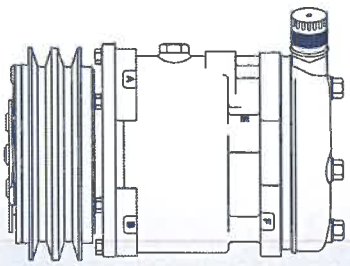
SANDEN
SD COMPRESSOR
PRODUCT CATALOGUE



SANDEN
Delivering Excellence

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Content

Sanden Compressors

Wobble Plate type / SD Series

Highly valued by customers as a mainstream compressor with much improvement having been added in the twenty years since its initial development, as well as through the introduction of variable displacement type compressor.

fixed displacement

SD5 This is a basic model of Sanden compressor and is well used continuously

fixed displacement

SD7 Best-selling model produced in plants in Japan, South-East Asia, and the Americas.

variable displacement

SDV/C Driving comfort is enhanced with variation in capacity according to the drivers' needs thus a resulting in steady power consumption

Swash Plate type / PX Series

Newly developed swash plate piston type PX series. It pursues high-speed durability and low NVH, thereby contributing to energy-conservation.

fixed displacement

PXF Large capacity and low NVH compressor which is available for large size vehicle.

variable displacement

PXV/C Next generation variable capacity compressor equipped with state of the art technology.

variable displacement

PXE Clutchless compressor taps on the integration of external control with the AC systems requirements. Resulting in an better fuel efficiency.

Scroll type / TR Series

Sanden started manufacturing of scroll compressor ahead of other makers in the world in 1981, and overseas auto manufacturers adopted it, thanks to its high efficiency, quietness, and super-high-speed durability.

fixed displacement

TRS Extremely compact and lightweight. Contributing to energy saving.

fixed displacement

TRSA Next generation scroll compressor with greater reliability through engineering innovations.

fixed displacement

SHS Sanden's semi-hermetic electric driven compressor is part of Sanden's efforts towards environmental protection, through compact and lightweight design.

SD5H

SANDEN SD5H series features 5 pistons driven, fixed displacement Compressor which utilizes the wobble-plate drive mechanism to its greatest mechanical efficiency possible.

Sanden has validated the quality of our Compressors to ensure that it provides the highest level of performance with good NVH characteristics and unsurpassed field durability.

Our range of SD5H Compressors include:
SD5H***09*** , SD5H***11*** , SD5H***14*** & SD5H***14HD***

SD5H Specification Table

SD5H09

Compressor Displacement: 87cc/rev
Maximum Allowable R.P.M: 7500
Maximum Continuous R.P.M: 6500

INFO SD505 equivalent. In terms of,
- Physical Dimensions
- Compressor Displacement

CLUTCH					CYLINDER HEAD	MOUNTING	OIL		COMPRESSOR MODEL	REMARKS
VOLTAGE	GROOVE	DIAMETER	GAUGE LINE	TERMINAL			TYPE	CC		
DC12	A2	125	36.6	AMP42281-2	C	EAR	SP20	100	**5076**	
DC12	A2	125	36.6	AMP60793-1	E	EAR	SP20	100	**5078**	
DC12	A2	125	36.6	AMP60793-1	FL	EAR	SP20	100	**5072**	
DC12	A2	125	36.6	AMP60793-1	K	EAR	SP20	100	**5077**	
DC12	A2	125	36.6	AMP42281-2	M	EAR	SP20	100	**5081**	
DC12	PV4	125	46.38	AMP60793-1	FL	EAR	SP20	100	**5075**	
DC12	PV5	120	46.38	AMP60793-1	FL	EAR	SP20	100	**5074**	
DC12	PV5	120	46.38	AMP60793-1	K	EAR	SP20	100	**5086**	
DC12	PV6	120	46.38	AMP60793-1	FL	EAR	SP20	100	**5085**	
DC12	PV6	120	46.38	AMP60793-1	K	EAR	SP20	100	**5096**	
DC12	PV8	119	46.55	AMP60793-1	E	EAR	SP20	100	**5079**	
DC12	PV8	119	46.55	AMP60793-1	FL	EAR	SP20	100	**5095**	
DC24	A2	125	36.6	AMP60793-1	FL	EAR	SP20	100	**5073**	
DC24	PV4	125	46.38	AMP42460-2 , AMP180916-5	K	EAR	SP20	150	**5082**	
DC24	PV5	120	46.38	AMP60793-1	FL	EAR	SP20	100	**5094**	

Abbreviations

STCV - Screw Type Charge Valve
QRCV - Quick Release Manifold Charge Valve
HPRV - High Pressure Relief Valve
FA - Flex Adaptor Option
BC - Bearing Cover
DC - Dust Cover

SD5H Specification Table

SD5H11

Compressor Displacement: 108cc/rev
Maximum Allowable R.P.M: 7000
Maximum Continuous R.P.M: 6000

INFO SD507 equivalent. In terms of,
- Physical Dimensions
- Compressor Displacement

CLUTCH					CYLINDER HEAD	MOUNTING	OIL		COMPRESSOR MODEL	REMARKS
VOLTAGE	GROOVE	DIAMETER	GAUGE LINE	TERMINAL			TYPE	CC		
DC12	A2	125	44.25	AMP42098-2 / AMP180916-0	C	EAR	SP20	185	**6332**	
DC12	A2	125	44.25	AMP 60793-1	BC	EAR	SP20	135	**6320**	
DC12	A2	125	44.25	AMP 60793-1	FL	EAR	SP20	135	**6333**	
DC12	A2	125	44.25	CF250MEC	FL	EAR	SP20	135	**6321**	
DC12	A2	125	44.25	AMP 60793-1	K	EAR	SP20	135	**6334**	
DC12	PV6	119	46.55	AMP 60793-1	FL	EAR	SP20	135	**6323**	
DC12	PV6	119	46.55	AMP 60793-1	K	EAR	SP20	135	**6322**	
DC12	PV8	119	46.55	AMP 60793-1	FL	EAR	SP20	135	**6328**	
DC12	PV8	119	46.55	AMP 60793-1	K	EAR	SP20	135	**6358**	
DC24	A2	125	44.25	AMP 60793-1	FL	EAR	SP20	135	**6357**	
DC24	A2	125	44.25	AMP 60793-1	K	EAR	SP20	135	**6356**	

SD5H14

Compressor Displacement: 138cc/rev
Maximum Allowable R.P.M: 7000
Maximum Continuous R.P.M: 6000

INFO SD508 equivalent. In terms of,
- Physical Dimensions
- Compressor Displacement

CLUTCH					CYLINDER HEAD	MOUNTING	OIL		COMPRESSOR MODEL	REMARKS
VOLTAGE	GROOVE	DIAMETER	GAUGE LINE	TERMINAL			TYPE	CC		
DC12	A2	132	39.55	AMP42460-2, AMP480053-3	C	EAR	SP20	175	**6642**	
DC12	A2	132	39.55	AMP60793-1	BC	EAR	SP20	175	**6620**	
DC12	A2	132	39.55	AMP60793-1	FG	EAR	SP20	175	**5305**	STCV
DC12	A2	132	39.55	AMP60793-1	FL	EAR	SP20	175	**6626**	
DC12	A2	132	39.55	AMP60793-1	K	EAR	SP20	175	**6630**	
DC12	A2	132	39.55	AMP60793-1	M	EAR	SP20	175	**6631**	
DC12	PV7	119	46.55	AMP60793-1	FL	EAR	SP20	175	**6629**	
DC12	PV7	119	46.55	AMP60793-1	K	EAR	SP20	175	**6628**	
DC24	A2	132	39.55	AMP60793-1	BC	EAR	SP20	175	**6622**	
DC24	A2	132	39.55	AMP60793-1	FG	EAR	SP20	175	**5306**	STCV
DC24	A2	132	39.55	AMP60793-1	FL	EAR	SP20	175	**6627**	
DC24	A2	132	39.55	AMP60793-1	K	EAR	SP20	175	**6634**	
DC24	A2	132	39.55	AMP60793-1	M	EAR	SP20	175	**6632**	
DC24	B1	152	33.85	CP3.96MA	BC	EAR	SP20	175	**6624**	
DC24	B1	152	33.85	CP3.96MA	FL	EAR	SP20	175	**6633**	

Abbreviations

STCV - Screw Type Charge Valve
QRCV - Quick Release Manifold Charge Valve
HPRV - High Pressure Relief Valve
FA - Flex Adaptor Option
BC - Bearing Cover
DC - Dust Cover

SD5H Specification Table

SD5H14HD

Specially designed clutch Dust Cover mounted over the entire front surface of the Compressor clutch assembly.

Compressor Displacement: 138cc/rev
Maximum Allowable R.P.M: 4000
Maximum Continuous R.P.M: 4000

CLUTCH					CYLINDER HEAD	MOUNTING	OIL		COMPRESSOR MODEL	REMARKS
VOLTAGE	GROOVE	DIAMETER	GAUGE LINE	TERMINAL			TYPE	CC		
DC12	A2	132	39.55	AMP60793-1	FL	EAR	SP20	210	**6664**	BC
DC12	A2	132	39.55	AMP60793-1	SW	EAR	SP20	175	**6688**	HPRV, BC
DC12	PV8	119	46.55	AMP60793-1	SW	EAR	SP20	175	**6690**	HPRV, BC
DC24	A2	132	39.55	AMP60793-1	FL	EAR	SP20	210	**6665**	BC
DC24	A2	132	39.55	AMP60793-1	K	EAR	SP20	210	**6680**	BC
DC24	A2	132	39.55	AMP60793-1	SW	EAR	SP20	175	**6689**	HPRV, BC
DC24	PV8	119	46.55	AMP60793-1	SW	EAR	SP20	175	**6691**	HPRV, BC

Enquiring on other models?

Should configurations differ, application or needs arise, please contact our authorised dealers, distributors or Sanden International Fronts for assistance.

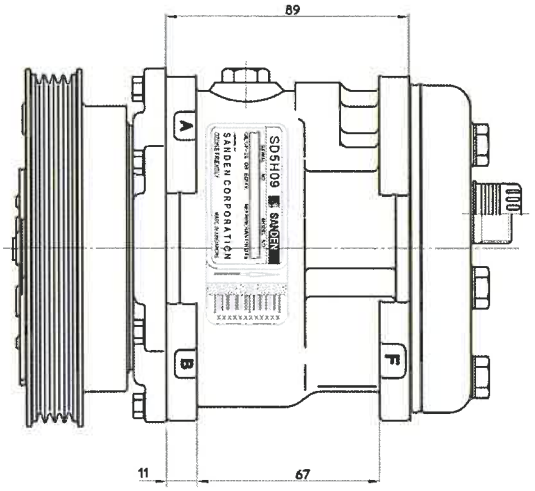
(Please refer to the back of the catalog for contact details)

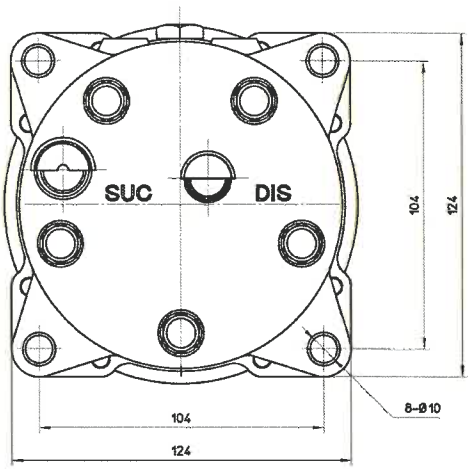
Abbreviations

STCV - Screw Type Charge Valve
QRCV - Quick Release Manifold Charge Valve
HPRV - High Pressure Relief Valve
FA - Flex Adaptor Option
BC - Bearing Cover
DC - Dust Cover

