INSTRUCTIONS

RISER-MOUNT AIR COMPRESSORS MODEL RMAC-LP

DANGER

RISK OF ASPHYXIATION

These air compressors are NOT designed to provide a supply of safe compressed breathing air. DO NOT use these compressors to provide compressed air for breathing. Failure to observe these instructions is an immediate hazard with a likelihood of death or serious personal injury!

DANGER

RISK OF ELECTROCUTION

Voltages and currents associated with these compressors are **LETHAL**. Follow all instructions provided. Work involving power MUST be performed ONLY by qualified individuals. All required precautions to prevent contact with live electrical conductors and equipment MUST be taken. Failure to comply with these instructions is an immediate hazard with a likelihood of death or serious personal injury!

WARNING

Motors and other electrical equipment can cause ignition of flammable vapors. DO NOT use this compressor in any area where flammable vapors may be present. DO NOT operate or repair this compressor if flammable vapors are present. DO NOT use or store materials capable of emitting flammable vapors near the compressor. Failure to observe these instructions can result in death, serious personal injury, or property damage.

CAUTION

These compressors are suitable for compressing ONLY atmospheric air*. DO NOT use these compressors in environments where the air is contaminated. DO NOT use these compressors to compress gases or gas mixtures other than atmospheric air. Failure to observe these instructions can result in personal injury, property damage, and compressor failure.

* Compressed Gas Association (CGA) pamphlet G-7 defines atmospheric air as a mixture of elements and compounds where nitrogen and oxygen comprise 99% or more of the mixture, with all other traces comprising 1% or less of the mixture.

CAUTION

Compressed air from these compressors is saturated with water vapor and contains droplets of liquid water. DO NOT install these compressors in or connect the outlet of these compressors to sprinkler systems exposed to temperatures below freezing, including freezer spaces and outdoor systems in cold climates. Failure to observe these instructions can result in ice plugging the sprinkler system, resulting in damage to pipe and failure of the sprinkler system to operate properly in case of fire.

IMPORTANT

Choose, install, and maintain these compressors in accordance with NFPA 13, *Standard for Installation of Sprinkler Systems*, and NFPA 70, *National Electrical Code*.

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UFS P/N 10-230007-000 Rev.1.00

1. Choosing a Compressor:

Table 1: CHOOSING A COMPRESSOR					
Compressor Kit P/N	**Compressor P/N**	**Motor HP**	**Maximum Sprinkler Volume** (Gallons)**	**Voltage (V)**	**Current Draw (A)**
RMAC-LP-16	00-100032-001	1/6	220	115	3.3
RMAC-LP-13	00-100032-002	1/3	430	115	3.5
RMAC-LP-12	00-100032-003	1/2	670	115	7.2
RMAC-LP-34	00-100032-004	3/4	850	115	10.6

**NOTE: Maximum gallons shown are for 18 PSIG in 30 minutes (at 70°F) to satisfy NFPA-13-2016 sections 7.2 and 7.3.

1.1. Receiving

Your compressor is inspected at the factory and packaged to protect against shipping damage. Inspect for damage or missing parts when the compressor is unpacked. Settle all claims directly with the freight company.

> ⚠ WARNING
> Do not operate this compressor if damaged during shipment, handling, or use. Damage may result in injury or property damage.

2. Installation

2.1. Assembly

Unbox compressor & remove filter from plywood support. Remove plastic plug(s) from intake port(s). Open filter packaging and thread filter(s) into compressor intake port(s). Discard plywood support and support hardware. Discard filter packaging.

2.2. Location

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> Compressed air from these compressors is saturated with water vapor and contains droplets of liquid water. DO NOT install these compressors in or connect the outlet of these compressors to sprinkler systems exposed to temperatures below freezing, including freezer spaces and outdoor systems in cold climates. Failure to observe these instructions can result in ice plugging the sprinkler system, resulting in damage to pipe and failure of the sprinkler system to operate properly in case of fire.

Locate the compressor in a clean, well-ventilated area where the air is relatively cool, clean, and dry. A 110°F (35°C) maximum and 40°F (4.5°C) minimum temperature for surrounding and inlet air are recommended. Provide at least 12 to 18 inches from any wall or other obstruction that will interfere with airflow through the motor's fan built into the motor. Blocking airflow through the fan may cause the compressor to overheat. Do not place the compressor in an area of excessive heat, such as near a boiler.

