

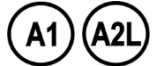
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Ref: TI_L-Series_A1_A2L_EN_Rev00

Application Engineering Europe

THERMO™-EXPANSION VALVE L-SERIES (LCLE / LJRE / LERE/ LIRE)



General information

The Take-a-part Liquid Injection Valve of L-Series are mainly designed for superheat control of desuperheating of suction gas e.g. in hot gas bypass systems and interstage cooling in multiple stage compressors.

Features

- Modular design for economical logistics and easy assembly and servicing
- Combinations of different charges with various orifice springs cover a very large application range
- Power element with a long-life laser welded stainless steel head resists corrosion
- Large diaphragm eliminates disturbances to the valve and provides smoother and consistent valve control over wide range of operation
- High-quality materials and processes for high reliability and long lifetime
- Superior partial load performance due to double seat orifice design (LJRE, LERE)
- Flanges: brazing ODF/ODM connection with straight through and angle style configuration


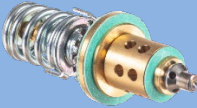




TCLE

- For maintenance no loosen the pipes connections are necessary, due there are no operationally relevant parts inside the flange
- Max. allowable pressure PS:
 - 46 bar with XB Power assembly
 - 31 bar with XC Power assembly
- Medium Temperature range TS: -45...+65 °C

TAKE-APART DESIGN

L valves consists of 3 main assembly parts:

Valve Series	Power element	Orifice	Flange	
			 Angle	 Straight through
LCLE	XB1019...-1B XB1019...-2B	X22440-B...B	C501-5/ C501-5mm C501-7 / C501-7mm A576 / A576-mm	9761-3 / 9761-3mm 9761-4 / 9761-4mm 6346-17
LJRE		X11873-B...B	10331	10332
LERE	XC726...-2B	X9117-B...B	9153 / 9153-mm	9152 / 9152-mm
LIRE	XC726...-4B	X9166-B10B		

Each part can be selected individually and combined according to the system requirements by following of 4 selection steps.

Step 1: Single Selection Orifice according required Capacity

Valve Type	Orifice Type	Orifice Part No.	Capacity (kW)									Power element
			Capacity code	R134a	R513A	R450A	R404A R507	R407C	R410A	R448A	R449A	
LCLE	X22440-B1B	803210	1*	1.5	1.3	1.3	1.3	2.1	2.2	1.9	1.9	XB 1019 ...
	X22440-B2B	803211	2*	2.9	2.6	2.5	2.6	4.0	4.3	3.7	3.6	
	X22440-B3B	803212	3*	6.1	5.5	5.4	5.6	8.5	9.2	7.9	7.7	
	X22440-B3.5B	803462	3.5*	9.3	8.3	8.1	8.4	12.9	13.9	11.9	11.6	
	X22440-B4B	803213	4*	13.5	12.1	11.8	12.2	18.7	20.2	17.3	16.9	
	X22440-B5B	803214	6*	17.3	15.5	15.1	15.7	24.0	25.9	22.1	21.6	
	X22440-B6B	803215	7*	23.6	21.2	20.7	21.5	32.9	35.5	30.3	29.6	
	X22440-B7B	803216	9*	32.0	28.7	28	29.0	44.4	48.0	41	40	
LJRE	X11873-B4B	803348	11*	45	40	40	40	62	67.7	57.8	56.5	XC 726 ...
	X11873-B5B	803349	12*	57	52	50	51	80	86.4	73.8	72.1	
LERE	X9117-B6B	803341	13*	71	64	62	63	99	-	90.7	88.6	
	X9117-B7B	803342	14*	81	73	71	72	112	-	104	101	
	X9117-B8B	803343	15*	112	100	98	99	155	-	143	139	
	X9117-B9B	803344	16*	135	121	119	120	188	-	174	170	
LIRE	X9166-B10B	803347	17*	174	156	152	154	241	-	222	217	

