



SEG Series

OIL-INJECTED ROTARY SCREW COMPRESSORS

OPERATOR MANUAL

SEG-5 SEG-10
SEG-7.5 SEG-15



WARNING

Personal injury and/or equipment damage will result by failing to pay attention to the vital safety information and instructions in this manual. Carefully read, understand, and retain all safety information and instructions before operating this compressor.

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1.0 Introduction





Preface

Warning



Read this manual before assembly or operation of the compressor. Become familiar with this information, its safety instructions and its operation before starting unit. Serious personal injury may result if safety and/or operational information is not understood or comprehended.

☉ Alert signals

Description of signals

 Danger	<p>Danger is used to indicate presence of a hazard that will cause severe personal injury, death, or substantial property damage.</p>
 Warning	<p>Warning is used to indicate the presence of a hazard, which can cause severe personal injury, or substantial property damage.</p>
 Caution	<p>Caution is used to indicate the presence of a hazard, which can cause personal injury, or property damage.</p>
 Reference	<p>Supplementary instruction for operation and maintenance</p>



Description of symbols – cont.



Symbols	Description of symbols
	Prohibited
	Extreme caution

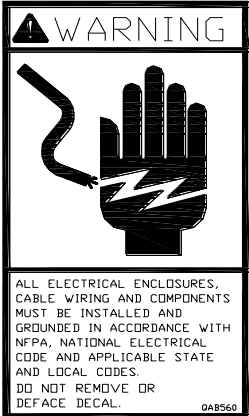
☉ **Warning Labels are placed on the machines.**
 If the labels are not clear or missing, contact FS CURTIS directly.

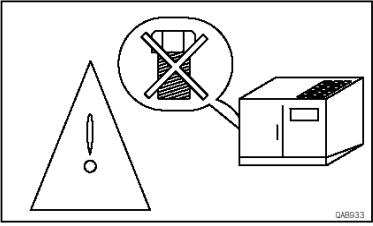
☉ **Explanations of safety symbols**

<p>Operation manual</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;">CAUTION</p> <p>READ AND UNDERSTAND THE INSTRUCTION MANUAL BEFORE INSTALLING AND OPERATING THIS UNIT. FAILURE TO FOLLOW THE OPERATION AND MAINTENANCE PROCEDURES COULD RESULT IN SEVERE INJURY OR DAMAGE. ONLY QUALIFIED PERSONNEL SHOULD OPERATE OR MAINTAIN THIS ROTARY SCREW COMPRESSOR.</p> <p style="text-align: right; font-size: small;">048545</p> </div>	<p>Follow the instructions before using this compressor.</p> <p>Confirm the direction of motor rotation before startup.</p> <p>See Section 5.5 for instructions</p>
<p>Caution before startup</p>	<p>To restart compressor after a long period of being inactive, rotate air end manually with the power off. If it is difficult to rotate, contact FS CURTIS directly.</p>

	<p>Danger: Electric circuits</p>
	<p>Danger: Rotating parts</p>
	<p>Danger: Hot or noxious gas outlet: Not Breathable</p>
	<p>Danger: Heat. Do not touch hot areas</p>
	<p>Rotation</p>

	<p>Read instruction</p>
	<p>Hearing protection required</p>

	<p>Turn off power supply before maintenance or service around electric equipment, such as starter, and motor.</p>
--	---

	<p>Remove the 2 <u>RED</u> Shipping Brackets that secure the motor/airend to the base frame before test run or startup. Contact FSCURTIS or distributor for assistance if necessary.</p>
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Safety

1. Become familiar with this manual and follow the instructions before operating the compressor.
2. If any malfunctions or trouble has occurred, do not run compressor until problem is resolved.
3. Make sure the compressor has been disconnected before servicing or changing parts. Lockout and tagout prior to maintenance.
4. To ensure human safety and protect the facility from damage, an electrical ground is necessary.
5. Wear proper apparel during operation. Protective clothing should be worn such as facemask or safety goggles and non slip footwear.
6. Optional Dryer should be connected to separate 120V power source and follow Lockout/Tagout procedures for inspection or maintenance.

Additional Safety information for Air Compressors

Like all power tools, there is danger associated with operating this equipment. Accidents are frequently caused by lack of familiarity or failure to pay attention. Use this machine with extreme caution. If normal safety precautions are overlooked or ignored, serious personal injury may occur.

The following are some safety suggestions that users should observe:

Caution

- Users that neglect these safety precautions run the risk of serious injury or death.
- Fingers and clothing must be kept away from rotating parts.
- Compressed air from this machine cannot be used for pharmaceutical, food or health requirements without further treatment.
- Release all pressure from the system prior to maintenance.
- Electric shock could be fatal.
- Grounding of starter and motor is necessary. Choose grounding cable according to the power range of the compressor.
- Lockout and tagout power supply before working on control panel.
- Lockout and tagout power supply before inspection and maintenance - compressor is controlled by PID and may start automatically according to the setting.
- Optional Dryer should be connected to separate 120V power source and follow Lockout/Tagout procedures for inspection or maintenance.

Warning

- Users who neglect the following instructions may damage the compressor.
- Lockout and tagout the compressor if maintenance is needed.
- Lockout and tagout power supply before inspection and maintenance - compressor is controlled by PID and may start automatically according to the setting.
- Optional Dryer should be connected to separate 120V power source and follow Lockout/Tagout procedures for inspection or maintenance.
- Relief valve is necessary for air piping larger than 1/2".
- Do not exceed the rated discharge pressure on nameplate during operation.
- The enclosure should be in place prior to operation

2.0 Receiving and Installation

A. Receiving

1. Check that your shipment matches your order.
2. Check for any damage that may have occurred during shipment.

B. Installation.

In order to ensure proper installation and trouble free operation with minimal maintenance:

1. Select a location where light is adequate enough to operate, maintain, and inspect the compressor.
2. A clean, low relative humidity and well-ventilated area is best for safe operation. The ambient temperature should be kept below 104°F (40°C). The air delivery of the compressor will decrease as the temperature gets higher.
3. Reserve space for maintenance, the distance between the compressor and the wall or other equipment must be greater than 28 inches (71 cm).
4. There must be at least 3 feet of clearance between top of compressor and any over head obstructions.
5. To avoid damage to the unit, lift using eyebolts and straps as shown in Figure 2.1

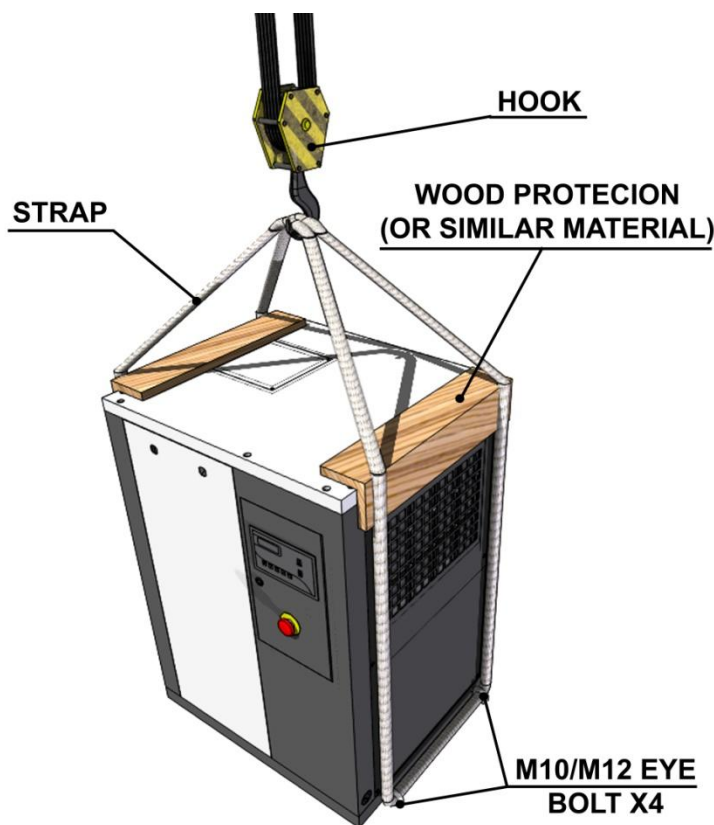


Figure 2.1

C. Precaution for piping foundation and cooling system

1. Air piping

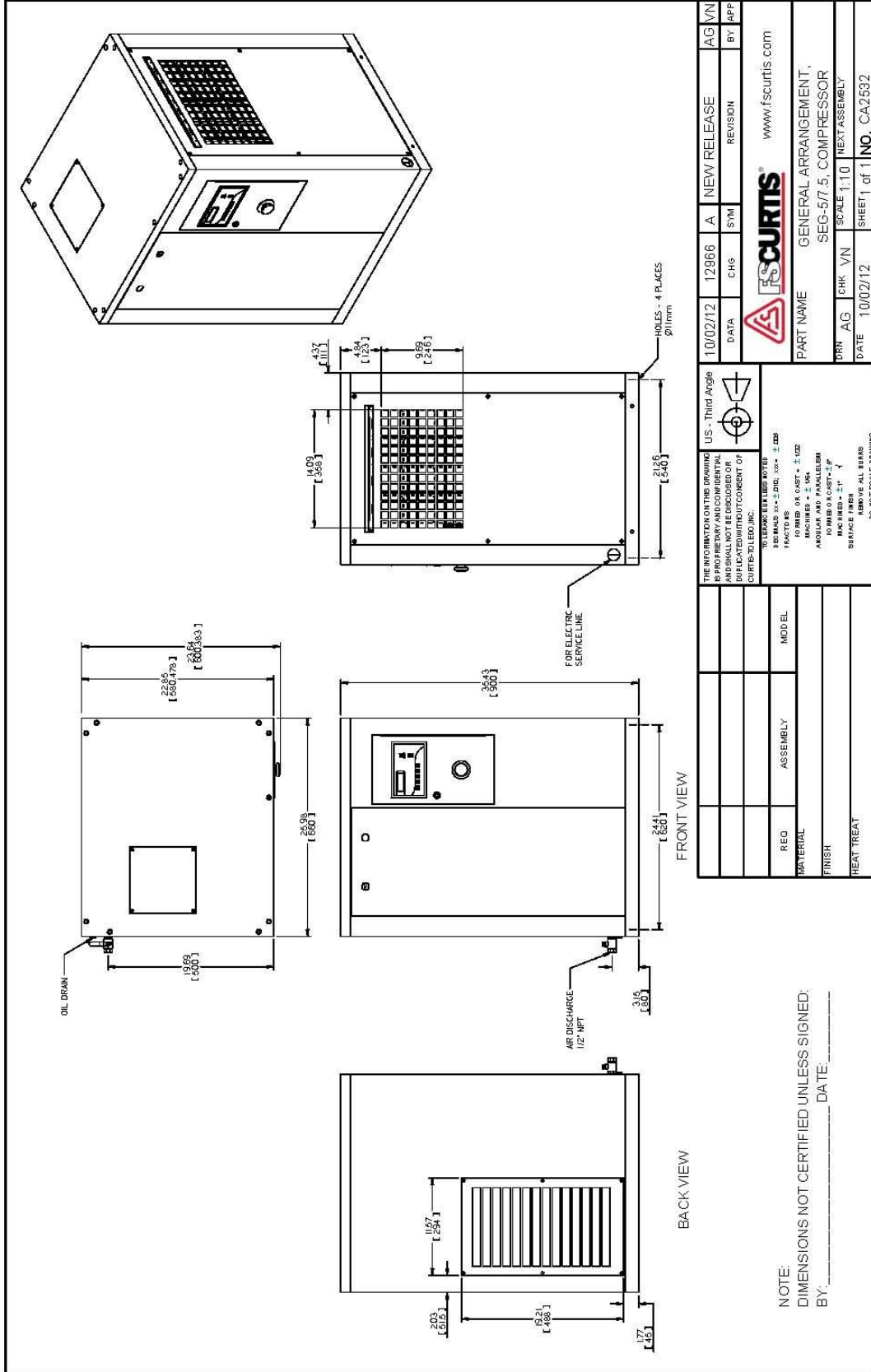
- (1). Install required accessories.
- (2). Main piping should have 1° - 2° slope away from compressor to drain the condensate.
- (3). Pressure drop of piping must not exceed 5% of discharge pressure. Select larger piping than required for better efficiency.
- (4). Branch line must be located at the top side of main piping to avoid the condensate from flowing to the equipment.
- (5). To prolong service life of pneumatic tools, install an air filter regulator unit on the outlet.
- (6). Do not randomly reduce the size of the main piping. Use the proper reducer if necessary to reduce pressure losses.
- (7). The ideal installation arrangement of air solution is air compressor + air tank + dryer. The air tank is capable of draining some of the condensate and cooling down the temperature of compressed air. This will lead to more efficient dryer operation.
- (8). If the air requirement is large in a short period of time, install a higher volume air tank to reduce the frequency of full/off load control.
- (9). The ideal main piping is constructed around the factory as a loop which is better for delivering compressed air from both sides at any point.