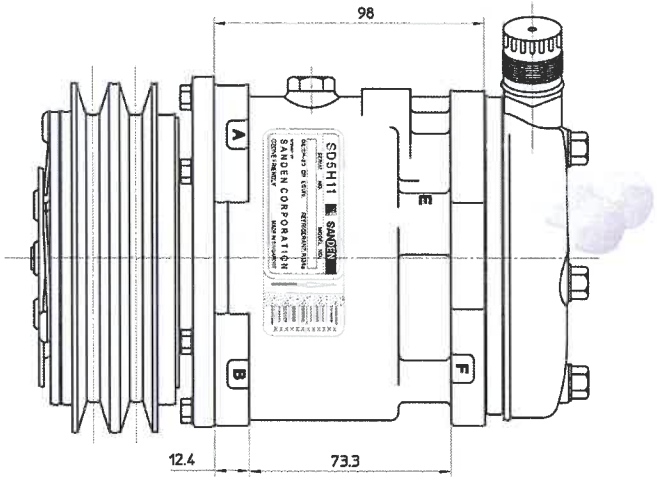
Standard SD5H Drawings

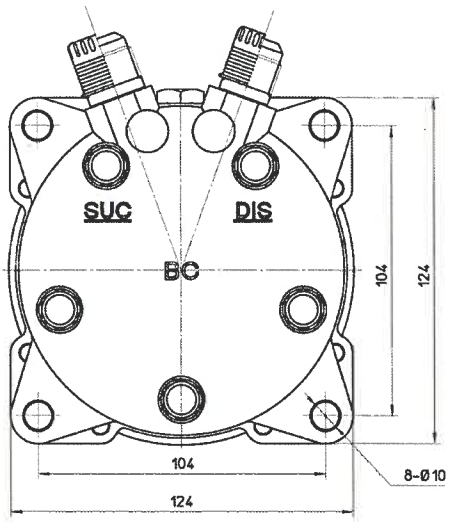
SD5H09





SD5H11





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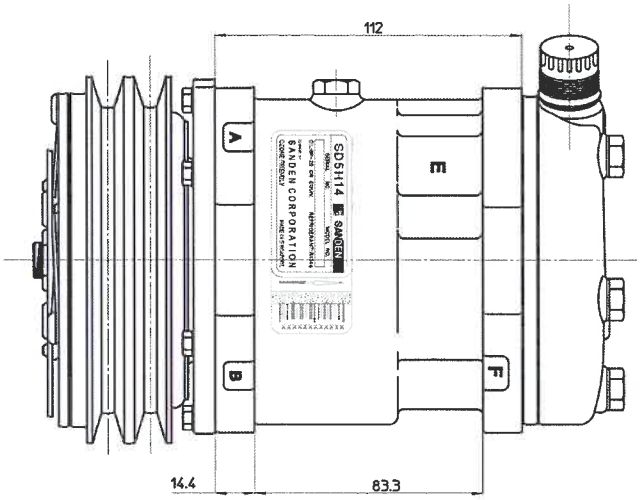
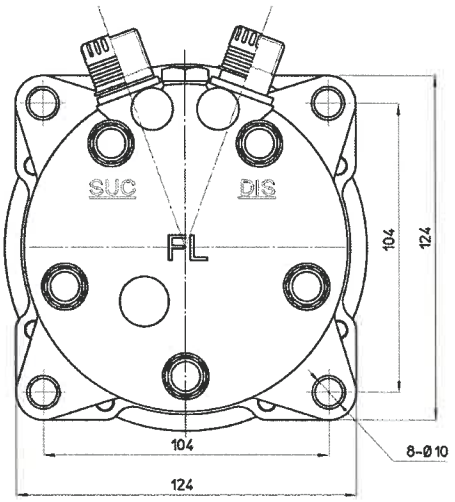
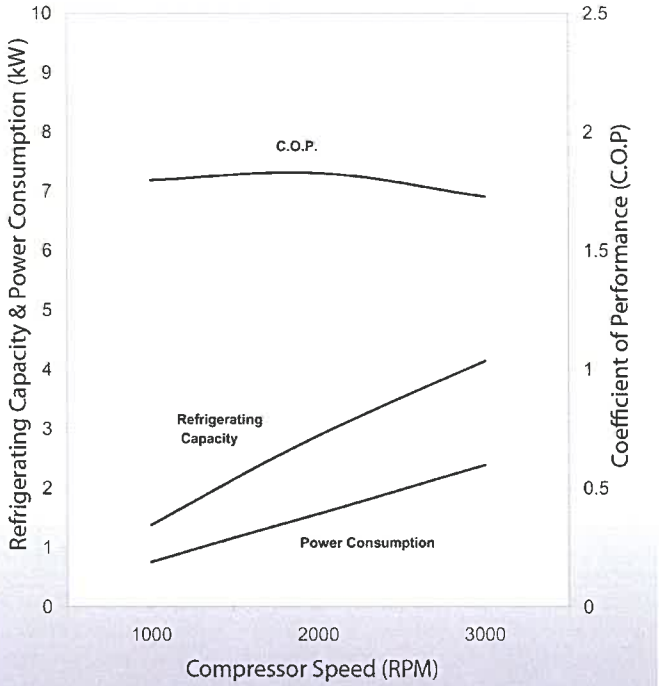


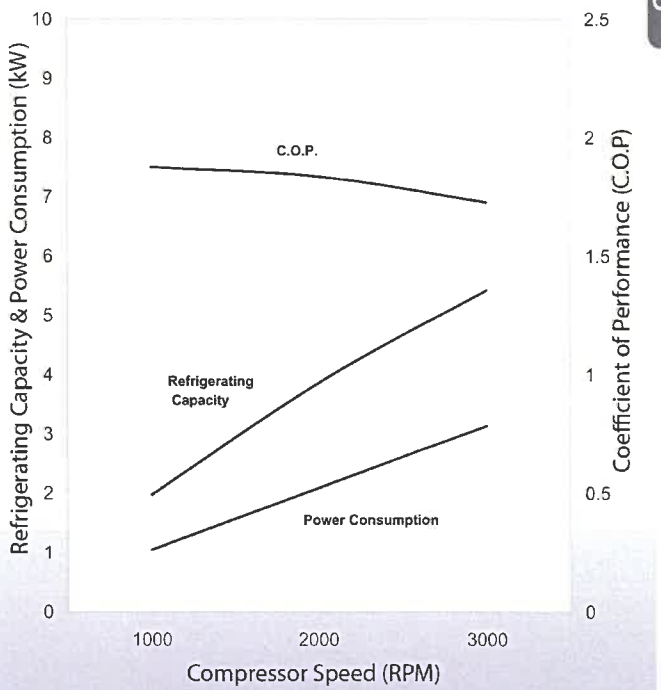


SD5H Performance Chart

For SD5H09 Models



For SD5H11 Models



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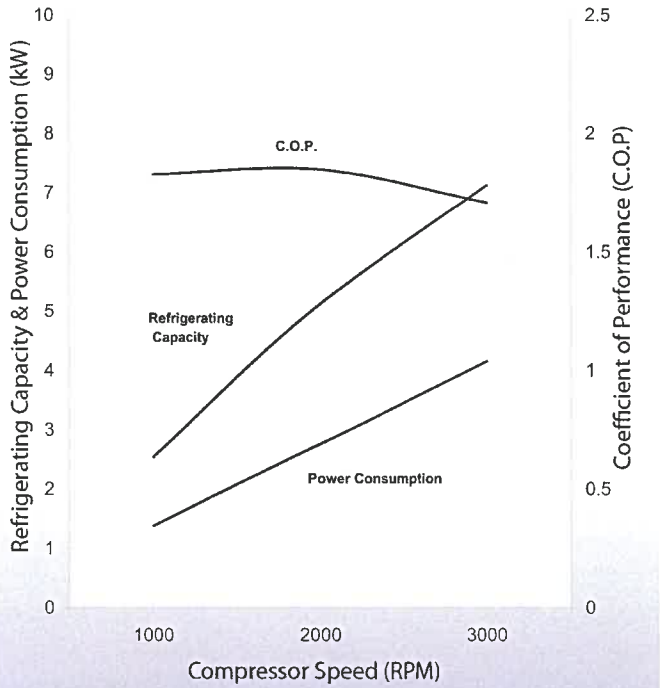

TESTING CONDITIONS
Discharge Pressure : 1.67 MPaG , Suction Pressure : 196 kPaG , Sub Cool Temp : 0 K , Super Heat Temp. : 10 K

SD7H

SD7H series features 7 pistons driven, fixed displacement Compressor which provides a smoother operation and achieving higher performance. With more pistons, the torque variations and vibration is greatly reduced. The Compressor is quieter while still maintaining high efficiencies and durability.

Our range of SD7H Compressors include:
SD7H***13*** , SD7H***15*** & SD7H***15HD***.

SD7H Specification Table

SD7H13

Compressor Displacement: 129cc/rev
Maximum Allowable R.P.M: 7000
Maximum Continuous R.P.M: 6000

INFO SD708 equivalent. In terms of,
- Physical Dimensions
- Compressor Displacement

CLUTCH					CYLINDER HEAD	MOUNTING	OIL		COMPRESSOR MODEL	REMARKS
VOLTAGE	GROOVE	DIAMETER	GAUGE LINE	TERMINAL			TYPE	CC		
DC12	A1	125	44.25	CF250MA	WU	DIRECT	SP10	135	**8938**	
DC12	A1	125	44.25	CF250MA	WU	EAR	SP10	135	**8939**	
DC12	A2	125	39.55	AMP60793-1	KG	EAR	SP10	135	**8911**	
DC12	A2	125	44.25	AMP60793-1	JE	EAR	SP10	135	**8949**	
DC12	A2	125	44.25	AMP60793-1	WQ	DIRECT	SP10	135	**8965**	HPRV
DC12	A2	125	44.25	AMP60793-1	WQ	EAR	SP10	135	**8966**	HPRV
DC12	PV7	119	46.55	CF250MA	WN	DIRECT	SP10	135	**8980**	
DC12	PV7	119	46.55	CF250MA	WP	DIRECT	SP10	135	**8979**	HPRV
DC12	PV8	119	46.50	AMP60793-1	JE	DIRECT	SP10	135	**8916**	
DC12	PV8	119	50.1	AMP60793-1	KG	EAR	SP10	135	**8969**	
DC12	PV8	119	50.1	AMP60793-1	JE	EAR	SP10	135	**8915**	
DC24	A2	125	44.25	AMP60793-1	JE	EAR	SP10	135	**8945**	
DC24	A2	125	44.25	AMP60793-1	KG	EAR	SP10	135	**8972**	

Abbreviations

STCV - Screw Type Charge Valve
QRCV - Quick Release Manifold Charge Valve
HPRV - High Pressure Relief Valve
FA - Flex Adaptor Option
BC - Bearing Cover
DC - Dust Cover

SD7H15

Compressor Displacement: 154cc/rev
Maximum Allowable R.P.M: 7000
Maximum Continuous R.P.M: 6000

INFO SD709 equivalent. In terms of,
- Physical Dimensions
- Compressor Displacement

CLUTCH					CYLINDER HEAD	MOUNTING	OIL		COMPRESSOR MODEL	REMARKS
VOLTAGE	GROOVE	DIAMETER	GAUGE LINE	TERMINAL			TYPE	CC		
DC12	A2	132	39.55	AMP60793-1	JE	EAR	SP10	135	**8220**	
DC12	A2	132	39.55	AMP60793-1	KG	EAR	SP10	135	**8227**	
DC12	A2	132	39.55	YAZAKI 7114-1492	WY	D/M	SP10	135	**8114**	HPRV
DC12	PV4	112	48.92	SUMITOMO 8100-0458	WN	D/M	SP10	135	**8070**	
DC12	PV6	119	46.55	AMP60793-1	JE	EAR	SP10	135	**8229**	
DC12	PV6	119	46.55	AMP60793-1	KG	EAR	SP10	135	**8228**	
DC12	PV8	119	46.55	AMP60793-1	JE	DIRECT	SP10	240	**6006**	
DC12	PV8	119	46.55	AMP60793-1	MD	EAR	SP10	240	**8237**	
DC12	PV8	119	50.1	AMP60793-1	JE	EAR	SP10	135	**8230**	
DC12	PV8	119	50.1	AMP60793-1	KG	EAR	SP10	135	**8238**	
DC24	A2	132	39.55	AMP60793-1	FZ	EAR	SP10	207	**8239**	HPRV, BC
DC24	A2	132	39.55	AMP60793-1	JE	EAR	SP10	135	**8126**	
DC24	A2	132	39.55	AMP60793-1	KG	EAR	SP10	135	**8264**	
DC24	B1	146	33.85	AMP60793-1	JE	EAR	SP10	135	**8250**	
DC24	B1	146	33.85	AMP60793-1	US	EAR	SP10	135	**8245**	
DC24	B1	146	33.85	AMP60793-1	WP	EAR	SP10	135	**8246**	HPRV
DC24	PV6	119	46.55	AMP60793-1	KG	EAR	SP10	207	**6039**	
DC24	PV8	119	46.55	AMP60793-1	JE	EAR	SP10	240	**6038**	BC
DC24	PV8	119	50.1	AMP60793-1	JE	EAR	SP10	135	**8240**	BC
DC24	PV8	119	50.10	AMP60793-1	KG	EAR	SP10	135	**8085**	BC
DC24	PV8	132	56.5	AMP60793-1	WV	DIRECT	SP10	175	**8291**	HPRV

Abbreviations

STCV - Screw Type Charge Valve
QRCV - Quick Release Manifold Charge Valve
HPRV - High Pressure Relief Valve
FA - Flex Adaptor Option
BC - Bearing Cover
DC - Dust Cover

SD7H Specification Table

SD7H15HD

Specially designed clutch Dust Cover mounted over the entire front surface of the Compressor clutch assembly.

