

LASER™

LASER™ SAND FILTER

USER MANUAL AND INSTALLATION GUIDE

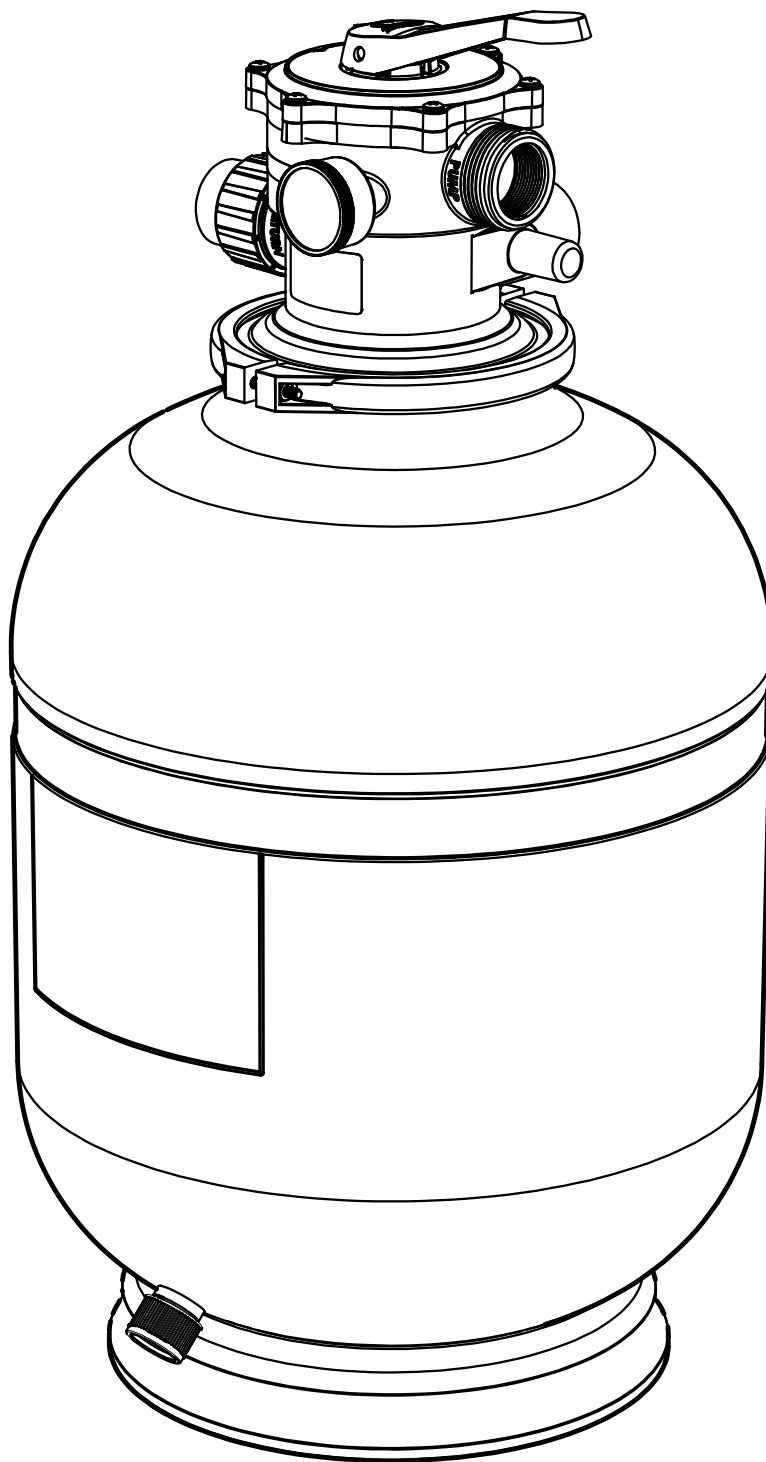
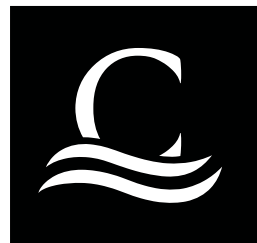


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INTRODUCTION

Thank you for purchasing the LASER™ SAND FILTER by CARVIN®

We want to help you get the best results from your new product and operate it safely. This manual contains information on how to do that; please read it carefully before installing and using the pool. If a problem should arise, or if you have any questions about your product, consult an authorized CARVIN® retailer or distributor.

