZE
SS-100	100	6"	6"	2" N.P.T.
SS-200	200	6"	6"	3" N.P.T.
SS-300	300	12"	6"	4" N.P.T.
SS-600	600	24"	6"	6" N.P.T.

FLOAT VALVE and OVERFLOW DRAIN COMBINATION in a Niche

• The VON-502 is used to control the water level in a pool. A float valve senses and automatically adds water when water levels drop due to evaporation or other factors. This unit also features an overflow drain to remove excess water caused by overfilling or precipitation.


VON-502



For complete details on these and other Hydrel products, write or call for the Specification Sheet describing the unit being considered.

SPECIFICATIONS:

NICHE: Heavy formed fiberglass.

FACE PLATE: Natural finish cast bronze. Chrome plating available on special order. (Add suffix "CP" to part number).

FLOAT VALVE: ½" cast bronze with heavy duty plastic.

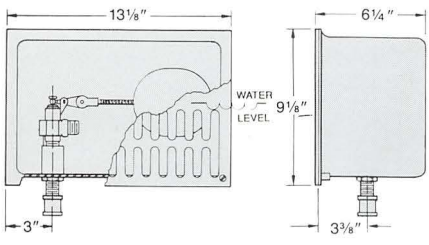
OVERFLOW STANDPIPE: An internal 2" PVC pipe may be removed and cut to meet the required water level, then cemented in place.

INLETS: ½" FPT for float valve, 2" FPT for overflow standpipe.

FLOAT VALVE in a Niche

• The FVN-75 controls pool water levels with the same float valve and action as the VON-502 above, but has no standpipe.


FVN-75



SPECIFICATIONS:

NICHE: Heavy formed fiberglass.

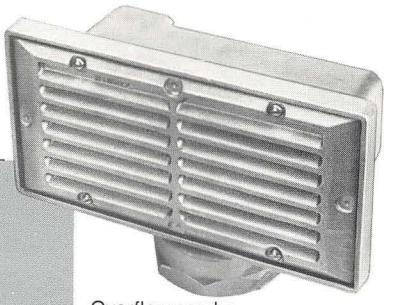
FACE PLATE: Cast bronze, chrome plated. Natural finish is available on special order. (Add suffix "BZ" to part number.)

FLOAT VALVE: ¾" cast bronze with heavy duty plastic or styrofoam float.

INLET: ¾" FPT for float valve.

WALL DRAIN OVERFLOW • The WDO-200 and WDO-300 wall drain overflow fittings provide drainage for excess pool water.

WDO-200
WDO-300



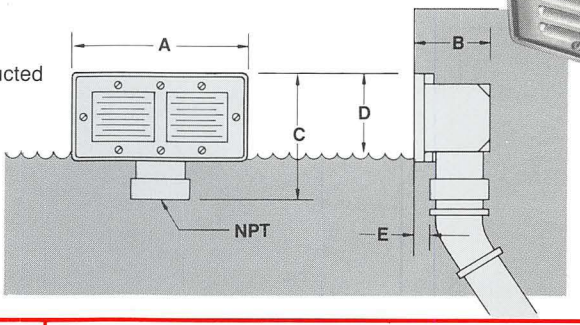
SPECIFICATIONS:

MATERIAL: The WDO-200 and WDO-300 shall be constructed of brass and bronze.

DRAINS: Shall be 2″ for WDO-200, and 3″ for WDO-300.

FASTENERS: Shall be stainless steel or silicone bronze.

	NPT	A	B	C	D	E
WDO-200	2"	10 1/4	3 7/8	4	3 3/4	13/16
WDO-300	3"	10 1/4	4 9/16	7 1/2	5 1/4	1



Overflow can be adjusted by inserting a copper tube of the required length into the outlet inside the wall drain. (This tube is not supplied).

OSP OVERFLOW STANDPIPE AND DRAIN FITTING

The OSP Series overflow standpipe and drain fitting consists of a chrome plated or natural bronze dome and standpipe, threaded on one end; plus a cast bronze floor entrance fitting with an integral capillary ring for 2, 3, or 4″ drain lines. BZ denotes natural finish.

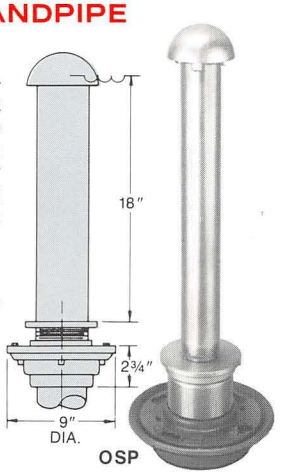
SPECIFICATIONS:

STANDPIPE: Shall be chrome plated red brass pipe.

DOME: Shall be chrome plated brass.

FLOOR ENTRANCE: Shall be cast iron with a membrane clamping ring.

FINISH: BZ denotes natural finish on standpipe and dome.



OSP-20: 2″ NPT • OSP-20 BZ: 2″ NPT
OSP-30: 3″ NPT • OSP-30 BZ: 3″ NPT
OSP-40: 4″ NPT • OSP-40 BZ: 4″ NPT

OSP-PL SERIES DRAIN WITH PLUG

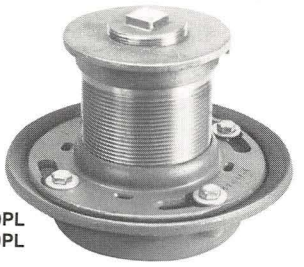
The drain fitting is dura cast iron with a clamp ring to hold waterstop membranes. The base is female NPT. The threaded extension includes an adjustable brass bushing to position the plug. The extension includes a pipe plug.

