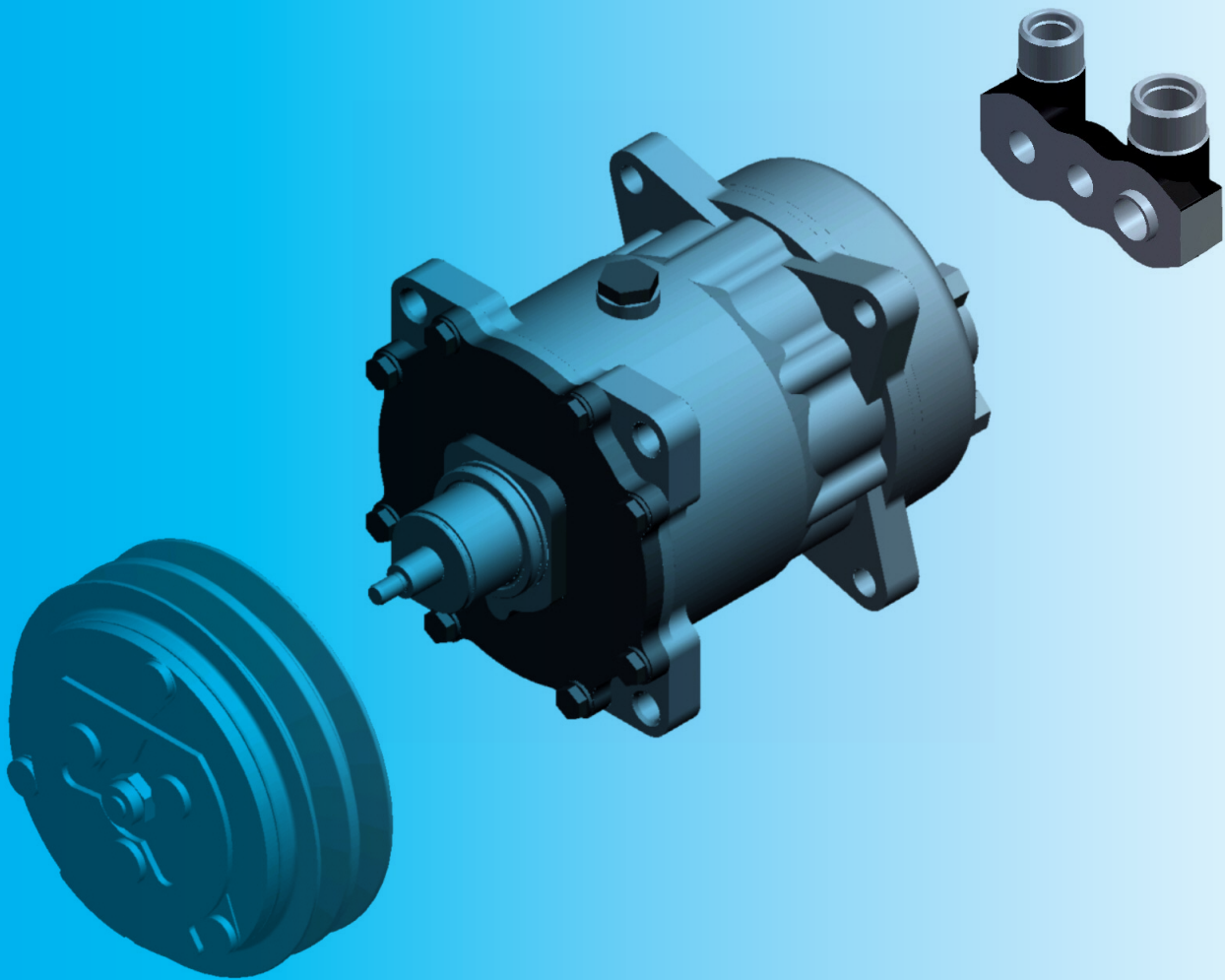


# FLX7

Compressor Series

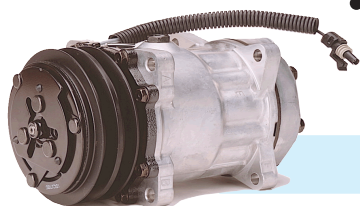


**SANDEN**

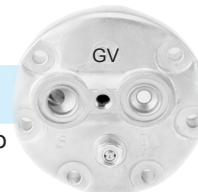
Delivering Excellence

# What is a FLX7?

## The FLX7 is Sanden's flexible compressor series.



- We started with the SD7H15 compressor known throughout the automotive and mobile HVAC industries for its performance and durability. Then we added extra standard features:
  - Pressure relief valve to guard against abnormal pressure conditions
  - Field Coil Diode to prevent electrical damage to the clutch
  - Heavy-duty clutch bearing to handle higher pressures and loads



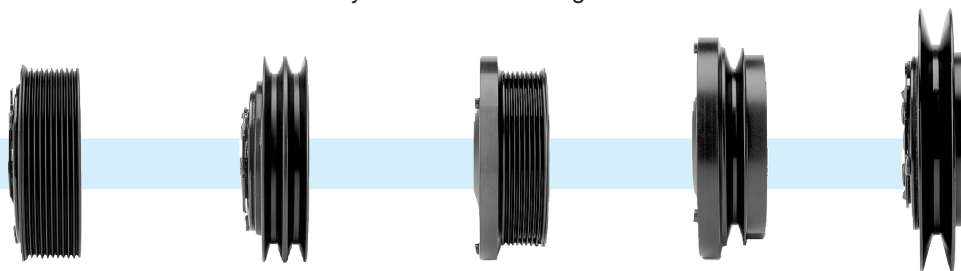
- Then we gave each FLX7 model a pad style cylinder head ready to accept one of our forged steel port fittings.

- Next, we engineered 6 forged-steel port fittings, each designed to fit the FLX7 cylinder head. The port fittings are not assembled to the compressor at Sanden's factory, This allows the end user to adapt a single compressor to fit a variety of applications.



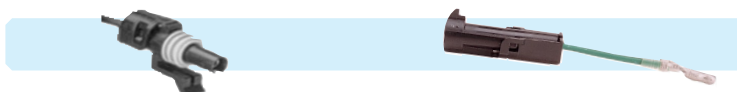
Model #	4865-6340	4866-6340	4867-6340	4868-6340	4869-6340	4870-6340
Orientation	Horizontal	Vertical	Vertical	Vertical	Horizontal	Vertical
Thread Size	3/4 x 7/8	3/4 x 7/8 (short)	1" x 14	3/4 x 7/8 Flare	1" x 14	1" x 14 (long)

- We didn't stop there. We gave the FLX7 series a wide variety of clutch rotor configurations



Groove Types	PV8, PV10	A2	PV8 SHD	A1 SHD	C1
Sizes	PV8 - 119mm PV10 - 125mm	125mm, 132mm, 152mm	133mm	138mm	158mm
Voltages	PV8 - 12v, 24v PV10 - 12v, 24v	125mm - 12v, 24v 132mm - 12v, 24v 152mm - 24v	12v	12v, 24v	12v, 24v
Sealed Heavy Duty (SHD)	No	No	Yes	Yes	No

- Finally, we gave each FLX7 compressor two clutch lead wire terminal options for application flexibility.



Sealed Packard Terminal is attached to the field coil on each FLX7

Jumper wire to convert field coil terminal to bullet-type is also included

# Why FLX7?

---

## What makes the FLX7 different?

We designed the FLX7 with our customers' needs in mind. Today's automotive and mobile A/C markets require the ability to deliver products quick, and at a fair price. The pressure of global competition is demanding better cost, quality and delivery performance. No matter the use, OEM, distributor, retailer, or repair shop, the FLX7 is the answer for you and your customers.

## Not Convinced yet? Check out these benefits:

### Model Consolidation

---

Utilizing interchangeable parts, the FLX7 compressor series allows distributors to consolidate hundreds of unique part numbers into less than 20. This translates into lower costs, and increased customer satisfaction. The FLX7 doesn't just replace existing models, it also creates compressor configurations previously unavailable from Sanden.

### Lower Inventory Costs

---

The consolidation of part numbers means customers can stock fewer models and still meet customer demand. Consider this example: A distributor who previously stocked twelve different Sanden model numbers can now stock one FLX7 compressor and six port fittings. The port fittings and clutch lead wire options give customers the ability to tailor their compressor inventories to satisfy a variety of A/C system configurations which, in turn, will translate into reduced slow-moving and obsolete stock.

### Application Flexibility

---

Flexibility truly is the key benefit of this compressor series. Customers will be confident, as they experience seasonal demand, that the FLX7 compressor on their shelf can be adapted on-the-fly to satisfy a variety of applications. The two clutch lead wire options and six fittings are just the beginning. More options are in development. The result will be an even more adaptable and flexible FLX7 compressor series.

### Added Value

---

Designing the FLX7 series to be compatible with hundreds of different A/C systems wasn't enough. We gave the FLX7 added value to make it clearly superior to other compressors. Each FLX7 comes standard with heavy duty clutch bearings, a clutch diode, and a pressure relief valve. The port fittings are also a superior value. Sanden's FLX7 port fittings are low-profile and made from forged steel, giving them superior durability and lower weight to cast-iron fittings.

### Reduced Lead Times

---

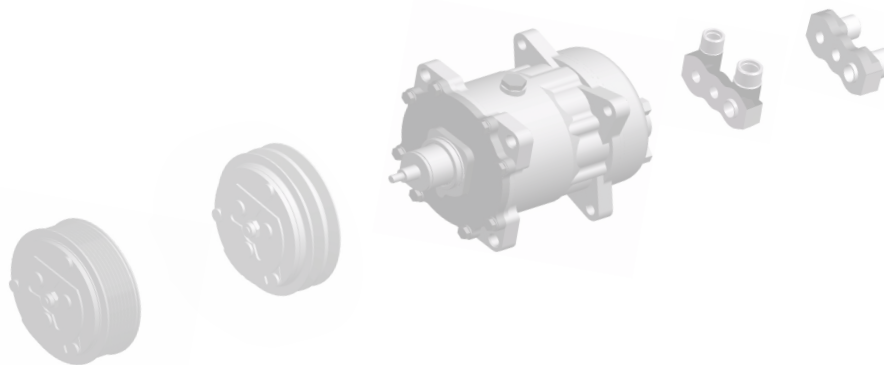
Sanden's customers are demanding shorter lead times for delivery of products, and we have the answer. The FLX7 can be delivered from our factory in days, not weeks. This reduced lead time means customers can stock less on their shelves and still have the ability to capture unforeseen market opportunities. Now more time can be spent taking orders instead of forecasting compressor needs.

