OPERATIONS MANUAL

FOR

architectural fountain kits

K-10 THROUGH K-160 SERIES

KIM LIGHTING
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INTRODUCTION

Your fountain is a part of architecture and ecology. Building a fountain in landscaped areas is similar in concept to planting a tree. It brings to the viewer an element of nature that is the life giving substance for man's survival. Appreciation for running water is built into our most fundamental instincts. The beauty is further enhanced with illumination during the evening hours.

We trust that if everything else fails, by reading the manual you will be amply rewarded in the proper assembly and installation, adjusting, and care of the fountain. Supplemental information on trouble shooting hints, winterizing and water treatment are included. This manual does, however, cover items which are not necessarily included in your fountain. The installation drawings should be utilized in conjunction with the manual for best results.

ASSEMBLY AND INSTALLATION INSTRUCTIONS

I. ASSEMBLY PREPARATION

A. Check all items against the packing list when unpacking the fountain equipment.

B. Utilize the fountain drawings to become familiar with the various component parts and their relative position in the complete fountain.

C. Read the manual to save time and re-work.

D. Check all local electrical, plumbing and other codes before commencing installation.

II. ASSEMBLY AND INSTALLATION

A. Manifolding

1. Lay out the piping in its proper position as shown on the fountain drawing.

2. If the manifolding is in sections, then connect each section together by means of the unions.

3. Adjust the support brackets (not necessarily supplied with all fountains) with the manifold.

4. Mount dandelion riser support to pool floor with lead anchors and stainless steel bolts for corrosion-proof and permanent installation.

5. On dandelions, run pipe from "Y" strainer to waste for easy flushing of trash.

B. Submersible Pumps

NOTE: Before attempting any connection, read detailed pump instructions, (page - 9), for 1/3 horsepower and larger only.

1. Connect pump to manifold piping, either by the hose and clamp connection or the other pipe connection.

C. Spray Equipment

1. Spray Rings

   a. Attach the legs to the sockets provided on the under side of the ring.

   b. Adjust to proper height and level. The water level is to be flush with the top of the pipe surface so the jets protrude.

c. Connect to the manifold with the hose and clamps provided.

2. Nozzles

a. Screw the nozzles onto the vertical riser pipes of the manifold piping.

3. Dandelions

a. Screw the bronze ball onto the riser support pipe.

b. Install the dandelion arms starting at the top, working down the sides. Cartons are marked showing which arms are for top half and which are for bottom. (Bottom arms have orifice inserted into threaded adaptor.)

D. Junction Boxes

1. Screw the junction box on the conduit stub and run up tight with good thread sealant to assure a water-tight connection.

NOTE: All threaded connections should be made with National Tapered Pipe threads (NPT). All conduit in the pool area must be an approved copper alloy, red brass pipe such as "Everdur".

E. Fountain Lights

1. Fasten the support R.B.P. stem into the base and tighten the set screw.

2. Attach the mounting yoke to the fixture with the 2 screws provided.

3. Fasten the yoke and fixture to the support stem and tighten the set screw after correct height has been determined. Fixture lens should be 2" below water level.

4. Roughly aim fixtures in direction of water travel from jets and equally space all units and different colors as shown on installation drawings. Do not over-tighten screws in yoke so final adjustment can be made after start up.

III. ELECTRICAL MAKEUP

NOTE: PROVIDE SEPARATE CIRCUITS FOR EACH PUMP AND LIGHTS. USE GROUND FAULT CIRCUIT INTERRUPTERS

A. Lights

1. Each light is supplied with a 9' cord that passes through a brass compression seal on the junction box. (See drawing for correct box and circuit, as some fountains have several boxes and numerous circuits).

2. Connect the green wires to the ground lug in the junction box for the equipment safety ground. Make all connections tight and well insulated.

3. Run unbroken ground wire from junction box ground lug to the service ground in panel board.

4. Check all circuits for continuity by flashing lights (5 seconds maximum).

CAUTION: DO NOT OPERATE LIGHTS UNLESS COMPLETELY SUBMERGED OR DAMAGE WILL RESULT.

