D10 (TD)
D15 (TD)
DRS 15 (TD)
Rotary Screw Air Compressor Units
- - -
Installation And Start-up Data

Contents: Page:

Please read this manual before installing or using your Air Compressor Unit. It contains valuable information that will help in the receiving, installation, use, and maintenance of the Unit.

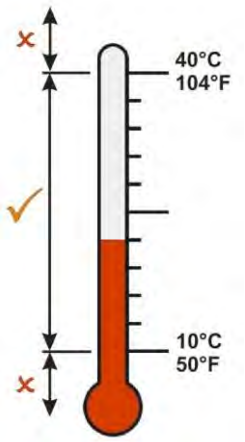
Please keep this manual in a safe place for future reference.

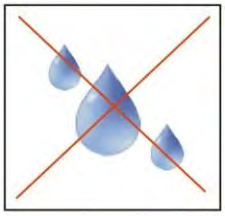
All of the information, policies, and procedures in this reference manual apply exclusively to Champion.

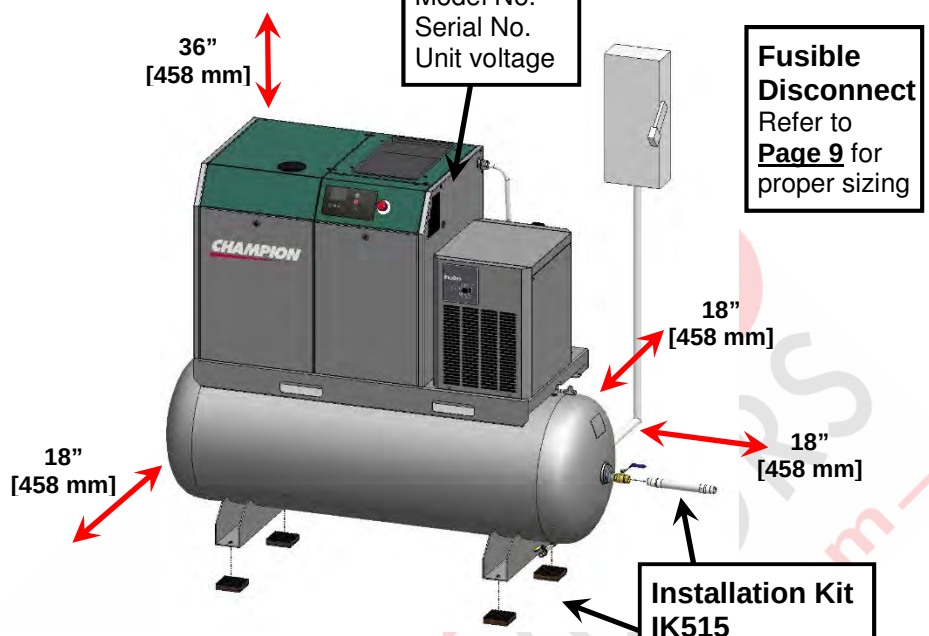
Authorized distributor service technicians are factory trained and skilled in compressor maintenance and repair. They are ready to respond and assist you by providing fast, expert maintenance and repair services.

Quick Start

Mechanical Installation
(Refer to Page 6)







Unit Nameplate
Model No.
Serial No.
Unit voltage

Fusible Disconnect
Refer to **Page 9** for proper sizing

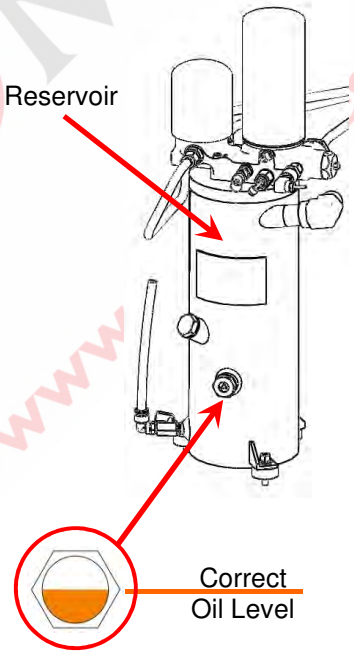
Installation Kit IK515
Flex-Hose & Vibration Isolators (sold separately)

Note: Dimensions indicated are typical for all D10, D15 and DRS 15 Units, ie base-mounted and tank-mounted.

- The Unit must be located indoors, in a dry, clean, cool, dust free, and well ventilated area.
- Allow a minimum 18" (458 mm) around and 36" (915 mm) above Unit.
- The ambient temperature should be between 10°C and 40°C (50°F and 104°F).
- Ensure that the floor under the Unit is smooth, level and capable of bearing the weight of the Compressor.
- If installed in a compressor room, ensure that the room is adequately ventilated.
- The unit must be anchored to the floor using isolator pads.

Lubrication
(Refer to Page 8)

- Before starting the Unit for the first time, ensure there is oil in the Reservoir.
- The Unit is equipped with the Sight Glass.
- The oil level should be close to the center of the Oil Sight Glass, while at rest.
- **Check the oil level after the Unit has been at rest for a minimum of 5 minutes.**



Rotation
(Refer to Page 10)

- Units are equipped with Advanced Phase Detection feature which prevents Units from rotating in the reversed direction.
- An 'E:0090 Phase Sequence' Error will appear on the Controller Screen if the phase sequence is incorrect. If this occurs, simply switch the incoming leads 'L1' and 'L3' at the Control Panel.

Quick Start (cont'd)

Unit Operation

Shown below is the 'CSC300' Controller which regulates the operation of the Unit. It is used to start and stop the Unit, and it provides information as to system pressure, temperature, etc.

Starting the Unit: Press the '**Start**' Button.

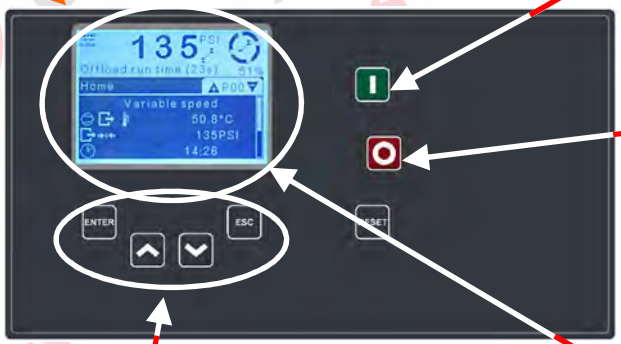
Stopping the Unit: Press the '**Stop**' Button

Caution:

1. Do not stop the Unit using the 'Emergency Stop' Button unless there is a danger to the product or of personnel injury.
2. Do not stop the Unit by use of a disconnect or breaker.

NOTE

Using the Emergency Stop Button, disconnect, or breaker to stop the Unit will not allow the Unit to go through an unloading sequence, and could result in damage to the Motor, Starter, or other electrical components. Damage caused in this manner is not covered by the manufacturers Warranty.



Start
Starts the Unit.

Stop
Causes the Unit to enter 'Idle' mode and then shut off.

Emergency Stop
Will quickly shut the Unit off. Is only to be used in an emergency.

Digital Readout
Indicates Unit pressure, temperature, etc.

Enter, Up, Down & Escape
Used in the programming and changing of operating parameters of the Unit.

Safety Precautions

In order to operate the Compressor Unit safely and correctly, we have opted to use the following symbols to make you aware of important points. These points relate to user safety and preventing equipment problems. Please pay close attention to these sections.

WARNING

Important safety Information. A hazard that may cause serious injury or loss of life.

CAUTION

Important information that indicates how to prevent damage to equipment, or how to avoid a situation that may cause minor injury.

NOTE

Information that you should pay special attention to.

WARNING

The following hazards may occur during the normal use of the equipment. Please read the following chart.

Area:	Hazard:	Safeguards:
What to look for.	What may occur if precautions are not observed.	How to avoid the hazard.
	Tampering with the Unit while under full or partial pressure may cause an explosion.	Relieve all pressure from the Unit before attempting any repair or maintenance work.
	As the Unit starts and stops automatically, serious injury may result from working on the Compressor with the power still in the 'on' position.	Shut off all power to the Unit before attempting to repair or maintain the Compressor.
	As the Unit starts and stops automatically, do not come into contact with moving parts.	Shut off all power to the Unit before attempting to repair or maintain the Compressor.
	Air compressed by the Unit is not suitable for inhaling. It may contain vapours harmful to your health. Compressor capable of pressures >50psi.	Never breath untreated compressed air produced by the Compressor. Do not direct air stream at body.
	Compressor Air End, Motor, and Tubing become hot when running. Touching these areas may cause serious burns.	Never touch the Air End, Motor, or Tubing during or immediately after operation.
	As the electrical components on the Compressor are General Purpose, there is a potential for explosion, should vapours be present in the area.	Do not install in hazardous locations. The Compressor must be a minimum of 20 feet (6.1 meters) from any source of potentially explosive vapours.

Unpacking and Inspection

NOTE

Each Champion Air Compressor is carefully tested and inspected before shipment. Though every attempt is made to ensure the safe and complete shipment of our product, freight damage or misplacement of goods may occur.

Shipments of Champion products are the property of the Consignee when the products leave our facility. Champion is not responsible for any damages or shortages caused to the product after it has left our shipping dock.

It is the responsibility of the receiver of the goods, either the Distributor or Customer, to ensure that the product has been shipped in full, and has arrived in suitable condition. Damage to the product may not be visible at time of off-loading, but may only become apparent upon unpacking or start-up.

Some areas to initially check are as follows:

a) Check for damage to the crating and/or packaging.
b) Check the exterior of the Cabinet for damage, either cosmetic or mechanical.
c) If there is mechanical damage, open the Cabinet to determine whether there is any internal damage to the Unit.

Should there be damage to the product or shortages in shipment:

1) Stop any further unpacking or operation of the product.
2) Make note of the problem on the Freight Bill, should it concern a shortage or visible damage to the product.
3) Should the damage be noticed only after the product has been received, contact the transport company immediately to file a claim.
   Depending on the problem, it may be wise to photograph the damage. Also, it may be wise to discuss with the carrier representative the time allotted to give notice of loss or damage to the product; there may be guidelines which limit timeframes of same.
4) Do not attempt further unpacking or operation of the product. Also, do not discard any packing material used.
5) A Loss or Damage Claim must be submitted to the carrier and supported by the following documents:
   - Copy of Freight Bill of Lading
   - Copy of the Invoice and Estimate to repair, in case of damage
   - Damage Report
   - Copy of photos, if applicable.

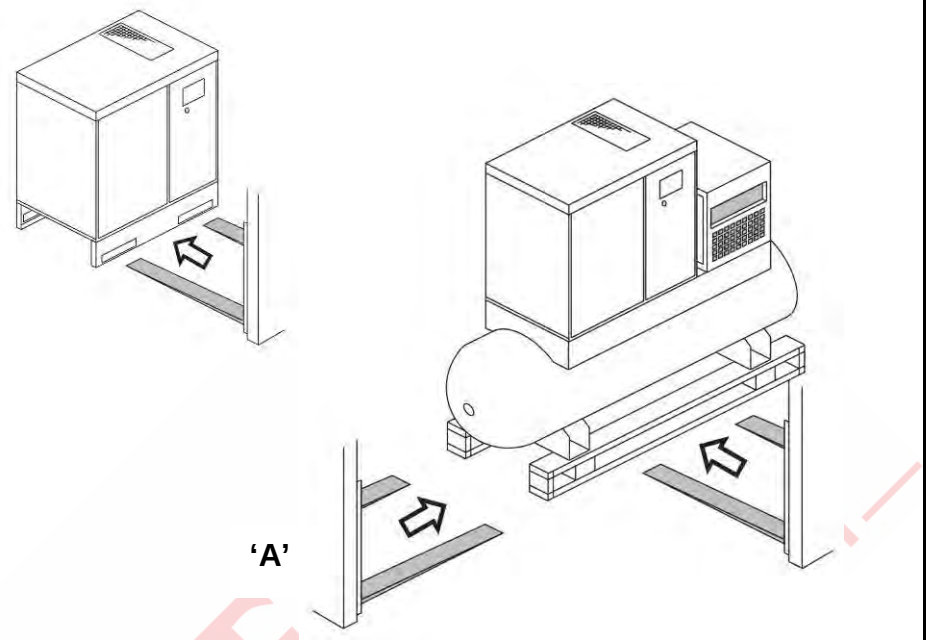
Installation – Mechanical

Moving of the Unit

When moving the Air Compressor, the forklift or hand lift forks go under the Unit from the directions as indicated.

When lifting from position 'A', use extended forks.

Please be advised that care must be taken when moving and positioning the Units as they are top heavy.

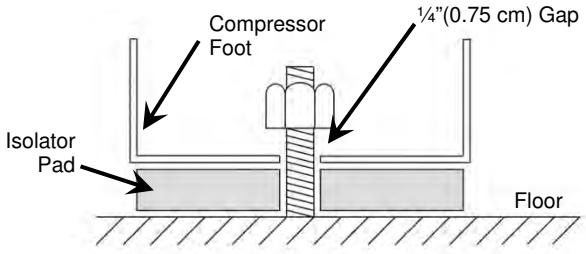


Location of the Unit

Items to consider when installing the Unit are as follows:

- The Unit must be located indoors, in a dry, clean, cool, dust free, and well ventilated area. If possible, the Compressor should be located in a separate room or area, away from the general operations of the shop.
- Allow a minimum of 18" (458 mm) around and 3 feet (915 mm) above the Unit for easy access to the various sides, this being for both the proper ventilation of the Unit and ease of servicing.
- Ensure that the floor under the Unit is smooth, level and capable of bearing the weight of the Compressor. The Compressor must sit squarely on the floor.
- Ensure that the Unit is anchored to the floor using isolator pads.
- If installed in a compressor room, ensure that the room is adequately ventilated. (One Horsepower produces approximately 2500 BTU/HR.) See Page 7.
- The ambient temperature should be between 50°F and 104°F (10°C to 40°C).
- If installing the Unit on a mezzanine, ensure that the structure can safely support the weight of the Unit. As well, the sound level of the Unit may increase due to the harmonics created by the structure; use Vibration Pads to lessen this.
- When anchoring the Unit, ensure that there is approx.. ¼" (0.75cm) between the Nut and the Compressor Foot (as shown below). Do not bolt down tightly.

Many common Compressor problems can be attributed to the location or installation of the Unit. Make sure the Unit is in a suitable location, and installed correctly.



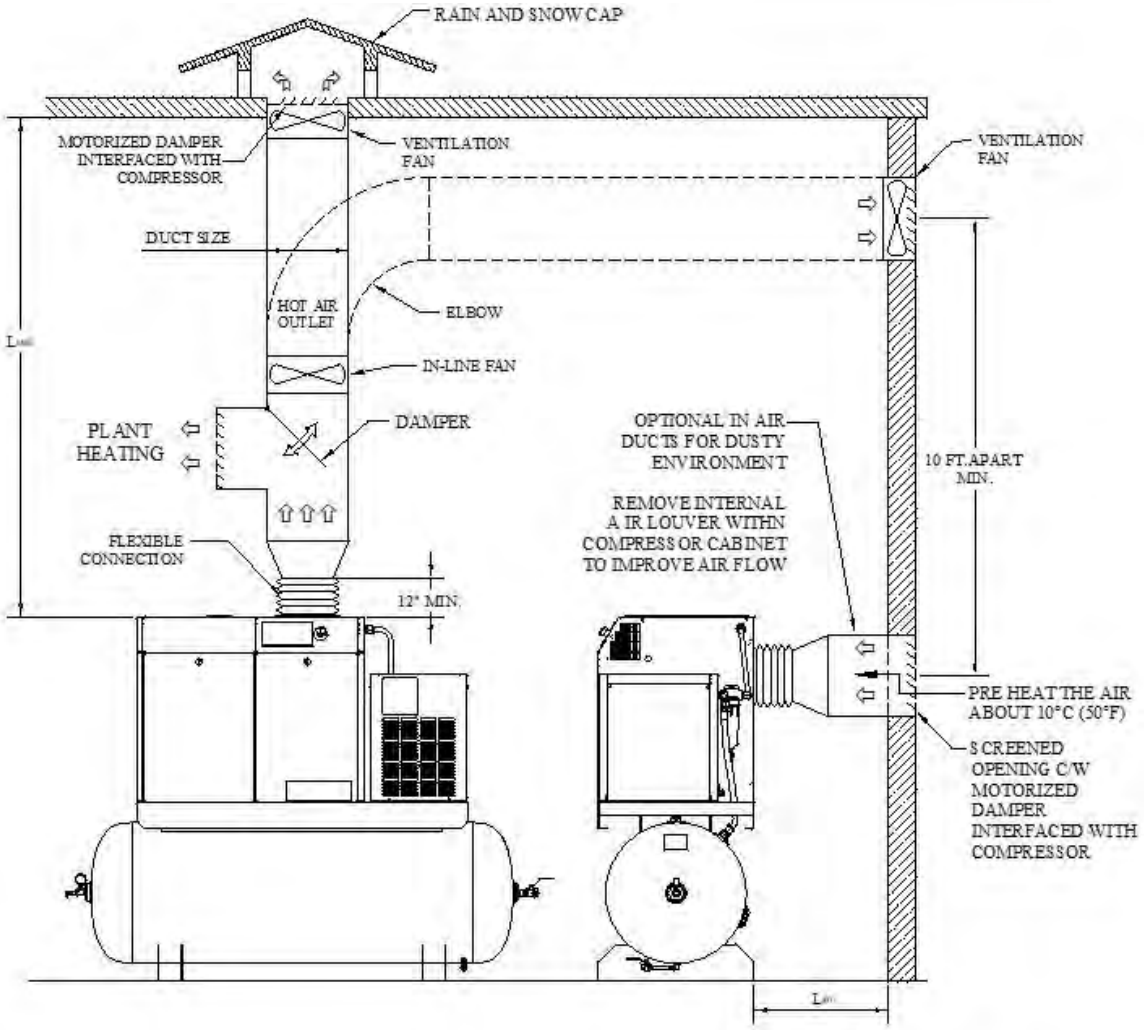
NOTE

The Compressor must not be operated in a confined area where the heat from the Unit cannot readily escape.

Installation – Mechanical (cont'd)

Shown below are items which assist in making a good installation. These are both intake and exhaust ductwork, helping the Unit to a) draw in clean outside air and b) exhaust the warmer air away from the Unit. The warmer air may be used, with the inclusion of a damper in the exhaust ducting, to warm the interior of the building during the colder months of the year.

Intake and Exhaust Ducting



MODEL	HP	HEAT LOAD (BTU/HOUR)	COOLING AIR (CFM)	RECOMMEND MIN. DUCT SIZE	MAX. DUCT LENGTH $L_{air} - L_{unit}$	AIR OUT OPENING AT COMPRESSOR
D10	10	30,240	650	Ø 12" (CIRL.) 12" x 12" (RECT.)	10 FT.	OUTLET SIZE 10 3/8" x 17 7/16"
D15 DRS 15	15	42,960	2,030	Ø 14" (CIRL.) 14" x 14" (RECT.)		INLET SIZE 6 3/8" x 12 3/16"

NOTE:

1. DUCTING SIZE BASED ON GALVANIZED STEEL DUCTS.
2. MAXIMUM PRESSURE DROP DUE TO DUCTING SYSTEM SHOULD BE WITHIN 0.1 IN. OF WATER.
3. ADDITIONAL VENTILATION SYSTEM NEEDED FOR PRESSURE DROP EXCEED ABOVE LIMIT.
4. AMBIENT TEMPERATURE: MIN. 10°C (50°F) ~ MAX. 40°C (104°F).
5. ANY DEVIATION FROM ABOVE INSTALLATION, CONSULT CHAMPION FOR TECHNICAL SUPPORT.
6. LONGER THAN 10 FT. OF DUCT LENGTH REQUIRES IN-LINE FAN(S)

Lubrication

Initial Start-up

Each Compressor Unit built is extensively tested at the factory before shipment. The Unit is shipped with the original oil in it as used for testing purposes.

Check the Oil level and for any Oil leaks on a daily basis. This must be done when the Unit is off. Top up the Oil level on a monthly basis.

Use only Champion lubricant. As well, do not mix Champion lubricant with any other lubricant.

Subsequent Oil Changes

Drain the existing oil from the Unit. (Please be advised that the Unit cannot be drained fully of oil, as some oil may remain in various components ie Cooler, Tubing, etc.)

Fill the Oil Reservoir to the center of the Sight Glass, as shown below. Do not under or overfill.

Use only Champion lubricant, available in both 1 US gallon (3.8 litre) jugs or 5 US gallon (18.9 litre) pails. Any remaining oil may be used for 'top-ups'.

The '**MK-D1015-CH**' Maintenance Kit includes:
- (2) Oil Filter ('DSC-603-CH')
- (1) Air/Oil Separator Filter ('DSC-302-CH')
- (2) Air Filters ('DSC-001931-CH')
- (1) In Line Filter ('DSC-612)
- (1) Oil Sample Kit ('308KBA6003')

⚠ CAUTION

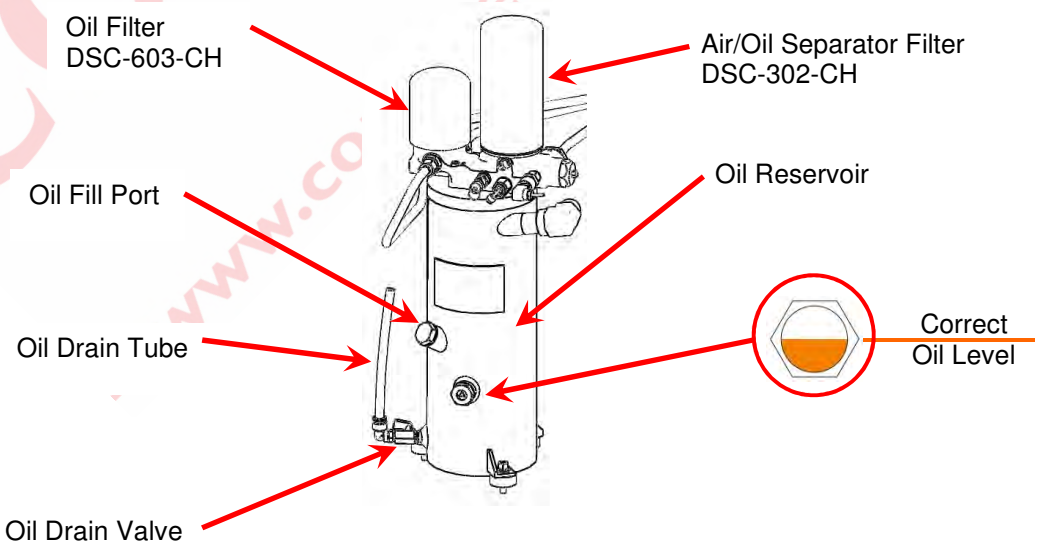
Do not attempt to operate the Unit without first checking whether there is oil in the Oil Reservoir. Add oil as required. Serious damage may result from use, however limited, without oil.

⚠ CAUTION

Use of improper oil may negatively affect Compressor performance or shorten Unit life. Resulting problems are not covered by the Champion Air Compressor Warranty.

⚠ CAUTION

Condensation (water) may form in the Oil Reservoir with the oil. If this occurs, as the water will tend to settle on the bottom of the Reservoir, drain the water from the Reservoir until you notice oil draining. Top up the Reservoir with new oil using only the Champion lubricant.



Installation - Electrical

General Information

It is your responsibility to ensure that the Compressor Unit is electrically connected in a safe and correct manner. **Any electrical work should be carried out by a competent Electrician, and be done in such a way that it meets all applicable Codes and Regulations.** Ensure that a suitable Fused Disconnect or Breaker is installed in the electrical supply before the Compressor Unit.	Ensure that a suitable Fused Disconnect or Breaker is sized and installed according to the appropriate local electrical codes. Electrical wiring and conduit from the building supply, through the Compressor Cabinet, and to the Switch in the Compressor Control Panel, must be rated for 90°C (194 °F) or higher.

