

Project Name: Great Parks Shaker Trace Seed Facility  
Submittal: 230000.005- Pumps and Accessories Submittal

CMTA Project Code: OSTS22

Reviewed by: K.Waymeyer

Date Received: 11/06/2024

Date Returned: 11/06/2024

Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with requirements of the drawings and specifications. This check is only for review of general compliance with the information given in the contract documents. The contractor is responsible for confirming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating his work with that of all other trades; and performing his work in a safe and satisfactory manner.

**Reviewed**

**Furnish as Corrected**

**Rejected**

**Revise and Resubmit**

COMMENTS:

1. No Exceptions.

**P-1 THRU 5 PAGE 4  
P-6 PAGE 9**

**SUBMITTAL COVER PAGE**

**Project #: 062204**

**Project Name: Shaker Trace Seed Nursery**

**Construction Manager: Pepper**

**Architect: Emersion Design, LLC.**

**Engineer: CMTA**

**Reference: Pumps and Accessories**

**Spec #:23 21 23.00- 1**

**Drawing #: M200**

**Manufacturer: Bell and Gossett**

**Supplier: Stoermer-Anderson**

**Contact Person (name/number): Trey Ellington 513-527-2300**

**Comfort Systems Contact: Chris Panno**

**Date: 10/21/2024**

<b>Pepper Construction</b> Tomorrow Transformed		
<input checked="" type="checkbox"/> <b>REVIEWED FOR APPROVAL</b>	<small>Review of this shop drawing does not relieve the Architect, Engineer or Subcontractor of their contractual design responsibilities. Pepper Construction's review is not, nor is it responsible for an engineering or architectural analysis of design elements, load or dimension calculations, or similar matters. The Subcontractor is responsible to furnish additional material or work as required by the Contract and review of these documents, as well as dimensions to be confirmed and corrected at the job site.</small>	
<input type="checkbox"/> <b>REVIEWED AS NOTED FOR APPROVAL</b>		
<input type="checkbox"/> <b>FOR RECORD</b>		
<b>JOB:</b> 2300931	<b>BY:</b> Hamed Elayan	<b>DATE:</b> 10/28/2024
<b>SUBMITTAL#</b> 232123.006		<b>Rev #</b> 000

- X Reviewed Spec # N/A
- Approved As Noted
- Rejected
- Revise and Resubmit

Sign Name: XXXXXXXXXX



# Equipment Submittal

<b>Project Name:</b>	Shaker Trace Seed Nursery	<b>Spec</b>	23 21 23
<b>Manufacturer:</b>	Bell and Gossett	<b>Section:</b>	
		<b>Date</b>	October 18, 2024
<b>Description:</b>	Pumps and Accessories	<b>Submitted:</b>	
		<b>Original or</b>	Original
		<b>Revision #:</b>	

**PROJECT INFO:** Great Parks of Hamilton County  
Shaker Trace Seed Nursery  
8667 New Haven Road  
Harrison, Ohio 45030

**MECHANICAL ENGINEER:** CMTA  
1100 Sycamore Street  
Suite 400  
Cincinnati, Ohio 45202

**CONSTRUCTION MANAGER:** Pepper Construction  
100 Williams Street  
Cincinnati, Ohio 45215

**MECHANICAL CONTRACTOR:** Comfort Systems USA  
419 Elliott Avenue  
Cincinnati, Ohio 45215

**EQUIPMENT SUPPLIER:** Stoermer-Anderson, Inc.  
5481 A Creek Road  
Cincinnati, Ohio 45242

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*Area below reserved for approval stamps:*

**CINCINNATI** 5481A Creek Road  
Cincinnati, OH 45242  
(513) 527-2300

**COLUMBUS** 1335 Dublin Rd Ste 112B  
Columbus, OH 43215  
(614) 486-0358

**LOUISVILLE** 220 Production Ct  
Louisville, KY 40299  
(502) 226-9050

Job/Project: 24-10638 Shaker Trace Seed Nursery	Representative: Steven Strode	
ESP-Systemwize: WIZE-E206565A	Created On: 10/17/2024	Phone: 8657890638
Location/Tag: P-1, 2, 3, 4 & 5	Email: tcrone@b-g.com	
Engineer: None Selected	Submitted By:	Date:
Contractor: None Selected	Approved By:	Date:

**High Efficiency Large Wet Rotor Circulator with ECM Motor**  
**Series: ecocirc® XL**

Model: 70-145

The ecocirc® XL circulator is designed with a highly efficient electronically commutated permanent magnet motor (ECM/PM Technology). Cast Iron model designed for closed loop hydronic heating and cooling systems pumping water or water/glycol mix. Stainless Steel body pump designed for plumbing systems or open loop heating and cooling systems.



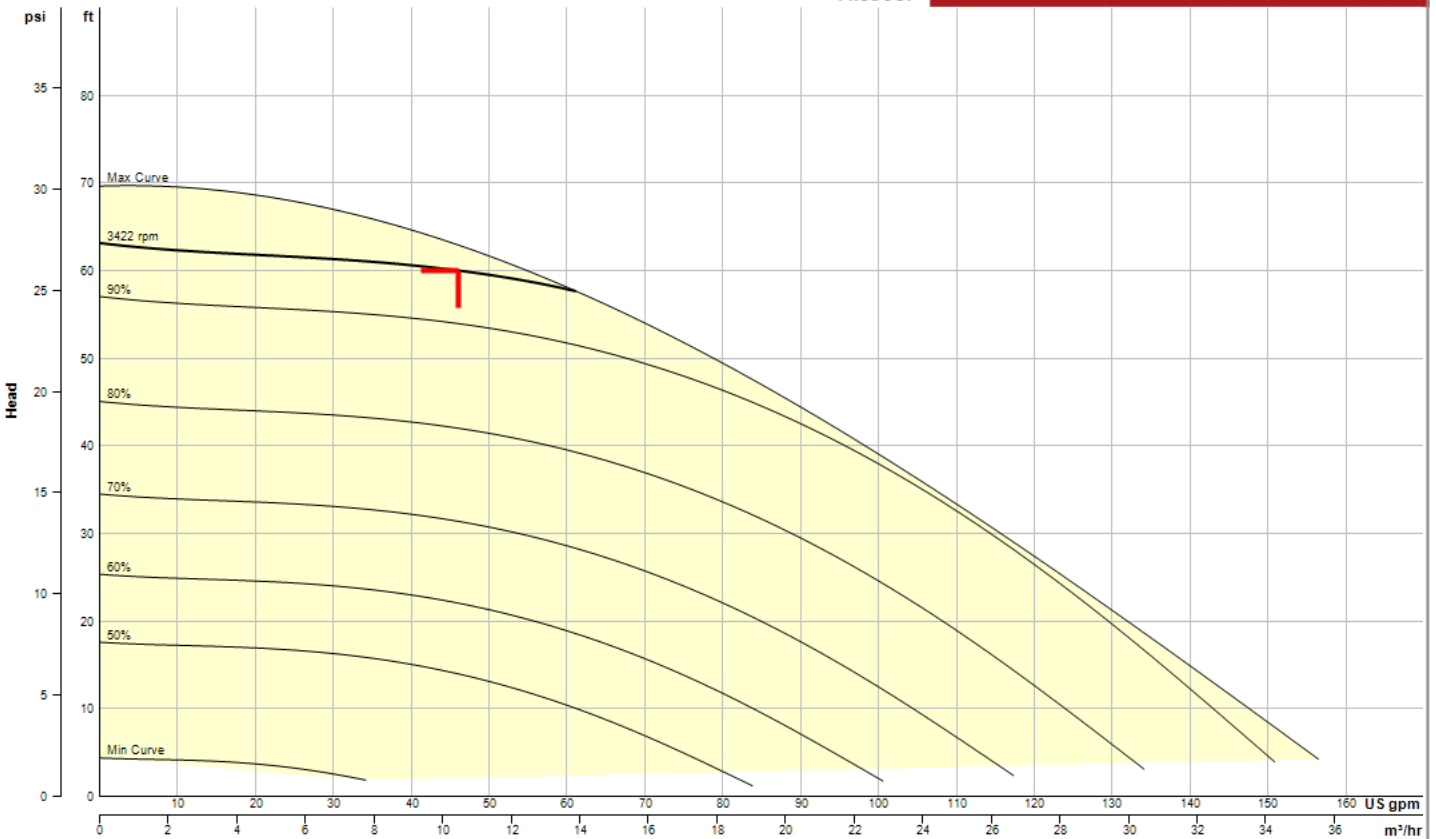
**Selection Summary**

Duty Point Flow	46.0 US gpm
Duty Point Head	60.0 ft
Control Head	0.0 ft
WTW Efficiency at Duty Point	43.9 %
WTW PLEV Efficiency	0.0 %
Motor Power	2.0
Electrical Input Power	1.59 hp
RPM @ Duty Point	3422 rpm
NPSHr	---
Minimum Shutoff Head	63.2 ft
Fluid Temperature	68 °F
Fluid Type	Water
Phase	1
Voltage	208-230
Weight (approx. - consult rep for exact)	38 lbs