2.3. Mounting

Compressors are intended to be mounted to a system riser. A mounting bracket, straps, and mounting hardware are provided.

2.4. Piping (reference "Installation of Riser-Mount Air Compressor" drawing)

Piping between the compressor, accessory items and the sprinkler system should be at least ½" NPS to minimize pressure drop from the compressor to system. Larger pipe size may be required by code and may be substituted with no adverse

effects. Smaller pipe sizes should not be used as they will restrict the compressor flow, lower capacity and shorten compressor/motor life. All piping connected to the compressor must be fully supported and not transfer any loads to the compressor.

If an AMD is used, allow sufficient distance between the compressor and AMD to ensure that the maximum temperature at the AMD is 200°F or less.

All oil-less compressors include a relief valve. This valve will open at a preset value above the pressure switch setting to prevent excess pressure in the event of switch failure.

> ⚠CAUTION
> Do not attempt to change the safety relief valve setting.

The compressor outlet piping should contain an accesible drain to remove excess water. A manual drain may be used, but an automatic drain is recommended.

> ⚠IMPORTANT
> Accumulation of condensed water in a system causes corrosion of components and reduces system capacity.

> ⚠IMPORTANT
> Warranty is void if a separate check valve is not installed to prevent water back flow.

2.5. Wiring (reference “Wiring Instructions” drawing)

> ⚠CAUTION
> Have a qualified electrician wire the compressor to ensure that the supply line has the same characteristics (voltage, frequency, and phasing) as the motor. Wiring must comply with all local and national codes.

> ⚠CAUTION
> Inadequate wiring size can cause insufficient voltage at the compressor during start-up. Overheating and damage to the motor and controls may result.

The power supply wiring must be of adequate size to avoid excessive voltage drop.

Table 2: MINIMUM RECOMMENDED WIRE SIZE

Compressor Kit P/N	Compressor P/N	Compressor HP	Up to 50 feet	Over 50 feet up to 100 feet
RMAC-LP-16	00-100032-001	1/6	12 AWG	12 AWG
RMAC-LP-13	00-100032-002	1/3	12 AWG	10 AWG
RMAC-LP-12	00-100032-003	1/2	12 AWG	10 AWG
RMAC-LP-34	00-100032-004	3/4	12 AWG	8 AWG

Do not connect other equipment to the compressor power supply wiring. Pressure switch controls starting (cut-in pressure of 13 PSIG) and stopping (cut-out pressure of 18 PSIG) of motor. The pressure switch is factory-connected to the motor.

IMPORTANT
Failure to use the pressure switch may result in overpressure of the compressor or other components in the system. Overpressure of the compressor may result in blown head gaskets or other damage.

3. Maintenance
   3.1. Lubrication

This compressor is designed for non-lubricated service. Bearings are permanently lubricated. DO NOT lubricate any part of the compressor or motor.

3.2. Maintenance Instructions

WARNING
BEFORE ATTEMPTING TO PERFORM MAINTENANCE, DISCONNECT, TAG, AND LOCK OUT POWER SOURCE AND THEN RELEASE ALL PRESSURE FROM THE SYSTEM. FAILURE TO OBSERVE THESE INSTRUCTIONS CAN RESULT IN DEATH, SERIOUS PERSONAL INJURY, OR PROPERTY DAMAGE.

The following instructions are based on NORMAL operation. If the compressor is in an excessively dusty area, increase frequency of maintenance checks.

WEEKLY:

- Open drain valve to drain condensate. Close valve when all condensate has drained.
- Check for unusual noise or vibration.
- Wipe all external parts of the compressor and motor with a clean rag.

MONTHLY:

- Manually test safety relief valve by pulling ring on safety relief valve and confirming that a small burst of air discharges from safety relief valve.
- Inspect air system for leaks and correct if necessary.
- Tighten mounting hardware as required.

QUARTERLY:

- Change filters.