All the information in this manual is based on the latest product information available at the time of publication. The manufacturer reserves the right to make changes at any time without notice and without incurring any obligation. No part of this publication may be reproduced without written permission.

READ AND FOLLOW ALL INSTRUCTIONS

Review all instructions provided with the product prior to its installation, startup, operation, shutdown, maintenance or winterizing.

Failure to follow warnings and safety messages may result in property damage or personal injury. The user assumes the bodily or material risks arising from any improper use of this product.

IMPORTANT SAFETY INSTRUCTIONS

Your safety and the safety of others are very important.

This manual provides important safety messages. A safety message alerts you to potential hazards that could hurt you or others. Each safety message is identified by a black box marked, WARNING.

TABLE (PRIVATE HOME INSTALLATION)

FILTER MODEL	MAXIMUM FLOW RATE gpm EU/sq. ft. (m3h/m2)	FILTRATION RATE gpm (m3/h)	SAND REQUIRED WEIGHT Lbs (Kilograms)	MAXIMUM PRESSURE PSI (Bars)
L160C	25.0 (60)	33 (7.5)	140 (65)	35 (2.41)
L192C	250 (60)	47 (10.7)	200 (90)	50 (3.45)
L225C	25.0 (60)	66 (15.0)	250 (113)	50 (3.45)
L250C	25.0 (60)	83 (18.9)	350 (159)	50 (3.45)

TABLE (COMMERCIAL INSTALLATION)

FILTER MODEL	MAXIMUM FLOW RATE gpm EU/sq. ft. (m3h/m2)	FILTRATION RATE gpm (m3/h)	SAND REQUIRED WEIGHT Lbs (Kilograms)	MAXIMUM PRESSURE PSI (Bars)
L160C	20.0 (48)	27 (6.1)	140 (65)	35 (2.41)
L192C	20.0 (48)	37 (8.4)	200 (91)	50 (3.45)
L225C	20.0 (48)	53 (12.0)	250 (113)	50 (3.45)
L250C	20.0 (48)	66 (15.0)	350 (159)	50 (3.45)

Before installation be sure to read all instructions and warnings carefully. Refer to product label(s) for additional operation instructions and specifications.

IMPORTANT: This product has been carefully inspected and packed at our factory. As the carrier has assumed full responsibility for its safe arrival, any claim for damage to the shipment, either visible or concealed, must be made to the carrier. Make sure that you have received the correct equipment for the installation.



WARNING Your filter is a pressure vessel and should never be serviced while under pressure. Always shut off the pump to relieve the pressure in the filter prior to servicing the unit.



WARNING To reduce risk of injury, do not permit children to use this product unless they are closely supervised at all times.



WARNING Locate the system at least five feet (1.5m) from the pool to prevent it from being used as a means of access to the pool by young children. (See ANSI/APSP/ICC-16-2017 standard Consult the specific regulations and codes that apply to your location.

PUMP SELECTION

A full line of pool pumps are available for installation with these filters. For those installations where the equipment will be placed above the water level, a self-priming pump should be selected. Ask your dealer to determine the proper size and distance from pool or spa and friction losses (restrictions) of associated equipment. The filter system is assembled at the site from a filter module and a pump module. This method allows you to choose a pump providing an optimal CIRCULATION RATE for a commercial installation (20 U.S. gallons per minute per square foot of filtration surface) or for a residential installation (25 U.S. gallons per minute per square foot of filtration surface or 61 cubic meters per hour per square meter of filtration surface).

The filter module is equipped with a dial valve which works as follows:

- FILTER:** Gives a downward flow through the filter bed. Dirt accumulates in the sand as filtering proceeds, and gradually restricts the flow of water until backwashing is necessary. This position can also be used for vacuuming.
- BACKWASH:** Gives an upward flow through the filter bed that removes the dirt from the sand and carries it to the waste.
- DRAIN:** Is for pumping water from the pool. It allows the flow from the pump to by pass the filter and go directly to the waste. You can also use this position to vacuum heavy concentrations of debris.
- WHIRLPOOL:** By passes the filter to obtain the optimum performance from a hydro-air fitting fed by the filter pump. (No filtration occurs in this position).
- WINTERIZE:** Allows air to leave or enter the tank to help priming and draining. Only to be used when pump is off.
- RINSE:** Gives a downward flow that settles the filter bed after backwashing and carries any remaining loose dirt to the waste.
- TEST:** Prevents only back flow of water from pool during pump maintenance if filter is below water level.

