ENOVATIVE®

Enovative® AutoHot®

JOB or CUSTOMER:					
ENGINEER:					
CONTRACTOR:					
SUBMITTED BY:		APPROVED BY:		ORDER NO:	
Date:		Date:		Date:	

SUBMITTAL | SPECIFICATIONS

The Enovative AutoHot® Energy Management System (EMS) is a comprehensive monitoring, control, and fault detection system for domestic hot water systems in any building type.

The on-demand recirculation control reduces pump runtime by as much as 90% by activating at the time that a hot water draw, or demand is initiated in the building and turning off when there is a temperature rise or a set point achieved on the hot water return line. Multiple pump options and activation sensor options are available.

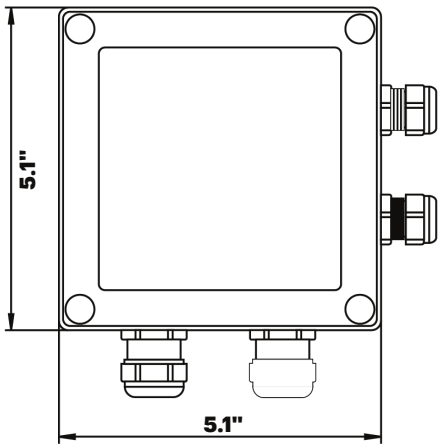
The boiler modulation control reduces hot water energy consumption by reducing the supply temperature when hot water demand is determined to be low with an adjustable fixed control schedule.

These control strategies achieve the optimal balance between comfort, water savings and energy efficiency.

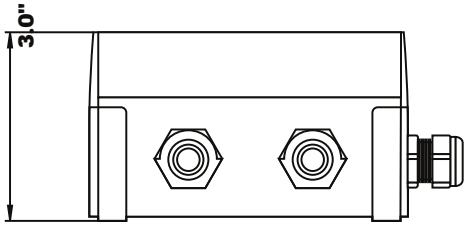
In addition to control of the water heating equipment, the AutoHot® EMS provides monitoring and fault detection. The system includes

Remote monitoring and control is available, providing alerts when system energy and performance exceed thresholds. Remote monitoring also enables the ability to control the system setpoints from a computer or phone.

