

Droplet9 Extension Package

- Brazed plate heat exchanger, single wall
- Circulator pump (select Option)
- Mechanical Room Controller
 - (4) Storage tank temperature sensors
 - PLC to communicate storage tank conditions with Droplet

Required Field Wiring

- Storage Tank temperature sensor in Tank thermowell (min. one landed)
- Start/Stop signal from Mech. Room Controller to Circulator Pump
- Temperature probe from pump to return pipe thermowell
 - Allows pump to adjust speed to maintain 140°F to Storage Tank
- Ethernet connection from Mech. Room Controller to remote Droplet9
- Mech. Room Controller whip plugged into standard 110VAC wall outlet
- *Optional:* Temp. probe from Mech. Room Controller to return pipe thermowell
 - Can be used to remotely monitor system performance

Heat Exchanger Performance

Heat Load		138,600 Btu/hr	40.5 kW
High-Lift Conditions	Temperature, Domestic Water (DW) IN	45°F	7.2°C
	Temperature, DW OUT	140°F	60°C
	Temperature, Heat Pump (HP) OUT	145°F	62.8°C
	Temperature, HP RETURN	55.2°F	12.9°C
	Flow, DW	2.94 US gpm	11.13 l/min
	Δp	0.39 ft	0.12 m
End-of-run (EOR) Conditions	Temperature, Domestic Water (DW) IN	115°F	46.1°C
	Temperature, DW OUT	140°F	60°C
	Temperature, Heat Pump (HP) OUT	145°F	62.8°C
	Temperature, HP Return	116.9°F	47.2°C
	Flow, DW	11.23 US gpm	42.51 l/min
	Δp	4.06 ft	1.24 m

Booster Pump Performance

Option 1	Max. Available Head*	15.6 ft	4.8 m
	Min. System Head Loss Required**	3.04 ft @ 2.94 gpm	0.93m @ 11.13 l/min
Option 2	Max. Available Head*	28.7 ft	8.8 m
	Min. System Head Loss Required**	3.04 ft @ 2.94 gpm	0.93m @ 11.13 l/min
Option 3	Max. Available Head*	35.3 ft	10.8 m
	Min. System Head Loss Required**	3.04 ft @ 2.94 gpm	0.93m @ 11.13 l/min
Option 4	Max. Available Head*	55.0 ft	16.8 m
	Min. System Head Loss Required**	3.04 ft @ 2.94 gpm	0.93m @ 11.13 l/min

*Max. Pump Head - Δp (HX) at EOR Flow

**System pressure drop at high-lift flow conditions to achieve stable deliver temperature at pump min. speed

NOTES:

Booster pump varies speed based on constant temperature (140°F at storage tank).
 Pump requires pipe thermowell/remote temp. sensor; start/stop signal from Droplet controller. See Pg.2 for detail.

SMALL PLANET SUPPLY TUMWATER, WA		
TITLE: DROPLET9 EXTENSION PACKAGE (TECHNICAL DATASHEET)		
SIZE B	DWG. NO. 003-00042	REV A
SCALE: 1:1		SHEET 1 OF 4

