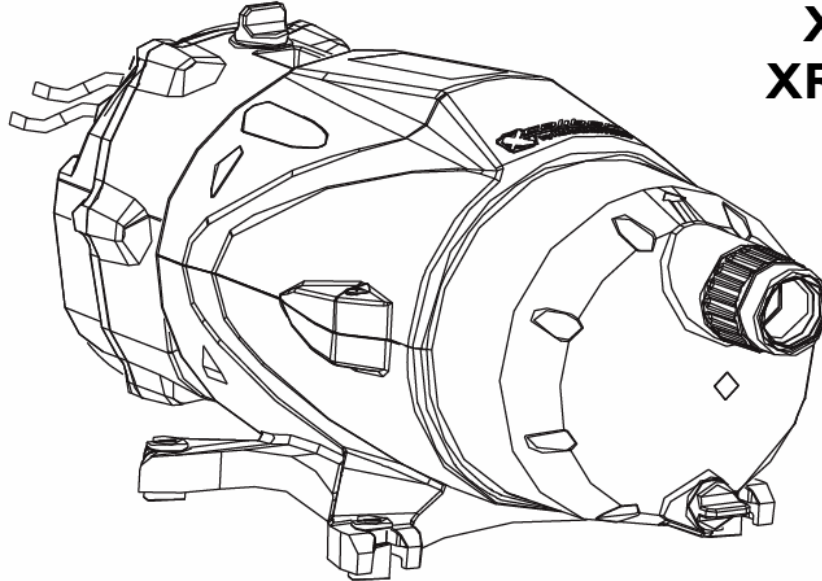




caliber™

**12-24 VDC
WATER PRESSURE SYSTEM**

MODELS
**XR-124
XRS-124**



INSTALLATION AND OPERATION MANUAL

(V 4.0)

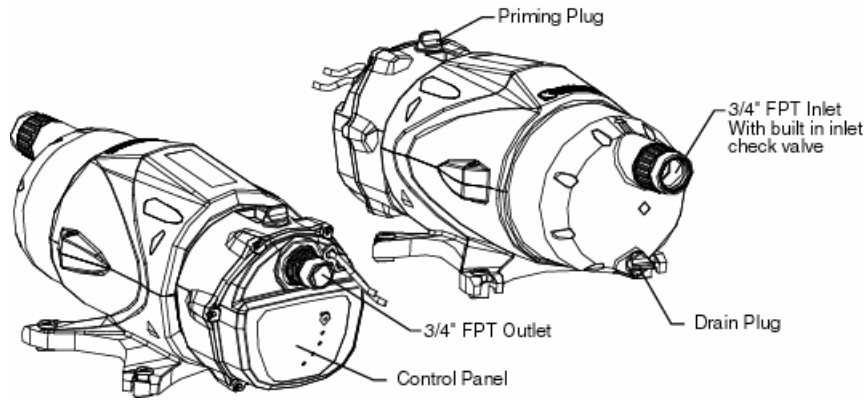
HEADHUNTER®

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Table of Contents

Technical Specifications p2
Performance Curves p3
Mounting the X-Caliber. p4
Plumbing Installation . . . . .	. p5
Electrical Installation . . . . .	. p6
Initial Start-up . . . . .	. p7
Use of Accumulator Tanks . . . . .	. p7
About the Control Panel . . . . .	. p8
How to Change Pump Settings. . . . .	. p9
Start and Stop Operation . . . . .	. p10
Pressure Boosting Applications . . . . .	. p10
Pump Setting Status Indication . . . . .	. p10
Alarms . . . . .	. p11,12
Winterization . . . . .	. p12
Installation Accessories . . . . .	. p12
Trouble-shooting Guide . . . . .	. p13
Technical Support . . . . .	. p13
Warranty . . . . .	. p13

X-Caliber Introduction:



The X-Caliber is a high performance water pressure system designed to operate on 12 or 24VDC and is comprised of a water-cooled motor, integrated flow and pressure control, and a quiet multi-stage self-priming impeller system. It uses advanced technology to provide superior performance while maintaining constant input power. Three input power settings and cut in pressures can be programmed into the pump via the integrated control panel. Power settings and alarm conditions are displayed via four colored LED's on the control panel. The XR-124 is for freshwater applications. The XRS-124 is for salt or freshwater applications.

Technical Data:

Operating Conditions:

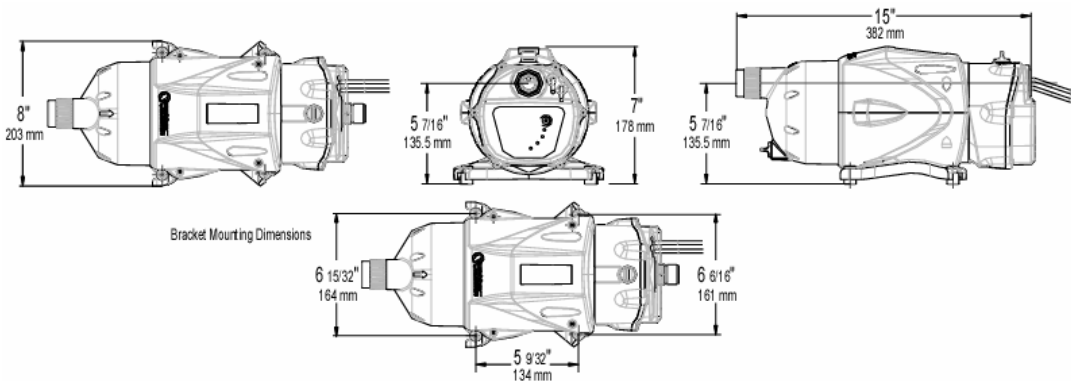
Maximum Pressure*:	67 psi (4.5 bar)
Maximum System Pressure**:	110 psi (7.5 bar)
Maximum Inlet Pressure:	36 psi (2.5 Bar)
Maximum Flow Rate:	10 GPM (38 LPM)
Maximum Suction Lift:	26ft (8m)
Minimum ambient temperature:	32°F (0°C)
Maximum ambient temperature:	120°F (48°C)
Maximum Fluid temperature:	95°F (35° C)
Inlet and discharge fitting:	3/4" inch female NPT (3/4" Gas male adapter included)
Sound Pressure Level:	<70 dB(A)
Dry Weight:	14 lbs (6.3 kg)

*Maximum pressure pump is capable of generating
 ** Maximum pressure pump is capable of withstanding

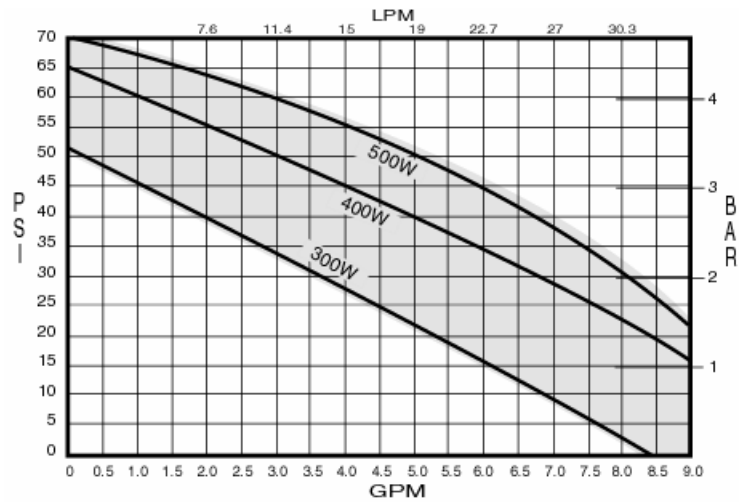
Electrical Specifications:

Power Setting	Low- 300W	Medium-400W	High-500W
Max Current (Amps)@12VDC:	25 Amps	34 Amps	42 Amps
Max Current (Amps)@24VDC:	12.5 Amps	17 Amps	21 Amps
Enclosure:	IP55		
Insulation Class:	B		
Supply Cables:	Tinned Stranded Copper-Type BC #10 AWG (6 ISOmm ²)		

Dimensional Drawing:



Performance Curves:



What's in the Box:

Following is a list of components included in every X-Caliber box.

- 1 XR-124 or XRS-124 X-Caliber 12/24VDC Water Pump
- 1 X-Caliber Installation and Operation Manual
- 4 Rubber Vibration Isolation Mounts



Fluid Requirements:

There are two different versions of the X-Caliber water pump.

The **XR-124** is designed for freshwater applications. It cannot be operated on saltwater.

The **XRS-124** is a more corrosion resistant version of the pump using all 316 Stainless Steel wetted components and is designed for salt or fresh water applications. Both the XR-124 and the XRS-124 pumps are suitable for rainwater and drinking water applications.

Consult the technical label on the top of the pump to ensure the right pump has been provided for the application. The X-Caliber is not intended for pumping fuel or any other flammable fluids.

Listing/Certifications:

The X-Caliber has been tested and certified to surpass all requirements of Underwriters Laboratories UL 778 specifications for Motor Operated Pumps, UL 1113 specifications for Electrically Operated Pumps for Nonflammable Liquids, Marine and is approved for drinking water use.



LISTING # 01C01



Mounting the X-Caliber:

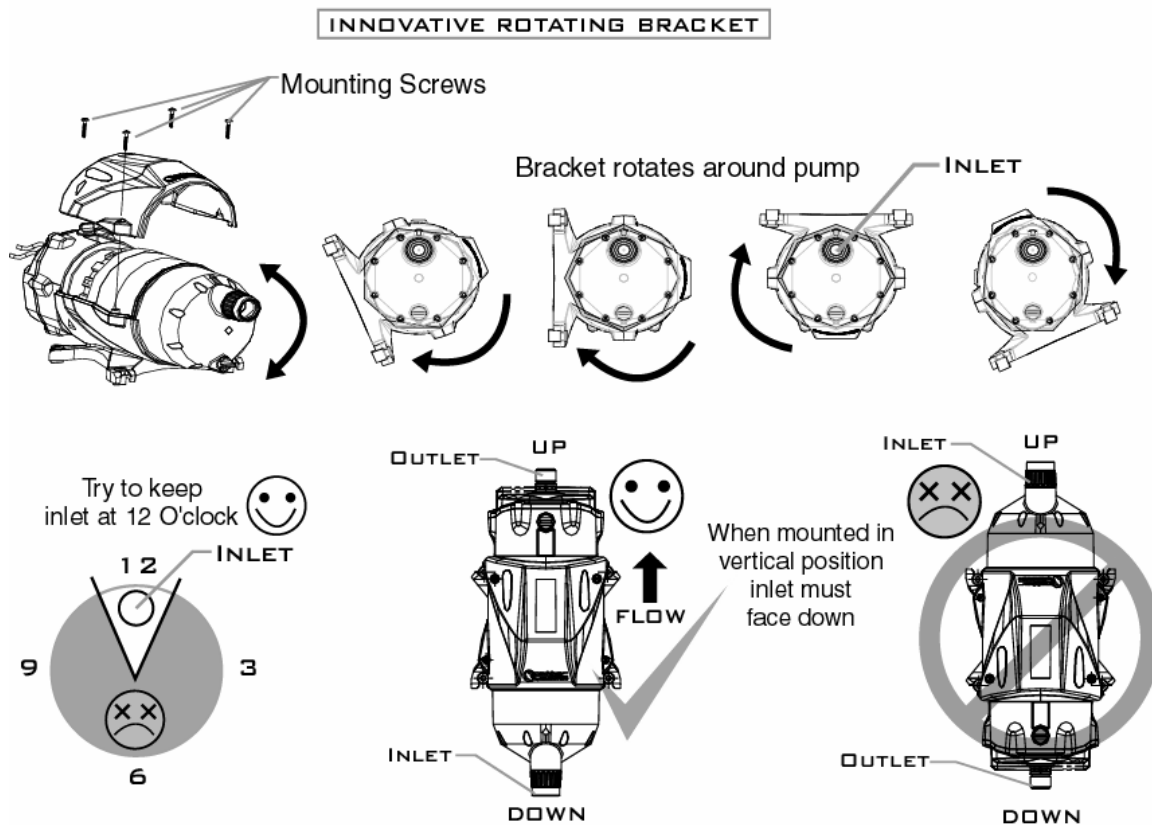
Install the four rubber vibration isolation mounts provided into the four mounting holes of the foot of the X-Caliber bracket.

Secure the pump to the foundation by installing the appropriate fasteners through the rubber vibration isolation mounts.

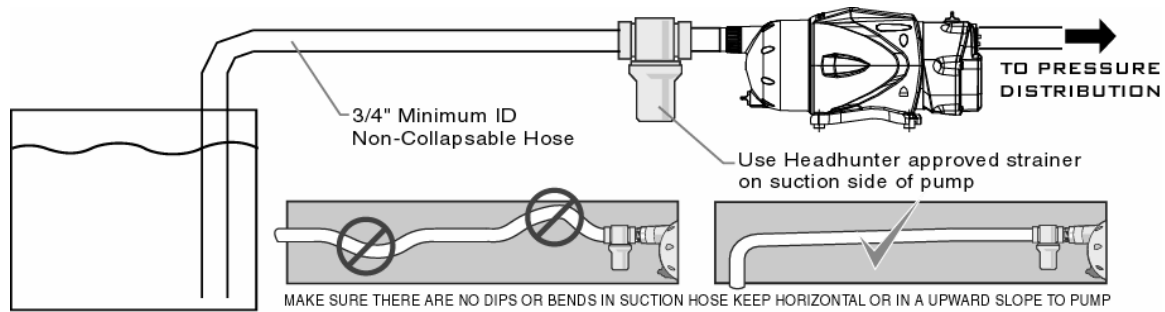
Mount pump to foundation so that control panel is visible and accessible.

An innovative rotating mounting bracket allows the pump to be mounted in a wide variety of configurations. If the pump is to be mounted on a horizontal plane, there is no need to rotate the bracket. To mount the pump to a vertical wall or angled plane; loosen the top bracket by removing the four mounting screws, remove the top half of the bracket, and rotate the cylindrical pump body within the mounting bracket to the horizontal, vertical, or even angled planes. A unique interlocking mechanism within the mounting bracket will secure the pump body to prevent any movement within the two halves of the bracket. Once the pump is in position, secure the top bracket to the lower bracket with the four screws.

If the pump is installed in the vertical position, put the inlet at the bottom and the discharge of the pump at the top. If the pump is installed on a horizontal or angled plane, align the inlet and discharge as close to the 12 o'clock position as possible.



Plumbing Installation:



1. Locate pump close to the water supply to eliminate unnecessarily long suction piping runs.
2. Install pump with $\frac{3}{4}$ " or 1" I.D. non-collapsible suction piping. Ensure that there are no leaks on the suction piping due to loose pipefittings, or cracks in hose or plastic pipe. **Suction leaks will impede the performance of the pump, and could cause the pump to go into an alarm condition.**
3. Eliminate any unnecessary restrictive fittings in the suction piping.
4. Protect the pump from foreign debris by installing a Headhunter approved strainer (IS-750, IS-1000S or IS-1000L) on the suction piping. Do not install charcoal or sediment water filters on the suction piping.
5. For long suction runs, it is recommended to install a spring check valve or foot valve near the tank to help keep the pump primed.
6. Install the suction piping with gradual uphill or horizontal run to the inlet of the pump to prevent the formation of air pockets.
7. Ensure inlet and discharge piping connected to the pump is well supported. This will prevent undue stress on the pump inlet and discharge fittings, which may cause leaking and/or damage to the fittings.
8. Make a leak proof connection to the $\frac{3}{4}$ " female NPT inlet connection of the pump.. A check valve is built in to the inlet fitting of the pump. Do not remove it.
 - a. **For European pipe connection, $\frac{3}{4}$ " male Gas x $\frac{3}{4}$ " male NPT adapters are available from Headhunter to make the transition. Contact your authorized Headhunter dealer.**
9. Make leak proof connections to the $\frac{3}{4}$ " female NPT discharge connection of the X-Caliber to the pressure delivery system. **Do not install a check valve on the discharge of the pump.** This may affect the pumps ability to monitor the system pressure.
10. Headhunter recommends the installation of a Headhunter PGV-100 – Vertical mount, or PGH-100 – Horizontal mount – 0-100 psi oil filled pressure gauge pressure gauge on the pressure delivery piping for monitoring the system pressure.