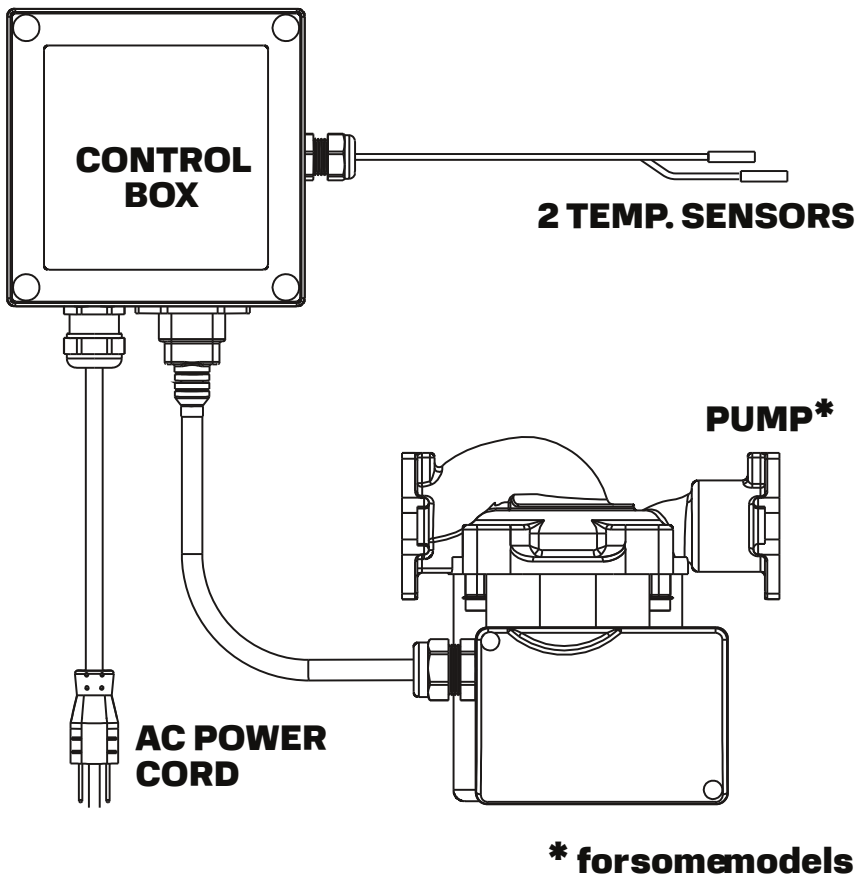
FRONT VIEW



SIDE VIEW



ASSEMBLY



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CONTROLLER FEATURES

Recirc Pump Control	Activation with hot water demand (multiple sensor options), turn off with temperature rise adjustable between 5°F and 25°F, and set lockout point between 80 °F and 125°F. Max runtime after activation of 10 minutes. Autoprime feature, pulses pump activation based on intervals between 10 minutes and 4 hours. Onboard dipswitches allow changes to other pump control modes. Modes include on-demand, continuous, temp based, or sensor based operation.
Boiler Temp. Modulation (Boiler Setback Schedule) OR Outdoor Reset control for heating system pumps	Create a fixed setpoint schedule adjustable to be compliant with various jurisdictions and codes. Adjustable setback temperature between 60 °F and 160°F for each hour of the day. OR Control a heating system pump on an outdoor reset adjustable based on the hour of the day.
Local Data Logging and Diagnostics	Record data to onboard SD card such as up to 3 temperature points (min, max, avg), 4 CT switches for equipment runtime (totalized and per period), and sensor activity. Onboard LED's provide diagnostic information on relay runtime, lockout status, and equipment runtime activity.

COMPLIANCE AND APPROVALS

Pumps compliant with NSF 61 low lead requirements, Controls have UL and IAPMO PS115-2007 compliance, meeting CA Title 24 code requirements for on-demand recirculation pump operation, boiler temperature modulation.

PHYSICAL CHARACTERISTICS

Dimensions	5.1" H x 5.1" W x 3.0" D (add 1" for strain relief connectors) (130mm x 130mm x 75mm)
Enclosure	Polycarbonate,IP66/67,NEMA 1,4,4X,6

MODEL NUMBER	DESCRIPTION
DC000C	AutoHot® Commercial Demand Recirculation Controller, 2 temp sensors. Standalone control unit
DC000A	AutoHot® EMS recirculation and boiler controller, 3 temp sensors, SD Card, Standalone control unit
DC055C	AutoHot® Commercial demand recirculation controller, 55-series pump, 2 temp sensors
DC055A	AutoHot® EMS recirculation and boiler controller, 55-series pump, 3 temp sensors, MicroSD Card
DC099C	AutoHot® Commercial Demand Recirculation Controller, 99-series pump, 2 temp sensors
DC099A	AutoHot® EMS recirculation and boiler controller, 99-series pump, 3 temp sensors, MicroSD Card
DC150C	AutoHot® Commercial Demand Recirculation Controller, 150-series pump, 2 temp sensors
DC150A	AutoHot® EMS recirculation and boiler controller, 150-series pump, 3 temp sensors, MicroSD Card

INPUTS

Power Input	120VAC, 60HZ
Fuse	Fuse holder for 5x25mm cartridge, includes 10A slow blow fuse.
(3) Temperature Sensors	3 inputs for 10k thermistors, 2 thermistors included
(1) Dry switch activation	Activation by dry contact switch, such as momentary push button, flow meter reed switch.
(1) Dry switch activation	Activation by dry contact switch, such as momentary push button, flow meter reed switch.
(1) micro SD slot	SD card included on all commercial models.
(1) Activation input, with 5v/12v DC power supply	Compatible with activators such as wireless receivers, flow switches.
(2 to 4) Dry contact, CT switch inputs	2 mainboard CT switch inputs to track equipment runtime such as gas valves, pumps. 2 additional CT ports with remote monitored models, Models with "R" at the end.