⚠ WARNING

- **Failure to correctly connect the Compressor to your building's electrical services may result in serious personal injury or damage to the equipment.**
- **Install all covers and panels before applying power to the Unit.**
- **Failure to install proper fuse protection may void the unit warranty.**
- **Before servicing the Unit, ensure the power source has been shut down and locked off.**
- **Read and understand the information contained in this manual before installing or operating the Unit.**
- **This product must be connected to a grounded, metallic, permanent wiring system, or an equipment-grounding terminal or lead on the product.**

Failure to observe any of the above precautions could result in severe personal injury or death, and/or damage to the Unit.

Fusible Disconnects

- Ensure that all wiring, fusing, etc is done in a manner that meets with the appropriate codes and regulations.
- See the sales drawings and electrical schematic contained in this manual for information about Motor nameplate amps, this is used to determine the appropriate Disconnect / Breaker and Wiring sizes.
- Units equipped with **Variable Speed Drives** (VSDs) **MUST** use **FAST-ACTING FUSES**. Refer to the table below for fuse sizes.

Fixed Speed Units:

Use TIME-DELAY type fuse.

Max. Allowable Fuse =
1.75 x Motor Full Load Amp

VSD Units:

Voltage	Fuse Type	Fuse Amp	Fuse Part No.	Disconnect Kit (Disconnect + Fuses)
200	HSJ, DFJ	**60**	F060	FD-060
230		**50**	F050	FD-050
460		**25**	F025	FD-025

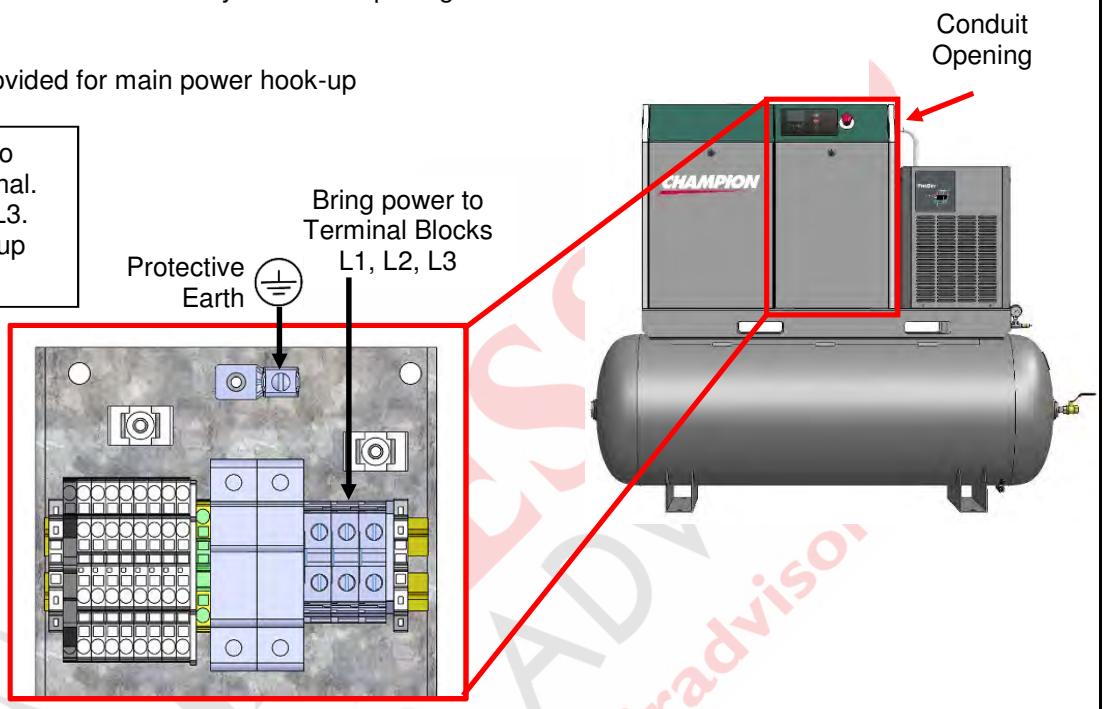
Installation – Electrical (cont'd)

Electrical Connection

The Electrician is to bring power to the Unit through the ¾" conduit hole located on the Right Panel. The Electrical Panel is accessible by means of opening the Unit Front RH Panel as shown at right.

3 terminal blocks are provided for main power hook-up

Connect ground wire to Protective Earth terminal. Bring power to L1,L2,L3. See page 12 for start-up procedures



Motors

Wiring must be done in a manner that the full Motor nameplate voltage +/- 5% is available at the Motor terminals during start-up. Contact your local Distributor or Service Centre if additional information is needed.

The Warranty that exists on the Electric Motor is that of the original manufacturer. In the event of a Motor failure, locate a certified EISA motor service centre.

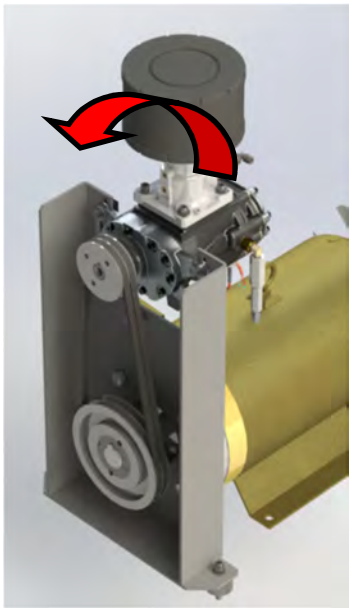
Motor/Air End Rotation

It is critical that the Motor and Air End in the Rotary Screw Unit be turning in the correct manner. Irreparable damage will be done if the Unit rotates in the opposite direction.

This unit is equipped with Advanced Phase Detection which prevents unit from rotating in the reverse direction. If the following error is visible on the Screen and the Unit will not start, simply switch power leads L1 and L3. Press the 'Reset' key on the Controller to reset the error message.

E:0090 Phase Sequence

Note: If the Motor is replaced or Motor Leads are re-wired, visually check for correct Motor Rotation before installing the belts.



Motor Maintenance Instructions

Cleaning

To ensure that the Motor operates at optimum temperatures and provides years of trouble-free service, periodically clean the outside of the Motor Housing of any build-up of dust, etc. Though it is not anticipated that, if installed correctly and in a suitable environment, there should not be much build-up on the Motor, keeping the Housing clean will allow the Motor to operate more efficiently.

Lubrication

This is a ball bearing motor. The bearings have been lubricated at the factory. Motors that do not have regrease capability are factory lubricated for the normal life of the bearings.

Noted below is a chart outlining the interval at which the Motor should be lubricated, this is based on the Motor horsepower. This must be part of a regular maintenance schedule.

Motor HP	Interval in Hours	Weight of Grease		Volume of Grease	
		Ounces	Grams	Cubic Inch	Teaspoon
10	9,500	0.61	17.4	1.2	3.9
15	3,600	0.61	17.4	1.2	3.9

The above chart is based on a standard environment in which the Motor is operating of 40°C. For other conditions, please multiply the Hour Interval from the chart above by the factor as indicated below.

Severity of Duty	Factor	Environmental Conditions
Standard	1.0	40°C (104°F), clean, little corrosion
Severe	0.5	50°C (122°F), moderate dirt, corrosion

Lubricant

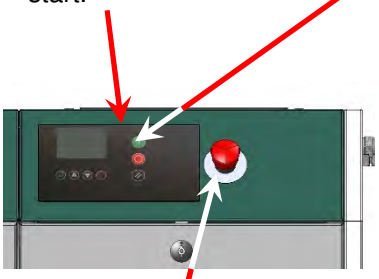
Motors are pre-greased, normally with Chevron SR #1-2. Equivalent and compatible greases are Texaco Polystar, Shell Dolium R and Amoco Rykon Premium #2.

Start-up Procedures

Unit Controls

Start Button
Allows the Unit to start.

Stop Button
Use this to shut the Unit off. Allows the Unit to idle and then stop after several seconds.



Emergency Stop Button
Do not use to normally stop the Unit. To be used to stop the Unit in emergencies only. Normal use will damage electrical controls and Shaft Seal.

Initial Start-up

1) Remove the LH Front Access Panel, and ensure that there is sufficient Oil in the Oil Reservoir. Refer to the 'Lubrication' section (page 8) in this manual for proper type and level of Oil.

2) Do a visual inspection of the Unit, and ensure that all fasteners are sufficiently tightened. This must be done, as some fasteners may become loose in transit.

3) Place the Fused Disconnect / Breaker in the 'On' position. Check that there is power to the Controller

4) During normal operation of the Unit, keep the Access Panels closed at all times.

5) Ensure the Ball Valve on the Unit is closed, press the 'Start' Button, and run the Unit up to maximum pressure. The Unit will run up to approx. 145 psi (10bar), at which point the Motor will continue to run but not compress air.

6) Once the Unit reaches 145 psi (10bar), it will idle for 5 minutes and shut off. For VSD units, the unit will idle for 2 minutes and shut off.

7) Open the Ball Valve slightly and allow the air to bleed from the Tank. Once the pressure reaches approx 125 psi (8.6bar), the Unit will start and begin to compress air after a short delay. For VSD units, this pressure is 135 psi (9.3bar).

8) Measure the amp draw as the Unit reaches maximum pressure.

9) Close the Ball Valve, allow the Unit to reach maximum pressure, idle, and shut off. Once off, check the various fittings etc inside the Cabinet to ensure there are no internal leaks.

10) Once you are confident that there are no internal leaks, the Unit will be ready for normal use.

11) To validate Warranty, complete the warranty registration and attach to the on-line Startup claim within Thirty (30) days of initial operation, or email to:
'**gdservice@gardnerdenver.com**'

⚠ CAUTION

Do not place any materials in close proximity to the Compressor. Placing materials against or close to the Unit will limit the cooling required, and could lead to premature failure.

⚠ WARNING

Shut off all power to the Compressor Unit before attempting any repair or maintenance.

⚠ NOTE

Adjusting the settings of the Controller could adversely affect the performance of the Unit. Only those individuals with knowledge of the Unit should make any adjustments.

Preventative Maintenance Schedule

WARNING

When servicing the Air Compressor, shut off all power to the Unit, and drain it of air pressure.

NOTE

It is the responsibility of the Compressor owner to ensure that a regular Maintenance Schedule is followed.

Noted on the following pages are general Maintenance guidelines based on average working conditions. Should the Unit be worked under extreme conditions, please contact your Champion Distributor for further input. As well, all maintenance/service work must be carried out by a qualified Technician.

The typical operating temperature of the Unit, this dependent on ambient temperatures, is between 70°C and 85°C (158°F and 185°F).

If the operating temperature of the Unit is too low (less than 70°C (158°F)):

- condensation will build up in the system and mix with the oil, causing internal component problems in the Unit
- Change the ambient conditions to increase the operating temperature.

If the operating temperature of the Unit is too high (above 85°C (185°F)):

- the oil will oxidize and lose its properties, this causing internal damage to components as well
- to combat this, the oil must be changed more often than noted below.

Note: Participation in Champion's oil analysis sampling program is required to receive the extended warranty. Any recommendations detailed in the oil analysis report must be followed as outlined in the report.

Regular Maintenance Items

'MK-D1015-CH'	**4000 Hour Maintenance Kit**
(2) **DSC-603-CH**	Oil Filter
(1) **DSC-302-CH**	Air/Oil Separator Filter
(2) **DSC-001931-CH**	Air Filter
(1) **DSC-612**	Inline Filter
(1) **308KBA6003**	Oil Sample Kit

Lubricant Options

Champion offers various lubricants for your unit, available in quantities of 5 US Gal. (18.9 litre) pails:

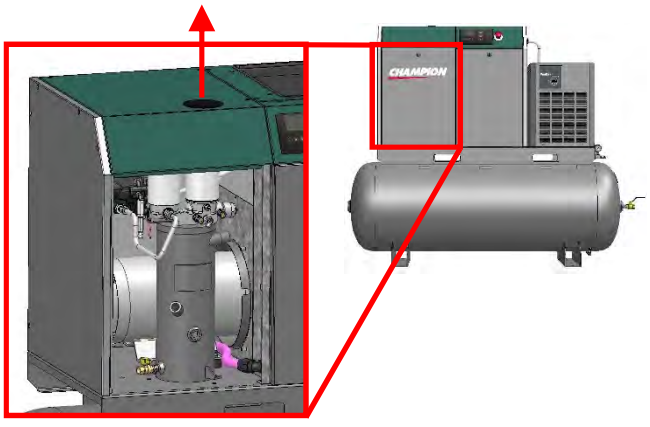
RotorLub 8000
RotorLub 8000TH
RotorLub 4000
RotorLub 4000FG
RotorLub 4000FG-68

Internal Access for Maintenance

The internal components of the Unit are accessible for servicing by way of removing the LH Front Panel.

The Belt access is by way of the LH Side Panel

Remove the plastic cap to change air/oil separator filter



Preventative Maintenance Schedule (cont'd)

Maintenance Item:	Daily	Maintenance Interval (in 000's of Hours)																		
		2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
Compressor Room																					
Temperature	Inspect	Ambient Temperature should be between 10°C and 40°C (50°F and 104°F)																			
Cleanliness	Inspect																				
Air Compressor Unit																					
Check Oil Level	Inspect																				
Take Oil Sample (See Note a)		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Replace Oil (See Note b)	(1)		X		X		X		X		X		X		X		X		X		X
Replace Oil Filter	(2)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Replace Air / Oil Separator	(3)		X		X		X		X		X		X		X		X		X		X
Replace Air Intake Filter	(4)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Check Belt Tension		X	X	X		X	X	X		X	X	X		X	X	X		X	X	X	
Replace Belts					X				X				X				X				X
Replace Tank Relief Valve							X						X						X		
Replace Solenoid	(5)				X				X				X				X				X
Rebuild Intake Valve	(6)				X				X				X				X				X
Rebuild Thermo Valve	(7)						X						X						X		
Rebuild Minimum Pressure Valve	(8)				X				X				X				X				X
Replace Scavenge Line Filter	(9)				X				X				X				X				X
Motor Bearing Lubrication		Refer to Motor Manufacturer's Recommendations on Page 11																			

Notes: a) Participation in Champion's oil analysis sampling program is required to receive the extended warranty. An oil sample must be sent to our lubricant analysis laboratory **every 2000 hours or every 6 months**, whichever occurs first. Any recommendations detailed in the oil analysis report must be followed as outlined in the report. Oil sample bottles are to be obtained from your local authorized Champion distributor.

b) The Champion oil used in the maintenance schedule is rated as a 4000 hour oil. A complete Oil change must be done every 4000 hours of Unit operation, or every 12 months, whichever occurs first. If other champion lubricant is used, please refer to the Warranty on Page 43 for further information.

c) If a component, during a regular inspection, has proven to be defective or unfit for regular operation, it must be repaired or replaced.

Parts and Repair Kits based on the above chart are as follows:

(1)	Rotor Lub 4000 Oil:	28H166	
(2)	Oil Filter	DSC-603-CH	
(3)	Air / Oil Separator:	DSC-302-CH	
(4)	Air Intake Filter	DSC-001931-CH	
(5)	Solenoid	DSC-001951	
(6)	Intake Valve Repair Kit	DSC-001950	
(7)	Thermo Valve Repair Kit:	DSC-111-1	
(8)	Minimum Pressure Valve Kit:	DSC-410	
(9)	Scavenge Line In-Line Filter	DSC-612	
	Air End Shaft Seal Kit	DSC-002718	
	Control Panel Ambient Air Filter	DSC-001447	
	VSD Control Panel Separation Foam	DSC-002719	(VSD units only)

As noted previously, the '**MK-D1015-CH**' Maintenance Kit includes the following items:

(2) **DSC-603-CH**	Oil Filter	(1) **DSC-612**	In-Line Filter
(1) **DSC-302-CH**	Air/Oil Separator Filter	(1) **308KBA6003**	Oil Sample Kit
(2) **DSC-001931-CH**	Air Filter		

Use only 'Genuine Champion' parts and kits for your Champion Screw Compressor, this to ensure that
a) it works at it's optimum performance level and
b) you maintain your Champion Compressor Warranty.

Maintenance Procedures

Changing the Oil Filter

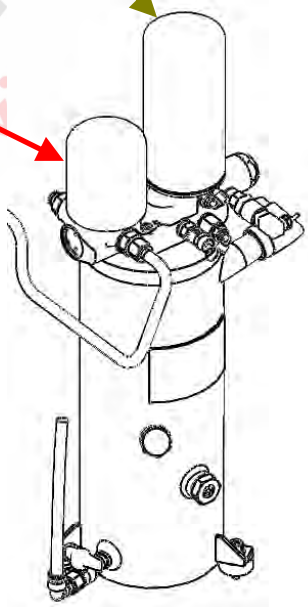
The Oil Filter should be changed only after all of the oil has been drained from the Unit.

1. Ensure that you have a bucket and strap wrench available.
2. Holding the bucket under the original Oil Filter to capture any spillage, use the strap wrench to turn the Oil Filter counter-clockwise. The Oil may still contain oil, so care must be taken.
3. On the replacement '**DSC-603-CH**' Oil Filter, lubricate the Filter Gasket with Compressor Oil.
4. Hand tighten the Oil Filter snug.

Changing the Air / Oil Separator

1) If necessary, use a strap wrench to turn the original Separator counter-clockwise.
2) On the new '**DSC-302-CH**' Air / Oil Separator, lubricate the Separator Gasket with Compressor Oil.
3) Hand tighten the new Air / Oil Separator snug

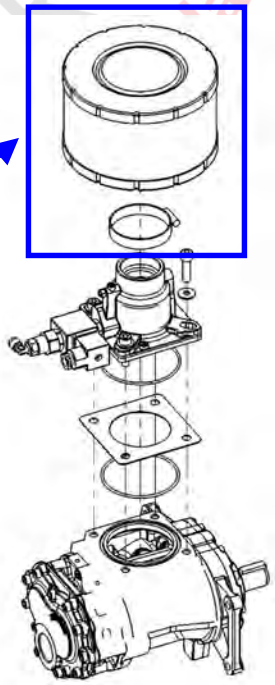
Note:
Do not over-tighten the Separator Filter on the Unit, as it may become very difficult to remove at a later date.



Changing the Air Intake Filter

1) Loosen the Filter Clamp at the base of the Intake Filter.
2) Remove the Air Filter Element from the Unit.
3) Clean the Intake Valve area of any dust or build-up.
4) Install a new Air Filter (Champion Part Number '**DSC-001931-CH**'), ensure it fits snugly on the Intake Valve Assembly, and tighten the Filter Clamp.

Note:
Depending on the quality of the air in the compressor room, it may be necessary to check and/or change the Air Filter more often than indicated on the 'Maintenance Schedule'.



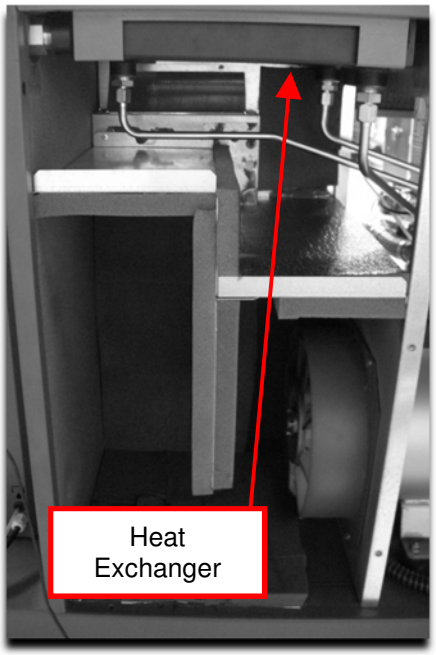
Maintenance Procedures (cont'd)

Cleaning the Heat Exchanger

The circulation of air through the Heat Exchanger is critical to the correct operation of the Unit. Clean the Heat Exchanger on a regular basis.

1. Remove the Back Panel.
2. Vacuum the Heat Exchanger as necessary.

Note:
When cleaning the Heat Exchanger, do not use sharp objects or a wire brush. These items could damage the cooling coils.



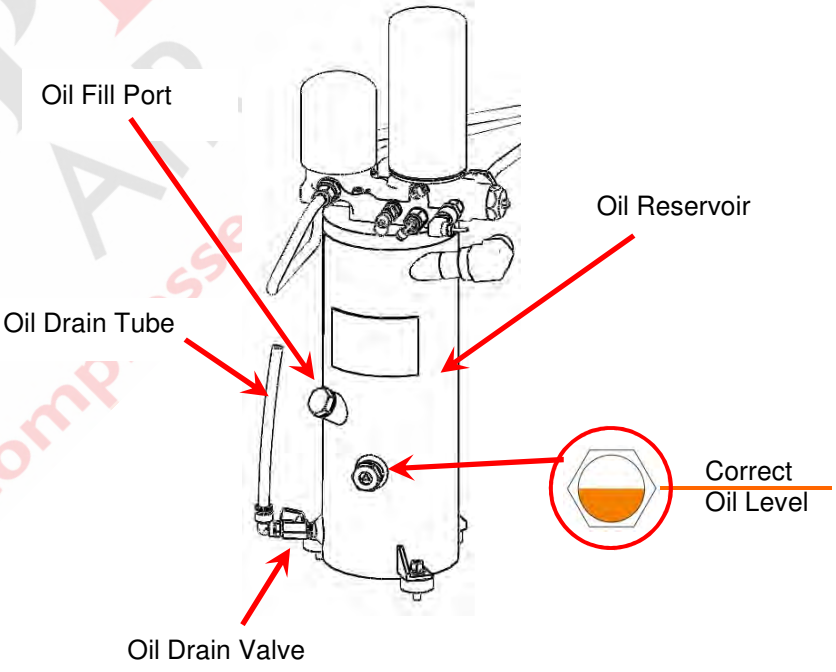
Oil Changes

Drain the existing oil by a) turning the Oil Drain Tube downwards and b) opening the Oil Drain Valve. (Please be advised that the Unit cannot be drained fully of oil, as some oil may remain in various components ie Cooler, Tubing, etc.)

Close the Drain Valve and turn the Drain Tube to face upwards.

Fill the Oil Reservoir to the center of the Sight Glass, as indicated at right. Do not under or overfill.

Use only Champion lubricant.



Maintenance Procedures (cont'd)

Tensioning the Drive Belts

The tightening and loosening of the Drive Belts is done by way of moving the Air End vertically either towards or away from the Motor.

