



EBARA *Hydro* Booster System

Uniquely EBARA Variable Speed (VFD) System
Type UN

Custom built for ideal water supply system...

APPLICATIONS

- General water supply i.e schools, hotels, hospitals, high-rise buildings, etc.
- Industrial water supply.
- Irrigation system for garden, parks, golf courses, etc.
- All booster pump station.

FEATURES

- **Energy Saving System**
Minimum energy consumed during operation due to the use of variable speed drive system.
- **Constant Pressure**
Constant pressure is possible due to variable speed drive that possess the ability for frictional loss compensation, thus stable pressure system ensured.
- **High Reliable Operation System**
The use of EBARA UN Controller assure system compatibility, thus ensure system reliability and durability.
- **Easy Operation & Easy Maintenance**
Operation data are displayed clearly on the control panel and can be adjusted at ease. Hence user-friendly operation assured.
- **Detailed Informative Output**
System able to provide useful operating information at one glance. No complicated setting required enhance trouble-free system operation.



Type UN-GB

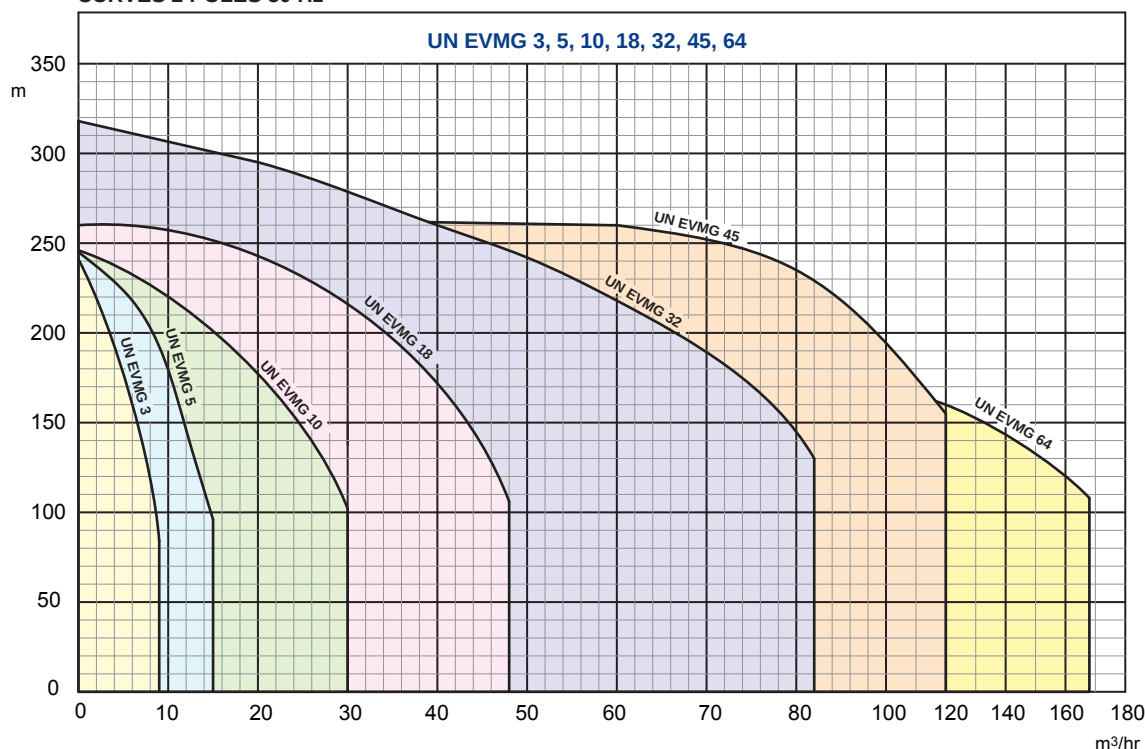


Type UN-IB

PERFORMANCE CURVE

UN EVMG 3, 5, 10, 18, 32, 45, 64

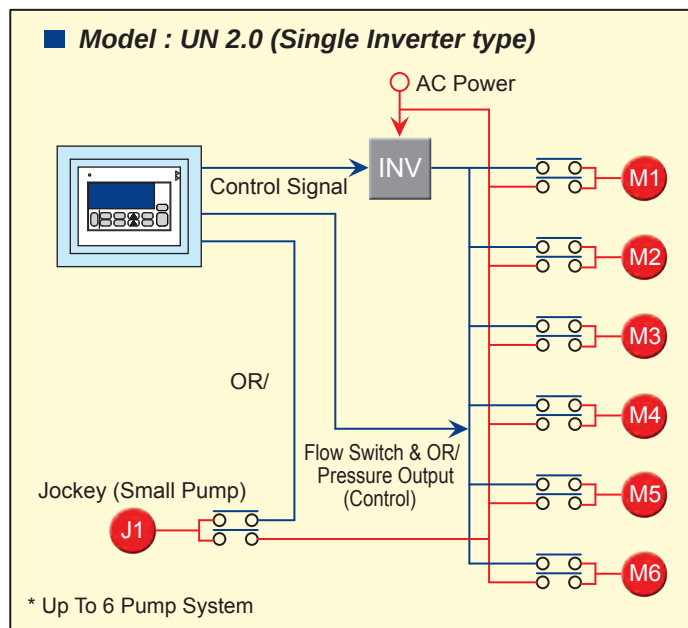
CURVES 2 POLES 50 Hz



SPECIFICATIONS

Item		Standard	Optional
Operation system	Pump speed	Inverter variable speed control drive	
	Pressure control	Constant pressure with system loss compensation	
