

Aquaphor Professional LP21-4021

Membrane Element

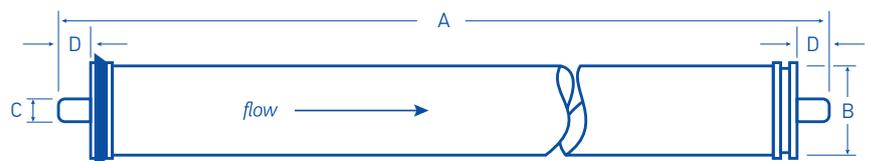
BRIEF INTRODUCTION

The LP (low pressure) series of aromatic polyamide compound membrane element has the properties of low-pressure operation, high permeate flow and excellent desalination and is applicable to desalination of brackish water. Besides, it is particularly applicable to fabrication of high-purity water for electronic industry and electric power industry owing to its excellent performance in removing soluble salts, TOC, SiO₂, etc.

Being suitable for desalting such water sources as surface water (NaCl ≤ 10000ppm), underground water, tap water and municipal water, etc., LP series is mainly applicable to treatment of various industrial water such as industrial-purpose pure water, boiler water replenishment in power plants, and can be also applied to such brackish water applications, such as treatment of high-concentration saline waste water and production of beverage-purpose water.



Size of Membrane Element: 1,0 inch = 25,4 mm



A	$\frac{\text{mm (inch)}}{533,4 (40)}$	B	$\frac{\text{mm (inch)}}{99,7 (3,9)}$	C	$\frac{\text{mm (inch)}}{19,1 (0,75)}$	D	$\frac{\text{mm (inch)}}{26,7 (1,05)}$
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MODEL	ACTIVE MEMBRANE Area ft ² (m ²)	AVERAGE PERMEATE GPD (m ³ /d)	STABLE REJECTION Rate %	MIN. REJECTION Rate %
LP21-4021	36 (3,3)	950 (3,6)	99,5	99,3

Testing Conditions

Testing Pressure	225 psi (1,55 MPa)
Testing Solution Temperature	25 °C
Concentration of Testing Solution (NaCl)	2 000 ppm
pH value of Testing Solution	7,5
Recovery Rate of Single Element	8%

Operation Limits & Conditions

Max. Working Pressure	600 psi (4,14 MPa)
Max. Volume of Feed water	16 gpm (3,6 m ³ /h)
Max. Temperature of Feed water	45°C
Max. Feed water SDI ₁₅	5
pH Range of Feed water during Continuous Operation	2 ≈ 11
pH Range of Feed Water during Chemical Cleaning	1 ≈ 13
Residual Chlorine Concentration of Feed Water	< 0,1 ppm
Max. Pressure Drop of Single Membrane Element	15 psi (0,1 MPa)
Max. Pressure Drop of Single Pressure Vessel with Six RO Membranes	50 psi (0,34 MPa)

NOTICE

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- The membrane used should remain wet after being used; In long term suspension, to prevent the breeding of microbes, soak the membrane elements with protective solution is highly recommended, the solution (prepared with RO filtered water) containing 1.0% sodium hydrogen sulfite (foodstuff-purpose).
- Operate low pressure flushing for 15-25 minutes of first use, high pressure flushing for 60-90 minutes when first use (Permeate volume no less than 50% of designed volume). Discard all the permeate and condensed water produced during the first one hour after system start-up.
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Aquaphor Professional LP21-4040

Membrane Element

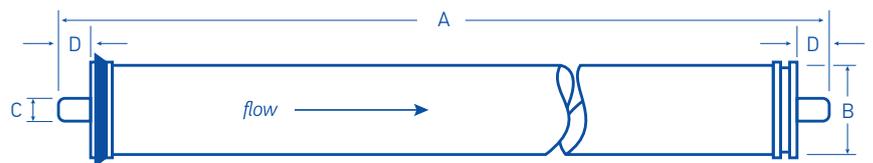
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MODEL	ACTIVE MEMBRANE Area ft ² (m ²)	AVERAGE PERMEATE GPD (m ³ /d)	STABLE REJECTION Rate %	MIN. REJECTION Rate %
LP21-4040	90 (8,4)	2 400 (9,1)	99,5	99,3

Testing Conditions

Testing Pressure	225 psi (1,55 MPa)
Testing Solution Temperature	25 °C
Concentration of Testing Solution (NaCl)	2 000 ppm
pH value of Testing Solution	7,5
Recovery Rate of Single Element	15%

Operation Limits & Conditions

Max. Working Pressure	600 psi (4,14 MPa)
Max. Volume of Feed water	16 gpm (3,6 m ³ /h)
Max. Temperature of Feed water	45°C
Max. Feed water SDI ₁₅	5
pH Range of Feed water during Continuous Operation	2 ≈ 11
pH Range of Feed Water during Chemical Cleaning	1 ≈ 13
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Aquaphor Professional LP22-8040

