

Ideal system booster with **new generation of Danfoss Scrolls DSH**

Danfoss scrolls DSH and DSF: a proven level of compressor robustness and system reliability

Danfoss has over 20 years of experience in R410A scroll compressors and billions of compressor operating hours in chiller applications worldwide. Building on this knowledge, Danfoss uses advanced statistical tools and psychrometric laboratory tests to study and measure the implications of system operations in critical conditions on compressor reliability. This has enabled Danfoss to enhance compressor durability in many different applications. The generation of DSH (R410A/R452B/R454B) and DSF (R32) Danfoss scrolls includes several innovative features to improve compressor and system robustness which are recognized by many major system manufacturers in Europe.

1. Intermediate Discharge Valves (IDVs) :

reduce the load on mechanical parts at start up, provide safer operation at high condensing and evaporating temperatures and contribute to better liquid management

2. Surface coating on thrust bearing and polymer bearings:

improves compressor robustness in low lubrication conditions (start-up)

3. Organ pipe:

maintains safe oil level at part-load in manifold configurations

4. Integrated Non-Return Valve:

reduces refrigerant migration from high-pressure to low-pressure side after compressor shutdown

For DSH and DSF Large 20 to 50TR (240 to 600):

5. Integrated discharge temperature protection:

prevents operation outside the operating envelope

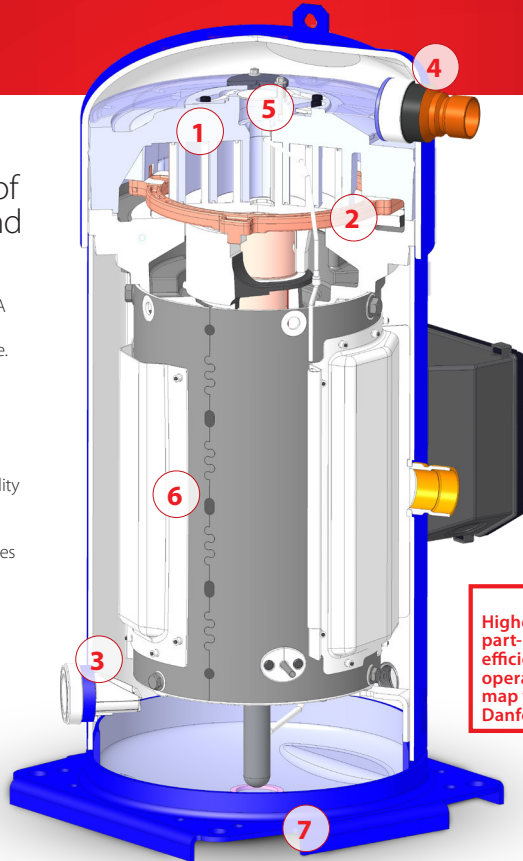
6. Modified gas flow path (Snorkel) and sealed lower bearing:

improves flooded start capabilities and overall compressor robustness against liquid slugs

7. New baseplate:

New baseplate enables to mount the compressor directly on the rails.

Additional Reverse Vent Valve on DSH 090 to DSH 184 and DSF prevent from reversed rotation in case of wrong phase connection



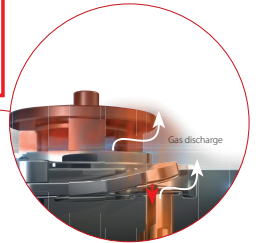
Higher part-load efficiency and operating map with Danfoss IDVs

Higher part-load efficiency with Danfoss IDVs

Danfoss Intermediate Discharge Valves (IDVs) mechanically reduce excessive compression of refrigerant under part-load conditions while maintaining the same cooling capacity. They adapt the effort of the motor to the pressure conditions in the system by opening when the pressure ratio (part-load) fall below the built-in optimization point of the scroll. This reduces the effort of the motor and its electrical consumption thus improving the system's seasonal energy efficiency. IDV technology enhances system efficiency by 10-12% on average in Water-to-Water chillers and by 8-10% in rooftops and 6-8% in Air-to-Water chillers. The compressors are backward compatible with SH range using R410A refrigerant.



Ready for
GWP <750
refrigerants:
R454B, R32



➤ Low Pressure Ratio, part-load, discharge pressure is low, IDVs open

➤ High Pressure Ratio, full load and heating mode, discharge pressure is high, IDVs close

Manifold configurations with Danfoss Scrolls

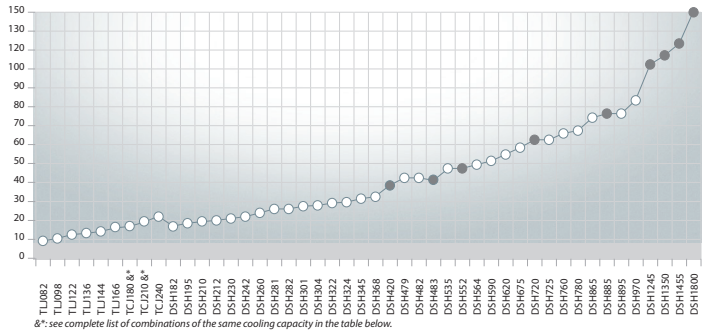
A wide line-up with few compressor models

○ Tandem ● Trio

Cooling capacity in TR @ 60Hz ARI

Rating conditions – R410A

	50 Hz - EN12900	60 Hz - ARI
Evaporating temp.	5°C / 41°F	7.2°C / 45°F
Condensing temp.	50°C / 122°F	54.4°C / 130°F
Super heat:	10K / 18°F	11.1K / 20°F
Sub-cooling:	0K	8.3K / 15°F



&*: see complete list of combinations of the same cooling capacity in the table below.

Manifold configurations enable competitive design costs and staged modulation

Several compressors can be installed in a single system to provide flexible modulated cooling capacity. This approach extends capacity and

performance while maintaining design and applied costs at competitive levels.

Manifold configurations allow a wide system line up with few compressor models. Manifolding also offers a lower sound level compared to alternative technologies.

Our expertise in manifold design enables Danfoss to provide a wide range of potential configurations, from 5 to 150TR in a single circuit.



For full data details, capacity tables or use with other refrigerants, please refer to the Coolselector²: coolselector.danfoss.com

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