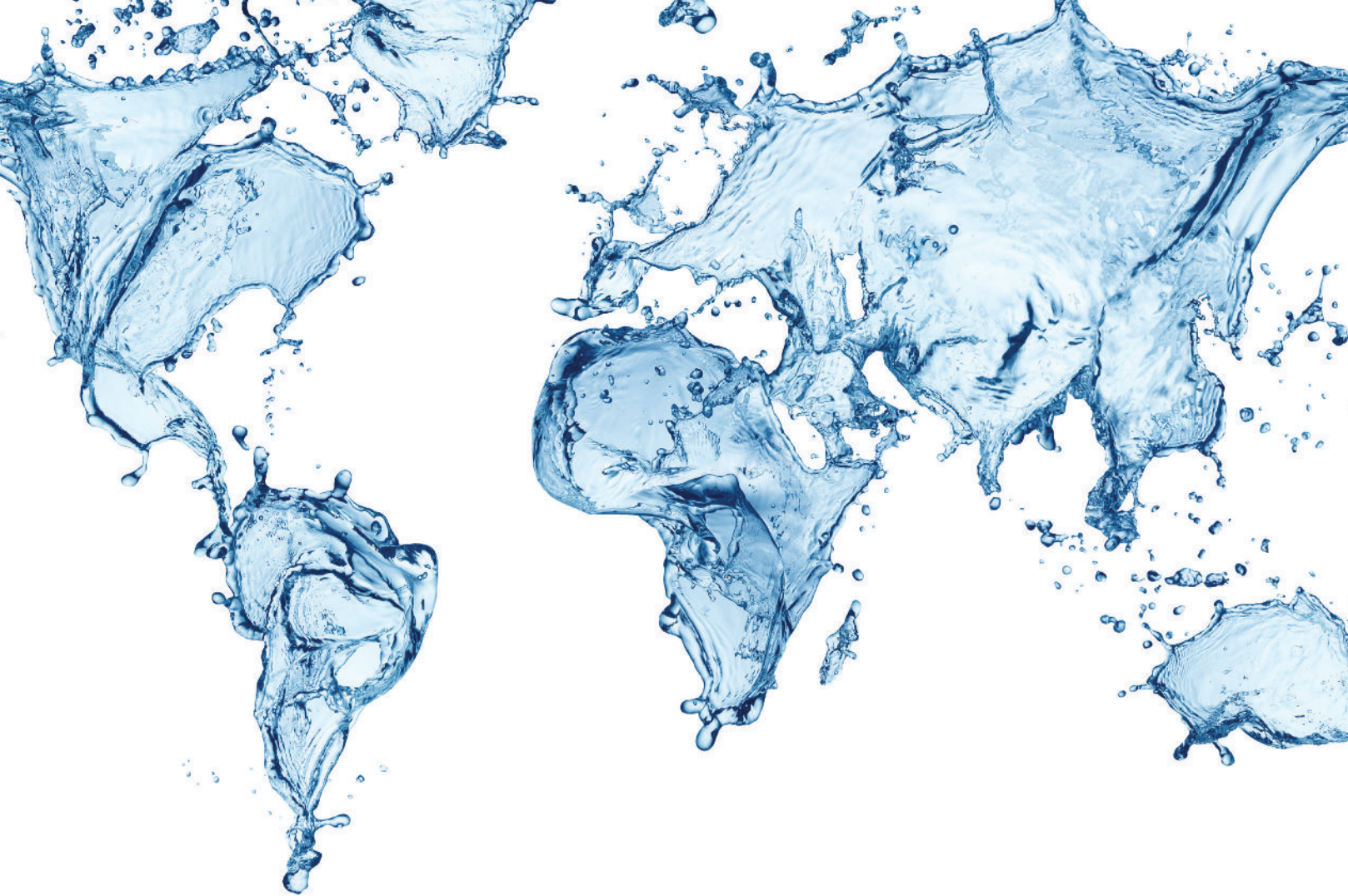




rm nanotech®
membranum

Membrane elements

Product catalog



Water is the most precious resource on Earth. A mankind's dependence on its stable source is growing every year. Nowadays membrane technologies become more and more important for water safety due to the problem of natural water contamination and rapidly growing demand.

Our mission is to increase efficiency of pure water production using state-of-the-art membrane technologies. Our green-field project was commissioned in September 2013 and now we are offering our products on a sound commercial basis.

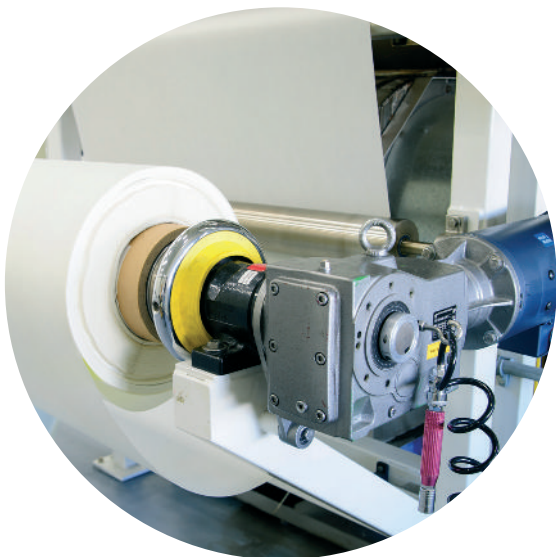




RM Nanotech is a brand new supplier of membrane flatsheet and spiral wound elements: being the first and the only Russian company among the world's leading membrane producers of nanostructured membrane flatsheet and membrane elements for reverse osmosis (RO), nanofiltration (NF) and ultrafiltration (UF).

Installed capacity of our plant is sufficient to meet requirements both of domestic and Worldwide customers.

The factory operates state-of the-art equipment and machinery based on the latest technology developments for production of ultrafiltration, composite nanofiltration and reverse osmosis membrane flatsheets; manual and automatic rolling of membrane elements of any size starting from domestics 1812 up to regular industrial 8040.



The reverse osmosis membrane range includes membrane for sea water desalination, brackish water desalination and low pressure membranes.



Just 2 years to

ity ☒ All tests
☐ Tests with invalid serial nr.

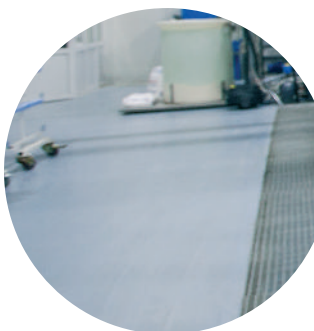
Model	Size	Rejection	Flow (GPD)	R
RO KH	8040-C	98.6%	11212	13
RO K	8040-C	99.4%	12393	13
RO K	8040-C	99.4%	12984	13
RO K	8040-C	98.3%	12501	13
K	8040-C	99.4%	11634	1
K	8040-C	99.4%	11456	
	8040-C	99.4%	1268	
	8040-C	99.4%		

RM Nanotech unique technologies offer certain advantages compare to other producers. For example, the performance comparison of RM Nanotech RO membranes for sea water desalination shows that they provide higher flux while maintaining the same high rejection as other producers. Usage of proprietary formulation for casting nanofiltration membranes makes them more resistant to chlorine, and enables to operate in a wider pH range and to withstand stronger concentrations of cleaning solutions compared to competition.





Our customers can seriously benefit from the fact that unlike other manufacturers we test **every single membrane element**, and results being certified by an individual product specification. Comprehensive technical support is provided by highly qualified and experienced experts. RM Nanotech's R&D center is offering its support in selection of the appropriate membrane type taking into account specific conditions of operation to get the most of its performance.



Our company's legacy is built on a long technological history inherited from membrane technologies researches in former USSR and Russia. RM Nanotech's major shareholder is RUSNANO Corporation (www.en.rusnano.com) which is state owned investment fund acting as a developer of nanoindustry and related fields in our country.

Besides production and supply of membrane flatsheet as well as spiral wound elements, we are ready to discuss potential localization of RM Nanotech`s technologies in your country.



Our own software is designed to carry out preliminary calculation of elements' performance in specific conditions on the basis of feed water parameters, type of the system's configuration and during evaluation of results and system cost. Software can be downloaded at www.rmnanotech.ru/eng/calc