1. 1/3 horsepower and larger pumps - See Page 9.

2. 1/8 horsepower Pumps - See instructions in packing carton.

   a. Connect cord to junction box with watertight compression seal.

   b. Make electrical connection and attach green ground wire to lug in junction box.

C. Junction Box Sealing

1. After making all connections and checks, we recommend that the junction box be potted with low temperature paraffin to guard against any possibility of water intrusion.

IV. START-UP PROCEDURE

Now that you have completely assembled and installed your fountain equipment, we suggest you make the following checks prior to filling your pool:

A. Check all threaded joints to be sure they are tight.

B. Check all hose and clamp joints to be sure they are tight.

C. Check all cord seals in the junction boxes to be sure they are tight.

D. Make continuity checks on all circuits for the lights and the pump.

CAUTION: DO NOT OPERATE PUMP UNLESS SUBMERGED.
DO NOT OPERATE LIGHTS UNLESS SUBMERGED.

E. Check all grounds.

F. Check junction box covers to be certain they are fastened down securely.

G. Close all valves, then open two full turns only at this time.

H. Remove all trash and sweep pool clean.

I. Fill pool with water.

1. When water level covers the pump, make a quick check on the pump operation.

2. Water line should be on top of the spray rings.

After you have completed all of the above checks, turn to the "Adjusting and Operating" section of this manual in order to properly adjust and operate your fountain.

ADJUSTING AND OPERATING PROCEDURE

To obtain a pleasing and enhancing fountain display, it will be necessary to adjust the water effects.

Turn the pump on and off, adjusting each effect for height and direction until the desired results are obtained. See table on Page 8 for maximum heights.

ADJUSTING - (See Page 8 for maximum heights).

A. Spray Rings (K-80, K-82, K-90, K-92 and K-140)

1. Check level of rings with water level. Rings without swivel jets should be flush with water level. Rings with adjustable swivel jets should be set with water level, flush with jet clamping nut.

2. Adjust height of water effect with valve. If two (2) valves are provided, they must be adjusted for equal number of turns open.

3. Rings with swivel jets are adjusted at the factory in accordance with the information supplied. Due to shipping, handling, and installation, they may require adjusting or if a change in pattern is desired, they may be adjusted as follows:

   a. Reduce operating height to 2' to 4'.

   b. Loosen clamping nuts so jets can be moved but still retain position.

   c. If a change in pattern is desired, align a few jets on each side of ring and check by raising effect to normal operating height. Then align adjacent nozzles until all streams are parallel.

   d. If only a minor correction is needed, adjust as necessary. A short piece of wood or soft mallet is helpful in moving nozzles as desired.

   e. Tighten clamping nuts and check at normal operating height.

B. Aerating Nozzles (K-10, K-12, K-14, K-70, K-110, K-150 and K-160)

1. Alignment is achieved with the swivel at the base of the jet on small and medium sizes. On large aerators, align with screws on support base.

2. The amount of aerating is controlled by adjusting the outer sleeve on the jet. Screwing the sleeve down increases the air content, raising the height. Screwing the sleeve up reduces the air content lowering the height. Normally sleeves are flush.

   NOTE: Water level must be maintained below top and above bottom of outer sleeve for proper operation.

3. Adjust height of water effect with valve. If two (2) valves are provided, they must be adjusted for equal number of turns open.

C. Morning Glories (K-20 and K-22)

1. Adjust vertical alignment with screws on support base.

2. Adjust valves for maximum GPM to nozzle with plug adjusted up.

3. Screw plug down until full sheet pattern of desired size is obtained. If a half-sheet pattern is desired, continue screwing the plug down until the desired size is obtained.

4. Lock the plug in the desired position with the clamping screw.

5. Minor adjustments can be made with the valves provided.

D. Bubbler (K-30)

1. Adjust valve for maximum GPM to nozzle and air induction valve open.

2. Adjust operating height as desired.

3. For best effect, 4½" of water depth over nozzle should be maintained.

E. Geysers (K-40 and K-42)

1. Adjust vertical alignment with screws on support base.

2. Adjust operating height as desired.

3. Top of nozzle should be flush with water level. A fuller effect may be obtained with additional submergence however the operating height will be reduced.

