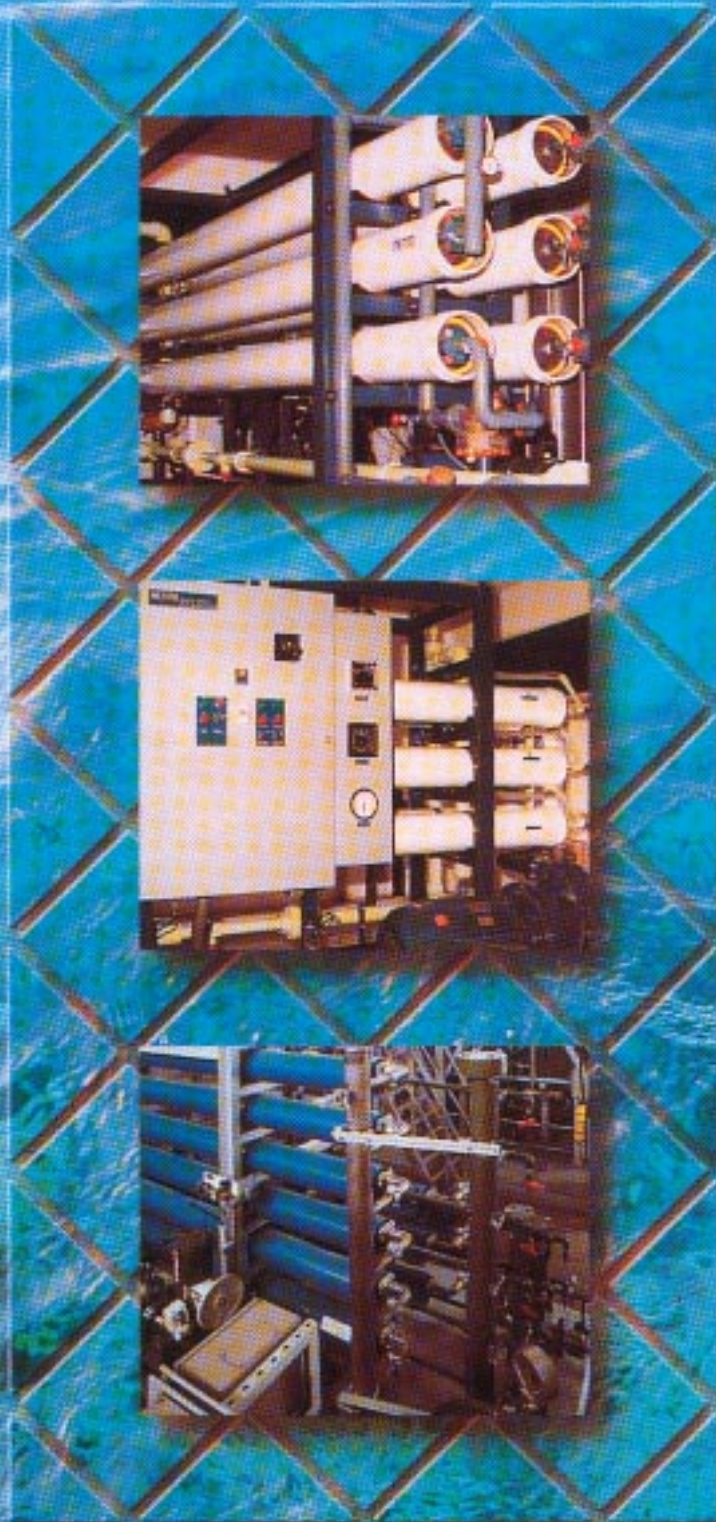


# MERITO



*Commitment to a  
Cleaner Environment*

S E R I E S 5 7 / 5 8



*Brackish Water Reverse Osmosis Systems*

# *brackish water reverse osmosis systems*

## **Descripton**

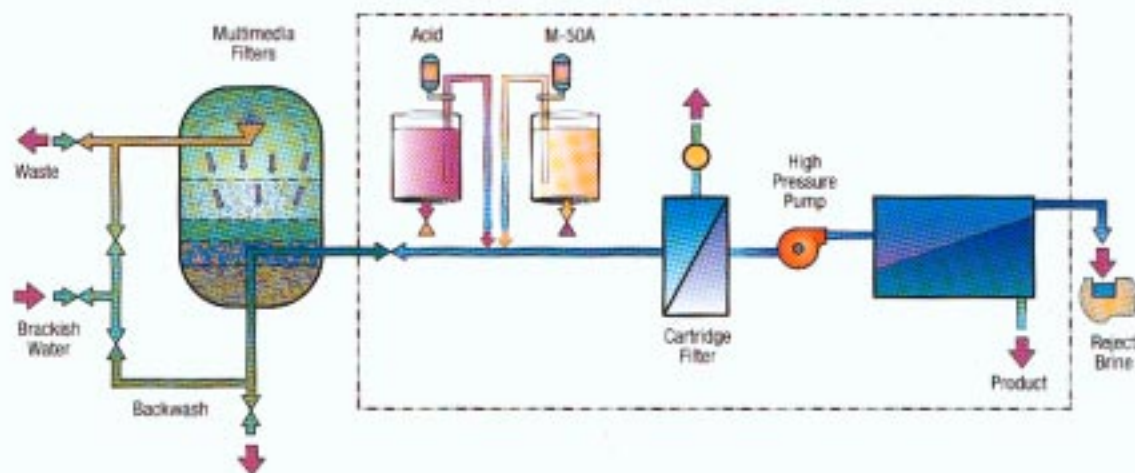
METITO 57 Series Reverse Osmosis (RO) Units cover nominal treated water capacities from 135-720 cubic metres per day.

It is a compact design for a medium size plant with all the equipment mounted on a single skid for easy installation. The equipment comprises chemical conditioning, cartridge filtration, high pressure pump, RO membranes, pressure vessels and the necessary instruments and controls. The unit is complete with interconnecting piping and wiring, and tested at our factory.

The 58 Series is for larger outputs, in the range of 760-3000 cubic metres per day. It is split into three components to facilitate transport and ease of installation. There is a pre-treatment skid for the chemical dosing equipment and cartridge filters; a skid for the RO membranes and pressure vessels, pipework and controls whilst the high pressure pumps are mounted separately. The concept allows for different installation arrangements depending on the available layout of the building.

The 'H' range of the 57 and 58 Series have a nominal water recovery (ratio of product to feed) of 75%; while METITO also offers the 'V' range of the 58 Series with a very high water recovery of 85%. The recovery of course, is dependent on the feedwater composition.

Smaller outputs are provided by other units in the METITO 50 series range while larger outputs can be achieved by using multiple units or a METITO custom-built design.



