



## Product Data

19XR / 23XRV / 19MV  
Positive Pressure  
Storage System



# Features/Benefits



Carrier's Positive Pressure Storage (PPS) system ensures the critical conservation of refrigerants during service and repair work on positive pressure chillers.

- Stores refrigerant R-513A
- Pumpdown compressor meets EPA's vacuum levels
- Minimizes refrigerant emissions during service
- Provides a safe method to store reserve refrigerant charge

The PPS system consists of a storage tank and pumpout unit and is available

in two sizes to meet most storage needs: 28 cu ft (0.8 cu m) or 52 cu ft (1.5 cu m).

Carrier's PPS systems are factory tested and certified to the American Society of Mechanical Engineers (ASME) pressure vessel code. The tanks are constructed of certified steel and pressure rated at 185 psig (1276 kPa).

The PPS system is equipped with dual relief valves for proper venting per ASHRAE 15 (American Society of Heating, Refrigerating, and Air-Conditioning Engineers) guidelines. An automatic level

switch is prewired to the control circuit to ensure proper storage levels.

The hermetic pumpout unit is a complete, compact condensing unit that consists of a hermetic compressor, water-cooled refrigerant condenser, oil separator, and prewired safety and control devices.

The hermetic pumpout unit is offered as a freestanding unit that can be used in conjunction with an existing storage tank or with chillers that have built-in storage systems using isolation valves.

## Table of contents

	Page
Features/Benefits . . . . .	2
Model Number Nomenclature . . . . .	2
Physical Data. . . . .	3
Machine Components . . . . .	4
Dimensions . . . . .	5
Performance Data . . . . .	8
Typical Piping . . . . .	10
Electrical Data . . . . .	11
Control Wiring Schematic. . . . .	11
Guide Specifications. . . . .	12

## Model number nomenclature

19XR0402740		1
Pumpout System	Storage Tank Size	Voltage
	Cu ft   Cu m	
19XR0402740	28   0.8	1 — 208/230-3-50 or 60
19XR0402750	52   1.5	2 — 460-3-60 3 — 400-3-50



ASME 'U' STAMP



Intertek

NOTE: Units are ETL listed to UL Standard 1963.

## 19XR Pumpout Unit a, b, c

	ENGLISH	SI
Pumpout Unit Weight <sup>d</sup> , lb (kg)	164	(75)
Pumpout Condenser Water Flow Rate, gpm (L/s)	7-9	(.45-.58)
Pumpout Condenser Water Pressure Drop, psig (kPa)	0.3	(2.0)
Maximum Entering Condenser Water Temperature, F (C)	85	(29)
Maximum Leaving Condenser Water Temperature, F (C)	100	(37)
Relief Valve, psig (kPa)	235	(1620)
Condenser Pressure Rating		
Refrigerant Side, psig (kPa)	450	(3102)
Waterside, psig (kPa)	450	(3102)

### NOTE(S):

- a. The motor is hermetic with thermal protection.
- b. The control box is mounted and wired with an ON/OFF/AUTO. switch according to NEMA 1 (National Electrical Manufacturing Association).
- c. The starter contactor is located in the control box. The overloads on the motor are wired and the internal disconnect switch is supplied by the customer.
- d. The pumpout unit weight includes the compressor/condenser, control box, and oil separator.

## 19XR Storage Tank Rated Dry Weight and Refrigerant Capacity

SIZE cu ft (cu m)	TANK OD in. (mm)	DRY WEIGHT <sup>a</sup> lb (kg)	MAXIMUM REFRIGERANT CAPACITY lb (kg)	
			ASHRAE/ANSI 15	UL 1963
			R-513A	R-513A
28 (0.8)	24.00 (610)	2334 (1059)	1860 (844)	1716 (778)
52 (1.5)	27.25 (692)	3414 (1549)	3563 (1616)	3286 (1491)

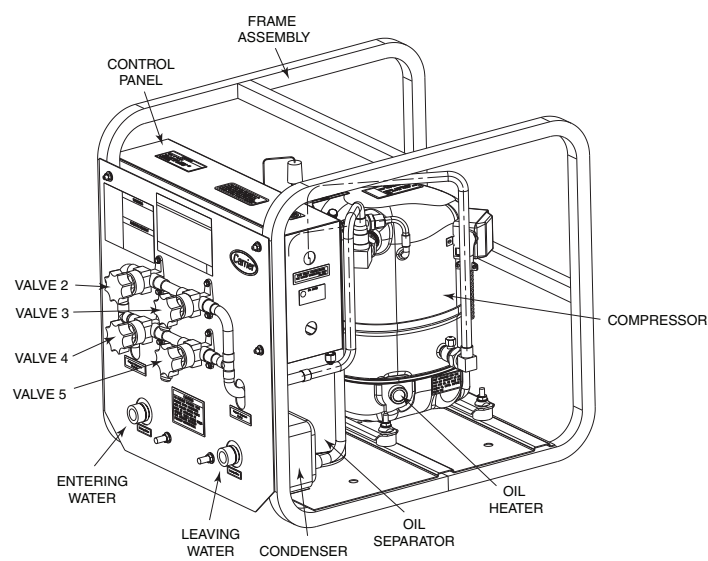
### NOTE(S):

- a. The pumpout unit weight includes the compressor/condenser, control box, and oil separator.

