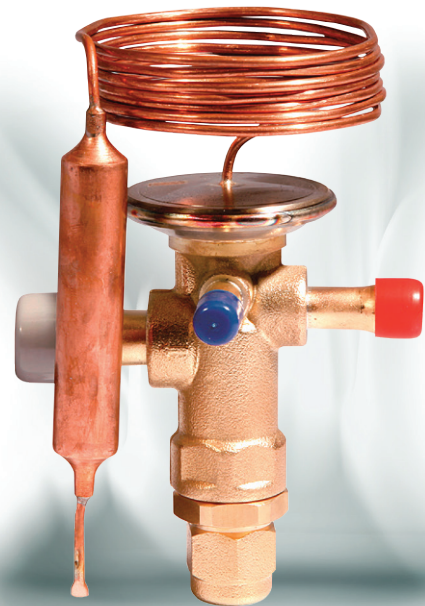




## Thermostatic Expansion Valve

RFGD series thermostatic expansion valves are used to adjust mass flow of refrigerant into the evaporator while controlling the refrigerant's superheat at the outlet of the evaporator. They can be used for various refrigerants under all working conditions. Typical applications are refrigeration systems like commercial refrigerators and freezers, icemakers, dehumidifiers as well as air conditioners at various evaporation temperatures.



### FEATURES

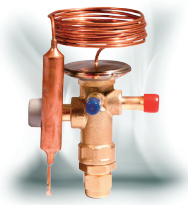
- COMPACT DESIGN WITH BUILD-IN ORIFICE
- WARM THERMO HEAD CONSTRUCTION
- ALL CONNECTIONS PIPES ARE COMPLETELY IN COPPER
- VALVES WITH MOP FUNCTION CAN BE PROVIDED TO ASSURE RELIABLE COMPRESSOR OPERATION
- APPLICABLE IN A WIDE EVAPORATION TEMPERATURE RANGE
- RELIABLE AND CONSISTENT PERFORMANCE OF SUPERHEAT CONTROL
- BALANCED PORT – SUITABLE FOR REVERSIBLE CYCLES
- THERMAL BULB UTILIZES CROSS CHARGE TECHNOLOGY, PROVIDING CONSISTENT SUPERHEAT DEGREE OVER THE WHOLE EVAPORATION TEMPERATURE RANGE

### GENERAL SPECIFICATION

- Applicable for all common HCFC and HFC refrigerants such as: R22, R134a, R404A, R407C, R410A, R507
- Ambient temperature min./max.: -35/+55°C
- Medium temperature TS min./max.:  
-40°C / +70°C  
-60°C / +70°C
- Max. operating pressure PS: 2,1 ... 4,5 MPa (21 ... 45 bar)<sup>1)</sup>
- Installation position:
  - Preferably valve head upwards
  - Main flow direction from inlet A to outlet B
- Certifications: UL/CSA and PED declaration

<sup>1)</sup> Max. operating pressure is related to the used refrigerant





# SANHUA RFGD SERIES Thermostatic Expansion Valve

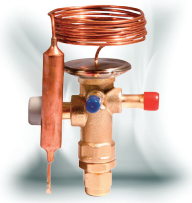
## TECHNICAL PARAMETERS

- RFGD valves are available in straight shape with adjustable superheat on site
- RFGD valves are available with the following solder connections
  - Metric: Inlet 10mm ODF/ Outlet 16mm ODF or Inlet 12mm ODF/ Outlet 22mm ODF or Inlet 16mm ODF/ Outlet 22mm ODF
  - Imperial: Inlet 3/8" ODF/ Outlet 5/8" ODF or Inlet 1/2" ODF/ Outlet 7/8" ODF or Inlet 5/8" ODF/ Outlet 7/8" ODF
- RFGD valves are available with 3 different temperature ranges:
  - from -40°C to +10°C
  - from -40°C to -5°C
  - from -60°C to -25°C
- Equalization port available as option:
  - Metric: 6mm ODF (available for models with metric solder connections)
  - Imperial: 1/4" ODF (available for models with imperial solder connections)
- Capillary tube length 1500mm as standard. Different length customizable on request.
- Standard MOP values:
  - T. range -40°C to +10°C: MOP: +15°C or MOP not present
  - T. range -40°C to -5°C: MOP: 0°C
  - T. range -60°C to -25°C: MOP: -20°C

