KOMATSU
REVERSE OSMOSIS MEMBRANE ELEMENTS MANUAL

BW series Brackish Water Reverse Osmosis Membrane Elements：

With rejection of over 99.5% on average and stable performance，it is fit for brackish water；

LP series Low Pressure Brackish Water Reverse Osmosis Membrane Elements：

Pressure in operation and wasting energy are reduced by 30% in contrast to BW series, on the basis of enough high rejection;

TW Series Super Low Pressure Tap Water Reverse Osmosis Element：

The best balance between high rejection and high water production; it is specially fit for the civil water treatment;

XLE Series Extreme Low Energy & large productive reverse osmosis membrane element：

20% higher water production than common membrane with the same membrane area, but 30% lower pressure in operation, and with perfect combination between extra low energy and large water production；

Characteristics

1、 We ensure the good quality of our membrane by the world class membrane sheet；
2、 With five series, it is complete for the specification；
3、 With high quality and competitive price；
4、 With our powerful R&D ability, we can offer order service by your requirements.；

OUR GOAL

RO MEMBRANE ELEMENTS WITH HIGHER QUALITY
MORE FLEXIBLE AND PRACTICAL STRATEGY
MORE PROFESSIONALTECHNICS
BETTER SERVICE

BW series Brackish Water
Reverse Osmosis Membrane Elements

Features: KOMATSU BW Series brackish water reverse osmosis membrane elements are made with the most high-tech super low pressure composite polyamide membrane available combining with decades of knowledge and experience in manufacturing reverse osmosis. LP Series of elements offer high rejection when feed water TDS value is lower than 8000ppm. They provide consistent, outstanding system performance in treating with brackish water, under ground water and surface water

- High rejection, esp. for SiO_2 rejection. They enable operational and maintenance cost saving of post-treatments equipments such as resin and EDI.
- Consistent, outstanding performance, improved element structure, wide flow path and short membrane leaf design.TW series of elements stand for the super reliable operation and most effective cleaning.
- Wide range and complete sets of products. There is 2.5 inch and 4.0 inch in diameter; 14 inch, 21inch and 40inch in length which can meet different system requirements about productive. Moreover, we can also design different size and specifications membrane elements according to clients requirements.

Product Specifications:

Model	Active Membrane Area ft^2 (m^2)	Operate Pressure Psi (MPa)	Average Flow GPD (m^3/d)	Rejection (%)	Recovery (%)
BW-2540	28 (2.6)	225 (1.55)	750 (2.8)	99.3	15
BW-4021	36 (3.3)	225 (1.55)	900 (3.4)	99.3	8
BW-4040	78 (7.5)	225 (1.55)	2400 (9.1)	99.5	15
BW-8365	365 (34)	225 (1.55)	9600 (36)	99.5	15
BW-8400	400 (37)	225 (1.55)	10600 (40)	99.5	15

Note：Test Conditions

1. Permeate flow and salt rejection based on the following test conditions: 2000 ppm NaCl, 225 psi (1.55Mpa), 77°F (25°C), pH 7.5, and above recovery.
2. Permeate flow rates for individual elements may vary +/-15%.
3. Minimum rejection is 99.0%.

Operating Limits

Maximum Operating Pressure……..……. 600psi (4.2MPa)
Maximum Feed Water Temperature……..…… 113 °F (45℃)
Maximum Feed SDI…… SDI 5
Free Chlorine ……..…… ＜0.1ppm
PH Range Continuous Operation……..…… 3～10
PH Range Short-Term Cleaning…… 2～11
Maximum Pressure Drop ……..…… 15Psi (0.1MPa)

LP series Low Pressure Brackish Water Reverse Osmosis Membrane Elements

Featrures: KOMATSU LP Series low pressure brackish water reverse osmosis membrane elements are made with the most high-tech super low pressure composite polyamide membrane available in the world combining with decades of knowledge and experience in manufacturing reverse osmosis. LP Series of elements offer high rejection when feed water TDS value is lower than 5000ppm. They provide consistent, outstanding system performance in treating with brackish water, under ground water and surface water.

