ENGINEERING TOMORROW

Data sheet

Solenoid valve
Types EVR 2 - EVR 40

EVR is a direct or servo operated solenoid valve for liquid, suction, and hot gas lines with HCFC and HFC refrigerants.

EVR valves are supplied complete or as separate components, i.e. valve body, coil and flanges, if required, can be ordered separately.

Features

- A complete range of solenoid valves for refrigeration, freezing and air conditioning systems
- Normally closed (NC) and normally open (NO) versions available
- AC and DC coils are interchangeable on all valve body versions
- Use with any fluorinated refrigerant
- Designed for media temperatures up to 220 °F
- Flare connections up to $^5/_8$ in
- Solder connections up to 2 $^1/_8$ in
- Solder versions have extended connections; there is no need to dismantle the valve when soldering

Approvals

UL listed, file MH 7648

Note:
These approvals are only recognized when one of the EVR series of solenoid valves found in this leaflet is combined with a GP general purpose coil.

Table of contents

Technical data

Refrigerant
R22/R407C, R404A/R507, R134a, R407A, R23.
For other refrigerants, please contact Danfoss.

Temperature of medium: -40 – 220 °F
Maximum 265 °F during defrosting

Maximum working pressure
EVR 2 – EVR 8: MWP = 655 psig
EVR 10: MWP = 500 psig
EVR 15 – EVR 40: MWP = 460 psig

Enclosure of coil
~ NEMA 2 or ~ NEMA 4

Valve type	Opening differential pressure Δp [psi]			Medium temperature [°F]	Maximum working pressure MWP [psig]	C_v value[1)] [gal/min]
	Minimum	Maximum (= MOPD) liquid[2)]				
		AC	DC			
EVR 2	0.0	350	260	-40 – 220	655	0.19
EVR 3	0.0	300	260	-40 – 220	655	0.32
EVR 4	0.7	300	260	-40 – 220	655	0.66
EVR 6	0.7	300	260[3)]	-40 – 220	655	0.93
EVR 8	0.7	300	260	-40 – 220	655	1.3
EVR 10	0.7	300	260[3)]	-40 – 220	500	2.2
EVR 15	0.7	300	260[3)]	-40 – 220	460	3.0
EVR 18	0.7	300	260	-40 – 220	460	3.9
EVR 20	0.7	300[4)]	190	-40 – 220	460	5.8
EVR 22	0.7	300[4)]	190	-40 – 220	460	6.9
EVR 25	1.0	300	260	-40 – 220	460	12.0
EVR 32	1.0	300	260	-40 – 220	460	18.0
EVR 40	1.0	300	260	-40 – 220	460	29.0

[1)] C_v value is the water flow in [gal/min] at a pressure drop across valve Δp = 1 psi. ρ = 10 lbs/gal

[2)] MOPD (Max. Opening Pressure Differential) for media in gas form is approximately 14 psi greater

[3)] EVR (NO): 300 psig

[4)] EVR (NO): 275 psig

Metric conversions
$^5/_9$ (t_1 °F - 32) = t_2 °C
1 in = 25.4 mm

Rated capacities [TR]

	R22/R407C	R134a	R404A/R507
Liquid			
EVR 2	1.17	0.89	0.80
EVR 3	2.03	1.55	1.40
EVR 4	4.15	3.16	2.86
EVR 6	5.83	4.43	4.01
EVR 8	8.01	6.09	5.52
EVR 10	13.8	10.5	9.53
EVR 15	18.9	14.4	13.0
EVR 18	24.6	18.7	17.0
EVR 20	36.4	27.7	25.1
EVR 22	43.7	33.3	30.1
EVR 25	72.8	55.4	50.2
EVR 32	116.5	88.7	80.3
EVR 40	182.0	138.5	125.4
Suction vapour			
EVR 2	0.10	0.07	0.09
EVR 3	0.17	0.13	0.15
EVR 4	0.34	0.26	0.30
EVR 6	0.48	0.37	0.43
EVR 8	0.66	0.51	0.58
EVR 10	1.15	0.88	1.01
EVR 15	1.57	1.20	1.38
EVR 18	2.04	1.56	1.80
EVR 20	3.02	2.31	2.66
EVR 22	3.62	2.78	3.19
EVR 25	6.04	4.63	5.32
EVR 32	9.66	7.40	8.51
EVR 40	16.1	11.6	13.3
Hot gas			
EVR 2	0.22	0.18	0.17
EVR 3	0.38	0.31	0.30
EVR 4	0.77	0.63	0.62
EVR 6	1.08	0.88	0.87
EVR 8	1.49	1.21	1.19
EVR 10	2.57	2.10	2.06
EVR 15	3.52	2.87	2.82
EVR 18	4.57	3.73	3.67
EVR 20	6.76	5.51	5.43
EVR 22	8.11	6.62	6.52
EVR 25	13.5	11.0	10.9
EVR 32	21.6	17.7	17.4
EVR 40	33.8	27.6	27.2

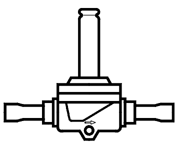
Metric conversions
1 psi = 0.07 bar
$^5/_9$ (t_1 °F - 32) = t_2 °C
1 TR = 3.5 kW
1 in = 25.4 mm
US gal/min = 0.86 m^3/h

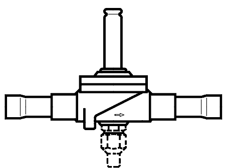
[1)] Rated liquid and suction vapor capacity are based on:
Evaporating temperature t_e= 40 °F
Liquid temperature ahead of valve t_l= 100 °F
Pressure drop Δp across valve
– with liquid Δp = 3 psi
– with suction vapor Δp = 1 psi (EVR 25, 32, 40 = 2 psi)

Rated hot gas capacity is based on:
– Condensing temperature t_c= 100 °F
– Hot gas temperature t_h= 140 °F
– Pressure drop across valve Δp = 3 psi

Ordering

EVR solder ODF connections, Normally Closed (NC) - separate valve bodies



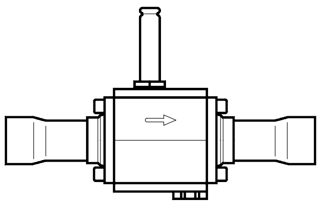


	Connection [in]	Port size [in]	Manual stem	C_v value [gal/min]	Code nos. valve body excl. coil
EVR 2	$^{1}/_{4}$	$^{3}/_{32}$	No	0.19	**032F7100**
EVR 3	$^{1}/_{4}$	$^{1}/_{8}$	No	0.32	**032F7105**
	$^{3}/_{8}$	$^{1}/_{8}$	No	0.32	**032F1157**
EVR 4	$^{3}/_{8}$	$^{5}/_{32}$	No	0.66	**032F7110**
EVR 6	$^{3}/_{8}$	$^{15}/_{64}$	No	0.93	**032F7115**
	$^{3}/_{8}$	$^{15}/_{64}$	Yes	0.93	**032F7116**
	$^{1}/_{2}$	$^{15}/_{64}$	No	0.93	**032F1162**
	$^{1}/_{2}$	$^{15}/_{64}$	No	0.93	**032F7144**
	$^{5}/_{8}$	$^{15}/_{64}$	No	0.93	**032F7117**
EVR 8	$^{1}/_{2}$	$^{5}/_{16}$	No	1.3	**032F7121**
	$^{1}/_{2}$	$^{5}/_{16}$	Yes	1.3	**032F7148**
	$^{5}/_{8}$	$^{5}/_{16}$	No	1.3	**032F7122**
EVR 10	$^{3}/_{8}$	$^{3}/_{8}$	No	2.2	**032F7125**
	$^{1}/_{2}$	$^{3}/_{8}$	No	2.2	**032F1166**
	$^{1}/_{2}$	$^{3}/_{8}$	Yes	2.2	**032F1188**
	$^{5}/_{8}$	$^{3}/_{8}$	No	2.2	**032F1168**
	$^{5}/_{8}$	$^{3}/_{8}$	Yes	2.2	**032F7149**
EVR 15	$^{5}/_{8}$	$^{9}/_{16}$	No	3.0	**032F1171**
	$^{5}/_{8}$	$^{9}/_{16}$	Yes	3.0	**032F1172**
	$^{7}/_{8}$	$^{9}/_{16}$	No	3.0	**032F7130**
EVR 18	$^{7}/_{8}$	$^{19}/_{32}$	Yes	3.9	**032F1004**
EVR 20	$^{7}/_{8}$	$^{7}/_{8}$	No	5.8	**032F1176**
	$^{7}/_{8}$	$^{7}/_{8}$	Yes	5.8	**032F1177**
EVR 22	$1^{1}/_{8}$	$^{15}/_{16}$	No	6.9	**032F7145**
	$1^{1}/_{8}$	$^{15}/_{16}$	Yes	6.9	**032F7137**
	$1^{3}/_{8}$	$^{15}/_{16}$	No	6.9	**032F7146**

Metric conversions
1 psi = 0.07 bar
$^{5}/_{9}(t_1\,°F - 32) = t_2\,°C$
1 TR = 3.5 kW
1 in = 25.4 mm
US gal/min = 0.86 m^3/h

Ordering
(continued)

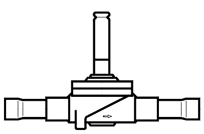
EVR solder ODF connections, Normally Closed (NC) - separate valve bodies



