

# MERITO



*brackish water  
reverse osmosis  
systems*

*series* 57  
58

## *Description*

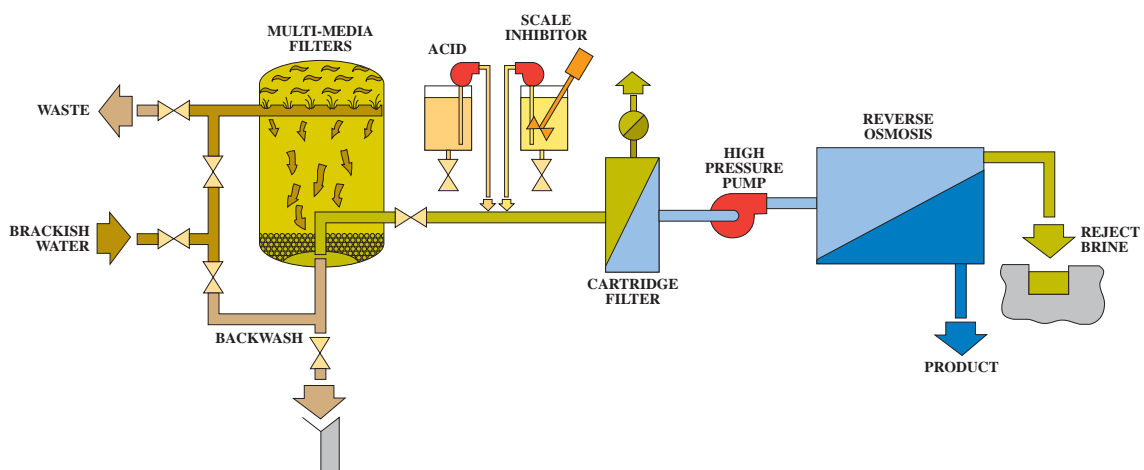
METITO 57 Series Reverse Osmosis (RO) Units cover nominal treated water capacities from 135-720 cubic metres per day.

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 units 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 (ration of product to feed) of 75%; whilst 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 whilst larger outputs can be achieved by using multiple units or a METITO custom-built design.



*Typical Flow Diagram for Brackish Water Reverse Osmosis*

## *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 pressurised by the high pressure pump, and the membrane separates it into the permeate (product) the reject (waste) streams.

The permeate from all the membranes is collected in 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 sterilised 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*

### ***Specifications 58 Series***

#### ***Pre-treatment Skid***

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

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

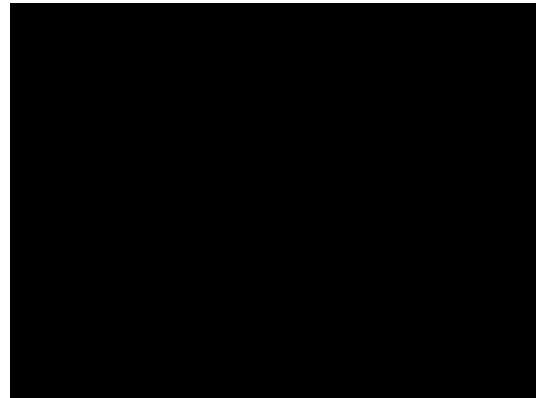
#### ***Mounted on Concrete Plinth***

- Stainless steel high pressure pump with close or flexible coupled TEFC motor.

- Feed flow control valve.

#### ***In Addition***

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



*Series 58 R.O. Unit with Pre-treatment Skid and Pump Unit*

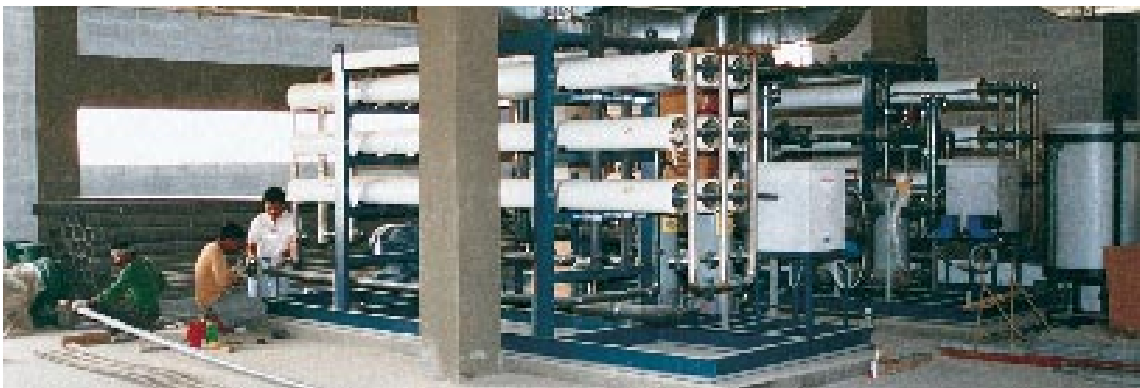
## *brackish water reverse osmosis systems*



