Micro Control Systems

HANBELL

Two-stage centrifugal compression
Centrifugal compressor dedicated to R134a

High-efficiency Model
RT Series
Centrifugal Compressor

Micro Control Systems

CE

RoHS COMPLIANT

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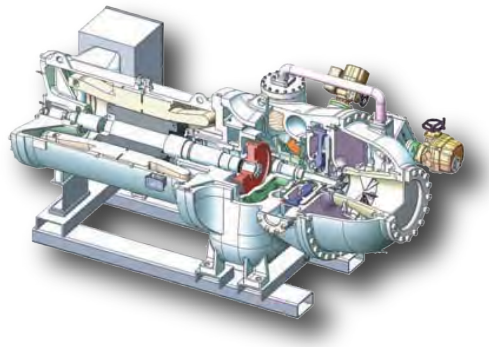
Highlights of RT Series centrifugal compressor

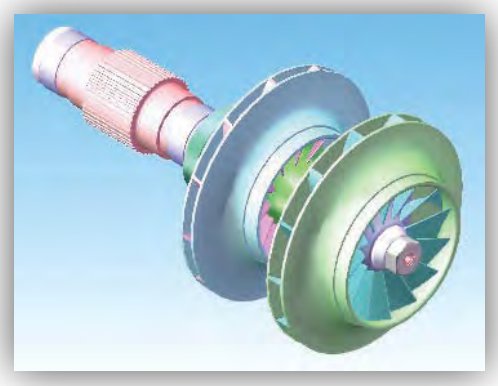


Advantages of Centrifugal Compressor

- Fewer rubbing parts, relative energy saving and with higher refrigerant flow than a similarly sized screw compressor
- Shorter length and spoke-like design for rapid acceleration of refrigerant flow and immediate delivery to diffuser thereafter

Two-stage Centrifugal Compression

- Specific compression ratio for each stage
- Lower discharge temperature and higher COP due to application with economizer and sub-cooler
- Higher efficiency of compression due to less leakage from close-type impellers

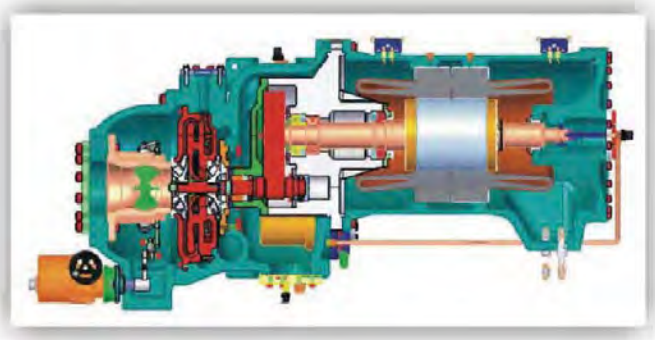


High-efficiency Motor

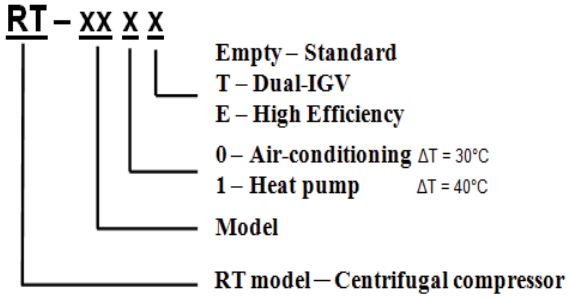
- Multiple choices of power
- Delta start or star delta start
- Total motor protection with PTC and Pt 100/Pt1000

Special Design

- Dedicated to refrigerant R134a
- Built-in oil pump for better lubrication of bearings and gears
- Reliable rigid bearings as protection against oil-deficit and surge when abrupt power cut occurs during starting
- Low oil carry-over due to double oil heaters and fine oil filters
- Precise inlet guide vane control for modulation



