



Introducing New Products  
**OIL COOLING UNIT**  
**OILCON**  
AKZ 8 SERIES

New Refrigerant

Amazingly improved Energy-Saving Inverter Oil Cooling Unit,  
Daikin Core Inverter Control Technology developed for Air Conditioner adapted.

# AKZ 8 SERIES

Circulation Type

## Features

### ● The first class Energy Saving.

(20% energy saving in comparison with our conventional products)

### ● High-accuracy temperature control.

- 1) Temperature control:  $\pm 0.1^\circ\text{C}$  (at saturation point of Heating volume in 10~100% load )
- 2) Wide cooling capacity control range: 10~100%.

### ● Low noise. (62 dB (A) with AKZ328 Class ... corresponding value in anechoic chamber)

### ● Low-viscosity pump and 0.5MPa relief pressure are standardized. (0.3 MPa for conventional unit)

### ● The shortest delivery, all optional specifications are listed as semi-standard.

### ● New useful functions added to current oil temperature warning functions.

- 1) Auto tuning function (auto setting P-GAIN and I-GAIN parameter for oil temperature control)
- 2) Refrigerant gas runout detection function 3) 99-hour timer function

### ● The smallest size in the class.



AKZ 148

AKZ 438

## Nomenclature

**AKZ**    **14**    **8** - **C** -   
 1              2              3              4              5

- 1 Model [Series No.] Inverter oil cooling unit for main shaft and lubricating oil (AKZ:circulating type)
- 2 Nominal cooling capacity (kW) ×10  
Adoption from the sequence of JIS Z8601 (2 digits)  
Ex. 14 means nominal cooling capacity of 1.4 kW.
- 3 Design No.: 8 (model change from 7)
- 4 Semi-standard (B, C, E, H, T)
  - Easily selecting optional specifications until previous series as semi-standard from the list.
  - According this system, delivery of optional spec was shorten.
- 5 Individual order symbol  
(4-digit alphanumerical characters)

Non-standard specifications for meeting individually required specifications not included in the semi-standard.

### Contents of Standard, Semi-standard, Non-standard Models

	Standard specification	Semi-standard	Non-standard	Remarks
Low-viscosity pump	○			Viscosity of oil:1.4~200mm <sup>2</sup> /s
Relief pressure:0.5MPa	○			Pump relief clacking pressure
Timer	○			99-hour timer
Outlet oil temperature sensor	○			
Circuit breaker		B		
CE specifications		C		European Safety Standard
Different voltage <sup>1</sup> specifications		E		220/230/380/400 415/440/460/480V (50/60Hz)
Oil heater		H		
Oil tank		T		
Relief pressure:0.98MPa			○	
Relief pressure:1.47MPa			○	
UL compliance			○	
Tropical treatment specifications			○	
Specified coating color			○	
Tandem-pump			○	

Note) \*1. Different voltage specifications (AKZ148, 328, 438 are available)

