HANBELL

RC2 Series
Screw Compressor

Technical Manual

HANBELL PRECISE MACHINERY CO.,LTD.

TEL:+886-3-4836215 FAX:+886-3-4836223

www.hanbell.com Sales@hanbell.com

HBME-RC2-10-A(500)

Contents

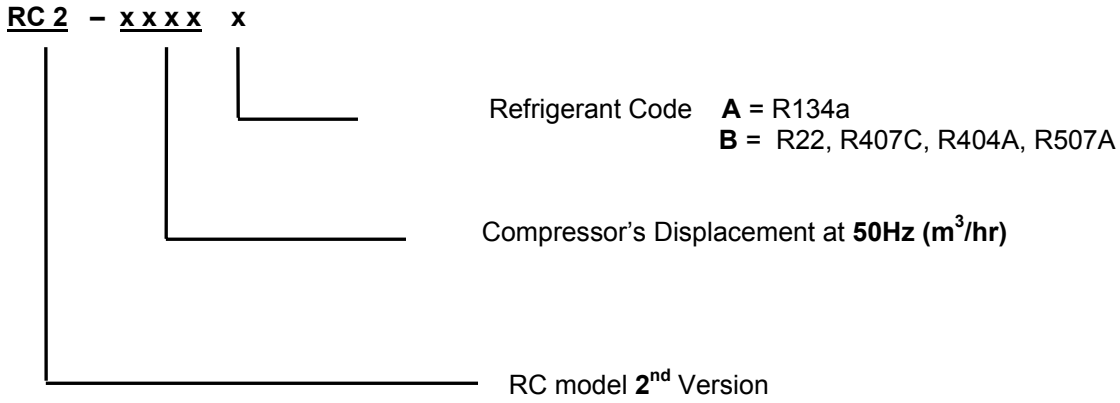
1. General

HANBELL **RC2** series semi-hermetic screw compressor is developed especially for applications in air-conditioning and refrigeration. With high operating load design, each HANBELL compressor is of high efficiency and reliability in all operating conditions such as thermal storage, heat pump system & refrigeration. Each HANBELL compressor has the latest and advanced **5-to-6 Patented Screw Rotor Profile** designed to ensure high capacity and efficiency in all operating conditions. Each unit is carefully manufactured and inspected by high precision THREAD SCREW ROTOR GRINDING MACHINE, CNC MACHINING CENTER, and 3D COORDINATE MEASURING MACHINE. Each **HANBELL** compressor follows **ISO 9001** quality system. This certification assures that its quality is controlled under severe quality procedures and good service to all customers.
RC2 series compressor is equipped with separated radial and axial bearings, liquid injection and economizer connection, PTC motor temperature thermistors and discharge temperature thermistors, a motor protector, and oil level switch and oil pressure differential switch and other accessories.. The complete accessories and their new designs guarantee the compressor has the best reliability, longest bearing life during heavy duty running and strict operating conditions.

This Technical Manual contains information about lifting, dimensions, installation, operation, applications and basic trouble-shooting. It is strongly recommended that contents of this manual should be referred carefully prior to lifting, installation, and commissioning of RC2 series compressor in order to prevent any accident or damage. Please contact HANBELL or its local distributors/agents for more information or further assistance.

2. Specifications and description of design

2.1 Compressor nomenclature



2.2 Compressor specifications

a. RC2-A

MODEL	COMPRESSOR					MOTOR							Lubricant charge	Oil Heater	Hydrostatic Pressure Test	WEIGHT
	Displacement 60 / 50Hz	Rated Speed 60 / 50Hz	VI	Cap. Control (%)		Type	Nominal Hp		Starting	Voltage (V)		Insulation	Protection				
	m^3/hr			STEP	STEPLESS		60Hz	50Hz		60Hz	50Hz			L	W	Kg/cm2G	kg
RC2-100A	118/98	3550/2950	2.2 2.6 3.0 3.5 4.8	33, 66, 100	33~100	3 Phase, 2 Pole, Squirrel Cage, Induction Motor	23	19	Y-△ PWS DOL	208 220 230 380 440 460 480 575	380 400 415	Class F	PTC Protection	7	150/300	42	275
RC2-140A	165/137			33, 66, 100	33~100		32	26						7			280
RC2-170A	207/172			25, 50, 75, 100	25~100		40	33						7			370
RC2-180A	216/180			33, 66, 100	33~100		42	35						7			300
RC2-200A	233/193			25, 50, 75, 100	25~100		45	37						8			420
RC2-230A	277/230			35, 50, 75, 100	35~100		53	44						14			540
RC2-260A	309/257			25, 50, 75, 100	25~100		59	49						14			545
RC2-300A	352/293			25, 50, 75, 100	25~100		67	56						16			590
RC2-310A	371/308			35, 50, 75, 100	35~100		71	59						16			575
RC2-320A	384/320			25, 50, 75, 100	25~100		72	60						16			595
RC2-340A	407/339			35, 50, 75, 100	35~100		77	64						16			600
RC2-370A	440/366			35, 50, 75, 100	35~100		84	70						16			610
RC2-410A	490/407			25, 50, 75, 100	25~100		93	78						15			730
RC2-470A	567/471			25, 50, 75, 100	25~100		108	90						18			800
RC2-510A	611/508			35, 50, 75, 100	35~100		117	98						20			760
RC2-550A	660/549			25, 50, 75, 100	25~100		126	105						23			820
RC2-580A	702/583			35, 50, 75, 100	35~100		131	109						20			805
RC2-610A	735/611			25, 50, 75, 100	25~100		135	113	Y-△ DOL	380 440 460 480 575				23			945
RC2-620A	745/619			35, 50, 75, 100	35~100		137	114						23			850
RC2-710A	858/713			35, 50, 75, 100	35~100		158	131						28			1099
RC2-790A	952/791			30, 50, 75, 100	30~100		175	146						28			1140
RC2-830A	993/825			30, 50, 75, 100	30~100		183	152						28			1150
RC2-930A	1117/929			35, 50, 75, 100	35~100		212	176						28			1180
RC2-1090A	1310/1089			35, 50, 75, 100	35~100		247	205						---	---		1400
RC2-1280A	1535/1276			30, 50, 75, 100	30~100		286	238						---	---		1550
RC2-1520A	1832/1523			25, 50, 75, 100	25~100		331	275						---	---		1600

Nominal Horse Power:

All the above Nominal Hp's are not equal to the maximum compressor Hp. Please refer to Hanbell selection software's output for rated current and Maximum Continuous Current-M.C.C according to various operating conditions while selecting sizes of contactor, cable, fuse and wire, etc…

b. RC2-B

MODEL	COMPRESSOR					MOTOR							Lubricant charge	Oil Heater	Hydrostatic Pressure Test	WEIGHT
	Displacement 60 / 50Hz	Rated Speed 60 / 50Hz	VI	Cap. Control (%)		Type	Nominal Hp		Starting	Voltage (V)		Insulation	Protection			
	m^3/hr			STEP	STEPLESS		60Hz	50Hz		60Hz	50Hz			L	W	Kg/cm2G	kg
RC2-100B	118/98	3550/2950	2.2 2.6 3.0 3.5 4.8	33, 66, 100	33~100	3 Phase, 2 Pole, Squirrel Cage, Induction Motor	38	31	Y-△ PWS DOL	208 220 230 380 440 460 480 575	380 400 415	Class F	PTC Protection	7	150/300	42	280
RC2-140B	165/137			33, 66, 100	33~100		50	41						7			285
RC2-170B	207/172			25, 50, 75, 100	25~100		63	52						7			380
RC2-180B	216/180			33, 66, 100	33~100		66	55						7			335
RC2-200B	233/193			25, 50, 75, 100	25~100		70	58						8			425
RC2-230B	277/230			35, 50, 75, 100	35~100		81	67						14			555
RC2-260B	309/257			25, 50, 75, 100	25~100		90	75						14			560
RC2-300B	352/293			25, 50, 75, 100	25~100		107	89						16			600
RC2-310B	371/308			35, 50, 75, 100	35~100		110	91						16			580
RC2-320B	384/320			25, 50, 75, 100	25~100		114	94						16			600
RC2-340B	407/339			35, 50, 75, 100	35~100		121	101		380 440 460 480 575				16			620
RC2-370B	440/366			35, 50, 75, 100	35~100		130	108						16			640
RC2-410B	490/407			25, 50, 75, 100	25~100		146	121						15			740
RC2-470B	567/471			25, 50, 75, 100	25~100		170	141	Y-△ DOL					18			810
RC2-510B	611/508			35, 50, 75, 100	35~100		183	152						20			780
RC2-550B	660/549			25, 50, 75, 100	25~100		195	162						23			850
RC2-580B	702/583			35, 50, 75, 100	35~100		210	175						20			840
RC2-610B	735/611			25, 50, 75, 100	25~100		214	178						23			960
RC2-620B	745/619			35, 50, 75, 100	35~100		220	183						23			880
RC2-710B	858/713			35, 50, 75, 100	35~100		250	208						28			1099
RC2-790B	952/791			30, 50, 75, 100	30~100		276	230						28			1180
RC2-830B	993/825			30, 50, 75, 100	30~100		290	234						28			1215
RC2-930B	1117/929			35, 50, 75, 100	35~100		334	278						28			1240
RC2-1090B	1310/1089			35, 50, 75, 100	35~100		402	335						---	---		1430
RC2-1280B	1535/1276			30, 50, 75, 100	30~100		471	392						---	---		1580
RC2-1520B	1832/1523			25, 50, 75, 100	25~100		534	443						---	---		1630

Nominal Horse Power:
All above Nominal Hp are not equal to the maximum compressors Hp; Please refer to Hanbell selection software's output for the rated current, Maximum Continuous Current-M.C.C according to various working condition while selecting the contactor, cable, fuse and wire, etc…

2.3 RC2 series compressor construction

RC2-100, RC2-140, RC2-180 Construction

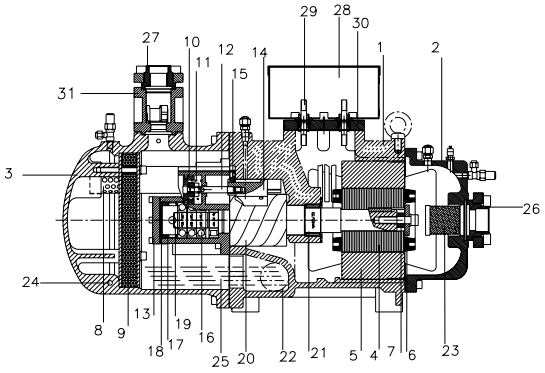


Figure 1

Item	Description	Item	Description	Item	Description	Item	Description
1	Compressor casing	9	Oil separator cartridge	17	Discharge fixed ring	25	Refrigeration Lubricant
2	Motor casing	10	Piston	18	Disc spring	26	Suction flange
3	Oil separator	11	Piston spring	19	Bearing lock nut	27	Discharge flange
4	Motor rotor assembly	12	Piston rod	20	Male rotor	28	Cable box
5	Motor stator assembly	13	Bearing seat's cover plate	21	Suction bearings	29	Power bolt
6	Motor rotor washer	14	Modulation slide valve	22	Oil filler cartridge	30	Motor cable cover plate
7	Motor rotor spacer ring	15	Slide valve key	23	Suction filter	31	Discharge check valve
8	Oil separator baffle	16	Discharge bearings	24	Oil heater		

RC2-170, RC2-200, RC2-230, RC2-260, RC2-300, RC2-310, RC2-320, RC2-340, RC2-370, RC2-410, RC2-470, RC2-510, RC2-580 Construction

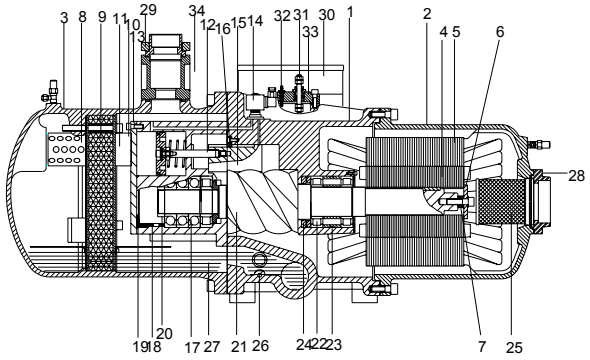


Figure 2

Item	Description	Item	Description	Item	Description	Item	Description
1	Compressor casing	10	Piston	19	Disc spring	28	Suction flange
2	Motor casing	11	Piston spring	20	Bearing lock nut	29	Discharge flange
3	Oil separator	12	Piston rod	21	Male rotor	30	Cable box
4	Motor rotor assembly	13	Bearing seat's cover plate	22	Suction bearings	31	Power bolt
5	Motor stator assembly	14	Modulation solenoid valve	23	Suction bearings inner/outer spacer ring	32	Thermostat terminals
6	Motor rotor washer	15	Modulation slide valve	24	Oil guiding ring	33	Motor cable cover plate
7	Motor rotor spacer ring	16	Slide valve key	25	Suction filter	34	Discharge check valve
8	Oil separator baffle	17	Discharge bearings	26	Oil heater		
9	Oil separator cartridge	18	Discharge fixed ring	27	Refrigeration Lubricant		

RC2-550, RC2-620 Construction

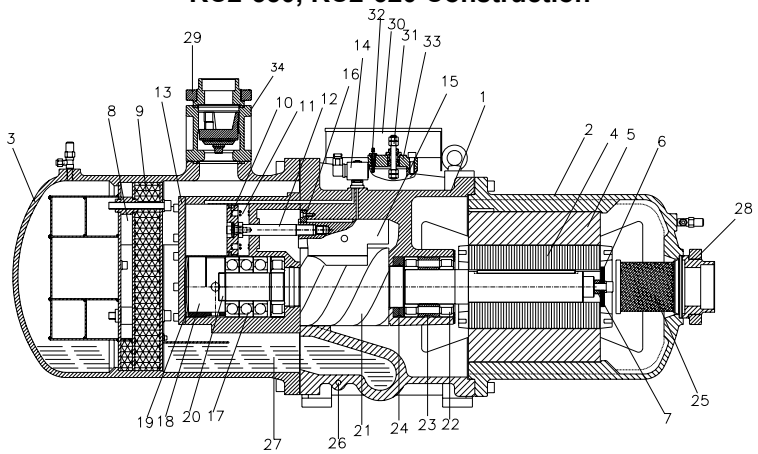


Figure 3

Item	Description	Item	Description	Item	Description	Item	Description
1	Compressor casing	10	Piston	19	Disc spring	28	Suction flange
2	Motor casing	11	Piston spring	20	Bearing lock nut	29	Discharge flange
3	Oil separator	12	Piston rod	21	Male rotor	30	Cable box
4	Motor rotor assembly	13	Bearing seat's cover plate	22	Suction bearings	31	Power bolt
5	Motor stator assembly	14	Modulation solenoid valve	23	Suction bearings inner/outer spacer ring	32	Thermostat terminals
6	Motor rotor washer	15	Modulation slide valve	24	Oil guiding ring	33	Motor cable cover plate
7	Motor rotor spacer ring	16	Slide valve key	25	Suction filter	34	Discharge check valve
8	Oil separator baffle	17	Discharge bearings	26	Oil heater		
9	Oil separator cartridge	18	Discharge fixed ring	27	Refrigeration Lubricant		

RC2-610, RC2-710, RC2-790, RC2-830, RC2-930 Construction

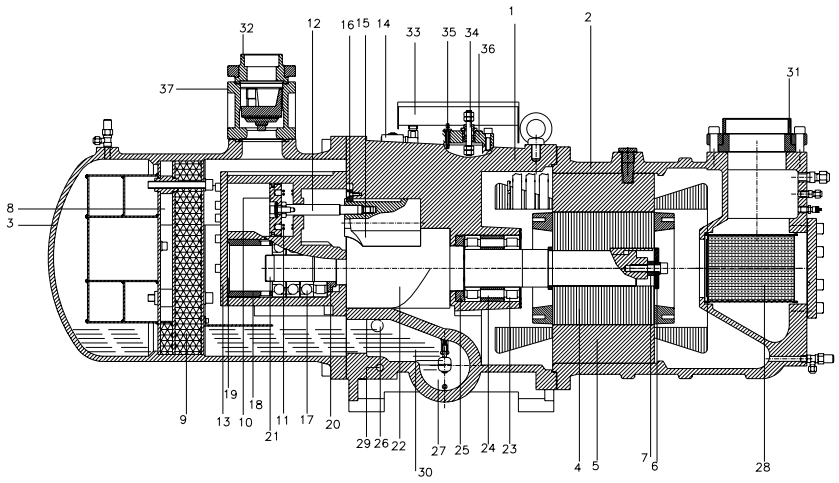


Figure 4

Item	Description	Item	Description	Item	Description	Item	Description
1	Compressor casing	11	Piston spring	21	Bearing lock nut	31	Suction flange
2	Motor casing	12	Piston rod	22	Male rotor	32	Discharge flange
3	Oil separator	13	Bearing seat's cover plate	23	Suction bearings	33	Cable box
4	Motor rotor assembly	14	Modulation solenoid valve	24	Suction bearings inner/outer spacer ring	34	Power bolt
5	Motor stator assembly	15	Modulation slide valve	25	Oil guiding ring	35	Thermostat terminals
6	Motor rotor washer	16	Slide valve key	26	Oil level sight glass	36	Motor cable cover plate
7	Motor rotor spacer ring	17	Discharge bearings	27	Oil filler cartridge	37	Discharge check valve
8	Oil separator baffle	18	Discharge fixed ring	28	Suction filter		
9	Oil separator cartridge	19	Disc spring	29	Oil heater		
10	Piston	20	α-Balance piston	30	Refrigeration Lubricant		

RC2- 1090, RC2-1280, RC2-1520 Construction

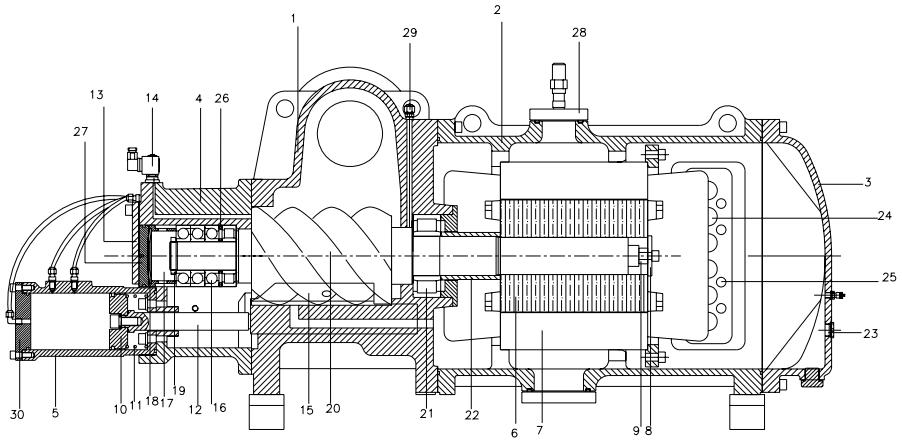


Figure 5

Item	Description	Item	Description	Item	Description	Item	Description
1	Compressor casing	9	Motor rotor spacer ring	17	Discharge fixed ring	25	Thermostat terminals
2	Motor casing	10	Piston	18	Disc spring	26	Discharge bearings inner/outer spacer ring
3	Motor cover casing	11	Piston spring	19	Bearing lock nut	27	Seal plate
4	Bearing seat	12	Piston rod	20	Male rotor	28	Economizer port flange
5	Piston cylinder	13	Bearing seat's cover plate	21	Suction bearings	29	Oil inlet connector
6	Motor rotor assembly	14	Modulation solenoid valve	22	Suction side spacer ring	30	Piston cylinder cover
7	Motor stator assembly	15	Modulation slide valve	23	Liquid Level sight glass		
8	Motor rotor washer	16	Discharge bearings	24	Power bolt		

2.4 Design features

HANBELL screw compressors feature simple and robust construction by elimination of some components such as pistons, piston rings, valve plates, oil pumps which are found in reciprocating compressors. Without these components, screw compressors run with low noise level, minimized vibration, high reliability and durability. HANBELL screw compressors are of two-shaft rotary displacement design with the latest and advanced 5:6 patented screw rotors. Screw rotors are precisely installed with roller bearings, i.e. radial bearings at both suction and discharge ends as well as angular contact ball bearings i.e. axial bearings at discharge end. A three-phase, two-pole squirrel-cage induction motor drives the compressor. The motor rotor is located on the shaft of the male screw rotor. Cooling of the motor is achieved with suction refrigerant vapor.

Compressor technical features:

Full product range- RC2 series compressor consists of 26 models with displacement ranging from 98/118 m3/hr up to 1523/1828 m3/hr (50/60Hz) compatible for different refrigerants and applications.

Multinational patents of high-efficiency screw rotors- The new 5:6 high efficiency screw rotor profile is patented in Taiwan, UK, US, and China. This new large-volume, high-efficiency rotor profile is designed especially for modern refrigerant characteristics. High-efficiency screw rotors are accomplished by using precision CNC machining centers, rotor milling machines, rotor grinding machines. Strict ISO 9001 process controlling and the application of precise

inspection equipments, such as ZEISS 3D coordinate measuring machines, ensure high-efficiency, high-quality, low-noise and low-vibration HANBELL RC2 series screw compressors.

High efficiency motor- Premium grade low-loss core steel with special motor cooling slot and refrigerant guide vane which pilot the cold suction refrigerant gas through the motor provides the highest operating efficiency possible no matter how strict operating conditions are.

Long life bearings and high reliability- The screw compressors utilize a combination of 11 axial and radial bearings and α axial balance piston to ensure longer bearing life and higher compressor reliability.

Double-walled rotor housing- Double casing structure with high strength inner ribs has been designed to minimize noise and ensure rigidity. The rotor housing is made of high-strength gray cast iron FC25 that is extremely stable, therefore no expansion will occur even at high-pressure condition. These casings are machined by computer aided machining centers and inspected by precision measuring machines to enhance reliability.

Direct flange-on oil separator- A vessel made of ductile material FC 500 specially designed to withstand high pressure and provide the highest efficiency of oil separation. Simple oil management, three-staged oil separator, low-pressure-drop demister to ensure the minimum refrigerant dilution in the oil and maintain high oil viscosity.

Precise capacity control- The slide valve for capacity control is located in the compressor chamber. The slide valve is actuated by injection of pressurized oil into the cylinder from the oil sump as well as bypass of oil through solenoid valves in each oil lines with pressure differential.

Perceptive protection modules- RC2 series screw compressors are equipped with PTC thermistors and motor protection module which could monitor discharge and motor coil temperatures as well as phase sequence and phase loss. Accessories also include oil level switch to monitor the level of oil, pressure differential switch, and pressure relief valve for optional application.

Adaptable with additional cooling- Liquid injection connection port located at the motor casing and in the compression chamber, oil cooler connection port, and middle pressure economizer connection port for customer's desired application.

RC2 series compressors not only continue RC series compressors' characteristics of high efficiency & reliability design mentioned above, but are also designed with the following newly added advantages to meet customers' needs more adequately:

1. Design the fittest high-efficiency motor for respective refrigerant, operation condition and electrical power.
2. Based on frames of RC series compressors, add 10 models by increasing suction volume of screw rotors (20% more than that of the original RC series model) to provide wider cost-effective election.
3. Dual capacity control of steps or continuous create more accurate and reliable mechanism (Option)
4. Economizer operation with floating ECO port can be effective under partial load and full load.

Detailed description of every new design features is given in the following chapters.

2.5 Compression process

As shown in Figure 6 below, during the rotation of the rotors, the meshing shifts from the suction side to the discharge side. The meshing rotors enclose a working space, which is continuously reduced as it moves in the axial direction. This causes a V-shaped lobe space between each male and female lobes. This lobe space is maximum at suction and sealing process. As the rotors rotate further, the new meshing at the suction side closes the V-shaped lobe space. The lobe space is then constantly reduced by continuous intermeshing of the lobes (compression process).
A reduction in lobe space takes places during its movement from the suction side of the rotors towards the discharge side. The volume is steadily reduced and it is thereby compressed in the sealed condition. As soon as the peaks of the rotor teeth are free to the outlet port, compressed vapor is discharged to the high-pressure side and flows to the oil separator where the high-pressured gas is separated from lubrication oil. The size and geometry of the outlet port determine the so-called "internal volume ratio (Vi)" of the compressor. This ratio must have a defined relationship with operating pressure ratio to avoid losses in efficiency due to under or over compression.

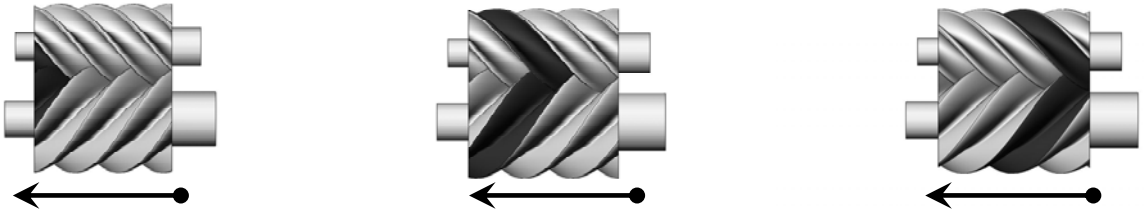


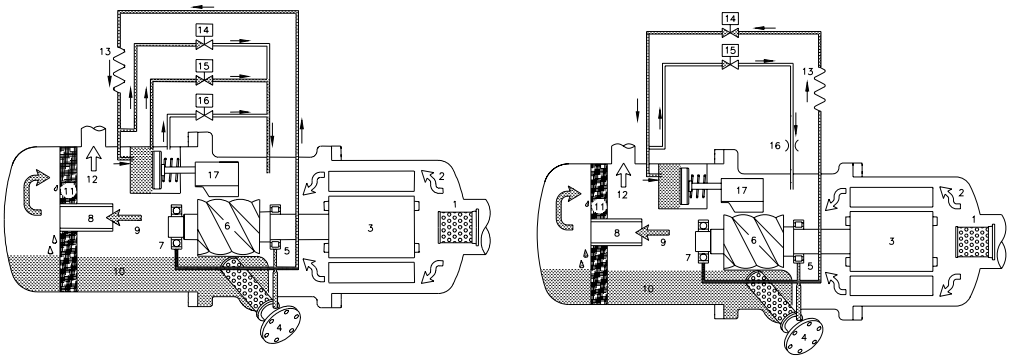
Figure 6 Compression process

2.6 Capacity control system

The RC2 series screw compressors are equipped with either 3-step/4-step capacity control system or continuous (step-less) capacity control system. Both of the capacity control systems consist of a modulation slide valve, piston rod, cylinder, piston and piston rings. The slide valve and the piston are connected by a piston rod. The principle of operation is using the oil pressure to drive the piston in the cylinder. See Figure 7, the lubrication oil flows from the oil sump through the oil filter cartridge and capillary then fills into the cylinder due to the positive oil pressure bigger than the right side of spring force plus the high pressure gas. The positive pressure differential causes the piston to move toward the right side in the cylinder. When the slide valve moves toward the right side, the effective compression volume in the compression chamber increases. This means the displacement of refrigerant gas also increases, as a result the refrigeration capacity also increases. However, when any of the step solenoid valve (for 3-step/4-step capacity control system) is opened, the high pressure oil in the cylinder bypasses to the suction port, which causes the piston and the slide valve to move toward the left side, and then some of the refrigerant gas bypasses from the compression chamber back to the suction end. As a result, the refrigeration capacity decreases because of the reduction of displacement of refrigerant gas flowing in the system.

The piston spring is used to push the piston back to its original position, i.e. minimum load position in order to reduce the starting current for the next starting. If the compressor started at full load capacity it may result in over current start. The capillary is used to maintain and restrain a suitable amount of oil flow into the cylinder. The modulation (stepless) solenoid valves (SV1 and SV2) are controlled by a micro controller or temperature switch to modulate the piston position smoothly with stable output of capacity.

If the oil filter cartridge, capillary, or modulation solenoid valves are not working well in the capacity control system, this may result in the abnormality and ineffectiveness of the capacity control system. **Before stopping the compressor, HANBELL strongly recommends that the unloading solenoid valve of stepless control system or minimum load solenoid valve of 3/4-step control system should be kept opened for 60~90 seconds so that oil pressure in the cylinder could be released. When starting the compressor again, it is in unloading position for light duty start.**

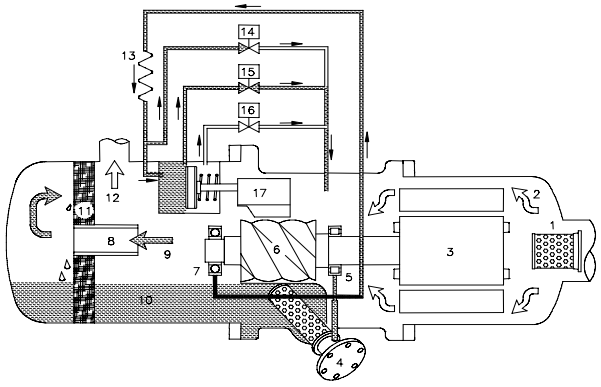


4-steps capacity control **Step-less capacity control**

Figure 7 Capacity control system

2.7 3 or 4-step capacity control system

There are two (For RC2-100, RC2-140, RC2-180) or three (for the rest 23 models) solenoid valves equipped on the compressor that control the compressor capacity from minimum capacity (please refer to chapter 2.2 for different minimum capacity of each model) to full load (100%). There are two / three normally closed (NC) solenoid valves that are used to control the various required capacity. For the compressor with 3-step / 4-step capacity control system, it is usual to use the sequence of min.%-66%-100% / min.%-50%-75%-100% to load the capacity of compressor and to use the sequence of 100%-66%-min.%/100%-75%-50%-min% to unload the capacity. If min% capacity is kept for a long time, the problem of oil return, motor cooling, high discharge temperature should be solved by adding accessories such as oil level switch for monitoring the oil level, liquid injection devices for cooling motor coil and reducing discharge temperature.(Figure 8). Min% is recommended for start and stop only, not for long-termed operation.



No.	Component	No.	Component	No.	Component
1	Suction filter	7	Discharge bearings	13	Capillary
2	Gas in（low pressure）	8	Oil separator baffle	14	Solenoid valve (min. %), SV 25%/33%
3	Motor	9	Gas out（high pressure with oil）	15	Solenoid valve (50% of full load),SV50%
4	Oil filter cartridge	10	Lubricant	16	Solenoid valve (75%/66% of full load),SV75%/66%
5	Suction bearings	11	Oil separator demister	17	Slide valve
6	Male rotor	12	Gas out(high pressure without oil)	*	For RC2-100, 140 & 180 the SV 50%omitted

Figure 8 4-step capacity control

RC2-100,140,180 Capacity control system	SV33%(NC)	SV66%(NC)
100% of full load	not energized	not energized
66% of full load	not energized	energized
33%（for start）	energized	not energized

RC2-170,RC2-200~1520 capacity control system	SV25%(NC)	SV75%(NC)	SV50%(NC)
100% full load	not energized	not energized	not energized
75% of full load	not energized	energized	not energized
50% of full load	not energized	not energized	energized
25%（for start）	Energized	not energized	not energized

Note: For 3-step or 4-step capacity control system, Hanbell equips normally-closed (NC) solenoid valves as standard accessory. If normally-opened (NO) solenoid valves are preferred instead, please specify it to Hanbell when placing order.

a. min% capacity

When starting the compressor, SV25%/33% solenoid valve is energized and the piston is in min% capacity position, so even the oil coming from the oil sump is continuously injecting into the cylinder thru the capillary, the high-pressured oil in the cylinder bypasses directly into the suction port, so the piston is held in its initial position.

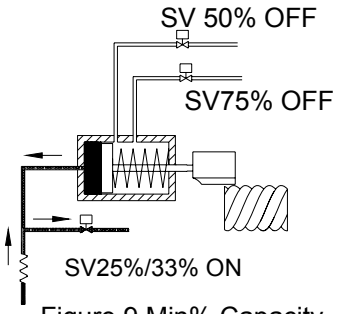


Figure 9 Min% Capacity

※It is strongly recommended to energize SV25%/33% solenoid valve for 1~3 minutes before starting the compressor to ensure the slide valve is in min% position.

b. 50% capacity (omitted for RC2-100, 140,180)

When SV50% solenoid valve is energized by the temperature controller, the high-pressure oil in the oil sump flows into the cylinder due to the closing of min% valve that pushes the piston moving toward the position where a hole at exactly 50% position drains the oil back to the suction port then the piston is held on that position.

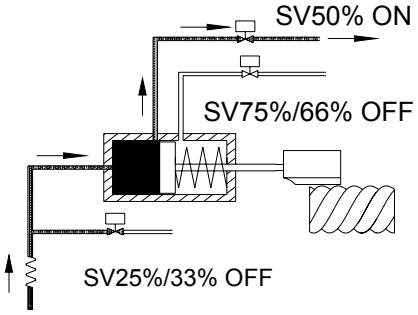


Figure 10 50% Capacity

c. 75%/66% capacity

When SV75%/66% solenoid valve is energized, SV50% solenoid valve will be de-energized simultaneously, the high pressure oil will push the piston towards the position where a hole at exactly 75%/66% position drains the oil back to the suction port and the piston will be held on that position.

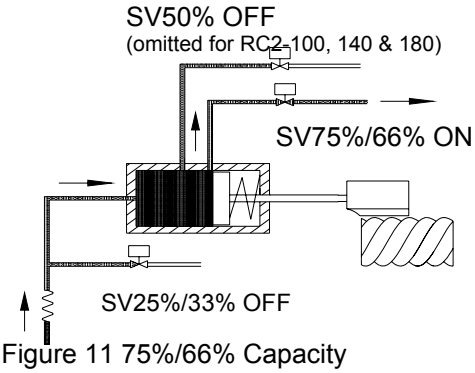


Figure 11 75%/66% Capacity

d. 100% full load

When all of two/three modulation solenoid valves are de-energized, the high-pressured oil flows into the cylinder continuously to push the piston toward the suction side gradually until the slide valve touches the end of the compression chamber and the piston also reaches its dead end entirely where no bypass of compression gas occurred. So full load is achieved.

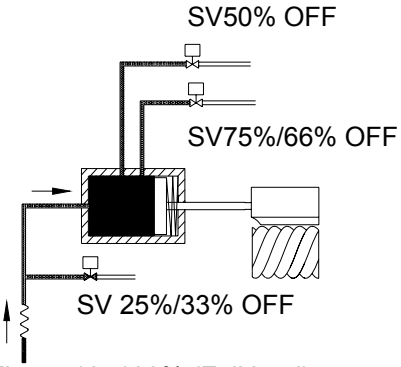


Figure 12 100% (Full load) Capacity

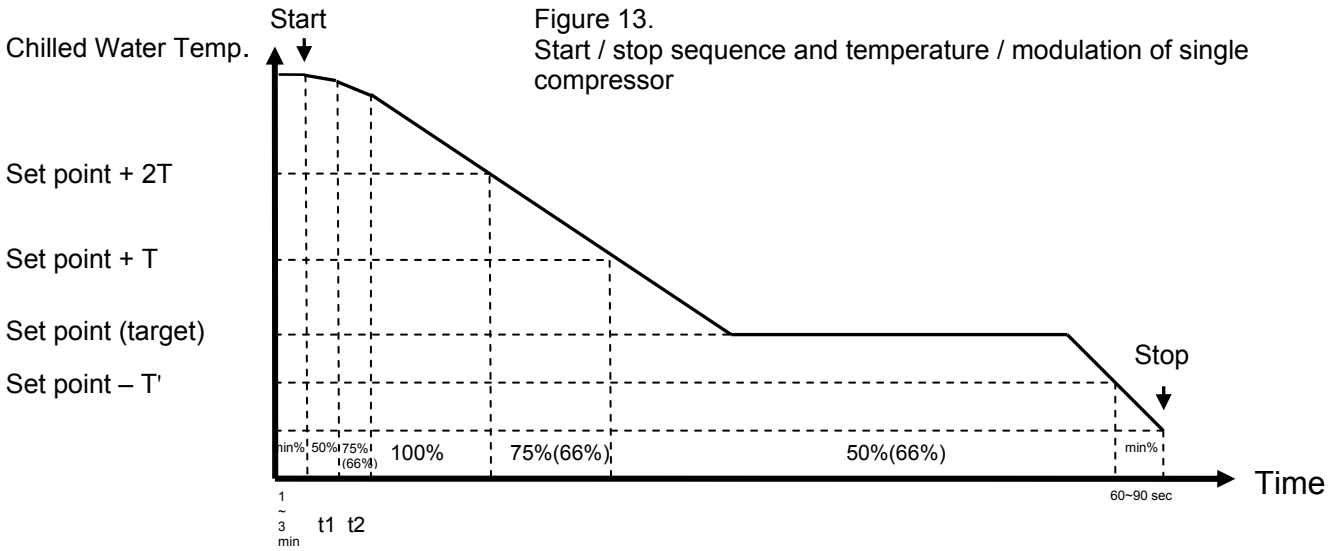


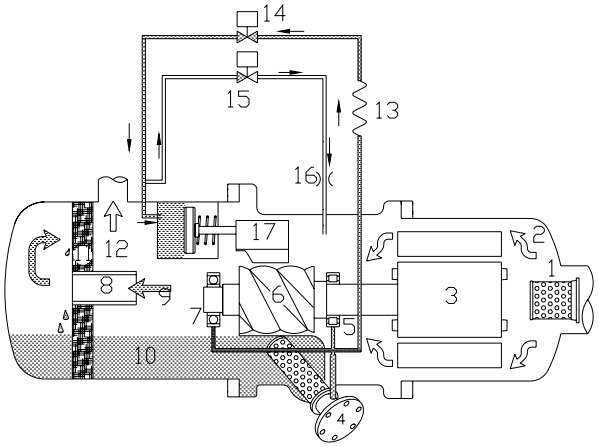
Figure 13.
Start / stop sequence and temperature / modulation of single compressor

※ It is strongly recommend to start /stop compressors as per above illustration

Note: 1. Above T & T' should be determined by system designer's experience and end user's application.
2. Above t1 & t2 should be longer than 60 sec as recommended.
3. Capacity control must be kept at min% capacity for 1~3 min before start and for 60~90 sec before stop.
4. Start the compressor at min% and SV50% can be energized right after start.

2.8 Continuous (stepless) capacity control system

In continuous (stepless) capacity control system, solenoid valve SV2 (for loading) and solenoid valve SV1 (for unloading) are equipped to inlet and outlet of piston cylinder respectively. These two solenoid valves are controlled by chiller temperature controller or micro controller so refrigeration capacity hence can be modulated anywhere within min% ~ 100%. Min% is recommended for start and stop only, not for long-termed operation.
It is very important for any controller to control loading and unloading in stable condition. For a smooth modulation, HANBELL installs a capillary in loading oil line and an additional orifice valve in unloading oil line to avoid too fast loading and unloading.

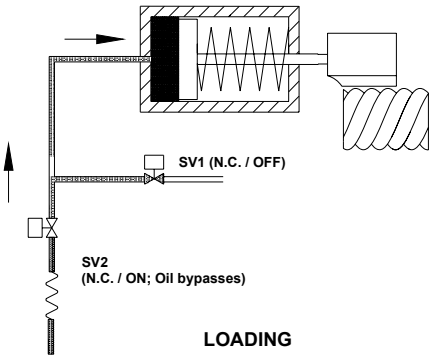
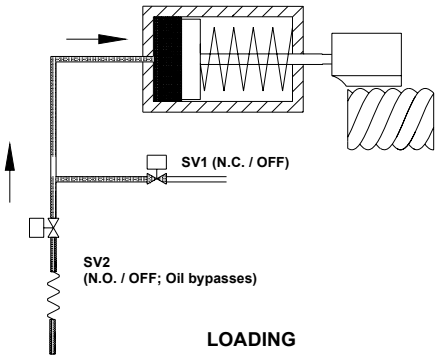
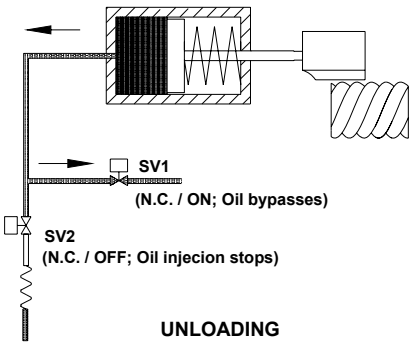
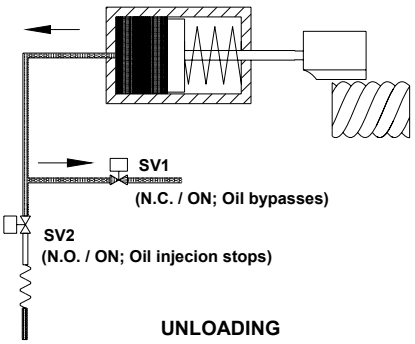
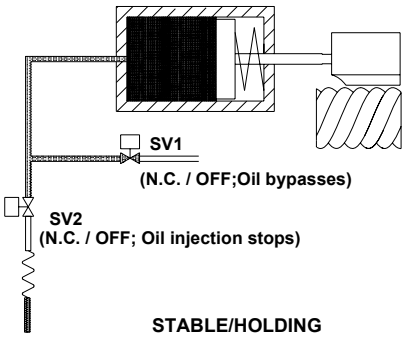
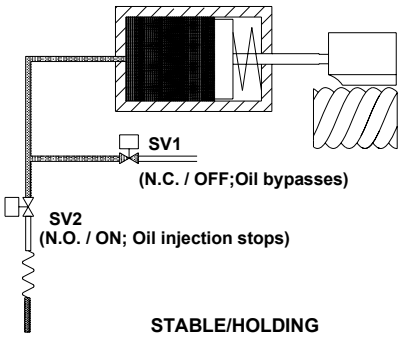


No.	Component	No.	Component	No.	Component
1	Suction filter	7	Discharge bearings	13	Capillary
2	Gas in（low pressure）	8	Oil separator baffle	14	Solenoid valve, SV2
3	Motor	9	Gas out（high pressure with oil）	15	Solenoid valve, SV1
4	Oil filter cartridge	10	Lubricant	16	Orifice
5	Suction bearings	11	Oil separator cartridge	17	Slide valve
6	Male rotor	12	Gas out (high pressure without oil)		

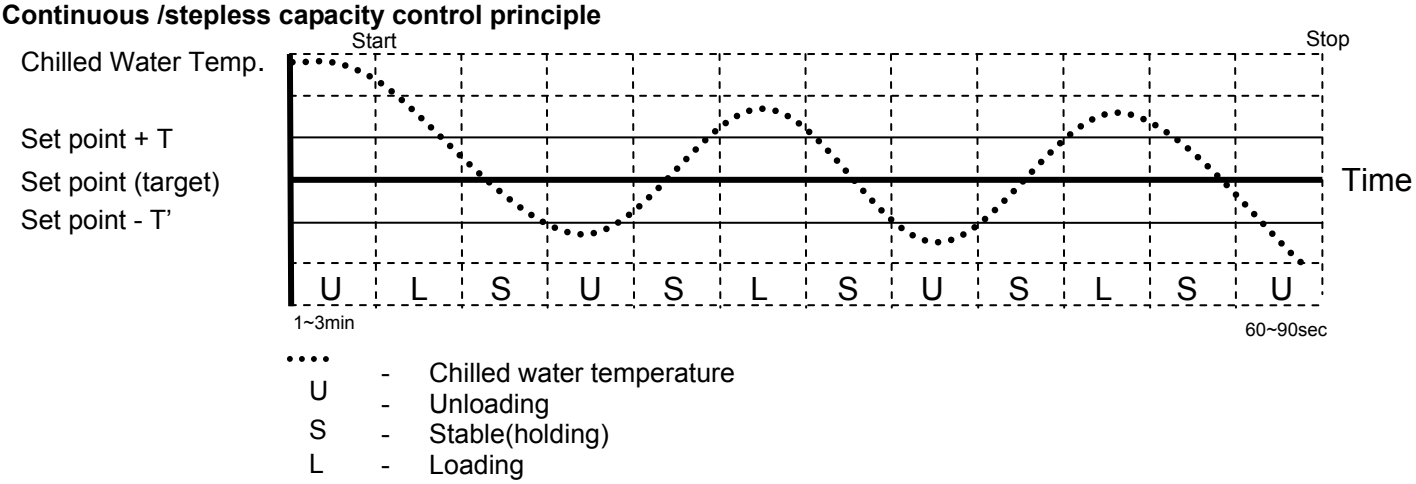
Figure 14 Stepless capacity control

Note: 1. For continuous (stepless) capacity control system, Hanbell equips with two normally closed solenoid valves as standard accessory. If it is necessary to be equipped with other type of solenoid valves, please specify it when placing orders.
2. If customers prefer to remove unloading orifice or equip with loading orifice for system application, please specify it when placing orders
3. Normally opened solenoid valve SV2 (for loading) is an alternative option.

	SV1(NC) Standard	SV2(NC) Standard	SV2(N0) Option
Start	energized	not energized	energized
Loading	not energized	energized	not energized
Unloading	energized	not energized	energized
Stable	not energized	not energized	energized

Capacity Modulation	NC SV2 (Standard)	NO SV2 (Option)
a. Loading Standard: When NC SV2 is energized but NC SV1 is not energized, oil will be injected continuously into piston cylinder and will not bypass through NC SV1 so compressor keeps loading. Option: When both NO SV2 and NC SV1 are not energized, oil will be injected continuously into piston cylinder and will not bypass through NC SV1 so compressor keeps loading.		
b. Unloading Standard: When NC SV1 is energized but NC SV2 is not energized, oil inside piston cylinder will bypass to suction port through NC SV1. Option: When both NO SV2 and NC SV1 are energized, oil inside piston cylinder will bypass to suction port through NC SV1.		
c. Stable/Holding Standard: When both NC SV2 and NC SV1 are not energized, piston can be held in stable/holding position. Option: When NO SV2 is energized but NC SV1 is not energized, piston can be held in stable/holding position.		

Continuous /stepless capacity control principle



- Chilled water temperature
U - Unloading
S - Stable(holding)
L - Loading

Note: 1. Above T. & T' should be determined by system designer's experience and end user's application.
2. Capacity control must be kept at unloading for 1~3 min before start and for 60~90 sec before stop.

Loading/unloading functions

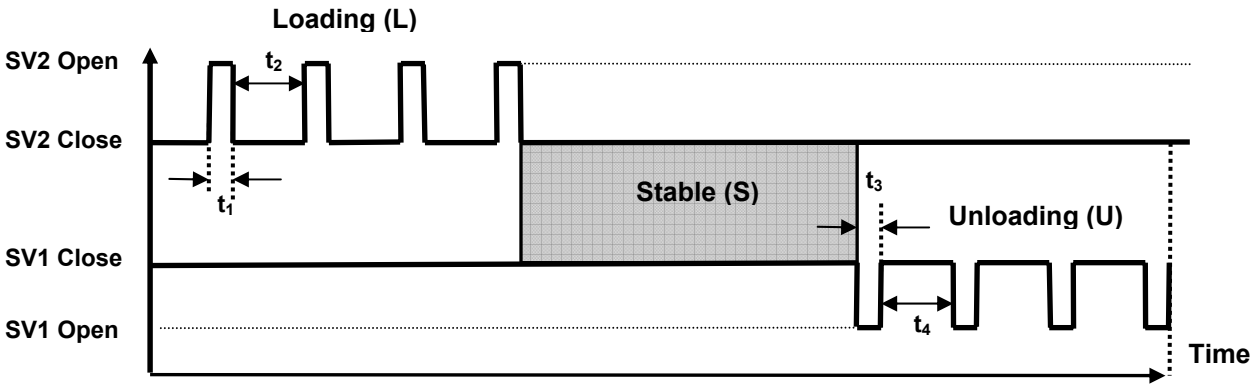
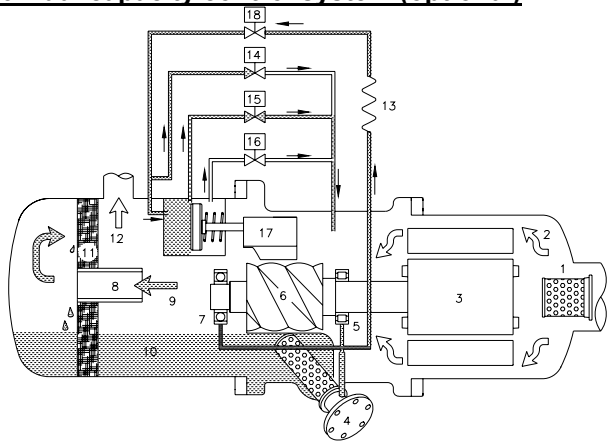


Figure 18 Loading and unloading functions

t_1, t_3: Pulse time 1 ~ 1.5 seconds
t_2, t_4: Pause time 15 ~ 20 seconds

2.9 Dual capacity control system (optional)



No.	Component	No.	Component	No.	Component
1	Suction filter	7	Discharge bearings	13	Capillary
2	Gas in（low pressure）	8	Oil separator baffle	14	Solenoid valve
3	Motor	9	Gas out（high pressure with oil）	15	Solenoid valve
4	Oil filter cartridge	10	Lubricant	16	Solenoid valve
5	Suction bearings	11	Oil separator cartridge	17	Slide valve
6	Male rotor	12	Gas out (high pressure without oil)	18	Solenoid valve

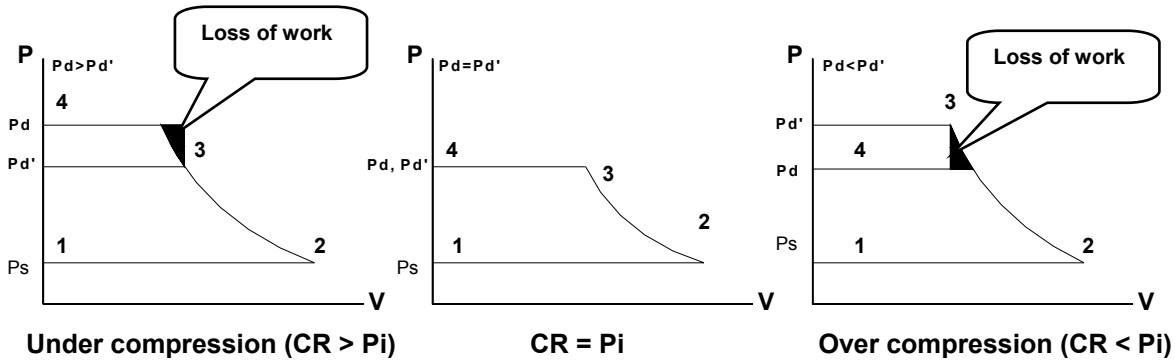
Figure 19 Dual capacity control

Hanbell can provide compressors with capacity as shown in the above figure, and its control logic is the same as those shown in chapter 2.7 and 2.8.

2.10 Compressor volume ratio (Vi)

The volume ratio **(Vi)** of the compressor can be defined as the ratio of suction volume to discharge volume in the compressor. The smaller the concavity of slide valve in the discharge end, the larger the volume ratio. The volume ratio directly affects the internal compression ratio (Pi). Low Vi corresponds to low Pi and high Vi corresponds to high Pi. In the equation below, in order to prevent over or under compression, the system compression ratio **(CR)** should be equal to compressor's internal compression ratio **(Pi)**. Please refer to P-V (pressure – volume) diagram below to figure out this relation.

CR = Pd/Ps
Pi = Vi ^{k}
Vi = Vs/Vd



Under compression (CR > Pi) **CR = Pi** **Over compression (CR < Pi)**

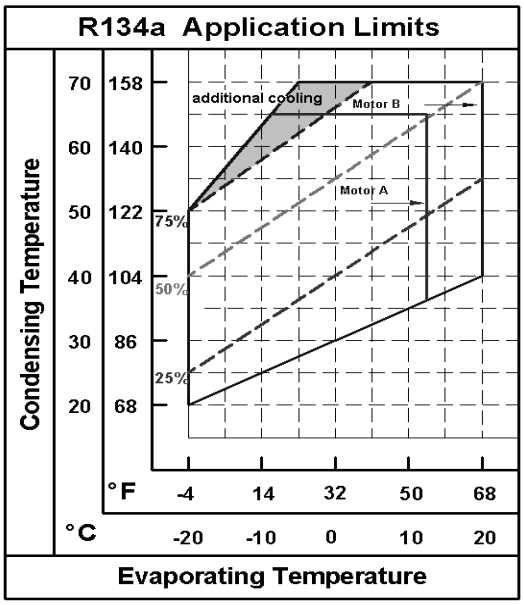
Figure 20 P-V Diagram

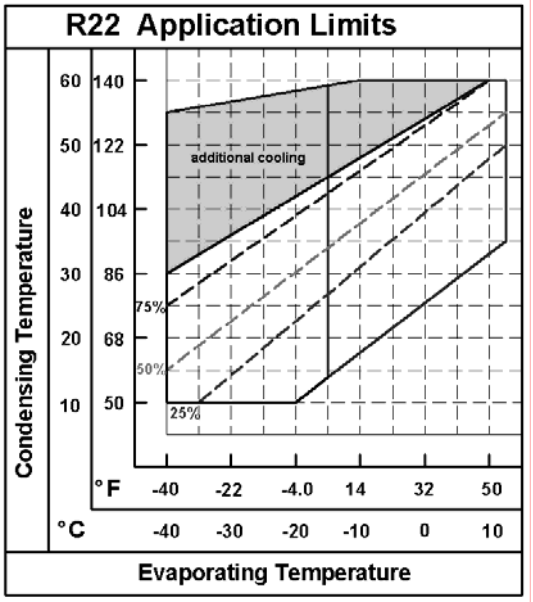
Where: **CR:** system compression ratio **Pi:** internal compression ratio
Vi: internal volume ratio **Pd:** system pressure (absolute pressure)
Pd': discharge pressure (absolute pressure) **Ps:** suction pressure (absolute pressure)
Vs: suction volume **Vd:** discharge volume **K:** refrigerant specific heat ratio

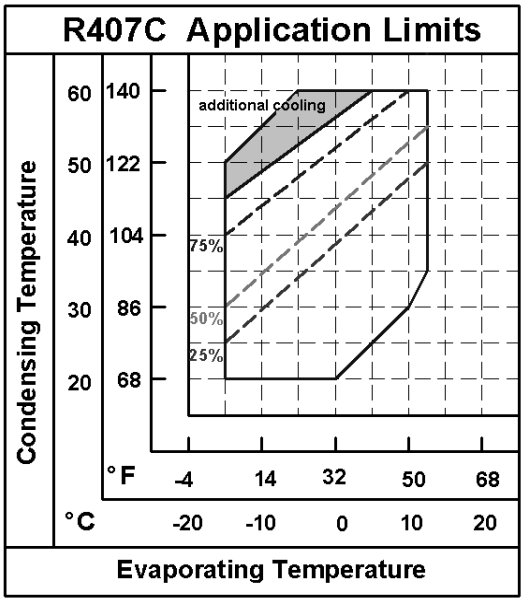
2.11 Application limits

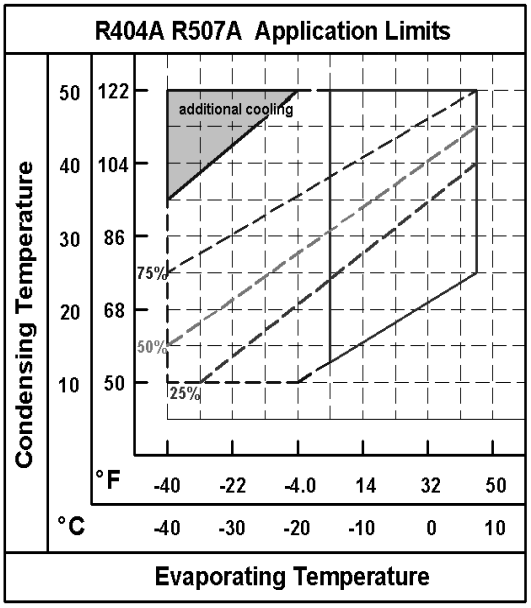
Application limits of the compressor vary significantly with the type of refrigerant used. The operating limits shown below are based on saturated suction and discharge operating conditions, for continuous operation over extended periods of time. It is important to operate within these limits to maintain proper compressor life. Operating at extra low saturated suction temperature, may cause oil management and motor cooling problems, and operating at extra high saturated condensing temperature will shorten the compressor life due to insufficient motor and compressor chamber cooling.

a. Application limits of RC2-100~RC2-930 are described on the respective refrigerant charts.

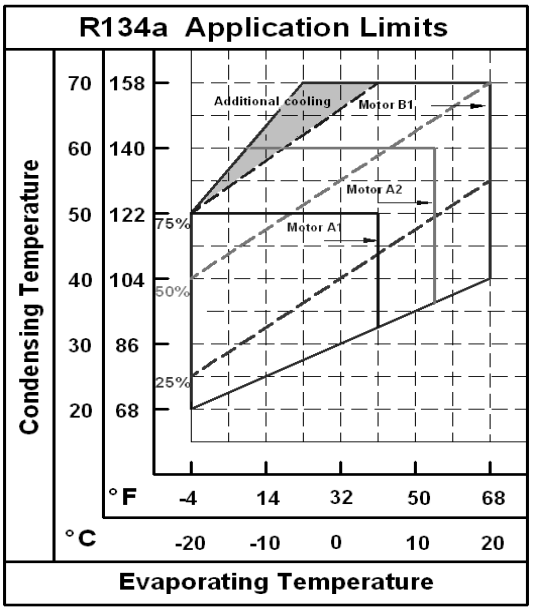


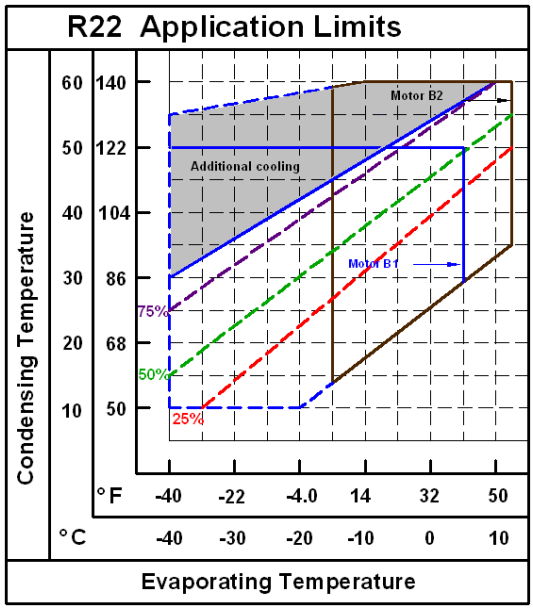


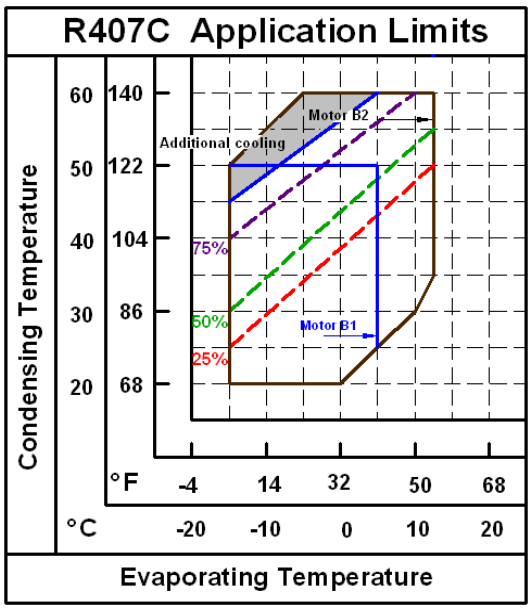


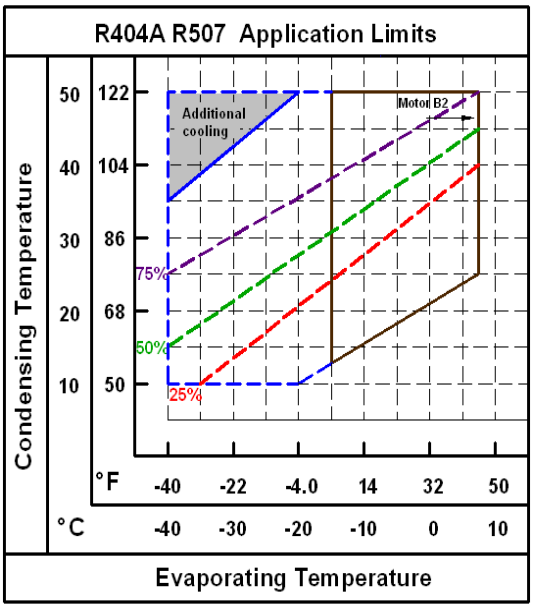


b. Application limits of of RC2-1090~RC2-1520 are described on the respective refrigerant charts.









Note:

1. When Hanbell screw compressor operate in partial or full load within limits, temperature of motor coil and discharge will rise concurrently. In order to keep compressor safely running continuously , Hanbell recommend usage of the following additional cooling devices :
   (1) Oil cooler or (2) Liquid injection for chamber or (3) Liquid injection for motor.

   Please refer to Hanbell selection software for application of additional cooling system.
   Hanbell recommends monitoring oil pressure differential and keep it 4 kg/cm2G over the suction pressure for adequate seal, lubrication and capacity control by pressure differential switch passively or by additional oil pump actively. Especially under operation conditions with low condensing temperature and high evaporating temperature like application in flooder water-cooled chillers, high-low pressure differential tends to be less than 4kg/cm2G, installation of oil pump is recommended to ensure regular oil pressure.
   Contact with Hanbell to verify potential operating conditions outside the limits shown.

2. Except RC2-1090, RC2-1280 & RC2-1520 cool motor coils by liquid refrigerant directly, other models cool motor coils by refrigerant returned from evaporator. If compressors run continuously at partial load below 50%, failure of motor coils might happen due to insufficient cooling. Therefore, Hanbell emphasizes installation of liquid injection system to motor to make sure adequate cooling of motor coils for safe running of compressors. According to EN12900, suction superheat is 10°k and liquid sub-cooling is 0°k.
3. The minimum discharge superheat is recommended to be kept 10°k higher than the condensing temperature (normally discharge superheat is around 20°K for R134a and 30°K for R22, R407C) to avoid liquid filling back to compressor and lubrication failure.

2.12 MCC and LRA

Refrigerant : R134a (Y-△)

Model	50Hz						60Hz														Unit: Ampere	
	380V		400V		415V		208V		220V		230V		380V		440V		460V		480V		575V	
	MCC	LRA	MCC	LRA	MCC	LRA	MCC	LRA	MCC	LRA	MCC	LRA	MCC	LRA	MCC	LRA	MCC	LRA	MCC	LRA	MCC	LRA
RC2-100A	53	175	50	180	49	165	115	380	109	350	104	360	63	210	55	175	52	180	50	165	42	145
RC2-140A	73	230	70	240	67	220	160	525	151	460	145	480	88	290	76	230	72	240	69	220	58	190
RC2-170A	92	310	88	325	85	295	203	690	192	595	184	620	111	375	96	310	92	325	88	295	73	255
RC2-180A	97	310	92	325	89	295	213	690	202	595	193	620	117	375	101	310	96	325	92	295	77	255
RC2-200A	103	310	98	325	94	295	226	690	214	595	204	620	124	375	107	310	102	325	98	295	82	255
RC2-230A	124	480	117	500	113	465	270	1080	256	905	244	945	148	600	128	480	122	500	117	465	98	375
RC2-260A	138	480	131	500	126	465	302	1080	286	905	273	945	165	600	143	480	137	500	131	465	109	375
RC2-300A	155	600	147	625	142	540	340	1385	322	1125	308	1175	186	735	161	600	154	625	147	540	123	470
RC2-310A	163	600	155	625	149	540	360	1385	341	1125	326	1175	197	735	170	600	163	625	156	540	130	470
RC2-320A	167	600	158	625	153	540	366	1385	346	1125	331	1175	200	735	173	600	165	625	158	540	132	470
RC2-340A	178	690	169	720	163	655	388	1510	367	1380	351	1440	213	810	184	690	176	720	168	655	140	545
RC2-370A	194	690	185	720	178	655	426	1510	403	1380	386	1440	233	810	202	690	193	720	185	655	154	545
RC2-410A	216	700	205	730	198	690	–	–	–	–	–	–	260	820	224	700	215	730	206	690	172	550
RC2-470A	248	810	236	845	227	795	–	–	–	–	–	–	300	985	259	810	248	845	238	795	198	660
RC2-510A	271	810	258	845	248	795	–	–	–	–	–	–	327	985	282	810	270	845	259	795	216	660
RC2-550A	292	875	277	915	267	850	–	–	–	–	–	–	350	1115	302	875	289	915	277	850	231	750
RC2-580A	304	875	288	915	278	850	–	–	–	–	–	–	365	1115	316	875	302	915	289	850	242	750
RC2-610A	313	1340	298	1400	287	1295	–	–	–	–	–	–	377	1750	325	1340	311	1400	298	1295	249	1120
RC2-620A	317	1220	301	1285	290	1160	–	–	–	–	–	–	381	1445	329	1220	315	1285	301	1160	252	970
RC2-710A	365	1340	347	1400	334	1295	–	–	–	–	–	–	439	1750	379	1340	363	1400	348	1295	290	1120
RC2-790A	404	1430	384	1495	370	1370	–	–	–	–	–	–	486	1930	420	1430	402	1495	385	1370	321	1165
RC2-830A	422	1565	401	1635	387	1485	–	–	–	–	–	–	507	2185	438	1565	419	1635	402	1485	335	1385
RC2-930A	490	1990	465	2080	448	1850	–	–	–	–	–	–	589	2470	509	1990	487	2080	466	1850	389	1665
RC2-1090A	357	1455	339	1520	327	1380	–	–	–	–	–	–	429	2030	371	1455	355	1520	340	1380	284	1290
RC2-1280A	414	1815	393	1900	379	1690	–	–	–	–	–	–	497	2260	429	1815	411	1900	394	1690	329	1520
RC2-1520A	478	2035	454	2130	438	1870	–	–	–	–	–	–	665	2630	574	2035	549	2130	526	1870	439	1645

Refrigerant : R22, R407C, R404A (Y-△)

Model	50Hz						60Hz														Unit: Ampere	
	380V		400V		415V		208V		220V		230V		380V		440V		460V		480V		575V	
	MCC	LRA	MCC	LRA	MCC	LRA	MCC	LRA	MCC	LRA	MCC	LRA	MCC	LRA	MCC	LRA	MCC	LRA	MCC	LRA	MCC	LRA
RC2-100B	69	230	65	240	63	220	151	525	142	460	136	480	82	290	71	230	68	240	65	220	54	190
RC2-140B	91	310	87	325	84	295	199	690	188	595	180	620	109	375	94	310	90	325	86	295	72	255
RC2-170B	118	400	112	420	108	370	257	920	243	760	233	795	141	485	122	400	116	420	111	370	93	325
RC2-180B	121	465	115	485	110	445	263	1085	249	930	238	970	144	575	124	465	119	485	114	445	95	380
RC2-200B	128	465	122	485	117	445	282	1085	266	930	255	970	154	575	133	465	127	485	122	445	102	380
RC2-230B	153	690	146	720	140	655	336	1510	318	1380	304	1440	184	810	159	690	152	720	146	655	122	545
RC2-260B	171	690	163	720	157	655	376	1510	355	1380	340	1440	206	810	178	690	170	720	163	655	136	545
RC2-300B	193	780	183	815	177	790	424	1960	401	1560	384	1630	232	1030	200	780	192	815	184	790	153	670
RC2-310B	203	780	193	815	186	790	446	1960	421	1560	403	1630	244	1030	211	780	201	815	193	790	161	670
RC2-320B	207	780	196	815	189	790	456	1960	431	1560	413	1630	250	1030	216	780	206	815	198	790	165	670
RC2-340B	220	1035	209	1080	201	940	483	2160	457	1985	437	2075	264	1220	228	1035	218	1080	209	940	175	815
RC2-370B	241	1035	229	1080	221	940	529	2160	500	1985	478	2075	289	1220	250	1035	239	1080	229	940	191	815
RC2-410B	268	875	254	915	245	850	_	_	_	_	_	_	323	1115	279	875	267	915	256	850	214	750
RC2-470B	310	1220	294	1285	284	1160	_	_	_	_	_	_	372	1445	321	1220	307	1285	294	1160	246	970
RC2-510B	336	1330	319	1390	308	1250	_	_	_	_	_	_	406	1605	350	1330	335	1390	321	1250	268	1145
RC2-550B	355	1330	337	1390	325	1250	_	_	_	_	_	_	426	1605	368	1330	352	1390	338	1250	282	1145
RC2-580B	377	1330	358	1390	345	1250	_	_	_	_	_	_	454	1605	392	1330	375	1390	359	1250	300	1145
RC2-610B	388	1565	369	1635	356	1485	_	_	_	_	_	_	467	2185	404	1565	386	1635	370	1485	309	1385
RC2-620B	393	1510	374	1580	360	1405	_	_	_	_	_	_	473	1880	409	1510	391	1580	375	1405	313	1265
RC2-710B	453	1990	430	2080	415	1850	_	_	_	_	_	_	545	2470	471	1990	450	2080	432	1850	360	1665
RC2-790B	498	2230	473	2330	456	2045	_	_	_	_	_	_	598	2875	516	2230	494	2330	473	2045	395	1800
RC2-830B	534	2355	508	2480	489	2590	_	_	_	_	_	_	643	3200	555	2355	531	2480	509	2590	425	1975
RC2-930B	620	2625	589	2745	567	2865	_	_	_	_	_	_	746	3740	644	2625	616	2745	591	2865	493	2295
RC2-1090B	552	2315	524	2420	505	2525	_	_	_	_	_	_	664	3120	573	2315	548	2420	526	2525	439	1930
RC2-1280B	646	2635	614	2755	592	2875	_	_	_	_	_	_	777	3755	671	2635	642	2755	615	2875	514	2305
RC2-1520B	730	3045	694	3185	669	3325	_	_	_	_	_	_	880	3600	760	3045	727	3185	696	3325	581	2550

3. Lubricants

The main functions of lubrication oil in screw compressors are lubrication, internal sealing, cooling and capacity control. Positive oil pressure in the cylinder pushes the piston together with the slide valve that is connected by a piston rod to move forward and backward in the compression chamber. The design of positive pressure differential lubrication system makes RC2 series normally omit an extra oil pump which is necessary for reciprocating compressors. However, in some special applications, it is still necessary to install an extra oil pump to screw compressors for safety.

Bearings used in RC2 series compressors require a small and steady quantity of oil for lubrication. Oil injection into the compression chamber creates a film of oil for sealing in the compression housing to increase efficiency and also can dissipate part of compression heat. In order to separate oil from refrigerant gas, an external oil separator is required to ensure the least amount of oil carried into the system.

Please pay more attention to the oil temperature, which is crucial to compressor bearings' life. Oil has a much lower viscosity at high temperatures. Too low viscosity of oil will result in poor lubrication and heat dissipation in the compressor. Viscosity is recommended to keep over 10mm^2/s at any temperatures for oil. Oil temperature in the oil sump should be kept above the saturated condensing temperature to prevent refrigerant migration into lubrication system. Oil has a higher viscosity in low ambient temperature circumstances. When viscosity is too high, slow flow speed of oil into the cylinder may result in too slow loading of the compressor. To solve this problem, use of oil heaters can warm up oil before start.

If the compressor operates under critical operating conditions, an extra oil cooler is required – please refer to Hanbell selection software for the required capacity and oil flow of the extra oil cooler. High-viscosity oil is recommended to apply in high operating conditions because high discharge temperature swill make viscosity of oil lower. Oil return from the evaporator may be insufficient in such as refrigeration systems, flooded chillers…etc. , in which it's difficult for oil to be carried back and it may cause oil loss in the compressor. If the system encounters the oil return problem then an extra 2nd oil separator is recommended to be installed between the compressor discharge tube and condenser.

Each of HANBELL RC2-230 ~ RC2-930 compressors is equipped with two oil sight glasses as a standard (the second sight glass is optional for the models RC2-100 ~ RC2-200), one is the high-level sight glass, and the other is the low-level sight glass (RC2-230~RC2-510 and RC2-580) or internal oil line sight glass (RC2-550 & RC2-610~RC2-930). The function of internal oil line sight glass is to monitor lubricant flow to capacity control system and bearings. While reverse running, it is unable to see the oil flow via sight glass. The normal oil level in the compressor oil sump should be maintained above the top of the low-level sight glass and in the middle level of high-level sight glass when compressor is running. It is strongly recommended to install the optional accessory of oil level switch to prevent compressor's failure from too low oil level.

3.1 Lubricants table

Applicable oil types (R22)

SPECIFICATION		UNITS	HBR -B10	HBR -A02	HBR -A04	HBR -B09	HBR -B02	HBR -B01
COLOR, ASTM			1.5	L1.0	L1.0	–	–	–
SPECIFIC GRAVITY			0.883	0.914	0.925	0.95	1.01	1.05
VISCOSITY	40℃	mm^2/s (cSt)	56.0	54.5	96.5	175	168	298
	100℃		7.0	6.07	8.12	16.5	20.2	32.0
FLASH POINT		℃	220	188	198	265	290	271
POUR POINT		℃	-40	-35	-25	-30	-43	-35
T.A.N		MgKOH/g	0.01	0.00	0.01	–	–	–
COPPER STRIP		100℃/3hr	1a	1a	1a	–	–	–
MOISTURE		ppm	15	20	20	–	–	–
FLOC POINT		℃	-75	-45	-35	–	–	–
DIELETRIC STRENGTH (2.5mm)		KV	75	50	50	46.6	–	–

Applicable oil types (R134a, R404A, R407C)

SPECIFICATION		UNITS	HBR -B05	HBR -B08	HBR -B09	HBR -B04
COLOR, ASTM			–	–	–	–
SPECIFIC GRAVITY			0.945	0.94	0.95	0.95
VISCOSITY	40℃	mm^2/s (cSt)	64	131	175	215.9
	100℃		8.9	14.53	16.5	20.8
FLASH POINT		℃	266	254	265	271
POUR POINT		℃	-43	-36.5	-30	-25
T.A.N		mg KOH/g	–	–	–	–
COPPER STRIP 100℃/3hr			–	–	–	–
MOISTURE		ppm	–	–	–	–
FLOC POINT		℃	–	–	–	–
DIELETRIC STRENGTH 2.5mm		KV	–	–	46.6	–

Note: For other applicable oil types, please consult with HANBELL firstly for approval.

3.2 Pre-cautions of changing oil

1. Use only qualified oil and do not mix different brands of oil together. Choice of oil should match characteristics of the refrigerant used. Some types of synthetic oil is incompatible with mineral oil. Oil remained in the compressor should be totally cleaned up in the system before charging different brands of oil. Charge the compressor with oil for the first start and then change it into new oil again to ensure that there's no mix at all.
2.When using polyester oil for chiller systems, please make sure not to expose oil to the atmosphere for prevention of change in its property. Therefore, it is necessary to vacuum the system completely when installing the compressor.
3. In order to ensure no moisture inside the system, it is suggested to clean the system by charging it with dry Nitrogen and then vacuum it repeatedly as long as possible.

4. It is a must to change oil especially if the motor has burned out because acid debris may still remain inside the system. Please follow the procedures mentioned above to change oil in the system. Check acidity of oil after 72 hours of operation and then change it again until acidity of oil becomes normal.

5. Please contact Hanbell local distributors/agents for choices of oil to be used.

3.3 Oil change

1. Change oil periodically: Check lubrication oil every 10,000 hours of continuous running. For the first operation of the compressor, it is recommended to change the oil and clean the external oil filter after running 2,000 hours. Check the system whether clean or not and then change oil every 20,000 hours or after 3 years' continuous running while the system operates in good condition.

2. Avoid clogging in oil filter with debris or swarf which may caused bearings' failure. An optional oil pressure differential switch is recommended to be installed. The switch will trip when the oil pressure differential between the primary and secondary sides reaches the critical point and then the compressor will automatically shut down to prevent the bearings from damage due to oil loss.

4. Compressor handling and installation

4.1 Compressor lifting

Each HANBELL screw compressor has been carefully tested at the factory and every precautionary measures have been taken to make sure that compressors will keep in perfect condition when reach customers' work. After the compressor arrives at your warehouse, please check if its crate is kept in good condition and check all the compressor accessories with shipping documents to see if there is any discrepancy.

When lifting the compressor, it is recommended to use a steel chain or steel cable which can be used for loading capacity of 2000kgf as shown in the figure below. Make sure that chains, cables or other lifting equipments are properly positioned to protect the compressor and its accessories from damaging. Keep the compressor in horizontal position when lifting, and prevent it from crashing or falling on the ground, hitting the wall or any other accident that may damage it or its accessories.