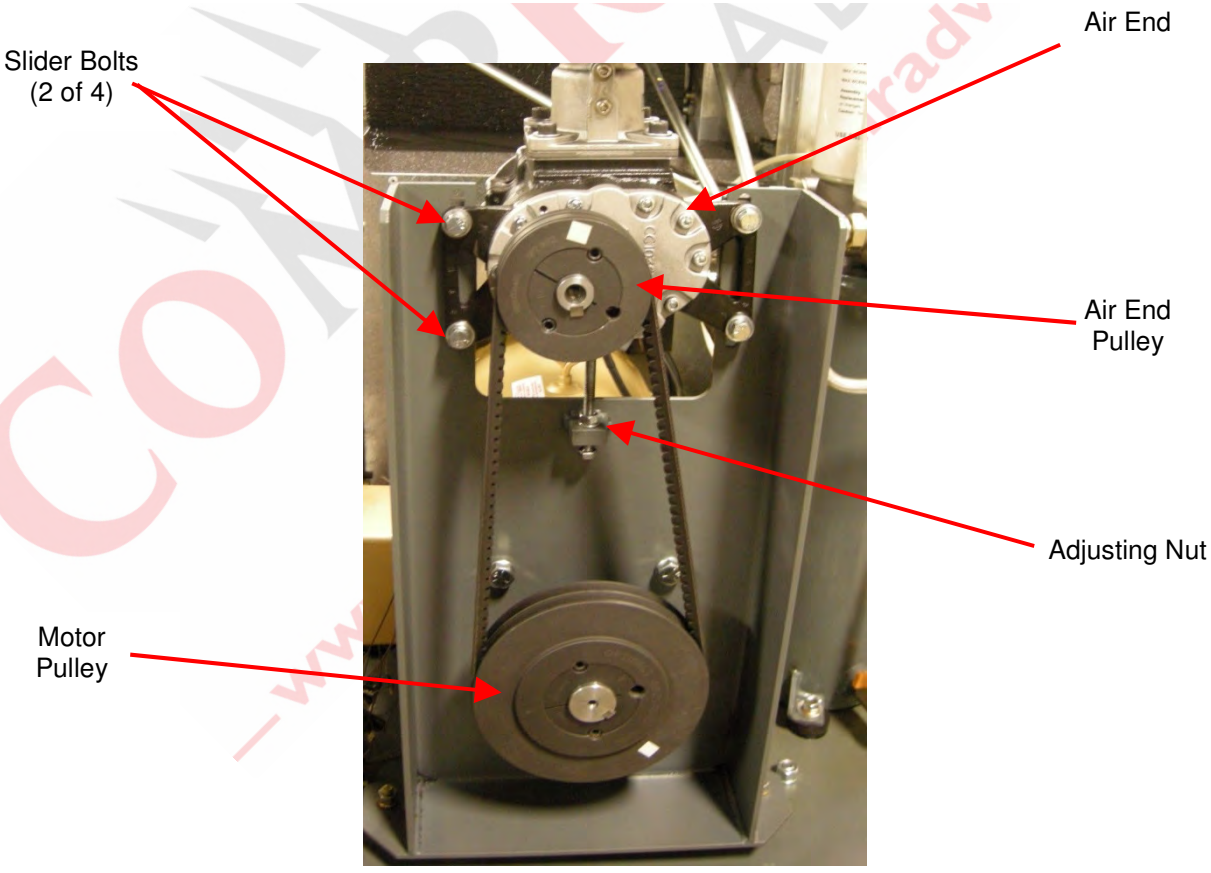
To adjust the Belt tension, simply:

1. loosen the (4) Slider Bolts holding the Air End in place
2. tighten (turn clock-wise) the Adjusting Nut on the Top of the Belt Tensioner Screw
3. re-torque the (4) Slider Bolts to 22 ft lbs (29.8 Nm)

Belt tensions for both new and older Belts are noted below.

Model Number:	Unit HP:	Maximum Pressure:	Belt Tension Hertz (New / Old)*	Belt Tension Pound Force / Inch Deflection**
D10 (TD)	10	145 psig (10bar)	83 / 73	6 lb / 0.27"
D15 (TD)	15	145 psig (10bar)	92 / 81	6 lb / 0.23"

Notes: * Belt tension data for new Belts having run for approx. 10 hours.
** Pound Force and Inch Deflection figures are for new Belts only.

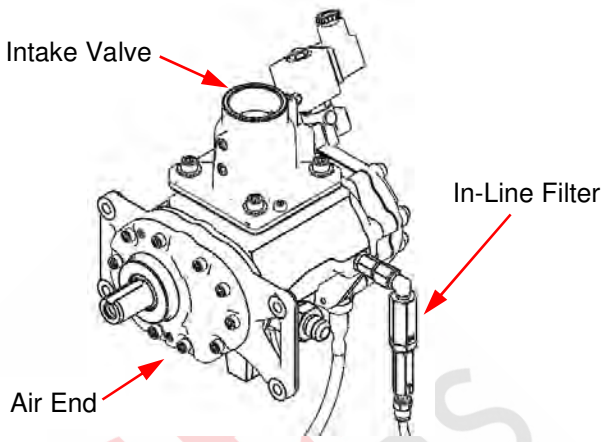


Maintenance Procedures (cont'd)

Changing the Scavenge Line 'In-Line' Filter

The '**DSC-612**' In-Line' Filter is located in the Scavenge Line between the Air-Oil Separator and the Air End, and removes any particles from the oil before it enters the Air End. The Filter must be replaced every 4000 hours to ensure the proper flow of oil through the Scavenge Line.

When re-assembling the parts, use Loctite thread sealant. Do not use Teflon tape, as the tape could come loose and obstruct the passage of oil.

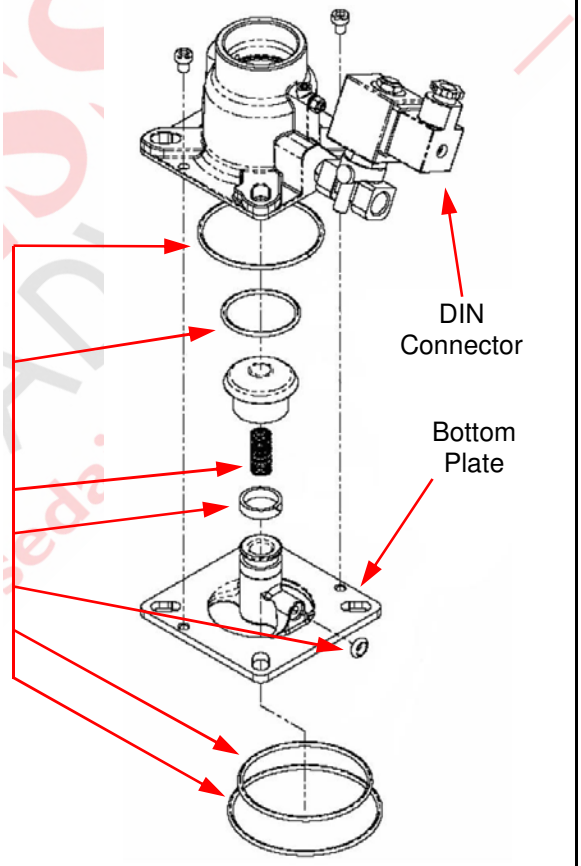


Intake Valve Repair Kit

The Intake Valve Assembly is located directly below the Intake Filter, and opens and closes to allow air to enter the Air End.

To repair the Intake Valve:

- Remove the Intake Filter from the top of the Intake Valve Assembly.
- Remove the DIN Connector from the Solenoid Valve attached to the Intake Valve Assembly.
- Remove the Intake Valve Assembly by way of removing the (4) Screws attaching it to the Air End
- Place a clean rag over the Air End to ensure that nothing enters it.
- Remove the (2) Screws on the Bottom Plate of the Intake Valve. This will allow the internal components to be removed.
- Clean the internal surfaces of the Intake Valve, flip over, insert the new components, and put the Bottom Plate in place.
- Secure the Bottom Plate.
- Press the Internal Plunger of the Intake Valve to ensure that it works correctly.
- Remove the rag from the Air End, install the O Ring, and secure the Intake Valve.
- Reconnect the DIN Connector to the Solenoid, and re-attach the Intake Filter.



Please order (1) '**DSC-001950**' Intake Valve Repair Kit. Shown at right are the various components associated with the Intake Valve Repair Kit.

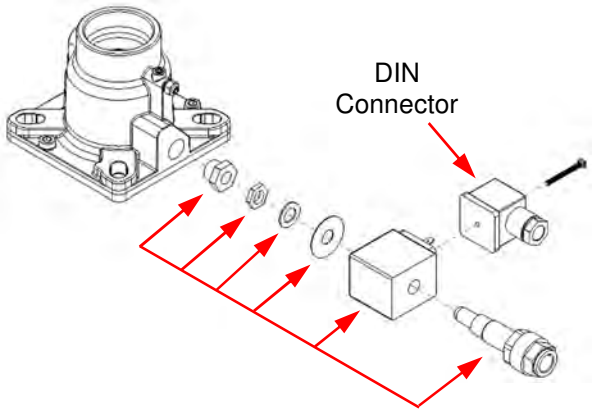
Solenoid Valve Replacement

First remove existing solenoid valve from Intake Valve Assembly by loosing the brass housing and threaded nipple.

To install new Solenoid Valve:

- Assemble various components of new solenoid valve shown at right to the Intake Valve Assembly.

Please order (1) '**DSC-001951**' Solenoid Valve Repair Kit. Shown at right are the various components associated with the Solenoid Valve Repair Kit.

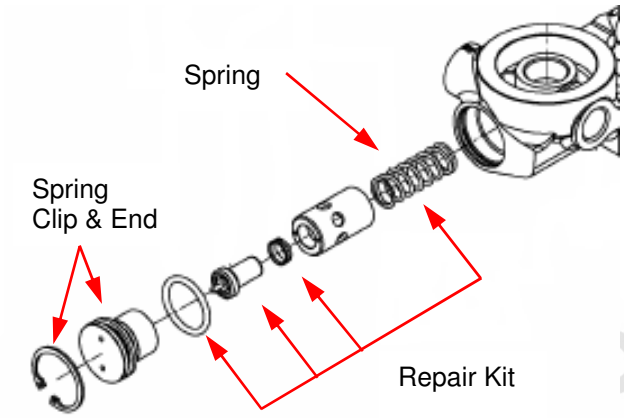


Maintenance Procedures (cont'd)

Thermo Valve Repair Kit

The Thermostatic Valve, or commonly called 'Thermo Valve', provides a means of re-directing the oil to be cooled. At start-up, the oil travels from the Oil Reservoir, through the Oil Filter, and into the Air End. As the oil temperature reaches approx. 71°C (160°F), the Thermo Valve re-directs the warm oil through the Heat Exchanger, allowing it to cool before entering the Oil Filter.

It is imperative that the Heat Exchanger be kept clean, as a dirty Heat Exchanger will limit the cooling of the oil.



To repair the Thermo Valve:

- Remove the Spring Clip and End Cap from the assembly. As the Spring is compressed, caution must be taken when removing the End Cap.
- Replace the O Ring, Thermostat, Collar, and Spring.
- Re-assemble.

The parts as indicated by the arrows (above – right) are included in the **'DSC-111-1' Thermo Valve Repair Kit**.

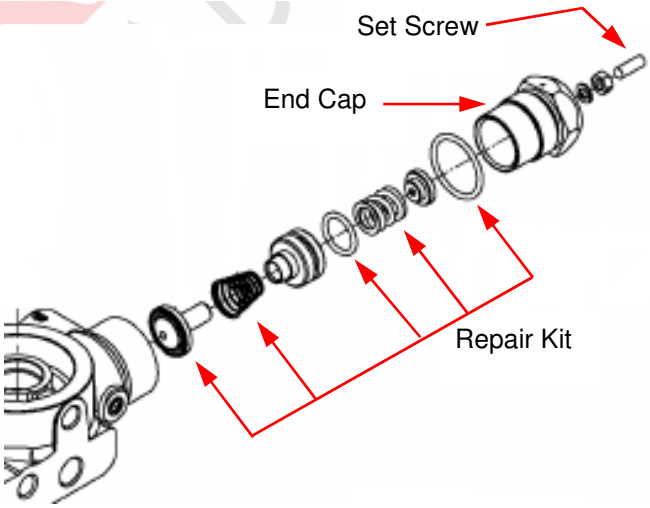
Minimum Pressure Valve Repair Kit

The Minimum Pressure Valve has two purposes when installed in the Rotary Screw Compressor Unit.

1. It allows the Unit to build up pressure (up to approx 65 psi (4.5bar)) before allowing the compressed air to flow through the cooler and
2. it acts as a 'one way' or 'check' Valve, stopping air from flowing back from the Tank.

The Minimum Pressure Valve is defective and requires repair if the Unit is

- shut down and
- air is bleeding from the Tank and
- air is bleeding out of the Unloader – Solenoid



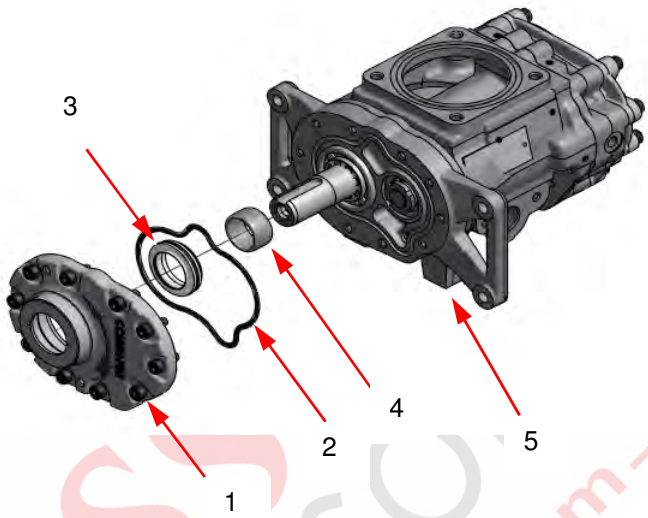
To repair the Minimum Pressure Valve:

- Remove the End Cap from the assembly. As the Spring is compressed, caution must be taken when removing the End Cap.
- **Do not remove or turn the Set Screw in the End Cap, as it has been preset at the factory**
- Replace the Plunger, Springs, and O Rings.
- Apply lubricant to moving parts.
- Re-assemble.

The parts as indicated by the arrows (above – right) are included in the **'DSC-410' Minimum Pressure Valve Repair Kit**.

Maintenance Procedures (cont'd)

Shaft Seal Repair Kit



Removing old Shaft Seal

- Remove the bolts of the seal housing (1)
- Extract inner ring (4) from the shaft
- Be careful not to damage the shaft
- Clean surfaces carefully

Installing the new Shaft Seal

- Apply Loctite 641 sealant on the inner surface of the new inner ring (4)
- Carefully wipe off excess sealant immediately
- If ring is heated, twist it 90º after it is installed, this will spread the sealant evenly on the surfaces
- The ring (4) must be heated to a maximum temperature of 150°C (302°F) to allow it to be installed on the Air End

Installing the O-Ring

- Install the new o-ring (2) onto the air end (5)
- Use heat-resistant grease to hold the o-ring in place

Installing new Seal Housing with new Shaft Seal

- Place DSC-002953 installation shaft sleeve tool (6) on the shaft of the air end
- Push the seal housing (1) onto the rotor shaft and hold it against the shaft seal inner ring. (The oil seal (3) is pre-installed onto the seal housing (1) at the factory)
- Then push the seal housing (1) carefully into final position
- Install the housing tightening the screws to 7.9-8.7 Nm (5.8-6.4 ft.lb)
- Remove the DSC-002953 installation shaft sleeve tool

The parts as indicated by the arrows (1 to 4) are included in the **'DSC-002718' Shaft Seal Repair Kit**.

Item 6, the **'DSC-002953' Shaft Sleeve Tool**, must be purchased separately. Failure to use this Sleeve in the installation of the new Seal will potentially allow the Shaft Seal to leak as it was not installed correctly. If you wish, the Tool can be returned to DV Systems for credit.

'CSC300' Controller

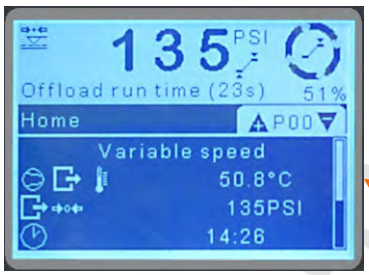
Description of Controller

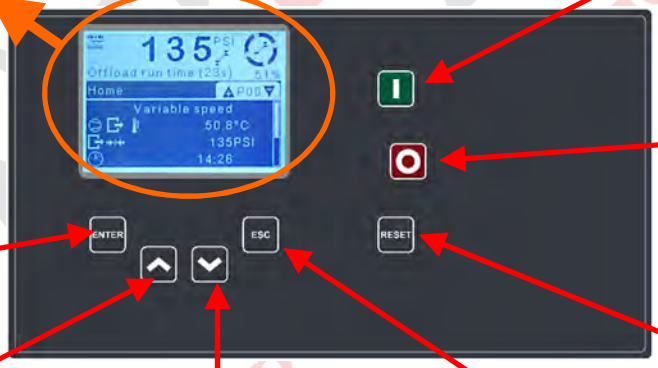
The 'CSC300' Controller is the 'brains' of the D10, D15 and DRS 15 Rotary Screw Compressor Units. It monitors, enables, and indicates the various functions of the Unit. The Controller voltage requirement is 24 volts +/- 15%.

The Controller is comprised of several levels of access, segregated into:

- **Operator Level (Access Code: '2012')**
  - indicates the main operating parameters (eg, temperature, pressure, etc) and faults of the unit.
- **Service 1 Level (Access Code: '2515')**
  - allows access to change the Unit pressures, etc and indicates any Unit faults.
  - an Access Code is required.
- **Service 2 Level**
  - allows access to change some of the more restricted parameters.
  - an Access Code is required.
- **Factory Level**
  - allows access to areas of the Controller that only factory personnel can access.
  - an Access Code is required.

Controller Operator Interface





Start
Starts the Unit.

Stop
Causes the Unit to enter 'Idle' mode and then shut off.

Enter
Used to enter a new page, etc, or pressed to save changes to a parameter.

Reset
Allows the Unit to be re-started after an error has occurred.

Up
Scrolls up through the parameters, or increases the value of a parameter.

Down
Scrolls down through the parameters, or decreases the value of a parameter.

Escape
Allows you to move back one menu level.

The Display above and at left indicates:

- The system pressure is 135 psi
- The Unit is unloading (not compressing air)
- The Unit is running at 51% of its full speed
- The remained Idling time is 23 seconds
- The temperature of the oil leaving the Air End is 50.8°C.

'CSC300' Controller (cont'd)

Unit Standard Operating Parameters

The chart below indicates the standard operating parameters programmed into the 'CSC300' Controller at the factory.

Model	Control Mode	Load Pressure	Offload Pressure	High Pressure Alarm	High Pressure Shutdown	Idle Shutdown (minutes)	Routine Service Hours	Grease Service Hours
D10	Load/ Offload	125 psi (8.6bar)	145 psi (10bar)	150 psi (10.3bar)	155 psi (10.7bar)	5	2000	9500
D15	Load/ Offload	125 psi (8.6bar)	145 psi (10bar)	150 psi (10.3bar)	155 psi (10.7bar)	5	2000	3600
DRS 15	Variable Speed	135 psi (9.3bar)	145 psi (10bar)	150 psi (10.3bar)	155 psi (10.7bar)	2	2000	3600

A description of the terminology used in the above chart is as follows:

HP: Horsepower of the Unit.

Load Pressure: The pressure at which the Unit will begin to compress air.

Offload Pressure: The pressure at which the Unit will stop compressing air.

High Pressure Alarm: The pressure (above the Offload Pressure) at which an alarm will be noted.

High Pressure Shutdown: The pressure (above the Offload Pressure) at which an alarm will be noted and the Unit will shut off.

Idle Shutdown: The amount of time the Unit will idle (run but not compress air) after it has reached the Unload Pressure before shutting off.

Routine Service Hours: The maximum allowable time between regular maintenance/service of the Unit.

Grease Service Hours: The maximum allowable time between motor lubrications.

⚠ NOTE

The above chart is supplied for information only. Serious consequences could result should any of the parameters be adjusted by someone who is not familiar with the correct and safe operation of the Unit.

Any adjustments made to the above parameters by others (other than a qualified Technician) resulting in the incorrect operation of the Unit, damage to the Unit, or damage to property is not covered by the Champion Warranty.

Please consult with your Champion Distributor or contact Champion directly should you have any questions or concerns about any of the information in the chart above, or in this manual.

'CSC300' Controller (cont'd)

Controller Structure

The chart below indicates the various fields of the 'CSC300' Controller, some require an Access Code. As suggested on the previous page, only those qualified should be permitted to make any adjustments to the parameters.

Default Level Available Without Access Code

Page 'P00' - Home

01	Any active alarm
02	Control Mode
06	COMP OUT TEMP
07	EQUIP OUT PRESS
13	Time
14	Date
15	Daylight saving
16	ISC Sequence

Page 'P01' – Service Timers

01	Total hours
02	Load / off load HRS
03	Load hours
04	Off load hours
05	Stopped hours
06	Routine service hours
07	Grease service hours

Page 'P02' – Utilisation

01	Equipment status
02	Load/ offload hours
03	MTR STR last HR
04	MTR STR last 24H
05	Load frequency
06	Load % last hour
07	Load % last 24H
08	Load time last hour
09	Load time last 24H

Page 'P03' – Error Log

01	Error 1
to	
50	Error 50

Page 'P04' – Event Log

01	Event 1
to	
200	Event 200

Page 'P09' – Access

01	DEFAULT USER
02	ADMIN USER
03	Operator
04	Service 1
05	Service 2
06	Factory

Service 1 Level Requiring Access Code: 2515

Page 'P10' – Equip settings 1

01	Control mode
02	Allow force offload
03	Start pressure
04	Load pressure
05	Off load pressure
10	RS485: 1 CONFIG
11	RS485: 2 CONFIG
12	Start source
13	Load source
14	Language
15	Time
16	Time format
17	Daylight saving
18	Date
19	Date format
20	LCD light level
21	Pressure unit
22	Temperature unit
23	VSD Target Pressure

Page 'P11' – Equip settings 2

01	Star delta TRANS
02	MIN MTR run
03	Load INH time
04	Reload INH time
05	Off load run time
06	Stop MIN time
07	Vent time
08	AUTO restart INH
09	CNDS drain open
10	CNDS drain INT
11	Off load drain time
12	MTR STR HR INH
13	DP inhibit time
14	Service hours 1
to	
21	Service hours 8
22	Weekly service
23	Annual service
24	Bi-annual service

Page 'P13' – VSD settings

01	VSD control mode
02	VSD target PRESS
03	VSD MAX speed
04	VSD MIN speed
05	VSD OPT speed
06	VSD offload SPD
07	VSD speed RPM
08	VSD output CURR
09	VSD P factor
10	VSD I factor
11	VSD D factor
12	VSD speed %
13	VSD MAX RMP rate

'CSC300' Controller (cont'd)

Page 'P16' – Warning alarm
- 01 Service hours 1
- 02 Service hours 2
- 13 EQUIP OUT PRESS
- 36 EQUIP OUT TEMP

Page 'P18' – I/O CONFIG
- 08 DI5 function
- 09 DI5 OK: NO/NC
- 14 DI8 function
- 15 DI8 OK: NO/NC
- 19 Relay 8 function

Page 'P20' – Diagnostics
- 01 Digital input 1
- to
- 08 Digital input 8
- 09 Analogue input 1
- 11 AI-3 - ohms
- 12 AI 3 – amps
- 13 AI 3- volts
- 18 Relay output 1
- to
- 25 Relay output 8
- 26 Analogue output 1

Page 'P21' – Run schedule
- 01 Run schedule
- 02 Workday edit
- 03 Schedule entry
- to
- 30 Schedule entry

Page 'P80' – ISC main menu (Shown if active)
- 01 ISC enabled
- 02 Offload pressure
- 03 Load pressure
- 04 ISC rotate INT

Page 'P81' – ISC settings (Shown if active)
- 01 ISC # compressors
- 02 ISC start delay
- 03 ISC damping
- 04 ISC tolerance
- 05 ISC DI1 FCN
- 06 ISC DI2 FCN
- 07 ISC DI3 FCN
- 08 ISC XPM pressure
- 09 ISC PRESS SENS

Page 'P82' – ISC priority (Shown if active)
- 01 COMP1 priority
- to
- 08 COMP8 priority

Service 2 Level Requiring Access Code: '1213'

Page 'P14' – Motor protection
- 01 Main MTR protect
- 02 Fan MTR protect
- 03 Main MTR NOM CUR
- 04 Main MTR SDTTF
- 05 Main MTR ROT LOC
- 06 Main MTR PH IMB

Page 'P17' – IMM stop alarm
- 01 COMP OUT TEMP
- 02 TEMP rise CONFIG
- 03 EQUIP OUT PRESS
- 04 EQUIP INT PRESS
- 05 PRES rise CONFIG
- 06 DIFF pressure
- 11 Phase detection
- 19 Inverter fault
- 20 Main MTR TEMP HI
- 21 EQUIP out TEMP H
- 23 Main motor fault

Page 'P19' – Sensor CONFIG
- 01 Analog input 1
- 02 Analog input 2
- 03 Analog input 3
- 04 Analog input 5

'CSC300' Controller (cont'd)

⚠ NOTE

Adjusting the parameters of the Controller could adversely affect the operation of the Unit. Only those individuals with knowledge of the Unit should be permitted to make any adjustments.