Compressor Displacement: 154cc/rev
Maximum Allowable R.P.M: 7000
Maximum Continuous R.P.M: 6000

CLUTCH					CYLINDER HEAD	MOUNTING	OIL		COMPRESSOR MODEL	REMARKS
VOLTAGE	GROOVE	DIAMETER	GAUGE LINE	TERMINAL			TYPE	CC		
DC12	A2	132	39.55	AMP60793-1	QC	EAR	SP10	207	**8276**	BC
DC24	A2	132	39.55	AMP60793-1	JE	EAR	SP10	135	**8236**	BC, DC
DC24	A2	132	39.55	AMP60793-1	MD	EAR	SP10	207	**8280**	BC

Enquiring on other models?

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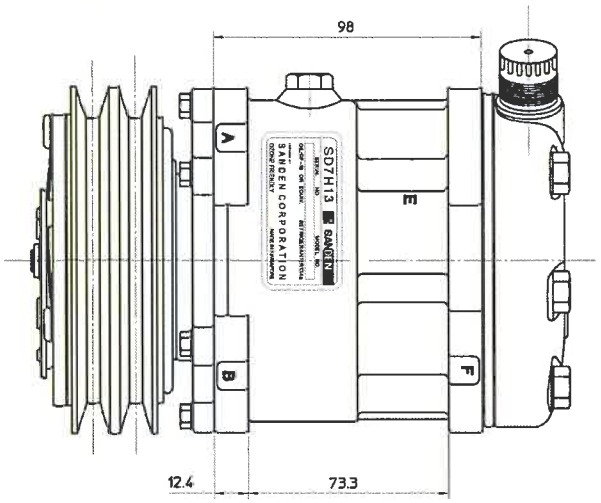
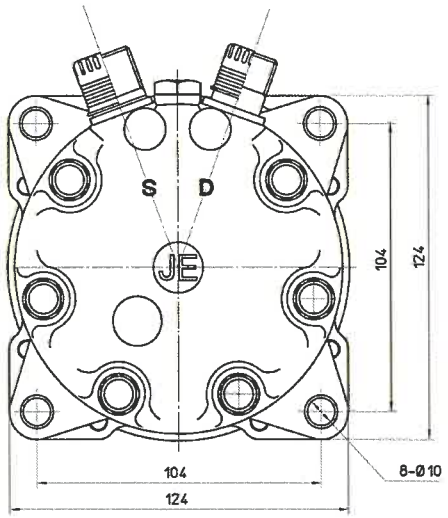
Abbreviations

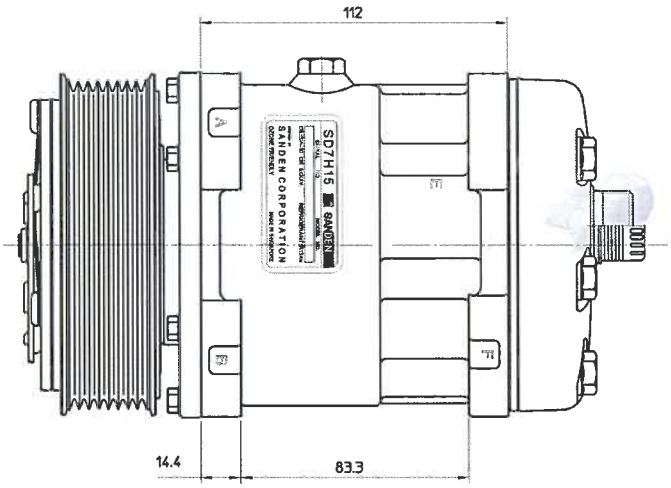
STCV - Screw Type Charge Valve
QRCV - Quick Release Manifold Charge Valve
HPRV - High Pressure Relief Valve
FA - Flex Adaptor Option
BC - Bearing Cover
DC - Dust Cover

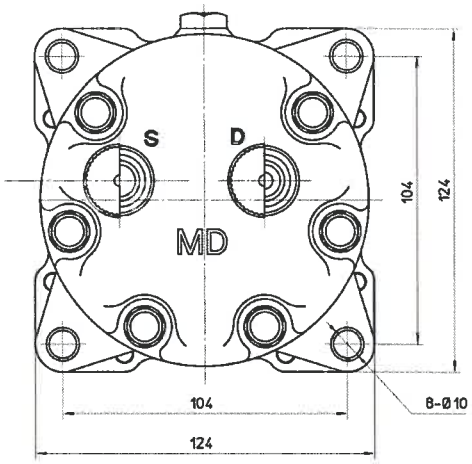
SD7H13



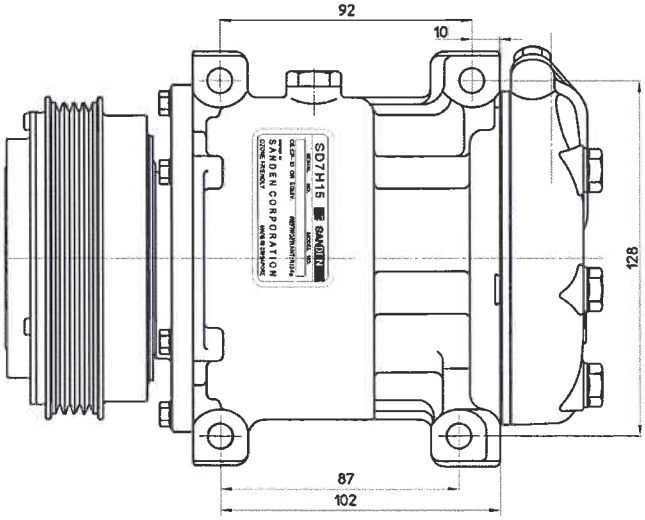


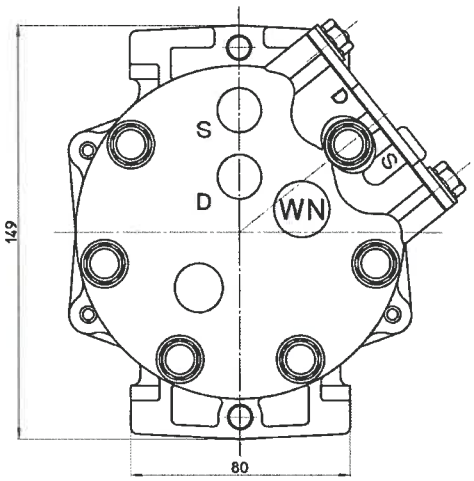
SD7H15





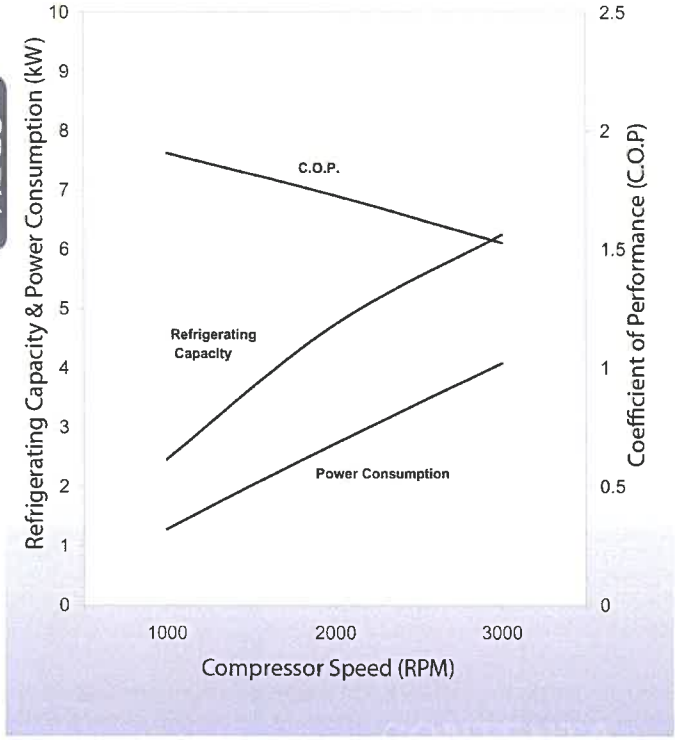
SD7H15 (Direct Mount)



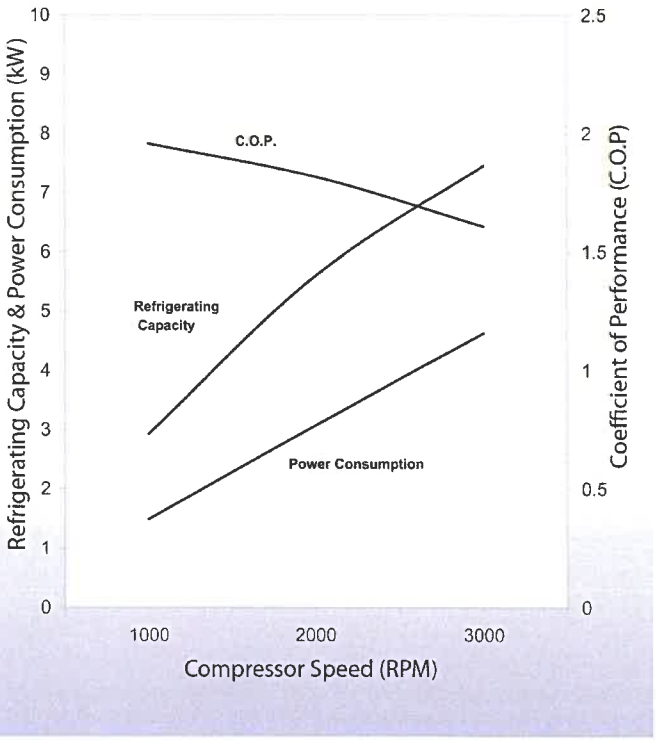


SD7H Performance Chart

For SD7H13 Models



For SD7H15 Models



TESTING CONDITIONS
Discharge Pressure: 1.67 MPaG , Suction Pressure: 196 kPaG , Sub Cool Temp: 0 K , Super Heat Temp.: 10 K

SD5L/7L

SD5L & SD7L series features fixed displacement Compressor developed for freezer truck application using R404a HFC refrigerant. The R404a systems are able to achieve sub-zero temperatures, down to -20°C, which is ideal for transportation of refrigerated cargo, such as frozen food.

Sanden's R404a range of Compressor has "flex" type hose connections, suitable for any configurations.

Our range of SD5L & SD7L Compressors include:
SD5L***09***, SD5L***11*** & SD5L***14***, and SD7L***13*** & SD7L***15***.

