Propane Specialist Response Kit

Tank/Cyl Connection Quick Reference Guide

07/02/2025
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USERS GUIDE

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INDEX

Pages 15, 16, 17, and 18 are handouts that I created for our class titled “Propane Response – 101 to Advanced Tactics”. I added them in this Users Guide to aid you on scene.

If you are ever on scene and would like another perspective feel free to call me. If I can, I’ll take the call or I’ll call you back as soon as possible.

Ronald (Ron) Huffman
(765) 524-4848

Propane Specialist Response Kit

QR links to available operational videos!

As responders ourselves, we understand that your team members have alot to remember. This document has been designed using images and numbers assigned to the Propane Specialist Response Kits components to assist in quickly identifying what is needed to connect to what you're working on.

To augment this users Guide I will be creating short videos to assist the first responders that can be viewed on scene. The QR code below will take you to a page on our website where you can select and view videos related to what you're working on.

Scan this QR link to access the Propane Specialist Response Kit's Users Guide Video Link Page

Propane Specialist Response Kit

ResponderTraining.com

NOTE
This users guide and associated online videos do not provided guidance or information for every component of the ***Propane Specialist Response Kit*** or training. It is intended to augment training provided by ***Responder Training Enterprises, LLC.***

Propane Specialist Response Kit Users Guide

Kit Component Location Index

Kit Item Identifier	Description	Located in Box #
1	1-3/4” Female ACME Vapor Adaptor X 1-3/4” Male ACME	1
2	1-3/4” Female ACME X 1-3/4” Male ACME 90 degree	1
3	3-1/4” Female X 1-3/4” Male ACME	1
4	1-1/4” Female ACME Vapor Adaptor X 1-3/4” Male ACME	1
5	1-5/16” QCC/OPD tank EVACUATION ADAPTER (no Excess Flow Valve)	1
6	Full Flow P .O.L. X 1-3/4” Male ACME	1
7	Reserve Cylinder Adapter Female POL	1
8	2-1/4” Female X 1-3/4” Male ACME	1
9	Fork Truck Safety Connector X 1-3/4” Male ACME	1
10	Bottle, high pressure pipe sealant	1
11	Box #1 foam insert	1
12	Propane Specialist Response Kit Box # 1	1
13	1-3/4" Male ACME x 1/4" Female NPT	1
14	1-3/4" Male ACME x 3/4" Female NPT	1
15	1-3/4" Cap	1
16	Reserved	1
17	Flomatic internal valve manual activation tool	1
18	1/4" ball valve	1
19	1-1//4" Cap	1
20	Bleeder plug	1
21	2 - 3/16" MC-331 internal valve handle pin (cotter pin)	1
22	2 - 1/8" MC-331 internal valve handle pin (cotter pin)	1
23	2 - 1/16" MC-331 internal valve handle pin (cotter pin)	1
24	1-1/4” ACME Propane Vapor Gasket	1
25	1-3/4” ACME Propane Filler Valve Gasket	1
26	2-1/4” ACME Propane Filler Valve Gasket	1
27	3-1/4” ACME Propane Filler Valve Gasket	1
28	Liquid Unloading Adapter Nylon Gasket	1
29	Liquid Unloading Adapter O-Ring	1
30	1/2-inch roll of high-pressure Teflon tape	1
31	300 psi bottom mount pressure gauge	1
32	Liquid Unloading Valve Assembly (new style) straight	2
33	1-inch pressure gauge assembly (300psi)	2
34	3121 Unloading Adapter	2
35	Liquid Unloading Valve Assembly (new style) 90 degree	2
36	Liquid Unloading Valve Assembly (old style) 90 degree	2
37	Hard Nose POL Plug	2
38	Fill Valve Adapter (Check Valve)	2
39	1-3/4” Female ACME X 1-3/4” Male ACME Unloading Adapter	2
40	1-3/4” Male ACME X 1-3/4” Male ACME	2
41	Box #2 foam insert	2

Kit Item Identifier	Description	Located in Box #
42	Propane Specialist Response Kit Box # 2	2
43	Gloves 1-pair	3
44	Gloves 1-pair	3
45	Wood Plug Kit	3
46	1-3/4” Female ACME X 1-3/4” Female ACME	3
47	Tool Tote	3
48	OPTIONAL - Emergency ESV W/manual Latch and 30-foot stainless steel cable and pull handle	3
49	3-1/4" Male ACME x 3-1/4" Male ACME	3
50	1-inch 3-way valve	3
51	Bottle, Leak Check Fluid	3
52	Liquid loading/unloading tank valve w/ball valve and 1-3/4" male ACME	3
53	High Pressure (250 psi) 1/4" quick connect x Female POL	3
54	Mower Propane Tank Connector (left hand thread) x Female POL	3
55	CGA 555 x Female POL	3
56	3/8" Male Quick Connector x Female POL	3
57	Low Pressure 1/4" quick connect x Female POL	3
58	7580F liquid loading unloading tank valve w/ball valve and 1-3/4" male ACME	3
59	Propane Specialist Response Kit Box # 3	3
60	Box #3 foam insert	3
61	Extra Heavy Couplings (1/4", 3/8", 1/2", 3/4", 1")	4
62	Extra Heavy Close nipples (1/4", 3/8", 1/2", 3/4", 1")	4
63	Brass non sparking hammer	4
64	ALL - N - One Chek-Lok Socket	4
65	Tool – Pipe Extractor Set	4
66	Extra Heavy 3-inch nipples (1/4", 3/8", 1/2", 3/4", 1")	4
67	Extra Heavy Plug (1/4", 3/8", 1/2", 3/4", 1")	4
68	Reducers (1/4' x 3/8", 3/8' x 1/2", 1/2' x 3/4", 3/4' x 1", 1" x 1-1/4", 1-1/4" x 1-1/2", 1-1/2' x 2")	4
69	Tool – POL wrench	4
70	Propane Specialist Response Kit Box # 4	4
71	Tool Tote	4
72	Custom Lexan case divider	4
73	10-foot 1/2" hose with 300 psi gauge, hydrostatic relief and ball valve (1-3/4" Female ACME x 1-3/4" Male ACME)	4
74	Dead Blow Hammer	4
75	12" x 3/8 female flare straight motor fuel x 1-3/4" Male ACME	4
76	12" x 3/8 female flare 90-degree motor fuel x 1-3/4" Male ACME	4
77	12” x Fork Truck Safety Connector 90-degree motor fuel x 1-3/4" Male ACME	4
78	12” x Male POL x Female POL 90-degree	4
79	1-3/4" Female ACME x 1-3/4" Male ACME extension with ball valve	4
80	OLD style Chek-Lok 7572C-14A liquid propane evacuation adapter with schedule 80 pipe extension and 1-3/4” male ACME (designed for underground storage tanks)	4
81	NEW style Chek-Lok 7590U-10 liquid propane evacuation adapter with schedule 80 pipe extension and 1-3/4” Male ACME (designed for underground storage tanks)	4
82	Box #4 foam insert	4
	Full Graphic Set	

