



Operation and Maintenance Manual



**Natural Gas Booster
40 HP @ 2200 RPM**

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Introduction

Compact Compression Inc. is pleased that you have selected our equipment for your requirements. CCI boosters are inspected and tested before leaving the shop. However, certain checks should be made before placing the booster into regular service. **Please read the Initial Installation and Start-Up section in this manual.**

Contact Information

General

Compact Compression Inc.

#8, 1820 – 30th Ave NE

Calgary AB, T2E 7M5

Ph: 1-403-219-3026

Fax: 1-403-717-1759

How to Use this Manual

This manual contains instructions on the safe operation and preventative maintenance of your CCI natural gas booster. We urge you to read this manual prior to start-up or operation of the package.

The Table of Contents permits you to quickly open the manual to any section.

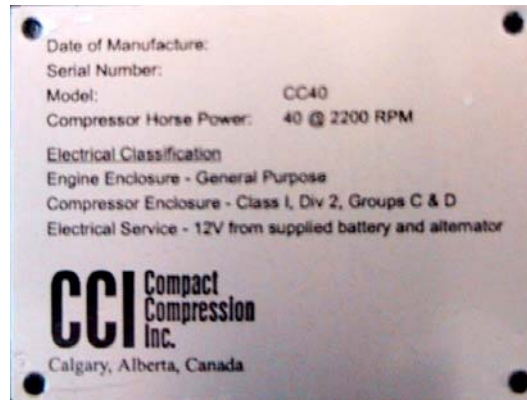
Compact Compression Inc., boosters are built with a variety of standard and/or optional components to suit a broad range of customer requirements. This manual **does not** identify equipment as standard or optional. All the equipment described in this manual may not be found on your package.

Please pay special attention to the **NOTES**, **CAUTIONS**, and **WARNINGS**. **WARNINGS** remind you to be careful in areas where carelessness can cause personal injury. **CAUTIONS** are given to prevent you from error that could cause damage to the equipment. **NOTES** give you added information designed to help you.

The descriptions and specifications contained in this manual were in effect at the time of publication. Compact Compression Inc. reserves the right to discontinue models at any time, or to change specifications or design without notice and without incurring obligation.

Compressor Identification

An identification label is affixed to the left side of the trailer below the control panels. The label contains the date of manufacture, serial number, model, horsepower, and area classification. The model and serial number are required when seeking information concerning the operation and/or ordering replacement parts.



Parts and Service

Replacement parts and service can be obtained from Compact Compression Inc. by calling **1-403-219-3022**. The compressor model and serial number will be required when seeking information and/or ordering parts.

Service and technical support supplied by Compact Compression Inc. can be obtained by contacting **1-403-219-3022**.

Safety Procedures

CAUTION: Read all instructions before operation

A natural gas compressor has complex controls and operating procedures which are detailed in this manual and must be understood and followed for safe and effective operation.

1. Do not alter the plumbing or wiring in any way without authorization in writing by the manufacturer. Injury, death or damage to equipment can result.
2. Always Purge and Leak Test the system after installing on site or when any of the process piping has been opened. See Purge and Leak Test system. **WARNING** Failure to purge completely can introduce oxygen into the system. When combined with natural gas as a fuel and a source of ignition (high temperature) this may produce an explosion which can injure or kill people and destroy equipment.
3. Do not have an open flame or spark near a Natural Gas Compressor. Natural Gas compressors process natural gas which can form a flammable or explosive mixture with air, an open flame or spark will ignite this mixture.
4. Always carry a functional Hydrogen Sulfide monitor while working in the vicinity of a natural gas compressor. Natural gas can contain Hydrogen sulfide which is fatal if inhaled, even in low concentrations.
5. Do not set discharge pressure higher than 250 psi. Injury, death, or damage to equipment can occur if specified pressure is exceeded.
6. Do not set inlet pressures above 70 psi. Injury, death, or damage to equipment can occur if specified pressure is exceeded.
7. Keep enclosure doors closed while running. The compressor has moving fans, shafts, belts, gears, and couplings, which are dangerous and can kill or maim. All Compact Compression machines are designed with sufficient cooling capacity to be run with the doors closed.
8. Do not place any part of your body near moving machinery in the event that the doors must be kept open while running the machine to adjust settings or troubleshoot.

Startup and Shutdown Instructions

Installation Instructions

1. Jack and level compressor
2. Open front and rear louvers
3. Inlet ball valve closed
4. Inlet pressure reducing regulator to 0: *All the way out*
5. Attach Process Vent Pipe. *Yellow pipe (loose in enclosure) screws into elbow at right rear and u-clamped to bracket on roof)*
6. Connect suction and discharge lines
7. Connect condensate line as required
8. Open engine oil maintainer block valve
9. Open glycol tank block valves

Purge and Leak Test Instructions

1. Set Inlet Regulator to a pressure of 0
2. Close the manual recycle valves along with the high and low pressure recycle valves
3. Open the Purge Valve (blowdown valve). *Allows purge gas to flow to process vent*
4. Open Inlet Ball Valve
5. Increase inlet pressure by screwing inlet valve in 1/2 turn
6. Turn on main power and ignition. Press “Test” button on Annunciator. This will give 5 Minutes to purge and leak test the unit. If you run out of time, press “Reset” and “Test” again for another 5 Minutes.
7. Purging will start as inlet pressure increases.
There will be an audible indication of gas passing through the piping and out the vent stack
8. After venting for a couple of minutes all air will have been vented from the system
9. Close Purge Valve (Blowdown Valve).
10. Increase inlet pressure as much as possible to a maximum of 65 psi. Well pressure may limit maximum
11. Listen for leaks, depressurize and repair if necessary.
12. Decrease inlet pressure to 0. Screw Inlet Regulator all the way out
13. Open Purge Valve to relieve pressure in system
14. Close Purge Valve (blowdown valve).

START UP (NOTE: *Only required on initial startup on a location)

1. *When starting for the first time read all instructions for starting and adjusting unit.
2. *Set high suction pressure shutdown at 65 psi
3. *Set low suction pressure shutdown at 0 psi
4. *Set high discharge pressure shutdown at 250 psi
5. *Set low discharge pressure shutdown at 0 psi
6. *Low pressure recycle block valve closed
7. *High pressure recycle block valve closed
8. Check fluid levels
 - a. Engine oil level
 - b. Engine oil day tank level.
Does not have to be full but should be topped up to prevent shutdown on low oil level
 - c. Glycol day tank level
 - d. Compressor oil level
 - e. Scrubber level
9. Blow down unit.
This relieves backpressure on the screw allowing a minimum power start which aids in cooling and extending belt life.
10. Open inlet ball valve.
11. Open manual recycle valve
12. Back inlet regulator adjusting screw all the way OUT and then IN until it meets resistance
13. Open compressor oil bypass valve (oil temp < 20C)
14. Engine speed control to idle (ccw)
15. Disengage belts (start position)
16. Power ON
17. If outside temperature below -10C *Depress start button with ignition off until engine oil pressure gauge reaches 20 psi.*
18. Ignition ON
19. Depress Starter Switch to turn engine
20. The annunciator has a 2 min timer for oil pressure and low discharge pressure. If engine doesn't start, turn Power Switch OFF and ON and try again
21. Check oil press
22. Set inlet regulator @ 3-5 psi.
23. Check to ensure compressor fan is turning
24. In winter time ensure dampers are closed (open in summer)
25. At idle engage belts (clutch switch in ENGAGED position then pull up on handle to push the drive sheave down)
Discharge pressure above 50 psi within 1 minute
26. *Ensure Fuel Gas Regulator @ 50 psi.
27. Set engine speed @1200rpm. And wait for compressor oil to reach >20C then slowly close the bypass valve
28. Wait for discharge temp to reach 130C
29. Turn speed to desired setting
30. Slowly close Manual Recycle valve
31. Set inlet regulator to desired pressure

POWER TEST

1. Start with package running normal.
2. Raise suction pressure as high as possible, DO NOT EXCEED 70 psi.
3. Choke discharge to increase backpressure as high as possible, DO NOT EXCEED 250 psi.
4. When the engine RPM starts to drop, max HP has been reached.
5. On compressors equipped with a low vi. the pressure ratio should not exceed five. For example: suction press. = $10(+14) \times 5 = 120$. With 10 pounds of pressure on the suction gauge the discharge should not exceed 120 lbs.
6. Now reduce the discharge pressure until the engine vacuum gauge reads -2". This will be the pressure setting for the HP recycle regulator.