Electrical Requirements:

It is not necessary to make any changes to the pump to select 12 or 24 VDC operation. The X-Caliber will recognize the input voltage on initial power up and make the necessary adjustment to operate on 12 or 24 VDC.

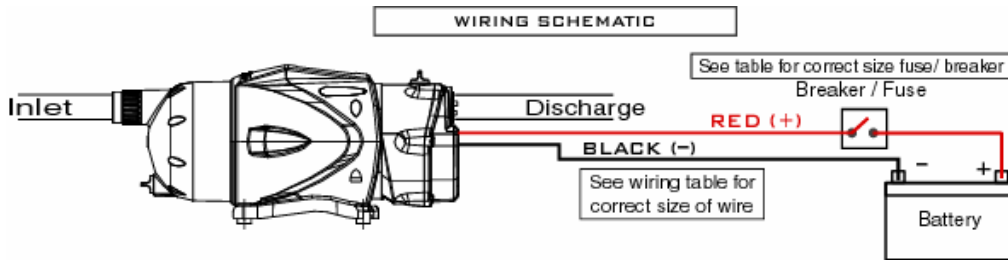
The performance of the X Caliber can be adjusted by the selection of one of three different input power settings, 300 Watt (Low), 400 Watt (Medium), and 500 Watt (High). Consult the wiring table below for the correct wire size selection based on the input power setting, length of the wiring run, and operating voltage.

It is important that the wire be sized correctly for optimum performance of the pump.

Headhunter recommends that the cables be sized for the maximum power settings for all new installations so that if increased performance is required at a later date, the pump does not have to be re-wired.

Measure the length of the wire from the DC power source to the pump and back to the DC source to determine the total length of the wire run. Use the wiring table below to determine the correct wire size based on the length of the wiring run.

Protect the circuit with the appropriate sized breaker or fuse.



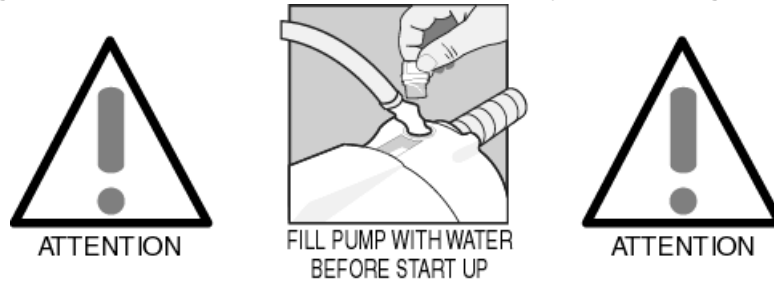
Connect the DC system positive to the red wire.
Connect the DC system negative to the black wire.

		AWG (ISO mm ²) WIRE SIZE SELECTION TABLE												
Power Setting	AMP	LENGTH OF CONDUCTOR *												
		10ft / 3m	15ft / 4m	20ft / 6m	25ft / 7m	30ft / 9m	40ft / 12m	50ft / 15m	60ft / 18m	70ft / 21m	80ft / 24m	90ft / 27m	100ft / 30m	
		AWG (mm ²)	AWG (mm ²)	AWG (mm ²)	AWG (mm ²)	AWG (mm ²)	AWG (mm ²)	AWG (mm ²)	AWG (mm ²)	AWG (mm ²)	AWG (mm ²)	AWG (mm ²)	AWG (mm ²)	
12 V	300W	25	10 (6)	8 (10)	6 (16)	6 (16)	6 (16)	4 (25)	4 (25)	2 (35)	2 (35)	2 (35)	1 (50)	1 (50)
	400W	34	8 (10)	6 (16)	6 (16)	4 (25)	4 (25)	2 (35)	2 (35)	1 (50)	0 (50)	0 (50)	2/0 (70)	2/0 (70)
	500W	42	6 (16)	6 (16)	4 (25)	4 (25)	2 (35)	2 (35)	1 (50)	0 (50)	2/0 (70)	2/0 (70)	3/0 (95)	3/0 (95)
24 V	300W	12.5	12 (4)	12 (4)	12 (4)	12 (4)	10 (6)	10 (6)	8 (10)	8 (10)	6 (16)	6 (16)	6 (16)	6 (16)
	400W	17	12 (4)	12 (4)	10 (6)	10 (6)	10 (6)	8 (10)	6 (16)	6 (16)	6 (16)	6 (16)	4 (25)	4 (25)
	500W	21	12 (4)	12 (4)	10 (6)	10 (6)	8 (10)	6 (16)	6 (16)	6 (16)	4 (25)	4 (25)	4 (25)	4 (25)

* Length of conductor is measure from source of power (battery/ electric panel) to DC load (pump) and back to DC negative connection on power supply (battery/ electric panel)

Initial Start Up and Priming:

1. Ensure that the pump is fully primed by removing the priming plug and filling the pump with water.
Warning! Initial operation of the pump without water may cause damage.



