

Chapter V – Quality Assurance of SHANGYUAN Membrane Elements

5-1 One-year Warranty for RO Membrane Elements

SHANGYUAN RO membrane elements shall be used according to the specifications and procedures set forth by SHANGYUAN Technology Co., Ltd. (hereinafter referred to “SHANGYUAN”), and only on this condition will SHANGYUAN ensure the quality of RO membrane elements manufactured and sold by itself, and offer a one-year period of limited quality guarantee, with the terms specified as follows:

Guarantee on Producing Technologies and Materials

SHANGYUAN ensures that the RO membrane elements produced and sold by itself are integral and intact in respect of producing technologies and materials. SHANGYUAN’s obligation under this limited warranty covers a period of 12 month from the date received by the buyer, and is limited to the gratis repair or, at SHANGYUAN’s discretion, replacement of any element which, when examined by SHANGYUAN, appears to be originally defective under this provision of limited warranty.

Guarantee on Performance

The new membrane products have the initial performance specified in the brochure of said product. SHANGYUAN warrants the performance of its elements for one years from the date when the RO system is put into operation or 6 months after the goods is shipped (whichever occurs first), during which period period SHANGYUAN warrants as follows:

① Performance of Membrane Element within One-year Period of Limited Warranty

(1) The average salt permeability doesn’t exceed 2 times of the value specified in the sample book of products when the membrane elements are used or measured on the testing condition specified in the General Technical Specifications of SHANGYUAN.

(2) The average permeate flow is not less than 70% of the initial permeate flow when the membrane elements are used or measured on the testing condition specified in the sample book of products provided by SHANGYUAN.

② Initial Performance

SHANGYUAN guarantees the initial minimum permeate flow and rejection rate as specified in the technical specifications. These parameters are obtained under standard testing conditions set forth by SHANGYUAN. If these membrane elements fail to reach the minimum initial values as specified, SHANGYUAN will, after confirming the performance failure, repair the membrane elements or refund to customer the expenses for purchasing those defective membrane elements, in which case SHANGYUAN itself will bear the freight charges.

③ In case the buyer fails to satisfy any of the following requirements, SHANGYUAN will bear no liability for performing the one-year quality warranty mentioned above:

(1) Feedwater turbidity shall not exceed 1.0NTU; SDI₁₅ shall not exceed 5; feedwater temperature shall not be higher than 45°C.

(2) Feedwater shall not contain any harmful substance that may cause physical and chemical damage to the membrane element.

(3) Before being installed or put into operation, the membrane element shall be stored in original packing box with the preserving temperature at 5~35°C.

(4) The pH value of feedwater shall be within the range of 3~10 during regular running. When the system is cleaned, the pH value of feedwater shall be within 2~12.

(5) The feedwater shall not contain such oxidizing substances as chlorine, potassium permanganate and hypochlorous acid radical, etc. (Notes: This article is not applicable to HOR series which shall work with the feedwater suitable for it)

(6) The maximum operating pressure for membrane element is as follows (except otherwise specified in the product instructions):

Membrane Series	Max Operating Pressure
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IU Series	600 psi
IU-FR Series	600 psi
IWL Series	600 psi
AF Series	600 psi

(7) In no case should the backpressure exerted on the membrane element be greater than 5 psi; besides, the membrane element should be avoided from the impact of water hammer when the system is in operation.

(8) If, under standard operating conditions, the performance of system decreases by 10% or if the contamination or scaling of membrane elements occurs, the membrane elements should be cleaned immediately in accordance with specified procedures.

(9) The system composition and design parameters of system, such as the array of membrane modules, configuration of instruments and meters and the recovery rate, etc., shall be surely in conformity with the proper engineering design.

(10) The seller shall be responsible for providing the user with proper manuals of system operation and maintenance, and conduct relevant training for the operating and managerial personnel so as to ensure that the user has the capability of cleaning the system, and other capabilities such as recovering the performances and diagnosing the failures of system.

(11) The user must frequently and systematically record the standardized performance data of the whole system and its subsystems, ensure that these data are true, complete and continuous, and then keep these data on file for future reference. When any claim is lodged against SHANGYUAN according to the terms of quality assurance, these data will be the evidence for SHANGYUAN to perform its guarantee for the quality.

