

## Technical Datasheet – CapSub4 | System 2 | Model 90-50

CapSub4 System 2 model 90-50 is a complete bore pumping and control system - designed and configured by the manufacturer, and delivered complete with everything you need for DIY installation.

Best Suited to: Medium to two storey home and garden

### Control

CapSmart VFD maintains a constant delivery pressure by matching pump speed to water delivery requirements – eliminating pressure fluctuations when demand changes.

- Fully automatic electronic control system
- Programmable, user-friendly digital interface
- Real time system feedback including pump pressure and motor current
- Fault finding, diagnostics and error logging.
- Variable Frequency Control Technology
- Reduced Power consumption; power consumed matches water delivery requirements
- Dry-run protection with automatic system reset and restart
- Over Pressurization cut out protection
- Soft Start eliminates water hammer
- Standard 10amp 3 pin 240v power connection – Plug directly into standard power point.

For more information on the CapSmart VFD, refer to the operating manual at:

<http://www.capsub.com.au/pages/techlibrary.aspx>

### Pumping Power

The E4XP Series pump platform is newly designed from the ground-up, using the latest technology, materials and patented design innovations to deliver the most efficient, longest service life submersible pumps available.

The E4XP 35/10 Features:

- Desert Sand Out System<sup>®</sup> - delivers best in class capabilities for sandy bores, and can handle up to 300 gm3 of solids (twice the industry standard) with no deterioration in service life.
- Defender<sup>®</sup> - Integrated Galvanic Corrosion System protects the pump and motor from galvanic corrosion by passivating stainless steel components.
- Easy-Check<sup>®</sup> - Combining a unique low head loss check valve for improved flow, and innovative sealing and assembly system to extend pump life, avoid the possibility of the check valve jamming, and simplify inspection and maintenance
- Micro-cast Stainless Steel Pump Ends
- Fully enclosed Pump shaft
- Fully dismountable pump end

