

i-14000X

i-14000

OIL FREE AIR COMPRESSOR

MITSUI SEIKI

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



JQA-0904



JQA-EM2883

Home office plant



505-0012

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Trusted Mitsui Seiki distributors

MITSUI SEIKI

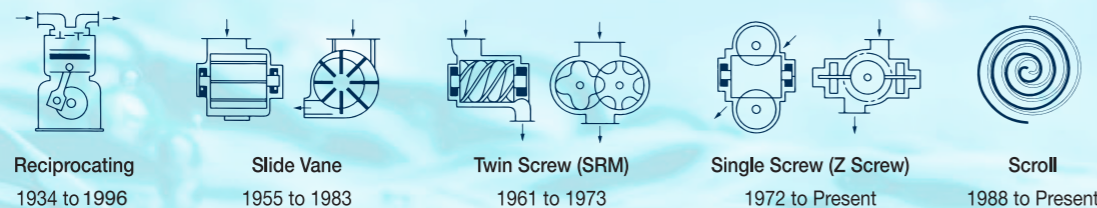
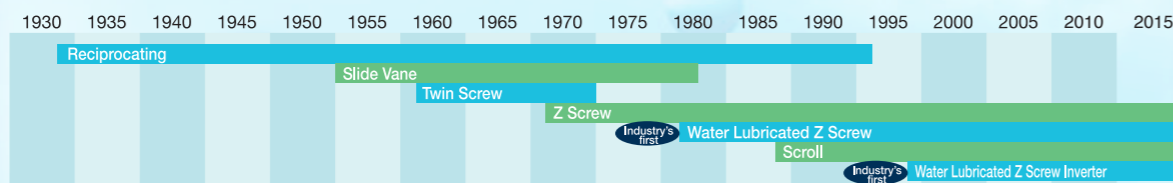
HIGH EFFICIENCY + CLEAN AIR = MITSUI SEIKI WATER LUBRICATE COMPRESSOR

Water lubrication is safe and sustainable.

Since 1982, Mitsui Seiki has been providing water lubricate air compressor to various industries. With its unique compression mechanism using water instead of oil, Mitsui Seiki offers clean air, highly efficient air compressor contributing to both customer cost-saving and environment protection.

History and Types of Mitsui Seiki Compressors

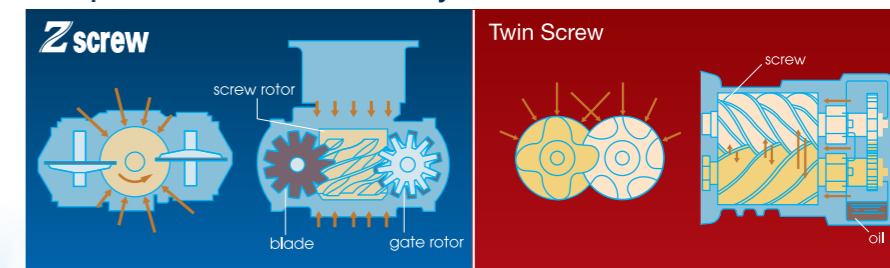
Mitsui Seiki has experience with many different types of compressors stretching back to 1934. In 1982, we launched sales of water lubricate Z screw compressor. More than 30years, we have provided energy efficient, clean air compressor all over the world.



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 axes 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)

Advantages of Water Lubrication



We offer a wide lineup of products to suit

MITSUI New Technology X Series - Oil Free Inverter Compressor

MITSUI SEIKI OIL FREE SCREW COMPRESSOR SERIES

i-14000 X series Water Lubricated Inverter Oil Free Compressor

Air Cooled 22/37 kW (Option : Water Cooled 22/37kW)
22kW / 37kW

Water lubrication	Increasing	High efficiency
Oil free	IT touch panel	Air cooled fan inverter
Inverter	Red-CX compatible	Built-in RO treatment
IPM motor	Energy saving	

Details ▶ 5,6

Next generation oil free compressor

MITSUI SEIKI OIL FREE SCREW COMPRESSOR SERIES

i-14000 series Water Lubricated Inverter Oil Free Compressor

NEW COLOR

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

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

Water Lubrication	Red-CX compatible
Oil free	Energy saving
Inverter	Environmentally friendly
IPM motor	High efficiency
Increasing	Air cooled fan inverter
IT touch panel	

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

NEW COLOR

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

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

Water lubrication	Red-CX compatible	Air cooled fan inverter
Oil free	Energy saving	
IE3 motor	Environmentally friendly	
IT touch panel	High efficiency	

Details ▶ 9

all types of needs, from compact to large units.