2. Foundation

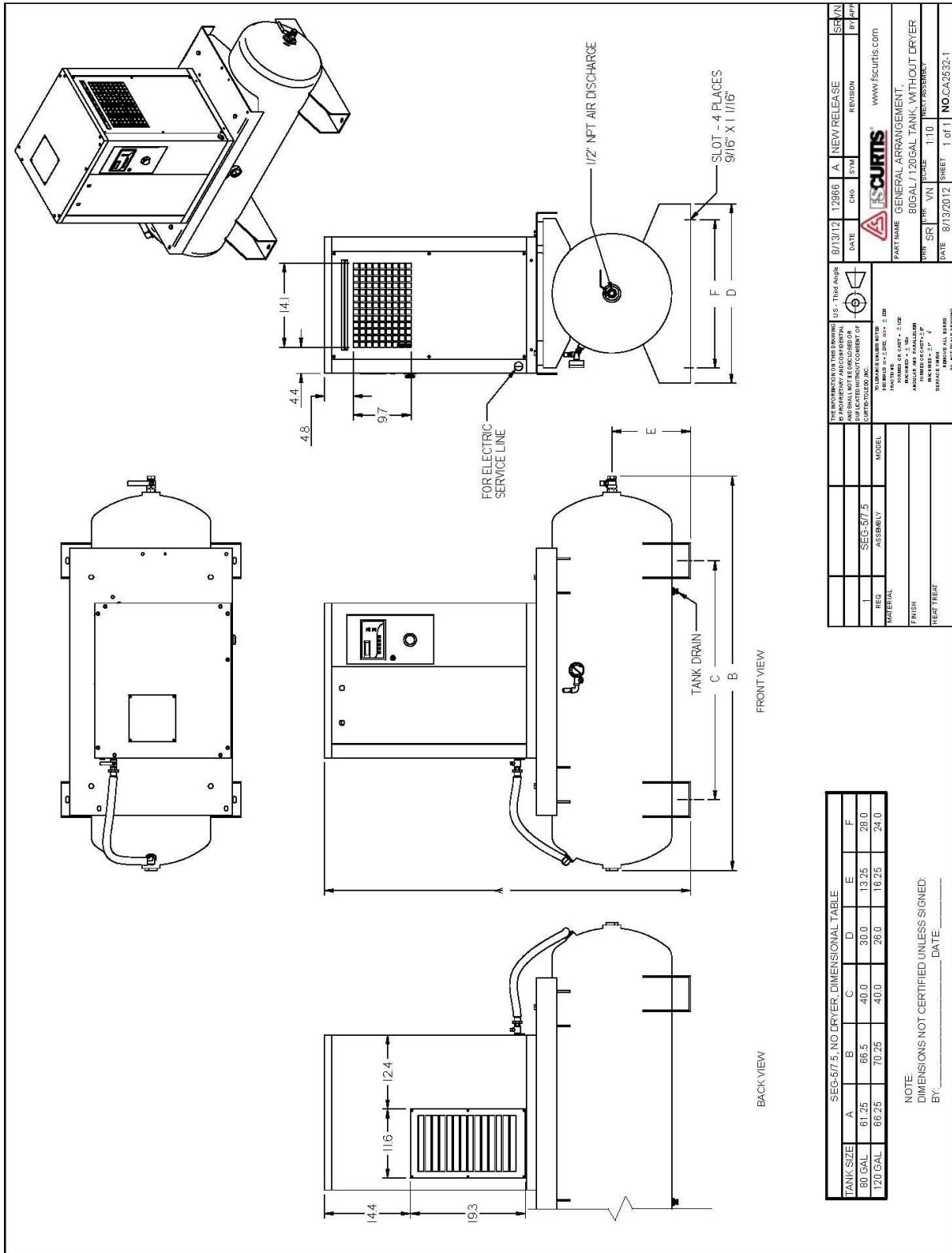
- (1). Select a solid and level surface to install the compressor.
- (2). There is no need to construct a base for the screw air compressor since the vibration is relatively small. However, the area must be flat and strong enough to support the weight of the unit.

3. Cooling system

Install an air-cooled compressor in a well-ventilated area to avoid high temperature shutdown. If placed in a sealed room, air extracting and removal apparatus is required and its capacity must be larger than the cooling fan in the compressor.



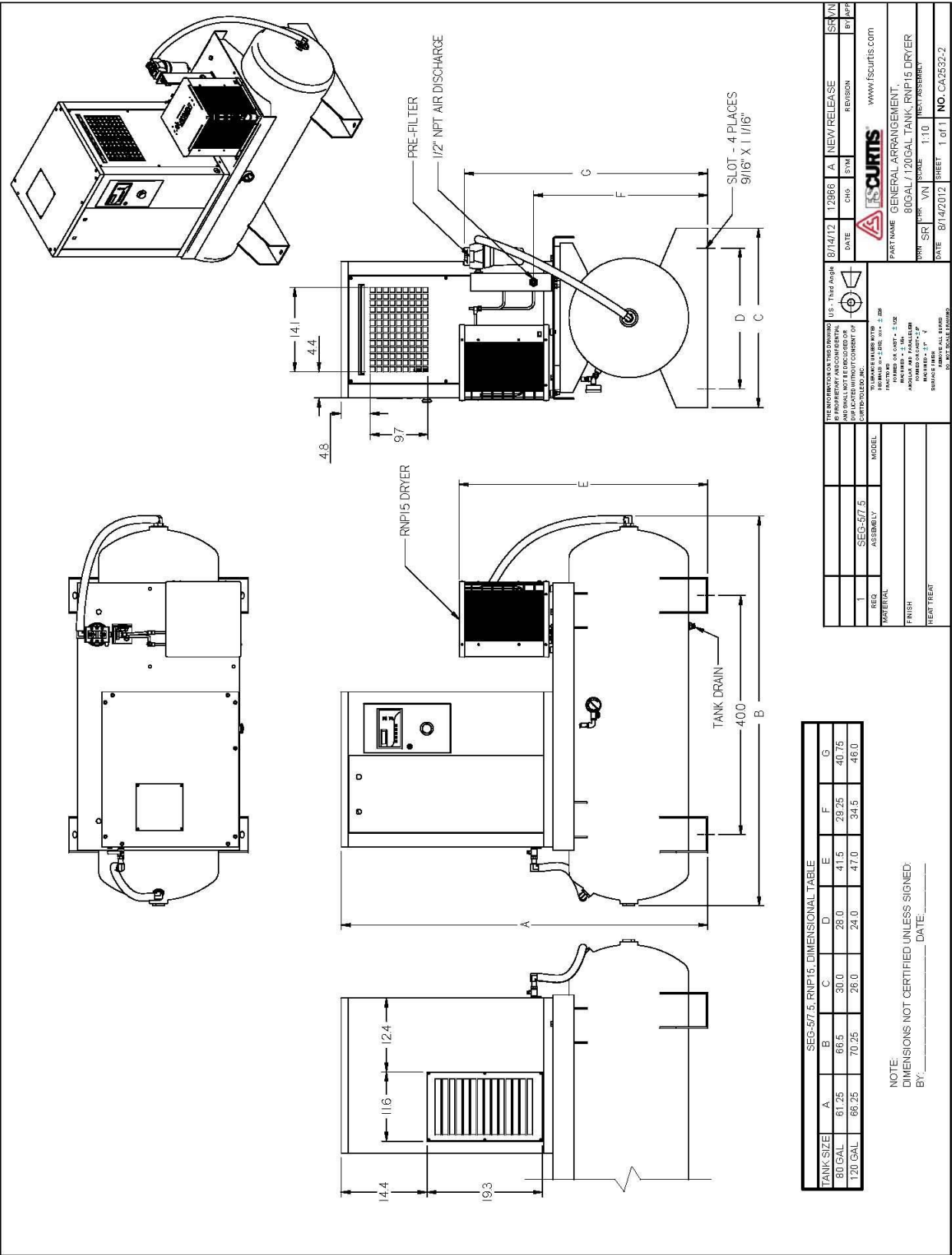
Form DA-412 Rev. A



DATE	8/13/12	12986	A	NEW RELEASE	SEAN
DATE				REVISION	BY
DATE				REVISION	BY
PARTNAME GENERAL ARRANGEMENT. 80GAL / 120GAL TANK, WITHOUT DRYER					
DATE	8/13/2012	SHEET	1 of 1	NO:CA2532-1	Form 04/92 Rev. A

