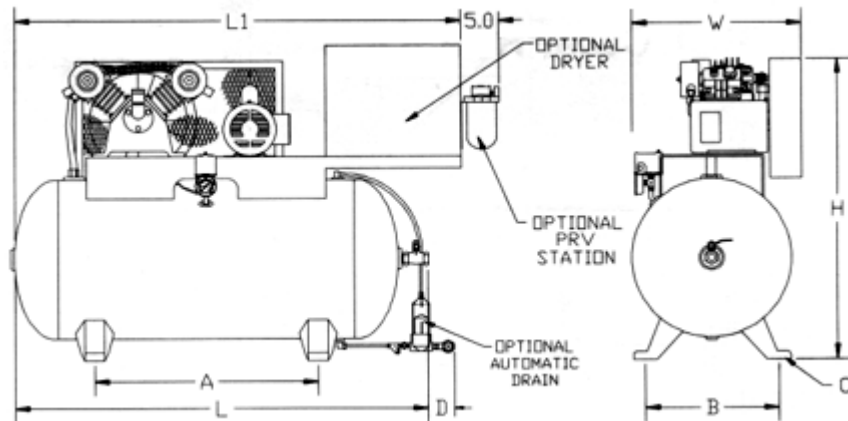
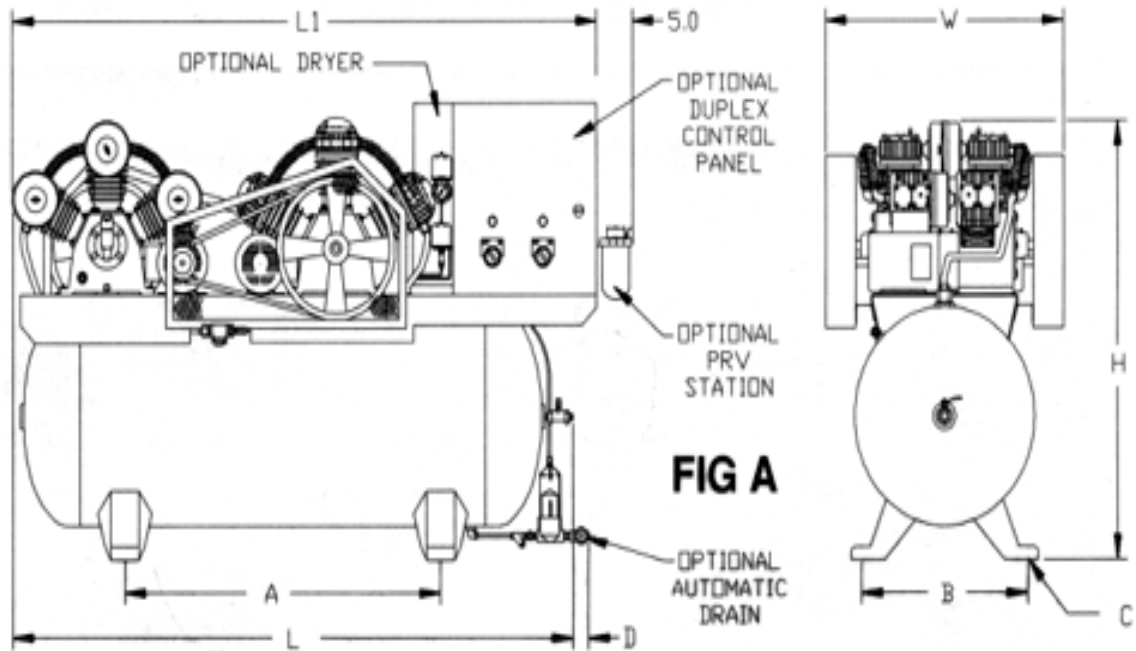




OPERATING AND MAINTENANCE INSTRUCTIONS CLIMATE CONTROL/INDUSTRIAL



“PERFORMANCE UNDER PRESSURE”

A Message from the President

Air Compressor Products, Inc. (ACP) was established in 1973 to manufacture compressed air systems and related products. We have over forty years experience in the compressed air industry and our total quality commitment and on-going development provide the background for our technically advanced products.