## MODEL DESIGNATION LEGEND

Position Number	Model Designation Legend	
1	Product Code	Product Series
	RFGD	Thermostatic expansion valve with build-in orifice
2	Refrigerant	Description
	1	R22
	2	R407C
	3	R404A / R507
	4	R134a
	5	R410A
3	Pressure Equalization	Description
	E	External pressure equalization
	( Omitted )	Internal pressure equalization
4	Valve Size	Internal Orifice Size
	From 1 to 6	Valve size: proportional to the orifice size and to the nominal capacity





# SANHUA RFGD SERIES Thermostatic Expansion Valve

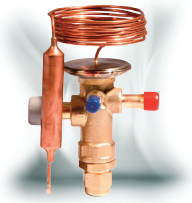
## MODEL DESIGNATION LEGEND

Position Number	Model Designation Legend	
5	Connections Type	Description
	M10	Metric: inlet 10mm / outlet 16mm
	M12	Metric: inlet 12mm / outlet 22mm
	M16	Metric: inlet 16mm / outlet 22mm
	3	Imperial: inlet 3/8" / outlet 5/8"
	4	Imperial: inlet 1/2" / outlet 7/8"
6	Miscellaneous	Description
	xxx	Digits for additional information e.g. temperature range, MOP, Bleed...

## MODEL DESIGNATION EXAMPLE

Position Number						According to Model Designation Legend
1	2	3	4	5	6	
<b>RFGD</b>	04	E	3	M16	xxx	Thermostatic expansion valve with build-in orifice
RFGD	<b>04</b>	E	3	M16	xxx	Refrigerant: R134a
RFGD	04	<b>E</b>	3	M16	xxx	With connection for external pressure equalization
RFGD	04	E	<b>3</b>	M16	xxx	Capacity: Valve and orifice size 3
RFGD	04	E	3	<b>M16</b>	xxx	Valve pipe connections: metric inlet 16mm/outlet 22mm
RFGD	04	E	3	M16	<b>xxx</b>	Digits for additional information





# SANHUA RFGD SERIES Thermostatic Expansion Valve

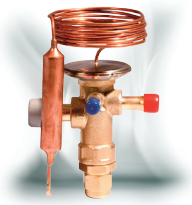
## TECHNICAL DATA

Nominal Capacities <sup>1)</sup>

R22			R407C <sup>2)</sup>			R404A / R507A			R134a			R410A		
PS: 2,8 MPa			PS: 2,8 MPa			PS: 3,5 MPa			PS: 2,1 MPa			PS: 4,5 MPa		
Model Name <sup>3)</sup>	Capacity		Model Name <sup>3)</sup>	Capacity		Model Name <sup>3)</sup>	Capacity		Model Name <sup>3)</sup>	Capacity		Model Name <sup>3)</sup>	Capacity	
	USRT	kW		USRT	kW		USRT	kW		USRT	kW		USRT	kW
RFGD 01-1	3,0	10,6	RFGD 02-1	3,1	10,9	RFGD 03-1	2,0	7,0	RFGD 04-1	1,8	6,3	RFGD 05-1	3,5	12,3
RFGD 01E-1			RFGD 02E-1			RFGD 03E-1			RFGD 04E-1			RFGD 05E-1		
RFGD 01-2	4,0	14,1	RFGD 02-2	4,2	14,8	RFGD 03-2	2,8	9,8	RFGD 04-2	2,5	8,8	RFGD 05-2	4,5	15,8
RFGD 01E-2			RFGD 02E-2			RFGD 03E-2			RFGD 04E-2			RFGD 05E-2		
RFGD 01-3	6,0	21,1	RFGD 02-3	6,3	22,2	RFGD 03-3	4,2	14,8	RFGD 04-3	3,6	12,7	RFGD 05-3	7,0	24,6
RFGD 01E-3			RFGD 02E-3			RFGD 03E-3			RFGD 04E-3			RFGD 05E-3		
RFGD 01-4	7,5	26,4	RFGD 02-4	8,1	28,5	RFGD 03-4	5,4	19,0	RFGD 04-4	4,6	16,2	RFGD 05-4	8,6	30,2
RFGD 01E-4			RFGD 02E-4			RFGD 03E-4			RFGD 04E-4			RFGD 05E-4		
RFGD 01-5	9,0	31,7	RFGD 02-5	9,4	33,1	RFGD 03-5	6,4	22,5	RFGD 04-5	5,5	19,3	RFGD 05-5	10,6	37,3
RFGD 01E-5			RFGD 02E-5			RFGD 03E-5			RFGD 04E-5			RFGD 05E-5		
RFGD 01-6	11,0	38,7	RFGD 02-6	11,7	41,1	RFGD 03-6	7,8	27,4	RFGD 04-6	6,8	23,9	RFGD 05-6	12,8	45,0
RFGD 01E-6			RFGD 02E-6			RFGD 03E-6			RFGD 04E-6			RFGD 05E-6		