CROSS REFERENCE TABLE

	DOW Filmtec	Hydranautics	TORAY	DESAL /GE Water	KOCH Fluid Systems	CSM
nanoRO sea water						
nanoRO KM 8040-C	SW30XLE-440i	SWC5 MAX				
nanoRO KM 8040-C2	SW30XLE-400i	SWC5-LD	TM820V-440	AD8040F400	8040-HF-400	RE8040-SHF400
nanoRO KM4040-C	SW30-4040	SWC6-4040	TM810V	AD4040FF	4040-HF	RE4040-SHF
nanoRO BRACKISH WATER						
High rejection elements						
nanoRO KC 8040-C	BW30HR-440i	CPA5 MAX	TM720D-440	AG-440	8040-XR-400	RE8040- UL440
nanoRO KC 8040-C2		CPA3			8040-XR-375	
nanoRO KC 8040-C3	BW30FR-365	CPA2	TM720D-400	AG-400, 34		
nanoRO KC 4040-C	LC HR-4040	CPA5-LD-4040	TM710D	AG-90	4040-XR	RE4040- BE
Standart elements						
nanoRO K 8040-C	BW30-400		TM720-430	AG8040F 400	8040-HR-400	RE8040- BE
nanoRO K 8040-C2		CPA3	TM720-400		8040-HR-375	
nanoRO K 8040-C3	BW30-365	CPA2	TM720-370	AG8040F		RE8040- BN
nanoRO K 4040-C	BW30-4040	CPA2-4040	TM710	AG4040FM	4040-HR	RE4040- BE
Low pressure elements						
nanoRO KH 8040-C	LE-400	ESPA1	TM720L-440			RE8040- BLN
nanoRO KH 4040-C	LE-4040	ESPA1-4040	TMG10			RE4040- BLN
Extra low pressure elements						
nanoRO KCH 8040-C	XLE-440*	ESPA4	TMH20A-440	AK8040F 400	8040-ULP400*	RE8040- BLF
nanoRO KCH 8040-F						
nanoRO KCH 8040-C3		ESPA4-LD	TMH20A-370			
nanoRO KCH 8040-F3						
nanoRO KCH 4040-C	XLE-4040	ESPA4-4040	TMH10A	AK4040FM	4040-ULP	RE4040- BLF
nanoRO KCH 4040-F	XLE-4040					
nanoNF BRACKISH WATER						
nanoNF 8040-F			TM620-400	HL8040F-400	8040-S-410	NE8040-70
nanoNF 8040-F2				HL8040F 365		
nanoNF 8040-F3	NF90-400/34i	ESNA1-LF-LD				
nanoNF 4040-F	NF90-4040		TM610	HL4040TM		NE4040-70
nanoNF 4040-F2						
nanoNF 4040-F3		ESNA1-LF-LD-4040				

* adapter is required for core tube

INDUSTRIAL GRADE MEMBRANE ELEMENTS

							Industrial grade membrane elements				
	S(%)	S(%) min	Q (GPD)	Q (GPD) min	Q (m ³ /h)	Q (l/h)	Test solution	P (MPa)	Reco very (%)	T°(C)	Recom mended NDP (bar)
nanoRO sea water											
nanoRO KM 8040-C	99,75	99,55	10500	8925	1,66		3,2% NaCl	5,5	10	25	20-30
nanoRO KM 8040-C2	99,8	99,6	9500	8330	1,50		3,2% NaCl	5,5	10	25	20-30
nanoRO KM 4040-C	99,75	99,4	2100	1680		330	3,2% NaCl	5,5	8	25	20-30
nanoRO KM 2540-C	99,75	99,4	750	600		120	3,2% NaCl	5,5	8	25	20-30
nanoRO brackish water											
High rejection membrane elements											
nanoRO KC 8040-C	99,7	99,4	11500	9775	1,81		0,15 % NaCl	15,5	15	25	14-20
nanoRO KC 8040-C2	99,7	99,4	11000	9350	1,73		0,15 % NaCl	15,5	15	25	14-20
nanoRO KC 8040-C3	99,7	99,4	10300	8755	1,62		0,15 % NaCl	15,5	15	25	14-20
nanoRO KC 4040-C	99,7	99,4	2500	2125		390	0,15 % NaCl	15,5	15	25	14-20
Standard pressure membrane elements											
nanoRO K 8040-C	99,5	99,1	11000	9350	1,73		0,15 % NaCl	15,5	15	25	14-20
nanoRO K 8040-C2	99,5	99,1	10500	8925	1,66		0,15 % NaCl	15,5	15	25	14-20
nanoRO K 8040-C3	99,5	99,1	9900	8415	1,56		0,15 % NaCl	15,5	15	25	14-20
nanoRO K 4040-C	99,5	99,1	2400	2040		380	0,15 % NaCl	15,5	15	25	14-20
Low pressure membrane elements											
nanoRO KH 8040-C	99,2	98,5	11500	9775	1,81		0,15 % NaCl	10,5	15	25	9,0-14
nanoRO KH 4040-C	99,2	98,5	2400	2040		380	0,15 % NaCl	10,5	15	25	9,0-14
Extra low pressure membrane elements											
nanoRO KCH 8040-C(F)	99,1	98,3	12400	10540	1,96		0,05 % NaCl	6,9	15	25	6-9,0
nanoRO KCH 8040-C(F)3	99,1	98,3	10500	8900	1,66						
nanoRO KCH 4040-C(F)	99,1	98,3	2600	2210		410	0,05 % NaCl	6,9	15	25	6-9,0
nanoNF brackish water											
nanoNF 8040-F	99,5	99	9500	7600	1,50		0,2 % MgSO ₄	6,9	15	25	6-20,0
nanoNF 8040-F2	99,5	99	9000	7200	1,42		0,2 % MgSO ₄	6,9	15	25	6-20,0
nanoNF 8040-F3	99,5	99	8500	6800	1,34		0,2 % MgSO ₄	6,9	15	25	6-20,0
nanoNF 4040-F	99,5	99	2000	1600		320	0,2 % MgSO ₄	6,9	15	25	6-20,0
nanoNF 4040-F2	99,5	99	1800	1440		280	0,2 % MgSO ₄	6,9	15	25	6-20,0
nanoNF 4040-F3	99,5	99	1700	1360		270	0,2 % MgSO ₄	6,9	15	25	6-20,0

F - shrink film wrapped

C - Fiberglass shell

T - tape-wrapped

MEMBRANE ELEMENTS FOR LIGHT INDUSTRIAL AND COMMERCIAL APPLICATIONS

								Test conditions		
	S(%)	S(%) min	Q(GPD)	Q(GPD) min	Q(m ³ /h)	Q(l/h)	Test solution	P (MPa)	Recovery (%)	T°(C)
nanoRO brackish water										
Standard pressure membrane elements										
nanoRO K 4040-F	99,5	98,5	2400	1920		380	0,15 % NaCl	15,5	15	25
nanoRO K 2540-T	99,4	98,5	750	600		120	0,15 % NaCl	15,5	15	25
Low pressure membrane elements										
nanoRO KH 4040-F	99,2	98	2400	1920		380	0,15 % NaCl	10,5	15	25
nanoRO KH 2540-T	99	98	780	624		120	0,15 % NaCl	10,5	15	25
Extra low pressure membrane elements										
nanoRO KCH 8040-C	99,1	98	12400	9920	1,95		0,05 % NaCl	6,9	15	25
nanoRO KCH 4040-C (F)	99,1	98	2600	2080		410	0,05 % NaCl	6,9	15	25
nanoRO KCH 2540-T	99	98	790	632		120	0,05 % NaCl	6,9	15	25
nanoNF brackish water										
nanoNF 8040-F	99,5	99	9500	7600	1,49		0,2 % MgSO ₄	6,9	15	25
nanoNF 4040-F	99,5	99	2000	1600		320	0,2 % MgSO ₄	6,9	15	25
nanoNF 2540-T	99,5	99	670	536		110	0,2 % MgSO ₄	6,9	15	25

F - shrink film wrapped

T - tape-wrapped

COMMERCIAL APPLICATIONS MEMBRANE ELEMENTS

						Test conditions		
	S(%) min	Q(GPD)	Q(GPD) min	Q(l/h) min	Test solution	P (MPa)	Recovery (%)	T°(C)
nanoRO brackish water								
Standard pressure membrane elements								
nanoRO K 4014-T	98	900	720	110	0,15 % NaCl	15,5	8%	25
nanoRO K 4014-T	98	525	420	70	0,15 % NaCl	15,5	5%	25
nanoRO K 3012-T	98	400	320	50	0,15 % NaCl	15,5	5%	25
nanoRO K 2521-T	98	310	248	40	0,15 % NaCl	15,5	8%	25
nanoRO K 2514-T	98	160	128	20	0,15 % NaCl	15,5	5%	25
Low pressure membrane elements								
nanoRO KH 4021-T	97	1080	864	140	0,15 % NaCl	15,5	8%	25
nanoRO KH 4014-T	97	600	480	80	0,15 % NaCl	15,5	5%	25
nanoRO KH 3012-T	97	400	320	50	0,15 % NaCl	15,5	5%	25
nanoRO KH 2521-T	97	330	264	40	0,15 % NaCl	15,5	8%	25
nanoRO KH 2514-T	97	185	148	20	0,15 % NaCl	15,5	5%	25
Extra low pressure membrane elements								
nanoRO KCH 4021-T	96	1025	820	130	0,05 % NaCl	6,9	8%	25
nanoRO KCH 4014-T	96	500	400	60	0,05 % NaCl	6,9	5%	25
nanoRO KCH 3012-T	96	400	320	50	0,05 % NaCl	6,9	5%	25
nanoRO KCH 2521-T	96	350	280	40	0,05 % NaCl	6,9	8%	25
nanoRO KCH 2514-T	96	150	120	20	0,05 % NaCl	6,9	5%	25
nanoNF brackish water								
nanoNF 4021-T	99	800	680	110	0,2 % MgSO4	6,9	8%	25
nanoNF 4014-T	99	390	331,5	50	0,2 % MgSO4	6,9	5%	25
nanoNF 2521-T	99	275	233,75	40	0,2 % MgSO4	6,9	8%	25
nanoNF 2514-T	99	115	97,75	20	0,2 % MgSO4	6,9	5%	25

F - shrink film wrapped

T - tape-wrapped

Product Description

Membrane material	Composite polyamide
Membrane type	ORM45K
Design	Spiral wound

Specification

Test conditions:
test solution of NaCl
32 g/l, P=5,5 MPa,
T=25 °C, pH=7,5.
Recovery -10%

Flow of each single
element in a batch may
vary for +/-15%

Nominal rejection
is reached after
48 hours of continuous
operation on test
solution

Minimal rejection
of a new element after
20 minutes' test on
test solution.