**Once you experience the benefits of Sanden's FLX7 compressor series you'll realize you can get more value for less cost.**

# Model Configuration List

## FLX 7 Fittings & Clutch Lead Wire Adapters

Model No.	Description	Orientation	Thread Type
4865-6340	FLX7 Fitting	Horizontal	3/4 x 7/8
4866-6340	FLX7 Fitting	Vertical	3/4 x 7/8
4867-6340	FLX7 Fitting	Vertical	1" x 14 (Short)
4868-6340	FLX7 Fitting	Vertical	3/4 x 7/8 Flare Type
4869-6340	FLX7 Fitting	Horizontal	1" x 14
4870-6340	FLX7 Fitting	Vertical	1" x 14 (Long)
4860-0400	FLX7 Clutch Wire Adapter	See page 17 for details	
4861-0400	FLX7 Clutch Wire Adapter		



## FLX 7 Compressors

Model No.	Clutch Description	Clutch Voltage	Sealed Heavy Duty	Oil Type	Body Mount Type
4860	A2, 125mm	12 volt	No	SP-15 PAG	Ear Mount
4862	A2, 125mm	24 volt	No	SP-15 PAG	Ear Mount
4864	PV8, 119mm	12 volt	No	SP-15 PAG	Ear Mount
4866	PV8, 119mm	24 volt	No	SP-15 PAG	Ear Mount
4868	C1, 158mm	12 volt	No	SP-15 PAG	Ear Mount
4870	C1, 158mm	24 volt	No	SP-15 PAG	Ear Mount
4872	PV10, 125mm	12 volt	No	SP-15 PAG	Ear Mount
4874	PV8, 133mm	12 volt	Yes	SP-15 PAG	Ear Mount
4875	A1, 138mm	12 volt	Yes	SP-15 PAG	Ear Mount
4877	A1, 138mm	24 volt	Yes	SP-15 PAG	Ear Mount
4881	A2, 152mm	24 volt	No	SP-15 PAG	Ear Mount
4419	A2, 125mm	12 volt	No	SP-15 PAG	Direct Mount
4420	PV8, 119mm	12 volt	No	SP-15 PAG	Direct Mount
4434	A2, 132mm	12 volt	No	SP-15 PAG	Ear Mount
4435	A2, 132mm	24 volt	No	SP-15 PAG	Ear Mount
4309	PV10, 125mm	24 volt	No	SP-15 PAG	Ear Mount
4327	PV8, 119mm	24 volt	No	SP-15 PAG	Direct Mount

**Important Note:** FLX7 models containing SP-15 PAG oil are intended for use in A/C systems containing R134a refrigerant.

# FLX7 Service Parts



Clutch kits and field coil assemblies are available for all FLX7 models.

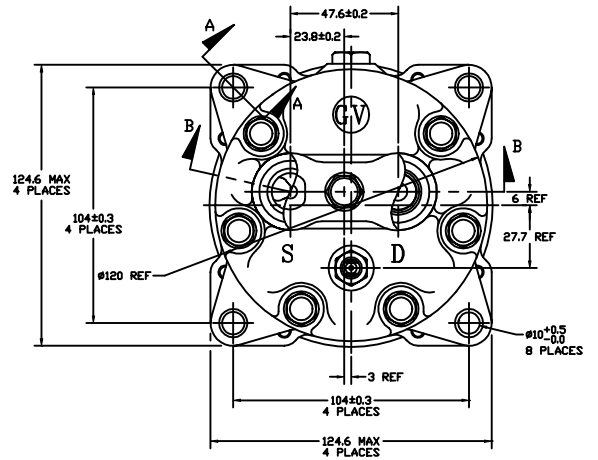
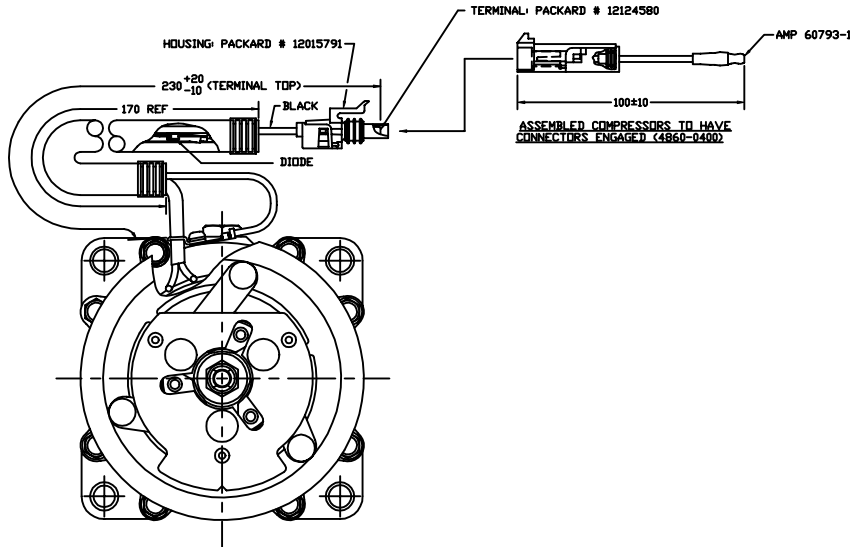
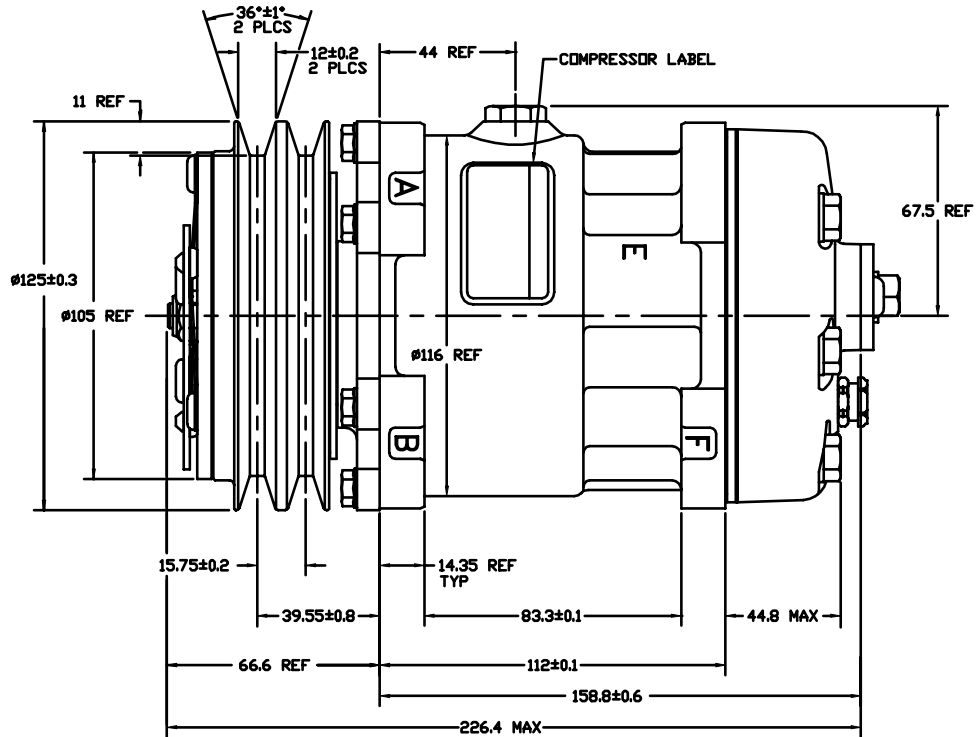
Compressor Model #	Clutch Kit Part #	Field Coil Assy. Part #
4860	4419-9931	4713-9110
4862	4862-9931	4871-9110
4864	4420-9931	4713-9110
4866	4866-9938	4871-9110
4868	4868-9930	4713-9110
4870	4870-9930	4871-9110
4872	4872-9930	4713-9110
4874	4874-9933	4874-9110
4875	4875-9932	4874-9110
4877	4877-9932	4877-9110
4881	4881-9930	4877-9110
4419	4419-9931	4713-9110
4420	4420-9931	4713-9110
4434	4434-9931	4713-9110
4435	4435-9931	4871-9110
4309	4309-9930	4871-9110
4327	4866-9938	4871-9110

## NOTES:

\* The clutch kits contain a rotor assembly, armature assembly, field coil assembly, dust covers, shims, and snap rings.

\* The field coil assemblies contain a field coil and the 4860-0400 jumper wire only.

# Model # 4860 / 4862



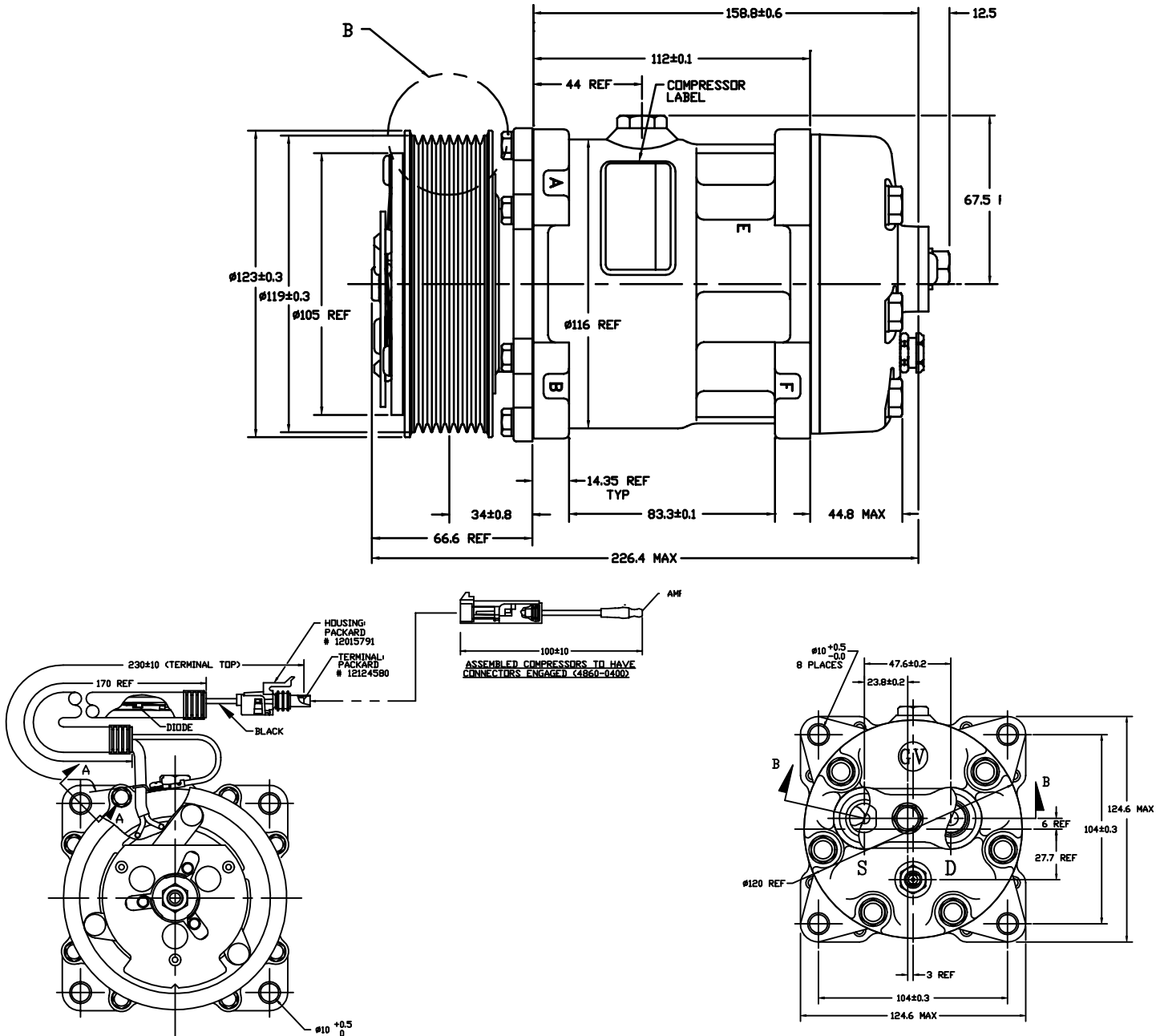
Clutch Specification	Model No.	
	4860	4862
Rated Voltage	DC 12V	DC 24V
Breakaway Torque	3.5 kgf · m min. @ 12V	3.5 kgf · m min. @ 16V
Minimum Engagement Voltage	7.5 V @ air gap 0.6mm REF.	7.5 V @ air gap 0.6mm REF.
Power Consumption	49 watts max	34 watts max
Belt Type	A Type	
Maximum Allowable Belt Tension	60 kgf per belt	
Pulley Diameter	ø125mm ( 4.92 In. )	
Clutch Type	Heavy Duty	

Note: Models with 24 volt clutch have 280mm , green lead wire.