Compact compressor with greater power

MITSUI SEIKI OIL FREE SCREW COMPRESSOR SERIES

ZU-Quatro series Water Lubricated Oil Free Compressor

Air cooled 7.5/11kW

Water lubrication	Energy saving
Oil free	Environmentally friendly
IE3 motor	High efficiency

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

Energy saving machine

Plural control system

Red CX

Averaging operating time	Averaging the operating time of inverter machine
Alternate operation	Turn back control
Permanent fixed operation	2 patterns of pressure settings by weekly timer
Start and stop in fixed order	

Details ▶ 11

i-14000X series

MITSUI SEIKI OIL FREE SCREW COMPRESSOR SERIES
Air Cooled 22/37kW

WATER × AIR SUSTAINABLE COMPRESSOR



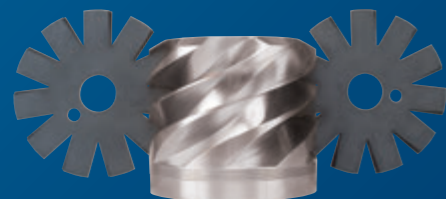
Mitsui Seiki launched innovative water lubricated oil free air compressor in 1982. Since then, we have delivered air compressors to customers of various industries, such as foods, beverages, pharmaceuticals, chemical, paint shops and cosmetics where clean air supply is critically important. Mitsui Seiki water lubricated compressor use no oil inside, thus most ideal air compressor with class zero (ISO8573-1) quality air.

i-14000X series is Mitsui Seiki new series(22kW and 37kW.) We have developed new design screw using latest theory and manufacturing technology. Built-in automatic RO water treatment system stabilizes water quality inside compressor. Combining SUS rotor and built-in RO system, Mitsui Seiki i-14000X series can supply high quality air to customers.

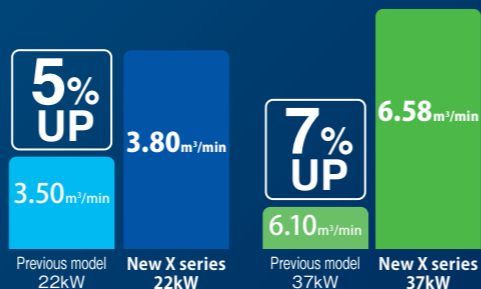
Big Air Delivery × Durability × Energy Saving

○ Air Delivery Volume Up

- Applying new technologies and analysis, we improved screw design.
- Air delivery improved 7% up from previous model.
- Pressure adjustable between 0.5-0.93MPa.

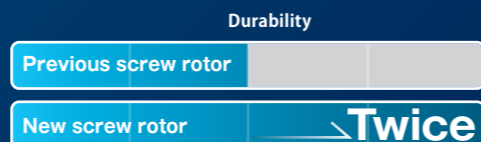


Made of SUS



○ Durability Up

- Screw rotor is made of SUS, thus achieve high durability.
- High precision, sophisticated design screw rotor.
- Abrasion-resistant and corrosion-resistant - screw durability become twice.



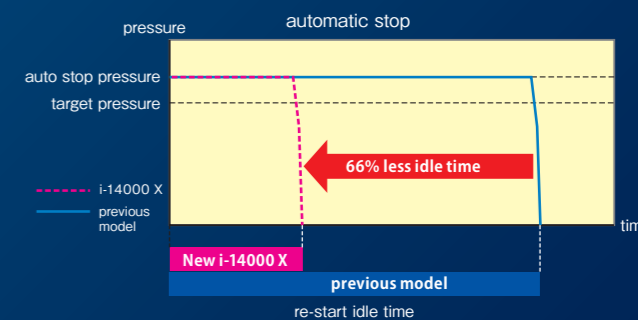
○ Built-in RO Water Treatment System

- Built-in RO water treatment system automatically create ideal condition, by removing impurities.(ex; Silica).

NEW FUNCTIONS

○ Quick Response Reboot System

- When compressor automatic stop function work (customer use no air), previous model had to wait some time until compressor can re-start. Now, new model have Quick Response Reboot System and need to wait 66% less time until re-start.



○ Global Warming

- By improving cooling air route inside compressor, even ambient temperature become 50°C, compressor do not stop.
- When ambient temperature become 45°C, inlet temperature pre-alarm appear.
- ※If ambient temperature is higher than 40°C, O-rings and electrical parts need exchange earlier than normal condition.



○ Clean Air

- Most stringent air purity standard Class 0 (ISO8573-1) quality air.
- SUS material is used for screw rotor and gate rotor.

ISO 8573-1 CLASS 0



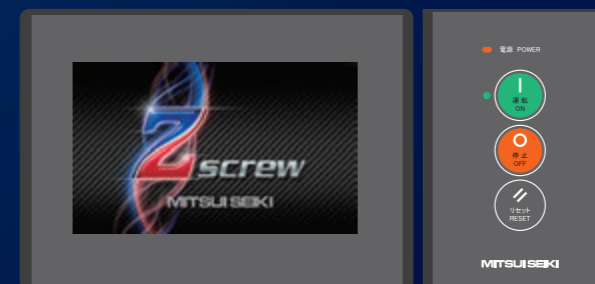
Mitsui Seiki water lubricate compressor, have achieved TUV certificate for ISO 8573-1:2010 [: :0], most stringent air purity standard in the industry.

TUV : Technische Überwachungs Verein: independent, internationally renowned organization specializing in evaluating and assessing of industrial technologies.



○ 7.0-inch LCD Touch Panel

- Easy and Multi-functional LCD Display.
Data logging function (Data download to USB memory.)
Schedule operation
Sudden power interruption auto re-start function (up to 20sec)
Alternative operation (Two units connect with wire, main unit and back-up unit)
- Overheat Pre-Alarm Function
When ambient temperature is higher than 45°C, inlet temperature alarm appear and warn customer.
- Smartphone Compressor Monitoring Application (Option)
Compressors can be monitored remotely from smartphones and tablets.
Additional software is needed.