Table 3: REPLACEMENT PARTS

Compressor Kit P/N	**Compressor P/N**	**Riser-Mount Kit P/N**	**Intake Filter P/N**	**Relief Valve P/N**	**Pressure Switch P/N**
RMAC-LP-16	00-100032-001	10-230006-100	00-100005-551	30-500005-402	00-100005-550
RMAC-LP-13	00-100032-002	10-230006-100	00-100005-554	30-500005-402	00-100005-550
RMAC-LP-12	00-100032-003	10-230006-100	00-100005-554 (x2)	30-500005-402	00-100005-550
RMAC-LP-34	00-100032-004	10-230006-100	00-100005-554 (x2)	30-500005-402	00-100005-550

3.3. Troubleshooting

Symptom	Possible Cause(s)	Corrective Action
Compressor Overheating	1. Dirty intake filter 2. Air flow to fan on flywheel blocked	1. Replace intake filter 2. Clear air flow to fan or relocate unit
Excessive noise in operation	1. Damaged bearings 2. Worn piston rings or skirts 3. Broken valves 4. Loose blower wheel 5. Damaged blower baffle	Replace compressor.
System builds pressure slowly	1. Compressor sized incorrectly 2. Leaks or restrictions in piping 3. Dirty intake filter 4. Blown head gasket	1. Check system size and compressor sizing 2. Correct leaks or remove restrictions 3. Clean intake filter 4. Replace compressor
Unit short cycles repeatedly	1. Piping too restrictive 2. Leak in line before system check valve	1. Increase pipe volume after compressor 2. Repair leaks
Motor hums and runs slowly or not at all	1. Low voltage or no voltage 2. Shorted or open motor winding 3. Defective check valve 4. Defective pressure switch – contacts will not close	1. Check voltage during attempt to start. Voltage must be within ±10% of nominal voltage to start motor. Increase wire size if necessary to lower voltage drop 2. Replace compressor 3. Replace check valve 4. Replace pressure switch
Reset mechanism cuts out repeatedly or fuses blow repeatedly	1. Insufficient voltage to motor 2. Wrong fuse size 3. Piping too restrictive 4. Defective motor	1. Check voltage during attempt to start. Voltage must be within ±10% of nominal voltage to start motor. Increase wire size if necessary to lower voltage drop 2. Be sure fuses are rated properly 3. Increase pipe volume after compressor 4. Replace compressor

4. Additional Information

4.1. Limited Warranty

What does this warranty cover?

This warranty covers all manufacturing defects in material and workmanship in your new Oil-Less Compressor Assembly.

How long does the coverage last?

This warranty lasts for one (1) year from the date of shipment to the original purchaser.

What will UNITED Fire Systems do?

UNITED Fire Systems will repair, replace, or refund the purchase price of, at its option, any defective Oil-Less Compressor Assembly at no charge

What does this warranty not cover?

Oil-Less Compressor Assemblies that have NOT been commissioned by UNITED Fire Systems or a trained distributor are not covered under this warranty. If you modify, change, of alter your Oil-Less Compressor Assembly without instructions from UNITED Fire Systems, the Oil-Less Compressor Assembly is not covered. Compressor assemblies not maintained per these instructions are not covered. Any problem that is caused by abuse, misuse, or an act of God (such as a flood) is not covered. Also, consequential and incidental damages are not recoverable under this warranty. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

How do you obtain service?

In order to be eligible for service under this warranty, your Oil-Less Compressor Assembly must have been commissioned by UNITED Fire Systems or a trained distributor. If something goes wrong with your Oil-Less Compressor Assembly, contact your trained distributor or:

UNITED Fire Systems, Division of UNITED Fire Protection Corporation
1 Mark Road, Kenilworth, NJ 07033 USA
Phone: 908-688-0300 Fax: 908-481-1131

UNITED Fire Systems will contact you within 24 hours to arrange for evaluation of your Oil-Less Compressor Assembly.

Is this warranty transferable?

