KOBELCO

Emeraude

Oil-free Screw Compressor General Catalog

KOBELCO COMPRESSORS CORPORATION

KOBELCO COMPRESSORS
MANUFACTURING (SHANGHAI)
CORPORATION

Oil-free Screw Compressor 2412

Change the Future by Air and Heat technology

Towards the Carbon-free society with oil-free technologies

Amid growing global concerns about climate change, carbon neutrality, and other environmental issues, the world is actively working towards a low-carbon society.

Oil-free compressors, which produce clean compressed air, represent a significant step forward in mitigating environmental risks and advancing towards a low-carbon future.

With continuous advancements in environmental performance, oil-free machines, equipped with heat recovery systems for effective heat utilization and heat recovery dryers, are leading the way.

To accelerate the realization of a low-carbon society, KOBELCO remains committed to developing environmentally friendly compressors and energy-saving technologies.

KOBELCO

Emeraude

Diverse choices for the best of your use.

INVERTER control*1 | IPM motor*2 | Full color touch monitor | Group control with hard wire*3 | Customize*4

ALE Emeraude ALEⅣ / Two-stage dry screw

Motor output 55-120kW

Discharge air flow 6.9-19.4 m³/min

P.9

Motor output 132-400kW

Discharge air flow 19.2-66.8 m³/min

P.11

Other type

FE Emeraude FE / Two-stage dry screw

Motor output 22-55kW

Discharge air flow 3.0-8.1 m³/min

P.23

ES Emeraude ES / scroll

Motor output 1.5-15kW

Discharge air flow 165-1,670 L/min

P.25

*1 Not all are INVERTER model. *2 Only available for INVERTER model. *3 Availability of group control with hard wire varies depending on controller type.
*4 Customization menu is different for each model. Please refer to pages 18-22 for details.

Oil-free Worry-free

What's most essential value for oil-free compressors is to supply pure, clean, oil-free air stably in any running conditions. For critical applications, such as, food and beverages processing, semiconductor and electronics manufacturing, medicines manufacturing and more, even the smallest oil contamination never been accepted.

As a pioneer of oil-free technology with over 60 years of history, Emeraude ALE/FE series assure safe oil-free compressed air and utmost reliability for your production.

Class 0 certified

KOBELCO has received Class 0 certification (ISO8573-1 [-:-:0]) for 〈Emeraude ALE〉series from international test institute called TÜV which certifies the highest level of purity for quality classifications of compressed air. This is one proof of KOBELCO's supreme oil-free technology.

CLASS	Concentration total oil (aerosol, liquid, vapor) mg/m³
0	As specified by equipment user or supplier and more stringent than class 1
1	≦0.01
2	≦0.1
3	≦1
4	≦5

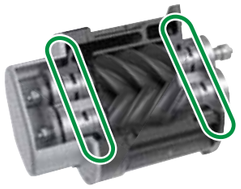
KOBELCO's unique design to ensure "Oil-free"

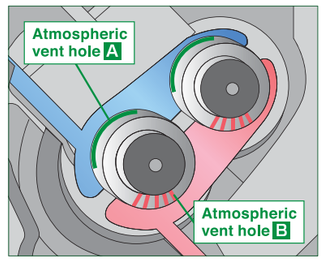
Dual vent holes design

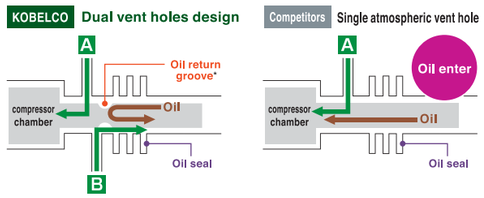
(Common for ALEⅣ / FE)

Dual vent holes design

KOBELCO's proven dual vent holes design prevents oil entry in compressor chambers during long unload running.







■ 3 steps of reliable shaft seal structure (during unloading)

1. Highly reliable oil seal prevents oil entry.
2. Oil return groove* pushes back oil even if oil break through oil seal.
3. Oil is exhausted from atmospheric vent hole B even if oil breaks through oil return groove*. Pressure between vent hole A and B is equal, so oil doesn't enter into compressor chambers.

*Oil return groove is applicable for ALEIV

Evolution continues, New generation starts

Now, brand-new chapter in the over 60 years history of KOBELCO's oil-free technology has just started, New generation Emeraude ALE debut. With ultimate specific power consumption, supreme silence and outstanding durability, Emeraude ALE reached new stage in the industry. Proudly standing dark green elegance is the result of our never ending challenges for technology innovation and craftsmanship improvement over the long history. Pursuing the perfection, making it a masterpiece.

Key Features

Best in class specific power consumption

With newly developed air-ends and optimized package design, achieved best in class specific power consumption.

Class 0 certified

KOBELCO's oil-free technology is proven by Class 0 certification (ISO8573-1 [-:-:0]) which certifies the highest level of purity for quality classifications of compressed air.

Long overhaul cycle

Thanks to long life cycle bearing and optimized design of air-ends, long overhaul cycle can be achieved. (1st stage : 9years / 2nd stage : 6years)

Outstanding quietness

The insulation materials, flow of unit ventilation air, and frequency of noise were all reviewed and optimised for outstanding quietness.

Full color touch monitor

Newly developed sophisticated LCD interface enables you to figure out necessary information at a glance.

Emeraude-ALE

ALEⅣ

Motor power	Discharge air flow	Specification
55-120kW	6.9-19.4m³/min	P.26·27

Setting a new standard for specific energy performance in its class. The future of mid-range Oil-free.

By optimizing energy efficiency throughout the entire system, we have set a new benchmark for specific energy performance in its class. A mid-range model that paves the way for the future with cutting-edge performance.

- Best in class specific power consumption
- Class 0 certified
- Long overhaul cycle
- Outstanding quietness
- Sophisticated full color touch monitor

Energy saving

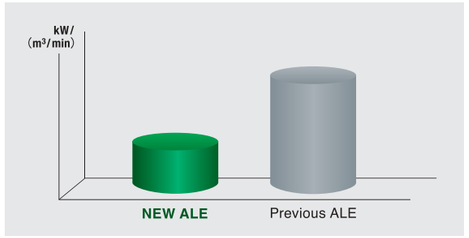
Best energy efficiency in mid-range models.

Class-leading specific power consumption

With specific power consumption as our primary design criterion, we strive to deliver products that maximize energy efficiency for our customers. The integration of ultra-high-efficiency motors and optimized package design has enabled us to set a new benchmark for specific energy performance in its class.

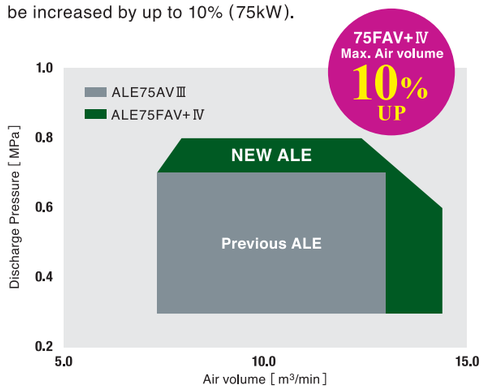
Compared with Previous ALE
9% UP
(ALE75FAV+Ⅳ)

Comparison of specific power consumption



Wide-range control

Wide range control can deliver higher airflow at lower pressure point. ALE Ⅳ senses line pressure and automatically utilizing excess power during low-pressure operation efficiently. At 0.6MPa operation, airflow can be increased by up to 10% (75kW).



Key components

Sophisticated components support ALE's high performance.

High-efficient motor (Fixed-speed : IE4, Inverter : IE5 equivalent)

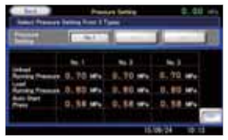
To pursue energy efficiency, we adopt high-efficiency motors. ALE Ⅳ fixed-speed models are equipped with IE4 super-premium motors, and inverter models feature ultra-high-efficiency IPM motors which are IE5 equivalent.

Enhancing usability with touchscreen controller

Equipped with a 7-inch full-color touch screen controller, it allows for easy monitoring of compressor operation and various settings.

Running condition

Setting

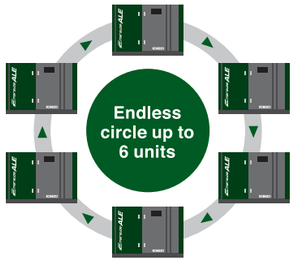


● Discharge pressure setting
: set and choose 3 patterns

Modbus I / O as standard

Group control (up to 6 units)

By interconnecting multiple units, max. 6 units can be automatically operated, achieving optimal energy-saving operation without group controller.



Emeraude-ALE ALEⅣ

Motor power	Discharge air flow	Specification
132 - 400 kW	19.2 - 66.8 m³/min	P.28·29

Ultimate Energy Efficient KOBELCO's Flagship.

By developing state-of-the-art air-ends and optimized package design, we achieved best in class specific power consumption as well as utmost durability. Here, new standard of oil-free compressors starts.

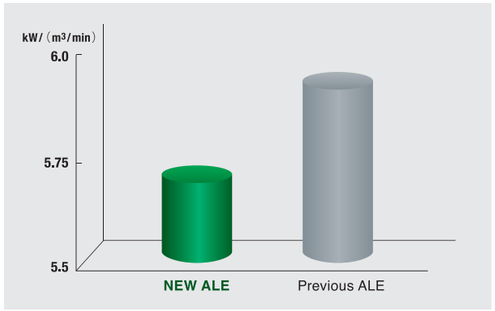
- Best in class specific power consumption
- Class 0 certified
- Long overhaul cycle
- Outstanding quietness
- Sophisticated full color touch monitor

Energy saving

Supreme energy efficiency for the lowest possible ownership cost.

