

Hitachi NITROGEN GAS GENERATOR

**HITACHI**  
Inspire the Next

# Hitachi PSA Nitrogen Gas Generator N<sub>2</sub> Pack

0.75-22kW

**NEXT II series** WITH OIL-FREE  
SCROLL COMPRESSOR

3.7 5.5

**INVERTER CONTROL**

0.75 2.2

**PRESSURE-SWITCH CONTROL**

7.5 11 15 22

**MULTI-DRIVE CONTROL**

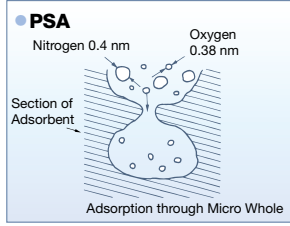


# Cost Reduction by On-Site Nitrogen Generation

**Q** What is the mechanism of nitrogen generation?

**A** Air is composed of Nitrogen (approx. 78%), Oxygen (approx. 21%) and others (approx. 1%). N<sub>2</sub> Pack is designed to extract nitrogen from air efficiently.

Pressure swing adsorption (PSA) is a technology used to separate nitrogen from air under pressure according to the difference in nitrogen's molecular diameter and affinity for an adsorbent material (a sort of activated carbon). By utilizing PSA, nitrogen can be stably extracted from air at a high quality.



**Q** Any better way to keep product quality or explosion protection from oxidation?

**A** N<sub>2</sub> Pack provides nitrogen at purity of 99–99.99% easily. Inactive gas has been widely used as an effective way to cope with oxidation or anti-explosion problems. Nitrogen, an inactive gas under normal temperature, is used mainly as deoxidation in various industries such as food packaging. N<sub>2</sub> Pack is capable to provide stable nitrogen without any special equipment.

## PSA Nitrogen Generation Flow

- Air, after compression and dehumidification, is pumped into adsorption tank.
- There are 2 processes taking place inside the adsorption tank, which are i) the process of adsorbing oxygen molecules onto the adsorbent material under pressure and abstracting nitrogen molecules, ii) the process of desorbing oxygen molecules from adsorbent material by depressurization to atmospheric pressure. In order to have continuous nitrogen output, the two processes repeat alternately in the two parallel adsorption tanks. This method is called PSA (Pressure Swing Adsorption).
- Generated nitrogen is stalled in the gas tank, which the purity is monitored by integrated oxygen sensor.

**Q** Feel troublesome to adjust the residual quantity of gas cylinder or changing the gas cylinder?

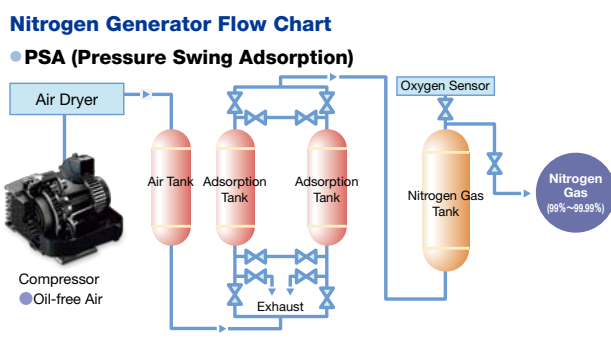
**A** Possible to have nitrogen provision by ONLY pressing the switch. Control covers both air compressor and PSA. By pressing the switch, auto operation starts, and nitrogen is supplied.

**Q** Want to reduce the cost of nitrogen or deoxidation?

**A** It is possible to reduce cost\*. N<sub>2</sub> Pack provides nitrogen by using air at a low level of cost. Since N<sub>2</sub> Pack uses ambient air as raw material to provide nitrogen, reduction of cost is possible. Further, if both nitrogen and other deoxidation are used during production, the volume of deoxidation can be reduced accordingly. \* Cost merit may differ due to the actual condition of current use of nitrogen and deoxidation.

**Q** Any influence from oil?

**A** By using Oil-free compressor, environment of Oil-free is preserved. Oil-free scroll air compressor with high reliability is adopted for all models. It is not necessary to worry about oil-change or oil disposal. Oil mist filter is not necessary either. \* Oil included in the surrounding air will be included in the discharge air from air compressor.



## Application (examples)

- Food** (Images of various food products)
- Medicine** (Image of a medicine bottle)
- Electronic** (Image of electronic components)
- Metal** (Image of a metal pipe)
- Machinery** (Image of a mechanical tool)
- Chemical** (Image of a chemical tank)
- Resin Product** (Image of resin products)
- Tier Filling** (Image of a tire being filled)
- Laboratory** (Image of a laboratory setting)

●Hitachi bears no patent responsibility of the manufacturing equipment which use the gas. Do relevant research on user's side.

