

Thermo™-Expansion Valve Series - TIH

Technical Bulletin

TIH series of Thermo™-Expansion Valves are designed for air conditioning, heat pumps and commercial refrigeration applications. The TIH is ideal for those applications requiring hermetic / compact size combined with stable and accurate control over wide load and evaporating temperature ranges.

Features

- Compact size and hermetic design
- up to 33 kW for R410A, 49 kW for R32
- Balanced port design
- Brazing connections (imperial and metric) with straight through configuration
- Stainless steel power element resists corrosion
- Large diaphragm provides smoother and consistent valve control
- Internal or external equalizer
- External superheat adjustment
- Standard with integrated 100 mesh size strainer at inlet of valve
- Packaging with 20 pieces necked including bulb fastening accessories and single operating instruction
- Applicable in systems with Copeland Scroll Digital™, stepless and variable speed compressors

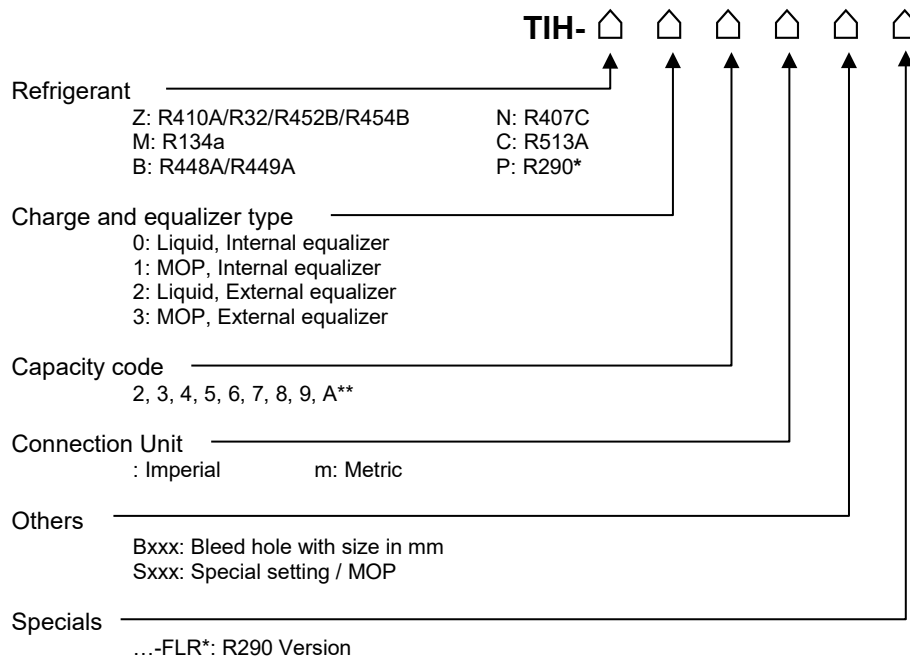
Options

- Single engineering sample for test purpose
- Special setting or bleed hole function on request: Minimum order quantity 100 pieces per batch, type and order
- Valve without internal strainer on request: Minimum order quantity 100 pieces per batch, type and order



TIH-M24

Type designation



Note: *) Please see R290 product guide for TIH-P...-FLR versions
****)** Versions with capacity code "A" are delivered standard without strainer

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Selection table R32 / R410A (20 pieces)

Capacity (kW)		Metric connection		Imperial connection		Connection		
R32	R410A	Type	Part No.	Type	Part No.	Inlet	Outlet	Equalizer
5.4	3.6	TIH-Z12m	802622M			6 mm	10 mm	internal
5.4	3.6			TIH-Z12	802636M	1/4"	3/8"	internal
9.0	6.0	TIH-Z13m	802623M			6 mm	10 mm	internal
9.0	6.0			TIH-Z13	802637M	1/4"	3/8"	internal
12.5	8.4	TIH-Z14m	802624M			10 mm	12 mm	internal
12.5	8.4			TIH-Z14	802638M	3/8"	1/2"	internal
5.4	3.6	TIH-Z32m	802625M			6 mm	10 mm	6 mm
5.4	3.6			TIH-Z32	802639M	1/4"	3/8"	1/4"
9.0	6.0	TIH-Z33m	802626M			6 mm	10 mm	6 mm
9.0	6.0			TIH-Z33	802640M	1/4"	3/8"	1/4"
12.5	8.4	TIH-Z34m	802627M			10 mm	12 mm	6 mm
12.5	8.4			TIH-Z34	802641M	3/8"	1/2"	1/4"
18.4	12.4	TIH-Z35m	802628M			10 mm	12 mm	6 mm
18.4	12.4			TIH-Z35	802642M	3/8"	1/2"	1/4"
21.8	14.6	TIH-Z36m	802629M			10 mm	12 mm	6 mm
21.8	14.6			TIH-Z36	802643M	3/8"	1/2"	1/4"
31.0	20.8	TIH-Z37m	802630M			12 mm	16 mm	6 mm
31.0	20.8			TIH-Z37	802644M	1/2"	5/8"	1/4"
34.6	23.2	TIH-Z38m	802631M			12 mm	16 mm	6 mm
34.6	23.2			TIH-Z38	802645M	1/2"	5/8"	1/4"
39.7	26.7	TIH-Z39m	802632M			12 mm	16 mm	6 mm
39.7	26.7			TIH-Z39	802646M	1/2"	5/8"	1/4"
49.4	33.2	TIH-Z3Am	802633M			12 mm	16 mm	6 mm
49.4	33.2			TIH-Z3A	802647M	1/2"	5/8"	1/4"

Note: The nominal capacities are based +4°C evaporating temperature, +38°C condensing temperature (bubble point) and 1K subcooling. For other operating conditions use the quick selection in this document or the "Controls Navigator R4.1" selection tool.

Selection table R452B/ R454B (20 Pieces)

Capacity (kW)		Metric connection		Imperial connection		Connection		
R452B	R454B	Type	Part No.	Type	Part No.	Inlet	Outlet	Equalizer
4.1	4.2	TIH-Z12m	802622M			6 mm	10 mm	internal
4.1	4.2			TIH-Z12	802636M	1/4"	3/8"	internal
6.9	6.9	TIH-Z13m	802623M			6 mm	10 mm	internal
6.9	6.9			TIH-Z13	802637M	1/4"	3/8"	internal
9.6	9.7	TIH-Z14m	802624M			10 mm	12 mm	internal
9.6	9.7			TIH-Z14	802638M	3/8"	1/2"	internal
4.1	4.2	TIH-Z32m	802625M			6 mm	10 mm	6 mm
4.1	4.2			TIH-Z32	802639M	1/4"	3/8"	1/4"
6.9	6.9	TIH-Z33m	802626M			6 mm	10 mm	6 mm
6.9	6.9			TIH-Z33	802640M	1/4"	3/8"	1/4"
9.6	9.7	TIH-Z34m	802627M			10 mm	12 mm	6 mm
9.6	9.7			TIH-Z34	802641M	3/8"	1/2"	1/4"
14.2	14.2	TIH-Z35m	802628M			10 mm	12 mm	6 mm
14.2	14.2			TIH-Z35	802642M	3/8"	1/2"	1/4"
16.7	16.8	TIH-Z36m	802629M			10 mm	12 mm	6 mm
16.7	16.8			TIH-Z36	802643M	3/8"	1/2"	1/4"
23.8	23.9	TIH-Z37m	802630M			12 mm	16 mm	6 mm
23.8	23.9			TIH-Z37	802644M	1/2"	5/8"	1/4"
26.6	26.7	TIH-Z38m	802631M			12 mm	16 mm	6 mm
26.6	26.7			TIH-Z38	802645M	1/2"	5/8"	1/4"
30.5	30.7	TIH-Z39m	802632M			12 mm	16 mm	6 mm
30.5	30.7			TIH-Z39	802646M	1/2"	5/8"	1/4"
38.0	38.2	TIH-Z3Am	802633M			12 mm	16 mm	6 mm
38.0	38.2			TIH-Z3A	802647M	1/2"	5/8"	1/4"

Note: The nominal capacities are based +4°C evaporating temperature, +38°C condensing temperature (bubble point) and 1K subcooling. For other operating conditions use the quick selection in this document or the "Controls Navigator R4.1" selection tool.

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Selection table R134a (20 pieces)

Capacity (kW) R134a	Metric connection				Imperial connection				Connection		
	without MOP Type	Part No.	with MOP Type	Part No.	without MOP Type	Part No.	with MOP Type	Part No.	Inlet	Outlet	Equalizer
2.4	TIH-M02m	802510M	TIH-M12m	802538M					6 mm	10 mm	internal
2.4					TIH-M02	802524M	TIH-M12	802552M	1/4"	3/8"	internal
4.0	TIH-M03m	802511M	TIH-M13m	802539M					6 mm	10 mm	internal
4.0					TIH-M03	802525M	TIH-M13	802553M	1/4"	3/8"	internal
5.6	TIH-M04m	802512M	TIH-M14m	802540M					10 mm	12 mm	internal
5.6					TIH-M04	802526M	TIH-M14	802554M	3/8"	1/2"	internal
2.4	TIH-M22m	802513M	TIH-M32m	802541M					6 mm	10 mm	6 mm
2.4					TIH-M22	802527M	TIH-M32	802555M	1/4"	3/8"	1/4"
4.0	TIH-M23m	802514M	TIH-M33m	802542M					6 mm	10 mm	6 mm
4.0					TIH-M23	802528M	TIH-M33	802556M	1/4"	3/8"	1/4"
5.6	TIH-M24m	802515M	TIH-M34m	802543M					10 mm	12 mm	6 mm
5.6					TIH-M24	802529M	TIH-M34	802557M	3/8"	1/2"	1/4"
8.2	TIH-M25m	802516M	TIH-M35m	802544M					10 mm	12 mm	6 mm
8.2					TIH-M25	802530M	TIH-M35	802558M	3/8"	1/2"	1/4"
9.7	TIH-M26m	802517M	TIH-M36m	802545M					10 mm	12 mm	6 mm
9.7					TIH-M26	802531M	TIH-M36	802559M	3/8"	1/2"	1/4"
13.8	TIH-M27m	802518M	TIH-M37m	802546M					12 mm	16 mm	6 mm
13.8					TIH-M27	802532M	TIH-M37	802560M	1/2"	5/8"	1/4"
15.4	TIH-M28m	802519M	TIH-M38m	802547M					12 mm	16 mm	6 mm
15.4					TIH-M28	802533M	TIH-M38	802561M	1/2"	5/8"	1/4"
17.7	TIH-M29m	802520M	TIH-M39m	802548M					12 mm	16 mm	6 mm
17.7					TIH-M29	802534M	TIH-M39	802562M	1/2"	5/8"	1/4"
22.0	TIH-M2Am	802521M	TIH-M3Am	802549M					12 mm	16 mm	6 mm
22.0					TIH-M2A	802535M	TIH-M3A	802563M	1/2"	5/8"	1/4"

Note1: The nominal capacities are based +4°C evaporating temperature, +38°C condensing temperature (bubble point) and 1K subcooling. For other operating conditions use the quick selection in this document or the "Controls Navigator R4.1" selection tool.

