SCROLL COMPRESSOR FOR REFRIGERATION

Scroll Compressor Sales Department
DALIAN SANYO COMPRESSOR

May 24, 2011

Compressor Line-up

R22 for Refrigeration - B8 (50Hz 380-415V / 60Hz 440-460V)

Phase	Out Put	Displacement	Compressor Model	Compressor Code	Starting Method	50Hz				60Hz				Outline Graph Code
						Nominal Capacity		Input	Current	Nominal Capacity		Input	Current	
	HP	cm^3/rev				kW	kBTU/h	kW	A	kW	kBTU/h	kW	A	
3	4	66.8	C-SB303L8A	809 840 68	—	5.30	18.1	3.40	5.8	6.40	21.9	4.05	5.9	
	5	83.2	C-SB373L8A	809 850 68	—	6.80	23.2	4.10	7.0	8.20	28.0	4.80	7.0	
	6	104.0	C-SC453L8H	809 261 68	—	7.95	27.1	5.14	9.1	9.47	32.3	5.98	8.9	
	7	120.0	C-SC523L8H	809 271 68	—	9.30	31.8	5.98	11.0	11.09	37.9	6.86	10.2	
	8	137.0	C-SC603L8H	809 281 68	—	10.40	35.5	6.92	11.9	12.46	42.5	8.09	12.0	
	10	171.2	C-SC753L8H	809 201 68	—	13.20	45.1	8.35	14.2	15.80	53.9	9.80	14.3	

R404A for Refrigeration - B8 (50Hz 380-415V / 60Hz 440-460V)

Phase	Out Put	Displacement	Compressor Model	Compressor Code	Starting Method	50Hz				60Hz				Outline Graph Code
						Nominal Capacity		Input	Current	Nominal Capacity		Input	Current	
	HP	cm^3/rev				kW	kBTU/h	kW	A	kW	kBTU/h	kW	A	
3	4	66.8	C-SBN303L8A	809 940 68	—	5.30	18.1	3.75	6.58	6.30	21.5	4.45	7.10	
	5	83.2	C-SBN373L8A	809 950 68	—	6.80	23.2	4.50	7.93	8.10	27.7	5.30	8.41	
	6	104.0	C-SCN453L8H	809 161 68	—	8.10	27.7	5.85	10.8	9.55	32.6	6.80	11.0	
	7	120.0	C-SCN523L8H	809 171 68	—	9.25	31.6	6.50	11.8	10.90	37.2	7.55	12.1	
	8	137.0	C-SCN603L8H	809 181 68	—	10.50	35.8	7.45	13.5	12.40	42.3	8.85	14.2	
	10	171.2	C-SCN753L8H	809 101 68	—	13.05	44.6	9.15	16.3	15.20	51.9	10.75	17.2	

Rated Conditions: Tc=50℃, Te=-15℃, Suction gas temperature=18.3 ℃; Subcooling=0K

Compressor Line-up

R22 for Refrigeration – B9 (60Hz 380V)

Phase	Out Put	Displacement	Compressor Model	Compressor Code	Starting Method	60Hz				Outline Graph Code
						Nominal Capacity		Input	Current	
	HP	cm^3/rev				kW	kBTU/h	kW	A	
3	6	104.0	C-SC453L9H	809 261 69	—	9.45	32.3	6.00	11.3	
	7	120.0	C-SC523L9H	809 271 69	—	11.00	37.6	6.75	12.3	
	8	137.0	C-SC603L9H	809 281 69	—	12.00	41.0	7.80	13.7	
	10	171.2	C-SC753L9H	809 201 69	—	15.90	54.3	9.50	16.7	

R404A for Refrigeration – B9 (60Hz 380V)