## Specifications

N <sub>2</sub> Pack® NEXT II series 0.75			N <sub>2</sub> Pack® NEXT II series 2.2								
Item·Unit	Model	kW	0.75			0.9		2.2			
			NPO-0.752N2S5	NPO-0.753N2S5	NPO-0.754N2S5	NPO-0.752N2S6	NPO-0.753N2S6	NPO-0.754N2S6	NPO-2.22NB5	NPO-2.23NB5	NPO-2.24NB5
Nitrogen Gas Purity*1		%	99	99.9	99.99	99	99.9	99.99	99	99.9	99.99
Nitrogen Gas Capacity*2, *3		m <sup>3</sup> /h	1.7	1.3	0.9	2.0	1.4	1.0	5.7	4.1	3.0
Nitrogen Gas Discharge Pressure		MPa	0.50	0.55		0.50	0.55		0.50	0.55	
Nitrogen Gas Discharge Port			Rc 1/4			Rc 1/4			Rc 1/4		
Ambient Temperature		°C	5–35			5–35			5–35		
Ambient Humidity*4		%	30–80			30–80			30–80		
Compressor	Model		Oil-free Scroll Compressor×1				Oil-free Scroll Compressor×1				
	Control Method		Pressure Switch Control				Pressure Switch Control				
Dimensions*5 (W×D×H)		mm	550×600×1,140				980×650×1,400				
Weight (Entire Unit)*10		kg	178				367				
Noise Level*6, *7, *8		dB[A]	42			44		46			

## N<sub>2</sub> Pack® NEXT II series Vtype 3.7 5.5

Item·Unit	Model	kW	3.7			5.5		
			NPO-3.72VNB	NPO-3.73VNB	NPO-3.74VNB	NPO-5.52VNB	NPO-5.53VNB	NPO-5.54VNB
Nitrogen Gas Purity*1		%	99	99.9	99.99	99	99.9	99.99
Nitrogen Gas Capacity*2, *3		m <sup>3</sup> /h	10.2	7.2	4.8	15.0	10.2	6.9
Nitrogen Gas Discharge Pressure		MPa	0.50	0.55		0.50	0.55	
Nitrogen Gas Discharge Port			Rc 1/4			Rc 1/4		
Ambient Temperature		°C	5–35			5–35		
Ambient Humidity*4		%	30–80			30–80		
Compressor	Model		Oil-free Scroll Compressor×1			Oil-free Scroll Compressor×1		
	Control Method		Inverter (Constant Pressure Control)			Inverter (Constant Pressure Control)		
Dimensions*5 (W×D×H)		mm	980×900×1,475			980×900×1,475		
Weight (Entire Unit)*10		kg	479			545		
Noise Level*6, *7, *8		dB[A]	50			53		

## N<sub>2</sub> Pack® NEXT II series 7.5 11

Item·Unit	Model	kW	11			16.5		
			NPO-7.52MNB5	NPO-7.53MNB5	NPO-7.54MNB5	NPO-112MNB5	NPO-113MNB5	NPO-114MNB5
Nitrogen Gas Purity*1		%	99	99.9	99.99	99	99.9	99.99
Nitrogen Gas Capacity*2, *3		m <sup>3</sup> /h	26	18	12	37	26	20
Nitrogen Gas Discharge Pressure		MPa	0.50	0.55		0.50	0.55	
Nitrogen Gas Discharge Port			Rc 3/8			Rc 1/2		
Ambient Temperature		°C	5–35			5–35		
Ambient Humidity*4		%	30–80			30–80		
Compressor	Model		Oil-free Scroll Compressor×2			Oil-free Scroll Compressor×3		
	Control Method		Multi-Drive Mode			Multi-Drive Mode		
Dimensions*5 (W×D×H)		mm	2,456×925×1,450			2,756×925×1,800		
Weight (Entire Unit)*10		kg	1,027			1,366		
Noise Level*6, *7, *8		dB[A]	56			58		