Valve Type	Orifice Type	Orifice Part No.	Capacity (kW)									Power Element
			Capacity code	R32	R454A	R454C	R455A	R1234ze	R1234yf			
LCLE	X22440-B1B	803210	1*	3.3	1.9	1.6	1.8	1.1	1.1			XB 1019 ...
	X22440-B2B	803211	2*	6.4	3.6	3.0	3.5	2.1	2.2			
	X22440-B3B	803212	3*	13.7	7.8	6.5	7.5	4.4	4.8			
	X22440-B3.5B	803462	3.5*	20.7	11.7	9.7	11.3	6.6	7.2			
	X22440-B4B	803213	4*	30.0	17	14.2	16.4	9.6	10.5			
	X22440-B5B	803214	6*	38.5	21.8	18.2	21	12.4	13.4			
	X22440-B6B	803215	7*	52.8	29.9	24.9	29	17.0	18.4			
	X22440-B7B	803216	9*	71.4	40.4	33.6	39	22.9	24.8			
LJRE	X11873-B4B	803348	11*	101	57	47.4	55	32.3	35.1			XC 726 ...
	X11873-B5B	803349	12*	129	72.8	60.5	70	41.3	44.7			
LERE	X9117-B6B	803341	13*	-	89.5	74.4	86.2	50.7	55			
	X9117-B7B	803342	14*	-	102	85.1	98.5	58.0	62.9			
	X9117-B8B	803343	15*	-	141	117	135	79.7	86.4			
	X9117-B9B	803344	16*	-	171	142	165	97	105			
LIRE	X9166-B10B	803347	17*	-	219	182	211	124	135			

NOTE 1: The nominal capacities are based +4 °C evaporating temperature (dew point), +38 °C condensing temperature (bubble point) and 1 K subcooling.

NOTE 2: For other operating conditions use the "Select" tool (www.climate.emerson.com/en-gb). For assistance with selection, please contact your local Emerson Sales offices.

Step 2: Single Selection - Suction Gas Superheat - Charge

Charge Code	Refrigerants													
	A1								A2L					
	R134a	R513A	R450A	R404A/ R507	R407C	R410A	R448A	R449A	R32	R454A	R454C	R455A	R1234ze	R1234yf
CL	-	-	-	22 K	13 K	30 K	17 K	17 K	31 K	19 K	13 K	15 K	-	-
GL	14 K	17 K	10 K	-	25 K	-	30 K	30 K		32 K	27 K	28 K	-	16 K
UL	30 K	-	26 K	-	-	-	-	-		-	-	-	22 K	-











Step 3: Single Selection - Power Element

Charge Code	Capacity Code	Max. allowable Pressure PS	Capillary tube length	Power Element	
				Type	Part No.
CL	1...12	46 bar	3.0 m	XB 1019 CL-2B	803141
	13...17	31 bar	3.0 m	XC 726 CL-2B	803160
GL	1...12	46 bar	3.0 m	XB 1019 GL-2B	803143
	13...17	31 bar	3.0 m	XC 726 GL-2B	802808
UL	1...12	46 bar	3.0 m	XB 1019 UL-2B	803152
	13...17	31 bar	3.0 m	XC 726 UL-2B	803166

Type Code Power Element - e.g. XB1019-CL-2B

	X □ □ □ □ □	-	□ □ □ □	
Type				Equalizer
XB1019	Smaller capacities PS: max 46 bar			A internal B external
XC726	larger capacities PS: max 31 bar			
				Capillary Tube Code
				1 1.5 m 2 3.0 m 4 6.0 m
				Charge Code - Superheat
				CL/ GL/ UL See table Suction Gas Superheat