SD5/7L Specification Table

SD5L SERIES

Compressor Displacement
SD5L09: 87cc/rev
SD5L11: 108cc/rev
SD5L14: 138cc/rev

Maximum Allowable R.P.M: 4000
Maximum Continuous R.P.M: 3000

CLUTCH						CYLINDER HEAD	MOUNTING	OIL		COMPRESSOR MODEL	REMARKS
FAMILY	VOLTAGE	GROOVE	DIAMETER	GAUGE LINE	TERMINAL			TYPE	CC		
5L09	DC12	A2	125	36.6	AMP60793-1	FW	EAR	NIL	0	**5652**	HPRV
5L09	DC12	A2	125	36.6	AMP60793-1	SW	EAR	NIL	0	**5650**	HPRV, FA
5L09	DC24	A2	125	36.6	AMP60793-1	SW	EAR	NIL	0	**5653**	HPRV, FA
5L11	DC12	A2	125	44.25	CF250MEC	SW	EAR	NIL	0	**5250**	FA
5L14	DC12	A2	132	39.55	AMP60793-1	B	EAR	NIL	0	**5362**	QRCV
5L14	DC12	A2	132	39.55	AMP60793-1	B	EAR	NIL	0	**5364**	STCV
5L14	DC12	A2	132	39.55	AMP60793-1	FG	EAR	NIL	0	**5359**	QRCV
5L14	DC12	A2	132	39.55	AMP60793-1	FG	EAR	NIL	0	**5365**	STCV
5L14	DC12	A2	132	39.55	AMP60793-1	FL	EAR	NIL	0	**5354**	
5L14	DC12	A2	132	39.55	AMP60793-1	SW	EAR	NIL	0	**5351**	HPRV, FA
5L14	DC12	PV4	119	46.55	AMP60793-1	FL	EAR	NIL	0	**5356**	
5L14	DC12	PV6	119	42.99	AMP60793-1	SW	EAR	NIL	0	**5367**	FA
5L14	DC12	PV8	119	46.55	AMP60793-1	SW	EAR	NIL	0	**5350**	HPRV, FA
5L14	DC24	A2	132	39.55	AMP60793-1	B	EAR	NIL	0	**5361**	QRCV
5L14	DC24	A2	132	39.55	AMP60793-1	B	EAR	NIL	0	**5363**	STCV
5L14	DC24	A2	132	39.55	AMP60793-1	FG	EAR	NIL	0	**5360**	QRCV
5L14	DC24	A2	132	39.55	AMP60793-1	FG	EAR	NIL	0	**5366**	STCV
5L14	DC24	A2	132	39.55	AMP60793-1	FL	EAR	NIL	0	**5355**	
5L14	DC24	A2	132	39.55	AMP60793-1	SW	EAR	NIL	0	**5352**	HPRV, FA

Abbreviations

STCV - Screw Type Charge Valve
QRCV - Quick Release Manifold Charge Valve
HPRV - High Pressure Relief Valve
FA - Flex Adaptor Option
BC - Bearing Cover
DC - Dust Cover

SD7L SERIES

Compressor Displacement
SD7L13: 129cc/rev
SD7L15: 154cc/rev

Maximum Allowable R.P.M: 4000
Maximum Continuous R.P.M: 3000

CLUTCH						CYLINDER HEAD	MOUNTING	OIL		COMPRESSOR MODEL	REMARKS
FAMILY	VOLTAGE	GROOVE	DIAMETER	GAUGE LINE	TERMINAL			TYPE	CC		
7L13	DC12	A2	125	39.55	AMP60793-1	JE	EAR	NIL	0	**8977**	
7L13	DC12	A2	125	39.55	AMP60793-1	KG	EAR	NIL	0	**8978**	
7L13	DC12	PV8	119	50.1	AMP60793-1	JE	EAR	NIL	0	**8974**	
7L13	DC24	A2	125	39.55	AMP60793-1	JE	EAR	NIL	0	**8976**	
7L13	DC24	A2	125	39.55	AMP60793-1	KG	EAR	NIL	0	**8975**	
7L13	DC24	PV8	119	50.1	AMP60793-1	JE	EAR	NIL	0	**8973**	
7L15	DC12	A2	132	39.55	AMP60793-1	GV	EAR	NIL	0	**6040**	FA
7L15	DC12	A2	132	39.55	AMP60793-1	GV	EAR	NIL	0	**8208**	HPRV, FA
7L15	DC12	A2	132	39.55	AMP60793-1	JE	EAR	NIL	0	**8253**	
7L15	DC12	PV6	119	46.55	AMP60793-1	JE	EAR	NIL	0	**6037**	
7L15	DC12	PV8	119	46.55	AMP60793-1	GV	EAR	NIL	0	**8256**	HPRV, FA
7L15	DC24	A2	132	39.55	AMP60793-1	GV	EAR	NIL	0	**8209**	HPRV, FA
7L15	DC24	A2	132	39.55	AMP60793-1	GV	EAR	NIL	0	**8296**	FA
7L15	DC24	A2	132	39.55	AMP60793-1	JE	EAR	NIL	0	**8252**	

Enquiring on other models?

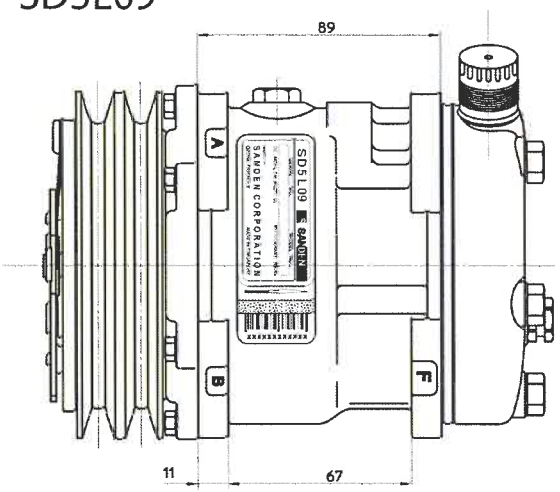
Should configurations differ, application or needs arise, please contact our authorised dealers, distributors or Sanden International Fronts for assistance.

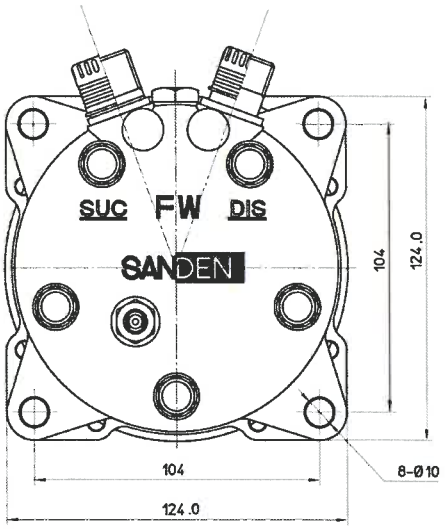
(Please refer to the back of the catalog for contact details)

Abbreviations

STCV - Screw Type Charge Valve
QRCV - Quick Release Manifold Charge Valve
HPRV - High Pressure Relief Valve
FA - Flex Adaptor Option
BC - Bearing Cover
DC - Dust Cover

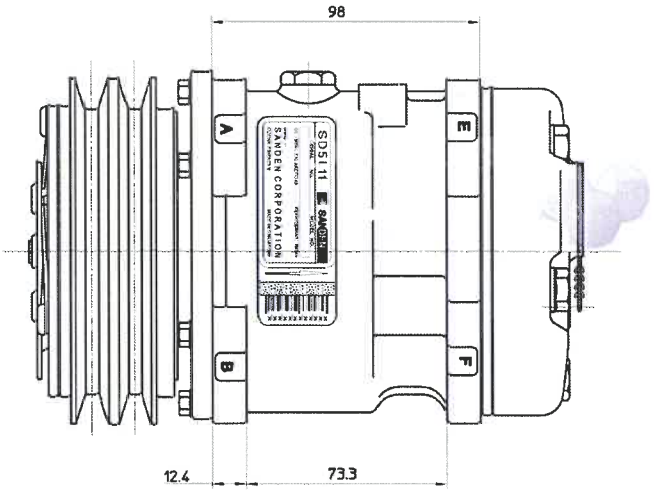
SD5L09

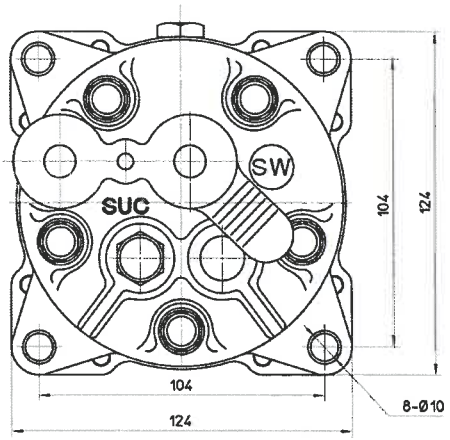




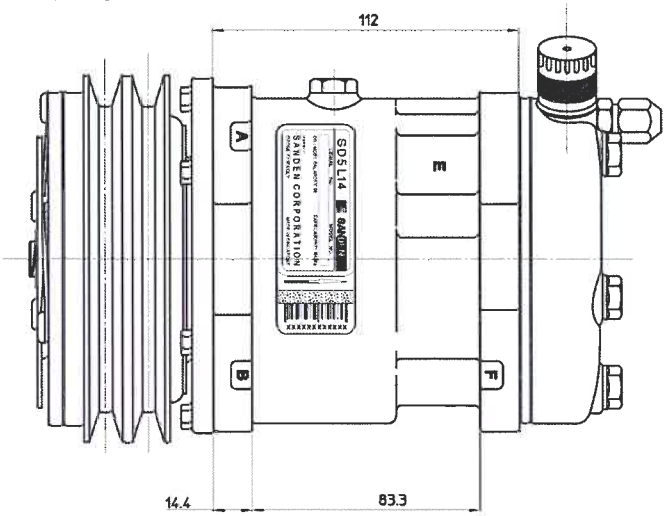
SD5/7L

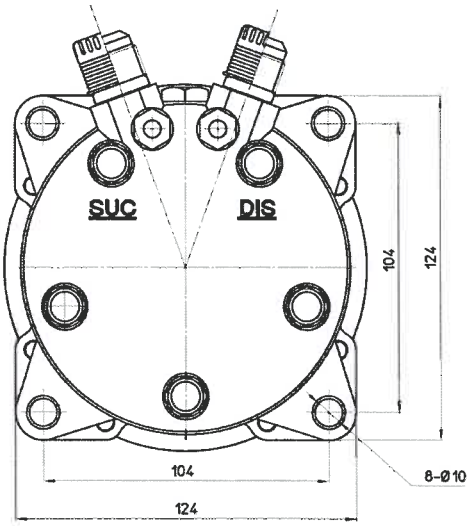
SD5L11



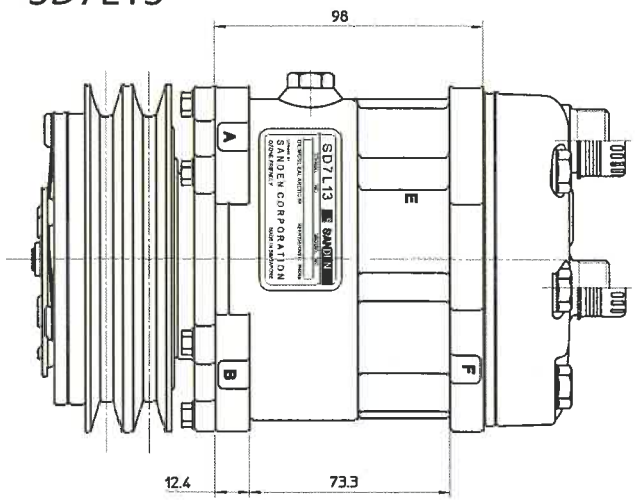


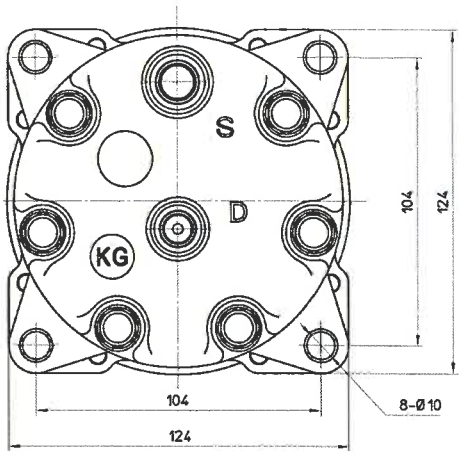
SD5L14





SD7L13





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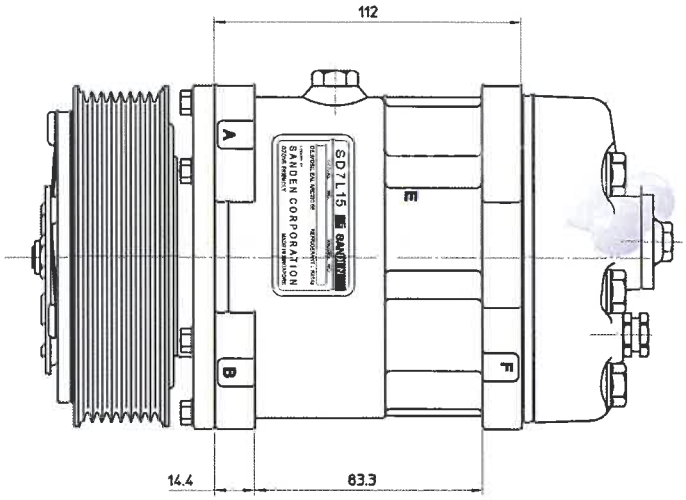
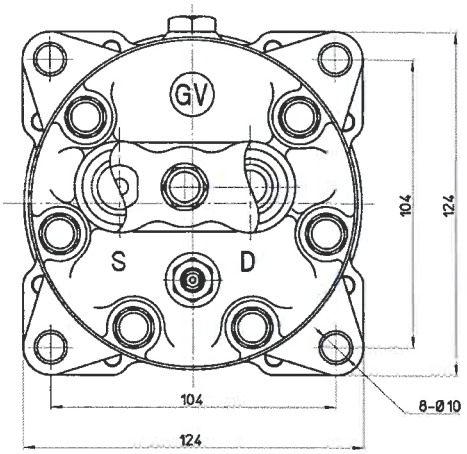
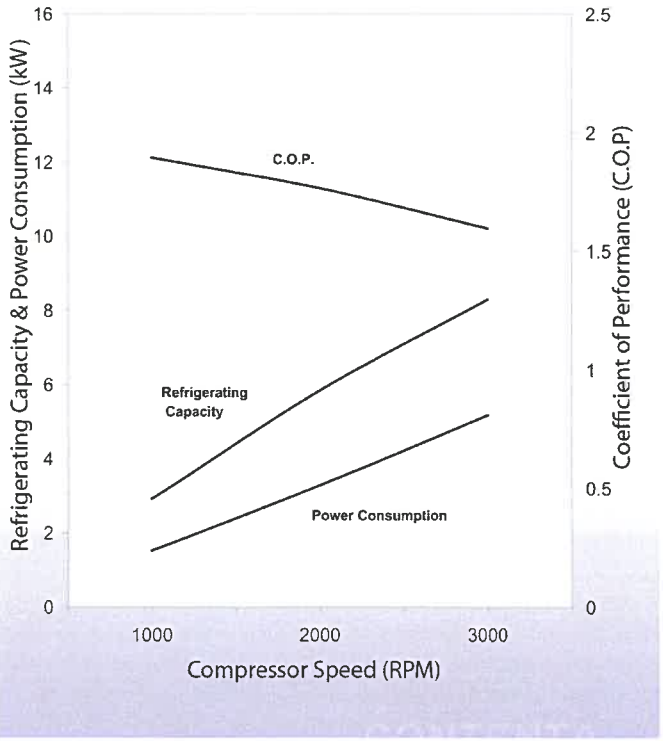