Class-leading specific power consumption

Comparison of specific power consumption



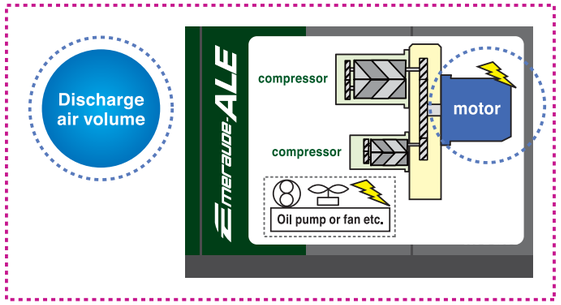
New ALE's performance is evaluated by specific power consumption as per JIS B 8341:2008 (ISO1217 Edition3 equivalent). KOBELCO places an importance on not only shaft power but also compressor's total input power including energy loss in the compressor because electricity consumption for customers is not shaft power and rated motor power but compressor's total input power.

Compared with Previous ALE — **3% Performance improvement**

*Comparison of 132kW models

Why "Specific power consumption"?

Specific power consumption is the new valuation standard based on compressor's total input power and discharge air volume. It shows the actual customer's energy use.



● Previous valuation standard
① Discharge air volume
② Shaft power

● New valuation standard
① Discharge air volume
② Compressor input power

Compressor input power (Motor input power + auxi-motor input power) ÷ Discharge air volume

Previous valuation standard evaluated discharge air volume and shaft power separately.
New valuation standard evaluate "specific power consumption" which shows energy consumption to create compressed air of 1m³/min in addition to discharge air volume.
This means an actual compressor performance including fan motors and an oil pump.

KOBELCO has achieved class-leading performance with specific power consumption because of newly designed rotors, reduction of energy loss and selection of high efficient components.

Newly designed high efficiency rotors

A new rotor profile has been designed using advanced analysis technology that KOBELCO has fostered in their long history since developing the first oil free screw compressor in Japan in 1956. KOBELCO has achieved class-leading specific energy consumption thanks to the new rotors which have been designed superior performance.

[Improved Points]

- Optimization of the inter stage pressure
- Optimization of rotor clearance
- Improvement of shaft sealing structure

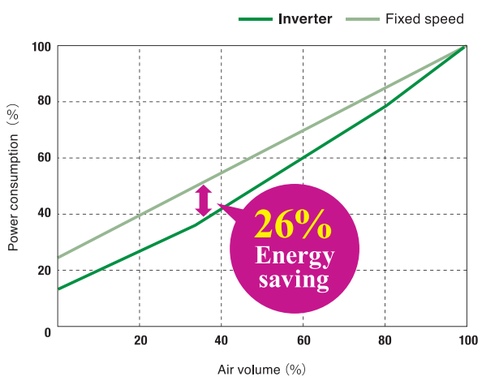
Package design for no wasted energy

Internal piping design, high efficiency motors and fans contribute to energy savings. Moreover, gas coolers' optimization decreases the discharge temperature and downsizes auxiliary equipment such as dryers.
This leads energy saving of not only compressors but also clean air systems.

Partial-load performance of Inverter model

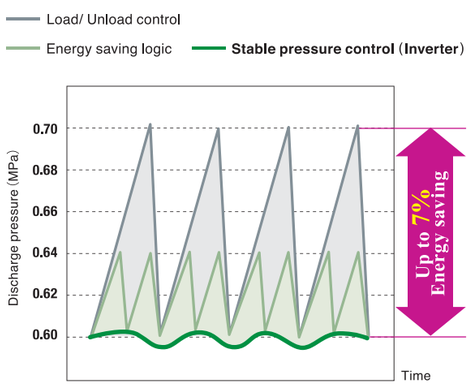
Inverter model's partial load performance has been improved thanks to IPM motor and superior rotor design. Inverter model supplies required air volume in appropriate power consumption.

■ Performance curve of KOBELCO Inverter model



Stable pressure control of Inverter model Energy saving logic of Fixed speed model

Stable pressure control of Inverter model keeps the line pressure lower. And the pressure fluctuation is kept within 0.01MPa. Energy saving logic of Fixed speed model forcibly switch loading to unloading at every capacity control cycle (min 23sec). Excessive pressure rise is eliminated and energy loss is minimized.

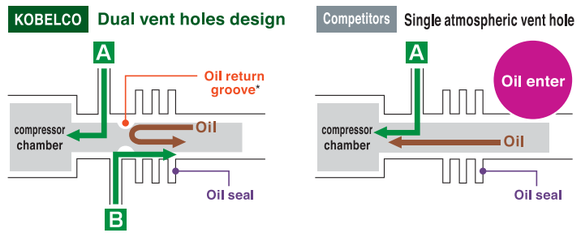


Reliability

Reliability does matter, as used in critical applications.

Unique design to ensure "Oil-free"

KOBELCO's proven dual vent holes design prevents oil entry in compressor chambers during unload running.
(Please see page6 for more detail)



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9 6 Long life cycle

Long Overhaul cycle has been achieved thanks to long life cycle bearings.

■ Standard Overhaul cycle

Superior Anti-corrosion performance

Proven Teflon coating and 2nd stage's Stainless steel rotors secure high durability against drain attack and prevent performance deterioration due to corrosion.

■ Anti-corrosion test results

*Picture may vary from actual products

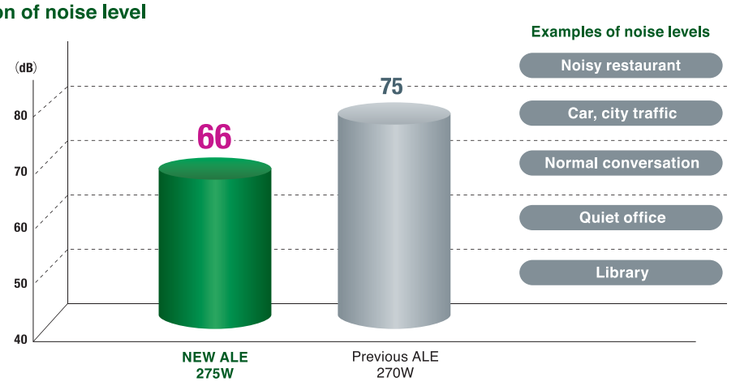
Usability

Advanced usability for your comfortable daily operations.

Outstanding quietness

Various noise control techniques has drastically reduced sound level. Making the working environment more comfortable.

■ Comparison of noise level



● Package structure for noise reduction

Cooling air inlet points have been put into one place to reduce noise.

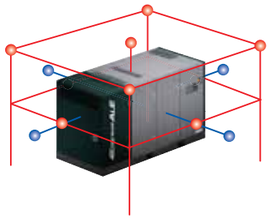
● Panel design

Noise absorbing material and high sealing ability against abrasive noise reduce noise leakage.

● Silencer

Newly designed suction and discharge silencers reduce noise level.

New measurement standard is more stringent than previous one because of 9point average and 1m around the unit.



● New measurement standard

9 point average measured at a distance of 1m around the unit or 1m above the unit

● Previous measurement standard (as per manufacturer's standard)

4 point average measured at 1m height and 1.5m around the unit

Easy maintenance

Easy access to key service parts for maintenance thanks to large panels and reduction of internal piping.

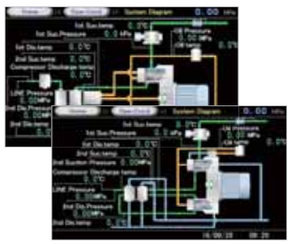
Exhaust cleaner without power source or instrument air

Filter type and compact exhaust cleaner has over 99% of oil mist separation performance and keeps inside of unit clean. Moreover, pressure resistance doesn't increase for long time because oil mist is separated itself.

User-friendly controller with 7 inch large size touch screen panel

It's easy to check and set running conditions.

Running condition 1



Setting 1

● Discharge pressure setting : set and choose 3 patterns

Setting 2

● Weekly timer setting ● Output contact setting
● Maintenance timer setting ● Language

Running condition 2

Trouble shooting

Alarm records

● Show estimated causes of each alarm

Running records

● Show running records of every 5sec & 1hr and daily & weekly reports

Others

● Show graphs of discharge pressure, load rate and motor current

Protection features

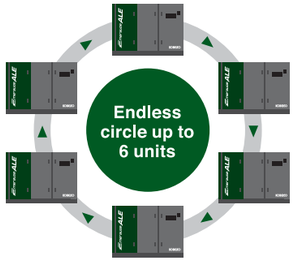
- 7500V surge protector
- Water flow switch (for water cooled model)
- Emergency stop button
- Motor winding temperature detection
- Password protection

Data logging with USB

Running data (CSV file) can be output from monitor to USB memory stick.

Group control

Max. 6 units can be automatically operated without a group control panel.



Key components

Key components for high performance.

Plate fin gas cooler (water cooled)

80% of pressure drop has been cut compared with shell & tube type. Additionally, because discharge air temperature has been reduced by optimization of cooler size, auxiliary equipments are downsized.

Capacity control valve

Proven pneumatic capacity control valve having quick response and high durability. Maintenance parts have been reduced thanks to built-in blow-off silencer.

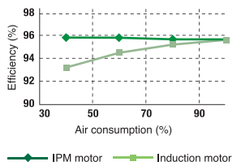
Main motor

IPM

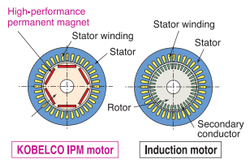
● IPM motor for Inverter model

Heat loss is small and high efficiency is kept even during low load condition.

