

## SPORLAN - THERMOSTATIC EXPANSION VALVES

- **Selective Thermostat Charges** — Designed to provide optimum performance for all applications — air conditioning and heat pump, medium and low temperature refrigeration.
- **Thermostatic Element Design** — Long lasting and field proven stainless steel diaphragm and welded element construction.
- **Diaphragm Design** — Large flat diaphragm permits precise valve control.
- **Replaceable Thermostatic Elements** — Field replaceable elements on all standard valves.
- **Balanced Port Design** — Provides perfect pin and port alignment, and prevents changes in pressure drop across the valve from influencing Valve operation. Provides excellent control on applications with widely varying operating conditions.
- **Pin Carrier Design (Conventional Valves)** — Provides precise pin and port alignment, and tighter seating.
- **Accessible Internal Parts** — Durable, leak proof body joint construction allows the valve to be disassembled, and the internal parts cleaned and inspected.
- **Materials of Construction** — Pin and port material offer maximum protection against corrosion and erosion.
- **Silver Soldered Connections** — For leak proof, high strength connection-to-body joints.
- **Adjustable Superheat Design** — All standard valves are externally adjustable.

### VALVE NOMENCLATURE/ORDERING INSTRUCTIONS

Combine the letters and numbers in the following manner to obtain the complete valve designation. Also include all connection Sizes and the capillary tube length.

#### CONVENTIONAL VALVES:

S	V		E	-	8	-	GA	5/8" ODF Solder	X	7/8" ODF Solder	X	1/4" ODF Solder	X	5'
Body Type: FB,F, EF,G, EG, RI,RC, S, EBS*, O*, V**, W**	<b>Sporlan Code - REFRIGERANT - Element Label Color Code</b>		E" specifies external equalizer. Omission of letter "E" indicates valve with internal equalizer. e.g. EGV-1-C				Thermostatic Charge	Inlet Connection  Size and Style		Outlet Connection  Size and Style		External Equalizer Connection  Size and Style		Capillary Tubing Length (Inches or Feet)
	F - R-12 Yellow E - R-13 - Blue V - R-22 -Green G - R-23 - Blue M - R124 - Blue J- R134a -Blue X - R-401A Pink L - R-402ASand S- R-404A Orange Z = R-410A Rose	V - R-407A – Green N - R-407 Lt. Brown S - R-408A -Purple F - R-409A -Yellow R - R-502 - Purple W - R-503 - Blue P - R-507 - Teal W - R-508B - Blue A - R-717 – White												

#### BALANCE PORTED VALVES:

EBF	V	E	AA		-	C	3/8" Extended ODF Solder	X	1/2" Extended ODF Solder	X	1/4" Extended ODF Solder	X	30"
			Port Size	Nominal Capacity in Tons									
Body Type: BF,SB F, EBF	22 (V) 407C (N) 407A (V)	"E" specifies external equalizer. Omission of letter "E" indicates valve with internal equalizer.	AAA	1/8 thru 1/3	Thermostatic Charge		Inlet Connection  Size and Style		Outlet Connection  Size and Style		External Equalizer Connection  Size and Style		Capillary Tubing Length (Inches)
			AA	1/2 thru 2/3									
			A	3/4 thru 1-1/2									
			B	1-3/4 thru 3									
			C	1/4 thru 5-1/2									
	134a (J) 12 (F) 401A (X) 409A (F)		AAA	1/8 thru 1/5									
			AA	1/4 thru 1/3									
			A	1/2 thru 1									
			B	1/4 thru 1-3/4									
			C	2 thru 3									
	404A (S) 502 (R) 408A (S)		AAA	1/8 thru 1/5									
			AA	1/4 thru 1/3									
			A	1/2 thru 1									
			B	1-1/4 thru 2									
			C	2-1/4 thru 3									
	507 (P) 402A (L)		AAA	1/8 thru 1/5									
			AA	1/4 thru 1/3									
			A	1/2 thru 1									
			B	1-1/4 thru 2									
			C	2-1/4 thru 3									

\*EBS and O valves are balance ported valves, but follow conventional valve nomenclature.

\*\*V and W valves have dual port semi-balance design.