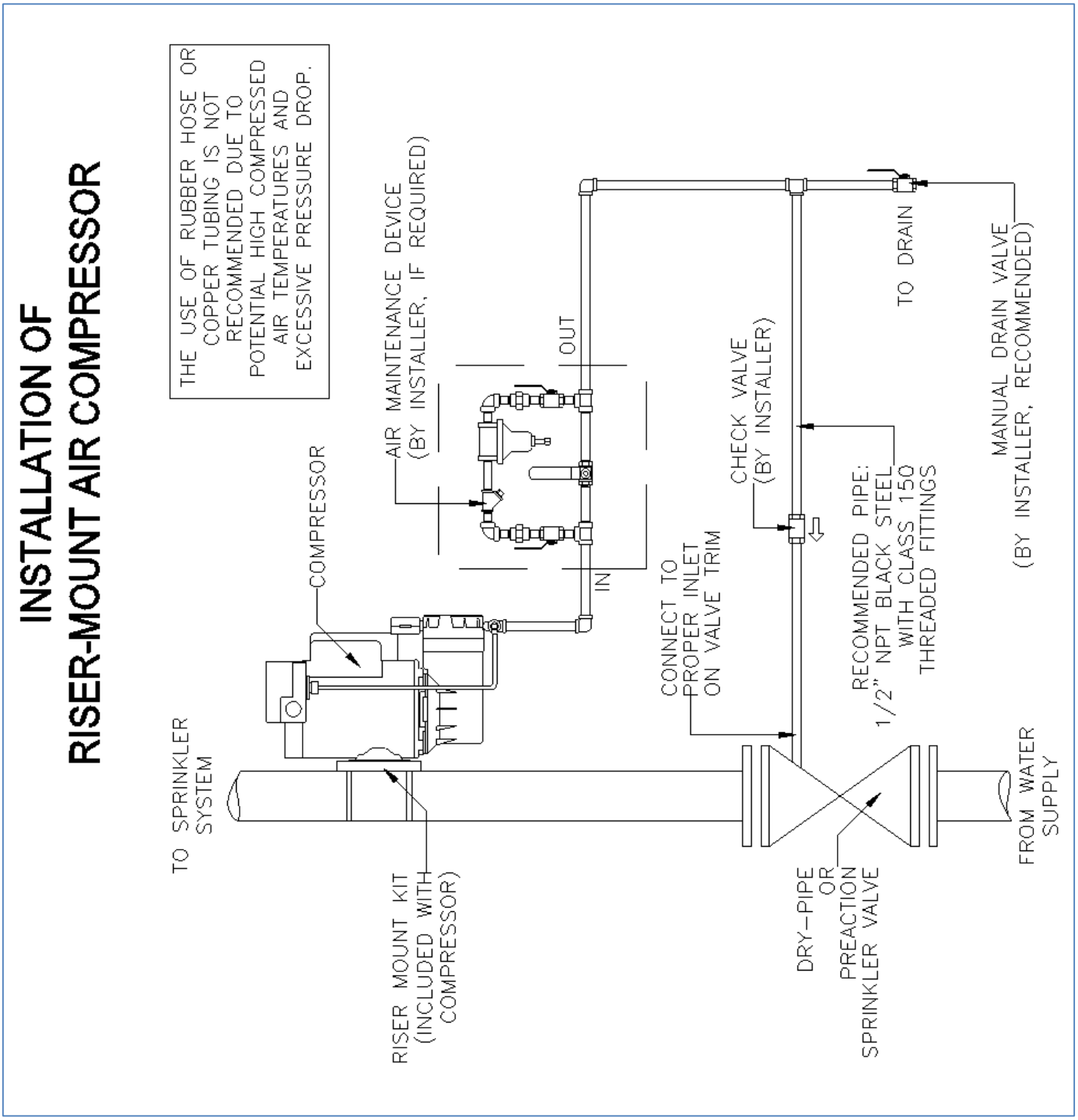
If the Oil-Less Compressor Assembly is moved from one to another installation during the time period of warranty coverage, the Oil-Less Compressor Assembly must be recommissioned by UNITED Fire Systems or your trained distributor to be eligible for continuing coverage. You must pay a quoted charge for this re-commissioning.

Is this the entire warranty?