**Typical Flow Diagram for Brackish Water Reverse Osmosis**

# brackish water reverse osmosis systems

## **Process**

The feedwater, after appropriate pretreatment is dosed with sulphuric acid and METITO M-50 sequestering agent to prevent scale formation. The amounts required will depend on the water analysis. However the METITO dosing system has adequate adjustment to allow for all requirements. A pH meter with high and low alarms monitors the acidified water to ensure that the dosage is suitable for correct plant operation.

The water is then passed through five micron cartridge filters to ensure that suspended particles do not enter the high pressure pump or membranes.

The water is then pressurized by the high pressure pump, and the membrane separates it into the permeate (product) and the reject (waste) streams.

The permeate from all the membranes is collected in a manifold and piped to the skid termination point at a pressure suitable for lifting the product water to storage. The product pressure will depend on each application but increasing the product pressure will require a corresponding increase in the feed pressure.

The product should be piped to a product water storage tank prior to the distribution system. It can be degassed, pH corrected and sterilized as appropriate.

METITO incorporates an automatic flushing system which passes the feedwater at low pressure to the inlet of the membranes. This flushing system operates on each plant shutdown to protect and prolong the life of the membranes.



**Series 58 Reverse Osmosis Unit**

# brackish water reverse osmosis systems

## **Specifications 58 Series**

### **Pre-treatment Skid**

The following equipment is mounted on an epoxy-coated welded-steel frame.