- High rejection, super large productive. Their operational pressure is no more than 70% of normal brackish membrane. LP series of elements can lower your operating and maintenance costs a lot by lowering the requirement of pumps, pressure vessels, piping and other components.
- Consistent, outstanding performance, improved element structure, wide flow path and short membrane leaf design.TW series of elements stand for the super reliable operation and most effective cleaning.
- Wide range and complete sets of products. There is 2.5 inch and 4.0 inch in diameter; 14 inch, 21inch and 40inch in length which can meet different system requirements about productive. Moreover, we can also design different size and specifications membrane elements according to clients requirements.

Product Specifications:

Model	Active Membrane Area ft^2 (m^2)	Operate Pressure Psi (MPa)	Average Flow GPD (m^3/d)	Rejection (%)	Recovery (%)
LP-2540	28 (2.6)	150 (1.05)	800 (3.0)	99.0	15
LP-4021	36 (3.3)	150 (1.05)	1000 (3.8)	99.0	8
LP-4040	78 (7.5)	150 (1.05)	2700 (10)	99.5	15
LP-8365	365 (34)	150 (1.05)	11000 (40)	99.5	8
LP-8400	400 (37)	150 (1.05)	12000 (45)	99.5	15

Note: Test Conditions

1. Permeate flow and salt rejection based on the following test conditions: 2000 ppm NaCl, 150 psi (1.05Mpa), 77°F (25°C), pH 7.5, and above recovery.
2. Permeate flow rates for individual elements may vary +/-15%.
3. Minimum rejection is 99.0%.

Operating Limits

Maximum Operating Pressure……..…….. 600psi (4.2MPa)
Maximum Feed Water Temperature……..…… 113 °F (45℃)
Maximum Feed SDI…… SDI 5
Free Chlorine ……..…… ＜0.1ppm
PH Range Continuous Operation……..…… 3～10
PH Range Short-Term Cleaning…… 2～11
Maximum Pressure Drop ……..…… 15Psi (0.1MPa)

TW Series Super Low Pressure
Tap Water Reverse Osmosis Element

Features: KOMATSU TW Series Super low pressure tap water reverse osmosis element are made with super low pressure composite polyamide membrane combining with long-term experience in manufacturing reverse osmosis. TW Series of elements offer high rejection when feed water TDS value is lower than 2000ppm. They provide consistent, outstanding system performance in drinking water production.

- High rejection. They provide high rejection in treating with pesticides, chlorine and other byproducts of disinfection of water.
- Consistent, outstanding performance, improved element structure, wide flow path and short membrane leaf design.TW series of elements stand for the super reliable operation and most effective cleaning.
- Wide range and complete sets of products. There is 2.5 inch and 4.0 inch in diameter; 14 inch, 21inch and 40inch in length which can meet different system requirements about productive. Moreover, we can also design different size and specifications membrane elements according to clients requirements.

Product Specifications:

Model	Active Membrane Area ft^2 (m^2)	Operate Pressure Psi (MPa)	Average Flow GPD (m^3/d)	Rejection (%)	Recovery (%)
TW-2514	8 (0.7)	110 (0.76)	250 (0.9)	98.5	5
TW-2521	13 (1.2)	110 (0.76)	350 (1.3)	98.5	8
TW-2540	28 (2.6)	110 (0.76)	800 (3.0)	99.0	15
TW-4021	36 (3.3)	110 (0.76)	1000 (3.8)	99.0	8
TW-4040	85 (8.3)	110 (0.76)	2600 (9.8)	99.0	15
TW-8365	365 (34)	110 (0.76)	10000 (38)	99.0	15
TW-8400	400 (37)	110 (0.76)	11000 (42)	99.0	15

Note：Test Conditions

1. Permeate flow and salt rejection based on the following test conditions: 2000 ppm NaCl,110psi (0.76Mpa), 77°F (25°C), pH 7.5, and above shown recovery.
2. Permeate flow rates for individual elements may vary +/-15%.
3. Minimum rejection is 98.0%.

Operating Limits

Maximum Operating Pressure……..…….. 600psi (4.2MPa)
Maximum Feed Water Temperature……..…… 113 °F (45℃)
Maximum Feed SDI…… SDI 5
Free Chlorine ……..…… ＜0.1ppm
PH Range Continuous Operation……..…… 3～10
PH Range Short-Term Cleaning…… 2～11
Maximum Pressure Drop ……..…… 15Psi (0.1MPa)

XLE Series Extreme Low Energy & large productive reverse osmosis membrane element

Features: KOMATSU XLE Series extream low energy & large productive reverse osmosis membrane elements are made with the largest productive composite polyamide membrane available combining with decades of knowledge and experience in manufacturing reverse osmosis. XLE Series of elements provide consistent, outstanding system performance when feed water TDS value is lower than 2000ppm.