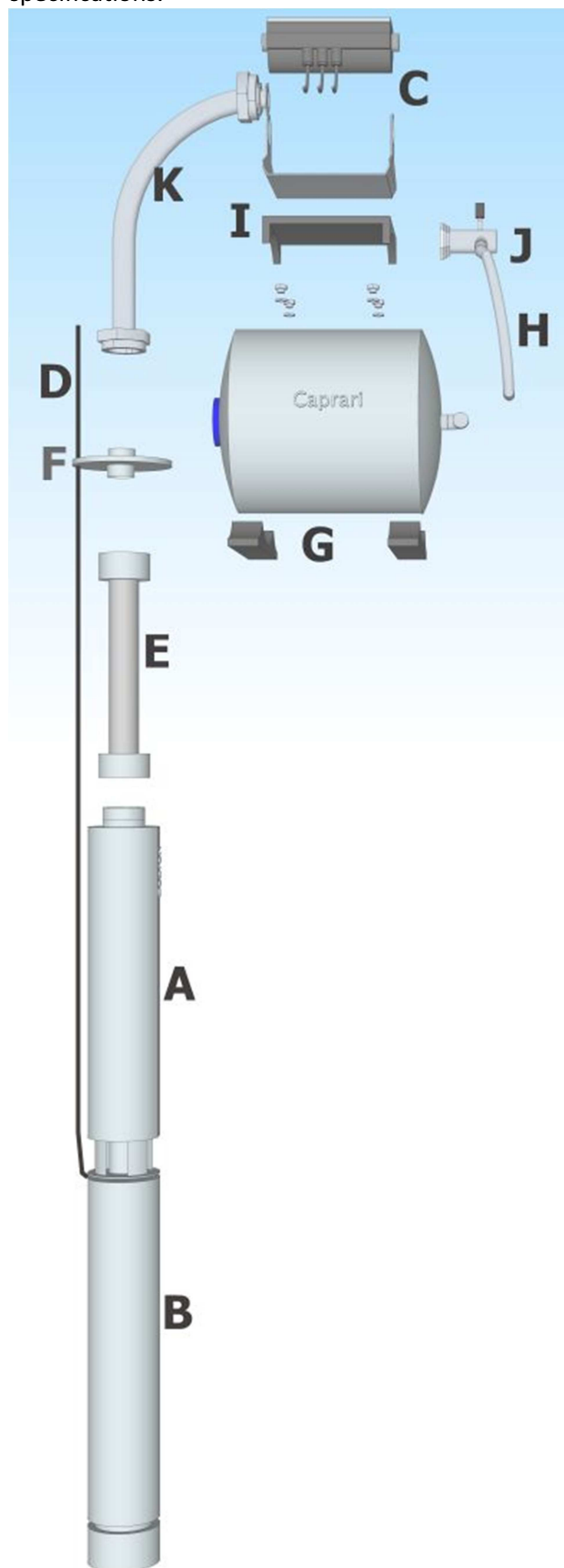
#### Performance Data

|      |       |     |      |      |      |     |       |       |       |       |       |       |
|------|-------|-----|------|------|------|-----|-------|-------|-------|-------|-------|-------|
| Flow | l/min | 0   | 54   | 60   | 66   | 72  | 78    | 84    | 90    | 96    | 108   | 120   |
| Head | m     | 66  | 59.5 | 58.5 | 57.2 | 56  | 54.2  | 52.5  | 52.5  | 47    | 41    | 33.5  |
|      |       |     |      |      |      |     |       |       |       |       |       |       |
| Flow | gph   | 0   | 713  | 792  | 871  | 950 | 1,029 | 1,109 | 1,188 | 1,267 | 1,425 | 1,584 |
| Head | feet  | 217 | 195  | 192  | 188  | 184 | 178   | 172   | 172   | 154   | 135   | 110   |

For Performance Curve and additional performance detail refer to page 3.

## System in Detail – CapSub4 | System 2 | Model 90-50

Every CapSub System includes everything you need for simple installation. It's professionally pre-wired, internally pre-plumbed with the pump unit, power supply and rising main configured to match your supplied bore specifications.