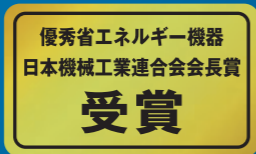
- Sudden power interruptoin auto re-start up to 20sec.
- Schedule running function.
- Alternate operation function.
- Remote monitoring from PC with Z-mate software.
- Data logging function - discharge temperature, inlet temperature, pressure(tank, user), kW, Voltage, Ampere and rotation speed.
- Data can download to USB memory and checked from PC.

Alternate Operation Function
i-14000X 2units conncted by wiring.
Main unit and back-up unit, automatic exchange.

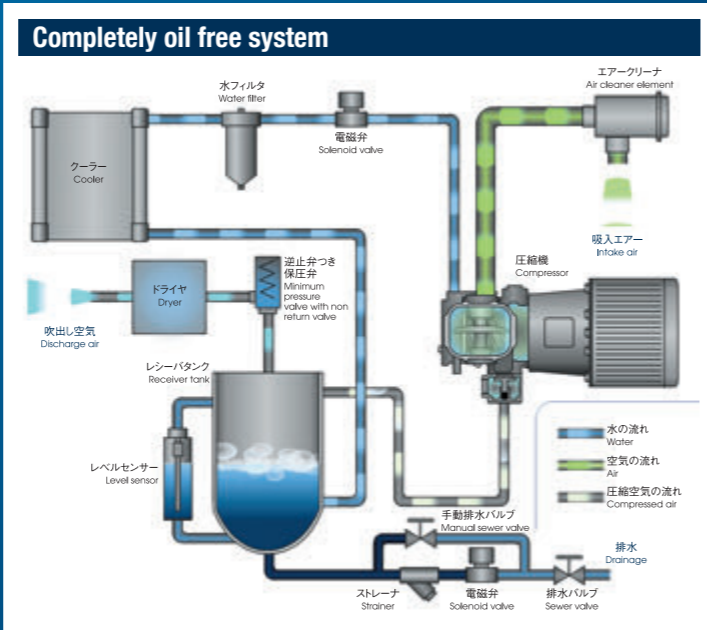
Next generation inverter oil free compressor

i-14000 series

MITSUBI SEIKI OIL FREE SCREW COMPRESSOR SERIES
 Water Lubricated Inverter Oil Free Compressor
 Air Cooled 30~75kW
 Water Cooled 55~220kW



**Simple Construction
 Easy Maintenance**
 “Water Lubricated Inverter Oil Free Compressor”

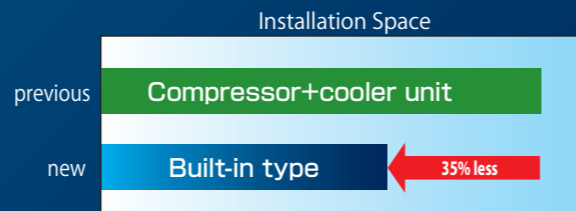


IPM motor and direct drive improve operating efficiency and durability

The compressor is equipped with the latest IMP motor with a built-in permanent magnet in the rotor. It does not suffer power loss and slips of 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.

55/75kW Built-in Cooler Type Debut Small Installation Space

35% Less Space! No Cooler Unit.



IPM motor (IE4 equivalent) Super Premium Efficiency

Motor Efficiency Standard

- IE1 ... Normal Motor
- IE2 ... High Efficient Motor
- IE3 ... Premium High Efficient Motor
- IE4 equivalent ... Super Premium High Efficient Motor**

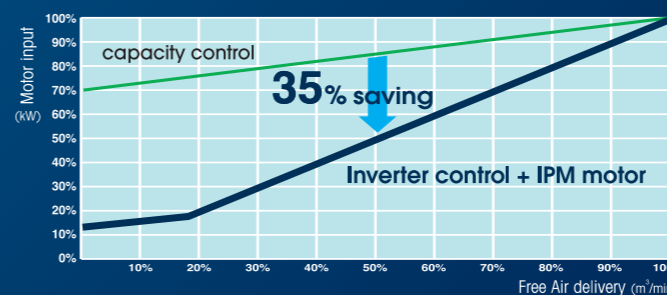
Synergy with inverter control greatly improves energy efficiency

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

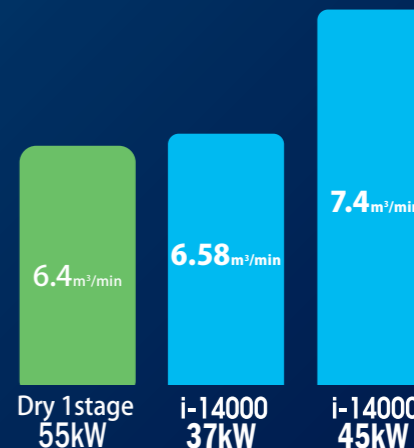
75kW model

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



Average power	Annual power	Annual CO ₂
35% reduction	¥2.25 million reduction	88⁺ CO₂ reduction

Comparison of Free Air Delivery



Why Mitsui Seiki so efficient?