TANK SIZE	A	B	C	D	E	F
80 GAL	61.25	66.5	40.0	30.0	13.25	28.0
120 GAL	66.25	70.25	40.0	26.0	16.25	24.0

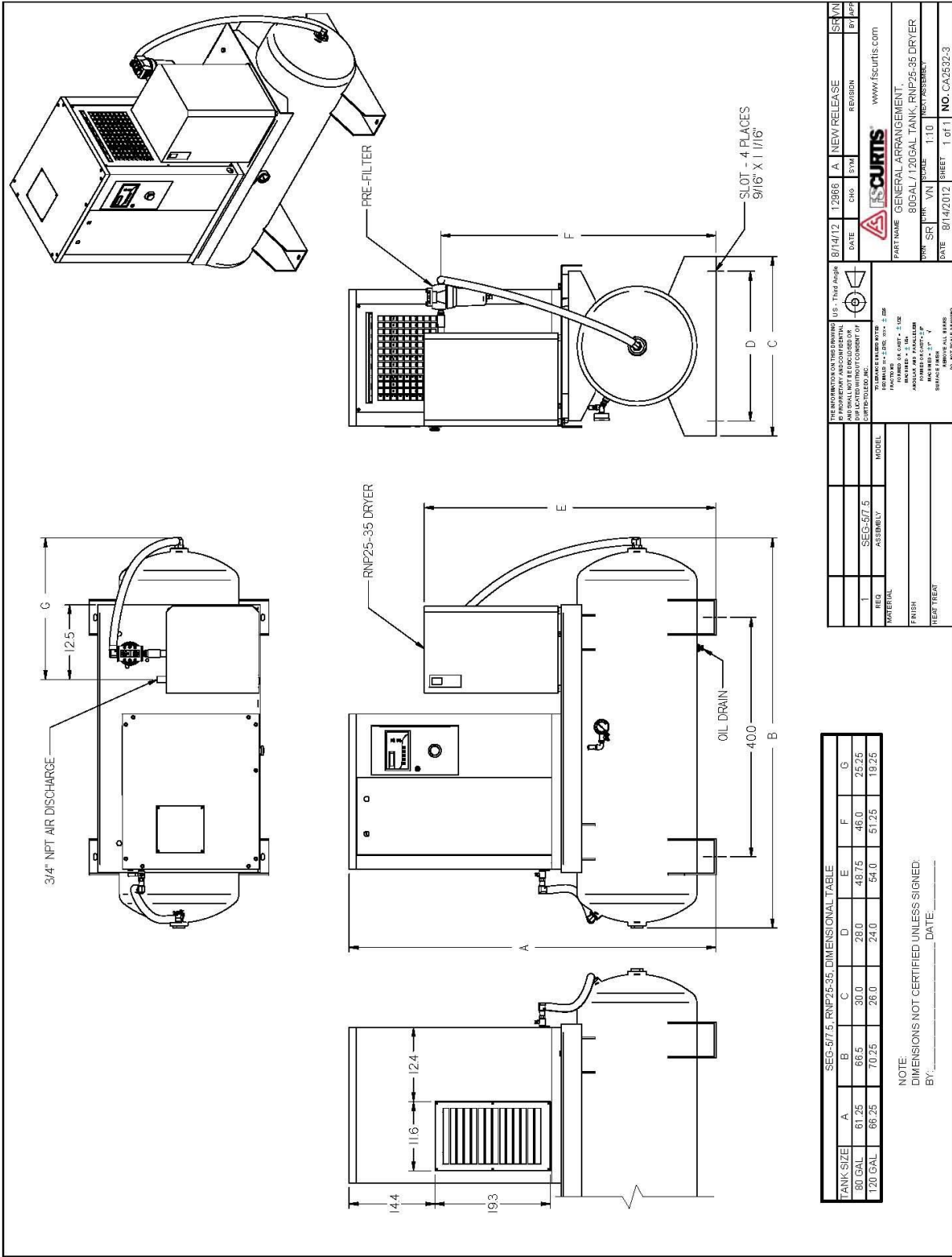
NOTE: DIMENSIONS NOT CERTIFIED UNLESS SIGNED:
 BY: _____ DATE: _____



TANK SIZE	A	B	C	D	E	F	G
80 GAL	87.25	66.5	30.0	28.0	41.5	29.25	40.76
120 GAL	88.25	70.25	26.0	24.0	47.0	34.5	45.0

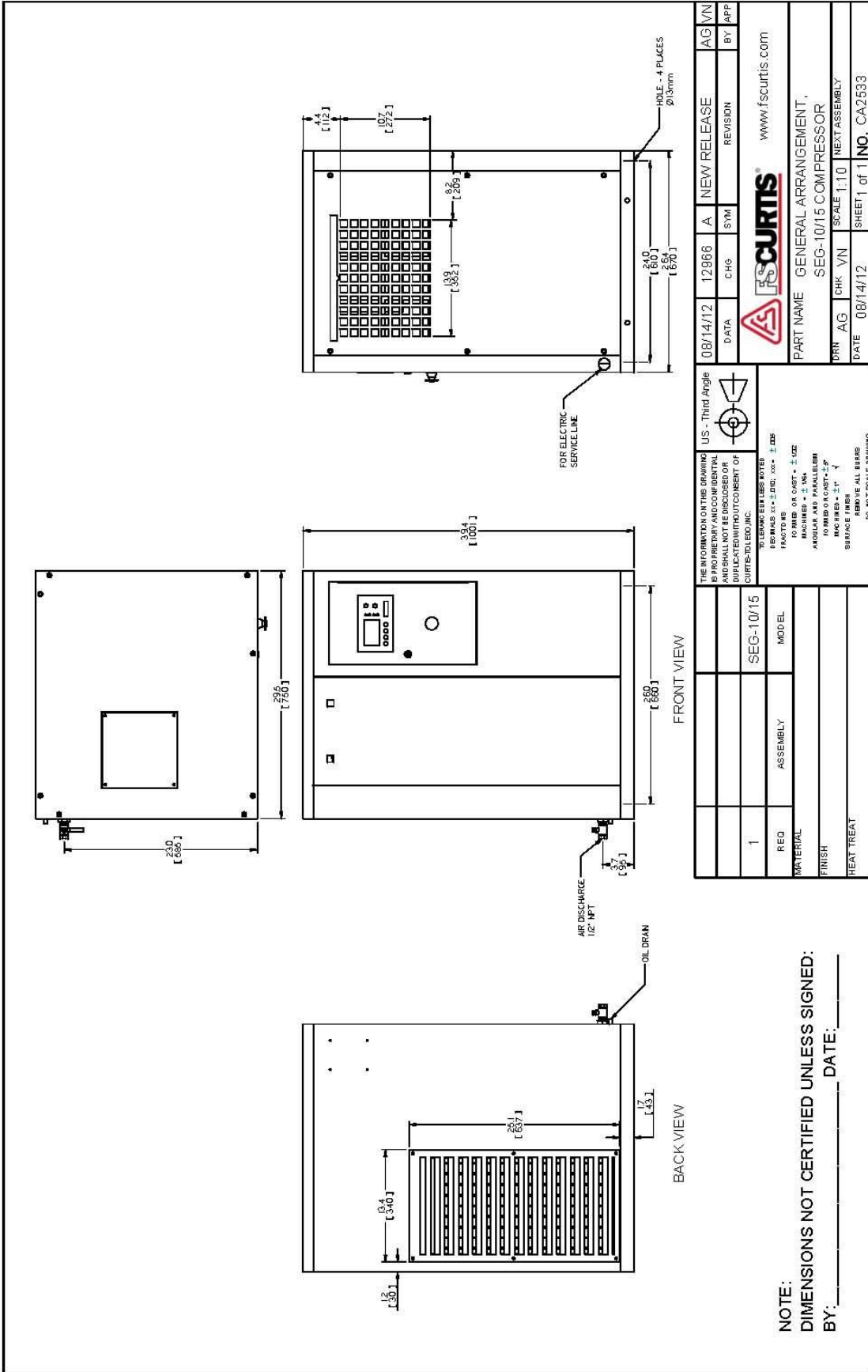
NOTE:
DIMENSIONS NOT CERTIFIED UNLESS SIGNED:
BY: _____ DATE: _____

INFORMATION ON THIS DRAWING THIS DRAWING IS THE PROPERTY OF SCURTIS AND SHALL NOT BE REPRODUCED OR DISCLOSED WITHOUT CONSENT OF SCURTIS.		U.S. - Third Angle 	DATE: 8/14/12 DRAWN BY: A CHECKED BY: A REVISION:	SR/VN BY: APT
REMARKS: 1. THIS DRAWING IS FOR THE 80 GAL. / 120 GAL. TANK, RNPI5 DRYER. 2. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED. 3. SURFACE FINISH: Y 4. REMOVE ALL SHARP EDGES AND CHAMFERED.		PART NAME: GENERAL ARRANGEMENT, 80 GAL / 120 GAL TANK, RNPI5 DRYER TANK SIZE: 80 GAL / 120 GAL SCALE: 1:10 DATE: 8/14/2012 SHEET: 1 of 1 NO. CA2532-2	www.scurtis.com	Form QA-412 Rev. A



TANK SIZE	A	B	C	D	E	F	G
80 GAL	61.25	66.5	30.0	28.0	48.75	46.0	25.25
120 GAL	66.25	70.25	28.0	24.0	54.0	51.25	19.25

NOTE:
DIMENSIONS NOT CERTIFIED UNLESS SIGNED:
BY: _____ DATE: _____



1		SEG-10/15	MODEL
MATERIAL		ASSEMBLY	MODEL
FINISH			
HEAT TREAT			

THE INFORMATION ON THIS DRAWING IS PROPRIETARY AND CONFIDENTIAL AND SHALL NOT BE DISCLOSED OR REPRODUCED IN ANY MANNER WITHOUT THE WRITTEN CONSENT OF CURTIS INDUSTRIES, INC.		US - Third Angle	AG/VN
TOLERANCE UNLESS NOTED: DIMENSIONS IN INCH: .005" ± .002 DIMENSIONS IN MILLIMETER: .125 ± .050 MACHINED OR CAST: ± .002 MACHINED: ± .004 HOLE TO HOLE OR PARALLEL: ± .002 MACHINED: ± .002 MACHINED: ± .004 HOLE TO HOLE OR PARALLEL: ± .002 HOLE TO HOLE OR PARALLEL: ± .004 HOLE TO HOLE OR PARALLEL: ± .004 HOLE TO HOLE OR PARALLEL: ± .004 DO NOT SCALE DRAWING		DATE: 08/14/12	REVISION
DRN	AG	CHK	VN
SCALE	SCALE		SCALE
SCALE	SCALE		SCALE

DATE	08/14/12	SHEET	1 of 1	NO.	CA2533
FORM	Form OA-412 Rev. A				

DRN	08/14/12	12966	A	NEW RELEASE	AG/VN
DATA	CHG	SYM	REVISION	BY	APP
PART NAME GENERAL ARRANGEMENT, SEG-10/15 COMPRESSOR					
SCALE 1:10 NEXT ASSEMBLY					
www.fscurtis.com					

NOTE: DIMENSIONS NOT CERTIFIED UNLESS SIGNED:
 BY: _____ DATE: _____

FOR ELECTRIC SERVICE LINE

AIR DISCHARGE 1/2" NPT

TANK ORIGIN

SLOT - 4 PLACES 9/16" X 1 1/16"

264

150

126

150

139

8.2

0.7

4.4

29.6

26

40

40

A

B

C

D

E

F

G

DIMENSIONAL TABLE

TANK SIZE	A	B	C	D	E	F	G
80 GAL	66.5"	70.25"	30"	40"	28"	13.25"	26"
120 GAL	70.5"	70.25"	26"	40"	24"	18.25"	31.25"

