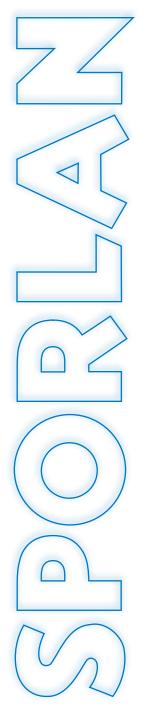


Catalog A2L-AC Low-GWP Climate Control Solutions











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Catalog A2L-AC, January 2025 supersedes Catalog 410A, April 2011 and all prior publications. This is a preliminary copy, please refer back at a later time for updated information.

Sporlan offers thermostatic expansion valves in R32 and R454B nominal capacities between 1/3 and 60 tons (1.17 and 210 kW). The models offered are externally equalized, have straight through or angle configuration, and ODF connections. Chatleff connections are available on the HX(C)E version.

The Sporlan refrigerant code for R32 is the letter "Z", which is found in valve nomenclature. The refrigerant code for R454B is "Y".

The Sporlan TEVs (ER, O, EBQ, SBQ) have replaceable thermostatic elements designed for the higher pressures associated with R32 and R454B. These valve models have the advantage of a balanced port construction, which makes them ideally suited for systems with a wide range of operating conditions

Replaceable thermostatic elements are designated by KT-47-ZGA or KT-47-YCP and KT-85-ZGA or KT-85-YCP

ZGA – The legacy bulb charge that was used for R410A works perfectly with R32 systems. The constituents and heavy thermal ballasts in the charge provide excellent antihunt characteristics by dampening the valve response in the opening direction. The maximum operating pressure or MOP of this charge is not as defined as the ZCP180 charge.

ZCP180 - An MOP style charge that works similar to the VCP100 charge that was used in R22 systems. The maximum operating pressure or MOP of this charge takes effect around 60°F (16°C) evaporator temperature. The ZCP180 charge has a mild thermal ballast that dampens the valve in the opening direction.

YCP – Designed for R454B systems, the YCP charge will give optimum performance for R454B systems. This charge also offers the anti-hunt dampened valve response like the ZGA.

The HXE valve does not offer a removable thermostatic element like the other valves. The element is integral to the valve body. HXE has an optional internal check valve option to allow refrigerant flow to bypass the expansion valve port in the reverse flow direction in heat pump systems. The valve nomenclature for HXE valves with an internal check is HXCE. The integral check valve means fewer connections, easier installation, and increased reliability. The thermostatic charge nomenclature for HX valves is KX and ZX for R32 and KXB and ZXB for R454B systems. The "K" version is optimal for indoor applications whereas the "Z" version is optimized for the outdoor application for heat pumps.

Contact the nearest Sporlan sales office if you have an application that requires a valve or charge that is not listed.

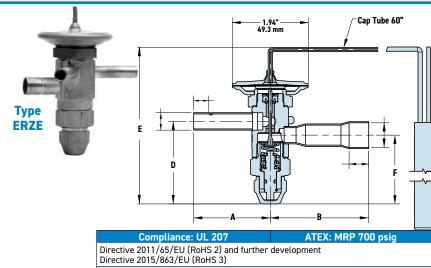
VALVE TYPE	CONNECTIO	ONS - Inches	EXTERNAL	VALVE DESCRIPTION AND APPLICATION
VALVE TYPE	Inlet	Outlet	EQUALIZER	VALVE DESCRIPTION AND APPLICATION
ERE	3/8 ODF 1/2 ODF 5/8 ODF 7/8 ODF	3/8 ODF 1/2 ODF 5/8 ODF 7/8 ODF 1-1/8 ODF 1-3/8 ODF	1/4" ODF or 1/8" ODF Capillary Tube Lengths	Small brass body valve available with either angle style or straight through connection pattern. ERZE valves are available externally adjustable. The ERZE has a balanced port construction, which makes it ideal for applications with a wide range of operating conditions. May be applied in bi-directional applications.
HXE	3/8 ODF 1/2 ODF Chatleff	3/8 ODF 1/2 ODF 5/8 ODF Chatleff	Available With OR Without 1/4" SAE Flare Nut	In addition to the features described above for the ERZE valve, the RCZE has a built-in check valve to allow bypass flow in the reverse direction. This feature makes this valve type ideally suited for heat pump applications. RCZE valves are available externally adjustable.
0	7/8 ODF 1-1/8 ODF 1-3/8 ODF 1-5/8 ODF		1/4" ODF	Brass bar body, externally adjustable valve. Inlet has a permanent 12 mesh strainer. This valve features a balanced port construction, and it is suitable for both air conditioning and refrigeration applications.
SBQE	3/8 ODF 90° Angle Inlet	1/2 ODF	1/4" ODF Pointed	Features ODF solder connections and a forged brass inlet fitting with a removable 100 mesh strainer which can be cleaned and/or replaced without removing the valve from the line. May be applied in bi-directional applications.
EBQE	3/8 ODF 1/2 ODF Straight Through	1/2 ODF 5/8 ODF 7/8 ODF	Toward Bottom Cap	Features extended ODF connections. A 100 mesh insert strainer is provided with the valve. May be applied in bi-directional applications.

Note: Not all fitting combinations are available.

Type ERZE

Knife Edge Joint Standard Cap Tube Length 30 in. (76 cm)

The ERZE valve is an externally adjustable balance port TEV designed for R32 air conditioning applications. The ERZE is a direct replacement for OEM BBI valves as well as any other application requiring a R32 expansion valve. The ERZE valve utilizes a KT-47 element design. This valve may also be applied in bi-directional applications.



Directive 2014/53/EU (RED)

Directive 2014/30/EU (EMC)

Regulation (EC) n. 1907/2006 (REACH)

Dimensions

Connections

VALVE	FITTING SIZE**			Incl	nes					mı	m		
TYPE	Inches	Α	В	С	D	Е	F	Α	В	С	D	Е	F
ERZE-	3/8 ODF	1.69	1.35					42.9	34.3				
1/3, 1/2, 3/4,	1/2 ODF	1.75*	1.35					44.4*	34.3				
1, 1-1/2 & 2*	5/8 ODF	-	2.51		2.10	3.99		-	63.8	46.0			44.6
	3/8 ODF	1.69	-	1.81			1.75	42.9	-		53.4	101.4	
ERZE- 3, 4, 5, 6 & 8	1/2 ODF	1.75	1.35					44.5	34.3				
	5/8 ODF	1.29	2.51					32.8	63.8				
	7/8 ODF	-	2.41					-	61.2				
	5/8 ODF	1.52	-					38.6	-				
FD7F	7/8 ODF	2.08	-					52.8	-				
ERZE- 12-1/2 & 15	5/8 ODF Ext.	-	2.51	1.90	2.23	4.25	1.88	_	63.8	48.3	56.7	108.0	47.9
	7/8 ODF Ext.	-	2.51					_	63.8				
	1-1/8 ODF Ext.	-	2.51					_	63.8				

^{*1/2} ODF inlet available on 2 ton valves only.

** Not all fitting combinations are available.

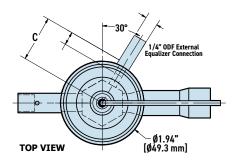
Valve Description

	NOMENCLATURE																
Е	R	Z	Ε	-	3	-	GA	-	B15		3	Х	4	Х	2		5'
1	2	3	4		5		6		7		8		9		10		11

1. Fitting	
E=	Extended Sweat Connections
S=	Elbow Inlet Strainer
2. Valve Type	
3. Sporlan System Refrigera	nt Code
Z=	R410A, R32
4. Equalizer	
E=	External
=	Internal
5. Capacity	
6. Thermostatic Charge	
7. Bleed Port Percentage	
=	0%
B15	15%
8. Inlet Connection	Size and Style
9. Outlet Connection	Size and Style
10. Equalizer Connection	Size and Style
11. Capillary Tubing Length	Inches, Feet, or meters

Bulb Sizes

THERMOSTATIC CHARGE	Inches	mm
ZCP180	0.50 OD x 3.00	13 OD x 76
ZGA	0.75 OD x 2.00	19 OD x 51



Capacities for R32

Tons - psi - °F

VALVE TYPE	EVAPOR/	TOR TEMPER	ATURE °F		
VALVE TYPE	40	20	0		
1/3	0.61	0.67	0.60		
1/2	1.04	1.15	1.02		
3/4	1.30	1.44	1.28		
1	1.73	1.92	1.74		
1 1/2	3.03	3.35	3.05		
2	3.98	4.41	4.00		
3	5.53	6.13	5.57		
4	7.26	8.05	7.31		
5	8.65	9.58	8.70		
6	10.38	11.50	10.41		
8	13.84	15.33	13.92		
12 1/2	18.04	19.99	18.15		
15	20.92	23.19	21.05		
ΔP (psi)	160	200	200		

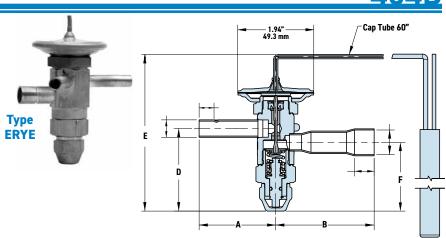
				LIQ	UID T	EMPEF	RATUR	E ENT	ERING	TEV °	'F				
0 10 20 30 40 50 60 70 80 90 100 110 120 130 14												140			
R32	1.58	1.53	1.47	1.41	1.36	1.30	1.24	1.19	1.13	1.06	1.00	0.94	0.87	0.80	0.73

EVAPORATOR TEMPERATURE		PRESSURE DROP ACROSS TEV (psi)													
	80	120	160	240	280	320	360								
°F	CORRECTION FACTOR, CF PRESSURE DROP														
40°	0.71	0.87	1.00	1.12	1.22	1.32	1.41	1.50							
20°	0.63	0.77	0.89	1.00	1.10	1.18	1.26	1.34							
0°	0.63	0.77	0.89	1.00	1.10	1.18	1.26	1.34							

Type ERYE

Knife Edge Joint Standard Cap Tube Length 30 in. (76 cm)

The ERYE valve is identical to the ERZE valve except for the Thermostatic Element charge. R454B applications will use the "YCP" charge. The ERYE valve also utilizes a KT-47 element design.



ATEX: MRP 700 psig Compliance: UL 207

Directive 2011/65/EU (RoHS 2) and further development Directive 2015/863/EU (RoHS 3)

Directive 2014/53/EU (RED)

Directive 2014/30/EU (EMC)
Regulation (EC) n. 1907/2006 (REACH)

Dimensions

Connections

VALVE	FITTING SIZE**			Incl	nes					mı	mm							
TYPE	Inches	Α	В	С	D	Е	F	Α	В	С	D	Е	F					
FDVF	3/8 ODF	1.69	1.35		2.10			42.9	34.3				44.6					
ERYE- 1/2 - 3	1/2 ODF	1.75*	1.35					44.4*	34.3									
1/2 - 3	5/8 ODF	-	2.51			3.99		-	63.8		53.4	101.4						
	3/8 ODF	1.69	-	1.81			1.75	42.9	-	46.0								
ERYE-	1/2 ODF	1.75	1.35					44.5	34.3									
4 1/2 - 11 1/2	5/8 ODF	1.29	2.51					32.8	63.8									
	7/8 ODF	-	2.41					-	61.2									
	5/8 ODF	1.52	-					38.6	-									
ERYE-	7/8 ODF	2.08	-					52.8	-									
	5/8 ODF Ext.	-	2.51	1.90	2.23	4.25	1.88	-	63.8	48.3	56.7	108.0	47.9					
15 1/2 & 18	7/8 ODF Ext.	-	2.51					-	63.8									
	1-1/8 ODF Ext.	-	2.51					-	63.8									

^{*1/2} ODF inlet available on 3 ton valves only.
** Not all fitting combinations are available.

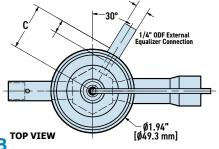
Valve Description

	NOMENCLATURE																
Е	R	Υ	Е	-	3	-	СР	-	B15		3	Х	4	Х	2		5'
1	2	3	4		5		6		7		8		9		10	Ī	11

1. Fitting					
E=	Extended Sweat Connections				
S=	Elbow Inlet Strainer				
2. Valve Type					
3. Sporlan System Refrigerar	nt Code				
Υ=	R454B				
4. Equalizer					
E=	External				
=	Internal				
5. Capacity					
6. Thermostatic Charge					
7. Bleed Port Percentage					
=	0%				
B15	15%				
8. Inlet Connection	Size and Style				
9. Outlet Connection	Size and Style				
10. Equalizer Connection	Size and Style				
11. Capillary Tubing Length	Inches, Feet, or meters				

Bulb Sizes

THERMOSTATIC CHARGE	Inches	mm
YCP	0.75 OD x 2.00	19 OD x 51



Capacities for R454B TOP VIEW

Tons - psi - °F

WALVE TYPE	EVAPOR#	EVAPORATOR TEMPERATURE °F								
VALVE TYPE	40	20	0							
1/2	0.49	0.54	0.47							
3/4	0.84	0.92	0.81							
1	1.05	1.15	1.02							
1 1/2	1.40	1.54	1.38							
2 1/2	2.45	2.69	2.42							
3	3.23	3.54	3.18							
4 1/2	4.49	4.92	4.43							
6	5.89	6.46	5.81							
7	7.01	7.69	6.92							
8 1/2	8.41	9.23	8.28							
11 1/2	11.2	12.3	11.1							
15 1/2	14.6	16.0	14.4							
18	17.0	18.6	16.7							
ΔP (psi)	160	200	200							

	LIQUID TEMPERATURE ENTERING TEV °F														
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
R454B	1.67	1.60	1.54	1.48	1.41	1.35	1.28	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.69

EVAPORATOR	PRESSURE DROP ACROSS TEV (psi)											
TEMPERATURE	80	120	160	200	240	280	320	360				
°F	CORRECTION FACTOR, CF PRESSURE DROP											
40°	0.71	0.87	1.00	1.12	1.22	1.32	1.41	1.50				
20°	0.63	0.77	0.89	1.00	1.10	1.18	1.26	1.34				
0°	0.63	0.77	0.89	1.00	1.10	1.18	1.26	1.34				

Type HXEStandard Cap Tube Length 30 in. (76 cm)

The HX and HXC valves are balanced port valves designed for use in light commercial air conditioning and heat pump systems. The HXC valve includes an internal check valve to allow reverse flow on heat pump applications. For R32 systems, the thermostatic charges to be used are KX and ZX. For R454B systems, the thermostatic charges to be used are KXB and ZXB.

(Ø 1.50) → HXE 1.76

ATEX: MRP 700 psig Directive 2011/65/EU (RoHS 2) and further development Directive 2015/863/EU (RoHS 3)

Directive 2014/53/EU (RED)

Directive 2014/30/EU (EMC)

Regulation (EC) n. 1907/2006 (REACH)

Dimensions

Connections

FITTING SIZE**			In	ches		
Inches	Α	В	С	D	Е	F
3/80DF X 3/80DF	1.70	1.70	0.38	0.38	0.33	0.33
3/80DF X 1/20DF	1.70	1.47	0.38	0.51	0.33	0.38
3/80DF X 5/80DF	1.70	1.58	0.38	0.63	0.33	0.50
3/80DF X 3/80DM	1.70	1.45	0.38	0.38(OD)	0.33	-
1/20DF X 1/20DF	1.47	1.47	0.51	0.51	0.38	0.38
1/20DF X 5/80DF	1.47	1.58	0.51	0.63	0.38	0.50
1/20DF X 7/80DF	1.47	2.08	0.51	0.88	0.38	0.76
1/20DF X 3/80DM	1.47	2.45	0.51	0.38	0.38	-
3/8 EXT ODF X 1/20DF	2.35	1.47	0.35	0.51	0.38	0.38
3/8 EXT ODF X 3/80DM	2.35	2.45	0.35	0.38	0.38	-
CHAT X CHAT	1.53	1.61	0.68	0.36	-	-
3/8 ODM X 3/8 ODF	2.45	1.81	0.38	0.38	-	0.30
5/8 ODF X 7/8 ODF	1.58	2.08	0.63	0.88	0.50	0.76
3/8 ODF X CHT W/O NOZZLE	1.70	1.38	0.38	0.36	0.33	-

^{*1/2} ODF inlet available on 2 ton valves only.

** Not all fitting combinations are available.

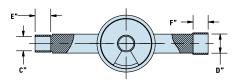
Nomenclature

	NOMENCLATURE															
нх	С	Α	Е	S	-	2	-	кх	-	B15		3	Х	4	Χ	2
1	2	3	4	5		6		7		8		9		10		11

1. Valve Type									
2. Check Valve									
C=	Internal Check Valve								
=	No Internal Check Valve								
3. Adjustment Style									
A=	Adjustable								
=	Non-Adjustable								
4. Equalizer									
E=	External								
=	Internal								
5. Element Capillary Tube Material									
S=	Stainless Steel								
=	Copper								
6. Capacity									
7. Thermostatic Charge									
KX=	R32 Indoor Charge								
ZX=	R32 Outdoor Charge								
KXB=	R454B Indoor Charge								
ZXB=	R454B Outdoor Charge								
8. Bleed Port Percentage									
=	0%								
B5=	5%								
B10=	10%								
B15	15%								
B20=	20%								
B30=	30%								
9. Inlet Connection	Size and Style								
10. Outlet Connection	Size and Style								
11. Equalizer Connection	Size and Style								

Bulb Sizes

THERMOSTATIC CHARGE	Inches	mm		
KX	0.75 OD X 3.00	19 OD X 76		
ZX	0.75 OD X 3.00	19 OD X 76		
KXB	0.75 OD X 3.00	19 OD X 76		
ZXB	0.75 OD X 3.00	19 OD X 76		



Capacities for R32

Tons - psi - °F

VALVE TYPE	EVAPORATOR TEMPERATURE °F								
VALVETIPE	40	20	0						
1	2.85	2.83	2.57						
2	3.86	3.83	3.48						
3	5.70	5.65	5.13						
5	6.69	6.50	6.42						
6	9.21	9.13	8.29						
8	12.36	12.25	11.12						
ΔP (psi)	160	200	200						

Capacities for R454B

Tons • psi • °F

VALVE TYPE	EVAPOR/	EVAPORATOR TEMPERATURE °F								
VALVETTPE	40	20	0							
1	2.31	2.27	2.04							
2	3.13	3.07	2.76							
3	4.62	4.54	4.08							
5	5.43	5.22	5.10							
6	7.47	7.33	6.59							
8	10.02	9.83	8.84							
ΔP (psi)	160	200	200							

		LIQUID TEMPERATURE ENTERING TEV °F											
REFRIGERANT	40	50	60	70	80	90	100	110	120	130	140		
	CORRECTION FACTOR, CF LIQUID TEMPERATURE												
R32	1.36	1.30	1.24	1.19	1.13	1.06	1.00	0.94	0.87	0.80	0.73		
R454B	1.38	1.32	1.26	1.20	1.13	1.07	1.00	0.93	0.87	0.80	0.72		

EVAPORATOR TEMPERATURE	PRESSURE DROP ACROSS TEV (psi)											
	80	120	160	200	240	280	320	360				
°F	CORRECTION FACTOR, CF PRESSURE DROP											
40°	0.71	0.87	1.00	1.12	1.22	1.32	1.41	1.50				
20°	0.63	0.77	0.89	1.00	1.10	1.18	1.26	1.34				
0°	0.63	0.77	0.89	1.00	1.10	1.18	1.26	1.34				

Type 0

Knife Edge Joint

Standard Cap Tube Length 5 Feet (1.5 m)

Sporlan Type O Valve is a brass bar body, externally adjustable valve with ODF solder connections. The thermostatic element is replaceable, and the inlet connection has a permanent 12 mesh strainer. This valve type features a balanced port construction, and it is designed for both air conditioning and refrigeration applications. A synthetic seating surface provides tight shut-off during system off periods.

