

Bulletin 114 was developed and published in 1991 as means to establish uniformity among ammonia refrigeration users and practitioners in identifying refrigerant piping. The basis of the guidelines was ANSI Standard A1.1-1981 "Scheme for Identification of Piping systems". In 2007 ANSI A13.1 was updated to indicate that orange backgrounds, rather than yellow should be used to indicate toxic and corrosive fluids (i.e. Ammonia). Bulletin 114 was recently updated in 2014 to reflect this standard.

## Pipe Marker Components

### Pipe Marker Body

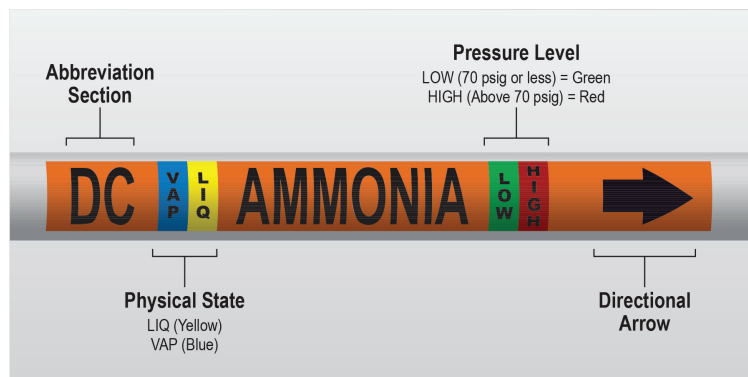
- The body of the marker should be "SAFETY ORANGE" and the text to be BLACK.
- Should follow ANSI 13.1 sizing chart (see on next page)
- Should Include the Pipe System in the Abbreviation Section

### Pressure Level

- If the pressure level exceeds 70 psig the pressure should be indicated as HIGH printed black on a red band
- If the pressure level is at or below 70 psig the pressure should be indicated as LOW printed black on a green band (as seen in the above example)

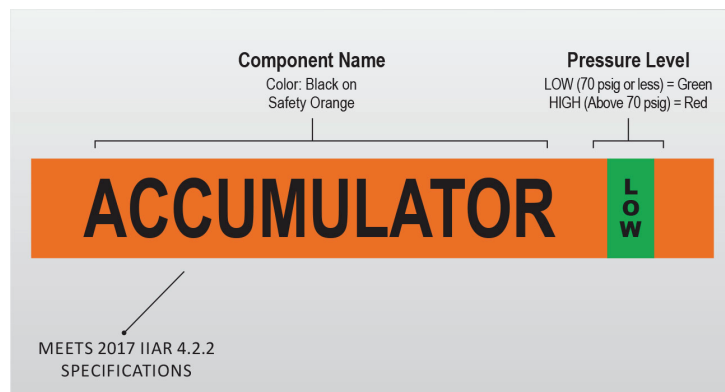
### Physical State

- If refrigerant state is liquid, LIQ should be printed black on a yellow band.
- If refrigerant is in the vapor state, VAP should be printed black on a sky blue band.
- If the refrigerant is in both vapor and liquid states both VAP and LIQ bands should be present.



## Component Marker Components

- Component markers should be approx. 3-1/2" high with 2-1/2" text.
- Follow ANSI Z535 color guide
- Pressure state can be added if necessary.



# IIAR Bulletin No. 114

## Guidlines for: Ammonia Refrigeration Pipe Markers

**KOLBI**  
PIPE MARKER CO.

### ANSI/IIAR Pipe Marker Size Minimums

IIAR Bulletin No. 114 Table 1					
Diameter (O.D.) Range	Marker Width	Marker Length	Letter Size	Physical State	Pressure Level
Up to 1-1/4"	1"	8"	1/2"	1/2"	1/2"
Greater than 1-1/4"-2"	1-1/2"	8"	3/4"	3/4"	3/4"
Greater than 2"-7"	2-1/2"	12"	1-1/4"	1"	1"
Greater than 7" - 10"	3-1/2"	24"	2-1/2"	1-1/2"	1-1/2"
Over 10"	4-1/2"	32"	3-1/2"	2"	2"

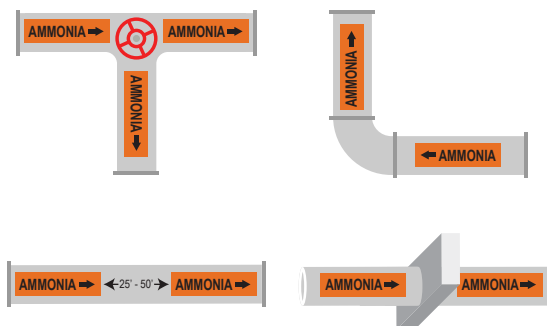
### Pipe Marker Placement

Before and after a change in piping direction.

