

Data sheet

4-Way Reversing valves

Type **STF** and **STF-H**



The 4-way valves are used in reversible applications such as heat pumps or reversible air conditioning units and chillers.

The 4-way valve allows an inversion of the refrigeration cycle, changing from cooling mode in summer to heating mode in winter.

Features

- Wide application range
 - complete capacity range
 - available for all common refrigerants (including flammable refrigerants)
 - many different connection diameters and configurations
- High reliability
 - unique design
 - instantaneous changeover at minimum pressure differential
 - mechanism to prevent incomplete changeover
 - Minimized leakage
- CE approved

Application

The cycle inversion is initiated by a small solenoid pilot valve, which pilots the movement of a slider, which changes the direction of the refrigerant. The valve is connected to the discharge and suction pipes.

The pilot valve ensures a very reliable changeover from cooling to heating mode, the changeover happens instantaneously with a minimum pressure differential. The valve design also guarantees a minimum pressure drop and a very low risk of leakage.

Fig.1 HEATING CYCLE
(Coil energized)

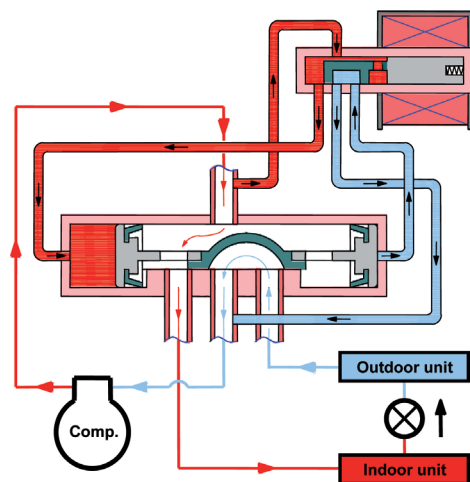
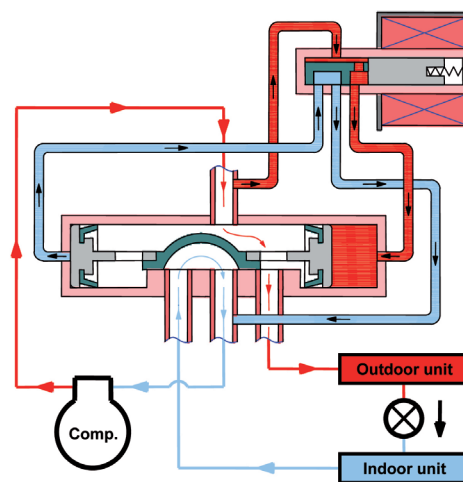


Fig. 2 COOLING CYCLE
(Coil not energized)



Application 1 - Winter conditions

When the solenoid coil is energized (Fig 1), the pilot valve moves to the right, and the high pressure fluid enters into the piston chamber. On the other hand, the fluid is released from the piston chamber, and the piston and the slide valve portion moves to the right.

Application 2 - Summer conditions

When the solenoid coil is de-energized (Fig.2), the pilot valve moves to the left, and the high pressure fluid comes into the discharge capillary tube, and enters into the piston chamber. On the other hand, the fluid is released from the piston chamber, and the piston and the slide valve portion moves to the left.

Product specification

Technical data

Parameter	STF and STF-H
Compatibility refrigerants	R22, R134a, R407A, R4070, R404A, R410A, R448A, R449A R32, R290, R454C, R454B, R452B (see safety note below)
Min. OPD	3 bar
Max. OPD	31 bar
Max. working pressure (PS/MWP)	45 bar Note! 49 bar for selected models. Please contact Danfoss for further information.
Refrigerant temperature range	-30 to 130 °C Note! 150 °C for selected models. Please contact Danfoss for further information.
Ambient temperature	-30 to 55 °C



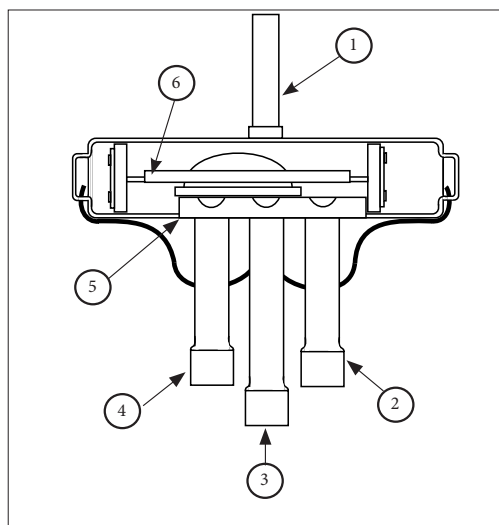
Special safety note for flammable refrigerants!

For countries where safety standards are not an indispensable part of the safety system Danfoss recommends the installer gets a third party approval of any system containing flammable refrigerant.

Please refer to separate drawings of the STF and STF-H valves with special disclaimer regarding usage of flammable refrigerants.

Please refer to separate document "Important Notice for usage of STF and STF-H valves with flammable refrigerants (No. S-FD001-1).