## SPORLAN - THERMOSTATIC EXPANSION VALVES RECOMMENDED THERMOSTATIC CHARGES

APPLICATION	REFRIGERANT										ACTUAL THERMOSTATIC CHARGES
	12 409A	22 407A	134a	401A	402A	404A 408A	40 7C	502	507	717	
AIR CONDITIONING	FCP60	—	JCP60	XCP60	—	—	—	—	—	—	FCP60
	—	VCP 100	—	—	—	—	NCP 100	—	—	—	VCP100
	—	VGA	—	—	—	—	—	—	—	—	VGA
	—	—	—	—	—	SCP115	—	RCP115	—	—	SCP115
COMMERCIAL REFRIGERATION 0°F TO -40°F	FC	—	JC	XC	—	—	—	—	—	—	FC
	—	VC	—	—	—	—	NC	—	—	—	VC
	—	—	—	—	—	SC	—	RC	—	—	SC
	—	—	—	—	LC	—	—	—	PC	—	PC
LOW TEMPERATURE REFRIGERATION 0°F TO -40°F	—	—	—	—	—	—	—	—	—	AC,AL	AC,AL
	FZ	—	—	—	—	—	—	—	—	—	FZ
	FZP	—	—	—	—	—	—	—	—	—	FZP
	—	VZ	—	—	—	—	—	—	—	—	VZ
	—	VZP40	—	—	—	—	—	—	—	—	VZP40
	—	—	—	—	LZ	SZ	—	RZ	PZ	—	SZ
	—	—	—	—	LZP	SZP	—	RZP	PZP	—	SZP
	—	—	—	—	—	—	—	—	—	AZ,AL	AZ,AL
EXTREME LOW TEMP. REFRIGERATION - 40°F TO -100°F	—	VX	—	—	—	—	—	—	—	—	VX
	—	—	—	—	LX	SX	—	RX	PX	—	SX




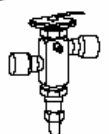


### • APPLICATION FACTORS

1. The type ZP charges have essentially the same characteristics as the Type Z charge with one exception: they produce a pressure limit Maximum Operating Pressure (MOP). ZP charges are not intended as replacements for Z charges. Each should be selected for its own unique purpose.
2. All A/C and Heat pump charges are intended for use with externally equalized valves.
3. Type L liquid charges are also available for most commonly used refrigerants in most element sizes.
4. If in doubt as to which charge to use, contact Sporlan Valve Company, Washington, Missouri with complete system data.
5. The type X charges are not to be used with "EBS" and "O" valves.

### • IMPORTANT NOTES

- A. R-134a A/C and commercial refrigeration applications are using R-12 or R409A or R-401A valves.
- B. R-404A commercial refrigeration applications are using R-502 or R-408A valves.
- C. R-404A and R-507 low temperature refrigeration applications are using R-502 or R-402A or R-408A valves.

## SPORLAN - THERMOSTATIC EXPANSION VALVES QUICK REFERENCE GUIDE — AIR CONDITIONING VALVES

VALVE TYPE	NOMINAL CAPACITY RANGE (Tons)			CONNECTION TYPES	VALVE DESCRIPTION AND APPLICATION
	R-22	R-134a	R-404A & R-507		
 RC P4521	2 thru 6	—	—	ODF Solder	Compact and adjustable thermostatic expansion valve with an internal check valve to allow reverse flow on heat pump applications. Valve also can be used for refrigerant 410A applications.(2 Ton through 6 Ton) RC valve replaces RI valve.
 S P4170	2 thru 10	2 thru 6	2 thru 7	ODF Solder	Brass bar body, externally adjustable valve. Inlet has a permanent 12 mesh strainer. General purpose valve for air conditioning and refrigeration applications.
 EBS P4171	8 & 11	5 & 7	6 & 7-1/2	Extended ODF Solder	Same physical size as the Type S valve except it features extended ODF connections and a balanced port construction.
 O P4172	15 thru 70	9 thru 40	9 thru 45	ODF Solder	Brass bar body, externally adjustable valve. Inlet has a permanent 12 mesh strainer. General purpose valve for air conditioning and refrigeration applications.
 V P4174	52 thru 10	35 thru 55	38 thru 70	ODF Solder or FPT Flange	Cast bronze body, externally adjustable valve with flange connections. Inlet has a 12 mesh strainer. This valve type features a dual port semi-balanced design. This valve type provides valve capacities greater than the Type M, and is suitable for air conditioning and refrigeration applications. Flanges for the Type V are interchangeable with the Type M.
 W P4175	135 & 180	80 & 110	—	ODF Solder Flange	Cast bronze body, externally adjustable valve with flange connections. Inlet has a 12 mesh strainer. This valve type features a dual port semi-balanced design and it is primarily for large capacity chillers. This valve type provides the largest valve capacities available for flange connection TEVs.

