

GLOBAL PUMP SOLUTION DOOCH

60Hz



BOOSTER PUMP SYSTEM

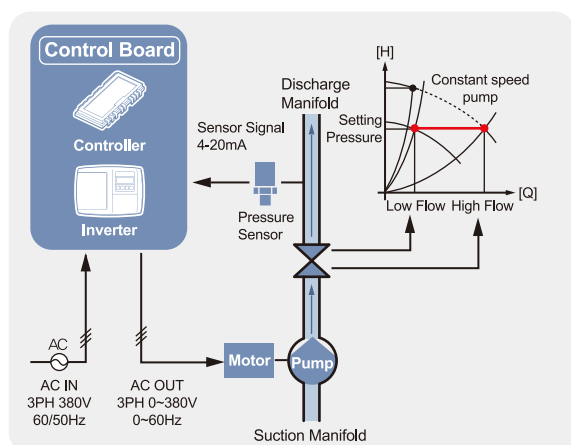
IOP, XQP, NSQP, NSQ, N747D SERIES

Booster System

DOOCH booster system supplies the constant pressurized water to the residential buildings and high rise office buildings, where it is required.

Features

High reliability
High efficiency
Fully integrated, all-in-one systems
Systems to match every need and requirement
Easy installation and operation



Applications

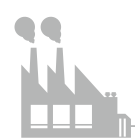
- Apartments
- Residential Buildings
- Office Buildings
- Hotels
- Industry



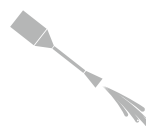
Pressurization



Boiler System



Industrial Circulation Pump Cooling System



High Pressure Washing System



Sprinkler



R/O Filtration

System Specification

Method of Control	Individual VFD	General Inverter
Models	IOP, XQP, NSQP, NSQ - Series	747D-Series
Operation Method	Controlled by a VFD installed on each and every pumps	Controlled by one inverter on one pump
Installation	Indoor	
Temperature	-10℃~+40℃	
Liquid Type	Clean Water	
Liquid Temp.	0℃~70℃	
Pump	Vertical Multi-stage Pump	
No. Of Pumps	2~6 (NSQ Exception)	
Power	3PH×380V×60Hz	3PH×220/380V×60Hz
Inlet/Outlet Manifold	Stainless Steel	

Definition of model

XQ P - 3 XR(L)10-6 - 80A

Manifold Dimensions

Pump Model

- * Pump Type - XR : Cast iron(Pump Head, Pump Casing)
- XRL : Stainless steel(Pump Head, Pump Casing)

Number of Pumps

Premium Model

"P" Indicates	Without "P" indicates
7" Touch screen LCD monitor	3.5" Color display
	

Inverter Type

MODEL	XQ-Drive	NSQ-Drive	N747D
Features	V.F.D. for pumps 	V.F.D. for pumps 	General inverter in a control panel 
Specification	Motor Power : 0.75~22kW Input : 3Φ×380~440V Output : 3Φ×380~440V Frequency : 50/60Hz	Motor Power : 0.75~22kW Input : 3Φ×380~440V (0.75~22kW) Output : 3Φ×380V Frequency : 50/60Hz	Motor Power : 0.75~110kW Input : 3Φ×220/380V Output : 3Φ×380V Frequency : 50/60Hz

Control Specifications/Features

	IOP-Series IoT Individual VFD booster pump system	XQP-Series Individual VFD booster pump system
Appearance	  조달우수제품	
Features	- Panel with 10.1" LCD Touch monitor (IP55) - All pumps controlled by individual inverters - Real-time monitoring with IoT function - Various information such as usage patterns, trends, etc. - Analyze annual flow and energy consumption - Real-time usage flow detection function - Available to check the trip details and management details - Equipped with DC reactor to suppress harmonics, EMC filter to reduce noise	- All pumps are fitted with an integrated V.F.D. which are directly mounted on the motor - Newly designed V.F.D. hardware (XQ Drive) - Pumps ranges from 0.75kW~22kW 2~6 Electronically speed controlled pumps - Equipped with a 7.0" Touch Monitor Low energy consumption (Above 30kW, 747D-Series is required)
Inverters	V.F.D. for pumps(XQ-Drive)  고효율기자재 	V.F.D. for pumps(XQ-Drive)  고효율기자재 
Type of Manifolds	 Standard Manifold	 Standard Manifold
Panel	  10.1" Integrated Monitoring Panel with Touch Screen LCD	  7" LCD Touch Screen Monitor

Control Specifications/Features

	747D-Series Inverter with panel booster pump system	NSQ-P-Series Individual VFD booster pump system	NSQ-Series Individual VFD booster pump system
Appearance			
Features	- Control panel is integrated with a general inverter which controls the pumps within the system. - Pumps range from 0.75kW~110kW 2~6 Electronically speed controlled pumps - Constant discharge pressure - Low energy consumption - Equipped with Dooch's own N747D controller	- All pumps are fitted with an integrated V.F.D. which are directly mounted on the motor - Newly designed V.F.D. hardware (NSQ Drive) - Pumps range from 0.75kW~22kW 2~6 Electronically speed controlled pumps - Equipped with a 7.0" Touch Monitor - Low energy consumption	3.5" Color display(The latest GUI is applied) - All pumps are fitted with an integrated V.F.D. which are directly mounted on the motor - Newly designed V.F.D. hardware (NSQ Drive) - Pumps range from 0.75kW~22kW 2~3 Electronically speed controlled pumps - Low energy consumption
Inverters	General Inverter 	V.F.D. for pumps(NSQ-Drive) 	V.F.D. for pumps(NSQ-Drive) 
Type of Manifolds	 Standard Manifold	 Standard Manifold	 Standard Manifold
Panel	 General Inverter within the Panel	 7" LCD Touch Screen Monitor	 Side Panel with individual circuit breakers (The latest GUI is applied)

Control Specifications/Features

	XQ-XR(L) Series Built-in VFD vertical multi-stage centrifugal pump	NSQ-XR(L) Series Built-in VFD vertical multi-stage centrifugal pump
Appearance		
Features	• Integrated V.F.D. which are directly mounted on the motor • Newly designed V.F.D. hardware (XQ Drive) • Low energy consumption • Compact design, no need for additional control panels	• Integrated V.F.D. which are directly mounted on the motor • Newly designed V.F.D. hardware (NSQ Drive) • Low energy consumption • Compact design, no need for additional control panels
Inverters	 Premium V.F.D. for pumps (XQ-Drive)	 V.F.D. for pumps (NSQ-Drive)
Manifolds	 Exclusive piping for V.F.D. pumps	 Exclusive piping for V.F.D. pumps