● Comparison of motor efficiency (for reference)



● Comparison of structure



● IE3 motor for fixed speed model

Fixed speed model (380-460V) has IE3 high efficiency induction motor.

Discharge silencer

KOBELCO Patented Expansion & Porous Silencer reduces noise level in broad frequency band.

*Expansion Silencer for 200kW and above

Oil pump

Oil pump attached to gear box is driven by a high efficiency main motor.
The risk of oil leakage is reduced by no-piping design.

Customize

Customized compressors tailored to your exact requirements.

KOBELCO's Oil-free compressors offer flexible customization options to suit your installation environment and application.
We provide the perfect air solution for your specific needs.

Customize 01 Large-size, water-cooled inverter compressor

Higher airflow with supreme energy saving performance

INVERTER

Inverter models are available for large, water-cooled compressors (315-400kW) by customization. Stable pressure control eliminates excessive pressure rise and inverter controls motor rotating speed according to air demand, resulting in exceptional energy efficiency.

Motor power

315-400kW

Discharge air flow

48.0-66.6m³/min

Customize 02 Outdoor models

Solution for your space constraints with outdoor models

Our outdoor package provide a solution for limited indoor space. These specialized enclosures, engineered for harsh outdoor environments, offer superior weatherproofing and dustproofing, allowing for safe and reliable operation.

Best solution for...

- Limited indoor space for compressor installation
- Insufficient ventilation for additional compressor

- Corrosion-resistant coating
- Specialized cover for touch screen controller
- SUS bolts for exposed parts

Customize 03 Heat recovery

Recover and utilize wasted heat energy

TR Series, heat recovery unit, is newly developed for water-cooled oil-free compressors. By recovering thermal energy, TR series contribute to improve entire plant energy efficiency and reduce CO_2 emissions.

Oil-free compressor

Up to **92%** of heat energy can be recovered

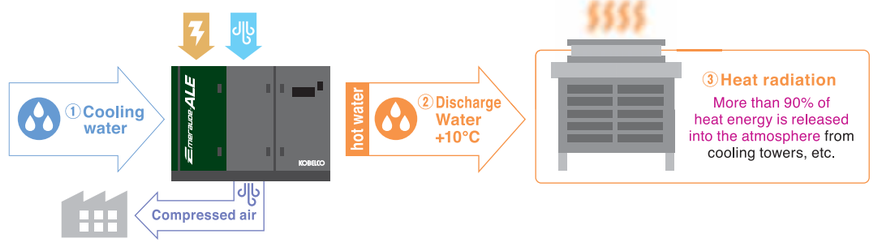
Up to **90°C** hot water can be supplied

Heat recovery unit TR series

What is a “Heat recovery”?

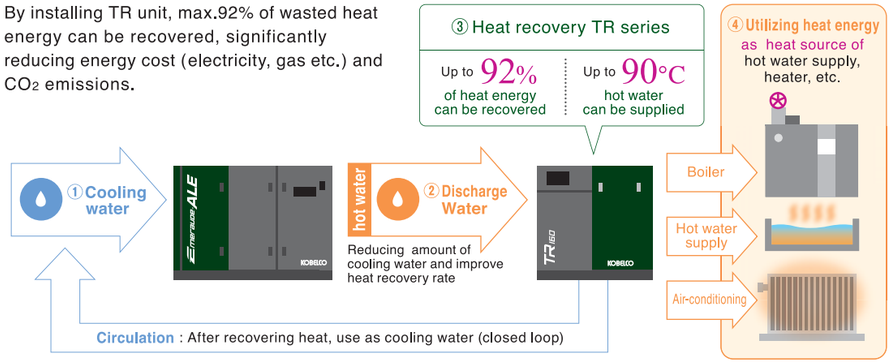
Without TR unit Wasting recoverable energy through cooling towers

Electrical energy input to compressors is converted into thermal energy during the air compression process. In conventional compressors, over 90% of thermal energy is wasted typically through cooling towers.



With TR unit Up to 92% of heat energy can be recovered *depending on conditions

By installing TR unit, max.92% of wasted heat energy can be recovered, significantly reducing energy cost (electricity, gas etc.) and CO_2 emissions.



*Heat recovery system can be added to your current ALE Ⅳ compressor. Minor modification of compressor will be required.

Hot water recovery unit-TR series

Maximizing heat recovery efficiency

By modifying cooling water line, heat can be recovered not only from gas coolers (inter/after-cooler), but also from oil cooler and the compressor.

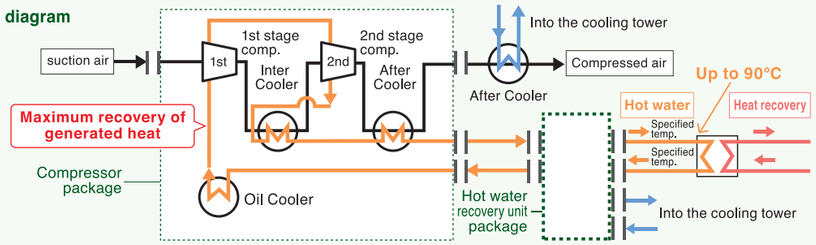
Minimizing energy loss

No modification for compressor's air line is required. This prevents any pressure drop that causes energy loss.

Safe and quiet package

Coolers and high-temperature air piping are enclosed inside the package. This leads to safe working environment and noise reduction.

■ System diagram



Recovered heat energy can be utilized for various purposes

〈 Applicable industries (Example) 〉

Pharmaceutical	Food, Beverage	Electrical equipment, Semiconductors	Chemicals
Cultivation, Humidification, Cleaning, etc.	Pasteurization, Sterilization, etc.	Air conditioning, Humidification, Cleaning, Hot water supply, etc.	Humidification, Cleaning, Hot water supply, etc.

〈 Purpose of using 〉

- Pre-heating of boiler
- Heater
- Shower
- Heated Pool

The environment and business both gain significant benefits

■ Benefits of hot water recovery (Preheating of boiler, Hot water temp:40°C→75°C)

Model	CO_2 reduction	Cost benefit	Recovery heat	
	t-CO_2/yr	USD/yr	MJ/h	kWh
ALE160W Ⅳ	210	76,500	510	140
ALE250W Ⅳ	330	118,000	790	220
ALE275W Ⅳ	350	129,000	860	240
ALE400W Ⅳ	480	175,000	1,160	330

For a 250kW compressor

CO_2 reduction **330** t-CO_2/yr

Cost benefit **118,000** USD/yr

〈 Conditions 〉 Suction conditions : 30°C 75%RH, Discharge pressure : 0.7MPa, Compressor : Continuous LD operation (load factor : 100%)
Annual operating hours : 8,000hr, Electricity unit cost : 0.17USD/kWh, Gas unit cost : 0.83USD/m^3
Heating value of city gas (LHV) : 9,700kcal/m^3, Boiler efficiency : 96%, CO_2 emission factor: (electricity) 0.55kg-CO_2/kWh, (gas) 2,29kg-CO_2/m^3
*Depends on temperature of hot water recovery and system.

■ Specification

Model	TR160	TR275	TR400
Compatible compressor model	ALE132W (V) Ⅳ ALE145W Ⅳ ALE160W (V) Ⅳ	ALE200W Ⅳ ALE250W (V) Ⅳ ALE275W Ⅳ	ALE315W Ⅳ (-V) ALE355W Ⅳ (-V) ALE400W Ⅳ (-V)
Recoverable water temp.	Up to 90°C *Depends on specification and condition		
Heat recovery efficiency	Up to 92%		
Dimensions W × D × H	1,520 × 980 × 1,500 mm		
Piping connection	JIS 10K-40A-FF equiv. × 4parts JIS 10K-50A-FF equiv. × 2parts		
Voltage	200-220V, 380-440V		
Pump motor	0.75kW	1.5kW	2.2kW
Weight	430kg	470kg	500kg

Tailor your compressor to perfection with extensive customization options.

We offer a wide range of custom options, from small part additions and replacements to large-scale specification changes, to meet your specific needs.

