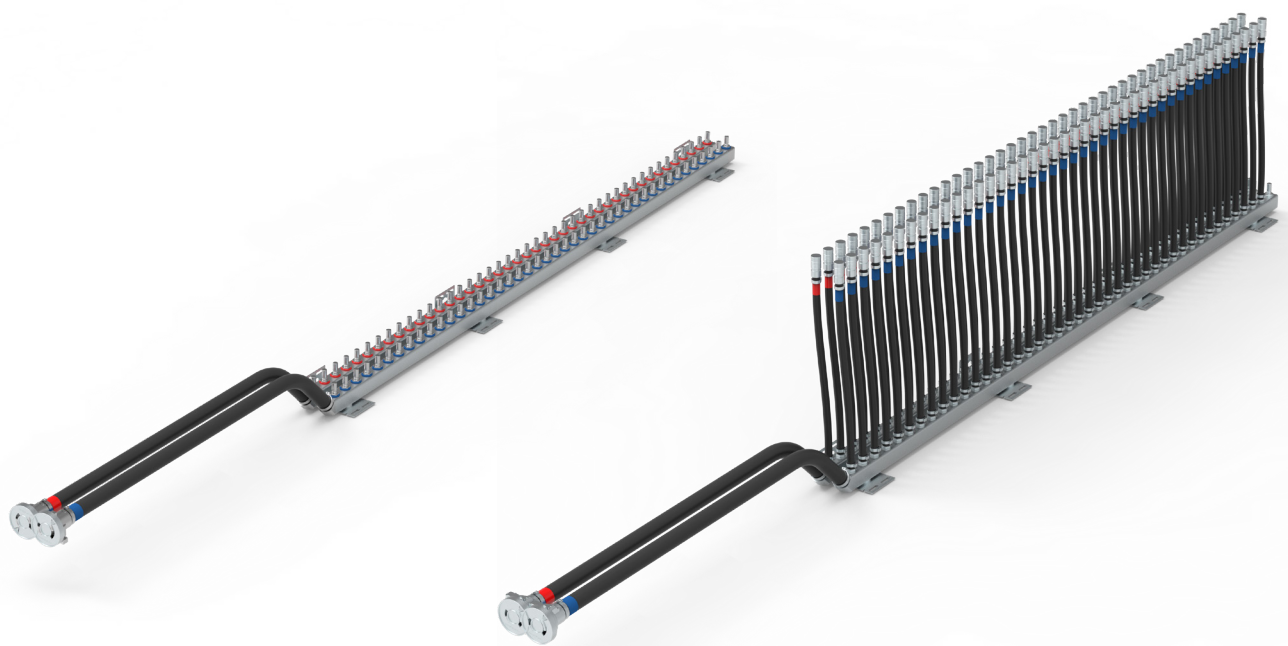




# Rack Manifold User Manual



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## 1. OVERVIEW

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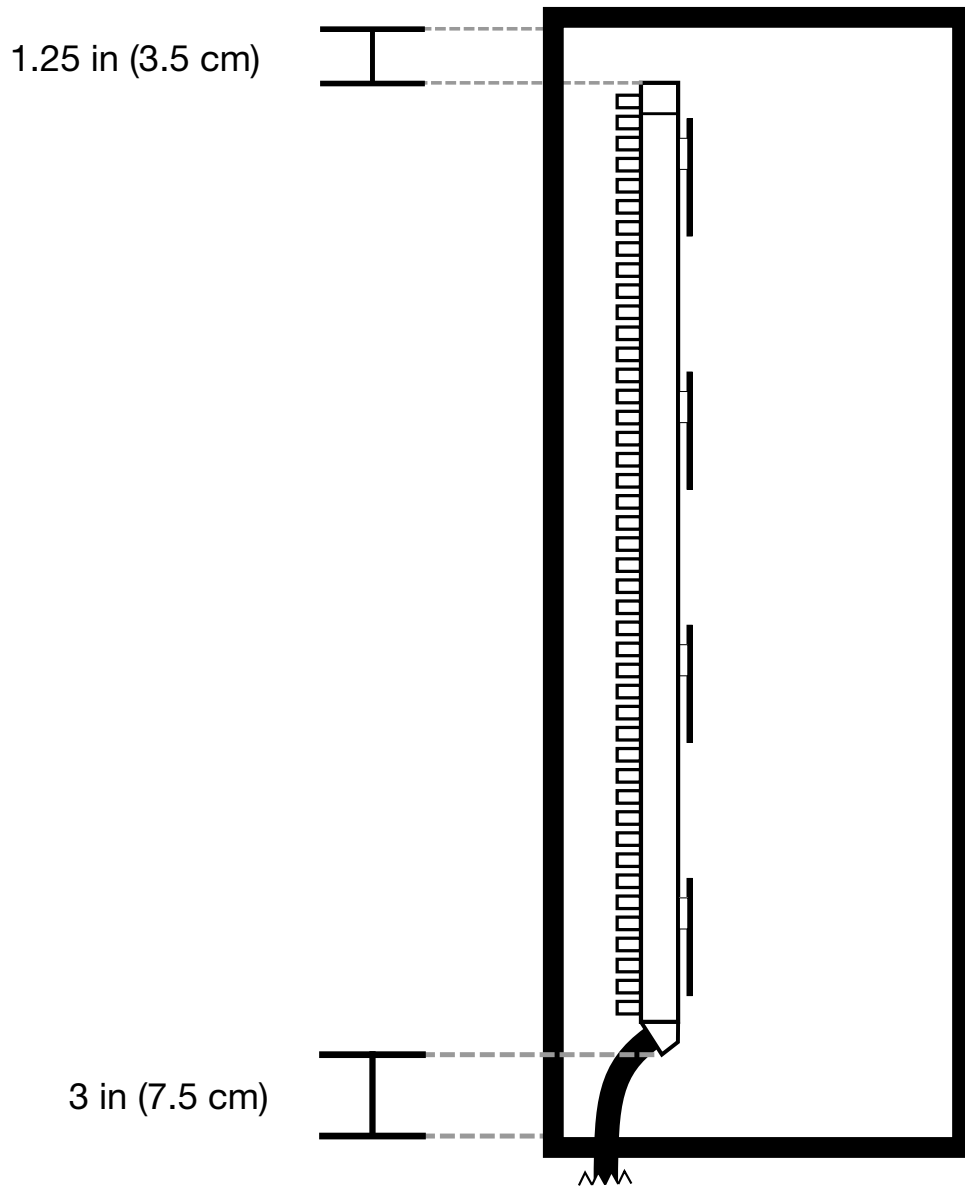
nVent's rack manifolds are made of stainless steel square tubes utilizing high quality fabrication processes and components. nVent rack manifolds enable integrated IT rack cooling loops to connect with compatible cooling infrastructures.

## 2. MINIMUM REQUIREMENTS

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### 2.1. Dimensions

It is recommended to use manifolds in a cabinet space that is a minimum of 4 ¼" (11 cm) taller than the manifold itself. A minimum clearance of 1 ¼" (3.5 cm) above and 3" (7.5 cm) below the manifold is recommended.



## 2.2. Water Quality Requirements

nVent follows the water quality guidelines for liquid cooling equipment published by ASHRAE. ASHRAE recommends the following water quality for the secondary or technology cooling system loop.

Parameter	Secondary Loop
pH	8.0 to 9.5
Corrosion inhibitor(s)	Required
Biocide	Required
Sulfide	< 1 ppm
Sulfate	< 10 ppm
Chloride	< 5 ppm
Bacteria	< 100 CFUs/mL
Total Hardness (as CaCo3)	< 0 ppm
Conductivity	0.2 to 20 micromho/cm
Total suspended solids	< 3 ppm
Residue after evaporation	< 50 ppm
Turbidity	< 20 NTU (Nephelometric)

When using treated water as the cooling liquid in the secondary loop, nVent supports using deionized and distilled water. The use of reverse osmosis and demineralized water is not supported.

## 2.3. Filtration

nVent recommends using a maximum 50 micron filter on the secondary or technology cooling system loop to remove any particulate within the secondary loop during operation. If smaller passage dimensions exist within the secondary loop, then a filter with a smaller passable media dimension can be selected to maintain the ½ to 1/10 passable media range.

Differential pressure should be monitored across the filter and tracked over the course of operation to determine if there is particulate build up in the filter. If the differential pressure indicates that there is build up on the filter, the filter should be removed and cleaned, and the particulate from the filter should be examined to determine the type of particulate in the system.

