

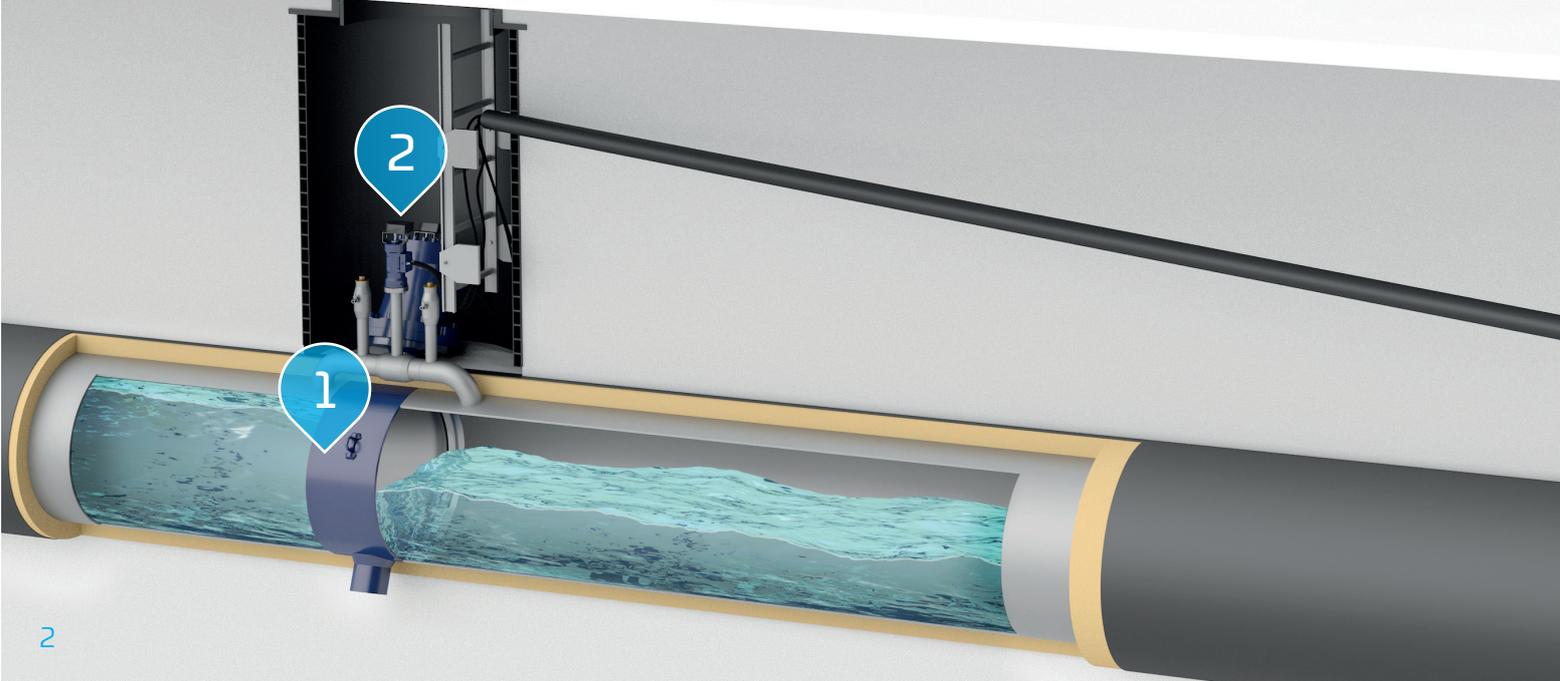
# HYDROX

## Hydraulic Control Solutions



Vexve's Hydrox™ hydraulic control solutions are suitable for even the most challenging installation sites and conditions. Specifically designed for district heating and district cooling applications.

Reliable - cost-effective - easy to use - safe





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## Valves



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## Hydraulic actuators



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## Control cabinets



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## Plastic chamber

The best overall solution is covered by our product range.

Seamless/complete operation with Vexve's range of valves.

# Hydrox™

Vexve's Hydrox hydraulic actuator is suitable for even the most challenging installation sites and conditions. Specifically designed for district heating and district cooling applications and to operate seamlessly with Vexve's comprehensive range of ball and butterfly valves, the Hydrox hydraulic actuator is the perfect solution for underground installation providing easy and reliable operation with maximum safety at all times.

