

**OIL
FREE AIR**
COMPRESSOR



RELIABLE 100% OIL-FREE ENGINEERED AIR

MITSUI SEIKI

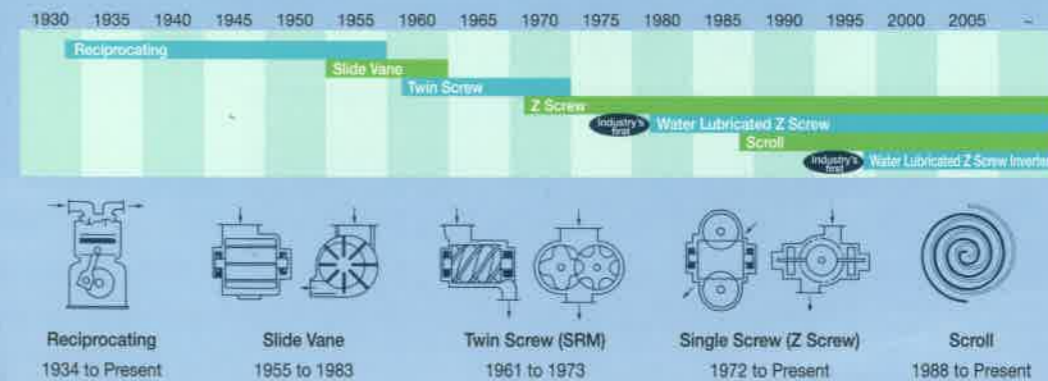
Advancing oil-free technologies for greater energy efficiency

Perfectly clean air and high efficiency are the key to lower costs and improve environmental friendliness.

Compressors account for 20 to 30% of factory power consumption. It could thus be said that conserving energy at factory starts with energy-efficient compressors. Today, there is greater demand than ever before for environmental friendliness and lower costs, and as a result, energy saving is the greatest challenge facing compressors. We have worked tirelessly to meet this challenge since we unveiled the water lubricated oil-free compressor which was a world's first compressor mechanism in 1982. These compressors do not need any oil. This eliminates energy loss from oil filters, and reduces waste oil, which is a type of industrial waste. We have also achieved an extremely high operating efficiency by using water as the lubricating medium in our unique compressor mechanism. Our Oil Free Compressors deliver the clean air and outstanding environmental performance demanded by industry and the planet.

History and Types of Mitsui Seiki Compressors

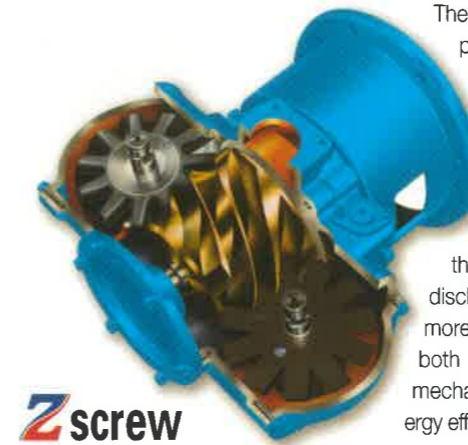
Mitsui Seiki has experience with many different types of compressors stretching back to 1934. In 1972, we launched sales of the Z Screw Compressor. We have continued to improve the efficiency and energy efficiency of our compressors in response to the demands of society over time.



Our secrets to greatly reduced power consumption: our unique Z Screw and water lubrication

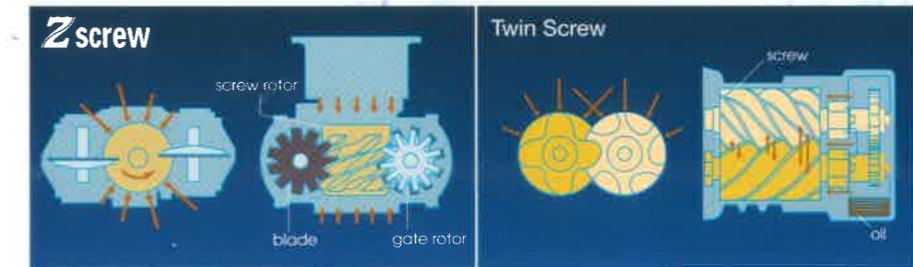
Energy efficiency is set to become the greatest demand placed on compressors. In order to meet this demand, it is first necessary to prevent air-intake leaks, energy loss, and mechanical loss. Mitsui Seiki's unique compression mechanism formed by our Z Screw and water lubrication system clear these hurdles at a high level. These advances have reduced energy consumption by levels never before achieved.

A simple construction and water-seal effect deliver ideal operating efficiency



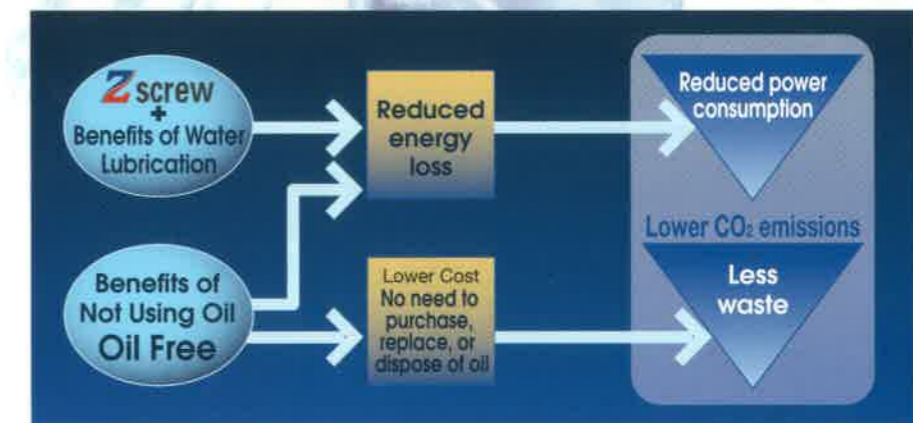
The Z Screw's construction uses a single screw rotor and two gate rotors, one placed on either side of the screw rotor. This simple construction transmits pressure to the rotating axle with good balance, and prevents excessive load on the bearings. This is one of the reasons for the Z Screw's high efficiency. The water used as a lubricating medium also seals gaps inside the compression chamber. Compressed air is thus kept from leaking, enabling the Z Screw to generate sufficient discharge even at low rotating speeds. This reduces both noise and vibration. The cooling effect of the water lubricant also prevents heating from the compression process (the discharge air temperature is about 40°C), making the compression process more efficient and eliminating the need for a cooling apparatus. This improves both safety and durability significantly. The fusion of our unique compression mechanism and new water-lubrication technology is helping greatly to improve energy efficiency in a wide range of fields.

