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TECHNICAL BROCHURE
D-608I R1

TECHNOFORCE e-HV™

VARIABLE SPEED BOOSTERS WITH VERTICAL MULTISTAGE e-SV PUMPS 60 HZ

BUILT IN THE USA
ENGINEERED, ASSEMBLED & TESTED

Bell & Gossett
a xylem brand

Table of Content

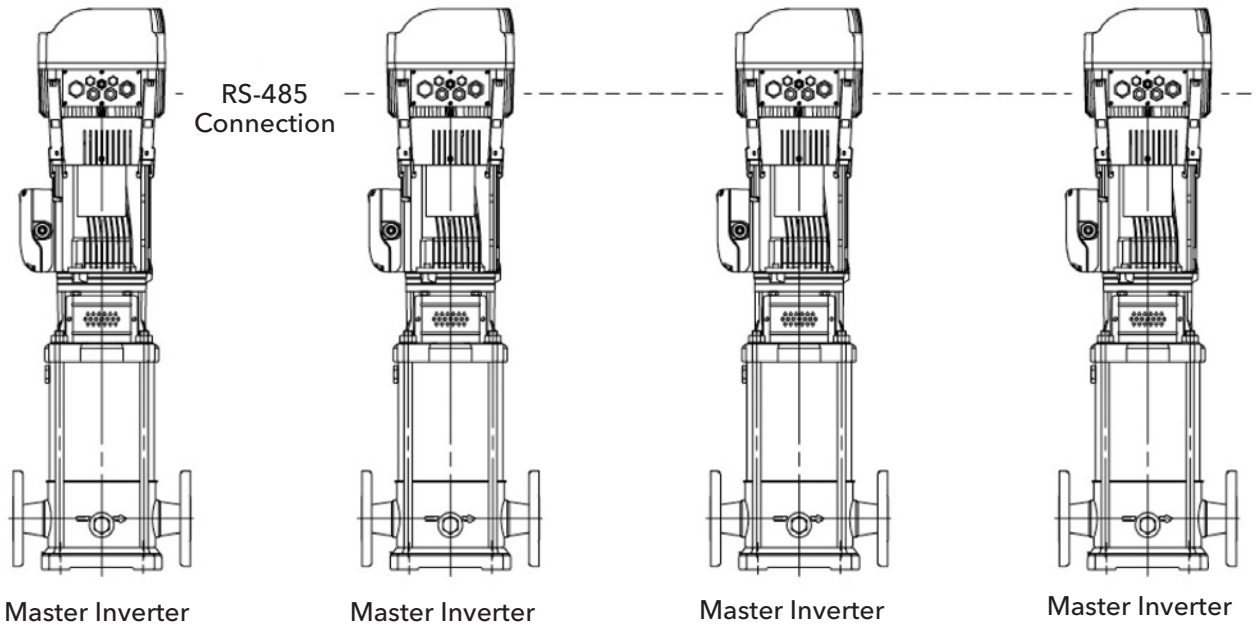
General Introduction - Product Description

The e-HV pump systems are pre-engineered and fabricated packaged booster systems designed to transfer and increase the pressure of clean water. The e-HV provides pressure boosting for a variety of applications:

- Commercial Office Buildings
- Industial/Plant
- Hospitals
- Schools
- Hotels, Inns & Resorts
- Condominiums & Apartments
- Sports Facilities
- Data Centers
- HVAC
- Irrigation
- Main Water Systems
- Rural Boosting Stations

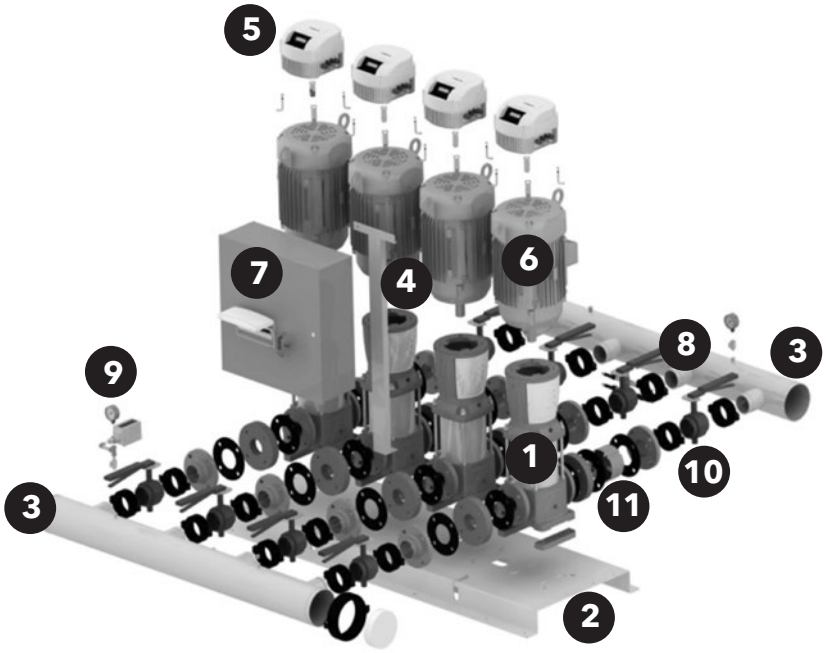
The e-HV booster sets are assembled with two to four vertical multistage e-SV pumps fixed onto a single base and connected in parallel via suction and discharge manifolds and fittings. The station is provided with a main system disconnect as well as individual electrical pump isolation to ensure that each pump can be serviced without the need to shut down the entire station.

Hydrovar Multi-Master Drive/Controllers
As a standard every e-HV booster is offered in the Multi-Master configuration. Each pump is paired with a Hydrovar® master type VFD mounted directly to a standard TEFC Premium Efficient NEMA Frame motor. Variable speed operation is handled via the designated "lead" master VFD in the given e-HV configuration. In the event of a failure in the lead master VFD, any of the sub sequential masters will become the lead and take control of the station. This gives the end user complete redundancy and increases the reliability of the system.



Major System Components

1. **Pumps:** SV Vertical Multistage Pumps: (2-4)
2. **Base:** 304 S.S.
3. **Manifolds:** Suction and Discharge 304 S.S.
4. **Pedestal:** 304 S.S.
5. **VFD:** Hydrovar Master Drive/Pump Logic Controller UL Type 1 / IP55
6. **Motors:** Premium Efficiency TEFC NEMA C-Face
7. **Panel:** NEMA 12 Station Disconnect & Pump Circuit Breakers
8. **Discharge Transducers:** Manifold with 1 Transducer per VFD
9. **Low Pressure Switch:** Suction side
10. **Isolation:** Less than 2" (Ball); Greater than 2" (Butterfly)
11. **Check:** Less than 2" (Silent); Greater than 2" (Wafer)
12. **Communication:** RS-485 (not shown)

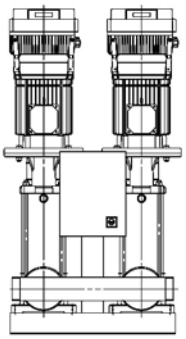


Operating Conditions

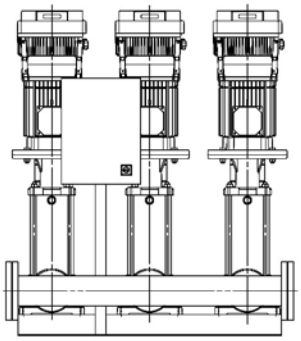
Fluids: Water containing now gas or corrosive and/or aggressive substances, no undissolved solids
Flow Rate: Up to 780GPM
Operating Pressure: Up to 270 PSIG
Liquid Temperature: 32°F to 180°F
Ambient Temperature: 32°F to 104°F, avoid direct sunlight
Relative Humidity: 90% non-condensing
Elevation: 3300 ft above sea level without derate

*On special request B&G can offer higher flow, pressure and Typic temperature rated packages.

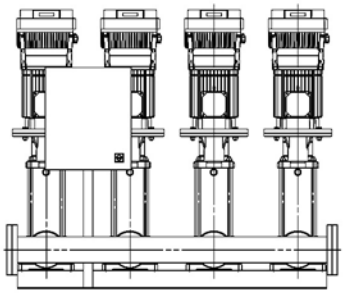
Typical Arrangements



Duplex

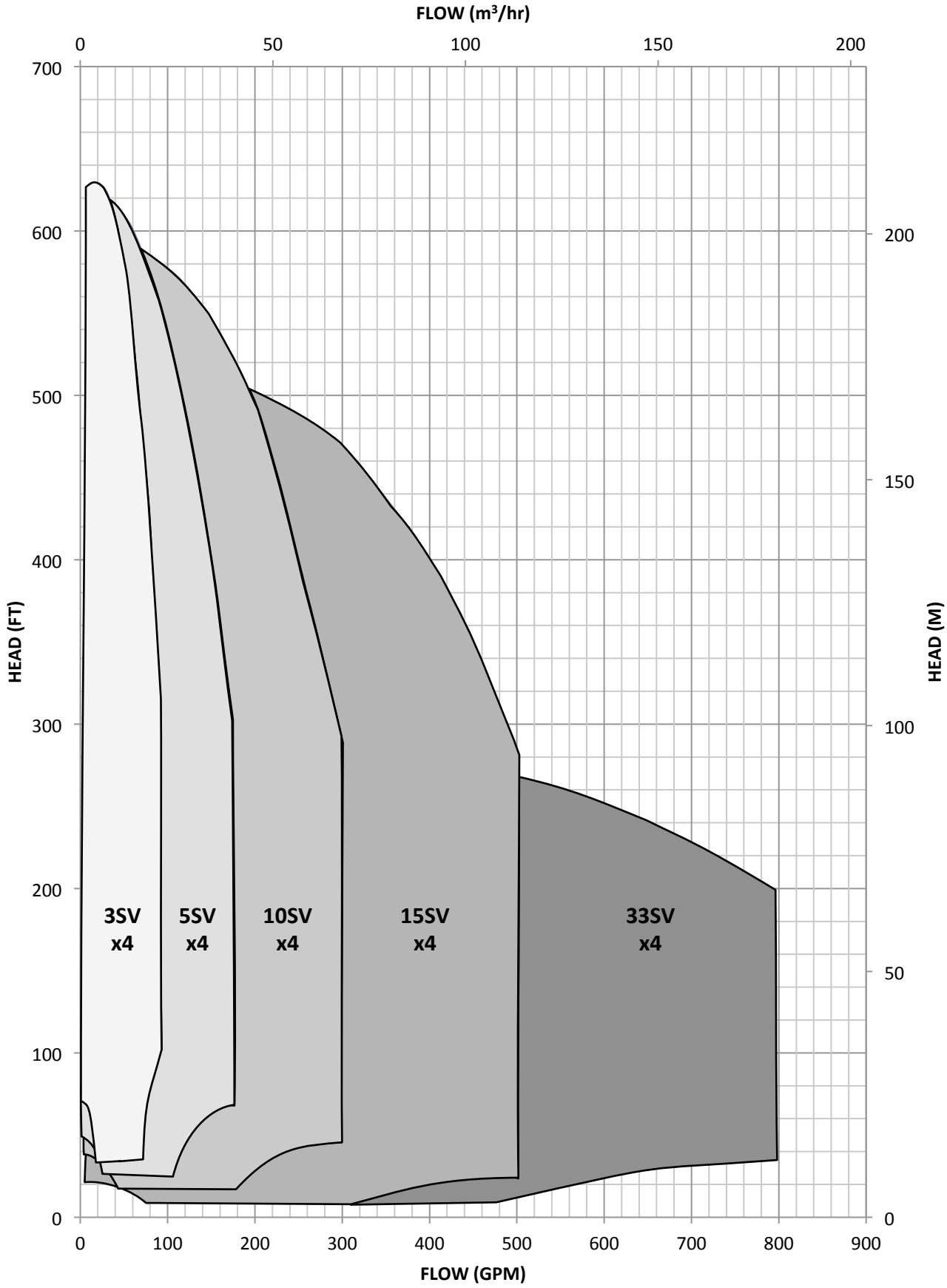


Tripex



Quadplex

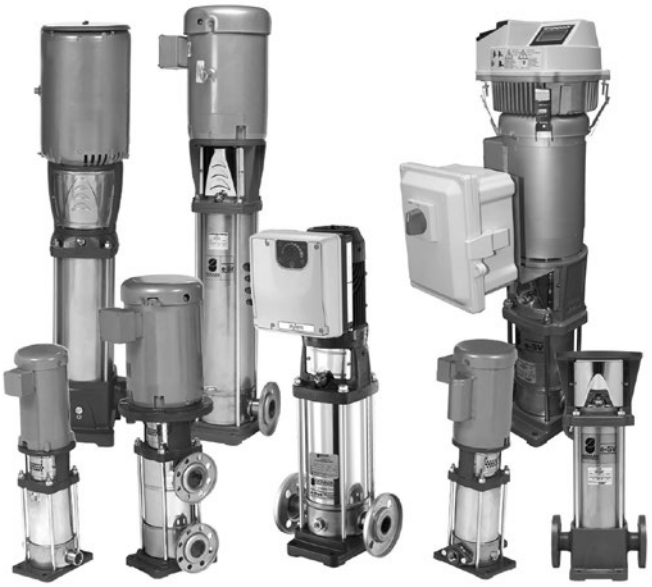
Hydraulic Performance Range



Typical Constuction

PUMP

The e-SV pump is a non-self-priming vertical multistage pump with AISI 304SS and Cast Iron wetted components, coupled to a standard motor. The liquid end, located between the upper cover and the pump casing, is held in place by tie rods. This design allows for the removal of the mechanical seal without the need to remove the Carb-SilCarb-Viton motor from the pump. The pump casing is available with different configurations and connection types.



TECHNICAL INFORMATION

Available Models: 3SV, 5SV, 10SV, 15SV, 33SV
Flow Rates: up to 200 GPM.
Heads: (TDH): up to 620 feet
Power: 1.5 to 15HP, 208-240/460 Volt, 3600 RPM, 3 PH, 60 Hz
Max Operating Pressure:
SV1-22 with round flanges: 360 or 575 PSI (25 or 40 bar)
SV33, 360 or 580 PSI (25 or 40 bar)
Temperature of Pumped Liquid:
22°F to 250°F standard design
22°F to 300°F Hot water design
Clockwise direction of rotation looking at the pump from above (indicated with an arrow on the bracket and joint).

For more information please refer to e-SV Technical Manual BeSV60

MOTOR

The e-SV pump utilizes standard NEMA C-face motors. The e-HV comes standard with TEFC Premium Efficient 2-pole motors. For more information please refer to station submittal documentation.

STATION DISCONNECT ENCLOSURE

A NEMA 12 rated enclosure is fitted with all the necessary components required to provide power to the station via a single field provided electrical connection. Each station will be provided with a main station disconnect and individual pump circuit breakers accessible without the need to disengage the main station disconnect.

Pump Control

The e-HV utilizes master Hydrovar variable frequency drives (VFD) that adjusts the speed of the pump in order to maintain constant pressure in the system. The HydroVar comes standard with a UL Type 1 / IP55 rating and is mounted directly on to the TEFC Premium Efficient motor via mechanical brackets.

Pressure is measured via a 4-20mA pressure transmitter which can be read on the HydroVar's display. A simple user interface allows you to set the desired pressure value for optimal adjustment, as well as view the operating data, such as the hours of operation and any alarms triggered.

Included diagnostic menu to view temperature, current and voltage values of Hydrovar facilitates diagnostics and failure analysis. Indicator lights signal power status, pump running and malfunctions. A password is required to access sensitive settings such as flow resistance compensation, external control and so on that allow you to configure the pump logic control in order to adapt it to any control requirements.

When more than one pump is used, the VFDs exchange information with each other through an RS485 serial line which can connect up to 8 Hydrovar devices plus one external unit for remote control. RS485 serial interface available as standard which allows to control the Hydrovar converters from a Modbus® field serial bus line.

Each VFD is equipped with two potential-free relays which can be used for remote signaling of pump running and malfunction status, plus a programmable voltage analog output for signaling the frequency or pressure. Standard version with two sensors inputs for implementing of two actual values signals within one system (min/max, difference) or for a second sensor for safety reasons. Specific digital inputs are used for protection against water failure, motor over temperature, as well as for external enable signal and remote control. The vfd also incorporates a dry running protection function via an adjustable minimum pressure threshold.

As added protection designed to protect the pump, motor and pumping system, the Hydrovar operating system shall also detect the following fault conditions: Over-Under Voltage, Over-Current/Output Short, Sensor Failure, Motor Over-Temperature, Inverter Over-Temperature, Minimum Threshold/Conveyor Limit, Lower Water Protection (requires a LWCO switch).

A Class A filter is standard for Hydrovar three-phase power supply (Total Harmonic Distortion Filter).

The following programmable flow `Run/Standby' splits are available for multi-pump control:
- 100 + Stdby
- 50/50
- 50/50 + Stdby
- 33/33/33
- 33/33/33 + Stdby
- 25/25/25/25

Standard building management system (BMS) commumication protocols include:
- Modbus RTU
- Modbus ASCII
- BACnet MS/TP

For further information, visit:
http://bellgossett.com/package-pumping-systems/pressure-booster-packages/technoforce-e-hv/

Sequence of Operation

The e-HV booster system shall consist of 2-to-4 pumps, each outfieed with a Hydrovar master VFD/pump logic controller linked together with a RS-485 connection. The pump logic controller is capable of multi-pump lead/ lag operation control, duty-standby pump selection, automatic alternation, and no-flow shutdown. Each pump logic controller has an individual microprocessor and is connected to a dedicated pressure transducer. Automatic transfer to the secondary master control shall occur upon a pump/VFD failure.

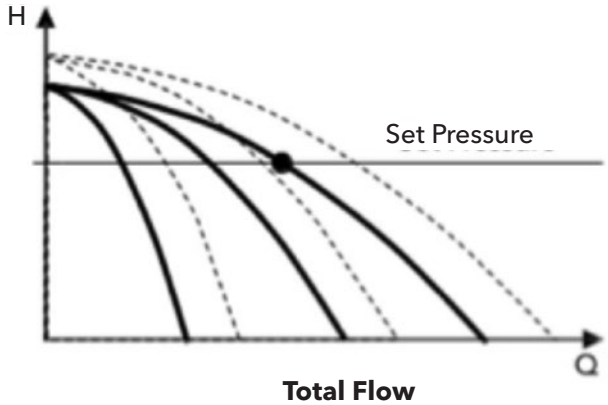
In LOCAL mode, the pumping system shall operate automatically. The discharge pump sensor shall send a 4-20 mA signal to the master pump logic controller, indicative of the process variable condition. On an increase of flow, the pump controller shall automatically start the lag pump(s) as necessary to satisfy demand. As demand is satisfied, the controller will destage the lag pumps as necessary to conserve energy.

When the pump controller detects the minimum Hz setting over a measured time interval, the pump station will automatically go into no flow shutdown. As the discharge pressure setting falls below programmed minimum setpoint, the pump controller will automatically restart the system.

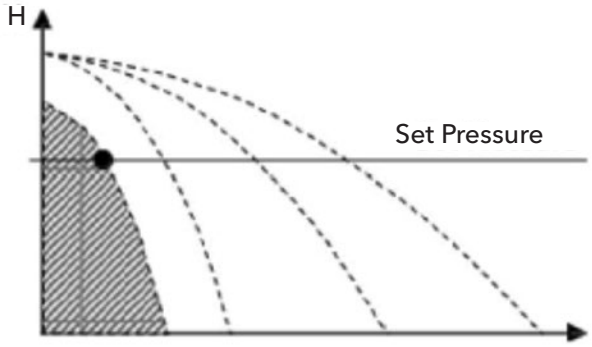
In the event of a pump failure ora VFD fault, the pump logic controller wiil automatically initiate a timed sequence of operation to start a redundant VFD/pump logic controller in the variable speed mode.

Should the pump logic controller protective programming detects a fault condition, an alarm condition will be present on the controller display.

The e-HV maintains a constant system setpoint pressure as shown in the following multi-pump curve.



Total Flow



Partial Flow

Operation Description

SETPOINT

It is possible to select up to two set points of different values, thus use the booster set to serve systems that require different user pressure values. For example, different set points can be used for different times of the day when the load conditions may vary greatly in an office build or school. The set point changes can set when the Booster is installed and are adjustable via the RS-485 communication through the BMS. It is also possible to change the measuring units to bar, psi, m3/h, °C, °F, l/sec, l/min, %. In this case it is possible to use different transducers depending of the selected measuring unit, such as flow and temperature transducers.

PUMP ALTERNATION

Alteration of the pumps can be set at the start at every system restart or at a given time set for each pump by means of an internal clock in the drive menu. This will help ensure equal amounts of run time for the available pumps on the station.

PROTECTION AGAINST DRY RUN

The protection function against dry running intervenes if the water reserve to which the booster set is connected falls below the minimum level guaranteed for suction. For the e-HV the level may be controlled by a float, level probes or minimum pressure switch. It is also possible to manage the function directly by imputing a minimum pressure value in the Hydrovar control board menu, which will receive a signal from the pressure transducer

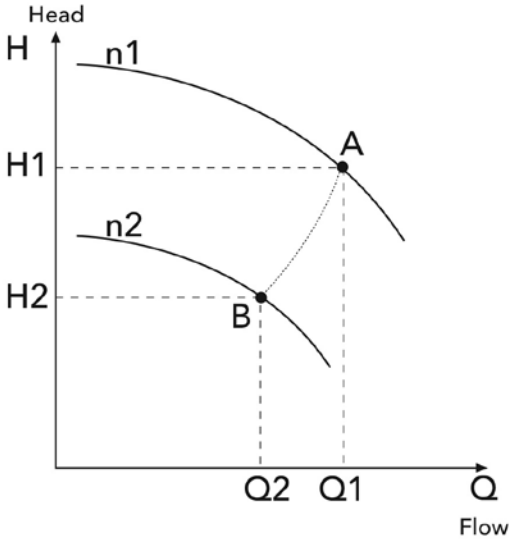
VARIABLE SPEED PERFORMANCE

By outfitting the pump with a variable frequency drive it becomes possible to vary the pump rotation speed according to a system pressure. These variations in speed with result in modified performance characteristics according to the relationships established by the Affinity Laws.

Flow Rate $\frac{Q1}{Q2} = \left[\frac{n1}{n2}\right]$

Head $\frac{H1}{H2} = \left[\frac{n1}{n2}\right]^2$

Power $\frac{P1}{P2} = \left[\frac{n1}{n2}\right]^3$



n1 = initial speed
Q1 = initial flow rate
H1 = initial head
P1 = initial power

n2 = speed required
Q2 = flow rate required
H2 = Head required
P2 = power required

Example:

2-pole, 60Hz, electric pump; n1 = 3500 RPM (point A); P1= 20HP
Flow Rate (A) = 150 GPM; Head (A) = 300 ft
By reducing the frequency to 50Hz the is reduced to approx. n2 = 2500 RPM (point B)
Flow Rate (B) = 107 GPM; Head (B) = 153 ft
The required power of the new work point B is now 7.29 HP

Booster Selection

The following conditions should be considered when choosing a booster set:

- Design Point
- Part Load Conditions
- Efficiency
- NPSH (Suction Conditions)
- Standby pumps
- Diaphragm tanks

CALCULATING THE FLOW RATE

The quantity of water called the **water requirement** depends on the type of application, e.g. office, school, hospital. The **value of peak consumption or design point** is the total amount of water required by all of the users at a given time period. In actual fact it is very unlikely that there will ever be a simultaneous demand by all the users so the **part load conditions** will be lower than the value of peak consumption and should be taken into account when selecting your package. Understanding these part load conditions could impact the size and number of pumps you select to optimize the efficiency of the system

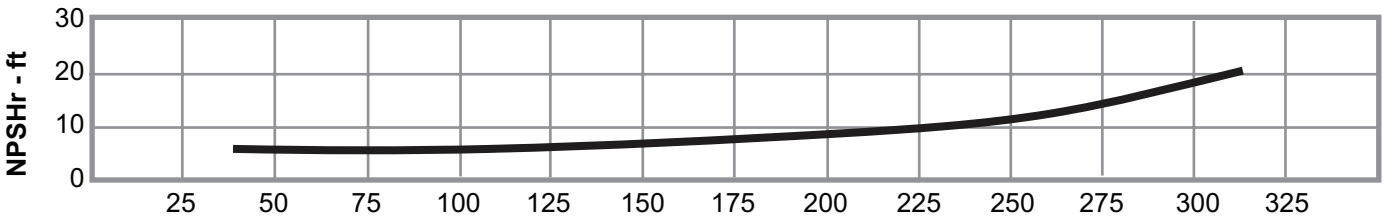
CALCULATING THE HEAD

The pressure required for a given system will depend greatly on the application. A number of factors must be taken into account, including the **height of the building, resistance in the pipes and suction conditions**.

For help calculating pipe resistance download the B&G System Syzer: http://bellgossett.com/selection-sizing-cad-tools/system-syzer

NPSHr

The **Net Positive Suction Head Required** is the net suction head as required by the pump in order to prevent cavitation for safe and reliable operation of the pump. These values are displayed on the pump curves.



NPSHa

The **Net Positive Suction Head Available** is the absolute total suction head available at the pump suction. The application will dictate this value and a few other conditions must be taken into consideration:

ha = Absolute Pressure on the surface of the liquid supply level in feet. (Barometric for open tank)
hvpa = The head in feet corresponding to the vapor pressure of the liquid at pumping temperature
hst = static height in feet of the liquid supply level above or below the pump centerline
hfs = All suction line losses in feet.

Booster Selection

SUCTION CONDITIONS

Understanding the suction conditions for a given application is very important when selecting a Booster. Without the proper **NPSHa (Net Positive Suction Head Available)** the Booster may not be able to deliver proper conditions to the system and the pumps will likely cavitate if not higher than the **NPSHr (Net Positive Suction Head Required).** If more suction pressure is available than the system was designed for the system may be prone to short-cycling or simply not operate at all.

NPSHa > NPSHr

In general there are **three types** of suction conditions to consider when selecting your booster station:

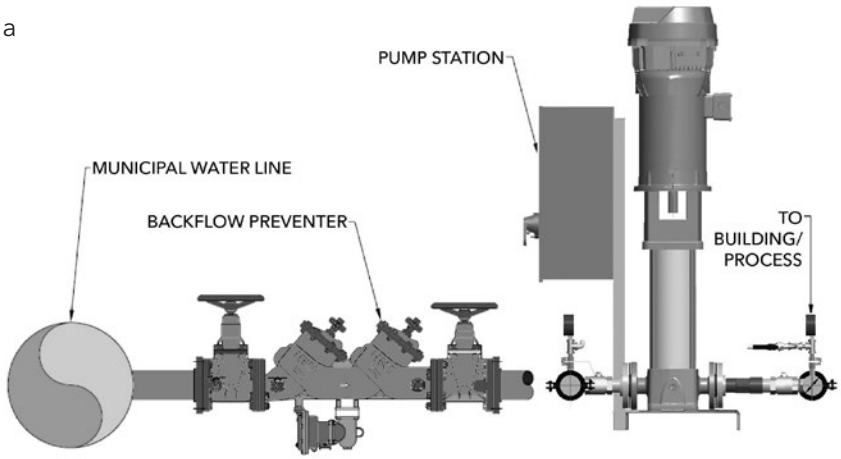
1. Pressurized

Installation where the supply is coming from a pressurize source. Typically this is a municipal water line with a backflow preventer

NPSHa = Suction Pressure

Available Boost =
Station discharge pressure
- Station suction pressure
+ Station friction losses

* Note: Suction pressure should be calculated at full flow to get accurate DP across the backflow preventer.



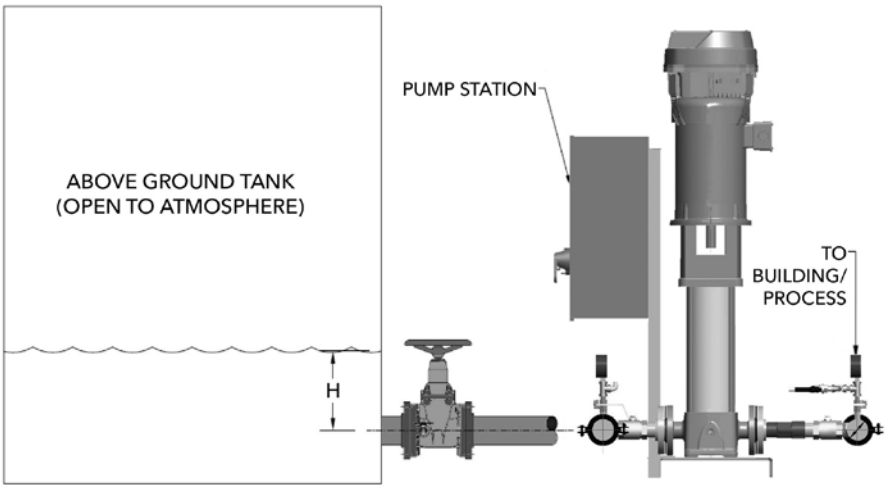
2. Flooded

Installation where the supply is from an above ground tank or water source where the water level is higher than the pump centerline.

NPSHa = ha-hvpa-hst-hfs

Available Boost =
Station discharge pressure
- Station suction pressure
+ Station friction losses

* Note: Elevation can affect atmospheric pressure and temperature, vapor pressure. Please refer to the tables in Appendix.



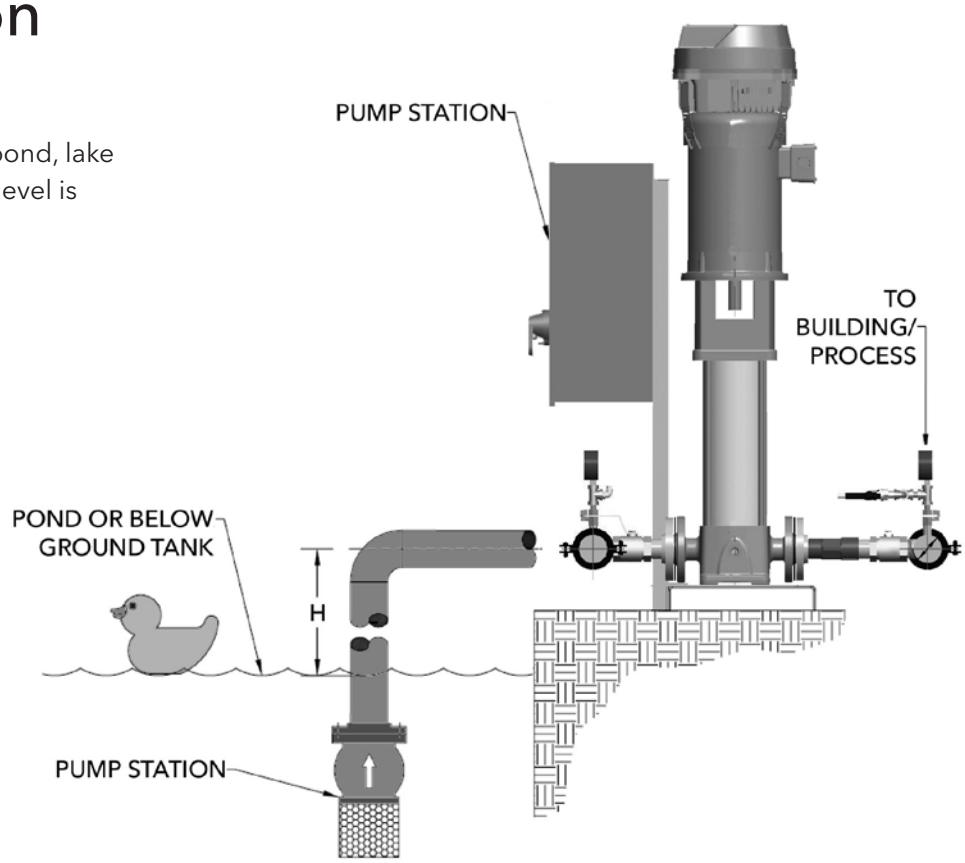
Booster Selection

3. Lift
Installation where the supply is from a pond, lake or below ground tank where the water level is below the pump centerline.