## Materials

Body:	Hydrox 2: EN S355 Hydrox 4 - 64: EN-GJS-400-15
Flange:	EN S355
Indicator shaft:	AISI 316L
Output shaft:	42CrMo4
Seals:	NBR
Recommended hydraulic fluid:	· Neste Hydraulii 46 SUPER · Neste Biohydraulii SE 46 or equal

## Properties

Torques:	From 2000 Nm up to 64 000 Nm
Recommended pressure range:	30-200 bar
Ambient temperature range:	-25 °C to +80 °C
Rotating angle:	91°
IP Protection class:	IP68
Corrosion resistance class:	C4

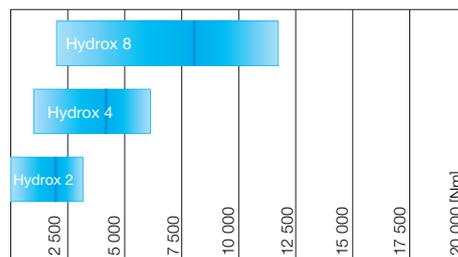
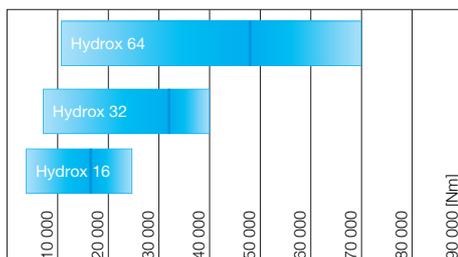
### Optional equipment:

- Position transmitter/indicator (low voltage)
- Connection block



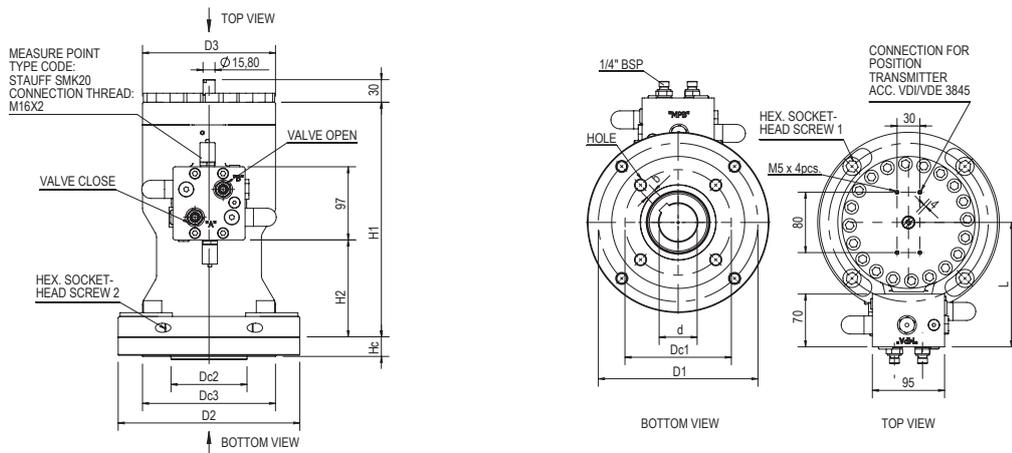
\*Hydraulic control block ensures containment of hydraulic pressure inside the actuator in case of damage to hydraulic lines and can be used to adjust hydraulic pressure input of individual actuators.

## Recommended torque range



Torque [Nm]

Actuator selection criteria:  
nominal torque as close as possible to valve torque



Model	D1	D2	D3	H1	H2	L	Oil displacement [l]	Hex socket-head screw 1	Hex socket-head screw 2	Dry weight [kg]
Hydrox 2	180	209	150	270	140	141	0.35	4 x M16	2 x M12	43
Hydrox 4	210	239	175	311	129	165	0.8	4 x M16	2 x M12	65
Hydrox 8	298	350	220	312	116	184	145	6 x M20	2 x M12	115
Hydrox 16	375	415	300	406	179	224	3.1	7 x M20	2 x M12	240
Hydrox 32	450	510	355	462	220	251	4.9	7 x M30	2 x M16	395
Hydrox 64	515	580	420	520	242	284	8.75	6 x M36	2 x M16	590