SETUP INSTRUCTIONS

1. Determine LP recycle setting. Determined by well conditions. Must be min. 5 psig or above.
2. Determine low suction pressure shutdown, 5psi. below LP recycle or 0 min.
3. Determine high suction pressure shutdown, 5 psi. above power test. DO NOT EXCEED 70 psi.
4. Determine HP recycle setting. Typically 20-25 psig above normal operating pressure. Can be set higher (determined by power test) but DO NOT EXCEED 250 psi.
5. Determine high discharge pressure shutdown. Set 10psi. higher than HP recycle setting but DO NOT EXCEED 250 psi.
6. Determine low discharge pressure shutdown. Has to be at least 50 psi above minimum suction pressure.
7. Set Hp recycle.
 - a. Start with manual bypass valve open.
 - b. Close HP recycle block valve.
 - c. Close LP recycle block valve.
 - d. Screw out HP recycle valve adjusting screw all the way.
 - e. Slowly open HP recycle block valve.
 - f. Slowly close manual recycle valve.
 - g. Isolate compressor from pipeline by shutting valve between compressor discharge and pipeline
 - h. Screw in high pressure recycle valve to maximum expected line pressure or engine vacuum reaches -2" on the gauge
 - i. Lock HP recycle valve adjusting screw
 - j. Slowly open valve between compressor and pipeline
8. Set LP recycle
 - a. Set LP recycle only after setting HP recycle.
 - b. Close LP recycle block valve.
 - c. Choke well pressure using inlet ball valve to reduce inlet pressure to 1-2psi
 - d. Screw out low pressure recycle valve all the way
 - e. Open block valve
 - f. Screw in LP recycle valve until suction pressure rises to the min desired suction pressure
 - g. Lock LP recycle valve adjusting screw
 - h. Slowly open Inlet ball valve.

Engine

Safety Gauges

The engine is equipped with instrument panels which contain shutdown gauges for High Engine Coolant Temperature and Low Engine Oil Pressure. The fault light for the Air Fuel Ratio controller indicates malfunction of the controller. Causes could be the O₂ sensor needs replacement but commonly the unit just needs the power to be cycled. This is easily accomplished by tripping and resetting the breakers in the back of the panel.

Fuel System

The engine fuel system is simple to adjust using the supplied gauges and LCD readout. The Fisher S402 regulator is used to regulate the fuel pressure. Set at 17" H₂O as indicated by the Fuel Press gauge on the instrument panel.

Power valve limits the maximum horsepower output of the engine by restricting the gas flow. The initial setting is 7 mm (9/32 in), measured from the top of the adjusting screw to the top of the nut.

Fuel ratio is adjusted by removing the top cap of the Maxitrol and turning the adjuster. An initial setpoint is 10 mm (3/8 in) measured from the top of the Maxitrol to the top of the adjuster. Turning the adjuster downwards richens and upwards leans the mixture.

Adjustment

If the mixture is badly out of adjustment set the power valve and mixture to the stock settings above. Otherwise begin at the next step.

1. Remove one of the wires to the solenoid so there is no adjustment by the air/fuel ratio controller. Ensure it does not touch any metallic parts or it may blow a fuse.
2. Bring the engine to idle.
3. Adjust the mixture until the light on the AFR Controller blinks from red to green. If it is solid red then lean it, and if solid green richen it. Move in small adjustments, 1/8 turn, and after each adjustment seal the top of the Maxitrol to get an accurate reading. Repeat until the color of the LCD has just changed. Replace the Maxitrol top cap.
4. Plug in the wire previously removed.
5. The duty cycle LCDs should indicate a duty cycle and the single LCD should be blinking from green to red.
6. Bring the compressor up to power.
7. The duty cycle should be around 50% and the green-red LCD blinking back and forth.
8. If the engine leans out (goes solid green) or the duty cycle goes to 0% the power valve is set too far in. To allow more gas turn out the power valve in small increments until the duty cycle rises and the blinking returns. Lock it in place.
9. A few iterations may be required to get it right. On the second try start back at the idle setting with the solenoid wires both connected.
10. You now have the mixture set to stoichiometric across the rpm/power band. The goal of this procedure is to have a green-red blinking LCD with about a 50% duty cycle when the compressor is at operating conditions.

Stopping

Reduce the power requirements of the compressor compartment by reducing the suction pressure to 2-3 psi. Bring the engine to idle. Run the engine for a few minutes at idle to allow the coolant system to cool down before turning the Ignition switch to the OFF position. Turn the panel power switch OFF.

Timing

Rotate the distributor counter clockwise to advance and clockwise to retard timing. Remember to tighten the body clamp.
Factory setting is 28° BTDC.

Valve Adjustment

Warm engine to operating temperature

Shut off and remove valve cover

Turn clockwise (looking at front) to TDC of #1 on compression stroke

At this position you can adjust:

#1 Intake & Exhaust

#3 Exhaust

#4 Intake

Turn engine clockwise one full turn and adjust

#2 Intake & Exhaust

#3 Intake

#4 Exhaust

Replace the Valve cover

Valve Adjustment

Back off the adjusting nut until the rocker has play

Rotate the pushrod with your fingers while slowly tightening the adjusting nut

When the lash is removed (pushrod stops spinning freely) STOP.

Tighten the adjusting nut ¼ turn further.

The valve is now done.

Oil

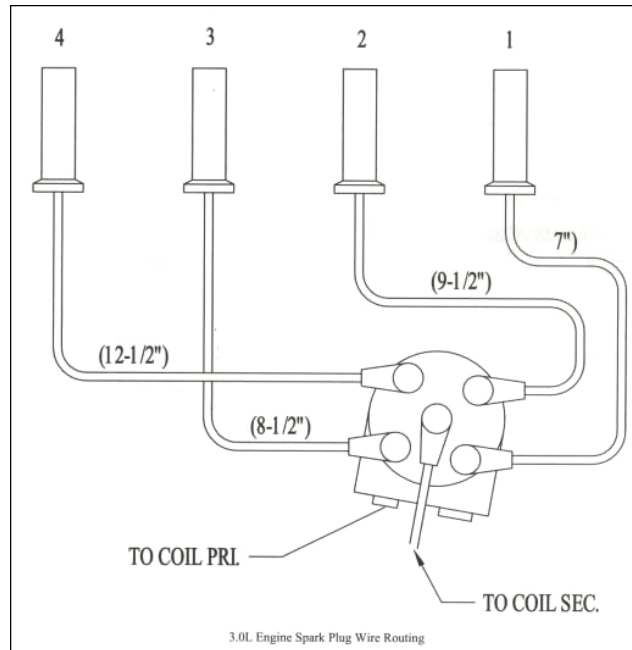
Compact Compression Inc. 5W30 Engine Oil.

Oil Change Interval

It is recommended to change the engine oil monthly, or every 700 hrs. Both the oil in the engine sump and the bypass filter housing should be changed.

Spark Plugs

Spark Plugs should always be replaced with the proper type and heat range. Stock plugs are **AC DELCO R46 TS** and the gap is 0.045 inches. Firing order is 1-3-4-2



The correct plug wiring is included for reference.

Oil Filters

The engine oil filter used is a PH11 or equivalent. The engine oil filter should be changed every service.