Step 4: Single Selection – Flange

Valve type	Power Element	Orifice	Flange Style				Connection (Inlet x Outlet)			
			Angle	Part No.	Straight through	Part No.	metric	imperial		
LCLE	XB1019...B	X22440-B1B X22440-B2B X22440-B3B X22440-B3.5B X22440-B4B X22440-B5B X22440-B6B X22440-B7B X22440-B8B		C501-5	803232		9761-3	803240	-	3/8" x 5/8" ODF
				C501-5mm	803233		9761-3mm	803241	10 x 16 mm ODF	-
			C501-7	803234		9761-4	803350	-	1/2" x 5/8" ODF	
			C501-7mm	803235		9761-4mm	803243	12 x 16 mm ODF	-	
		-	-	-		6346-17	803330	16 x 22 mm ODF	5/8" x 7/8" ODF	
			A576	803238	-	-	-	-	5/8" x 7/8" ODF 7/8" x 1-1/8" ODM	
			A576-mm	803239	-	-	-	16 x 22 mm ODF 22 x 28 mm ODM	-	
LJRE		X11873-B4B X11873-B5B		10331	803338		10332	803324	22 x 22 mm ODF	7/8" x 7/8" ODF 1-1/8" x 1-1/8" ODM
LERE LIRE	XC726...B	X9117-B6B X9117-B7B X9117-B8B X9117-B9B X9117-B10B		9153	803244		9152	803286	-	7/8" x 7/8" ODF 1-1/8"x1-1/8" ODM
				9153-mm	803245		9152-mm	803287	22 x 22 mm ODF 28 x 28 mm ODM	-

Type code - Valve Kit LCLE / LJRE / LERE - e.g. LCLE1CLWL10x16

Valve Series	L	<input type="checkbox"/>	<input type="checkbox"/>	E	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Type											
CL / JR	Small Capacity										
ER / IR	Large Capacity, Balanced port										
External Equalizer											
Charge Code											
CL											
GL	See table Suction Gas superheat										
UL											
Connection											
Inlet x outlet											
Capillary tube length											
blank	3.0 m										
4B	6.0 m										
Flange Style											
WL	angled										
DL	Straight through										

Selection Table Accessories and Spare Parts

Type	Part No.	Description	Illustration
X 99999	800005	Service Tool for T, ZZ, L and 935 Series valves	
X 13455	027579	Gasket sets for T, ZZ, L and 935 Series valves	
Screw ST 32	803573	Steel Screws for flange types: C501, 9761, 6346, A576	
Screw ST 48	803574	Steel Screws for flange types: 9152, 9153, 10331, 10332	
XA 1728-4	803260	Bulb clamp for XB1019	
XA 1728-5	803261	Bulb clamp for XC726	

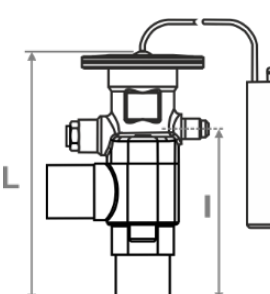
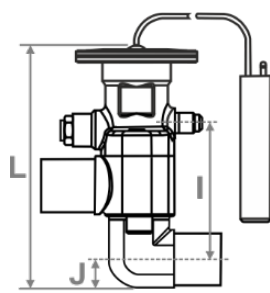
Technical Data

Max. allowable Pressure PS XB... Power element XC... Power element	46 bar 31 bar
Max. Test Pressure PT XB... Power element XC... Power element	50.6 bar 34.1 bar
Temperatures TS Medium	-45 ... +65 °C
Flange connections	Brass ODF or ODM
Vibration Resistance (for fastened valve, non-connected)	4g (0...1000 Hz, 1 octave/min)
Shock	20 g at 11 ms 80 g at 1 ms

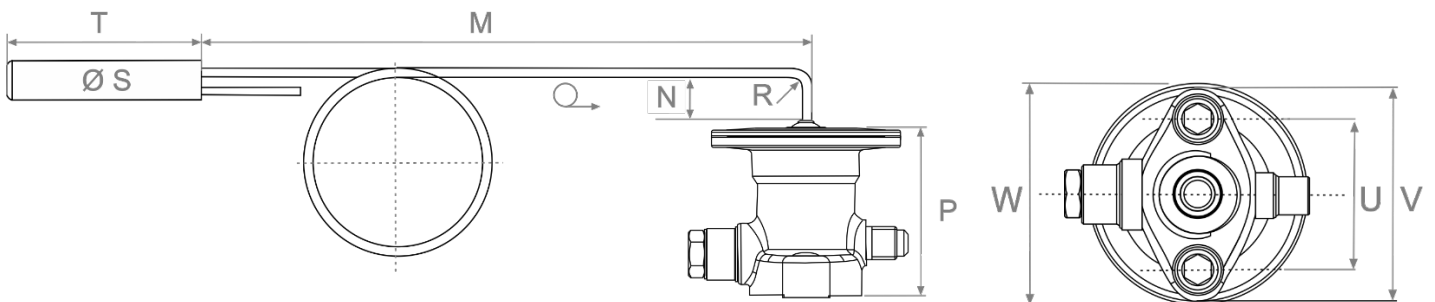
Materials power element valve head	Stainless steel
Materials capillary tube & bulb XB... Power element XC... Power element	copper zinc plated copper
Released Refrigerants	See Selection tables A1 & A2L
Standards	RoHS compliant
Delivery	Single Package
Markings	CE not required