NPSHa = ha-hvpa-hst+hfs

Available Boost =
Station discharge pressure
- Station suction pressure
+ Station friction losses

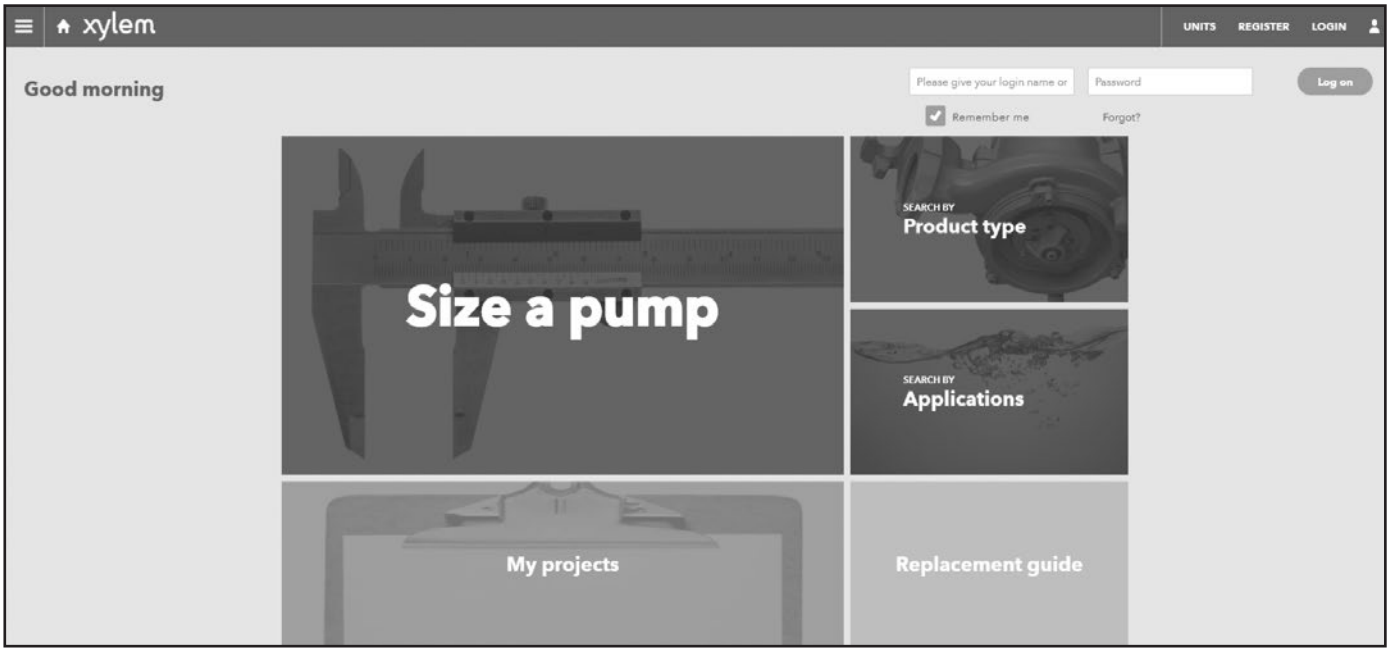
* Note: Lift applications typically require special design considerations. Foot valves and/or dedicated suction valves may be required. Please Consult Factory for Lift applications.



Selecting a Pump

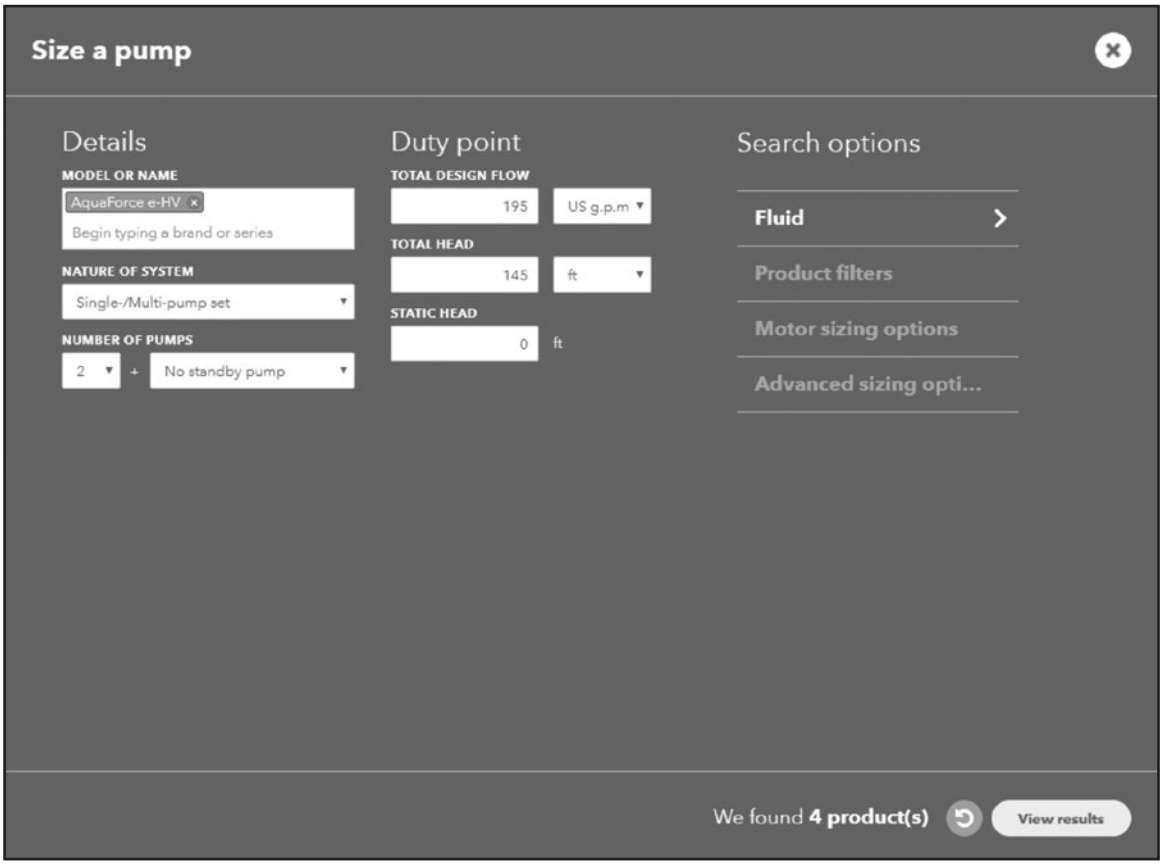
Now that we understand the factors that typically impact our Booster selection, sizing the proper pump is key. Ensuring the station can meet the design point but is also efficient at the part load conditions will provide the end user with the best possible solution. Utilizing the IntellitronicX selection software you can automatically understand the available e-SV pumps that can meet your system needs as well as complete Booster stations.

Visit: https://www.gouldsintellitronic.com/bin/XylectGoulds64.dll?RQID=login-48186781575044724 to login or register.

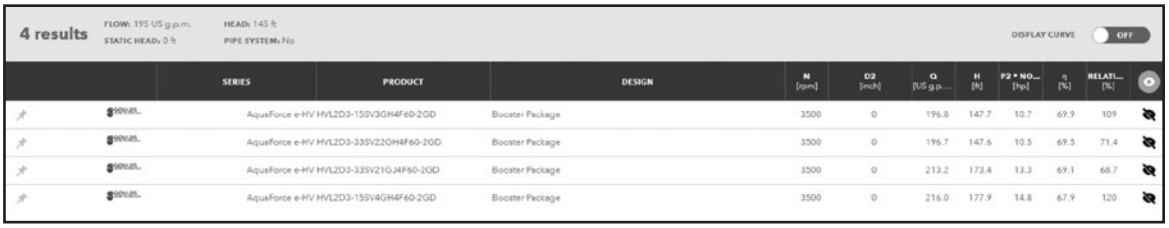


Selecting a Pump

Using the online tool we are able to sort pump selections based on all of the above factors discussed in previous sections:

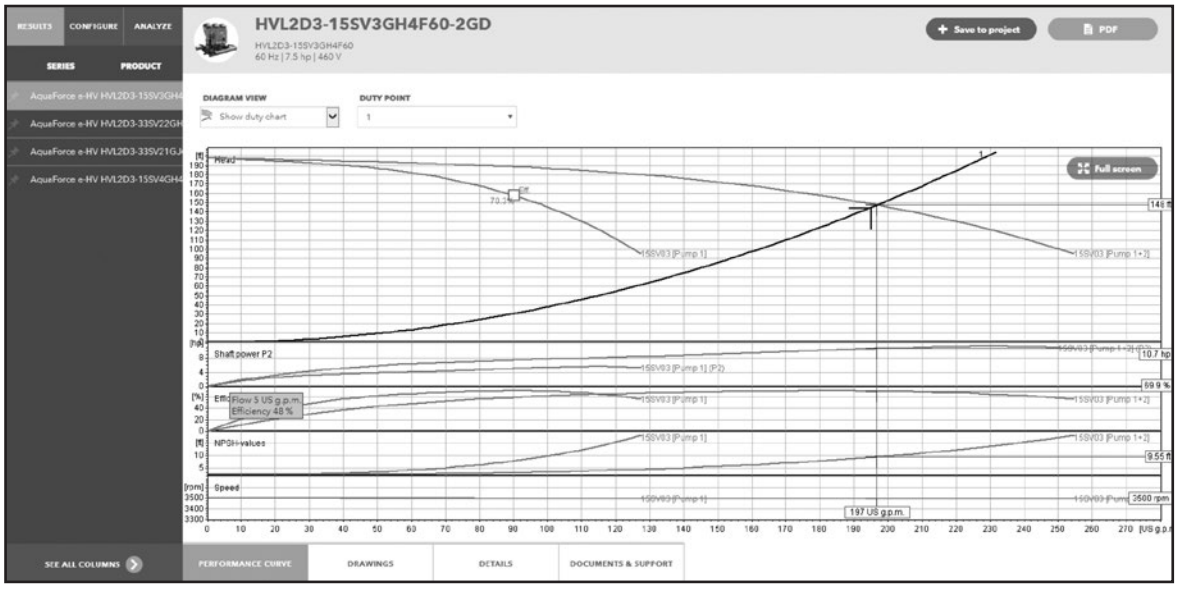


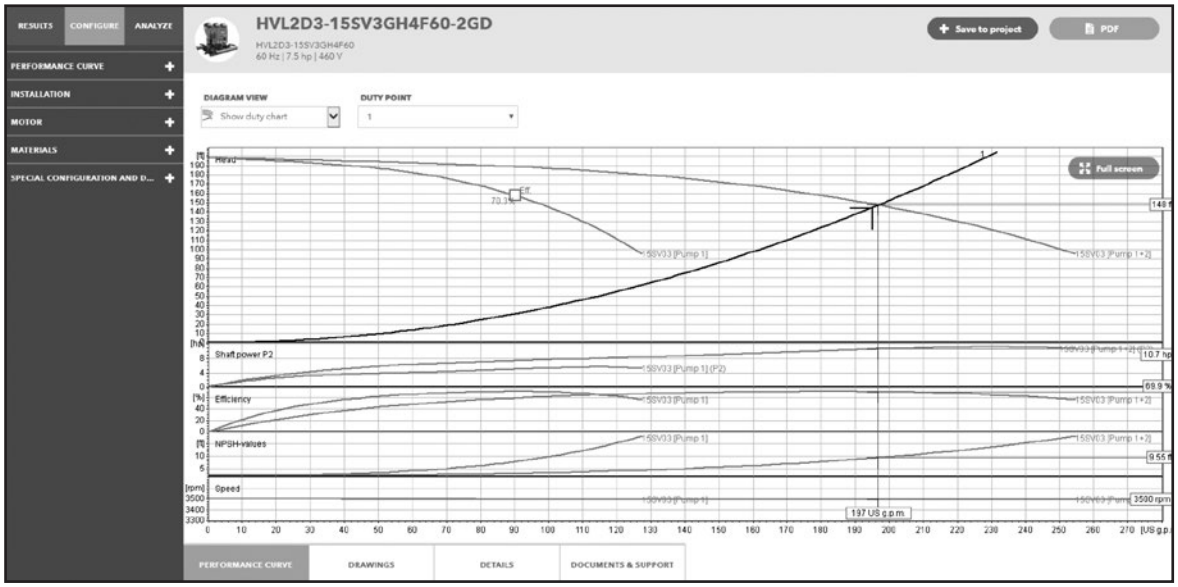
After entering our conditions we are given the available pumps sorted by efficiency.



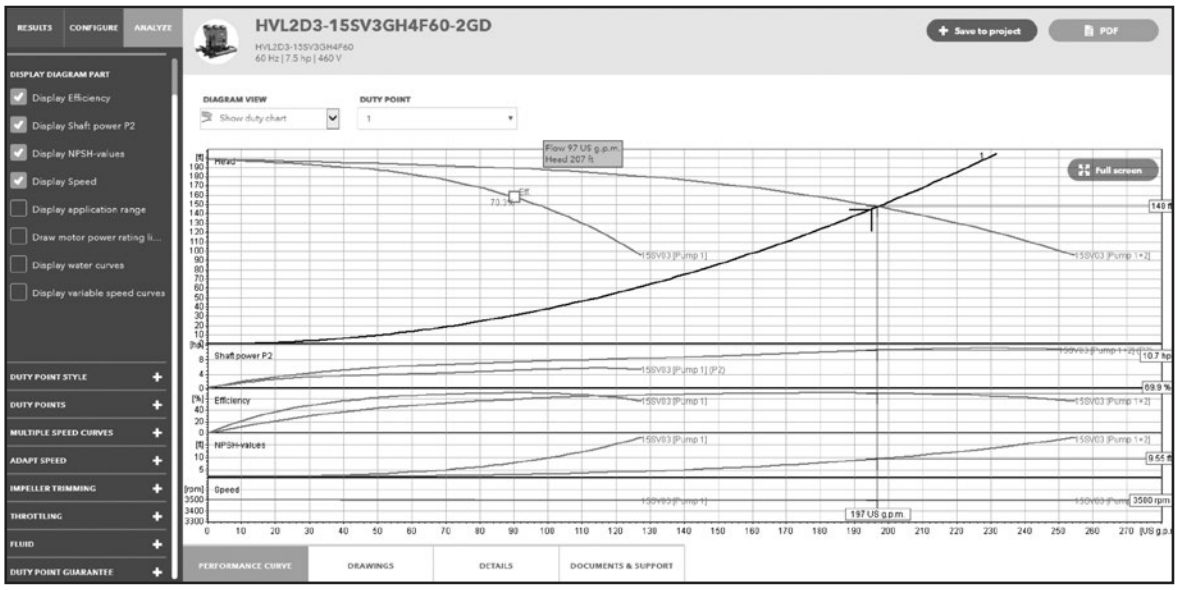
Selecting a Pump

Pulling up the pump curve we can now evaluate, configure, and analyze the pump selection for our application.





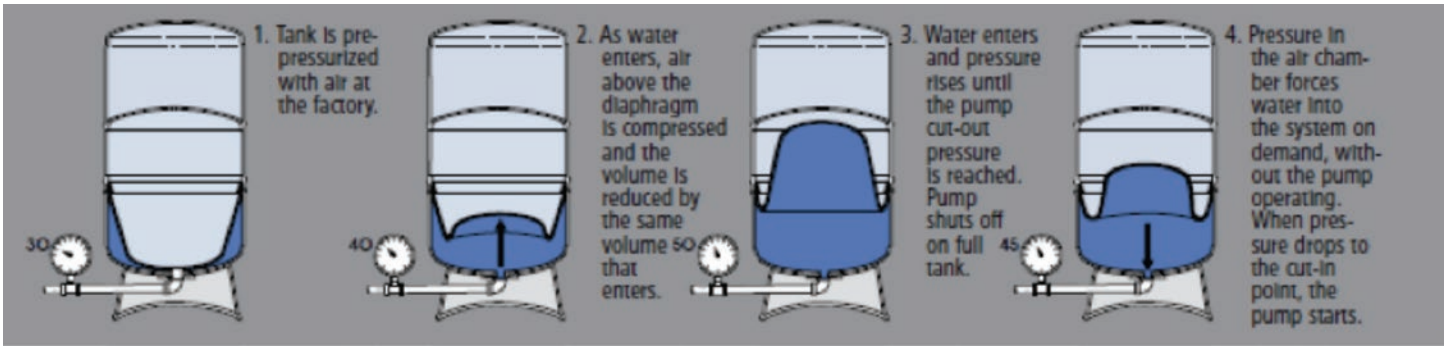
Selecting a Pump



For the e-HV we have optimized the pump selection based on flow and head available for 1 to 4 pumps running in parrallel. For standard offering and availability please see the Pump Curves section of this brochure or selection software available in the online tool.

Hydro-Pneumatic Tank Sizing

Due to misinformation in the market place, a surprising number of people are under the impression that hydro pneumatic tanks are not required with a variable speed pressure booster. While it is true that a variable speed system will function without the tank, the pumps cannot be effectively shut down during periods of very low demand. Since the goal of variable speed pumping is energy savings, it makes sense to save more by utilizing 'no-flow shutdown' logic. Therefore, an expansion tank is highly recommended.



1. Create a Buffer Between Shutdown and Start-up

- Tank will act as a buffer between low flow or no flow, as well as rapid changes in demand
- Higher energy savings with less cycling
  - Engineering consultants recognize this (i.e. Theoretical (Design) Shutdown Time is normally called out as 10-15 min)
- Less wear and tear. Motor manufactures frown on numerous cycles (max 15 cycles/hr)

Hydro-Pneumatic Tank Sizing

Consider:
A specification states 'no tank is required', and recommends a 5 gal tank for 'minor flows'.

> **An approach of a one-tank-fits-approach does not take into account different building flow characteristics, and puts design shutdown time at risk. The result is lower system efficiency, higher stress on the motor and equipment.**

2. Determine Tank Size (2 methods available)

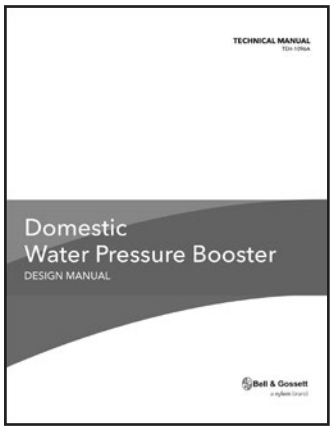
I. Rule-of-Thumb Method
Total tank size (volume in GPM) is 20% of nominal flow rate of a single pump for VFD systems. This is tank capacity and not draw-down gallons. (Note: for approximation purposes only)

Or:
II. Calculate Acceptance Volume / Draw-Down Coefficient Method
(Best Practice)

CALCULATE TANK SIZE (METHOD 2)

> **What is Acceptance Volume?** The volume of water a tank is designed to hold. For example, consider a hydro pneumatic tank: The bladder is smaller than the tank size, and is used to keep water and air separated. The acceptance volume would be what the bladder is designed to hold. Keep in mind that the tank has air contained in it and therefore it is not possible to fill the entire tank with water.

Refer to: B&G TEH-1096A (pgs. 28-36)
Link:http://bellgossett.com/literature-library/#documentType/teh_manuals



Step 1. Calculate Acceptance Volume – Determining Factors
- Theoretical Shut-down Time desired (usually spec'd as 10-15 min)
- Total system demand (GPM) divided by No. of 'Duty' pumps
- Type of building profile (school, hospital, hotel, etc.)

Example
- Duplex booster package with 50/50 split
- Facility: Apartment Building
- Desired Shutdown Time: 10 min.
- Total System Demand: 400 GPM

The following chart from B&G TEH 1096A provides estimates of acceptance volume based on total System Demand for various facilities based on a **30 minute** shutdown time for a booster pump.

Step 2. Calculate Total Single Duty Pump Flow
Divide total demand by the number of 'duty' pumps for the booster package:
Single Duty Pump Flow = 400 / 2 = 200 GPM
Read down left hand column to 300 GPM and follow row to the right to find value under the 'School' column = **60 GPM**

Step 3. Calculate the Adj. Drawdown Volume for 10 minutes
(Desired Shutdown Time / 30 min) x Acceptance Volume from Chart
(10 min / 30 min) x 60 gpm = **20 GPM**

Hydro-Pneumatic Tank Sizing

TOTAL SYSTEM DEMAND (GPM)	APARTMENT BUILDING	HOSPITAL	SCHOOL	UNIVERSITY - CLASS ROOMS	UNIVERSITY - DORMITORIES	COMMERCIAL	HOTEL	PRISON
50	8	60	15	15	23	11	15	38
100	15	120	30	30	45	22	30	75
150	23	180	45	45	68	33	45	113
200	30	240	60	60	90	44	60	150
250	38	300	75	75	113	55	75	188
300	45	360	90	90	135	66	90	225
350	53	420	105	105	158	77	105	263
400	60	480	120	120	180	88	120	300
450	68	540	135	135	203	99	135	338
500	75	600	150	150	225	110	150	375

Step 4. Determine the Drawdown Coefficient

Once the required adjusted acceptance volume has been determined, calculate the total tank volume based on the draw-down coefficient from a given tank manufacturer (see following chart example).

The following values must be known:

- **Adjusted Drawdown Value** (covered above)
- **Building Height** (static height expressed in psi)
- **System Friction Loss** (between package discharge and tank inlet)
- **Cut-in Pressure** (pressure the booster will restart; usually 10 psi below the discharge pressure set-point)
- **Discharge Pressure Set Point**
- **Initial Pressure (IP)** - The pressure at tank connection point at booster cut-in pressure].

P = Cut-in Pressure* – Friction Loss – Static Height (PSI)**

- **Final Pressure (FP)** - pressure at the tank connection point when system is fully pressurized

FP = System Set point – Friction Loss – Static Height*

> ***** NOTE: For tanks placed at the discharge of booster package:**
> **Initial Pressure =** Cut-in Pressure (10 psi below Discharge setting
> **Final Pressure =** Discharge Pressure Set Point

Hydro-Pneumatic Tank Sizing

Example - Booster in Basement and Tank on Roof

Using the previous example:

- Adjusted Drawdown Value = 20 GPM
- Building Height = 70 ft (30.3 psi)
- System Friction Loss = 4.73 psi + 5 psi = 9.73
- Cut-in Pressure = 65 psi
- Discharge Pressure Set Point = 75 psi
- Initial Pressure (IP) – 65 psi – 4.73 psi - 30.3 = 30 psi
- Final Pressure: 65 PSI (pump logic program default setting is 10 psi below pressure discharge setting)

Therefore:

Initial Pressure = 65 psi - 4.73 psi - 30.3 psi = 30 psi
Final Pressure = 75 psi - 4.73 psi - 30.3 psi = 40 psi

Using figure 5.6 table, we can now determine draw-down coefficient is **0.183**

- Divide the adj. draw-down volume by the draw-down coefficient to find Total Tank Volume:
  20 GPM / 0.183 = **110 gal = Total Tank Volume**

Example: Tank at Discharge of Booster Package Location

Initial Pressure = Cut-in Pressure = 65 psi

Final Pressure = Discharge System Pressure = 75 psi

Using figure 5.6 table, the draw-down coefficient **= 0.111**
20 GPM / 0.111 = **180 Gal Total Tank Volume**

Observation: The higher the hydro pneumatic tank is above the pressure booster, the smaller the tank needs to be.

Hydro-Pneumatic Tank Sizing

Hydropneumatic Tank Drawdown Volume - **Figure 5.6**

Source: Wessels Company, Detroit, Michigan, USA

INITIAL TANK PRESSURE PSI

FINAL TANK PRESSURE PSI

	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195
30	.447	.336	.224	.112																																		
35	.503	.402	.302	.201	.101																																	
40	.548	.457	.366	.274	.183	.091																																
45	.586	.503	.419	.335	.251	.168	.084																															
50	.618	.541	.464	.386	.309	.232	.155	.077																														
55	.646	.574	.502	.430	.359	.287	.215	.143	.072																													
60	.689	.602	.535	.489	.402	.335	.268	.201	.134	.067																												
65	.690	.627	.565	.502	.439	.376	.314	.251	.168	.125	.063																											
70	.708	.649	.590	.531	.472	.413	.354	.295	.236	.177	.118	.059																										
75	.725	.669	.613	.557	.502	.446	.390	.334	.279	.223	.167	.111	.056																									
80	.739	.686	.634	.581	.528	.475	.422	.370	.317	.264	.211	.158	.106	.053																								
85	.752	.702	.652	.602	.552	.502	.451	.401	.351	.301	.251	.201	.150	.100	.050																							
90	.764	.716	.669	.621	.573	.525	.476	.430	.362	.334	.267	.239	.191	.143	.096	.048																						
95	.775	.729	.684	.638	.593	.547	.501	.456	.410	.385	.319	.273	.228	.182	.137	.091	.046																					
100	.785	.741	.697	.654	.510	.587	.523	.480	.436	.392	.349	.305	.262	.216	.174	.131	.087	.044																				
105	.794	.752	.710	.668	.627	.585	.543	.501	.459	.418	.376	.334	.292	.251	.209	.167	.125	.064	.042																			
110	.802	.762	.722	.682	.642	.601	.561	.521	.481	.421	.401	.361	.321	.281	.241	.200	.160	.120	.060	.040																		
115	.810	.771	.732	.694	.655	.617	.576	.540	.501	.483	.424	.386	.347	.308	.270	.231	.193	.154	.116	.077	.039																	
120	.817	.780	.742	.705	.668	.631	.594	.557	.520	.483	.445	.408	.371	.334	.297	.260	.223	.168	.148	.111	.074	.037																
125	.823	.787	.752	.716	.680	.644	.606	.573	.537	.501	.465	.429	.394	.358	.322	.286	.251	.215	.179	.143	.107	.072	.036															
130	.829	.795	.760	.726	.691	.657	.622	.587	.553	.518	.484	.449	.415	.380	.346	.311	.276	.242	.207	.173	.136	.104	.039	.035														
135	.835	.802	.766	.735	.701	.668	.635	.601	.566	.534	.501	.468	.434	.401	.367	.334	.301	.267	.234	.200	.167	.134	.100	.067	.033													
140	.840	.806	.776	.743	.711	.679	.646	.614	.582	.549	.517	.485	.452	.420	.386	.356	.323	.291	.259	.226	.194	.162	.129	.097	.085	.032												
145	.845	.814	.783	.751	.720	.689	.657	.626	.595	.564	.532	.501	.470	.438	.407	.376	.344	.313	.282	.250	.219	.188	.157	.125	.094	.063	.031											
150	.850	.820	.789	.759	.729	.698	.688	.636	.607	.577	.546	.516	.486	.455	.425	.395	.364	.334	.304	.273	.243	.213	.182	.152	.121	.091	.061	.030										
155	.854	.825	.796	.766	.737	.707	.678	.648	.619	.589	.560	.530	.501	.471	.442	.412	.383	.354	.324	.295	.265	.236	.206	.177	.147	.118	.088	.059	.029									
160	.859	.830	.801	.773	.744	.716	.687	.658	.630	.601	.572	.544	.515	.487	.458	.429	.401	.372	.343	.315	.286	.258	.229	.200	.172	.143	.114	.086	.057	.029								
165	.863	.835	.807	.779	.751	.723	.696	.668	.640	.612	.584	.556	.529	.501	.473	.445	.417	.390	.362	.334	.306	.278	.250	.223	.195	.167	.139	.111	.083	.056	.028							
170	.886	.839	.812	.785	.758	.731	.704	.677	.650	.623	.596	.566	.541	.514	.487	.460	.433	.406	.379	.352	.325	.296	.271	.244	.217	.189	.162	.135	.106	.081	.054	.027						
175	.870	.843	.817	.791	.764	.736	.712	.685	.659	.633	.606	.580	.554	.527	.501	.474	.448	.422	.395	.389	.343	.316	.290	.264	.237	.211	.185	.158	.132	.105	.079	.053	.026					
180	.873	.847	.822	.796	.770	.745	.719	.693	.668	.642	.616	.591	.585	.539	.514	.488	.462	.437	.411	.385	.360	.334	.306	.282	.257	.231	.205	.180	.154	.128	.103	.077	.051	.026				
185	.876	.851	.826	.801	.776	.751	.726	.701	.676	.651	.626	.601	.576	.551	.526	.501	.476	.451	.426	.401	.376	.351	.325	.300	.275	.250	.225	.200	.175	.150	.125	.100	.075	.050	.025			
190	.879	.855	.830	.806	.782	.757	.733	.706	.684	.660	.635	.611	.586	.562	.537	.513	.489	.484	.440	.415	.391	.366	.342	.318	.293	.269	.244	.220	.195	.171	.147	.122	.096	.073	.049	.024		
195	.882	.858	.835	.811	.787	.763	.739	.715	.691	.668	.644	.620	.596	.572	.548	.525	.501	.477	.453	.429	.405	.381	.358	.334	.310	.286	.262	.238	.215	.191	.167	.143	.119	.095	.072	.048	.024	
200	.885	.862	.838	.815	.792	.769	.745	.722	.699	.675	.652	.629	.605	.582	.559	.536	.512	.489	.466	.442	.419	.396	.373	.349	.326	.303	.279	.256	.233	.210	.186	.163	.140	.116	.093	.070	.047	.023

Pre-Charging Hydropneumatic Tanks

Caution: Most hydropneumatic tanks shipped from the manufacturer are pre-charged to a pressure that is usually well below the actual charging require for the system. The result is an air volume in the tank that is too small, and leads to pump short cycling and lost efficiency.

To correct the pre-charge for a job specific application, we need to define these variables:

D = Discharge pressure setting
M = Max pressure drop
(Discharge pressure setting - cut-in pressure)
H = Tank elevation above the pressure booster (psi)
P = Correct tank pre-charge tank pressure (tank empty)

The formula for the correct tank pre-charge is:
P = D – M – H – 1

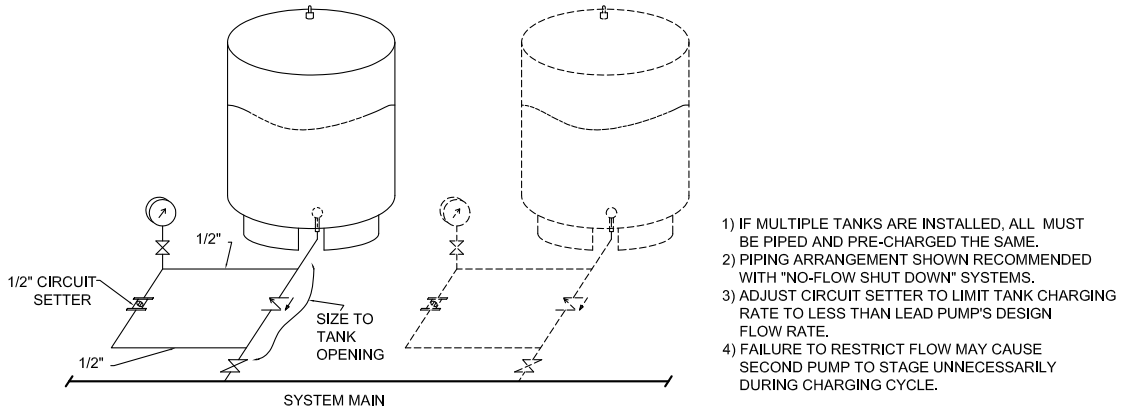
Example #1: Pressure Booster in Basement and Tank on Roof

Discharge pressure is 75 psi. After a 'no flow shutdown' event occurs, the booster normally restarts when it sees a drop of 10 psi below the discharge set point. The building is 75 ft tall (30.3 psi).