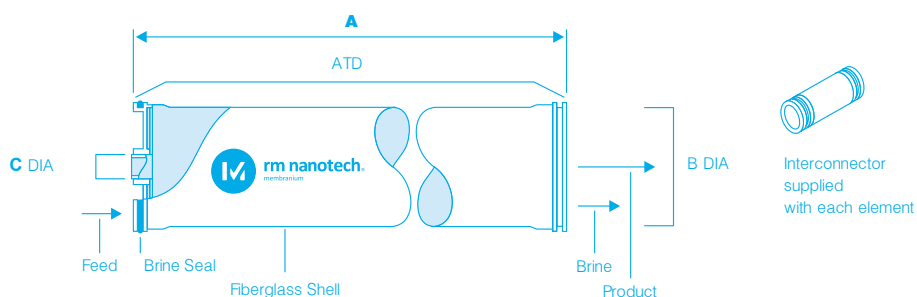
Operating conditions

Model	Flow*		Rejection	Area		Spacer	
	m3/hr	GPD		m2	ft2	mm	mil
KM 8040-C	1,66	10500	99,75/99,55	39	420	0,71	28
KM 8040-C2	1,50	9500	99,8/99,6	37	400	0,79	31
KM 8040-C3	1,42	9000	99,01/99,6	35	375	0,86	34

Recommended operation pressure, MPa	4,5-6,5
Maximum operation pressure, MPa	7
Maximum pressure drop, MPa	0,07
Operation temperature, °C ¹⁾	4-45
pH at continuous operation at T<35°C	2-11
pH at continuous operation at T<45°C	3-10.5
Chemical cleaning, temperature, °C	T<45 T<35 T<25
CIP pH (short time operation)	2-11 1-11.5 1-12
Free chlorine content, mg/l max	0,1
Maximum feed flow, m3/hr	17
Concentrate/permeate ratio on each element, min	10:1
SDI (15 minutes test), max	5
Turbidity, NTU max	1

1)

During continuous
work with pH over 10
the temperature must
not exceed 35°C



Model	A mm	B mm	B' (ATD) mm	C mm	Weight kg
KM 8040-C (2,3)	1016	203	200	28,6	15,5

Product Description

Membrane material	Composite polyamide
Membrane type	ORM45K
Design	Spiral wound

Specification

Test conditions:
test solution of NaCl
32 g/l, P=5,5 MPa,
T=25 °C, pH=7,5.
Recovery -8%

Flow of each single
element in a batch may
vary for +/-15%

Nominal rejection
is reached after 48
hours of continuous
operation on test
solution

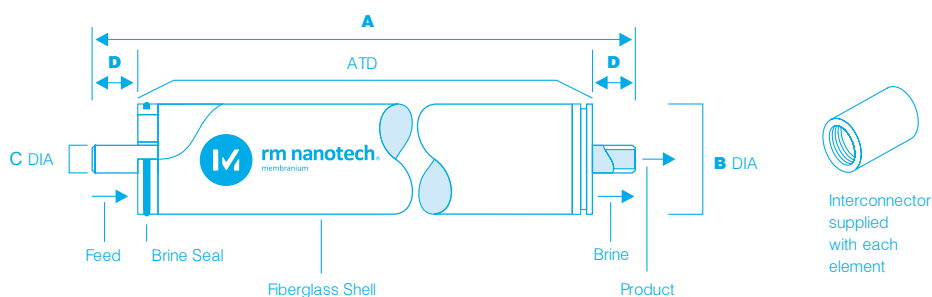
Minimal rejection
of a new element after
20 minutes' test on
test solution.

1)
During continuous
work with pH over 10
the temperature must
not exceed 35°C

Model	Flow*		Rejection	Area		Spacer	
	l/hr	GPD		m2	ft2	mm	mil
KM 4040-C	330	2100	99,75/99,4 normal**/ minimal***	8,0	86	0,71	28

Operating conditions

Recommended operation pressure, MPa	4,5-6,5
Maximum operation pressure, MPa	7
Maximum pressure drop, MPa	0,1
Operation temperature, °C ¹⁾	4-45
pH at continuous operation at T<35°C	2-11
pH at continuous operation at T<45°C	3-10,5
Chemical cleaning, temperature, °C	T<45 T<35 T<25
CIP pH (short time operation)	2-11 1-11,5 1-12
Free chlorine content, mg/l max	0,1
Maximum feed flow, m3/hr	3,6
Concentrate/permeate ratio on each element, min	10:1
SDI (15 minutes test), max	5
Turbidity, NTU max	1



Model	A mm	B mm	B' (ATD) mm	C mm	D mm	Weight kg
KM 4040-C	1016	101,6	100,3	19,1	26,7	4,5

Product Description

Membrane material	Composite polyamide
Membrane type	ORM45K
Design	Spiral wound

Specification

*
test solution of NaCl
32 g/l, P=5,5 MPa,
T=25 °C, pH=7,5.
Recovery - 8%

*
Flow of each single
element in a batch may
vary for +/-20%

**
Nominal rejection is
reached after 100
hours of continuous
operation on test
solution.

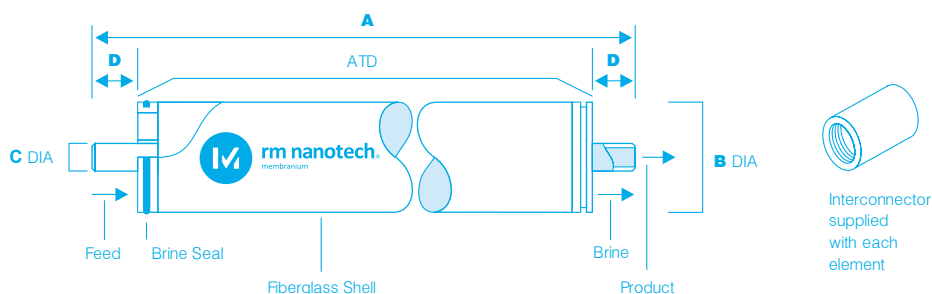
Minimal rejection
of a new element after
20 minutes' test on
test solution.

1)

During continuous
work with pH over 10
the temperature must
not exceed 35°C

Operating conditions

Recommended operation pressure, MPa	4,5-6,5
Maximum operation pressure, MPa	7
Maximum pressure drop, MPa	0,1
Operation temperature, °C ¹⁾	4-45
pH range at operation ¹⁾	2-11
CIP pH (short time operation)	1-12
Free chlorine content, mg/l max	0,1
Maximum feed flow, m3/hr	1,4
Concentrate/permeate ratio on each element, min	10:1
SDI (15 minutes test), max	5
Turbidity, NTU max	1



Model	A mm	B mm	B' (ATD) mm	C mm	D mm	Weight kg
KM 2540-C	1016	63,5	61	19,1	30,5	2,2

Product Description

Membrane material	Composite polyamide
Membrane type	ORM31K
Design	Spiral wound

Specification

*

Test conditions:
test solution of NaCl
1500 mg/l, P=1,55
MPa, T=25 °C, pH=7,5.
Recovery -15%

*

Flow of each single
element in a batch
may vary for +/-15%

**

Nominal rejection
is reached after 100
hours of continuous
operation on test
solution

Minimal rejection
of a new element after
20 minutes' test
on test solution

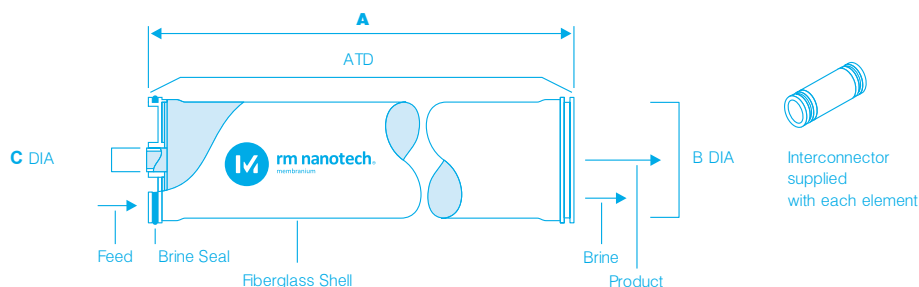
1)

During continuous
work with pH over 10
the temperature must
not exceed 35°C

Model	Flow*		Rejection	Area		Spacer	
	m3/hr	GPD		m2	ft2	mm	mil
KC 8040-C	1.8	11 500	99,7/99,4	39	420	0,71	28
KC 8040-C2	1.7	11 000	99,7/99,4	37	400	0,79	31
KC 8040-C3	1.6	10 300	99,7/99,4	35	375	0,86	34

Operating conditions

Recommended operation pressure, MPa	1,2-2,0
Maximum operation pressure, MPa	4,1
Maximum pressure drop, MPa	0,07
Operation temperature, °C ¹⁾	4-45
pH at continuous operation at T<35°C	2-11
pH at continuous operation at T<45°C	3-10,5
Chemical cleaning, temperature, °C	T<45 T<35 T<25
CIP pH (short time operation)	2-11 1-11,5 1-12
Free chlorine content, mg/l max	0,1
Maximum feed flow, m3/hr	17
Concentrate/permeate ratio on each element, min	5:1
SDI (15 minutes test), max	5
Turbidity, NTU max	1



Model	A mm	B mm	B' (ATD) mm	C mm	Weight kg
KC 8040-C (2,3)	1016	203	200	28.6	15.5

Product Description

Membrane material	Composite polyamide
Membrane type	ORM31K
Design	Spiral wound

Specification

Model	Flow*		Rejection	Area		Spacer	
	l/hr	GPD		m2	ft2	mm	mil
KC 4040-C	390	2500	99,7/99,4	8.0	86	0,71	28

*

Test conditions:
test solution of NaCl
1500 mg/l, P=1,55
MPa, T=25 °C, pH=7,5.
Recovery -15%

*

Flow of each single
element in a batch may
vary for +/-15%

**

Nominal rejection is
reached after 100
hours of continuous
operation on test
solution.