	Connection [in]	Port size [in]	Manual stem	C_v value [gal/min]	Code nos. valve body excl. coil
EVR 25	$1^1/_8$	1	No	12.0	**032F1189**
	$1^1/_8$	1	Yes	12.0	**032F1190**
	$1^3/_8$	1	No	12.0	**032F1193**
	$1^3/_8$	1	Yes	12.0	**032F1194**
EVR 32	$1^3/_8$	$^7/_8$	No	18.0	**042H1176**
	$1^3/_8$	$^7/_8$	Yes	18.0	**042H1177**
	$1^5/_8$	$^7/_8$	No	18.0	**042H1178**
	$1^5/_8$	$^7/_8$	Yes	18.0	**042H1179**
	$2^1/_8$	$^7/_8$	No	18.0	**042H1180**
	$2^1/_8$	$^7/_8$	Yes	18.0	**042H1181**
EVR 40	$2^1/_8$	1	Yes	29.0	**042H1188**

Metric conversions
1 psi = 0.07 bar
$^5/_9$ (t_1 °F - 32) = t_2 °C
1 TR = 3.5 kW
1 in = 25.4 mm
US gal/min = 0.86 m^3/h

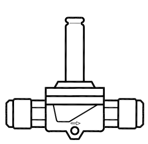
EVR solder ODF connections, Normally Open (NO) - separate valve bodies



	Connection [in]	Port size [in]	C_v value [gal/min]	Code nos. valve body excl. coil
EVR 6	$^3/_8$	$^1/_4$	0.93	**032F1164**
EVR 10	$^1/_2$	$^3/_8$	2.2	**032F1169**
EVR 15	$^5/_8$	$^9/_{16}$	3.0	**032F1174**

Metric conversions
1 psi = 0.07 bar
$^5/_9$ (t_1 °F - 32) = t_2 °C
1 TR = 3.5 kW
1 in = 25.4 mm
US gal/min = 0.86 m^3/h

EVR flare connections, Normally Closed (NC) - separate valve bodies



	Connection [in]	Port size [in]	Manual stem	C_v value [gal/min]	Code nos. valve body excl. coil
EVR 3	$^1/_4$	$^1/_8$	No	0.32	**032F8106**
EVR 3	$^3/_8$	$^1/_8$	No	0.32	**032F8115**
EVR 6	$^3/_8$	$^{15}/_{64}$	No	0.93	**032F8071**

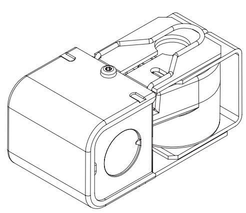
Metric conversions
1 psi = 0.07 bar
$^5/_9$ (t_1 °F - 32) = t_2 °C
1 TR = 3.5 kW
1 in = 25.4 mm
US gal/min = 0.86 m^3/h

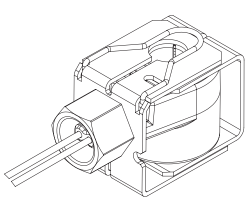
BJ and BX coils for EVR valves

Approvals

Listed with EVR. MH7648
Low Voltage Directive (LVD) 2006/95/EC

Ordering





Coil type	Valve type	Wire length [in]	Wire length [cm]	Voltage [V] AC	Frequency [Hz]	Power consumption [Hz]	Code no.
Junction box NEMA 2							
BJ024CS	AKV / EVR EVRH / EVRA EVRAT / EVRS EVRST / EVM EV220B 6-50 EV210B EV215B EV225B EV250B	7	18	24	50 / 60	14	**018F4100**
BJ120CS		7	18	110 120	50 / 60 60	16 15	**018F4110**
BJ240CS		7	18	208 – 240 230	60 50	14 17	**018F4120**
BJ120BS	AKVH / EVRH	7	18	120	60	16	**018F4130**
BJ208BS		7	18	208	60	16	**018F4132**
BJ240BS		7	18	240	60	16	**018F4134**
Conduit boss NEMA 4							
BX024CS	AKV / EVR EVRH / EVRA EVRAT / EVRS EVRST / EVM EV220B 6-50 EV210B EV215B EV225B EV250B	18	46	24	50 / 60	14	**018F4102**
BX024CS		71	180	24	50 / 60	14	**018F4103**
BX024CS		98	250	24	50 / 60	14	**018F4104**
BX120CS		18	46	110 120	50 / 60 60	16 15	**018F4112**
BX120CS		36	91				**018F4113**
BX120CS		71	180				**018F4114**
BX120CS		98	250				**018F4115**
BX240CS		18	46	208 – 240 230	60 50	14 17	**018F4122**
BX240CS		98	250				**018F4123**
BX120BS	AKVH / EVRH	98	250	120	60	16	**018F4131**
BX208BS		98	250	208	60	16	**018F4133**
BX240BS		98	250	240	60	16	**018F4135**

Technical data

Design
In accordance with UL 429

Power supply
Alternating current (AC)

Permissible voltage variation
Alternating current (AC):
50 Hz and 60 Hz: -10% – +15%
50/60 Hz: +/- 10%

Power consumption
Alternating current (AC): Inrush: 49 VA;
Holding: 28 VA. 16 W

Insulation of coil wire
Class H according to IEC 85

Connection
Junction box or Conduit boss

Enclosure. IEC 60529
Junction box NEMA 2 ~ IP 12–32
Conduit boss NEMA 4 ~ IP 54

Ambient temperature
-40 °F – 122 °F (-40 °C – 50 °C)

BG coils for EVR valves
(continued)

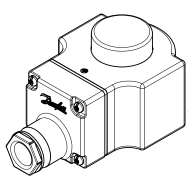
Features

- For high temperatures – class H insulated wire
- Encapsulated coils with long life time
- Wide range of coils
  – from 12 V – 200 V DC
  – with terminal box IP67 ~ NEMA 6

Approvals

Low Voltage Directive (LVD) 2006/95/EC

Ordering



Valve type	Voltage [V] DC	Power consumption [W]	Code no.
EVR 2 to 15 (NC) EVR 25 to 40 (NC/NO) EVR 6 to 15 (NO) EVRC 10 to 15 EVRA 3 to 15 (NC) EVRA 25 to 40 (NC) EVRAT 10 to 15 (NC) EVRS/EVRST 3 to 15 EVM (NC/NO)	12	20	**018F6856**
	24	20	**018F6857**
	48	20	**018F6859**
	110	20	**018F6860**
	115	20	**018F6861**
	220	20	**018F6851**
EVR 20 to 22 (NC/NO) EVRC 20 EVRA 20 EVRAT 20 EVRST 20	12	20	**018F6886**
	24	20	**018F6887**
	48	20	**018F6889**
	110	20	**018F6890**
	220	20	**018F6881**

Technical data

Design
In accordance with VDE 0580

Power supply
Direct current (DC)

Permissible voltage variation
-10 – 15%

Power consumption
20 W

Insulation of coil wire
Class H according to IEC 85

Connection
Terminal box

Enclosure. IEC 529
IP 67 NEMA 6

Ambient temperature
-40 °F – 122 °F (-40 °C – 50 °C)

Capacity Liquid

Type	Liquid capacity Q_0 [TR] at a pressure drop across valve Δp [psi]						
	1	2	3	4	5	6	7
R22/R407C							
EVR 2	0.58	0.82	1.01	1.16	1.30	1.43	1.54
EVR 3	0.98	1.39	1.70	1.97	2.20	2.41	2.60
EVR 4	2.04	2.88	3.53	4.08	4.56	4.99	5.39
EVR 6	2.91	4.12	5.04	5.82	6.51	7.13	7.71
EVR 8	4.08	5.77	7.06	8.15	9.12	9.99	10.79
EVR 10	6.92	9.78	11.98	13.83	15.47	16.94	18.30
EVR 15	9.46	13.39	16.39	18.93	21.16	23.18	25.04
EVR 18	12.38	17.50	21.44	24.75	27.68	30.32	32.75
EVR 20	18.20	25.74	31.53	36.40	40.70	44.59	48.16
EVR 22	21.84	30.89	37.83	43.68	48.84	53.50	57.79
EVR 25	0.28	34.15	63.05	72.81	81.40	89.17	96.31
EVR 32	0.44	54.63	100.88	116.49	130.24	142.67	154.10
EVR 40	0.67	85.35	157.63	182.02	203.50	222.93	240.79
R134a							
EVR 2	0.54	0.77	0.94	1.09	1.22	1.33	1.44
EVR 3	0.92	1.30	1.59	1.84	2.05	2.25	2.43
EVR 4	1.90	2.69	3.30	3.81	4.26	4.66	5.04
EVR 6	2.72	3.85	4.71	5.44	6.08	6.66	7.20
EVR 8	3.81	5.38	6.59	7.61	8.51	9.33	10.07
EVR 10	6.46	9.13	11.19	12.92	14.44	15.82	17.09
EVR 15	8.84	12.50	15.31	17.68	19.76	21.65	23.38
EVR 18	11.56	16.35	20.02	23.12	25.84	28.31	30.58
EVR 20	17.00	24.04	29.44	33.99	38.01	41.63	44.97
EVR 22	20.40	28.84	35.33	40.79	45.61	49.96	53.96
EVR 25	0.26	31.89	58.88	67.99	76.01	83.27	89.94
EVR 32	0.41	51.02	94.21	108.78	121.62	133.23	143.90
EVR 40	0.63	79.70	147.20	169.97	190.03	208.17	224.85

Capacities are based on:
Liquid temperature t_l = 100 °F
Evaporating temperature t_e = 40 °F
Superheat temperature (t_e + 10 °F) = 50 °F

Metric conversions
1 psi = 0.07 bar
$^5/_9$ (t_1 °F - 32) = t_2 °C
1 TR = 3.5 kW

Correction factors
When liquid temperature t_l ahead of the expansion valve is other than 100 °F, adjust the table capacities by multiplying them by the appropriate correction factor found in the following table.