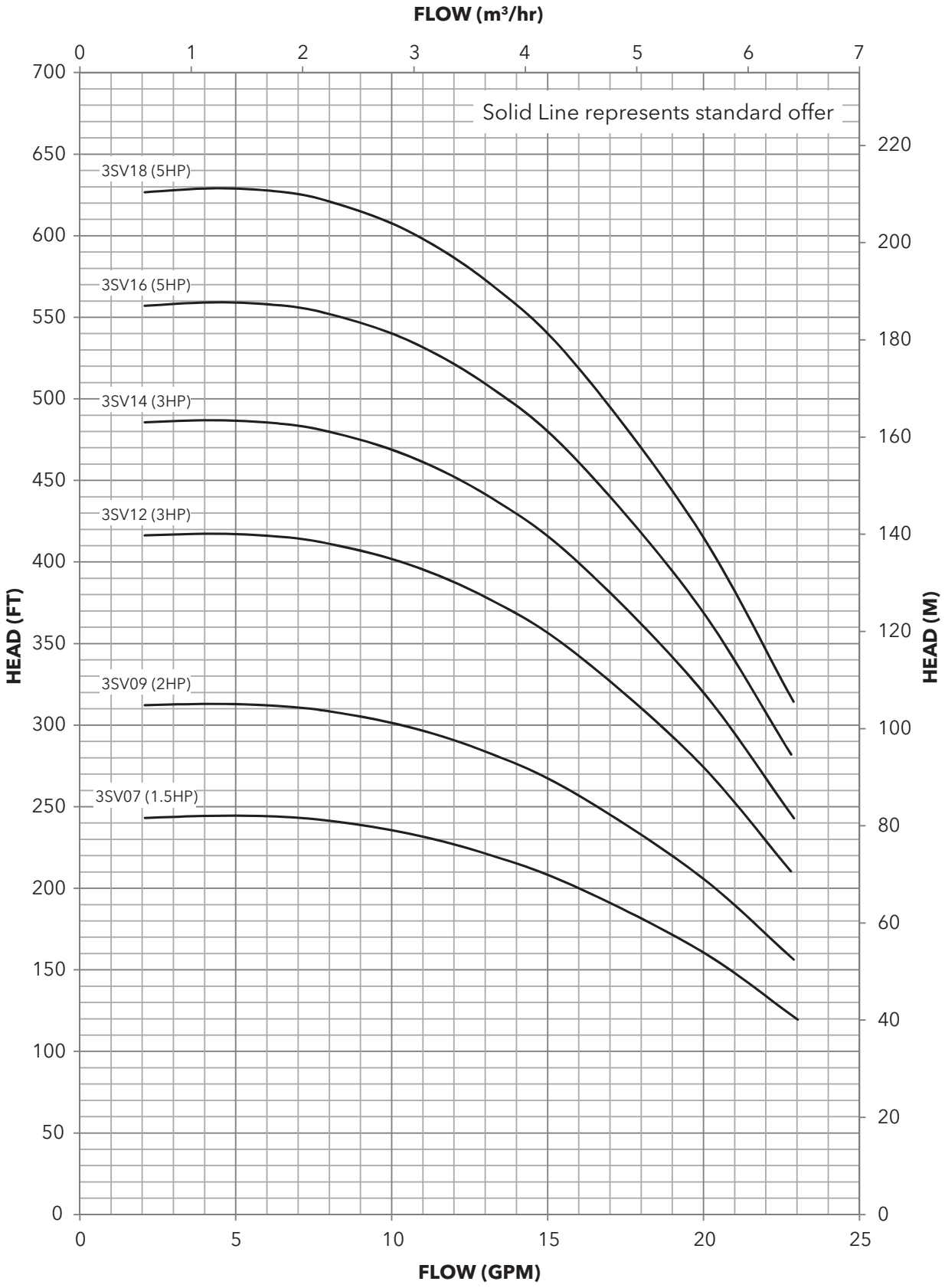
Therefore:
P = D – M – H – 1 = 75 – 10 – 30.3 – 1 = 33.7 psi

Example #2: Tank located at the Pressure Booster Package

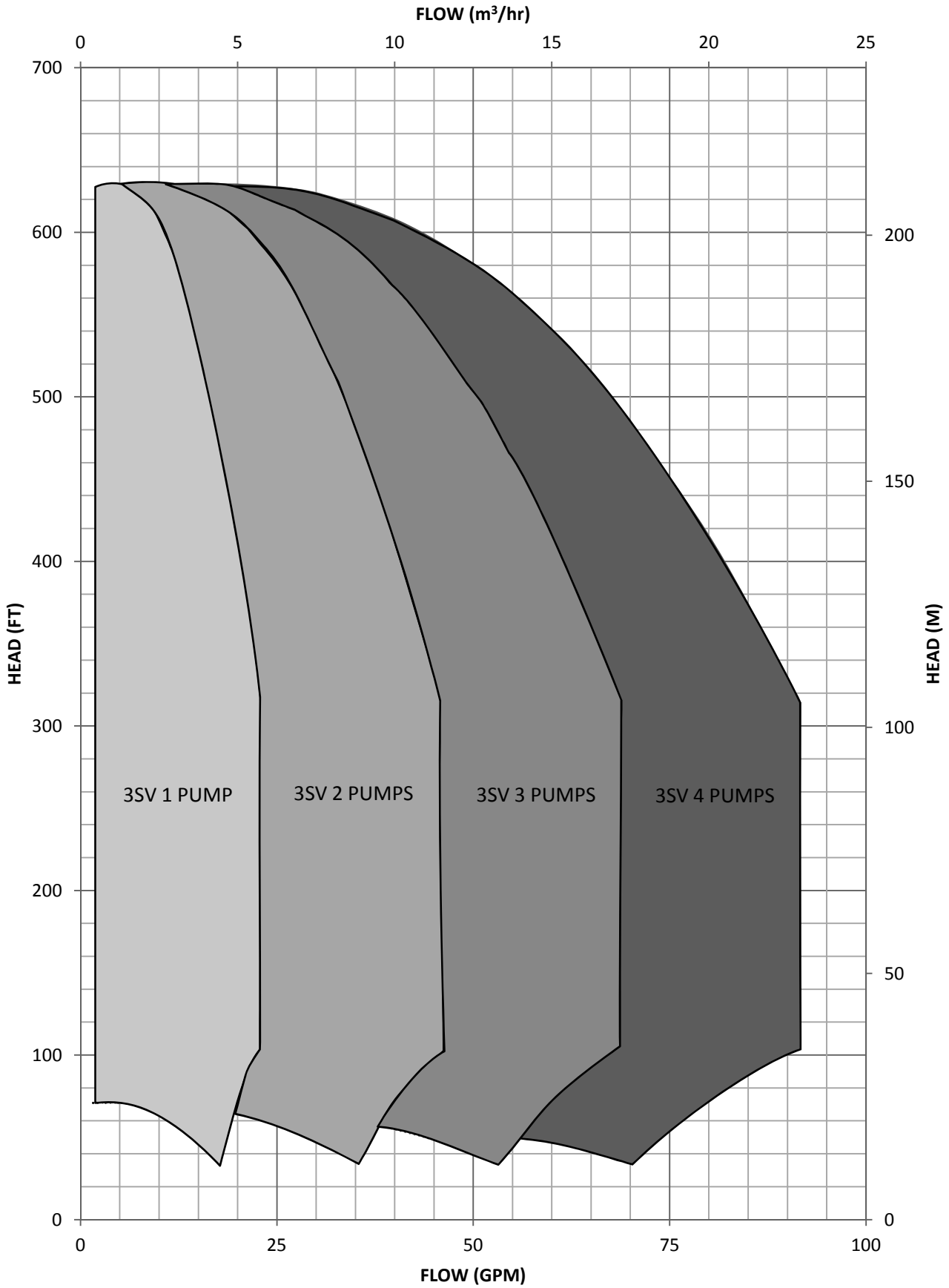
Using the previous values above:
P= 75 – 10 -1 – **63 psi**



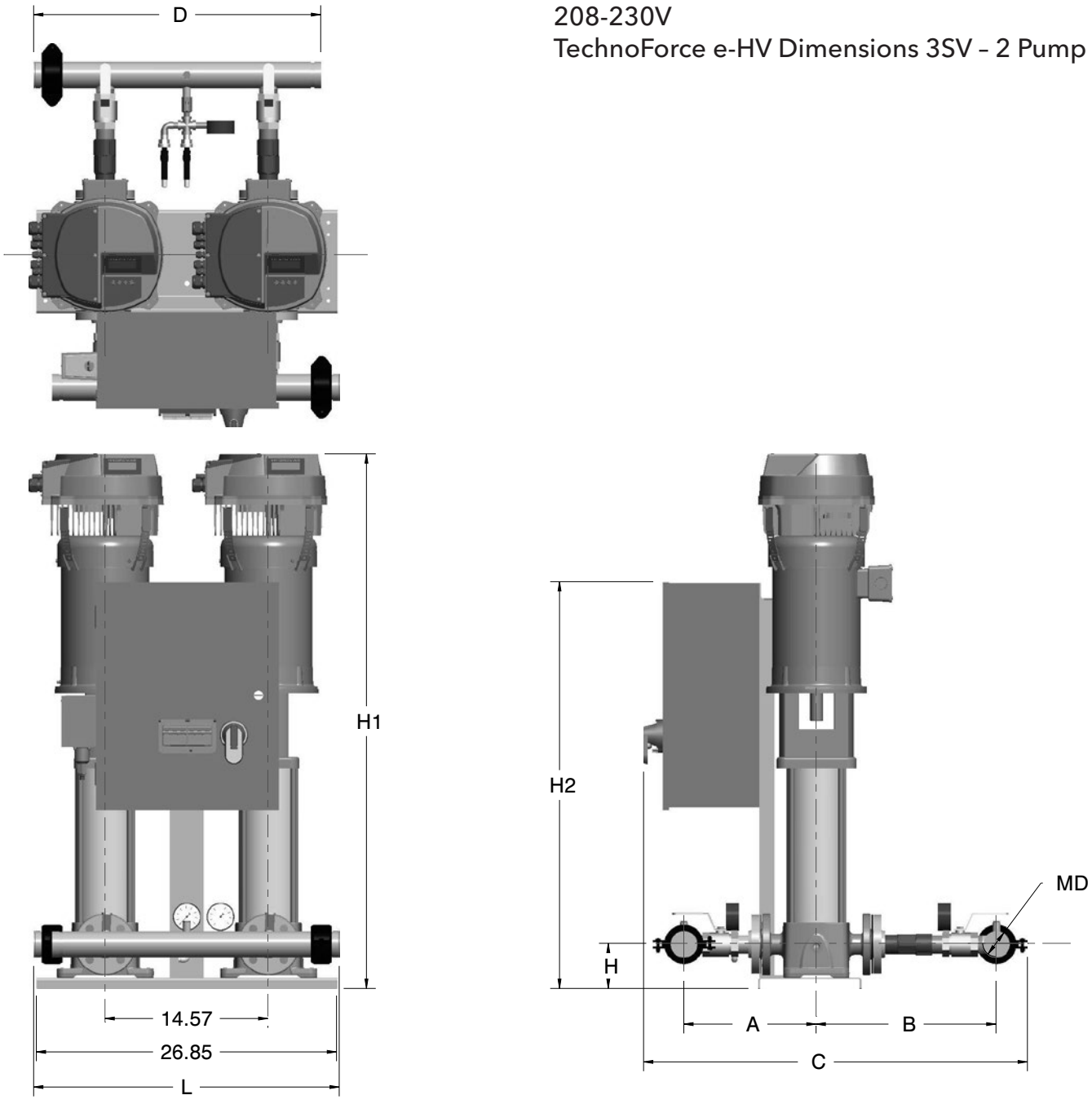
TechnoForce e-HV Curves 3SV



TechnoForce e-HV Curves 3SV

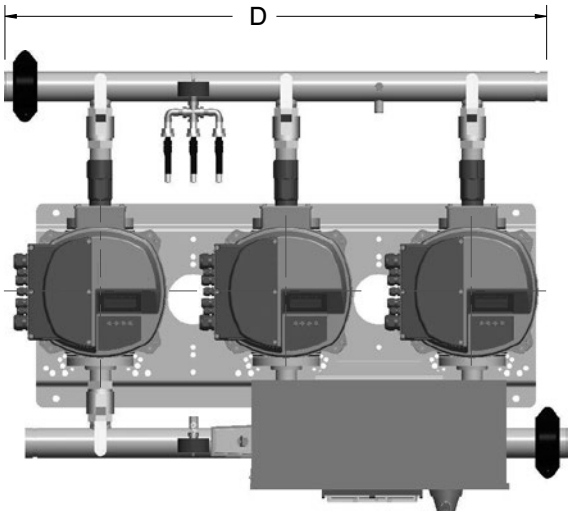


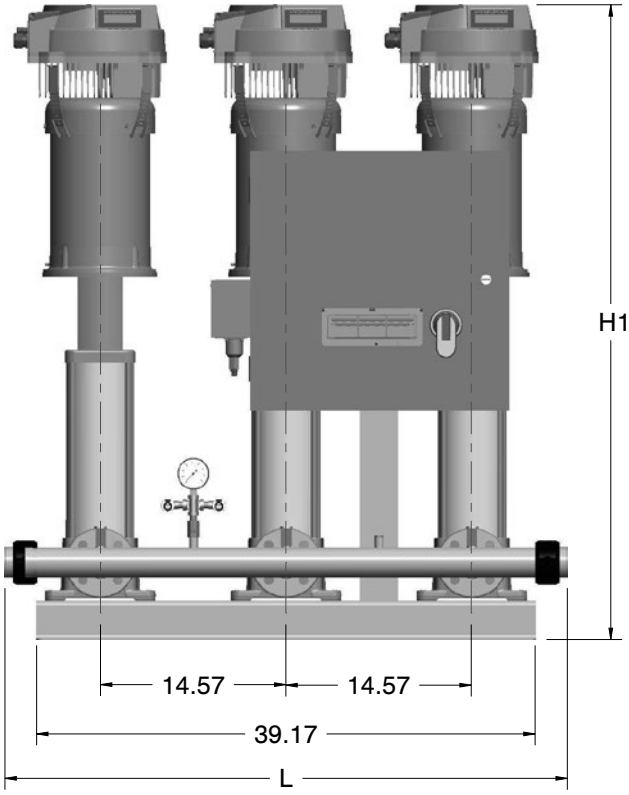
208-230V
TechnoForce e-HV Dimensions 3SV – 2 Pump

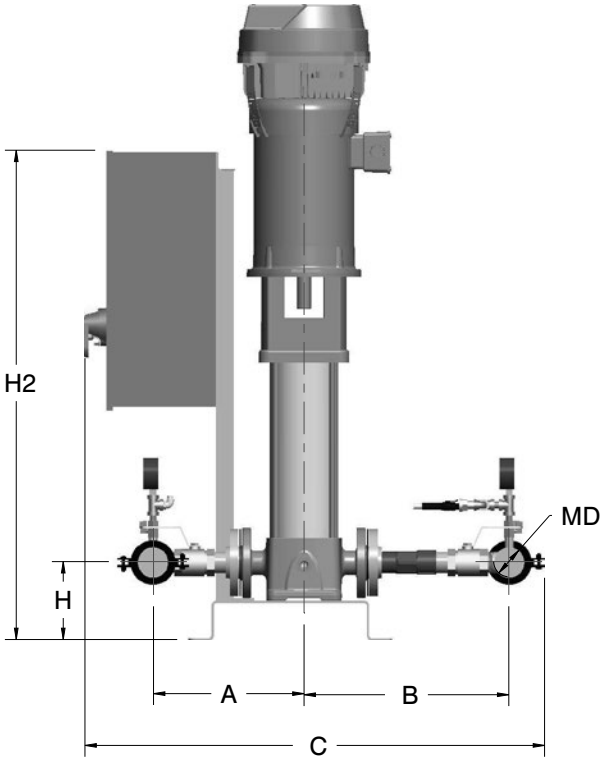


HVL2L2	MD	A	B	C	D	H	H1	H2	L	Wt.(lb)
3SV7GD4F60	2	11.83	16.09	34.33	25.67	4.04	35.36	31.27	27.33	331.0
3SV9GE4F60	2	11.83	16.09	34.33	25.67	4.04	36.94	31.27	27.33	340.2
3SV12GF4F60	2	11.83	16.09	34.33	25.67	4.04	41.81	31.27	27.33	395.4
3SV14GF4F60	2	11.83	16.09	34.33	25.67	4.04	43.38	31.27	27.33	400.0
3SV16GG4C60	2	11.83	16.09	34.33	25.67	4.04	47.05	36.27	27.33	503.5
3SV18GG4F60	2	11.83	16.09	34.33	25.67	4.04	49.32	36.27	27.33	512.7

208-230V
TechnoForce e-HV Dimensions 3SV – 3 Pump

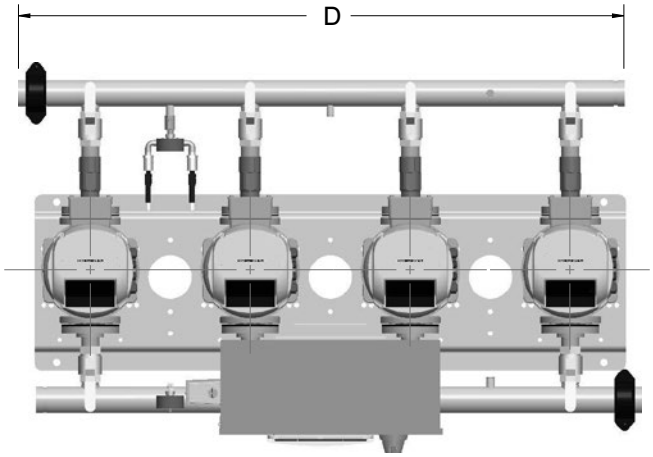


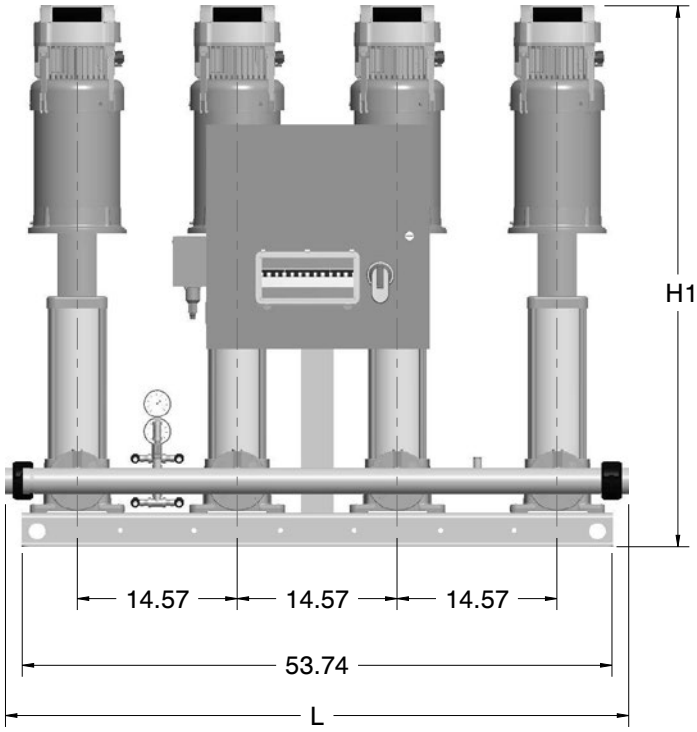


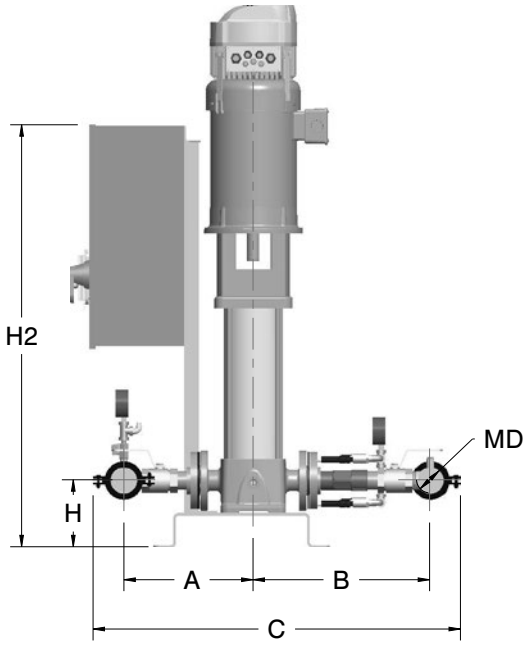


HVL3L2	MD	A	B	C	D	H	H1	H2	L	Wt.(lb)
3SV7GD4F60	2	11.83	16.09	36.12	42.57	6.12	37.43	33.34	44.20	508.3
3SV9GE4F60	2	11.83	16.09	36.12	42.57	6.12	39.01	33.34	44.20	522.1
3SV12GF4F60	2	11.83	16.09	36.12	42.57	6.12	43.88	33.34	44.20	604.9
3SV14GF4F60	2	11.83	16.09	36.12	42.57	6.12	45.45	33.34	44.20	611.8
3SV16GG4F60	2	11.83	16.09	36.12	42.57	6.12	49.12	38.34	44.20	766.1
3SV18GG4F60	2	11.83	16.09	36.12	42.57	6.12	51.39	38.34	44.20	779.9

208-230V
TechnoForce e-HV Dimensions 3SV – 4 Pump

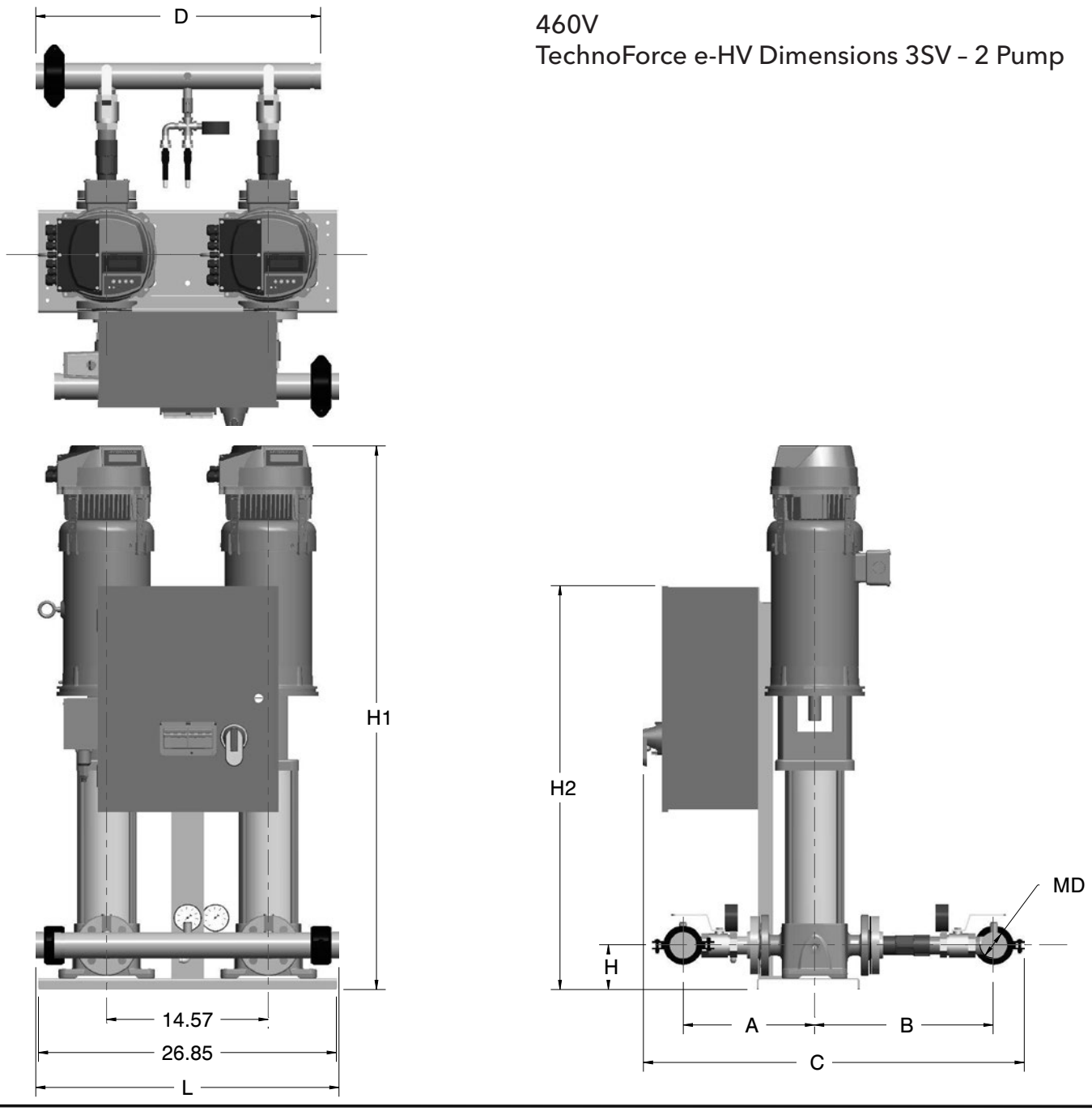






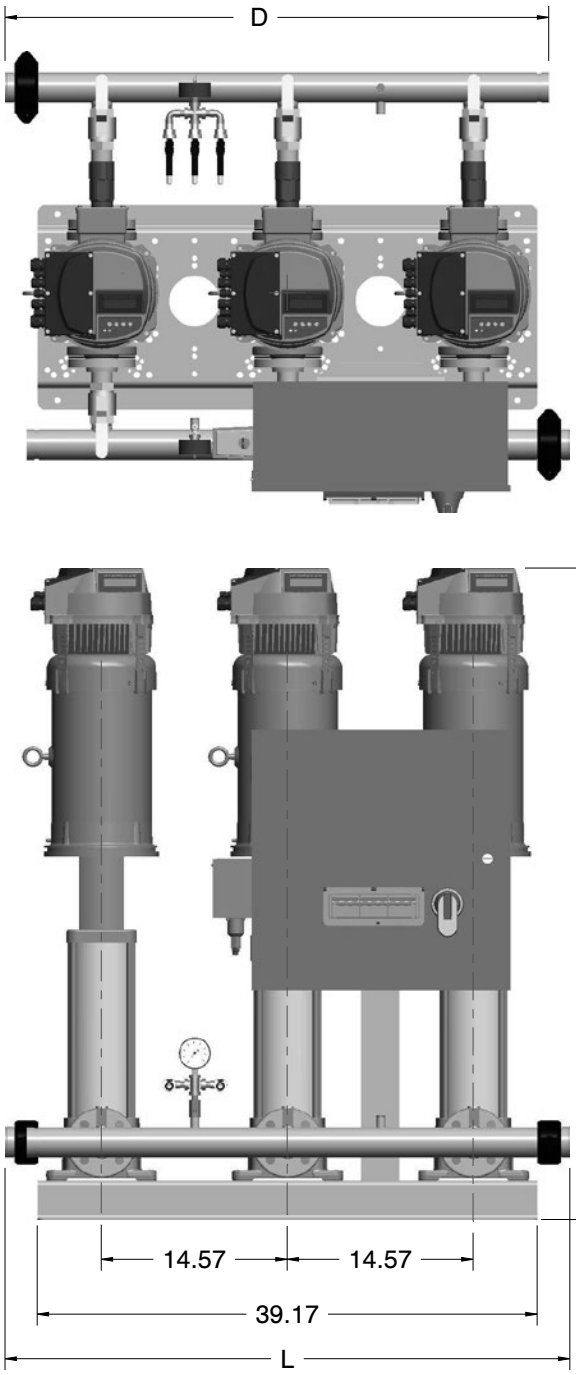
HV4D2	MD	A	B	C	D	H	H1	H2	L	Wt.(lb)
3SV7GD4F60	2	11.77	16.09	33.48	55.17	6.10	36.62	33.34	56.79	700.7
3SV9GE4F60	2	11.77	16.09	33.48	55.17	6.10	39.20	33.34	56.79	732.9
3SV12GF4F60	2	11.77	16.09	33.48	55.17	6.10	42.75	33.34	56.79	797.3
3SV14GF4F60	2	11.77	16.09	33.48	55.17	6.10	44.38	33.34	56.79	806.5
3SV16GG4C60	2	11.77	16.09	33.48	55.17	6.10	47.38	38.34	56.79	930.7
3SV18GG4C60	2	11.77	16.09	33.48	55.17	6.10	49.63	38.34	56.79	949.1

460V
TechnoForce e-HV Dimensions 3SV – 2 Pump



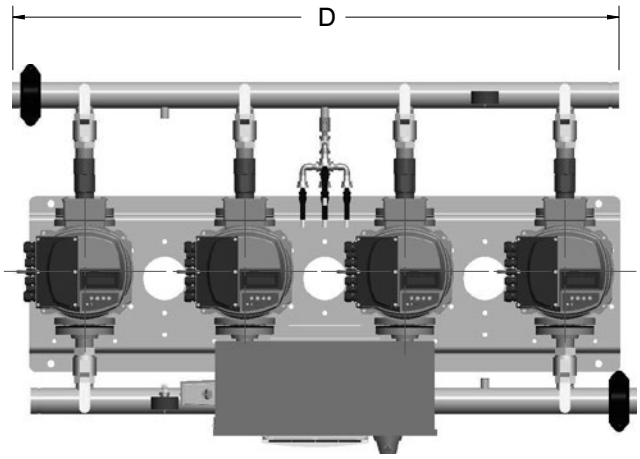
HVL2D2	MD	A	B	C	D	H	H1	H2	L	Wt.(lb)
3SV7GD4F60	2	11.83	16.09	34.33	25.67	4.04	35.36	31.27	27.33	331.0
3SV9GE4F60	2	11.83	16.09	34.33	25.67	4.04	36.94	31.27	27.33	340.2
3SV12GF4F60	2	11.83	16.09	34.33	25.67	4.04	41.81	31.27	27.33	395.4
3SV14GF4F60	2	11.83	16.09	34.33	25.67	4.04	43.38	31.27	27.33	400.0
3SV16GG4F60	2	11.83	16.09	34.33	25.67	4.04	46.46	36.27	27.33	473.2
3SV18GG4F60	2	11.83	16.09	34.33	25.67	4.04	48.73	36.27	27.33	482.4

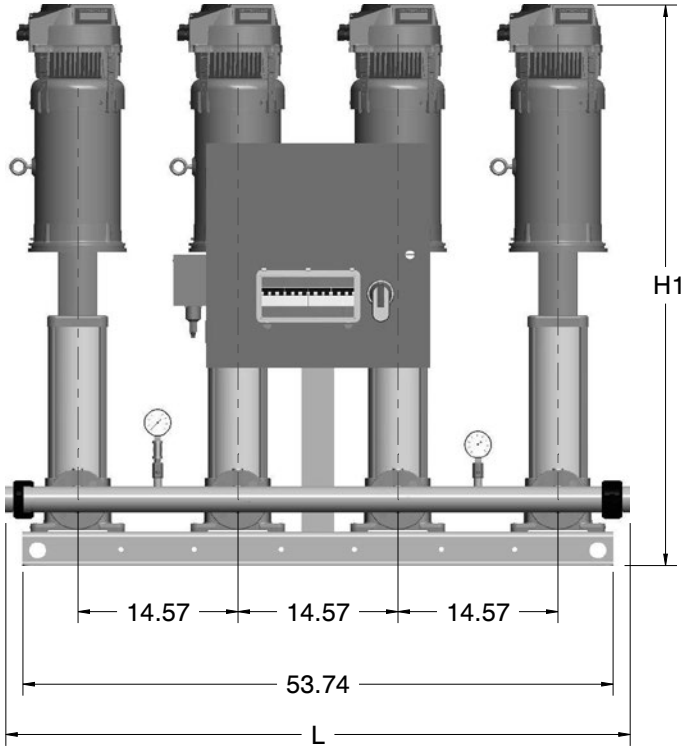
460V
TechnoForce e-HV Dimensions 3SV – 3 Pump