**Performance Curve**

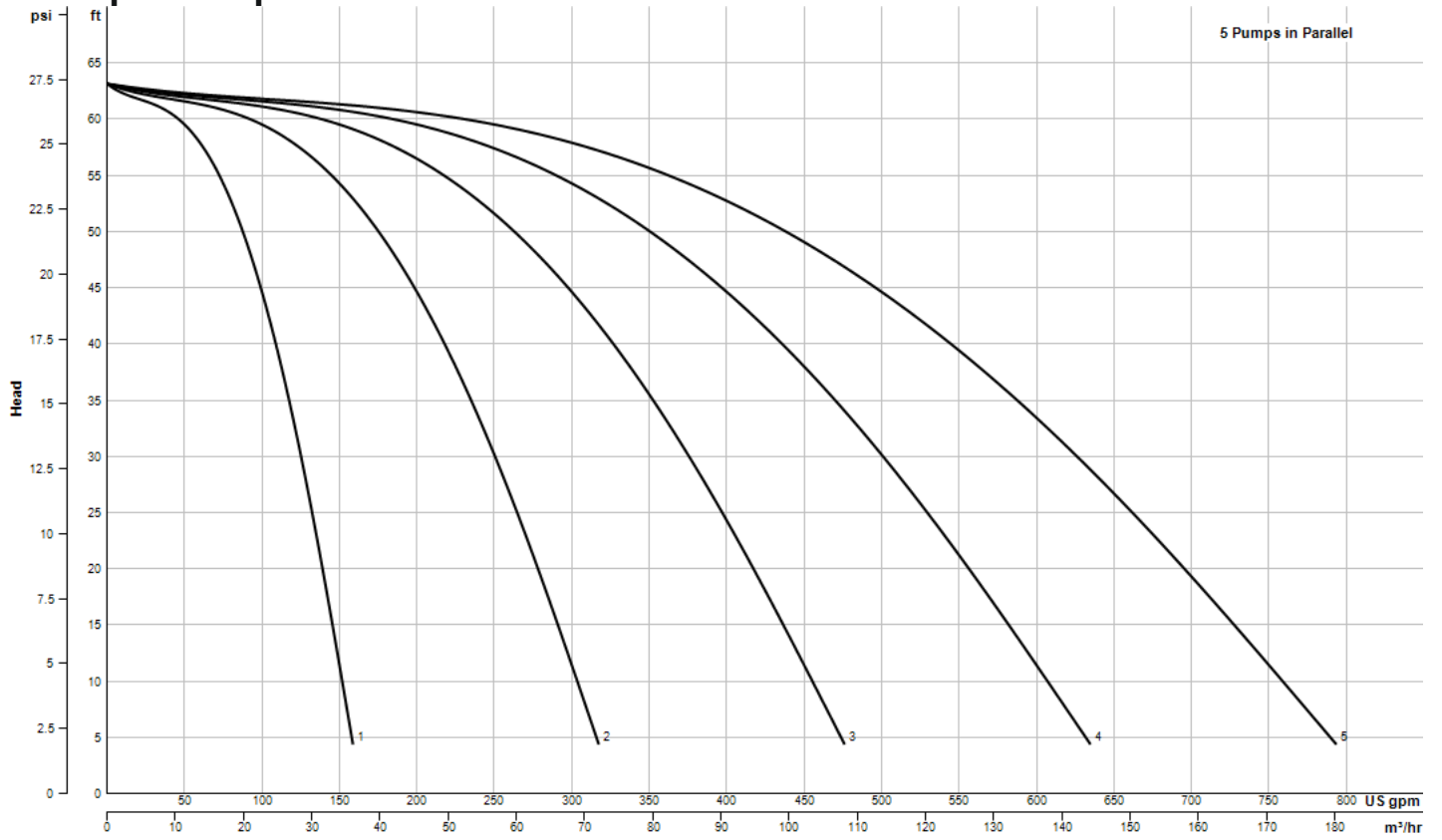


**ecocirc XL**  
Ecocirc XL 70-145

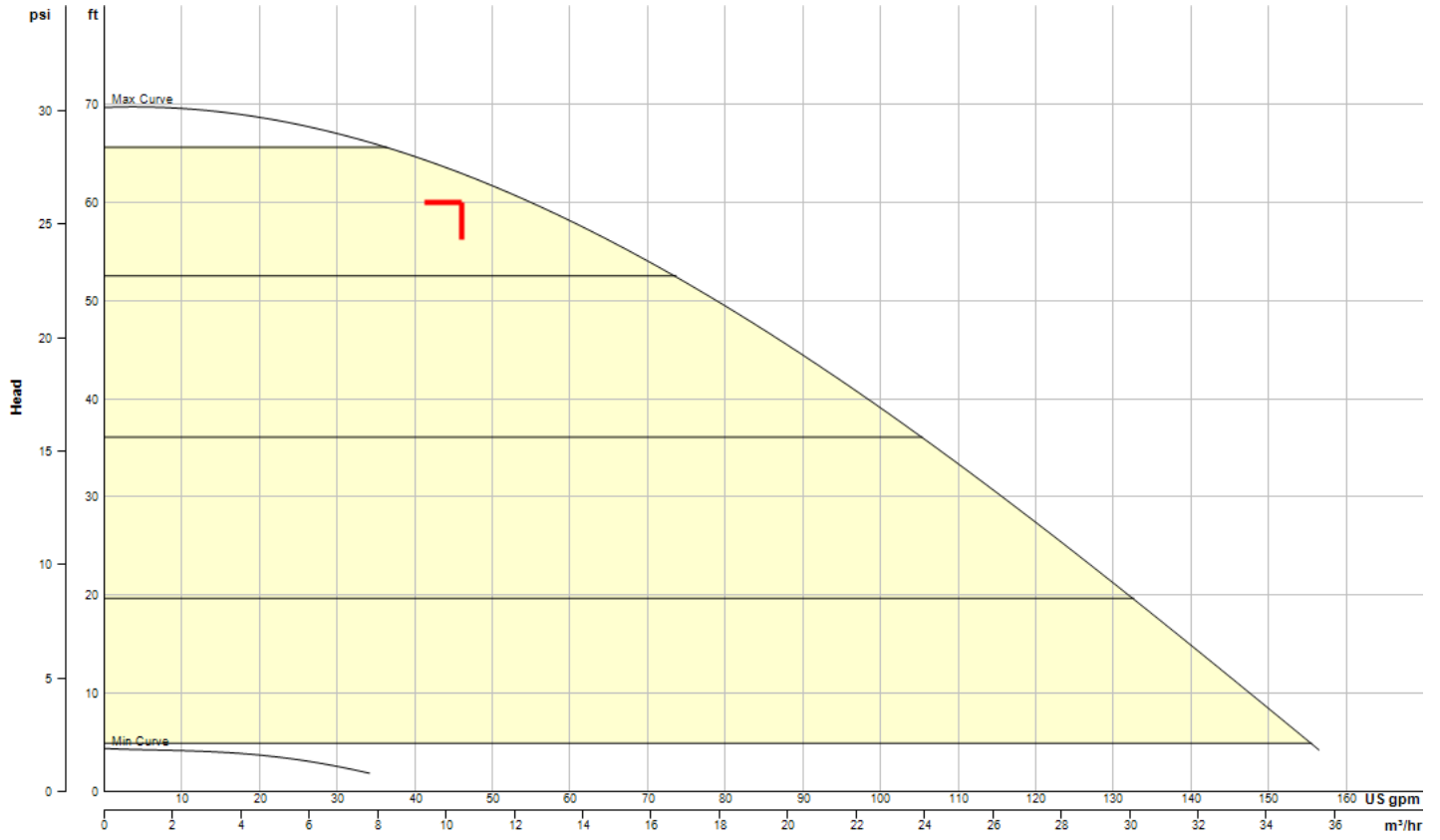


Performance curve meets 14.6 / ISO 9906 acceptance criteria

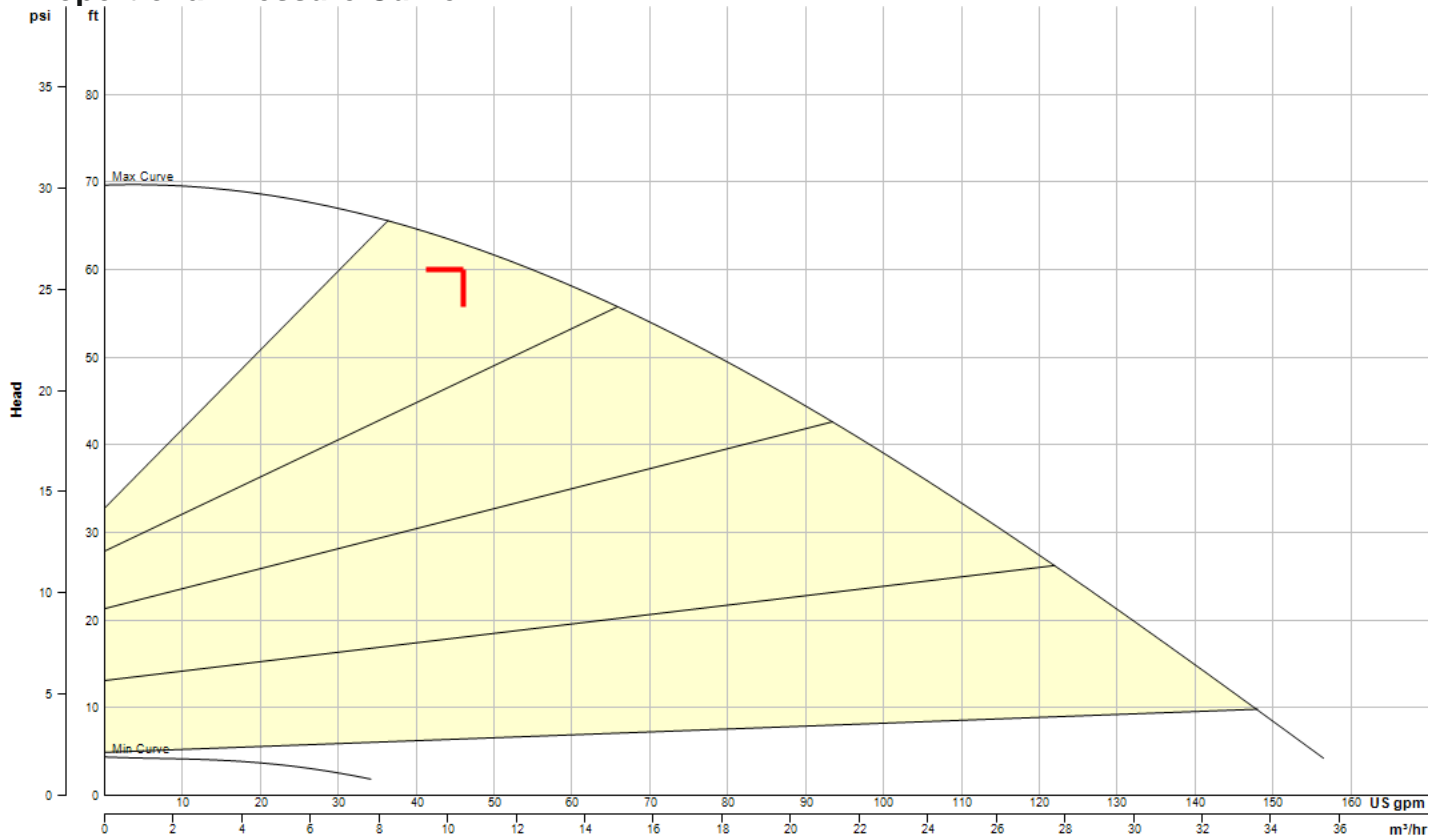
# Multiple Pump Curve

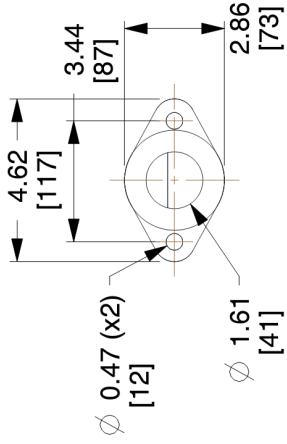


# Constant Pressure Curve

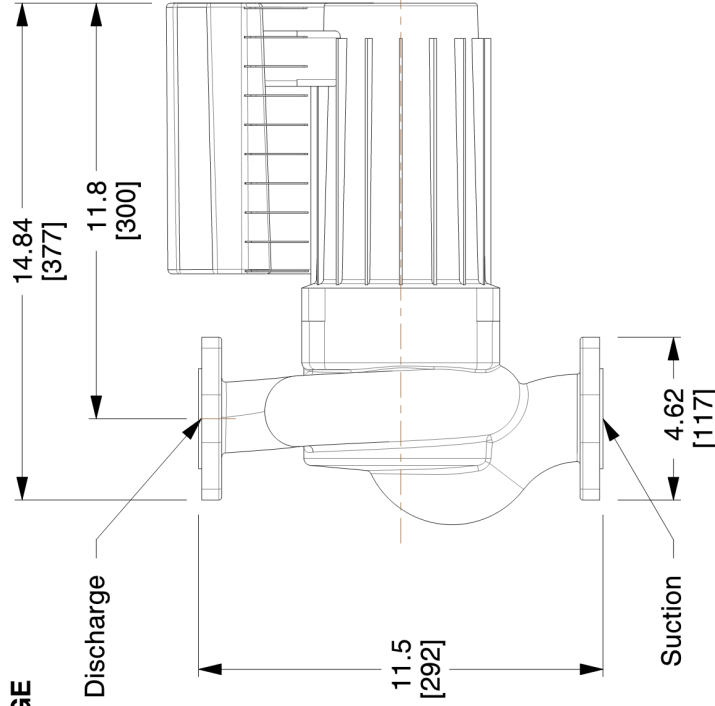
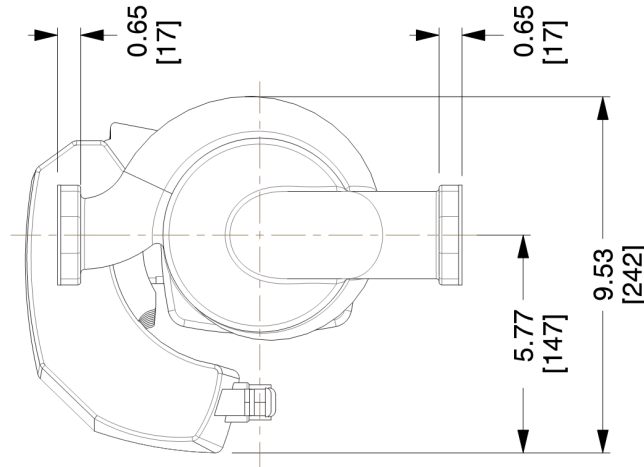


# Proportional Pressure Curve





**SUCTION & DISCHARGE FLANGE DETAILS**



a xylem brand

8200 N. Austin Ave.  
Morton Grove, IL 60053, USA

This drawing and the information depicted therein is the property of Xylem. Copies are issued in strict confidence and shall not be reproduced or copied, or used as the basis for the manufacture or sale of products without prior written permission of Xylem.

Dimensions are subject to change

Not to be used for construction unless certified

**BG-104315 ECOCIRC XL 70-145**

Series ecocirc XL High Efficiency Large Wet Rotor Circulator with (ECM)

Motor Hp:2 | Voltage:208-230 | Phase:1 | Watts Range:55-1400 | Amp Range:0.6-6.0

Dimensions : IN (mm)

Scale : N.T.S.

Submittal # : A-429C

## Standard Materials of Construction

<b>Pump Body Construction:</b>	Cast Iron or Stainless Steel
<b>Impeller</b>	Poly-phenylene Sulfide or Stainless Steel
<b>Shaft</b>	AISI 420 Stainless Steel
<b>Rotor</b>	Permanent Magnet
<b>Bearing</b>	Carbon Sleeve
<b>Gasket/O-Ring</b>	EPDM
<b>All Other Wetted Parts</b>	AISI 304 Stainless Steel
<b>Motor Type</b>	Electronically Commutated Motor/Permanent Magnet
<b>Motor Insulation Class</b>	F

## Operating Data

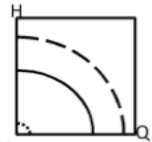
Max Working Pressure	175 psi (12 bar)
Minimum Working Temperature	14°F (-10°C)
Maximum Working Temperature	230°F (110°C)
Ambient Temperature Range	32°F - 104°F (0°C - 40°C)



## STANDARD OPERATING MODES



### CONSTANT SPEED



The pump maintains a constant speed at any flow rate. The desired speed is set on the interface panel of the pump.



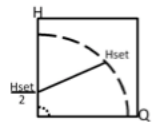
### CONSTANT PRESSURE ( $\Delta p$ -c)



The pump maintains a constant differential pressure at any flow demand until the maximum speed is reached. The desired head of the pump can be set via user interface. Recommended for use in systems with small or constant pressure losses.



### PROPORTIONAL PRESSURE ( $\Delta p$ -v)



The differential pressure continuously increases or decreases based on the flow demand. The set point head can be set on the pump user interface. Use for systems with large pressure losses.



### NIGHT MODE

The pump will automatically reduce speed when there is an abrupt change in fluid temperature. The change in fluid temperature is from a boiler operating in night time setback mode. The built-in temperature sensor is used. (Fixed Speed, Constant Pressure, Proportional Pressure)

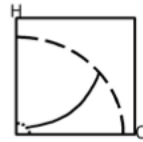
## INPUT SIGNALS

- One 0-10V (Analog): Speed Control by external controller