The bypass filter element is a Harvard H-O778. It is recommended to change this element annually, or if the oil has become contaminated with any foreign substance like glycol.

Air Flow and Fan

The engine compartment air flow is in through the front louver and out through the sides of the top front duct. The fan has a manually adjustable pitch. If the engine coolant runs too hot pitch can be added in 5 degree increments. In the winter one can either partially close the inlet louvers or reduce the fan pitch. When required; clean off the bug screen or washout the radiator in the reverse direction of flow. Excess bugs and debris in the radiator core will cause the unit to run hot.

The stock fan pitch is 35 degrees. When adjusting the fan be sure to mark all pieces, including any balancing washers so they go back together the same way and maintain balance. When you disassemble the fan hub 5 small white cylinders will fall out. These are used to set the pitch of the fan.

Compressor

Starting after Extended Storage (1 month or more)

If the screw has been sitting without operation for more than one month it will require priming with oil before starting.

Relieve all pressure from the compressor compartment

Remove the 1" plug above the screw inlet

Pour about 1 liter of suitable CCI screw compressor oil into the elbow and replace the plug.

Follow the standard startup instructions when this is done.



Oil and Filter

Replace the oil at the recommended intervals with Compact Compression Inc. recommended Screw Oil. Fill it to the level shown below. When replacing the oil filter ALWAYS use an anti-seize product on the threads to prevent galling of the aluminum.



Oil Fill Level



Oil Filter

Coalescing Filter

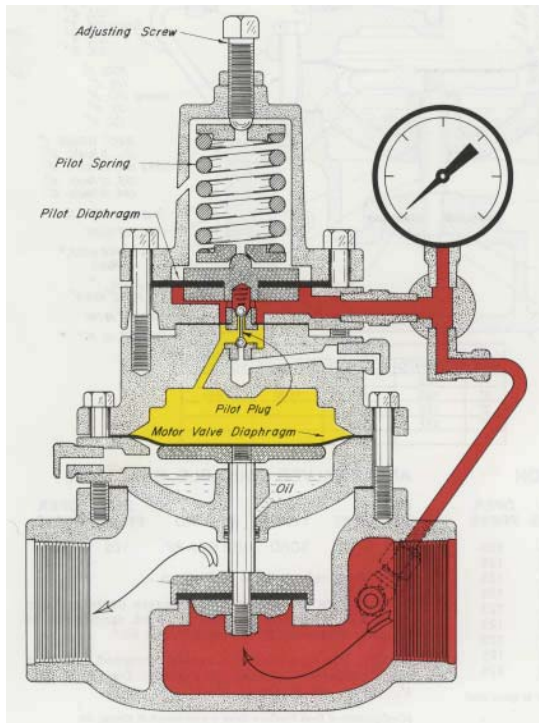
The coalescing filter periodically needs to be replaced. It is housed in the upright vessel shown below. Replace it if the differential pressure reaches 8 psid.



High Recycle Regulator

Kimray 130 SGT-BP-D

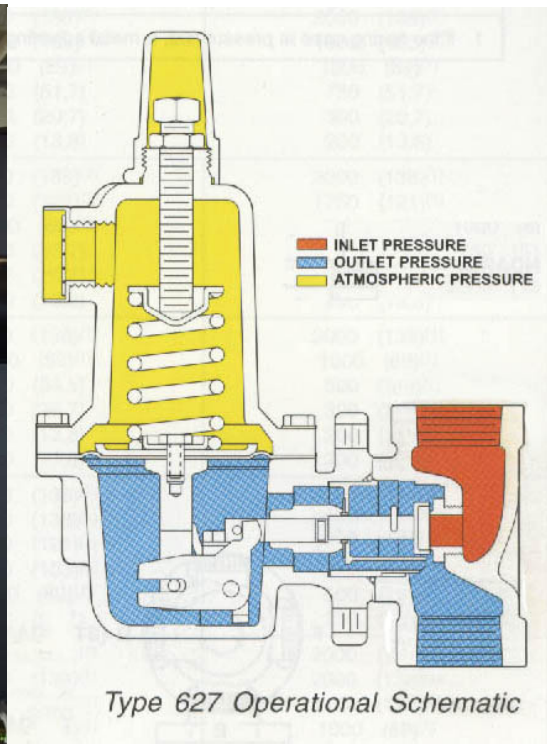
Pictured below is the 1" back pressure regulator. It controls the high recycle pressure. Turn the top adjuster inwards to increase the set pressure and outwards to decrease. If the pipeline gets backed up the discharge pressure will rise. To avoid having the compressor shut-down the high recycle allows gas back to the suction side and limits the screw discharge pressure to acceptable limits. A starting value would be 20 psig above the pipeline pressure. If the pipe pressure continues to rise, the discharge check will close and the unit should continue to run in full recycle. The high recycle should be set below the high discharge pressure shutdown.



Low Pressure Recycle

Fisher 627

The low pressure recycle is a pressure reducing regulator used to prevent the well pressure from becoming too low. To adjust, remove the top cap and turn the adjusting screw. In for increased setting and out to decrease. This regulator should be set above the low pressure shutdown switch and below the inlet regulator setting. Capable settings are in the 5-20 psig range.



Inlet Regulator

Kimray 230-SGT-PRB-D

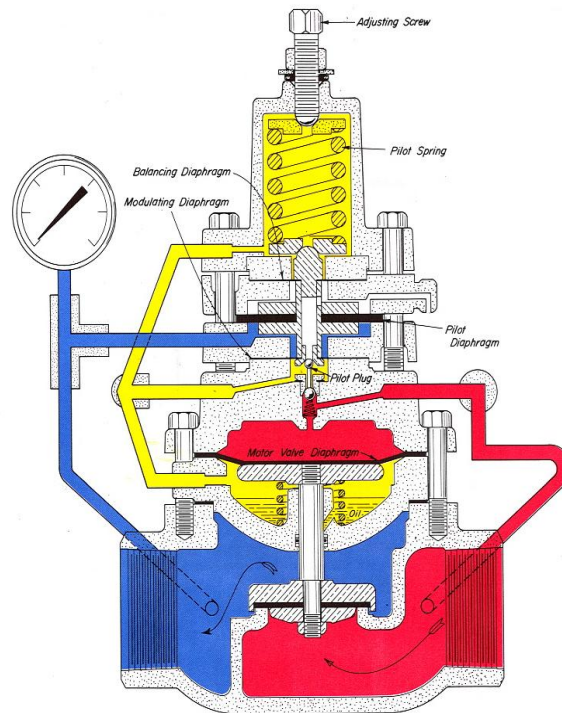
The inlet regulator pictured below is a balanced pressure reducing regulator. Its purpose is to limit the suction pressure to the screw when wellhead pressures are high. Turning the top adjuster inwards increases the set pressure and turning it outwards decreases the set pressure. Anything over 70 psig is not allowed by limits of the screw. If the well pressure is higher than the setpoint then the regulator will maintain the set pressure to the screw. If the well pressure falls below set pressure the regulator will open fully and allow gas to flow at that pressure. For example at 20 psig setpoint, 10 psig well, the regulator will be fully open and the screw suction pressure will be 10 psig. The inlet regulator should be set at a pressure above the low recycle regulator setpoint.