## N<sub>2</sub> Pack® NEXT II series 15 22

Item·Unit	Model	kW	22.5			30		
			NPO-152MNB5	NPO-153MNB5	NPO-154MNB5	NPO-222MNB5	NPO-223MNB5	NPO-224MNB5
Nitrogen Gas Purity*1		%	99	99.9	99.99	99	99.9	99.99
Nitrogen Gas Capacity*2, *3		m <sup>3</sup> /h	52	36	25	68	50	35
Nitrogen Gas Discharge Pressure		MPa	0.50	0.55		0.50	0.55	
Nitrogen Gas Discharge Port			Rc 1/2			Rc 1/2		
Ambient Temperature		°C	5–35			5–35		
Ambient Humidity*4		%	30–80			30–80		
Compressor	Model		Oil-free Scroll Compressor×3			Oil-free Scroll Compressor×4		
	Control Method		Multi-Drive Mode			Multi-Drive Mode		
Dimensions*5 (W×D×H)		mm	2,950×1,100×1,930			2,960×1,200×1,930		
Weight (Entire Unit)*10		kg	1,821			2,218		
Noise Level*6, *7, *8		dB[A]	63			65		

\*1. Total capacity of nitrogen gas and other gases (such as argon gas). Nitrogen Gas Purity of 99.999% model is available as a special ordered model.  
 \*2. Capacity is the converted value under the temperature of 20°C, humidity of 60%, and with no clog on the suction filter of compressor.  
 \*3. Nitrogen gas purity decreases when ambient temperature is high, or ambient humidity is high. If nitrogen gas purity decreases due to ambient temperature, it is recommended to decrease the nitrogen gas amount of use.  
 \*4. It indicates relative humidity.  
 \*5. Dimensions indicate the entire unit (including recommended installation interval between units). Dimensions do NOT include protruding objects.  
 \*6. Noise level is measured at 1.5m in front in an anechoic room when full-load operation. It varies in different operating conditions and/or different environments with echo of actual field installations.  
 \*7. Noise level is increased by 1-2 dB[A] when air dryer operates.  
 \*8. The increase of noise level when Adsorption Tank exhausts is NOT included.  
 \*9. [Energy Save mode] is default setting when shipment.  
 \*10. Wait is for 200V model only.

# Nitrogen Supply with Reasonable Cost\*

\* Cost merit may differ due to the actual conditions.

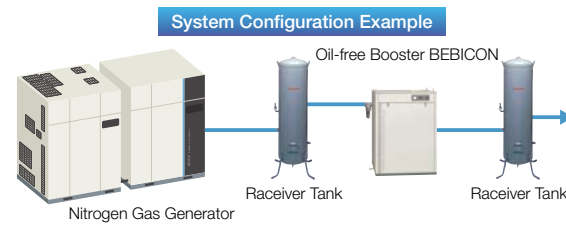
## N<sub>2</sub> Pack Model Selection Reference

N <sub>2</sub> Pack Model NEXT II series	NPO-0.75	NPO-2.2	NPO-3.7 Vtype	NPO-5.5 Vtype	NPO-7.5	NPO-11	NPO-15	NPO-22						
Pressure (MPa)	0.50-0.55													
Nitrogen Gas Capacity (m <sup>3</sup> /h)	0.9-2.0	3.0-5.7	4.8-10.2	6.9-15.0	12-26	20-37	25-52	35-68						
Nitrogen Gas Amount of Use (m <sup>3</sup> /h)	0	2	4	6	8	10	14	18	22	26	30	40	50	60
Nitrogen Gas Amount of Use (m <sup>3</sup> /24h)	0	16	32	48	64	80	112	144	176	208	240	320	400	480
Daily Used Amount by Gas Vendor	Nitrogen Gas Cylinder (Volume: 7m <sup>3</sup> )		Liquefied Nitrogen Cylinder (Volume: Approx. 107 m <sup>3</sup> (119kg))			Nitrogen Storage Tank at 1,200 m <sup>3</sup> (2,000kg) or above								

\* Daily used nitrogen gas amount is calculated at 8h/day as working hour.

## Possible to Increase Pressure with Oil-free Booster BEBICON

- It is possible to increase pressure of nitrogen gas by installation of Oil-free Booster BEBICON.
- It is possible to respond to different requirements of nitrogen purity.
- For details, contact your nearest Hitachi representative office.



## 0.75 NEXT II series

### Oil-free Scroll Compressor Loaded, High Level of Energy-Saving

Control of N<sub>2</sub> Pack covers both air compressor and PSA.

#### Energy-Saving

Process of nitrogen generation is optimized responding to the nitrogen used amount, which achieves high-level of Energy-Saving.

#### High Capacity

Class top level of nitrogen capacity is achieved by adoption of high-efficiency adsorbent material and combined control of both air compressor and PSA.