- One 4-20mA (Analog): Connection with an external differential pressure sensor for pressure control mode (two differential pressure sensor ranges: 0-15 and 0-30 PSIG) on single phase models.
- Two absolute pressure sensors 4-20mA (Analog) input for three phase models.
- One external temperature sensor input for Differential Temp operating mode. Sensor Type: KYT38, P/N: 104502
- One built-in temperature sensor for Set Point Temp and Differential-Temp operating mode.

**START/STOP CONNECTIONS:** Connect to external dry contact relay or use with a thermostat.

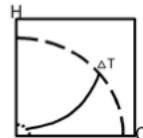
## TEMPERATURE DEPENDENT OPERATING MODES

### SET POINT TEMPERATURE ( $\Delta p$ -T)



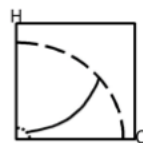
The nominal differential pressure set point is modified based on the fluid temperature. Uses the built-in temperature sensor.

### SET POINT TEMPERATURE (T)



The pump maintains a constant temperature in a system, such as domestic hot water system or a single temperature heating system. Uses the built-in temperature sensor.

### DIFFERENTIAL TEMPERATURE ( $\Delta T$ )



The pump maintains a constant differential temperature between the built-in and external temperature sensors.

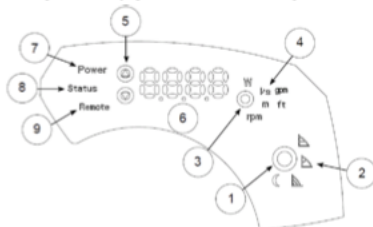
## REMOTE BUILDING MANAGEMENT SYSTEM CAPABILITIES

- The pump can be monitored or controlled by a signal from BMS (Building Management System). Built-in protocols are BACnet and Modbus. Direct connection to a PC is available.
- An optional wireless module can be added to create a short range wireless field for remote connection to the pump. An internet browser can be used to program the advanced settings. Module P/N: 104500

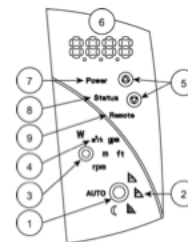
**OUTPUT RELAY(single phase):** Normally Open Dry Contact Relay for Fault Mode indication.

**OUTPUT RELAYS (three phase):** Two Normally Open Dry Contact Relays for Fault Mode and Run indication.

## ONBOARD USER INTERFACE



1. Control mode button
2. Control mode indicators
3. Parameter button
4. Parameter indicators
5. Setting buttons
6. Numeric display
7. Power indicator
8. Status / Fault indicator
9. Remote control indicator



Job/Project: 24-10638 Shaker Trace Seed Nursery	Representative: Steven Strode	
ESP-Systemwize: WIZE-E206565A	Created On: 10/17/2024	Phone: 8657890638
Location/Tag: P-6	Email: tcrone@b-g.com	
Engineer: None Selected	Submitted By:	Date:
Contractor: None Selected	Approved By:	Date:

**High Efficiency Large Wet Rotor Circulator with ECM Motor**  
**Series: ecocirc® XL**

**Model: 55-45**

The ecocirc® XL circulator is designed with a highly efficient electronically commutated permanent magnet motor (ECM/PM Technology). Cast Iron model designed for closed loop hydronic heating and cooling systems pumping water or water/glycol mix. Stainless Steel body pump designed for plumbing systems or open loop heating and cooling systems.