Design



- 1. Discharge connection
- 2. Connection to evaporator/condenser
- 3. Suction connection
- 4. Connection to condensor/evaporator
- 5. Valve body
- 6. Slider

The valve is composed of three basic components:
 - Pilot valve
 - Main valve body, including valve slider
 - Solenoid coil

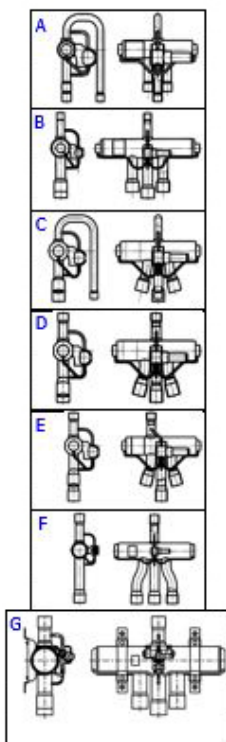
The 4-way valve slider is shifted by changes in differential pressure in the valve which is actuated by the pilot solenoid valve. The valve slider is specially designed to prevent incomplete changeover and movement with minimum pressure differential.

Dimensions

Refer to separate drawings of models. - Contact danfoss for further information.

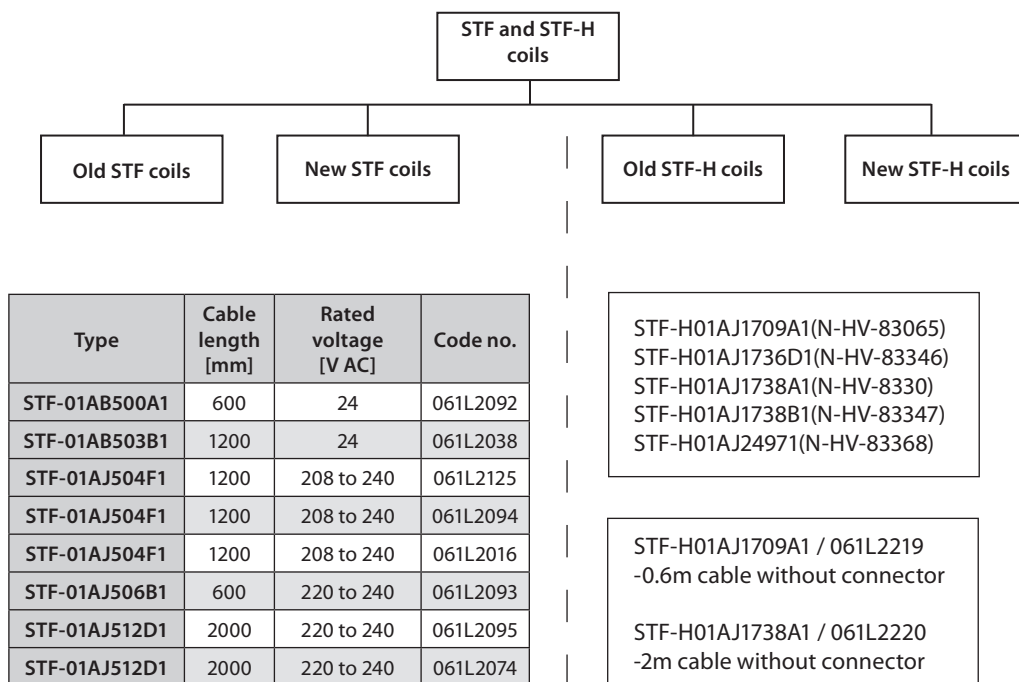
Ordering

*Capacity is indicated for 0.1bar suction pressure drop and condition 54.5 CCT, 7.2 CET and 5K SH



Model	Packing format	Danfoss code	Capacity [kW]*	Style	Discharge [in]	Suction [in]
			R290/R410A			
STF-H0167	45	061L1348	4.8	A	5/16	3/8
STF-H0267	32	061L1349	9.5	A	3/8	1/2
STF-H0321	32	061L1350	9.5	E	1/2	5/8
STF-H0351	32	061L1351	13.7	B	1/2	5/8
STF-H0429	24	061L1352	18.2	F	1/2	3/4
STF-H0651	24	061L1353	25.1	B	1/2	3/4
STF-H0731	6	061L1354	31.2	F	3/4	7/8
STF-H0951	6	061L1355	38.12	B	3/4	7/8
STF-H0954	6	061L1356	38.12	F	7/8	11/8
STF-2028G	1	061L1357	41.8	F	11/8	13/8
STF-2525G	1	061L1358	63.2	G	11/8	13/8
STF-3017G	1	061L1362	89.4	G	11/8	15/8
STF-4017G	1	061L1359	125.5	G	15/8	15/8
STF-5017G	1	061L1360	161.3	G	15/8	2 1/2
STF-6009G	1	061L1361	265.8	G	15/8	2 3/8