Dimension (mm)

GENERAL

Valve (Kit)	Illustration	Power Element	Flange	Inlet x Outlet	I	J	L	
LCLE		XB1019...1B	Angled	C501-5	3/8" x 5/8" ODF	57	-	106
				C501-5mm	10 x 16 mm ODF	57	-	105
				C501-7	1/2" x 5/8" ODF	61	-	113
				C501-7mm	12 x 16 mm ODF-	61	-	108
				A576	5/8" x 7/8" ODF 7/8" x 1-1/8" ODM	77	-	124
				A576-mm	16 x 22 mm ODF 22 x 28 mm ODM	77	-	124
LJRE				10331	22 x 22 mm ODF 7/8" x 7/8" ODF 1-1/8" x 1-1/8" ODM	93	-	140
LERE LIRE		XC726...2B		9153	7/8" x 7/8" ODF 1-1/8" x 1-1/8" ODM	93	-	140
				9153-mm	22 x 22 mm ODF 28 x 28 mm ODM	93	-	140
LCLE		XB1019...1B	Straight through	9761-3	3/8" x 5/8" ODF	31	17	95
				9761-3mm	10 x 16 mm ODF	31	17	95
				9761-4	1/2" x 5/8" ODF	31	17	95
				9761-4mm	12 x 16 mm ODF-	31	17	95
				6346-17	16 x 22mm ODF 5/8" x 7/8" ODF	33	17	95
				10332	22 x 22 mm ODF 7/8" x 7/8" ODF 1-1/8" x 1-1/8" ODM	74.5	16.5	137
LJRE		XC726...2B		9152	7/8" x 7/8" ODF 1-1/8" x 1-1/8" ODM	74.5	16.5	139
				9152-mm	22 x 22 mm ODF 28 x 28 mm ODM	74.5	16.5	139

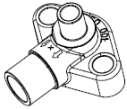
POWER ELEMENT



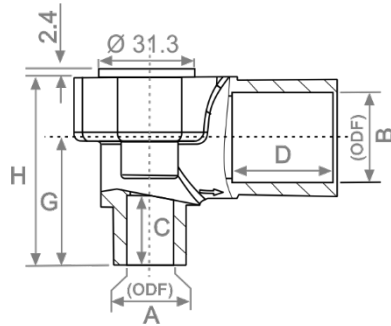
Power Element Type	M	N	S	T	Binding radius R (minimum)	P	U	V	W
XB 1019-1B	1.5 m	15	16	78	10 mm	58	44.5	62	65
XB 1019-2B	3.0 m	15	16	78	10 mm	58	44.5	62	65
XC762....-2B	3.0 m	-	19	124	-	60	44.5	62	73
XC762....-4B	6.0 m	-	19	124	-	60	44.5	62	73