Correction factors for liquid temperature t_l

t_l [°F]	80	90	100	110	120
Factor	1.10	1.05	1.00	0.95	0.90

Capacity
Liquid
(continued)

Type	Liquid capacity Q_0 [TR] at a pressure drop across valve Δp [psi]						
	1	2	3	4	5	6	7
R404A and R507							
EVR 2	0.38	0.54	0.66	0.77	0.86	0.94	1.01
EVR 3	0.65	0.91	1.12	1.29	1.45	1.58	1.71
EVR 4	1.34	1.90	2.32	2.68	3.00	3.28	3.55
EVR 6	1.92	2.71	3.32	3.83	4.28	4.69	5.07
EVR 8	2.68	3.79	4.65	5.36	6.00	6.57	7.10
EVR 10	4.55	6.43	7.88	9.10	10.17	11.14	12.04
EVR 15	6.23	8.80	10.78	12.45	13.92	15.25	16.47
EVR 18	8.14	11.51	14.10	16.28	18.20	19.94	21.54
EVR 20	11.97	16.93	20.74	23.94	26.77	29.33	31.68
EVR 22	14.37	20.32	24.88	28.73	32.13	35.19	38.01
EVR 25	0.28	22.46	41.47	47.89	53.54	58.65	63.35
EVR 32	0.44	35.94	66.36	76.62	85.67	93.84	101.36
EVR 40	0.67	56.14	103.68	119.72	133.86	146.63	158.38

Capacities are based on:
Liquid temperature t_l= 100 °F
Evaporating temperature t_e= 40 °F
Superheat temperature (t_e+ 10 °F) = 50 °F

Metric conversions
1 psi = 0.07 bar
$^5/_9$ (t_1 °F - 32) = t_2 °C
1 TR = 3.5 kW

Correction factors
When liquid temperature tl ahead of the expansion valve is other than 100 °F, adjust the table capacities by multiplying them by the appropriate correction factor found in the following table.

Correction factors for liquid temperature t_l

t_l [°F]	80	90	100	110	120
Factor	1.10	1.05	1.00	0.95	0.90

Capacity
Suction vapor

Type	Pressure drop across valve Δp [psi]	Suction vapor capacity Q_0 [TR] at evaporating temperature t_e [°F]							
		-40	-20	0	10	20	30	40	50
R22/R407C									
EVR 2	1	0.03	0.04	0.05	0.06	0.07	0.08	0.08	0.09
	2	0.04	0.06	0.08	0.08	0.09	0.11	0.12	0.13
	3	0.05	0.07	0.09	0.10	0.11	0.13	0.14	0.16
EVR 3	1	0.05	0.07	0.09	0.10	0.11	0.13	0.14	0.15
	2	0.07	0.10	0.13	0.14	0.16	0.18	0.20	0.22
	3	0.09	0.12	0.15	0.17	0.19	0.22	0.24	0.26
EVR 4	1	0.11	0.15	0.19	0.21	0.24	0.26	0.29	0.32
	2	0.15	0.20	0.26	0.30	0.33	0.37	0.41	0.45
	3	0.18	0.24	0.32	0.36	0.40	0.45	0.50	0.55
EVR 6	1	0.16	0.21	0.27	0.30	0.34	0.38	0.42	0.46
	2	0.22	0.29	0.38	0.42	0.47	0.53	0.58	0.64
	3	0.25	0.35	0.45	0.51	0.57	0.64	0.71	0.78
EVR 8	1	0.22	0.29	0.38	0.42	0.47	0.53	0.58	0.64
	2	0.30	0.41	0.53	0.59	0.66	0.74	0.82	0.90
	3	0.35	0.49	0.63	0.72	0.80	0.90	0.99	1.10
EVR 10	1	0.38	0.50	0.64	0.72	0.80	0.89	0.99	1.09
	2	0.51	0.69	0.89	1.00	1.12	1.25	1.39	1.53
	3	0.60	0.82	1.08	1.22	1.36	1.52	1.69	1.86
EVR 15	1	0.52	0.68	0.88	0.98	1.10	1.22	1.35	1.49
	2	0.70	0.94	1.22	1.38	1.54	1.71	1.90	2.09
	3	0.82	1.13	1.47	1.66	1.87	2.08	2.31	2.55
EVR 18	1	0.68	0.89	1.15	1.29	1.44	1.60	1.77	1.94
	2	0.92	1.23	1.60	1.80	2.01	2.24	2.48	2.73
	3	1.08	1.47	1.93	2.18	2.44	2.72	3.02	3.33
EVR 20	1	0.99	1.31	1.69	1.89	2.11	2.35	2.60	2.86
	2	1.35	1.81	2.35	2.64	2.96	3.29	3.65	4.02
	3	1.58	2.17	2.83	3.20	3.59	4.00	4.44	4.90
EVR 22	1	1.19	1.58	2.02	2.27	2.54	2.82	3.12	3.43
	2	1.62	2.18	2.82	3.17	3.55	3.95	4.38	4.83
	3	1.90	2.60	3.40	3.84	4.30	4.80	5.32	5.88
EVR 25	1	0.01	0.02	0.02	0.03	0.03	0.03	0.04	0.04
	2	1.72	2.35	3.07	3.47	3.89	4.34	4.81	5.31
	3	3.17	4.34	5.67	6.40	7.17	8.00	8.87	9.79
EVR 32	1	0.02	0.03	0.04	0.04	0.05	0.06	0.06	0.07
	2	2.76	3.77	4.92	5.55	6.22	6.94	7.69	8.49
	3	5.07	6.94	9.07	10.24	11.48	12.80	14.19	15.67
EVR 40	1	0.03	0.05	0.06	0.07	0.08	0.09	0.09	0.10
	2	4.31	5.88	7.68	8.67	9.72	10.84	12.02	13.26
	3	7.92	10.84	14.17	15.99	17.94	20.00	22.18	24.48

Metric conversions
1 psi = 0.07 bar
$^5/_9(t_1\ °F - 32) = t_2\ °C$
1 TR = 3.5 kW

Correction factors
When liquid temperature t_l ahead of the expansion valve is other than 100 °F, adjust the table capacities by multiplying them by the appropriate correction factor found in the following table.

The table values refer to evaporator capacity and are given as a function of evaporating temperature te and pressure drop Δp across the valve. Capacities are based on liquid temperature t_l= 100 °F ahead of the expansion valve and superheat t_s= 7 °F.
For each additional 10 °F of superheat, the table capacities must be reduced by 2%.

Correction factors for liquid temperature t_l

t_l [°F]	80	90	100	110	120
Factor	1.10	1.05	1.00	0.95	0.90

Capacity
Suction vapor
(continued)

Type	Pressure drop across valve Δp [psi]	Suction vapor capacity Q_0 [TR] at evaporating temperature t_e [°F]							
		-40	-20	0	10	20	30	40	50
R134a									
EVR 2	1	0.02	0.03	0.04	0.04	0.05	0.06	0.06	0.07
	2	0.02	0.04	0.05	0.06	0.07	0.08	0.09	0.10
	3	0.03	0.04	0.06	0.07	0.08	0.09	0.11	0.12
EVR 3	1	0.03	0.05	0.06	0.07	0.08	0.09	0.11	0.12
	2	0.04	0.06	0.09	0.10	0.12	0.13	0.15	0.17
	3	0.05	0.07	0.10	0.12	0.14	0.16	0.18	0.20
EVR 4	1	0.07	0.10	0.13	0.15	0.17	0.20	0.22	0.25
	2	0.09	0.13	0.18	0.21	0.24	0.27	0.31	0.35
	3	0.10	0.15	0.21	0.25	0.29	0.33	0.38	0.42
EVR 6	1	0.10	0.14	0.19	0.22	0.25	0.28	0.32	0.36
	2	0.12	0.19	0.26	0.30	0.34	0.39	0.44	0.50
	3	0.14	0.22	0.31	0.36	0.41	0.47	0.54	0.60
EVR 8	1	0.14	0.19	0.26	0.30	0.35	0.39	0.44	0.50
	2	0.17	0.26	0.36	0.42	0.48	0.55	0.62	0.70
	3	0.19	0.30	0.43	0.50	0.58	0.66	0.75	0.85
EVR 10	1	0.23	0.33	0.45	0.51	0.59	0.67	0.75	0.85
	2	0.30	0.44	0.61	0.71	0.82	0.93	1.05	1.19
	3	0.33	0.51	0.73	0.85	0.98	1.12	1.27	1.44
EVR 15	1	0.32	0.45	0.61	0.70	0.80	0.91	1.03	1.16
	2	0.41	0.60	0.84	0.97	1.12	1.27	1.44	1.62
	3	0.45	0.70	1.00	1.16	1.34	1.53	1.74	1.97
EVR 18	1	0.41	0.59	0.80	0.92	1.05	1.20	1.35	1.52
	2	0.53	0.79	1.10	1.27	1.46	1.66	1.88	2.12
	3	0.58	0.92	1.30	1.52	1.75	2.01	2.28	2.57
EVR 20	1	0.61	0.87	1.18	1.35	1.55	1.76	1.98	2.23
	2	0.78	1.16	1.61	1.87	2.15	2.45	2.77	3.12
	3	0.86	1.35	1.92	2.23	2.58	2.95	3.35	3.78
EVR 22	1	0.73	1.04	1.41	1.63	1.86	2.11	2.38	2.67
	2	0.93	1.39	1.94	2.24	2.58	2.94	3.32	3.74
	3	1.03	1.62	2.30	2.68	3.09	3.54	4.02	4.54
EVR 25	1	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.03
	2	0.94	1.47	2.08	2.43	2.80	3.20	3.63	4.10
	3	1.71	2.69	3.83	4.47	5.16	5.90	6.70	7.56
EVR 32	1	0.01	0.02	0.03	0.03	0.04	0.04	0.05	0.05
	2	1.50	2.35	3.33	3.88	4.48	5.12	5.81	6.56
	3	2.74	4.31	6.13	7.15	8.25	9.44	10.72	12.10
EVR 40	1	0.02	0.03	0.04	0.05	0.06	0.06	0.07	0.08
	2	2.35	3.66	5.20	6.06	7.00	8.00	9.08	10.24
	3	4.28	6.73	9.58	11.17	12.90	14.75	16.75	18.90

Metric conversions
1 psi = 0.07 bar
$^5/_9$ (t_1 °F - 32) = t_2 °C
1 TR = 3.5 kW

Correction factors
When liquid temperature t_l ahead of the expansion valve is other than 100 °F, adjust the table capacities by multiplying them by the appropriate correction factor found in the following table.

