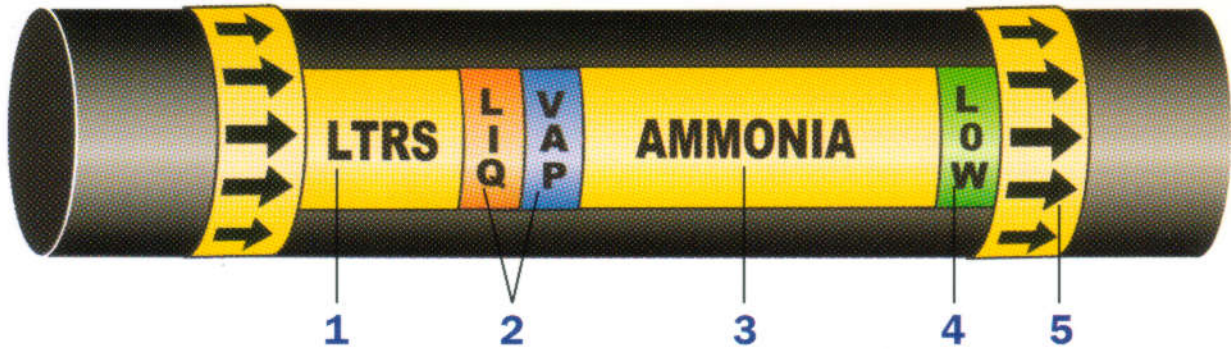


AMMONIA REFRIGERATION SYSTEM PIPE MARKING GUIDE

Complies with IIAR (*International Institute of Ammonia Refrigeration*) Standards



1. ABBREVIATIONS

Abbreviations for Ammonia System Components

ABBREVIATION SYSTEM

BD	Booster Discharge
CD	Condenser
DC	Defrost Condensate
ES	Economizer Suction
HGD	Hot Gas Defrost
HPL	High Pressure Liquid
HSD	High Stage Discharge
HSS	High Stage Suction
HTRL	High Temperature Recirculated Liquid
HTRS	High Temperature Recirculated Suction
LIC	Liquid Injection Cooling
LSS	Low Stage Suction
LTRL	Low Temperature Recirculated Liquid
LTRS	Low Temperature Recirculated Suction
RV	Relief Vent
TSR	Thermosyphon Return
TSS	Thermosyphon Supply

2. PHYSICAL STATE

LIQ - Liquid - Black or white printed on orange

VAP - Vapor - Black or white printed on blue

LIQ/VAP - Use both if both states exist

VAP
LIQ
LIQ
VAP
VAP
VAP
VAP
VAP
LIQ
LIQ/VAP
LIQ
LIQ
LIQ/VAP
VAP
LIQ/VAP
LIQ

3. MARKER BODY

"AMMONIA" printed in black on yellow

4. PRESSURE LEVEL

HIGH Pressure - Black or white printed on red

LOW Pressure - Black or white printed on green

LOW
HIGH
HIGH
LOW
HIGH
HIGH
LOW
LOW
LOW
LOW
HIGH
LOW
HIGH
HIGH
HIGH

5. FLOW DIRECTION

Direction of flow of the system contents is indicated by the arrows. Place arrows at one or both ends.

PIPE MARKER SIZE CHART

Outside Pipe Diameter Including Covering	Minimum Length of Label Field Color	Minimum Height of Letters
.75" - 1.25" (19 - 32 mm)	8" (203 mm)	.5" (13 mm)
1.5" - 2" (38 - 51 mm)	8" (203 mm)	.75" (19 mm)
2.5" - 6" (64 - 152 mm)	12" (305 mm)	1.25" (32 mm)
8" - 10" (203 - 254 mm)	24" (610 mm)	2.5" (64 mm)
Over 10" (Over 254 mm)	32" (813 mm)	3.5" (89 mm)

Graphic Products, Inc.

Toll Free: **1-800-788-5572**

P.O. BOX 4030 • BEAVERTON, OR • 97076

Fax: 503-646-0183 • info@GraphicProducts.com

www.GraphicProducts.com • www.DuraLabelpro.com

Create Pipe Markers with the

DuraLabel[®] PRO

THERMAL TRANSFER PRINTER

■ Increase efficiency at your facility with signs and labels that identify equipment, explain proper maintenance procedures and equipment operation. At the same time, improve safety by clearly marking all hazards, pipes, and containers. The durable, indoor/outdoor vinyl and ribbon are easy to load, UV-resistant to prevent fading, and available in a variety of colors.

Create your own signs and labels to reduce the cost and time delay associated with ordering from outside services. Use this versatile sign and label printer to create your own customized pipe markers.

