TUA / TUAE - Thermostatic Expansion Valves

Danfoss TUA/TUAE stainless steel thermostatic expansion valves feature solder inlet and outlet connections. By pairing one valve body with one of ten replaceable orifices, a contractor can satisfy applications from -40 °F to +50 °F and up to $4\frac{1}{2}$ tons capacity (see capacity chart for specifics).



Facts

Applications:

- Traditional refrigeration
- Self-contained refrigerators
- Transport refrigeration
- Supermarket refrigeration
- Temperature range: -40 °F to +50 °F
- Capacity range: 1/30 to 4 1/2 tons (varies by refrigerant)
- Refrigerants: R-22, R-407C, R-134a, R-404A
- Functional valve consists of valve body and orifice

Scan the QR Code for a video with more information on the TUA valve features and installation or visit http://bit.ly/TUAinstall



Selection and Installation Instructions

1. Select Valve Body	Select the valve body bas equalization using the tab	ed on refrigerant and need for internal or ex ble on the next page under "Select Valve Boo	ternal	
2. Select Orifice	 Select one of ten orifice Prior to installing into s orifice inlet. 	es using the "Select Orifice" section on the fo ystem, verify that only mesh portions of the	llowing page. screen cover the	
3. Assemble Valve	 Place one drop of refrig Verify that the metal ga Tighten orifice into valve leaks, proper torquing Replace the metal washer time you change the orifice 	erant oil between the screen cage and the p isket is seated on the base of the orifice. /e (specification is 26–30 ftlbs.). In addition insures proper superheat control. r/gasket that is mounted at the base of the o ce assembly or remove it from the valve bod	ushpin. to eliminating rifice every y.	
4. Braze Valve into System	 Clean and insert coppe Direct torch at copper t Briefly direct torch on v Apply brazing alloy unt Do not try to fill the ridge Sweat connections using As internal connector sur use of high content silver NO WET WRAP REQUIRED Secure sensing bulb wi and 4:00 on the tube, ai Wrap included insulation finishing one inch beyon 	r tubing into appropriate connection on valu tubing until it begins to color (10–15 seconds valve connection (2–5 seconds). :il it flows. <u>Attempts to do so may clog the connector.</u> any common brazing alloy (minimum 5% sil- face is copper, connections are copper to co- solder or flux. Th enclosed bulb strap to suction line. Bulb s nd the strap should be tight enough that no on tape beginning one inch before the bulb and the bulb on the other end.	re.). ver, recommended 15% si pper, and there is no need hould be located betwee bulb movement is possik and overlapping each wra	ilver). d for :n 1:00 ble. ap,
5. Adjust Superheat	 Remove the cap with a Make superheat adjust Turning clock Turning count Reinstall the cap. Expansion valves on low t for medium temperature 	⁵ √32 inch hex key. ments ¼ turn at a time (¼ turn ≈ 1 °F). wise increases superheat. ær-clockwise decreases superheat. temperature systems may require more adju systems.	stment as the factory set	ting is
		Easy to carry kits for truck store All TUA/TUAE valve bodies and orifice featured on the next page and a hex key for superheat adjustment. Both TUA/TUAE valve bodies and orifices and T2/TE2 and orifices plus gaskets for TUA/TUAE and a hex key for superheat adjustment. Kits are plastic cases with foam inserts, all valves an instructions for selection and installation of the val- foam available available upon request.	ock 068U7000 068U7001 d orifices, and ves. Empty kits and	

Product Selection

1. Select Valve Body

Equalization	R-22	R-407C	R-404A	R-134a
Internal	068U	2235	068U2285	068U2205
External	068U	2237	068U2287	068U2207

All valves above have $\frac{3}{8}$ in. $\times \frac{1}{2}$ in. solder ODF connections and are designed for evaporator temperatures -40 °F to +50 °F (N charge). Other variations available, please contact your local Danfoss authorized wholesaler.

2. Select Orifice

TUA/TUAE valve capacities are based on the installed orifice. To select the correct size, use one of the two methods below:

A. System characteristics: Select the orifice using appropriate refrigerant, evaporator temperature, and system capacity. OR

B. Nominal capacity of the installed valve: Use the nominal capacity of the originally installed valve and match with the nominal capacity in chart (3rd column from left).