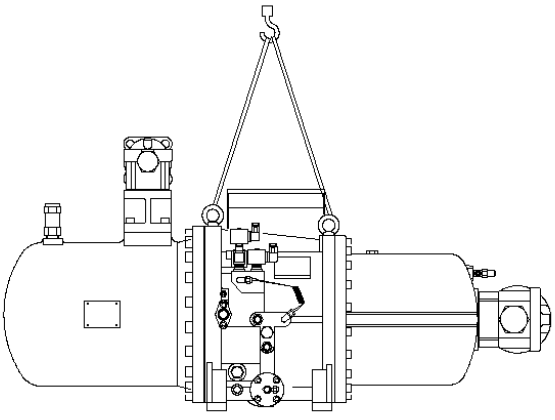


Figure 21 Lifting the compressor with steel chain or steel cable

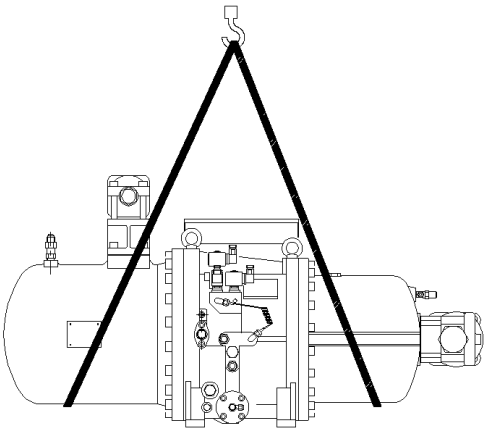


Figure 22 Lifting the compressor with safety ropes

4.2 Mounting the compressor

The installation of the compressor in the refrigeration system should be made accessible and make sure that the chiller base or site are far enough from the heat source to prevent heat radiation. The compressor should also be installed as close as possible to the electrical power supply for easier connection and must keep good ventilation and low humidity condition in the site. Make sure that the frame or supporter is strong enough to prevent excessive vibration and noise while the compressor is running and must reserve enough space for compressors' future overhauling work.
The compressor must be installed horizontally and in order to prevent excessive vibration transferred by the structure and piping of the chiller while in operation, the cushion or anti-vibration pad should be installed. The installation of the

anti-vibration pad is shown in Figure 23. The screws should only be tightened until slight deformation of the rubber pad is visible.
※It is strongly recommended to position the compressor higher than the evaporator

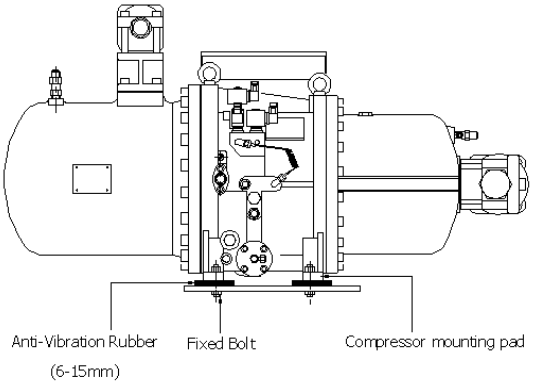


Figure 23 Installation of anti-vibration pad

Suggestions on piping works

The unsuitable piping works done to the compressor could cause abnormal vibration and noise that might damage the compressor. Take notice of the following pointers to prevent this situation from happening:
1. Cleanliness of the system should be kept after welding the piping to avoid any swarf or debris contained inside the system as it may cause serious damage to the compressor during operation.

2. In order to reduce the vibration on the piping tubes, it is recommended to use copper tube to be the suction and discharge piping tubes. Copper tubes are better to minimize the vibration in the piping while the compressor is in operation. In case steel tubes are to be used in piping system, then the suitable welding works are very important to avoid any stress in the piping. This inner stress can cause harmonic vibration and noise that can reduce the life of the compressor. If a large-caliber copper tube is not easily accessible and a steel tube is used instead in suction port, Hanbell also recommends the use of a copper tube in discharge port to best minimize abnormal vibration and noise.

3. Remove the oxidized impurities, swarf or debris caused by welding in the piping tubes, if these fall into the compressor the oil filter might be clogged resulting in the malfunctioning of lubrication system, bearings and capacity control system.

4. The material of suction and discharge flanges is forged steel and it can be welded directly with piping connectors. After welding the flanges and pipes, it must be cooled down by ambient air. Do not use water to cool it down because water quenching is prohibited.

Installing the compressor in a sloping position

Figure 24 shows a 15° limit of oblique angle for installation of compressor. In case the oblique angle is higher than the limit, compressor will be shut down easily. For special applications like the installation in ships, fishing boats, etc…, where the oblique angle might exceed the limit, external oil separators, oil tanks and related accessories are recommended to be installed. Please contact HANBELL or local distributors for further layout recommendation.

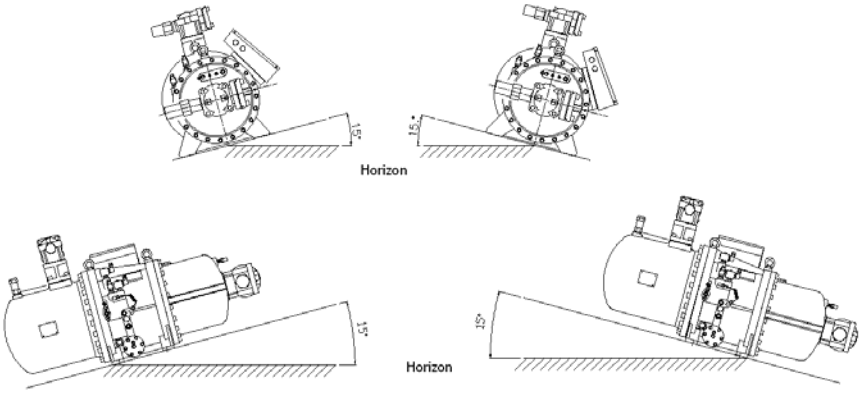
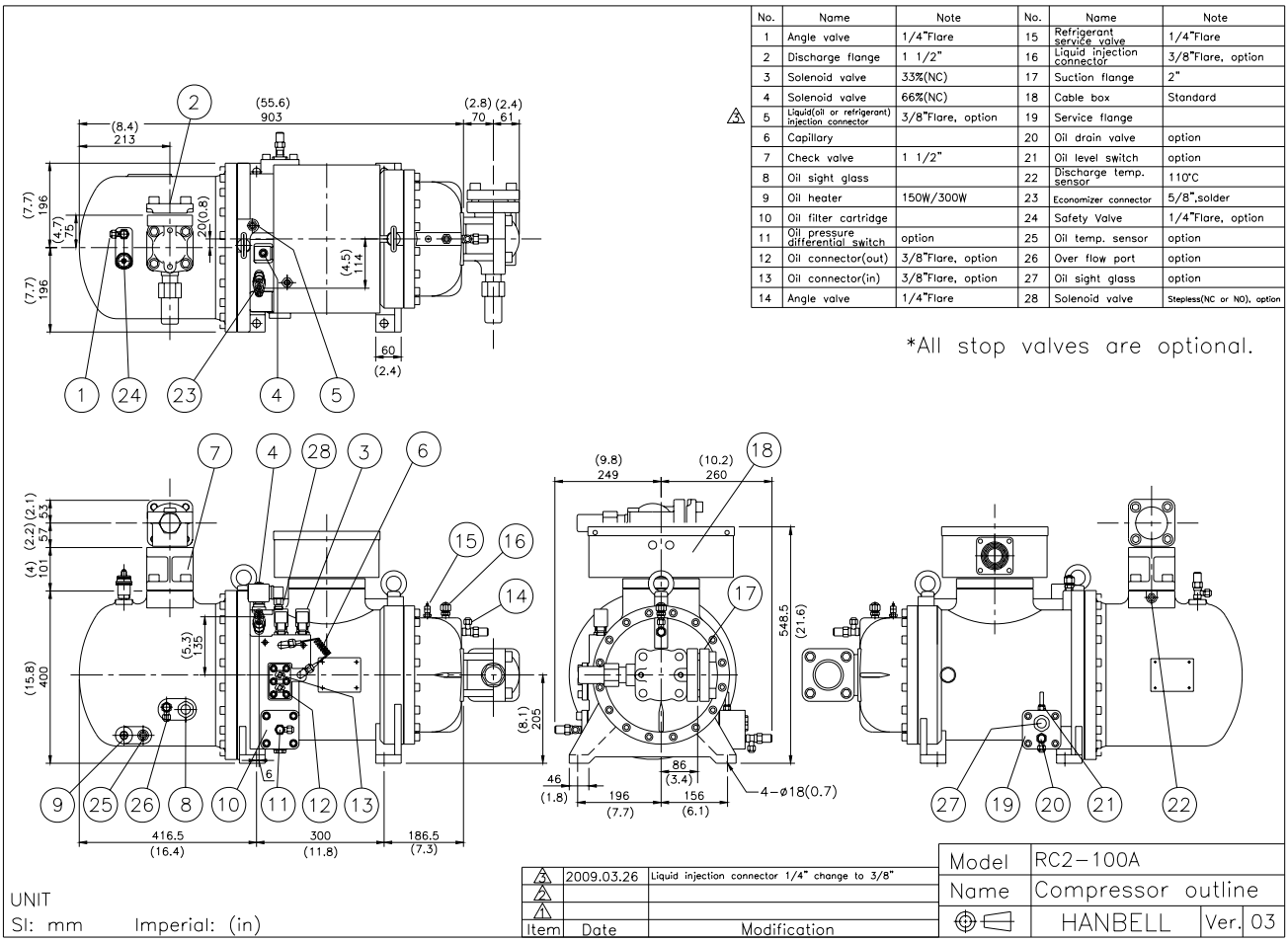


Figure 24 Limits of oblique angle for the installation of the compressor

4.3 RC2 compressor outline drawings

1. RC2-A outline drawings

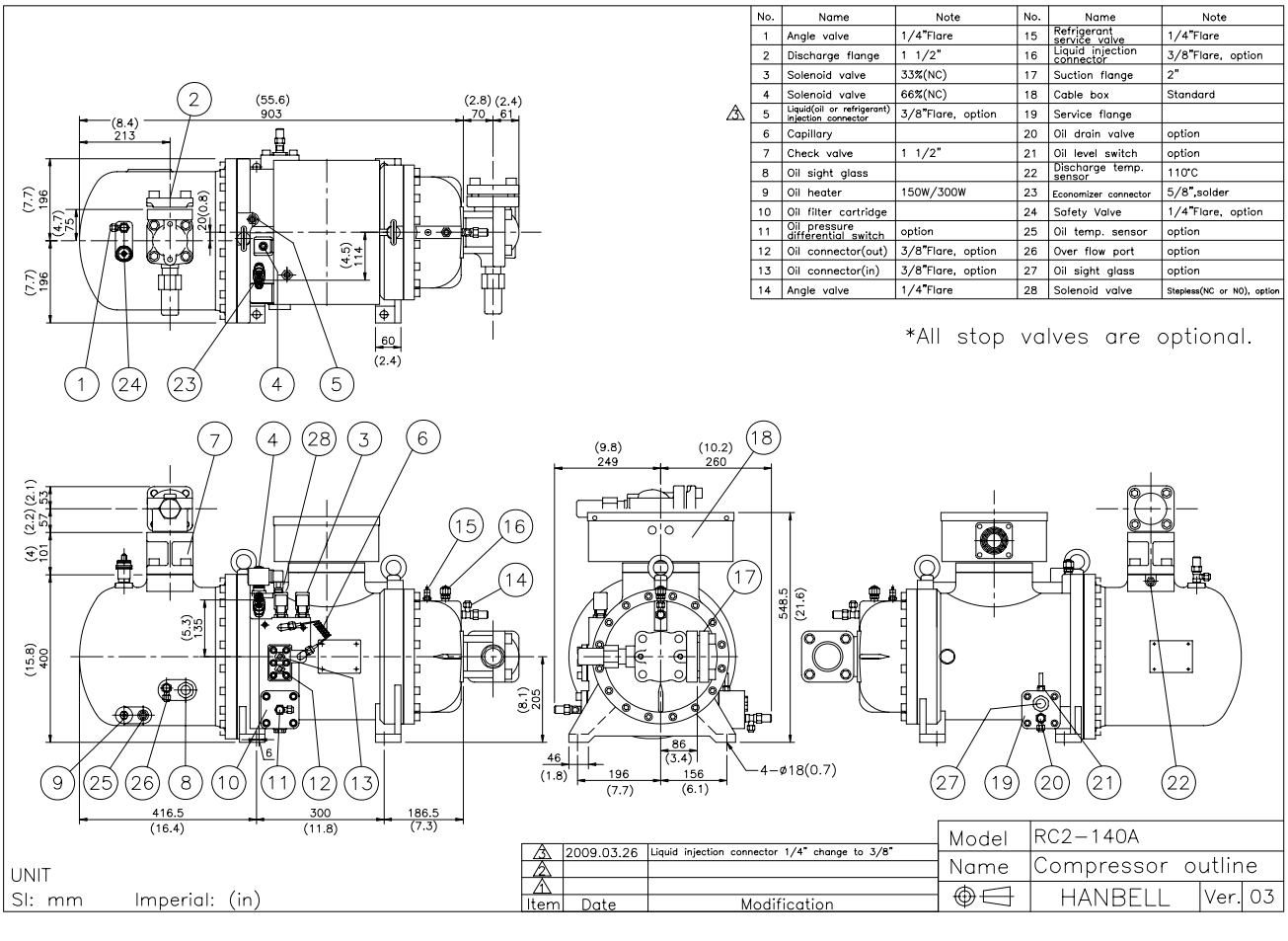


No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	15	Refrigerant service valve	1/4"Flare
2	Discharge flange	1 1/2"	16	Liquid injection connector	3/8"Flare, option
3	Solenoid valve	33%(NC)	17	Suction flange	2"
4	Solenoid valve	66%(NC)	18	Cable box	Standard
5	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	19	Service flange	
6	Capillary		20	Oil drain valve	option
7	Check valve	1 1/2"	21	Oil level switch	option
8	Oil sight glass		22	Discharge temp. sensor	110℃
9	Oil heater	150W/300W	23	Economizer connector	5/8",solder
10	Oil filter cartridge		24	Safety Valve	1/4"Flare, option
11	Oil pressure differential switch	option	25	Oil temp. sensor	option
12	Oil connector(out)	3/8"Flare, option	26	Over flow port	option
13	Oil connector(in)	3/8"Flare, option	27	Oil sight glass	option
14	Angle valve	1/4"Flare	28	Solenoid valve	Stepless(NC or NO), option

*All stop valves are optional.

Item	Date	Modification
3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
2		
1		

Model	RC2-100A
Name	Compressor outline
HANBELL	Ver. 03



No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	15	Refrigerant service valve	1/4"Flare
2	Discharge flange	1 1/2"	16	Liquid injection connector	3/8"Flare, option
3	Solenoid valve	33%(NC)	17	Suction flange	2"
4	Solenoid valve	66%(NC)	18	Cable box	Standard
5	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	19	Service flange	
6	Capillary		20	Oil drain valve	option
7	Check valve	1 1/2"	21	Oil level switch	option
8	Oil sight glass		22	Discharge temp. sensor	110℃
9	Oil heater	150W/300W	23	Economizer connector	5/8",solder
10	Oil filter cartridge		24	Safety Valve	1/4"Flare, option
11	Oil pressure differential switch	option	25	Oil temp. sensor	option
12	Oil connector(out)	3/8"Flare, option	26	Over flow port	option
13	Oil connector(in)	3/8"Flare, option	27	Oil sight glass	option
14	Angle valve	1/4"Flare	28	Solenoid valve	Stepless(NC or NO), option

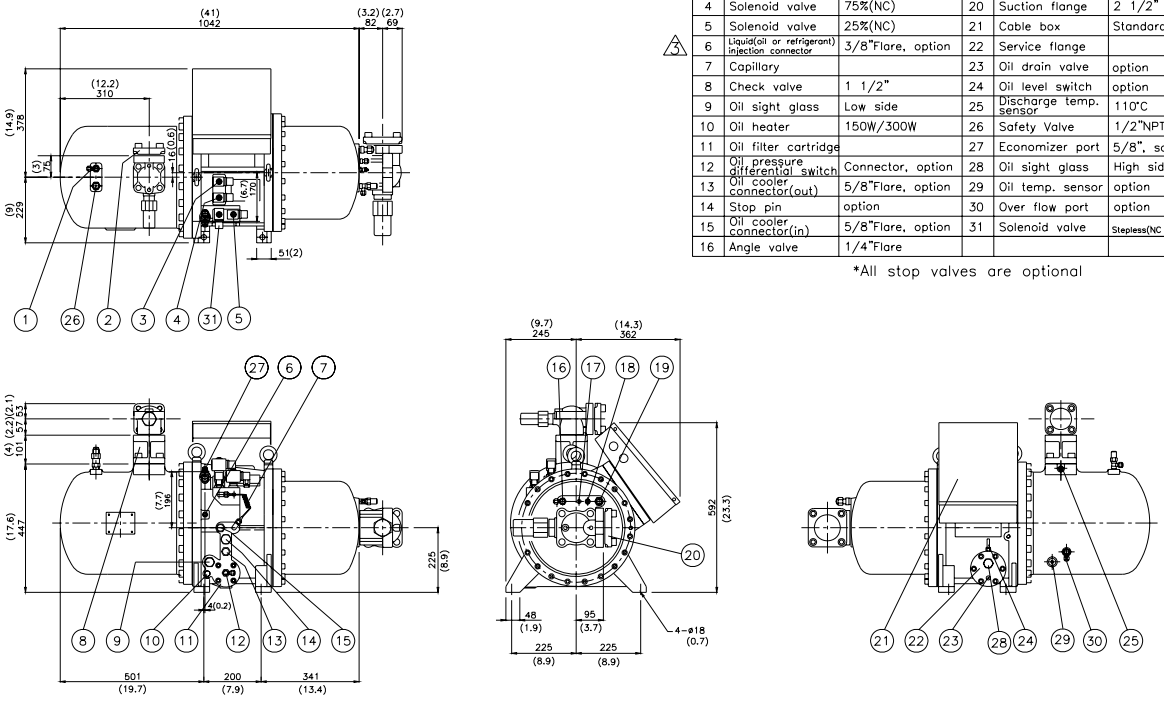
*All stop valves are optional.

Item	Date	Modification
3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
2		
1		

Model	RC2-140A
Name	Compressor outline
HANBELL	Ver. 03

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	1 1/2"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	20	Suction flange	2 1/2"
5	Solenoid valve	25%(NC)	21	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	22	Service flange	
7	Capillary		23	Oil drain valve	option
8	Check valve	1 1/2"	24	Oil level switch	option
9	Oil sight glass	Low side	25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1/2"NPT,option
11	Oil filter cartridge		27	Economizer port	5/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil sight glass	High side
13	Oil cooler connector(out)	5/8"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	5/8"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

*All stop valves are optional



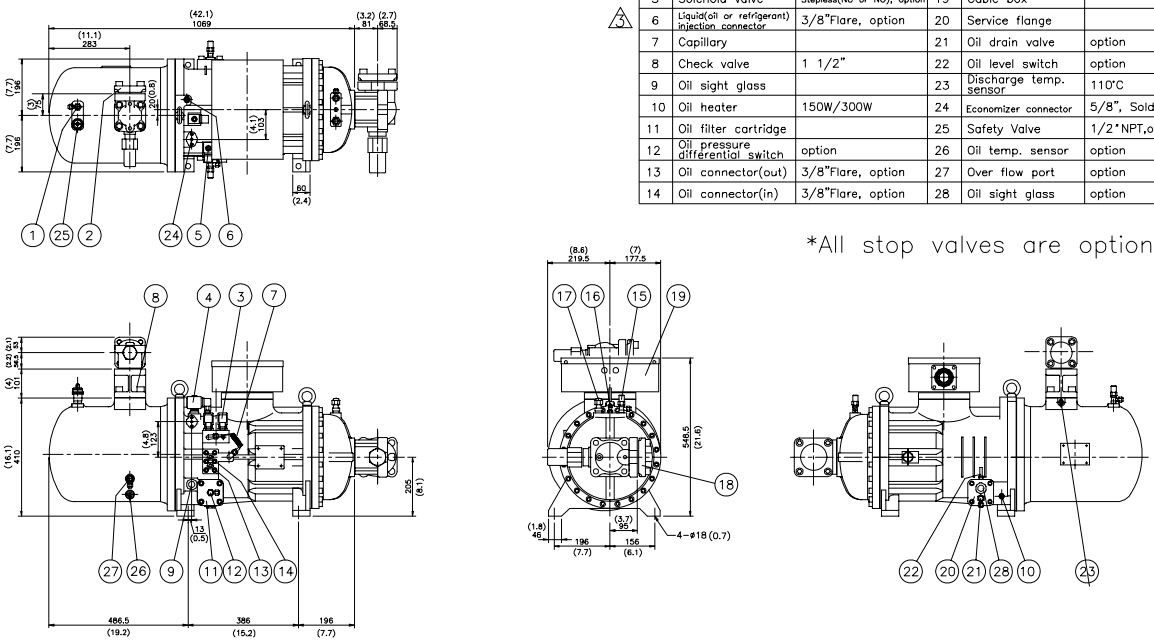
3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
2		
1		
Item	Date	Modification

Model	RC2-170A
Name	Compressor outline
HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	15	Angle valve	1/4"Flare
2	Discharge flange	1 1/2"	16	Refrigerant service valve	1/4"Flare
3	Solenoid valve	33%(NC)	17	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	66%(NC)	18	Suction flange	2 1/2"
5	Solenoid valve	Stepless(NC or NO), option	19	Cable box	
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	20	Service flange	
7	Capillary		21	Oil drain valve	option
8	Check valve	1 1/2"	22	Oil level switch	option
9	Oil sight glass		23	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	24	Economizer connector	5/8", Solder
11	Oil filter cartridge		25	Safety Valve	1/2"NPT,option
12	Oil pressure differential switch	option	26	Oil temp. sensor	option
13	Oil connector(out)	3/8"Flare, option	27	Over flow port	option
14	Oil connector(in)	3/8"Flare, option	28	Oil sight glass	option

*All stop valves are optional.



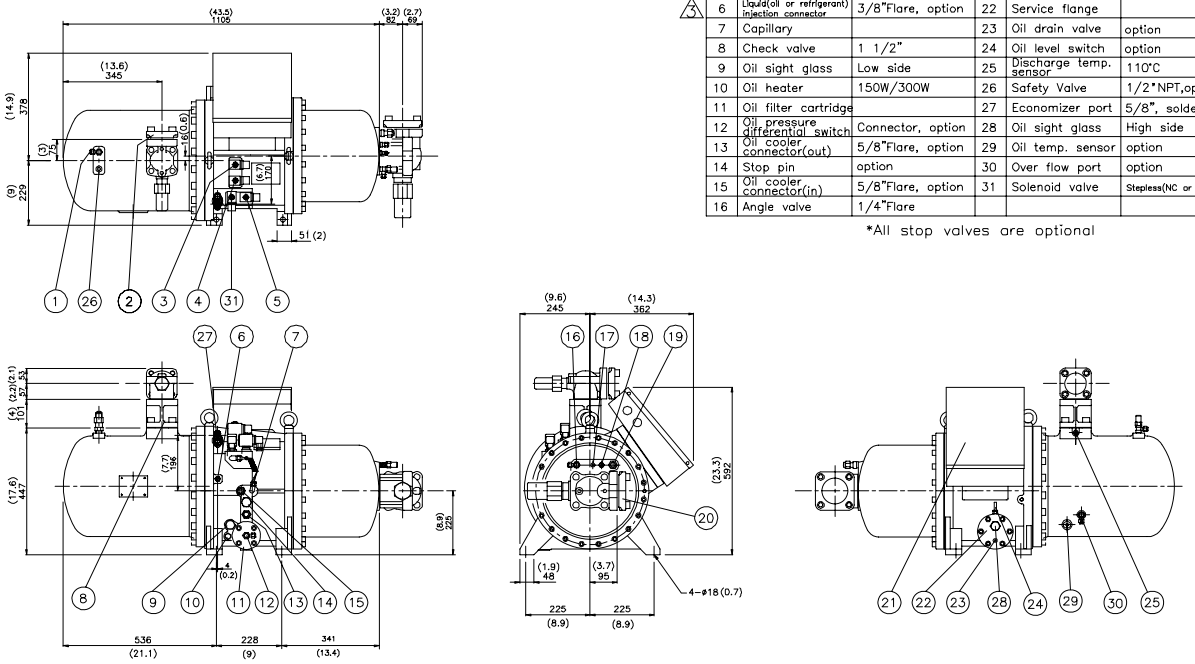
3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
2		
1		
Item	Date	Modification

Model	RC2-180A
Name	Compressor outline
HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	1 1/2"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	20	Suction flange	2 1/2"
5	Solenoid valve	25%(NC)	21	Cable box	Standard
△3 6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	22	Service flange	
7	Capillary		23	Oil drain valve	option
8	Check valve	1 1/2"	24	Oil level switch	option
9	Oil sight glass	Low side	25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1/2"NPT,option
11	Oil filter cartridge		27	Economizer port	5/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil sight glass	High side
13	Oil cooler connector(out)	5/8"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	5/8"Flare, option	31	Solenoid valve	Stepless(NC or NO),option
16	Angle valve	1/4"Flare			

*All stop valves are optional



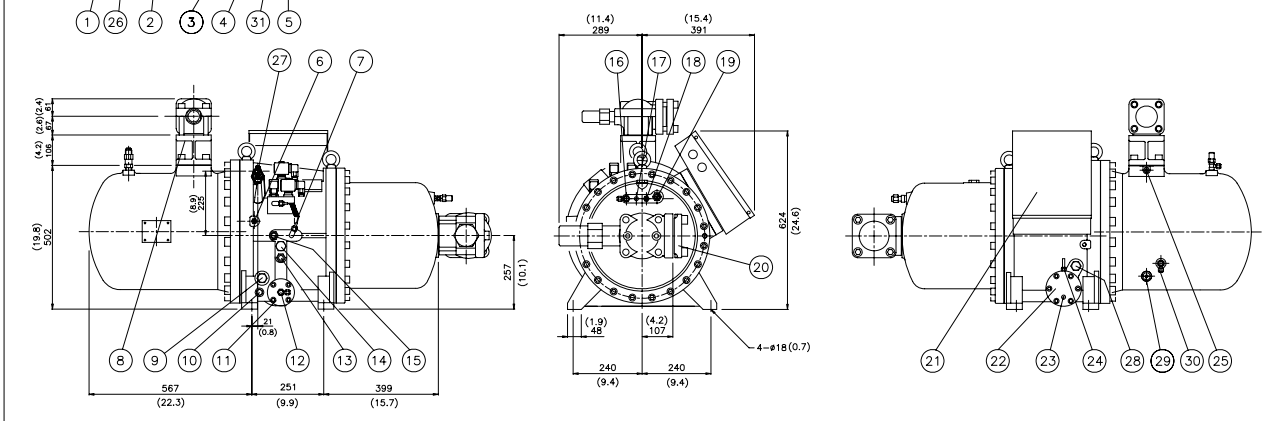
Item	Date	Modification
△3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
△2		
△1		

Model	RC2-200A
Name	Compressor outline
HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	2"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	20	Suction flange	3"
5	Solenoid valve	35%(NC)	21	Cable box	Standard
△3 6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	22	Service flange	
7	Capillary		23	Oil drain valve	option
8	Check valve	2"	24	Oil level switch	option
9	Oil sight glass	Low side	25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1/2"NPT,option
11	Oil filter cartridge		27	Economizer port	5/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil sight glass	High side
13	Oil cooler connector(out)	5/8"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	5/8"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

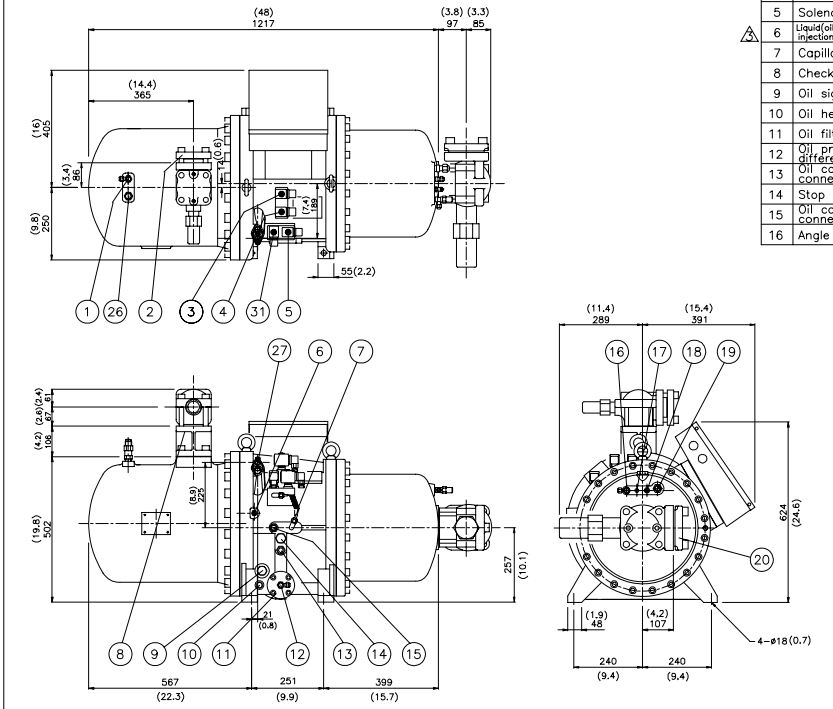
*All stop valves are optional



Item	Date	Modification
△3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
△2		
△1		

Model	RC2-230A
Name	Compressor outline
HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)



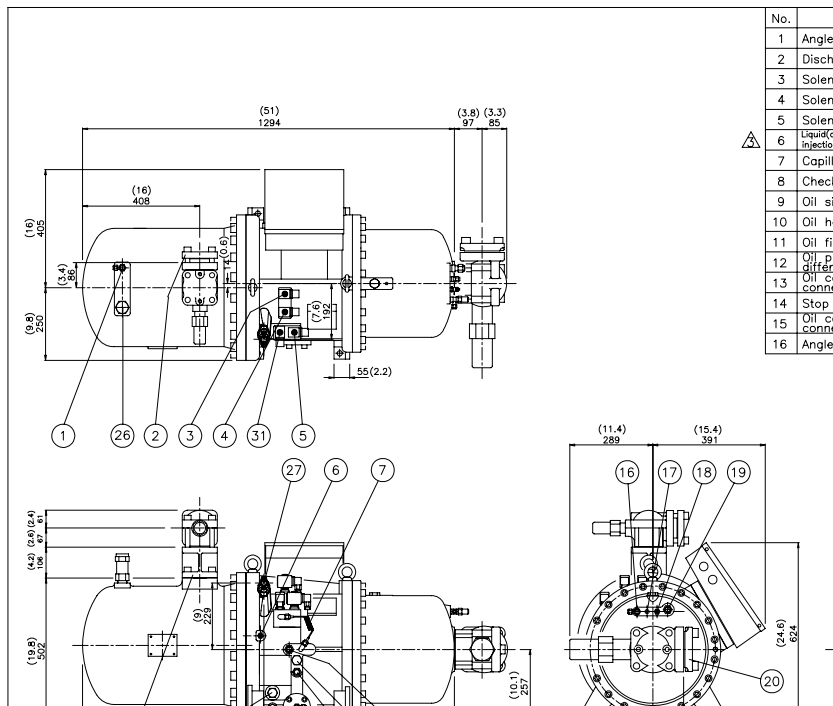
No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	2"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	20	Suction flange	3"
5	Solenoid valve	35%(NC)	21	Cable box	Standard
△3 6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	22	Service flange	
7	Capillary		23	Oil drain valve	option
8	Check valve	2"	24	Oil level switch	option
9	Oil sight glass	Low side	25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1/2"NPT,option
11	Oil filter cartridge		27	Economizer port	5/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil sight glass	High side
13	Oil cooler connector(out)	5/8"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	5/8"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

*All stop valves are optional

△3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
△2		
△1		
Item	Date	Modification

Model	RC2-260A
Name	Compressor outline
HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)



No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	2"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	20	Suction flange	3"
5	Solenoid valve	25%(NC)	21	Cable box	Standard
△3 6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	22	Service flange	
7	Capillary		23	Oil drain valve	option
8	Check valve	2"	24	Oil level switch	option
9	Oil sight glass	Low side	25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1" NPT,option
11	Oil filter cartridge		27	Economizer port	7/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil sight glass	High side
13	Oil cooler connector(out)	5/8"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	5/8"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

*All stop valves are optional

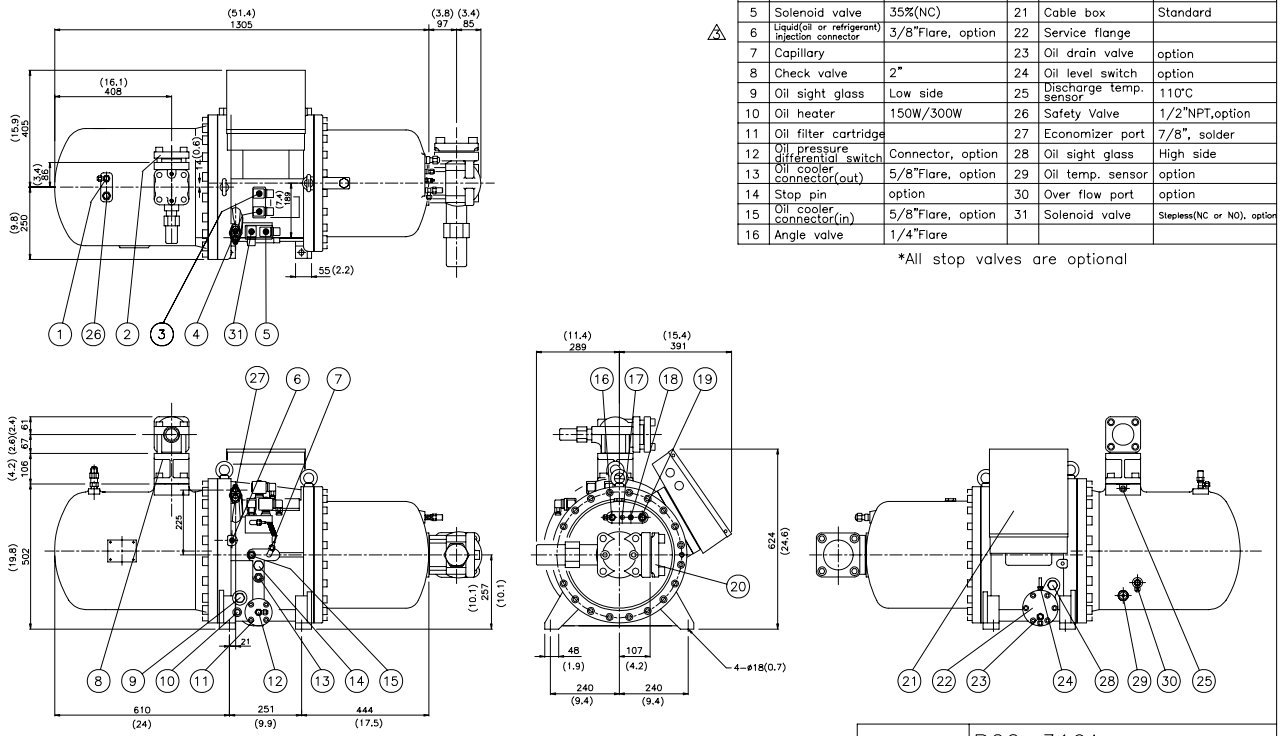
△3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
△2		
△1		
Item	Date	Modification

Model	RC2-300A
Name	Compressor outline
HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	2"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	20	Suction flange	3"
5	Solenoid valve	35%(NC)	21	Cable box	Standard
△3 6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	22	Service flange	
7	Capillary		23	Oil drain valve	option
8	Check valve	2"	24	Oil level switch	option
9	Oil sight glass	Low side	25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1/2"NPT,option
11	Oil filter cartridge		27	Economizer port	7/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil sight glass	High side
13	Oil cooler connector(out)	5/8"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	5/8"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

*All stop valves are optional



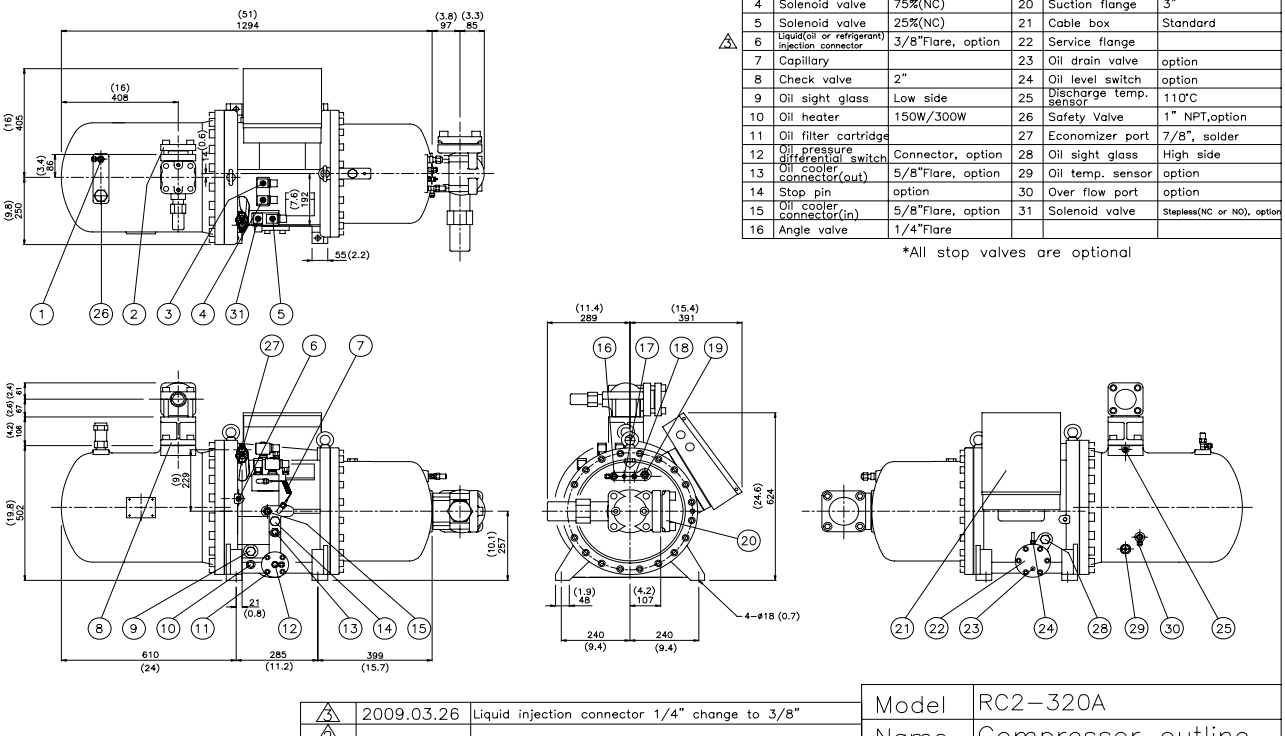
Item	Date	Modification
△3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
△2		
△1		

Model	RC2-310A
Name	Compressor outline
	HANBELL Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	2"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	20	Suction flange	3"
5	Solenoid valve	25%(NC)	21	Cable box	Standard
△3 6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	22	Service flange	
7	Capillary		23	Oil drain valve	option
8	Check valve	2"	24	Oil level switch	option
9	Oil sight glass	Low side	25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1" NPT,option
11	Oil filter cartridge		27	Economizer port	7/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil sight glass	High side
13	Oil cooler connector(out)	5/8"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	5/8"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

*All stop valves are optional



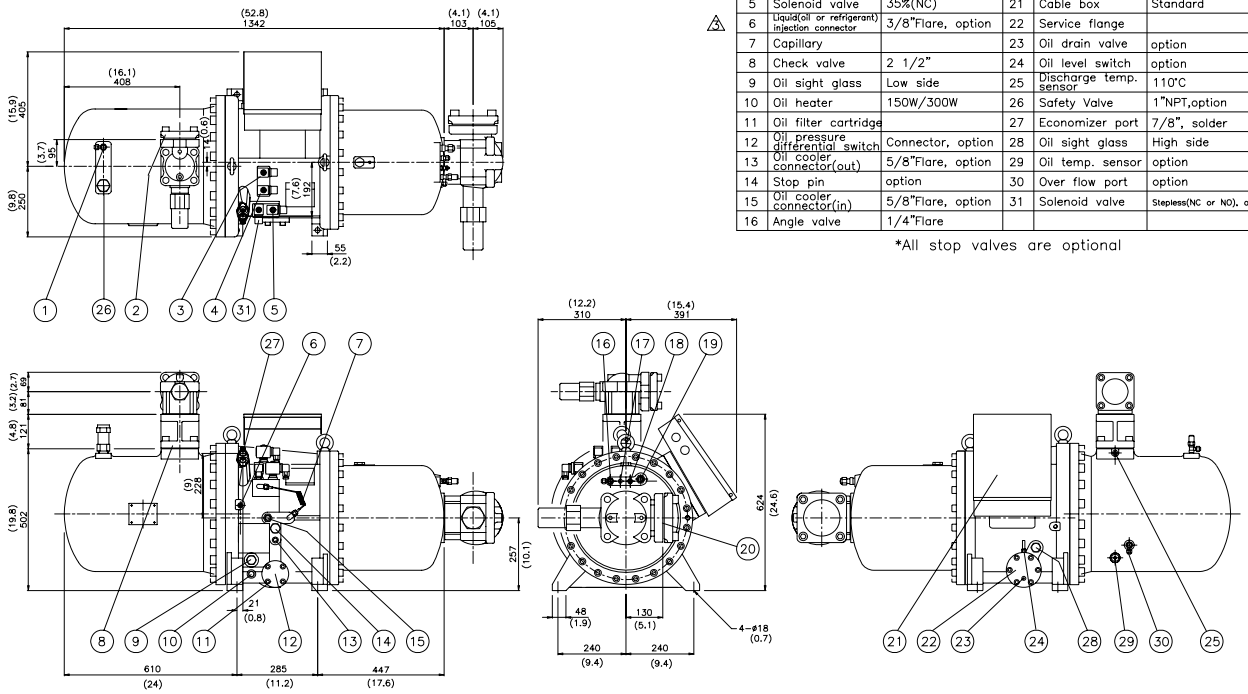
Item	Date	Modification
△3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
△2		
△1		

Model	RC2-320A
Name	Compressor outline
	HANBELL Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	2 1/2"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	20	Suction flange	4"
5	Solenoid valve	35%(NC)	21	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	22	Service flange	
7	Capillary		23	Oil drain valve	option
8	Check valve	2 1/2"	24	Oil level switch	option
9	Oil sight glass	Low side	25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1"NPT,option
11	Oil filter cartridge		27	Economizer port	7/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil sight glass	High side
13	Oil cooler connector(out)	5/8"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	5/8"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

*All stop valves are optional



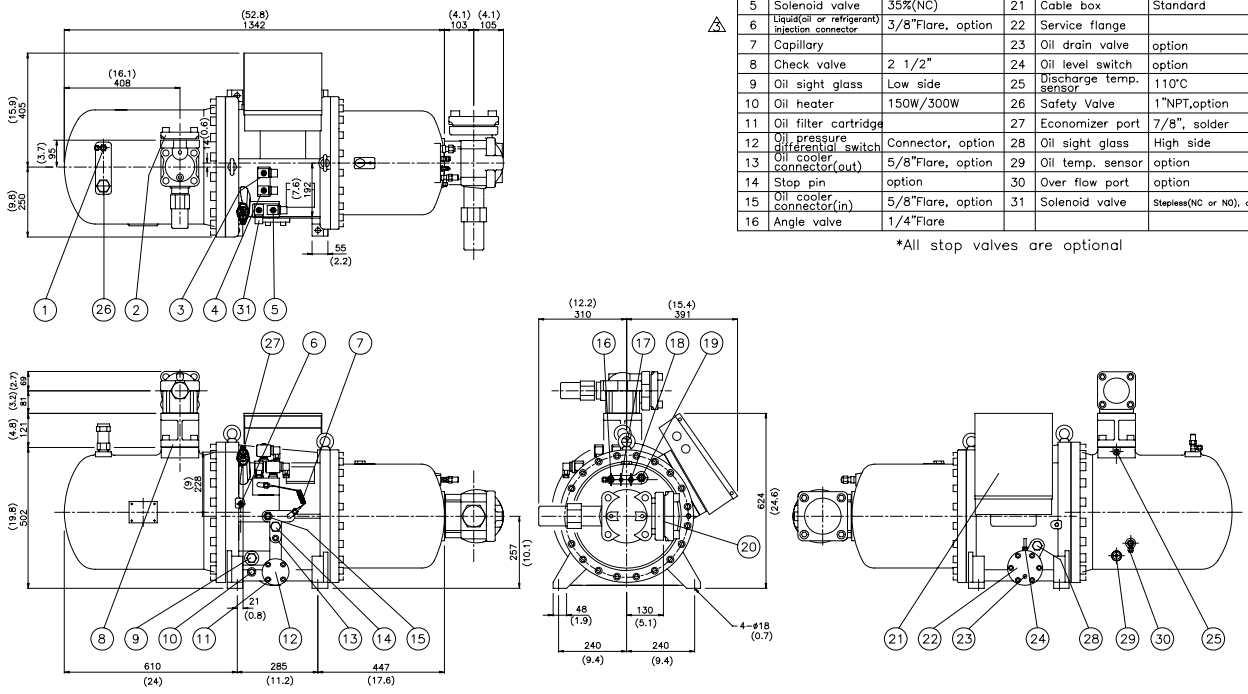
Item	Date	Modification
3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
2		
1		

Model	RC2-340A
Name	Compressor outline
HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	2 1/2"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	20	Suction flange	4"
5	Solenoid valve	35%(NC)	21	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	22	Service flange	
7	Capillary		23	Oil drain valve	option
8	Check valve	2 1/2"	24	Oil level switch	option
9	Oil sight glass	Low side	25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1"NPT,option
11	Oil filter cartridge		27	Economizer port	7/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil sight glass	High side
13	Oil cooler connector(out)	5/8"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	5/8"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

*All stop valves are optional



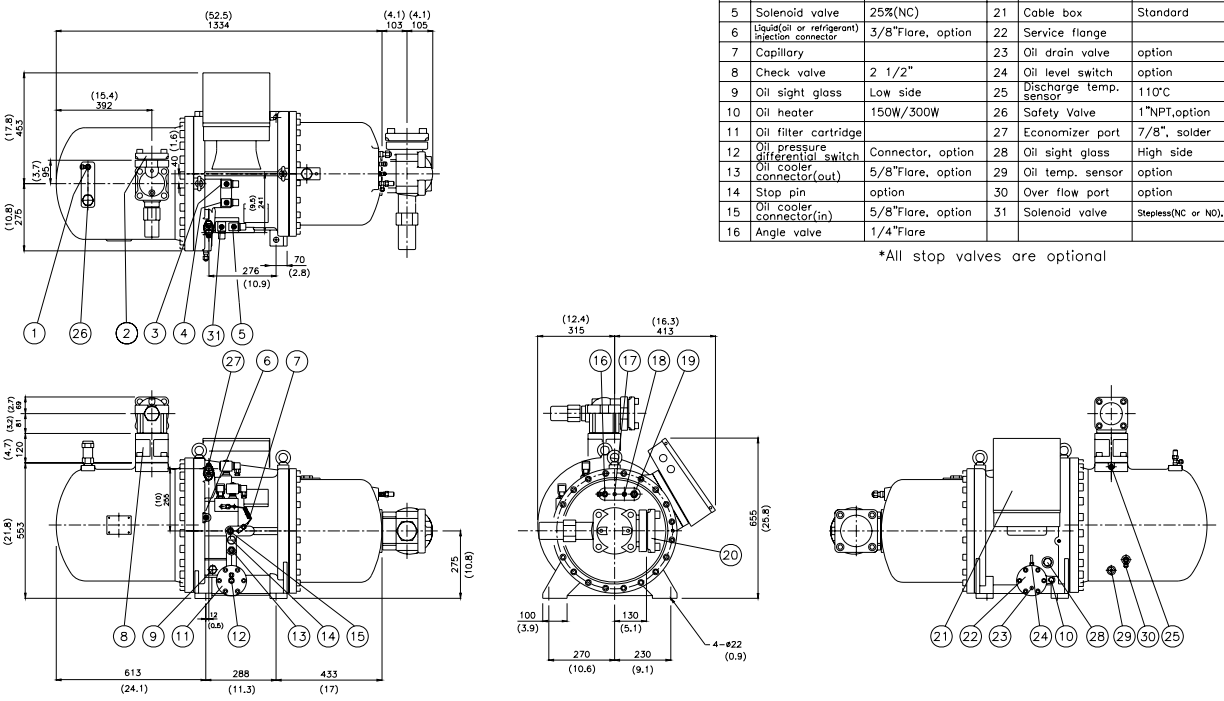
Item	Date	Modification
3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
2		
1		

Model	RC2-370A
Name	Compressor outline
HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	2 1/2"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	20	Suction flange	4"
5	Solenoid valve	25%(NC)	21	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	22	Service flange	
7	Capillary		23	Oil drain valve	option
8	Check valve	2 1/2"	24	Oil level switch	option
9	Oil sight glass	Low side	25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1"NPT,option
11	Oil filter cartridge		27	Economizer port	7/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil sight glass	High side
13	Oil cooler connector(out)	5/8"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	5/8"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

*All stop valves are optional

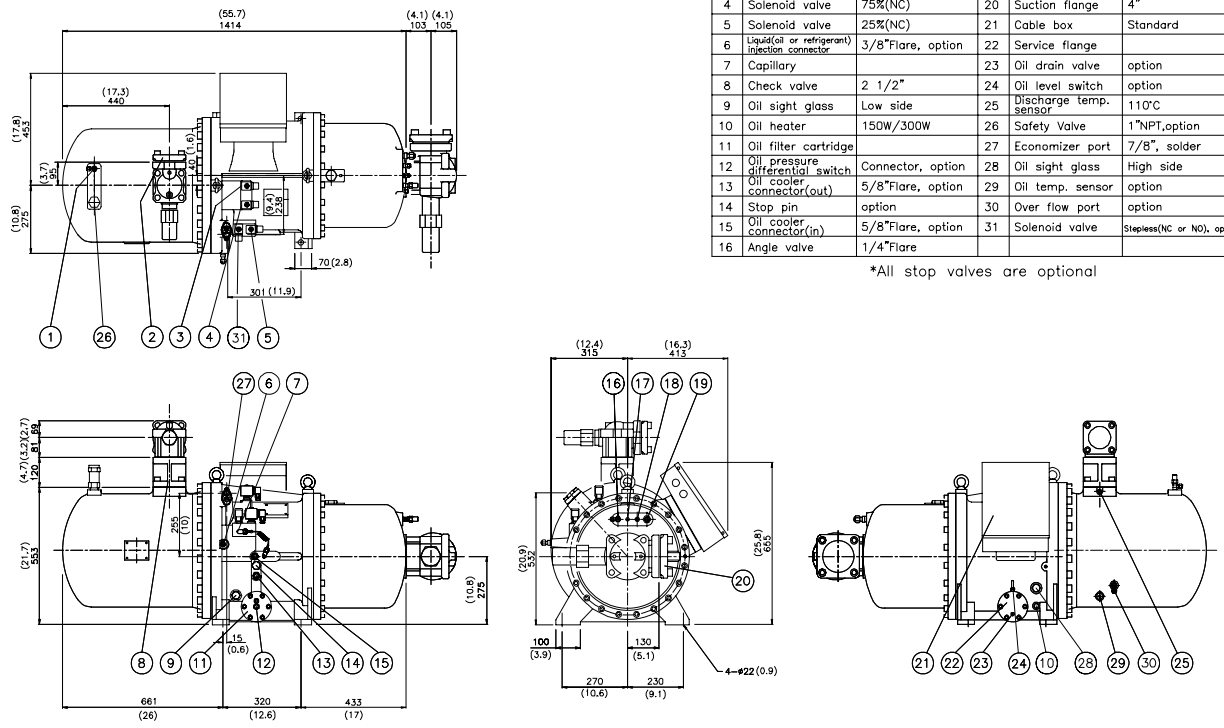


3	2009.03.26	Riss in motor casing have seen removed	Model	RC2-410A
2			Name	Compressor outline
1			HANBELL	Ver. 03
Item	Date	Modification		

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	2 1/2"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	20	Suction flange	4"
5	Solenoid valve	25%(NC)	21	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	22	Service flange	
7	Capillary		23	Oil drain valve	option
8	Check valve	2 1/2"	24	Oil level switch	option
9	Oil sight glass	Low side	25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1"NPT,option
11	Oil filter cartridge		27	Economizer port	7/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil sight glass	High side
13	Oil cooler connector(out)	5/8"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	5/8"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

*All stop valves are optional

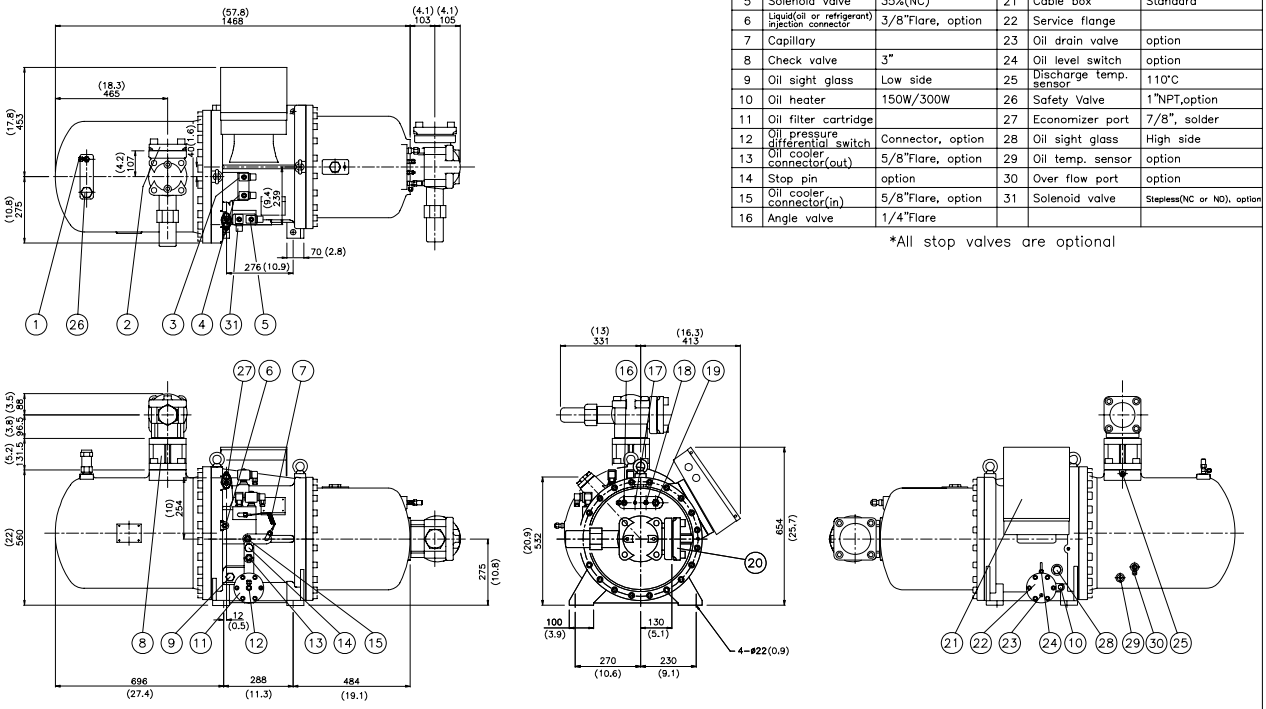


3	2009.03.26	Riss in motor casing have seen removed	Model	RC2-470A
2			Name	Compressor outline
1			HANBELL	Ver. 03
Item	Date	Modification		

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	3"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	20	Suction flange	4"
5	Solenoid valve	35%(NC)	21	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	22	Service flange	
7	Capillary		23	Oil drain valve	option
8	Check valve	3"	24	Oil level switch	option
9	Oil sight glass	Low side	25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1"NPT,option
11	Oil filter cartridge		27	Economizer port	7/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil sight glass	High side
13	Oil cooler connector(out)	5/8"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	5/8"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

*All stop valves are optional



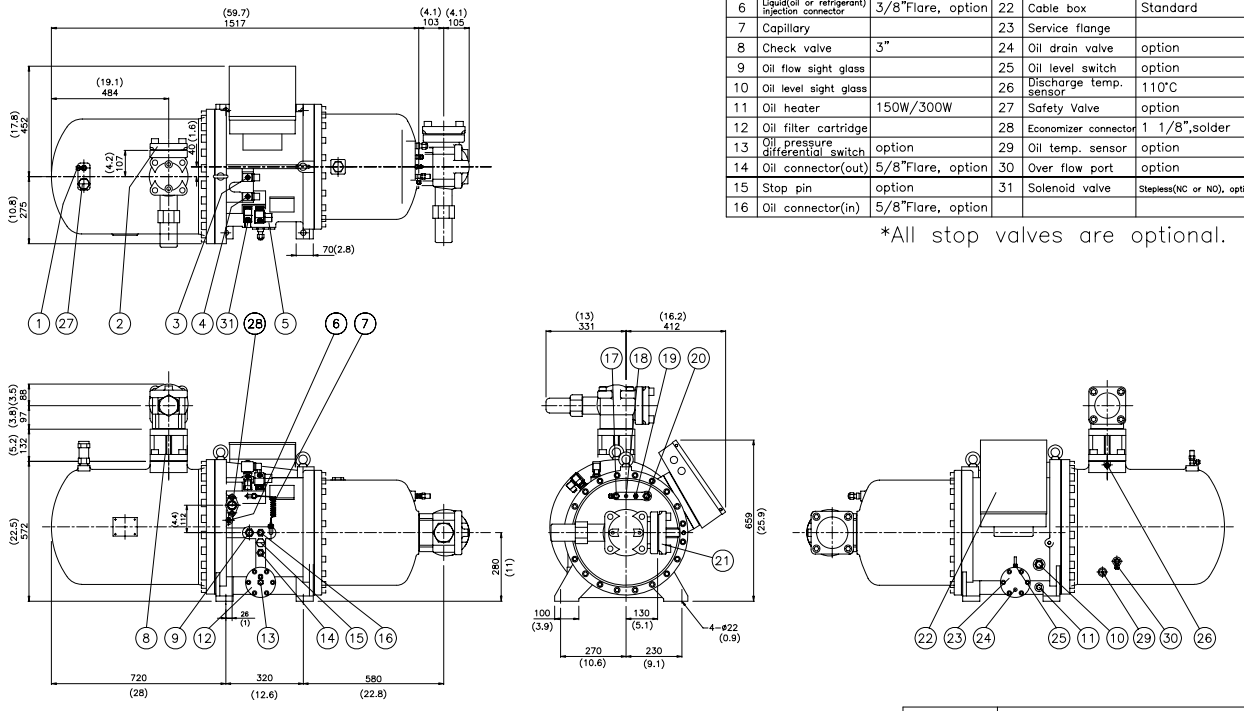
Item	Date	Modification
3	2009.03.26	Riss in motor casing have seen removed
2		
1		

Model	RC2-510A
Name	Compressor outline
HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Angle valve	1/4"Flare
2	Discharge flange	3"	18	Refrigerant service valve	1/4"Flare
3	Solenoid valve	50%(NC)	19	Connector	1/4"Flare
4	Solenoid valve	75%(NC)	20	Liquid injection connector	5/8"Flare, option
5	Solenoid valve	25%(NC)	21	Suction flange	4"
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	22	Cable box	Standard
7	Capillary		23	Service flange	
8	Check valve	3"	24	Oil drain valve	option
9	Oil flow sight glass		25	Oil level switch	option
10	Oil level sight glass		26	Discharge temp. sensor	110°C
11	Oil heater	150W/300W	27	Safety Valve	option
12	Oil filter cartridge		28	Economizer connector	1 1/8",solder
13	Oil pressure differential switch	option	29	Oil temp. sensor	option
14	Oil connector(out)	5/8"Flare, option	30	Over flow port	option
15	Stop pin	option	31	Solenoid valve	Stepless(NC or NO), option
16	Oil connector(in)	5/8"Flare, option			

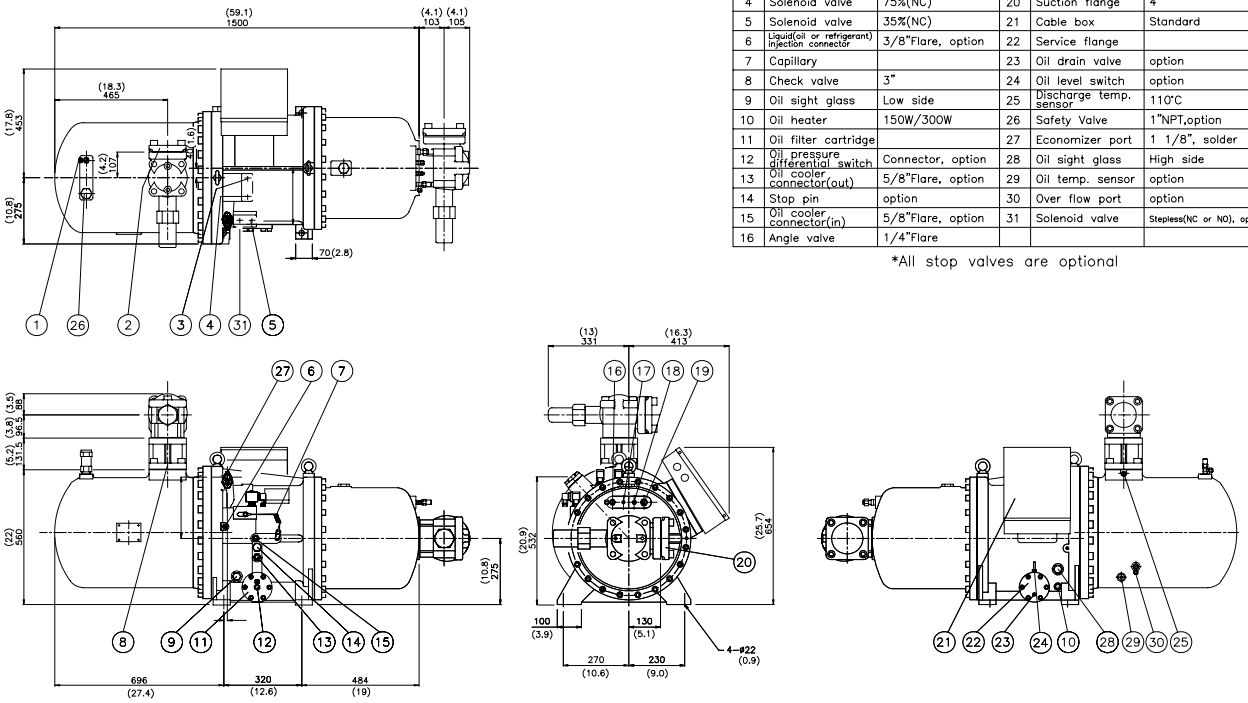
*All stop valves are optional.



Model	RC2-550A
Name	Compressor outline
HANBELL	Ver. 03

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	3"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	20	Suction flange	4"
5	Solenoid valve	35%(NC)	21	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	22	Service flange	
7	Capillary		23	Oil drain valve	option
8	Check valve	3"	24	Oil level switch	option
9	Oil sight glass	Low side	25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1"NPT,option
11	Oil filter cartridge		27	Economizer port	1 1/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil sight glass	High side
13	Oil cooler connector(out)	5/8"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	5/8"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

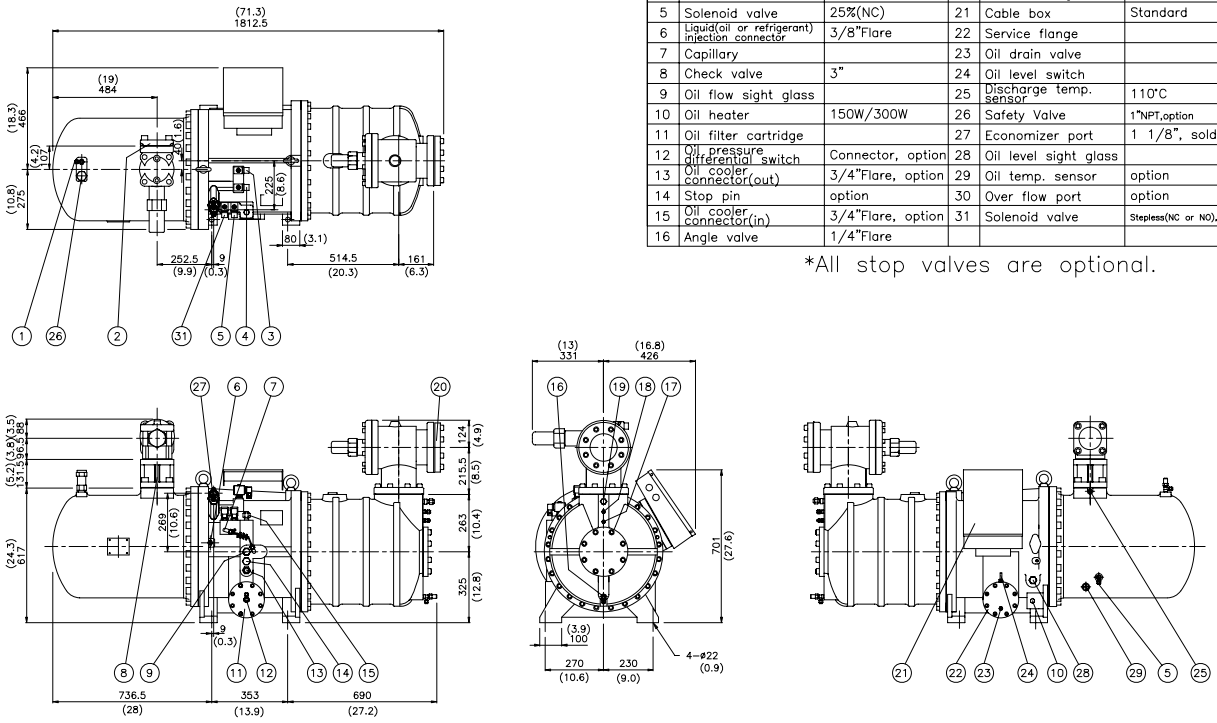
*All stop valves are optional



3	2009.03.26	Riss in motor casing have seen removed	Model	RC2-580A
2			Name	Compressor outline
1			HANBELL	Ver. 03
Item	Date	Modification		

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	3"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare
4	Solenoid valve	75%(NC)	20	Suction flange	5"
5	Solenoid valve	25%(NC)	21	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare	22	Service flange	
7	Capillary		23	Oil drain valve	
8	Check valve	3"	24	Oil level switch	
9	Oil flow sight glass		25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1"NPT,option
11	Oil filter cartridge		27	Economizer port	1 1/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil level sight glass	
13	Oil cooler connector(out)	3/4"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	3/4"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

*All stop valves are optional.

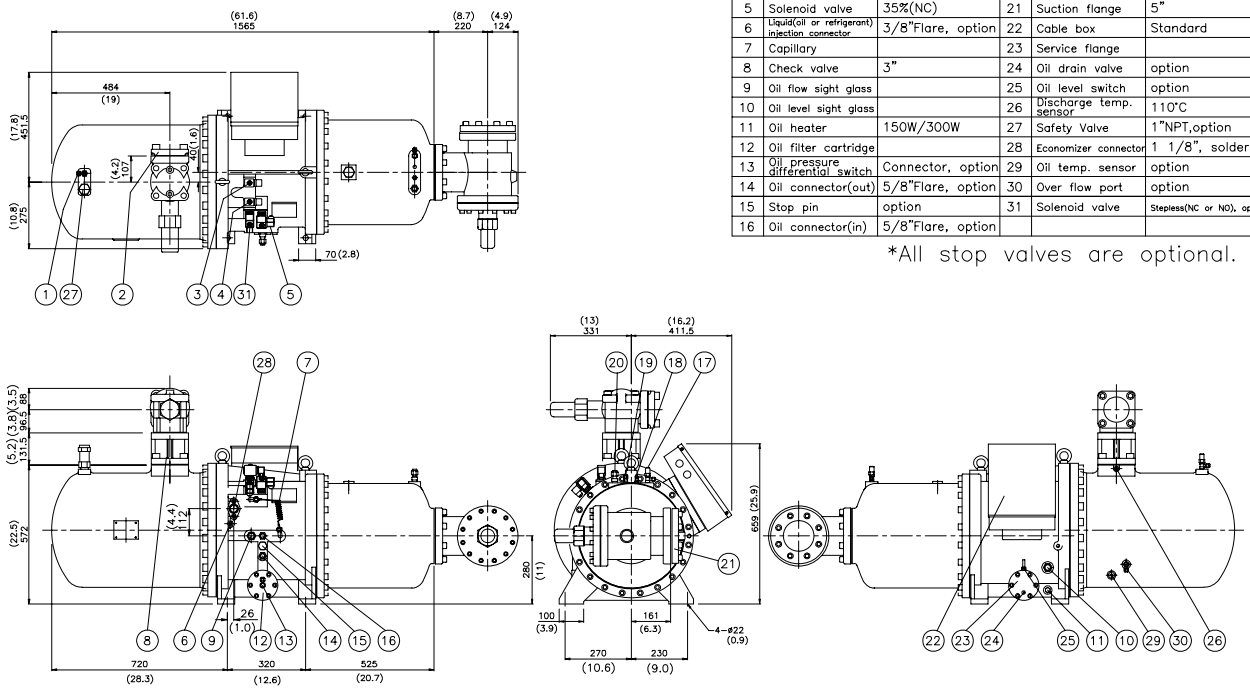


UNIT:
SI: mm Imperial: (in)

3			Model	RC2-610A
2			Name	Compressor outline
1			HANBELL	Ver. 03
Item	Date	Modification		

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Angle valve	1/4"Flare
2	Discharge flange	3"	18	Refrigerant service valve	1/4"Flare
3	Solenoid valve	50%(NC)	19	Connector	1/4"Flare
4	Solenoid valve	75%(NC)	20	Liquid injection connector	5/8"Flare, option
5	Solenoid valve	35%(NC)	21	Suction flange	5"
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	22	Cable box	Standard
7	Capillary		23	Service flange	
8	Check valve	3"	24	Oil drain valve	option
9	Oil flow sight glass		25	Oil level switch	option
10	Oil level sight glass		26	Discharge temp. sensor	110°C
11	Oil heater	150W/300W	27	Safety Valve	1"NPT,option
12	Oil filter cartridge		28	Economizer connector	1 1/8", solder
13	Oil pressure differential switch	Connector, option	29	Oil temp. sensor	option
14	Oil connector(out)	5/8"Flare, option	30	Over flow port	option
15	Stop pin	option	31	Solenoid valve	Stepless(NC or NO), option
16	Oil connector(in)	5/8"Flare, option			

*All stop valves are optional.

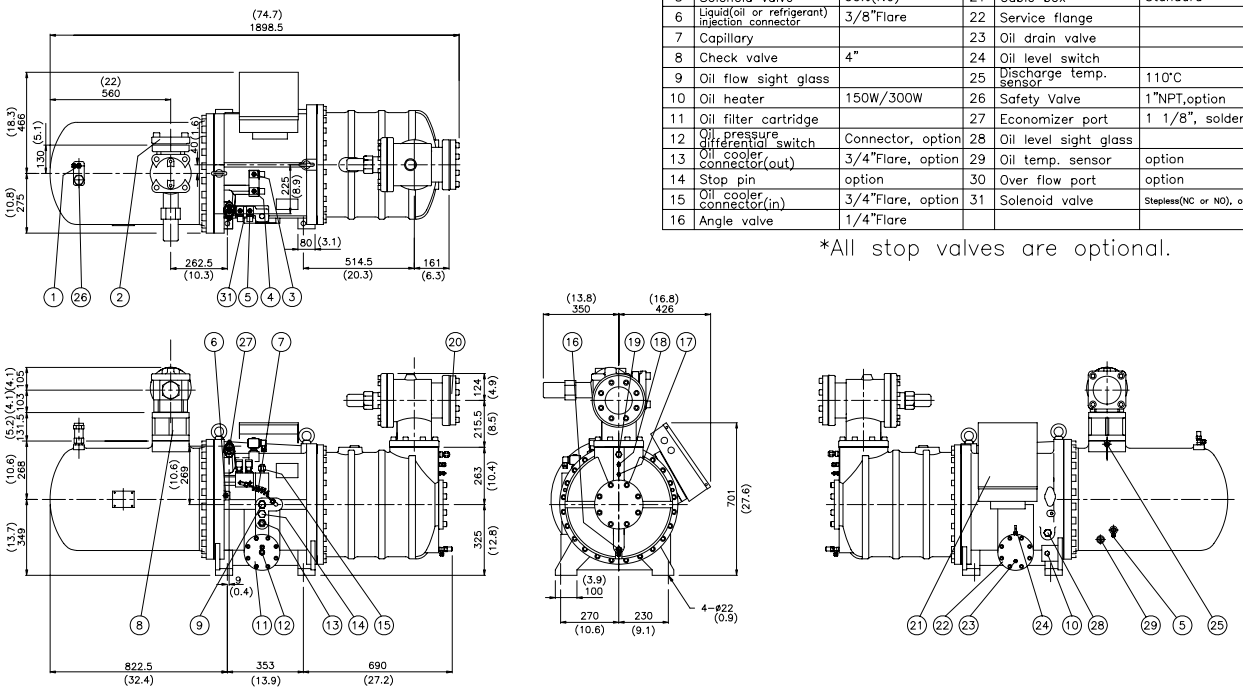


3	2009.03.26	Riss in motor casing have seen removed	Model	RC2-620A
2			Name	Compressor outline
1			HANBELL	Ver. 03
Item	Date	Modification		

UNIT:
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	4"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare
4	Solenoid valve	75%(NC)	20	Suction flange	5"
5	Solenoid valve	35%(NC)	21	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare	22	Service flange	
7	Capillary		23	Oil drain valve	
8	Check valve	4"	24	Oil level switch	
9	Oil flow sight glass		25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1"NPT,option
11	Oil filter cartridge		27	Economizer port	1 1/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil level sight glass	
13	Oil cooler connector(out)	3/4"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	3/4"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

*All stop valves are optional.

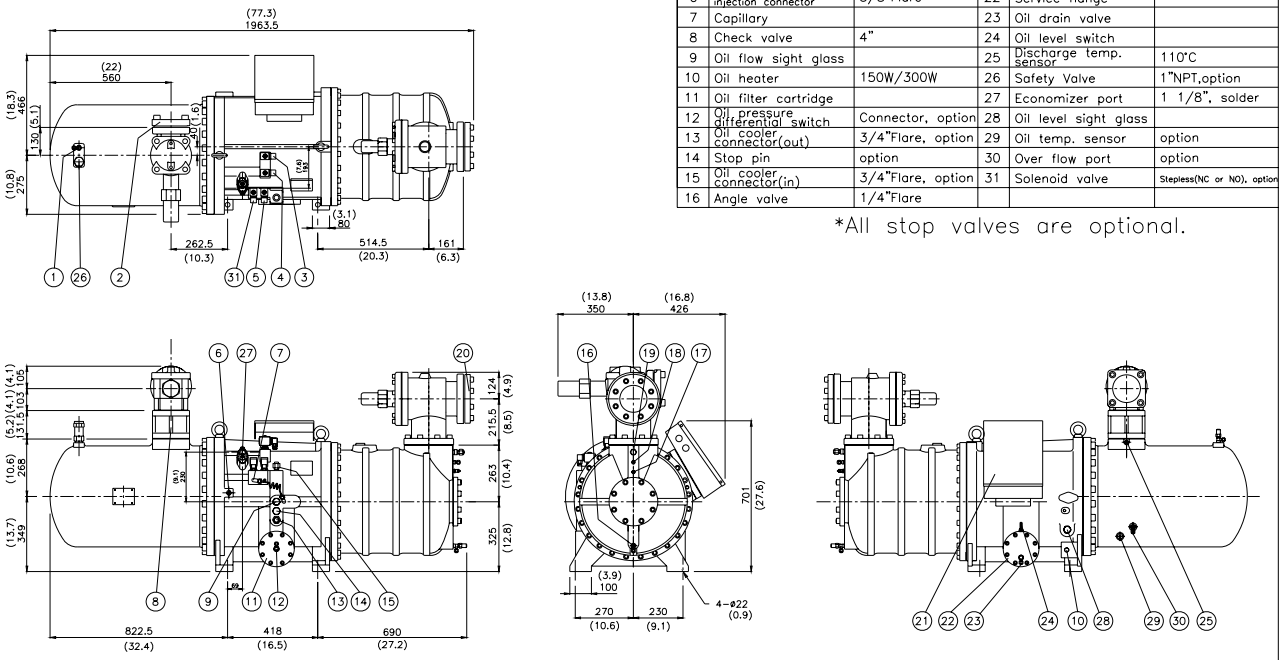


3			Model	RC2-710A
2			Name	Compressor outline
1			HANBELL	Ver. 03
Item	Date	Modification		

UNIT:
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	4"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare
4	Solenoid valve	75%(NC)	20	Suction flange	5"
5	Solenoid valve	30%(NC)	21	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare	22	Service flange	
7	Capillary		23	Oil drain valve	
8	Check valve	4"	24	Oil level switch	
9	Oil flow sight glass		25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1"NPT,option
11	Oil filter cartridge		27	Economizer port	1 1/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil level sight glass	
13	Oil cooler connector(out)	3/4"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	3/4"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

*All stop valves are optional.