The table values refer to evaporator capacity and are given as a function of evaporating temperature te and pressure drop Dp across the valve. Capacities are based on liquid temperature t_l= 100 °F ahead of the expansion valve and superheat t_s = 7 °F.
For each additional 10 °F of superheat, the table capacities must be reduced by 2%.

Correction factors for liquid temperature t_l

t_l [°F]	80	90	100	110	120
Factor	1.10	1.05	1.00	0.95	0.90

Capacity
Suction vapor
(continued)

Type	Pressure drop across valve Δp [psi]	Suction vapor capacity Q_0 [TR] at evaporating temperature t_e [°F]							
		-40	-20	0	10	20	30	40	50
R404A and R507									
EVR 2	1	0.02	0.03	0.04	0.05	0.06	0.06	0.07	0.08
	2	0.03	0.05	0.06	0.07	0.08	0.09	0.10	0.11
	3	0.04	0.05	0.07	0.08	0.09	0.11	0.12	0.13
EVR 3	1	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.13
	2	0.06	0.08	0.10	0.12	0.13	0.15	0.17	0.19
	3	0.07	0.09	0.12	0.14	0.16	0.18	0.20	0.23
EVR 4	1	0.08	0.11	0.15	0.17	0.20	0.22	0.25	0.27
	2	0.11	0.16	0.21	0.24	0.27	0.31	0.35	0.39
	3	0.14	0.19	0.26	0.29	0.33	0.38	0.42	0.47
EVR 6	1	0.12	0.16	0.22	0.25	0.28	0.31	0.35	0.39
	2	0.16	0.23	0.30	0.34	0.39	0.44	0.49	0.55
	3	0.19	0.27	0.37	0.42	0.47	0.54	0.60	0.67
EVR 8	1	0.17	0.23	0.30	0.34	0.39	0.44	0.49	0.55
	2	0.23	0.32	0.42	0.48	0.55	0.62	0.69	0.77
	3	0.27	0.38	0.51	0.58	0.66	0.75	0.84	0.94
EVR 10	1	0.28	0.39	0.51	0.59	0.66	0.75	0.83	0.93
	2	0.39	0.54	0.72	0.82	0.93	1.05	1.17	1.31
	3	0.46	0.65	0.87	0.99	1.13	1.27	1.43	1.60
EVR 15	1	0.39	0.53	0.70	0.80	0.91	1.02	1.14	1.27
	2	0.53	0.74	0.98	1.12	1.27	1.43	1.61	1.79
	3	0.63	0.89	1.19	1.36	1.54	1.74	1.96	2.19
EVR 18	1	0.51	0.70	0.92	1.05	1.18	1.33	1.49	1.67
	2	0.70	0.96	1.28	1.47	1.66	1.87	2.10	2.35
	3	0.82	1.16	1.55	1.78	2.02	2.28	2.56	2.86
EVR 20	1	0.75	1.02	1.35	1.54	1.74	1.96	2.20	2.45
	2	1.03	1.42	1.89	2.15	2.44	2.75	3.09	3.45
	3	1.21	1.70	2.28	2.61	2.97	3.35	3.76	4.20
EVR 22	1	0.90	1.23	1.62	1.85	2.09	2.35	2.64	2.94
	2	1.23	1.70	2.27	2.59	2.93	3.31	3.71	4.14
	3	1.46	2.04	2.74	3.13	3.56	4.02	4.51	5.05
EVR 25	1	0.01	0.01	0.02	0.02	0.03	0.03	0.03	0.04
	2	1.32	1.85	2.48	2.83	3.22	3.63	4.08	4.56
	3	2.43	3.40	4.57	5.22	5.93	6.70	7.52	8.41
EVR 32	1	0.02	0.02	0.03	0.04	0.04	0.05	0.05	0.06
	2	2.11	2.96	3.96	4.53	5.15	5.81	6.52	7.29
	3	3.88	5.45	7.31	8.36	9.49	10.72	12.04	13.45
EVR 40	1	0.03	0.04	0.05	0.06	0.06	0.07	0.08	0.09
	2	3.30	4.62	6.19	7.08	8.04	9.07	10.19	11.39
	3	6.06	8.51	11.42	13.06	14.83	16.75	18.81	21.02

Metric conversions
1 psi = 0.07 bar
$^5/_9(t_1\ °F - 32) = t_2\ °C$
1 TR = 3.5 kW

Correction factors
When liquid temperature t_l ahead of the expansion valve is other than 100 °F, adjust the table capacities by multiplying them by the appropriate correction factor found in the following table.

The table values refer to evaporator capacity and are given as a function of evaporating temperature t_e and pressure drop Δp across the valve. Capacities are based on liquid temperature t_l= 100 °F ahead of the expansion valve and superheat t_s= 7 °F.
For each additional 10 °F of superheat, the table capacities must be reduced by 2%.

Correction factors for liquid temperature t_l

t_l [°F]	80	90	100	110	120
Factor	1.10	1.05	1.00	0.90	0.90

Capacity
Hot gas

Type	Pressure drop across valve Δp [psi]	Hot gas capacity Q_h [TR] Evaporating temp. t_e = 40 °F, hot gas temp. $t_h = t_c + 40$ °F, subcooling Δt_u = 10 °F								
		R22/R407C			R134a			R404A/R507		
		Condensing temp. t_c [°F]			Condensing temp. t_c [°F]			Condensing temp. t_c [°F]		
		70	**100**	**140**	**70**	**100**	**140**	**70**	**100**	**140**
EVR 2	2	0.15	0.16	0.17	0.12	0.14	0.14	0.14	0.14	0.13
	5	0.24	0.26	0.27	0.19	0.21	0.22	0.22	0.23	0.21
	10	0.33	0.36	0.38	0.26	0.29	0.30	0.31	0.32	0.29
	15	0.39	0.43	0.46	0.31	0.35	0.37	0.37	0.38	0.35
	20	0.44	0.49	0.52	0.34	0.39	0.42	0.42	0.44	0.40
	25	0.48	0.54	0.58	0.36	0.43	0.46	0.46	0.48	0.44
EVR 3	2	0.26	0.28	0.29	0.21	0.23	0.23	0.24	0.24	0.22
	5	0.40	0.43	0.45	0.32	0.36	0.37	0.38	0.38	0.35
	10	0.55	0.61	0.64	0.44	0.49	0.51	0.52	0.53	0.49
	15	0.66	0.73	0.77	0.52	0.59	0.62	0.62	0.65	0.59
	20	0.74	0.83	0.88	0.57	0.66	0.70	0.71	0.74	0.68
	25	0.81	0.91	0.98	0.61	0.72	0.78	0.77	0.81	0.75
EVR 4	2	0.53	0.57	0.60	0.44	0.47	0.49	0.50	0.51	0.46
	5	0.83	0.90	0.94	0.67	0.74	0.76	0.78	0.79	0.72
	10	1.14	1.26	1.32	0.92	1.02	1.06	1.08	1.11	1.01
	15	1.37	1.52	1.60	1.08	1.22	1.28	1.30	1.34	1.22
	20	1.54	1.72	1.83	1.19	1.37	1.46	1.47	1.53	1.40
	25	1.68	1.90	2.03	1.27	1.49	1.61	1.60	1.68	1.56
EVR 6	2	0.76	0.82	0.86	0.62	0.68	0.69	0.71	0.72	0.65
	5	1.18	1.29	1.35	0.96	1.05	1.09	1.11	1.13	1.03
	10	1.63	1.79	1.89	1.31	1.46	1.52	1.54	1.58	1.44
	15	1.95	2.16	2.29	1.54	1.74	1.83	1.85	1.91	1.75
	20	2.20	2.46	2.62	1.70	1.96	2.09	2.09	2.18	2.00
	25	2.40	2.71	2.90	1.82	2.13	2.30	2.29	2.41	2.22

Metric conversions
1 psi = 0.07 bar
$^5/_9$ (t_1 °F - 32) = t_2 °C
1 TR = 3.5 kW

Correction factors
The table values refer to hot gas capacity and are given as a function of condensing temperature t_c and pressure drop Δp across the valve. Capacities are based on a hot gas temperature superheated 40 °F above condensing temperature ($t_h = t_c + 40$ °F).

For each additional 10 °F of superheat above 40 °F, the table capacities must be reduced by 1%. When the valve is used in a hot gas defrost circuit. evaporator temperature affects the capacity. When the evaporator temperature differs from 40 °F, adjust the table capacities by multiplying them by the appropriate correction factor found in the following table.