History Of Dooch's Booster Systems

Generation: 1



Pressure Control Booster System

- Pressure ON/OFF switch
- Pressure Diviation
- Pressure Differences : $\pm 1.2 \text{ kgf/cm}^2$

1985~

Generation: 2



General Inverter Booster System

- Single pump RPM controlled
- General Inverter
- Centralized Control
- Stable Pressure
- Pressure Differences : $\pm 0.7 \text{ kgf/cm}^2$

1995~

Generation: 2.5



V.F.D. Booster System (Partial)

- Specific pumps RPM controlled via V.F.D.
- Stable Pressure
- Pressure Differences : $\pm 0.5 \text{ kgf/cm}^2$
- Half pump system
- Max. power saving

2005~

Generation: 3



Individual V.F.D. Booster System

- All pumps equipped with V.F.D.
- Stable Pressure
- Color 7" LCD Touch Monitor
- High Reliability
- Pressure Differences : $\pm 0.3 \text{ kgf/cm}^2$

2005~

Generation: 3.5



Individual V.F.D. Booster System

- All pumps RPM controlled
- All pumps equipped with V.F.D.
- EMC Filter/DC reactor internally installed
- Color 7" LCD Touch Monitor
- Stable Pressure, power saving
- Pressure Differences : $\pm 0.3 \text{ kgf/cm}^2$

2015~

Generation: 4



IoT Individual V.F.D. Booster System

- Real-time monitoring as IoT function
- All pumps RPM controlled
- All pumps equipped with V.F.D.
- EMC Filter/DC reactor internally installed
- Color 10.1" LCD Touch Monitor
- Stable Pressure, power saving
- Pressure Differences : $\pm 0.3 \text{ kgf/cm}^2$

2021~

Premium XQ-Drive

XQ DRIVES is pump-specific variable frequency drives that manages pump performance to match a wide range of system conditions and requirements. Adjusting the pump speed is the most efficient means of controlling pump flow and reducing energy consumption.

As the drives have a self-cooling and motor-independent structure, they can be mounted directly on the motor or on the wall.

XQ DRIVES are equipped with the latest GUI 3.5" color LCD display.

A noise-filtering EMC filter and a DC reactor are also installed within the XQ Drives.



Technical Specification

Available Power	0.75~22kW
Input Power	3Φ×380V~440V
Output Power	3Φ×380V~440V
Frequency	50/60Hz
Max. Frequency	60Hz
IP Class	IP 55
Max. Distance Of Pressure Transmitter	Max. 10m
Ambient Temp.	-10℃~+40℃

Protections

- Dry Running
- Low Water Level Detection
- Over/Under Voltage Inverter
- Min. Flow Stop
- Temp. Pressure Setting
- Sensor Failure
- Pump Freezing
- Pump Overload

XQ-Drive Features

- 1 3.5" LCD Display (Graphical User Interface)
- 2 Energy Savings up to 70%
- 3 Multi-pump control capacity of up to 6 pumps
- 4 Hydraulic control functions included
- 5 Electrical and hydraulic pump protections
- 6 Automatic recovery after power failure
- 7 Easy retrofitting on existing pump system
- 8 Flexible installation either directly on a standard I.E.C. motors or on walls
- 9 EMC filter and DC reactor built-in
 - Reduce noise and harmonic distortion

NSQ-Drive

NSQ-DRIVES are pump specific variable frequency drive that manages pump performance to match a wide range of system conditions and requirements. Adjusting the pump speed is the most efficient means of controlling pump flow and reducing the energy consumption.

As the drives are self-cooling and motor-independent structure, it can be mounted directly on the motor or on the wall.



Technical Specification

Available Power	0.75~22kW
Input Power	3Φ×380~440V (0.75~22kW)
Output Power	3Φ×380~440V (0.75~22kW)
Frequency	50/60Hz
Max. Frequency	60Hz
IP Class	IP 55
Max. Distance Of Pressure Transmitter	Max. 10m
Ambient Temp.	-10℃~+40℃

Protections

- Dry Running
- Low Water Level Detection
- Over/Under Voltage Inverter
- Min. Flow Stop
- Temp. Pressure Setting
- Sensor Failure
- Pump Freezing
- Pump Overload

NSQ-Drive Features

- 1 Energy Savings up to 70%
- 2 Multi-pump control capacity of up to 6 pumps
- 3 Hydraulic control functions included
- 4 Electrical and hydraulic pump protections
- 5 Automatic recovery after power failure
- 6 Easy retrofitting on existing pump system
- 7 Flexible installation either directly on a standard I.E.C. motors or on walls

One Pump Controller OPC-1000/OPC-1001

One pump controller OPC-1000 and OPC-1001 are applicable for any general inverter, and this product enables the latest pump control function of pump inverter.

Since this product is applicable for any general inverter, it can be utilized without limitation of pump power.

Also, this product is easy to set up the pressure and provides various pump protection functions.



Specification

Input Power	1Φ×200~240V / 50~60Hz
Communication Port	RS485 communication MOD BUS-RTU CAN communication (Internal communication)
Display	3.5" TFT TRUE COLOR LCD(320×240) : OPC-1001 3×LED : OPC-1000
Multi-function Input/Output	RUN/STOP, RESET, EMSTOP, Pressure sensor input(2ea), Low water level sensor, Multi-function digital input(3ea), Multi-function analogue input (1ea), RUN/STOP, FAULT relay output, Multi-function analogue output(1ea)
Control Signal	RUN/STOP, RESET, EMSTOP, Analogue signal input, Frequency command analogue output RUN/STOP, FAULT relay signal

Properties

- Control for Static pressure and Differential pressure
- 2 pressure sensor wiring available
- Pump control with General inverter available
(No limitation for inverter capacity)
- Interactive control available up to 6 pumps
(Maximization of system stability)
- Pump protection function available
(High pressure, Low pressure, and Pressure sensor error)
- Control parameter set-up via Keypad
(For the case of OPC-1000, optional item)
- Log indication for Pump/Inverter operation
(Key pad type only)

Color Monitor TM3.5

TM 3.5 monitor receives the data from pumps with inverters, and provides the integrated information for user's easy understanding.

Also, it is easy to set the system pressure, and user can understand the various pump information such as pump operation log or alarm log, with user-friendly UX and GUI.