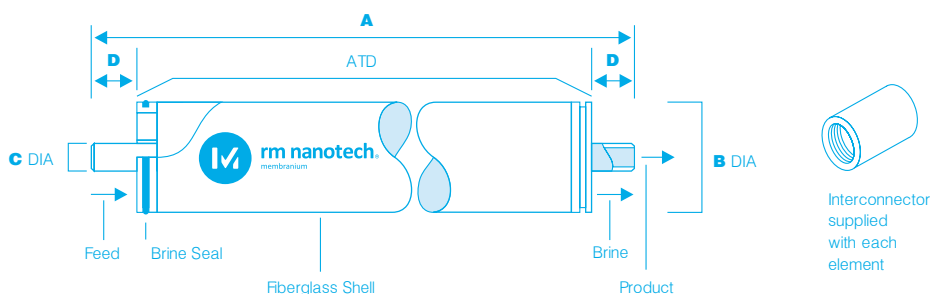
Minimal rejection
of a new element after
20 minutes' test on
test solution.

Operating conditions

Recommended operation pressure, MPa	1,2-2,0
Maximum operation pressure, MPa	4,1
Maximum pressure drop, MPa	0,1
Operation temperature, °C ¹⁾	4-45
pH at continuous operation at T<35°C	2-11
pH at continuous operation at T<45°C	3-10,5
Chemical cleaning, temperature, °C	T<45 T<35 T<25
CIP pH (short time operation)	2-11 1-11.5 1-12
Free chlorine content, mg/l max	0,1
Maximum feed flow, m3/hr	3,6
Concentrate/permeate ratio on each element, min	5:1
SDI (15 minutes test), max	5
Turbidity, NTU max	1

1)

During continuous
work with pH over 10
the temperature must
not exceed 35°C



Model	A mm	B mm	B' (ATD) mm	C mm	D mm	Weight kg
KC 4040-C	1016	101,6	100,3	19,1	26,7	4,5

Product Description

Membrane material	Composite polyamide
Membrane type	ORM31K
Design	Spiral wound

Specification

*

Test conditions:
test solution of NaCl
1500 mg/l, P=1,55
MPa, T=25 °C, pH=7,5.
Recovery -15%

*

Flow of each single
element in a batch may
vary for +/-15%

**

Nominal rejection
is reached after 48
hours of continuous
operation on test
solution

Minimal rejection
of a new element
after 20 minutes' test
on test solution.

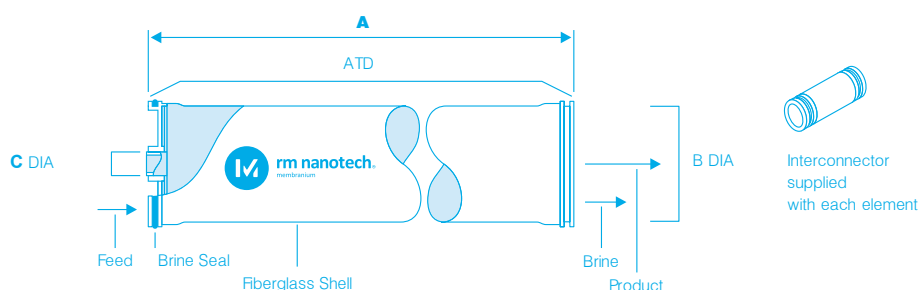
1)

During continuous
work with pH over 10
the temperature must
not exceed 35°C

Model	Flow*		Rejection	Area		Spacer	
	m3/hr	GPD		m2	ft2	mm	mil
K 8040-C	1,75	11 000	99,5/99,1	39	420	0,71	28
K 8040-C2	1,65	10 500	99,5/99,1	37	400	0,79	31
K 8040-C3	1,55	9 900	99,5/99,1	35	375	0,86	34

Operating conditions

Recommended operation pressure, MPa	1,2-2,0
Maximum operation pressure, MPa	4,1
Maximum pressure drop, MPa	0,07
Operation temperature, °C ¹⁾	4-45
pH at continuous operation at T<35°C	2-11
pH at continuous operation at T<45°C	3-10,5
Chemical cleaning, temperature, °C	T<45 T<35 T<25
CIP pH (short time operation)	2-11 1-11,5 1-12
Free chlorine content, mg/l max	0,1
Maximum feed flow, m3/hr	17
Concentrate/permeate ratio on each element, min	5:1
SDI (15 minutes test), max	5
Turbidity, NTU max	1



Model	A mm	B mm	B' (ATD) mm	C mm	Weight kg
K 8040 -C (2, 3)	1016	203	200	28,6	15,5

Product Description

Membrane material	Composite polyamide
Membrane type	ORM31K
Design	Spiral wound

Specification

Model	Flow*		Rejection	Area		Spacer	
	l/hr	GPD		m2	ft2	mm	mil
K 4040-C	380	2400	99,5/99,1	8,0	86	0,71	28

*

Test conditions:
test solution of NaCl
1500 mg/l, P=1,55
MPa, T=25 °C, pH=7,5.
Recovery -15%

*

Flow of each single
element in a batch may
vary for +/-15%

**

Nominal rejection
is reached after 48
hours of continuous
operation on test
solution

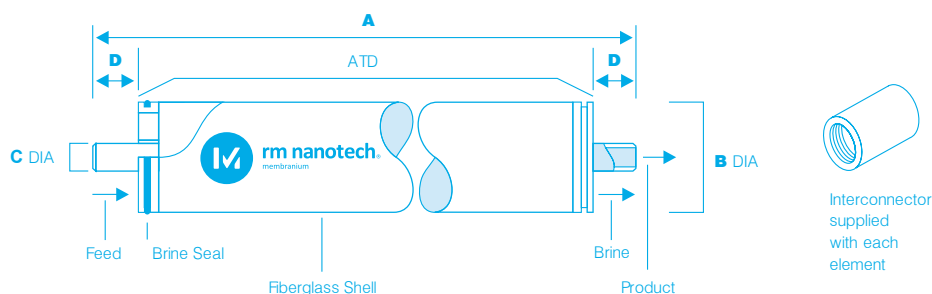
Minimal rejection
of a new element after
20 minutes' test on
test solution

Operating conditions

Recommended operation pressure, MPa	1,2-20
Maximum operation pressure, MPa	
glass fiber/tape overwrap	4,1/2,1
Maximum pressure drop, MPa	0,07
Operation temperature, °C ¹⁾	4-45
pH at continuous operation at T<35°C	2-11
pH at continuous operation at T<45°C	3-10,5
Chemical cleaning, temperature, °C	T<45 T<35 T<25
CIP pH (short time operation)	2-11 1-11.5 1-12
Free chlorine content, mg/l max	0,1
Maximum feed flow, m3/hr	3,6
Concentrate/permeate ratio on each element, min	5:1
SDI (15 minutes test), max	5
Turbidity, NTU max	1

1)

During continuous
work with pH over 10
the temperature must
not exceed 35°C



Model	A mm	B mm	B' (ATD) mm	C mm	D mm	Weight kg
K 4040-C	1016	101,6	100,3	19,1	26,7	4,5

Product Description

Membrane material	Composite polyamide
Membrane type	ORM32K
Design	Spiral wound

Specification

*

Test conditions:
test solution of NaCl
1500 mg/l, P=1,0
MPa, T=25 °C, pH=7,5.
Recovery -15%t

*

Flow of each single
element in a batch may
vary for +/-15%

**

Nominal rejection
is reached after 48
hours of continuous
operation on test
solution

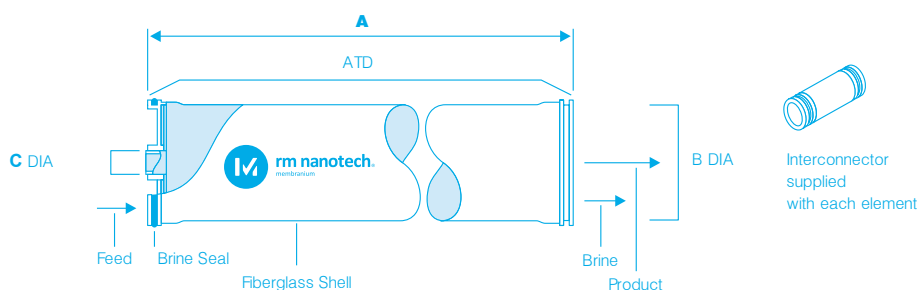
Minimal rejection
of a new element after
20 minutes' test on
test solution

1)

During continuous
work with pH over 10
the temperature must
not exceed 35°C

Operating conditions

Recommended operation pressure, MPa	0,9-1,2
Maximum operation pressure, MPa	4,1
Maximum pressure drop, MPa	0,07
Operation temperature, °C ¹⁾	4-45
pH at continuous operation at T<35°C	2-11
pH at continuous operation at T<45°C	3-10,5
Chemical cleaning, temperature, °C	T<45 T<35 T<25
CIP pH (short time operation)	2-11 1-11.5 1-12
Free chlorine content, mg/l max	0,1
Maximum feed flow, m3/hr	17
Concentrate/permeate ratio on each element, min	5:1
SDI (15 minutes test), max	5
Turbidity, NTU max	1