Comparison of Z Screw with Dry Twin Screw



- Radial and axial loads cancel each other, resulting a theoretically zero load
- Water seal enables highly efficient operation at low speeds
- Cool air discharge (about 40°C)
- Radial load and distance between the two screw axles place significant limitations on bearing load
- Screw must operate at high speeds in order to prevent compressed air from leaking
- Hot air discharge (about 300°C)

Environmental Performance of Water Lubricated Oil Free Compressor



We offer a wide lineup of products to suit all types of needs, from compact to large units.

Next generation oil free compressor

MITSUI SEIKI OIL FREE SCREW COMPRESSOR SERIES

Z-14000 series
Water Lubricated Inverter Oil Free Compressor



Air cooled 15-75kW
15kW / 22kW / 30kW / 37kW / 45kW / 55kW / 75kW

Water cooled 55-220kW (option: water cooled 15-45kW)
55kW / 75kW / 100kW / 150kW / 180kW / 220kW

Water lubrication	Red-C1 compatible
Oil free	Z-Mate compatible
Inverter	Energy saving
IPM motor	Environmentally friendly
Increasing	High efficiency
IT touch panel	Air cooled fan inverter

Details ▶ 7,8

Standard models with simple design optimized for environmental performance

MITSUI SEIKI OIL FREE SCREW COMPRESSOR SERIES

U-14000 series
Water Lubricated Oil Free Compressor



Air cooled 15-75kW
15kW / 22kW / 37kW / 55kW / 75kW

Water cooled 55/75kW (option: water cooled 15-37kW)
55kW / 75kW


Water lubrication	Energy saving
Oil free	Environmentally friendly
IT touch panel	High efficiency
Red-C1 compatible	Air cooled fan inverter
Z-Mate compatible	

Details ▶ 9

Compact compressor with greater power than the model standard

MITSUI SEIKI OIL FREE SCREW COMPRESSOR SERIES

ZU-Quattro series
Water Lubricated Oil Free Compressor



Air cooled 7.5/11kW

Water lubrication	Environmentally friendly
Oil free	High efficiency
Energy saving	

Details ▶ 10

Big power for large-scale facilities

MITSUI SEIKI OIL FREE SCREW COMPRESSOR SERIES

ZU series
Water Lubricated Oil Free Compressor



Water cooled 90kW/100kW/120kW

Water lubricated	Environmentally friendly
Oil free	High efficiency
Energy saving	

Details ▶ 10

High capacity turbo package trusted worldwide

MITSUI SEIKI TURBO COMPRESSOR SERIES

FELLIOTT™
MITSUI SEIKI
High Capacity Oil Free Turbo Compressor



POLARIS Series
P300/400/500

Turbo	Environmentally friendly
Oil free	High efficiency
IT touch panel	

Details ▶ 10

Next generation oil free compressor

i-14000 series

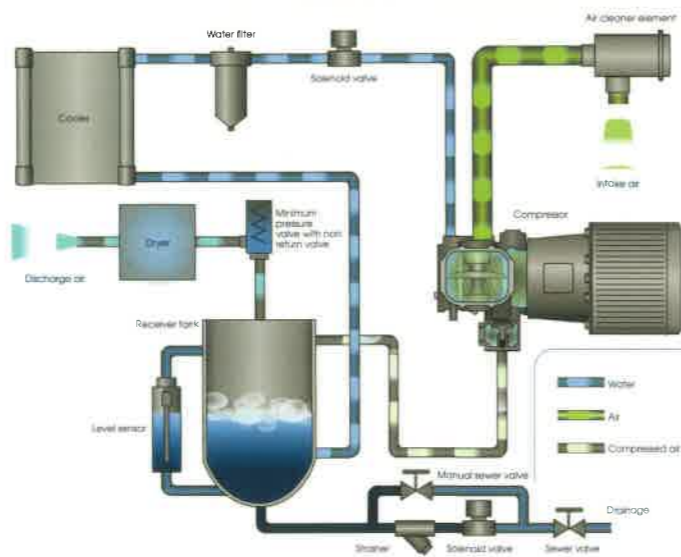
MITSUI SEIKI OIL FREE SCREW COMPRESSOR SERIES
 Water Lubricated Inverter Oil Free Compressor
 Air cooled 15-75kW
 Water cooled 55-220kW

Compact 15kW, 22kW, and 37kW models!

Space-saving models with smallest footprint and volume in the industry

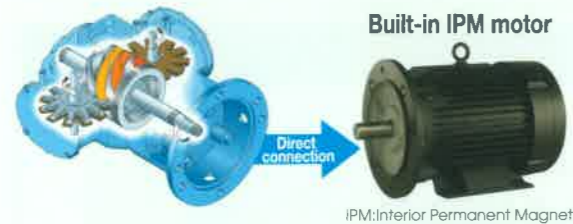


Completely oil free system

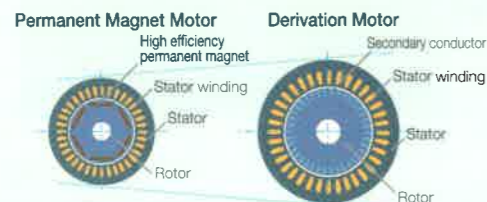


IPM motor and direct drive improve operating efficiency and durability

The compressor is equipped with the latest IMP motor with a built-in permanent magnet in the rotor. It does not suffer the power loss and slips of a conventional induction motor, and its motor efficiency is 5% higher. The use of direct drive also eliminates power transmission loss, and the need for belt maintenance.

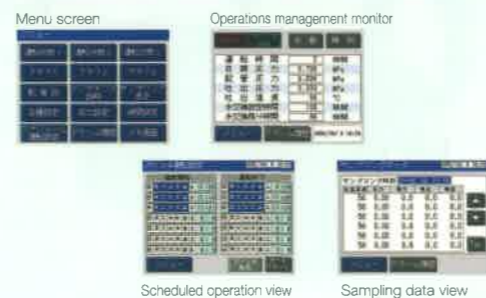


Structural Comparison of Permanent Magnet Motor and Derivation Motor



LC motor IT touch panel facilitates operational management

A built-in IT touch panel enables a variety of operations, from scheduled operation to data sampling and maintenance, to be performed speedily by touching the wide range of on-screen menus. The touch panel is a bright, eye-friendly LCD monitor.



