Freezer On Wheels ECZ Compressor

Installation Guideline

Congratulations on purchasing the Emerson Freezer on Wheels compressor for meeting your critical transport application requirement. These are built tough and have a galaxy of leading features.

Compressor Mounting

- There are two mounting options - standard mounting & option no 2.
- Option 2 leg mounting 170 X 70 mm - different grommets are required & can be made available upon request.
- Use compatible grommets & sleeve with M8 or M6 bolts / studs.
- Place all 4 grommets & sleeve in the mounting studs / holes on the base plate.
- Place compressor & ensure all 4 mounting legs rests on the grommets.
- Use correct washer size as per selected bolt /stud (M8 or M6).
- Properly tighten all the 4 bolts with the torque recommended (Usage of lock nut would be helpful).

Standard Mounting
Opt. 1 (101mm X 165mm)

Mounting Opt. 2
(170mm X 70mm)

Terminal Cover Fixing & Wiring

- Fix terminal cover in its position securely after wiring connection.
- Ensure proper routing of electric cables / wires to ensure they do not touch metal parts.
- Do not leave terminal cover open – accessories will get exposed to dust & may result in electrical shock.
- Retain tab In the cover as it holds the relay in place during transportation.
- Ensure proper earthing while recharging FOW machine.

With Cover & Bale Strap
to hold It

Not Recommended

System Processing

- Compressors are checked for pumping with nitrogen/dry air before dispatch. Hence checking the pump function in open air isn't recommended.
- Flush system with dry nitrogen. In absence of nitrogen, flush with refrigerant.
- Leak check with dry nitrogen by charging not more than 200 Psig using nitrogen regulator.
- Deep vacuum up to 250 Microns or less for new as well as retrofit systems.
- Refrigerant charging :
  - Charge refrigerant through liquid port or through process tube & run system to monitor parameters.
  - Measure suction pressure / superheat / amps & adjust the charge accordingly.
  - Maintaining below parameters would further help ensuring healthy system.

System Parameters

Refrigerant	R134a	R404a	R134a	R404a	R134a	R404a
Parameters	**Stage 1 Temp. Pull DOwn**		**Stage 2 Freezing Starts**		**Stage 3 PCM/Glycol is Completely Frozen**	
Suction Pressure (Psig)	9-10	25-30	3-4 Psig	12-16	0-1	8-10
Discharge Pressure (Psig)	160-175	290-300	135-145	250-260	125-13	230-240
Suction Temp. (^{0}C)	22-25	22-25	-2 to -5	-6 to -7	-10 to -12	-19 to -21
Liquid Temp (^{0}C)	43-44	43-44	40-42	40-42	37-39	37-39
Superheat	35 to 39	41 to 45	18 to 20	18 to 20	12 to 15	12 to 15
Sub cooling	4 to 5	4 to 5	1 to 2	1 to 2	0.5 to 1.5	0.5 to 1.5

Tubing Support

- Ensure proper tube looping at suction & discharge sides.
- Retain flexible loop on discharge & suction loop to absorb transport vibrations.
- For discharge tube connection, a small length of straight tube with bigger diameter than discharge tube is recommended between discharge tube and condenser inlet. This helps in absorbing the transport shocks.
- Use thin/ flexible copper tubing (0.027" thick).

Recommended Refrigerant

- Refer compressor name plate for recommended refrigerant.
- Compressor motor, electrical accessories, oil, other internal parts are designed & suitable to work with designed pressures for a specific refrigerant only.
- If a different refrigerant other than mentioned on name plate is used, this may result in abnormal operating conditions like Component wear / breakage, low pumping, noise, high amps and overheating issues.
- Always follow guidelines given in product specification where application envelope and temperatures limits are given.
- If any of the temperatures are out of limit, consult application engineer for more guidelines.

Lubrication & Oil Removal

- The compressor is supplied with initial oil charge. See compressor nameplate.
- The standard oil charge for use with refrigerants R404a & R134a is a polyester (POE) lubricant of 22 CST Grade Emkarate EAL 22 or equivalent.
- POE oil is hygroscopic & absorb moisture rapidly when exposed to ambient for brief period. Hence compressor should not be kept open without plugs or without a positive charge inside a shell for more than 15 mins.
- It is recommended that a properly sized filter-drier is installed in all POE systems.

Trouble Shooting

Not Cooling:

- Check for suction superheat & discharge temp- check for over or under refrigerant charge, ensure positive suction super heat.
- Filter drier /capillary choke or oil choke in evaporator due to low suction pressure – flush system, vacuum & recharge, do not run system after pull down (R 134a refrigerant runs below vacuum beyond -21^{0} C cabinet temp).

High Amps:

- Check - loose electrical connections, proper fitment of relay / protector & capacitors, voltage at compressor terminal.
- Compressor may be running with wrong refrigerant.
- High discharge pressure – ensure proper ventilation & hot air short cycling around condenser.

Noisy Operation:

- Check grommet condition & if compressor mounting bolts are secured tightly.
- Check if Tube is touching metal parts or cabinet.
- Compressor is running with low suction pressure & liquid refrigerant flooding.
- Periodic maintenance : check electrical connections, terminal cover fitting, condenser cleanliness, compressor mounting bolts once in a fortnight.

ASIA10-B0310-R00-11/2017

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