	Number of pump control	Single alternate, Parallel alternate, Up to 6 pumps cyclic Pumps rest at small flow rate	
Installation area		Indoor Ambient temperature Up to 40°C	Outdoor Weather-proof available
Pump		Vertical multistage Pump: Model EVM	3M, CDX and other EBARA model
Power source		Three phase, 380/400/415 V, 50 Hz	
Pressure tank	Type	Pre-charged Diaphragm	
	Capacity	18L	Over 18L
	Max. working pressure	10 bar	Up to 20 bar
Pressure sensor		3 Wire for DC 12V Output Voltage 1 - 5V	
Control panel & Controller	Main components	Inverter (each pump), Control panel (Remote type) Main circuit breaker, Main control CPU board Interface board, Pilot light, Isolator, Voltage detection board Control circuit noise filter, Electric leakage breaker	Water level board, Main supply noise filter Surge protector
	Protection	Electric thermal device, controlled by microcomputer	
	Display Items	Discharge pressure {digital display} Pump operation current {digital display} Voltage {digital display} Pump operation frequency {digital display} Power {red LED} Operation condition {running pump} Operation mode {Automatic or manual} Storage tank selection {Tank 1 or 2} Storage tank water level condition {normal} System interlock Failure : Shortage or full of storage tank Low discharge pressure. *Option: IN-LINE BOOSTING mode Inverter trip	
	External output signal (No voltage, normal open contact)	Pump running Pump failure Storage tank condition {Full, low, shortage}	
	External input signal (No voltage, normal open contact)	System interlock {on/off}	