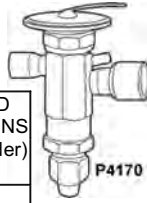
\* R-22 M Valves with GA & CP 100 Thermostatic chargers are also available.

## SPORLAN - THERMOSTATIC EXPANSION VALVES

### Type-S

ELEMENT SIZE No. 83, Knife Edge Joint.  
Standard Tubing Length - 5 Feet.

REFRIGERANT (Sporlan Code)	TYPE & CAPACITY	THERMOSTATIC CHARGES AVAILABLE	STANDARD CONNECTIONS (in. ODF Solder)	
	External Equalizer Only		Inlet	Outlet
22 (V)	SVE-2	GA or CP100	1/2	5/8
	SVE-3			
	SVE-4			
	SVE-5			
	SVE-8		7/8	
	SVE-10			



### Type-RC

With internal check valve.  
R-22 ELEMENT SIZE No. 43, Knife Edge Joint,  
Standard Tubing Length - 30"  
R-410A ELEMENT SIZE No. 45, Knife Edge Joint,  
Standard Tubing Length - 30"

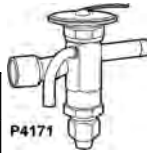


REFRIGERANT (Sporlan Code)	TYPE & CAPACITY	THERMOSTATIC CHARGES AVAILABLE	STANDARD CONNECTIONS Inches ODF Solder	
	External Equalizer Only		Inlet	Outlet
22 (V)	RCVE-2	GA Only	3/8	1/2
	RCVE-3		1/2	5/8
	RCVE-4			
	2 RCVE-5			
	RCVE-6			
410A (Z)	RCZE-2	GA Only	3/8	1/2
	RCZE-3		1/2	5/8
	RCZE-4			
	RCZE-5			
	RCZE-6			

### Type-EBS

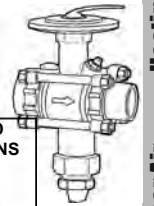
Balanced Port Construction ELEMENT SIZE No. 83,  
Knife Edge Joint, Standard Tubing Length - 5 Feet

REFRIGERANT (Sporlan Code)	TYPE & CAPACITY	THERMOSTATIC CHARGES AVAILABLE	STANDARD CONNECTIONS (in. ODF Solder)	
	External Equalizer Only		Inlet	Outlet
22 (V)	EBSVE-8	GA or CP100	5/8	7/8
	EBSVE-11			



### Type-W

ELEMENT SIZE No. 63, Gasket Joint,  
Standard Tubing Length - 5 Feet  
Flange Ring Size — 1-3/4" OD x 1-1/2" ID.

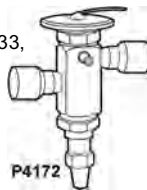


REFRIGERANT (Sporlan Code)	TYPE & CAPACITY	ELEMENT SIZE NUMBER	THERMOSTATIC CHARGES AVAILABLE	STANDARD CONNECTIONS Inches Extended ODF Solder	
	External Equalizer Only			Inlet	Outlet
22 (V)	WVE-135	63	GA or CP100	1-5/8	2-1/8
	WVE-180	7	G only		

### Type-O

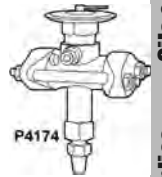
Balanced Port Construction ELEMENT SIZE No. 83 and 33,  
Knife Edge Joint, Standard Tubing Length - 5 Feet

REFRIGERANT (Sporlan Code)	TYPE & CAPACITY	Element Size Number	THERMOSTATIC CHARGES AVAILABLE	STANDARD CONNECTIONS (in. ODF Solder)	
	External Equalizer Only			Inlet	Outlet
22 (V)	OVE-15	8	GA or CP100	7/8	1-1/8
	OVE-20	3			
	OVE-30	3			
	OVE-40	3		1-1/8	1-3/8
	OVE-55	3			
	OVE-70	3			



### Type-V

ELEMENT SIZE No. 63, Gasket Joint,  
Standard Tubing Length - 5 Feet  
Flange Ring Size — 1-3/4" OD x 1-1/2" ID.