Membrane Element

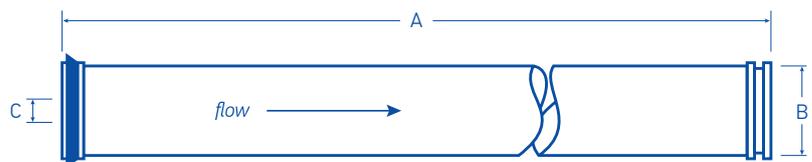
BRIEF INTRODUCTION

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Being suitable for desalting such water sources as surface water (NaCl ≤ 10000ppm), underground water, tap water and municipal water, etc., LP series is mainly applicable to treatment of various industrial water such as industrial-purpose pure water, boiler water replenishment in power plants, and can be also applied to such brackish water applications, such as treatment of high-concentration saline waste water and production of beverage-purpose water.



Size of Membrane Element: 1,0 inch = 25,4 mm



A	$\frac{\text{mm (inch)}}{1016,0 (40)}$	B	$\frac{\text{mm (inch)}}{201,9 (7,95)}$	C	$\frac{\text{mm (inch)}}{28,6 (1,125)}$
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MODEL	ACTIVE MEMBRANE Area ft ² (m ²)	AVERAGE PERMEATE GPD (m ³ /d)	STABLE REJECTION Rate %	MIN. REJECTION Rate %
LP22-8040	400 (37,2)	10 500 (39,7)	99,5	99,3

Testing Conditions

Testing Pressure	225 psi (1,55 MPa)
Testing Solution Temperature	25 °C
Concentration of Testing Solution (NaCl)	2 000 ppm
pH value of Testing Solution	7,5
Recovery Rate of Single Element	15%

Operation Limits & Conditions

Max. Working Pressure	600 psi (4,14 MPa)
Max. Volume of Feed water	75 gpm (17 m ³ /h)
Max. Temperature of Feed water	45°C
Max. Feed water SDI ₁₅	5
pH Range of Feed water during Continuous Operation	2 ≈ 11
pH Range of Feed Water during Chemical Cleaning	1 ≈ 13
Residual Chlorine Concentration of Feed Water	< 0,1 ppm
Max. Pressure Drop of Single Membrane Element	15 psi (0,1 MPa)
Max. Pressure Drop of Single Pressure Vessel with Six RO Membranes	50 psi (0,34 MPa)

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Aquaphor Professional ULP22-8040

Membrane Element

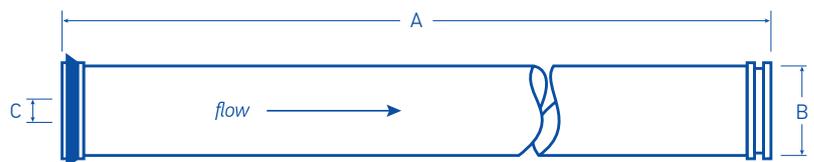
BRIEF INTRODUCTION

ULP series of ultra-low pressure aromatic polyamide compound membrane element can work under ultra low pressure to reach as high permeate flow and rejection same as regular low-pressure membrane element, and is applicable to desalination of surface water and underground water. It operates under approximately two thirds of the operating pressure of regular low-pressure composite membranes, which can decrease the investment costs for such relevant facilities as pumps, pipelines, and containers, etc. and the operating cost for the RO system, thus increasing the economic efficiency.

Applicable to desalination treatment of those water sources with NaCl lower than 2000 ppm, such as surface water, underground water, tap water and municipal water, ULP series membrane elements are mainly applicable to such as pure water, boiler water replenishment, foodstuff processing, and pharmaceutical production.



Size of Membrane Element: 1,0 inch = 25,4 mm



A	$\frac{\text{mm (inch)}}{1016,0 (40)}$	B	$\frac{\text{mm (inch)}}{201,9 (7,95)}$	C	$\frac{\text{mm (inch)}}{28,6 (1,125)}$
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MODEL	ACTIVE MEMBRANE Area ft ² (m ²)	AVERAGE PERMEATE GPD (m ³ /d)	STABLE REJECTION Rate %	MIN. REJECTION Rate %
ULP22-8040	400 (37,2)	12 100 (45,7)	99,0	98,5

Testing Conditions

Testing Pressure	150 psi (1,03 MPa)
Testing Solution Temperature	25 °C
Concentration of Testing Solution (NaCl)	1 500 ppm
pH value of Testing Solution	7,5
Recovery Rate of Single Element	15%

Operation Limits & Conditions

Max. Working Pressure	600 psi (4,14 MPa)
Max. Volume of Feed water	75 gpm (17 m ³ /h)
Max. Temperature of Feed water	45°C
Max. Feed water SDI ₁₅	5
pH Range of Feed water during Continuous Operation	3 ≈ 10
pH Range of Feed Water during Chemical Cleaning	2 ≈ 12
Residual Chlorine Concentration of Feed Water	< 0,1 ppm
Max. Pressure Drop of Single Membrane Element	15 psi (0,1 MPa)
Max. Pressure Drop of Single Pressure Vessel with Six RO Membranes	50 psi (0,34 MPa)