Model	Product no.	Compatible valves				d	b	ISO 5211	Hole	Dc1	Dc2	Dc3	Hc	Max stem height
		Butterfly valves	Ball valves Reduced Bore	Ball valves Full Bore										
Hydrox 2	80100210020		DN 125, DN 150	DN 100, DN 125	A20	-	F10	4 x M10	102	70	125	25	80	
	80100212035		DN 200	DN 150	35	10	F12	4 x M12	125	85	150	25	80	
	80100214035	DN 300, DN 350			35	10	F14	4 x M16	140	100	175	25	80	
	80100214040		DN 250	DN 200	40	12	F14	4 x M16	140	100	175	25	80	
Hydrox 4	80100414040	DN 400			40	12	F14	4 x M16	140	100	175	26	93	
	80100416050		DN 300, DN 350	DN 250, DN 300	50	14	F16	4 x M20	165	130	210	32	93	
Hydrox 8	80100816050	DN 450, DN 500			50	14	F16	4 x M20	165	130	210	32	110	
	80100825060	DN 600			60	18	F25	8 x M16	254	200	300	32	110	
	80100825070		DN 400	DN 350	70	20	F25	8 x M16	254	200	300	32	110	
	80100830090		DN 500, DN 600	DN 400, DN 500	90	25	F30	8 x M20	298	230	350	32	90	
Hydrox 16	80101625070	DN 700			70	20	F25	8 x M16	254	200	300	35	137	
	80101630090	DN 750, DN 800			90	25	F30	8 x M20	298	230	415	35	137	
	80101635100		DN 700	DN 600	100	28	F35	8 x M30	356	260	415	45	137	
Hydrox 32	80103235100	DN 900			100	28	F35	8 x M30	356	260	415	47	167	
	80103235120	DN 1000	DN 800	DN 700	120	32	F35	8 x M30	356	260	415	47	167	
Hydrox 64	80106435120	DN 1200			120	32	F35	8 x M30	356	260	415	55	211	
	80106440140	DN 1400		DN 800	140	36	F40	8 x M36	406	300	475	55	211	

# Hydrox™ by-pass

Hydrox by-pass is the smallest of the Hydrox actuator family. It is intended primarily for use on the bypass valve in demanding sites where mainline valves are equipped with larger Hydrox actuators. Hydrox by-pass provides the same capabilities as the larger Hydrox actuators and is designed to be used in the most challenging applications and environments. Hydrox by-pass is intended specifically for district heating and cooling applications and operates seamlessly with Vexve DN 40–100 ball valves.

## Materials

Body:	EN-GJS-400-15
Flange:	EN S355
Indicator shaft:	AISI 316L
Output shaft:	42CrMo4
Seals:	NBR
Recommended hydraulic fluid:	<ul style="list-style-type: none"> <li>· Neste Hydraulii 46 SUPER</li> <li>· Neste Biohydraulii SE 46 or equal</li> </ul>

## Properties

Torques:	Up to 350 Nm
Recommended pressure range:	30–200 bar
Ambient temperature range:	-25 °C to +80 °C
Rotating angle:	91°
IP Protection class:	IP68
Corrosion resistance class:	C3-L

### Optional equipment:

- Position transmitter/indicator (low voltage)
- Control block



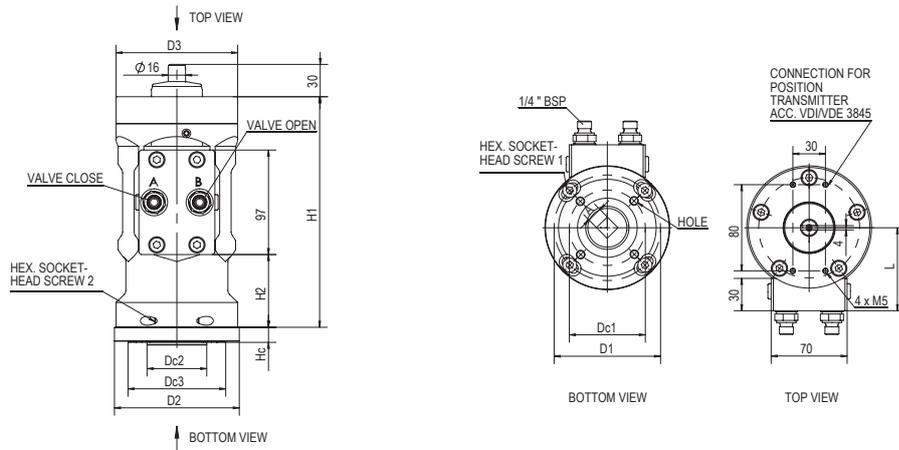
\*Hydraulic control block ensures containment of hydraulic pressure inside the actuator in case of damage to hydraulic lines and can be used to adjust hydraulic pressure input of individual actuators.