E1: AC220~230V 50/60Hz

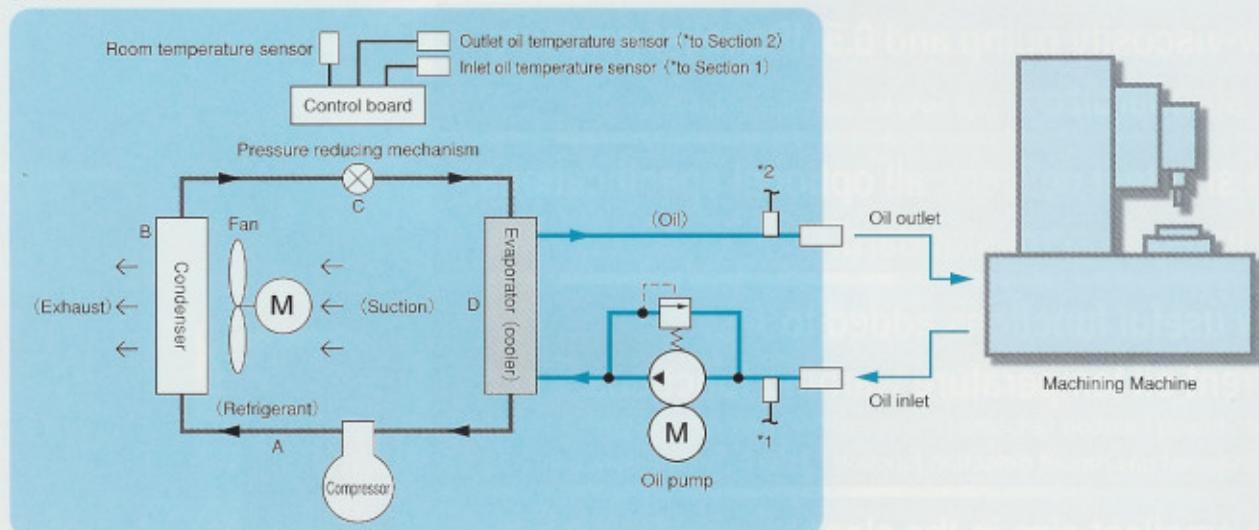
E2: AC380~400~415V 50/60Hz

E3: AC440~460~480V 50/60Hz

\*Size AKZ568 and 908 are scheduled to be organized in semi-standard in and after July to September, 2003.