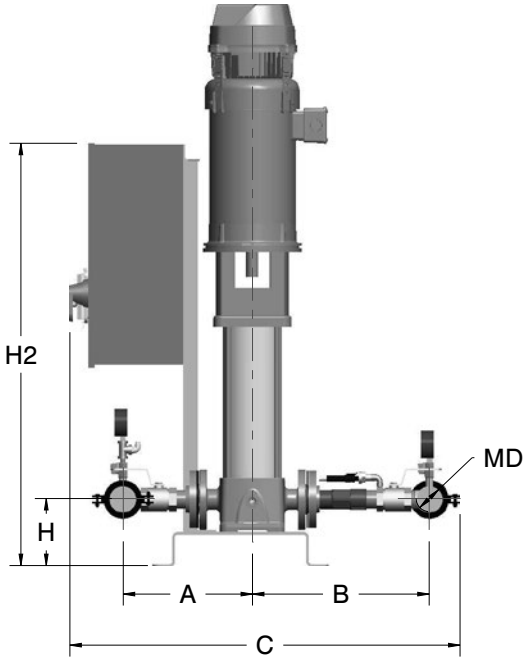


HVL3D2	MD	A	B	C	D	H	H1	H2	L	Wt.(lb)
3SV7GD4F60	2	11.83	16.09	36.12	42.60	6.12	37.43	33.34	44.26	508.3
3SV9GE4F60	2	11.83	16.09	36.12	42.60	6.12	39.01	33.34	44.26	522.1
3SV12GF4F60	2	11.83	16.09	36.12	42.60	6.12	43.88	33.34	44.26	604.9
3SV14GF4F60	2	11.83	16.09	36.12	42.60	6.12	45.45	33.34	44.26	611.8
3SV16GG4F60	2	11.83	16.09	36.12	42.60	6.12	48.53	38.34	44.26	720.6
3SV18GG4F60	2	11.83	16.09	36.12	42.60	6.12	50.80	38.34	44.26	734.4

460V
TechnoForce e-HV Dimensions 3SV – 4 Pump

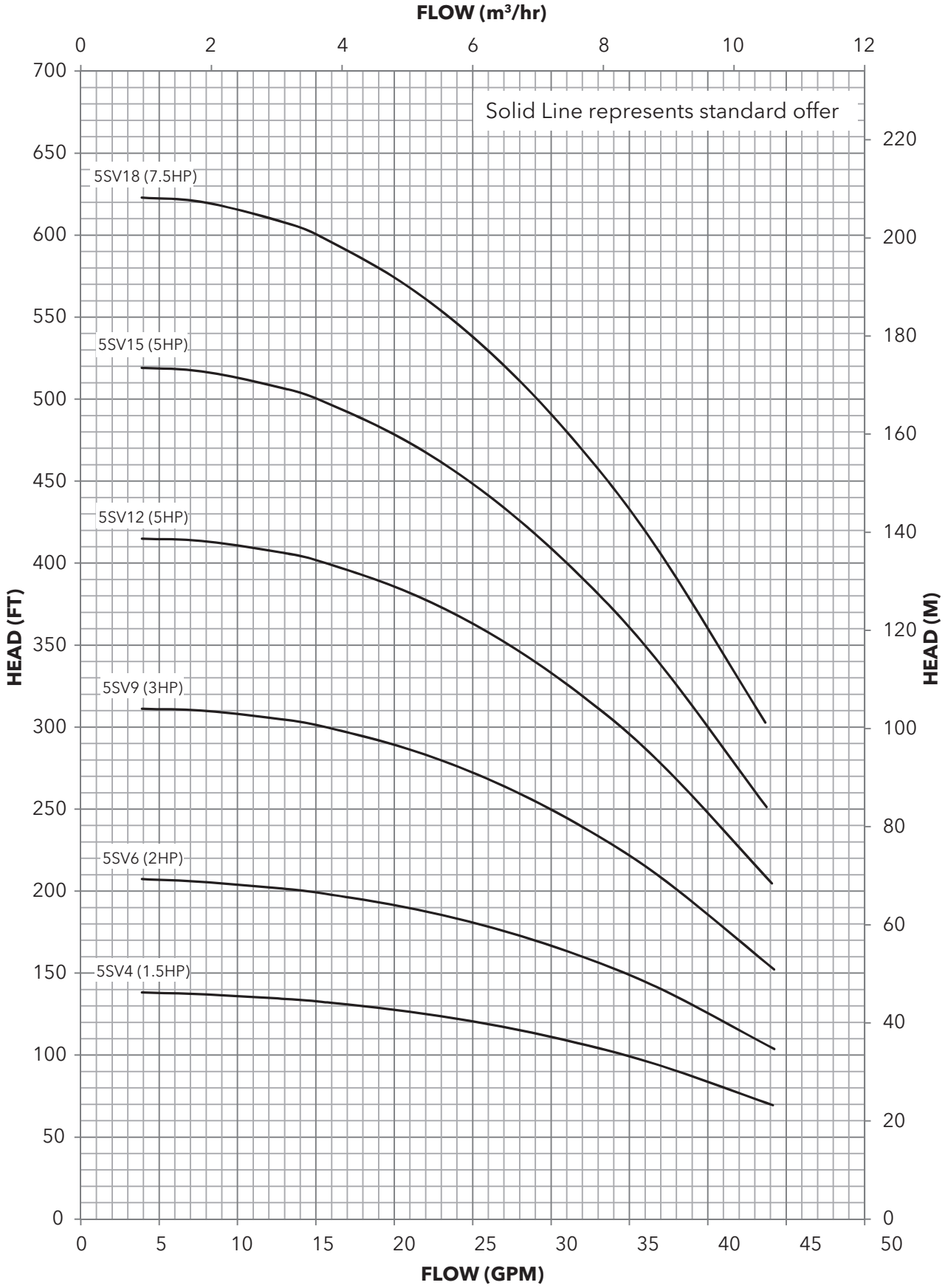




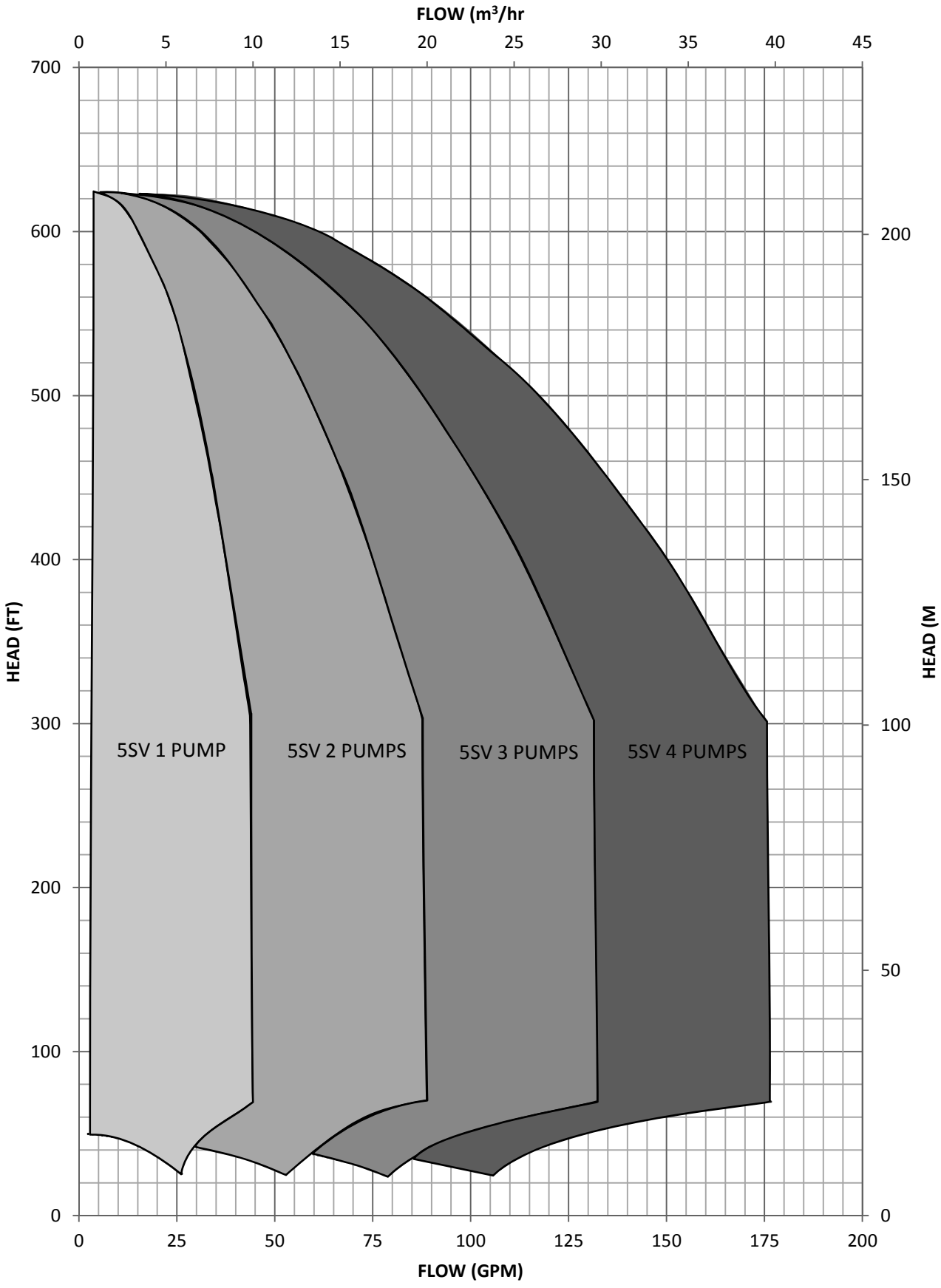


HVL4D2	MD	A	B	C	D	H	H1	H2	L	Wt.(lb)
3SV7GD4F60	2	11.77	16.09	33.53	55.20	6.10	37.43	33.34	56.85	658.9
3SV9GE4F60	2	11.77	16.09	33.53	55.20	6.10	39.01	33.34	56.85	677.3
3SV12GF4F60	2	11.77	16.09	33.53	55.20	6.10	43.88	33.34	56.85	787.7
3SV14GF4F60	2	11.77	16.09	33.53	55.20	6.10	45.45	33.34	56.85	796.9
3SV16GG4F60	2	11.77	16.09	33.53	55.20	6.10	48.53	38.34	56.85	941.4
3SV18GG4F60	2	11.77	16.09	33.53	55.20	6.10	50.80	38.34	56.85	959.8

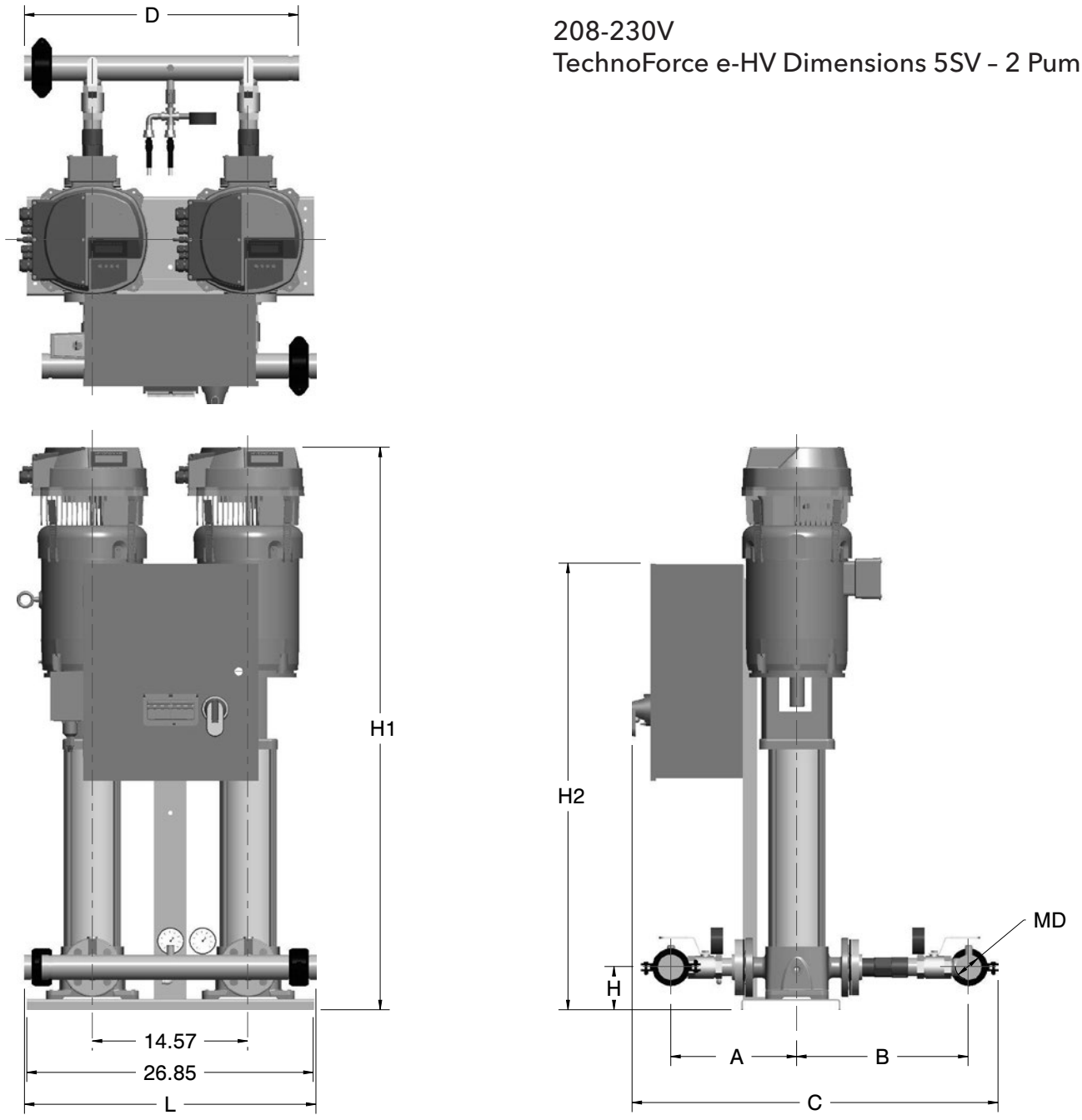
TechnoForce e-HV Curves 5SV



TechnoForce e-HV Curves 5SV

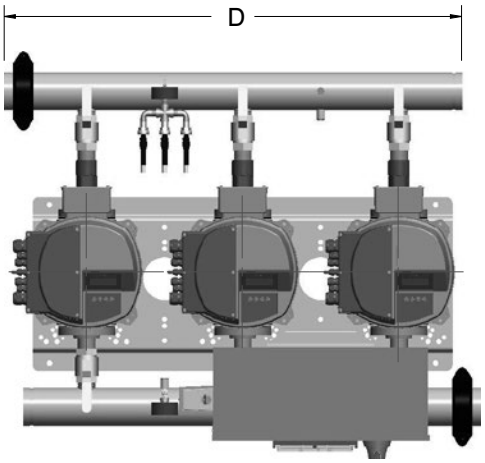


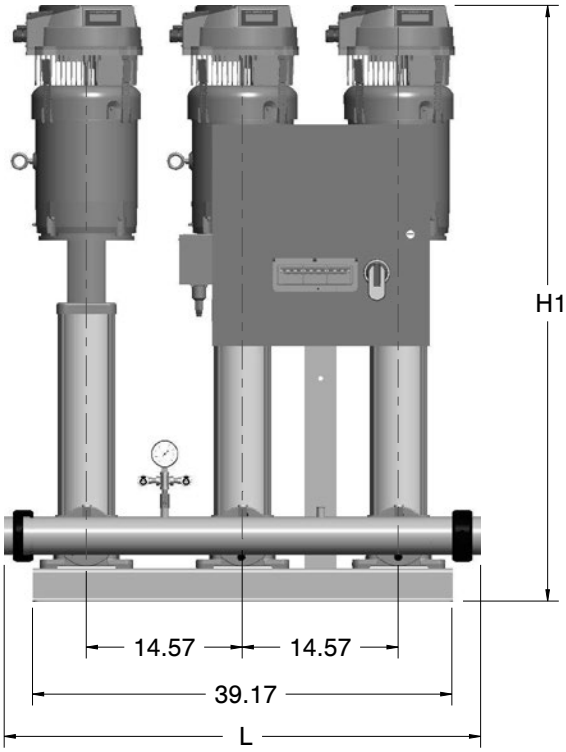
208-230V
TechnoForce e-HV Dimensions 5SV – 2 Pump

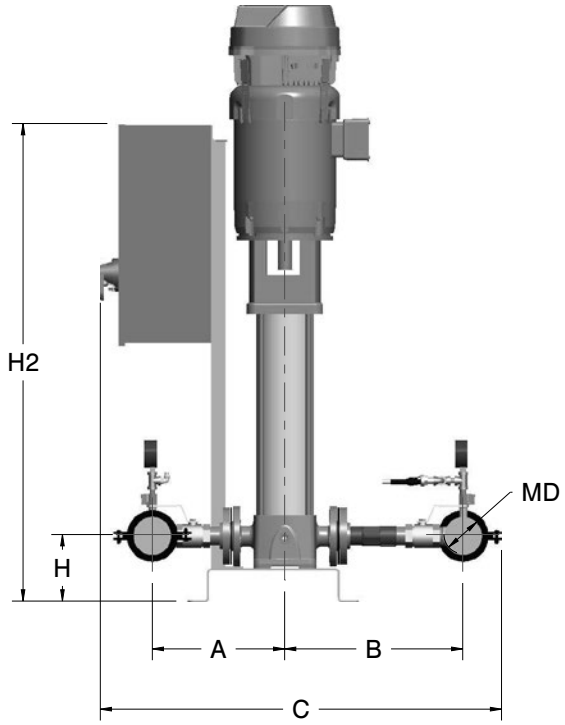


HVL2L2	MD	A	B	C	D	H	H1	H2	L	Wt.(lb)
5SV4GD4F60	2	11.80	16.07	34.31	25.67	4.06	33.79	31.27	27.33	326.5
5SV6GE4F60	2	11.80	16.07	34.31	25.67	4.06	35.75	31.27	27.33	335.7
5SV9GF4F60	2	11.80	16.07	34.31	25.67	4.06	41.22	31.27	27.33	390.9
5SV12GG4C60	2	11.80	16.07	34.31	25.67	4.06	46.96	36.27	27.33	501.2
5SV15GG4C60	2	11.80	16.07	34.31	25.67	4.06	49.91	36.27	27.33	508.1
5SV18GH4F60	2	11.80	16.07	34.31	25.67	4.06	52.95	41.77	27.33	607.0

208-230V
TechnoForce e-HV Dimensions 5SV – 3 Pump



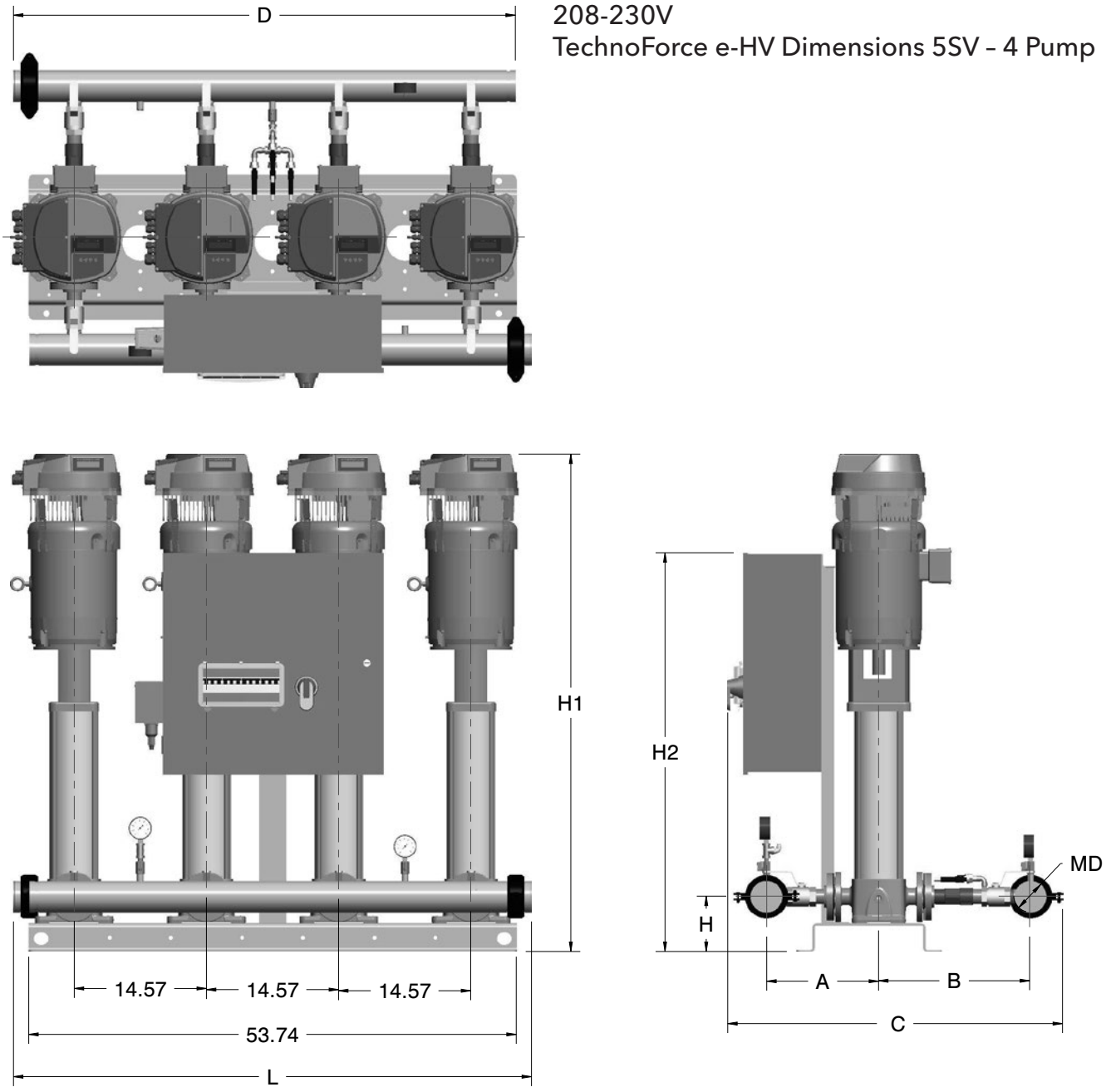




HVL3L2	MD	A	B	C	D	H	H1	H2	L	Wt.(lb)
5SV4GD4F60	2	11.80	16.07	36.10	42.60	6.12	35.86	33.34	44.26	501.5
5SV6GE4F60	2	11.80	16.07	36.10	42.60	6.12	37.82	33.34	44.26	515.3
5SV9GF4F60	2	11.80	16.07	36.10	42.60	6.12	43.29	33.34	44.26	598.1
5SV12GG4F60	2	11.80	16.07	36.10	42.60	6.12	49.03	38.34	44.26	762.6
5SV15GG4F60	2	11.80	16.07	36.10	42.60	6.12	51.98	38.34	44.26	773.0
5SV18GH4F60	2	11.80	16.07	36.10	42.60	6.12	55.02	43.84	44.26	920.3

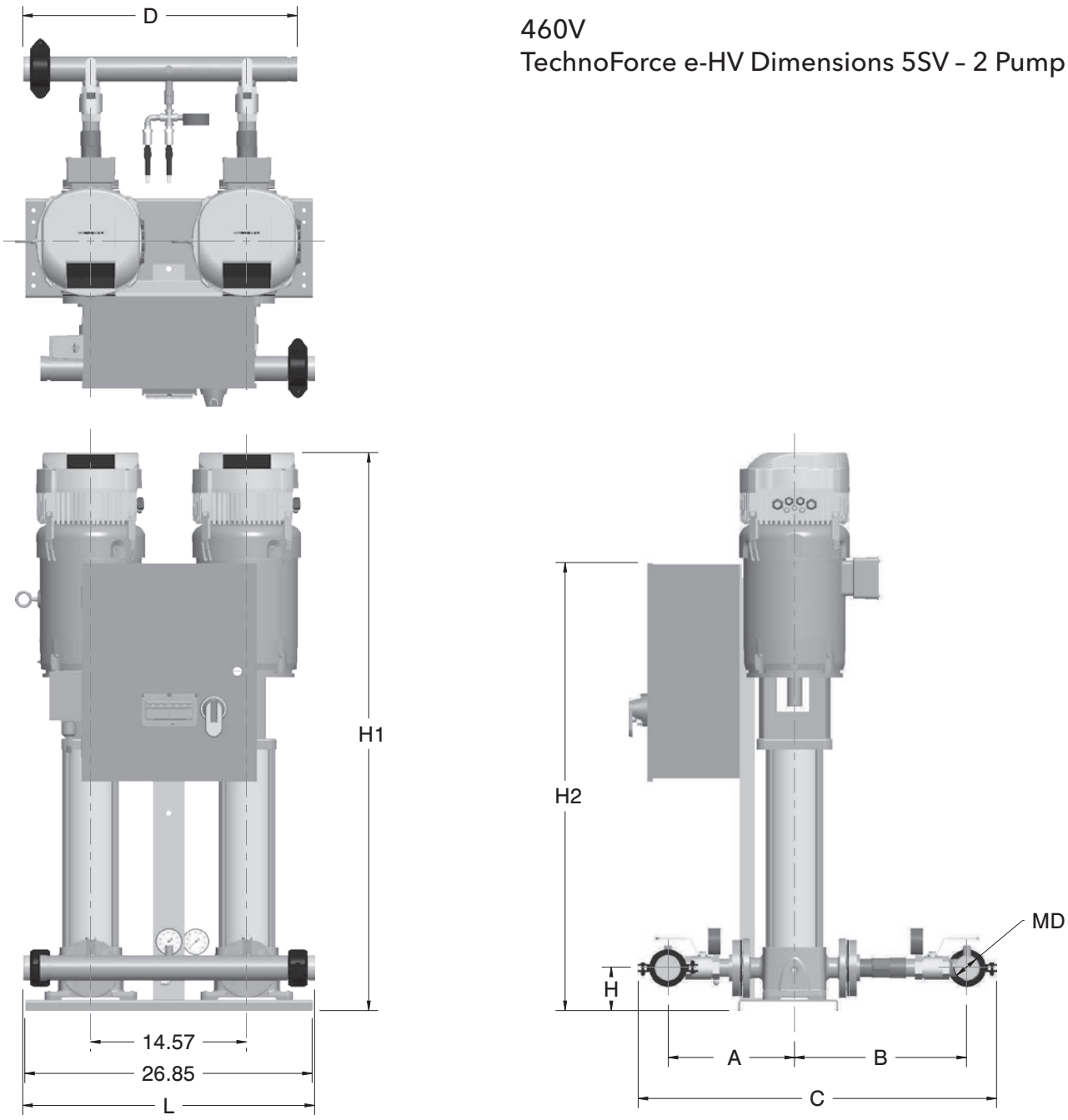
HVL3L3	MD	A	B	C	D	H	H1	H2	L	Wt.(lb)
5SV4GD4F60	3	12.36	16.64	37.48	42.73	6.12	35.86	33.34	44.51	518.1
5SV6GE4F60	3	12.36	16.64	37.48	42.73	6.12	37.82	33.34	44.51	531.9
5SV9GF4F60	3	12.36	16.64	37.48	42.73	6.12	43.29	33.34	44.51	614.7
5SV12GG4F60	3	12.36	16.64	37.48	42.73	6.12	49.03	38.34	44.51	779.2
5SV15GG4F60	3	12.36	16.64	37.48	42.73	6.12	51.98	38.34	44.51	789.6
5SV18GH4F60	3	12.36	16.64	37.48	42.73	6.12	55.02	43.84	44.51	936.9

208-230V
TechnoForce e-HV Dimensions 5SV – 4 Pump



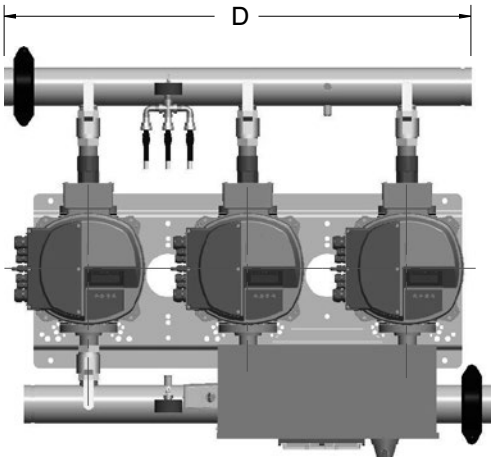
HVL4L3	MD	A	B	C	D	H	H1	H2	L	Wt.(lb)
5SV4GD4F60	3	12.33	16.65	36.90	55.32	6.10	35.86	33.34	57.12	670.6
5SV6GE4F60	3	12.33	16.65	36.90	55.32	6.10	37.82	33.34	57.12	689.0
5SV9GF4F60	3	12.33	16.65	36.90	55.32	6.10	43.29	33.34	57.12	799.4
5SV12GG4F60	3	12.33	16.65	36.90	55.32	6.10	49.03	38.34	57.12	1018.2
5SV15GG4F60	3	12.33	16.65	36.90	55.32	6.10	51.98	38.34	57.12	1032.0
5SV18GH4F60	3	12.33	16.65	36.90	55.32	6.10	55.02	43.84	57.12	1284.8

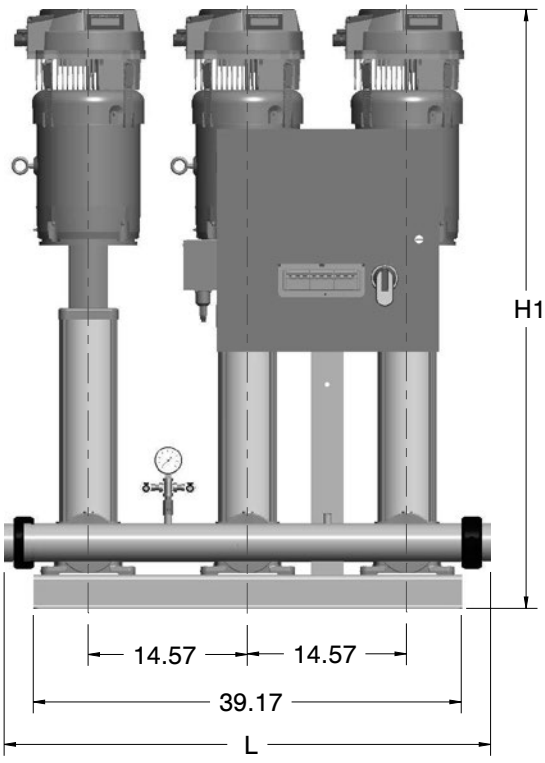
460V
TechnoForce e-HV Dimensions 5SV – 2 Pump

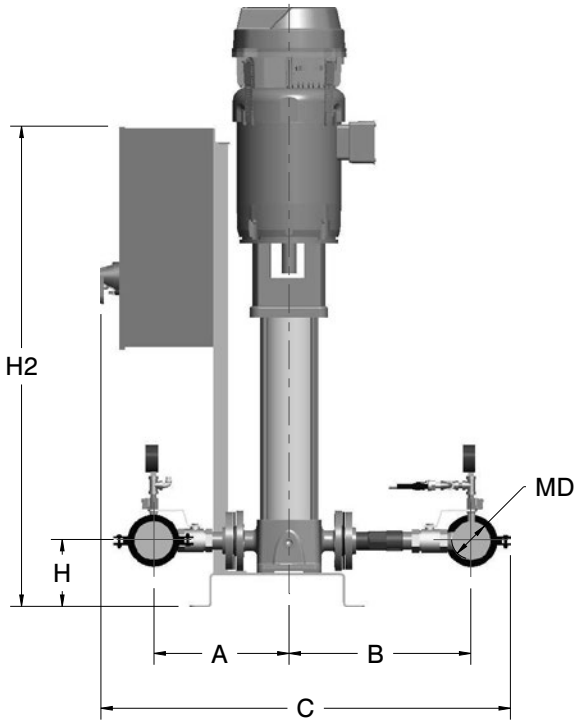


HV2D2	MD	A	B	C	D	H	H1	H2	L	Wt.(lb)
5SV4GD4F60	2	11.80	16.07	34.49	25.64	4.06	32.98	31.27	27.27	383.9
5SV6GE4F60	2	11.80	16.07	34.49	25.64	4.06	35.94	31.27	27.27	400.0
5SV9GF4F60	2	11.80	16.07	34.49	25.64	4.06	40.13	31.27	27.27	432.2
5SV12GG4C60	2	11.80	16.07	34.49	25.64	4.06	45.13	36.27	27.27	501.2
5SV15GG4C60	2	11.80	16.07	34.49	25.64	4.06	48.13	36.27	27.27	508.1
5SV18GH4F60	2	11.80	16.07	34.49	25.64	4.06	52.38	41.77	27.27	556.4