Correction factors for t_h and t_e

t_e [°F]	-40	-20	0	20	40	50
Factor	1.18	1.14	1.09	1.04	1	0.97

Capacity
Hot gas
(continued)

Type	Pressure drop across valve Δp [psi]	Hot gas capacity Q_h [TR] Evaporating temp. t_e = 40 °F, hot gas temp. $t_h = t_c$+40 °F, subcooling Δt_u = 10 °F								
		R22/R407C			R134a			R404A/R507		
		Condensing temp. t_c [°F]			Condensing temp. t_c [°F]			Condensing temp. t_c [°F]		
		70	100	140	70	100	140	70	100	140
EVR 8	2	1.06	1.15	1.20	0.87	0.95	0.97	1.00	1.01	0.91
	5	1.65	1.80	1.88	1.35	1.48	1.52	1.56	1.59	1.44
	10	2.29	2.51	2.64	1.83	2.04	2.12	2.16	2.22	2.01
	15	2.74	3.03	3.21	2.15	2.43	2.57	2.59	2.68	2.45
	20	3.08	3.45	3.67	2.38	2.74	2.92	2.93	3.05	2.81
	25	3.36	3.80	4.07	2.54	2.99	3.22	3.21	3.37	3.11
EVR 10	2	1.80	1.95	2.03	1.48	1.61	1.65	1.69	1.72	1.55
	5	2.81	3.06	3.19	2.29	2.50	2.58	2.64	2.69	2.44
	10	3.88	4.26	4.48	3.11	3.46	3.60	3.66	3.76	3.42
	15	4.64	5.14	5.44	3.65	4.13	4.35	4.40	4.55	4.15
	20	5.23	5.85	6.23	4.03	4.65	4.96	4.97	5.18	4.76
	25	5.71	6.44	6.90	4.31	5.07	5.47	5.44	5.72	5.28
EVR 15	2	2.46	2.67	2.78	2.02	2.20	2.25	2.31	2.35	2.12
	5	3.84	4.18	4.37	3.13	3.43	3.53	3.62	3.69	3.33
	10	5.31	5.83	6.13	4.25	4.73	4.93	5.01	5.15	4.68
	15	6.35	7.03	7.44	4.99	5.65	5.96	6.02	6.22	5.68
	20	7.16	8.00	8.52	5.52	6.36	6.79	6.81	7.09	6.51
	25	7.81	8.81	9.44	5.90	6.93	7.48	7.45	7.82	7.23
EVR 18	2	3.22	3.49	3.63	2.65	2.87	2.95	3.03	3.07	2.77
	5	5.02	5.47	5.72	4.09	4.48	4.62	4.73	4.82	4.36
	10	6.94	7.62	8.02	5.56	6.18	6.45	6.56	6.73	6.12
	15	8.30	9.20	9.73	6.53	7.39	7.79	7.87	8.14	7.43
	20	9.36	10.46	11.14	7.22	8.32	8.87	8.90	9.27	8.52
	25	10.21	11.52	12.34	7.71	9.06	9.78	9.74	10.23	9.45

Metric conversions
1 psi = 0.07 bar
$^5/_9$ (t_1 °F - 32) = t_2 °C
1 TR = 3.5 kW

Correction factors
The table values refer to hot gas capacity and are given as a function of condensing temperature t_c and pressure drop Δp across the valve. Capacities are based on a hot gas temperature superheated 40 °F above condensing temperature (t_h=t_c+ 40 °F). For each additional 10 °F of superheat above 40 °F, the table capacities must be reduced by 1%.

When the valve is used in a hot gas defrost circuit. evaporator temperature affects the capacity. When the evaporator temperature differs from 40 °F, adjust the table capacities by multiplying them by the appropriate correction factor found in the following table.

Correction factors for t_h and t_e

t_e [°F]	-40	-20	0	20	40	50
Factor	1.18	1.14	1.09	1.04	1	0.97

Capacity
Hot gas
(continued)

Type	Pressure drop across valve Δp [psi]	Hot gas capacity Q_h [TR] Evaporating temp. t_e = 40 °F, hot gas temp. t_h = t_c + 40 °F, subcooling Δt_u = 10 °F								
		R22/R407C			R134a			R404A/R507		
		Condensing temp. t_c [°F]			Condensing temp. t_c [°F]			Condensing temp. t_c [°F]		
		70	100	140	70	100	140	70	100	140
EVR 20	2	4.73	5.13	5.34	3.89	4.23	4.33	4.45	4.52	4.07
	5	7.39	8.04	8.41	6.01	6.59	6.80	6.95	7.09	6.41
	10	10.21	11.21	11.79	8.17	9.09	9.48	9.64	9.90	8.99
	15	12.21	13.53	14.31	9.60	10.87	11.46	11.57	11.96	10.93
	20	13.77	15.39	16.38	10.62	12.23	13.05	13.09	13.63	12.53
	25	15.02	16.94	18.15	11.34	13.33	14.39	14.33	15.04	13.90
EVR 22	2	5.68	6.16	6.41	4.67	5.07	5.20	5.34	5.42	4.89
	5	8.86	9.65	10.09	7.22	7.90	8.16	8.35	8.50	7.69
	10	12.25	13.45	14.14	9.81	10.91	11.38	11.57	11.87	10.79
	15	14.65	16.23	17.17	11.52	13.04	13.75	13.89	14.36	13.12
	20	16.52	18.47	19.66	12.74	14.68	15.66	15.71	16.36	15.03
	25	18.02	20.33	21.79	13.61	15.99	17.26	17.19	18.05	16.67
EVR 25	2	6.26	6.79	7.08	5.13	5.58	5.74	5.88	5.98	5.39
	5	14.77	16.09	16.81	12.03	13.17	13.59	13.91	14.17	12.82
	10	20.42	22.42	23.57	16.34	18.19	18.97	19.28	19.79	17.99
	15	24.42	27.06	28.62	19.20	21.73	22.92	23.14	23.93	21.86
	20	27.53	30.78	32.76	21.23	24.47	26.10	26.18	27.27	25.05
	25	30.04	33.89	36.31	22.69	26.66	28.77	28.66	30.08	27.79
EVR 32	2	10.01	10.86	11.33	8.20	8.93	9.17	9.41	9.56	8.63
	5	23.63	25.74	26.90	19.24	21.08	21.75	22.25	22.68	20.51
	10	32.66	35.87	37.72	26.15	29.10	30.35	30.85	31.67	28.78
	15	39.08	43.29	45.80	30.72	34.77	36.66	37.03	38.28	34.98
	20	44.05	49.24	52.42	33.97	39.15	41.76	41.89	43.63	40.08
	25	48.06	54.22	58.09	36.30	42.65	46.04	45.85	48.14	44.46
EVR 40	2	15.63	16.97	17.69	12.82	13.95	14.33	14.70	14.94	13.48
	5	36.93	40.22	42.04	30.07	32.94	33.98	34.77	35.44	32.04
	10	51.04	56.05	58.94	40.86	45.47	47.42	48.21	49.48	44.97
	15	61.06	67.64	71.56	48.01	54.33	57.29	57.86	59.82	54.65
	20	68.84	76.94	81.91	53.08	61.17	65.24	65.45	68.17	62.63
	25	75.09	84.72	90.77	56.72	66.64	71.93	71.64	75.21	69.48

Metric conversions
1 psi = 0.07 bar
$^5/_9$ (t_1 °F - 32) = t_2 °C
1 TR = 3.5 kW

Correction factors
The table values refer to hot gas capacity and are given as a function of condensing temperature t_c and pressure drop Δp across the valve. Capacities are based on a hot gas temperature superheated 40 °F above condensing temperature (t_h = t_c+40 °F).
For each additional 10 °F of superheat above 40 °F, the table capacities must be reduced by 1%.

When the valve is used in a hot gas defrost circuit. evaporator temperature affects the capacity. When the evaporator temperature differs from 40 °F, adjust the table capacities by multiplying them by the appropriate correction factor found in the following table.

Correction factors for t_h and t_e

t_e [°F]	-40	-20	0	20	40	50
Factor	1.18	1.14	1.09	1.04	1	0.97

Identification

Essential valve data is given on the label.

Example

EVR 8	Valve type and size
SWP	Safe Working Pressure (MWP) in psig
018F4100	Coil group for the EVR
MOPD	Maximum Operating Pressure in psi
S and A	Approvals in USA and Canada

Valve selection example

Note:
When selecting the appropriate solenoid valve, it is easier to convert the actual required capacity to that of the rated capacities listed in the tables. This is done by utilizing various correction factors in the selection process. The following examples illustrate how this is done.

Liquid line solenoid valve selection example
Refrigerant R134a
Condensing temperature t_c = 100 °F
Liquid temperature ahead of valve t_l = 90 °F
Maximum allowable pressure drop across valve Δp = 2 psi
Evaporator capacity Q_o = 10 TR (required valve capacity)

The table capacity should be corrected by the corresponding factor as:

$$Q_{table} \times f_{liquid} = Q_o$$

Step 1:
Determine the correction factor for liquid temperature. From the correction factor table found on page 8, a liquid temperature of 90 °F corresponds to a factor of 1.05.

Step 2:
Correct the required valve capacity.
This is done by dividing the evaporator capacity by the liquid correction factor.
$Q_{corrected}$ = 10/1.05 = 9.5 TR

Step 3:
Select the appropriate capacity table and choose the first valve whose capacity is greater than or equal to $Q_{corrected}$ at the required pressure drop. Using the R134a liquid capacity table found on page 8, the EVR 15 is selected as it has a capacity of 12.5 TR at a Δp = 2 psi.