SYSTEM ACCESSORIES	DESCRIPTION
CTS	Copper Temperature Sensor
CT-100	Current Trandsducer (CT) logger
ERK-001	External Relay Kit, for use with AutoHot controller and pumps greater than 1/3 HP, or pumps without capacitors

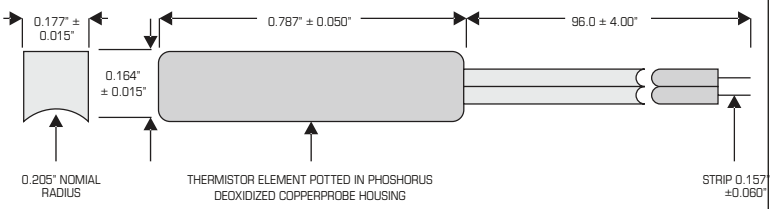
OUTPUTS

Relay 1 - Output 1	16A Normally Open relay for recirc pump control, external relay option available for control of large pumps.
Relay 2 - Output 2	16A Normally Closed for boiler setpoint control or outdoor reset of a heating pump.

ENOVATIVE AutoHot® SYSTEM ACCESSORIES

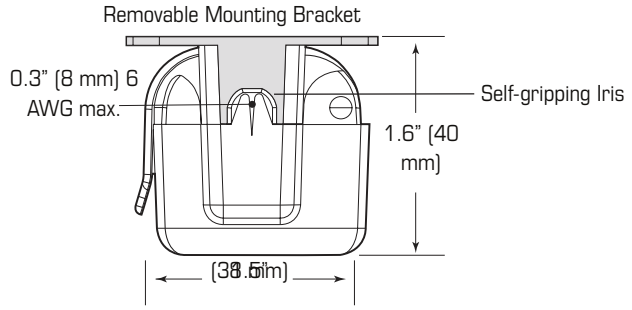
TEMPERATURE SENSOR

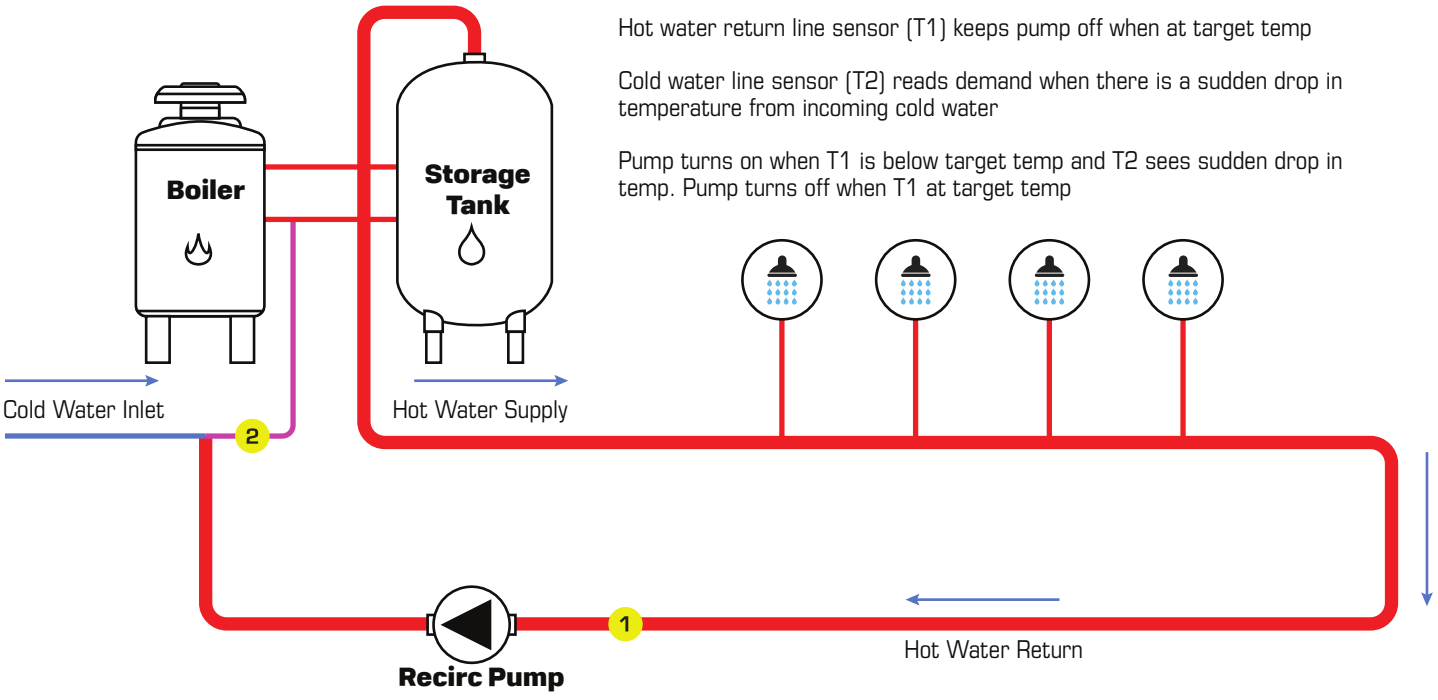
RESISTANCE @ +25°C = 10,000 Ω +/- 1%
RESISTANCE/TEMPERATURE CURVE = "J"
TEMPERATURE COEFFICIENT @ +25°C = -4.4%/°C NOMINAL
BETA "ß" (0 TO +55°C) = 3,892°K NOMINAL
MAXIMUM TEMPERATURE RATING = +105°C
LEAD WIRE: 24 AWG, STRANDED CONDUCTOR, TWO CONDUCTOR, PVC INSULATED ZIPCORD