Emeraude ALEⅣ Customized Contents

Category	Customized Contents	Details
IoT	Remote monitoring system	Monitor the status of various devices
	Flow meter	Monitor flow rates
	Multi meter	Monitor amount of electricity
Safety	Bearing temperature monitoring sensor	Monitoring and warning of the temperature of the outer ring of bearing
	Dust filter (cooler inlet)	Effective for dusty ambient environments
	Add circuit for water supply electric valve	Close the valve when the compressor is stopped to prevent condensation
	Water supply electric valve	Close the valve when the compressor is stopped to prevent condensation
	Chemical anchor bolt	
	Drain Bypass	Drain discharge by manual valve in addition to the supplied motorized valve
	Companion flange	
	Display cooling water inlet / outlet temperature	Monitors cooling water temperature
	DC reactors for fan inverter	Reduce the harmonic component of the input current, improve the power factor of the input power supply, and save energy
	Vibration sensor for motor bearings	Monitors vibration trends to prevent serious accidents
	Vibration sensor for air end bearings	Monitors vibration trends to prevent serious accidents
	Heater for preventing condensation on electrical components	Prevents electrical component failure due to condensation
	Soft starters	Prevents high starting currents and voltage drops and their impact on equipment
	Exhaust temperature sensor (Analog output 4-20mA)	Monitor exhaust air temperature at compressor ceiling
	Dew point sensor	For rotary drum dryer (ED dryer)
	Specifications for high temperature (Inlet temperature 50°C)	Stable operation even at an Inlet temperature of 50°C
	Adjust inter-cooler water volume	Control excessive condensate from being carried out to the two-stage compression area.
	Motor heater	Prevent failure due to condensation
	Separate placement of electrical components	Monitor, Control panel, Motor starting unit
	Cold region model (below 0°C)	Add heater. Prevent viscosity increase due to low temperature of lubricating oil and reduce various risks during motor startup.
	Prevent salt damage	Anti-rust components to prevent salt damage
	Adjust chiller water volume	For sites using chiller water, add a regulating valve to prevent excessive condensate generation.
	Machine protection during long-term power outages	Injection of rust inhibitor
Motor	Induction motor (IE3) inverter model	
	Induction motor (IE4) inverter model	
	High-voltage motor (10kV) for Fixed speed model	
	High-voltage motor (6kV) for Fixed speed model	
	High-efficiency motor (IE4)	
	High-efficiency motor (IE5)	
	IP rating designation	Special requirements for dustproofing and waterproofing
Explosion proof	Explosion-proof motor	
	Explosion-proof electric box	
Environment / Noise	Low noise specification	For sites requiring even lower noise levels
	Separately placed silencer	For sites requiring even lower noise levels
Energy saving	Line pressure control (10bar)	Energy saving by controlling by Line pressure
	Line pressure control (20bar)	Energy saving by controlling by Line pressure
	External pressure signal input (4-20mA : 0-1.5MPa)	Energy saving by controlling by Line pressure
	Extraction of hot air	For dryers using exhaust heat from compressed air
	Zero purge drain discharge valve	Reduce air purge when draining condensate
	Hot water recovery	Hot compressed air is exchanged with water by a heat exchanger. The hot water can be used for various purposes within the plant.
Certification inspection	Compressed air quality testing (test objects : oil content, particles, dew point etc)	Monitoring of compressed air quality
	On-site inspection at our manufacturing plant	
	Regulatory Compliance (ROHS, REACH)	Mainly for parts
	Regulatory Compliance (HACCP)	Mainly for parts
Special voltage	High voltage starter cabinet	Generally used with high voltage motors
Special gases	Nitrogen Compressor	For nitrogen production Special requirements for air inlet, leakage, etc.
	Other special gases	Specialty Gas Industry
Special requirements	3-stage password	Industry regulations mainly for the pharmaceutical industry
	Silicon free compressed air	For industries affected by silicon, such as automotive sheet metal coating companies
	Outdoor model	Suitable for customers without air compressor room. It is directly installed in the outdoors
	Food grade oil	Suitable for customers who need food grade oil.
	Copper-free compressed air	Copper-free compressed air for the battery industry
	Low-pressure compressor	For low pressure requirements
	Marine Compressors	
	Compressors for highlands (above 1,000m)	
	Special Power Supply	Overseas or power supply special factories
	Stainless steel nameplate	
Signal import / export	PROFIBUS	
	ETHER NET	
	DEVICE NET	
	CC LINK	
	External contact output (abnormal, analog signal output)	For DCS centralized control systems
Documents	Inspection report before shipment	
	Material Certificate	
	Other Special Document Requests	

*For details of the above specifications and those not listed, please contact our sales staff for inquiries.

Emeraude-FE

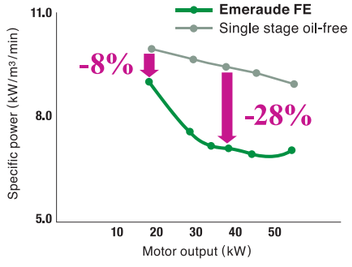
Motor power	Discharge air flow	Specification
22 - 55 kW	3.0 - 8.1 m³/min	P.30

Energy saver with Two-stage compression.

- Supreme specific power consumption
- Highly efficient two stages compression
- Ultimate clean air

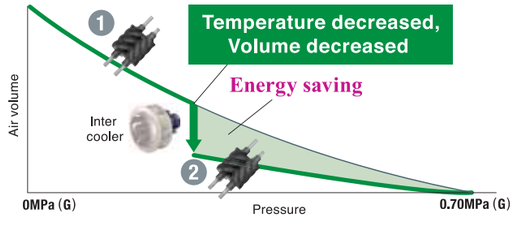
Highly efficient Two-stage compression

Emeraude FE's Two-stage compression is 8～28% more efficient than typical single stage oil-free screw type.
Also, it can decrease discharge temperature which leads to reliability.



Why Energy saving ?

- Less power is required because discharge air from 1st stage is cooled by inter cooler and air volume for 2nd stage can be decreased accordingly.
- Less air leakage in each compression chamber with less compression rate for each stage.



Reliable Air-ends

- Reliability and efficiency backed by over 60 year history of oil-free technology.
- Teflon coated Air-ends and 2nd stage's Stainless steel enhance anti-corrosion.

Supreme thermosetting coating

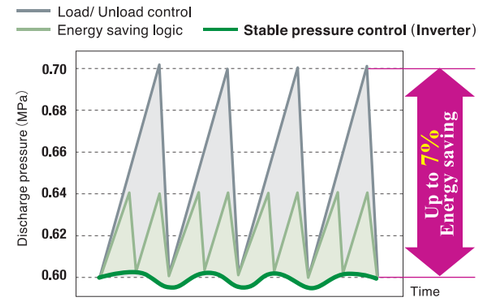
Screw's surfaces and inner walls of air-end housing are coated by PTFE or MoS2 thermosetting coating which has super strong adhesion, anti-corrosion and high thermostability properties.

Anti-corrosion test results

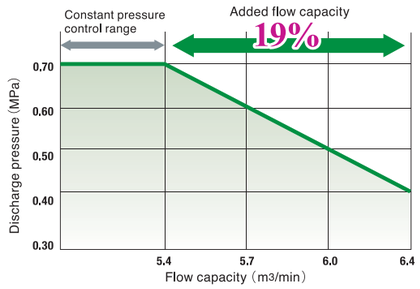
*Picture may vary from actual products

Energy saving logic of Fixed speed model

Stable pressure control of Inverter model keeps the line pressure lower. And the pressure fluctuation is kept within 0.01MPa. Energy saving logic of Fixed speed model forcibly switch loading to unloading at every capacity control cycle (min 23sec). Excessive pressure rise is eliminated and energy loss is minimized.



Wide-range control



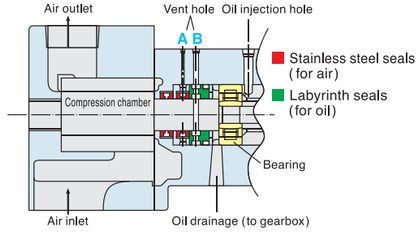
Expand flow capacity range in low pressure to increase its maximum capacity, as well as supply optimized solution for energy saving.
–Transfer the method from retrenching to utilization.

Flow capacity changes under Wide Range control for FE37AV

Discharge pressure (MPa)	0.7	0.6	0.5	0.4
Capacity (m³/min)	5.4	5.7	6.0	6.4
Added flow capacity (%)	100	106	111	119

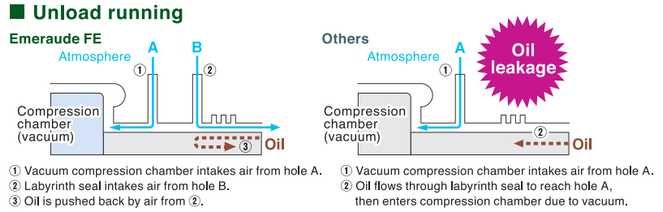
Unique design to ensure "Oil-free"

Two vent holes



KOBELCO's proven two vent holes design prevents oil entry in compressor chambers during unload running.

Unload running

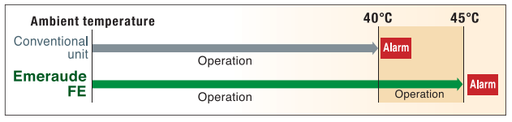


① Vacuum compression chamber intakes air from hole A.
② Labyrinth seal intakes air from hole B.
③ Oil is pushed back by air from ②.

① Vacuum compression chamber intakes air from hole A.
② Oil flows through labyrinth seal to reach hole A, then enters compression chamber due to vacuum.

Durable for high ambient temperature

Reviewing the total cooling system including design of coolers and cooling fan with safety margin, the compressor can operate even under ambient temperature of 45°C.



*Long-time continuous operation at ambient temperatures of 40°C or higher may shorten lifetime of components such as electric equipment and O-rings comparing with normal operation.

User friendly LCD controller

This monitor can be used not only to keep track of the operating conditions but also to set the discharging pressure, etc. The operating records, graphic displays, weekly timers, daily reports and weekly report management, can be conducted.

- Operation data can be output through “Modbus” (optional).
- The front control panel of the controller is complete with a waterproof specification equivalent to IP65.

Protection features

- Momentary Interruption protection : Within 0.5 sec.
- Automatic reset from power failure : 0.5 to 20 sec.
- Built-in 12,000V lightning surge killer and noise filter.

Emeraude-ES

Motor power	Discharge air flow	
1.5-15kW	165-1,670L/min	Specification P.30

The ideal compact compressor created by the scroll type.

Small installation space

Outstanding quietness

1.5-3.7kW CLASS

COMPACT series

The installation space is only one sheet of newspaper.
Ideal compact design.

5.5-15kW CLASS

MULTI STAGE CONTROL series

Energy-saving,
high-performance model
equipped with multiple compressors.

Durability and less maintenance, thanks to its simple and robust structure

Fewer parts and simple construction of Air-end

- Intermittent maintenance : 4years (or 10,000hours)
- Overhaul : 8years (or 20,000hours)

*Under the operation of 5,000hours/year or less.