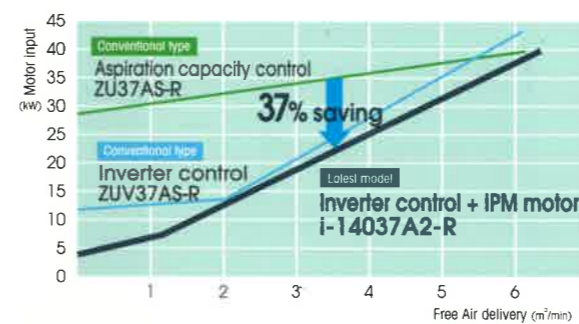
Synergy with inverter control greatly improves energy efficiency.

The Z Screw and water-lubrication system enable highly efficient operation even at low speeds. This makes it possible to take full advantage of the inverter's rotation-control capabilities, thereby enabling highly energy-efficient operation, and truly making this the ideal compressor for an era focused on cost and the environment.

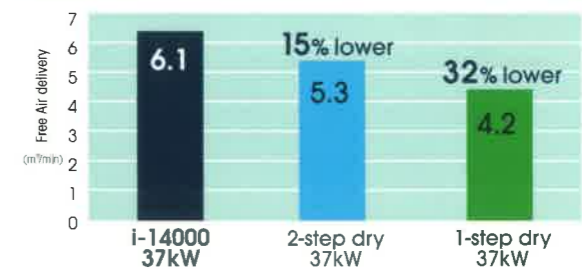
Energy saving Benefits of i-14000 (Compared to Previous Model)

37kW model

Air discharge volume: 60% Electricity cost: ¥15/kWh Time of operation: 6,000 h/year



Comparison of Free Air Delivery (37kW)



Average power	Annual power	Annual CO ₂
37% reduction	¥1.20 million reduction	45% CO₂ reduction

All models have much improved energy efficiency

Model	i-14015A2-R	i-14022A2-R	i-14030A-R	i-14037A2-R	i-14045A-R	i-14055A-R	i-14075A-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 (t/year)	18tons	25tons	32tons	45tons	48tons	61tons	84tons	122tons	181tons	216tons	262tons
Power reduction (t/year)	¥480k	¥660k	¥860k	¥1,200k	¥1,300k	¥1,640k	¥2,250k	¥3,260k	¥4,860k	¥5,800k	¥7,020k

*Conditions Load: 60% Electricity cost: ¥15/kWh Time of operation: 6,000 h/year CO₂ emission factor: 0.559 kg/CO₂/kWh

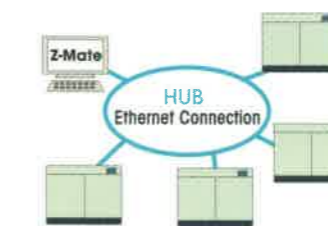
Several functionalities cover every detail of environmental and cost performance.

- Improved energy efficiency and quieter operation
- Air-cooled fan motor inverter
- Better cooling efficiency
- Air-cooled super slit fin
- Ozone depletion factor of 0:
- Environmentally friendly CFC alternatives used

Select the Optional System to Suit Your Needs

Monitor operating status in real time Remote monitoring system Z-Mate

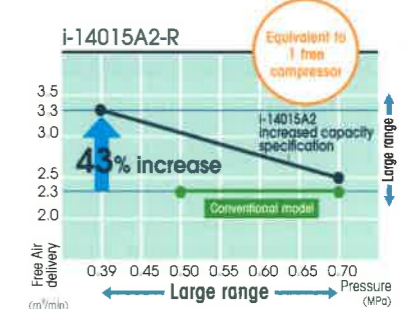
From a computer, you can monitor the operating status of up to 10 compressors connected over a building LAN or other Ethernet connection. You can also save monitoring data and control the compressors remotely.



*Only compressor models with a built-in LCD monitor IT touch panel can be connected.

Efficient support for higher discharge capacity needs Low-pressure high-capacity specification Increasing

The discharge capacity under ideal pressure is up to 43% greater than conventional models. The higher-capacity specification for a model with motor output of 15kW is equivalent to getting an additional 7.5kW compressor for free.



- Water lubrication
- Oil free
- Inverter
- IPM motor
- Increasing
- IT touch panel
- Red-C1 compatible
- Z-Mate compatible
- Energy saving
- Environmentally friendly
- High efficiency
- Air-cooled fan inverter

Standard models with simple design optimized for environmental performance

U-14000 series

MITSUI SEIKI OIL FREE SCREW COMPRESSOR SERIES
 Water Lubricated Oil Free Compressor
 Air cooled 15-75kW Water cooled 55/75kW



u-14022A-R

Compact 15kW, 22kW, and 37kW models!

Space-saving models with smallest footprint and volume in the industry

LCD monitor IT touch panel

The easy-to-view screen shows power gages, voltmeters, and more, facilitating operations management.

Air-cooled fan motor inverter

The air cooling fan is also inverter controlled by sensing the discharge temperature. This makes the compressor more energy efficient.

Air-cooled super slit fin

The water cooler (air cooling) fins have been specially machined into "super slit fins." This increases the cooling efficiency.

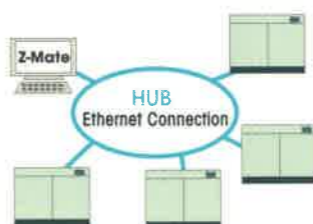
Environmentally friendly CFC alternatives used

The cooling dryer uses the environmentally friendly CFC alternative R-407C, which does not deplete the ozone layer.

Select the Optional System to Suit Your Needs

Monitor operating status in real time Remote Monitoring System Z-Mate

From a computer, you can monitor the operating status of up to 10 compressors connected over a building LAN or other Ethernet connection. You can also save monitoring data and control the compressors remotely.



* Only compressor models with a built-in LCD monitor IT touch panel can be connected.