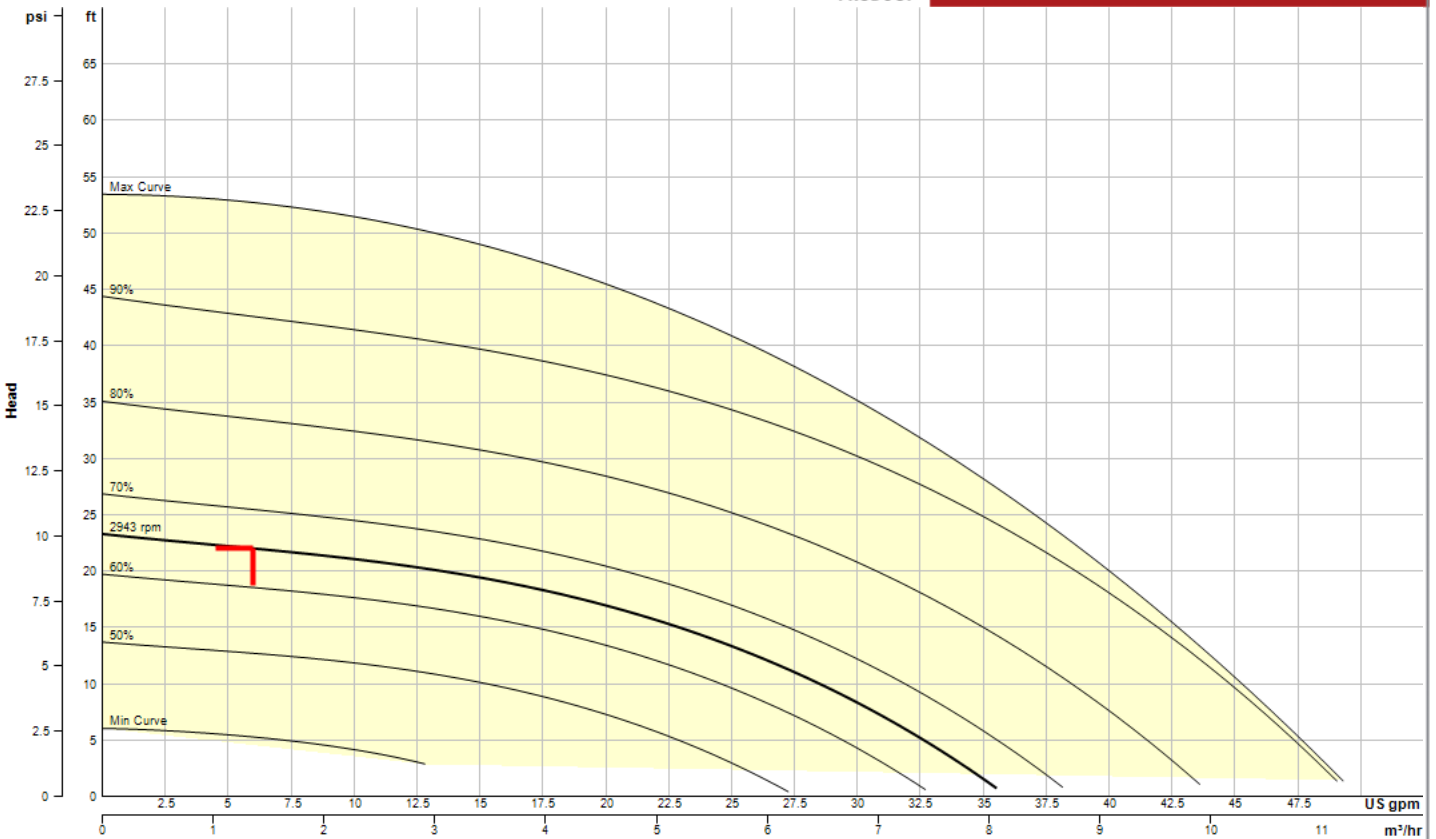
**Selection Summary**

Duty Point Flow	6.0 US gpm
Duty Point Head	22.0 ft
Control Head	0.0 ft
WTW Efficiency at Duty Point	25.2 %
WTW PLEV Efficiency	0.0 %
Motor Power	0.5
Electrical Input Power	0.132 hp
RPM @ Duty Point	2943 rpm
NPSHr	---
Minimum Shutoff Head	23.3 ft
Fluid Temperature	68 °F
Fluid Type	Water
Phase	1
Voltage	208-230
Weight (approx. - consult rep for exact)	22 lbs