REFRIGERANT (Sporlan Code)	TYPE & CAPACITY	THERMOSTATIC CHARGES AVAILABLE	STANDARD CONNECTIONS Inches Extended ODF Solder	
	External Equalizer Only		Inlet	Outlet
22 (V)	VVE-52	GA or CP100	1-3/8	1-3/8
	VVE-70			
	VVE-100			

### TEV REPLACEMENT ELEMENTS

Item Descriptions	
KT-43-VGA 30"	KT-43-VCP100 30"
KT-33-VGA 60"	KT-33-VCP100 60"
KT-53-VGA 60"	KT-53-VCP100 60"
KT-83-VGA 60"	KT-83-VCP100 60"
KT-63-VGA 10"	KT-63-VCP100 10"

Compressors,  
Chillers, Condensers

Motors

Electrical

Heating  
Components

Indoor Air  
Quality

Thermostats

Oils &  
Chemicals

Accessories, Supplies  
& Commodities

Tools &  
Instruments

Refrigeration

# Refrigeration

Compressors, Chillers, Condensers  
 Motors  
 Electrical  
 Heating Components  
 Indoor Air Quality  
 Thermostats  
 Oils & Chemicals  
 Accessories, Supplies & Commodities  
 Tools & Instruments  
 Refrigeration

## SPORLAN - THERMOSTATIC EXPANSION VALVES

### THERMOSTATIC EXPANSION VALVE CAPACITIES FOR REFRIGERANTS (Tons of Refrigeration)

#### AIR CONDITIONING AND HEAT PUMP APPLICATIONS

VALVE TYPES	NOMINAL CAPACITY	REFRIGERANT	
		22	410A
		RECOMMENDED THERMOSTATIC CHARGES	
		VCP100, VGA	N, ZGA
		EVAPORATOR TEMPERATURE (°F)	
		40°	40°
RC	2	2.30	2.76
RC	3	3.20	3.83
RC	4	4.20	5.03
RC	5	5.00	5.99
RC	6	6.01	7.20
EBS	8	8.51	—
EBS	11	11.50	—
O	15	15.00	—
O	20	22.20	—
O	30	30.50	—
O	40	40.30	—
O	55	55.00	—
O	70	73.00	—
S	2	2.00	—
S	3	3.20	—
S	4	4.50	—
S	5	5.20	—
S	8	8.00	—
S	10	10.00	—
S	15	15.00	—
V	52	52.00	—
V	70	73.00	—
V	100	100.00	—
W	135	143.00	—
W	180	180.00	—

REFRIGERANT	LIQUID TEMPERATURE ENTERING TEV (°F)								
	60°	70°	80°	90°	100°	110°	120°	130°	140°
	CORRECTION FACTOR, CF LIQUID TEMPERATURE								
22	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.76
410A	1.32	1.24	1.16	1.08	1.00	0.92	0.83	0.73	0.62

These factors include corrections for liquid refrigerant density and net refrigerating effect and are based on an evaporator temperature of 40° F.

REFRIGERANT	PRESSURE DROP ACROSS TEV (PSI)										
	75	100	125	150	160	175	200	225	250	275	
	CORRECTION FACTOR, CF PRESSURE DROP 40°F EVAPORATOR TEMPERATURE										
22	0.87	1.00	1.12	1.22	—	1.32	1.41	1.50	1.58	1.66	
410A	0.68	0.79	0.88	0.97	1.00	1.05	1.12	1.19	1.25	1.31	

**TEV CAPACITY = TEV RATING X CF LIQUID TEMPERATURE X CF PRESSURE DROP —**

Example: Calculate the actual capacity of a nominal 2 ton, R-22, Type RC valve at 40° F evaporator, 80° F liquid temperature entering the TEV, and 75 psi pressure drop across the TEV:

TEV capacity = 2.30 (from rating chart) x 1.12 (CF liquid temperature) x 0.87 (CF pressure drop)  
 = 2.24 tons