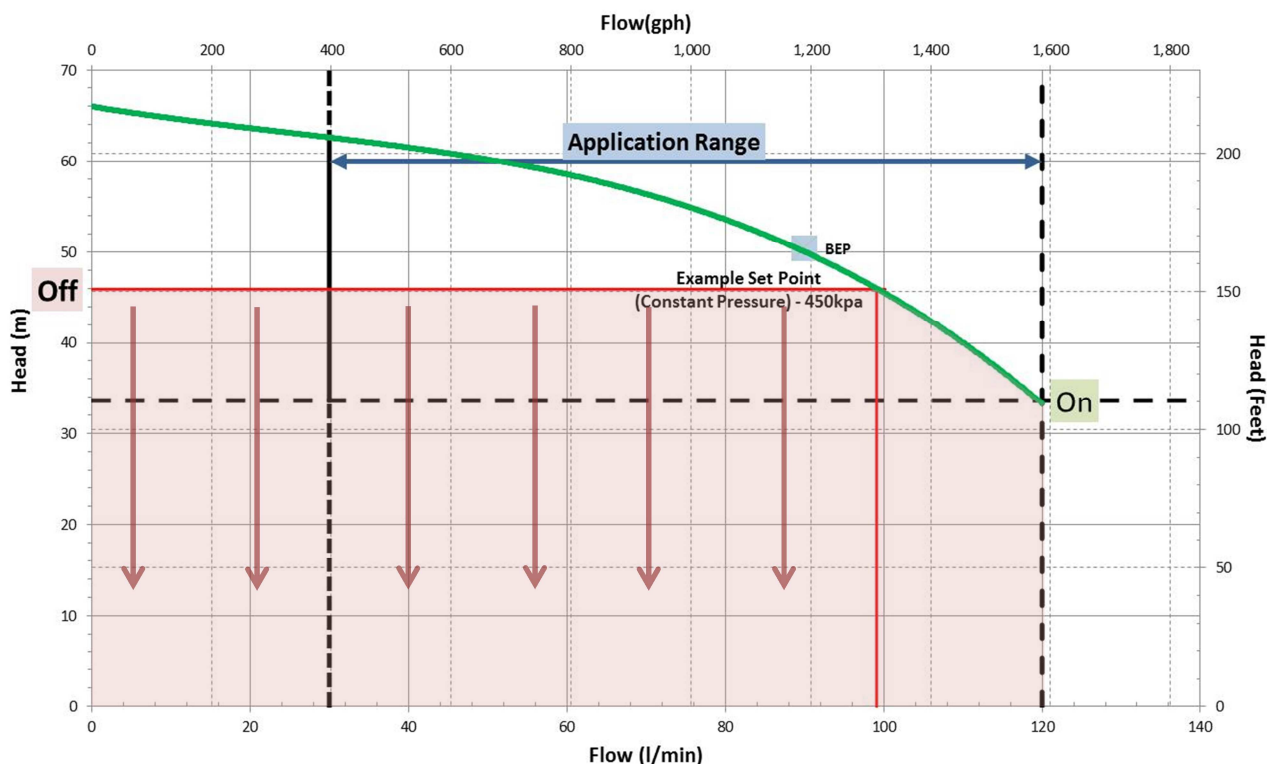


|   |  |  |
|---|--|--|
|   | <b>System</b>  | 2  |
|   | <b>Model</b>   | 90-50  |
|   | <b>Suitable for</b>  | Medium to Two Storey Home and Garden                                   |
|   | Comes with everything you need   | ✓  |
|   | <b>Pumping Power</b>   |  |
| A | Caprari E4XP Series Pump Model   | 35/10  |
| B | Motor Model  | MCH415-6   |
|   | Motor P2 Power (kW)  | 1.1  |
|   | Max in-bore diameter (suits 4")  | 98mm   |
|   | <b>Controller</b>  |  |
| C | Controller Model   | CapSmart VFD   |
|   | Automatic On/Off Control   | ✓  |
|   | Variable Frequency Drive (Constant Pressure)                             | ✓  |
|   | Current sensing technology (Pump & Motor Protection)                     | ✓  |
|   | Plug and Play - 240v 10 Amp 3 Pin "IN" (2m Length)                       | ✓  |
|   | Power Out, to Motor  | 240V, 3 Phase  |
|   | <b>The Pump</b>  |  |
|   | Galvanic Defender ® Corrosion Protection                                 | ✓  |
|   | Easy Check ® High Flow Check Valve                                       | ✓  |
|   | Desert Sand ® (Sand Protection system to 300gm3)                         | ✓  |
|   | <b>Down the Bore</b>   |  |
| D | Electrical Drop Cable (High Quality Rubber Submersible rated)            | 3C+E 2.5mm   |
| E | Flexibore 100 Series Flexible Rising Main, c/- Stainless Steel Couplings | ✓  |
|   | Flexible Rising Main Size  | 32mm   |
|   | Pump and Motor Suspension  | Not Independently Required - Flexibore is designed to suspend the pump |
| F | Solid Stainless Steel Bore Cap (Adjustable) - Suit Bores                 | 4-6"   |
|   | Bore Cap Outlet (Threaded)   | 1 1/4"   |
|   | <b>Additional Plumbing and Components</b>                                |  |
|   | Fits inside Std "Polyslab" Pump Cover                                    | ✓  |
| G | 18L Horizontal Pressure Tank   | ✓  |
| H | Connection Kit 316SS   | 1"   |
| I | Bracket  | 32 SS  |
| J | Delivery Connection (BSP)  | 32mm / 1 1/4"  |
| K | Flexible Swept Bend in Stainless Steel, c/- Unions                       | 1 1/4"   |
|   | <b>Performance Characteristics</b>                                       |  |
|   | <b>Metric</b>  |  |
|   | Max Head (m)   | 66   |
|   | Max Flow (l/min)   | 120  |
|   | Output at BEP  | 90 l/min @ 520 kPa   |
|   | <b>Imperial</b>  |  |
|   | Max Pressure (psi)   | 94   |
|   | Max Flow (gph)   | 1600   |
|   | Output at BEP  | 1200 gph @ 75psi   |