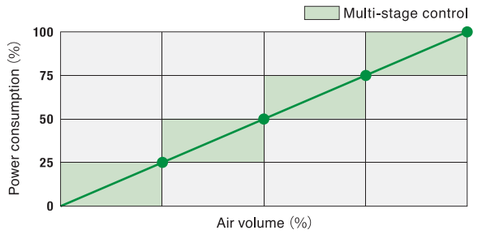
Energy efficient multi Air-end system (ES8 and above)

In-built load dependent group control enables efficient and economical operation

- Multi-stage operation

Multiple Air-end-motor trains are equipped within the unit and run optimum number of compressor controlled by microprocessor controller.

■ Load/Power consumption graph

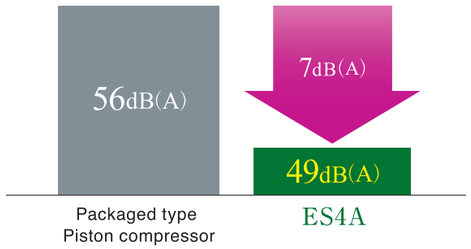


Fail safe design-Multi Air-end system (ES8 and above)

In the event any of Air-end inside Multi Air-end model failed, other Air-end with start up automatically to prevent complete stop of air delivery.

Extreme silence and low vibration

Thanks to the nature of design of scroll compressor, which does not contain any valves and lesser torque variation, operation noise is extremely fewer than that of piston type compressor.



Emeraude-ALE ALEⅣ

Emeraude ALEⅣ / Two-stage dry screw

55-120kW

Inverter (Ultla Premium IE5 equivalent motor model) / Water cooled model

Model	Max. Discharge Pressure	Free Air Delivery 50/60Hz			Main motor	Discharge Connection	Dimensions W×D×H	Noise Level	Voltage	Weight
	MPa	MPa	m³/min	cfm	kW		mm	dB(A)		kg
ALE55WV+Ⅳ	1.04	0.60	10.2	360	55	DN50 FF	2,000×1,400×1,680	62	380·415	2,000
		0.70	9.6	339						
		0.99	7.9	279						
ALE75WV+Ⅳ	1.04	0.60	12.0	424	75			65		2,050
		0.70	12.0	424						
		0.99	10.6	374						
ALE75FWV+Ⅳ	0.86	0.60	14.5	512	75				380·415	2,250
		0.70	13.6	480						
		0.81	12.6	445						
ALE100WV+Ⅳ	0.86	0.60	19.0	671	100		2,200×1,335×1,880			2,750
		0.70	17.9	632						
		0.81	16.8	593						
	1.04	0.80	16.8	593						2,650
		0.90	15.9	561						
		0.99	15.2	537						

Inverter (Ultla Premium IE5 equivalent motor model) / Air cooled model

Model	Max. Discharge Pressure	Free Air Delivery 50/60Hz			Main motor	Discharge Connection	Dimensions W×D×H	Noise Level	Voltage	Weight
	MPa	MPa	m³/min	cfm	kW		mm	dB(A)		kg
ALE55AV+Ⅳ	0.86	0.60	10.1	357	55	DN50 FF	1,880×1,490×1,850	64	380·415	1,650
		0.70	9.5	335						
		0.81	8.9	314						
ALE75AV+Ⅳ	0.86	0.60	11.9	420	75			67		1,700
		0.70	11.8	417						
		0.81	11.6	410						
	1.00	0.80	11.1	392				69		
		0.95	10.0	353						
ALE75FAV+Ⅳ	0.86	0.60	14.4	508	75		2,060×1,500×2,100	67	380·415	2,050
		0.70	13.4	473						
		0.81	12.3	434						
ALE100AV+Ⅳ	0.86	0.60	18.7	660	100					2,150
		0.70	17.6	621						
		0.81	16.4	579						
	1.00	0.80	15.7	554				70		
		0.90	15.4	544						
		0.95	15.1	533						

Motor specifications : IPM motor, 6-pole totally enclosed fan-cooled, Insulation class F, Drive system : Step-up gear.

Inverter (Super Premium IE4 Induction motor model) / Water cooled model

Model	Max. Discharge Pressure	Free Air Delivery 50/60Hz			Main motor	Discharge Connection	Dimensions W×D×H	Noise Level	Voltage	Weight
	MPa	MPa	m³/min	cfm	kW		mm	dB(A)		kg
ALE55WV Ⅳ	0.75	0.70	9.1	321	55	DN50 FF	2,000×1,400×1,680	62	380·415	2,350
	0.86	0.80	8.3	293						
	1.04	1.00	7.3	258						
ALE75WV Ⅳ	0.75	0.70	12.0	424	75			65		2,400
	0.86	0.80	11.5	406						
	1.04	1.00	10.1	357						
ALE75FWV Ⅳ	0.75	0.70	13.2	466	75					2,550
ALE90WV Ⅳ	0.75	0.70	16.2	572	90		2,200×1,500×1,880	65		3,200
	0.86	0.80	14.8	523						
	1.04	1.00	13.2	466						
ALE100WV Ⅳ	0.75	0.70	17.9	632	100					3,250
	0.86	0.80	16.2	572						
	1.04	1.00	14.7	519						
ALE110WV Ⅳ	0.75	0.70	18.6	657	110			67		3,300
	0.86	0.80	17.3	611						
	1.04	1.00	15.6	551						
ALE120WV Ⅳ	0.75	0.70	19.4	685	120					
	0.86	0.80	18.0	635						
	1.04	1.00	17.2	607						

Inverter (Super Premium IE4 Induction motor model) / Air cooled model

Model	Max. Discharge Pressure	Free Air Delivery 50/60Hz			Main motor	Discharge Connection	Dimensions W×D×H	Noise Level	Voltage	Weight
	MPa	MPa	m³/min	cfm	kW		mm	dB(A)		kg
ALE55AV Ⅳ	0.75	0.70	9.0	318	55	DN50 FF	1,880×1,490×1,850	64	380·415	2,000
	0.86	0.80	8.3	293						
ALE75AV Ⅳ	0.75	0.70	11.8	417	75			67		2,050
	0.86	0.80	11.4	402						
	1.00	1.00	9.4	332				69		
ALE75FAV Ⅳ	0.75	0.70	13.0	459	75		2,060×1,500×2,100	67		2,400
ALE90AV Ⅳ	0.75	0.70	16.0	565	90			67		2,650
	0.86	0.80	14.6	516				69		
	1.00	1.00	13.0	459						
ALE100AV Ⅳ	0.75	0.70	17.6	621	100			67		2,700
	0.86	0.80	15.8	558				70		
	1.00	1.00	14.7	519						
ALE110AV Ⅳ	0.75	0.70	18.5	653	110			69		2,750
	0.86	0.80	17.1	604				71		
ALE120AV Ⅳ	0.75	0.70	19.1	674	120			69		
	0.86	0.80	17.9	632				71		

Motor specifications : Induction motor, 2-pole totally enclosed fan-cooled, Insulation class F, Drive system : Step-up gear.
Suction conditions Absolute suction pressure : 0.1MPa. Suction temperature : 20°C, Humidity : 0%RH

Fixed speed / Water cooled model

Model	Max. Discharge Pressure	Free Air Delivery 50Hz			Main motor	Discharge Connection	Dimensions W×D×H	Noise Level	Voltage	Weight
	MPa	MPa	m³/min	cfm	kW		mm	dB(A)		kg
ALE55W Ⅳ	0.75	0.70	9.1	321	55	DN50 FF	2,000×1,400×1,680	62	380·415	2,300
	0.86	0.80	8.3	293						
	1.04	1.00	7.3	258						
ALE75W Ⅳ	0.75	0.70	12.0	424	75			65		2,350
	0.86	0.80	11.5	406						
	1.04	1.00	10.1	357						
ALE75FW Ⅳ	0.75	0.70	13.2	466	75			65		2,550
ALE90W Ⅳ	0.75	0.70	15.7	554	90		2,200×1,335×1,880	65		3,050
	0.86	0.80	14.8	523						
	1.04	1.00	13.2	466						
ALE100W Ⅳ	0.75	0.70	17.4	614	100			65		3,100
	0.86	0.80	16.2	572						
	1.04	1.00	14.7	519						
ALE110W Ⅳ	0.75	0.70	18.1	639	110			67		3,150
	0.86	0.80	17.3	611						
	1.04	1.00	15.6	551						
ALE120W Ⅳ	0.75	0.70	19.4	685	120			67		
	0.86	0.80	18.0	636						
	1.04	1.00	17.2	607						

Fixed speed / Air cooled model

Model	Max. Discharge Pressure	Free Air Delivery 50Hz			Main motor	Discharge Connection	Dimensions W×D×H	Noise Level	Voltage	Weight
	MPa	MPa	m³/min	cfm	kW		mm	dB(A)		kg
ALE55A Ⅳ	0.75	0.70	9.0	318	55	DN50 FF	1,880×1,490×1,850	64	380·415	1,950
	0.86	0.80	8.3	293						
	1.00	1.00	6.9	244						
ALE75A Ⅳ	0.75	0.70	11.8	417	75			67		2,000
	0.86	0.80	11.4	403						
	1.00	1.00	9.4	332				69		
ALE75FA Ⅳ	0.75	0.70	13.0	459	75		2,060×1,500×2,100	67		2,350
ALE90A Ⅳ	0.75	0.70	15.6	551	90			67		2,550
	0.86	0.80	14.6	516				69		
	1.00	1.00	13.0	459						
ALE100A Ⅳ	0.75	0.70	17.2	607	100			67		2,600
	0.86	0.80	15.8	558				70		
	1.00	1.00	14.7	519						
ALE110A Ⅳ	0.75	0.70	18.0	635	110			69		2,650
	0.86	0.80	17.1	604				71		
ALE120A Ⅳ	0.75	0.70	19.1	674	120			69		
	0.86	0.80	17.9	632				71		

