

User Manual

87R-10BA

Beverage System

GAST

A UNIT OF IDEX CORPORATION

IMPORTANT SAFETY INSTRUCTIONS AND REGULATORY INFORMATION



WARNING











PLEASE READ THIS MANUAL COMPLETELY BEFORE INSTALLING AND USING THIS PRODUCT. SAVE THIS MANUAL FOR FUTURE REFERENCE AND KEEP IN THE VICINITY OF THE PRODUCT.



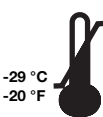





Congratulations on the purchase of your new GAST Compressor System. This system uses an oil-free rocking piston air compressor that produces high-purity compressed air for use in beverage syrup dispensing or other pneumatic applications.

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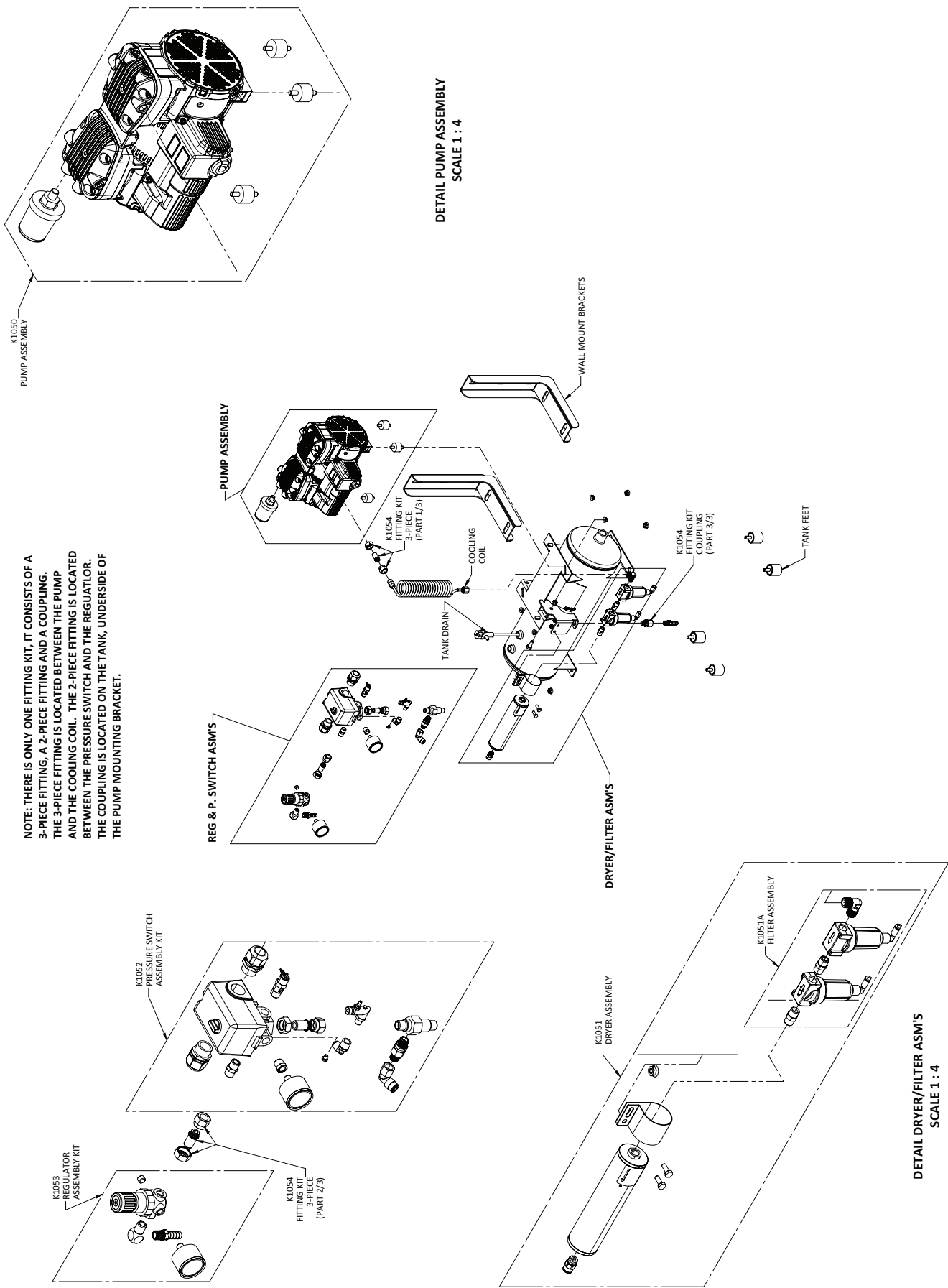
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TABLE OF SYMBOLS

	DANGER: Indicates an imminently hazardous situation which will result in serious or fatal injury if not avoided. This symbol is used only in the most extreme conditions.
	WARNING: Indicates a potentially hazardous situation which could result in serious injury if not avoided.
	CAUTION: Indicates a potentially hazardous situation which may result in minor or moderate injury if not avoided. It may also be used to alert against unsafe practices.
	Indicates the acceptable lowest barometric pressure conditions in which this unit can be shipped.
	Indicates package should be handled with these symbols pointing up.
	FRAGILE: Handle package with care.
	Indicates this package must be kept dry.
	Electrical Shock Hazard. Risk of electric shock present. Make sure power is disconnected before attempting this procedure.