CT-100 CT SENSOR (Sold separately)

Function	Tracks equipment runtime (pumps, gas valves, fans, or other powered equipment)
Temperature Range	5 to 140°F
Function	UL 508 open device listing, CE:EN61010-1, CAT III, Pollution Degree 2, basic insulation
Amperage Range @ 50/60Hz Only	0.15A to 60A
Trip Point	0.15A or less
Housing	Split-core





Hot water return line sensor (T1) keeps pump off when at target temp

Cold water line sensor (T2) reads demand when there is a sudden drop in temperature from incoming cold water

Pump turns on when T1 is below target temp and T2 sees sudden drop in temp. Pump turns off when T1 at target temp

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55-SERIES PUMP SPECIFICATIONS

TECHNICAL & ELECTRICAL DATA

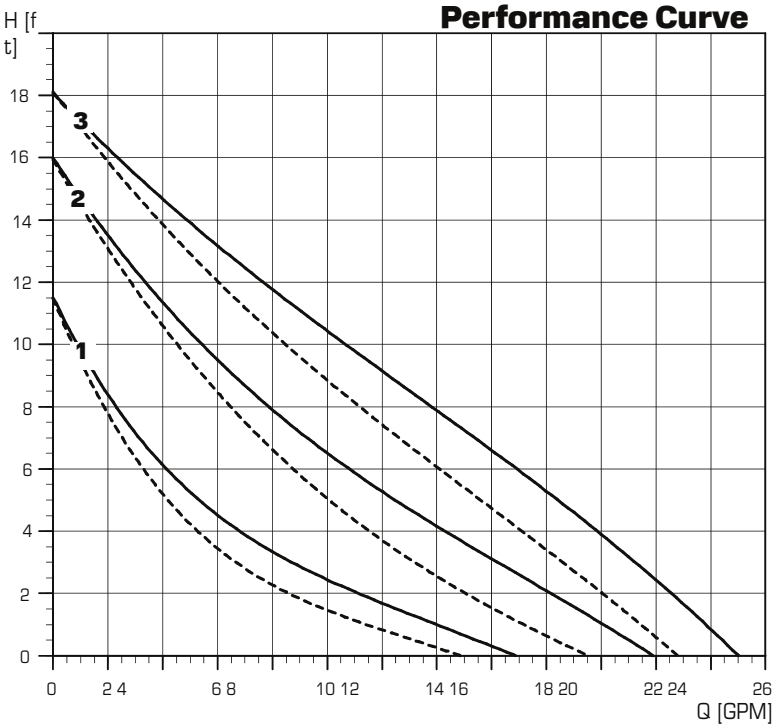
Flow range:	0-25 gpm
Head range:	0-18 feet
Motors:	2-pole, single-phase
Max. liquid temperature:	230°F (110°C)
Min. liquid temperature:	36°F (2°C)
Max. system pressure:	145 psi (10 bar)

