

CHARGING and START-UP

The control circuit should be energized 24 hours before charging and start-up to open the liquid line solenoid and turn on the crankcase heater. This will assist the evacuation and dehydration process and provide additional compressor protection during the charging and start-up.

Charge refrigerant into a system through a filter-drier in the charging line. This provides further assurance the refrigerant charge is clean and dry. The system refrigerant capacity is approximately 80% of the condenser, receiver, and liquid line capacity. If the condenser volume or refrigerant capacity is unknown, the system refrigerant capacity is often calculated at 90% of the receiver and liquid line capacity. Be cautious if the calculated charge is exceeded. Weigh the refrigerant. The actual refrigerant charge should be less than the calculated capacity. **DO NOT charge liquid refrigerant into the suction side of the compressor.**

Be sure the compressor discharge valve is open. The suction valve should be open 2 or 3 turns, with a valve stem wrench attached for quick throttle adjusting. High and low pressure gauges should be attached. Liquid charging is faster. If R-404A or R-507 is used, liquid charging is mandatory. R-404A and R-507 refrigerant cylinders have a dip tube and liquid is charged with the cylinder upright. Break the final vacuum by charging liquid refrigerant into the receiver outlet valve access or the area of liquid line downstream from the receiver outlet.

Approximately 50 to 60% of the system charge can usually be injected into the receiver area before it is necessary to start the compressor for the system to accept more refrigerant. It may be necessary to throttle the compressor suction valve to keep suction pressures reasonable and prevent tripouts during charging and pull-down. If it is necessary to add liquid refrigerant to the suction side, a full control ball valve must be used in the charging line to slowly meter refrigerant vapor into the system.

If the condensing temperature is 105°F or greater, charge the system until the sight glass just clears, being careful not overcharge. If the condensing temperature is below 105°F, a part of the condenser coil can be blocked to raise the condensing temperature to 105°F. Be careful not

to block the air blast against the compressor. This procedure satisfies systems with floating head pressure control. Follow the same procedure for systems with low-ambient flooded condenser head pressure control.

With 105°F condensing temperature, charge until the sight glass just clears. Then accurately weigh in the additional pounds of refrigerant specified in the chart on page 19. There is also a charging tag on the unit. The pounds specified on the tag supercedes this IOM. This will provide adequate charge for all ambient operation. The actual charge should not exceed the calculated systems capacity. After system charging and room pull-down is complete, test the ability of the system to successfully pump down. Raise the room thermostat setting to close the liquid solenoid. The system must pumpdown and shut off at the low pressure cutout setting. See Table 13.

Unblock the condenser coil and return the room thermostat to the desired setting.

The first two to three hours of operation after start-up is a critical time. Do not just start-up and walk away. Watch for floodback and adjust the expansion valve if necessary. Observe system pressures. Check all fans on the evaporator and condensing unit to be sure they are operational and turning the proper direction. Record the pounds of refrigerant charged into the system. Check the compressor oil level frequently. On low temperature systems the fan delay control may cycle the evaporator fans. To keep the fans on until the room pulls down, it may be necessary to jumper the fan delay control.

Check voltage and amperage at the compressor. Voltage must be within 10% of the specplate rating. Amperage should be approximately equal across all three lines. Check the piping for vibration and add supports if needed. Check electrical conduit for vibration and route to prevent contact with tubing.

Use the Start-Up Check List on page 24 to assist you. Don't forget to remove the fan delay jumper if one was used. Also, fully open the suction valve. After the room has pulled down to design temperature and held for 24 hours, review the system guidelines on page 23 and complete a system service record on page 25.

POUNDS OF ADDITIONAL REFRIGERANT CHARGE TO ADD FOR FLOODED HEAD PRESSURE CONTROL

Table 12

MiniCon 1/2 - 6 HP		MiniCon 1/2 - 6 HP		D - Series 3 - 22 HP		V - Series 20 - 80 HP	
Model MLH	Lbs. to Add	Model MLS	Lbs. to Add	Model DLD	Lbs. to Add	Model VLD	Lbs. to Add
H051H22	2.5	S050H22	1.3	3L22	9.5	SINGLE	
H050M44	2.2	S050M44	1.1	3L44	8.2	20H22	58
H050L44	2.2	S050L22	1.3	4L22	14.3	20M44	50
H075H22	2.5	S050L44	1.1	4L44	12.3	25H22	78
H075M44	3.2	S075H22	2.5	5H22	14.3	25M44	67
H075L44	3.2	S075L22	2.5	5M44	16.4	27L22	58
H100H22	3.8	S075L44	3.2	5L22	14.3	27L44	50
H100L44	3.2	S100H22	3.8	5L44	12.3	30H22	98
H101M44	4.3	S100M44	4.3	6M44	23.0	30M44	84
H150H22	5.0	S100L22	3.8	6L22	14.3	30L22	58
H150M44	4.3	S100L44	3.2	6L44	12.3	30L44	50
H150L44	4.3	S150H22	5.0	7H22	27.0	35H22	115
H200H22	7.5	S150L44	4.3	7M44	23.0	35M44	99
H201M44	8.6	S200H22	7.5	8H22	27.0	40H22	144
H200L44	6.5	S200M44	6.5	8M44	23.0	40M44	124
H250H22	7.5	S200L22	7.5	8L22	27.0	50H22	156
H300H22	12.4	S200L44	6.5	8L44	23.0	50M44	134
H300M44	10.6	S201L22	7.5	9L22	27.0	60H22	195
H300L44	10.6	S202L22	7.5	9L44	23.0	60M44	168
H400H22	12.4	S250L44	7.1	10H22	44.0	PARALLEL	
H400M44	10.6	S300H22	8.3	10M44	38.0	17H22	58
H500H22	16.5	S300M44	7.1	10L22	27.0	17M44	50
H500M44	14.2	S300L22	8.3	10L44	23.0	21H22	78
MLD		S300L44	7.1	12H22	44.0	21M44	67
D300L22	12.4	S400H22	12.4	12M44	38.0	24H22	98
D300L44	10.6	S400M22	12.4	12L22	27.0	24M44	84
D400L22	12.4	S400M44	10.6	12L44	23.0	31H22	86
D400L44	10.6	S500H22	16.5	15H22	54.0	31M44	74
D500H22	16.5	S500M22	16.5	15M44	46.0	41H22	115
D500M44	14.2			15L22	44.0	41M44	99
D500L22	12.4			15L44	38.0	44L44	74
D500L44	10.6			22L22	54.0	51H22	117
				22L44	46.0	51M44	101
						54L44	99
						61H22	195
						61M44	168
						61L44	124
						71H22	173
						71M44	149
						81H22	231
						81H22	198

CHARGING STEPS - (See Page 18)

1. Charge as necessary to achieve a clear sight glass, with the air intake to the condenser blocked, to maintain a minimum 200 psi head pressure. This will prevent gas from by passing through the flood valve. **DO NOT OVERCHARGE!** Just clear the glass.
2. Add the exact amount of refrigerant shown in this table of the model being charged. This will provide the system the charge it requires for all weather, flooded, operation.