	WARNING: To Avoid Serious Burns. Do not touch surface during operation.
	Indicates the acceptable maximum relative humidity for shipping.
	Indicates the acceptable shipping temperature range.
	Read operation and maintenance manual before operating.
	CAUTION: Risk of Bursting – Do not adjust regulator to result in output pressure greater than marked maximum pressure of attachment.
	WARNING: Risk of injury – Do not direct air/nitrogen stream at body.
Symbol	Description
	A/C power
	Ground

System Features



Operating manual

Information

Please note that you can find the pictures and figures we are referring to throughout the manual

Important - read this first!

Please read the following information and operating instructions included with this product before use. This information is for your safety and it is important that you follow these instructions. It will also help prevent damage to the product. Failure to operate the unit in accordance with the instructions or using unauthorized spare parts can cause damage to the unit and could cause serious injury.

⚠ CAUTION: To reduce risk of electric shock

- Only authorized service agents should carry out service. Removing parts or attempting repairs can create an electric shock. Refer all servicing to qualified service agents.
- If this unit is supplied with a three-pin plug, connect with a properly earthed outlet only.

⚠ WARNING: To reduce risk of electrocution

- Do not use this unit with electrical voltages other than stated on the rating plate located on the back of the system.
- Store in a dry place.
- Keep surrounding floor area dry around system.
- Do not reach for this product if it has fallen into liquid. Unplug immediately.
- This unit is not weatherproof. Never operate outdoors in the rain or in a wet area.

⚠ DANGER: To reduce risk of explosion or fire

- This unit is not intended to be used as a sprayer.
- Do not use this product in or near explosive atmospheres or where aerosol products are being used.
- Do not allow compressor to intake any other gases other than atmospheric air.
- Do not pump combustible liquids or vapours with this product; do not use it in or near areas with combustible or explosive liquids or vapours.
- Do not use this unit near open flames.

⚠ CAUTION: To prevent injury

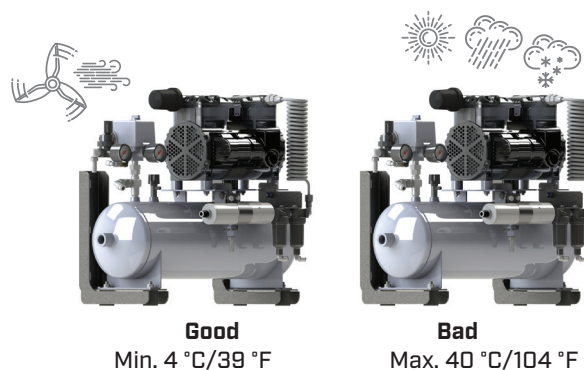
- Compressed air/nitrogen can be dangerous; do not direct airflow at a persons head or body.
- Always keep the system out of reach of children.
- Never operate this product if it has a damaged power lead or plug, if it has been dropped or damaged, or if it has fallen into water. Return the product to a service center for examination and repair.
- Keep the electrical cable away from hot surfaces.
- Ensure all openings are kept free of restriction and never place the system on a soft surface where the openings may be blocked. Keep all openings free from dust, dirt and other particles.
- Never insert fingers or any other objects into fans.
- This unit is thermally protected and can automatically restart when the unit cools and the overload resets.
- Wear safety glasses, when servicing this product.
- Use only in well ventilated areas.
- This product may only be connected to units or tools with a max. pressure rating higher or equal to that of the system.
- The internal surface of the system can get hot. Do not touch internal system surface during operation. Keep the system cover in place during operation.
- The surface of the system can get hot. Do not touch system surface during operation.

Failure to observe the safety precautions could result in severe bodily injury, including death in extreme cases.

⚠ IMPORTANT: General directions for use

- Protect the system against rain, moisture, frost and dust.
- The system is constructed and approved for a max. pressure as stated under Technical Specifications.
- Do not operate system at ambient temperatures exceeding 40°C/104°F or falling below 4°C/39°F.
- If the supply power lead on the system is defective, an authorized distributor or other qualified personnel must carry out the repair.

Warranty



Provided that the operational instructions, maintenance, and service have been carried out, your system is guaranteed against faulty material or workmanship for 2 years. Reference warranty statement at back of manual.

Conditions for Sale and Delivery will generally apply. Gast Manufacturing, Inc. A/S reserves the right to change technical specifications/constructions.

Contents of box

Your system should be delivered in a clean and undamaged box. If not, contact your equipment provider immediately. The box should contain the following:

- 1 1994001 system
- 1 system operating manual
- 1 quick start guide

Unpacking

DO

- Ensure incoming line voltage is above 108 Vac (208 Vac for high volt models)
- Ensure room temperature is below 40°C (104°F)
- Inspect product for damage
- Ensure bottom and sides of system are clear from obstruction

DON'T

- Throw away packaging, manuals, or part packet
- Install in a dusty/dirty non-ventilated or enclosed area without proper cooling

Installation

Your system is very easy to operate. Observe the following simple instructions and you will get many years' service from your unit.