F. Jet Pod with Aerators (K-100)

1. See instruction on Aerators (B).

2. Heights of the (6)peripheral aerators can be further adjusted by screwing mounting nipple up or down and securing the adjustment with the lock nut.

G. Dandelion (K-120, K-122, K-130 and K-132)

1. Dandelion jets are pre-adjusted at factory. Trash in manifold may clog a few jets upon start-up. These may be cleaned by loosening set screw on body of jet and sliding back to flush.

2. To adjust, slide body back of deflector cap with .020 feeler gauge and lock in position.

3. When water flow to jets decreases, "Y" strainer is clogged and must be cleaned.

   a. Close regulating valve in discharge manifold fully and open valve on "Y" strainer flush line to waste.

   b. If fine debris has clogged screen, open strainer, remove screen and manually clean.

KIT NUMBER	MAXIMUM OPERATING HEIGHT	TYPE OF WIND CONTROL OPTION "WC"
K-10	4'	None
K-12	9'	Solenoid valve by-pass
K-14	15'	One pump stop
K-20	2' & 3'	None
K-22	2.5' & 4'	One pump stop
K-30	18"	None
K-40	9'	Solenoid valve by-pass
K-42	12'	One pump stop
K-50	5'	None
K-52	10'	Solenoid valve by-pass
K-60	14'	One pump stop
K-70	7'	One pump stop
K-80	10'	Solenoid valve by-pass
K-82	10'	Solenoid valve by-pass
K-90	12'	Solenoid valve by-pass
K-92	12'	One pump stop
K-100	14'	One pump stop
K-110	7'	One pump stop
K-120	7'	Stop the pump (fountain shut down)
K-122	Mounting	Stop the pump (fountain shut down)
K-130	Height	Stop the pump (fountain shut down)
K-132	Height	Stop both pumps (fountain shut down)
K-140	7' & 3'	Solenoid valve by-pass
K-150	7'	Solenoid valve by-pass
K-160	6' X 7' throw	Solenoid valve by-pass

KIM SUBMERSIBLE PUMPS

PUMP MODEL	HORSEPOWER	ELECTRICAL REQUIREMENTS	FULL LOAD AMPS
KSP-40	1/3	115/1p/60 Hz.	8.0
KSP-60	1/2	115/1p/60 Hz.	9.5
KSP-90	3/4	115/1p/60 Hz.	12.0
KSP-130	1	230/1p/60 Hz.	7.0

INSTALLATION

1. Inspect the unit to see that no parts are missing or damaged in shipment. Check nameplate to see that voltage, phase and Hertz agree with your power source.

2. Attach pump to manifold and run submersible cord through compression cord seal on junction box.

3. Connect the black and white wires of the cord to the line leads from your power source. The green wire should be attached to the junction box ground lug and an unbroken wire run to the service ground in the panel board.

4. The motor is an oil filled, single phase permanent split capacitor type with an integral automatic overload protector, therefore, it requires no starter.

5. A switch or time clock may be utilized for automatic control if desired.

START UP

1. Fill pool with water. The pump is water cooled and lubricated. Do not run dry or it will fail and warranty is void.

2. Check circuit to insure correct operating voltage. Warranty is voided if pump is operated at less than rated voltage.

MAINTENANCE

1. The only maintenance required is to periodically clean the strainer screen, check screen frequently as seasonal changes may require more frequent cleaning. Remove the spring clips, lift off screen and reverse flush with a garden hose.

GENERAL MAINTENANCE

Your ornamental water fountain, like all types of mechanical equipment, must have periodic care in order to operate effectively and perform as designed.

We suggest you follow the procedure outline below and your fountain will continue to provide you with pleasure and relaxation throughout the years.

KIM LIGHTING, INC. is continuously striving to provide you with equipment that is as trouble-free as possible. However, a little preventive maintenance will go a long way in providing trouble-free operation.

