MITSUI SEIKI

OIL FREE AIR COMPRESSOR

i-140000X

MITSUI SEIKI

http://www.mitsuiseiki.co.jp

ISO 9001 JQA-0904

ISO 14001 JQA-EM2883

Home office plant

VEGETABLE OIL INK

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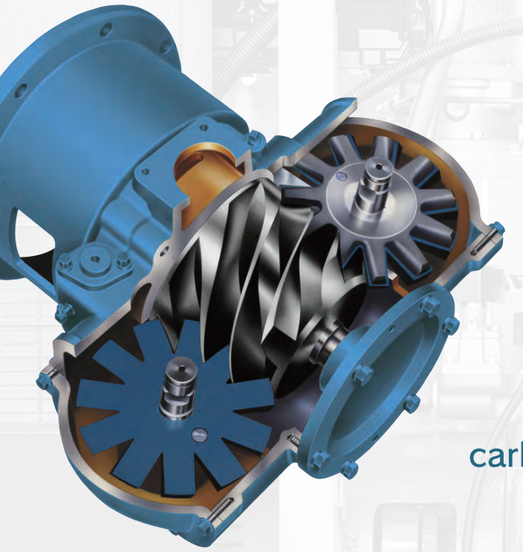
Contact information
Trusted Mitsui Seiki distributors

2025.7.O



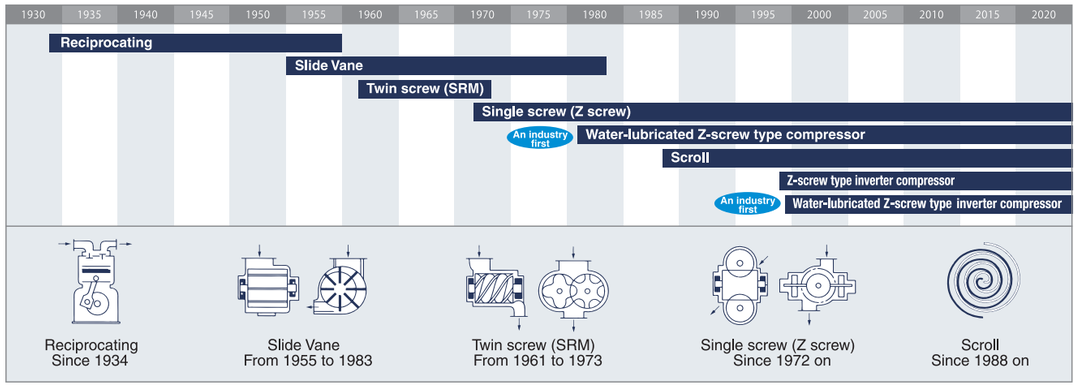
Z screw
a world-class compression mechanism

MITSUI SEIKI is working towards carbon neutrality with the power of 'i-series'.

The evolution of the Z-screw is the evolution of the Air compressor

Since 1982, MITSUI SEIKI has been providing water lubricate air compressor to various industries such as food products, beverages and electronic components.
With its unique compression mechanism using water insted of oil,
MITSUI SEIKI offers clean air, high efficient and cost-saving to customers.
Moreover, our water lubricate compressor helps reduce environmental impact since no oil is used at all.

Compressors design



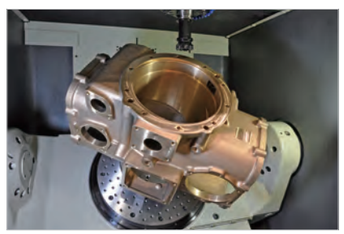
High reliability resulting from accuracy

The high precision technology of Mitsui Seiki, a machine tool manufacturer, is utilized in the machining of the compression section to support the Z-screw compression mechanism, which boasts high efficiency and high stability.


Gate Rotor


Screw Rotor

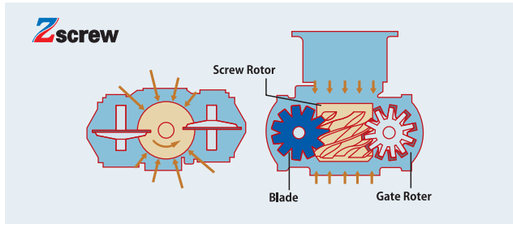

Blade



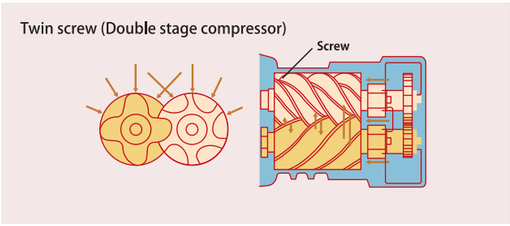
Simple structure and sealing affect for high level of performance

One screw rotor and two symmetrically arranged gate rotors.
Because of this simple structure, the Z-screw has a good pressure balance against the rotary axis and does not place any extra burden on the bearings.
This is one reason for the high efficiency.
In addition, an oil or water seals the gaps in the compression chamber as a lubricant
By preventing compressed air leakage, sufficient discharge volume can be obtained even at low speed rotation.
This also suppresses noise and vibration, and the cooling effect of the lubricating oil suppresses temperature increases in the compression process, significantly improving the efficiency, safety, and durability of the compression process.
The unique compression mechanism provides significant energy savings in a variety of fields.

Comparison of Z-screw and twin screw

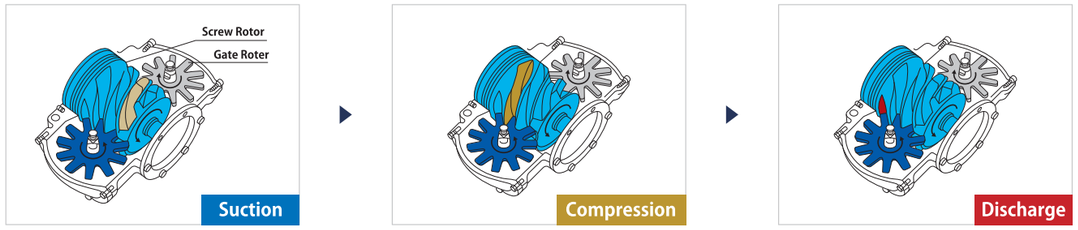


The loads applied in the radial (radial) and axial (axial) directions offset each other and are theoretically zero.



The radial load (radial load) and the distance between the two screw shafts make the bearing highly constrained with load.

Air flow



Model

Motor output (kW)	Inverter		Fixed speed	
	Air cooled	Water cooled	Air cooled	Water cooled
3.7			●	
7.5			●	
11			●	
15	●		●	
22	●		●	
30	●			
37	●		●	
45	●			
55	●	●	●	●
75	●	●	●	●
100		●		●
120				●
150		●		
180		●		
220		●		

For other water-cooled models, please contact us.

COMPRESSOR SERIES

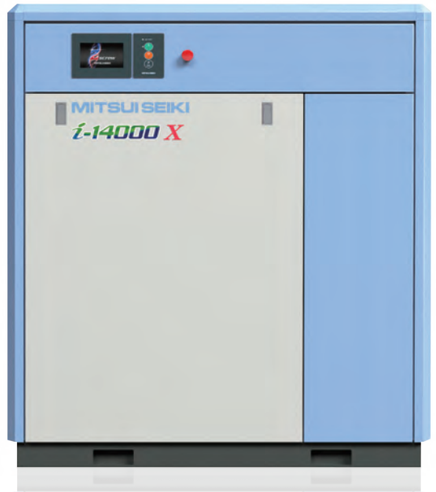
An oil-free compressor with outstanding high performance

i-14000X

Water lubricated inverter compressor
Air cooled 15 – 37kW (Option : Water cooled 22 / 37kW)

15kW / 22kW / 37kW

Inverter	Z-Mate II (Optional)
IPM motor	IT touch panel
Z-Cloud (Optional)	Red-CX



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Pure, oil-free air with our water-lubricated compressor.

i-14000

Water lubricated inverter compressor
Air cooled 30 – 75kW (Option : Water cooled 22 / 37kW)

30kW / 45kW / 55kW / 75kW

Water cooled 55 – 220kW (Option : Water cooled 30 / 45kW)

55kW / 75kW / 100kW / 150kW / 180kW / 220kW

Inverter	Z-Mate II (Optional)	Z-Cloud (Optional)
IPM motor	IT touch panel	Red-CX (Optional)