## Recommended torque range



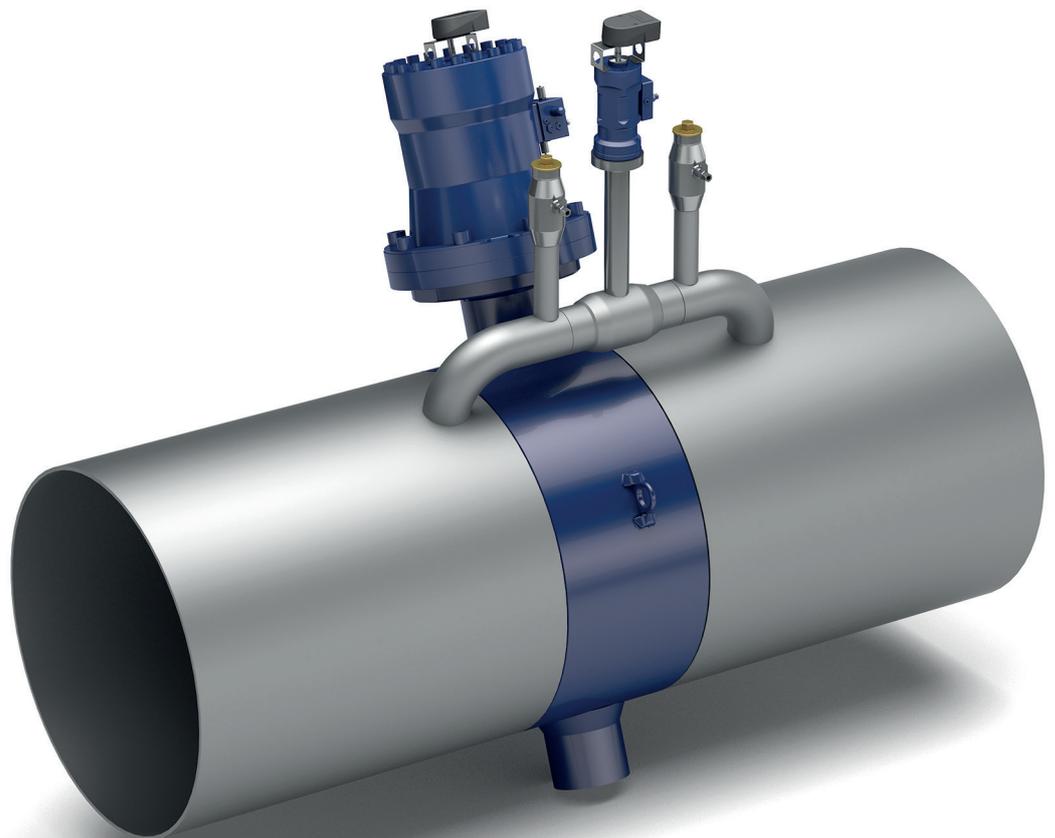
Torque [Nm]

Actuator selection criteria: nominal torque as close as possible to valve torque



Model	D1	D2	D3	H1	H2	L	Oil displacement [l]	Hex socket-head screw 1	Hex socket-head screw 2	Dry weight [kg]
Hydrox 035BP	98	115	112	214	68	73	0,097	4 x M8	2 x M8	14

Model	Product no.	Compatible valves		A - square	ISO 5211	Hole	Dc1	Dc2	Dc3	Hc	Stem height
		Ball valves Reduced Bore	Ball valves Full Bore								
Hydrox 035BP	80203507011	DN 40, DN 50	DN 32, DN 40	11	F07	4 x M8	70	55	90	14	12,5
	80203507014	DN 65, DN 80	DN 50, DN 65	14	F07	4 x M8	70	55	90	14	12,5
	80203507016	DN 100	DN 80	16	F07	4 x M8	70	55	90	14	12,5



Hydrox™ product family provides a wide range of control units to meet the requirements of the customers and operating environments.



# HCU Basic

HCU Basic is the most simplified version of the Hydrox product family's control units. It is the right choice when a flexible control option is needed.