Adjustment

In \rightarrow Increase

Out \rightarrow Decrease

Setpoint: Preferred inlet pressure. 70 psig max



Utility Gas Regulator

Control Air 700-DF

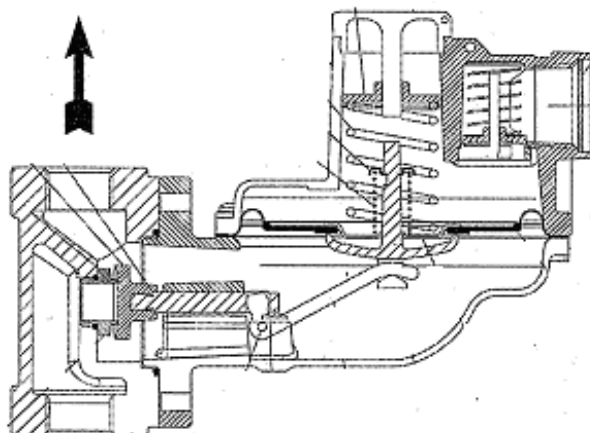
The regulator sets the pressure for the scrubber pneumatic dump and inlet pressure to the fuel gas regulator and clutch cylinder. Turn clockwise to increase and counter clockwise to decrease the setpoint. Recommended setting is 50 psig. If the pressure is set below 50 psi. there is a danger of belt slippage.



Fuel Gas Regulator

Fisher HSR

Used to set pressure for the engine fuel system and gas fired heaters. Recommended setpoint is 17" H₂O. To adjust remove the top cap and turn inwards to increase and outwards to decrease. Use the fuel pressure gauge to set the pressure and always have a small amount of flow and the top cap installed to make accurate settings.



Belts and Sheaves

The belts will need replacing due to normal wear or the drive ratio will need changing if conditions change dramatically. The two procedures are outlined below.

Replacement

WARNING: Suitably prepare the compressor unit for maintenance and use safe work practices. Unhooking the battery cables and relieving all pressures is a minimum.

Remove the belt guard.

Remove Allen head bolts from the driveshaft yolk and slide it out of the way.

Slip the belts off the sheaves.

One at a time, remove the belts. They should just slip through between the shaft and the drive sheave.

Replacement is the reversal of removal.

Ratio Change

When a ratio change is necessary the belts and driven sheave must be replaced. Due to the nature of the belt tensioner and belt alignment, only CCI sheave ratios are recommended. A table of available ratios can be found on the next page.

Remove the belt guard.

Remove the old belts as above.

Remove the driven sheave and bushing and replace with the new sheave and bushing.

Install the new belts.

Replace the belt guard.

A table of suitable ratios is included. Contact CCI with new site conditions for selection of the proper ratio.

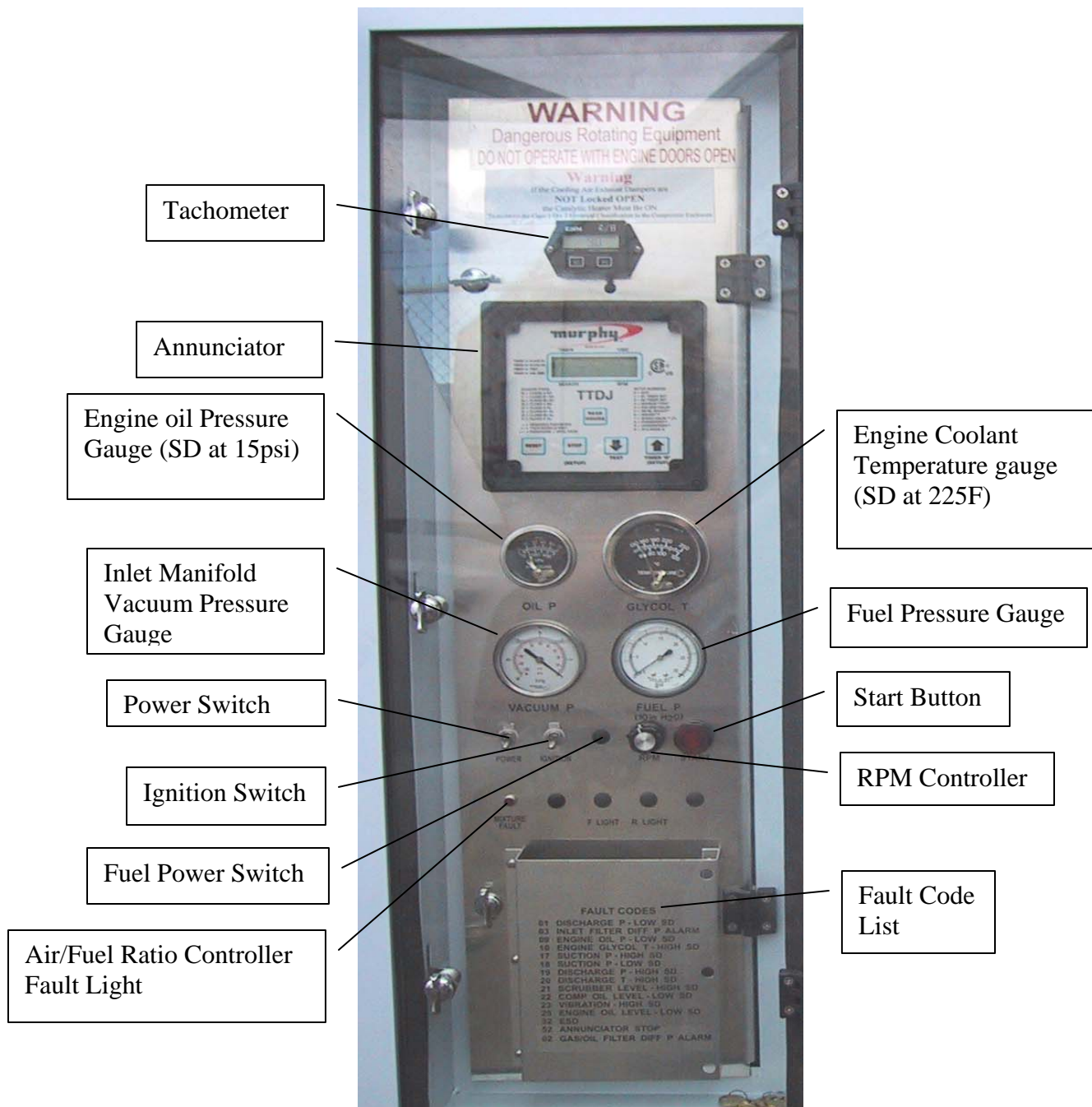
RATIO	BELT (Qty 3)	SHEAVE (3 Groove)	BUSHING
R1	5VX750	5V1253 (12.5")	E35MM
R2	5VX730	5V1093 (10.9")	SF35MM
R3	5VX710	5V9253 (9.25")	SF35MM
R4	5VX690	5V803 (8.0")	SF35MM
R5	5VX670	5V713 (7.1")	SK35MM
R6	5VX660	5V633 (6.3")	SK35MM
R7	5VX650	5V553 (5.5")	SDS35MM
R8	5VX630	5V493 (4.9")	SDS35MM