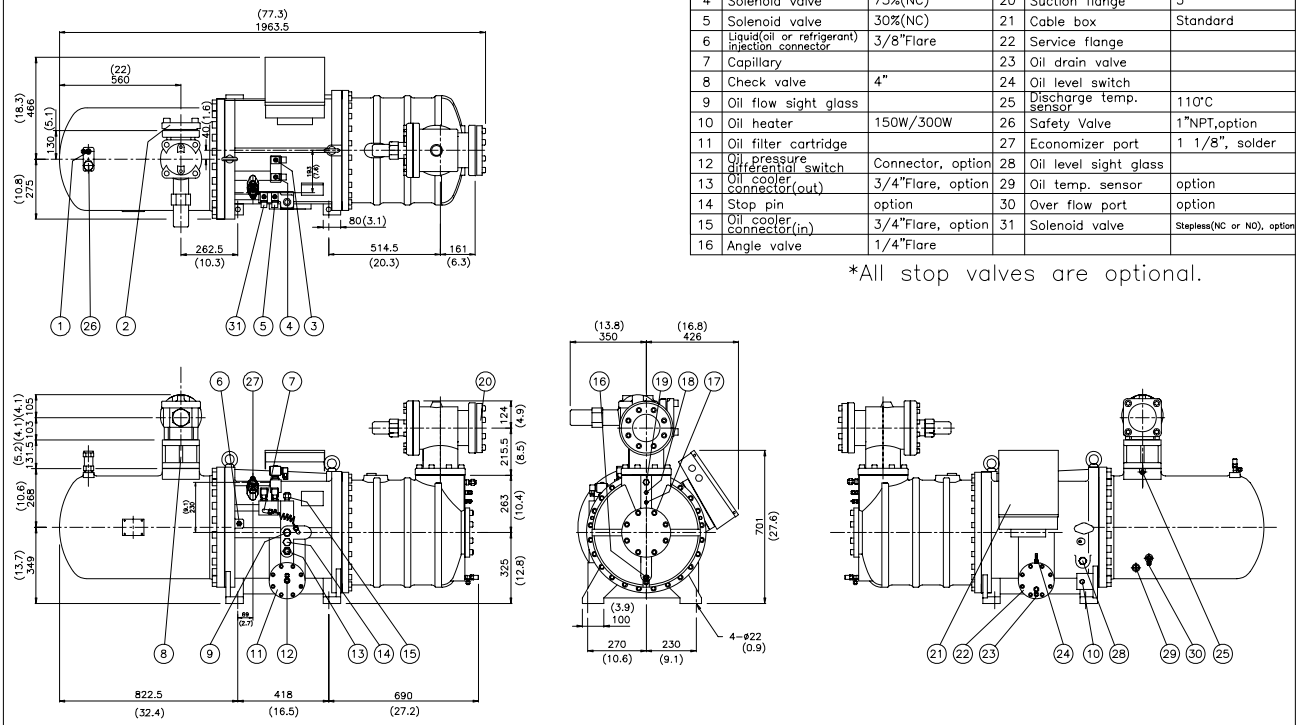
Item	Date	Modification
3	2009.03.26	Riss in motor casing have seen removed
2		
1		

Model	RC2-790A
Name	Compressor outline
HANBELL	Ver. 03

UNIT:
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	4"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare
4	Solenoid valve	75%(NC)	20	Suction flange	5"
5	Solenoid valve	30%(NC)	21	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare	22	Service flange	
7	Capillary		23	Oil drain valve	
8	Check valve	4"	24	Oil level switch	
9	Oil flow sight glass		25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1"NPT,option
11	Oil filter cartridge		27	Economizer port	1 1/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil level sight glass	
13	Oil cooler connector(out)	3/4"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	3/4"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

*All stop valves are optional.



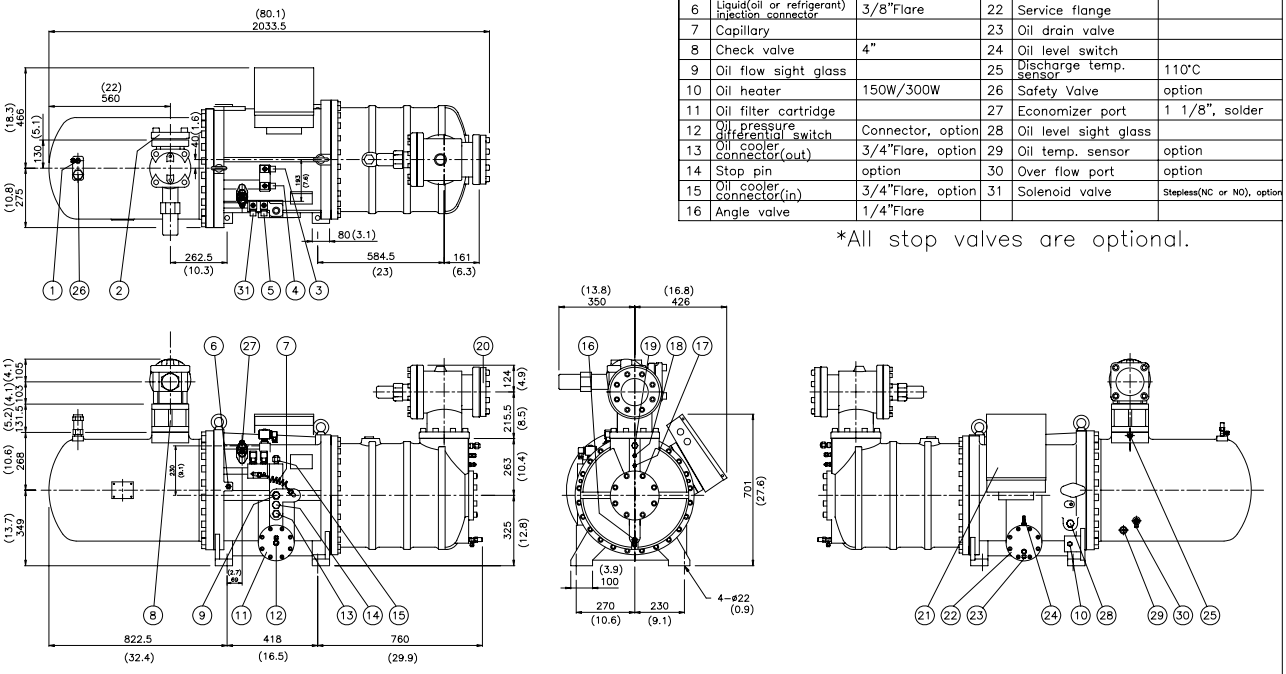
Item	Date	Modification
3		
2		
1		

Model	RC2-830A
Name	Compressor outline
HANBELL	Ver. 03

UNIT:
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	4"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare
4	Solenoid valve	75%(NC)	20	Suction flange	5"
5	Solenoid valve	35%(NC)	21	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare	22	Service flange	
7	Capillary		23	Oil drain valve	
8	Check valve	4"	24	Oil level switch	
9	Oil flow sight glass		25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	option
11	Oil filter cartridge		27	Economizer port	1 1/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil level sight glass	
13	Oil cooler connector(out)	3/4"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	3/4"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

*All stop valves are optional.

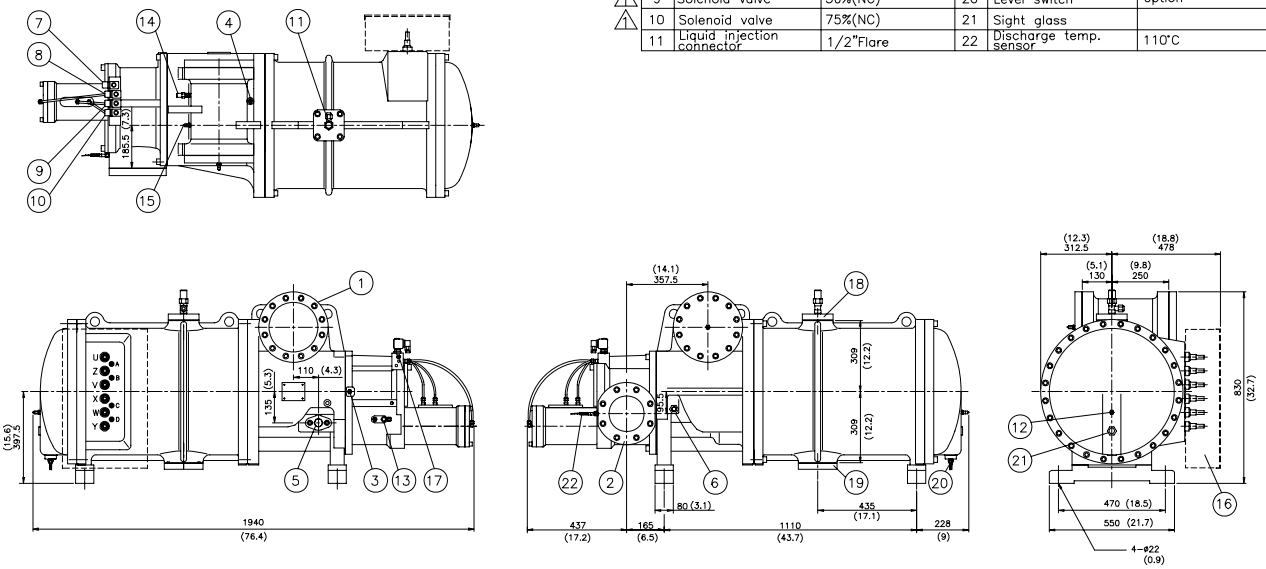


Item	Date	Modification
3		
2		
1		

Model	RC2-930A
Name	Compressor outline
HANBELL	Ver. 03

UNIT:
SI: mm Imperial: (in)

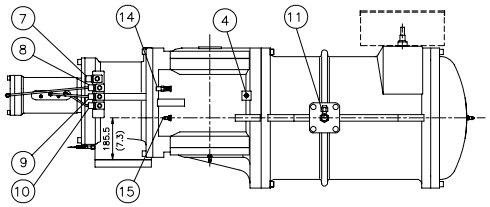
No.	Name	Note	No.	Name	Note
1	Suction flange	6"	12	Refrigerant service valve	1/4"Flare
2	Discharge flange	5"	13	Angle valve	1/4"Flare
3	Oil connector	1/4"Flare	14	Angel valve	1/4"Flare
4	Oil connector	3/8"Flare	15	Refrigerant service valve	1/4"Flare
5	Economizer port	1 1/8", solder	16	Cable box	
6	Oil injection connector	5/8"Flare	17	Modulation control oil connector	1/4"Flare
7	Solenoid valve	Stepless(NC or NO),option	18	Economizer flangle(in)	2 1/2"
8	Solenoid valve	35%(NC)	19	Economizer flangle(out)	4"
9	Solenoid valve	50%(NC)	20	Level switch	option
10	Solenoid valve	75%(NC)	21	Sight glass	
11	Liquid injection connector	1/2"Flare	22	Discharge temp. sensor	110°C



Item	Date	Modification
3		
2		
1	2009.09.15	Modified the positions of partial loads for 50% and 75%

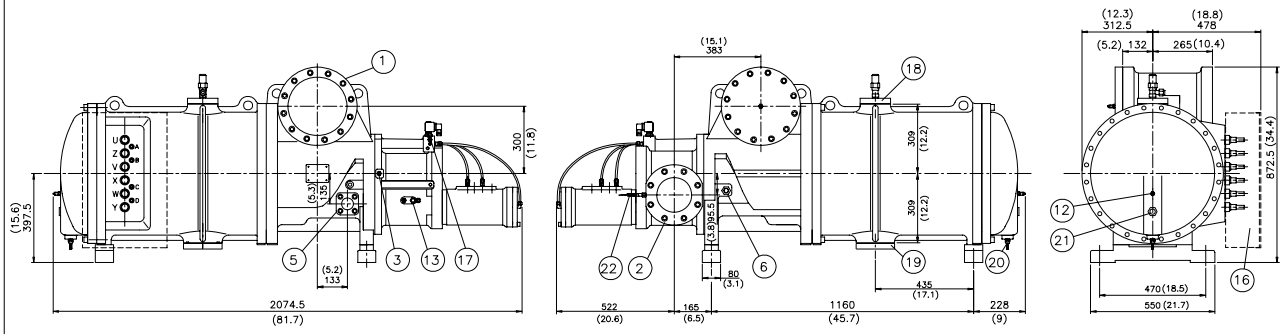
Model	RC2-1090A
Name	Compressor outline
HANBELL	Ver. 03

UNIT:
SI: mm Imperial: (in)



No.	Name	Note	No.	Name	Note
1	Suction flange	8"	12	Refrigerant service valve	1/4"Flare
** 2	Discharge flange	5"	13	Angle valve	1/4"Flare
3	Oil connector	1/4"Flare	14	Angel valve	1/4"Flare
4	Oil connector	3/8"Flare	15	Refrigerant service valve	1/4"Flare
5	Economizer port	1 5/8", solder	16	Cable box	
6	Oil injection connector	5/8"Flare	17	Modulation control oil connector	1/4"Flare
7	Solenoid valve	Stepless(NC or NO),option	18	Economizer flangle(in)	2 1/2"
8	Solenoid valve	30%(NC)	19	Economizer flangle(out)	4"
△1 9	Solenoid valve	50%(NC)	20	Level switch	option
△1 10	Solenoid valve	75%(NC)	21	Sight glass	
11	Liquid injection connector	1/2"Flare	22	Discharge temp. sensor	110°C

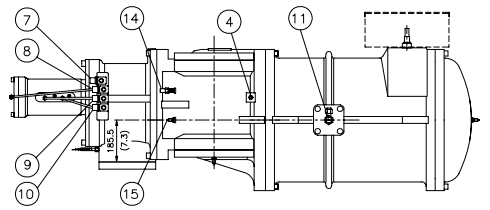
** Discharge side should be connected with 6" pipe.



Item	Date	Modification
△3		
△2		
△1	2009.09.15	Modified the positions of partial loads for 50% and 75%

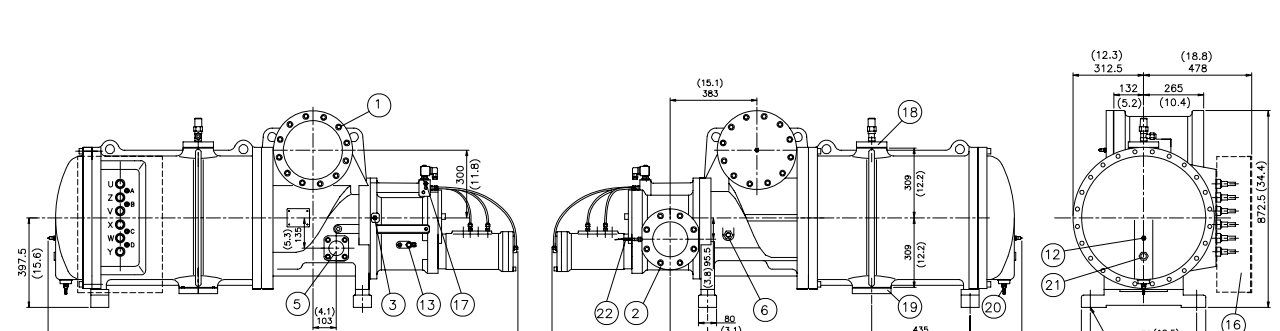
Model	RC2-1280A
Name	Compressor outline
HANBELL	Ver. 03

UNIT:
SI: mm Imperial: (in)



No.	Name	Note	No.	Name	Note
1	Suction flange	8"	12	Refrigerant service valve	1/4"Flare
2	Discharge flange	5"	13	Angle valve	1/4"Flare
3	Oil connector	1/4"Flare	14	Angel valve	1/4"Flare
4	Oil connector	3/8"Flare	15	Refrigerant service valve	1/4"Flare
5	Economizer port	2 1/8", solder	16	Cable box	
6	Oil injection connector	5/8"Flare	17	Modulation control oil connector	1/4"Flare
7	Solenoid valve	Stepless(NC or NO),option	18	Economizer flangle(in)	2 1/2"
8	Solenoid valve	25%(NC)	19	Economizer flangle(out)	4"
△1 9	Solenoid valve	50%(NC)	20	Level switch	option
△1 10	Solenoid valve	75%(NC)	21	Sight glass	
11	Liquid injection connector	1/2"Flare	22	Discharge temp. sensor	110°C

** Discharge side should be connected with 6" pipe.

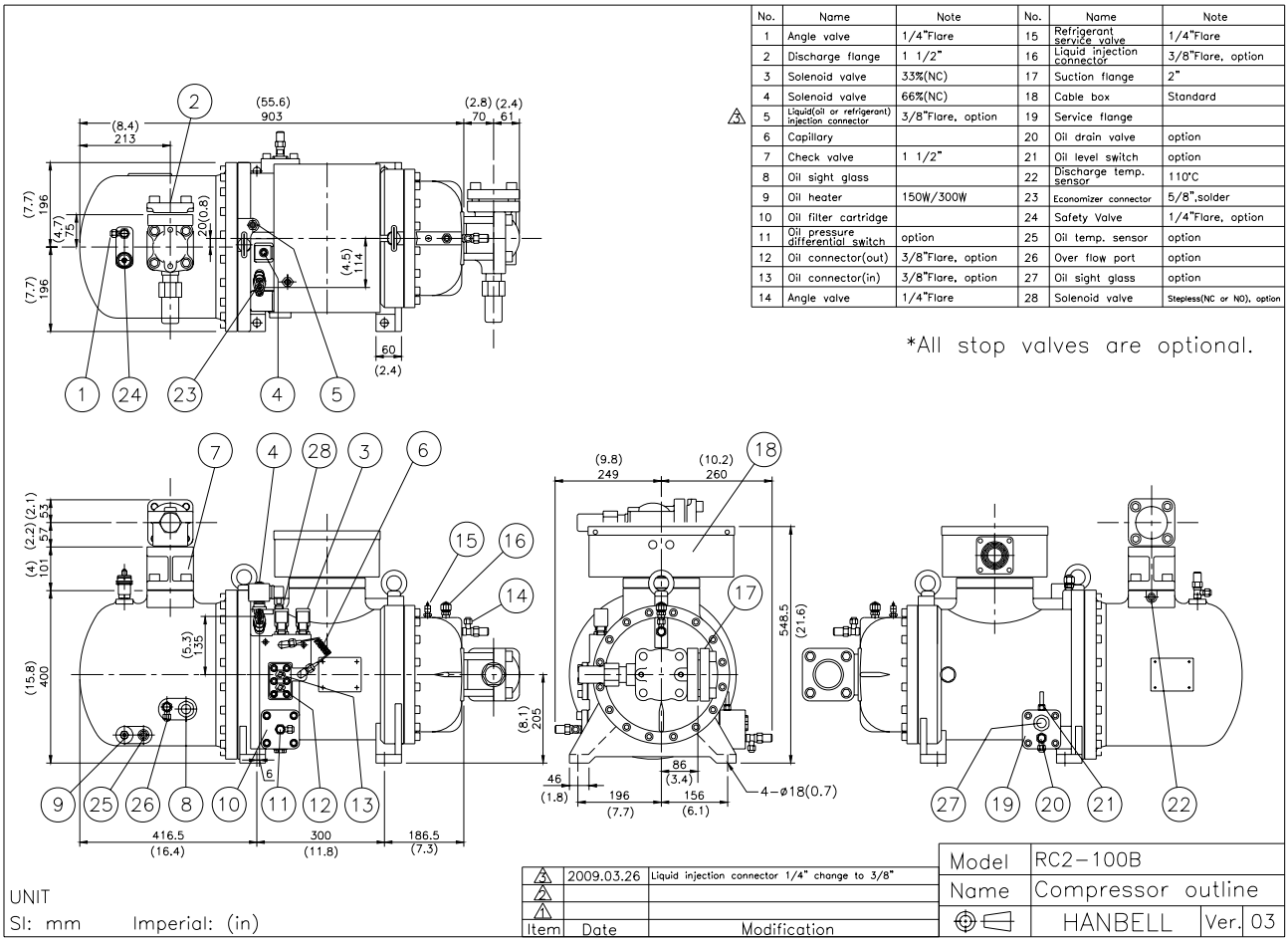


Item	Date	Modification
△3		
△2		
△1	2009.09.15	Modified the positions of partial loads for 50% and 75%

Model	RC2-1520A
Name	Compressor outline
HANBELL	Ver. 03

UNIT:
SI: mm Imperial: (in)

2. RC2-B outline drawings



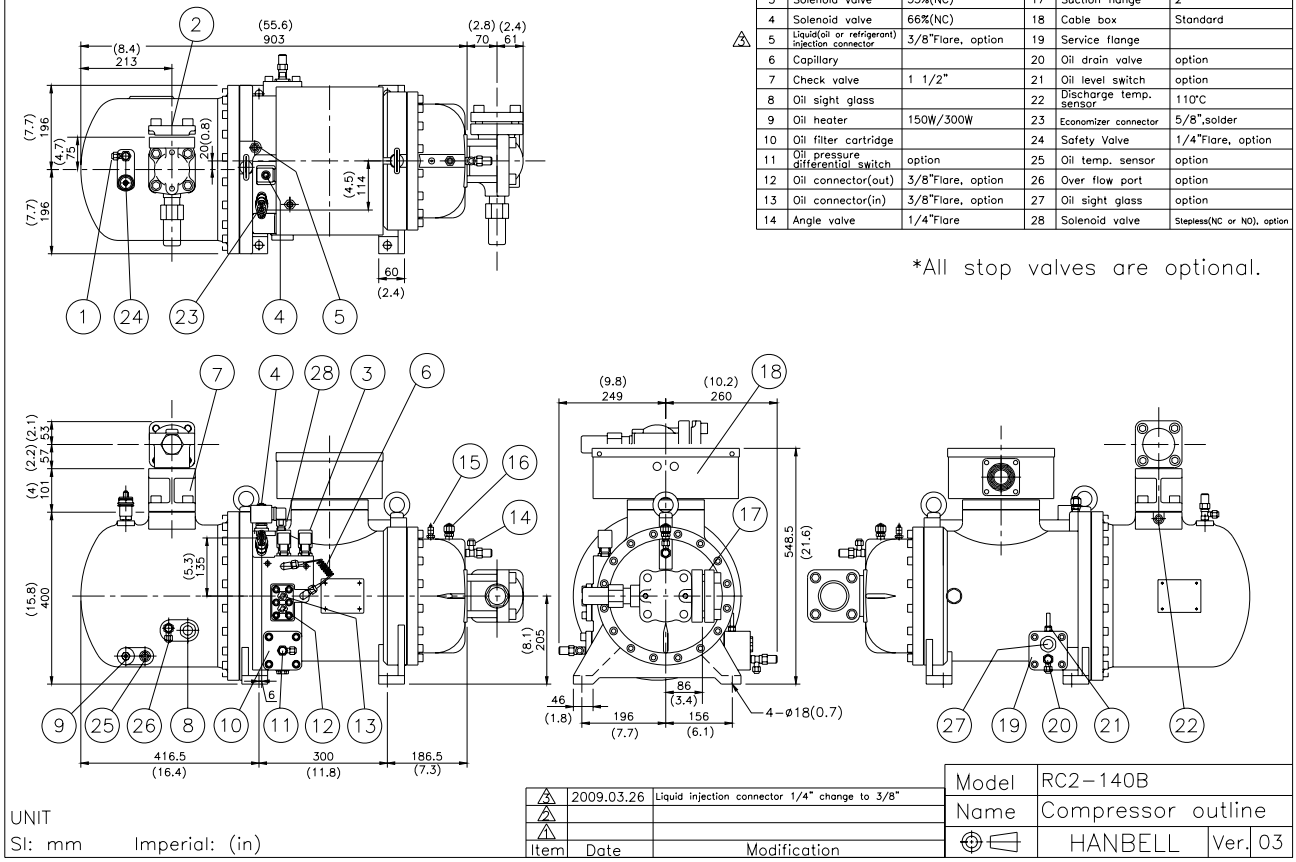
No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	15	Refrigerant service valve	1/4"Flare
2	Discharge flange	1 1/2"	16	Liquid injection connector	3/8"Flare, option
3	Solenoid valve	33%(NC)	17	Suction flange	2"
4	Solenoid valve	66%(NC)	18	Cable box	Standard
5	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	19	Service flange	
6	Capillary		20	Oil drain valve	option
7	Check valve	1 1/2"	21	Oil level switch	option
8	Oil sight glass		22	Discharge temp. sensor	110°C
9	Oil heater	150W/300W	23	Economizer connector	5/8",solder
10	Oil filter cartridge		24	Safety Valve	1/4"Flare, option
11	Oil pressure differential switch	option	25	Oil temp. sensor	option
12	Oil connector(out)	3/8"Flare, option	26	Over flow port	option
13	Oil connector(in)	3/8"Flare, option	27	Oil sight glass	option
14	Angle valve	1/4"Flare	28	Solenoid valve	Stepless(NC or NO), option

*All stop valves are optional.

Item	Date	Modification
3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
2		
1		

UNIT
SI: mm Imperial: (in)

Model	RC2-100B
Name	Compressor outline
HANBELL	Ver. 03



No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	15	Refrigerant service valve	1/4"Flare
2	Discharge flange	1 1/2"	16	Liquid injection connector	3/8"Flare, option
3	Solenoid valve	33%(NC)	17	Suction flange	2"
4	Solenoid valve	66%(NC)	18	Cable box	Standard
5	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	19	Service flange	
6	Capillary		20	Oil drain valve	option
7	Check valve	1 1/2"	21	Oil level switch	option
8	Oil sight glass		22	Discharge temp. sensor	110°C
9	Oil heater	150W/300W	23	Economizer connector	5/8",solder
10	Oil filter cartridge		24	Safety Valve	1/4"Flare, option
11	Oil pressure differential switch	option	25	Oil temp. sensor	option
12	Oil connector(out)	3/8"Flare, option	26	Over flow port	option
13	Oil connector(in)	3/8"Flare, option	27	Oil sight glass	option
14	Angle valve	1/4"Flare	28	Solenoid valve	Stepless(NC or NO), option

*All stop valves are optional.

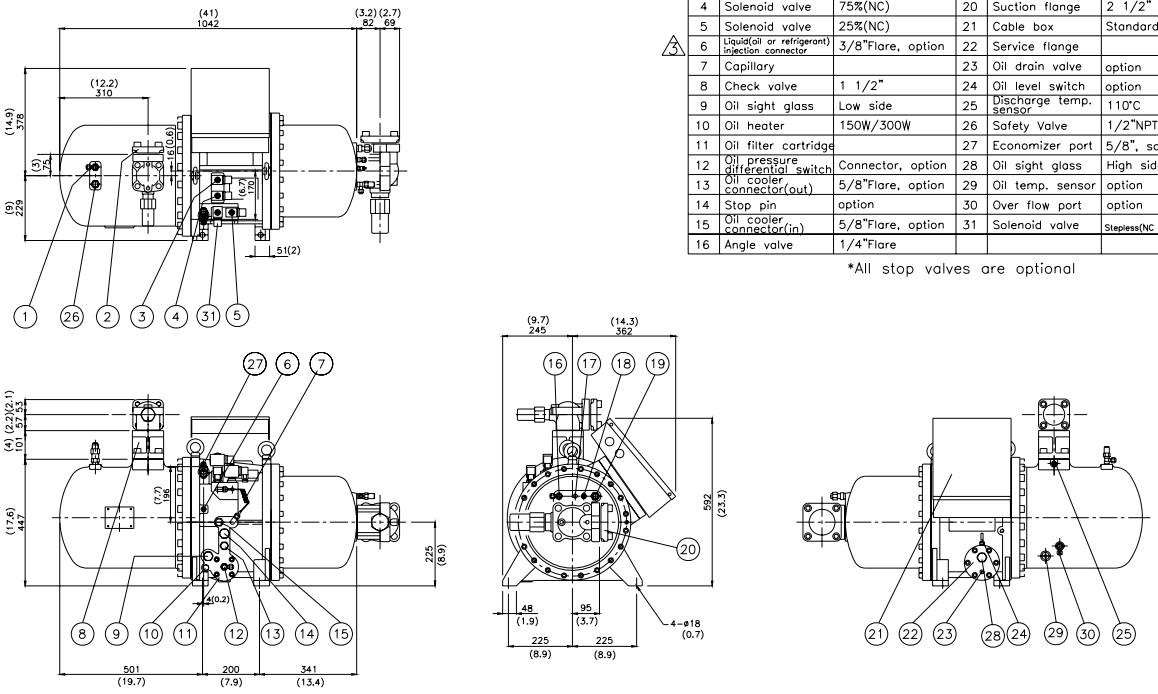
Item	Date	Modification
3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
2		
1		

UNIT
SI: mm Imperial: (in)

Model	RC2-140B
Name	Compressor outline
HANBELL	Ver. 03

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	1 1/2"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	20	Suction flange	2 1/2"
5	Solenoid valve	25%(NC)	21	Cable box	Standard
△3 6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	22	Service flange	
7	Capillary		23	Oil drain valve	option
8	Check valve	1 1/2"	24	Oil level switch	option
9	Oil sight glass	Low side	25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1/2"NPT,option
11	Oil filter cartridge		27	Economizer port	5/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil sight glass	High side
13	Oil cooler connector(out)	5/8"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	5/8"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

*All stop valves are optional



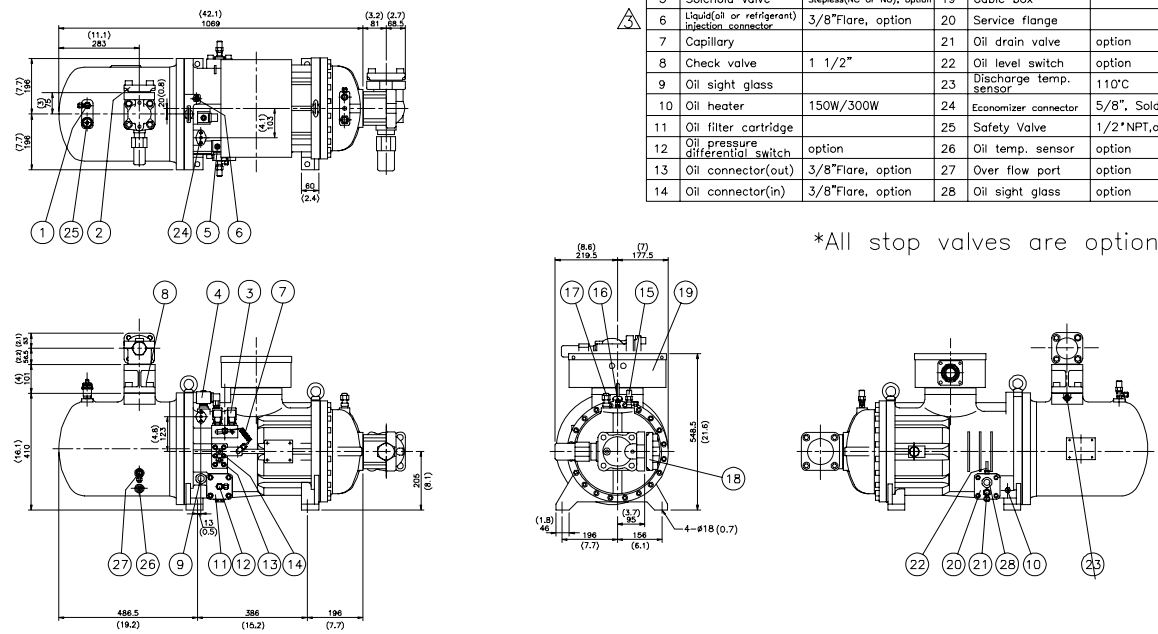
△3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
△2		
△1		
Item	Date	Modification

UNIT
SI: mm Imperial: (in)

Model	RC2-170B
Name	Compressor outline
HANBELL	Ver. 03

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	15	Angle valve	1/4"Flare
2	Discharge flange	1 1/2"	16	Refrigerant service valve	1/4"Flare
3	Solenoid valve	33%(NC)	17	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	66%(NC)	18	Suction flange	2 1/2"
5	Solenoid valve	Stepless(NC or NO), option	19	Cable box	
△3 6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	20	Service flange	
7	Capillary		21	Oil drain valve	option
8	Check valve	1 1/2"	22	Oil level switch	option
9	Oil sight glass		23	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	24	Economizer connector	5/8", Solder
11	Oil filter cartridge		25	Safety Valve	1/2"NPT,option
12	Oil pressure differential switch	option	26	Oil temp. sensor	option
13	Oil connector(out)	3/8"Flare, option	27	Over flow port	option
14	Oil connector(in)	3/8"Flare, option	28	Oil sight glass	option

*All stop valves are optional.



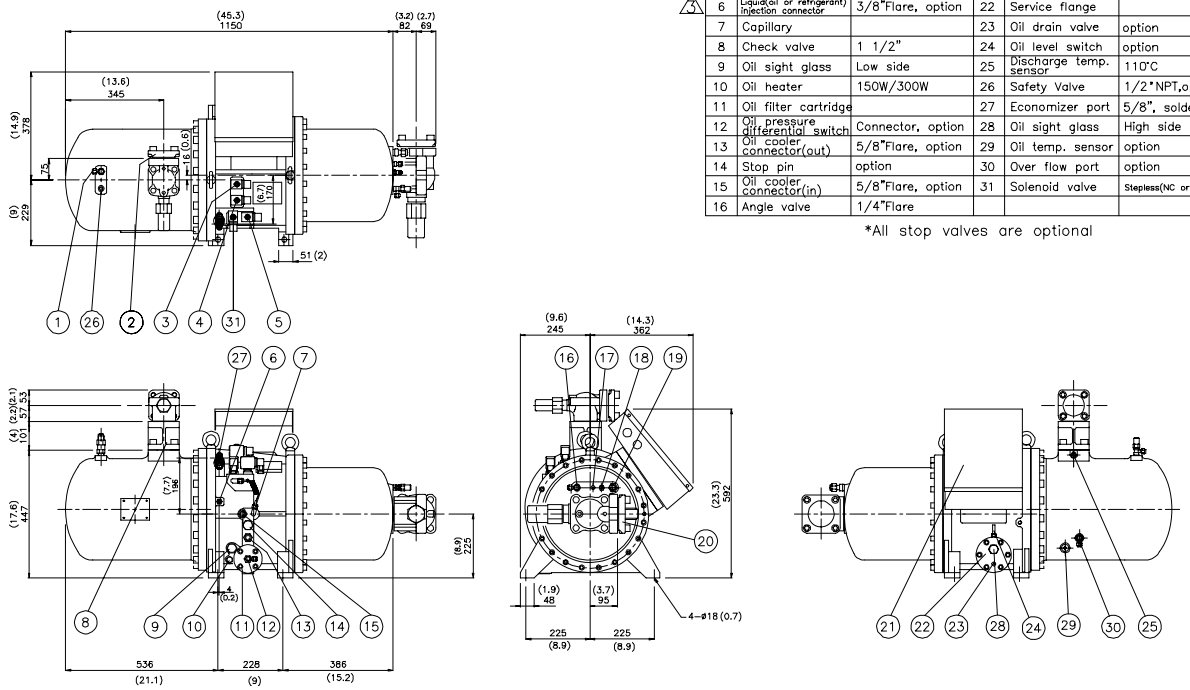
△3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
△2		
△1		
Item	Date	Modification

UNIT
SI: mm Imperial: (in)

Model	RC2-180B
Name	Compressor outline
HANBELL	Ver. 03

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	1 1/2"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	20	Suction flange	2 1/2"
5	Solenoid valve	25%(NC)	21	Cable box	Standard
△3 6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	22	Service flange	
7	Capillary		23	Oil drain valve	option
8	Check valve	1 1/2"	24	Oil level switch	option
9	Oil sight glass	Low side	25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1/2"NPT,option
11	Oil filter cartridge		27	Economizer port	5/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil sight glass	High side
13	Oil cooler connector(out)	5/8"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	5/8"Flare, option	31	Solenoid valve	Stepless(NC or NO),option
16	Angle valve	1/4"Flare			

*All stop valves are optional



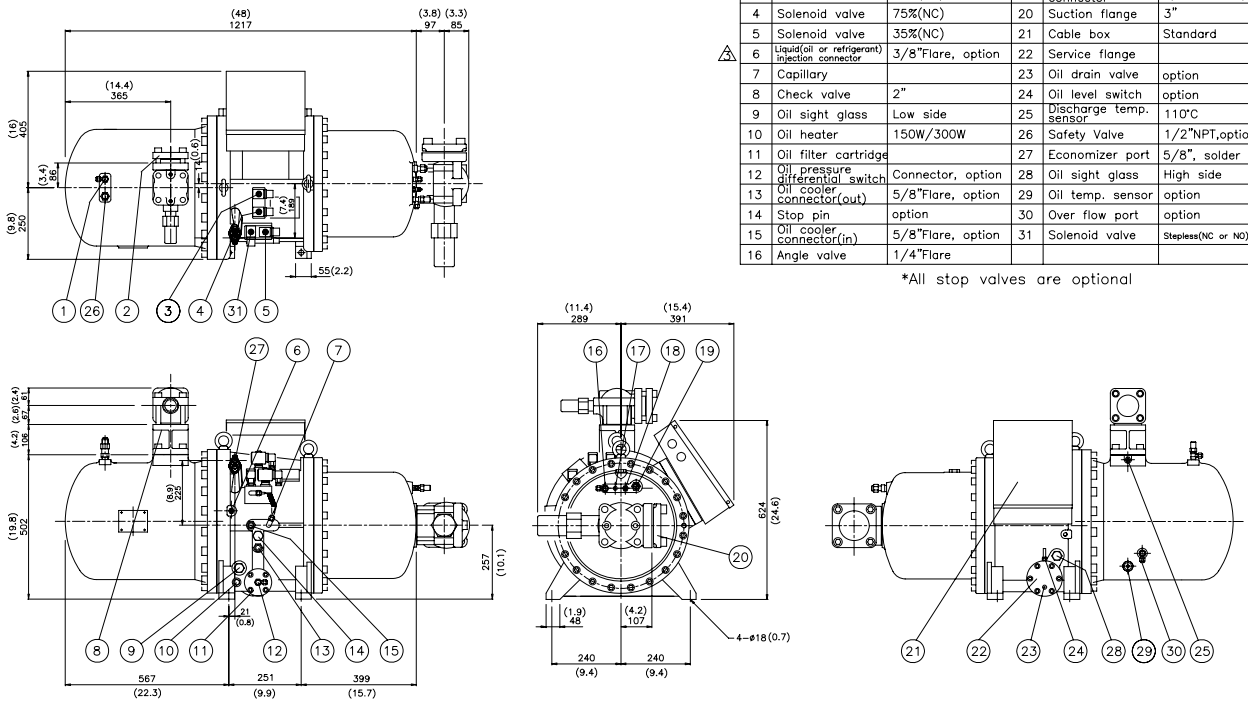
Item	Date	Modification
△3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
△2		
△1		

Model	RC2-200B
Name	Compressor outline
HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	2"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	20	Suction flange	3"
5	Solenoid valve	35%(NC)	21	Cable box	Standard
△3 6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	22	Service flange	
7	Capillary		23	Oil drain valve	option
8	Check valve	2"	24	Oil level switch	option
9	Oil sight glass	Low side	25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1/2"NPT,option
11	Oil filter cartridge		27	Economizer port	5/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil sight glass	High side
13	Oil cooler connector(out)	5/8"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	5/8"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

*All stop valves are optional



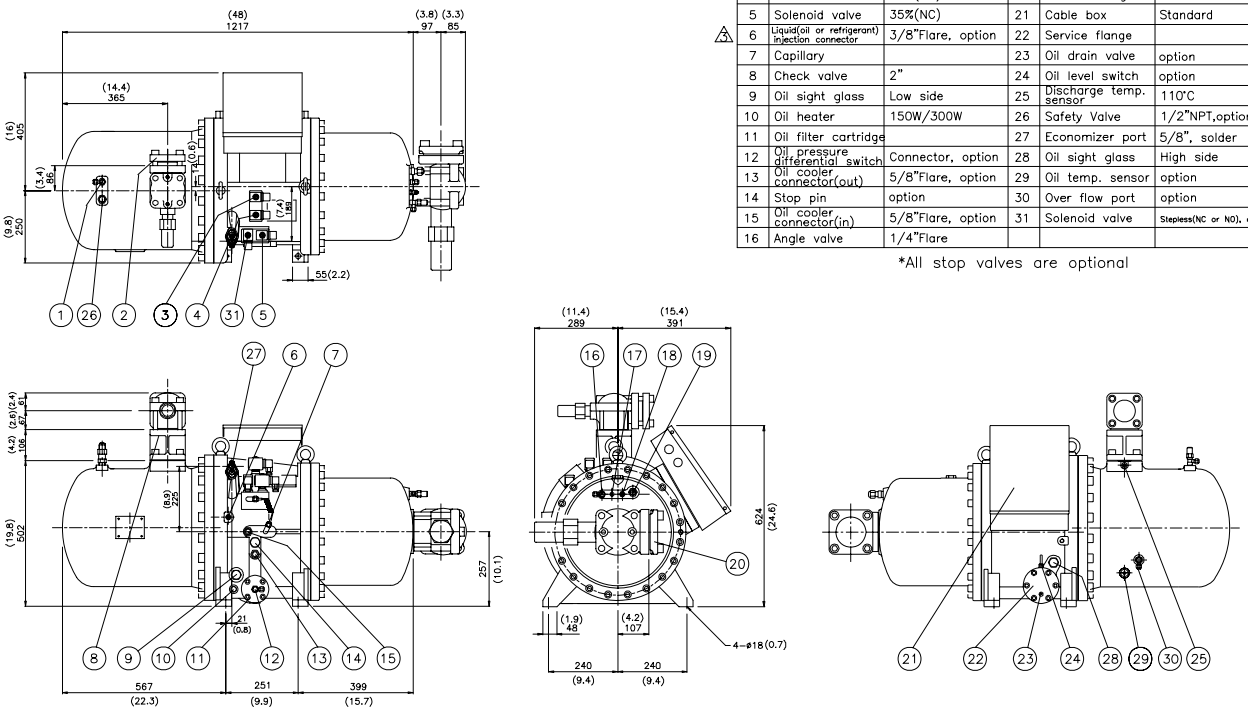
Item	Date	Modification
△3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
△2		
△1		

Model	RC2-230B
Name	Compressor outline
HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	2"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	20	Suction flange	3"
5	Solenoid valve	35%(NC)	21	Cable box	Standard
△3 6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	22	Service flange	
7	Capillary		23	Oil drain valve	option
8	Check valve	2"	24	Oil level switch	option
9	Oil sight glass	Low side	25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1/2"NPT,option
11	Oil filter cartridge		27	Economizer port	5/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil sight glass	High side
13	Oil cooler connector(out)	5/8"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	5/8"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

*All stop valves are optional

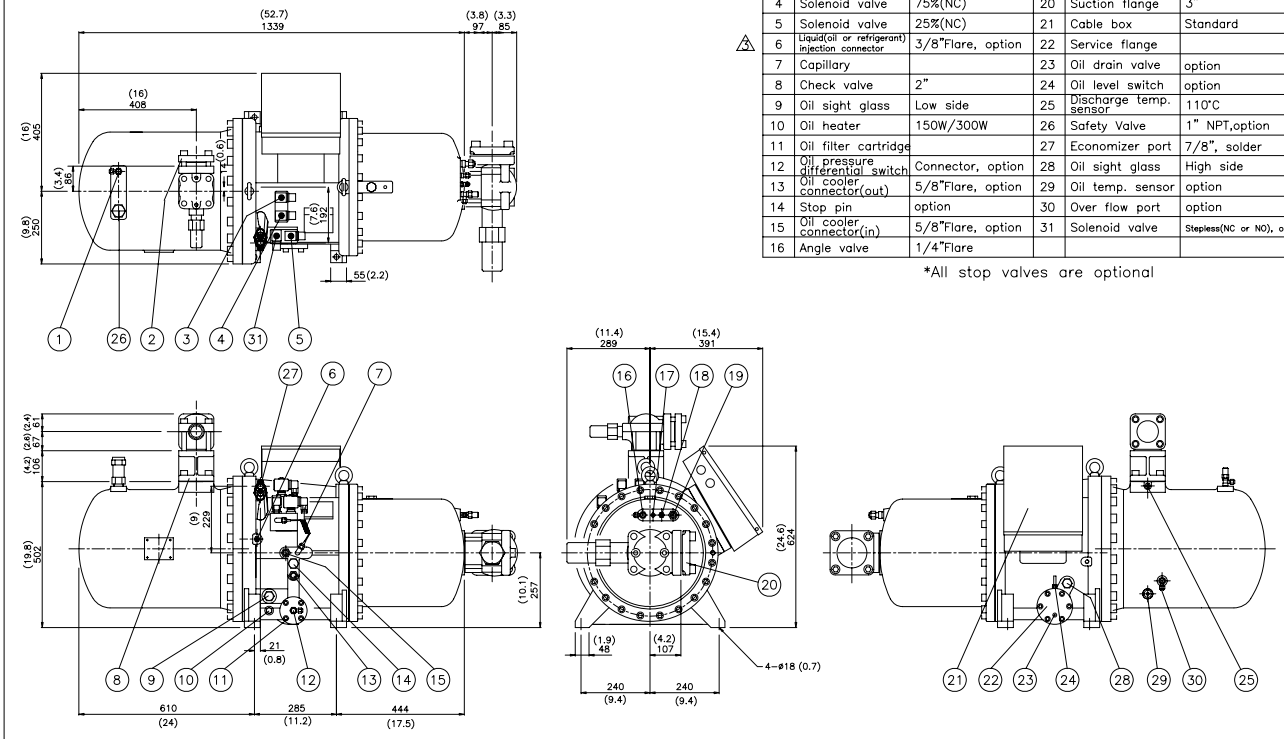


△3	2009.03.26	Liquid injection connector 1/4" change to 3/8"	Model	RC2-260B
△2			Name	Compressor outline
△1			HANBELL	Ver. 03
Item	Date	Modification		

UNIT
SI: mm Imperial: (in)

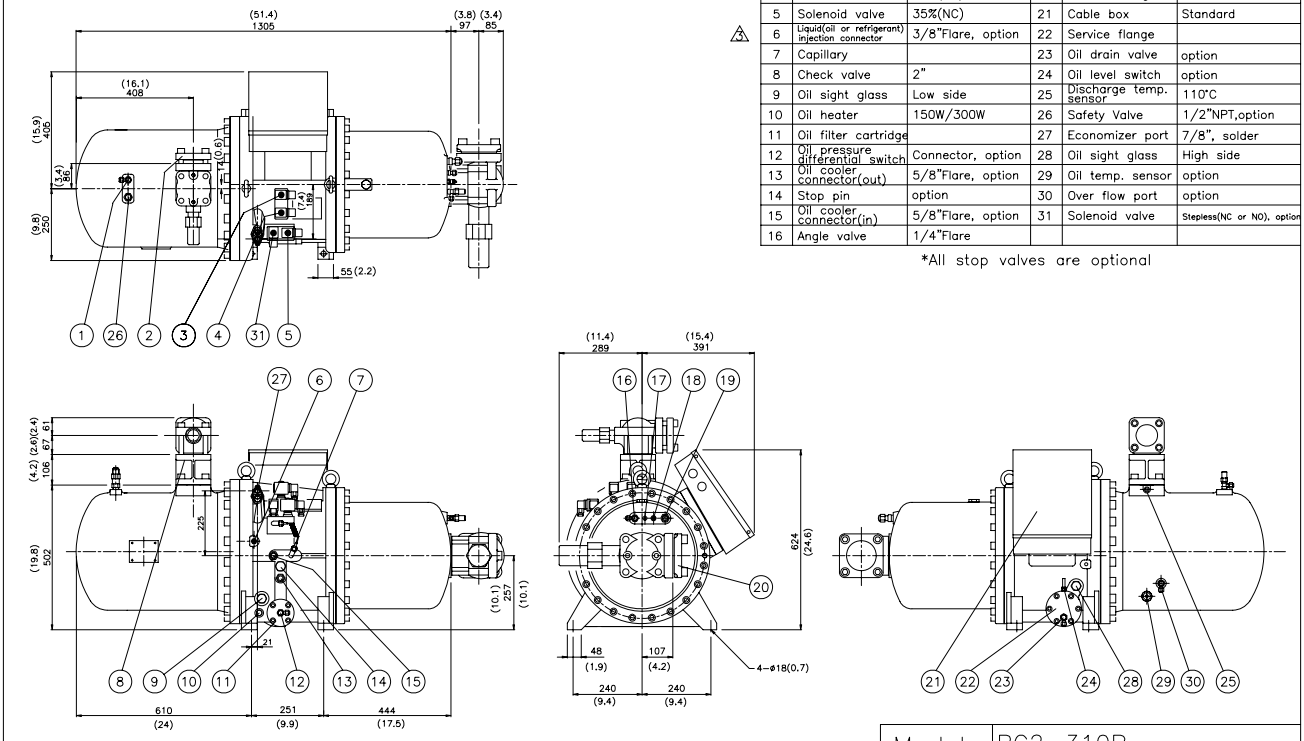
No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	2"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	20	Suction flange	3"
5	Solenoid valve	25%(NC)	21	Cable box	Standard
△3 6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	22	Service flange	
7	Capillary		23	Oil drain valve	option
8	Check valve	2"	24	Oil level switch	option
9	Oil sight glass	Low side	25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1" NPT,option
11	Oil filter cartridge		27	Economizer port	7/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil sight glass	High side
13	Oil cooler connector(out)	5/8"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	5/8"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

*All stop valves are optional



△3	2009.03.26	Liquid injection connector 1/4" change to 3/8"	Model	RC2-300B
△2			Name	Compressor outline
△1			HANBELL	Ver. 03
Item	Date	Modification		

UNIT
SI: mm Imperial: (in)



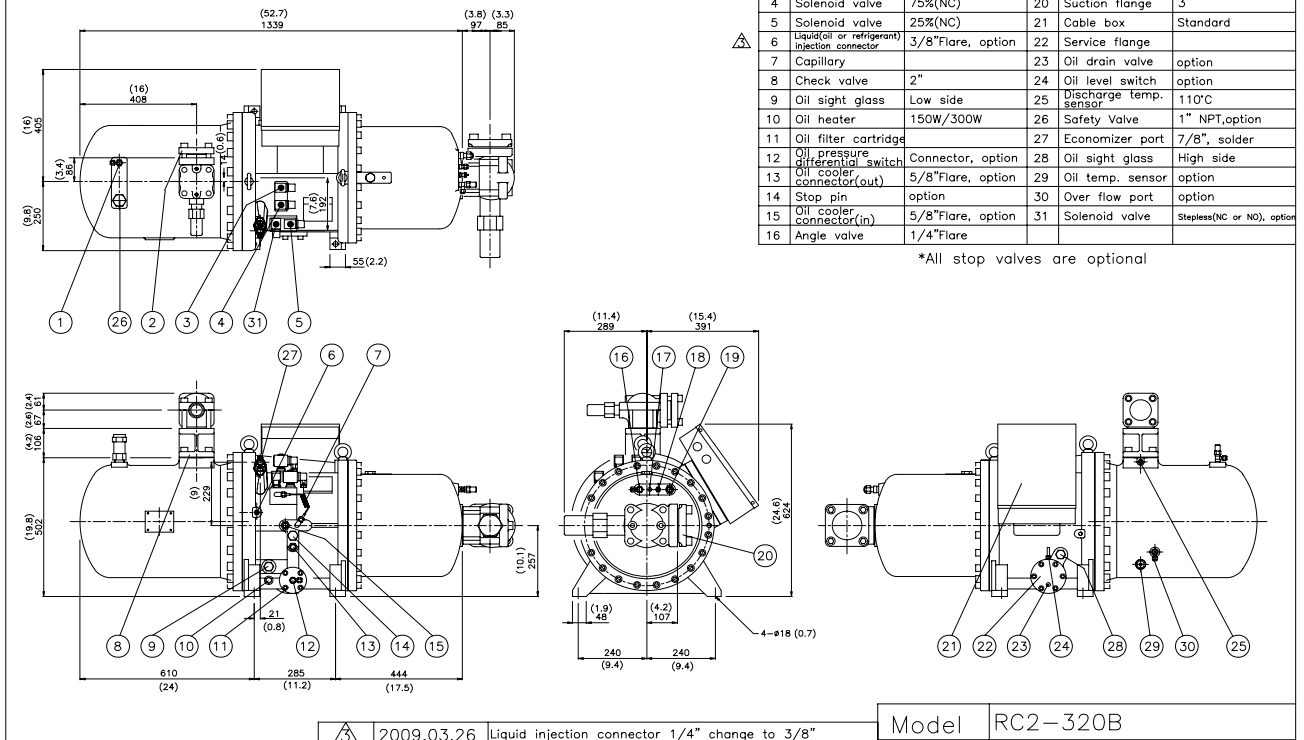
No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	2"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	20	Suction flange	3"
5	Solenoid valve	35%(NC)	21	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	22	Service flange	
7	Capillary		23	Oil drain valve	option
8	Check valve	2"	24	Oil level switch	option
9	Oil sight glass	Low side	25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1/2"NPT,option
11	Oil filter cartridge		27	Economizer port	7/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil sight glass	High side
13	Oil cooler connector(out)	5/8"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	5/8"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

*All stop valves are optional

3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
2		
1		
Item	Date	Modification

Model	RC2-310B
Name	Compressor outline
HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)



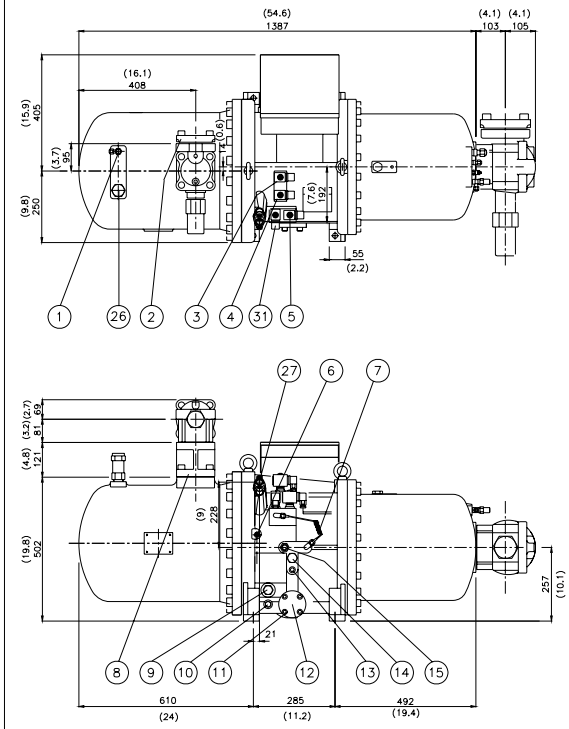
No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	2"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	20	Suction flange	3"
5	Solenoid valve	25%(NC)	21	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	22	Service flange	
7	Capillary		23	Oil drain valve	option
8	Check valve	2"	24	Oil level switch	option
9	Oil sight glass	Low side	25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1" NPT,option
11	Oil filter cartridge		27	Economizer port	7/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil sight glass	High side
13	Oil cooler connector(out)	5/8"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	5/8"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

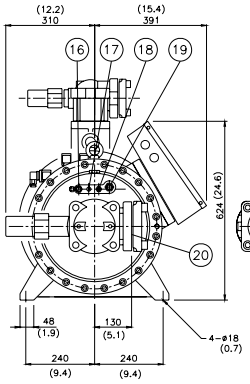
*All stop valves are optional

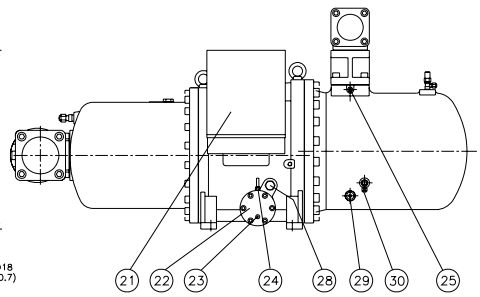
3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
2		
1		
Item	Date	Modification

Model	RC2-320B
Name	Compressor outline
HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)







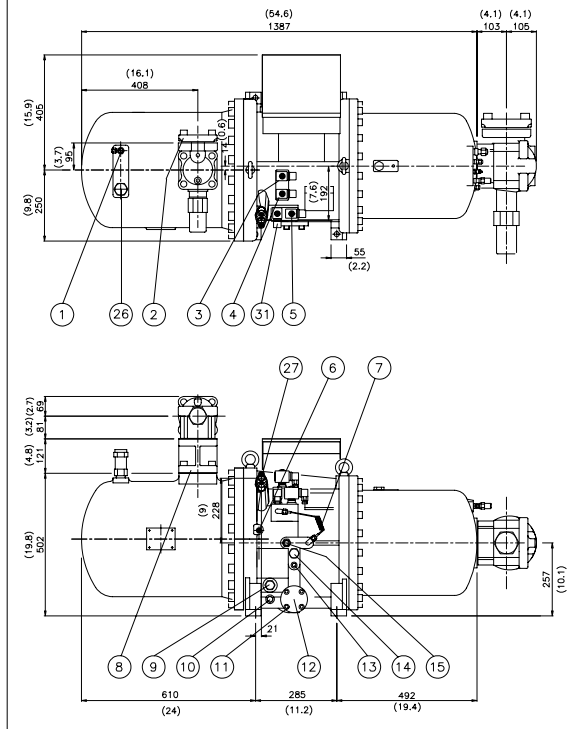
No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	2 1/2"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	20	Suction flange	4"
5	Solenoid valve	35%(NC)	21	Cable box	Standard
6	Liquid injection connector	3/8"Flare, option	22	Service flange	
7	Capillary		23	Oil drain valve	option
8	Check valve	2 1/2"	24	Oil level switch	option
9	Oil sight glass	Low side	25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1"NPT,option
11	Oil filter cartridge		27	Economizer port	7/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil sight glass	High side
13	Oil cooler connector(out)	5/8"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	5/8"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

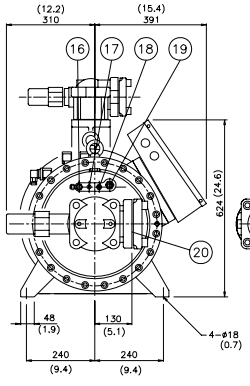
*All stop valves are optional

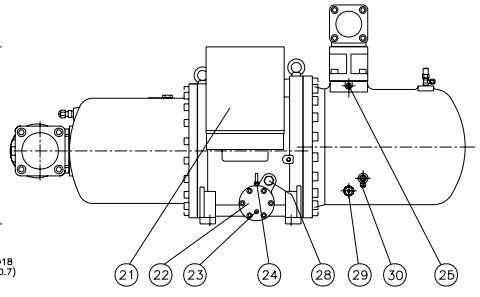
Item	Date	Modification
3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
2		
1		

Model	RC2-340B
Name	Compressor outline
	HANBELL Ver. 03

UNIT
SI: mm Imperial: (in)







No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	2 1/2"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	20	Suction flange	4"
5	Solenoid valve	35%(NC)	21	Cable box	Standard
6	Liquid injection connector	3/8"Flare, option	22	Service flange	
7	Capillary		23	Oil drain valve	option
8	Check valve	2 1/2"	24	Oil level switch	option
9	Oil sight glass	Low side	25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1"NPT,option
11	Oil filter cartridge		27	Economizer port	7/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil sight glass	High side
13	Oil cooler connector(out)	5/8"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	5/8"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

*All stop valves are optional

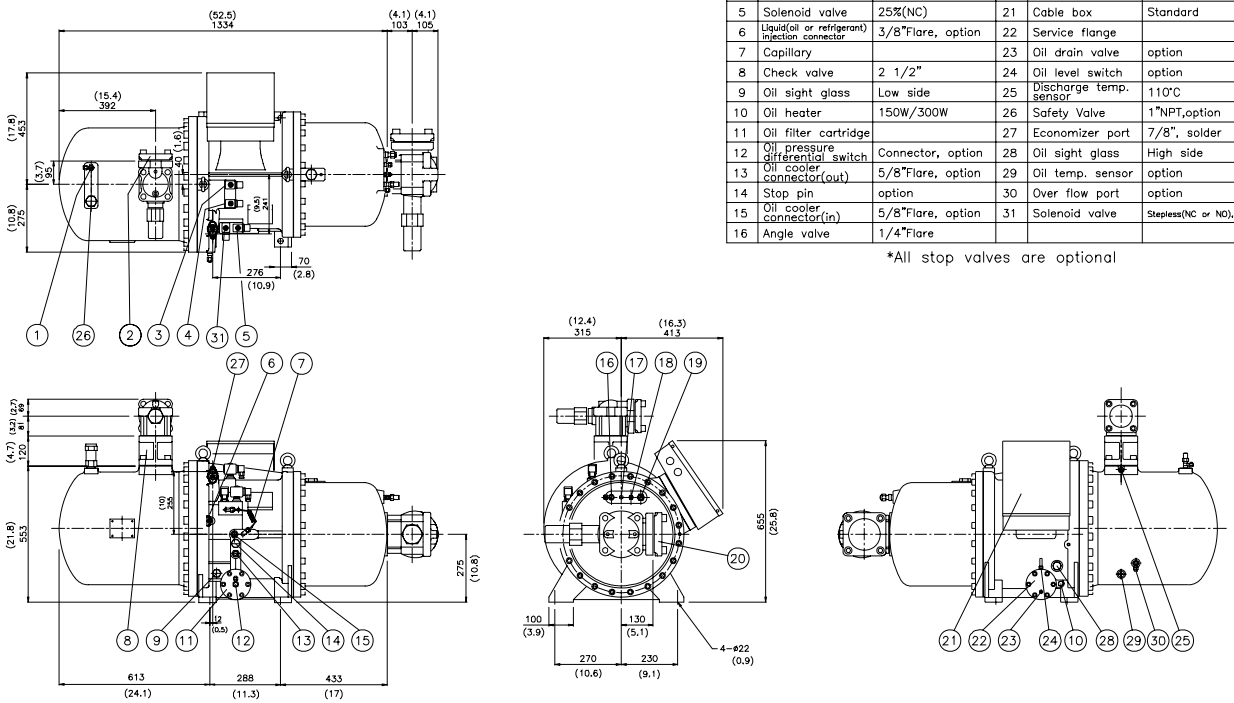
Item	Date	Modification
3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
2		
1		

Model	RC2-370B
Name	Compressor outline
	HANBELL Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	2 1/2"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	20	Suction flange	4"
5	Solenoid valve	25%(NC)	21	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	22	Service flange	
7	Capillary		23	Oil drain valve	option
8	Check valve	2 1/2"	24	Oil level switch	option
9	Oil sight glass	Low side	25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1"NPT,option
11	Oil filter cartridge		27	Economizer port	7/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil sight glass	High side
13	Oil cooler connector(out)	5/8"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	5/8"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

*All stop valves are optional

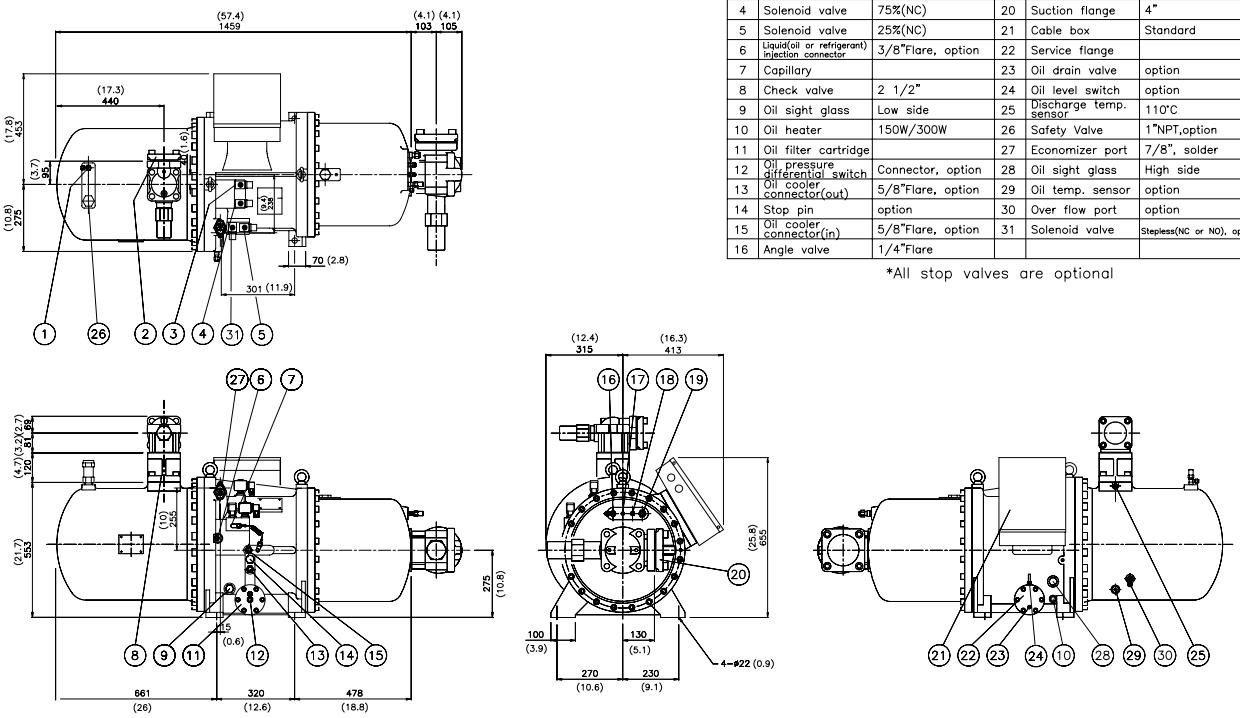


3	2009.03.26	Riss in motor casing have seen removed	Model	RC2-410B
2			Name	Compressor outline
1			HANBELL	Ver. 03
Item	Date	Modification		

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	2 1/2"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	20	Suction flange	4"
5	Solenoid valve	25%(NC)	21	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	22	Service flange	
7	Capillary		23	Oil drain valve	option
8	Check valve	2 1/2"	24	Oil level switch	option
9	Oil sight glass	Low side	25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1"NPT,option
11	Oil filter cartridge		27	Economizer port	7/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil sight glass	High side
13	Oil cooler connector(out)	5/8"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	5/8"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

*All stop valves are optional

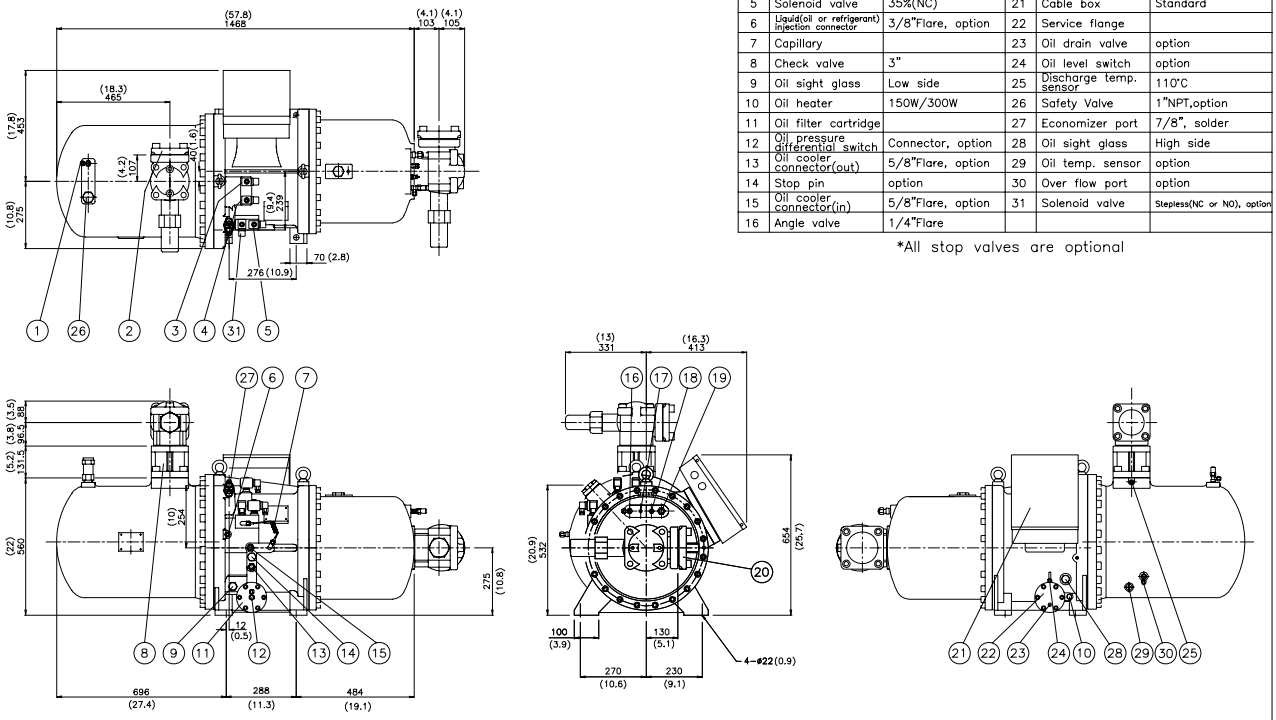


3	2009.03.26	Riss in motor casing have seen removed	Model	RC2-470B
2			Name	Compressor outline
1			HANBELL	Ver. 03
Item	Date	Modification		

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	3"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	20	Suction flange	4"
5	Solenoid valve	35%(NC)	21	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	22	Service flange	
7	Capillary		23	Oil drain valve	option
8	Check valve	3"	24	Oil level switch	option
9	Oil sight glass	Low side	25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1"NPT,option
11	Oil filter cartridge		27	Economizer port	7/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil sight glass	High side
13	Oil cooler connector(out)	5/8"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	5/8"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

*All stop valves are optional



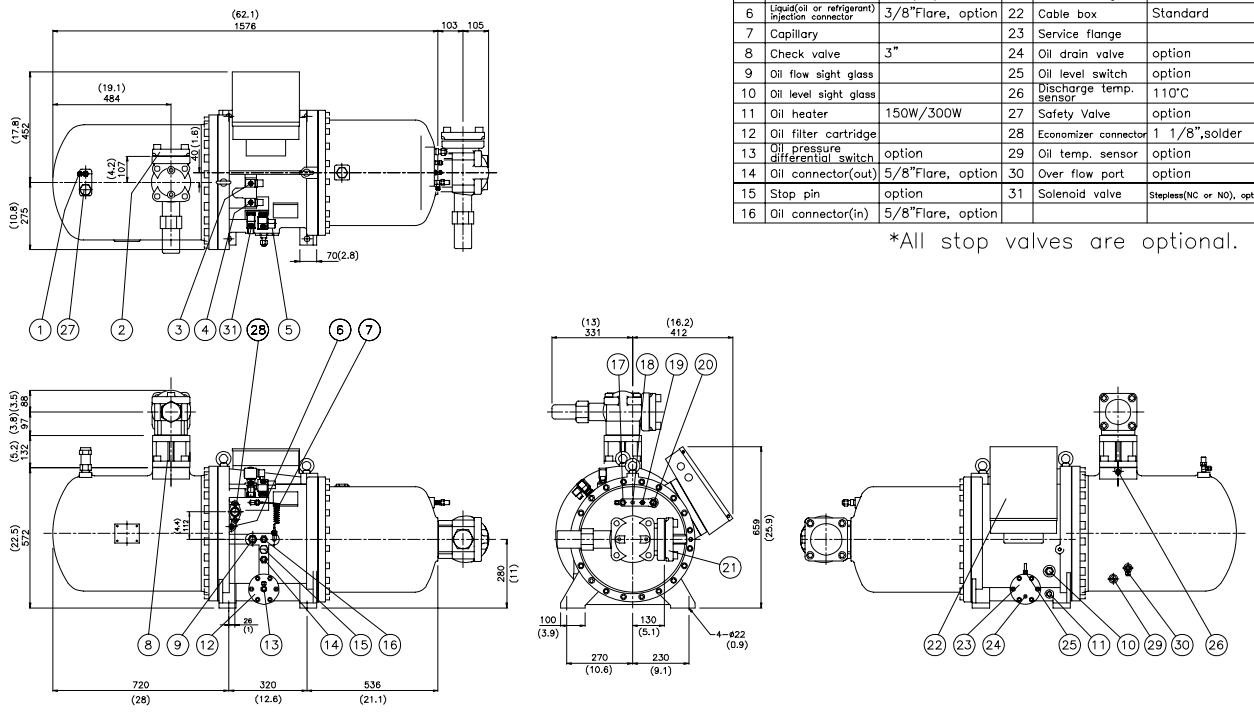
UNIT
SI: mm Imperial: (in)

Item	Date	Modification
3	2009.03.26	Riss in motor casing have seen removed
2		
1		

Model	RC2-510B
Name	Compressor outline
HANBELL	Ver. 03

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Angle valve	1/4"Flare
2	Discharge flange	3"	18	Refrigerant service valve	1/4"Flare
3	Solenoid valve	50%(NC)	19	Connector	1/4"Flare
4	Solenoid valve	75%(NC)	20	Liquid injection connector	5/8"Flare, option
5	Solenoid valve	25%(NC)	21	Suction flange	4"
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	22	Cable box	Standard
7	Capillary		23	Service flange	
8	Check valve	3"	24	Oil drain valve	option
9	Oil flow sight glass		25	Oil level switch	option
10	Oil level sight glass		26	Discharge temp. sensor	110°C
11	Oil heater	150W/300W	27	Safety Valve	option
12	Oil filter cartridge		28	Economizer connector	1 1/8",solder
13	Oil pressure differential switch	option	29	Oil temp. sensor	option
14	Oil connector(out)	5/8"Flare, option	30	Over flow port	option
15	Stop pin	option	31	Solenoid valve	Stepless(NC or NO), option
16	Oil connector(in)	5/8"Flare, option			

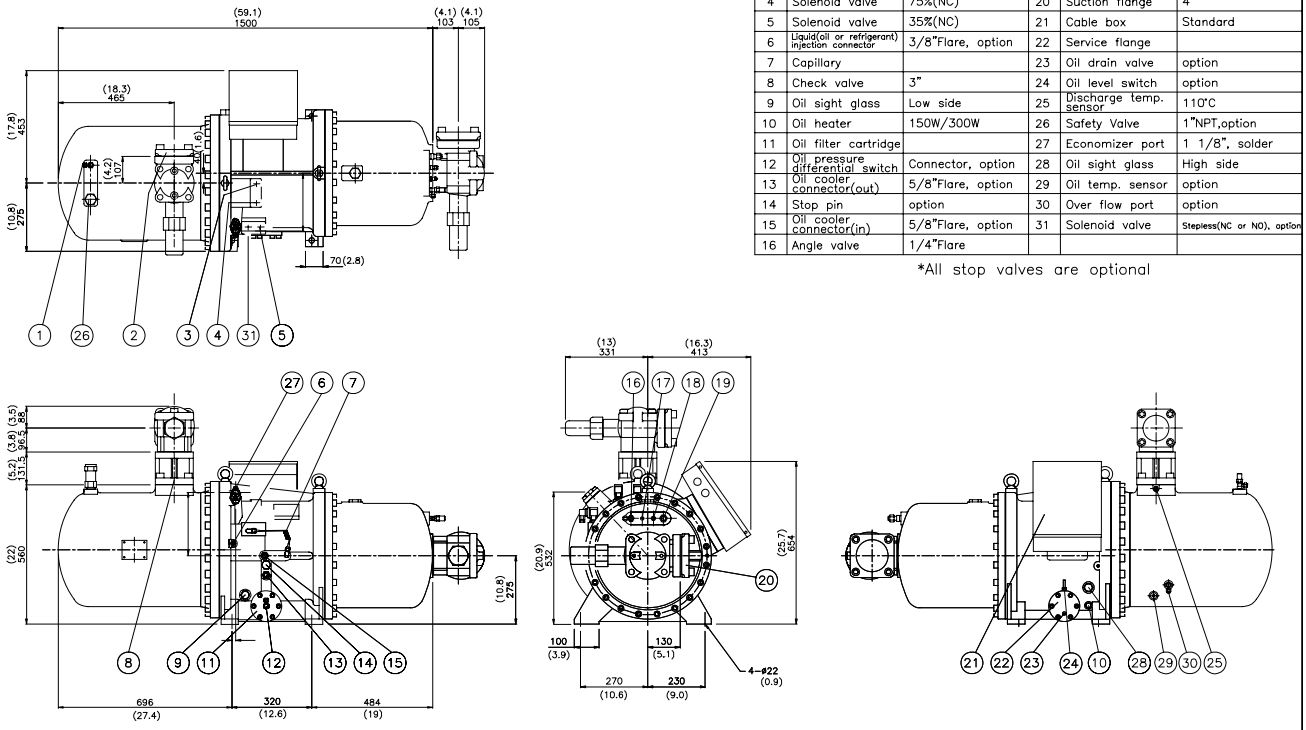
*All stop valves are optional.