We know that a company's greatest asset is its ability to provide genuine service to its customers. Our mission is to continually improve our products and services in order to meet our customer's needs. This has established Air Compressor Products as an innovative industry leader in the manufacture, development and application of products for compressed air systems.

Our products are built for value, safety and long lasting performance. Our modern manufacturing facilities have the flexibility to meet the market needs for both standard and special compressor packages. ACP breathing air and climate control products are recognized worldwide. Our goal is to provide you with products and service second to none.

Sincerely,

Air Compressor Products, Inc.



Greg Walski

CEO



FAILURE TO READ THIS MANUAL BEFORE INSTALLING AND OPERATING YOUR NEW AIR COMPRESSOR COULD RESULT IN INJURY, PROPERTY DAMAGE, AND/OR EQUIPMENT FAILURE.

FREIGHT DAMAGE

Freight damages do not constitute warranty service. ACP terms are FOB point of shipment (plant), and ACP's responsibility ceases upon delivery of product to carrier and obtaining receipt for same. It is the responsibility of the receiving customer to file damage or concealed damage claim with the delivering carrier upon receipt of product.

INDEX

PAGE	1	LETTER FROM ACP PRESIDENT SAFETY WARNING FREIGHT DAMAGE
	2	INDEX
	3	INSTALLATION
		PREPARING TO START
	4	STARTING
	5	STOPPING FOR MAINTENANCE LUBRICATION
		BELT TENSION ADJUSTMENT
	7	PERIODIC MAINTENANCE CHART
	8	TROUBLESHOOTING CHART
	12	LONG TERM STORAGE
	13	TORQUE SPECIFICATIONS

INSTALLATION

LOCATION

Locate the compressor in a dry, clean, cool and well ventilated area. If the compressor must be mounted in areas which are poorly ventilated or have dirt, vapors or volatile fumes in the atmosphere, install a remote air intake system. These conditions may cause faulty operation due to clogged intake filters and valves or they can cause moisture to accumulate in the systems air lines.

NOTE: Maximum ambient temperature in which the compressor and motor should be operated is 104°F.

The compressor must not be installed closer than twelve (12) inches to a wall or to another compressor to allow ample circulation of air across the compressor cylinders and heads. Additional safety can be achieved by locating the pulley system, with the guard, on the wall side.

Mounting - Mount the compressor on a concrete pad or floor making certain that the receiver feet are level and that no stress is induced in the legs when the mounting nuts are tightened, shim feet if necessary. Severe vibrations will result when feet are uneven and drawn tightly to the pad which can lead to welds cracking or fatigue of the receiver.

Induction System - Avoid locating the air inlet system where it could ingest toxic, volatile or corrosive vapors, air temperatures exceeding 120°F, water or extremely dirty air. Ingesting any of the above noted atmospheres by the compressor will impair the performance of the equipment.

PREPARING TO START



FAILURE TO MAKE THESE RECOMMENDED CHECKS COULD RESULT IN SERIOUS INJURY, PROPERTY DAMAGE, AND MECHANICAL FAILURE.

1. Remove all loose pieces and tools around the compressor installation.
2. Check oil level in crankcase.
3. Check motor and compressor pulley for alignment and tightness on shaft
4. Be absolutely certain that all mounting bolts are tight.
5. Manually rotate compressor through enough revolutions to be certain there are no mechanical interferences.
6. Check belt tension, it should be neither too loose nor too tight.
7. Check all pressure connections for tightness.
8. Check to make sure all safety relief valves are in place.
9. Check to be sure all guards are in place and securely mounted.
10. Check fuses, circuit breakers and thermal overloads for proper size.
11. Open all manual shutoff valves (block valves) at and beyond the compressor discharge.
12. After all of the above conditions have been satisfied, jog the starter switch button to check the rotational direction of the compressor, it should agree with the rotation arrow on the unit.

STARTING

Follow this procedure for start up of a new installation, after changes to an existing installation have been made, and after service or repairs have been performed.

1. Instructions in addition to those contained within this manual, supplied by manufacturer of support equipment, must also be read and understood before start-up.
2. Jog starter button and check compressor rotation.
3. Start compressor and watch for excessive vibration and noises. If either is present, stop compressor and correct.
4. Check air receiver pressure.
5. Manually blow safety relief valve(s).
6. Check operation of controls.
7. Observe general compressor operation closely for first hour and then frequently for next seven hours. If any abnormal conditions exist, stop compressor and correct the problem.
8. After two days of operation, check belt tension, air and oil piping for leaks and crankcase oil level.