**Performance Curve**

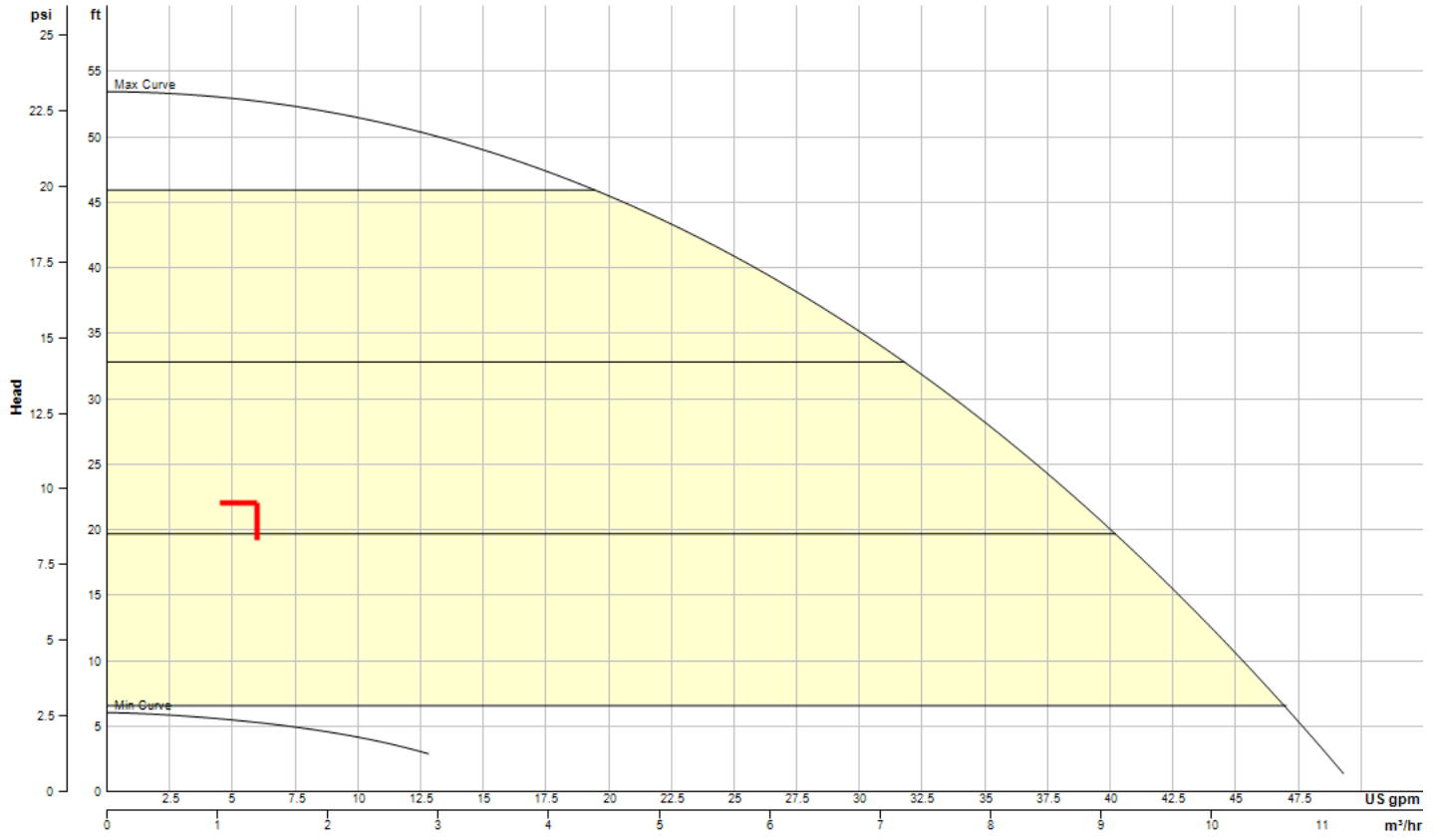


**ecocirc XL**  
**Ecocirc XL 55-45**

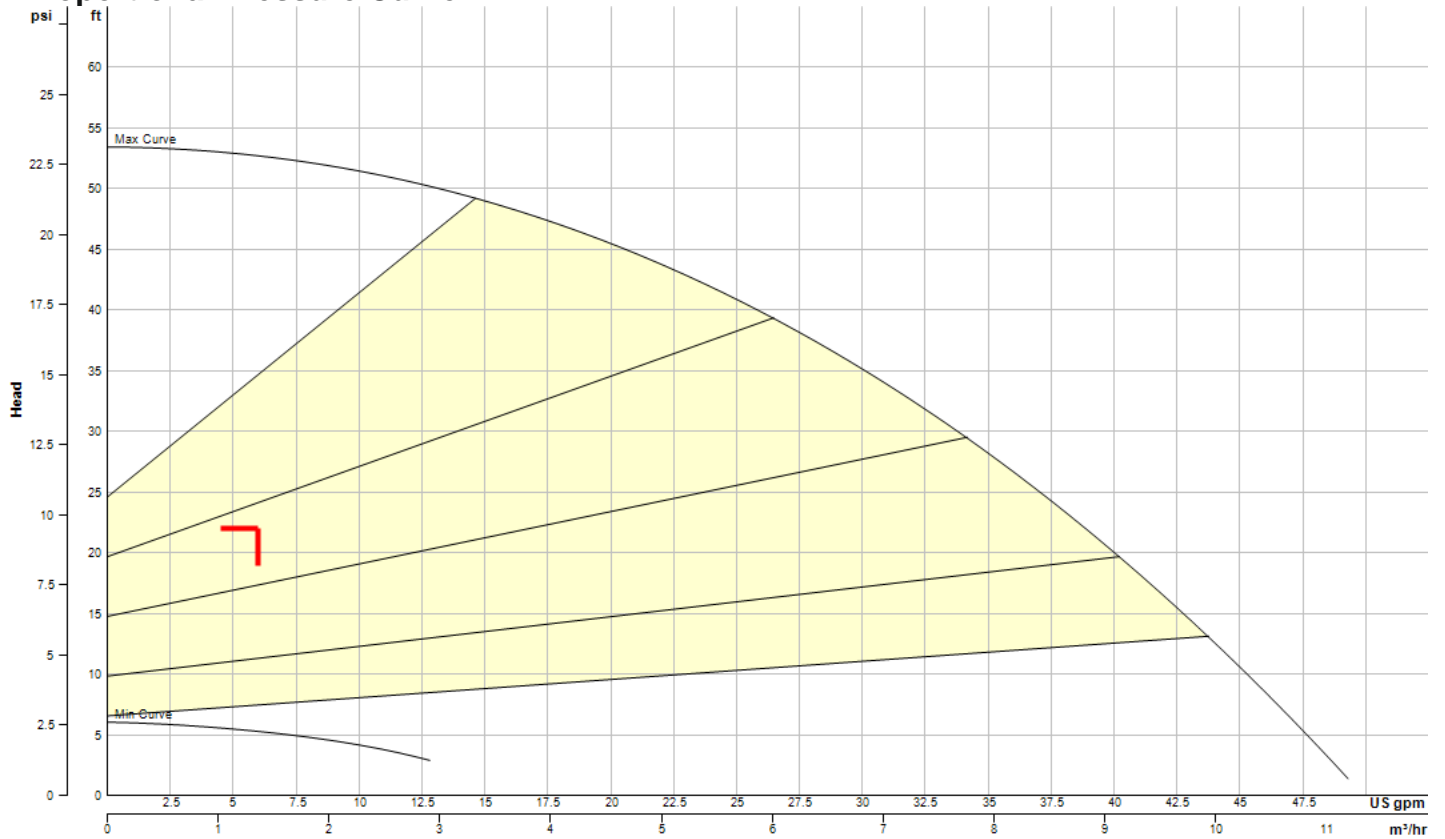


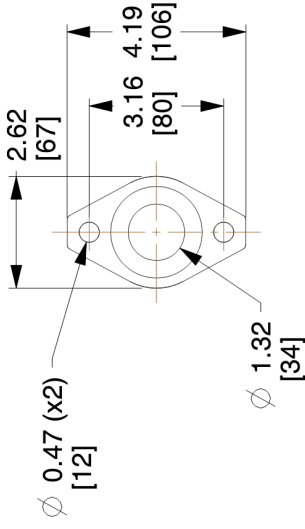
Performance curve meets 14.6 / ISO 9906 acceptance criteria

# Constant Pressure Curve

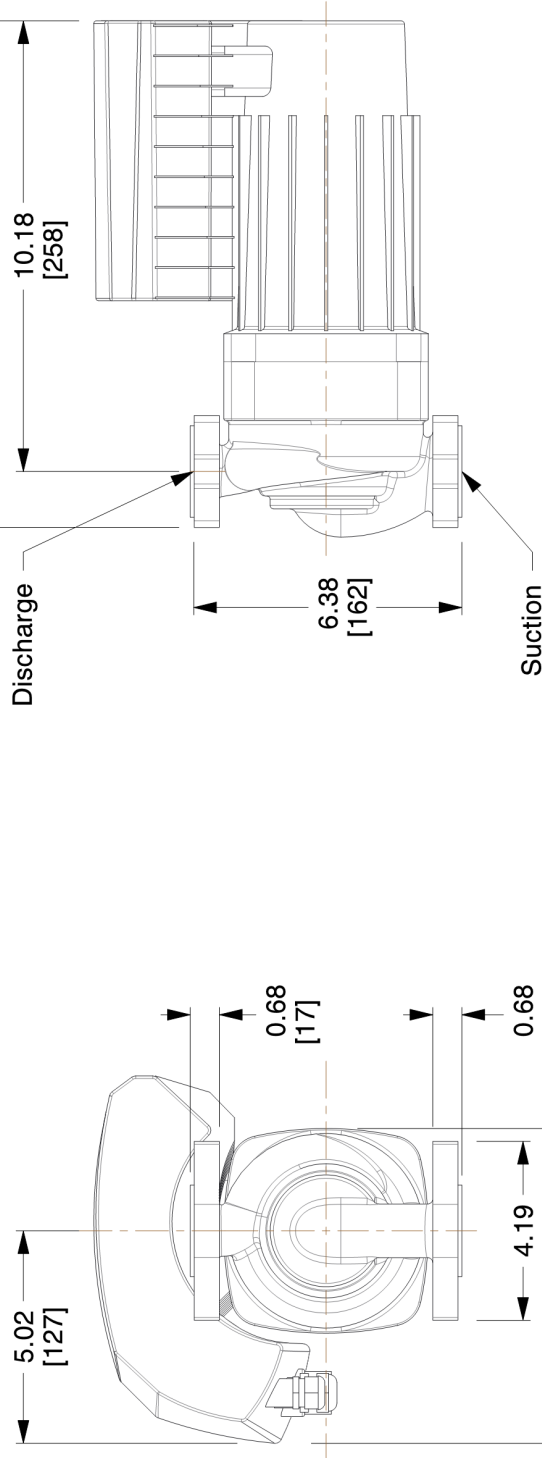


# Proportional Pressure Curve





**SUCTION & DISCHARGE  
FLANGE DETAILS**



**Bell & Gossett**  
a xylem brand

8200 N. Austin Ave.  
Morton Grove, IL 60053, USA

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Dimensions are subject to change

Not to be used for construction unless certified

**BG-104306 ECOCIRC XL 55-45**

Series ecocirc XL High Efficiency Large Wet Rotor Circulator with (ECM)

Motor Hp:1/2 | Voltage:208-230 | Phase:1 | Watts Range:30-500 | Amp Range:0.2-2.0

Dimensions : IN (mm)

Scale : N.T.S.

Submittal # : A-429C

## Standard Materials of Construction

<b>Pump Body Construction:</b>	Cast Iron or Stainless Steel
<b>Impeller</b>	Poly-phenylene Sulfide or Stainless Steel
<b>Shaft</b>	AISI 420 Stainless Steel
<b>Rotor</b>	Permanent Magnet
<b>Bearing</b>	Carbon Sleeve
<b>Gasket/O-Ring</b>	EPDM
<b>All Other Wetted Parts</b>	AISI 304 Stainless Steel
<b>Motor Type</b>	Electronically Commutated Motor/Permanent Magnet
<b>Motor Insulation Class</b>	F

## Operating Data

Max Working Pressure	175 psi (12 bar)
Minimum Working Temperature	14°F (-10°C)
Maximum Working Temperature	230°F (110°C)
Ambient Temperature Range	32°F - 104°F (0°C - 40°C)



## STANDARD OPERATING MODES



### CONSTANT SPEED



The pump maintains a constant speed at any flow rate. The desired speed is set on the interface panel of the pump.



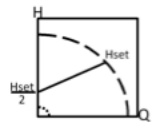
### CONSTANT PRESSURE ( $\Delta p$ -c)



The pump maintains a constant differential pressure at any flow demand until the maximum speed is reached. The desired head of the pump can be set via user interface. Recommended for use in systems with small or constant pressure losses.



### PROPORTIONAL PRESSURE ( $\Delta p$ -v)



The differential pressure continuously increases or decreases based on the flow demand. The set point head can be set on the pump user interface. Use for systems with large pressure losses.



### NIGHT MODE

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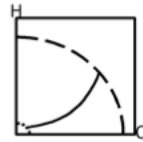
## INPUT SIGNALS

- One 0-10V (Analog): Speed Control by external controller
- One 4-20mA (Analog): Connection with an external differential pressure sensor for pressure control mode (two differential pressure sensor ranges: 0-15 and 0-30 PSIG) on single phase models.
- Two absolute pressure sensors 4-20mA (Analog) input for three phase models.
- One external temperature sensor input for Differential Temp operating mode. Sensor Type: KYT38, P/N: 104502
- One built-in temperature sensor for Set Point Temp and Differential-Temp operating mode.

**START/STOP CONNECTIONS:** Connect to external dry contact relay or use with a thermostat.

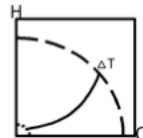
## TEMPERATURE DEPENDENT OPERATING MODES

### SET POINT TEMPERATURE ( $\Delta p$ -T)



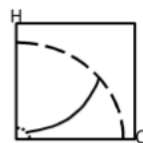
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### DIFFERENTIAL TEMPERATURE ( $\Delta T$ )



The pump maintains a constant differential temperature between the built-in and external temperature sensors.

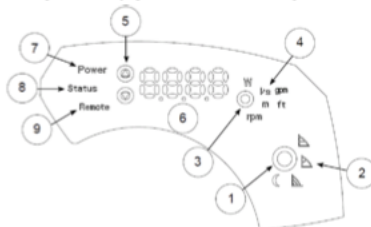
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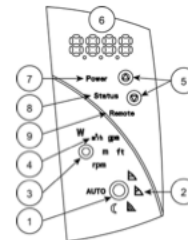
**OUTPUT RELAY(single phase):** Normally Open Dry Contact Relay for Fault Mode indication.

**OUTPUT RELAYS (three phase):** Two Normally Open Dry Contact Relays for Fault Mode and Run indication.

## ONBOARD USER INTERFACE



1. Control mode button
2. Control mode indicators
3. Parameter button
4. Parameter indicators
5. Setting buttons
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7. Power indicator
8. Status / Fault indicator
9. Remote control indicator



<b>Job/Project:</b> 24-10638 Shaker Trace Seed Nursery	<b>Representative:</b> Blackmore and Glunt, Inc.	
<b>ESP-Systemwize:</b> WIZE-E206565A	10/17/2024	<b>Phone:</b> (314) 878-4313
<b>Location/Tag:</b> ADS-2	<b>Email:</b> sblackmore@b-g.com	
<b>Engineer:</b> None Selected	<b>Submitted By:</b>	<b>Date:</b>
<b>Contractor:</b> None Selected	<b>Approved By:</b>	<b>Date:</b>

## CRSN Coalescing Style Air & Sediment Separator

The Bell & Gossett CRSN is a combination air & sediment separator that utilizes a coalescing medium to remove impurities from HVAC systems. It features a stainless steel coalescing medium with 58% open area, non-removable end cover, and connections for an air vent, blow down valve, and skim valve. The product is designed, constructed, inspected and stamped per ASME Section VIII, Division 1.