** Contact CCI for bushing information.

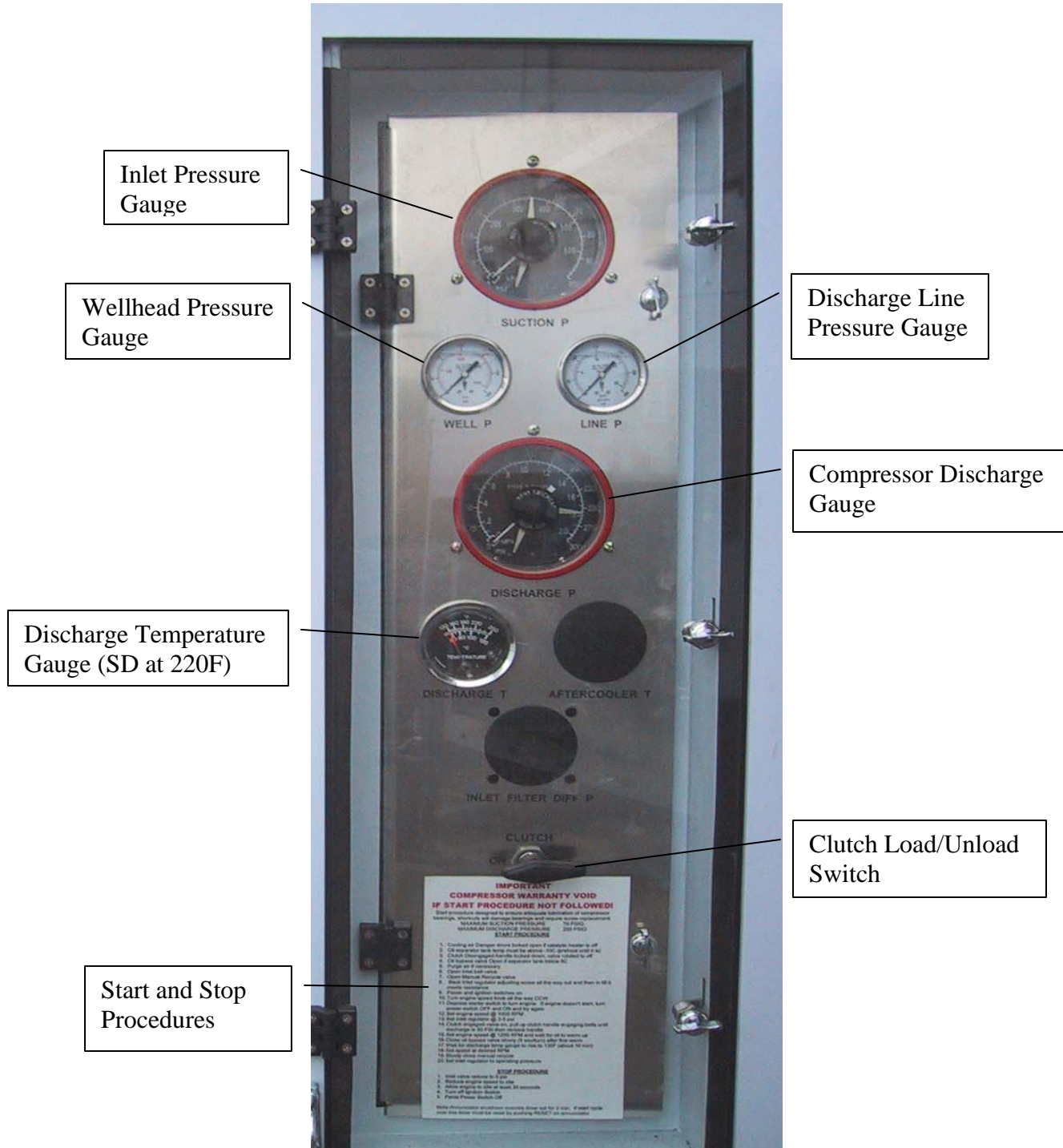
Control Panel

There are two control panels, the Compressor Compartment Panel is rated Class I, Division 2, and the Engine Compartment Panel is rated General Purpose. A full size wiring diagram is included in the Appendix. Circuit Breaker ratings are found on the wiring diagram.

Engine Control Panel And Components



Compressor Control Panel and Components



ANNUNCIATOR

Annunciator - n : indicates which electrical circuit has been active. Source: *WordNet* ® 1.6, © 1997 Princeton University

- RESET – Clears Alarms and Shutdowns. Used to initialize timers and annunciation for startup.
- STOP – Shuts down unit on Code 52 and does not turn on the alarm output (Alarm output not used on CC40).
- READ HOURS – Push anytime power is on to read current run time.
- TEST – Used to Setup and Troubleshoot panel. See installation and operation manual, Murphy TTDJ-99062N.

On startup the first timer will count down from 2 minutes to 0 then the second timer counts down its' remaining 8 minutes of 10 it started with. After 10 minutes the unit is fully functional and awaits alarm or shutdown. If a fault is set a 2-3 second countdown timer (Timer 4) starts and if the fault remains after this time the unit shutdowns, by interrupting power to the coil, and the fault is annunciated on the LCD display. The exception is the ESD input #32. It does not wait for Timer 4.

Inputs 1-16 are configurable as alarms or shutdowns and can also be placed on either Timer 1 or Timer 2. Inputs 17-28 are dedicated shutdowns. Input 32 is a dedicated ESD.

The shutdowns are setup as follows:

01	Timer 1	2 min	Shutdown	Discharge P-Low
02	Timer 2	10 min	Alarm	Gas/Oil Sep Diff P
03	Timer 2	10 min	Alarm	Inlet Filter Diff P
09	Timer 1	2 min	Shutdown	Engine Oil P Low
10	Timer 2	10 min	Shutdown	Engine Glycol T High
16	Timer 1	2 min	Shutdown	Suction P Low
17			Shutdown	Suction P High
19			Shutdown	Discharge P High
20			Shutdown	Discharge T High
21			Shutdown	Scrubber Level High
22			Shutdown	Comp Oil Level Low
25			Shutdown	Engine Oil Level Low
32			ESD Shutdown	ESD

Annunciator Troubleshooting:

Displayed SD/Alarm	Possible Cause & How to Fix
01	-Check gauge setting - should be < min expected discharge pressure but > 50 psi -Check wiring - should be NC circuit when pressure higher than setting
02	-Filter has become dirty and clogged. Change filter for DP > 8 psi. -Check wiring - should be NC circuit when pressure < 8 psi.
03	-Filter has become dirty and clogged. Change filter for DP > 8 psi. -Check wiring - should be NC circuit when pressure < 8 psi.

09	<ul style="list-style-type: none"> -Check that gauge is working properly -Check wiring - circuit should be NO when pressure > 15 psi. -Engine may have powered out. Set recycles within power limits. -Check that engine has fuel gas. -Inlet regulator may be set too high and unit is running out of power. -Possible governor problem - Contact CCI if none of the above help.
10	<ul style="list-style-type: none"> -Check that gauge is working properly -Check If fan Is turning/Check Belts -Check If louvers are open -Check wiring - should be NO circuit when temp < 225 F
16	<ul style="list-style-type: none"> -Check gauge setting - should be < LP recycle setting but > 0 psi -Check wiring - should be NC circuit when pressure > setpoint -Check setting on inlet regulator -Set LP Recycle and leave LP recycle ball valve open -Open inlet block valve -Solenoid valves above inlet regulator should turn on with Ignition power.
17	<ul style="list-style-type: none"> -Check gauge setting - should be > inlet reg setpoint -Check inlet regulator for proper operation (pressure should not climb above setpoint) -Check wiring - should be NC circuit when pressure < setpoint
19	<ul style="list-style-type: none"> -Check gauge setting - should be above HP recycle setpoint -Check wiring - should be NC circuit when pressure < setpoint -Is there something restricting flow from the unit? (Closed ball valve, too small orifice) -Set HP recycle and leave recycle supply ball valve open
20	<ul style="list-style-type: none"> -Check gauge for proper operation -Wiring circuit should be NO when temp < 220 F -Louvers should be open -Check if fan is turning/Check Belts -Cooler should be clean -Dampers on top of unit should not be latched shut -Oil filter indicator should be reading in the green. If red, replace filter -Check operation of the thermostat. Should open at 190 F -Bypass gate valve should be closed after oil tubing is hot to the touch.
21	<ul style="list-style-type: none"> -Check level on sight glass. If too high, drain excess condensate. -Check operation of the dump assembly. -Check wiring - should be NC circuit when condensate level is low. -Is there a ball valve shut in the dump assembly? -If there is a condensate pump, is there a supply of fuel gas to the pump?
22	<ul style="list-style-type: none"> -Is compressor oil level less than 7-1/2"? Add oil. -Check wiring - should be NC circuit when oil level is > 7-1/2"
25	<ul style="list-style-type: none"> -Is oil level lower than the lower green line on the level controller? Add oil to daytank -If level does not come up, check operation of the level controller -Check wiring - should be NC circuit when oil level is at midpoint of controller
32	<ul style="list-style-type: none"> -Is ESD button pressed? Reset by pressing and turning button. -Check wiring - should be NC circuit when button not pressed.