Coils for STF and STF-H valves

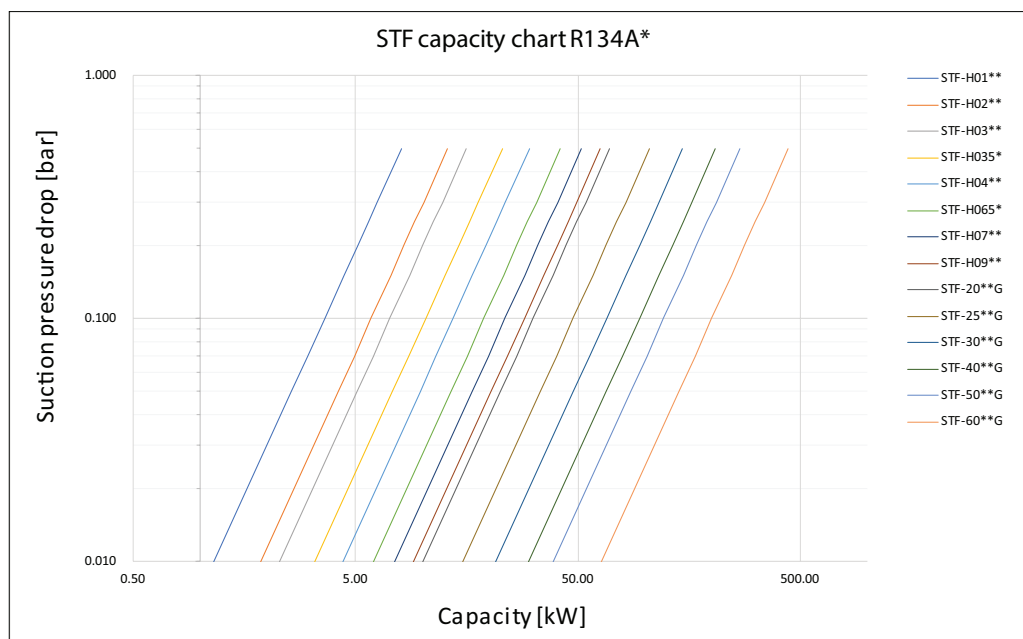


STF and STF-H coils - Model split:

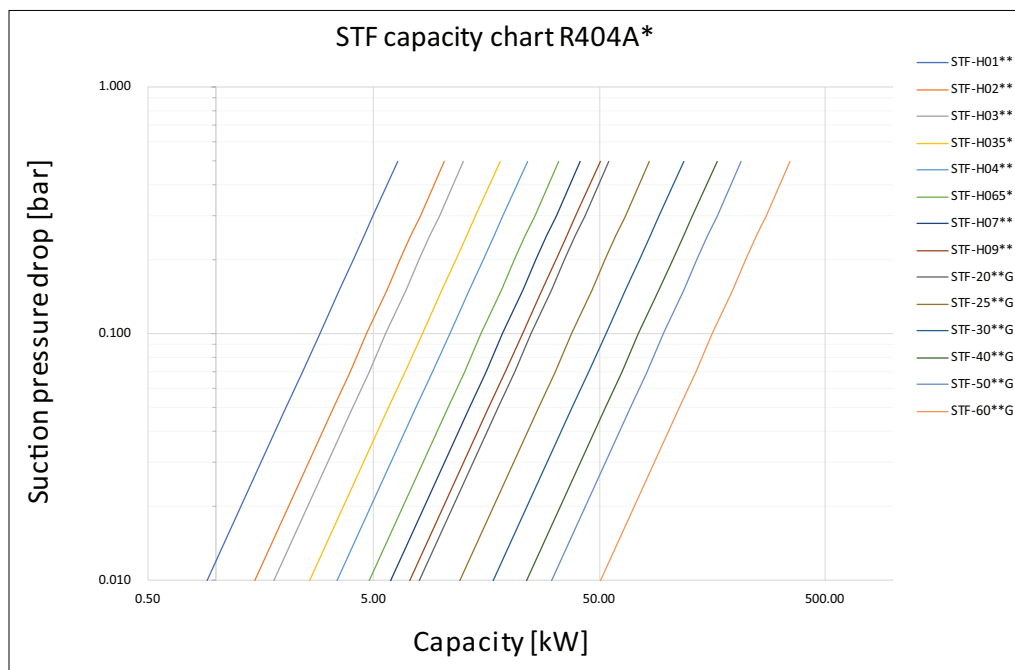
- The old and new STF models uses the same coils.
- The old and new STF-H Models uses the same coils.
- For STF-H models we currently only have 2 coil versions with Danfoss codes.

⚠ Note: Refer to drawings of specific models for detailed technical specifications and dimensions. Contact Danfoss for more information.