460V
TechnoForce e-HV Dimensions 5SV – 3 Pump

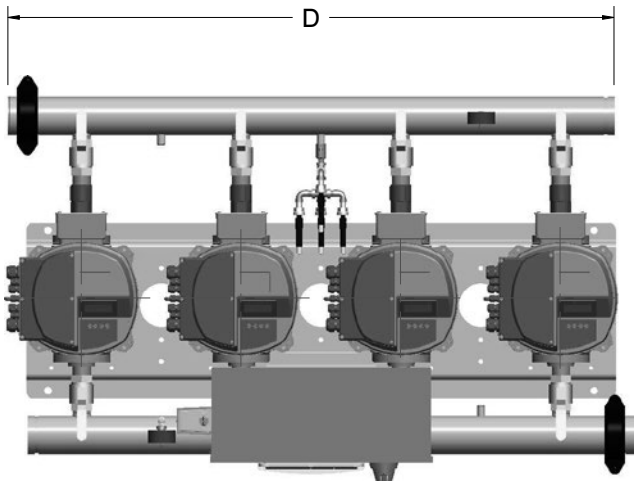




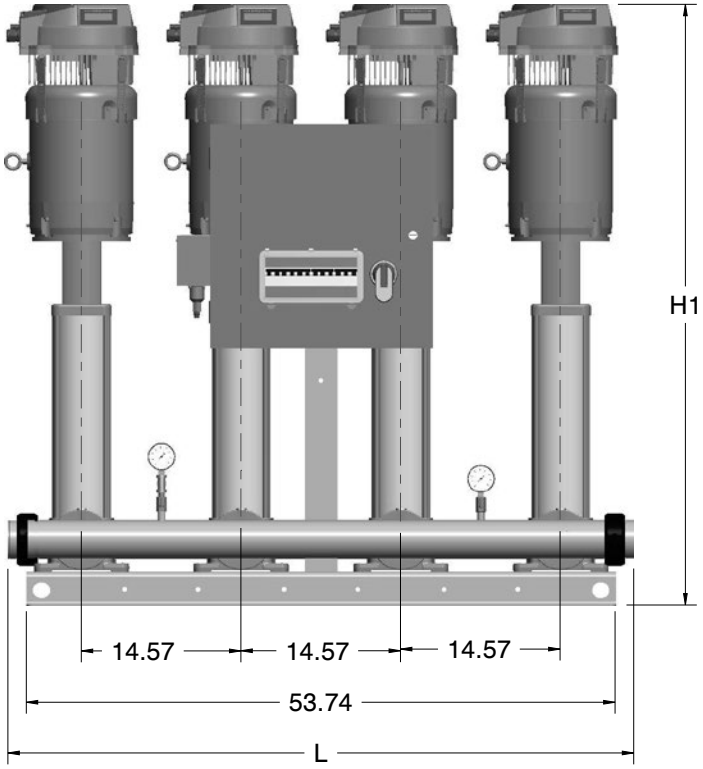


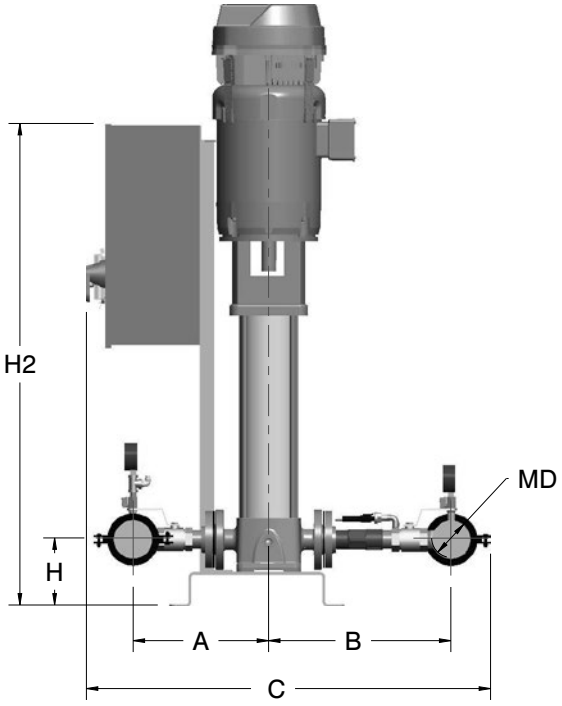
HVL3D2	MD	A	B	C	D	H	H1	H2	L	Wt.(lb)
5SV4GD4F60	2	11.80	16.07	36.10	42.60	6.12	35.86	33.34	44.26	501.5
5SV6GE4F60	2	11.80	16.07	36.10	42.60	6.12	37.82	33.34	44.26	515.3
5SV9GF4F60	2	11.80	16.07	36.10	42.60	6.12	43.29	33.34	44.26	598.1
5SV12GG4F60	2	11.80	16.07	36.10	42.60	6.12	48.44	38.34	44.26	717.3
5SV15GG4F60	2	11.80	16.07	36.10	42.60	6.12	51.39	38.34	44.26	727.6
5SV18GH4F60	2	11.80	16.07	36.10	42.60	6.12	55.02	43.84	44.26	920.3

HVL3D3	MD	A	B	C	D	H	H1	H2	L	Wt.(lb)
5SV4GD4F60	3	12.36	16.64	37.48	42.73	6.12	35.86	33.34	44.53	518.1
5SV6GE4F60	3	12.36	16.64	37.48	42.73	6.12	37.82	33.34	44.53	531.9
5SV9GF4F60	3	12.36	16.64	37.48	42.73	6.12	43.29	33.34	44.53	614.7
5SV12GG4F60	3	12.36	16.64	37.48	42.73	6.12	48.44	38.34	44.53	733.9
5SV15GG4F60	3	12.36	16.64	37.48	42.73	6.12	51.39	38.34	44.53	744.2
5SV18GH4F60	3	12.36	16.64	37.48	42.73	6.12	55.02	43.84	44.53	936.9



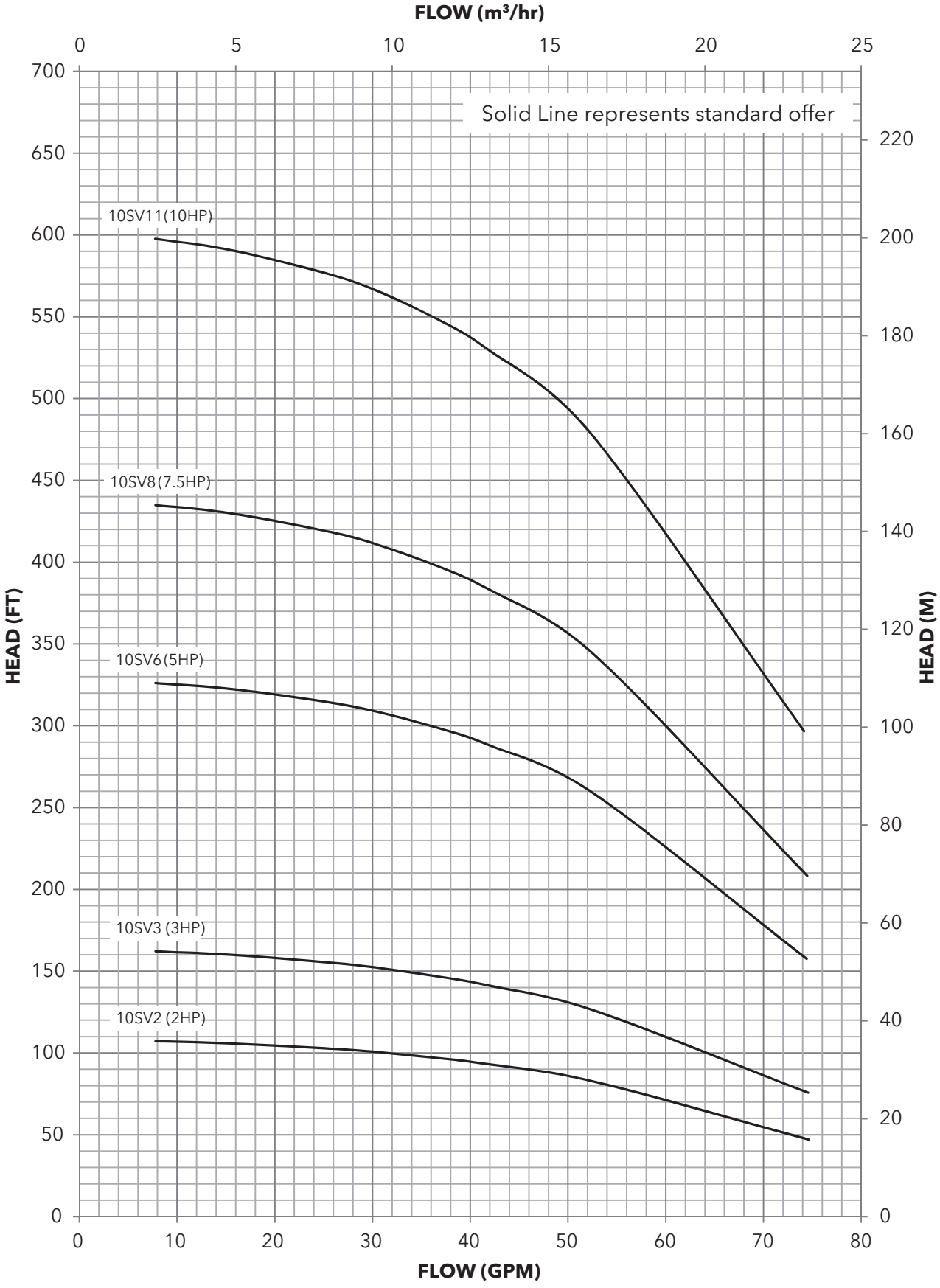
460V
TechnoForce e-HV Dimensions 5SV – 4 Pump



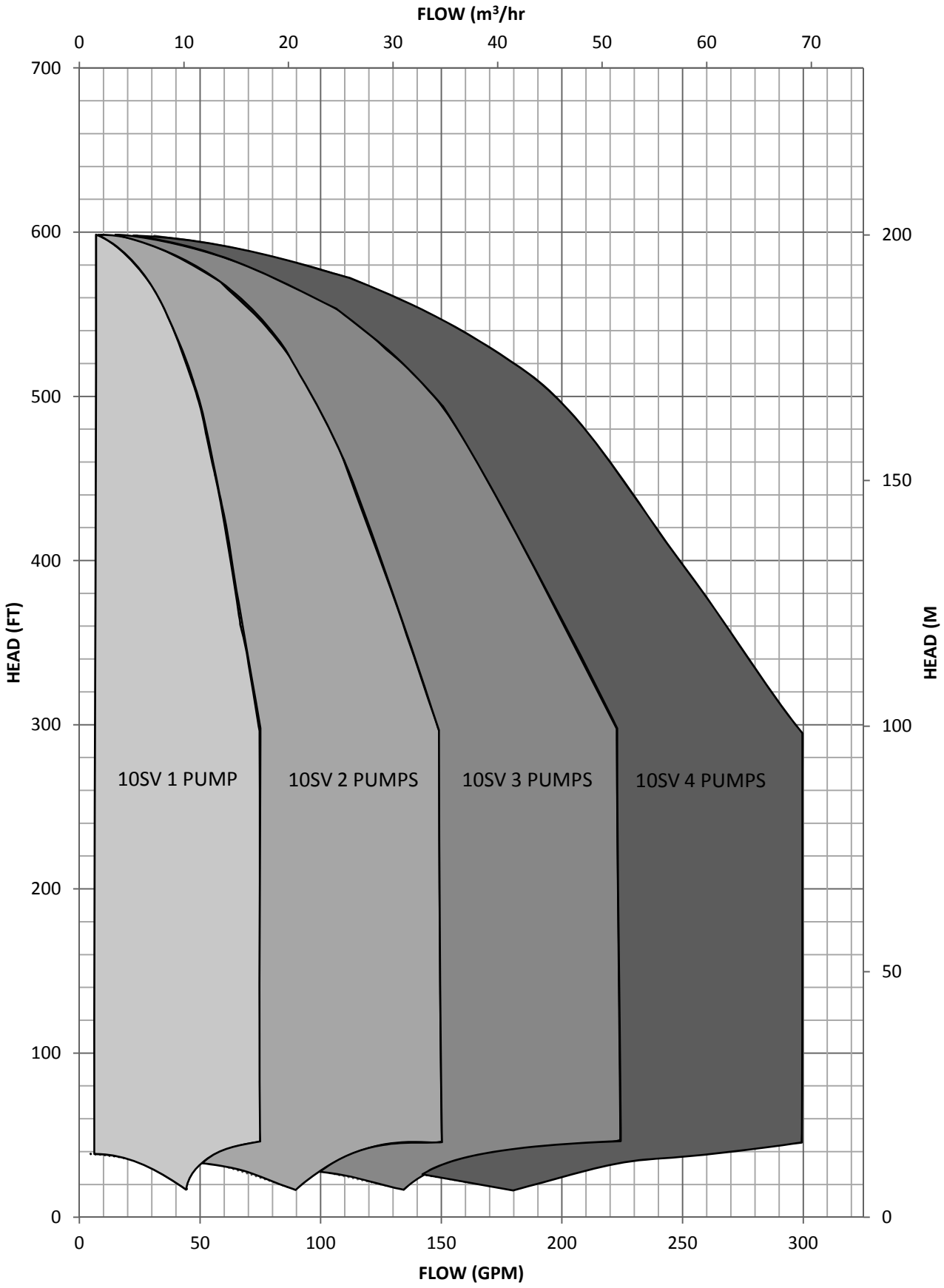


HVL4D3	MD	A	B	C	D	H	H1	H2	L	Wt.(lb)
5SV4GD4F60	3	12.36	16.64	36.89	55.32	6.12	35.86	33.34	57.12	670.6
5SV6GE4F60	3	12.36	16.64	36.89	55.32	6.12	37.82	33.34	57.12	689.0
5SV9GF4F60	3	12.36	16.64	36.89	55.32	6.12	43.29	33.34	57.12	799.4
5SV12GG4F60	3	12.36	16.64	36.89	55.32	6.12	48.44	38.34	57.12	957.7
5SV15GG4F60	3	12.36	16.64	36.89	55.32	6.12	51.39	38.34	57.12	971.5
5SV18GH4F60	3	12.36	16.64	36.89	55.32	6.12	55.02	43.84	57.12	1227.7

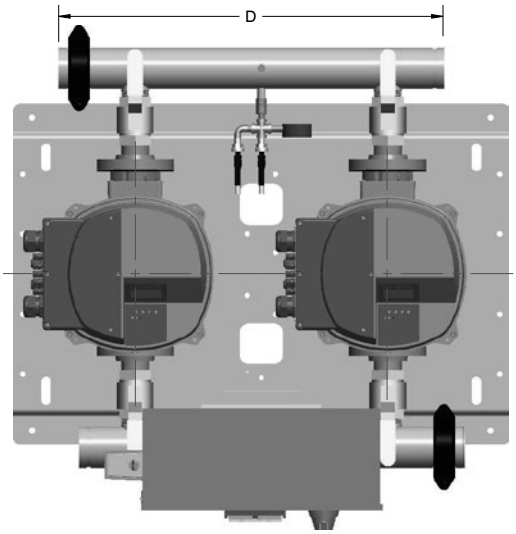
TechnoForce e-HV Curves 10SV

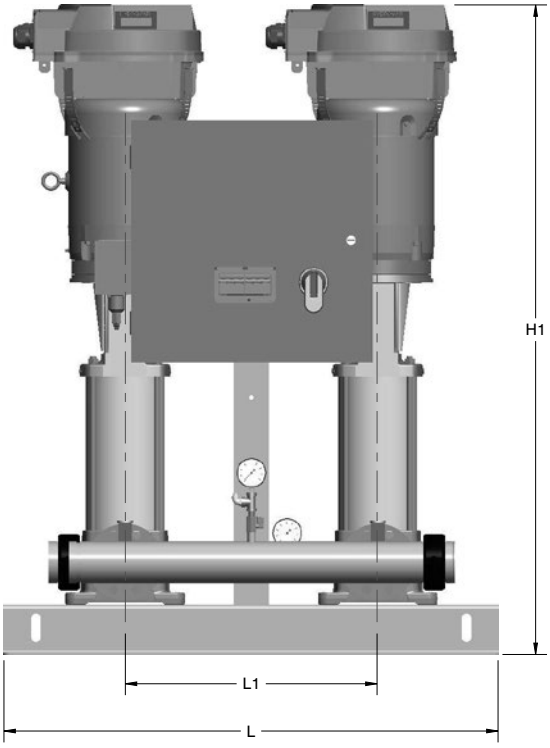


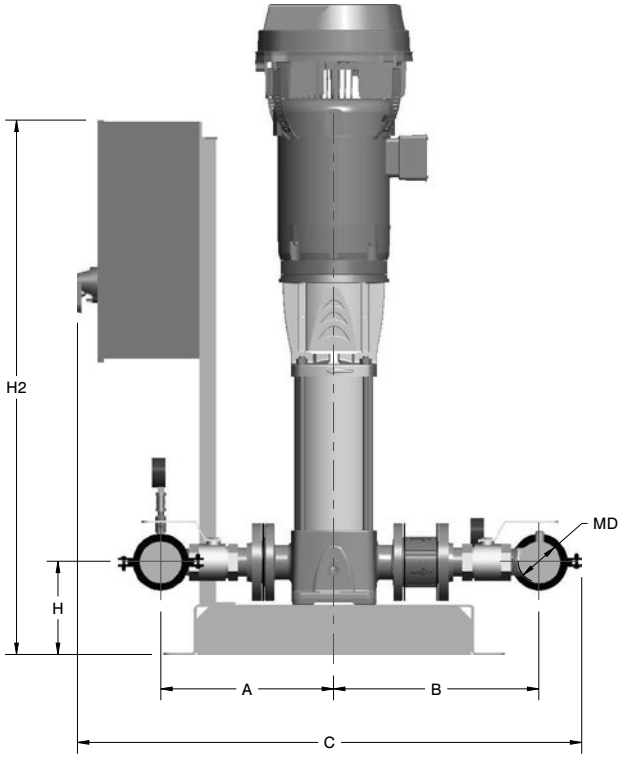
TechnoForce e-HV Curves 10SV



208-230V
TechnoForce e-HV Dimensions 10SV – 2 Pump



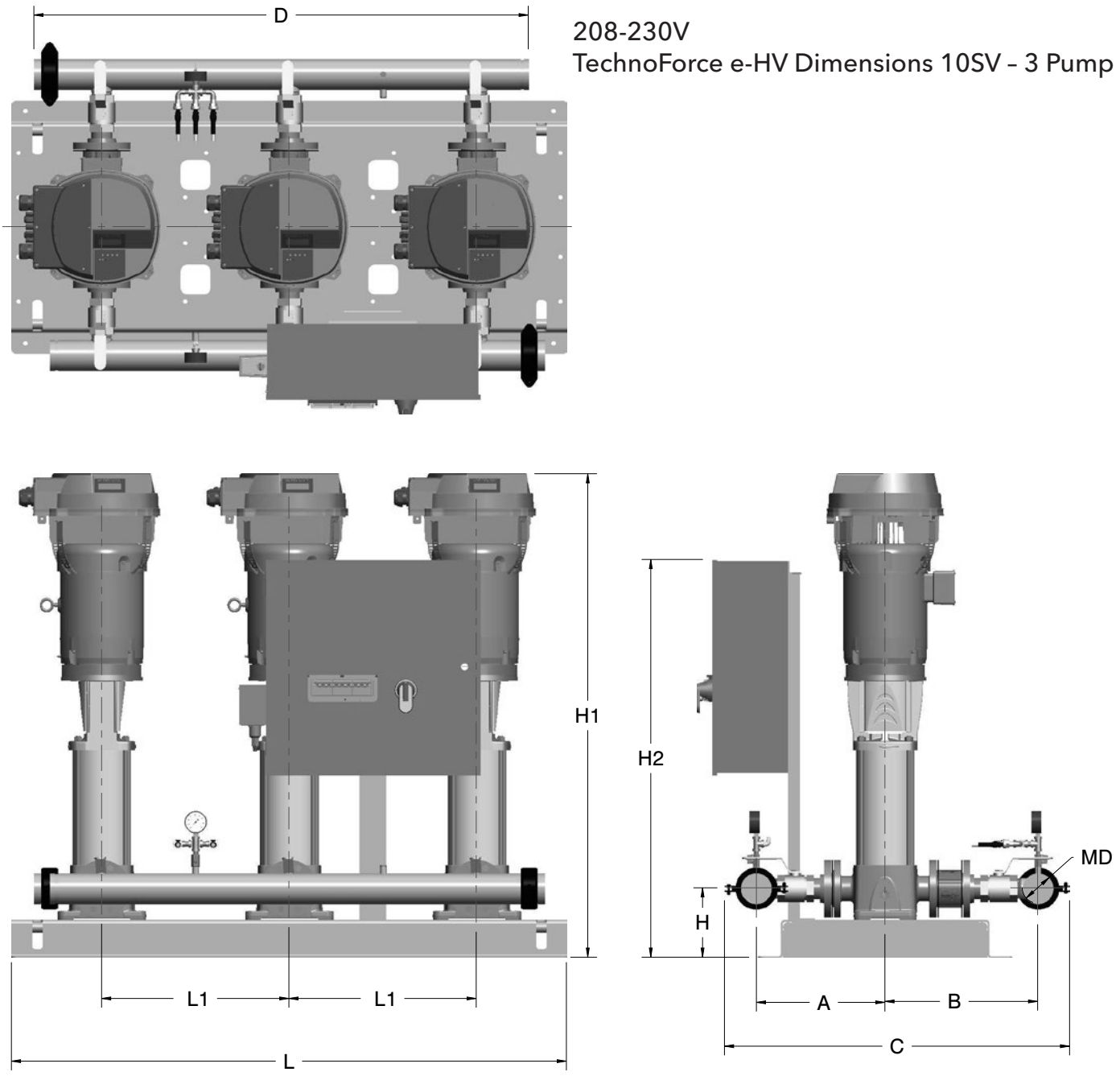




HVL2L2	MD	A	B	C	D	H	H1	H2	L	L1	Wt.(lb)
10SV2GE4F60	2	14.03	16.78	36.42	25.67	6.69	37.57	33.34	27.33	14.57	408.8
10SV3GF4F60	2	14.03	16.78	36.42	25.67	6.69	41.34	33.34	27.33	14.57	461.7
10SV6GG4C60	2	14.03	16.78	36.42	25.67	6.69	47.71	38.34	27.33	14.57	581.6
10SV8GH4F60	2	14.03	16.78	36.42	25.67	6.69	50.31	38.34	27.33	14.57	678.0
10SV11GJ4F60	2	14.03	16.78	41.22	32.37	7.87	57.65	45.02	41.73	21.26	894.3

HVL2L3	MD	A	B	C	D	H	H1	H2	L	L1	Wt.(lb)
10SV2GE4F60	3	14.59	17.34	39.17	25.80	6.69	37.57	33.34	27.58	14.57	419.8
10SV3GF4F60	3	14.59	17.34	39.17	25.80	6.69	41.34	33.34	27.58	14.57	472.7
10SV6GG4C60	3	14.59	17.34	39.17	25.80	6.69	47.71	38.34	27.58	14.57	592.6
10SV8GH4F60	3	14.59	17.34	39.17	25.80	6.69	50.31	38.34	27.58	14.57	689.0
10SV11GJ4F60	3	14.59	17.34	42.59	32.46	7.87	57.65	45.02	41.73	21.26	907.4

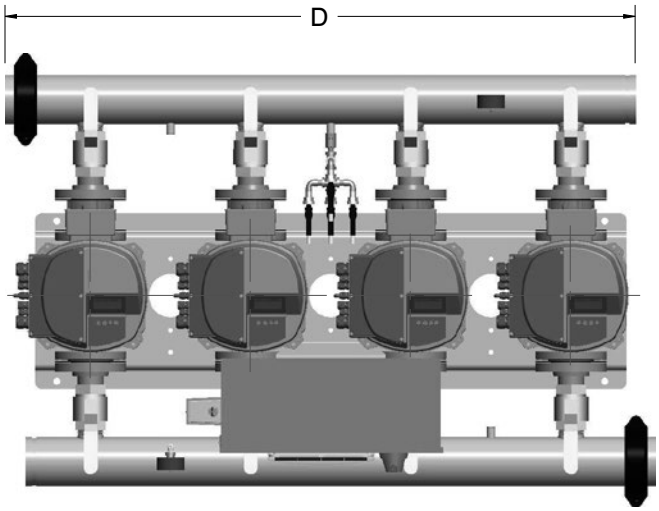
208-230V
TechnoForce e-HV Dimensions 10SV – 3 Pump

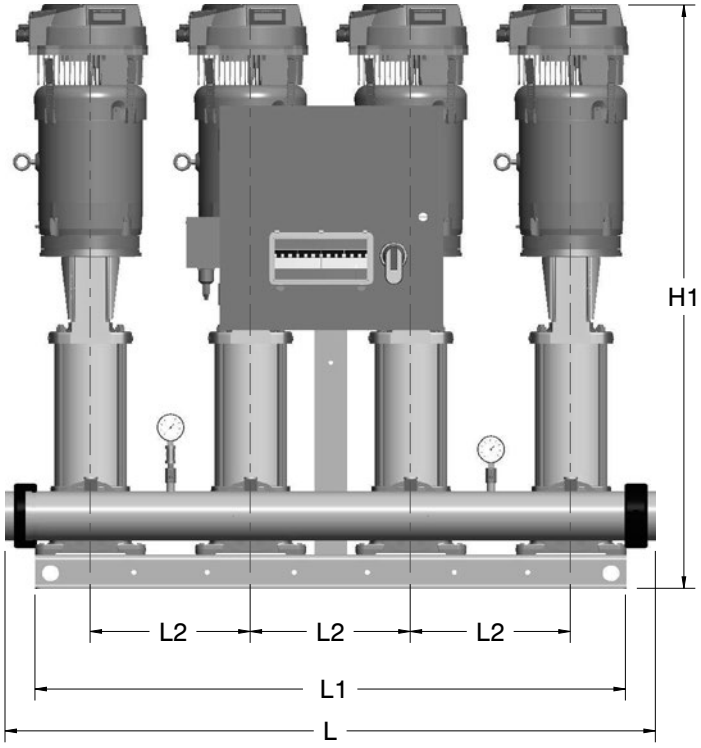


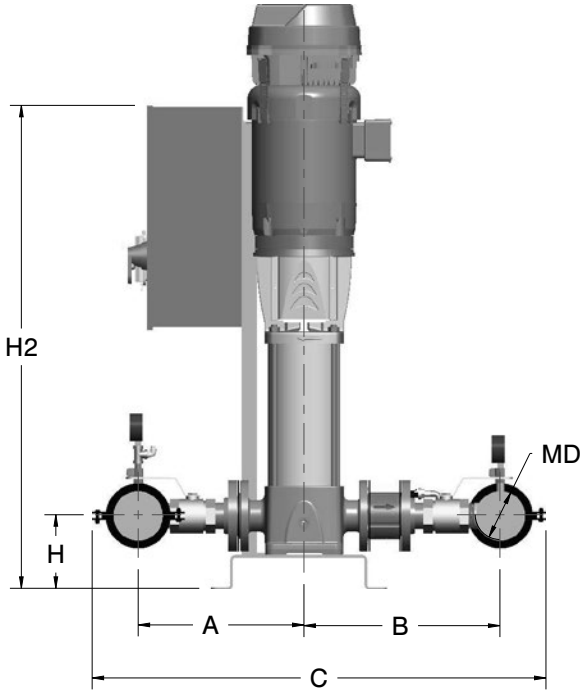
HVL3L3	MD	A	B	C	D	H	H1	H2	L	L1	Wt.(lb)
10SV2GE4F60	3	14.59	17.34	39.17	42.73	6.69	37.57	33.34	44.51	14.57	613.4
10SV3GF4F60	3	14.59	17.34	39.17	42.73	6.69	41.34	33.34	44.51	14.57	692.7
10SV6GG4F60	3	14.59	17.34	39.17	42.73	6.69	47.71	38.34	44.51	14.57	872.3
10SV8GH4F60	3	14.59	17.34	39.17	42.73	6.69	50.31	38.34	44.51	14.57	1016.2
10SV11GJ4F60	3	14.59	17.34	42.28	56.11	7.87	57.65	45.02	63.00	21.26	1379.9

208-230V

TechnoForce e-HV Dimensions 10SV – 4 Pump



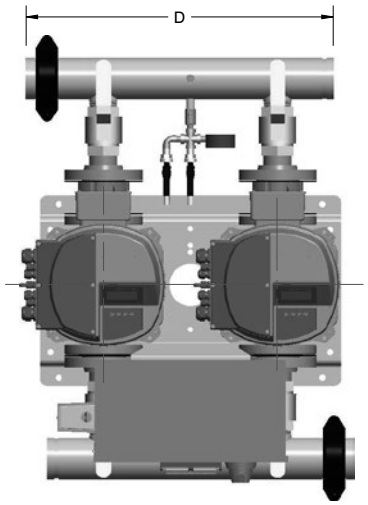


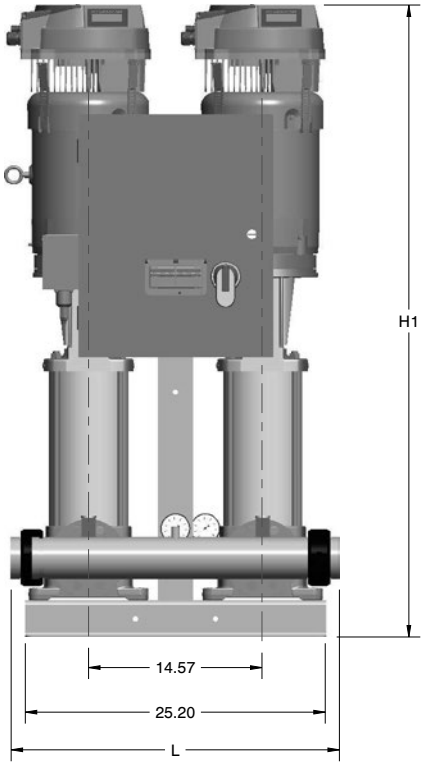


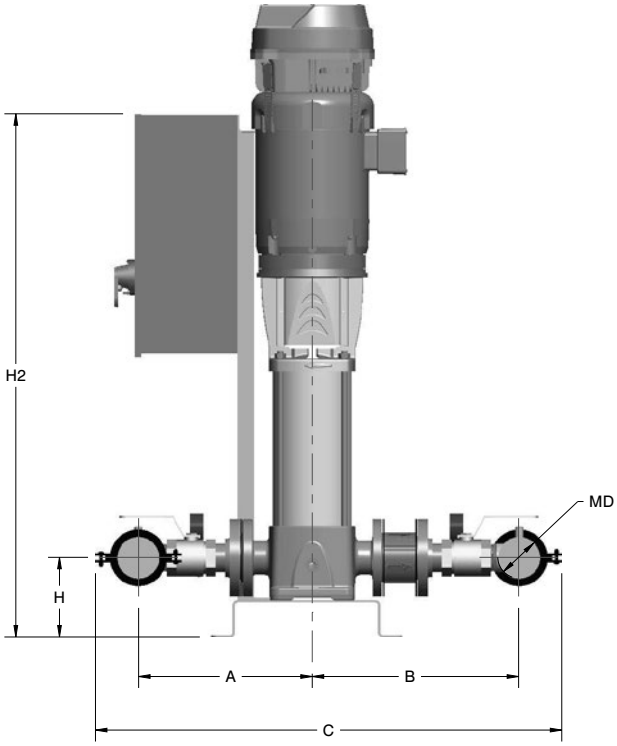
HVL4L3	MD	A	B	C	D	H	H1	H2	L	L1	L2	Wt.(lb)
10SV2GE4F60	3	14.59	17.34	39.18	55.32	6.69	37.57	33.34	57.10	53.74	14.57	797.5
10SV3GF4F60	3	14.59	17.34	39.18	55.32	6.69	41.34	33.34	57.10	53.74	14.57	903.3
10SV6GG4F60	3	14.59	17.34	39.18	55.32	6.69	47.71	38.34	57.10	53.74	14.57	1143.4
10SV8GH4F60	3	14.59	17.34	39.18	55.32	6.69	50.31	38.34	57.10	53.74	14.57	1391.6
10SV11GJ4F60	3	14.59	17.34	42.28	75.40	7.87	57.65	45.02	85.83	85.83	21.26	1814.3