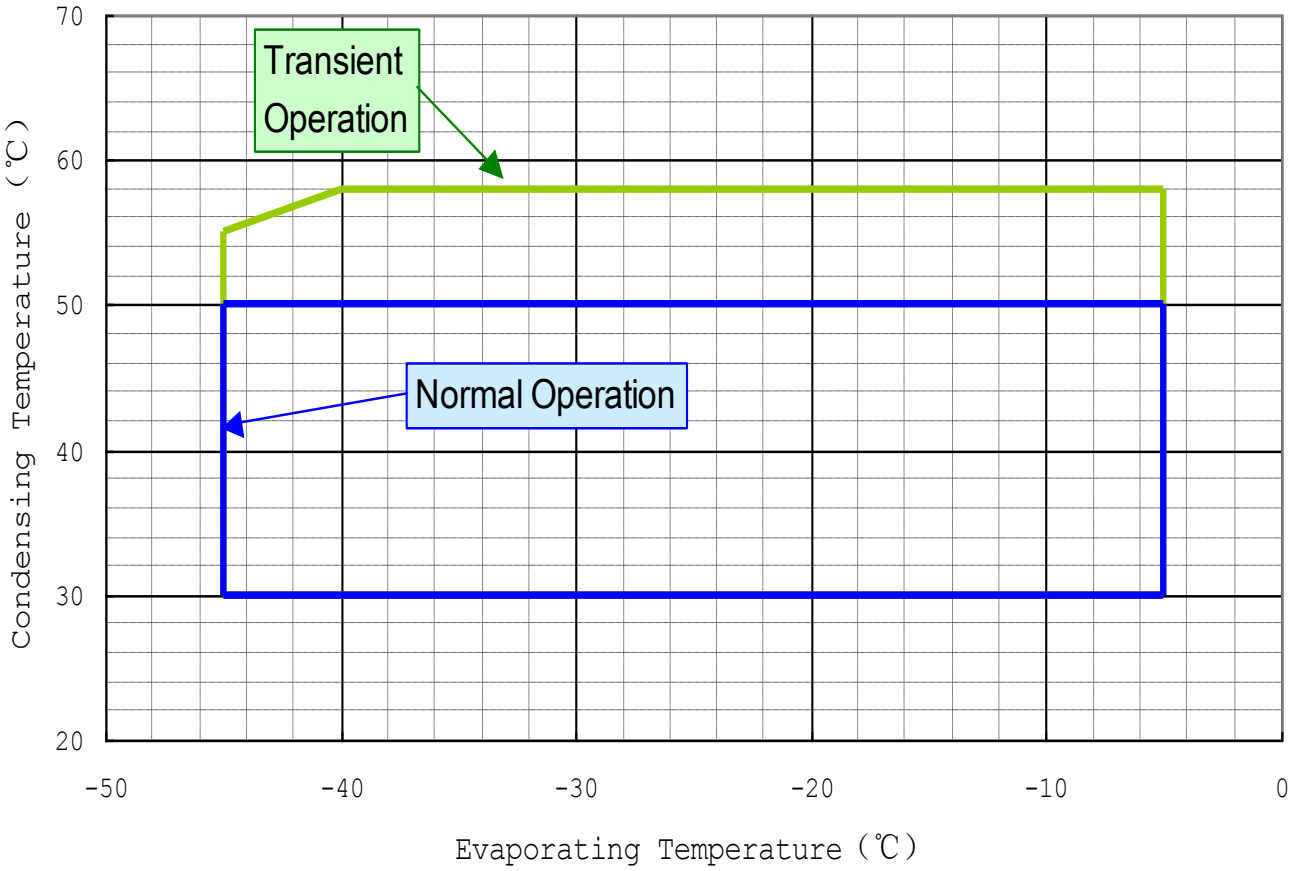
Phase	Out Put	Displacement	Compressor Model	Compressor Code	Starting Method	60Hz				Outline Graph Code
						Nominal Capacity		Input	Current	
	HP	cm^3/rev				kW	kBTU/h	kW	A	
3	6	104.0	C-SCN453L9H	809 161 69	—	10.20	34.8	6.70	12.3	
	7	120.0	C-SCN523L9H	809 171 69	—	11.60	39.6	7.55	13.4	
	8	137.0	C-SCN603L9H	809 181 69	—	13.10	44.7	8.80	15.4	
	10	171.2	C-SCN753L9H	809 101 69	—	16.50	56.3	10.60	18.5	

Rated Conditions: Tc=50℃, Te=-15℃, Suction gas temperature=18.3 ℃; Subcooling=0K

Envelope(R404A)

Operating Envelope (for Refrigeration R404A)

Suction Gus Temperature: 18.3℃
Compressor Cooling: Liqud Injection



APPLICATION STANDARD&LIMIT(R404A)

- Standard : Applicable to ordinary conditions(including standard, over-load and low-temp. conditions).

- Limit : Applicable to transitional short periods, such as starting and early stage of defrost mode.