SYSTEM OPERATION DIAGRAM

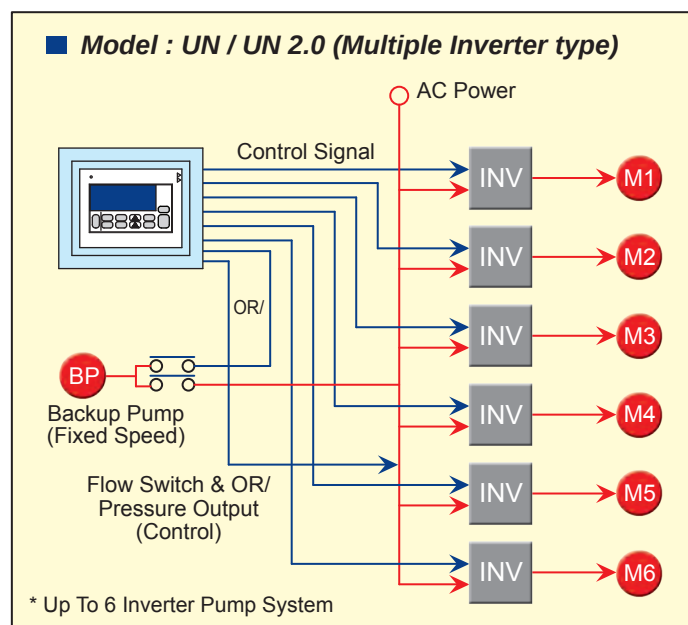


Operation Functional Features

• UN 2.0 (Single Inverter) System

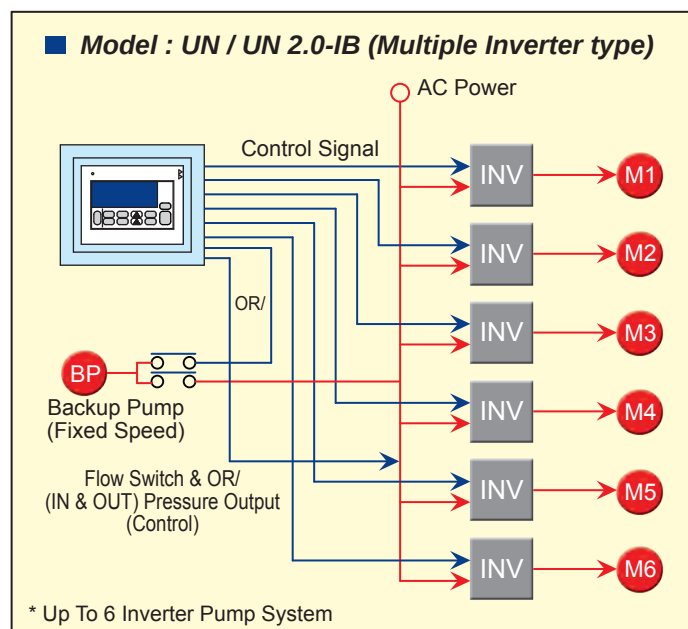
- Booster unit incorporated with 1 single floating inverter driven pump and 5 fix speed pump up to 6 pumps in parallel operation and capable to adjust the water pressure automatically to meets actual system demand at all time.
- ECO-friendly CETP# controller with password protection provided and prevents any non-authorities personnel erroneous operation or/ overwriting of parameter function code, an LCD display or Touch screen display is optionally available upon request.
- Dry running prevention, high & low pressure limit protection, pipe friction loss compensation, automatically restart or/ switching during emergency, tank water level control function and Jockey (Small Q) pump available.

* CETP – Constant Estimates Terminal Pressure



• UN/UN 2.0 (Multi Inverter type) System

- Booster unit incorporated with multiple pumps with Multi inverter up to 5 or 6 pumps parallel in operation and capable to adjust the water pressure automatically to meets actual system demand at all time.
- Graphical LCD display or/ ECO-friendly controller with password protection provided and prevents any non-authorities personnel erroneous operation or/ overwriting of parameter function code, Touch screen display is optionally available upon request.
- Dry running prevention, high & low pressure limit protection, pipe friction loss compensation, automatically restart or/ switching during emergency, schedule (Daily, Weekly & Monthly) operation function, tank water level control and back up pump available.



• UN/UN 2.0 (Multi Inverter type) System

- Booster unit incorporated with multiple pumps with Multi inverter up to 5 or 6 pumps parallel in operation and capable to adjust the water pressure automatically to meets actual system demand at all time.
- Graphical LCD display or/ ECO-friendly controller with password protection provided and prevents any non-authorities personnel erroneous operation or/ overwriting of parameter function code, Touch screen display is optionally available upon request.
- Dry running prevention, high & low pressure limit protection, pipe friction loss compensation, automatically restart or/ switching during emergency, schedule (Daily, Weekly & Monthly) operation function, tank water level control, IN-LINE direct booster function and back up pump available.