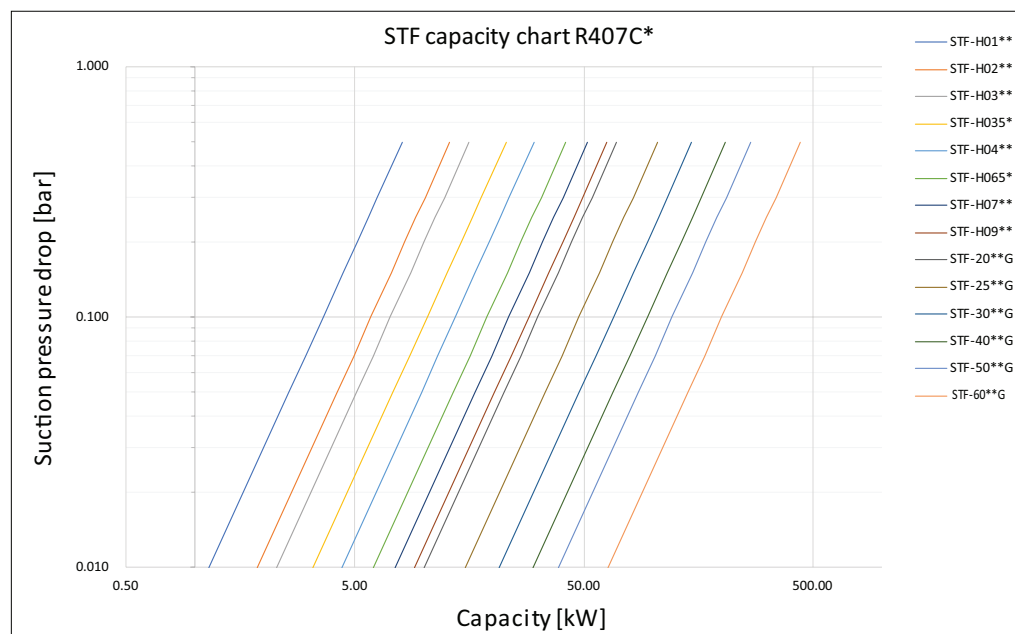
Capacity charts



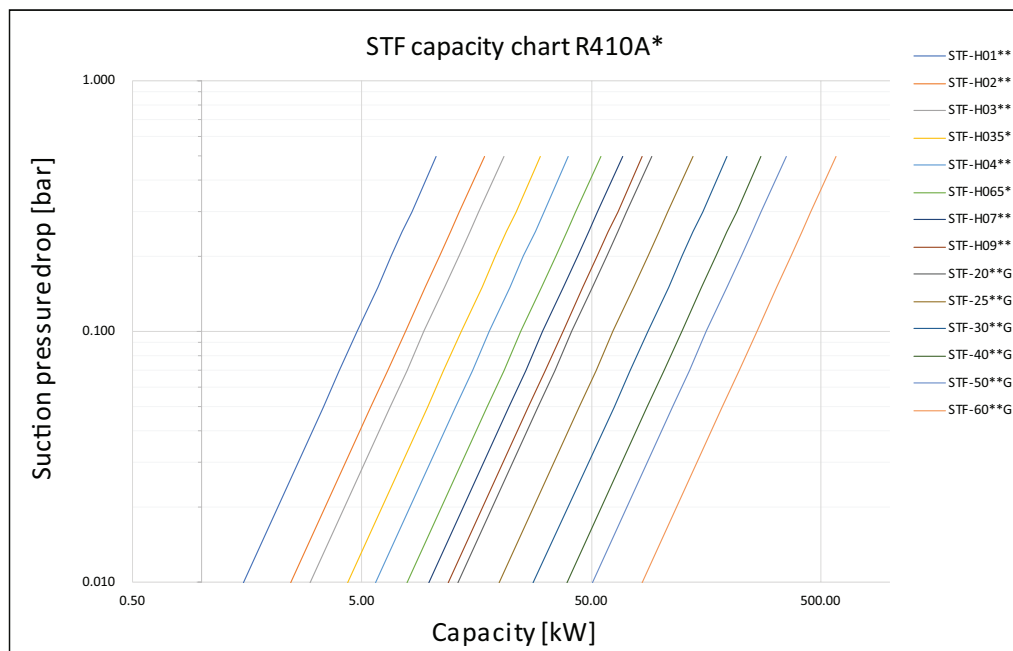
*Capacity calculated for CT 54.4 °C, ET 7.2 °C, SH 5K



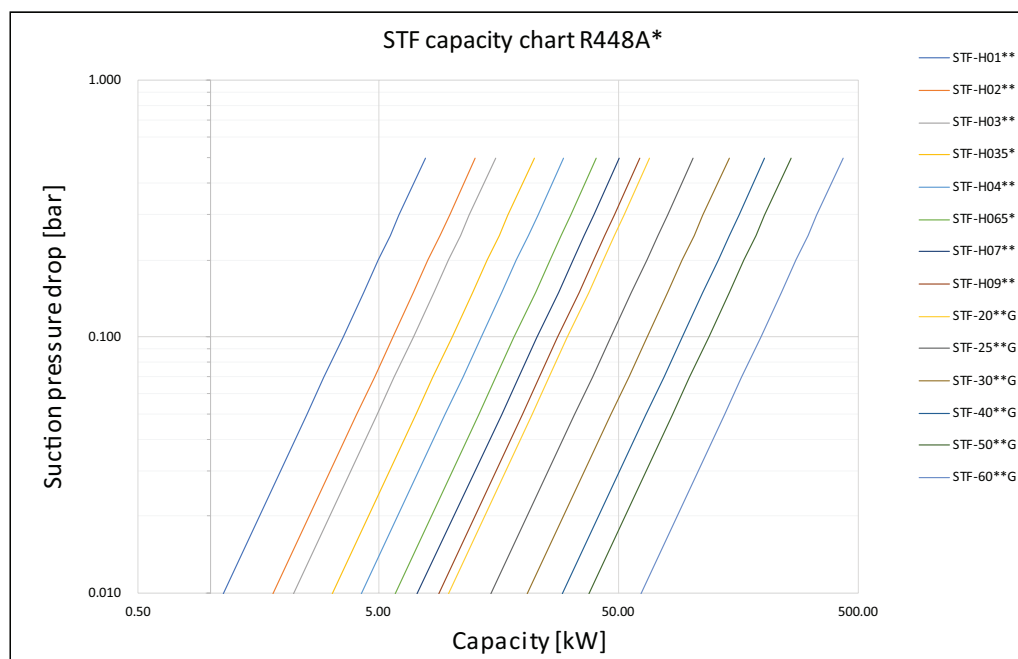
*Capacity calculated for CT 54.4 °C, ET 7.2 °C, SH 5K