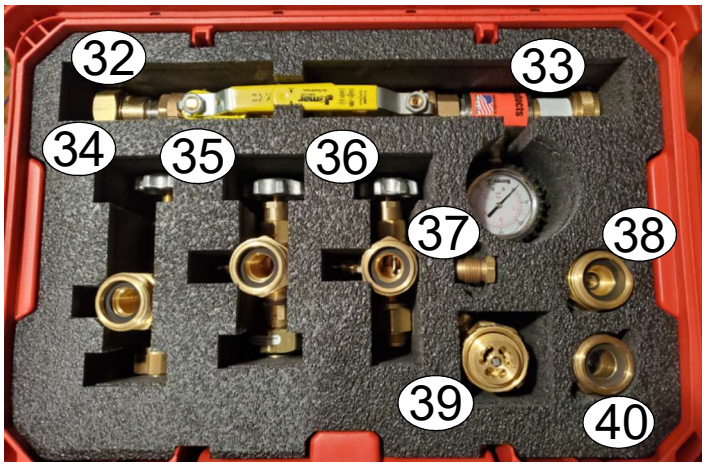
Propane Specialist Response Kit Users Guide

Kit Component Location Map

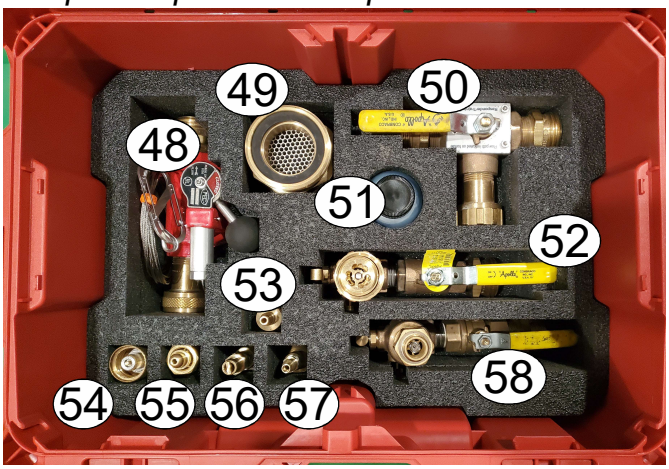
Note: Some kit items are not referenced in this GUIDE because they are not specific valve connectors.

Propane Specialist Response Kit - Box # 1

Propane Specialist Response Kit - Box # 2

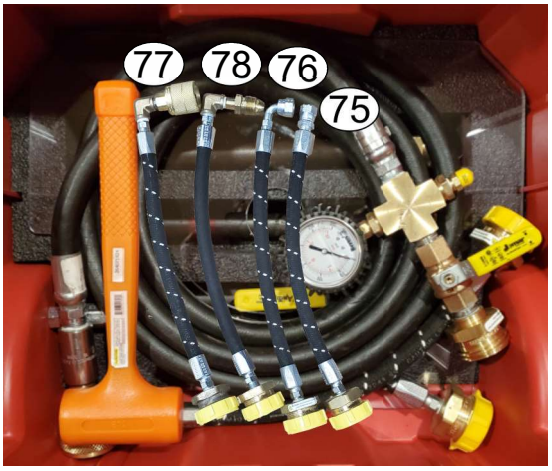


Propane Specialist Response Kit - Box # 3



The items in Box #1's Left side storage area and the lift out Tool Totes from Boxes # 3 & 4 have been intentionally omitted because their components are not referenced in this document. However they are all listed on pages 4 & 5 of this guide.

Propane Specialist Response Kit - Box # 4



Propane Specialist Response Kit Users Guide

Component Application and Identification Guide

COMMON Horizontal Residential Tank Connections

Identified tank connection points may only need one of the items identified or multiple pieces to accomplish the task.

Vapor/Fill Valve
1 3/4" Male ACME
See page "17"
(FILL Valve)

Service Valve
Vapor (P.O.L.)

Vapor Return
1-1/4" Male ACME

Liquid Volume
Gauge 0-100%

OLD Style - Liquid
Withdrawal Valve
See page "16"

NEW Style - Liquid
Withdrawal Valve
See page "16"

Pressure Relief Device

See page "16"

Box 1 - #1

"or"

Box 2 - #34

"or"

Box 2 - #39

"or"

Box 2 - #38

Box 1 - #6

"or"

Box 2 - #37

"or"

Box 4 - #78

"or"

Box 1 - #4
Vapor Return

See page "16"

Box 2 - #36

"or"

Box 3 - #58

See page "16"

Box 2- #35

"or"

Box 3 - #52

"or"

Box 2 - #32

Box 4 - #73

Add a control valve assembly

"or"