FLANGES - ANGLED

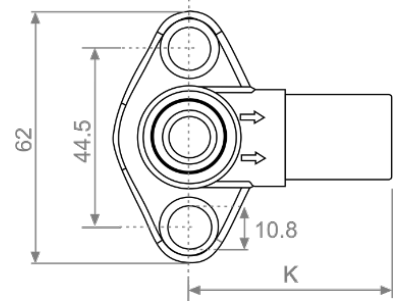
C501-5
C501-5mm
C501-7
C501-7mm



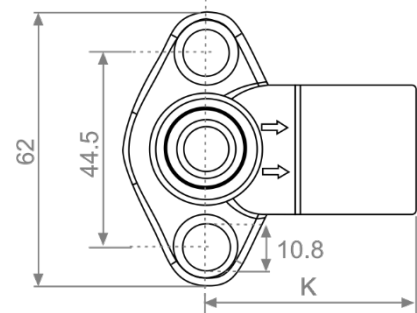
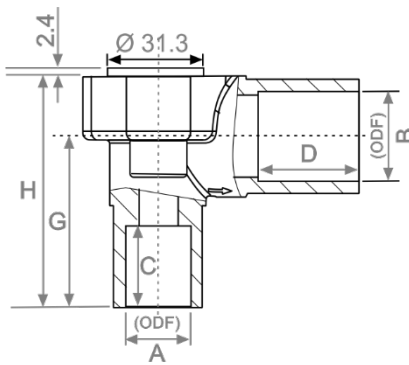
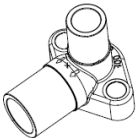
Side view



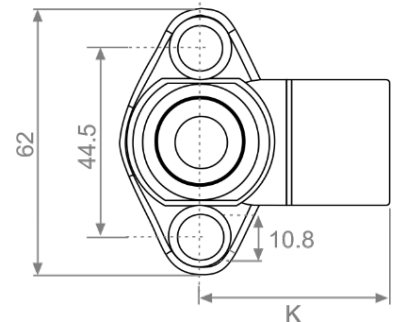
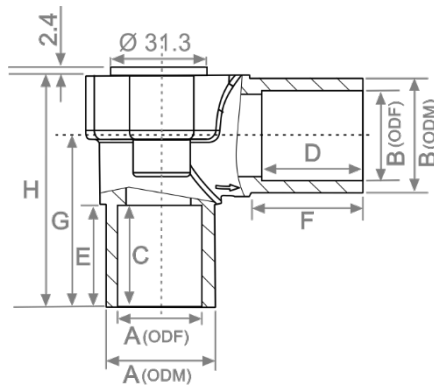
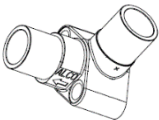
Bottom view



A576
A576-mm



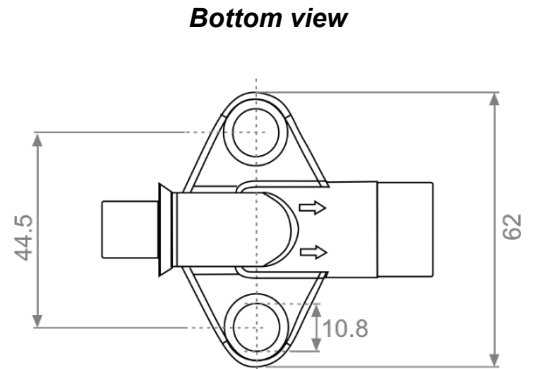
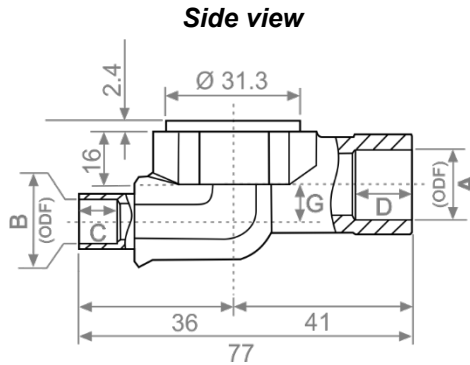
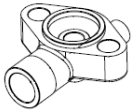
10331
9153
9153-mm