- Super large productive. It can provide much larger productive when the operational pressure is 100psi. Reduce system operating costs and design difficulties. They can help to reduce pressure vessel quanitity and investment and the later operation and maintenance costs.
- Consistent, outstanding performance, improved element structure, wide flow path and short membrane leaf design. XLE series of elements stand for the super reliable operation and most effective cleaning.
- Wide range and complete sets of products. There is 2.5 nch and 4.0 inch and 8.0inch in diameter; 14 inch, 21inch and 40inch in length which can meet different system requirements about productive. Moreover, we can also design different size and specifications membrane elements according to clients requirements.

Product Specifications:

Model	Active Membrane Area ft^2 (m^2)	Operate Pressure Psi (MPa)	Average Flow GPD (m^3/d)	Rejection (%)	Recovery (%)
XLE-2514	8 (0.7)	100 (0.69)	400 (1.5)	98.5	5
XLE-2521	13 (1.2)	100 (0.69)	500 (1.9)	98.5	8
XLE-2540	28 (2.6)	100 (0.69)	1100 (4.2)	99.0	15
XLE-4021	36 (3.3)	100 (0.69)	1300 (4.9)	99.0	8
XLE-4040	78 (7.5)	100 (0.69)	3000 (11.3)	99.0	15
XLE-8365	365 (33)	100 (0.69)	12000 (45)	99.0	15
XLE-8400	400 (37)	100 (0.69)	13200 (50)	99.0	15

Note: Test Conditions

1. Permeate flow and salt rejection based on the following test conditions: 500 ppm NaCl,100psi (0.69Mpa), 77°F (25°C), pH 7.5, and above shown recovery.
2. Permeate flow rates for individual elements may vary +/-15%.
3. Minimum rejection is 98.0%.

Operating Limits

Maximum Operating Pressure……..…….. 600psi (4.2MPa)
Maximum Feed Water Temperature……..…… 113 °F (45℃)
Maximum Feed SDI…… SDI 5
Free Chlorine ……..…… ＜0.1ppm
PH Range Continuous Operation……..…… 3～10
PH Range Short-Term Cleaning…… 2～11
Maximum Pressure Drop ……..…… 15Psi (0.1MPa)

ECO series Low Pressure
Reverse Osmosis Membrane Elements

Featrures: KOMATSU ECO Series low pressure reverse osmosis membrane elements are made with the most high-tech super low pressure composite polyamide membrane available in the world combining with decades of knowledge and experience in manufacturing reverse osmosis. ECO Series of elements offer high rejection when feed water TDS value is lower than 5000ppm.

- High rejection, super large productivity. The operation pressure is no more than 70% of normal brackish membrane. ECO series of elements can lower your operation and maintenance costs a lot by lowering the requirement of pumps, pressure vessels, piping and other components.
- Consistent, outstanding performance, improved element structure, wide feed spacer channel and short membrane leaf design. Under the condition of ensuring adequate area of the membrane, wider spacer channel will help to discharge contaminants of feed water. The stress-tolerant required of pretreatment and quality required of feed water will be relatively higher when woking under Off-Normal condition. ECO series membrane elements have more effective cleaning than normal elements. It can maintain a relatively low Pressure Drop and prolong the span-life of membrane element when the quality of feed water is not good.
- So far, there is only 4.0 inch in diameter and 40inch in length. One model is high rejection type and the other is large productive type. We will also design different size and specifications membrane elements according to clients requirements in the future.

Product Specifications:

Model	Active Membrane Area ft^2 (m^2)	Operate Pressure Psi (MPa)	Average Flow GPD (m^3/d)	Rejection (%)	Recovery (%)
ECO1-4040	75 (7.3)	150 (1.05)	2400 (9.1)	99.5	15
ECO2-4040	75 (7.3)	150 (1.05)	2800 (10.6)	99.0	15
ECO3-4040	85 (8.3)	75 (0.53)	2200 (8.3)	98.0	15

Note: Test Conditions

1. Permeate flow and salt rejection based on the following test conditions: 1500 ppm NaCl, 77°F (25°C), pH 7.5, and above recovery.
2. Permeate flow rates for individual elements may vary +/-15%.
3. Minimum rejection is 98.5%.