Box 2 - #33

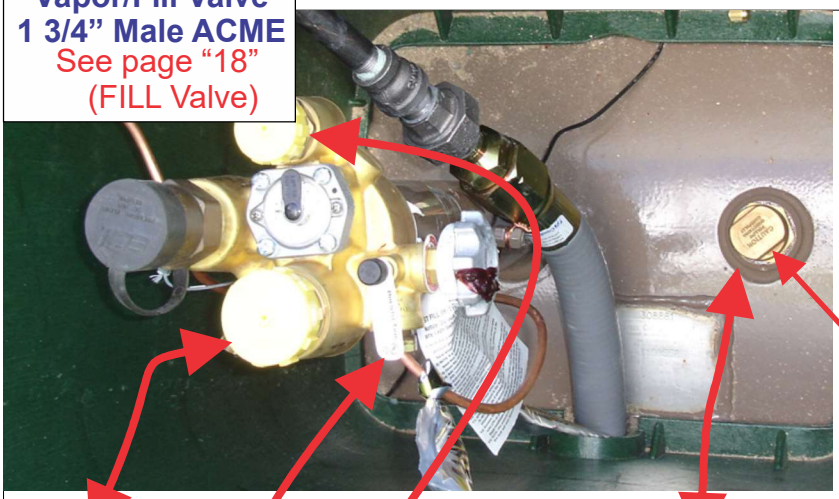
Propane Specialist Response Kit Users Guide

Component Application and Identification Guide

COMMON Underground Tank Connections

Identified tank connection points may only need one of the items identified or *multiple* pieces to accomplish the task.

Vapor/Fill Valve
1 3/4" Male ACME
See page "18"
(FILL Valve)



Box 2 - #34

"or"

Box 2 - #39

"or"

Box 2 - #38

Box 1 - #4

Box 1 - #6

"or"

Box 2 - #37

Box-4 #81

"or"

Box-4 #80

"+"

Box-4 #79

New Style Liquid Withdrawal (35) (81)
See page "16"

"or"

Old Style Liquid Withdrawal (36) (80)
See page "16"

ALL-N-One Set

Fits 2 Styles of LWD Caps

Fits 4 Styles of LWD caps

Propane Liquid Withdrawal Valve Socket Set

Add a control valve assembly

Box 4 - #73

"or"

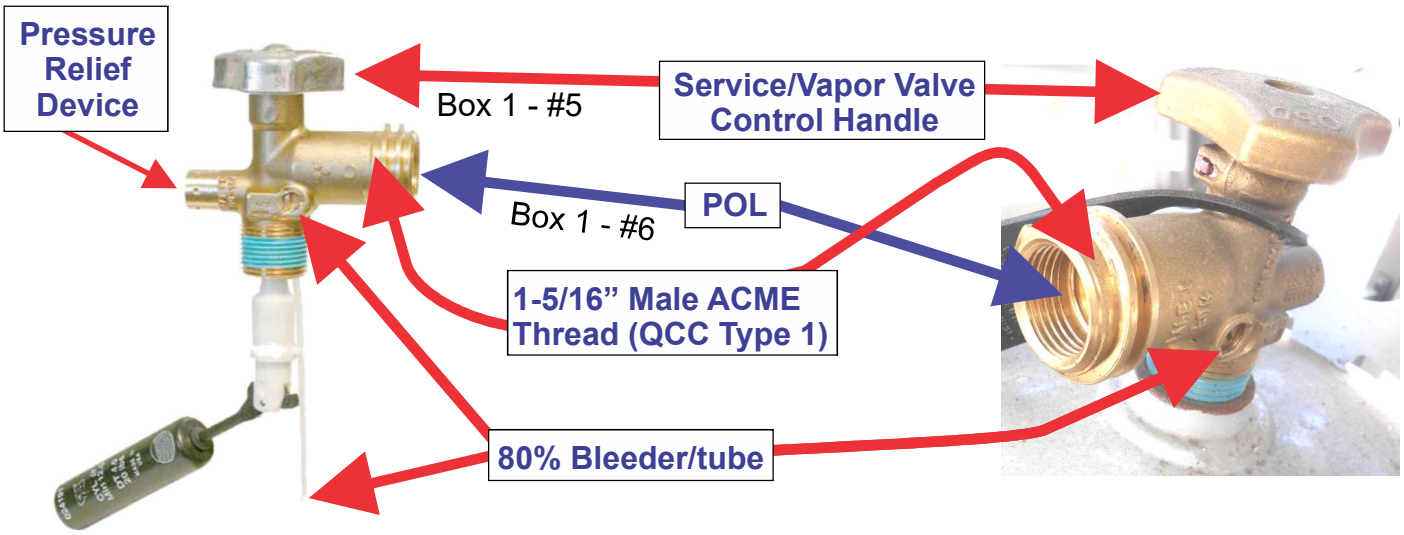
Box 2 - #33

Propane Specialist Response Kit Users Guide

Component Application and Identification Guide

Identified tank connection points may only need one of the items identified or multiple pieces to accomplish the task.

Overfill Protection Device (OPD) REQUIRED ON 4-40 POUND TANKS



Box 1 - #5

Box 1 - #6

Box 2 - #37

Box 4 - #78

Vapor Service Valve with POL Connection ONLY

Commonly found on 100 #, 420#, and many other tanks

Box 1 - #6

Box 2 - #37

Box 4 - #78

Box 4 - #73

Add a control valve assembly

"or"

Box 2 - #33

LPG RESPONDER TRAINING ENTERPRISES, LLC CNG
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Propane Specialist Response Kit Users Guide

Component Application and Identification Guide

Identified tank connection points may only need one of the items identified or multiple pieces to accomplish the task.

420# (100 Gallon) Tank Valve options

Service Valve Vapor (P.O.L.)

Vapor/Fill Valve 1 3/4" Male ACME
See page "18" (FILL Valve)

Box 1 - #6

Box 2 - #37

Box 4 - #78

Box 1 - #1

"or"

Box 2 - #34

"or"

Box 2 - #39

"or"

Box 2 - #38

Box 4 - #73

Add a control valve assembly

"or"

Box 2 - #33

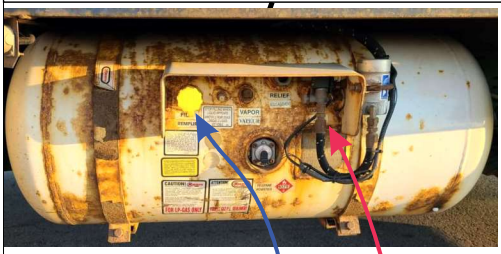
Propane Specialist Response Kit Users Guide

Component Application and Identification Guide

Motor Fuel Tank Connections

Identified tank connection points may only need one of the items identified or multiple pieces to accomplish the task.