The pool and water conditions directly influence the overall operation of the fountain. To assist you in maintaining the beauty of your fountain, we have included the following maintenance guide. However, as local water conditions vary, we recommend your contacting a pool service firm who would be familiar with local conditions and who could offer a regular maintenance program.

1. POOL AND WATER

A. Trash

Remove as required to maintain a clean presentable pool. Accumulation will not only detract from appearance but can damage pump by clogging suction screen.

B. Dirty Water

Drain periodically (as required) and replace with fresh clean water. A filter system would be an excellent addition in maintaining clean water.

C. Algae

The best method of control is regular chemical treatment maintaining at all times the necessary concentration. Swimming pool type chemicals and a test kit are necessary. Consult your local pool service firm or board of health for amounts and types of approved chemicals.

Algae is one of the most common and perplexing problems in maintaining a pool. This growth, which is of plant nature and nourished with sunlight, appears in pools in two forms: The free-floating type which gives a distinct green color to the water and the clinging type which grows on the sides and bottom of the pool. While algae is easily killed and if properly treated can be removed from the pool water, it is better to maintain proper chlorine treatment thus eliminating the possibility of algae appearing.

Algae thrives in water with a high pH and high temperatures and if not controlled properly, can spread throughout the entire pool in hours. The algae which attaches itself to the wall and floor of the pool is difficult to remove. The pool must be drained and direct contact with a straight solution of chlorine is the only practical way of removal. The clinging type may appear as black spots or as a brownish or greenish, mossy layer. The brown or green algae can often be removed by doubling the chlorine dosage and brushing off without draining the pool; however, some of the cells will undoubtedly have recessed into the pores of the plaster and may continue to re-occur. The old proberb: "An ounce of prevention is worth a pound of cure" is certainly true in the case of pool chemistry.

II. PUMP SUCTION SCREEN

Keep trash such as paper and leaves out of the pool and off the screen as they will clog the screens and cause the pumps to starve for water. Serious damage to the motor and pump will result. Clean screens once a week or more frequently if needed to maintain a free flow of water. Remove and clean pump suction screen at least once a month. See detailed pump instructions, (page 9).

III. SPRAY NOZZLES

Trash that occasionally passes through a suction screen can clog the small jet on a spray ring. Deposits of minerals and salts will also build up and eventually restrict flow through nozzles. Simply use a probe to break these deposits free and flush out the ring by means of the flushout plugs on the bottom side of the rings. This action should be performed as required to keep the sprays in good operation. Do not remove the non-adjustable jets from spray rings.

IV. FOUNTAIN LIGHTS

The lamps supplied are long life with an expectancy of 4000 hours. The burned out bulbs should be changed as required in order to keep the illumination level at its maximum. Of course, as the lamps approach their life expectancy, it would be wise to make a complete change of all lamps, thereby providing for maximum illumination and reduce the need to relamp single units during this period.

SUGGESTED WINTER OPERATION

The best solution to cold weather operation is to close the fountain down for the season. Calm water freezes very early in the season and even agitated water will freeze at very low temperatures.

With freezing weather present, there is extreme risk of water freezing the piping which will cause ruptures in the lines. The fountain lights will be damaged in the same manner.

There are two methods whereby the fountain may be kept in year around operation. One is to keep the water temperature above freezing level. This may be accomplished by heating the water by means of steam lines in the pool or by means of a recirculating hot water system. Both methods are, of course, governed by the volume of water and the temperature variances. Economics is probably the most important single consideration when considering winter operation.

We recommend closing the fountain down during the severe winter months. Outlined below is our suggested procedure.

1. Drain all the water from the pool and piping.

2. Drain all spray rings in the pool by removing the flushout plugs located in the bottom side of the ring.

3. Remove all fountain lighting fixtures and store to prevent damage to lenses and to electrical cable.

4. Remove all piping, jets, spray rings and pumps and store in a protected area.

5. Plug all cord seals and secure junction box covers.

TROUBLE-SHOOTING HINTS

I. POOL

A. Pool is slimy and green or brown tinted.	Excessive algae growth See General Maintenance.

II. SPRAYS

A. Nozzle not spraying.	Nozzle clogged. See General Maintenance Item III.
B. Entire ring or bank of nozzles not spraying.	Check adjusting valve.
C. Sprays surging up and down.	Pump suction screens clogged. 1. Shut down pump immediatly and clean screens. 2. See General Maintenance Item II.
D. Sprays not rising to full height.	Lines clogged or suction screen clogged. 1. Check screens. 2. Check all nozzles. 3. Check nozzles for clogging. 4. Check lines for clogging. 5. Check that all pumps are operating.