2. Ensure pump is correctly wired. Make sure the red pump wire is connected to DC (+).
3. Make sure that faucets are open and downstream filters are bypassed or removed on the discharge piping of the X-Caliber so that it can expel the air during the priming operation.
4. Apply 12VDC or 24VDC to the pump.
5. The X-Caliber will begin its priming operation. The default power setting on initial start up is 300 Watt. The default cut in pressure setting is the lowest pressure, 29 psi (2 bar).
6. Priming Mode: The pump will perform the following operation until it is primed. While in the "Priming Mode" the blue "Status" led will be on continuously.
 - a. First trial run for 2 minutes.
 - b. Pause for 15 sec.
 - c. Second trial run for 90 seconds.
 - d. Pause for 20 seconds.
 - e. Third trial run of 90 seconds.
 - f. Pause of 20 seconds.
 - g. Fourth trial of 90 seconds.
 - h. Pause of 20 seconds.
 - i. Fifth trial of 90 seconds.

If the pump is still not primed after 5 trials, it will go into alarm.

7. Once the pump has picked up a prime, allow it to run for 1 minute at maximum flow in order to ensure all air has been expelled from the suction piping.
8. Close off faucets to allow pump to build up maximum pressure and turn off by its self.
9. Pump is primed.

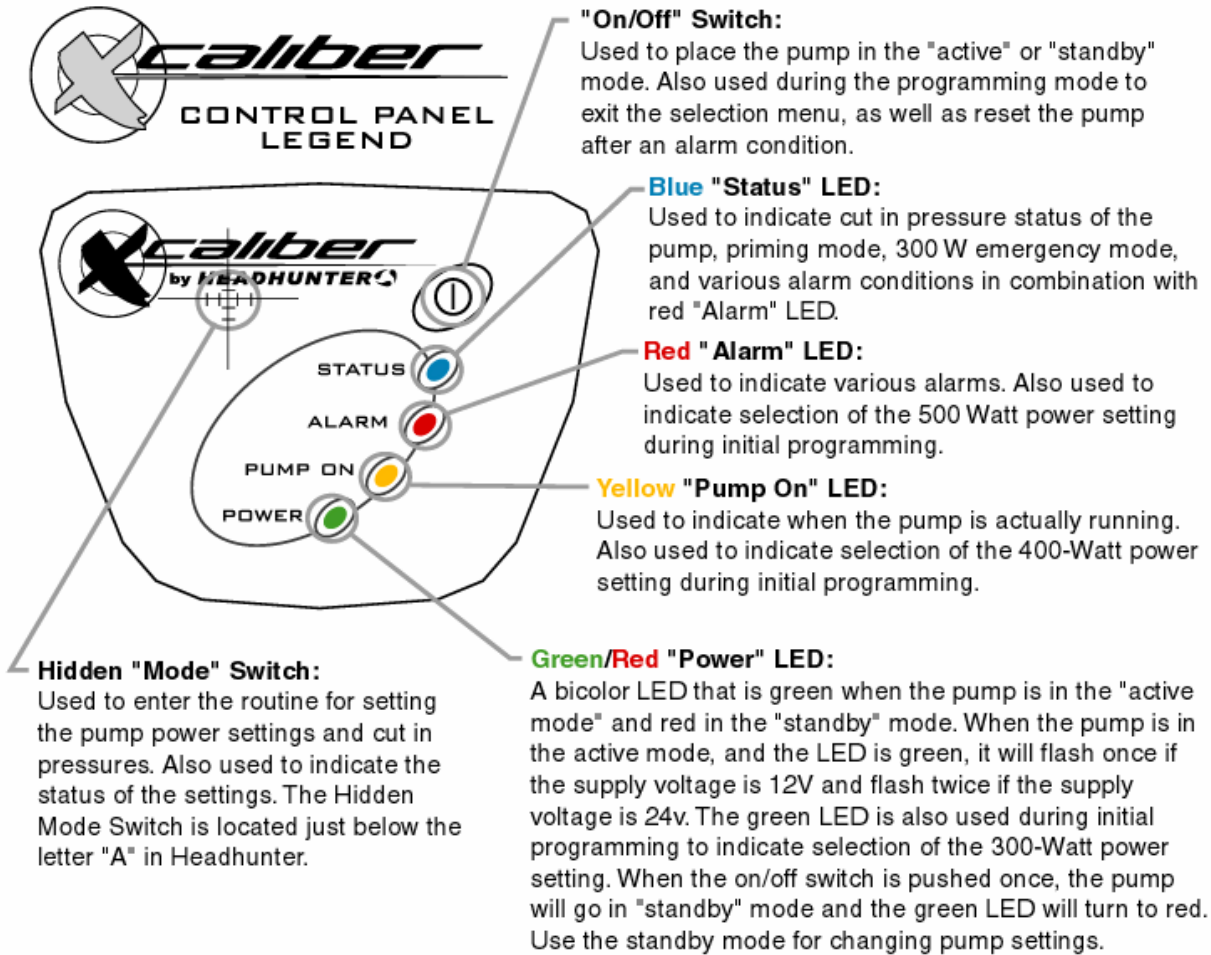
Accumulator Tanks:

The X-Caliber water pump can be used with or without a pressure accumulator tank. If there are low flow devices such as icemakers, reverse osmosis water filters, and or small leaks in the system, Headhunter recommends the installation of a small pressure accumulator tank such as a Headhunter model# PT-102.