HVL4L4	MD	A	B	C	D	H	H1	H2	L	L1	L2	Wt.(lb)
10SV2GE4F60	4	15.09	17.84	41.30	57.36	6.69	37.57	33.34	59.20	53.74	14.57	819.8
10SV3GF4F60	4	15.09	17.84	41.30	57.36	6.69	41.34	33.34	59.20	53.74	14.57	925.6
10SV6GG4F60	4	15.09	17.84	41.30	57.36	6.69	47.71	38.34	59.20	53.74	14.57	1165.7
10SV8GH4F60	4	15.09	17.84	41.30	57.36	6.69	50.31	38.34	59.20	53.74	14.57	1413.9
10SV11GJ4F60	4	15.09	17.84	43.34	77.43	7.87	57.65	45.02	85.83	85.83	21.26	1839.1

460V
TechnoForce e-HV Dimensions 10SV – 2 Pump



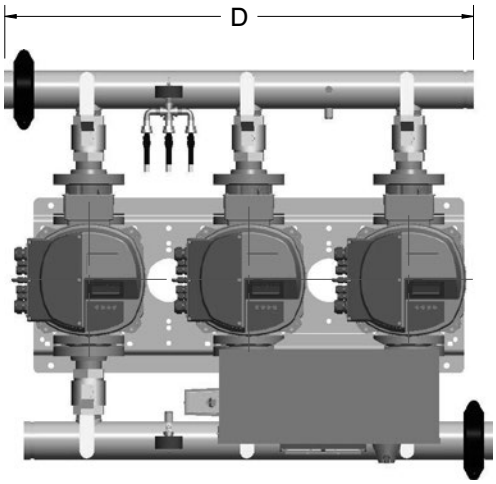


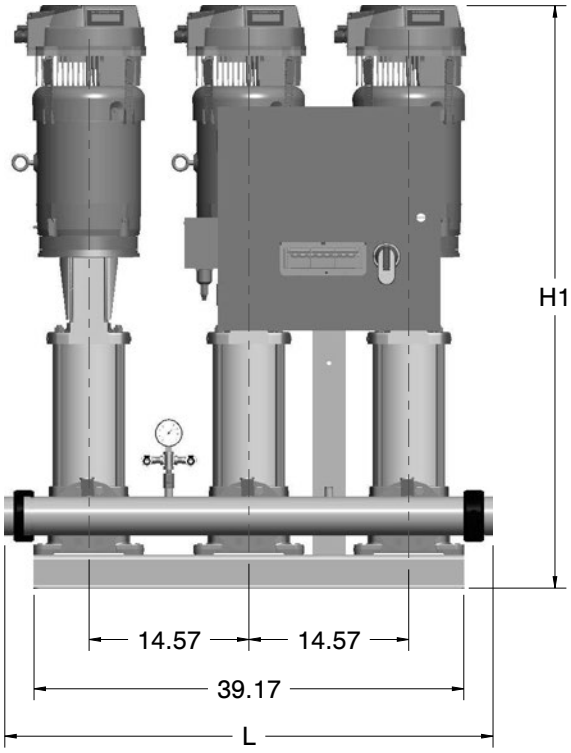


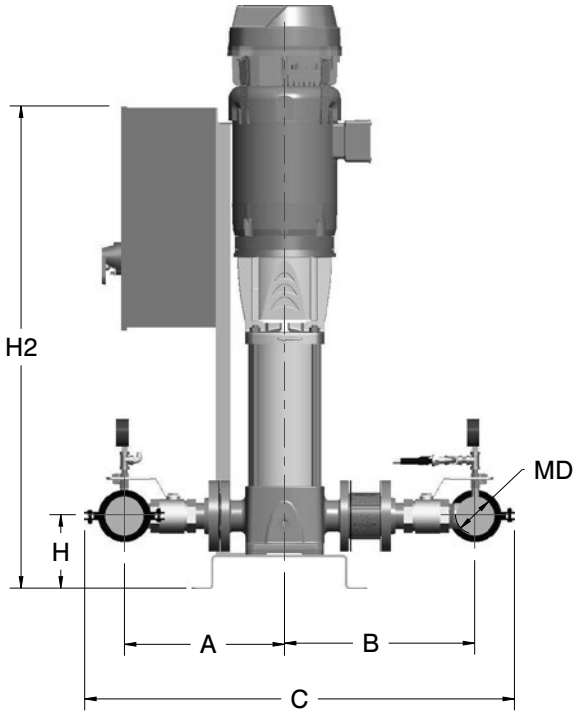
HVL2D2	MD	A	B	C	D	H	H1	H2	L	Wt.(lb)
10SV2GE4F60	2	14.03	16.78	36.42	25.67	6.69	37.57	33.34	27.33	408.8
10SV3GF4F60	2	14.03	16.78	36.42	25.67	6.69	41.34	33.34	27.33	461.7
10SV6GG4F60	2	14.03	16.78	36.42	25.67	6.69	47.12	38.34	27.33	553.3
10SV8GH4F60	2	14.03	16.78	36.42	25.67	6.69	50.31	38.34	27.33	678.0
10SV11GJ4F60	2	14.03	16.78	36.42	25.67	6.69	55.79	43.84	27.33	737.6

HVL2D3	MD	A	B	C	D	H	H1	H2	L	Wt.(lb)
10SV2GE4F60	3	14.59	17.34	39.17	25.80	6.69	37.57	33.34	27.58	419.8
10SV3GF4F60	3	14.59	17.34	39.17	25.80	6.69	41.34	33.34	27.58	472.7
10SV6GG4F60	3	14.59	17.34	39.17	25.80	6.69	47.12	38.34	27.58	564.3
10SV8GH4F60	3	14.59	17.34	39.17	25.80	6.69	50.31	38.34	27.58	689.0
10SV11GJ4F60	3	14.59	17.34	39.17	25.80	6.69	55.79	43.84	27.58	748.6

460V
TechnoForce e-HV Dimensions 10SV – 3 Pump

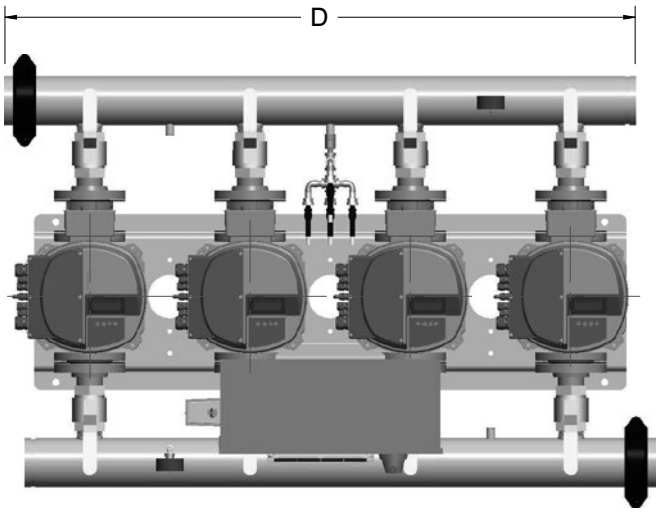


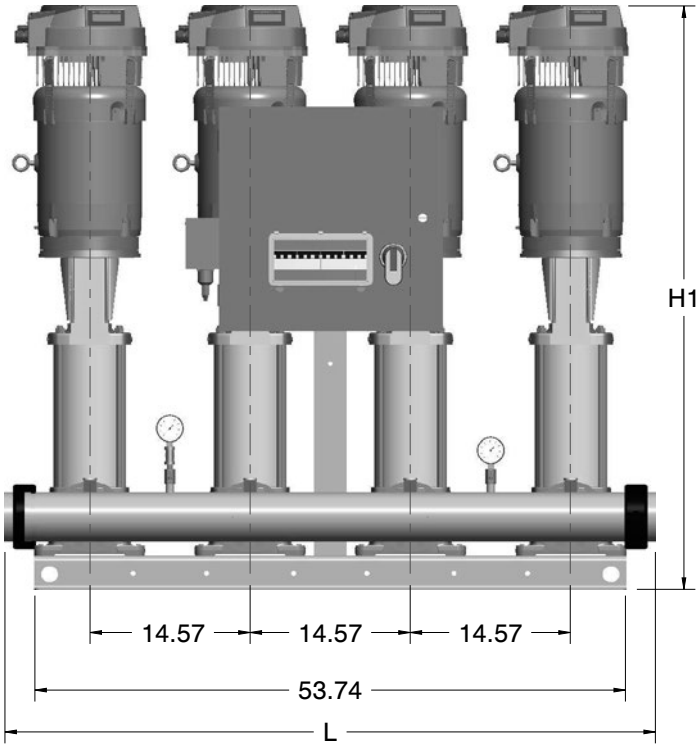


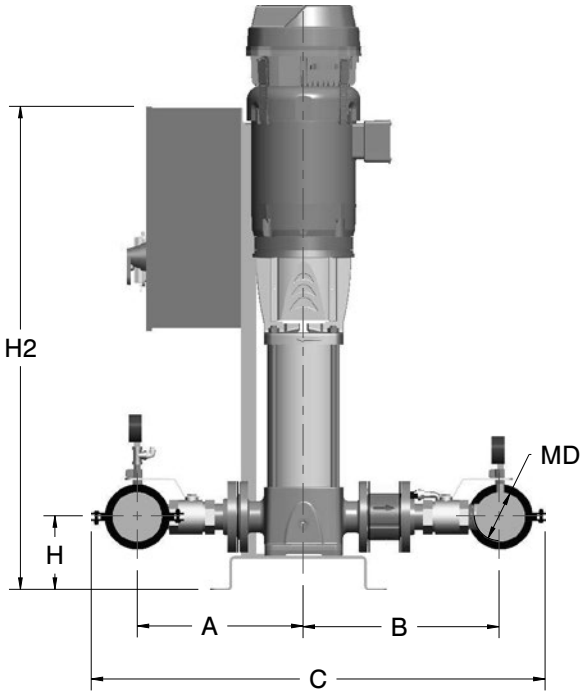


HVL3D3	MD	A	B	C	D	H	H1	H2	L	Wt.(lb)
10SV2GE4F60	3	14.59	17.34	39.17	42.73	6.69	37.57	33.34	44.51	613.4
10SV3GF4F60	3	14.59	17.34	39.17	42.73	6.69	41.34	33.34	44.51	692.7
10SV6GG4F60	3	14.59	17.34	39.17	42.73	6.69	47.12	38.34	44.51	829.1
10SV8GH4F60	3	14.59	17.34	39.17	42.73	6.69	50.31	38.34	44.51	1016.2
10SV11GJ4F60	3	14.59	17.34	39.17	42.73	6.69	55.79	43.84	44.51	1104.6

460V
TechnoForce e-HV Dimensions 10SV – 4 Pump



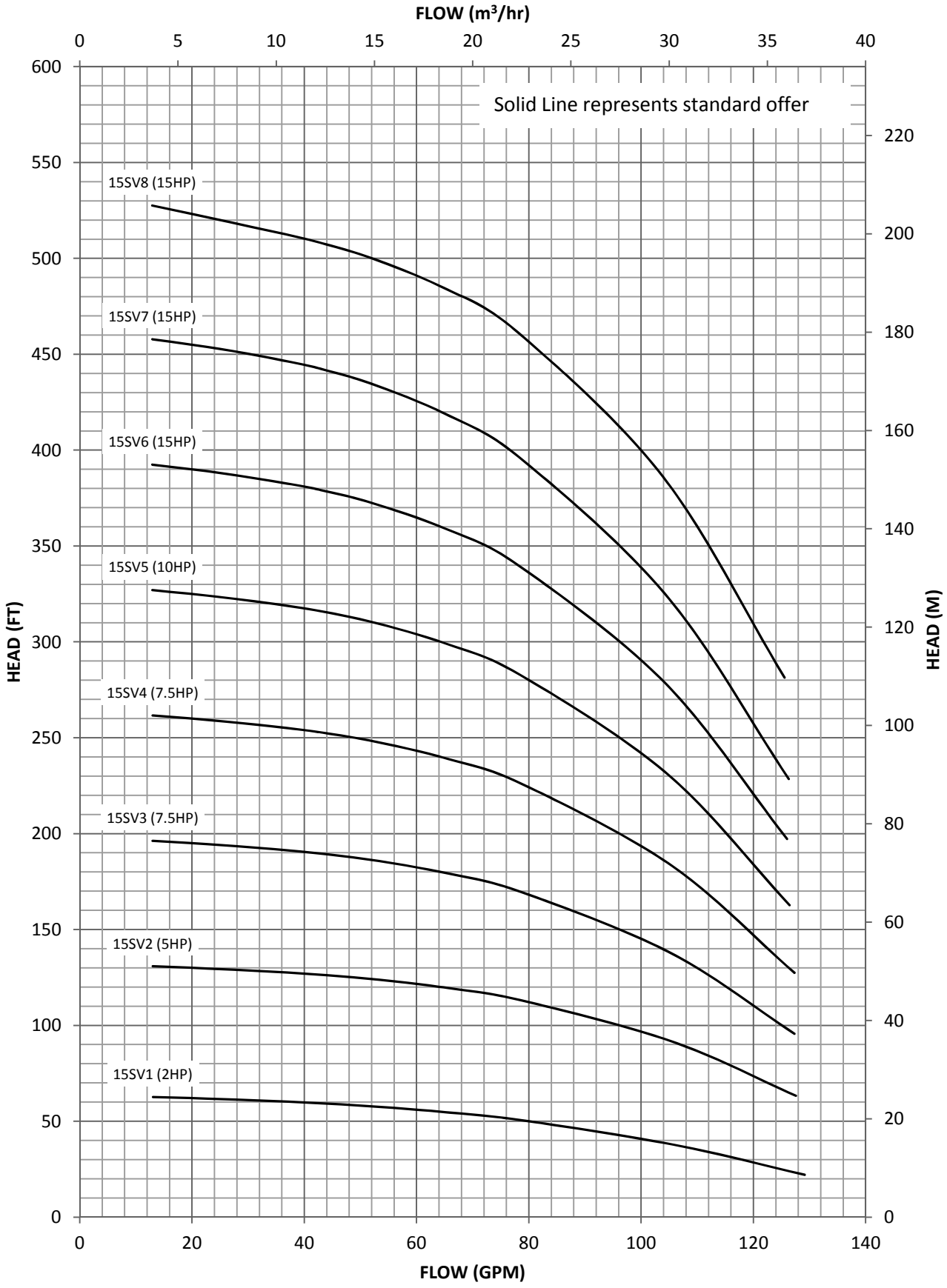




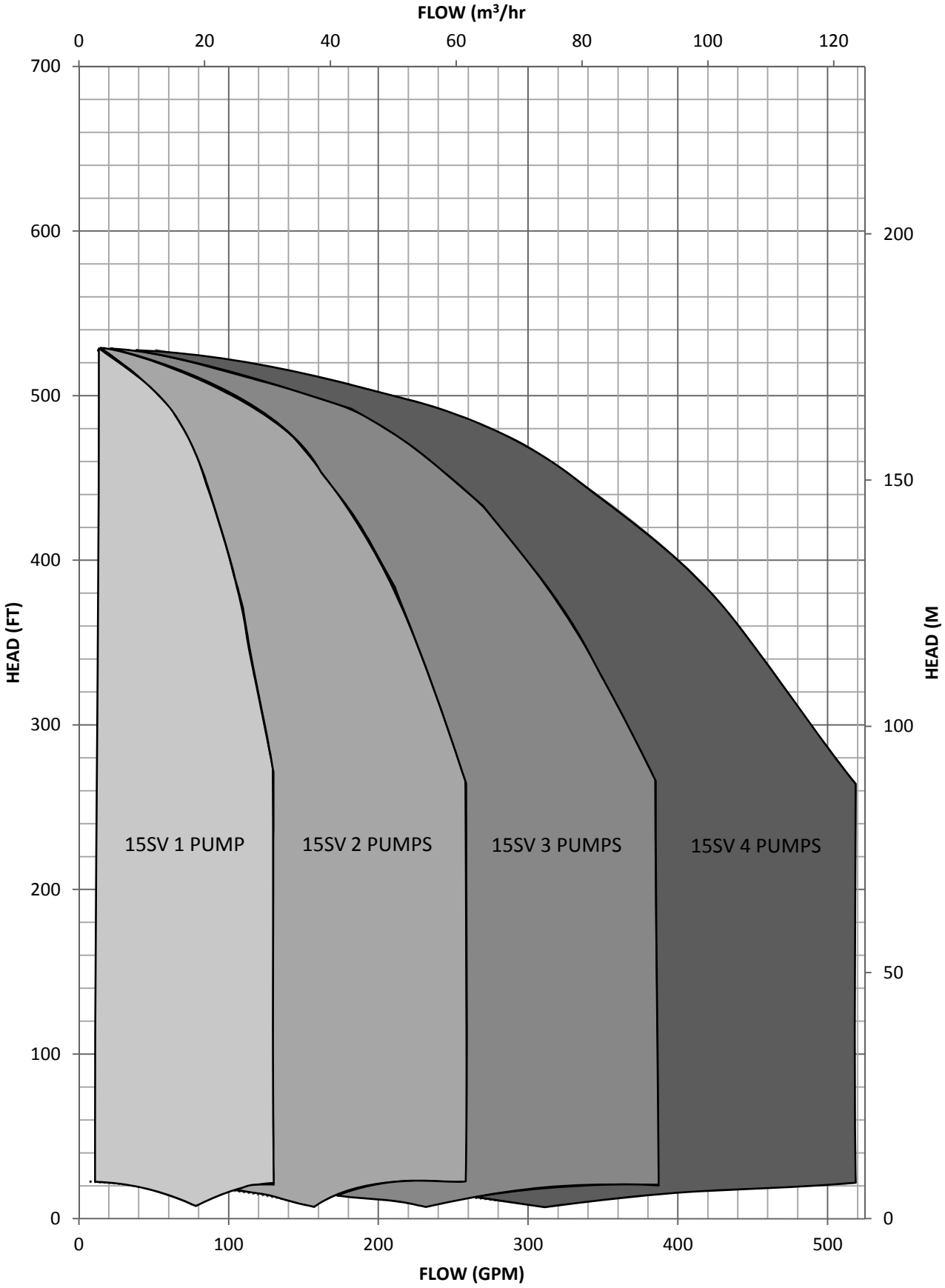
HVL4D3	MD	A	B	C	D	H	H1	H2	L	Wt.(lb)
10SV2GE4F60	3	14.59	17.34	39.18	55.32	6.69	37.57	33.34	57.10	797.5
10SV3GF4F60	3	14.59	17.34	39.18	55.32	6.69	41.34	33.34	57.10	903.3
10SV6GG4F60	3	14.59	17.34	39.18	55.32	6.69	47.12	38.34	57.10	1084.6
10SV8GH4F60	3	14.59	17.34	39.18	55.32	6.69	50.31	38.34	57.10	1334.1
10SV11GJ4F60	3	14.59	17.34	39.18	55.32	6.69	55.79	43.84	57.10	1451.2

HVL4D4	MD	A	B	C	D	H	H1	H2	L	Wt.(lb)
10SV2GE4F60	4	15.09	17.84	41.30	57.35	6.69	37.57	33.34	59.19	819.8
10SV3GF4F60	4	15.09	17.84	41.30	57.35	6.69	41.34	33.34	59.19	925.6
10SV6GG4F60	4	15.09	17.84	41.30	57.35	6.69	47.12	38.34	59.19	1106.9
10SV8GH4F60	4	15.09	17.84	41.30	57.35	6.69	50.31	38.34	59.19	1356.4
10SV11GJ4F60	4	15.09	17.84	41.30	57.35	6.69	55.79	43.84	59.19	1473.5

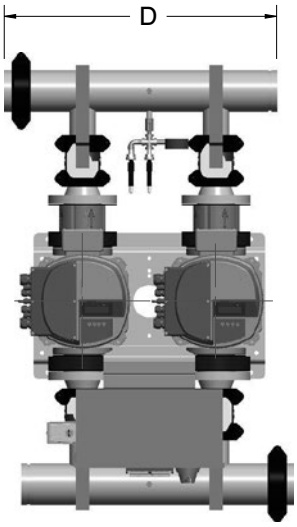
TechnoForce e-HV Curves 15SV

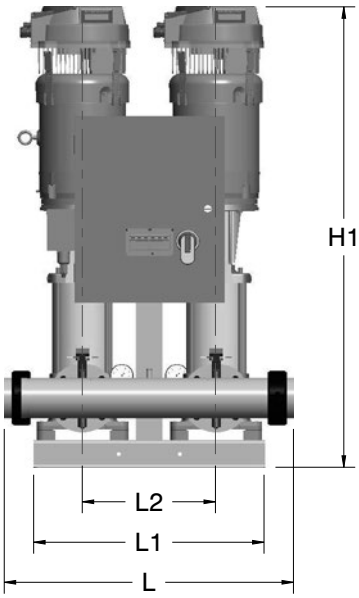


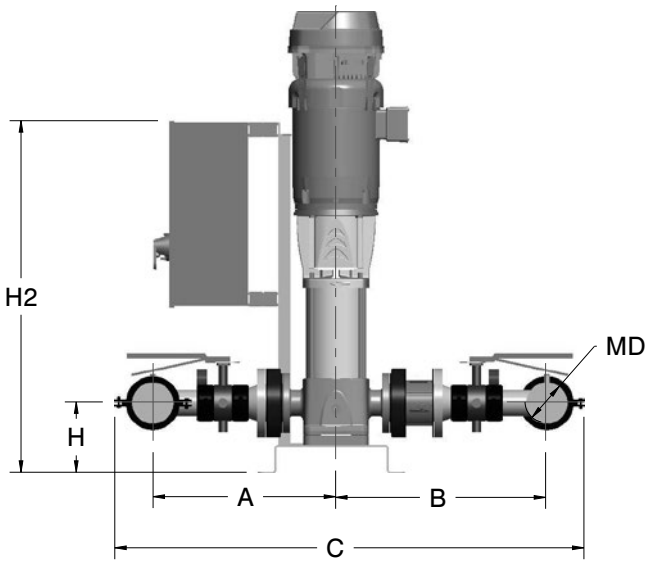
TechnoForce e-HV Curves 15SV



208-230V
TechnoForce e-HV Dimensions 15SV – 2 Pump



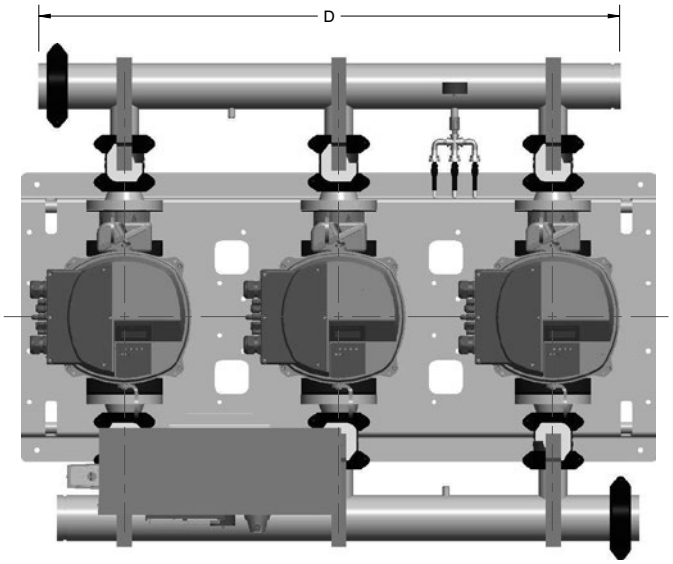


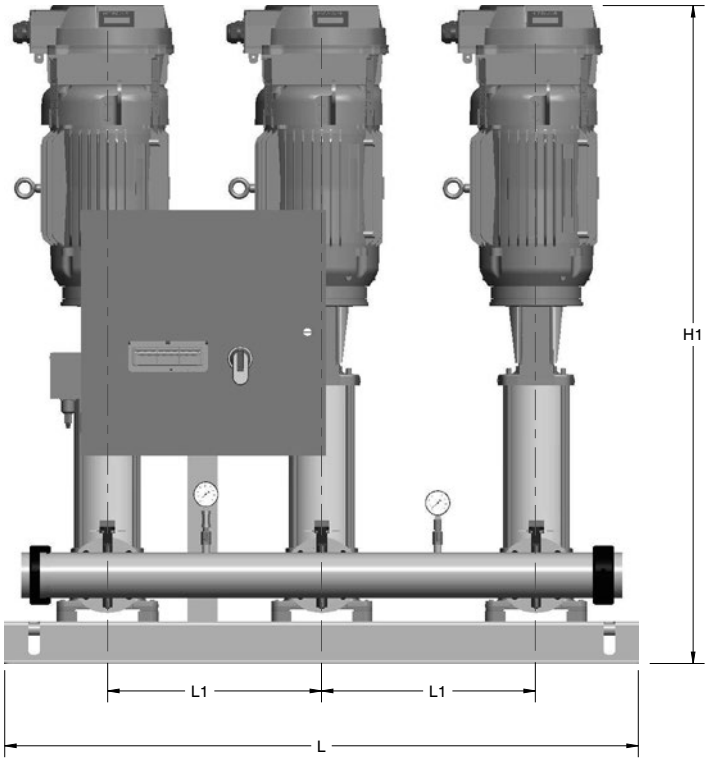


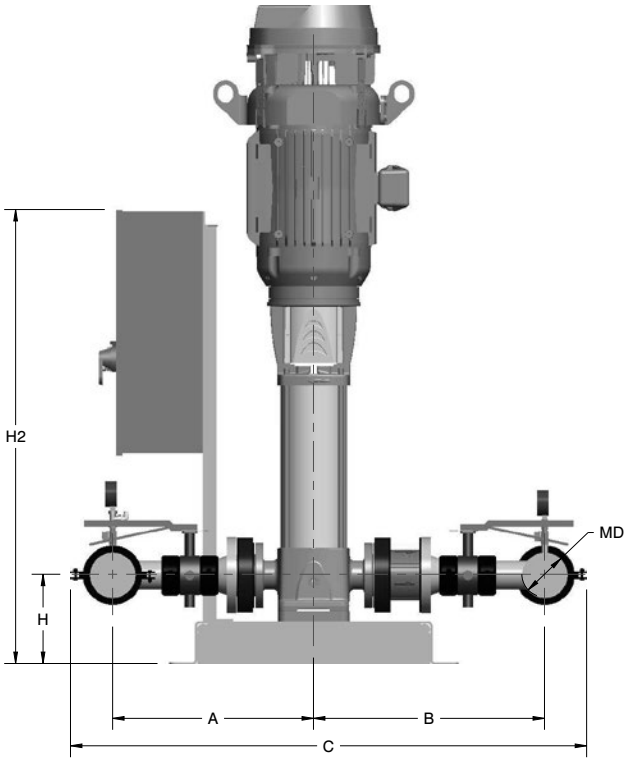
HVL2L3	MD	A	B	C	D	H	H1	H2	L	L1	L2	Wt.(lb)
15SV1GE4F60	3	19.47	22.47	49.19	29.67	7.69	40.62	38.34	35.62	25.20	14.57	598.8
15SV2GG4C60	3	19.47	22.47	49.19	29.67	7.69	45.32	38.34	35.62	25.20	14.57	755.9
15SV3GH4F60	3	19.47	22.47	49.19	29.67	7.69	47.29	38.34	35.62	25.20	14.57	850.0
15SV4GH4F60	3	19.47	22.47	49.19	29.67	7.69	49.18	38.34	35.62	25.20	14.57	856.9
15SV5GJ4F60	3	19.47	22.47	49.19	36.43	8.67	54.63	39.52	42.12	42.12	21.26	1058.8
15SV6GK4F60	3	19.47	22.47	49.19	36.43	8.87	59.98	45.02	42.12	42.12	21.26	1385.4
15SV7GK4F60	3	19.47	22.47	49.19	36.43	8.87	62.50	45.02	42.12	42.12	21.26	1403.8
15SV8GK4F60	3	19.47	22.47	49.19	36.43	8.87	64.39	45.02	42.12	42.12	21.26	1408.4

HVL2L4	MD	A	B	C	D	H	H1	H2	L	L1	L2	Wt.(lb)
15SV1GE4F60	4	19.97	22.97	51.32	29.67	7.69	40.62	38.34	35.62	25.20	14.57	612.7
15SV2GG4C60	4	19.97	22.97	51.32	29.67	7.69	45.32	38.34	35.62	25.20	14.57	769.8
15SV3GH4F60	4	19.97	22.97	51.32	29.67	7.69	47.29	38.34	35.62	25.20	14.57	863.9
15SV4GH4F60	4	19.97	22.97	51.32	29.67	7.69	49.18	38.34	35.62	25.20	14.57	870.8
15SV5GJ4F60	4	19.97	22.97	51.32	36.49	8.87	54.63	45.02	42.12	42.12	21.26	1074.4
15SV6GK4F60	4	19.97	22.97	51.32	36.49	8.87	59.98	45.02	42.12	42.12	21.26	1401.0
15SV7GK4F60	4	19.97	22.97	51.32	36.49	8.87	62.50	45.02	42.12	42.12	21.26	1419.4
15SV8GK4F60	4	19.97	22.97	51.32	36.49	8.87	64.39	45.02	42.12	42.12	21.26	1424.0