## 3. SPECIFICATIONS

### 3.1. Weldment Assembly

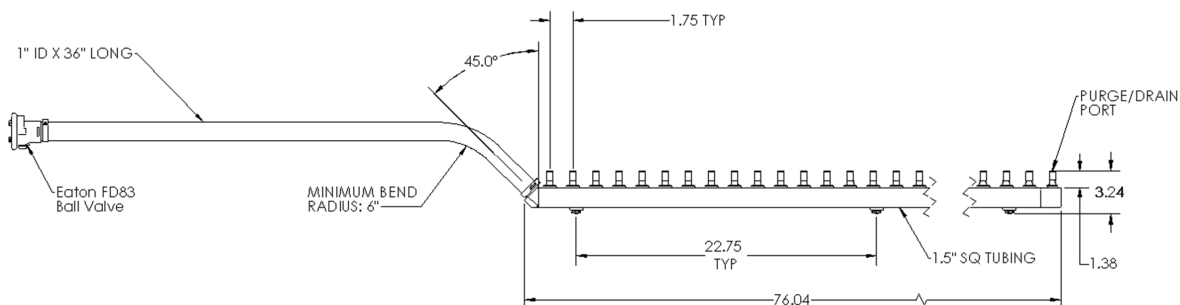
#### 3.1.1. Base Material

304L Stainless Steel

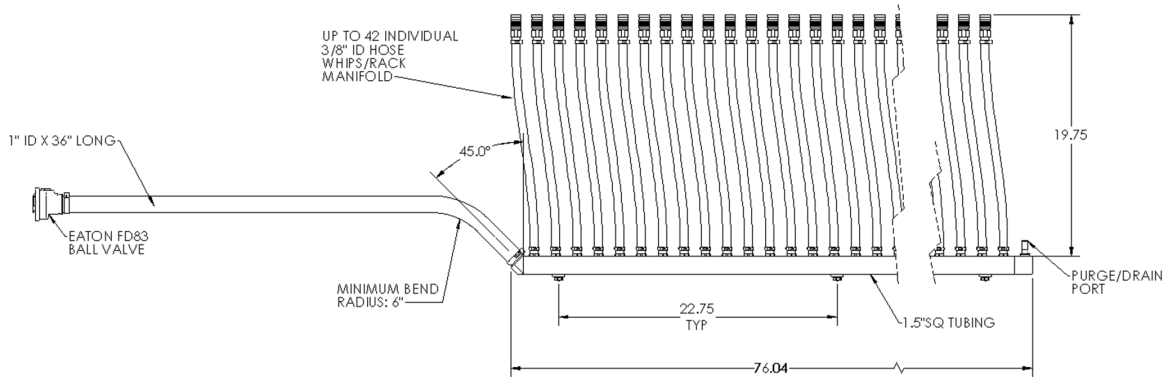
#### 3.1.2. Dimensions

Note: dimensions and weights refer to standard models. Custom orders will vary.

- RCM42001 Standard Model:



- RCM42001H Hose Whip Model:



### 3.1.3. Weight

Fully populated:

- RCM42001 Standard Model
  - Dry: 25 lbs
  - Filled: 30 lbs
- RCM42001H Hose Whip Model
  - Dry: 45 lbs
  - Filled: 55 lbs