Technical data and ordering

TUA and TUAE (IF EXACT CAPACITY CANNOT BE FOUND, USE NEXT LARGER ORIFICE)

F	8-22	R-407C	Evaporator temperature (°F)									
Orifico cizo	Danfoss	Nominal capacity of installed value (tops)	-40	-30	-20	-10	0	10	20	30	40	50
Offlice Size	Code No.	Rated capacity ² (tons)										
0	068U1030	1⁄6	1⁄15	1⁄15	1⁄15	1⁄10	1⁄8	1⁄8	1⁄6	1⁄6	1⁄6	1⁄5
1	068U1031	У5	1⁄10	1⁄8	1⁄8	1⁄6	1⁄6	1⁄5	1⁄5	1⁄5	1⁄4	1⁄4
2	068U1032	1⁄4	1⁄10	1⁄8	1⁄8	1⁄6	1⁄5	1⁄4	1⁄4	1⁄4	1⁄3	1⁄3
3	068U1033	1⁄3	1⁄8	1⁄6	1⁄5	1⁄4	1⁄4	1⁄3	1⁄3	1⁄3	1⁄3	1⁄3
4	068U1034	1/2	1⁄4	1⁄4	1⁄4	1⁄3	1⁄3	1/2	1/2	1⁄2	3⁄4	3⁄4
5	068U1035	3⁄4	1⁄3	1⁄3	1⁄3	1⁄2	1⁄2	3⁄4	3⁄4	3⁄4	1	1
6	068U1036	1 1⁄2	1/2	1⁄2	1⁄2	3⁄4	3⁄4	1	1 1⁄4	1 1⁄3	1 1/2	1 1/2
7	068U1037	2	1/2	3⁄4	3⁄4	1	1	1 1⁄3	1 1⁄2	1 3⁄4	2	2
8	068U1038	2 ¾	1	1	1 1⁄3	1 1⁄2	1 3⁄4	2	2 1⁄3	2 1⁄2	3	3
9	068U1039	4	1 1⁄3	1 ½	1 3⁄4	2	2 1⁄2	2 3⁄4	3 ¼	3 1/2	4	4 1/2