4

3

2

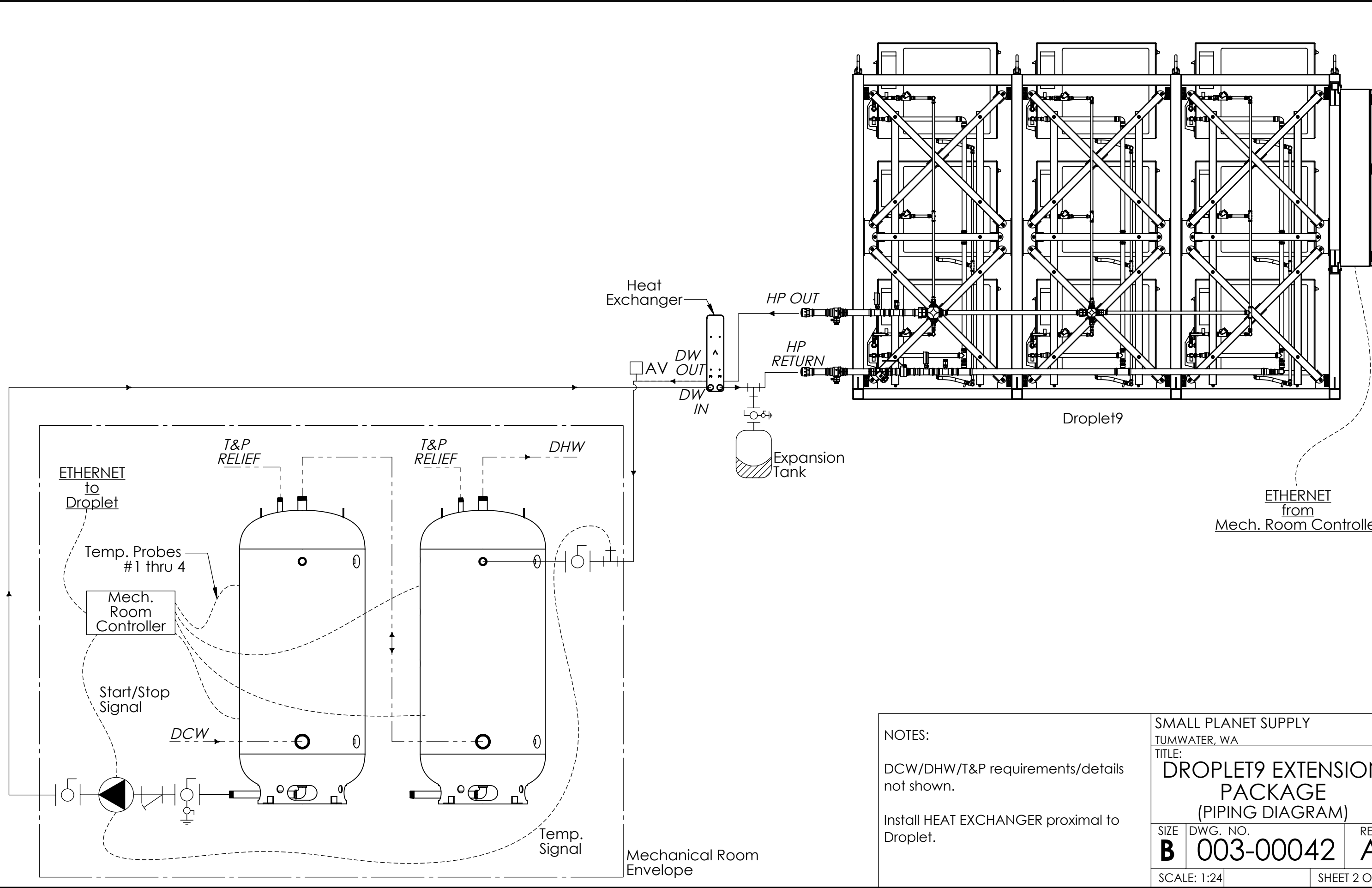
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B

B

A

A



NOTES:
 DCW/DHW/T&P requirements/details not shown.
 Install HEAT EXCHANGER proximal to Droplet.

SMALL PLANET SUPPLY TUMWATER, WA		
TITLE: DROPLET9 EXTENSION PACKAGE (PIPING DIAGRAM)		
SIZE B	DWG. NO. 003-00042	REV A
SCALE: 1:24		SHEET 2 OF 4