Selection table R513A (20 pieces)

Capacity (kW) R513A	Metric connection				Imperial connection				Connection		
	without MOP Type	Part No.	with MOP Type	Part No.	without MOP Type	Part No.	with MOP Type	Part No.	Inlet	Outlet	Equalizer
2.2	TIH-C02m	808400M	TIH-C12m	808428M					6 mm	10 mm	internal
2.2					TIH-C02	808414M	TIH-C12	808442M	1/4"	3/8"	internal
3.6	TIH-C03m	808401M	TIH-C13m	808429M					6 mm	10 mm	internal
3.6					TIH-C03	808415M	TIH-C13	808443M	1/4"	3/8"	internal
5.0	TIH-C04m	808402M	TIH-C14m	808430M					10 mm	12 mm	internal
5.0					TIH-C04	808416M	TIH-C14	808444M	3/8"	1/2"	internal
2.2	TIH-C22m	808403M	TIH-C32m	808431 M					6 mm	10 mm	6 mm
2.2					TIH-C22	808417M	TIH-C32	808445M	1/4"	3/8"	1/4"
3.6	TIH-C23m	808404M	TIH-C33m	808432M					6 mm	10 mm	6 mm
3.6					TIH-C23	808418M	TIH-C33	808446M	1/4"	3/8"	1/4"
5.0	TIH-C24m	808405M	TIH-C34m	808433M					10 mm	12 mm	6 mm
5.0					TIH-C24	808419M	TIH-C34	808447M	3/8"	1/2"	1/4"
7.4	TIH-C25m	808406M	TIH-C35m	808434M					10 mm	12 mm	6 mm
7.4					TIH-C25	808420M	TIH-C35	808448M	3/8"	1/2"	1/4"
8.8	TIH-C26m	808407M	TIH-C36m	808435M					10 mm	12 mm	6 mm
8.8					TIH-C26	808421M	TIH-C36	808449M	3/8"	1/2"	1/4"
12.5	TIH-C27m	808408M	TIH-C37m	808436M					12 mm	16 mm	6 mm
12.5					TIH-C27	808422M	TIH-C37	808450M	1/2"	5/8"	1/4"
13.9	TIH-C28m	808409M	TIH-C38m	808437M					12 mm	16 mm	6 mm
13.9					TIH-C28	808423M	TIH-C38	808451M	1/2"	5/8"	1/4"
16.0	TIH-C29m	808410M	TIH-C39m	808438M					12 mm	16 mm	6 mm
16.0					TIH-C29	808424M	TIH-C39	808452M	1/2"	5/8"	1/4"
19.9	TIH-C2Am	808411M	TIH-C3Am	808439M					12 mm	16 mm	6 mm
19.9					TIH-C2A	808425M	TIH-C3A	808453M	1/2"	5/8"	1/4"

Note: The nominal capacities are based +4°C evaporating temperature, +38°C condensing temperature (bubble point) and 1K subcooling. For other operating conditions use the quick selection in this document or the "Controls Navigator R4.1" selection tool.

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Selection table R407C (20 pieces)

Capacity (kW) R407C	Metric connection				Imperial connection				Connection		
	without MOP Type	Part No.	with MOP Type	Part No.	without MOP Type	Part No.	with MOP Type	Part No.	Inlet	Outlet	Equalizer
3.3	TIH-N02m	802566M	TIH-N12m	802594M					6 mm	10 mm	internal
3.3					TIH-N02	802580M	TIH-N12	802608M	1/4"	3/8"	internal
5.4	TIH-N03m	802567M	TIH-N13m	802595M					6 mm	10 mm	internal
5.4					TIH-N03	802581M	TIH-N13	802609M	1/4"	3/8"	internal
7.6	TIH-N04m	802568M	TIH-N14m	802596M					10 mm	12 mm	internal
7.6					TIH-N04	802582M	TIH-N14	802610M	3/8"	1/2"	internal
3.3	TIH-N22m	802569M	TIH-N32m	802597M					6 mm	10 mm	6 mm
3.3					TIH-N22	802583M	TIH-N32	802611M	1/4"	3/8"	1/4"
5.4	TIH-N23m	802570M	TIH-N33m	802598M					6 mm	10 mm	6 mm
5.4					TIH-N23	802584M	TIH-N33	802612M	1/4"	3/8"	1/4"
7.6	TIH-N24m	802571M	TIH-N34m	802599M					10 mm	12 mm	6 mm
7.6					TIH-N24	802585M	TIH-N34	802613M	3/8"	1/2"	1/4"
11.2	TIH-N25m	802572M	TIH-N35m	802600M					10 mm	12 mm	6 mm
11.2					TIH-N25	802586M	TIH-N35	802614M	3/8"	1/2"	1/4"
13.2	TIH-N26m	802573M	TIH-N36m	802601M					10 mm	12 mm	6 mm
13.2					TIH-N26	802587M	TIH-N36	802615M	3/8"	1/2"	1/4"
18.8	TIH-N27m	802574M	TIH-N37m	802602M					12 mm	16 mm	6 mm
18.8					TIH-N27	802588M	TIH-N37	802616M	1/2"	5/8"	1/4"
21.0	TIH-N28m	802575M	TIH-N38m	802603M					12 mm	16 mm	6 mm
21.0					TIH-N28	802589M	TIH-N38	802617M	1/2"	5/8"	1/4"
24.1	TIH-N29m	802576M	TIH-N39m	802604M					12 mm	16 mm	6 mm
24.1					TIH-N29	802590M	TIH-N39	802618M	1/2"	5/8"	1/4"
30.0	TIH-N2Am	802577M	TIH-N3Am	802605M					12 mm	16 mm	6 mm
30.0					TIH-N2A	802591M	TIH-N3A	802619M	1/2"	5/8"	1/4"

Note: The nominal capacities are based +4°C evaporating temperature, +38°C condensing temperature (bubble point) and 1K subcooling. For other operating conditions use the quick selection in this document or the "Controls Navigator R4.1" selection tool.

Selection table R448A/R449A (20 pieces)

Capacity (kW)		Metric connection				Imperial connection				Connection		
R448A	R449A	without MOP Type	Part No.			without MOP Type	Part No.			Inlet	Outlet	Equalizer
3.1	3.0	TIH-B02m	802706M							6 mm	10 mm	internal
3.1	3.0					TIH-B02	802720M			1/4"	3/8"	internal
5.1	5.0	TIH-B03m	802707M							6 mm	10 mm	internal
5.1	5.0					TIH-B03	802721M			1/4"	3/8"	internal
7.2	7.0	TIH-B04m	802708M							10 mm	12 mm	internal
7.2	7.0					TIH-B04	802722M			3/8"	1/2"	internal
3.1	3.0	TIH-B22m	802709M							6 mm	10 mm	6 mm
3.1	3.0					TIH-B22	802723M			1/4"	3/8"	1/4"
5.1	5.0	TIH-B23m	802710M							6 mm	10 mm	6 mm
5.1	5.0					TIH-B23	802724M			1/4"	3/8"	1/4"
7.2	7.0	TIH-B24m	802711M							10 mm	12 mm	6 mm
7.2	7.0					TIH-B24	802725M			3/8"	1/2"	1/4"
10.6	10.3	TIH-B25m	802712M							10 mm	12 mm	6 mm
10.6	10.3					TIH-B25	802726M			3/8"	1/2"	1/4"
12.5	12.2	TIH-B26m	802713M							10 mm	12 mm	6 mm
12.5	12.2					TIH-B26	802727M			3/8"	1/2"	1/4"
17.8	17.4	TIH-B27m	802714M							12 mm	16 mm	6 mm
17.8	17.4					TIH-B27	802728M			1/2"	5/8"	1/4"
19.9	19.4	TIH-B28m	802715M							12 mm	16 mm	6 mm
19.9	19.4					TIH-B28	802729M			1/2"	5/8"	1/4"
22.8	22.3	TIH-B29m	802716M							12 mm	16 mm	6 mm
22.8	22.3					TIH-B29	802730M			1/2"	5/8"	1/4"
28.4	27.7	TIH-B2Am	802717M							12 mm	16 mm	6 mm
28.4	27.7					TIH-B2A	802731M			1/2"	5/8"	1/4"

Note: The nominal capacities are based +4°C evaporating temperature, +38°C condensing temperature (bubble point) and 1K subcooling. For other operating conditions use the quick selection in this document or the "Controls Navigator R4.1" selection tool.

Superheat

The factory setting of TIH is made with the valve pin just starting to move away from seat. The superheat increments necessary to get the pin ready to move is called static superheat (SS). A superheat increments over and beyond the static superheat (factory setting) is necessary for the valve pin to open to its rated capacity. This additional superheat is known as gradient or opening superheat (OS).