FILTER SAND

The outstanding filtration and superior dirt-holding capacity of this filter depends on the use of the proper grade of filter sand. It should meet the following specifications: The filter sand must be free of clay, loam, dirt and organic matter, and must consist of hard, durable, rounded or sub-angular grains of silica sand with no more than 1% of flat or micaceous particles. The grains should have an effective size of 0.44mm with a uniformity coefficient of 1.35. **DO NOT USE "SANDBOX" SAND.**

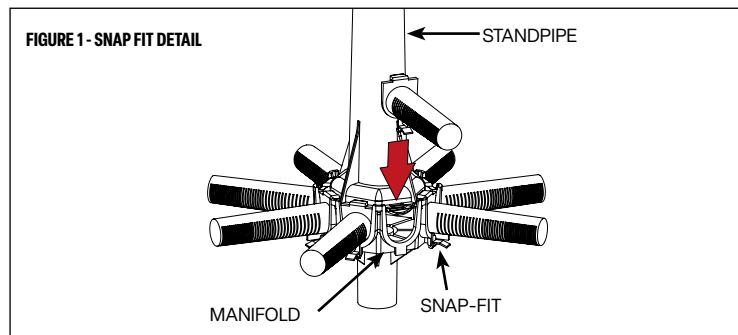
The filter sand is **NOT** included in the filter module and must be purchased separately. Refer to the table for the quantity required. Do not fill the tank with sand before the filter is in its final position. Keep the sand dry for easy installation. Use only the approved filter sand, otherwise the system may not work satisfactorily.

INSTALLATION

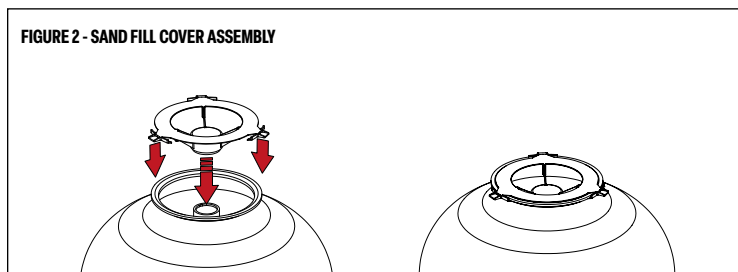
LOCATION: System should be installed in accordance with the standards and instructions in effect in your country or municipality, preferably in a dry, shaded, and well-ventilated area (See previous warning). Locate the system on a hard, level surface, preferably in a dry, shaded, and well-ventilated area. Give consideration to the following: Position of suction, return, and waste connections; Access for backwashing and servicing; Protection from the sun, rain, splashing, etc; Drainage of filter room or pit; Ventilation and protection of the motor.

SYSTEM ASSEMBLY

- Place the empty tank in position on the base. Press the tank down until it engages the base.
- If the laterals are not installed, hold the standpipe/manifold assembly so that the manifold is located in the middle of the tank. Take one of the lateral flow tubes in your other hand and lower it into the tank, sliding it down the tube and into one of the grooves in the manifold until a snap-fit is obtained. Repeat this action until all eight lateral flow tubes are installed, then lower the complete assembly down to the bottom of the tank. Press it down to ensure that the central tube is seated in the depression in the base of the tank. See FIGURE 1.

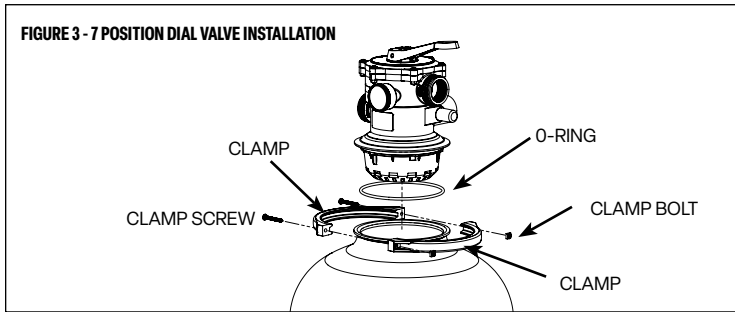


- Place the sand fill cover over the tank opening to prevent the sand from getting into the standpipe. See FIGURE 2.