Pipe Grabber[™] Sleeves -

These clear plastic pipe marking sleeves enable users to identify dirty, oily, rusty pipes by providing a clean surface for the pipe marking label. Labels are applied directly on the sleeve, then the sleeve curls tightly around the pipe.



Pipe Grabber[™] Sleeve Sizes:

- 1" x 9" - Fits pipes with diameters 1" - 1.5"
- 1.5" x 9" - Fits pipes with diameters 1.5" - 2.3"
- 2" x 12" - Fits pipes with diameters 2" - 3"
- 3" x 12" - Fits pipes with diameters 3" - 4"
- 4" x 18" - Fits pipes with diameters 4" - 5.2"
- Custom lengths available



Use the ammonia pipe marking guide on the reverse side to properly customize your labels with the DuraLabel PRO.

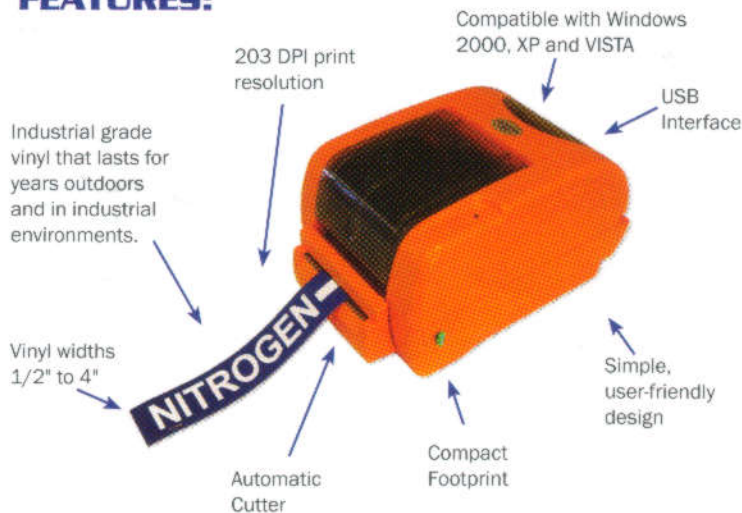


Count on us when you need labels, signs, pipe markers, poster printers or laminators. Your absolute satisfaction is guaranteed. Got questions? Call us!



The pipe marking guide on the opposite side, along with the DuraLabel PRO, are very valuable resources for making your facility safe. **Our CD includes an Ammonia Pipe Marking Package** in accordance with **IIAR standards**. This series of pre-made templates makes labeling your ammonia pipes fast and easy! Call us today and we'll help you get started!

FEATURES:



Printer Dimensions: 7.5" (W) x 8.5" (H) x 12" (L)

PIPE MARKING GUIDE

to the ASME A13.1 - 2007 Standard for the Identification of Pipes

COLOR CODE

Material Properties	Letter color on Field color	Example
FLAMMABLE Fluids which are a vapor or produce vapors that can ignite and continue to burn in air.	Black on Yellow	→ HYDROGEN →
COMBUSTIBLE Fluids that may burn but are not flammable.	White on Brown	→ ACETIC ACID →
TOXIC & CORROSIVE Fluids which are corrosive or toxic or will produce corrosive or toxic substances.	Black on Orange	→ NITRIC ACID →
FIRE QUENCHING Water and other substances used in sprinkler fire fighting piping systems.	White on Red	→ HALON →
OTHER WATER Any other water except for water used in sprinkler & fire fighting piping systems.	White on Green	→ BOILER WATER →
COMPRESSED AIR Any vapor or gas under pressure that does not fit a category above.	White on Blue	→ COMPRESSED AIR →
DEFINED BY USER	White on Black	→ DEFINED BY USER →
DEFINED BY USER	Black on White	→ DEFINED BY USER →
DEFINED BY USER	White on Purple	→ DEFINED BY USER →
DEFINED BY USER	White on Gray	→ DEFINED BY USER →

PIPE MARKER SIZE CHART

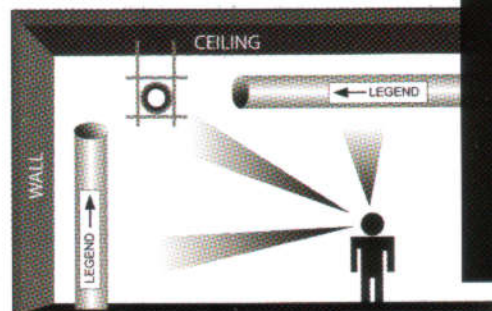
Letter & Label Dimensions in accordance to pipe diameter

NOTE:
It is recommended that pipes less than .75" in diameter, be labeled with a permanent tag.