Operating Limits

Maximum Operating Pressure……..……. 600psi (4.2MPa)

Maximum Feed Water Temperature……..…… 113 °F (45℃)

Maximum Feed SDI…… SDI 5

Free Chlorine ……..…… ＜0.1ppm

PH Range Continuous Operation……..…… 3～10

PH Range Short-Term Cleaning…… 2～11

Maximum Pressure Drop ……..…… 15Psi (0.1MPa)

Comparison chart of different elements models

KOMATSU	Filmtec	Hydranautics
Model	Model	Model
BW-2540	TW/BW-2540	/
BW-4021	TW/BW-4021	/
BW-4040	TW/BW-4040	CPA2-4040
BW-8365	BW30-365	CPA2-8040
BW-8400	BW30-400	CPA3-8040
LP-2540	LP-2540	/
LP-4021	LP-4021	/
LP-4040	LP-4040	ESPA2-4040
LP-8365	/	/
LP-8400	LE-400	ESPA2-8040
TW-2514	/	/
TW-2521	/	/
TW-2540	/	/
TW-4021	/	/
TW-4040	/	ESPA3-4040
TW-8365	/	/
TW-8400	/	ESPA3-8040
XLE-2514	/	/
XLE-2521	XLE-2521	/
XLE-2540	XLE-2540	/
XLE-4021	XLE-4021	/
XLE-4040	XLE-4040	ESPA4-4040
XLE-8365	/	/
XLE-8400	XLE-440	ESPA4-8040
ECO1-4040	/	ESPA2-4040
ECO2-4040	/	ESPA1-4040
ECO3-4040	/	/

Note: **the datas above are for reference and may be not exactly the same as the actual performance because of the complicated and many infulences on the membranes when used may be not exactly the same as the datas in the actual performance**

2540、4040 and 8040 Membranes Performance Sheet

Product Code	Series	Model	Rejection	Permeate				Test Pressure		
			%	GPD	M3/D	LPM	LPH	Psi	MPa	Kg/cm3
400801	Brickish Series	BW-4021	99.2	900	3.4	2.4	142	225.0	1.6	15.6
400802		BW-4040	99.5	2400	9.1	6.3	379	225.0	1.6	15.6
400803		BW-8365	99.5	9600	36.3	25.2	1514	225.0	1.6	15.6
400804		BW-8400	99.5	10600	40.1	27.9	1672	225.0	1.6	15.6
400806	Low Pressure Series	LP-4021	99.0	1000	3.8	2.6	158	150.0	1.0	10.4
400807		LP-4040	99.5	2700	10.2	7.1	426	151.0	1.0	10.5
400808		LP-8365	99.5	11000	41.6	28.9	1735	152.0	1.1	10.5
400809		LP-8400	99.5	12100	45.8	31.8	1908	153.0	1.1	10.6
400813	Tap Water Series	TW-4021	99.0	1000	3.8	2.6	158	110.0	0.8	7.6
400814		TW-4040	99.0	2600	9.8	6.8	410	110.0	0.8	7.6
400815		TW-8365	99.0	10000	37.9	26.3	1577	111.0	0.8	7.7
400816		TW-8400	99.0	11000	41.6	28.9	1735	112.0	0.8	7.8
400820	Extreme Low Energy Series	XLE-4021	99.0	1300	4.9	3.4	205	100.0	0.7	6.9
400821		XLE-4040	99.0	3000	11.4	7.9	473	100.0	0.7	6.9
400822		XLE-8365	99.0	12000	45.4	31.5	1893	101.0	0.7	7.0
400823		XLE-8400	99.0	13200	50.0	34.7	2082	102.0	0.7	7.1
400824	ECO Series	ECO1-4040	99.5	2400	9.1	6.3	379	150.0	1.0	10.4
400825		ECO2-4040	99.0	2800	10.6	7.4	442	150.0	1.0	10.4
400826		ECO3-4040	98.0	2200	8.3	5.8	347	75.0	0.5	5.2