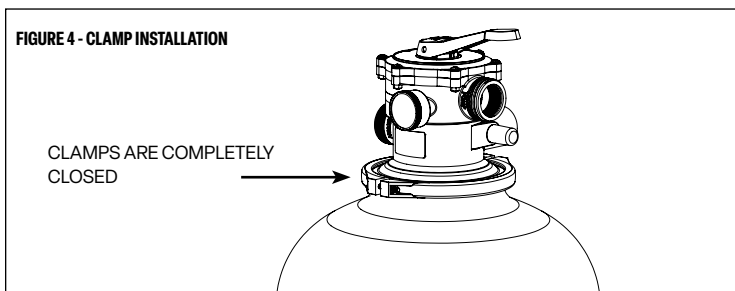
- Fill the tank approximately 1/2 full of water.
- Pour the recommended amount of sand into the tank, making sure that the standpipe remains centered and vertical. Level the surface upon completion.
- Remove the sand-fill cover.
- Pre assemble the clamps with one screw and one nut, turning the screw 3-4 turns only. See FIGURE 3.
- Carefully remove all sand particles from the valve mounting surfaces.

FIGURE 3 - 7 POSITION DIAL VALVE INSTALLATION



9. Place the O-Ring onto the bottom of the valve body.
10. Lower the dial valve carefully into position so that its underside engages with the standpipe. Rotate the valve until the inlet is approximately in line with the pump.
11. Place clamps around tank and valve neck and assemble second screw and nut.
12. Firmly tap with a rubber mallet outside of the clamps as you tighten both screws alternately and evenly.
13. Make sure screws are tightened until clamps are completely closed. FIGURE 4

FIGURE 4 - CLAMP INSTALLATION



14. Install the pressure gauge into the threaded opening in the dial valve.
15. Install the backwash adapter, if necessary, to reduce backwash flow. Install 2 threaded adapters into pump discharge and dial valve inlet after wrapping threads with 4 to 8 wraps of Teflon tape. Place one hose clamp over each end of pump to filter hose and push hose on to each adapter. Position clamps over barbed portion of adapter and tighten.

You are now ready to connect the system to your pool.

ELECTRICAL DATA

Refer to information on motor nameplate for electrical service data. If the pump on your system is supplied with a 3-prong 115V plug, then the appropriate female receptacle should be installed. Connect only to a grounding type receptacle protected by a Ground Fault Circuit Interrupter (GFCI). Motors should have fused disconnect switch or circuit breaker and wire size large enough for pump horsepower and distance from power source. Wiring should be done in accordance with applicable codes by a competent electrician.

PLUMBING CONNECTIONS

The provision of gate valves and unions in the pump suction and pool return lines of a permanent installation will make servicing easier and prevent loss of water while routine maintenance is in progress. Pump Installation: Follow the instructions supplied with the pump. Connect the pipes to the filter system as shown on page 3. Do not use pipes smaller than the connections provided. Support the plumbing so that it puts no strain on either the pump or the filter.

FOR SOLVENT WELD CONNECTIONS

Rigid or flexible PVC pipe can be used. Pipe ends should be clean and free of any debris caused by the cutting operation. Be sure that the proper adhesive is used on the type of pipe specified. Recommended Adhesives: These are examples only and are not intended to restrict brands:

PVC-PVC CONNECTION

OATLEY Uni-Weld Pool-Tite 2300
IPS Weld-On 705

PVC-ABS CONNECTION

OATLEY Uni-Weld Pool-Tite 2300
IPS Weld-On 705

Note: A primer will assure that adhesive joints are superior. Suregard P-3000 has a purple tracer to qualify in areas where codes specify a primer must be used.

Caution: We recommend that you consider climatic conditions when applying adhesives. Certain atmospheric situations, such as high moisture content, make the adhesive action of certain glues less effective. Check the manufacturer's instructions.

FOR THREADED CONNECTIONS

Use only Teflon tape or equivalent on threaded plumbing connections. Other pipe compounds may damage threads. We do not recommend the use of silicone or petroleum based compounds. **DO NOT OVER TIGHTEN: HAND-TIGHTEN PLUS 1/2 TURN IS SUFFICIENT.**

FILTER PLUMBING

If the filter is equipped with union connections, union adapters are needed to complete plumbing connections and may need to be ordered separately.

