



Innovative Refrigeration Systems
 373 Mt. Torrey Road
 Lyndhurst, VA 22952
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IN CASE OF A REFRIGERATION EMERGENCY

If you have an **EMERGENCY** with your refrigeration system, please call: **540-941-1999 ext. 301**
 During business hours, one of our trained staff members will handle your problem immediately. If you experience problems after hours, the voice mail will pick up. Please listen to this message. It will explain what constitutes an emergency and what steps you should take. This system works promptly and efficiently when complete information is given. If you have any questions about how to handle emergency situations, please call our office during business hours.

CARBON DIOXIDE TEMPERATURE PRESSURE CHART

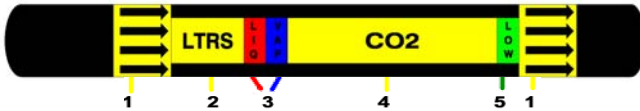
Temp. deg. °F	Press Psig	Temp. deg. °F	Press Psig	Temp. deg. °F	Press Psig
-40	131.0	-7	256.6	26	447.6
-39	134.0	-6	261.3	27	454.6
-38	137.0	-5	266.1	28	461.7
-37	140.1	-4	271.0	29	468.8
-36	143.3	-3	275.9	30	476.1
-35	146.5	-2	280.9	31	483.4
-34	149.7	-1	285.9	32	490.8
-33	153.0	0	291.0	33	498.2
-32	156.3	1	296.2	34	505.8
-31	159.7	2	301.4	35	513.4
-30	163.1	3	306.7	36	521.2
-29	166.6	4	312.1	37	529.0
-28	170.1	5	317.5	38	536.8
-27	173.7	6	323.0	39	544.8
-26	177.3	7	328.6	40	552.9
-25	181.0	8	334.2	41	561.0
-24	184.8	9	339.9	42	569.2
-23	188.5	10	345.7	43	577.6
-22	192.4	11	351.5	44	586.0
-21	196.3	12	357.4	45	594.5
-20	200.2	13	363.4	46	603.0
-19	204.2	14	369.5	47	611.7
-18	208.3	15	375.6	48	620.5
-17	212.4	16	381.7	49	629.3
-16	216.5	17	388.0	50	638.3
-15	220.7	18	394.3	51	647.3
-14	225.0	19	400.7	52	656.5
-13	229.4	20	407.2	53	665.7
-12	233.7	21	413.7	54	675.0
-11	238.2	22	420.4	55	684.4
-10	242.7	23	427.1	56	694.0
-9	247.3	24	433.8	57	703.6
-8	251.9	25	440.7	58	713.3

AMMONIA TEMPERATURE PRESSURE CHART

Temp. deg. °F	Press Psig	Temp. deg. °F	Press Psig	Temp. deg. °F	Press Psig	Temp. deg. °F	Press Psig
-60	18.8	-8	10.3	20	33.5	48	71.1
-55	16.6	-7	10.9	21	34.6	49	72.8
-50	14.3	-6	11.6	22	35.7	50	74.5
-45	11.7	-5	12.2	23	36.8	55	83.4
-40	8.7	-4	12.9	24	37.9	60	92.9
-35	5.4	-3	13.6	25	39.0	65	103.1
-30	1.6	-2	14.3	26	40.2	70	114.1
-29	.08	-1	15.0	27	41.4	75	125.8
-28	.00	0	15.7	28	42.6	80	138.3
-27	.4	1	16.5	29	43.8	85	151.7
-26	.8	2	17.2	30	45.0	90	165.9
-25	1.3	3	18.0	31	46.3	95	181.1
-24	1.7	4	18.8	32	47.6	100	197.2
-23	2.2	5	19.6	33	48.9	105	214.2
-22	2.6	6	20.4	34	50.2	110	232.2
-21	3.1	7	21.2	35	51.6	115	251.5
-20	3.6	8	22.1	36	52.9	120	271.7
-19	4.1	9	22.9	37	54.3	125	293.1
-18	4.6	10	23.8	38	55.7		
-17	5.1	11	24.7	39	57.2		
-16	5.6	12	25.6	40	58.6		
-15	6.2	13	26.5	41	60.1		
-14	6.7	14	27.5	42	61.6		
-13	7.3	15	28.4	43	63.1		
-12	7.9	16	29.4	44	64.7		
-11	8.5	17	30.4	45	66.3		
-10	9.0	18	31.4	46	67.9		
-9	9.7	19	32.5	47	69.5		

*Vacuum Inches of Mercury – *Italic Figures*

CARBON DIOXIDE REFRIGERATION PIPING IDENTIFICATION GUIDE

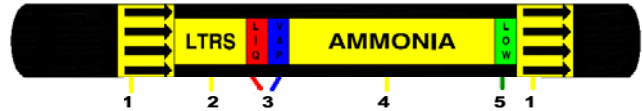


- Use arrows to indicate the direction of flow in the pipe.
- Use the following abbreviations to properly identify system components.