## Technical characteristics:

### Control unit

Control unit for controlling two or four valves equipped with hydraulic actuators.

- Dimensions for four valve control unit  
682 x 895 x 312 mm (W x H x D)
- Dimensions for two valve control unit  
350 x 1200 x 220 mm (W x H x D)  
Note! Including plinth
- Protection class: IP34
- Fluid temperature: -20 – +80 °C
- Ambient temperature: -20 – +50 °C

### Control valve block

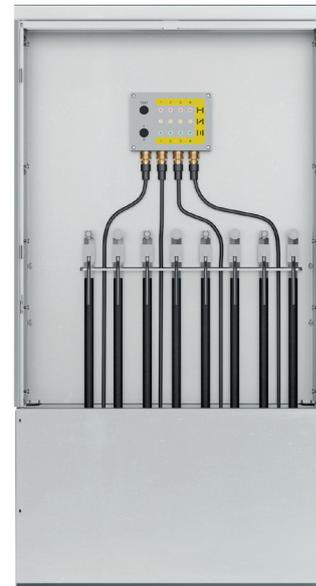
- Control valves: 4/8 pcs. (2/4 valves)
- Max. pressure: 350 bar
- Positions of lever: 2 (valve open – valve shut)
- It is possible to control only one valve at a time with one electro-hydraulic pump unit

### Indicator lamp panel

- Indicates open, middle and shut positions of valves
- Low voltage powered with battery
- Connected to position transmitter on the actuator

### Connection for portable pump unit

- Quick couplings with flat face casing
- Pump unit includes transportation box, hydraulic hoses and electric cable



Model	Product no.
HCU Basic	814-000

# HCU Manual

The HCU Manual is the basic version of a full range of control possibilities for Vexve hydraulic actuators. It is the right choice where simplicity is key and secure operation is needed at all times.

## Technical characteristics

### Control cabinet for 4 valves

- Dimensions: 800 x 600 x 300 mm (W x H x D)
- Protection class: IP65

### Hand pump

Double acting hand pump with pilot check valves

- Fluid viscosity: 10-500 mm<sup>2</sup>/s
- Filtration: ISO code 16/13; SAE class 4 or better
- Fluid temperature: -20°C +80°C
- Ambient temperature: -20°C +50°C
- Max. pressure: 380 bar
- Pressure limiter: 200 bar (adjustable)

### Oil tank

- Reservoir capacity: 5 lt.

### Control valve block

- Control valves: 4-6 pcs.
- Max. pressure: 350 bar
- Positions of lever: 3 (Valve open – Neutral – Valve shut)

One valve is possible to maneuver at a time.

### Pressure gauge

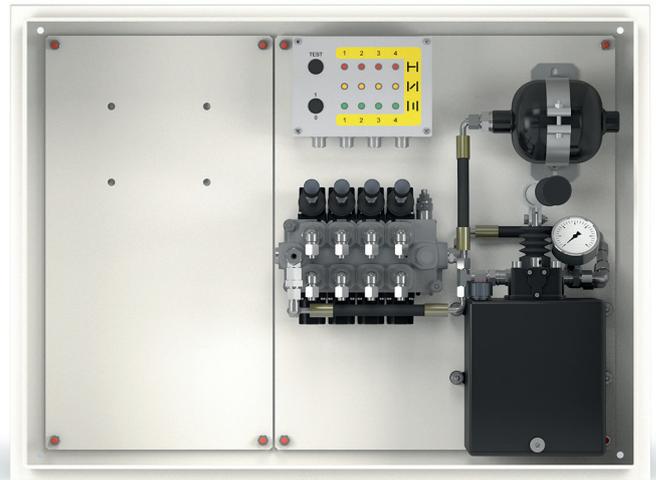
- Range: 0...315 bar

### Indicator lamp panel

- Indicates open, middle and shut positions of valves
- Low voltage powered with battery
- Connected to position transmitter on the actuator

### Connection for portable pump unit

- Quick couplings with flat face casing
- Pump unit (sold separately) incl. transportation box, hydraulic hoses and electric cable



Model	Product no.
Manual	810000

# HCU Manual+

This is an enhanced version of the HCU Manual control unit. The HCU Manual+ control cabinet is equipped with an electric hydraulic pump unit for convenient operation.

