



Piggyback Kit

(upgrade your 90 gpd system to a 180)



INSTALLATION INSTRUCTIONS

SpectraPure®

Thank you for your purchase of our SpectraPure PiggyBack Kit. This kit contains everything you will need to upgrade your RO or RO/DI system from 90 Gallons Per Day to 180 Gallons Per Day.* ** Please read this manual and be sure to follow the step-by-step instructions. If you have any problems with the installation, please contact SpectraPure Support for assistance.

*Actual production will vary depending upon tap water TDS, water temperature, and water pressure.
**This PiggyBack Kit will not be effective in areas of extremely low water pressure.

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Contents:

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|--|---------------------------------------|
| (1) Membrane Housing | (1) 1/4" Elbow Fitting w/black collar |
| (1) 90 GPD RO Membrane | (1) 1/4" "Y" Fitting |
| (2) Membrane Housing Clips | (1) Length of 1/4" Black Tubing |
| (1) 1/4" Elbow Fitting w/yellow collar | (1) Length of 1/4" Blue Tubing |
| (1) 1/4" Elbow Fitting w/blue collar | (1) 180 GPD Flow Restrictor |

SpectraPure® Inc. assumes no responsibility for water damage due to leaks. It is the user's responsibility to determine that the system is leak-free.

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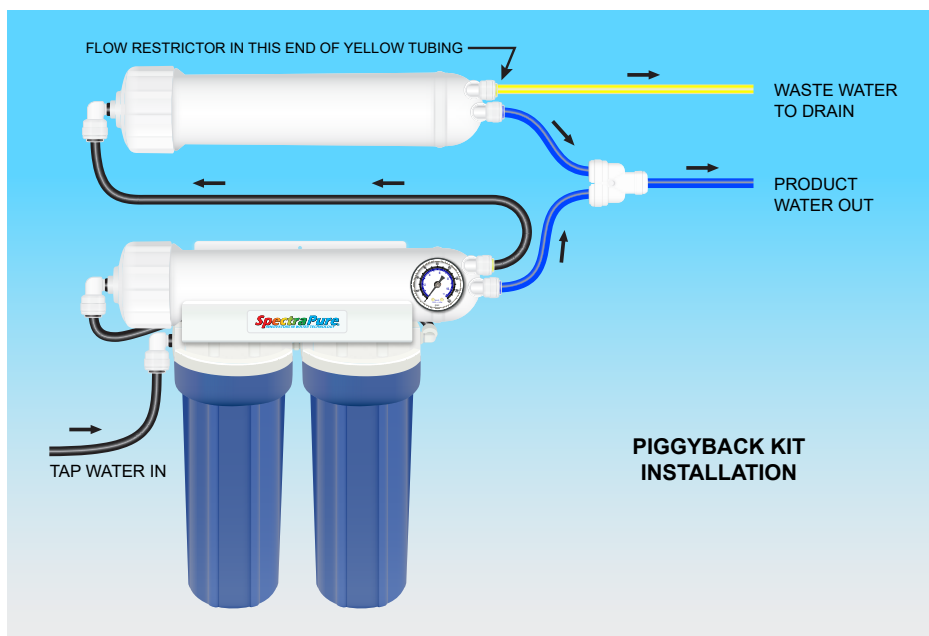