Specification

Input Power	1Φ×200~440V / 50~60Hz
Communication Port	RS485 communication MOD BUS-RTU
Display	3.5" TFT TRUE COLOR LCD(320×240)
Multi-function Input/Output	SYSTEM RUN output relay contact SYSTEM FAULT output relay contact
Storage Medium	SD card available (Logging data storage)
Update Port	USB ×1EA

Properties

- Full color display
- Easy to set the pressure
- Icons includes; History of Run/Alarm and various information
- Languages includes; Korean/Chinese/English
- RS-485: Integrated communication with each drive information
- USB PORT: Firmware upgrade port
- Available up to 3 pumps
- Logging data records
(Setting pressure, Current setting, Operation data of each pump)

Pump-specific Internet modem DL-1000

Input power specification

Rated voltage	AC220V
Rated frequency	60Hz

Product specification

Product size	140 x 140 x 44mm
Product weight	1.1Kg

Communication method(Booster pump communication)

Communication method	RS-485 / Ethernet communication
Communication protocol	Mod-bus(RTU mode)
Server communication	TCP / IP



The name & port of the parts

No.	Description	Remark
①	Power input	AC220V
②	USB port	
③	Service port for update	
④	RS-485 Communication port	Booster pump connection
⑤	LAN(TCP/IP)	Internet connection



Composition

- Connect booster pump system and cloud server
- Transfer data collected from booster pump to data cloud server
- Transfer command from monitoring system to booster pump





Features

- Full Color Display
- Touch Screen Interface
- User-Friendly/Easy to function
- Icons includes; History of Run/Alarm and other various information
- Languages include; Korean/Chinese/English
- RS 485: Integrated communication
- USB PORT: Firmware upgrade port

Specification

- 7" TFT LCD
- Touch Screen Monitor
- RS-485 PORT : 2 ports
- CAN COM. PORT : 1
- Run/Alarm contact
- Power: 220~440V
- Temp. & Humidity : -10~40℃ / 90% Under
- USB PORT

Model Application

Models	Available	Unavailable
NSQ-Series		●
NSQP-Series	●	
XQP-Series	●	

※ P: Indicates a TM 7.0" Touch Monitor is included with the system

GUI(Graphic User Interface) Introduction



1. Current Date and Time
2. Setting Pressure Value
3. Current Pressure Value
4. Current Output Ratio
5. Icon/Current condition of each pumps (Up to 6 pumps)

	Ratio Current operating ratio		Current Current Value
	Power Current power consumption		Frequency Current operating frequency
	Accumulated Power Current Power accumulation		Output Power Current Output Power

6. Status
7. Run History
8. Set-Up

Features

- Full-color display
- User-friendly touch screen interface
- Easy to set pressure
- Icons include; History of run/alarm and other various information
- Languages include; Korean/English/Chinese
- Integral monitoring system; gather information of each drive via CAN communication
- Comfortable UX Interface/GUI; high-quality user recognition rate & operability
- Easy firmware upgrade with usb port



Configuration of LCD Monitor



Category	Screen layout
1	Pump status
2	Trend
3	Current date/time
4	Current pressure value
5	Run/Stop
6	Settings
7	Current operation ratio/ Total flow rate
8	Run history
9	Indicator
10	Current pressure

Functions

- Lcd touch screen – Large LCD screen; indicate various information graphically
- Language selection – Korean(Standard)/English/Chinese
- Digital I/O function – Run system by external digital input/control function; stop, alarm etc.
- Analog I/O function – Convert 4~20mA of external signal internally or internal signal externally
- Schedule run – Operatable in different pressure values by time/date/month
- Record & save run history – Record and save various run histories in SD card on a real-time basis
- Indicate & save alarm content – Indicate and save various alarm/breakdown content
- Remote monitoring system – Monitor running status & alarm remotely with integrated contact
- CAN communication – Connected with booster pump system
- RS-485 communication – Connected with external devices

NSQP Series System

7" LCD Touch Monitor

NSQ-Drive

High Efficiency Motor

High Efficiency pump

Isolating Valve

Non-return Valve

Low-Water Level Detector

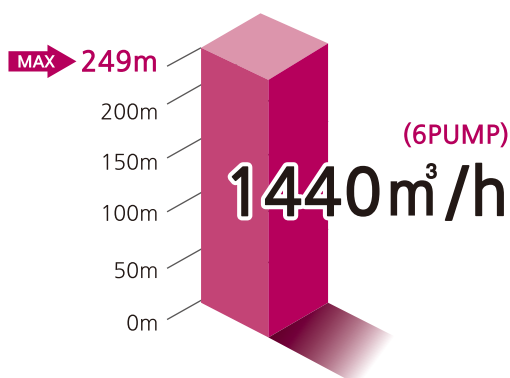
Manifold
(Material : STS 304)

Base
(Material : SS 400)



Specification

- Max. Flow(Q) : 1,440m³/h
- Max. Head (H) : 249m
- Pump Connection : Up to 6 Pumps
- Motor Power: 0.75~22kW (1~30HP)
- Power specification : 3Φ×380V~440V / 60Hz



Functions

- Pressure settings
- Alternative operation
- Pump Freeze Protection
- Automatic detection of low flow on discharge
- Automatic recovery after power outage
- NSQ drive will protect the pump
- Operation display and storage
- Equipped with an RS485 - option