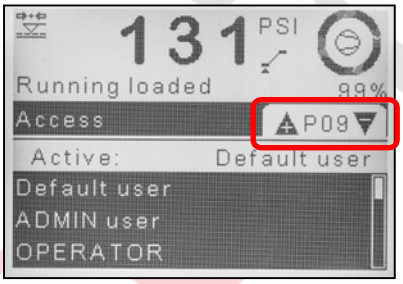
Access Code Entry

To gain entry to areas of the Controller in which an Access Code is required:

1. When navigation location is at **P00**

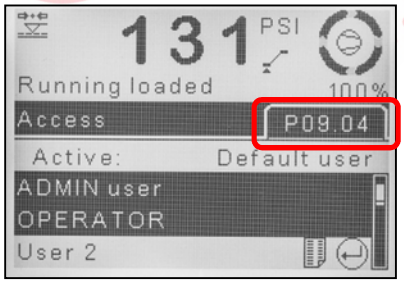
2. Press the '**Down**' key to navigate to **P09** Access page.

3. The screen shown below will appear

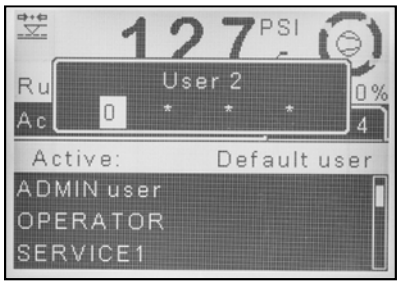


4. Press '**Enter**' key to navigate into P09 menu content and press 'Down' key to highlight **P09.04 Service 1**.

5. The screen shown below will appear

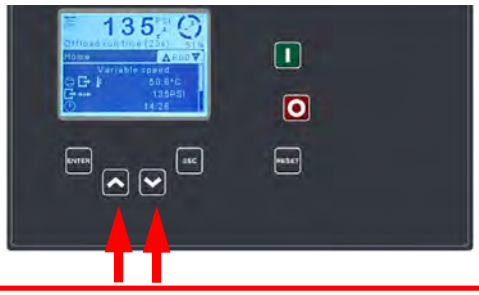


6. Press '**Enter**' key



'CSC300' Controller (cont'd)

9. Using the '**Up**' and '**Down**' keys, change the first digit of the Access Code to the appropriate number



10. Press '**Enter**' to move to the following digit. Using the '**Up**', '**Down**', and '**Enter**' keys, input the access code.

Once you have entered the correct Access Code, you will have access to pages of the Controller reflecting that code.

'CSC300' Controller (cont'd)

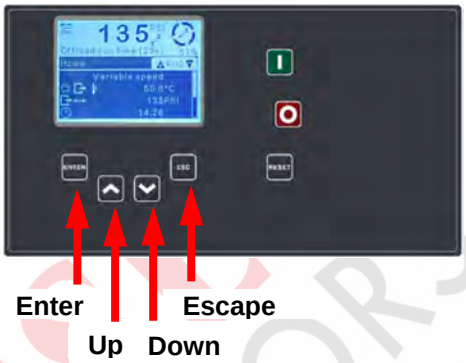
Page Menus

Once the correct Access Code has been entered, access will be given to pages reflecting that Code. Refer to Page 23 and 24 for available pages.

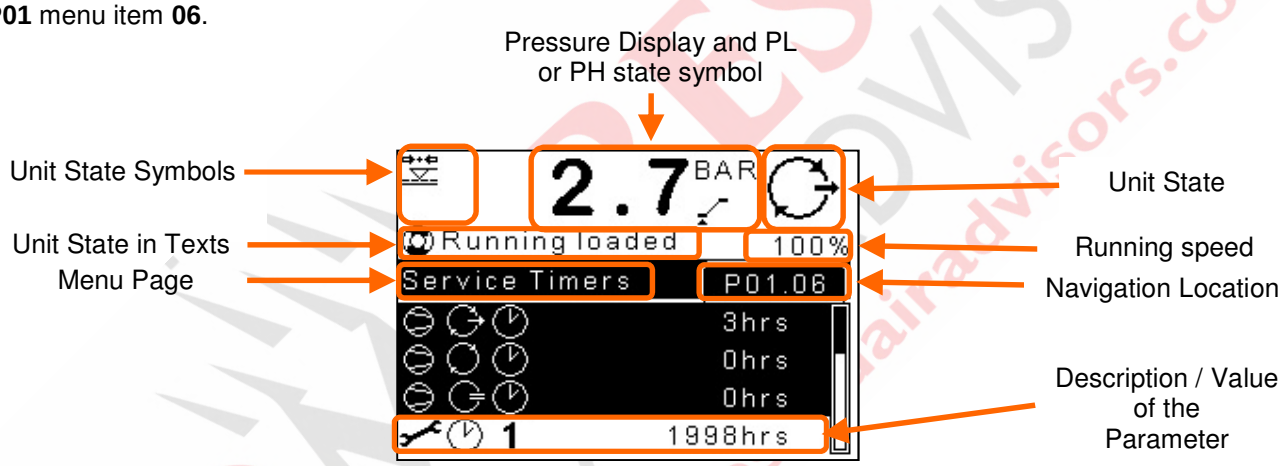
Use '**Enter**' and '**Escape**' keys on the Controller to navigate between menu page navigation and menu content navigation.

To select an appropriate menu page, use the '**Up**' or '**Down**' arrows on the controller.

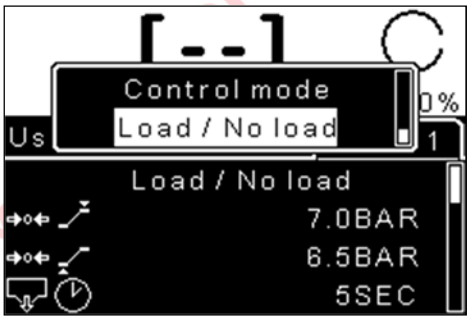
Once the appropriate page has been high-lighted, press '**Enter**' to access its menu content.



Use the '**Up**' and '**Down**' keys to navigate between menu content items. Below indicates the user has navigated to **P01** menu item **06**.



To adjust an editable parameter, navigate to it and press the '**Enter**' key. An edit menu popup window will appear. Use the '**Up**' or '**Down**' key until the desired value is highlighted, then press '**Enter**'.

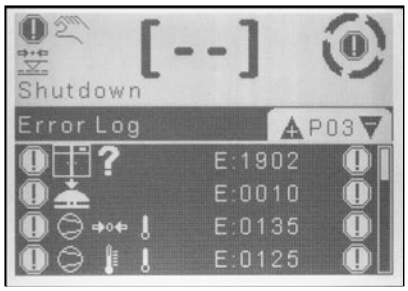


'CSC300' Controller (cont'd)

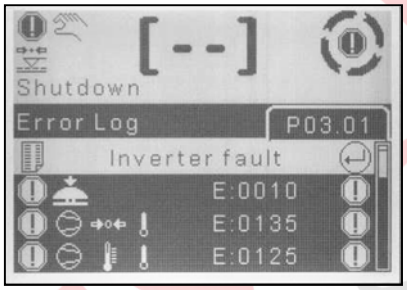
Error Log Menu

Any issues that the Unit may have are stored on an Error Log. It places in its memory the last 50 faults in chronological order. If all 50 faults have been used, any new faults will become '01', and all others will be moved back one step. This ensures that only the most recent faults appear.

Shown below is a typical Error Log Menu. The Error Log is on 'Page 03' of the Controller and it does not require an access code.

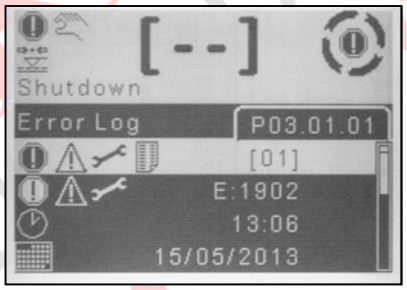


Press '**Enter**' to see the list of Errors



Use '**Up**' or '**Down**' keys to highlight an error

Press '**Enter**' to see details of the selected error



Use '**Up**' or '**Down**' keys to view the recorded data at the time of the fault

'CSC300' Controller (cont'd)

Advanced Phase Detection

Advanced Phase Detection feature of the CSC300 controller is utilized in fixed speed units. It measures the phase sequence of the incoming power to prevent motor from rotating in the wrong direction. If the following error is visible on the Screen and the Unit will not start, simply switch power leads L1 and L3.

E:0090 Phase Sequence

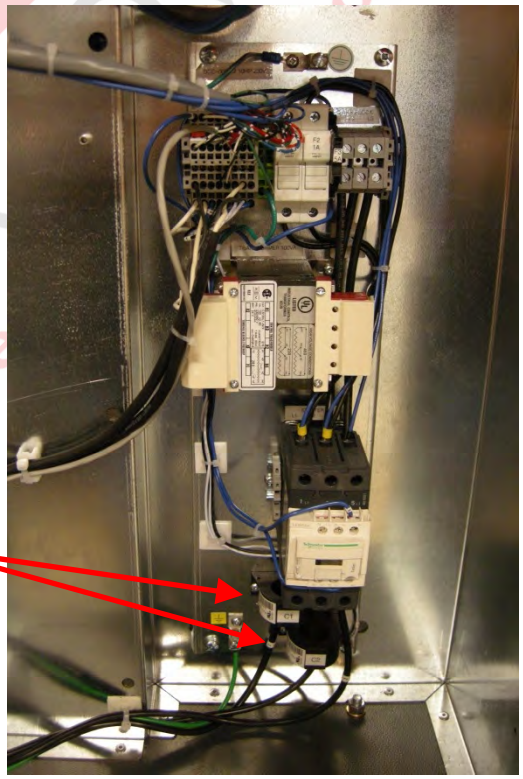
Note: If the Motor is replaced, Motor Rotation must be visually verified.

⚠ CAUTION **Irreparable damage will occur to the Air End if the rotation is incorrect.**

Advanced Motor Protection

Current Sensors are used to provide Under Current Detection, Rotor Lock Overload, Phase Imbalance, and Motor Overload protection to fixed speed compressors. Combined, CSC300 offers protection equivalent to Trip Class 10A for the main motor.

Current carrying cable through these Current Sensors may be looped up to 2 times to provide greater accuracy. Please consult factory if the motor is to be replaced.



Common Compressor Faults

Common Faults

Noted below are the most common Faults experienced.

'CSC300' Alarms

There is an issue with the Unit, but it will still operate.

Code:	Description:	Most Common Items to Check:
A:0083	Motor phase imbalance	Check supply voltage, fuses and cable
A:0119	Delivery Pressure High	Solenoid not working, Intake Valve Orifice clogged, Transducer dirty or faulty, pressure changed incorrectly, alternate external pressure source
A:0129	Delivery Temperature High	Ambient temp high, Unit dirty, low oil level, no air flow through Unit, Temp Sensor defective
A:2816	Power Failure Occurred	Press 'Reset' Button and restart Unit
A:4819	Routine Service Due	Service Unit and reset Service Timer (Page 'P16' on Controller)
A:4809	Grease Service Due	Service motor and reset Grease Service Timer (Page 'P16' on Controller)

'CSC300' Shutdown Errors

There is an issue with the Unit, and the Unit will not operate until the Fault has been addressed.

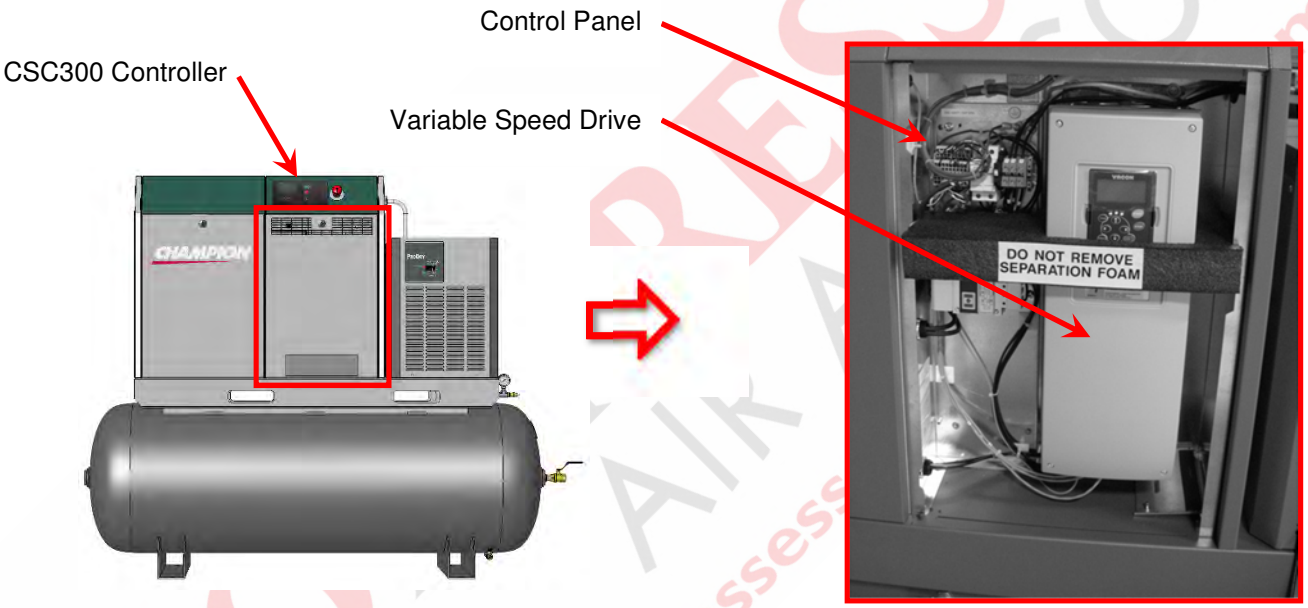
Code:	Description:	Most Common Items to Check:
E:0010	Emergency	Emergency stop switch is pressed
E:0082	Motor Overload	Motor drawing high amps, low voltage, high pressure settings, low oil level
E:0083	Motor phase Imbalance	Check motor connections in the control panel and motor connection box
E:0090	Phase Sequence	Rotation of Motor wrong, sequence order of supply cable incorrect
E:0091-0093	Phase L1/L2/L3 Fault	Check supply voltage, fuses and cable
E:0115	Delivery Pressure Sensor Fault	Transducer not making good electrical contact, or defective
E:0119	Delivery Pressure High	Solenoid Not working, Intake Valve Orifice clogged, Transducer dirty or faulty, pressure changed incorrectly, alternate external pressure source
E:0125	Delivery Temp Sensor Fault	Temperature Sensor not making good electrical contact, or defective
E:0129	Delivery Temperature High	Ambient temp high, Unit dirty, low oil level, no air flow through Unit, Temp Sensor defective
E:0902	Anti-Rotation	Rotation of Main Motor wrong, Solenoid Valve not relieving pressure

Variable Speed Drive

Your Champion DRS 15 Rotary Screw Compressor Unit has been equipped with a Vacon 'Variable Speed Drive', or 'VSD'. A Compressor with an integral VSD can handle the constant loads for an extended period of time (running at close to 100% duty cycle), but it can also run at slower speeds to accommodate lower air demands at other times of the day.

Variable Speed Drives can reduce the overall energy costs associated with operating the Compressor Unit by simply controlling the speed of the Motor and Air End to match consumption. As Rotary Screw Compressors using the variable speed technology match the varying air demands and therefore have the ability to impact your energy consumption, some energy providers have offered rebates when these Units are purchased. Consult your local energy provider to determine if this applies.

Shown below is a 'DRS 15' Unit with a Variable Speed Drive.



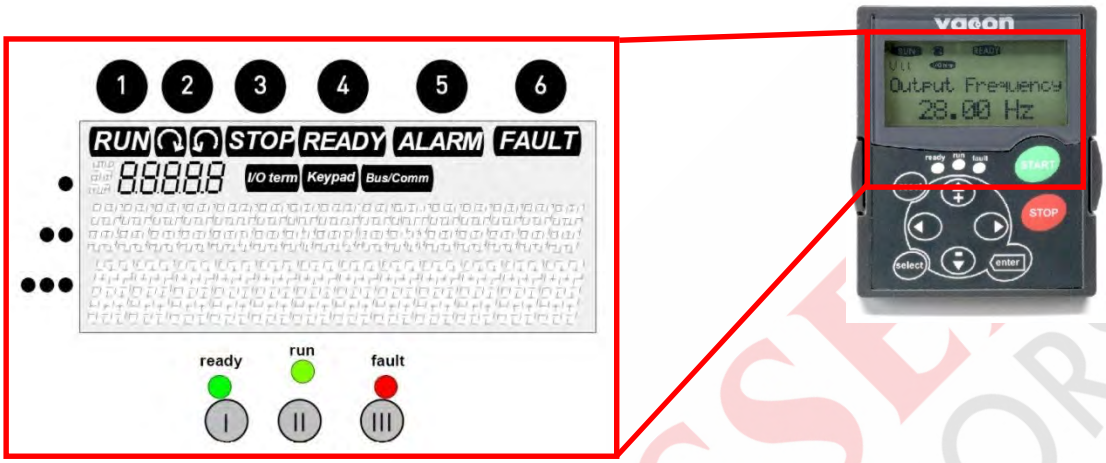
VSD Interface

The VSD Controller Interface is shown at right. It provides a means of operating, monitoring, and adjusting the parameters of the Variable Speed Drive.

Please note that adjustments to the parameters of the Variable Speed Drive should be made only by qualified Technicians, or with the guidance of factory trained personnel. Incorrect adjustments will affect the performance of the Unit, and could result in damage to the Drive.

Variable Speed Drive (cont'd)

Operating Screen



Typical Drive Status Indicators on Screen

1	RUN	=	Motor is running; Blinks when the stop command has been given but the frequency is still ramping down.
2	↻ ↺	=	Indicates the direction of motor rotation.
3	STOP	=	Indicates that the drive is not running.
4	READY	=	Lights when AC power is on. In case of a trip, the symbol will not light up.
5	ALARM	=	Indicates that the drive is running outside a certain limit and a warning is given.
6	FAULT	=	Indicates that unsafe operating conditions were encountered due to which the drive was stopped.

I ●	=	Illuminates with the AC power connected to the drive and no faults are active. Simultaneously, the drive status indicator READY is lit up.
II ●	=	Illuminates when the drive is running. Blinks when the STOP button has been pushed and the drive is ramping down.
III ●	=	Blinks when unsafe operating conditions were encountered due to which the drive was stopped (Fault Trip). Simultaneously, the drive status indicator FAULT blinks on the display and the fault description can be seen, see chapter 7.3.4, Active Faults.

●	=	Location indication; displays the symbol and number of menu, parameter etc. Example: M2 = Menu 2 (Parameters); P2.1.3 = Acceleration time
●●	=	Description line; Displays the description of menu, value or fault.
●●●	=	Value line; Displays the numerical and textual values of references, parameters etc. and the number of submenus available in each menu.

Variable Speed Drive (cont'd)

Keypad Buttons

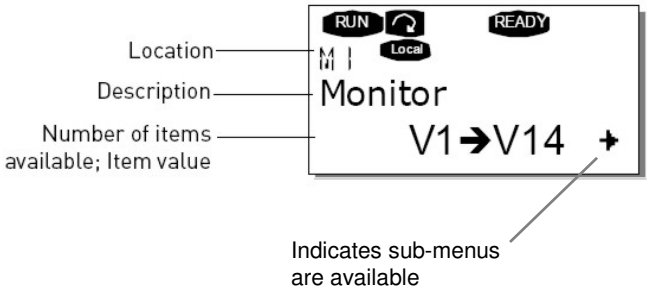
reset	=	Reset Button	Used to rest active Faults
select	=	Select Button	Used to switch between two latest displays May be useful to see how changing one value influences another.
enter	=	Enter Button	Used for: a) confirmation of selection b) Fault history reset
▲ +	=	Browse Button Up	Browse the main menu and pages of sub-menus. Edit values
- ▼	=	Browse Button Down	Browse the main menu and pages of sub-menus. Edit values
◀	=	Menu Button Left	Move backwards in menu. Move cursor left in parameter value. Exit edit mode. Hold down for 3 seconds to return to Main Menu.
▶	=	Menu Button Right	Move forwards in menu. Move cursor right in parameter value. Exit edit mode.
start	=	Start Button	Not Used.
stop	=	Stop Button	Not Used.

Menu Button Navigation

The data on the VSD Control Keypad is arranged in menus and sub-menus. Shown at right is an example of a typical menu.

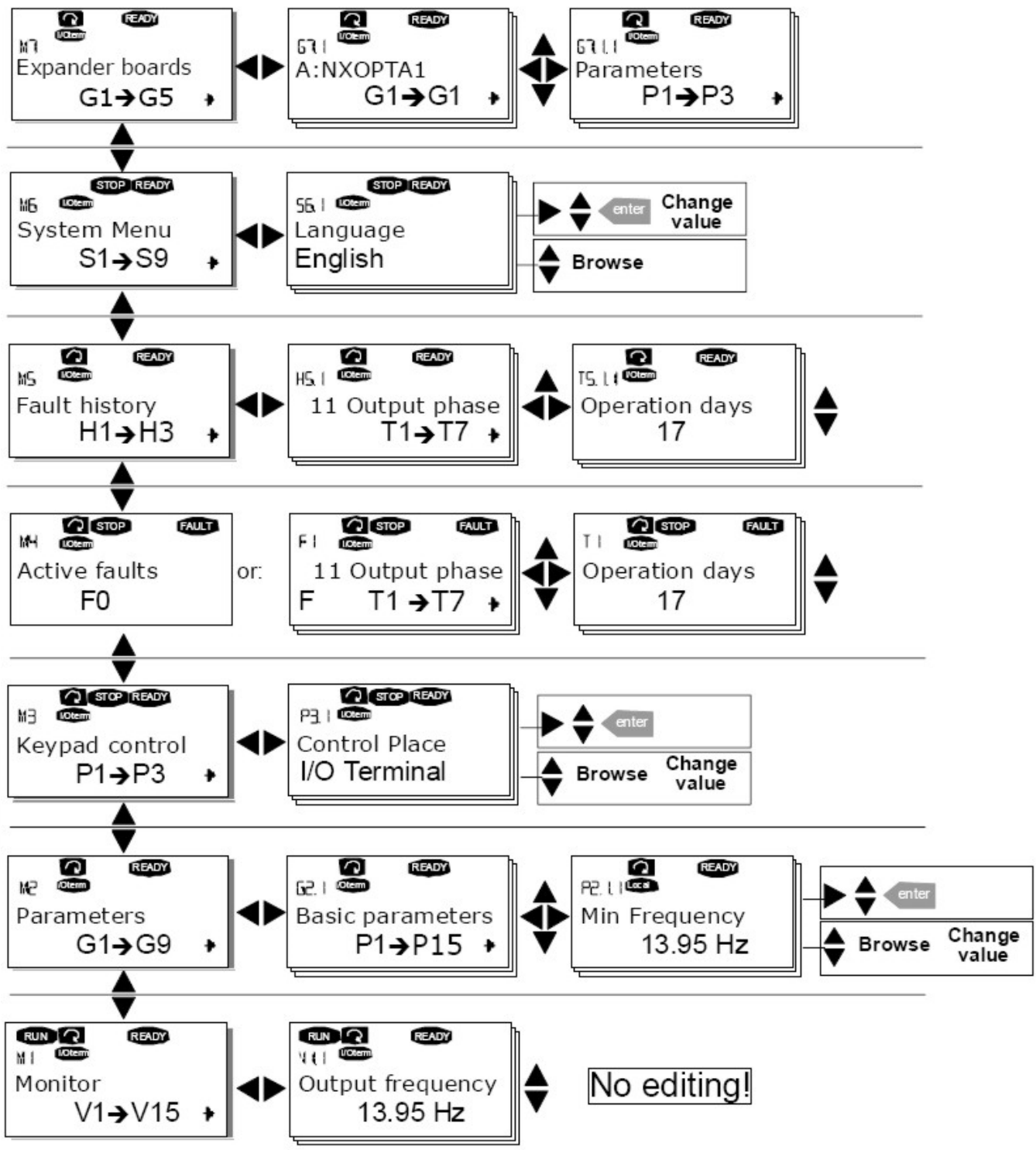
The first level consists of menus 'M1' to 'M7', and is called the 'Main Menu'. The User can navigate in the Main Menu using the 'Browse Button Up' and 'Browse Button Down' keys.

