

Technical Datasheet – CapSub-3 | System 2 | Model 80-55

CapSub3 System 2 Model 80-55 is a complete bore pumping and control system - designed and configured by the manufacturer, and delivered complete with everything you need for DIY installation. It has been specifically engineered to suit 3" Bores, and ideal for retrofitting windmill wells, small domestic bores or replacing windmill pumps.

Best Suited to: Low Flow / Medium / Large Head applications

Control

CapSmart VFD HS 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; Operates between 70 and 140 Hz
- 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 15amp 3 pin 240v power connection – Plug directly into 15 Amp power point.

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

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

Pumping Power

The CapSub-3 series pump platform is newly designed from the ground-up, using the latest technology, materials and design innovations to deliver the most efficient, longest service life submersible pumps available for 3" bore wells. Both motor and pump are engineered specifically for high speed operation (up to 140Hz) to deliver world-leading flow and head ratings from a 3" Pump.

The CapSub3 80/55 Features:

- Pump constructed entirely AISI 304 Stainless Steel, including high performance high speed bearings and NBR (Nitrile) Seals for ensured durability, reliability and service life.
- Motor and pump engineered for high speed operation (up to 140 Hz) to deliver extended service range over service life
- Integrated jam-free check valve avoids the possibility of the check valve jamming, and simplifies inspection and maintenance
- Fully dismountable pump end