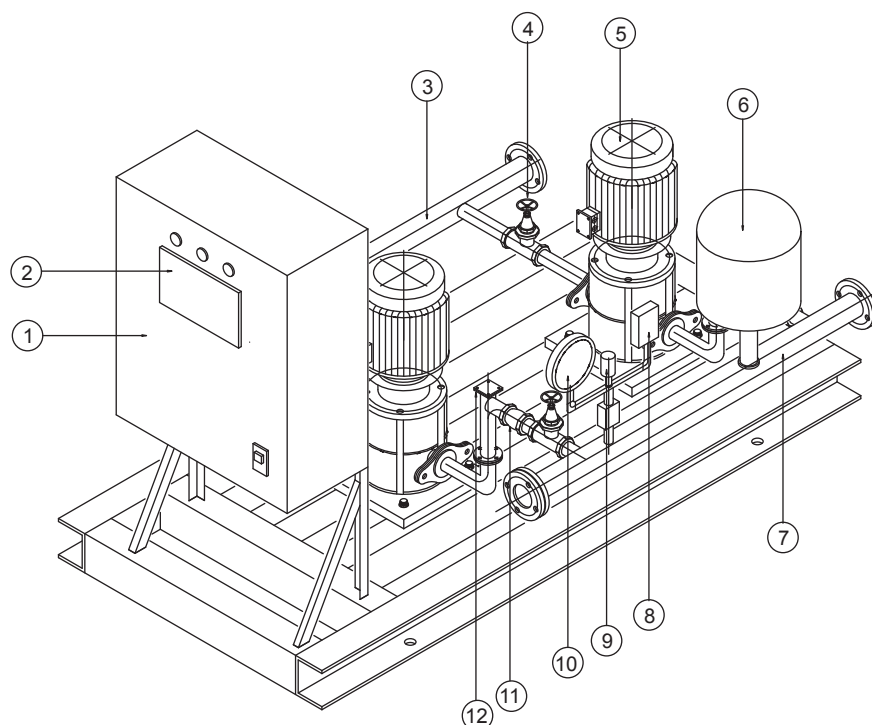
Input Signal & Type of Sensor

- Constant Pressure control installation:
Industrial pressure transmitter with 0 to 20mA, 4 to 20mA or/ 0 - 5 VDC input signal.

* Ebara designed flow switch device optional to enhances better controlling and reliability of overall system operation

- Option:
 - Float less Relay control for Tank to Tank pumping application
 - Dual pressure sensor & flow switch for IN-LINE Direct booster application

ISOMETRIC DRAWING



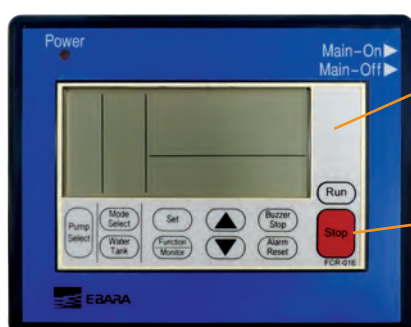
No.	Part Name
1	Control Panel
2	Controller
3	Suction Manifold
4	Gate Valve
5	Pump
6	Expansion Tank
7	Discharge Manifold
8	Pressure Switch
9	Pressure Transmitter
10	Pressure Gauge
11	Check Valve
12	Flow Switch

CONTROLLER UNIT

The heart of the system is the EBARA controller unit, which is user-friendly and permits 'One-touch' operation. It controls the sequence of pump operation with signals input from the pressure sensor and/or flow switch in Auto & Alternate mode. This user-friendly controller unit operates compatible with other electrical components to ensure smooth function of booster system.

EBARA controller unit generally provides the below 'One-touch' functioning features:

- 1 x Power on indicating light
- 1 x Power selector switch (ALT/PAR/Rotation/P1 to P5)
- 1 x Mode selector switch (Auto/Test)
- 1 x Power main on off switch
- 1 x Set switch
- 1 x Function / Monitor switch
- 1 x Buzzer stop switch
- 1 x Alarm reset switch
- 1 x Run switch
- 1 x Stop switch
- 1 x LCD System parameter displays



System parameters display:

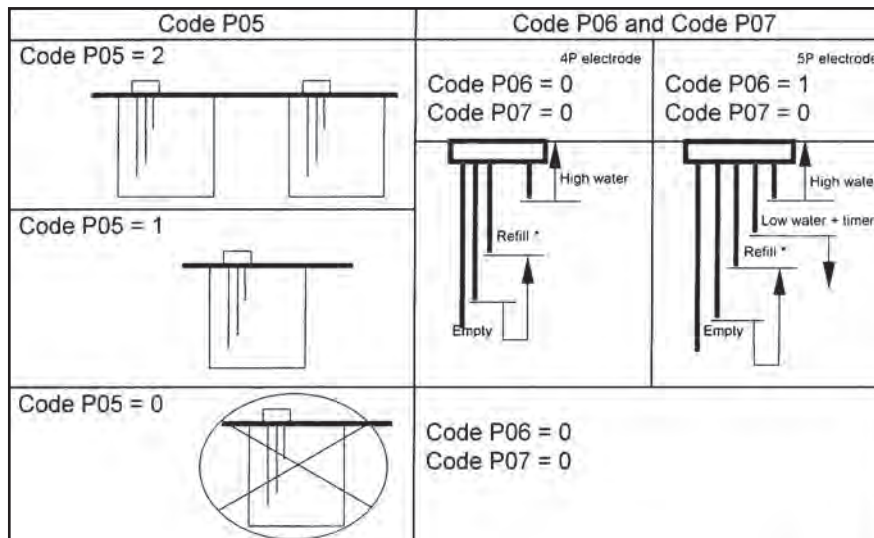
Operation mode
Pump no. in operation
Output frequency & discharge
Water tank & Fault type

Operation pushbuttons:

Run or stop
Pump, mode & water tank select
Parameters set & function monitor
Buzzer stop & alarm reset

UNIQUE FEATURES

Receiving (Water) Tank



Note 1. * Short circuit E12-E15, E22-E25 (when using the dual tank system) with the jumper cable (included).
 2. Water reduction is detected by timer control. Therefore, the empty display may be triggered during the period when the suction amount is greater than the volume of water flowing into the water tank.