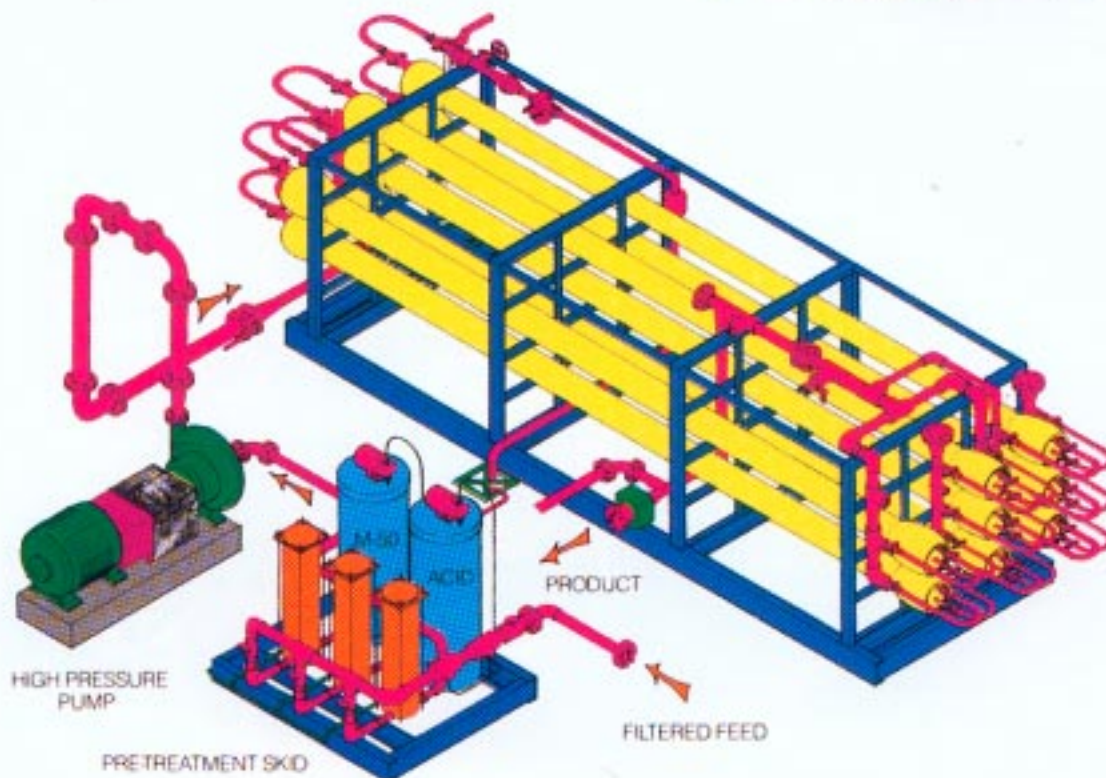
- M50/M50A tank, dosing pump (manual stroke and speed adjustment) and injection fitting.
- Acid tank, dosing pump (manual stroke and speed adjustment) and PVC injection fitting.
- 316L SS or PVC pre-filter(s) with five micron polypropylene cartridge elements, vent valve, and pressure gauges.
- Low pressure switch for high pressure pump protection.
- pH meter with high and low alarms.

### **Mounted on Concrete Plinth**

- Stainless steel high pressure pump with close or flexible coupled TEFC motor.
- Feed flow control valve to regulate system pressure.

### **In Addition**

- An Operation and Maintenance manual (in English) will be provided with each unit.