This valve type has two body styles: a small body which provides capacities up to 45 tons (see capacity tables), and a large body which extends capacities up to 85 tons R32.

Refrigerant distributors that will mate directly to this valve are listed below. Refer to Sporlan Bulletin 20-10 for additional application information on this subject.

Outlet Connections Distributors

1115, 1116, 1655R 1117, 1126, 1128, 1657R 1125, 1127, 1143, 1659R 1-1/8" ODF 1-3/8" ODF 1-5/8" ODF



Compliance: UL 207	ATEX: MRP 700 psig
Directive 2011/65/EU (RoHS 2) and further Directive 2015/863/EU (RoHS 3)	development
Directive 2014/53/EU (RED)	
Directive 2014/30/EU (EMC)	
Regulation (EC) n. 1907/2006 (REACH)	

	NOMENCLATURE															
0	0 Z E - 20 - GA - B15 7 X 9 X 2 5'													5'		
1	2	3		4		5		6		7		8		9		10

1. Valve Type									
2. Sporlan System Refrigerant Code									
Z= R410A, R32									
3. Equalizer									
E=									
4. Capacity									
5. Thermostatic Charge									
6. Bleed Port Percentage									
•	0%								
B15	15%								
B30=	30%								
7. Inlet Connection	Size and Style								
8. Outlet Connection Size and Style									
9. Equalizer Connection Size and Style									
10. Capillary Tubing Length	Inches, Feet, or meters								

Capacities for R32

Tons - psi - °F

EVAPORATOR TEMPERATURE °F										
40	20	0								
28.9	32.0	30.6								
34.6	38.4	36.7								
47.6	52.8	50.5								
72.2	80.0	76.5								
86.6	95.5	91.9								
160	200	200								
	28.9 34.6 47.6 72.2 86.6	40 20 28.9 32.0 34.6 38.4 47.6 52.8 72.2 80.0 86.6 95.5								

	LIQUID TEMPERATURE ENTERING TEV °F														
	0 10 20 30 40 50 60 70 80 90 100 110 120 130 140														
R32	1.58	1.53	1.47	1.41	1.36	1.30	1.24	1.19	1.13	1.06	1.00	0.94	0.87	0.80	0.73
	PRESCUE PROPAGOS TEV (1)														

EVAPORATOR		PRESSURE DROP ACROSS TEV (psi)												
TEMPERATURE	80	120	160	200	240	280	320	360						
°F		CORRECTION FACTOR, CF PRESSURE DROP												
40°	0.71	0.87	1.00	1.12	1.22	1.32	1.41	1.50						
20°	0.63	0.77	0.89	1.00	1.10	1.18	1.26	1.34						
0°	0.63	0.77	0.89	1.00	1.10	1.18	1.26	1.34						

Type 0

Knife Edge Joint Standard Cap Tube Length 5 Feet (1.5 m)

Type O Valves used in R454B applicators are identical to ones used in R32 applications except for the thermostatic element charge. R454B applications will use the "YCP" charge.

This valve type has two body styles: a small body which provides capacities up to 35 tons (see capacity tables), and a large body which extends capacities up to 70 tons R454B.

Refrigerant distributors that will mate directly to this valve are listed below. Refer to Sporlan Bulletin 20-10 for additional application information on this subject.

Outlet Connections Distributors 1-1/8" ODF 1115, 1116, 1655R 1-3/8" ODF 1117, 1126, 1128, 1657R 1-5/8" ODF 1125, 1127, 1143, 1659R



Compliance: UL 207	ATEX: MRP 700 psig
Directive 2011/65/EU (RoHS 2) and further Directive 2015/863/EU (RoHS 3)	development
Directive 2014/53/EU (RED)	
Directive 2014/30/EU (EMC)	
Regulation (EC) n. 1907/2006 (REACH)	

NOMENCLATURE																
0	Υ	Ε	-	20	-	СР	-	B15		7	Х	9	х	2		5'
1	2	3		4		5		6		7		8		9		10

1. Valve Type	1. Valve Type								
2. Sporlan System Refrigera	nt Code								
Y= R454B									
3. Equalizer									
E=	External								
4. Capacity									
5. Thermostatic Charge									
6. Bleed Port Percentage									
-	0%								
B15	15%								
B30=	30%								
7. Inlet Connection	Size and Style								
8. Outlet Connection	Size and Style								
9. Equalizer Connection	Size and Style								
10. Capillary Tubing Length	Inches, Feet, or meters								

Capacities for R454B

Tons - psi - °F

VALVE TYPE	EVAP0	RATOR TEMPERAT	URE °F		
VALVE TIPE	40	20	0		
OYE-20	23.4	25.7	24.3		
0YE-25	28.1	30.8	29.2		
0YE-35	38.6	42.4	40.2		
0YE-55	58.5	64.2	60.9		
OYE-70	70.2	77.0	73.0		
ΔP (psi)	160	200	200		

	LIQUID TEMPERATURE ENTERING TEV °F														
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
R454B	1.67	1.60	1.54	1.48	1.41	1.35	1.28	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.69
EVAPORATOR PRESSURE DROP ACROSS TEV (psi)															

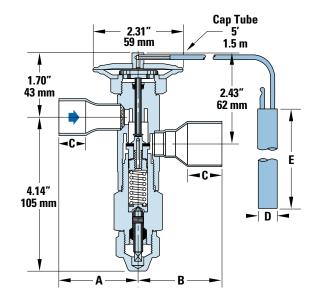
EVAPORATOR	PRESSURE DROP ACROSS TEV (psi)										
TEMPERATURE	80	120	160	200	240	280	320	360			
°F		CORRECTION FACTOR, CF PRESSURE DROP									
40°	0.71	0.87	1.00	1.12	1.22	1.32	1.41	1.50			
20°	0.63	0.77	0.89	1.00	1.10	1.18	1.26	1.34			
0°	0.63	0.77	0.89	1.00	1.10	1.18	1.26	1.34			

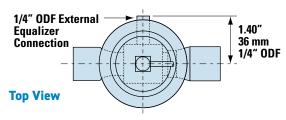
1/4" ODF

EXPANSION VALVES

Dimensions

Type 0 with Number 85 Element
For use on 20 thru 45 Ton Valves R32
For use on 20 thru 35 Ton Valves R454B





Connections

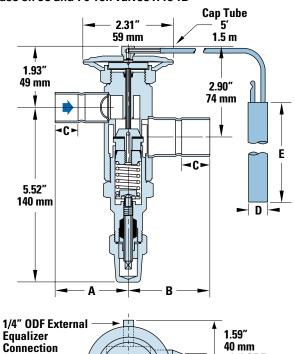
STRAIGHT THRU		Inches		mm			
ODF SOLDER	Α	В	С	Α	В	C	
7/8	2.09	-	0.75	53	-	19	
1-1/8	2.21	2.23	0.91	56	57	23	
1-3/8	-	2.39	0.97	-	61	25	

Bulb Sizes

THERMOSTATIC	REFRIGERANT	Inc	hes	mm		
CHARGE	REFRIGERANT	D	Е	D	Е	
YCP	YCP R454B		2.00	19	51	
ZCP180	ZCP180 R32		2.50	13	64	
ZGA	R32	0.75	2.00	19	51	

Type O with Number 85-3 Element

For use on 50+ Ton Valves R32 For use on 55 and 70 Ton Valves R454B



Connections

Top View

STRAIGHT THRU		Inches		mm			
ODF SOLDER	Α	В	С	Α	В	С	
1-1/8	2.69	-	0.91	68	-	23	
1-3/8	-	2.84	0.97	-	72	25	
1-5/8	-	3.12	1.09	-	79	28	

Bulb Sizes

THERMOSTATIC	REFRIGERANT	Inc	hes	mm		
CHARGE	REFRIGERANT	D	Е	D	ш	
YCP	R454B	0.75	2.00	19	51	
ZCP180	R32	0.50	2.50	13	64	
ZGA	R32	0.75	2.00	19	51	

Type EBQE & SBQE Balanced Port Replaceable Cartridge Style

Knife Edge Joint Standard Cap Tube Length 5 Feet (1.5 m)

Sporlan Types SBQE & EBQE are small brass bar body valves with extended ODF solder connections and the same balanced port construction as the Type BF valve. Both valves have replaceable thermostatic elements. The Type EBQE has a 100 mesh insert strainer. The Type SBQE has a 100 mesh removable strainer that can be cleaned and/or replaced while the valve is still soldered in the system. The balanced port construction makes these valves ideally suited for R32 applications with varying pressure drop across the valve. The EBQE and SBQE may also be applied in bi-directional applications.



Compliance: UL 207	ATEX: MRP 700 psig
Directive 2011/65/EU (RoHS 2) and further Directive 2015/863/EU (RoHS 3)	development
Directive 2014/53/EU (RED)	
Directive 2014/30/EU (EMC)	
Regulation (EC) n. 1907/2006 (REACH)	

Specifications

TYPE EBQE	TYPE SBQE			CONNECTIO	ONS - Inches			
EXTENDED ODF SOLDER	F SOLDER (with replaceable strainer)		NOMINAL CAPACITY RANGE	BOLD figures are standard and will be furnished unless otherwise specified.				
EXTERNAL	EQUALIZER			INLET X OUTLET	EXTERNAL EQUALIZER			
EBQE-AAA	SBQE-AAA	AAA	1/3 - 1/2	EBQE 3/8 x 1/2 ODF				
EBQE-AA	SBQE-AA	AA	3/4 - 1	1/2 x 5/8 0DF 1/2 x 7/8 0DF	1/4" ODF			
EBQE-A	SBQE-A	Α	1 1/2 - 2 1/2	Straight Thru	Pointed Toward			
EBQE-B	QE-B SBQE-B		3 - 4 1/2	SBQE	Bottom Cap			
EBQE-C	SBQE-C	С	5 - 8 1/2	3/8 x 1/2 ODF 90° Angle Inlet				

	NOMENCLATURE														
Е	BQ	Е	-	Α	-	ZGA	-	B15		3	Х	4	Х	2	5'
1	2	3		4		5		6		7		8		9	10

1. Fitting	
E=	Extended Sweat Connections
S=	Elbow Inlet Strainer
	SAE Flare
2. Valve Type	
3. Equalizer	
E=	External
=	Internal
4. Capacity Code	
5. Thermostatic Charge	
ZGA=	R32
ZCP180=	R32
6. Bleed Port Percentage	
=	0%
B5=	5%
B10=	10%
B15	15%
B20=	20%
B30=	30%
B40	40%
7. Inlet Connection	Size and Style
8. Outlet Connection	Size and Style
9. Equalizer Connection	Size and Style
10. Capillary Tubing Length	Inches, Feet, or meters

BQ/BF Capacities for R32

Tons - psi - °F

CARTRIDGE	EVAPORATOR TEMPERATURE °F							
TYPE	40	20	0					
AAA	0.61	0.67	0.60					
AA	1.30	1.44	1.28					
Α	2.77	3.07	2.72					
В	4.84	5.37	4.77					
С	8.99	9.97	8.85					
ΔP (psi)	160	200	200					

	LIQUID TEMPERATURE ENTERING TEV °F														
	0 10 20 30 40 50 60 70 80 90 100 110 120 130 140														
R32	1.58	1.53	1.47	1.41	1.36	1.30	1.24	1.19	1.13	1.06	1.00	0.94	0.87	0.80	0.73

EVAPORATOR	PRESSURE DROP ACROSS TEV (psi)											
TEMPERATURE	80 120 1		160	200	240	280	320	360				
°F		CORRECTION FACTOR, CF PRESSURE DROP										
40°	0.71	0.87	1.00	1.12	1.22	1.32	1.41	1.50				
20°	0.63	0.77	0.89	1.00	1.10	1.18	1.26	1.34				
0°	0.63	0.77	0.89	1.00	1.10	1.18	1.26	1.34				

Type EBQE & SBQE Balanced Port Replaceable Cartridge Style

Knife Edge Joint Standard Cap Tube Length 5 Feet (1.5 m)

For R454B applications, Sporlan type SBQE and EBQE are identical to those used for R32 applications except for the Thermostatic Element charge. R454B applications will use the "YCP" charge.



Compliance: UL 207	ATEX: MRP 700 psig
Directive 2011/65/EU (RoHS 2) and further Directive 2015/863/EU (RoHS 3)	development
Directive 2014/53/EU (RED)	
Directive 2014/30/EU (EMC)	
Regulation (EC) n. 1907/2006 (REACH)	

Specifications

TYPE EBQE	TYPE SBQE			CONNECTIO	DNS - Inches
EXTENDED ODF SOLDER	EXTENDED ODF SOLDER (with replaceable strainer)	CARTRIDGE CODE (Port Size)	NOMINAL CAPACITY RANGE	and will be	are standard e furnished vise specified.
EXTERNAL	EQUALIZER			INLET X OUTLET	EXTERNAL EQUALIZER
EBQE-AAA	SBQE-AAA	AAA	1/3 - 1/2	EBQE 3/8 x 1/2 ODF	
EBQE-AA	SBQE-AA	AA	3/4 - 1	1/2 x 5/8 ODF 1/2 x 7/8 ODF	1/4" ODF
EBQE-A	SBQE-A	A	1 1/2 - 2	Straight Thru	Pointed Toward
EBQE-B	SBQE-B	В	2 1/2 - 4	SBQE	Bottom Cap
EBQE-C	SBQE-C	С	4 1/2 - 7	3/8 x 1/2 0DF 90° Angle Inlet	

	NOMENCLATURE														
Е	BQ	Е	-	Α	-	YCP	-	B15		3	Х	4	Х	2	5'
1	2	3		4		5		6		7		8		9	10

1. Fitting	
E=	Extended Sweat Connections
S=	Elbow Inlet Strainer
	SAE Flare
2. Valve Type	
3. Equalizer	
E=	External
=	Internal
4. Capacity Code	
5. Thermostatic Charge	
YCP=	R454B
6. Bleed Port Percentage	
=	0%
B5=	5%
B10=	10%
B15	15%
B20=	20%
B30=	30%
B40	40%
7. Inlet Connection	Size and Style
8. Outlet Connection	Size and Style
9. Equalizer Connection	Size and Style
10. Capillary Tubing Length	Inches, Feet, or meters

BQ/BF Capacities for R454B

Tons • psi • °F

CARTRIDGE	EVAPOR#	TOR TEMPER	ATURE °F				
TYPE	40	20	0				
AAA	0.49	0.54 0.4					
AA	1.05	1.15	1.02				
Α	2.24	2.46	2.17				
В	3.93	4.31	3.79				
С	7.29	8.00	7.04				
ΔP (psi)	160	200	200				

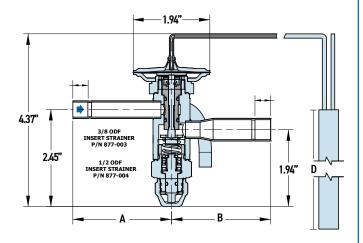
LIQUID TEMPERATURE ENTERING TEV °F															
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
R454B	1.67	1.60	1.54	1.48	1.41	1.35	1.28	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.69

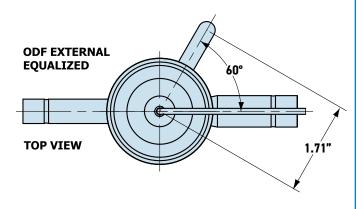
EVAPORATOR	PRESSURE DROP ACROSS TEV (psi)											
TEMPERATURE	80	120	160	200	240	280	320	360				
°F		CORRECTION FACTOR, CF PRESSURE DROP										
40°	0.71	0.87	1.00	1.12	1.22	1.32	1.41	1.50				
20°	0.63	0.77	0.89	1.00	1.10	1.18	1.26	1.34				
0°	0.63	0.77	0.89	1.00	1.10	1.18	1.26	1.34				

Type EBQE & SBQE

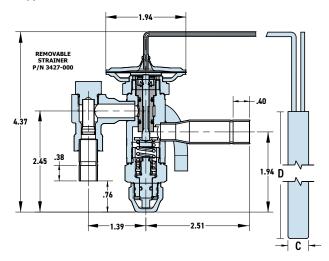
Dimensions

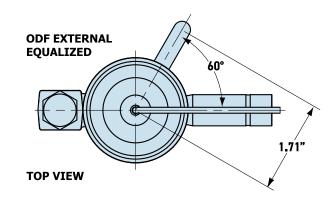
Type EBQE with Number 47 Element





Type SBQE with Number 47 Element





Connections

FITTING SIZE*	Inc	hes	mm			
Inches	Α	В	Α	В		
3/8	2.50	-	64	-		
1/2	2.42	2.48	61	63		
5/8	-	2.48	-	63		
7/8	-	2.39	-	61		

^{*} Not all fitting combinations are available.

Bulb Sizes

THERMOSTATIC	REFRIGERANT	Inc	hes	mm			
CHARGE	REFRIGERANT	С	D	С	D		
ZCP180	R32	0.50	3.00	13	76		
ZGA	R32	0.75	2.00	19	51		
YCP	R454B	0.75	2.00	19	51		

Connections

Only available with 3/8" ODF Inlet and 1/2" ODF Outlet.

Bulb Sizes

THERMOSTATIC	REFRIGERANT	Inc	hes	mm			
CHARGE	REFRIGERANT	С	D	С	D		
ZCP180	R32	0.50	3.00	13	76		
ZGA	R32	0.75	2.00	19	51		
YCP	R454B	0.75	2.00	19	51		

DISTRIBUTORS AND AUXILIARY SIDE CONNECTORS

All Sporlan distributors are ready for service with R32 and R454B. The following tables are provided for making selections based on procedure explained in Bulletin 20-10.