Water Filters:

The X-Caliber water pump can be used in conjunction with a charcoal or sediment water filter installed on the pressure delivery system. The water filter should be sized for minimal pressure drop at the maximum flow rate capable by the pump. **Do not install a charcoal or sediment type water filter on the suction piping of the pump.** It will restrict the flow of water to the pump. Headhunter recommends the installation of a by-pass on water filter installations to make priming easier.

About the X-Caliber Control Panel:



Introduction to Power Settings:

The X Caliber has the ability to operate at three different power settings, 300 Watt (Low), 400 Watt (Medium), and 500 Watt (High). The pump is shipped with a default power setting of 300 Watt (Low). Typical factors that determine the optimum power setting are; maximum pressure piping system is designed for, capacity required, and size of wire available. It is important that the 12 or 24 VDC supply cables be properly sized for the intended power setting.

Headhunter recommends that the cables be sized for the maximum power settings for all new installations so that if increased performance is required at a later date, the pump does not have to be re-wired.

How to change pump settings:

1

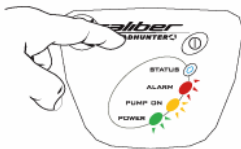
Push and Release



Push and release the on/off switch to place the pump in standby mode. Open a faucet and drain the pressure down in the system. Power LED should be **Red**

2

Push and Hold 8 seconds



Push and hold the hidden mode switch for 8 seconds, until the **Red, Yellow, and Green** LEDs all flash together, to enter the routine for selecting the performance setting.

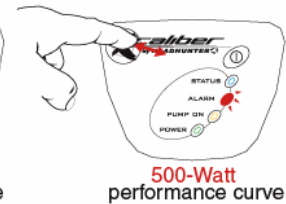
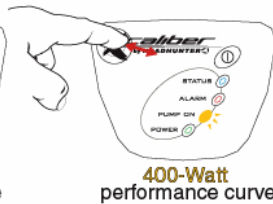
Release the hidden mode switch.

3

Push and Release

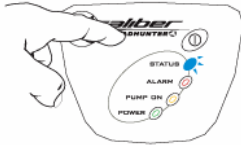


Push and release the hidden mode switch momentarily to select the performance setting. To cycle through the settings continue to push and release the hidden mode switch.



4

Push and Hold 8 seconds



After a performance setting has been selected, push and hold the hidden mode switch for 8 seconds until the **blue** LED flashes to enter the routine for setting the cut in pressure.

Release the hidden mode switch.

5

Push and Release



Push and release the hidden mode switch momentarily to select the cut in pressure setting. To cycle through the settings continue to push and release the hidden mode switch.

SETTING	CODE
Low Cut In Pressure	Blue status LED blink once pause
Medium Cut In Pressure	Blue status LED blink two times pause
Highest Cut In Pressure	Blue status LED blink three times pause

* Note: Each pause will last 3 seconds. The flashes will occur at 1 per second

NOTE: In the 300-W setting only the low cut in pressure is available
 In the 400-W setting low and Medium cut in pressures are available
 In the 500-W setting all three low, med, and high cut in's are available

6

Push and Hold 8 seconds



To accept the cut in pressure, and performance settings and exit from the pump set-up routine; push and hold the on/off switch for 8 seconds until the power LED returns to the **red** "standby" mode.

Release the on/off switch.

7

Push and Release



Push and release the on/off switch to return the pump to the active mode. Power LED should return to **green**, and pump should begin to operate.



ATTENTION

If the set up routine is not completed within 2 minutes, the pump will exit the routine and revert to the "standby" mode. It will return to the previous power and cut-in pressure settings.

Start and Stop Operation:

The X-Caliber will soft-start when the pressure drops to the pre-set cut in pressure or when it detects a high flow condition. A high flow condition is defined as a drop in pressure of 1.4 psi/sec (.1 bar/sec). It will soft stop when it has reached its maximum pressure.

The power setting, and the friction and lift loss of the supply piping will determine the maximum shut off pressure of the pump. The pump will vary its RPM to maximize its performance while maintaining constant input power.

