

Owner:	Date:
Phone:	Mueller® Dealer:
Email:	Phone:
	Email:

Milk Cooler Information

Size:	Model:	Milk Cooler Piping:	☐ Single Unit	☐ Dual Unit
Serial No.			☐ Triple Unit	☐ Quad Unit

Fre-Heater® Heat Recovery Device

Brand:	Size in Gallons:
Model:	Distance from Units (Feet):
Refrigeration Inlet Line Size (Inches OD):	Refrigeration Outlet Line Size (Inches OD):

Condensing Unit(s) Information

Note: Viewed left (L) and right (R) from the rear of the cooler.

Horsepower (Bottom)	L:	R:	Horsepower (Sides)	L:	R:
Model (Bottom)	L:	R:	Model (Sides)	L:	R:
Serial No. (Bottom)	L:	R:	Serial No. (Sides)	L:	R:
Electrical Char. (Volt/Phase/Hertz)	L:	R:	Electrical Char. (Volt/Phase/Hertz)	L:	R:
Wire Size and Length (Feet)	L:	R:	Wire Size and Length (Feet)	L:	R:
Breaker Size (Ampere)	L:	R:	Breaker Size (Ampere)	L:	R:
Suction Line (Diameter–Length)	L:	R:	Suction Line (Diameter–Length)	L:	R:
Liquid Line (Diameter–Length)	L:	R:	Liquid Line (Diameter–Length)	L:	R:

Note: Attach a simple sketch of refrigerant piping showing number of fittings, riser lengths, and location of valves and filter-driers.

Condensing Unit(s) Location

Size of Vent (Inches):	☐ Inside	☐ Outside
Type of Screen: ☐ Louvered ☐ Screened	Side of Building:	☐ North ☐ South ☐ East ☐ West
Exhaust Fan Size (Inches):	Condenser Air Flow Direction:	☐ North ☐ South
Exhaust Fan CFM:		☐ East ☐ West

Note: Attach a simple sketch of unit location.

Milking Information

Survey Taken On:	☐ First Milking ☐ Second Milking	Amount of Milk in Cooler (lbs):
	☐ Third Milking ☐ Fourth Milking	Amount of Milk Added This Milking (lbs):

Milk Cooler Thermometer Reading

Beginning of Survey (°F):	Time Milking Started:	☐ a.m. ☐ p.m.
End of Survey (°F):	Time Agitator Starts:	☐ a.m. ☐ p.m.
Peak Blend Temperature While Milk is Being Added (°F):	Time Compressor Starts:	☐ a.m. ☐ p.m.
Compressor Stops (°F):	Time Milking Stops:	☐ a.m. ☐ p.m.
Amount of Refrigerant Charge (lbs):	Time Compressor Stops:	☐ a.m. ☐ p.m.
R-22 Checked by Weigh-In/Weigh-Out Method: ☐ Yes ☐ No		