Compact compressor with greater power than the model standard

ZU-Quattro series

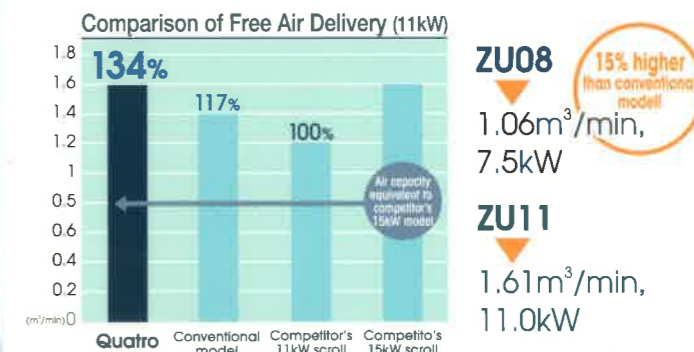
MITSUI SEIKI OIL FREE SCREW COMPRESSOR SERIES
 Water Lubricated Oil Free Compressor
 Air cooled 7.5/11kW



ZU08A4

Industry's highest air capacity at same motor output

Combines high durability with efficient maintenance



- Water lubrication
- Oil free
- Energy saving
- Environmentally friendly
- High efficiency

Big power for large-scale facilities

ZU series

Water Lubricated Oil Free Compressor
 Water cooled 90 to 120kW

Greatly improved maintainability and durability

Industry leader for discharge capacities at same horsepower

High capacity turbo package trusted worldwide

FELLIOTT™ MITSUI SEIKI

MITSUI SEIKI TURBO COMPRESSOR SERIES

High Capacity Oil Free Turbo Compressor
POLARIS Series
 P300/400/500



High durability using our custom-designed materials

The compressor uses a stainless steel impeller that is even more durable than titanium, and semi-permanent inclination pad journal bearings.

Improved energy efficiency through optimized airflow

Aspiration is controlled in response to changes in temperature and plant load. Combined with the high-performance inverter, this further improves energy efficiency.

Highly space-efficient package design

The POLARIS series was designed to be maintenance-free. As a result, we chose the minimum number of components and a simple construction, which also makes the series space efficient. This also makes operating noise extremely low.

- Turbo
- Oil free
- IT touch panel
- Environmentally friendly
- High efficiency

- Water lubrication
- Oil free
- IT touch panel
- Red-C1 compatible
- Z-Mate compatible
- Energy saving
- Environmentally friendly
- High efficiency
- Air-cooled fan inverter

Quantity control systems optimized for your facility's conditions

Red CX Regulate Eco Drive Controller Inverter compatible quantity control



This system saves energy by operating the minimum number of compressors necessary to provide the needed pressure, in accordance with air consumption rates (up to 8 units can be controlled). A digital pressure display can be used to configure the pressure range and number of units to operate at a detailed level. The inverter can be combined with a standard unloader, making it possible to control the number of units using the inverter alone, thereby further improving energy efficiency.

Energy Efficiency Analysis

We will propose a comprehensive action plan and work with you to reduce your facility's overall energy usage. We will propose a plan aimed at contributing to the global environment, with measures that can be taken over the short term, as well as a medium-term strategy and plan for conversion to clean energy.

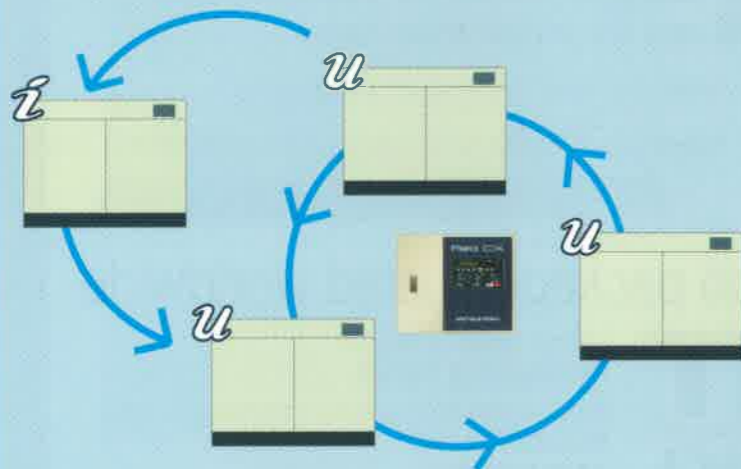


i&u control

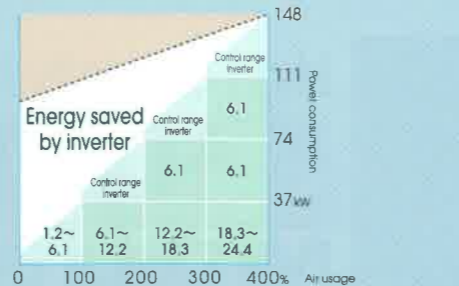
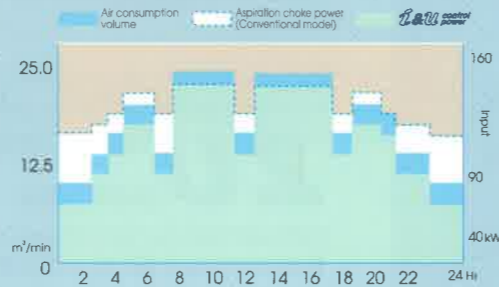
Using one i-14037A2-R+ three u-140375A2-R's

Total aspiration volume 24.4m³/min

The inverter is the first to turn on and the last to shut down. The standard units operate at full capacity, and the inverter controls the number of units operating in accordance with changes in load. If multiple inverters are used, double-loop operation with a rotation function can be used as well.



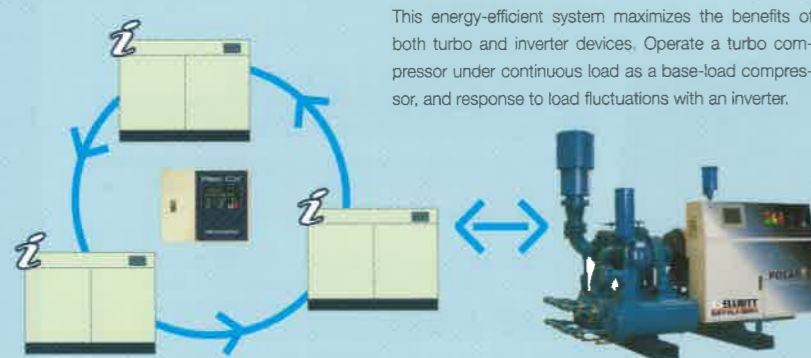
Air usage conditions: Simulation with Max 23m³/min and Min 10m³/min



Base Load Control

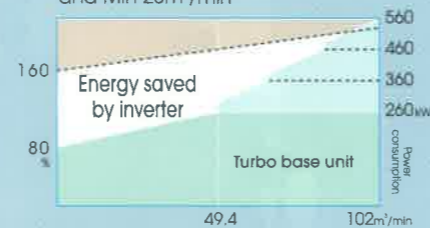
Using one POLARIS™ P-300+ three i-14100W's

Total aspiration volume 102m³/min



This energy-efficient system maximizes the benefits of both turbo and inverter devices. Operate a turbo compressor under continuous load as a base-load compressor, and response to load fluctuations with an inverter.