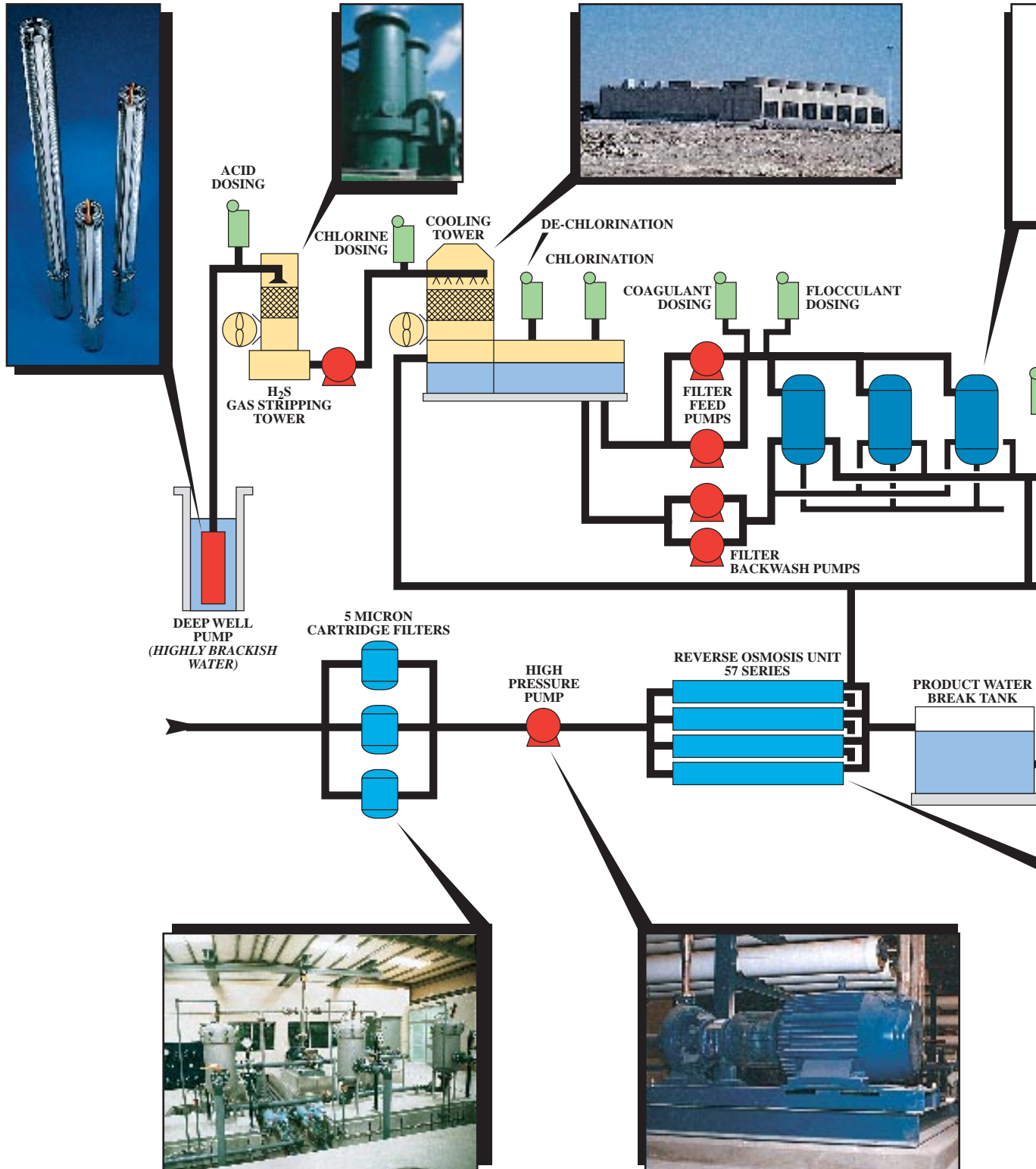
### ***RO Skid***

- Feed flow indicator.
- 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.
- Product flow indicator.
- Flushing pipework and valves.
- Pressure gauges to measure, permeator feed, interstage or reject pressures.
- Control panel constructed to NEMA 12 or IP54 including microprocessor, star-delta starter, integral disconnect switch, status and fault indication lights.