Inverter Benefit Example

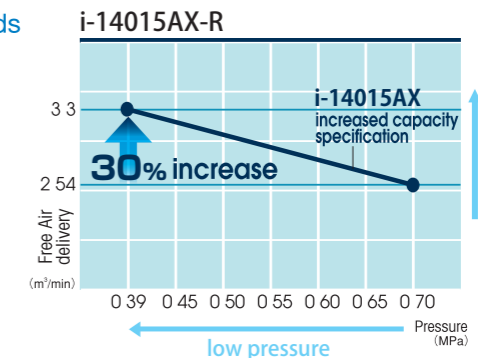
Model	i-14015AX-R	i-14022AX-R	i-14030A3-R	i-14037AX-R	i-14045A3-R	i-14055A4-R	i-14075A4-R	i-14100W	i-14150W	i-14180W	i-14220W
Motor output	15kW	22kW	30kW	37kW	45kW	55kW	75kW	100kW	150kW	180kW	220kW
CO ₂ reduction (1/year)	14ton	23ton	26ton	38ton	39ton	64ton	88ton	128ton	190ton	227ton	275ton
Power reduction (1/year)	¥370k	¥590k	¥670k	¥960k	¥1,000k	¥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: 0.587 kg/CO₂/kWh

Select the Optional System to Suit Your Needs

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

This option enables compressor to discharge increased air delivery with lower pressure. For example, 15kW increasing option model can discharge 30% bigger air volume at 0.39MPa. Please ask Mitsui Seiki about detail information for this option.



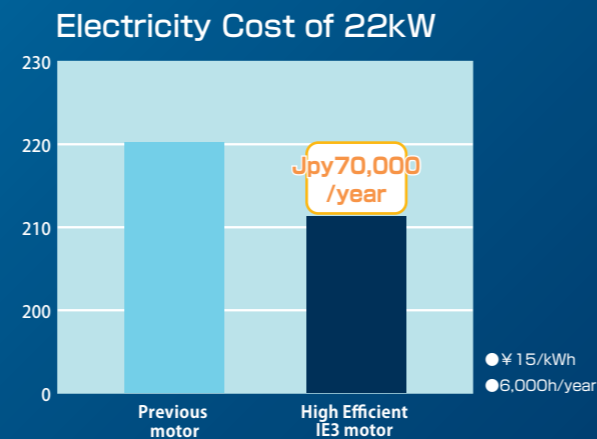
- Water lubrication
- oil free
- Inverter
- IPM motor
- Increasing
- IT touch panel
- RED-CX compatible
- Energy saving
- Environmentally friendly
- High efficiency
- Air cooled fan inverter

Standard Fixed-speed Models optimized for environmental performance

U-14000 series

MITSUBISHI SEIKI OIL FREE SCREW COMPRESSOR SERIES
 Water Lubricated Oil Free Compressor
 Air Cooled 15~75kW
 Water Cooled 55/75kW

High Efficient Premium IE3 Motor



Fan Motor Inverter

Fan motor is controlled by inverter for energy saving.

New Design Cooler

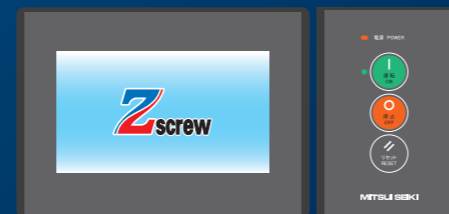
New design super slitfin is adopted to perform high cooling capability.

Climate-friendly Alternative Gas

Dryer use alternative R-407C gas to protect ozone layer.(Built-in dryer type.)

7.0-inch Easy and Multi-function LCD Display

Running conditions, alarm detail, maintenance detail and setting can be checked easily and speedy. This display enables easy operation of air compressor.



- Sudden power Interruption auto re-start up to 20sec.
- Schedule running function.
- Remote monitoring from PC with Z-mate software.
- Data logging function-discharge temperature, inlet temperature, pressure (tank, user), kW, Voltage, Ampere and rotation speed.
- Data can download to USB memory and checked from PC.

MITSUBISHI SEIKI OIL FREE SCREW COMPRESSOR SERIES **ZU ZU-Qüatro**

- Water lubrication
- oil free
- IE3 motor
- Energy saving
- Environmentally friendly
- High efficiency

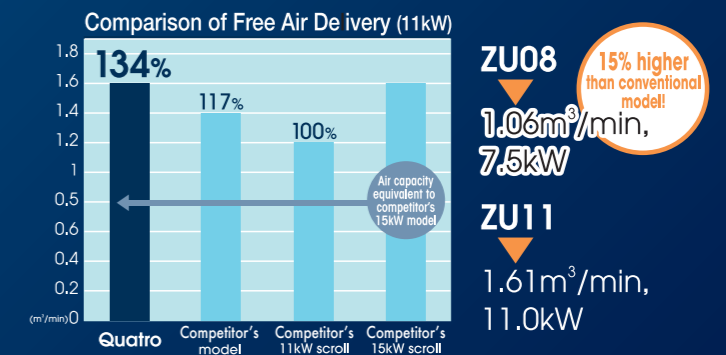
Compact compressor with great power

ZU-Qüatro series

MITSUBISHI SEIKI OIL FREE SCREW COMPRESSOR SERIES
 Water Lubricated Oil Free Compressor
 Air Cooled 7.5~11kW



Industry's highest air capacity at same motor output
 Combines high durability with efficient maintenance



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

Class 0 ISO8573-1 CLASS 0

ISO8573-1 CLASS 0

Mitsui Seiki water lubricate compressor, have received TUV certificate for ISO 8573-1 CLASS 0, most stringent air purity standard in the industry. For pharmaceuticals, food, beverages and electronics industries, where clean air supply is critical, the best and simple solution to avoid air contamination is to use compressor without any oil exist inside.