Compressor nomenclature



Technical Data

Type: Two-stage Compressor with Speed-up Gearing

Model			RT-111		RT-120		RT-130		RT-140		RT-160		RT-161	
Refrigerant			R134a											
Compressor	Type		Two-stage with speed-up gearing											
	Pressure ratio*		LP	HP	LP	HP	LP	HP	LP	HP	LP	HP	LP	HP
			1.91	1.73	1.63	1.55	1.63	1.55	1.63	1.55	1.63	1.55	1.91	1.73
	Mass flow rate*	kg/sec	9.83	11.74	11.95	13.54	13.01	14.73	13.43	15.21	15.95	18.06	17.03	20.35
	Volume flow (Suction)*	m^3/hr	2,028	1,296	2,466	1,740	2,684	1,893	2,771	1,954	3,291	2,321	3,515	2,246
	Rated Speed	rpm	12,000		11,700		12,000				9,400			
	Inlet guide vane control		10~100% continuous											
Transmission	Type		Helical gear											
	Lubrication		Built-in oil pump											
	Lubricant charge	Liter	33		38						57			
Motor	Type		3 Phase, 2 Pole, Induction											
	Starting		Y-△ Starting, Direct starting											
	Voltage (50/60 Hz)	V	380~600,10k/6k/4k/3k											
	Insulation		Class F											
	Protection		PTC, Pt100/Pt1000											
Oil heater		kW	2x0.5											
Ref. heater		kW	2x0.3											
Dimension (LxWxH)		m	2.20 x 1.20 x 1.1		2.30 x 1.20 x 1.02						2.62 x 1.29 x 1.27			
Weight		kg	3,000		3,500						4,500			
Hydrostatic pressure test		kg/cm^2g	22											

Model			RT-180		RT-200		RT-221		RT-240		RT-260		RT-280	
Refrigerant			R134a											
Compressor	Type		Two-stage with speed-up gearing											
	Pressure ratio*		LP	HP	LP	HP	LP	HP	LP	HP	LP	HP	LP	HP
			1.63	1.55	1.63	1.55	1.91	1.73	1.63	1.55	1.63	1.55	1.63	1.55
	Mass flow rate*	kg/sec	18.34	20.77	19.73	22.35	19.66	23.48	23.91	27.08	26.18	29.65	27.36	30.99
	Volume flow (Suction)*	m^3/hr	3,784	2,669	4,071	2,872	4,056	2,592	4,933	3,480	5,402	3,810	5,645	3,982
	Rated Speed	rpm	8,900				9,400		8,200					
	Inlet guide vane control		10~100% continuous											
Transmission	Type		Helical gear											
	Lubrication		Built-in oil pump											
	Lubricant charge	Liter	57						68					
Motor	Type		3 Phase, 2 Pole, Induction											
	Starting		Y-△ Starting, Direct starting											
	Voltage (50/60 Hz)	V	380~600,10k/6k/4k/3k											
	Insulation		Class F											
	Protection		PTC, Pt100/Pt1000											
Oil heater		kW	2x0.5											
Ref. heater		kW	2x0.3											
Dimension (LxWxH)		m	2.62 x 1.29 x 1.27						2.60 x 1.30 x 1.20					
Weight		kg	4,500											
Hydrostatic pressure test		kg/cm^2g	22											

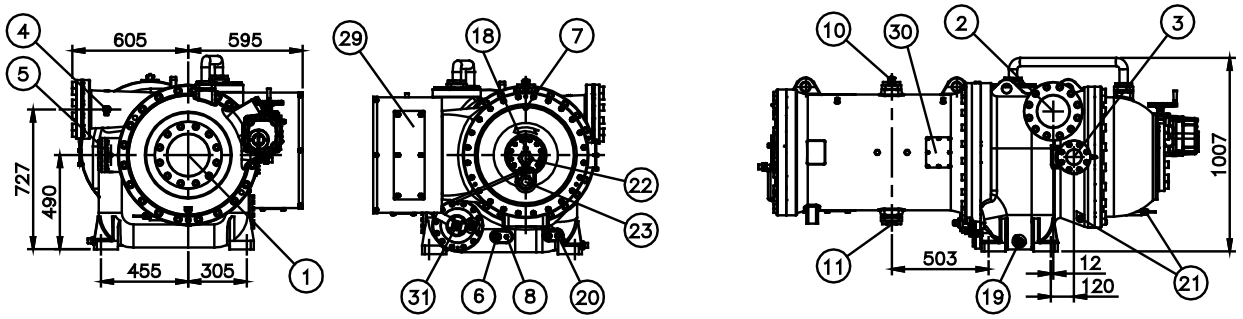
Note:
1. Under CT/ET=36/6℃
2. IGV1≧10% for normal operating，IGV1=0% only for starting procedure
3. IGV2 is optional for RT-160, RT-180, RT-200; standard for RT-111, RT-161, RT-221.
4. Nominal tonnage ≒first 2 digits of each model multiplied by 50.