Compressor Specification	Model No.	
	4860	4862
Oil Type	SP-15	SP-15
Refrigerant	R134a	R134a
Oil Quantity	200 cc ( 6.76 fl. oz. )	
Displacement Per Revolution	154.9 cc / rev. ( 9.5 cu. In. / rev. )	
Maximum Allowable Speed	7000 R.P.M.	
Maximum Allowable Continuous Speed	6000 R.P.M.	
Weight	7.6 kg ( 16.8 LBS. )	

Note: All dimensions are metric, not drawn to scale, and for reference only

# Model # 4864 / 4866



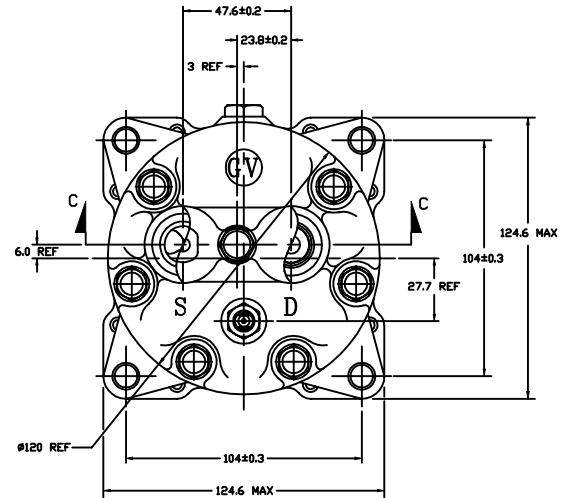
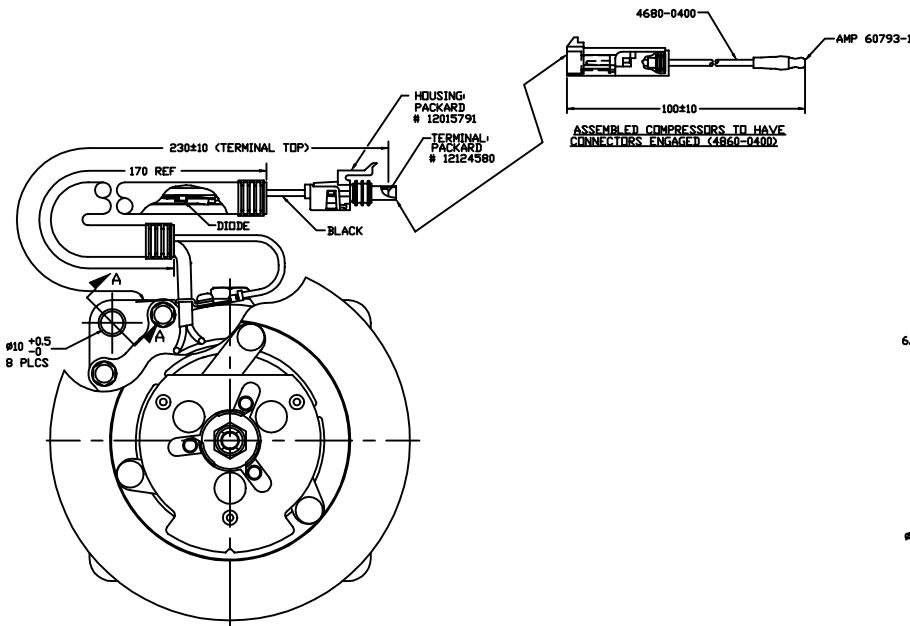
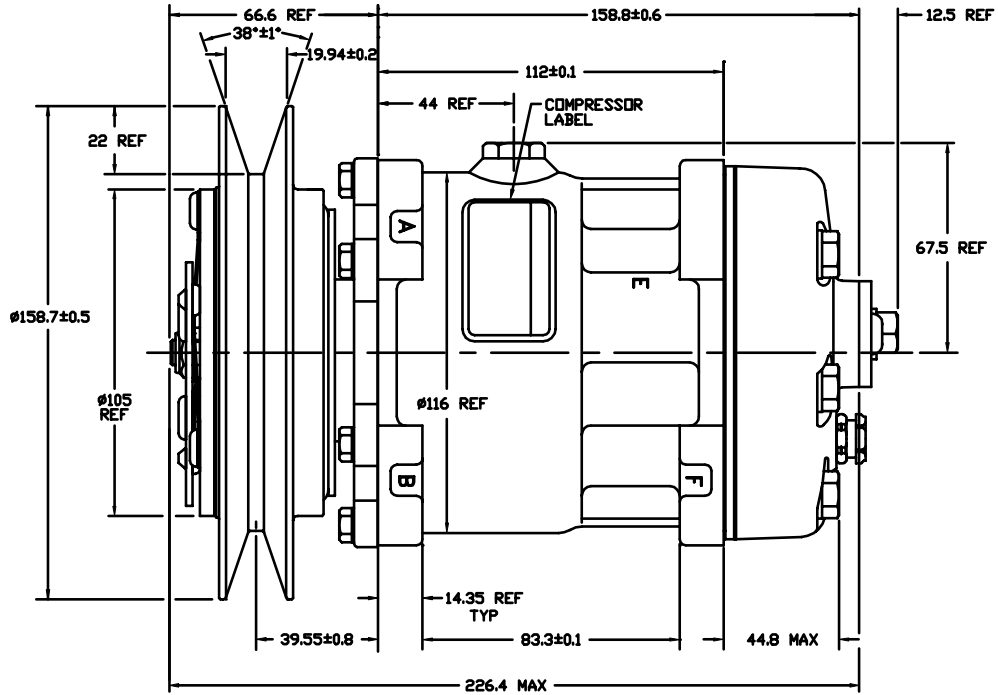
Clutch Specification	Model No.	
	4864	4866
Rated Voltage	DC 12V	DC 24V
Breakaway Torque	3.5 kgf - m min. @ 12V	3.5 kgf - m min. @ 24V
Minimum Engagement Voltage	7.5 V @ air gap 0.6mm REF.	7.5 V @ air gap 0.6mm REF.
Power Consumption	49 watts max	34 watts max
Belt Type	PV8 Type	
Maximum Allowable Belt Tension	120 kgf	
Pulley Diameter	ø119mm ( 4.69 In. )	
Clutch Type	Standard	

Note: Models with 24 volt clutch have 280mm, green lead wire.

Compressor Specification	Model No.	
	4864	4866
Oil Type	SP-15	SP-15
Refrigerant	R134a	R134a
Oil Quantity	200 cc ( 6.76 fl. oz. )	
Displacement Per Revolution	154.9 cc / rev. ( 9.5 cu. In. / rev. )	
Maximum Allowable Speed	7000 R.P.M.	
Maximum Allowable Continuous Speed	6000 R.P.M.	
Weight	7.6 kg ( 16.8 LBS. )	

Note: All dimensions are metric, not drawn to scale, and for reference only

# Model # 4868 / 4870



Clutch Specification	Model No.	
	4868	4870
Rated Voltage	DC 12V	DC 24V
Breakaway Torque	3.5 kgf - m min. @ 12V	3.5 kgf - m min. @ 24V
Minimum Engagement Voltage	7.5 V @ air gap 0.6mm REF.	16 V @ air gap 0.6mm REF.
Power Consumption	49 watts max	34 watts max
Belt Type	C Type	
Maximum Allowable Belt Tension	60 kgf per belt	
Pulley Diameter	Ø158.7mm ( 6.25 In. )	
Clutch Type	Heavy Duty	

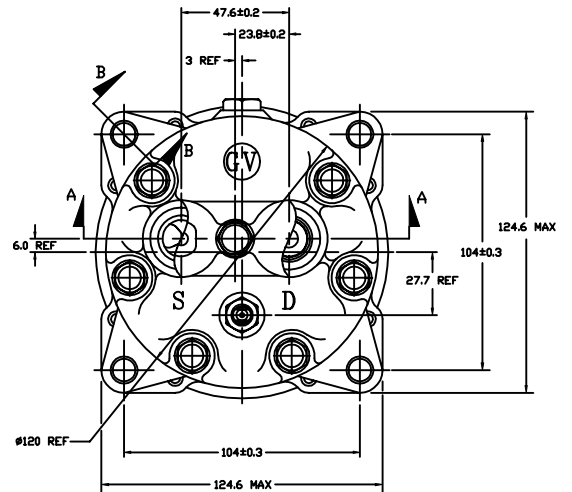
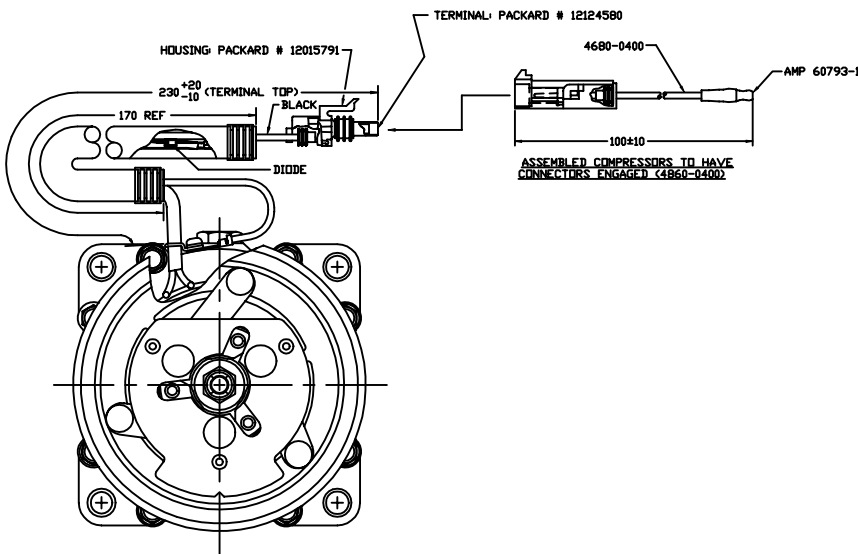
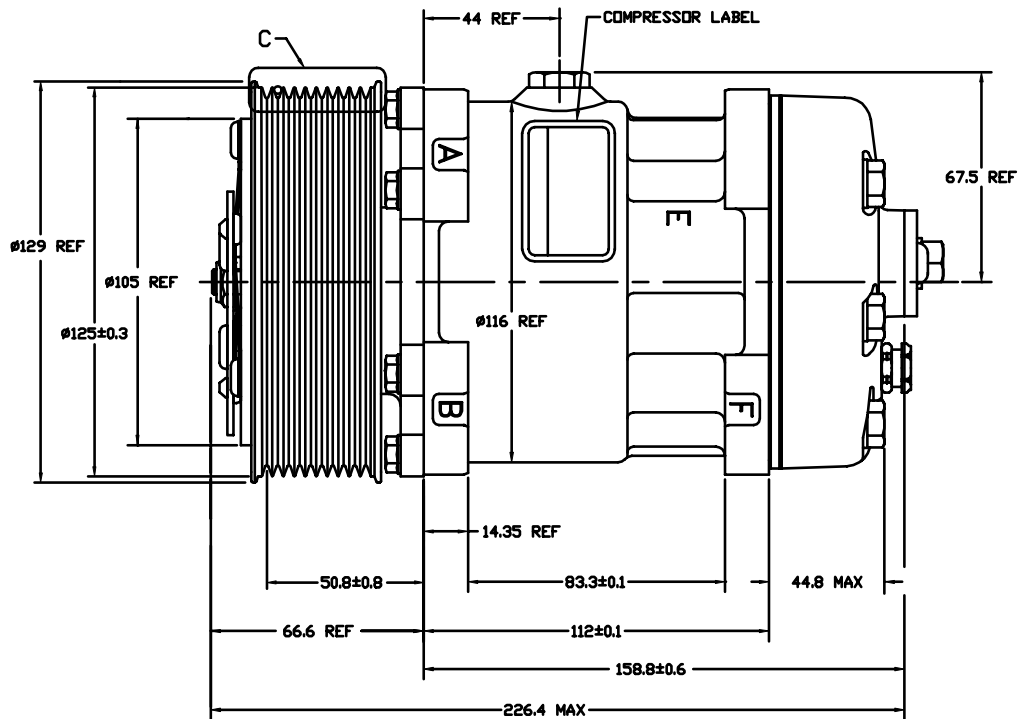
Note: Models with 24 volt clutch have 280mm , green lead wire.