- Note:**
- 1) Nominal capacities referred at the following working conditions:  
Condensing temperature: 38°C; evaporating temperature +4,4°C; Liquid temperature 37°C  
Static Super Heating: 3,5K
  - 2) R407C data based on dew point conditions
  - 3) Model Name in this table is referred to the first 4 positions of the model designation





# SANHUA RFGD SERIES

## Thermostatic Expansion Valve

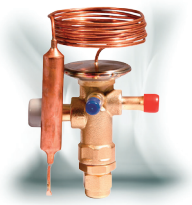
### MODEL LIST

(without Internal Equalization)

Model Name										Temperature Range			
Refr.	Valve Body	Capacity Size All Sizes	Pipe connections Metric / Imperial	Inlet		Outlet		Pressure Equal.		-40°C to +10°C		-40°C to -5°C	-60°C to -20°C
				[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	No MOP	MOP: +15°C	MOP: 0°C	MOP: -20°C
R22	RFGD 01 -	1 -	M10	10	-	16	-	-	-	O.R.	O.R.	O.R.	O.R.
		2 -	M12	12	-	22	-	-	-	O.R.	O.R.	O.R.	O.R.
		3 -	M16	16		22		-	-	O.R.	O.R.	O.R.	O.R.
		4 -	3	-	3/8	-	5/8	-	-	O.R.	O.R.	O.R.	O.R.
		5 -	4	-	1/2	-	7/8	-	-	O.R.	O.R.	O.R.	O.R.
		6 -	5		5/8		7/8		-	O.R.	O.R.	O.R.	O.R.
R407C	RFGD 02 -	1 -	M10	10	-	16	-	-	-	O.R.	O.R.	O.R.	O.R.
		2 -	M12	12	-	22	-	-	-	O.R.	O.R.	O.R.	O.R.
		3 -	M16	16		22		-	-	O.R.	O.R.	O.R.	O.R.
		4 -	3	-	3/8	-	5/8	-	-	O.R.	O.R.	O.R.	O.R.
		5 -	4	-	1/2	-	7/8	-	-	O.R.	O.R.	O.R.	O.R.
		6 -	5		5/8		7/8		-	O.R.	O.R.	O.R.	O.R.
R404A / R507	RFGD 03 -	1 -	M10	10	-	16	-	-	-	O.R.	O.R.	O.R.	O.R.
		2 -	M12	12	-	22	-	-	-	O.R.	O.R.	O.R.	O.R.
		3 -	M16	16		22		-	-	O.R.	O.R.	O.R.	O.R.
		4 -	3	-	3/8	-	5/8	-	-	O.R.	O.R.	O.R.	O.R.
		5 -	4	-	1/2	-	7/8	-	-	O.R.	O.R.	O.R.	O.R.
		6 -	5		5/8		7/8		-	O.R.	O.R.	O.R.	O.R.
R134a	RFGD 04 -	1 -	M10	10	-	16	-	-	-	O.R.	O.R.	O.R.	O.R.
		2 -	M12	12	-	22	-	-	-	O.R.	O.R.	O.R.	N.A.
		3 -	M16	16		22		-	-	O.R.	O.R.	O.R.	N.A.
		4 -	3	-	3/8	-	5/8	-	-	O.R.	O.R.	O.R.	N.A.
		5 -	4	-	1/2	-	7/8	-	-	O.R.	O.R.	O.R.	N.A.
		6 -	5		5/8		7/8		-	O.R.	O.R.	O.R.	N.A.
R410A	RFGD 05 -	1 -	M10	10	-	16	-	-	-	O.R.	O.R.	O.R.	N.A.
		2 -	M12	12	-	22	-	-	-	O.R.	O.R.	O.R.	N.A.
		3 -	M16	16		22		-	-	O.R.	O.R.	O.R.	N.A.
		4 -	3	-	3/8	-	5/8	-	-	O.R.	O.R.	O.R.	N.A.
		5 -	4	-	1/2	-	7/8	-	-	O.R.	O.R.	O.R.	N.A.
		6 -	5		5/8		7/8		-	O.R.	O.R.	O.R.	N.A.