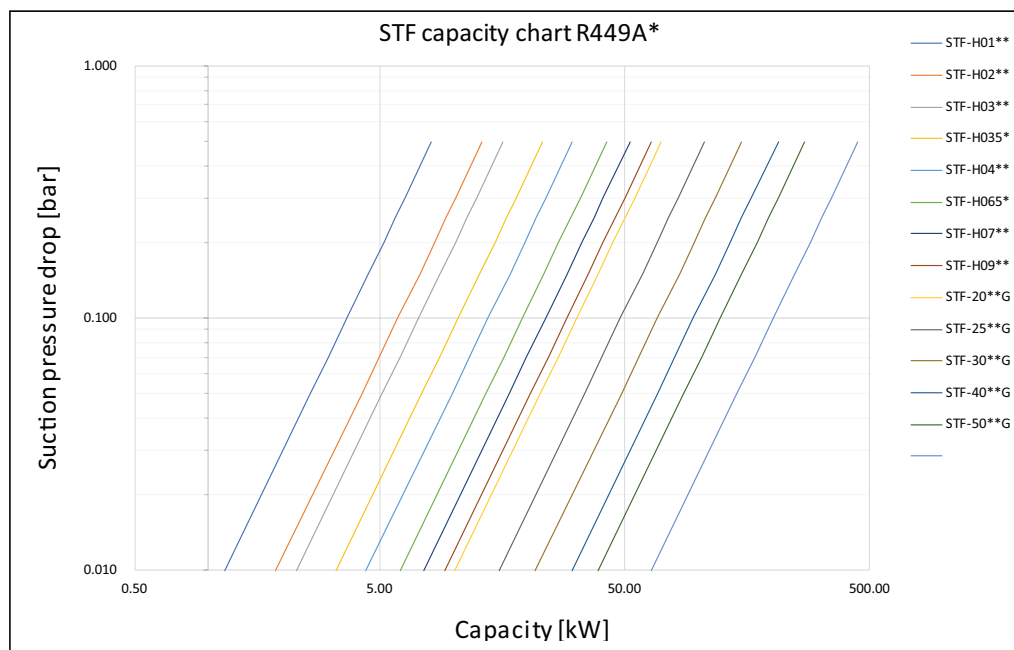
*Capacity calculated for CT 54.4 °C, ET 7.2 °C, SH 5K



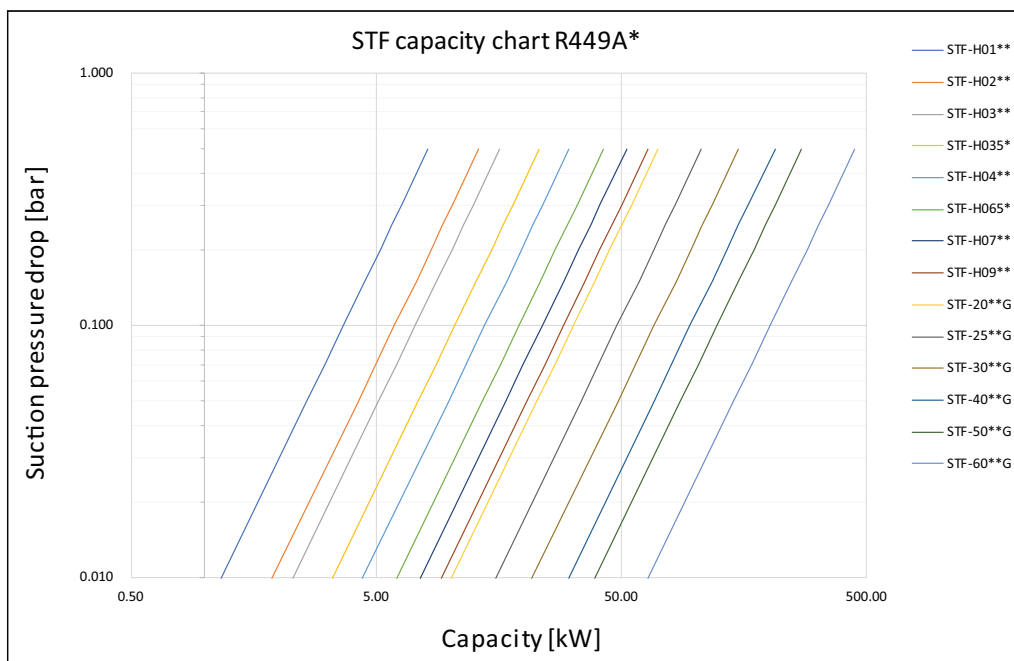
*Capacity calculated for CT 54.4 °C, ET 7.2 °C, SH SK