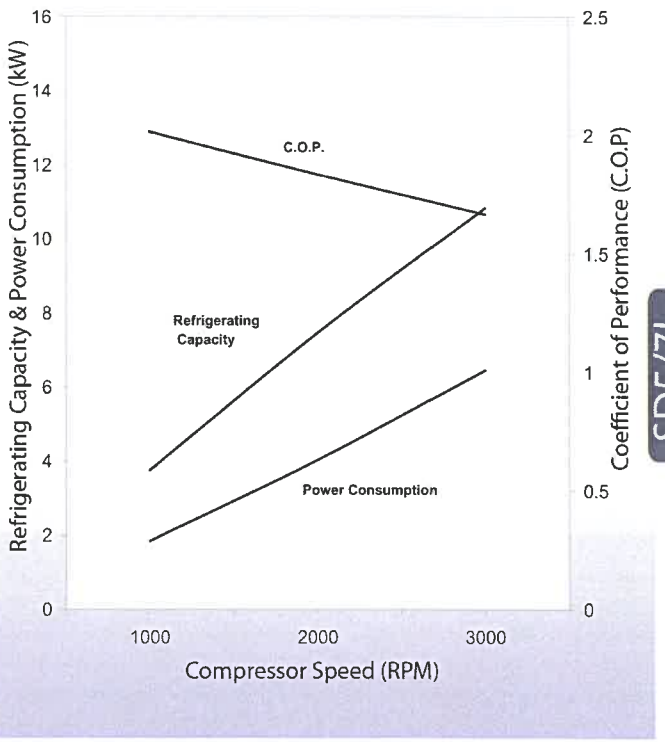


SD5L Performance Chart

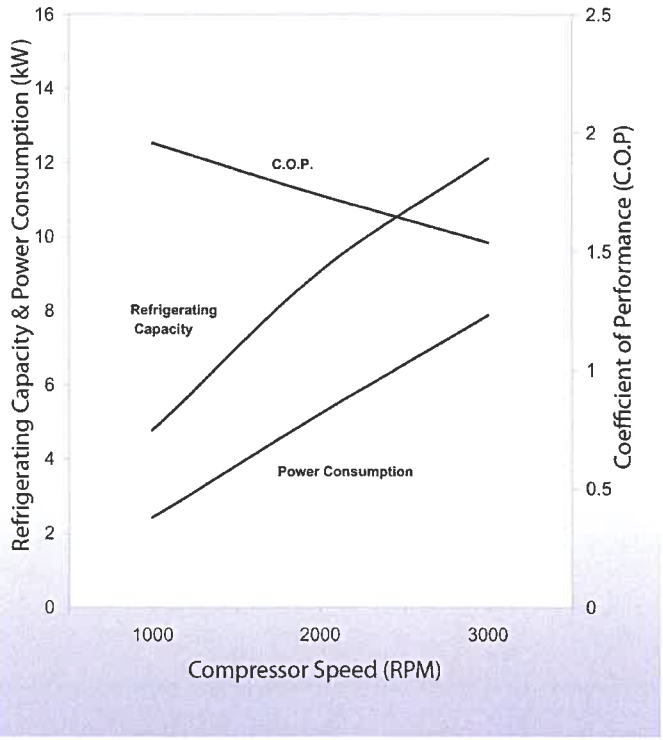
For SD5L09 Models



For SD5L11 Models



For SD5L14 Models

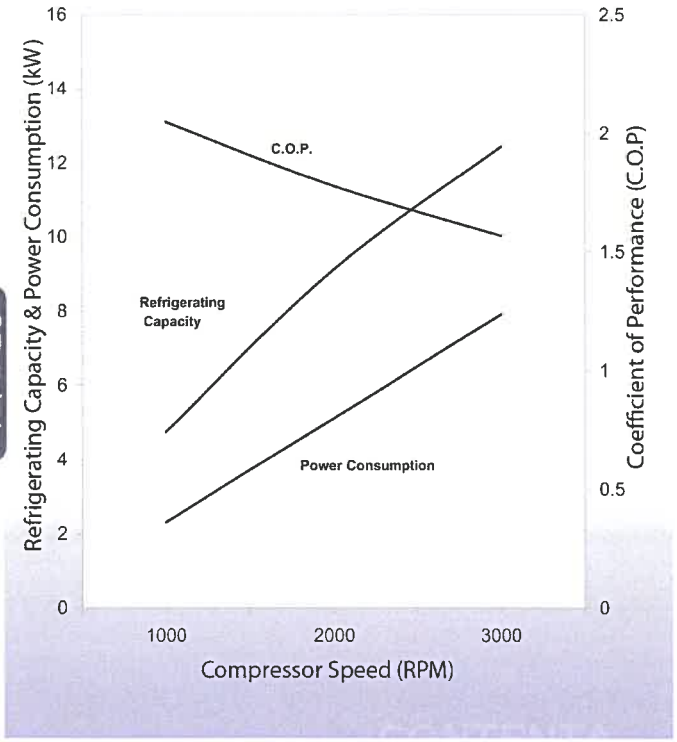


SD5/7L

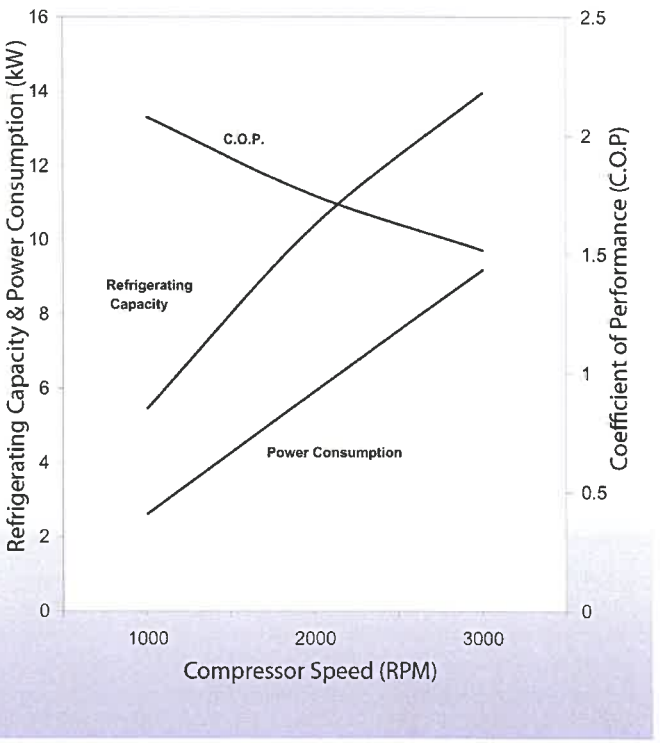
TESTING CONDITIONS
Discharge Pressure: 2.40 MPaG , Suction Pressure: 500 kPaG , Sub Cool Temp: 5 K , Super Heat Temp.: 10 K

SD5/7L

For SD7L13 Models

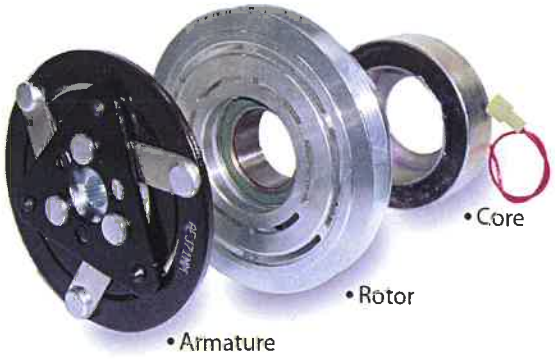


For SD7L15 Models



TESTING CONDITIONS
Discharge Pressure: 2.40 MPaG , Suction Pressure: 500 kPaG , Sub Cool Temp.: 5 K , Super Heat Temp.: 10 K

Clutch Assembly
for SD5 and SD7



SD5 Clutch Assembly Specification Table

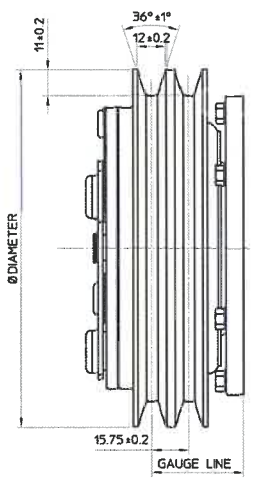
FAMILY	VOLTAGE	GROOVE	DIAMETER	GAUGE LINE	TERMINAL	MODEL
5H09 5L09	DC12	A2	125	36.6	AMP60793-1	**EC-125A21TA**
	DC12	PV4	125	46.38	AMP60793-1	**EC-125PV41BA**
	DC12	PV5	120	46.38	AMP60793-1	**EC-120PV51FA**
	DC12	PV6	120	46.38	AMP60793-1	**EC-120PV61ADA**
	DC12	PV8	119	46.55	AMP60793-1	**EC-119PV81RA**
	DC24	A2	125	36.6	AMP60793-1	**EC-125A22TB**
	DC24	PV4	125	46.38	AMP42460-2 / AMP180916-5	**EC-125PV42BC**
	DC24	PV5	120	46.38	AMP60793-1	**EC-120PV52FB**
5H11 5L11	DC12	A1	125	28.5	CF250MEC	**EC-125A11VA**
	DC12	A2	125	44.25	AMP60793-1	**EC-125A21NA**
	DC12	A2	132	44.25	AMP60793-1	**EC-132A21ALA**
	DC12	M2	125	44.25	CF250MEC	**EC-125M21BA**
	DC12	PV4	119	46.55	AMP144545-9 / AMP142755-1	**EC-119PV41PB**
	DC12	PV4	120	58.2	AMP60793-1	**EC-120PV41RA**
	DC12	PV5	120	58.2	AMP60793-1	**EC-120PV51GA**
	DC12	PV6	119	46.55	AMP60793-1	**EC-119PV61YB**
	DC12	PV8	119	46.55	AMP60793-1	**EC-119PV81MB**
	DC24	A2	125	44.25	AMP60793-1	**EC-125A22AEB**
	DC24	PV6	119	45	AMP60793-1	**EC-119PV62BDA**
	DC24	PV8	119	46.55	AMP60793-1	**EC-119PV82MA**
5H14 5L14	DC12	A1M1	130	39.55	AMP42460-2 / AMP480053-3	**EC-130AM21LA**
	DC12	A1	122	60.15	AMP60793-1	**EC-122A11AA**
	DC12	A2	132	39.55	AMP60793-1	**EC-132A21AMA**
	DC12	B1	152	33.85	AMP60793-1	**EC-152B11FD**
	DC12	PV4	119	46.55	AMP60793-1	**EC-119PV41TA**
	DC12	PV6	119	46.55	AMP60793-1	**EC-119PV61AUA**
	DC12	PV7	119	46.55	AMP60793-1	**EC-119PV71KA**
	DC12	PV8	119	46.55	AMP60793-1	**EC-119PV81TC**
	DC12	PV10	125	50.79	AMP60793-1	**EC-125PV101FB**
	DC24	A2	132	39.55	AMP60793-1	**EC-132A22AMB**
	DC24	B1	146	33.85	AMP60793-1	**EC-146B12ED**
	DC24	B1	152	33.85	CP3.96MA	**EC-152B12FA**
	DC24	B1M1	138	39.55	AMP60793-1	**EC-138BM22AA**
	DC24	C1	158	39.55	AMP60793-1	**EC-158C12LD**
	DC24	PV7	119	46.55	AMP60793-1	**EC-119PV72KB**
	DC24	PV8	119	46.55	AMP60793-1	**EC-119PV82AEB**
	DC24	PV10	125	50.79	AMP60793-1	**EC-125PV102FA**