**Note:** 1) Extent of delivery: valve body and bulb strap  
 2) O.R. : On Request  
 3) N.A.: Not Available





# SANHUA RFGD SERIES Thermostatic Expansion Valve

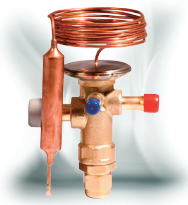
## MODEL LIST

(with External Equalization)

Model Name										Temperature Range			
Refr.	Valve Body	Capacity Size All Sizes	Pipe connections Metric / Imperial	Inlet		Outlet		Pressure Equal.		-40°C to +10°C		-40°C to -5°C	-60°C to -20°C
				[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	No MOP	MOP: +15°C	MOP: 0°C	MOP: -20°C
R22	RFGD 01E -	1 - 2 - 3 - 4 - 5 - 6 -	M10	10	-	16	-	-	-	O.R.	O.R.	O.R.	O.R.
			M12	12	-	22	-	-	-	O.R.	O.R.	O.R.	O.R.
			M16	16	-	22	-	-	-	O.R.	O.R.	O.R.	O.R.
			3	-	3/8	-	5/8	-	-	O.R.	O.R.	O.R.	O.R.
			4	-	1/2	-	7/8	-	-	O.R.	O.R.	O.R.	O.R.
			5	-	5/8	-	7/8	-	-	O.R.	O.R.	O.R.	O.R.
R407C	RFGD 02E -	1 - 2 - 3 - 4 - 5 - 6 -	M10	10	-	16	-	-	-	STD	O.R.	O.R.	O.R.
			M12	12	-	22	-	-	-	STD	O.R.	O.R.	O.R.
			M16	16	-	22	-	-	-	STD	O.R.	O.R.	O.R.
			3	-	3/8	-	5/8	-	-	STD	O.R.	O.R.	O.R.
			4	-	1/2	-	7/8	-	-	STD	O.R.	O.R.	O.R.
			5	-	5/8	-	7/8	-	-	STD	O.R.	O.R.	O.R.
R404A / R507	RFGD 03E -	1 - 2 - 3 - 4 - 5 - 6 -	M10	10	-	16	-	-	-	STD	O.R.	O.R.	O.R.
			M12	12	-	22	-	-	-	STD	O.R.	O.R.	O.R.
			M16	16	-	22	-	-	-	STD	O.R.	O.R.	O.R.
			3	-	3/8	-	5/8	-	-	STD	O.R.	O.R.	O.R.
			4	-	1/2	-	7/8	-	-	STD	O.R.	O.R.	O.R.
			5	-	5/8	-	7/8	-	-	STD	O.R.	O.R.	O.R.
R134a	RFGD 04E -	1 - 2 - 3 - 4 - 5 - 6 -	M10	10	-	16	-	-	-	STD	O.R.	O.R.	O.R.
			M12	12	-	22	-	-	-	STD	O.R.	O.R.	N.A.
			M16	16	-	22	-	-	-	STD	O.R.	O.R.	N.A.
			3	-	3/8	-	5/8	-	-	STD	O.R.	O.R.	N.A.
			4	-	1/2	-	7/8	-	-	STD	O.R.	O.R.	N.A.
			5	-	5/8	-	7/8	-	-	STD	O.R.	O.R.	N.A.
R410A	RFGD 05E -	1 - 2 - 3 - 4 - 5 - 6 -	M10	10	-	16	-	-	-	STD	O.R.	O.R.	N.A.
			M12	12	-	22	-	-	-	STD	O.R.	O.R.	N.A.
			M16	16	-	22	-	-	-	STD	O.R.	O.R.	N.A.
			3	-	3/8	-	5/8	-	-	STD	O.R.	O.R.	N.A.
			4	-	1/2	-	7/8	-	-	STD	O.R.	O.R.	N.A.
			5	-	5/8	-	7/8	-	-	STD	O.R.	O.R.	N.A.