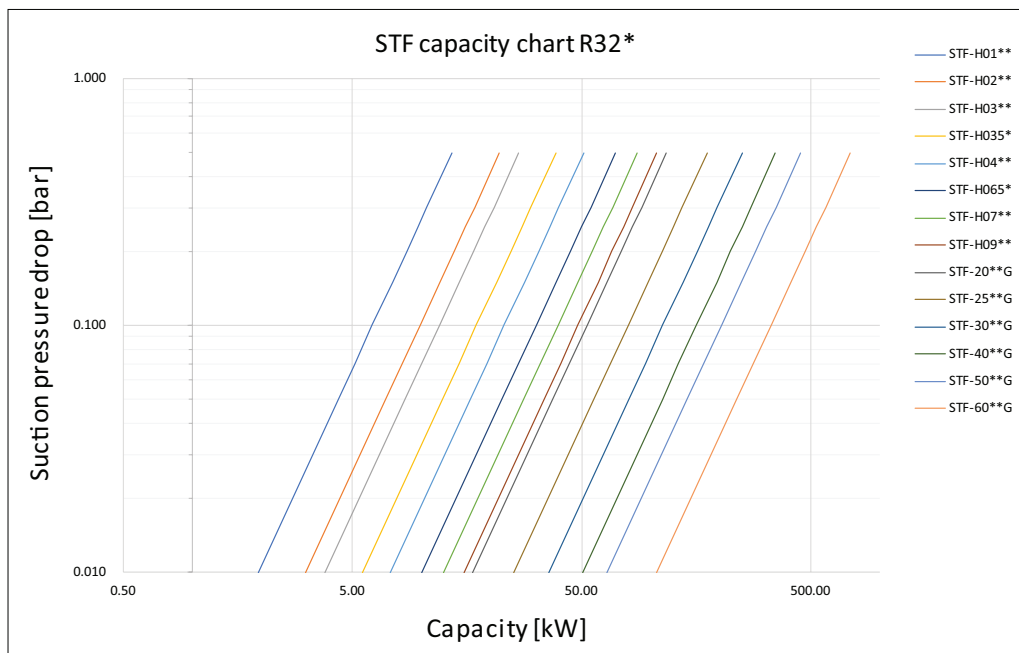
*Capacity calculated for CT 54.4 °C, ET 7.2 °C, SH SK



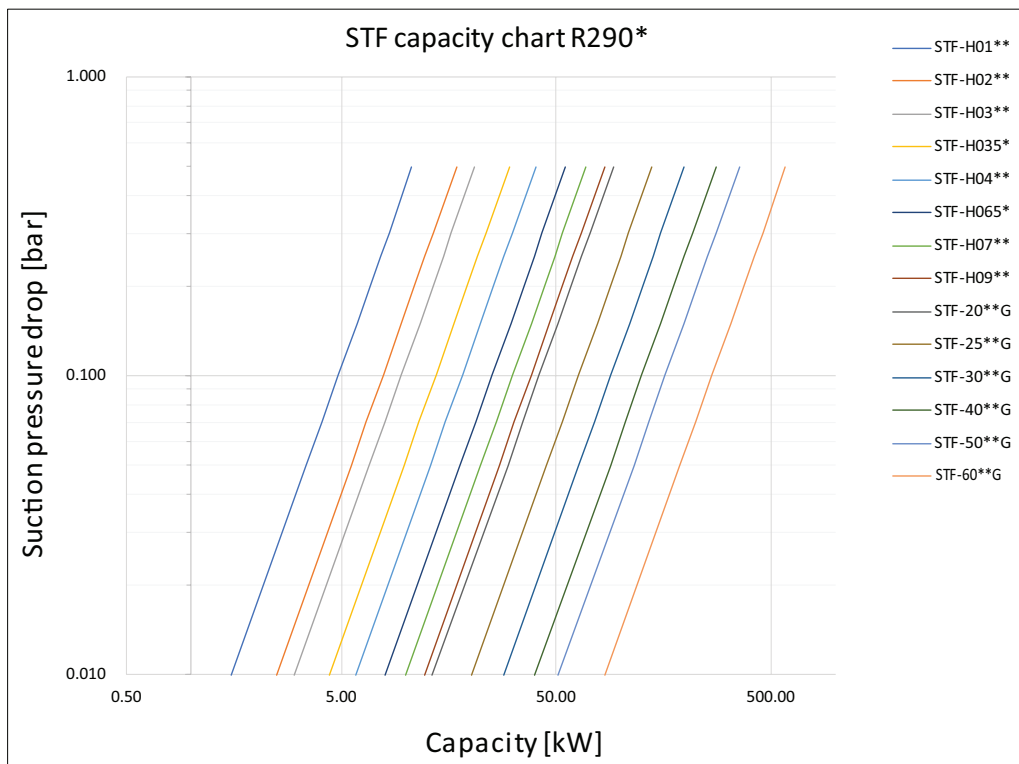
*Capacity calculated for CT 54.4 °C, ET 7.2 °C, SH SK