R-22 Pressure Temperature Chart											
psig	°F	psig	°F	psig	°F	psig	°F	psig	°F	psig	°F
0	-41.45	71	41.65	142	79.28	213	105.7	284	126.6	355	144.1
1	-38.91	72	42.32	143	79.71	214	106.0	285	126.9	356	144.3
2	-36.49	73	42.98	144	80.13	215	106.4	286	127.1	357	144.5
3	-34.18	74	43.64	145	80.56	216	106.7	287	127.4	358	144.7
4	-31.97	75	44.29	146	80.98	217	107.0	288	127.7	359	145.0
5	-29.85	76	44.94	147	81.40	218	107.3	289	127.9	360	145.2
6	-27.81	77	45.59	148	81.82	219	107.6	290	128.2	361	145.4
7	-25.85	78	46.22	149	82.24	220	108.0	291	128.4	362	145.6
8	-23.96	79	46.85	150	82.65	221	108.3	292	128.7	363	145.9
9	-22.13	80	47.48	151	83.07	222	108.6	293	129.0	364	146.1
10	-20.36	81	48.10	152	83.48	223	108.9	294	129.2	365	146.3
11	-18.65	82	48.72	153	83.89	224	109.2	295	129.5	366	146.5
12	-16.99	83	49.33	154	84.30	225	109.5	296	129.7	367	146.8
13	-15.37	84	49.94	155	84.70	226	109.9	297	130.0	368	147.0
14	-13.80	85	50.55	156	85.11	227	110.2	298	130.3	369	147.2
15	-12.27	86	51.15	157	85.51	228	110.5	299	130.5	370	147.4
16	-10.78	87	51.74	158	85.91	229	110.8	300	130.8	371	147.7
17	-9.332	88	52.33	159	86.31	230	111.1	301	131.0	372	147.9
18	-7.914	89	52.92	160	86.70	231	111.4	302	131.3	373	148.1
19	-6.530	90	53.50	161	87.10	232	111.7	303	131.5	374	148.3
20	-5.176	91	54.08	162	87.49	233	112.0	304	131.8	375	148.5
21	-3.853	92	54.65	163	87.89	234	112.3	305	132.1	376	148.8
22	-2.558	93	55.22	164	88.28	235	112.6	306	132.3	377	149.0
23	-1.289	94	55.78	165	88.67	236	112.9	307	132.6	378	149.2
24	-0.046	95	56.35	166	89.05	237	113.2	308	132.8	379	149.4
25	1.172	96	56.90	167	89.44	238	113.5	309	133.1	380	149.6
26	2.368	97	57.46	168	89.82	239	113.8	310	133.3	381	149.8
27	3.540	98	58.01	169	90.21	240	114.1	311	133.6	382	150.1
28	4.692	99	58.56	170	90.59	241	114.4	312	133.8	383	150.3
29	5.823	100	59.10	171	90.97	242	114.7	313	134.1	384	150.5
30	6.935	101	59.64	172	91.35	243	115.0	314	134.3	385	150.7
31	8.027	102	60.18	173	91.72	244	115.3	315	134.6	386	150.9
32	9.102	103	60.71	174	92.10	245	115.6	316	134.8	387	151.1
33	10.16	104	61.24	175	92.47	246	115.9	317	135.1	388	151.3
34	11.20	105	61.76	176	92.84	247	116.2	318	135.3	389	151.6
35	12.22	106	62.29	177	93.21	248	116.5	319	135.6	390	151.8
36	13.23	107	62.81	178	93.58	249	116.8	320	135.8	391	152.0
37	14.23	108	63.32	179	93.95	250	117.1	321	136.0	392	152.2
38	15.21	109	63.84	180	94.32	251	117.4	322	136.3	393	152.4
39	16.17	110	64.35	181	94.68	252	117.7	323	136.5	394	152.6
40	17.12	111	64.86	182	95.05	253	118.0	324	136.8	395	152.8
41	18.06	112	65.36	183	95.41	254	118.3	325	137.0	396	153.0
42	18.99	113	65.86	184	95.77	255	118.6	326	137.3	397	153.2
43	19.90	114	66.36	185	96.13	256	118.8	327	137.5	398	153.5
44	20.80	115	66.86	186	96.49	257	119.1	328	137.7	399	153.7
45	21.69	116	67.35	187	96.85	258	119.4	329	138.0	400	153.9
46	22.57	117	67.84	188	97.20	259	119.7	330	138.2	401	154.1
47	23.44	118	68.33	189	97.56	260	120.0	331	138.5	402	154.3
48	24.29	119	68.81	190	97.91	261	120.3	332	138.7	403	154.5
49	25.14	120	69.29	191	98.26	262	120.6	333	138.9	404	154.7
50	25.98	121	69.77	192	98.61	263	120.8	334	139.2	405	154.9
51	26.81	122	70.25	193	98.96	264	121.1	335	139.4	406	155.1
52	27.62	123	70.72	194	99.31	265	121.4	336	139.7	407	155.3
53	28.43	124	71.19	195	99.66	266	121.7	337	139.9	408	155.5
54	29.23	125	71.66	196	100.0	267	122.0	338	140.1	409	155.7
55	30.02	126	72.13	197	100.3	268	122.2	339	140.4	410	155.9
56	30.81	127	72.59	198	100.7	269	122.5	340	140.6	411	156.2
57	31.58	128	73.05	199	101.0	270	122.8	341	140.8	412	156.4
58	32.35	129	73.51	200	101.4	271	123.1	342	141.1	413	156.6
59	33.10	130	73.97	201	101.7	272	123.3	343	141.3	414	156.8
60	33.85	131	74.43	202	102.1	273	123.6	344	141.5	415	157.0
61	34.60	132	74.88	203	102.4	274	123.9	345	141.8	416	157.2
62	35.33	133	75.33	204	102.7	275	124.2	346	142.0	417	157.4
63	36.06	134	75.78	205	103.1	276	124.4	347	142.2	418	157.6
64	36.78	135	76.22	206	103.4	277	124.7	348	142.5	419	157.8
65	37.50	136	76.66	207	103.7	278	125.0	349	142.7	420	158.0
66	38.20	137	77.11	208	104.1	279	125.2	350	142.9	421	158.2
67	38.90	138	77.54	209	104.4	280	125.5	351	143.2	422	158.4
68	39.60	139	77.98	210	104.7	281	125.8	352	143.4	423	158.6
69	40.29	140	78.42	211	105.1	282	126.1	353	143.6	424	158.8
70	40.97	141	78.85	212	105.4	283	126.3	354	143.8	425	159.0