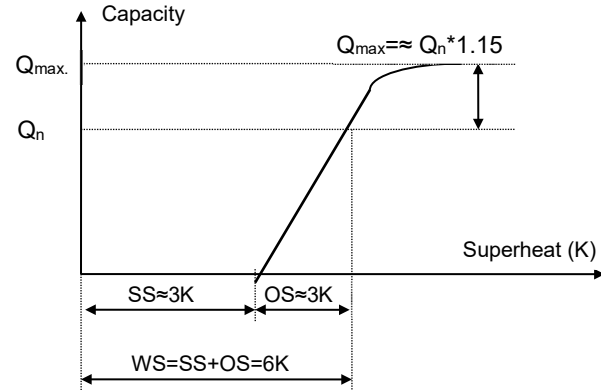
The working superheat, which can be measured in field, is the sum of static superheat and opening superheat (WS).

The opening superheat of TXV varies if the selected valve operates at higher or lower capacities than rated capacity. It is highly recommended to select the valve according to the rated capacity. Using reserve capacity leads to larger opening superheat and longer pull-down time during start-up or after defrosting.

Selecting a larger valve than required in system may lead to smaller opening superheat and/or hunting of TXV.

Static superheat setting

Thermo®-Expansion Valves are factory preset for optimum superheat settings. This setting should be modified only if absolutely necessary. The readjustment should be at the **lowest** expected evaporating temperature.



Q_n = Nominal capacity

SS: Static superheat at rated nominal operating condition

OS: Opening superheat at rated nominal capacity

Standard MOPs

Refrigerant	Standard MOP	Corresponding temperature	Recommended max. design evaporating temp.
R134a	3.8 bar	+16°C	+12°C
R513A	3.8 bar	+14°C	+10°C
R407C	6.9 bar	+14.5°C	+12.5°C
R410A	13.4 bar	+20°C	+18°C
R32	13.4 bar	+20°C	+18°C
R452B	13.4 bar	+22°C	+20°C
R454B	13.4 bar	+22°C	+20°C

Note 1: Pressures are gauge pressures.

Heat pump application

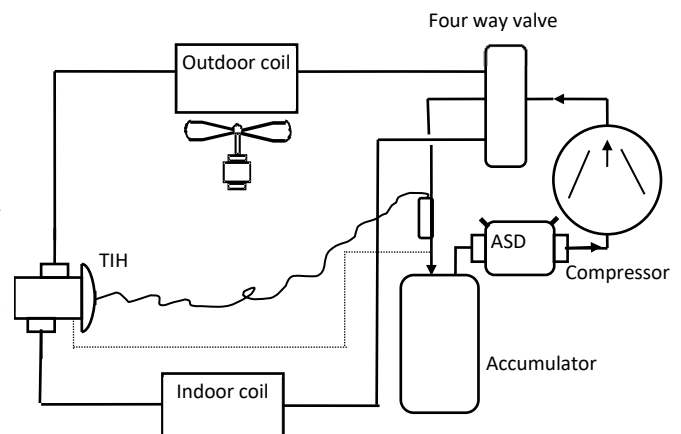
There are several ways to apply an expansion valve in a heat pump. The following figure is showing the most popular application:

Bi-flow application

For application of TIH in Bi-flow as single expansion valve in heat pumps, the following subjects need to be considered:

- TIH is balanced port only in normal flow direction but not in reverse flow direction.
- Inlet pressure in reverse flow act on valve pin as closing force. This effect is more significant at higher inlet pressure and lower evaporating temperature.
- This effect will prevent the valve from desired opening percentage in reverse flow depends on port size of valve, inlet pressure and evaporating temperature.

Based on the above facts, it is necessary to evaluate the selection of TIH in Bi-flow application.



System with single Bi-flow expansion valve and EMERSON suction filter dryer ASD.

Thermo™-Expansion Valve Series - TIH

TIH: Quick selection (included 1.5 bar pressure drop for liquid line components and distributor)

Condensing temperature (°C)	R32									Valve type
	Capacity (kW)									
	Evaporating temperature (°C)									
15	10	5	0	-5	-10	-15	-20	-25		
65	5.1	5.2	5.3	5.4	5.5	5.5	4.9	4.3	3.7	TIH-Z...2
	8.5	8.7	8.9	9.0	9.2	9.2	8.2	7.2	6.1	TIH-Z...3
	11.9	12.2	12.5	12.7	12.8	12.9	11.5	10.1	8.6	TIH-Z...4
	17.4	17.9	18.3	18.6	18.8	19.0	16.9	14.8	12.6	TIH-Z...5
	20.6	21.2	21.6	22.0	22.2	22.4	19.9	17.4	14.9	TIH-Z...6
	29.3	30.1	30.8	31.3	31.7	31.9	28.4	24.8	21.2	TIH-Z...7
	32.7	33.6	34.3	34.9	35.3	35.6	31.7	27.7	23.7	TIH-Z...8
	37.5	38.6	39.4	40.1	40.6	40.9	36.4	31.8	27.2	TIH-Z...9
60	46.7	48.0	49.1	49.9	50.5	50.9	45.3	39.6	33.8	TIH-Z...A
	5.2	5.4	5.5	5.6	5.7	5.8	5.2	4.5	3.9	TIH-Z...2
	8.7	9.0	9.2	9.4	9.5	9.6	8.6	7.5	6.4	TIH-Z...3
	12.2	12.6	12.9	13.1	13.3	13.5	12.0	10.5	9.0	TIH-Z...4
	17.9	18.4	18.9	19.3	19.6	19.8	17.7	15.5	13.2	TIH-Z...5
	21.1	21.8	22.3	22.8	23.1	23.4	20.8	18.3	15.6	TIH-Z...6
	30.0	31.0	31.8	32.4	32.9	33.3	29.7	26.0	22.3	TIH-Z...7
	33.5	34.6	35.5	36.2	36.8	37.2	33.1	29.0	24.8	TIH-Z...8
55	38.4	39.7	40.7	41.6	42.2	42.7	38.0	33.3	28.5	TIH-Z...9
	47.9	49.4	50.7	51.7	52.5	53.1	47.3	41.5	35.5	TIH-Z...A
	5.2	5.4	5.6	5.7	5.8	5.9	5.3	4.6	4.0	TIH-Z...2
	8.7	9.0	9.3	9.5	9.7	9.8	8.8	7.7	6.6	TIH-Z...3
	12.1	12.6	13.0	13.3	13.6	13.8	12.3	10.8	9.3	TIH-Z...4
	17.8	18.5	19.1	19.6	19.9	20.2	18.1	15.9	13.6	TIH-Z...5
	21.0	21.9	22.5	23.1	23.5	23.9	21.3	18.7	16.1	TIH-Z...6
	29.9	31.1	32.1	32.9	33.5	34.0	30.3	26.7	22.9	TIH-Z...7
50	33.4	34.7	35.8	36.7	37.4	37.9	33.9	29.7	25.5	TIH-Z...8
	38.3	39.9	41.1	42.1	42.9	43.5	38.9	34.1	29.3	TIH-Z...9
	47.7	49.6	51.2	52.4	53.4	54.2	48.4	42.5	36.5	TIH-Z...A
	5.1	5.3	5.5	5.7	5.8	5.9	5.3	4.7	4.0	TIH-Z...2
	8.4	8.9	9.2	9.5	9.7	9.9	8.8	7.8	6.7	TIH-Z...3
	11.8	12.4	12.9	13.3	13.6	13.8	12.4	10.9	9.4	TIH-Z...4
	17.4	18.2	18.9	19.5	19.9	20.3	18.2	16.0	13.8	TIH-Z...5
	20.5	21.5	22.3	23.0	23.5	23.9	21.5	18.9	16.2	TIH-Z...6
45	29.2	30.6	31.8	32.7	33.5	34.1	30.5	26.9	23.1	TIH-Z...7
	32.6	34.2	35.5	36.5	37.4	38.0	34.1	30.0	25.8	TIH-Z...8
	37.4	39.2	40.7	41.9	42.9	43.7	39.1	34.5	29.6	TIH-Z...9
	46.6	48.8	50.7	52.2	53.4	54.4	48.7	42.9	36.9	TIH-Z...A
	4.8	5.1	5.4	5.6	5.7	5.9	5.3	4.7	4.0	TIH-Z...2
	8.1	8.6	9.0	9.3	9.6	9.8	8.8	7.8	6.7	TIH-Z...3
	11.3	12.0	12.5	13.0	13.4	13.7	12.3	10.9	9.4	TIH-Z...4
	16.6	17.6	18.4	19.1	19.6	20.1	18.1	15.9	13.7	TIH-Z...5
40	19.6	20.8	21.8	22.6	23.2	23.7	21.3	18.8	16.2	TIH-Z...6
	27.9	29.6	31.0	32.1	33.0	33.7	30.3	26.8	23.1	TIH-Z...7
	31.1	33.0	34.6	35.8	36.8	37.7	33.8	29.9	25.8	TIH-Z...8
	35.7	37.9	39.7	41.1	42.3	43.2	38.9	34.3	29.6	TIH-Z...9
	44.5	47.2	49.4	51.2	52.7	53.8	48.4	42.7	36.8	TIH-Z...A
	4.5	4.9	5.1	5.4	5.6	5.7	5.2	4.6	4.0	TIH-Z...2
	7.5	8.1	8.6	9.0	9.3	9.5	8.6	7.6	6.6	TIH-Z...3
	10.5	11.3	12.0	12.6	13.0	13.4	12.1	10.7	9.2	TIH-Z...4
30	15.4	16.7	17.7	18.5	19.1	19.6	17.7	15.7	13.6	TIH-Z...5
	18.2	19.7	20.8	21.8	22.6	23.2	20.9	18.5	16.0	TIH-Z...6
	26.0	28.0	29.7	31.0	32.1	33.0	29.8	26.4	22.8	TIH-Z...7
	29.0	31.2	33.1	34.6	35.8	36.8	33.2	29.5	25.5	TIH-Z...8
	33.3	35.9	38.0	39.7	41.1	42.3	38.2	33.8	29.2	TIH-Z...9
	41.4	44.7	47.3	49.5	51.2	52.6	47.5	42.1	36.4	TIH-Z...A
	3.4	4.0	4.4	4.8	5.1	5.3	4.8	4.3	3.8	TIH-Z...2
	5.7	6.7	7.4	8.0	8.4	8.8	8.0	7.2	6.3	TIH-Z...3
	8.0	9.3	10.3	11.1	11.8	12.3	11.2	10.1	8.8	TIH-Z...4
	11.8	13.7	15.2	16.4	17.3	18.1	16.5	14.8	12.9	TIH-Z...5
	14.0	16.2	17.9	19.3	20.4	21.3	19.5	17.4	15.2	TIH-Z...6
	19.9	23.1	25.5	27.5	29.1	30.4	27.8	24.8	21.6	TIH-Z...7
	22.2	25.7	28.5	30.7	32.5	33.9	31.0	27.7	24.1	TIH-Z...8
	25.5	29.5	32.7	35.3	37.3	38.9	35.6	31.8	27.7	TIH-Z...9
	31.7	36.8	40.7	43.9	46.4	48.5	44.3	39.6	34.5	TIH-Z...A