Main Components



7" LCD Touch Screen Monitor
embedded into the Panel

Option

External internet modem, PC S/W,
STS Panel box, Outdoor double box



V.F.D.
NSQ-Drive



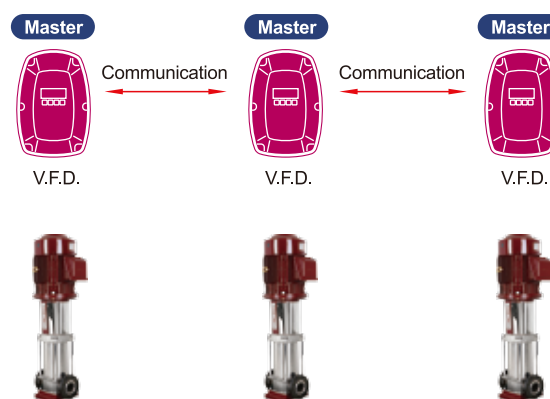
High Efficiency Pump
XR(L) Series



Standard Manifold

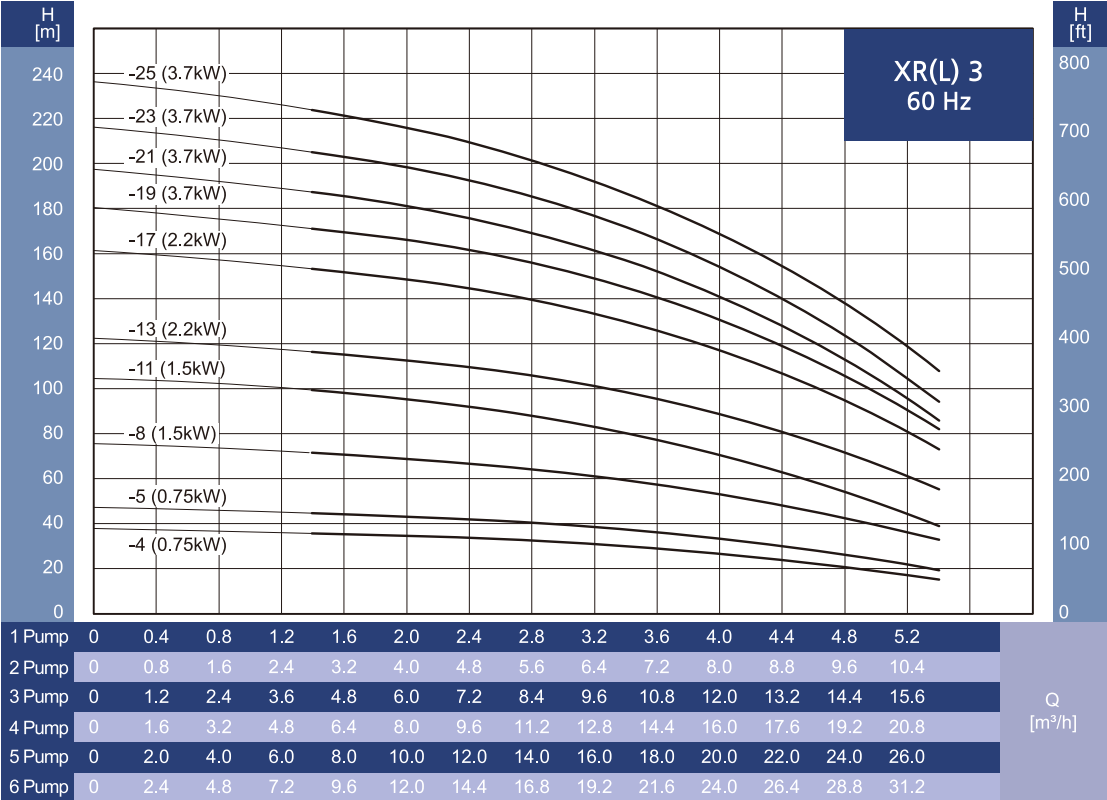
Features

- 7" color LCD touch monitor
- Each pump are individually controlled by a NSQ drive
- High reliability (Multi-master control)
- Constant discharge pressure
- Reduced tank and panel sizes
- Less wear of the system during operation
- Compact assembly and installation
- High reliability with an installation of two pressure transmitter
- Lowest possible energy consumption
- Up to 22kW and connection of up to 6 pumps

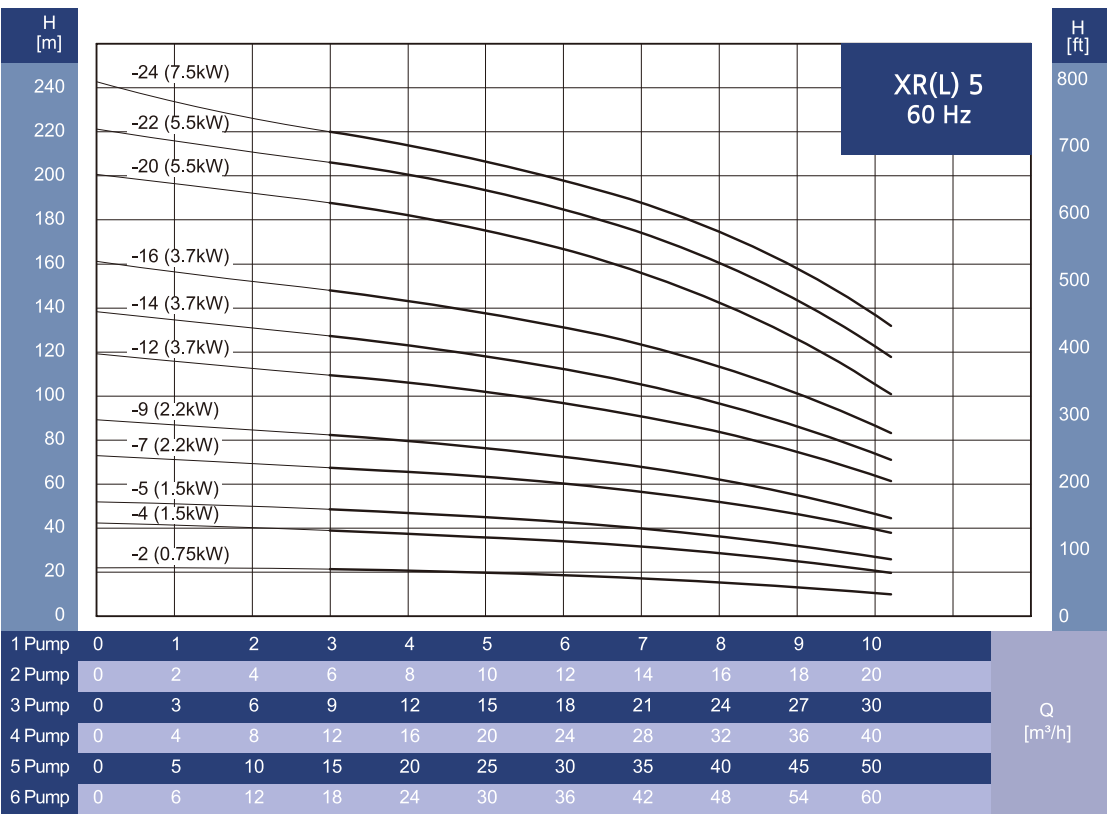


- Alternative Operation
 - Alternative operation is based on each pump's operational rate.
 - This ensures that the operational rate of each pump will be the same and extends the life-line of each pump as the wear is evenly distributed amongst the pumps.