Compressor Specification	Model No.	
	4868	4870
Oil Type	SP-15	SP-15
Refrigerant	R134a	R134a
Oil Quantity	200 cc ( 6.76 fl. oz. )	
Displacement Per Revolution	154.9 cc / rev. ( 9.5 cu. In. / rev. )	
Maximum Allowable Speed	7000 R.P.M.	
Maximum Allowable Continuous Speed	6000 R.P.M.	
Weight	7.6 kg ( 16.8 LBS. )	

Note: All dimensions are metric, not drawn to scale, and for reference only



# Model # 4872 / 4309



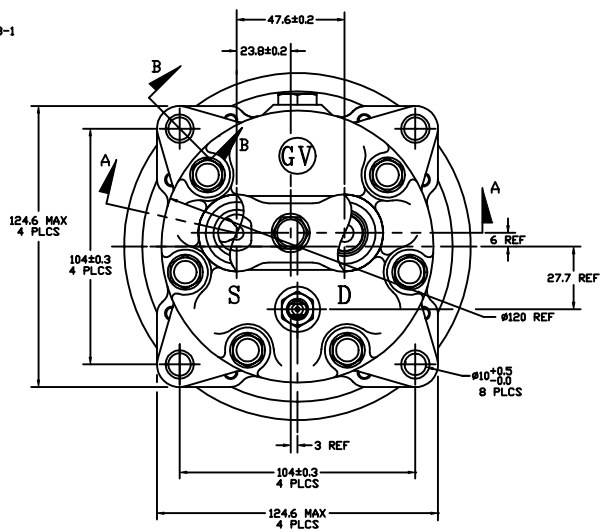
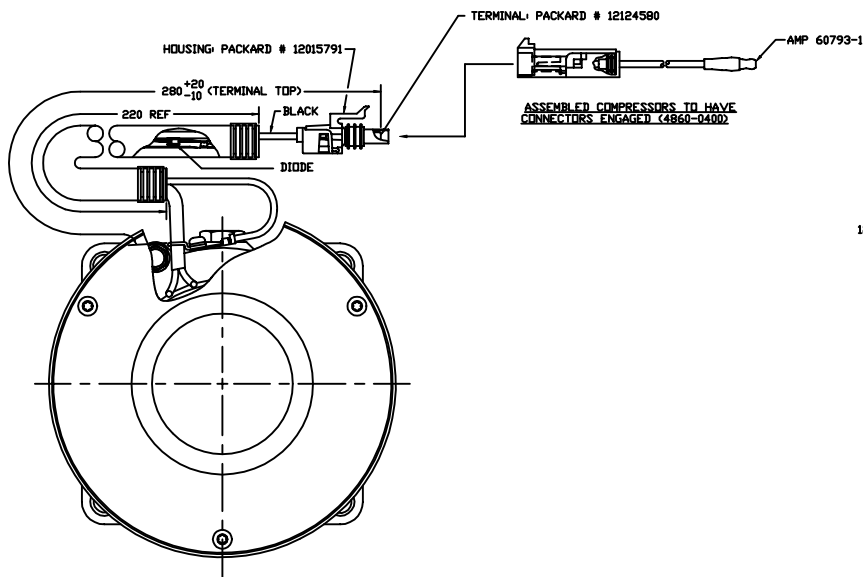
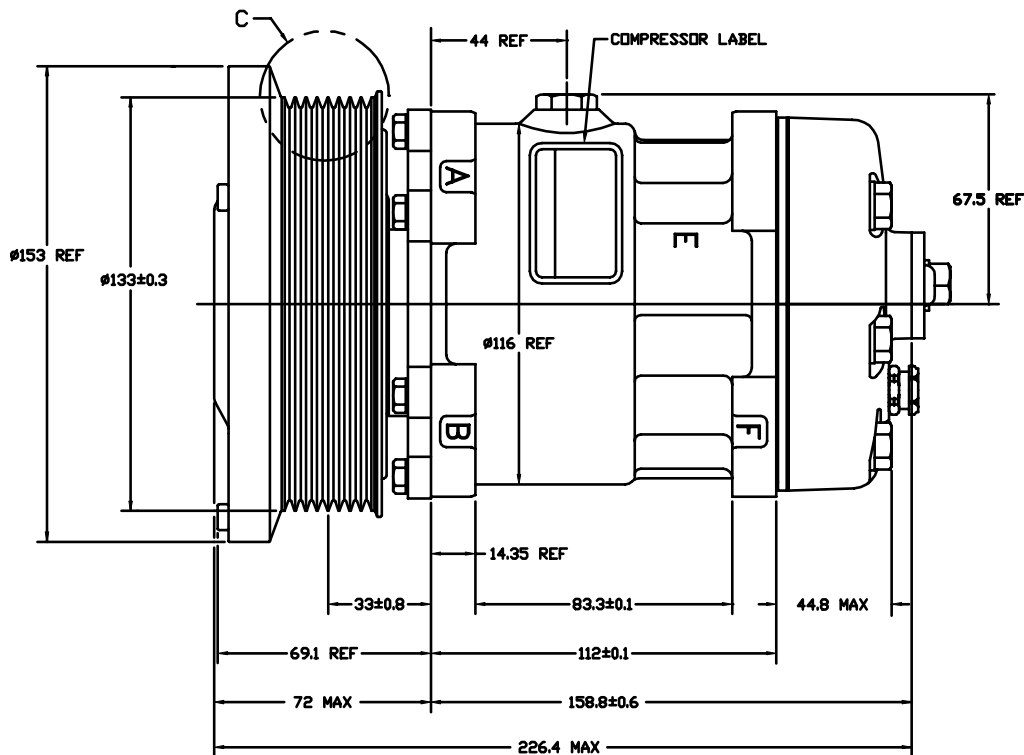
Clutch Specification	Model No.	
	4872	4309
Rated Voltage	DC 12V	DC 24V
Breakaway Torque	3.5 kgf - m min. @ 12V	3.5 kgf - m min. @ 24V
Minimum Engagement Voltage	7.5 V @ air gap 0.6mm REF.	16 V @ air gap 0.6mm REF.
Power Consumption	49 watts max	34 watts max
Belt Type	PV10 Type	
Maximum Allowable Belt Tension	150 kgf	
Pulley Diameter	$\phi 125$ mm ( 4.92 In. )	
Clutch Type	Heavy Duty	

Note: Models with 24 volt clutch have 280mm , green lead wire.

Compressor Specification	Model No.	
	4872	4309
Oil Type	SP-15	SP-15
Refrigerant	R134a	R134a
Oil Quantity	200 cc ( 6.76 fl. oz. )	
Displacement Per Revolution	154.9 cc / rev. ( 9.5 cu. In. / rev. )	
Maximum Allowable Speed	7000 R.P.M.	
Maximum Allowable Continuous Speed	6000 R.P.M.	
Weight	7.6 kg ( 16.8 LBS. )	

Note: All dimensions are metric, not drawn to scale, and for reference only

# Model # 4874



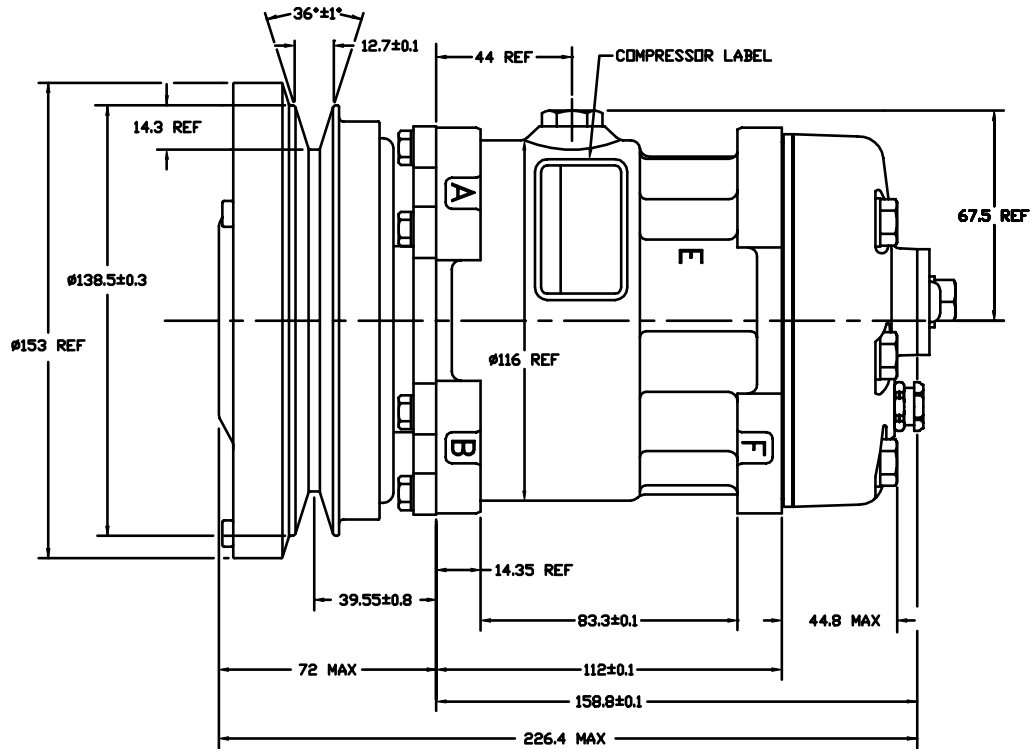
	Model No.
Clutch Specification	4874
Rated Voltage	DC 12V
Breakaway Torque	3.5 kgf - m min. @ 12V
Minimum Engagement Voltage	7.5 V @ air gap 0.6mm REF.
Power Consumption	43 watts max
Belt Type	PV8 Type
Maximum Allowable Belt Tension	120kgf
Pulley Diameter	ø133mm ( 5.2 In. )
Clutch Type	Sealed Heavy Duty