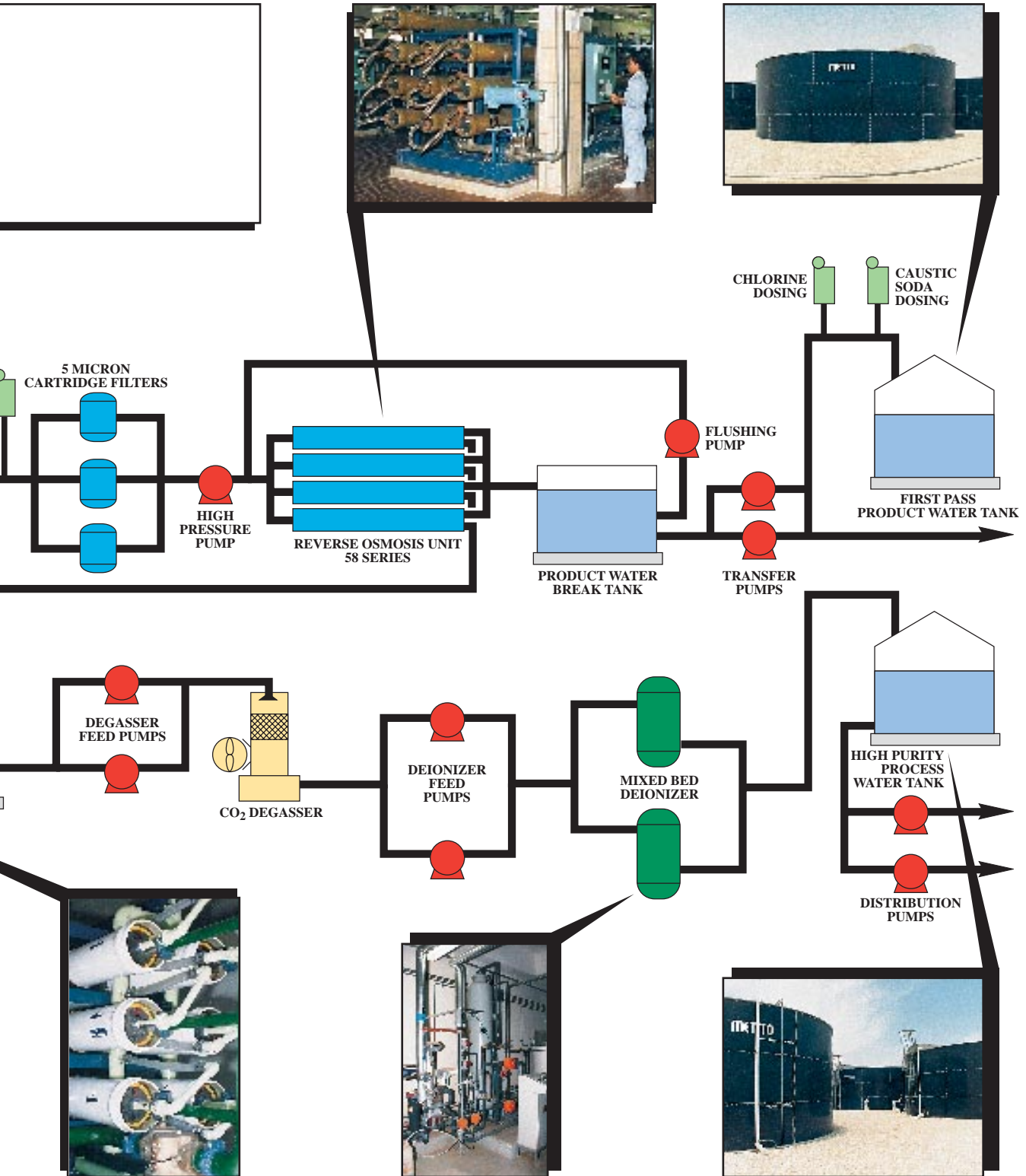
Standard power supply 380-440V, 3 phase, 50 or 60 Hz.



*Typical 2 Pass Reverse Osm*



**Brackish Water Treatment Plant**



### **Specifications 57 Series**

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

- M50 tank, dosing pump (manual stroke and speed adjustment) and injection fitting.
- Acid dosing pump (manual stroke and speed adjustment) and PVC injection fitting.
- 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.
- Feed flow indicator.
- Product flow indicator.
- Flushing pipework and valves.
- Pressure gauges to measure high pressure pump discharge, permeator feed or reject pressures.

### **Series 57 Reverse Osmosis Unit**

- Stainless steel high pressure pump with close or flexible coupled TEFC motor.
- Feed flow control valve.
- 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 microprocessor, star-delta starter, integral disconnect switch, control circuit transformer, control switches, status and fault indicator lights.
- Standard power supply 380-440V, 3 phase, 50 or 60 HZ.

#### ***In Addition***

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

### **Options & Accessories**

- Alternative voltages
- Alternative panel specification
- 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 of World Health Organisation standard for wide variations in TDS and water temperatures.





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 ▮  
Seoul, S. Korea