To access the various pages of a menu, use the 'Menu Button Left' or 'Menu Button Right' keys. To access a sub-menu, use the 'Menu Button Right' key.



Variable Speed Drive (cont'd)

Menu Button Navigation Chart



Variable Speed Drive (cont'd)

Monitoring Menu

The Monitoring Menu, accessible at the 'Main Menu' by pressing the 'Main Menu Right' button when 'M1' is visible on the first line of the display, indicates the values for the various running parameters as in shown below.

Code	Signal Name	Unit	Description
V1.1	Output Frequency	Hz	Frequency to the motor
V1.2	Frequency Reference	Hz	
V1.3	Motor Speed	rpm	Calculated motor speed
V1.4	Motor Current	A	Measured motor current
V1.5	Motor Torque	%	Calculated motor shaft torque
V1.6	Motor Power	%	Calculated motor shaft power
V1.7	Motor Voltage	V	Calculated motor voltage
V1.8	DC Link Voltage	V	Measured DC link voltage
V1.9	Unit Temperature	°F	Heat sink temperature
V1.10	Motor Temperature	%	Calculated motor temperature
V1.11	Voltage Input	V	AI1
V1.12	Current Output	mA	AI2
V1.13	DIN1, DIN2, DIN3		Digital input statuses
V1.14	DIN4, DIN5, DIN6		Digital input statuses
V1.15	D01, R01, R02		Digital and relay output statuses
V1.16	Analogue Output	mA	A01
V1.17	Multimonitoring Items		Displays three selectable monitoring values

Variable Speed Drive (cont'd)

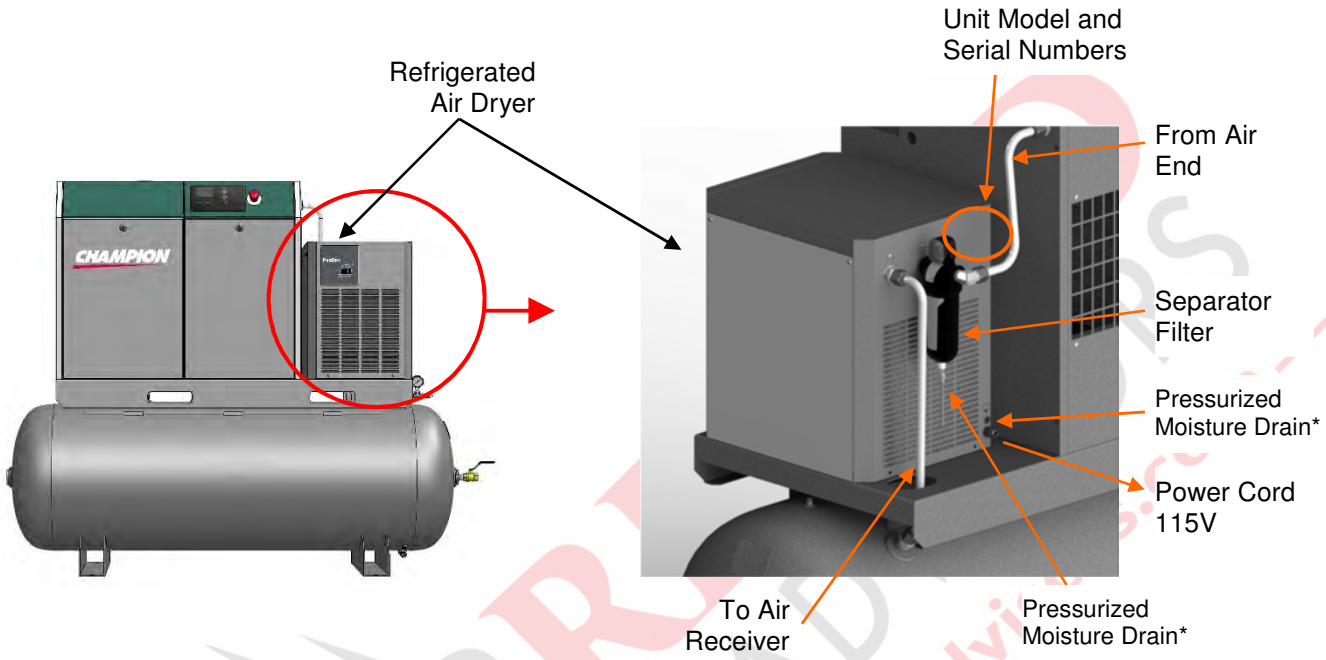
Common VSD Fault Codes

Noted below are the most common fault codes that may appear on the VSD. For a more thorough list, please check the manual which deals exclusively with the Vacon Variable Speed Drive and which accompanied the Unit.

Fault Code	Fault	Possible Causes:	Corrective Measures:
1	Over-current.	Current too high in Motor Cable.	Check loading. Check Motor. Check Cables.
2	Over-voltage.	The DC link voltage has exceeded the limits. - too short a deceleration time - high voltage spikes in supply	 Make deceleration time longer. Check input voltage.
3	Ground Fault.	Insulation failure in Motor or wiring.	Check Motor wires and Motor.
8	System Fault.	- component failure - faulty operation	Reset the fault and restart the Unit.
13	Frequency Converter under temperature.	Heatsink temperature is below -10°C.	
14	Frequency Converter over temperature.	Heatsink temperature is over 90°C. Overtemperature warning is issued when the heatsink temperature exceeds 85°C.	Check the amount and flow of cooling air. Check the heatsink for dust. Check the ambient temperature. Ensure the switching frequency is not too high in relation to ambient temperature and motor load
15	Motor stalled.	Motor stall protection has tripped.	Check Motor and load.
16	Motor over-temperature.	Motor is overloaded.	Decrease motor load.
17	Motor under-load.	Motor under-load temperature has tripped.	Check load.
22	EEPRON checksum fault.	Parameter save fault. - faulty operation. - component failure.	Should the fault re-occur, contact the Distributor.
25	Microprocessor watchdog fault.	- faulty operation. - component failure.	Reset the fault and restart the Unit. Contact Distributor.
31	IGBT temperature (hardware).	IGBT Inverter Bridge overtemp protection has detected too high a short term overload current.	Check loading. Check motor size. Make identification run.
32	Fan cooling.	Cooling Fan of frequency converter does not start when ON command is given.	Contact Distributor.
50	Analogue Input Iin < 4mA.	Current at the analogue input is less than 4 mA. - control cable is broken or loose. - signal source has failed.	Check the current loop circuitry.
52	Keypad communication fault.	The data connection between the control keypad and the frequency converter is broken.	Check keypad connection and possible keypad cable.
54	Slot fault.	Defective option board or slot.	Check board and slot. Contact the nearest Vacon Distributor.
56	PT100 board temperature fault.	Temperature limit values set for the PT100 board parameters have been exceeded.	Find the cause of temperature rise.

Separator Filter and Refrigerated Air Dryer

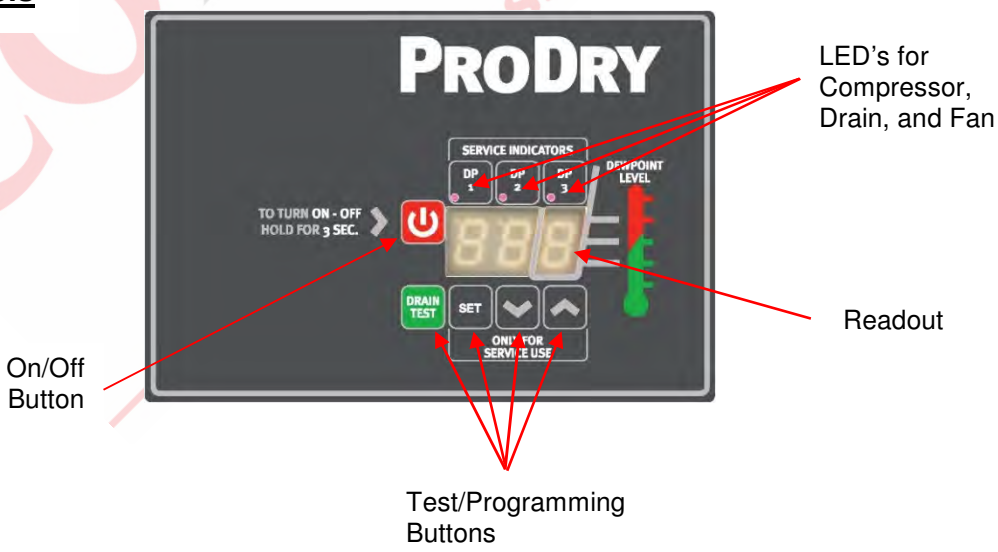
Your Unit may be equipped with a Separator Filter and an 'ASD Series' Refrigerated Air Dryer Unit as indicated below. These items are located in the compressed air lines after the air is compressed but before it enters the Air Receiver. This allows for what is termed a 'dry' Tank.



*Drains will discharge automatically under pressure. It is recommended that pneumatic drain tubes be anchored and filtered as per your local municipality regulations.

More detailed information concerning the Dryer Unit is included in the Dryer manual. The information contained in this manual is a 'quick reference' only.

Dryer Controls

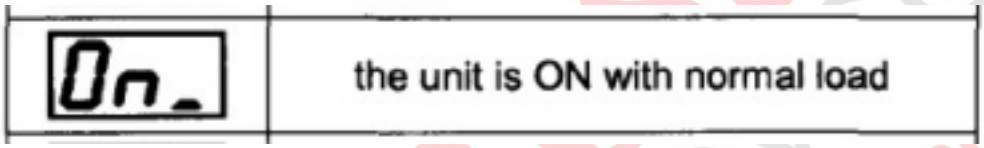


Separator Filter and Refrigerated Air Dryer (cont'd)

Typical Dryer Operation

The Dryer will operate as follows:

- Pressing the 'On/Off' Button for 3 seconds will start the Unit
- There is a time delay of up to 2 minutes before the Refrigerant Compressor starts.
- The Condenser Fan will start approx. 30 seconds there-after.
- The Fan will not normally run at full speed, this indicated by a flashing LED
- The readout will initially show ambient temperature indicated by 3 horizontal bars on the readout
- Once the Fan and Compressor start, the dew point of the Unit will decrease to approx. 1°C, this indicated by 1 or no horizontal bars.
- Once at approx. 1°C, the Fan will stop, only to be called to run again once the temperature increases to approx. 5°C
- Pressing the 'On/Off' Button (when the Unit is operating) will run the Fan at full speed for several seconds, after which the Unit will stop. (The LED will be on continually while the Fan runs at full speed.)



- As well as showing the dew point, the readout may indicate several fault codes as suggested below.

Typical Fault Codes

The readout will indicate a variety of 'fault codes', the most common being as follows:

Energy Saving Mode.
- The Dew Point has been running at below -1°C for over 6 minutes.
- The Unit will automatically restart operation at 6°C.

Temperature Probe Alarm.
- The Temperature Probe is not working properly. It may not be connected to the Board, or the Probe may be defective.
- Replace the Probe if necessary.

High Temperature Alarm.
- The Dew Point has been running at above 12.5°C for over 6 minutes. The Unit must be manually turned off and on.
- The fault could be caused by a dirty radiator, high ambient temperature, a faulty Fan, or a faulty refrigerant Compressor, to name only a few.

Separator Filter and Refrigerated Air Dryer (cont'd)

Typical Separator Filter

As previously noted, the Separator Filter is located between the Air End and the Refrigerated Dryer. It contains a 1 micron Separator Element which protects the Dryer Unit by removing liquids and solid particles 1 microns and larger.

The label shown above is included with a replacement Filter Element, and should be affixed to the outside of the Bowl for future reference.

Filter Element Replacement

To replace a dirty Filter Element:

- Shut the Compressor Unit off.
- Bleed any compressed air from the system to ensure there is no pressure at the Filter.
- Unscrew the Bowl from the assembly, exposing the dirty Filter Element.
- Pull the Filter Element out of the Canister Head
- Clean any debris from the inside of the Bowl
- Remove the O-ring from the inside of the Canister Head
- Install the new O-ring making sure it is properly seated
- Place the new 1 micron Separator Filter Element into the Bowl (the filter is self-centring).
- Screw the Canister with the Element inside it to the Canister Head until the indicators line up.
- Gauge will return to green when Filter is once again under pressure.

Trouble Shooting Guide

WARNING

When servicing the Air Compressor, shut off all power to the Unit, and drain it of air pressure.

The 'Conditions', 'Causes', and 'Suggested Corrections' as indicated below and on the following page(s) are only a guideline for failures that we have found to be most common.

Though this information is provided in this booklet, it is assumed and expected that any personnel involved in the servicing of an Air Compressor Unit is knowledgeable with this type of equipment. Do not attempt to service a Compressor Unit unless you are familiar with it, as there are many issues that may come into play, the most important being personal safety and the welfare of the Unit.

Should you have any questions, or require servicing to your Unit, please contact your local Champion Distributor/Service Center.

Condition:	Cause:	Suggested Correction:
A. Unit won't start.	No power to the Unit.	Check that power at the disconnect or breaker is on. Also, check any primary and secondary fuses.
	Loose and/or missing wires in the electrical circuit.	Check that all wiring connections are tight. With a wiring schematic, check that all wiring is present and correct.
	Emergency Stop Button pressed in.	Release by twisting and pulling out.
	Motor Overload is tripped.	Reset the overload.
	Compressor over-heated and stopped.	Insufficient air flow to cool Unit. Ambient temperature too high. Heat Exchanger is dirty. Faulty Temperature Switch. Oil level is low.
	Compressor stopped by over-pressure.	Solenoid Valve faulty. Seals on Intake Valve leaking. Intake Valve Spring broken. Pressure Transducer stopped Unit. Lower maximum pressure setting.
	Unit has 'timed out' / shut off because pressure has not gone below cut-in pressure of 120 psi.	Drop pressure below 120 psi.
	Power interruption.	Reset the Unit.

Trouble Shooting Guide (cont'd)

Condition:	Cause:	Suggested Correction:
B. No or Insufficient Air Flow.	Air Filter is dirty.	Replace the Air Filter.
	Oil Separator is blocked.	Replace the Oil Separator.
	Intake Valve is faulty.	Repair or replace the Intake Valve.
	Air leaks in the system.	Check the Unit and system for air leaks.
	Pressure limits are incorrectly set.	Adjust the pressure settings.
	Blowdown Solenoid Valve is open.	Check the wiring to the Solenoid and replace as necessary.
	Belt are broken or slipping	Check Belt tension and that Belts are in good condition.
C. Unit is overheating.	Ambient temperature is too high.	Check cooling air circulation.
	Blocked air circulation at the Unit.	Check the air circulation in and around the Unit.
	Heat Exchanger is dirty.	Clean the Heat Exchanger
	Oil level is too low.	Add oil as required.
	Using wrong type of compressor oil.	Change to the factory recommended oil.
	Thermo Valve is faulty.	Check and repair as necessary.
	Oil Filter is blocked.	Replace the Oil Filter.
	Temperature Sensor is faulty.	Check the wiring to the Temperature sensor. Replace the Sensor if necessary.
	Thermostat is faulty.	Replace the Thermostat.
	Pressure is too high.	Lower the pressure setting.
	Cabinet door/panel is open/off.	Secure the door/panel to the Unit.
D. Compressor Starts Slowly.	Intake Valve not functioning properly.	Check Intake Valve operation. Repair or replace as required.
	Ambient temperature is too low.	Stop and restart once ambient increases.
	Minimum Pressure Valve leaking back to Air End.	Repair or replace the Minimum Pressure Valve.
	Minimum Pressure Valve setting is too high.	Adjust Minimum Pressure Valve setting to 65 psi.
	Using wrong type of oil.	Change to factory recommended oil.

Trouble Shooting Guide (cont'd)

Condition:	Cause:	Suggested Correction:
E. Intake Valve Leaks Oil When Unit Stops.	Intake Valve Seal leaks.	Repair using an Intake Valve Repair Kit.
	Intake Valve stuck in open position.	Repair or replace the Intake Valve.
	Blowdown Solenoid not functioning.	Replace the Solenoid.
F. Oil Consumption is Too High.	Oil level is too high.	Reduce the oil level to the proper level.
	Oil Return Line (Scavenge Line) is blocked.	Clean and/or replace the Scavenge In-Line Filter.
	Oil Separator is saturated with oil.	Replace the Oil Separator.
	Wrong type of oil used.	Change to factory recommended oil.
	Unit is operating at too high a temperature.	See 'Section C'.
	Oil leak.	Repair oil leak.
	Unit load is light or excessive load/idle cycles.	Ensure Unit is set to operate at correct pressures, and there is a minimum of 10 psi differential. Also the Unit could be oversized for the tank capacity.
G. Compressor Surges.	Restriction in Heat Exchanger or Hoses.	Flush out or replace.
	Pressure Transducer setting is incorrect or malfunctioning.	Set pressure as per instructions or replace.
	Blockage at Unit outlet.	Check for obstructions in outlet piping.
	Dryer is freezing up, not allowing air to pass through.	Check that the Dryer parameters are correct. Increase dew point to 2.0 if required.
	Air Receiver is too small.	Use a minimum 120 Gallon for 7-1/2 to 15 HP Units.
H. High Power Consumption.	Improper air pressure settings.	Reset the pressure as per factory defaults.
	Blowdown Solenoid is not functioning.	Inspect or replace as necessary.
	The voltage in the building is too low or there is a phase imbalance.	Contact an Electrician to verify.
	The Motor is failing.	Have Motor inspected.
I Fault Alarms.	Emergency Stop.	Ensure Emergency Stop Button is not pressed in.
	High Temperature.	See 'Section C'.
	Low Temperature.	Ambient temperature is too low. Increase to 10°C.
	High pressure.	Check the pressure settings, the Pressure Transducer and the wiring to the Transducer.

Standard Warranty

Oil-Lubricated Rotary Screw Packages

D Series, DRS Series

STANDARD WARRANTY

Champion (the "Company") warrants to each original retail purchaser ("Purchaser") of its new products from the Company or its authorized distributor that such products are, at the time of delivery to the Purchaser, free of defects in material and workmanship. **This Standard Warranty statement applies to compressors shipped after May 1st, 2015.**

STANDARD WARRANTY PERIOD

The Company's obligation under this warranty is limited to repairing or, at its option, replacing, during normal business hours at an authorized service facility of the Company, any part which in its judgment proved not to be as warranted within the applicable warranty period as follows. **Regular maintenance in accordance with the service manual is required. Use of genuine Champion OEM parts and lubricants are highly recommended. If a component failure is deemed a result of using non-genuine Champion parts and lubricants, warranty will not be allowed.**

COMPONENT	STANDARD WARRANTY COVERAGE	DETAILS
Package	**12 months** from startup or **15 months** from date of shipment to first purchaser, whichever occurs first	All components within the package, excluding normal wear items
Airend	**12 months** from startup or **15 months** from date of shipment to first purchaser, whichever occurs first	Normal wearing items, such as shaft seals and inlet valve components, along with the servicing of these items is not covered under the warranty unless deemed as material or workmanship defects. Any disassembly or partial disassembly of the airend, or failure to return the "unopened" airend per Company instructions, will be cause for denial of warranty.
Electric Motors	**12 months** from startup or **15 months** from date of shipment to first purchaser, whichever occurs first	Includes both drive motor and cooling fan motor. For nonstandard motors, the original manufacturer's warranty will take precedence.
Major Package Components	**12 months** from startup or **15 months** from date of shipment to first purchaser, whichever occurs first	Includes package controller, variable frequency drive if applicable, air/oil reservoir, air/oil cooler, and precision mixing valve (VS Series).
Labor	**Package / Electric Motors: 12 months** from startup or **15 months** from date of shipment to first purchaser, whichever occurs first **Airend / Major Package Components: 12 months** from startup or **15 months** from date of shipment to first purchaser, whichever occurs first	Service will be provided by Company representative or authorized service personnel, for repair or replacement of any product or part which in the Company's sole judgment is proved not to be as warranted. Labor shall be limited to the amount specified in the Company's labor rate schedule. All costs of transportation of product, parts, and repaired or replacement parts claimed not to be as warranted to and from such service facilities shall be borne by the Purchaser. The Company may require the return of any part claimed not to be as warranted to one of its facilities as designated by Company, transportation prepaid by Purchaser, to establish a claim under this warranty. Replacement parts provided under the terms of the warranty are warranted for the remainder of the Warranty Period.

NO WARRANTY IS MADE WITH RESPECT TO:

1. **ANY PRODUCT WHICH HAS BEEN REPAIRED OR ALTERED IN SUCH A WAY, IN THE COMPANY'S SOLE JUDGMENT, AS TO AFFECT THE PRODUCT ADVERSELY**
2. **ANY PRODUCT WHICH HAS, IN THE COMPANY'S SOLE JUDGMENT BEEN SUBJECT TO NEGLIGENCE, ACCIDENT, IMPROPER STORAGE, OR IMPROPER INSTALLATION OR APPLICATION**
3. **ANY PRODUCT WHICH HAS NOT BEEN OPERATED OR MAINTAINED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE COMPANY**
4. **ANY RECONDITIONED OR PRIOR OWNED PRODUCT**

STANDARD WARRANTY DISCLAIMER

THE FOREGOING WARRANTY IS EXCLUSIVE AND IT IS EXPRESSLY AGREED THAT, EXCEPT AS TO TITLE, THE COMPANY MAKES NO OTHER WARRANTIES AND HEREBY EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES, INCLUDING WITHOUT LIMITATION, EXPRESSED, IMPLIED OR STATUTORY WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE. THE REMEDY PROVIDED UNDER THIS WARRANTY SHALL BE THE SOLE, EXCLUSIVE AND ONLY REMEDY AVAILABLE TO PURCHASER AND IN NO CASE SHALL THE COMPANY BE SUBJECT TO ANY OTHER OBLIGATIONS OR LIABILITIES. UNDER NO CIRCUMSTANCES SHALL THE COMPANY BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, EXPENSES, LOSSES OR DELAYS HOWSOEVER CAUSED. NO STATEMENT, REPRESENTATION, AGREEMENT, OR UNDERSTANDING, ORAL OR WRITTEN, MADE BY ANY AGENT, DISTRIBUTOR, REPRESENTATIVE, OR EMPLOYEE OF THE COMPANY WHICH IS NOT CONTAINED IN THIS WARRANTY WILL BE BINDING UPON THE COMPANY UNLESS MADE IN WRITING AND EXECUTED BY AN OFFICER OF THE COMPANY. THIS WARRANTY SHALL NOT BE EFFECTIVE AS TO ANY CLAIM WHICH IS NOT PRESENTED WITHIN 30 DAYS AFTER THE DATE UPON WHICH THE PRODUCT IS CLAIMED NOT TO HAVE BEEN AS WARRANTED. ANY ACTION FOR BREACH OF THIS WARRANTY MUST BE COMMENCED WITHIN ONE YEAR AFTER THE DATE UPON WHICH THE CAUSE OF ACTION OCCURRED. ANY ADJUSTMENT MADE PURSUANT TO THIS WARRANTY SHALL NOT BE CONSTRUED AS AN ADMISSION BY THE COMPANY THAT ANY PRODUCT WAS NOT AS WARRANTED. WARRANTY IS NOT TRANSFERRABLE

Premium Warranty Plan

Oil-Lubricated Rotary Screw Packages

D Series, DRS Series

The extended warranty is available on all new Champion oil-lubricated rotary screw / rotary vane packages **shipped after May 1st, 2015.** To receive the extended airend and package component warranty, the requirements listed below must be performed and documented during the full warranty period. In the event of a claim under this warranty, documentation shall be provided evidencing full compliance with this requirement.