Note: All dimensions are metric, not drawn to scale, and for reference only

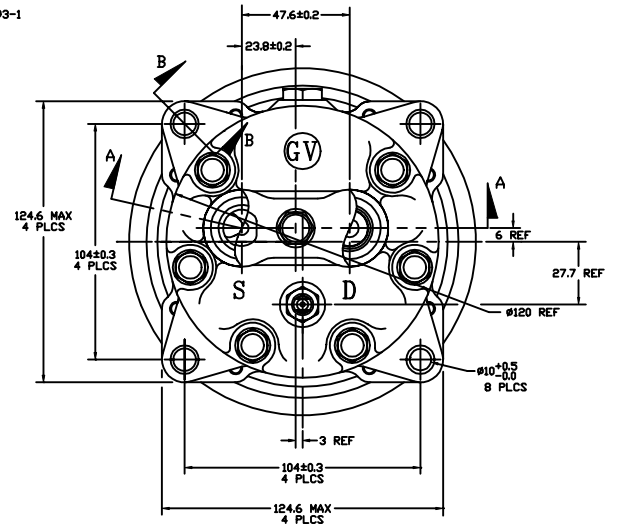
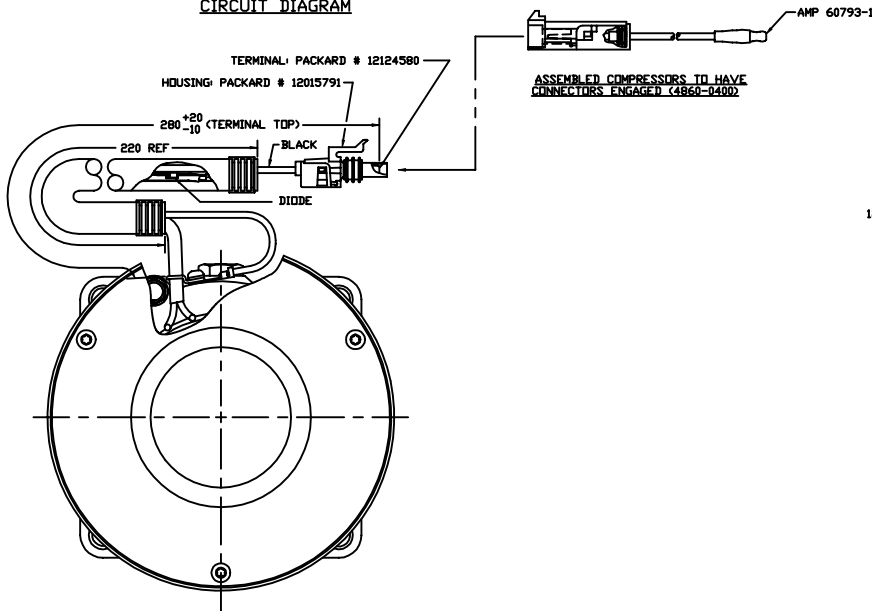
	Model No.
Compressor Specification	4874
Oil Type	SP-15
Refrigerant	R134a
Oil Quantity	200 cc ( 6.76 fl. oz. )
Displacement Per Revolution	154.9 cc / rev. ( 9.5 cu. In. / rev. )
Maximum Allowable Speed	4000 R.P.M.
Maximum Allowable Continuous Speed	4000 R.P.M.
Weight	8.5 kg ( 18.8 LBS. )

Note: All dimensions are metric, not drawn to scale, and for reference only

# Model # 4875 / 4877



## CIRCUIT DIAGRAM



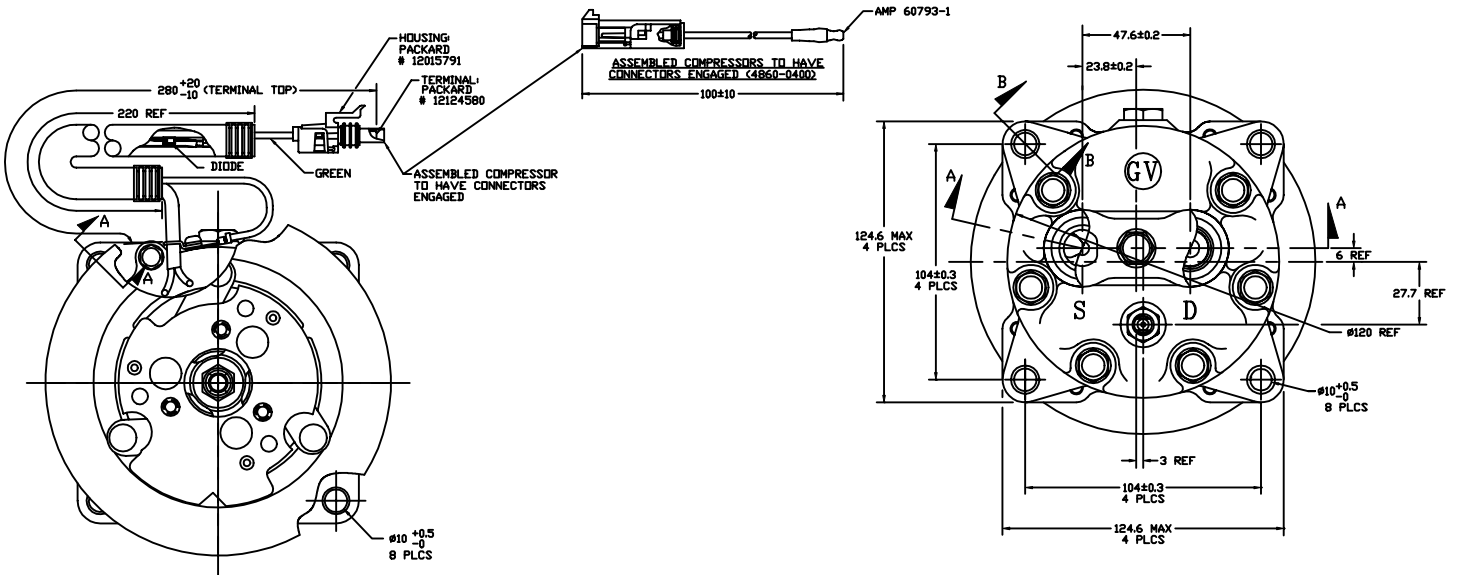
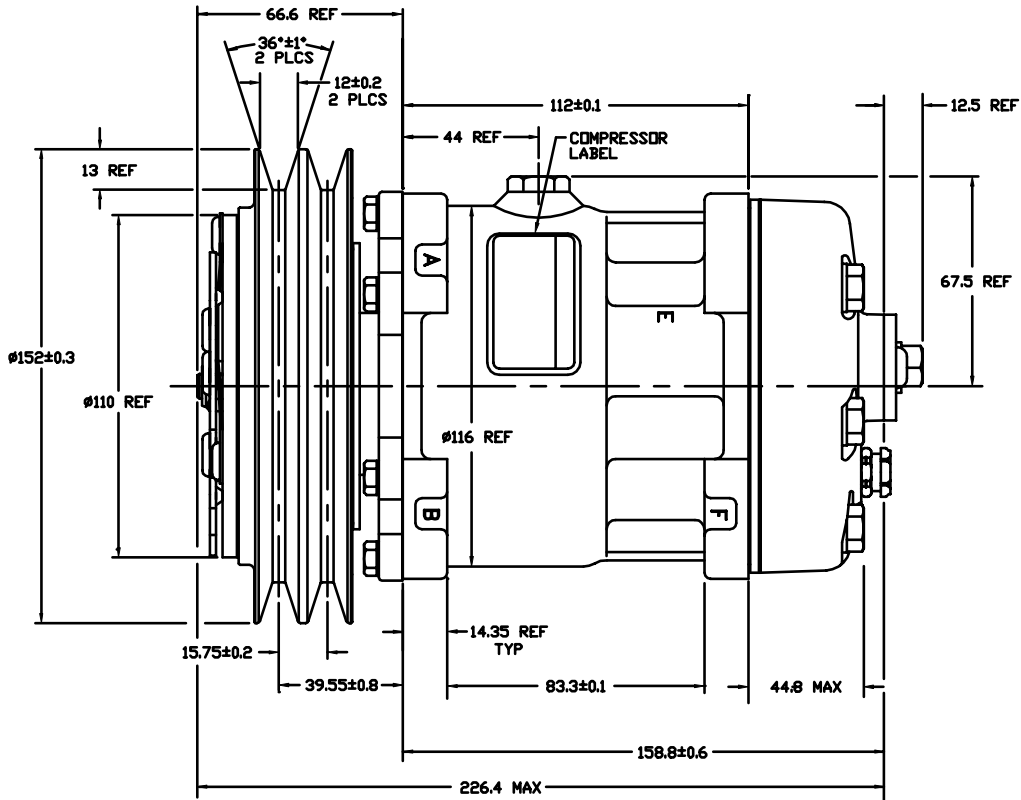
Clutch Specification	Model No.	
	4875	4877
Rated Voltage	DC 12V	DC 24V
Breakaway Torque	3.5 kgf - m min. @ 12V	3.5 kgf - m min. @ 24V
Minimum Engagement Voltage	7.5 V @ air gap 0.6mm REF.	16 V @ air gap 0.6mm REF.
Power Consumption	43 watts max	34 watts max
Belt Type	A Type	
Maximum Allowable Belt Tension	60 kgf per belt	
Pulley Diameter	Ø138mm ( 5.453 In. )	
Clutch Type	Sealed Heavy Duty	

Note: Models with 24 volt clutch have 280mm , green lead wire.