#### Low Noise Low Vibration

Low noise and low vibration is achieved thanks to Oil-free Scroll compressor.  
Noise level at 42/44 dB(A) (50/60Hz) (NPO-0.75N2S)

#### Compact

One package structure is possible due to the adoption of high-efficiency adsorbent material.

#### Compact, Space-Saving

Footprint is reduced by approx. 50% from previous model.

Air Dryer  
Oil-free Scroll Compressor

Roller is available as option.

## Remote Operation and External I/O Terminal as Standard

Besides various external I/O terminals as standard equipment, output of various alarms is also equipped.

Input	Remote Switch	Operation
Output	Operation Response	General Trouble (Compressor)
Nitrogen Gas Discharge	General Alarm (Density Alarm, Pressure Alarm)	



NPO-5.5VNB



Oil-Free Scroll Compressor Head.

## 2.2/3.7/5.5 NEXT II series

ALL MODELS ARE LOADED WITH OIL-FREE SCROLL COMPRESSOR.

Hitachi original control of both compressor and nitrogen generation process

#### Energy-Saving

No need of periodic change of adsorbent material thanks to Oil-free compressor. Low maintenance cost is possible.

#### Low Cost

By loading Oil-free Scroll compressor, low noise and low vibration is possible.

#### Low Noise, Low Vibration

## Energy-Saving by Inverter Control

Vtype 3.7 5.5

## Large Nitrogen Capacity

Full Range 2.2 3.7 5.5

## Easy-To-Use

Full Range 2.2 3.7 5.5

## Space-Saving due to One-Package Structure

## Various Convenient Equipment Available



NPO-22MNB

## 7.5/11/15/22 NEXT II series

### MERITS OF OIL-FREE SCROLL COMPRESSOR

MERITS OF OIL-FREE SCROLL COMPRESSOR  
**1**

NO Oil-Related Trouble or Maintenance Cost

MERITS OF OIL-FREE SCROLL COMPRESSOR  
**2**

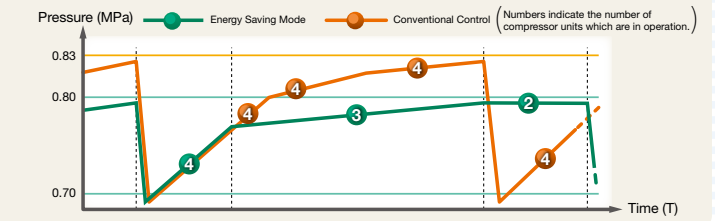
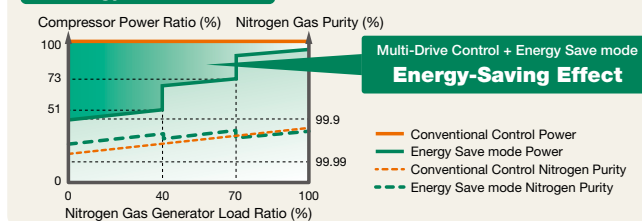
Low Vibration Possible

## Energy-Saving by Multi-Drive Control

Operation of multiple compressor heads is automatically controlled, responding to the nitrogen used amount. [Energy Save mode], under which the process of nitrogen generation is optimized, is set. Energy-Saving operation is possible with keeping nitrogen purity and necessary pressure.

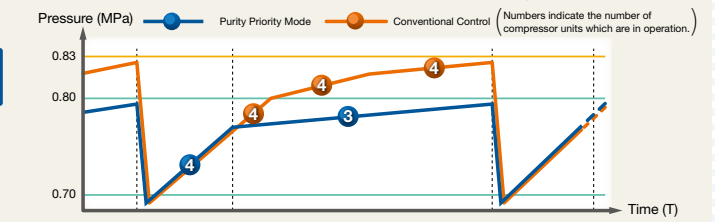
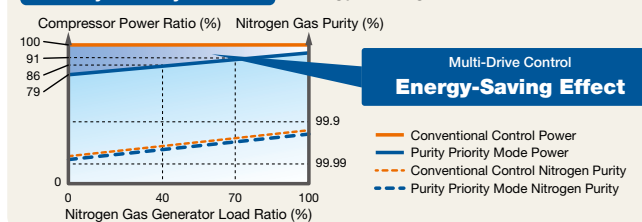
#### Energy Save mode