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Standard models with simple design optimized for environmental performance

u-14000

Water lubricated oil free compressor
Air cooled 15 – 75kW

15kW / 22kW / 37kW / 55kW / 75kW

Water cooled 55 / 75kW (Option : Water cooled 22 / 37kW)

Fixed speed	IE3 motor	IT touch panel
Z-Cloud (Optional)	Z-Mate II (Optional)	Red-CX (Optional)

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Remote monitoring system with IoT solutions

Cloud Remote Monitoring System

Z-Cloud

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Compressor Remote Monitoring System

Z-Mate II

P.13

Optimal unit control system adapted to conditions

Plural control system

Red CX

P.14

Receiver tank

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OIL INJECTION COMPRESSOR SERIES

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Water Lubricated Inverter Oil Free compressor

i-14000X series Inverter compressor

Air cooled 15 – 37kW

Main motor power	15 - 37 kW	Free air derivery	2.54 - 6.58 m³/min	Specification P.17

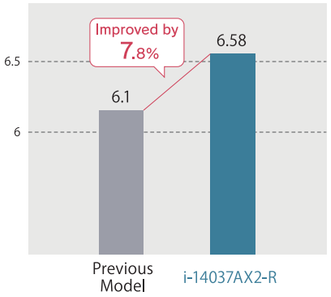
Main motor power (kW)	Dimension (W×L×H)
15/22	1457×750×1640
37	2065×750×1700

Water and Compresed Air
Toward the Era of Creating the Earth with Us

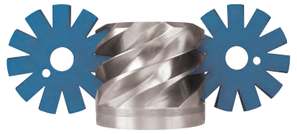
The i-14000X series has a unique compression mechanism "Z-screw" that has been enhanced to the utmost limit, Achieved the largest air delivery volume in its class. The compressor has been reviewed and a high-efficiency permanent magnet High efficiency and energy saving. The SUS rotor and Class Zero provide even higher quality air.

Largest air delivery volume in its class

- Optimization of ideal compression shape (Z-screw) using the latest machining technology and analysis
- Largest air volume in the oil-free class
- Wide range of pressure settings from 0.50 to 0.93 MPa (Optional for less than 0.50 MPa)



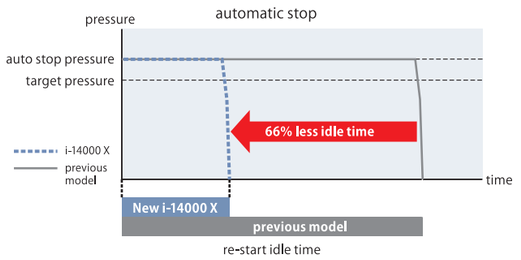
The Ultimate Air end



- Achieves ultimate precision in compression mechanisms by taking advantage of the expertise of a machine tool manufacturer.
- SUS rotor, ultra-precision machining, and complex shape machining
- Highly efficient, high-performance airend with high durability and wear resistance
- SUS rotor：i&u 15-37kW

Instantaneous startup system

- AUCS (Auto Unloader Control System) plus instant activation system
- Improved end compression tracking and greatly reduced idle time in automatic start/stop operation, number-controlled operation, (Reduce 50-60% of idle time)



Dealing with Global Warming

- Operation without abnormal shutdown even at an ambient temperature of 50°C
- Warning is issued when ambient temperature exceeds 45°C (displayed as intake air temperature warning)
- Continuous operation at ambient temperatures above 40°C (104°F) will shorten the life of the lubricating oil, O-rings, electrical components, etc., more than normal.

Standardization of RED-CX

- Enable/Disable selectable for unit control system
- Standardized unit control, which used to be a optional feature, for greater extensibility.

Data logging to USB memory

- Logging of operation data is possible by connecting the supplied USB memory.

Other features

- SASSC (Simple Automatic Start / Stop Control)
- Automatic double time functions
- Emergency button
- Fan control setting

Water Lubricated Inverter Oil Free compressor

i-14000 series Inverter compressor

Air cooled 30 – 75kW
Water cooled 55 – 220kW

[Main motor power] 30 - 220 kW [Free air derivery] 4.8 - 37.5 m³/min

Specification P.17

Main motor power (kW)	Dimension (W×L×H)
30A	1780×750×1510
45A	2538×900×1595
55A/75A	2450×1190×1800
55W	2300×1190×1500
75W	2600×1190×1500
100W/150W	2750×1200×1800
180W/220W	2750×1500×1800

High performance is achieved by the effect with inverter control

High performance is achieved by the effect with inverter control
Z-screw water lubrication system for highly efficient operation even at low speeds.
This allows the rotation control function by the inverter to be fully demonstrated, enabling a high level of energy-This compressor is truly in accordance with the current demand for environmental issues and cost reduction.

All models are directly driven with IPM motors for improved power efficiency and durability

The latest IPM motor with permanent magnets built in the rotor.
No power loss or slip compared to conventional induction motors.
Motor efficiency has been increased by 5%.
In addition, direct drive eliminates power transmission losses and belt maintenance.

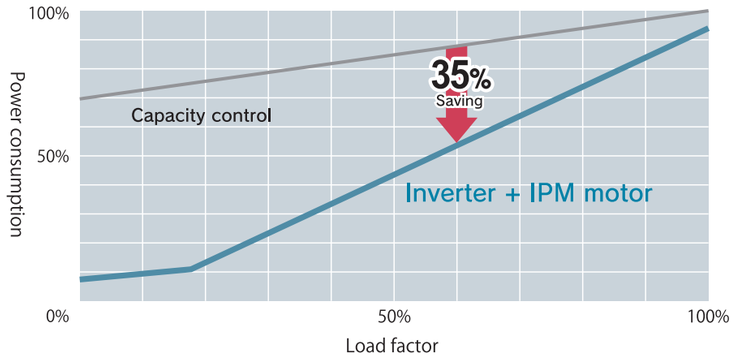
Extremely significant energy savings super-premium effect

Motor efficiency level

IE1	Typical efficiency
IE2	High efficiency
IE3	Premium efficiency (top-runner motor)
Equivalent to IE4	Super Premium Efficiency

Energy saving effect by inverter

75kW(with air capacity control at 100%)
Discharge air volume: 60% Electricity cost: 15 yen/kWh Operating time: 6000h/year



Average electricity consumption
Reduced by **35%**

Annual electric power saving
Reduction **4.49** million yen

Annual CO_2
Reduced by **66** t-CO_2

Estimated energy saving effect of inverter control

Model	i-14015AX2-R	i-14022AX2-R	i-14030A3-R	i-14037AX2-R	i-14045A3-R	i-14055A4-R	i-14075A4-R	i-14100W	i-14150W	i-14180W	i-14220W
Motor output	15kW	22kW	30kW	37kW	45kW	55kW	75kW	100kW	150kW	180kW	220kW
CO_2 reduction (year)	11ton	17ton	20ton	28ton	29ton	48ton	66ton	96ton	143ton	170ton	206ton
Reduced electricity cost (year)	¥74k	¥118k	¥133k	¥192k	¥201k	¥329k	¥449k	¥653k	¥972k	¥1,159k	¥1,405k

*Conditions Load factor: 60% Electricity cost: 30 yen/kWh Operating hours: 6000h/year CO2 emission factor: 0.441
*The above values are calculated at a pressure setting of 0.7 MPa.
*Please check the CO2 load factor as it varies depending on the electric supplier.

Water Lubricated Oil Free compressor

u-14000 series Fixed speed

Air cooled 15 – 75kW
Water cooled 55 / 75kW

[Main motor power] 15 - 75 kW [Free air derivery] 2.3 - 13.0 m³/min

Specification P.17

Main motor power (kW)	Dimension (W×L×H)
15/22	1457×750×1510
37	2068×750×1595
55	2300×1200×1500
75	2600×1200×1500

High-efficiency oil-free compressors
for environmental and energy-saving applications

Mitsui Seiki's u-14000 series of water-lubricated oil-free compressors offers a diverse lineup of both water- and air-cooled compressors to provide clean air that meets your needs. Increases energy savings.

Inverter for air-cooled fan motor

The air cooler cooling fan is also controlled by inverter by sensing the discharge temperature.