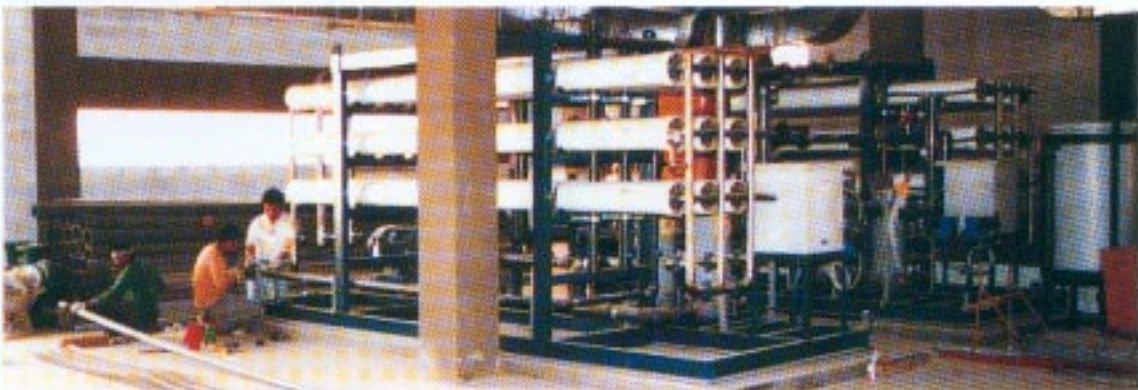


## *brackish water reverse osmosis systems*



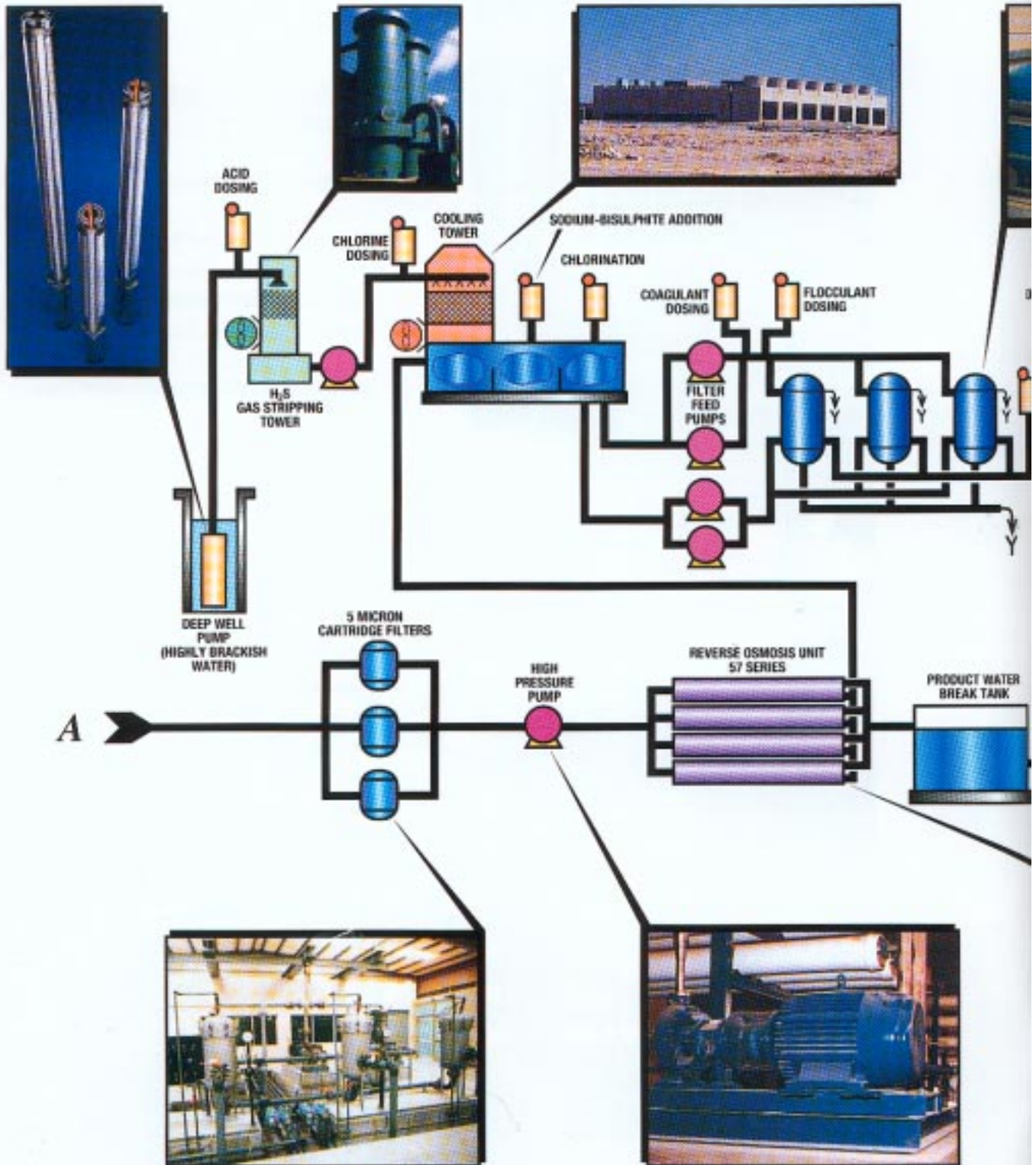
### **RO Skid**

- High pressure switch for membrane protection.  
Pump discharge pressure gauge.
- Reverse osmosis membranes spiral wound-in GRP pressure vessels.
- High pressure piping in stainless steel.
- Low pressure piping in PVC.
- Reject control valve to regulate the system water recovery.
- Permeate flow indicator.
- Reject flow indicator.
- Flushing pipework and valves.
- Pressure gauges to measure operating, interstage and reject pressures.
- Control panel constructed to NEMA 12 or IP54 including programmable logic controller, starters, integral disconnect switch, status and fault indication lights.
- Standard power supply 380-480V, 3 phase, 50 or 60 Hz.