Model	Spd	Volts	Amps	Watts	Hp	Capacitor
55-Series	3	115	0.75	87	0.12	10 µF/180 V
	2		0.69	77	0.10	10 µF/180 V
	1		0.53	58	0.08	10 µF/180 V

Part No.	Name	Description
DC055C	AutoHot®	55-series pump, commercial controller, (2) temp sensors
DC055A		55-series pump, commercial EMS, (3) temp sensors
DR055A		55-series pump, residential controller, push button activator
DR055A-USK		55-series pump, residential controller, push button, Under Sink Kit

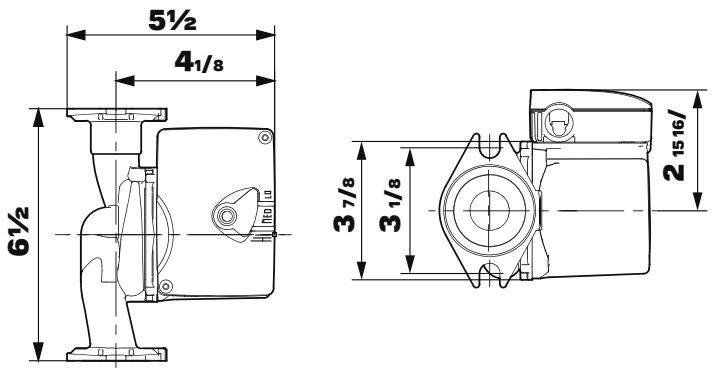
○ SELECT MODEL

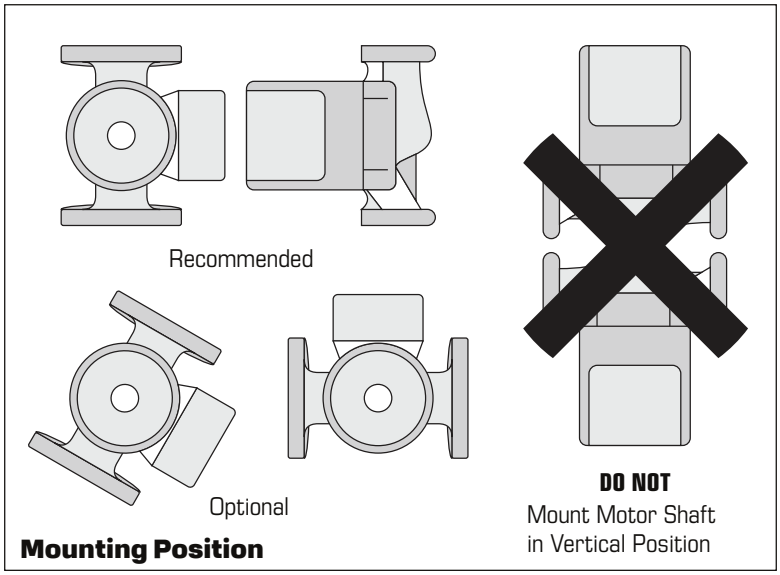
Performance Curve



SIZE & WEIGHT

Model	Type and Size	Wt. (lbs)
UPS 15-55 SFC	GF 15/26	6





Mounting Position

MATERIALS OF CONSTRUCTION

DESCRIPTION	MATERIAL	DESCRIPTION	MATERIAL
Inlet Cone, Bearing Plate, Bearing Retainers, Rotor Can, Rotor Cladding Shaft Retainer	304 Stainless Steel	Pump Housing (Volute)	Silicon bronze C875 or Stainless steel 300 series
Stator Housing	Aluminum	O'Ring & Gaskets	EP (Ethylene Propylene Rubber)
Shaft, Upper & Lower Radial Bearings	Aluminum Oxide Ceramic	Impeller	PES Composite (30% Glass Filled)
Thrust Bearing	Carbon bearing and EPDM retainer		
Check Valve	ACETAL with 302 Stainless Steel Spring & Nitrile Rubber Seats	Terminal Box	Noryl®