## SPORLAN -THERMOSTATIC EXPANSION VALVE Type EBS Series Valves

### PART NUMBERS

#### TYPE R410A Expansion Valves

PART NO	DESCRIPTION
RCZE-2-GA3/8X1/2ODF	2 ton TXV VALVE,R-410A
RCZE-3-GA3/8X1/2ODF	3 ton TXV VALVE,R-410A
RCZE-3-N3/8X1/2ODF	3 ton TXV VALVE,R-410A
168788-A	3 ton TXV ERZE-3-GA 3x4 ODF
RCZE-4-GA1/2X1/2ODF	4 ton TXV VALVE,R-410A
168718-A	4 ton TXV ERZE-4-GA 3x4 ODF
RCZE-5-GA4X5ODF	5 ton TXV VALVE,R-410A
168792-A	5 ton TXV ERZE-5-GA 3x4 ODF
151370-A	6 ton TXV RCZE-6-GA 1/2 X 5/8 ODF
168794-A	6 ton TXV ERZE-6-GA 3x4 ODF
151550-A	8 ton TXV RZE-8-GA 5X7ODF
151555-A	12.5 ton TXV RZE-12.5-GA 7X9ODF
151560-A	15 ton TXV RZE-15-GA 7X9ODF
OZE-20-GA	20 ton TXV OZE-20-GA 7X9 ODF
125385-A	25 ton TXV OZE-25-GA 7X9ODF
OZE-35-GA	35 ton TXV OZE-35-GA 9X11 ODF
125426-A	50 ton TXV OZE-50-GA 9X11 ODF
125467-A	60 ton TXV OZE-60-GA 9X11 ODF
KT-45-ZGA	KT-45-ZGA POWER ELEMENT for R valve 12.5-15 ton
KT-45-5-ZGA	KT-45-5-ZGA POWER ELEMENT for R valve 2-8 ton
KT-85-ZGA	KT-85-ZGA POWER ELEMENT for O valve 20 - 35 ton
KT-85-3-ZGA	KT-85-3-ZGA POWER ELEMENT for O valve 50-60 ton

#### Type S Series Valves

PART NO	DESCRIPTION
SVE-10-GA5/8X7/8ODF	SVE-10-GA 5/8X7/8 ODF
SVE-15-GA7/8X1-1/8ODF	SVE-15-CP100 7/8X1-1/8 ODF
SVE-2-GA1/2/5/8ODF	SVE-2-GA 1/2X5/8 ODF
SVE-3-GA1/2X5/8ODF	SVE-3-GA 1/2X5/8 ODF
SVE-4-GA1/2X7/8ODF	SVE-4-GA 1/2X7/8 ODF
SVE-5-GA1/2X7/8ODF	SVE-5-GA 1/2X7/8 ODF
SVE-8-GA5/8X7/8ODF	SVE-8-GA 5/8X7/8 ODF
SVE10CP1005/8X7/8ODF	SVE-10-CP100 5/8X7/8 ODF
SVE15CP1007/8X11/8OD	SVE-15-CP100 7/8X1-1/8 ODF
SVE2-CP1001/2X5/8OD	SVE-2-CP100 1/2X5/8 ODF
SVE3-CP1001/2X5/8OD	SVE-3-CP100 1/2X5/8 ODF
SVE4-CP1001/2X7/8OD	SVE-4-CP100 1/2X5/8 ODF
SVE5-CP1001/2X7/8OD	SVE-5-CP100 1/2X5/8 ODF
SVE8CP1005/8X7/8ODF	SVE-8-CP100 5/8X7/8 ODF

#### Type RC Series Valves

PART NO	DESCRIPTION
RCVE-2-GA3/8X1/2ODF	RCVE-2-GA 3/8X1/2 ODF
RCVE-3-GA3/8X1/2ODF	RCVE-3-GA 3/8X1/2 ODF
RCVE-4-GA1/2X1/2ODF	RCVE-4-GA 1/2X1/2 ODF
RCVE-4-GA1/2X5/8ODF	RCVE-4-GA 1/2X5/8 ODF
RCVE-5-GA1/2X1/2ODF	RCVE-5-GA 1/2X1/2 ODF
RCVE-5-GA1/2X5/8ODF	RCVE-5-GA 1/2X5/8 ODF
RCVE-6-GA1/2X1/2ODF	RCVE-6-GA 1/2X1/2 ODF
RCVE-6-GA1/2X5/8ODF	RCVE-6-GA 1/2X5/8 ODF
RCZE-2-GA3/8X1/2ODF	RCZE-2-GA 3/8X1/2 ODF
RCZE-3-GA3/8X1/2ODF	RCZE-3-GA 3/8X1/2 ODF
RCZE-4-GA1/2X1/2ODF	RCZE-4-GA 1/2X1/2 ODF
RCZE-5-GA1/2X5/8ODF	RCZE-5-GA 1/2X5/8 ODF
RCZE-6-GA1/2X5/8ODF	RCZE-6-GA 1/2X5/8 ODF

