

Owner: _____

Phone: _____

Email: _____

Milk Cooler Information

Size: _____ Model: _____

Serial No. _____

Date: _____

Mueller® Dealer: _____

Phone: _____

Email: _____

Milk Cooler Piping: ☐ Single Unit ☐ Dual Unit
☐ Triple Unit ☐ Quad Unit

Fre-Heater® Heat Recovery Device

Brand: _____

Model: _____

Refrigeration Inlet Line Size (cm OD): _____

Size in Gallons: _____

Distance from Units (meters): _____

Refrigeration Outlet Line Size (cm 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 (meters)	L:	R:	Wire Size and Length (meters)	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 (cm): _____

Type of Screen: ☐ Louvered ☐ Screened

Exhaust Fan Size (cm): _____

Exhaust Fan CFM: _____

☐ Inside ☐ Outside

Side of Building: ☐ North ☐ South ☐ East ☐ West

Condenser Air Flow Direction: ☐ North ☐ South
☐ East ☐ West

Note: Attach a simple sketch of unit location.

Milking Information

Survey Taken On: ☐ First Milking ☐ Second Milking
☐ Third Milking ☐ Fourth Milking

Amount of Milk in Cooler (kg): _____

Amount of Milk Added This Milking (kg): _____

Milk Cooler Thermometer Reading

Beginning of Survey (°C): _____

End of Survey (°C): _____

Peak Blend Temperature While Milk is Being Added (°C): _____

Compressor Stops (°C): _____

Amount of Refrigerant Charge (kg): _____

R-507 Checked by Weigh-In/Weigh-Out Method: ☐ Yes ☐ No

Time Milking Started: ☐ a.m. ☐ p.m.

Time Agitator Starts: ☐ a.m. ☐ p.m.

Time Compressor Starts: ☐ a.m. ☐ p.m.

Time Milking Stops: ☐ a.m. ☐ p.m.

Time Compressor Stops: ☐ a.m. ☐ p.m.