Appendix

Included in this Appendix:

- Process and Instrumentation Diagram
- Wiring Diagram
- Bolt Torques
- Recommended Spare Parts

Bolt Torques

<u>Bolts</u>	<u>Torque (ft-lbs)</u>
3/8" Flywheel Plate	33
Drive Shaft Coupling Socket Head Capscrews	100

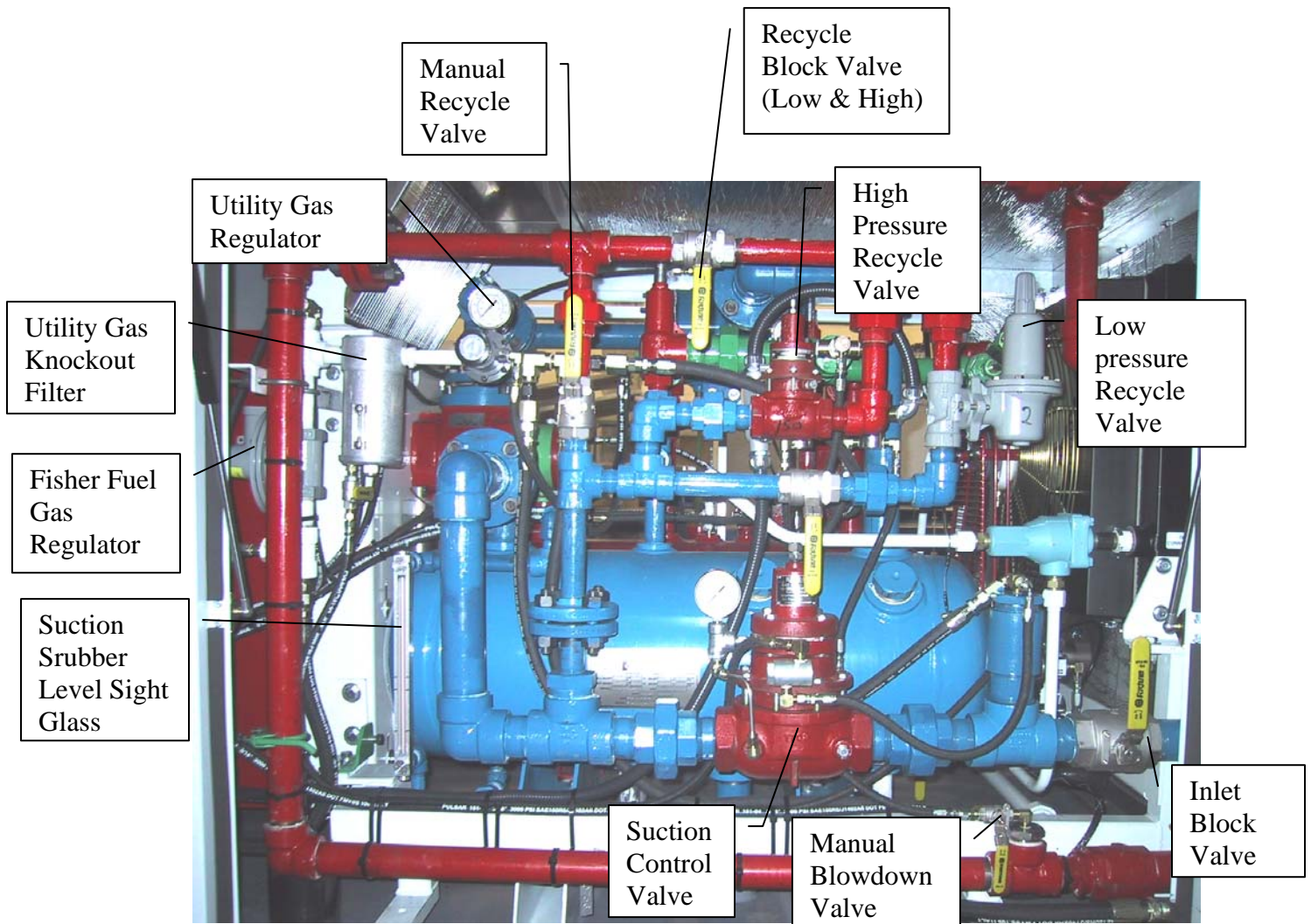
Recommended Spare Parts

<u>CCI P/N</u>	<u>Description</u>
2107	Compressor Oil PGS 68
1825	Compressor Oil Filter Element
1031	Gas /Oil Separator Filter Element
1780	Inlet Particulate Filter Element
3386	Engine Oil 5W30
1607	Engine Oil Filter Element
1705	Off Line Engine Oil Filter Element
1777	Engine Spark Plug GM 3.0L
1724	Engine Fan Belt
1452	Rear Fan Belt
Contact CCI.	Compressor Drive Belts
1921	Trailer Spare Tire