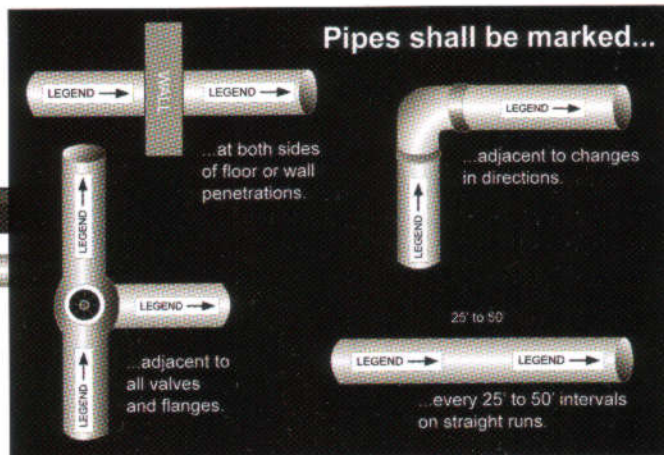
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2.5" - 6"	64 - 152 mm	12"	305 mm	1.25"	32 mm
8" - 10"	203 - 254 mm	24"	610 mm	2.5"	64 mm
Over 10"	Over 254 mm	32"	813 mm	3.5"	89 mm

PLACE MARKERS:

- To indicate direction of flow by labeling with arrows at one or both ends.
- To be visible from the point of normal approach.
- Near valves, flange and changes in pipe direction.
- Both sides of ceiling, wall or floor penetrations.
- At any line entry or re-entry point.
- On straight pipe runs.
- Every 50 feet is typical.



Right: Label placement in relation to point of normal approach



Above: Orientation of Labels

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This guide is for general purposes only. It is not a substitute for review of applicable standards. Copyright 2007 Graphic Products, Inc.

Create Pipe Markers with

DuraLabel® PRO

THERMAL TRANSFER PRINTER

■ Increase efficiency at your facility with signs and labels that identify equipment, explain proper maintenance procedures and equipment operation. At the same time, improve safety by clearly marking all hazards, pipes, and containers. The durable, indoor/outdoor vinyls and ribbons are easy to load, UV-resistant to prevent fading, and available in a variety of colors.

Create your own signs and labels to reduce the cost and time delay associated with ordering from an outside service. Use this versatile sign and label printer to create your own customized pipe markers.

Pipe Grabber™ Sleeves



These clear plastic pipe marking sleeves enable users to identify dirty, oily, rusty pipes by providing a clean surface for the pipe marking label. Labels are applied directly on the sleeve, then the sleeve curls tightly around the pipe.

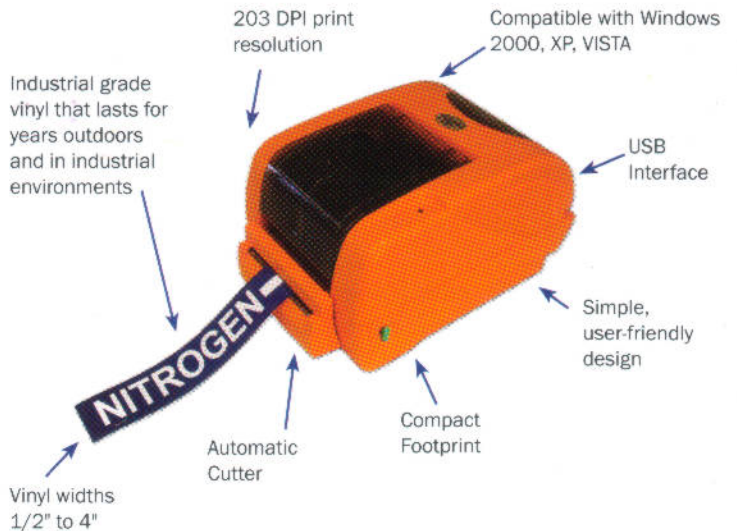
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- Custom lengths available

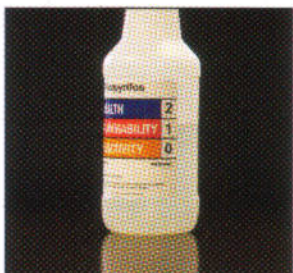


WE ARE YOUR SIGN AND LABEL COMPLIANCY SPECIALISTS!
CALL US AT 1-800-788-5572

FEATURES



Printer Dimensions: 7.5" (W) x 8" (H) x 12" (L)



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VALVE TAGS & PIPE MARKING TOOLS

for use with the *DuraLabel*

It is important that signs and labels are legible, strategically placed to be seen clearly and easy to understand. It is critical to follow OSHA's standards of compliance for the health and safety of everyone at your facility.

Valve tag, pipe marking and sign materials, along with the DuraLabel, enable users to provide a safe environment for their employees while increasing productivity and efficiency.



DuraTag™ attached by zip-tie to valve for easy identification.