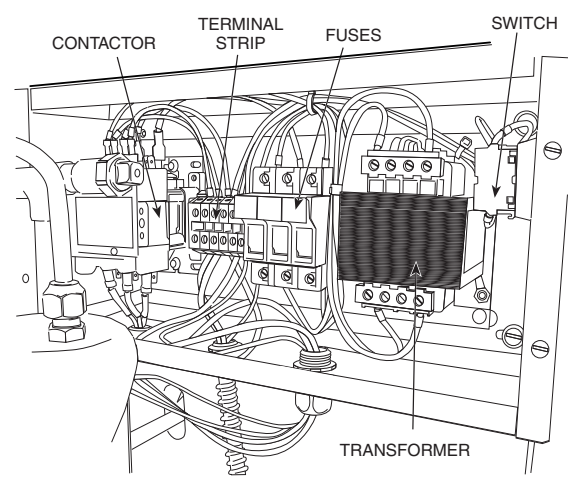
### LEGEND

- ANSI — American National Standards Institute
- ASHRAE — American Society of Heating, Refrigeration, and Air-Conditioning Engineers
- UL — Underwriters' Laboratories

19XR Positive Pressure Storage System

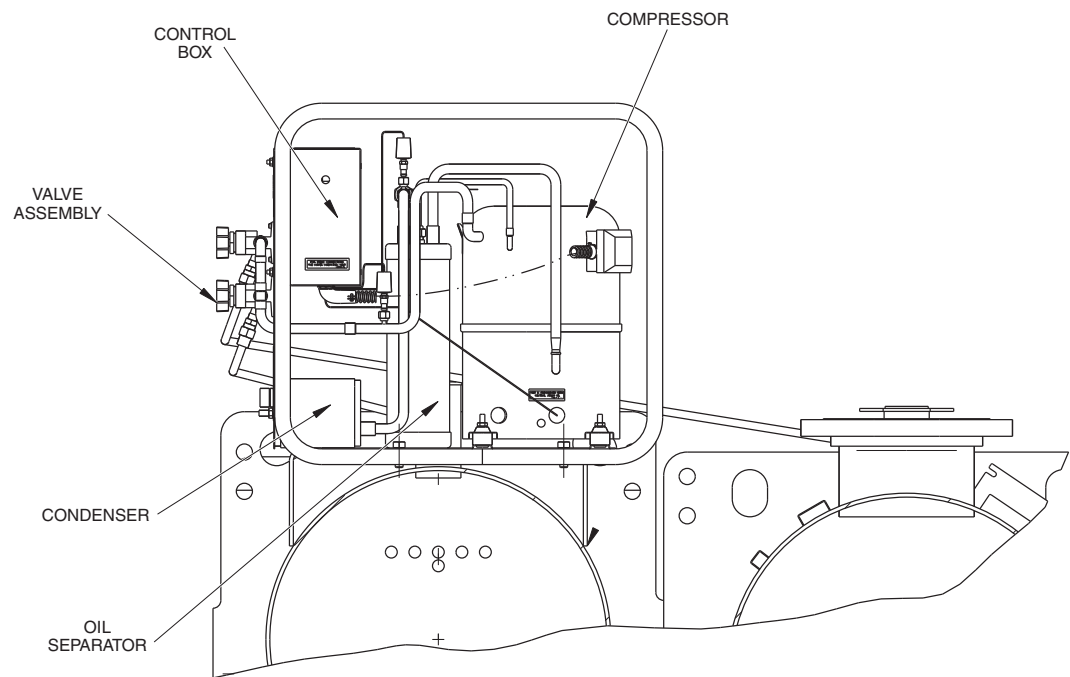


19XR Pumpout Unit

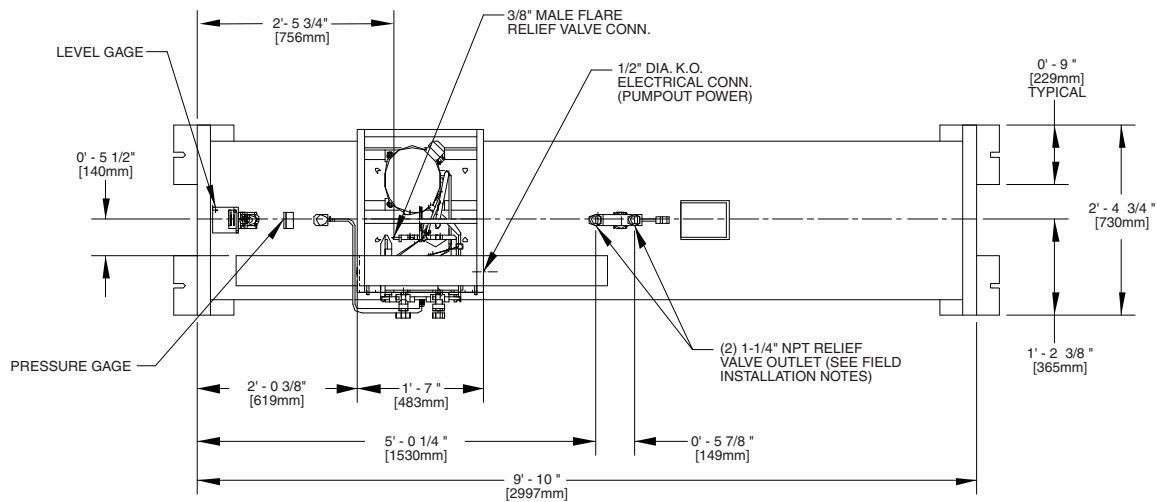


19XR Control Box (Interior)

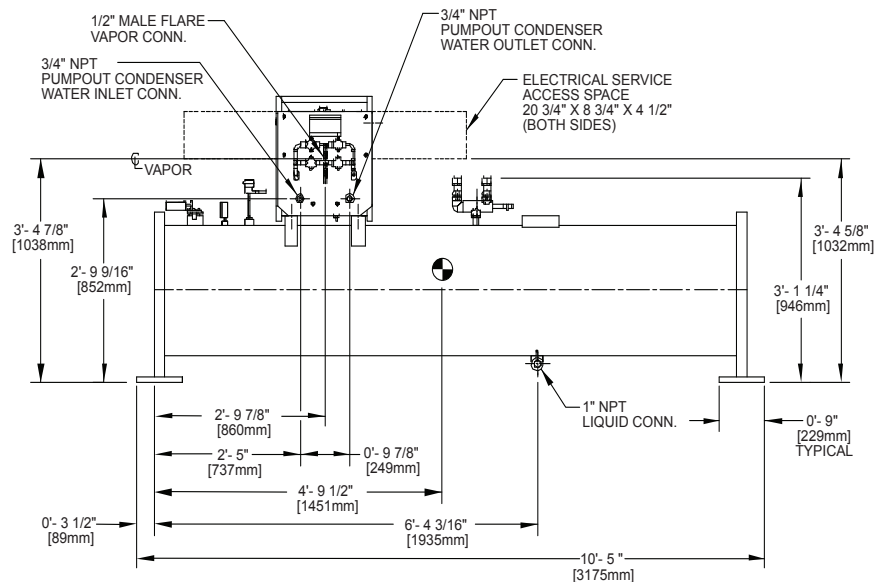
19XR Pumpout Unit: Typical Chiller Mount