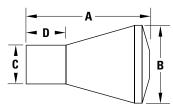


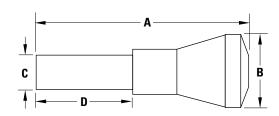


Quick Reference

CONNECTION SIZE	TYPICAL TEV	DISTRIBUTOR	MAXIM	UM NUMI	BER OF CI	RCUITS	NOZZLE	SIDE	MATERIAL
Inches	TYPES 1, 2	TYPE	3/16	1/4	5/16	3/8	TYPE	CONNECTION	MATERIAL
		1613	6	4	-	-	PERM.	-	
1/2 ODM	BBI, CBBI, EBQ,	1616	8	6	4	-	PERM.	-	
1/2 ODM	SBQ, ER, <i>HX</i>	D260	6	4	-	-	L	-	
		D262	9	6	4	-	L	-	
	DDI ODDI EDO	1620	6	4	-	-	J	-	
5/8 ODM	BBI, CBBI, EBQ, SBQ, ER, HX	1622	9	7	4	-	J	-	
	300, EN, 11X	1651(R)	7	5	_	-	J (R)	3/8 or 1/2 ODF	#360 BRASS
	DD1 0DD1 5D0	1112	7	6	4	2	G	-	#360 BRASS
7/8 ODM	BBI, CBBI, EBQ, SBQ, ER, HX	1113	12	8	6	4	G	-	
		1653(R)	12	9	6	4	G (R)	3/8 or 1/2 ODF	
		1115	15	10	9	6	E	-	
1-1/8 ODM	0, ER	1116	20	15	-	-	Е	-	
		1655 (R)	20	12	10	7	E (R)	1/2 or 5/8 ODF	
		1117	18	15	9	7	С	-	
1-3/8 ODM	O, ER	1126	24	18	15	12	С	-	#377 BRASS
1-3/8 ODM	U, EK	1128	28	25	21	16	С	-	#3// DRA33
		1657(R)	26	18	14	11	C (R)	5/8 or 7/8 ODF	#360 BRASS
		1125	28	24	20	16	Α	-	#377 BRASS
1-5/8 ODM	0	1127	37	30	26	20	Α	-	
1-3/8 UDM	"	1143	40	36	30	24	Α	-	#360 BRASS
		1659(R)	32	24	18	14	A (R)	7/8 or 1-1/8 ODF	

Dimensions





Specifications

	BER OF	NOZZLE	NOZZLE &	INLET					DIMEN	ISIONS			
	JITS & G SIZES	ORIFICE NUMBERS	RETAINER	CONNECTION	DISTRIBUTOR		Inc	hes		mm			
	LABLE	AVAILABLE	RING SIZE	Inches		A	В	С	D	A	В	С	D
Type D	260 Net V	Veight - Approxima	tely 2 oz. (60 g)					407				12.4	
2 to 6 2 to 4	3/16" 1/4"	1/9 thru 8	L	1/2 ODM Solder		1.96	0.81	.497 .503	0.82	49.8	21	12.6 12.8	21
Type D	262 Net V	Veight - Approxima	itely 3 oz. (80 g)										
7 to 9 5 to 6 2 to 4	3/16" 1/4" 5/16"	1/9 thru 8	L	1/2 ODM Solder		2.44	1.00	<u>.497</u> .503	0.81	62.0	25.4	12.6 12.8	21
Type 1	Type 1613 Net Weight - Approximately 2 oz. (60 g)												
2 to 7 2 to 6	5/32" 3/16"	1/2 thru 5	PERM.	1/2 ODM Solder		1.17	0.81	<u>.498</u> .500	0.50	29.7	21	12.6 12.7	13
2 to 4	1/4"												
		leight - Approxima	tely 3 oz. (80 g)										
8 to 10 7 to 8	5/32" 3/16"	1/2 thru 5	PERM.	1/2 ODM		1.55	1.00	.498 .500	0.50	39.4	25.4	12.6 12.7	13
5 to 6 2 to 4	1/4" 5/16"	1/2 (111 (13	F LAM.	Solder									
Type 1	520 Net W	/eight - Approxima	tely 2 oz. (60 g)										
2 to 6 2 to 4	3/16" 1/4"	1/9 thru 8	J	5/8 ODM Solder	To O	1.14	0.81	.623 .625	0.69	29.0	21	15.8 15.9	18

TEV models in italics are OEM type thermostatic expansion valves.
 Thermostatic expansion valves used with refrigerant distributor must be externally equalized.

DISTRIBUTORS AND AUXILIARY SIDE CONNECTORS

Specifications

NUMBER OF	NOZZLE	NOZZLE &	INLET					DIMEN	ISIONS			
CIRCUITS & TUBING SIZES	ORIFICE NUMBERS	RETAINER	CONNECTION	DISTRIBUTOR		Inc	hes			m	ım	
AVAILABLE	AVAILABLE	RING SIZE	Inches		A	В	С	D	A	В	С	D
Type 1622 Net W	eight - Approxima	tely 3 oz. (80 g)										
7 to 9 3/16"			5/8 ODM		1.63	1.00	<u>.623</u> .625	0.63	41.4	25.4	15.8 15.9	16
5 to 7 1/4"	1/9 thru 8	J	Solder				.625				15.9	
2 to 4 5/16"												
Type 1112 Net W	eight - Approxima	tely 4 oz. (110 g)									00.0	
4 to 6 1/4"		_	7/8 ODM	6%	1.72	0.91	<u>.873</u> .875	1.00	43.7	23	22.2 +/-	25.4
2 to 4 5/16"	1/6 thru 20	G	Solder	and and			.075				0.03	
2 3/8"												
Type 1113 Net W	eight - Approxima	tely 5 oz. (140 g)										
8 to 12 3/16"				9 9	1.78	1.16	<u>.873</u> .875	0.88	45.2	29.5	22.2 +/-	22
7 to 8 1/4" 5 to 6 5/16"	1/6 thru 20	G	7/8 ODM Solder		1.70	1.10	.875	0.00	45.2	27.3	0.03	22
3 to 4 3/8"												
Type 1115 Net W	eight - Approxima	tely 9 oz. (250 a)										
11 to 15 3/16"	5 FF :	, , , , , ,		ee			1 100				20.50	
9 to 10 1/4"	2 thru 30	E	1-1/8 ODM	-00	2.44	1.50	1.123 1.125	1.12	62.0	38.1	28.52 28.58	28.4
7 to 9 5/16"	2 2 00	_	Solder	CC								
5 to 6 3/8"												
Type 1116 Net W	leight - Approxima	tely 9 oz. (250 g)			2.44	1.75	1.123	1.12	62.0	44.4	28.52 28.58	28.4
16 to 20 3/16" 11 to 15 1/4"	2 thru 30	E	1-1/8 ODM Solder	# # E	2.44	1./5	1.123 1.125	1.12	62.0	44.4	28.58	28.4
Type 1117 Net W	eight - Approxima	tely 1 lb. (450 g)										
11 to 15 1/4"			1-3/8 ODM		2.56	1.75	1.373 1.375	.31	65.0	44.4	34.87 34.92	33.3
9 5/16"	3 thru 50	С	Solder	940			1.3/5				34.92	
7 3/8"												
Type 1126 Net W	eight - Approxima	tely 1 lb., 6 oz. (6	520 g)									
19 to 24 3/16"				0.5	0.01	2 20	1.373	1 10	71	, 0.5	34.87	20.7
15 to 18 1/4" 10 to 15 5/16"	3 thru 50	С	1-3/8 ODM Solder		2.81	2.38	1.373 1.375	1.12	71.4	60.5	34.87 34.92	28.4
8 to 12 3/8"			Cottage.	344								
Type 1128 Net W	leight - Annroxima	telv 1 lh 10 oz	(740 a)	_								
25 to 28 3/16"	2 Uhbi oviilla	,, 10 02.										
19 to 25 1/4"	3 thru 50	С	1-3/8 ODM		3.12	3.00	1.373 1.375	1.38	79.2	76.2	34.87 34.92	35.1
16 to 21 5/16"	3 (11 4 30		Solder									
13 to 16 3/8"												
Type 1125 Net W	eight - Approxima	tely 1 lb., 14 oz.	(850 g)	2010								
25 to 28 3/16" 19 to 24 1/4"			1-5/8 ODM		3.12	3.00	1.623 1.625	1.30	79.2	76.2	<u>41.22</u> 41.28	33.0
16 to 20 5/16"	10 thru 50	A	Solder	-36			1.625				41.28	
13 to 16 3/8"												
Type 1127 Net W	eight - Approxima	tely 2 lb., 4 oz. (1	I.0 kg)									
29 to 37 3/16"					0.00	0.50	1.623	1.00		00.0	41.22	00.5
25 to 30 1/4"	10 thru 50	A	1-5/8 ODM Solder		3.31	3.50	1.623 1.625	1.28	84.1	88.9	41.22 41.28	32.5
21 to 26 5/16" 17 to 20 3/8"			Joine	Control of the Contro								
Type 1143 Net W	leight - Annrovima	telv 3 lh (1 4 ka)										
29 to 40 3/16"	cigiit - Appi uxillid	y 5 tb. (1.4 Kg)										
31 to 36 1/4"	10 +bm - 50		1-5/8 ODM		3.69	4.00	1.623 1.625	1.44	93.7	102	41.22 41.28	36.6
27 to 30 5/16"	10 thru 50	A	Solder	- Control of the cont								
21 to 24 3/8"												

DISTRIBUTORS AND AUXILIARY SIDE CONNECTORS

Capacities for 32 Tons - psi - °F

Capacities for 454B Tons - psi - °F

NOZZLE			OR NOZZLE (TOR TEMPER			NOZZLE			OR NOZZLE (TOR TEMPER		
NUMBER	40	20	0	-20	-40	NUMBER	40	20	0	-20	-40
1/9	0.186	0.147	0.119	0.0983	0.083	1/9	0.182	0.145	0.118	0.098	0.0837
1/6	0.287	0.227	0.184	0.152	0.128	1/6	0.281	0.223	0.181	0.151	0.129
1/4	0.462	0.366	0.296	0.244	0.206	1/4	0.453	0.359	0.292	0.243	0.208
1/3	0.605	0.479	0.387	0.32	0.27	1/3	0.593	0.47	0.382	0.318	0.272
1/2	0.837	0.663	0.536	0.442	0.374	1/2	0.82	0.65	0.529	0.441	0.377
3/4	1.26	1	0.809	0.668	0.564	3/4	1.24	0.982	0.798	0.665	0.568
1	1.69	1.34	1.08	0.894	0.755	1	1.66	1.31	1.07	0.891	0.761
1 1/2	2.46	1.95	1.57	1.3	1.1	1-1/2	2.41	1.91	1.55	1.3	1.11
2	3.38	2.67	2.16	1.78	1.51	2	3.31	2.62	2.13	1.78	1.52
2 1/2	4.21	3.33	2.7	2.23	1.88	2-1/2	4.13	3.27	2.66	2.22	1.89
3	5.06	4	3.24	2.67	2.26	3	4.95	3.93	3.19	2.66	2.27
4	6.77	5.36	4.33	3.58	3.02	4	6.63	5.26	4.28	3.56	3.04
5	8.35	6.6	5.34	4.41	3.72	5	8.18	6.48	5.27	4.39	3.75
6	10	7.92	6.4	5.29	4.47	6	9.81	7.77	6.32	5.27	4.5
8	12.1	9.54	7.71	6.37	5.38	8	11.8	9.36	7.62	6.35	5.42
10	13.5	10.7	8.65	7.14	6.03	10	13.2	10.5	8.54	7.11	6.08
12	16.7	13.2	10.7	8.82	7.45	12	16.4	13	10.5	8.78	7.5
15	20.7	16.4	13.2	10.9	9.24	15	20.3	16.1	13.1	10.9	9.31
17	23.1	18.3	14.8	12.2	10.3	17	22.7	18	14.6	12.2	10.4
20	27.9	22.1	17.8	14.7	12.4	20	27.3	21.7	17.6	14.7	12.5
25	35.1	27.8	22.5	18.5	15.7	25	34.4	27.2	22.2	18.5	15.8
30	40.1	31.7	25.6	21.2	17.9	30	39.3	31.1	25.3	21.1	18
35	48.2	38.2	30.9	25.5	21.5	35	47.2	37.4	30.5	25.4	21.7
40	54.1	42.8	34.6	28.6	24.1	40	53	42	34.2	28.5	24.3
50	70.1	55.5	44.9	37	31.3	50	68.7	54.5	44.3	36.9	31.5

TUBE DIAMETER	DI	STRIBUTOR EVAPORA	CAPACITY PI		ns)	TUBE DIAMETER	DI		CAPACITY P	ER TUBE (Tor RATURE °F	rs)
Inches	40	20	0	-20	-40	Inches	40	20	0	-20	-40
3/16	0.61	0.46	0.36	0.28	0.22	3/16	0.47	0.35	0.27	0.21	0.16
1/4	1.77	1.34	1.03	0.80	0.63	1/4	1.37	1.03	0.79	0.61	0.47
5/16	3.6	2.73	2.1	1.63	1.28	5/16	2.79	2.1	1.6	1.24	0.97
3/8	6.51	4.93	3.79	2.94	2.31	3/8	5.06	3.81	2.9	2.24	1.75

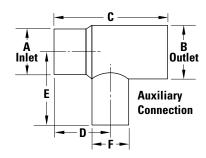
LI	QUID TE	MPERA	TURE C	ORREC'	TION FO	R NOZZ	LE AND	TUBES	°F	LIC	QUID TE	MPERA	TURE C	ORREC	TION FO	R NOZZ	LE AND	TUBES	°F
50	50 60 70 80 90 100 110 120 130								140	50	60	70	80	90	100	110	120	130	140
	CORRECTION FACTOR, CF LIQUID TEMPERATURE								C	DRRECT	ION FA	CTOR, C	F LIQUI	D TEMF	ERATU	RE			
2.10	1.83	1.59	1.37	1.17	1.00	0.85	0.72	0.61	0.52	2.10	1.83	1.59	1.37	1.17	1.00	0.85	0.72	0.61	0.52

		TUBE	LENGT	'H COR	RECTION	ON FAC	TOR (Ir	nches)					TUBE	LENGT	'H COR	RECTION	ON FAC	TOR (Ir	iches)		
12	12 18 24 30 36 42 48 54 60 66								72	12	18	24	30	36	42	48	54	60	66	72	
	CORRECTION FACTOR, CF PRESSURE DROP									COR	RECTIO	N FAC	TOR, CI	F PRES	SURE D	ROP					
1.36	1.16	1.07									0.95	0.90	0.86	0.82	0.79	0.76	0.73				

Auxiliary Side Connectors

ASC-4-3, ASC-5-4, ASC-7-4, ASC-9-5, ASC-11-7, and ASC-13-9

For proper distributor type, order by complete Sporlan type listed below. E.g., an 1126 distributor requires an ASC-11-7 Auxiliary Side Connector. Do not use an ASC that is smaller or larger than recommended. Bushing up or down at the outlet defeats the purpose of the internal nozzle tube extension. Do not use an ASC on distributors with permanent nozzles.



	CONNEC	CTION SIZ	ES - Inches								DIMEN	SIONS					
TVDE	INLET	OUTLET	AUXILIARY	USED WITH	NOZZLE			Inch	es					mn	1		
TYPE	ODM SOLDER	ODF SOLDER	ODF SOLDER	DISTRIBUTOR TYPE	SIZE	A (ODM)	B (ODF)	С	D	E	F (ODF)	A (ODM)	B (ODF)	С	D	Ε	F (ODF)
ASC-4-3	1/2	1/2	3/8	D260, D262	L	1/2	1/2	1.75	0.85	1.04	3/8	12.7	12.7	44.4	22	26.4	9.52
ASC-5-4	5/8	5/8	1/2	1620, 1622	J	5/8	5/8	1.88	0.95	1.25	1/2	15.9	15.9	47.8	24	31.8	12.7
ASC-7-4	7/8	7/8	1/2	1112, 1113	G	7/8	7/8	2.25	1.06	1.38	1/2	22.2	22.2	51.2	26.9	35.1	12.7
ASC-9-5	1-1/8	1-1/8	5/8	1115, 1116	Е	1-1/8	1-1/8	2.81	1.47	1.62	5/8	28.6	28.6	71.4	37.3	41.1	15.9
ASC-11-7	1-3/8	1-3/8	7/8	1117, 1126, 1128	С	1-3/8	1-3/8	3.53	1.89	2.19	7/8	34.9	34.9	89.7	48.0	55.6	22.2
ASC-13-9	1-5/8	1-5/8	1-1/8	1125, 1127, 1143	Α	1-5/8	1-5/8	3.85	1.95	2.75	1-1/8	41.3	41.3	94.5	46.5	69.8	28.6

SOLENOID VALVES

Selection - Capacity Rating

Capacity, MOPD and Electrical specifications are required. All solenoid valves are tested and rated in accordance with A.R.I. Standard No. 760-2001.

Liquid Capacity Selection Table Tons - psi - °F

"E" Series Extended	CONNECTIONS	PORT			R454B					R32		
Connections	ODF SOLDER Inches	SIZE Inches		PRESS	URE DROP	– psi*			PRESS	URE DROF	– psi*	
Normally Closed	inches	inches	1	2	3	4	5	1	2	3	4	5
E2S120-HP	1/4	0.075	0.55	0.79	0.97	1.12	1.26	0.68	0.97	1.19	1.38	1.55
E5S130-HP	3/8	0.150	1.78	2.53	3.11	3.60	4.03	2.19	3.12	3.83	4.44	4.97
E6S130-HP	3/8	3/16	3.17	/ F1	E E E	/ /2	7.19	3.91	5.56	6.84	7.92	8.87
E6S140-HP	1/2	3/16	3.17	4.51	5.55	6.42	7.19	3.71	5.56	6.84	1.92	8.87
E8S140-HP	1/2	1/4	4.09	5.79	7.09	8.18	9.15	5.05	7.14	8.74	10.09	11.28
E8S150-HP	5/8	1/4	4.09	5.79	7.09	8.18	7.15	5.05	7.14	8.74	10.09	11.28
E9S240-HP	1/2	9/32	5.20	7.33	8.96	10.34	11.55	6.42	9.05	11.06	12.75	14.24
E9S250-HP	5/8	9/32	5.20	7.33	8.76	10.34	11.55	6.42	7.05	11.06	12.75	14.24
E10S140-HP	1/2	5/16	6.93	9.84	12.08	13.97	15.64	8.55	12.14	14.90	17.23	19.29
E10S150-HP	5/8	3/16	6.73	7.84	12.08	13.77	15.64	8.55	12.14	14.90	17.23	17.29
E14S250-HP	5/8	7/16	10.1	14.3	17.5	20.2	22.5	12.5	17.6	21.5	24.9	27.8
E19S270-HP	7/8	19/32	15.4	21.9	26.8	31.0	34.7	19.0	27.0	33.1	38.2	42.8
E25S270-HP	7/8	25/22	27.7	27 /	/F.O	E2.0	E0.0	22.52	// 00	E/ E0	/F 20	72.0/
E25S290-HP	1-1/8	25/32	26.4	37.4	45.8	52.9	59.2	32.53	46.08	56.50	65.29	73.04
E35S190-HP	1-1/8	1	42.8	62.4	77.9	91.1	102.9	52.69	76.90	0F 0/	112.2/	10/ 77
E35S1110-HP	1-3/8		42.8	62.4	77.9	71.1	102.9	52.67	76.70	95.94	112.24	126.77

^{*} Do not use below 1 psi (0.07 bar) pressure drop.

Capacities based on 100°F (38°C) liquid temperature, 40°F (5°C) evaporator temperature. For other liquid line temperatures use liquid correction factors below. Maximum Operating Pressure Differential (MOPD) for the AC coil is 450 psid (31 bar). Maximum Rated Pressure (MRP) = 700 psig (48.3 bar).

	Liquid Temperature Correction Factors °F														
Refrigerant	40	50	60	70	80	90	100	110	120	130	140				
R32	1.36	1.30	1.24	1.19	1.13	1.06	1.00	0.94	0.87	0.80	0.73				
R454B	1.41	1.35	1.28	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.69				

These factors include corrections for liquid refrigerant density and net refrigerating effect and are based on an average evaporator temperature of $40^{\circ}F$ ($5^{\circ}C$). For each $10^{\circ}F$ ($10^{\circ}C$) reduction in evaporating temperature, capacities are reduced by approximately 1-1/2% (2.7%).

Discharge Gas Capacity - Tons - psi - °F

NAINE.			R4	54B					R	32		
VALVE		Pre	ssure Dro	Across Va	lve			Pre	essure Drop	Across Va	alve	
SERIES	2	5	10	25	50	100	2	5	10	25	50	100
E2-HP	0.18	0.28	0.40	0.64	0.81	0.96	0.21	0.33	0.48	0.76	0.98	1.19
E5-HP	0.57	0.91	1.29	2.06	3.20	3.98	0.67	1.07	1.53	2.43	3.84	4.87
E6-HP	1.06	1.67	2.35	3.69	5.38	6.40	1.26	1.97	2.77	4.35	6.48	7.94
E8-HP	1.34	2.12	3.00	4.74	6.30	8.09	1.58	2.50	3.53	5.59	7.52	9.80
E9-HP	1.72	2.71	3.82	6.01	8.21	10.7	2.03	3.20	4.51	7.10	9.79	12.9
E10S1-HP	2.24	3.56	5.06	8.04	11.2	14.6	2.64	4.20	5.96	9.48	13.3	17.6
E14-HP	3.33	5.25	7.42	11.7	17.1	22.0	3.93	6.20	8.75	13.8	20.4	26.6
E19-HP	5.00	7.94	11.3	17.9	25.4	32.9	5.90	9.36	13.3	21.1	30.4	39.8
E25-HP	8.59	13.6	19.3	30.6	40.6	52.5	10.12	16.0	22.7	36.0	48.5	63.6
E35-HP	12.7	20.9	30.4	50.2	71.6	94.0	14.8	24.5	35.7	58.9	85.3	113.3

^{*} Minimum operating capacity is at 1 psi (0.07 bar) pressure drop.