Suction line solenoid valve selection example
Refrigerant R134a
Liquid temperature ahead of expansion valve t_l = 90 °F
Evaporator temperature t_e = 30 °F
Superheat ahead of valve t_s = 17 °F
Maximum allowable pressure drop across valve Δp = 3 psi
Evaporator capacity Q_o = 10 TR (required valve capacity)

The table capacity should be corrected by the corresponding factor as:

$$Q_{table} \times f_{liquid} \times f_{superheat} = Q_o$$

Step 1:
Determine the correction factor for superheat ahead of the valve by increasing the required valve capacity by 2% for each 10 °F of actual superheat above the table rated value of 7 °F. In the example. a superheat of 17 °F corresponds to a 10 °F increase above the table value which is equivalent to a superheat correction factor of 0.98.

Step 2:
Determine the correction factor for liquid temperature. From the correction factor table found on page 13, a liquid temperature of 90 °F corresponds to a factor of 1.05.

Step 3:
Correct the required valve capacity. This is done by first multiplying the evaporator capacity by the superheat correction factor and then dividing it by the liquid correction factor.
$Q_{corrected}$ = 10/0.98/1.05=9.7

Step 4:
Select the appropriate capacity table and choose the first valve whose capacity is greater than or equal to $Q_{corrected}$ at the required evaporating temperature and pressure drop. Using the R134a suction vapor capacity table found on page 13, the EVR 40 is selected as it has a capacity of 14.75 TR at t_e = 30 °F and Δp = 3 psi.

Valve selection example
(continued)

Hot gas line solenoid valve selection example
With hot gas defrost, pressure in the evaporator quickly rises to a value near that of the condensing pressure and remains there until the defrost cycle has been completed. Therefore. when selecting valves for hot gas applications, sizing is based primarily on the condensing temperature t_c and the pressure drop D_p across the valve.

Example (with heat recovery)
Refrigerant: R134a
Evaporator temperature: t_e= 0 °F
Condensing temperature: t_c= 100 °F
Hot gas temperature ahead of valve: t_h= 180 °F
Maximum allowable pressure drop across valve: Δp = 5 psi
Output of heat recovery condenser: Q_h= 15 TR (required valve capacity)

The table capacity should be corrected by the correspondig factor as:

$$Q_{table}\ x\ f_{evaporator}\ x\ f_{superheat} = Q_o$$

Step 1:
Determine the correction factor for hot gas temperature (t_h= t_c+ 40 °F) by increasing the required valve capacity by 1% for each 10 °F of actual superheat above the table rated superheat value of 40 °F.
In the example, an actual hot gas temperature of 180 °F is 40 °F higher than the calculated table value of (t_h= t_c+ 40 °F = 140 °F). This is equivalent to a hot gas correction factor of 0.96.

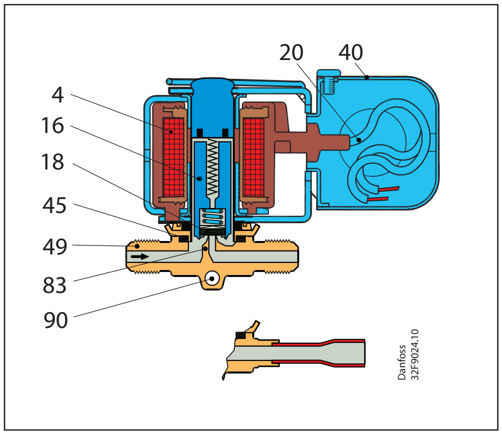
Step 2:
Determine the correction factor for evaporator temperature. From the correction factor table found on page 19 an evaporator temperature of 0 °F corresponds to a factor of 1.09.

Step 3:
Correct the required valve capacity. This is done by first multiplying the heat recovery capacity by the hot gas correction factor and then dividing it by the evaporator correction factor.
$Q_{corrected}$= 15 /0.96/1.09=14.3

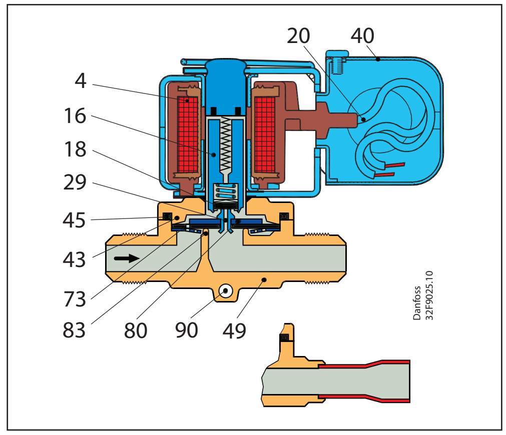
Step 4:
Select the appropriate capacity table and choose the first valve whose capacity is greater than or equal to $Q_{corrected}$ at the required condensing temperature and pressure drop. Using the R134a hot gas capacity table found on pages 19 and 20, the EVR 32 is selected as it has a capacity of 21.8 TR at t_c= 100 °F and Δp = 5 psi.

Design / Function

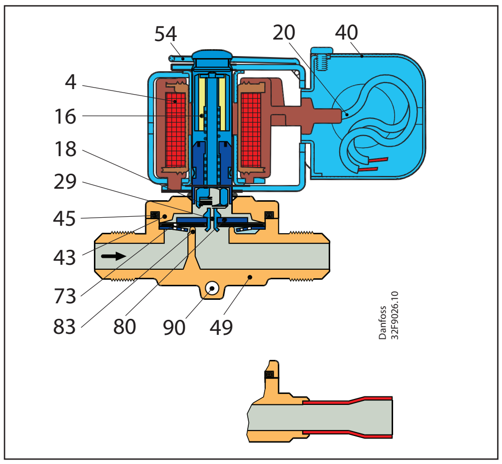
EVR 2 and EVR 3, NC



EVR 4 – EVR 22, NC



EVR 6 – EVR 15, NO



4. Coil
16. Armature
18. Valve plate
20. Earth terminal
29. Pilot orifice
40. Junction box
43. Valve cover
45. Gasket
49. Valve body
54. Spacer ring
73. Equalizing hole
80. Diaphragm
83. Valve seat
90. Fixing hole

Note:
The drawings are only representative.

EVR solenoid valves are based on two different design principles:
1. Direct operation
2. Servo operation

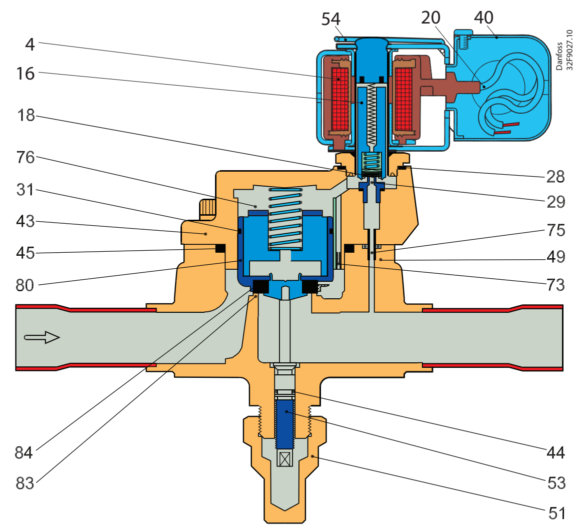
1: Direct operation
EVR 2 and EVR 3 are direct operated. The valves opens to admit full flow when the armature (16) is moved up into the magnetic field of the coil.
The valves operates with a minimum differential pressure of 0 psi.
The valve plate (18) is fitted directly to the armature (16).
Inlet pressure and spring force act to close the valve when the coil is de-energized.

2a:
EVR 4 – EVR 22 are servo-operated with a "floating" diaphragm (80). The pilot orifice (29) is located in the center of the diaphragm.
The pilot valve plate (18) is fitted directly to the armature (16).
When the coil is de-energized, the valve port and pilot orifice are closed and the inlet pressure acts both above and below the diaphragm.
The valve port and pilot orifice are kept closed by the armature spring force and the differential pressure between inlet and outlet sides.
When current is applied to the coil, the armature is pulled up into the magnetic field and the pilot orifice opens. This relieves pressure above the diaphragm because the space above it becomes connected to the outlet side of the valve.
The differential pressure between inlet and outlet presses the diaphragm away from the valve seat (83) and the valve opens to admit full flow. A minimum differential pressure (0.7 psi for EVR 4 – EVR 22) is necessary to open the valve and keep it open.
When the coil is de-energized, the pilot orifice closes. Then. via the equalizing port (73) the pressure above the diaphragm rises to the same value as the inlet pressure, which results in the valve port being closed by the diaphragm.

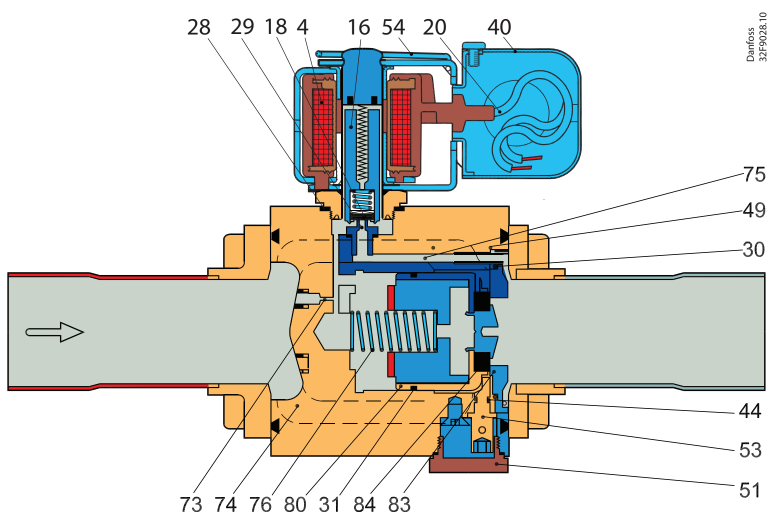
EVR 6 – EVR 15, NO, function in a manner opposite to the NC valves; they are open when the coil is de-energized.
Normally open (NO) EVR valves are available with servo operation only.