Before and after piping penetrates walls, ceilings and floors.

On extended horizontal or vertical runs of pipe, with a maximum spacing of 40ft between markers.

#### Location of Markers



## Ammonia Legends

### CO<sub>2</sub> Legends Available

Item #	Legend	Abbr.	State	Pressure
A1	BOOSTER DISCHARGE	BD	VAP	LOW
A1A	BOOSTER SUCTION	BS	VAP	LOW
A2	CONDENSER DRAIN	CD	LIQ	HIGH
A3	DEFROST CONDENSATE	DC	LIQ	HIGH
A3A	DEFROST CONDENSATE	DC	LIQ VAP	HIGH
A4	ECONOMIZER SUCTION	ES	VAP	LOW
A5	EQUALIZER	EQ	VAP	HIGH
A6	FOUL GAS	FG	VAP	LOW
A6A	FOUL GAS	FG	VAP	HIGH
A7	HIGH PRESSURE LIQUID	HPL	LIQ	HIGH
A8	HIGH STATE DISCHARGE	HSD	VAP	HIGH
A9	HIGH STATE SUCTION	HSS	VAP	LOW
A10	HIGH TEMP RECIRCULATED LIQUID	HTRL	LIQ	LOW
A11	HIGH TEMP RECIRCULATED SUCTION	HTRS	LIQ VAP	LOW
A12	HIGH TEMP SUCTION	HTS	VAP	LOW
A13	HOT GAS	HG	VAP	HIGH
A14	HOT GAS DEFROST	HGD	VAP	HIGH
A15	INTERMEDIATE PRESSURE LIQUID	IPL	LIQ	LOW
A15A	LIQUID DRAIN	LD	LIQ	LOW
A16	LIQUID INJECTION COOLING	LIC	LIQ	HIGH
A17	LIQUID TRANSFER	LT	LIQ	LOW

Item #	Legend	Abbr.	State	Pressure
A18	LOW STAGE SUCTION	LSS	VAP	LOW
A18A	LOW TEMPERATURE LIQUID	LTL	LIQ	LOW
A18B	LOW LOW TEMPERATURE LIQUID	LLTL	LIQ	LOW
A19	LOW TEMP RECIRCULATED LIQUID	LTRL	LIQ	LOW
A19A	LOW LOW TEMPERATURE RECIRCULATED LIQUID	LLTRL	LIQ	LOW
A20	LOW TEMP RECIRCULATED SUCTION	LTRS	LIQ VAP	LOW
A20A	LOW LOW TEMPERATURE RECIRCULATED SUCTION	LLTRS	LIQ VAP	LOW
A21	LOW TEMP SUCTION	LTS	VAP	LOW
A22	MEDIUM TEMP RECIRCULATED LIQUID	MTRL	LIQ	LOW
A23	MEDIUM TEMP RECIRCULATED SUCTION	MTRS	LIQ VAP	LOW
A24	MEDIUM TEMP SUCTION	MTS	VAP	LOW
A24A	OIL DRAIN	OD	N/A	N/A
A25	PUMP OUT	PO	VAP	LOW
A25A	PURGE	PRG	VAP	HIGH
A26	PURGE LINE	PL	VAP	HIGH
A27	RELIEF VENT	RV	VAP	LOW
A28	RELIEF VENT	RV	VAP	HIGH
A28A	SUB-COOLED LIQUID	SCL	LIQ	HIGH
A29	THERMOSYPHON RETURN	TSR	LIQ VAP	HIGH
A30	THERMOSYPHON SUPPLY	TSS	LIQ	HIGH
A31	THERMOSYPHON VENT	TSV	VAP	HIGH