4

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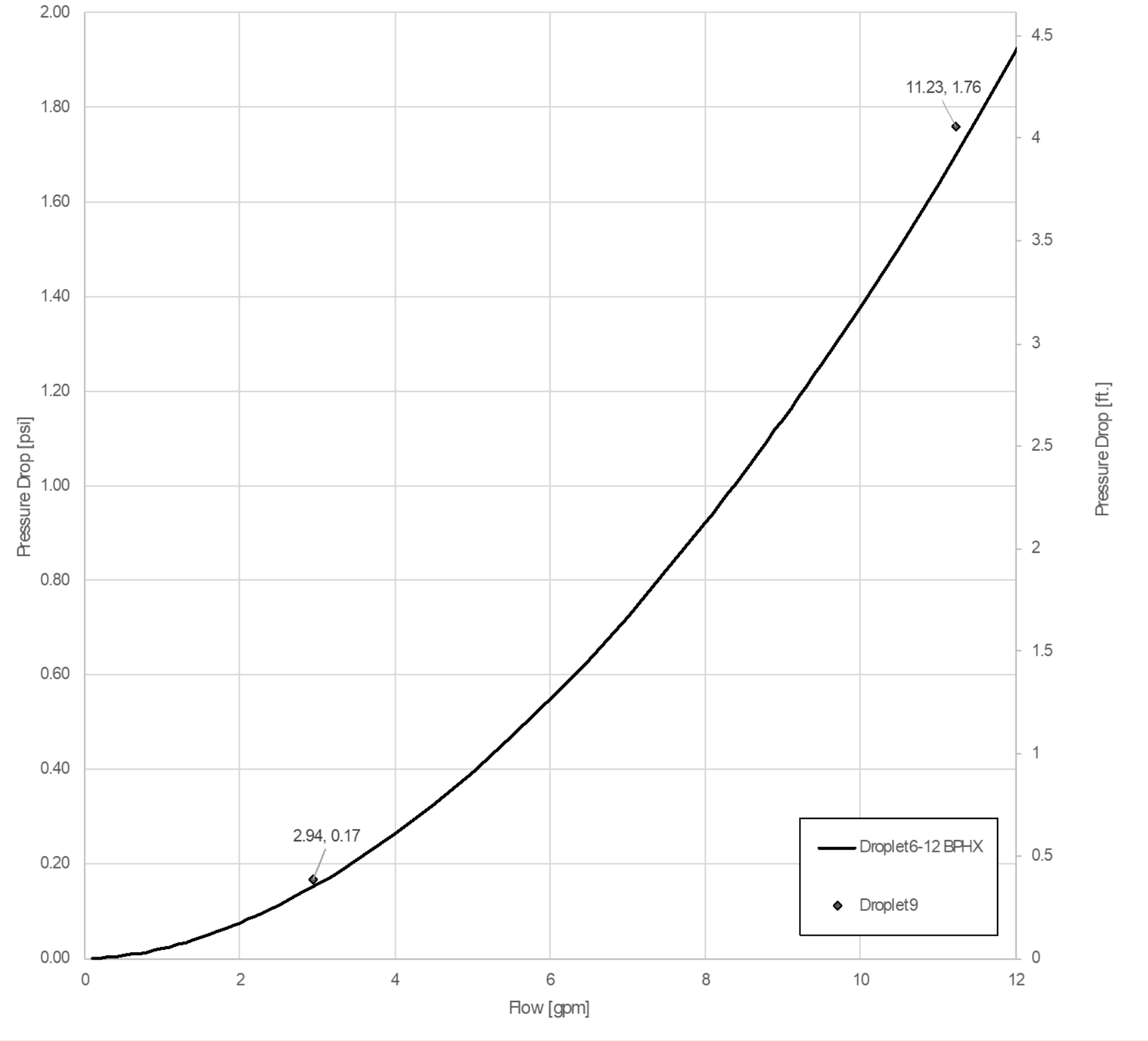
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2

1

Droplet9 Flow v. Pressure Drop (Building Side)

High Lift: 45°F→140°F, End-of-run: 115°F→140°F, Air Temp.: ≥5°F



B

B

A

A

NOTES: Pressure drop of building-side heat exchanger at Droplet9 boundary conditions (high-lift & end-of-run).			SMALL PLANET SUPPLY TUMWATER, WA		
			TITLE: DROPLET9 EXTENSION PACKAGE (BPHX PRESSURE DROP CURVE)		
SIZE	DWG. NO.	REV			
B	003-00042	A			
SCALE: 1:1				SHEET 3 OF 4	