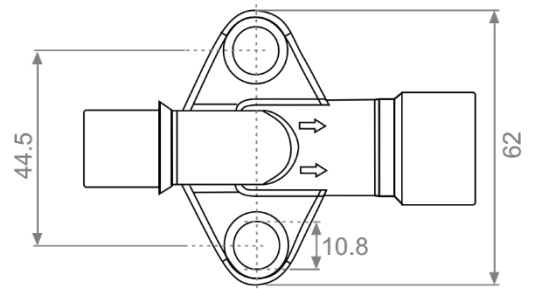
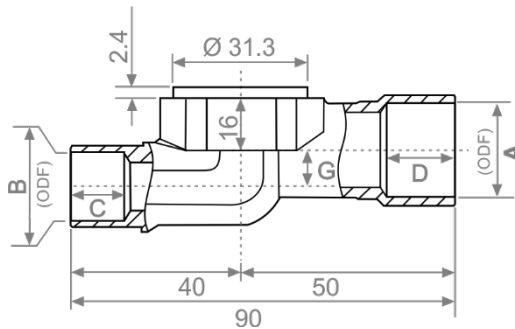
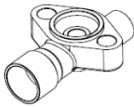
Type	ODF		ODM		(mm)						
	Inlet A	Outlet B	Inlet A	Outlet B	C	D	E	F	G	H	K
C501-5	3/8"	5/8"	-	-	14	21	-	-	27	39	40
C501-5mm	10 mm	16 mm	-	-	14	21	-	-	27	39	40
C501-7	1/2"	5/8"	-	-	17	21	-	-	30	42	40
C501-7mm	12 mm	16 mm	-	-	17	21	-	-	30	42	40
A576	5/8"	7/8"	7/8"	1-1/8"	21	25	-	-	43	58	50
A576-mm	16 mm	22 mm	22 mm	28 mm	21	25	25	28	43	58	50
10331	22 mm / 7/8"	22 mm / 7/8"	1-1/8"	1-1/8"	19	19	25	25	59	74	51
9153	7/8"	7/8"	1-1/8"	1-1/8"	19	19	25	25	59	74	51
9153-mm	22 mm	22 mm	28 mm	28 mm	19	19	25	25	59	74	51

FLANGES – STRAIGHT THROUGH

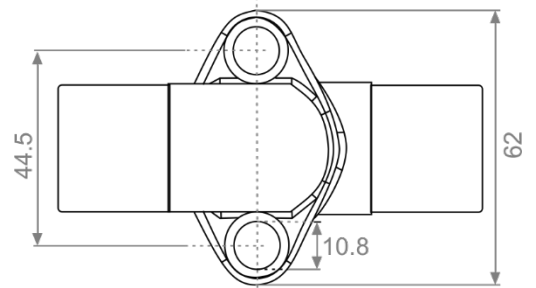
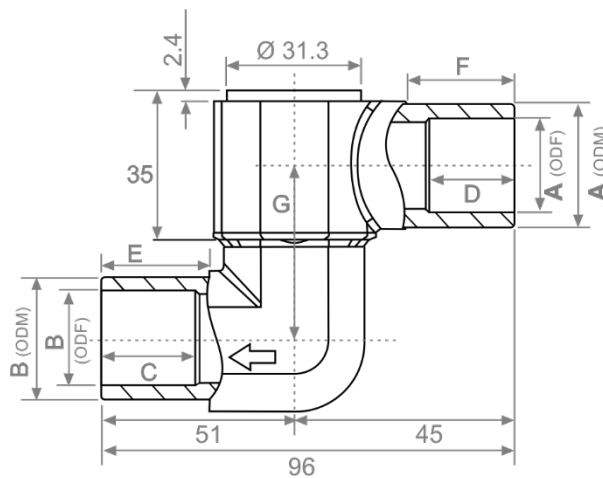
9761-3 mm
9761-3
9761-4 mm
9761-4



6346-17



10332
9152
9152-mm



Type	ODF		ODM		(mm)				
	Inlet A	Outlet B	Inlet A	Outlet B	C	D	E	F	G
9761-3 mm	3/8"	5/8"	-	-	9	13	-	-	8.5
9761-3	10 mm	16 mm	-	-	9	13	-	-	8.5
9761-4 mm	1/2"	5/8"	-	-	9	13	-	-	8.5
9761-4	12 mm	16 mm	-	-	9	13	-	-	8.5
6346-17	16 mm / 5/8"	22 mm / 7/8"	-	-	12.7	16	-	-	8.5
10332	22 mm / 7/8"	22 mm / 7/8"	1-1/8"	1-1/8"	19	19	25	25	40.9
9152	7/8"	7/8"	1-1/8"	1-1/8"	19	19	25	25	40.9
9152-mm	22 mm	22 mm	28 mm	28 mm	19	19	25	25	40.9

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