Air usage conditions: Simulation with Max 100m³/min and Min 25m³/min



POLARIS™P-300-350 + three i-14100W's (280kW 49.8m³/min) (100kW 17.6m³/min)

POLARIS™P-300

Oil-free compressors are used in a wide range of fields demanding clean air and energy efficiency.



IT plants / chip fabrication plants

The manufacture of high-precision devices require a clean environment. IT plants, chip fabrication plants, and other plants which manufacture cutting edge devices require high-purity clean air.

Food processing plants

As awareness of food safety grows ever stronger, a thoroughly clean environment is an essential condition for food-processing plants.

Machine tool component processing plants

General manufacturing plants are also aiming to use clean air and improve energy efficiency in order to reduce waste oil and obtain ISO certification.

Peripheral devices



Receiver tank



Supply /discharge system of lubricant water



Inverter controlled cooling dryer



Filter



Maintenance replacement parts

Air filters & water filters

i-14000 inverter specifications 15kW to 220kW

I-14055W-R



Model	I-14015A2-R	I-14022A2-R	I-14030A-R	I-14037A2-R	I-14045A-R	I-14055A-R	I-14075A-R	I-14055W-R	I-14075W-R	I-14100W	I-14150W	I-14180W	I-14220W		
Delivered air pressure (MPa)	0.7 (0.39)*														
Free air delivery (m ³ /min)	2.5 (3.3)*	3.6 (4.7)*	4.8 (5.5)*	6.1 (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°C)														
Capacity control method	Power-saving AUUS														
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														
Motor type	Totally enclosed fan cooled IMP motor														
Starter	Totally enclosed water cooled IMP motor														
Drive system	Inverter starter														
Cooling system	Direct coupled motor														
Fan motor power (kW)	Air cooled			Air cooled (separate unit)				Water cooled							
Lubrication water volume (L)	1.6 (inverter control)	2.2 (inverter control)	3.0 (inverter control)	7.5 (inverter control) +0, 15/0,22				0.15/0,22		(0,15/0,22)×2					
Dryer	10 (under applied pressure)*														
Air dew point at outlet (°C)	10 (under applied pressure)*														
Refrigerator power (refrigerant: 407C) (kW)	0.53/0.64	1.5/1.8	1.5/1.8	1.5/1.9	2.1/2.5	2.1/2.5	2.9/3.6	2.1/2.5	2.9/3.6						
Discharge pipe diameter (R)	1			1 1/2				2		10k JIS 3B (80A) flange		10k JIS 4B (100A) flange			
Dimensions															
Width (w/out dryer) (mm)	1457 (1277)			1780 (1430)				2068 (1850)		2538 (2195)		2300 (1860)		2600 (1860)	
Length (mm)	750						900				1200		1500		
Height (mm)	1510			1595				1500		1200		1800			
Total mass (dry) (kg)	610	640	730	960	1086	1310	1480	1350	1520	2100	2400	3050	3100		
Noise level (dB (A))	54 - 57	55 - 59	56 - 61	59 - 65	59 - 67	61 - 69	63.5 - 69	61 - 63	63.5 - 65	65 - 67	66 - 69	64 - 69	66 - 70		

Caution: 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°C and rated discharge pressure.
 (1) Specifications for discharge pressure of 0.39MPa (factory option) available on request.
 (2) For 55kW/75kW 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.
 (3) 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).
 (4) Specifications for 15 to 45kW water-cooled unit available on request (factory option).
 (5) Cooling water volume (water temp. 32°C): 55kW: 150L/min; 75kW: 200L/min; 100kW: 250L/min; 150kW: 300L/min; 180kW: 430L/min; 220kW: 430L/min.

u-14000 15kW to 75kW

U-14022A2-R



Model	U-14015A2-R	U-140156A2-R	U-140225A2-R	U-140226A2-R	U-140375A2-R	U-140376A2-R	U-14055A-R	U-140556A-R	U-14075A-R	U-140756A-R	U-14055W-R	U-140556W-R	U-14075W-R	U-140756W-R	
Delivered air pressure (MPa)	0.7														
Free air delivery (m ³ /min)	2.3	3.5	6.1	9.5	13.0	9.5	13.0	9.5	13.0	17.4	25.0	31.0	37.5		
Intake conditions	Atmospheric pressure (2-40°C)														
Capacity control method	Power-saving AUUS & Automatic start/stop selection														
Main motor power (kW)	15	22	37	55	75	55	75	55	75	100	150	180	220		
Power source voltage (50/60Hz/V)	200/200 · 220														
Motor type	3-phase squirrel case, 2P totally enclosed external fan														
Starter	Direct in														
Drive system	3-contactor, star delta start														
Cooling system	Direct drive by coupling														
Fan motor power (kW)	Air cooled			Air cooled (separate unit)				Water cooled							
Lubrication water volume (L)	23			40				100							
Dryer	10 (under applied pressure)*														
Air dew point at outlet (°C)	10 (under applied pressure)*														
Refrigerator power (refrigerant: 407C) (kW)	0.53/0.64	1.5/1.8	1.5/1.9	2.1/2.5	2.9/3.6	2.1/2.5	2.9/3.6	2.1/2.5	2.9/3.6						
Discharge pipe diameter (R)	1			1 1/2				2		10k JIS 3B (80A) flange					
Dimensions															
Width (w/out dryer) (mm)	1457 (1277)			2068 (1850)				2300 (1860)		2600 (1860)		2300 (1860)		2600 (1860)	
Length (mm)	750						1200				1500				
Height (mm)	1510			1595				1500		1200		1800			
Total mass (dry) (kg)	670	700	1100	1450	1750	1500	1850	1500	1850	2100	2400	3050	3100		
Noise level (dB (A))	57	59	65	69	63	65	69	63	65	65	69	63	65		

* Values with ambient temperature of 30°C and rated discharge pressure.
 (1) 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.
 (2) Specifications for 15 to 37kW water-cooled unit and 75kW high-voltage 3,000/3,300V available on request (optional).
 (3) 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).
 (4) Cooling water volume (water temp. 32°C): 55kW: 150L/min; 75kW: 200L/min.