## Principle

OILCON



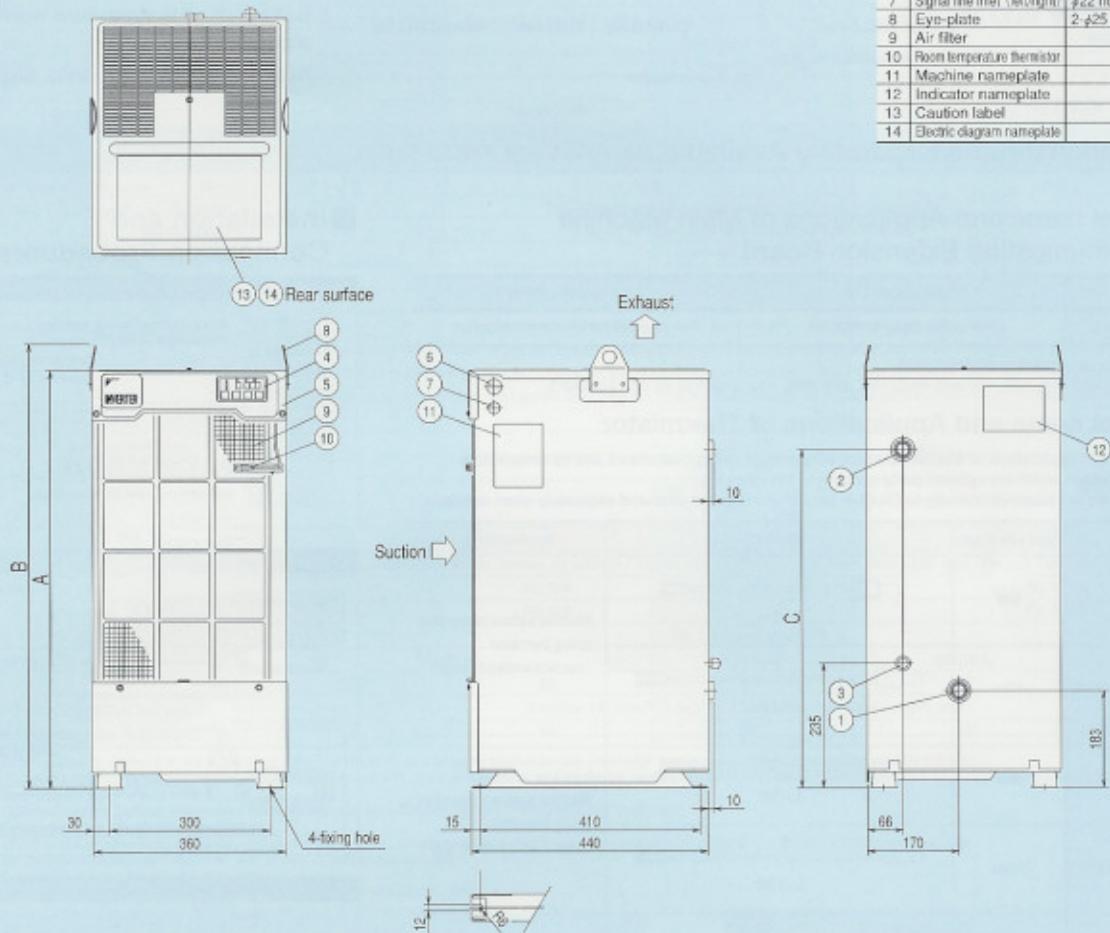
### Description on refrigeration cycle

- A : Using compressor, refrigerant gas is made into high-temperature high-pressure compressed gas so that it can be easily cooled and liquefied at the condenser.
- B : At the condenser, this high-temperature high-pressure gas is cooled by air and condensed, and becomes high-temperature high-pressure liquid.
- C : In the pressure reducing mechanism, this high-temperature high-pressure liquid is squeezed to reduce pressure, and made into low-temperature low-pressure liquid so that it can be easily evaporated at the cooler.
- D : At the cooler, this low-temperature low-pressure liquid deprives heat from oil and becomes low-temperature low-pressure gas.

## Dimensional Outline Drawing

Model	A	B	C
AKZ148(-B,-C)	650	(700)	550
AKZ328(-B,-C)	790	(840)	640
AKZ438(-B,-C)	990	(1040)	820

Part No.	Name	Remarks
1	Oil inlet	Rc 3/4
2	Oil outlet	Rc 3/4
3	Oil drain	R 1/4 (plug stopper)
4	Control panel	
5	Top plate	
6	Power inlet (left/right)	#28 hole
7	Signal line inlet (left/right)	#22 hole
8	Eye-plate	2-#25 hole
9	Air filter	
10	Room temperature thermistor	
11	Machine nameplate	
12	Indicator nameplate	
13	Caution label	
14	Electric diagram nameplate	

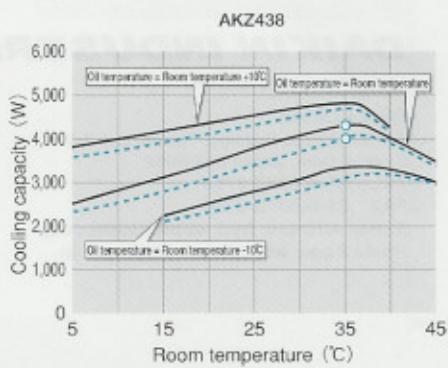
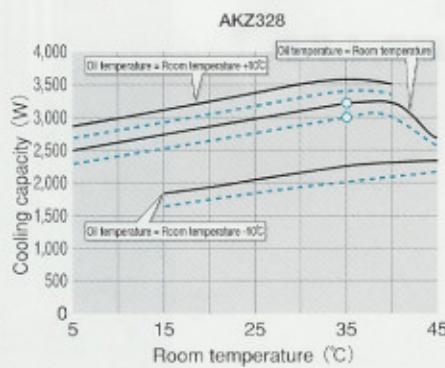
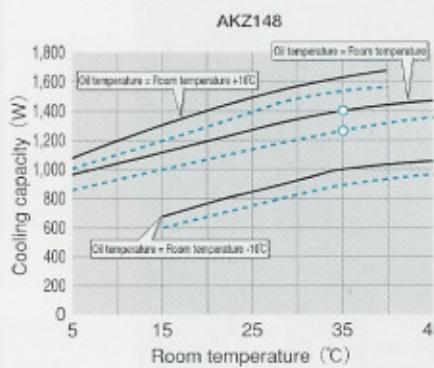