4

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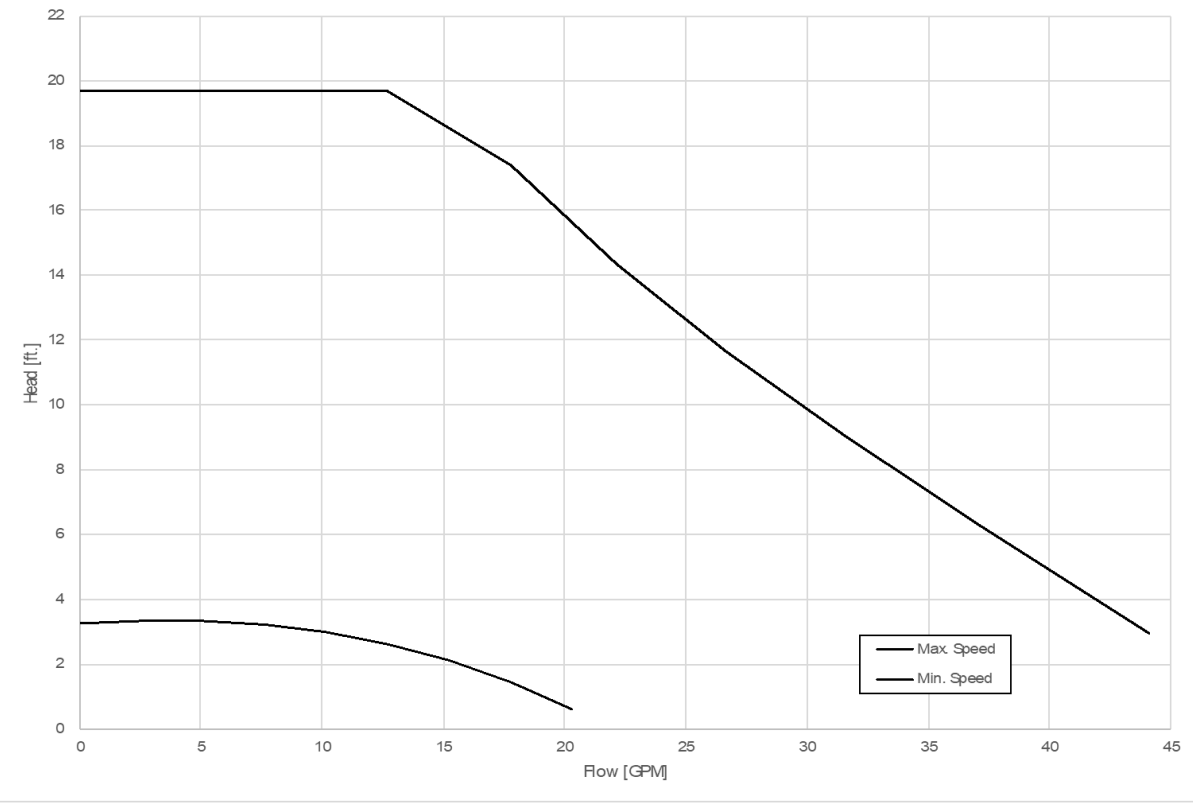
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B