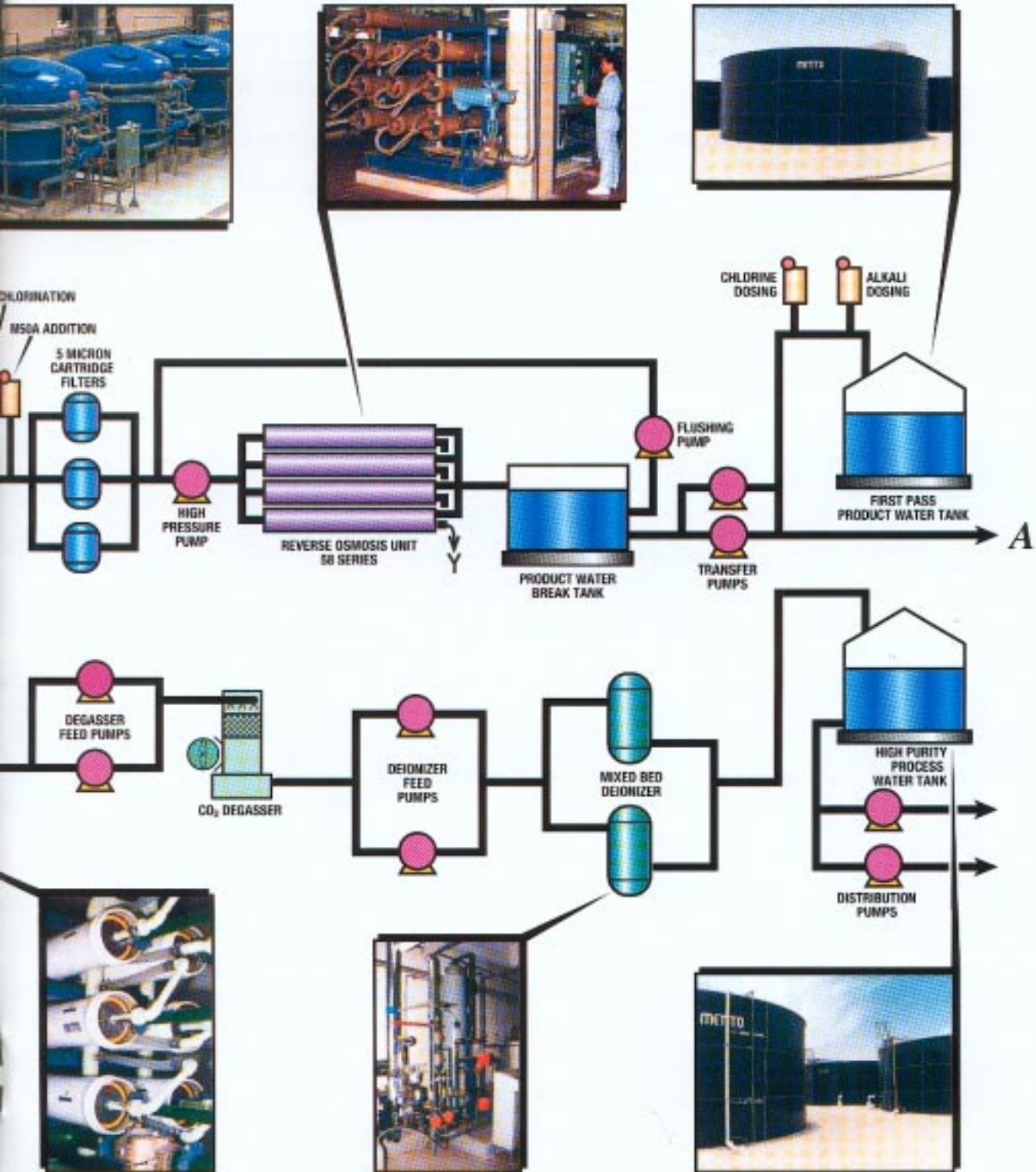
# brackish water reverse osmosis systems