- Visually inspect unit for shipping damage, contact your supplier/shipper immediately if you think the unit may have been damaged.
 - Use only plumbing rated for 50 °C [122 °F] or higher. Ensure that the plumbing has a sufficient internal diameter to avoid pressure loss in the system [1/4 inch or larger]. Check for leaks.
- A) Install product on a rigid level surface maintaining a minimum of 6 in/15 cm clearance all around the unit and a 12 in/30 cm clearance above the system.
- Sufficient cooling from the surroundings is important. Place the system in a dustfree, dry and cool, yet frostfree, room. Do not install in a closed cupboard, unless adequate openings for ventilation are available (minimum 645 cm²/100 in² each). If the system is placed under a table, a minimum of 1 in/2.5 cm free height must be available above the system or an opening of Ø30 cm/11.8 inches, corresponding to the top of the system, may be cut in the table. Ensure that the system stands firmly on the floor.



WARNING: Install in a well ventilated area to provide proper cooling. Unit must be shielded or placed in a location so that it will be free from direct or indirect contact with moisture or other contaminants, such as water, food products, dust & dirt, etc.

Follow these steps to install your unit:

1. Securely connect output hose on the air supply line to the 3/8" hose barb on the regulator.

DO

- Securely fasten air line to system, pulling on it to ensure it is seated
- Check for leaks with soapy water

DON'T

- Allow kinks in the air line

2. Plug the system in.

DO

- Ensure the power switch is off on the compressor (O) before connecting power

DON'T

- Plug in the system until all connections are made
- Cut or excessively bend the cord
- Use an extension cord smaller than recommended in gage table on next page

3. Turn on the system and allow to fully pressurize, this could take 5 minutes depending on the installation.

DON'T

- Use the system during charging cycle

4. Run the system checks.

- a. Verify pressure gauge on the front of the pressure switch shows ~125 psi ±5 psi
- b. Verify the pressure gauge on the regulator shows 80 psi ±5 psi

- c. Verify compressor does not operate for at least 30 minutes after installation and without using dispenser.
- d. Verify air supply line and power cord are securely installed
- e. Pour cups of beverage and ensure system cycles

Electrical Connection and Grounding Instruction

! WARNING



Electrical Shock Hazard

This product must be properly grounded.

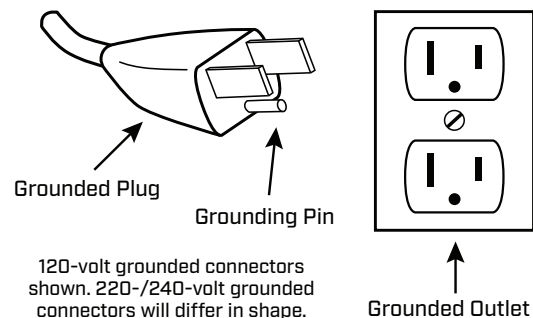
Do not modify the plug provided. If it will not fit the outlet, have the proper outlet installed by a qualified electrician.

If repair or replacement of the cord or plug is necessary, do not connect the grounding wire to either flat blade terminal. The wire with insulation that is green or green with yellow stripes is the grounding wire.

Check the condition of the power supply wiring.

Do not permanently connect this product to wiring that is not in good condition or is inadequate for the requirements of this product.

Failure to follow these instructions can result in death, fire, or electrical shock.



Model with a power supply cord:

This product must be grounded. For 120-volt circuits, connect power supply cord grounding plug to a matching grounded outlet. Do not use an adapter. (See grounding plug diagram)

In the event of an electrical short circuit, grounding reduces the risk of electric shock by providing an escape wire for the electric current. This product may be equipped with a power supply cord having a grounding wire with an appropriate grounding plug.

The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and ordinances

Check with a qualified electrician or serviceman if the grounding instructions are not completely understood, or if you are not sure whether the product is properly grounded. Do not modify the plug provided. If it will not fit the outlet, have the proper outlet installed by a qualified electrician.

Extension Cords

Use only a 3-wire extension cord that has a 3-blade grounding plug. Connect extension cord plug to a matching 3-slot receptacle. Do not use an adapter. Make sure your extension cord is in good condition. Check that the gage wire of the extension cord is the correct size wire to carry the current this product will draw.