## Performance Data – CapSub4 | System 2 | Model 90-50

Pump Model: E4XP 35/10  
Motor: MCH415-6  
Controller: CapSmart-VFD

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|                                   |  |
|-----------------------------------|--|
| <b>Flow Application Range</b>     | 0 - 120 l/min   0 - 1,584 gph  |
| <b>Recommended Pressure Range</b> | 330kpa - 600 kPa (48psi - 87psi)<br>34m - 61m   110 Feet - 201 Feet                            |
| <b>Example Set Point</b>          | 450 kPa (This is preset at time of order to customer specification - it can be easily changed) |

### How to read the Application Curve

This Application Curve defines the performance and application range of CapSmart VFD controller paired with Caprari E4XP 35/10 Submersible Pump and MCH415-6 Motor.

When flow demand is within the Application Range the controller runs the pump constantly. The CapSmart VFD controller detects system flow requirements to vary the motor frequency, and deliver a constant pressure for all flows from 30 l/min to the set point. In the example, with a set point of 450kpa, constant pressure will be maintained up to a flow of 98 l/min.

CapSmart VFD will switch the pump off when zero flow is detected for a preset minimum of time<sup>1</sup> (this will occur when, for example, all taps have been turned off). When system pressure falls below the bottom of the pressure range<sup>2</sup>, the pump is switched on.

<sup>1</sup> It is at this point that the pressure tank is charged with reserve water

<sup>2</sup> The pressure tank first delivers 18 litres of water, then the pump is switched on automatically.

### Using your own details

Plot the Total Dynamic Head<sup>3</sup> of your water delivery system against the vertical axis. Read across to the Pump Curve (the green line) to determine flow delivery. The closer to BEP (Best Efficiency Point) on the curve, the closer to the pump's optimal operating range.

<sup>3</sup> Calculate Total Dynamic Head for your bore installation using the CapSub selection tool:

<http://www.capsub.com.au/pages/SelectionGuide.aspx>

## CapSub4 - System 2 - 90-50

### Requested data

|              |                  |
|--------------|------------------|
| Flow         | 0 l/s            |
| Head         | 0 m              |
| Fluid        | Clean Water      |
| Pumpe type   | Single head pump |
| No. of pumps | 1                |

### Operating pump data

|                      |        |
|----------------------|--------|
| Flow                 |        |
| Head                 |        |
| Shaft power          |        |
| Efficiency           | %      |
| Head H(Q=0)          | 66.1 m |
| Discharge connection | 1 1/4" |

### Motor data

|                      |            |
|----------------------|------------|
| Frequency            | 50 Hz      |
| Rated voltage        | 400 V      |
| Nominal speed        | 2820 1/min |
| Number of poles      | 2          |
| Rated power P2       | 1.1 kW     |
| Rated current        | 2.8 A      |
| Motor type           | 3~         |
| Insulation class     | B          |
| Degree of protection | IP 68      |