Figure 1: Installation of Piggyback Kit

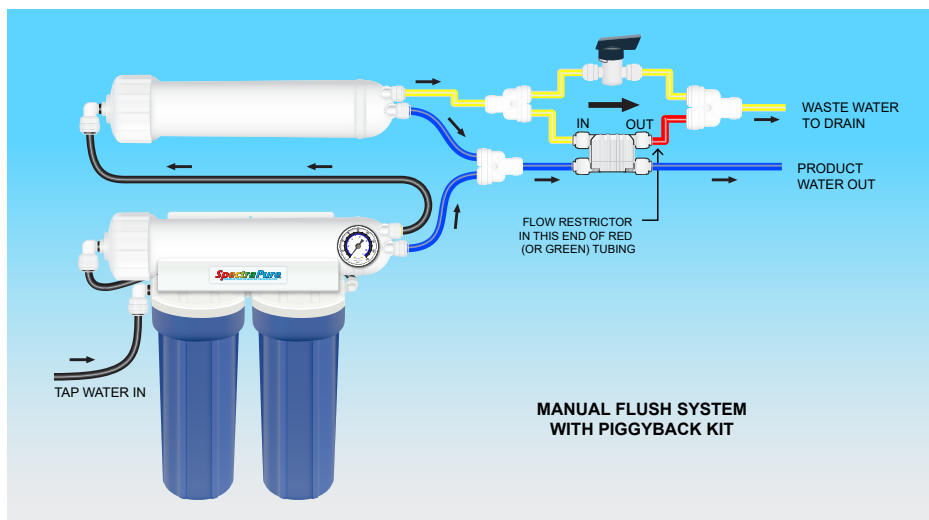
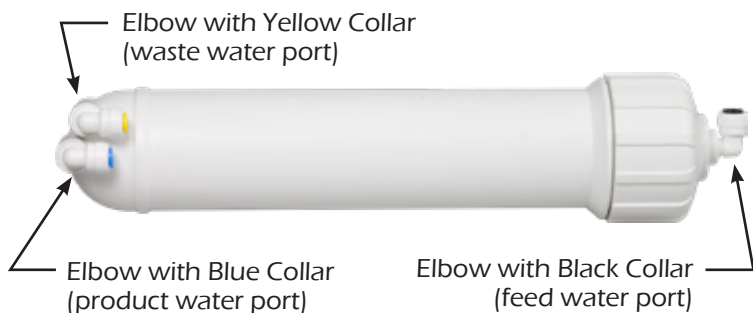


Figure 2: Installation of Piggyback Kit on System with Manual Flush and ASO Valve

INSTALLATION

1. Locate the membrane housing and the three 1/4" elbows that came with your kit. Insert the elbows into the the fittings on the membrane housing. The elbow with the black collar should be inserted into the feed water port of the membrane housing. The elbow with the blue collar will go into the product water port of the membrane housing and the elbow with the yellow collar will go into the waste water port of the membrane housing. Refer to the images below for the correct configuration.

NOTE: Make sure that the elbows are fully inserted into the ports. Be sure to monitor the final installation for leaks. If leaks are encountered, refer to "Working With Push Fittings" on Page 6.



As seen on the close-up on the left, the product water port (blue) is located towards the center of the membrane housing. The waste water port (yellow) is located farther down on the side of the housing.

2. Locate the 1/4" Yellow tubing (brine line) on the existing RO membrane housing. Remove the tubing and discard the existing flow restrictor. You may use a pair of nippers to remove the old flow restrictor, if necessary. See the image on right. (Do not throw away the yellow line.)



INSTALLATION (continued)

3. Install the two double sided clips onto the existing membrane housing. Orient the new RO membrane housing as shown in Fig. 1. Push the membrane housing into the clips.
4. Locate the 1/4" black tubing included with the kit. Install this tubing between the waste water port on the first membrane housing and the feed port on the second membrane housing.
5. Disconnect the 1/4" blue tubing from the product water port of the first membrane housing. Locate the 1/4" blue tubing included with the kit. Connect this 1/4" blue tubing from the product water port of the first membrane housing to the "y" connector on the product water port of the second membrane housing.
6. Reinstall the 1/4" blue tubing disconnected from the product water port of the first membrane housing onto the open port of the "y" on the second membrane housing.
7. Locate the flow restrictor included with this kit. Install it into the BRINE port on the second membrane housing. (See Figure 1) Then reinstall the 1/4" yellow tubing onto this port.
8. Turn the system on and run for 15-20 minutes to rinse the membrane and allow it to reach its optimum rejection rate. Check for leaks and tighten necessary connections.

CHECKING THE CONCENTRATE TO PURIFIED WATER RATIO

In order to maximize the life of your SpectraPure RO Membrane, you may need to adjust the ratio of the concentrate to purified water. If not enough concentrate is allowed to flow past the membrane during operation, the impurities will precipitate out on the membrane surface, clogging the RO Membrane. To keep this from happening, the Concentrate to Purified Water Ratio must be checked and adjusted in order to compensate for pressure and temperature variations that exist in all water supplies. The flow rate of the concentrate must be a minimum of 3X the product flow rate. *3X to 5X is an acceptable concentrate flow rate.*

PROCEDURE:

1. Open the cold water supply valve and let the system run for 5 minutes. Direct both tubes down the drain.
2. Collect product water from the blue and yellow tubing into separate measuring cups. When the product water (blue tube) hits 100 ml, remove both lines from the cups and record the results.