PREMIUM WARRANTY PLAN PERIOD

Champion (the "Company") shall warrant the components identified below to be free of defects in material and workmanship for the warranty period. Normal wearing components and servicing of these items is not covered under the premium warranty. The Company's obligation under this warranty is limited to repairing or, at its option, replacing, during normal business hours at an authorized service facility of the Company, any part which in its sole judgment proved not to be as warranted within the applicable warranty period as follows. Regular maintenance in accordance with the service manual and use of genuine Champion OEM parts and lubricants is required.

COMPONENT	PLATINUM EXTENDED WARRANTY COVERAGE	DETAILS
Package	**12 months (1 year)** from startup or **15 months** from date of shipment to first purchaser, whichever occurs first	All components within the package, excluding normal wear items
Airend	**60 months (5 years)** from date of initial startup or **63 months** from shipment, whichever occurs first	Normal wearing items, such as shaft seals and inlet valve components, along with the servicing of these items is not covered under the warranty unless deemed as material or workmanship defects. Any disassembly or partial disassembly of the airend, or failure to return the "unopened" airend per Company instructions, will be cause for denial of warranty
Electric Motors	**60 months (5 years)** from date of initial startup or **63 months** from shipment, whichever occurs first (*Excludes 1ph motors*)	Includes both drive motor and cooling fan motor. For nonstandard motors, the original manufacturer's warranty will take precedence.
Major Package Components	**60 months (5 years)** from date of initial startup, or **63 months** from shipment, whichever occurs first	Includes package controller, variable frequency drive if applicable, air/oil reservoir, air/oil cooler.
Labor	**Package: 12 months** from startup or **15 months** from date of shipment to first purchaser, whichever occurs first **Airend / Major Package Components:** **60 months** from date of initial startup, or **63 months** from shipment, whichever occurs first	Service will be provided by Company representative or authorized service personnel, for repair or replacement of any product or part which in the Company's sole judgment is proved not to be as warranted. Labor shall be limited to the amount specified in the Company's labor rate schedule. All costs of transportation of product, parts, and repaired or replacement parts claimed not to be as warranted to and from such service facilities shall be borne by the Purchaser. The Company may require the return of any part claimed not to be as warranted to one of its facilities as designated by Company, transportation prepaid by Purchaser, to establish a claim under this warranty. Replacement parts provided under the terms of the warranty are warranted for the remainder of the Warranty Period.

PREMIUM WARRANTY PLAN REQUIREMENTS

1. The **Premium Warranty Registration Form** (BP-46) must be completed and returned to Champion within 30 days of the compressor package start-up date.

2. Use of **Genuine Champion OEM parts and lubricant (or warranty kits)** as specified in the service manual must be purchased from an authorized Champion distributor. **Maintenance shall be performed in accordance to the table found below along with the recommended maintenance schedule found in the service manual for the appropriate compressor package.** Consult the service manual for proper maintenance intervals for the operating hours of the equipment.

D Series, DRS Series:

Component	Change Interval
Oil Filter	Every **2000hrs** or **6 months,** whichever occurs first
Oil Sample	Every **2000hrs** or **6 months,** whichever occurs first
Lubricant	Change per recommendations of the Oil Analysis or hour Life rating of lubricant or as indicated by controller or **12 months,** whichever occurs first
Separator	Every **4000hrs** or **12months,** whichever occurs first
Inlet Air Filter	Every **2000hrs** or **6 months,** whichever occurs first
Control Box Filter	Every **2000hrs** or **6 months,** whichever occurs first
Cabinet Air Filter	Every **2000hrs** or **6 months,** whichever occurs first

3. Participation in Champion's oil analysis sampling program is required. An oil sample must be sent to our lubricant analysis laboratory every **2000 hours or every 6 months**, whichever occurs first. Any recommendations detailed in the oil analysis report must be followed as outlined in the report. Oil sample bottles are to be obtained from your local authorized Gardner Denver distributor.

4. The use of approved Champion lubricants is required. The following lubricants are approved for warranty and must be changed in accordance with the above maintenance tables or **a minimum of every 12 months**. Oil filter and separator elements must be replaced at the time of the lubricant change.

   D Series, DRS Series:

   RotorLub 8000, RotorLub 8000TH, RotorLub 4000, Rotorlub 4000FG, RotorLub 4000FG-68

5. A log of all maintenance performed must be maintained with the corresponding operational hours. This includes the following changes: air filter, oil filter, separator, and lubricant. All other maintenance and repairs also require logging and documentation with corresponding hours.

PREMIUM WARRANTY PLAN DISCLAIMER

CHAMPION RESERVES THE RIGHT TO CHANGE THE PREMIUM WARRANTY PLAN AND/OR REQUIREMENTS AS DEEMED APPROPRIATE BY THE COMPANY. CHAMPION RESERVES THE RIGHT TO REFUSE PARTICIPATION IN THE PREMIUM WARRANTY PLAN TO ANY DISTRIBUTOR AND/OR END CUSTOMER OF THE COMPRESSOR. THIS PREMIUM WARRANTY PLAN IS SUPPLEMENTAL TO THE STANDARD WARRANTY. COMPANY MAKES NO OTHER WARRANTY OR REPRESENTATION OF ANY KIND, EITHER EXPRESS OR IMPLIED. THE FOREGOING WARRANTY IS EXCLUSIVE AND IT IS EXPRESSLY AGREED THAT, EXCEPT AS TO THE TITLE, COMPANY MAKES NO OTHER WARRANTIES EXPRESSED, IMPLIED, OR STATUTORY, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY. THIS WARRANTY SHALL NOT BE EFFECTIVE AS TO ANY CLAIM WHICH IS NOT PRESENTED WITHIN 30 DAYS AFTER THE DATE UPON WHICH THE PRODUCT IS CLAIMED NOT TO HAVE BEEN AS WARRANTED. ANY ACTION FOR BREACH OF THIS WARRANTY MUST BE COMMENCED WITHIN ONE YEAR AFTER THE DATE UPON WHICH THE CAUSE OF ACTION OCCURRED.

NO WARRANTY IS MADE WITH RESPECT TO:

1. **ANY PRODUCT WHICH HAS BEEN REPAIRED OR ALTERED IN SUCH A WAY, IN THE COMPANY'S SOLE JUDGMENT, AS TO AFFECT THE PRODUCT ADVERSELY**
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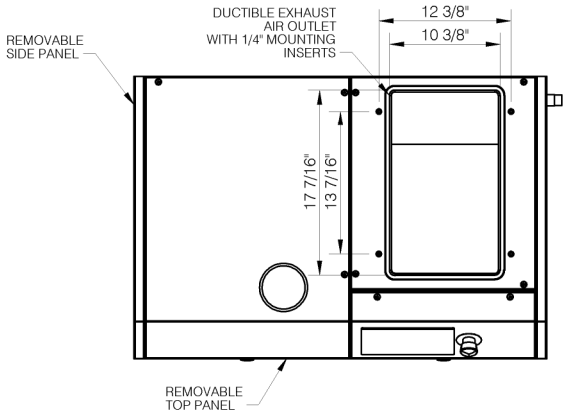
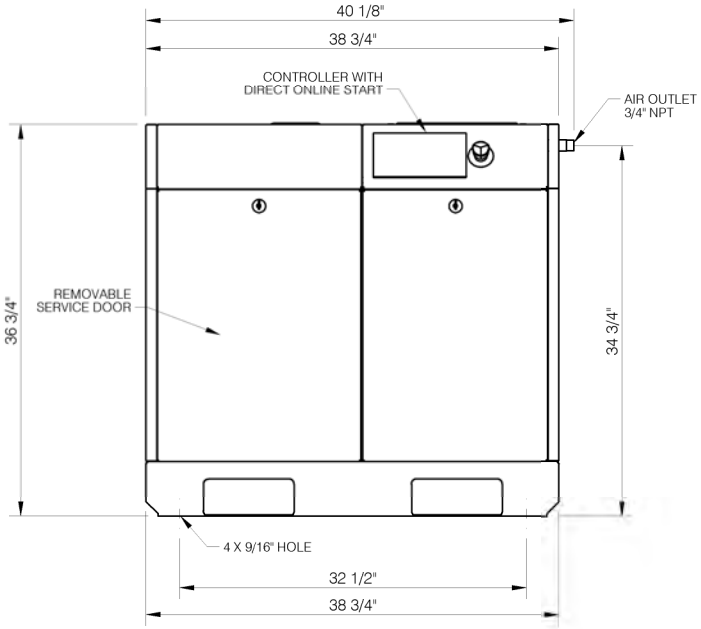
3. **ANY PRODUCT WHICH HAS NOT BEEN OPERATED OR MAINTAINED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE COMPANY**
4. **ANY RECONDITIONED OR PRIOR OWNED PRODUCT**

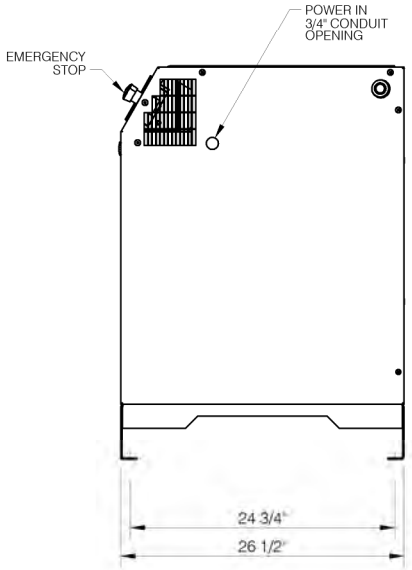
MODEL NO.	HP	PRESSURE PSI	ACFM @ LOAD PRESSURE	NOMINAL SOUND @ 1 METRE	FULL LOAD CURRENT (AMPS)			WEIGHT LBS
					3-PHASE			
					200V	230V	460V	
D10	10	125-145	33	65 dBA	32.2	28	14	560
D15	15	125-145	52	69 dBA	48.3	42	21	600

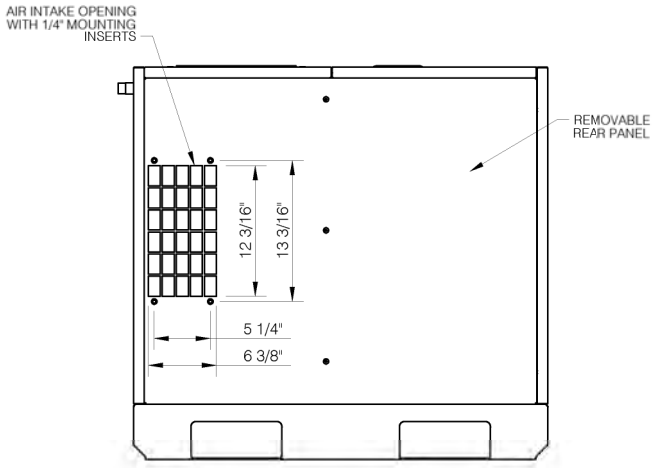


INSTALLATION REQUIREMENTS

1. MAINTAIN 3 FEET DISTANCE FROM WALLS AND OTHER OBJECTS FOR PURPOSE OF COOLING AND SERVICING.
2. COMPRESSOR MUST BE LEVEL AND ANCHORED DOWN TO SOLID LEVEL FLCOR.
3. AMBIENT CONDITIONS: 10°C (50°F) MIN. 40°C (104°F) MAX.
4. APPROACH TEMP. FROM TANK 5°C (41°F)





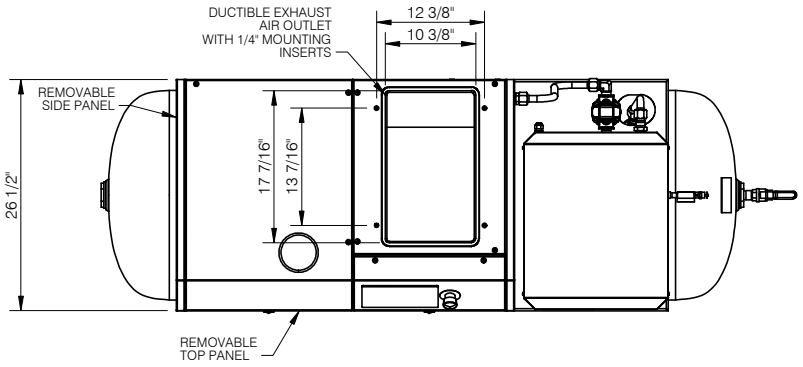


REV.	DATE	REVISION DESCRIPTION	ECN NO.

CHAMPION

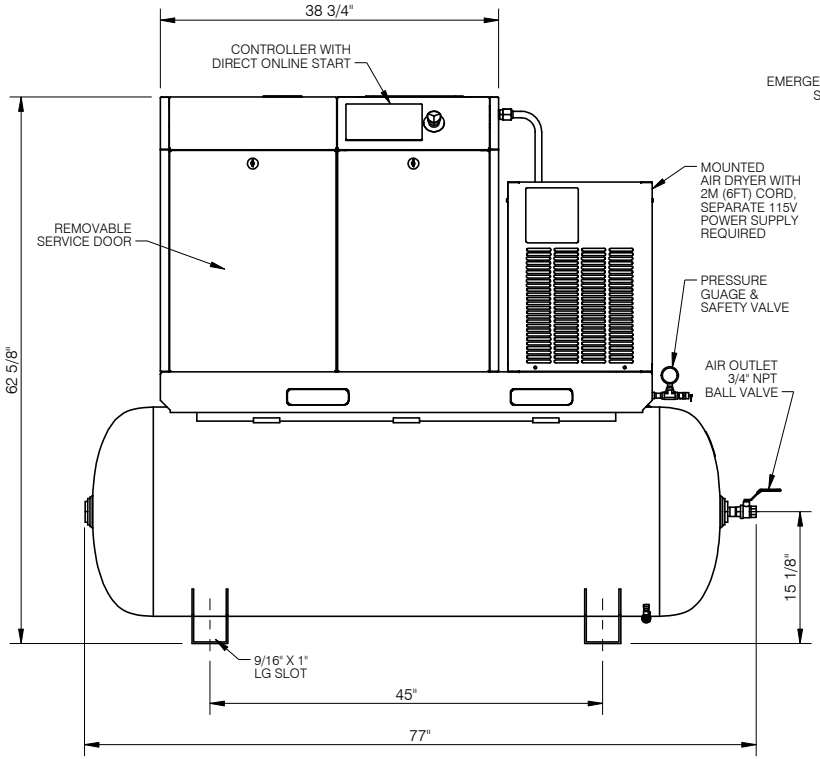
NAME OF PROJECT				DESCRIPTION OF DRAWING		
D10-15 SCREW COMPRESSOR				SALES-ENGINEERING DRAWING		
DRAWN BY	CHECKED BY	DATE	SCALE	DRAWING NO.	SHT NO	REV.
DM	LT	02/20/19	N.T.S	D1015-SE	1/1	00

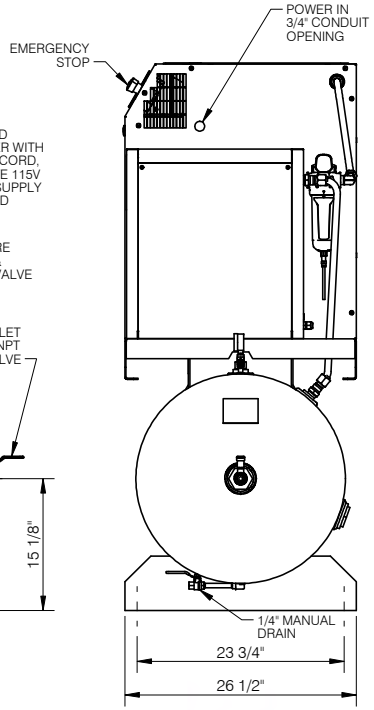
MODEL NO.	HP	PRESSURE PSI	ACFM @ LOAD PRESSURE	NOMINAL SOUND @ 1 METRE	FULL LOAD CURRENT (AMPS)			AIR RECEIVER GAL.	DRYER	FILTER ELEMENT	WEIGHT LBS
					3-PHASE						
					200V	230V	460V				
D10TD	10	125-145	33	65 dBA	32.2	28	14	120	ASD-40 115V, 60Hz, 5.24A	1 MICRON	970
D15TD	15	125-145	52	69 dBA	48.3	42	21	120	ASD-60 115V, 60Hz, 6.96A	1 MICRON	1175

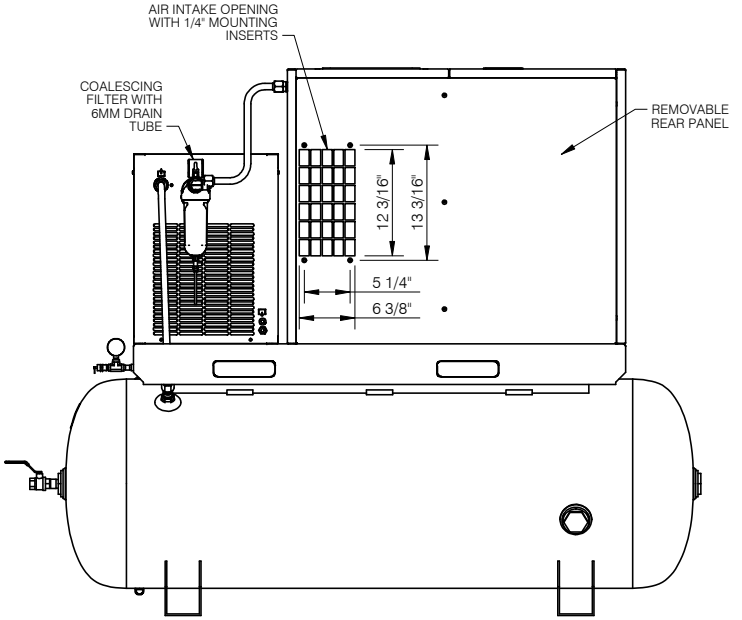


INSTALLATION REQUIREMENTS

1. MAINTAIN 3 FEET DISTANCE FROM WALLS AND OTHER OBJECTS FOR PURPOSE OF COOLING AND SERVICING.
2. COMPRESSOR MUST BE LEVEL AND ANCHORED DOWN TO SOLID LEVEL FLOOR.
3. AMBIENT CONDITIONS: 10°C (50°F) MIN. 40°C (104°F) MAX.
4. APPROACH TEMP. FROM TANK 5°C (41°F)





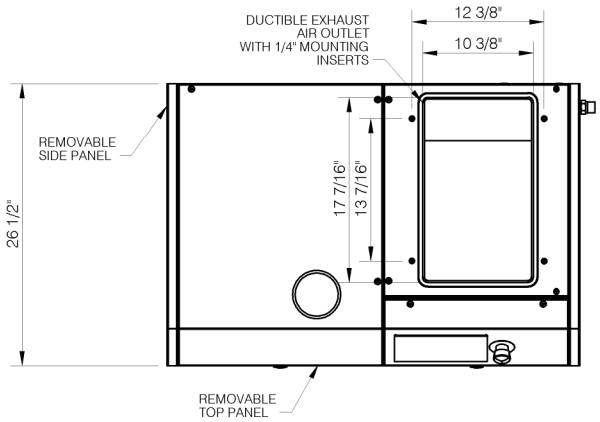


REV.	DATE	REVISION DESCRIPTION	ECN NO.

CHAMPION

NAME OF PROJECT				DESCRIPTION OF DRAWING		
D10-15TD SCREW COMPRESSOR WITH DRYER				SALES-ENGINEERING DRAWING		
				DRAWING NO.	SHT NO	REV.
DRAWN BY	CHECKED BY	DATE	SCALE	D1015TD-SE	1/1	00
DM	LT	02/20/19	N.T.S			

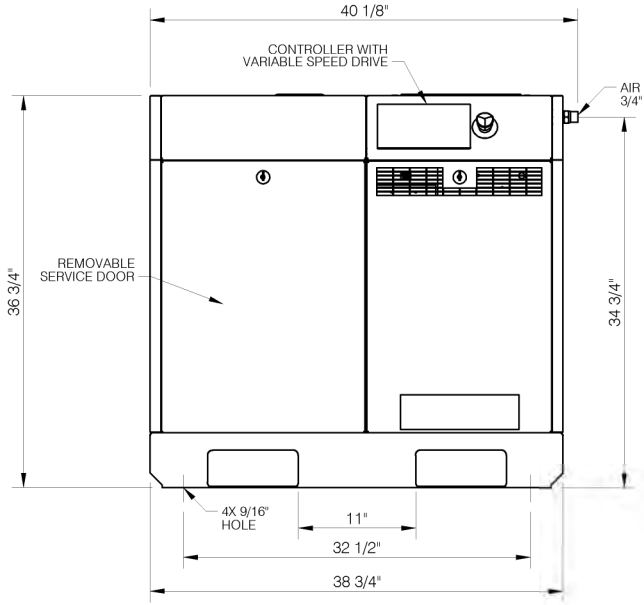
MODEL NO.	HP	PRESSURE PSI	ACFM @ LOAD PRESSURE		NOMINAL SOUND @ 1 METRE	VFD INPUT CURRENT RATING (AMPS)			WEIGHT LBS
						3-PHASE			
			MAX. CAP.	MIN. CAP.		200V	230V	460V	
DRS 15	15	135-145	51	21	69 dBA	61	48	23	591

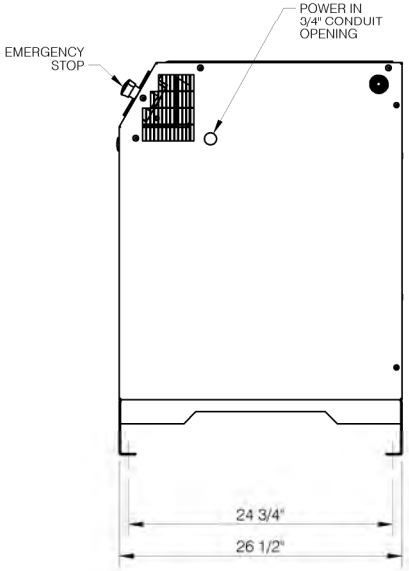


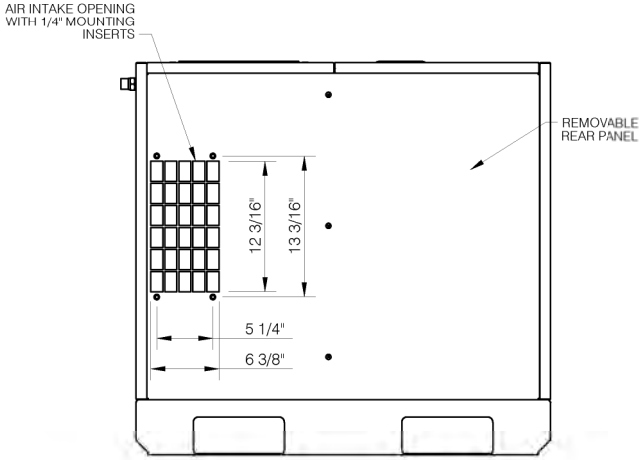
VOLTAGE	PHASE	FUSE TYPE	FUSE AMP	DISCONNECT KIT NO. (INC. FUSES & DISCONNECT)
200	3	HSJ	60	FD-060
230			50	FD-050
460			25	FD-025

INSTALLATION REQUIREMENTS

1. MAINTAIN 3 FEET DISTANCE FROM WALLS AND OTHER OBJECTS FOR PURPOSE OF COOLING AND SERVICING.
2. COMPRESSOR MUST BE LEVEL AND ANCHORED DOWN TO SOLID LEVEL FLOOR.
3. AMBIENT CONDITIONS: 10°C (50°F) MIN. 40°C (104°F) MAX.
4. APPROACH TEMP. FROM TANK 5°C (41°F)





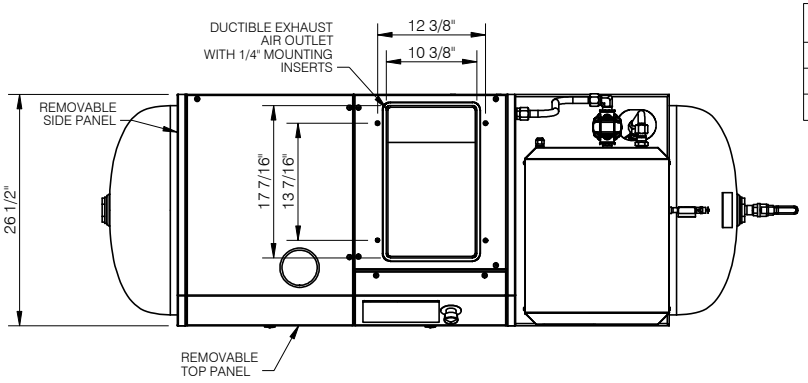


REV.	DATE	REVISION DESCRIPTION	ECN NO.