The Conditions for Composing an RO System

① The integral and effective pretreatment, the array of elements, the setup of instruments and meters, the design standards of equipment and the components shall be all in conformity with the guide to RO membrane design and the relevant

technical standards of SHANGYUAN, and SHANGYUAN shall have the right to examine the design to confirm whether it is in conformity with the design guidance and relevant technical standards.

② The RO system shall be equipped with proper devices that can prevent the formation of microbial contamination and other kinds of contamination, and shall have applicable protective measures

Conditions of Raw Water

① The feedwater of RO system must ensure that the membrane surface will not suffer the adhesion by any of the colloidal matter, microorganism or other deposit

② The RO membrane should be free from the damage of those harmful chemicals, such as surfactant, organic solvent, grease, high-molecular polymer, etc.

③ The raw water should be free from any strong oxidative substance, such as ozone, chlorine or potassium permanganate, etc.

④ The feedwater temperature shall be lower than 45℃.

⑤ The SDI₁₅ of raw water entering the RO system shall surely be less than 5 all the time, and the maximum turbidity of feedwater shall be less than 1.0NTU, while the turbidity of feedwater in continuous operation shall be controlled within 0.3~0.5NTU, and the SDI shall be preferably less than 3.

⑥ No colloidal sulfur shall be contained in raw water.

Operating Conditions

① Determine the most suitable recovery rate for the RO system in running time based upon the degree of separation-out of hardly solved substances.

② The RO system shall be surely free from fouling and scaling formed by calcium, magnesium, barium, strontium, and silicon, etc. during the running time.

③ The RO system shall be equipped with special-purpose device to prevent RO elements from being affected by the water hammer from when the high-pressure pump is started up and is in running.

④ The RO system shall use the chemicals as recommended by SHANGYUAN

or as permitted for use. In case you are going to use those chemicals not recommended by SHANGYUAN, please obtain the consent from SHANGYUAN first.

Cleaning Conditions

Please refer to “Guide to Cleaning of SHANGYUAN Membrane Elements”

Points for Attention during the Use of RO Elements

① Any specific application must be limited within the extreme operating conditions. We strongly recommend you to refer to the latest edition of technology manual and design guide prepared by SHANGYUAN Technology Co., Ltd., or consult experts proficient in membrane technology. In case the customer fails to follow the operating conditions as specified in this manual, SHANGYUAN technology Co., Ltd. will assume no liability for all results

② All membrane elements have been strictly tested before leaving the factory. The wet-type elements have been treated with the preservative solution made of RO-filtered water and 1.0% sodium hydrogen sulfite (an antifreeze solution of 10% propanediol is required in winter) for storage purpose, then sealed with plastic bag in vacuum, and further packed in carton boxes. In order to prevent the breeding of microbes during short-time storage, transportation and system standby, we recommend you to soak the membrane elements with protective solution (prepared with RO-filtered water) containing 1.0% sodium hydrogen sulfite (foodstuff purpose).

③ The RO-filtered water produced in the first hour of running shall be discarded.

④ During storage time and run time, it is strictly prohibited to dose any chemical medicament that may be harmful to membrane elements. In case of any violation in using this kind of chemical medicament, SHANGYUAN Technology Co., Ltd. assumes no liability for any outcome incurred herefrom.

5-2 Procedures for Repair and Replacement of Membrane Element

In case the customer definitely requests to implement the procedures on repair

and replacement of membrane elements, the following procedures set forth by SHANGYUAN shall be implemented:

5-2.1 Procedure on Repair of Membrane Element

Before any membrane element is returned for repair, you must contact first the regional sales manager of SHANGYUAN and obtain the agreement from said manager.

The procedure on repair of membrane element includes two methods: On-the-spot inspection and testing of the membrane elements conducted by SHANGYUAN's technical personnel at the customer's site; or returning of the membrane element to the site of SHANGYUAN for inspection and testing.

① In case of on-the-spot inspection and testing:

(1) For the products within the quality guarantee term with the problems caused by the membrane materials and the producing technologies of SHANGYUAN, SHANGYUAN shall, upon completion of the inspection and testing, bear all the expenses for inspection and testing of the membrane elements, and the customer can obtain the membrane elements compensated by SHANGYUAN that are in conformity with the technical specifications, with the freight charges borne by SHANGYUAN.