Motor specifications : Induction motor, 2-pole totally enclosed fan-cooled, Insulation class F, Drive system : Step-up gear.
Suction conditions Absolute suction pressure : 0.1MPa. Suction temperature : 20°C, Humidity : 0%RH

Water cooled model

Model	Cooling water Quantity	△T	Water inlet temperature	Water inlet / outlet connection	Initial lubricant charge
	L/min	°C			L
ALE55WV+ Ⅳ ALE55WV Ⅳ ALE55W Ⅳ	80	10	20	DN32 FF	20
ALE75WV+ Ⅳ ALE75WV Ⅳ ALE75W Ⅳ	107				
ALE75FWV+ Ⅳ ALE75FWV Ⅳ ALE75FW Ⅳ				DN40 FF	35
ALE90WV Ⅳ ALE90W Ⅳ	147				
ALE100WV+ Ⅳ ALE100WV Ⅳ ALE100W Ⅳ					
ALE110WV Ⅳ ALE110W Ⅳ	172				
ALE120WV Ⅳ ALE120W Ⅳ	172				

Air cooled model

Model	Cooling fan motor output	Initial lubricant charge
	kW	L
ALE55AV+ Ⅳ ALE55AV Ⅳ ALE55A Ⅳ	1.5	30
ALE75AV+ Ⅳ ALE75AV Ⅳ ALE75A Ⅳ		
ALE75FAV+ Ⅳ ALE75FAV Ⅳ ALE75FA Ⅳ		50
ALE90AV Ⅳ ALE90A Ⅳ	3.0	
ALE100AV+ Ⅳ ALE100AV Ⅳ ALE100A Ⅳ		
ALE110AV Ⅳ ALE110A Ⅳ		
ALE120AV Ⅳ ALE120A Ⅳ		

*Keep the water temperature below 40°C for water cooled model.
*Please refer to standard specification manual for water quality.

Emeraude-ALE ALE Ⅳ

Emeraude ALE Ⅳ / Two-stage dry screw

132-400kW

Inverter (IPM motor model) / Water cooled model

Model	Max. Discharge Pressure	Free Air Delivery 50/60Hz		Main motor	Discharge Connection	Dimensions W×D×H	Noise Level	Voltage	Weight
	MPa	m³/min	cfm	kW		mm	dB(A)		kg
ALE132WV Ⅳ	0.75	24.8	876	132	DN65 FF	2,705×1,545×1,845	66	380·415	3,700
	0.86	22.0	777						
	1.04	19.6	692						
ALE160WV Ⅳ	0.75	29.3	1,035	160					3,800
	0.86	26.8	946						
	1.04	24.8	876						
ALE250WV Ⅳ	0.75	45.4	1,603	250	DN80 FF	3,150×1,600×2,180			5,350
	0.86	41.7	1,473						
	1.04	38.5	1,360						

Inverter (IPM motor model) / Air cooled model

Model	Max. Discharge Pressure	Free Air Delivery 50/60Hz		Main motor	Discharge Connection	Dimensions W×D×H	Noise Level	Voltage	Weight
	MPa	m³/min	cfm	kW		mm	dB(A)		kg
ALE132AV Ⅳ	0.75	24.0	848	132	DN65 FF	3,730×1,700×1,995	71	380·415	4,300
	0.86	21.1	745						
ALE160AV Ⅳ	0.75	28.3	999	160			73		4,300
	0.86	25.8	911						
ALE250AV Ⅳ	0.75	44.4	1,568	250	DN80 FF	4,300×1,900×2,180	76		5,600
	0.86	40.8	1,441						

Motor specifications : IPM motor, 4-pole totally enclosed fan-cooled, Insulation class F, Drive system : Step-up gear.

Inverter (Induction motor model) / Air cooled model

Model	Max. Discharge Pressure	Free Air Delivery		Main motor	Discharge Connection	Dimensions W×D×H	Noise Level	Voltage	Weight
	MPa	m³/min	cfm	kW		mm	dB(A)		kg
ALE132AV Ⅳ	0.75	23.8	840	132	DN65 FF	3,730×1,700×1,995	71	380·415	4,790
	0.86	20.9	738						4,780
ALE145AV Ⅳ	0.75	25.6	904	145			71		4,790
	0.86	23.8	840						
ALE160AV Ⅳ	0.75	28.2	995	160			73		4,790
	0.86	25.6	904						
ALE200AV Ⅳ	0.75	35.4	1,250	200	DN80 FF	4,300×1,900×2,180	76		6,475
	0.86	33.0	1,165						
ALE250AV Ⅳ	0.75	44.0	1,553	250			76		6,485
	0.86	40.5	1,430						
ALE275AV Ⅳ	0.75	47.6	1,680	275			76		6,550
	0.86	44.0	1,553						

Inverter (Induction motor model) / Water cooled model

Model	Max. Discharge Pressure	Free Air Delivery		Main motor	Discharge Connection	Dimensions W×D×H	Noise Level	Voltage	Weight
	MPa	m³/min	cfm	kW		mm	dB(A)		kg
ALE132WV Ⅳ	0.75	24.8	875	132	DN65 FF	2,705×1,545×1,845	66	380·415	4,280
	0.86	21.6	762						
	1.04	19.9	702						
ALE145WV Ⅳ	0.75	26.5	935	145					4,340
	0.86	24.8	875						
	1.04	21.5	759						
ALE160WV Ⅳ	0.75	29.2	1,031	160					4,340
	0.86	26.5	935						
	1.04	24.7	872						
ALE200WV Ⅳ	0.75	37.4	1,320	200	DN80 FF	3,150×1,700×2,180	66		6,435
	0.86	33.7	1,190						
	1.04	30.3	1,070						
ALE250WV Ⅳ	0.75	45.0	1,589	250					6,445
	0.86	41.4	1,461						
	1.04	38.1	1,345						
ALE275WV Ⅳ	0.75	48.6	1,716	275			66		6,510
	0.86	45.0	1,589						
	1.04	41.3	1,458						
ALE315WV Ⅳ	0.75	54.6	1,927	315	DN100 FF	3,850×2,000×2,400	75		9,100
	0.86	51.5	1,818						9,150
	1.04	48.0	1,694						9,400
ALE355WV Ⅳ	0.75	63.1	2,227	355	DN100 FF		75		9,100
	0.86	58.8	2,076						9,150
	1.04	54.5	1,924						9,400
ALE400WV Ⅳ	0.75	66.8	2,358	400	DN100 FF		75		9,100
	0.86	63.1	2,227						9,150
	1.04	58.7	2,072				70		9,400

Motor specification : Induction motor, 2-poles totally enclosed fan-cooled, Insulation class F, Drive system : Step-up gear.

Fixed speed / Water cooled model

Model	Max. Discharge Pressure	Free Air Delivery 50Hz		Main motor	Discharge Connection	Dimensions W×D×H	Noise Level	Weight		
								Voltage	Star-Delta	Reactor*
	MPa	m³/min	cfm	kW		mm	dB(A)		kg	
ALE132W Ⅳ	0.75	24.8	876	132	DN65 FF	2,705×1,545×1,845	66	380·415	4,100	-
	0.86	21.6	763							
	1.04	19.9	703							
ALE145W Ⅳ	0.75	26.5	936	145					4,200	-
	0.86	24.8	876							
	1.04	21.5	759							
ALE160W Ⅳ	0.75	29.2	1,031	160					4,200	-
	0.86	26.5	936							
	1.04	24.7	872							
ALE200W Ⅳ	0.75	37.4	1,321	200	DN80 FF	3,150×1,600×2,180	66	380·415	5,950	-
	0.86	33.7	1,190							
	1.04	30.3	1,070							
ALE250W Ⅳ	0.75	45.0	1,589	250					5,950	-
	0.86	41.4	1,462							
	1.04	38.1	1,345							
ALE275W Ⅳ	0.75	48.6	1,716	275					6,000	-
	0.86	45.0	1,589							
	1.04	41.3	1,458							
ALE315W Ⅳ	0.75	54.6	1,928	315	DN100 FF	3,850×2,000×2,400 〈4,082×2,000×2,400〉	70	380·415	9,100	-
	0.86	51.5	1,819					10,000	-	10,200
	1.04	48.0	1,695					-	-	-
ALE355W Ⅳ	0.75	63.1	2,228	355				380·415	9,150	-
	0.86	58.8	2,077					10,000	-	10,300
	1.04	54.5	1,925					-	-	-
ALE400W Ⅳ	0.75	66.8	2,359	400			75	380·415	9,400	-
	0.86	63.1	2,228					10,000	-	10,450
	1.04	58.7	2,073				70	-	-	-

Motor specification : Induction motor, 2-pole totally enclosed fan-cooled, Insulation class F, Drive system : Step-up gear.
*Reactor starter panel is separated. Power sources for main and auxiliary motors are separately needed.
Consult us regarding the size and weight of separate starter panel.
〈 〉 is for 10,000V spec.