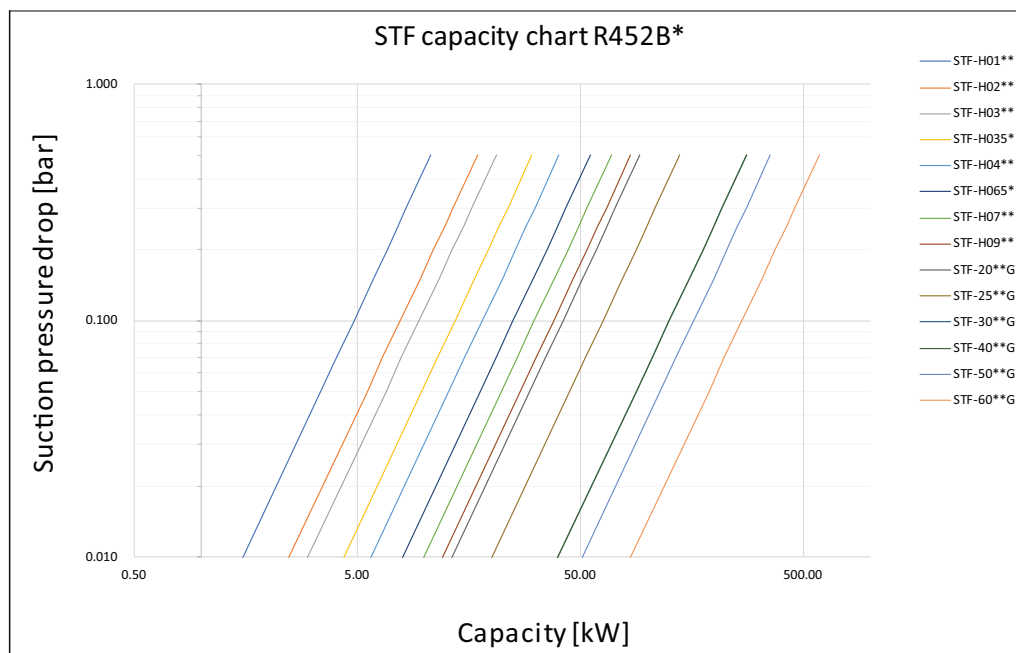
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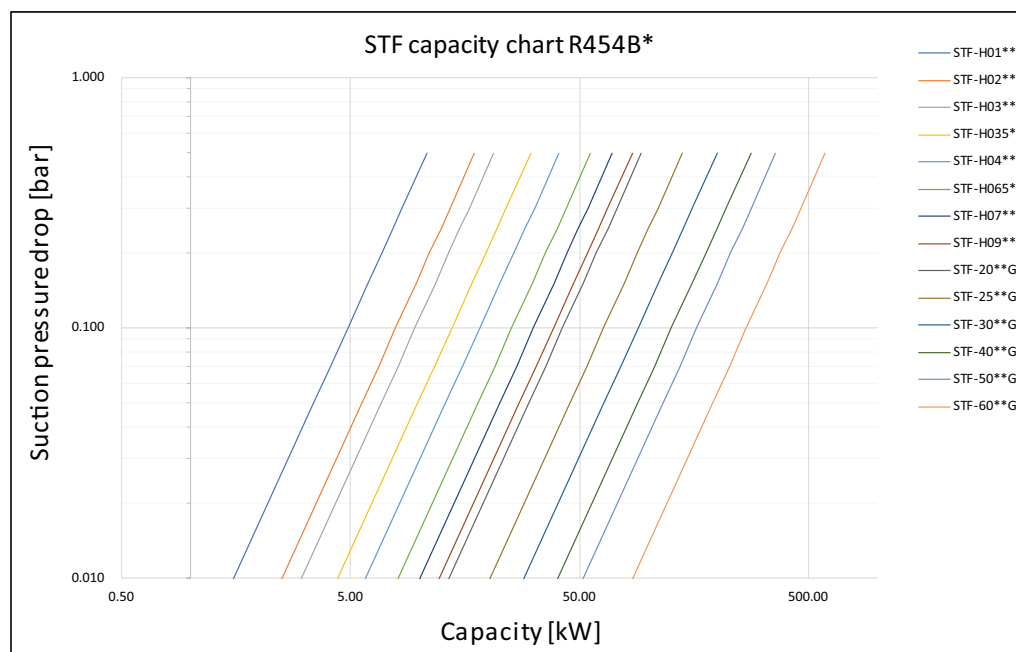
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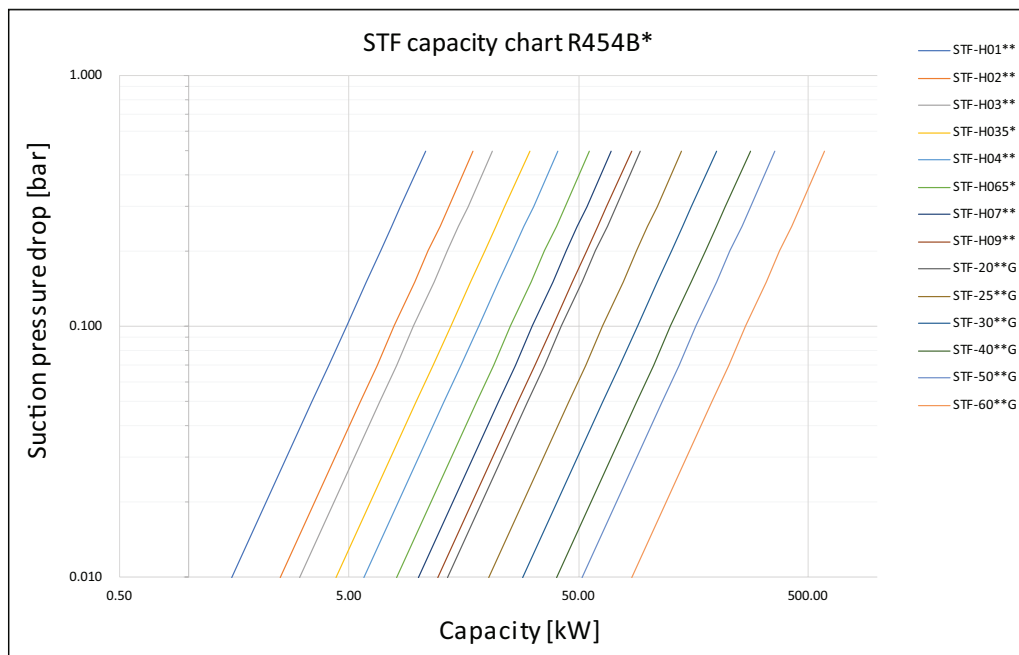
*Capacity calculated for CT 54.4 °C, ET 7.2 °C, SH SK