An undersized cord is a potential fire hazard, and will cause a drop in line voltage resulting in loss of power causing the product to overheat. The following table indicates the correct size cord for length required and the ampere rating listed on the product nameplate. **If in doubt, use the next heavier gage cord. The smaller the gage number, the heavier the wire gage.**

Minimum gage for extension cords

Amps	Volts	Length of cord in feet								
		25	50	100	150	200	250	300	400	500
	120v									
	240v									
0-2		18	18	18	16	16	14	14	12	12
2-3		18	18	16	14	14	12	12	10	10
3-4		18	18	16	14	12	12	10	10	8
4-5		18	18	14	12	12	10	10	8	8
5-6		18	16	14	12	10	10	8	8	8
6-8		18	16	12	10	10	8	6	6	6
8-10		18	14	12	10	8	8	6	6	4
10-12		16	14	10	8	8	6	6	4	4
12-14		16	12	10	8	6	6	6	4	2
14-16		16	12	10	8	6	6	4	4	2
16-18		14	12	8	8	6	4	4	2	2
18-20		14	12	8	6	6	4	4	2	2

Electromagnetic Interference (EMI)

The system is designed to avoid electromagnetic emissions interference with surrounding electrical equipment. Due to the vast assortment of electrical equipment available, it is possible that some interference may be experienced by the end user. If interference is experienced, the device that is creating interference should be removed from the room where the generator is located. If the interference persists, then it may be necessary to confirm that both devices are connected to isolated circuits. If the problem still occurs, then the two devices should be moved as far apart as possible. Finally, if the problem cannot be eliminated, contact Gast Manufacturing.

Electrical Installation

⚠ WARNING

Incorrect electrical connection may result in electric shock. The electrical connection must be carried out in accordance with local electrical regulations and by qualified personnel. Earthing of all AC models must be ensured during installation. The capacitor must be earthed, as failure to do so may cause electric shock when touched. Plug the system into an earthed socket of nominal voltage and ensure that fusing is adequate.

- For electrical connection, refer to schematic in back of this manual.
- Check system serial number label for frequency and voltage to ensure that it corresponds to the voltage and frequency used for the system.
- Minimum of 15 Amp rating on circuit breakers.

Operation

- If the temperature of the system is extremely low (for instance after transportation or stocking), allow system to get to room temperature before switching on the system.
- Do not use system for compression of liquids and dangerous gases, such as petrol vapour and solvents.
- Do not lubricate the oil-less system with oil, as this will destroy important components.

I O

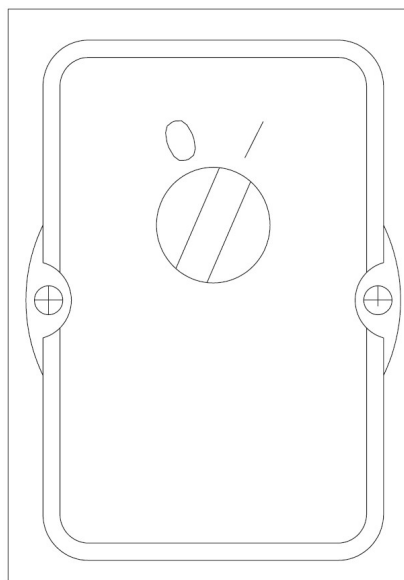
Indicates the ON and OFF position for the equipment power switch (system breaker)

I = ON

When **ON**, voltage **WILL** be supplied to the system.

O = OFF

When **OFF**, voltage **WILL NOT** be supplied to the system.



Pressure Switch 'I' on or 'O' off

Preventive maintenance

CAUTION
Loud Noise!

Test the safety valve:

- Once a year.
- Switch off system on the main switch and pull out the plug.
- Pull the ring at the end of the safety valve (see back of manual).




Safety Valve

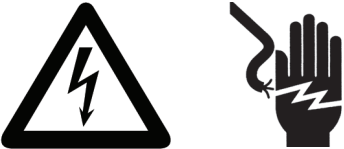
- Check the Pump Up Time**
- The pump up-time can be referenced to determine if the system is experiencing any pneumatic leaks.
1. Turn system off and un-plug. Remove the air connection to the system’s outlet fitting.
 2. Completely drain the system of air by releasing air through the outlet fitting (when hose is removed from fitting, press up on the center stem of the fitting if system is equipped with a quick disconnect fitting).
 3. Plug unit back in and turn system on.
 4. System will run for up to five minutes, then the pressure switch will toggle the system off.

CAUTION
Always test the system when cold as the time indicated refers to the pumping time of a cold compressor. The pumping time of a warm compressor is much longer and consequently, the result would be misleading.

	Monthly	Annually	Two years	5 years	10 years
Check compressor, air hoses and equipment for leaks. Do this by checking the pump up time	•				
Clean unit: wipe with soft, damp cloth. If necessary, use paraffin on rag to remove sticky adhesions or dust/dirt that might prevent cooling	•				
Check intake filter on compressor, replace if dirty		•			
Check inline filter element, replace if dirty		•			
Check tank moisture		•			
Check O-rings in the non-return valve and replace if damaged or worn			•		
Test safety valve by gently pulling the ring and releasing pressure from the system. Clean if dirty			•		
Replace pressure switch and membrane dryer			•		
Compressor rebuild (cups, seals, valves)				•	
Conduct regulator’s preventative maintenance				•	
Replace compressor, pressure switch, and separator					•

All kits are identified in the accessories portion of this manual.

**WARNING**




Electrical Shock Hazard

Disconnect electrical power supply cord before performing maintenance on this product.