Thermo™-Expansion Valve Series - TIH

TIH: Quick selection (included 1.5 bar pressure drop for liquid line components and distributor)

Condensing temperature (°C)	R410A Capacity (kW)									Valve type
	Evaporating temperature (°C)									
	15	10	5	0	-5	-10	-15	-20	-25	
65	2.9	3.0	3.0	3.0	3.1	3.0	2.7	2.3	1.9	TIH-Z...2
	4.9	5.0	5.0	5.1	5.1	5.1	4.5	3.9	3.2	TIH-Z...3
	6.9	7.0	7.1	7.1	7.1	7.1	6.2	5.4	4.5	TIH-Z...4
	10.1	10.3	10.4	10.5	10.5	10.4	9.2	7.9	6.7	TIH-Z...5
	11.9	12.1	12.3	12.3	12.4	12.3	10.8	9.4	7.9	TIH-Z...6
	16.9	17.2	17.5	17.6	17.6	17.6	15.4	13.3	11.2	TIH-Z...7
	18.9	19.2	19.5	19.6	19.6	19.6	17.2	14.9	12.5	TIH-Z...8
	21.7	22.1	22.4	22.5	22.5	22.5	19.8	17.1	14.4	TIH-Z...9
	27.0	27.5	27.8	28.0	28.1	28.0	24.6	21.2	17.9	TIH-Z...A
60	3.2	3.3	3.3	3.4	3.4	3.4	3.0	2.6	2.2	TIH-Z...2
	5.3	5.4	5.5	5.6	5.6	5.6	5.0	4.3	3.7	TIH-Z...3
	7.4	7.6	7.7	7.8	7.9	7.9	7.0	6.0	5.1	TIH-Z...4
	10.9	11.2	11.4	11.5	11.6	11.6	10.2	8.9	7.5	TIH-Z...5
	12.9	13.2	13.4	13.6	13.7	13.7	12.1	10.5	8.9	TIH-Z...6
	18.3	18.8	19.1	19.4	19.5	19.5	17.2	14.9	12.6	TIH-Z...7
	20.5	21.0	21.3	21.6	21.7	21.8	19.2	16.7	14.1	TIH-Z...8
	23.5	24.1	24.5	24.8	25.0	25.0	22.0	19.1	16.2	TIH-Z...9
	29.3	30.0	30.5	30.9	31.1	31.1	27.5	23.8	20.2	TIH-Z...A
55	3.3	3.4	3.5	3.5	3.6	3.6	3.2	2.8	2.4	TIH-Z...2
	5.5	5.7	5.8	5.9	6.0	6.0	5.3	4.6	3.9	TIH-Z...3
	7.7	7.9	8.1	8.3	8.3	8.4	7.4	6.5	5.5	TIH-Z...4
	11.3	11.6	11.9	12.1	12.3	12.3	10.9	9.5	8.1	TIH-Z...5
	13.3	13.7	14.1	14.3	14.5	14.6	12.9	11.2	9.5	TIH-Z...6
	19.0	19.6	20.0	20.4	20.6	20.7	18.3	16.0	13.6	TIH-Z...7
	21.2	21.8	22.4	22.7	23.0	23.1	20.5	17.8	15.1	TIH-Z...8
	24.3	25.1	25.7	26.1	26.4	26.5	23.5	20.4	17.4	TIH-Z...9
	30.2	31.2	32.0	32.5	32.8	33.0	29.3	25.5	21.6	TIH-Z...A
50	3.3	3.4	3.5	3.6	3.7	3.7	3.3	2.9	2.5	TIH-Z...2
	5.5	5.7	5.9	6.0	6.1	6.2	5.5	4.8	4.1	TIH-Z...3
	7.7	8.0	8.3	8.4	8.6	8.7	7.7	6.7	5.7	TIH-Z...4
	11.3	11.8	12.1	12.4	12.6	12.7	11.3	9.9	8.4	TIH-Z...5
	13.3	13.9	14.3	14.7	14.9	15.0	13.4	11.7	10.0	TIH-Z...6
	19.0	19.8	20.4	20.9	21.2	21.4	19.0	16.6	14.2	TIH-Z...7
	21.2	22.1	22.8	23.3	23.6	23.9	21.2	18.5	15.8	TIH-Z...8
	24.3	25.3	26.1	26.7	27.1	27.4	24.4	21.3	18.1	TIH-Z...9
	30.3	31.5	32.5	33.3	33.8	34.1	30.3	26.5	22.6	TIH-Z...A
45	3.2	3.4	3.5	3.6	3.7	3.8	3.4	2.9	2.5	TIH-Z...2
	5.4	5.6	5.9	6.0	6.2	6.3	5.6	4.9	4.2	TIH-Z...3
	7.5	7.9	8.2	8.5	8.7	8.8	7.8	6.9	5.9	TIH-Z...4
	11.0	11.6	12.1	12.4	12.7	12.9	11.5	10.1	8.6	TIH-Z...5
	13.0	13.7	14.3	14.7	15.0	15.2	13.6	11.9	10.2	TIH-Z...6
	18.5	19.5	20.3	20.9	21.4	21.7	19.4	17.0	14.5	TIH-Z...7
	20.6	21.8	22.7	23.3	23.8	24.2	21.6	18.9	16.2	TIH-Z...8
	23.7	25.0	26.0	26.8	27.4	27.8	24.8	21.7	18.6	TIH-Z...9
	29.5	31.1	32.4	33.4	34.1	34.6	30.9	27.1	23.2	TIH-Z...A
40	3.0	3.3	3.4	3.6	3.7	3.8	3.4	3.0	2.5	TIH-Z...2
	5.1	5.4	5.7	6.0	6.1	6.3	5.6	4.9	4.2	TIH-Z...3
	7.1	7.6	8.0	8.3	8.6	8.8	7.9	6.9	5.9	TIH-Z...4
	10.4	11.2	11.8	12.2	12.6	12.9	11.5	10.2	8.7	TIH-Z...5
	12.3	13.2	13.9	14.5	14.9	15.2	13.6	12.0	10.3	TIH-Z...6
	17.5	18.8	19.8	20.6	21.2	21.6	19.4	17.1	14.7	TIH-Z...7
	19.6	21.0	22.1	23.0	23.6	24.1	21.6	19.1	16.3	TIH-Z...8
	22.4	24.1	25.4	26.4	27.1	27.7	24.8	21.9	18.8	TIH-Z...9
	28.0	30.0	31.6	32.8	33.8	34.5	30.9	27.2	23.4	TIH-Z...A
30	2.4	2.8	3.0	3.3	3.4	3.6	3.2	2.9	2.5	TIH-Z...2
	4.0	4.6	5.1	5.4	5.7	5.9	5.4	4.8	4.2	TIH-Z...3
	5.6	6.5	7.1	7.6	8.0	8.3	7.6	6.7	5.8	TIH-Z...4
	8.2	9.5	10.4	11.2	11.8	12.2	11.1	9.9	8.6	TIH-Z...5
	9.7	11.2	12.3	13.2	13.9	14.4	13.1	11.7	10.1	TIH-Z...6
	13.8	15.9	17.6	18.8	19.8	20.5	18.7	16.6	14.4	TIH-Z...7
	15.4	17.8	19.6	21.0	22.1	22.9	20.8	18.5	16.0	TIH-Z...8
	17.7	20.4	22.5	24.1	25.4	26.3	23.9	21.3	18.4	TIH-Z...9
	22.0	25.4	28.0	30.0	31.6	32.8	29.8	26.5	22.9	TIH-Z...A

Thermo™-Expansion Valve Series - TIH

TIH: Quick selection (included 1.5 bar pressure drop for liquid line components and distributor)