SPECIFICATIONS:

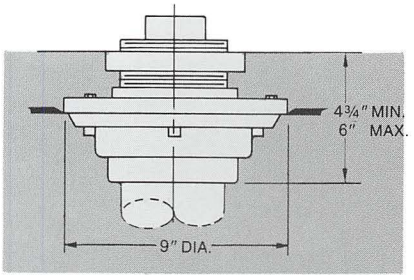
BODY: Shall be dura cast iron with clamp ring to retain waterstop membranes – base 2″ (OSP-20PL) or 3″ (OSP-30PL) female NPT.

PLUG: Shall be 2″ (OSP-20L) or 3″ (OSP-30PL) male NPT with adjustable brass bushing in the body.

OSP-20PL • OSP-30PL



OSP-20PL
OSP-30PL



FLOOR DRAINS • Floor drains are used to empty the fountain for periodic maintenance or cleaning, and are tied into the storm or sewer system. On the line from the drain to the applicable system, a valve must be installed to control the draining of the fountain.

SPECIFICATIONS:

BODY: Dura-coated cast iron with membrane clamping ring.

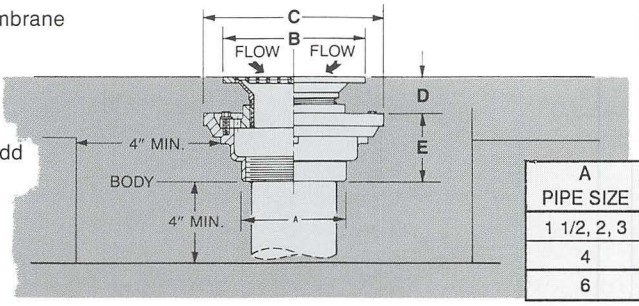
STRAINER: Polished cast bronze threaded for height adjustment.

INLET: NPT threads.

To order a chrome-plated strainer, add suffix "CP" to the part number.

FD-150: 1½″ NPT • FD-400: 4″ NPT
FD-200: 2″ NPT • FD-600: 6″ NPT
FD-300: 3″ NPT

FD-400



A PIPE SIZE	B STR.DIA.	C	D MIN. MAX.	E
1 1/2, 2, 3	5	9	1/4 - 1	2 7/8
4	6	9	5/8 -1 1/4	3 1/8
6	8	9	5/8 -1 1/4	3 1/8

FLOOR DRAIN WITH BACKWATER VALVE

In pump room and pump pits, a drain with a backwater valve prevents the water from backed-up storm or sewer lines from entering the pit area. This is accomplished with a ball float which makes a water tight seal when forced against the drain body by backwater pressure.

SPECIFICATIONS:

BODY: Dura-coated cast iron body, integral trap and side outlet.

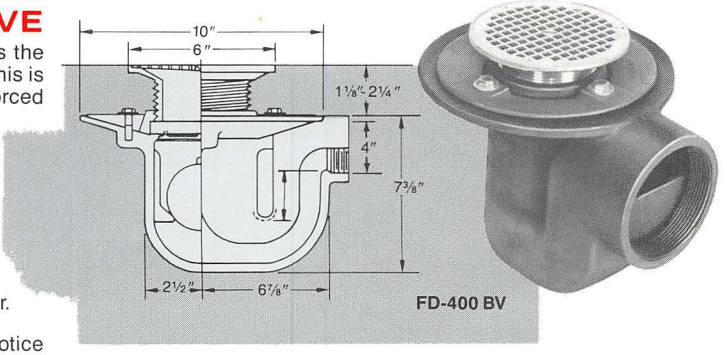
BACKWATER VALVE: Ball float.

STRAINER: Polished cast bronze, threaded for height adjustment.

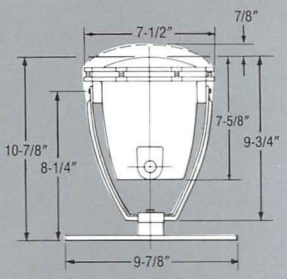
INLET: NPT threads.

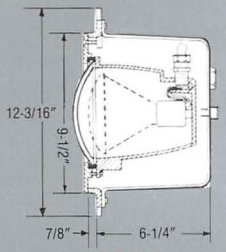
To order a chrome plate strainer, add the suffix "CP" to the part number.

NOTE: Hydrel reserves the right to change any specifications without notice



4418-5

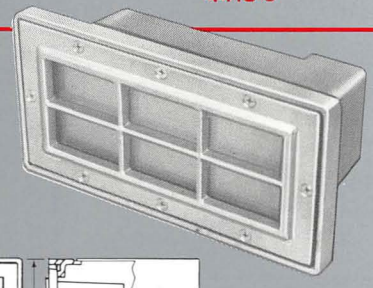




4418-3

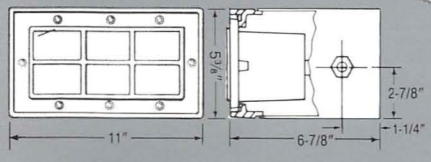
250W MAX.
PAR 38 QUARTZ 120V

100W MAX.
PAR 38 INCAN 12V



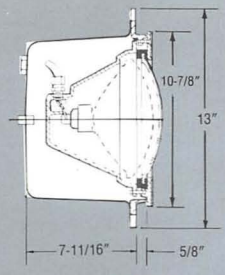
300W MAX.
T-3 QUARTZ
120V

116W MAX.
A-21 INCAN
120V

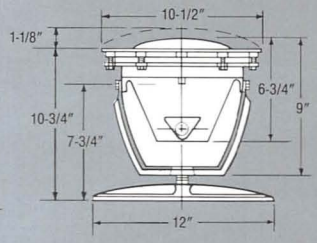


4415-3

500W MAX. • PAR 56 QUARTZ 120V
300W MAX. • PAR 56 INCAN 12V



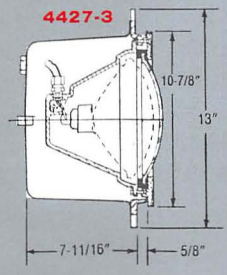
4424-3

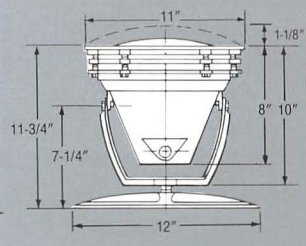


4424-5

1000W MAX. • PAR 64 QUARTZ 120V

4427-3





4427-5

4427-73

HYDREL UNDERWATER LIGHTING

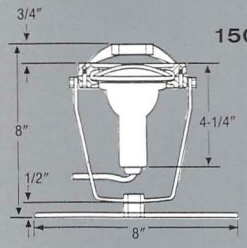
Hydrel offers you the widest choice of premium quality underwater fixtures and accessories in the industry. They include standard base, yoke and niche mounts, in both line and low voltage; as well as special purpose units and new low profile, high efficiency quartz halogen fixtures.