Model	A mm	B mm	B' (ATD) mm	C mm	Weight kg
KH 8040-C	1016	203	200	28,6	15,5

Product Description

Membrane material	Composite polyamide
Membrane type	ORM32K
Design	Spiral wound

Specification

Test conditions:
test solution of NaCl
1500 mg/l, P=1,0
MPa, T=25 °C, pH=7,5.
Recovery -15%

Flow of each single
element in a batch may
vary for +/-15%

Nominal rejection
is reached after 48
hours of continuous
operation on test
solution

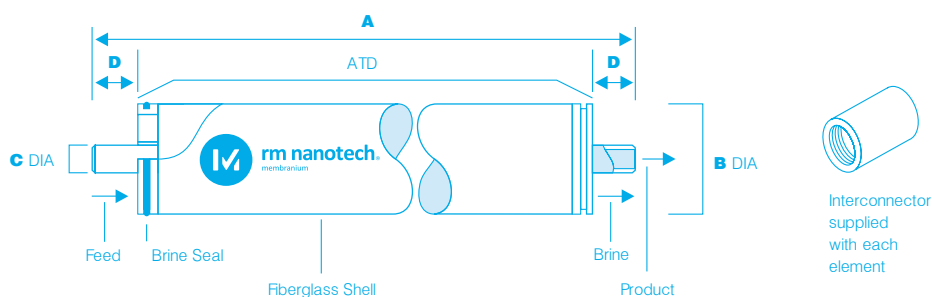
Minimal rejection
of a new element after
20 minutes' test on
test solution

1)
During continuous
work with pH over 10
the temperature must
not exceed 35°C

Model	Flow*		Rejection	Area		Spacer	
	l/hr	GPD		m2	ft2	mm	mil
KH 4040-C	380	2400	99,2/98,5 normal**/ minimal***	8,0	86	0,71	28

Operating conditions

Recommended operation pressure, MPa	0,9-1,2
Maximum operation pressure, MPa	4,1/2,1
Maximum pressure drop, MPa	0,1
Operation temperature, °C ¹⁾	4-45
pH at continuous operation at T<35°C	2-11
pH at continuous operation at T<45°C	3-10,5
Chemical cleaning, temperature, °C	T<45 T<35 T<25
CIP pH (short time operation)	2-11 1-11.5 1-12
Free chlorine content, mg/l max	0,1
Maximum feed flow, m3/hr	3.6
Concentrate/permeate ratio on each element, min	5:1
SDI (15 minutes test), max	5
Turbidity, NTU max	1



Model	A mm	B mm	B' (ATD) mm	C mm	D mm	Weight kg
KH 4040-C	1016	101.6	100.3	19,1	26.7	4.5

Extra low pressure reverse osmosis
membrane elements
for brackish water desalination
KCH Series

Product Description

Membrane material	Composite polyamide
Membrane type	ORM33K
Design	Spiral wound
Features	Fiberglass shell (-C) or shrink film-wrapped (-F)

*

Test conditions:
test solution of NaCl
500 mg/l, P=0,7 MPa,
T=25 °C, pH=7,5.
Recovery -15%

*

Flow of each single
element in a batch may
vary for +/-15%

**

Nominal rejection
is reached after 48
hours of continuous
operation on test
solution

Minimal rejection
of a new element
after 20 minutes' test
on test solution

1)

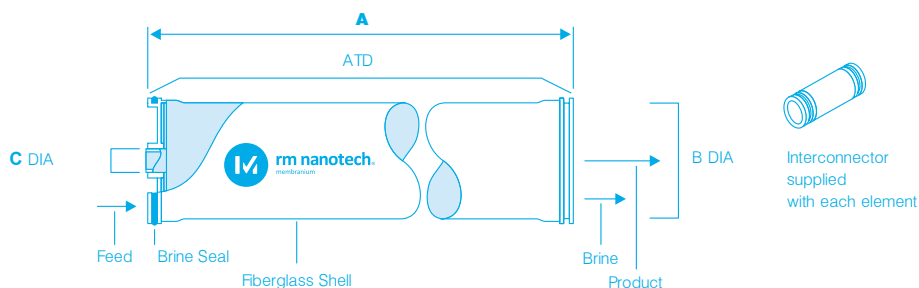
During continuous
work with pH over 10
the temperature must
not exceed 35°C

Specification

Model	Flow*		Rejection	Area		Spacer	
	m3/hr	GPD		m2	ft2	mm	mil
KCH 8040-C	1,95	12 400	99,1/98,3	41	440	0,66	26
KCH 8040-C3	1,6	10 500	99,1/98,3	35	375	0,86	34
KCH 8040-F	1,95	12 400	99,1/98,3	41	440	0,66	26
KCH 8040-F3	1,6	10 500	99,1/98,3	35	375	0,86	34

Operating conditions

Recommended operation pressure, MPa	1,2-2,0
Maximum operation pressure, MPa	4,1
Maximum pressure drop, MPa	0,07
Operation temperature, °C 1)	4-45
pH at continuous operation at T<35°C	2-11
pH at continuous operation at T<45°C	3-10,5
Chemical cleaning, temperature, °C	T<45 T<35 T<25
CIP pH (short time operation)	2-11 1-11,5 1-12
Free chlorine content, mg/l max	0,1
Maximum feed flow, m3/hr	17
Concentrate/permeate ratio on each element, min	5:1
SDI (15 minutes test), max	5
Turbidity, NTU max	1



Model	A mm	B mm	B' (ATD) mm	C mm	Weight kg
KCH 8040-C (3)	1016	203	200	28,6	15.5
KCH 8040-F (3)	1016	203	200	28,6	14

Extra low pressure reverse osmosis
membrane elements
for brackish water desalination
KCH Series

Product Description

Membrane material	Composite polyamide
Membrane type	ORM33K
Design	Spiral wound
Features	Fiberglass shell (-C) or shrink film-wrapped (-F)

Specification

*

Test conditions:
test solution of NaCl
500 mg/l, P=0.7 MPa,
T=25°C, pH=7.5.
Recovery -15%

*

Flow of each single
element in a batch may
vary for +/-15%

**

Nominal rejection
is reached after 48
hours of continuous
operation on test
solution

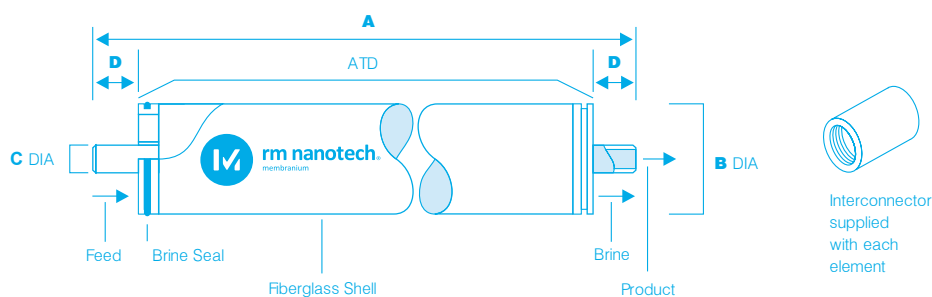
Minimal rejection
of a new element
after 20 minutes' test
on test solution

1)

During continuous
work with pH over 10
the temperature must
not exceed 35°C

Operating conditions

Recommended operation pressure, MPa	0,6-0,9
Maximum operation pressure, MPa	
Glass fiber/tape overwrap	4,1/2,1
Maximum pressure drop, MPa	0,1
Operation temperature, °C ¹⁾	4-45
pH at continuous operation at T<35°C	2-11
pH at continuous operation at T<45°C	3-10,5
Chemical cleaning, temperature, °C	T<45 T<35 T<25
CIP pH (short time operation)	2-11 1-11.5 1-12
Free chlorine content, mg/l max	0,1
Maximum feed flow, m3/hr	3,6
Concentrate/permeate ratio on each element, min	5:1
SDI (15 minutes test), max	5
Turbidity, NTU max	1



Model	A mm	B mm	B' (ATD) mm	C mm	D mm	Weight kg
KCH 4040-C	1016	101,6	100,3	19,1	26,7	4,5
KCH 4040-F	1016	101,6	100,3	19,1	26,7	3,6