R-404A		Evaporator temperature (°F)										
Orifice size	Danfoss	Nominal canacity of installed value: (tons)	-40	-30	-20	-10	0	10	20	30	40	50
Office Size	Code No.	Nominal capacity of instaned valve (tons)	Rated capacity ² (tons)									
0	068U1030	1/8	1⁄20	1⁄20	1⁄15	1⁄15	1⁄10	1⁄10	1⁄8	1⁄8	1⁄8	1⁄8
1	068U1031	⅓	1⁄15	1⁄15	1⁄10	1⁄8	1⁄8	1⁄6	1⁄6	1⁄5	1⁄5	1⁄5
2	068U1032	1⁄4	1⁄15	1⁄15	1⁄10	1⁄8	1⁄6	1⁄5	1⁄5	1⁄4	1⁄4	1⁄4
3	068U1033	1/3	½10	1⁄8	1⁄8	1⁄6	1⁄5	1⁄4	1⁄4	1⁄3	1⁄3	1⁄3
4	068U1034	1/2	1⁄6	1⁄5	1⁄4	1⁄4	1⁄3	1⁄3	1/2	1⁄2	1/2	1/2
5	068U1035	3⁄4	1⁄5	1⁄4	1⁄3	1⁄3	1⁄2	1⁄2	1⁄2	3⁄4	3⁄4	3⁄4
6	068U1036	1 1⁄4	1⁄3	1⁄3	1⁄2	1⁄2	3⁄4	3⁄4	1	1	1	1 ⅓
7	068U1037	1 1⁄2	1⁄3	1⁄2	1⁄2	3⁄4	1	1	1 1⁄3	1 ½	1 1⁄2	1 3⁄4
8	068U1038	2 1⁄3	1⁄2	3⁄4	1	1	1 1⁄3	1 1⁄2	2	2	2 1⁄3	2 ½
9	068U1039	3 1⁄3	3⁄4	1	1 1⁄3	1 ½	2	2 1⁄4	2 1⁄2	3	3 1⁄2	3 3⁄4
R-134a		Evaporator temperature (°F)										
		R-134a				Evap	orator te	mperatui	re (°F)			
	Danfoss	R-134a	-40	-30	-20	Evap –10	orator te	mperatuı 10	re (°F) 20	30	40	50
Orifice size	Danfoss Code No.	R-134a Nominal capacity of installed valve' (tons)	-40	-30	-20	Evap –10 Ra	orator te 0 ated capa	mperatu 10 icity² (tor	re (°F) 20 1s)	30	40	50
Orifice size	Danfoss Code No. 068U1030	R-134a Nominal capacity of installed valve' (tons) ½	-40 1⁄30	-30 ½0	- 20 1⁄20	Evap -10 Ra 1⁄20	orator te 0 ated capa ½s	mperatui 10 icity² (tor ⅓s	re (°F) 20 ns) ½10	30 ½0	40 ½	50 ½
Orifice size 0 1	Danfoss Code No. 068U1030 068U1031	R-134a Nominal capacity of installed valve ¹ (tons) ½ ½	-40 1⁄30 1⁄20	- 30 ½0 ½5	- 20 ½0 1/15	Evap -10 Ra 1⁄20 1⁄10	orator te 0 ated capa 1⁄15 1⁄10	mperatui 10 acity² (tor ¼s ⅓	re (°F) 20 ns) ½0 ½8	30 1/10 1/6	40 1⁄8 1⁄6	50 ½ ½
Orifice size 0 1 2	Danfoss Code No. 068U1030 068U1031 068U1032	R-134a Nominal capacity of installed valve ¹ (tons) ½ ½	-40 1⁄30 1⁄20 1⁄15	-30 ½20 ½5 ½5	-20 1⁄20 1⁄15 1⁄15	Evap -10 1/20 1/20 1/10	orator ter 0 ated capa ½s ½s ½8	mperatur 10 ncity² (tor ½s ½ ½6	re (°F) 20 15) ½0 ½8 ½6	30 1/10 1/6 1/5	40 1/8 1/6 1/5	50 ½ ½ ½
Orifice size 0 1 2 3	Danfoss Code No. 068U1030 068U1031 068U1032 068U1033	R-134a Nominal capacity of installed valve' (tons) ½ ½ ½ ½ ¼	-40 1/30 1/20 1/15 1/15	- 30 1⁄20 1⁄15 1⁄15 1⁄10	-20 ½20 ½15 ½15 ½8	Evap -10 % % % %	orator ter 0 ated capa ½s ½8 ½8	mperatur 10 hcity ² (tor ½ ½ ½ ½	re (°F) 20 1s) ½8 ½8 ½6 ½5	30 1/10 1/6 1/5 1/4	40 ½ ½ ½ ½	50 1/8 1/5 1/5 1/4
Orifice size 0 1 2 3 4	Danfoss Code No. 068U1030 068U1031 068U1032 068U1033 068U1034	R-134a Nominal capacity of installed valve' (tons) ½ ½ ½ ½ ½ ½	-40 1/30 1/20 1/15 1/15 1/8	-30 1/20 1/15 1/15 1/10 1/6	-20 V20 V15 V15 V15 V8 V5	Evap -10 Ka V20 V10 V10 V10 V10 V10 V10 V10	orator ter 0 ated capa 1/15 1/10 1/8 1/6 1/4	mperatur 10 hcity² (tor ½s ½s ¼4	re (°F) 20 15) ½6 ½5 ½3	30 1/10 1/6 1/5 1/4 1/3	40 1/8 1/6 1/5 1/4 1/3	50 1/8 1/5 1/5 1/4 1/2