208-230V
TechnoForce e-HV Dimensions 15SV – 3 Pump

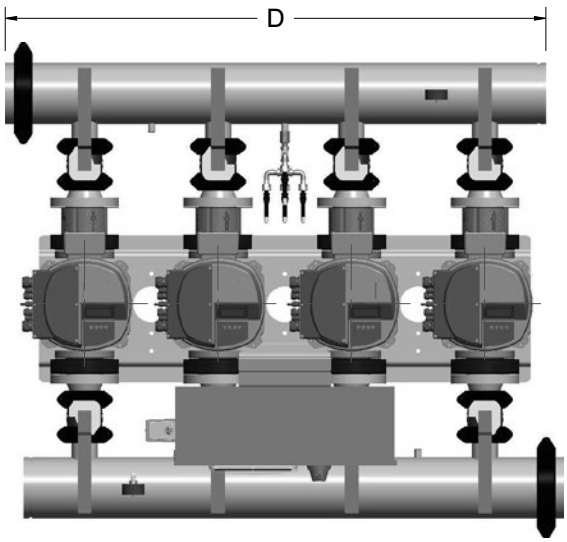


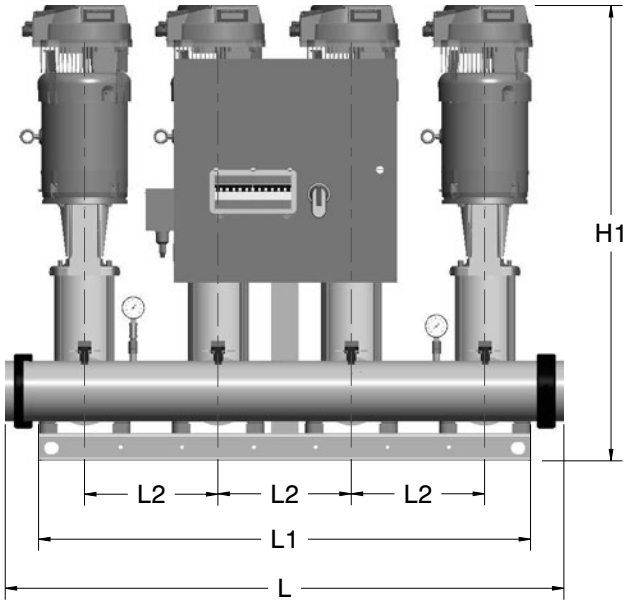


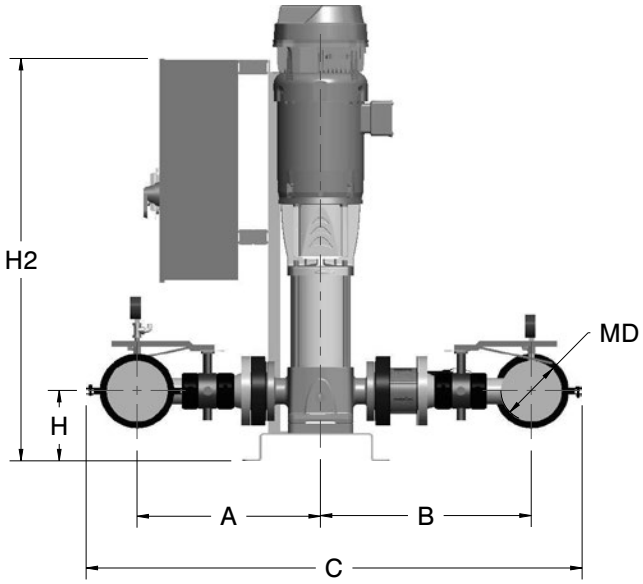


HVL3L4	MD	A	B	C	D	H	H1	H2	L	L1	Wt.(lb)
15SV1GE4F60	4	19.97	22.97	51.32	44.27	7.69	40.62	38.34	50.12	14.57	892.5
15SV2GG4F60	4	19.97	22.97	51.32	44.27	7.69	45.32	38.34	50.12	14.57	1129.1
15SV3GH4F60	4	19.97	22.97	51.32	44.27	7.69	47.29	38.34	50.12	14.57	1269.4
15SV4GH4F60	4	19.97	22.97	51.32	44.27	7.69	49.18	38.34	50.12	14.57	1279.7
15SV5GJ4F60	4	19.97	22.97	51.32	57.75	7.69	54.63	45.02	63.62	21.26	1623.5
15SV6GK4F60	4	19.97	22.97	51.32	57.75	8.87	59.98	45.02	63.62	21.26	2078.9
15SV7GK4F60	4	19.97	22.97	51.32	57.75	8.87	62.50	45.02	63.62	21.26	2106.5
15SV8GK4F60	4	19.97	22.97	51.32	57.75	8.87	64.39	45.02	63.62	21.26	2113.4

208-230V
TechnoForce e-HV Dimensions 15SV – 4 Pump

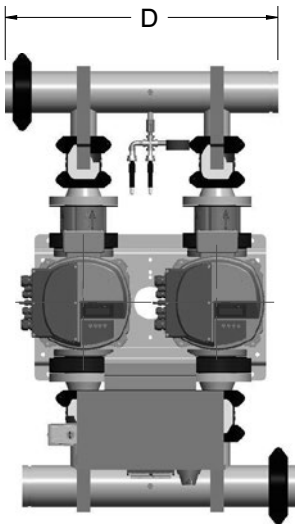




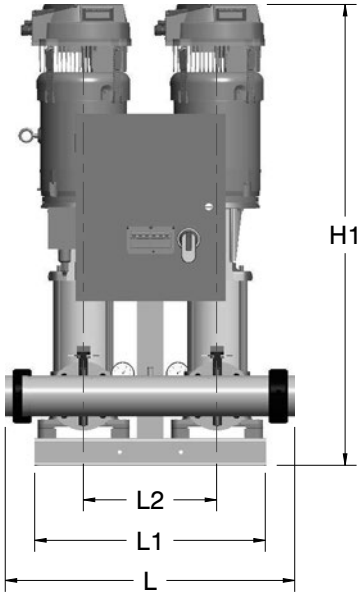


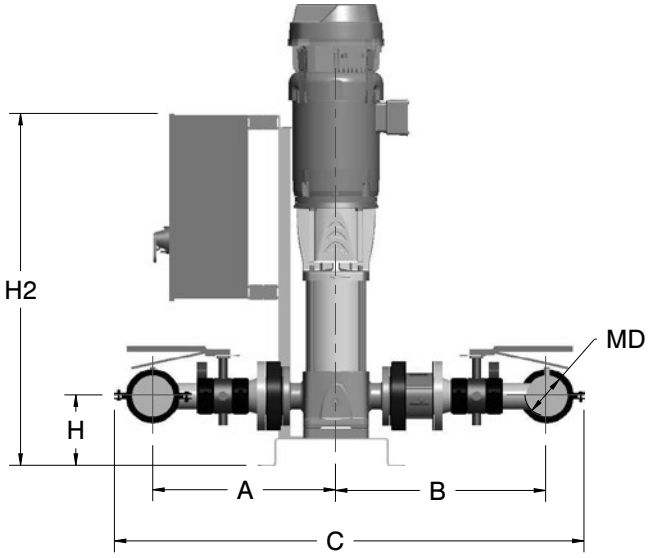
HVL4L4	MD	A	B	C	D	H	H1	H2	L	L1	L2	Wt.(lb)
15SV1GE4F60	4	19.97	22.97	51.32	57.35	7.69	40.62	38.34	64.75	53.74	14.57	1165.3
15SV2GG4F60	4	19.97	22.97	51.32	57.35	7.69	45.32	38.34	64.75	53.74	14.57	1483.7
15SV3GH4F60	4	19.97	22.97	51.32	57.35	7.69	47.29	38.34	64.75	53.74	14.57	1727.3
15SV4GH4F60	4	19.97	22.97	51.32	57.35	7.69	49.18	43.84	64.75	53.74	14.57	1741.1
15SV5GJ4F60	4	19.97	22.97	51.32	77.43	8.87	54.63	45.02	85.83	85.83	14.57	2137.0
15SV6GK4F60	4	19.97	22.97	51.32	77.43	8.87	59.98	50.02	85.83	85.83	21.26	2781.5
15SV7GK4F60	4	19.97	22.97	51.32	77.43	8.87	62.50	50.02	85.83	85.83	21.26	2818.3
15SV8GK4F60	4	19.97	22.97	51.32	77.43	8.87	64.39	50.02	85.83	85.83	21.26	2827.5

HVL4L6	MD	A	B	C	D	H	H1	H2	L	L1	L2	Wt.(lb)
15SV1GE4F60	6	20.03	23.03	54.18	59.06	7.69	40.62	38.34	64.75	53.74	14.57	1215.4
15SV2GG4F60	6	20.03	23.03	54.18	59.06	7.69	45.32	38.34	64.75	53.74	14.57	1533.7
15SV3GH4F60	6	20.03	23.03	54.18	59.06	7.69	47.29	38.34	64.75	53.74	14.57	1777.3
15SV4GH4F60	6	20.03	23.03	54.18	59.06	7.69	49.18	43.84	64.75	53.74	14.57	1791.1
15SV5GJ4F60	6	21.03	24.03	56.18	79.13	8.87	54.63	45.02	85.83	85.83	21.26	2205.5
15SV6GK4F60	6	21.03	24.03	56.18	79.13	8.87	59.98	50.02	85.83	85.83	21.26	2850.0
15SV7GK4F60	6	21.03	24.03	56.18	79.13	8.87	62.50	50.02	85.83	85.83	21.26	2886.8
15SV8GK4F60	6	21.03	24.03	56.18	79.13	8.87	64.39	50.02	85.83	85.83	21.26	2896.0



460V
TechnoForce e-HV Dimensions 15SV – 2 Pump



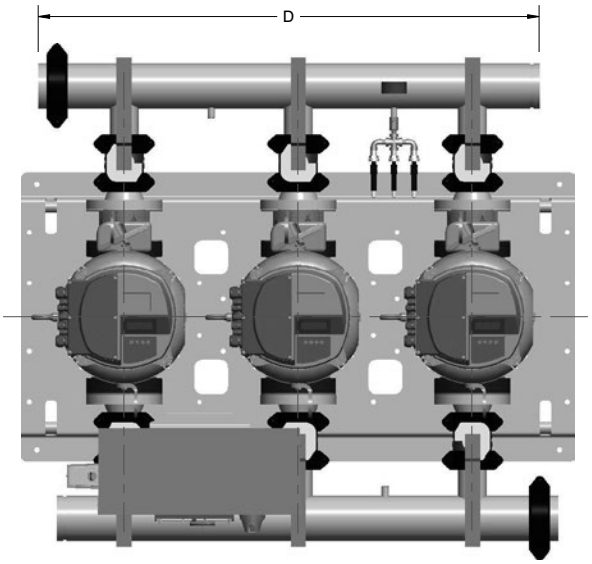


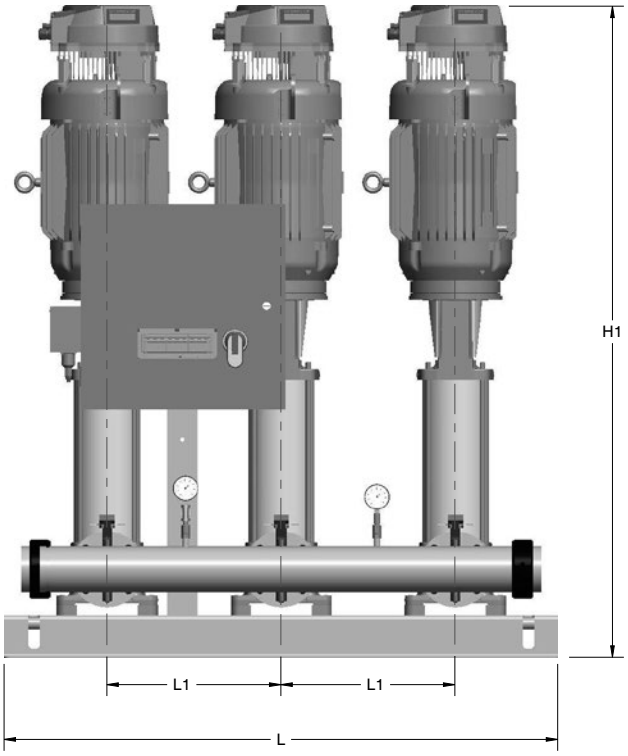
HVL2D3	MD	A	B	C	D	H	H1	H2	L	L1	L2	Wt.(lb)
15SV1GE4F60	3	19.47	22.47	49.19	29.73	7.69	40.62	38.34	35.62	25.20	14.57	598.8
15SV2GG4F60	3	19.47	22.47	49.19	29.73	7.69	44.73	38.34	35.62	25.20	14.57	727.6
15SV3GH4F60	3	19.47	22.47	49.19	29.73	7.69	47.29	38.34	35.62	25.20	14.57	850.0
15SV4GH4F60	3	19.47	22.47	49.19	29.73	7.69	49.18	38.34	35.62	25.20	14.57	856.9
15SV5GJ4F60	3	19.47	22.47	49.19	29.73	7.69	52.77	38.34	35.62	25.20	14.57	902.9
15SV6GK4F60	3	19.47	22.47	49.19	32.49	8.87	59.30	45.02	38.37	37.80	17.32	1289.6
15SV7GK4F60	3	19.47	22.47	49.19	32.49	8.87	61.82	45.02	38.37	37.80	17.32	1308.0
15SV8GK4F60	3	19.47	22.47	49.19	32.49	8.87	63.71	45.02	38.37	37.80	17.32	1312.4

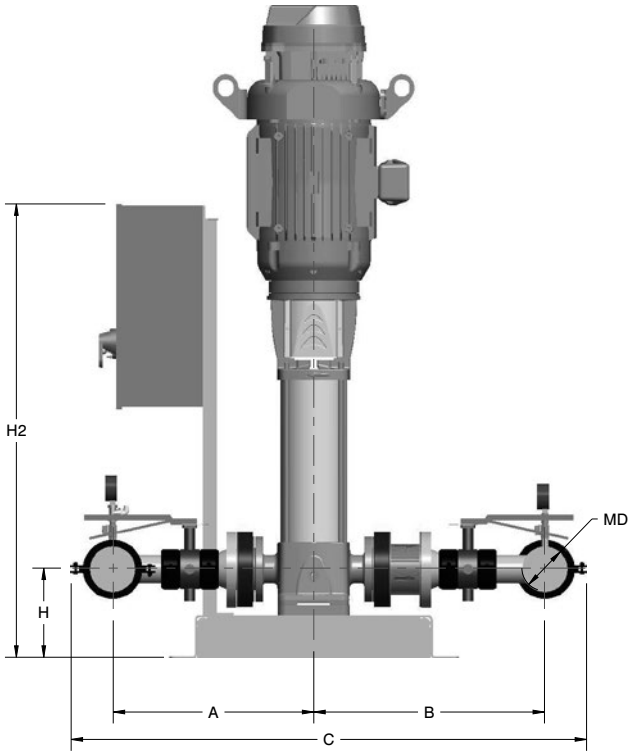
HVL2D4	MD	A	B	C	D	H	H1	H2	L	L1	L2	Wt.(lb)
15SV1GE4F60	4	19.97	22.97	51.32	29.79	7.69	40.62	38.34	35.62	25.20	14.57	612.7
15SV2GG4F60	4	19.97	22.97	51.32	29.79	7.69	44.73	38.34	35.62	25.20	14.57	741.5
15SV3GH4F60	4	19.97	22.97	51.32	29.79	7.69	47.29	38.34	35.62	25.20	14.57	863.9
15SV4GH4F60	4	19.97	22.97	51.32	29.79	7.69	49.18	38.34	35.62	25.20	14.57	870.8
15SV5GJ4F60	4	19.97	22.97	51.32	29.79	7.69	52.77	38.34	35.62	25.20	14.57	916.8
15SV6GK4F60	4	19.97	22.97	51.32	32.55	8.87	59.30	45.02	38.37	37.80	17.32	1303.6
15SV7GK4F60	4	19.97	22.97	51.32	32.55	8.87	61.82	45.02	38.37	37.80	17.32	1322.0
15SV8GK4F60	4	19.97	22.97	51.32	32.55	8.87	63.71	45.02	38.37	37.80	17.32	1326.6

460V

TechnoForce e-HV Dimensions 15SV – 3 Pump

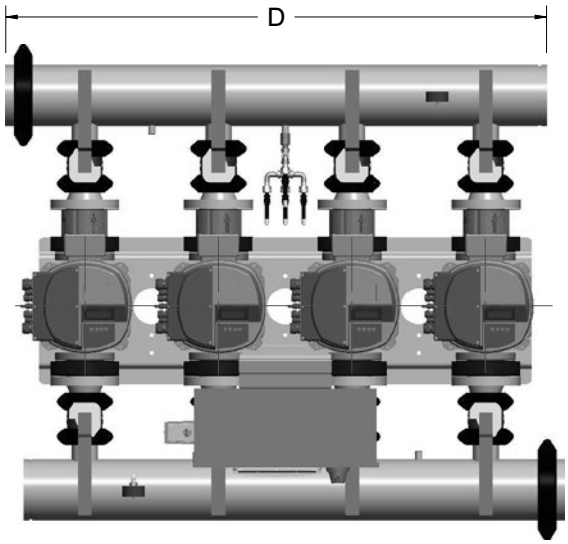


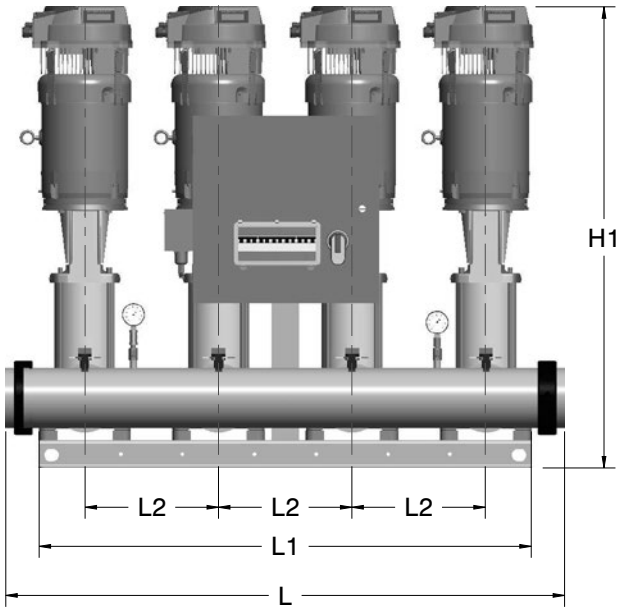


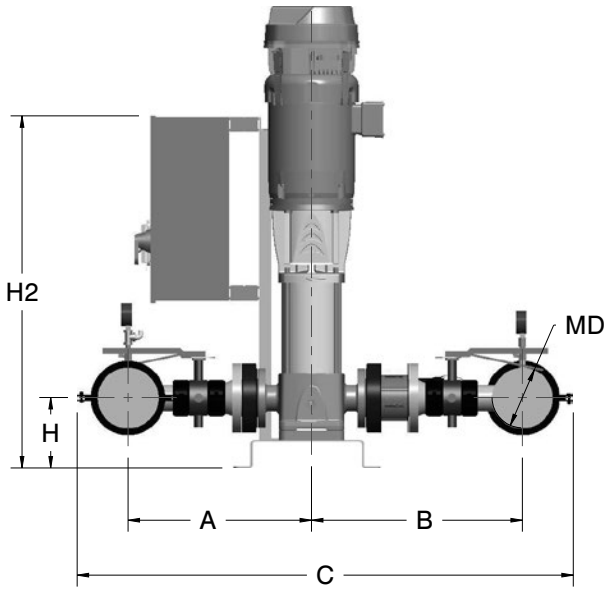


HVL3D4	MD	A	B	C	D	H	H1	H2	L	L1	Wt.(lb)
15SV1GE4F60	4	19.97	22.97	51.32	44.36	7.69	40.62	38.34	50.12	14.57	892.5
15SV2GG4F60	4	19.97	22.97	51.32	44.36	7.69	44.73	38.34	50.12	14.57	1085.7
15SV3GH4F60	4	19.97	22.97	51.32	44.36	7.69	47.29	38.34	50.12	14.57	1269.4
15SV4GH4F60	4	19.97	22.97	51.32	44.36	7.69	49.18	38.34	50.12	14.57	1279.7
15SV5GJ4F60	4	19.97	22.97	51.32	44.36	7.69	52.77	38.34	50.12	14.57	1348.7
15SV6GK4F60	4	19.97	22.97	51.32	49.87	8.87	59.30	45.02	55.12	17.32	1936.8
15SV7GK4F60	4	19.97	22.97	51.32	49.87	8.87	61.82	45.02	55.12	17.32	1964.4
15SV8GK4F60	4	19.97	22.97	51.32	49.87	8.87	63.71	45.02	55.12	17.32	1971.3

460V
TechnoForce e-HV Dimensions 15SV – 4 Pump



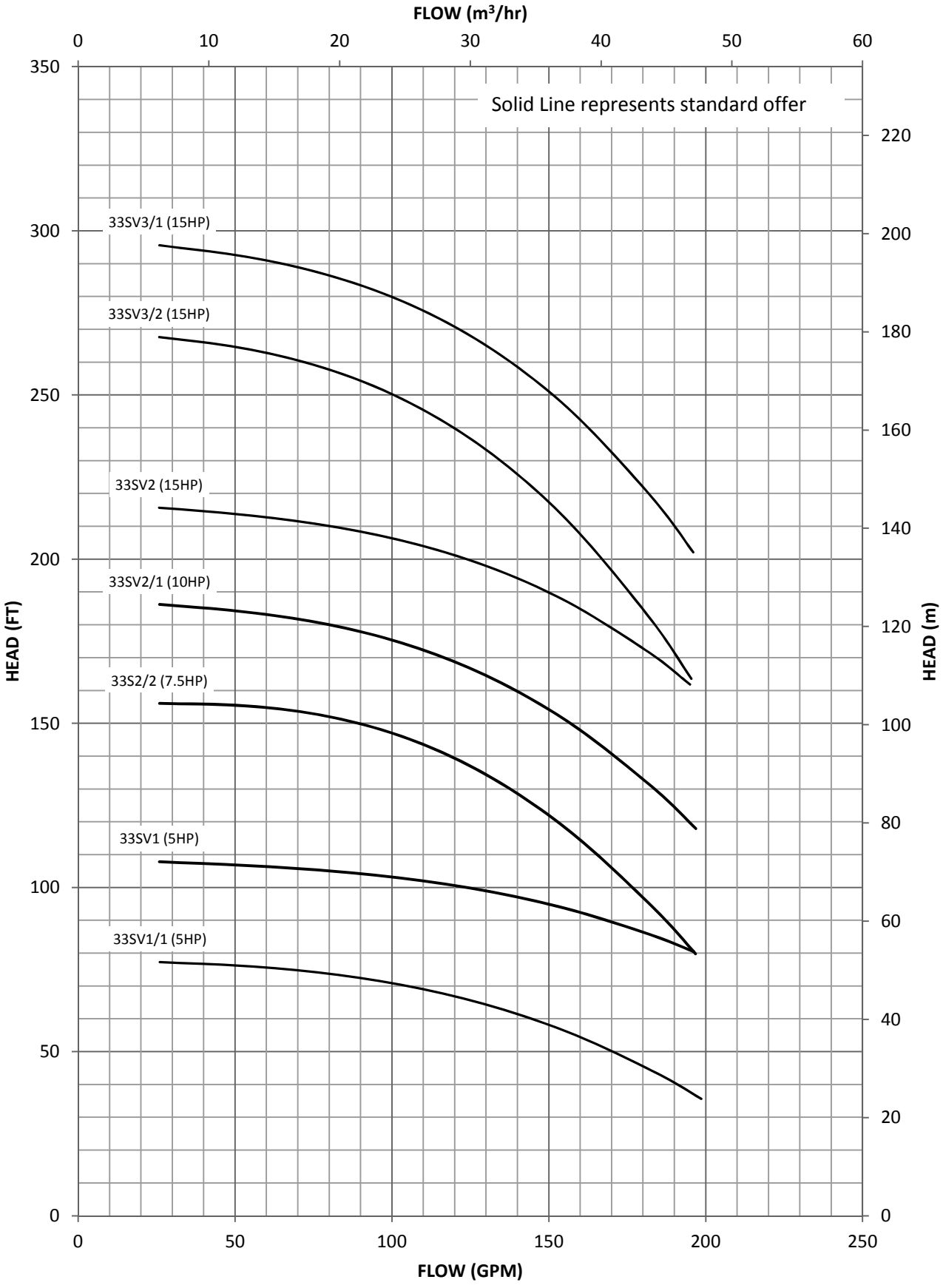




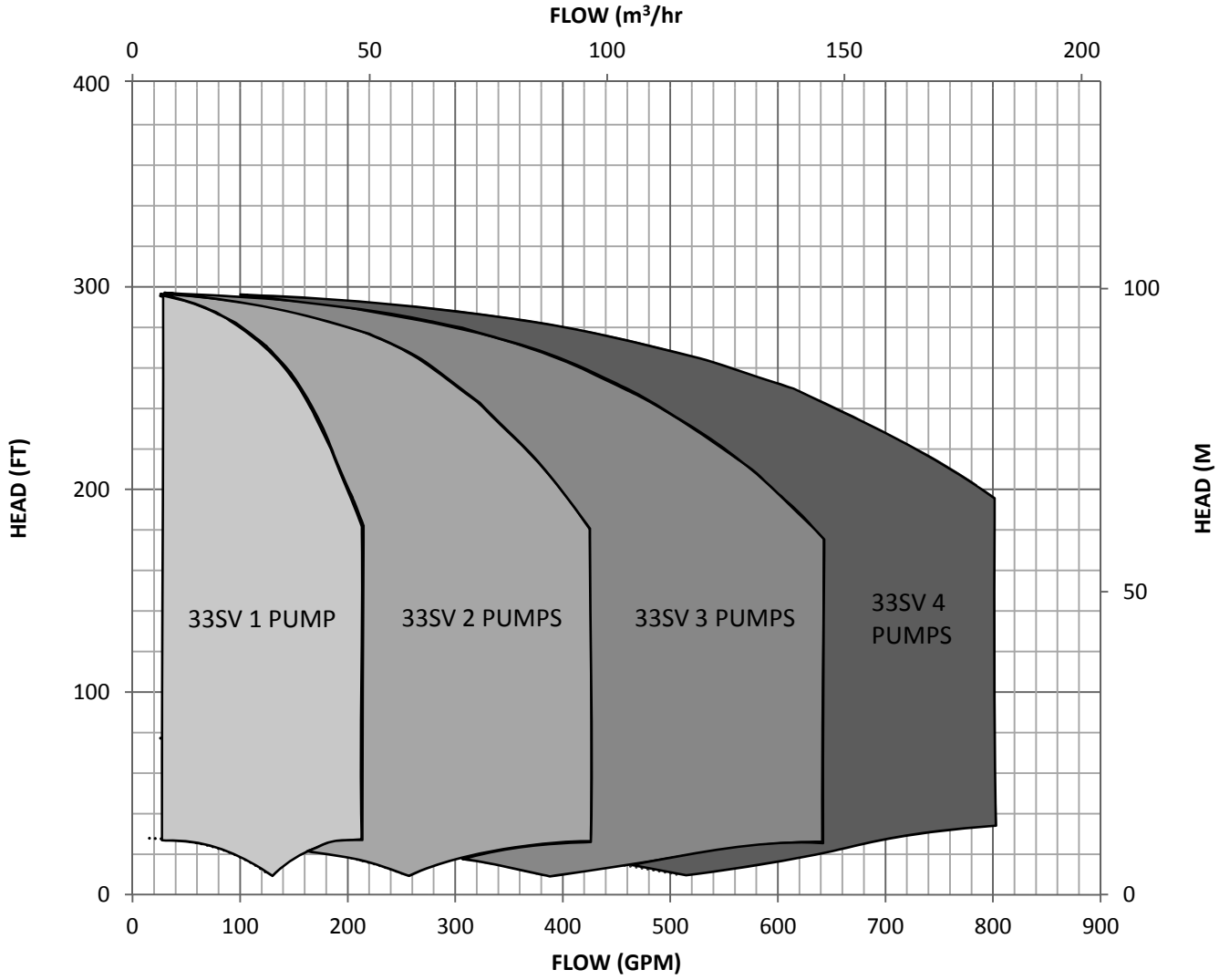
HVL4D4	MD	A	B	C	D	H	H1	H2	L	L1	L2	Wt.(lb)
15SV1GE4F60	4	19.97	22.97	51.32	57.35	7.69	40.62	38.34	64.75	53.74	14.57	1165.3
15SV2GG4F60	4	19.97	22.97	51.32	57.35	7.69	44.73	38.34	64.75	53.74	14.57	1422.9
15SV3GH4F60	4	19.97	22.97	51.32	57.35	7.69	47.29	38.34	64.75	53.74	14.57	1667.7
15SV4GH4F60	4	19.97	22.97	51.32	57.35	7.69	49.18	38.34	64.75	53.74	14.57	1681.5
15SV5GJ4F60	4	19.97	22.97	51.32	57.35	7.69	52.77	38.34	64.75	53.74	14.57	1773.5
15SV6GK4F60	4	19.97	22.97	51.32	65.62	8.87	59.30	45.02	74.02	74.02	17.32	2621.6
15SV7GK4F60	4	19.97	22.97	51.32	65.62	8.87	61.82	45.02	74.02	74.02	17.32	2658.4
15SV8GK4F60	4	19.97	22.97	51.32	65.62	8.87	63.71	45.02	74.02	74.02	17.32	2667.6

HVL4D6	MD	A	B	C	D	H	H1	H2	L	L1	L2	Wt.(lb)
15SV1GE4F60	6	21.03	24.03	54.18	59.06	7.69	40.62	38.34	64.75	53.74	14.57	1215.4
15SV2GG4F60	6	21.03	24.03	54.18	59.06	7.69	44.73	38.34	64.75	53.74	14.57	1473.0
15SV3GH4F60	6	21.03	24.03	54.18	59.06	7.69	47.29	38.34	64.75	53.74	14.57	1717.8
15SV4GH4F60	6	21.03	24.03	54.18	59.06	7.69	49.18	38.34	64.75	53.74	14.57	1731.6
15SV5GJ4F60	6	21.03	24.03	54.18	59.06	7.69	52.77	38.34	64.75	53.74	14.57	1823.6
15SV6GK4F60	6	21.03	24.03	56.18	67.32	8.87	59.30	45.02	74.02	74.02	17.32	2689.4
15SV7GK4F60	6	21.03	24.03	56.18	67.32	8.87	61.82	45.02	74.02	74.02	17.32	2726.2
15SV8GK4F60	6	21.03	24.03	56.18	67.32	8.87	63.71	45.02	74.02	74.02	17.32	2735.4