START-UP PROCEDURE

After completing the preceding items and filling the pool with water, put the system into operation as described below. When the filter system is below deck level, always close the gate valves in the pump suction and pool return lines before you remove the cover from the hair and lint strainer. Re-open the valves before you restart the pump.

- 1a. **For in-ground pools:** Set the dial valve to **WINTERIZE**. Remove the cover from the hair and lint strainer, and fill the pump with water. Refit the cover and strainer Ring-Lok™ - hand tighten only - do not re-tighten strainer Ring-Lok™ during operation.
- 1b. **For above-ground pools:** When the water level in the pool reaches the skimmer and return fitting, the filter and pump will begin filling with water. Some air may be trapped in the pump or filter, but will be removed when the pump is started. Removing the pressure gauge temporarily while the filter is filling with water will also help remove any trapped air. Replace the pressure gauge when a steady stream of water appears.
2. Set the dial valve to **DRAIN** position.
3. Perform pump start-up.
4. After a good flow has been established, continue pumping for one minute or until waste water is clear, then stop the pump.
5. Set the dial valve to **BACKWASH**, and start the pump. The pump should deliver a strong stream of water as soon as it has removed the air from the suction system. Should the pump fail to prime within two or three minutes, stop the pump and repeat steps 1 and 2.
6. After a proper flow of clean water has been established, operate the filter with the dial valve set to **DRAIN**, **WHIRLPOOL** and **RINSE** for ONE minute each in that order. Stop the pump before changing valve positions.
7. Set the dial valve back to **FILTER**. After the filter has operated for about 10 minutes, check the pool return fitting for air bubbles. A continuous flow of air indicates a leak in the suction system, which must be corrected immediately.

NORMAL FILTER OPERATION

Set the dial valve to **FILTER**, and start the pump.

BACKWASH

Backwash the filter thoroughly at least once a week, and whenever the pressure gauge reads 6 - 8 PSI (0,5 Bar) above normal.

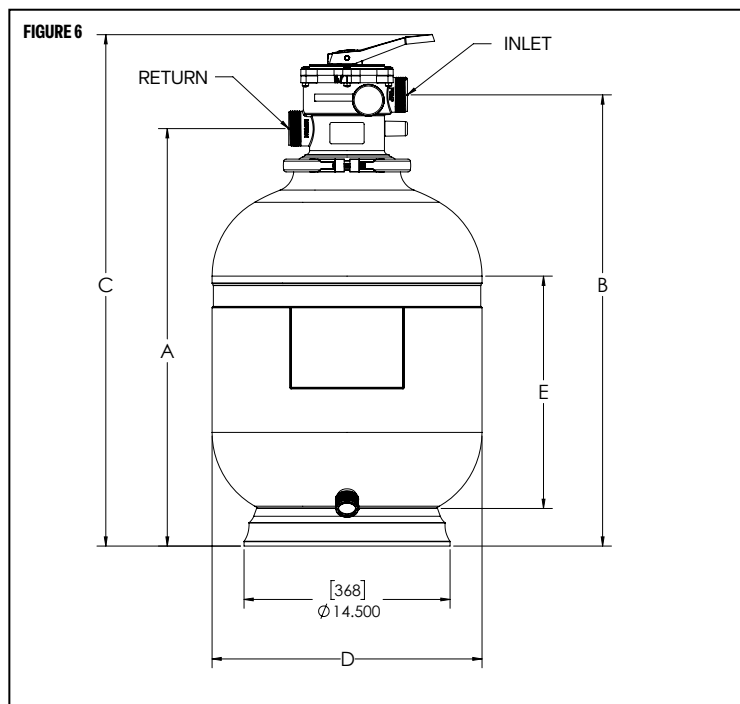
1. Stop the pump.
2. Close the valve at the pump suction. (If equipped).
3. Set the dial valve to **TEST**.
4. Remove the cover from the hair and lint strainer. Lift out the basket and empty it. Refit the cover and strainer Ring-Lok - hand-tighten only - **do not re-tighten strainer Ring-Lok during operation.**
5. **Re-open the valve** at the pump suction and re-start the pump with the dial valve set at **FILTER**.
6. Once air in the system has been removed and a steady flow of water has resumed turn off the pump and change the dial valve to **BACKWASH**.
7. Re-start the pump and backwash for about **THREE** minutes, or until the backwash water is clear.
8. Stop the pump. If the dial valve is equipped with **RINSE**, set the dial valve to **RINSE**. Re-start the pump and run for 20 seconds.
9. Stop the pump. Set the dial valve back to **FILTER**. Re-start the pump.
NOTE: Do not vacuum when in **BACKWASH** position.