99-SERIES PUMP SPECIFICATIONS

TECHNICAL & ELECTRICAL DATA

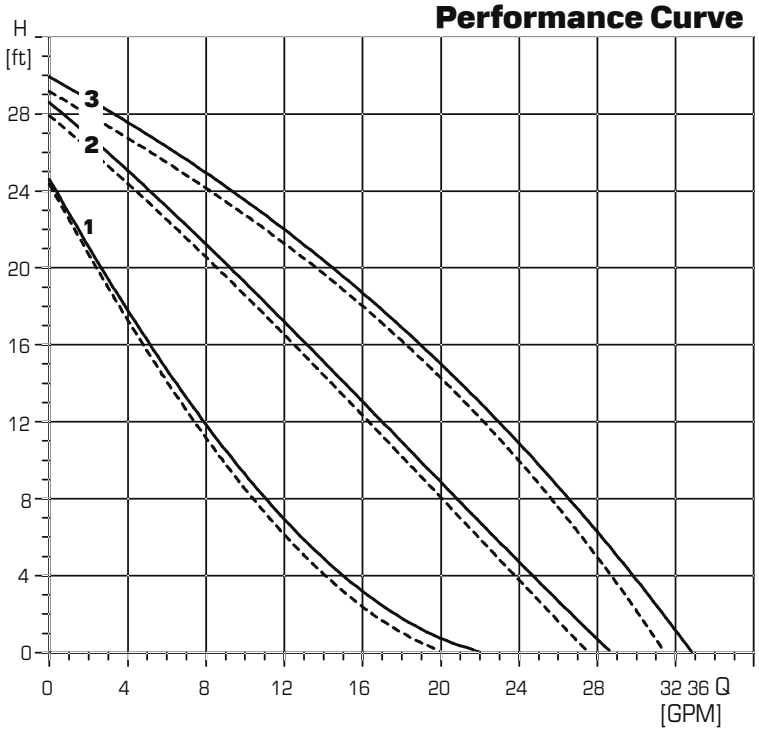
Flow range:	0-33 gpm
Head range:	0-29 feet
Motors:	2-pole, single-phase
Max. liquid temperature:	230°F (110°C)
Min. liquid temperature:	36°F (2°C)
Max. system pressure:	145 psi (10 bar)

Model	Spd	Volts	Amps	Watts	Hp	Capacitor
99-Series	3	115	1.8	197	1/6	20 µF/180 V
	2		1.5	179	1/6	20 µF/180 V
	1		1.3	150	1/6	20 µF/180 V

Part No.	Name	Description
DC099C	AutoHot®	99-series pump, commercial controller, (2) temp sensors
DC099A		99-series pump, commercial EMS, (3) temp sensors
DR099A		99-series pump, residential controller, push button activator
DR099A-USK		99-series pump, residential controller, push button, Under Sink Kit