Motor Fuel Connections



Box 2 - #34

"or"

Box 2 - #39

"or"

Box 2 - #38

3/8" Flare Nut

Box 4 - #75

Box 4 - #76

Box 1 - #6

"or"

Box 2 - #37

"or"

Box 4 - #78

ForkLift Connections

Box 1 - #9

"or"

Box 4 - #77

Box 2 - #34

"+"

Box 1 - #2

if needed

"or"

Box 2 - #39

Add a control valve assembly

Box 4 - #73

"or"

Box 2 - #33

Propane Specialist Response Kit Users Guide

Component Application and Identification Guide

Specialty Tank Connections

Identified tank connection points may only need one of the items identified or multiple pieces to accomplish the task.

Camper *Low Pressure* (regulated) Connections


Box 3 - #56

"or"

Box 3 - #57

"+"

Box 1 - #6

HIGH Pressure Quick Connection


Box 3 - #53

"+"

Box 1 - #6

Cylinder *Liquid Withdrawal* Connection (CGA 555)


Male thread

Box 3 - #55

"+"

Box 1 - #6

Lawn Mower Propane Tank Connection - *Left Hand Thread*

Box 3 - #54

"+"

Box 1 - #6

1-Pound Cylinder


Box 1 - #7

"+"

Box 1 - #6

The flexible 90 degree POL hose connector in Box #4 can be used instead of item Box 1 - #6

Box 4 - #78

Box 4 - #73

Add a control valve assembly

"or"

Box 2 - #33

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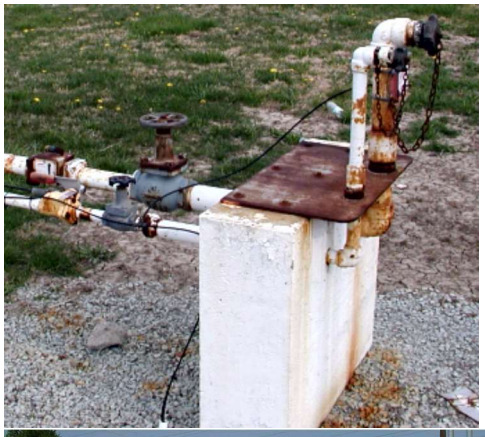
Propane Specialist Response Kit Users Guide

Component Application and Identification Guide

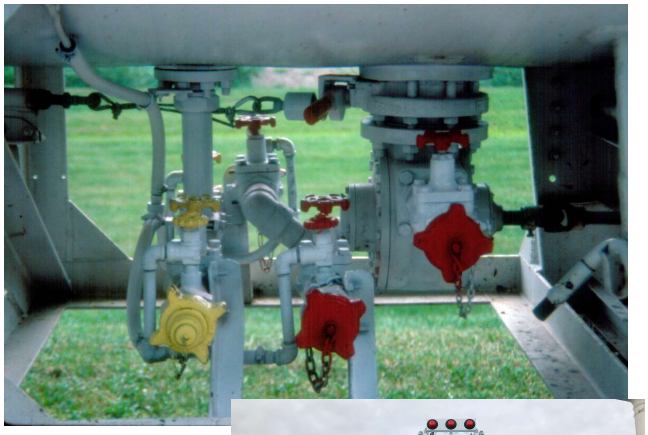
Bulk Plants and DOT MC330/331

Identified tank connection points may only need one of the items identified or multiple pieces to accomplish the task.

Bulk Plants



DOT MC330/331



1 3/4” ACME

Box 2 - #40

2 1/4” ACME

Box 1 - #8

3 1/4” ACME

Box 1 - #3

3 1/4” ACME

Box 2 - #49

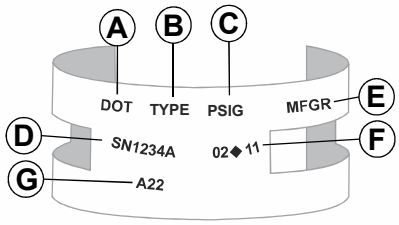
Add the 1-inch control valve assembly →

Box 2 - #33

Propane Specialist Response Kit Users Guide

Common Tank/Cylinder Information

PROPANE CYLINDER MARKINGS GUIDE



A - Indicates that the cylinder has been manufactured according to U.S. DOT specifications
B - Cylinder specification type
C - Cylinder service pressure (psig)
D - Cylinder serial number
E - Manufacturer's name (or registered symbol)
F - Original manufacture test date, month, year and inspectors mark
G - Area for date requalified/retested (most often indicated by a letter with A, B, C & D corresponding to 1st, 2nd, 3rd & 4th quarter of a year, respectively), followed by two numbers of the year.

OTHER POSSIBLE MARKINGS
TW - Tare weight or empty weight of the cylinder
WC - Water storage capacity of the tank

Data plates and tank collars provide specific tank information.

20 lb Propane Tank

Dimensions: 1' 6" in height and 1' in diameter.
20 pound propane tanks are often referred to as grill cylinders and hold approximatly 4.6 gallons of propane

30 lb Propane Tank

Dimensions: 2' in height and 1' in diameter.
30 pound propane tanks hold approximatly 7 gallons of propane when full.

33.5lb Forklift Propane Tank

Dimensions: 30" x 12" x 12"
Hold approximatly 8 gallons of propane when full.

43.5lb Forklift Propane Tank

Dimensions: 34" x 12" x 12"
Holds approximatly 9 gallons of propane when full.

40 lb Propane Tank

Dimensions: 29" in height and 12.5" in diameter.
40 pound propane tanks are often found on the front of campers and hold approximatly 9.5 gallons of propane when full.

100 lb Propane Tank

Dimensions: 48" in height and 14.5" in diameter.
100 pound propane tanks hold approximatly 23.5 gallons of propane when full.