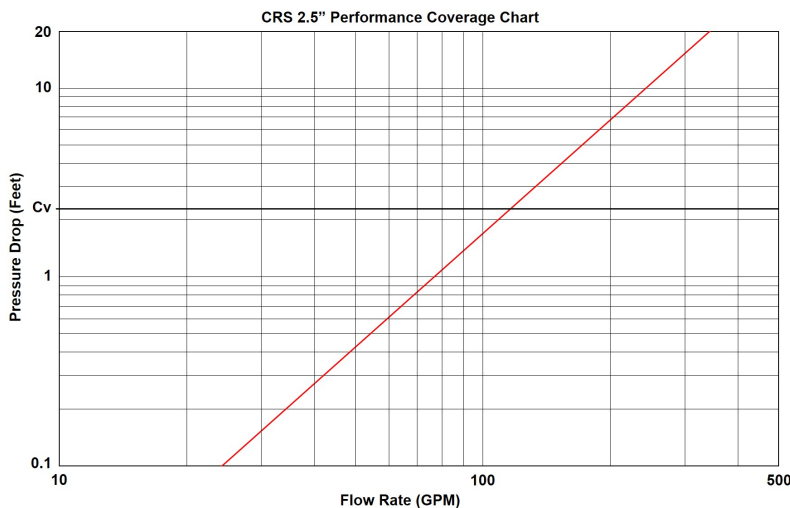


### Separator Selection

Model	CRSN-2-1/2N
Size	2.5 in
Design Flow	0.0 gpm
Recommended Max Flow	96 gpm
ASME Certified	true
Pressure Drop @ Design Flow	0.0'
Shipping Weight	38.0 lbs
Flooded Weight	68.0 lbs
Cv	116.0

Designed and constructed per ASME Section VIII, Division 1

## Performance Coverage Chart:



## CRSN-2-1/2N

Type of Separator: 2.5" NPT Coalescing Style Air & Sediment Combo Separator, Standard Velocity, Non-Removable Head

### Operating Limits

Max Working Pressure	150.0 psig
Max Temperature	450.0 °F

### Materials of Construction

Body	Carbon Steel
Coalescing Medium	304 SS

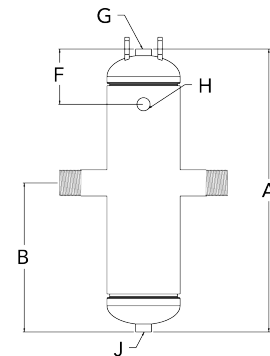
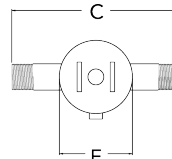
Consult local rep for higher working pressures and temperatures.

## Dimensional data:

\* All dimensions +/- 0.125" (3.2mm) tolerance. Dimensions are subject to change. Not to be used for construction purposes unless certified.

### IMPORTANT NOTES

1. Consult IOM 0121-01 for safety and service instructions.
2. Lifting lugs are for transportation and installation of the empty vessel, and are not to be used for complete or partial support of the flooded vessel.
3. Welding to the pressure vessel boundary will void the ASME stamp.



### DIMENSIONS IN INCHES \* (mm)

A	B	C	E	F	G	H	J
25.63 (651)	13.5 (343)	15.75 (400)	6.63 (168)	5 (127)	3/4" NPTF	1/2" NPTF	1" NPTF

<b>Job/Project:</b> 24-10638 Shaker Trace Seed Nursery	<b>Representative:</b> Blackmore and Glunt, Inc.	
<b>ESP-Systemwize:</b> WIZE-E206565A	10/17/2024	<b>Phone:</b> (314) 878-4313
<b>Location/Tag:</b> ADS-1	<b>Email:</b> sblackmore@b-g.com	
<b>Engineer:</b> None Selected	<b>Submitted By:</b>	<b>Date:</b>
<b>Contractor:</b> None Selected	<b>Approved By:</b>	<b>Date:</b>

## CRSN Coalescing Style Air & Sediment Separator

The Bell & Gossett CRSN is a combination air & sediment separator that utilizes a coalescing medium to remove impurities from HVAC systems. It features a stainless steel coalescing medium with 58% open area, non-removable end cover, and connections for an air vent, blow down valve, and skim valve. The product is designed, constructed, inspected and stamped per ASME Section VIII, Division 1.

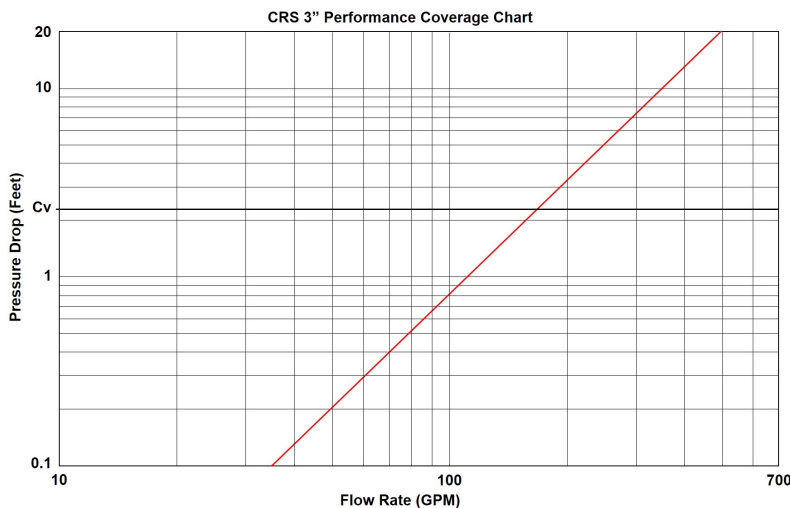


### Separator Selection

Model	CRSN-3F
Size	3.0 in
Design Flow	0.0 gpm
Recommended Max Flow	138 gpm
ASME Certified	true
Pressure Drop @ Design Flow	0.0'
Shipping Weight	58.0 lbs
Flooded Weight	90.0 lbs
Cv	168.0

Designed and constructed per ASME Section VIII, Division 1

## Performance Coverage Chart:



## CRSN-3F

Type of Separator: 3" Flanged Coalescing Style Air & Sediment Combo Separator, Standard Velocity, Non-Removable Head

### Operating Limits

Max Working Pressure	150.0 psig
Max Temperature	450.0 °F

### Materials of Construction

Body	Carbon Steel
Coalescing Medium	304 SS

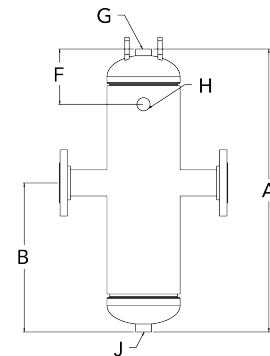
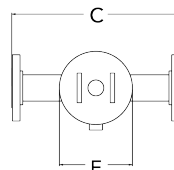
Consult local rep for higher working pressures and temperatures.

## Dimensional data:

\* All dimensions +/- 0.125" (3.2mm) tolerance. Dimensions are subject to change. Not to be used for construction purposes unless certified.

### IMPORTANT NOTES

1. Consult IOM 0121-01 for safety and service instructions.
2. Lifting lugs are for transportation and installation of the empty vessel, and are not to be used for complete or partial support of the flooded vessel.
3. Welding to the pressure vessel boundary will void the ASME stamp.



### DIMENSIONS IN INCHES \* (mm)

A	B	C	E	F	G	H	J
25.63 (651)	13.5 (343)	20.25 (514)	6.63 (168)	5 (127)	3/4" NPTF	1/2" NPTF	1" NPTF

<b>Job/Project:</b>	<b>Representative: Blackmore and Glunt</b>		
<b>ESP-Systemwise: WIZE-E206565A</b>	<b>Created On: 10/17/2024</b>	<b>Phone: (513)489-5225</b>	
<b>Location/Tag:</b>	<b>Email: tcrone@b-g.com</b>		
<b>Engineer:</b>	<b>Submitted By:</b>	<b>Date:</b>	
<b>Contractor:</b>	<b>Approved By:</b>	<b>Date:</b>	

## Expansion Tanks: Potable Water Diaphragm

**Bell & Gossett Series: PTA ASME**

The Series PTA expansion tank is an ASME constructed vessel designed to absorb the forces of expanding water and protect the domestic water system from pressure build up. PTA-5 through PTA-210V are bladder tanks that have a FDA approved polypropylene liner and butyl diaphragm that isolate the water from the steel shell. The PTA-447 through PTA-457 are bladder tanks that utilize a FDA approved replaceable butyl bladder to isolate the system water from the steel shell.



**Designed for Potable Hot Water Systems**

Designed and constructed per ASME Section VIII, Division 1

### Selection Criteria

Model	PTA-5
Quantity	3
Required Tank Volume	0.0 gal
Required Acceptance	0.0 gal
Actual Tank Volume	3.5 gal
Actual Acceptance Volume	2.3 gal
Orientation	All
Type	Diaphragm
ASME Rated	true
Fill/Max Temperature	0.0 °F / 0.0 °F
Fill/Max Pressure	0.0 psi / 0.0 psi
System Volume	0.0 gal
Atmospheric Pressure	14.7 psi

### Tank Details

- Commercial Applications
- ASME Construction
- Controls System Pressure
- Protects Plumbing Fixtures
- Eliminates Relief Valve Blow-Off
- FDA Approved Materials
- High Maximum Operating Temperatures
- High Working Pressures of 175 PSI and 250 PSI Available
- Models PTA-5 through PTA-210V are listed by NSF 61

**PTA-5**

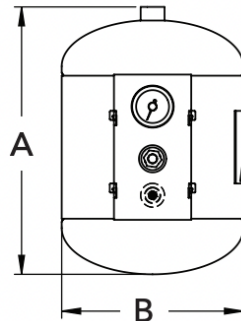
### Operating Data

Max Operating Temperature	240.0 °F
Max Working Pressure	150.0 psig
Shipping Weight	22 (10)

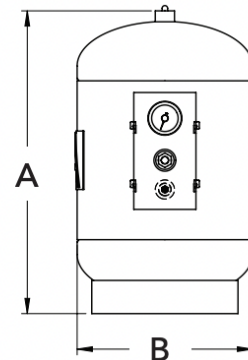
### Performance Curve Data

#### Materials of Construction

Shell	Steel
Diaphragm	Polypropylene Liner, Butyl
System Connection	Stainless Steel



**PTA-5 thru PTA-12**



**PTA-20V thru PTA-210V**

Dimensions are subject to change. Not to be used for construction purposes unless certified.