SD7 Clutch Assembly Specification Table

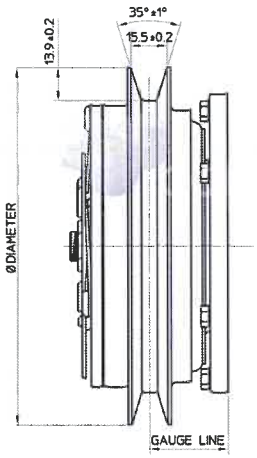
FAMILY	VOLTAGE	GROOVE	DIAMETER	GAUGE LINE	TERMINAL	MODEL
7H13 7H15 7L13 7L15	DC12	A1M1	130	41.55	AMP42460-2 / AMP180916-0	**EC-130AM21MA**
	DC12	A1	125	44.25	CF250MA	**EC-125A11UA**
	DC12	A2	125	39.55	AMP60793-1	**EC-125A21UB**
	DC12	A2	125	44.25	AMP60793-1	**EC-125A21XJ**
	DC12	A2	132	39.55	AMP60793-1	**EC-132A21AYP**
	DC12	PV6	119	46.55	AMP60793-1	**EC-119PV61ACD**
	DC12	PV7	119	46.55	CF250MA	**EC-119PV71LA**
	DC12	PV8	119	46.55	AMP60793-1	**EC-119PV81NE**
	DC12	PV8	119	50.1	AMP60793-1	**EC-119PV81AGG**
	DC12	PV10	120	65.6	CF250MA	**EC-120PV101FB**
	DC24	A2	125	44.25	AMP60793-1	**EC-125A22XG**
	DC24	A2	132	39.55	AMP60793-1	**EC-132A22ARB**
	DC24	B1	146	33.85	AMP60793-1	**EC-146B12CD**
	DC24	C1	153	39.55	AMP60793-1	**EC-153C12BB**
	DC24	PV6	119	46.55	AMP60793-1	**EC-119PV62BNA**
	DC24	PV8	119	50.1	AMP60793-1	**EC-119PV82AJE**
	DC24	PV8	132	56.5	AMP60793-1	**EC-132PV82HC**

Accessories

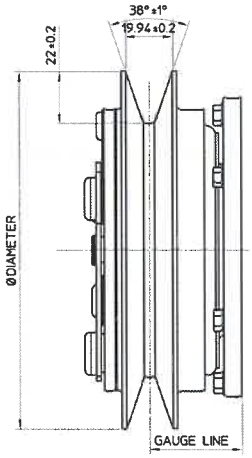
Clutch Assembly Drawings



'A' GROOVE



'B' GROOVE



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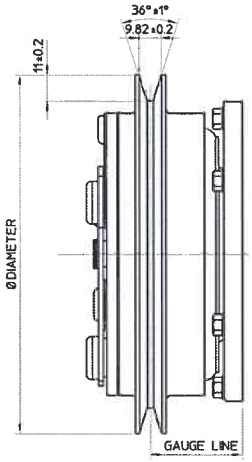
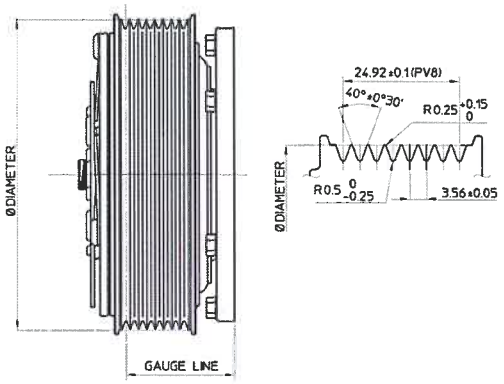


'M' GROOVE



'PV' GROOVE

Cylinder Head
for SD5 and SD7

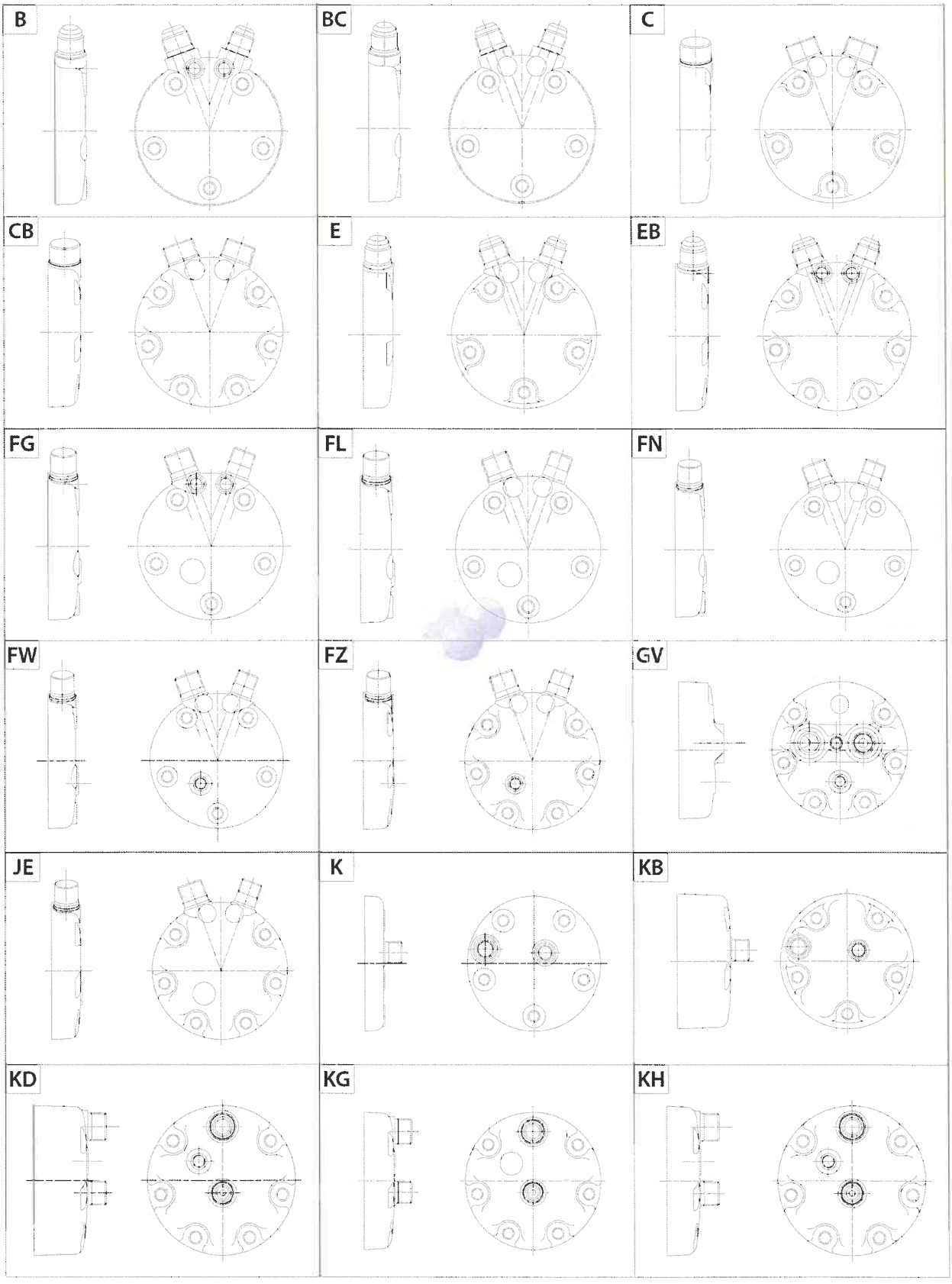
Cylinder Head Specification Table

FAMILY	FITTINGS				BOLT LENGTH	STAMP	BODY CV	CV	HPRV	FA
	ORIENTATION	TYPE	SUCTION	DISCHARGE						
SD5	VERTICAL	FLARE	7/8-14UNF	3/4-16UNF	40	E	•			
	VERTICAL	FLARE	7/8-14UNF	3/4-16UNF	48	B		•		
	VERTICAL	FLARE	7/8-14UNF	3/4-16UNF	48	BC				
	VERTICAL	PAD (U) TYPE	M10XP1.25 (1)		48	UB				
	VERTICAL	PAD (U) TYPE	M10XP1.25 (1)		65	RD				
	VERTICAL	PAD (UG) TYPE	M8XP1.25 (2)		40	ZC				
	VERTICAL	ROTA-LOCK	1-14UNS	1-14UNS	40	C				
	VERTICAL	TUBE-O-RING	7/8-14UNF	3/4-16UNF	48	FG		•		
	VERTICAL	TUBE-O-RING	7/8-14UNF	3/4-16UNF	48	FL				
	VERTICAL	TUBE-O-RING	7/8-14UNF	3/4-16UNF	48	FN	•			
	VERTICAL	TUBE-O-RING	7/8-14UNF	3/4-16UNF	48	FW			•	
	HORIZONTAL	PAD (Q) TYPE	M10XP1.5 (1)		40	SW			•	•
	HORIZONTAL	PAD (Q) TYPE	M10XP1.5 (1)		40	SZ				•
	HORIZONTAL	ROTA-LOCK	1-14UNS	1-14UNS	40	M				
	HORIZONTAL	TUBE-O-RING	7/8-14UNF	3/4-16UNF	40	K				
	HORIZONTAL	TUBE-O-RING	7/8-14UNF	3/4-16UNF	65	KB				
SD7	VERTICAL	FLARE	7/8-14UNF	3/4-16UNF	40	EB		•		
	VERTICAL	FLARE	7/8-14UNF	3/4-16UNF	40	KH			•	
	VERTICAL	PAD (U) TYPE	M10XP1.25 (1)		40	UK				
	VERTICAL	PAD (UG) TYPE	M8XP1.25 (2)		40	US				
	VERTICAL	PAD (UG) TYPE	M8XP1.25 (2)		40	WQ			•	
	VERTICAL	ROTA-LOCK	1-14UNS	1-14UNS	40	CB				
	VERTICAL	TUBE-O-RING	7/8-14UNF	3/4-16UNF	40	FZ			•	
	VERTICAL	TUBE-O-RING	7/8-14UNF	3/4-16UNF	40	JE				
	ANGLED (51°)*	PAD (UG) TYPE	M8XP1.25 (2)		48	UP				
	ANGLED (51°)	PAD (UG) TYPE	M8XP1.25 (2)		48	WN				
	ANGLED (51°)*	PAD (UG) TYPE	M8XP1.25 (2)		48	WP			•	
	ANGLED (51°)	PAD (UG) TYPE	M8XP1.25 (2)		48	WY			•	
	ANGLED (51°)*	PAD (UG) TYPE	M8XP1.25 (2)		58	WU				
	HORIZONTAL	PAD (G) TYPE	M10XP1.5 (1)		48	GV			•	•
	HORIZONTAL	PAD (Q) TYPE	3/8-24UNF		40	QC				•
	HORIZONTAL	PAD (WV) TYPE	M8XP1.25 (2)		48	WV			•	
	HORIZONTAL	ROTA-LOCK	1-14UNS	1-14UNS	40	MB				
	HORIZONTAL	ROTA-LOCK	1-14UNS	1-14UNS	40	MD				
	HORIZONTAL	TUBE-O-RING	7/8-14UNF	3/4-16UNF	40	KG				
	HORIZONTAL	TUBE-O-RING	7/8-14UNF	3/4-16UNF	58	KD			•	

*Counter-Clockwise Direction

Abbreviations

Body CV - For Body Charge Valve Models • ***FA*** - Flex Adaptor Option • ***HPRV*** - High Pressure Relieve Valve Option • ***CV*** - Charge Valve Option