PROTECTION FEATURES

Automatic back up system ensure smooth and continuous pumping operation during the below malfunction:

- electrical leakage,
- discharge pressure drop,
- inverter tripped

Freezes pump Operation when Low Water level at suction tank. Fault Display for below:

- suction tank water level
- system interlock
- electrical leakage
- low discharge pressure. *Option (IN-LINE BOOSTING mode)

REMOTE MONITORING FEATURES

The same operation conditions of the pumping system can be observed and monitored at remote station with only 2 wire connection. No additional electrical supply is required. Buzzer is provided, and distance within 500m is permissible.

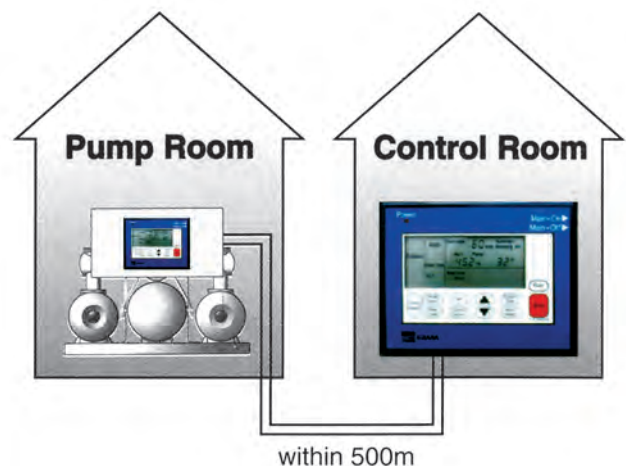
Display Items:

1) Normal Display

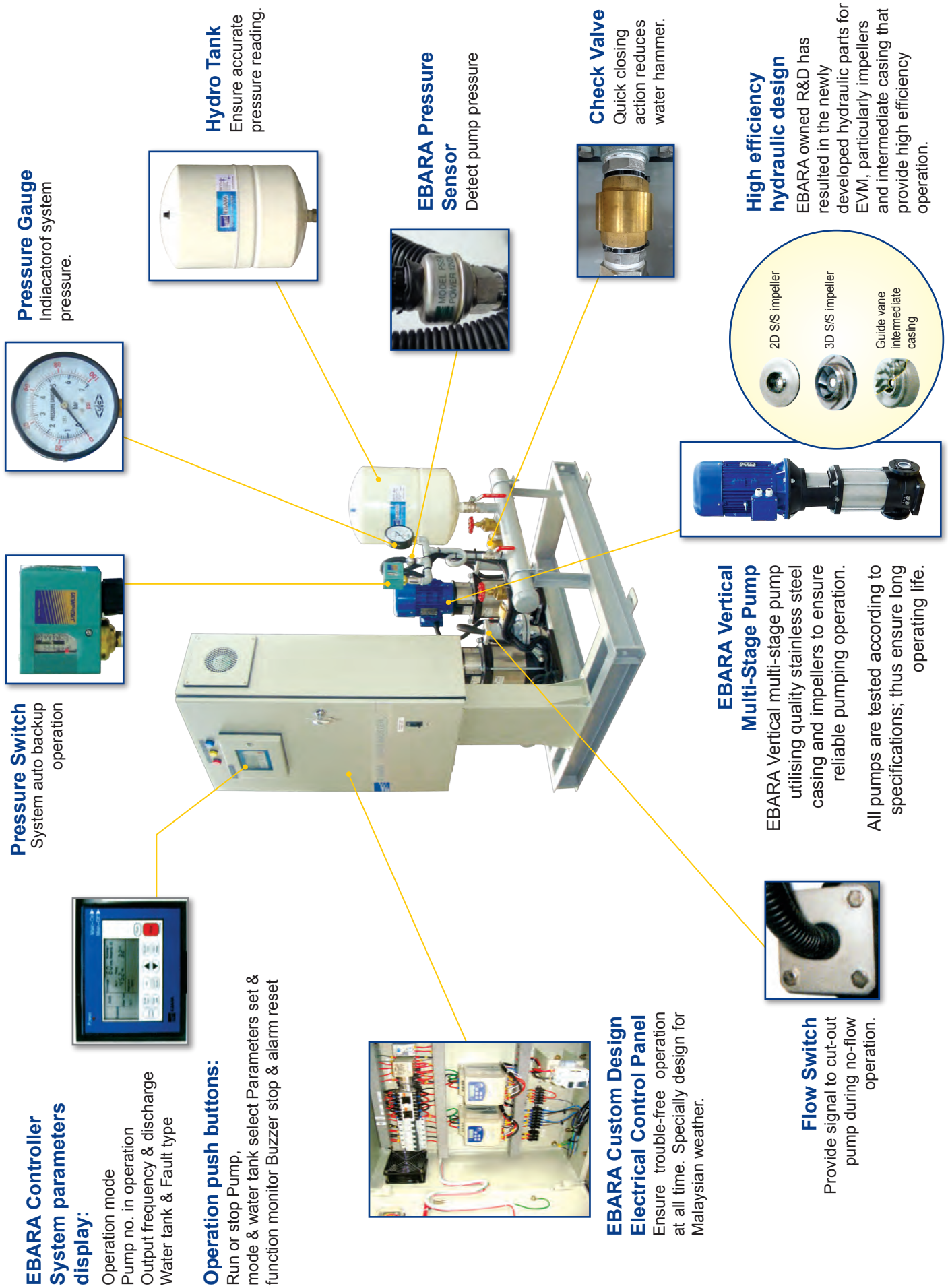
- Digital : Discharge pressure,
Pump Operation Hz (each pump).
Operation current (each pump), Voltage.
- Others : Electrical source (LED Display).
Operation mode (Auto, Test, No. of Pump)
System interlock.

