STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for SW

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	20.000	Add Flow / Climate Change (%)	0
Ratio R	0.450	Minimum Backdrop Height (m)	0.000
Maximum Rainfall (mm/hr)	550	Maximum Backdrop Height (m)	0.000
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for SW

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.135	4-8	0.182	8-12	0.003

Total Area Contributing (ha) = 0.320

Total Pipe Volume (m³) = 26.325

Network Design Table for SW

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	18.505	0.115	160.9	0.046	5.00	0.0	0.600	o	225	Pipe/Conduit	
1.001	43.288	0.177	244.6	0.045	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.002	13.585	0.042	323.5	0.044	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.003	33.651	0.103	326.7	0.033	0.00	0.0	0.600	o	375	Pipe/Conduit	
2.000	36.846	0.223	165.2	0.059	5.00	0.0	0.600	o	225	Pipe/Conduit	
2.001	24.690	0.164	150.5	0.008	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.004	36.916	0.091	405.7	0.045	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.005	6.778	0.017	398.7	0.004	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.006	6.778	0.020	338.9	0.036	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.007	37.890	0.150	252.6	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.008	4.500	0.015	300.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.009	5.441	0.040	136.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	72.74	5.30	12.390	0.046	0.0	0.0	0.0	1.03	40.9	9.1
1.001	68.57	6.02	12.200	0.091	0.0	0.0	0.0	1.00	70.7	16.9
1.002	67.37	6.25	11.948	0.135	0.0	0.0	0.0	1.00	110.7	24.6
1.003	64.58	6.81	11.906	0.168	0.0	0.0	0.0	1.00	110.1	29.4
2.000	70.90	5.61	12.340	0.059	0.0	0.0	0.0	1.01	40.3	11.3
2.001	68.72	5.99	12.117	0.067	0.0	0.0	0.0	1.06	42.3	12.5
1.004	61.81	7.42	11.728	0.280	0.0	0.0	0.0	1.00	159.5	46.9
1.005	61.34	7.53	11.637	0.284	0.0	0.0	0.0	1.01	160.9	47.2
1.006	60.91	7.64	11.620	0.320	0.0	0.0	0.0	1.10	174.7	52.8
1.007	58.95	8.13	11.600	0.320	0.0	0.0	0.0	1.27	202.7	52.8
1.008	58.71	8.20	11.450	0.320	0.0	0.0	0.0	1.17	185.8	52.8
1.009	58.32	8.30	11.435	0.320	0.0	0.0	0.0	0.86	15.2«	52.8

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Manhole Schedules for SW

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
1	13.625	1.235	Open Manhole	1350	1.000	12.390	225				
2	13.475	1.275	Open Manhole	1350	1.001	12.200	300	1.000	12.275	225	
3	13.750	1.802	Open Manhole	1500	1.002	11.948	375	1.001	12.023	300	
4	13.675	1.769	Open Manhole	1500	1.003	11.906	375	1.002	11.906	375	
5	13.675	1.335	Open Manhole	1350	2.000	12.340	225				
6	13.725	1.608	Open Manhole	1200	2.001	12.117	225	2.000	12.117	225	
7	13.425	1.697	Open Manhole	1800	1.004	11.728	450	1.003	11.803	375	
								2.001	11.953	225	
8	13.250	1.613	Open Manhole	1800	1.005	11.637	450	1.004	11.637	450	
9	13.175	1.555	Open Manhole	1350	1.006	11.620	450	1.005	11.620	450	
HW1	13.150	1.550	Open Manhole	1	1.007	11.600	450	1.006	11.600	450	
HW2	13.150	1.700	Open Manhole	1	1.008	11.450	450	1.007	11.450	450	
10	13.150	1.715	Open Manhole	1800	1.009	11.435	150	1.008	11.435	450	
HW3	12.990	1.595	Open Manhole	0		OUTFALL		1.009	11.395	150	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
1	528853.242	265857.333	528853.242	265857.333	Required	
2	528863.584	265872.677	528863.584	265872.677	Required	
3	528900.088	265895.944	528900.088	265895.944	Required	
4	528907.557	265884.597	528907.557	265884.597	Required	
5	528865.681	265828.777	528865.681	265828.777	Required	
6	528899.264	265843.936	528899.264	265843.936	Required	
7	528921.768	265854.094	528921.768	265854.094	Required	
8	528955.230	265869.685	528955.230	265869.685	Required	
9	528954.203	265876.384	528954.203	265876.384	Required	
HW1	528953.176	265883.084	528953.176	265883.084	Required	
HW2	528933.517	265915.475	528933.517	265915.475	Required	
10	528933.205	265919.964	528933.205	265919.964	Required	
HW3	528929.532	265923.977			No Entry	