- ※ "OIL-FREE" dry screw compressors, although they are called oil-free, use oil inside for gears.
- ※ The quality of discharged air is affected by ambient environment and installation location.



- Water lubrication
- oil free
- IT touch panel
- RED-CX compatible
- IE3 motor
- 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.

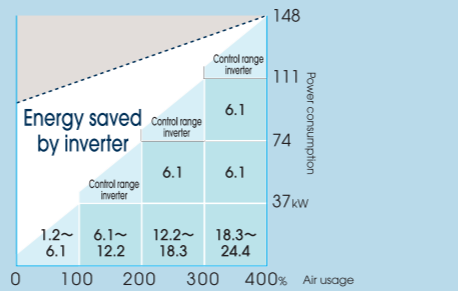
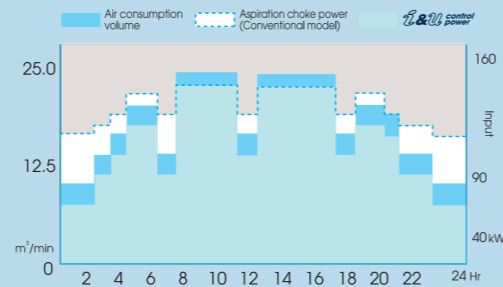
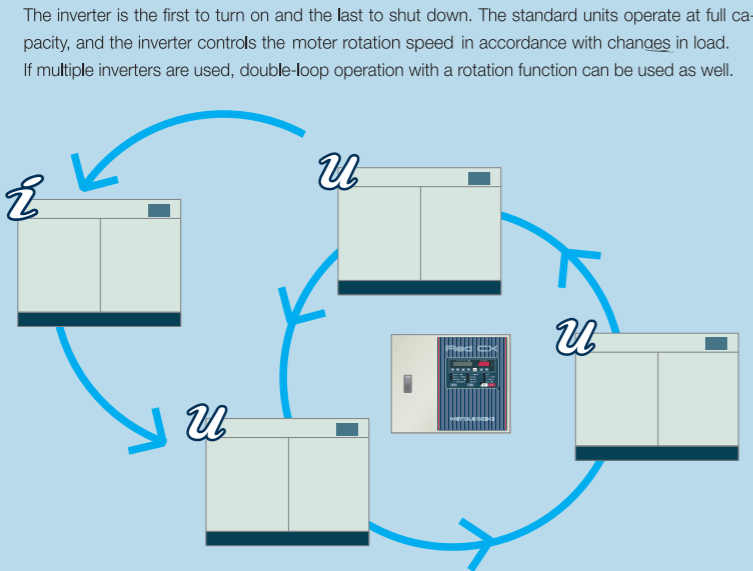


i&U control

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

Total aspiration volume 24.4m³/min

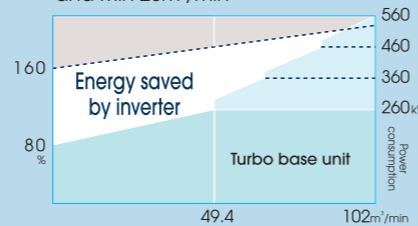
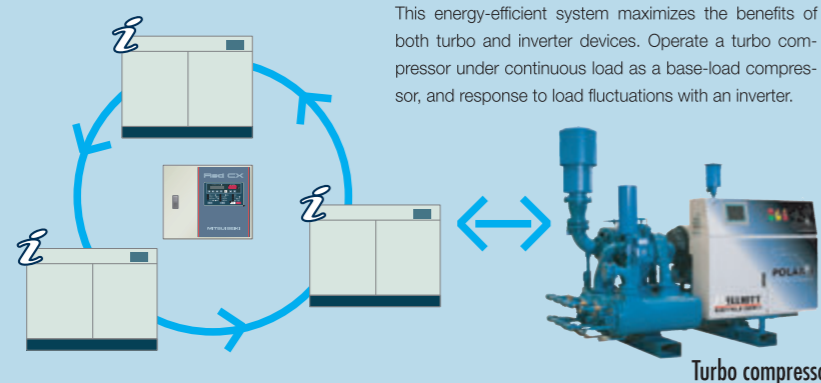
Air usage conditions: Simulation with Max 23m³/min and Min 10m³/min



Base Load Control Turbo compressor three i-14100W's

Total aspiration volume 102m³/min

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



Turbo compressor + three i-14100W's (100kW: 17.4m³/min)

Special Options

Low-pressure Big-volume Option ... Lower pressure and big air volume. (i-14000X/i-14000)

380V·400V ... We have 380/400/440V 50/60Hz option so that compressor can be used in different voltage country.

Cold region option ... If compressor is located in cold region, internal heater works to prevent compressor from freezing.

Outdoor option ... Compressor is protected by walls and roof to prevent rain get inside.

Water cooling ... If compressor location is difficult to ventilate, we have water cooling option. (15kW and bigger.)

Singapore/Malaysia pressure vessel option

Automatic RO water treatment system

... RO system always control the water quality inside compressor to keep compressor in good condition.

※Please ask Mitsui Seiki for these options.