## Typical 2 Pass Reverse Os



# brackish water reverse osmosis systems

## Reverse Osmosis Water Treatment Plant

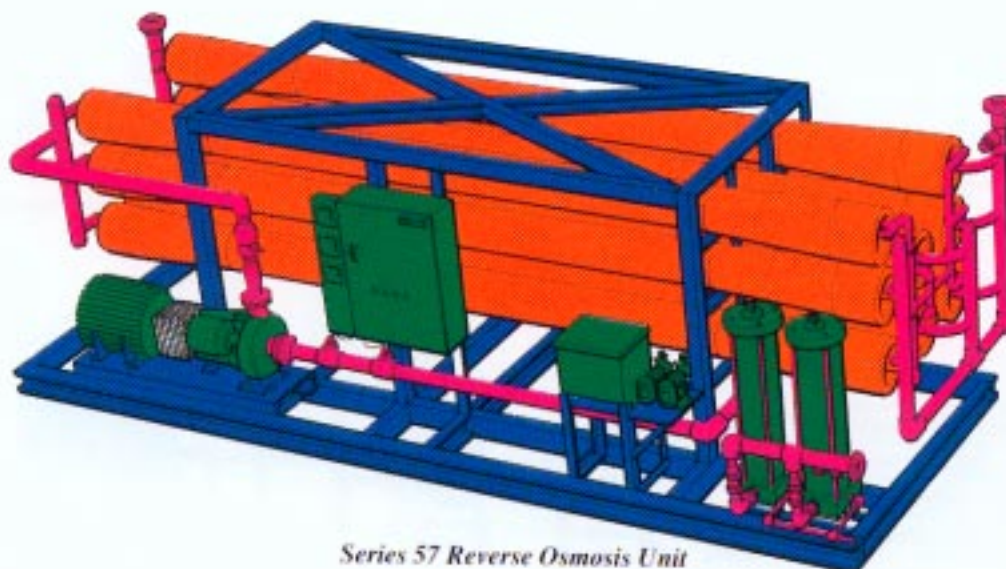


# brackish water reverse osmosis systems

## **Specifications 57 Series**

The following equipment is mounted on an epoxy-coated welded-steel frame.

- M50/M50A tank, dosing pump (manual stroke and speed adjustment) and injection fitting.
- Acid dosing pump (manual stroke and speed adjustment) and PVC injection fitting.
- 316L SS or PVC pre-filter(s) with five micron polypropylene cartridge elements, vent valve, and pressure gauges.
- Low pressure switch for high pressure pump protection.
- pH meter with high and low alarms.
- Brine flow indicator.
- Permeate flow indicator.
- Flushing pipework and valves.
- Pressure gauges to monitor pump discharge, operating, interstage and reject pressures.



*Series 57 Reverse Osmosis Unit*

- Stainless steel high pressure pump with close or flexible coupled TEFC motor.
- Feed flow control valve to regulate system pressure.
- Reverse osmosis membranes-spiral wound-in GRP pressure vessels.
- High pressure piping in stainless steel.
- Low pressure piping in PVC.
- Reject control valve to regulate the system water recovery.
- Control panel constructed to NEMA 12 or IP54 including programmable logic controller, starters, integral disconnect switch, control circuit transformer, control switches, status and fault indicator lights.
- Standard power supply 380-480V, 3 phase, 50 or 60 HZ.

### **In Addition**

- An Operation and maintenance manual (in English) will be provided with each unit.

# *brackish water reverse osmosis systems*

## **Specifications 57 Series**

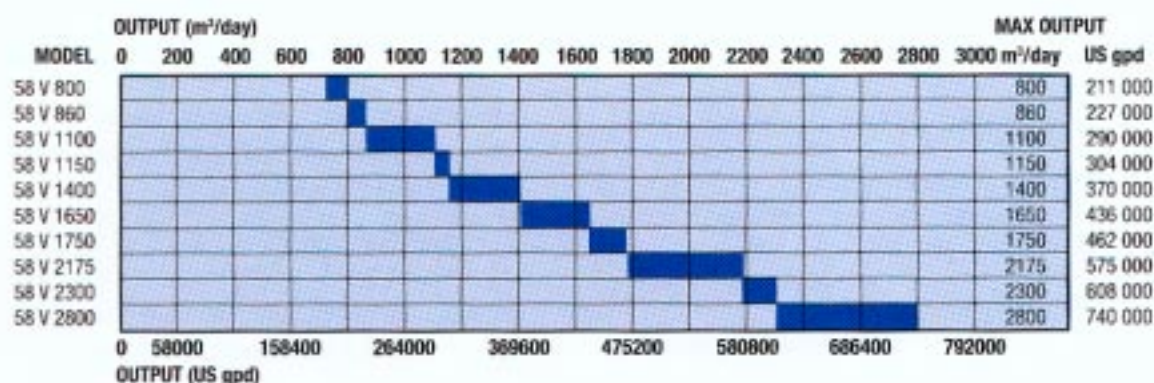
- Alternative voltages.
- Alternative panel specification.
- ORP analyzer/indicator.
- Temperature indicator.
- Temperature switch (high).
- Portable conductivity meter.
- Portable pH meter.
- Silt density index (SDI) test kit.
- Chlorine test kit.
- Auto isolating valve to close feed line at system shutdown.
- Operating instructions in other languages.
- pH chart recorder.
- Conductivity indicator.
- Conductivity chart recorder.
- Filtration-sand, activated carbon or iron removal.
- Pre-and/or post chlorination.
- Raw and/or product water storage tanks.
- Bulk chemical storage tank.
- Pumping/ pressure systems.
- Degassing tower.
- Post-treatment chemical dosing (pH correction, etc.).
- Cleaning skid.