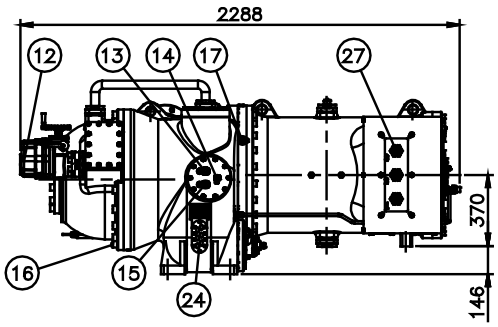
Applicable Power

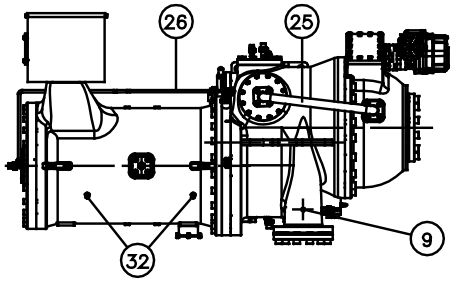
Voltage	RT-111~200	RT-221~280
380V~600V	○	Optional
3kV/3.3kV	○	○
6kV/6.6kV	○	○
10kV	○	○

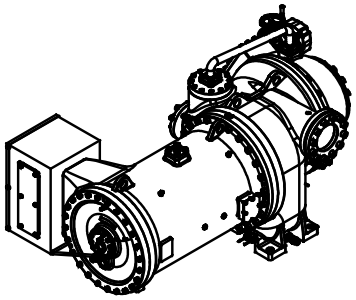
RT-120~140 Outline

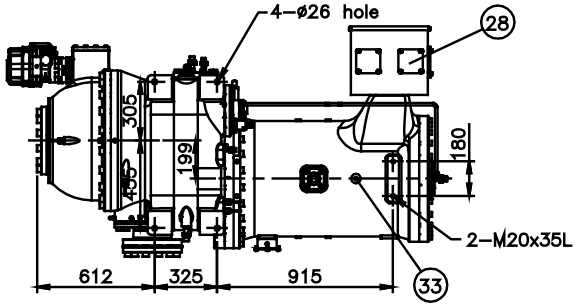
No.	Name	Specification	No.	Name	Specification
1	Suction flange	8" 20k (JIS)	18	Oil connection (motor)	1/4"FL
2	Discharge flange	6" 20k (JIS)	19	Oil drain valve	1/4"FL
3	Economizer connection	2 1/2" 20k(JIS)	20	Oil heater (2x500W)	220V
4	Pressure connection (discharge)	1/4"FL	21	Refrigerant heater (2x300W)	220V
5	Pressure connection (ECO)	1/4"FL	22	Sight glass (motor)	
6	Pressure connection (oil tank)	1/4"FL	23	Sight glass (ref. level)	
7	Pressure connection (motor)	1/4"FL	24	Sight glass (oil level)	
8	Temperature sensor (oil tank)	PT100	25	Ref. return pipe	1 1/4"steel(optional)
9	Discharge temperature thermistor	PT100	26	Oil return pipe	1/2"
10	Motor cooling connection (inlet)	3/4"FL	27	Power bolt	5/8-11UN ; 9/16-18UNF
11	Motor cooling connection (outlet)	1 1/8"copper	28	Cable box flange	2*3"
12	Actuator (IGV volume control)	220V/1ø/50/60Hz	29	Cable box flange	380*80
13	Angle valve	1/2"FL (optional)	30	Motor temperature sensor	PTC,3*PT100/PT1000
14	Eva. oil return connection	1/4"FL	31	Oil pump outlet	1"steel/380V/3ø/50/60Hz
15	IGV oil return connection (inlet)	1/2"FL	32	Motor cool. connect. (inlet)	1/4"FL
16	IGV oil return connection (out.)	3/8"FL	33	Motor cooling connection. (outlet)	1/2"FL
17	Oil connection (gearbox)	3/8"FL			