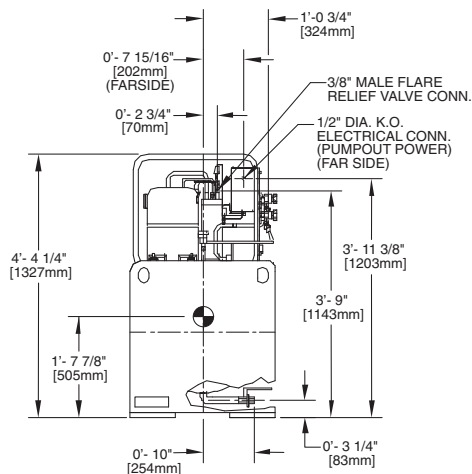
## Storage Tank with Pumpout Unit



Top View




Front View



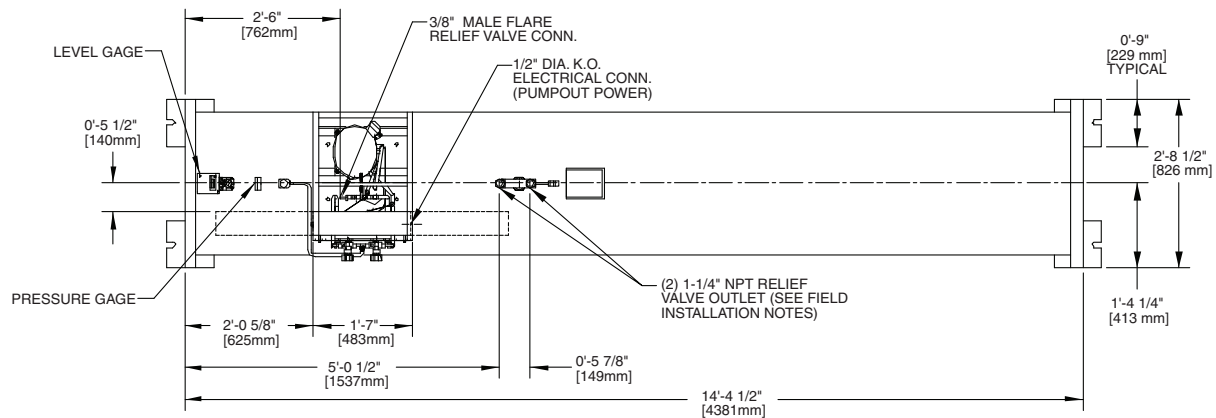
Left Side View

### NOTES:

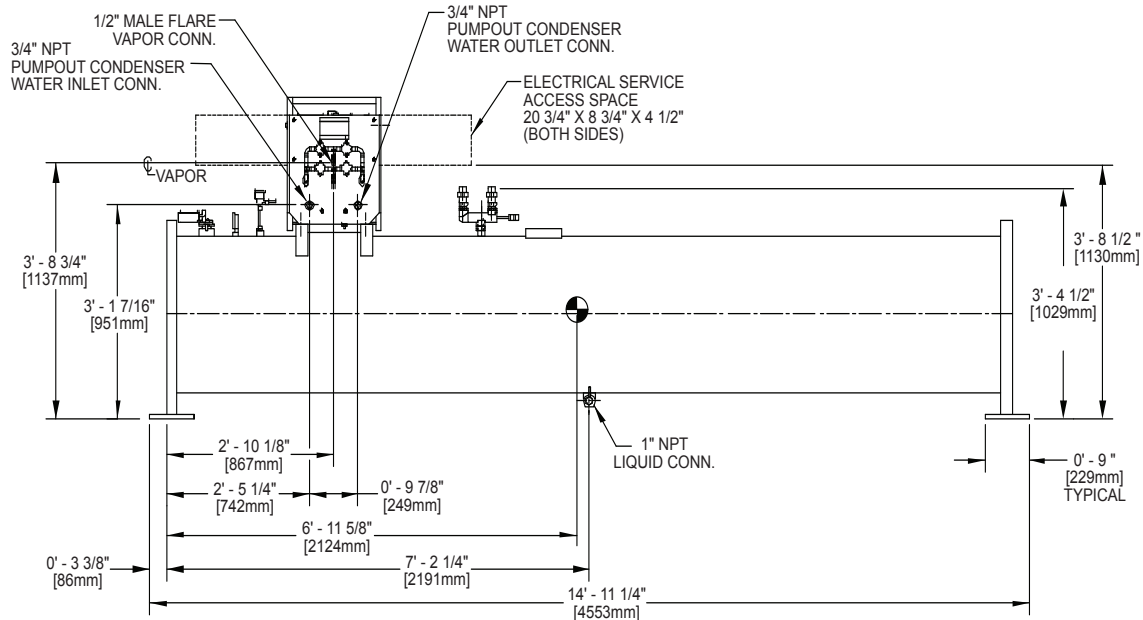
1.  Denotes center of gravity.
2. Dimensions in [ ] are in millimeters.
3. The weights and center of gravity values given are for an empty storage tank.
4. For additional information on the pumpout unit, see certified drawings.
5. Conduit knockout is located on the side of the control box.
6. Storage tank weight: 2334 lb (1059 kg).

28 Cu Ft [0.8 Cu M] Storage Tank with Pumpout Unit

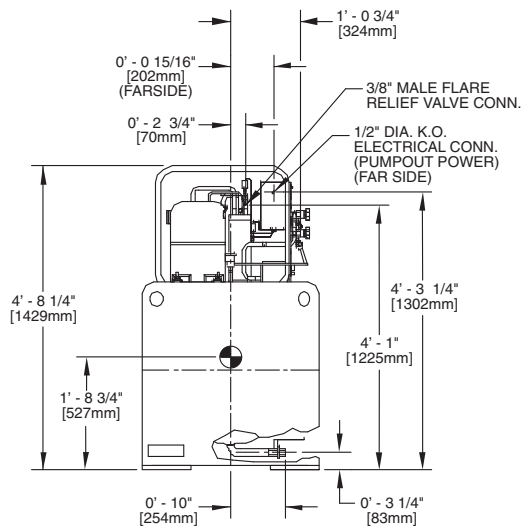
## Storage Tank with Pumpout Unit (cont)