120 Gallon Veritical Propane Tank

Dimensions: 54.5" in height and 30" in diameter
A 120 vertical gallon propane tank is also commonly referred to as 420 lb or PIG propane tank.
A 120 gallon propane tanks hold 99 gallons of propane when full.

150 Gallon Horizontal Propane Tank

Dimensions: 5'8" in height and 24" in diameter
A 150 gallon propane tanks hold 120 gallons of propane when full.

250 Gallon Horizontal Propane Tank

Dimensions: 7'10" long and 30" in diameter
A 250 gallon propane tank holds 200 gallons of propane when full.

500 Gallon Horizontal Propane Tank

Dimensions: 9' 11" long and 37.5" in diameter
A 500 gallon propane tank holds 400 gallons of propane when full.

1000 Gallon Horizontal Propane Tank

Dimensions: 16' 2" long and 41" in diameter
A 1000 gallon propane tank holds 800 gallons when full.

Created by:
Ron Huffman
Owner/Lead Instructor
Responder Training Enterprises, LLC

NOTE: All dimensions and volumes are approximated

OPD Valve with QCC Type 1 and POL Connections

Since October 1st 1998 all new 4 to 40 pound cylinders have been required to have an Overfill Protection Device (OPD) installed. The OPD is designed to stop product flow into the cylinder during the filling process in excess of the maximum permitted filling limit or 80% of the tanks capacity. Along with this change came the Federal regulation requiring that propane tanks with an OPD's must be re-certified 12 years from the date of manufacture stamped on the tank. Tanks that have been re-certified must then be re-certified every 5 years. This standard has changed to exclude horizontal tanks.

Without OPD (star handwheel)

With OPD (trilobular handwheel)

OPD cylinder valves may have either a CGA (Compressed Gas Association) 791 (ACME threads) or a CGA 810 (push-pull, quick disconnect) connection device.

CGA 810

CGA 791M

In addition to the 80% fill limiter, OPD valves contain a Discharge Check Valve. It's purpose is to prevent discharge from the cylinder unless a POL (Prest-O-Lite) or QCC (Quick Closing Coupling) type-1 fitting is connected to the valve. When the connector is properly threaded onto the OPD valve it pushes open the Discharge Check Valve and allows propane to flow through the connector and to the attached appliance.

POL
CGA 510

QCC Type-1

QCC Type 1 connectors are color coded to indicate the maximum BTU per Hour that each are capable of producing. **BLACK** is the lowest at 100,000 BTU/hour, **GREEN** is next at 200,000 BTU/hour and **RED** is the maximum at 400,000 BTU/hour.

Currently OPD valves with the QCC Type-1 connector are still capable of receiving a male POL, this could change someday. But, for now if you need to flare a larger quantity of propane than the QCC Type-1 is capable of, you may be able to use a full flow POL.

The QCC connector (CGA 791) is a 1-5/16” ACME (right hand thread) which is found on BBQ and other systems with OPD valves.

When purchasing propane equipment such as portable heaters they often are shipped with a POL connector. Don’t be confused by the large QCC Type-1 threads.

CGA 791 - QCC Type 1
(right hand thread)

CGA 510 - P.O.L.
(left hand thread)

POL (Prest-O-Lite) Connection Only

OPD

No Discharge Check Valve

QCC (Quick Closing Coupling) Type-1

OPD

With Discharge Check Valve

Created by: Ronald D. Huffman respondertraining.rdh@gmail.com 2019/5/18

Propane Specialist Response Kit Users Guide

Component Application and Identification Guide

Liquid Withdrawal

Performing liquid withdrawal operations on an OLD style Chek-Lok using the 7572C-14A adapter has always been accompanied by a release of liquid propane until the adapter has been tightened down. The New style adapter (7590U-10) stops the release with the new design and the use of an O-Ring.

New Style
7590U-10

Box 2 - #31, 35
Box 4 - #81

New Style Liquid Withdrawal

Old Style Liquid Withdrawal

Old Style
7572C-14A

Box 2 - #36
Box 4 - #80

Box-2 #35

NEW style Liquid Evacuation Valve adapter utilizes an ***O-ring*** to seal the valve to the tank unit.

Box-2 #36

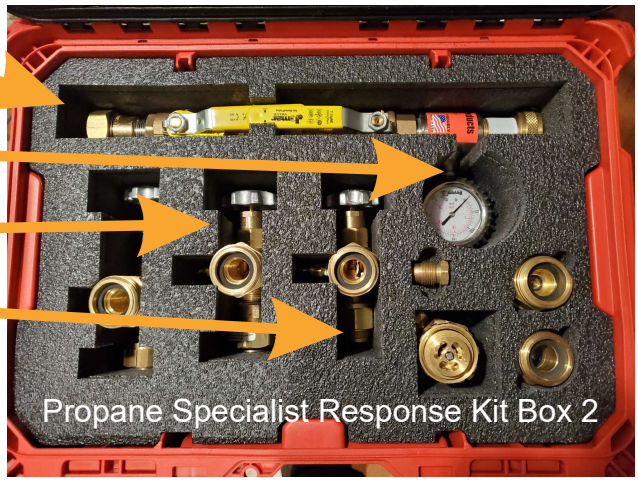
This style adapter is used on the Old style Liquid Evacuation Valve and *DO NOT seal to the tank unit until it is securely tightened*.

New Style Liquid Withdrawal (straight)
Box-2 #32

1-inch Control Valve W/Gauge
Box-2 #33

New Style Liquid Withdrawal
Box-2 #35

Old Style Liquid Withdrawal
Box-2 #36



Loosen cap to vent any accumulated LP-Gas from the Liquid Withdrawal Valve. After venting stops, remove the cap. If venting does not stop, retighten the cap and use other approved means to withdraw liquid from the container. ***NOTE:*** Use a suitable size wrench when removing the cap and adapter from the Chek-Lok. ***Do not allow the Chek-Lok to un-thread from the tank during removal.***
When necessary, use a second wrench to secure the Chek-Lok in position.