Capacities based on $100^{\circ}F$ (38°C) condensing temperature, isentropic compression plus $50^{\circ}F$ (28°C), $40^{\circ}F$ (5°C) evaporator and $65^{\circ}F$ (18.3°C) suction gas. For capacities at other conditions, consult Sporlan Division of Parker, Washington, MO.

Type E2 and E5 Series

The E2 Series are hermetic solenoid valves with direct acting construction. These valves may be mounted horizontally, on their side or in a vertical line.

The E5 Series are hermetic solenoid valves with pilot operated disc construction. These valves may be mounted horizontally, on their side or in a vertical line.

The –HP product series have been specifically designed to meet higher pressure requirement. Also, they have been certified for use with select flammable refrigerants.

The E2 and E5 series solenoid valves feature extended solder type connections as standard. One important benefit to the

user is that all valves in the "E2" and "E5" series can be installed using either low or no silver content brazing alloy.

The E2 and E5 series solenoid valves utilize the MKC-1 coil. The MKC-1 coil is Class "F"



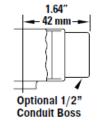
Type E5S130-HP

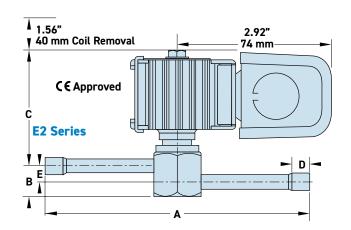
temperature rated and is provided as standard, therefore a high temperature coil is not required for discharge service.

Dimensions

		Dimensi	ons - Inch	es (mm)		
					D	Е
VALVE SERIES	ТҮРЕ	A	В	С	FITTING DEPTH ODF	OFFSET
					ODF	
E2	E2S120-HP	4.63 (117.6)	0.53 (13.5)	2.01 (51.0)	0.31 (8)	0.25 (6.35)
E5	E5S130-HP	4.56 (116)	0.53 (13.5)	2.51 (63.7)	0.31 (8)	0.23 (6)

MKC-1 (COIL SPECIFICATION	NS								
TYPES STANDARD VOLT/ WATTS										
ITPES	CYCLES	AC	DC							
JUNCTION BOX CONDUIT BOSS DIN TOP SPADE LEADS	24/50-60 120/50-60 208-240/50-60 120-208-240/50-60	15	18							





Nominal Liquid Capacity

Tons • psi • °F

				MAXIMUM	МС	PD	TONS OF REF	RIGERATION
VALVE SERIES	TYPE	CONNECTIONS	PORT SIZE Inches	RATED PRESSURE	Р	si	Pressure	Drop 3 psi
				psi	AC	DC	R32	R454B
E2	E2S120-HP	1/4" ODF	0.75				1.10	0.07
EZ	E2S130-HP	3/8" ODF	0.75	700	450	/00	1.19	0.97
re	E5S120-HP	1/4" ODF	0.15	700	450	400	2.02	2.11
E5 -	E5S130-HP	3/8" ODF	0.15				3.83	3.11

Capacities based on 100°F (38°C) liquid temperature, 40°F (5°C) evaporator temperature.

- Maximum rated pressure 700 psi (48.3 bar).
- Capacities based on 100°F (38°C) liquid temperature, 40°F (5°C) evaporator temperature. For other liquid line temperatures use liquid correction factors below. Maximum Operating Pressure Differential (MOPD) for the AC coil is 450 psid (31 bar). Maximum Rated Pressure (MRP) = 700 psig (48.3 bar).
- Dual voltage 4-wire coils, 120-208-240/50-60 are available at slight additional cost.
 For other voltages and cycles, consult Sporlan Division of Parker, Washington, MO.
- Available with conduit boss, junction box, or DIN at no extra charge.
- For capacity at other pressure drops, see page 13.

SOLENOID VALVES

Type E6, E8, and E10 Series

The E6, E8 and E10 Series are compact solenoid valves with pilot operated disc construction for refrigeration and air conditioning. These valves may be mounted horizontally, on their side or in a vertical line. They are suitable for suction line service because very low pressure differential, 1 psi, is required for full operation.

The Type E6, E8 and E10 series solenoid valves feature extended solder type connections as standard. One important benefit to the user is that all valves in the "E6", "E8" and "E10" series can be installed without disassembly using either low or no silver content brazing alloy.

The –HP product series have been specifically designed to meet higher pressure requirement. Also, they have been certified for use with select flammable refrigerants.

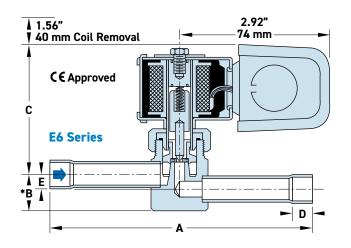


Type E6S130-HP

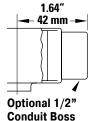
The E6, E8 and E10 series solenoid valves utilize the MKC-1 coil. The MKC-1 coil is Class "F" temperature rated and is provided as standard, therefore a high temperature coil is not required for discharge service.

		Dimension	ns - Inche	s (mm)			
					D	E	
VALVE SERIES	ТҮРЕ	A	В	С	FITTING DEPTH	OFFSET	
					ODF		
F.	E6S130-HP	4.63	0.75	2.44	0.31	0.31	
E6	E6S140-HP	5	0.75	2.44	0.38		
E8	E8S140-HP	E 0/	0.72	2.50	0.38		
E8	E8S150-HP	5.04	0.73	2.59	0.5	0.3	
E10	E10S140-HP	5		2.52	0.38	0.39	
EIU	E10S150-HP	6.49	0.86	2.52	0.5		

^{*} Add 1.1" for valves with Manual Lift Stem.



MKC-1 COIL SPECIFICATIONS								
TYPES	STANDARD VOLT/	WA	WATTS					
IIPES	CYCLES	AC	DC					
JUNCTION BOX CONDUIT BOSS DIN TOP SPADE LEADS	24/50-60 120/50-60 208-240/50-60 120-208-240/50-60	15	18					



Nominal Liquid Capacity

Tons • psi • °F

		CONNECTIONS	PORT SIZE Inches	MAXIMUM	МС)PD	TONS OF REFRIGERATION	
VALVE SERIES	TYPE			RATED PRESSURE	Р	si	Pressure Drop 3 psi	
				psi	AC	DC	R32	R454B
E6	E6S130-HP	3/8" ODF	3/16		450	400	6.8	5.6
E0	E6S140-HP	1/2" ODF						
F0	E8S140-HP	1/2" ODF	. /					
E8	E8S150-HP	5/8" ODF	1/4"	700			8.7	7.1
F10	E10S140-HP	1/2" ODF	5/16				14.9	12.1
E10	E10S150-HP	5/8" ODF						

Capacities based on 100°F (38°C) liquid temperature, 40°F (5°C) evaporator temperature.

Maximum rated pressure (MRP) is for A2L refrigerants only. For A1 refrigerants, MRP is 1015 psig.

Types E9, E14, E19 and E25 Series

Types E9, E14, E19 and E25 Series are compact solenoid valves with pilot operated disc construction for refrigeration and air conditioning. These valves may be mounted horizontally, on their side or in a vertical line. These valves are also suitable for suction line service because very low pressure differential, 1 psi, is required for full operation.

The E9, E14, E19 and E25 series solenoid valves feature extended solder type connections as standard.

One important benefit to the user is that all valves in the "E9, E14, E19 and E25" series can be installed without disassembly using either low or no silver content brazing

Dimensions

				С	D	Е	
VALVE SERIES	TYPE	A *B		NORMALLY CLOSED	FITTING DEPTH	OFFSET	
				ON O	ODF		
	E9S230-HP	4.63	0.69	2.65	0.31	0.39	
E9	E9S240-HP	5.00	0.75	2.70	0.38	0.33	
	E9S250-HP	6.50	0.69	2.74	0.50	0.31	
E14	E14S250-HP	6.88	0.46	3.26	0.50	-	
E19	E19S270-HP	7.13	0.81	3.41	0.75	-	
F0F	E25S270-HP	7.50	0.72	3.81	0.75	-	
E25	E25S290-HP	8.50	0.72	3.81	0.91	-	

^{*} Add 1.12" (28 mm) for valves with Manual Lift Stem.

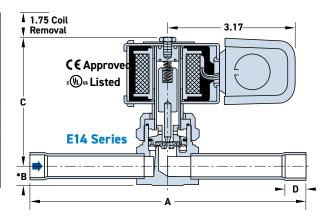
alloy.

The -HP product series have been specifically designed to meet higher pressure requirement. Also, they have been certified for use with select flammable refrigerants.

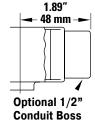


Type E14S250-HP

The E9, E14, E19 and E25 series solenoid valves utilize the MKC-2 coil. The MKC-2 coil is Class "F" temperature rated and is provided as standard, therefore a high temperature coil is not required for discharge service.



MKC-1 COIL SPECIFICATIONS								
TYPES	STANDARD VOLT/	WA	TTS					
TTPES	CYCLES	AC	DC					
JUNCTION BOX CONDUIT BOSS DIN TOP SPADE LEADS	24/50-60 120/50-60 208-240/50-60 120-208-240/50-60	15	18					



Nominal	Liquid	Capacity	
----------------	--------	-----------------	--

Tons • psi • °F

				MAXIMUM	МС)PD	TONS OF REFRIGERATION	
VALVE SERIES	TYPE	CONNECTIONS	PORT SIZE Inches	RATED PRESSURE	Р	si	Pressure Drop 3 psi	
				psi	AC	DC	R32	R454B
E9	E9S240-HP	1/2" ODF	0 /22"				11.0	8.9
E7	E9S250-HP	5/8" ODF	9/32"			400	11.0	8.7
E14	E14S250-HP	5/8" ODF	7/16"	700	450		21.5	17.5
E14	E14S270-HP	7/8" ODF					21.3	17.5
	E19S250-HP	5/8" ODF						
E19	E19S270-HP	7/8" ODF	19/32"				29.0	23.5
	E19S290-HP	1-1/8" ODF						
E25	E25S270-HP	7/8" ODF	25 (22)				56.5	45.8
E23	E25S290-HP	1-1/8" ODF	25/32"				36.5	45.8

Capacities based on 100°F (38°C) liquid temperature, 40°F (5°C) evaporator temperature.

- Maximum rated pressure 700 psi (48.3 bar).
- Capacities based on 100°F (38°C) liquid temperature, 40°F (5°C) evaporator temperature. For other liquid line temperatures use liquid correction factors below. Maximum Operating Pressure Differential (MOPD) for the AC coil is 450 psid (31 bar). Maximum Rated Pressure (MRP) = 700 psig (48.3 bar).
- Dual voltage 4-wire coils, 120-208-240/50-60 are available at slight additional cost. For other voltages and cycles, consult Sporlan Division of Parker, Washington, MO.
- Available with conduit boss, junction box, or DIN at no extra charge.
- For capacity at other pressure drops, see page 13.

SOLENOID VALVES

Types E35 Series

Types E35 Series solenoid valves are pilot operated for refrigeration and air conditioning applications. They are suitable for suction service because very low pressure differential, 1 psi, is required for full operation. The E35 Series may be mounted horizontally, on their side or in a vertical line.

The Type E35 series solenoid valves feature extended solder type connections as standard. One important benefit to the user is that all valves in the E35 series can be installed without disassembly using either low or no silver content brazing alloy.

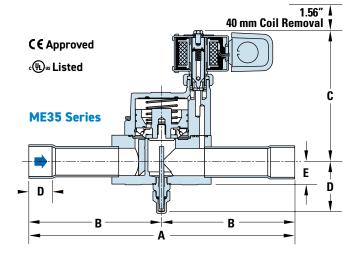
The MKC-1 coil is Class "F" temperature rated and are provided as standard, therefore a high temperature coil is not required for discharge service.



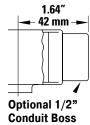
Dimensions

				(;	D	*E	
VALVE SERIES	TYPE	A	В	NORMALLY CLOSED	NORMALLY OPEN	FITTING DEPTH	OFFSET	
))N	ON	ODF		
ESE	E35S190-HP	10.06	5.03	4.81	5.94	0.91	0.84	
E35	E35S1110-HP	11.06	5.53	4.01	3.74	0.97	0.84	

^{*} Add 1.12" for valves with Manual Lift Stem.



MKC-1 COIL SPECIFICATIONS								
TYPES	STANDARD VOLT/	WA	TTS					
TIPES	CYCLES	AC	DC					
JUNCTION BOX CONDUIT BOSS DIN TOP SPADE LEADS	24/50-60 120/50-60 208-240/50-60 120-208-240/50-60	15	18					



Nominal Liquid Capacity

Tons • psi • °F

VALVE SERIES	ТҮРЕ	CONNECTIONS	PORT SIZE Inches	MAXIMUM RATED PRESSURE psi	MOPD psi		TONS OF REFRIGERATION Pressure Drop 3 psi	
					AC	DC	R32	R454B
E35	E35S190-HP	1-1/8"	1"	700	450	400	05.0	77.0
	E35S1110-HP	1-3/8"					95.9	77.9

Capacities based on 100°F (38°C) liquid temperature, 40°F (5°C) evaporator temperature.

Identification

Nomenclature - E Series

М	Е	10	S	2	5	0	S
Manual Lift Stem	Design Series	Port Size in 1/32"	Connections Solder	Coil Size Q, W	Connection Size in 1/8"	*Connections 0 - ODF X ODF 1 - ODF X ODM 2 - ODM X ODF 3 - ODM X ODM	Coil Connection S- Spade E - DIN 43650A

Type "E" series is identified by an expanded nomenclature. The system of valve identity based on port size. In addition, the "E" series identifies the connection size and type. The advantage of the "E" series nomenclature system is that it allows ease in valve identification of the standard line and can provide considerable information about special valves supplied to manufacturers.

For connections and other special features consult Sporlan Division of Parker, Washington, MO.

- ① The MKC-1 and MKC-2 are fungus proof and meet MIL-I-631C.
- The standard MKC-1 and MKC-2 are class "F" rated.
- Standard connections are ODF inlet x ODF outlet on "E" Series valves. Minimum quantities may be required for other connections.



Application

Compressor Capacity Reduction Service

Sporlan Solenoid Valves may be used in conjunction with Sporlan Discharge Bypass Valves for capacity reduction service. For capacity information and further details on the Discharge Bypass Valves see pages 36 to 39 or consult Sporlan Division of Parker, Washington, MO.

Filter-Driers are Essential

Dirt and other system contaminants present a problem for refrigeration and air conditioning controls. Since pilot operated solenoid valves operate with rather close tolerances, system cleanliness is imperative. The Sporlan Catch-All® Filter-Drier filters out minute particles of dirt and other foreign matter, thus protecting the valve.

Sporlan recommends using a Catch-All® Filter-Drier ahead of every liquid line solenoid valve on all refrigeration and air conditioning applications. Contact Sporlan before adding a Catch-All® Filter-Drier in the discharge line.

Transformer Selection for Low-Voltage Control Systems

Many systems utilize low voltage controls, requiring the use of a transformer for voltage reduction, normally to 24 volts. The selection of a transformer is not accomplished by merely selecting one that has the proper voltage requirements. The volt-ampere (VA) rating is equally important. To determine the VA requirement for a specific solenoid valve, refer to the chart below. It should be noted, that insufficient transformer capacity will result in reduced operating power or lowering of the MOPD value.

If more than one solenoid valve and/or other accessories are operated from the same transformer, then the transformer VA rating must be determined by adding the individual accessories' VA requirements.

Fusing

Sporlan Solenoid Valves are not supplied with fuses. Fusing should be according to local codes. We recommend fusing the hot leg of the valve wiring with fast acting fuses and the valve should be grounded either through the fluid piping or the electrical conduit.

COIL	24 VOLTS/ 50-60 CYCLES CURRENT-AMPERES			120 VOLTS/ 50-60 CYCLES		OLTS/ CYCLES	TRANSFORMER RATING VOLTS-AMPERES
KIT			CURRENT-AMPERES		CURRENT-AMPERES		FOR 100% OF RATED
	INRUSH	HOLDING	INRUSH	HOLDING	INRUSH	HOLDING	MOPD OF VALVE
MKC-1	1.9	0.63	0.39	0.14	0.19	0.09	60
MKC-2	3.1	1.4	0.60	0.26	0.31	0.13	100

- All current values are based on 60 cycles.
- Volt-ampere ratings are based on inrush currents.
- Above values are based on the most severe conditions. Consult Sporlan Division of Parker, Washington, MO for coil characteristics on specific valve types.

Catch-All FILTER-DRIERS

The universal acceptance of the Catch-All® Filter-Drier is due to its unique molded porous core, consisting of a blend of highly effective desiccants. The quality features built into it assure years of service on any refrigeration system.



Moisture - The Catch-All Filter-Drier

removes moisture from the refrigerant by adsorbing and retaining it deep within the desiccant granules. The blend of desiccants used in the Catch-All Filter-Drier are specially formulated for exceptional water removal.

Foreign Matter - The Catch-All Filter-Drier will filter out scale,

solder particles, carbon, sludge, dirt or any other foreign matter with negligible pressure drop. Fine particles that would go through an ordinary strainer are removed down to a minimum size in one pass filtration. The large filtering area of the Catch-All Filter-Drier core permits it to collect a large amount of dirt without plug up.

Acid – The Catch-All Filter-Drier is unexcelled in acid removal ability. The hydrochloric, hydrofluoric, and various organic acids are adsorbed and held by the desiccant in a manner similar to the adsorption of moisture. Tests have demonstrated that the Catch-All Filter-Drier has superior acid removal ability when compared to competitive driers. This ability, along with its excellent ability to clean up the oil, is responsible for the excellent field performance in cleaning up severely contaminated systems.

C (UL) US LISTED

Sealed Type - Liquid Line and Suction Line Specifications

"C" SERIES LIQUID LINE TYPE	SUCTION LINE TYPE	CONNECTION SIZE	VOLUME of DESICCANT	OVERALL LENGTH Inches	SOLDER SOCKET DEPTH	DIAMETER of BODY
ODF SOLDER	ODF SOLDER	menes	Cubic Inches	ODF SOLDER	Inches	Inches
C-032-S	-	1/4		3.81	0.38	
C-032-CAP C-032-CAP-T	-	Extended 1/4 Male	3	5.81	_	1.75
C-033-S	_	3/8		3.88	0.44	
C-052-S C-0525-S	-	1/4 5/16	5	4.19 4.38	0.38 0.44	2.44
C-053-S	-	3/8		4.31	0.44	
C-082-S C-0825-S C-083-S C-084-S	– С-083-S-T-НН С-084-S-T-НН	1/4 5/16 3/8 1/2	9	5.12 5.31 5.25 5.44	0.38 0.44 0.44 0.50	2.62
C-162-S C-1625-S C-163-S C-164-S C-165-S — C-167-S	— — С-164-S-Т-НН С-165-S-Т-НН С-166-S-Т-НН С-167-S-Т-НН	1/4 5/16 3/8 1/2 5/8 3/4 7/8	16	5.75 5.94 5.88 6.00 6.31 6.75 6.93	0.38 0.44 0.44 0.50 0.62 0.62 0.75	3.00
C-303-S C-304-S C-305-S C-306-S C-307-S C-309-S	— — C-305-S-T-HH C-306-S-T-HH C-307-S-T-HH C-309-S-T-HH	3/8 1/2 5/8 3/4 7/8 1-1/8	30	8.88 9.00 9.25 9.65 9.80 9.75	0.44 0.50 0.62 0.62 0.75 0.96	3.00
	- - - C-417-S-T-HH C-419-S-T-HH	3/8 1/2 5/8 7/8 1-1/8	41			3.50
-	C-437-S-T-HH C-439-S-T-HH C-4311-S-T-HH C-4313-S-T-HH	7/8 1-1/8 1-3/8 1-5/8	48	10.34 10.74 10.94 10.94	0.75 0.94 1.00 1.06	4.75
C-607-S C-609-S	C-607-S-T-HH C-609-S-T-HH	7/8 1-1/8	60	16.00 16.00	0.75 0.96	3.00
COMPACT STYLE	C-144-S-TT-HH C-145-S-TT-HH C-146-S-TT-HH C-147-S-TT-HH C-149-S-TT-HH	1/2 5/8 3/4 7/8 1-1/8	14	4.14 4.38 4.83 4.97 4.93	0.50 0.66 0.66 0.75 0.96	4.44

Oil, Sludge and Varnish — Even the best refrigeration oils break down to produce varnish, sludge and organic acids. Only the Catch-All Filter-Drier is capable of removing these products of oil decomposition.