**Note:** 1) Extent of delivery: valve body and bulb strap  
 2) O.R. : On Request  
 3) N.A.: Not Available  
 4) STD: Standard Models available on stock (see Standard Model Table for further details)





# SANHUA RFGD SERIES

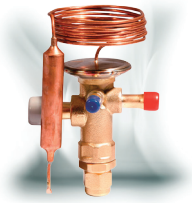
## Thermostatic Expansion Valve

### RFGD STANDARD RANGE

A) Models with Metric Connections

Model Name								
Refr.	MWP [ MPa ]	Valve Body	Capacity Size All Sizes	Connections IN x OUT		Pressure Equal. [mm]	Internal Code	Product Number
				Metric	[mm]			
R407C	2,8	RFGD 02E -	1 -	M10	10 x 16	6	RFGD 02E-3.1-57	RFG-25007
			2 -	M12	12 x 22	6	RFGD 02E-4.2-58	RFG-25008
			3 -	M12	12 x 22	6	RFGD 02E-6.3-59	RFG-25009
			4 -	M12	12 x 22	6	RFGD 02E-8.1-60	RFG-25010
			5 -	M16	16 x 22	6	RFGD 02E-9.4-61	RFG-25011
			6 -	M16	16 x 22	6	RFGD 02E-11.7-62	RFG-25012
R404A / R507	3,5	RFGD 03E -	1 -	M10	10 x 16	6	RFGD 03E-2.0-63	RFG-25013
			2 -	M12	12 x 22	6	RFGD 03E-2.8-64	RFG-25014
			3 -	M12	12 x 22	6	RFGD 03E-4.2-65	RFG-25015
			4 -	M12	12 x 22	6	RFGD 03E-5.4-66	RFG-25016
			5 -	M16	16 x 22	6	RFGD 03E-6.4-67	RFG-25017
			6 -	M16	16 x 22	6	RFGD 03E-7.8-68	RFG-25018
R134a	2,1	RFGD 04E -	1 -	M10	10 x 16	6	RFGD 04E-1.8-69	RFG-25019
			2 -	M12	12 x 22	6	RFGD 04E-2.5-70	RFG-25020
			3 -	M12	12 x 22	6	RFGD 04E-3.6-71	RFG-25021
			4 -	M12	12 x 22	6	RFGD 04E-4.6-72	RFG-25022
			5 -	M16	16 x 22	6	RFGD 04E-5.5-73	RFG-25023
			6 -	M16	16 x 22	6	RFGD 04E-6.8-74	RFG-25024
R410A	4,5	RFGD 05E -	1 -	M10	10 x 16	6	RFGD 05E-3.5-75	RFG-25025
			2 -	M12	12 x 22	6	RFGD 05E-4.5-76	RFG-25026
			3 -	M12	12 x 22	6	RFGD 05E-7.0-77	RFG-25027
			4 -	M12	12 x 22	6	RFGD 05E-8.6-78	RFG-25028
			5 -	M16	16 x 22	6	RFGD 05E-10.6-79	RFG-25029
			6 -	M16	16 x 22	6	RFGD 05E-12.8-80	RFG-25030