Additional information on reverse osmosis membrane elements

Notes	<p>Flow of each single element in a lot may vary for $\pm 15\%$ for elements 4040 and 8040 and for $\pm 20\%$ for elements 2540 and 2521.</p> <p>Nominal rejection of 2521 and 2540 membrane elements is achieved after 100 hours of continuous operation on test solution.</p> <p>Nominal rejection of 4040 and 8040 membrane elements is achieved after 48 hours of continuous operation on test solution (except nanoRO KC series – 100 hours). Each element is tightly packed under vacuum in a polyethylene bag and preserved with a solution containing 1% of sodium metabisulphite.</p>
Important information	<p>At the first launch an element should be washed for at least 1 hour.</p> <p>In order to prevent destruction of elements the following should be observed:</p> <p>Do not allow excessive feed pressure and feed flow above the levels indicated in the specification. Take measures for protection of membrane elements from back pressure on the permeate side. The pressure on permeate side under no circumstances must exceed pressure at the feed of membrane element.</p> <p>Avoid hydraulic hammer during start up, operation and shut down of reverse osmosis systems. During start up of reverse osmosis system the feed pressure must be increased down to the operating level gradually within 30-60 second (at the max. rate of 0,1 MPa/sec) and likewise during shut down of reverse osmosis system the feed pressure must be decreased down to the operating level gradually within 30-60 second (at the max. rate of 0,1 MPa/sec) Take measures for prevention of membrane elements' operation in dead-end mode without concentrate discharge.</p>
Operating conditions	<p>Operating pressure may vary:</p> <p>For sea water from 4,5 up to 7 MPa, for brackish water from 1 up to 4 MPa, for slightly salted and tap water from 0,5 up to 2,0 MPa depending on the salt content of feed water, temperature, recovery, operating life of membrane elements. Pressure drop must not exceed 0,07 MPa on each element and 0,4 MPa on each pressure vessel. Feed water temperature must not exceed 45 °C. At pH 10 the maximum temperature of the feed water must not exceed 35 °C</p> <p>Time of chemical cleaning of membrane elements within the range of pH 1-12 must not exceed 4 hours, occurrence of chemical cleaning not exceeding 1 time per month. The maximum turbidity of feed water must not exceed 1 NTU, and SDI < 5. For long and stable operation of reverse osmosis plants it is recommended to pre-treat feed water to turbidity below 0,2 NTU and SDI down to the level of 1-3. Recovery on each membrane element 1 m (40 inch) long must not exceed 15% for all types of membrane elements, except sea water elements. Recovery for sea water membrane elements must not exceed 10%. For long and stable operation of sea water membrane plants it is recommended to maintain recovery on each membrane element 1 m long within 6 – 8%.</p>
Operating compatibility	<p>Chlorine: it is not recommended to expose composite polyamide membrane to free chlorine and other oxidizers (permanganate, ozone, bromine, iodine). In case such oxidizers are present in the feed water measures should be taken for their removal. Cationic polymers and cationic surfactants can cause irreversible changes of composite polyamide membranes' properties. For this reason they should not be used during operation and chemical cleaning of reverse osmosis membrane elements. For lubrication of rubber seals glycerin should be used. Using petroleum based lubricants can be the cause of membrane elements' failure.</p>
General	<p>Membrane elements should be stored wet after use.</p> <p>To prevent biological contamination of membrane elements during prolonged shut-down of reverse osmosis systems it is recommended to run preservation of elements (or system) following the manufacturer's instructions.</p> <p>The customer shall bear responsibility for use of chemical agents not recommended for use with membrane elements. The customer's failure to follow recommendations of operating membrane elements may result in withdrawal of the manufacturer's warranty obligations.</p>
Technical support	<p>RM Nanotech's experienced scientific and technical personnel is able to render technical support to end users and engineering companies to design new or optimize existing reverse osmosis systems.</p>

Product Description

Membrane material	Polypiperazineamide
Membrane type	NaRM
Design	Spiral wound
Features	Shrink film-wrapped (-F)

Specification

*

Test conditions:
test solution of NaCl
500 mg/l, P=0,7 MPa,
T=25 °C, pH=7,5.
Recovery ~15%

**

Test conditions:
test solution of MgSO₄
2000 mg/l, P=0,7
MPa, T=25 °C, pH=7,5.
Recovery ~15%

*

Flow of each single
element in a batch may
vary for +/-15%

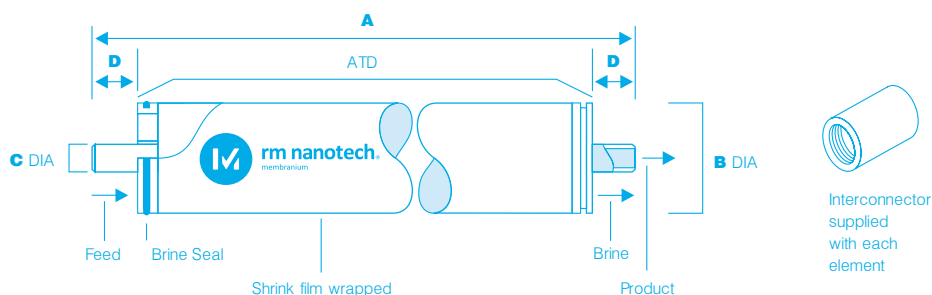
Model	Flow*		Rejection	Area		Spacer	
	m ³ /hr	GPD		m ²	ft ²	mm	mil
4040-F	320*/260**	2000*/1600**	60*/99**	8	86	0,71	28
4040-F2	280*/230**	1800*/1440**	60*/99**	7,7	83	0,79	31
4040-F3	270*/220*	1700*/1350**	60*/99**	7,4	80	0,86	34

Operating conditions

Recommended operation pressure, MPa	0,6-2,0
Maximum operation pressure, MPa, tape overwrap	2,1
Maximum pressure drop, MPa	0,1
Operation temperature, °C ¹⁾	4-45
pH at continuous operation at T<35°C	2-12
pH at continuous operation at T<45°C	3-10,5
Chemical cleaning, temperature, °C	T<45
CIP pH (short time operation)	T<35
Acceptable Hydrogen peroxide concentration during continuous operation, mg/l	T<25
during disinfection (not longer than 30 min), mg/l	2-11
Acceptable free Chlorine concentration during continuous operation, mg/l	1-11,5
during disinfection (not longer than 30 min), mg/l	1-12
Maximum feed flow, m ³ /hr	40
Concentrate/permeate ratio on each element, min	1000
Colour index, deg., max	1
Turbidity, NTU max	5
	3,6
	5:1
	50
	20

1)

During continuous work
with pH over 10 the
temperature must not
exceed 35°C



Model	A mm	B mm	B' (ATD) mm	C mm	D mm	Weight kg
4040-F(2,3)	1016	101,6	100,3	19,1	26,7	3,6

Product Description

Membrane material	Polypiperazineamide
Membrane type	NaRM
Design	Spiral wound
Features	Shrink film-wrapped (-F)

Specification

*

Test conditions:
test solution of NaCl
500 mg/l, P=0,7 МПа,
T=25 °C, pH=7,5.
Recovery -15%

**

Test conditions:
test solution of MgSO₄
2000 mg/l, P=0,7
МПа, T=25 °C, pH=7,5.
Recovery -15%

*

Flow of each single
element in a batch may
vary for +/-15%

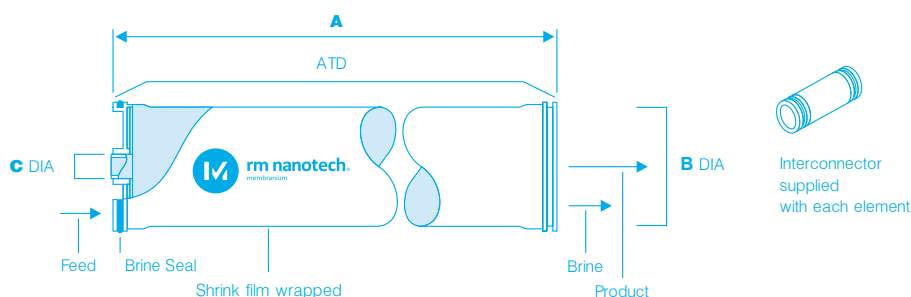
Model	Flow*		Rejection	Area		Spacer	
	m ³ /hr	GPD		m ²	ft ²	mm	mil
8040-F	1,50*/1.2**	9500*/7600**	60*/99**	37	400	0,71	28
8040-F2	1,42*/1.1**	9000*/7200**	60*/99**	35	375	0,79	31
8040-F3	1,34*/1.0**	8500*/6800**	60*/99**	33	360	0,86	34

Operating conditions

Recommended operation pressure, MPa	0,6-2,0
Maximum operation pressure, MPa, tape overwrap	2,1
Maximum pressure drop, MPa	0,1
Operation temperature, °C ¹⁾	4-45
pH at continuous operation at T<35°C	2-12
pH at continuous operation at T<45°C	3-10,5
Chemical cleaning, temperature, °C	T<45
CIP pH (short time operation)	T<35
Acceptable Hydrogen peroxide concentration during continuous operation, mg/l	T<25
during disinfection (not longer than 30 min), mg/l	2-11
Acceptable free Chlorine concentration during continuous operation, mg/l	1-11,5
during disinfection (not longer than 30 min), mg/l	1-12
Maximum feed flow, m ³ /hr	40
Concentrate/permeate ratio on each element, min	1000
Colour index, deg., max	1
Turbidity, NTU max	5
	3,6
	5:1
	50
	20

1)

During continuous work
with pH over 10 the
temperature must not
exceed 35°C



Model	A mm	B mm	B' (ATD) mm	C mm	Weight kg
8040-F(2,3)	1016	203	200	28,6	14

Additional information on nanofiltration membrane elements.