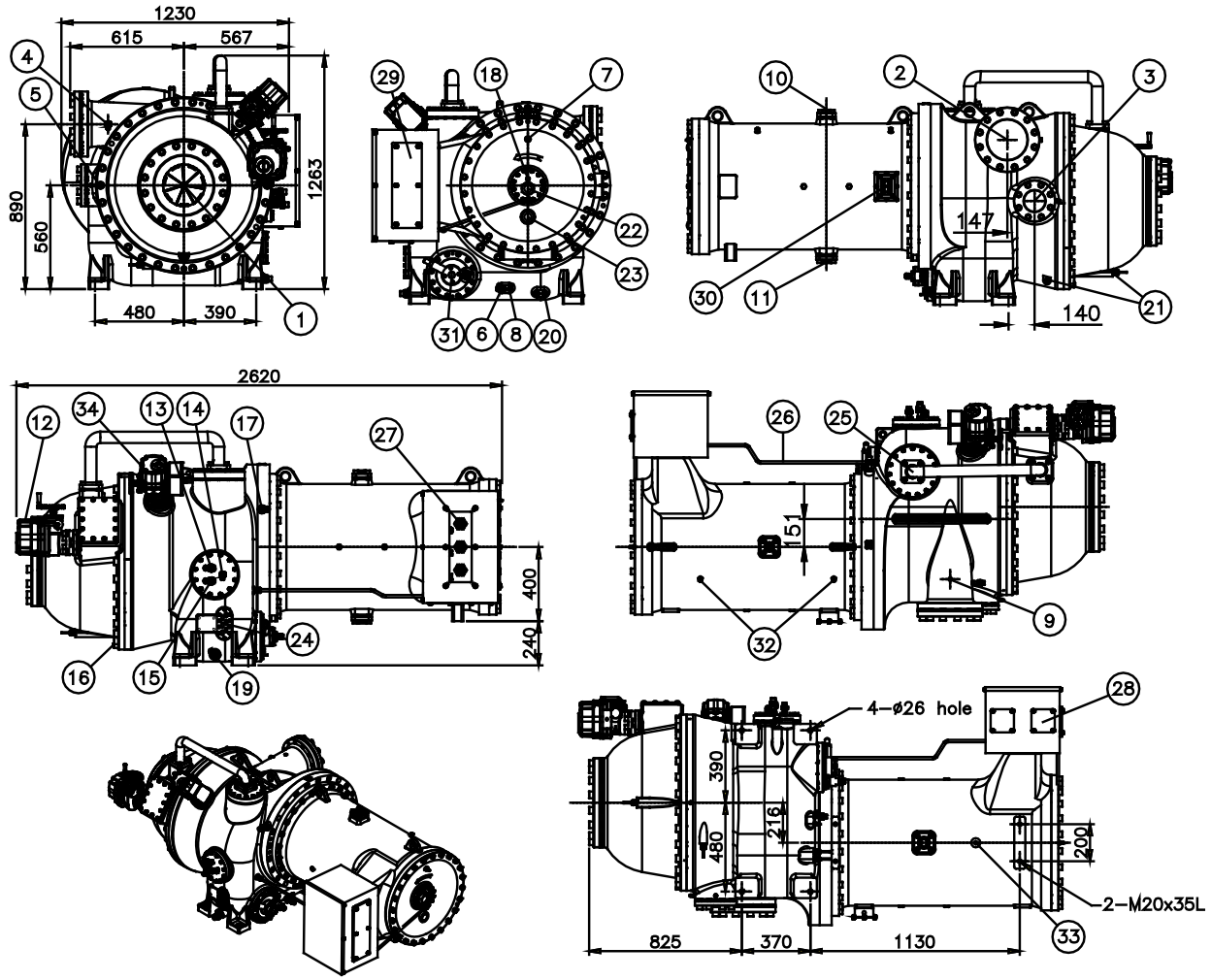






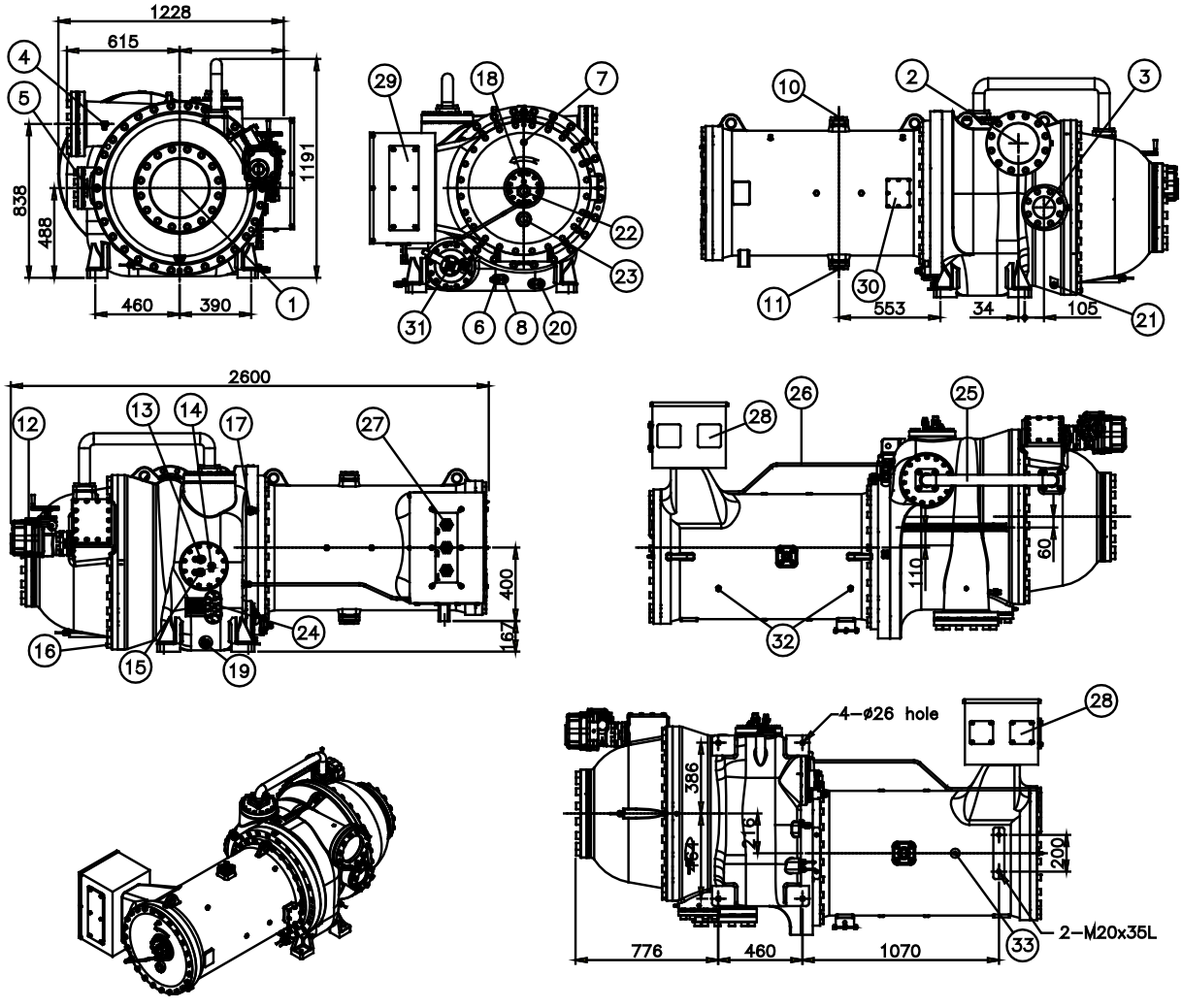
RT-160~200 & 161 & 221 Outline

No.	Name	Specification	No.	Name	Specification
1	Suction flange	12" 20k(JIS)	18	Oil Lubricant Inlet(Motor side)	1/4"FL
2	Discharge flange	8" 20k(JIS)	19	Oil drain	1/4"FL
3	Economizer connector	4" 20k(JIS)	20	Oil heater(2x500W)	220V
4	Pressure detector(discharge)	1/4"FL	21	Ref. heater(2x300W)	220V
5	Pressure detector(ECO.)	1/4"FL	22	Sight glass(motor direction)	
6	Pressure detector(Oil tank)	1/4"FL	23	Sight glass(ref. level)	
7	Pressure detector(motor)	1/4"FL	24	Sight glass(oil level)	
8	Temperature sensor(Oil tank)	PT100	25	Ref. recycling pipe	2" steel
9	Discharge Temperature protector	PT100	26	Lub. recycling pipe	1/2"
10	Motor Liquid injection(inlet)	7/8"copper	27	Power bolt	5/8-11UN ; 9/16-18UNF
11	Motor Liquid injection(outlet)	1 5/8"copper	28	Cable box flange	2*3"
12	Actuator (IGV Volume control)	220V/1ø/50/60Hz	29	Cable box flange	380*80
13	Oil sep. oil recycling inlet	1/2"FL	30	Motor temp. sensor	PTC,3*PT100/PT1000
14	Eva. oil recycling connector	1/4"FL	31	Oil pump outlet	1" steel/380V/3ø/50/60Hz
15	IGV oil recycling(inlet)	1/2"FL	32	Motor Liquid injection(inlet)	1/4"FL
16	IGV oil recycling(outlet)	3/8"FL	33	Motor Liquid injection(outlet)	3/4"FL
17	Oil Lubricant Inlet(Gearbox side)	1/2"FL	34	Radial IGV control	220V/1ø/50/60Hz