VACUUMING THE POOL

LIGHT SOIL: Set dial valve to **FILTER**. **HEAVY SOIL:** set dial valve to **DRAIN**.

DRAINING THE POOL

Use the filter pump to drain the pool, or lower the pool water level, by setting the dial valve to **DRAIN**. This position allows the water to be pumped directly to waste without passing through the tank. Use the **DRAIN** position for emptying the pool, and also when using the vacuum cleaner to remove heavy dirt, soil, and sand from the pool.



US/CANADA SYSTEMS					
MODEL	A	B	C	D	E
L160C-7	26 ¼" 667 mm	28 ¾" 730 mm	33" 838 mm	16" 406 mm	13" 330 mm
L192C-7	30" 762 mm	32 ½" 826 mm	36 ¾" 934 mm	19" 483 mm	12 ½" 318 mm
L225C-7	30 ¾" 781 mm	33 ¼" 845 mm	37 ½" 953 mm	22 ½" 572 mm	11 ½" 318 mm
L250C-7	34" 864 mm	36 ½" 927 mm	40 ¾" 1035 mm	25" 635 mm	13 ½" 343 mm

DRAINING THE POOL

Use the filter pump to drain the pool, or lower the pool water level, by setting the dial valve to DRAIN. This position allows the water to be pumped directly to waste without passing through the tank. Use the DRAIN position for emptying the pool, and also when using the vacuum cleaner to remove heavy dirt, soil, and sand from the pool.

CLOSING DOWN AND WINTERIZING

Backwash the filter for five minutes before closing down the pool for an extended period. Consult your pool dealer for advice on winterizing your pool and equipment if freezing temperatures occur in your locality. Follow his recommendations, because his knowledge of your equipment makes him the best qualified source of information. Backwash the filter for at least thirty minutes before closing down the pool for winterizing. This will clean the filter bed thoroughly (the original sand should last for several years depending on conditions). Where the filter system is unprotected from frost, drain the tank and pump in the following manner. (Note that it is NOT sufficient to set the dial valve to WINTERIZE, because the tank and pump will not empty unless the drain plugs are removed.)

1. Remove the drain cap located at the base of the filter tank. Should the water not drain readily from the tank, dislodge any sand that may be blocking the drain hole, or blow out the obstruction by running the pump for a short period. **CAUTION: DO NOT DAMAGE THE DRAIN NOZZLE.**
2. Set the dial valve to WINTERIZE. This will help the draining process by allowing air to enter the tank.
3. Unscrew the pressure gauge from the dial valve by using a wrench on the square metal shank. Do not apply force to the case of the gauge. Store the gauge indoors where it will not be mislaid.
4. Remove the drain plug(s) from the pump. Take the cover off the hair and lint strainer and check that most of the water drains from the pump and strainer. Store the pump and motor indoors, or protect them from the elements and extreme temperatures. Have any repairs made during the off-season when the best service is available - do not leave them until next season. If the electric motor requires service or repairs, take or send it to the motor manufacturer's local service station, as listed in the information supplied with the motor. CARVIN® does not undertake the service or repair of motors.

TROUBLE SHOOTING

SAND BACK TO POOL

Sand too small; Flow too high; Sand bed calcified; Broken laterals; Broken manifold; Loose standpipe; Too much sand; Dial valve not engaged; Air accumulation in filter.

SAND OUT OF BACK WASH HOSE

No backwash adapter/orifice; Flow too high; Too much sand in tank.

INADEQUATE FILTERING

Dirty make-up water; Improper sand; Sand is low; Algae in filter; Excessive dirt in pool; Calcified sand bed; Heavy swimmer load; Flow rate too high/too low; Backwashing cycle too short; Backwash adapter in wrong location; Backwash line too small.

SHORT FILTER CYCLE

Dirty filter; Improper sand; Sand is low; Algae in filter; Excessive dirt in pool; Calcified sand bed; Heavy swimmer load; Flow rate too high or too low; Backwashing cycle too short; Backwash adapter in wrong location; Channels low; Backwashing cycle too short; Backwash adapter in wrong location; Channels in sand.

FILTER LEAKS

Tank cracked; Drain plug not tight; Valve/tank O-Ring damaged.