DUPLEX UNITS:

NOTE: It is strongly recommended when starting duplex units both compressors be put on line in the alternating mode. When running only one unit for a long period of time there is a tendency due to heat generated by the operating compressor for the stand-by compressor to condense moisture in the head causing fist. When both units are operating equal heat keeps the moisture suspended.

STOPPING FOR MAINTENANCE



NEVER ASSUME THE COMPRESSOR IS READY FOR MAINTENANCE OR SERVICE BECAUSE IT IS STOPPED. THE AUTOMATIC STOP-START CONTROL MAY START THE COMPRESSOR AT ANY TIME. I

The following procedures should be followed to maximize safety when preparing for maintenance or service.

1. Disconnect and lock-out the main power switch and hang a sign at the switch informing of the unit being serviced.
2. Close shut-off valve (block valve) between receiver and compressor, or receiver and plant air system, to prevent any back-up of air flow into the area to be serviced.
3. Lock open manual vent valve and wait for the pressure in the area to be serviced (compressor, receiver, etc.) to be completely relieved before starting service. The manual vent valve may be the drain valve in the receiver. **NEVER** remove a plug to relieve the pressure.
4. Shut off water and depressurize system if it is water cooled.
5. Open all manual drain valves within the area to be serviced.

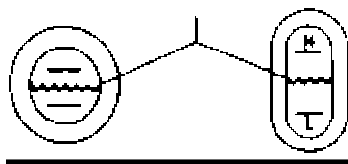
CAUTION: When maintenance has been completed, refer to the starting procedure section of this manual for restarting the unit.

MAINTENANCE AND SERVICE LUBRICATION

In order to insure proper lubrication the compressor must not be run at a speed lower than 400 RPM or faster than the maximum as stipulated so as to avoid rapid wear of the parts.

Always keep oil level in between the H and L lines or the oil gauge (as shown).

Standard Oil Level



Oil Gauge

Do not over fill. The oil level must be maintained as noted above. Never allow oil to fall below "L" Level.

Change oil after first 100 hours of operation and every 1000 hours thereafter, (every 500 hours when the condition of the oil dictates more frequent changes).

Fill crankcase only when compress is shut down.

The lubricant should be a premium quality. **NON DETERGENT OIL**, containing a rust and oxidation inhibitor. Utilization of an improper oil may result in coking which on build-up may plug heat exchangers, control lines, compressor valves and safety relief valves, resulting in a fire or explosion. For proper viscosity refer to the table below.

AMBIENT TEMPERATURE AT POINT OF INSTALLATION	SAE VISCOSITY	ISO VISCOSITY GRADE
0°F. TO 32°F.	SAE 10W	ISO 32
32°F. TO 80°F.	SAE 20W	ISO 46/68
ABOVE 80°F.	SAE 30	ISO 100

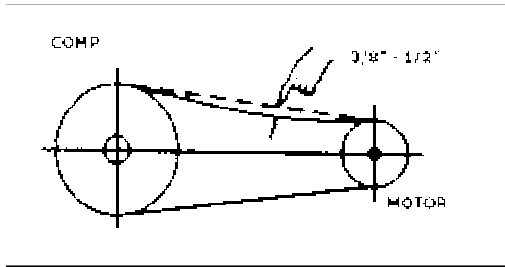
NOTE:

All reciprocating compressors have a tendency to pass higher than normal amounts of oil out the discharge port when new. This is because the piston rings need to conform to the cylinder walls. Allow 100 hours running time at full discharge operating pressure for piston ring break-in. Do not use a higher viscosity oil than is specified in the table above.