## Technical characteristics

In addition to the HCU Manual features, the HCU Manual + includes the following features:

### HCU Manual+ pump

- Motor: 0,55kW
- Connection voltage: 230V 50Hz 1-phase
- Pump flow rate: 0,57 or 1,35 l/min
- Check valve
- Pressure range: 35...200 bar
- Suction filter
- Connection hoses

### Oil tank

Reservoir capacity: 2,5 lt.

Hydrox model	Runtime 0-100% (s)	
	Pump flow rate 0,57 l/min	Pump flow rate 1,35 l/min
Hydrox 035BP	10	4
Hydrox 2	37	16
Hydrox 4	84	36
Hydrox 8	153	64
Hydrox 16	326	138
Hydrox 32	516	218
Hydrox 64	921	389

Recommended



Model	Flow rate	Product no.
Manual+	0,57 l/min	811000
Manual+	1,35 l/min	811001

# HCU Remote

The hydraulic control cabinet HCU Remote is used for remote and local control of valves fitted with hydraulic actuators. The valves can also be operated directly at the cabinet and also without electricity with the hand pump.

## Description

At operational changes, or emergencies, it is necessary to quickly close the valves. Therefore there is a need to be able to remotely control valves from control centers. HCU Remote is meant for the most demanding locations where remote control is required. All components are located in a rugged metal enclosure and the electronics to electrical cabinet with high protection class.



## Function

The HCU Remote contains an electrical hydraulic pump with frequency converter control. The pump is connected by hoses to the valve actuator. The control of the valve is based on the analog signal of the position transmitter. The hydraulic system is controlled with solenoid valves based on the valve position. The default closing time for each actuator size is calculated to give a slow closing to minimize the risk of water hammer in the pipe. The closing time and different operation ramps can be calibrated because of the frequency converter. For control of the hydraulic pump and the solenoid valves, programmable logic is used. The control system can be adapted to current circumstances and requirements.

## Remote control

The HCU Remote is provided with equipment that enables remote control of the valves. To transmit the signals to and from the control center, common wired or wireless transmission methods can be used. Wireless transmitting is working in 3G/4G networks. The wired alternatives in standard control unit are Modbus TCP/IP and I/O SCADA. Other data transfer methods are also possible.

## Equipment

The Hydrox product range provides a complete hydraulic control cabinet with the following components:

- Compact power pack with hydraulic pump, oil tank and pressure switch

- Electrically operated directional valves and indicators
- Electrical cabinet with power module and frequency converter as well as heater to keep the unit free from moisture
- Process screen on the door of the electrical cabinet

## Local control

- Control with buttons: common open, close and stop buttons, valve selection is made on the process screen
- Diode indication for position 0-100 % open and end positions in the process screen
- Active and old alarms in the process screen
- Emergency stop and Local/Remote control switch
- Local control overrides remote control for safety

## Remote control

- Incoming signals: open/close for each valve and common stop
- Analog feedback signals for valve position and digital feedback signals for end positions.
- Process and equipment alarm

## Position indication at the actuator

- Hydrox actuator is equipped with position transmitter with analog signal and digital signals for end positions.
- Position transmitter and HCU remote cabinet are factory calibrated together with valve and actuator.
- No calibration is needed when installing the cabinet at site.

# Technical characteristics:

## Cabinet

- Dimensions: 1310 x 895 x 312 mm (W x H x D)
- Control unit protection classification: IP34
- Inner electrical cabinet protection classification: IP65
- Fluid viscosity: 10–500 mm<sup>2</sup>/s
- Filtration: ISO code 16/13; SAE class 4 or better
- Fluid temperature: -20 °C – +80 °C
- Ambient temperature: -25 °C – +35 °C (heating, optional cooling)

## Pump

- Motor: 0,75 kW
- Connection voltage: 400v/3-phase, 50 Hz
- Pump flow rate: 0,1-1,26 l/min
- Maximum recommended pressure: 210 bar
- Pressure limiter at 150 bar (adjustable)

## Oil tank

Reservoir capacity: 2 lt

Hydrox model	Runtime 0–100% (s)
Hydrox 035BP	23
Hydrox 2	65
Hydrox 4	150
Hydrox 8	271
Hydrox 16	504
Hydrox 32	579
Hydrox 64	608