1

REG

ASSEMBLY

MODEL

SEG-10/15

US - Third Angle

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TO ORDER: PART NUMBER NOTES

FORMS: ± 2 DIA. $\pm .005$ $\pm .005$

FINISHES: $\pm .002$ $\pm .002$

ARCHIVES: $\pm .004$

ANGLES: $\pm .005$

TO ORDER: ROUGHNESS: $\pm .5$

SURFACE FINISH: $\pm .1$

REMOVE ALL BURRS

DO NOT SCALE DRAWING

DATE: 08/14/12

CHK: VN

SCALE: 1:20

SHEET 1 of 1

NO. CA2533-1

REVISION

AG: VN

DATE: 08/14/12

12986

A

NEW RELEASE

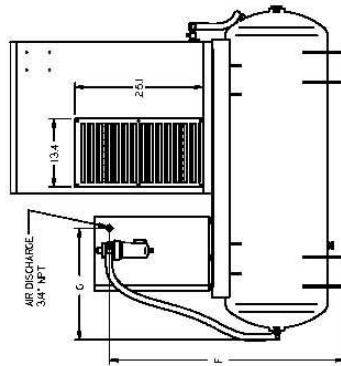
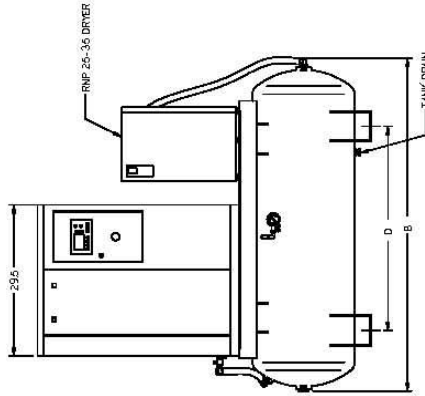
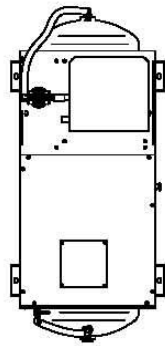
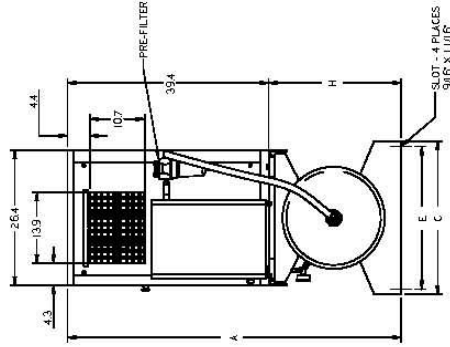
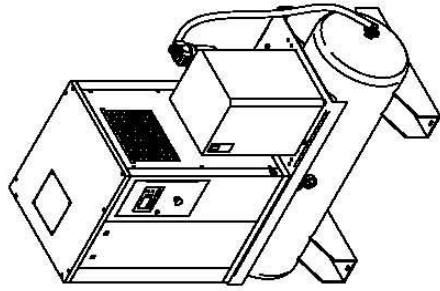
BY: APP

www.fscurtis.com

PART NAME GENERAL ARRANGEMENT,
80 GAL / 120 GAL TANK, WITHOUT DRYER

NOTE:
DIMENSIONS NOT CERTIFIED UNLESS SIGNED:
BY: _____ DATE: _____


Form 04-412 Rev. A




FRONT VIEW

BACK VIEW

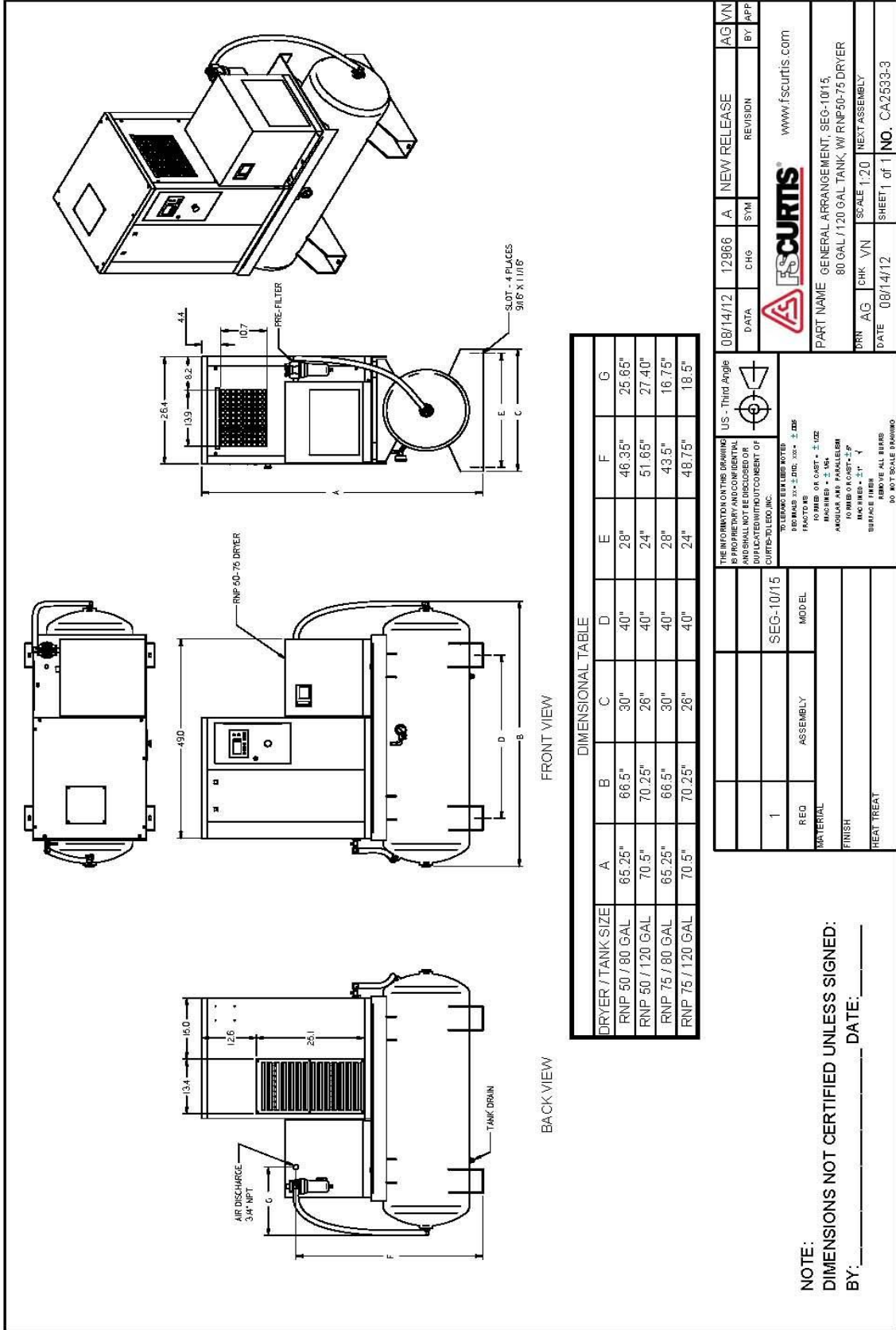
TANK SIZE	A	B	C	D	E	F	G
80 GAL.	65.25"	30"	40"	28"	46"	22"	
120 GAL.	70.25"	26"	40"	24"	51.25"	23.75"	

08/14/12 12966 A NEW RELEASE AG V N
 DATA CHG SYM REVISION BY: AFP
 www.fscurtis.com
 PART NAME GENERAL ARRANGEMENT, SEG-10/15
 80 GAL / 120 GAL TANK, W/ RNP25-35 DRYER
 DRN AG CHK YN SCALE 1:20 NEXT ASSEMBLY
 DATE 08/14/12 SHEET 1 of 1 NO. CA2533-2

US - Third Angle

 THE INFORMATION ON THIS DRAWING IS UNLESS OTHERWISE SPECIFIED TO BE IN ACCORDANCE WITH THE FIRST ANGLE METHOD OF PROJECTION AND UNLESS OTHERWISE SPECIFIED TO BE IN ACCORDANCE WITH THE FIRST ANGLE METHOD OF PROJECTION.
 TELEPHONE: 800-368-2262
 FAX: 800-368-2262
 10000 W. 100th St., Suite 100
 Minneapolis, MN 55438
 ANGLES ARE PARALLEL TO THE DRAWING PLANE
 UNLESS OTHERWISE SPECIFIED
 SURFACE FINISH: UNLESS OTHERWISE SPECIFIED
 DO NOT SCALE DRAWING

1	SEG-10/15	MODEL
REG	ASSEMBLY	MODEL
MATERIAL		
FINISH		
TREAT		

NOTE: DIMENSIONS NOT CERTIFIED UNLESS SIGNED:
 BY: _____ DATE: _____



FRONT VIEW

BACK VIEW

DIMENSIONAL TABLE

DRYER / TANK SIZE	A	B	C	D	E	F	G
RNP 50 / 80 GAL	65.25"	30"	40"	28"	46.35"	25.65"	25.65"
RNP 60 / 120 GAL	70.5"	30"	40"	24"	51.65"	27.40"	27.40"
RNP 75 / 80 GAL	65.25"	30"	40"	28"	43.5"	18.75"	18.75"
RNP 75 / 120 GAL	70.5"	26"	40"	24"	48.75"	18.5"	18.5"

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SYSTEMS NOTES:
 DIMENSIONS 3/16" ± DIM. 1/32" ± DIM.
 FINISHES: RZ OR CAST ± 1.0Z
 MACHINES ± .004
 ANGLE AND PARALLELISM
 10 TIMES UNLESS SPECIFIED
 SURFACE FINISH
 REMOVE ALL BEARS
 DO NOT SCALE DRAWING

REVISIONS:

NO.	DESCRIPTION	DATE	BY	APP
1	NEW RELEASE	08/14/12	12966	AG/VN

DATE: 08/14/12 SHEET 1 of 1 NO. CA2533-3

SCALE: 1:20

NEXT ASSEMBLY

PART NAME: GENERAL ARRANGEMENT, SEG-10/15, 80 GAL / 120 GAL TANK, W/ RNP50-75 DRYER

WWW.FSCURTIS.COM

REQUIREMENTS:

REQ	ASSEMBLY	MODEL
1	SEG-10/15	

NOTE: DIMENSIONS NOT CERTIFIED UNLESS SIGNED: _____ DATE: _____

D. Electrical

A qualified electrician in compliance with standards and local codes should do all electrical wiring. Be sure to investigate local requirements before installing the compressor. Refer to the wiring diagram before starting any work.

The power supply should be adequate and free of parasitic loads that may cause a low voltage condition during the operation of the compressor; otherwise, there may be nuisance electrical shutdowns. This equipment requires a properly grounded electrical disconnect switch.

We recommend the use of time delay fuses in a fusible disconnect for isolating the unit. This disconnect should be located so an operator can disconnect the unit without being near the unit in case of an emergency. We also recommend the use of a lockout/tagout to help insure safety during maintenance of the compressor. Per the National Electric Code the time delay fuses should be sized at 175% of the full load amperage (FLA) found on the motor nameplate. Consult the Code if you want to use another style of branch circuit protection.



WARNING

Failure to properly ground compressor package could result in controller malfunction.

All internal wiring has been done at the factory. Wiring of the power supply to the compressor should be done by a qualified electrician to comply with the National Electric Code, state code, and any local codes in accordance with the wiring diagram specific to your compressor model shown in the included wire diagram.