Special Applications — A special "HH" core Catch-All Filter-Drier is available to remove wax which frequently causes difficulty on low temperature refrigeration systems. For cap tube systems, use the C-032-CAP or C-032-CAP-T Catch-All which has fittings suitable for attaching to any size capillary tube.

Remember...It's the CORE that counts!

Sealed Type - Liquid Line and Suction Line Specifications



"C" SERIES LIQUID LINE TYPE ODF SOLDER	SUCTION LINE TYPE ODF SOLDER	CONNECTION SIZE Inches	VOLUME of DESICCANT cm3	OVERALL LENGTH mm ODF SOLDER	SOLDER SOCKET DEPTH mm	DIAMETER of BODY mm
C-032-S	_	1/4		97	10	
C-032-CAP C-032-CAP-T	-	Extended 1/4 Male	49	148	_	44
C-033-S	-	3/8		99	11	
C-052-S C-0525-S	-	1/4 5/16	82	106 111	10 11	62
C-053-S	-	3/8		109	11	
C-082-S C-0825-S C-083-S C-084-S	– – C-083-S-T-HH C-084-S-T-HH	1/4 5/16 3/8 1/2	147	130 135 133 138	10 11 11 13	67
C-162-S C-1625-S C-163-S C-164-S C-165-S — C-167-S	— — — С-164-S-Т-НН С-165-S-Т-НН С-166-S-Т-НН С-167-S-Т-НН	1/4 5/16 3/8 1/2 5/8 3/4 7/8	262	146 151 149 152 160 171 176	10 11 11 13 16 16	76
C-303-S C-304-S C-305-S C-306-S C-307-S C-309-S	- C-305-S-T-HH C-306-S-T-HH C-307-S-T-HH C-309-S-T-HH	3/8 1/2 5/8 3/4 7/8 1-1/8	492	226 229 235 245 249 248	11 13 16 16 19 24	76
	– – – – C-417-S-T-HH C-419-S-T-HH	3/8 1/2 5/8 7/8 1-1/8	672		- 13 16 19 24	89
-	C-437-S-T-HH C-439-S-T-HH C-4311-S-T-HH C-4313-S-T-HH	7/8 1-1/8 1-3/8 1-5/8	787	263 273 278 278	19 24 25 27	121
C-607-S C-609-S	C-607-S-T-HH C-609-S-T-HH	7/8 1-1/8	983	406 406	19 24	76
COMPACT STYLE	C-144-S-TT-HH C-145-S-TT-HH C-146-S-TT-HH C-147-S-TT-HH C-149-S-TT-HH	1/2 5/8 3/4 7/8 1-1/8	229	105 111 123 126 125	13 16 18 19 24	113

Sealed Type Liquid Line Ratings and Selection Recommendations

R32

		RATINGS AT	, ō			
	ERING	WATER CA 50PP DROF	M		ION SATIONS	
ТҮРЕ	SURFACE FILTERING AREA in2	75°F	125°F	REFRIGERANT FLOW CAPACITY, TONS AT 1 PSI ΔP	SELECTION RECOMMENDATIONS TONS	
		SI	EALED TYP	PE		
C-032-CAP				2.0	1/4 thru	
C-032-S	9	14	10	·	1/4 (11 (
C-033-S				5.4	·	
C-052-S C-0525-S	15	36	24	2.9	1/2 thru	
C-0525-S C-053-S	15	36	24	6.5	1-1/2	
C-053-5 C-082-S				0.0		
C-0825-S	-			2.9	1/2 thru	
C-083-S	21	55	37	7.2	2-1/2	
C-084-S				13.5	,_	
C-162-S				2.0		
C-1625-S				2.9		
C-163-S	33	82	55	7.2	3/4 thru 5	
C-164-S				15.4		
C-165-S				22.4		
C-303-S				6.4		
C-304-S	53	164	110	15.4	2-1/2 thru	
C-305-S	00	104	110	23.8	7-1/2	
C-307-S				30.4		
C-414-S				17.4		
C-415-S	67	226	151	24.8	4 thru 10	
C-417-S	ļ - ·			31.1	- unu 10	
C-419-S				34.3		
C-607-S	106	328	220	41.1	11 thru 15	
C-609-S				47.1		

R454B

	RATINGS AT ARI STANDARD CONDITIONS					
	TERING	WATER CA 50PP DROE	M		ION DATIONS	
TYPE	SURFACE FILTERING AREA in2	75°F	125°F	REFRIGERANT FLOW CAPACITY, TONS AT 1 PSI ΔP	SELECTION RECOMMENDATIONS, TONS	
		S	EALED TYP	PE		
C-032-CAP				1.6		
C-032-S	9	26	21	1.0	1/2 thru 1	
C-033-S				4.3		
C-052-S				2.3		
C-0525-S	15	65	53	-	3/4 thru 3	
C-053-S				5.3		
C-082-S		99 81	2.3			
C-0825-S	21		-	1 thru 5		
C-083-S				5.8		
C-084-S				10.9		
C-162-S				2.3		
C-1625-S		4.45	440		1-1/2 thru	
C-163-S	33	147	119	5.8	10	
C-164-S				12.4		
C-165-S				18.0		
C-303-S C-304-S	-			5.1 12.4		
C-304-S C-305-S	53	295	239	12.4	4 thru 20	
C-305-S C-307-S	-			24.5		
C-307-S C-414-S				14.0		
C-414-S C-415-S	-			20.0	7 1 /2 +b=	
C-415-5 C-417-S	67	405	328	25.1	7-1/2 thru 23	
C-417-3	-			27.7	23	
C-417-3				33.1		
C-607-S	106	590	478	37.0	20 thru 30	
C-603-2				J 37.U		

¹ Based on 86°F liquid line temperature ...and a refrigerant flow of 2.3 pounds per minute per ton for Refrigerant R454B and a 1.8 pounds per minute per ton for Refrigerant R32.

The variation in flow ratings of filter-driers having the same size core and shell is caused by the difference in connection sizes used.

^{2 20} drops = 1 gram = 1 cc.

³ The filtration area is equal to the core surface area plus the large internal surface available for depth filtration.

Replaceable Core Type

ODF Solder Connections

The rugged construction of the Replaceable Core Catch-All has proven itself in the field for many years. The design features include:

- 1. The famous molded porous core for maximum contaminant removal. The core cannot swell, powder or pack assuring ease of installation and removal.
- 2. The bolt and nut attachment of the end plate provides simple trouble-free installation.
- **3.** The internal construction gives a one piece assembly and assures proper core alignment.



- **4.** A complete line of fitting sizes all with copper fittings.
- **5.** No plastic parts are used all internal parts are plated steel.
- A corrosion resistant powder paint protects the exterior of the shell

Specifications

ТҮРЕ	CONNECTIONS ODF SOLDER Inches	OPTIONAL SECONDARY FILTER*	NUMBER of CORES or FILTER ELEMENTS	CORE PART NUMBER	VOLUME of DESICCANT Cubic Inches	FILTER ELEMENT PART NUMBER	MOUNTING BRACKETS	OVERALL LENGTH Inches
C-R424-G C-R425-G C-R427-G	1/2 5/8 7/8	ı	1	RCW-42	42	-	A-175-1	9.00 9.06 9.44
C-485-G C-487-G C-489-G C-4811-G C-4813-G	5/8 7/8 1-1/8 1-3/8 1-5/8	FS-480	1		48	RPE-48-BD	A-685	9.15 9.30 9.50 9.60 9.60
C-967-G C-969-G C-9611-G C-9613-G	7/8 1-1/8 1-3/8 1-5/8	FS-960	2	RCW-48, RCA-48 or	96	RPE-48-BD	A-685	14.84 15.04 15.14 15.14
C-1449-G C-14411-G C-14413-G	1-1/8 1-3/8 1-5/8	FS-1440	3	RC-4864-HH	144	RPE-48-BD	A-685	20.58 20.68 20.68
C-19211-G C-19213-G C-19217-G	1-3/8 1-5/8 2-1/8	FS-19200	4		192	RPE-48-BD	A-685	26.22 26.22 26.22

 $UL\ and\ UL\ C\ Listed\ -\ Guide\ SMGT-File\ No.\ SA-1756A\ \&\ B.\ All\ listed\ models\ have\ a\ maximum\ rated\ pressure\ of\ 650\ psi.$

*Optional Secondary Filter must be purchased separately. O-rings (p/n 621-025) are supplied with each secondary filter, but can be purchased separately. The secondary filter cannot be used if the shell is installed in the suction line.

Type numbers with G suffix indicate that unit is supplied with 1/4" female pipe connection in the end plate and pipe plug. For liquid line service and angle charging valve for system charging purposes can be installed in place of the pipe plug. Angle charging and Schrader type access valves are available from your Sporlan Wholesaler.

Liquid Line Ratings and Selection Recommendations

R32

	RATINGS AT ARI STANDARD CONDITIONS						
	FILTERING	WATER CAPACITY 50PPM DROPS		REFRIGERANT FLOW	rion Dation IS		
TYPE	SURFACE F AREA in2	75°F	125°F	CAPACITY, TONS AT 1 PSI ΔP	SELECTION RECOMMENDATIONS, TONS		
			SEALED T	YPE			
C-R424-G				16.0	2-1/2 thru 5		
C-R425-G	67	67 225	151	19.1	5 thru 7 1 /2		
C-R427-G				26.1	5 thru 7-1/2		
C-485-G				20.8	5 thru 7-1/2		
C-487-G	64	419	271	33.7	7-1/2 thru 15		
C-489-G				60.9	10 thru 15		
C-967-G	128	838	542	55.3	15 thru 20		
C-969-G	120	030	542	68.6	20 thru 25		
C-1449-G	192	1257	813	83.6	25 thru 30		
C-14411-G	172	123/	013	94.3	30 thru 35		
C-19211-G				118.7	45 thru 50		
C-19213-G	256	1676	1084	139.5	55 thru 60		
C-19217-G				146.6	55 thru 65		

R454B

	<u>o</u>	RATINGS A	S,				
	FILTERING	WATER CAPACITY 50PPM DROPS		REFRIGERANT FLOW	TION IDATION 4S		
TYPE	SURFACE FAREA AREA in 2	75°F	125°F	CAPACITY, TONS AT 1 PSI ΔP	SELECTION RECOMMENDATIONS, TONS		
		Ş	SEALED T	/PE			
C-R424-G				12.9	5 thru 7-1/2		
C-R425-G	67	403	326	15.4	10 thru 15		
C-R427-G				21.0	10 1111 13		
C-485-G				16.7	10 thru 15		
C-487-G	64	581 46	581	581	581 461	27.1	15 thru 20
C-489-G				49.1	20 thru 30		
C-967-G	128	1162	922	44.6	25 thru 35		
C-969-G	120	1102	122	55.3	35 thru 40		
C-1449-G	192	1743	1383	67.4	40 thru 50		
C-14411-G	172	1743	1303	76.0	50 thru 60		
C-19211-G				95.7	70 thru 80		
C-19213-G	256	2324	1844	112.4	80 thru 100		
C-19217-G				118.1	85 thru 100		

- 1 Based on 86°F liquid line temperature and a refrigerant flow of 2.3 pounds per minute per ton for Refrigerant R454B and a 1.8 pounds per minute per ton for Refrigerant R32.
- 2 20 drops = 1 gram = 1 cc.
- 3 The filtration area is equal to the core surface area plus the large internal surface available for depth filtration.

The variation in flow ratings of filter-driers having the same size core and shell is caused by the difference in connection sizes used.

For complete information see your Sporlan Wholesaler, our website at www.sporlan.com, or write Sporlan and request Bulletin 40-10.

Catch-All FILTER-DRIERS

Suction Line Filter-Drier Ratings

for New Systems and Clean-up after Burnout

Selection Instructions

The flow capacities are rated at the maximum recommended pressure drop for permanent installation.

To ensure the suction line filter-drier has ample contaminant removal ability, selection must be based on flow capacity and the amount of desiccant required for system clean-up. The suction line filter-drier must be large enough to adequately remove acid, moisture and solid contaminants without causing nuisance plug-ups. Sizing is especially important for sealed type suction line filter-driers since they should be sized to clean a small system with one service call.

To reduce the pressure drop through replaceable core shells, substitute cores with filter elements (see page 30) after the system has been cleaned up. The 6171-5 screen should be discarded when cores are replaced with RPE-48-BD elements in RSF shells.

For complete description of the suggested system clean-up procedure, request Bulletin 40-10.

Suction Line Flow Capacity

R32

EV	APORATOR TEMPERATURE	40)°F
	PRESSURE DROP (psi)	3.0	8.0*
	C-083-S-T-HH		
	C-084-S-T-HH	3.4	
	C-164-S-T-HH	4.5	
	C-165-S-T-HH	5.2	
	C-166-S-T-HH	6.5	
ш	C-167-S-T-HH	7.3	
SEALED TYPE	C-305-S-T-HH	5.5	
	C-306-S-T-HH	7.2	
_	C-307-S-T-HH	8.7	
呵	C-309-S-T-HH	9.7	
₹	C-417-S-T-HH	9.9	
Й	C-419-S-T-HH	10.1	
S	C-437-S-T-HH	13.0	
	C-439-S-T-HH	16.4	
	C-4311-S-T-HH	18.1	
	C-4313-S-T-HH	19.9	
	C-607-S-T-HH	10.9	
	C-609-S-T-HH	12.3	
111	RSF-487-T	16.5	28.5
3	RSF-489-T	19.9	34.2
<u> </u>	RSF-4811-T	24.2	41.7
EAB	RSF-4813-T	26.0	45.0
S I	RSF-4817-T	28.1	48.5
EPLAC CORE	RSF-4821-T	30.3	52.1
<u>a</u> 0	RSF-9617-T	41.1	70.8
REPLACEABLE CORE TYPE	RSF-9621-T	47.8	82.2
	RSF-9625-T	48.9	84.2

R454B

EV	APORATOR TEMPERATURE	40)°F
	PRESSURE DROP (psi)	3.0	8.0*
	C-083-S-T-HH		
	C-084-S-T-HH	2.9	
	C-164-S-T-HH	3.7	
	C-165-S-T-HH	4.4	
	C-166-S-T-HH	5.5	
ш	C-167-S-T-HH	6.2	
<u> </u>	C-305-S-T-HH	4.7	
Ľ	C-306-S-T-HH	6.1	
SEALED TYPE	C-307-S-T-HH	7.3	
Щ.	C-309-S-T-HH	8.1	
4	C-417-S-T-HH	8.3	
<u>iii</u>	C-419-S-T-HH	8.4	
S	C-437-S-T-HH	11.0	
	C-439-S-T-HH	13.8	
	C-4311-S-T-HH	15.2	
	C-4313-S-T-HH	16.7	
	C-607-S-T-HH	9.2	
	C-609-S-T-HH	10.3	
	RSF-487-T	13.2	24.0
з	RSF-489-T	15.9	28.7
EABL	RSF-4811-T	19.3	35.1
å≿	RSF-4813-T	20.7	37.8
S I	RSF-4817-T	22.4	40.7
REPLACEABLE CORE TYPE	RSF-4821-T	24.2	43.8
<u>a</u> 0	RSF-9617-T	32.8	59.4
m 0	RSF-9621-T	38.1	69.1
	RSF-9625-T	39.0	70.7

^{*}Denotes TEMPORARY INSTALLATION. Cores for system clean-up; RPE-48-BD Filter Elements should be installed after clean-up. Rated in accordance with ARI Standard 730. For a simplified "Quick Selection Guide," request Form 40-109.

Significance of the Type Number

The letters and numerals in the Catch-All® type number each have a significance. The "C" indicates Catch-All. The first two or three digits indicate cubic inches of desiccant. The last one or two digits indicate fitting size in eighths of an inch. For sealed models, a "-S" following the last digit indicates solder fittings, and no letter indicates a flare fitting. Replaceable core models (C-420 and larger) only have solder connections and the "-S" is omitted. Examples are: C-083 is 8 cu. in. and 3/8" flare, C-309-S is 30 cu. in. and 1-1/8" solder, C-19213-G is 192 cu. in. and 1-5/8" solder. Due to the hazardous nature when leaks are present, Sporlan Catch-All Filter-Driers for A2L, A2 & A3 refrigerants are only UL listed for models with

solder fittings. Flare fittings tend to have a greater probability of leakage and therefore are not UL listed for flammable A2L, A2 & A3 refrigerants.

Other suffix letters indicate special qualities. For example:

- "-T" indicates a pressure tap consisting of a Schrader type access valve on the inlet end of the Catch-All.
- "-HH" indicates a charcoal style core for wax removal and clean-up after a hermetic motor burnout.
- "-CAP" indicates a Catch-All particularly designed for installation on capillary tube systems.

Replaceable Cores and Pleated Filter Elements - Order Separately

Cores for replaceable core type filter-driers are molded of exactly the same desiccants that are used in the popular sealed filter-driers.

Cores are individually packed in metal cans, fully activated and hermetically sealed against moisture and dirt.

Filter Elements are dried and packed in individual sealed metal cans. This method of packaging prevents the element from picking up moisture from the atmosphere.

Detailed instructions are printed on each can. Each can contains a "triple gasket" consisting of a new end plate gasket, an end plate gasket for certain competitive filter-driers and a core gasket where desired. See the specifications on page 25 for the number of cores required for each type drier.

RCW-42 – High Water Capacity Core – Order as separate item – Fits ONLY shell type C-R424, C-R425 and C-R427. Designed specially for use with POE oils. This core should be used on systems that have a ruptured water cooled condenser, or that have been exposed to the atmosphere, or for some reason have a high amount of moisture in the system.

RCA-48 – Activated Core – Order as separate item – Fits types C-480 thru C-19200 Series shells and Replaceable Suction Filter (RSF) shells. This is the standard core suitable for most installations in the liquid or suction line applications.

HH Style Catch-All for Wax Removal

Small amounts of wax are often a problem on low temperature systems. Even well engineered systems frequently contain minute quantities of wax which are sufficient to clog expansion valve screens or cause sticking of the valve. Sporlan has developed a special blend of desiccants including activated charcoal which removes small amounts of wax in the liquid line before this wax can cause trouble at the expansion valve. These Catch-All Filter-Driers have been very successful in correcting trouble jobs in the field.

Select an HH Style Catch-All Filter-Drier if wax problems occur on low temperature systems. In addition to their wax removal ability, these filter-driers will remove all of the other harmful contaminants that the standard filter-driers remove. Listed in the table are various Catch-All models that incorporate the HH style core.