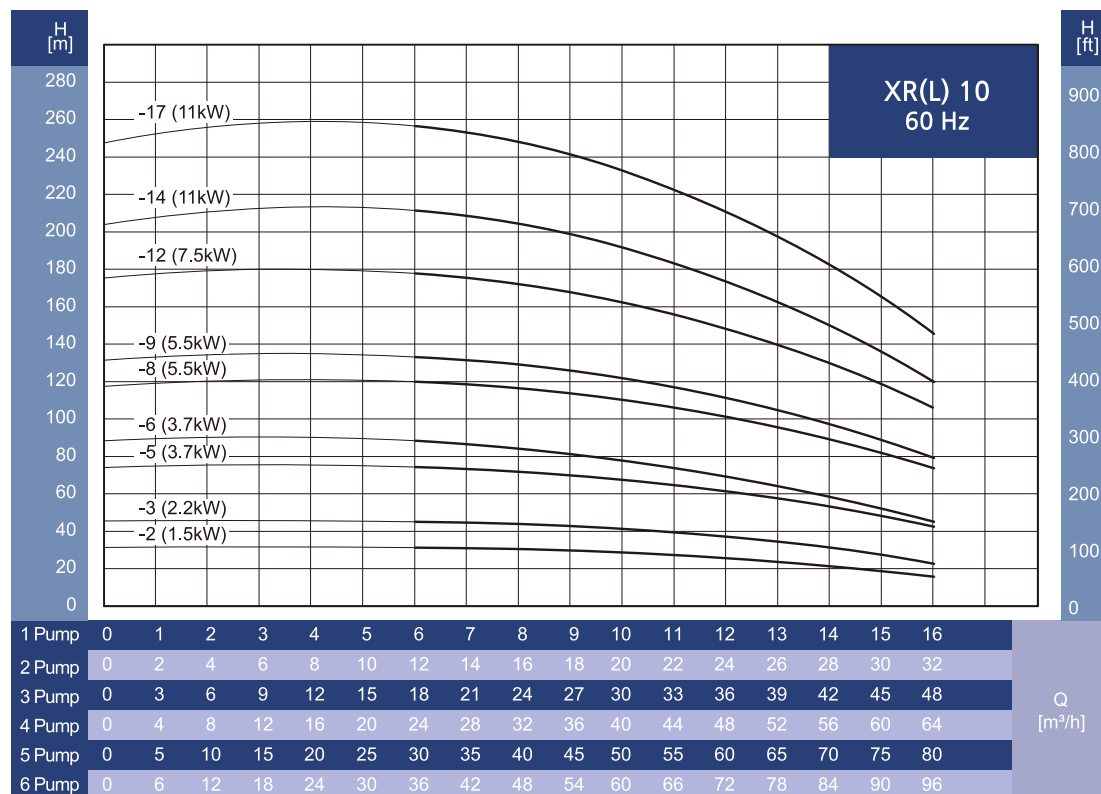
XR(L) 3 Series



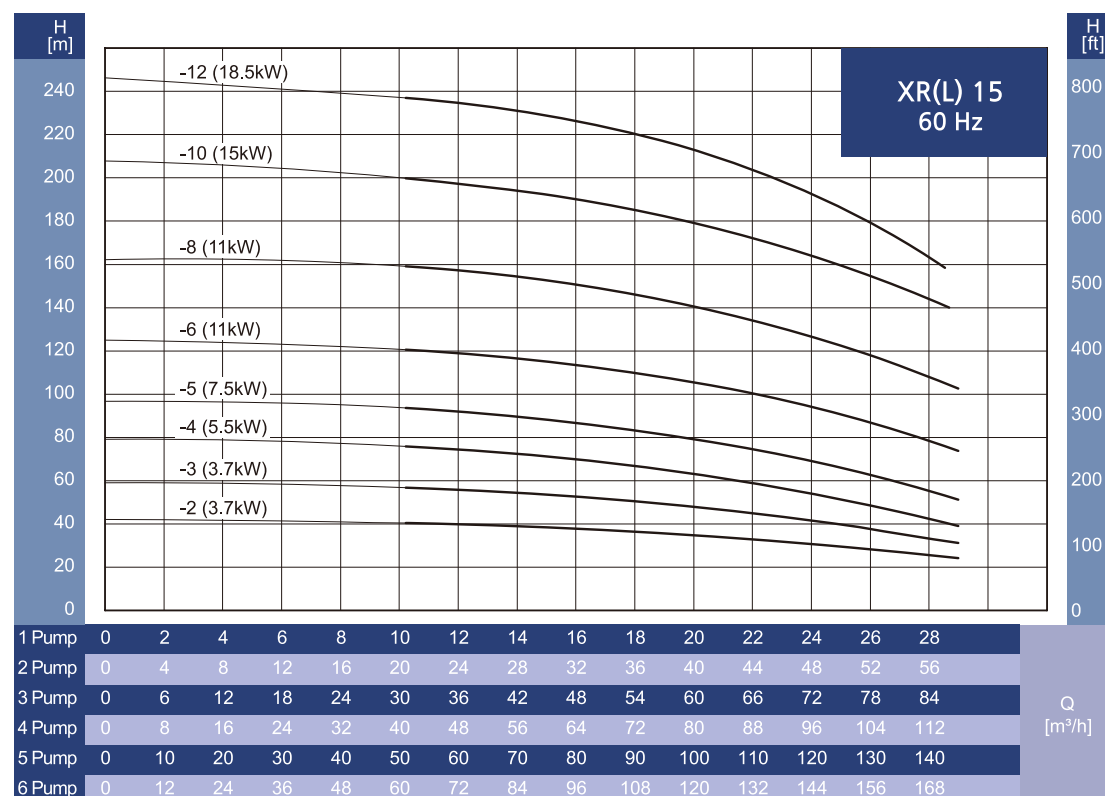
XR(L) 5 Series



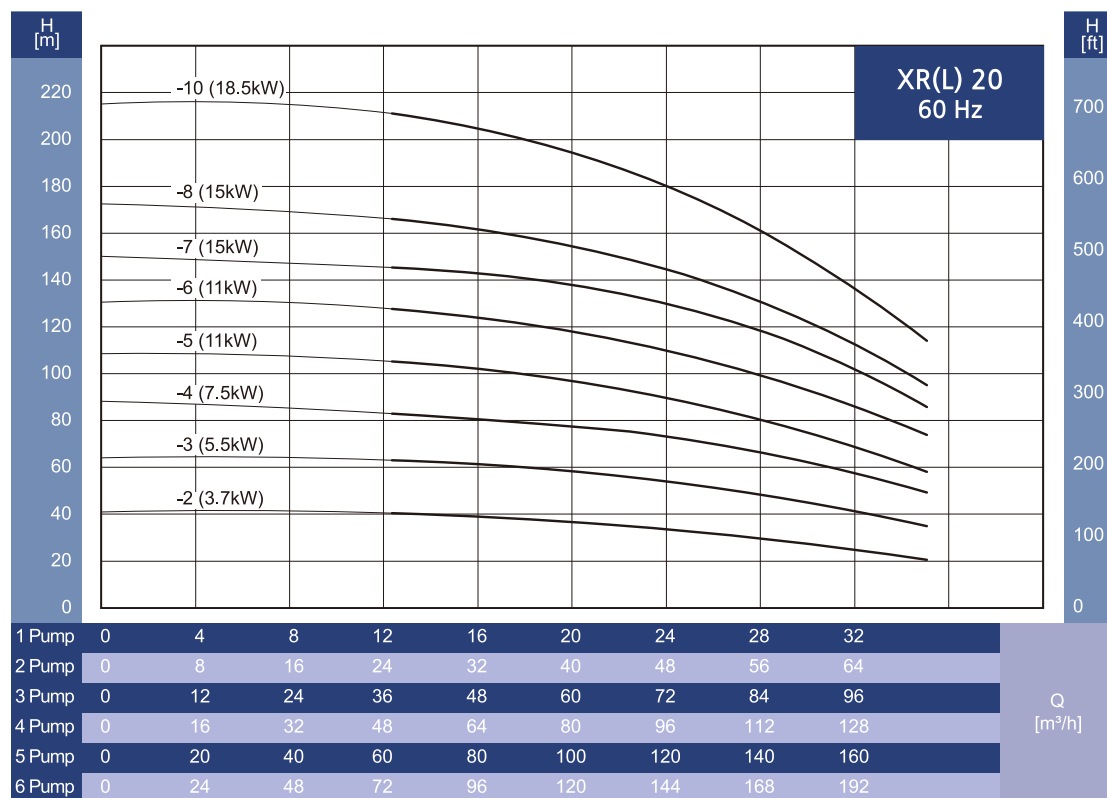