### Operating limits

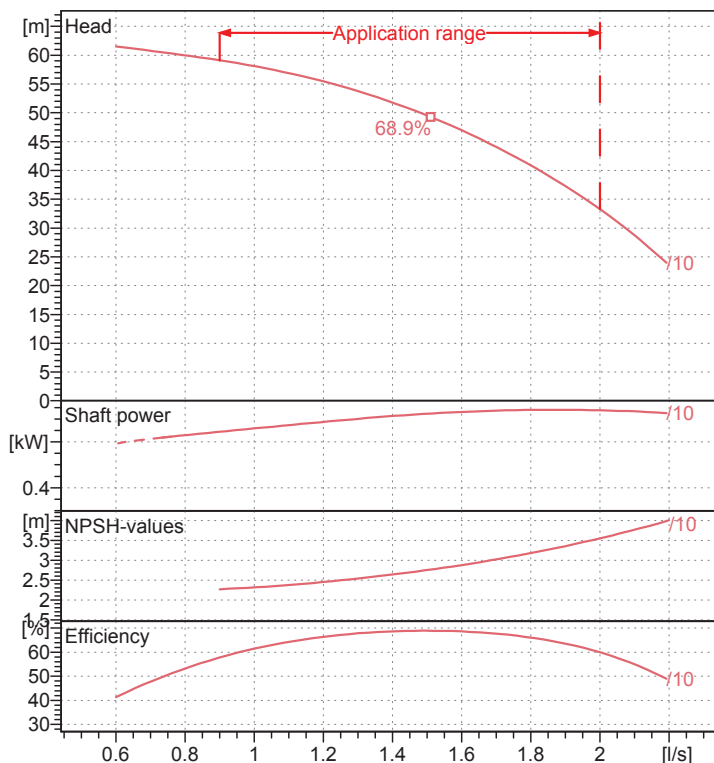
|                                     |           |
|-------------------------------------|-----------|
| Starts per hour max.                | 20        |
| Maximum temperature of pumped fluid | 30 °C     |
| Maximum content of solid            | 150 g/m³  |
| Max. Density                        | 998 kg/m³ |
| Max. viscosity                      | 1 mm²/s   |

### General data

|        |         |
|--------|---------|
| Weight | 14.8 kg |
|--------|---------|

### Materials

|                                      |   |
|--------------------------------------|---|
| PUMP CONSTRUCTION                    |   |
| Suction and delivery body            | AISI 304 Precision cast stainless steel |
| Outer shell                          | AISI 304 Stainless steel                |
| Shaft                                | AISI 304 Stainless steel                |
| Protective bushing                   | Chromed, precision cast AISI 304        |
| Impeller                             | Thermoplastic resin                     |
| Diffuser                             | Thermoplastic resin                     |
| Insert, middle disc and stage sh     | AISI 304 Stainless steel                |
| Transmission coupling                | AISI 316 Stainless steel                |
| Cable guard                          | AISI 304 Stainless steel                |
| Cone strainer                        | AISI 304 Stainless steel                |
| Swing check valve with spring return |   |
| MOTOR CONSTRUCTION                   |   |
| Upper bearing                        | Protected by a stainless steel cover    |
| Shaft                                | Stainless steel                         |
| Outer shell                          | Stainless steel                         |
| Seal on shaft, external              | Ring with rubber lip                    |
| Seal on shaft, internal              | Mechanical in ceramic/graphite          |
| Guide-Thrust bearing                 | Ball bearing steel                      |



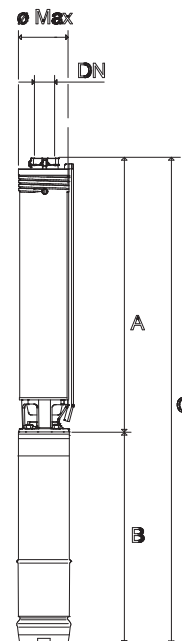
### Operating data

ISO 9906-A

| Q [l/s] | H [m] | P [kW] | Eff. [%] | NPSH [m] |
|---------|-------|--------|----------|----------|
|         |       |        |          |          |

A = 518  
B = 420  
C = 938  
DN = G1 1/4"  
ø Max = 98

### Dimensions mm



Remarks:

|                           |                  |   |                      |
|---------------------------|------------------|---|----------------------|
| Date<br><b>2013-09-20</b> | Page<br><b>8</b> | Offer no.<br><b>CapSub System Curve</b> | Pos.no<br><b>4.1</b> |
|---------------------------|------------------|---|----------------------|