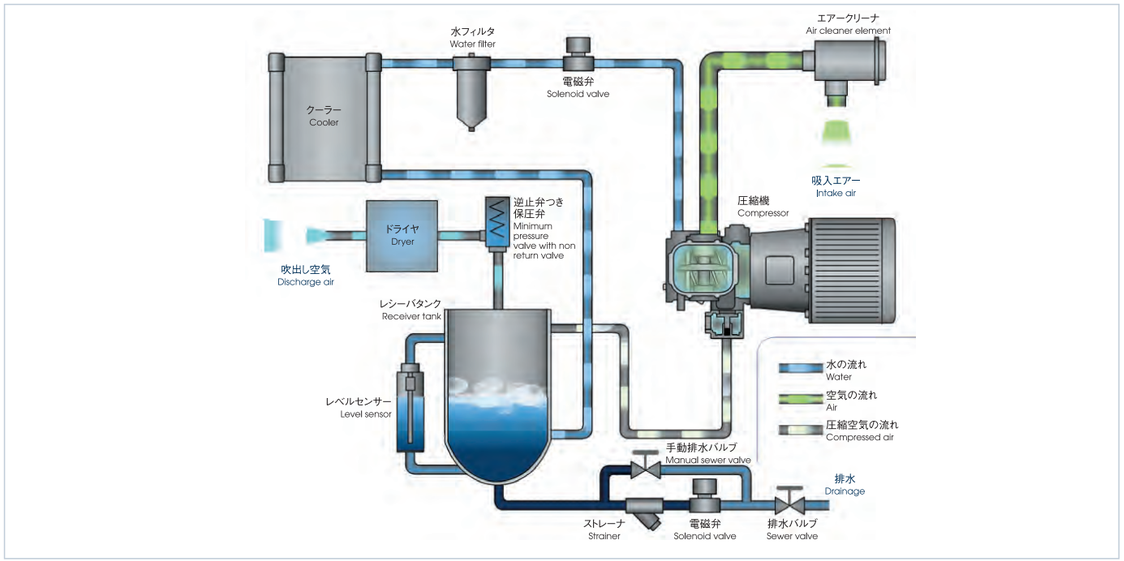
Air-cooled super slit fins

The fin side of the water cooler (air-cooled) is specially processed (super-slit fin). Improved cooling efficiency.

Use of environmentally friendly CFC substitutes

The refrigeration dryer uses R-407C, an environmentally friendly CFC substitute with zero ozone damage factor.

Completely oil-free system Water flow diagram (Type: Screw type)



Acquired Class Zero Certification

Mitsui Seiki's water-lubricated oil-free compressors are certified ISO8573-1:2010, the highest level of quality certification, and are 100% oil-free.

ISO8573-1 Class 0

CLASS	Oil & Oil Vapor mg/m³
0	<0.01
1	0.01
2	0.1
3	1
4	5

7-inch display (touch panel type)

- **7-inch display (touch panel type) as standard equipment for easier operation management**

Operation data logging function (enables monitoring of operation status by saving and recording data to USB)

Schedule operation function (operation and shutdown can be set for any day of the week and time)

Momentary power loss prevention function (can be set up to 10 seconds arbitrarily)

Alternate operation function (alternate operation is possible only by wiring between units with LCD monitors)

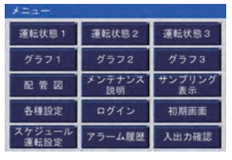
- **Communication function for compressor management (optional)**

Combined with Z-MATE II PC monitoring software and Z-Cloud (optional for domestic use), detailed management is possible.

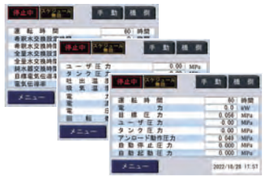
- **External output signal can be selected (option)**

Selectable from operation signal or operation signal (including standby), etc.

- Menu display



- Operation Control Monitor



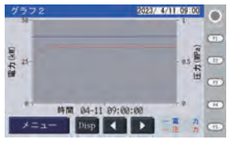
- Sampling data display

- Piping Diagram Display

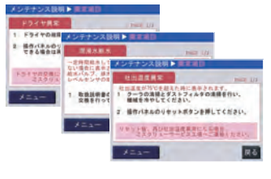
- Maintenance instruction display

- Schedule operation display

- Operating Data Graph

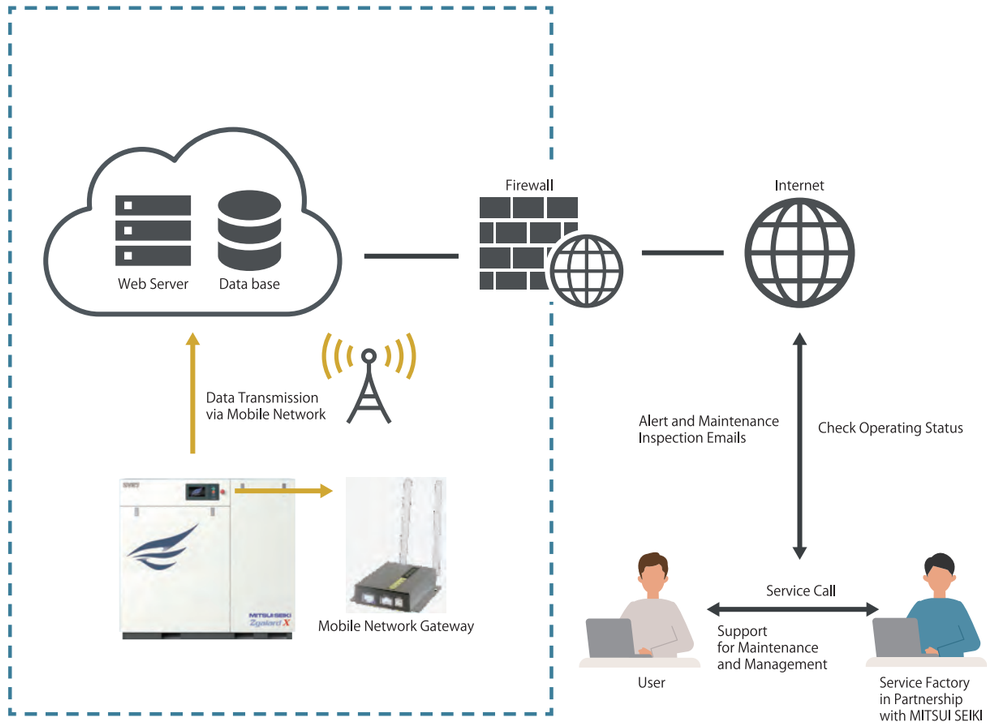


- Troubleshooting



Real-time monitoring and sharing of operational status

Compressor operation status can be checked 24 hours a day from a remote location.

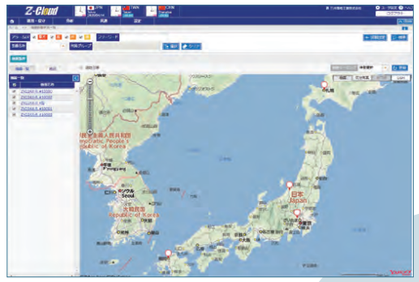


- Improved efficiency of maintenance and inspection work and easier management of operation information.
- Remote monitoring allows real-time checking of operation status.
- Automatic e-mail transmission in the event of abnormalities and maintenance, and prompt support by checking the details of the abnormality and operating status.

  Note: Only models with LCD monitors can be connected to the compressor.

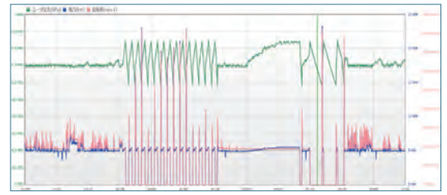
Operation Status Check

Remote monitoring to check compressor operation status



Energy-saving effects

Analyze operating status on trend graphs to check current status and improve operations



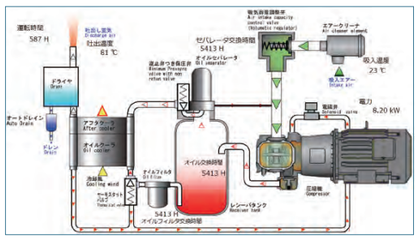
List of Features

Optimal Maintenance

Confirmation of operation status and preventive maintenance via alarm notification and maintenance inspection e-mail