XR(L) 10 Series



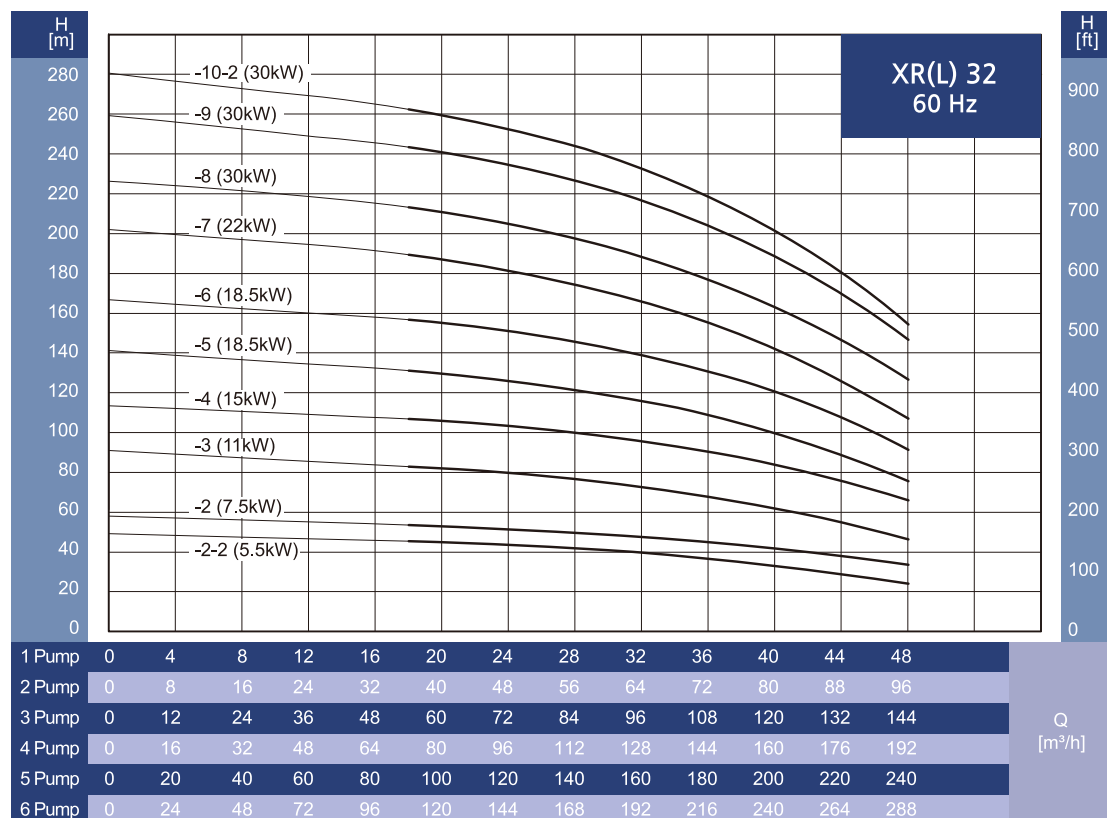
XR(L) 15 Series



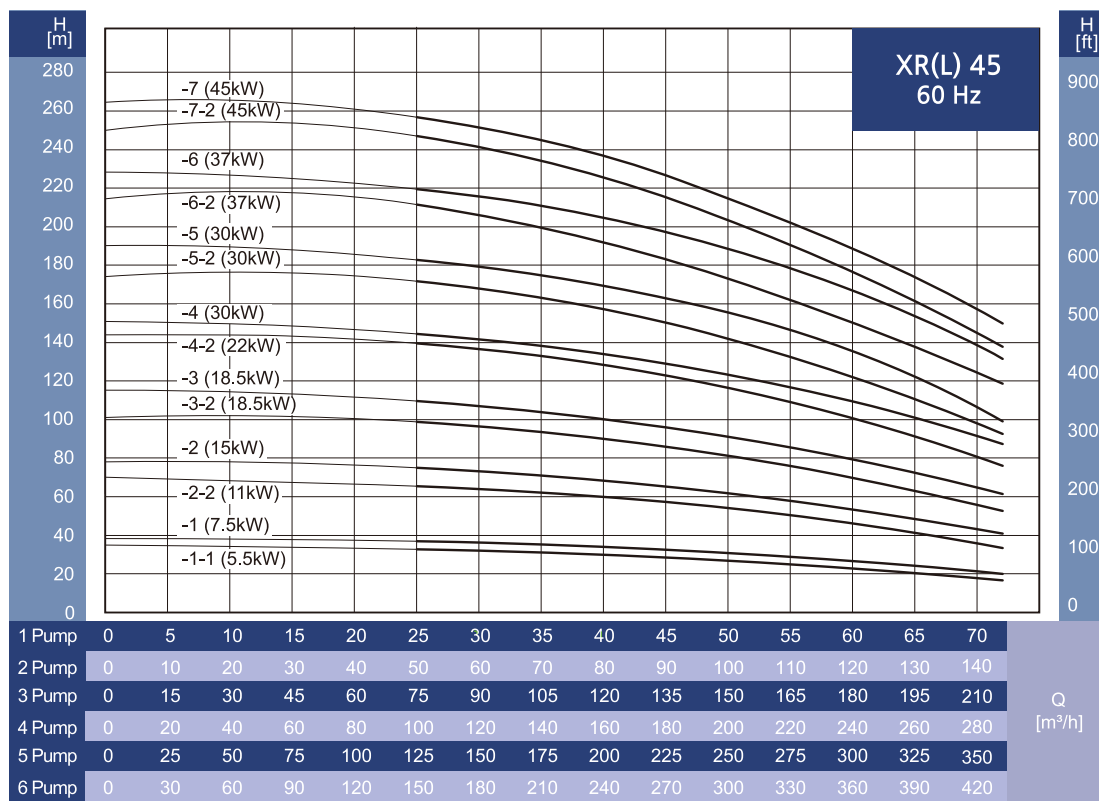
XR(L) 20 Series