2) Fault Display

- Discharge pressure drop (each pump),
- Inverter fault (each pump),
- Water level (over-flow, insufficient, shortage conditions).

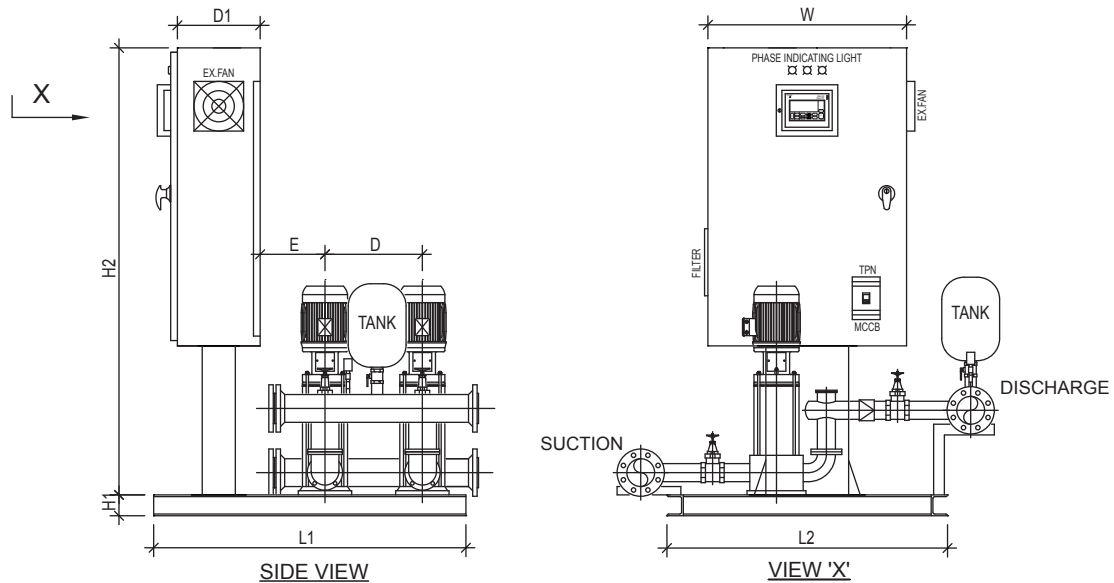


MAJOR COMPONENTS & FUNCTIONS



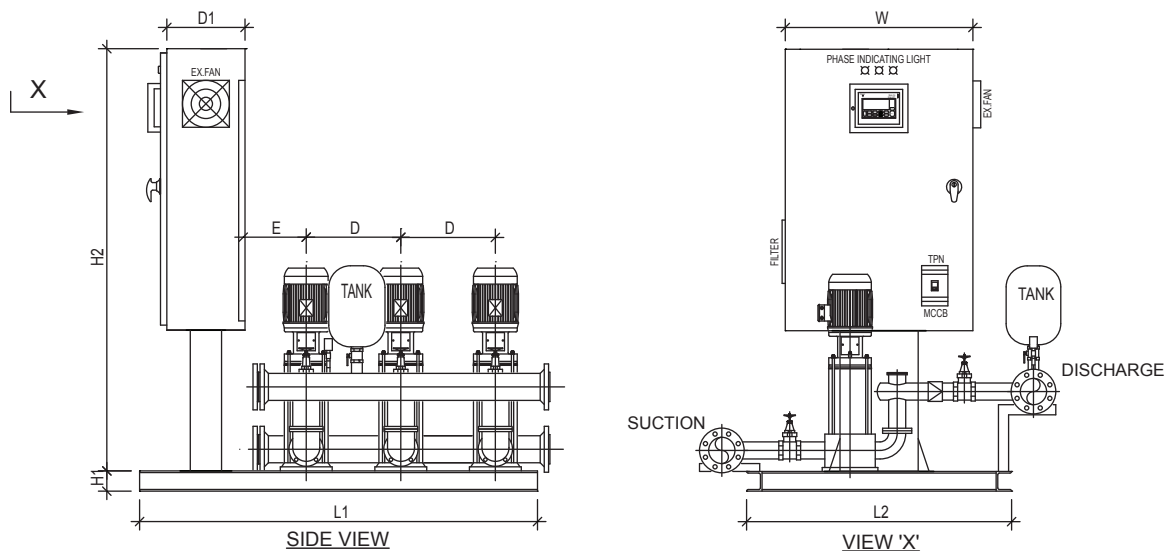
DIMENSION

2UN



DIMENSION MODEL	H1 mm	H2 mm	D1 mm	W mm	L1 mm	L2 mm	D mm	E mm	TANK LITER	SUCTION MANIFOLD mm	DISCHARGE MANIFOLD mm	PIPE CONNECTION
2UN-EVM 3	75	1350	250	600	1030	780	350	180	18	50	50	NPT
2UN-EVM 5	75	1350	250	600	1030	780	350	180	18	50	50	NPT
2UN-EVM 10	100	1350	250	600	1070	910	390	210	24	65	65	NPT
2UN-EVM 18	100	1350	250	600	1245	910	440	305	24	80	80	FLANGE
2UN-EVM 32	100	1350	250	600	1755	910	440	305	100	100	100	FLANGE
2UN-EVM 45	100	1350	250	600	1865	1200	550	305	100	150	150	FLANGE
2UN-EVM 64	100	1350	250	600	1865	1200	550	305	100	150	150	FLANGE