Pressure Boosting Applications:

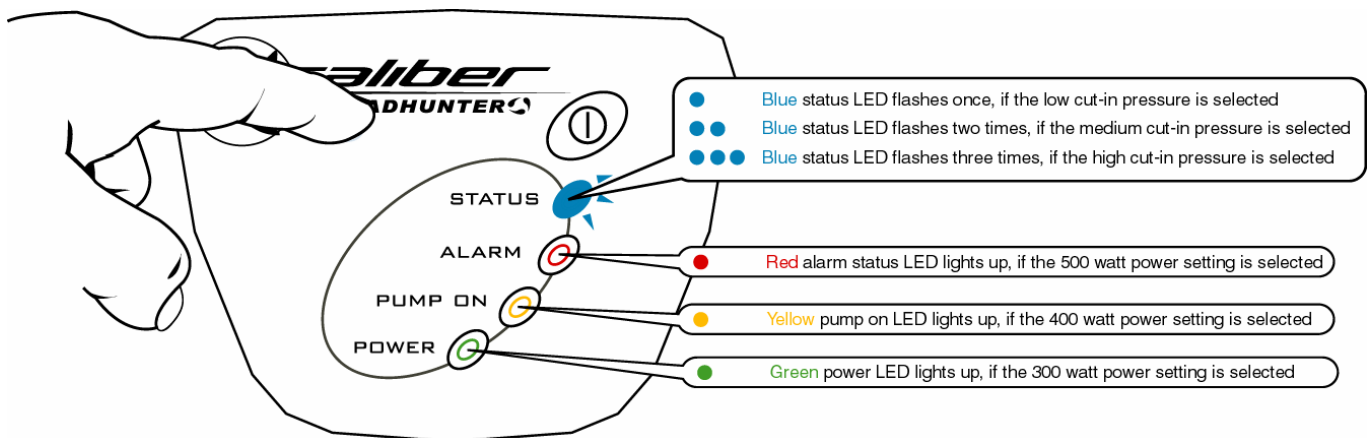
The X-Caliber can be used in pressure boosting applications. If supplying the inlet of the pump with pressurized water, ensure that the sum of the inlet pressure and the max pressure capable of the pump does not exceed the rated pressure of the piping system.

For example; a 30 psi (2 bar) inlet pressure + 53 psi (3.6 bar) pump pressure = 83 psi (5.6 bar) max pressure generated.

Headhunter recommends the installation of a high flow Headhunter # PR-750 pressure regulator on the inlet supply of the pump so that the maximum pressure generated can be safely adjusted.

Status Indication:








To determine what settings have been programmed into the pump, push the hidden mode switch momentarily (<8 seconds).



Alarms:

The X-Caliber has many built in self-protecting features and will indicate the various alarm conditions with the following LED configurations.

ALARM CONDITIONS

PROBLEM	ALARM CODES	
Dry Run	Red alarm LED continuous	
Under Voltage	Red alarm LED continuous Blue status LED blink once pause	
Over Voltage	Red alarm LED continuous Blue status LED blink twice pause	
Over Current	Red alarm LED blink once pause	
Electronic High Temperature	Red alarm LED blink four times pause	
Over Pressure	Red alarm LED blink five times pause	
Anti-Flooding	Red alarm LED blink six times pause	
* Note: Each pause will last 3 seconds. The flashes will occur at 1 per second		

Acknowledgement of the Alarms:

Once the X-Caliber has gone into an alarm condition, it will not automatically restart. To restore the X-Caliber to normal operation, rectify the alarm condition, make sure the pump is primed, and press the on/off switch twice. An alarm condition may also be acknowledged by turning the power to the pump off and then back on again. If the alarm condition still exists, then the alarm must be acknowledged by pushing the on/off switch only. The pump will resume normal operation if the alarm condition has been resolved.

Dry Run Alarm:

The X-Caliber will sense a dry run condition by monitoring the combination of input power, RPM, and system pressure. Most probable cause of a dry run alarm is an empty water tank or a leak in the suction piping.

Under and Over Voltage Alarm:

The X-Caliber will recognize if it should operate on 12VDC or 24VDC on initial power up. The green "Power" LED will flash once if the system is rated 12VDC or twice if the system is rated 24VDC. The pump will recognize when the voltage is falling below its nominal range and revert to an "emergency" low power 300-watt mode. **The blue LED will flash continuously when the pump is in the emergency power mode.** If the voltage continues to fall, the pump will go into a low voltage alarm and turn off.

If the voltage exceeds the X-Calibers' maximum rated input voltage, the pump will go into a high voltage alarm and turn off. The voltage ranges for the normal, emergency, and alarm conditions for both 12VDC and 24VDC are shown in the table below.

Nominal System Voltage	Operational Voltage Range	Operation
12VDC	VDC<8	Under Voltage Alarm
	8 <VDC<10	300 Watt Emergency Mode
	10<VDC <16	Normal operation
	16<VDC	Over Voltage Alarm
24VDC	VDC<16	Under Voltage Alarm
	16<VDC<20	300 Watt Emergency Mode
	20<VDC<32	Normal operation
	32<VDC	Over Voltage Alarm

Over Temperature Alarm:

The X-Caliber will turn off and go into over temperature alarm when the temperature in the pump exceeds 140° F (70°C). Most probable cause is too high of an ambient temperature.

Over Current Alarm:

The X-Caliber pump continuously monitors the input current levels. If the current level reaches 60 Amps, the pump will turn off and go into Over Current Alarm. Most probable cause is debris stuck in the pump.

Over Pressure Alarm:

The X-caliber can be used as a pressure booster and thus be supplied with pressurized water. To prevent the pump from exceeding its maximum operating pressure of 110 psi (7.5 Bar), the pump will turn off and go into over pressure alarm if this pressure is exceeded.

Anti-Flooding Alarm:

The X-Caliber has an optional anti-flooding routine that will recognize when the pump is running at the same RPM, input power, and pressure for 30 minutes, turn the pump off, and go into alarm. The pump is shipped without this routine enabled.