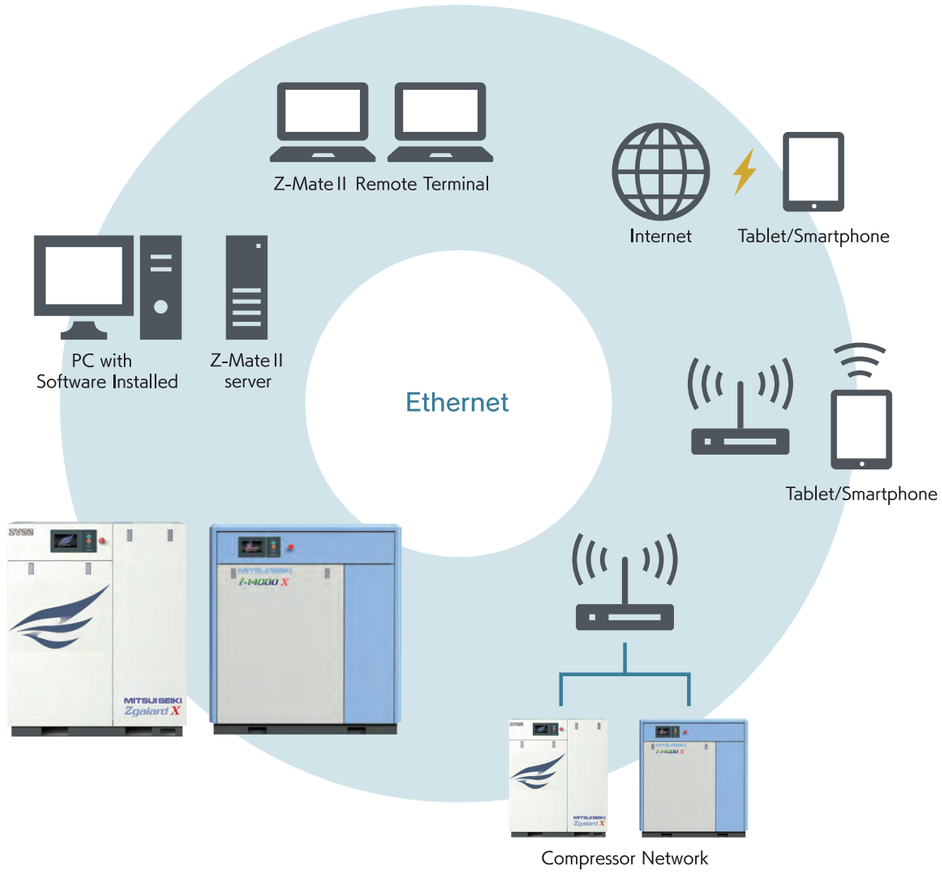
Layout Monitoring

Graphic monitoring of data is available



Z-Mate II Compressor Remote Monitoring System

Z-Mate II is a system that monitors and operates the operational status of each compressor (models with LCD monitors) connected to an Ethernet line such as an internal LAN using a personal computer.



Compressor operation can be easily managed, and compressors can be operated and stopped from a PC.
Up to 50 compressors can be connected.

Note : "Z-Mate II Software" is required to use Z-Mate II.
Only compressors with a Z-Mate II compatible LCD monitor can be connected.
Please contact us for details on the applicable products.

Red CX

Regulate Eco Drive Controller

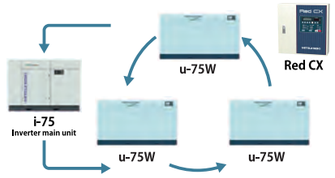
Attempts energy saving by driving minimum required numbers of plural air compressors according to air consumption (Maximum controlled unit: eight unit.).
Digital pressure indication enables driving of the minimum number in precise pressure range. Further energy saving is materialized by combination of inverter machine and standard un-loader machine or plural unit control of inverter machine only.

Plural units control examples

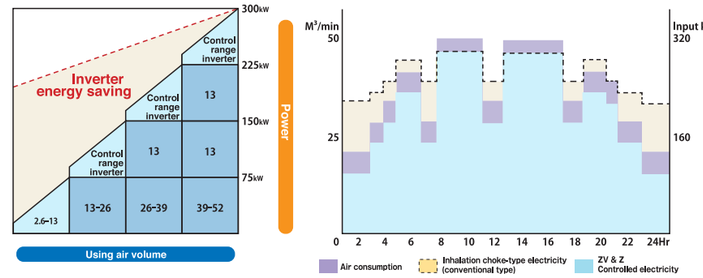
i&u Control i-75kW x 1set + u-75kW x 3set Free air delivery 52m³/min

- **In case of 1 set of inverter machine**
  Inverter machine runs first and stops last. Ideal driving is enabled as the standard machine runs with full load whereas the inverter machine runs by controlled number ofthe rotation depending on load fluctuation.
- **In case of plural number of inverter machines**
  Double loop driving with rotation function of inverter machine is viable.

Applicable to control the inverter unit for all types



Simulation of Air usage conditions: Max46m³/min ↔ Min20m³/min



Function of plural unit control system

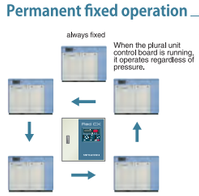
Averaging operating time

Pressure sensor detects air pressure and starts / stops compressor. Red CX chooses which compressor to start / stop in order to average the operating time. Having operated for a certain time, running compressor averages the operating time in rotating.

Alternate operation

You can operate main machine and subordinate machine alternately.
When the main machine has run for a certain time, subordinate one starts to run in exchange so that operating time is averaged.

Permanent fixed operation



You can set which compressor to run all the time. The fixed compressor starts to operate first and continue running. The other compressors can be running in all operation pattern.

Start and stop in fixed order

If you set starting order, units will be started and stopped in order

Averaging the operating time of inverter machine

If you use both standard machine and inverter machine

Standard machine runs in the way averages the operating time. Inverter machine rotates in optional time.

Turn back control

If sizes of machines are different

Set starting order. Compressors start to run in that order stop reversely.

2 pattern of pressure setting by weekly timer

ex.) You can set different pressure day and night / weekdays and the weekend.

Receiver tank

Material	SS400•SM490A	Attachment	safety valve, pressure gauge, drain valve
Color	Munsell 7.577/1	Certification	the second sort pressure vessel certificate

Tank Selection Chart

Applicable compressor	Tank capacity (L)
3.7–5.5kW	200
7.5–15kW	200–500
22kW	500–700
37kW	700–1000
55kW	1000–2000
75kW	1500–3000

※Further, for general application, it is recommended to install the air tank of delivery air capacity 10～20%.

※Please ask us when you choose vessel's volume in terms of pressure, air consumption or holding time.

Model	Tank capacity (L)	Maximum allowable pressure MPa	Mass (Kg)	Outer diameter D (ømm)	Height H (mm)	Air outlet / inlet connection diameter	
						Socket	Flange
MTA-02	201	1.00	120	462	1660	Rc1	
MTA-03	298	1.00	150	512	1921	Rc1-1/2	
MTA-05	498	1.00	270	666	1978	Rc1-1/2	
MTA-07	698	1.00	330	766	2072		50A
MTA-10	991	1.00	470	868	2253		50A

※About 100, 400, 1500 – 6000L vessels, please ask us.
※If you use oil-free air, we recommend having inside epoxy-coated (option).
※There is no duty to submit registration of vessel setting, please observe safety regulation of boilers and pressure vessels based on Industrial Safety and Health Act.
※Designs of product may be changed without prior notice. Ask us about detailed information.

Clean air system

Put a combination of various filters in the piping in proportion to the required air cleanness to obtain much more clean compressed air.

use	result
Line filter	
Air tool. Air motor, Air press, general painting, spray lubrication	Dry air nominal filtering rating : 1– 5 μm In such a case that inclusion of a certain oil or dust after waterelimination was allowed.
Line filter + mist filter	
For instrumentation, static painting, dry, electronie parts	Dry and oil eliminated air nominal filtering rating : 0.1～0.01 μm In such a case that the air eliminated almost all the water, oil and dust was required.
Line filter + mist filter + activated carbon filter	
For medicament, food, brewing, ozone generator, scientific analysis equipment and caisson shielding	Dry, oil and smell eliminated air nominal filtering rating: 0.003~0.01 umin In such a case that the air eliminated almost all the water, oil, dust and smell was required.

Customizing specification option

Increasing specification (Free Air Delivery)	Discharge air volume shall be lowered to increase the delivery air volume (applicable to the Increasing type ZV 22kW～75kW)
380V-440V different voltage	Applicable to change the main circuit voltage. Electricity 200V shall be self supplied to the Operation circuit and Dryer power supply through the Down transformer.
Cold region specification (-10℃)	Countermeasure shall be supplied for the cold region to operate the unit in a safe condition. The unit shall automatically keep the heat when the atmosphere temperature dropped to prevent the Dryer and Drain from freezing up.
Outdoor specification	Waterproof package applicable to install outdoor to confront the rain flooding.
Water cooling type	Applicable to replace the cooling unit with a water cooling type when the application of the air cooling type was difficult under environmental condition such as not possible to ensure the ventilation (applicable to 22W and 37kW)

※Some specifications are not applicable depending on the unit type. Please contact us for details.