## OILCON AKZ "8" Series Performance curve

Solid line — : 60 Hz Broken line - - - : 50 Hz

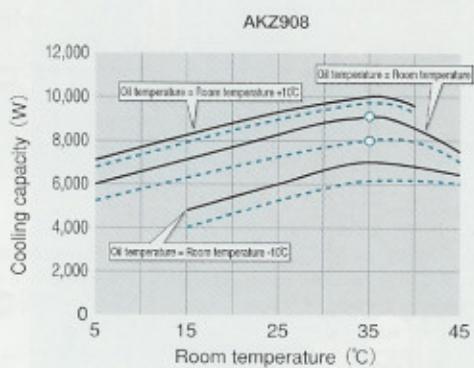
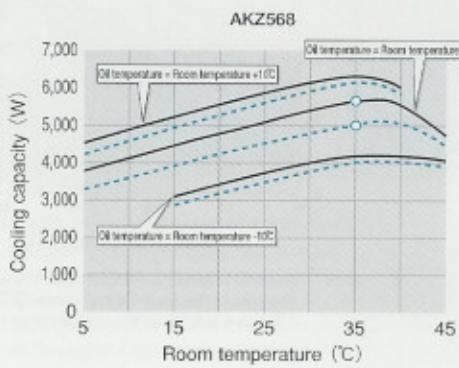
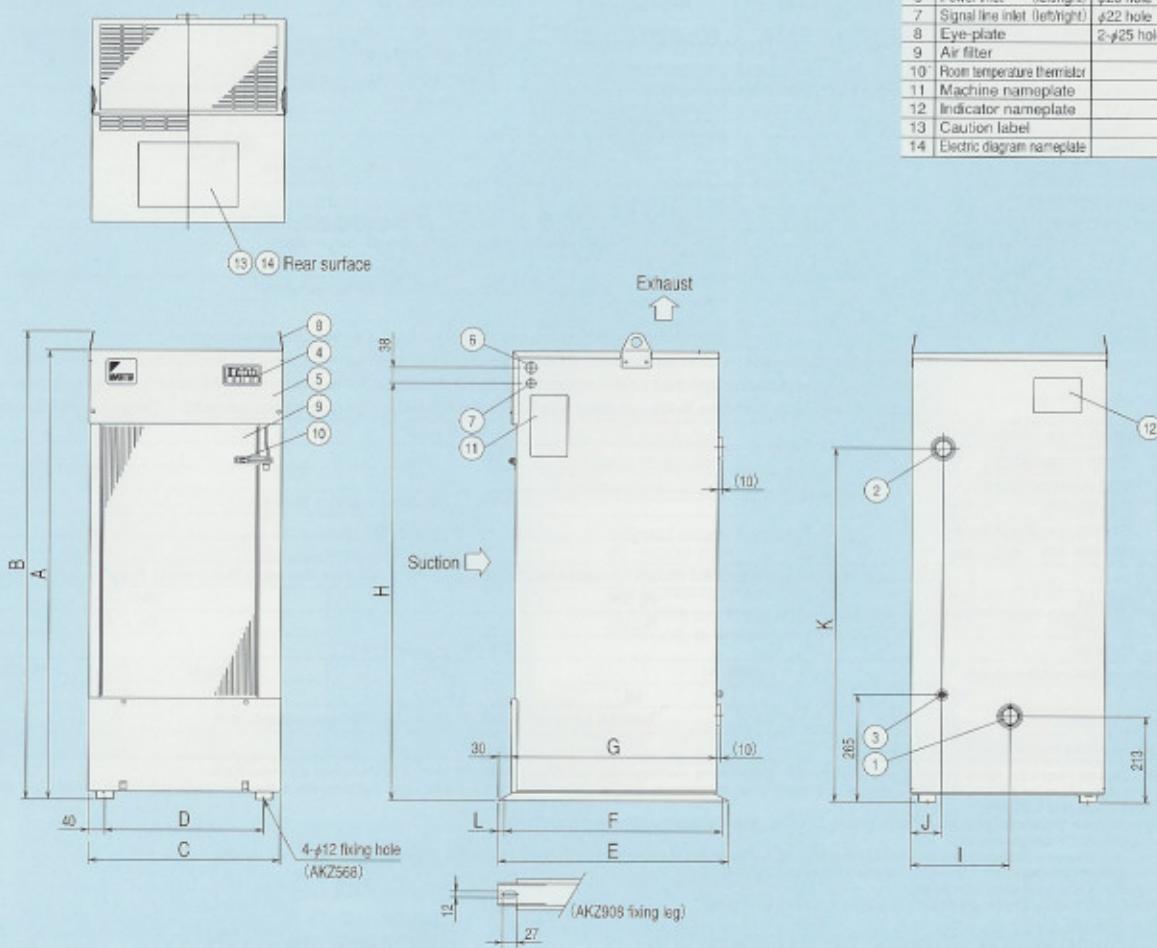
1. Mark ○ is the standard point. (Room temperature : 35°C; Inlet oil temperature : 35°C; Oil used : ISO VG32).