Part Number	A Height	B Diameter	System Connection
1BN346LF	14 (356)	10 (254)	3/4 NPTF
Inches (mm)			

**JOB:**
**REPRESENTATIVE:**

 UNIT TAG:  
 ENGINEER:  
 CONTRACTOR:

 ORDER NUMBER:  
 SUBMITTED BY:  
 APPROVED BY:

 DATE:  
 DATE:  
 DATE:


# ecocirc® 20-18 | ecocirc+ 20-18

## High Efficiency Wet Rotor Circulator with Electronically Commutated Motor (ECM)

**DESCRIPTION**

The ecocirc 20-18 circulators are designed with a highly efficient electronically commutated permanent magnet motor (ECM Technology). Cast iron flanged models are designed for closed loop hydronic heating and cooling systems, and stainless steel flanged and union body pumps for plumbing systems or open loop heating and cooling systems.

**CONSTRUCTION MATERIALS**

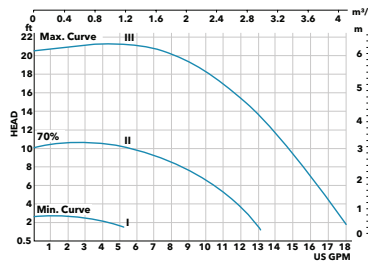
- Pump Body:** Cast Iron or Stainless Steel
- Impeller:** Impact Modified PPE
- Shaft:** Ceramic/Alumina
- Rotor Can:** 316 Stainless Steel
- Bearings:** Ceramic/Alumina
- O-Ring:** EPDM
- All Other Wetted Parts:** 304 or 316 Stainless Steel
- Motor Type:** Electronically Commutated Permanent Magnet Motor
- Insulation Class:** F
- Check Valve:** 1" Noryl Check Valve shipped loose for field installation

**OPERATING DATA**

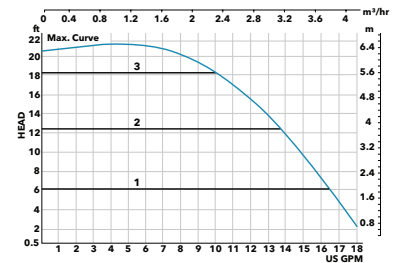
- Maximum Working Pressure:** 145 psi (10 Bar)
- Minimum Working Temperature:** 14°F (-10°C)
- Maximum Working Temperature:** 230°F (110°C)
- Ambient Temperature Range:** 32°F - 104°F (0°C - 40°C)

**PERFORMANCE**

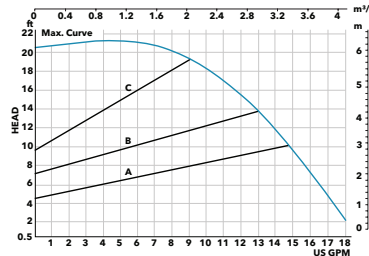
Fixed Speed Curve



Constant Pressure Curve



Proportional Pressure Curve


**SCHEDULE ecocirc 20-18**

CAST IRON BODY (Flanged)		STAINLESS STEEL BODY (Flanged and Union)		RATED MOTOR CHARACTERISTICS				
MODEL NUMBER	PART NUMBER	MODEL NUMBER	PART NUMBER	VOLTAGE	PHASE	Hz	WATTS RANGE	AMP RANGE
ecocirc 20-18 flanged	60B0B1000	ecocirc 20-18 stainless steel flanged	60B0B1001	115V	1	50/60	0-70	.06-1.02
		ecocirc 20-18 stainless steel union	60B0B1002	115V	1	50/60	0-70	.06-1.02

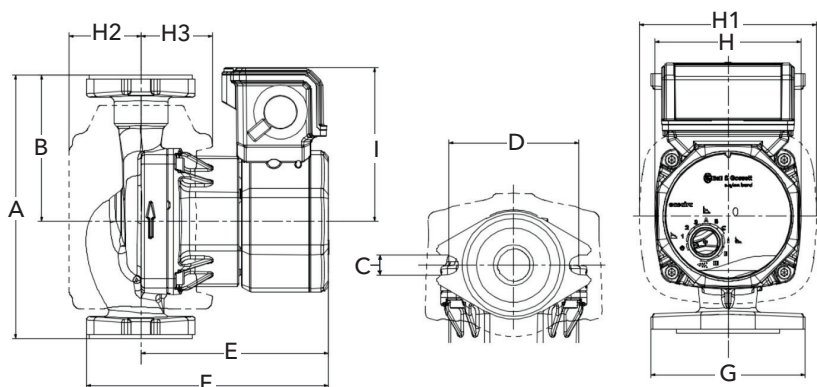
**Note:** Where potable water is pumped, use a stainless steel circulator. ecocirc 20-18 and ecocirc+ 20-18 circulators are recommended for indoor use only.

**SCHEDULE ecocirc+ 20-18**

CAST IRON BODY (Flanged)		STAINLESS STEEL BODY (Flanged and Union)		RATED MOTOR CHARACTERISTICS				
MODEL NUMBER	PART NUMBER	MODEL NUMBER	PART NUMBER	VOLTAGE	PHASE	Hz	WATTS RANGE	AMP RANGE
ecocirc+ 20-18 flanged	60B0B1003	ecocirc+ 20-18 stainless steel flanged	60B0B1004	115V	1	50/60	0-70	.06-1.02
		ecocirc+ 20-18 stainless steel union	60B0B1005	115V	1	50/60	0-70	.06-1.02

**Note:** Where potable water is pumped, use a stainless steel circulator. ecocirc 20-18 and ecocirc+ 20-18 circulators are recommended for indoor use only.

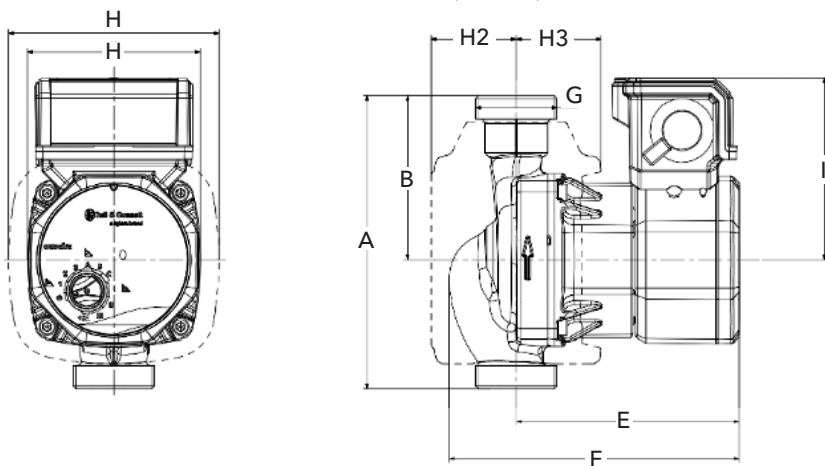
**ecocirc/ecocirc+ 20-18 PUMP DIMENSIONS (FLANGED)**



MODEL NUMBER	DIMENSIONS - INCHES (mm)										APPROX. SHIPPING WEIGHT LB. (KG)	
	A	B	E	F	H	H1	H2	H3	I	CAST IRON	STAINLESS STEEL	
ecocirc 20-18 flanged	6.38" (162)	3.54" (90)	4.57" (116)	5.9" (150)	3.54" (90)	4.29" (109)	1.73" (44)	1.73" (44)	3.74" (95)	6.2 lb. (2.81)	5.86 lb. (2.66)	
ecocirc+ 20-18 flanged	6.38" (162)	3.54" (90)	4.57" (116)	5.9" (150)	3.54" (90)	4.29" (109)	1.73" (44)	1.73" (44)	3.74" (95)	6.2 lb. (2.81)	5.86 lb. (2.66)	

MODEL NUMBER	FLANGED SIZE INCHES - NPT	# OF BOLTS	DIMENSIONS - INCHES (mm)			COMPANION FLANGE PART NUMBERS	
			C	D	G	CAST IRON PN	STAINLESS STEEL PN
ecocirc 20-18 flanged	¾", 1", 1-¼", 1-½"	2	.47" (12)	3.15" (80)	3.74" (95)	101201-101204	101501LF - 101504LF
ecocirc+ 20-18 flanged	¾", 1", 1-¼", 1-½"	2	.47" (12)	3.15" (80)	3.74" (95)	101201-101204	101501LF - 101504LF

**ecocirc/ecocirc+ 20-18 PUMP DIMENSIONS (UNION)**



MODEL NUMBER	DIMENSIONS - INCHES (mm)										APPROX. SHIPPING WEIGHT LB. (KG)	
	A	B	E	F	H	H1	H2	H3	I	CAST IRON	STAINLESS STEEL	
ecocirc 20-18 union	6" (152.4)	3.36" (85.4)	4.57" (116)	5.9" (150)	3.54" (90)	4.29" (109)	1.73" (44)	1.73" (44)	3.74" (95)	N/A	4.61 lb. (2.09)	
ecocirc+ 20-18 union	6" (152)	3.36" (85.4)	4.57" (116)	5.9" (150)	3.54" (90)	4.29" (109)	1.73" (44)	1.73" (44)	3.74" (95)	N/A	4.61 lb. (2.09)	

MODEL NUMBER	UNION TAILPIECE SIZE INCHES - NPT	# OF BOLTS	DIMENSIONS - INCHES (mm)		UNION CONNECTOR KIT PART NUMBERS
			G	CAST IRON PN	BRONZE PN
ecocirc 20-18 union	½" Sweat, ¾" Sweat, ¾" NPT	0	1 ¼" NPSM	N/A	113203LF, 113201LF, 113202LF
ecocirc+ 20-18 union	½" Sweat, ¾" Sweat, ¾" NPT	0	1 ¼" NPSM	N/A	113203LF, 113201LF, 113202LF

## SAFETY STANDARDS AND PROTECTION

**Enclosure:** Class 1, IP44 (equivalent to NEMA Type 2)

UL Listed to UL 778; UL 1004-1, 1004-7; and UL 60730-1

cUL Listed to C22.2 #108

Electronically Thermally Protected (Integrated Motor Protection)

**Motor Insulation Class:** F

Stainless steel models are NSF/ANSI-61 certified

## STANDARD OPERATING MODES

### CONSTANT SPEED



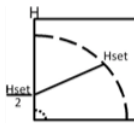
The pump maintains a constant speed at any flow rate. The desired speed is set on the interface panel of the pump.