REFRIGERANT CHARGE (R-22)			
Unit HP	Tri-Plate / Fre-Heater®	HPF Air-Cooled Units¹	E-Star® OHSE¹
3 HP	10.0 lbs	11.5 lbs	–
3 HP²	–	9.5 lbs	–
3.5 OHSE	–	–	13.5 lbs
4 HPF	12.0 lbs	16.0 lbs	–
5 HPF(S)	14.0 lbs	19.0 lbs	–
5 OHSE	–	–	15.0 lbs
7.5 OHSE	–	–	30.0 lbs
10 OHSE	–	–	34.0 lbs

¹Refrigerant charge is the same with or without Model “D” Fre-Heater.

²Three horsepower units with small condenser (34” x 20”).

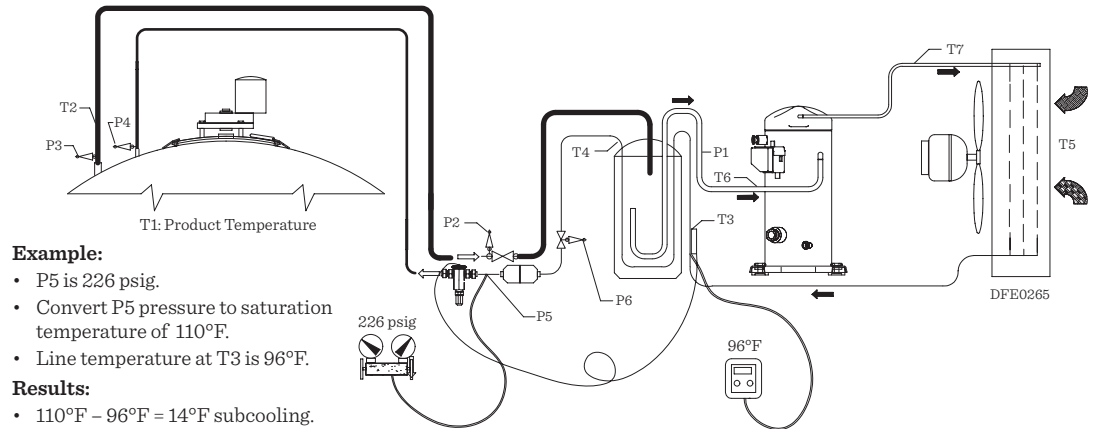
SUBCOOLING VALVE SELECTION (R-22)		
Unit HP	Part No.	Subcooling Valve No.
3 HPF	8822369	BS94541-OA
3.5 OHSE	8822369	BS94541-OA
4 HPF	8822369	BS94541-OA
5 HPF(S)	8822106	BS94555-OA
5 OHSE	8822106	BS94555-OA
7.5 OHSE	8823805	BS99067-**-78
10 OHSE	8824398	BS99067-**-67.8

(S) Denotes scroll compressor models.

MODEL OE REFRIGERANT VALVE CHART (R-22)		
Unit HP	Part No.	Expansion Valve No.
3 OE	8824490	AAE-3HC/FBVE-3-**-
3.5 OESE	8824490	AAE-4HW/FBVE-3-**-
4 OE	8824491	AAE-4HC/FBVE-4-**-
5 OESE	8824492	AAE-5HW/FBVE-5-**-
7.5 OESE	N/A	573-SVE-5-**-

(S) Denotes scroll compressor models.