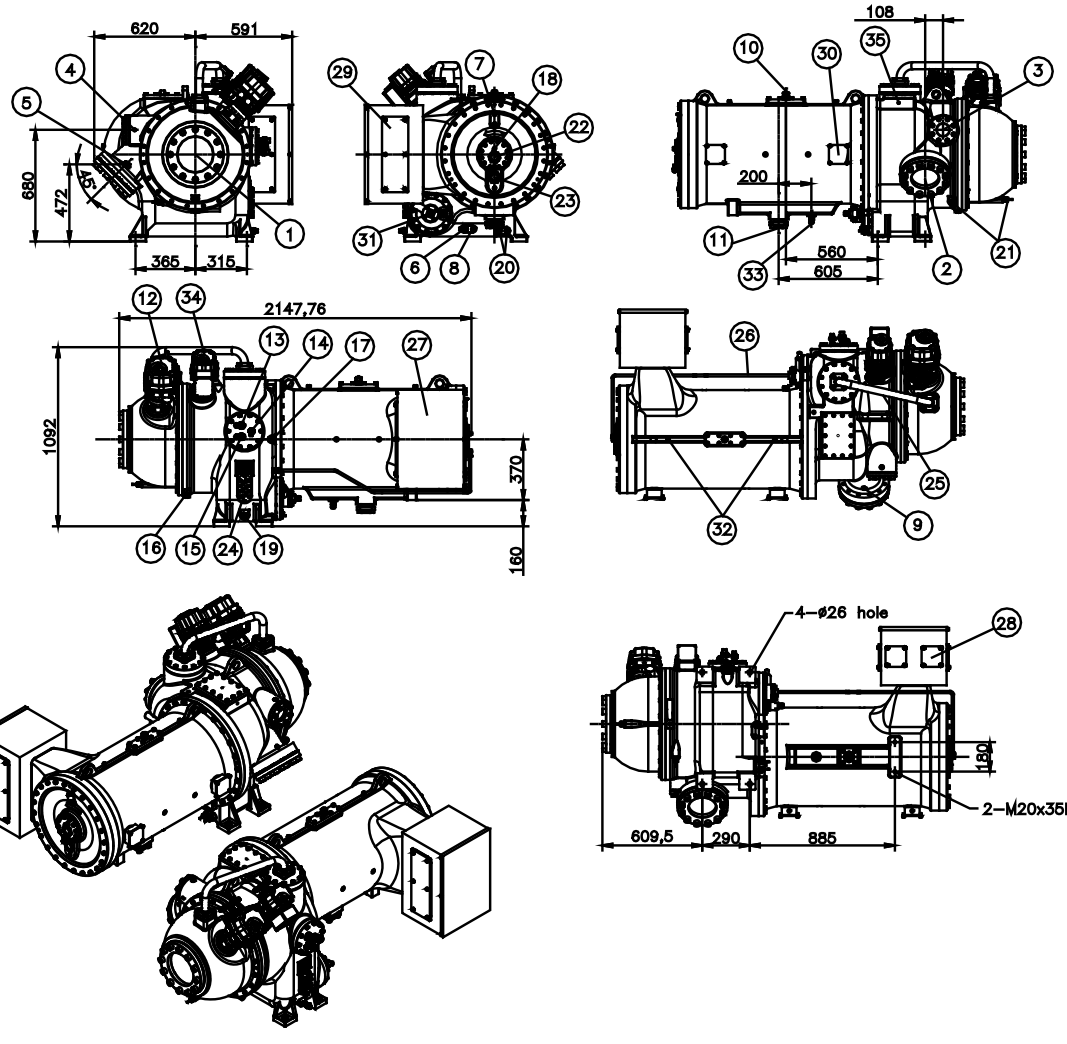
RT-240~280 Outline

No.	Name	Specification	No.	Name	Specification
1	Suction flange	12" 20k(JIS)	18	Oil Lubricant Inlet(Motor side)	1/4"FL
2	Discharge flange	8" 20k(JIS)	19	Oil drain	1/4"FL
3	Economizer connector	4" 20k(JIS)	20	Oil heater(2x500W)	220V
4	Pressure detector(discharge)	1/4"FL	21	Ref. heater(2x300W)	220V
5	Pressure detector(ECO.)	1/4"FL	22	Sight glass(motor direction)	
6	Pressure detector(Oil tank)	1/4"FL	23	Sight glass(ref. level)	
7	Pressure detector(motor)	1/4"FL	24	Sight glass(oil level)	
8	Temperature sensor(Oil tank)	PT100	25	Ref. recycling pipe	2" steel
9	Discharge Temperature protector	PT100	26	Lub. recycling pipe	1/2"
10	Motor Liquid injection(inlet)	7/8"copper	27	Power bolt	5/8-11UN ; 9/16-18UNF
11	Motor Liquid injection(outlet)	1 5/8"copper	28	Cable box flange	2*3"
12	Actuator (IGV Volume control)	220V/1ø/50/60Hz	29	Cable box flange	380*80
13	Oil sep. oil recycling inlet	1/2"FL	30	Motor temp. sensor	PTC,3*PT100/PT1000
14	Eva. oil recycling connector	1/4"FL	31	Oil pump outlet	1" steel/380V/3ø/50/60Hz
15	IGV oil recycling(inlet)	1/2"FL	32	Motor Liquid injection(inlet)	1/4"FL
16	IGV oil recycling(outlet)	3/8"FL	33	Motor Liquid injection(outlet)	3/4"FL
17	Oil Lubricant Inlet(Gearbox side)	1/2"FL			