Notation

i-14037A2-R
 ① ② ③ ④ ⑤

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

u-140225A2-R
 ① ② ③ ④ ⑤ ⑥

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 ZU-Quatro7.5kW/11kW Air cooled ZU08A4



Model	ZU085A4	ZU086A4	ZU115A4	ZU116A4
Delivered air pressure (MPa)	0.7			
Free air delivery (m ³ /min)	1.06		1.61	
Intake conditions	Atmospheric pressure (2-40°C)			
Capacity control method	Power-saving AUUS			
Main motor power (kW)	7.5		11	
Power source voltage (50/60Hz/V)	200/200 · 220			
Motor type	3-phase squirrel case, 4P totally enclosed external fan			
Starter	Direct in			
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 separately (select according to purpose)			
Discharge pipe diameter (R)	3/4			
Total mass (dry) (kg)	410		425	
Noise level (dB (A))	56		58	
W×L×H (mm) (w/out dryer)	880×750×1450			

(1) Noise values measured in noiseless environment at distance of 1.5meters from front, at height of 1m (at 0.7MPa)

Notation

ZU-085A4
 ① ② ③ ④ ⑤

① ZU (oil-free)
 ② 08 = 7.5kW, 11 = 11kW
 ③ 5 = 50Hz, 6 = 60Hz
 ④ Air cooled
 ⑤ Quatro series

ZU Large Series ZU 90kW to 120kW Water cooled

Model	ZU905WS	ZU906WS	ZU1005WS	ZU1006WS	ZU1205WS	ZU1206WS
Delivered air pressure (MPa)	0.7					
Free air delivery (m ³ /min)	16.0	15.0	18.2	17.4	21.3	20.8
Intake conditions	Atmospheric pressure (2-40°C)					
Discharge air temp. (approx. °C)	Cooling water intake temp. +15°C or less					
Capacity control method	Power-saving AUUS & Automatic start/stop selection					
Main motor power (kW)	90		100		120	
Power source voltage (50/60Hz/V)	400	440	400	440	400	440
Motor type	3-phase squirrel case, 2P totally enclosed external fan					
Starter	3-contactor, star delta start					
Drive system	Direct drive by coupling					
Cooling system	Water cooled					
Fan motor power (kW)	0.15	0.22	0.15	0.22	0.15	0.22
Lubrication water volume (L)	135					
Cooling water volume (water temp. 32°C) (L/min)	250			300		
Discharge pipe diameter (R)	10k JIS 3B (80A) flange					
Total mass (dry) (kg)	2095		2145		2195	
Noise level (dB (A))	67		69		70	
W×L×H (mm) (w/out dryer)	2490×1200×1800					

(1) Noise values measured in noiseless environment at distance of 1.5meters from front, at height of 1m (at 0.7MPa)
 (2) Specifications for high-voltage 3,000/3,300V unit available on request (optional).

ELLIOTT MITSUBI SEIKI POLARIS™ P-300/400/500 (Three Stage)

Series	Model	HP (kW)	Delivered air pressure (MPa)	Free air delivery (m ³ /min)		
P300 Series	P300-250	250 (186)	0.69	33.7		
	P300-300	300 (224)				
	P300-350	350 (260)				
	P300-400	400 (298)				
P400 Series	P400-400	400 (298)		0.69	51.2	
	P400-450	450 (336)				
	P400-500	500 (374)				
	P400-600	600 (448)				
P500 Series	P500-600	600 (448)			0.69	87.8
	P500-700	700 (522)				
	P500-800	800 (597)				
	P500-900	900 (671)				

- Safety instructions**
- Free air delivery is the volume of delivery air discharged when air pressure is applied to the intake (atmospheric pressure), (JIS B 8341).
 - Do not use delivery air for respirator equipment whose discharge is inhaled directly.
 - Maintain ventilation so that intake air temperature does not exceed 40°C. Use the compressor indoors.
 - Contact us for guaranteed values.
 - Do not drain water discharge from the compressor directly into rain gutters. Follow any applicable wastewater regulations. Please contact your Mitsui Seiki sales representative if you have any questions or problems.
 - Contact us for information about documents to be submitted to municipal authorities, and power/installation environment.
 - Product appearance, specifications, and the like are subject to change without notice in order to make improvements.
 - Read the instruction manual, warnings, and caution labels thoroughly before use.
 - Use only genuine Mitsui Seiki parts with Mitsui Seiki compressors.
 - Please contact us with any other questions about specifications.

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°C.
(We recommend the optional cold-weather specification if installing in temperatures of 2°C 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's protective features.

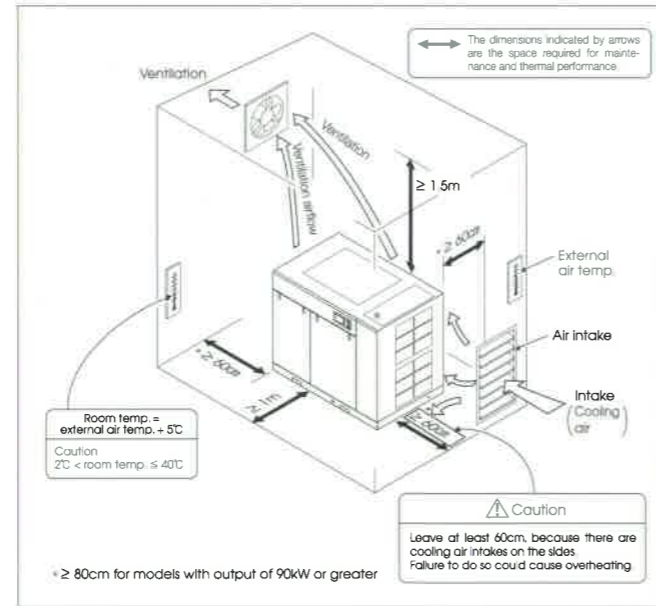
Maintenance

- ▲ 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°C. Failure to do so could cause the compressor to overheat, or damage the insulation of electrical components.