OIL INJECTION COMPRESSOR SERIES

ZgaiardX3

Inverter compressor
Air cooled 7.5 – 15kW

7.5kW / 11kW / 15kW

Inverter | Red-CX | IE3 motor

Fixed speed
Air cooled 7.5 – 15kW

7.5kW / 11kW / 15kW

IE3 motor | Red-CX

Inverter compressor
Air cooled 22 / 37kW
(Option：Water cooled 22 / 37kW)

Inverter | Z-Mate II (Optional)
IPM motor | IT touch panel
Z-Cloud (Optional) | Red-CX

Fixed speed
Air cooled 22 / 37kW
(Option：Water cooled 22 / 37kW)

IE3 motor | IT touch panel
Z-Cloud (Optional) | Red-CX

ZgaiardX

Inverter compressor
Air cooled 7.5 – 15kW

7.5kW / 11kW / 15kW

Inverter | Red-CX (Optional)
IE3 motor

Fixed speed
Air cooled 7.5 – 15kW

7.5kW / 11kW / 15kW

IE3 motor | Red-CX (Optional)

Inverter compressor
Air cooled 22 – 75kW

Water cooled 55~75kW
(Option：22 / 37kW)

22kW / 37kW / 55kW / 75kW

Inverter | Z-Mate II (Optional)
IPM motor | IT touch panel
Z-Cloud (Optional) | Red-CX (Optional)

Fixed speed
Air cooled 22 – 75kW

Water cooled 55~75kW
(Option：22 / 37kW)

22kW / 37kW / 55kW / 75kW

IE3 motor | Red-CX (Optional)

i-14000・i-14000X Inverter specifications 15kW–220kW

Model	i-14015AX2-R	i-14022AX2-R	i-14030A3-R	i-14037AX2-R	i-14045A3-R	i-14055A4-R	i-14075A4-R	i-14055W3-R	i-14075W3-R	i-14100W	i-14150W	i-14180W	i-14220W
Delivered air pressure (MPa)	0.7 (0.39) ※												
Free air delivery (m³/min)	2.54 (3.3) ※	3.8 (4.7) ※	4.8 (5.5) ※	6.58 (7.6) ※	7.4 (8.8) ※	9.5 (11.8) ※	13.0 (14.7) ※	9.5 (11.8) ※	13.0 (14.7) ※	17.4 (19.9) ※	25.0 (25.9) ※	31.0 (36.0) ※	37.5 (38.5) ※
Intake conditions	Atmospheric pressure (2–40℃)												
Main motor power (kW)	15	22	30	37	45	55	75	55	75	100	150	180	220
Power source voltage (50/60Hz,V)	200/200・220									400			
Motor type	Totally enclosed fan cooled IPM motor												
Starter	Inverter starter												
Drive system	Direct coupled motor												
Cooling system	Air cooled							Water cooled					
Fan motor power (kW)	1.5 (inverter control)	2.2 (inverter control)	3.0 (inverter control)	3.7 (inverter control)	3.0 (inverter control)	7.5 (inverter control)		0.15/0.22				(0.15/0.22) ×2	
Lubrication water volume (L)	23		26	40		65		100		135		200	
Dryer: Air dew point at outlet (℃)	10 (under applied pressure)＊									-			
Dryer: Electricity consumption (kW)	0.51/0.64	1.1/1.3	1.5/1.8	1.4/1.7	2.1/2.5	2.4/2.8		2.1/2.5	2.9/3.6	-			
Dryer: Refrigeration	R-407C	R-410A	R-407C	R-410A	R-407C	R-410A		R-407C		-			
Dryer: Refrigeration amount (g)	300	650	800	1050	900	1300		800	2200	-			
Discharge pipe diameter (R)	1			1 1/2		2				JIS 10k 3B (80A) Flange		JIS 10k 4B (100A) Flange	
Dimension: Width (mm)	1457	1457 (1277)	1780 (1430)	2065 (1850)	2538 (2195)	2750 (2305)		2300 (1860)	2600 (1860)	(2750)			
Dimension: Length (mm)	750				900	1190				1200		1500	
Dimension: Height (mm)	1640	1640	1510	1700	1595	1800		1500		1800			
Total mass (Dry state) (kg)	700	750	730	1050	1090	1850	1900	1350	1520	2100	2400	3050	3100
Noise level (dB (A))	54～57	55～59	56～63	61～65	59～66	61～63	63.5～67	61～63	63.5～65	65～67	66～70	64～69	66～70

Cautions: Dryer of low pressure specifications (factory option) shall be separate type. Please contact us for dryer dimensions and mass.
Values in ( )* are the free air delivery for 0.39MPa specification (factory option)
＊Values with ambient temperature of 30℃ and rated discharge pressure.
◎ Specifications for discharge pressure of 0.93MPa (factory option) available on request.
◎ Noise values measured in noiseless environment at distance of 1.5meters from front, at height of 1m, with load of 60 to 100%. (at 0.7MPa)
◎ Specifications for 22 to 45kW water-cooled unit available on request (factory option).
◎ Cooling water volume (water temp. 32℃): 55kW: 150ℓ/min; 75 kW: 200ℓ/min; 100 kW: 250ℓ/min; 150kW: 300ℓ/min; 180kW: 430ℓ/min; 220kW: 430ℓ/min

u-14000 Fixed speed 15kW–75kW

Model	u-140155A3-R u-140156A3-R	u-140225A3-R u-140226A3-R	u-140375A3-R u-140376A3-R	u-140555A3-R u-140556A3-R	u-140755A3-R u-140756A3-R	u-140555W3-R u-140556W3-R	u-140755W3-R u-140756W3-R
Delivered air pressure (MPa)	0.7						
Free air delivery (m³/min)	2.3	3.5	6.1	9.5	13.0	9.5	13.0
Intake conditions	Atmospheric pressure (2–40℃)						
Capacity control method	Power - saving AUCS or Automatic start / stop selection						
Main motor power (kW)	15	22	37	55	75	55	75
Power source voltage (50/60Hz,V)	200/200・220						
Motor type	3-phase squirrel cage, 2P totally-enclosed external fan (IE3 motor)						
Starter	Direct in	3-contector, star delta start					
Drive system	Direct coupled motor						
Cooling system	Air cooled			Air cooled (separate unit)		Water cooled	
Fan motor power (kW)	1.5 ((inverter control)	2.2 (inverter control)	3.0 (inverter control)	7.5(inverter control)+0.15/0.22		0.15/0.22	
Lubrication water volume (L)	23		40	100			
Dryer: Air dew point at outlet (℃)	10 (under applied pressure)＊						
Dryer: Electricity consumption (kW)	0.55/0.63・0.66	1.5/1.8	1.5/1.9	2.1/2.5	2.9/3.6	2.1/2.5	2.9/3.6
Dryer: Refrigeration	R-407C						
Dryer: Refrigeration amount (g)	280	600	800	800	2200	800	2200
Discharge pipe diameter (R)	1		1 1/2	2			
Dimension: Width (mm)	1457 (1277)		2068 (1850)	2300 (1860)	2600 (1860)	2300 (1860)	2600 (1860)
Dimension: Length (mm)	750			1200			
Dimension: Height (mm)	1510		1595	1500			
Total mass (Dry state) (kg)	670	750	1160	1480	1705	1530	1805
Noise level (dB (A))	57	59	65	69	69	65	69

＊Values with ambient temperature of 30℃ and rated discharge pressure.
◎For 55 kW/75 kW Air cooled devices, a separately installed cooler unit (1,560 x 1,115 x 1,500 (WxLxH) /585kg (mass)) is included in addition to the main unit.
◎Specifications for 22 to 37kW water-cooled unit and 75kW high-voltage 3,000/3,300V available on request (optional).
◎Noise values measured in noiseless environment at distance of 1.5meters from front, at height of 1m, with load of 60 to 100% (at 0.7MPa)
◎Cooling water volume (water temp. 32℃): 55kW: 150ℓ/min; 75kW: 200ℓ/min
◎ 380 / 400 / 440V option is also available.