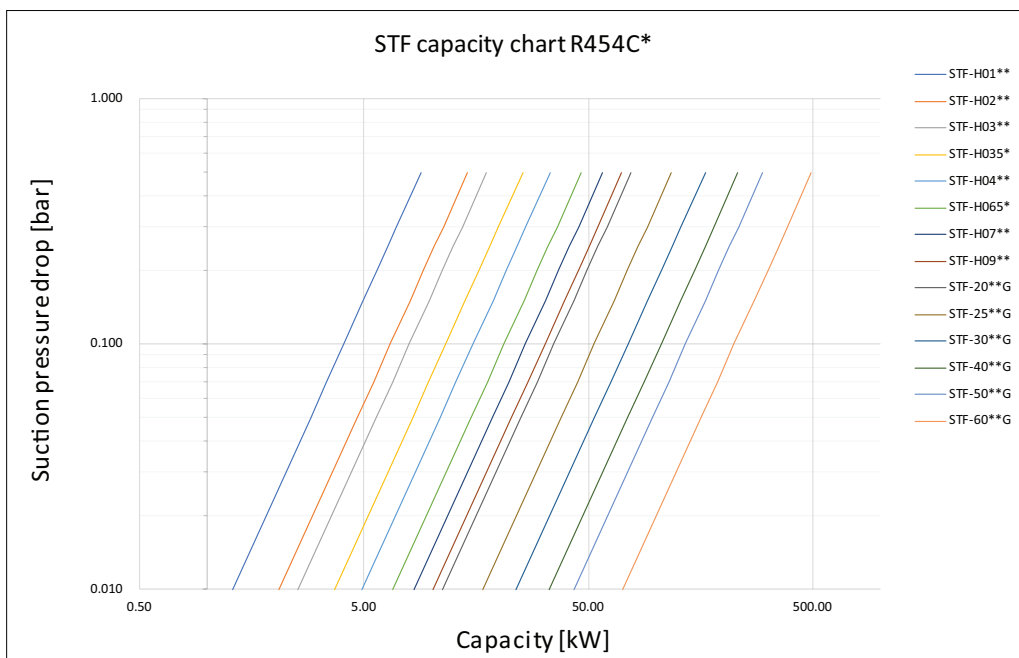
*Capacity calculated for CT 54.4 °C, ET 7.2 °C, SH SK



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*Capacity calculated for CT 54.4 °C, ET 7.2 °C, SH SK

⚠ Note: For capacity charts for other refrigerants, please contact Danfoss.

Certificates and declarations Approvals	The list contains all approvals registered for this product type. Individual code numbers may have some or all of these approvals, some local approvals may not be in the list, and approvals change over time. Check status on www.danfoss.com or contact your local Danfoss representative if in doubt.
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The Danfoss store	<p>Store.danfoss.com with a number of country and regional sites provides access to browsing (and eventually purchasing) products from the Danfoss portfolio within Cooling, Drives, Heating and District Energy, Industrial Automation and High Pressure pumps.</p> <p>The site contains information about products, including technical and commercial data, and gives access to technical documentation, certificates and declarations, and assets such as photos, CAD models and dimensional drawings. For some products you will also find relations to e.g. accessories and spare parts.</p> <p>Information is published on individual code numbers, but may also apply to other code numbers in the portfolio.</p> <p>Code numbers are displayed as a result of either a free text search function, e.g. by Type, product function, code number or by appropriate product attributes, and/or by browsing through catalogues organized by the business portfolios defined above, all supported by a number of filters that allows you to narrow down searches until one or more code numbers are displayed</p>
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