2. Cooling capacity varies depending on conditions such as room temperature, inlet oil temperature, oil kinematic viscosity, etc.



Model	A	B	C	D	E	F	G	H	I	J	K	L
AKZ568(-B,-C)	1110	(1160)	470	390	560	530	500	1030	240	75	875	15
AKZ908(-B,-C)	1220	(1270)	560	480	680	635	620	1140	257	88	790	22.5

Part No	Name	Remarks
1	Oil inlet	Rc 1-1/4
2	Oil outlet	Rc 1-1/4
3	Oil drain	R 1/4 (plug stopper)
4	Control panel	
5	Electrical component box cover	
6	Power inlet (left/right)	ø28 hole
7	Signal line inlet (left/right)	ø22 hole
8	Eye-plate	2-ø25 hole
9	Air filter	
10	Room temperature thermistor	
11	Machine nameplate	
12	Indicator nameplate	
13	Caution label	
14	Electric diagram nameplate	



## Specifications

OILCON equivalent horse power (HP)	0.5	1.2	1.5	2.0	3.0
Model	AKZ 148 (-B, -C)	AKZ 328 (-B, -C)	AKZ 438 (-B, -C)	AKZ 568 (-B, -C)	AKZ 908 (-B, -C)
Cooling capacity (50/60Hz) <sup>1)</sup> kW	1.3/1.4	2.8/3.2	3.8/4.3	5.0/5.6	8.0/9.0
Power source Main circuit (50/60Hz)		AC 3-phase	200/200~220V	50/60Hz	
Control circuit			DC12/24V		
Painted color			White		
Dimensions (H×W×D) mm	650×360×440	790×360×440	990×360×440	1110×470×560	1220×560×680
Compressor (Hermetic DC swing type)	Equivalent to 0.4 kW	Equivalent to 0.75 kW	Equivalent to 1.1 kW	Equivalent to 1.5 kW	Equivalent to 2.2 kW
Evaporator			Shell and coil type		
Condenser			Crossfin coil type		
Fan			Propeller fan		
Motor Oil pump		0.4kW×4P		0.75kW×4P	
Fan		75W		90W×4P	150W×4P
Oil pump discharge rate (50/60Hz) <sup>2)</sup> l/min	12/14.4	24/28.8		30/36	
Oil pump cracking pressure MPa	0.5	0.6		0.6	
Temperature control (selectable)	Reference		Room temperature and machine surface temperature <sup>3)</sup>		
	Control subject		Inlet oil temperature and outlet oil temperature		
	Tuning range		-9.9~+9.9 (k)		
	Fixed type		Inlet oil temperature and outlet oil temperature		
	Control subject		5~50°C		
	Control range				
Refrigerant control			Compressor capacity control by inverter + Electronic expansion valve		
Protector					
			Full set of Overcurrent relay (motor for pump), Reverse phase protector, Restart prevention timer, Low-room temperature protection thermostat, High-oil temperature protection thermostat, Low-oil temperature protection thermostat, Relief valve for pump, Discharge pipe temperature thermostat, Condenser temperature thermostat, Refrigerant leak detector, and Inverter protector, High-pressure pressure switch <sup>4)</sup> , Compressor protection thermostat <sup>5)</sup>		
Name of refrigerant (new refrigerant)			R410A		
Operating range	Room temperature °C		5~45		
	Inlet oil temperature °C		5~50		
	Oil viscosity mm <sup>2</sup> /s		1.4~200 (ISO VG2~32)		
	External Discharge side pressure loss	0.5 MPa or lower			
	Suction side	Within 30.7 kPa			
Usable oil		Lubricating oil, Mineral oil based hydraulic fluid (however, not usable for Phosphate ester based hydraulic fluid, Water, Water-soluble liquid, Chemicals, Foods, Fuel, Cutting and grinding liquids)			
Connection piping	Oil inlet	Rc 3/4		Rc 1-3/4	
	Oil outlet	Rc 3/4		Rc 1-3/4	
	Oil drain		Rc 1/4 (plug stopper)		
Noise (corresponding value in anechoic chamber) <sup>6)</sup>		62dB(A)	65dB(A)	65dB(A)	67dB(A)
Weight kg	52	58	67	97	125
Transportation vibration			Vertical 14.7m/s <sup>2</sup> (1.5G) × 2.5Hr (10~100 Hz sweep/5 min)		
Rated current of wiring circuit breaker (locally procure) <sup>7)</sup> A	10	10	10	15	20