Condensing temperature (°C, bubble point)	R452B			Capacity (kW)						R452B		Valve type
	Evaporating temperature (°C)											
	15	10	5	0	-5	-10	-15	-20	-25			
65	3.7	3.7	3.8	3.8	3.8	3.8	3.4	2.9	2.5	TIH-Z...2		
	6.1	6.2	6.3	6.4	6.4	6.4	5.7	4.9	4.2	TIH-Z...3		
	8.5	8.7	8.8	8.9	9.0	9.0	7.9	6.9	5.8	TIH-Z...4		
	12.5	12.8	13.0	13.1	13.2	13.2	11.6	10.1	8.6	TIH-Z...5		
	14.8	15.1	15.3	15.5	15.5	15.6	13.7	11.9	10.1	TIH-Z...6		
	21.1	21.5	21.8	22.0	22.1	22.2	19.6	17.0	14.4	TIH-Z...7		
	23.5	24.0	24.3	24.6	24.7	24.7	21.8	18.9	16.1	TIH-Z...8		
	27.0	27.5	27.9	28.2	28.4	28.4	25.1	21.7	18.4	TIH-Z...9		
	33.6	34.3	34.8	35.1	35.3	35.4	31.2	27.1	23.0	TIH-Z...A		
60	3.8	3.9	4.0	4.1	4.1	4.1	3.6	3.2	2.7	TIH-Z...2		
	6.4	6.6	6.7	6.8	6.8	6.9	6.1	5.3	4.5	TIH-Z...3		
	8.9	9.2	9.4	9.5	9.6	9.6	8.5	7.4	6.3	TIH-Z...4		
	13.1	13.5	13.7	13.9	14.1	14.1	12.5	10.9	9.3	TIH-Z...5		
	15.5	15.9	16.2	16.4	16.6	16.7	14.8	12.8	10.9	TIH-Z...6		
	22.1	22.7	23.1	23.4	23.6	23.7	21.0	18.3	15.6	TIH-Z...7		
	24.6	25.3	25.8	26.1	26.4	26.5	23.4	20.4	17.4	TIH-Z...8		
	28.3	29.0	29.6	30.0	30.3	30.4	26.9	23.4	19.9	TIH-Z...9		
	35.2	36.1	36.8	37.3	37.7	37.9	33.5	29.2	24.8	TIH-Z...A		
55	3.9	4.0	4.1	4.2	4.2	4.3	3.8	3.3	2.8	TIH-Z...2		
	6.5	6.7	6.9	7.0	7.1	7.1	6.3	5.5	4.7	TIH-Z...3		
	9.1	9.4	9.6	9.8	9.9	10.0	8.9	7.7	6.6	TIH-Z...4		
	13.3	13.8	14.1	14.4	14.5	14.7	13.0	11.4	9.7	TIH-Z...5		
	15.7	16.2	16.6	17.0	17.2	17.3	15.4	13.4	11.4	TIH-Z...6		
	22.4	23.1	23.7	24.1	24.4	24.6	21.9	19.1	16.3	TIH-Z...7		
	25.0	25.8	26.4	26.9	27.3	27.5	24.4	21.3	18.2	TIH-Z...8		
	28.7	29.6	30.4	30.9	31.3	31.6	28.0	24.5	20.9	TIH-Z...9		
	35.7	36.9	37.8	38.5	39.0	39.3	34.9	30.5	26.0	TIH-Z...A		
50	3.8	4.0	4.1	4.2	4.3	4.4	3.9	3.4	2.9	TIH-Z...2		
	6.4	6.7	6.9	7.0	7.2	7.3	6.5	5.7	4.8	TIH-Z...3		
	9.0	9.3	9.6	9.9	10.0	10.2	9.0	7.9	6.8	TIH-Z...4		
	13.2	13.7	14.2	14.5	14.7	14.9	13.3	11.6	9.9	TIH-Z...5		
	15.6	16.2	16.7	17.1	17.4	17.6	15.7	13.7	11.7	TIH-Z...6		
	22.1	23.1	23.8	24.3	24.8	25.1	22.3	19.6	16.7	TIH-Z...7		
	24.7	25.7	26.5	27.2	27.6	28.0	24.9	21.8	18.6	TIH-Z...8		
	28.4	29.5	30.5	31.2	31.7	32.1	28.6	25.0	21.4	TIH-Z...9		
	35.3	36.8	37.9	38.8	39.5	40.0	35.6	31.2	26.7	TIH-Z...A		
45	3.7	3.9	4.1	4.2	4.3	4.4	3.9	3.4	2.9	TIH-Z...2		
	6.2	6.5	6.8	7.0	7.1	7.3	6.5	5.7	4.9	TIH-Z...3		
	8.7	9.1	9.5	9.8	10.0	10.2	9.1	8.0	6.8	TIH-Z...4		
	12.7	13.4	13.9	14.4	14.7	14.9	13.4	11.7	10.1	TIH-Z...5		
	15.0	15.8	16.5	17.0	17.3	17.6	15.8	13.9	11.9	TIH-Z...6		
	21.4	22.5	23.4	24.1	24.7	25.1	22.4	19.7	16.9	TIH-Z...7		
	23.9	25.1	26.1	26.9	27.6	28.0	25.0	22.0	18.9	TIH-Z...8		
	27.4	28.9	30.0	30.9	31.6	32.2	28.8	25.3	21.7	TIH-Z...9		
	34.1	35.9	37.4	38.5	39.4	40.0	35.8	31.4	27.0	TIH-Z...A		
40	3.5	3.7	3.9	4.1	4.2	4.3	3.9	3.4	2.9	TIH-Z...2		
	5.8	6.2	6.6	6.8	7.0	7.2	6.4	5.7	4.9	TIH-Z...3		
	8.2	8.7	9.2	9.5	9.8	10.0	9.0	8.0	6.8	TIH-Z...4		
	12.0	12.8	13.5	14.0	14.4	14.8	13.3	11.7	10.0	TIH-Z...5		
	14.2	15.1	15.9	16.6	17.1	17.4	15.6	13.8	11.9	TIH-Z...6		
	20.2	21.6	22.7	23.6	24.3	24.8	22.3	19.6	16.9	TIH-Z...7		
	22.5	24.1	25.3	26.3	27.1	27.7	24.8	21.9	18.8	TIH-Z...8		
	25.8	27.6	29.1	30.2	31.1	31.8	28.5	25.2	21.6	TIH-Z...9		
	32.2	34.4	36.2	37.6	38.7	39.6	35.5	31.3	26.9	TIH-Z...A		
30	2.8	3.2	3.5	3.7	3.9	4.0	3.7	3.3	2.8	TIH-Z...2		
	4.6	5.3	5.8	6.2	6.5	6.7	6.1	5.4	4.7	TIH-Z...3		
	6.5	7.4	8.1	8.6	9.1	9.4	8.6	7.6	6.6	TIH-Z...4		
	9.5	10.8	11.9	12.7	13.3	13.9	12.6	11.2	9.7	TIH-Z...5		
	11.2	12.8	14.0	15.0	15.8	16.4	14.9	13.2	11.5	TIH-Z...6		
	16.0	18.2	20.0	21.3	22.4	23.3	21.2	18.8	16.3	TIH-Z...7		
	17.8	20.3	22.3	23.8	25.0	26.0	23.6	21.0	18.2	TIH-Z...8		
	20.5	23.4	25.6	27.3	28.7	29.8	27.1	24.1	20.9	TIH-Z...9		
	25.5	29.1	31.9	34.1	35.8	37.1	33.7	30.0	26.0	TIH-Z...A		

Thermo™-Expansion Valve Series - TIH

TIH: Quick selection (included 1.5 bar pressure drop for liquid line components and distributor)