APPLICATION STANDARD&LIMIT(R404A)

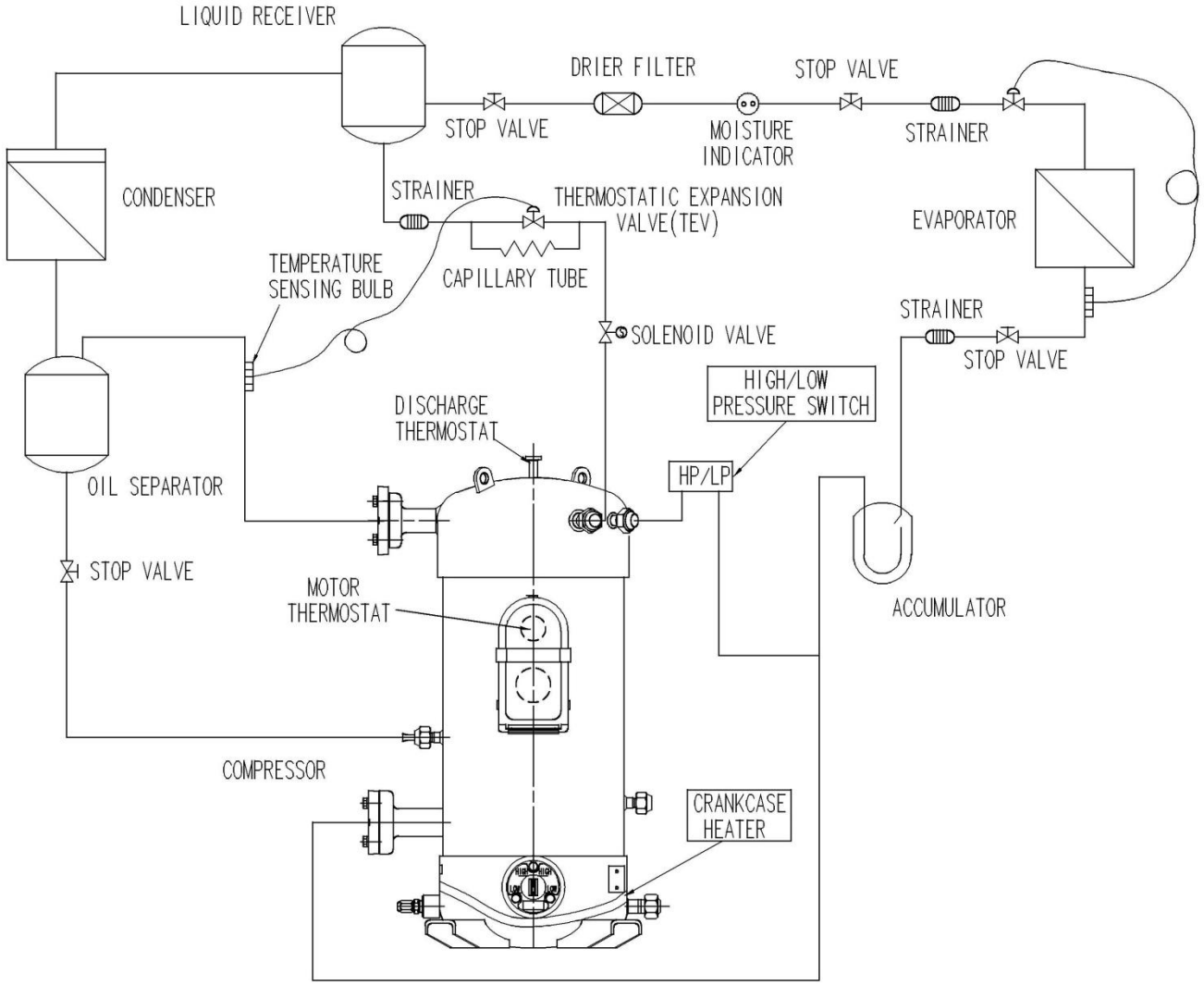
No.	Item	Standard	Limit	Note
1	Refrigerant	R404A		
2	Evaporating Temp.	- 40 ~ - 5℃		
		(0.004 ~ 0.411 MPa(G))		Comp. Suction Pressure
3	Condensing Temp.	+ 30 ~ + 50℃	+ 58℃	Ensure the pressure difference of thermal expansion valve be within 0.8MPa(G) Min.
		(1.31 ~ 2.18 MPa(G))	(2.63 MPa(G))	
4	Compression Ratio	24 Max		
5	Winding Temp.	90℃ Max	110℃	
6	Shell Bottom Temp.	Upper Limit : 90℃ Max		
		Lower Limit : Evaporating Temp. + 12K Min (When comp. Is running)		To install crackcase heater
		Ambient Temp. + 11K Min (When comp. shuts off)		
7	Discharge Gas Temp.	115℃ Max	125℃	Inside of the well pipe on the top of comp.
		Set discharge gas thermo sensor as 128℃ OFF,75℃ ON		
8	Suction Gas Temp.	18℃ Max	No excessive noise	It should meet the requirement of item 5,6,7and 14 within 300mm of the suction fitting.
		Superheat:10K Min.	No increase of current or vibration	