To enable the anti-flooding protection, push and hold the on/off switch for 20 seconds while the pump is running. Release the on/off switch when the yellow LED begins to flash.

To disable the anti-flooding protection, push and hold the on/off switch for 20 seconds while the pump is running. Release the on/off switch when the yellow LED stops flashing and returns to a steady yellow illumination.

Maintenance:






The X-Caliber is designed to be a maintenance free water pressure pump. It is recommended to check the inlet strainer monthly for any accumulation of debris.

Winterization:

Freezing will damage the pump and connected plumbing. Use the following procedure to winterize your X-Caliber water pump.

1. Open faucet and allow pump to run and empty freshwater tank.
2. Remove drain plug on front of pump and allow water to drain from pump body.
3. Do not use Automotive Antifreeze to winterize potable water systems as it is very poisonous and may cause serious injury or death.

X-Caliber Installation Accessories (sold separately):

	IS-1000L 1" FPT High Flow Inlet Strainer IS-1000L 1" BSP High Flow Inlet Strainer IS-750 ¾" FPT High Flow Inlet Strainer IS-1000S 1" FPT Compact High Flow Inlet Strainer
	BPH-750 ¾" 19mm ID Banzai pipeline Potable Water Suction /Pressure Hose BPH-1000 1" 25 mm ID Banzai Pipeline Potable Water Suction/Pressure Hose
	1436-007 ¾" MPT x ¾" (19mm) Straight PVC Hose Adapter 1436-102 ¾" MPT x 1" (25mm) Straight PVC Hose Adapter
	1413-131 ¾" MPT x 1" (25mm) 90° PVC Hose Adapter 1413-007 ¾" MPT x ¾" (19mm) 90° PVC Hose Adapter
	PT-102 Headhunter Pressure Accumulator Tank w/ optional X-Caliber mounting bracket

Troubleshooting Guide:

Problem	Cause	Remedy
Pump runs continuously or cycles on and off.	<ul style="list-style-type: none"> a. Leak in discharge piping. b. Debris stuck in inlet check valve. c. Inlet check valve is missing. 	<ul style="list-style-type: none"> * Fix leak. * Clean debris out of check valve. * Install check valve.
Pump stops because of alarm condition	<ul style="list-style-type: none"> a. Dry running. b. Overheating. c. Over or under voltage. d. Anti-flooding shutdown. e. Over Pressure Alarm f. Over current alarm. g. Over temperature of electronics. 	<ul style="list-style-type: none"> * Check the water supply. * Supply cold water<95F (35C) * Check electrical supply. * Disable if not required. * Reduce inlet pressure to the pump. * Free blocked rotor/impellor. * Reduce ambient temperature.
Pump does not reach max pressure.	<ul style="list-style-type: none"> a. Low voltage, pump operating in 300W emergency power mode. b. Air leak in suction line. c. Restriction in suction line. d. Pump not fully primed. e. Pump set for wrong power setting. 	<ul style="list-style-type: none"> * Check electrical supply. * Repair leak in suction line. * Remove restriction in suction line. * Prime pump. * Check wiring, and circuit protection then increase power setting.

Technical Support:

Have a question about the X-Caliber, or need technical advice? Contact your nearest Headhunter representative or our technical support department via;

Toll Free Phone in the USA: (800) 662-8557
 Outside or inside the USA Phone #: (954) 581-6996

Email: headmaster@headhunterinc.com
 Fax: (954)-587-0403

Limited Warranty:

Headhunter warrants its XR-124 and XRS-124 X-Caliber water pumps to be free from material and workmanship defects under normal use and service for a period of two (2) years from the date of manufacture. Headhunter will repair or replace, at its discretion, any part of the X-Caliber Water Pumps, which were determined to be defective by the factory provided that:

1. The product has been properly installed and used in accordance with the instructions packed with the product.
2. No repairs have been made without written factory authorization.
3. Proof of purchase can be provided.
4. The product has not been misused, abused or altered in any way.
5. The product or component has been returned for warranty evaluation.

The following conditions are not covered by this warranty:

1. Repairs made by anyone other than factory personnel, or an authorized Headhunter representative.
2. Use of the product to perform duties other than those for which the product was intended.
3. Physically damaged or altered products.
4. Pump failure due to foreign debris.
5. Products with missing or modified labels.

Headhunter will not be responsible for freight damage incurred during shipping to a service center.



EU Certificate of Conformity

We,

Headhunter Inc., 3380 SW 11th Avenue, Fort Lauderdale, FL 33315 – USA,
Declare in sole responsibility that the products hereunder mentioned and to which this
certificate applies, are in conformity with the basic and safety requirements of EC Directives:

97/23/ECC
EC-Machinery Directive 98/37
Low Voltage Directive 73/23/ECC
Directive of Electromagnetic Compatibility 89/336/ECC
Directive 93/68/ECC
Noise Level Directive 2000/14 ECC

X-Caliber

To give effect to the correct application of the safety and health requirements stated in the EC
Directives, the following standards and / or technical specifications were consulted:

EN ISO 12100-1
EN ISO 12100-2
EN 60335-1
EN 60335-2-41
EN 55014-1
EN 61000-3-2
EN 61000-3-3
EN 61000-6-3

HEADHUNTER 

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