RCW-48 – High Water Capacity Core – Order as separate item – Fits types C-480 thru C-19200 Series shells and Replaceable Suction Filter (RSF) shells. Designed specially for use with POE oils. This core



should be used on systems that have a ruptured water cooled condenser, or that have been exposed to the atmosphere, or for some reason have a high amount of moisture in the system.

RC-4864-HH – Activated Charcoal Core – Order as separate item – Fits types C-480 thru C-19200 Series shells and Replaceable Suction Filter (RSF) shells. This core should be used for wax removal on low temperature systems, and for clean-up of systems that have had a hermetic motor burnout.

RPE-48-BD – Filter Element – Order as separate item – Fits types C-480 thru C-19200 Series shells and Replaceable Suction Filter (RSF) shells. This element should be used in RSF shells installed in the suction line to obtain the lowest possible pressure drop. In cleaning up a system after a hermetic motor burnout, cores should be used first. Then after the system is thoroughly clean, this filter element can be installed in the RSF shell.

TYPE	CONNECTIONS Inches	ТҮРЕ	CONNECTIONS Inches
C-032-S-HH	1/4 ODF Solder	C-165-S-HH	5/8 ODF Solder
C-052-S-HH	1/4 ODF Solder	C-303-S-HH	3/8 ODF Solder
C-053-S-HH	3/8 ODF Solder	C-304-S-HH	1/2 ODF Solder
C-082-S-HH	1/4 ODF Solder	C-305-S-HH	5/8 ODF Solder
C-083-S-HH	3/8 ODF Solder	C-307-S-HH	7/8 ODF Solder
C-084-S-HH	1/2 ODF Solder	C-415-S-HH	5/8 ODF Solder
C-162-S-HH	1/4 ODF Solder	C-417-S-HH	7/8 ODF Solder
C-163-S-HH	3/8 ODF Solder	RC-4864-HH	Donlassable Core
C-164-S-HH	1/2 ODF Solder	KU-4004-HH	Replaceable Core

For dimensions, refer to the specifications for standard filter-driers or consult Bulletin 40-10.

Catch-All REVERSIBLE HEAT PUMP FILTER-DRIERS

Design Benefits

- A short overall length for easy installation.
- Drier operates in either flow direction with low pressure drop.
- Proven metal check valves used in construction no synthetic materials.
- The Sporlan dependable molded core used for maximum filtration ability. When the flow direction reverses, dirt already collected remains in the filter-drier.
- c (L) us
 - A carefully engineered blend of desiccants for maximum water capacity and acid removal ability. The HPC-160 and HPC-300 series also have an HH style core with activated charcoal which offers maximum ability to remove oleoresin and other reactive chemical constituents in the lubricant.
 - Same rugged construction as used in the Catch-All®.

Catch-All REVERSIBLE HEAT PUMP FILTER-DRIERS

Specifications - Tons - psi - °F

"HPC" SERIES LIQUID LINE TYPE	CONNECTION SIZE	VOLUME OF DESSICANT	OVERALL LENGTH Inches	SOLDER SOCKET DEPTH	DIAMETER of BODY	SHIPPING WEIGHT
ODF Solder	Inches	Cu. In.	ODF Solder	Inches	Inches	lb
HPC-082-S	1/4		5.32	.38		,
HPC-083-S	3/8	8	5.46	.44	3.0	1-1/4
HPC-084-S HPC-103-S	1/2 3/8		5.58 5.96	.50 .44		
HPC-103-5	1/2	10	6.08	.50	3.0	1-3/4
HPC-105-S	5/8	10	6.32	.62	5.0	1 3/4
HPC-163-S	3/8		6.92	.44		
HPC-163-S-HH	3/8		6.92	.44		
HPC-164-S	1/2	14	7.07	.50	3.0	2-1/4
HPC-164-S-HH	1/2	14	7.07	.50	3.0	2-1/4
HPC-165-S	5/8		7.35	.62		
HPC-165-S-HH	5/8		7.35	.62		
HPC-304-S	1/2		10.18	.50		
HPC-304-S-HH	1/2		10.18	.50		
HPC-305-S HPC-305-S-HH	5/8	30	10.42	.62 .62	3.0	/ 1 //
HPC-305-S-HH HPC-306-S	5/8 3/4	30	10.42 10.86	.62	3.0	4-1/4
HPC-300-3	7/8		11.02	.75		
HPC-307-S-HH	7/8		11.02	.75		

R32

For New Installations

TYPE	SURFACE FILTERING AREA in2	RATINGS AT WATER CA 50PP DROF	PACITY	INDARD CONDITIONS REFRIGERANT FLOW	STION NDATION NS
2	SURFACE AREA in2	75°F	125°F	CAPACITY, TONS AT 1 PSI ΔP	SELEC RECOMMEI TO
HPC-083-S	15	51	34	7.2	1/2 thru
HPC-084-S	13	5	34	13.5	2-1/2
HPC-163-S				7.2	2//
HPC-164-S	26	83	56	15.5	3/4 thru 5
HPC-165-S				15.9	till d 5
HPC-304-S				13.0	2.4/2
HPC-305-S	53	147	112	14.7	2-1/2
HPC-306-S	33	167	112	15.4	thru 7-1/2
HPC-307-S				16.0	

For Clean-Up After Burnout

HPC-083-S-HH	15		7.2	1/2 thru 2-1/2
HPC-163-S-HH			7.2	2/1
HPC-164-S-HH	26		15.5	3/4 thru 5
HPC-165-S-HH		N/A	15.9	un u s
HPC-303-S-HH			7.2	2.1/2
HPC-304-S-HH	53		13.0	2-1/2 thru
HPC-305-S-HH	33		14.7	7-1/2
HPC-307-S-HH			16.0	7-1/2

R454B

For New Installations

	FILTERING	WATER CA 50PP	PACITY	ANDARD CONDITIONS	NOL
TYPE		DRO	PS	REFRIGERANT FLOW	ECTI(
	SURFACE AREA in2	75°F	125°F	CAPACITY, TONS AT 1 PSI ΔP	SELECTION RECOMMENDATIONS
HPC-083-S	15	91	73	5.8	1 thru 3
HPC-084-S	13	71	73	10.9	Tunus
HPC-163-S				5.8	
HPC-164-S	26	150	121	12.5	1 thru 8
HPC-165-S				18.0	
HPC-304-S				10.6	
HPC-305-S	53	299	242	12.1	8 thru 20
HPC-306-S	33	277	242	12.6	0 IIII U 20
HPC-307-S				13.1	

For Clean-Up After Burnout

i di dican-o	PAILEI	Burnout		
HPC-083-S-HH	15		5.8	1 thru 3
HPC-163-S-HH			5.8	
HPC-164-S-HH	26		12.5	1 thru 8
HPC-165-S-HH		N/A	18.0	
HPC-303-S-HH		N/A	5.8	
HPC-304-S-HH	53		10.6	8 thru 20
HPC-305-S-HH	53		12.1	o un u zu
HPC-307-S-HH			13.1	

HPC-100 Series – Core volume is 10 cubic inches (164 cm³). Core surface filtering area is 18 sq. inches (116 cm²). Maximum rated pressure is 650 psig (44.8 bar). HPC-160-HH Series – Core volume is 14 cubic inches (229 cm³). Core surface filtering area is 26 sq. inches (168 cm²). Maximum rated pressure is 650 psig (44.8 bar). HPC-300-HH Series – Core volume is 30 cubic inches (492 cm³). Core filtering area is 53 sq. inches (342 cm²). Maximum rated pressure is 650 psig (44.8 bar). UL and UL_C Listed – Guide-SMGT-File No. SA-1756A & B.

See All MOISTURE AND LIQUID INDICATOR 32, 454B

9 OUTSTANDING BENEFITS

- ONE INDICATOR for all REFRIGERANTS provides a true moisture indication for Refrigerant 22, 32, 134a, 290, 404A, 407A, 407C, 407F, 410A, 448A, 449A, 450A, 454A, 454B, 454C, 455A, 507, 513A, 744, 1234yf, 1234ze.
- RELIABLE and ACCURATELY CALIBRATED COLOR
 CHANGE POINTS in parts per million of moisture for each refrigerant.
- 3. REPLACEABLE INDICATOR ELEMENT the color indicator paper can be changed on fused glass models manufactured since 1984 without removing the See All from the line.
- **4. INDICATOR PROTECTED from DISCOLORATION and DIRT** by a filter pad and screen. This prevents washing of the indicator by the refrigerant and protects it from system contamination and turbulence.
- 5. COLOR CHANGES ARE EASILY DISTINGUISHED and REVERSIBLE
 - indicator colors differ so widely between the wet and dry condition, there is no possibility of confusion.
 Colors reverse as often as moisture concentration in the system changes.
- LARGE FULL VIEW SIGHTGLASS extra large crystal clear sightglass for viewing the refrigerant. Bubbles indicate a shortage of refrigerant or a restriction in the liquid line.

- DISASSEMBLY FOR INSTALLATION IS UNNECESSARY –
 with extended fittings on small size solder models.
 See · Alls are easy to braze.
- **8. PLASTIC CAP** is supplied with See · All to keep the glass free from dust, dirt and grease.
- Z00ML0CK C0MPATIBLE multiple models are available for use with ZoomLock fittings, couplings, adapters, and tees.

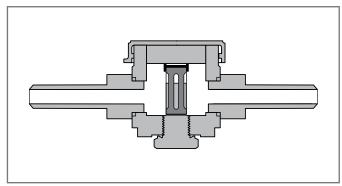


Figure 1

	SPECIFI	CATIONS	
Connection Sizes (in.)	Type No.	Overall Length (in.)	See-All
	ODF Solder	-	
1/4	SA-12S	((2 (110)	
3/8	SA-13S	4.63 (118mm)	
1/2	SA-14S	(00 (10 ()	
5/8	SA-15S	4.88 (124mm)	
7/8	SA-17S	(21(1/0)	
1-1/8	SA-19S	6.31 (160mm)	
1-3/8	SA-211		
1-5/8	SA-213	8 (203mm)	
2-1/8	SA-217		
	ZoomLock Compatible		
3/8 ODM	SA-13-PZK	4.63 (118 mm)	
1/2 ODM	SA-14-PZK	4.63 (118 mm)	
5/8 ODM	SA-15-PZK	4.88 (124 mm)	
7/8 ODM	SA-17-PZK	6.42 (163 mm)	

	MOISTURE CONTENT - PPM												
		SEE • ALL SHOWS											
REFRIGERANT	LIQUID LINE TEMPERATURE	Green - DRY	Chartreuse - CAUTION	Yellow - WET									
D00	75°F / 24°C	₽125	125-500	企500									
R32	100°F / 38°C	₽145	145-580	☆580									
R454B	75°F / 24°C	₽120	120-500	☆500									

Note: Change or add Catch-All Filter-Drier when paper turns from green to chartreuse.

Maximum Rated Pressure for all models is 650 psig (44.8 bar). Overall width is: 1.31" (33.3 mm) for 1/4" and 3/8" sizes. 1.58" (40.1 mm) for 1/2" and 5/8 sizes, and 1.38" (35.1 mm) for 7/8" and 1-1/8" sizes. Most solder connections can be used as male fittings as well as female fittings. The 1/4" ODF is 3/8" ODM, the 3/8" ODF is 1/2" ODM, the 1/2" ODF is 5/8" ODM, and the 5/8" ODF is 3/4" ODM. Models with female flare and/or swivel nut connections are supplied with a copper gasket in the fitting.

1 These models have copper connections and feature a removable element cartridge – for replacement cartridge specify AC-20.

REPLACEABLE Suction Filters

The Replaceable Suction Filter shell. used with RPE-48-BD pleated filter element, is designed to be installed in the suction line of new systems to remove circulating contaminants.



RSF-4817-T

Design Benefits

- High flow capacity
- Corrosion resistant coating on shell
- Can be used with desiccant cores for clean-up after burnout
- Various fitting sizes up to 3-1/8" line size
- Access valve supplied for pressure drop measurement or charging

Flow Capacity - Tons - psi - °F

7/1	RSF-4817-T	
480	S Total Control of	100
·w		
- 123		

Sporlan Replaceable Suction Filters are installed in the suction line of refrigeration or air conditioning systems to remove contaminants that may be in the system at startup.

The Replaceable Suction Filter has large fittings permitting the use of a small shell on a system with large line sizes, resulting in considerable economy. The angle construction is suitable of flow in either direction, which results in easy installation even on compact racks.

The Replaceable Suction Filters should be used with cores for cleaning up a system after a hermetic motor burnout. Select the RC-4864, RC-4864-HH or RCW-48 replaceable cores. After cleanup, install RPE-48-BD elements in the shells.

Selection

How It's Used

The table below gives information for choosing the proper model for a given system. The filter elements are supplied in hermetically sealed metal cans. For flow capacity WITH CORES, see page 27.

kW - bar - °C

	ري	FLO'	W CAPA	CITY		- 10	풑		SNS ER	FLO	W CAPA	CITY			픋																								
	ECTIONS ICHES		APORAT MPERATI		IUMBER OF FILTER ELEMENTS	AREA Inches	LENG.	_ 0			APORAT MPERATI		NUMBER OF	AREA 12	LENGTH																								
TYPE	NE(Inch		40°F		MBEF FILTE EMEN	를 잃 트 플 트	ng F	TYPE	NECT Inches	5°C			FILTER	ER A	ALL																								
	CONNEC Inch ODF SO	PRESS	URE DRO)P – psi	NUMBER FILTER ELEMENT FILTER AR Square Inc		ERA I		CONNI Inc	PRESSURE DROP - bar			ELEMENTS	臣	ERA																								
	0	1	2	3		L S	No.		ن ت	0.07	0.14	0.21			OVER,																								
RSF-487-T	7/8	8.0	11.3	13.8			9.30	RSF-487-T	7/8	28.1	39.7	48.5			236																								
RSF-489-T	1-1/8	12.7	18.0	22		388	9.37	RSF-489-T	1-1/8	44.7	63.3	77.4]		238																								
RSF-4811-T	1-3/8	18.5	26.1	32	One		9.60	RSF-4811-T	1-3/8	65.1	91.8	113	One	2503	244																								
RSF-4813-T	1-5/8	23.7	33.5	41	RPE-48-BD		9.60	RSF-4813-T	1-5/8	83.3	118	144	RPE-48-BD	2503	244																								
RSF-4817-T	2-1/8	31.8	44.9	55																9.37	RSF-4817-T	2-1/8	112	158	193			238											
RSF-4821-T	2-5/8	41.6	58.8	72					9.75	9.75	RSF-4821-T	2-5/8	146	207	253			248																					
RSF-9611-T	1-3/8	20.8	29.4	36		776	776	15.14	RSF-9611-T	1-3/8	73.2	103	127			385																							
RSF-9613-T	1-5/8	27.1	38.4	47				776	776	776	776	776	776	776	776	776	776	776	776												15.14	RSF-9613-T	1-5/8	95.3	135	165			385
RSF-9617-T	2-1/8	34.1	48.2	59	Two RPE-48-BD															14.96	RSF-9617-T	2-1/8	120	170	207	Two RPE-48-BD	5006	380											
RSF-9621-T	2-5/8	46.8	66.1	81					15.43	RSF-9621-T	2-5/8	165	232	285	Nr E-40-00		392																						
RSF-9625-T	3-1/8	64.1	90.6	111			15.12	RSF-9625-T	3-1/8	225	319	390			384																								

Listed by Underwriters' Laboratories, Inc. Guide SMGT File No. SA-1756A & B. RSF shells have a 500 psig (34.5 bar) M.R.P. rating. Note: Ratings are in accordance with ARI Standards 730. Flow capacity (tons/kW) with cores is approximately 40% of the above values. For complete information see your Sporlan Wholesaler, our website at www.sporlan.com, or write Sporlan and request Bulletin 80-10.

<u>CID TEST KITS - TYPE TA-1 AND AK-3</u>

Designed to Test Mineral, Alkylbenzene and POE Lubricants

- Thoroughly field proven
- of service work

Takes the guesswork out

Design Benefits

- Builds Customer Confidence Show the test results of the acid test kit to customers, or perform the test in their presence. In this way they realize you are using the most up-to-date scientific method for system maintenance. Showing customers the test results will also help to convince them to spend the money necessary to do a proper clean-up job. Customers who are thoroughly confident of your abilities will be more interested in establishing preventive maintenance programs.
- Accurate and Reliable Using a simple, scientific method, you can precisely measure the amount of acid in a lubricant sample taken from a contaminated system. The test procedure has been proven by extensive field experience.

- **Convenient -** The TA-1 is simple and convenient to use. The kit has pre-measured solutions supplied in bottles with screw caps for easy handling. The kit may be used on the job site, or a lubricant sample can be saved and tested in the presence of the equipment owner.
- Lubricant Sample Used for Test Since lubricant is the scavenger, it gives the best indication of acid in the system. Less than an ounce of lubricant is required.
- Quick to Use Once the lubricant sample is obtained... it will take only minutes to perform the test. Simply mix the solutions and lubricant to be tested. Shake, and the resulting color tells the complete story.
- Cost The TA-1 kit is a very inexpensive way of the vulnerability to assess expensive system components harmful acidic to conditions.

The TA-1 is normally used on a "pass or fail" basis.

HEAD PRESSURE CONTROL VALVES

High and Low Ambient Stability

The design of air conditioning systems utilizing air cooled condensing units involves two main problems that must be solved if the system is to operate reliably and economically . . . high ambient and low ambient operation. If the condensing unit is properly sized, it will operate satisfactorily during extremely high ambient temperatures. However, some units will be required to operate at ambient temperatures below their design dry bulb temperature during most of the year, the solution to low ambient operation is more complex.

Without good head pressure control during low ambient operation, the system can experience both running cycle and off-cycle problems. Since the pressure differential across the thermostatic expansion valve port affects the rate of refrigerant flow, low head pressure generally causes insufficient refrigerant to be fed to the evaporator. Failure to have sufficient head pressure will result in low suction pressure and/or iced evaporator coils.

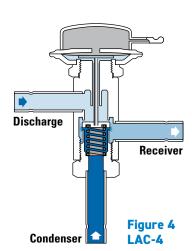
The primary off-cycle problem is refrigerant migration to the condenser. Insufficient flow through the TEV will cause a low suction pressure.

The typical method of maintaining normal head pressure in a refrigeration system during periods of low ambient temperature is to restrict liquid flow from the condenser to the receiver, and at the same time divert hot gas to the inlet of the receiver. This backs liquid refrigerant up into the condenser reducing its capacity which in turn increases the condensing pressure. At the same time the hot gas raises liquid pressure in the receiver, allowing the system to operate normally.

Operation

LAC-4

The valve designation LAC stands for Low Ambient Control. The LAC-4 is a three way modulating valve that responds to discharge pressure. As shown in Figure 4, the discharge pressure bleeds around the pushrod to the underside of the diaphragm. The discharge pressure opposes the dome

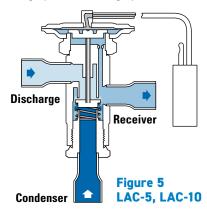


pressure. When the outdoor ambient falls, the condensing pressure falls. This causes the discharge pressure to fall as well. When the discharge pressure falls below the dome pressure, the valve modulates open to the discharge port which allows discharge gas to bypass the condenser. Mixing the discharge gas with the liquid creates a high pressure at the condenser outlet, reducing the flow and causing liquid to back up in the condenser. Flooding the condenser reduces

the area available for condensing. This reduction in effective condenser surface area results in a rise in condensing pressure. During summer conditions, the discharge pressure is high thus closing the discharge port. Hence, there is full liquid flow from the condenser to the receiver.