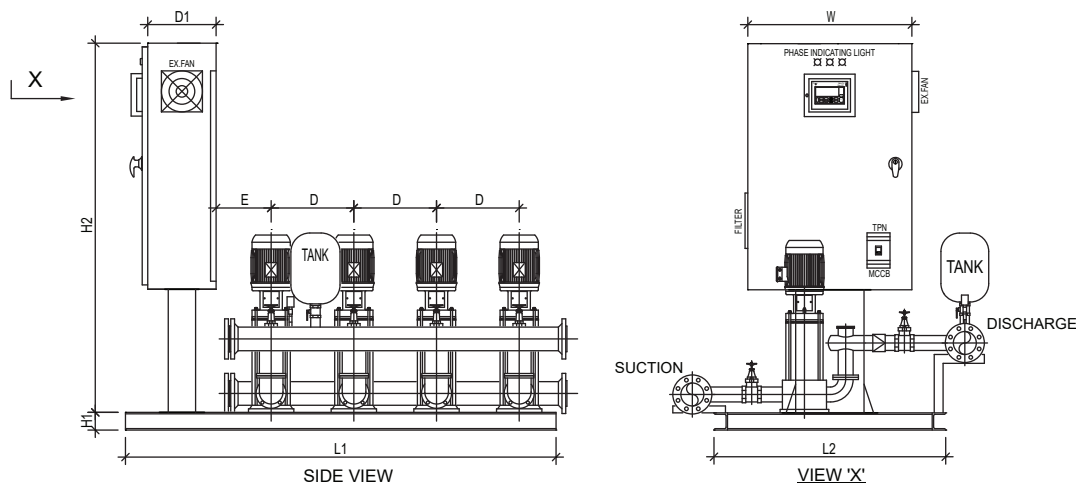
3UN



DIMENSION MODEL	H1 mm	H2 mm	D1 mm	W mm	L1 mm	L2 mm	D mm	E mm	TANK LITER	SUCTION MANIFOLD mm	DISCHARGE MANIFOLD mm	PIPE CONNECTION
3UN-EVM 3	100	1350	250	650	1380	780	350	180	18	50	50	NPT
3UN-EVM 5	100	1350	250	650	1380	780	350	180	18	50	50	NPT
3UN-EVM 10	100	1350	250	650	1490	910	390	210	24	65	65	NPT
3UN-EVM 18	150	1350	250	650	1685	910	440	305	24	100	100	FLANGE
3UN-EVM 32	150	1350	250	650	2195	910	440	305	100	150	150	FLANGE
3UN-EVM 45	150	1350	250	650	2415	1200	550	305	100	150	150	FLANGE
3UN-EVM 64	150	1350	250	650	2415	1200	550	305	100	150	150	FLANGE

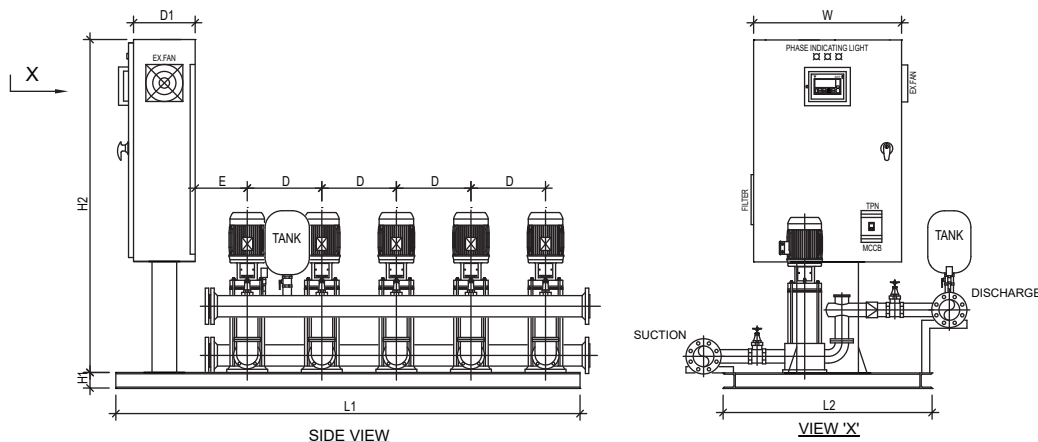
DIMENSION

4UN



DIMENSION	H1	H2	D1	W	L1	L2	D	E	TANK	SUCTION	DISCHARGE	PIPE
MODEL	mm	mm	mm	mm	mm	mm	mm	mm	LITER	MANIFOLD	MANIFOLD	CONNECTION
4UN-EVM 3	100	1350	250	750	1730	780	350	180	18	65	65	NPT
4UN-EVM 5	100	1350	250	750	1730	780	350	180	18	65	65	NPT
4UN-EVM 10	150	1350	250	750	1880	910	390	210	24	80	80	FLANGE