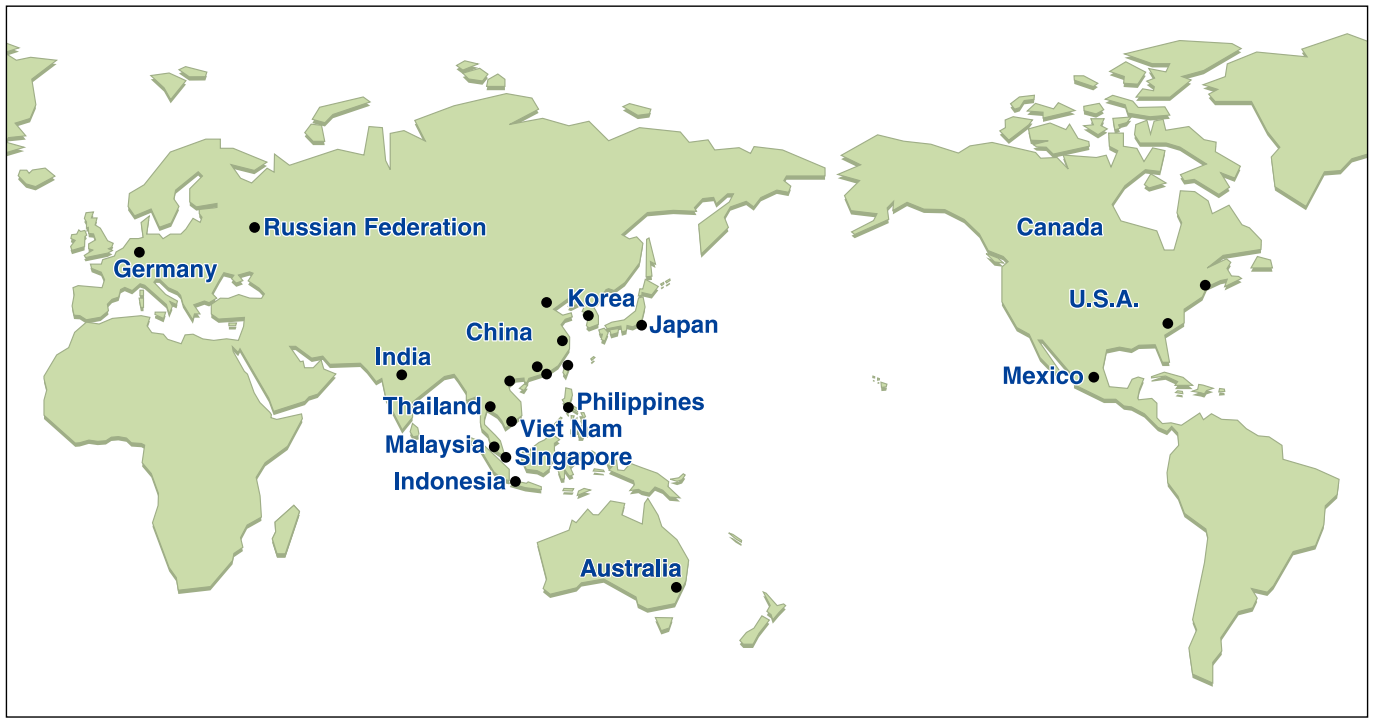
Energy-Saving effect of 49% at load ratio 40%, 27% at load ratio 70%, 4% at load ratio 100% is possible.



#### Purity Priority Mode

Energy-Saving effect of 14% at load ratio 40%, 9% at load ratio 70%, 4% at load ratio 100% is possible.





## Asia & Oceania

### China

Hitachi Industrial Equipment Systems (China) Co., Ltd.  
(Shanghai Branch)

Room1207, Rui Jin Building, No.205  
Maoming Road(S) Shanghai 200020

TEL : +86 (21) 5489-2378

FAX : +86 (21) 3356-5070

### (Beijing Branch)

Room1420, Beijing Fortune Building,  
No.5 Dong San Huan Bei Road,  
Chao Yang District, Beijing 100004

TEL : +86 (10) 6590-8180

FAX : +86 (10) 6590-8189

### (Guangzhou Branch)

Room3403, Office Tower, CITIC Plaza ,  
No.233 Tianhe North Road, Guangzhou  
510613

TEL : +86 (20) 3877-0438

FAX : +86 (20) 2735-3820

Hitachi Industrial Equipment Systems  
(Hong Kong) Co., Ltd.