Notation

i – 1 4 0 3 7 A X 2 – R
(① i ・ ② 037 ・ ③ A ・ ④ X2 ・ ⑤ R)

① i-14000 series (oil-free/inverter)
② 37kW
③ Air cooled
④ Type name
⑤ Built-in air dryer

u – 1 4 0 2 2 5 A 3 – R
(① u ・ ② 022 ・ ③ 5 ・ ④ A ・ ⑤ 3 ・ ⑥ R)

① u-14000 series (oil-free)
② 22kW
③ 50Hz
④ Air cooled
⑤ Type name
⑥ Built-in air dryer

ZU-Quatro Compact series Fixed speed 7.5kW / 11kW

Model	ZU085A5	ZU086A5	ZU115A5	ZU116A5
Delivered air pressure (MPa)	0.7			
Free air delivery (m³/min)	1.06		1.61	
Intake air pressure	Atmospheric pressure (2–40℃)			
Capacity control method	Power - saving AUCS or Automatic start / stop selection			
Main motor power (kW)	7.5		11	
Power source voltage (50/60Hz,V)	200/200・220			
Motor type	3-phase squirrel cage, 2P totally-enclosed external fan (IE3 motor)			
Starter	Direct coupled motor			
Drive system	V ribbed belt			
Cooling system	Air cooled			
Fan motor power (kW)	0.08	0.12	0.15	0.22
Lubrication water volume (L)	20			
Dryer	Installed separataly (select according to purpose)			
Discharge pipe diameter (R)	3/4			
WxLxH (mm) (W/out dryer)	880 × 750 × 1450			
Total mass (Dry state) (kg)	410		450	
Noise level (dB (A))	56		58	

Notation

ZU-085A5
(① ZU ・ ② 08 ・ ③ 5 ・ ④ A ・ ⑤ 5)

①ZU (oil-free)
②08 = 7.5kW, 11 = 11kW
③5 = 50Hz, 6 = 60Hz
④Air cooled
⑤Type name

ZU Large series Fixed speed 100kW / 120kW

Model	ZU1005WS2	ZU1006WS2	ZU1205WS2	ZU1206WS2
Delivered air pressure (MPa)	0.7			
Free air delivery (m³/min)	18.2	17.4	21.3	20.8
Intake air pressure	Atmospheric pressure (2–40℃)			
Capacity control method	Power - saving AUCS or Automatic start / stop selection			
Main motor power (kW)	100		120	
Power source voltage (50/60Hz,V)	400	440	400	440
Motor type	3-phase squirrel cage, 2P totally-enclosed external fan (IE3 motor)			
Starter	Soft start		3-contector, star delta start	
Drive system	Direct coupled motor			
Cooling system	Water cooled			
Fan motor power (kW)	0.15	0.22	0.15	0.22
Lubrication water volume (L)	135			
Dryer	250		300	
Discharge pipe diameter (R)	JIS 10k 3B (80A) Flange			
WxLxH (mm) (W/out dryer)	2490 × 1200 × 1800			
Total mass (Dry state) (kg)	2200		2600	
Noise level (dB (A))	68		70	

Notation

ZU-1006WS2
(① ZU ・ ② 100 ・ ③ 6 ・ ④ W ・ ⑤ S2)

①ZU (oil-free)
②100kW
③5 = 50Hz, 6 = 60Hz
④Water cooled
⑤Type name

For the safe use of Mitsui Seiki air compressor

1. Free air delivery shows air volume measured with JISB 8341 standard, and converted to inlet conditions of JISB 8341 standard.
2. Do not use discharged air for respiratory purpose for human.
3. Make sure that ambient temperature is always below 40C˚. Install compressor at indoor ventilated environment.
4. Please contact Mitsui Seiki for product warranty and guaranteed values.
5. Please follow environmental regulations of each region.
6. Please contact Mitsui Seiki for detail information about power supply and installation details.
7. Machine specification may change without prior notice.

- Read instruction manuals and warning labels carefully and follow instructions.
- Please use Mitsui Seiki genuine parts only.
- Feel free to contact Mitsui Seiki for any questions.

Compressor installation

Precautions for installation location

Some installation environments can damage the compressor or cause malfunctions. Please follow the precautions below in order to ensure the efficient, safe, and long-term use of your compressor.

Installation environment

- Avoid installing outdoors, in semi-outdoor locations, in locations exposed to rain, and the like.
- Avoid installing in locations exposed to dust or toxic gases.
- Install in a location with an ambient temperature between 2 and 40℃.
  (We recommend the optional cold-weather specification if installing in temperatures of 2℃ and lower)

Location

- Install on a firm, level floor.
- Install in a spacious, well lit location enabling operation to be monitored easily.
- There should be no impediments to transporting the unit to/from the location or performing maintenance.

Electrical wiring

- All electrical wiring during installation must be done in accordance with technical standards. Electrical leaks, worn insulation, overcurrent, short circuits, open-phase driving, and defective protective equipment could cause sparks from the electrical wiring or electronic circuits.
- Install a non-fuse breaker on the main power line if the model so requires.
- Connect a ground cable to prevent electrical leaks.
- Never remove protective equipment or perform modifications that disables an electronic circuit protective features.

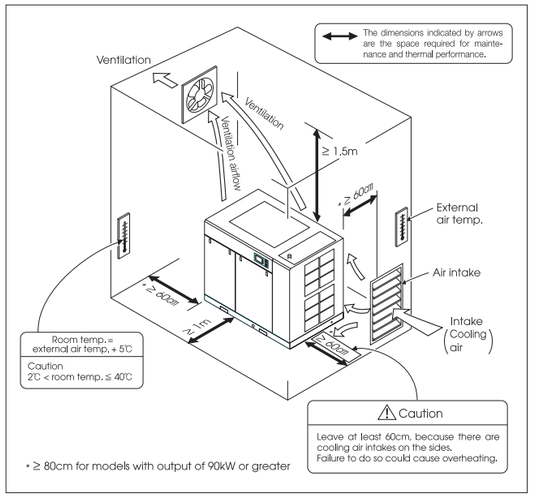
Maintenance

- We recommend conducting maintenance and inspection ahead of the standard schedule in accordance with the installation environment and location.

Ventilation

- The compressor room must be ventilated. Install a ventilation fan, duct, or the like so that the ambient temperature does not exceed 40℃. Failure to do so could cause the compressor to overheat, or damage the insulation of electrical components.

Installation space



- If there is a possibility of freezing, please take measures to prevent freezing, such as heat insulation.
  Please contact our sales representatives for cold-region specification.
- Please contact us for installation at a higher height.

Selected examples of installation

Please consult with Mitsui Seiki or a designated service shop for details

Model	Non-fuse breaker		Power transformer	Secondary wiring cable				Cooling tower
				Below 22kW less 10m, Over 37kW less 20m				For CT outlet temp. of 32℃
	200/220V	400/440V	Capacity* (200/400V)	200/220V	Grounding cable	400/440V	Grounding cable	
i-14015AX2-R			30/35KVA	22mm²M8	14mm²M8	8mm²M5	8mm²M5	—
i-14022AX2-R			45KVA	38mm²M8	22mm²M8	14mm²M6	14mm²M6	10t or more
i-14030A3-R			55/60KVA	60mm²M8	22mm²M6	22mm²M6	14mm²M6	10t or more
i-14037AX2-R			70/75KVA	100mm²M10	22mm²M10	22mm²M8	14mm²M8	10t or more
i-14045A3-R			75/85KVA	100mm²M10	38 mm²M8	38mm²M8	22mm²M8	15t or more
i-14055A4-R			95KVA	100mm²M12	38mm²M8	60mm²M8	22mm²M8	—
i-14055W3-R			95KVA	100mm²M12	38mm²M8	60mm²M8	22mm²M8	15t or more
i-14075A4-R			130KVA	150mm²M12	38mm²M10	60mm²M10	38mm²M10	—
i-14075W3-R			130KVA	150mm²M12	38mm²M10	60mm²M10	38mm²M10	20t or more
i-14100W			200KVA	—	—	80mm²M12	38mm²M12	30t or more
i-14150W			250KVA	—	—	100mm²M12	38mm²M12	30t or more
i-14180W			300KVA	—	—	200mm²M12	38mm²M12	40t or more
i-14220W			350KVA	—	—	250mm²M12	38mm²M12	40t or more
u-14015A3-R			25KVA	22mm²M8	14mm²M5	14mm²M5	14mm²M5	5t or more
u-14022A3-R			35KVA	38mm²M10	22mm²M5	22mm²M8	22mm²M5	10t or more
u-14037A3-R	※1 NV250-SEV,HEV NF250-SEV,HEV-225AT		55KVA	100mm²M10	38mm²M5	38mm²M10	22mm²M5	10t or more
u-14055A3-R			80KVA	150mm²M12	38mm²M8	60mm²M8	22mm²M8	—
u-14055W3-R			80KVA	150mm²M12	38mm²M8	60mm²M8	22mm²M8	15t or more
u-14075A3-R	※2 NV400-SEW,HEW NF400-SEW,HEW-400AT	※1 NV250-SEV,HEV NF250-SEV,HEV-225AT	110KVA	200mm²M12	38mm²M8	100mm²M10	22mm²M10	—
u-14075W3-R	※2 NV400-SEW,HEW NF400-SEW,HEW-400AT	※1 NV250-SEV,HEV NF250-SEV,HEV-225AT	110KVA	200mm²M12	38mm²M8	100mm²M10	22mm²M10	20t or more
ZU08A5			15KVA	8mm²M5	5.5mm²M5	3.5mm²M4	5.5mm²M4	—
ZU11A5			20KVA	14mm²M6	14mm²M6	5.5mm²M4	14mm²M5	—
ZU100WS2		NV400-SEW,HEW NF400-SEW,HEW-400AT	150KVA	—	—	150mm²M12	38mm²M8	30t or more
ZU120WS2		※2 NV400-SEW,HEW NF400-SEW,HEW-400AT	200KVA	—	—	200mm²M12	60mm²M10	30t or more