Installation space



Selected examples of installation

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

Model	Non-fuse breaker		Power transformer Capacity (200/400V)	Secondary wiring cable ≤ 22 kW or ≤ 10 m				Cooling tower For CT outlet temp. of 32°C
	200/220V	400/440V		200/220V	Grounding cable	400/440V	Grounding cable	
I-14015A2-R	100AF-100AT	50AF-50AT	20KVA	22mm²M6	14mm²M6	8mm²M5	8mm²M5	≥ 5t
I-14022A2-R	225AF-150AT	100AF-75AT	*32/33KVA	38mm²M8	22mm²M6	14mm²M6	14mm²M6	≥ 10t
I-14030A-R	225AF-175AT	100AF-100AT	*42/45KVA	60mm²M8	38mm²M6	22mm²M6	14mm²M6	≥ 10t
I-14037A2-R	225AF-225AT	225AF-125AT	*52/59KVA	80mm²M10	38mm²M8	22mm²M8	22mm²M8	≥ 10t
I-14045A-R	400AF-300AT	225AF-150AT	*63/71KVA	100mm²M10	60mm²M8	38mm²M8	22mm²M8	≥ 15t
I-14055A-R	400AF-350AT	225AF-175AT	*75/73KVA	100mm²M12	60mm²M8	60mm²M8	22mm²M8	≥ 15t
I-14055W-R	400AF-350AT	225AF-175AT	*75/73KVA	100mm²M12	60mm²M8	60mm²M8	22mm²M8	≥ 15t
I-14075A-R	400AF-400AT	225AF-225AT	110KVA	125mm²M12	38mm²M10	60mm²M10	38mm²M10	≥ 20t
I-14075W-R	400AF-400AT	225AF-225AT	110KVA	125mm²M12	38mm²M10	60mm²M10	38mm²M10	≥ 20t
I-14100W	—	400AF-250AT	200KVA	—	—	80mm²M12	38mm²M12	≥ 30t
I-14150W	—	400AF-350AT	250KVA	—	—	100mm²M12	38mm²M12	≥ 30t
I-14180W	—	600AF-500AT	300KVA	—	—	200mm²M12	38mm²M12	≥ 40t
I-14220W	—	600AF-600AT	350KVA	—	—	250mm²M12	38mm²M12	≥ 40t
u-14015A2-R	100AF-100AT	100AF-60AT	20KVA	22mm²M8	14mm²M5	14mm²M5	14mm²M5	≥ 5t
u-14022A2-R	225AF-175AT	100AF-100AT	30KVA	38mm²M10	22mm²M5	22mm²M8	22mm²M5	≥ 10t
u-14037A2-R	NF250-SEW,HEW-225AT	225AF-150AT	50KVA	80mm²M10	22mm²M8	38mm²M10	22mm²M5	≥ 10t
u-14055A-R	400AF-400AT	225AF-225AT	75KVA	150mm²M12	38mm²M8	60mm²M8	22mm²M8	≥ 15t
u-14055W-R	400AF-400AT	225AF-225AT	75KVA	150mm²M12	38mm²M8	60mm²M8	22mm²M8	≥ 15t
u-14075A-R	NF400-SEW,HEW-400AT	NF250-SEW,HEW-225AT	110KVA	150mm²M12	38mm²M8	60mm²M10	22mm²M10	≥ 20t
u-14075W-R	NF400-SEW,HEW-400AT	NF250-SEW,HEW-225AT	110KVA	150mm²M12	38mm²M8	60mm²M10	22mm²M10	≥ 20t
ZU08A4	100AF-60AT	30AF-30AT	10KVA	8mm²M5	5.5mm²M5	3.5mm²M4	5.5mm²M4	—
ZU11A4	100AF-75AT	50AF-50AT	15KVA	14mm²M6	14mm²M6	5.5mm²M5	14mm²M5	—
ZU90WS	—	NF400-SEW,HEW-350AT	150KVA	—	—	150mm²M12	38mm²M8	≥ 30t
ZU100WS	—	NF400-SEW,HEW-400AT	150KVA	—	—	150mm²M12	38mm²M8	≥ 30t
ZU120WS	—	NF400-SEW,HEW-400AT	200KVA	—	—	200mm²M12	60mm²M10	≥ 30t

① Use a recommended SEW or HEW circuit breaker (made by Mitsubishi Electric Corporation). (If changing in same frame)

② If you use our designated NF series of non-fuse circuit breakers, use the NV series of designated leak-electricity circuit breakers (made by Mitsubishi Electric Corporation).

③ Use power lines with a size of 55kW or less when the continuous maximum allowed temp. is 75°C (e.g. NIV power lines). If the ambient temperature is 50°C or less, it is assumed that the wiring separation will be 20m or less.

④ Use power lines with a size of 75kW or more when the continuous maximum allowed temp. is 90°C (e.g. LMFC power lines). If the ambient temperature is 50°C or less, it is assumed that the wiring separation will be 20m or less.

Ventilating the compressor room

Be very careful to ventilate the compressor room!

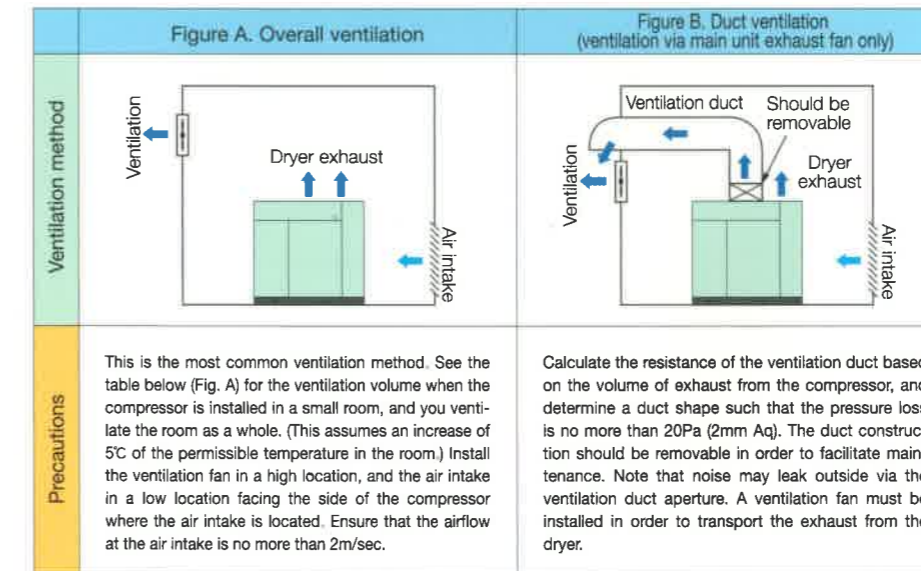
The compressor room must be ventilated. Install a ventilation fan, duct, or the like so that the ambient temperature does not exceed 40°C. Failure to do so could cause the compressor to overheat, or damage the insulation of electrical components.

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°C.
(We recommend the optional cold-weather specification if installing in temperatures of 2°C and lower)



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.

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.