NOTE: Most measuring cups show milliliters as well as ounces. Since there will be more water collected from the waste (yellow) line, use a larger measuring cup for this side.

WASTE (YELLOW) _____ ml. : PRODUCT (BLUE) 100 ml.

The result is your Concentrate to Waste Water Ratio. By dividing the WASTE water measurement by 100, you will end up with a ratio where the PRODUCT water is expressed as 1. (e.g. 3:1, 4:1, etc.)

If your Product to Waste Water Ratio is too high (e.g. 5:1 or 6:1), you may adjust it by trimming the Flow Restrictor. (See Flow Restrictor Adjustment And Replacement.) If your Product to Waste Water Ratio is too low (e.g. 1:1), contact SpectraPure for a replacement flow restrictor.

FLOW RESTRICTOR ADJUSTMENT AND REPLACEMENT

1. Locate the waste water tubing that contains the flow restrictor. (Refer to Figure 1 on Page 3 for systems without manual flush and ASO valve; Figure 2 for systems with manual flush and/or ASO valve.)
2. Remove the tubing from its push fitting at the membrane as follows:
 - a.) Firmly depress and hold the push fitting collar down with your thumbnail.
 - b.) While the push fitting collar is depressed, pull the tubing straight out of the push fitting. Once the tubing is removed, release the collar.
3. Carefully remove the flow restrictor assembly, now visible as a plastic insert in the end of the yellow tubing. You may use an object such as a dull knife

FLOW RESTRICTOR ADJUSTMENT AND REPLACEMENT (cont.)

to help pry the flow restrictor insert from the end of the tubing. The entire flow restrictor (consisting of the insert collar and thin capillary tubing) may then be gently extracted.

NOTE: Take care not to crush or otherwise damage the delicate capillary tubing.

4. Refer to the Flow Restrictor Table on the right. Find the **product flow rate** in the left-hand column and the **length of the flow restrictor** in the right-hand column.
5. Using a new single-edge razor blade, carefully measure and then cut the flow restrictor to the total length indicated.
6. Reinsert the flow restrictor assembly into the yellow tubing and firmly reseal the insert into the end of the yellow tubing by carefully pressing on the insert with your thumbnail. Care should be taken not to crush or otherwise damage the end of the capillary tubing protruding from the end of the insert.
7. Reinsert the yellow tubing into its push fitting in the RO membrane as follows:
 - a.) Moisten the O-ring seal inside the concentrate outlet fitting by dripping a few drops of clean water into the fitting.
 - b.) Grasp the yellow tubing near the flow restrictor end, and insert the tubing into the push fitting. Push the tubing into the fitting until resistance is felt, approximately 1/2 inch (12.7 mm). The tubing is now resting on the O-ring seal inside the fitting.
 - c.) Firmly push the tubing approximately an additional 1/4 inch (6.35 mm) further into the fitting to completely seat the line into the fitting and O-ring seal.
8. Turn on the system water supply and check for leaks prior to further use or testing. If a leak is observed, you may not have pushed the yellow tubing into the push fitting far enough to seal the tubing against the O-ring. Turn off the system water supply and reseal the tubing as described above.

FR-180 (GREEN)

PRODUCT RATE ml/min	gpd	CUT TO LENGTH	
		in.	cm.
490	186	1	2.5
460	175	2	5.1
430	163	3	7.6
400	152	4	10.2
379	144	5	12.7
356	135	6	15.2
344	131	7	17.8
326	124	8	20.3
311	118	9	22.9
300	114	10	25.4
289	110	11	27.9
281	107	12	30.5
270	103	13	33.0
263	100	14	35.6
259	98	15	38.1
256	97	16	40.6

ONE YEAR LIMITED WARRANTY:

SpectraPure, Inc.® warrants the product to the original owner only to be free of defects in material and workmanship for a period of one year from the date of receipt. SpectraPure's liability under this warranty shall be limited to repairing or replacing at SpectraPure's option, without charge, F.O.B. SpectraPure's factory, any product of SpectraPure's manufacture. SpectraPure will not be liable for any cost of removal, installation, transportation or any other charges which may arise in connection with a warranty claim. Products which are sold but not manufactured by SpectraPure are subject to the warranty provided by the manufacturer of said products and not by SpectraPure's warranty. SpectraPure will not be liable for damage or wear to products caused by abnormal operating conditions, accident, abuse, misuse, unauthorized alteration or repair or, if the product was not installed in accordance with SpectraPure's or other manufacturer's printed installation and operating conditions, or damage caused by hot water, freezing, flood, fire or acts of God.

SpectraPure will not be responsible for any consequential damages arising from installation or use of the product, including any water or mold damage due to flooding which may occur due to malfunction or faulty installation, including, but not limited to failure by installer to over- or under-tighten fittings, housings, and/or push-style fittings, or improper installation of push-style fittings. Consumable items such as prefilters and membranes are not covered under the one year warranty.

To obtain service under this warranty, the defective system or components must be returned to SpectraPure with proof of purchase, installation date, failure date and supporting installation data. Any defective product to be returned to the factory must be sent freight prepaid. Documentation supporting the warranty claim and a Return Merchandise Authorization (RMA) number must be included. SpectraPure will not be liable for shipping damages due to the improper packaging of the returned equipment and all returned goods must also have adequate insurance coverage and a tracking number.

SpectraPure will not pay for loss or damage caused directly or indirectly by the presence, growth, proliferation, spread or any activity of "fungus", wet or dry rot or bacteria. Such loss or damage is excluded regardless of any other cause or event that contributes concurrently or in any sequence to the loss. We will not pay for loss or damage caused by or resulting from continuous or repeated seepage or leakage of water, or the presence or condensation of humidity, moisture or vapor, that occurs over a period of 14 days or more. "Fungus" and "fungi" mean any type or form of fungus or Mycota or any byproduct or type of infestation produced by such fungus or Mycota, including but not limited to, mold, mildew, mycotoxins, spores, scents or any biogenic aerosols.

SpectraPure will not be liable for any incidental or consequential damages, losses or expenses arising from installation, use, or any other causes. There are no expressed or implied warranties, including merchantability or fitness for a particular purpose, which extend beyond those warranties described or referred to above.

* **The one year limited warranty does not apply to consumable items, including but not limited to, filters and cartridges unless specifically stated above.**

TERMS AND CONDITIONS:

1. Shipping charges on units or parts submitted to our facility for repair or replacement must be borne by the registered purchaser. After repair or replacement, the factory will return the unit or part freight prepaid to the customer.
2. We assume no warranty liability in connection with our equipment other than as herein specified.
3. This warranty is in lieu of all other warranties expressed or implied, including warranties of fitness for a particular purpose.
4. We do not authorize any person or representative to assume for us any other obligation on the sale of our equipment. This is the exclusive remedy and liability for consequential damages under any and all warranties which are excluded to the extent exclusion is permitted by law.
5. Proof of original purchase date must accompany all warranty claims.
6. SpectraPure, Inc. Reserves the right to change prices without notice when necessary. All prices in the catalog are quoted in US dollars.
7. Claims for error in quantity or condition must be made within 10 days of receipt of material. SpectraPure, Inc. will not be responsible for any claimed shortages not reported within 10 days. Returns other than warranty claims may be subject to 20% restocking fee.
8. SpectraPure, Inc. cannot be held liable for damage or loss to a shipment by a freight carrier. Check shipment for damage before acceptance or note on freight bill subject to inspection for concealed damage. Consignee must file claim. SpectraPure, Inc. will offer as much assistance as possible.
9. A complete credit check is required prior to shipping on a Net 30 basis. In the interim period during which credit references are being evaluated, all orders must be prepaid until approved.
10. All returned checks [due to insufficient funds or closed accounts] will be subjected to a **\$35 penalty charge**.
11. Invoices on Net 30 accounts not paid within 30 days of shipment will be considered delinquent and will accrue Finance charges at the rate of 1.5% per month (18% per annum).