Chart of Unit Max Amp Draw (Motor SFA)

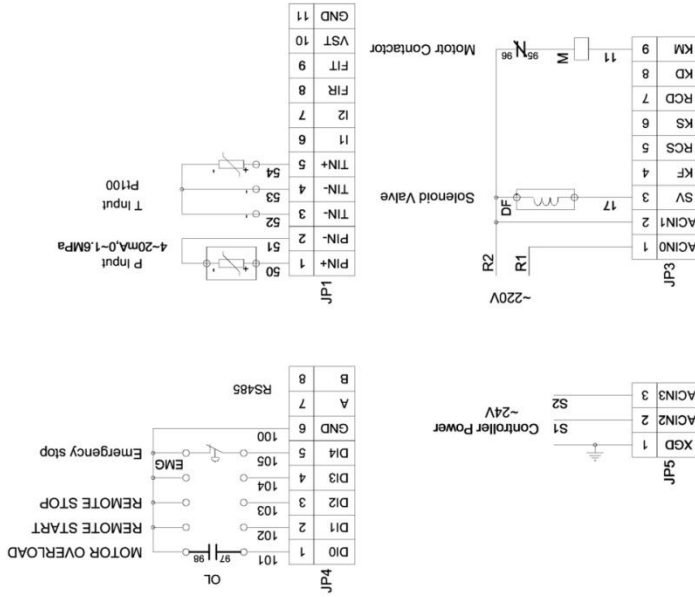
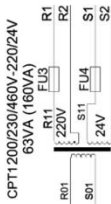
Model		230 V	460 V
SEG-5	Amp Draw	16.1	8.1
SEG-7.5	Amp Draw	21.6	10.8
SEG-10	Amp Draw	28.8	14.4
SEG-15	Amp Draw	41.6	20.8

Figure: 2-1

Note: Optional Dryer should be connected to separate 120V power source and follow Lockout/Tagout procedures for inspection or maintenance.

CUSTOMER TO SUPPLY PROPERLY PROTECTED
POWER SOURCE AS PER LOCAL CODES
(USE 60 C OR 75 C COPPER WIRE ONLY)

POWER SOURCE
(BY CUSTOMER)



CPT-1 VA RATING/VOLTAGE	FUSE CHART		
	FUSE SIZE FU1 & FU2	FU3	FU4
100VA/200-230-460V	1.5-1.5-1.0A		FU4
80VA/220V 20VA/24V	0.5A		1.25A
160VA/200-230-460V	2.5-2.5-1.0A		
140VA/220V 20VA/24V	1.25A		1.25A

REQ	ASSEMBLY	MODEL
SEG-5/15		
MATERIAL		
FINISH		
HEAT TREAT		
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11/08/12	12966	B	REMOVE CURRENT TRANSFORMER METAL OVERCURRENT RELEASE OPERATE FUSES	VN	-
10/16/12	12966	A	NEW RELEASE	VN	-
DATA	CHG	SYM	REVISION	BY	APP
www.fscurtis.com					
PART NAME					
WIRING SCHEMATIC FVNR					
SEG-5/15					
DRN	VN	CHK	VN	SCALE	1:1
DATE	10/16/12	SHEET 1 of 1		NO.	1481065

Form QA-412 Rev. A

3.0 General Description

COMPRESSOR

The compressor assembly is an oil flooded positive displacement, single stage, helical screw type unit consisting of two rotors or screws supported axially by roller bearings and enclosed in a housing or stator as depicted in the sectional view Figure 3-1.

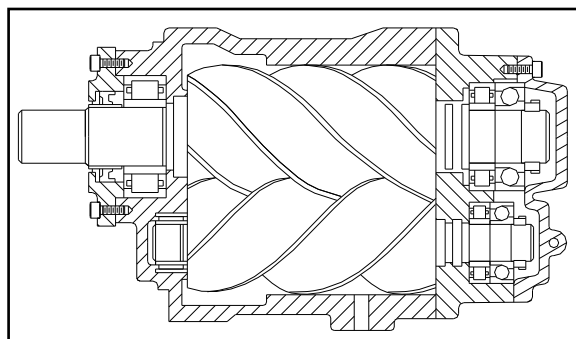


Figure 3-1
Compressor Assembly

In operation, as depicted below in the compression cycle (Ref. Figure 3-2), air enters the compressor through the inlet port becomes trapped between the helical lobes of the main rotor and the matching grooves of the secondary rotor (A). As the rotors turn air is trapped in the cavity created by the mashing lobe and groove and reduced in volume or “compressed”. It is then pushed through the successive cavities (B) until it reaches the discharge end of the compressor (C) and is sent to the oil separator.

During the compression cycle, oil is injected into the compressor for the purpose of dissipating the heat of compression and to seal the internal clearances. The compressed air laden with oil leaves the compressor through the discharge port and enters a reservoir where the oil and air are separated. This process delivers a smooth flow of compressed air at the desired pressure.

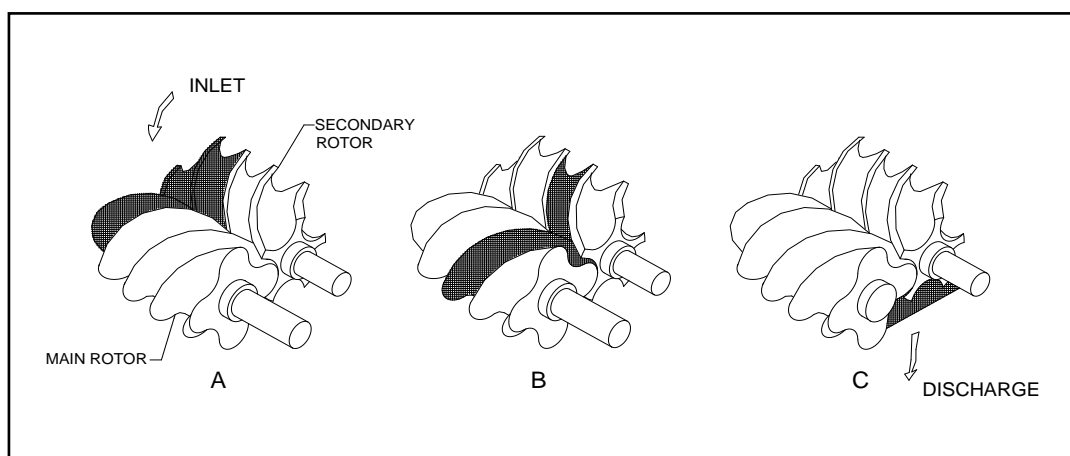


Figure 3-2
Compression Cycle

AIR/OIL FLOW

Air enters the compressor through the air filter and air inlet valve where it is mixed with oil. After compression, the air/oil mixture is discharged into the oil receiver tank. The oil is removed as the air passes through the Air/Oil Separator element. Oil collected at the bottom of the separator element is returned to the inlet of the compressor through the scavenger line that is equipped with a sight glass for monitoring the flow of oil to determine when separator replacement is necessary. The coalesced air then passes through the minimum pressure valve set to maintain a minimum of 65 PSI in the oil separator to ensure a sufficient flow of oil to the compressor. The compressed air is discharged to its point of use or enters the aftercooler on SEG-10 & 15 models where it is then cooled and discharged to its point of use.

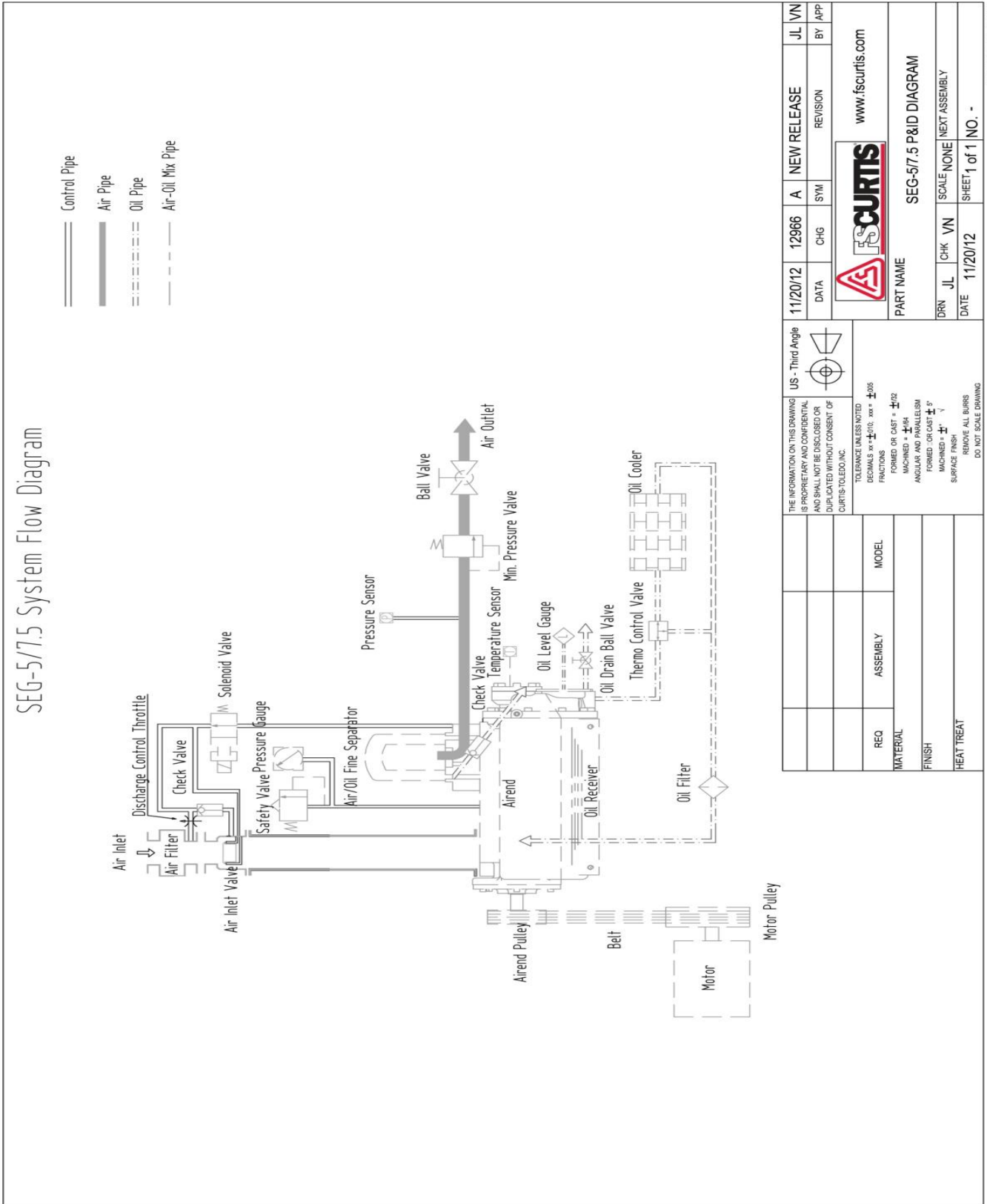
A sufficient amount of oil is stored in the Oil Receiver Tank and is forced by the pressure of compression from the separator to the thermal by-pass valve, which regulates its flow into the oil cooler depending on the temperature of the oil. The thermal valve will open when the oil reaches a predetermined temperature allowing the hot oil to enter the cooler. Oil, which has not reached this temperature setting will by-pass the cooler.

The oil is then filtered and sent to the compressor to initiate the compression cycle. The oil also serves as lubrication for the compressor bearings.