Compressor Specification	Model No.	
	4875	4877
Oil Type	SP-15	SP-15
Refrigerant	R134a	R134a
Oil Quantity	200 cc ( 6.76 fl. oz. )	
Displacement Per Revolution	154.9 cc / rev. ( 9.5 cu. In. / rev. )	
Maximum Allowable Speed	4000 R.P.M.	
Maximum Allowable Continuous Speed	4000 R.P.M.	
Weight	8.5 kg ( 18.8 LBS. )	

Note: All dimensions are metric, not drawn to scale, and for reference only

# Model # 4881



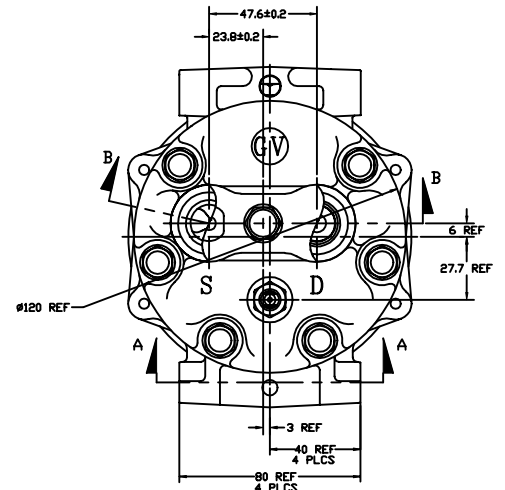
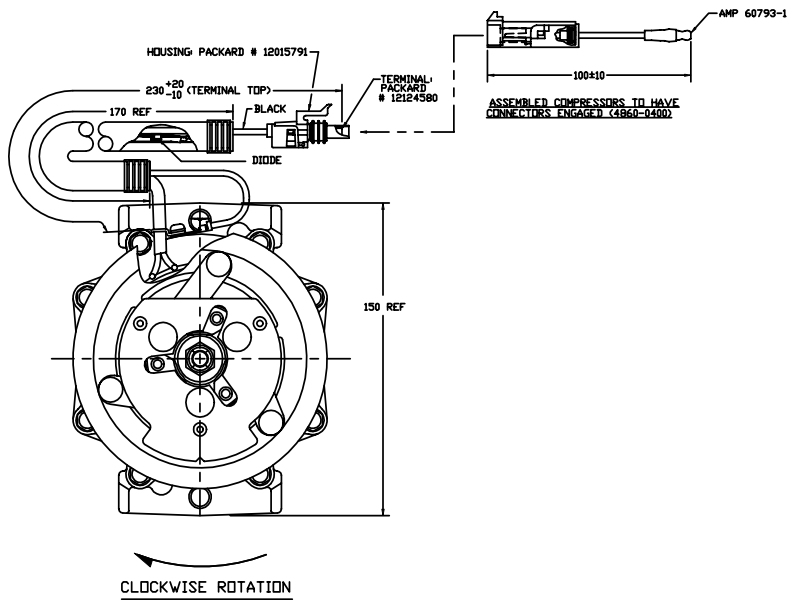
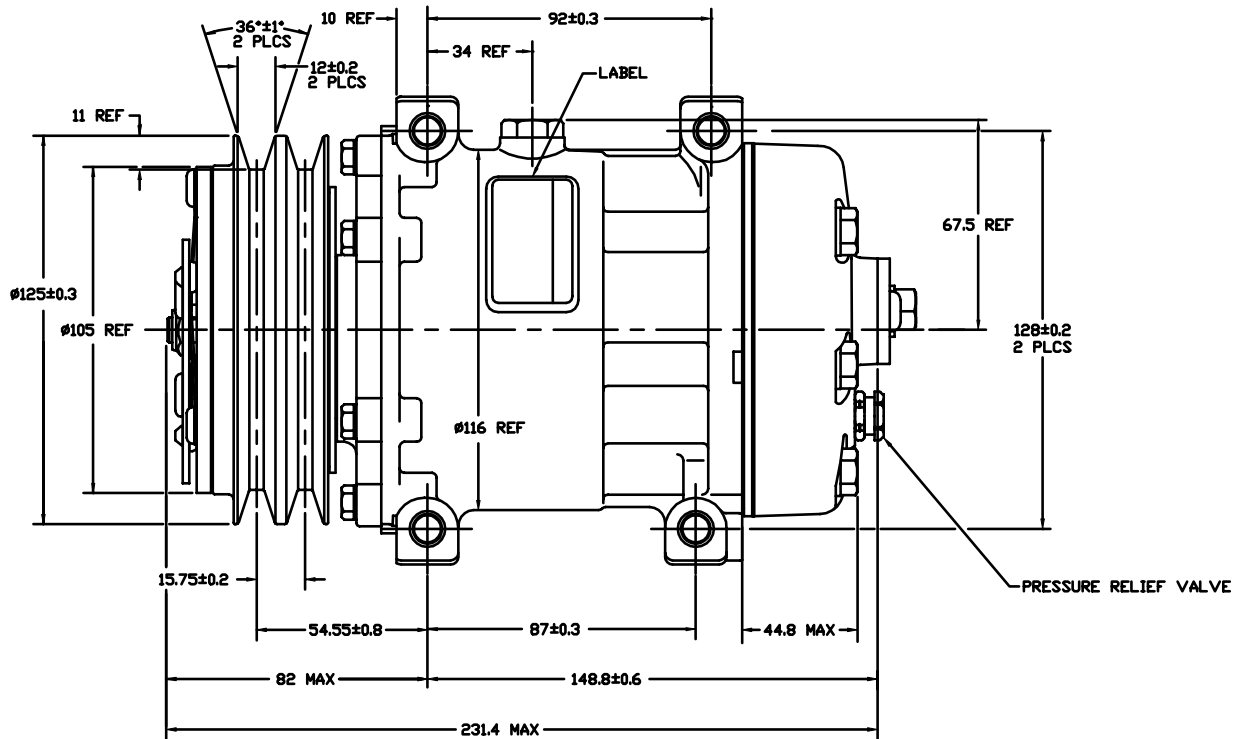
	Model No.
Clutch Specification	4881
Rated Voltage	DC 24V
Breakaway Torque	3.5 kgf - m min. @ 24V
Minimum Engagement Voltage	16 V @ air gap 0.6mm REF.
Power Consumption	34 watts max
Belt Type	A Type
Maximum Allowable Belt Tension	60 kgf per belt
Pulley Diameter	ø152mm ( 5.98 In. )
Clutch Type	Heavy Duty

Note: Models with 24 volt clutch have 280mm , green lead wire.

	Model No.
Compressor Specification	4881
Oil Type	SP-15
Refrigerant	R134a
Oil Quantity	200 cc ( 6.76 fl. oz. )
Displacement Per Revolution	154.9 cc / rev. ( 9.5 cu. In. / rev. )
Maximum Allowable Speed	7000 R.P.M.
Maximum Allowable Continuous Speed	6000 R.P.M.
Weight	7.6 kg ( 16.8 LBS. )

Note: All dimensions are metric, not drawn to scale, and for reference only

# Model # 4419



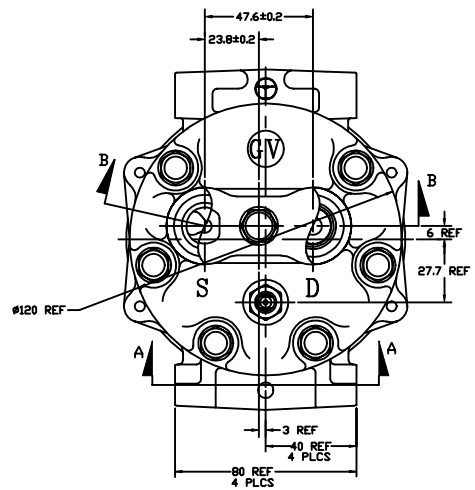
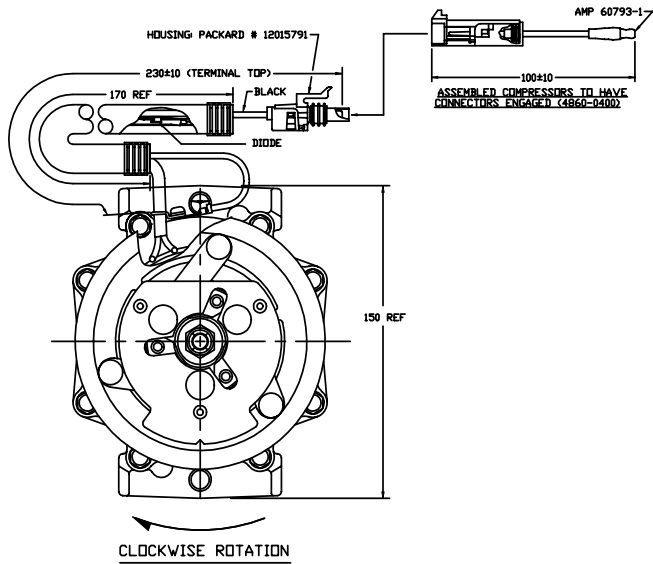
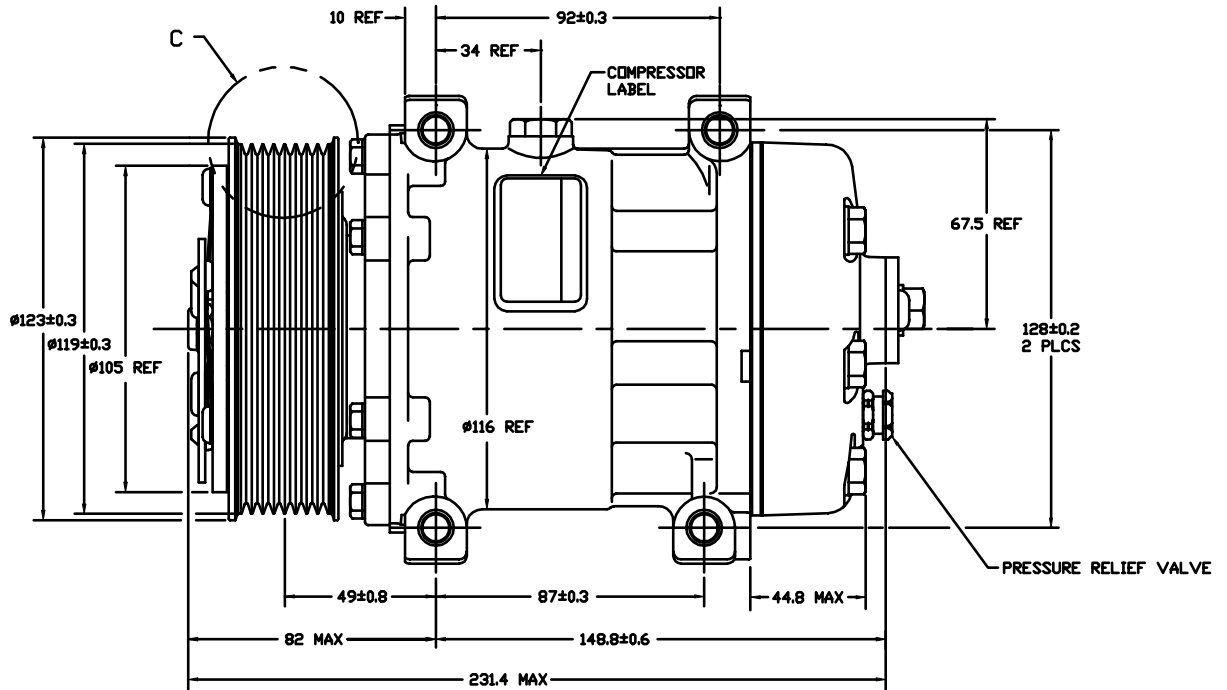
	Model No.
Clutch Specification	4419
Rated Voltage	DC 12V
Breakaway Torque	3.5 kgf - m min. @ 12V
Minimum Engagement Voltage	7.5 V @ air gap 0.6mm REF.
Power Consumption	49 watts max
Belt Type	A Type
Maximum Allowable Belt Tension	60 kgf per belt
Pulley Diameter	Ø125mm ( 4.92 In. )
Clutch Type	Heavy Duty

Note: All dimensions are metric, not drawn to scale, and for reference only

	Model No.
Compressor Specification	4419
Oil Type	SP-15
Refrigerant	R134a
Oil Quantity	200 cc ( 6.76 fl. oz. )
Displacement Per Revolution	154.9 cc / rev. ( 9.5 cu. In. / rev. )
Maximum Allowable Speed	8000 R.P.M.
Maximum Allowable Continuous Speed	6000 R.P.M.
Weight	7.6 kg ( 16.8 LBS. )