## **Feedwater Temperature**

Units can operate over a wide variety of feedwater temperatures, up to a maximum of 45°C. The plant capacities quoted refer to operating temperatures between 25-30°C. Higher temperatures give an increase in output and lower temperatures a corresponding decrease. The product TDS is also influenced by temperature; high temperatures giving higher product TDS values. METITO plants produce water in accordance with World Health Organisation standards for wide variations in TDS and water temperatures.



# brackish water reverse osmosis systems

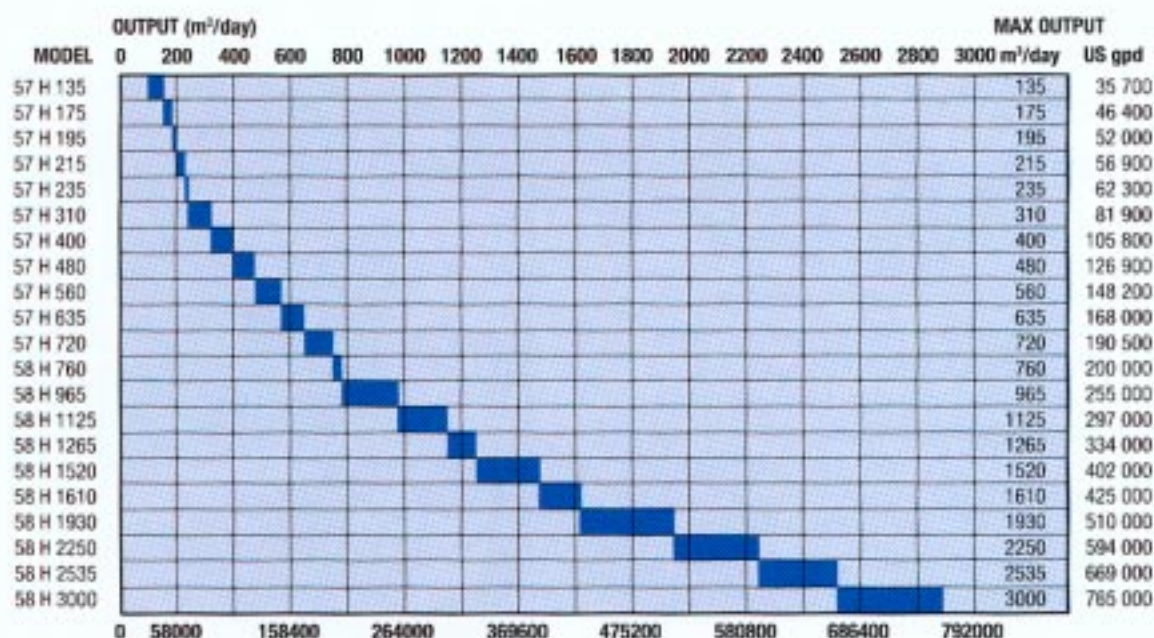


**Table of Plant Capacities 'V' Series**  
Nominal 85% Conversion

**Notes:** Capacity based on feed TDS 1500mg/l NaCl, nominal 24 bar operating pressure, operating temperature within range 25-30°C, and nominal water recovery -  
H - 75%  
V - 85%

Higher recoveries are possible, each case would be individually designed.  
If the feed TDS is higher, the capacity will be reduced, and a higher feed pressure may be required.  
For other conditions call your nearest METITO office.