4.0 System flow diagram and components function

A. System flow diagram and components function

SEG-5 & 7.5 System Flow Diagram



11/20/12		12966	A	NEW RELEASE	JL	VN
DATA		CHG	SYM	REVISION	BY	APP
		www.iscortis.com				
PART NAME						
SEG-5/7.5 P&ID DIAGRAM						
DRN	JL	CHK	VN	SCALE	NONE	NEXT ASSEMBLY
DATE	11/20/12	SHEET 1 of 1		NO.	-	

US - Third Angle

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TOLERANCE UNLESS NOTED:
 DECIMALS: xx ±.010; xxx ±.005
 FRACTIONS:
 FORMED OR CAST: ±.1/32
 MACHINED: ±.004
 ANGULAR AND PARALLELISM:
 FORMED OR CAST: ±.5°
 MACHINED: ±.1°
 SURFACE FINISH:
 REMOVE ALL BURRS
 DO NOT SCALE DRAWING

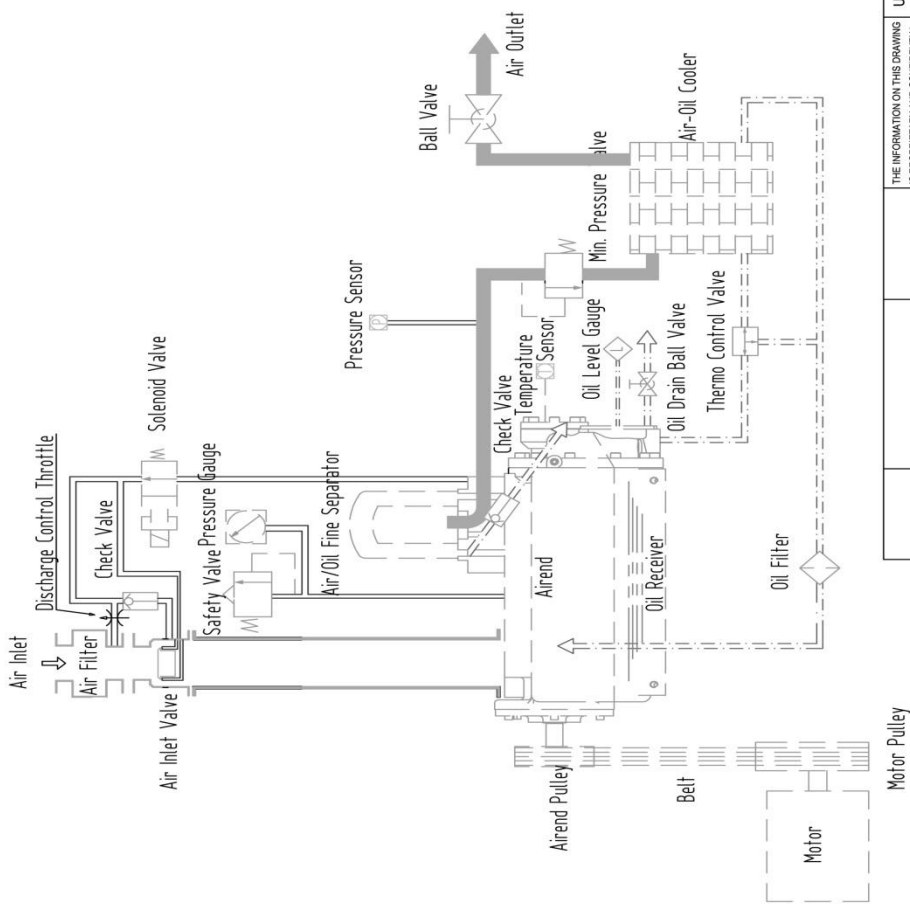
REQ	ASSEMBLY	MODEL
MATERIAL		
FINISH		
HEAT TREAT		


Form QA-412 Rev. A

SEG-10 & 15 System Flow Diagram

SEG-10/15 System Flow Diagram

- Control Pipe
- Air Pipe
- Oil Pipe
- Air-Oil Mix Pipe



		11/20/12	12966	A	NEW RELEASE	JL	VN
		DATA	CHG	SYM	REVISION	BY	APP
		 www.fscurtis.com					
		PART NAME					
		SEG-10/15 P&ID DIAGRAM					
DRN	JL	CHK	VN	SCALE	NONE	NEXT ASSEMBLY	
DATE	11/20/12		SHEET		1 of 1 NO. -		

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TOLERANCE UNLESS NOTED
 DECIMALS xx ±.010; xxx ±.005
 FRACTIONS
 FORMED OR CAST = ±.02
 MACHINED = ±.04
 ANGULAR AND PARALLELISM
 FORMED OR CAST ±.5°
 MACHINED ±.1°
 SURFACE FINISH
 REMOVE ALL BURRS
 DO NOT SCALE DRAWING

REQ	ASSEMBLY	MODEL
MATERIAL		
FINISH		
HEAT TREAT		

B. Description of system flow chart and component function

1. Air flow path (refer to the flow chart for each type)

1.1. After dust is removed by the intake filter, clean air goes through the air inlet valve into the compression chamber and is mixed with oil. The mixture is compressed and delivered into the oil receiver tank, Air/Oil Separator, minimum pressure valve, (and after cooler on SEG-10 & 15 models only).

1.2. Function of parts in the air flow path

(1). Air intake filter

Air intake filter is a suction filter which is a special-purpose air cleaner of the air compressor. For normal environmental use, clean out the dust on the element every 2,000 hours of operation. Do not use compressed air.

(2). Air Inlet Valve

On/Off Load Control : for SEG-5/SEG-7.5/SEG-10/SEG-15 models

The solenoid valve is switched by different capacity controls such as: start, stop, off load. Each will move the piston of the intake valve. The minimum pressure valve (MPV) keeps minimum pressure to maintain oil circulation.

When system pressure is less than the unload setting value, the solenoid valve is activated and the air inlet valve opens fully. When the value is reached, the intake valve closes and the compressor is then running off load.

(3). Temperature Sensor

Lack of oil in circulation will induce high discharge temperature. It displays on the panel through the signal from the thermal couple. General setting value is 212°F (100°C). Do not operate the unit over this temperature otherwise a trip will occur.

(4). Oil Receiver

There is a sight glass on the bottom side of the receiver. Maintain the oil level between H-L. On the bottom there is a drain valve, remember to drain condensate water every time before startup. In addition, an oil fill hole for oil replacement is on the tank as well.

The larger cross-section area design of this tank will slow down the compressed air, this is known as the first stage of air oil separation.

(5). Air/Oil Separator

Refer to the description on oil flow path.

(6). Solenoid Valve

During start, stop, or off load operation, this valve will release pressure to ensure the air end starts without back pressure or stops under off load operation.

(7). Minimum Pressure Valve

Minimum pressure valve is located at the outlet air discharge from Air/Oil Fines Separator Tank. Operating pressure is set at around 65 PSIG. The functions of minimum pressure valve are shown below:

A. To build up oil circulation pressure and operating temperature at start.

B. When pressure is over 65 PSIG, it will reduce flow rate passing and protect air/oil separator from damage due to large pressure difference and increase oil separator efficiency.

C. Prevent back flow under off load running.

(8). After Cooler (On SEG-10 & 15 Models Only)

The compressed air is circulated through the aftercooler which is cooled by the blower attached to the main motor shaft. Generally discharge air temperature is 27°F above ambient temperature.

Environment is a crucial factor for air-cooled type air compressors. Install in a well-ventilated area.

2. Oil flow path (refer to the flow chart of each type)

(1). Description of oil injection flow chart

Pressure in the separator pushes oil into the oil cooler and then passes through the oil filter for filtration after being cooled down. Oil flow then goes into compression chamber from the bottom of air end and also goes to the bearing on the discharge side for lubrication. The compressed air and oil mixture is delivered to the Air/Oil Separator which then passes through the filter element separating the oil from the air and discharging the oil back to the oil receiver.

(2). Volume of oil injection

The purpose of oil injection in an oil flooded screw compressor is to dissipate the heat away in the process of air compression.

(3). Function of the parts in the oil flow system

A. Oil Cooler

The function of the oil cooler is similar to the air cooler. Oil is circulated through the oil cooler to dissipate heat with additional cooling from the blower fan. Environment is a crucial factor for air-cooled type compressors; install unit in a well-ventilated area. Clean the dust on the fins of radiator periodically with compressed air or with solvent.

B. Oil Filter

Oil filters help get rid of metallic particles, and sludge from compressor oil in order to protect bearings and rotors. After the first 500 hours of operation is reached, follow the instructions for replacement. Failure to do so may result in lack of oil which will lead to high discharge temperature and shorter bearing life.

C. Air/Oil Separator

a. Function

The filter element of the air/oil fines separator is made by multiple layers of filtration materials. Most of the oil mist in the compressed air is filtered out through the separator filter element. The life span of the air/oil separator filter element is affected greatly by lubricant grade and condition. Use CurtisLubePlus FSC- 8000 in order to maintain your warranty. There is a pressure sensor and a minimum pressure valve at the air/oil separator outlet. Compressed air is fed through the air/oil separator, to the minimum pressure valve and discharged to its point of use, or to the after cooler (on SEG-10 & 15 models) prior to discharge. Oil collected by the air/oil separator will return to the suction side of the air end to avoid oil carry over.

b. Air/Oil Separator Filter Element needs to be replaced when:

1. Oil carry over increases.
2. Amp draw increases.

E. Protection and warning

1. Motor overload protection

When the Amp draw exceeds the upper limit of the overload relay setting, the unit will shutdown automatically. Re-setting the unit is required prior to the next start. The relay limit has been set by the factory. To maintain normal operation, do not change the limit setting without consulting the factory.

If motor overloads during operation, contact manufacturer immediately to prevent damage to the motor.

2. Discharge temperature protection

Discharge temperature setting is 212°F (100°C). If the temperature exceeds 212°F (100°C), the compressor will trip. One of the most common reasons for high discharge temperature is an issue with the oil cooler. For an air-cooled compressor, if the radiator is clogged, oil temperature goes up resulting in a compressor trip because cooling air can't pass through the radiator. Clean the dust off the fins of the radiator periodically with compressed air or with a solvent if the situation gets worse.

The air compressor is designed to operate up to 104°F (40°C) ambient temperature which makes it necessary to place the unit in a well-ventilated area. **When the compressor is tripped due to a high discharge temperature, the system is unable to restart unless the reset button is pressed after the system cools down.**

F. Control system and electric circuit

1. Control system

(1) Start & Overload Operation

After motor start, the solenoid valve is energized to keep the intake valve open and building pressure. When pressure reaches 65 PSIG, the minimum pressure valve (MPV) opens allowing compressed air to discharge.

(3) Off load operation

When the discharge pressure reaches the unload pressure setting, the solenoid valve is de-energized and blows down air and closes the intake valve. Compressor is running in off load condition.

(4) Stop

Pressing the "STOP" button will de-energize the solenoid valve and a close the intake valve. As a result the system blows down into the atmosphere. Motor stops after 15 seconds (default setting)

(5) Emergency stop

When the E-Stop button is activated, the motor will stop immediately and an E-Stop warning will display on the control panel. The blow down line opens, and the intake valve closes to prevent lubricant from coming out of the air end. Only use the E-Stop button in an emergency and the "Stop" button for normal shut down use.

(6) Auto stop over time period

If there is no demand for compressed air, the compressor runs in “off load” mode until it stops after a set time period and remains in Stand-by Mode. The compressor starts automatically to meet air demand. There is an AutoStop warning sign displayed on the controller. **The unit should not start more than 6 times per hour.** This is controlled by AutoStop time setting on AIMS controller.

Minimum is setting is 10 minutes, default is 15 minutes.