Outdoor option

Receiver Tank

Material SS400·SM490A

Accessory Safety valve Pressure gauge and drain valve

Color Munsell7.5Y/1

Documents Japanese pressure vessel standard

Model	Capacity (L)	Maximum pressure MPa	Weight (kg)	Diameter D (φ mm)	Height H (mm)	Piping size	
						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

- ※ Please ask Mitsui Seiki about 1500-6000L tank.
- ※ Please ask Mitsui Seiki about stainless steel tank.
- ※ We recommend epoxy coating in case of oil free compressor.
- ※ Use anchor to firmly position tank.
- ※ Please follow pressure vessel regulations of each country.
- ※ Please ask Mitsui Seiki for more detailed information.



Clean Air System

Please check air purity level needed in your factory, and choose adequate equipment.



	Air Use	Air Purity
Line Filter	Air-tool, Air-motor, Air-press, painting, Spray	Dry air 1-5μm A little amount of oil particle and dust inside air is permissible
Line Filter + Mist Filter	Instrument air, Electrostatic coating, Drying air and Electric parts	Dry oil-free air 0.1-0.01μm Clean air. Oil, dust and water are not allowed in compressed air.
Line filter + Mist filter + Carbon filter	Pharmaceutical, food, brewery, packing, ozone generator, science labo and caisson air	Dry oil-free deodor air 0.003-0.01μm Clean air. Oil, dust, water and smell are strictly not allowed.

i-14000 inverter specifications 15kW to 220kW

Model	i-14015AX-R	i-14022AX-R	i-14030A3-R	i-14037AX-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 (m ³ /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°C)												
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						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						
Air dew point at outlet (°C)	10 (under applied pressure)*												
Refrigerator power (refrigerant -40°C) (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					
Refrigerant	R-407C	R-410A	R-407C	R-410A	R-407C	R-410A	R-407C						
Refrigerant amount	340	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		
Width (w/out dryer) (mm)	1407	1457 (1277)	1780 (1430)	2068 (1850)	2538 (2195)	2450 (2005)	2300 (1860)	2600 (1860)	(2750)				
Length (mm)	750				900	1190	1200	1200	1500				
Height (mm)	1640	1640	1510	1715	1595	1800	1500	1800					
Total mass (dry) (kg)	650	700	730	1050	1090	-	1480	1350	1520	2100	2400	3050	3100
Noise level (dB (A))	54~57	55~59	56~63	61~65	59~66	-	63.5~69	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°C 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°C): 55kW: 150ℓ/min; 75 kW: 200ℓ/min; 100 kW: 250ℓ/min; 150kW: 300ℓ/min; 180kW: 430ℓ/min; 220kW: 430ℓ/min

u-14000 15kW to 75kW

Model	u-14015A3-R	u-14015A3-R	u-14022A3-R	u-14022A3-R	u-14037A3-R	u-14037A3-R	u-14055A3-R	u-14055A3-R	u-14075A3-R	u-14075A3-R	u-14055W3-R	u-14055W3-R	u-14075W3-R	u-14075W3-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							
Intake conditions	Atmospheric pressure (2-40°C)													
Main motor power (kW)	Power-saving AUCS & Automatic start/stop selection													
Power source voltage (50/60Hz,V)	15	22	37	55	75	55	75							
Motor type	200/200-220													
Starter	3-phase squirrel case, 2P totally enclosed external fan (IE3 motor)													
Drive system	Direct in	3-contactor, star delta start												
Cooling system	Direct drive by coupling													
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											
Air dew point at outlet (°C)	10 (under applied pressure)*													
Refrigerator power (refrigerant -40°C) (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							
Refrigerant	R-407C													
Refrigerant amount	280	600	800	800	2200	800	2200							
Discharge pipe diameter (R)	1			1 1/2		2								
Width (w/out dryer) (mm)	1457 (1277)		2068 (1850)	2300 (1860)	2600 (1860)	2300 (1860)	2600 (1860)							
Length (mm)	750				1200									
Height (mm)	1510			1595	1500									
Total mass (dry) (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°C 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°C): 55kW: 150ℓ/min; 75kW: 200ℓ/min
 ○ 380 / 400 / 440V option is also available.

Notation	① i-14000 series (oil-free/inverter)	② 22kW	③ Air cooled	④ Type name	⑤ Built-in air dryer	
i-14037AX-R	①	②	③	④	⑤	
Notation	① u-14000 series (oil-free)	② 22kW	③ 50Hz	④ Air cooled	⑤ Type name	⑥ Built-in air dryer
u-140225A3-R	①	②	③	④	⑤	⑥

zu-Quatro Compact Series ZU-Quatro7.5kW/11kW Air cooled

Model	ZU085A5	ZU086A5	ZU115A5	ZU116A5
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 AUCS			
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 (IE3 motor)			
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			
Noise level (dB (A))	56			58
W×L×H (mm) (w/out dryer)	880 × 750 × 1450			
Total mass (dry) (kg)	410			460

○ Noise values measured in noiseless environment at distance of 1.5meters from front, at height of 1m (at 0.7MPa)
 ○ Specifications for discharge pressure of 0.93MPa (factory option) available on request.
 ○ 380/400/440V option is also available.