Contact Responder Training Enterprises, LLC, for your propane response training and equipment needs.
Ron Huffman, respondertraining.rdh@gmail.com www.respondertraining.com or (765) 524-4848

REGO Liquid Withdrawal Adapters

Performing liquid withdrawal operations on an OLD style Chek-Lok using the 7572C-14A adapter has always been accompanied by a release of liquid propane until the adapter has been tightened down. The New style adapter (7590U-10) stops the release with the new design and the use of an O-Ring.

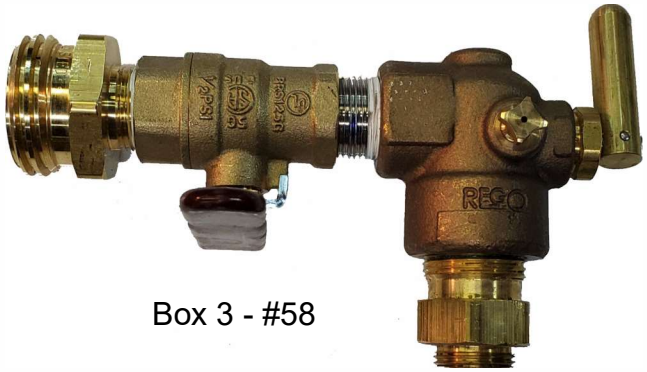

Old Style
7572C-14A


New Style
7590U-10

To go a step further the REGO 7580F-20 and 7590U-20 Chek-Lok® adapters eliminate gas flow when installing or removing!

The adapter's operating handle rotates moving the equalizing stem in the Chek-Lok® valve up and down. When the handle is "UP" or in the "CLOSED" position, potential gas flow through Chek-Lok® valve is stopped. Use of the RegO adapter ensures proper connections and opening of the check mechanism.

The **REGO 7580F-20** adapter is specifically designed to eliminate the need for gas to flow from the OLD style ChekLok® when the adapter is installed or removed.



Box 3 - #58

CLOSED

OPEN


CLOSED


OPEN

While not as common as the 7590U-10, the **REGO 7590U-20** is also designed specifically to be used with the NEWER style RegO ChekLok® Excess Flow Valves.

Box 3 - #52


CLOSED


OPEN

NOTE: Instructions to Open Chek-Lok® (REGO text)

Loosen cap to vent any accumulated LP-Gas from the Chek-Lok. After venting stops, remove the cap. If venting does not stop, retighten the cap and use other approved means to withdraw liquid from the container. ***NOTE:*** Use a suitable size wrench when removing the cap and adapter from the Chek-Lok. ***Do not allow the Chek-Lok to un-thread from the tank during removal. When necessary, use a second wrench to secure the Chek-Lok in position.***

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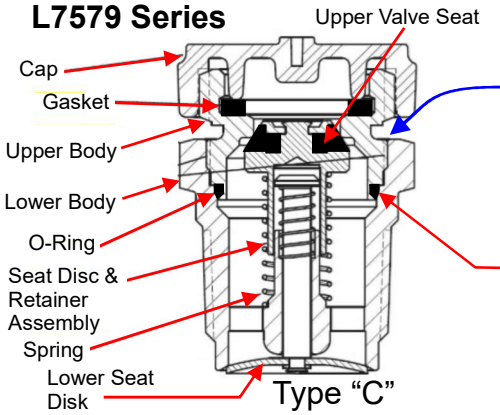
Propane Fill Valves and Unloading Adapters

On most tanks and cylinders without a dedicated large bore vapor connection such as a Mc331, a 1-3/4” ACME connection that is commonly used as a filler valve would be a good choice for vapor flaring operations.

Note: Unloading adapters such as the REGO 3119a and the REGO 3121 are not valves. They are designed to open the tank connection only. A separate control valve assembly should be installed inline in case the tank valve does not reseat.



Type “C”

Upper O-Ring leak on underground tank

SPECIAL NOTE: LEFT HAND thread

Box 2 - #39 ***Box 2 - #34***

Upper Body

1 3/4” ACME Gasket

Type “C”

Seat Disk

6579 Series valves include a swing-away check

Back Check

SPECIAL NOTE:
LEFT HAND thread
Screw Down to OPEN - Up to CLOSE

Rego 3119a

Box 2 - #39

Rego 3121

Box 2 - #34

LIQUID LOADING-UNLOADING ADAPTOR (In and Out)

1 3/4”Female ACME (In only)

PSRK Box 1 - #1

1 3/4”Female ACME (In and Out)

Should be used with a control valve.

SPECIAL NOTE: when using the Rego 3121 or Marshal Excelsior 450 adapter verify that the valve stem is completely retracted (UP) prior to connecting it to the Double-Check Filler Valve. Failure to do so may cause an unwanted product release.
Screw Down to OPEN - Up to CLOSE

WARNING: In many makes of valves, the valve opening distance may be less than the plunger travel of the adapter. Do not force the handwheel if it appears that the Filler Valve is wide open (screwed down).

Basic propane metering system components

One of my jobs while employed in the propane service industry was repairing propane metering systems. This included systems from Veeder Root, Liquid Controls, Neptune, Mid-Com and others. I thought a description of a few of the most common components could be helpful.

Generally, a system is designed with a register head (a) (part that displays the gallons pumped, it could also be inside the cab) sits atop of the measuring chamber (b).

The measuring chamber is supplied liquid propane through a vapor eliminator (c). The strainer (d) is typically made from stainless steel and or brass and is inside of the vapor eliminator, it's designed to catch debris in the supply before it gets to the measuring chamber.

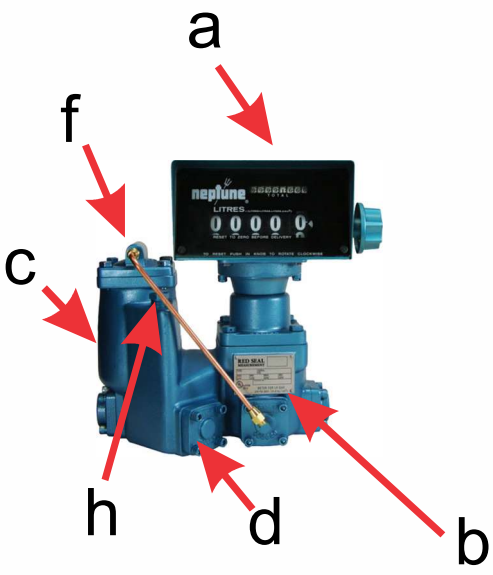
Propane is fed into the middle of the strainer (usually from the back of the assembly). The vapor eliminator has a float assembly connected to an internal control valve that closes if the liquid gets high enough. The vapor line is connected to the differential valve (e) (flat round component with a diaphragm) vis hose or tube (f). The vapor line is also connected back to the vapor system in the tank. This will need to be closed to stop vapor from leaking if the system is broken open in an accident.