Model	RC2-550B
Name	Compressor outline
HANBELL	Ver. 03

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	3"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	20	Suction flange	4"
5	Solenoid valve	35%(NC)	21	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	22	Service flange	
7	Capillary		23	Oil drain valve	option
8	Check valve	3"	24	Oil level switch	option
9	Oil sight glass	Low side	25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1"NPT,option
11	Oil filter cartridge		27	Economizer port	1 1/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil sight glass	High side
13	Oil cooler connector(out)	5/8"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	5/8"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

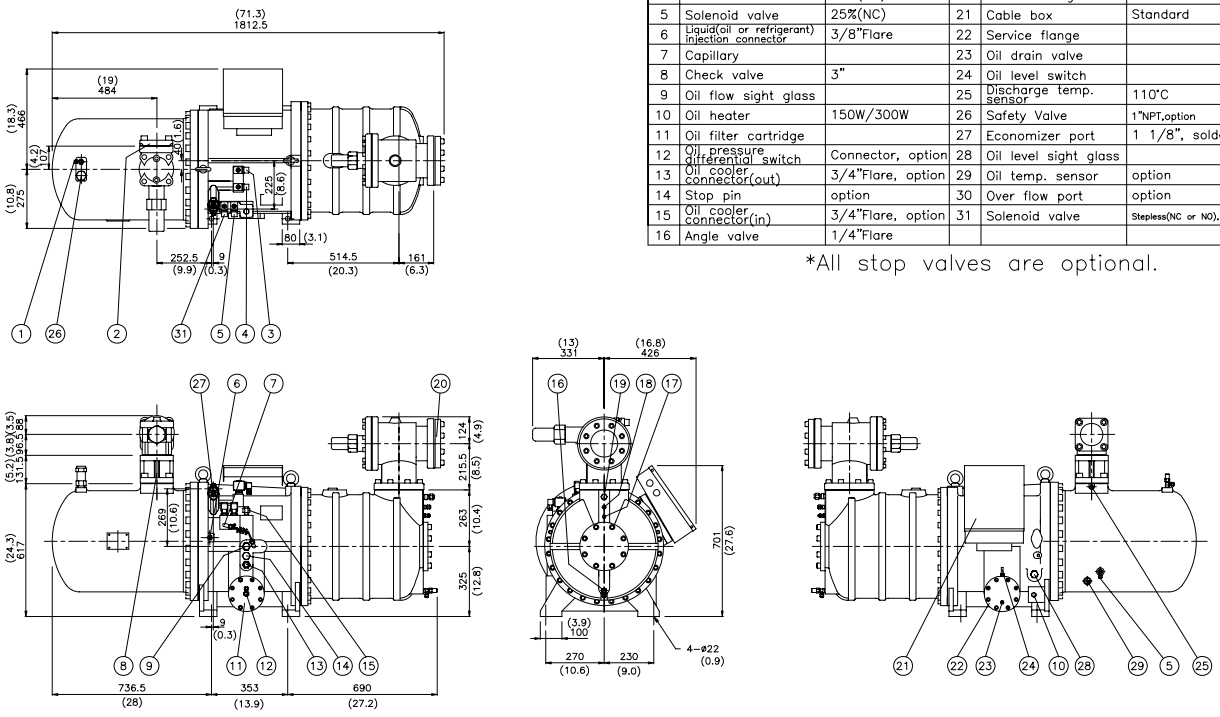
*All stop valves are optional



3	2009.03.26	Riss in motor casing have seen removed	Model	RC2-580B
2			Name	Compressor outline
1			HANBELL	Ver. 03
Item	Date	Modification		

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	3"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare
4	Solenoid valve	75%(NC)	20	Suction flange	5"
5	Solenoid valve	25%(NC)	21	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare	22	Service flange	
7	Capillary		23	Oil drain valve	
8	Check valve	3"	24	Oil level switch	
9	Oil flow sight glass		25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1"NPT,option
11	Oil filter cartridge		27	Economizer port	1 1/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil level sight glass	
13	Oil cooler connector(out)	3/4"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	3/4"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

*All stop valves are optional.

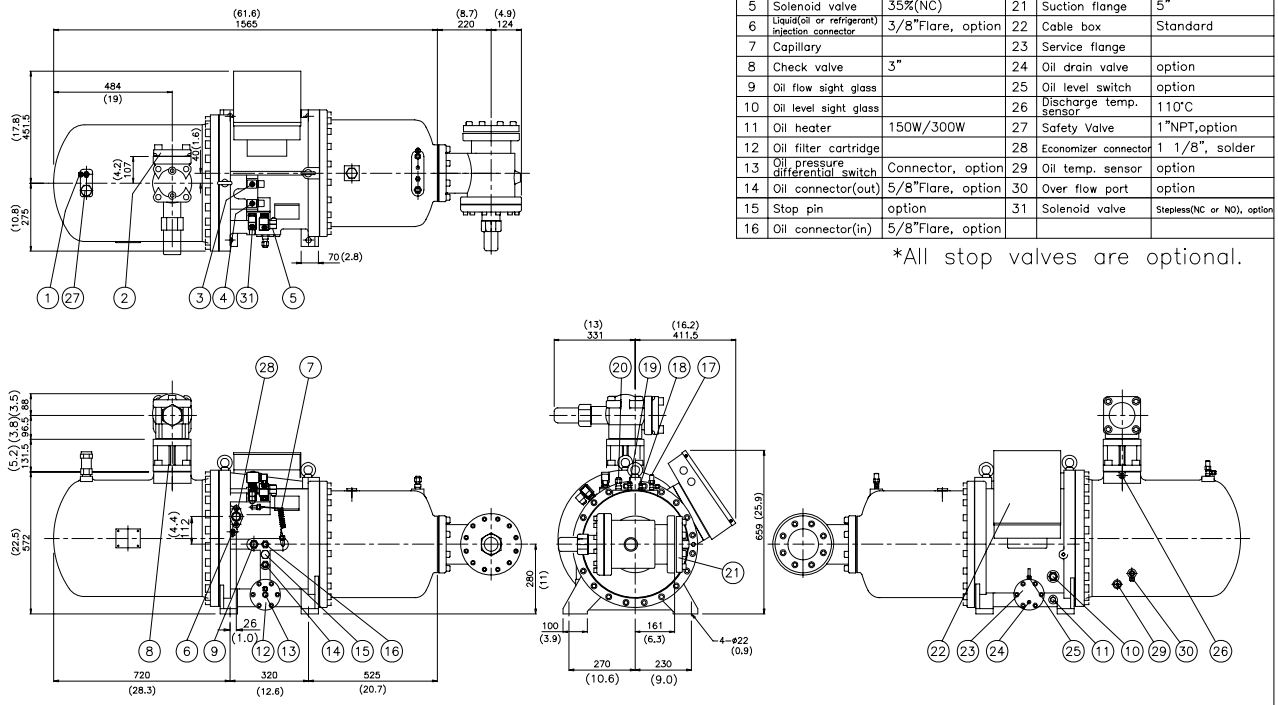


UNIT:
SI: mm Imperial: (in)

3	2009.03.26	Riss in motor casing have seen removed	Model	RC2-610B
2			Name	Compressor outline
1			HANBELL	Ver. 03
Item	Date	Modification		

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Angle valve	1/4"Flare
2	Discharge flange	3"	18	Refrigerant service valve	1/4"Flare
3	Solenoid valve	50%(NC)	19	Connector	1/4"Flare
4	Solenoid valve	75%(NC)	20	Liquid injection connector	5/8"Flare, option
5	Solenoid valve	35%(NC)	21	Suction flange	5"
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	22	Cable box	Standard
7	Capillary		23	Service flange	
8	Check valve	3"	24	Oil drain valve	option
9	Oil flow sight glass		25	Oil level switch	option
10	Oil level sight glass		26	Discharge temp. sensor	110°C
11	Oil heater	150W/300W	27	Safety Valve	1"NPT,option
12	Oil filter cartridge		28	Economizer connector	1 1/8", solder
13	Oil pressure differential switch	Connector, option	29	Oil temp. sensor	option
14	Oil connector(out)	5/8"Flare, option	30	Over flow port	option
15	Stop pin	option	31	Solenoid valve	Stepless(NC or NO), option
16	Oil connector(in)	5/8"Flare, option			

*All stop valves are optional.

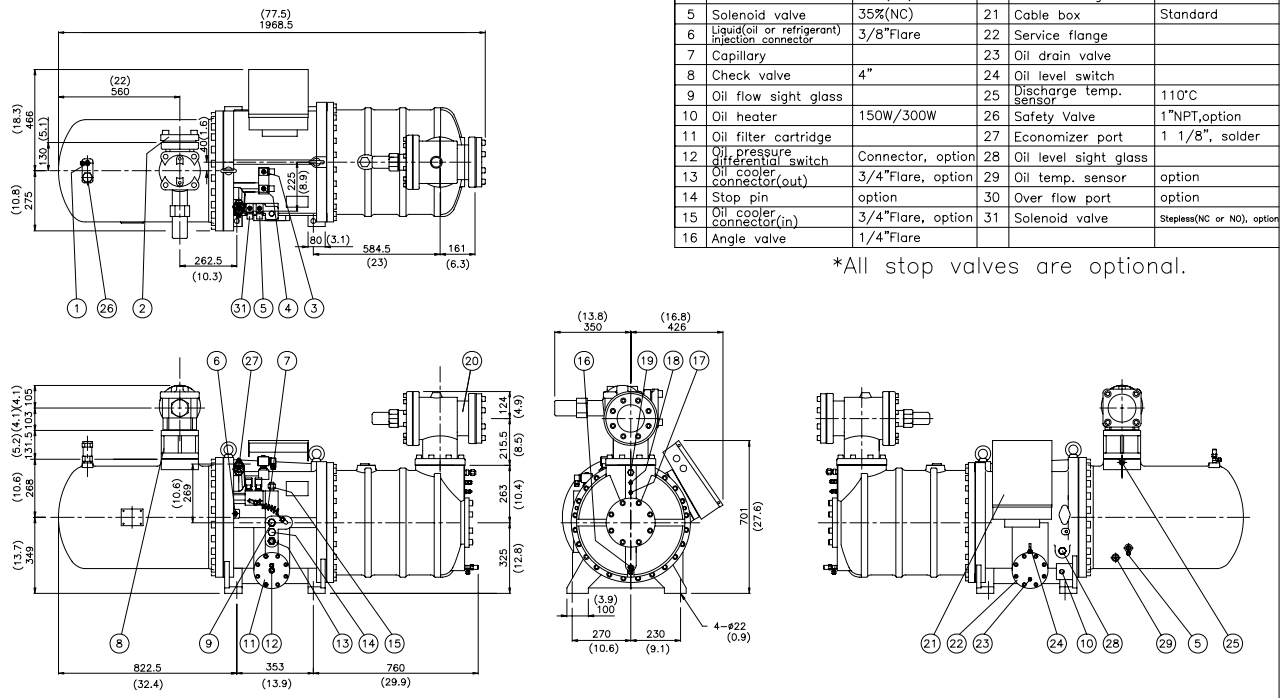


3	2009.03.26	Riss in motor casing have seen removed	Model	RC2-620B
2			Name	Compressor outline
1			HANBELL	Ver. 03
Item	Date	Modification		

UNIT:
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	4"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare
4	Solenoid valve	75%(NC)	20	Suction flange	5"
5	Solenoid valve	35%(NC)	21	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare	22	Service flange	
7	Capillary		23	Oil drain valve	
8	Check valve	4"	24	Oil level switch	
9	Oil flow sight glass		25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1"NPT,option
11	Oil filter cartridge		27	Economizer port	1 1/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil level sight glass	
13	Oil cooler connector(out)	3/4"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	3/4"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

*All stop valves are optional.

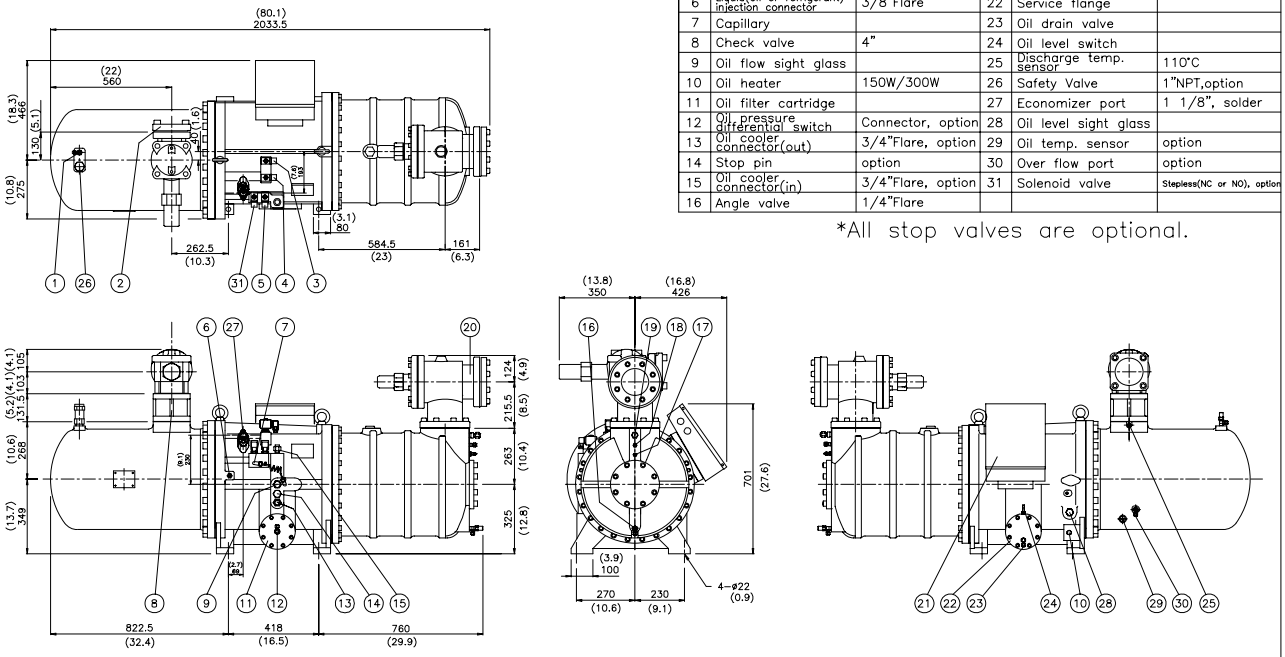


3	2009.03.26	Riss in motor casing have seen removed	Model	RC2-710B
2			Name	Compressor outline
1			HANBELL	Ver. 03
Item	Date	Modification		

UNIT:
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	4"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare
4	Solenoid valve	75%(NC)	20	Suction flange	5"
5	Solenoid valve	30%(NC)	21	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare	22	Service flange	
7	Capillary		23	Oil drain valve	
8	Check valve	4"	24	Oil level switch	
9	Oil flow sight glass		25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1"NPT,option
11	Oil filter cartridge		27	Economizer port	1 1/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil level sight glass	
13	Oil cooler connector(out)	3/4"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	3/4"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

*All stop valves are optional.



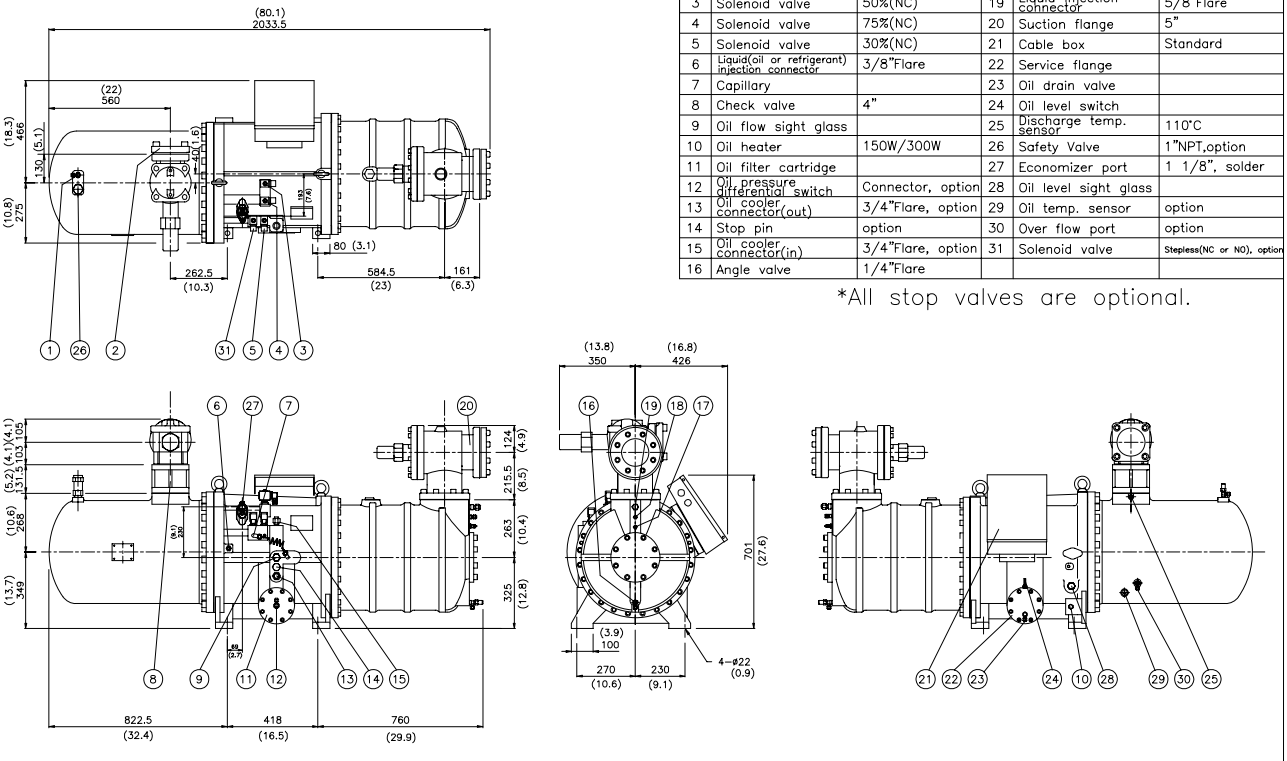
Item	Date	Modification
3	2009.03.26	Riss in motor casing have seen removed
2		
1		

Model	RC2-790B
Name	Compressor outline
HANBELL	Ver. 03

UNIT:
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	4"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare
4	Solenoid valve	75%(NC)	20	Suction flange	5"
5	Solenoid valve	30%(NC)	21	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare	22	Service flange	
7	Capillary		23	Oil drain valve	
8	Check valve	4"	24	Oil level switch	
9	Oil flow sight glass		25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	1"NPT,option
11	Oil filter cartridge		27	Economizer port	1 1/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil level sight glass	
13	Oil cooler connector(out)	3/4"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	3/4"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

*All stop valves are optional.



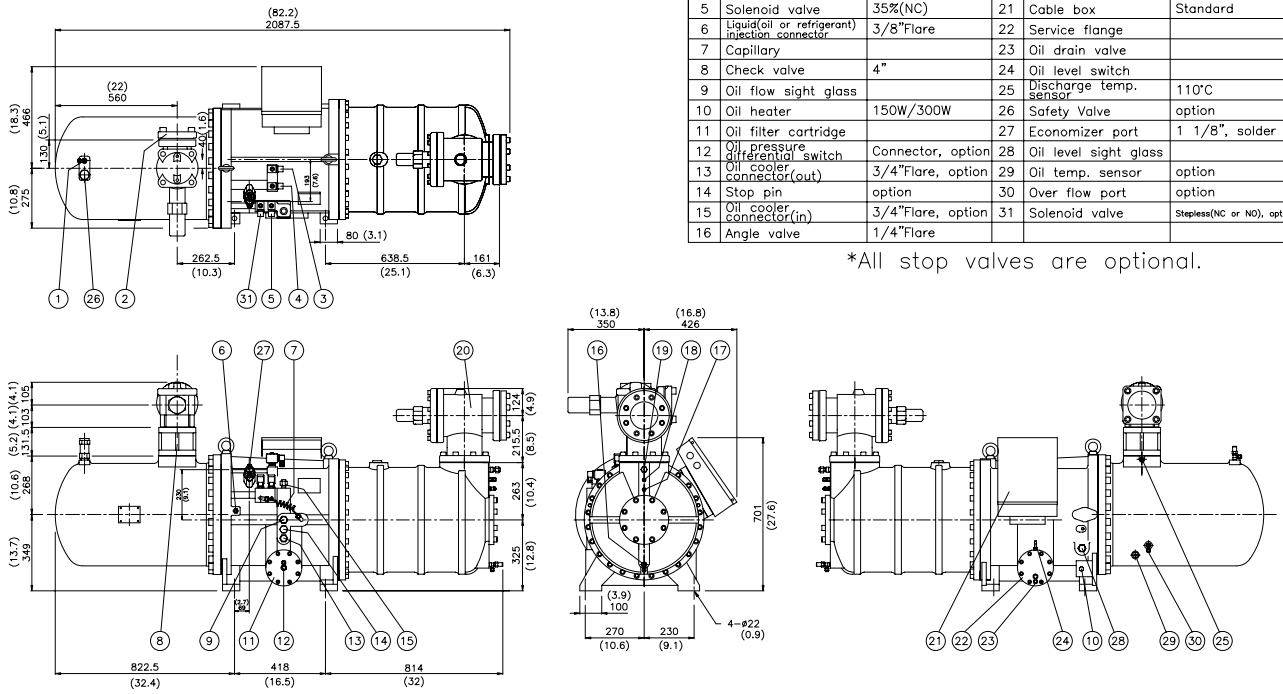
Item	Date	Modification
3		
2		
1		

Model	RC2-830B
Name	Compressor outline
HANBELL	Ver. 03

UNIT:
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	17	Refrigerant service valve	1/4"Flare
2	Discharge flange	4"	18	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	19	Liquid injection connector	5/8"Flare
4	Solenoid valve	75%(NC)	20	Suction flange	5"
5	Solenoid valve	35%(NC)	21	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare	22	Service flange	
7	Capillary		23	Oil drain valve	
8	Check valve	4"	24	Oil level switch	
9	Oil flow sight glass		25	Discharge temp. sensor	110°C
10	Oil heater	150W/300W	26	Safety Valve	option
11	Oil filter cartridge		27	Economizer port	1 1/8", solder
12	Oil pressure differential switch	Connector, option	28	Oil level sight glass	
13	Oil cooler connector(out)	3/4"Flare, option	29	Oil temp. sensor	option
14	Stop pin	option	30	Over flow port	option
15	Oil cooler connector(in)	3/4"Flare, option	31	Solenoid valve	Stepless(NC or NO), option
16	Angle valve	1/4"Flare			

*All stop valves are optional.

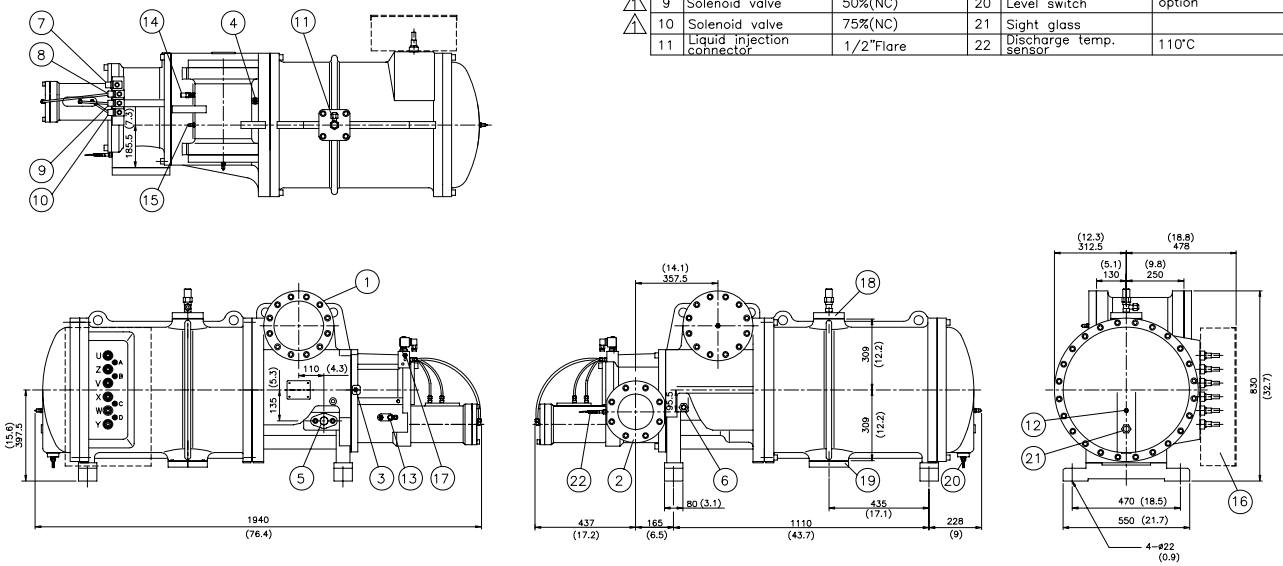


Item	Date	Modification
3		
2		
1		

Model	RC2-930B
Name	Compressor outline
HANBELL	Ver. 03

UNIT:
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Suction flange	6"	12	Refrigerant service valve	1/4"Flare
2	Discharge flange	5"	13	Angle valve	1/4"Flare
3	Oil connector	1/4"Flare	14	Angel valve	1/4"Flare
4	Oil connector	3/8"Flare	15	Refrigerant service valve	1/4"Flare
5	Economizer port	1 1/8", solder	16	Cable box	
6	Oil injection connector	5/8"Flare	17	Modulation control oil connector	1/4"Flare
7	Solenoid valve	Stepless(NC or NO),option	18	Economizer flangle(in)	2 1/2"
8	Solenoid valve	35%(NC)	19	Economizer flangle(out)	4"
9	Solenoid valve	50%(NC)	20	Level switch	option
10	Solenoid valve	75%(NC)	21	Sight glass	
11	Liquid injection connector	1/2"Flare	22	Discharge temp. sensor	110°C



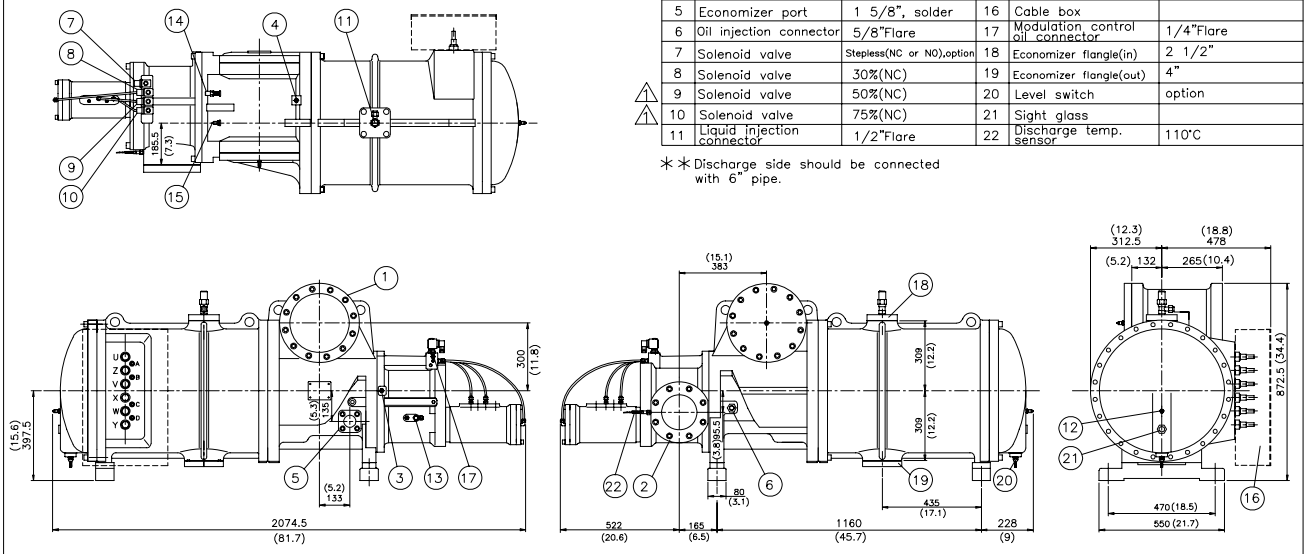
Item	Date	Modification
3		
2		
1	2009.09.15	Modified the positions of partial loads for 50% and 75%

Model	RC2-1090B
Name	Compressor outline
HANBELL	Ver. 03

UNIT:
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Suction flange	8"	12	Refrigerant service valve	1/4"Flare
2	Discharge flange	5"	13	Angle valve	1/4"Flare
3	Oil connector	1/4"Flare	14	Angel valve	1/4"Flare
4	Oil connector	3/8"Flare	15	Refrigerant service valve	1/4"Flare
5	Economizer port	1 5/8", solder	16	Cable box	
6	Oil injection connector	5/8"Flare	17	Modulation control oil connector	1/4"Flare
7	Solenoid valve	Stepless(NC or NO),option	18	Economizer flangle(in)	2 1/2"
8	Solenoid valve	30%(NC)	19	Economizer flangle(out)	4"
9	Solenoid valve	50%(NC)	20	Level switch	option
10	Solenoid valve	75%(NC)	21	Sight glass	
11	Liquid injection connector	1/2"Flare	22	Discharge temp. sensor	110°C

∗∗Discharge side should be connected with 6" pipe.



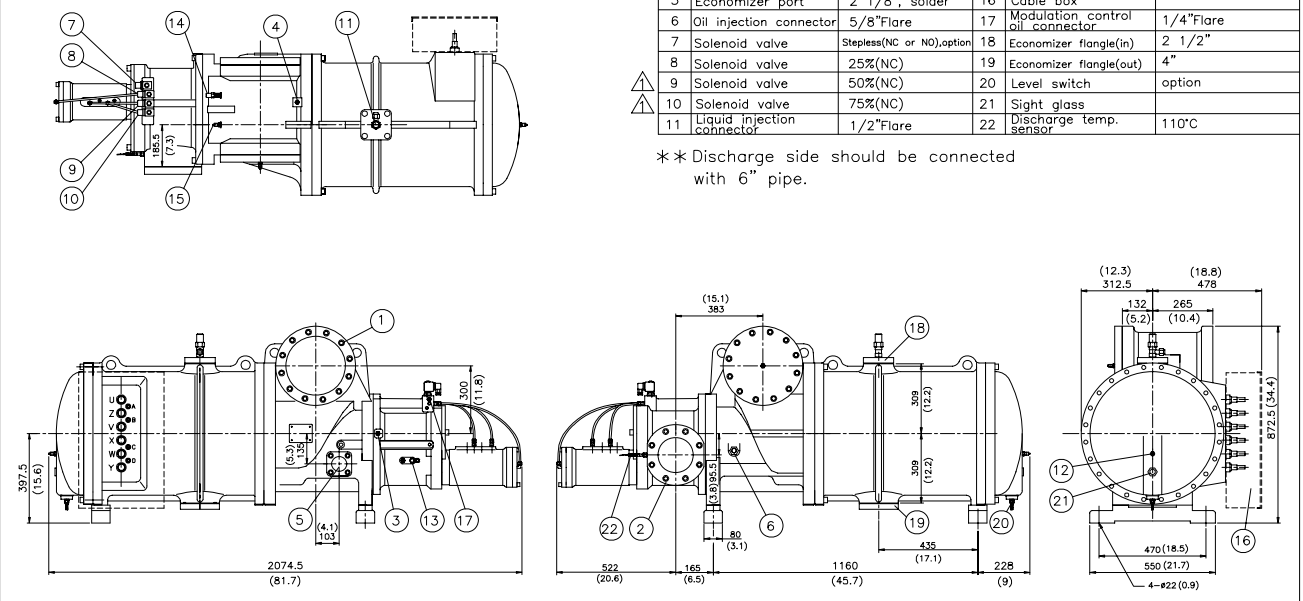
Item	Date	Modification
3		
2		
1	2009.09.15	Modified the positions of partial loads for 50% and 75%

Model	RC2-1280B
Name	Compressor outline
HANBELL	Ver. 03

UNIT:
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Suction flange	8"	12	Refrigerant service valve	1/4"Flare
2	Discharge flange	5"	13	Angle valve	1/4"Flare
3	Oil connector	1/4"Flare	14	Angel valve	1/4"Flare
4	Oil connector	3/8"Flare	15	Refrigerant service valve	1/4"Flare
5	Economizer port	2 1/8", solder	16	Cable box	
6	Oil injection connector	5/8"Flare	17	Modulation control oil connector	1/4"Flare
7	Solenoid valve	Stepless(NC or NO),option	18	Economizer flangle(in)	2 1/2"
8	Solenoid valve	25%(NC)	19	Economizer flangle(out)	4"
9	Solenoid valve	50%(NC)	20	Level switch	option
10	Solenoid valve	75%(NC)	21	Sight glass	
11	Liquid injection connector	1/2"Flare	22	Discharge temp. sensor	110°C

∗∗Discharge side should be connected with 6" pipe.



Item	Date	Modification
3		
2		
1	2009.09.15	Modified the positions of partial loads for 50% and 75%

Model	RC2-1520B
Name	Compressor outline
HANBELL	Ver. 03

UNIT:
SI: mm Imperial: (in)

4.4 Compressors accessories

To supply “Total Solution” for customers, Hanbell designs complete standard and optional accessories according to various application requirements for safe and steady running and best performance of compressors

1. Compressors standard and optional accessories

● **: Standard,** △ **: Optional**

Model & Accessory	RC2-																								
	100	140	170	180	200	230	260	300	310	320	340	370	410	470	510	550	580	610	620	710	790	830	930	1090	1280	1520
Steps or Step-less capacity control system	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Compatible Steps& step-less capacity control system	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
Discharge check valve	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Suction & discharge connection bushings	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Suction & discharge stop valves	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
INT 69 controller	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PTC temp. sensor	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
INT69Y controller	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
INT69HBY controller	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
IP54 cable box	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
150W oil heater	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	X	X	X
Oil level switch	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	X	X	X
Oil drain valve	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
Liquid injection system (solenoid valve + expansion valve)	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
Liquid injection system (solenoid valve + stop valve)	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
Horizontal check valve	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	●	●	●
External oil separator	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
External oil filter	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
Oil flow switch	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
Economizer	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
Economizer connection stop valve	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
Oil cooler	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
Oil pump	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
Oil filter pressure differential switch	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
Safety valve	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
Explosion proof accessories	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
Mounting pad	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
Lubricant oil	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
Micro controller	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
Sound jacket	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
Temperature sensors Pt100 or Pt1000 – for motor coil temp. monitoring	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	●	●	●

Note: The accessory chart is just for reference only. Actual specification and accessories enclosed might vary with different quotation and agreement respectively. If any optional accessory is required and out of above mentioned standard accessory, please contact Hanbell for detailed specification and price.

2. Description of accessories

a. Steps or step-less capacity control system
Please refer to chapter 2.6 and 2.7 for the detail of step or step-less capacity control system.

b. Compatible steps and step-less capacity control system
For customers' ease of stock control, possible modification of capacity-control logic in the future, or other special requirements of capacity control, Hanbell deliberately designs devices for stepless/step dual capacity control as nonstandard optional accessory for customers' choices. Logic of stepless/step dual capacity control is basically identical to that of stepless or step capacity control respectively. Please refer to Chapter 2.6 & 2.7 for further details. If you have special requirements of capacity control, please contact Hanbell.

c. Suction and Discharge check valve
Hanbell standard check valve is gravity-driven with characteristics of large flow volume and low pressure differential. After shut-down of compressor, Teflon taper guider inside can simultaneously seal up the precisely machined base of check valve by gravity force to effectively prevent return of high-pressured gas to compressor. The gravity-driven check valve is equipped vertically. Due to limitation of space or piping requirements, alternative horizontal check valve is accessible.

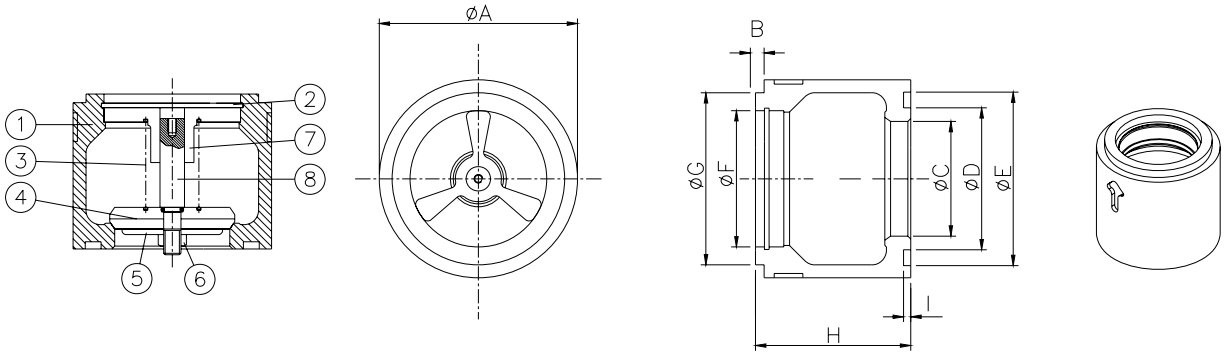
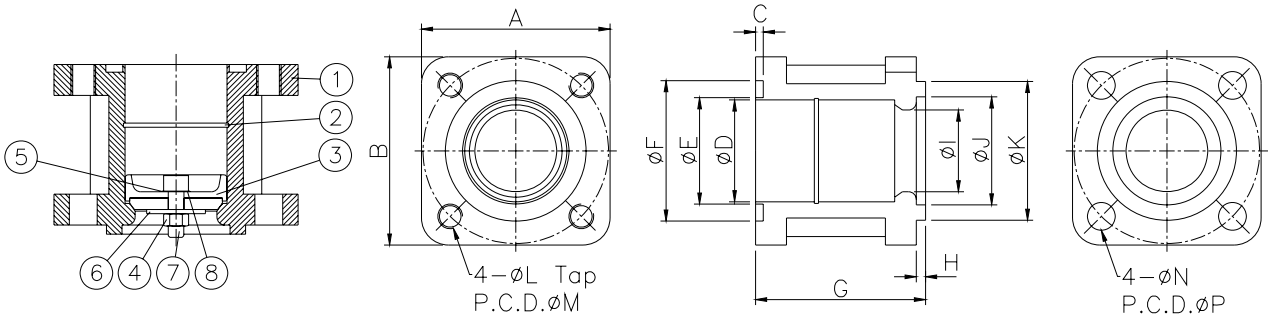


Figure 25 Suction check valve outline drawing (Horizontal type)

Dia.	Dimension unit: mm								
	A	B	C	D	E	F	G	H	I
2"	102	6	53	69	91	65	90	85	5
2 1/2"	122	6	69	89	111	85	110	97	5
3"	138	6	80	99	121	95	120	108	5
4"	163	6	96	124	146	120	145	123	5
5"	203	6	150	155	176	150	175	150	5
6"	238	6	190	195	216	190	215	160	5

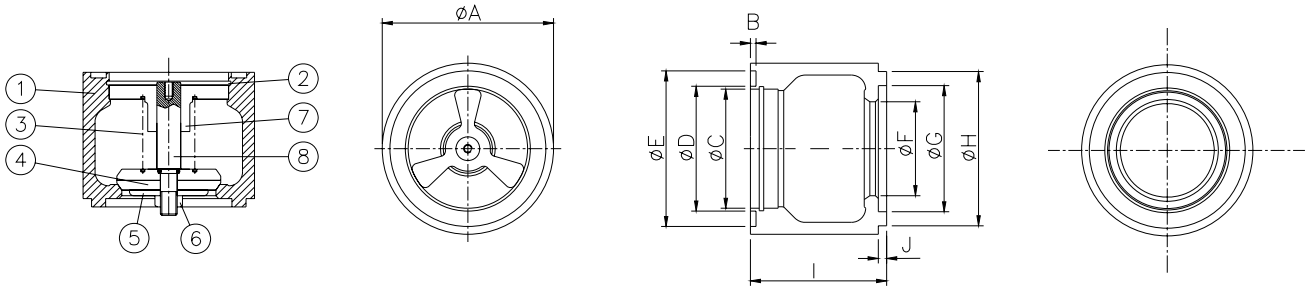
No.	1	2	3	4	5	6	7	8
Item	Body	C clipper	Spring	Valve plate	Gasket	Nut	Guide seat	Shaft



Dia.	Dimension unit: mm														
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P
1 1/2"	109	109	5	55	59	76	105	6	34	60	75	M16x2	105	18	105
2"	122	122	5	65	69	91	110	6	46	70	90	M16x2	120	18	120
2 1/2"	134	134	5	85	89	111	125	6	55	90	110	M16x2	140	18	140
3"	153	153	5	95	99	121	135	6	66	100	120	M20x2.5	160	22	160
4"	171	171	5	120	124	146	135	6	80.5	125	145	M20x2.5	185	22	185

No.	1	2	3	4	5	6	7	8
Item	Body	C clipper	Guide seat	Nut	Valve plate	Gasket	Bolt	Washer

Figure 26 Discharge check valve outline drawing (Vertical type)

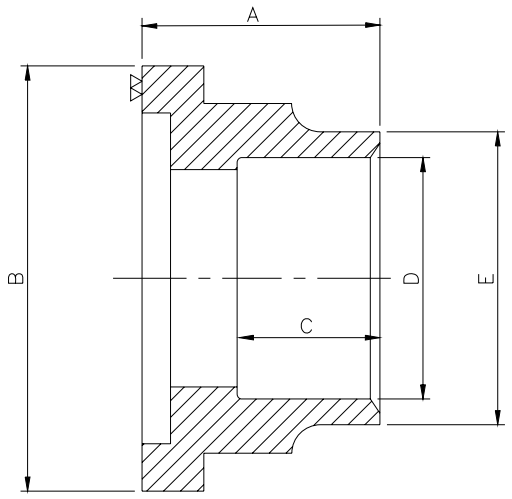


Dia.	Dimension unit: mm									
	A	B	C	D	E	F	G	H	I	J
1 1/2″	86	4	55	59	76	42	60	75	80.5	6
2”	102	4	65	69	91	53	70	90	85	6
2 1/2″	122	4	85	89	111	67	90	110	97	6
3″	138	4	95	99	121	80	100	120	108	6
4″	163	4	120	124	146	96	125	145	123	6
5”	203	5	150	155	176	122	150	175	150	6
6”	238	5	190	195	216	146	190	215	160	6

No.	1	2	3	4	5	6	7	8
Item	Body	C clipper	Spring	Valve plate t	Gasket	Nut	Guide seat	Shaft

Figure 27 Discharge check valve outline drawing (Horizontal type)

d. Suction and discharge connection bushings



Model	Standard Discharge Flange Bushing		Standard Suction Flange Bushing	
	Steel pipe	Copper pipe	Steel pipe	Copper pipe
RC2-100	1 1/2″	1 5/8”	2″	2 1/8”
RC2-140	1 1/2″	1 5/8”	2″	2 1/8”
RC2-170	1 1/2″	1 5/8”	2 1/2″	2 5/8”
RC2-180	1 1/2″	1 5/8”	2 1/2″	2 5/8”
RC2-200	1 1/2″	1 5/8”	2 1/2″	2 5/8”
RC2-230	2 ″	2 1/8”	3″	3 1/8”
RC2-260	2 ″	2 1/8”	3″	3 1/8”
RC2-300	2 ″	2 1/8”	3″	3 1/8”
RC2-310	2 ″	2 1/8”	3″	3 1/8”
RC2-320	2 ″	2 1/8”	3″	3 1/8”
RC2-340	2 1/2″	2 5/8”	4″	4 1/8”
RC2-370	2 1/2″	2 5/8”	4″	4 1/8”
RC2-410	2 1/2″	2 5/8”	4″	4 1/8”
RC2-470	2 1/2″	2 5/8”	4″	4 1/8”
RC2-510	3″	3 1/8”	4″	4 1/8”
RC2-550	3″	3 1/8”	4″	4 1/8”
RC2-580	3″	3 1/8”	4″	4 1/8”
RC2-610	3″	3 1/8”	5″	5 1/8”
RC2-620	3″	3 1/8”	5″	5 1/8”
RC2-710	4″	4 1/8”	5″	5 1/8”
RC2-790	4″	4 1/8”	5″	5 1/8”
RC2-830	4″	4 1/8”	5″	5 1/8”
RC2-930	4″	4 1/8”	5″	5 1/8”
RC2-1090	5″	5 1/8”	6″	---
RC2-1280	6″	---	8″	---
RC2-1520	6″	---	8″	---

Figure 28 Flange bushing dimensions

Note: The above table lists specification of standard bushing for every model of Hanbell compressors. Their dimensions refer to flange bushing dimensions and the table below. If bushing dimensions are not indicated in purchasing order, Hanbell will provide standard type. Suitable piping of customers’ choice is also shown in the table below. If non-standard bushing is needed, please double-check with Hanbell sales representatives when placing order for compressors.

Specification and dimension of optional flange bushing

Model	Discharge / Suction port	Materials and		Dimension of flanges bushing				
				A	B	C	D	E
RC2-100 RC2-140	Discharge	Copper	1 1/2"	52	75	35	38.3	49
			1 5/8"				41.6	52
			1 3/4"				44.8	55
			2"				51.1	62
			2 1/8"				54.3	65
		Steel	1 1/4"				3.3	58
			1 1/2"				49.3	64
	Suction	Copper	1 5/8"	50	90	30	41.6	55
			1 3/4"				44.8	55
			2"				51.1	62
			2 1/8"				54.3	65
			2 1/2"				63.8	74
			2 5/8"				67	74
		Steel	1 1/2"				49.3	60
			2"				61.3	74
RC2-170 RC2-180 RC2-200	Discharge	Copper	1 1/2"	52	75	35	38.3	49
			1 5/8"				41.6	52
			1 3/4"				44.8	55
			2"				51.1	62
			2 1/8"				54.3	65
		Steel	1 1/4"				3.3	58
			1 1/2"				49.3	64
	Suction	Copper	1 5/8"	60	110	35	41.6	52
			1 3/4"				44.8	55
			2"				51.1	62
			2 1/8"				54.3	65
			2 1/2"				63.8	74
			2 5/8"				67	77
			3 1/8"				79.8	90
		Steel	1 1/2"				49.3	64
			2"				61.3	76
			2 1/2"				77.2	90
RC2-230 RC2-260 RC2-300 RC2-310 RC2-320	Discharge	Copper	1 5/8"	50	90	30	41.6	55
			1 3/4"				44.8	55
			2"				51.1	62
			2 1/8"				54.3	65
			2 1/2"				63.8	74
			2 5/8"				67	74
		Steel	1 1/2"				49.3	60
			2"				61.3	74
	Suction	Copper	2"	66	120	45	51.1	62
			2 1/8"				54.3	65
			2 3/8"				60.7	71
			2 1/2"				63.8	74
			2 5/8"				67	77
			3"				76.6	87
			3 1/8"				79.8	90
		Steel	2"				61.3	76
			2 1/2"				77.2	92
			3"				90.2	103
RC2-340 RC2-370 RC2-410 RC2-470	Discharge	Copper	1 5/8"	60	110	35	41.6	52
			1 3/4"				44.8	55
			2"				51.1	62
			2 1/8"				54.3	65
			2 1/2"				63.8	74
			2 5/8"				67	77
			3 1/8"				79.8	90
		Steel	1 1/2"				49.3	64
			2"				61.3	76
			2 1/2"				77.2	90
	Suction	Copper	2 5/8"	76	145	50	67	87
			3"				76.6	87
			3 1/8"				79.8	90
			3 5/8"				92.4	103
			4"				102	112
			4 1/8"				105.1	116
		Steel	3"				90.2	105
			3 1/2"				102.8	117
			4"				115.6	128
RC2-510 RC2-550 RC2-580	Discharge	Copper	2"	66	120	45	51.1	62
			2 1/8"				54.3	65
			2 3/8"				60.7	71
			2 1/2"				63.8	74
			2 5/8"				67	77
			3"				76.6	87
			3 1/8"				79.8	90
		Steel	2"				61.3	76
			2 1/2"				77.2	92
			3"				90.2	103
	Suction	Copper	2 5/8"	76	145	50	67	87
			3"				76.6	87
			3 1/8"				79.8	90
			3 5/8"				92.4	103
			4"				102	112
			4 1/8"				105.1	116
		Steel	3"				90.2	105
			3 1/2"				102.8	117
			4"				115.6	128
RC2-610 RC2-620	Discharge	Copper	2"	66	120	45	51.1	62
			2 1/8"				54.3	65
			2 3/8"				60.7	71
			2 1/2"				63.8	74
			2 5/8"				67	77
			3"				76.6	87
			3 1/8"				79.8	90
		Steel	2"				61.3	76
			2 1/2"				77.2	92
			3"				90.2	103
	Suction	Copper	4 1/8"	80	174	35	105.1	121.2
			5 1/8"	75			130.5	146.5
			5"	75			127.5	146.5
		Steel	4"	80			115.6	134
			5"	75			141.3	154
RC2-710 RC2-790 RC2-830 RC2-930	Discharge	Copper	2 5/8"	76	145	50	67	87
			3"				76.6	87
			3 1/8"				79.8	90
			3 5/8"				92.4	103
			4"				102	112
			4 1/8"				105.1	116
		Steel	3"				90.2	105
			3 1/2"				102.8	117
			4"				115.6	128
	Suction	Copper	4 1/8"	80	174	35	105.1	121.2
			5 1/8"	75			130.5	146.5
			5"	75			127.5	146.5
		Steel	4"	80			115.6	134
			5"	75			141.3	154
RC2-1090	Discharge	Steel	5"	75	174	35	141.3	154
	Suction	Steel	6"	75	215	40	166.7	196
RC2-1280 RC2-1520	Discharge	Steel	6"	75	215	40	166.7	196
	Suction	Steel						

e. Suction and discharge stop valves

For maintenance and service of compressor, it is recommended to install the suction and discharge stop valves. Please refer to following detail of Hanbell stop valves.

Model	Stop Valve Size		Model	Stop Valve Size	
	Discharge	Suction		Discharge	Suction
RC2-100	1 1/2″	2″	RC2-470	2 1/2″	4″
RC2-140	1 1/2″	2″	RC2-510	3″	4″
RC2-170	1 1/2″	2 1/2″	RC2-550	3″	4″
RC2-180	1 1/2″	2 1/2″	RC2-580	3″	4″
RC2-200	1 1/2″	2 1/2″	RC2-610	3″	5″
RC2-230	2″	3″	RC2-620	3″	5″
RC2-260	2″	3″	RC2-710	3″	5″
RC2-300	2″	3″	RC2-790	4″	5″
RC2-310	2″	3″	RC2-830	4″	5″
RC2-320	2″	3″	RC2-930	4″	5″
RC2-340	2 1/2″	4″	RC2-1090	5″	6″
RC2-370	2 1/2″	4″	RC2-1280	6″	8″
RC2-410	2 1/2″	4″	RC2-1520	6″	8″

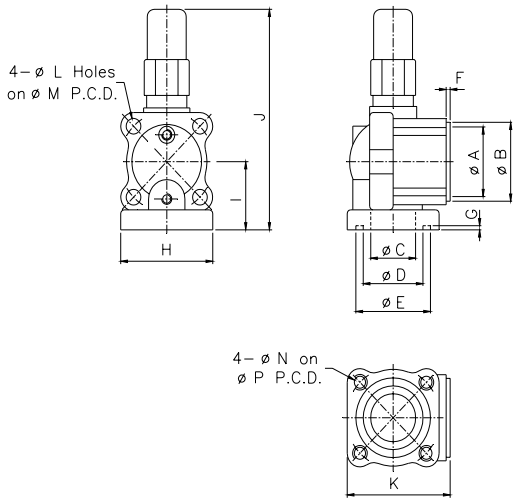


Figure 29 Dimension of stop valve

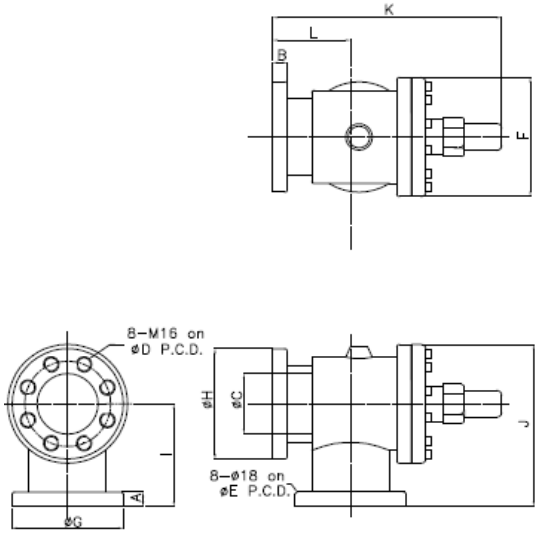


Figure 30 5” Suction stop valve

Dia.	Dimensions unit: mm														
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P
1 1/2″	60	75	36	59	76	6	5	106	75	256	115	18	105	M16x2	105
2″	70	90	60	69	91	6	5	122	86	280	128	18	120	M16x2	120
2 1/2″	90	110	67	89	111	6	5	137	95	307	153	18	140	M16x2	140
3″	100	120	80	99	121	6	5	154	117	398	177	22	160	M20x2.5	160
4″	125	145	105	124	146	6	5	171	130	445	201	22	185	M20x2.5	185

Dia.	Dimensions unit: mm											
	A	B	C	D	E	F	G	H	I	J	K	L
5″	30	30	126	194	194	248	230	230	214	338	474	161

* Specification of stop valve

Maximum working pressure	Hydrostatic pressure test	Refrigerant	Temperature range
28 kg / cm² G	42 kg / cm² G	HFC, HCFC	–40˚C~150˚C

f. INT69HBY control module and PTC temperature sensor

In order to protect compressor, each RC2 series compressor has been installed three PTC temperature sensors inside motor coil and another one at the discharge side of compressor. These sensors are connected to an INT69HBY control module to monitor the phase loss, phase sequence, motor temperature, discharge temperature but with manually reset function. If the temperature in one of the positions monitored exceeds the nominal response temperature of the respective PTC thermistor, the sensor resistance increases and the INT69HBY control module output relay trips. The module resets when the temperature drops below the response temperature by approx. 5K. The output replay provides a potential-free change-over contact and is energized as long as the nominal response temperature is not exceeded.

INT69HBY & PTC temperature sensors connection diagram

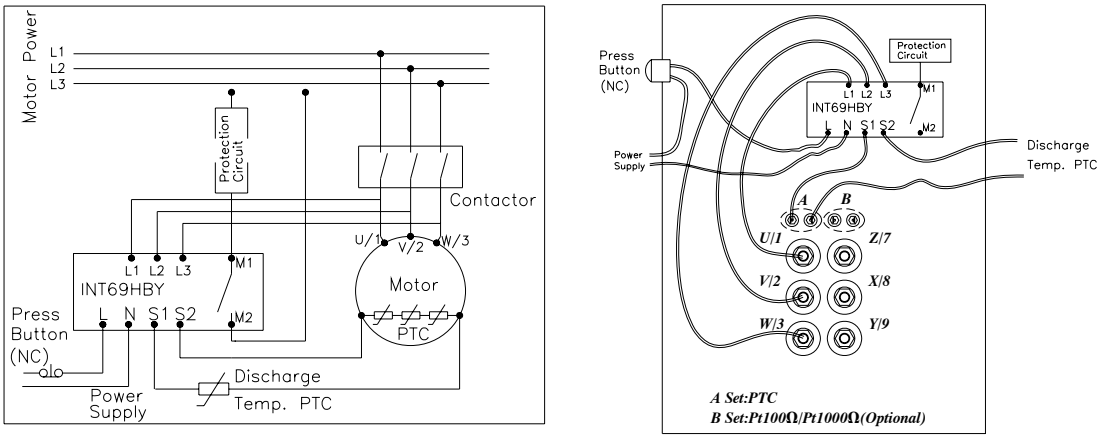


Figure 31 INT69HBY & PTC connection diagram

Other major functional descriptions are as follow:

1. After the supply voltage has been connected, a three second initialisation period follows. Provided the PTC chain resistance is below the reset threshold (2.75kΩ), the relay trips after these 3 seconds have expired.
2. 1 to 9 PTC thermistors with different nominal response termperature may be connected serially to the PTC input.
3. If any thermistor resistance increases above trip level the relay drops out. This failure results in a lockout. (5 minutes delay for 1st PTC failure, 60 minutes delay for 2nd failure, lockout for 3rd failure.)
4. If a rapid temperature increase is detected (locked rotor condition), the output relay drops out. This failure results in a lockout.
5. The phase monitoring of the three phase motor voltage becomes active 1 second after motor has started, for duration of 10 seconds. In case of a wrong phase sequence or a phase failure, the relay switches of and locks.
6. The Lock-out and delay time may be lifted by cycling the power off for approx. 5 seconds.
7. To avoid nuisance tripping due to reverse running after shutdown (pressure equalization), the phase monitoring function is only re-enabled approx. 20 seconds after motor stop.
8. A dual LED (red / green) provides additional information about the motor protector and compressor status.
9. The relay is fed out as a N/O dry contact, which is closed under good conditions.
10. Sensor and supply circuits are galvanic isolated.
11. The motor protector is not suitable for use with frequency converters.

Technical data:

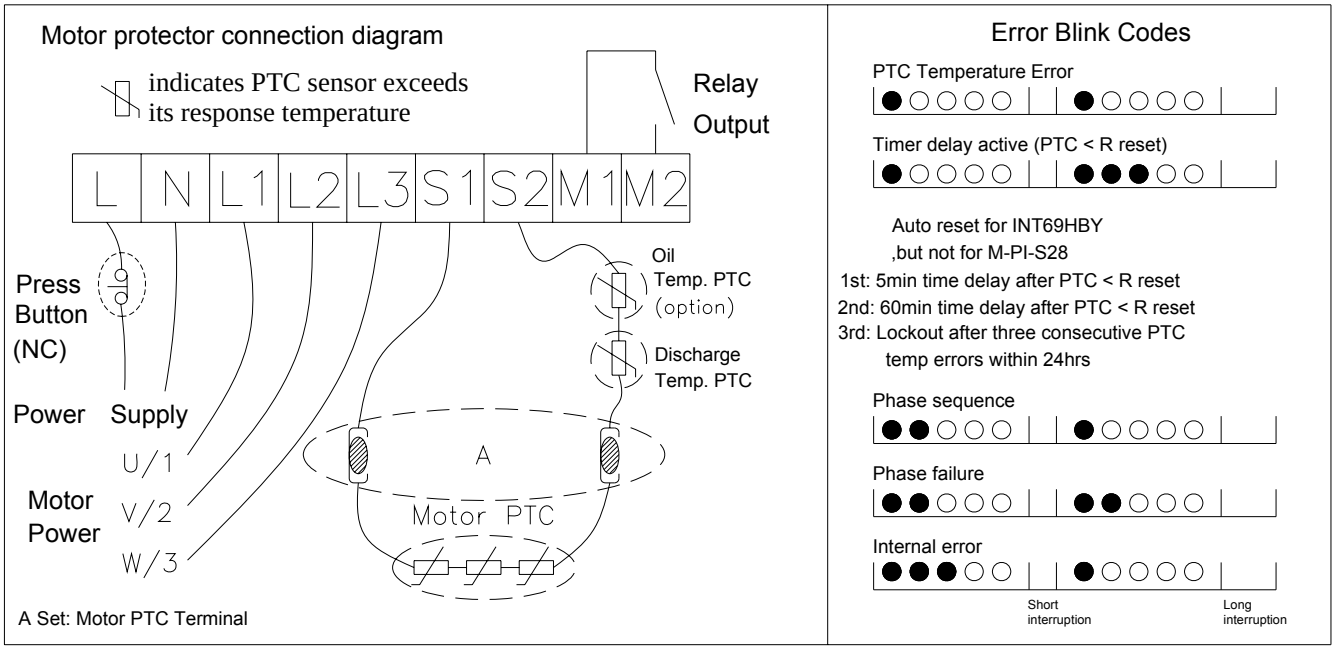
●Supply voltage
AC 50/60 Hz 115/120V-15 …+10% 3VA
AC 50/60 Hz 230/240V-15…+10% 3VA

●Ambient temperature
-30 … +70 ℃

●Relay output
max. AC 240V, max. 2.5A, C300
min. ＞ 24V AC/DC, >20 mA

●Phase monitor
3 AC, 50/60Hz, 200 ~ 575 V ± 10%

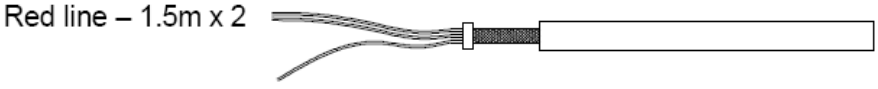
Blink code display& diagram:



g.150W oil heater

A UL approved 150W oil heater has been installed in every compressor as a standard accessory.

Before restart of compressor after shutdown for a long time, please turn on oil heater at least 8 hours to make the temperature inside compressor higher than system temperature and ambient temperature and then it can prevent condensation of refrigerant inside oil sump of compressor which may result in liquid compression in next start and poor lubrication due to too low viscosity of lubricant oil. In addition, Hanbell also offers 300W oil heater to keep adequate lubricant oil temperature for large external oil separator and applications in areas with low ambient temperature.



Green / Yellow line – 1.5m x 1 (Grounding)

Figure 32 150W oil heater

Specification： 150W, 300W; 110V or 220V; IP 54; UL approval

Note: If compressor is installed in low ambient temperature, it is recommended to insulate oil separator against cold ambience.

h. Oil level switch

There are 3 wires in oil level switch, 2 wires for the interlock to main control circuit or any micro controller's independent circuit, and one wire with green color for grounding. To prevent from oil level switch trip caused by oil foaming or surging in the sump, a time delay around 60 ~ 90 seconds is recommended before shut down the compressor.

Max. contact capacity = 50VA DC/AC
Initial contact resistance = 150mΩ (Max.)
Switching voltage = 600V DC
Max. voltage = 300V DC/AC
Max. current = 0.5A DC/AC

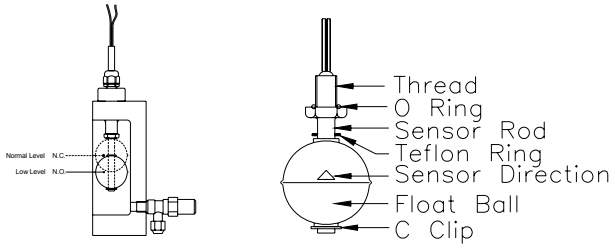
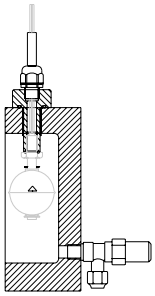


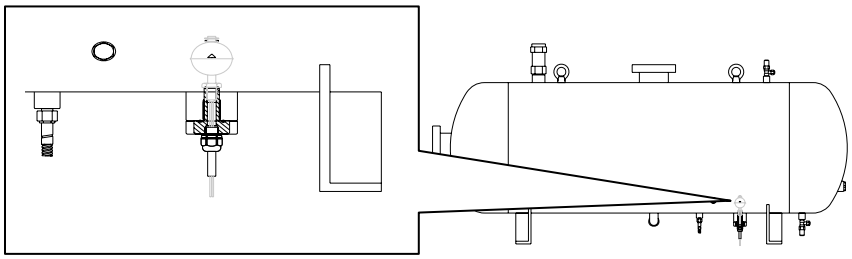
Figure 33 Oil level switch

Note:

1. On the float ball there is a triangle mark which tells you its sensor direction. Therefore, before you install an oil level switch on a compressor or an external oil separator, please use the triangle mark as your reference before install any oil level switch on the compressor or external oil separator.
2. Please check this triangle mark and modify the oil level switch if needed.
3. If you have any other question, don't hesitate to contact with Hanbell representatives for help.
4. The illustration below show you the outside appearance of our oil level switch



Oil level switch on a compressor



Oil level switch on an external oil separator

i. Oil drain valve

Oil drain valve is installed in compressor to drain out oil for maintenance.

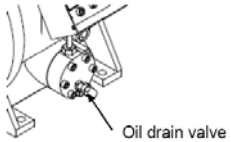
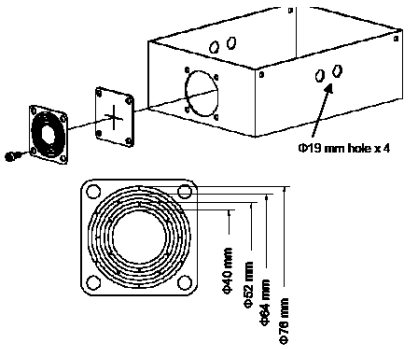


Figure 34 Oil drain valve

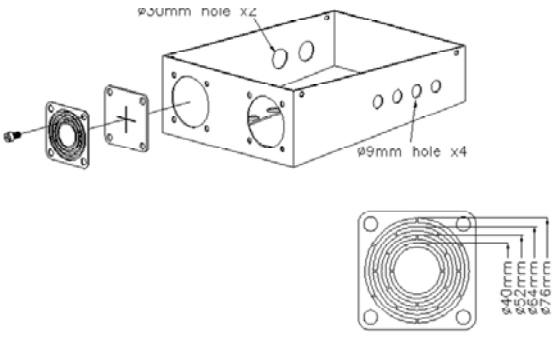
j.IP54 cable box

Hanbell designs and makes the cable box which meets IP54 specification.
Dimensions of cable box and the size of opening in cable box (for motor power line and control power line) refer to the drawing below

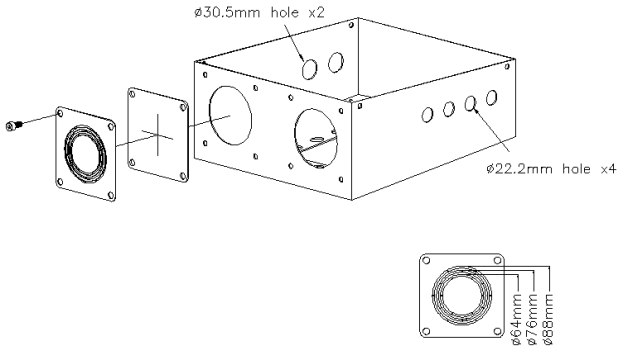
①RC2-100, RC2-140, RC2-180 cable box(Fig.35)



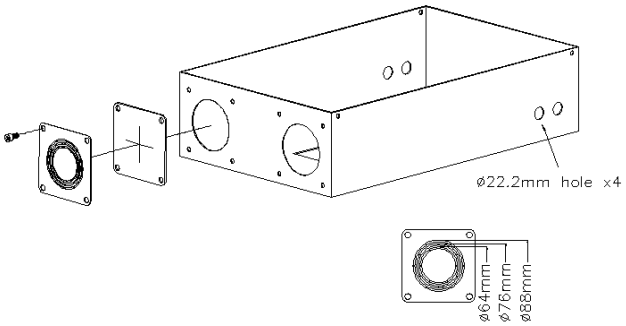
② RC2-170, RC2-200, RC2-260, RC2-300, RC2-310, RC2-320, RC2-340, RC2-370, RC2-410, RC2-470, RC2-510, RC2-550, RC2-580, RC2-620 cable box (Fig. 35)



③RC2-610, RC2-710, RC2-790, RC2-830, RC2-930 cable box (Fig. 37)



④RC2-1090, RC1280, RC1520 cable box (Fig.38)



k. Liquid injection system (solenoid valve + expansion valve)

Liquid injection system is an auxiliary mechanism to cool motor coil. Except RC2-1090,1280 &1520 necessitate forced cooling of motor coil by liquid injection, the rest models cool motor coil by suction return gas . In high-condensing-temperature or low-evaporating-temperature applications liquid injection system is recommended to cool motor coil auxiliary. In high-compression-ratio applications, liquid injection system to compression chamber is also recommended to cool down high compression heat due to high compression ratio to maintain normal discharge temperature. Please refer to Chapter 7 for detailed introduction of additional cooling.

Hanbell provides the following liquid injection expansion valves and solenoid valves for customers' options. Please refer to capacity recommended in selection program to choose appropriate liquid injection expansion valves.

Brand	Model	Low Temp. Type	High Temp. Type
SPORLAN	Y1037-FV-3-180,3/8"SAE		○
	Y1037-FV-5-180,3/8"SAE		○
ALCO	TCLE-3HW-6A	○	
	TCLE-5HW-6A	○	
	TCLE-10HW-6A	○	
FUJIKOKI	JBE-E60HFKT-1		○

l. Liquid injection system (solenoid valve + stop valve)

This simple liquid injection system adjusts amount of liquid injection by stop valve, suitable for application with level load and ambient temperature but it's not recommended. Opening ratio of stop valve could not vary with system loading and change of temperature. Therefore, frequent check of discharge temperature can prevent damage of compressor due to over cooling or insufficient cooling.

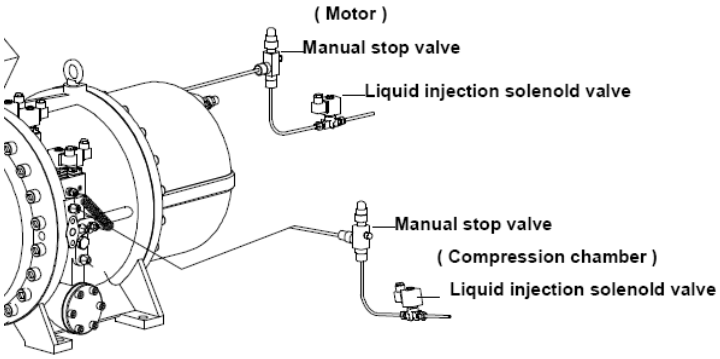


Figure 39 Liquid injection – solenoid valve + stop valve

m. Horizontal check valve

Horizontal check valve is standard accessory of RC2- F Series compressor. Considering limitation of clearance for installation, horizontal check valve would be alternative to aforementioned vertical check valve for RC2 Series compressor. Its dimension and installation drawing are as follow:

Dimension:

Diameter	Dimension Unit: mm		
NO.	A	B	Length
1 1/2"	86	80.5	190
2"	102	85	210
2 1/2"	122	96	240
3"	138	108	300
4"	163	123	330
5"	203	150	

Installation:

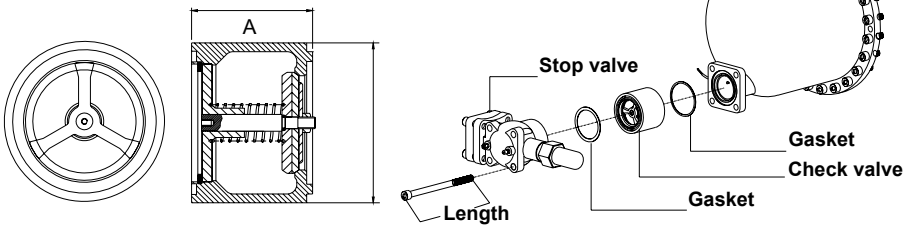


Figure 40 Dimensions and installation of horizontal check valve

n. External oil separator

For improvement of oil return in flooded-type, low-temperature and parallel systems, system with long piping and application with RC1090,1280,1520 compressor models, Hanbell specially designs a complete series of external oil separators – OS series with characteristics of high filtration efficiency and low pressure drop. The following table shows details of OS series:

Note : It is recommended to install a buffer before the external oil separator to avoid noise and vibration which caused by resonance.

(Ⅰ) Technical data：

Model	Type	Oil Volume (Liter)		Range of application based on Displacement (m^3/hr) (Recommended)	Shell Diameter
		High level	Low level		
OS40	Vertical	17	9	205	14”
OS50	Vertical	22	12	206~270	16”
OS65	Vertical	31	18	271~440	18”
OS80	Horizontal	33	20	441~705	20”
OS100	Horizontal	40	27	706~1120	20”
OS125	Horizontal	50	30	1121~1310	24”
OS150	Horizontal	60	36	1311~1835	24”

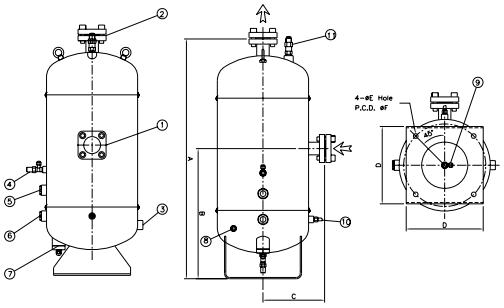
(Ⅱ) Accessories：

No.	Description	OS40	OS50	OS65	OS80	OS100	OS125	OS150
1	Refrigerant inlet	1 1/2”	2”	2 1/2”	3”	4”	5”	6”
2	Refrigerant outlet	1 1/2”	2”	2 1/2”	3”	4”	5”	6”
3	Oil outlet	5/8” Flare	5/8” Flare	5/8” Flare	1” PF	1” PF	1 1/4” PF	1 1/4” PF
4	Oil charge valve	1/4” Flare						
5	High oil S.G.	1 PCS						
6	Low oil S.G.	1 PCS						
7	Oil level switch	1 PCS						
8	Oil heater	150W	150W	150W	150W	150W	300W	300W
9	Oil drain valve	1/4” Flare						
10	Oil temp. protection (option)	1/8” NPTF						
11	Safety valve (option)	1/2”	1/2”	1/2”	1”	1”	1 1/2”	1 1/2”

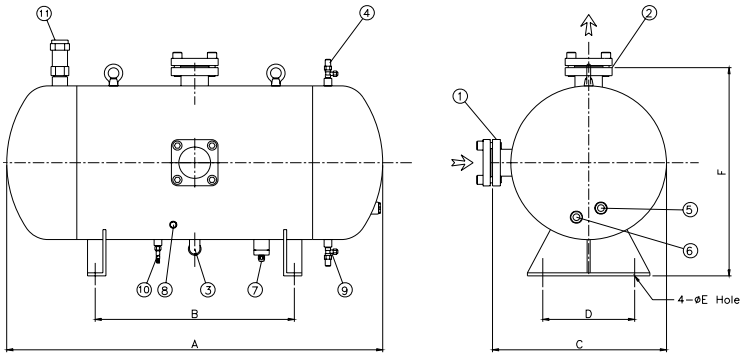
(Ⅲ) Dimensions：

No.	OS40	OS50	OS65	OS80	OS100	OS125	OS150
A	930	1050	1110	1227	1637	1829	2229
B	505	585	595	650	1000	1080	1480
C	240	275	300	568	354	409	409
D	300	350	350	300	300	400	400
E	18	22	22	23	23	23	23
F	320	360	360	688	698	830	830

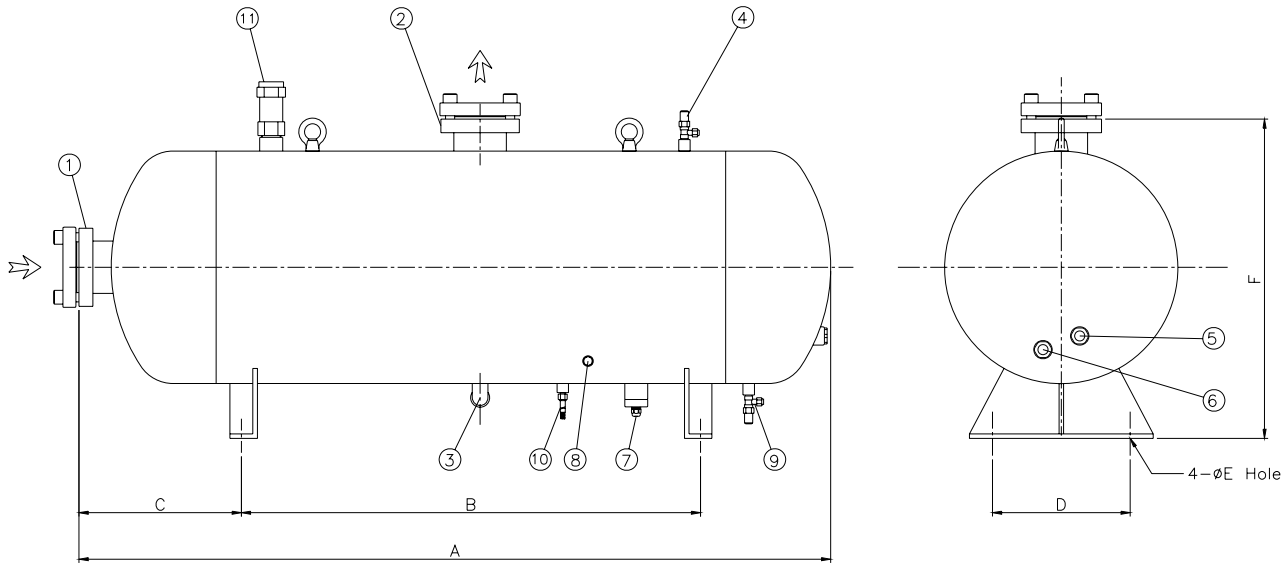
(Ⅳ) Drawing：



Vertical -OS40, OS50, OS65 (Fig.41)



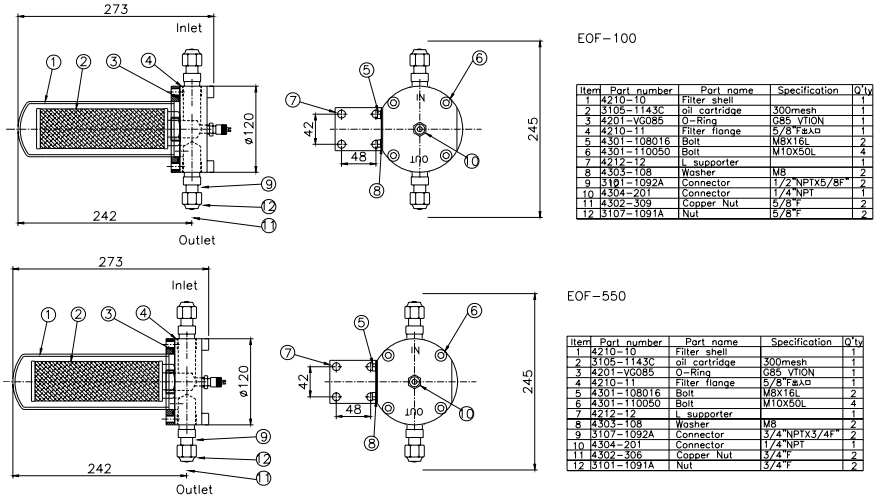
Horizontal -OS80 (Fig.42)



Horizontal OS100, OS125, OS150 (Fig.43)

o. External oil filter

External oil filter is optional accessory of external oil separator. It is suggested to install external oil filter in oil return line before suction port of compressor for safe running of compressor.