CD	Condenser Drain	LTD	Low Temp Discharge
HGD	Hot Gas Defrost	LTRL	Low Temp Recirculated Liquid
HSD	High Stage Discharge	LTRS	Low Temp Recirculated Suction
HTL	High Temp Liquid	LTS	Low Temp Suction
HTRL	High Temp Recirculated Liquid	RV	Relief Vent
HTRS	High Temp Recirculated Suction	VENT	Vent
HTS	High Temp Suction		

- Indicates whether the refrigerant is a liquid, vapor, or both.
 Liq – Orange color band indicates liquid state.
 Vap – Blue color band indicates vapor state
 Use both color bands if both liquid and vapor may be present
- Print "CO2" in black letters on Yellow background.
- Indicates whether the internal pipe pressure is high or low.
 High – Red color band indicates high pressure.
 Low – Green color band indicates low pressure.

AMMONIA REFRIGERATION PIPING IDENTIFICATION GUIDE



- Use arrows to indicate the direction of flow in the pipe.
- Use the following abbreviations to properly identify system components.

BD	Booster Discharge	HTS*	High Temp Suction
CD	Condenser Drain	LIC	Liquid Injection Cooling
DC	Defrost Condensate	LSS	Low Stage Suction
EQ*	Equalizer	LTRL	Low Temp Recirculated Liquid
ES	Economizer Suction	LTRS	Low Temp Recirculated Suction
HGD	Hot Gas Defrost	LTS*	Low Temp Suction
HPL	High Pressure Liquid	PO*	Pump Out
HSD	High Stage Discharge	PU*	Purge
HSS	High Stage Suction	RV	Relief Vent
HTRL	High Temp Recirculated Liquid	TSR	Thermosyphon Return
HTRS	High Temp Recirculated Suction	TSS	Thermosyphon Supply

- Indicates whether the refrigerant is a liquid, vapor, or both.
 Liq – Orange color band indicates liquid state.
 Vap – Blue color band indicates vapor state
 Use both color bands if both liquid and vapor may be present.
- Print "AMMONIA" in black letters on Yellow background.
- Indicates whether the internal pipe pressure is high or low.
 High – Red color band indicates high pressure.
 Low – Green color band indicates low pressure.
 *Not currently recognized in the IAR standards

CARBON DIOXIDE EMERGENCY ACTION

Preparing for an CARBON DIOXIDE EMERGENCY
 1. Learn Carbon Dioxide FIRST AID PROCEDURES
 -Mouth/mask Resuscitation
 -Cardiopulmonary Resuscitation (CPR)
 -Treatment for shock
 -Be prepared – DELAY and INEXPERIENCE may result in more serious injury
 2. Make sure your emergency support is knowledgeable about Carbon Dioxide first aid and treatment
 -Local Fire Department/ Ambulance Service
 -Emergency Clinic
 -Local Hospital
 3. NEVER wear contact lenses when working with any chemicals

Exposure to Carbon Dioxide – Eyes
 1. Check for and remove any contact lenses.
 2. Immediately flush eyes with plenty of water for at least 15 minutes.
 3. Get medical attention immediately.
Exposure to Carbon Dioxide – Skin
 1. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing and shoes before reuse.
 2. Get medical attention immediately
Exposure to Carbon Dioxide – Frostbite
 1. Try to warm up the frozen tissues.
 2. Get medical attention immediately
Exposure to Carbon Dioxide – Inhalation
 1. Move exposed person to fresh air.
 2. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel.
 3. Loosen tight clothing such as a collar, tie or waistband.
 4. Get medical attention immediately.
Exposure to Carbon Dioxide – Ingestion
 As this product is a gas, refer to the inhalation section.

ANHYDROUS AMMONIA EMERGENCY ACTION

Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind; keep out of low areas and ventilate closed spaces before entering. Self-contained breathing apparatus (SCBA) and structural firefighter's protective clothing will provide limited protection for short-term exposure to these materials. Fully-encapsulated protective clothing should be worn for spills and leaks with no fire. Evacuate the leak or spill area immediately for at least 50 feet in all directions. CALL CHEMTREC AT 1-800-424-9300 AS SOON AS POSSIBLE, especially if there are no local hazardous material teams available.
Preparing for an AMMONIA EMERGENCY
 1. Learn Ammonia FIRST AID PROCEDURES
 -Mouth/mask Resuscitation
 -Cardiopulmonary Resuscitation (CPR)
 -Treatment for shock
 -Be prepared – DELAY and INEXPERIENCE may result in more serious injury
 2. Make sure your emergency support is knowledgeable about ammonia first aid and treatment
 -Local Fire Department/Ambulance Service
 -Emergency Clinic
 -Local Hospital
 3. NEVER wear contact lenses when working with any chemicals

Overexposure to Ammonia Vapor
 1. Remove victim to fresh air
 2. Summon an ambulance
 3. If breathing fails, start mouth/mask resuscitation
 4. If no pulse, begin CPR
 5. If patient goes into shock, treat accordingly
 6. Oxygen may be administered by trained persons
Exposure to Liquid Ammonia – Eyes
 1. FLOOD IMMEDIATELY with water for at least 15 minutes. Eyelid must be held open during washing
 2. Summon an ambulance
 3. Determine if patient is wearing contact lenses and advise medical personnel

Exposure to Liquid Ammonia – Skin
 1. FLOOD IMMEDIATELY with large quantities of water for at least 15 minutes
 2. Summon an ambulance
 3. Decontaminate the victim with water before transporting in the close confines of an ambulance
 4. Flood clothing with large quantities of water
 CAUTION: Skin may be frozen to clothing
 Decision to remove clothing should be made by medical personnel only
 5. Advise medical personnel that salves or ointments should not be applied