Fixed speed / Air cooled model

Model	Max. Discharge Pressure	Free Air Delivery 50Hz		Main motor	Discharge Connection	Dimensions W×D×H	Noise Level	Voltage	Weight
	MPa	m³/min	cfm	kW		mm	dB(A)		kg
ALE132A Ⅳ	0.75	23.8	840	132	DN65 FF	3,730×1,700×1,995	71	380·415	4,700
	0.86	20.9	738						
	1.04	19.2	678						
ALE145A Ⅳ	0.75	25.6	904	145			71		4,700
	0.86	23.8	840						
	1.04	20.7	731						
ALE160A Ⅳ	0.75	28.2	996	160			73		4,700
	0.86	25.6	904						
	1.04	23.8	840						
ALE200A Ⅳ	0.75	35.4	1,250	200	DN80 FF	4,300×1,900×2,180	76	380·415	6,200
	0.86	33.0	1,165						
	1.04	29.8	1,052						
ALE250A Ⅳ	0.75	44.0	1,554	250					6,200
	0.86	40.5	1,430						
	1.04	37.3	1,317						
ALE275A Ⅳ	0.75	47.6	1,681	275					6,250
	0.86	44.0	1,554						
	1.04	40.4	1,427						

Motor specification : Induction motor, 2-pole totally enclosed fan-cooled, Insulation class F, Drive system : Step-up gear.

Water cooled model

Model	Cooling water Quantity	△T	Water inlet temperature	Water inlet /outlet connection	Initial lubricant charge
	L/min	°C			L
ALE132WV Ⅳ ALE132W Ⅳ	238	10	20	DN50 FF	25
ALE145W Ⅳ	261				
ALE160WV Ⅳ ALE160W Ⅳ	288				
ALE200W Ⅳ	355			DN65 FF	30
ALE250WV Ⅳ ALE250W Ⅳ	443				
ALE275W Ⅳ	487				
ALE315W Ⅳ	492			DN80 FF	50
ALE355W Ⅳ	555				
ALE400W Ⅳ	625				

*Keep the water temperature below 40°C for water cooled model.
*Please refer to standard specification manual for water quality.

Air cooled model

Model	Cooling fan motor output	Initial lubricant charge
	kW	L
ALE132AV Ⅳ ALE132A Ⅳ	6 (3kW×2)	35
ALE145A Ⅳ		
ALE160AV Ⅳ ALE160A Ⅳ		
ALE200A Ⅳ	11 (5.5kW×2)	51
ALE250AV Ⅳ ALE250A Ⅳ		
ALE275A Ⅳ		

*Suction conditions Absolute suction pressure : 0.10MPa, Suction temperature : 20°C, Humidity : 0%RH.
*Discharge air volumes is converted to suction conditions.
*Discharge pressure are measured after gas coolers.
*Air produced by compressors should not be used in respiratory equipment furnishing air for direct inhalation.
*Nominal working pressure of 0.75MPa & 0.86MPa model is 0.70MPa.
*Nominal working pressure of 1.04MPa is 0.90MPa.

*Since the cooling for the compressed air & the inside of the compressor unit depends on the surrounding air condition, the surrounding air must be properly ventilated to prevent the ambient temperature from rising above 45°C.
(For air-cooled 1.04MPa model, the surrounding air temperature should not exceed 40°C)
*Please be sure to use the lubricating oil recommended by KOBELCO.
*Specifications and appearances are subject to change without notice
Contact us if guaranteed values of performance is needed.

Emeraude-FE

Emeraude FE / Two-stage dry screw

Inverter / Air cooled model

Model	Max. Discharge Pressure	Free Air Delivery 50/60Hz		Main motor	Discharge Connection	Dimensions W×D×H	Noise Level	Voltage	Weight	Cooling fan motor	Initial lubricant
	MPa	m³/min	cfm	kW		mm	dB(A)		kg	kW	L
FE37AV	0.75	5.4	191	37	40A (R1·1/2)	1,650×1,100×1,500	68	380·415	1,035	2.2	13
FE55AV	0.75	8.1	286	55		1,950×1,200×1,500	67		1,440		

Fixed Speed / Air cooled model

Model	Max. Discharge Pressure	Free Air Delivery 50Hz		Main motor	Discharge Connection	Dimensions W×D×H	Noise Level	Voltage	Weight	Cooling fan motor	Initial lubricant
	MPa	m³/min	cfm	kW		mm	dB(A)		kg	kW	L
FE22A	0.75	3.8	134	22	25A (R1)	1,650×900×1,500	64	380·415	905	2.2	11
FE22A-H	0.86	3.0	106								
FE30A	0.75	4.8	170	30	40A (R1·1/2)	1,650×1,100×1,500	67		1,016	3.0	13
FE30A-H	0.86	4.2	148								
FE37A	0.75	5.8	205	37			68		1,030		
FE37A-H	0.86	5.1	180								
FE45A	0.75	6.9	244	45		1,950 ×1,200×1,500	65		1,325		
FE45A-H	0.86	6.3	222				66				
FE55A	0.75	8.1	286	55			67		1,415		
FE55A-H	0.86	7.5	265				68				

Starting system of fixed speed model is Star-Delta.
*Suction conditions Absolute suction pressure : 0.10MPa, Suction temperature : 20°C, Humidity : 0%RH.
*Discharge air volumes is converted to suction conditions.
*Discharge pressure are measured after gas coolers.
*Noise values is measured at 1.5m away from the machine front and 1m from the floor in the anechoic room, with the machine being operated at its full load.
*Air produced by compressors should not be used in respiratory equipment furnishing air for direct inhalation.
*Nominal working pressure of 0.75MPa is 0.70MPa.
*Nominal working pressure of 0.86MPa is 0.80MPa.

*Since the cooling for the compressed air & the inside of the compressor unit depends on the surrounding air condition, the surrounding air must be properly ventilated to prevent the ambient temperature from rising above 40°C.
*Please be sure to use the lubricating oil recommended by KOBELCO.
*Specifications and appearances are subject to change without notice
Contact us if guaranteed values of performance is needed.

Emeraude-ES

Emeraude ES / scroll

Model	Discharge pressure	Discharge air flow	Nominal output	Noise level	Dimensions W×D×H	Weight
	MPa	L/min	kW	dB (A)	mm	kg
ES2A-5/6	0.65-0.8	165	1.5	45	483×537×875	87
ES3A-5/6		250	2.2	49	483×537×875	95
ES4A-5/6		410	3.7	49	545×622×1,058	134
ES8A-5/6		835	3.7×2	53	650×955×1,195	260
ES11A-5/6		1,225	3.7×3	56	650×955×1,195	330
ES15A-5/6		1,670	3.7×4	58	650×955×1,555	425

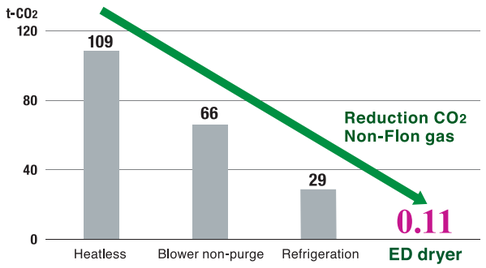
Main motor : TEFC Induction motor.
Electrical specification : 220V-60Hz, 380/415V-50Hz, 3phase 415V-50Hz model without air tank (ES2-4).
Starter : Direct-on-line.

ED series-Rotary drum desiccant dryer

Energy saving Dryer

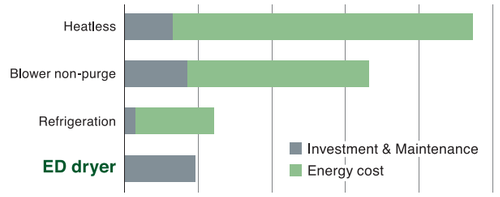
"Clean and dry" compressed air requires high quality depending on the application. The ED dryer was born based on a revolutionary design concept that uses the heat generated during the compression process of an oil-free compressor to regenerate the dehumidifying rotor. High dew point is achieved with almost no energy consumption and without the use of a large amount of adsorbents. This product is ideal for realizing the resource-saving and decarbonized society that KOBELCO is aiming for.

■ CO_2 emission



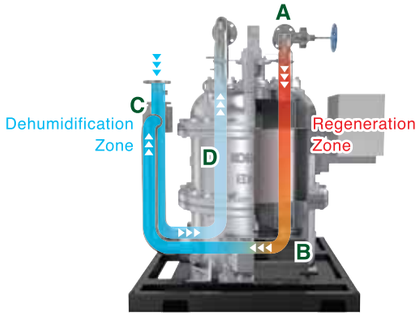
The energy required to rotate the dehumidifying rotor is **only 25W.** It requires almost no power and has a zero-purge design that significantly reduces life cycle costs compared to other desiccant and refrigerant dryers. In addition, there is no need to install an air filter before or after the ED dryer, which contributes to the avoidance of energy loss due to pressure drop.

■ 10 years Life cycle cost



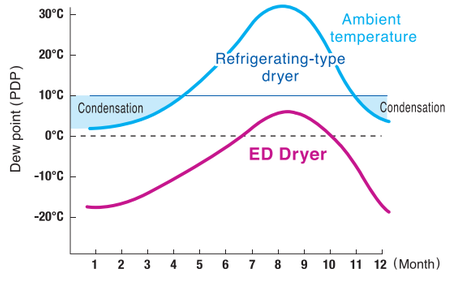
*Estimate based on 8,000 hours per year.

Uses the exhaust heat of the compressor



The high-temperature compressed air in front of the compressor's gas-cooler is branched and flowed to about 1/4 of the area of the dehumidifying rotor to regenerate the dehumidifying rotor. **【A】** The dehumidifying rotor rotates slowly while repeating dehumidification and regeneration. After regeneration, the compressed air is cooled by the cooler at the bottom of the dryer **【B】** and rejoins the low-temperature compressed air that has passed through the compressor's gas-cooler. **【C】** The merged compressed air flows to approximately 3/4 of the area of the dehumidifying rotor and is dehumidified.