◎Use recommended SEV, SEW or HEV, HEW breaker(made by Mitsubishi Electric Corporation.)
◎Use recommended NV series leak-detect type breaker or NF series non-fuse breaker(made by Mitsubishi Electric Corporation).
◎For 55kW and smaller compressor, size of cable is calculated when continuos maximum allowed temp of cable is 75˚C(HIV wire) and ambient temperature <50˚C, wiring length below 20m.
◎For 75kW and bigger compressor, size of cable is calculated when continuous maximum allowed temp of cable is 90˚C(LMFC wire) and ambient temperature <50˚C, wiring length below 20m.
※ Air cooling machine do not need cooling tower. For water cooling compressor and 15-45kW water cool option machine, please check cooling tower capacity in above list.
◎For other models and specs, please contact Mitsui Seiki for detailed information.
◎Wiring size of inverter compressor is calculated when continuous maximum allowed temp of cable is 75˚C HIV wire(55kW and below), 90˚C LMFC wire(75kW and bigger). Wiring length below 20m.
※For u-140375A3-R, u-14075A3-R and u-14075W3-R, please use designated Mitsubishi Breaker instantaneous tripping current adjustable up to 16x type.

Ventilating the compressor room

Be very careful to ventilate the compressor room!

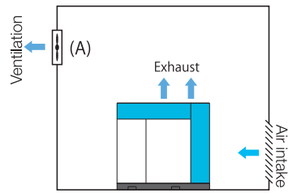
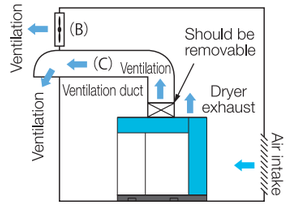
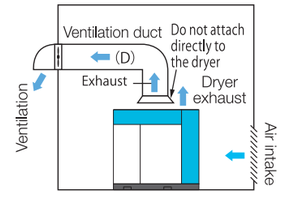
The compressor room must be ventilated. Install a ventilation fan, duct, or the like so that the ambient temperature does not exceed 40℃. Failure to do so could cause the compressor to overheat, or damage the insulation of electrical components.

Ventilation Precautions

- ⚠ Please install wire netting in ducts to prevent birds and debris from entering.
- ⚠ Also, install the duct in such a way that rainwater cannot enter.
- ⚠ Select a ventilation volume in the duct with a heat resistance of 80°C or higher.
- ⚠ Cooling air flowing backward in the duct may cause freezing.
- ⚠ Install a damper to prevent backflow.
- ⚠ Do not exhaust air directly from the dryer through ducts equipped with ventilation fans.
- ⚠ Overcooling may cause malfunction.
- ⚠ The recommended flow velocity at the air intake is 2 m/sec. or less.
- ⚠ Allowable temperature rise indoors is assumed to be 5°C.

Precautions for installation location

●Some installation environments can damage the compressor or cause malfunctions. Please follow the precautions below in order to ensure the efficient, safe, and long-term use of your compressor.

	Overall ventilation	Duct ventilation	Fan in a duct
Ventilation method			
Precautions	This is the most common ventilation method. See the table below (Fig. A) for the ventilation volume when the compressor is installed in a small room, and you ventilate the room as a whole. (This assumes an increase of 5˚C of the permissible temperature in the room.) Install the ventilation fan in a high location, and the air intake in a low location facing the side of the compressor where the air intake is located. Ensure that the airflow at the air intake is no more than 2m/sec. Room intake = room ventilation (A) + compressor FAD	Calculate the resistance of the ventilation duct based on the volume of exhaust from the compressor, and determine a duct shape such that the pressure loss is no more than 20Pa (2mm Aq). The duct construction should be removable in order to facilitate maintenance. Note that noise may leak outside via the ventilation duct aperture. A ventilation fan must be installed in order to transport the exhaust from the dryer. Room intake = room ventilation (B) + exhaust (C) + compressor FAD	Calculate the resistance of the exhaust duct based on the exhaust air volume and determine the shape of the duct so that the pressure loss is less than 29.4 Pa (3 mm Aq). Note that noise may leak outside through the exhaust duct opening. Always leave a gap of 300mm-400mm between the exhaust duct inlet and the compressor's cooling exhaust port. If the gap is small or directly connected to the compressor, it may cause failure due to overcooling. Intake = Exhaust + Compressor FAD Room intake (E) = room ventilation (C) + exhaust (D) + compressor FAD

Ventilation Volume

Model	Heat output (MJ/h)		Overall ventilation		Duct ventilation			Fan in a duct	
			Room ventilation m³/min (A)		Room ventilation m³/min (B)(50/60Hz)		Room ventilation m³/min (C)(50/60Hz)	Room ventilation m³/min (D)(50/60Hz)	
	compressor	Dryer	compressor	built-in dryer type	compressor	built-in dryer type	compressor	compressor	built-in dryer type
i-14015AX2-R	57	12	157	190	8	41	80	104	137
i-14022AX2-R	84	11	230	260	12	42	95	126	155
i-14030A3-R	108	14	299	336	15	53	100	135	173
i-14037AX2-R	140	18	387	437	20	70	170	224	273
i-14045A3-R	162	22	448	509	23	84	150	203	264
i-14055A4-R	198	33	547	639	28	119	220	292	383
i-14055W3-R	40	20	109	166	—	—	—	—	—
i-14075A4-R	270	33	747	838	38	129	300	398	489
i-14075W3-R	54	37	149	252	—	—	—	—	—
i-14100W	72	—	199	—	—	—	—	—	—
i-14150W	108	—	299	—	—	—	—	—	—
i-14180W	130	—	358	—	—	—	—	—	—
i-14220W	158	—	438	—	—	—	—	—	—
u-14015A3-R	54	8	149	171	8	30	80	104	126
u-14022A3-R	79	14	219	257	11	49	80	107	145
u-14037A3-R	133	17	368	416	19	66	120	163	210
u-14055A3-R	40+(158)	20	109+(438)	166+(438)	Please contact us for more information.				
u-14055W3-R	40	20	109	166	—	—	—	—	—
u-14075A3-R	54+(216)	37	149+(597)	252+(597)	Please contact us for more information.				
u-14075W3-R	54	37	149	252	—	—	—	—	—
ZU08A5	27	—	75	—	4	—	80	—	—
ZU11A5	40	—	109	—	6	—	90	—	—
ZU100WS2	72	—	199	—	—	—	—	—	—
ZU120WS2	86	—	239	—	—	—	—	—	—

* ( ) shows figure of cooler units.

Calculating ventilation requirement

$$Q = \frac{n \times H \times 1000}{1.2 \times \triangle T \times 60}$$

Q : Required ventilation volume (m³/min)
H : Heat output per unit (MJ/h)
n : Number of units
△T : Tolerated temperature rise (t1-t0)
(t1: tolerated indoor temp. (℃); t0: outside tem. (℃)) T is generally calculated as 5℃.