OUTPUT (US gpd)



**Table of Plant Capacities 'H' Series**  
Nominal 75% Conversion

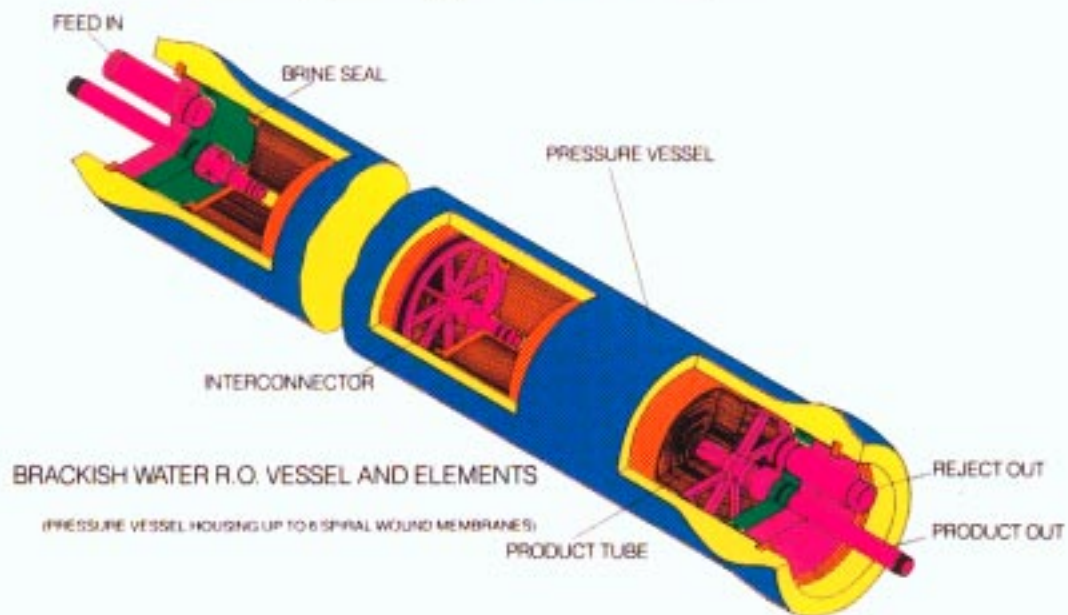
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# brackish water reverse osmosis systems

## Skid Sizes

Skid Type	Length		Width		Height	
	mm	ins	mm	ins	mm	ins
57	5340	210	1470	58	1980	78
58 Pre-treatment	1800	71	1500	59	1400	55
58 RO Stack	7200	283	1800	71	2000	79

Note: 58 Series - high pressure pumps are mounted separately, and the area required for the RO components is approx. 5m x 10m x 2m high.



*Brackish Water Reverse Osmosis Vessel and Elements*  
*Brackish Water Reverse Osmosis Vessel and Elements*



The information contained within brochure is subject to change without prior notice.



Commitment to a  
Cleaner  
Environment

# METITO

The Americas (Houston,  
Texas)  
METITO INTERNATIONAL  
INC.  
11931 Wickchester Lane,  
Suite 201  
Houston, Texas 77043  
U.S.A.  
Tel.: +1 (281) 293 8500  
Fax: +1 (281) 759 3646  
E-mail: metito@vonl.com

Africa (Cairo, Egypt)  
METITO EGYPT LTD.  
22 Shehab Street,  
Mohandiseen, Giza  
Cairo, Egypt  
Tel.: +20 (2) 749 7126  
Fax: +20 (2) 749 7128  
E-mail:  
metito@intouch.com

Asia (Jakarta, Indonesia)  
PT METITO INDONESIA  
Jl. Ampera Raya No. 18 A  
Cilandak Timur–Pasar Minggu  
Jakarta 12560, Indonesia  
Tel.: +62 (21) 7800 394  
Fax: +62 (21) 780 0395  
E-mail: metito@indo.net.id

Headquarters for Europe, Africa and Asia  
(Sharjah, U.A.E.)

METITO (OVERSEAS) LTD.  
Al Sayegh Tower, Corniche Road  
P.O. Box 22701, Sharjah, UAE  
Tel.: +971 (6) 556 1818  
Fax: +971 (6) 556 4777  
E-mail: metito@emirates.net.ae  
website: metito.com

## METITO WORLDWIDE LOCATIONS

▮ Houston, Texas, USA ▮ Nicosia, Cyprus ▮ Jakarta, Indonesia ▮ Beirut,  
Lebanon ▮ Tehran, Iran ▮ Sharjah, United Arab Emirates ▮ Abu Dhabi, United Arab  
Emirates ▮ Cairo, Egypt ▮ Baghdad, Iraq ▮ Tripoli, Libya ▮ Tunis, Tunisia ▮  
Mumbai, India ▮ Kuala Lumpur, Malaysia ▮ Amman, Jordan ▮ Tokyo, Japan ▮  
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