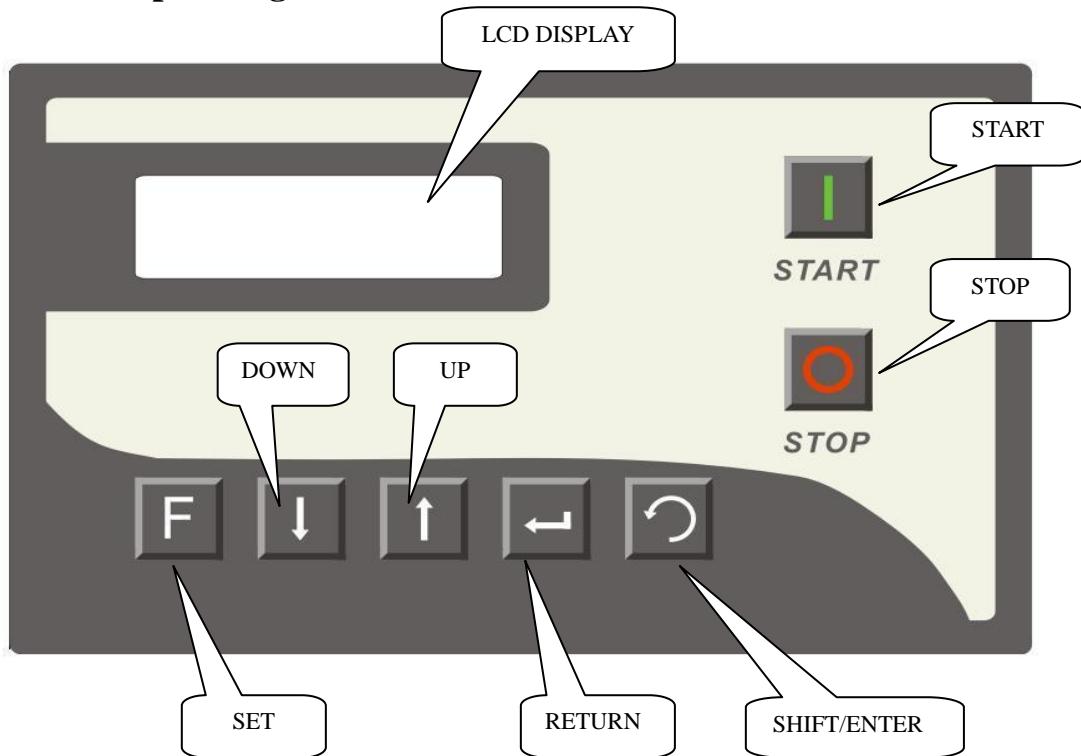
2. Electric Circuit

The motor uses across the line start. The compressor system is operated by an AIMS controller

3. Controller:

Refer to the AIMS Controller Manual (CAP 830) included in document package.

A. Controller Operating Panel



- START** Turns the compressor ON

- STOP** Turns the compressor OFF. Compressor stops after preset idle time.

- SET** Password menu access. After the parameters are modified, pressing this key confirms the change of parameter.

- UP** UP-key scrolls to the next display, switches to the next menu or increases parameter value.

- DOWN** DOWN-key scrolls to the previous display, switches to the previous menu or decreases parameter value.

- SHIFT/ENTER** The key is used as a shift key for the data being modified and an enter key for the menu being selected.

- RETURN** The key is used for returning to the upper menu.

5.0 Operating Procedure

A. Test run: start and stop

1. Connect power, ground cable, and check power supply.
2. Maintain oil level by keeping it visible in the sight glass by the oil fill port on the side of the airend.
3. **If the initial start of the unit will be 6 months or longer after delivery, add 0.5 quarts of CurtisLubePlus FSC- 8000 lubricant through air inlet valve and rotate air end manually to prevent compressor damage due to lack of oil.**
4. Check cooling system
5. **Check Motor Rotation:** Press the “Start” button and immediately push the “Emergency Stop” button. Verify the rotation of the motor coupling against arrow on airend. This will require help from an additional person. Switch any 2 of the 3 power cables if direction is not correct.
6. Press “START” button to restart the compressor.
7. **Observe any warnings on controller screen.**
8. Time delay will be activated after pressing the “STOP” button; the motor will stop automatically after 10-15 seconds.
9. Compressed air will be released immediately after pressing the “OFF” button.

B. Inspection before start

In order to protect the compressor and increase operation efficiency it is necessary to inspect the system prior to operation.

1. **Open both ball valves below the oil tank to drain any water. Condensed water will cause bearing damage and reduce the lifespan of the lubricant.**
2. Check oil level:
Do not use other lubricant than CurtisLubePlus FSC- 8000 for warranty purposes.
Make sure that the pressure is released before refilling.
Warning: Opening the oil fill cap while under pressure may cause injury.
3. Inspect the oil level 10 minutes after unit stops. The Oil level could read lower during operation.

C. During operation

1. **Stop the compressor if any abnormal noise or vibration is observed.**
2. Do not loosen any screws or open any control valve during operation.
Warning: Doing so may cause injury.
3. Make sure any condensed water is released from the after cooler (SEG-10/15 models only). Moisture is not allowed in the system.
4. Record discharge pressure, discharge temperature, oil level and inspect gauge periodically during operation for future reference.

D. Storage

In some cases it may be necessary to store the compressor for an extended period of time before placing the unit in operation.

When this is required do the following:

1. Cover and seal all machine openings to prevent moisture and dirt from entering the unit.
2. If the storage conditions are below freezing, drain any condensate from the system and the after cooler on SEG-10/15 models. Outdoor storage is not recommended.

6.2 Air Filter

The air filter is the primary protection of the compressor from harmful dirt being ingested into the oil system. It needs to be inspected weekly for clogging or holes. The period for these inspections is dependent on the environment the machine is in (at least 2000 hours).

Element Inspection and Replacement

1. Switch off the unit; disconnect the power, and lock and tagout to prevent accidental starting.
2. Allow one minute after stopping for the system to settle and the pressure to be relieved.
3. Loosen the wing nut that secures the cover, and remove the cover.
4. Loosen the wing nut that secures the element and remove the element.
5. Place a bright light inside the element to inspect for damage or leak holes. Discard any element that shows the slightest hole.
6. Inspect all the gaskets and gasket contact surfaces of the housing. Correct any faulty conditions immediately.
7. Clean the housing with a damp cloth. Do not blow out dirt with compressed air.
8. Place a new element in the housing and re-secure in place with the wing nut.
9. Replace the cover and tighten the wing nut.
10. Reset the filter service advisory in the controller and the machine will be ready for operation.

6.3 Oil Filter

The oil filter in the compressor system is a full flow replaceable canister type. Initially, the filter should be replaced after 500 hours of operation, then every 2000 hours. This element protects the compressor bearings from grit and dirt ingress throughout the system. A dirty filter will cause an oil flow restriction that can result in high oil temperature and a unit shutdown.

DANGER

Hot oil under pressure will cause severe injury, death, or property damage.

Be sure the compressor is shutdown and pressure relieved before attempting to remove the oil filter, separator, filling oil, or changing the oil.

Oil Filter Replacement

1. Switch off the unit; disconnect the power, and lockout and tagout to prevent accidental starting.
2. Allow one minute after stopping for the system to settle and the pressure to be relieved.
3. Using a strap wrench, remove the old element and gasket.
4. Clean the gasket surface with a clean rag.
5. Apply a light film of oil to the new gasket.
6. Hand tighten the new element until the new gasket is seated in the gasket groove.
7. Continue tightening by hand an additional $\frac{1}{2}$ to $\frac{3}{4}$ turn.
8. Reconnect power and reset filter service advisory.
9. Restart the machine to check for leaks.

6.4 Air/Oil Separator

The air/oil separator should be changed at 4000 hours, once a year, when there is excessive oil vapor in the discharge air, whichever occurs first. Higher temperature operation can cause the element to plug faster. Consistent operation in temperatures over 180°F oil discharge temperature, will require more frequent separator element changes.

DANGER

Hot oil under pressure will cause severe injury, death, or property damage.

Be sure the compressor is shutdown and pressure relieved before attempting to remove the oil filter, separator, filling oil, or changing the oil.

Separator Filter Replacement

Turn off the unit; disconnect the power, and lockout and tagout to prevent accidental starting.

1. Relieve pressure from entire system.
2. Using a strap wrench, remove the old filter element.
3. Clean the gasket mating surface with a clean rag.
4. Apply a light film of oil to the new gasket on the filter element.
5. Hand tighten the new filter element until the new gasket is seated against the mating surface.
6. Continue tightening by hand an additional ½ to ¾ turn.
7. Reconnect power, reset separator service advisory.
8. Restart the machine and check for leaks.

6.5 Service Kit Part Numbers

Model	Service 2000hr Kit	Service 4000hr Kit	Service 6000hr Kit	Service 8000hr Kit
SEG-5 & 7.5	VGB707	VGB708	VGB707	VGB709
SEG-10 & 15	VGB710	VGB711	VGB710	VGB712

2000/6000 hr Kit = Air Filter + Oil Filter

4000 hr Kit = Air Filter + Oil Filter + Air/Oil Separator

8000 hr Kit = Air Filter + Oil Filter + Air/Oil Separator + Enclosure Filters +
Inlet valve, Thermal valve, MPV kits

Use only genuine FS Curtis replacement parts.

Substitute parts can reduce performance and void the warranty.

6.6 Lubricant

Your compressor has been filled and tested with a high quality synthetic compressor lubricant. It has the advantage of extended service life, high temperature operation, and easy start-up when cold, reduced sludge and lacquer buildup, and is completely compatible with all seals, gaskets, and other compressor materials.

When operating in severe conditions it will be necessary to change the lubricant more frequently. Temperature of operation has the most significant effect on the life of the lubricant. The following chart shows the decrease in interval based on temperature.

Discharge Temperature	FSC8000
Up to 180°F	8000 hrs
180 to 190°F	6000 hrs
190 to 200°F	4000 hrs
200 to 210°F	2000 hrs

To eliminate confusion concerning what type of lubricant to use, always use CurtisLubePlus FSC- 8000 Lubricants. If other lubricants are used, failures due to lubrication are not warrantable.



CAUTION

Plugged filters, coolers, and orifices can result from mixing different lubricants and conditioners. This will also void the warranty.

Be sure to always use CurtisLubePlus FSC- 8000 in refilling your compressor.

Oil Analysis

Oil analysis is an excellent tool to add to your compressor maintenance program. At regular intervals, submit lubricant samples to a qualified laboratory for analysis. You should receive a detailed report showing the lubricant condition, wear metals, and contaminants. The rate that these measurements change over time provides the basis for predictive compressor maintenance, saving you from unplanned machine downtime and unnecessary oil changes. Order part number VO701-POL oil sample kit.



DANGER

Hot oil under pressure will cause severe injury, death, or property damage.

Be sure the compressor is shutdown and pressure relieved before attempting to remove the oil filter, separator, filling oil, or changing the oil.

Checking Oil Level and Adding Compressor Oil

1. Turn off the unit; disconnect the power, and lockout and tagout to prevent accidental restarting.
2. Allow one minute after stopping the compressor for settling and the pressure to relieve.
3. Remove any dirt from around the fill cap, and then remove the fill cap.
4. Inspect the cap for damage and cleanliness. Replace if necessary.
5. The oil should be visible in the window by the oil fill port on the side of the airend.
6. Replace the cap securely. Never put the cap on without tightening it immediately.