Top View



Front View



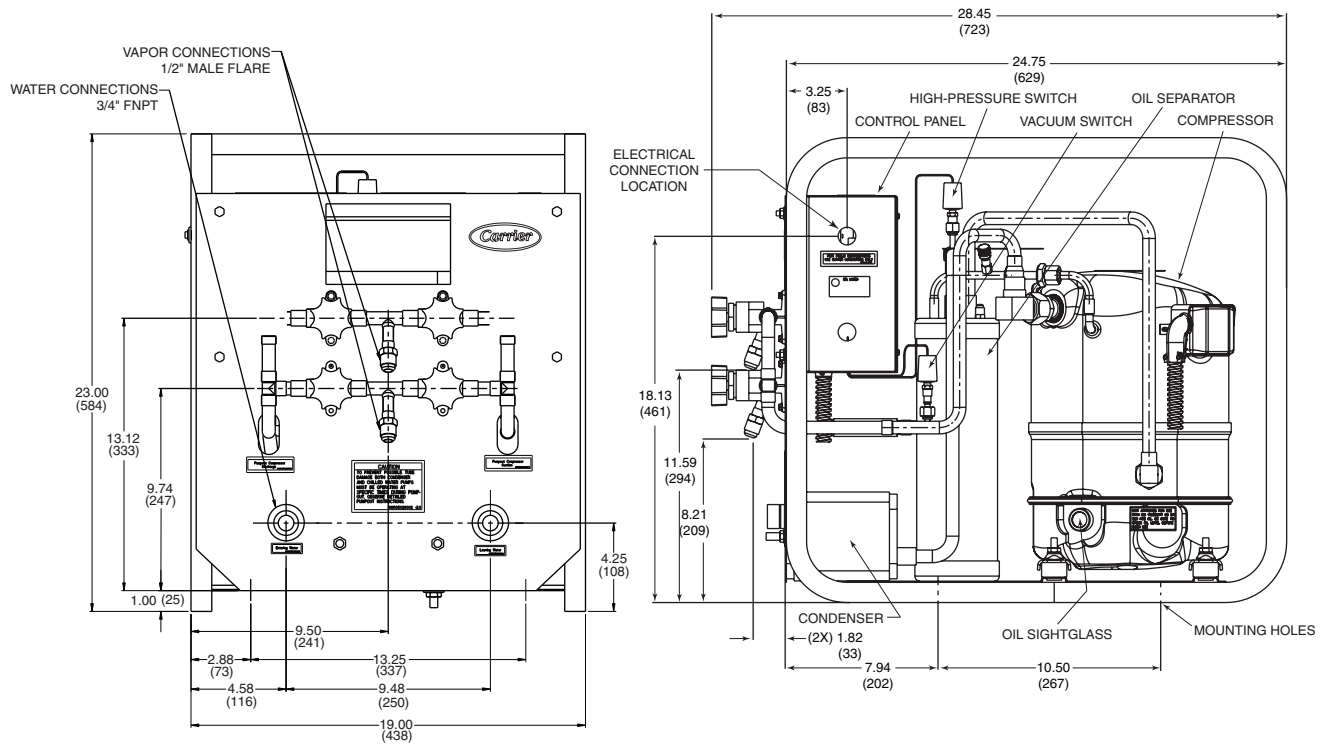
Left Side View

### NOTES:

1. Denotes center of gravity.
2. Dimensions in [ ] are in millimeters.
3. The weights and center of gravity values given are for an empty storage tank.
4. For additional information on the pumpout unit, see certified drawings.
5. Conduit knockout is located on the side of the control box.
6. Storage tank weight: 3414 lb (1549 kg).