COMPRESSOR OIL CAPACITY

<u>New ACP Part#</u>	<u>Old ACP Part #</u>	<u>Old CC Part #</u>	<u>New CC Part #</u>	<u>Oil Capacity</u>
SINGLE STAGE				
ACP-GS02	ACP-GS-0	C0S	C0S	12 oz.
ACP-GS11	ACP-GSA-0	C0S A	N/A	21.4 oz.
ACP-GS12	ACP-GSA-1	C1S	C1S	21.4 oz.
ACP-GS13	ACP-GS-12	C2S	C2S	37.2 oz.
ACP-GS22	ACP-GS-35	C3S	C3S	32.9 oz.
ACP-0S23	ACP-GSA-35	CSS	C4S	57.1 oz.
ACP-GS33	ACP-GSA-7510	C6SA	C5SB	85.5oz.
ACP-GS33	ACP-GS-7510	C6SA	C6S	85.5 oz.
ACP-GS43	ACP-GS-15	C7S	C7S	152.6 oz.
TWO STAGE				
ACP-G12	ACP-G-1	N/A	N/A	21.4 oz.
ACP-G13	ACP-GA-123	C2T	C2T	37.2 oz.
ACP-G23	ACP-G-35	N/A	C4T	57.1 oz.
ACP-G33	ACP-G-7510	N/A	N/A	85.5 oz.
ACP-G43	ACP-G-15	N/A	N/A	152.6 oz.
ACP-G54	ACP-GH-2025C	N/A	N/A	202.3oz.
ACP-GB1	ACP-GB1	N/A	N/A	
ACP-GB2	ACP-GB2	N/A	N/A	

BELT TENSION ADJUSTMENT



To change tension, loosen the motor hold-down bolts and slide the motor on the base, using a lever if necessary, or by turning the adjusting bolt at the end of the base.

Retighten motor hold-down bolts.

NOTE: Do not over tighten belts.

PERIODIC MAINTENANCE CHART

CHECK	Daily	Weekly	Monthly	Semi-Annually	Annually
1. Check Low oil level. Maintain between High and level marks on gauge. CAUTION: Do not overfill!	X				
2. Drain moisture accumulation from the air receiver.	X				
3. Drain drop legs and u in air distribution system.	X				
4. Give compressor an overall visual inspection and be sure safety guards are in place.	X				
5. Check for any unusual noise or vibration.	X				
6. Check for oil leaks.	X				
7. Operate the safety valves to be certain they are functioning.		X			
8. Clean the cooling surfaces of the intercooler, aftercooler and compressor.		X			
9. Replace more or clean air intake filter. Check more often if dirty conditions exist.		X			
10. Check the air distribution system for air leaks.		X			
11. 11. Inspect oil for contamination and change if necessary. Check more often under dirty conditions.			X		
12. Check belt tension.			X		
13. Check pulley and pulley clamp screws or set screws for tightness.			X		
14. Inspect compressor valves.				X	
15. Inspect pressure switch diaphragm and contacts. Also contact points in motor starter (if supplied).					X

TROUBLE SHOOTING

Trouble	Probable Cause
<p>Low discharge pressure and air delivery.</p>	<p>Restricted air inlet filter or suction line.</p> <p>Bad compressor valves or valve unloading mechanism.</p> <p>Leaks in the plant air system at fittings, connections, tools, etc.</p> <p>Unloader pilot set wrong or bad.</p> <p>Pressure switch set wrong or bad.</p> <p>Drive belt slipping.</p> <p>Incorrect speed.</p> <p>Worn piston rings or loose piston.</p> <p>Leaking head gasket.</p> <p>Drain valve open.</p> <p>Bad pressure gauge.</p> <p>Demand exceeds capacity, compressor not sized properly.</p> <p>Safety valve leaking.</p> <p>Loose compressor valves or leaking at valve gaskets.</p> <p>Valves or piston rings not seated.</p>
<p>Water in the crankcase</p>	<p>Compressor does not run long enough to get hot and vaporize the moisture squeezed out of the air during compression.</p> <p>Compressor may be too large for the application.</p> <p>Leaking cylinder head.</p> <p>Detergent oil being used.</p> <p>System pressure leaking back through valve.</p>

TROUBLE SHOOTING (Continued)

Trouble	Probable Cause
Rusty valves and/or cylinders.	Compressor operated too infrequently. Compressor does not run enough to get hot and vaporize the moisture squeezed out of the air during compression. Not properly processed for storage.
Excessive belt wear.	Pulleys out of alignment. Belt too loose or too tight. Belt slipping. Pulley wobbling. Pulley groove damaged or rough.
Excessive vibration.	Incorrect speed. Compressor valves not functioning properly. Pulley loose. Motor or engine out of balance. Compressor, motor or engine not secured tightly, or tightened in a bind. Excessive discharge pressure.
Compressor loads and unloads excessively.	Air storage capacity too small. Compressor valves or unloaders bad. Excessive system leakage. Incorrect speed. Unloader pilot differential set too close.