R-507 Pressure Temperature Chart

psig	°C	psig	°C	psig	°C	psig	°C	psig	°C	psig	°C	psig	°C
0	-46.73	71	-1.93	142	18.50	213	32.72	284	43.84	355	52.95	426	60.73
1	-45.37	72	-1.57	143	18.72	214	32.89	285	43.95	356	53.06	427	60.84
2	-44.08	73	-1.21	144	18.96	215	33.06	286	44.11	357	53.17	428	60.95
3	-42.85	74	-0.85	145	19.18	216	33.24	287	44.23	358	53.28	429	61.06
4	-41.67	75	-0.49	146	19.41	217	33.41	288	44.39	359	53.45	430	61.17
5	-40.54	76	-0.14	147	19.64	218	33.58	289	44.50	360	53.56	431	61.28
6	-39.45	77	0.21	148	19.87	219	33.75	290	44.67	361	53.67	432	61.34
7	-38.40	78	0.55	149	20.10	220	33.92	291	44.78	362	53.78	433	61.45
8	-37.39	79	0.89	150	20.32	221	34.09	292	44.95	363	53.89	434	61.56
9	-36.41	80	1.23	151	20.54	222	34.26	293	45.06	364	54.00	435	61.67
10	-35.46	81	1.57	152	20.76	223	34.43	294	45.23	365	54.12	436	61.78
11	-34.54	82	1.91	153	20.99	224	34.60	295	45.34	366	54.23	437	61.84
12	-33.65	83	2.24	154	21.21	225	34.77	296	45.45	367	54.34	438	61.95
13	-32.78	84	2.57	155	21.42	226	34.94	297	45.61	368	54.45	439	62.06
14	-31.94	85	2.90	156	21.64	227	35.10	298	45.73	369	54.56	440	62.17
15	-31.11	86	3.23	157	21.86	228	35.27	299	45.89	370	54.73	441	62.28
16	-30.31	87	3.55	158	22.07	229	35.44	300	46.00	371	54.84	442	62.34
17	-29.53	88	3.87	159	22.29	230	35.60	301	46.17	372	54.95	443	62.45
18	-28.77	89	4.19	160	22.51	231	35.76	302	46.28	373	55.06	444	62.56
19	-28.02	90	4.51	161	22.72	232	35.93	303	46.39	374	55.17	445	62.67
20	-27.30	91	4.82	162	22.93	233	36.09	304	46.56	375	55.28	446	62.78
21	-26.58	92	5.13	163	23.15	234	36.25	305	46.67	376	55.39	447	62.84
22	-25.89	93	5.44	164	23.35	235	36.42	306	46.84	377	55.50	448	62.95
23	-25.20	94	5.75	165	23.56	236	36.58	307	46.95	378	55.62	449	63.06
24	-24.53	95	6.06	166	23.77	237	36.74	308	47.06	379	55.73	450	63.17
25	-23.87	96	6.36	167	23.98	238	36.90	309	47.23	380	55.84	451	63.23
26	-23.22	97	6.66	168	24.19	239	37.06	310	47.34	381	55.95	452	63.34
27	-22.59	98	6.96	169	24.40	240	37.22	311	47.50	382	56.06	453	63.45
28	-21.97	99	7.26	170	24.60	241	37.38	312	47.61	383	56.17	454	63.56
29	-21.36	100	7.55	171	24.81	242	37.54	313	47.73	384	56.28	455	63.62
30	-20.76	101	7.85	172	25.01	243	37.70	314	47.89	385	56.39	456	63.73
31	-20.17	102	8.13	173	25.21	244	37.84	315	48.00	386	56.50	457	63.84
32	-19.59	103	8.42	174	25.41	245	38.00	316	48.11	387	56.62	458	63.95
33	-19.02	104	8.71	175	25.61	246	38.17	317	48.28	388	56.73	459	64.01
34	-18.45	105	9.00	176	25.81	247	38.34	318	48.39	389	56.84	460	64.12
35	-17.90	106	9.28	177	26.01	248	38.50	319	48.50	390	56.95	461	64.23
36	-17.35	107	9.56	178	26.21	249	38.61	320	48.67	391	57.06	462	64.28
37	-16.81	108	9.85	179	26.41	250	38.78	321	48.78	392	57.17	463	64.39
38	-16.28	109	10.12	180	26.61	251	38.95	322	48.89	393	57.28	464	64.51
39	-15.76	110	10.40	181	26.81	252	39.11	323	49.00	394	57.39	465	64.62
40	-15.25	111	10.67	182	27.00	253	39.28	324	49.17	395	57.50	466	64.67
41	-14.74	112	10.95	183	27.20	254	39.39	325	49.28	396	57.62	467	64.78
42	-14.23	113	11.22	184	27.39	255	39.56	326	49.39	397	57.73	468	64.89
43	-13.74	114	11.49	185	27.59	256	39.73	327	49.56	398	57.84	469	64.95
44	-13.25	115	11.76	186	27.77	257	39.89	328	49.67	399	57.89	470	65.06
45	-12.77	116	12.03	187	27.97	258	40.00	329	49.78	400	58.00	471	65.17
46	-12.30	117	12.30	188	28.16	259	40.17	330	49.89	401	58.12	472	65.23
47	-11.82	118	12.56	189	28.35	260	40.34	331	50.06	402	58.23	473	65.34
48	-11.36	119	12.82	190	28.54	261	40.45	332	50.17	403	58.34	474	65.45
49	-10.90	120	13.08	191	28.73	262	40.61	333	50.28	404	58.45	475	65.56
50	-10.45	121	13.34	192	28.92	263	40.78	334	50.39	405	58.56	476	65.62
51	-10.00	122	13.60	193	29.10	264	40.89	335	50.56	406	58.67	477	65.73
52	-9.55	123	13.86	194	29.29	265	41.06	336	50.67	407	58.78	478	65.84
53	-9.11	124	14.11	195	29.48	266	41.23	337	50.78	408	58.89	479	65.89
54	-8.68	125	14.37	196	29.66	267	41.34	338	50.89	409	59.00	480	66.01
55	-8.25	126	14.62	197	29.85	268	41.50	339	51.00	410	59.12	481	66.12
56	-7.82	127	14.87	198	30.03	269	41.67	340	51.17	411	59.17	482	66.17
57	-7.41	128	15.12	199	30.21	270	41.78	341	51.28	412	59.28	483	66.28
58	-6.99	129	15.37	200	30.40	271	41.95	342	51.39	413	59.39	484	66.39
59	-6.58	130	15.62	201	30.58	272	42.11	343	51.50	414	59.50	485	66.45
60	-6.17	131	15.87	202	30.76	273	42.23	344	51.62	415	59.62	486	66.56
61	-5.77	132	16.11	203	30.94	274	42.39	345	51.78	416	59.73	487	66.67
62	-5.37	133	16.36	204	31.12	275	42.50	346	51.89	417	59.84	488	66.73
63	-4.97	134	16.60	205	31.30	276	42.67	347	52.00	418	59.95	489	66.84
64	-4.58	135	16.84	206	31.48	277	42.84	348	52.12	419	60.00	490	66.89
65	-4.19	136	17.08	207	31.66	278	42.95	349	52.23	420	60.12	491	67.01
66	-3.81	137	17.32	208	31.84	279	43.11	350	52.34	421	60.23	492	67.12
67	-3.43	138	17.56	209	32.01	280	43.23	351	52.50	422	60.34	493	67.17
68	-3.05	139	17.79	210	32.19	281	43.39	352	52.62	423	60.45	494	67.28
69	-2.67	140	18.02	211	32.37	282	43.50	353	52.73	424	60.56	495	67.39
70	-2.31	141	18.26	212	32.54	283	43.67	354	52.84	425	60.67	496	67.45

STARTING REFRIGERANT CHARGE (R-507)	
Unit HP	E-Star® OHSE¹
3.5 OHSE	13.5 lbs/6.12 kg
5 OHSE	15.0 lbs/6.80 kg
7.5 OHSE	25.0 lbs/11.34 kg
9 OHSE	25.0 lbs/11.34 kg