Model	Heat output (MJ/h)		Compressor exhaust volume (m³/min)		Ventilation volume (m³/min) (Fig. A)		Ventilation volume (m³/min) (Fig. B)	
	Stand-alone compressor	With dryer	Stand-alone compressor	With dryer	Stand-alone compressor	With dryer	Stand-alone compressor	With dryer
I-14015A2-R	54	62	80	107	149	171	8	30
I-14022A2-R	79	93	80	111	219	257	11	49
I-14030A-R	108	122	100	147	299	336	15	53
I-14037A2-R	133	150	120	167	368	416	19	66
I-14045A-R	162	184	150	197	448	509	23	84
I-14055A-R	198	219	420	467	547	604	28	85
I-14055W-R	40	61	50	97	109	166	6	63
I-14075A-R	270	307	420	527	746	849	37	140
I-14075W-R	54	91	50	157	149	252	8	110
I-14100W	72	—	55	—	199	—	10	—
I-14150W	108	—	55	—	299	—	15	—
I-14180W	130	—	110	—	358	—	18	—
I-14220W	158	—	110	—	438	—	22	—
u-14015A2-R	54	62	80	107	149	171	8	30
u-14022A2-R	80	93	80	111	219	257	11	49
u-14037A2-R	134	150	120	167	368	416	19	66
u-14055A-R	198	218	420	467	547	604	28	84
u-14055W-R	40	60	50	97	109	166	6	63
u-14075A-R	270	307	420	527	746	849	38	141
u-14075W-R	54	91	50	157	149	252	8	110
ZU08A4	32	—	80	—	75	—	4	—
ZU11A4	47	—	90	—	100	—	5	—
ZU90WS	65	—	60	—	179	—	9	—
ZU100WS	72	—	60	—	199	—	10	—
ZU120WS	88	—	60	—	239	—	12	—

Calculating ventilation requirement

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

Q : Required ventilation volume (m³/min)

H : Heat output per unit (MJ/h)

n : Number of units

ΔT : Tolerated temperature rise (t1-t0)

(t1: tolerated indoor temp. (C); t0: outside temp. (C)) T is generally calculated as 5°C.

Quality of supplied water

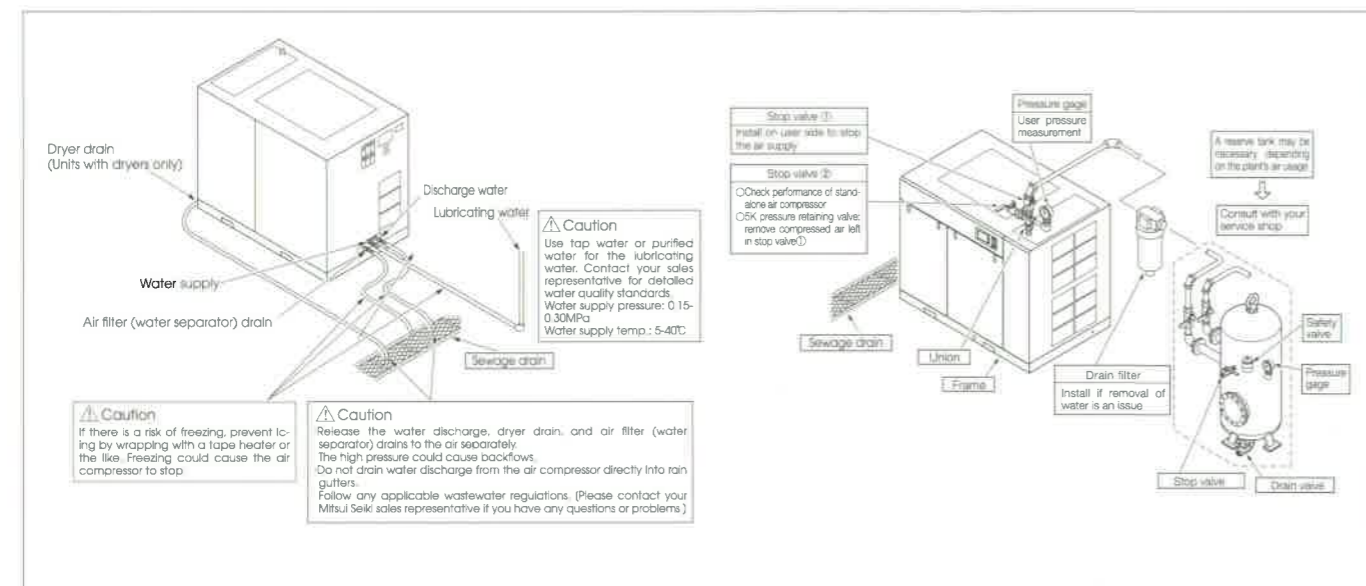
Compressors that use water lubricant inject water internally during the compression process, in order to cool, lubricate, and seal the interior of the compression chamber. For this reason, the quality of the water that is supplied to the compressor has a large impact on its performance and service life. 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	—	—	—
Turbidity	2 or less	—	—	—
pH (25°C)	6-8	○	○	—
Electrical conductivity (25°C)	≤ 150 μ S/cm	○	○	—
Total hardness (CaCO ₃)	mg/ℓ ≤ 50	—	○	—
Iron (Fe)	mg/ℓ ≤ 0.3	○	—	—
M alkalinity (CaCO ₃)	mg/ℓ ≤ 50	—	○	—
Chloride ions (Cl ⁻)	mg/ℓ ≤ 50	○	—	—
Sulfide ions (SO ₄ ²⁻)	mg/ℓ ≤ 50	○	—	—
Nitrate ions (NO ₃ ⁻)	mg/ℓ ≤ 0.3	○	—	—
Silica (SiO ₂)	mg/ℓ ≤ 30	—	○	—
CODMn (O)	mg/ℓ ≤ 2.5	—	—	○
Ammonium ions (NH ₄ ⁺)	mg/ℓ 0	○	—	—

- 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.

Piping

- Do not connect pipes with union joints or flange joints, so that they do not impede overhauls and the like.
- 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.



Maintenance

- Replace the water filters and air cleaner elements every year, or when the monitor lamp is lit.
- If the dust filter becomes clogged, it could cause the system to malfunction. Clean it regularly.
- Only use genuine Mitsui Seiki maintenance parts.
- Perform other maintenance in accordance with the operation 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.

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 Plan: The target is to reduce CO₂ emissions from industry by 8.6% from 1990 levels by the year 2010.
- Key points of revision: A system for calculating, reporting, and publishing greenhouse gases was introduced.

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<http://www.mitsuseiki.co.jp>



JQA-0904



JQA-EM2883

Home office plant



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