If product is hard wired into system, disconnect electrical power at the circuit breaker or fuse box before performing maintenance on this product.

Failure to follow these instructions can result in death, fire, or electrical shock.

**WARNING**


Injury Hazard

Product surfaces become very hot during operation, allow product surfaces to cool before handling.

Air stream from product may contain solid or liquid material that can result in eye or skin damage, wear proper eye protection.

Clean this product in a well ventilated area.

Failure to follow these instructions can result in burns, eye injury, or other serious injury.

 **WARNING:** Always disconnect power before servicing. The head[s] surface[s] can be very hot depending on compressor usage. Do not touch these parts during or directly after operation.

Maintenance

By performing regularly scheduled maintenance, you will ensure your system provides you with years of superior performance. Also to extend your system life, please do the following:

- Keep system clean and free of dirt and debris.
- Keep area surrounding system clean and free of debris.
- Maintain recommended controlled ambient temperature – high temperatures will shorten life.
- Verify all leaks are sealed

NOTE: Filter kits are available for the system

Replacing Inline Filters Element (see System Features):

1. Turn off system and unplug.
2. Disconnect compressor system from electrical power.
3. Bleed air from system.
4. Rotate filter bowl and drop down slightly to remove. Use caution to not damage or kink the drain tubing or lose the o-ring.
5. Remove filter element by turning completely out and discard.
6. Install a new .01 or 5 micron filter element depending on what filter is being serviced (verify correct part is installed). Use caution to not damage the element stem.
7. Position filter bowl by pushing up slightly and rotating into place. Verify the drain tubing is not kinked or damaged, and that the o-ring is on filter bowl.
8. Reconnect electrical power to system.

Testing for Leaks:

1. Disconnect air hose.
2. Run system until it reaches maximum operating pressure (approximately 116 psi/8.0 bar).
3. Turn off the system.
4. Let the system set for 15 minutes.
5. Verify the unit has not lost more than 10 psi of pressure – this would indicate a significant leak within the unit.
6. Repair if needed, using soapy water to determine where leaks are occurring.
7. Connect air hose.

Replacing Intake Filter Element (see System Features):

1. Turn off system.
2. Disconnect system from electrical power.
3. Remove intake filter cap by rotating it CCW.
4. Remove old intake filter and discard.
5. Install replacement filter and replace.
6. Reconnect electrical power to system.

WARNING

Disposal of system or components (once deemed non-usable by the authorized dealer and end user) should be done in accordance with all local codes. Contact your local waste management authorities to determine proper disposal methods.

WARNING

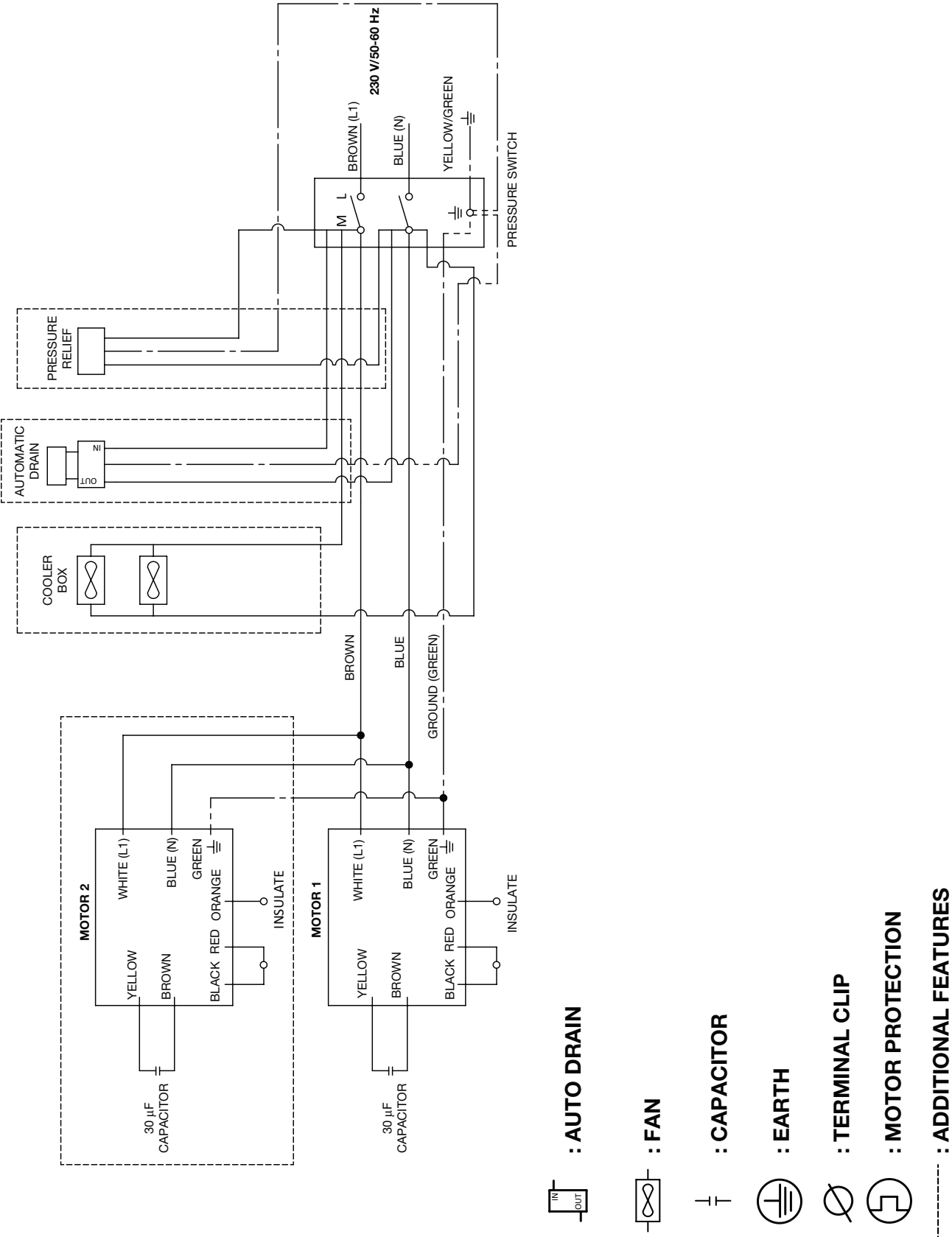
Do not exceed the OSHA requirements of 30 Psig/2 bar air for cleaning purposes.