# SANHUA RFGD SERIES

## Thermostatic Expansion Valve

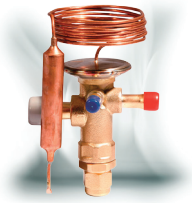
### RFGD STANDARD RANGE

B) Models with Imperial Connections

Model Name								
Refr.	MWP [ MPa ]	Valve Body	Capacity Size All Sizes	Connections IN x OUT		Pressure Equal. [inch]	Product Number	Product Number
				Imperial	[inch]			
R407C	2,8	RFGD 02E -	1 -	3	3/8 x 5/8	1/4	RFGD 02E-3.1-33	RFG-25037
			2 -	4	1/2 x 7/8	1/4	RFGD 02E-4.2-34	RFG-25038
			3 -	4	1/2 x 7/8	1/4	RFGD 02E-6.3-35	RFG-25039
			4 -	4	1/2 x 7/8	1/4	RFGD 02E-8.1-36	RFG-25040
			5 -	5	5/8 x 7/8	1/4	RFGD 02E-9.4-37	RFG-25041
			6 -	5	5/8 x 7/8	1/4	RFGD 02E-11.7-38	RFG-25042
R404A / R507	3,5	RFGD 03E -	1 -	3	3/8 x 5/8	1/4	RFGD 03E-2.0-39	RFG-25043
			2 -	4	1/2 x 7/8	1/4	RFGD 03E-2.8-40	RFG-25044
			3 -	4	1/2 x 7/8	1/4	RFGD 03E-4.2-41	RFG-25045
			4 -	4	1/2 x 7/8	1/4	RFGD 03E-5.4-42	RFG-25046
			5 -	5	5/8 x 7/8	1/4	RFGD 03E-6.4-43	RFG-25047
			6 -	5	5/8 x 7/8	1/4	RFGD 03E-7.8-44	RFG-25048
R134a	2,1	RFGD 04E -	1 -	3	3/8 x 5/8	1/4	RFGD 04E-1.8-01	RFG-25049
			2 -	4	1/2 x 7/8	1/4	RFGD 04E-2.5-02	RFG-25050
			3 -	4	1/2 x 7/8	1/4	RFGD 04E-3.6-03	RFG-25051
			4 -	4	1/2 x 7/8	1/4	RFGD 04E-4.6-04	RFG-25052
			5 -	5	5/8 x 7/8	1/4	RFGD 04E-5.5-49	RFG-25053
			6 -	5	5/8 x 7/8	1/4	RFGD 04E-6.8-32	RFG-25054
R410A	4,5	RFGD 05E -	1 -	3	3/8 x 5/8	1/4	RFGD 05E-3.5-22	RFG-25055
			2 -	4	1/2 x 7/8	1/4	RFGD 05E-4.5-23	RFG-25056
			3 -	4	1/2 x 7/8	1/4	RFGD 05E-7.0-24	RFG-25057
			4 -	4	1/2 x 7/8	1/4	RFGD 05E-8.6-25	RFG-25058
			5 -	5	5/8 x 7/8	1/4	RFGD 05E-10.6-27	RFG-25059
			6 -	5	5/8 x 7/8	1/4	RFGD 05E-12.8-26	RFG-25060

