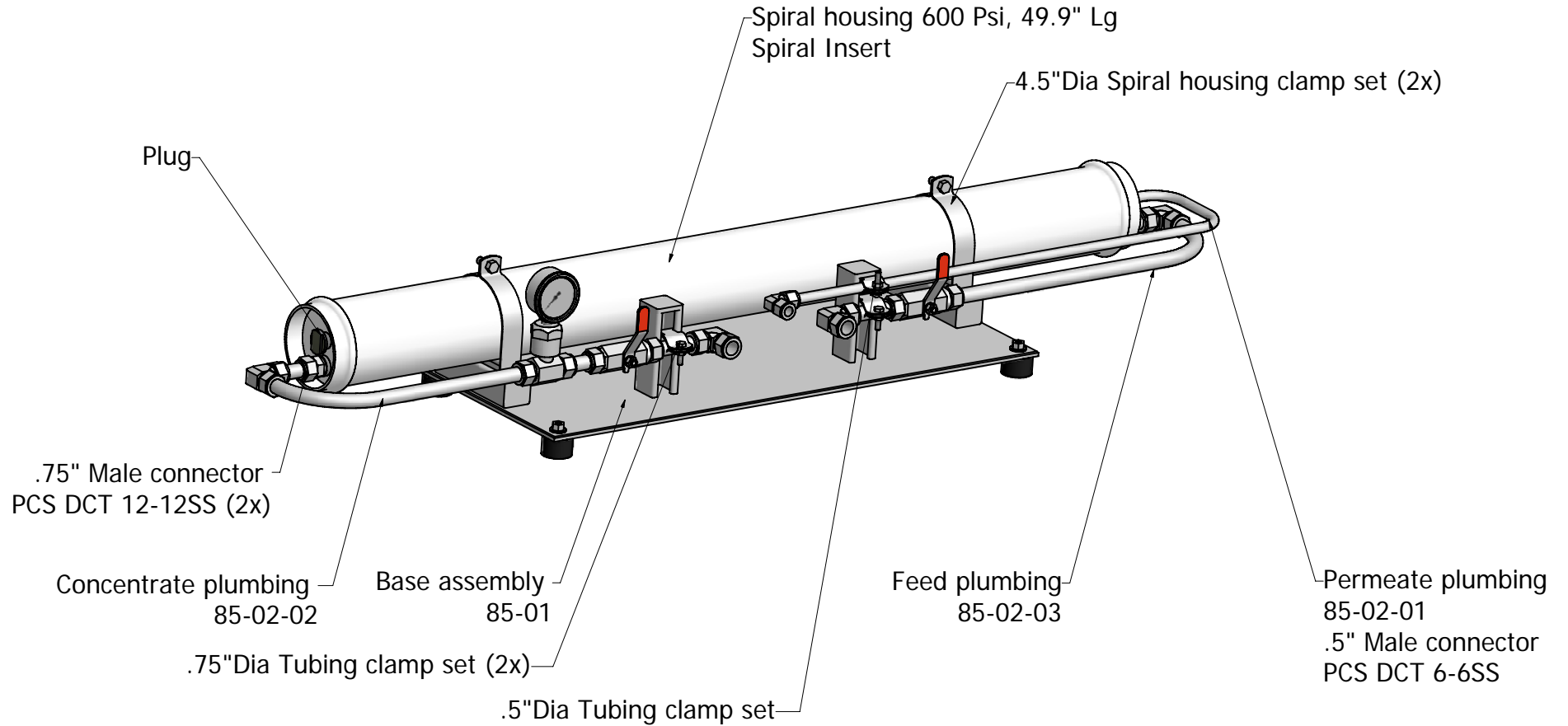


Confidential Material
Preliminary Only

Revision	NEW LOGIC RESEARCH		
	S-85 Spiral System		
		P&ID	
Aug 2014			M. Ayers

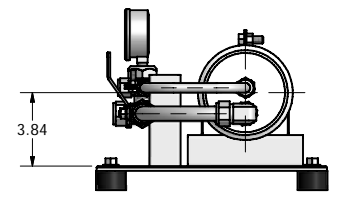
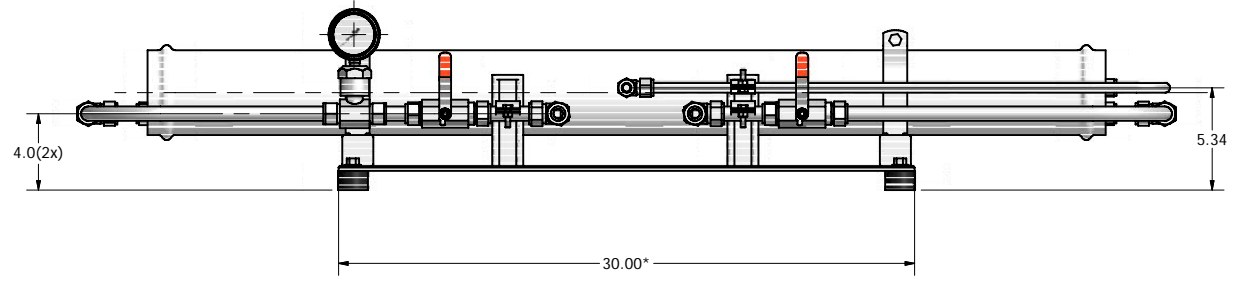
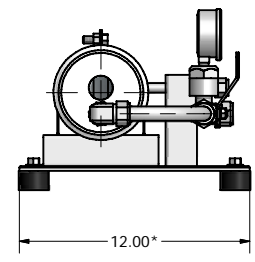
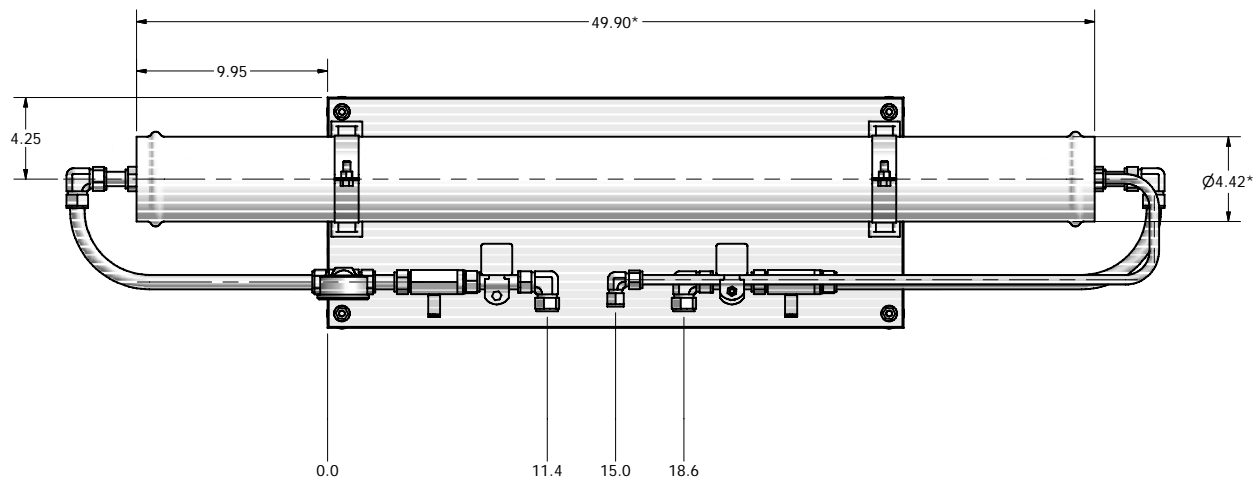
ISO VIEW



NORES:

1. New Logic Research confidential material.
2. All dimensions are shown in inches & for references only.
3. Preliminary.

DRAWN	F. Rubin	10/16/2009	<i>NEW LOGIC RESEARCH</i>		
CHECKED	M. Ayers				
QA			TITLE		
MFG			SPIRAL 85 SERIES SYSTEM		
APPROVED	G. Johnson		SIZE	DWG NO	REV
			C	85-00	
			SCALE	SHEET 1 OF 2	



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APPROVED	G. Johnson		SIZE	DWG NO
			C	85-00
			SCALE	REV
				SHEET 2 OF 2

SPIRAL SYSTEM COMPONENT SPECIFICATIONS
S-85 Spiral System

1] Filter Pack

Membrane:	ESPA 4040, SWC 4040
Membrane Surface Area:	85sf (19.8m ²) (1ea 4" Dia x 40"L)
Estimated Production:	1.66 gpm (at 5-10GFD)
Maximum Operating Temperature:	120 °F (49°C) (Options for up to 80°C)
Allowable Feed Slurry pH Range:	2-11 (Options for 1-14)
O-ring Material:	Ethylene Propylene
Filter Pack Housing:	Polyurethane Coated, Filament Wound, Epoxy FRP
Wetted Ports:	316L Stainless Steel
Wetted Plastic End Plates:	PVC Thermoplastic