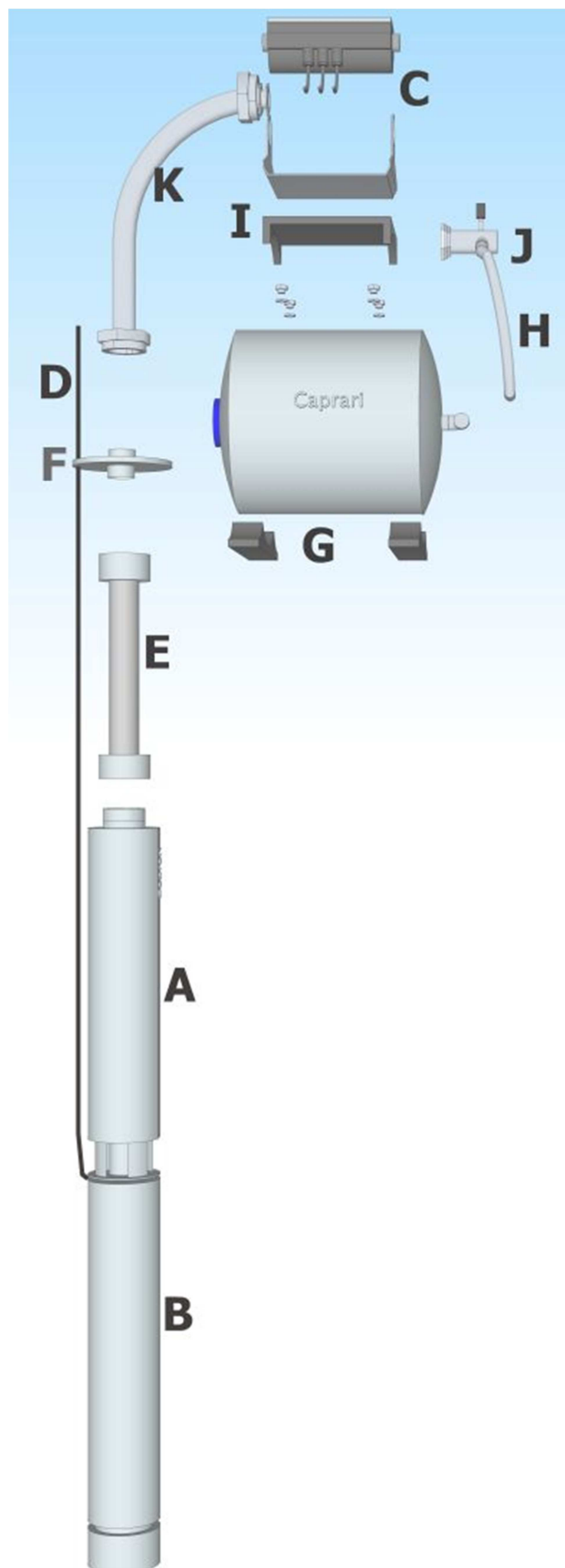
Performance Data

Flow	l/min	0	15	30	42	54	66	78	90	108		Max Pump P2 Power (kW)	1.35
Head	m	75	70.6	67.5	65.3	62.9	59.7	55.2	49	35.2		Motor (Out) Amps	7.2
Flow	gph	0	198	396	554	713	871	1029	1188	1425		Supply (in) Amps	12.5
Head	feet	246	232	221	214	206	196	181	161	115			

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

System in Detail – CapSub3 | System 2 | Model 80-55

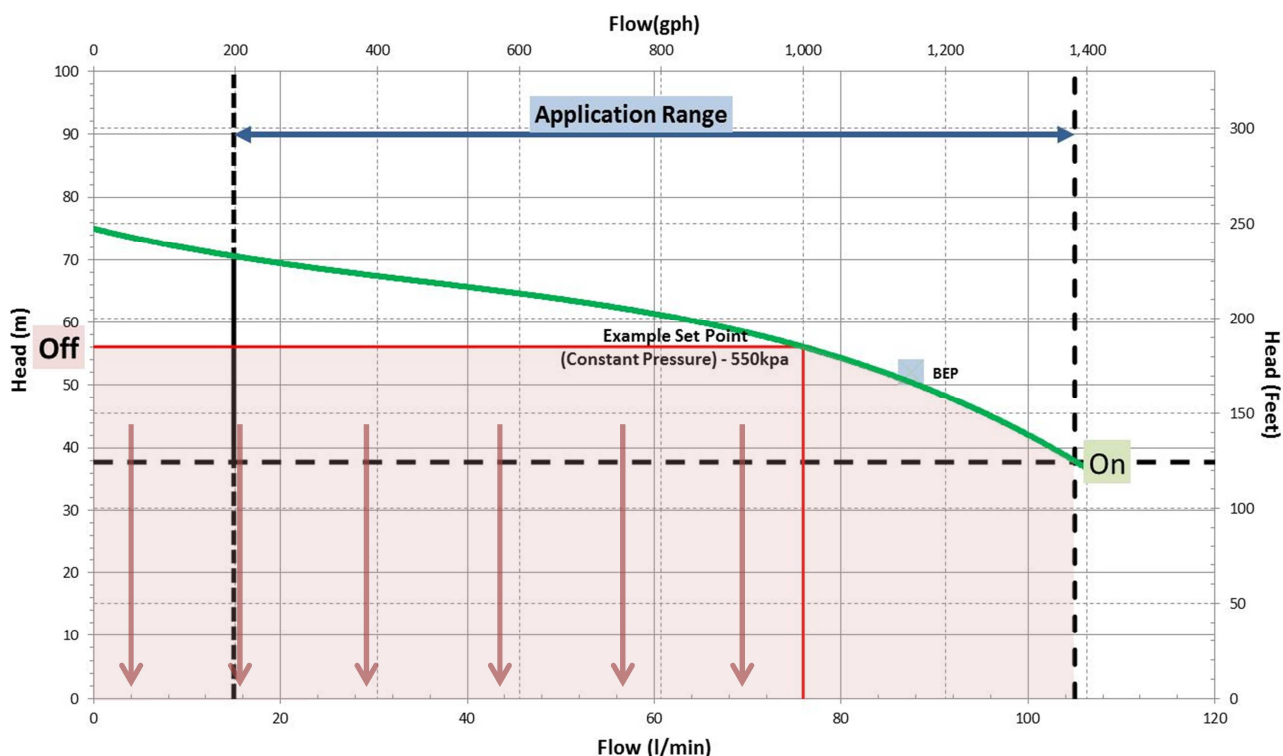
Every CapSub System includes everything you need for simple installation. It's professionally pre-wired, internally pre-plumbed with the pump unit, power supply and rising main configured to match your supplied bore specifications.