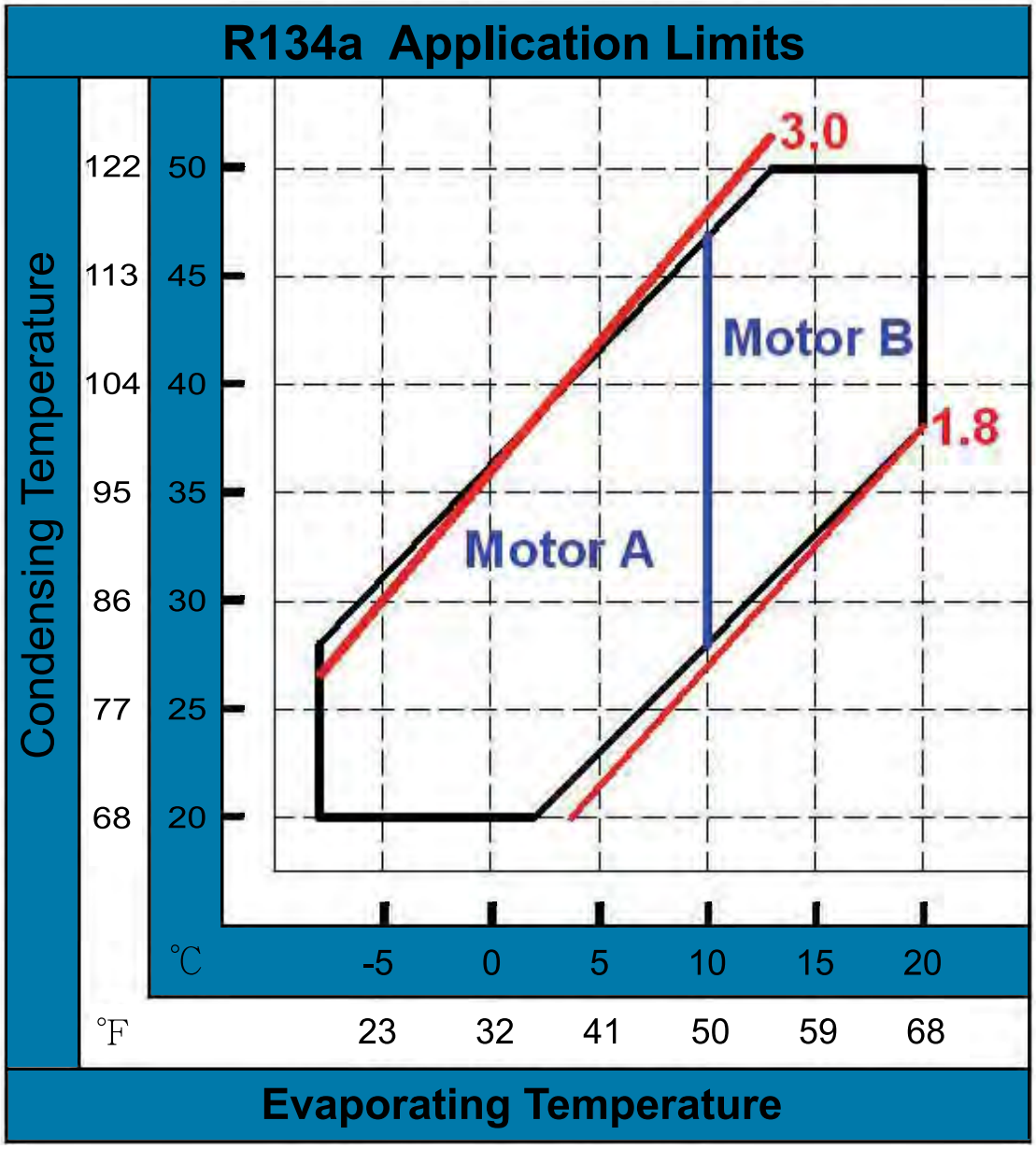


RT-111 Outline

No.	Name	Specification	No.	Name	Specification
1	Suction flange	8" 20k (JIS)	19	Oil drain valve	1/4"FL
2	Discharge flange	6" 20k (JIS)	20	Oil heater (2x500W)	220V
3	Economizer connection	2 1/2" 20k(JIS)	21	Refrigerant heater (2x300W)	220V
4	Pressure connection (discharge)	1/4"FL	22	Sight glass (motor)	
5	Pressure connection (ECO)	1/4"FL	23	Sight glass (ref. level)	
6	Pressure connection (oil tank)	1/4"FL	24	Sight glass (oil level)	
7	Pressure connection (motor)	1/4"FL	25	Ref. return pipe	1 1/4"
8	Temperature sensor (oil tank)	PT100	26	Oil return pipe	1/2"
9	Discharge temperature thermistor	PT100	27	Power bolt	5/8-11UN ; 9/16-18UNF
10	Motor cooling connection (inlet)	3/4"FL	28	Cable box flange	2*3"
11	Motor cooling connection (outlet)	1 1/8"copper	29	Cable box flange	380*80
12	Actuator (IGV volume control)	220V/1ø/50/60Hz	30	Motor temperature sensor	PTC,3*PT100/PT1000
13	Angle valve	1/2"FL	31	Oil pump outlet	1" steel/380V/3ø/50/60Hz
14	Eva. oil return connection	1/4"FL	32	Motor cool. connect. (inlet)	1/4"FL
15	IGV oil return connection (inlet)	1/2"FL	33	Motor cooling connection (outlet)	1/2"FL
16	IGV oil return connection (out.)	3/8"FL	34	Radial IGV control	220V/1ø/50/60Hz
17	Oil connection (gearbox)	3/8"FL	35	Oil connection (gearbox)	1/4"FL
18	Oil connection (motor)	1/4"FL			



Application Limits



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