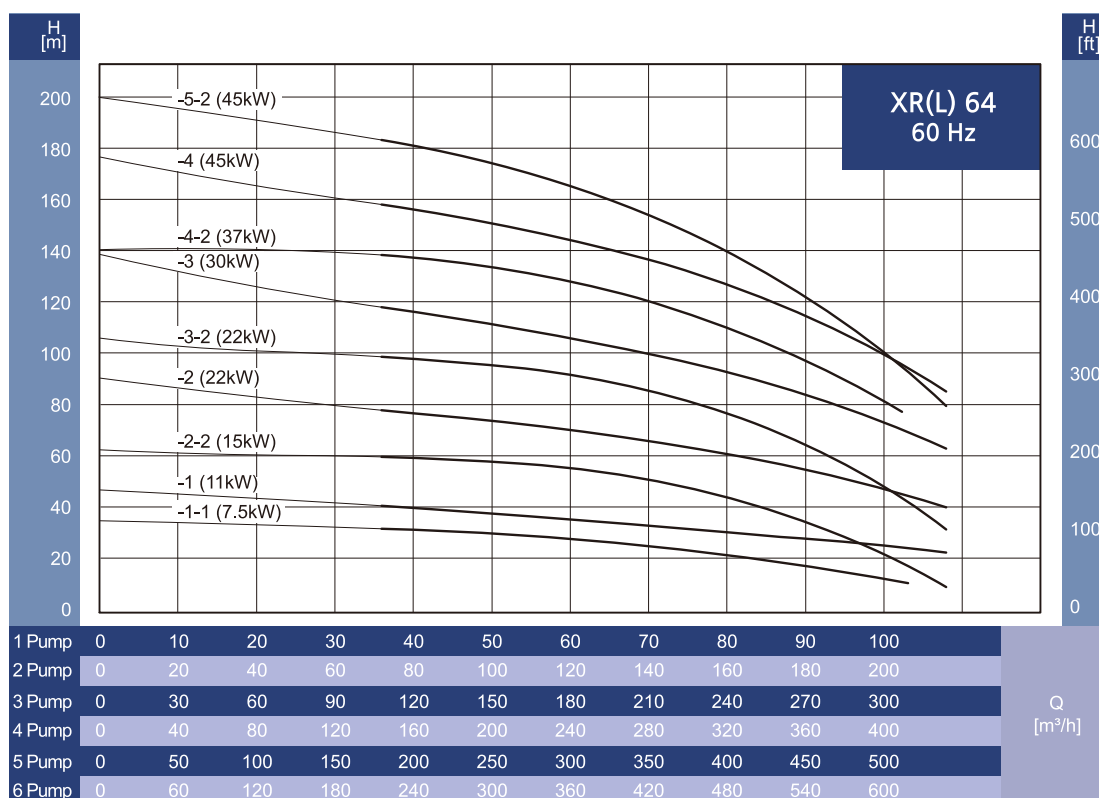
XR(L) 32 Series



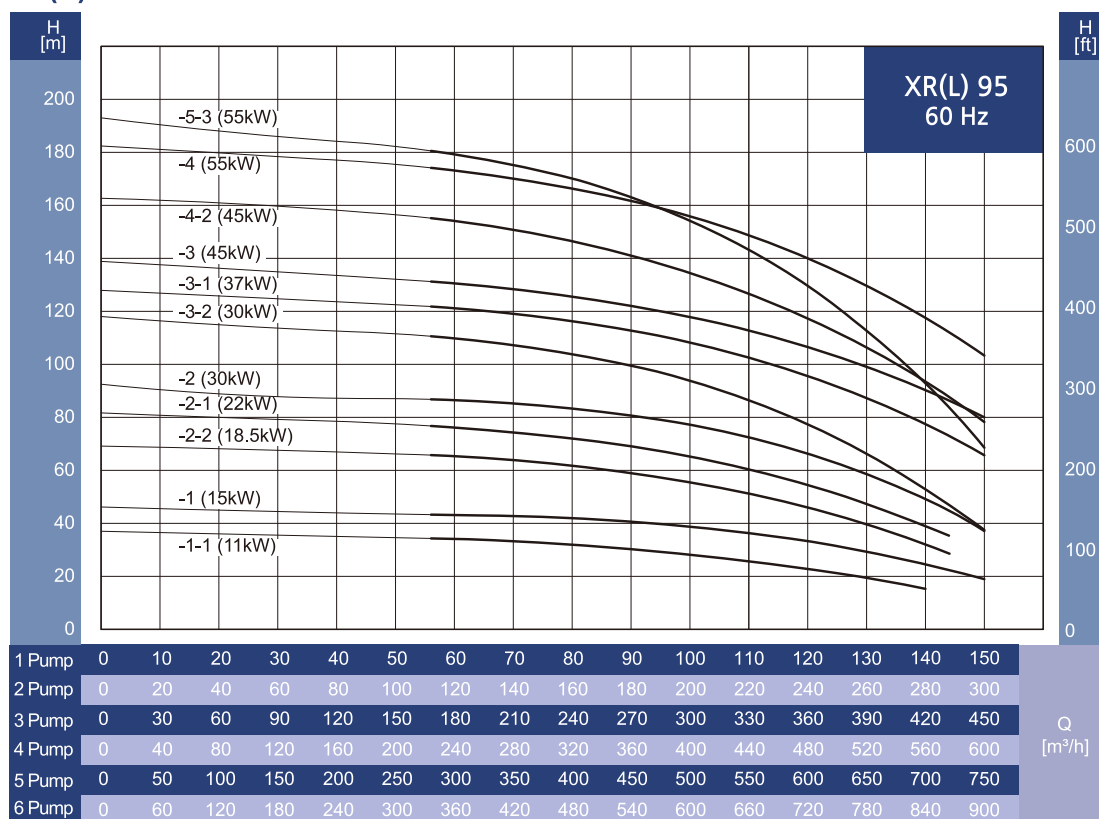
XR(L) 45 Series



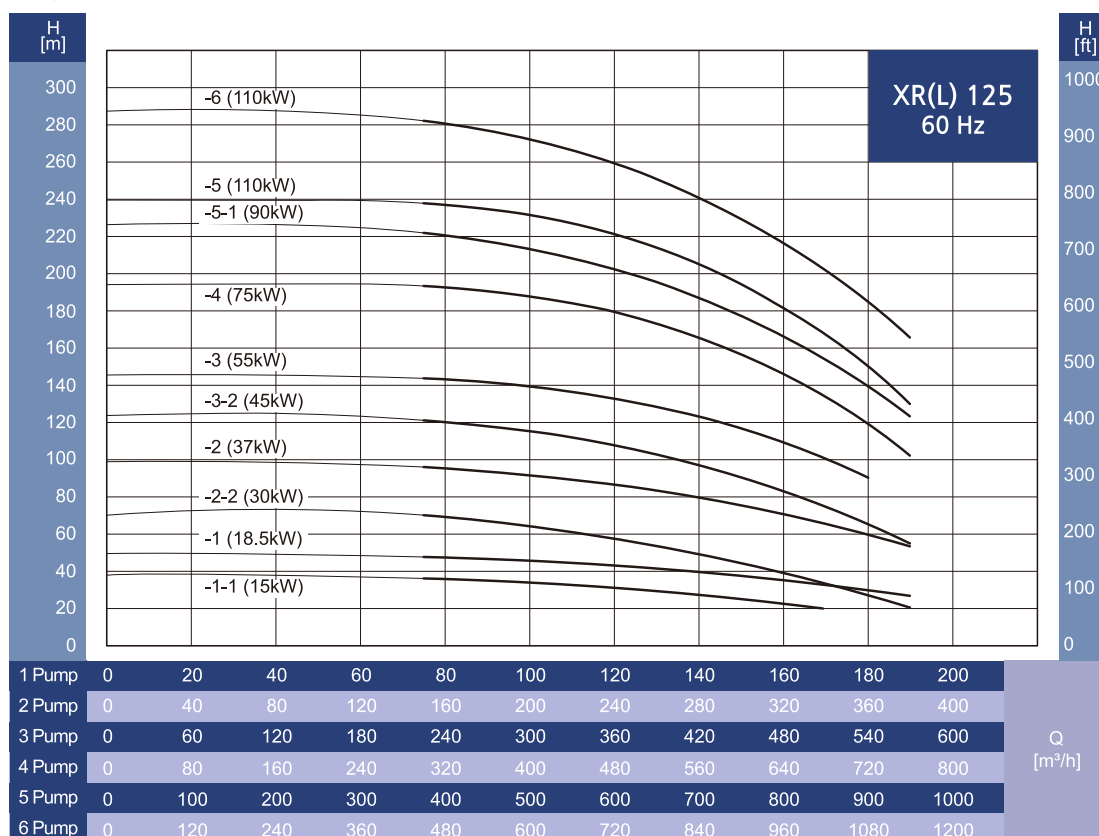