DuraTag™ Stock -

Print on this exceptionally durable UV-stabilized material that is so tear resistant, no grommets are necessary. This heavy-duty material is resistant to moisture, chemicals, and extreme cold, making it ideal for indoor and outdoor use. Compatible with DuraLabel colored ribbon.



3 Easy Steps to Follow:

- Print your tag with the DuraLabel
 - Punch it with a hole punch
 - Attach it with a zip tie
- No grommets needed!**



Valve Tags -

Inexpensive custom tags are fast and easy to create. Our valve tags are extremely durable and long-lasting for a uniform and professional appearance throughout your entire facility.

Valve Tags come in:

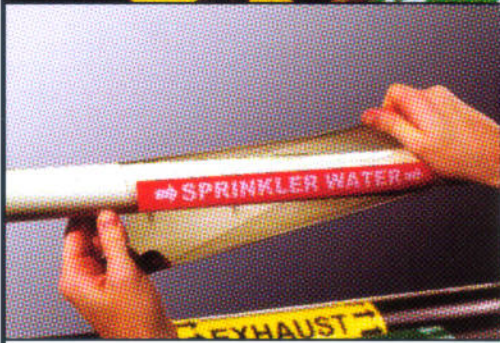
- Sizes: 2.25" x 3.75" & 3.375" x 4.75"
- Colors: Black, White, Red, Blue, Green, Yellow, & Orange

Please visit www.DuraLabel.com or call 1-800-788-5572 for more information



Pipe Grabber™ Sleeves -

These clear plastic pipe marking sleeves enable users to identify dirty, oily, or rusty pipes by providing a clean surface for the pipe marking label. Labels are applied directly on the sleeve and the sleeve curls tightly around the pipe. (Shown below)



Labeled Pipe Grabber™ Sleeve, being curled around pipe.



Pipe Grabbers™ available in the following sizes:

- 1" x 9" - Fits pipes with diameters 1" - 1.5"
- 1.5" x 9" - Fits pipes with diameters 1.5" - 2.3"
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- 4" x 18" - Fits pipes with diameters 4" - 5.2"
- Custom lengths available

Sign Blanks -

Sign Blanks are great for quickly creating large custom signs. Even multi-color signs can be made using different ribbon and vinyl colors. Just print your labels, apply them to the sign blank, then slip zip ties through the mounting holes and attach wherever necessary.

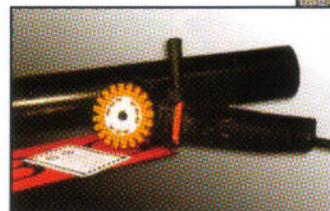


MBX Vinyl Zapper -

This innovative, multi-purpose device removes vinyl, decals, pinstripes, reflective tape and adhesives quickly and easily in a single operation. You can also prepare surfaces before applying labels using one of the many changeable wheels.

MBX Vinyl Zapper with the Eraser Wheel

- Reduces labor by 60%
- Removes 35 - 50 sq. ft. per hour
- Removes multiple vinyl layers in seconds
- Does not damage OEM paint or substrate materials
- Pneumatic or electrical models
- Changeable wheels for multiple surfaces
- Operates in hot or cold temperatures



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Toll Free: 1-800-788-5572 ♦ Fax: 503-646-0183

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4-Methylbenzenamine

106-49-0
WARNING

HEALTH HAZARDS: NA

ORGAN HAZARDS: Eyes, skin, blood, cardiovascular system

CHECK
RESP.
Check
Respirator



CONSULT MATERIAL SAFETY DATA SHEET FOR ADDITIONAL INFORMATION ON HAZARDS



RATINGS	
4 - Extreme	
3 - Serious	
2 - Moderate	
1 - Slight	
0 - Minimal	

0-Chlorostyrene

HEALTH	1
FLAMMABILITY	2
REACTIVITY	0

2039-87-4



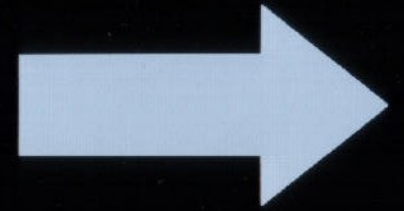
CONSULT MSDS FOR ADDITIONAL INFORMATION ON HAZARDS

FLAMMABLE

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3

NITROGEN



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WARNING

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HIGH-VOLTAGE TRANSFORMERS

AUTHORIZED PERSONNEL ONLY

ADVERTENCIA

AREA A-572 CONTIENE
TRANSFORMADORES DE ALTO VOLTAJE

SOLO PERSONAL AUTORIZADO



AMMONIA

1" WIDE X
2" HIGH
PRESSURE
TAG
GOES HERE

LTRS

1" WIDE X
2" HIGH
STATETAG
GOES HERE

→ NITROGEN →