Item	Part number	Part name	Specification	Q'ty
1	4210-10	Filter shell		1
2	3105-1143C	oil cartridge	300mesh	1
3	4201-VG085	O-Ring	G85 VTION	1
4	4210-11	Filter flange	5/8"F⌀⌂⌀	1
5	4301-108016	Bolt	M8X16L	2
6	4301-110050	Bolt	M10X50L	4
7	4212-12	L supporter		1
8	4303-108	Washer	M8	2
9	3101-1092A	Connector	1/2"NPTX5/8F"	2
10	4304-201	Connector	1/4"NPT	1
11	4302-309	Copper Nut	5/8"F	2
12	3107-1091A	Nut	5/8"F	2

Item	Part number	Part name	Specification	Q'ty
1	4210-10	Filter shell		1
2	3105-1143C	oil cartridge	300mesh	1
3	4201-VG085	O-Ring	G85 VTION	1
4	4210-11	Filter flange	5/8"F⌀⌂⌀	1
5	4301-108016	Bolt	M8X16L	2
6	4301-110050	Bolt	M10X50L	4
7	4212-12	L supporter		1
8	4303-108	Washer	M8	2
9	3107-1092A	Connector	3/4"NPTX3/4F"	2
10	4304-201	Connector	1/4"NPT	1
11	4302-306	Copper Nut	3/4"F	2
12	3101-1091A	Nut	3/4"F	2

Figure 44 External oil filter

p. Oil flow switch

Oil flow switch operates with external oil separator to prevent oil deficient compressor. Specification and installation of oil flow switch are shown as below:

Specification:

Type	Size	Process connection d1	Setpoint range(H_20, 20℃)		Max. flow rate [l/min]	Dimensions		
			Increasing flow [l/min]	Decreasing flow [l/min]		l_1	Nut size sw[mm]	
							Brass	Stainless steel
VHS 15M	DN 15	1/2" BSP	3, 4…4,2	3,0…3,8	67	11	19	27
VHS 20M	DN 20	3/4" BSP	7, 0…9,1	6,4…8,2	180	15	27	32
VHS 25M	DN 25	1" BSP	13,5…17,0	12,0…15,5	195	15	32	41

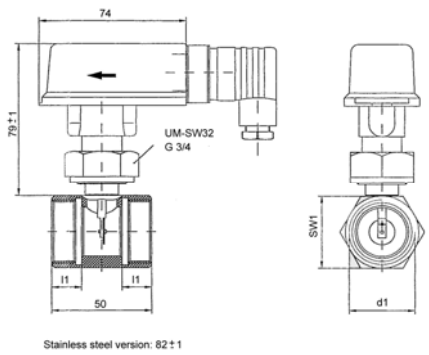


Figure 45 Oil flow switch

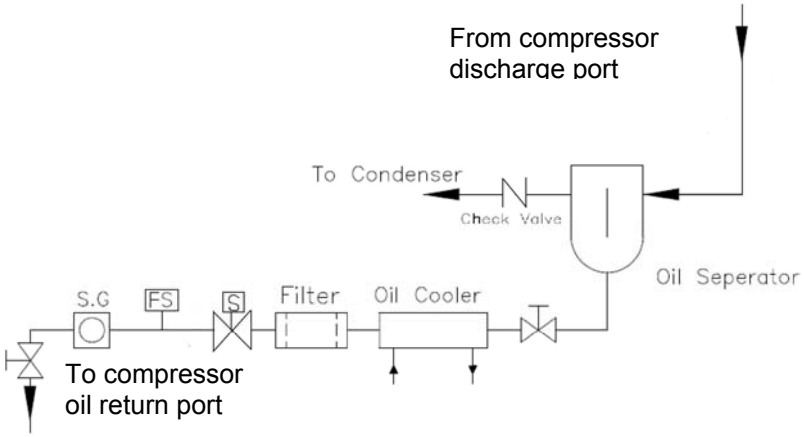


Figure 46 Installation of oil flow switch

q. Economizer connection muffler

When economizer is used, it is recommended to install a muffler and check valve before middle-pressure returned gas port in compression chamber to effectively mitigate pulsation noise in middle pressure as shown in the drawing below:

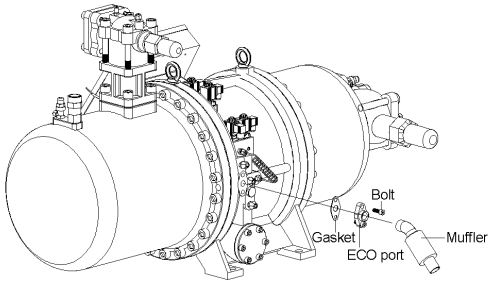


Figure 47 Installation of ECO muffler

r. Mounting pad

To avoid extra vibration and noise resulted from direct contact between compressor footings and the base on which compressor is mounted, it is recommended to add mounting pads in between as the drawing below shown.

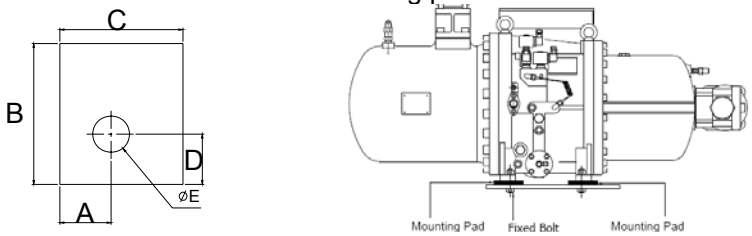


Figure 48 Compressor mounting pad (optional)

Model	Part No.	A	B	C	D	E	Thickness	Req. Q'ty
RC2-100, RC2-140, RC2-170, RC2-180, RC2-200, RC2-230, RC2-260, RC2-300, RC2-310, RC2-320	3131-9815B	20	55	50	20	22	20 mm	4
RC2-340, RC2-370, RC2-410, RC2-470, RC2-510, RC2-550, RC2-580	3136-9815B	26	100	70	25	22	20 mm	4
RC2-610, RC2-620, RC2-710, RC2-790, RC2-830, RC2-930	3139-9815B	25	100	80	25	22	20 mm	4
RC2-1090, RC2-1280, RC2-1520	3142-9815B	40	100	80	40	22	20 mm	4

s. Temperature sensors Pt100 or Pt1000

Motor of RC2-1090,1280 & 1520 compressor adopts independent liquid injection cooling system，other models utilize suction return gas to cool motor coil. To effectively detect temperature of motor coil and adequately adjust volume of liquid injection by measured temperature, Hanbell specially mounts PT100 or PT1000 sensor on motor coil as a standard accessory for RC2-1090,1280 & 1520 and as an optional accessory for other models. This temperature sensor along with controller of the system monitor motor coil temperature and then control on/off of liquid injection valve accordingly to provide suitable liquid injection as shown in the diagram below.

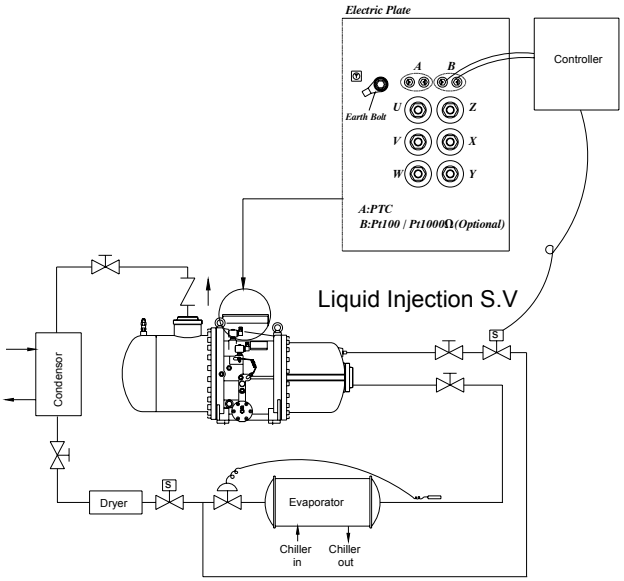


Figure 49 Liquid injection connection diagram (RC2-100~RC2-930)

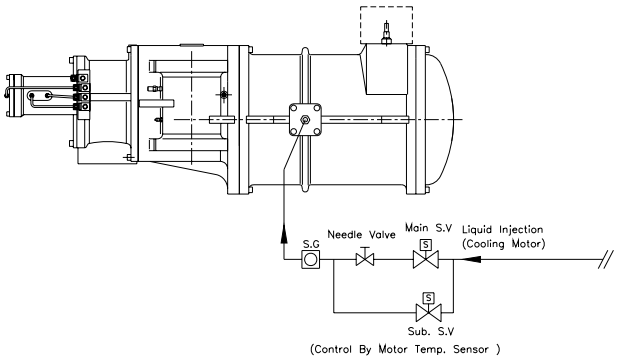


Figure 50 Liquid injection connection diagram (RC2-1090~RC2-1520)

Note:

1. Liquid injection main solenoid valve is turned on concurrently with start of compressor (RC2-1090~RC2-1520)
2. Liquid injection solenoid valve is controlled by controller according to temperature measured by Pt100/Pt1000 sensor. (RC2-100~RC2-930)
3. Liquid injection sub solenoid valve is for auxiliary use. Its control logic is the same with that of aforementioned liquid injection valve in RC2-100~RC2-930.
4. Hanbell suggests to control temperature of motor coil at 60℃ (not higher than 60℃)

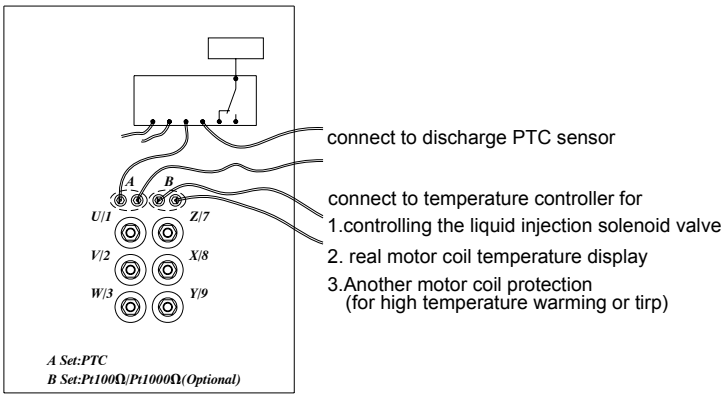


Figure 51 Connection diagram of Pt100/Pt1000 sensor

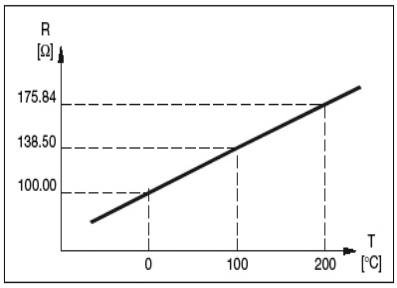


Figure 52 Pt100 sensor

Specification : Pt100 sensor

- Recommended max. meas. Current for heat coefficient <0.1K - DC 1 ~ 3 mA
- Heating coefficient - 10mΩ/K
- Sensor resistance at 0℃ - 100Ω±0.12Ω
- Change of resistance 0 ~ 100℃ - 0.385Ω/K
- Insulation test voltage U is – AC 1.5kV

Specification : Pt1000 sensor

- Recommended max. meas. Current for heat coefficient < 0.1K – DC0.2 ~ 2mA
- Sensor resistance at 0℃ - 1000Ω±1.20Ω
- Change of resistance 0 ~ 100℃ - 3.85Ω/K
- Insulation test voltage U is – AC 1.5kV

Please specify Pt100 or Pt1000 sensor when placing orders to Hanbell. In addition, except RC2-1090, 1280 & 1520 compressors, other models can also be equipped with Pt100 or Pt1000 sensor to adjust liquid injection to precisely control motor coil while running. Their connection refer to the diagram

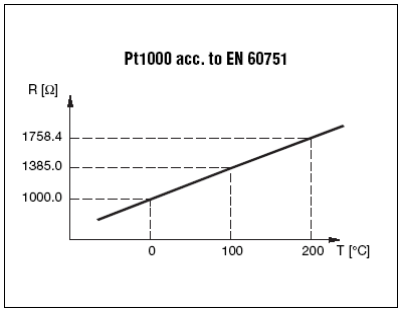
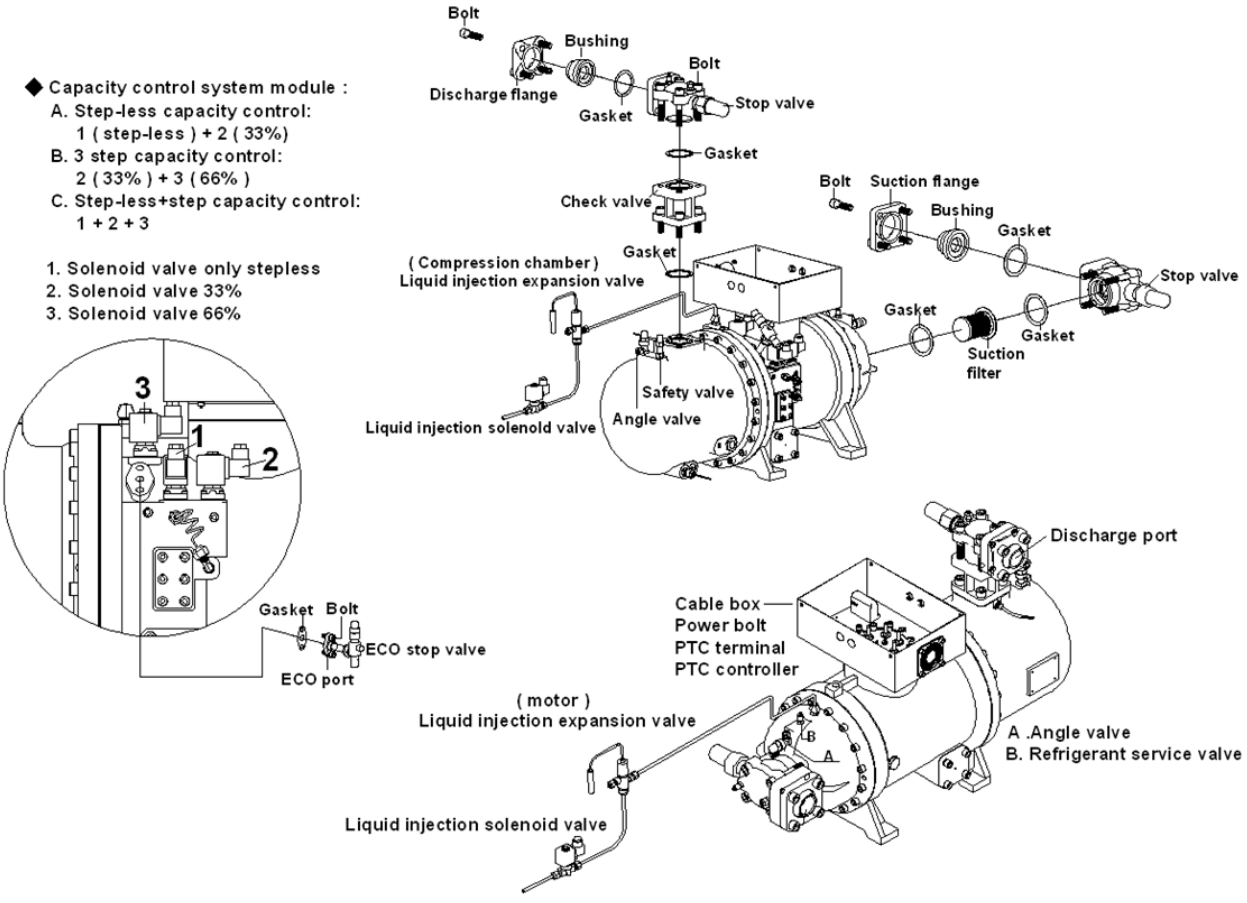


Figure 53 Pt1000 sensor

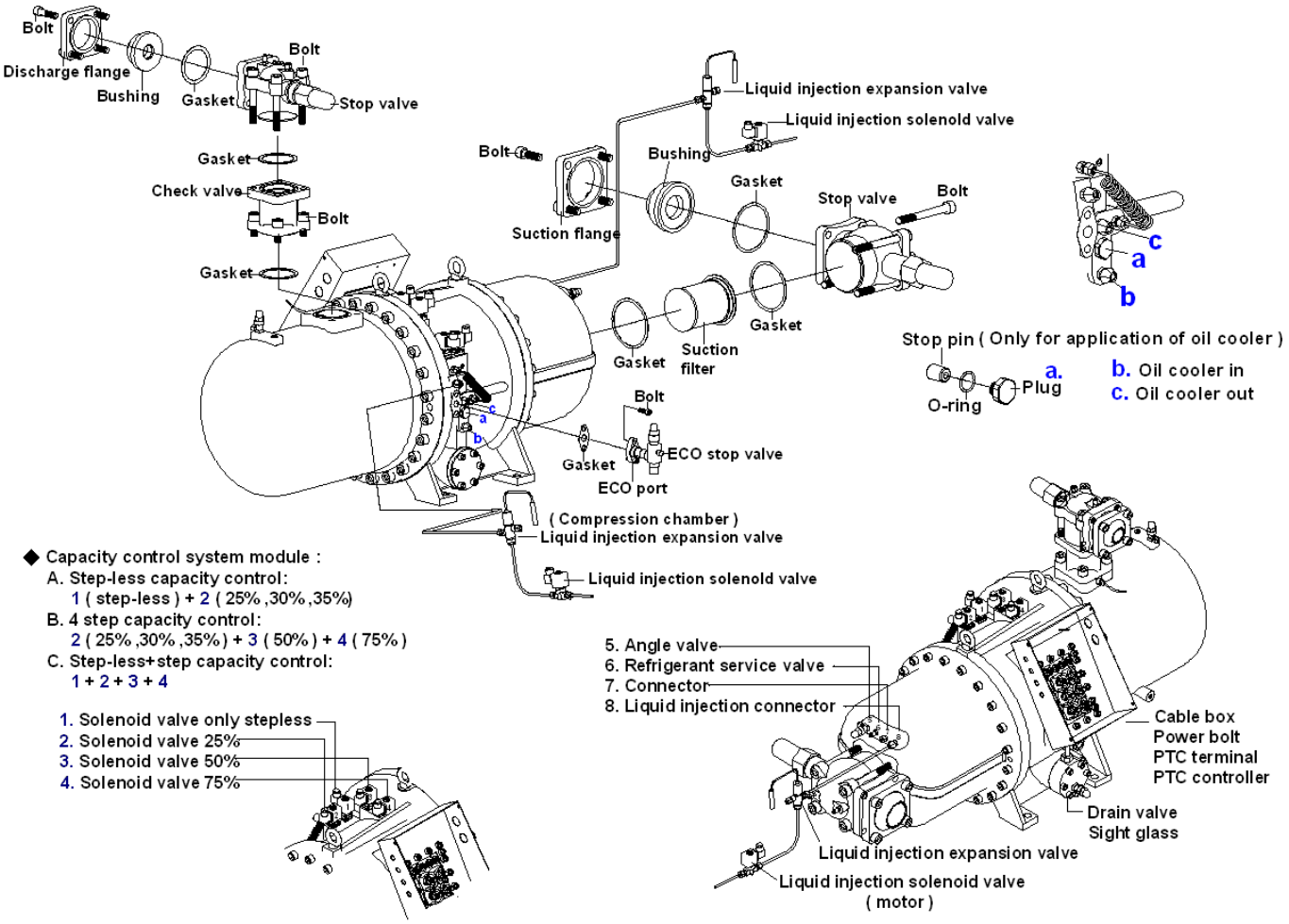
4.5 Installation and connection of compressor

The diagrams below show the installation and connection of compressors

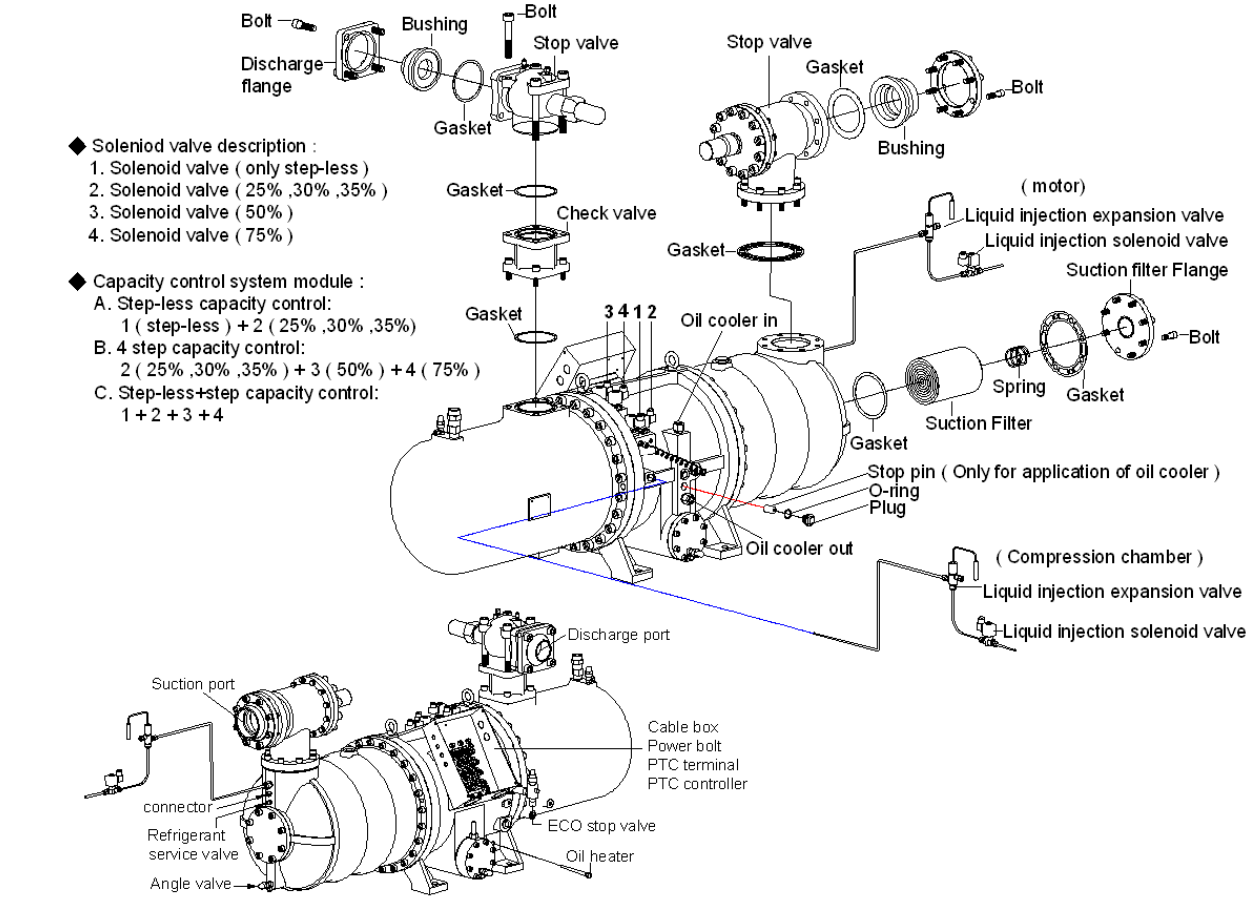
a. RC2-100 , RC2-140 , RC2-180



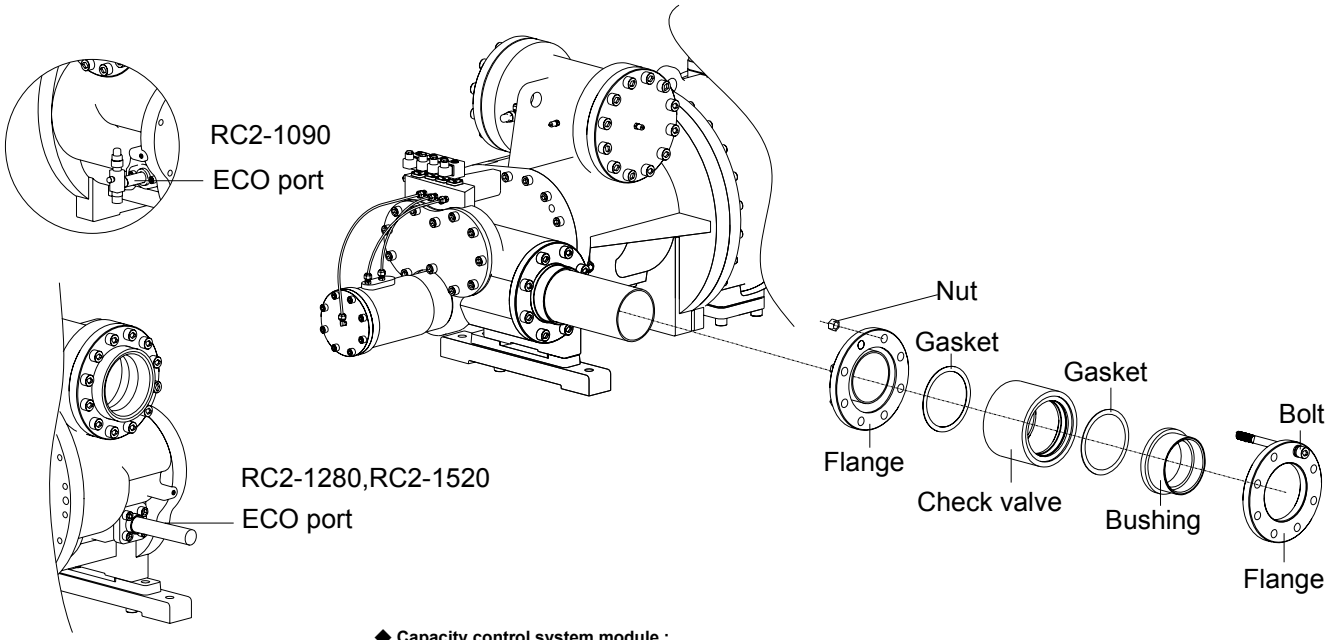
b. RC2-170, RC2-200, RC2-230,RC2-260, RC2-300, RC2-310, RC2-320, RC2-340, RC2-370, RC2-410, RC2-470, RC2-510, RC2-550, RC2-580, RC2-620



c. RC2-610, RC2-710, RC2-790, RC2-830, RC2-930



d. RC2-1090, RC2-1280, RC2-1520



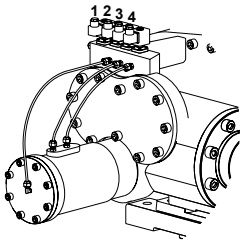
◆ **Capacity control system module :**

A. Step-less capacity control:
1 (step-less) + 2 (25% ,30% ,35%)

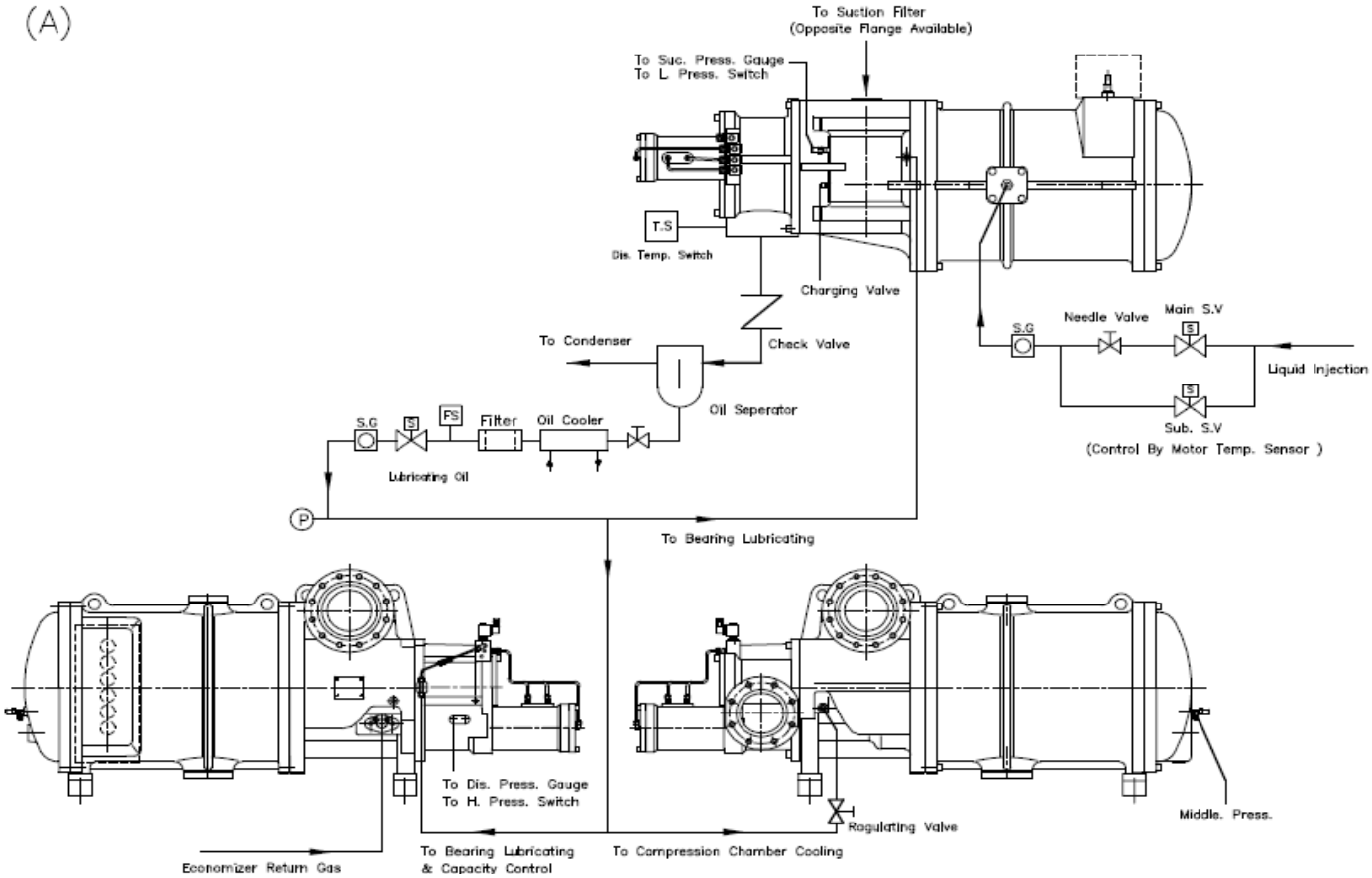
B. 4 step capacity control:
2 (25% ,30% ,35%) + 3 (50%) + 4 (70%)

C. Step-less+step capacity control:
1 + 2 + 3 + 4

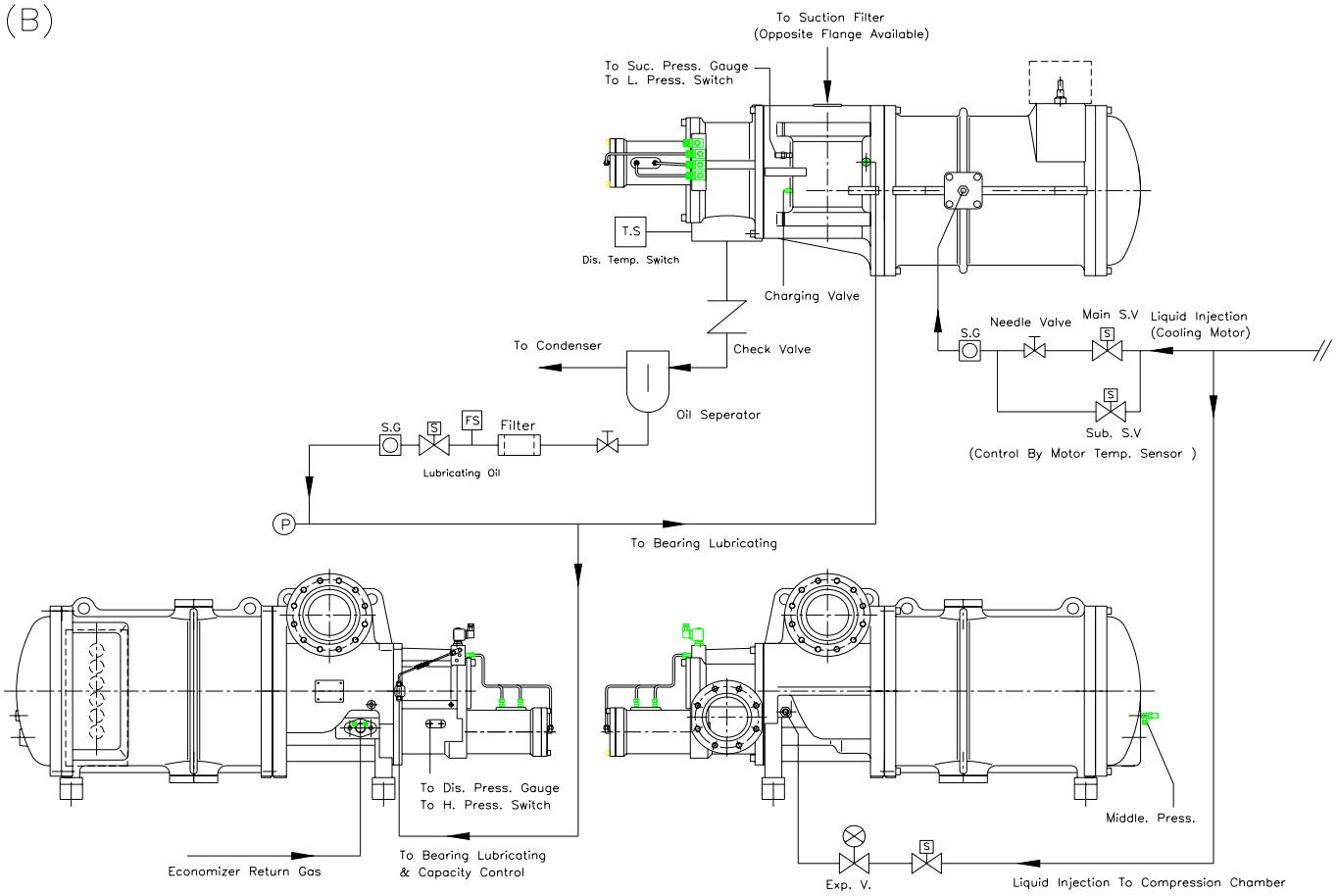
1. Solenoid valve only stepless
2. Solenoid valve 25%(30%,35%)
3. Solenoid valve 50%
4. Solenoid valve 75%



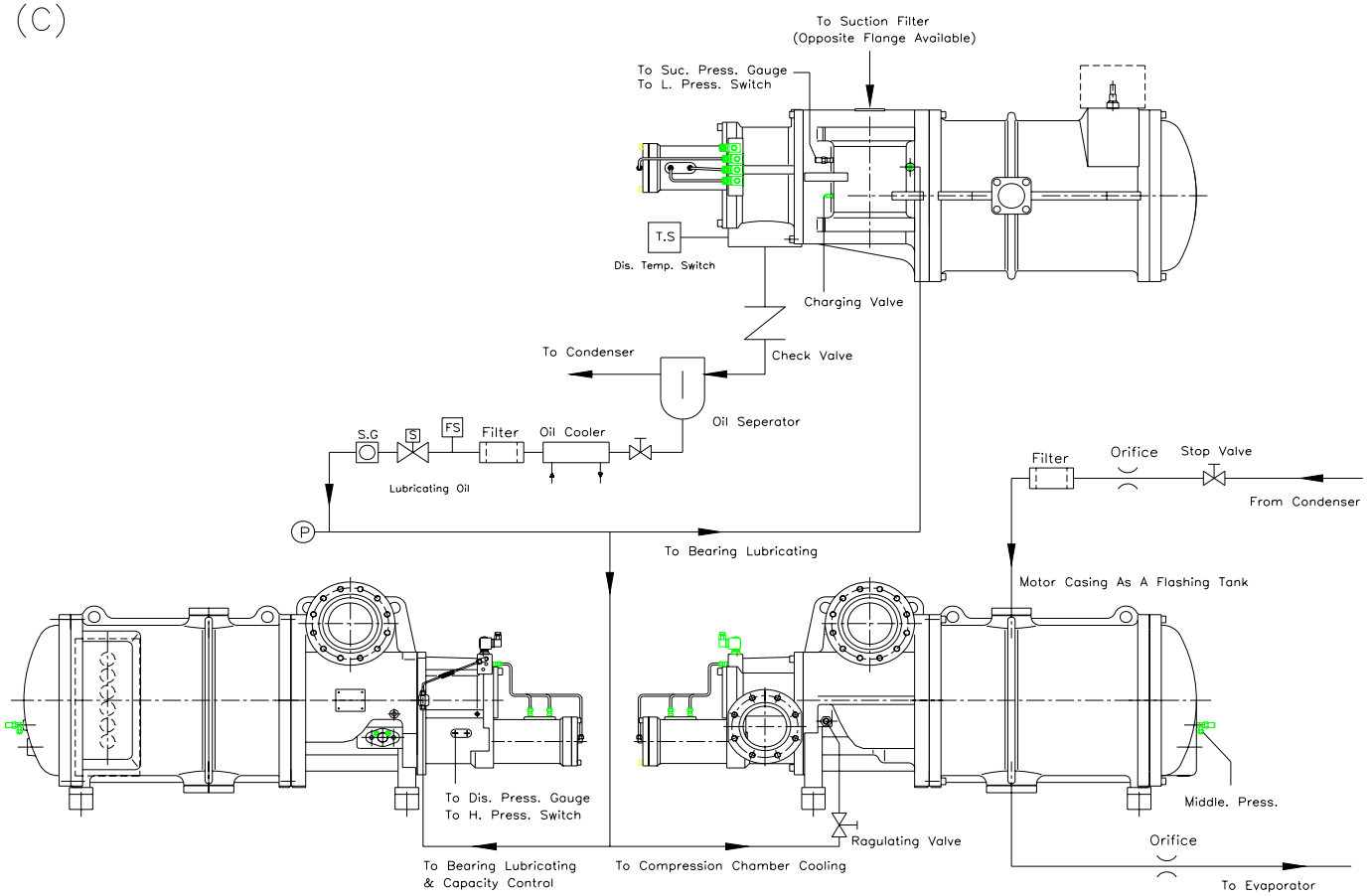
(A)



(B)


To Suction Filter
(Opposite Flange Available)
To Suc. Press. Gauge
To L. Press. Switch
T.S
Dis. Temp. Switch
Charging Valve
To Condenser
Check Valve
Oil Seperator
S.G
FS
Filter
Lubricating Oil
Needle Valve
Main S.V
Liquid Injection
(Cooling Motor)
Sub. S.V
(Control By Motor Temp. Sensor)
P
To Bearing Lubricating
To Dis. Press. Gauge
To H. Press. Switch
Economizer Return Gas
To Bearing Lubricating
& Capacity Control
Middle. Press.
Exp. V.
Liquid Injection To Compression Chamber

(C)


To Suction Filter
(Opposite Flange Available)
To Suc. Press. Gauge
To L. Press. Switch
T.S
Dis. Temp. Switch
Charging Valve
To Condenser
Check Valve
Oil Seperator
S.G
FS
Filter
Oil Cooler
Lubricating Oil
Filter
Orifice
Stop Valve
From Condenser
P
To Bearing Lubricating
Motor Casing As A Flashing Tank
To Dis. Press. Gauge
To H. Press. Switch
Middle. Press.
Ragulating Valve
Orifice
To Bearing Lubricating
& Capacity Control
To Compression Chamber Cooling
To Evaporator

5. Electrical data and design
5.1 Motor design

HANBELL RC2 series screw compressors are fitted with Y-Δ motor as standard. But Δ/ΔΔ motor (Part Winding Starting – PWS) is also available for model RC2-100A ~ RC2-580A & RC2-100B ~ RC2-410B.

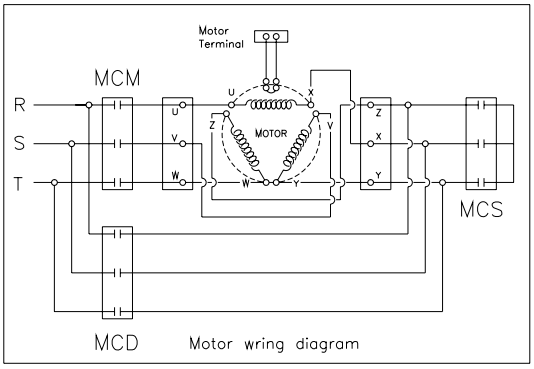
i.e. ●RC2-100A ~ RC2-580A & RC2-100B ~ RC2-410B both Y-Δ motor and Δ/ΔΔ motor are available.
●RC2-610A ~ RC2-1520A & RC2-470B ~ RC2-1520B only Y-Δ motor are available.

Y-Δ Starting

Y-Δ motor connects motor coil by Y connection during starting therefore reducing voltage on coils to 1/√3 of input voltage and reconnects motor coil by △ connection after starting. By doing so, we can decrease starting current thorough voltage drop, i.e., so-called voltage-drop starting.

Y-Δ motor connection method is shown in the following motor wiring diagram:

In Y connection, MCM, MCS are inductive while motor leads Z,X,Y are tied together as a neutral connecting as Y fashion. A few seconds later (3~5 sec is recommended), MCM, MCS become deductive. Around 0.25 sec later, MCM,MCD are inductive, it turns out △ run connection.



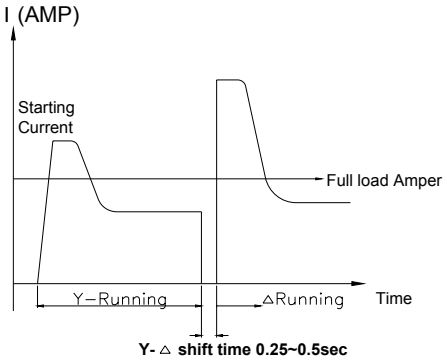


Figure 54 Y-Δ Starting diagram

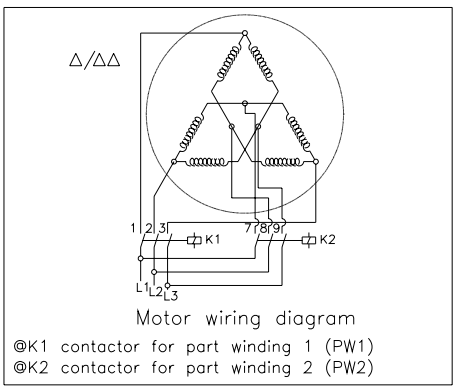
Please pay attention : After Y start, MCM & MCS are deductive for 0.25 sec and then MCM & MCD are inductive for Δ run. Within as transient as 0.25 sec, pseudo short circuit might occur due to inappropriate action of contactors, causing trip of compressors. When it occurs, we recommend usage of adjustable Y-Δ dedicated timer or slightly lengthen span of time for MCM, MCS deduction - MCM, MCD re-induction from 0.25 sec to 0.5 sec max directly in micro controller or PLC program. Please refer to Y-Δ shift time diagram for details. Because motor is not powered during Y-Δ shift, shorter Y-Δ shift span is suggested to prevent second start due to decreased rotation speed. However, if Y-Δ shift span is too short, aforementioned pseudo short circuit might occur.

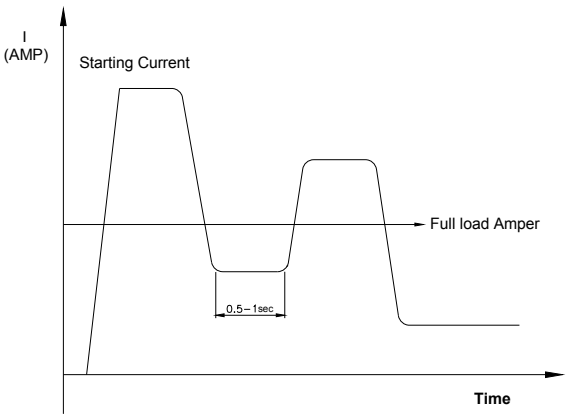
Characteristics of Y-Δ Starting

1. Starting current in Y connection is 1/3 of lock rotor ampere.
2. Starting torque in Y connection is 1/3 of lock rotor torque.
3. Acceleration of motor rotor becomes smaller at full-load starting, therefore compressors require starting at partial load.

Δ/ΔΔ (PW) starting

RC2-100A ~ RC2-580A & RC2-100B ~ RC2-410B are available to be fitted with PWS motor for customer's application as an optional accessory. Please refer to the follow diagram for the wiring of PWS motor.





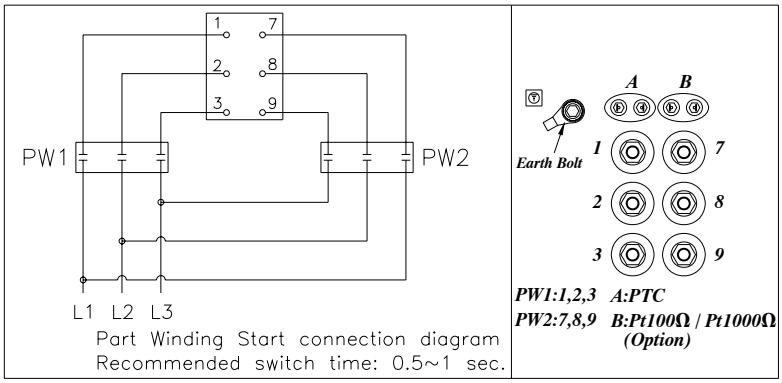


Figure 55 Δ/ΔΔ (PW) starting diagram

The selection of both of the motor contactors (k1 / k2) is each for approx. 60% of the max. running current. The recommended time delay of the switching relay k1 is to be set at 0.5 second and not more than 1 second.

PWS Starting features

The starting current is around 40% ~ 70% of full-winding Locked Rotor Current. It depends on the design and motor size, and low starting torque.

Direct on line features

The starting equipment consists of only a main contactor and thermal or electronic overload relay. During a direct-on-line start, the starting torque is very high, and is higher than necessary for most applications. The disadvantage with this method is that it gives the highest possible starting current. Please refer to the follow diagram for the wiring of DOL starting

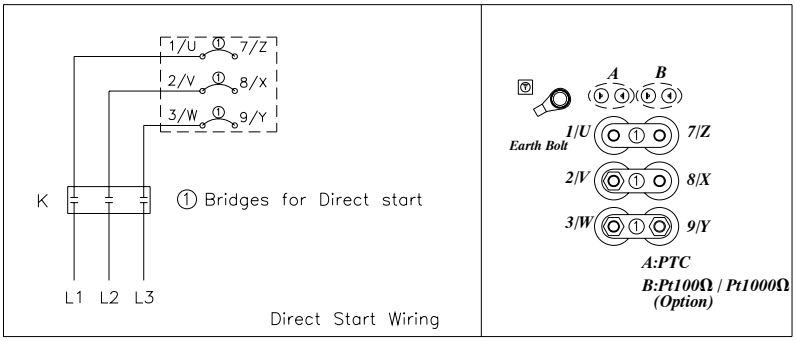


Figure 56 DOL starting diagram

Soft starting features

A soft starter has different characteristics than other starting methods. It has thyristors in the main circuit, and the motor voltage is regulated with a printed circuit board. The soft starter's advantage is that when the motor voltage is low during start, the starting current and starting torque is also low. Please refer to the following diagram for wiring of soft starting.

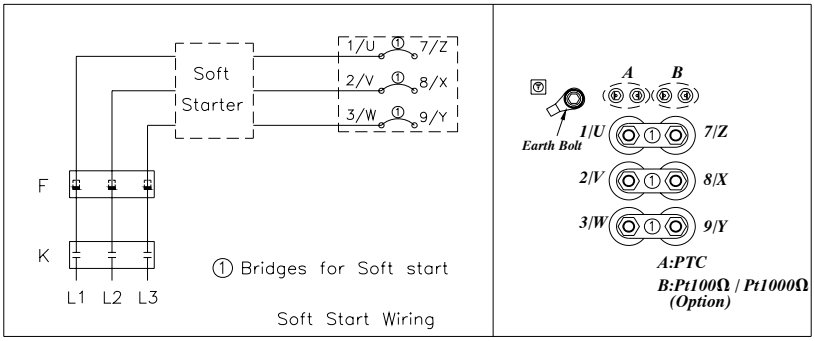


Figure 57 Soft starting diagram

Besides Y-Δ and PWS start, if there were any inquiry of direct on line start、soft start、inverter start or series reactance reduced voltage start, please contact Hanbell for further information.

5.2 Compressor protection devices

The table below shows the list of protection devices which are essential to protect the compressor and operate safely. Follow the protection devices listed in the below table to ensure the compressor running under normal condition.

Protection device	Set point	Remark
Motor wiring temperature protector (PTC sensor)	Cutout 110℃, cut in 100℃ ※	Standard
Discharge temperature protector (PTC sensor)	Cutout 110℃, cut in 100℃ ※	Standard
Phase reversal protector (INT69HBY)		Optional
Phase failure protector (INT69HBY)		Optional
Oil level switch		Optional
Oil filter pressure differential switch	Cutout 1.5kg/cm^{2}g	Optional
Oil flow switch		Optional
Pt100 or Pt1000 for liquid injection to motor chamber.	Depends on customer's application. Normally, Cut in 60℃, cut out 50℃ is ok.	Optional

※Manual reset suggested

Motor thermistors and discharge thermistors are temperature sensors with quick response while the temperature approach to their set point; thermistors must be connected in series to a controller (INT69HBY) in terminal box as a guardian to protect compressor. Alarm lamp for this protector is required to be embedded on control panel as indicator. Any intention to short controllers for starting of compressors is prohibited. It is beyond Hanbell's warranty of compressors if there is any action above mentioned found.

Note: when any protection device trips, please do troubleshooting and reset manually. Do not let the compressor reset automatically after abnormal trip!

5.3 Power supply

1. Limitation of power supply

a. Voltage limitation
Long-term running : rated voltage ±5%
Instant running : rated voltage ±10%

b. Frequency :
Rated frequency ±2%

Note that in the region where the electricity power is unstable, install an additional hi-low voltage protector with ± 5% tolerance of normal voltage to ensure safe operating of the compressor.

2. Unbalanced voltages :

Unbalanced voltages usually occur because of variations in the load. When the load on one or more of the phases is different than the other(s), unbalanced voltages will appear. This can be due to different impedances, or type and value of loading in each phase. Unbalanced voltages can cause serious problems, particularly to the motor.
NEMA defines voltage unbalance as follows :

$$\text{Percent voltage unbalance} = 100 \times \frac{\text{(maximum voltage deviation from average voltage)}}{\text{(average voltage)}}$$

NEMA states that poly-phase motors shall operate successfully under running conditions at rated load when voltage unbalance at the motor terminals does not exceed 1%. Furthermore, operation of a motor with over 5% unbalance is not recommended for it probably results in motor damage.

Unbalanced voltages at motor terminals cause phase current unbalance ranging from 6 to 10 times the percent of voltage unbalance for a fully loaded motor. This causes motor over current resulting in excessive heat that shortens motor life, and hence, eventual motor burnout. If the voltage unbalance is great enough, the reduced torque capability might not be adequate for the application and the motor will not attain rated speed.
Some of the more common causes of unbalance voltages are :

- ●Unbalanced incoming utility supply
- ●Faults or grounds in power transformer
- ●Large single phase distribution transformer in the system
- ●Open phase on the primary 3-phase transformer in the distribution system
- ●Blow fuse on 3 phase bank of power factor improvement capacitors
- ●Unequal impedance in conductors of power supply wiring
- ●Unbalanced distribution of single phase loads such as lighting
- ●Unequal transformer tap settings
- ●Open delta connected transformer banks
- ●Heavy reactive single phase loads such as welders

A 3-phase unbalanced voltages protector is upon request as optional accessory. Please contact Hanbell for more details.

5.4 Selection of magnetic contactor

Please refer to AC3 specification, compressor selection program and design conditions of system to choose suitable contactor. The following table shows recommended contactor size(for Y-△ start) fit for all models in different design and operation conditions by AC3 specification .(If design and operation conditions differ, a second choice is must.)

Refrigerant		R134A							
Condensing / Evaporating Temp.		Air cooling (55/4℃)				Water cooling(38/4℃)			
Contactor size (Amp)		MCM	MCD	MCS	O.L	MCM	MCD	MCS	O.L
50Hz 400V	RC2-100A	25	25	14	43	17	17	10	30
	RC2-140A	33	33	19	58	23	23	13	40
	RC2-170A	42	42	25	74	29	29	17	51
	RC2-180A	44	44	26	77	31	31	18	53
	RC2-200A	47	47	27	82	33	33	19	56
	RC2-230A	55	55	32	96	39	39	22	66
	RC2-260A	63	63	36	109	44	44	25	76
	RC2-300A	71	71	41	123	49	49	28	85
	RC2-310A	74	74	43	129	52	52	30	90
	RC2-320A	76	76	44	132	53	53	31	92
	RC2-340A	81	81	47	140	56	56	33	98
	RC2-370A	88	88	51	153	62	62	36	107
	RC2-410A	98	98	57	170	68	68	39	118
	RC2-470A	114	114	66	197	79	79	46	137
	RC2-510A	123	123	71	214	86	86	49	148
	RC2-550A	133	133	77	230	92	92	53	160
	RC2-580A	138	138	80	239	96	96	56	167
	RC2-610A	143	143	82	247	99	99	57	171
	RC2-620A	145	145	84	251	100	100	58	174
	RC2-710A	167	167	96	289	116	116	67	200
	RC2-79()A	183	183	105	316	128	128	74	222
	RC2-830A	193	193	111	334	133	133	77	231
	RC2-930A	223	223	129	386	155	155	89	268
	RC2-1090A	260	260	150	450	181	181	104	313
	RC2-1280A	301	301	174	521	208	208	120	361
	RC2-1520A	348	348	201	603	242	242	140	419

Refrigerant		R134A							
Condensing / Evaporating Temp.		Air cooling (55/4℃)				Water cooling(38/4℃)			
Contactor size (Amp)		MCM	MCD	MCS	O.L	MCM	MCD	MCS	O.L
60Hz 380V	RC2-100A	31	31	18	54	22	22	13	38
	RC2-140A	42	42	25	74	29	29	17	51
	RC2-170A	54	54	31	93	37	37	21	64
	RC2-180A	56	56	32	97	39	39	23	68
	RC2-200A	60	60	35	104	41	41	24	71
	RC2-230A	70	70	41	121	48	48	28	83
	RC2-260A	80	80	46	138	55	55	32	95
	RC2-300A	90	90	52	155	62	62	36	108
	RC2-310A	94	94	54	163	39	39	22	67
	RC2-320A	96	96	56	167	67	67	39	116
	RC2-340A	102	102	59	177	71	71	41	123
	RC2-370A	112	112	65	194	78	78	45	135
	RC2-410A	125	125	72	216	86	86	50	150
	RC2-470A	143	143	83	248	100	100	58	173
	RC2-510A	157	157	90	271	109	109	63	189
	RC2-550A	168	168	97	291	117	117	67	202
	RC2-580A	175	175	101	304	122	122	70	210
	RC2-610A	181	181	104	313	125	125	72	217
	RC2-620A	183	183	105	316	127	127	73	220
	RC2-710A	210	210	122	365	146	146	84	253
	RC2-79()A	234	234	135	405	162	162	94	281
	RC2-830A	244	244	141	422	169	169	98	293
	RC2-930A	282	282	163	489	196	196	113	339
	RC2-1090A	329	329	190	569	228	228	132	396
	RC2-1280A	380	380	220	659	264	264	153	458
	RC2-1520A	440	440	254	762	305	305	176	529

5.5 Grounding

There's a grounding terminal inside cable box. Please accurately connect it to grounding of control panel for the system.

Suggestion:

a. The regular setting of electric leak protection should be greater than 50mA; for a humid location, 25mA is better.
b. Grounding voltage of casing should be no greater than 50V; for a humid location, the limit is 25V.
c. Grounding resistance should be no greater than 500 Ohm.
d. Air cut board (ACB) is regularly equipped with electric leak protection. Please refer to related settings for its normal action.
e. If electric leak protection is active, please check if insulation of equipments is normal and if its wiring and setting are correct.

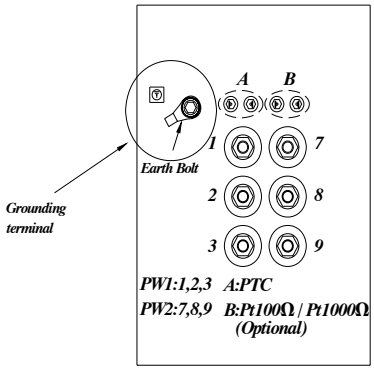


Figure 58 Grounding Terminal

Please make sure nothing is wrong before turning on the power. If there are any questions, please contact the supplier of equipments.

F

6. Operation and maintenance

6.1 Compressor start-up

PRE-START CHECKING- Table below shows the required procedures and checkpoints before starting-up the compressor during commissioning or initial operation of the unit.

Items	Things to be checked	States or standard values
1. Accessories	1. Oil level 2. Oil heater 3. System valves status 4. Solenoid valves 5. Capillary	1. Higher than the middle line of oil level sight glass 2. Should be kept energizing after compressor shut down. 3. Opened 4. Fixed 5. No serious distortion or damaged
2. Electrical system	1. Voltage of main power 2. Voltage of control circuit 3. Insulation resistance value of the motor between phase to phase and phase to ground. 4. Power terminals and wire cables' terminal connection. 5. Grounded 6. Capacity of electrical accessories 7. Settings of switches, sensors and controllers.	1. Electricity voltage should be kept within 5% to the rated voltage, instant maximum voltage drop while starting should be less than 10% to the rated voltage. 2. Standard voltage is 220V.Maximum voltage is 230V. If there is other demand, contact HANBELL. 3. Insulation resistance value should be above 5MΩ. 4. Power terminals are firmly fixed on terminal block and well insulated. Keep wire cables away from heat source and sharpened metal. Power terminals are fixed firmly and well insulated. Terminal screw and block are both required. 5. (Ruled by the local Electricity Regulations.) 6. Properly selected (or inquired by the system designer.) 7. Properly set (or inquired by the system designer.)
3. Piping system	1. Outer piping system 2. Leakage test 3. Bolts to fix the compressor.	1. Fixed firmly. 2. No leakage. 3. Fix the compressor tightly.
4. Safety devices	1. Motor coil sensor (thermistor) 2. Discharge sensor (thermistor) 3. Controller	1. Connected in series with discharge sensor to controller. 2. Connected in series with motor sensor to controller. 3. Closed circuit with N.C. & N.O.

In addition to the pre-start checking given in the above table, please also consider the following:

a. It is necessary to pay more attention to the auxiliary facilities while the chiller is commissioning at the job-site and the periodic maintenance after the initial start-up.

b. In order to keep the capacity control smoothly under the low ambient temperature with the normal viscosity of oil, oil heater should be kept energizing after compressor has been shut down for preparation for the next start-up.

c. Check that all the settings on each pressure switch are correct.

d. Check if all the stop valves in the system are already open.

e. Check the rotating direction of the compressor by starting the compressor for a split second (approx. 0.5…1 sec.) and check the suction and discharge pressure gauges. The correct rotating direction is: suction pressure drops immediately and the discharge pressure will go up.

f. Compressor's lubrication oil should be checked immediately after starting. Oil level should be within sight glass range or higher than the middle line of oil level sight glass.

g. Oil foaming can be generated during starting phase, but it should reduce when the compressor is under stable operating conditions. Otherwise this can indicate excessive liquid in the suction gas.

h. The running condition of compressor after commissioning at the job-site should be adjusted as; the discharge temperature will be at least 20K above the saturated condensing temperature and the suction vapor superheat should be within 10K to the saturated evaporating temperature.

i. The whole plant, especially the pipelines and capillary tubes must be checked for abnormal vibrations. Please contact HANBELL or local distributor if any abnormal vibrations or noise found while compressor is running.

j. Regularly check the plant according to national regulations and the following items should also be checked:

- ●Operating data of the machine
- ●Check the lubrication/ oil level
- ●All compressor protection devices
- ●Check electrical cable connections and tightness

6.2 Troubleshooting

The table below shows some problem that might encounter in the jobsite during commissioning or upon operation of compressor. This table will only serve as a guide for the Engineer to understand the situation once the problem occurred in the site.

PROBLEMS	PROBABILITY CAUSES	REMEDY / CORRECTIVE ACTION
Sudden trip of motor thermistor / sensor	Low suction pressure cause low refrigerant flow rate	Install liquid injection to motor coil
	Refrigerant shortage	Charge refrigerant
	Suction filter clogged	Clean filter
	High suction temperature	Install liquid injection to motor coil
	High suction superheat	Adjust the superheat less than 10°K
	Unstable electricity system or failure	Check electricity power supply
	Motor overload	
	Bad motor coil causing temperature rising rapidly	
Compressor unable to load	Low ambient temperature or high oil viscosity.	Turn on the oil heater before compressor start.
	Capillary clogged.	Clean or replace capillary
	Modulation solenoid valve clogged or solenoid valve coil burnt.	Clean / purge solenoid valve core or replace the solenoid valve coil
	Internal built-in oil line clogged.	Check and clean the compressor oil circuit
	Piston stuck-up.	Change piston or piston ring
	Oil filter cartridge clogged.	Clean oil filter (replace if needed)
	Too small the high-low pressure differential.	Minimum pressure differential is 4 bar. Consider to install an oil pump.
Compressor unable to unload.	Modulation solenoid valve clogged or burnt.	Clean or replace the solenoid valve
	Piston rings worn off or broken, or cylinder damaged resulting leakage.	Change piston (if cylinder damaged severely, change the cylinder)
	Lubrication oil insufficient.	Check the oil level of the compressor if enough, add some oil if necessary
	Leakages at internal discharge cover plate end side.	Check or replace the gasket and tighten the bolts.
	Solenoid valve voltage misused.	Check the control voltage
	Piston stuck-up.	Change the piston set, and check the cylinder and slide valve.
	Capacity control logic unsuitable.	Check
Poor insulation of motor	1. Bad compressor motor coil.	Check the coil or change the motor stator
	2. Motor power terminal or bolt wet or frosty.	
	3. Motor power terminal or bolt bad or dusty.	
	4. Bad insulation of magnetic contactors.	
	5. Acidified internal refrigeration system.	
	6. Motor coil running long time continuously under high temperature.	
	7. Compressor restart counts too many times.	
Compressor starting failure or Y-Δ starter shifting failure	Slide valve piston unable to go back to its lowest % original position.	Check if the unloading SV is energized once the compressor shut down. Unload the compressor before shot down.
	Voltage incorrect.	Check the power supply
	Voltage drop too big when starting the compressor or magnetic contactor failure or phase failure.	Check the power supply and the contactor.
	Motor broken down	Change the motor
	Motor thermister sensor trip.	See “sudden trip of motor sensor” above
	Incorrect supply power connection.	Check and re-connect
	Y-Δ timer failure.	Check or replace.
	Discharge or suction stop valve closed.	Open the stop valve
	Improper connection between node terminals of Y-Δ wiring.	Check and re-connect the wiring
	Rotor locked	Check and repair
	Earth fault	Check and repair
	Protection device trip	Check
Abnormal vibration and noise of compressor	Damaged bearings.	Change bearing.
	Phenomenon of liquid compression.	Adjust proper suction superheat
	Friction between rotors or between rotor and compression chamber.	Change screw rotors or/and compression chamber.
	Insufficient lubrication oil.	Check the oil level of the compressor if enough, add some oil if necessary.
	Loosen internal parts.	Dismantle the compressor and change the damaged parts.
	Electromagnetic sound of the solenoid valve.	Check
	System harmonic vibration caused by improper piping system.	Check the system piping and if possible improve it using copper pipe.
	External debris fallen into the compressor.	Dismantle the compressor and check the extent of the damage.
	Friction between slide valve and rotors.	Dismantle the compressor and change the damaged parts.
	Motor rotor rotates imbalance.	Check and repair.
Compressor does not run	Motor line open	Check
	Tripped overload	Check the electrical connection
	Screw rotors seized	Replace screw rotors, bearings etc.…
	Motor broken	Change motor.
High discharge temperature	Insufficient refrigerant.	Check for leaks. Charge additional refrigerant and adjust suction superheat less than 10°K
	Condenser problem of bad heat exchange.	Check and clean condenser
	Refrigerant overcharge.	Reduce the refrigerant charge
	Air / moisture in the refrigerant system	Recover and purify refrigerant and vacuum system
	Improper expansion valve.	Check and adjust proper suction super heat
	Insufficient lubrication oil.	Check the oil level and add oil.
	Damaged bearings.	Stop the compressor and change the bearings and other damaged parts.
	Improper Vi value.	Change the slide valve.
	No system additional cooling (Liquid injection or oil cooler)	Install additional system cooling (liquid injection or oil cooling or both base on working condition limitation)
Compressor losses oil	Lack of refrigerant	Check for leaks. Charge additional refrigerant.
	Improper system piping	Check and correct the piping or install an external oil separator
	Liquid fills back	Maintain suitable suction superheat at compressor
Low suction pressure	Lack of refrigerant	Check for leaks. Charge additional refrigerant.
	Evaporator dirty or iced	Defrost or clean coil
	Clogged liquid line filter drier	Replace the cartridge
	Clogged suction line or compressor suction strainer	Clean or change suction strainer
	Expansion valve malfunctioning	Check and reset for proper superheat
	Condensing temperature too low	Check means for regulating condensing temperature

Note: The replacement of compressor internal parts should be perform only by a qualified / certified service technician with full knowledge of HANBELL screw compressor or it should be a Service Engineer from HANBELL.

6.3 Compressor checking list

Please fill out the compressor checking list and send it to Hanbell, if any failure of compressor happened. Hanbell will reply and suggest the solution to resolve the failure.

CHECK LIST FOR TROUBLESHOOTING OF HANBELL SCREW COMPRESSOR

Compressor model：　　Compressor S/N：

System design condition SCT/SST：　　Evaporator type：

Refrigerant type：　　Liquid injection：☐ Motor ☐ Chamber

Voltage：R-S:　　S-T:　　R-T:　　Over load setting：　　A

Y–Δ setting:　　Sec　　Δ–Δ setting：　　Sec

Starting current：　　A　　Δ current：　　A（end of starting）

Operating current (full load)：R:　　S:　　T:

Description of problem：

- ☐ A：abnormal noise　　dBA at　　% capacity
- ☐ B：abnormal vibration
- ☐ C：over current
- ☐ D：motor burnout
- ☐ E：unable to load
- ☐ F：unable to unload
- ☐ G：leakage（Photo would be a plus）
- ☐ H：accessory parts damaged（Photo would be a plus）
- ☐ I ：other（Detail would be a plus）

Suction pressure	Discharge pressure	Suction temp.	Discharge temp.	Liquid line temp.	Condenser water temp.		Chiller water temp.		Oil cooler temp.		Economizer temp.	
					inlet	outlet	inlet	outlet	inlet	outlet	inlet	outlet

E-mail: sales@hanbell.com & service@hanbell.com
Fax: +886-3-4836223 Tel: +886-3-4836215

7. Applications

7.1 Additional cooling

When compressors operate in the following application conditions, installation of an additional auxiliary cooling apparatus is recommended to lower discharge temperature, maintain proper temperature of lubricant and additional cooling for motor coil… to ensure safe running of compressors with efficiency.

- Air-cooled system
- High compression ratio system such as heat pump, low temperature and refrigeration system
- High discharge temperature system such as heat recovery system
- If compressors have to run at partial load below 50% continuously in a long term.
- Any other heavy duty application

There are two type of additional cooling of compressor that described separately as below.

a. Liquid injection applications

In areas with high condensing temperature and/or low evaporating temperature as in the limitation diagram, additional cooling is required in order for the compressor to work properly. A relatively simple method of additional cooling is direct refrigerant injection in the compressor either in the motor side or compression chamber side.

The purpose of installing a liquid injection system is to prevent the compressor from overheat. The system installed a liquid injection expansion valve between the liquid line and compressor for cooling down the compression chamber and motor to ensure the continuous and safe running of the compressor. The suction superheat should be controlled between 5K~10K for the application of air-cooled and heat pump chillers by means of expansion valve devices. These devices can be adjusted by the stem of the expansion valve to control the suction superheat by means of refrigerant flow rate. When the initial startup, the loading of the chiller is heavy due to the high temperature of chilled water, so the liquid injection devices capacity should be selected or calculated enough to reduce the overheat of the compressor.

Calculating the cooling capacity of liquid injection devices

Liquid injection devices can be calculated with the **HANBELL selection software** or manually. For manual calculation, consider the most extreme conditions to be expected during actual operations i.e. minimum evaporating temperature, maximum suction gas super heat and condensing temperature.

Liquid injection applied with low temperature expansion valve

When the compressor applied in the low temperature system (E.T. ≦ -10°C) the compression ratio is high at this condition, also the discharge temperature will be very high. The design of the liquid injection system for low temperature application is similar to the illustration shown in figure below. There are two connectors for the liquid injection in the compressor, one is in the motor side to cool down the motor temperature and reduce the discharge temperature. The other is in the compression chamber side and its function is to reduce the discharge temperature and increase the compression efficiency. However, when additional cooling in compression chamber like economizer operation, oil cooler application is used or when condensing temperature is low, discharge temperature be kept low and liquid injection may not be turned on, although motor load is severe and motor coil temperature is high. This may lead to motor failure. Therefore, in application mentioned above Pt100 or Pt1000 for liquid injection to motor is recommended instead.

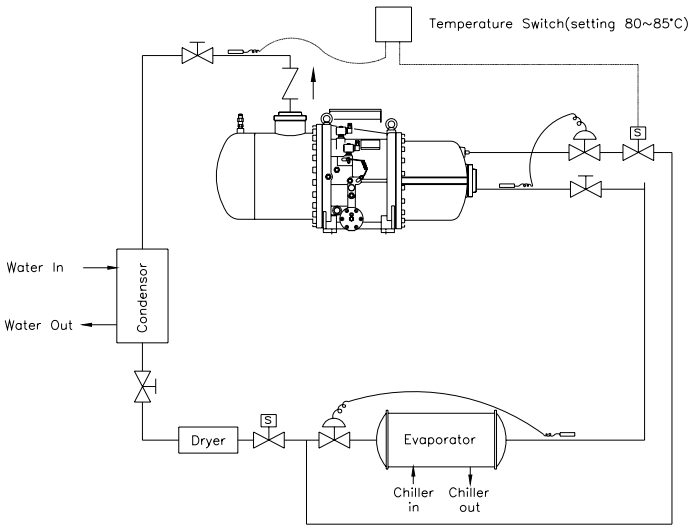


Figure 59 Liquid injection connected to motor

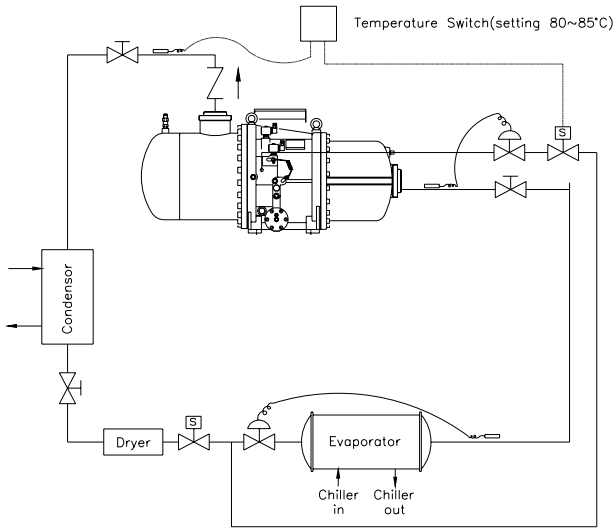


Figure 60 Liquid injection connected to compression chamber

Liquid injection applied with high temperature expansion valve

Select the high temperature expansion valve, which can sense the discharge temperature with its remote bulb. This can control the opening of expansion valve proportionally, and can reach the best cooling effect; it will control the compressor discharge temperature at an optimal situation of around 80°C.
It can also be installed with an additional solenoid valve or service valve in front of the high temperature expansion valve for the maintenance purposes. The solenoid valve will be opened while starting the compressor. The equilibrium tube of high temperature expansion valve should be connected to the high-pressure side to counter the internal pressure.
However, when additional cooling in compression chamber like economizer operation, oil cooler application is used, or when condensing temperature is low, discharge temperature may be kept low and liquid injection may not be turned on, although motor load is severe and motor coil temperature is high. This may lead to motor failure. Therefore, in applications mentioned above, Pt100 or Pt1000 for liquid injection to motor is recommended instead.

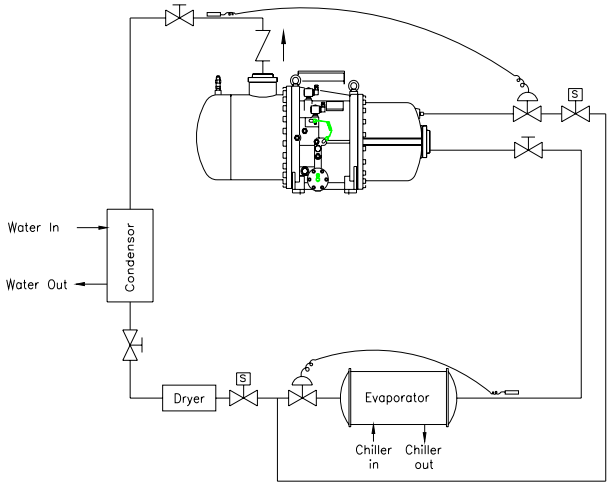


Figure 61 Liquid injection (high temperature type) connected connected to motor

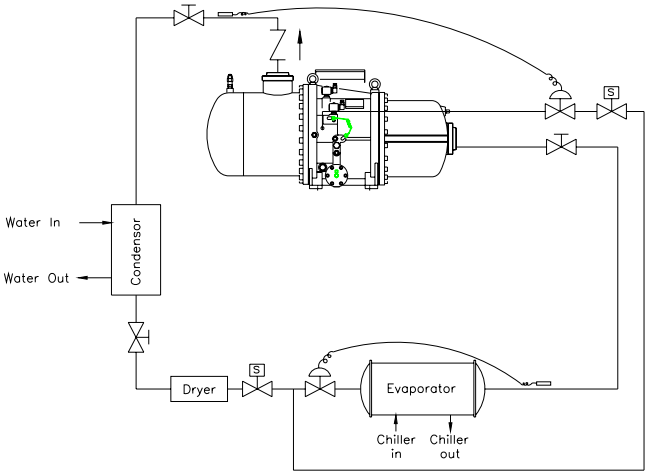


Figure 62 Liquid injection (high temperature type) to compression chamber

b. Oil cooler applications

Compared to liquid injection applications, external oil cooler applications reduces the discharge temperature and at the same time gives better efficiency. Oil cooler application can be classified into 3 types: cooling by refrigerant, cooling by ambient air, cooling by cooling water. Oil cooler capacity can be calculated manually or using HANBELL selection software. When calculating manually, worst case operating conditions must be considered: minimum evaporating temperature, maximum suction gas superheat, maximum condensing temperature and the operation mode.

Cooling by refrigerant

The cooler uses refrigerant as the cooling medium. A basic refrigerant-cooled oil cooling system is shown in Figure 63.

In the oil cooler, solenoid valve for refrigerant circuit is controlled by oil temperature of the oil outlet of compressor.

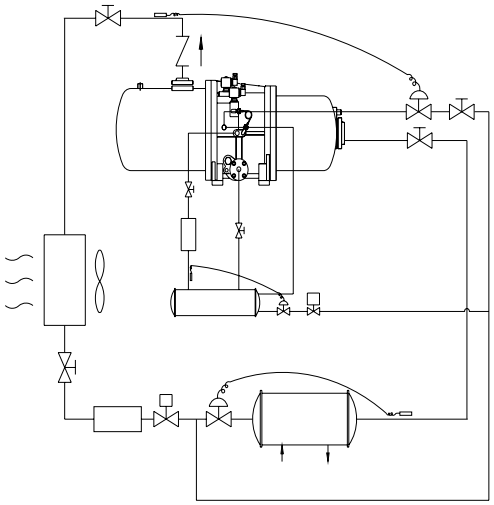


Figure 63 Oil cooling by refrigerant

Air-cooled oil cooling (cooling by ambient air)

The basic air-cooled oil cooling system is shown in Figure 64. This method of cooling is indirect cooling which uses ambient air to cool down the oil, which circulates in the oil cooler.

In the oil cooler, fan is controlled by oil temperature of the oil outlet of compressor.

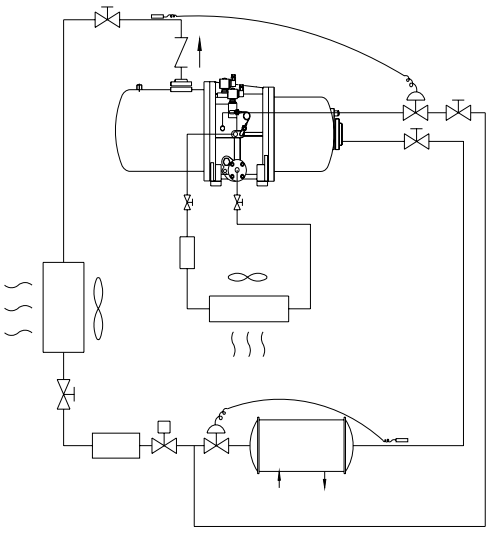


Fig. 64 Oil cooling by ambient air

Water-cooled oil cooling (cooling by water)

This cooling method utilizes a shell and tube heat exchanger and a source of cooled liquid from an external cooling tower or closed loop evaporative cooler. Once-through water can be used but results in high water usage. An indirect cooling system uses a pump to circulate the cooling medium and a cooling tower or evaporative cooler to reject heat from the cooling medium. The basic water-cooled oil cooling system is shown in Figure 65.