Condensing temperature (°C, bubble point)	R454B			Capacity (kW)			R454B			Valve type
	Evaporating temperature (°C)									
	15	10	5	0	-5	-10	-15	-20	-25	
65	3.7	3.8	3.9	3.9	3.9	3.9	3.4	3.0	2.5	TIH-Z...2
	6.2	6.3	6.4	6.5	6.5	6.5	5.7	5.0	4.2	TIH-Z...3
	8.7	8.9	9.0	9.1	9.1	9.1	8.0	7.0	5.9	TIH-Z...4
	12.8	13.0	13.2	13.3	13.4	13.4	11.8	10.3	8.7	TIH-Z...5
	15.1	15.4	15.6	15.7	15.8	15.8	14.0	12.1	10.3	TIH-Z...6
	21.5	21.9	22.2	22.4	22.5	22.5	19.9	17.2	14.6	TIH-Z...7
	23.9	24.4	24.8	25.0	25.1	25.1	22.2	19.2	16.3	TIH-Z...8
	27.5	28.0	28.4	28.7	28.8	28.9	25.5	22.1	18.7	TIH-Z...9
	34.2	34.9	35.4	35.7	35.9	35.9	31.7	27.5	23.3	TIH-Z...A
60	3.9	4.0	4.1	4.1	4.1	4.2	3.7	3.2	2.7	TIH-Z...2
	6.5	6.6	6.8	6.8	6.9	6.9	6.1	5.3	4.5	TIH-Z...3
	9.1	9.3	9.5	9.6	9.7	9.7	8.6	7.5	6.4	TIH-Z...4
	13.3	13.6	13.9	14.1	14.2	14.3	12.6	11.0	9.3	TIH-Z...5
	15.7	16.1	16.4	16.6	16.8	16.8	14.9	13.0	11.0	TIH-Z...6
	22.4	22.9	23.4	23.7	23.9	24.0	21.2	18.5	15.7	TIH-Z...7
	24.9	25.6	26.1	26.4	26.6	26.7	23.7	20.6	17.5	TIH-Z...8
	28.6	29.4	29.9	30.3	30.6	30.7	27.2	23.6	20.1	TIH-Z...9
	35.7	36.6	37.3	37.7	38.1	38.2	33.8	29.4	25.0	TIH-Z...A
55	3.9	4.0	4.1	4.2	4.3	4.3	3.8	3.3	2.8	TIH-Z...2
	6.5	6.7	6.9	7.0	7.1	7.2	6.4	5.6	4.7	TIH-Z...3
	9.1	9.4	9.7	9.8	10.0	10.0	8.9	7.8	6.6	TIH-Z...4
	13.4	13.9	14.2	14.5	14.6	14.7	13.1	11.4	9.7	TIH-Z...5
	15.9	16.4	16.8	17.1	17.3	17.4	15.5	13.5	11.5	TIH-Z...6
	22.6	23.3	23.9	24.3	24.6	24.8	22.0	19.2	16.4	TIH-Z...7
	25.2	26.0	26.6	27.1	27.4	27.7	24.5	21.4	18.3	TIH-Z...8
	28.9	29.9	30.6	31.1	31.5	31.7	28.2	24.6	21.0	TIH-Z...9
	36.0	37.2	38.1	38.8	39.2	39.5	35.1	30.6	26.1	TIH-Z...A
50	3.9	4.0	4.2	4.2	4.3	4.4	3.9	3.4	2.9	TIH-Z...2
	6.5	6.7	6.9	7.1	7.2	7.3	6.5	5.7	4.8	TIH-Z...3
	9.0	9.4	9.7	9.9	10.1	10.2	9.1	7.9	6.8	TIH-Z...4
	13.3	13.8	14.2	14.6	14.8	15.0	13.3	11.7	10.0	TIH-Z...5
	15.7	16.3	16.8	17.2	17.5	17.7	15.7	13.8	11.8	TIH-Z...6
	22.3	23.2	23.9	24.5	24.9	25.2	22.4	19.6	16.8	TIH-Z...7
	24.9	25.9	26.7	27.3	27.8	28.1	25.0	21.9	18.7	TIH-Z...8
	28.6	29.7	30.6	31.3	31.9	32.2	28.7	25.1	21.5	TIH-Z...9
	35.6	37.0	38.2	39.0	39.7	40.1	35.7	31.3	26.7	TIH-Z...A
45	3.7	3.9	4.1	4.2	4.3	4.4	3.9	3.4	2.9	TIH-Z...2
	6.2	6.6	6.8	7.0	7.2	7.3	6.5	5.7	4.9	TIH-Z...3
	8.7	9.2	9.5	9.8	10.0	10.2	9.1	8.0	6.9	TIH-Z...4
	12.8	13.5	14.0	14.4	14.7	15.0	13.4	11.7	10.1	TIH-Z...5
	15.1	15.9	16.5	17.0	17.4	17.7	15.8	13.9	11.9	TIH-Z...6
	21.5	22.7	23.5	24.2	24.8	25.2	22.5	19.7	16.9	TIH-Z...7
	24.0	25.3	26.3	27.0	27.6	28.1	25.1	22.0	18.9	TIH-Z...8
	27.6	29.0	30.2	31.1	31.7	32.2	28.8	25.3	21.7	TIH-Z...9
	34.4	36.1	37.6	38.7	39.5	40.1	35.9	31.5	27.0	TIH-Z...A
40	3.5	3.8	4.0	4.1	4.2	4.3	3.9	3.4	2.9	TIH-Z...2
	5.9	6.3	6.6	6.8	7.0	7.2	6.5	5.7	4.9	TIH-Z...3
	8.2	8.8	9.2	9.6	9.9	10.1	9.0	8.0	6.8	TIH-Z...4
	12.1	12.9	13.6	14.1	14.5	14.8	13.3	11.7	10.1	TIH-Z...5
	14.3	15.2	16.0	16.6	17.1	17.5	15.7	13.8	11.9	TIH-Z...6
	20.3	21.7	22.8	23.7	24.3	24.9	22.3	19.7	16.9	TIH-Z...7
	22.7	24.2	25.4	26.4	27.2	27.7	24.9	21.9	18.8	TIH-Z...8
	26.0	27.8	29.2	30.3	31.2	31.8	28.6	25.2	21.6	TIH-Z...9
	32.4	34.6	36.4	37.7	38.8	39.6	35.6	31.3	26.9	TIH-Z...A
30	2.8	3.2	3.5	3.7	3.9	4.0	3.7	3.3	2.8	TIH-Z...2
	4.7	5.3	5.8	6.2	6.5	6.7	6.1	5.4	4.7	TIH-Z...3
	6.5	7.4	8.1	8.7	9.1	9.4	8.6	7.6	6.6	TIH-Z...4
	9.6	10.9	12.0	12.8	13.4	13.9	12.6	11.2	9.7	TIH-Z...5
	11.3	12.9	14.1	15.1	15.8	16.4	14.9	13.2	11.5	TIH-Z...6
	16.2	18.4	20.1	21.4	22.5	23.3	21.2	18.8	16.3	TIH-Z...7
	18.0	20.5	22.4	23.9	25.1	26.0	23.6	21.0	18.2	TIH-Z...8
	20.7	23.5	25.7	27.5	28.8	29.9	27.1	24.1	20.9	TIH-Z...9
	25.8	29.3	32.1	34.2	35.9	37.2	33.8	30.0	26.0	TIH-Z...A

Thermo™-Expansion Valve Series - TIH

TIH: Quick selection (included 1.5 bar pressure drop for liquid line components and distributor)

Condensing temperature (°C)	R134a Capacity (kW)								Valve type
	Evaporating temperature (°C)								
	15	10	5	0	-5	-10	-15	-20	
70	2.4	2.4	2.3	2.3	2.3	2.2	2.0	1.6	TIH-M...2
	4.0	3.9	3.9	3.9	3.8	3.7	3.3	2.7	TIH-M...3
	5.5	5.5	5.5	5.4	5.3	5.2	4.6	3.8	TIH-M...4
	8.1	8.1	8.0	7.9	7.8	7.6	6.7	5.5	TIH-M...5
	9.6	9.6	9.5	9.4	9.2	9.0	8.0	6.5	TIH-M...6
	13.7	13.6	13.5	13.3	13.1	12.8	11.3	9.3	TIH-M...7
	15.3	15.2	15.1	14.9	14.6	14.3	12.6	10.4	TIH-M...8
	17.5	17.5	17.3	17.1	16.8	16.4	14.5	11.9	TIH-M...9
	21.8	21.8	21.6	21.3	20.9	20.4	18.1	14.9	TIH-M...A
60	2.4	2.4	2.4	2.4	2.4	2.4	2.1	1.8	TIH-M...2
	4.0	4.0	4.0	4.0	4.0	3.9	3.5	2.9	TIH-M...3
	5.6	5.6	5.7	5.6	5.6	5.5	4.9	4.1	TIH-M...4
	8.2	8.3	8.3	8.3	8.2	8.1	7.2	6.0	TIH-M...5
	9.7	9.8	9.8	9.8	9.7	9.6	8.5	7.1	TIH-M...6
	13.8	13.9	14.0	13.9	13.8	13.6	12.2	10.1	TIH-M...7
	15.4	15.5	15.6	15.5	15.4	15.2	13.6	11.3	TIH-M...8
	17.6	17.8	17.9	17.8	17.7	17.5	15.6	12.9	TIH-M...9
	22.0	22.2	22.3	22.2	22.0	21.7	19.4	16.1	TIH-M...A
50	2.2	2.3	2.4	2.4	2.4	2.4	2.1	1.8	TIH-M...2
	3.7	3.8	3.9	4.0	4.0	4.0	3.6	3.0	TIH-M...3
	5.2	5.4	5.5	5.5	5.6	5.6	5.0	4.2	TIH-M...4
	7.7	7.9	8.1	8.1	8.2	8.2	7.3	6.2	TIH-M...5
	9.1	9.3	9.5	9.6	9.7	9.6	8.7	7.3	TIH-M...6
	12.9	13.3	13.6	13.7	13.7	13.7	12.3	10.3	TIH-M...7
	14.4	14.8	15.1	15.3	15.3	15.3	13.8	11.5	TIH-M...8
	16.5	17.0	17.4	17.5	17.6	17.6	15.8	13.3	TIH-M...9
	20.6	21.2	21.6	21.8	21.9	21.9	19.7	16.5	TIH-M...A
40	1.9	2.0	2.1	2.2	2.2	2.3	2.1	1.7	TIH-M...2
	3.2	3.4	3.6	3.7	3.7	3.8	3.4	2.9	TIH-M...3
	4.4	4.7	5.0	5.1	5.2	5.3	4.8	4.1	TIH-M...4
	6.5	7.0	7.3	7.5	7.7	7.8	7.1	6.0	TIH-M...5
	7.7	8.2	8.6	8.9	9.1	9.2	8.4	7.1	TIH-M...6
	10.9	11.7	12.3	12.7	12.9	13.1	11.9	10.1	TIH-M...7
	12.2	13.1	13.7	14.2	14.4	14.6	13.3	11.2	TIH-M...8
	14.0	15.0	15.7	16.2	16.6	16.8	15.3	12.9	TIH-M...9
	17.4	18.7	19.6	20.2	20.6	20.9	19.0	16.1	TIH-M...A
30	1.3	1.5	1.7	1.9	2.0	2.0	1.9	1.6	TIH-M...2
	2.1	2.6	2.9	3.1	3.3	3.4	3.1	2.7	TIH-M...3
	2.9	3.6	4.0	4.4	4.6	4.7	4.4	3.8	TIH-M...4
	4.3	5.3	5.9	6.4	6.7	7.0	6.5	5.5	TIH-M...5
	5.1	6.2	7.0	7.6	8.0	8.2	7.6	6.5	TIH-M...6
	7.2	8.9	10.0	10.8	11.3	11.7	10.9	9.3	TIH-M...7
	8.0	9.9	11.1	12.0	12.7	13.1	12.1	10.4	TIH-M...8
	9.2	11.3	12.8	13.8	14.5	15.0	13.9	11.9	TIH-M...9
	11.5	14.1	15.9	17.2	18.1	18.7	17.3	14.9	TIH-M...A

Thermo™-Expansion Valve Series - TIH

TIH: Quick selection (included 1.5 bar pressure drop for liquid line components and distributor)