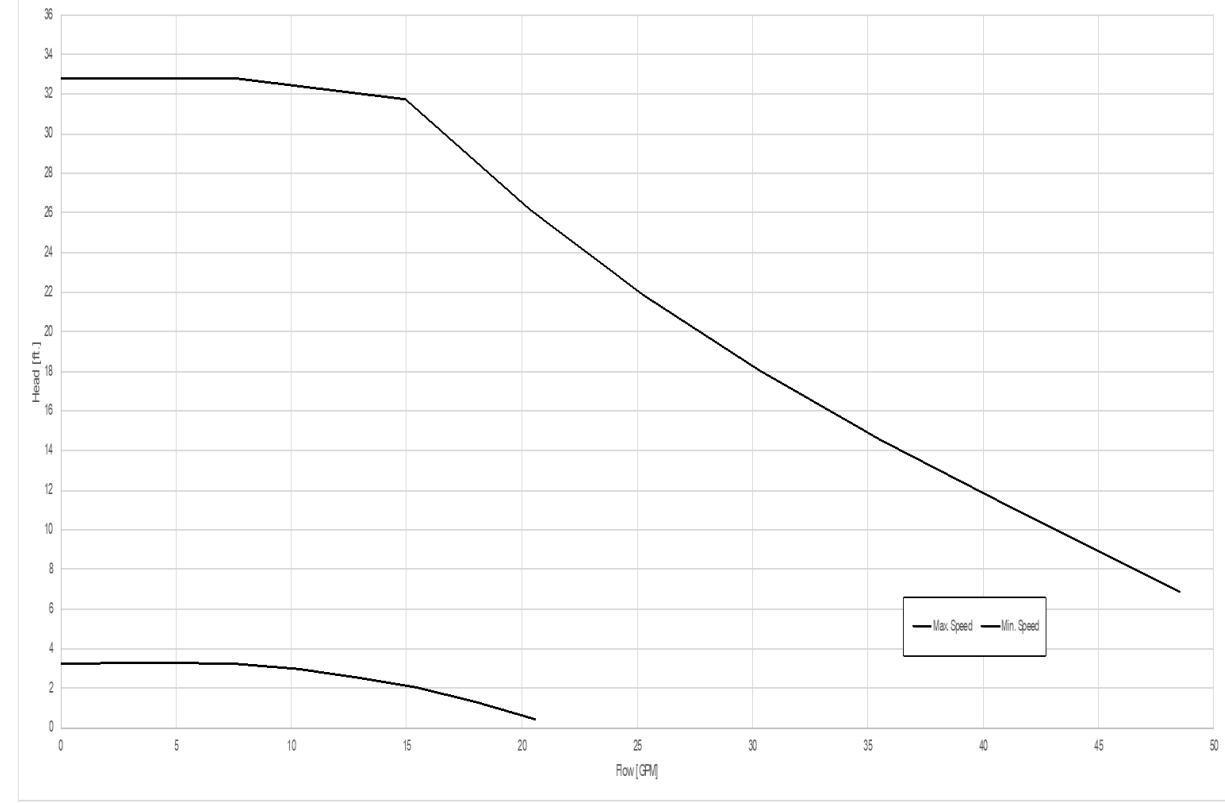
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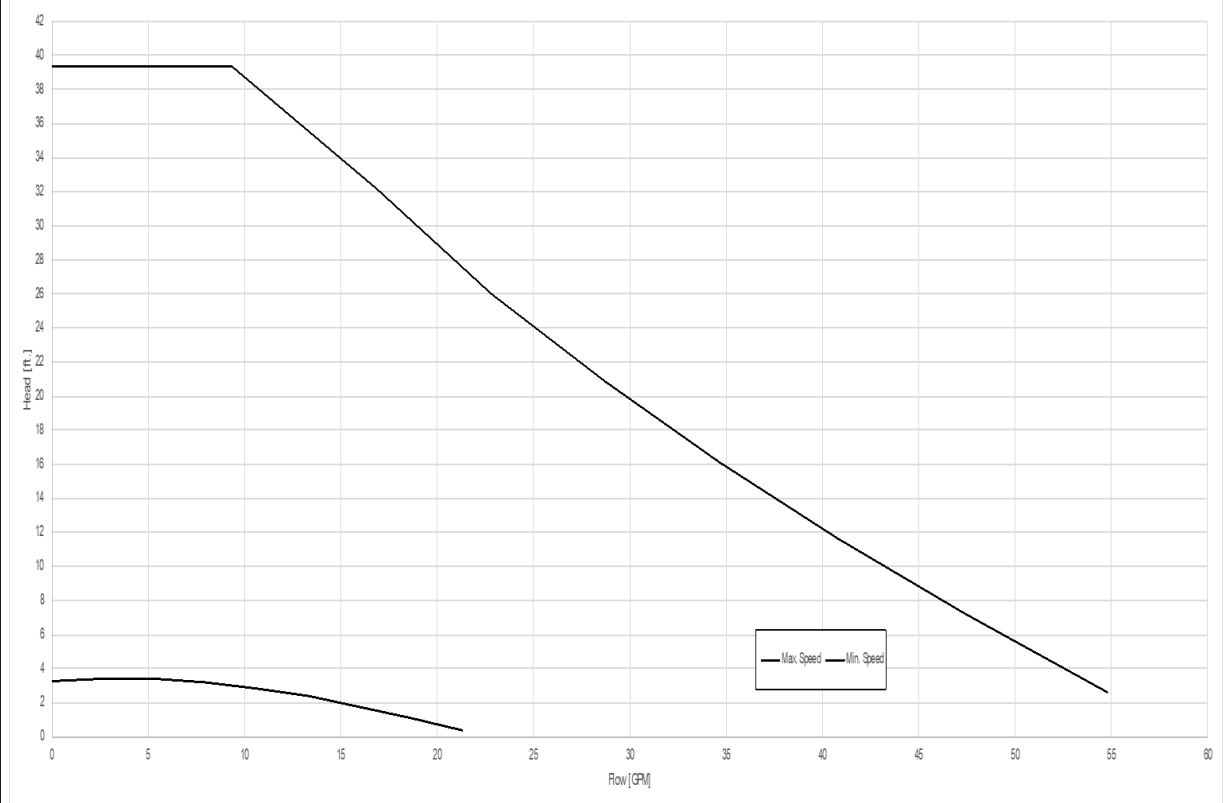
Circulator Pump Option #1
Head v. Flow