4UN-EVM 18	150	1350	250	750	2125	910	440	305	24	100	100	FLANGE
4UN-EVM 32	150	1350	250	750	2635	910	440	305	100	150	150	FLANGE
4UN-EVM 45	150	1350	250	750	2965	1200	550	305	100	200	200	FLANGE
4UN-EVM 64	150	1350	250	750	2965	1200	550	305	100	200	200	FLANGE

5UN



DIMENSION	H1	H2	D1	W	L1	L2	D	E	TANK	SUCTION	DISCHARGE	PIPE
MODEL	mm	mm	mm	mm	mm	mm	mm	mm	LITER	MANIFOLD	MANIFOLD	CONNECTION
5UN-EVM 3	150	1350	300	800	2080	780	350	180	18	80	80	FLANGE
5UN-EVM 5	150	1350	300	800	2080	780	350	180	18	80	80	FLANGE
5UN-EVM 10	150	1350	300	800	2270	910	390	210	24	100	100	FLANGE
5UN-EVM 18	150	1350	300	800	2565	910	440	305	24	150	150	FLANGE
5UN-EVM 32	150	1350	300	800	3075	910	440	305	100	200	200	FLANGE
5UN-EVM 45	150	1350	300	800	3515	1200	550	305	100	200	200	FLANGE
5UN-EVM 64	150	1350	300	800	3515	1200	550	305	100	200	200	FLANGE

* Dimensional details are provided for reference only.

* All specifications are subject to change without prior notice.



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