Condensing temperature (°C)	R513A Capacity (kW)								Valve type
	Evaporating temperature (°C)								
	15	10	5	0	-5	-10	-15	-20	
70	2.0	1.9	1.9	1.9	1.8	1.7	1.5	1.2	TIH-C...2
	3.3	3.2	3.2	3.1	3.0	2.9	2.5	2.0	TIH-C...3
	4.6	4.5	4.4	4.3	4.2	4.1	3.5	2.9	TIH-C...4
	6.8	6.7	6.5	6.4	6.2	6.0	5.2	4.2	TIH-C...5
	8.0	7.9	7.7	7.5	7.3	7.0	6.1	5.0	TIH-C...6
	11.4	11.2	11.0	10.7	10.4	10.0	8.7	7.1	TIH-C...7
	12.7	12.5	12.3	11.9	11.6	11.2	9.7	7.9	TIH-C...8
	14.6	14.4	14.1	13.7	13.3	12.8	11.2	9.1	TIH-C...9
	18.1	17.9	17.5	17.1	16.6	16.0	13.9	11.3	TIH-C...A
60	2.1	2.1	2.1	2.0	2.0	2.0	1.7	1.4	TIH-C...2
	3.5	3.5	3.5	3.4	3.4	3.3	2.9	2.4	TIH-C...3
	4.8	4.9	4.8	4.8	4.7	4.6	4.1	3.3	TIH-C...4
	7.1	7.1	7.1	7.0	6.9	6.8	6.0	4.9	TIH-C...5
	8.4	8.4	8.4	8.3	8.2	8.0	7.0	5.8	TIH-C...6
	11.9	12.0	11.9	11.8	11.6	11.4	10.0	8.3	TIH-C...7
	13.3	13.4	13.3	13.2	12.9	12.7	11.2	9.2	TIH-C...8
	15.3	15.4	15.3	15.1	14.9	14.5	12.9	10.6	TIH-C...9
	19.1	19.1	19.0	18.8	18.5	18.1	16.0	13.2	TIH-C...A
50	2.0	2.1	2.1	2.1	2.1	2.1	1.8	1.5	TIH-C...2
	3.3	3.4	3.5	3.5	3.5	3.4	3.1	2.6	TIH-C...3
	4.7	4.8	4.8	4.9	4.9	4.8	4.3	3.6	TIH-C...4
	6.9	7.0	7.1	7.2	7.1	7.1	6.3	5.3	TIH-C...5
	8.1	8.3	8.4	8.4	8.4	8.3	7.5	6.2	TIH-C...6
	11.5	11.8	12.0	12.0	12.0	11.9	10.6	8.8	TIH-C...7
	12.9	13.2	13.4	13.4	13.4	13.3	11.9	9.9	TIH-C...8
	14.8	15.1	15.3	15.4	15.4	15.2	13.6	11.3	TIH-C...9
	18.4	18.8	19.1	19.2	19.1	19.0	16.9	14.1	TIH-C...A
40	1.7	1.8	1.9	2.0	2.0	2.0	1.8	1.5	TIH-C...2
	2.9	3.1	3.2	3.3	3.4	3.4	3.1	2.6	TIH-C...3
	4.0	4.3	4.5	4.6	4.7	4.7	4.3	3.6	TIH-C...4
	5.9	6.3	6.6	6.8	6.9	6.9	6.3	5.3	TIH-C...5
	7.0	7.5	7.8	8.0	8.1	8.2	7.4	6.2	TIH-C...6
	10.0	10.7	11.1	11.4	11.6	11.7	10.6	8.9	TIH-C...7
	11.1	11.9	12.4	12.7	12.9	13.0	11.8	9.9	TIH-C...8
	12.8	13.7	14.2	14.6	14.9	14.9	13.5	11.4	TIH-C...9
	15.9	17.0	17.7	18.2	18.5	18.6	16.8	14.2	TIH-C...A
30	1.2	1.4	1.6	1.7	1.8	1.9	1.7	1.5	TIH-C...2
	2.0	2.4	2.7	2.9	3.0	3.1	2.8	2.4	TIH-C...3
	2.7	3.3	3.7	4.0	4.2	4.3	4.0	3.4	TIH-C...4
	4.0	4.9	5.5	5.9	6.2	6.4	5.9	5.0	TIH-C...5
	4.8	5.8	6.5	7.0	7.3	7.5	6.9	5.9	TIH-C...6
	6.8	8.2	9.2	9.9	10.4	10.7	9.9	8.4	TIH-C...7
	7.6	9.2	10.3	11.1	11.6	11.9	11.0	9.4	TIH-C...8
	8.7	10.5	11.8	12.7	13.3	13.7	12.6	10.8	TIH-C...9
	10.8	13.1	14.7	15.8	16.5	17.0	15.7	13.4	TIH-C...A

Thermo™-Expansion Valve Series - TIH

TIH: Quick selection (included 1.5 bar pressure drop for liquid line components and distributor)

Condensing temperature (°C)	R407C									Valve type
	Capacity (kW)									
	Evaporating temperature (°C)									
	15	10	5	0	-5	-10	-15	-20	-25	
60 bubble/ 63.9 dew point	3.1	3.1	3.1	3.1	3.1	3.1	2.8	2.4	2.0	TIH-N...2
	5.1	5.2	5.2	5.2	5.2	5.2	4.6	3.9	3.3	TIH-N...3
	7.2	7.3	7.3	7.3	7.3	7.2	6.4	5.5	4.6	TIH-N...4
	10.6	10.7	10.7	10.7	10.7	10.6	9.5	8.1	6.8	TIH-N...5
	12.5	12.6	12.7	12.7	12.6	12.5	11.2	9.5	8.0	TIH-N...6
	17.7	17.9	18.0	18.0	18.0	17.8	15.9	13.6	11.4	TIH-N...7
	19.8	20.0	20.1	20.1	20.0	19.9	17.7	15.1	12.7	TIH-N...8
	22.7	23.0	23.1	23.1	23.0	22.8	20.4	17.4	14.6	TIH-N...9
	28.3	28.6	28.8	28.8	28.7	28.4	25.3	21.6	18.2	TIH-N...A
50 bubble/ 54.4 dew point	3.1	3.1	3.2	3.2	3.2	3.2	2.9	2.5	2.1	TIH-N...2
	5.1	5.2	5.3	5.4	5.4	5.4	4.8	4.2	3.5	TIH-N...3
	7.1	7.3	7.4	7.5	7.6	7.6	6.8	5.8	4.9	TIH-N...4
	10.5	10.8	10.9	11.1	11.1	11.1	10.0	8.6	7.3	TIH-N...5
	12.4	12.7	12.9	13.1	13.1	13.1	11.8	10.1	8.6	TIH-N...6
	17.6	18.1	18.4	18.6	18.7	18.7	16.8	14.4	12.2	TIH-N...7
	19.7	20.2	20.5	20.7	20.8	20.8	18.7	16.1	13.6	TIH-N...8
	22.6	23.2	23.6	23.8	23.9	23.9	21.5	18.4	15.6	TIH-N...9
	28.1	28.9	29.3	29.6	29.8	29.8	26.7	23.0	19.5	TIH-N...A
40 bubble/ 44.9 dew point	2.8	3.0	3.1	3.1	3.2	3.2	2.9	2.5	2.2	TIH-N...2
	4.7	4.9	5.1	5.2	5.3	5.4	4.9	4.2	3.6	TIH-N...3
	6.6	6.9	7.2	7.3	7.4	7.5	6.8	5.9	5.0	TIH-N...4
	9.7	10.2	10.5	10.8	10.9	11.0	10.0	8.6	7.4	TIH-N...5
	11.4	12.0	12.4	12.7	12.9	13.0	11.8	10.2	8.7	TIH-N...6
	16.3	17.1	17.7	18.1	18.4	18.5	16.8	14.5	12.4	TIH-N...7
	18.1	19.0	19.7	20.2	20.5	20.7	18.7	16.2	13.8	TIH-N...8
	20.8	21.9	22.6	23.2	23.5	23.7	21.5	18.6	15.9	TIH-N...9
	25.9	27.2	28.2	28.8	29.3	29.6	26.8	23.2	19.8	TIH-N...A
30 bubble/ 34.2 dew point	2.3	2.6	2.7	2.9	3.0	3.0	2.8	2.4	2.1	TIH-N...2
	3.9	4.3	4.6	4.8	5.0	5.1	4.6	4.1	3.5	TIH-N...3
	5.4	6.0	6.4	6.7	6.9	7.1	6.5	5.7	4.9	TIH-N...4
	8.0	8.8	9.4	9.9	10.2	10.4	9.6	8.3	7.2	TIH-N...5
	9.4	10.4	11.1	11.7	12.0	12.3	11.3	9.9	8.5	TIH-N...6
	13.4	14.8	15.8	16.6	17.1	17.5	16.1	14.0	12.1	TIH-N...7
	15.0	16.5	17.7	18.5	19.1	19.6	17.9	15.6	13.5	TIH-N...8
	17.2	19.0	20.3	21.2	22.0	22.5	20.6	18.0	15.5	TIH-N...9
	21.4	23.6	25.2	26.5	27.3	28.0	25.6	22.4	19.2	TIH-N...A
20 bubble/ 25.6 dew point		1.9	2.2	2.4	2.6	2.7	2.5	2.2	2.0	TIH-N...2
		3.1	3.6	4.0	4.3	4.5	4.2	3.7	3.3	TIH-N...3
		4.4	5.1	5.6	6.0	6.3	5.9	5.2	4.6	TIH-N...4
		6.4	7.5	8.3	8.9	9.3	8.7	7.7	6.7	TIH-N...5
		7.6	8.9	9.8	10.5	11.0	10.2	9.1	7.9	TIH-N...6
		10.8	12.6	13.9	14.9	15.6	14.6	12.9	11.2	TIH-N...7
		12.0	14.1	15.6	16.7	17.5	16.3	14.4	12.5	TIH-N...8
		13.8	16.2	17.9	19.1	20.0	18.7	16.5	14.4	TIH-N...9
	17.2	20.1	22.2	23.8	25.0	23.3	20.6	17.9	TIH-N...A	

Thermo™-Expansion Valve Series - TIH

TIH: Quick selection (included 1.5 bar pressure drop for liquid line components and distributor)