DIAL VALVE LEAKS

Handle not properly engaged; Valve/tank O-Ring damaged; Valve cover O-Ring damaged; Pressure gauge needs sealant.

ABNORMAL LOSS OF POOL WATER

Leak inside dial valve; Leakage from pool or piping.

HIGH PRESSURE IN FILTER

Dirty filter; Backwash adapter installed in return; Calcified sand bed; Return lines too small.

LOW PRESSURE IN FILTER

Dial valve incorrectly set; Pump running too slow (plugged); Air leakage into pump suction.

NOTE: If the recommendations in this manual do not solve your particular problem(s), please contact your local dealer for service.

WATER CHEMISTRY

A proper and consistent use of chemicals is necessary to maintain clean, sanitary water, prevent a spread of germ infection and control the growth of algae which can spoil the appearance and enjoyment of your pool or spa. Chlorine is the most commonly used chemical to provide clean, sanitary water. Either dry or liquid chlorine can be used which should be added daily as it is dissipated by dirt and germs as well as by the sun and the wind. It is also important that the correct level of acidity or alkalinity of the pool water be maintained. This is the pH of your pool with pH 7.0 being neutral. Readings above pH 7.0 are alkaline and readings below are acid. A desirable range is 7.2 to 7.4. Consult your local pool/spa dealer for complete information on the proper application and use of chemicals.

FILTER MAINTENANCE

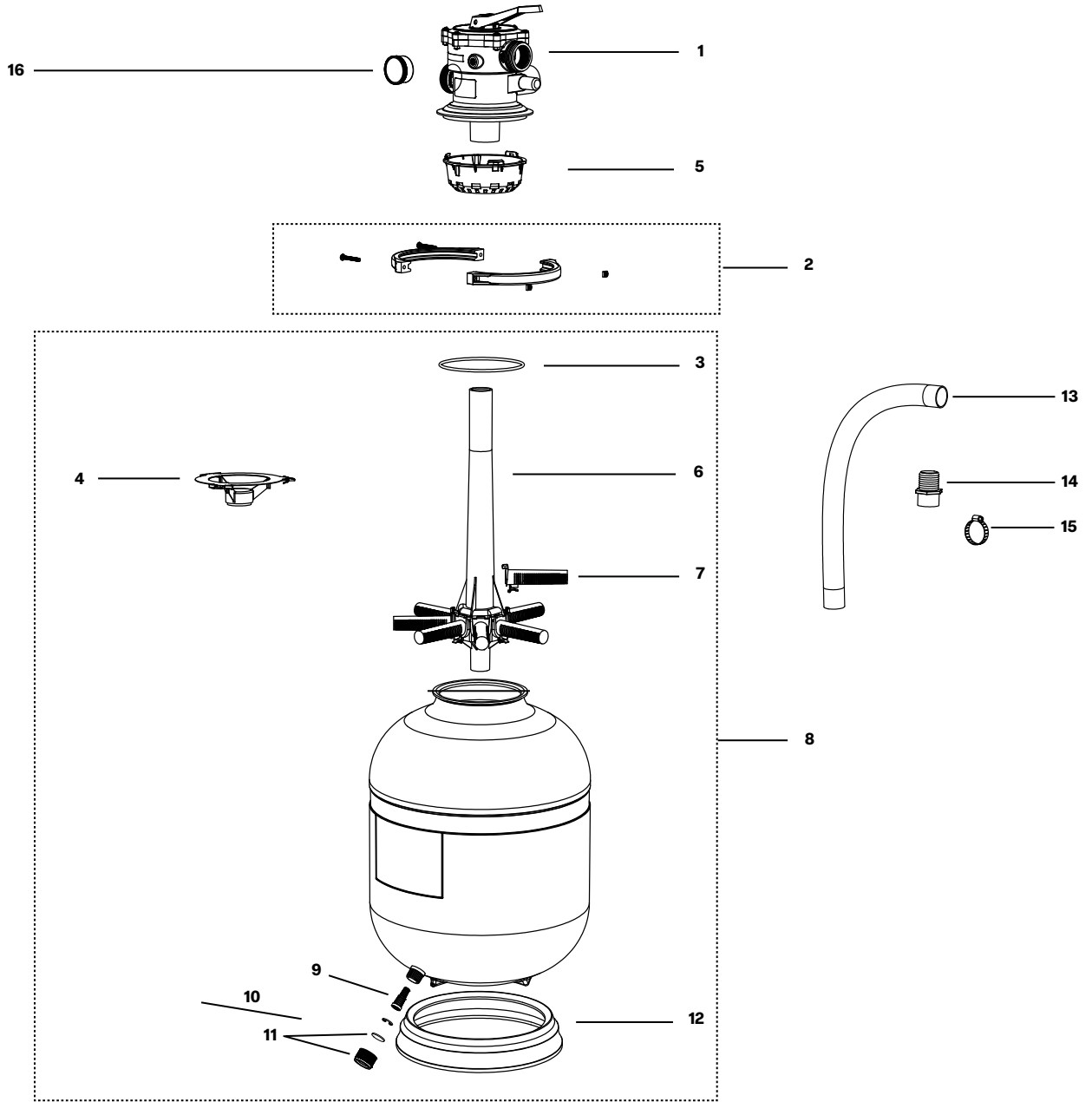
Filter tank and contents should not require attention other than backwashing, provided water is kept in continuous chemical balance without heavy dosages of corrosive chemicals.