XR(L) 64 Series



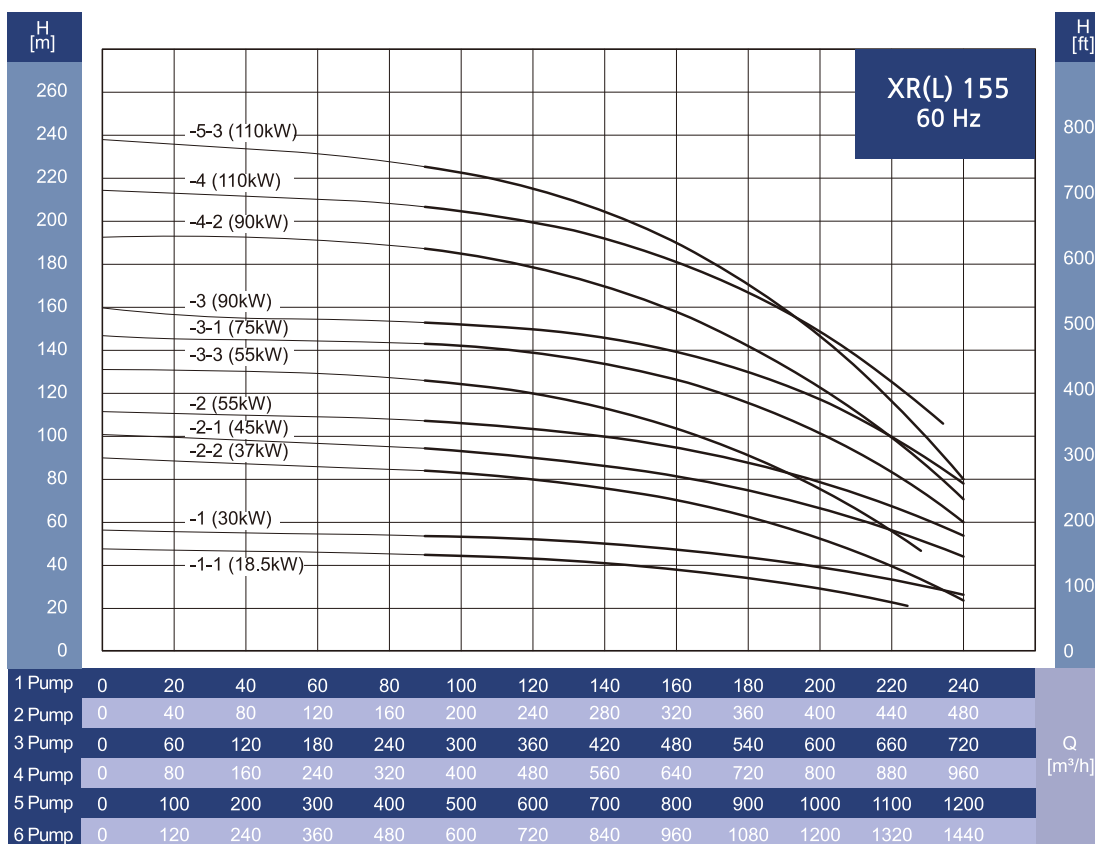
XR(L) 95 Series



XR(L) 125 Series



XR(L) 155 Series



XR(L) 185 Series