Quality of supplied water

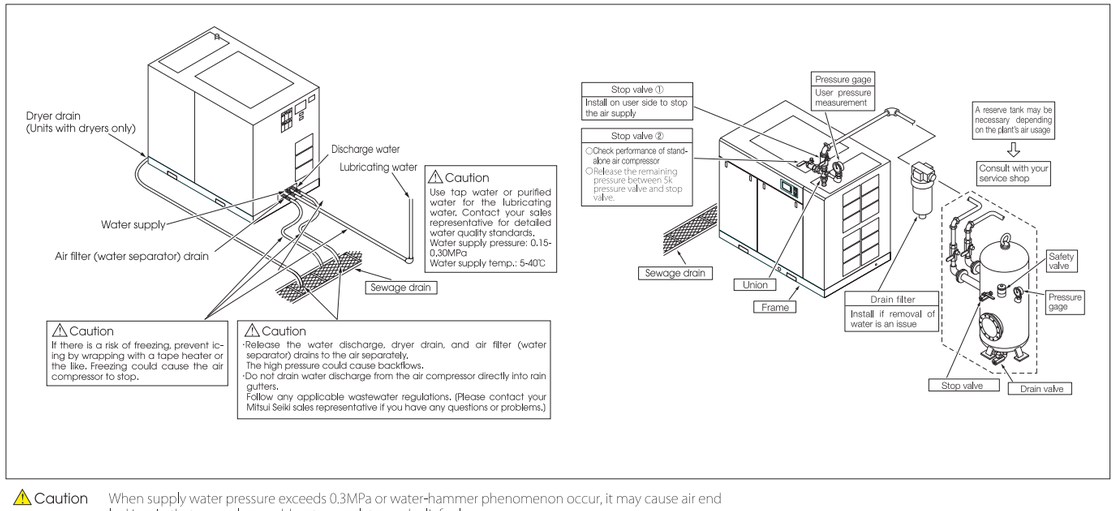
Compressors use water lubricant inject water internally during the compression process, in order to cool, lubricate, and seal the interior of the compression chamber. For this reason, the quality of the water that is supplied to the compressor has a large impact on its performance and service life. Below are preferred water-quality standards for preventing damage to the air compressor, cooler, piping, and the like from corrosion, scaling, and slime.

Indicator		Standard	Associated with		
			Corrosion	Scaling	Slime
Appearance		Clear and colorless	—	—	—
Chromaticity		Under 5	—	—	—
Turbidity		Under 2	—	—	—
pH (25℃)		6～8	○	○	—
Electrical conductivity (25℃)	mg/ℓ	40～200μS/cm	○	○	—
Total hardness ($CaCO_3$)	mg/ℓ	Under 70	—	○	—
Iron (Fe)	mg/ℓ	Under 0.3	○	—	—
M alkalinity ($CaCO_3$)	mg/ℓ	Under 50	—	○	—
Chloride ions (Cl^-)	mg/ℓ	Under 50	○	—	—
Sulfide ions (SO_4^{2-})	mg/ℓ	Under 50	○	—	—
Nitrate ions (NO_3^-)	mg/ℓ	Under 10	○	—	—
Silica (SiO_2)	mg/ℓ	Under 30	—	○	—
Ammonium ions (NH_4^+)	mg/ℓ	Under 0.1	○	—	—
TOC	mg/ℓ	Under 3	—	—	○

* Do not use ultrapure water.
* Scales are caused by such minerals as calcium, magnesium carbonate, sulfates, phosphates, and silicates. Please inquire with your Mitsui Seiki sales representative if you will be using highly saline water, or if it is not feasible to maintain the water quality described above. We offer water softening systems and other remedies.
* We can also check your water quality. Feel free to contact us about this.
* Well water and industrial water do not suffice this standard.
* Above graph is applied for 15AX2, 22AX2, 37AX, 55/75A4

Piping

- Connect pipes with union joints or flange joints for maintenance purpose.
- Make sure that the diameter of the main pipe is at least as large as the discharge outlet, in order to minimize the drop in pressure. Install an approximately 1/100 slope to enable draining from the piping.
- Use a pipe diameter with enough leeway to reduce resistance, in accordance with the installed length of the piping.
- Install stop valves on the compressor discharge outlet, on both the user side and discharge side, in order to facilitate maintenance.
- Install air tanks, filters, and the like as needed, in accordance with the plant's air usage.
- See the installation manual for further details.



⚠Caution When supply water pressure exceeds 0.3MPa or water-hammer phenomenon occur, it may cause air end leaking. In that case, please add water regulator and relief valve.

Maintenance

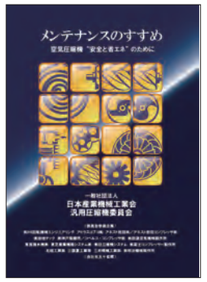
[**Oil type**]

- Check the oil level of the Compressor every day.
- Adjust the amount of the drain (water) from the oil chamber in proportion to the load condition.
- Life cycle of the compressor oil is approximately 6,000 hours (for genuine oil Z-6000 compressor oil)
  Replace the oil immediately after passed the life cycle.
  Sooner replacement, if necessary as the dirt condition even not attained 6,000 hours, would help maintain good condition.
- Life cycle of the oil separator element is approximately 6,000 hours. Replace the oil separator element immediately after passed the life cycle.
- Life cycle of the oil filter is approximately 6,000 hours. Replace the oil filter immediately after passed the life cycle.
  (Replacement period for the compressor oil, oil separator and oil filter shall become sooner according to the application circumstance).
- If a dust filter is blocking, it cause trouble. Clean filters regularly.
- Replace the Air cleaner element if the Monitor lamp lights up.
- Use Mitsui Seiki dedicated parts for maintenance part certainly.
- Execute other maintenance work based on Instruction Manual.

Have maintenance performed by a Mitsui Seiki Kogyo-certified technician (a service shop designated by Mitsui Seiki Kogyo).

We distribute guides for safely installing and maintaining your compressor (published by the Japan Society of Industrial Machinery Manufacturers). Please read them together with your operation manual.

"Safe air compressor installation"



"Maintenance tips for safe, energy-efficient use of air compressors"

Laws and regulations relating to compressors

Industrial Health and Safety Law
"Ordinance on Safety of Boilers and Pressure Vessels"

[Overview]
- Vessels with maximum pressure of 0.2MPa or higher, with capacity of 40L or higher
- Vessels with maximum pressure of 0.2MPa or higher, with internal diameter of 200mm or more, and length of 1,000mm or more

[Documents to submit]
- Second-class Pressure Vessel Description Handling Instructions
- Second-class Pressure Vessel Description (Original)

◎Note: It is not necessary to submit these document, but keep them in a secure place, because they are important.

[Installation and use]
- Pressure vessels cannot be modified
- Perform self inspections at least once a year, and keep a record
- Adjust pressure delivered by safety valve
- Use a pressure gage with a maximum meter reading of 1.5 to 3 times the maximum pressure used, with a display that makes it easy to check the maximum pressure used.

Basic Environment Law
"Noise Abatement Act/Vibration Control Law"

[Overview]
- Applies to compressors with rated drive output of 7.5kW or more. Check with the Pollution Section of your municipal office, because the regulation values differ by prefecture.

[Documents to submit]
- At least 30days before installing the compressor, you must submit a notice of start or change of construction to your prefectural government via the Pollution Section of your municipal government.

[Installation and use]
- The noise and vibration at the boundary of the plant grounds must be within the regulated levels.

"Law Concerning the Recovery and Destruction of Fluorocarbons" (Japanese Law)

The users of Classified Product(Commercial Refrigeration and A/C with CFC, HCFC and HFC) are required to conducted below three items.
①Products must be installed at adequate location.
②Periodical check (once per 3month) by user and recording the result.
③When leakage was found, user have the responsibility of repairing the products . Re-filling of refrigerant without repair is prohibited.
In case of bigger size refrigerate products.
In case of products with refrigerator capacity of bigger than 7.5kW, annual inspection by engineer with enough experience and knowledge (such as manufacturer and refrigerator maintenance engineer) is required by law.

Laws and regulations relating to the environment and energy conservation

Energy conservation laws
(Energy Conservation Act) Enacted April 1, 2006 (revision)

- Purpose
  Reduce average annual energy per unit of production by at least 1%.
- Key points of revision
  Improve energy efficiency measures of factories and offices obligated to conserve energy through the central management of heating and electricity.

Global warming laws
(Law for the Promotion of Measures to Deal with Global Warming)

Enacted April 1, 2006 (revision)

- Kyoto Protocol Target Achievement PlanThe target is to reduce CO_2 emissions from industry by 8.6% from 1990 levels by the year 2010.
- Key points of revisionA system for calculating, reporting, and publishing greenhouse gases was introduced.