APPLICATION STANDARD&LIMIT(R404A)

9	Running Voltage	Within±10% of the rated voltage	Voltage at comp. Terminals
10	Starting Voltage	85% of the rated voltage min.	Dropped voltage at comp. Terminals.
11	On/Off Period	ON Period:Until the oil level retruns to the center of the lower bearing.	For at least 7 minutes-ON/3 minutes-OFF is recommendable
		OFF Period:Until balance of high and low pressure side is obtained.	
12	Refrigerant Charge	Charged Volume: to minimize refrigerent charge as far as possible.	Use the cooling・ temperature・ pressure of system to decide a reasonable quantity
		No FLASH GAS occurs before expansion valve	
13	Life Time	200,000 cycle Max.	
14	Oil Level	Keep oil level above LOW level of sightglass when running	
15	Abnormal Pressure Rise	Pressure Rise: 2.78MPa(G) Max.	By high pressure switch
	Abnormal Pressure Drop	Pressure Drop: 0.005MPa(G) Min.	By low pressure switch
16	System Moisture Level	Balance moisture in Refrigerant circuit at the beginning:200ppm Max.	Dry core:D-S type made by SANYO
		Recommend the componet on the right when drier is needed.	
17	System Uncondensable Gas Level	1 Vol.% Max.	24 hrs. after vacuuming:1.01 kPa Max.
		Residual Oxygen 0.1 Vol.% Max.	
18	Tilt	5° Deg.Max.	