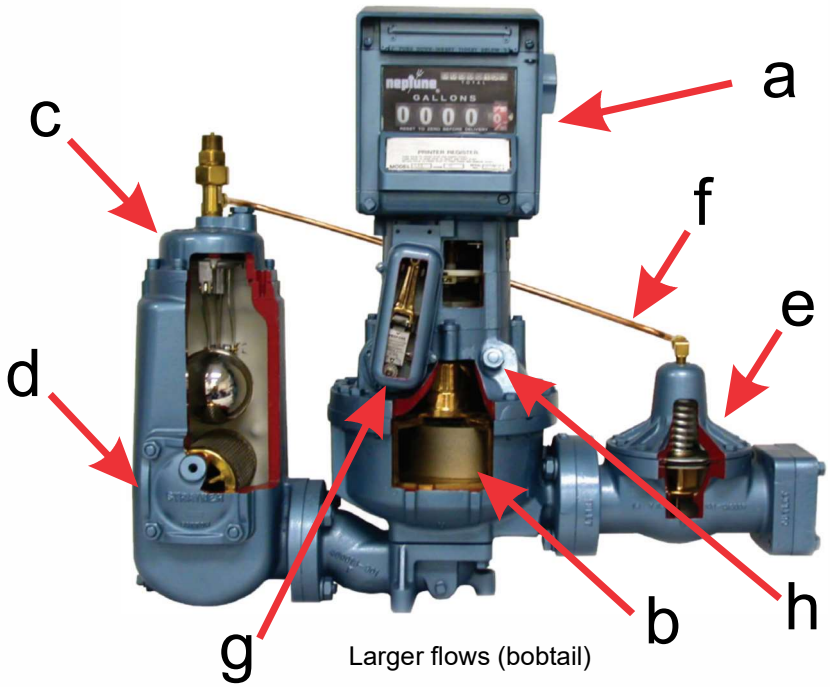
Units typically have an temperature compensator (g) that is used to calibrate the system to 60 degrees F (in the U.S.) and adjust the registers reading based off of product temperature and a thermometer well (h) used during calibration.

Ron Huffman

Owner, Responder Training Enterprises, LLC.

Smaller flows (bottle filling)



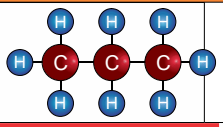


Larger flows (bobtail)

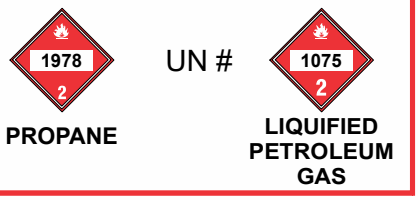
Propane Fact Sheet

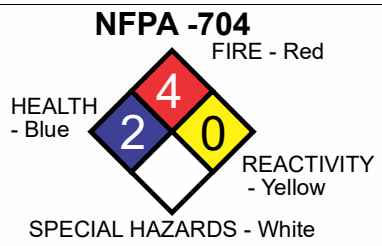
DOT GUIDEBOOK GUIDE # 115, 366-369, 375

Chemical Name: **Propane**
Chemical Family: **Hydrocarbon**
Chemical Formula: C_3H_8



CAS Registry No.: **74-98-6**
IDLH: **2200 ppm** (based on 10% LEL)
LEL: **2.15 (2)** UEL: **9.6 (10)**
Vapor Density: **1.52**
Specific Gravity: **0.5**
Vapor Pressure: **95 psig @ 60 Deg. F**
Boiling Point: **-44 Deg. F**
Freeze Point **-306**
Evaporation Rate: **Gas at normal ambient temperatures**
Flash Point: **-156 Deg. F**
Ignition Temp.: **900 - 1100 Deg. F**
Weight: **4.24 Lbs. per gallon @ 60 Deg. F**
Expansion Ratio: **270 - 1**
Solubility: **Not soluble in water**





Color: **Colorless**
Odor: **Odorless, ALSO SEE BELOW**
Percent Volatile by Volume (%): **100**
Stability: **Stable**
Hazardous Polymerization: **Will not occur**
Decomposition Products: **CO, CO_2**
OSHA PEL: **1000 ppm**
ACGIH TLV: **1000 ppm**

STORAGE VESSALS

Propane and other Liquified Petroleum Gases (LPG) are commonly shipped in container sizes from less than 1 ounce, to over 34,000 gallons (railcar). Cigarette lighters, hand held torches, spray cans, semi trailers and rail cars can all be used as a vessel to hold propane and other LPG's.
Normally small cylinders (less than 100 lbs.) are used to supply propane vapor and do not have a dip tube (80% liquid tube). If a cylinder that was designed to supply vapor only is inverted, liquid will be expelled from the vapor opening.
Pre-Plan your local area and know what's being transported, stored and how!

EMERGENCY RESPONSE

Warning : ***Danger! Compressed Flammable gas.*** Simple asphyxiate: death possible in higher concentrations (IDLH 2200 ppm). Contact with liquid causes cryogenic type burns, can be extreme, similar to frost bite.

If responding to a tank on fire: **YOUR FIRST DECISION** must be whether to apply water or evacuate the area. If an attack is made, apply water to the point of flame contact first and continuously then to other tank surfaces to assist in cooling the tank. Manage vapor leaks as needed. If possible use un-maned or remote nozzles. After the fire has been extinguished continue to apply water to the tank surface until the tank is cool. If possible you should NOT extinguish a flammable gas fire with-out shutting off the flow of gas first *"unless" the flame is impinging on the vapor space.* If the fire contacting the vapor space is extinguished, continually disperse product vapors until the hazard is removed.