Orifice size 0 1 2 3 4 5	Danfoss Code No. 068U1030 068U1031 068U1032 068U1033 068U1034 068U1035	R-134a Nominal capacity of installed valve' (tons) ½ ½ ½ ½ ½ ½	-40 1/30 1/20 1/15 1/15 1/15 1/8 1/5	-30 1/20 1/15 1/15 1/10 1/6 1/5	-20 1/20 1/15 1/15 1/8 1/5 1/4	Evap -10 Ka V20 V10 V10 V10 V10 V18 V28 V28 V28 V28 V28 V28 V28 V28 V28 V2	orator ter O ated capa ½s ⅓ ½ ½ ½ ¼ ¼	nperatur 10 hcity² (tor ½s ½s ¼ ¼ ½s	re (°F) 20 15) 1/10 1/8 1/8 1/8 1/8 1/8 1/8 1/3 1/2	30 1/10 1/6 1/5 1/4 1/3 1/2	40 1/8 1/6 1/5 1/4 1/4 1/3 1/2	50 1/8 1/5 1/5 1/4 1/2 1/2
Orifice size 0 1 2 3 4 5 6	Danfoss Code No. 068U1030 068U1031 068U1032 068U1033 068U1034 068U1035 068U1036	R-134a Nominal capacity of installed valve' (tons) ½ ½ ½ ½ ½ ½ ¾	-40 1/20 1/20 1/15 1/15 1/15 1/15 1/15 1/15 1/15 1/1	-30 1/20 1/15 1/15 1/10 1/6 1/5 1/4	-20 1/20 1/15 1/15 1/15 1/15 1/15 1/15 1/15 1/1	Evap -10 Kr V20 V10 V10 V10 V10 V12 V20 V10 V10 V10 V10 V10 V10 V10 V10 V10 V1	orator te 0 ated capa ½ ½ ½ ½ ½ ½	mperatur 10 kcity² (tor ½ ½ ½ ½ ½	re (°F) 20 15) 160 176 176 176 176 176 176 175 173 172 174 174 174 174 174 174 174 174 174 174	30 1/10 1/6 1/5 1/4 1/3 1/2 3/4	40 1/8 1/6 1/5 1/4 1/2 1	50 1/8 1/5 1/5 1/4 1/2 1/2 1
Orifice size 0 1 2 3 4 5 6 7	Danfoss Code No. 068U1030 068U1031 068U1032 068U1033 068U1033 068U1034 068U1035 068U1036	R-134aNominal capacity of installed valve' (tons)½½½½½¾1 ¼	-40 1/30 1/20 1/15 1/15 1/15 1/15 1/15 1/15 1/15 1/1	-30 1/20 1/15 1/15 1/10 1/6 1/5 1/4 1/3	-20 1/20 1/15 1/15 1/15 1/2 1/2	Evap -10 Ka V20 V10 V10 V10 V16 V25 V4 V3 V2 V2 V2 V2 V2 V2 V2 V2 V2 V2	0 ated capa 1/15 1/10 1/8 1/6 1/4 1/3 1/2 3/4	mperatur 10 kcity² (tor ½ ½ ½ ½ ¾	re (°F) 20 15) ½0 ½6 ½5 ½3 ½2 34 1	30 ½0 ½6 ½5 ¼4 ½2 34 1	40 1/8 1/6 1/5 1/4 1/2 1 1 1/4	50 1/8 1/5 1/5 1/4 1/2 1 1 1/2
Orifice size 0 1 2 3 4 5 6 7 8	Danfoss Code No. 068U1030 068U1031 068U1032 068U1033 068U1034 068U1035 068U1036 068U1037 068U1038	R-134a Nominal capacity of installed valve' (tons) ½ ½ ½ ½ ½ ½ ½ ½ ½ ½ ¾ 1 ¼ 1 ¾	-40 1/20 1/20 1/15 1/15 1/15 1/15 1/15 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2	-30 1/20 1/15 1/15 1/10 1/6 1/5 1/4 1/3 1/2	-20 1/20 1/15 1/15 1/15 1/15 1/15 1/15 1/15 1/1	Evap -10 Ra ½20 ½0 ½0 ½8 ½5 ¼4 ½3 ¼2 ¾4	0 rator te 0 ated capa 1/15 1/10 1/8 1/6 1/4 1/3 1/2 3/4 1	mperatur 10 kcity² (tor ½ ½ ½ ½ ½ ¾ 1 ¼	re (°F) 20 15) ½ ½ ½ ½ ½ ¾ 1 1 ½	30 1/10 1/6 1/5 1/4 1/3 1/2 3/4 1 1 3/4	40 1/8 1/6 1/5 1/4 1/3 1/2 1 1/4 2	50 1/8 1/5 1/4 1/2 1/2 1 1 1/2 2

All capacity data is in accordance to ARI 750-2007.

¹Nominal capacity based on condensing temperature of 100 °F, a vapor free liquid temperature of 98 °F ahead of the expansion valve and an evaporator temperature of 40 °F.

²Capacity based on condensing temperature of 95 °F and a vapor free liquid temperature of 85 °F ahead of the expansion valve. Spare parts and accessories are available on pages 56.