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PIPELINE SCHEDULES for SW

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	225	1	13.625	12.390	1.010	Open Manhole	1350
1.001	o	300	2	13.475	12.200	0.975	Open Manhole	1350
1.002	o	375	3	13.750	11.948	1.427	Open Manhole	1500
1.003	o	375	4	13.675	11.906	1.394	Open Manhole	1500
2.000	o	225	5	13.675	12.340	1.110	Open Manhole	1350
2.001	o	225	6	13.725	12.117	1.383	Open Manhole	1200
1.004	o	450	7	13.425	11.728	1.247	Open Manhole	1800
1.005	o	450	8	13.250	11.637	1.163	Open Manhole	1800
1.006	o	450	9	13.175	11.620	1.105	Open Manhole	1350
1.007	o	450	HW1	13.150	11.600	1.100	Open Manhole	1
1.008	o	450	HW2	13.150	11.450	1.250	Open Manhole	1
1.009	o	150	10	13.150	11.435	1.565	Open Manhole	1800

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	18.505	160.9	2	13.475	12.275	0.975	Open Manhole	1350
1.001	43.288	244.6	3	13.750	12.023	1.427	Open Manhole	1500
1.002	13.585	323.5	4	13.675	11.906	1.394	Open Manhole	1500
1.003	33.651	326.7	7	13.425	11.803	1.247	Open Manhole	1800
2.000	36.846	165.2	6	13.725	12.117	1.383	Open Manhole	1200
2.001	24.690	150.5	7	13.425	11.953	1.247	Open Manhole	1800
1.004	36.916	405.7	8	13.250	11.637	1.163	Open Manhole	1800
1.005	6.778	398.7	9	13.175	11.620	1.105	Open Manhole	1350
1.006	6.778	338.9	HW1	13.150	11.600	1.100	Open Manhole	1
1.007	37.890	252.6	HW2	13.150	11.450	1.250	Open Manhole	1
1.008	4.500	300.0	10	13.150	11.435	1.265	Open Manhole	1800
1.009	5.441	136.0	HW3	12.990	11.395	1.445	Open Manhole	0

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Area Summary for SW

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.046	0.046	0.046
1.001	-	-	100	0.045	0.045	0.045
1.002	-	-	100	0.044	0.044	0.044
1.003	-	-	100	0.033	0.033	0.033
2.000	-	-	100	0.059	0.059	0.059
2.001	-	-	100	0.008	0.008	0.008
1.004	-	-	100	0.045	0.045	0.045
1.005	-	-	100	0.004	0.004	0.004
1.006	-	-	100	0.036	0.036	0.036
1.007	-	-	100	0.000	0.000	0.000
1.008	-	-	100	0.000	0.000	0.000
1.009	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.320	0.320	0.320

Surcharged Outfall Details for SW

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.009	HW3	12.990	11.395	0.000	0	0

Datum (m) 11.200 Offset (mins) 0

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
15	0.900	165	0.900	315	0.900	465	0.900	615	0.900	765	0.900	915	0.900	1065	0.900	1215	0.900	1365	0.900
30	0.900	180	0.900	330	0.900	480	0.900	630	0.900	780	0.900	930	0.900	1080	0.900	1230	0.900	1380	0.900
45	0.900	195	0.900	345	0.900	495	0.900	645	0.900	795	0.900	945	0.900	1095	0.900	1245	0.900	1395	0.900
60	0.900	210	0.900	360	0.900	510	0.900	660	0.900	810	0.900	960	0.900	1110	0.900	1260	0.900	1410	0.900
75	0.900	225	0.900	375	0.900	525	0.900	675	0.900	825	0.900	975	0.900	1125	0.900	1275	0.900	1425	0.900
90	0.900	240	0.900	390	0.900	540	0.900	690	0.900	840	0.900	990	0.900	1140	0.900	1290	0.900	1440	0.900
105	0.900	255	0.900	405	0.900	555	0.900	705	0.900	855	0.900	1005	0.900	1155	0.900	1305	0.900		
120	0.900	270	0.900	420	0.900	570	0.900	720	0.900	870	0.900	1020	0.900	1170	0.900	1320	0.900		
135	0.900	285	0.900	435	0.900	585	0.900	735	0.900	885	0.900	1035	0.900	1185	0.900	1335	0.900		
150	0.900	300	0.900	450	0.900	600	0.900	750	0.900	900	0.900	1050	0.900	1200	0.900	1350	0.900		