PART NO	DESCRIPTION
EBSVE-11-GA5/8X7/8OD	EBSVE-11-GA 5/8X7/8 ODF
EBSVE-8-CP1005/8X7/8	EBSVE-8-C100 5/8X7/8 ODF
EBSVE-8-GA5/8X7/8ODF	EBSVE-8-GA 5/8X7/8 ODF
EBSVE11CP1005/8X7/8O	EBSVE-11-CP100 5/8X7/8 ODF

#### Type O Series Valves

PART NO	DESCRIPTION
OVE-20-GA7/8X7/8ODF	TXV, VALVE 7/8X7/8 ODF
OVE15CP1007/8X11/8O	OVE-15-CP100 7/8X1-1/8 ODF
OVE15GA7/8X1-1/8ODF	OVE-15-GA 7/8X1-1/8 ODF
OVE20CP1007/8X1-3/8OD	OVE-20-CP100 7/8X1-3/8 ODF
OVE20GA7/8X1-1/8ODF	OVE-20-GA 7/8X1-1/8 ODF
OVE30CP1001-1/8X1-3/8O	OVE-30-CP100 1-1/8X1-3/8 ODF
OVE30GA1-1/8X1-3/8OD	OVE-30-GA 1-1/8X1-3/8 ODF
OVE40CP10011/8X13/8O	OVE-40-CP100 1-1/8X1-3/8 ODF
OVE40CP10011/8X15/8O	OVE-40-CP100 1-1/8X1-5/8 ODF
OVE40GA1-1/8X1-3/8OD	OVE-40-GA 1-1/8X1-3/8 ODF
OVE40GA1-1/8X1-5/8OD	OVE-40-GA 1-1/8X1-5/8 ODF
OVE55CP10011/8X13/8O	OVE-55-CP100 1-1/8X1-3/8 ODF
OVE55CP10011/8X15/8O	OVE-55-CP100 1-1/8X1-5/8 O
OVE55GA1-1/8X1-3/8OD	OVE-55-GA 1-1/8X1-3/8 ODF
OVE55GA1-1/8X1-5/8OD	OVE-55-GA 1-1/8X1-5/8 ODF
OVE70CP10011/8X13/8O	OVE-70-CP100 1-1/8X1-3/8 ODF
OVE70CP10011/8X15/8O	OVE-70-CP100 1-1/8X1-5/8 ODF
OVE70GA1-1/8X1-3/8OD	OVE-70-GA 1-1/8X1-3/8 ODF
OVE70GA1-1/8X1-5/8OD	OVE-70-GA 1-1/8X1-5/8 ODF

#### Type V Series Valves

PART NO	DESCRIPTION
VVE-100-GA13/8X13/8	VVE-100-GA 1-3/8X1-3/8 ODF
VVE-52-GA13/8X138OD	VVE-52-GA 1-3/8X1-3/8 ODF
VVE-70-GA13/8X13/8OD	VVE-70-GA 1-3/8X1-3/8 ODF
VVE100CP10013/8X13/8	VVE-100-CP100 1-3/8X1-3/8 ODF
VVE52CP10013/8X13/8	VVE-52-CP100 1-3/8X1-3/8 ODF
VVE70CP10013/8X13/8O	VVE-70-CP100 1-3/8X1-3/8 ODF

#### Type W Series Valves

PART NO	DESCRIPTION
WVE-135-GA15/8X21/8	WVE-135GA 1-5/8X2-1/8 ODF
WVE135CP10015/8X21/8	WVE-135-CP100 1-5/8X2-1/8 ODF

Compressors,  
Chillers, Condensers

Motors

Electrical

Heating  
Components

Indoor Air  
Quality

Thermostats

Oils &  
Chemicals

Accessories, Supplies  
& Commodities

Tools &  
Instruments

Refrigeration