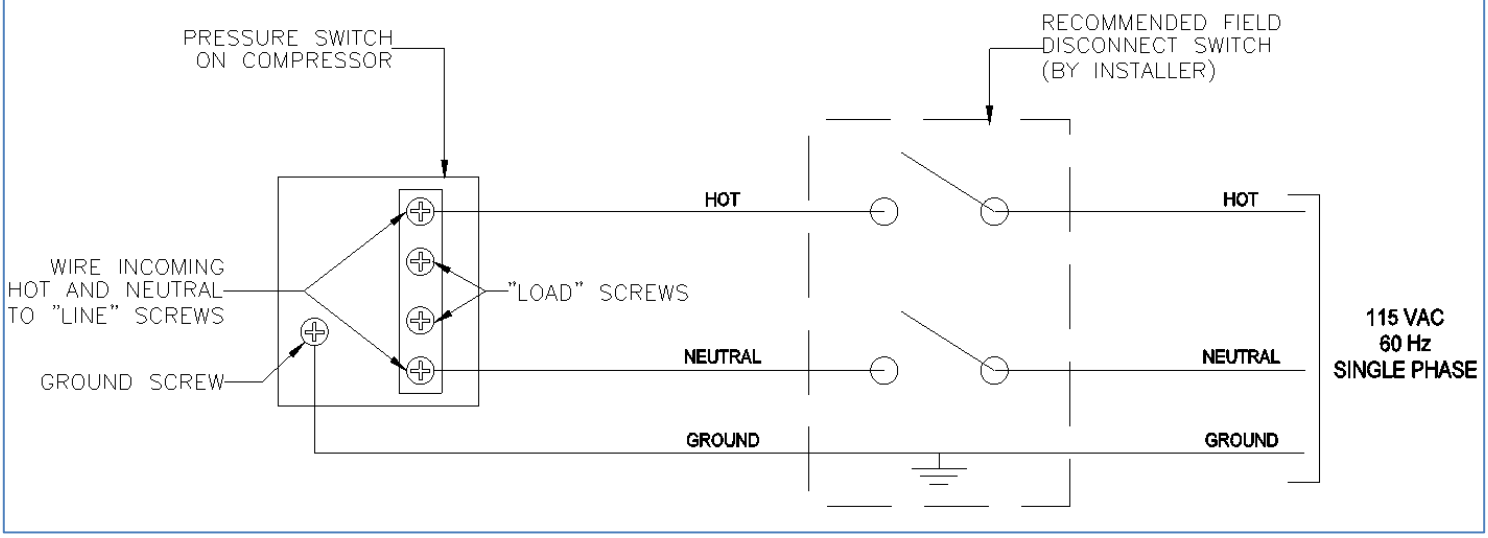
This limited warranty is the entire warranty given by UNITED Fire Systems to the purchaser of a new Oil-Less Compressor Assembly. There are no other warranties expressed or implied, beyond those required by law.

How do State and Federal laws apply?

This warranty gives you specific legal rights per Federal law. You may also have other rights which vary from state to state.


INSTALLATION OF
RISER-MOUNT AIR COMPRESSOR
THE USE OF RUBBER HOSE OR COPPER TUBING IS NOT RECOMMENDED DUE TO POTENTIAL HIGH COMPRESSED AIR TEMPERATURES AND EXCESSIVE PRESSURE DROP.
AIR MAINTENANCE DEVICE (BY INSTALLER, IF REQUIRED)
OUT
IN
COMPRESSOR
TO SPRINKLER SYSTEM
RISER MOUNT KIT (INCLUDED WITH COMPRESSOR)
CONNECT TO PROPER INLET ON VALVE TRIM
CHECK VALVE (BY INSTALLER)
RECOMMENDED PIPE: 1/2" NPT BLACK STEEL WITH CLASS 150 THREADED FITTINGS
DRY-PIPE OR PREACTION SPRINKLER VALVE
TO DRAIN
MANUAL DRAIN VALVE (BY INSTALLER, RECOMMENDED)
FROM WATER SUPPLY

WIRING INSTRUCTIONS



⚠ DANGER ⚠

RISK OF ELECTROCUTION

Voltages and currents associated with these compressors are **LETHAL**. Follow all instructions provided. Work involving power MUST be performed ONLY by qualified individuals. All required precautions to prevent contact with live electrical conductors and equipment MUST be taken. Failure to comply with these instructions is an immediate hazard with a likelihood of death or serious personal injury!

⚠ WARNING

Have a qualified electrician wire the compressor to ensure that the supply line has the same characteristics (voltage, frequency, and phasing) as the motor. Wiring must comply with all local and national codes.

See Table 2 for minimum AWG of conductors.

⚠ CAUTION

Inadequate wiring size can cause insufficient voltage at the compressor during start-up. Overheating and damage to the motor and controls may result.

⚠ IMPORTANT

"LOAD" screws are pre-wired to motor at factory. Do not remove these wires or connect incoming hot and neutral to these screws.