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

MECHANICAL SUBCOOLING VALVE SELECTION (R-507)		
Unit HP	Part No.	Subcooling Valve No.
3.5 OHSE	8823910	Y1227-BS945-41
5.0 OHSE	8823905	Y1227-BS945-55
7.5 OHSE*	8823808	CS99067
7.5 OHSE**	8823806	CS99038
10 OHSE*	N/A	N/A
10 OHSE**	8823808	CS99067

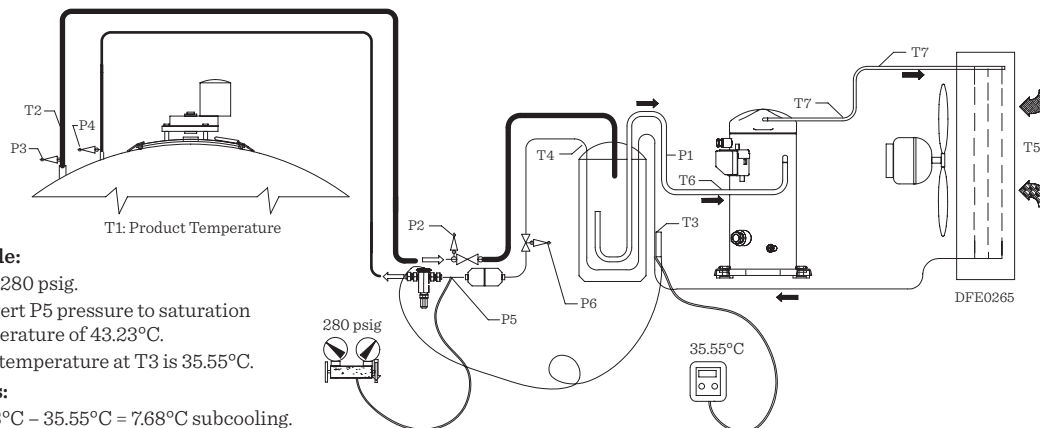
* 60 hz applications only.

** 50 hz applications only.

ELECTRONIC SUBCOOLING VALVE SELECTION (R-507)		
Unit HP	Part No.	Subcooling Valve No.
3.5 OHSE	8826763	SER-6
5.0 OHSE	8826764	SER-11
7.5 OHSE	8826764	SER-11
9 OHSE	8826765	SER-20

MODEL OE REFRIGERANT VALVE CHART (R-507)		
Unit HP	Part No.	Expansion Valve No.
3.5 OESE	8825505	FBPE-3 ½
5.0 OESE	8825503	FBPE-4 ½
7.5 OESE	8825842	Y573-SPE-8-PC
9 OESE	8825840	Y573-SPE-10-PC

HiPerForm® Subcooling Measurement



Example:

- P5 is 280 psig.
- Convert P5 pressure to saturation temperature of 43.23°C.
- Line temperature at T3 is 35.55°C.

Results:

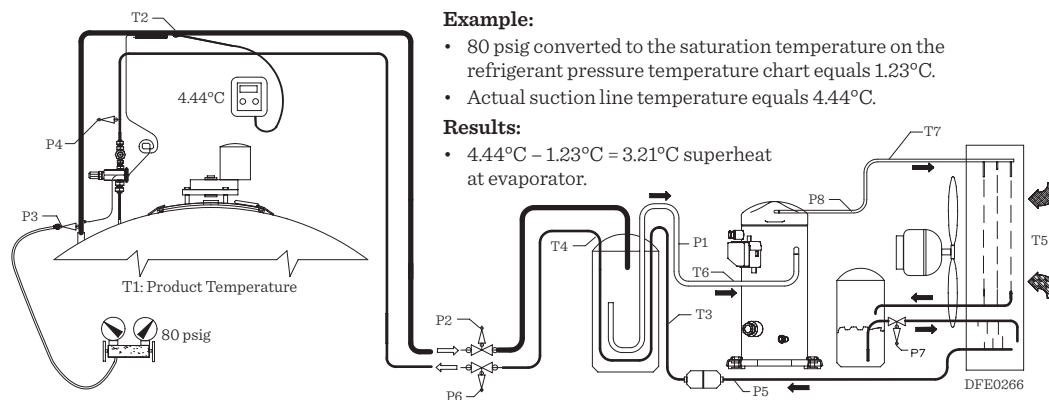
- $43.23^{\circ}\text{C} - 35.55^{\circ}\text{C} = 7.68^{\circ}\text{C}$ subcooling.

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 7°C, and a condensing temperature of at least 35°C for proper setup of system. For the pull-down test, begin readings at the start of testing until product is pulled down to desired temperature and record volume.

Model OESE Superheat Measurement



Example:

- 80 psig converted to the saturation temperature on the refrigerant pressure temperature chart equals 1.23°C.
- Actual suction line temperature equals 4.44°C.

Results:

- $4.44^{\circ}\text{C} - 1.23^{\circ}\text{C} = 3.21^{\circ}\text{C}$ 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 7°C, and a condensing temperature of at least 35°C.

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)
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.