SERVICE AND REPAIR PARTS

Refer all service to your local dealer as his knowledge of your equipment makes him the best qualified source of information. Order all repair parts through your dealer. Give the following information when ordering repair parts: Unit nameplate date and description of part.

REPLACEMENT PARTS

FIGURE 7 - PARTS FOR LASER™ MODELS L160C-7, L192C-7, L225C-7, L250C-7



#	No PIÈCE	DESCRIPTION	#	No PIÈCE	DESCRIPTION
1	39263035R	Dial Valve Assembly 7-Position 1 1/2 NPT - V Clamped	8	94082160R	LASER™ 160C Tank Assembly
2	85813903K	Clamp		94082192R	LASER™ 192C Tank Assembly
3	47036447R	O-Ring - BN		94082225R	LASER™ 225C Tank Assembly
4	22363907R	Sand Fill Cover 9869		94082250R	LASER™ 250C Tank Assembly
5	43281146K	Deflector Basket	9	85853300R	Drain Nozzle
6	42375475R	L160C Standpipe (H = 20.38")	10	14255202R	Drain Nozzle Retainer
	42355192R	L192C Standpipe (H = 24.22")	11	85826300R	Drain Cap w/Gasket
	42355225R	L225C Standpipe (H = 25.10")	12	12116471R	Filter Base
	42355250R	L250C Standpipe (H = 28.00")	13	3116000535R	Tiger Flex Hose 1 1/2" x 35'
7	85531102R8	L160C Snap-Fit Lateral (8 per bag)	14	31105307R	Barb connector 1 1/2" (Tiger Flex Hose)
	85531203R8	L192C / L225C Snap-Fit Lateral (8 per bag)	15	605480R2	Hose Clamp 1 1/2" SS (2 per bag)
	85531304R8	L250C Snap-Fit Lateral (8 per bag)	16	91934182R	Pressure Gauge 0-60 PSI CBM 1/4" NPT

CONSUMER INFORMATION

Authorized CARVIN® retailer or distributor personnel are trained professionals. They should be able to answer any question you may have. If you encounter a problem that your retailer or distributor does not solve to your satisfaction, please discuss it with the retailer's or distributor's management. The Service Manager, General Manager, or Owner can help. Almost all problems are solved in this way.

If you are not satisfied with the decision made by the retailer's or distributor's management, contact the CARVIN® technical support.

When you write or call, please provide the following information:

- Product model, serial number and date code.
- Name of retailer or distributor who sold the Product to you.
- The original proof of purchase showing the date of purchase.
- Your name, address and telephone number.
- A detailed description of the problem.
- If sending an email, any relevant photos of the Product and its surroundings.

REPLACEMENT PARTS AVAILABILITY

Replacement parts are available through your CARVIN® retailer or distributor.

WARRANTY

A digital warranty is provided for your product.

https://carvinpool.com/link_warranty

TECHNICAL SUPPORT INFORMATION

After contacting your dealer or distributor, if you have any problems with your Product, contact CARVIN® Technical Support.

AMERICA

Web: carvinpool.com/support

Email: help@carvinpool.com

Phone: 1 (450) 250-4500 option 2

Fax: 1 (450) 250-4501

Toll Free: 1 866 979-4501

Mail: CARVIN® POOL EQUIPMENT

Technical Support

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