These units are built of the finest materials; cast bronze or stainless steel housing, tempered lenses, silicone gasket and stainless steel niches. All have Low Water Cut-offs, and our base/yoke models include a standard rockguard. All are U.L. listed.

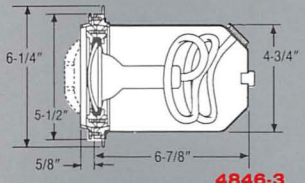
Our more popular fixtures are shown here, with underwater junction boxes on the facing page. For a complete showing and full details, ask for Hydrel's Underwater Lighting Catalog and/or the Product Data Sheets for specific models.

Hydrel Underwater Lighting Fixtures are also available for salt water applications. Contact the factory.

150W MAX. • T-4 QUARTZ 120V
75W MAX. • MR-16 QUARTZ
12V

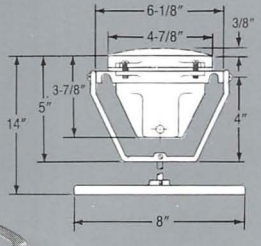


4846-5



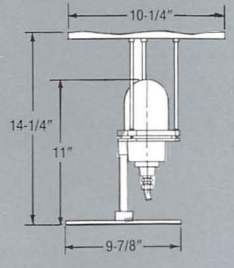
4846-3

50W MAX.
PAR 36 12V

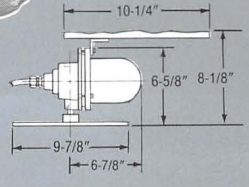


4410-5LV

116W MAX. • A-21 INCAN 120V



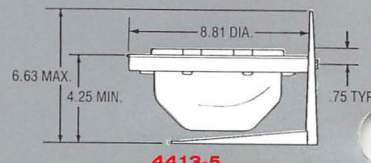
4412-V5/WLV



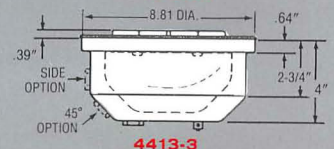
4412-H5/WLH

400W MAX.
RSC
QUARTZ
120V
4414

250W
MAX.
T-R QUARTZ
120V
4413

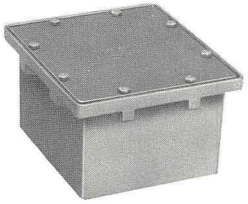


4413-5



4413-3

UNDERWATER JUNCTION BOXES



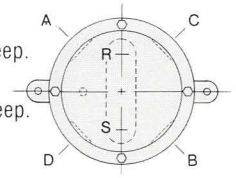
Hydrel Underwater Junction Boxes are designed for the connection of supply cords from underwater fixtures and service conduits. They feature heavy cast bronze construction, neoprene gaskets, internal ground lugs and silicone bronze hardware. All hubs, indicated by letters, may be tapped either 1/2″ or 3/4″ NPT. Some boxes may have larger hubs. (See individual descriptions). When ordering, specify the catalog number, hub location and hub size. All boxes are supplied standard with 3 tapped hubs.

1701

Outside Dim:
4 3/4″ dia. x 3″ deep.

Inside Dim:
3 1/2″ dia. x 2″ deep.
(25 cubic inches)

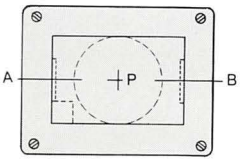
Cover may have single 1/2″ or 3/4″ NPT hub.
Bottom may also have single 1″ hub.



1703

Outside Dim:
3 3/8″ x 4 3/8″
x 2 1/2″ deep.

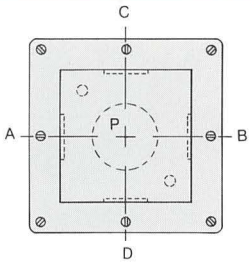
Inside Dim:
3″ x 2″ x 2″ deep.
(12.0 cubic inches)



1705

Outside Dim:
4 3/4″ square
x 2 1/2″ deep.

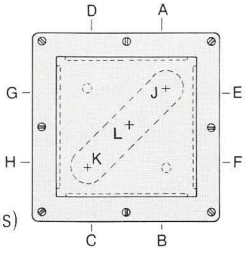
Inside Dim:
3″ sq. x 2″ deep.
(18.0 cubic inches)



1706

Outside Dim:
5 3/8″ square
x 2 1/2″ deep.

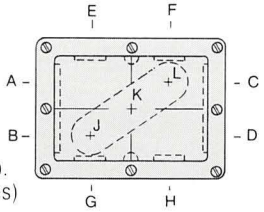
Inside Dim:
4″ sq. x 2″ deep.
(32.0 cubic inches)



1708

Outside Dim:
7 3/8″ x 5 3/8″
x 2 1/2″ deep.

Inside Dim:
6″ x 4″ x 2″ deep.
(48.0 cubic inches)

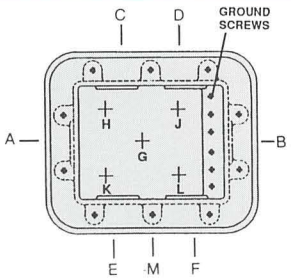


Bottom may have single 1″ or 1¼″ NPT hub.