CHAMPION

NAME OF PROJECT				DESCRIPTION OF DRAWING		
DRS 15 SCREW COMPRESSOR				SALES-ENGINEERING DRAWING		
DRAWN BY	CHECKED BY	DATE	SCALE	DRAWING NO.	SHT NO	REV.
DM	LT	02/20/19	N.T.S	DRS15-SE	1/1	00

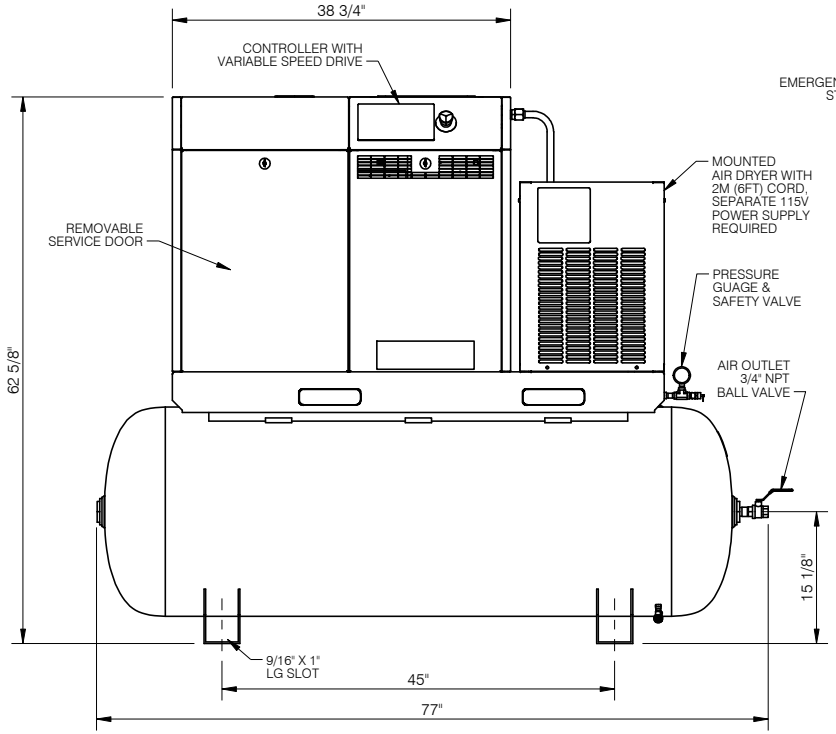
MODEL NO.	HP	PRESSURE PSI	ACFM @ LOAD PRESSURE		NOMINAL SOUND @ 1 METRE	VFD INPUT CURRENT RATING (AMPS) 3-PHASE			AIR RECEIVER GAL.	DRYER	FILTER ELEMENT	WEIGHT LBS
			MAX. CAP.	MIN. CAP.		200V	230V	460V				
DRS 15TD	15	135-145	51	21	69	61	48	23	120	ASD-60 115V, 60Hz, 6.96A	1 MICRON	1175

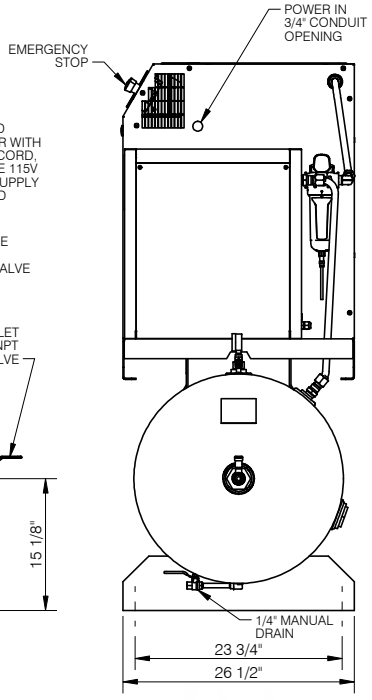


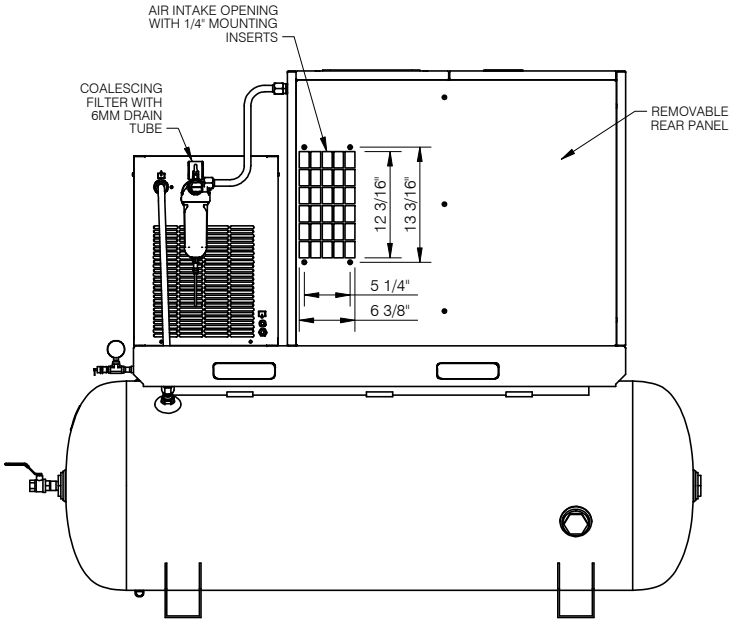
VOLTAGE	PHASE	FUSE TYPE	FUSE AMP	DISCONNECT KIT NO. (INC. FUSES & DISCONNECT)
200	3	HSJ	60	FD-060
230			50	FD-050
460			25	FD-025

INSTALLATION REQUIREMENTS

1. MAINTAIN 3 FEET DISTANCE FROM WALLS AND OTHER OBJECTS FOR PURPOSE OF COOLING AND SERVICING.
2. COMPRESSOR MUST BE LEVEL AND ANCHORED DOWN TO SOLID LEVEL FLOOR.
3. AMBIENT CONDITIONS: 10°C (50°F) MIN. 40°C (104°F) MAX.
4. APPROACH TEMP. FROM TANK 5°C (41°F)







REV.	DATE	REVISION DESCRIPTION	ECN NO.

CHAMPION

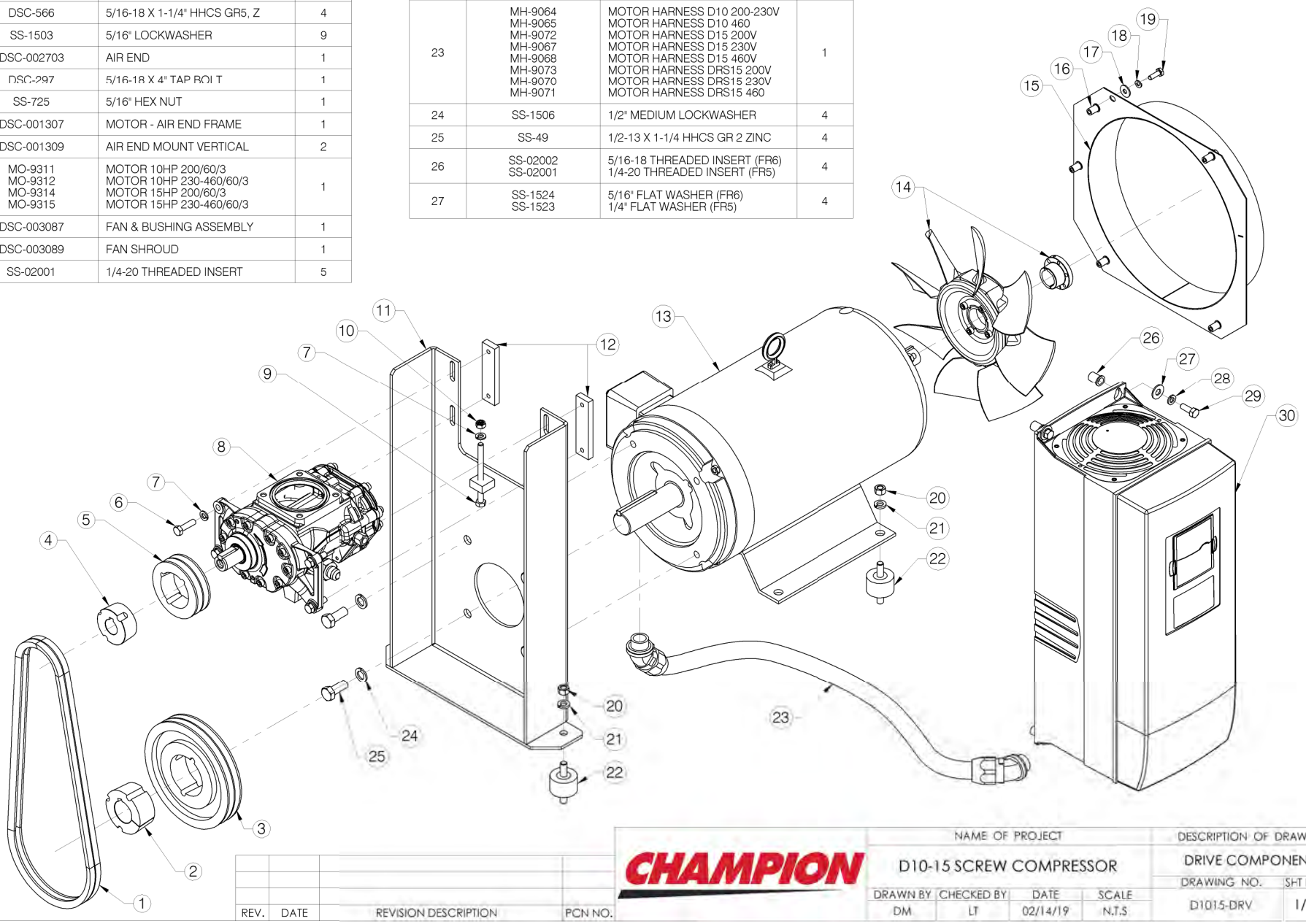
NAME OF PROJECT				DESCRIPTION OF DRAWING		
DRS 15TD SCREW COMPRESSOR WITH DRYER				SALES-ENGINEERING DRAWING		
				DRAWING NO.	SHT NO	REV.
DRAWN BY	CHECKED BY	DATE	SCALE	DRS15TD-SE	1/1	00
DM	LT	02/20/19	N.T.S			

BOM Table			
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	DSC-446 DSC-429	D10 BELT D15 BELT	2
2	DSC-613	MOTOR BUSHING	1
3	PU-9237 PU-9238	D10 MOTOR PULLEY D15 MOTOR PULLEY	1
4	DSC-002705	AIR END BUSHING	1
5	PU-9277	AIR END PULLEY	1
6	DSC-566	5/16-18 X 1-1/4" HHCS GR5, Z	4
7	SS-1503	5/16" LOCKWASHER	9
8	DSC-002703	AIR END	1
9	DSC-297	5/16-18 X 4" TAP BOLT	1
10	SS-725	5/16" HEX NUT	1
11	DSC-001307	MOTOR - AIR END FRAME	1
12	DSC-001309	AIR END MOUNT VERTICAL	2
13	MO-9311 MO-9312 MO-9314 MO-9315	MOTOR 10HP 200/60/3 MOTOR 10HP 230-460/60/3 MOTOR 15HP 200/60/3 MOTOR 15HP 230-460/60/3	1
14	DSC-003087	FAN & BUSHING ASSEMBLY	1
15	DSC-003089	FAN SHROUD	1
16	SS-02001	1/4-20 THREADED INSERT	5

BOM Table			
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
17	SS-1523	1/4" FLAT WASHER	5
18	SS-1505	1/4" MEDIUM LOCKWASHER	5
19	DSC-597	1/4-20 X 0.75" HHCS	5
20	SS-657	3/8-16 HEX NUT	4
21	SS-1502	3/8" LOCKWASHER	4
22	DSC-001330	VIBRATION ISOLATOR	4
23	MH-9064 MH-9065 MH-9072 MH-9067 MH-9068 MH-9073 MH-9070 MH-9071	MOTOR HARNESS D10 200-230V MOTOR HARNESS D10 460 MOTOR HARNESS D15 200V MOTOR HARNESS D15 230V MOTOR HARNESS D15 460V MOTOR HARNESS DRS15 200V MOTOR HARNESS DRS15 230V MOTOR HARNESS DRS15 460	1
24	SS-1506	1/2" MEDIUM LOCKWASHER	4
25	SS-49	1/2-13 X 1-1/4 HHCS GR 2 ZINC	4
26	SS-02002 SS-02001	5/16-18 THREADED INSERT (FR6) 1/4-20 THREADED INSERT (FR5)	4
27	SS-1524 SS-1523	5/16" FLAT WASHER (FR6) 1/4" FLAT WASHER (FR5)	4

BOM Table			
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
28	SS-1503 SS-1505	5/16" LOCKWASHER (FR6) 1/4" LOCKWASHER (FR5)	4
29	SS-13 DSC-597	5/16-18 X 7/8" HHCS (FR6) 1/4-20 X 3/4" HHCS (FR5)	4
30	DSC-002610 DSC-002706 DSC-002707	INVERTER D15 200V (FR6) INVERTER D15 230V (FR6) INVERTER D15 460V (FR5)	1

*ITEMS 26-30 FOR VSD UNITS ONLY



REV.	DATE	REVISION DESCRIPTION	PCN NO.

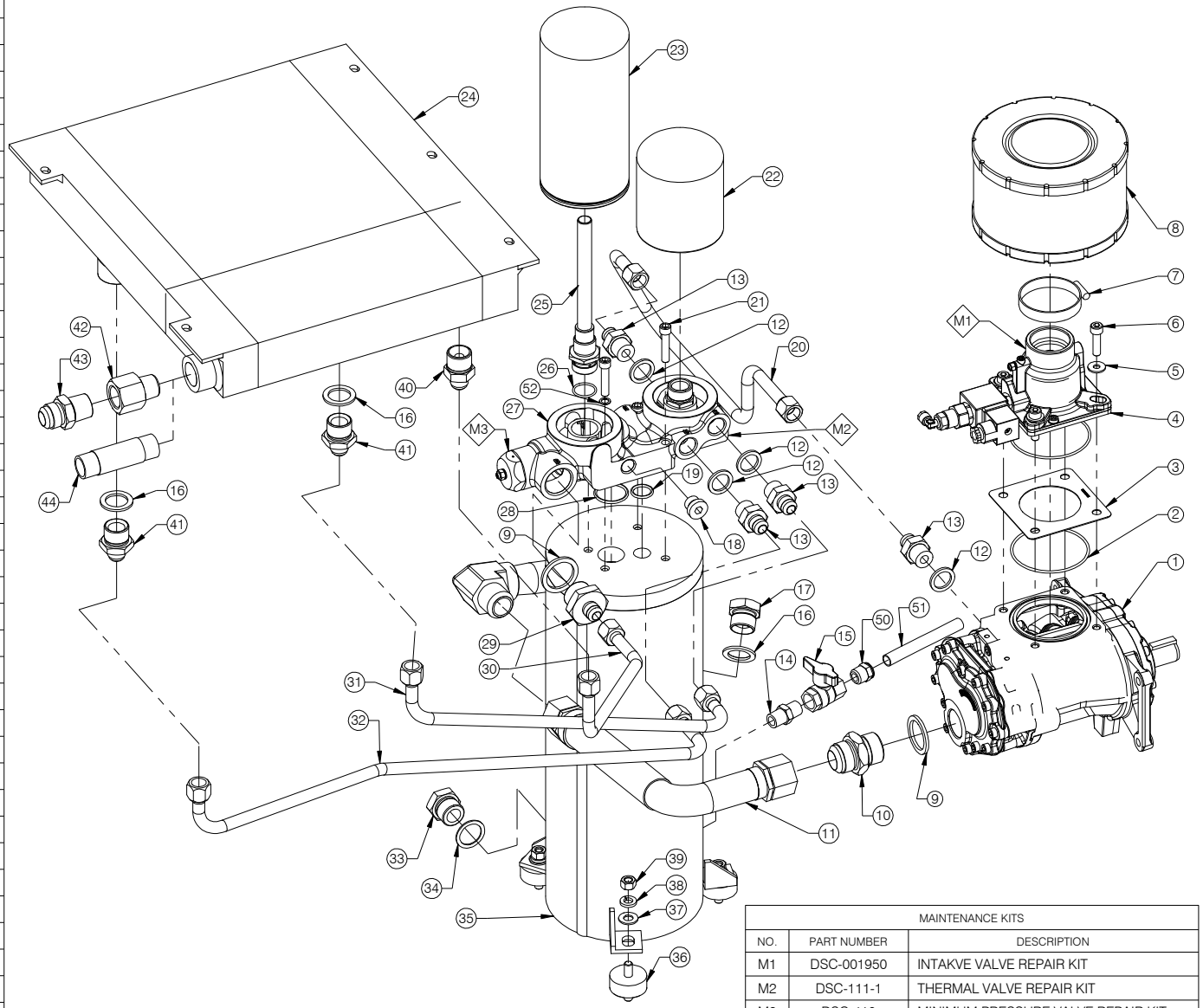
CHAMPION

NAME OF PROJECT			
D10-15 SCREW COMPRESSOR			
DRAWN BY	CHECKED BY	DATE	SCALE
DM	LT	02/14/19	N.T.S

DESCRIPTION OF DRAWING			
DRIVE COMPONENTS			
DRAWING NO.		SHT NO	REV.
D1015-DRV		1/1	00

NO.	PART NUMBER	DESCRIPTION	QTY.
1	DSC-002703	AIR END	1
2	DSC-365	AE O-RING	1
3	DSC-001952	INTAKE VALVE PLATE	1
4	DSC-001930	INTAKE VALVE	1
5	SS-1523	1/4" FLAT WASHER	4
6	SS-10036	M8 X 30MM SHCS	4
7	DSC-001932	INTAKE FILTER CLAMP	1
8	DSC-001931-CH	AIR FILTER	1
9	DSC-386	BONDED WASHER R1"	2
10	DSC-575	ADAPTER R1" - JIC 16	1
11	DSC-002639	FLEXI-HOSE	1
12	DSC-200	BONDED WASHER 1/2" BSPP	4
13	DSC-001214	ADAPTER 1/2"BSPP - JIC 8	4
14	DSC-002826	ADAPTER 3/8"NPT(M) - 3/8"NPT(M)	1
15	DSC-002828	BALL VALVE 3/8" NPTF X 3/8" NPTF	1
16	DSC-120	BONDED WASHER 3/4" BSPP	3
17	DSC-618	OIL FILL PLUG 3/4" BSPP	1
18	DSC-002717	PLUG 3/8" BSPM	1
19	DSC-002724	O-RING THERMOVALVE INLET	1
20	DSC-002640	1/2" STEEL TUBE OIL TO AIR END	1
21	SS-01919	5/16-18 X 1-1/2 SHCS	4
22	DSC-603-CH	OIL FILTER	1
23	DSC-302-CH	AIR/OIL SEPARATOR FILTER	1
24	DSC-001449-1	HEAT EXCHANGER	1
25	DSC-325	SEPARATOR TUBE	1
26	DSC-324	SEPARATOR TUBE O-RING	1
27	DSC-002704	MANIFOLD ASSEMBLY	1
28	DSC-002726	O-RING A/O INLET	1
29	DSC-002709	ADAPTER 1"BSPP(M) - JIC 8(M)	1
30	DSC-002651-1	1/2 STEEL TUBE AIR OUT	1
31	DSC-002653	1/2 STEEL TUBE OIL FROM COOLER	1
32	DSC-002652	1/2 STEEL TUBE OIL TO COOLER	1
33	DSC-001907	OIL SIGHT GLASS 3/4" BSPP	1
34	DSC-002259	COPPER WASHER 3/4"BSPP WD	1
35	DSC-001397-2	AIR OIL RECEIVER	1
36	DSC-002050	ISOLATOR A/O TANK	3
37	SS-1525	3/8" FLAT WASHER	3
38	SS-1502	3/8" LOCKWASHER	3
39	SS-657	3/8-16 HEX NUT	3
40	DSC-572	ADAPTER 3/4"NPTM - JIC8	2
41	DSC-567	ADAPTER R3/4" - JIC8	2
42	DSC-001616	ADAPTER 3/4"NPTM - 3/4"NPTF	1
43	DSC-237 DSC-572	ADAPTER D15TD ADAPTER D10TD	1
44	SS-2118	3/4"NPT X 3-1/2 GALV NIPPLE (BASE-MTD ONLY)	1

NO.	PART NUMBER	DESCRIPTION	QTY.
50	DD-00091	3/8"NPT X 1/2"DIA PNEU. FITTING	1
51	R-8504	PE TUBING 1/2" OD	1
52	DSC-002940	COPPER SEAL RING M8, 1MM THICK	2



MAINTENANCE KITS		
NO.	PART NUMBER	DESCRIPTION
M1	DSC-001950	INTAKVE VALVE REPAIR KIT
M2	DSC-111-1	THERMAL VALVE REPAIR KIT
M3	DSC-410	MINIMUM PRESSURE VALVE REPAIR KIT
---	MK-D1015-CH	4000HR MAINTENANCE KIT

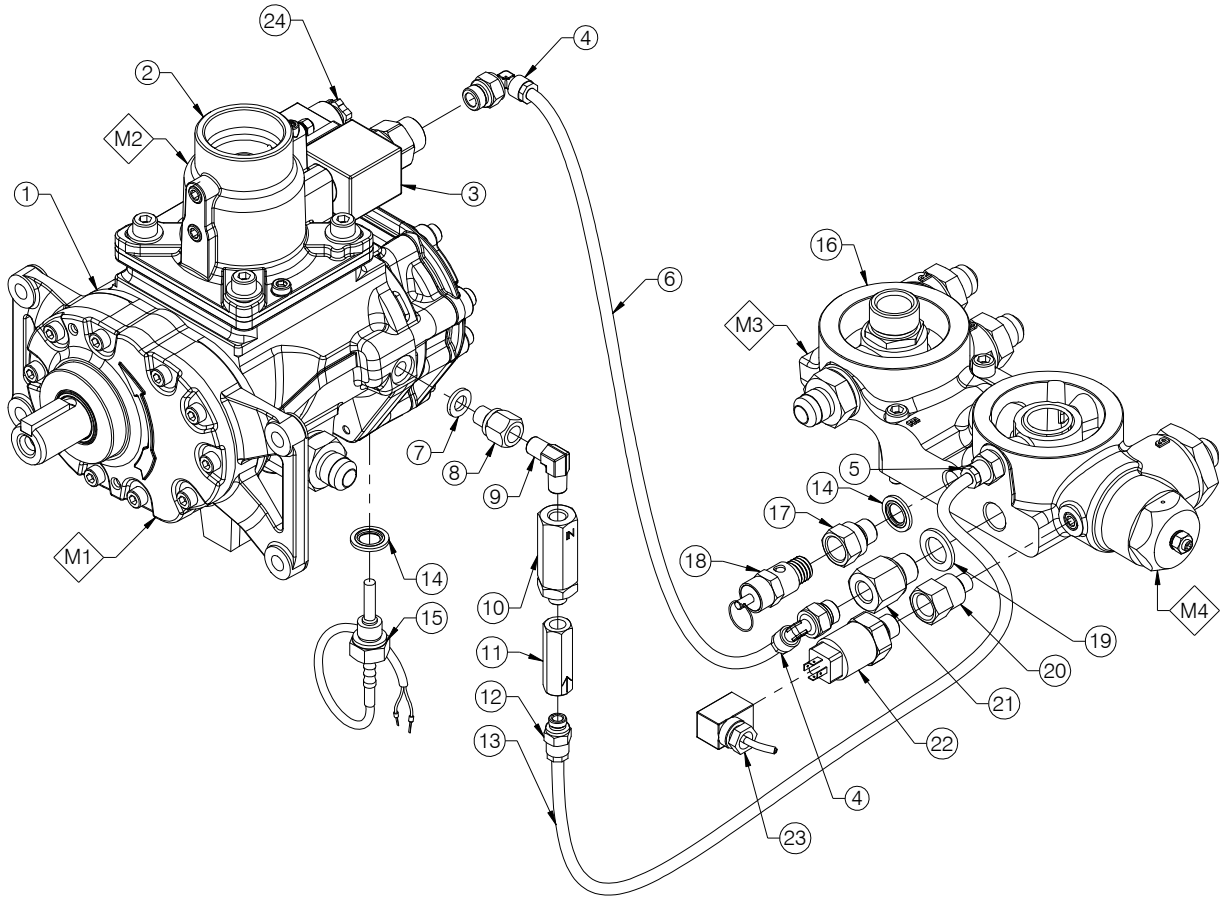
REV.	DATE	REVISION DESCRIPTION	PCN NO.

