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Application Engineering Europe

THERMO™-EXPANSION VALVE ZZ-SERIES (ZZCE)

A1 A2L

General information

Take-a-part Thermo™-Expansion ZZ-Serie Valves are designed for deep freeze (down to -100°C) application.
ZZ-Series valves are ideal for those applications requiring flexibility in selection of capacity and excellent stable superheat control under varying operating conditions.

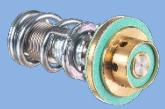
ZZCE

Features

- Modular design for economical logistics and easy assembly and servicing
- 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
- Constant superheat across a wide application range
- Flanges: brazing ODF/ODM connection with straight through and angle style configuration
- To withstand stress at extremely low temperatures, ZZ-Series valves feature bronze bolts.
- For maintenance no loosen the pipes connections are necessary, due there are no operationally relevant parts inside the flange
- Max. allowable pressure PS: 31 bar

TAKE-APART DESIGN

ZZ valve consists of 3 main assembly parts:

Valve Series	Power element	Orifice	Flange	
			 Angle	 Straight through
ZZCE	XC726...-…B	X10-B…	C501-5/ C501-5mm	9761-3 / 9761-3mm
			C501-7 / C501-7mm	9761-4 / 9761-4mm
			A576 / A576-mm	6346-17

Each part can be selected individually and combined according to the system requirements by following of 3 selection steps.

Step 1: Single Selection - Orifice according required Capacity

			Capacity (kW)									
Refrigerant Charge Code:			**BG**		SW			**BW**				
Valve Type	**Orifice Type**	**Orifice Part No.**	**Capacity code**	**A1 R23**	**Capacity code**	**A1 R404A R507**	**A1 R452A***	**Capacity code**	**A1 R448A R449A**	**A2L R454A***	**A2L R455A***	**Power element**
ZZCE	**X10-B01**	**803621**	2BG	1.9	2/4SW	1.2	1.3	1BW	1.7	1.7	1.6	XC 726 ...-...B
	X10-B02	**803622**	6BG	4.0	1-1/2SW	2.6	2.5	2BW	3.7	3.7	3.4	
	X10-B03	**803623**	8BG	6.8	2-1/2SW	4.4	5.4	3BW	6.2	6.2	5.7	
	X10-B04	**803624**	12BG	10.8	3-1/2SW	7.0	8.1	5BW	9.8	9.8	9.1	
	X10-B05	**803625**	17BG	16.3	5SW	10.6	11.8	6BW	14.8	14.8	13.7	
	X10-B06	**803624**	25BG	21.7	8SW	14.1	15.1	10BW	19.8	19.8	18.2	
	X10-B07	**803627**	31BG	27.1	9SW	17.6	20.7	12BW	24.7	24.7	22.8	

NOTE 1: *) Superheat readjustment required - see Operating Instruction
NOTE 2: The nominal capacities are based:
R23: -60 °C evaporating temperature (dew point), -25 °C condensing temperature (bubble point) and 1 K subcooling.
Other Refrigerants: -40 °C evaporating temperature (dew point), +25 °C condensing temperature (bubble point) and 1 K subcooling.
NOTE 3: 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 - Power Element

Charge Code	Refrigerant	Alternative Refrigerant	MOP Code	MOP (bar)	Evaporating Temperature	Max. allowable Pressure PS	Capillary tube length	Power Element	
								Type	**Part No.**
BG	A1 R23		20	1.4 bar	-100...-71 °C	31 bar	3.0 m	**XC 726 BG 20-2B**	**803376**
			60	4.1 bar	-100...-51 °C		3.0 m	**XC 726 BG 60-2B**	**803377**
			125	8.6 bar	-100...-33 °C		3.0 m	**XC 726 BG 125-2B**	**803378**
SW	A1 R404A R507	A1 R452A	40	2.4 bar	-75…18 °C		3.0 m	**XC 726 SW 40-2B**	**803456**
			40	2.4 bar	-75…18 °C		6.0 m	**XC 726 SW 40-4B**	**803493**
			55	3.8 bar	-75…10 °C		3.0 m	**XC 726 SW 55-2B**	**803476**
			55	3.8 bar	-75…10 °C		6.0 m	**XC 726 SW 55-4B**	**803495**
BW	A1 R448A R449A	A2L R454A R455A	30	2.1 bar	-75…18 °C	31 bar	3.0 m	**XC 726 BW 30-2B**	**802793**