III. LIGHTS

A. Individual light not on.	Lamp burned out. See General Maintenance Item IV.
B. Entire group of lights out.	Circuit malfunction. 1. Check circuit breakers. 2. Check circuitry for continuity or shorting.

RECOMMENDED SPARE PARTS LIST

We recommend you keep a reasonable quantity of replacement parts on hand at all times. Lamps listed below are available from your local dealer.

All parts are available from: KIM LIGHTING, INC.
P. O. Box 1275
City of Industry, California 19747

SPARE PARTS FOR FOUNTAIN LIGHTS	ORDERING DESCRIPTION	
Lenses and Gaskets for:		
Model #F-220	*L-10 Lens. *Specify:	clear, blue, red, amber, green, turquoise. GS-16 Gasket
Model #F-520	*LP-30 Lens. *Specify:	clear, blue, red, amber, turquoise. GS-31 Gasket.
Lamps for:		
Model #F-220	250 watt, PAR-38, FL lamp.	
Model #F-520	500 watt, PAR-56, MFL lamp.	

To order Any Component: Specify by name, part number and size from the fountain drawings.

KF-11, KF-12 AND KF-13 FILTRATION SYSTEM

INSTALLATION

1. Locate skimmers and eyeball inlet fittings near corners of pool or equally spaced in round pools for best skimming action. See Drawings.

2. Anti-vortex plate and sump should be located in deepest part of pool or near side closest to equipment pit.

3. Equipment pit should be covered but still allow ventilation for motor. A drain or sump pump is recommended to prevent flooding of motor. A time clock is convenient for controlling filter runs. A backwash line must be provided to flush the filter.

TO START FILTER FOR FIRST TIME:

1. Check drawings to make sure that all lines have been correctly installed. Install all plugs in filter tank.

2. Remove tank cover and slowly fill with required quantity of #20 white crystal Silica sand (effective size of .45 mm and a uniformity cooefficient of 1.5 maximum). Be careful not to damage plastic under drains in tank by filling tank 1/2 full of water before loading the sand.

3. Fill strainer pot with water if unit is above pool water level. Do not run pump dry or seal will be damaged.

4. If 3-phase pump motor is supplied, check for proper rotation.

5. Pull unitrol valve handle up to backwash position until valve piston is fully seated.

6. Open all valves in suction, discharge or return lines.

7. Start pump and backwash for minimum of 4 minutes to flush fine particles and silt from sand to avoid pool contamination.

8. Open air relief vent on top of tank to vent trapped air.

TO FILTER:

1. Do not run filter without Silica sand.

2. After backwashing, stop pump and push handle down to filter position until valve is fully seated.

3. Start pump. If surface skimmers are utilized, close valves partially from other suction locations so that most of the flow is through skimmers for best skimming action.

4. Run filter for minimum of one time turnover per day of pool water.

TO BACKWASH FILTER:

1. Stop pump and pull handle up to backwash position.

2. Start pump and run for 2 to 3 minutes or until backwash water is clear.

3. Clean pump strainer basket periodically as a clogged basket will cause poor filter performance and possible damage to pump.

4. Close all valves in suction and discharge lines, remove pump strainer cover and clean basket thoroughly.

5. Replace pump strainer basket and fasten cover securely.

6. Open and adjust all valves.

TO VACUUM POOL:

1. Leave handle in filter position.

2. Close all suction valves except vacuum valve.

3. Place vacuum cleaner head in water first, fill vacuum hose with water and then attach to vacuum fitting in pool wall.

4. After vacuuming, pool filter must be backwashed to clean out accumulated dirt and debris. Clean pump strainer.

GENERAL NOTES:

1. Always turn pump OFF before changing position of handle for filter or backwash.

2. Never run pump dry as seal depends on water for lubrication.

3. Always maintain adequate water level in pool so that pump will not draw air through skimmer.

4. Backwash filter when flow from eyeball inlets is greatly reduced or when tank pressure gauge indicates 10 to 15 pounds higher than with a clean filter.