1710

Outside Dim:
7-5/8″ x 6-1/2″
x 4-7/16″ deep.

Inside Dim:
5-3/16″ x 4-1/8″
x 3-11/16″ deep.
(62 cubic inches)

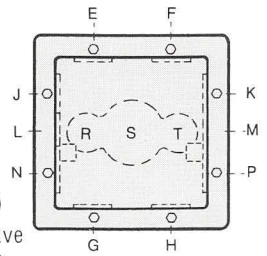


1711

Outside Dim:
7 5/8″ square
x 4 3/4″ deep.

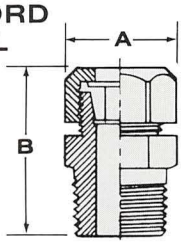
Inside Dim:
6″ sq. x
4″ deep.
(144.0 cubic in.)

Bottom may have maximum three 1″ hubs or two 1¼″ or one 2″ hub.



WATERTIGHT CORD ENTRANCE SEAL

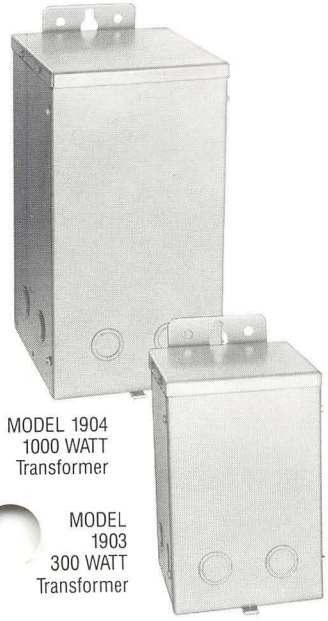
Constructed of brass with a neoprene grommet, these seals are used in our underwater junction boxes as fixture cord entrance seals for type ST and SO Water-resistant cord.



CATALOG NUMBER	CORD SIZE	NPT	A	B
1430-2	18-3	½	⅞	1½
1430-22*	16-3	½	⅞	1½
1430-3	14-3	¾	1¼	1¾
1430-33	10-3	¾	1¼	1¾

*18-2, 16-1 Cords fit 1430-22

FOUNTAIN LIGHT ACCESSORIES



MODEL 1904
1000 WATT
Transformer

MODEL
1903
300 WATT
Transformer

LOW VOLTAGE TRANSFORMERS • Low voltage lighting fixtures require that the line voltages be stepped down. This is normally accomplished with a transformer or series of transformers located in the pool equipment area. Hydrel offers such units in sizes from 300 to 1000 watts.

Because of the factor of line loss, the length of cords used with low voltage underwater fixtures must be considered carefully.

300 WATT TRANSFORMERS

These 120V 12V step down transformers are two-winding isolated type. Taps are provided to ensure proper voltage when operated within allowable line loss limits. Two separate wiring compartments isolate primary and secondary leads. Housed in weatherproof enclosure. Meets requirements of Article 680 N.E.C., listed by U.L.

1903 • 120V FUSED PRIMARY, 12V, 13V and 14V SECONDARY.
Maximum dimensions: Depth 4-1/2″, Height 9-1/2″, Width 5-1/8″.

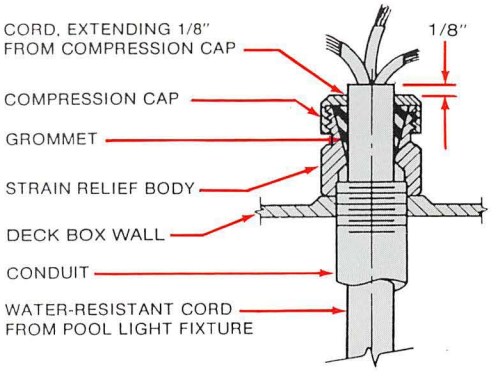
1903J • 120V FUSED PRIMARY, 12V and 13V SECONDARY.
Maximum dimensions: Depth 5-7/8″, Height 5-1/2″, Width 10-1/8″.

1903L • 120V Circuit Breaker on PRIMARY, 12V SECONDARY.
Maximum dimensions: Depth 4-1/2″, Height 9″, Width 6″.

1000 WATT TRANSFORMERS

1904 • 120V FUSED PRIMARY, 12V, 13V and 14V SECONDARY.
Maximum dimensions: Depth 6¼″, Height 11½″, Width 6¼″.

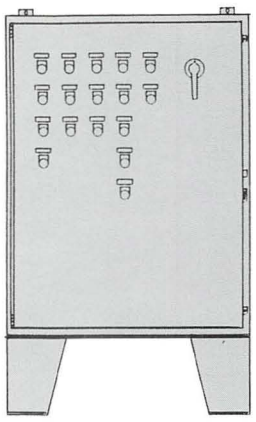
STRAIN RELIEF



SR-50	1/2″ NPT	16-3*
SR-75	3/4″ NPT	10-3
SR-75-4	3/4″ NPT	16-3*

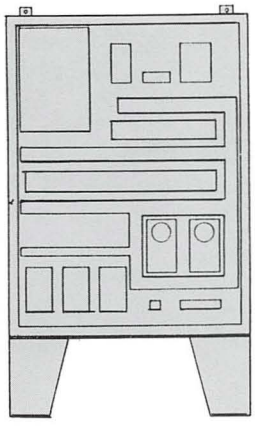
*18-2, 16-1 Cords fit SR-50.

To meet NEC requirements, HYDREL recommends the use of PC-21 potting compound in all underwater J-Boxes.



THE CONFIGURATION OF EQUIPMENT WILL VARY WITH EACH APPLICATION.