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- The permeate value listed in the table is the average value. The permeate flow of single membrane element is tolerance not exceeding ±15% of the nominal value.
- All wet-type membrane elements have been strictly tested before leaving the factory, and have been treated with 1.0% sodium hydrogen sulfite (10% glycerin antifreeze required in winter) for storage purpose, then sealed with plastic bag in vacuum, and further packed in carton boxes.
- The membrane used should remain wet after being used; In long term suspension, to prevent the breeding of microbes, soak the membrane elements with protective solution is highly recommended, the solution (prepared with RO filtered water) containing 1.0% sodium hydrogen sulfite (foodstuff-purpose).
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Aquaphor Professional XLP11-4021

Membrane Element

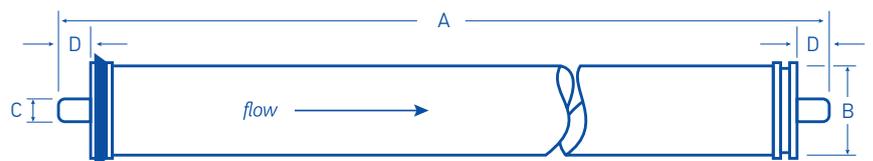
BRIEF INTRODUCTION

XLP series of extremely low pressure aromatic polyamide compound membrane element can work under ultra low pressure to reach as high permeate flow and salt rejection as regular low-pressure membrane element can, and is applicable to desalination of surface water and underground water. It operates under approximately half the operating pressure of regular low-pressure composite membrane, and achieves a salt rejection rate of up to 99.0%, which can decrease the investment costs for such relevant facilities as pump, piping, and container, etc. and the operating cost for the RO system, thus increasing the economic efficiency.

Being suitable for the desalination treatment of those water sources with low salinity not requiring high salt rejection such as surface water, underground water, tap water and municipal water, which have a salt concentration lower than 1000 ppm, XLP series of membrane element is particularly applicable to the second-pass desalination with two-pass RO system, and is mainly applied to numerous applications of various scales, such as pure water production, boiler water replenishment, foodstuff processing and pharmaceutical production.



Size of Membrane Element: 1,0 inch = 25,4 mm



A	$\frac{\text{mm (inch)}}{533,4 (40)}$	B	$\frac{\text{mm (inch)}}{99,7 (3,9)}$	C	$\frac{\text{mm (inch)}}{19,1 (0,75)}$	D	$\frac{\text{mm (inch)}}{26,7 (1,05)}$
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MODEL	ACTIVE MEMBRANE Area ft ² (m ²)	AVERAGE PERMEATE GPD (m ³ /d)	STABLE REJECTION Rate %	MIN. REJECTION Rate %
XLP11-4021	36 (3,3)	1 000 (3,78)	98,0	97,5

Testing Conditions

Testing Pressure	100 psi (0,69 MPa)
Testing Solution Temperature	25 °C
Concentration of Testing Solution (NaCl)	500 ppm
pH value of Testing Solution	7,5
Recovery Rate of Single Element	8%

Operation Limits & Conditions

Max. Working Pressure	600 psi (4,14 MPa)
Max. Volume of Feed water	16 gpm (3,6 m ³ /h)
Max. Temperature of Feed water	45°C
Max. Feed water SDI ₁₅	5
pH Range of Feed water during Continuous Operation	3 ≈ 10
pH Range of Feed Water during Chemical Cleaning	2 ≈ 12
Residual Chlorine Concentration of Feed Water	< 0,1 ppm
Max. Pressure Drop of Single Membrane Element	15 psi (0,1 MPa)
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Aquaphor Professional XLP11-4040

Membrane Element

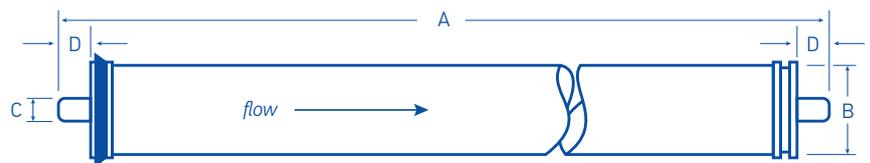
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MODEL	ACTIVE MEMBRANE Area ft ² (m ²)	AVERAGE PERMEATE GPD (m ³ /d)	STABLE REJECTION Rate %	MIN. REJECTION Rate %
XLP11-4040	90 (8,4)	2 000 (7,6)	98,0	97,5

Testing Conditions

Testing Pressure	100 psi (0,69 MPa)
Testing Solution Temperature	25 °C
Concentration of Testing Solution (NaCl)	500 ppm
pH value of Testing Solution	7,5
Recovery Rate of Single Element	15%

Operation Limits & Conditions

Max. Working Pressure	600 psi (4,14 MPa)
Max. Volume of Feed water	16 gpm (3,6 m ³ /h)
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