Design / Function
(continued)

EVR 25



EVR 32 and EVR 40



4. Coil
16. Armature
18. Pilot valve plate
20. Earth screw
28. Gasket
29. Pilot orifice
30. O-ring
31. Piston ring
40. Junction box
43. Valve cover
44. O-ring
45. Valve cover gasket
49. Valve body
51. Protective cap /blanking plug
53. Manual stem
73. Equalizing hole
74. Main passage
75. Pilot passage
76. Return spring
80. Servo piston
83. Main valve seat
84. Main valve plate

Note:
The drawings are only representative.

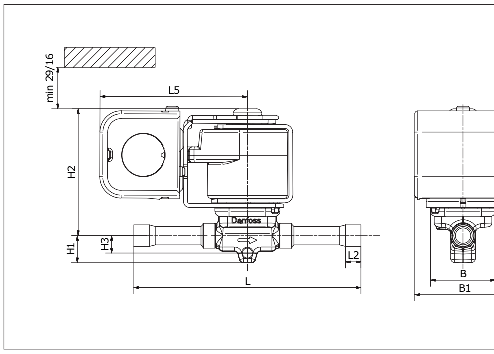
2b. Servo operation of EVR 25 – EVR 40
EVR 25. EVR 32 and EVR 40 are servo-operated piston valves.
The valves are closed when the coil is de-energized. In operation. EVR 25 is the same as for EVR 4 – EVR 22. but the design is different. The pilot unit is located in the cover and the servo unit is a piston (80) with a cast iron piston ring.

For EVR 25 – EVR 40, piston (80) and valve plate (84) will close against the valve seat (83) due to the differential pressure between inlet and outlet plus the force from the return spring (76).
When the coil is energized, the pilot orifice (29) is opened and pressure on the spring side of the piston is relieved. The pressure differential now opens the valve. The minimum differential required to keep the valve fully open is 1 psi.

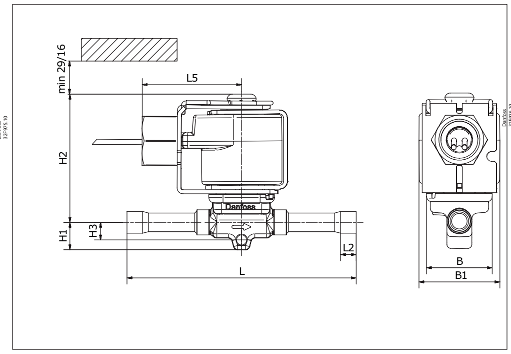
Dimensions [in] and weights [lbs]

EVR 2 - EVR 8 NC, EVR 6 - EVR 8 NO, Solder connection

With junction box
EVR 2 - EVR 8 NC, EVR 6 - EVR 8 NO



With conduit boss
EVR 2 - EVR 8 NC, EVR 6 - EVR 8 NO



Coil net weight: 1 lb

Note:
The drawings are only representative.

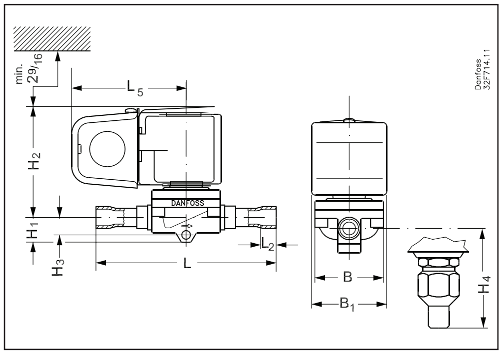
	Connection				L_5								
Type	Normal size	Over-size	L	L_2	Junction box	Conduit boss	H_1	H_2	H_3	H_4	B	B_1	Net weight with coil
EVR 2 NC	1/4	—	4 5/8	3/8	3	2	9/16	—	7/20	—	1 5/16	2 1/16	1.3
EVR 3 NC	1/4	—	4 5/8	3/8	3	2	9/16	2 13/16	7/20	—	1 5/16	2 1/16	1.3
EVR 3 NC	—	3/8	4 5/8	3/8	3	2	9/16	2 13/16	7/20	—	1 5/16	2 1/16	1.3
EVR 4 NC	3/8	—	4 3/8	3/8	3	2	9/16	3 1/16	3/8	—	1 7/16	2 1/16	1.4
EVR 4 NC	—	1/2	5	3/8	3	2	9/16	3 1/16	3/8	—	1 7/16	2 1/16	1.4
EVR 6 NC/NO	3/8	—	4 3/8	3/8	3	2	9/16	3 1/16	3/8	—	1 7/16	2 1/16	1.4
EVR 6 NC/NO	3/8	—	4 3/8	3/8	3	2	—	3 1/16	—	2 3/16	1 7/16	2 1/16	1.4
EVR 6 NC	—	1/2	5	3/8	3	2	9/16	3 1/16	3/8	—	1 7/16	2 1/16	1.4
EVR 6 NC	—	5/8	6 1/2	1/2	3	2	9/16	3 1/16	3/8	—	1 7/16	2 1/16	1.4
EVR 8 NC	3/8	—	4 5/8	3/8	3	2	9/16	3 1/16	3/8	—	1 7/16	2 1/16	1.4
EVR 8 NC	—	1/2	5	3/8	3	2	9/16	3 1/16	3/8	—	1 7/16	2 1/16	1.4
EVR 8 NC	—	5/8	6	1/2	3	2	9/16	3 1/16	3/8	—	1 7/16	2 1/16	1.4

Metric conversions:
1 in = 25.4 mm

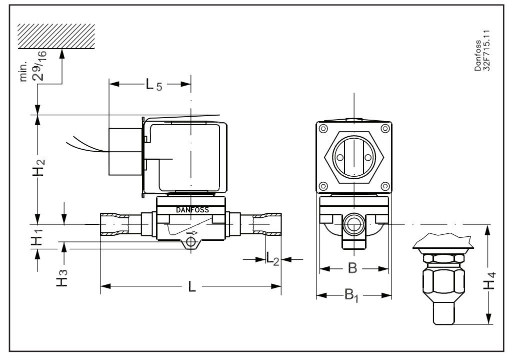
Dimensions [in] and weights [lbs]

EVR 10 NC/NO, Solder connection

With junction box
EVR 10 NC/NO



With conduit boss
EVR 10 NC/NO



Coil net weight: 1 lb

Note:
The drawings are only representative.

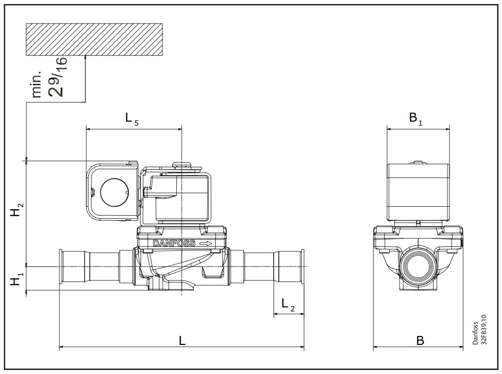
Type	Connection		L	L_2	L_5		H_1	H_2	H_3	H_4	B	B_1	Net weight with coil
	Normal size	Over-size			Junction box	Conduit boss							
EVR 10 NC	3/8	—	4 5/8	3/8	3	2	5/8	3 1/8	7/16	—	1 13/16	2 1/16	1.8
EVR 10 NC/NO	—	1/2	5	3/8	3	2	5/8	3 1/8	7/16	—	1 13/16	2 1/16	1.8
EVR 10 NC/NO	—	1/2	5	3/8	3	2	—	3 1/8	—	2 3/16	1 7/16	2 1/16	1.8
EVR 10 NC/NO	—	5/8	6 5/16	1/2	3	2	5/8	3 1/8	7/16	—	1 13/16	2 1/16	1.8

Metric conversions:
1 in = 25.4 mm

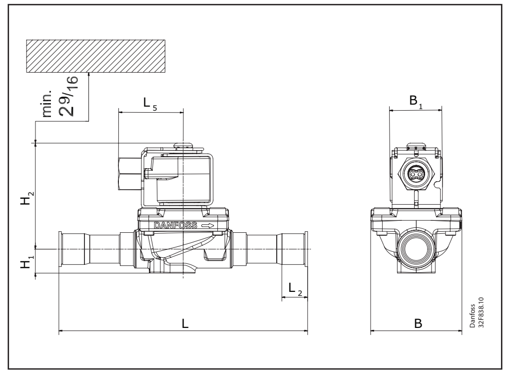
Dimensions [in] and weights [lbs]

EVR 15 - EVR 22 NC, EVR 15 NO, Solder connection

With junction box
EVR 15 - EVR 22, NC/NO



With conduit boss
EVR 15 - EVR 22, NC/NO



Coil net weight: 1 lb

Note:
The drawings are only representative.