THESE UNITS MAY BE FLOOR OR WALL MOUNTED (UNITS ILLUSTRATED ARE FLOOR MOUNTED)



HYDREL CONTROL PANEL, CP SERIES

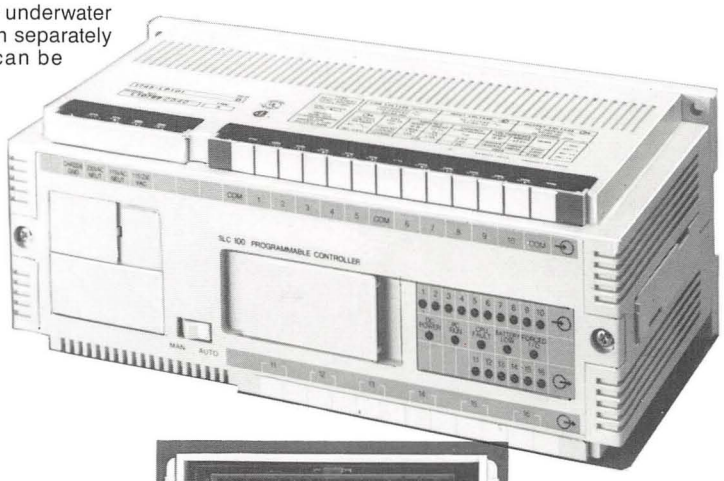
Hydrel Control Panels vary to meet your requirements. They are secured enclosures, floor or wall mounted, and house the controls to produce the desired water effect. These controls include a primary load center for the distribution of power; fuse blocks, circuit breakers, and a terminal block for the various circuits required. Timers, which may be astronomic or 24 hour clocks, are used to energize or de-energize the various circuits or functions as programmed. Wind control, water make-up and low water cut-off controls are also included. Indicator lights in the door enclosure identify the circuits that are activated.

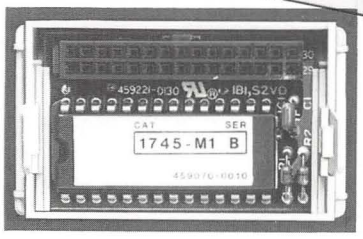
For complete details on these and other Hydrel products, write or call for the Specification Sheet describing the unit being considered.

PROGRAMMABLE CONTROLLER

The SLC-100 is designed to operate sequential water effects and/or underwater lighting. The SLC Series is 100% solid state, and offers up to sixteen separately programmable channels. The Fan EEPROM memory module can be pre-programmed by Hydrel to provide the desired sequences.

USER MEMORY SIZE: 885 words maximum.
MEMORY TYPE: CMOS RAM. Battery backup. Optional EEPROM.
TYPICAL SCAN TIME: 15 milliseconds, 500 word program.
INTERNAL CONTROL RELAYS: 181 maximum. Regular or latched.
TIMERS/COUNTERS/SEQUENCERS: 32 maximum. Retentive.
TIME BASE: 0.1 sec. Fine time bases to 0.01 sec. can be selected.
TIMER RANGE: 0.1 to 999.9 sec.
SEQUENCER CAPACITY: 100 steps, 8-bit groups, cascadable, time- or event-driven.
SHIFT REGISTERS: 8-bit groups, cascadable, time- or event-driven.
DIAGNOSTIC INDICATORS: PC, RUN, DC POWER, CPU FAULT, FORCED I/O, BATTERY LOW, Status Indicator for each I/O Point.
COUNTER CAPACITY: 9999 counts.





LENGTH:
9.812" (250mm)
WIDTH:
4.875" (124mm)
HEIGHT:
3.75" (95mm)

SPECIFICATIONS:

INCOMING POWER:	Input Circuits – 10	Output Circuits – 6
85-132/170-265 VAC 60/60 Hz	85-132 VAC 50/60 Hz	Hard Contact – 10-250 VAC/10-125 VDC
	170-265 VAC 50/60 Hz	Hard Contact – 10-250 VAC/10-125 VDC
	10-30V AC/DC	Hard Contact – 10-250 VAC/10-125 VDC
18-30 VDC	10-30V AC/DC	Hard Contact – 10-250 VAC/10-125 VDC

HYDREL TIMERS

The ITC-1 and ITC-2 Standard Time Switches are 24 hour, dial type time switches for energizing and de-energizing water effect circuits. The AD-1 and AD-2 Astronomic Time Switches perform the same function and can be programmed for annual use with a day omitting feature. The ITC and AD Series are available to control single or double circuits.

SPECIFICATIONS:

ITC-1: Shall be SPST, 120V, 40 amps per pole, 24 hour time setting.

ITC-2: Shall be DPST, 120V, 40 amps per pole, 24 hour time setting.

AD-1*: Shall be SPST, 120V, 40 amps per pole, astronomic dial setting.

AD-2*: Shall be DPST, 120V, 40 amps per pole, astronomic dial setting.

DIMENSIONS (BOTH UNITS):
Approx. 9¼" high, 6" wide, 3⅝" deep.

GENERAL INFORMATION:

* "On" operation shall occur automatically at Sunset (in city of use). "Off" operation shall be adjustable from 8:30 PM to 2:30 AM in one half hour increments or at Sunrise. (AD only).

All timers shall be enclosed in an outdoor case surface mount, baked gray epoxy enamel. Terminals shall be screw type, capable of accepting #8 AWG wire.

MS SERIES MAGNETIC MOTOR STARTERS

Magnetic starters provide full voltage, across the line, start-stop control of electric motors. They include thermal relays, which together with the proper heating elements, will protect motor windings from harmful current and resultant temperature rise caused by such factors as overloading the motor, sustained low line voltage, or stalled motors.

SPECIFICATIONS:

SIZES 00 THRU 3½: Shall be straight through wiring, spring assisted gravity dropout contact breaking, fast arc quenching, quick change coil and self-aligning magnets.

CONTACTS: Consist of silver cadmium oxide 45° wedge action.

RELAY: Melting alloy.

CONTROL: Hand, off, automatic.