### CONSTANT PRESSURE ( $\Delta p-c$ )



The pump maintains a constant differential pressure at any flow demand until the maximum speed is reached. The desired head of the pump can be set via user interface. Recommended for use in systems with small or constant pressure losses.

### PROPORTIONAL PRESSURE ( $\Delta p-v$ )



The differential pressure continuously increases or decreases based on the flow demand. The set point head can be set on the pump user interface. Use for systems with large pressure losses.

### NIGHT MODE (ecocirc+ 20-18 only)

The pump will automatically reduce speed when there is an abrupt change in fluid temperature. The change in fluid temperature is from a boiler operating in night time setback mode. The external temperature sensor is used. (Fixed Speed, Constant Pressure, Proportional Pressure)

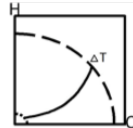
## INPUT SIGNALS (ecocirc+ 20-18 only)

**One 0-10V (Analog):** Speed Control by external controller

One external temperature sensor input for temperature modes. **Sensor Type:** KYT38, P/N: 104502

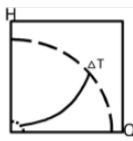
## TEMPERATURE DEPENDENT OPERATING MODES (ecocirc+ 20-18 only)

### SET POINT TEMPERATURE ( $\Delta p-T$ ) (ecocirc+ 20-18 only)



The nominal differential pressure set point is modified based on the fluid temperature. Uses an external temperature sensor.

### SET POINT TEMPERATURE (T) (ecocirc+ 20-18 only)



The pump maintains a constant temperature in a system, such as domestic hot water system or a single temperature heating system. Uses an external temperature sensor.

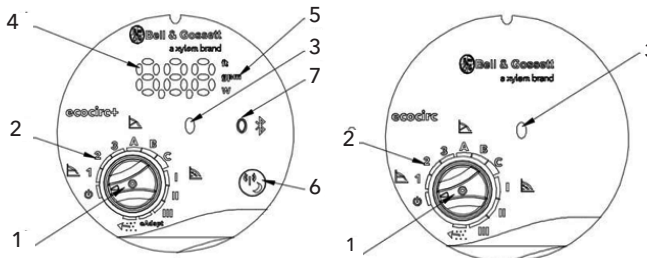
### eAdapt (ecocirc+ 20-18 only)

The pump will optimize the energy consumption by identifying the ideal duty point.

### Air Purge

Air purge will remove the dissolved gases from the pump.

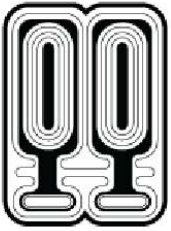
## ONBOARD USER INTERFACE



1	Control mode knob
2	Control mode indicators
3	Status/Fault indicators
4	Numeric display
5	Parameter indicators
6	Control mode button
7	Remote control status indicator



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**wessels**  
**company**

SUBMITTAL

**NLA-SERIES**  
 HVAC EXPANSION TANKS

Models: NLA-35 to NLA-800L  
 Submittal Sheet No. A-1010A Rev. 1 5/17/2018

Job Name _____	Submitted By _____	Date _____
Location _____	Approved By _____	Date _____
_____	Order No. _____	Date _____
Engineer _____	Notes _____	_____
Contractor _____	_____	_____
Sales Rep. _____	_____	_____

**Description:**

Wessels patented NLA tanks are ASME removeable bladder type pre-charged HVAC expansion tanks. They are designed to absorb the expansion forces and control the pressure in heating/cooling systems. The system's expanded water (fully compatible with water/glycol mixtures) is contained in a full acceptance heavy-duty butyl bladder that prevents tank corrosion and waterlogging problems. All NLA expansion tanks can be installed vertically or horizontally.

**Construction:**

Shell: Carbon Steel  
 Heads: Carbon Steel  
 Exterior: Carbocoat 140 - Harvester Red  
 Interior: Heavy Duty Butyl Bladder

**Design Parameters:**

Maximum Design Pressure: 125 PSIG\*  
 Temperature Range: -20°F to 240°F

\*150, 200 & 250 PSIG available

Model Number	Part Number	Tank Volume (Gallons)	Tagging Information	Quantity
NLA-35	22010035	10		
NLA-50	22010050	13		
NLA-85	22010085	23		
NLA-130	22010130	35		
NLA-200	22010200	53		
NLA-300	22010300	79		
NLA-400	22010400	106		
NLA-500	22010500	132		
NLA-600	22010600	158		
NLA-800L	22010805	211		

**Typical Specification**

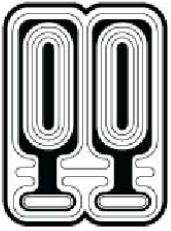
Furnish and install, as shown on plans, a \_\_\_\_\_ gallon \_\_\_\_\_" diameter X \_\_\_\_\_" (high) pre-charged steel HVAC expansion tank with heavy-duty butyl bladder. The tank shall have multiple water-side connections to eliminate stagnate water within the tank, a 0.302"-32 charging valve connection (standard tire valve) to facilitate the on-site charging of the tank to meet system requirements, a pressure gauge, and bladder integrity monitor. The tank must be constructed in accordance with the most recent addendum of Section VIII Division 1 of the ASME Boiler and Pressure Vessel Code and rated for 125 psig.

Each tank shall be Wessels model number NLA-\_\_\_\_\_ or approved equal.



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**wessels**  
**company**

101 Tank Street Greenwood, IN 46143  
 P: 317-888-9800 F: 317-865-7411  
 www.westank.com

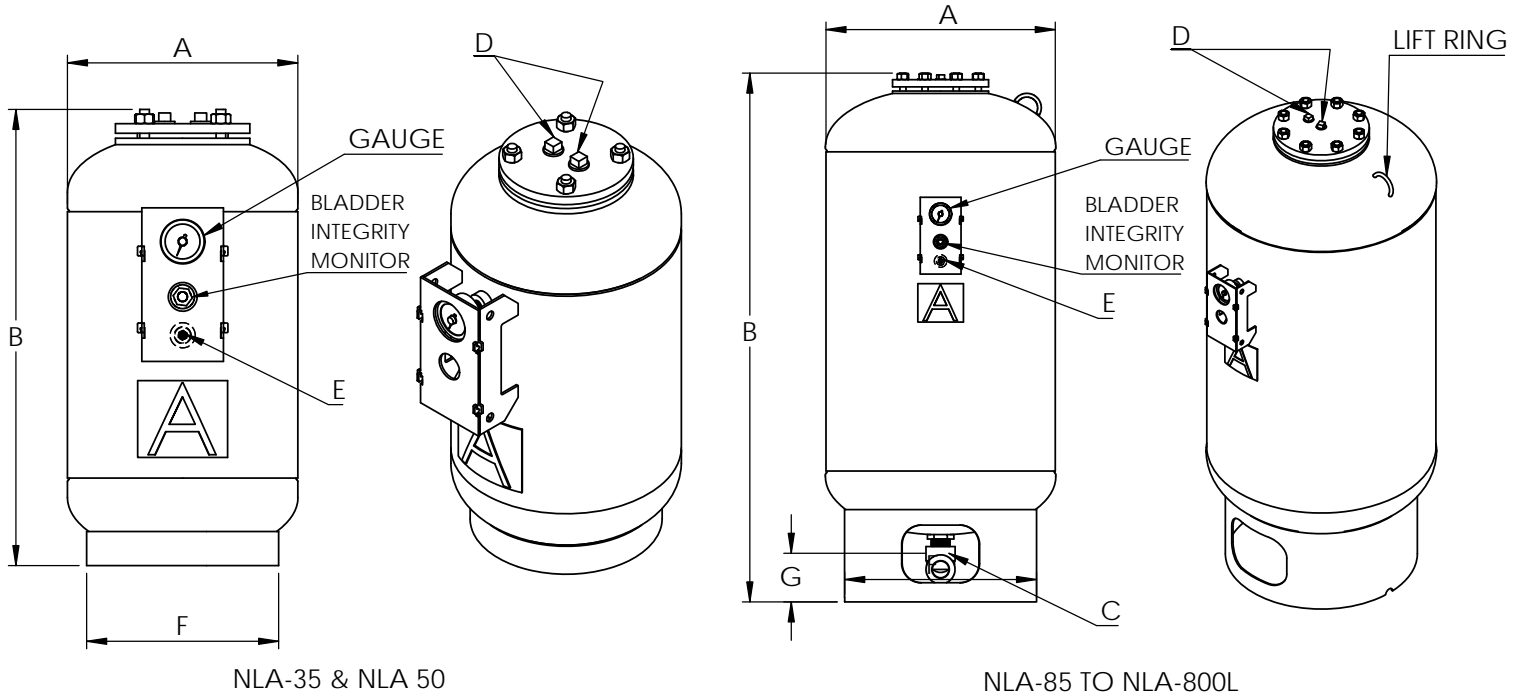


SINCE 1908  
**wessels**  
 company

SUBMITTAL

**NLA-SERIES**  
 HVAC EXPANSION TANKS

Models: NLA-35 to NLA-800L  
 Submittal Sheet No. A-1010A Rev. 1 5/17/2018



**Dimensions & Weights:**

Model Number	Dimensions in Inches						Approx. Shipping Weight (lbs)	
	A	B	System Connection		Charging Valve	F		G
			C	D	E			
NLA-35	12	23 1/2	-			10	-	40
NLA-50	14	24				10	-	50
NLA-85	16	37	1 NPT			12	5 1/2	90
NLA-130	20					16		125
NLA-200	24	43	1 1/2 NPT	3/4 NPT	0.302"-32NC	20	5 1/4	210
NLA-300		55						225
NLA-400		49						300
NLA-500	30	57	2 NPT			24	5 1/4	335
NLA-600		65						360
NLA-800L		76						475

**Notes:**

- Tanks are factory pre-charged at 40 psig and field adjustable.
- California code-sight glass is available upon request.
- Both top and bottom connections (C & D) access the bladder.
- Mounting clips are available upon request.
- U.S. Patent No. 8,633,825 B2



SINCE 1908  
**wessels**  
 company

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