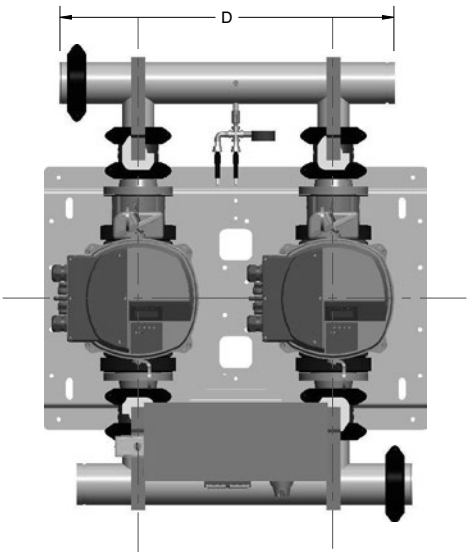
TechnoForce e-HV Curves 33SV

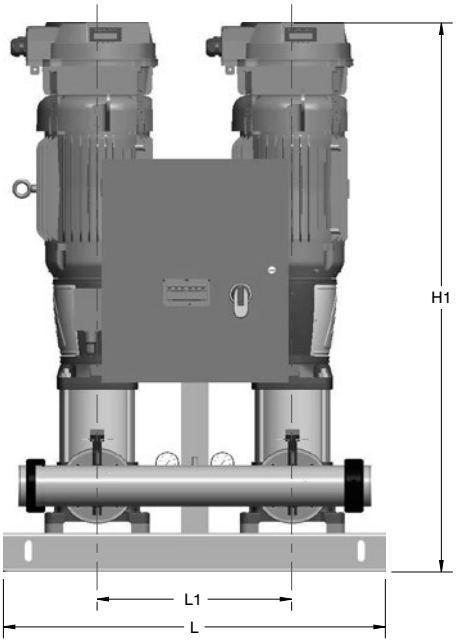


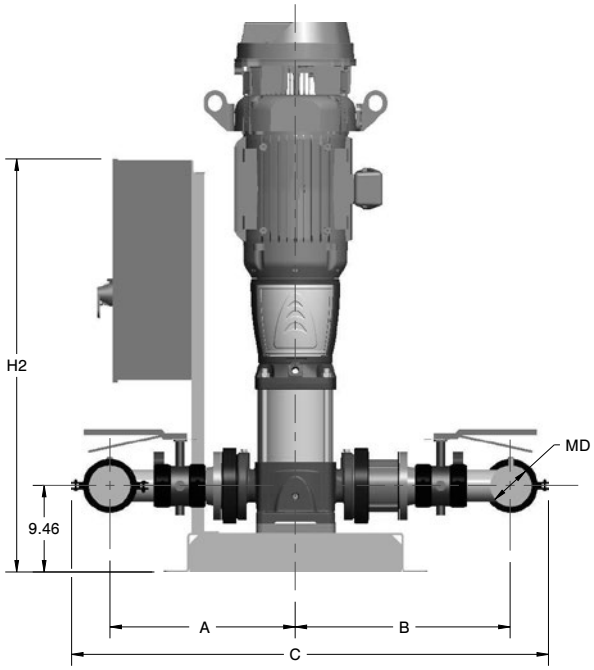
TechnoForce e-HV Curves 33SV



208-230V
TechnoForce e-HV Dimensions 33SV – 2 Pump



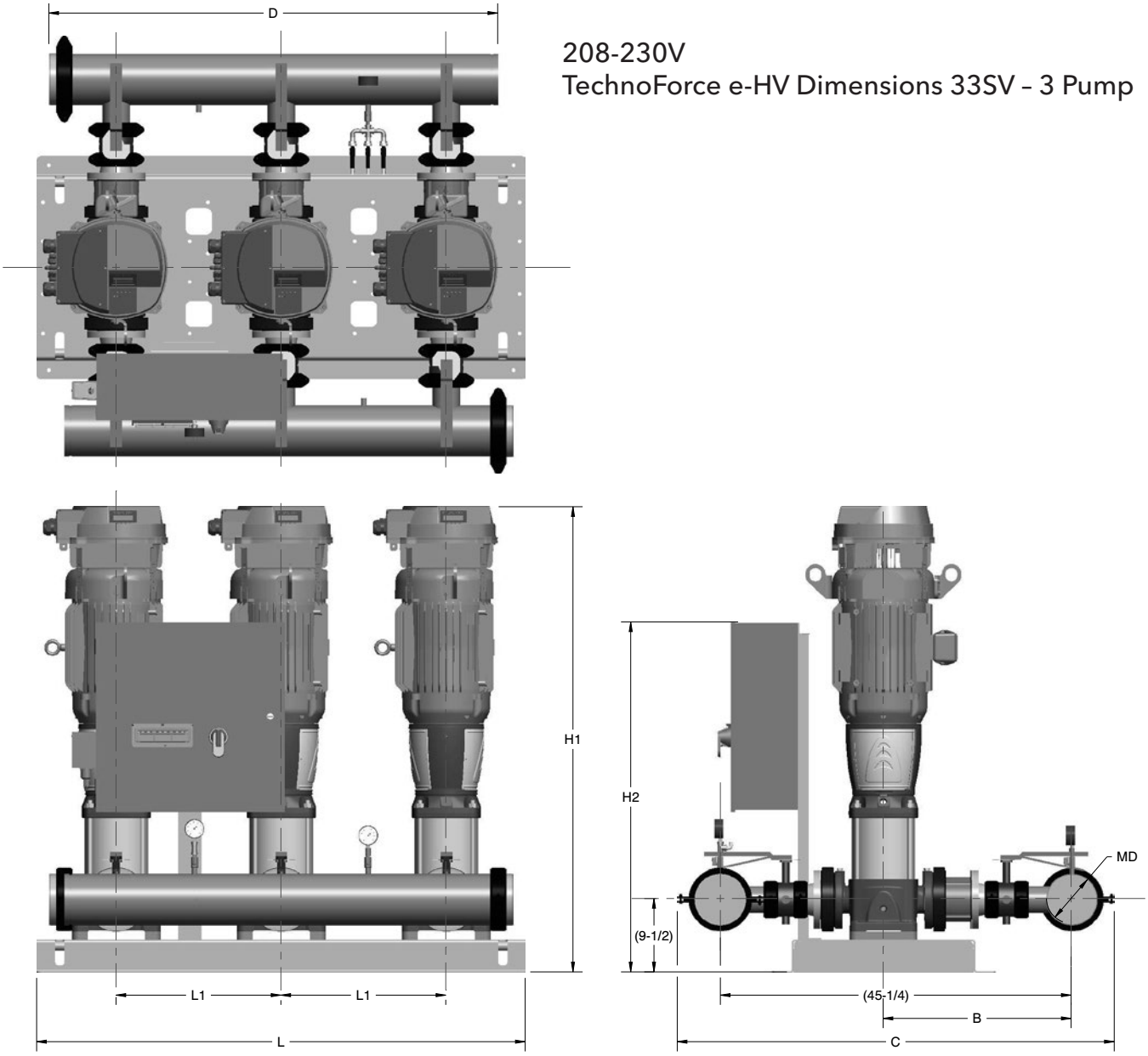




HVL2L3	MD	A	B	C	D	H1	H2	L	L1	Wt.(lb)
33SV11GG4F60	3	19.74	22.99	49.97	32.49	48.41	39.52	38.38	17.32	1077.9
33SV10GH4F60	3	19.74	22.99	49.97	32.49	48.49	39.52	38.38	17.32	1164.6
33SV22GH4F60	3	19.74	22.99	49.97	32.49	51.45	39.52	38.38	17.32	1189.9
33SV21GJ4F60	3	19.74	22.99	49.97	36.40	53.26	39.52	42.38	21.26	1290.7
33SV20GK4F60	3	19.74	22.99	49.97	36.40	56.70	45.02	42.38	21.26	1601.2
33SV32GK4F60	3	19.74	22.99	49.97	36.40	59.66	45.02	42.38	21.26	1621.9
33SV31GK4F60	3	19.74	22.99	49.97	36.40	59.66	45.02	42.38	21.26	1621.9

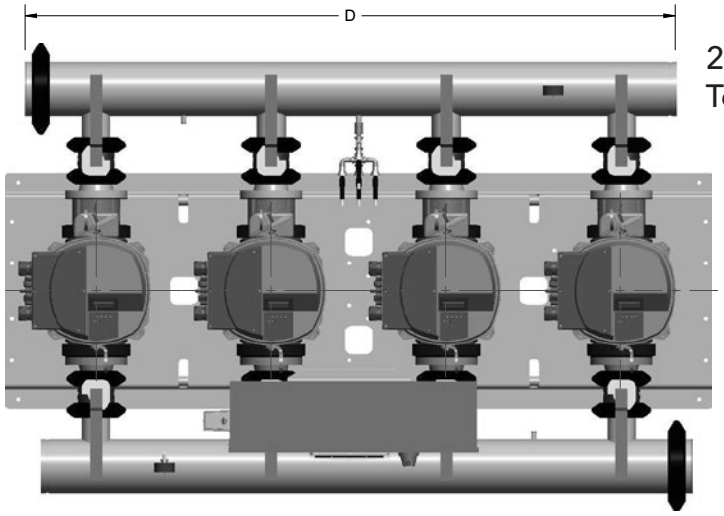
HVL2L4	MD	A	B	C	D	H1	H2	L	L1	Wt.(lb)
33SV11GG4F60	4	20.24	23.49	52.10	32.55	48.41	39.52	38.38	17.32	1092.6
33SV10GH4F60	4	20.24	23.49	52.10	32.55	48.49	39.52	38.38	17.32	1179.3
33SV22GH4F60	4	20.24	23.49	52.10	32.55	51.45	39.52	38.38	17.32	1204.6
33SV21GJ4F60	4	20.24	23.49	52.10	36.49	53.26	39.52	42.38	21.26	1310.5
33SV20GK4F60	4	20.24	23.49	52.10	36.49	56.70	45.02	42.38	21.26	1621.0
33SV32GK4F60	4	20.24	23.49	52.10	36.49	59.66	45.02	42.38	21.26	1641.7
33SV31GK4F60	4	20.24	23.49	52.10	36.49	59.66	45.02	42.38	21.26	1641.7

208-230V
TechnoForce e-HV Dimensions 33SV – 3 Pump

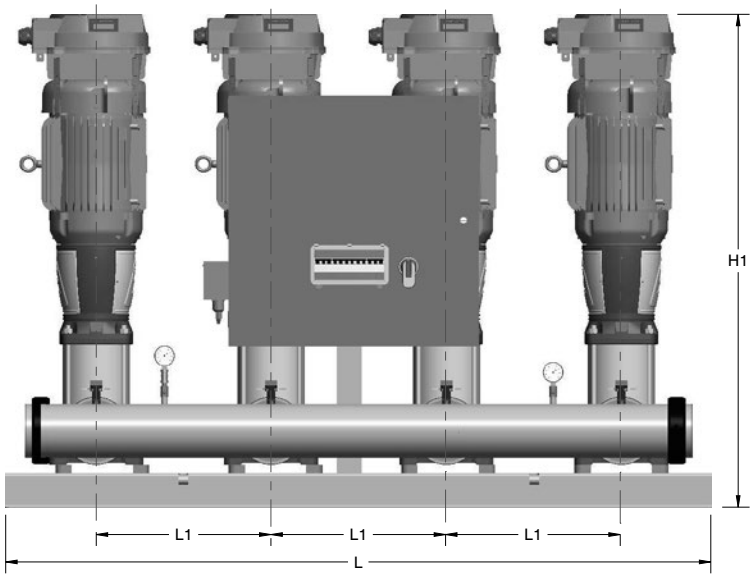


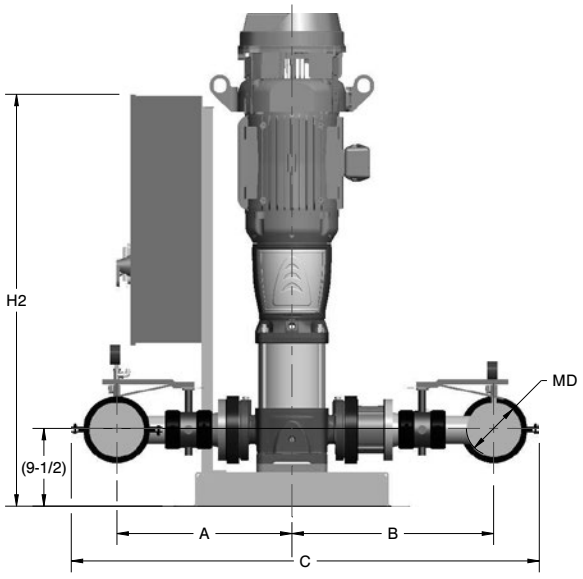
HVL3L4	MD	A	B	C	D	H	H1	H2	L	L1	Wt.(lb)
33SV11GG4F60	4	19.92	23.17	51.48	49.78	9.46	48.41	39.52	55.62	17.32	1622.8
33SV10GH4F60	4	19.92	23.17	51.48	49.78	9.46	48.49	39.52	55.62	17.32	1751.7
33SV22GH4F60	4	19.92	23.17	51.48	49.78	9.46	51.45	39.52	55.62	17.32	1789.6
33SV21GJ4F60	4	19.92	23.17	51.48	57.75	9.46	53.26	45.02	63.62	21.26	1972.5
33SV20GK4F60	4	19.92	23.17	51.48	57.75	9.46	56.70	45.02	63.62	21.26	2403.8
33SV32GK4F60	4	19.92	23.17	51.48	57.75	9.46	59.66	45.02	63.62	21.26	2434.8
33SV31GK4F60	4	19.92	23.17	51.48	57.75	9.46	59.66	45.02	63.62	21.26	2434.8

HVL3L6	MD	A	B	C	D	H	H1	H2	L	L1	Wt.(lb)
33SV11GG4F60	6	20.99	24.24	56.34	49.91	9.46	48.41	39.52	55.62	17.32	1668.9
33SV10GH4F60	6	20.99	24.24	56.34	49.91	9.46	48.49	39.52	55.62	17.32	1797.8
33SV22GH4F60	6	20.99	24.24	56.34	49.91	9.46	51.45	39.52	55.62	17.32	1835.7
33SV21GJ4F60	6	20.99	24.24	56.34	57.87	9.46	53.26	45.02	63.62	21.26	2024.2
33SV20GK4F60	6	20.99	24.24	56.34	57.87	9.46	56.70	45.02	63.62	21.26	2455.5
33SV32GK4F60	6	20.99	24.24	56.34	57.87	9.46	59.66	45.02	63.62	21.26	2486.5
33SV31GK4F60	6	20.99	24.24	56.34	57.87	9.46	59.66	45.02	63.62	21.26	2486.5



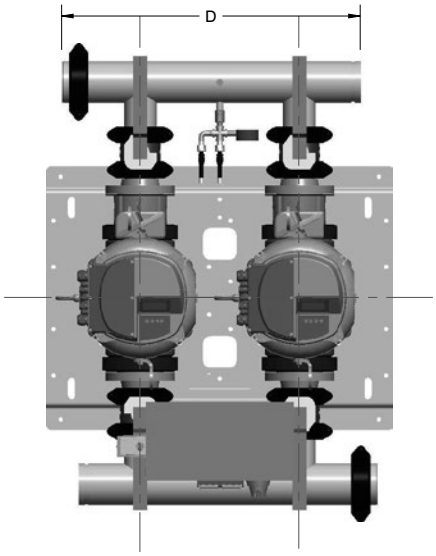
208-230V
TechnoForce e-HV Dimensions 33SV – 4 Pump

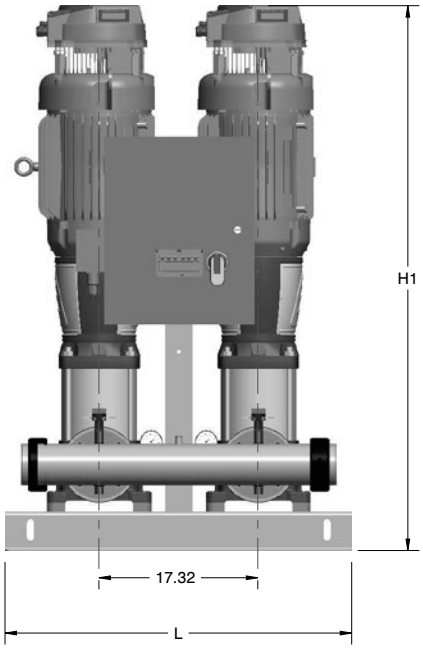


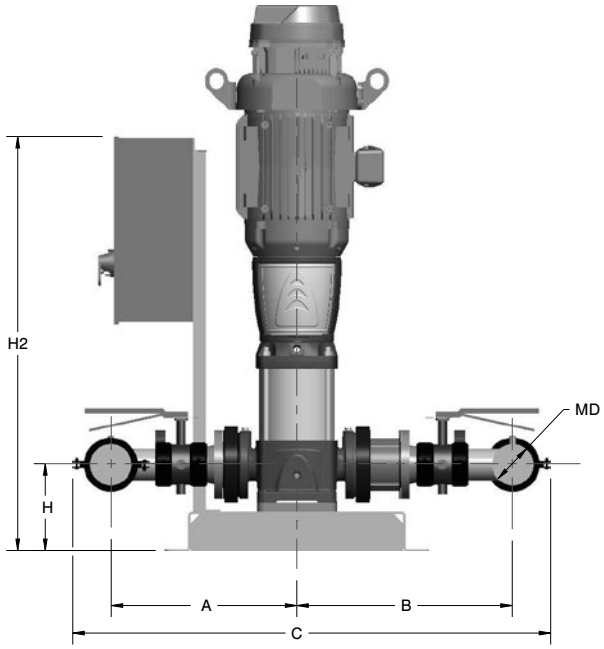


HVL4L6	MD	A	B	C	D	H	H1	H2	L	L1	Wt.(lb)
33SV11GG4F60	6	21.30	24.55	57.00	67.32	9.46	48.41	39.52	74.02	17.32	2208.2
33SV10GH4F60	6	21.30	24.55	57.00	67.32	9.46	48.49	45.02	74.02	17.32	2438.0
33SV22GH4F60	6	21.30	24.55	57.00	67.32	9.46	51.45	45.02	74.02	17.32	2488.6
33SV21GJ4F60	6	21.30	24.55	57.00	79.13	9.46	53.26	45.02	85.83	21.26	2669.1
33SV20GK4F60	6	21.30	24.55	57.00	79.13	9.46	56.70	50.02	85.83	21.26	3281.4
33SV32GK4F60	6	21.30	24.55	57.00	79.13	9.46	59.66	50.02	85.83	21.26	3322.8
33SV31GK4F60	6	21.30	24.55	57.00	79.13	9.46	59.66	50.02	85.83	21.26	3322.8

460V
TechnoForce e-HV Dimensions 33SV – 2 Pump

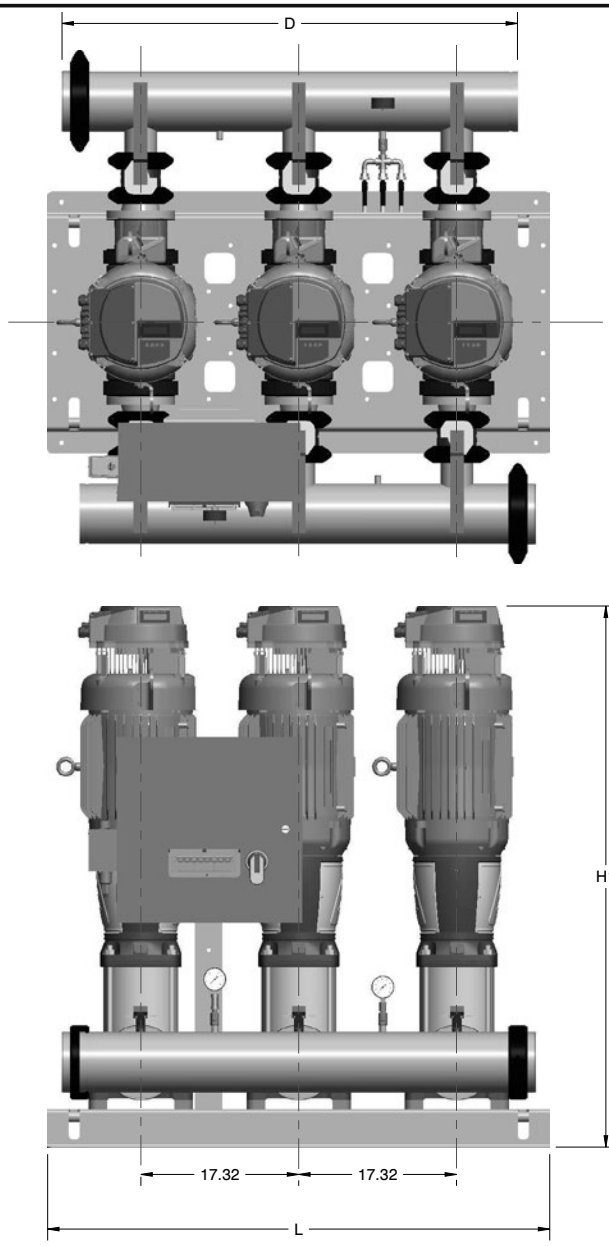






HVL2D3	MD	A	B	C	D	H	H1	H2	L	Wt.(lb)
33SV11GG4F60	3	19.74	22.99	49.97	32.49	9.46	47.82	39.52	38.38	1049.1
33SV10GH4F60	3	19.74	22.99	49.97	32.49	9.46	48.49	39.52	38.38	1164.6
33SV22GH4F60	3	19.74	22.99	49.97	32.49	9.46	51.45	39.52	38.38	1189.9
33SV21GJ4F60	3	19.74	22.99	49.97	32.49	9.46	52.58	39.52	38.38	1215.2
33SV20GK4F60	3	19.74	22.99	49.97	32.49	9.46	56.02	39.52	38.38	1502.7
33SV32GK4F60	3	19.74	22.99	49.97	32.49	9.46	58.98	45.02	38.38	1525.5
33SV31GK4F60	3	19.74	22.99	49.97	32.49	9.46	58.98	45.02	38.38	1525.5

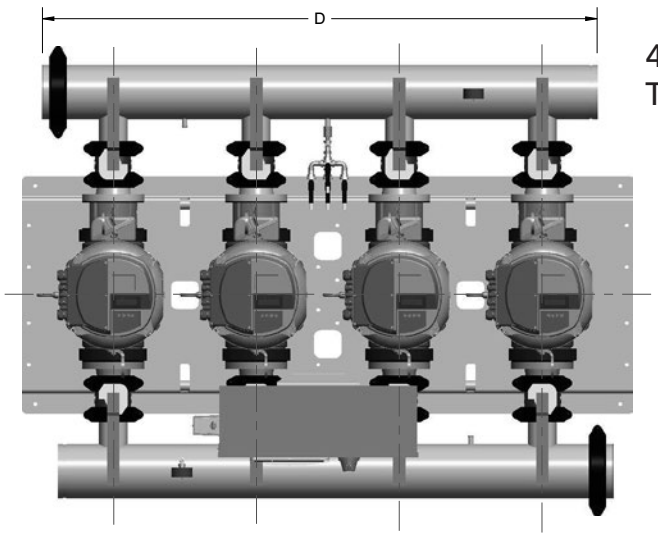
HVL2D4	MD	A	B	C	D	H	H1	H2	L	Wt.(lb)
33SV11GG4F60	4	20.24	23.49	52.10	32.55	9.46	47.82	39.52	38.38	1063.8
33SV10GH4F60	4	20.24	23.49	52.10	32.55	9.46	48.49	39.52	38.38	1179.3
33SV22GH4F60	4	20.24	23.49	52.10	32.55	9.46	51.45	39.52	38.38	1204.6
33SV21GJ4F60	4	20.24	23.49	52.10	32.55	9.46	52.58	39.52	38.38	1229.9
33SV20GK4F60	4	20.24	23.49	52.10	32.55	9.46	56.02	39.52	38.38	1517.4
33SV32GK4F60	4	20.24	23.49	52.10	32.55	9.46	58.98	45.02	38.38	1540.2
33SV31GK4F60	4	20.24	23.49	52.10	32.55	9.46	58.98	45.02	38.38	1540.2



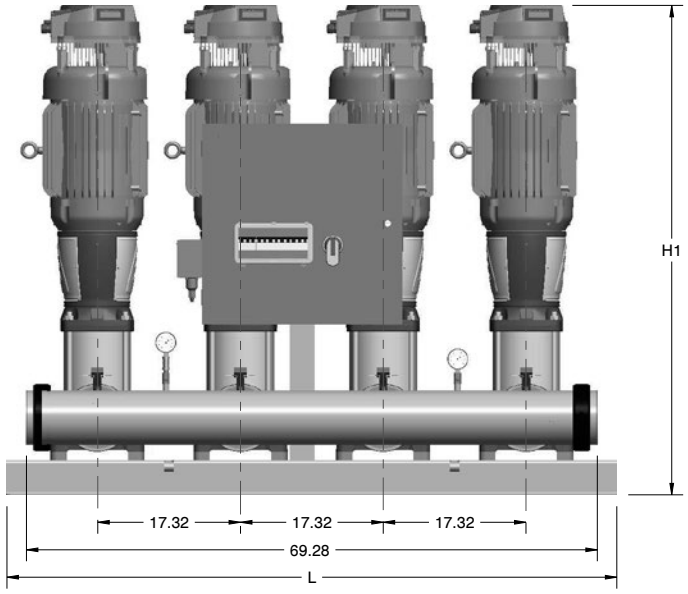
460V
TechnoForce e-HV Dimensions 33SV – 3 Pump

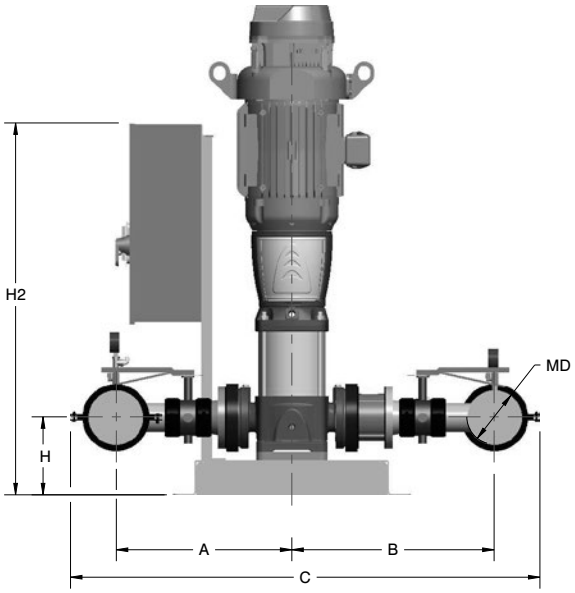
HVL3D4	MD	A	B	C	D	H	H1	H2	L	Wt.(lb)
33SV11GG4F60	4	20.24	23.17	51.79	49.87	9.46	47.82	39.52	55.62	1578.4
33SV10GH4F60	4	20.24	23.17	51.79	49.87	9.46	48.49	39.52	55.62	1751.7
33SV22GH4F60	4	20.24	23.17	51.79	49.87	9.46	51.45	39.52	55.62	1789.6
33SV21GJ4F60	4	20.24	23.17	51.79	49.87	9.46	52.58	39.52	55.62	1827.6
33SV20GK4F60	4	20.24	23.17	51.79	49.87	9.46	56.02	39.52	55.62	2258.8
33SV32GK4F60	4	20.24	23.17	51.79	49.87	9.46	58.98	45.02	55.62	2292.0
33SV31GK4F60	4	20.24	23.17	51.79	49.87	9.46	58.98	45.02	55.62	2292.0

HVL3D6	MD	A	B	C	D	H	H1	H2	L	Wt.(lb)
33SV11GG4F60	6	20.99	24.24	56.34	50.00	9.46	47.82	39.52	55.62	1624.5
33SV10GH4F60	6	20.99	24.24	56.34	50.00	9.46	48.49	39.52	55.62	1797.8
33SV22GH4F60	6	20.99	24.24	56.34	50.00	9.46	51.45	39.52	55.62	1835.7
33SV21GJ4F60	6	20.99	24.24	56.34	50.00	9.46	52.58	39.52	55.62	1873.7
33SV20GK4F60	6	20.99	24.24	56.34	50.00	9.46	56.02	39.52	55.62	2304.9
33SV32GK4F60	6	20.99	24.24	56.34	50.00	9.46	58.98	45.02	55.62	2338.1
33SV31GK4F60	6	20.99	24.24	56.34	50.00	9.46	58.98	45.02	55.62	2338.1



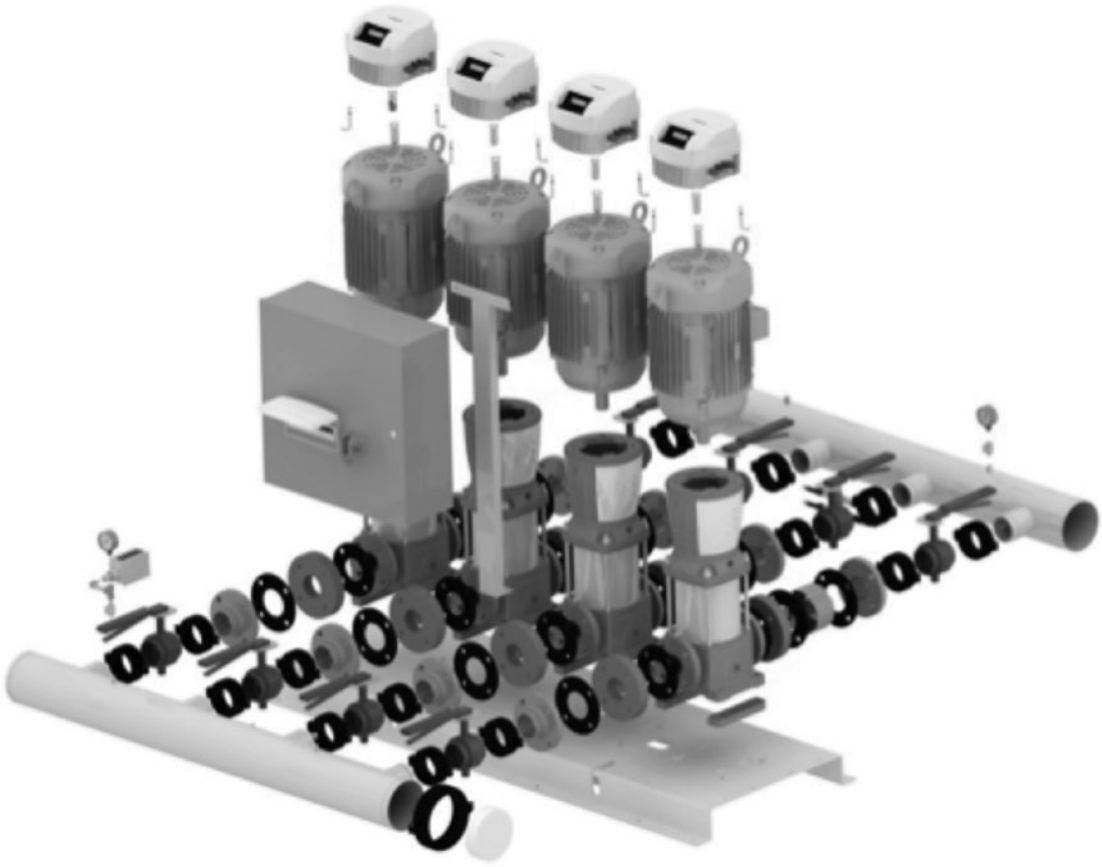
460V
TechnoForce e-HV Dimensions 33SV – 4 Pump





HVL4D6	MD	A	B	C	D	H	H1	H2	L	Wt.(lb)
33SV11GG4F60	6	21.30	24.55	56.97	67.32	9.46	47.82	39.52	74.02	2146.3
33SV10GH4F60	6	21.30	24.55	56.97	67.32	9.46	48.49	39.52	74.02	2377.4
33SV22GH4F60	6	21.30	24.55	56.97	67.32	9.46	51.45	39.52	74.02	2428.0
33SV21GJ4F60	6	21.30	24.55	56.97	67.32	9.46	52.58	39.52	74.02	2478.6
33SV20GK4F60	6	21.30	24.55	56.97	67.32	9.46	56.02	45.02	74.02	3113.2
33SV32GK4F60	6	21.30	24.55	56.97	67.32	9.46	58.98	45.02	74.02	3154.6
33SV31GK4F60	6	21.30	24.55	56.97	67.32	9.46	58.98	45.02	74.02	3154.6

Product Key



HV		3		D		3		10SV6GG4C60	B
Series		**# of Pumps**		**Voltage**		**Header**		**Pump**	**Brand**
HVL	eHV	2	Duplex	D	460/3/60	2	2 inch -105GPM	XXXXXXXXXX	BG
		3	Triplex	L	208-230/3/60	3	3 inch -230GPM		
		4	Quadplex			4	4 inch -400GPM		
						6	6 inch -900GPM		

Notes

Notice - Industrial Control Protocols

Certain Industrial Control Protocols do not offer security protections at protocol level and may be exposed to additional Cybersecurity risk. Customer security precautions including physical security measures are an important layer of defense in such cases. Xylem Bell & Gossett TechnoForce e-HV Variable Speed Boosters is designed with the consideration that it would be deployed and operated in a physically secure location.

- Xylem suggests that physical access to cabinets and/or enclosures containing TechnoForce e-HV Variable Speed Boosters and the associated system should be restricted, monitored and logged at all times.
- Xylem recommends that customers inventory and document all industrial equipment running on their premises including model name, software version, and how devices are connected to each other and the local network.
- Xylem recommends creating and maintaining offline copies of configuration backups to all equipment involved in controlling critical processes.
- In cases where control commands for Xylem equipment are issued from SCADA or building management systems, Xylem recommends a regular check by operators to ensure the integrity of communications between these systems and Xylem equipment.
- Physical access to the communication lines should be restricted to prevent any attempts of wiretapping, sabotage. Best practice is to use metal conduits for the communication lines running between one cabinet to another cabinet.
- People with unauthorized physical access to the device could cause serious disruption of the device functionality. A combination of physical access controls to the location should be used, such as locks, card readers, and/or guards etc.
- Xylem Bell & Gossett TechnoForce e-HV Variable Speed Boosters supports the following physical access ports
  - RJ45 connector for removable keypad as well as Modbus RTU communications
  - RJ45 for Modbus TCP communications
  - Terminal block for Modbus RTU and other Digital IOs
- Xylem suggests access to above physical ports need to be restricted

Xylem Product Cybersecurity

Xylem values your system security and the availability of your critical services. For more information on Xylem cybersecurity practices or to contact the cybersecurity team please visit xylem.com/security.

Xylem |'zīləm|

1) The tissue in plants that brings water upward from the roots;
2) a leading global water technology company.

We're a global team unified in a common purpose: creating advanced technology solutions to the world's water challenges. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. Our products and services move, treat, analyze, monitor and return water to the environment, in public utility, industrial, residential and commercial building services settings. Xylem also provides a leading portfolio of smart metering, network technologies and advanced analytics solutions for water, electric and gas utilities. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise with a strong focus on developing comprehensive, sustainable solutions.

For more information on how Xylem can help you, go to www.xylem.com

We value your feedback. Please take our 3 question survey at **bellgossett.com/survey** to let us know how we are doing.

xylem
Let's Solve Water

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