2] Piping

Maximum Pressure:	550 psi (Options for up to 1200 psi)
Pressure Piping:	316L Stainless Steel Tubing
Atmospheric Piping:	316L Stainless Steel Tubing
Pipe Clamps:	None
On/Off Valves:	316L SS Tubing ball valve
Flow Control Valves:	None
Check Valves:	None
Pneumatic Actuators:	None
Positioners:	None
Skid Pipe Terminations:	½" Compression Fittings
Flange Gaskets:	None
Clean in Place Tank:	None

3] Pump Specifications:

Feed Pump Type:	Hydracell 3 GPM 316SS Horizontal Diaphragm
Feed Pump Motor:	Baldor 3 HP 1720 rpm TEFC 460VAC, 3phase
Motor Speed Controller:	AC Tech 380-480VAC, NEMA 4 (or Equal)

5] Operating Site Conditions:

Equipment Rating:	NEMA 4, Indoor/Outdoor protect from sunlight & rain.
Ambient Temperature:	5 - 37°C
Storage Temperature:	2 - 70°C (Protect Filter Pack from Freezing)
Max Relative Humidity:	<95%, non-condensing
Elevation:	3300 ft maximum without derating

SPIRAL SYSTEM COMPONENT SPECIFICATIONS (continued)**6] Electrical Specifications:**

Controls Voltage:	None
Programmable Controller Type:	None
Touch Screen Display Type:	None
Enclosures:	None
Switches, Relays, & Contactors:	None
Pressure Sensors:	Wika Gauges
Mag Flow Tube and Transmitter:	None
Bag Filter DP Sensors:	None
Temperature Sensor:	None
Conductivity Meter:	None
pH Meter:	None
Level Sensors:	None
Solenoid Valves	None
VFD Communication:	None

Utility Summary						New Logic Research					
VSEP System											
AIR COMPRESSOR SIZING INFORMATION											
			# of Valves	In ³ Air/stroke	Strokes/day	CFM	M3/hr				
Spiral RO											
No Pneumatic Actuators											
System Air Totals						System Totals					
						0.00					
Supply instument grade dry air at 80-90 psi (560-630kPa)											
Supply air to enclosure mounted regulator/filter 3/8" NPT connection											
Totals do not include air for tools or other sources.											
HOT WATER SIZING INFORMATION											
			# /Day	Temp degC	Gallons/Day	GPM	M3/hr				
Spiral RO											
Cleanings											
			0.14	45-50	31.5	0.02	0.005				
Rinse filter pack at 5gpm for 5mins											
			0.14	45-50	3.5	0.00	0.0006				
Intermittent need of additional cleaning or flush of filter pack											
			0.033	45-50	0.825	0.00	0.0001				
System Water Totals						System Totals					
						0.02					
Supply chlorine free water at >300 uS/cm											
Supply water at 45degC and 5gpm (1.2m3/hr)											
Supply water at 15 psi to 2" Hot Water flange connection on Combo Skid											
ELECTRICAL LOAD PANEL SIZING INFORMATION											
Circuit Breaker Sizing 1.25-2x Nameplate Current											
3-Phase Power Voltage VAC			400-460	50/60 Hz							
1-Phase Power Voltage VAC			220-120	50/60 Hz							
			# Motors	Rated Motor HP	Nameplate Current	Nameplate Current	Recommended CB Sizing				
					400V	460V					
No Motors Supplied											
			0								
Totals			0								
Supply 3-Phase power from customer supplied load panel (with circuit breakers, disconnects, line filters, etc.) to the inlet of each VFD provided by New Logic.											
			# Connections	Rated Motor HP	Nameplate Current	Nameplate Current	Recommended CB Sizing				
					220V	120V					
No Main Control Enclosures											
			0	NA	10	8.0	20				
New Logic provided transformer inside the control enclosure will provide 1 phase power for switches.											
Note: These are estimates only based on very preliminary data. These calculations are subject to change and do not include equipment offskid of VSEP system (ie: Transfer Pumps, Generators, Heaters, Lighting, Cranes, etc). For power consumption estimates refer to the operating cost spreadsheet.											