COIL: Multiple voltage 120/208/240 volts, 60 Hz, other voltages and frequencies available.

ENCLOSURE: NEMA 4X, NEMA 4, or NEMA 1.

ORDERING INFORMATION:

These units are non-reversing, with resettable thermal overload relays of the melting alloy type. They are designed for use with motors ranging from 1½ HP to 75 HP. To order the model required, see the example below:

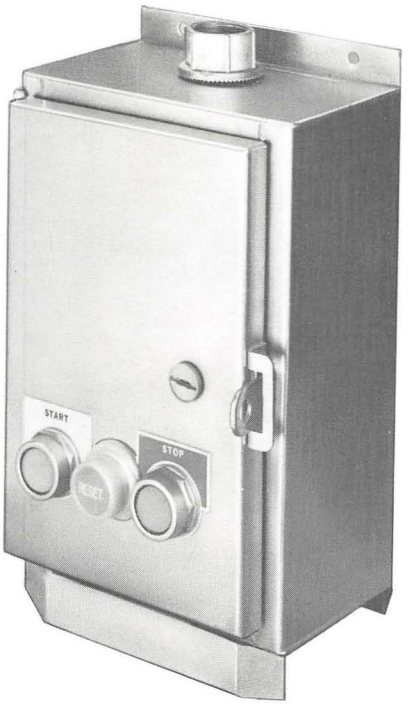
MS – 750 / 1800 / 4 / 240 / 3

HORSEPOWER
RPM. (PUMP)
NEMA ENCLOSURE
VOLTAGE
PHASE

PART NUMBERS:

MS-150	1½ HP.	MS-1500	15 HP.
MS-200	2 HP.	MS-2500	25 HP.
MS-300	3 HP.	MS-3000	30 HP.
MS-500	5 HP.	MS-4000	40 HP.
MS-750	7½ HP.	MS-5000	50 HP.
MS-1000	10 HP.	MS-7500	75 HP.

For complete details on these and other Hydrel products, write or call for the Specification Sheet describing the unit being considered.



CMS SERIES MAGNETIC MOTOR STARTER

The CMS starters meet the National Electric Code requirement for providing short circuit motor protection with fused disconnection of line voltage, a means of safeguarding personnel from contact with live parts and a motor controller with overload protection. A combination starter with fused disconnects is adaptable to various ampere loads within the rating of the fuse clip. Combination starters also provide a more compact and attractive installation than separate units. Units are supplied without fuses.

SPECIFICATIONS:

TYPE: Shall be combination starter with fusable disconnect.

CONTACTS: Silver cadmium oxide, 45° wedge action.

RELAYS: Melting alloy.

COIL: Multiple voltage 120/208/240 volt, 60 Hz. Other voltages and frequencies available.

ENCLOSURE: NEMA 4X, NEMA 4, or NEMA 1.

CMS – 750 / 1800 / 4 / 240 / 3

HORSEPOWER
RPM. (PUMP)
NEMA ENCLOSURE
VOLTAGE
PHASE

PART NUMBERS:

CMS-300	3 HP.	CMS-2500	25 HP.
CMS-500	5 HP.	CMS-3000	30 HP.
CMS-750	7½ HP.	CMS-4000	40 HP.
CMS-1000	10 HP.	CMS-5000	50 HP.
CMS-1500	15 HP.	CMS-7500	75 HP.

DCC SERIES SEQUENCE TIMERS

Circuits that operate lighting fixtures or solenoid valves can be turned off and on by these units in order to create a changing pattern of lighting or water effects.

SPECIFICATIONS:

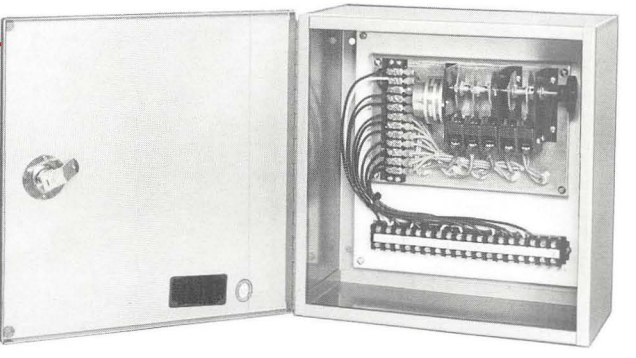
TIMER: Shall be 180° adjustable cut cam with trail output rated for 1800 watts per cam.

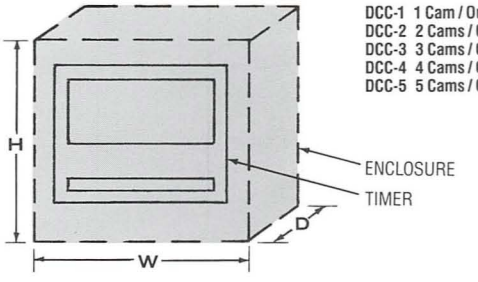
MOTOR: Shall be synchronous 1 RPM 120V, 60 Hz. Other voltages and frequencies available on special order.

ENCLOSURE: Shall be NEMA IV.

NOTE: Custom sequence timers are available on special order.