LAC-5 and LAC-10

The LAC-5 and LAC-10 are also three-way modulating valves but they respond to receiver pressure. As shown in Figure 5, the receiver pressure acts under the diaphragm. As the receiver pressure drops below the valve setting, the seat moves away from the discharge port allowing discharge gas to bypass the condenser. This discharge gas warms the liquid in the receiver and raises the pressure to the valve setting. At the same time discharge gas is bypassing the condenser, liquid flow from the condenser is restricted, which allows liquid to back up in the condenser. Flooding the condenser reduces the area available for condensing thus raising the condensing pressure. During summer conditions, the seat closes the discharge port due to high pressure in the receiver.



Therefore, there is full liquid flow from the condenser to the receiver.

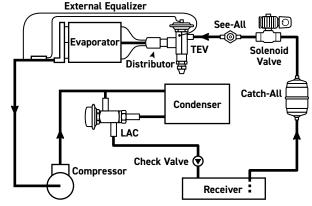
Refrigerant Migration

During an off cycle there is a potential for refrigerant to migrate from the warm receiver to the cold condenser. An auxiliary check valve should be used in the liquid line between the LAC and the receiver to prevent this from occurring. See Figure 6.

Piping Suggestions

The piping schematic shown in Figure 6 is only to illustrate the general location of the head pressure control valves in the system. Sporlan recommends that recognized piping references be consulted for assistance in piping procedures.

Figure 6



^{*} This page of Catalog A2L has pending information and should be refered to more at a later time

ELECTRONIC TEMPERATURE CONTROL SYSTEMS 32. 454B

Electric Expansion Valves

Sporlan Electric Expansion Valves (EEVs), now rated at full stroke (100% open) with no reserve capacity, are currently available in nominal R32 capacities from 1 to 576 tons and R454B capacities from 0.8 to 476 tons. These valves can control refrigerant flow down to 10% of rated capacity. Therefore, they are applicable on all the same types of systems found in the air conditioning and refrigeration industries as thermostatic expansion valves.

Sporlan electric valves are designed for compatibility with R32 and R454B. System conditions will dictate which product is necessary to control the application.

The SER, SERI and SEHI are Electronically Operated Step Motor flow control valves, intended for the precise control of liquid refrigerant flow. Synchronized signals to the motor



provide discrete angular movement, which translate into precise linear positioning of the valve piston. Valve pistons and ports are uniquely characterized, providing extraordinary flow resolution and performance. The SER, SERI and SEHI valves are easily interfaced with microprocessor based controllers, including Sporlan supplied controllers.

Specifications

VALVE	Maximum Rated	INLET - Inches (ODF)	OUTLET - Inches (ODF)	CONFIGURATION	CABLE	LENGTH
TYPE	Pressure (MRP)	INLET - Inches (ODF)	OUTLET - Inches (ODF)	CONFIGURATION	Feet	Meters
SER-AA*		1/4, 3/8	3/8, 1/2, 5/8	Angle		
SER-A*	1015 psig	1/4, 3/8	3/8, 1/2, 5/8	Angle		
SER-B*	1015 psig	1/4, 3/8	3/8, 1/2, 5/8	Angle		
SER-C*		1/4, 3/8	3/8, 1/2, 5/8	Angle		
SER-DS*		3/8, 1/2, 5/8	1/2, 5/8, 7/8, 1-1/8	Straight Through Offset	10	3
SERI-F*		5/8, 7/8	5/8, 7/8, 1-1/8, 1-3/8	Angle	Less Cable	Less Cable
SERI-G*	700	5/8, 7/8	1/2, 5/8, 7/8, 1-1/8, 1-3/8			
SERI-J*	700 psig	7/8, 1-1/8	7/8, 1-1/8, 1-3/8	Angle or		
SERI-K†		1-1/8	7/8, 1-1/8, 1-3/8, 1-5/8	Straight Through		
SERI-L†		1-1/8, 1-3/8	1-1/8, 1-3/8, 1-5/8	Offset		
SEHI-175	1-1/8, 1-3/8, 1-5/8 2-1/8		2-1/8		10, 20, 30, 40	2 / 0 12
SEH-P	620 psig	1-3/8, 1-5/8	1-3/8, 1-5/8, 2-1/8	Straight Through	10, 20, 30, 40	3, 6, 9, 12

^{*}Suitable for bi-directional applications.

Liquid Capacities Tons - psi - °F

	VALVE				40	°F							20	°F							0°	'F			
	TYPE									PR	ESSU	RE DF	ROP A	CROS	S VA	LVE (p	si)								
	TIPE	80	120	160	200	240	280	320	360	80	120	160	200	240	280	320	360	80	120	160	200	240	280	320	360
	SER-AA	0.74	0.90	1.04	1.17	1.28	1.38	1.48	1.57	0.73	0.90	1.03	1.16	1.27	1.37	1.46	1.55	0.72	0.88	1.02	1.14	1.25	1.35	1.44	1.53
	SER-A	1.59	1.95	2.26	2.52	2.76	2.98	3.19	3.38	1.58	1.94	2.24	2.50	2.74	2.96	3.16	3.35	1.56	1.91	2.21	2.47	2.70	2.92	3.12	3.31
	SER-B	3.07	3.76	4.34	4.85	5.31	5.74	6.13	6.51	3.04	3.72	4.30	4.81	5.27	5.69	6.08	6.45	3.00	3.68	4.24	4.74	5.20	5.61	6.00	6.37
	SER-C	8.32	10.2	11.8	13.2	14.4	15.6	16.6	17.6	8.24	10.1	11.7	13.0	14.3	15.4	16.5	17.5	8.14	9.97	11.5	12.9	14.1	15.2	16.3	17.3
1 [SER-D	16.9	20.7	23.9	26.8	29.3	31.7	33.8	35.9	16.8	20.5	23.7	26.5	29.1	31.4	33.5	35.6	16.6	20.3	23.4	26.2	28.7	31.0	33.1	35.1
, [SERI-F	25.0	30.6	35.4	39.5	43.3	46.8	50.0	53.0	24.8	30.3	35.0	39.2	42.9	46.4	49.6	52.6	24.5	30.0	34.6	38.7	42.4	45.7	48.9	51.9
<u> </u>	SERI-G	32.5	39.8	46.0	51.4	56.3	8.06	65.0	68.9	32.2	39.5	45.6	50.9	55.8	60.3	64.4	68.3	31.8	38.9	45.0	50.3	55.1	59.5	63.6	67.5
2 [SERI-J	58.5	71.6	82.7	92.5	101	109	117	124	58.0	71.0	82.0	91.7	100	108	116	123	57.2	70.1	80.9	90.5	99.1	107	114	121
۱ ا	SERI-K	106	130	150	168	184	198	212	225	105	129	149	166	182	197	210	223	104	127	147	164	180	194	207	220
[SERI-L	144	176	204	228	250	270	288	306	143	175	202	226	247	267	286	303	141	173	199	223	244	264	282	299
	SEHI-175	251	307	355	397	435	469	502	532	249	305	352	393	431	465	497	528	246	301	347	388	425	459	491	521
	SEH-P	407	499	576	644	705	762	815	864	404	494	571	638	699	755	807	856	398	488	563	630	690	745	797	845
	SER-AA	0.60	0.73	0.85	0.95	1.04	1.12	1.20	1.27	0.59	0.72	0.83	0.93	1.02	1.10	1.17	1.25	0.57	0.70	0.81	0.91	0.99	1.07	1.15	1.22
	SER-A	1.29	1.58	1.83	2.04	2.24	2.42	2.59	2.74	1.27	1.55	1.79	2.01	2.20	2.37	2.54	2.69	1.24	1.52	1.75	1.96	2.15	2.32	2.48	2.63
١l	SER-B	2.49	3.05	3.52	3.93	4.31	4.65	4.97	5.28	2.44	2.99	3.45	3.86	4.23	4.57	4.88	5.18	2.39	2.92	3.37	3.77	4.13	4.46	4.77	5.06
IJ	SER-C	6.74	8.26	9.54	10.7	11.7	12.6	13.5	14.3	6.62	8.11	9.36	10.5	11.5	12.4	13.2	14.0	6.47	7.92	9.15	10.2	11.2	12.1	12.9	13.7
ן נ	SER-D	13.7	16.8	19.4	21.7	23.8	25.7	27.4	29.1	13.5	16.5	19.0	21.3	23.3	25.2	26.9	28.6	13.2	16.1	18.6	20.8	22.8	24.6	26.3	27.9
	SERI-F	20.3	24.8	28.7	32.0	35.1	37.9	40.5	43.0	19.9	24.4	28.1	31.5	34.5	37.2	39.8	42.2	19.4	23.8	27.5	30.7	33.7	36.4	38.9	41.2
기	SERI-G	26.4	32.3	37.3	41.7	45.6	49.3	52.7	55.9	25.9	31.7	36.6	40.9	44.8	48.4	51.7	54.9	25.3	31.0	35.7	40.0	43.8	47.3	50.6	53.6
ן נ	SERI-J	47.4	58.1	67.1	75.0	82.1	88.7	94.8	101	46.6	57.0	65.8	73.6	80.6	87.1	93.1	98.7	45.5	55.7	64.3	71.9	78.8	85.1	91.0	96.5
1	SERI-K	86.0	105	122	136	149	161	172	182	84.4	103	119	133	146	158	169	179	82.5	101	117	130	143	154	165	175
3	SERI-L	117	143	165	185	202	219	234	248	115	140	162	181	199	215	229	243	112	137	158	177	194	210	224	238
	SEHI-175	203	249	288	322	352	381	407	432	200	245	282	316	346	374	399	424	195	239	276	309	338	365	390	414
	SEH-P	330	404	467	522	572	618	660	700	324	397	458	512	561	606	648	688	317	388	448	501	549	593	633	672

	CORRECTION FACTOR, CF LIQUID TEMPERATURE °F														
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
R32	1.58	1.53	1.47	1.41	1.36	1.30	1.24	1.19	1.13	1.06	1.00	0.94	0.87	0.80	0.73
R454B	1.67	1.60	1.54	1.48	1.41	1.35	1.28	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.69

[†]Bi-sealing, reduced flow in reverse direction.

Electric Evaporator Control Valves

CDS-4, -7, -9, and -17

The CDS valves are designed for more precise and energy efficient control of temperatures in evaporators. Proper temperature is obtained by regulating refrigerant flow in the evaporator in response to signals generated by an electronic controller and sensor combination. The valves are built



around balanced ports, which allows input power of less than 4 watts, less than one quarter of the power used by older heat motor and analog designs. When not actively stepping, power to the motor is removed for further energy savings. The step motors used are standard 12-volt DC bipolar designs, which in concert with the integral gear reduction, give the valves unsurpassed accuracy and repeatability over the entire operating range. Since the valves are powered

from an external controller, no pilot lines or high to low side bleeds are required. The properly applied CDS valve and controller can replace standard mechanical evaporator pressure regulators (EPR), suction stop solenoid valves, and conventional thermostats.

CDS-2, CDS-4, CDS-7, CDS-9 and CDS-17 valves may be applied as heat reclaim, head pressure control, or liquid line differential valves for R32 and R454B.

CDS-2, CDS-4, CDS-7 and CDS-9 have a Maximum Rated Pressure (MRP) of 700 psig. The CDS-17 has a MRP of 650 psig.

Due to the step motor design, the CDS series are the first evaporator control valves that may be sized to contribute NO additional pressure drop to the suction line.

Simplified cartridge design allows all moving parts to be replaced as a unit. Only the valve body is left in the line. This will allow maintenance or repair without unsweating the entire valve.

Specifications

TYPE	CONNECTIONS	CONFIGURATION	CABLE	LENGTH	CABLE ENDS		
TIPE	ODF SOLDER - Inches	CONFIGURATION	Feet	Meters	CABLE ENDS		
CDS-2	1/2, 5/8, 7/8	Straight Through					
CDS-4	1/2, 5/8, 7/8	1/2, 5/8, 7/8 Straight Through					
CDS-7	5/8, 7/8, 1-1/8, 1-3/8	Straight Through	10 20	3	S-Stripped and Tinned		
CDS-9	5/8, 7/8, 1-1/8, 1-3/8	Straight Through	20				
CDS-17	1-3/8, 1-5/8, 2-1/8	Straight Through					

Flow Capacity - Suction Vapor

Tons • psi • °F

	TYPE	EVAPORATOR	PRESS	URE DRO	OP ACRO	SS VAL	/E – psi
	ITPE	TEMP. °F	0.5	1	3	5	10
		40	0.69	0.97	1.64	2.10	2.94
		20	0.58	0.80	1.37	1.75	2.50
	CDS-2	0	0.47	0.66	1.12	1.43	1.99
		-20	0.38	0.53	0.90	1.13	1.54
		-40	0.30	0.41	0.68	0.86	1.13
		40	1.45	2.04	3.49	4.48	6.28
		20	1.20	1.69	2.89	3.71	5.23
	CDS-4	0	0.98	1.38	2.35	3.02	4.13
		-20	0.78	1.10	1.88	2.37	3.13
		-40	0.61	0.86	1.43	1.77	2.22
п		40	4.11	5.68	9.5	12.1	16.7
ľ		20	3.43	4.75	7.94	10.1	14.3
9	CDS-7	0	2.82	3.90	6.52	8.29	11.0
岁		-20	2.27	3.15	5.26	6.42	8.1
5		-40	1.80	2.48	3.88	4.65	5.3
		40	6.13	8.5	14.3	18.3	25.4
		20	5.11	7.09	11.9	15.2	21.6
	CDS-9	0	4.19	5.81	9.8	12.5	17.0
		-20	3.37	4.68	7.9	9.8	12.8
		-40	2.65	3.68	5.89	7.2	9.0
		40	11.0	15.2	25.7	32.9	45.7
		20	9.1	12.7	21.4	27.4	39.0
	CDS-17	0	7.47	10.4	17.6	22.4	30.6
		-20	6.00	8.4	14.1	17.6	22.9
		-40	4.72	6.6	10.6	13.0	15.9

R	32	Flow Capacity (Tons)						
Type	Cv	Pressure Drop (psi)						
Туре	C	0.5	1	3	5	10		
CDS-2	1.4	5.01	7.00	11.88	15.20	21.24		
CDS-4	2.8	10.77	15.12	25.88	33.23	46.65		
CDS-7	7.3	28.21	39.03	65.3	82.9	114.7		
CDS-9	11.2	43.04	59.8	100.7	128.3	178.3		
CDS-17	20.4	77.7	108.1	182.6	233.0	324.3		

TYPE	EVAPORATOR	PRESS	URE DRO	OP ACRO	SS VAL	/E – psi
TIPE	TEMP. °F	0.5	1	3	5	10
	40	0.82	1.14	1.93	2.47	3.46
	20	0.68	0.95	1.62	2.07	2.97
CDS-2	0	0.56	0.79	1.33	1.71	2.39
	-20	0.45	0.63	1.08	1.37	1.87
	-40	0.36	0.50	0.83	1.05	1.40
	40	1.71	2.39	4.10	5.26	7.39
	20	1.42	2.00	3.42	4.40	6.24
CDS-4	0	1.17	1.64	2.81	3.61	4.99
	-20	0.94	1.32	2.27	2.87	3.84
	-40	0.74	1.04	1.75	2.17	2.79
	40	4.84	6.70	11.2	14.2	19.7
•	20	4.07	5.63	9.42	12.0	17.1
CDS-7	0	3.37	4.67	7.80	9.91	13.5
	-20	2.74	3.79	6.34	7.84	10.1
	-40	2.18	3.02	4.77	5.79	6.9
	40	7.21	10.0	16.9	21.5	29.9
	20	6.06	8.42	14.2	18.1	25.8
CDS-9	0	5.00	6.95	11.7	14.9	20.5
	-20	4.06	5.64	9.5	11.9	15.7
	-40	3.22	4.47	7.21	8.9	11.3
	40	12.9	18.0	30.3	38.7	53.8
	20	10.8	15.1	25.4	32.4	46.6
CDS-17	0	8.93	12.4	21.0	26.8	37.1
	-20	7.23	10.1	17.0	21.4	28.3
	-40	5.73	8.0	13.0	16.1	20.2

R4	.54B		Flow	Flow Capacity (Tons)				
Type	Cv	Pressure Drop (psi)						
Туре	CV	0.5	1	3	5	10		
CDS-2	1.4	4.16	5.81	9.86	12.62	17.63		
CDS-4	2.8	8.94	12.55	21.48	27.59	38.73		
CDS-7	7.3	23.41	32.39	54.2	68.8	95.2		
CDS-9	11.2	35.72	49.6	83.6	106.5	148.0		
CDS-17	20.4	64.5	89.7	151.6	193.4	269.1		

* Liquid capacities calculated at 40 deg F evaporator temperatures

		Liquid Temperature Entering Expansion Valve (°F) Liquid Application													
	0	10	14	30	40	50	60	70	80	90	100	110	120	130	140
R32	1.27	1.23	1.21	1.14	1.09	1.05	1.00	0.95	0.90	0.85	0.80	0.75	0.70	0.64	0.59
R454B	1.30	1.25	1.23	1.15	1.10	1.05	1.00	0.94	0.89	0.84	0.78	0.73	0.67	0.61	0.54

Electric Discharge Bypass Valves

SDR Valves

SDR series valves are Step Discharge Regulators, or electrically operated discharge gas bypass valves. Unlike previous mechanical discharge gas bypass valves that only control a downstream pressure, the SDR series offers direct temperature control of air or liquid. The valves use the same 12 DC bipolar step motor as all other Sporlan step motor operated valves, including the CDS valves above. Balanced pistons and ports, uniquely characterized for hot gas flow, have been incorporated into the design. Seating materials, motors and gears have all been laboratory and field proven in high temperature gas applications.

With capacities up to 111 tons nominal R32 and 95 tons nominal R454B, the SDR series is suitable for use in small process chillers and environmental chambers, as well as large direct expansion air conditioning applications. The valves may be controlled by third party controllers or by the Sporlan TCB interface/controller shown below. SDR valves are normally installed in the same manner as mechanical discharge gas bypass valves; in a bypass branch of the discharge gas line. The valves may be piped to feed into the evaporator at the distributor, downstream of the evaporator, or at the compressor suction. Contact Sporlan for additional piping recommendations.

When applied with a third party controller or DDC building management system, the SDR can be used with the IB or TCB as an interface to the existing system. For standalone control, the SDR and TCB with sensor will allow close temperature control of the air or liquid stream. See the section below for information on the TCB and IB.



The SDR valves are tight seating and will act as solenoid valves for shut off.

All Sporlan SDR valves are rated at 700 psig (48 bar) MRP.