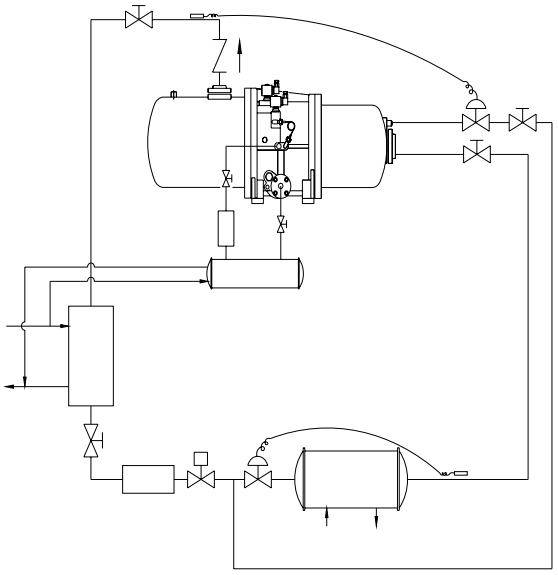
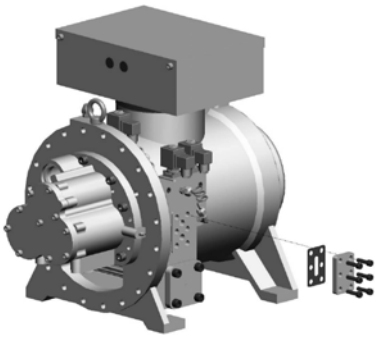


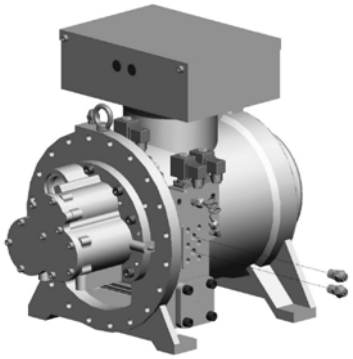
Figure 65 Oil cooling by water

Note:

1. Please decide appropriate oil cooler capacity by referring to HANBELL selection software.
2. The max. pressure drop allowed in external oil cooler is 1.5 kg/cm^2.
3. When applying an oil cooler with a compressor, please add appropriate refrigeration oil in accordance with the size of oil cooler as well as the length of piping.
4. For RC2-100/140/180, their oil circuit design is different to others. These models don't use the oil stop pin for external oil cooler application. If you find the oil connector (inlet/outlet) installed on the compressor, this means the oil needs to flow out from the oil outlet connector and flow in to the oil inlet connector. If you don't use external additional cooling, you should simply see a cover plate on this position which means the oil will pass this internal tunnel and way up to the cylinder and bearings. Please refer to the illustration below.



Internal oil circuit application



External oil circuit application

7.2 Economizer applications

HANBELL screw compressor can be fitted with an additional middle connection for economizer operation. With this form of operation, refrigeration capacity and also system efficiency can be improved by means of a sub-cooling circuit or two-stage refrigerant expansion.
Based on HANBELL extensive research a special design of the economizer connection has been developed so that the connection causes no additional back flow losses during compression. As a result of this, compressor capacity is fully retained in all operating conditions.
Please refer to Hanbell selection software for calculation of economizer capacity at different operating conditions.

Principle of operation
As opposed to the reciprocating operation of a piston compressor, the compression in a screw compressor takes place only with one flow direction. When the rotors turn, refrigerant vapor is pressed into the rotor grooves by the opposing rotor teeth and transported to end wall of the corresponding working space. In this phase, the volume is steadily reduced and the vapor is compressed from suction pressure to condensing pressure.
The pressure at the additional middle connection is at a similar level to the intermediate pressure with a two-stage system. As a result of these features, a screw compressor of this design can be combined with an additional sub-cooling circuit or an intermediate pressure vessel (flash type sub-cooler) for two-stage expansion. These measures result in a clearly increased refrigeration capacity due to additional liquid sub-cooling, especially with high-pressure ratios. The power consumption of the compressor increases slightly compare to the additional work that takes place at a better level of efficiency.

System with Economizer (sub-cooler)
With this form of operation, a heat exchanger (refrigerant sub-cooler) is used to sub-cooled liquid refrigerant. The sub-cooling is achieved by injecting a part of the refrigerant from the condenser through an expansion device in counter flow into the sub-cooler, which then evaporates due to the absorption of heat. The superheated vapor is pulled into the compressor at the Economizer connection and mixed with the vapor, which is already slightly compressed from the evaporator.
The sub-cooled liquid is at condensing pressure with this form of operation, the pipeline to the evaporator does not therefore require any special features, aside from insulation. The system can be generally applied. Figure 67 shows the system with economizer, **sub-cooler**.

System with economizer (flash type)
The liquid sub-cooling is achieved with this form of operation by reducing the boiling point pressure in an intermediate pressure vessel **(flash type sub-cooler)** arranged between condenser and evaporator. This physical effect leads to the cooling of the liquid down to the boiling point, due to evaporation of part of the liquid. To stabilize the pressure of the vessel, a regulator is used which at the same time controls the quantity of vapor flowing to economizer connection of the compressor.
This form of operation gives the most economical thermodynamic performance due to direct heat exchanging. As the intermediate pressure is reduced to the boiling point temperature this system should only be used with flooded evaporators. Figure 68 shows the system with economizer, **flash type sub-cooler.**

Note:
1. When economizer is used, it is recommended to install a muffler before middle-pressure returned gas port in compression chamber to effectively mitigate pulsation noise in middle pressure as shown in the drawing below.

2. A filter and check valve are also recommended to install before ECO port of compressor.

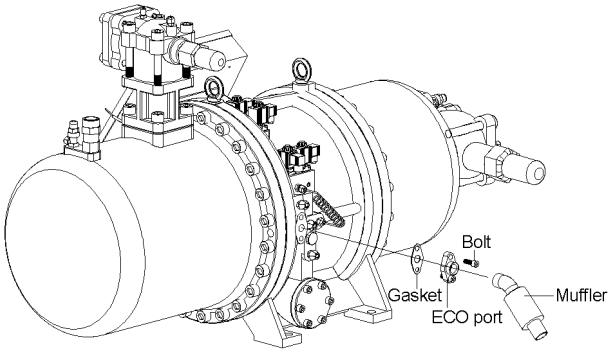


Figure 66 Installation of ECO buffer

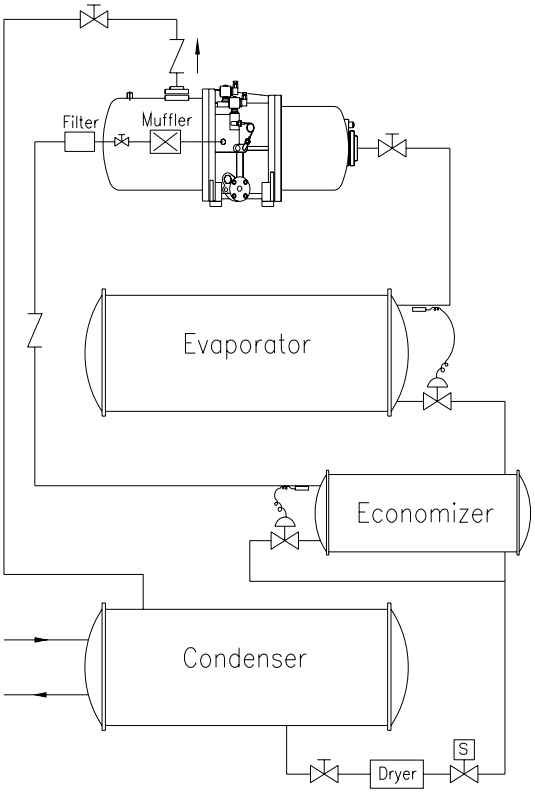


Figure 67 System with economizer (sub-cooler)

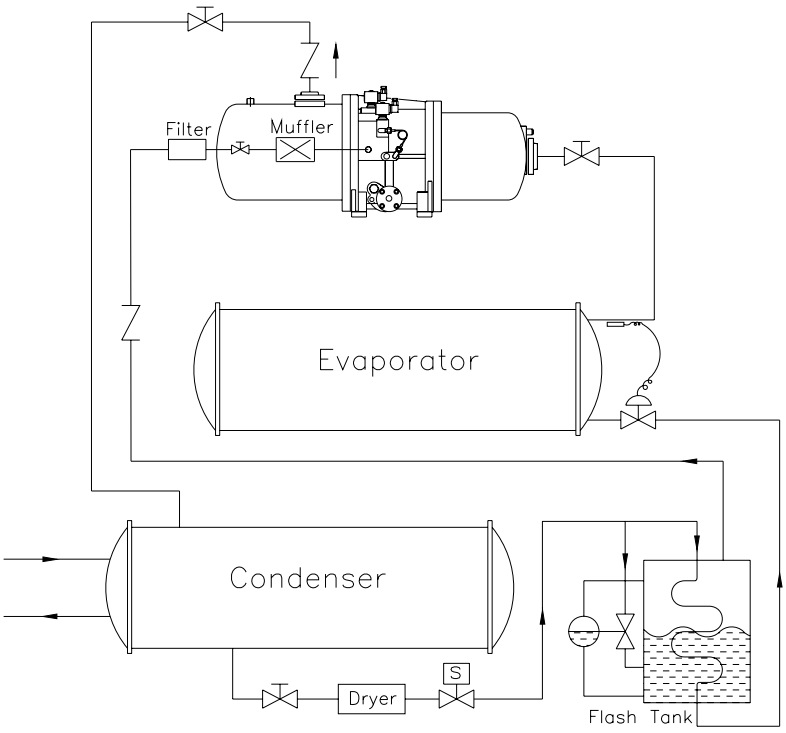


Figure 68 System with economizer (flash type sub-cooler)

7.3 Parallel system applications

In the rack or parallel system, it is possible to happen the unequal-distribution of returned oil from the evaporator that could cause low oil level in one or more of the compressors. Be sure to install the oil level switch inside each compressors and oil flow switch installed in each oil return line to ensure the returned oil in each compressor with normal oil level.
The basic design of the system is shown in Figure 69, twin compressor parallel system connections. The accessories installed are the basic and if there are more applications or protection required, contact HANBELL or local distributor/agent for more information or further confirmation.

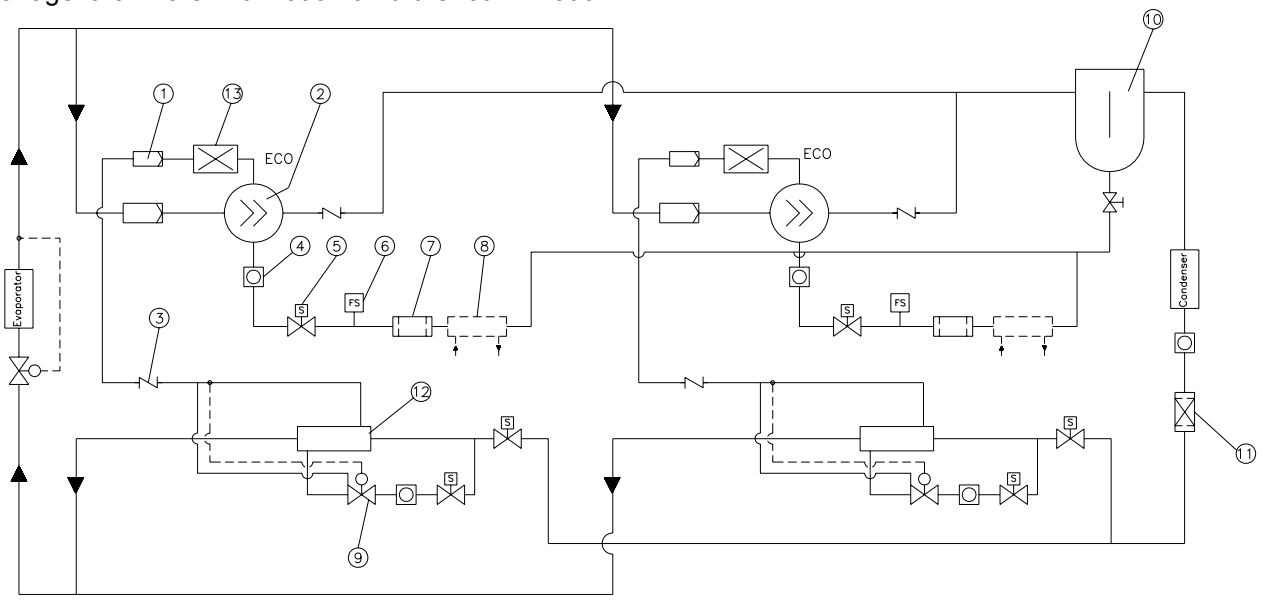


Figure 69 Parallel system with two compressors

Item	Description	Item	Description	Item	Description
1	Filter	6	Flow switch	11	Dryer
2	Compressor	7	Oil filter	12	Secondary cooler
3	Check valve	8	Oil cooler	13	Muffler
4	Sight glass	9	Expansion valve		
5	Solenoid valve	10	Oil separator		

7.4 Oil pump application

An additional oil pump is recommended to install to the system when the differential pressure of oil pressure and suction pressure is less than 4bar (for example: water cooled flooder chiller). If compressor is operating at the mentioned condition, the failure of modulation and lubrication will be happened and will seriously damage the compressor. Besides the installation of additional oil pump, a high – low pressure differential switch is also recommended to install to this kind of system. Please contact with Hanbell for more detailed information of oil pump.

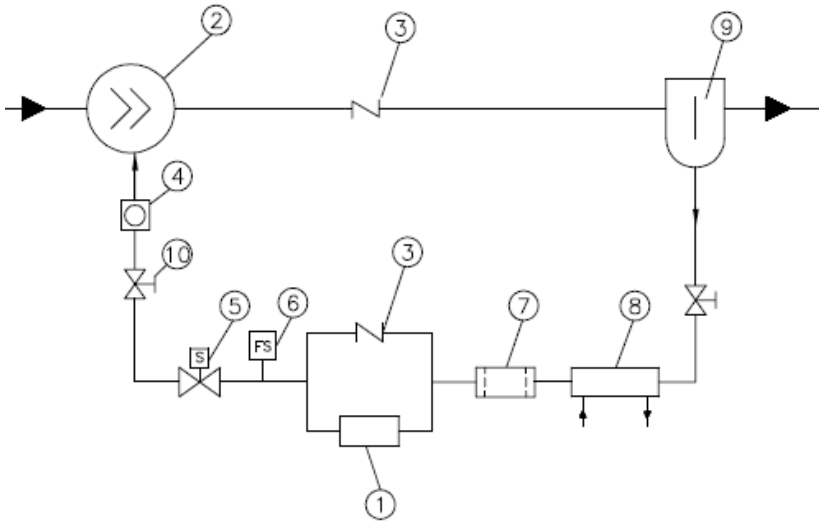


Figure 70 Additional oil pump

Item	Description	Item	Description	Item	Description
1	Oil pump	5	Solenoid valve	9	External oil separator
2	Compressor	6	Flow switch	10	Service valve
3	Check valve	7	Oil filter cartridge		
4	Sight glass	8	Oil cooler		

7.5 Important note of applications of compressor

1. Pump down

Do not pump down the compressor on the chiller as a routine operation except only for temporary maintenance or a long term shut down. Because pump down will cause extremely high temperature in the compression chamber and overheat of the motor as well due to less amount of refrigerant in the suction side. When doing the pump down, be sure to take notice of the items listed below :

a. Hanbell recommends that whenever doing the pumping down of the compressor, the compressor is also recommended to run at 100% capacity.

b. Pump down should be done once each time, as it may be dangerous to the compressor, compression chamber for pumping down repeatedly.

c. The minimum suction pressure when doing the pump down should be over 0.5kg/cm2g

d. The allowable length of time for pumping down a compressor should not be over 15 seconds.

e. When doing the pump down of compressor, must take notice of the high discharge temperature should not exceed 110℃.

f. Take notice of high/low pressure by reading the oil level of the compressor and the noise of running as well. If there is any abnormal value or situation, then emergently stop the pump down.

2. Long term partial load operation

If compressors have to run at partial load below 50% continuously, though maybe within operation limits under such operation condition and with temperature of motor below trip setting for overheating, insufficient dissipation of heat in motor will occur due to lower flow rate of suction gas at partial load. If compressors operate under high temperature for a long time, insulation of motor will deteriorate gradually at risk of serious motor damage finally. In such severe operation conditions, Hanbell strongly recommends installation of liquid injection system to cool motor coil and use of Pt100 or Pt1000 sensor as described in chapter 4.4-s, to effectively control temperature of motor while running. It is suggested to switch on liquid injection when temperature of motor coil is higher than 60℃ and turn off liquid injection when it's lower than 50℃.

3. Low pressure receiver

When a compressor operates in the following application conditions, installation of a low pressure receiver is recommended in order to prevent massive liquid refrigerant from returning to the compressor under momentary changes of operation condition.

●Heat pump ●Parallel system ●system with long piping

●operating in the low ambient temperature area ●system heating load varies extremely

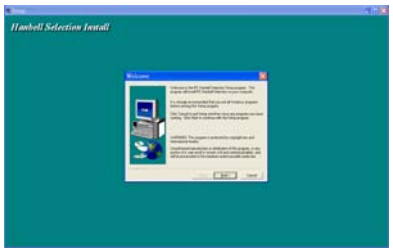
8 Selection software

Selection software installation procedure

Step:

1. This compressor model selection software is suitable for the operating system of Windows98, NT or the above edition (Windows ME, 2000, XP)
   Systematic demand: The magnetic disc space should be at least 300MB.
2. Best results of browser please use the whole screen 800x600 degree.
3. Before installing this software, please close all the works and browser windows firstly.
4. To the selection software files, please move the cursor to **"setup.exe"** and double click.

5. And then it will present 「**welcome**」window, please select **"next"**
   Then, 「**users information**」windows appear, please select **"next"** again and then the windows appear 「**choose the purpose position**」
   Finally please choose the file position, click the **"next"** button. (Default recommends)



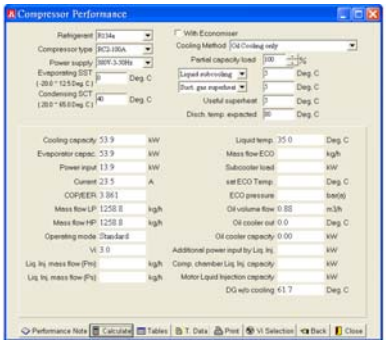
6. The software will decompress automatically.

ESP Operating Procedure:

Step:

1. Before operating our selection software, please check any upgrade of selection software at Hanbell website

2. Enter the main window and it will present products of 「**RC**」, 「**RCF**」, 「**RC2-A**」, 「**RC2-B**」, 「**RC2-AF**」, 「**RC2-BF**」 and 「**LA**」 button of three series of screw compressors of HANBELL.
3. After selecting 「**RC2-A**」, will present several function buttons:
   (3.1) choose the unit, 「**SI**」or 「**Imperial**」. **(default unit is SI)**
   (3.2) 「**PERFORMANCE**」button shows the performance sheet of the compressor

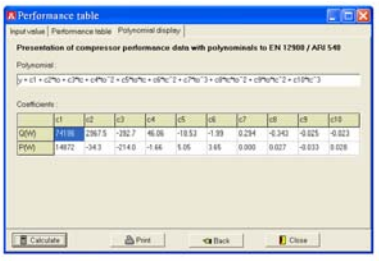


The above window is the operating mode of a compressor, just key-in the following condition and then click the 「**Calculate**」button.

- Refrigerant type
- With economizer (yes/no)
- Compressor model
- Oil cooler or liquid injection
- Power supply (default is 380V 3 50Hz)
- Partial load percent (%)
- Evaporating SST (˚C,˚F)(default is 0 ˚C)
- Condensing SCT (˚C,˚F)(default is 40 ˚C)

Showed the calculated performance data in the middle of the window.

In the lower part of the window, there are several kinds of buttons:
「**Calculate**」: Must click this key, to calculate the value.
「**Tables**」：Can calculate the coefficient of performance by means of polynomial.
「**T.Data**」：The technical data is the same with function key of technical data
「**Print**」： Copying the calculated performance data
「**Vi selection**」：After calculating, different Vi value can be chose by clicking this button.

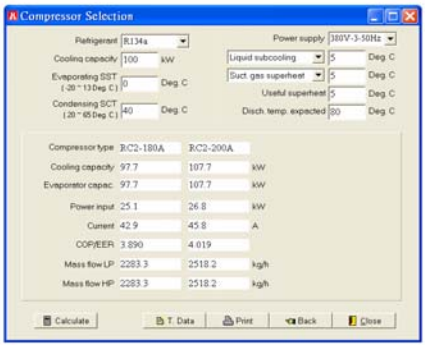


(3.2.1) Click 「**Tables**」button and the window will appear right one (default window), it can calculate the coefficient of performance using polynomial.

(3.2.2) Click the polynomial display button and then 「**Calculate**」. Presentation of compressor performance data using polynomial calculation.

(3.3) 「***SELECTION***」by clicking this button, it will help the customer how to choose screw compressor model.
After clicking the 「***SELECTION***」button, the right window is customer's necessary operating mode. Just key-in the following data.

- Refrigerant type
- Evaporating SST
- Cooling Capacity (KW)
- Condensing SCT
- Power supply

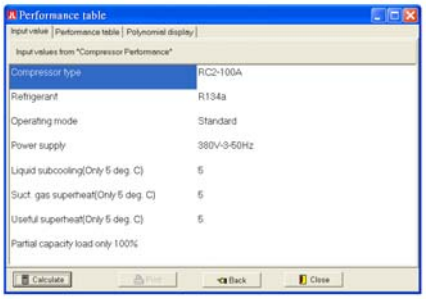


The data shown in the middle of the window is the compressor model and its performance

「**Calculate**」: Must click this button, to calculate the value. After keying the required data click this button and will show the compressor model and the performance.

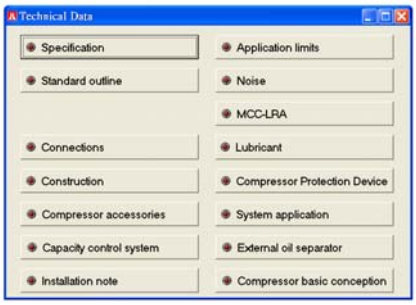
「**T.Data**」: The technical data is the same with function key of technical data(3.4)

「**Print**」: Copying the calculated performance data



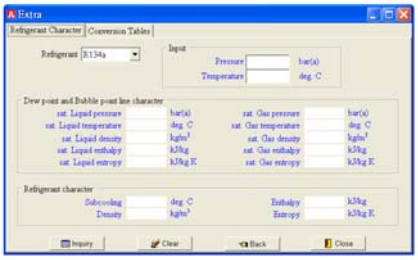
(3.4) 「***T.DATA***」button is for the detailed technical information that the customer needs to know about the compressor including specifications, dimensions and connections, accessories, and others.

Entering this window, it will be shows the following items:



◎Specification：Introduce the design specification of the RC series compressor.
◎Standard outline：Compressors outline drawing.
◎Connections：Shows the sizes of bushing and compressor outline drawing for customer's reference.
◎Construction：Sectional drawing of the compressor with corresponding description.
◎Compressor accessories：Includes the standard and optional accessories of compressors.
◎Capacity control system：Introduce the capacity control system of compressor.
◎Installation Note：It shows the compressor handling, installation and pre-cautions before installing the compressors and some accessories.
◎Application limits：It shows the compressors operation limitation based on various refrigerant.
◎Noise：The noise level table (spectrum)
◎MCC & LRA：Compressors' MCC & LRA
◎Lubricant：Introduce the suitable lubricant oil for various conditions, and features of viscosity, flash point, pour point, moisture, and floc point, etc…
◎Compressor Protection device：It shows the set point and return point of compressor protection switches
◎System application：The window will present the system application suggestion, piping drawing and illustration
◎External oil separator： Oil separator introduction (OS series), application, dimension, and outline, etc…
◎Compressor basic conception：Hanbell compressors design, concept and version.

(3.5) 「**EXTRA**」**Refrigerant** Contrast sheet (Pressure – Temperature) and unit conversion.
Entering the window, it will present the following information:
「**Refrigerant Characteristic**」(R22, R134a, R407C, R404A)
「**Conversion Tables**」:
Temperature, length, area, volume, Mass
Pressure, Specific Volume, density, Velocity
Flow rate, power, Specific Enthalpy, Specific Entropy (specific heat)



(3.6) 「**ABOUT**」Shows the edition of this software and technical support.
(3.7) 「**EXIT**」Leave current window

9. Warranty

All HANBELL screw compressors are put through strict quality and performance testing prior to shipping from the factory. The screw compressors are manufactured from the finest quality material and are warranted for one year after the completion of installation and commissioning at the jobsite or up to18 months from the original date of sales by HANBELL or designated sales agent, whichever comes first.

However, HANBELL will not be responsible if the compressor does not work properly for any of the following reasons:

1) damaged caused by others including shipping, natural disaster, war, etc.
2) damage caused by improper installation, operation or maintenance that is not in accordance with the HANBELL Technical Manual or instruction,
3) damaged caused by modification of any part on or connected to the compressor, and/or
4) damage caused by the improper maintenance or repair by a non-authorized technician.
5) HANBELL will also not responsible for any accident, which may happen to personnel while installing, setting up, operating, maintaining, and/or repairing the compressor.

Appendix

Appendix 1. RC2 Compressor noise level

RC2 Series Screw Compressors' Sound Pressure Level

Hz\Model	RC2-100	RC2-140	RC2-170	RC2-180	RC2-200	RC2-230	RC2-260	RC2-300	RC2-310
50	55.0	55.6	59.4	56.5	59.7	60.1	60.4	60.8	61.0
63	51.9	52.4	56.1	53.3	56.3	56.7	57.0	57.3	57.6
80	56.9	57.4	61.4	58.4	61.7	62.1	62.4	62.8	63.1
100	54.0	54.5	58.3	55.5	58.6	59.0	59.3	59.6	59.9
125	53.6	54.1	57.9	55.0	58.1	58.5	58.8	59.2	59.4
160	53.1	53.6	57.3	54.5	57.6	58.0	58.3	58.6	58.8
200	51.0	51.5	55.1	52.4	55.4	55.8	56.0	56.3	56.6
250	60.4	61.0	65.3	62.1	65.6	66.1	66.3	66.7	67.0
315	56.1	56.6	60.6	57.6	60.9	61.3	61.6	61.9	62.2
400	53.2	53.7	57.5	54.7	57.8	58.2	58.4	58.8	59.0
500	57.6	58.2	62.3	59.2	62.5	62.9	63.3	63.6	63.9
630	55.5	56.0	60.0	57.0	60.2	60.6	60.9	61.3	61.6
800	64.8	65.4	70.0	66.6	70.3	70.8	71.1	71.5	71.9
1000	59.8	60.4	64.6	61.5	64.9	65.4	65.7	66.1	66.3
1250	66.9	67.5	72.3	68.7	72.6	73.1	73.4	73.9	74.2
1600	63.2	63.7	68.2	64.9	68.5	69.0	69.3	69.7	70.0
2000	62.0	62.6	67.0	63.7	67.3	67.8	68.1	68.5	68.8
2500	62.0	62.6	67.0	63.7	67.3	67.8	68.1	68.5	68.8
3150	59.5	60.1	64.3	61.1	64.6	65.1	65.3	65.7	66.0
4000	58.2	58.8	62.9	59.8	63.2	63.6	63.9	64.3	64.6
5000	53.1	53.6	57.4	54.6	57.7	58.1	58.3	58.7	58.9
6300	50.2	50.7	54.3	51.6	54.5	54.9	55.2	55.5	55.7
8000	45.2	45.6	48.8	46.4	49.0	49.3	49.6	49.9	50.1
10000	44.6	45.0	48.2	45.8	48.4	48.7	49.0	49.3	49.5
12500	39.4	39.8	42.5	40.5	42.8	43.1	43.2	43.5	43.7
16000	34.8	35.2	37.6	35.8	37.8	38.0	38.2	38.5	38.6
20000	34.5	34.8	37.2	35.4	37.4	37.6	37.8	38.1	38.2
Overall dB(A)	73.1	73.7	78.1	74.8	78.4	78.8	79.2	79.6	79.9

Hz\Model	RC2-320	RC2-340	RC2-370	RC2-410	RC2-470	RC2-510	RC2-550	RC2-580	RC2-610
50	**61.2**	**61.4**	**62.4**	**63.8**	**64.8**	**65.7**	**66.7**	**66.9**	**67.1**
63	**57.7**	**58.0**	**58.9**	**60.2**	**61.1**	**62.0**	**62.9**	**63.1**	**63.3**
80	**63.3**	**63.5**	**64.5**	**66.0**	**67.0**	**67.9**	**68.9**	**69.2**	**69.4**
100	**60.0**	**60.3**	**61.2**	**62.6**	**63.6**	**64.4**	**65.4**	**65.7**	**65.8**
125	**59.6**	**59.8**	**60.8**	**62.2**	**63.1**	**64.0**	**64.9**	**65.2**	**65.3**
160	**59.0**	**59.3**	**60.2**	**61.6**	**62.5**	**63.3**	**64.3**	**64.5**	**64.7**
200	**56.7**	**57.0**	**57.9**	**59.2**	**60.1**	**60.9**	**61.8**	**62.0**	**62.2**
250	**67.2**	**67.5**	**68.5**	**70.1**	**71.2**	**72.1**	**73.2**	**73.5**	**73.7**
315	**62.4**	**62.6**	**63.6**	**65.1**	**66.1**	**67.0**	**67.9**	**68.2**	**68.4**
400	**59.2**	**59.4**	**60.4**	**61.8**	**62.7**	**63.5**	**64.5**	**64.7**	**64.9**
500	**64.1**	**64.4**	**65.4**	**66.9**	**67.9**	**68.8**	**69.8**	**70.1**	**70.3**
630	**61.7**	**62.0**	**63.0**	**64.4**	**65.4**	**66.3**	**67.3**	**67.5**	**67.7**
800	**72.0**	**72.4**	**73.5**	**75.2**	**76.3**	**77.3**	**78.5**	**78.8**	**79.0**
1000	**66.5**	**66.8**	**67.9**	**69.4**	**70.5**	**71.4**	**72.5**	**72.7**	**72.9**
1250	**74.4**	**74.7**	**75.9**	**77.6**	**78.8**	**79.9**	**81.0**	**81.3**	**81.6**
1600	**70.2**	**70.5**	**71.6**	**73.3**	**74.4**	**75.4**	**76.5**	**76.8**	**77.0**
2000	**69.0**	**69.3**	**70.4**	**72.0**	**73.1**	**74.1**	**75.1**	**75.4**	**75.6**
2500	**69.0**	**69.3**	**70.4**	**72.0**	**73.1**	**74.1**	**75.1**	**75.4**	**75.6**
3150	**66.2**	**66.4**	**67.5**	**69.0**	**70.1**	**71.0**	**72.1**	**72.4**	**72.6**
4000	**64.7**	**65.0**	**66.0**	**67.5**	**68.6**	**69.5**	**70.5**	**70.8**	**71.0**
5000	**59.1**	**59.4**	**60.3**	**61.7**	**62.6**	**63.4**	**64.4**	**64.6**	**64.8**
6300	**55.9**	**56.1**	**57.0**	**58.3**	**59.2**	**60.0**	**60.9**	**61.1**	**61.3**
8000	**50.2**	**50.4**	**51.2**	**52.4**	**53.2**	**53.9**	**54.7**	**54.9**	**55.1**
10000	**49.6**	**49.8**	**50.6**	**51.7**	**52.5**	**53.2**	**54.0**	**54.2**	**54.4**
12500	**43.8**	**44.0**	**44.7**	**45.7**	**46.4**	**47.0**	**47.7**	**47.9**	**48.0**
16000	**38.7**	**38.9**	**39.5**	**40.4**	**41.0**	**41.6**	**42.2**	**42.3**	**42.5**
20000	**38.3**	**38.5**	**39.1**	**40.0**	**40.6**	**41.1**	**41.7**	**41.9**	**42.0**
Overall dB(A dB(A)	**80.1**	**80.4**	**81.5**	**83.1**	**84.2**	**85.2**	**86.3**	**86.6**	**86.8**

Hz\Model	RC2-620	RC2-710	RC2-790	RC2-830	RC2-930	RC2-1090	RC2-1280	RC2-1520
50	**67.2**	**67.4**	**67.5**	**67.8**	**68.5**	**70.2**	**70.6**	**70.9**
63	**63.4**	**63.5**	**63.7**	**63.9**	**64.6**	**66.2**	**66.6**	**66.9**
80	**69.4**	**69.6**	**69.8**	**70.1**	**70.8**	**72.5**	**73.0**	**73.3**
100	**65.9**	**66.1**	**66.3**	**66.5**	**67.2**	**68.8**	**69.3**	**69.6**
125	**65.4**	**65.6**	**65.8**	**66.0**	**66.7**	**68.3**	**68.7**	**69.1**
160	**64.8**	**65.0**	**65.1**	**65.4**	**66.0**	**67.7**	**68.1**	**68.4**
200	**62.3**	**62.4**	**62.6**	**62.8**	**63.5**	**65.0**	**65.4**	**65.8**
250	**73.8**	**74.0**	**74.1**	**74.4**	**75.2**	**77.0**	**77.5**	**77.9**
315	**68.5**	**68.7**	**68.8**	**69.1**	**69.8**	**71.5**	**72.0**	**72.3**
400	**65.0**	**65.2**	**65.3**	**65.6**	**66.2**	**67.9**	**68.3**	**68.6**
500	**70.4**	**70.6**	**70.7**	**71.0**	**71.7**	**73.5**	**73.9**	**74.3**
630	**67.8**	**68.0**	**68.1**	**68.4**	**69.1**	**70.8**	**71.2**	**71.6**
800	**79.1**	**79.3**	**79.5**	**79.8**	**80.6**	**82.6**	**83.1**	**83.5**
1000	**73.0**	**73.2**	**73.4**	**73.7**	**74.4**	**76.3**	**76.7**	**77.1**
1250	**81.7**	**81.9**	**82.1**	**82.4**	**83.2**	**85.3**	**85.8**	**86.2**
1600	**77.1**	**77.3**	**77.5**	**77.8**	**78.6**	**80.5**	**81.0**	**81.4**
2000	**75.7**	**75.9**	**76.1**	**76.4**	**77.2**	**79.1**	**79.6**	**80.0**
2500	**75.7**	**75.9**	**76.1**	**76.4**	**77.2**	**79.1**	**79.6**	**80.0**
3150	**72.6**	**72.8**	**73.0**	**73.3**	**74.0**	**75.9**	**76.3**	**76.7**
4000	**71.1**	**71.3**	**71.4**	**71.7**	**72.4**	**74.2**	**74.7**	**75.0**
5000	**64.9**	**65.1**	**65.2**	**65.5**	**66.1**	**67.8**	**68.2**	**68.5**
6300	**61.3**	**61.5**	**61.7**	**61.9**	**62.5**	**64.0**	**64.4**	**64.8**
8000	**55.1**	**55.3**	**55.4**	**55.6**	**56.2**	**57.6**	**57.9**	**58.2**
10000	**54.5**	**54.6**	**54.7**	**55.0**	**55.5**	**56.9**	**57.2**	**57.5**
12500	**48.1**	**48.2**	**48.3**	**48.5**	**49.0**	**50.2**	**50.5**	**50.8**
16000	**42.5**	**42.6**	**42.7**	**42.9**	**43.3**	**44.4**	**44.7**	**44.9**
20000	**42.1**	**42.2**	**42.3**	**42.5**	**42.9**	**43.9**	**44.2**	**44.4**
Overall dB(A)	**86.9**	**87.1**	**87.3**	**87.6**	**88.4**	**90.3**	**90.8**	**91.2**

Note:

1. The above 1/3 octave spectrum datum is based on C/T 50°C,E/T 0°C, with R22.
2. For all compatible refrigerants of R22, R134a, R407C and the working conditions acceptable in limitation of Hanbell screw compressors, it has very similar value at all respective bars as above Sound Pressure Level chart with ±2dBA tolerance of OVERALL value at any working condition by any refrigerant.
3. The above datum is based on ISO-2151 to be measured.

Appendix 2. RC2- AF , RC2- BF compressor

Contents

1. Introduction

The Hanbell RC2-F series semi-hermetic twin screw compressor inherits all outstanding designs of RC products and especially developed for low temperature, flooded type and parallel system applications. By omitting demister of oil separator, it can effectively avoid pressure loss, over compression and power consumption.

The RC2-F technical manual only contains the additional and differential information from RC2 series. They are including：

2. Compressor Specification
3. Installation
4. Standard and optional accessories
5. Outline drawing
6. Dimension of bushing and valve

1. Compressor Specification

1.1 RC2-AF

MODEL	COMPRESSOR					MOTOR							Oil Heater	Hydrostatic Pressure Test
	Displacement 60 / 50Hz	Rated Speed 60 / 50Hz	VI	Cap. Control (%)		Type	Nominal Hp		Starting	Voltage (V)		Insulation	Protection		
	m^3/hr			STEP	STEPLESS		60Hz	50Hz		60Hz	50Hz			W	Kg/cm2G
RC2-100AF	118/98	3550/2950	2.2 2.6 3.0 3.5	33, 66, 100	33~100	3 Phase, 2 Pole, Squirrel Cage, Induction Motor	23	19	Y-△ PWS DOL	208 220 230 380 440 460 480 575	380 400 415	Class F	PTC Protection	150/300	42
RC2-140AF	165/137			33, 66, 100	33~100		32	26							
RC2-170AF	207/172			25, 50, 75, 100	25~100		40	33							
RC2-180AF	216/180			33, 66, 100	33~100		42	35							
RC2-200AF	233/193			25, 50, 75, 100	25~100		45	37							
RC2-230AF	277/230			35, 50, 75, 100	35~100		53	44							
RC2-260AF	309/257			25, 50, 75, 100	25~100		59	49							
RC2-300AF	352/293			25, 50, 75, 100	25~100		67	56							
RC2-310AF	371/308			35, 50, 75, 100	35~100		71	59							
RC2-320AF	384/320			25, 50, 75, 100	25~100		72	60							
RC2-340AF	407/339			35, 50, 75, 100	35~100		77	64							
RC2-370AF	440/366			35, 50, 75, 100	35~100		84	70							
RC2-410AF	490/407			25, 50, 75, 100	25~100		93	78		380 440 460 480 575					
RC2-470AF	567/471			25, 50, 75, 100	25~100		108	90							
RC2-510AF	611/508			35, 50, 75, 100	35~100		117	98							
RC2-550AF	660/549			25, 50, 75, 100	25~100		126	105							
RC2-580AF	702/583			35, 50, 75, 100	35~100		131	109							
RC2-610AF	735/611			25, 50, 75, 100	25~100		135	113	Y-△ DOL						
RC2-620AF	745/619			35, 50, 75, 100	35~100		137	114							
RC2-710AF	858/713			35, 50, 75, 100	35~100		158	131							
RC2-790AF	952/791			30, 50, 75, 100	30~100		175	146							
RC2-830AF	993/825			30, 50, 75, 100	30~100		183	152							
RC2-930AF	1117/929			35, 50, 75, 100	35~100		212	176							
RC2-1090AF	1310/1089			35, 50, 75, 100	35~100		247	205						---	
RC2-1280AF	1535/1276			30, 50, 75, 100	30~100		286	238						---	
RC2-1520AF	1832/1523			25, 50, 75, 100	25~100		331	275						---	

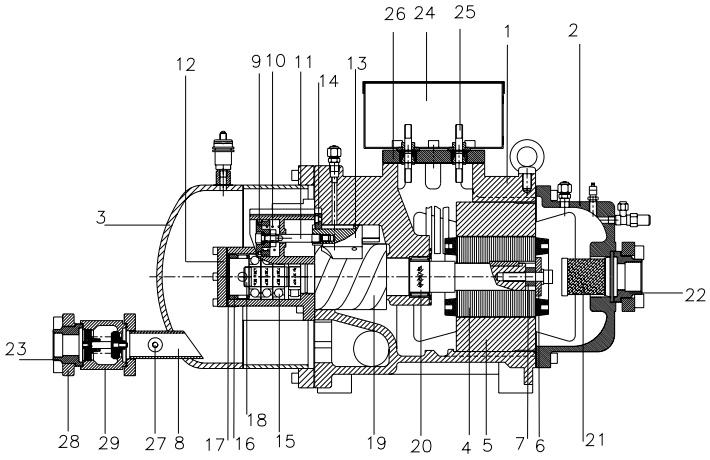
Nominal Horse Power (Hp) –
All above models' Nominal Hp are not equal to the maximum compressors Hp ; Please refer to Hanbell selection software's output to gain the rated current, Maximum Continuous Current-M.C.C based on various input while selecting the contactor, cable size and fuse wire, etc…

1.2 RC2-BF

MODEL	COMPRESSOR					MOTOR							Oil Heater	Hydrostatic Pressure Test
	Displacement 60 / 50Hz	Rated Speed 60 / 50Hz	VI	Cap. Control (%)		Type	Nominal Hp		Starting-Up	Voltage (V)		Insulation	Protection		
	m^3/hr			STEP	STEPLESS		60Hz	50Hz		60Hz	50Hz			W	Kg/cm2G
RC2-100BF	118/98	3550/2950	2.2 2.6 3.0 3.5	33, 66, 100	33~100	3 Phase, 2 Pole, Squirrel Cage, Induction Motor	38	31	Y-△ PWS DOL	208 220 230 380 440 460 480 575	380 400 415	Class F	PTC Protection	150/300	42
RC2-140BF	165/137			33, 66, 100	33~100		50	41							
RC2-170BF	207/172			25, 50, 75, 100	25~100		63	52							
RC2-180BF	216/180			33, 66, 100	33~100		66	55							
RC2-200BF	233/193			25, 50, 75, 100	25~100		70	58							
RC2-230AF	277/230			35, 50, 75, 100	35~100		53	44							
RC2-260BF	309/257			25, 50, 75, 100	25~100		90	75							
RC2-300BF	352/293			25, 50, 75, 100	25~100		107	89							
RC2-310BF	371/308			35, 50, 75, 100	35~100		110	91		220 230 380 440 460 480					
RC2-320BF	384/320			25, 50, 75, 100	25~100		114	94							
RC2-340BF	407/339			35, 50, 75, 100	35~100		121	101							
RC2-370BF	440/366			35, 50, 75, 100	35~100		130	108							
RC2-410BF	490/407			25, 50, 75, 100	25~100		146	121							
RC2-470BF	567/471			25, 50, 75, 100	25~100		170	141	Y-△ DOL	380 440 460 480 575					
RC2-510BF	611/508			35, 50, 75, 100	35~100		183	152							
RC2-550BF	660/549			25, 50, 75, 100	25~100		195	162							
RC2-580BF	702/583			35, 50, 75, 100	35~100		210	175							
RC2-610BF	735/611			25, 50, 75, 100	25~100		214	178							
RC2-620BF	745/619			35, 50, 75, 100	35~100		220	183							
RC2-710BF	858/713			35, 50, 75, 100	35~100		250	208							
RC2-790BF	952/791			30, 50, 75, 100	30~100		276	230							
RC2-830BF	993/825			30, 50, 75, 100	30~100		290	234							
RC2-930BF	1117/929			35, 50, 75, 100	35~100		334	278							
RC2-1090BF	1310/1089			35, 50, 75, 100	35~100		402	335						---	
RC2-1280BF	1535/1276			30, 50, 75, 100	30~100		471	392						---	
RC2-1520BF	1832/1523			25, 50, 75, 100	25~100		534	443						---	

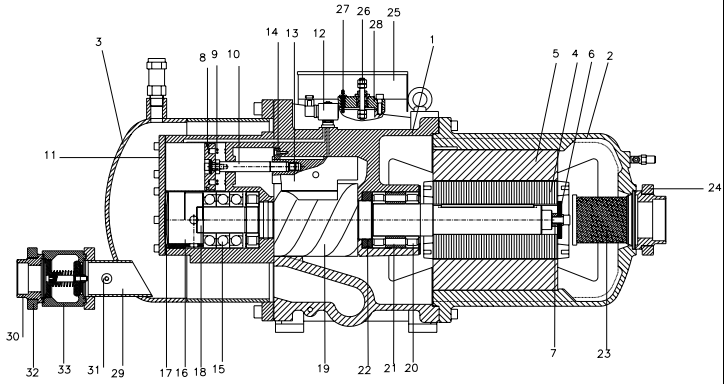
Nominal Horse Power:
All above Nominal Hp are not equal to the maximum compressors Hp; Please refer to Hanbell selection software's output for the rated current, Maximum Continuous Current-M.C.C according to various working condition while selecting the contactor, cable, fuse and wire, etc…

1-3 RC2-100, RC2-140, RC2-180 Construction



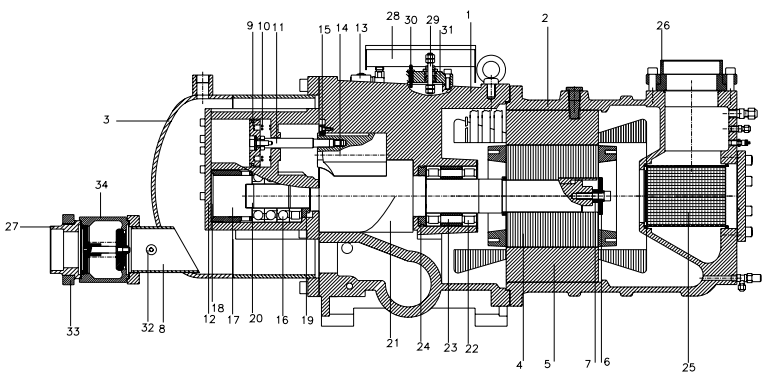
No	Description	No	Description
1	Compressor casing	19	Male rotor
2	Motor casing	20	Suction bearings
3	Oil separator w/o cartridge	21	Suction filter
4	Motor rotor assembly	22	Suction flange
5	Motor stator assembly	23	Discharge flange
6	Motor rotor washer	24	Cable box
7	Motor rotor spacer ring	25	Power bolt
8	Baffle	26	Motor cable cover plate
9	Piston	27	PTC discharge temperature sensor
10	Piston spring	28	Discharge connect flange
11	Piston rod	29	Check valve
12	Bearing seat's cover plate		
13	Modulation slide valve		
14	Slide valve key		
15	Discharge bearings		
16	Discharge fixed ring		
17	Disc spring		
18	Bearing slot nut		

1-4 RC2-170, RC2-200, RC2-230, RC2-260, RC2-300, RC2-310, RC2-320, RC2-340, RC2-370, RC2-410, RC2-470, RC2-510, RC2-550, RC2-580, RC2-620 Construction



No	Description	No	Description
1	Compressor casing	19	Male rotor
2	Motor casing	20	Suction bearings
3	Oil separator w/o cartridge	21	Suction bearings inner/outer spacer ring
4	Motor rotor assembly	22	Oil guiding ring
5	Motor stator assembly	23	Suction filter
6	Motor rotor washer	24	Suction flange
7	Motor rotor spacer ring	25	Cable box
8	Piston	26	Power bolt
9	Piston spring	27	Thermostat terminals
10	Piston rod	28	Motor cable cover plate
11	Bearing seat's cover plate	29	Baffle
12	Modulation solenoid valve	30	Refrigeration Lubricant
13	Modulation slide valve	31	PTC discharge temperature sensor
14	Slide valve key	32	Discharge connect flange
15	Discharge bearings	33	Check valve
16	Discharge fixed ring		
17	Disc spring		
18	Bearing slot nut		

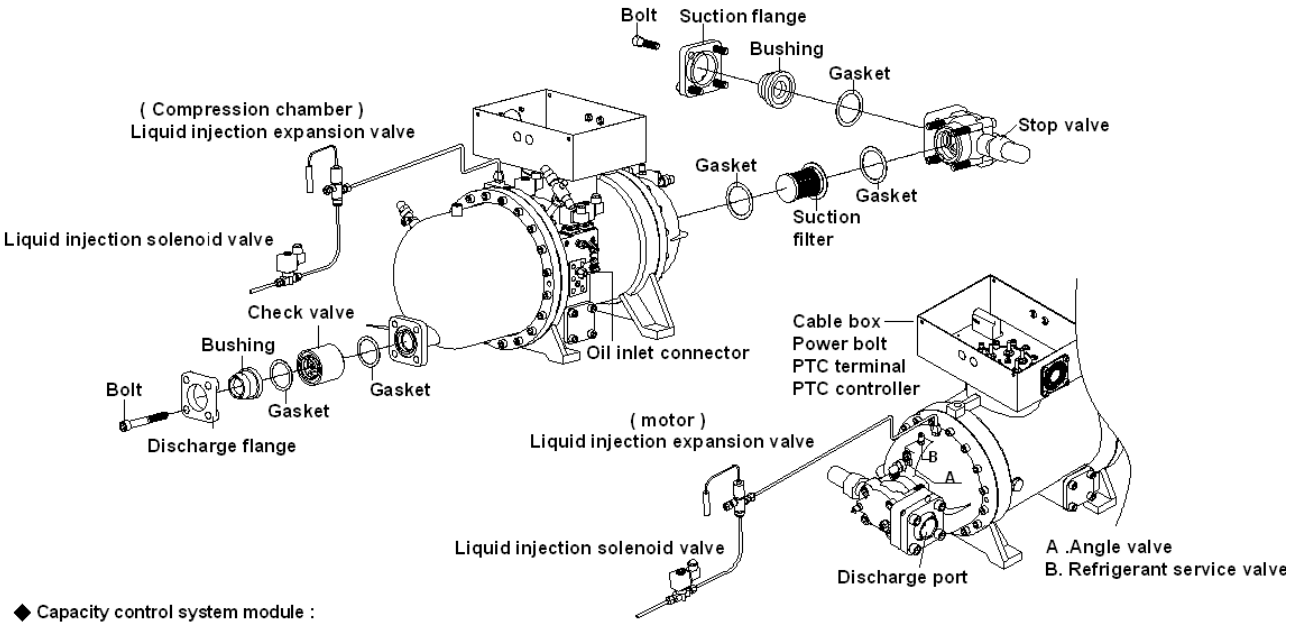
1-5 RC2-610, RC2-710, RC2-790, RC2-830, RC2-930 Construction



No	Description	No	Description
1	Compressor casing	19	α-Balance piston
2	Motor casing	20	Bearing slot nut
3	Oil separator w/o cartridge	21	Male rotor
4	Motor rotor assembly	22	Suction bearings
5	Motor stator assembly	23	Suction bearings inner/outer spacer ring
6	Motor rotor washer	24	Oil guiding ring
7	Motor rotor spacer ring	25	Suction filter
8	Baffle	26	Suction flange
9	Piston	27	Discharge flange
10	Piston spring	28	Cable box
11	Piston rod	29	Power bolt
12	Bearing seat's cover plate	30	Thermostat terminals
13	Modulation solenoid valve	31	Motor cable cover plate
14	Modulation slide valve	32	PTC discharge temperature sensor
15	Slide valve key	33	Discharge connect flange
16	Discharge bearings	34	Check valve
17	Discharge fixed ring		
18	Disc spring		

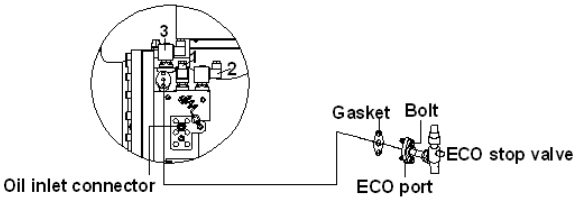
2. Installation

2-1 Installation of RC2-100~RC2-140, RC2-180 compressor

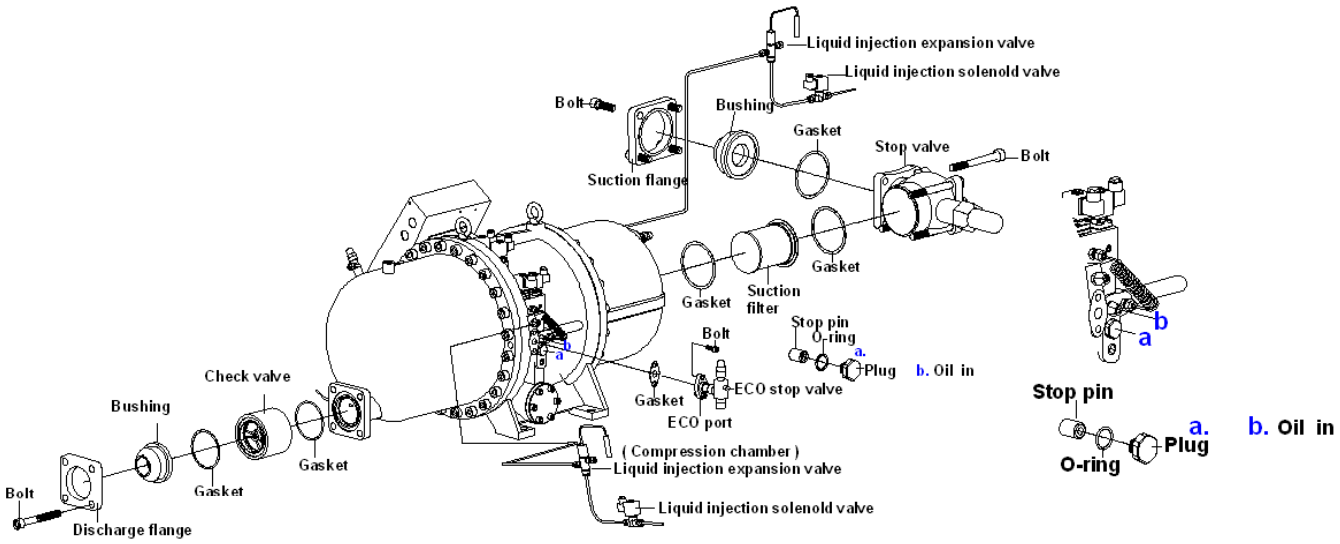


◆ Capacity control system module :
A. Step-less capacity control:
1 (step-less) + 2 (33%)
B. 3 step capacity control:
2 (33%) + 3 (66%)
C. Step-less+step capacity control:
1 + 2 + 3

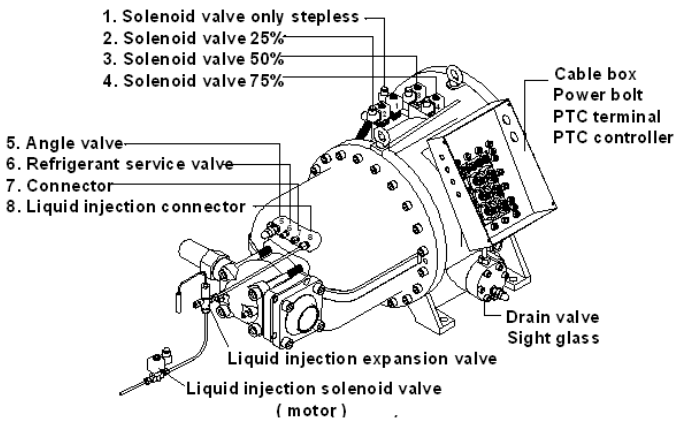
1. Solenoid valve only stepless
2. Solenoid valve 33%
3. Solenoid valve 66%



2-2 Installation of RC2-170~580, RC2-620 compressor



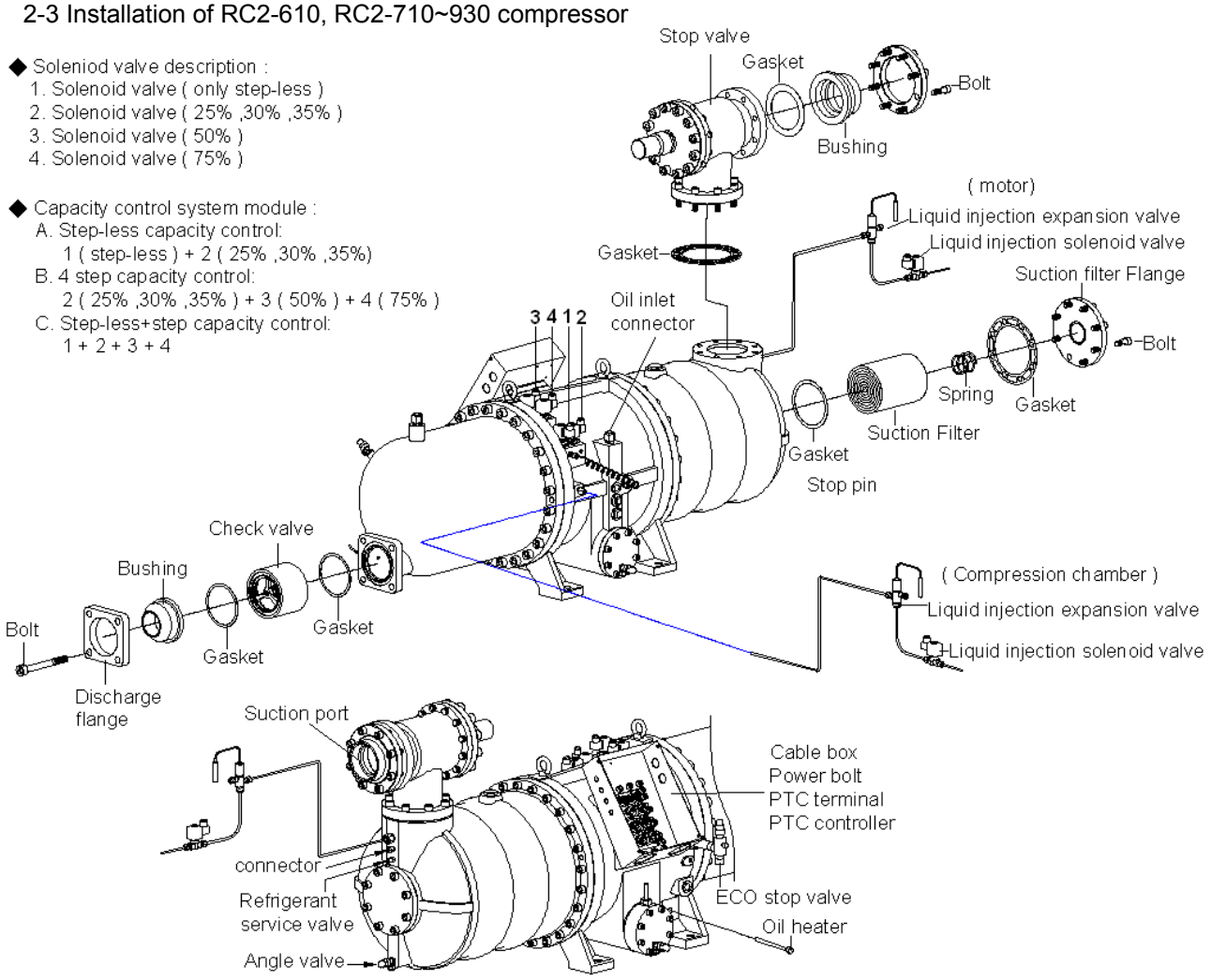
◆ Capacity control system module :
A. Step-less capacity control:
1 (step-less) + 2 (25% ,30% ,35%)
B. 4 step capacity control:
2 (25% ,30% ,35%) + 3 (50%) + 4 (75%)
C. Step-less+step capacity control:
1 + 2 + 3 + 4



2-3 Installation of RC2-610, RC2-710~930 compressor

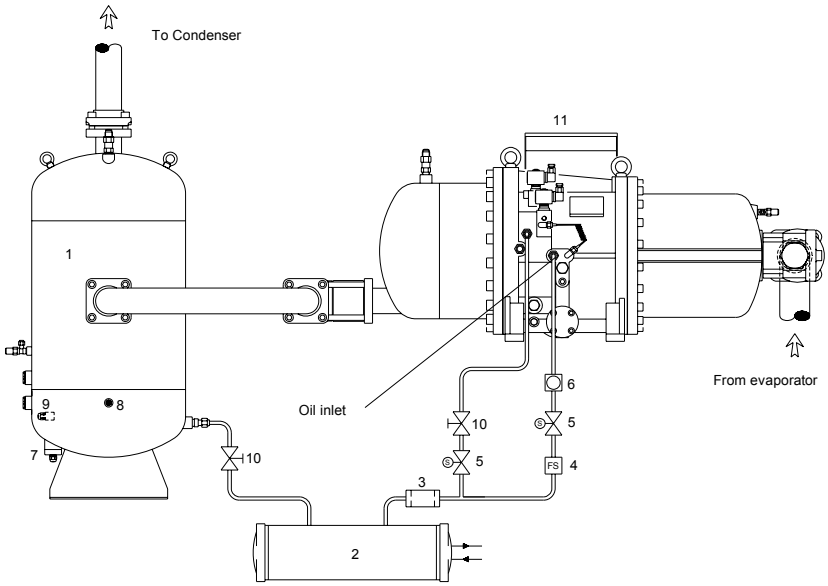
◆ Soleniod valve description :
1. Solenoid valve (only step-less)
2. Solenoid valve (25% ,30% ,35%)
3. Solenoid valve (50%)
4. Solenoid valve (75%)

◆ Capacity control system module :
A. Step-less capacity control:
1 (step-less) + 2 (25% ,30% ,35%)
B. 4 step capacity control:
2 (25% ,30% ,35%) + 3 (50%) + 4 (75%)
C. Step-less+step capacity control:
1 + 2 + 3 + 4



2-4 Installation of lubricant circuit

To obtain high oil filtering efficiency, low pressure drop loss and non-interruption with lubricant supply system, the oil separator is built outside the compressor. The installation of lubricant circuit is a very important issue during the whole procedures. So, before starting, please make sure to read all the instructions of this manual carefully and ensure each step is done in accordance with the specifications.



1.	External oil separator	7.	Oil level switch
2.	Oil cooler	8.	Oil temperature sensor
3.	Oil filter and cartridge	9.	Oil heater
4.	Lubricant flow switch	10.	Manually adjustable flow valve
5.	Oil solenoid valve	11.	Compressor
6.	Sight glass		

Illustration of RC2-F compressor and its external oil separator and accessories recommendation

In the lubricant circuit, installing oil solenoid valve in proper place is very important. As the compressor is shut down, lubricant will automatically inject into compressor due to pressure differential. It will easily make the system difficult to restart because of low oil level or lubricant injection inside the compression chamber. Besides, the following issues are noticed：

- Stop-pin must be installed during operating
- External oil separator and its filter & cartridge is recommended
- Refrigerant oil volume is varied and based on the different designs of external oil separator. Hanbell only offers the minimum oil flow volume in different conditions the customers gave. (without oil cooler)
- In parallel system, many compressors use one external oil separator. Please contact Hanbell sales engineer for further technical suggestions and specification of related piping and flanges.

3. Standard and optional accessories

3-1 Chart of RC2-F standard and optional accessories

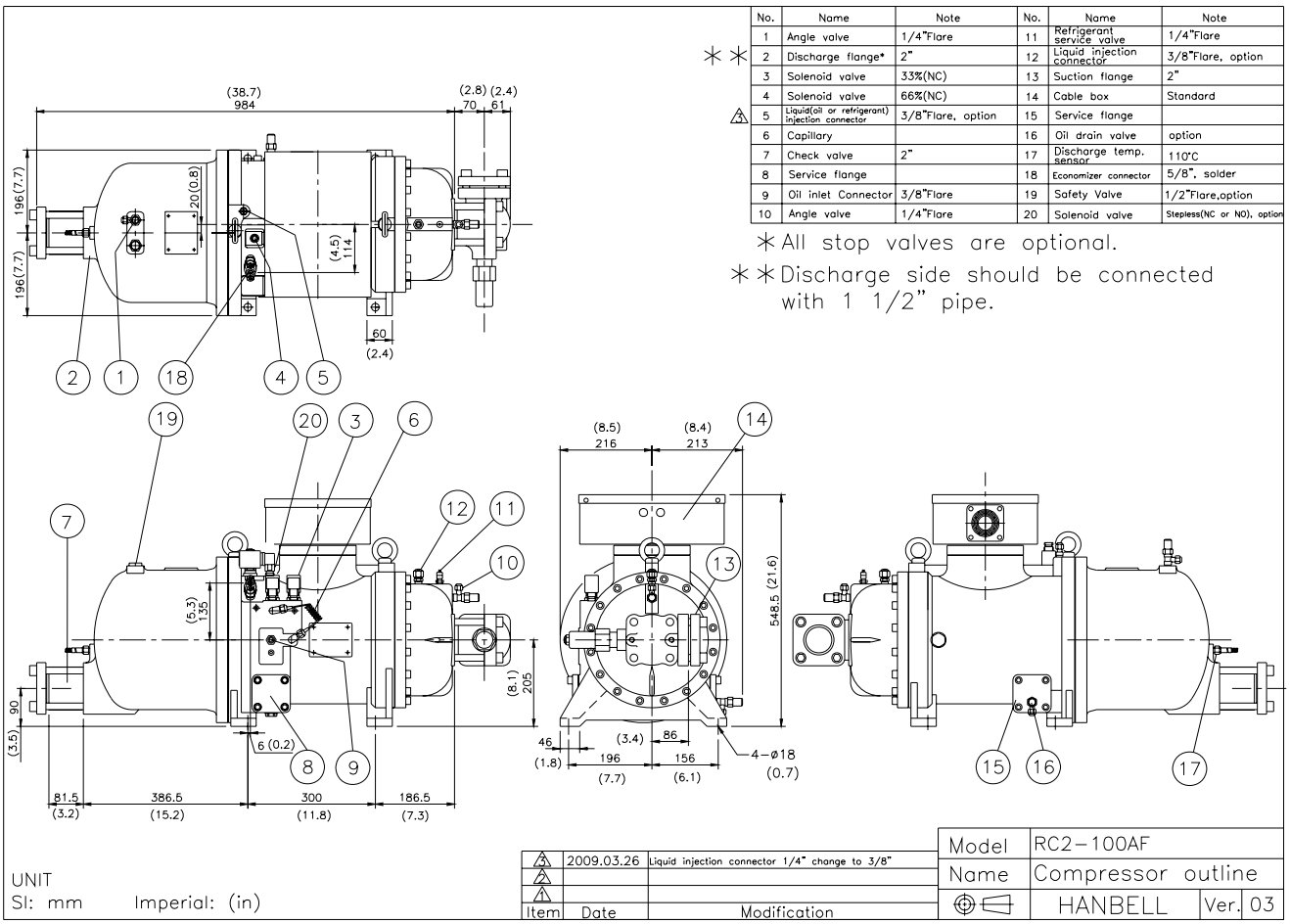
	No	Type	Model
			RCF Series
Compressor	1	Suction flange	Standard
	2	Discharge flange	Standard
	3	Capacity control solenoid valve	Standard
	4	Winding temperature sensor	Standard
	5	Liquid injection port	Standard
	6	Main oil return port	Standard
	7	Economizer return port	Standard
	8	Oil injection compression chamber/Liquid injection port	Standard
	9	Discharge temperature sensor	Standard
	10	Check valve (discharge side)	Standard
	11	INT69 temperature monitoring device	Standard
	12	INT69Y (Temp, phase missing, sequence monitoring)	Optional
	13	INT69HBY (Temp, phase missing, sequence monitoring, manual reset)	Optional
	14	Stop valve (discharge side/suction side)	Optional
	15	Safety valve	Optional
	16	Voltage protector	Optional
	17	Lubricant	Optional
Oil Separator(optional)	1	Suction flange	Standard
	2	Discharge flange	Standard
	3	Oil level switch	Standard
	4	Oil heater	Standard
	5	Oil drain valve	Standard
	6	Lubricant temperature sensor	Optional
	7	Safety valve	Optional
	8	Lubricant	Optional
	9	Stop Valve	Optional
Others	1	Oil cooler	Optional
	2	Oil filter and cartridge	Optional
	3	Sight glass	Optional
	4	Oil solenoid valve	Optional
	5	Oil flow switch	Optional

3-2 Specification of Hanbell external oil separator

Model	Type	Oil Volume (Liter)		Range of application by Theoretical Displacement (m^3/hr) (Recommended)	Corresponding Compressor Model	Shell Diameter
		High level	Low level			
OS40	Vertical	17	9	205	RC2-100 RC2-140	14”
OS50	Vertical	22	12	206~270	RC2-170 RC2-180 RC2-200 RC2-230	16”
OS65	Vertical	31	18	271~440	RC2-260 RC2-300 RC2-310 RC2-320 RC2-340 RC2-370	18”
OS80	Horizontal	33	20	441~705	RC2-410 RC2-510 RC2-550 RC2-580	20”
OS100	Horizontal	40	27	706~1120	RC2-610 RC2-620 RC2-710 RC2-790 RC2-830 RC2-930	20”

Note :In parallel application, please contact Hanbell sales engineer and recheck the size of inlet, flange, bushing and stop valve of external oil separator. Please refer to Chapter 4.4 for the detail of oil separator.

4. Compressor outline drawing



No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	11	Refrigerant service valve	1/4"Flare
∗∗ 2	Discharge flange*	2"	12	Liquid injection connector	3/8"Flare, option
3	Solenoid valve	33%(NC)	13	Suction flange	2"
4	Solenoid valve	66%(NC)	14	Cable box	Standard
⚠5	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	15	Service flange	
6	Capillary		16	Oil drain valve	option
7	Check valve	2"	17	Discharge temp. sensor	110°C
8	Service flange		18	Economizer connector	5/8", solder
9	Oil inlet Connector	3/8"Flare	19	Safety Valve	1/2"Flare,option
10	Angle valve	1/4"Flare	20	Solenoid valve	Stepless(NC or NO), option

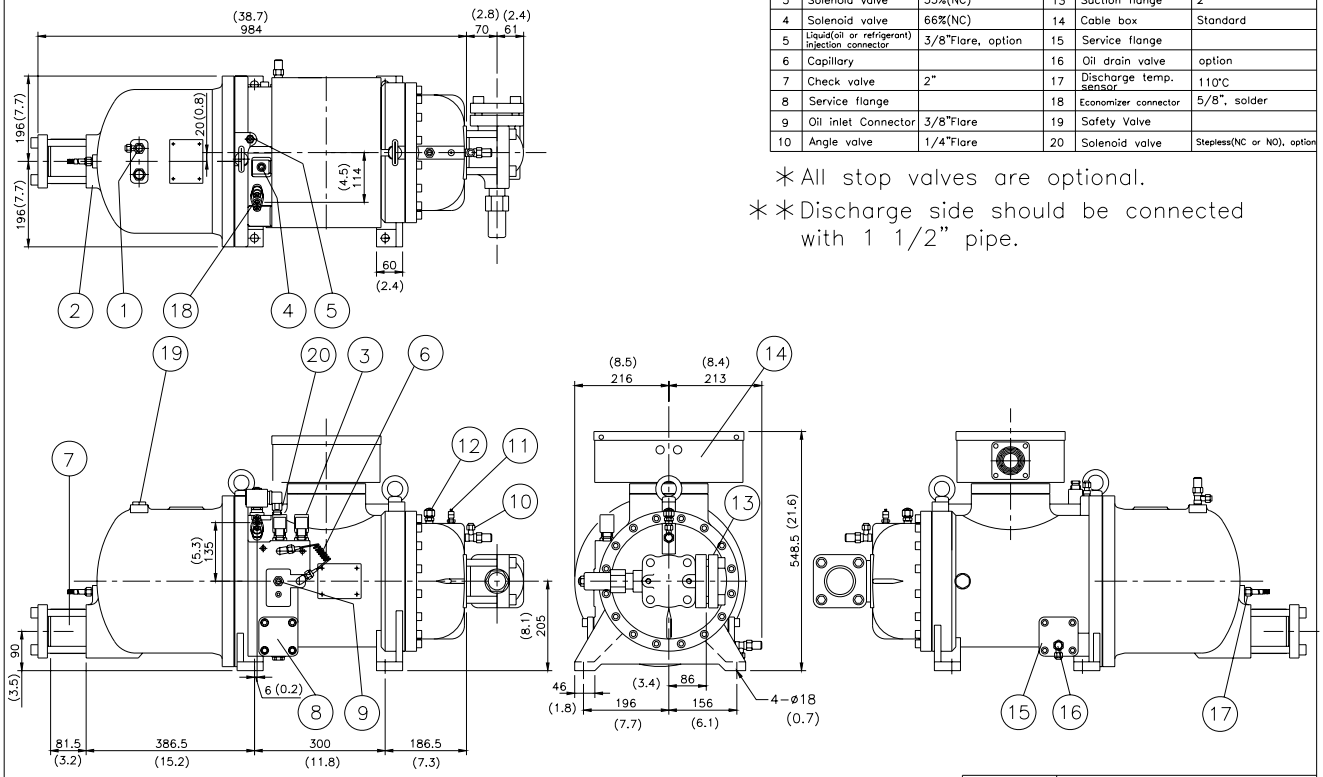
∗All stop valves are optional.

∗∗Discharge side should be connected with 1 1/2" pipe.

Item	Date	Modification
⚠3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
⚠2		
⚠1		

Model	RC2-100AF
Name	Compressor outline
HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)



No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	11	Refrigerant service valve	1/4"Flare
∗∗ 2	Discharge flange*	2"	12	Liquid injection connector	3/8"Flare, option
3	Solenoid valve	33%(NC)	13	Suction flange	2"
4	Solenoid valve	66%(NC)	14	Cable box	Standard
5	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	15	Service flange	
6	Capillary		16	Oil drain valve	option
7	Check valve	2"	17	Discharge temp. sensor	110°C
8	Service flange		18	Economizer connector	5/8", solder
9	Oil inlet Connector	3/8"Flare	19	Safety Valve	
10	Angle valve	1/4"Flare	20	Solenoid valve	Stepless(NC or NO), option

∗All stop valves are optional.

∗∗Discharge side should be connected with 1 1/2" pipe.

Item	Date	Modification
⚠3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
⚠2		
⚠1		

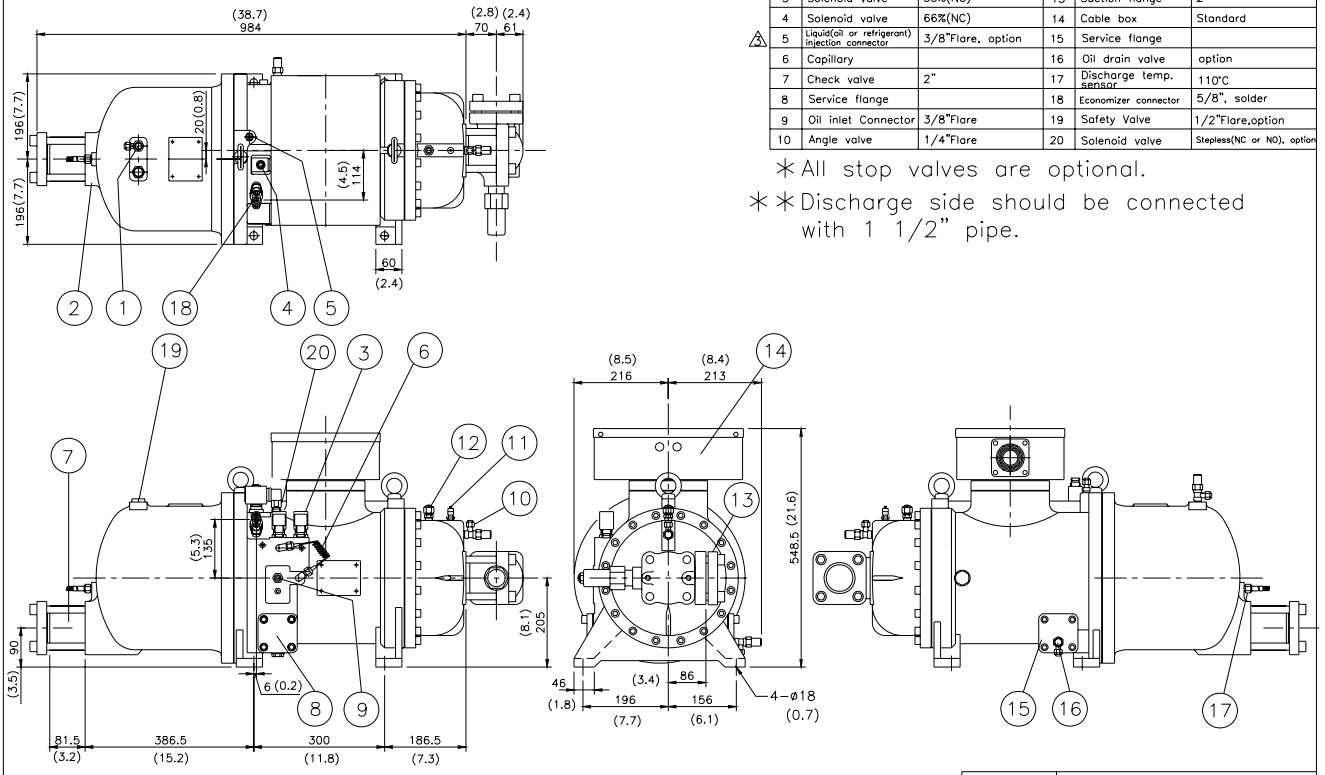
Model	RC2-100BF
Name	Compressor outline
HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	11	Refrigerant service valve	1/4"Flare
2	Discharge flange*	2"	12	Liquid injection connector	3/8"Flare, option
3	Solenoid valve	33%(NC)	13	Suction flange	2"
4	Solenoid valve	66%(NC)	14	Cable box	Standard
△5	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	15	Service flange	
6	Capillary		16	Oil drain valve	option
7	Check valve	2"	17	Discharge temp. sensor	110°C
8	Service flange		18	Economizer connector	5/8", solder
9	Oil inlet Connector	3/8"Flare	19	Safety Valve	1/2"Flare,option
10	Angle valve	1/4"Flare	20	Solenoid valve	Stepless(NC or NO), option

∗ All stop valves are optional.

∗∗ Discharge side should be connected with 1 1/2" pipe.