52 Cu Ft [1.5 Cu M] Storage Tank with Pumpout Unit

## Pumpout Unit Contact Surfaces and Dimensions

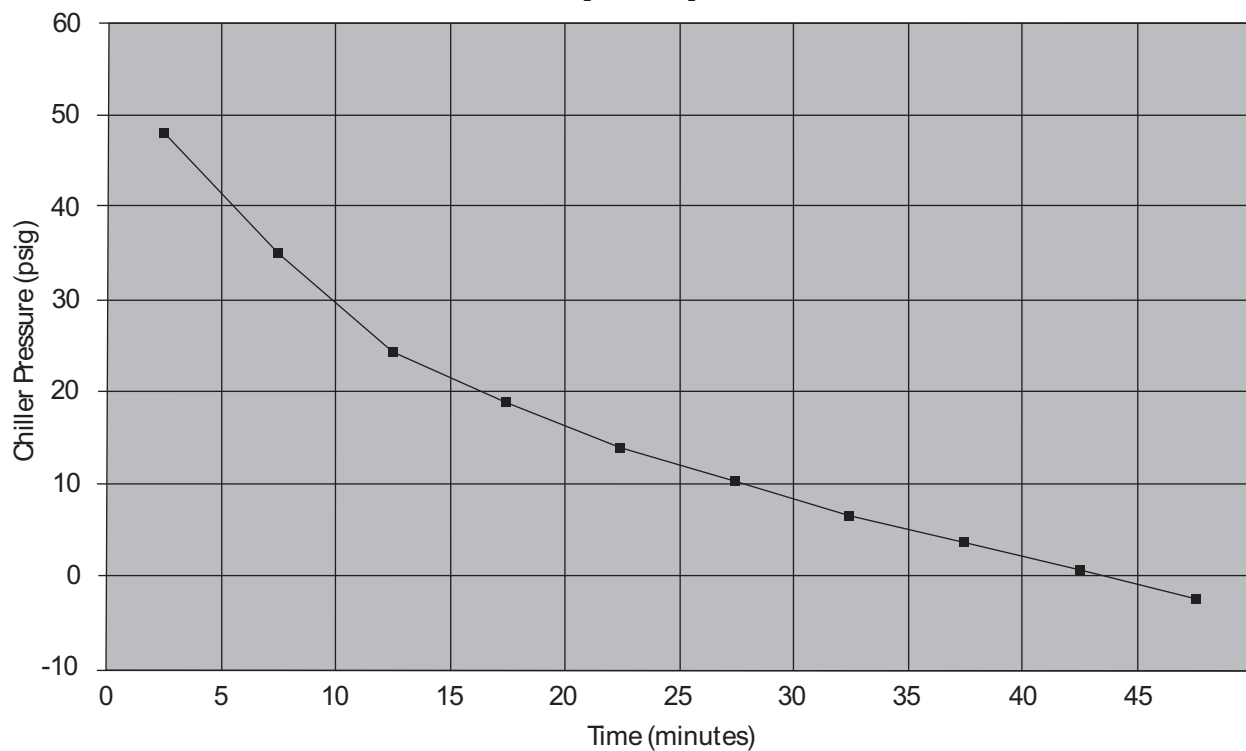


Dimensions in inches (millimeters).

## Chiller Pressure R-513A Vapor

**Evacuation Time** — The removal of refrigerant from a chiller will depend on the size of the chiller, type of refrigerant, and cooling water temperature supplied to the pumpout condenser. The following chart depicts typical pumpout time for a nominal 500-ton capacity chiller using R-513A refrigerant.

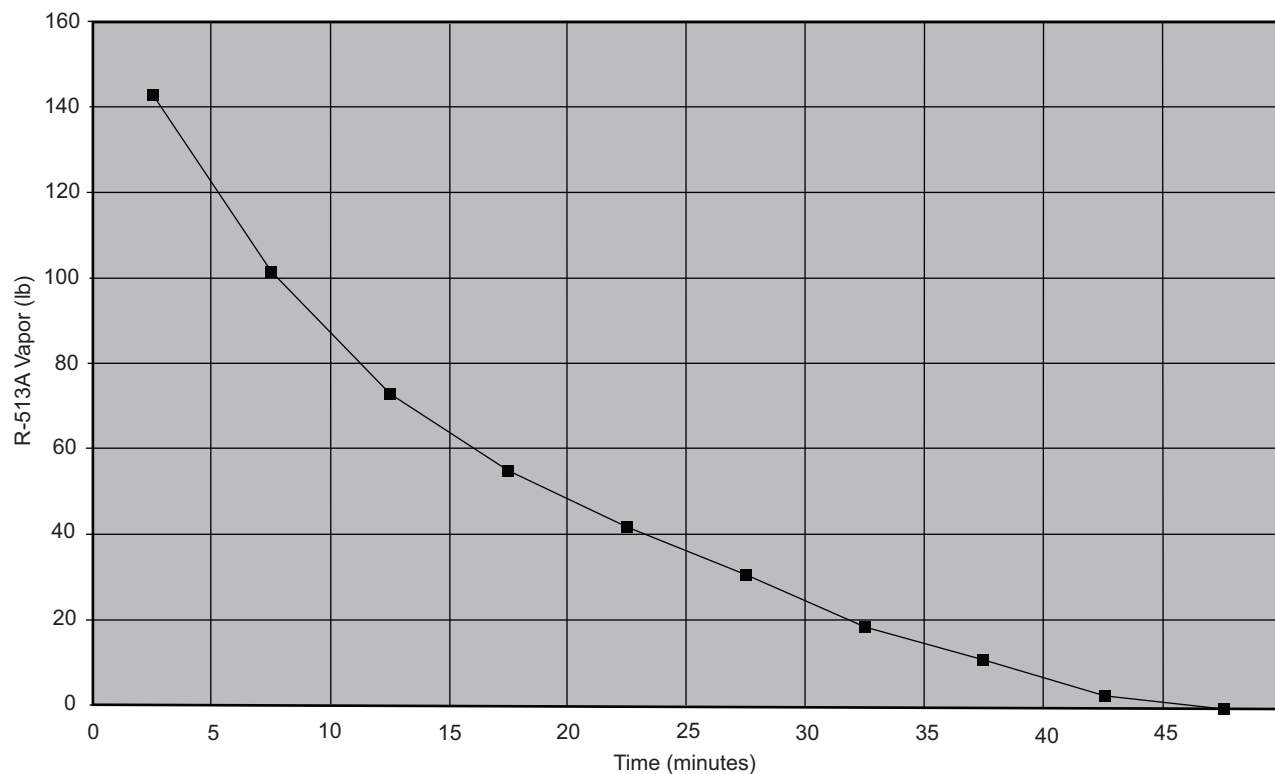
### Pumpout Vapor Transfer



## R-513A Vapor Left in Chiller (Lb)

**Refrigerant Vapor Transfer** — A typical 500-ton chiller using R-513A refrigerant contains about 150 lb (68 kPa) of refrigerant vapor. Once the liquid is removed, refrigerant is removed with the positive pressure storage system. It is possible to recover almost all of this refrigerant by evacuating the chiller and condensing the vapor.