Simulation Criteria for SW

Volumetric Runoff Coeff	0.750	Manhole Headloss Coeff (Global)	0.500	Inlet Coeffiecient	0.800
Areal Reduction Factor	1.000	Foul Sewage per hectare (l/s)	0.000	Flow per Person per Day (l/per/day)	0.000
Hot Start (mins)	0	Additional Flow - % of Total Flow	0.000	Run Time (mins)	60
Hot Start Level (mm)	0	MADD Factor * 10m³/ha Storage	0.000	Output Interval (mins)	1

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm)	20.000	Cv (Summer)	0.750
Return Period (years)	2	Ratio R	0.450	Cv (Winter)	0.840
Region	England and Wales	Profile Type	Summer	Storm Duration (mins)	30

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Online Controls for SW

Hydro-Brake® Optimum Manhole: 10, DS/PN: 1.009, Volume (m³): 4.9

Unit Reference	MD-SHE-0043-1000-1400-1000	Sump Available	Yes
Design Head (m)	1.400	Diameter (mm)	43
Design Flow (l/s)	1.0	Invert Level (m)	11.435
Flush-Flo™	Calculated	Minimum Outlet Pipe Diameter (mm)	75
Objective	Minimise upstream storage	Suggested Manhole Diameter (mm)	1200
Application	Surface		

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.400	1.0	Kick-Flo®	0.383	0.6
Flush-Flo™	0.189	0.7	Mean Flow over Head Range	-	0.7

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	0.6	0.600	0.7	1.600	1.1	2.600	1.3	5.000	1.8	7.500	2.1
0.200	0.7	0.800	0.8	1.800	1.1	3.000	1.4	5.500	1.9	8.000	2.2
0.300	0.7	1.000	0.9	2.000	1.2	3.500	1.5	6.000	1.9	8.500	2.3
0.400	0.6	1.200	0.9	2.200	1.2	4.000	1.6	6.500	2.0	9.000	2.3
0.500	0.6	1.400	1.0	2.400	1.3	4.500	1.7	7.000	2.1	9.500	2.4

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Storage Structures for SW

Tank or Pond Manhole: HW2, DS/PN: 1.008

Invert Level (m) 11.450

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	119.3	1.700	599.5

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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW

Simulation Criteria

Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 0.000
Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coeffiecient 0.800
Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 20.000 Cv (Summer) 1.000
Region England and Wales Ratio R 0.450 Cv (Winter) 1.000

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status OFF
DVD Status ON
Inertia Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)
1.000	1	15 Summer	2	+0%	100/15 Summer				12.474	-0.141	0.000	0.29		10.8
1.001	2	15 Summer	2	+0%	100/15 Summer				12.313	-0.187	0.000	0.29		19.4
1.002	3	15 Summer	2	+0%	100/15 Summer				12.099	-0.224	0.000	0.33		27.4
1.003	4	15 Summer	2	+0%	100/15 Summer				12.057	-0.224	0.000	0.34		33.1
2.000	5	15 Summer	2	+0%	100/15 Summer				12.435	-0.130	0.000	0.36		13.8
2.001	6	15 Summer	2	+0%	100/15 Summer				12.215	-0.127	0.000	0.39		15.3
1.004	7	1440 Winter	2	+0%	30/960 Summer				11.988	-0.190	0.000	0.02		2.8
1.005	8	1440 Winter	2	+0%	30/360 Summer				11.988	-0.099	0.000	0.03		2.6
1.006	9	1440 Winter	2	+0%	30/240 Summer				11.988	-0.082	0.000	0.03		2.9
1.007	HW1	1440 Winter	2	+0%	30/180 Summer				11.988	-0.062	0.000	0.02		2.9
1.008	HW2	1440 Winter	2	+0%	2/480 Summer				11.988	0.088	0.000	0.01		0.8
1.009	10	1440 Winter	2	+0%	2/15 Summer				11.995	0.410	0.000	0.05		0.7

PN	US/MH Name	Status	Level Exceeded
1.000	1	OK	
1.001	2	OK	
1.002	3	OK	
1.003	4	OK	
2.000	5	OK	
2.001	6	OK	
1.004	7	OK	
1.005	8	OK	
1.006	9	OK	
1.007	HW1	OK	
1.008	HW2	SURCHARGED	
1.009	10	SURCHARGED	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW

Simulation Criteria

Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 0.000
Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coeffiecient 0.800
Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 20.000 Cv (Summer) 1.000
Region England and Wales Ratio R 0.450 Cv (Winter) 1.000

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status OFF
DVD Status ON
Inertia Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)
1.000	1	15 Summer	30	+0%	100/15 Summer				12.512	-0.103	0.000	0.56		20.6
1.001	2	15 Summer	30	+0%	100/15 Summer				12.379	-0.121	0.000	0.63		41.3
1.002	3	15 Summer	30	+0%	100/15 Summer				12.214	-0.109	0.000	0.72		60.2
1.003	4	1440 Winter	30	+0%	100/15 Summer				12.211	-0.070	0.000	0.03		2.9
2.000	5	15 Summer	30	+0%	100/15 Summer				12.480	-0.085	0.000	0.69		26.2
2.001	6	15 Summer	30	+0%	100/15 Summer				12.266	-0.076	0.000	0.76		29.5
1.004	7	1440 Winter	30	+0%	30/960 Summer				12.211	0.033	0.000	0.03		4.7
1.005	8	1440 Winter	30	+0%	30/360 Summer				12.211	0.124	0.000	0.04		4.4
1.006	9	1440 Winter	30	+0%	30/240 Summer				12.211	0.141	0.000	0.05		5.0
1.007	HW1	1440 Winter	30	+0%	30/180 Summer				12.211	0.161	0.000	0.03		4.9
1.008	HW2	1440 Winter	30	+0%	2/480 Summer				12.211	0.311	0.000	0.01		0.8
1.009	10	1440 Winter	30	+0%	2/15 Summer				12.215	0.630	0.000	0.06		0.8

PN	US/MH Name	Status	Level Exceeded
1.000	1	OK	
1.001	2	OK	
1.002	3	OK	
1.003	4	OK	
2.000	5	OK	
2.001	6	OK	
1.004	7	SURCHARGED	
1.005	8	SURCHARGED	
1.006	9	SURCHARGED	
1.007	HW1	SURCHARGED	
1.008	HW2	SURCHARGED	
1.009	10	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW

Simulation Criteria

Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 0.000
Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coeffiecient 0.800
Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 20.000 Cv (Summer) 1.000
Region England and Wales Ratio R 0.450 Cv (Winter) 1.000

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status OFF
DVD Status ON
Inertia Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)
1.000	1	15 Summer	100	+40%	100/15 Summer				12.901	0.286	0.000	0.92		33.7
1.001	2	15 Summer	100	+40%	100/15 Summer				12.809	0.309	0.000	1.01		66.4
1.002	3	15 Summer	100	+40%	100/15 Summer				12.645	0.322	0.000	1.15		96.6
1.003	4	15 Summer	100	+40%	100/15 Summer				12.597	0.316	0.000	1.13		111.8
2.000	5	15 Summer	100	+40%	100/15 Summer				12.961	0.396	0.000	1.15		43.8
2.001	6	15 Summer	100	+40%	100/15 Summer				12.681	0.339	0.000	1.19		46.2
1.004	7	1440 Winter	100	+40%	30/960 Summer				12.582	0.404	0.000	0.06		8.7
1.005	8	1440 Winter	100	+40%	30/360 Summer				12.582	0.495	0.000	0.09		8.7
1.006	9	1440 Winter	100	+40%	30/240 Summer				12.582	0.512	0.000	0.10		9.8
1.007	HW1	1440 Winter	100	+40%	30/180 Summer				12.582	0.532	0.000	0.05		9.8
1.008	HW2	1440 Winter	100	+40%	2/480 Summer				12.582	0.682	0.000	0.01		0.9
1.009	10	1440 Winter	100	+40%	2/15 Summer				12.594	1.009	0.000	0.07		0.9

PN	US/MH Name	Status	Level Exceeded
1.000	1	SURCHARGED	
1.001	2	SURCHARGED	
1.002	3	SURCHARGED	
1.003	4	SURCHARGED	
2.000	5	SURCHARGED	
2.001	6	SURCHARGED	
1.004	7	SURCHARGED	
1.005	8	SURCHARGED	
1.006	9	SURCHARGED	
1.007	HW1	SURCHARGED	
1.008	HW2	SURCHARGED	
1.009	10	SURCHARGED	

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