Replacing Non-Return Valve:

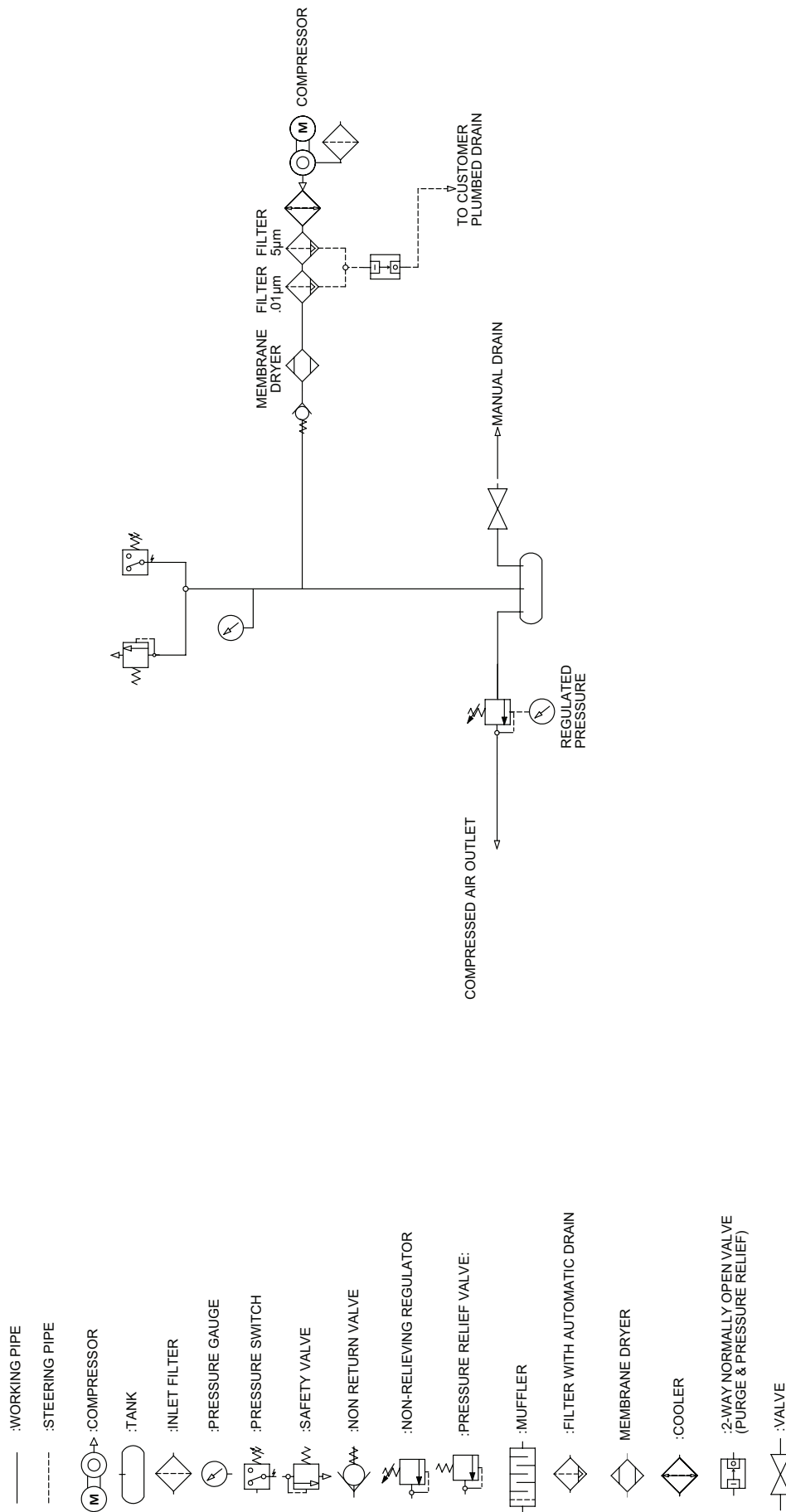
1. Turn off system and unplug.
2. Empty the system by bleeding with CPC.
3. Remove the non-return valve from the system.
4. Install new non-return valve.