Note) \*1. Cooling capacity means the rate at standard point (condition A) and oil pump discharge rate (discharge condition B). Product tolerances are about ±5%. Standard point (A) is the point at 35°C inlet temperature and 35°C room temperature, and discharge condition B is the oil pump discharge rate in the table above when suction pressure is -20.0 kPa and discharge pressure is 0.20 MPa.

\*2. Optional Machine Surface temperature sensor is required (see Section: Optional Parts separately available).

\*3. To be applied to CE-compliance unit.

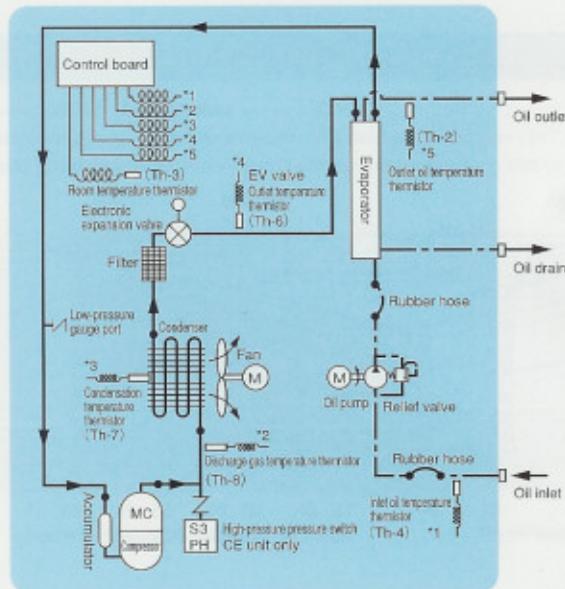
\*4. Wiring circuit breaker is not standardly included in the product. Locally procure one with capacity suited for the model and mount to the main machine side.

By the way, semi-standard item (-B) with a breaker attached is available.

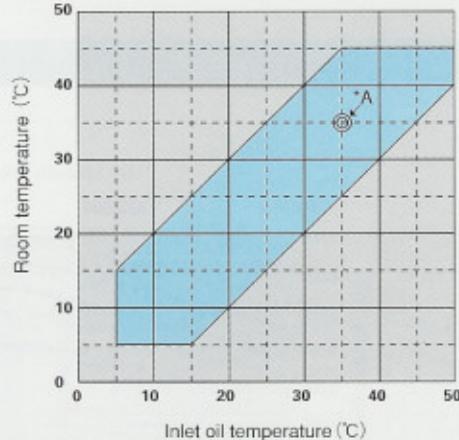
\*5. Conditions of 1 m in front and 1 m in height.

\*6. In the case of AKZ148-H, 328-H, and 438-H with a heater, the heater is 1 kW.