### Pumpout Vapor Transfer



## Typical Pumpout Unit/Chiller Connection Schematic

Chillers without Isolation Valves

Chillers with Isolation Valves  
(with or without Pumpout Storage Tanks)

### General Piping Connection Sizes

CONNECTION	SIZE (in.)
<b>Refrigerant Transfer Connections</b>	1/2 Flare (male)
<b>Condenser Water Cooling Connectors</b>	3/4 NPT (female)
<b>Safety Relief Head Pumpdown</b>	3/8 Flare (male)

#### NOTES:

- The field-supplied tubing is to be 1/2-in. OD tubing (min.) and must be arranged and supported to avoid stresses on the equipment, transmission of vibrations, and interference with routine access during the reading, adjusting, and servicing of the equipment. If the distance from the chiller to the pumpout unit is over 50 ft, then 7/8-in. OD tubing (min.) must be used. Provisions should be made for adjustment in each plane of the tubing and for both periodic and major servicing of the equipment. Special care must be taken so that the safety head does not experience tubing strain. Vent the safety head per ASHRAE 15 (American Society of Heating, Refrigeration, and Air-Conditioning Engineers), latest revision.
- The tubing and valve from the storage tank to the pumpout compressor is factory supplied when the unit is factory mounted.

#### LEGEND

- Factory-Supplied Tubing
- Field-Supplied Tubing
- Field-Supplied Tubing (Multiple Chillers)
- Service Valve (Factory Supplied)
- Service Valve (Field Supplied)

## Electrical Data for PPS and Optional Free-Standing Pumpout Unit

PPS SYSTEM	MOUNTING	PUMPOUT UNIT ASSEMBLY NUMBER	POWER SUPPLY V-Ph-Hz	MAX RLA	LRA
19XR04027401	28 cu ft storage tank	19XR04035801	208/230-3-50/60	15.8	105.0
19XR04027402		19XR04035802	460-3-60	7.8	52.0
19XR04027403		19XR04038503	400-3-50	7.8	52.0
19XR04027501	52 cu ft storage tank	19XR04035801	208/230-3-50/60	15.8	105.0
19XR04027502		19XR04035802	460-3-60	7.8	52.0
19XR04027503		19XR04035803	400-3-50	7.8	52.0