Wiring Schematic

120 Vac - 60 Hz



Pneumatic Schematic



Parts & Accessories List

Part no.	Description
K1050	Service compressor kit
K1051	Dryer assembly kit - contains membrane dryer, filter kit (K1051A), respective fittings, & mounting components
K1051A	Filter assembly kit - contains 5 um, 0.01 um filter replacement kits, respective fittings & mounting components
K1052	Pressure switch assembly kit - contains pressure switch, check valve, safety valve, power cord, & all respective fittings.
K1053	Pressure regulator assembly kit - contains pressure regulator, pressure gauge, & respective fittings
K1054	Fitting kit- contains all system fittings not contained in the above assembly kits
K1055	Annual preventative maintenance kit
AF631	Compressor shock mount
5418009A	Manual tank drain
AF714	Tank foot
4390100	Cooling pipe
AP716	Capacitor
8008118	Wall mounting bracket
5416110	Safety valve - 11 BAR 160 PSI
5140000	Pressure gauge

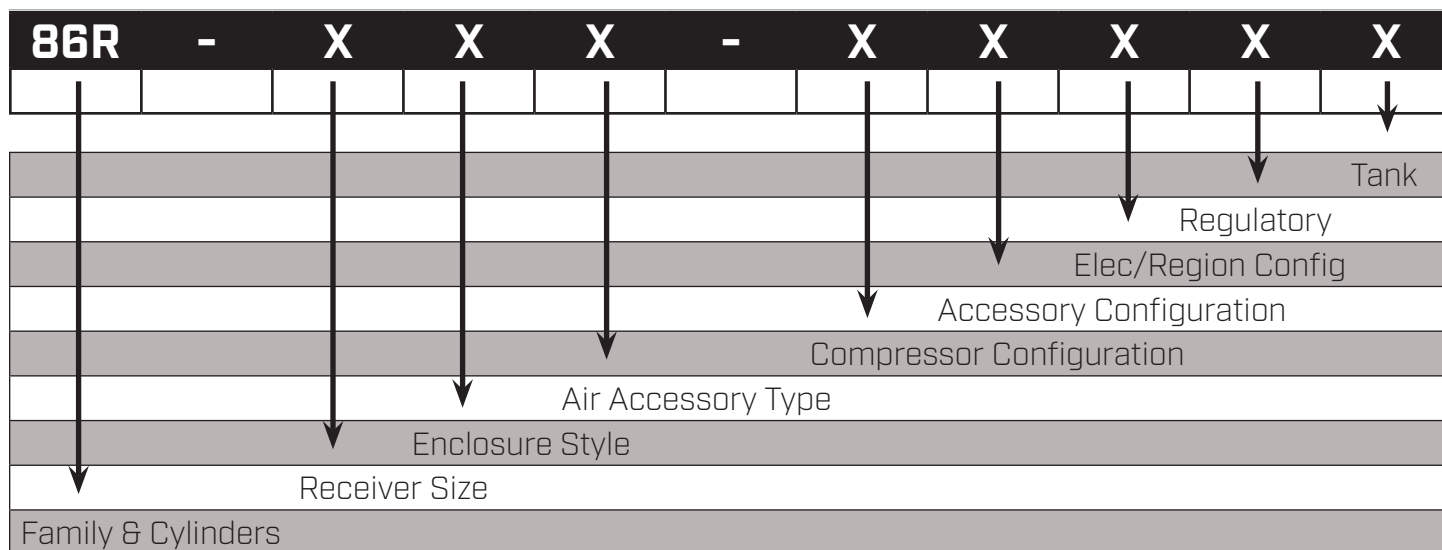
Technical Data & Specifications

Specifications		87R-10BA
		120 V
Frequency	HZ	60
Flow @ 80 psi	l/min	47
	CFM	1.66
Max Current	A	5.7
Weight	kg	23
	lbs	51
Pumping Time (empty tank)	seconds	85 seconds or less
Noise Level	dB[A]/1m	≤ 65
Dimensions (LxWxH)	mm	594 x 292 x 462
	in	23.4 x 11.5 x 18.2
Motor	HP	1/2
	KW	0.37
Max Pressure	bar	8.6
	psi	125
Thermal Protection		Yes
Pressure Dew Point		3°C or lower at a duty cycle of 50%, 0.57CFM
Relative Humidity %		20 - 80%*
Ambient Temperature		4°C to 40°C/39°F to 104°F

** Non-Condensing*

The figures in the tables are based on the unit working in a clean environment at an ambient temperature of 20°C, relative humidity of 50% and operating at sea level. The performance of the product will be adversely effected at high altitudes (5000 feet and above).