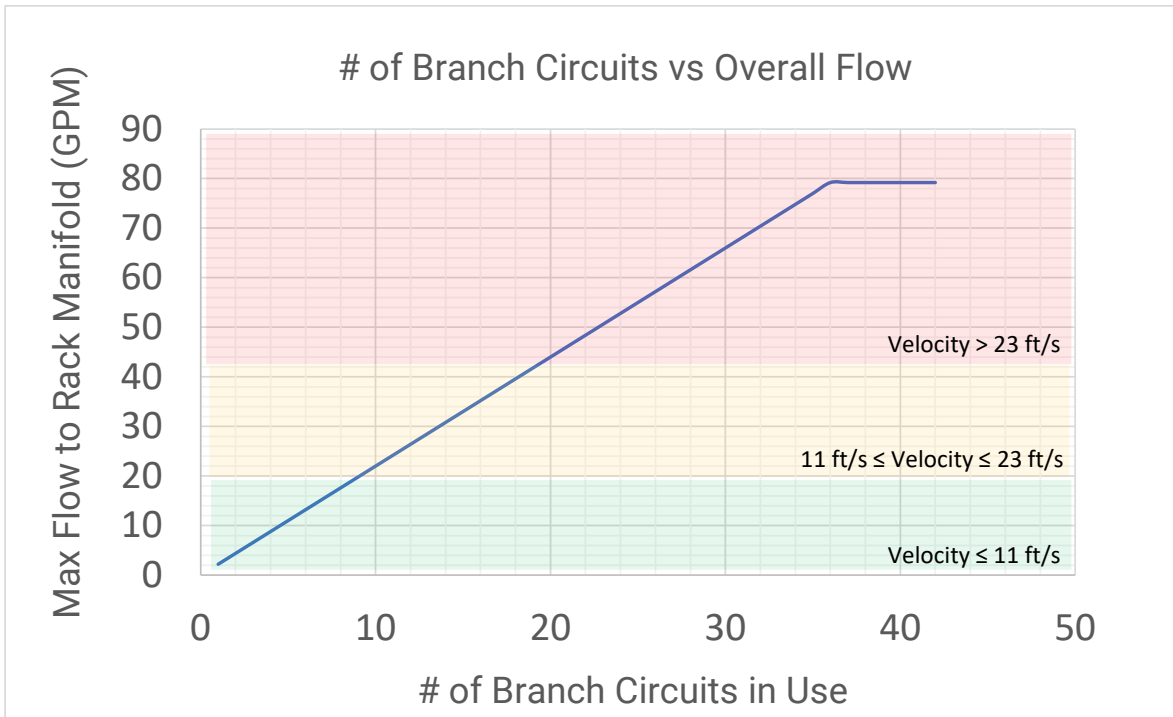
### 3.1.4. Internal Volume

Fully populated:

- RCM42001 Standard Model: 195 in<sup>3</sup>
- RCM42001H Hose Whip Model: 305 in<sup>3</sup>

### 3.1.5. Flow Rating

Max flow per branch must not exceed 2.2 GPM.



### **3.1.6. Maximum Operating Pressure**

150 psig (10 bar)

### **3.1.7. Temperature Rating**

- Max operating temperature: 70°C
- Storage temperature: -40°C to 80°C

\* It is recommended to warm the rack manifold up to room temperature prior to installation to prevent damages to seals and hoses during handling.

## **3.2. Hose**

### **3.2.1. Material**

Peroxide Cured EPDM

### **3.2.2. Dimensions**

- Inlet/outlet Hoses: 1" ID available in 36" lengths
- Branch circuit Hoses: 3/8" ID available in 12", 18", and 24" lengths

### **3.2.3. Minimum Allowable Bend Radius**

- 1" ID hose: 6"
- 3/8" ID hose: 3"

### **3.2.4. Humidity Requirement**

It is recommended that ambient humidity be below 70%.

### **3.2.5. Wetted Materials**

During normal operation, coolant comes in contact with the following materials:

- 304L Stainless Steel
- Chrome Plated Brass
- C36000 Brass
- Peroxide Cured EPDM
- Fluorocarbon (FKM) seals
- Nitrile (NBR) seals

## 4. INSTALLATION

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### 4.1. Handling

Outside of the carton, the rack manifold is best transported to the installation site with the use of a cart. Do not carry or grab the rack manifold by the quick disconnects or hose whip. Do not drag the inlet/outlet hoses across the floor as this can damage to the dual interlocking ball valve or introduce debris to the inner seal.

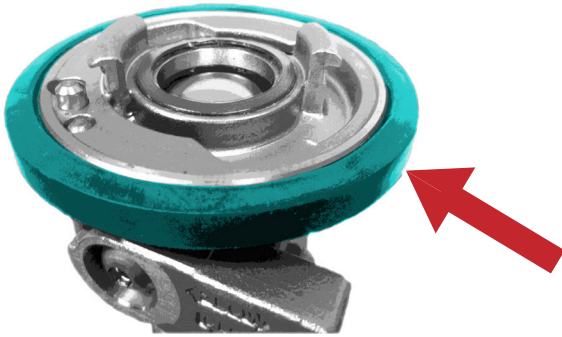
### 4.2. Pre-Commissioning Checklist

#### 4.2.1. Depressurizing

The rack manifold is pressurized with 10 psig of Nitrogen from the factory. Depressurizing requires attaching the purge hose kit to the purge/drain port and slowly opening the small ball valve.