Notation

ZU-085A5

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	ZU1006WSZ	ZU1006WSZ	ZU1206WSZ	ZU1206WSZ
Delivered air pressure (MPa)	0.7			
Free air delivery (m ³ /min)	18.2	17.4	21.3	20.8
Intake conditions	Atmospheric pressure (2-40°C)			
Capacity control method	Power-saving AUCS & 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 case, 2P totally enclosed external fan (IE3 motor)			
Drive system	Direct drive by coupling			
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)	10k JIS 3B (80A) flange			
Noise level (dB (A))	68			70

○ Noise values measured in noiseless environment at distance of 1.5meters from front, at height of 1m (at 0.7MPa)
 ○ Specifications for high-voltage 3,000/3,300V unit available on request (optional).
 ○ Specifications for discharge pressure of 0.93MPa (factory option) available on request.
 ○ Please ask Mitsui Seiki for dimension and weight.

Notation

ZU-1006WSH

① ② ③ ④ ⑤ ⑥

① ZU (oil-free)
 ② 100kW
 ③ 60Hz
 ④ Air cooled
 ⑤ Type name
 ⑥ High voltage option

For the safe use of Mitsui Seiki air compressor

- Free air delivery shows air volume measured with JISB 8341 standard, and converted to inlet conditions of JISB 8341 standard.
- Do not use discharged air for respiratory purpose for human.
- Make sure that ambient temperature is always below 40°C. Install compressor at indoor ventilated environment.
- Please contact Mitsui Seiki for product warranty and guaranteed values.
- Please follow environmental regulations of each region.
- Please contact Mitsui Seiki for detail information about power supply and installation details.
- 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°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.

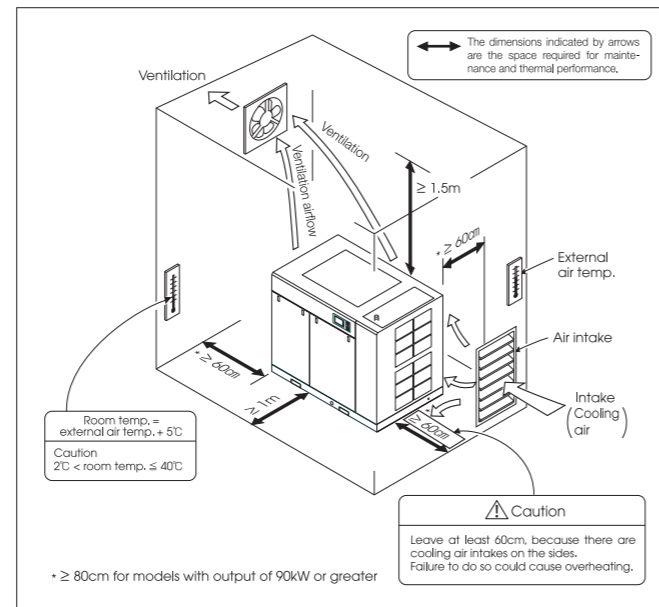
Maintenance

- ▲ 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



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)

	Figure A. Overall ventilation	Figure B. Duct ventilation (ventilation via compressor exhaust fan only)
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 (B) = 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 (E) = room ventilation (C) + exhaust (D) + compressor FAD

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
				~ 22 kW ... ≤ 10 m		37kW ... ≤ 20 m		
	200/220V	400/440V		200/220V	Grounding cable	400/440V	Grounding cable	
i-14015AX-R	100AF-100AT	50AF-50AT	30KVA	22mm²M8	14mm²M8	8mm²M5	8mm²M5	—
i-14022AX-R	225AF-150AT	100AF-75AT	45KVA	38mm²M8	22mm²M8	14mm²M6	14mm²M6	≤10t
i-14030A3-R	225AF-175AT	100AF-100AT	55/60KVA	60mm²M8	38mm²M6	22mm²M6	14mm²M6	≤10t
i-14037AX-R	225AF-225AT	225AF-125AT	70/75KVA	100mm²M10	22mm²M10	22mm²M8	14mm²M8	≤10t
i-14045A3-R	400AF-300AT	225AF-150AT	75/85KVA	100mm²M10	38mm²M8	38mm²M8	22mm²M8	≤15t
i-14055A4-R	400AF-350AT	225AF-175AT	95KVA	100mm²M12	38mm²M8	60mm²M8	22mm²M8	—
i-14055W3-R	400AF-350AT	225AF-175AT	95KVA	100mm²M12	38mm²M8	60mm²M8	22mm²M8	≤15t
i-14075A4-R	400AF-400AT	225AF-225AT	130KVA	150mm²M12	38mm²M10	60mm²M10	38mm²M10	—
i-14075W3-R	400AF-400AT	225AF-225AT	130KVA	150mm²M12	38mm²M10	60mm²M10	38mm²M10	≤20t
i-14100W	—	400AF-250AT	200KVA	—	—	100mm²M12	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-14015A3-R	100AF-100AT	100AF-60AT	25KVA	22mm²M8	14mm²M5	14mm²M5	14mm²M5	≤5t
u-14022A3-R	225AF-200AT	100AF-100AT	35KVA	38mm²M10	22mm²M5	22mm²M8	22mm²M5	≤10t
u-14037A3-R	※1 NV250-SEV,HEV 特殊形 NF250-SEV,HEV,225AT	NF250-SEV,HEV-150AT	55KVA	100mm²M10	38mm²M5	38mm²M10	22mm²M5	≤10t
u-14055A3-R	NF400-SEW,HEW-400AT	225AF-225AT	80KVA	150mm²M12	38mm²M8	60mm²M8	22mm²M8	—
u-14055W3-R	NF400-SEW,HEW-400AT	225AF-225AT	80KVA	150mm²M12	38mm²M8	60mm²M8	22mm²M8	≤15t
u-14075A3-R	※2 NV400-SEW,HEW 特殊形 NF400-SEW,HEW-400AT	※1 NV250-SEV,HEV 特殊形 NF250-SEV,HEV,225AT	110KVA	200mm²M12	38mm²M8	100mm²M10	22mm²M10	—
u-14075W3-R	※2 NV400-SEW,HEW 特殊形 NF400-SEW,HEW-400AT	※1 NV250-SEV,HEV 特殊形 NF250-SEV,HEV,225AT	110KVA	200mm²M12	38mm²M8	100mm²M10	22mm²M10	≤20t
ZU08A5	100AF-60AT	50AF-40AT	15KVA	8mm²M5	5.5mm²M5	3.5mm²M4	5.5mm²M4	—
ZU11A5	100AF-75AT	50AF-50AT	20KVA	14mm²M6	14mm²M6	5.5mm²M4	14mm²M5	—