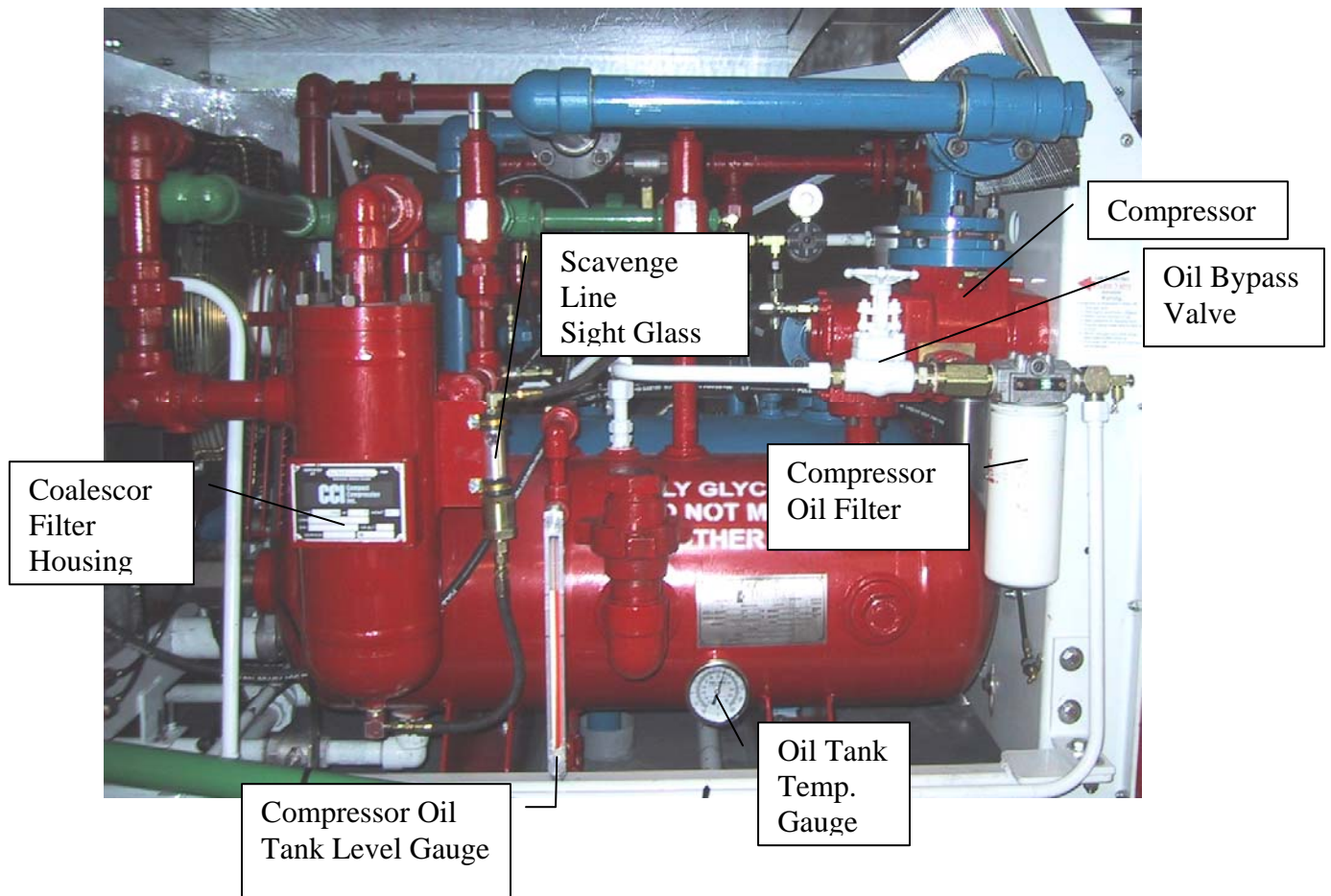
Shutdown and Alarm Standard Setpoints

Code	Set at
Discharge Press Low SD 01	Min 50 psi or 10 psi less than normal discharge pressure. Whichever is higher.
Coalesing Filter DP AL 02	8 psid
Inlet Filter DP AL 03	8 psid
Comp Oil Filter DP AL 04	20 psid
Fire Loop SD 05	20 psi
Engine Oil Press Low SD 09	15 psi
Glycol Temp High SD 10	107°C / 225 °F
Suction Press Low SD 16	1 psi
Suction Press High SD 17	65 psi
Discharge Press High SD 19	245 psi
Discharge Temp High SD 20	104°C / 220 °F
Scrubber Level High SD 21	See level on sight glass
Comp Oil Level Low SD 22	See level on sight glass
Compressor Oil Temp Lockout 23	0°C / 32°F
Engine Oil Level Low SD 25	See level on Levelminder
Gas Detection SD 29	20% LEL
Emergency Shutdown (ESD) 32	
Manual Stop SD 52	