Condensing temperature (°C)	R448A/R449A											Valve type
	Capacity (kW)											
	Evaporating temperature (°C)											
	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	
60 bubble / 63.4 dew point	2.2	2.2	2.2	2.2	2.1	1.9	1.6	1.3	1.1	0.9	0.7	TIH-B...2
	3.3	3.3	3.3	3.2	3.2	2.8	2.4	2.0	1.6	1.3	1.0	TIH-B...3
	4.7	4.8	4.8	4.7	4.7	4.1	3.5	2.9	2.3	1.9	1.5	TIH-B...4
	7.2	7.2	7.2	7.2	7.1	6.3	5.3	4.4	3.5	2.8	2.3	TIH-B...5
	9.9	9.9	9.9	9.9	9.8	8.6	7.3	6.0	4.8	3.9	3.1	TIH-B...6
	12.1	12.1	12.1	12.0	11.9	10.5	8.9	7.3	5.9	4.8	3.8	TIH-B...7
	14.4	14.4	14.4	14.3	14.2	12.6	10.6	8.7	7.0	5.7	4.6	TIH-B...8
	19.5	19.6	19.6	19.5	19.3	17.1	14.4	11.8	9.6	7.7	6.2	TIH-B...9
	26.2	26.3	26.3	26.1	25.9	22.9	19.3	15.9	12.8	10.3	8.3	TIH-B...A
50 bubble / 54 dew point	2.2	2.3	2.3	2.3	2.3	2.1	1.7	1.4	1.2	1.0	0.8	TIH-B...2
	3.4	3.4	3.4	3.5	3.5	3.1	2.6	2.2	1.8	1.4	1.2	TIH-B...3
	4.9	5.0	5.0	5.0	5.0	4.5	3.8	3.2	2.6	2.1	1.7	TIH-B...4
	7.4	7.5	7.6	7.6	7.6	6.8	5.8	4.8	3.9	3.2	2.6	TIH-B...5
	10.2	10.4	10.5	10.5	10.5	9.4	8.0	6.6	5.4	4.4	3.5	TIH-B...6
	12.5	12.7	12.8	12.8	12.8	11.4	9.7	8.0	6.5	5.3	4.3	TIH-B...7
	14.8	15.1	15.2	15.3	15.3	13.6	11.6	9.6	7.8	6.3	5.1	TIH-B...8
	20.1	20.5	20.7	20.7	20.7	18.5	15.7	13.0	10.6	8.6	7.0	TIH-B...9
	27.0	27.4	27.7	27.8	27.8	24.8	21.1	17.4	14.2	11.5	9.4	TIH-B...A
40 bubble / 44.5 dew point	2.1	2.2	2.3	2.3	2.3	2.1	1.8	1.5	1.2	1.0	0.8	TIH-B...2
	3.2	3.3	3.4	3.5	3.5	3.1	2.7	2.2	1.8	1.5	1.2	TIH-B...3
	4.7	4.8	5.0	5.0	5.1	4.6	3.9	3.3	2.7	2.2	1.8	TIH-B...4
	7.1	7.3	7.5	7.6	7.7	6.9	5.9	4.9	4.1	3.3	2.7	TIH-B...5
	9.8	10.1	10.4	10.5	10.6	9.5	8.2	6.8	5.6	4.6	3.7	TIH-B...6
	11.9	12.3	12.6	12.8	12.9	11.6	10.0	8.3	6.8	5.6	4.5	TIH-B...7
	14.2	14.7	15.0	15.3	15.4	13.8	11.9	9.9	8.1	6.6	5.4	TIH-B...8
	19.3	19.9	20.4	20.7	20.9	18.8	16.1	13.4	11.0	9.0	7.4	TIH-B...9
	25.8	26.7	27.4	27.8	28.0	25.2	21.6	18.0	14.8	12.1	9.9	TIH-B...A
30 bubble / 34.5 dew point	1.9	2.0	2.1	2.2	2.2	2.0	1.8	1.5	1.2	1.0	0.8	TIH-B...2
	2.8	3.0	3.2	3.3	3.3	3.0	2.6	2.2	1.8	1.5	1.2	TIH-B...3
	4.1	4.4	4.6	4.8	4.9	4.4	3.8	3.2	2.7	2.2	1.8	TIH-B...4
	6.2	6.6	7.0	7.2	7.4	6.7	5.8	4.9	4.0	3.3	2.7	TIH-B...5
	8.6	9.1	9.6	9.9	10.1	9.2	8.0	6.7	5.5	4.6	3.7	TIH-B...6
	10.4	11.2	11.7	12.1	12.4	11.2	9.7	8.2	6.8	5.5	4.6	TIH-B...7
	12.4	13.3	13.9	14.4	14.7	13.4	11.6	9.7	8.0	6.6	5.4	TIH-B...8
	16.9	18.0	18.9	19.6	20.0	18.2	15.8	13.2	10.9	9.0	7.4	TIH-B...9
	22.6	24.2	25.4	26.2	26.8	24.4	21.1	17.7	14.6	12.0	9.9	TIH-B...A
20 bubble / 25.3 dew point	1.4	1.6	1.8	1.9	2.0	1.9	1.6	1.4	1.2	1.0	0.8	TIH-B...2
	2.1	2.4	2.7	2.9	3.0	2.8	2.4	2.1	1.7	1.4	1.2	TIH-B...3
	3.0	3.5	3.9	4.2	4.4	4.1	3.6	3.0	2.5	2.1	1.7	TIH-B...4
	4.6	5.3	5.9	6.3	6.6	6.1	5.4	4.6	3.8	3.2	2.6	TIH-B...5
	6.3	7.4	8.1	8.7	9.1	8.5	7.4	6.3	5.3	4.4	3.6	TIH-B...6
	7.7	9.0	9.9	10.6	11.1	10.3	9.1	7.7	6.4	5.3	4.4	TIH-B...7
	9.1	10.7	11.8	12.6	13.3	12.3	10.8	9.2	7.6	6.3	5.2	TIH-B...8
	12.4	14.5	16.0	17.2	18.0	16.7	14.7	12.4	10.4	8.6	7.1	TIH-B...9
	16.6	19.4	21.5	23.0	24.1	22.4	19.7	16.7	13.9	11.5	9.5	TIH-B...A

Thermo™-Expansion Valve Series - TIH

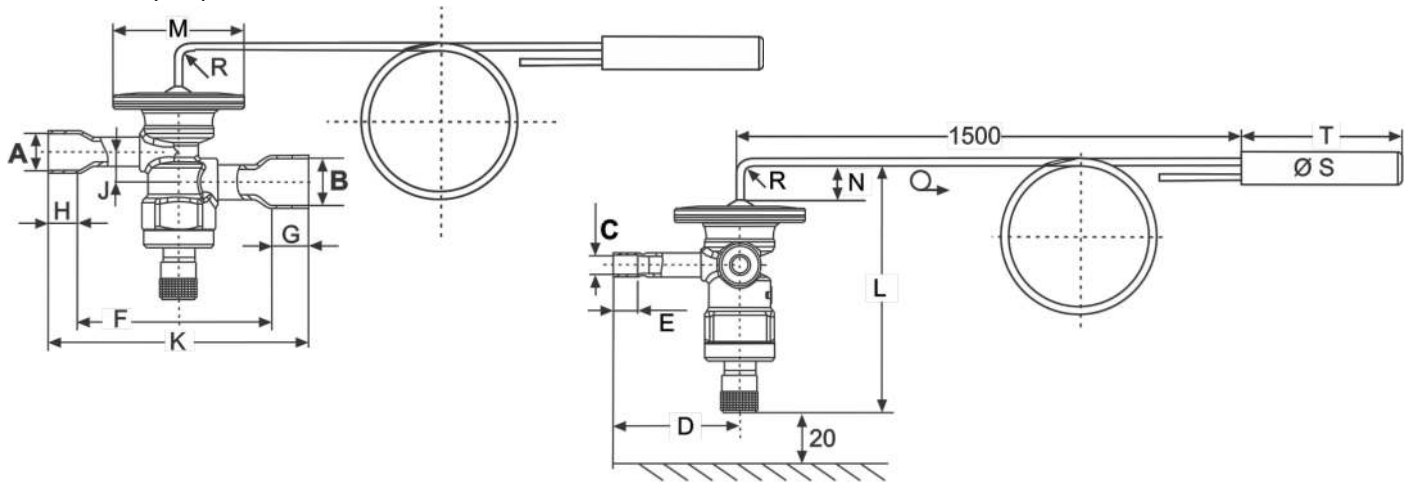
Technical Data

Maximum working pressure PS	46 bar
Factory test pressure PT	50.6 bar
Medium temperature range TS	-40...+70°C
Power element	Stainless steel, Laser welded

Connections	Copper ODF
Gross weight	270-305 g (depend on the valve size)
Label	Laser printing

Charge	MOP	Refrigerant	Maximum bulb temperature
TIH-M0../M2..	-	R134a	+100°C
TIH-N0../N2..	-	R407C	+80°C
TIH-B0../B2..	-	R448A, R449A	+80°C
TIH-C0../C2..	-	R513A	+100°C
TIH-M1../M3..	3.8 bar	R134a	+120°C
TIH-C1../C3..	3.8 bar	R513A	+120°C
TIH-N1../N3..	6.9 bar	R407C	+120°C
TIH-Z1../Z3..	13.4 bar	R410A, R32, R452B, R454B	+120°C

Dimensions (mm)



Body:

Type	ODF (mm) / (inch)			(mm)								
	A	B	C	D	E	F	G	H	J	K	L	M
TIH-..2	6 / 1/4"	10 / 3/8"	internal equalizer			70.7	8.4	8.4	10.3	87.5	83.2	45
TIH-..3												
TIH-..2	6 / 1/4"	10 / 3/8"	6 / 1/4"	43.5	8.4							
TIH-..3												
TIH-..4	10 / 3/8"	12 / 1/2"	internal equalizer			68.7	10.4	8.4				
TIH-..4	10 / 3/8"	12 / 1/2"	6 / 1/4"	43.5	8.4							
TIH-..5												
TIH-..6												
TIH-..7	12 / 1/2"	16 / 5/8"	6 / 1/4"	43.5	8.4	64	13.1	10.4				
TIH-..8												
TIH-..9												
TIH-..A												

Bulb:

Charge	Refrigerant	N	Bending radius R	Ø S	T	Capillary tube length
M0/M2, N0/N2, B0/B2, C0/C2	R134a, R407C, R448A, R449A, R513A	10 mm	5 mm	12.6 mm	53 mm	1.5 m
Z1/Z3, M1/M3, C1/C3, N1/N3	R410A, R32, R452B, R454B, R134a, R513A, R407C	10 mm	5 mm	15.9 mm	53 mm	1.5 m

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