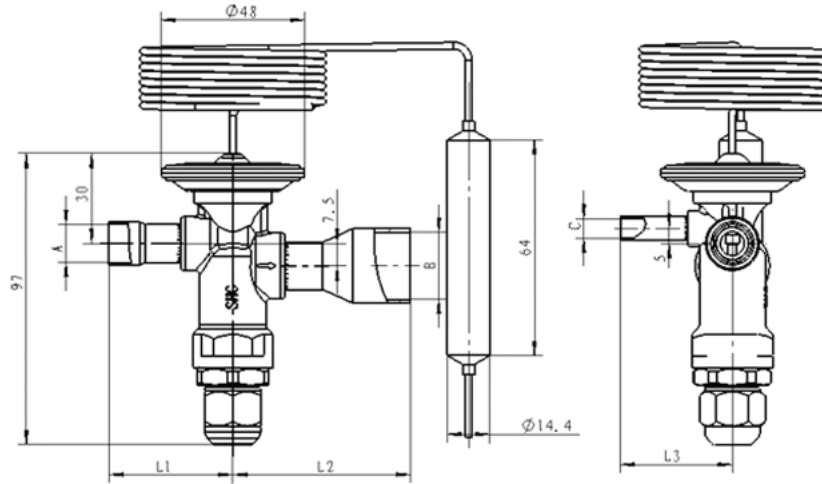






# SANHUA RFGD SERIES Thermostatic Expansion Valve

## DIMENSIONS

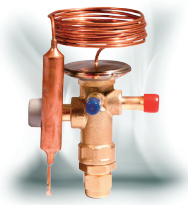


*Note: the drawing represents a model with External Pressure Equalization*

## OVERALL DIMENSIONS

Overall Dimensions			
Orifice Size	L1 (mm)	L2 (mm)	L3 (mm)
1	41.5	59.5	37.5
2	41.5	59.5	37.5
3	41.5	59.5	37.5
4	41.5	59.5	37.5
5	41.5	59.5	37.5
6	41.5	59.5	37.5



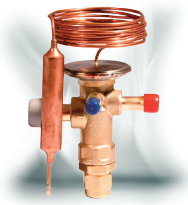


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## NECESSARY INFORMATION FOR RFGD CUSTOMIZATION

Please specify all mandatory information in the customization table below. The standard RFGD features will be used if fields aren't filled in.

Pos.	Mandatory information		
1	<b>Refrigerant</b>		
	<input type="radio"/> R22 <input type="radio"/> R134a	<input type="radio"/> R407C <input type="radio"/> R410A	<input type="radio"/> R404A/R507A <input type="radio"/> Other Ref. : _____
2	<b>Pressure Equalization</b>		
	<input type="radio"/> Internal <input type="radio"/> Ext. pressure equalization		
3	<b>Capacity</b>		
	Capacity:	_____	kW
	Based on:		
	Evaporation temp. to:	_____	°C
	Condensing temp. tc:	_____	°C
	Subcooling tcu:	_____	K (Standard value 1K)
	Superheat toh:	_____	K (Standard value 10K)
Pressure drop:	_____	bar (Standard: Without pressure drop)	
	<b>Alternative information if capacity data isn't available</b>		
	Brand of used expansion valve:	_____	
	Complete model of used expansion valve:	_____	
4	<b>Valve Shape</b>		
	<input type="radio"/> Straight (Standard)		



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## NECESSARY INFORMATION FOR RFGD CUSTOMIZATION

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Pos.	Mandatory information	
5	<b>Connections</b>	
	Metrical	Imperial
	o Inlet 10mm, Outlet 16mm	o Inlet 3/8", Outlet 5/8"
	o Inlet 12mm, Outlet 22mm	o Inlet 1/2", Outlet 7/8"
	o Inlet 12mm, Outlet 22mm Ext. pressure equal. 6mm if selected	o Inlet 5/8", Outlet 7/8" Ext. pressure equal. 1/4" if selected
	Other connections	
	Inlet:	_____
	Outlet:	_____
	Ext. pressure equal.:	_____
Pos.	Additional information	
6	<b>Static superheat: Factory Setting</b>	
	<b>Capacité</b>	
	o 3...4K (Standard)	o Other value: _____
7	<b>MOP</b>	
	o Without (Standard)	o MOP point: _____
8	<b>Bleed</b>	
	o Without (Standard)	o 15% Bleed                      o 30% Bleed
9	<b>Designated application / other requirements</b>	
	_____	