B
BC
C
CB
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EB
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FZ
GV
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KB
KD
KG
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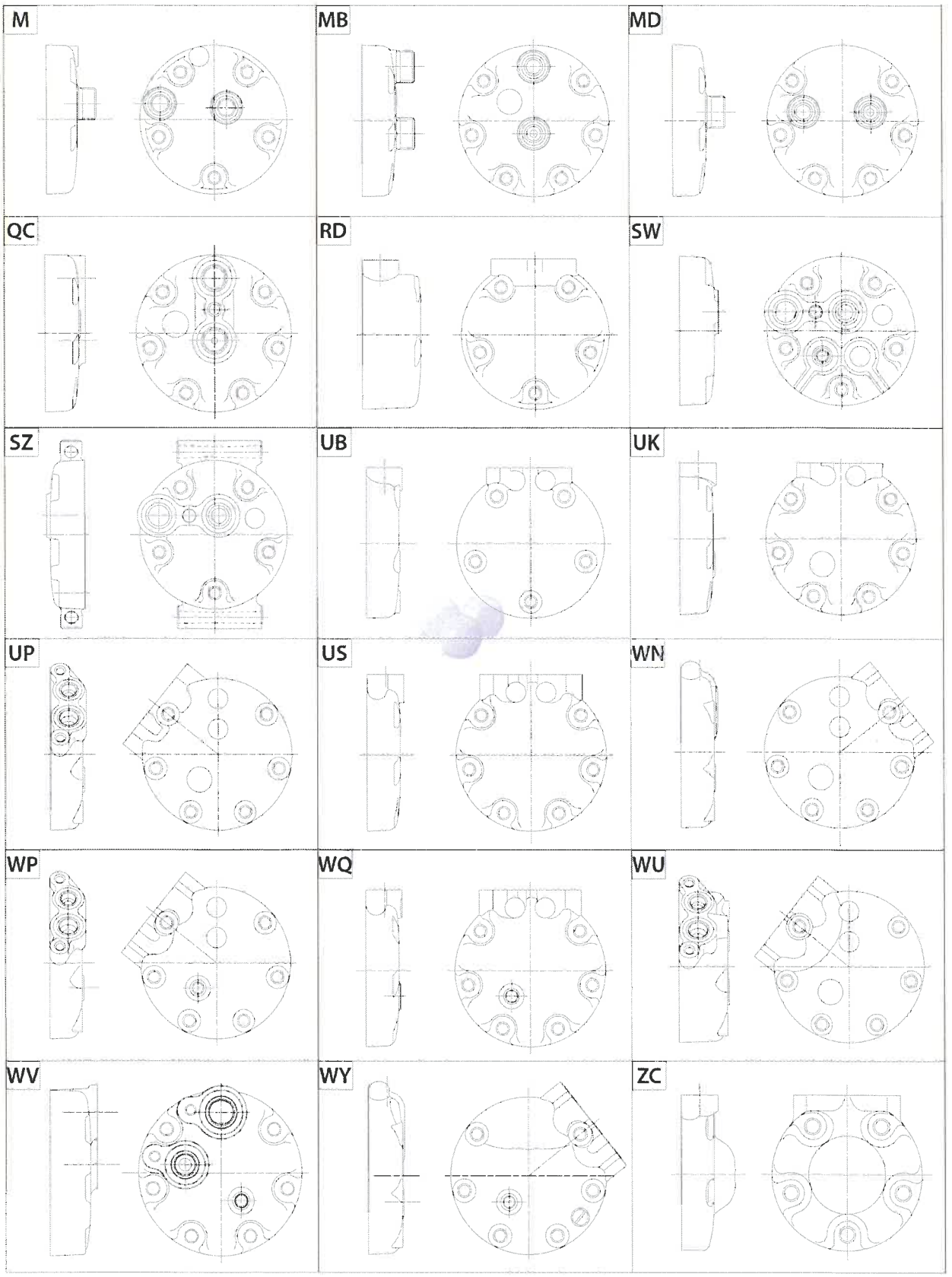
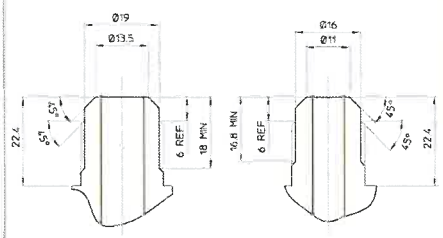
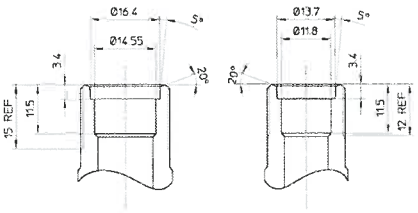
Cylinder Head Drawings





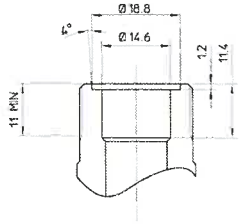
SUCTION DISCHARGE

FLARE TYPE



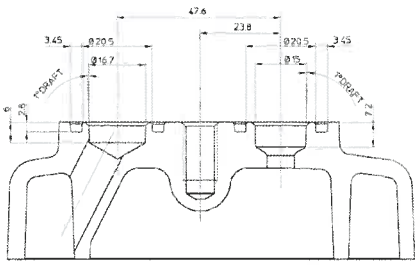
SUCTION DISCHARGE

STANDARD TUBE O-RING TYPE



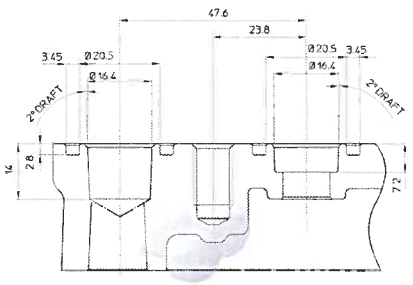
SUCTION / DISCHARGE

ROTALOCK TUBE O-RING TYPE



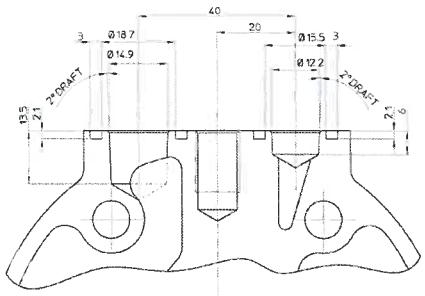
SUCTION DISCHARGE

PAD (G) TYPE



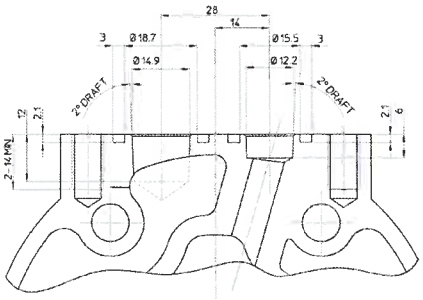
SUCTION DISCHARGE

PAD (Q) TYPE



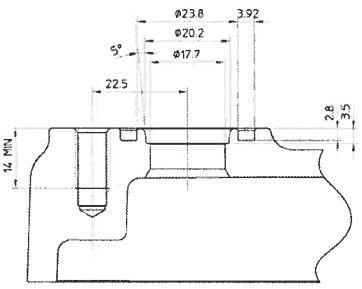
SUCTION DISCHARGE

PAD (U) TYPE

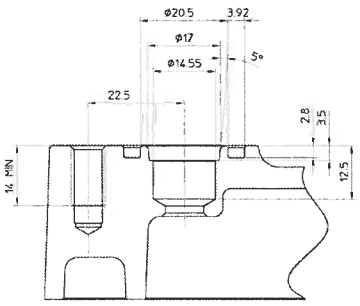


SUCTION DISCHARGE

PAD (UG) TYPE



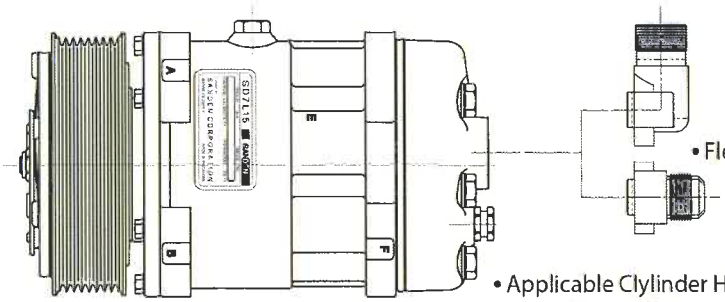
SUCTION



DISCHARGE

PAD (WV) TYPE

Flex Adaptor Application



• Flex Adaptor Options

• Applicable Clylinder Head
GV, QC, SW, SZ

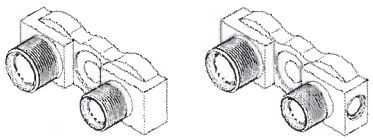
The concept of Flex Compressor allows users to reduce the models required with a standard Compressor with Flexible Adaptors to cater to different application needs.

Flex Adaptors can be used with GV, QC, SW and SZ Cylinder Heads, which are available for both SD5 and SD7 models.

Adaptors are available in horizontal and vertical configurations, with the various standard fittings,

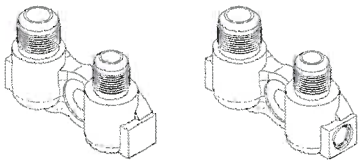
- Tube O-ring type
- Rota-Lock type
- Flare type

HORIZONTAL TUBE-O-RING TYPE



• Without CV Option • With CV Option

VERTICAL FLARE TYPE



• Without CV Option • With CV Option

Lubricant Oil SP10/ SP20

Unique formulated lubricant providing the following benefits:

- Miscible with R134a at both low and high temperature
- Excellent thermal and chemical stability
- Excellent lubrication
- Excellent seal compatibility
- High viscosity index
- Excellent low temperature fluidity

Quality

All lubricant oil are packed under stringent procedures to ensure top quality lubricants are sent out to our customers, minimizing contamination by foreign particles and moisture.

Product Ordering

Quote Number :

SP10 - 3000-9030S

SP20 - 7800-9030S

Oil amount per can : 250ml

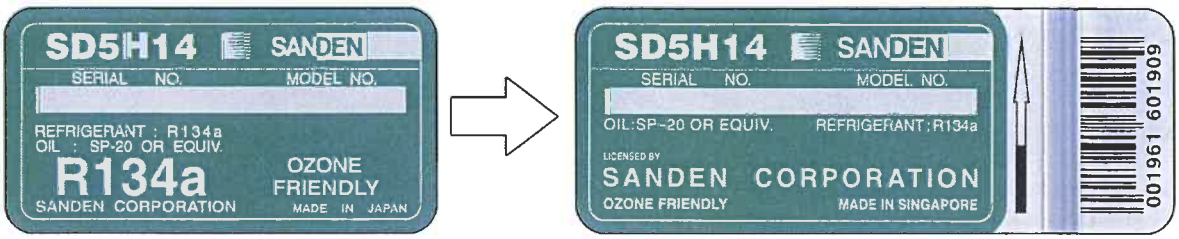
Oil cans per box : 6

Recommended Application	
SP10	SP20
SD7H13 Type D Models	SD5H09
SD7H15 Type C Models	SD5H11
SD6V / SD7V	SD5H14
SD7B08/10	SD7H13 Standard Models
PXF / PXE / PXV	SD7H15 Type B Models
TRS / TRSA	

Brand Protection Technology

New Individually Unique Compressor Label

Sanden International (Singapore) Pte Ltd has introduced our latest technology, 'Enxure' to combat the rising counterfeiting problem. The new label will contain the basic product information as in the current label and will incorporate a unique fingerprint in the form of magnetic strip and barcode. The new label can only be authenticated using special scanning equipment, which is only available with Sanden authorised dealers.



Current Label Format

New Finger-Print Label Format

Embossed Sanden Logo

In order to further assist customer to differentiate genuine Sanden Compressors from counterfeit Compressors, an embossed SANDEN logo will appear on the cylinder block.

Both the new label and embossed SANDEN logo will be applied to all SD5 Compressors. Kindly note that Sanden International (Singapore) Pte Ltd is the only manufacturing plant producing SD5 and all new labels will have the "Made in Singapore" print.

For queries and authentication, please contact our authorised dealers in your area or write in to acmktg@sanden.com.sg.

Service Information

Cautionary Information

1.1 Pressure Release
Before disconnecting AC lines, always make sure refrigerant has been removed from the A/C system by recovering it with the appropriate recovery equipment.

When working on Compressors, separate from the system, always be sure to relieve internal pressure first. Internal Compressor pressure can be relieved by removing the oil plugs (if necessary) or by removing shipping cap/pads from both ports.

1.2 Recovery of Refrigerant
Never discharge refrigerant to the atmosphere. Always used approved refrigerant recovery/recycling equipment to capture refrigerant which is removed from the A/C system. Do not mix refrigerants in the same piece of equipment; one should be designated for R-12 and another for R134a.

1.3 Handling of Refrigerant
Always wear eye and hand protection when working on an A/C system or Compressor. Liquid refrigerant can cause frostbite and/or blindness.

1.4 Ventilation
Keep refrigerants and oils away from open flames. Refrigerants can produce poisonous gases in the presence of a flame. Work in a well-ventilated area.