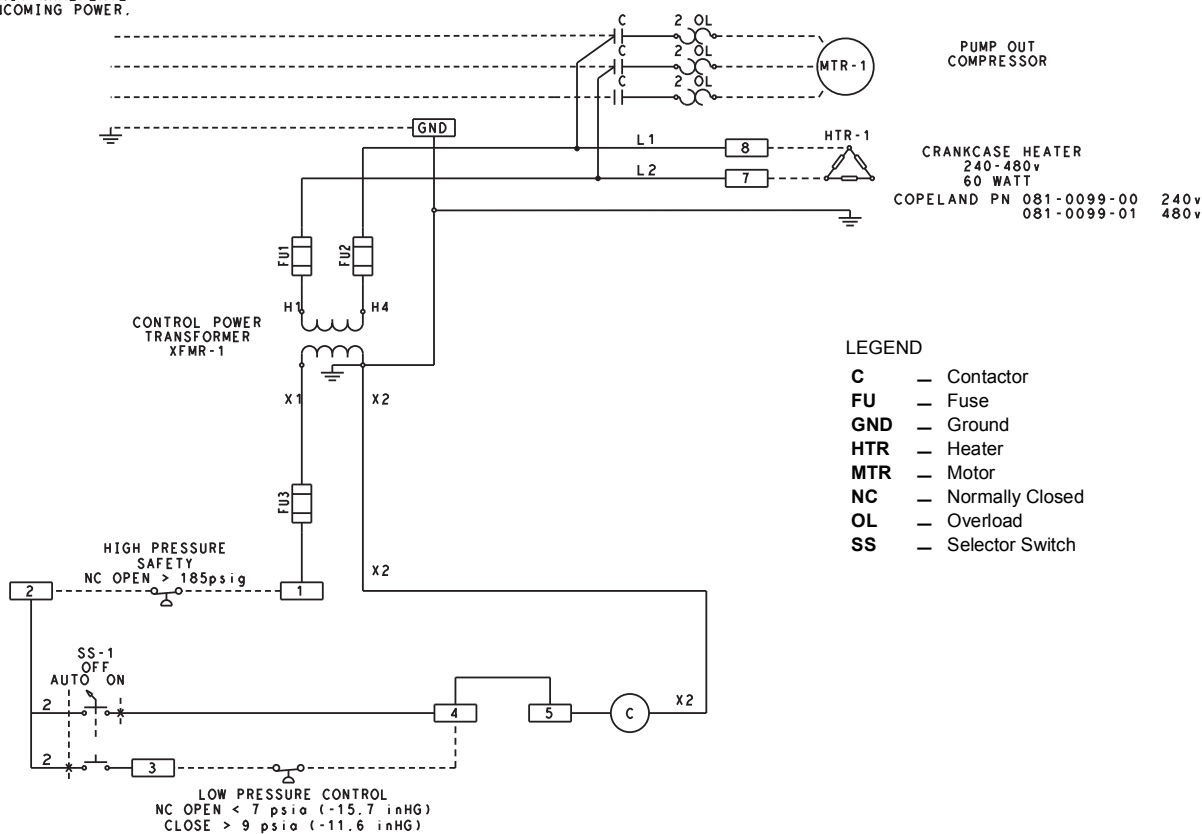
### LEGEND

**LRA** — Locked Rotor Amps  
**PPS** — Positive Pressure Storage  
**RLA** — Rated Load Amps

## Control wiring schematic

### 19XR Pumpout Unit Wiring Schematic

SEE UNIT NAMEPLATE  
FOR INCOMING POWER.



### LEGEND

**C** — Contactor  
**FU** — Fuse  
**GND** — Ground  
**HTR** — Heater  
**MTR** — Motor  
**NC** — Normally Closed  
**OL** — Overload  
**SS** — Selector Switch

NOTE: Overcurrent protection per National Electrical Code or governing local jurisdiction.

# Guide specifications

## Positive Pressure Pumpout System

### HVAC Guide Specifications

Carrier Model Number: **19XR**

#### Part 1 — General

##### 1.01 System Description

The installation of the chiller system shall have on site a storage system consisting of a storage tank, a transfer pump unit with a condensing tank, a valve system, a filter drier, and controls in an assembled component package from the manufacturer. Requirements include:

##### A. Pumpout Compressor Assembly:

1. Assembly to be hermetic compressor.
2. Assembly shall have thermal protection on the motor.
3. Assembly to be equipped with an in-line oil separator.

##### B. Controls:

1. Controls shall be NEMA 1 (National Electrical Manufacturers Association) rated, and include a control box with single point power.
2. Controls to be supplied with high pressure cut-out protection.
3. Controls shall be supplied with an ON/OFF/AUTO. switch.

##### C. Transfer Condenser:

Water-cooled condenser for condensing of refrigerant vapor to liquid during transfer at a rate of not less than 150 lb of vapor to 20 lb of vapor in 45 minutes of time using R-513A as a base example.

##### D. Transfer Piping:

Storage unit to be equipped with four-way transfer valve manifold to interconnect both liquid and vapor transfer along with pressurization of chiller during transfer of refrigerant from chiller to storage tank.

##### E. Storage Tank:

1. To be rated for R-513A under American Society of Mechanical Engineers (ASME) Section VIII pressure vessel codes with a minimum 185 psig (1276 kPa) rating.
2. Tank to be supplied with automatic shutoff level switch.
3. Tank to have drain valve located at the lowest point of drain with minimum 1 in. NPT.

##### F. Pumpout unit and storage tank to be applied for use with R-513A refrigerant.

##### 1.02 Quality Assurance

- A. The PPS (Positive Pressure Storage) system shall meet or exceed the following code approvals from:
1. Underwriters Laboratories for storage tank systems.
  2. ASME, Section VIII.
  3. The Environmental Protection Agency for compliance with guideline regarding 20 in. Hg vacuum capacity during pumpout of refrigerant.
  4. Storage tank and condenser transfer tank to comply to ASHRAE 15 (American Society of Heating, Refrigerating and Air-Conditioning Engineers) for safety relief valves. Rupture disc-type safety devices are not acceptable.
- B. The PPS System shall be fully tested as per ASME Section VIII guidelines and nameplated with ASME code approval.
- C. The PPS system shall be factory tested for wiring, controls, and compressor run-in operation.
- D. The PPS system shall be shipped to site with 5 psig (34 kPa) or higher holding charge of nitrogen after full dehydration of tank to remove moisture.

##### 1.03 Shipping/Packaging

- A. All controls and electrical components are to be protected from dirt and rain with protective wrappings.
- B. Unit is to be labeled with: customer's name, serial number, and designation clearly displayed on the on the outside of packaging.