Type Code Power Element - e.g. XC 726 SW 40-2B

XC 726 - ⌂⌂ ⌂⌂⌂ - ⌂ ⌂

Type
XC726 PS: max 31 bar

Refrigerant Charge Code
BG R23
SW R404A, R507, R425A*
BW R448A, R449A, R454A*, R455A*

MOP Code
blank Without MOP **20…125** MOP

Capillary Tube Code
2 3.0 m **4** 6.0 m

Equalizer
A internal **B** external

NOTE: *) Superheat readjustment required - see Operating Instruction

Step 3: Single Selection – Flange

Valve type	Power Element	Orifice	Flange Style						Connection (Inlet x Outlet)	
			Angle		Part No.	Straight through		Part No.	metric	imperial
ZZCE	XC726...B	X10-B01 X10-B02 X10-B03 X10-B04 X10-B05 X10-B06 X10-B07		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	-

NOTE: ⚠ To withstand stress at extremely low temperatures, ZZ-Series valves feature bronze bolts. Please order separately Screw BZ 32 Part No. 803575

Type code - Valve Kit ZZCE - e.g. ZZCE12BG60WL12X16

ZZ ⌂ **E** ⌂⌂ ⌂⌂ ⌂⌂ ⌂⌂ ⌂⌂ ⌂⌂ **x** ⌂⌂

Valve Series

Type
C Small Capacity

External Equalizer

Capacity Code
2/4…31

Refrigerant Charge Code
BG R23
SW R404A, R507, R425A*
BW R448A, R449A, R454A*, R455A*

MOP Code
blank Without MOP
20…125 MOP

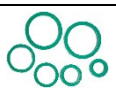
Flange Style
WL angled
DL Straight through

Capillary tube length
blank 3.0 m
4B 6.0 m

Connection
Inlet x outlet

NOTE: *) Superheat readjustment required - see Operating Instruction

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 BZ 32	803575	Bronze screw for Flange types: C501, C501-7, 9761, A576	
XA 1728-5	803261	Bulb clamp for XC726	

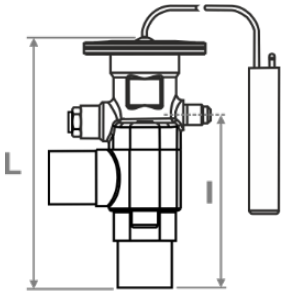
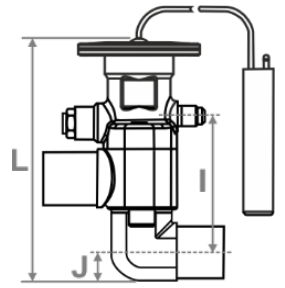
Technical Data

Max. allowable Pressure PS	31 bar
Max. Test Pressure PT	34.1 bar
Temperatures TS Medium	-100 … +75 °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

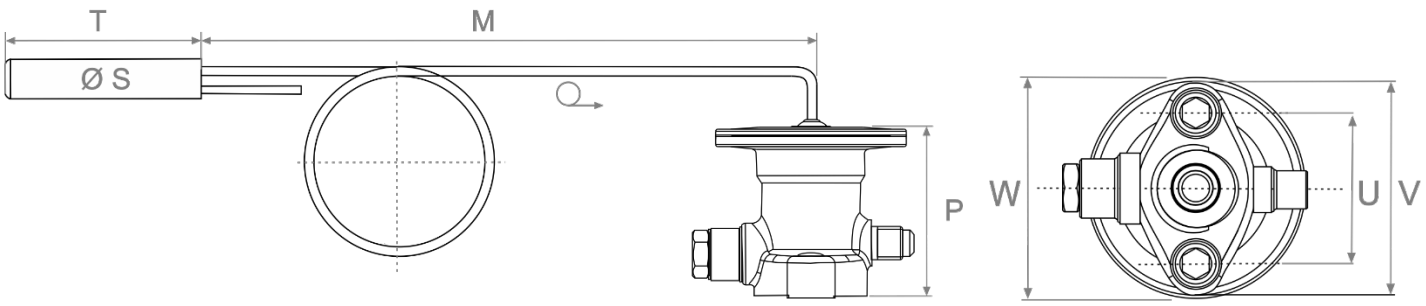
Materials power element valve head	Stainless steel
Materials capillary tube & bulb	zinc plated copper
Released Refrigerants	See Selection tables A1 & A2L
Standards	RoHS compliant
Delivery	Single Package
Markings	CE not required

Dimension (mm)

GENERAL

Valve (Kit)	Illustration	Power Element	Flange		Inlet x Outlet	I	J	L
ZZCE		XC726...B	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
ZZCE		XC726...B	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 22 mm ODF 5/8” x 7/8” ODF	33	17	95