1.5 Avoid use of Compressed Air
Do not introduce compressed air into an A/C system due to the danger of contamination.

R134a Gas / PAG Oil Handling Precaution

As a conscientious member of the global community, Sanden Corporation with its subsidiaries is committed to the elimination of CFC-based refrigerants. This section focuses on service information for Sanden Compressors intended for use with R134a and PAG oils.

2.1 Always follow the safety precautions described in Section 1.

2.2 Do not discharge R134a gas into the atmosphere. Even though it's ozone depletion potential is zero, it does have a global warming potential. Recovery and recycling are mandated by the Clean Air Act. Use recovery equipment only for R134a gas. Never introduce another refrigerant into the R134a gas equipment.

2.3 Never mix R134a gas with other refrigerant or A/C system failure is likely to occur.

2.4 Use only Sanden specified PAG lubricant oil for R134a systems using Sanden Compressor. If other lubricants are used, A/C system failure is likely to occur.

2.5 Never introduce R134a or PAG oil into a system not designed for them except when following appropriate retrofit procedure described in Conversion from R12 to R134a AC systems.

2.6 The Sanden specificed PAG oil used in R134a systems absorb atmospheric moisture very quickly. Moisture in the A/C system can cause major damages or failures.

- Never leave the PAG oil exposed to air for prolonged time. Tightly reseal the oil container immediately after each use.
- During A/C system repairs, cap all fittings as soon as opened and leave capped until just before they are reconnected.
- If a repair is performed on the Compressor or R134a system, evacuate the system for at least 45mins before recharging to ensure the removal of moisture which may have been absorbed by the PAG oil in the Compressor and system.

Service Information

Sanden Procedures for Conversion from R12 to R134a

1. If the R-12 vehicle air conditioning system is operational, run it at idle with the A/C blower on high speed for five (5) minutes to maximize the amount of oil in the Compressor.

2. Recover all R-12 refrigerant from the vehicle's A/C System.

3. Remove the Compressor from the vehicle.

4. Remove the Compressor oil plug and then drain as much mineral oil as possible from the Compressor body.

5. Drain mineral oil from the cylinder head suction and discharge ports while turning the shaft with a socket wrench on the clutch armature retaining nut.

6. Remove the existing R-12 receiver drier or accumulator drier form the vehicle and discard. Allow as much oil as possible to drain from the A/C hoses. It is advisable to change A/C hoses if they are more than 10 years of age due to incompatibility with PAG Lubricant Oil.

7. Change any O-ring on the receiver drier or accumulator drier joints to approved HNBR O-rings; replace any other O-rings that have been disturbed.

8. Replace the receiver drier or accumulator drier with a new R134a compatible one containing XH7 or XH9 desiccant.

9. If the CCOT system is being repaired due to Compressor damage, or foreign material is found in the oil drained from the system, this foreign material must be removed from the system. At this time, an in-line filter should be installed in the liquid line. Allow as much oil as possible to drain from the A/C lines when installing the filter. Change any O-rings disturbed in the installation of the filter to approved HNBR O-rings.

10. Perform any necessary repairs to the Compressor or A/C system.

11. Using the original PAG lubricant oil amount specified, add SP-20 or SP-10 oil to the Compressor.

12. Replace the Compressor oil plug O-ring with a HNBR seal.

13. Reinstall the Compressor oil plug. The plug seat and O-ring must be clean and free of damages. Torque the plug to 11-15ft·lb (15-20N·m, 150-200kgf·cm).

14. Change any seal at the Compressor port to approved HNBR seals.

15. Reinstall the Compressor to the A/C system. Evacuate the A/C system for at least forty-five (45) minutes to a vacuum of 29 in, Hg, using R-12 equipment, to remove as much R-12 gas as possible from the residual mineral oil.

16. Remove all R-12 service equipment and disable the R-12 service fitting to prevent any refrigerant other than R134a from being used. Permanently install R134a quick connect service fitting to the A/C System.

17. Connect R134a service hoses and other equipment. Re-evacuate the system for thirty (30) minutes using the R134a equipment.

18. Charge the A/C system with R134a gas. Generally, about 5% (by weight) less than R-12 charge amount is required. Leak check the A/C system per SAE J1628 procedure.

19. If the A/C system is a CCOT type which has been repaired due to damages or the discovery of foreign material in the oil drained from the system, run the system for sixty (60) minutes to capture this material in the filter installed in step 9. Recover the refrigerant, remove and dispose of the filter, reconnect the lines, evacuate for at least forty-five (45) minutes, and recharge the A/C system. This step should not be necessary for TXV system, since the receiver drier is fitted with an internal filter.

20. Check the A/C system operating parameters. The A/C system should function correctly within acceptable limits of temperature and pressure. This will ensure that the correct amount of R134a gas has been charged.

21. In extreme circumstances when expected cooling performance cannot be achieved and high discharge pressures are experienced, it may be necessary to add more condensing capacity to the A/C system. An electric fan(s) and/or larger capacity condenser can be used.

22. Replace all R-12 Compressor label with retrofit labels per SAE J1660 in order to provide information on the R134a retrofit which has been performed.

Sanden System Diagnosis (R-134a)

SANDEN
Delivering Excellence

Test No. 1 System Inoperative

1. Check system fuse.
2. Check belt tension. Tighten or replace belt.
3. Check for current at clutch coil. If present, check defective clutch coil or clutch. Ensure good earth connection.
4. Check system controls, relay wiring & thermostat, etc.
5. Make visual check on all fittings and for burst or seeping hoses.
6. Check air gap of clutch.

Test No. 2 Insufficient Cooling

High Side: Low / Low Side: Low

Check Sight Glass

Bubbles in Sight Glass

Refrigerant is low. May be caused by small leak.

1. Check for leakage & correct.
2. Add requirement until bubbles disappear & both gauges show a normal reading.

No Bubbles in Sight Glass

Gauge readings are excessively low. Possibly no liquid in sight glass.

1. A serious leak may be indicated.
2. Expansion valve screen may be clogged.
3. Expansion valve may be stuck closed. Replace valve.

High Side: High / Low Side: High

Check Sight Glass

Refrigerant Overcharge

Note: Sight glass may show bubbles.

Bleed off refrigerant until heavy stream of bubbles appear, then charge with refrigerant until bubbles eliminated from sight glass.

Engine Cooling System

1. Check belt tension & adjust. Use tension gauge.
2. Test radiator pressure cap & system thermostat.
3. Check all hoses.
4. Ensure there is anti-freeze in coolant.
5. Check heater water valve.

Condenser

1. May be blocked & not having sufficient air flow. Remove bug screen & clean condenser.
2. Clearance between radiator & condenser must be to system design dimensions.

Expansion Valve

Test valve using the "R-134a Test"

1. If valve responds to test, remove bulb from tailpipe and clean contacts. Replace bulb and tighten securely.
2. If valve does not respond to test, replace expansion valve.

High Side: Normal / Low Side: Normal

Note: Low side gauge reading may or may not drop into vacuum while testing.

Moisture in System

1. Purge refrigerant from system.
2. Replace drier.
3. Evacuate system and recharge.

High Side: High / Low Side: Normal

Note: Low side gauge reading will be constant and will not drop.

Air In System

1. Purge refrigerant from system.
2. Replace drier.
3. Evacuate system and recharge.

High Side: High / Low Side: Low

Restriction

Liquid Line or receiver-drier shows heavy sweating or frost immediately after point of restriction.

1. Remove component clear restriction or renew component.

High Side: Normal / Low Side: Normal~High

Thermostatic Switch

Compressor cycles (cuts in & out) too rapidly.

1. Thermostatic switch defective (range between points is incorrectly set.)
2. Replace thermostat.

Test No. 3 Compressor & Clutch

Lack of Cooling

Compressor Running Rough or Intermittently or inoperative

1. Check belt and belt tension.
2. Check clutch air gap.
3. Check clutch voltage, amps, lead wire, earth.
4. Check shaft turning smoothness test.
5. Check for low refrigerant charge.
6. Leak test compressor.
7. Leak test and diagnose system.

Unusual Noise when Clutch Engaged

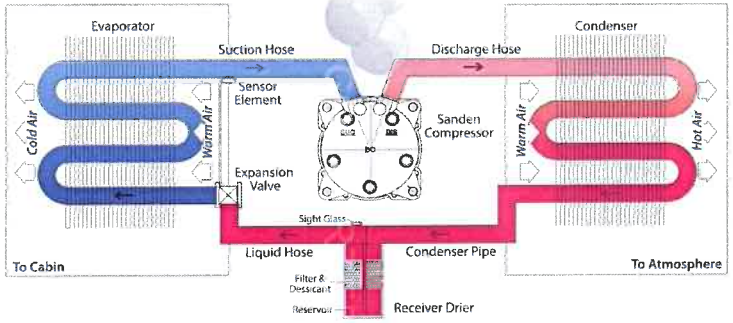
1. Check all compressor mounting components.
2. Check engine components.
3. Check for intermittent operation of clutch or slipping clutch.
4. Check clutch bearing.
5. Check shaft turning smoothness.
6. Check oil level.

Unusual Noise when Clutch Disengaged Or Chattering

1. Check fuse and electrical supply.
2. Check air gap.

Automotive Air Conditioning

An automotive air conditioner is a system which cools and dehumidifies the interior of a car, bus or truck by removing heat and moisture



Check These Five Points

1. Test gauges connected
2. All gauge hoses are purged
3. System is stabilized.
4. Performance Test was conducted
5. Gauge readings are documented.

No Cooling From System

1. Blown fuse.
2. Broken or disconnected electrical wire.
3. Broken or disconnected ground wire.
4. Clutch coil or solenoid burned out or disconnected.
5. Electrical switch contacts in thermostat burned excessively or sensing element defective.
6. Blower motor disconnected or burned out.
7. Ignition switch ground or relay burned out.
8. Loose or broken drive belt.
9. Compressor partially or completely frozen.
10. Compressor reed valves inoperative – indicated by slight variation of both gauge readings at engine speed.
11. Expansion valve stuck open – indicated by normal discharge pressure, high suction pressure and evaporator flooding.
12. Heater valve inoperative – indicated by hot water in heater and hot discharge air from evaporator.
13. Broken refrigerant line.
14. Fusible plug blown (not used on all systems).
15. Leak in system.
16. Clogged screen or screens in receiver-dehydrator or expansion valve. Plugged hose or coil.
17. Compressor shaft seal leaking.

Insufficient Cooling From System

1. Blower motor sluggish.
2. Compressor clutch slipping.
3. Obstructed blower discharge passage.
4. Clogged air intake filter.
5. Insufficient air circulation over condenser coil (fins clogged with dirt or bugs)
6. Evaporator clogged.
7. Outside air vents open.
8. Insufficient refrigerant in system.
9. Clogged screen in expansion valve indicated by gauge pressures being normal or showing slightly increased discharge pressure and low suction pressure with evaporator air output temperature high.
10. Expansion valve thermal bulb has lost its charge – indicated by too high a low gauge reading and excessive sweating of evaporator and suction line.
11. Clogged screen in receiver – indicated by higher than normal reading on high pressure gauge, lower than normal reading on low pressure gauge, and liquid lines cold to touch with possible frost.
12. Excessive moisture in system – indicated by excessive head pressure gauge reading.
13. Air in system – indicated by excessive head pressure and possibly bubbles in sight glass.
14. Thermostat defective or improperly adjusted – indicated by low gauge reading high or clutch cycling at too high a reading.

Intermittent Cooling

1. Defective circuit breaker, blower switch or blower motor.
2. Bad earth connection or loose electrical connection in compressor clutch coil or solenoid.
3. Compressor clutch slipping.
4. Expansion valve icing up – may be caused by excessive moisture in the system or incorrect super heat adjustment.
5. Evaporator, coil icing up – thermostat probe not in coil fins, thermostat adjusted too low, defective thermostat.
6. Clogged evaporator fins.

Noisy System

1. Defective winding or improper connection in compressor clutch coil or solenoid.
2. Loose or excessively worn drive belts.
3. Noisy clutch.
4. Compressor noisy – loose mounting or worn inner parts.
5. Loose panels on car.
6. Compressor oil level low
7. Blower fan noisy – excessive wear in motor.
8. Idler pulley and bearing defective.
9. Excessive charge in system – rumbling noise or vibration in high pressure line, thumping noise in compressor, excessive head pressure and suction pressure, bubbles or cloudiness in sight glass, or low head pressure.
10. Low charge in system – hissing in evaporator case at expansion valve, bubbles or cloudiness in sight glass, or low head pressure.
11. Excessive moisture in system – expansion valve noisy, suction pressure low.