(2) For the products within the quality guarantee term with the problems not caused by the membrane materials or the producing technologies of SHANGYUAN, the customer shall, upon completion of the inspection and testing, bear all the expenses for inspection and testing and for replacement of membrane elements, with the freight charges also borne by the customer.

(3) As for the products beyond the quality guarantee term, the customer shall, upon completion of the inspection and testing, bear all the expenses for inspection and testing and for replacement of membrane elements, with the freight charges also borne by the customer.

② In case of returning the membrane elements to the site of SHANGYUAN for inspection and testing:

(1) The customer shall fill in “Registration Form for Return, Repair and Replacement of Membrane Element(s)”, and send it to the regional sales manager of SHANGYUAN by e-mail, fax or other ways. Upon confirmation, the regional sales manager shall notify the customer to return the membrane element.

(2) Besides sending back the membrane element, the customer shall also provide the following information:

- Model and serial number of membrane element, and contract number.
- Detailed description of failures of product
- All data that can reflect the properties of membrane element(s) returned, such as rejection rate, temperature, pressure, salt concentration of feedwater, and permeate flow, etc.

5-2.2 Packing and Transportation

① Before transportation, the customer shall take necessary measures for protecting and storing the membrane elements of various types as stipulated in the terms set forth in the technical announcement of SHANGYUAN.

② The membrane element(s) shall be packed in sealed plastic bag and then placed in the carton box to avoid mechanical damage in the course of transportation, and shall be surely kept away from moisture and exposure to sunlight.

③ After obtaining the notice of return from SHANGYUAN, the customer shall send out the membrane element(s) as soon as possible in order to avoid the change in properties of membrane element(s) caused by excessively long time of storage.

5-2.3 Procedures for Inspection and Testing

① In case it is necessary to conduct destructive experiment on the returned membrane element(s) for the purpose of technical inspection, SHANGYUAN shall, upon having its regional sales manager of SHANGYUAN contacting the customer and obtaining authorization from the customer, carry out the destructive experiment.

② As for the membrane element(s) within the quality guarantee term, if the testing result proves that the problem of membrane element(s) is not caused by the membrane materials or the producing process, the customer shall exclusively bear all of the expenses for inspection and testing, and cannot get compensation from

SHANGYUAN. SHANGYUAN will, according to the instructions of customer, dispose of the membrane element(s) or, at the customer's charges, send back the element(s) to the customer.

③ In case the testing result proves that there actually exists defect in the material or producing process of the membrane element(s), SHANGYUAN will bear the expenses for inspection and testing; besides, the customer can obtain the membrane element(s) compensated by SHANGYUAN that are in conformity with the technical specifications, with the freight charges borne by SHANGYUAN.

④ As for the membrane element(s) beyond the quality guarantee term, the customer shall bear all the expenses for inspection, testing and replacement of membrane element(s) as well as the freight charges.

5-2.4 Additional Provisions

① SHANGYUAN shall bear the transportation expenses for returning the membrane element(s) back to the company

② In case SHANGYUAN doesn't receive the membrane element(s) within the specified time, it will notify the customer of ending the repair program. In general case, the specified time shall be within one month from the date when the customer receives the Registration Form for Repair and Replacement of Membrane Elements signed by the regional sales manager of SHANGYUAN.

③ The quality warranty shall be invalidated upon the occurrence of any of the following:

- The membrane element bears no serial number of SHANGYUAN Technology Co. Ltd.
- It is obviously visible that the membrane element(s) has suffered the contamination of inferior water quality in the course of service.
- The mechanical damage is obviously visible, which is caused in the course of service.
- The membrane element has been damaged due to improper storage or transportation.
- The membrane element(s) has/have been arbitrarily transformed without the

permission of SHANGYUAN Technology Co. Ltd.

Attachment 1 – Registration Form for Repair and Replacement of Membrane Elements

SHANGYUAN TECHNOLOGY CO., LTD.			
Registration Form for Repair and Replacement of Membrane Elements			
Name of Customer		Name of Seller	
Contact Person		Fax	
Telephone		E-mail	
Attached			
Model and S/N :			
Detailed Description of Failure (including the time of initial operation):			
Below is for SHANGYUAN Membrane Technology Co. Ltd. only			
Comments of Regional Sales Manager			