If responding to a potential odor/leak: Arrive with your meter ready. Calibrated and warmed up, wear all of your PPE, test LOW medium and high in accordance with your departments SOP's and SOG's.

Identify if there is a basement, cellar or crawl space. Ask if there has recently been any service work of the gas system (this may help you locate small leaks quicker). A leak detection fluid may help identify small leaks that a meter reading in % of LEL cannot detect.

Liquid leaks produce visible clouds when sufficient humidity is present. may be able to be converted to a water leak using water injection.

PPE

***Respiratory:** SCBA for gas in unknown concentrations and concentrations above occupational exposure limits and firefighting.

***Hands:** Use cold-impervious, insulating gloves where contact with liquid may occur that will not freeze to objects.

***Eyes:** Possibility of liquid contact, wear splash-proof safety glasses and face shield.

***Skin and Body:** Where contact with liquid may occur, wear appropriate cold insulating protective clothing and face shield (SCBA). Structural PPE required for firefighting.

Extinguishing Media: Shut off source, Water Injection, Water spray, Class A-B-C or BC extinguisher.

Product vapors will gather in low areas, check all low areas for gas vapor accumulations (ditches, sewers, river beds and structure), disperse product vapors with water fog or forced air.

CAUTION: Flammability limits (i.e., explosion hazard) should be considered when assessing the need to expose personnel to concentrations requiring respiratory protection.

Supplied BY: *Responder Training Enterprises LLC, P.O. Box 182, Shirley IN 47384, (765) 524-4848 respondertraining.rdh@gmail.com*

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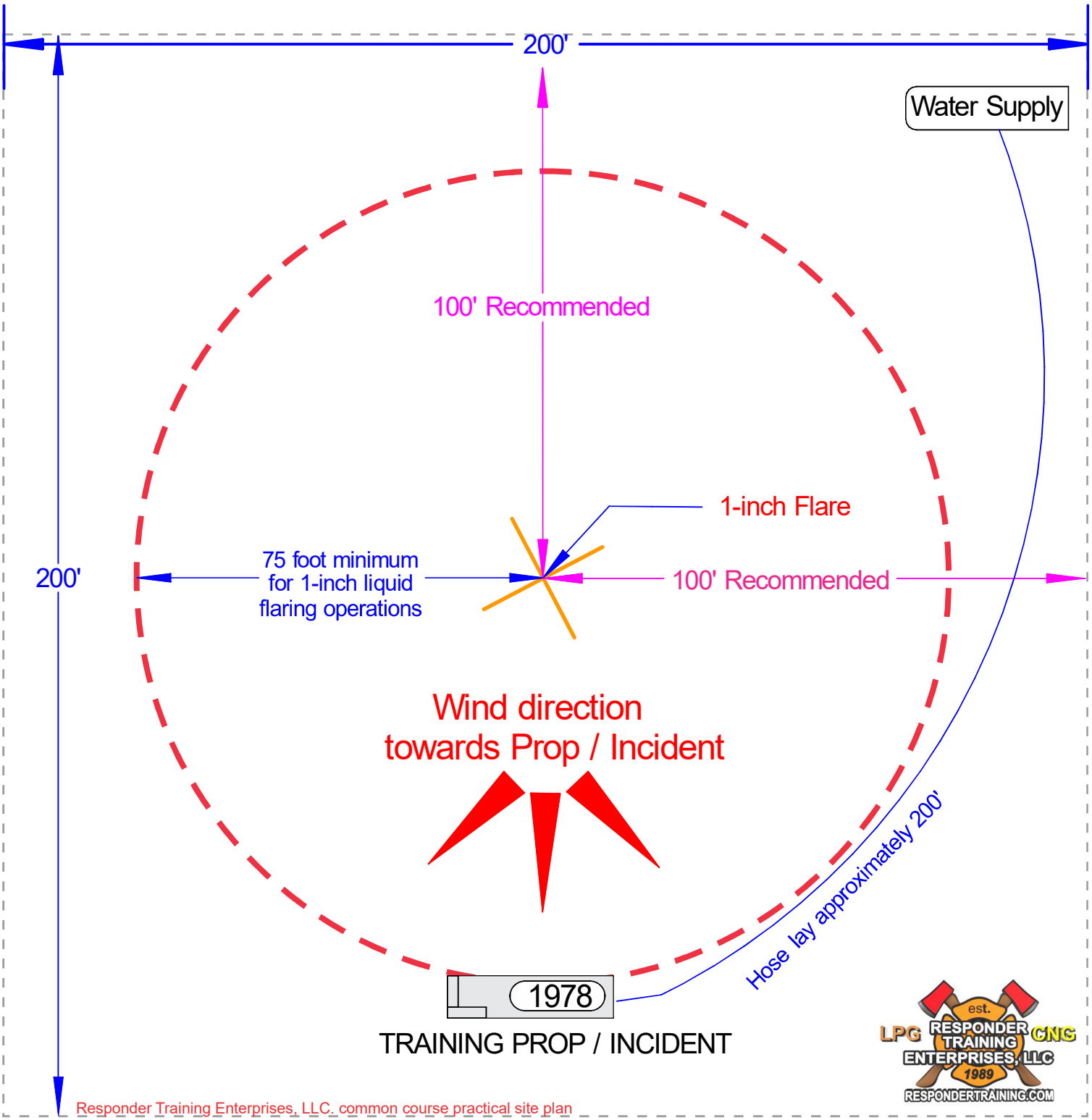
Flaring Site Plan (training/incident)

Propane Response - 101 to Advanced Tactics Class practical site plan for ***Liquid*** Propane Flaring Operations using the ***1-inch Responder Flare (AKA The Dragon Slayer)***.

Smaller flares with reduced flows or propane systems that can not supply full 1-inch liquid flows ***will not*** require the same size spacing.



These are the "minimum" distances "*commonly used*" by Responder Training Enterprises, LLC. based on the radiated heat produced while burning ***LIQUID*** propane using our ***1-inch flare***.