Changing Compressor Lubricant

1. Turn off the unit; disconnect the power, and lockout and tagout to prevent accidental restarting.
2. Allow one minute after stopping the compressor for settling and the pressure to relieve.
3. Remove any dirt from around the fill cap, and then remove the fill cap. If the lubricant appears dirty or has a foul smell it should be replaced.
4. Drain the lubricant from the bottom of the oil receiver using both ball valves. Oil will drain more quickly and completely if it is warm from operation.
5. Close all drains and replace with fresh compressor oil to the proper level.
6. Replace the fill cap and run the unit.
7. Switch off the unit and disconnect the power to prevent accidental restarting.
8. Allow one minute after stopping the compressor for settling and the pressure to relieve.
9. Remove the fill cap to see if more lubricant should be added and to insure that there are no leaks.

6.7 Thermostatic Valve

The thermostatic valve is a non-adjustable temperature control valve. On the compressor we use this valve to mix hot and cold oil. It will begin to open at 150-155°F and be fully open at 170°F. This insures that the system temperature is above the pressure condensation point and there is minimal accumulation of water.

6.8 Minimum Pressure Valve

The minimum pressure valve is a non-adjustable spring biased check valve. It has been designed to maintain a minimum sump pressure of 65 psig. If the pressure is allowed to get too low, the oil carryover rate will increase and the separator could be damaged.

Air exiting the vent hole in the cap of the valve indicates an o-ring failure and it needs to be replaced. The air leaking into the spring cavity where the vent is located will change the operation of the valve.

6.9 Belts

Routine examination of the drive system is recommended to insure maximum compressor life. The belts need to be checked for wear and stretch.

To check the belts:

Turn off the unit; disconnect the power, and lockout and tagout to prevent accidental restarting.

Allow one minute after stopping the compressor for settling and the pressure to relieve.

Remove the belt guard.

Inspect for any fraying or cracking of the belts and replace if present.

Check the tension. The deflection should be about 1/64" per inch of span between the sheaves with about 4 pounds of force perpendicular to the belt.

To change the belts: (SEG-5 thru SEG-15)

1. Turn off the unit; disconnect the power, and lockout and tagout to prevent accidental restarting.
2. Allow one minute after stopping the compressor for settling and the pressure to relieve.
3. Remove the belt guard.
4. Release tension by loosening the 2 tension bolts for the pulley.
5. Remove belts
6. Install new belts.
7. Tighten the 2 tensioning bolts and reset the tension on the belts.

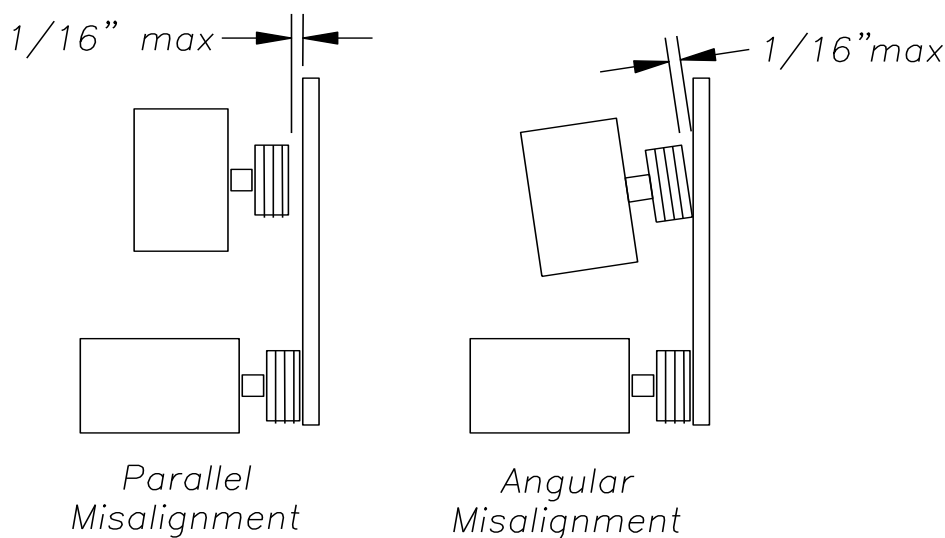
6.10 Sheave Alignment

Any degree of sheave misalignment will result in a reduction of belt life. Misalignment whether parallel or angular should not exceed 1/16".

Parallel misalignment occurs when the shafts are parallel, but the face of the sheave is not in alignment. Angular misalignment occurs when the shafts are not parallel.

An easy and effective method for checking the alignment in both directions is to use an accurate straight edge.

1. Turn off the unit; disconnect the power, and lockout and tagout to prevent accidental restarting.
2. Allow one minute after stopping the compressor for settling and the pressure to relieve.
3. Remove the belt guard.
4. Lay the straight edge across the face of the motor sheave and check the alignment with the air end sheave.



5. Then lay the straight edge across the face of the air end sheave and check the alignment with the motor sheave.
6. If the alignment gap is greater than 1/16" in either direction, loosen the belts as outlined in changing belts section and align the sheaves.
7. Reset the tension on the belts

8. Return the unit to operation.

6.11 Fan

Check the fan mounted to the main motor shaft for cracking, bent or loose blades. Make sure that it is securely mounted and tighten the mounting screws if loose. Replace a damaged fan immediately.


6.12 Motor

The motor in the air compressor requires routine maintenance. Every 1000 hours of operation or six months, whichever comes first, check that the motor is clean and ventilation openings are clear.

The second area to maintain to insure long motor life is bearing lubrication. Bearing grease will lose its lubricating ability over time, not suddenly. The type of grease used the temperature of operation, and the speed of the motor effect the life of the bearing lubrication. You should re-grease the bearings every 2000 hrs or once a year. Units in severe duty (dusty locations or high ambient temperatures) the time interval is 1000 hours.

A high quality ball or roller bearing grease with the following characteristics should be used:

	Standard Service	Hi-Temperature Service
Soap Type	Lithium	Lithium
Grease Viscosity SSU at 100°F	400 – 550	475 – 525
Worked Penetration	265 – 296	220 – 240
N-H Bomb min hrs for 20 psi drop at 210°F	750	1000
Bleeding, max weight % in 500 hrs at 212°F	10	3
Rust Inhibiting	Yes	Yes



CAUTION

Over greasing is a major cause of bearing and motor failure. Make sure not to over grease or to introduce any contaminants during greasing.



WARNING

Rotating machinery can cause injury or death. Open main disconnect, tagout and lockout power supply to the starter before working on the electric motor

Greasing the bearings:

Turn off the unit; disconnect the power, and lockout and tagout to prevent accidental restarting.

1. Clean grease fittings.
2. Remove the relief plug and free the hole of hardened grease.
3. Add grease with hand operated grease gun until it appears at the shaft hole in the end plate or the relief plug outlet.
4. Re-connect the power, and run the unit for 20 minutes without the relief plug in place.
5. Switch off the unit; disconnect the power, and lockout and tagout to prevent accidental restarting.
6. Re-install the grease relief plug.
7. Return unit to service.

6.13 AIR END/MOTOR REMOVAL

Air end/motor removal and installation

(Note: It is important to have clear access to the air end/motor area)

Lifting devices are necessary for the removal and installation of the air end/motor

- A) Turn off compressor.
- B) Turn off main power and lock out and tagout to avoid accidental start-up.
- C) Remove all side access panels.
- D) Remove belt guard and belts from pulleys.
- E) Remove 3 hose fittings from the airend which are coming from the cooler.
- F) Remove 3 sensors (2-Pressure sensors & 1-Temperature sensor).
- G) Unplug PD (Position Differential) switch.
- H) Unplug solenoid coil from airend.
- I) Remove 4 air end mounting bolts.
- J) Remove air end

Installation of the air end

Reverse removal instructions and readjust belt tension before installing the belt guard screen.

Motor Removal

- K) Remove cover from motor junction box.
- L) Note wire connections.
- M) Remove wires and conduit connectors from the motor junction box.
- N) Remove 4 bolts from motor base studs.
- O) Lift and remove motor from cabinet.

To reinstall motor and air end, start with step (O) and reverse procedure.

7.0 Troubleshooting

<p>Compressor will not start</p>	<ul style="list-style-type: none"> a. No power b. Fuses blown in the control circuit. c. Loose or missing wires or components in the control circuit. d. Incorrect voltage e.g. using 230 volt in a 460 volt system. e. Faulty temperature sensor. f. Pressure in oil separator tank.
<p>Unit starts – but shuts down immediately</p>	<ul style="list-style-type: none"> a. Pressure transducer or timer failure. b. High Air Temperature c. Loose or missing electrical components. d. Pressure limit set too low. e. Motor overloads trip out. f. Low voltage.
<p>Compressor does not build up to the desired pressure.</p>	<ul style="list-style-type: none"> a. Inlet valve partially closed. b. Belt slippage. c. Restricted inlet air cleaner. d. Excessive air demand. e. Defective pressure gauge. f. Pressure limit set too low. g. Excessive pressure drop across the separator element. h. Solenoid valve stuck open. i. Air end malfunction – excessive clearance or rotor movement. j. Compressor sized too small. k. Safety valve keeps discharging.

Compressor will not load	<ul style="list-style-type: none"> a. Pressure set too low b. Inlet valve will not open. c. Faulty solenoid valve.
Capacity (delivery) is below stated amount	<ul style="list-style-type: none"> a. Restricted inlet air filter. b. Inlet valve partially closed. c. Air pressure set too high. d. Insufficient oil flow. e. Solenoid valve malfunction. f. Belt slippage. g. Leakage in air system. h. Worn air end.
Compressor surges	<ul style="list-style-type: none"> a. Erratic air demand. b. Customer air system too small for supply. c. Minimum pressure valve. d. Pressure differential too low for the system conditions. e. Loose electrical connection between the controller and the solenoid valve. f. Faulty pressure transducer. g. Faulty solenoid valve. h. Faulty pressure relief valve.
Excessive Oil Consumption	<ul style="list-style-type: none"> a. Overfilled sump. b. Broken oil line. c. Plugged oil return line. d. Operating below rated pressure. e. Damaged or dirty separator. f. Lightly loaded or excessive load/unload cycles. g. Using incorrect oil.

<p>High Temperature Shutdown</p>	<ul style="list-style-type: none"> a. Elevated ambient temperature. b. Low sump oil level. c. Plugged oil filter. d. Restricted cooling airflow. e. Clogged heat exchanger. f. Thermal bypass is leaking g. Faulty high air temperature sensor. h. Delivery pressure set too high. i. Panels are open. j. Exhaust air is restricted.
<p>High power consumption</p>	<ul style="list-style-type: none"> a. Plugged separator. b. Plugged aftercooler. c. Improper air pressure switch setting. d. Too low of a line voltage. e. Electrical phase imbalance. f. Imminent motor failure. g. Imminent air end failure h. Belt slippage i. Loose electrical connection
<p>Safety valve discharges</p>	<ul style="list-style-type: none"> a. Over pressure not set correctly. b. Inlet valve not closing properly in relation to air demand. c. Plugged separator. d. Faulty minimum pressure check valve. e. Faulty safety valve.

8.0 Maintenance Log

Model: _____ Serial Number: _____

Date	Hourmeter Reading	Changed				Greased Motor Bearings	Cleaned Cooler	Checked Fitting Tightness
		Air Filter	Oil Filter	Oil	Separator			

NOTES