	System	2
	Model	80-55
	Suitable for	Low Flow
	Comes with everything you need	✓
	Pumping Power	
A	Caprari CapSub-3 Pump Model	80/55
B	Motor	High Speed 70-140 Hz
	Motor P2 Power (W)	900
	Max in-bore diameter (suits 3" / 80mm)	78mm
	Controller	
C	Controller Model	CapSmart VFD
	Automatic On/Off Control	✓
	Variable Frequency Drive (Constant Pressure)	✓
	Current sensing technology (Pump & Motor Protection)	✓
	Plug and Play - 240v "IN" (2m Length)	15 Amp 3 Pin
	Power Out, to Motor	240V, 3 Phase
	The Pump	
	All Stainless Steel AISI 304 Construction	✓
	Jam-Free High Flow Check Valve	✓
	Engineered for High Speed Operation (to 140Hz)	✓
	Down the Bore	
D	Electrical Drop Cable (High Quality Rubber Submersible rated)	3C+E 2.5mm (up to 90m - others on request)
E	Flexibore 100 Series Flexible Rising Main, c/- Stainless Steel Couplings	✓
	Flexible Rising Main Size	DN 32mm (Supplied to length specified)
	Pump and Motor Suspension	Not Independently Required - Flexibore is designed to suspend the pump
F	Solid Stainless Steel Bore Cap (Adjustable) - Suit Bores	3-4"
	Bore Cap Outlet (Threaded)	1 1/4"
	Additional Plumbing and Components	
	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"
	Performance Characteristics	
	Metric	
	Max Head (m)	75
	Max Flow (l/min)	117
	Output at BEP	88l/min @ 510kpa
	Imperial	
	Max Pressure (psi)	107
	Max Flow (gph)	1540
	Output at BEP	1,160gph @ 74psi

Performance Data – CapSub-3 | System 2 | Model 80-55

CapSub3-System2-Model 80-55



Flow Application Range	0 - 105 l/min 0 - 1,390 gph
Available Pressure Range	370kpa (ON) - 680 kpa (OFF) 54psi (ON) - 99psi (OFF) 38m (ON) - 69m (OFF) 124 Feet (ON) - 228 Feet (OFF)
Example Set Point	550 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 HS controller paired with CapSub-3 80/55 Submersible Pump and motor.

When flow demand is within the Application Range the controller runs the pump constantly. The CapSmart VFD HS controller detects system flow requirements to vary the motor frequency, and deliver a constant pressure for all flows from 15 l/min to the set point. In the example, with a set point of 550kpa, constant pressure will be maintained up to a flow of 76 l/min.

CapSmart VFD will switch the pump off when zero flow is detected for a preset minimum of time¹ (this will occur when, for example, all taps have been turned off). When system pressure falls below the bottom of the pressure range², the pump is switched on.

