

**Beijer Ref India – Danfoss Refrigeration & Air-ConditioningTraining-(2022)** 





# **Scheme of Presentation**

- 1. Range of products RA
- 2. Selection parameters
- 3. Application





### **Company Profile**

Danfoss was founded in 1933, based in Denmark and we have a Head quarters for India in Chennai, Tamil Nadu.

In our India head quarters, they are manufacturing KP 35 and DML Filter driers.





# **Range of Danfoss RA Products**

- 1. Compressor
- 2. Filter Drier
- 3. Thermostatic Expansion Valve / Electronic Expansion valve
- 4. Solenoid Valve (EVR)
- 5. Shut off valve
- 6. Sight Glass / Moisture Indicator
- 7. Oil Separator
- 8. HP/LP cut out switch





### **Range of Danfoss RA Products**

# Typical cooling circuit in commercial refrigeration







#### **Compressor**

#### **Reciprocating – Hermetic Compressors**

- 1. MT R22
- 2. MTZ R22, R407C, R134A, R404A
- 3. NTZ R404A, R134A

#### **Scroll – Hermetic Compressors**

- 1. H Series R22, R407C & R410A
- 2. SM R22
- 3. SY R22, R407C, R134A
- 4. SZ R22, R407C, R134A & R404A
- 5. MLZ R22, R404A, R134A
- 6. LLZ R404A

#### **Refrigerants Used**

- 1. R22 HBP
- 2. R407C HBP/MBP
- 3. R404A MBP/LBP
- 4. R410A HBP
- 5. R134A HBP/MBP





## MT, MTZ & NTZ Nomenclature



Available code numbers are listed section "Ordering information and packaging"





#### **Scroll Working**







### <u>H – Series Nomenclature</u>







## SM, SY & SZ Nomenclature



\* When SM compressors are used with R417A, the factory charged mineral oil 160P must be replaced by polyolester oil 160SZ





### **MLZ & LLZ Nomenclature**







### **MLZ & LLZ Nomenclature**







### **MLZ & LLZ Nomenclature**







# **Selection Parameters**

- 1. Cooling Capacity Kw, BTU/hr, Kcal, Tonnage
- 2. Refrigerant
- 3. Voltage
- 4. Evaporation Temperature
- 5. Condensation Temperature
- 6. Frequency 50 or 60 HZ
- 7. Type Reciprocating or Scroll
- 8. Application





## **Filter Drier**

#### **Description**

- 1. DML R22, R407C, R134A, R404A
- 2. DCL R22, R407C, R134A, R404A
- 3. DCR with Core R22, R407C, R134A, R404A

#### **Selection Parameters**

- 1. Connection Size
- 2. Connection Type (Solder or Flare)
- 3. Refrigerant



#### Note:

The difference between DML and DCL are, DML – 100% molecular seive and DCL – 80% molecular seive and 20% activated alumina





## **Thermostatic Expansion Valve**

#### TGE Ζ S Χ Ν L R22 R407C R134A R404A R410A T/TE 2 Х Ζ S Ν R134A R22 R407C R404A E – External Equalizer Orifice 0X,00, 1 to 6 T/TE Х 7 S Ν 5,12,20,55 R22 R407C R134A R404A Orifice 1 to 13

Fixed Orifice

Exchangeabl e Orifice

Exchangeabl e Orifice & Valve body





#### **Electronic Expansion Valve**

#### **Features:**

1. These valves used to have a precise liquid injection in the evaporators.

2. Supports all refrigerants

3. ETS 50 – ETS 400 is fitted with moisture indicator.

4. The output will be received by electronic controllers like EKC and other brands available in market.







### **Selection Parameters**

- 1. Connection Size
- 2. Cooling Capacity
- 3. Condensation Temperature
- 4. Evaporation Temperature
- 5. Refrigerant





# Solenoid Valve – EVR V2

#### **Features:**

- 1. These valves used to control the flow of refrigerants.
- 2. Supplied in NC & NO versions with deenergised coils.
- 3. Flare connections up to 5/8 in
- 4. Solder connections up to 2 1/8 in ,also available in flange connections.

#### **Selection Parameters:**

- 1. Cooling capacity
- 2. Refrigerant
- 3. Connection type (Solder, flare or flange)
- 4. Coil Voltage







### Shut Off Valve – GBC & BML

#### **Features:**

- 1. To separate the components for service and replacement of components.
- GBC Can be operated the open use close using tools. It has a access port to use gauges.
- 3. BML Can be operated using hand to open or close

#### **Selection Parameters:**

- 1. Connection size
- 2. Connection type



GBC



BML





## **Sight Glass & Moisture Indicator**

#### SGR (Without Indicator)

- 1. Indicates liquid level & Oil level in compressor
- 2. Connection Solder or socket type

#### SGN/SGRN (With N type indicator)

- 1. For Ref R22, R134A, R404A, R407C
- 2. Indicates water content, ref deficiency
- 3. Connection Solder, Flare or Socket.

#### <u>SGI/SGRI</u>

- 1. For Ref R22
- 2. Indicates water content, ref deficiency
- 3. Connection Solder, Flare or Socket.



#### SGI / SGR / SGN





#### **Oil Separator**

#### **Features**

- It is used to return the compressor lubricating oil back to the compressor oil sump.
- 2. To prevent the circulation of the oil with refrigerant.
- 3. Connections Solder / Flare







## **HP/LP Cut Out Switch**

#### **Features**

- 1. It is used to give protection against excessively low suction pressure and high discharge pressure
- 2. It is available in three types.
  - a. HP man / LP auto
  - b. Fully auto
  - c. HP man / LP auto (with indication)







# Thank you