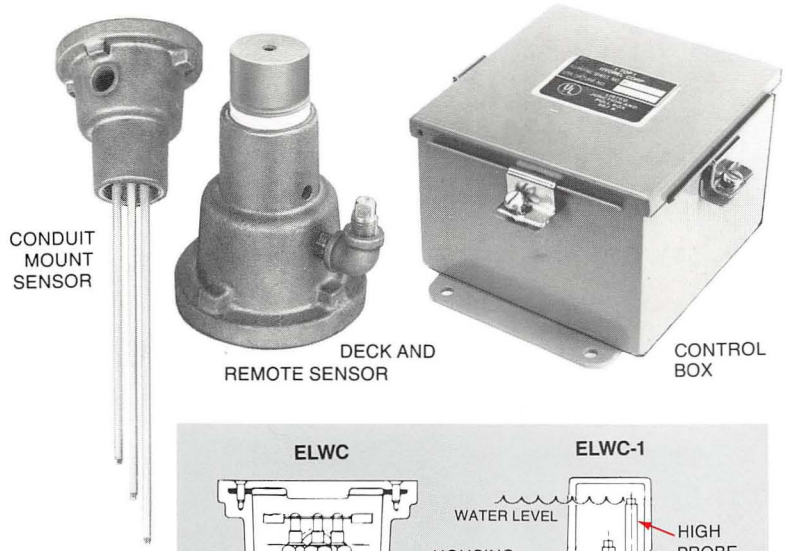
	DCC-1	DCC-2	DCC-3	DCC-4	DCC-5
D	3.5	3.5	5	5	5
H	8	8	12	12	12
W	6	6	10	10	10





DCC-1 1 Cam / Output
DCC-2 2 Cams / Output
DCC-3 3 Cams / Output
DCC-4 4 Cams / Output
DCC-5 5 Cams / Output

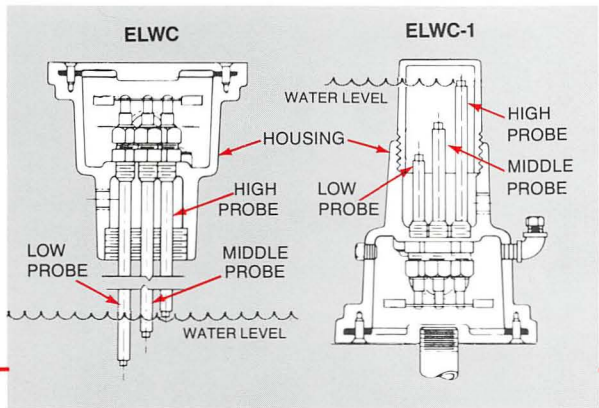
Water effect designers, installers and end users employing the equipment described herein, assume full responsibility for the compliance with all applicable codes and ordinances. The manufacturer/supplier does not control the application, installation or usage, and retains no responsibility for consequences arising from same.



ELECTRONIC WATER LEVEL AND LOW WATER CUT-OFF CONTROLS

The ELWC AND ELWC-1 Electronic Water Level and Low Water Cut-off Control combines these functions in single units. These units maintain water level and also protect pump and lighting equipment against overheating should the water level drop below minimums required for cooling in an emergency. These units consist of a control box and a sensor housing. The ELWC is designed for deck or remote mounting with the sensor housing set in a down position. The ELWC-1 is for conduit mounting with the sensor housing set in an up position. These are electrically connected to a remotely located control box.

The sensor units monitor the pool water level by making the electrically conductive water a part of the control unit. This is accomplished with a series of stainless steel probes which must be cut to the proper length for the specific pool. There are the high, middle, and low probes. The water level is maintained between the high and middle probe as the control senses the water position and activates or shuts off the water supply solenoid. The low probe is the cut-off which senses the absence of water and turns off the lighting and pump equipments.



ELWC DECK OR REMOTE MOUNT:

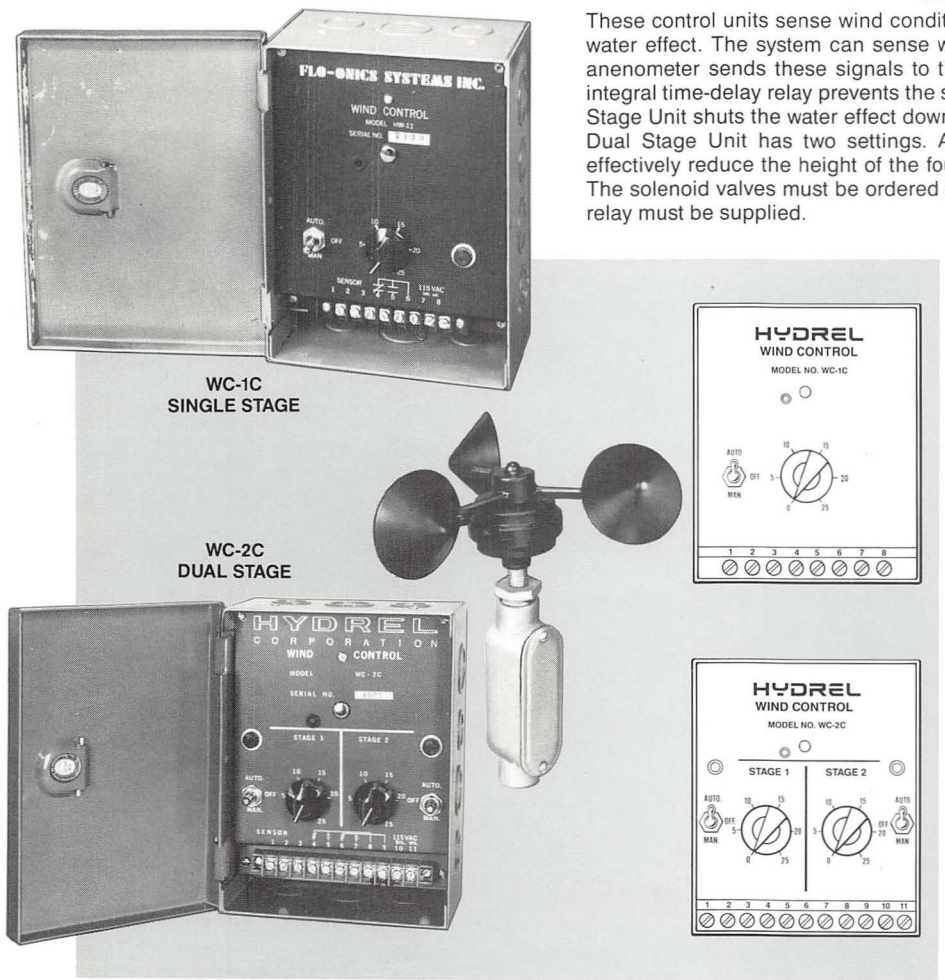
ELWC-LC Probe housing with probes • ELWC-PA Probe Set
ELWC-CP Control panel with circuit board • SD-1002 Circuit board