Note: All dimensions are metric, not drawn to scale, and for reference only

# Model # 4420 / 4327



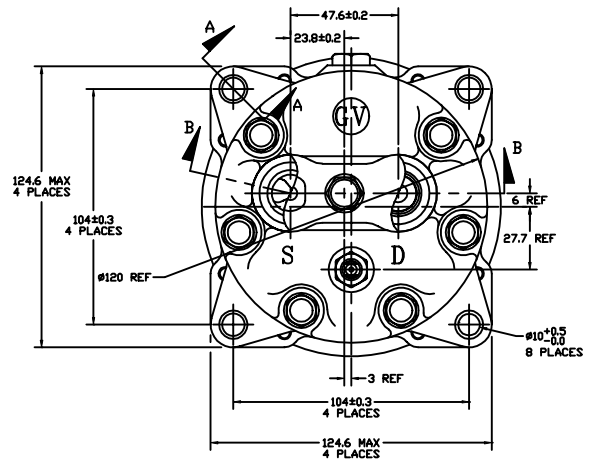
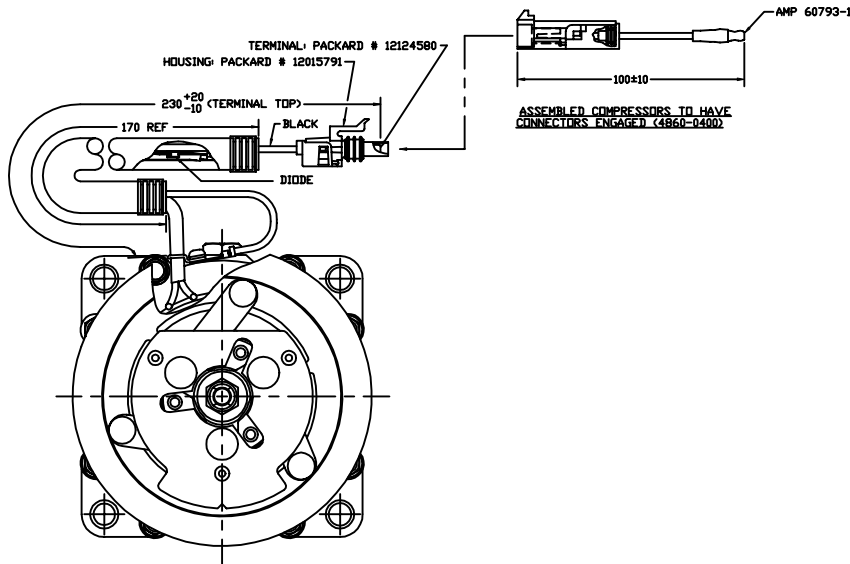
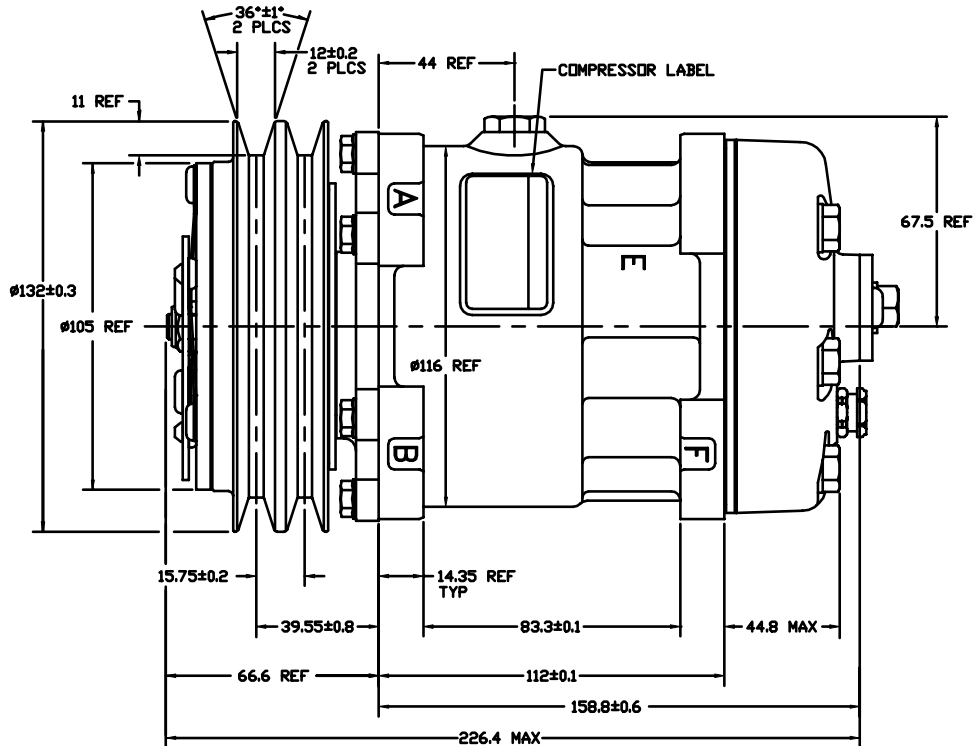
Clutch Specification	Model No.	
	4420	4327
Rated Voltage	DC 12V	DC 24V
Breakaway Torque	3.5 kgf - m min. @ 12V	3.5 kgf - m min. @ 24V
Minimum Engagement Voltage	7.5 V @ air gap 0.6mm REF.	16 V @ air gap 0.6mm REF.
Power Consumption	49 watts max	34 watts max
Belt Type	PV8 Type	
Maximum Allowable Belt Tension	60 kgf per belt	
Pulley Diameter	ø119mm (4.69 In.)	
Clutch Type	Standard	

Note: Models with 24 volt clutch have 280mm, green lead wire.

Compressor Specification	Model No.	
	4420	4327
Oil Type	SP-15	SP-15
Refrigerant	R134a	R134a
Oil Quantity	200 cc ( 6.76 fl. oz. )	
Displacement Per Revolution	154.9 cc / rev. ( 9.5 cu. In. / rev. )	
Maximum Allowable Speed	7000 R.P.M.	
Maximum Allowable Continuous Speed	6000 R.P.M.	
Weight	7.6 kg ( 16.8 LBS. )	

Note: All dimensions are metric, not drawn to scale, and for reference only

# Model # 4434 / 4435



Clutch Specification	Model No.	
	4434	4435
Rated Voltage	DC 12V	DC 24V
Breakaway Torque	3.5 kgf - m min. @ 12V	3.5 kgf - m min. @ 24V
Minimum Engagement Voltage	7.5 V @ air gap 0.6mm REF.	16V @ air gap 0.6mm REF.
Power Consumption	49 watts max	34 watts max
Belt Type	A Type	
Maximum Allowable Belt Tension	60 kgf per belt	
Pulley Diameter	$\phi 132$ mm ( 5.2 In. )	
Clutch Type	Heavy Duty	

Note: Models with 24 volt clutch have 280mm , green lead wire.

Compressor Specification	Model No.	
	4434	4435
Oil Type	SP-15	SP-15
Refrigerant	R134a	R134a
Oil Quantity	200 cc ( 6.76 fl. oz.)	
Displacement Per Revolution	154.9 cc / rev. ( 9.5 cu. In. / rev. )	
Maximum Allowable Speed	7000 R.P.M.	
Maximum Allowable Continuous Speed	6000 R.P.M.	
Weight	7.6 kg ( 16.8 LBS.)	

Note: All dimensions are metric, not drawn to scale, and for reference only

# Fittings

Each FLX7 model has a pad style cylinder head ready to accept any of the six hose fittings. The fittings have the following features:

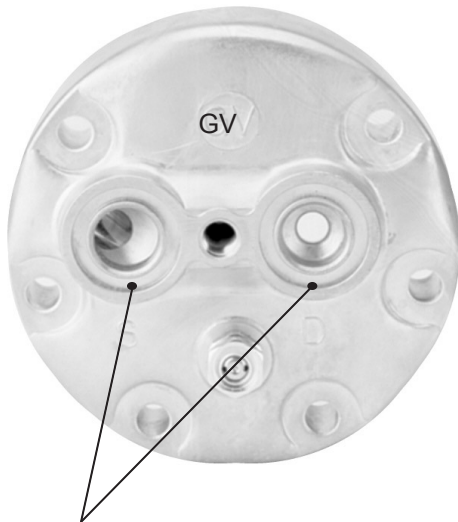
- Forged Steel Construction
- Low Profile Design
- Powder Coated for Rust Protection
- Horizontal and Vertical Configurations
- Variety of Hose Thread Options



Part #	4865-6340
Orientation	Horizontal
Thread Size	3/4 x 7/8



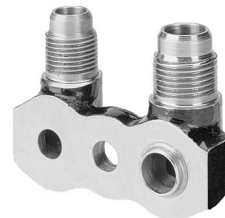
Part #	4866-6340
Orientation	Vertical
Thread Size	3/4 x 7/8 (short)



Note: O-rings are installed on FLX7 compressors to form seal between fitting and compressor. If needed, additional o-rings may be purchased separately (part # 7801-0500)



Part #	4867-6340
Orientation	Vertical
Thread Size	1" x 14



Part #	4868-6340
Orientation	Vertical
Thread Size	3/4 x 7/8 (Flare)



Part #	4869-6340
Orientation	Horizontal
Thread Size	1" x 14



Part #	4870-6340
Orientation	Vertical
Thread Size	1" x 14 (long)



# Jumper Wires and Service Oil

For maximum flexibility, the FLX7 series has a variety of clutch lead wire options:

**1** A sealed Packard Terminal is attached to the field coil on every FLX7 model.

**2** A jumper wire to convert from the sealed Packard terminal to a bullet type terminal comes standard with every FLX7 model.

**3** A jumper wire to convert from the sealed Packard terminal to a sealed Metri-pack terminal that is commonly used in the Heavy Truck industry. This jumper is sold separately, and will fit every FLX7 model.

Part# 4860-0400 (included with every FLX7 model)

Part# 4861-0400 (sold separately)