Item	Date	Modification
△3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
△2		
△1		

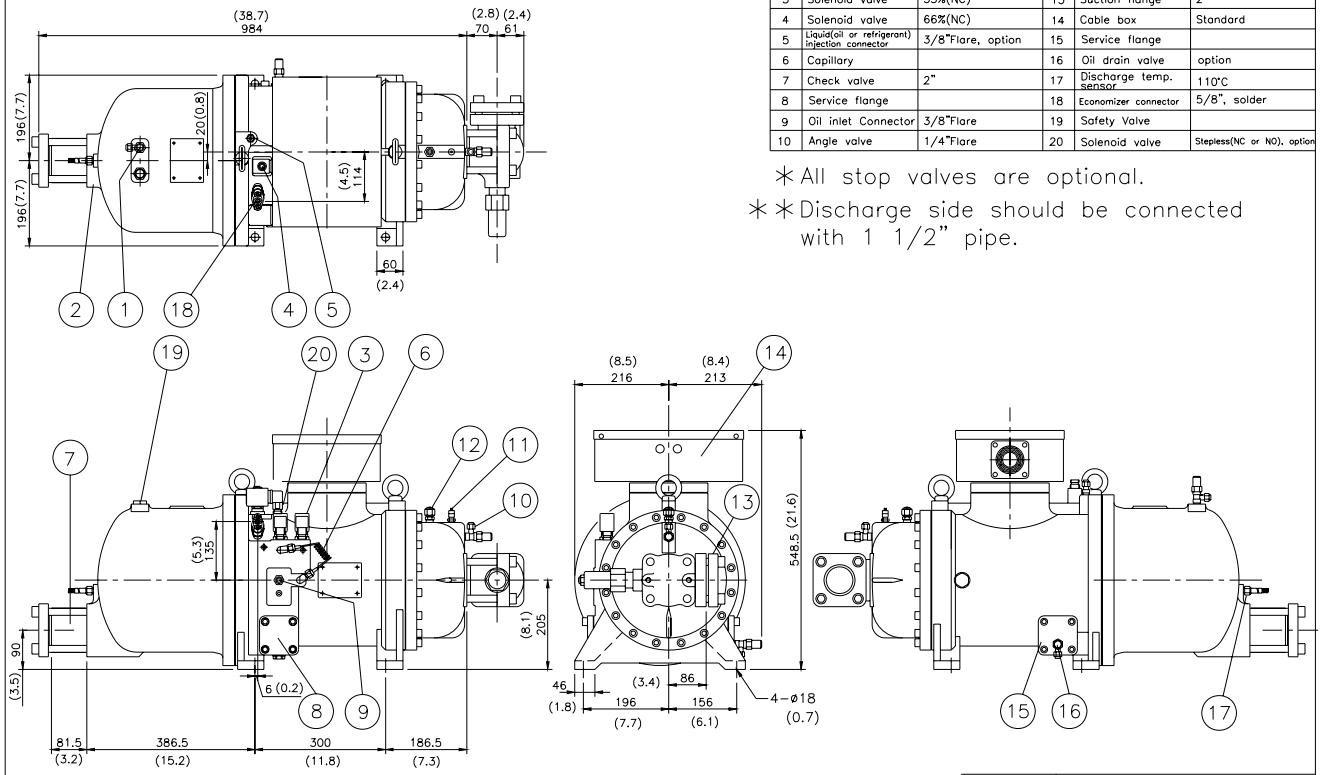
Model	RC2-140AF
Name	Compressor outline
	HANBELL Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	11	Refrigerant service valve	1/4"Flare
2	Discharge flange*	2"	12	Liquid injection connector	3/8"Flare, option
3	Solenoid valve	33%(NC)	13	Suction flange	2"
4	Solenoid valve	66%(NC)	14	Cable box	Standard
△5	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	15	Service flange	
6	Capillary		16	Oil drain valve	option
7	Check valve	2"	17	Discharge temp. sensor	110°C
8	Service flange		18	Economizer connector	5/8", solder
9	Oil inlet Connector	3/8"Flare	19	Safety Valve	
10	Angle valve	1/4"Flare	20	Solenoid valve	Stepless(NC or NO), option

∗ All stop valves are optional.

∗∗ Discharge side should be connected with 1 1/2" pipe.



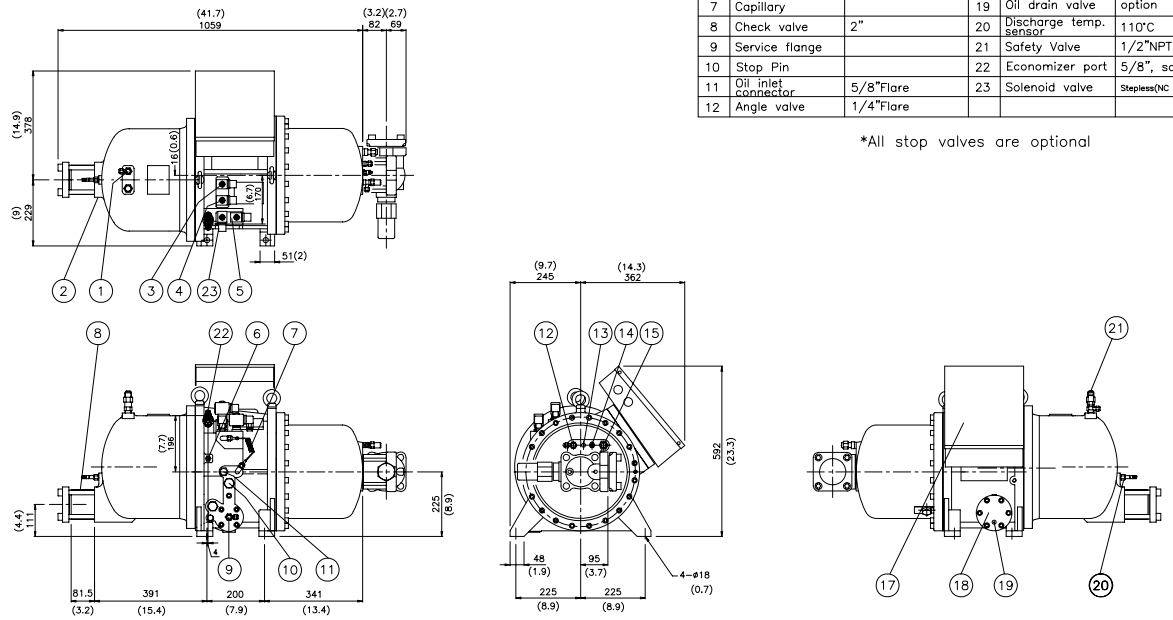
Item	Date	Modification
△3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
△2		
△1		

Model	RC2-140BF
Name	Compressor outline
	HANBELL Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Refrigerant service valve	1/4"Flare
2	Discharge flange	2"	14	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	15	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	16	Suction flange	2 1/2"
5	Solenoid valve	25%(NC)	17	Cable box	Standard
△3 6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Service flange	
7	Capillary		19	Oil drain valve	option
8	Check valve	2"	20	Discharge temp. sensor	110°C
9	Service flange		21	Safety Valve	1/2"NPT,option
10	Stop Pin		22	Economizer port	5/8", solder
11	Oil inlet connector	5/8"Flare	23	Solenoid valve	Stepless(NC or NO), option
12	Angle valve	1/4"Flare			

*All stop valves are optional



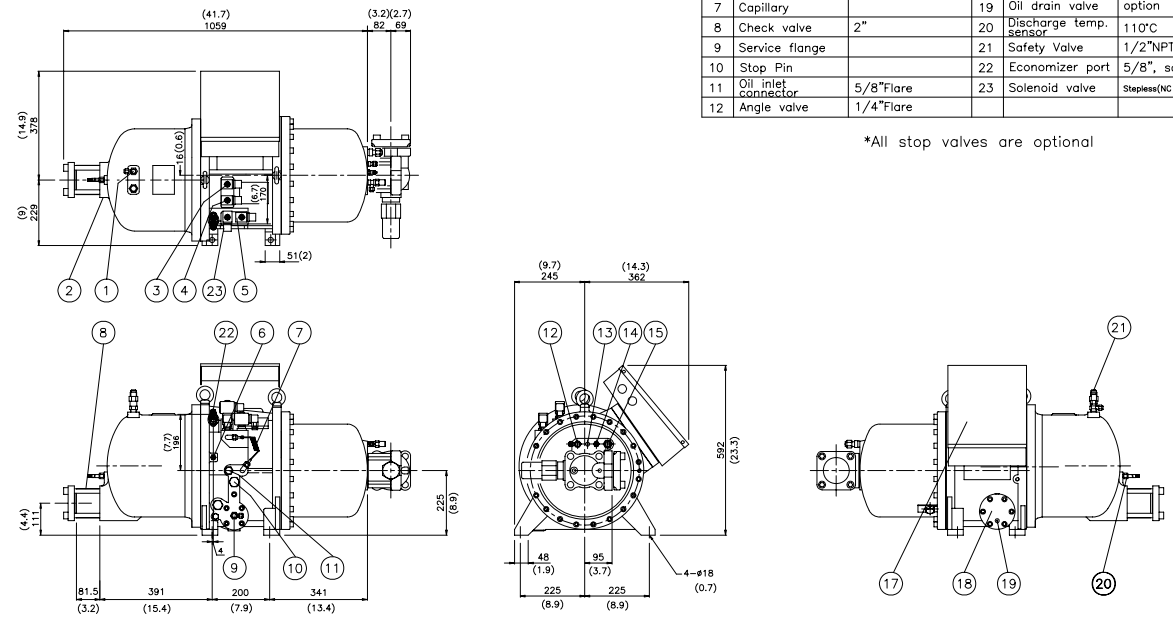
△3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
△2		
△1		
Item	Date	Modification

Model	RC2-170AF	
Name	Compressor outline	
	HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Refrigerant service valve	1/4"Flare
2	Discharge flange	2"	14	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	15	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	16	Suction flange	2 1/2"
5	Solenoid valve	25%(NC)	17	Cable box	Standard
△3 6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Service flange	
7	Capillary		19	Oil drain valve	option
8	Check valve	2"	20	Discharge temp. sensor	110°C
9	Service flange		21	Safety Valve	1/2"NPT,option
10	Stop Pin		22	Economizer port	5/8", solder
11	Oil inlet connector	5/8"Flare	23	Solenoid valve	Stepless(NC or NO), option
12	Angle valve	1/4"Flare			

*All stop valves are optional



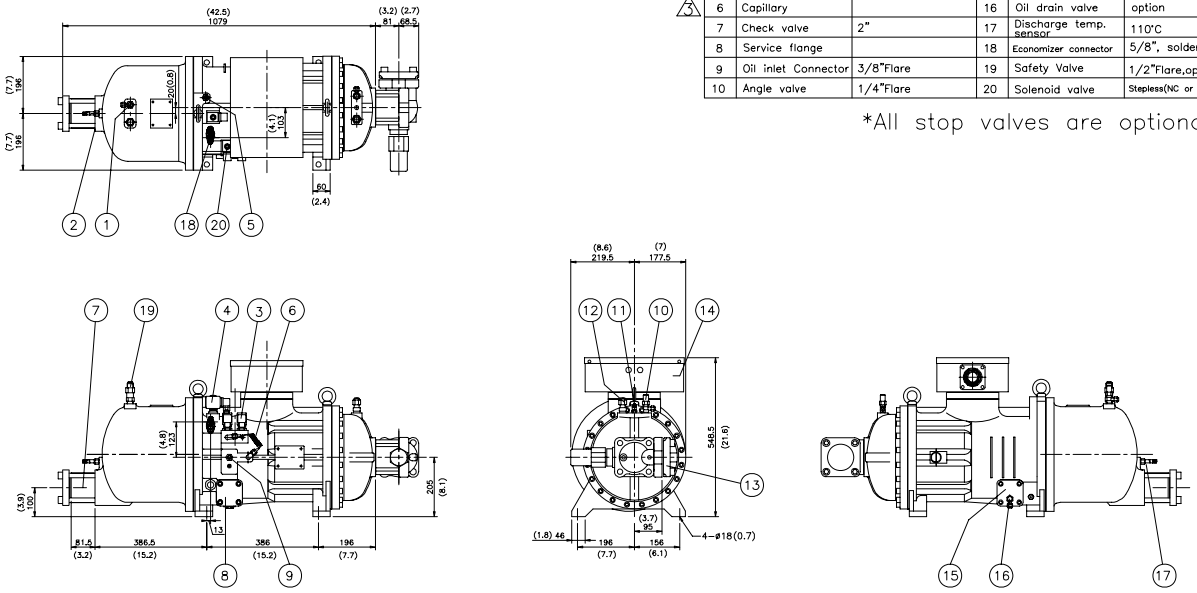
△3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
△2		
△1		
Item	Date	Modification

Model	RC2-170BF	
Name	Compressor outline	
	HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	11	Refrigerant service valve	1/4"Flare
2	Discharge flange	2"	12	Liquid injection connector	5/8"Flare, option
3	Solenoid valve	33%(NC)	13	Suction flange	2 1/2"
4	Solenoid valve	66%(NC)	14	Cable box	Standard
5	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	15	Service flange	
6	Capillary		16	Oil drain valve	option
7	Check valve	2"	17	Discharge temp. sensor	110°C
8	Service flange		18	Economizer connector	5/8", solder
9	Oil inlet Connector	3/8"Flare	19	Safety Valve	1/2"Flare,option
10	Angle valve	1/4"Flare	20	Solenoid valve	Stepless(NC or NO), option

*All stop valves are optional.



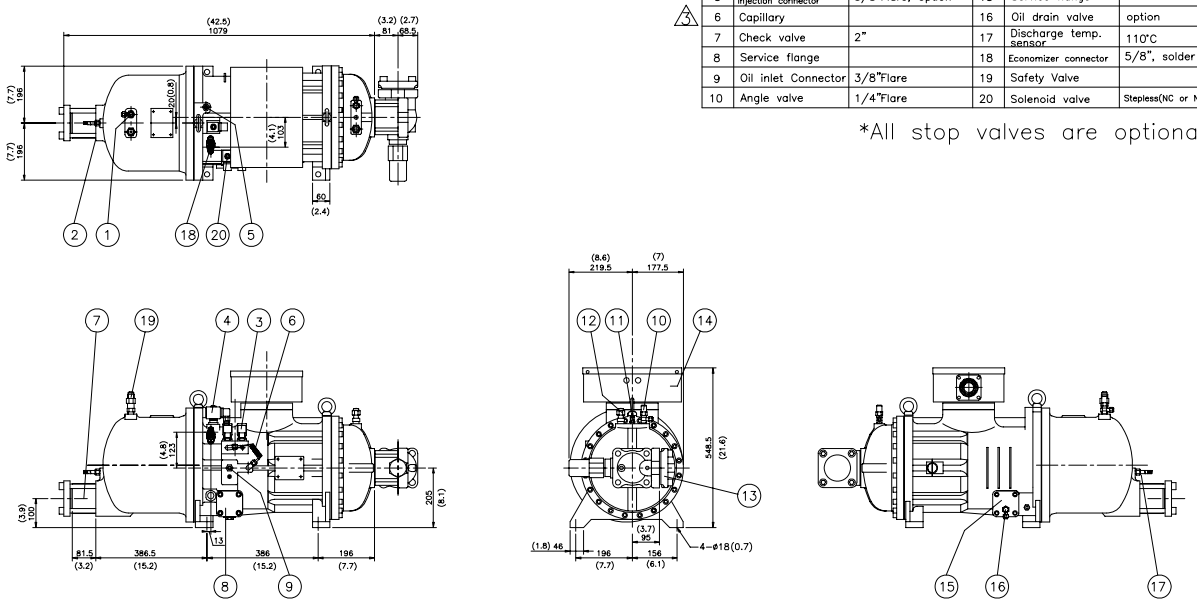
3	2009.03.26	Liquid injection connector 1/4" change to 3/8"	
2			
1			
Item	Date	Modification	

Model	RC2-180AF		
Name	Compressor outline		
	HANBELL	Ver.	03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	11	Refrigerant service valve	1/4"Flare
2	Discharge flange	2"	12	Liquid injection connector	5/8"Flare, option
3	Solenoid valve	33%(NC)	13	Suction flange	2 1/2"
4	Solenoid valve	66%(NC)	14	Cable box	Standard
5	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	15	Service flange	
6	Capillary		16	Oil drain valve	option
7	Check valve	2"	17	Discharge temp. sensor	110°C
8	Service flange		18	Economizer connector	5/8", solder
9	Oil inlet Connector	3/8"Flare	19	Safety Valve	
10	Angle valve	1/4"Flare	20	Solenoid valve	Stepless(NC or NO), option

*All stop valves are optional.



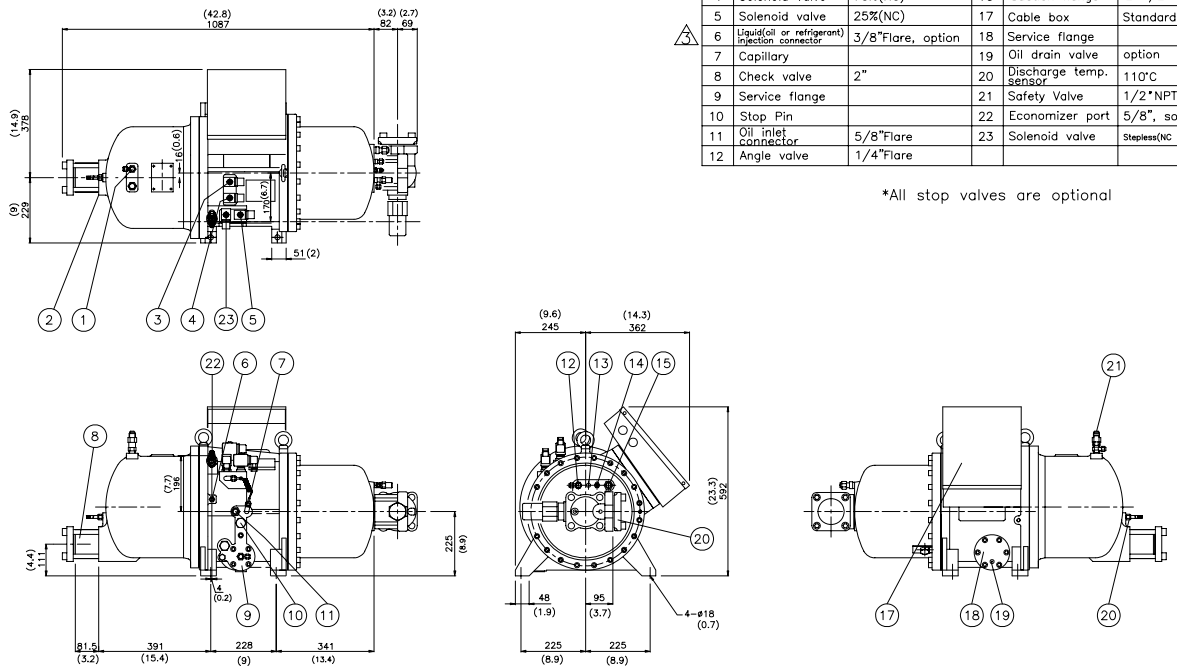
3	2009.03.26	Liquid injection connector 1/4" change to 3/8"	
2			
1			
Item	Date	Modification	

Model	RC2-180BF		
Name	Compressor outline		
	HANBELL	Ver.	03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Refrigerant service valve	1/4"Flare
2	Discharge flange	2"	14	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	15	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	16	Suction flange	2 1/2"
5	Solenoid valve	25%(NC)	17	Cable box	Standard
△3 6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Service flange	
7	Capillary		19	Oil drain valve	option
8	Check valve	2"	20	Discharge temp. sensor	110°C
9	Service flange		21	Safety Valve	1/2"NPT,option
10	Stop Pin		22	Economizer port	5/8", solder
11	Oil inlet connector	5/8"Flare	23	Solenoid valve	Stepless(NC or NO), option
12	Angle valve	1/4"Flare			

*All stop valves are optional

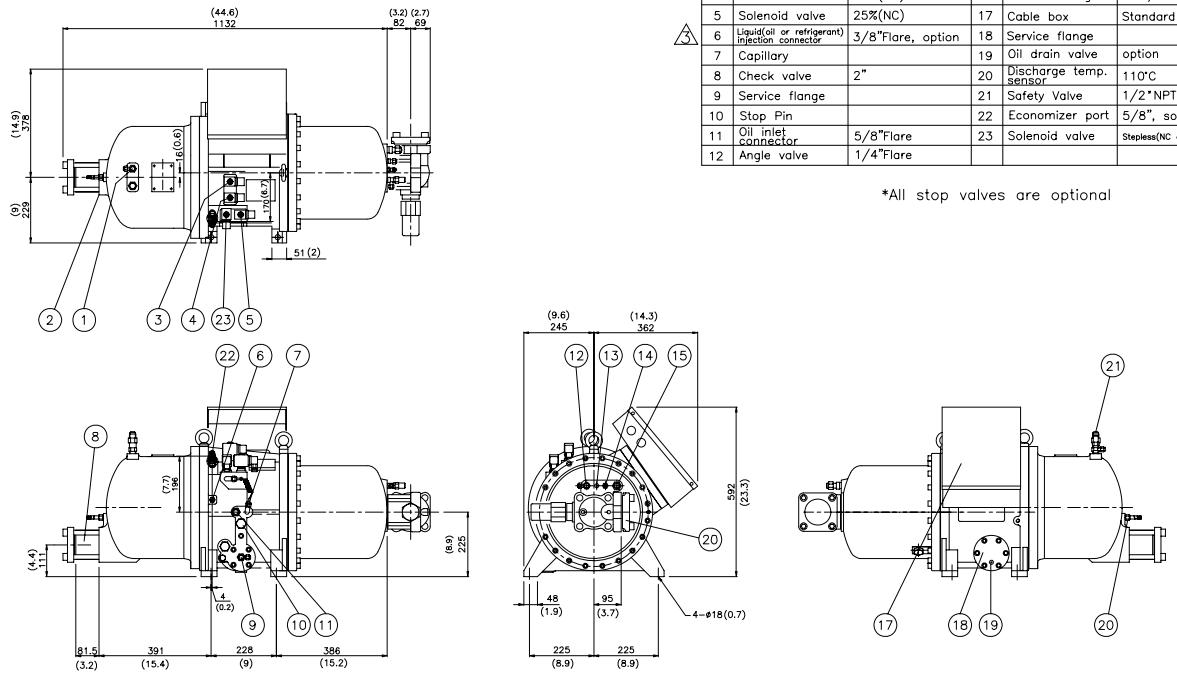


△3	2009.03.26	Liquid injection connector 1/4" change to 3/8"	Model	RC2-200AF
△2			Name	Compressor outline
△1			HANBELL	Ver. 03
Item	Date	Modification		

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Refrigerant service valve	1/4"Flare
2	Discharge flange	2"	14	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	15	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	16	Suction flange	2 1/2"
5	Solenoid valve	25%(NC)	17	Cable box	Standard
△3 6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Service flange	
7	Capillary		19	Oil drain valve	option
8	Check valve	2"	20	Discharge temp. sensor	110°C
9	Service flange		21	Safety Valve	1/2"NPT,option
10	Stop Pin		22	Economizer port	5/8", solder
11	Oil inlet connector	5/8"Flare	23	Solenoid valve	Stepless(NC or NO), option
12	Angle valve	1/4"Flare			

*All stop valves are optional

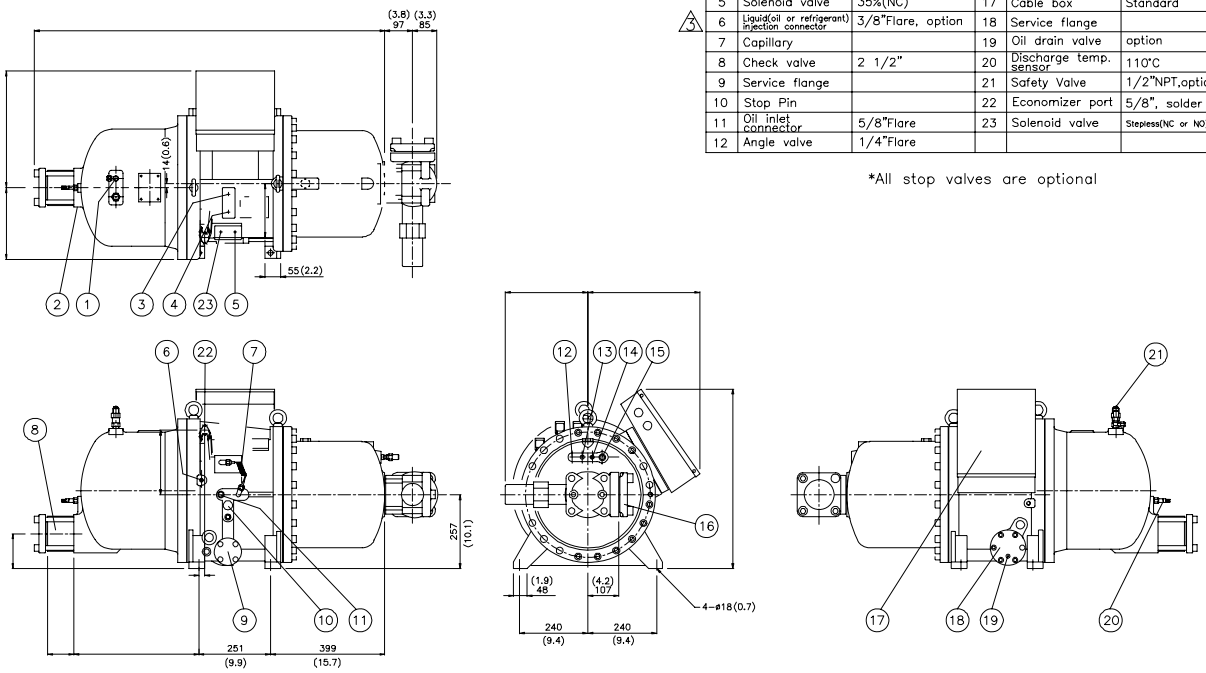


△3	2009.03.26	Liquid injection connector 1/4" change to 3/8"	Model	RC2-200BF
△2			Name	Compressor outline
△1			HANBELL	Ver. 03
Item	Date	Modification		

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Refrigerant service valve	1/4"Flare
2	Discharge flange	2 1/2"	14	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	15	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	16	Suction flange	3"
5	Solenoid valve	35%(NC)	17	Cable box	Standard
△3 6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Service flange	
7	Capillary		19	Oil drain valve	option
8	Check valve	2 1/2"	20	Discharge temp. sensor	110°C
9	Service flange		21	Safety Valve	1/2"NPT,option
10	Stop Pin		22	Economizer port	5/8", solder
11	Oil inlet connector	5/8"Flare	23	Solenoid valve	Stepless(NC or NO), option
12	Angle valve	1/4"Flare			

*All stop valves are optional

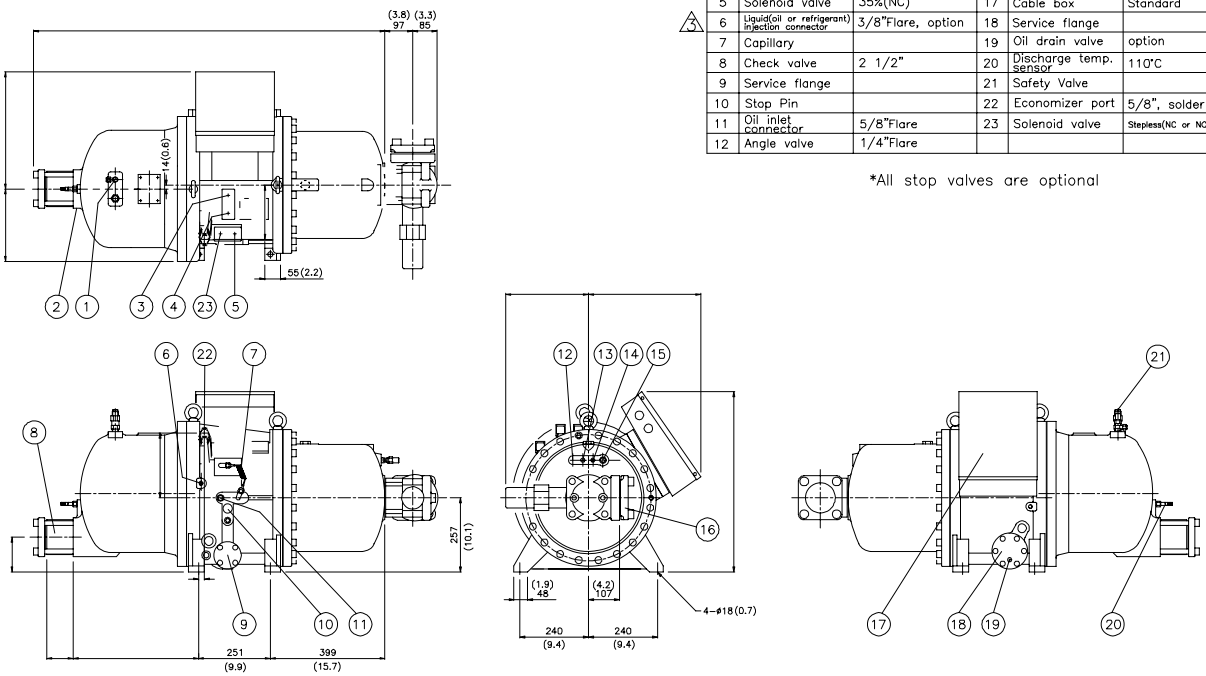


Item	Date	Modification
△3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
△2		
△1		

Model	RC2-230AF
Name	Compressor outline
HANBELL	Ver. 03

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Refrigerant service valve	1/4"Flare
2	Discharge flange	2 1/2"	14	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	15	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	16	Suction flange	3"
5	Solenoid valve	35%(NC)	17	Cable box	Standard
△3 6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Service flange	
7	Capillary		19	Oil drain valve	option
8	Check valve	2 1/2"	20	Discharge temp. sensor	110°C
9	Service flange		21	Safety Valve	
10	Stop Pin		22	Economizer port	5/8", solder
11	Oil inlet connector	5/8"Flare	23	Solenoid valve	Stepless(NC or NO), option
12	Angle valve	1/4"Flare			

*All stop valves are optional



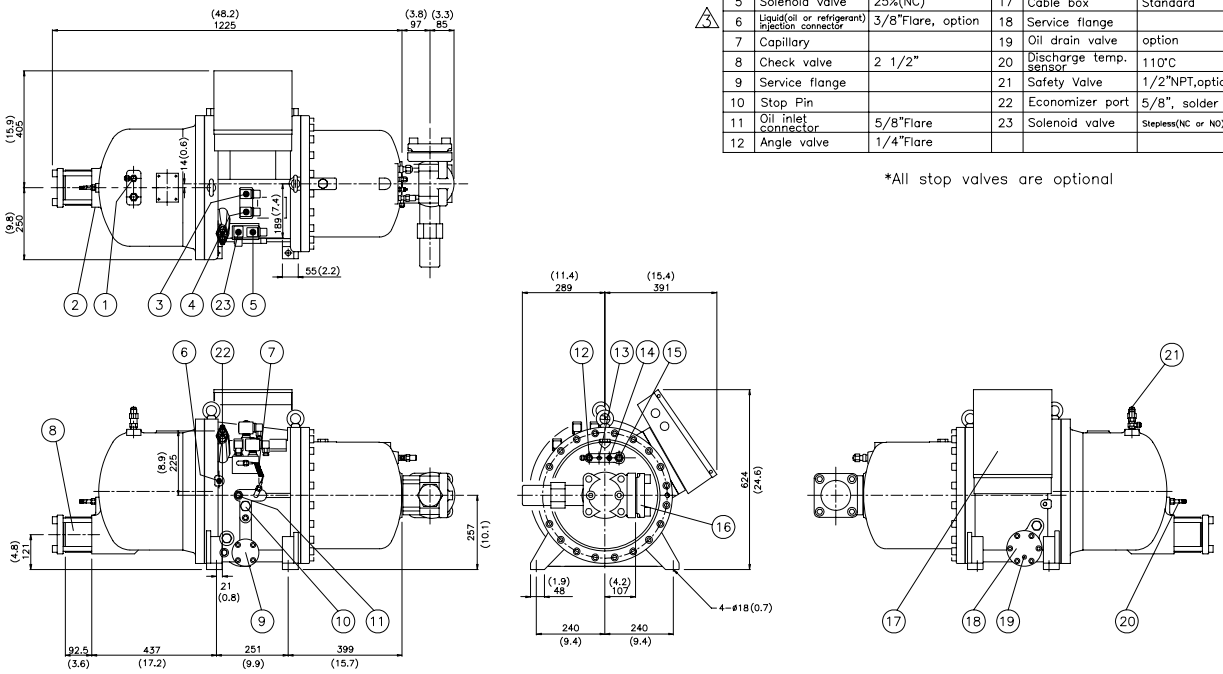
Item	Date	Modification
△3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
△2		
△1		

Model	RC2-230BF
Name	Compressor outline
HANBELL	Ver. 03

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Refrigerant service valve	1/4"Flare
2	Discharge flange	2 1/2"	14	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	15	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	16	Suction flange	3"
5	Solenoid valve	25%(NC)	17	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Service flange	
7	Capillary		19	Oil drain valve	option
8	Check valve	2 1/2"	20	Discharge temp. sensor	110°C
9	Service flange		21	Safety Valve	1/2"NPT,option
10	Stop Pin		22	Economizer port	5/8", solder
11	Oil inlet connector	5/8"Flare	23	Solenoid valve	Stepless(NC or NO), option
12	Angle valve	1/4"Flare			

△3 applies to: 6

*All stop valves are optional



Item	Date	Modification
△3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
△2		
△1		

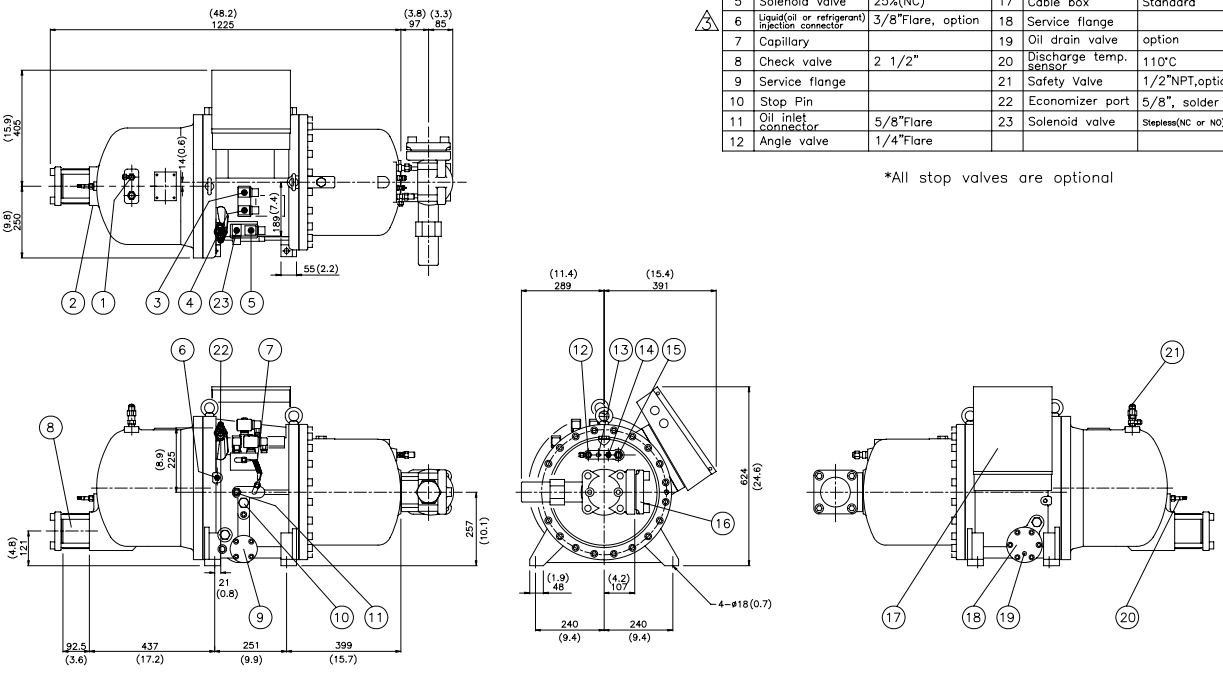
Model	RC2-260AF
Name	Compressor outline
	HANBELL Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Refrigerant service valve	1/4"Flare
2	Discharge flange	2 1/2"	14	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	15	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	16	Suction flange	3"
5	Solenoid valve	25%(NC)	17	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Service flange	
7	Capillary		19	Oil drain valve	option
8	Check valve	2 1/2"	20	Discharge temp. sensor	110°C
9	Service flange		21	Safety Valve	1/2"NPT,option
10	Stop Pin		22	Economizer port	5/8", solder
11	Oil inlet connector	5/8"Flare	23	Solenoid valve	Stepless(NC or NO), option
12	Angle valve	1/4"Flare			

△3 applies to: 6

*All stop valves are optional



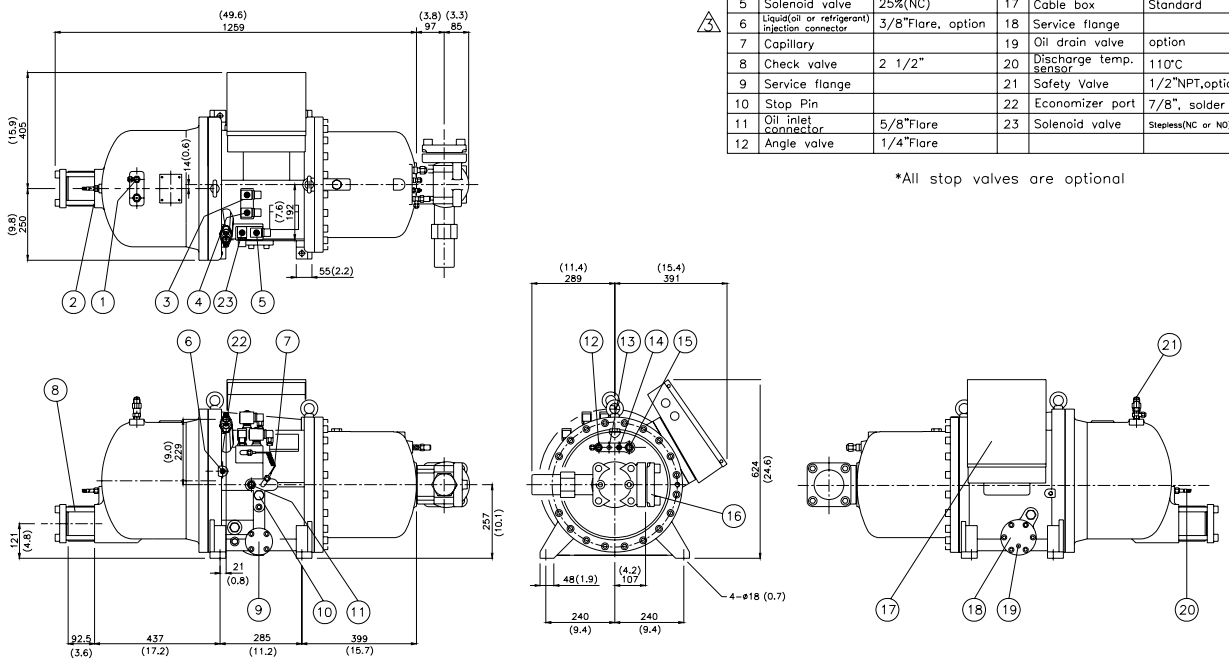
Item	Date	Modification
△3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
△2		
△1		

Model	RC2-260BF
Name	Compressor outline
	HANBELL Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Refrigerant service valve	1/4"Flare
2	Discharge flange	2 1/2"	14	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	15	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	16	Suction flange	3"
5	Solenoid valve	25%(NC)	17	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Service flange	
7	Capillary		19	Oil drain valve	option
8	Check valve	2 1/2"	20	Discharge temp. sensor	110°C
9	Service flange		21	Safety Valve	1/2"NPT,option
10	Stop Pin		22	Economizer port	7/8", solder
11	Oil inlet connector	5/8"Flare	23	Solenoid valve	Stepless(NC or NO), option
12	Angle valve	1/4"Flare			

*All stop valves are optional



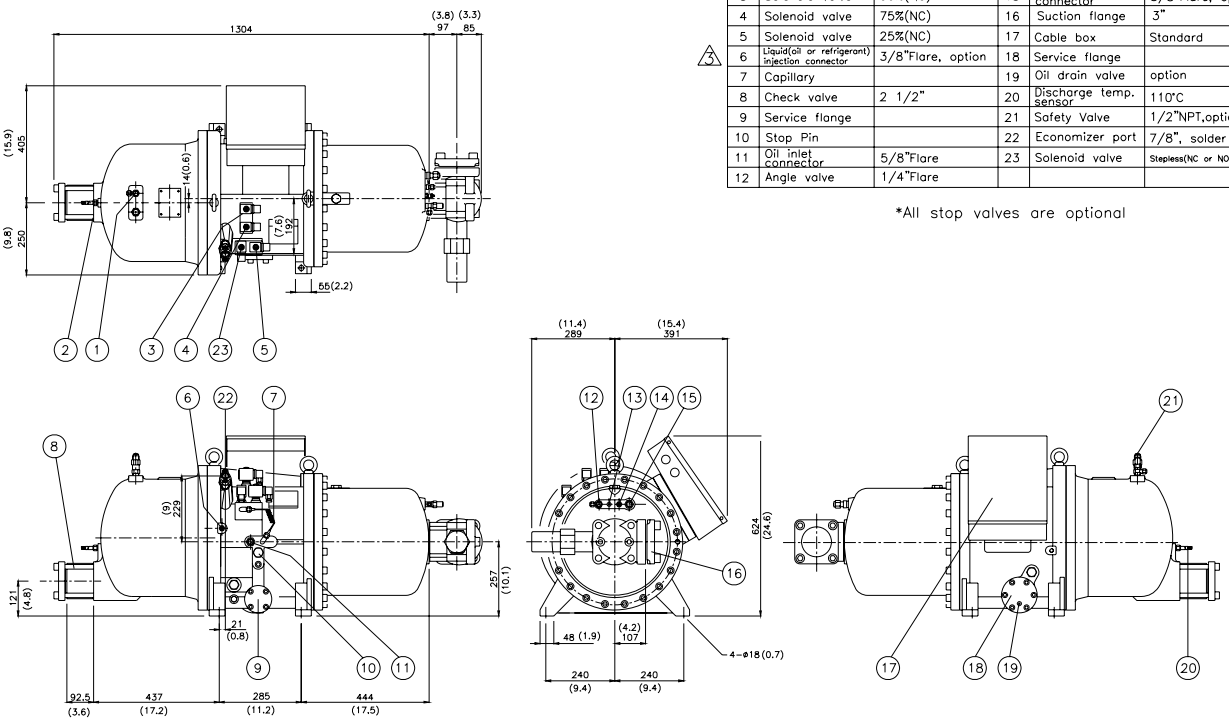
Item	Date	Modification
3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
2		
1		

Model	RC2-300AF
Name	Compressor outline
HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Refrigerant service valve	1/4"Flare
2	Discharge flange	2 1/2"	14	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	15	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	16	Suction flange	3"
5	Solenoid valve	25%(NC)	17	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Service flange	
7	Capillary		19	Oil drain valve	option
8	Check valve	2 1/2"	20	Discharge temp. sensor	110°C
9	Service flange		21	Safety Valve	1/2"NPT,option
10	Stop Pin		22	Economizer port	7/8", solder
11	Oil inlet connector	5/8"Flare	23	Solenoid valve	Stepless(NC or NO), option
12	Angle valve	1/4"Flare			

*All stop valves are optional



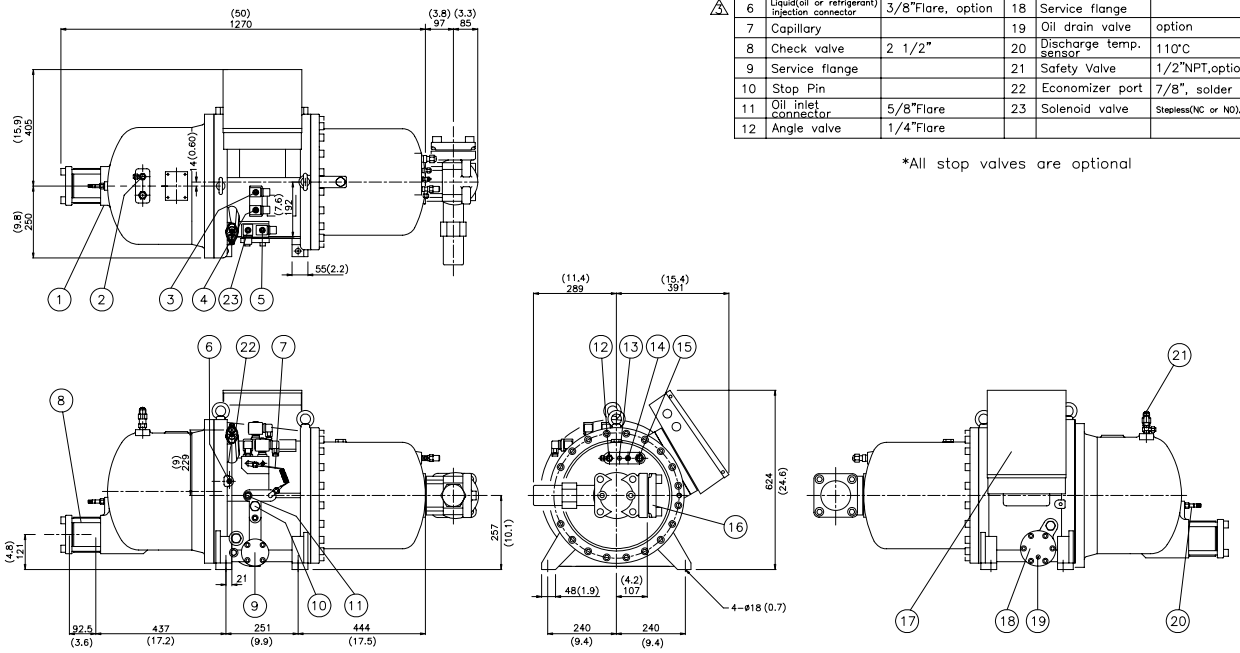
Item	Date	Modification
3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
2		
1		

Model	RC2-300BF
Name	Compressor outline
HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Refrigerant service valve	1/4"Flare
2	Discharge flange	2 1/2"	14	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	15	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	16	Suction flange	3"
5	Solenoid valve	35%(NC)	17	Cable box	Standard
△3 6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Service flange	
7	Capillary		19	Oil drain valve	option
8	Check valve	2 1/2"	20	Discharge temp. sensor	110°C
9	Service flange		21	Safety Valve	1/2"NPT,option
10	Stop Pin		22	Economizer port	7/8", solder
11	Oil inlet connector	5/8"Flare	23	Solenoid valve	Stepless(NC or NO), option
12	Angle valve	1/4"Flare			

*All stop valves are optional



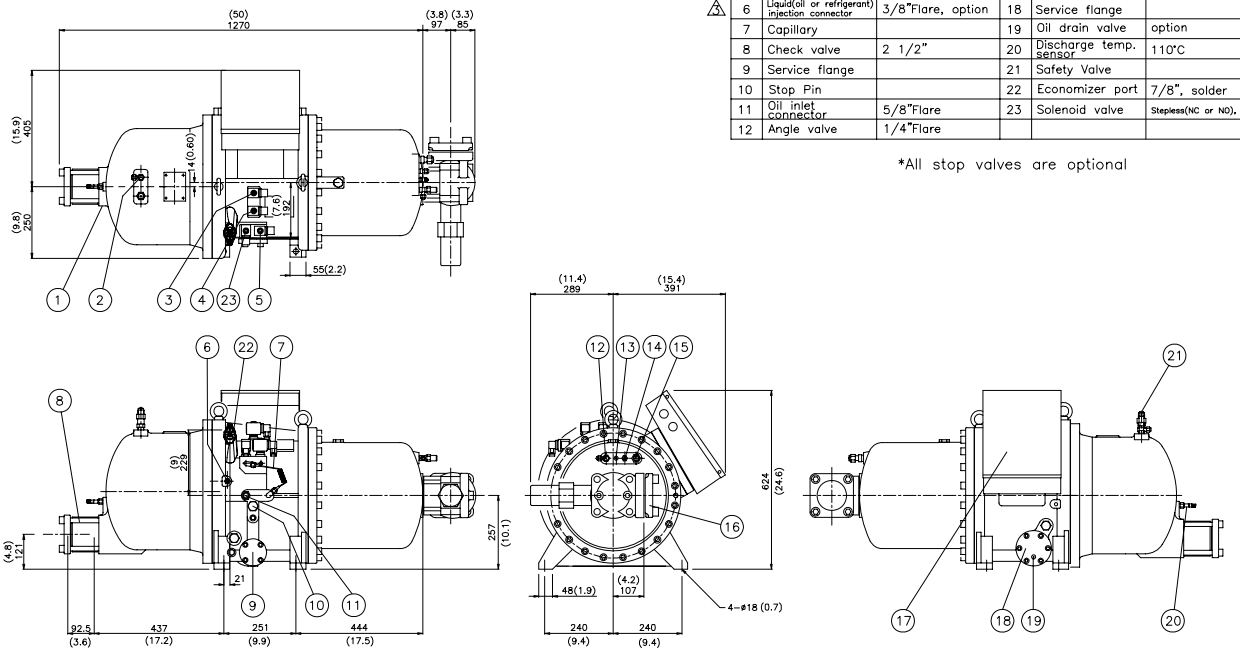
Item	Date	Modification
△3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
△2		
△1		

Model	RC2-310AF
Name	Compressor outline
	HANBELL Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Refrigerant service valve	1/4"Flare
2	Discharge flange	2 1/2"	14	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	15	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	16	Suction flange	3"
5	Solenoid valve	35%(NC)	17	Cable box	Standard
△3 6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Service flange	
7	Capillary		19	Oil drain valve	option
8	Check valve	2 1/2"	20	Discharge temp. sensor	110°C
9	Service flange		21	Safety Valve	
10	Stop Pin		22	Economizer port	7/8", solder
11	Oil inlet connector	5/8"Flare	23	Solenoid valve	Stepless(NC or NO), option
12	Angle valve	1/4"Flare			

*All stop valves are optional



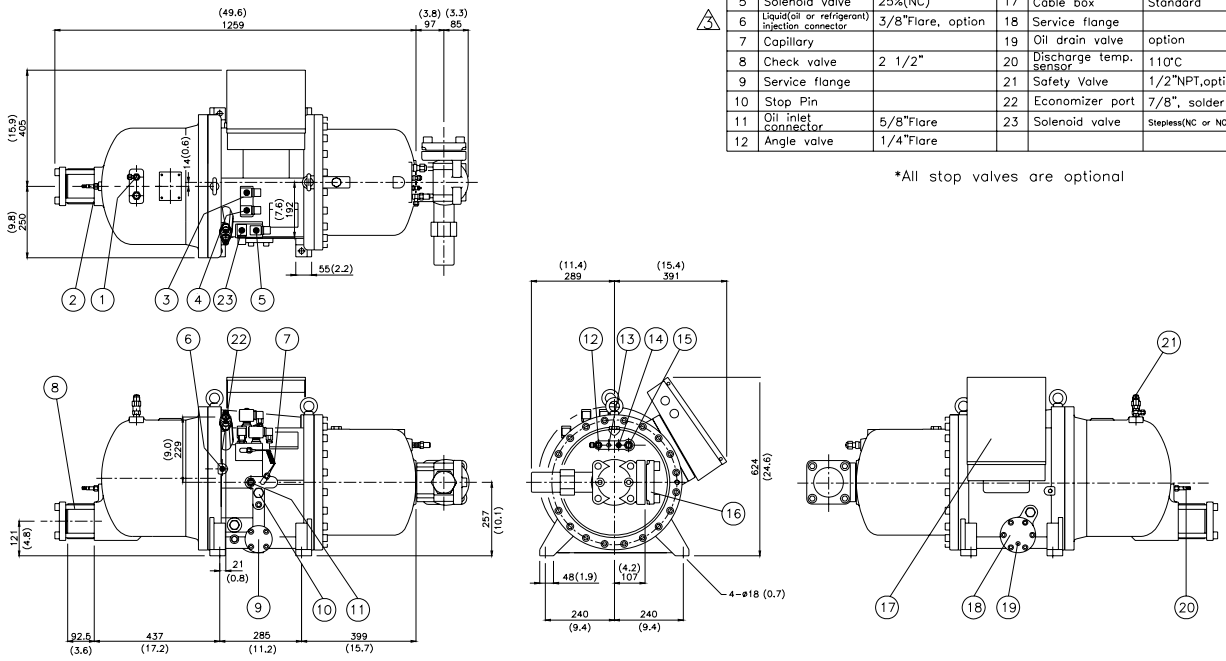
Item	Date	Modification
△3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
△2		
△1		

Model	RC2-310BF
Name	Compressor outline
	HANBELL Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Refrigerant service valve	1/4"Flare
2	Discharge flange	2 1/2"	14	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	15	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	16	Suction flange	3"
5	Solenoid valve	25%(NC)	17	Cable box	Standard
△3 6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Service flange	
7	Capillary		19	Oil drain valve	option
8	Check valve	2 1/2"	20	Discharge temp. sensor	110°C
9	Service flange		21	Safety Valve	1/2"NPT,option
10	Stop Pin		22	Economizer port	7/8", solder
11	Oil inlet connector	5/8"Flare	23	Solenoid valve	Stepless(NC or NO), option
12	Angle valve	1/4"Flare			

*All stop valves are optional



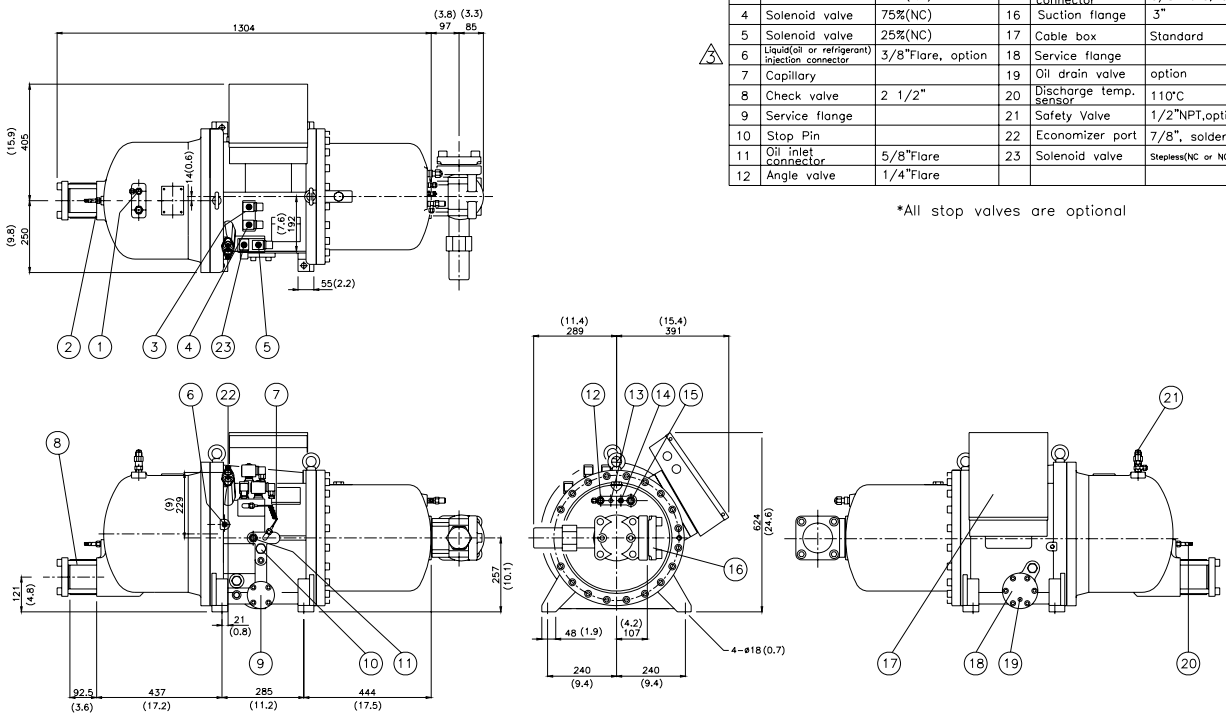
△3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
△2		
△1		
Item	Date	Modification

Model	RC2-320AF		
Name	Compressor outline		
	HANBELL	Ver.	03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Refrigerant service valve	1/4"Flare
2	Discharge flange	2 1/2"	14	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	15	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	16	Suction flange	3"
5	Solenoid valve	25%(NC)	17	Cable box	Standard
△3 6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Service flange	
7	Capillary		19	Oil drain valve	option
8	Check valve	2 1/2"	20	Discharge temp. sensor	110°C
9	Service flange		21	Safety Valve	1/2"NPT,option
10	Stop Pin		22	Economizer port	7/8", solder
11	Oil inlet connector	5/8"Flare	23	Solenoid valve	Stepless(NC or NO), option
12	Angle valve	1/4"Flare			

*All stop valves are optional



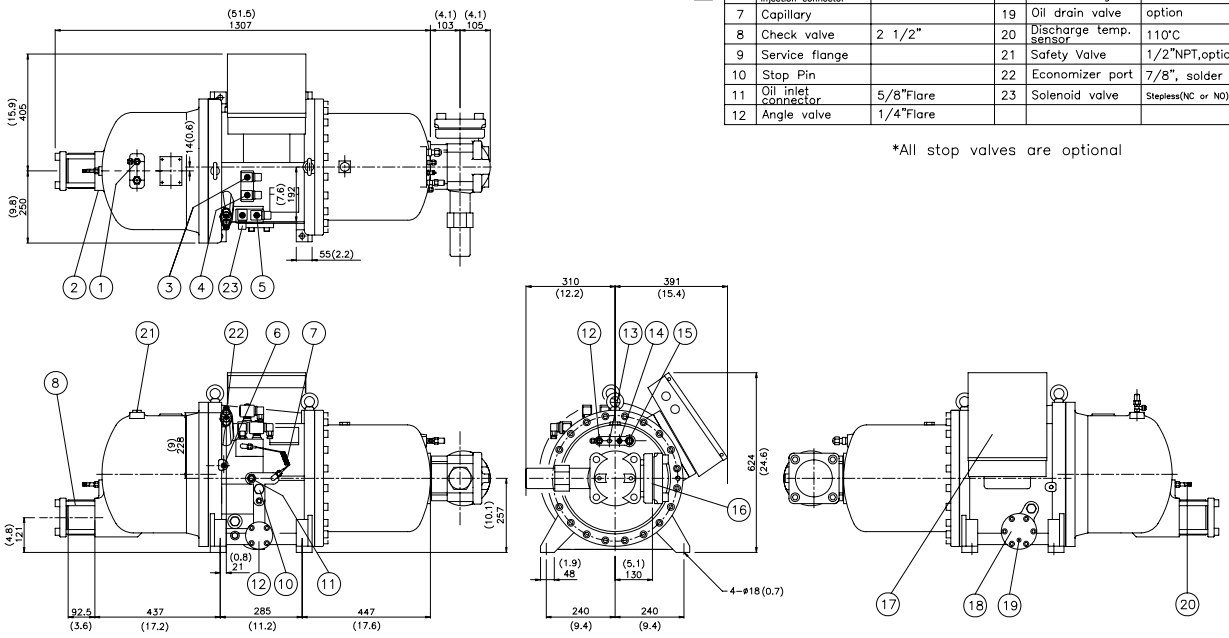
△3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
△2		
△1		
Item	Date	Modification

Model	RC2-320BF		
Name	Compressor outline		
	HANBELL	Ver.	03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Refrigerant service valve	1/4"Flare
2	Discharge flange	2 1/2"	14	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	15	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	16	Suction flange	4"
5	Solenoid valve	35%(NC)	17	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Service flange	
7	Capillary		19	Oil drain valve	option
8	Check valve	2 1/2"	20	Discharge temp. sensor	110°C
9	Service flange		21	Safety Valve	1/2"NPT,option
10	Stop Pin		22	Economizer port	7/8", solder
11	Oil inlet connector	5/8"Flare	23	Solenoid valve	Stepless(NC or NO), option
12	Angle valve	1/4"Flare			

*All stop valves are optional



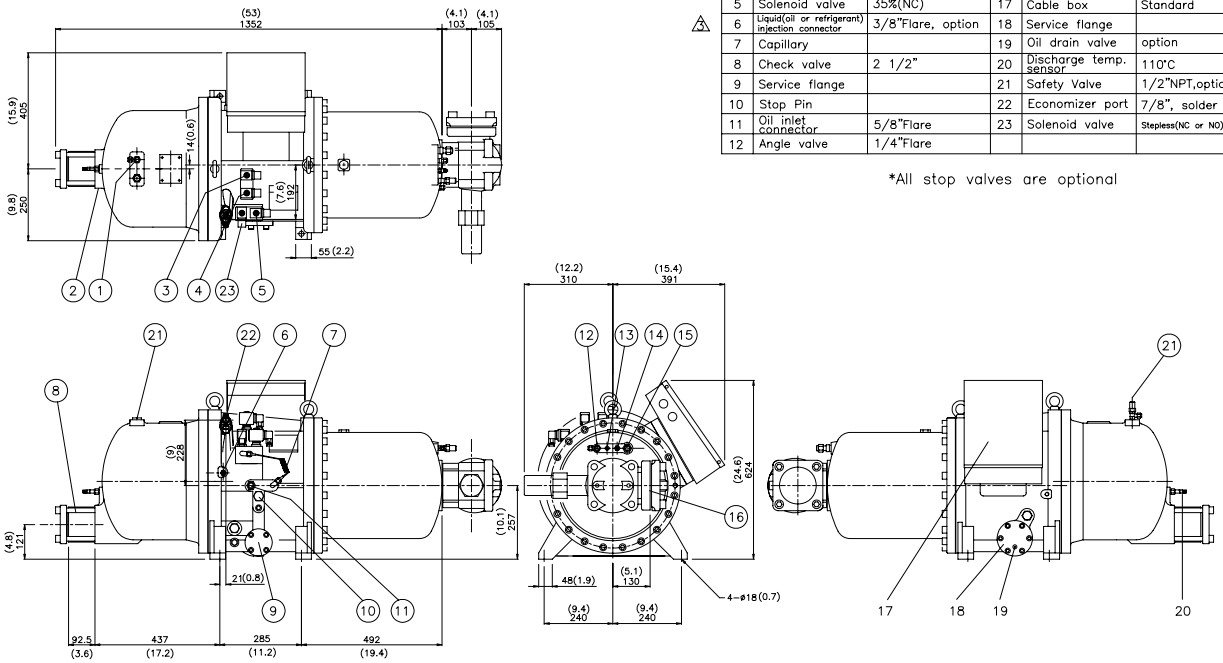
Item	Date	Modification
3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
2		
1		

Model	RC2-340AF
Name	Compressor outline
HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Refrigerant service valve	1/4"Flare
2	Discharge flange	2 1/2"	14	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	15	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	16	Suction flange	4"
5	Solenoid valve	35%(NC)	17	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Service flange	
7	Capillary		19	Oil drain valve	option
8	Check valve	2 1/2"	20	Discharge temp. sensor	110°C
9	Service flange		21	Safety Valve	1/2"NPT,option
10	Stop Pin		22	Economizer port	7/8", solder
11	Oil inlet connector	5/8"Flare	23	Solenoid valve	Stepless(NC or NO), option
12	Angle valve	1/4"Flare			

*All stop valves are optional



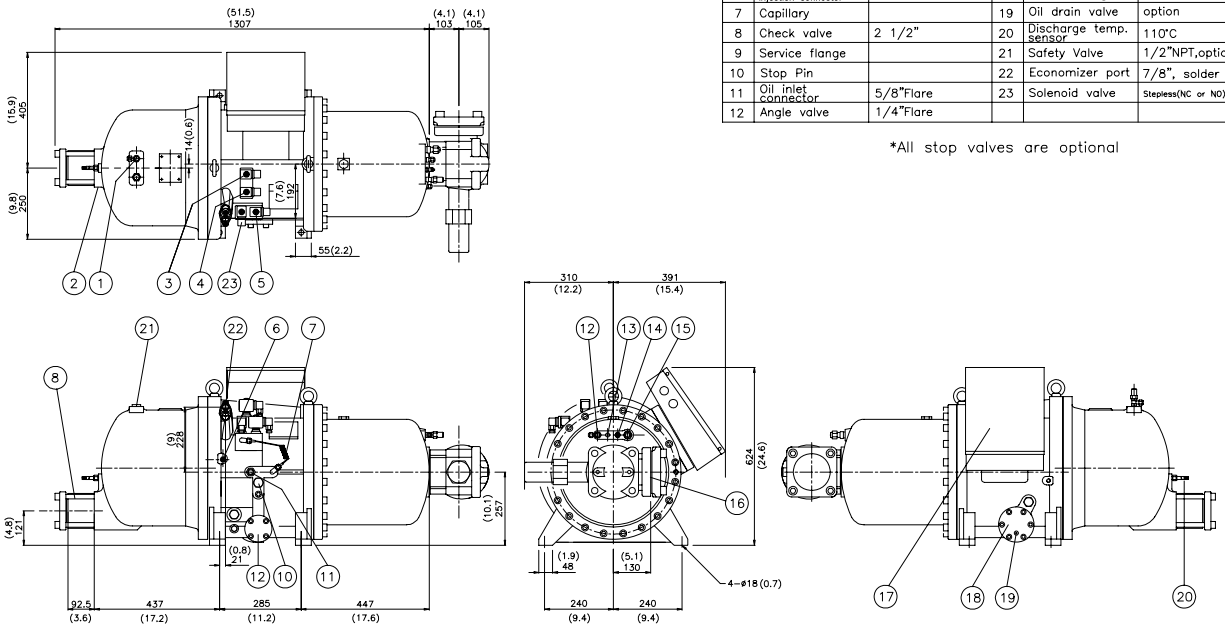
Item	Date	Modification
3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
2		
1		

Model	RC2-340BF
Name	Compressor outline
HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Refrigerant service valve	1/4"Flare
2	Discharge flange	2 1/2"	14	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	15	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	16	Suction flange	4"
5	Solenoid valve	35%(NC)	17	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Service flange	
7	Capillary		19	Oil drain valve	option
8	Check valve	2 1/2"	20	Discharge temp. sensor	110°C
9	Service flange		21	Safety Valve	1/2"NPT,option
10	Stop Pin		22	Economizer port	7/8", solder
11	Oil inlet connector	5/8"Flare	23	Solenoid valve	Stepless(NC or NO), option
12	Angle valve	1/4"Flare			

*All stop valves are optional



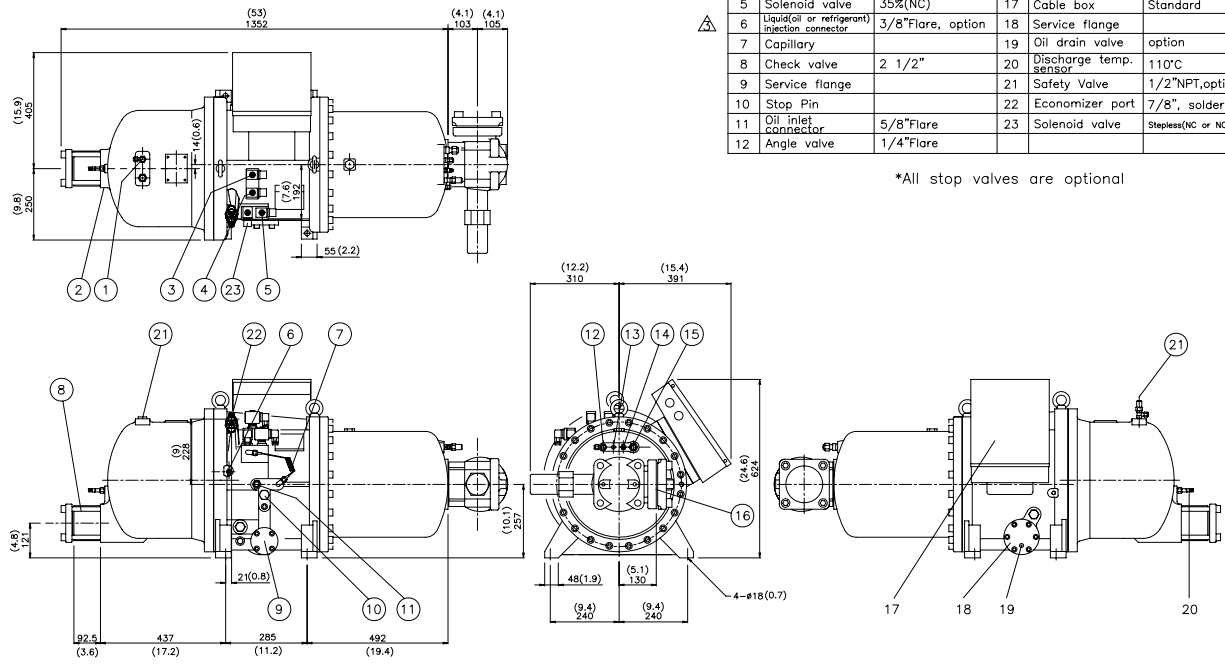
Item	Date	Modification
3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
2		
1		

Model	RC2-370AF
Name	Compressor outline
HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Refrigerant service valve	1/4"Flare
2	Discharge flange	2 1/2"	14	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	15	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	16	Suction flange	4"
5	Solenoid valve	35%(NC)	17	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Service flange	
7	Capillary		19	Oil drain valve	option
8	Check valve	2 1/2"	20	Discharge temp. sensor	110°C
9	Service flange		21	Safety Valve	1/2"NPT,option
10	Stop Pin		22	Economizer port	7/8", solder
11	Oil inlet connector	5/8"Flare	23	Solenoid valve	Stepless(NC or NO), option
12	Angle valve	1/4"Flare			

*All stop valves are optional



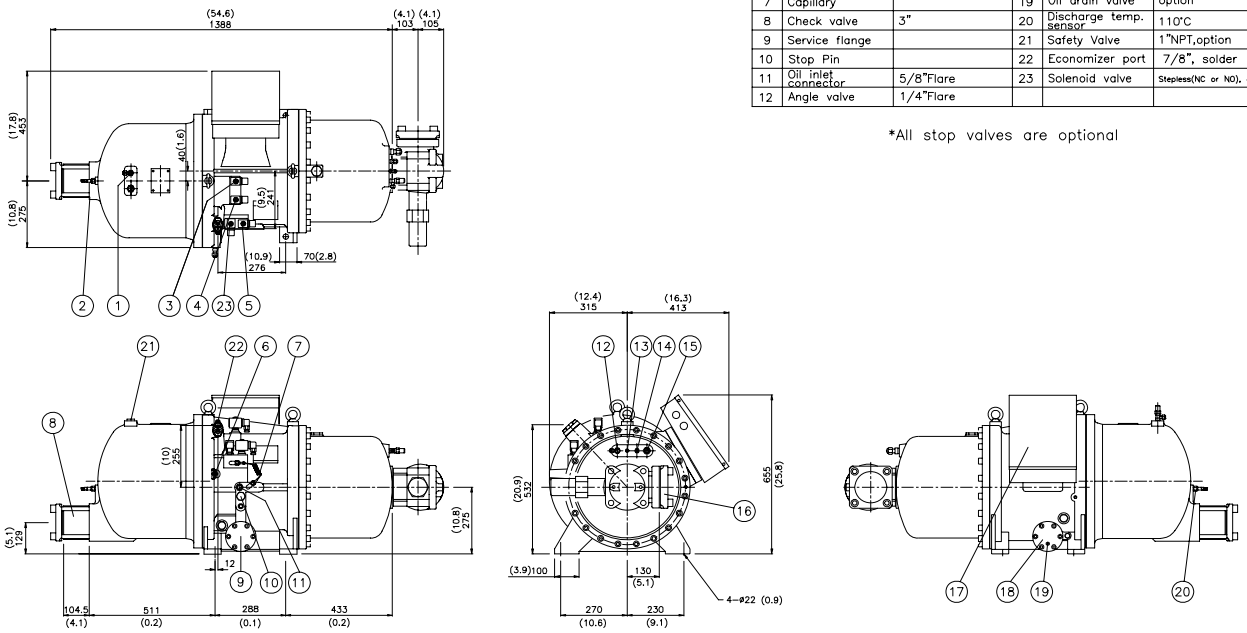
Item	Date	Modification
3	2009.03.26	Liquid injection connector 1/4" change to 3/8"
2		
1		

Model	RC2-370BF
Name	Compressor outline
HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Refrigerant service valve	1/4"Flare
2	Discharge flange	3"	14	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	15	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	16	Suction flange	4"
5	Solenoid valve	25%(NC)	17	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Service flange	
7	Capillary		19	Oil drain valve	option
8	Check valve	3"	20	Discharge temp. sensor	110°C
9	Service flange		21	Safety Valve	1"NPT,option
10	Stop Pin		22	Economizer port	7/8", solder
11	Oil inlet connector	5/8"Flare	23	Solenoid valve	Stepless(NC or NO), option
12	Angle valve	1/4"Flare			

*All stop valves are optional

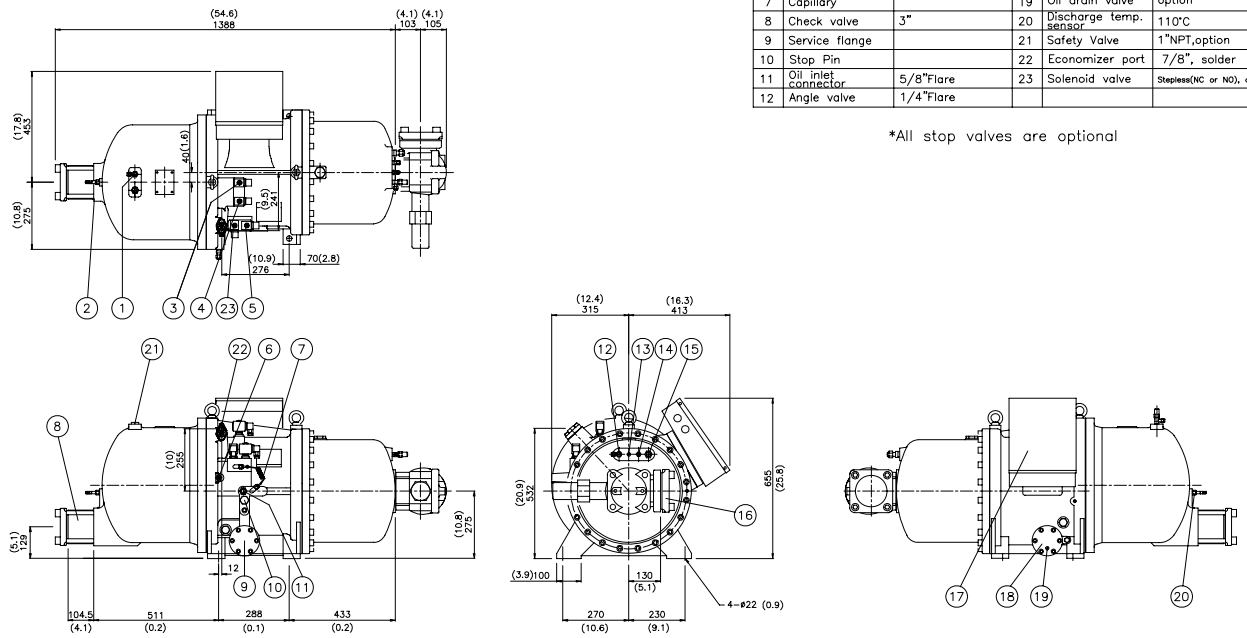


3	2009.03.26	Riss in motor casing have seen removed	Model	RC2-410AF
2			Name	Compressor outline
1			HANBELL	Ver. 03
Item	Date	Modification		

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Refrigerant service valve	1/4"Flare
2	Discharge flange	3"	14	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	15	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	16	Suction flange	4"
5	Solenoid valve	25%(NC)	17	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Service flange	
7	Capillary		19	Oil drain valve	option
8	Check valve	3"	20	Discharge temp. sensor	110°C
9	Service flange		21	Safety Valve	1"NPT,option
10	Stop Pin		22	Economizer port	7/8", solder
11	Oil inlet connector	5/8"Flare	23	Solenoid valve	Stepless(NC or NO), option
12	Angle valve	1/4"Flare			

*All stop valves are optional

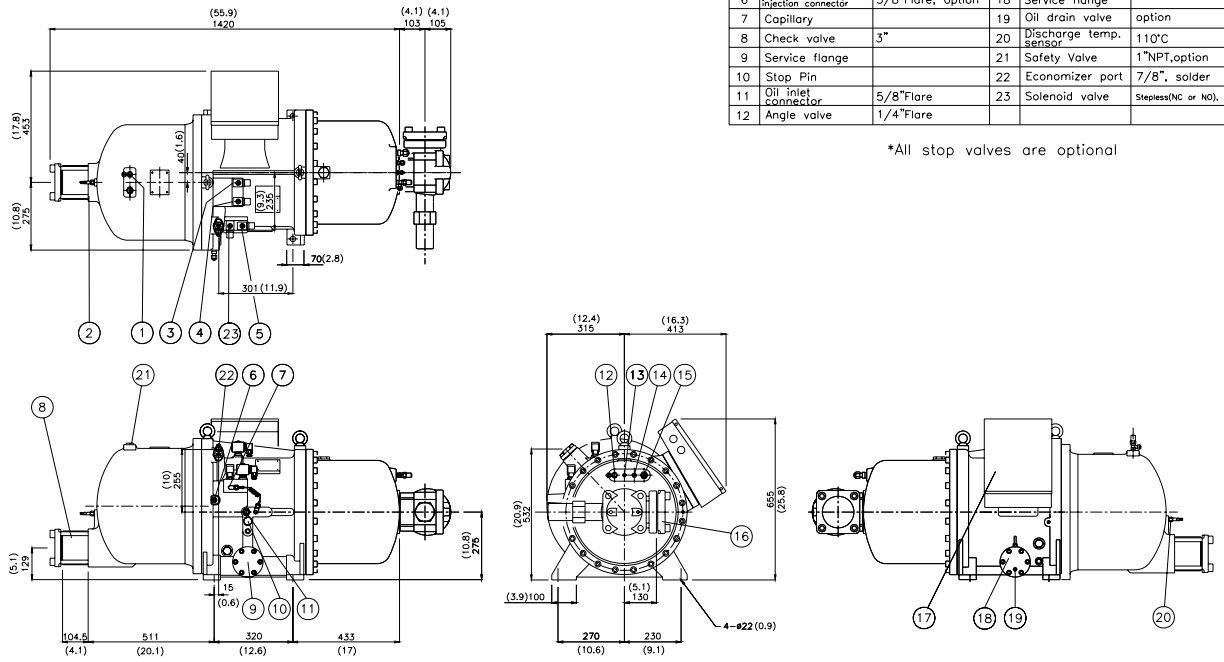


3	2009.03.26	Riss in motor casing have seen removed	Model	RC2-410BF
2			Name	Compressor outline
1			HANBELL	Ver. 03
Item	Date	Modification		