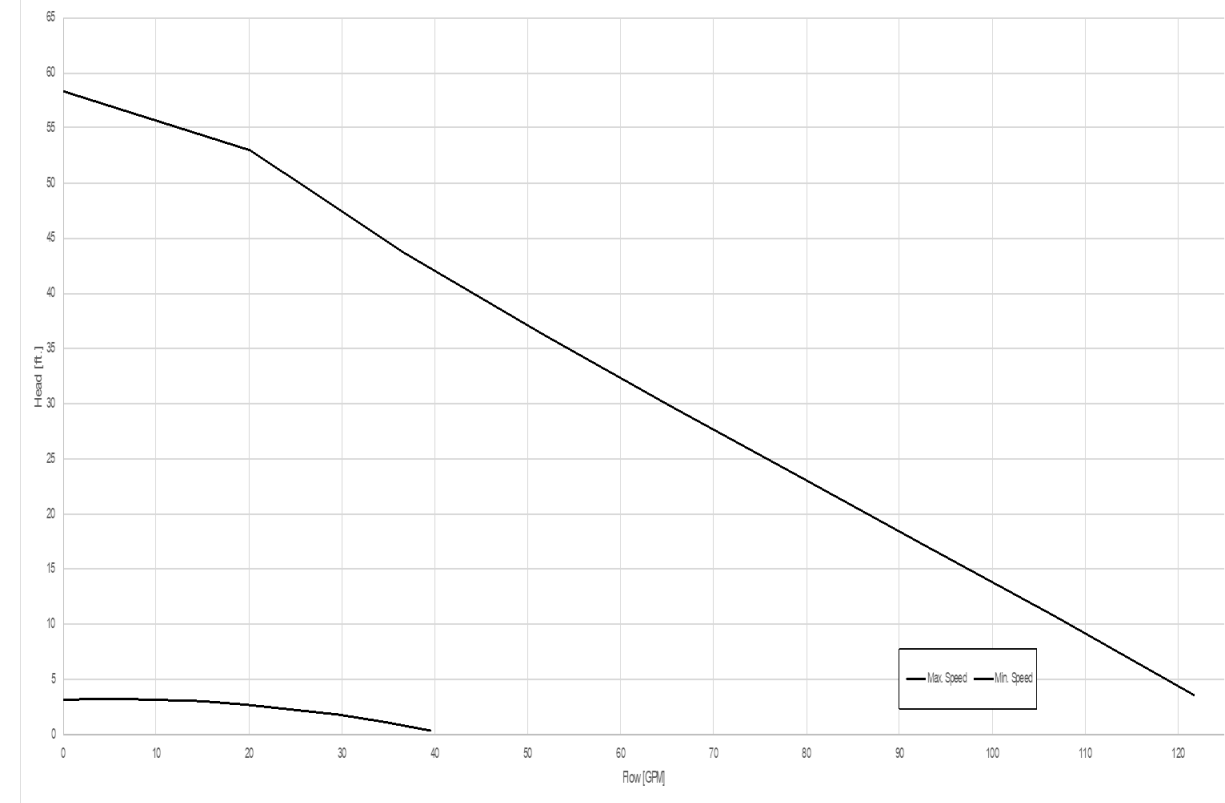
Circulator Pump Option #2
Head v. Flow



Circulator Pump Option #3
Head v. Flow



Circulator Pump Option #4
Head v. Flow



SMALL PLANET SUPPLY TUMWATER, WA		
TITLE: DROPLET9 EXTENSION PACKAGE (CIRCULATOR PUMP CURVES)		
SIZE B	DWG. NO. 003-00042	REV A
SCALE: 1:1		SHEET 4 OF 4

4

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