TROUBLE SHOOTING (Continued)

Trouble	Probable Cause
Air receiver pressure excessive.	Air pressure gauge inaccurate. Leaks in unloader piping system. Compressor valve unloader bad. Unloader pilot or pressure switch set improperly, or bad.
Compressor overheats.	Defective compressor valves. Pressure setting too high. Clogged Intercooler, internally or externally. Inadequate ventilation or recirculation of hot air. Pulley rotation wrong. Incorrect speed. Running clearances insufficient, piston to cylinder wall or running gear. Lubrication inadequate.
Compressor knocks.	Head clearance insufficient. Piston loose in cylinder bore, cylinder bore worn, piston or piston rings worn. Worn connecting rod bearings. Worn main bearings. Excessive crankshaft end play. Pulley loose. Compressor valve assemblies loose.
High air discharge temperature	Compressor valve assemblies bad. Air discharge pressure too high. Inadequate ventilation or hot air recirculating. Cooling surfaces of compressor or Intercooler excessively dirty. Ambient temperature too high. Scored or excessively worn cylinder walls.

TROUBLE SHOOTING (Continued)

Trouble	Probable Cause
Excessive oil consumption.	<p>Worn piston rings.</p> <p>Air intake restricted.</p> <p>Compressor running too hot.</p> <p>Breather valve not functioning properly.</p> <p>Oil level in crankcase too high.</p> <p>Oil viscosity wrong for the application.</p> <p>Connection rod Out of alignment, bent or twisted.</p> <p>Leaking oil seal.</p> <p>Running unloaded too long.</p> <p>Piston rings not seated. Allow 100 hours for seating.</p> <p>Wrong oil, may be a detergent oil with a tendency to foam, etc.</p>
Excessive current draw.	<p>Low voltage.</p> <p>Loose electrical connection.</p> <p>Wire size too small.</p> <p>Motor too small.</p> <p>Air discharge pressure too high</p> <p>.Bearings tight or seizing.</p> <p>No crankshaft endplay.</p> <p>Compressor speed too high.</p> <p>Motor bad.</p> <p>Compressor not unloaded.</p>
Failure to start.	<p>Power not on.</p> <p>Blown circuit fuse or circuit breaker tripped.</p> <p>Thermal motor overload tripped.</p> <p>Low voltage.</p> <p>Faulty start switch.</p> <p>Power failure.</p> <p>Pressure switch misadjusted or inoperable.</p> <p>Loose or broken wire.</p> <p>Motor bad.</p> <p>Compressor not unloading.</p>

TROUBLE SHOOTING (Continued)

Trouble	Probable Cause
Motor stalls.	Motor overloaded. See “Excessive current drawn” in this section.
Duplex will not alternate.	Alternator relay loose in the socket. COMP1/ALT/COMP2 switch not in ALT mode. Pressure switch Improperly adjusted. No voltage to respective starter. Thermal motor overload tripped. Bad alternator relay. Motor bad.
Constant air bleed from pressure switch.	Worn or damaged pressure switch diaphragm. Pressure switch bleeder valve stuck. Discharge check valve stuck or faulty.

LONG TERM STORAGE

A compressor unit should not be stored without proper preservation for more than six (6) weeks. This is not a hard rule as the location must be taken into consideration. In very damp climates compressors could be stored for one (1) to two (2) weeks and in very dry climates a compressor could be stored for ten (10) to twelve (12) weeks.

PROCESSING A COMPRESSOR FOR EXTENDED STORAGE:

1. Fill the crankcase with a preservative oil.
2. Remove the suction and discharge valve cover plates and spray preservative oil over valves.
3. Remove air filter and tape openings shut with moisture resistant tape or plug with plastic pipe plugs.
4. Disconnect discharge pipe between compressor and air receiver. Tape or plug openings in compressor and air receiver the same as in step 3.
5. Cover entire unit with plastic covering to keep out moisture and to keep dust and dirt off unit.