Model	Flow rate	Product no.
HCU Remote	0,1-1,26 l/min	812100

Options	Product no.
Hydrox Control Unit (HCU) Remote - Locked control cabinet	812010
Hydrox Control Unit (HCU) Remote - Analogue pressure measurement	812011
Hydrox Control Unit (HCU) Remote - Wireless remote control	812012
Hydrox Control Unit (HCU) Remote - For six valves	812013
Hydrox Control Unit (HCU) Remote - For two valves	812014
Hydrox Control Unit (HCU) Remote - Cooling	812015

## Control valve block

- Control valves: 2-6 pcs.
- Max. pressure: 210 bar
- Positions of lever: 3 (open - neutral - shut)

## Pressure gauge

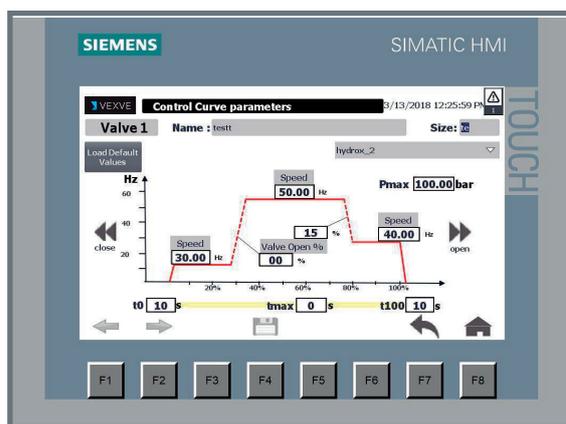
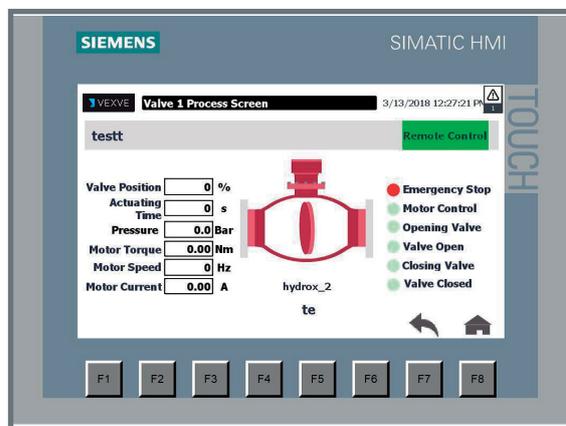
Range: 0...250 bar

## Electrical cabinet

- Local and remote access switch, safety switch
- Control panel
- Common operating buttons: open, close, stop and emergency stop

## Control panel

- Size: 7" Simatic
- Valve functional calibration window
- Valve position indication: Analog position 0-100 % open and end positions
- Alarms: Active and old ones
- Diagnostics and user settings



# Hydrox accessories

	Product no.	Part
	830002	Hydrox Portable pump 0,57l/min with case
	830003	Hydrox Portable pump 1,35l/min with case
	830004	Hydrox Electric hydraulic pump for HCU Manual/Manual+ 0,57 l/min
	830005	Hydrox Electric hydraulic pump for HCU Manual/Manual+ 1,35 l/min
	820000	Hydrox Position transmitter HCU Manual
	820001	Hydrox Position transmitter HCU Remote
	821000	Hydrox Sensor Cable HCU Manual
	821100	HydorX Sensor Cable HCU Remote
	840000	Hydrox Hydraulic Hose
	812500	HCU Remote Plinth, above ground
	812501	HCU Remote Plinth, ground recessed mounting
	812502	HCU Manual Plinth, ground recessed mounting

# Vexve – we are part of the solution

Vexve is the globally leading provider of valve solutions for the heating and cooling needs of cities and industry. Developed for demanding applications, Vexve valve and control products and hydraulic control solutions are used in district energy networks, power plants, and internal heating and cooling systems of buildings.

Our vision is to be our customer's committed and responsible technology partner for heating and cooling. Together we are creating innovative and more efficient energy infrastructures for sustainable smart cities.

For more than 50 years our success has been based on highly trained personnel and products that meet even the highest quality standards. We deliver our services worldwide from Helsinki all the way to Beijing, Doha and Moscow.

Vexve professionals manufacture products on modern, highly automated production lines in our Laitila, Sastamala and Saint Petersburg facilities. Our production methods and products meet the quality criteria and standards for our business area, such as EN 488, PED and GOST. The quality of the customer experience is a key issue for us.

Our business operations are ISO 9001 and ISO 14001 certified. As a responsible company, we operate in accordance with the ISO 26000 standard.





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