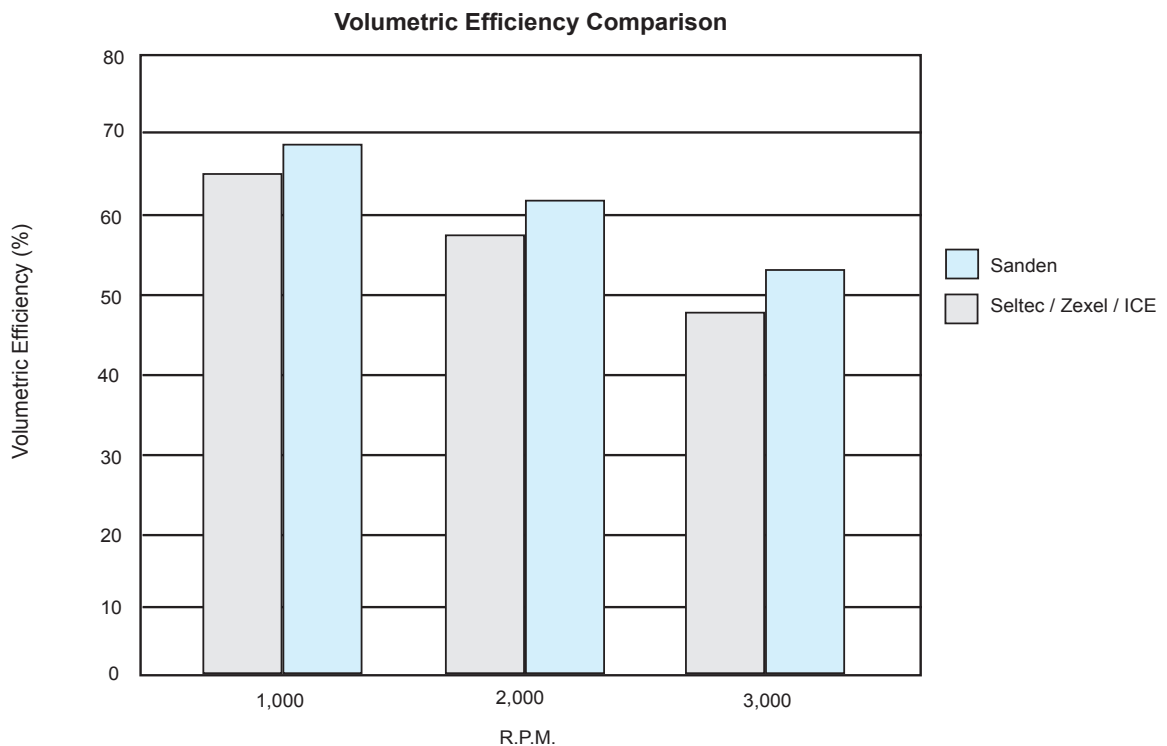
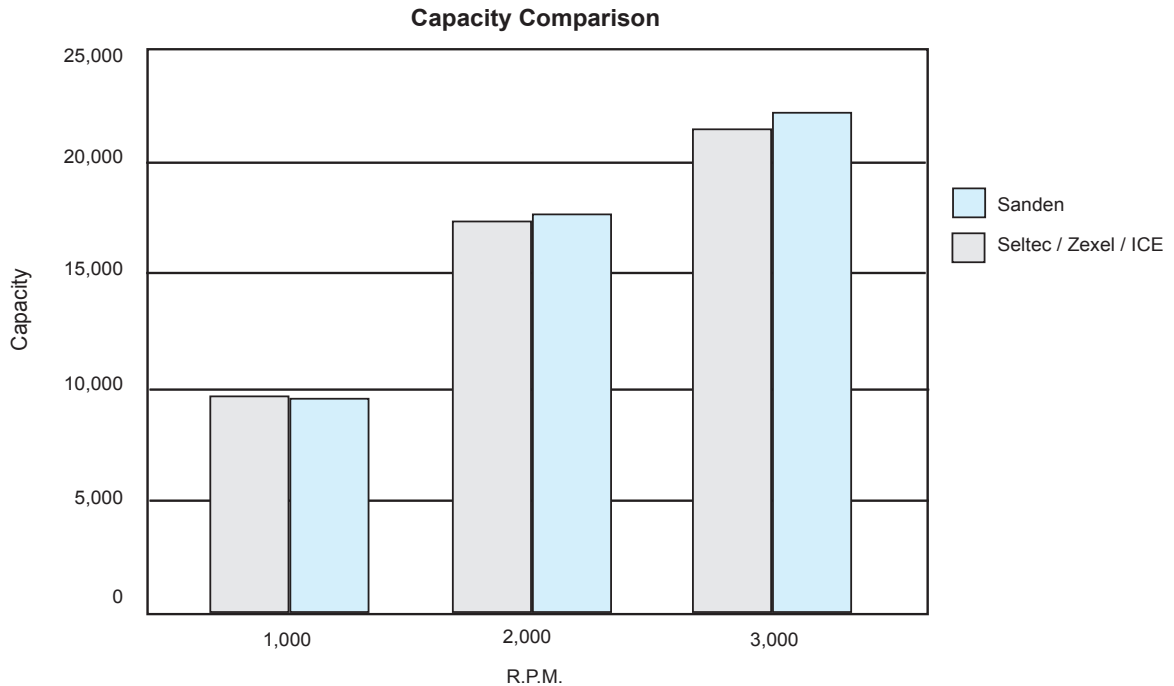


Sanden SP-15 refrigerant oil for R-134a applications is available for purchase. SP-15 comes in 6 packs of 250cc cans (Part# 7803-1996)

# FLX7 vs. The Competition

## Comparison Testing

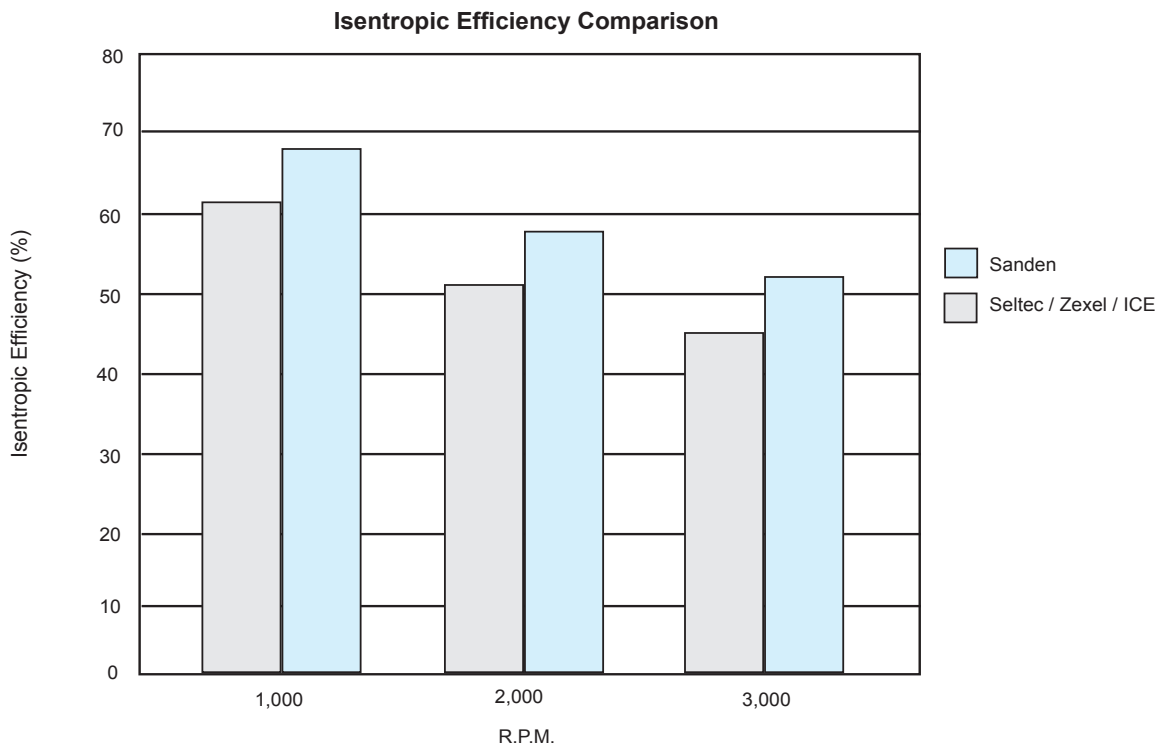
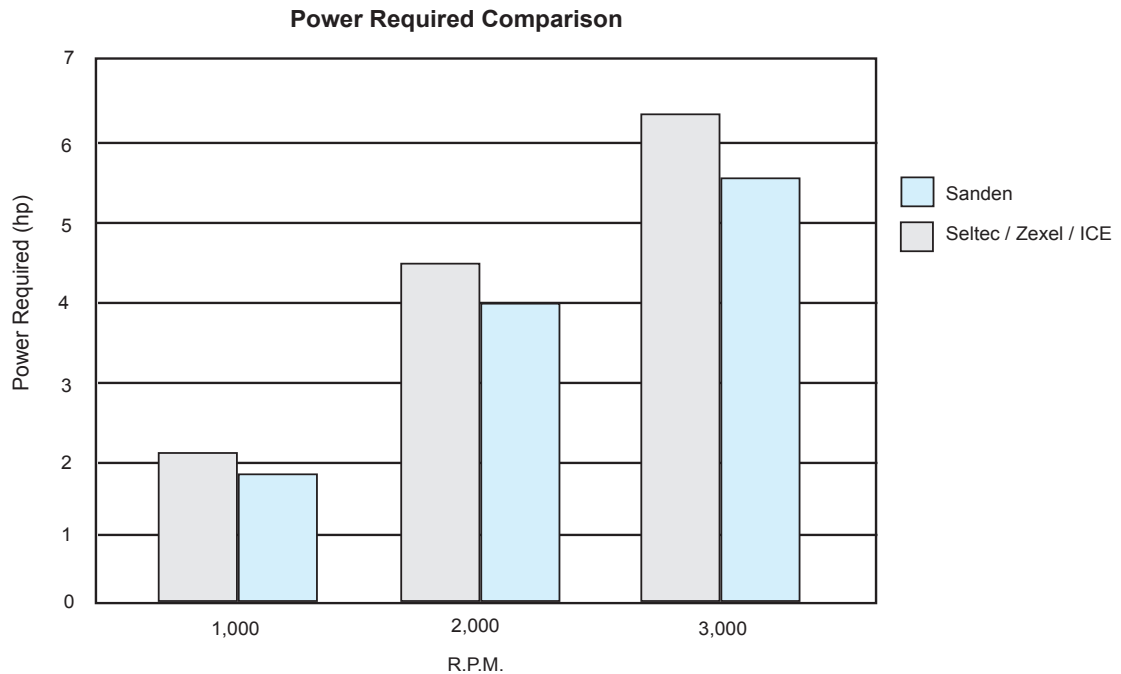
Sanden Engineering labs conducted a comparison test between the Sanden FLX7 (model# 4860) and a Seltec TM-16HD (model 488-4601, ICE equivalent part# 2521180). The objective of the testing was to compare these two product lines in the areas of capacity, volumetric efficiency, power requirements, and isentropic efficiency. The sample size used in each test was three (3) from each manufacturer.



# FLX7 vs. The Competition

## Comparison Testing

The conclusion of the testing demonstrated the FLX7 has greater capacity, higher volumetric efficiency, lower power requirements, and greater isentropic efficiency than the TM-16HD.



## **North American Offices:**

---

### **Sanden International (U.S.A.), Inc.**

601 South Sanden Blvd.  
Wylie, TX 75098 - 4999  
Telephone: 214-442-8400  
Fax: 214-442-8560

### **Sanden Mexicana S.A. de C.V.**

P.O. Box 1145, Carretera,  
Piedras Negra KM55, CP25000  
Saltillo, Coahuila, Mexico  
Telephone: +52-84-15-2500  
Fax: +52-84-16-4407

### **Detroit Regional Office**

47772 Halyard Dr.  
Plymouth, MI 48170  
Telephone: 734-459-1900  
Fax: 734-459-1902

## **European Office:**

---

### **Sanden International (Europe), Ltd.**

Hampshire International Business Park  
Crockford, Lane, Chineham  
Basingstoke, Hants RG24 8WH, U.K.  
Telephone: +44-1256-708-888  
Fax: +44-1256-708-883

## **Asia Office:**

---

### **Sanden International (Singapore) Pte. Ltd.**

Sanden House  
25, Ang Mo Kio Street 65,  
Singapore 569062  
The Republic of Singapore  
Telephone: +65-63113-113  
Fax: 65-6482-4572

## **Australia Office:**

---

### **Sanden International (Australia) Pty. Ltd.**

54 Allingham Street, Condell Park,  
N.S.W. 2200, Australia  
Telephone: +61-2-9791-0999  
Fax: +61-2-9791-9029

## **Main Corporate Office:**

---

### **Sanden Corporation**

1-31-7, Taito, Taito-ku,  
Tokyo 110-8555, Japan  
Telephone: +81-3-3835-1321  
Fax: +81-3-3833-7096



Delivering Excellence