Notes	<p>Flux of each single element in a lot may vary for $\pm 15\%$. Each element is tightly packed under vacuum in a polyethylene bag and preserved with a solution containing 1% of sodium metabisulphite.</p>
Important information	<p>At the first launch an element should be washed for at least 1 hour. In order to prevent destruction of elements the following should be observed: Do not allow excessive feed pressure and feed flow above the levels indicated in the specification. Take measures for protection of membrane elements from back pressure on the permeate side. The pressure on permeate side under no circumstances must exceed pressure at the feed of membrane element. Avoid hydraulic hammer during start up, operation and shut down of nanofiltration systems. During start up of reverse osmosis system the feed pressure must be increased up to the operating level gradually within 30-60 second (at the max. rate of 0,1 MPa/sec) and likewise during shut down of reverse osmosis system the feed pressure must be decreased down to the operating level gradually within 30-60 second (at the max. rate of 0,1 MPa/sec) Take measures for prevention of membrane elements' operation in dead-end mode without concentrate discharge.</p>
Operating conditions	<p>Operating pressure may vary: for brackish water from 1 up to 4 MPa, for slightly salted and tap water from 0,5 up to 2,0 MPa depending on the salt content of feed water, temperature, recovery, operating life of membrane elements. Pressure drop must not exceed 0,07 MPa on each element and 0,4 MPa on each pressure vessel. Feed water temperature must not exceed 45°C. At pH 10 the maximum temperature of the feed water must not exceed 35°C Time of chemical cleaning of membrane elements within the range of pH 1-13 must not exceed 4 hours. The maximum turbidity of feed water must not exceed 1 NTU, and SDI<5. For long and stable operation of nanofiltration plants it is recommended to pre-treat feed water to turbidity below 0,2 NTU and SDI down to the level of 1-3. Recovery on each membrane element 1 m (40 inch) long must not exceed 15% for all types of membrane elements.</p>
Operating compatibility	<p>Chlorine, hydrogen peroxide: For disinfection of nanofiltration membrane elements it is recommended to use sodium hypochlorite with maximum concentration of free chlorine up to 5 mg/l or hydrogen peroxide with maximum concentration up to 1000 mg/l. Cationic polymers and cationic surfactants can cause irreversible changes polypiperazine membranes' properties. For this reason they should not be used during operation and chemical cleaning of nanofiltration membrane elements. For lubrication of rubber seals glycerin should be used. Using petroleum based lubricants can be the cause of membrane elements' failure.</p>
General	<p>Membrane elements should be stored wet after use. To prevent biological contamination of membrane elements during prolonged shut-down of reverse osmosis systems it is recommended to run preservation of elements (or system) following the manufacturer's instructions. The customer shall bear responsibility for use of chemical agents not recommended for use with membrane elements. The customer's failure to follow recommendations of operating membrane elements may result in withdrawal of the manufacturer's warranty obligations.</p>
Technical support	<p>RM Nanotech's experienced scientific and technical personnel is able to render technical support to end users and engineering companies to design new or optimize existing membrane systems.</p>

Product Description

Membrane material	Polysulfone
Membrane type	RM33PS with proteins molecular weight cut-off (MWCO) of over 20,000 Daltons
Design	Spiral wound
Features	Shrink film-wrapped (-F)

Specification

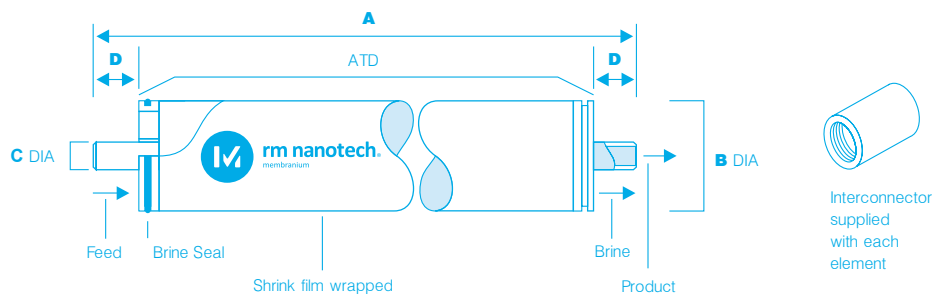
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Test conditions: 0,1% solution of myoglobin (17 kDa) in 0,9% solution of NaCl, P=0,1 MPa, T=25 °C. Recovery -15%
Membrane's specific flow by demineralized water (SDI<1) is min. 150 l/(hr*m2*bar)

Model	Rejection by protein*, %	Area		Spacer	
		m2	ft2	mm	mil
4040-F20-1	97*	8	86\	0,71	28
4040-F20-2	97*	7,7	83	0,79	31
4040-F20-3	97*	7,4	80	0,86	34

Operating conditions

Recommended operation pressure, MPa	0,2-1,5
Maximum operation pressure, MPa	2,1
Maximum pressure drop, MPa	0,1
Operation temperature, °C ¹⁾	4-50
pH at operation ¹⁾	1-12
CIP pH (short time operation)	1-13
Acceptable Hydrogen peroxide concentration during continuous operation	20
during disinfection (not longer than 30 min), mg/l	500
Acceptable free Chlorine concentration during continuous operation	1
during disinfection (not longer than 30 min), mg/l	200
Maximum feed flow, m3/hr	18
Concentrate/permeate ratio on each element, min	5:1
Colour index, deg., max	50
Turbidity, NTU max	20



Model	A mm	B mm	B' (ATD) mm	C mm	D mm	Weight kg
4040-F20-1/2/3	1016	101,6	100,3	19,1	26,7	3,6

Product Description

Membrane material	Polysulfone
Membrane type	RM33PS with proteins molecular weight cut-off (MWCO) of over 20,000 Daltons
Design	Spiral wound
Features	Shrink film-wrapped (-F)

Specification

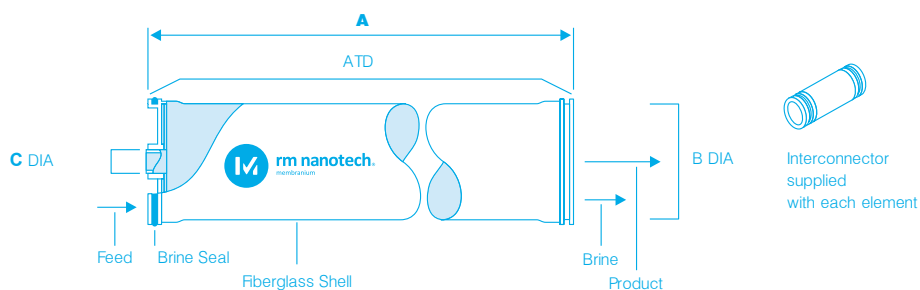
*

Test conditions: 0,1% solution of myoglobin (17 kDa) in 0,9% solution of NaCl, P=0,1 MPa, T=25 °C. Recovery -15%
Membrane's specific flow by demineralized water (SDI<1) is min. 150 l/(hr*m2*bar)

Model	Rejection by protein*, %	Area		Spacer	
		m2	ft2	mm	mil
8040-F20-1	97*	39	420	0,71	28
8040-F20-2	97*	37	400	0,79	31
8040-F20-3	97*	35	375	0,86	34

Operating conditions

Recommended operation pressure, MPa	0,2-1,5
Maximum operation pressure, MPa	2,1
Maximum pressure drop, MPa	0,1
Operation temperature, °C ¹⁾	4-50
pH at operation ¹⁾	1-12
CIP pH (short time operation)	1-13
Acceptable Hydrogen peroxide concentration during continuous operation	20
during disinfection (not longer than 30 min), mg/l	500
Acceptable free Chlorine concentration during continuous operation	1
during disinfection (not longer than 30 min), mg/l	200
Maximum feed flow, m3/hr	18
Concentrate/permeate ratio on each element, min	5:1
Colour index, deg., max	50
Turbidity, NTU max	20



Model	A mm	B mm	B' (ATD) mm	C mm	Weight kg
8040-F20-1/2/3	1016	203	200	28,6	14

Additional information on ultrafiltration membrane elements series 20

Notes	<p>Specific flow of membrane on desalted water ($SDI < 1$) is 150 l/(hr*m²*bar) min. Depending on the concentration of the feed solution, temperature, recovery the membrane's specific flux may vary from 50 up to 150 l/(hr*m²*bar). Each element is tightly packed under vacuum in a polyethylene bag dry.</p>
Important information	<p>At the first launch an element should be washed for at least 1 hour. In order to prevent destruction of elements the following should be observed: Do not allow excessive feed pressure and feed flow above the levels indicated in the specification. Take measures for protection of membrane elements from back pressure on the permeate side. The pressure on permeate side under no circumstances must exceed pressure at the feed of membrane element. Avoid hydraulic hammer during start up, operation and shut down of nanofiltration systems. During start up of reverse osmosis system the feed pressure must be increased up to the operating level gradually within 30-60 second (at the max. rate of 0,1 MPa/sec) and likewise during shut down of reverse osmosis system the feed pressure must be decreased down to the operating level gradually within 30-60 second (at the max. rate of 0,1 MPa/sec) Take measures for prevention of membrane elements' operation in dead-end mode without concentrate discharge.</p>
Operating conditions	<p>Operating pressure may vary: For protein solutions from 0,2 up to 1,0 MPa depending on the concentration of feed solution, temperature, recovery, operating life of membrane elements. Pressure drop must not exceed 0,1 MPa on each element and 0,4 MPa on each pressure vessel. Feed water temperature must not exceed 50°C. Time of chemical cleaning of membrane elements within the range of pH 1-13 must not exceed 4 hours. Recovery on each membrane element 1 m (40 inch) long must not exceed 15% for all types of membrane elements.</p>
Operating compatibility	<p>Chlorine, hydrogen peroxide: For disinfection of ultrafiltration membrane elements it is recommended to use sodium hypochlorite with maximum concentration of free chlorine up to 200 mg/l or hydrogen peroxide with maximum concentration up to 500 mg/l. Cationic polymers and cationic surfactants can cause irreversible changes polyethersulfone membranes' properties. For this reason they should not be used during operation and chemical cleaning of ultrafiltration membrane elements. For lubrication of rubber seals glycerin should be used. Using petroleum based lubricants can be the cause of membrane elements' failure.</p>
General	<p>Membrane elements should be stored wet after use. To prevent biological contamination of membrane elements during prolonged shut-down of membrane systems it is recommended to run preservation of elements (or system) following the manufacturer's instructions. The customer shall bear responsibility for use of chemical agents not recommended for use with membrane elements. The customer's failure to follow recommendations of operating membrane elements may result in withdrawal of the manufacturer's warranty obligations.</p>
Technical support	<p>RM Nanotech's experienced scientific and technical personnel is able to render technical support to end users and engineering companies to design new or optimize existing membrane systems.</p>