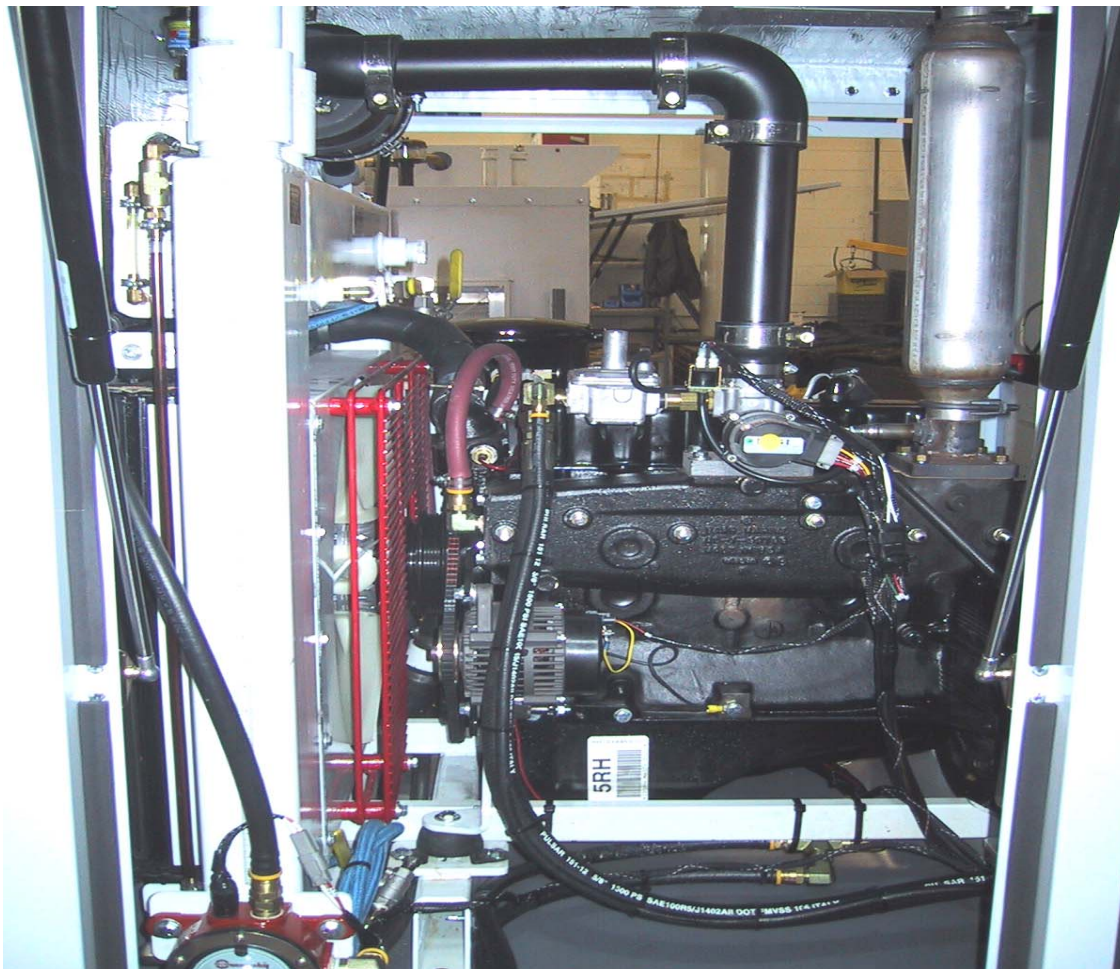
COMPRESSOR COMPARTMENT PANEL SIDE



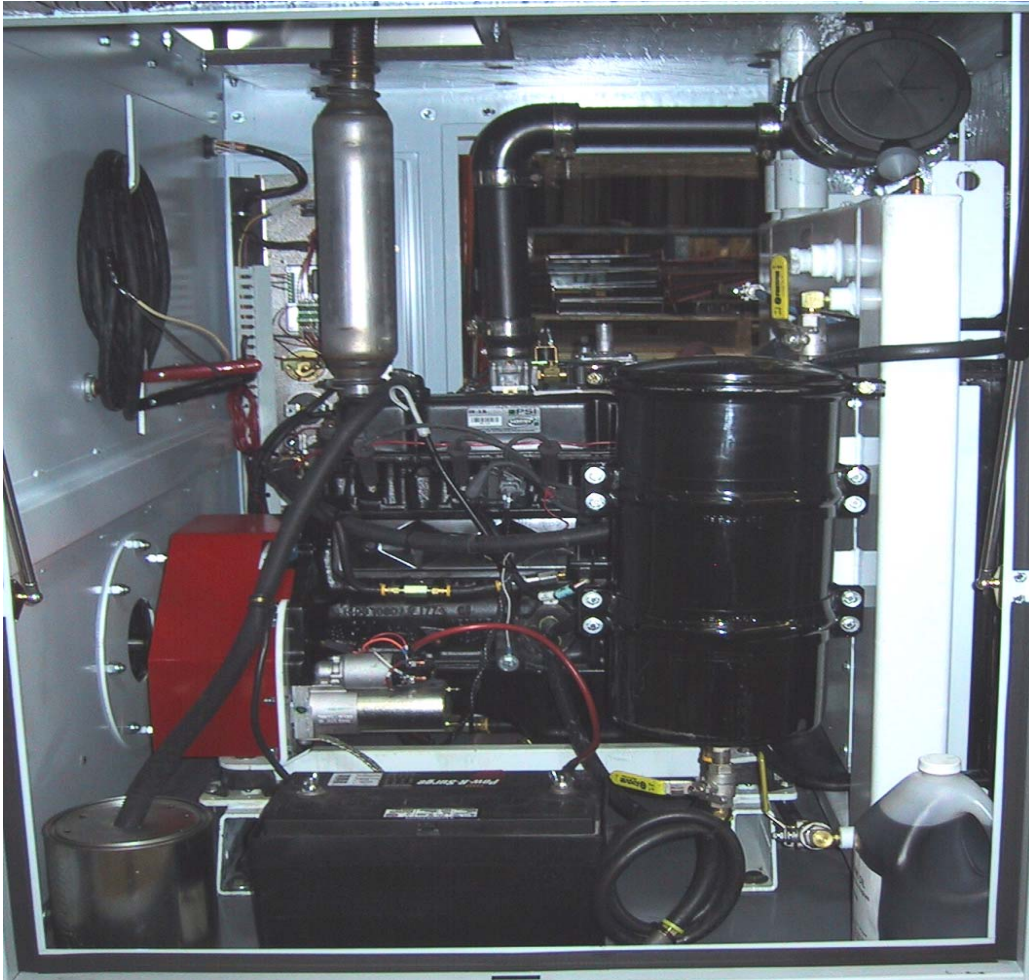
COMPRESSOR COMPARTMENT COMPRESSOR SIDE



ENGINE COMPARTMENT PANEL SIDE



ENGINE COMPARTMENT COMPRESSOR SIDE



Limited Warranty

New CCI Natural Gas Compressors

Compact Compression Inc. warrants to the original customer, each new natural gas compressor supplied, that is found, in normal use and service to be defective in factory material or workmanship, within a period of 12 months or 6000 hours. Whichever occurs first. It will reimburse or credit for necessary repairs or replacements of any defective or malfunctioning parts of said compressor with the exclusion of the major components which carry their own warranties. All replacements must be made with genuine or CCI approved parts.

Major components carry the original manufacturers' warranty. For example, the engine carries the distributor's warranty of 12 months or 2000 hours whichever occurs first. The screw carries the standard Tamrotor warranty of 1 year, excluding the gas seal.

The warranty period shall begin on the first Start-Up date to the first purchaser or 18 months after the date of sale, whichever comes first. In either scenario, the warranty period will commence no later than 24 months after the compressors' date of manufacture.

This warranty covers only malfunctions resulting from defects in material and workmanship and the labor to repair any such problems.

THIS WARRANTY DOES COVER LABOR REQUIRED TO GAIN OR CLOSE ACCESS TO THE COMPRESSOR.

This **warranty does not cover** malfunctions resulting from:

- improper calibration of spark, fuel systems
- misuse
- negligence
- accident
- alterations not approved by CCI
- lack of performance of normal maintenance
- improper installation
- the replacement of maintenance items
- **loss of time, inconvenience, loss of use of equipment or other consequential damages**

The requirements of the purchaser are:

- shall notify CCI of any such defective part within 20 days from the time the purchaser obtains such knowledge
- provide proof of purchase and in-service date to CCI when requesting warranty
- shall properly operate and maintain the compressor in accordance with an authorized owner/operator manual
- request for service shall be made to CCI during regular business hours
- **monthly oil sampling and analysis as per authorized owner/operator manual**

TO THE EXTENT ALLOWED BY LAW, LOSS OF TIME, INCONVENIENCE, LOSS OF USE OF THE EQUIPMENT, COMMERCIAL LOSS, OR CONSEQUENTIAL DAMAGE ARE NOT COVERED.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER EXPRESS OR IMPLIED WARRANTY ON ANY CCI COMPRESSOR OR ANY PART THEREOF, INCLUDING ANY IMPLIED WARRANTY OR MERCHANTABILITY OR FITNESS.

CC40 Inspection and Service Report

Date						
Hours						
Ratio (Initial Ratio =)						
Suction Pressure (Initial SP =)						
Discharge Pressure (Initial DP =)						
Flow (Initial Flow =)						
Outside Temperature						
Inspector Initials						

RUNNING CHECKS

1. RPM						
2. Annunciator Warnings						
3. Engine Oil P (30 — 50 psi)						
4. Engine Glycol Temperature (170-190 F)						
5. Manifold Vacuum (“Hg)						
6. Fuel Pressure (“w/c)						
7. Air Fuel Ratio Controller Fault Light						
8. Suction Pressure (0 — 70 psi)						
9. Wellhead Pressure (psi)						
10. Line Pressure (psi)						
11. Discharge Pressure (60 — 250 psi)						
12. Discharge Temperature (165 — 190 F)						
13. Inlet Particulate Diff P						
14. Clean Air Pre-cleaner						
15. Coalescing Filter Diff P (psi)						
16. Fuel/Instrument. Regulator P (50 psi)						
17. Condensate Tank Level (inches)						
18. Air Fuel Ratio Mixture Indicator 50/75 Red/Green						
19. Air Filter Service Indicator (%)						
20. Manifold to exhaust gasket leaks						
21. Coolant Day Tank Level (inches)						
22. Engine Oil Day Tank Level (inches)						
23. Engine Oil Minder Level						
24. Clean Compressor Cooler						
25. Compressor Oil Level (inches)						
26. Compressor Oil Filter Cond. Indicat’r %						
27. Scavenge Line Sight Glass (1 ½ turns open – old style)						
28. Oil and Gas Leaks						
29. Excessive Vibration						
30. Bearing Noise						
31. Engine Oil Sample						
32. Compressor Oil Sample						
33. Timing (1400 hrs)						
34. Vibe Test						
34. Power Test Suction Pressure						
35. Power test discharge pressure						
36. Power test Flow						
37. Power Test Vacuum						
38. Auto Blowdown Valve OK?						
39. Auto Shutoff Valve OK?						

STOPPED CHECKS

Date						
1. Engine Oil Change (700 hrs)						
2. Engine CoolantChange (4,500 hr) (50/50)						
3. Coolant added (Enter amount)						
4. Engine Oil Filter Change						
5. Engine Oil Lubrifier Filter Check/Drain						
6. Engine Crankcase Vent Can (Drain)						
7. Engine Mounts						
8. Fan/Alternator Belt						
9. Coolant Hoses and clamps						
10. Spark Plugs Change (1400 hrs)						
11. Dirty Well - Change Spark Plugs every service						
12. Compression Check (100-160 psi) Enter by cylinder number.	1.	1.	1.	1.	1.	1.
	2.	2.	2.	2.	2.	2.
	3.	3.	3.	3.	3.	3.
	4.	4.	4.	4.	4.	4.
13. Spark plug wires						
14. Cap and Rotor Check						
15. Air Filter change on condition						
16. Water Pump (Seal Check)						
17. Check Main Drive Rubber Coupling						
18. Inspect and clean radiator						
19. Tighten Jam Nuts on Power Valve						
20. Tighten all wires on control panel						
21. Compressor Oil Level						
22. Compressor Drive Belts						
23. Compressor Drive Slide Pads (8 total)						
24. Compressor Fan Idler Pulley and Tightener						
25. Tighten Fan Drive Rear Bearings Set Screw						
26. Grease Main Drive Shaft (3 points)						
27. Grease Midwall Bearing						
28. Grease Main Bearing Assembly						
29. Grease Fan Driveshaft Universal						
30. Grease Fan Driveshaft Rear Bearing						
31. Grease Fan Bearing						
32. Engine Oil Added (Enter amount)						
33. Dipstick Oil Level (100%)						
34. Drain Fuel Gas Scrubber						
35. Compressor Oil Change (4,000 hr)						
36. Heater Operation (Quarterly)						
37. Loose Insulation						

PSV Service Check Log

[illegible]

Vessel Inspection

[illegible]

Component Serial Number Register

#	Component	Date	No	Initial	Date	No	Initial
1	Screw SN						
2	Scrubber SN						
2	Scrubber CRN						
3	Separator SN						
3	Separator CRN						
4	Scrubber PSV SN						
4	Scrubber PSV CRN						
5	Separator PSV SN						
5	Separator PSV CRN						
6	Coalescer PSV SN						
6	Coalescer PSV CRN						
7	Cooler SN						
7	Cooler CRN						
8	Engine SN						