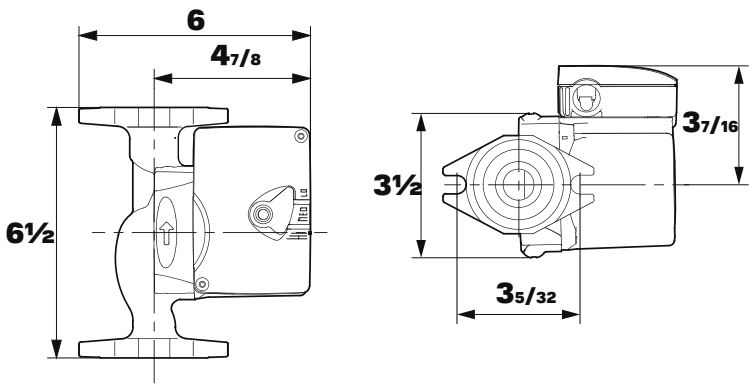
○ SELECT MODEL

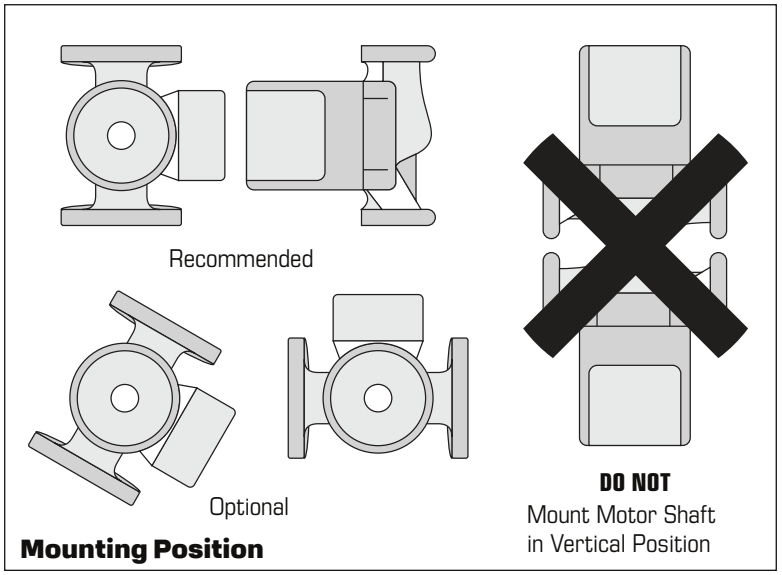
Performance Curve



SIZE & WEIGHT

Model	Type and Size	Wt. (lbs)
99-11	Flange - (2) ½" Dia. Bolt Holes	10





Mounting Position

MATERIALS OF CONSTRUCTION

DESCRIPTION	MATERIAL	DESCRIPTION	MATERIAL
Inlet Cone, Bearing Plate, Bearing Retainers, Rotor Can, Rotor Cladding Shaft Retainer	304 Stainless Steel	Pump Housing (Volute)	Silicon bronze C875 or Stainless steel 300 series
Stator Housing	Aluminum	O'Ring & Gaskets	EP (Ethylene Propylene Rubber)
Shaft, Upper & Lower Radial Bearings	Aluminum Oxide Ceramic	Impeller	PES Composite (30% Glass Filled)
Thrust Bearing	Carbon bearing and EPDM retainer		
Check Valve	ACETAL with 302 Stainless Steel Spring & Nitrile Rubber Seats	Terminal Box	Noryl®

150-SERIES PUMP SPECIFICATIONS

TECHNICAL & ELECTRICAL DATA

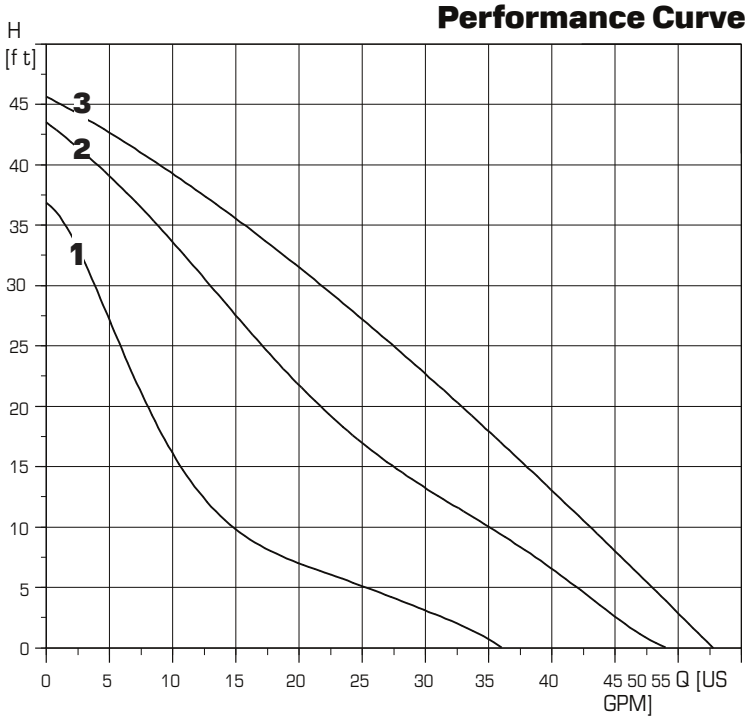
Flow range:	0-53 gpm
Head range:	0-46 feet
Motors:	2-pole, single-phase
Max. liquid temperature:	230°F (110°C)
Min. liquid temperature:	36°F (2°C)
Max. system pressure:	145 psi (10 bar)