Product Description

Membrane material	Polysulfone
Membrane type	RM33PS with proteins molecular weight cut-off (MWCO) of over 50,000 Daltons
Design	Spiral wound
Features	Shrink film-wrapped (-F)

Specification

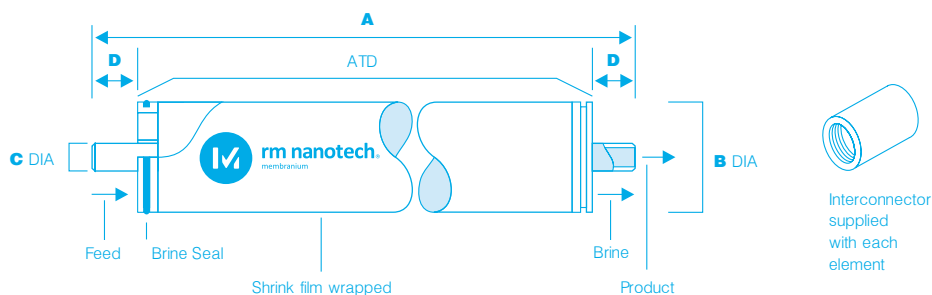
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Test conditions: 0,1% solution of albumine (69 kDa) in 0,9% solution of NaCl, P=0,1 MPa, T=25 °C. Recovery -15%
Membrane's specific flow by demineralized water (SDI<1) is min. 240 l/(hr*m2*bar)

Model	Rejection by protein*, %	Area		Spacer	
		m2	ft2	mm	mil
4040-F50-1	98*	8	86	0,71	28
4040-F50-2	98*	7,7	83	0,79	31
4040-F50-3	98*	7,4	80	0,86	34

Operating conditions

Recommended operation pressure, MPa	0,2-1,5
Maximum operation pressure, MPa	2,1
Maximum pressure drop, MPa	0,1
Operation temperature, °C ¹⁾	4-50
pH at operation ¹⁾	1-12
CIP pH (short time operation)	1-13
Acceptable Hydrogen peroxide concentration during continuous operation	20
during disinfection (not longer than 30 min), mg/l	500
Acceptable free Chlorine concentration during continuous operation	1
during disinfection (not longer than 30 min), mg/l	200
Maximum feed flow, m3/hr	18
Concentrate/permeate ratio on each element, min	5:1
Colour index, deg., max	50
Turbidity, NTU max	20



Model	A mm	B mm	B' (ATD) mm	C mm	D mm	Weight kg
4040-F50-1/2/3	1016	101,6	100,3	19,1	26,7	3,6

Product Description

Membrane material	Polysulfone
Membrane type	RM33PS with proteins
Design	molecular weight cut-off (MWCO) of over 50,000 Daltons
Features	Spiral wound Shrink film-wrapped (-F)

Specification

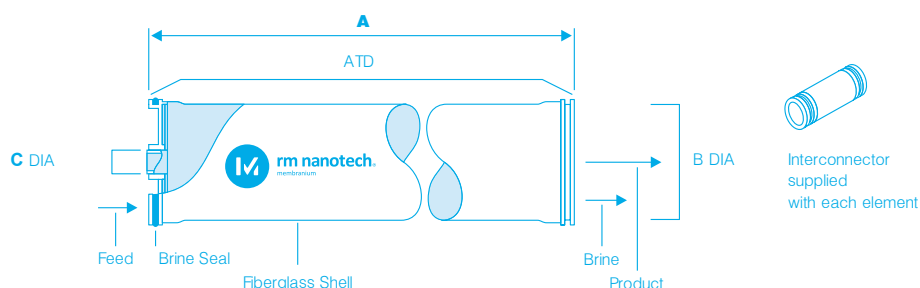
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Test conditions:
0,1% solution of
myoglobine (17 kDa)
in 0,9% solution of
NaCl, P=0,1 MPa, T=25
°C. Recovery -15%
Membrane's specific
flow by demineralized
water (SDI<1) is min.
240 l/(hr*m2*bar)

Model	Rejection by protein*, %	Area		Spacer	
		m2	ft2	mm	mil
8040-F50-1	98*	39	420	0,71	28
8040-F50-2	98*	37	400	0,79	31
8040-F50-3	98*	35	375	0,86	34

Operating conditions

Recommended operation pressure, MPa	0,2-1,5
Maximum operation pressure, MPa	2,1
Maximum pressure drop, MPa	0,1
Operation temperature, °C ¹⁾	4-50
pH at operation ¹⁾	1-12
CIP pH (short time operation)	1-13
Acceptable Hydrogen peroxide concentration during continuous operation	20
during disinfection (not longer than 30 min), mg/l	500
Acceptable free Chlorine concentration during continuous operation	1
during disinfection (not longer than 30 min), mg/l	200
Maximum feed flow, m3/hr	18
Concentrate/permeate ratio on each element, min	5:1
Colour index, deg., max	50
Turbidity, NTU max	20

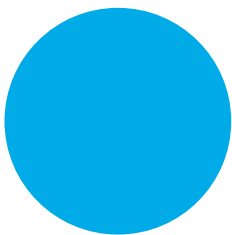
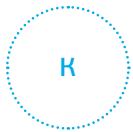


Model	A mm	B mm	B' (ATD) mm	C mm	Weight kg
8040-F50-1/2/3	1016	203	200	28,6	14

Additional information on ultrafiltration membrane elements.

Notes	<p>Specific flow of membrane on desalted water ($SDI < 1$) is 240 l/(hr*m²*bar) min. Depending on the concentration of the feed solution, temperature, recovery the membrane's specific flux may vary from 80 up to 240 l/(hr*m²*bar). Each element is tightly packed under vacuum in a polyethylene bag dry.</p>
Important information	<p>At the first launch an element should be washed for at least 1 hour. In order to prevent destruction of elements the following should be observed: Do not allow excessive feed pressure and feed flow above the levels indicated in the specification. Take measures for protection of membrane elements from back pressure on the permeate side. The pressure on permeate side under no circumstances must exceed pressure at the feed of membrane element. Avoid hydraulic hammer during start up, operation and shut down of nanofiltration systems. During start up of reverse osmosis system the feed pressure must be increased up to the operating level gradually within 30-60 second (at the max. rate of 0,1 MPa/sec) and likewise during shut down of reverse osmosis system the feed pressure must be decreased down to the operating level gradually within 30-60 second (at the max. rate of 0,1 MPa/sec) Take measures for prevention of membrane elements' operation in dead-end mode without concentrate discharge.</p>
Operating conditions	<p>Operating pressure may vary: For protein solutions from 0,2 up to 1,0 MPa depending on the concentration of feed solution, temperature, recovery, operating life of membrane elements. Pressure drop must not exceed 0,1 MPa on each element and 0,4 MPa on each pressure vessel. Feed water temperature must not exceed 50°C. Time of chemical cleaning of membrane elements within the range of pH 1-13 must not exceed 4 hours. Recovery on each membrane element 1 m (40 inch) long must not exceed 15% for all types of membrane elements.</p>
Operating compatibility	<p>Chlorine, hydrogen peroxide: For disinfection of ultrafiltration membrane elements it is recommended to use sodium hypochlorite with maximum concentration of free chlorine up to 200 mg/l or hydrogen peroxide with maximum concentration up to 500 mg/l. Cationic polymers and cationic surfactants can cause irreversible changes polyethersulfone membranes' properties. For this reason they should not be used during operation and chemical cleaning of ultrafiltration membrane elements. For lubrication of rubber seals glycerin should be used. Using petroleum based lubricants can be the cause of membrane elements' failure.</p>
General	<p>Membrane elements should be stored wet after use. To prevent biological contamination of membrane elements during prolonged shut-down of membrane systems it is recommended to run preservation of elements (or system) following the manufacturer's instructions. The customer shall bear responsibility for use of chemical agents not recommended for use with membrane elements. The customer's failure to follow recommendations of operating membrane elements may result in withdrawal of the manufacturer's warranty obligations.</p>
Technical support	<p>RM Nanotech's experienced scientific and technical personnel is able to render technical support to end users and engineering companies to design new or optimize existing membrane systems.</p>

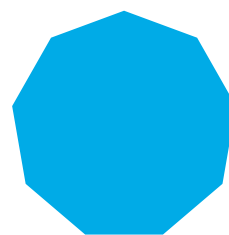
INDICATION OF MEMBRANE ELEMENTS



Membrane type
Membrane material
K – composite
polyamide



Membrane
properties
C – High
rejection
H – Low pressure
CH – Extra low pressure
M – Sea water



Element's dimensions
in inches
8.0 - diameter
(first two digits)
40 - length
(second two digits)



Additional data
For 4040, 8040
elements
C –glass fiber shell
F - Shrink film-wrapped (-F)
T – tape-wrapped
For UF membrane elements
20,50 - MWCO
1,2,3 – spacer thickness
(as per Specification)