CHAMPION

NAME OF PROJECT				DESCRIPTION OF DRAWING		
D10-15 SCREW COMPRESSOR				SYSTEM COMPONENTS		
				DRAWING NO.	SHT NO	REV.
DRAWN BY	CHECKED BY	DATE	SCALE	D1015-SYS	1/1	00
DM	LT	02/19/19	N.T.S			

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	DSC-002703	AIR END	1
2	DSC-001930	INTAKE VALVE	1
3	DSC-001951	SOLENOID VALVE	1
4	DSC-158	PNEUMATIC ELBOW 1/4"BSPP X 6MM	2
5	DSC-380	1/4"BSPP STRAIGHT X 6MM TUBE FITTING	1
6	DSC-482	PNEUMATIC TUBE BLACK 6MM OD	2'
7	DSC-263	1/8" BONDED WASHER	1
8	DSC-677	ORIFICE 1MM	1
9	DSC-001359	ELBOW 1/8"NPT(M) - 1/8"NPT(M)	1
10	DSC-612	INLINE FILTER	1
11	DSC-001358	CHECK VALVE 1/8"NPT(F)	1
12	DSC-175	PNEUMATIC STRAIGHT 1/8" X 6MM	1
13	DSC-382	PNEUMATIC TUBE NATURAL 6MM OD	2'
14	DSC-001217	BONDED WASHER 1/4" BSPP	2
15	DSC-001238	TEMPERATURE SENSOR CSC200300	1
16	DSC-002704	MANIFOLD ASSEMBLY	1
17	DSC-001564	ADAPTER 1/4"BSPPM - 1/4"NPTF	1
18	TIA-5165	SAFETY VALVE 1/4" 165 PSI	1
19	DSC-427	BONDED WASHER 3/8"	1
20	DSC-001568	ADAPTER 1/8"BSPPM - 1/4"BSPPF	1
21	DSC-278	ADAPTER 3/8"BSPM X 1/4"BSPF	1
22	DSC-001237	PRESSURE TRANSDUCER CSC200300	1
23	DSC-001366	PRESS. TRANSD. CABLE CSC200300	0.5'
24	DSC-002868	SOLENOID CABLE ASSY.	1

MAINTENANCE KITS		
M1	DSC-002718	SHAFT SEAL KIT
M2	DSC-001950	INTAKE VALVE REPAIR KIT
M3	DSC-111-1	THERMAL VALVE REPAIR KIT
M4	DSC-410	MINIMUM PRESSURE VALVE REPAIR KIT

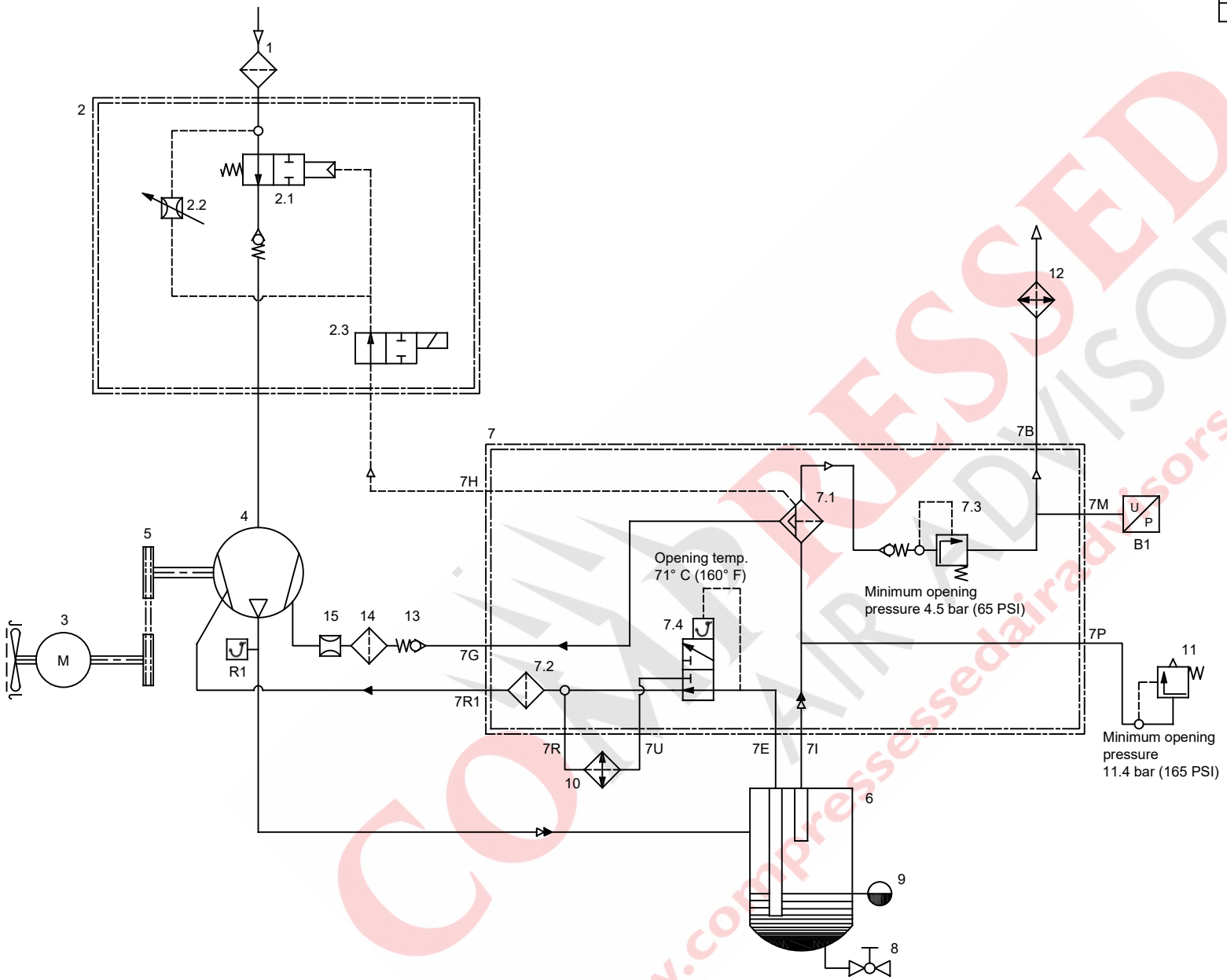


REV.	DATE	REVISION DESCRIPTION	PCN NO.

CHAMPION

NAME OF PROJECT				DESCRIPTION OF DRAWING			
D10-15 SCREW COMPRESSOR				PNEUMATIC COMPONENTS			
				DRAWING NO.	SHT NO	REV.	
DRAWN BY	CHECKED BY	DATE	SCALE	D1015-PNE	1/1	00	
DM	LT	02/19/19	N.T.S				

REV.	DATE	REVISION DESCRIPTION	PCN NO.



1. Air inlet filter
2. Intake valve
2.1 Intake valve - NO
2.2 Discharge control screw
2.3 2/2 Solenoid valve - NO
3. Main motor
4. Air end
5. Belt drive
6. Air/Oil receiver
7. Combo block
7.1 Air/Oil separator
7.2 Oil Filter
7.3 Minimum pressure valve
7.4 Thermostatic valve
7B. Outlet minimum pressure valve
7E. Inlet thermostatic valve (Inlet from the de-oiler tank)
7G. Recovery oil
7H. Air connection - control line
7I. Inlet de-oiler tank
7M. Air connection (After minimum pressure valve)
7P. Safety valve connection
7R. Return from the oil cooler
7R1.Return thermostatic valve (Inlet to the screw)
7U. Outlet thermostatic valve (Inlet to the oil cooler)
8. Oil drain valve
9. Oil level sight glass
10. Oil cooler
11. Pressure relief valve
12. Air cooler
13. Scavenge check valve
14. Scavenge inline filter
15. Scavenge orifice

R1 Oil temperature
B1 Sensor mains pressure

Air line
Oil line
Air/Oil line
Control line

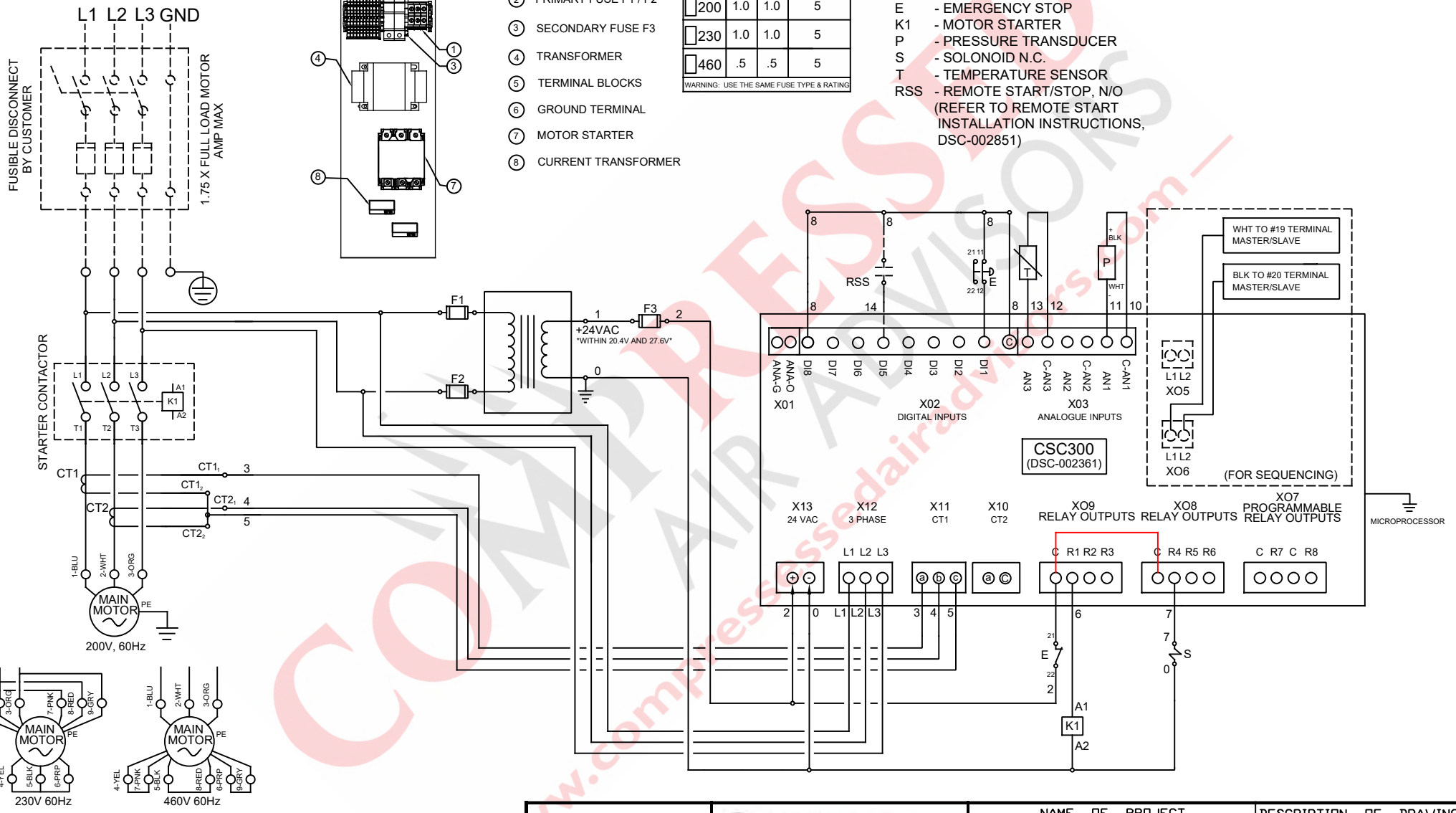
FRACTIONAL DIMENSIONS: ±1/32
DECIMAL DIMENSION: ±.005
ANGLES: ±1°
*UNLESS OTHERWISE SPECIFIED

Gardner Denver

NAME OF PROJECT				DESCRIPTION OF DRAWING		
D10-15 SCREW COMPRESSOR				P & ID DIAGRAM		
				DRAWING NO.	SHT NO	REV
DRAWN BY	CHECKED BY	DATE	SCALE	D1015-PID	1/1	00
DM	EH	02/20/19	N.T.S.			

REV.	DATE	REVISION DESCRIPTION	PCN NO.

POWER CIRCUIT SCHEMATIC



PANEL SCHEMATIC

1. POWER BLOCK
2. PRIMARY FUSE F1 / F2
3. SECONDARY FUSE F3
4. TRANSFORMER
5. TERMINAL BLOCKS
6. GROUND TERMINAL
7. MOTOR STARTER
8. CURRENT TRANSFORMER

FUSE TABLE			
VOLTAGE	FUSE SIZE (AMPS)		
	CC TIME DELAY		5MM TIME DELAY
	F1	F2	F3
☐200	1.0	1.0	5
☐230	1.0	1.0	5
☐460	.5	.5	5
WARNING: USE THE SAME FUSE TYPE & RATING			

CT1 - CURRENT TRANSFORMER #1
CT2 - CURRENT TRANSFORMER #2
E - EMERGENCY STOP
K1 - MOTOR STARTER
P - PRESSURE TRANSDUCER
S - SOLONOID N.C.
T - TEMPERATURE SENSOR
RSS - REMOTE START/STOP, N/O (REFER TO REMOTE START INSTALLATION INSTRUCTIONS, DSC-002851)

X07 - R7 AND R8 FOR PROGRAMMABLE RELAY OUPUT FUNCTION

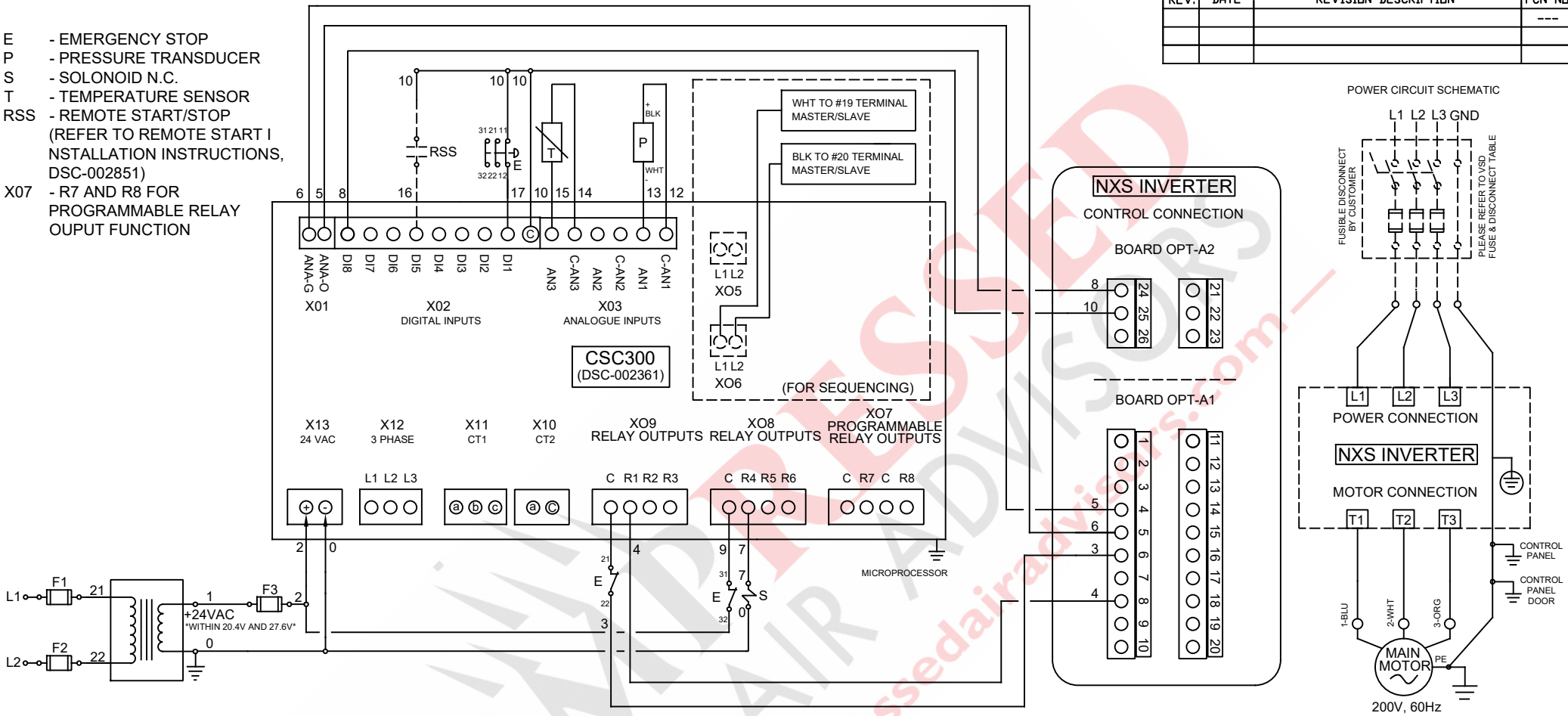
FRACTIONAL DIMENSIONS: ±1/32
DECIMAL DIMENSION: ±.005
ANGLES: ±1°
*UNLESS OTHERWISE SPECIFIED

Gardner Denver

NAME OF PROJECT				DESCRIPTION OF DRAWING		
D10-15 SCREW COMPRESSOR CSC300 CONTROLLER				ELECTRICAL SCHEMATICS CSC300		
				DRAWING NO.	SHT NO	REV
DRAWN BY	CHECKED BY	DATE	SCALE	CSC300D1015	1/1	00
DM	EH	02/20/19	N.T.S.			

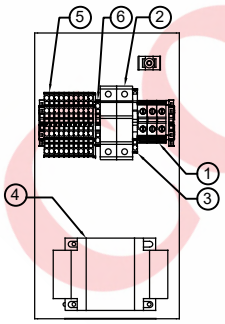
REV.	DATE	REVISION DESCRIPTION	PCN NO.

E - EMERGENCY STOP
P - PRESSURE TRANSDUCER
S - SOLONOID N.C.
T - TEMPERATURE SENSOR
RSS - REMOTE START/STOP (REFER TO REMOTE START I NSTALLATION INSTRUCTIONS, DSC-002851)
X07 - R7 AND R8 FOR PROGRAMMABLE RELAY OUPUT FUNCTION



POWER CIRCUIT SCHEMATIC

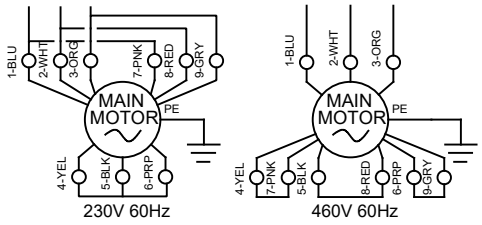
FUSE TABLE			
VOLTAGE	FUSE SIZE (AMPS)		
	CC TIME DELAY		5MM TIME DELAY
	F1	F2	F3
200	1.0	1.0	5
230	1.0	1.0	5
460	.5	.5	5
WARNING: USE THE SAME FUSE TYPE & RATING			



PANEL SCHEMATIC

1. POWER BLOCK
2. PRIMARY FUSE F1 / F2
3. SECONDARY FUSE F3
4. TRANSFORMER
5. TERMINAL BLOCK
6. GROUND TERMINAL

VSD FUSE & DISCONNECT TABLE			
VOLTAGE	HSJ TYPE FUSE		
	AMP	DV FUSE NO.	DV FUSE DISCONNECT KIT (FUSES & DISCONNECT)
200	60	F060	FD-060
230	50	F050	FD-050
460	25	F025	FD-025
WARNING: USE THE SAME FUSE TYPE & RATING			



FRACTIONAL DIMENSIONS: ±1/32
DECIMAL DIMENSION: ±.005
ANGLES: ±1°
*UNLESS OTHERWISE SPECIFIED

Gardner Denver

NAME OF PROJECT				DESCRIPTION OF DRAWING		
DRS 15 SCREW COMPRESSOR WITH VARIABLE SPEED CONTROLS				ELECTRICAL SCHEMATICS CSC300 & NXS INVERTER		
DRAWN BY	CHECKED BY	DATE	SCALE	DRAWING NO.	SHT NO	REV
DM	EH	02/20/19	N.T.S.	CSC300DRS15	1/1	00