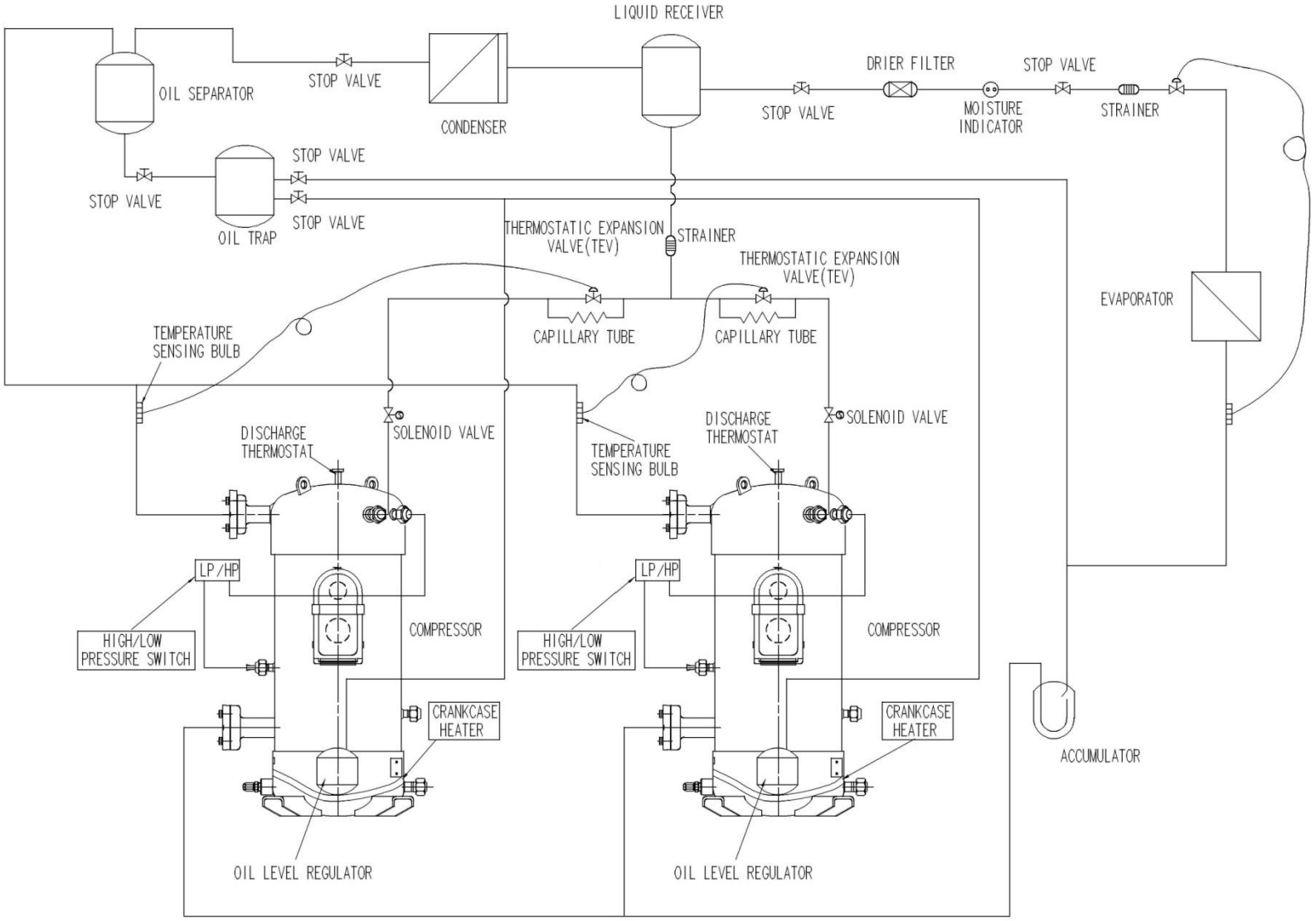
System Principle

- Single compressor system



System Principle

- Tandem compressor system



System Parts Specifications

- TEV Specifications

Comp. Model	Cap.of TEV	TEV Model	S.S.H
C-SCN453L8H	1.05KW	INX-2203DUL-Q61	44.5±3K
C-SCN523L8H	2.53KW	INX-2208DUL-Q63	
C-SCN603L8H			
C-SCN753L8H			

- Capillary Tubes in parallel with TEV

Comp. Model	OD (mm)	ID (mm)	L (mm)
C-SCN453L8H	Φ3	Φ1	1000
C-SCN523L8H			
C-SCN603L8H		Φ1.2	
C-SCN753L8H			

- NOTE: when applying the TEV and Capillary tube combination, please confirm below items within the full envelope of the system:
- ·Is the Discharge temperature below the specification value？（High load conditions）
- ·Is there any irregularity vibration with the TEV ？（Low load conditions）

System Parts Specifications

•Capillary Tubes for Liquid Injection without TEV

Comp. Model	OD (mm)	ID (mm)	L (mm)
C-SCN453L8H	φ3	φ1.4	500
C-SCN523L8H		φ1.5	
C-SCN603L8H		φ1.6	
C-SCN753L8H		φ1.7	

• NOTE: when apply the Capillary Tubes without TEV, please confirm below items within the full envelope of the system:

•·Is the Discharge temperature below the specification values？（High load conditions）

• Solenoid Valve: A solenoid valve must be provided in the injection circuit(before the injection port) that opens whenever the compressor is running and be closed when the compressor is in off cycle.

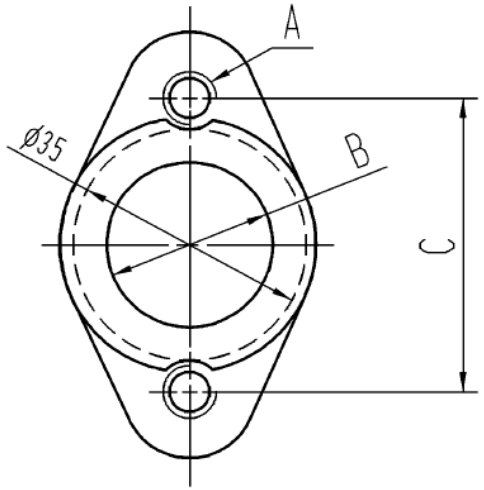
System Parts Specifications

- Suction&Discharge Valve

SANYO low temperature compressor use Oval Flange Valve for the connections to system piping:

System Parts Specifications

Comp. Model	Valve Type	A	B	C
C-SCN453L8H C-SC453L8H C-SCN523L8H C-SC523L8H C-SCN603L8H C-SC603L8H	Suction	M10xP1.5	ϕ 22	50.8
	Discharge	M8xP1.5	ϕ 16	42.0
C-SCN753L8H C-SC753L8H	Suction	M8xP1.5	ϕ 22	44.5
	Discharge	M8xP1.5	ϕ 20	44.5



THANK YOU!