## Piping diagram (AKZ148, 328, 438, 568)

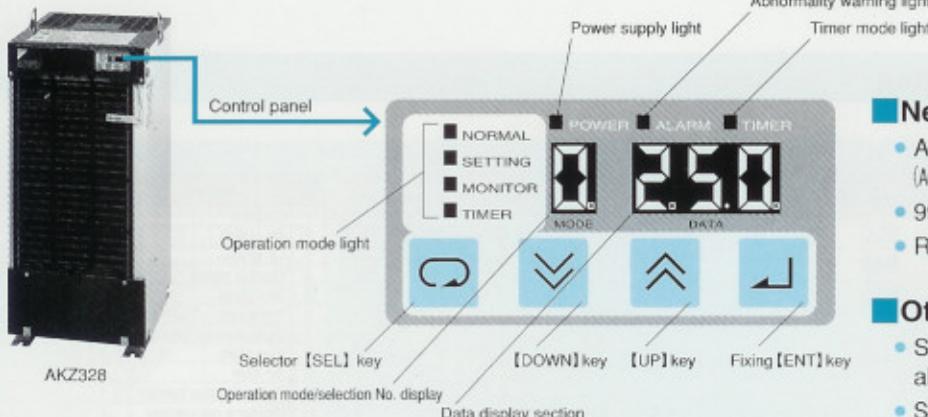


## Operating range



Note) 1. Mark ◎ means the standard point (condition A)  
2. Operate in the range of the above (The use outside of the usable range causes failure.)

## Functions of Control Panel



### New functions of AKZ8 Series

- Auto tuning function (Auto setting P-GAIN and I-GAIN parameter for oil temperature control)
- 99-hour timer function
- Refrigerant gas runout detection function

### Other continuing functions

- Setting of oil temperature warning, alarm display function
- Set temperature and monitor display functions

## Optional Parts Separately Available (for AKZ 8 and AKZJ 8 Series)

### Model name and Applications of Main Machine Communication Extension Board

Model	AKZ B-OP-CS	AKZ B-OP-CSP*
Applications	For serial communication	For parallel/serial communication

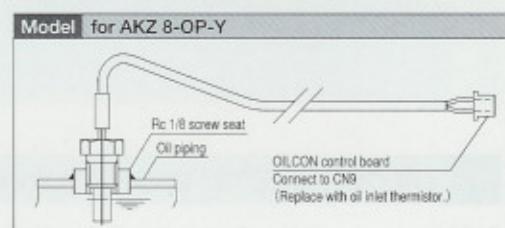
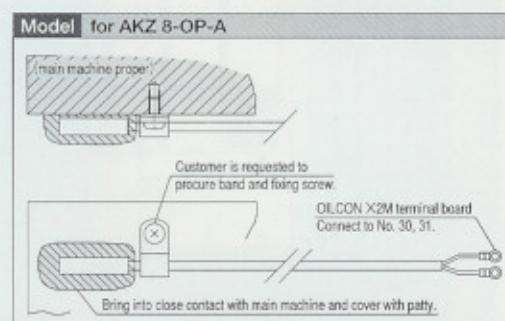
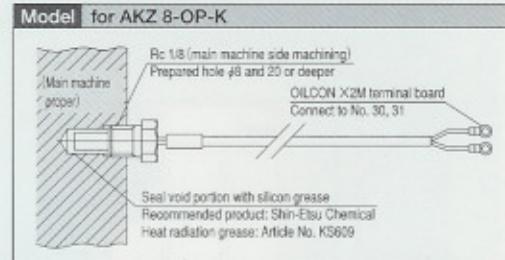
Note) \* • To be applied to AKZ568, 908.  
• In AKZ148, 328, 438 and AKZJ188, 358, 458, also available as non-standard.

### Model name and Applications of Thermistor

Model name and applications of Machine Surface temperature tuning thermistors and oil temperature control thermistors which are optional parts conform to the following. Thermistors are not attached normally to OILCON proper and must be procured separately when needed.

Model	Lead wire length	Form	Applications
AKZ B-OP-K5	5m		Machine surface temperature tuning thermistor (machine embedding type)
AKZ B-OP-K10	10m		
AKZ B-OP-A5	5m		Machine surface temperature tuning thermistor (machine surface affixing type)
AKZ B-OP-A10	10m		
AKZ B-OP-Y5	5m		Oil temperature control thermistor
AKZ B-OP-Y10	10m		

### Installation and Connection Procedures



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