For Deck and Remote Electronic Water Level and LWC Control, order ELWC

For Conduit mounted Electronic Water Level and LWC Control, order ELWC-1

HYDREL WIND CONTROL

These control units sense wind conditions and can automatically reduce or shut down the water effect. The system can sense wind velocity changes of 1 MPH to 25 MPH, and an anenometer sends these signals to the control box (which can be remotely located). An integral time-delay relay prevents the system from reacting to momentary gusts. The Single Stage Unit shuts the water effect down when wind conditions meet the preset velocity. The Dual Stage Unit has two settings. At the first stage, a solenoid valve is energized to effectively reduce the height of the fountain. At the second stage, the pump is shut down. The solenoid valves must be ordered separately. If load exceeds 10 amps, an intermediate relay must be supplied.



SPECIFICATIONS:

ELECTRICAL: Shall be 120V, 60 Hz.

CONTROL BOX: NEMA 1 enclosure 6″ x 8″ x 4.″

CIRCUIT BOARD: Shall be solid state.

TERMINAL: Shall be ''auto, off, manual'' function switch with dial adjustable wind velocity actuation points. (WC-1C & WC-2C).

INDICATORS: Shall have pilot indicator lights to identify function.

ANENOMETER: Shall be cupped type with integral generator with ½″ NPT mounting box.

MAXIMUM LOAD: Shall be 10 amp.

GENERAL INFORMATION:

1. When coil current exceeds 10 amps, an intermediate relay is required. Order separately.

2. When the system is first energized, there is a delay of approximately 60 seconds before the controls stabilize at the normal position.

3. Locate anenometer in an open area, exposed to the same wind conditions as the fountain.

4. Control Box may be located up to 500 ft. from the anenometer. Use AWG wire in metal conduit. Only the signal leads should be in this conduit.

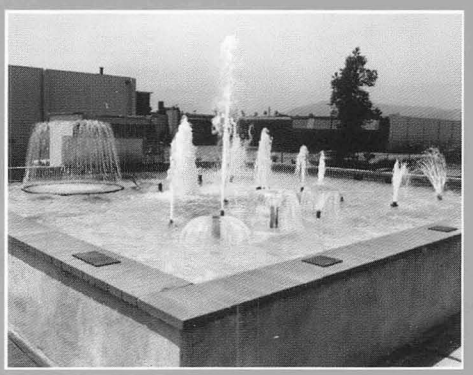
5. Locate the Control Box in a protected area. Avoid proximity to high power switch gear.

6. The numbers around the control dial represent wind speed in mph. When testing units, set dials to a speed higher than the existing wind speed.

NOTE: Hydrel reserves the right to change any specifications without notice

LIGHT, WATER, MOTION...

from concept to creation.

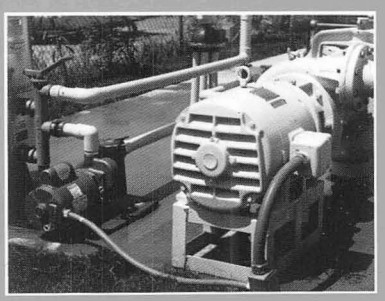


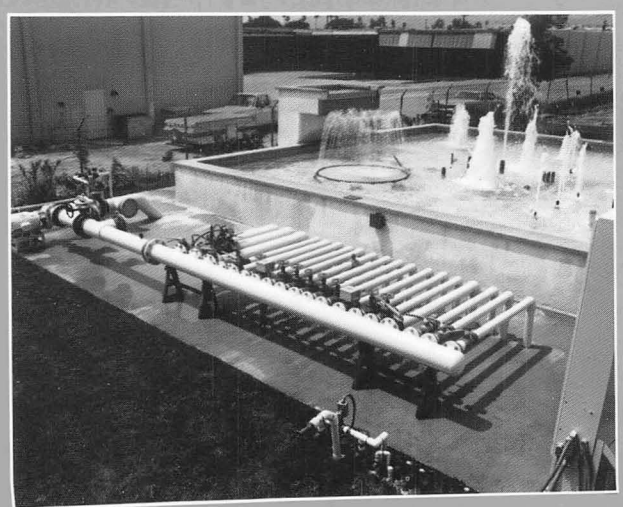
HYDREL...
quality products, quality people

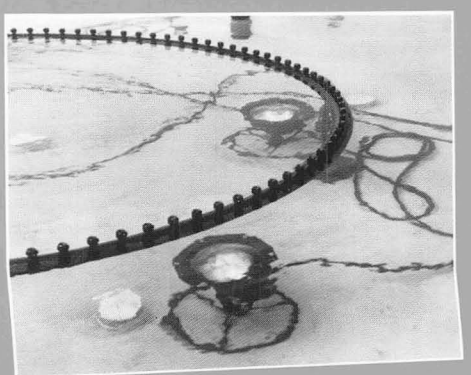
Hydrel offers you a comprehensive line of fountain and water effects complemented by a creative design/engineering group tempered by forty-five years of experience. We can provide computer generated visuals, detailed mechanical and electrical layouts and isometric renderings, all designed to implement your concept within a soundly engineered system.

As part of our design service, we maintain a complete testing and demonstration capability in our own 2,000 square foot outdoor pool. This unique facility is equipped with a versatile system of pumps; valves, fountains and other components which enable our engineers to interchange or combine units to preview and evaluate their performance, appearance and compatibility.

No other company in our industry can offer such integrated services in the production of water effects.







HYDREL PRODUCT LINES

Architectural and Landscape Lighting
Underwater Lighting • Fountains

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