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Refrigerant service valve	1/4"Flare
2	Discharge flange	3"	14	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	15	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	16	Suction flange	4"
5	Solenoid valve	25%(NC)	17	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Service flange	
7	Capillary		19	Oil drain valve	option
8	Check valve	3"	20	Discharge temp. sensor	110°C
9	Service flange		21	Safety Valve	1"NPT,option
10	Stop Pin		22	Economizer port	7/8", solder
11	Oil inlet connector	5/8"Flare	23	Solenoid valve	Stepless(NC or NO), option
12	Angle valve	1/4"Flare			

*All stop valves are optional



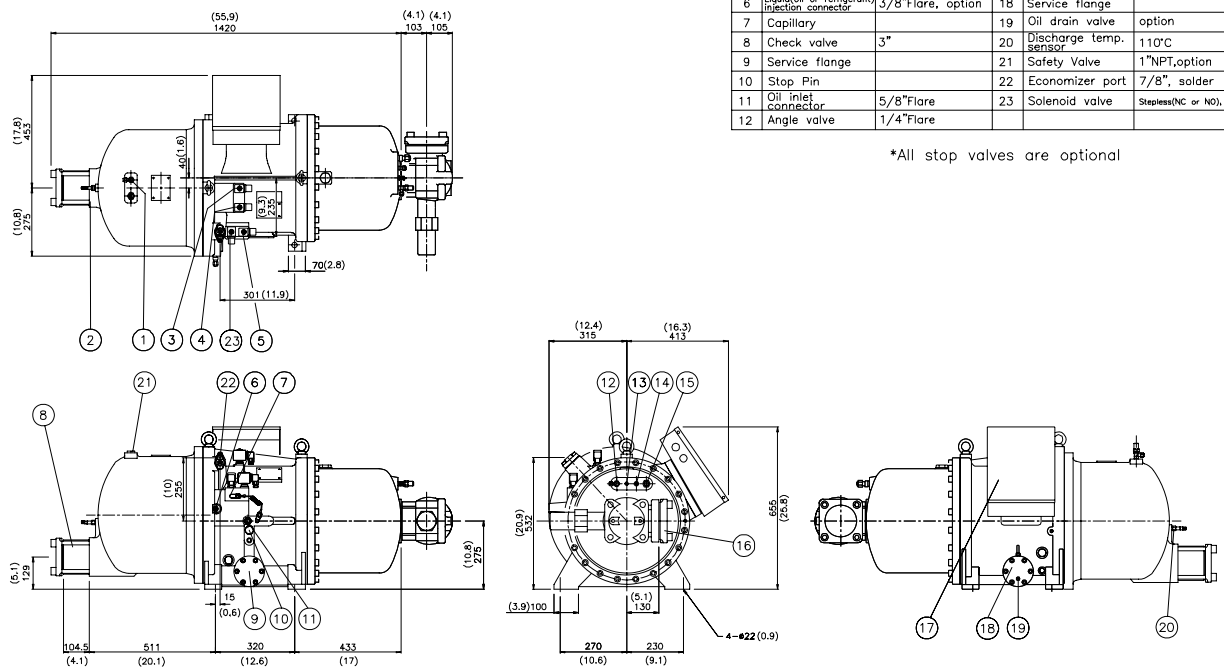
Item	Date	Modification
3	2009.03.26	Riss in motor casing have seen removed
2		
1		

Model	RC2-470AF
Name	Compressor outline
HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Refrigerant service valve	1/4"Flare
2	Discharge flange	3"	14	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	15	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	16	Suction flange	4"
5	Solenoid valve	25%(NC)	17	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Service flange	
7	Capillary		19	Oil drain valve	option
8	Check valve	3"	20	Discharge temp. sensor	110°C
9	Service flange		21	Safety Valve	1"NPT,option
10	Stop Pin		22	Economizer port	7/8", solder
11	Oil inlet connector	5/8"Flare	23	Solenoid valve	Stepless(NC or NO), option
12	Angle valve	1/4"Flare			

*All stop valves are optional



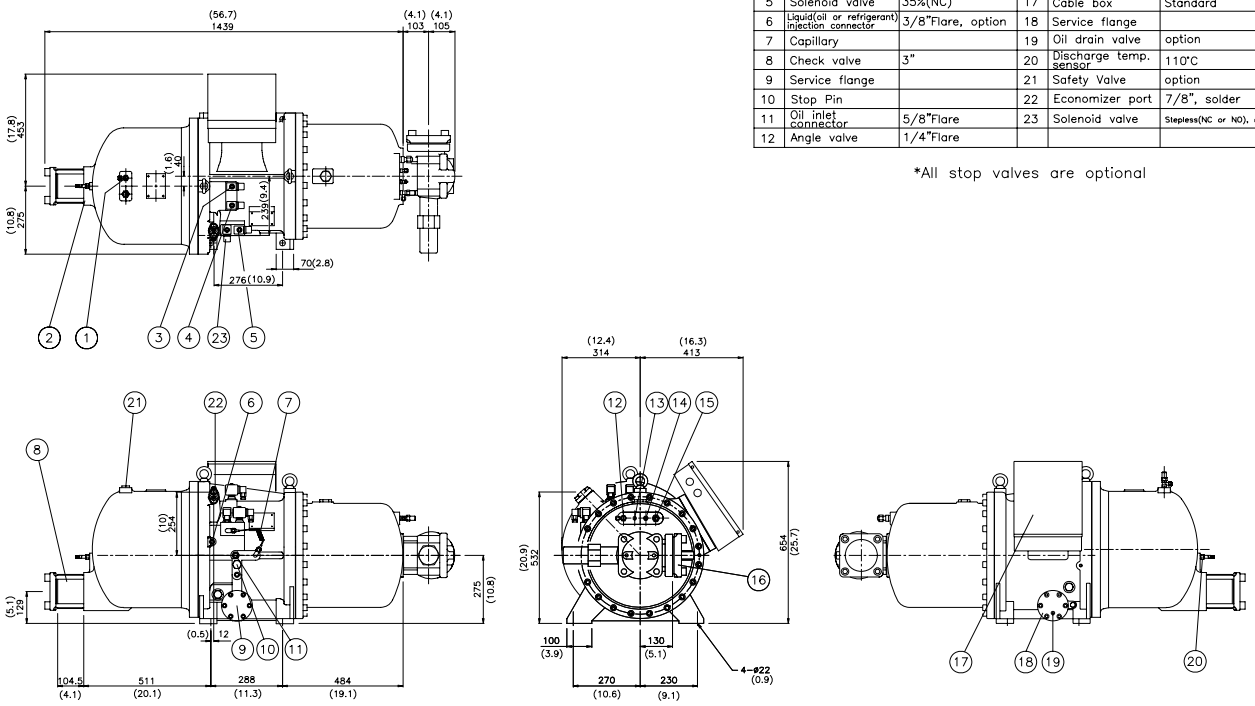
Item	Date	Modification
3	2009.03.26	Riss in motor casing have seen removed
2		
1		

Model	RC2-470BF
Name	Compressor outline
HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Refrigerant service valve	1/4"Flare
2	Discharge flange	3"	14	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	15	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	16	Suction flange	4"
5	Solenoid valve	35%(NC)	17	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Service flange	
7	Capillary		19	Oil drain valve	option
8	Check valve	3"	20	Discharge temp. sensor	110°C
9	Service flange		21	Safety Valve	option
10	Stop Pin		22	Economizer port	7/8", solder
11	Oil inlet connector	5/8"Flare	23	Solenoid valve	Stepless(NC or NO), option
12	Angle valve	1/4"Flare			

*All stop valves are optional



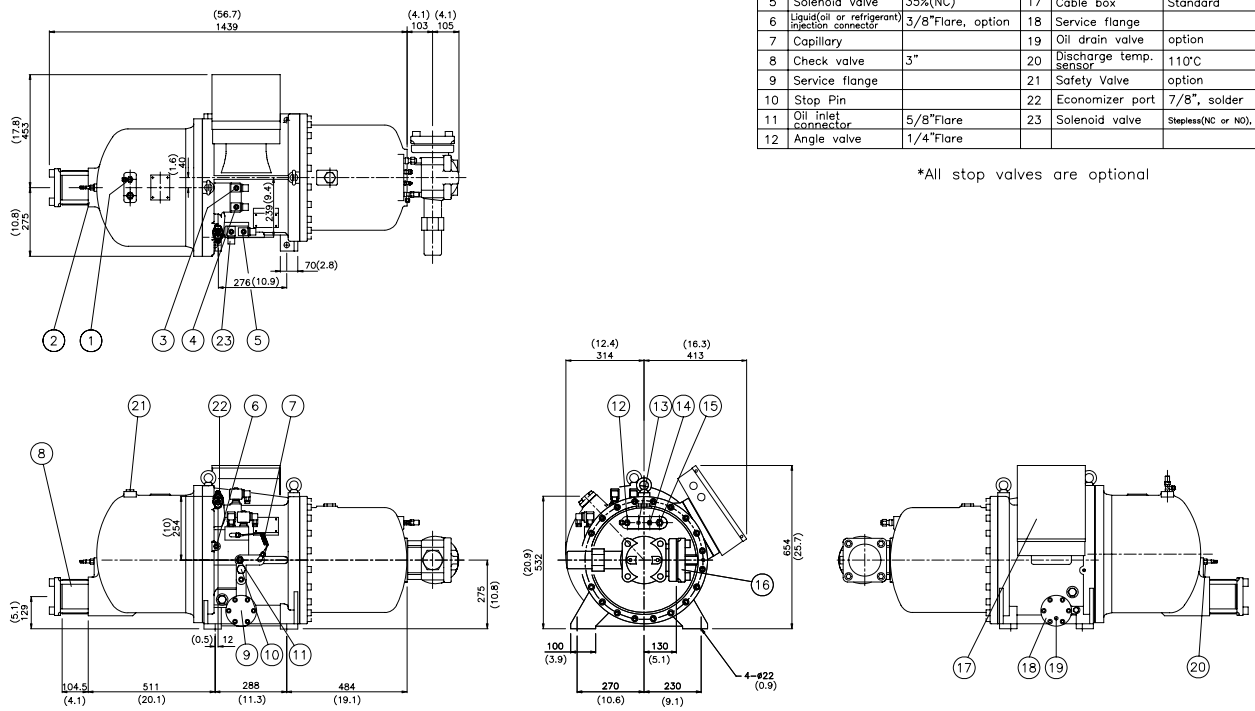
Item	Date	Modification
3	2009.03.26	Riss in motor casing have seen removed
2		
1		

Model	RC2-510AF
Name	Compressor outline
HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Refrigerant service valve	1/4"Flare
2	Discharge flange	3"	14	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	15	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	16	Suction flange	4"
5	Solenoid valve	35%(NC)	17	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Service flange	
7	Capillary		19	Oil drain valve	option
8	Check valve	3"	20	Discharge temp. sensor	110°C
9	Service flange		21	Safety Valve	option
10	Stop Pin		22	Economizer port	7/8", solder
11	Oil inlet connector	5/8"Flare	23	Solenoid valve	Stepless(NC or NO), option
12	Angle valve	1/4"Flare			

*All stop valves are optional



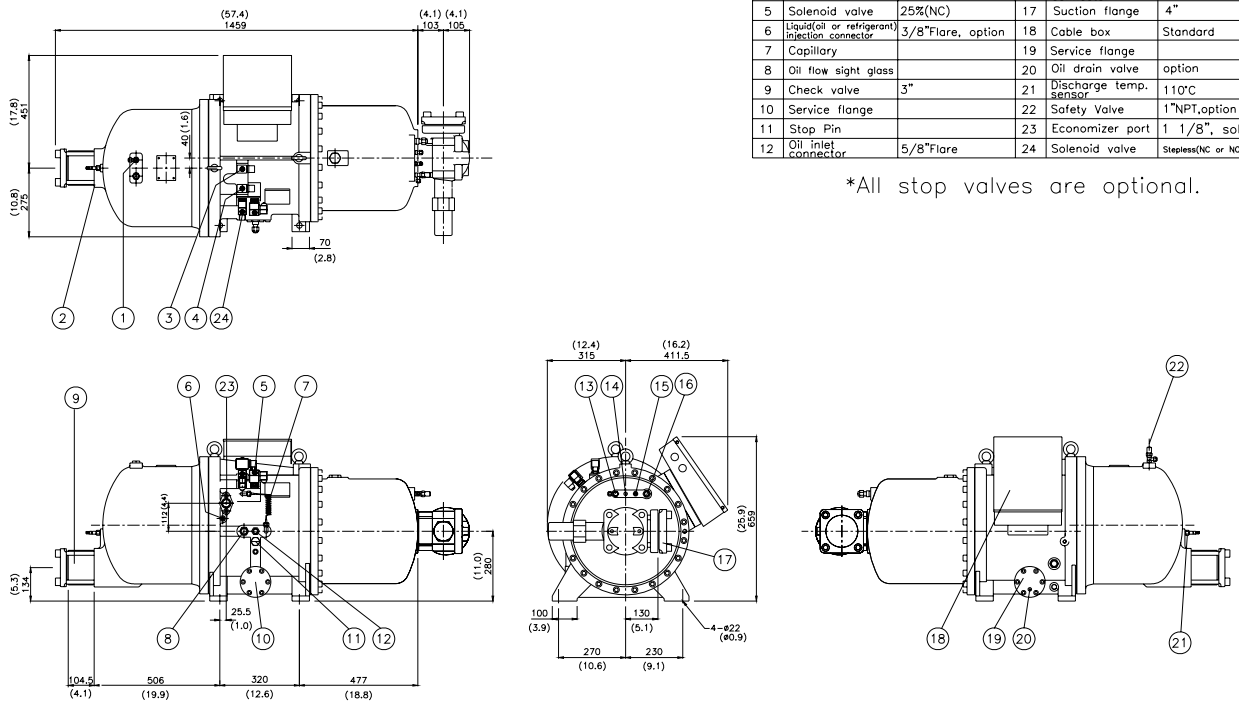
Item	Date	Modification
3	2009.03.26	Riss in motor casing have seen removed
2		
1		

Model	RC2-510BF
Name	Compressor outline
HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Angle valve	1/4"Flare
2	Discharge flange	3"	14	Refrigerant service valve	1/4"Flare
3	Solenoid valve	50%(NC)	15	Connector	1/4"Flare
4	Solenoid valve	75%(NC)	16	Liquid injection connector	5/8"Flare, option
5	Solenoid valve	25%(NC)	17	Suction flange	4"
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Cable box	Standard
7	Capillary		19	Service flange	
8	Oil flow sight glass		20	Oil drain valve	option
9	Check valve	3"	21	Discharge temp. sensor	110°C
10	Service flange		22	Safety Valve	1"NPT,option
11	Stop Pin		23	Economizer port	1 1/8", solder
12	Oil inlet connector	5/8"Flare	24	Solenoid valve	Stepless(NC or NO), option

*All stop valves are optional.

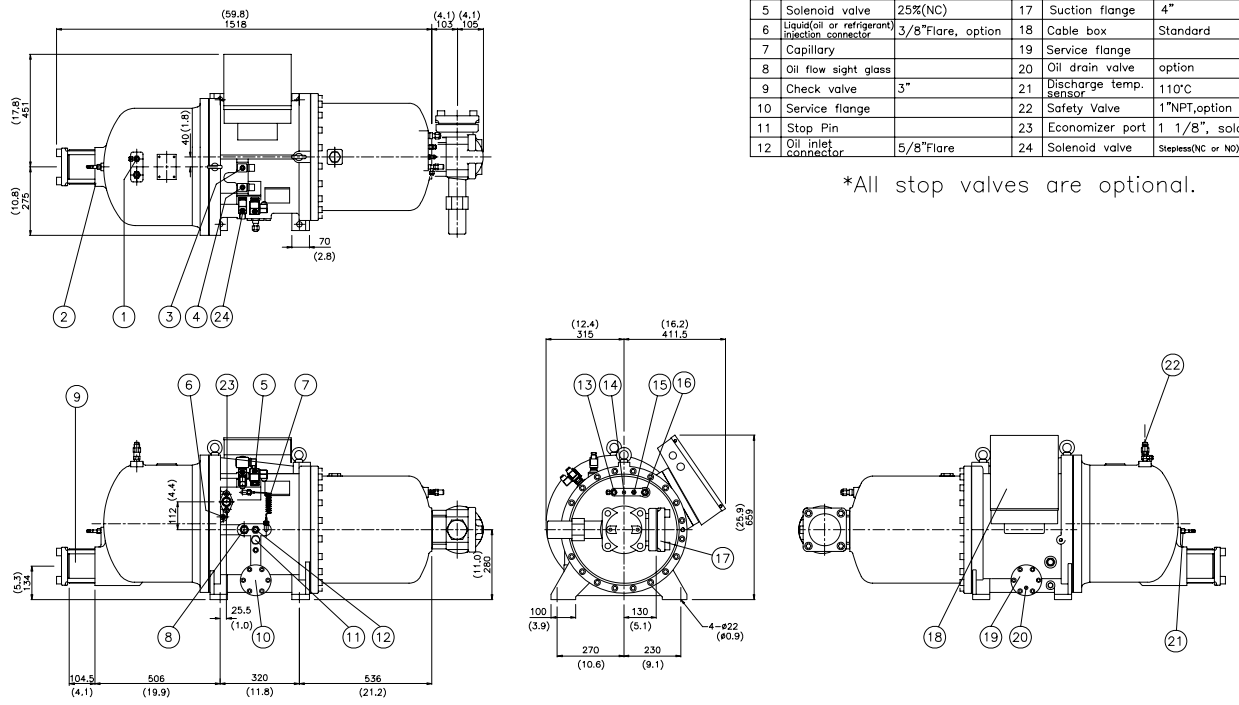


3	2009.03.26	Riss in motor casing have seen removed	Model	RC2-550AF
2			Name	Compressor outline
1			HANBELL	Ver. 03
Item	Date	Modification		

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Angle valve	1/4"Flare
2	Discharge flange	3"	14	Refrigerant service valve	1/4"Flare
3	Solenoid valve	50%(NC)	15	Connector	1/4"Flare
4	Solenoid valve	75%(NC)	16	Liquid injection connector	5/8"Flare, option
5	Solenoid valve	25%(NC)	17	Suction flange	4"
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Cable box	Standard
7	Capillary		19	Service flange	
8	Oil flow sight glass		20	Oil drain valve	option
9	Check valve	3"	21	Discharge temp. sensor	110°C
10	Service flange		22	Safety Valve	1"NPT,option
11	Stop Pin		23	Economizer port	1 1/8", solder
12	Oil inlet connector	5/8"Flare	24	Solenoid valve	Stepless(NC or NO), option

*All stop valves are optional.

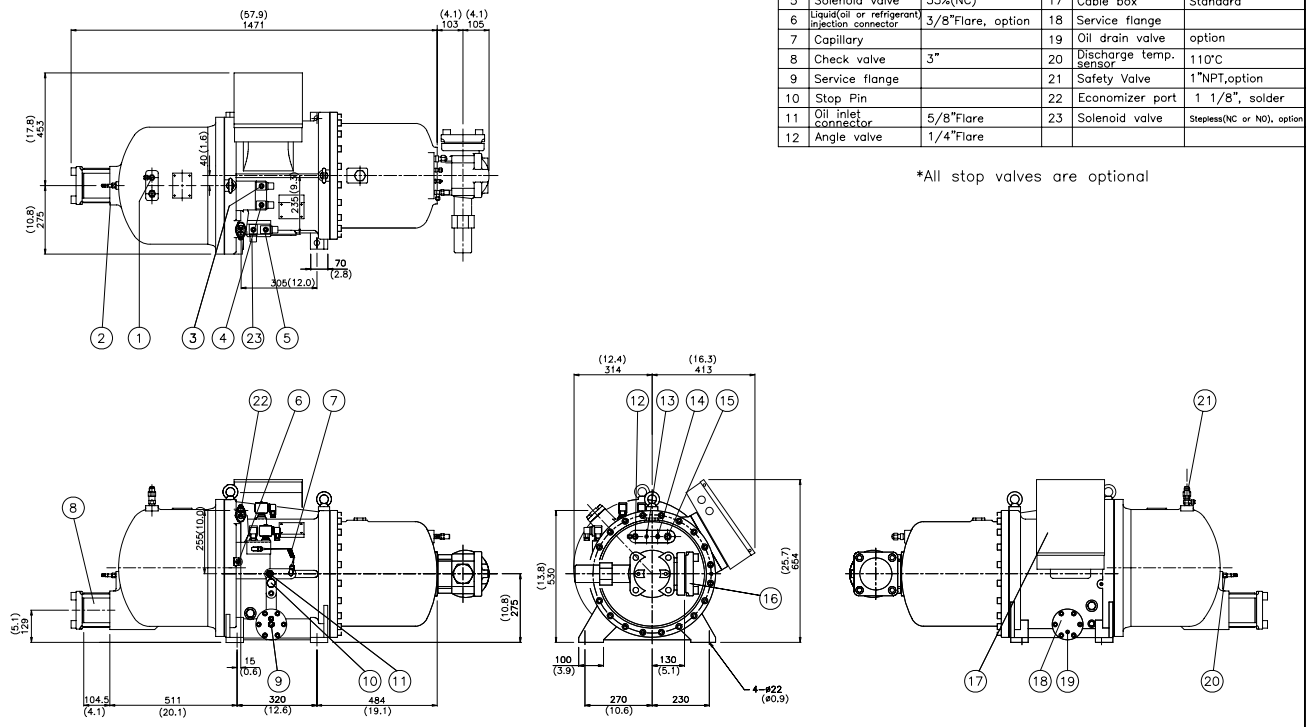


3	2009.03.26	Riss in motor casing have seen removed	Model	RC2-550BF
2			Name	Compressor outline
1			HANBELL	Ver. 03
Item	Date	Modification		

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Refrigerant service valve	1/4"Flare
2	Discharge flange	3"	14	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	15	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	16	Suction flange	4"
5	Solenoid valve	35%(NC)	17	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Service flange	
7	Capillary		19	Oil drain valve	option
8	Check valve	3"	20	Discharge temp. sensor	110°C
9	Service flange		21	Safety Valve	1"NPT,option
10	Stop Pin		22	Economizer port	1 1/8", solder
11	Oil inlet connector	5/8"Flare	23	Solenoid valve	Stepless(NC or NO), option
12	Angle valve	1/4"Flare			

*All stop valves are optional



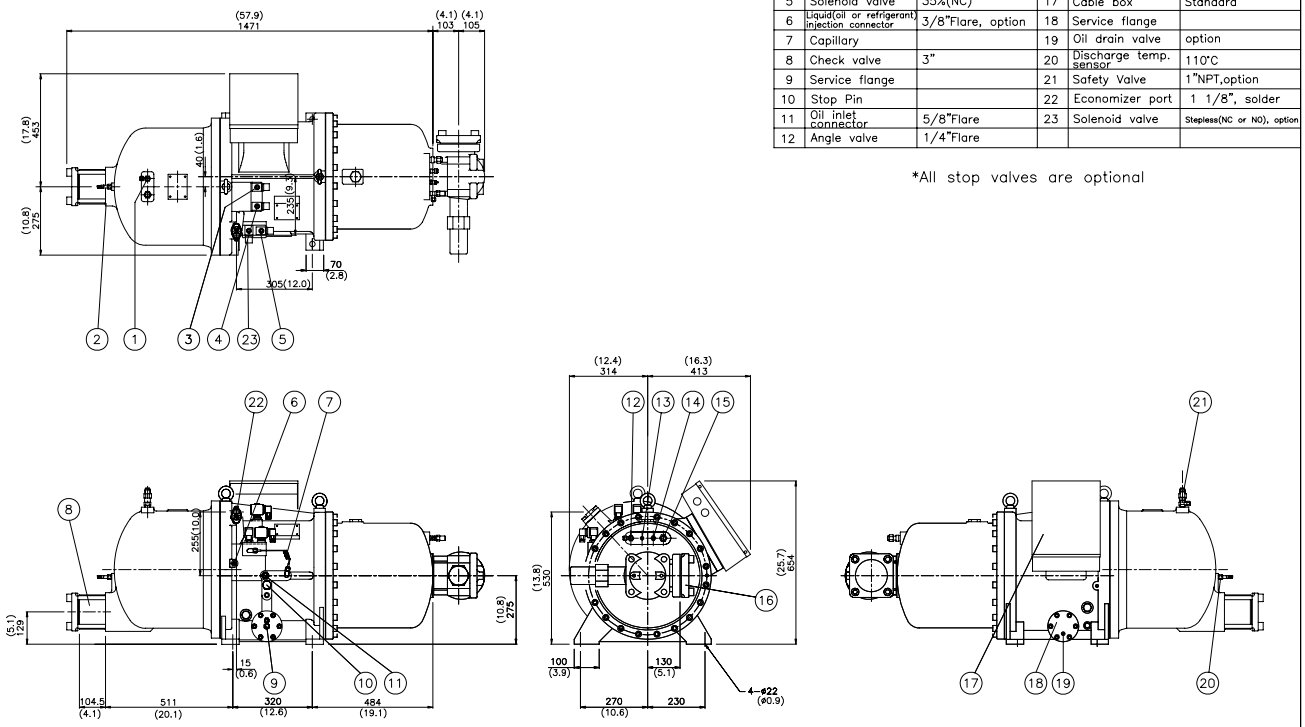
Item	Date	Modification
3	2009.03.26	Riss in motor casing have seen removed
2		
1		

Model	RC2-580AF
Name	Compressor outline
HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Refrigerant service valve	1/4"Flare
2	Discharge flange	3"	14	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	15	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	16	Suction flange	4"
5	Solenoid valve	35%(NC)	17	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Service flange	
7	Capillary		19	Oil drain valve	option
8	Check valve	3"	20	Discharge temp. sensor	110°C
9	Service flange		21	Safety Valve	1"NPT,option
10	Stop Pin		22	Economizer port	1 1/8", solder
11	Oil inlet connector	5/8"Flare	23	Solenoid valve	Stepless(NC or NO), option
12	Angle valve	1/4"Flare			

*All stop valves are optional



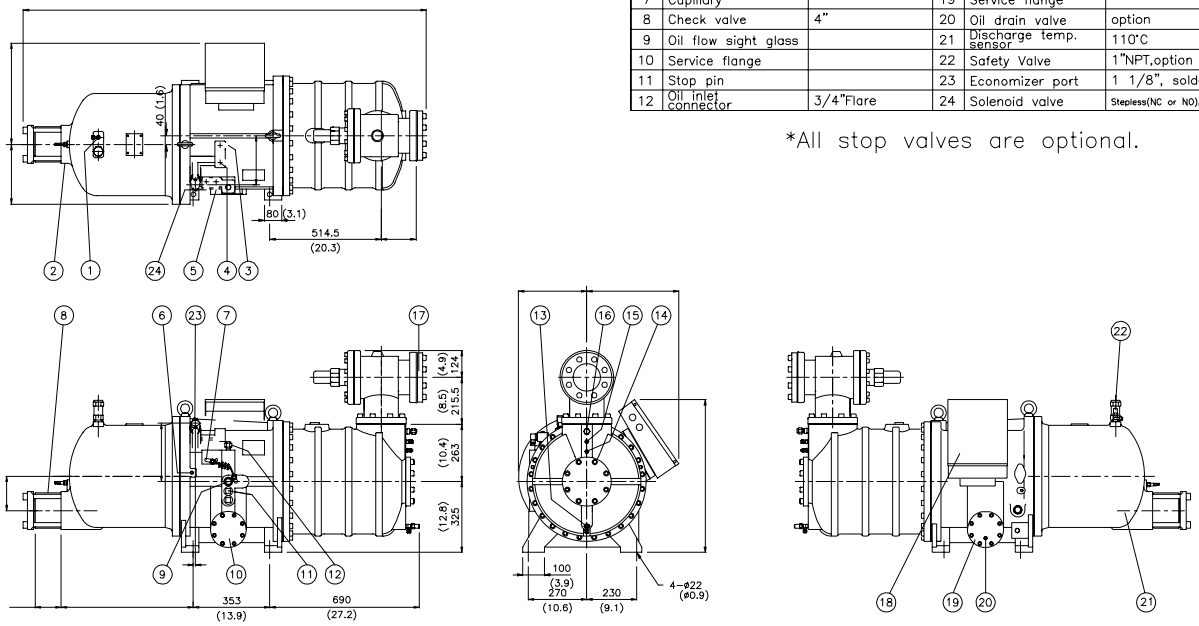
Item	Date	Modification
3	2009.03.26	Riss in motor casing have seen removed
2		
1		

Model	RC2-580BF
Name	Compressor outline
HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Angle valve	1/4"Flare
2	Discharge flange	4"	14	Refrigerant service valve	1/4"Flare
3	Solenoid valve	50%(NC)	15	Connector	1/4"Flare
4	Solenoid valve	75%(NC)	16	Liquid injection connector	5/8"Flare
5	Solenoid valve	25%(NC)	17	Suction flange	5"
6	Liquid(oil or refrigerant) injection connector	3/8"Flare,option	18	Cable box	Standard
7	Capillary		19	Service flange	
8	Check valve	4"	20	Oil drain valve	option
9	Oil flow sight glass		21	Discharge temp. sensor	110°C
10	Service flange		22	Safety Valve	1"NPT,option
11	Stop pin		23	Economizer port	1 1/8", solder
12	Oil inlet connector	3/4"Flare	24	Solenoid valve	Stepless(NC or NO), option

*All stop valves are optional.

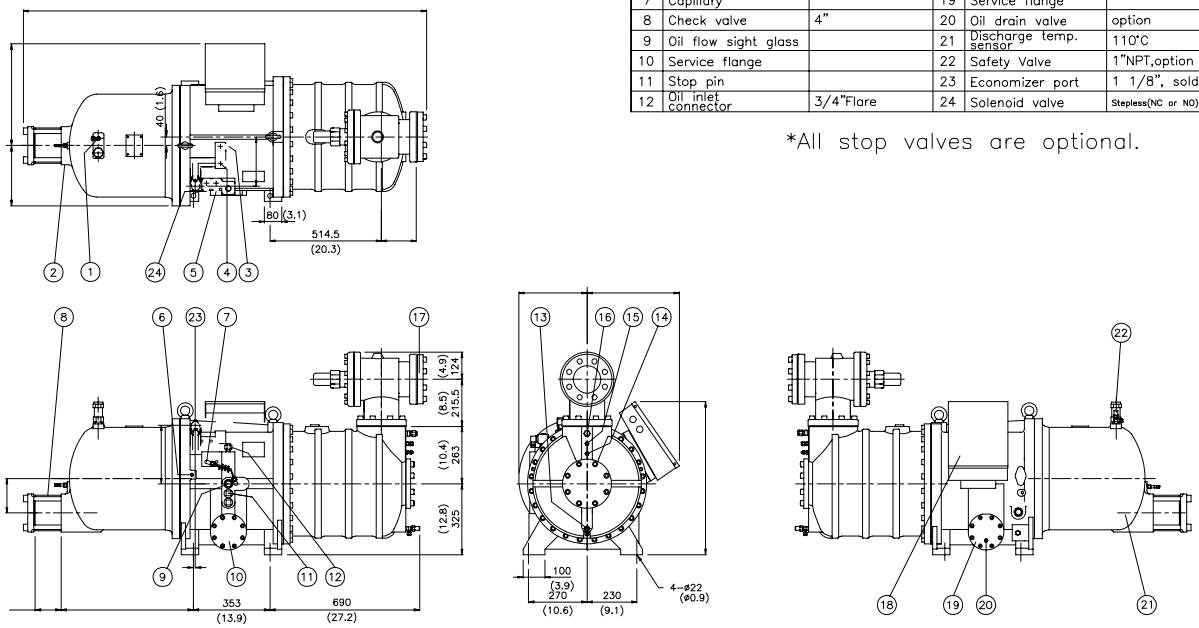


Item	Date	Modification
3		
2		
1		

Model	RC2-610AF
Name	Compressor outline
HANBELL	Ver. 03

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Angle valve	1/4"Flare
2	Discharge flange	4"	14	Refrigerant service valve	1/4"Flare
3	Solenoid valve	50%(NC)	15	Connector	1/4"Flare
4	Solenoid valve	75%(NC)	16	Liquid injection connector	5/8"Flare
5	Solenoid valve	25%(NC)	17	Suction flange	5"
6	Liquid(oil or refrigerant) injection connector	3/8"Flare,option	18	Cable box	Standard
7	Capillary		19	Service flange	
8	Check valve	4"	20	Oil drain valve	option
9	Oil flow sight glass		21	Discharge temp. sensor	110°C
10	Service flange		22	Safety Valve	1"NPT,option
11	Stop pin		23	Economizer port	1 1/8", solder
12	Oil inlet connector	3/4"Flare	24	Solenoid valve	Stepless(NC or NO), option

*All stop valves are optional.

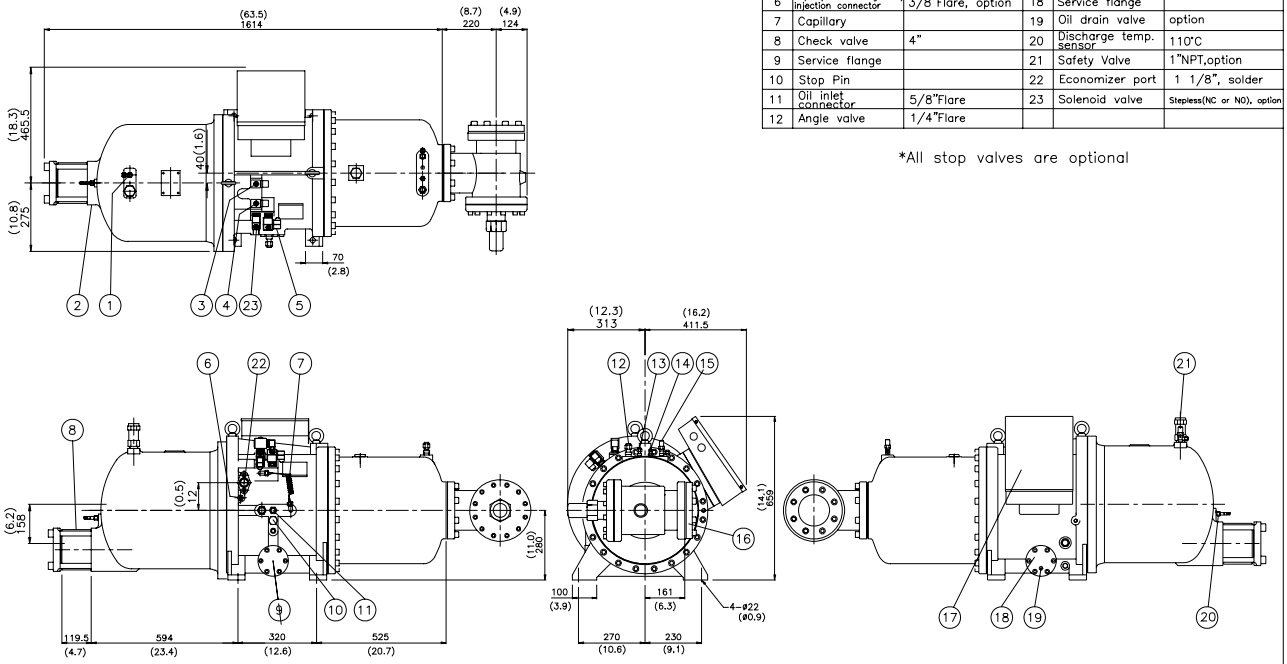


Item	Date	Modification
3		
2		
1		

Model	RC2-610BF
Name	Compressor outline
HANBELL	Ver. 03

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Refrigerant service valve	1/4"Flare
2	Discharge flange	4"	14	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	15	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	16	Suction flange	5"
5	Solenoid valve	35%(NC)	17	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Service flange	
7	Capillary		19	Oil drain valve	option
8	Check valve	4"	20	Discharge temp. sensor	110°C
9	Service flange		21	Safety Valve	1"NPT,option
10	Stop Pin		22	Economizer port	1 1/8", solder
11	Oil inlet connector	5/8"Flare	23	Solenoid valve	Stepless(NC or NO), option
12	Angle valve	1/4"Flare			

*All stop valves are optional



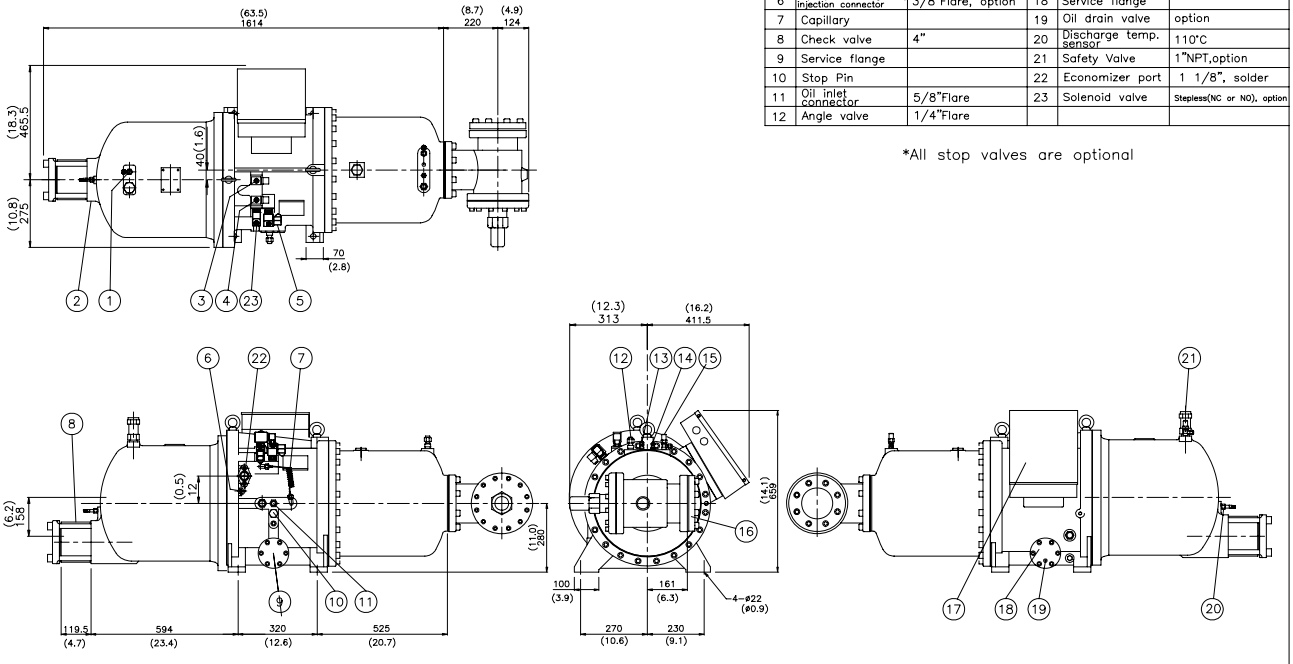
Item	Date	Modification
3	2009.03.26	Riss in motor casing have seen removed
2		
1		

Model	RC2-620AF		
Name	Compressor outline		
	HANBELL	Ver.	03

UNIT:
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Refrigerant service valve	1/4"Flare
2	Discharge flange	4"	14	Connector	1/4"Flare
3	Solenoid valve	50%(NC)	15	Liquid injection connector	5/8"Flare, option
4	Solenoid valve	75%(NC)	16	Suction flange	5"
5	Solenoid valve	35%(NC)	17	Cable box	Standard
6	Liquid(oil or refrigerant) injection connector	3/8"Flare, option	18	Service flange	
7	Capillary		19	Oil drain valve	option
8	Check valve	4"	20	Discharge temp. sensor	110°C
9	Service flange		21	Safety Valve	1"NPT,option
10	Stop Pin		22	Economizer port	1 1/8", solder
11	Oil inlet connector	5/8"Flare	23	Solenoid valve	Stepless(NC or NO), option
12	Angle valve	1/4"Flare			

*All stop valves are optional



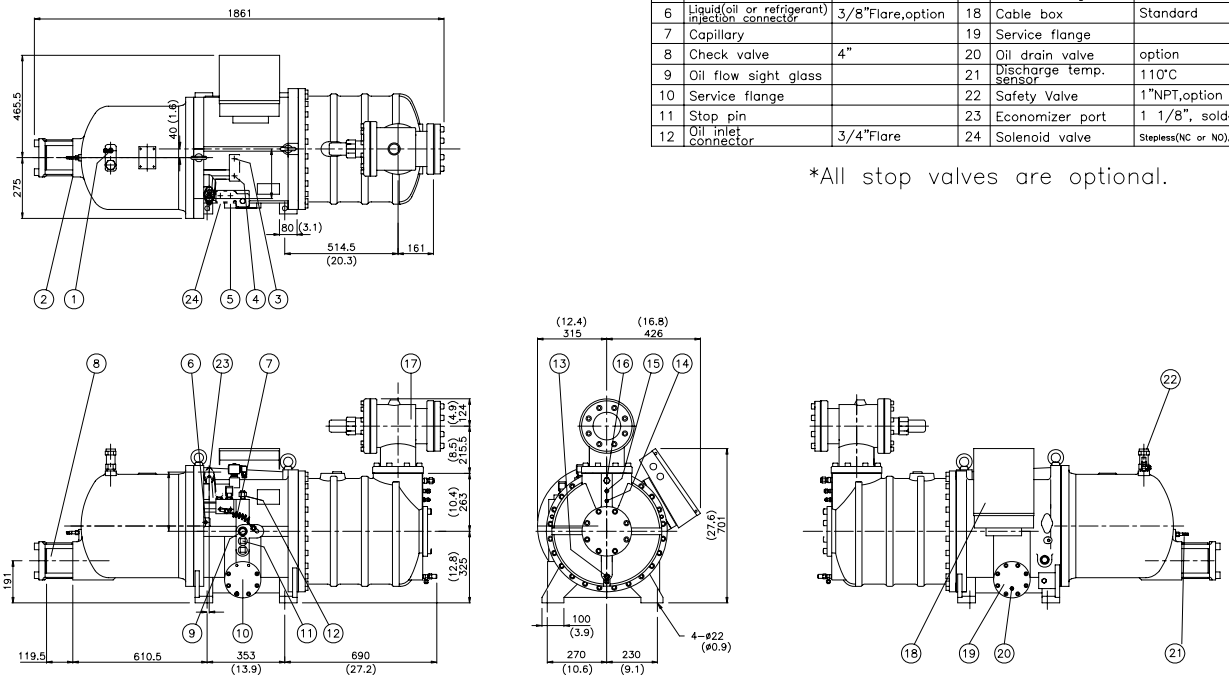
Item	Date	Modification
3	2009.03.26	Riss in motor casing have seen removed
2		
1		

Model	RC2-620BF		
Name	Compressor outline		
	HANBELL	Ver.	03

UNIT:
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Angle valve	1/4"Flare
2	Discharge flange	4"	14	Refrigerant service valve	1/4"Flare
3	Solenoid valve	50%(NC)	15	Connector	1/4"Flare
4	Solenoid valve	75%(NC)	16	Liquid injection connector	5/8"Flare
5	Solenoid valve	35%(NC)	17	Suction flange	5"
6	Liquid(oil or refrigerant) injection connector	3/8"Flare,option	18	Cable box	Standard
7	Capillary		19	Service flange	
8	Check valve	4"	20	Oil drain valve	option
9	Oil flow sight glass		21	Discharge temp. sensor	110°C
10	Service flange		22	Safety Valve	1"NPT,option
11	Stop pin		23	Economizer port	1 1/8", solder
12	Oil inlet connector	3/4"Flare	24	Solenoid valve	Stepless(NC or NO), option

*All stop valves are optional.

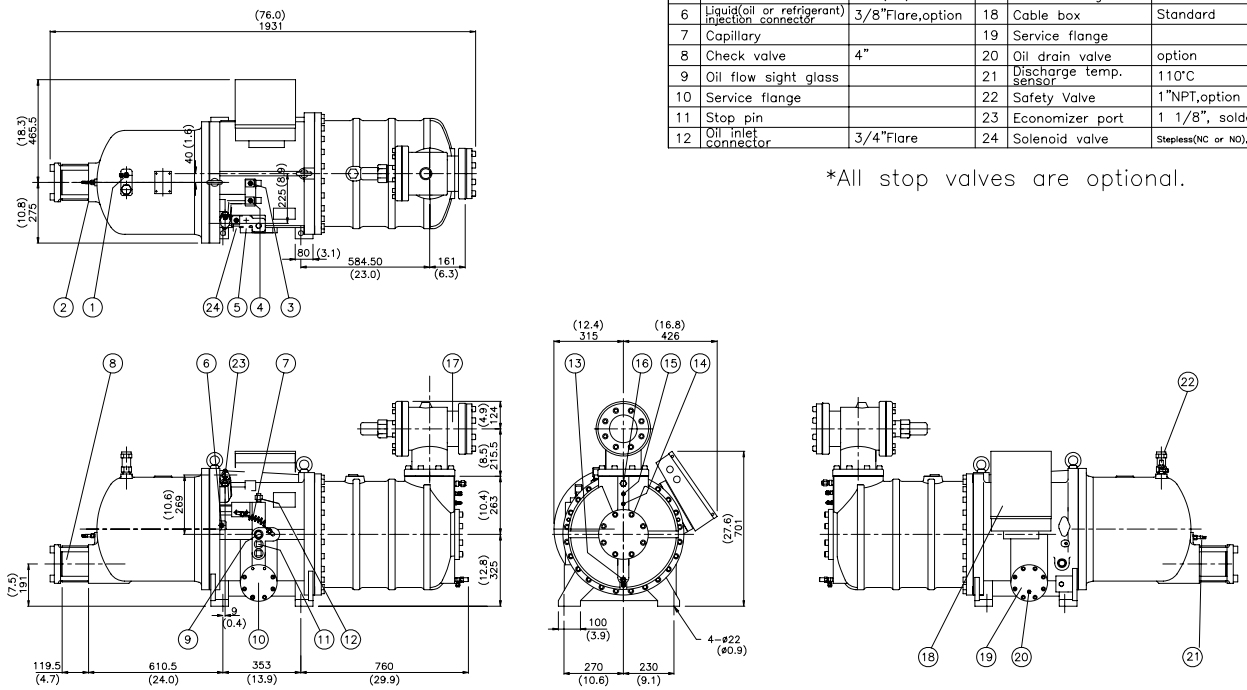


Item	Date	Modification
3		
2		
1		

Model	RC2-710AF
Name	Compressor outline
HANBELL	Ver. 03

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Angle valve	1/4"Flare
2	Discharge flange	4"	14	Refrigerant service valve	1/4"Flare
3	Solenoid valve	50%(NC)	15	Connector	1/4"Flare
4	Solenoid valve	75%(NC)	16	Liquid injection connector	5/8"Flare
5	Solenoid valve	35%(NC)	17	Suction flange	5"
6	Liquid(oil or refrigerant) injection connector	3/8"Flare,option	18	Cable box	Standard
7	Capillary		19	Service flange	
8	Check valve	4"	20	Oil drain valve	option
9	Oil flow sight glass		21	Discharge temp. sensor	110°C
10	Service flange		22	Safety Valve	1"NPT,option
11	Stop pin		23	Economizer port	1 1/8", solder
12	Oil inlet connector	3/4"Flare	24	Solenoid valve	Stepless(NC or NO), option

*All stop valves are optional.

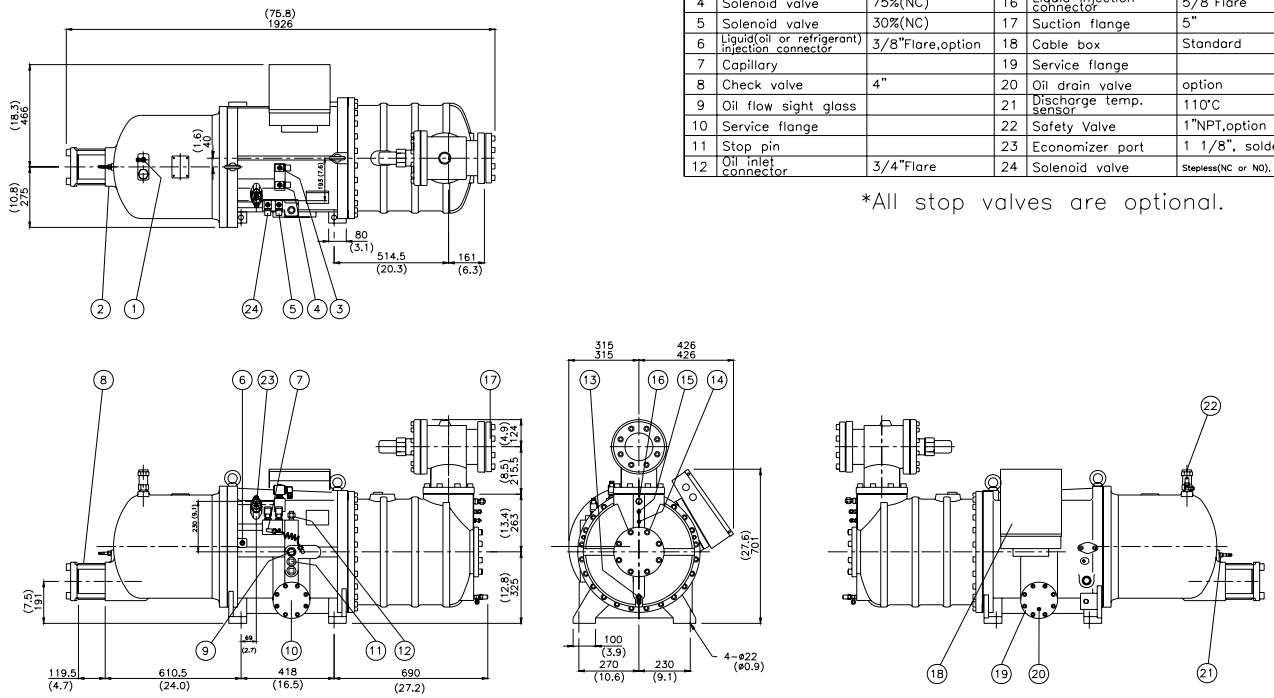


Item	Date	Modification
3		
2		
1		

Model	RC2-710BF
Name	Compressor outline
HANBELL	Ver. 03

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Angle valve	1/4"Flare
2	Discharge flange	4"	14	Refrigerant service valve	1/4"Flare
3	Solenoid valve	50%(NC)	15	Connector	1/4"Flare
4	Solenoid valve	75%(NC)	16	Liquid injection connector	5/8"Flare
5	Solenoid valve	30%(NC)	17	Suction flange	5"
6	Liquid(oil or refrigerant) injection connector	3/8"Flare,option	18	Cable box	Standard
7	Capillary		19	Service flange	
8	Check valve	4"	20	Oil drain valve	option
9	Oil flow sight glass		21	Discharge temp. sensor	110°C
10	Service flange		22	Safety Valve	1"NPT,option
11	Stop pin		23	Economizer port	1 1/8", solder
12	Oil inlet connector	3/4"Flare	24	Solenoid valve	Stepless(NC or NO), option

*All stop valves are optional.

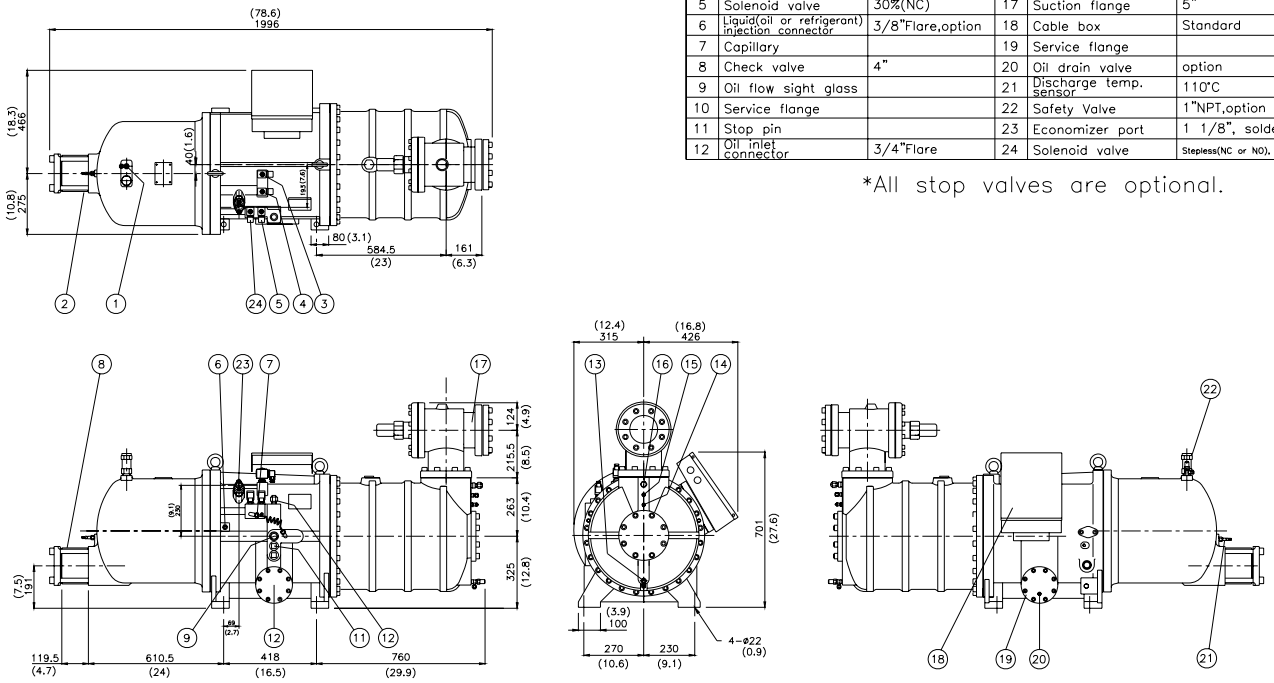


			Model	RC2-790AF
			Name	Compressor outline
Item	Date	Modification	HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Angle valve	1/4"Flare
2	Discharge flange	4"	14	Refrigerant service valve	1/4"Flare
3	Solenoid valve	50%(NC)	15	Connector	1/4"Flare
4	Solenoid valve	75%(NC)	16	Liquid injection connector	5/8"Flare
5	Solenoid valve	30%(NC)	17	Suction flange	5"
6	Liquid(oil or refrigerant) injection connector	3/8"Flare,option	18	Cable box	Standard
7	Capillary		19	Service flange	
8	Check valve	4"	20	Oil drain valve	option
9	Oil flow sight glass		21	Discharge temp. sensor	110°C
10	Service flange		22	Safety Valve	1"NPT,option
11	Stop pin		23	Economizer port	1 1/8", solder
12	Oil inlet connector	3/4"Flare	24	Solenoid valve	Stepless(NC or NO), option

*All stop valves are optional.

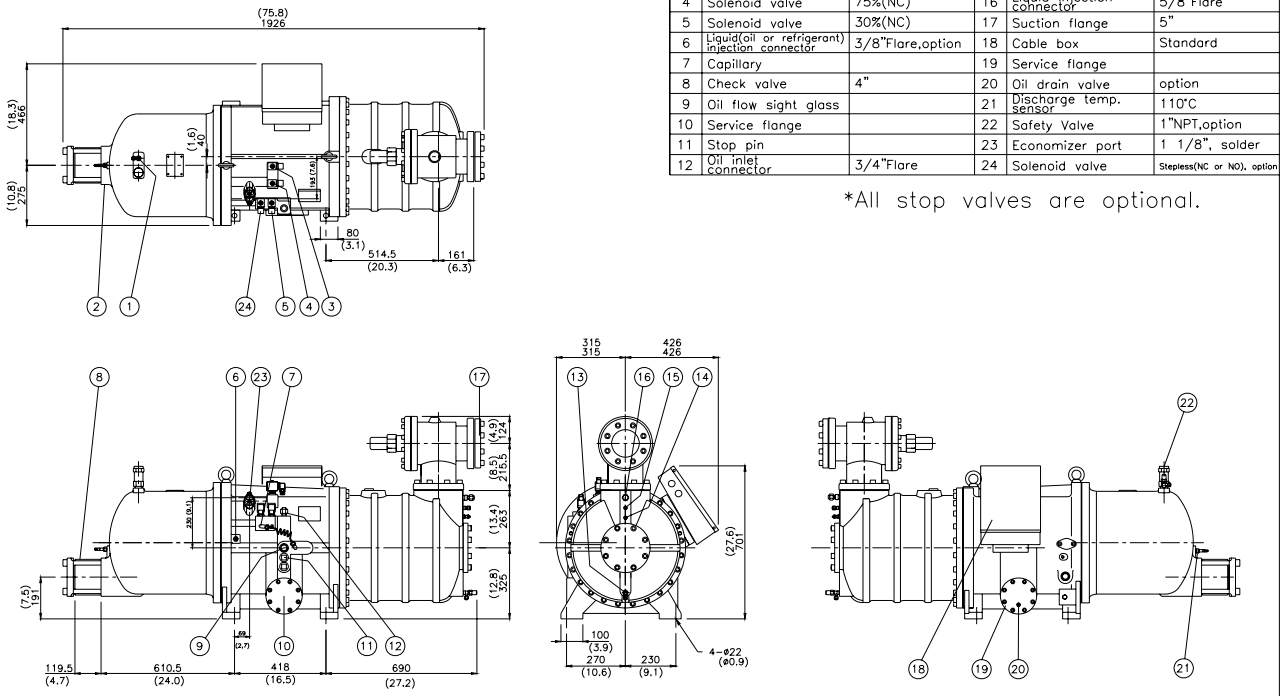


3	2009.03.26	Riss in motor casing have seen removed	Model	RC2-790BF
2			Name	Compressor outline
1			HANBELL	Ver. 03
Item	Date	Modification		

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Angle valve	1/4"Flare
2	Discharge flange	4"	14	Refrigerant service valve	1/4"Flare
3	Solenoid valve	50%(NC)	15	Connector	1/4"Flare
4	Solenoid valve	75%(NC)	16	Liquid injection connector	5/8"Flare
5	Solenoid valve	30%(NC)	17	Suction flange	5"
6	Liquid(oil or refrigerant) injection connector	3/8"Flare,option	18	Cable box	Standard
7	Capillary		19	Service flange	
8	Check valve	4"	20	Oil drain valve	option
9	Oil flow sight glass		21	Discharge temp. sensor	110°C
10	Service flange		22	Safety Valve	1"NPT,option
11	Stop pin		23	Economizer port	1 1/8", solder
12	Oil inlet connector	3/4"Flare	24	Solenoid valve	Stepless(NC or NO), option

*All stop valves are optional.



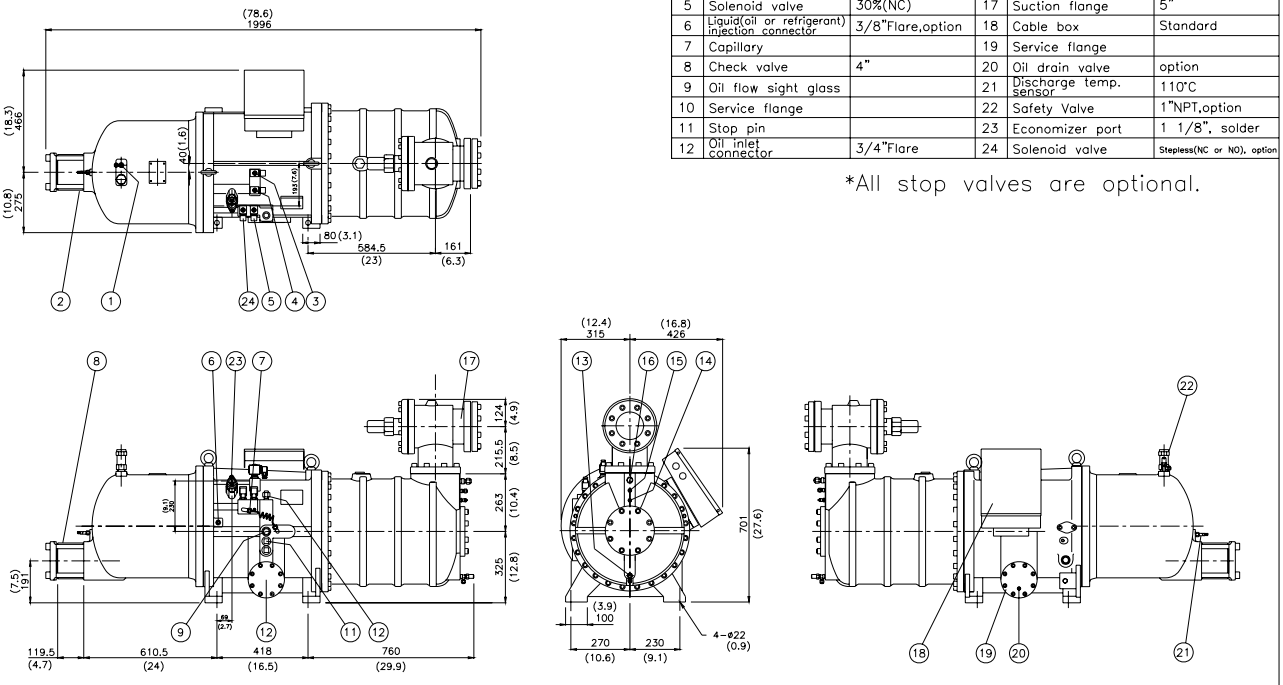
Item	Date	Modification
3		
2		
1		

Model	RC2-830AF
Name	Compressor outline
HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Angle valve	1/4"Flare
2	Discharge flange	4"	14	Refrigerant service valve	1/4"Flare
3	Solenoid valve	50%(NC)	15	Connector	1/4"Flare
4	Solenoid valve	75%(NC)	16	Liquid injection connector	5/8"Flare
5	Solenoid valve	30%(NC)	17	Suction flange	5"
6	Liquid(oil or refrigerant) injection connector	3/8"Flare,option	18	Cable box	Standard
7	Capillary		19	Service flange	
8	Check valve	4"	20	Oil drain valve	option
9	Oil flow sight glass		21	Discharge temp. sensor	110°C
10	Service flange		22	Safety Valve	1"NPT,option
11	Stop pin		23	Economizer port	1 1/8", solder
12	Oil inlet connector	3/4"Flare	24	Solenoid valve	Stepless(NC or NO), option

*All stop valves are optional.



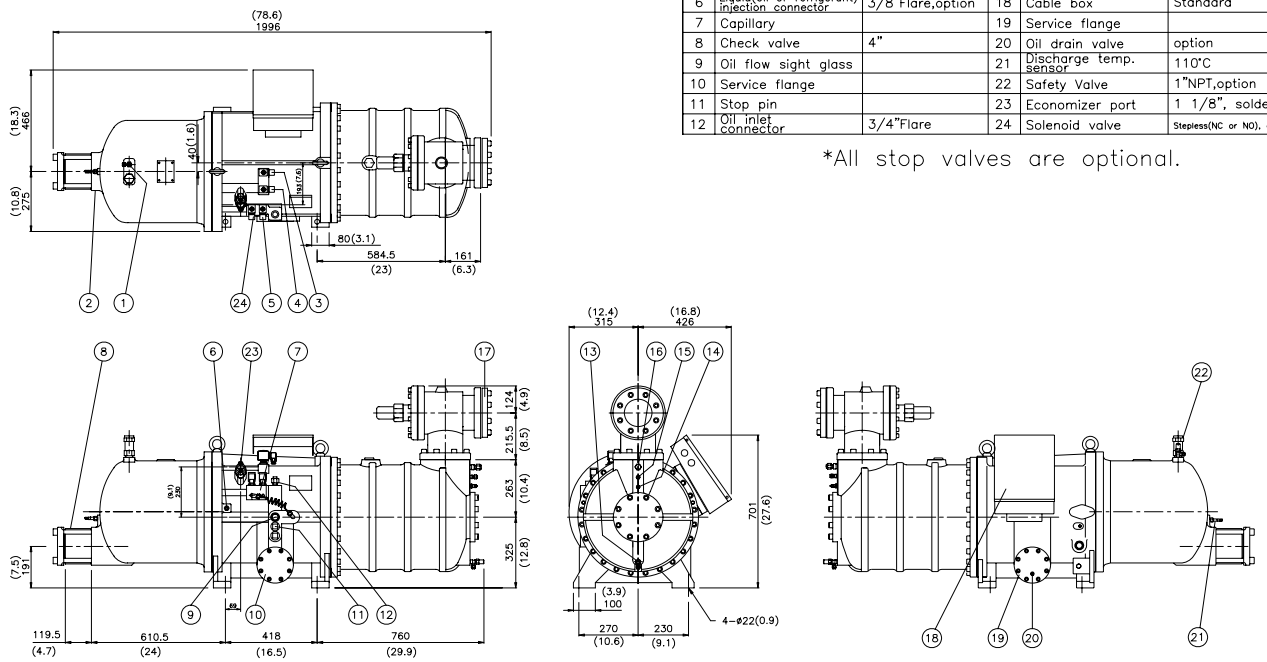
Item	Date	Modification
3	2009.03.26	Riss in motor casing have seen removed
2		
1		

Model	RC2-830BF
Name	Compressor outline
HANBELL	Ver. 03

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Angle valve	1/4"Flare
2	Discharge flange	4"	14	Refrigerant service valve	1/4"Flare
3	Solenoid valve	50%(NC)	15	Connector	1/4"Flare
4	Solenoid valve	75%(NC)	16	Liquid injection connector	5/8"Flare
5	Solenoid valve	35%(NC)	17	Suction flange	5"
6	Liquid(oil or refrigerant) injection connector	3/8"Flare,option	18	Cable box	Standard
7	Capillary		19	Service flange	
8	Check valve	4"	20	Oil drain valve	option
9	Oil flow sight glass		21	Discharge temp. sensor	110°C
10	Service flange		22	Safety Valve	1"NPT,option
11	Stop pin		23	Economizer port	1 1/8", solder
12	Oil inlet connector	3/4"Flare	24	Solenoid valve	Stepless(NC or NO), option

*All stop valves are optional.

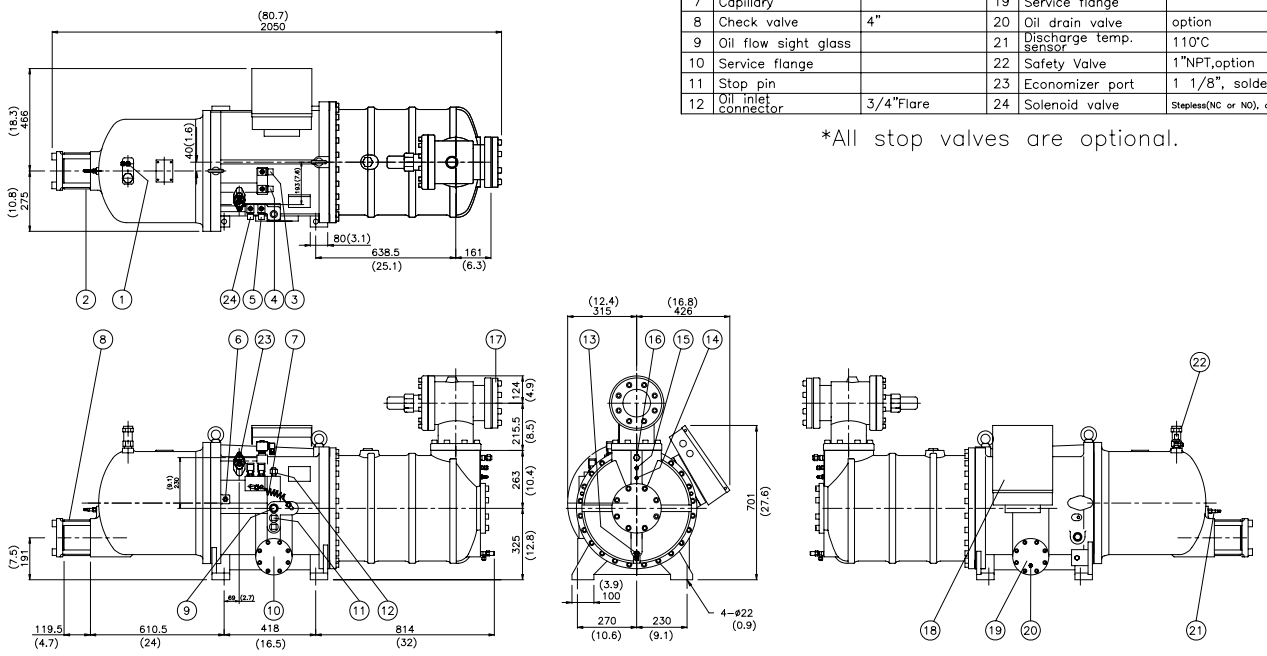


Item	Date	Modification	Model	RC2-930AF
3			Name	Compressor outline
2			HANBELL	Ver. 03
1				

UNIT
SI: mm Imperial: (in)

No.	Name	Note	No.	Name	Note
1	Angle valve	1/4"Flare	13	Angle valve	1/4"Flare
2	Discharge flange	4"	14	Refrigerant service valve	1/4"Flare
3	Solenoid valve	50%(NC)	15	Connector	1/4"Flare
4	Solenoid valve	75%(NC)	16	Liquid injection connector	5/8"Flare
5	Solenoid valve	35%(NC)	17	Suction flange	5"
6	Liquid(oil or refrigerant) injection connector	3/8"Flare,option	18	Cable box	Standard
7	Capillary		19	Service flange	
8	Check valve	4"	20	Oil drain valve	option
9	Oil flow sight glass		21	Discharge temp. sensor	110°C
10	Service flange		22	Safety Valve	1"NPT,option
11	Stop pin		23	Economizer port	1 1/8", solder
12	Oil inlet connector	3/4"Flare	24	Solenoid valve	Stepless(NC or NO), option

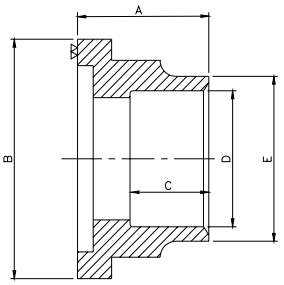
*All stop valves are optional.



Item	Date	Modification	Model	RC2-930BF
3			Name	Compressor outline
2			HANBELL	Ver. 03
1				

UNIT
SI: mm Imperial: (in)

4. Dimension of bushing and valve



Model	Standard Discharge Flange Coupling		Standard Suction Flange Coupling	
	Steel pipe	Copper pipe	Steel pipe	Copper pipe
RC2-100 (F)	1 1/2"	1 5/8"	2"	2 1/8"
RC2-140 (F)	1 1/2"	1 5/8"	2"	2 1/8"
RC2-170 (F)	2"	2 1/8"	2 1/2"	2 5/8"
RC2-180 (F)	2"	2 1/8"	2 1/2"	2 5/8"
RC2-200 (F)	2"	2 1/8"	2 1/2"	2 5/8"
RC2-230 (F)	2 1/8"	2 5/8"	3"	3 1/8"
RC2-260 (F)	2 1/8"	2 5/8"	3"	3 1/8"
RC2-300 (F)	2 1/8"	2 5/8"	3"	3 1/8"
RC2-310 (F)	2 1/8"	2 5/8"	3"	3 1/8"
RC2-320 (F)	2 1/8"	2 5/8"	3"	3 1/8"
RC2-340 (F)	2 1/8"	2 5/8"	4"	4 1/8"
RC2-370 (F)	2 1/8"	2 5/8"	4"	4 1/8"
RC2-410 (F)	3"	3 1/8"	4"	4 1/8"
RC2-470 (F)	3"	3 1/8"	4"	4 1/8"
RC2-510 (F)	3"	3 1/8"	4"	4 1/8"
RC2-550 (F)	3"	3 1/8"	4"	4 1/8"
RC2-580 (F)	3"	3 1/8"	4"	4 1/8"
RC2-610 (F)	4"	4 1/8"	5"	5 1/8"
RC2-620 (F)	4"	4 1/8"	5"	5 1/8"
RC2-710 (F)	4"	4 1/8"	5"	5 1/8"
RC2-790 (F)	4"	4 1/8"	5"	5 1/8"
RC2-830 (F)	4"	4 1/8"	5"	5 1/8"
RC2-930 (F)	4"	4 1/8"	5"	5 1/8"

Specification and dimension of optional flange bushing

Model	Discharge / Suction port	Materials and Sizes of pipes		Dimension of flanges bushing				
				A	B	C	D	E
RC2-100 RC2-140	Discharge	Copper	1 5/8"	50	90	30	41.6	55
			1 3/4"				44.8	55
			2"				51.1	62
			2 1/8"				54.3	65
			2 1/2"				63.8	74
			2 5/8"				67	74
		Steel	1 1/2"				49.3	60
			2"				61.3	74
	Suction	Copper	1 5/8"	50	90	30	41.6	55
			1 3/4"				44.8	55
			2"				51.1	62
			2 1/8"				54.3	65
			2 1/2"				63.8	74
			2 5/8"				67	74
		Steel	1 1/2"				49.3	60
			2"				61.3	74
RC2-170 RC2-180 RC2-200	Discharge	Copper	1 5/8"	50	90	30	41.6	55
			1 3/4"				44.8	55
			2"				51.1	62
			2 1/8"				54.3	65
			2 1/2"				63.8	74
			2 5/8"				67	74
		Steel	1 1/2"				49.3	60
			2"				61.3	74
	Suction	Copper	1 5/8"	60	110	35	41.6	52
			1 3/4"				44.8	55
			2"				51.1	62
			2 1/8"				54.3	65
			2 1/2"				63.8	74
			2 5/8"				67	77
			3 1/8"				79.8	90
		Steel	1 1/2"				49.3	64
			2"				61.3	76
			2 1/2"				77.2	90
RC2-230 RC2-260 RC2-300 RC2-310 RC2-320	Discharge	Copper	1 5/8"	60	110	35	41.6	52
			1 3/4"				44.8	55
			2"				51.1	62
			2 1/8"				54.3	65
			2 1/2"				63.8	74
			2 5/8"				67	77
			3 1/8"				79.8	90
		Steel	1 1/2"				49.3	64
			2"				61.3	76
			2 1/2"				77.2	90
	Suction	Copper	2'	66	120	45	51.1	62
			2 1/8"				54.3	65
			2 3/8"				60.7	71
			2 1/2"				63.8	74
			2 5/8"				67	77
			3"				76.6	87
			3 1/8"				79.8	90
		Steel	2"				61.3	76
			2 1/2"				77.2	92
			3"				90.2	103
RC2-340 RC2-370	Discharge	Copper	1 5/8"	60	110	35	41.6	52
			1 3/4"				44.8	55
			2"				51.1	62
			2 1/8"				54.3	65
			2 1/2"				63.8	74
			2 5/8"				67	77
		Steel	1 1/2"				49.3	64
			2"				61.3	76
			2 1/2"				77.2	90
	Suction	Copper	3"	76	145	50	76.6	87
			3 1/8"				79.8	90
			3 5/8"				92.4	103
			4"				102	112
			4 1/8"				105.1	116
		Steel	3"				90.2	105
			3 1/2"				102.8	117
			4"				115.6	128
RC2-410 RC2-470 RC2-510 RC2-550 RC2-580	Discharge	Copper	2'	66	120	45	51.1	62
			2 1/8"				54.3	65
			2 3/8"				60.7	71
			2 1/2"				63.8	74
			2 5/8"				67	77
			3"				76.6	87
			3 1/8"				79.8	90
		Steel	2"				61.3	76
			2 1/2"				77.2	92
			3"				90.2	103
	Suction	Copper	2 5/8"	76	145	50	67	87
			3"				76.6	87
			3 1/8"				79.8	90
			3 5/8"				92.4	103
			4"				102	112
			4 1/8"				105.1	116
		Steel	3"				90.2	105
			3 1/2"				102.8	117
			4"				115.6	128
RC2-610 RC2-620 RC2-710 RC2-790 RC2-830 RC2-930	Discharge	Copper	2 5/8"	76	145	50	67	87
			3"				76.6	87
			3 1/8"				79.8	90
			3 5/8"				92.4	103
			4"				102	112
			4 1/8"				105.1	116
			3"				90.2	105
		Steel	3 1/2"				102.8	117
			4"				115.6	128
	Suction	Copper	4 1/8"	80	174	35	105.1	121.2
			5 1/8"	75			130.5	146.5
			5"	75			130.5	146.5
		Steel	4"	80			115.6	134
			5"	75			141.3	154