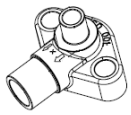
POWER ELEMENT



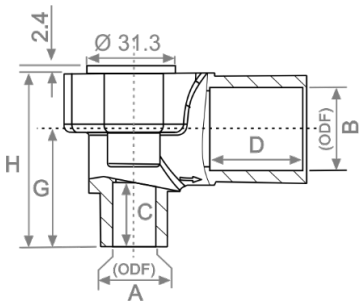
Power Element Type	M	S	T	P	U	V	W
XC762…-2B	3.0 m	19	124	60	44.5	62	73
XC762…-4B	6.0 m	19	124	60	44.5	62	73

FLANGES - ANGLED

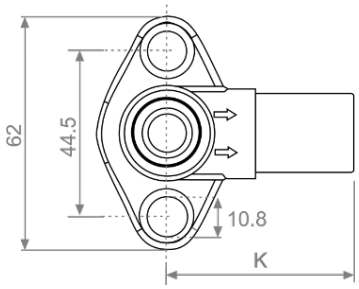
C501-5
C501-5mm
C501-7
C501-7mm



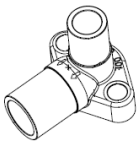
Side view

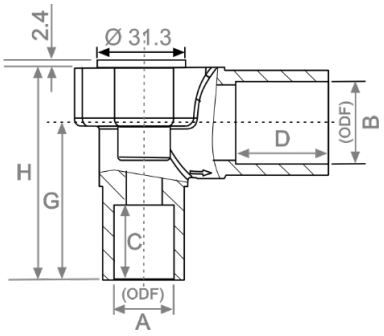


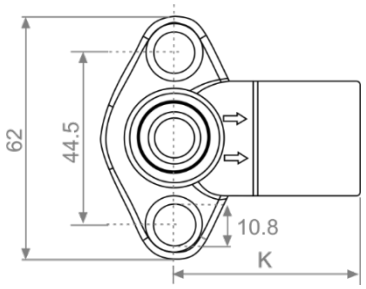
Bottom view



A576
A576-mm

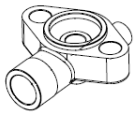




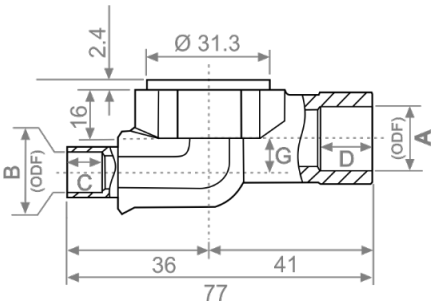


FLANGES – STRAIGHT THROUGH

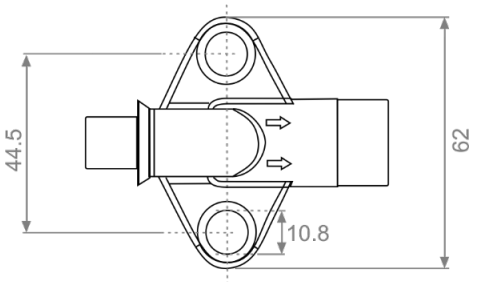
9761-3 mm
9761-3
9761-4 mm
9761-4



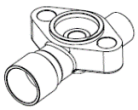
Side view

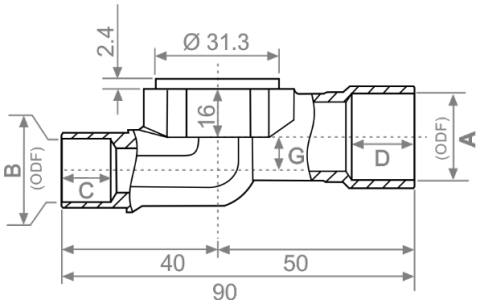


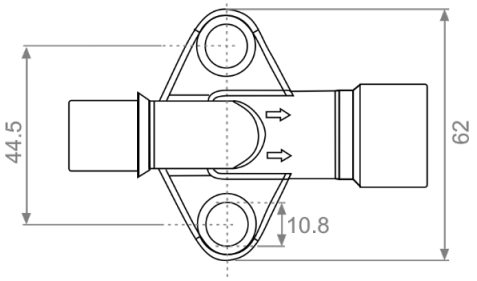
Bottom view



6346-17







Type		ODF		ODM		(mm)						
		Inlet A	Outlet B	Inlet A	Outlet B	C	D	E	F	G	H	K
ANGLED	**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
STRAIGHT THROUGH	**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	-	-