CATALOG NUMBER	MODEL NUMBER	PUMP HORSEPOWER	FILTER RATE	BACKWASH RATE	FILTER AREA	SAND REQUIRED
KF-11	HRS-16	1/2	28 GPM	28 GPM	1.4 sq.ft.	175 lbs.
KF-12	HRS-20	3/4	44 GPM	44 GPM	2.2 sq.ft.	200 lbs.
KF-13	KRS-24	1	62 GPM	62 GPM	3.1 sq.ft.	250 lbs.

SEQUENCED LIGHTING OPTION "SL"

1. Follow assembly, installation and electrical makeup instructions as outlined in other sections.

2. Particular care should be exercised so that each circuit is connected to the proper number, color, J-box and position of each fixture as shown on the installation drawings.

3. The programmer control panel should be located on inside wall as close as practical to the fountain.

4. Individual power circuits should be provided as shown on the drawings. A time clock may be used on the control circuit for automatic control if desired.

5. The sequence time interval may be adjusted by sliding the double cams or repositioning the "on" - "off" actuators for each circuit.

CAUTION: DO NOT OPERATE LIGHTS UNLESS COMPLETELY SUBMERGED OR DAMAGE WILL RESULT.

WIND CONTROL OPTION "WC"

GENERAL

The wind control system controls either a pump or solenoid control valve. See Page 8 for the type of system supplied. Variations are as follows:

Type "A" - "Stop one pump" - By deenergizing or stopping one out of two or three pumps the operating height is automatically reduced. (K-14, K-22, K-42, K-60, K-70, K-92, K-100 and K-110).

Type "B" - "Stop the pump" - By deenergizing or stopping the only pump the fountain is automatically shut down. (K-120, K-122, K-130 and K-132).

Type "C" - "Solenoid valve by-pass" - By energizing the solenoid valve, it opens by-passing water into the pool; thereby the operating height is automatically reduced. The reduced height may be adjusted with the limit pin on the valve. (K-12, K-40, K-52, K-80, K-90, K-140, K-150 and K-160).

INSTALLATION

a. Mount sensing head up-wind at fountain height and free from obstructions that would shield head. Do not place in spray area.

b. Attach control panel to wall of inside protected area.

c. Wire sensing head to control panel. All terminal pin coding must be maintained. See proper wiring diagram for your Kit and Instructions for R-91-1 Wind Control.

d. Wire from control panel through junction box to pump or valve. Be sure correct voltage is supplied to pump through terminal pin (6) of control panel. Jumper must be removed for pump control. See proper wiring diagram for your Kit.

START UP

a. Make sure all other steps and instructions have been followed.

b. Turn test switch (G) on wind control panel to "Man." (manual) position and start fountain.

   (1) Adjust Type "A" system for maximum height with the regulating valves in the pump discharge manifold.

   (2) Adjust Type "B" system for maximum height with the regulating valve in the pump discharge manifold.

   (3) Adjust Type "C" system for low or reduced height operation by adjusting the by-pass valve for more or less flow which changes the height. (See Valve Instructions for adjusting procedure).

c. Turn test switch (G) on wind control panel to "Off" position.

(1) Adjust Type "C" system for maximum height with the regulating valve in the pump discharge manifold.

d. Turn test switch to "Auto"; the wind control is now in control of fountain. Turn tripping velocity control (A) to "25" on the pilot light (c) which will extinguish after the approximate four (4) minute time delay expires. (Whenever test switch (G) is turned or unit is first energized the four (4) minute delay must expire before maximum height of start-up can occur).

e. See R-91-1 Wind Control Instructions for detailed adjustment and check out procedure.