#### 4.2.2. Inspecting Bumpers

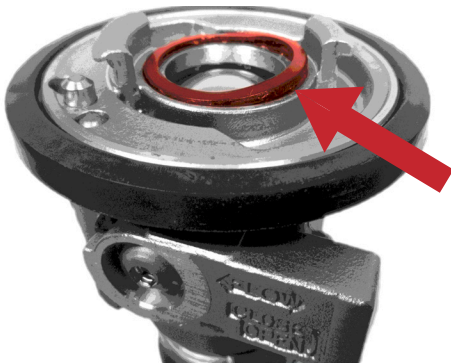
Ensure the black rubber bumper is properly seated on the dual interlocking ball valve.



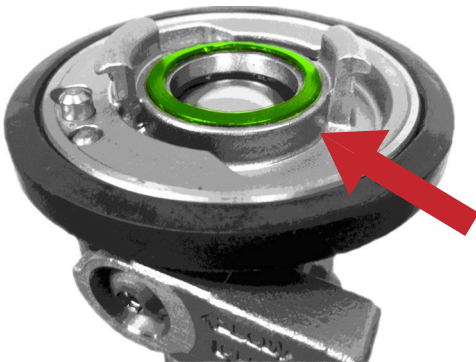
#### 4.2.3. Inspecting Seals

Ensure the face seal of the dual interlocking ball valve is properly seated.

- Improperly seated seal:



- Properly seated seal:



#### 4.2.4. Hose Inspection

Inspect all hoses for kinks. If the hose is kinked upon receiving, inspect the kinked section, and do not use if there are signs of stress (discoloration) or cracks.

#### 4.2.5. Mounting

To mount rack manifolds, follow the relevant section of the installation instruction manual included with the mounting bracket kit.

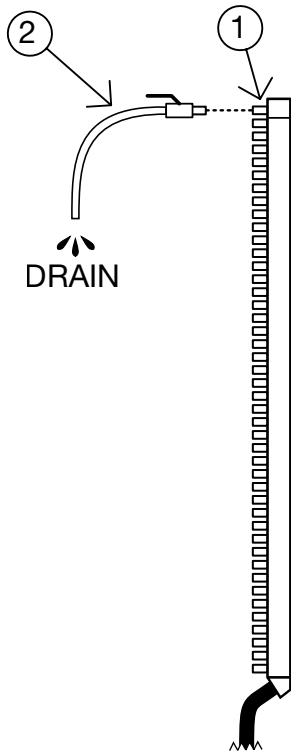
**Do not lift manifold by hoses or quick disconnects.**

The rack manifold contains a 1/2" M6 stud as an optional ground connection, which is indicated by a ground label. It is recommended that this be used with the nVent Bonding and Grounding Kit (Catalog #: DBGRDK).

### 4.3. Commissioning

#### 4.3.1. Flushing

Manifolds should be thoroughly flushed with fluid before connecting to the cooling circuit in order to reduce the risk of contamination entering the circuit. To flush the manifold, connect the fill and purge kit to the port furthest from the 1" inlet/outlet hose. Open the ball valve on the fill and purge kit and run fluid through the manifold for a minimum of 30 seconds.



- 1: Purge/drain port
- 2: Fill and purge kit

#### 4.3.2. Connecting Quick Disconnects

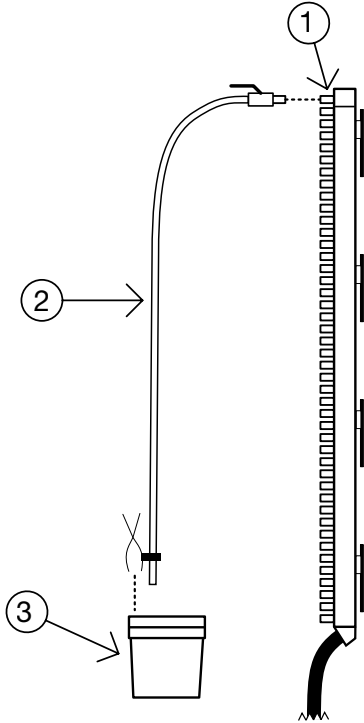
The port furthest from the 1" inlet/outlet hose is for draining/purging and is not intended to be connected to a cooling circuit. When connecting quick disconnects, the force to connect increases as the internal pressure of the system increases. It is recommended to support the manifold while inserting quick disconnects.