6th Floor, North Tower World Finance  
Centre, Harbour City, Canton Road,  
Tsim Sha Tsui, Kowloon Hong Kong

TEL : +852 2735-9218

FAX : +852 2735-6793

Taiwan Hitachi Asia Pacific Co., Ltd  
3rd Floor, No. 167, Tun Hwa N. Road,  
Hung-Kuo Building, Taipei 10512, Taiwan

TEL : +886 (2) 2718-3666

FAX : +886 (2) 2514-7664

### India

Hitachi India Pvt. Ltd.

Units 304-306, 3rd Floor, ABW Elegance  
Tower, Jasola District Centre, New Delhi  
110 025, India

TEL : +91 (11) 4060-5252

FAX : +91 (11) 4060-5253

### Indonesia

PT Hitachi Asia Indonesia

Menara BCA 38<sup>th</sup> Floor Suite #3804 &  
3805 Jl. M. H Thamrin No.1, Jakarta  
10310, Indonesia

TEL : +62 (21) 2358-6757

FAX : +62 (21) 2358-6755

### Malaysia

Hitachi Asia (Malaysia) Sdn. Bhd.

Suite 17.3, Level 17, Menara IMC  
(Letter Box No.5) No. 8 Jalan Sultan  
Ismail, 50250, Kuala Lumpur

TEL : +60 (3) 2031-8751

FAX : +60 (3) 2031-8758

### Philippines

Hitachi Asia Ltd. Philippine Branch

Unit 8, 11th Floor Zuellig Bldg.,  
Makati Avenue corner Paseo de Roxas  
Makati City, Philippines 1225

TEL : +632 886-9018

FAX : +632 887-3794

### Singapore

Hitachi Asia Ltd.

(Industrial Components & Equipment  
Group)

No.30, Pioneer Crescent  
#10-15, West Park Bizcentral  
Singapore 628560

TEL : +65-6305-7400

FAX : +65-6305-7401

### Thailand

Hitachi Asia (Thailand) Co., Ltd.

18th Floor, Ramaland Building, 952  
Rama IV Road Bangrak, Bangkok 10500

TEL : +66 (2) 632-9292

FAX : +66 (2) 632-9299

### Viet Nam

Hitachi Asia Ltd.

(Ho Chi Minh City Office)

4th Floor, The Landmark, 5B Ton Duc  
Thang Street District 1, Ho Chi Minh City

TEL : +84 (8) 3829-9725

FAX : +84 (8) 3829-9729

### (Ha Noi Office)

Sun Red River Bldg., 5th Floor,

23 Phan Chu Trinh Street

Hoan Kiem District, Hanoi

TEL : +84 (4) 3933-3123

FAX : +84 (4) 3933-3125

### Australia

Hitachi Australia Pty Ltd.

Level 8, 123 Epping Road, North Ryde,  
NSW 2113

TEL : +61 (2) 9888-4100

FAX : +61 (2) 9888-4188

### Europe

#### Germany

Hitachi Europe GmbH  
(Industrial Components & Equipment  
Group)

Am Seestern 18 (Euro Center)

D-40547 Düsseldorf

TEL : +49 (211) 5283 0

FAX : +49 (211) 5283 649

### Russian Federation

Hitachi, Ltd. (Moscow Office)

Millenium House, 12, Trubnaya, Moscow  
107045

TEL : +7 (495) 787-4020

FAX : +7 (495) 787-4021

### Latin America

#### Mexico

Hitachi Industrial Equipment

Mexico S.A. de C.V.

Avenida Rio Seguro 161, Parque Tecno  
Industrial Castro del Rio Tramo  
Irapuato-Silao km125, Carretera

Panamerica C.P.36810, Irapuato, Gto.,  
Mexico

TEL : +52 (462) 693-7088, -7089, -7090

FAX : +52 (462) 693-7091

### North America

#### U.S.A.

Hitachi America, Ltd.

(Industrial Components & Equipment  
Division)

50 Prospect Avenue, Tarrytown,

New York, 10591-4625

TEL : +1(914) 332-5800

FAX : +1(914) 332-5555

#### (Charlotte Office)

(Industrial Components & Equipment  
Division)

6901 Northpark Blvd., Suite A, Charlotte,  
NC 28216

TEL : +1 (704) 494-3008

FAX : +1 (704) 599-4108

Products described in this catalog may differ from different countries or regions. Contact your nearest Hitachi representative office for details.

Product appearances and specifications in this catalog are subject to change with or without notice, as Hitachi continues to develop the latest technologies and products for its customers.

 **Hitachi Industrial Equipment Systems Co., Ltd.**

*For further information, please contact your nearest sales representative.*