TYPE	CONNECTIONS	CONFIGURATION	CABLE LENGTH		
	Inches		Feet	Meters	
SDR-1X	3/8, 1/2 ODF				
SDR-2	3/8, 1/2 ODF		Less Cable 10	Less Cable 3	
SDR-2X	1/2, 5/5, 7/8 ODF	Angle	10	3	
SDR-3	3/8, 1/2, 5/8 ODF		10	3	
SDR-3X	3/8, 1/2, 5/8 ODF		20	6	
SDR-4	7/8, 1-1/8 ODF	Canalisha Thau	30	9	
SDR-5	1-3/8 ODF	Straight Thru	40	12	

Capacities

Tons - psi - °F

				Minin	num A	llowa	ble Ev	apora	itor Te	mper	ature	at Red	duced	Load	°F - To	ons			
	Valve		40			26			20			0			-20			-40	
	Model								Conde	nsing To	empera	ture °F							
	Product	80	100	120	80	100	120	80	100	120	80	100	120	80	100	120	80	100	120
	SDR-1X	1.05	1.35	1.70	1.05	1.35	1.70	1.05	1.35	1.70	1.05	1.35	1.72	1.05	1.36	1.73	1.06	1.38	1.75
	SDR-2	3.11	4.00	5.05	3.11	4.01	5.06	3.11	4.01	5.07	3.12	4.03	5.10	3.13	4.06	5.15	3.16	4.10	5.22
$\sqrt{1}$	SDR-2X	6.16	8.18	10.37	6.36	8.23	10.4	6.39	8.23	10.41	6.41	8.27	10.5	6.44	8.33	10.58	6.49	8.42	10.7
2)	SDR-3	12.2	15.8	19.9	12.3	15.8	20.0	12.3	15.8	20.0	12.3	15.9	20.1	12.4	16.0	20.3	12.5	16.2	20.6
1	SDR-3X	21.7	28.3	35.7	22.0	28.3	35.8	22.0	28.4	35.9	22.1	28.5	36.1	22.2	28.7	36.4	22.4	29.0	36.9
7	SDR-4	38.7	54.5	72.2	42.3	57.5	74.9	43.5	58.5	75.9	46.4	61.3	78.7	48.4	63.4	81.1	49.9	65.2	83.3
	SDR-5	111	144	182	112	145	183	112	145	183	113	145	184	113	146	186	114	148	188
	SDR-1X	0.89	1.15	1.45	0.90	1.15	1.46	0.90	1.15	1.46	0.90	1.16	1.47	0.91	1.17	1.48	0.91	1.18	1.50
ונ	SDR-2	2.66	3.42	4.31	2.66	3.43	4.33	2.67	3.43	4.34	2.68	3.45	4.36	2.70	3.48	4.40	2.72	3.52	4.46
7	SDR-2X	5.34	7.02	8.86	5.47	7.04	8.9	5.48	7.05	8.90	5.50	7.09	9.0	5.54	7.15	9.04	5.59	7.22	9.2
الإ	SDR-3	10.5	13.5	17.0	10.5	13.5	17.1	10.5	13.5	17.1	10.6	13.6	17.2	10.6	13.7	17.4	10.7	13.9	17.6
ŕ	SDR-3X	18.7	24.2	30.5	18.8	24.3	30.6	18.9	24.3	30.7	19.0	24.4	30.9	19.1	24.6	31.2	19.3	24.9	31.5
2	SDR-4	34.2	47.6	62.6	37.1	50.0	64.8	38.0	50.9	65.6	40.4	53.1	67.9	42.0	54.8	69.7	43.3	56.2	71.4
	SDR-5	95.6	123	156	96.1	124	156	96.2	124	156	96.7	125	158	97.3	126	159	98.2	127	161

Note: Capacities are based on discharge temperature 50°F (28°C) above isentropic compression, 100°F (55°) condensing temperature, 0°F (0°C) subcooling, 25°F (13°C) superheat at the compressor and includes both the hot gas bypassed and the liquid refrigerant for desuperheating, regardless of whether the liquid is fed through the system thermostatic expansion valve or auxiliary desuperheating expansion valve.

For complete information see your Sporlan Wholesaler, our website at www.sporlan.com, or write Sporlan and request Bulletin 100-60.

ELECTRONIC TEMPERATURE CONTROL SYSTEMS 32. 454E

Modulating Three-Way Valves

MTW Valves

The Modulating 3-Way (MTW) valve allows control of refrigerant flow through two outlet ports. Two valve pistons are attached to a connecting rod and to the stepper motor. As the MTW valve modulates one port opens and the other port closes. The movement of the valve pistons relative to the two ports is inversely proportional.

The MTW valve is typically located in the discharge line for dehumidification, reheat and heat reclaim applications. Sporlan recommends piping Outlet A to the normal condenser and Outlet B to the reclaim/reheat condenser. Outlet connections A and B are designated on the valve body

Features and Benefits

- Improved performance from modulated control
- Reduction in number of modulation valves required per system
- Simplified system piping enables piping material cost reduction
- Reduced install time enables labor cost reduction
- Single actuator reduces control and wiring complexity
- Bi-sealing piston assembly



TYPE	CONNECTIONS	Cable Length		
	Inches	Feet	Meters	
MTW-7	1/2, 5/8, 7/8 ODF			
MTW-9	5/8, 7/8, 1-1/8 ODF	10 20	3 6	
MTW-17	1-3/8, 1-5/8, 2-1/8 ODF	30 40	9 12	
MTW-21	1-5/8, 2-1/8, 2-5/8 ODF			

Discharge Capacities

Tons - psi - °F

	Flow Capacity (Tons)									
Tuna	Evap Temp			DP (psi						
Type	(°F)	0.5	1	3	5	10				
	40	4.21	6.00	10.52	13.69	19.60				
	20	4.08	5.82	10.21	13.28	19.02				
MTW-7	0	3.94	5.62	9.85	12.82	18.36				
	-20	3.79	5.40	9.47	12.31	17.64				
	-40	3.62	5.16	9.05	11.77	16.86				
	40	7.49	10.55	18.19	23.47	33.25				
	20	7.27	10.24	17.66	22.79	32.28				
MTW-9	0	7.02	9.90	17.06	22.01	31.19				
	-20	6.75	9.51	16.41	21.17	29.99				
	-40	6.46	9.10	15.70	20.25	28.69				
	40	14.22	19.86	33.8	43.3	60.9				
	20	13.81	19.29	32.83	42.1	59.1				
MTW-17	0	13.35	18.65	31.74	40.69	57.2				
	-20	12.84	17.94	30.53	39.14	55.0				
	-40	12.30	17.18	29.24	37.48	52.7				
	40	29.1	38.7	61.2	75.7	101.4				
	20	28.3	37.7	59.6	73.8	98.8				
MTW-21	0	27.45	36.6	57.8	71.5	95.8				
	-20	26.50	35.3	55.8	69.1	92.5				
	-40	25.47	34.0	53.6	66.4	88.9				

		Flow Capacity (Tons)										
	Tuna	Evap Temp			DP (psi							
	Type	(°F)	0.5	1	3	5	10					
		40	3.71	5.29	9.28	12.08	17.32					
		20	3.60	5.13	9.00	11.71	16.78					
	MTW-7	0	3.47	4.94	8.68	11.29	16.19					
		-20	3.33	4.75	8.33	10.84	15.54					
		-40	3.18	4.53	7.96	10.35	14.84					
		40	6.59	9.28	16.02	20.67	29.30					
ത		20	6.39	9.00	15.53	20.04	28.41					
لكت	MTW-9	0	6.17	8.69	14.99	19.34	27.42					
吗		-20	5.92	8.34	14.39	18.57	26.33					
		-40	5.66	7.98	13.76	17.75	25.17					
(رکتا		40	12.49	17.45	29.7	38.1	53.5					
邻		20	12.11	16.92	28.81	36.9	51.9					
\sim	MTW-17	0	11.69	16.34	27.81	35.67	50.1					
		-20	11.24	15.70	26.72	34.27	48.2					
		-40	10.74	15.01	25.56	32.77	46.1					
		40	25.3	33.7	53.2	65.9	88.3					
		20	24.6	32.8	51.7	64.1	85.9					
	MTW-21	0	23.78	31.7	50.1	62.0	83.1					
		-20	22.90	30.5	48.2	59.7	80.0					
		-40	21.96	29.3	46.2	57.3	76.8					

Note: Capacities based upon 100° F condensing temperature, 60° F liquid entering expansion valve, isentropic compression plus 50° F, evaporator temperature as shown plus 25° F superheat suction gas.

ELECTRONIC TEMPERATURE CONTROL SYSTEMS

IB-G Interface Board

The IB-G is a small electronic circuit board that extends the functionality of an external system controller to drive step motor valves. The external controller must provide an analog 0-10VDC or 4-20mA signal to the IB-G. The signal is then converted to a step motor signal to position the valve.

The IB-G has been developed with all of the functionality of the following IB Series Interface Boards including quick response versions: IB 1, IB 2, IB 3, IB 6 and IB ESX. All of these options are configurable on the IB-G. The IB-G can accept 4-20 milliamp or 0-10 volt DC analog input signals and is designed to allow externally supplied control signals to control one or two Sporlan step motor valves including CDS evaporator control valves, SDR electric discharge bypass valves, and

SEI/SER/SEH/SEV/ESX* electric expansion valves. Enhanced features include LED indicators for power and valve position, option for 400 pulses per second (pps), and a valve open or close feature.

*The IB-G can only control a single ESX valve.



APPENDIX B - Technical Specifications

ELECTRICAL

Supply Voltage

22-28VAC 50/60Hz or 22-28VDC; Class II input

Digital Inputs

Interface to dry contact or open collector

Indicators

Red LED - Power

Yellow LED - Valve Closed

Green LED - Valve Open

Analog Inputs

0-10VDC

4-20mA

MECHANICAL

Operating Temperature

-22°F to 158°F (-30°C to 70°C)

Storage Temperature

-30°F to 170°F (-34°C to 77°C)

Humidity

10-95%RH (Non-Condensing)

Wiring

Screw Terminal

Mounting

SNAP Track

Mounting Holes

COMPLIANCE

CE

RoHS

APPENDIX A - Ordering Information

ITEM DESCRIPTION

IB-G INTERFACE BOARD

POWER SUPPLY (100-240 VAC/24VDC)

ITEM NUMBER

953580 953444

Kelvin II Series

Valve Controllers

Superheat Control

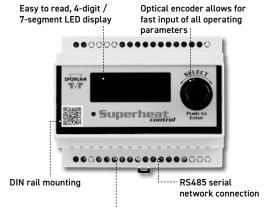
- True pressure / temperature stand-alone superheat controller via EEV control
- Remote access via Modbus or BACnet
- Pumpdown mode via dry contact input
- Manual valve positioning
- Energy efficient system operation though more accurate valve control

Subcool Control

- · Controls liquid temperature using an EEV
- Provides secondary control of superheat for system protection
- Displays actual leaving liquid temperature, superheat, suction pressure, valve position, controller status, and alarms
- Pumpdown mode via dry contact input
- · Manual valve positioning
- · Remote access via Modbus

Temperature Control

Temperature control via electric valve (ie: SDR)



Easy access screw terminals provide reliable connections for all inputs

- Increased operating limits (-50°F to +299°F)
- · Remote access via Modbus
- · Pumpdown mode via dry contact input
- Manual valve positioning
- Advanced algorithm with AUTO PID to optimize system performance
- Optional high temperature selection for discharge control (60°F to +299°F) with 98.6K temperature sensor
- · Optional temperature delta control (maintains T1-T2)

ELECTRONIC TEMPERATURE CONTROL SYSTEMS

Kelvin II Series Continued

Valve Controllers

Chiller Control

- Controls EEV on most compact chillers
- · Remote access via Modbus or BACnet
- · Provides liquid temperature and superheat (P-T) control for common refrigerants
- · Pumpdown mode via dry contact input
- · Allows manual valve positioning

Secondary Fluid Control

- Controls Sporlan SFV stepper valve on medium temperature secondary fluid
- · Remote access via Modbus
- · Provides optimum efficiency, using liquid in, liquid out, and discharge air temperatures
- · Allows manual valve positioning

Pressure Control

· Controls electric evaporator regulator valve (CDS) or hot gas bypass valve (SDR) to regulate system pressure

- Remote access via Modbus or BACnet
- · Pumpdown mode via dry contact input
- · Manual valve positioning
- · Advanced algorithm with AUTO PID to optimize system performance
- Head pressure control to replace mechanical A8 and A9 valves
- Supports inlet or outlet regulator (ie: A80E)

Learn More



Superheat Control Bulletin 100-50-5.1



Subcool Control Bulletin 100-50-5.2



Temperature Control Bulletin 100-50-5.3



Pressure Control Bulletin 100-50-5.5



Chiller Control Bulletin 100-50-5.6



Bulletin 100-50-5.4rd

EQ Valve Module

The Parker - Sporlan EQ Valve Module is a controller designed for responsive superheat control in HVAC systems. Up to 2 coils (evaporators) can be measured and controlled. The controller will use pressure/temperature sensors to measure each coil's superheat and position up to 2 electronic expansion valves. The controller can be configured to control two coils that share a temperature and/or pressure (common suction or heat pump designs) or have individual suction lines (main compressor plus supplemental designs). The controller includes status LEDs and RS-485 network port connectivity to allow setup and readout of values

Features

- Auto PID or manual-set PID superheat control
- 24 VDC operating voltage
- 2 x Coil outlet temperature thermistor inputs
- 2 x Pressure inputs
- 2 x Stepper outputs
- MODBUS over RS-485 Serial Communication Interface
- Status LED indicators
- DIN or screw mounting options



Specifications

Table 1: Control	ler Specifications
Input Power	24VDC ±10% Current: 0.75A minimum, 1.5A maximum Supply must be Class 2 and Class II rated. Maximum wire length between power supply and controller is 175 ft. Minimum wire width is 18AWG.
Temperature 10k Type 2 NTC Thermistor (default) or 2K, 3K (software selectable)	
Pressure Inputs	0.5 – 4.5 VDC ratiometric transducer input. Pressure ranges: 150 PSI, 300 PSI, 500 PSI, 652 PSI and Custom (Absolute or Gauge software selectable)
Stepper Motor Outputs	Unipolar/Bipolar 13.5 VDC @ 400 mA per phase (All Sporlan Valves)
Data Interface	MODBUS Slave device over RS-485 (2 ports) Address selectable in software 120 Ω termination enabled via DIP switch 4 on port 1 (no hardware termination included on port 2) Settings: 38400 baud, Even parity, 8 data bits, 1 stop bit
Operating Temperature	-40°C to +70°C (-40°F to 158°F)
Operating Humidity	0 to 95% RH Non-condensing
Storage Temperature	-40°C to +70°C (-40°F to 158°F)
Compliance	UL, RoHS, FCC
Storage Humidity	0 to 90% RH Non-condensing

ELECTRONIC TEMPERATURE CONTROL SYSTEMS

Micro Thermo Modular Controllers

Micro Thermo Technologies 700-Series Platform

The Micro Thermo 700 series is a flexible and modular family of I/O boards that allows custom creation of Suction Group, Circuit and Gas Cooler controllers that allows the creation of a custom rooftop unit controller. The Micro Thermo 700 series platform communicates over a LON Echelon network that takes advantage of free topology architecture to make network wiring easy.

The RTU700 Software contains advanced control for features like variable capacity compressors, variable speed fans, differential enthalpy economizers, modulating hot gas reheat, indoor air quality mitigation, and heat reclaim integrated with your refrigeration system. Windows PC-based software has simple point & click navigation with fully customizable screens for intuitive control system navigation and interactive process screens.

Features

- Configurable I/O
- Reduced board & space requirements compare to MT-500 series
- Simplified user interface
- Compatible with all modern refrigerants, including A2Ls commonly used in HVAC systems.

Refer to microthermo.com literature page for more details For ordering inquiries, email mtorder@parker.com



700 Module	Inputs	Outputs
MT-722	2UI	2 AO
MT-708R	0	8 RO
MT-708V	0	8 MVC
MT-766A	6 UI	2 AO, 4 RO
MT-784A	8 UI	4 R0
MT-742V	4 UI	2 MVC
MT-716U	16 UI	0

PRESSURE TEMPERATURE CHART

R454 and R32 At Sea Level

-18.3

-16.7

-16.1

-15.6

-15.0

-14.4

-13.9

-13.3

-12.8

5

41.5

42.7

43.9

45.1

47.6

48.8

50.1

51.4

52.7

Refrigerant type (safety class) Refrigerant (Sporlan Letter Code) TEMP. TEMP. HFO (A2L) HFO (A2L) HFC (A2L) HFC (A2L) 454B(Y) 32(H) 454B(Y) 32(H) °C °C °F °F -50 -45.6 5.2 10 -12.2 55.4 63.5 -42.8 8.0 -11.7 56.8 65.0 -11.1 58.2 -40.0 8.4 11.0 66.6 -10.6 59.7 11.4 14.4 68.2 -34.4 14.8 18.2 -10.0 61.1 69.8 -29 -33.9 15.5 19.0 62.6 71.4 -8.9 -28 -33.3 16.3 19.8 64.1 73.1 -27 -32.8 17 20.6 -8.3 65.6 74.8 -26 -32.2 17.7 21.5 67.1 76.5 -25 -31.7 18.5 22.3 68.7 78.3 -24 -31.1 19.3 -6.7 70.3 80.0 23.2 -23 -30.6 20.1 24.1 -6.1 71.9 81.8 -22 -30.0 20.9 25.0 22 -5.6 73.5 83.6 -29.4 23 -5.0 21.7 25.9 75.2 85.5 -20 -28.9 24 -4.4 76.8 87.3 -19 -3.9 25 -28.3 23.4 27.8 78.5 89.2 -18 -3.3 -27.8 26 28.7 80.3 91.1 24.3 -17 -27.2 -2.8 82 93.1 25.2 29.7 -26.7 26.1 30.7 28 -2.2 83.8 95.1 -26.1 27 31.7 29 -1.7 85.6 97.1 -25.6 30 99.1 27.9 32.8 87.4 -25.0 28.8 33.8 -0.6 89.2 101.2 0.0 -24.4 29.8 34.9 32 91.1 103.2 30.8 36.0 93 -23.9 33 105.3 0.6 -23.3 31.8 37.1 34 94.9 107.5 -22.8 32.8 38.2 35 96.9 109.7 -22.2 33.8 39.4 36 2.2 98.8 111.9 -21.7 34.9 40.5 37 100.8 114.1 -21.1 35.9 41.7 3.3 38 102.9 116.3 -20.6 37 42.9 39 3.9 104.9 118.6 -20.0 38.1 44.2 4.4 107 40 121.0 -19.4 39.2 45.4 5.0 109.1 123.3 -18.9 40.4 46.7 111.2 125.7

TEMP.		HFO (A2L)	HFC (A2L)		
°F	°C	454B(Y)	32(H)		
60	15.6	161.1	174.0		
62	16.7	166.7	180.1		
64	17.8	172.5	186.3		
65	18.3	175.4	189.5		
66	18.9	178.4	192.7		
68	20.0	184.4	199.2		
70	21.1	190.5	205.8		
72	22.2	196.8	212.6		
74	23.3	203.2	219.6		
75	23.9	206.5	223.2		
76	24.4	209.8	226.7		
78	25.6	216.5	234.0		
80	26.7	223.4	241.5		
82	27.8	230.4	249.1		
84	28.9	237.6	256.9		
85	29.4	241.2	260.9		
86	30.0	244.9	264.9		
88	31.1	252.4	273.0		
90	32.2	260.1	281.3		
92	33.3	267.9	289.8		
94	34.4	275.8	298.5		
95 96	35.0 35.6	279.9 284	302.9 307.4		
98	36.7	284	316.4		
100	37.8	300.8	325.7		
102	38.9	309.4	335.1		
104	40.0	318.3	344.8		
105	40.6	322.8	349.6		
106	41.1	327.3	354.6		
108	42.2	336.5	364.6		
110	43.3	345.9	374.9		
112	44.4	355.5	385.3		
114	45.6	365.2	396.0		
115	46.1	370.2	401.4		
120	48.9	395.7	429.3		
125	51.7	422.4	458.7		
130	54.4	450.5	489.5		
135	57.2	479.9	521.8		
140	60.0	510.7	555.8		
145	62.8	543	591.4		
150	65.6	576.8	628.8		
155	68.3	612.3	668.1		
160	71.1	649.3	709.4		
165	73.9	688.2	752.9		

To determine Subcooling for 400-Series blends, use Bubble Point in Gray. To determine Superheat for 400-Series blends, use Dew Point in Blue.

47.9

49.3

50.6

51.9

53.3

54.7

56.1

57.5

59.0

60.5

62.0

44

50

52

54

56

6.7

7.2

7.8

8.9

10.0

11.1

12.2

12.8

13.3

14.4

What's Your Superheat?

113.4

115.6

117.8

120

124.6

129.3

140

145.1

147.7

150.3

155.7

128.1

130.5

133.0

135.5

140.6

151.2

156.7

159.5

162.4

168.1

145.8