#### 4.3.3. Purging Air

It is important to purge all air from the cooling infrastructure before commissioning any system. It is recommended to purge all circuits in series first, then purge parallel circuits from lowest to highest until all branches are purged of air. An external pump that provides at least 10 GPM is suggested in order to have sufficient flow capacity to move and dislodge any trapped air. The system is purged of air when the coolant passing through the purge hose kit is clear or free of entrained air.

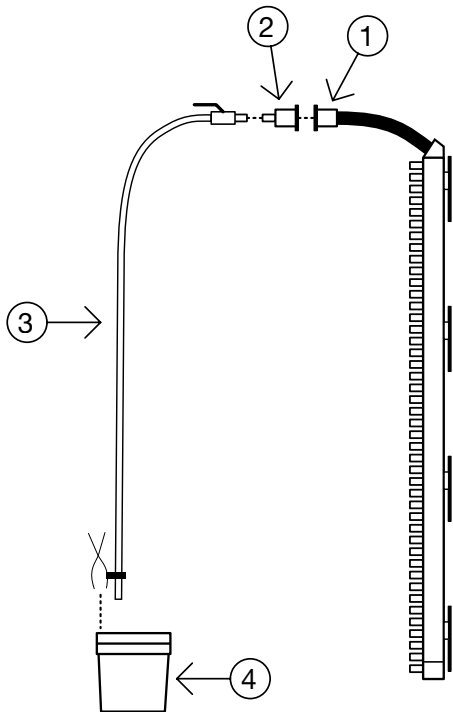


- For bottom feed configurations, the topmost port functions as the purge outlet.




- 1: Manifold purge/drain port
- 2: Purge kit
- 3: Bucket (not included)

- For top feed configurations, the manifold inlet/outlet dual interlocking ball valve can be used as the purge outlet by using the dual interlocking ball valve adaptor kit.



- 1: Manifold Inlet/outlet dual interlocking ball valve
- 2: Top feed purge kit adaptor
- 3: Purge kit
- 4: Bucket (not included)

## 5. SPARE PARTS

Catalog Number:	Description:	Image:
DPDU2	HDW KIT, PDU BRKT, PROLINE	
RCPKIT001	RM PURGE KIT NSP06	
RCPKIT002	RK MNFLD TOP FED PRGE KIT ADPT	
RCAMMS	RM ACC MOUNTING SPOOL	
RCAMORR	RM ACC IND ORING RED	
RCAMORB	RM ACC IND ORING BLU	

## 6. SAFETY AND USER RESPONSIBILITY

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- It is the responsibility of the user to ensure the product used presents no health or safety hazard conditions through their own analysis and testing.
- This product can cause severe injury or death if used improperly. Never pressurize the product above 10 psig with compressible fluid. Pressurization above 10 psig must be done hydrostatically.
- The rack manifold is mechanically isolated for thermal performance and is equipped with an optional grounding provision. Avoid routing electrical wires nearby the rack manifold. Do not terminate any wires near the hoses.
- Installing the rack manifold near any radiant heat source could cause accelerated aging of the hose and other non-metallic components.

## 7. WARRANTY

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<https://HOFFMAN.nVent.com/rackchiller-rack-manifold-product-warranty>

## **North America**

### **All locations**

Tel +1 763 422 2211

## **Europe**

### **Straubenhardt, Germany**

Tel +49 7082 794.0

### **Betschdorf, France**

Tel +33 388 90 64 90

### **Warsaw, Poland**

Tel +48 22 209 98 35

### **Assago, Italy**

Tel +39 02 5776151 224

## **Middle East & India**

### **Dubai, United Arab Emirates**

Tel +971 4 823 8666

### **Bangalore, India**

Tel +91 80 6715 8900

### **Istanbul, Turkey**

Tel +90 216 250 7374

## **Asia**

### **Shanghai, P.R. China**

Tel +86 21 2412 6943

### **Qingdao, P.R. China**

Tel +86 532 8771 6101

### **Singapore**

Tel +65 6768 5800

### **Shin-Yokohama, Japan**

Tel +81 45 476 0271



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