Gast Manufacturing reserves the right to make technical modifications to these units as needed.



Family & cylinders	Receiver Size	Enclosure Style	Air Accessory Type
86R = single cylinder & small bore (low flow)	0, 1.5, 3, 4, 15, 25, 40	B = Basic or Open	Q = iQ dryer (2, 3, or 6 size)
87R = twin cylinder & large bore (high flow)		M = Metal Cabinet	A = Membrane Dryer
LDA = single cylinder		P = Plastic Cover	N = Separator [1=CMS, 2 Membrane]

Troubleshooting Guide

Problem	Possible Cause[s]	Possible Solution[s]
1. System will not start	a. Power cord not connected to system	a. Verify that plug is connected to back of system and to wall
	b. Store breaker tripped	b. Unplug equipment on circuit to find fault. Reset circuit breaker. Contact electrician or equipment provider if problem persists.
	c. Voltage is too low	c. Check voltage of system while unit is running and verify voltage is above 110 V
	d. Unit not turned on	d. Turn unit on and verify operation
	e. Plugged/clogged filters	e. Remove filters and clean or replace as necessary. If problem persists, contact equipment provider for replacement parts
	f. Compressor not purging pressure	f. Verify that unloader on pressure switch is venting compressor head pressure by listening for purge noise (blast of air)
	g. Ambient temperature is too high	g. Check temperature. If above 104 °F [40 °C], adjust temperature or relocate system to cooler location
2. Unit on - low pressure	a. Plugged/clogged filters	a. Remove filters and clean or replace as necessary. If problem persists, contact equipment provider for replacement parts
	b. Leaks in system	b. Use soapy water to check for leaks in plumbing. Repair/replace as needed
3. Unit noisy	a. Outlet plumbing is not securely fastened to system or is damaged	a. Manually check to make sure system plumbing is securely fastened to system. Use soapy water to check for leaks in plumbing. Repair/replace as needed
	b. Safety relief valve is continuously relieving	b. Pull relief valve ring. If problem persists contact equipment provider
	c. Membrane dryer is purging air	c. Normal operation for the membrane dryer is to purge air through the purge holes on the dryer
4. Unit runs continuously	a. Leaks in system	a. Use soapy water to check for leaks in plumbing. Repair/replace as needed
	b. Broken pressure switch	b. Contact your equipment provider for replacement part
	c. Membrane dryer purge rate out of spec	c. An audible and increased flow can be felt from the 3 purge holes on the membrane dryer. Contact your equipment provider for replacement part

NOTE: Prior to all servicing unit should be turned off and unplugged from power source

Troubleshooting - continued

CAUTION

Switch off and isolate from electrical supply before removing any parts from the system. Empty receiver of air before dismantling parts of system. Only qualified personnel should perform troubleshooting activities.

1. **System does not start:**

- a) No power from wall. Check circuit fuses and plug (no fuses on system).
- b) Breakage or loose connections in electrical wiring.
- c) Defective capacitor.
- d) The thermal protection has switched off the pump due to overheating. When cooled the pump will automatically turn on at a suitable operation temperature. Go through the points in step 5.
- e) The system has not been unloaded and there is back pressure. Make sure that the system purges each time it stops (listen for purge noise).
- f) The pump is locked.
- g) Pressure in the air receiver is too high for activation of the pressure switch. The pressure switch completes circuit only when pressure has dropped to preset start pressure. Empty receiver. Relieve system pressure and restart.

2. **System does not start, makes a buzzing sound followed by a clicking noise (cannot start against high pressure):**

- a) Leaky non-return valve. Use soapy water to find out whether air leaks from the valve. If so, clean or replace.

3. **System works, but pressure does not increase:**

- a) Intake filter clogged. Replace.
- b) Leaks in fittings, tubes or pneumatic equipment. Check with soapy water or by letting unit stay overnight with disconnected mains. Pressure drop is not to exceed 1 bar (14.5 psi).
- c) Check the compressor cups. Replace, if necessary.
- d) Defective valve plate. Contact your equipment provider.
- e) Failure in non-return valve which is creating a flow restriction.

4. **Loud noise from system:**

- a) Dirt or failure in non-return valve. Clean or replace.
- b) System is purging during off cycle. This is normal operation.

5. **System gets very hot:**

- a) Leaks. See Step 3b.
- b) Too high ambient temperature. Ensure adequate ventilation if the system is installed in a cabinet.
- c) Overloaded. Allow system more cooling time between operations.

6. **System starts when no air is being used:**

- a) Leaks. See Step 3b.

7. **System does not switch on against pressure or does not switch off at max. pressure:**

- a) Defective pressure switch. Replace.

WARRANTY POLICY

Provided that the instructions for operation, maintenance and service have been carried out, your GAST compressor is guaranteed against faulty material or workmanship for 2 years. The guarantee does not cover damage caused by violence, misuse, incorrect repairs or use of unoriginal spare parts. Costs of transportation of parts/equipment are not covered by the guarantee. GAST's Conditions for Sale and Delivery will generally apply. GAST International A/S reserves the right to change technical specifications/constructions.

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