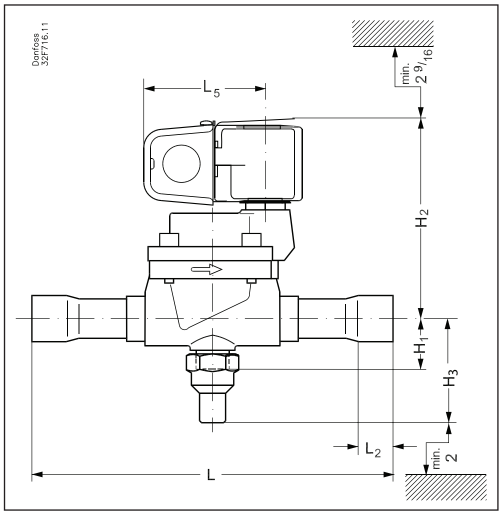
Type	Connection		L	L_2	L_5		H_1	H_2	H_3	H_4	B	B_1	Net weight with coil
	Normal size	Over-size			Junction box	Conduit boss							
EVR 15 NC/NO	5/8	—	6 7/8	1/2	3	2	3/4	3 3/8	3/4	—	2 3/16	2 1/16	2.4
EVR 15 NC/NO	5/8	—	6 7/8	1/2	3	2	—	3 3/8	—	2 1/8	2 3/16	2 1/16	2.4
EVR 15 NC	—	7/8	7 1/8	5/8	3	2	3/4	3 3/8	3/4	—	2 3/16	2 1/16	2.4
EVR 18 NC	7/8	—	7 1/8	5/8	3	2	3/4	3 3/8	3/4	—	2 3/16	2 1/16	2.4
EVR 18 NC	—	1 1/8	8 1/2	7/8	3	2	3/4	3 3/8	3/4	—	2 3/16	2 1/16	2.4
EVR 20 NC	7/8	—	7 1/2	5/8	3	2	25/32	3 9/16	—	—	2 13/16	2 1/16	3.4
EVR 20 NC	7/8	—	7 1/2	5/8	3	2	—	3 9/16	—	2 3/8	2 13/16	2 1/16	3.4
EVR 20 NC	—	1 1/8	8 1/2	7/8	3	2	25/32	3 9/16	—	—	2 13/16	2 1/16	3.4
EVR 22 NC	1 1/8	—	10 1/16	7/8	3	2	25/32	3 9/16	—	—	2 13/16	2 1/16	3.4
EVR 22 NC	—	1 3/8	11 1/16	1	3	2	25/32	3 9/16	—	—	2 13/16	2 1/16	3.4

Metric conversions:
1 in = 25.4 mm

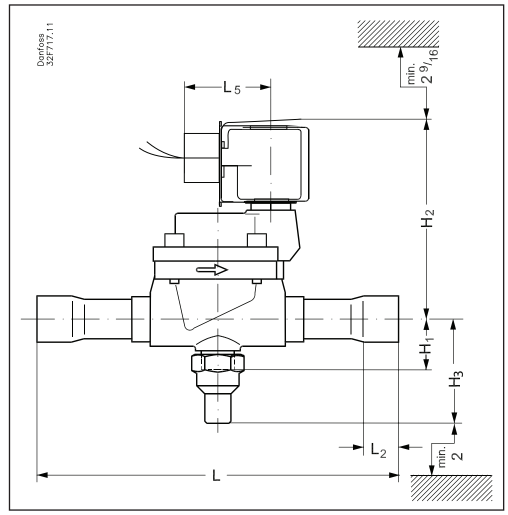
Dimensions [in] and weights [lbs]

EVR 25 - EVR 40, Solder connection

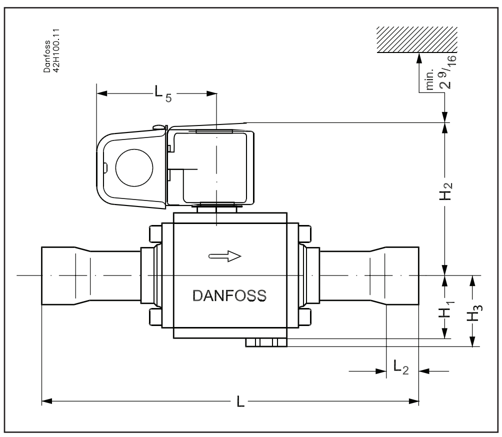
With junction box
EVR 25



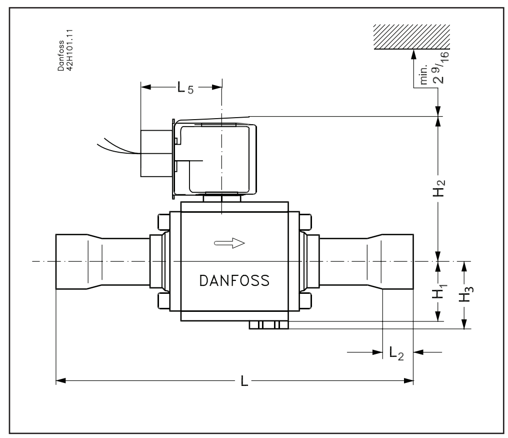
With conduit boss
EVR 25



EVR 32 and EVR 40



EVR 32 and EVR 40



Coil net weight: 1 lb

Note:
The drawings are only representative.

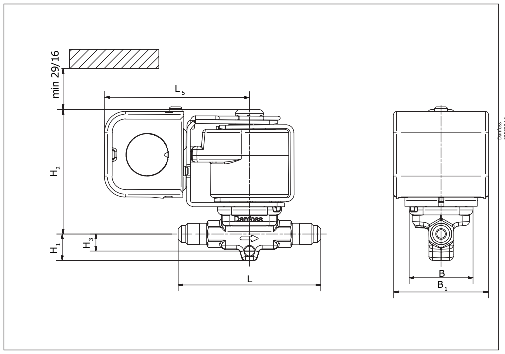
Type	Connection		L	L_2	L_5		H_1	H_2	H_4	B	Net weight with coil
	Normal size	Oversize			Junction box	Conduit boss					
EVR 25	1 1/8	—	10 1/16	7/8	3	2	1 ½	5 7/16	2 13/16	3 ¼	6.9
EVR 25	—	1 3/8	11 1/16	1	3	2	1 ½	5 7/16	2 13/16	3 ¼	7.7
EVR 32	1 3/8	—	11 1/16	1	3	2	1 7/8	4 3/8	2 1/8	3 3/16	9.5
EVR 32	—	1 5/8	11 1/16	1 1/8	3	2	1 7/8	4 3/8	2 1/8	3 3/16	9.7
EVR 40	1 5/8	—	11 1/16	1 1/8	3	2	1 7/8	4 3/8	2 1/8	3 3/16	10.0
EVR 40	—	2 1/8	11 1/16	1 1/8	3	2	1 7/8	4 3/8	2 1/8	3 3/16	10.0

Metric conversions:
1 in = 25.4 mm

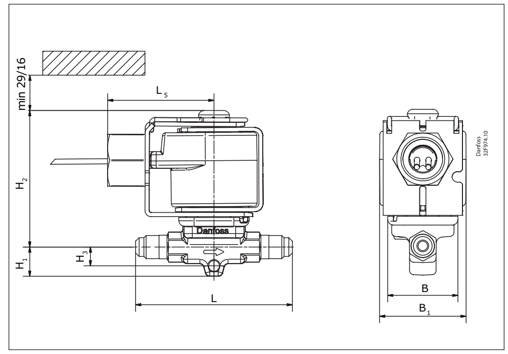
Dimensions [in] and weights [lbs]

EVR 2 - 6 NC, Flare connection

With junction box
EVR 2 – 6 NC



With conduit boss
EVR 2 – 6 NC



Coil net weight: 1 lb

Note:
The drawings are only representative.

Type	Connection		L	L_5		H_1	H_2	H_3	H_4	B	B_1	Net weight with coil
	Normal size	Oversize		Junction box	Conduit boss							
EVR 2 NC	1/4	—	2 5/16	3	2	9/16	2 13/16	5/16	—	1 5/16	2 1/16	1.3
EVR 3 NC	1/4	—	2 5/16	3	2	9/16	2 13/16	5/16	—	1 5/16	2 1/16	1.3
EVR 3 NC	—	3/8	2 7/16	3	2	9/16	2 13/16	5/16	—	1 5/16	2 1/16	1.3
EVR 4 NC	3/8	—	2 3/4	3	2	9/16	2 7/8	3/8	—	1 7/16	2 1/16	1.4
EVR 4 NC	—	1/2	3	3	2	9/16	2 7/8	3/8	—	1 7/16	2 1/16	1.4
EVR 6 NC	3/8	—	2 3/4	3	2	9/16	2 7/8	3/8	—	1 7/16	2 1/16	1.4
EVR 6 NC	3/8	—	2 3/4	3	2	9/16	2 7/8	—	2 3/16	1 7/16	2 1/16	1.4
EVR 6 NC	—	1/2	3	3	2	9/16	2 7/8	3/8	—	1 7/16	2 1/16	1.4

Metric conversions
1 in = 25.4 mm

Spare parts

Type	Code no.			
	Seal kit	Service kit	Piston service kit	Pilot service kit
EVR 2	**032F8196**	**032F0230**	—	—
EVR 3	**032F8196**	**032F0230**	—	—
EVR 4	**032F8165**	—	—	—
EVR 6	**032F8165**	**032F8166**	—	—
EVR 8	**032F8165**	**032F8166**	—	—
EVR 10	**032F8196**	**032F0185**	—	—
EVR 15	**032F8196**	**032F0187**	—	—
EVR 18	**032F8196**	**032F0187**	—	—
EVR 20	—	**032F0189**	—	—
EVR 22	—	**032F0189**	—	—
EVR 25	—	—	**032F3236**	**042H0165**
EVR 32	—	—	**042H0172**	**042H0165**
EVR 40	—	—	**042H0173**	—
EVR 6 NO	**032F8165**	—	—	—
EVR 10 NO	**032F8196**	—	—	—
EVR 15 NO	**032F8196**	—	—	—

Spare parts, contents

Seal kit	Service kit	Piston service kit	Pilot service kit
O-ring Gasket	Diaphragm assembly Armature assembly Rubber gasket Screws Torx key Snap fastener Nut	Piston assembly Plastic block Spring Piston ring Rubber gasket Snap fastener Nut	Armature tube assembly Snap fastener Armature Orifice Gaskets Nut