Model	Spd	Volts	Amps	Watts	Hp	Capacitor
150-Series	3	115	3.5	370	1/6	40µF/180 V
	2		3.1	335	1/6	40µF/180 V
	1		2.5	265	1/6	40µF/180 V

Part No.	Name	Description
DC150C	AutoHot®	150-series pump, commercial controller, (2) temp sensors
DC150A		150-series pump, commercial EMS, (3) temp sensors
DR150A		150-series pump, residential controller, push button activator
DR150A-USK		150-series pump, residential controller, push button, Under Sink Kit

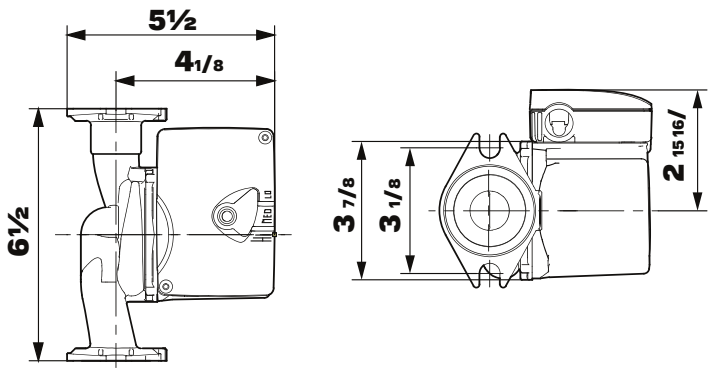
○ SELECT MODEL

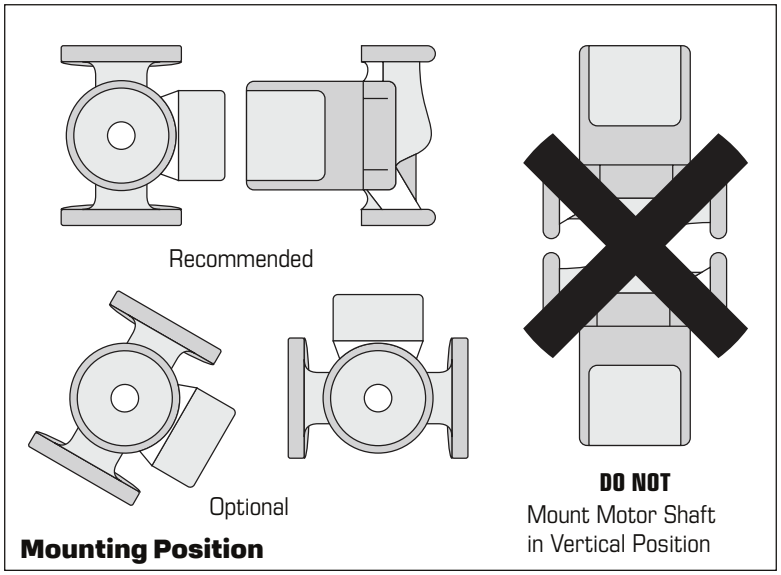
Performance Curve



SIZE & WEIGHT

Model	Type and Size	Wt. (lbs)
UPS 26-150 SF	GF 15/26	6





Mounting Position

MATERIALS OF CONSTRUCTION

DESCRIPTION	MATERIAL	DESCRIPTION	MATERIAL
Inlet Cone, Bearing Plate, Bearing Retainers, Rotor Can, Rotor Cladding Shaft Retainer	304 Stainless Steel	Pump Housing (Volute)	Silicon bronze C875 or Stainless steel 300 series
Stator Housing	Aluminum	O'Ring & Gaskets	EP (Ethylene Propylene Rubber)
Shaft, Upper & Lower Radial Bearings	Aluminum Oxide Ceramic	Impeller	PES Composite (30% Glass Filled)
Thrust Bearing	Carbon bearing and EPDM retainer		
Check Valve	ACETAL with 302 Stainless Steel Spring & Nitrile Rubber Seats	Terminal Box	Noryl®