Dew point characteristics



ED dryers consume almost no energy and can achieve high dew points. The dew point varies depending on the inlet conditions and the temperature of the cooling water. By taking advantage of this feature and controlling the temperature at which the air enters the dehumidification process, it is possible to achieve an even higher dew point and to stabilize the dew point throughout the year.

Uniquely designed dehumidification rotor

The dehumidification rotor uses a special honeycomb structure to increase the dehumidification efficiency and achieve a high dew point. Compared to two-tower dryers, the adsorbent used only about 5% and maintains a long service life. There is no need to worry about adsorbents being mixed with compressed air and taken out, and there is no need for air filters before and after the dryer.

Dew-point stabilization system

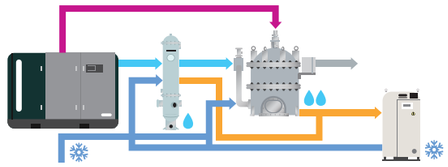
By combining our oil-free screw compressors with other accessories, With a high level of reliability, the dew point can be stably maintained throughout the year.

■ Combined use with Refrigeration Dryer

Atmospheric pressure dew point -30°C stabilization system

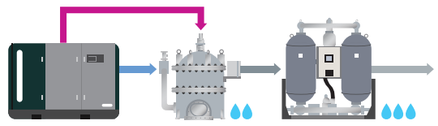
■ Combined use with Pre-cooler + Chiller Water

Atmospheric pressure dew point -40°C stabilization system



■ Use in the front stage of a high-dew point desiccant dryers

Atmospheric pressure dew point -70°C stabilization system



■ Applicable model

ED dryer	Applicable compressor
ED160W	ALE120～160
ED250W	ALE200～250
ED370W	ALE275～400

*Selection based on discharge pressure of 0.69MPa.

■ Options

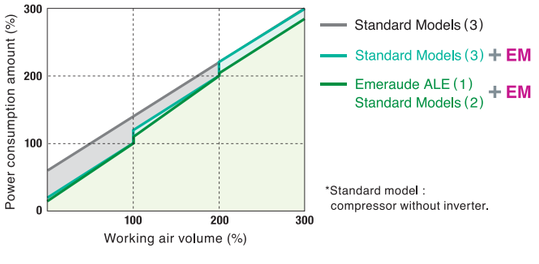
- Connection Piping Kit
- Heat Insulation Material
- Pressure Dew Point Sensor
- Extra Heater

Group Controller Model EM

Efficient utilization of multiple compressors and accessories with energy saving.

Your merits are ;

- **Saving electricity consumption by optimizing the number of running compressor.**
- **Minimizing pressure band compare with conventional cascade pressure setting.**
- **Maximizing energy saving merit of variable speed compressor.**
- **Equalizing compressor running hours.**
- **Integrating auxiliary equipment control for further energy saving.**



*Standard model : compressor without inverter.

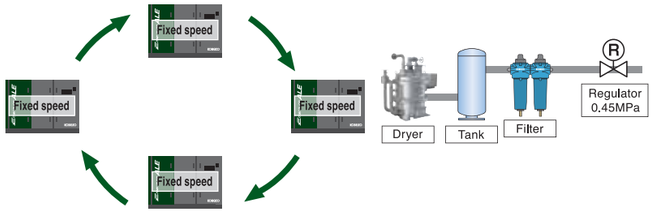
■ Specification

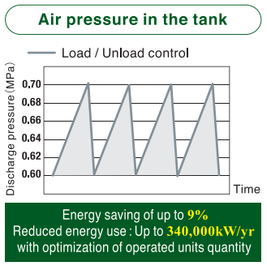
Model		EM4-2	EM4-4	EM4-8
Max No. of compressor		2	4	8
Display		4.3 inch	7 inch	7 inch
Dimensions (mm)	Width	500	600	700
	Depth	200	200	200
	Height	600	900	1,200
Control pressure		0～1.5MPa		
Installation style		Wall mount		
Weight (kg)		30	50	70
Power supply		AC 100V to 240V 50/60Hz 1Φ		

KOBELCO provides advanced total solution.

KOBELCO, a pioneer of Compressor technologies in Japan, always explores the front-line with its proven history and advanced technology. KOBELCO proposes suitable air system to meet customer's various requests such as clean air system, high efficiency and automation.

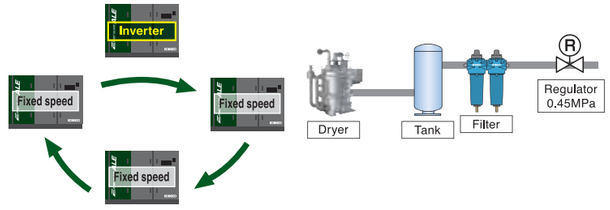
① Group control

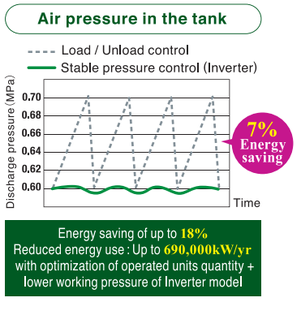




Max 6 units can be operated without a group control panel in case of new ALE.

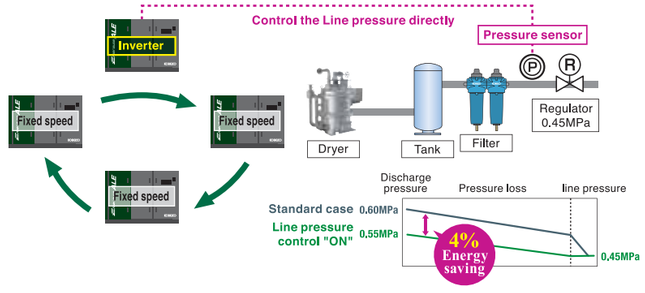
② Stable pressure control of Inverter model + Group control

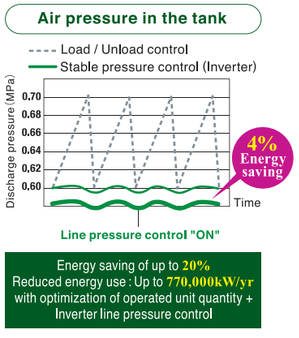




Because Stable pressure control of Inverter model leads to lower down the parallel fixed speed models' discharge pressure, a lot of energy use is saved.

③ Line pressure control (Option) + Stable pressure control of Inverter model + Group control



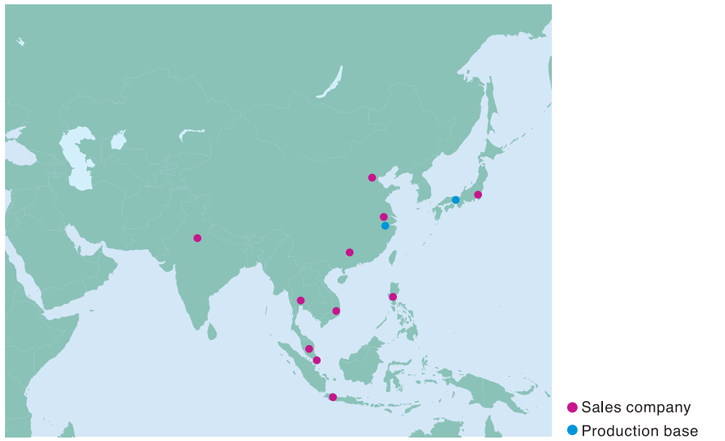


Line pressure control optimizes the discharge pressure which has excessive margin. It's possible to reduce energy loss with excessive pressure rise by monitoring of line pressure and pressure drop.

*Assumptions : 160kW. *4units, average load ratio: 62.5%, running time : 8,000hr, Comparison to Load/unload control without group control.

The strong partnership with our customers is producing fruitful results throughout the world.

KOBELCO COMPRESSOR sales and production locations are based in the regions of Asia and North America, in response to expanding demand overseas. Domestically KOBELCO responds to customer requirements in a meticulous manner through sales offices and service centers nationwide, which provide support for customers in a coordinated manner, covering all their needs ranging from daily support work to proposals for the implementation of new technologies.



Japan
KOBELCO COMPRESSORS CORPORATION

China
KOBELCO COMPRESSORS MANUFACTURING (SHANGHAI) CORPORATION
〈Shanghai〉 KOBELCO COMPRESSORS (SHANGHAI) CORPORATION
〈Beijing〉 KOBELCO COMPRESSORS (SHANGHAI) CORPORATION BEIJING BRANCH
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KOBELCO COMPRESSORS VIETNAM CO., LTD

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KOBELCO COMPRESSORS MALAYSIA SDN. BHD.

Philippines
KOBELCO COMPRESSORS AND MACHINERY PHILIPPINES CORPORATION

Indonesia
PT. KOBELINDO COMPRESSOR

India
KOBELCO COMPRESSORS INDIA PVT. LTD.

America
KOBELCO COMPRESSORS MANUFACTURING INDIANA, INC.

⚠ Safety Precautions

1. Before operating, be sure to read the entire instruction manual and follow all safety directions.
2. Never attempt to perform unauthorized equipment modifications. Doing so could cause accidents resulting in injury.
3. The compressors are designed to compress air. Never use them with other gases. Doing so could result in accidents or breakdowns.
4. Never directly inhale the compressed air or use it for respiration systems of any kind. Doing so could cause pulmonary injury.