HiPerForm® Subcooling Measurement



Example:

- P5 is 226 psig.
- Convert P5 pressure to saturation temperature of 110°F.
- Line temperature at T3 is 96°F.

Results:

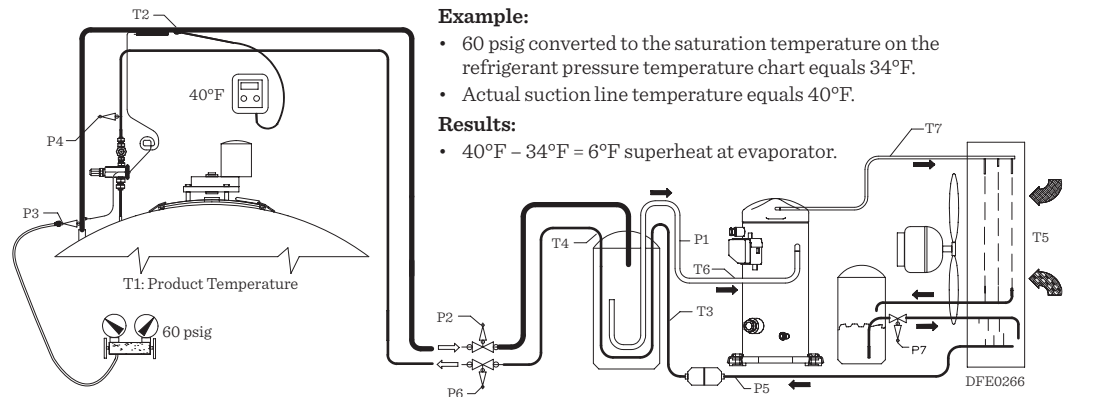
- 110°F – 96°F = 14°F subcooling.

Instructions:

1. Determine the high-side pressure at P5 with an accurate gauge.
2. From the refrigerant pressure temperature chart, determine the saturation temperature of the high-side pressure.
3. Measure the temperature of the high-side liquid at the subcooling valve remote bulb location T3.
4. Subtract the temperature measured in step 3 from the saturation temperature read from the chart in step 2. The difference is the amount of subcooled refrigerant.

Note: The above readings must be taken with the evaporator completely covered with milk or water at a product temperature below 45°F, and a condensing temperature of at least 95°F.

Model OESE Superheat Measurement



Example:

- 60 psig converted to the saturation temperature on the refrigerant pressure temperature chart equals 34°F.
- Actual suction line temperature equals 40°F.

Results:

- 40°F – 34°F = 6°F superheat at evaporator.

Instructions:

1. Determine the suction pressure with an accurate gauge at the evaporator outlet P3.
2. From the refrigerant pressure temperature chart, determine the saturation temperature at the observed suction pressure.
3. Measure the temperature of the suction gas at the expansion valve remote bulb location T2.
4. Subtract the saturation temperature read from the chart in step 2 from the temperature measured in step 3. The difference is the superheat of suction gas.

Note: The above readings must be taken with the evaporator completely covered with milk or water at a product temperature below 45°F, and a condensing temperature of at least 95°F.

TEMPERATURE READINGS

- T1: Milk temperature
T2: Suction line temperature at evaporator outlet
T3: Line temperature at accumulator inlet/subcooling valve bulb
T4: Line temperature at accumulator outlet
T5: Ambient temperature entering condenser
T6: Suction line temperature entering compressor
T7: Compressor discharge temperature

PRESSURE READINGS

- P1: Suction pressure at compressor inlet
P2: Suction pressure at accumulator inlet
P3: Suction pressure at evaporator outlet
P4: Pressure at evaporator inlet or TXV inlet
P5: Pressure at subcooling valve inlet (HiPerForm® units)
P5: Pressure at filter-drier inlet (OESE® units)
P6: Pressure at liquid line service valve
P7: Pressure at receiver outlet (OESE units only)

- SH: Superheat is the suction pressure @ P3 converted to a temperature and subtracted from T2
SC: Subcooling is the pressure @ P5 converted to a temperature minus the temperature @ T3
E-T: Evaporator temperature
C-T: Condensing temperature

Survey Data to be Recorded by Technician

[illegible]

¹Take a setup reading before starting the test.

²Take a reading at five-minute intervals.

³Take voltage readings at the start, in the middle, and at the end of test.