◎ 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 continuous 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-14037A3-R, u-14075A3-R and u-14075W3-R, please use designated Mitsubishi Breaker instantaneous tripping current adjustable up to 16x type.

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.

◎ [] shows figure of cooler unit

Quality of supplied water

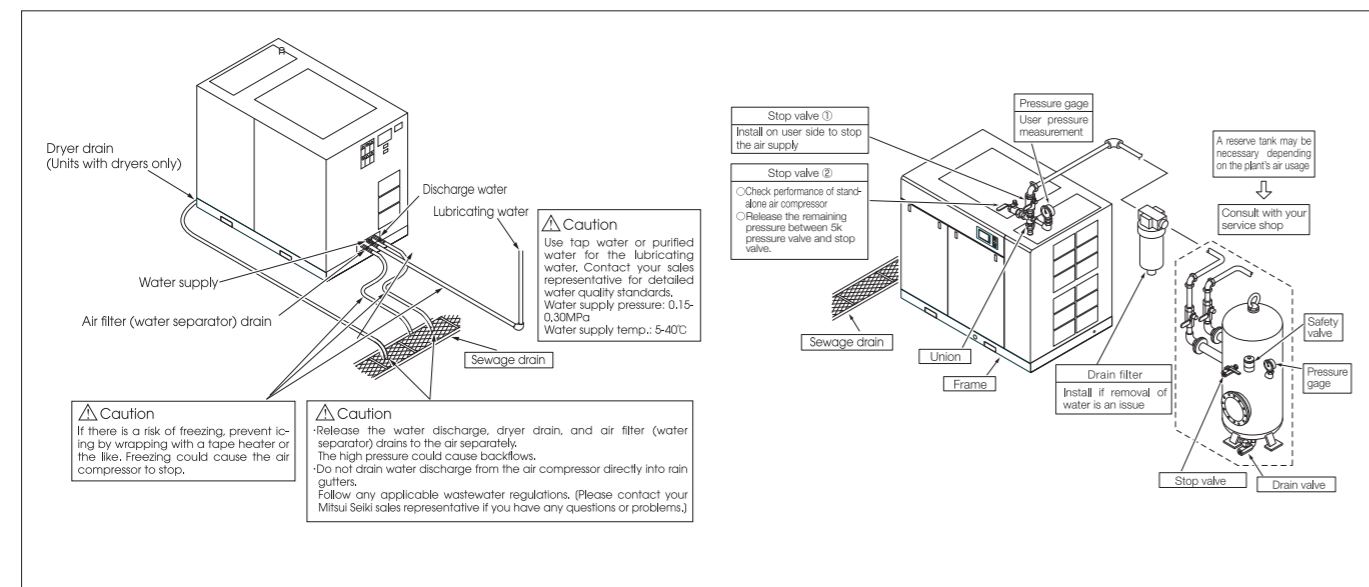
Compressors use water lubricant inject water internally during the compression process, in order to cool, lubricate, and seal the interior of the compression chamber. For this reason, the quality of the water that is supplied to the compressor has a large impact on its performance and service life. Below 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	—	—	—
Turbidity	2 or less	—	—	—
pH (25°C)	6-8	○	○	—
Electrical conductivity (25°C)	≤ 20-120μs/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.
- * We recommend RO water. Well water and industrial water do not suffice this standard.

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.

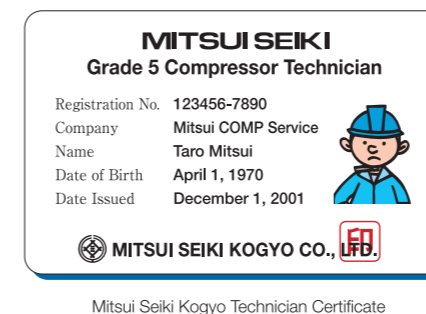


⚠ Caution When supply water pressure exceeds 0.3MPa or water-hammer phenomenon occur, it may cause air end leaking. In that case, please add water regulator and relief valve.

Maintenance

- 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).



Mitsui Seiki Kogyo Technician Certificate

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 documents, 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 30 days 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.

Peripheral devices