¹ It is at this point that the pressure tank is charged with reserve water

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

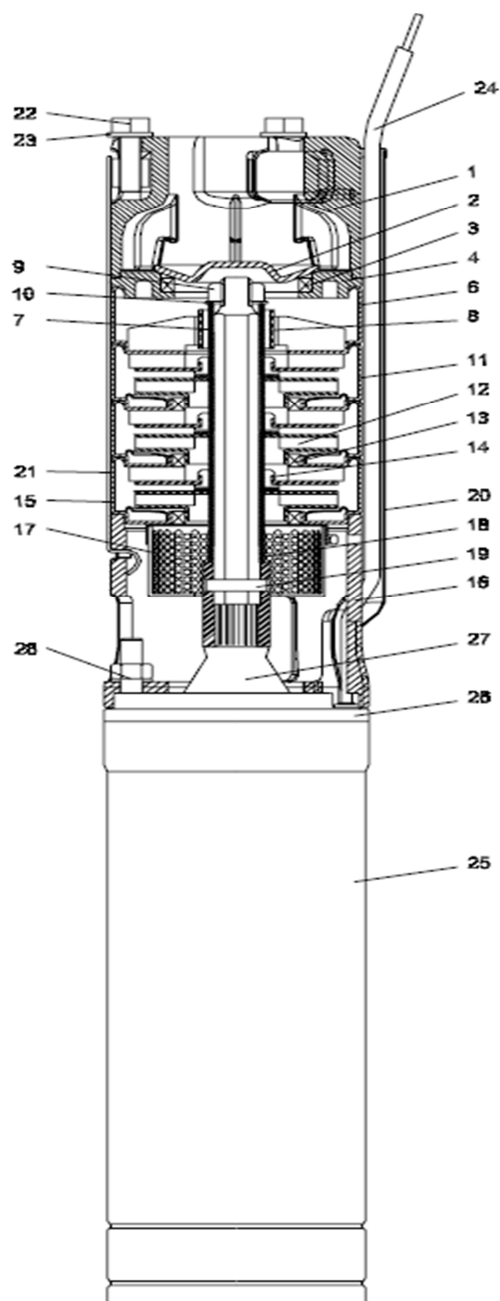
Using your own details

Plot the Total Dynamic Head³ 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.

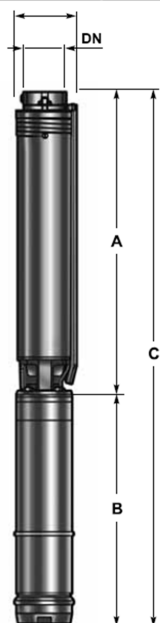
³ Calculate Total Dynamic Head for your bore installation using the CapSub selection tool:

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

Construction – CapSub3 | System 2 | Model 80-55



Key	Component	Material	Material Code
1	Discharge Chamber	Stainless Steel	AISI 304 -1.4301
2	Valve Cone	Stainless Steel	AISI 304 -1.4301
3	Valve Seat	Stainless Steel/NBR	AISI 304 -1.4301
4	Retainer for Valve Seat	Stainless Steel	AISI 304 -1.4301
6	Top Diffusor	Stainless Steel	AISI 304 -1.4301
7	Top Spacer	Stainless Steel	AISI 304 -1.4301
8	Top Bearing	Stainless Steel/NBR	AISI 304 -1.4301
9	Nut M8	Stainless Steel	AISI 304 -1.4301
10	Washer M8	Stainless Steel	AISI 304 -1.4301
11	Diffusor	Stainless Steel	AISI 304 -1.4301
12	Impeller	Stainless Steel	AISI 304 -1.4301
13	Neck Ring	Stainless Steel/NBR	AISI 304 -1.4301
14	Intermediate Bearing	NBR	
15	Bottom Diffusor	Stainless Steel	AISI 304 -1.4301
16	Suction Interconnector	Stainless Steel	AISI 304 -1.4301
17	Strainer	Stainless Steel	AISI 304 -1.4301
18	First Spacer	Stainless Steel	AISI 304 -1.4301
19	Shaft with coupling	Stainless Steel	AISI 304 -1.4301
20	Cable Guard	Stainless Steel	AISI 304 -1.4301
21	Strap	Stainless Steel	AISI 304 -1.4301
22	Bolt M6	Stainless Steel	AISI 304 -1.4301
23	Washer M6	Stainless Steel	AISI 304 -1.4301
24	Motor Lead with Plug		
25	Motor Stator	Stainless Steel	AISI 304 -1.4301
26	Motor Top Cover	Stainless Steel	AISI 304 -1.4301
27	Shaft Seal	NBR	
28	Nut and Washer M6	Stainless Steel	AISI 304 -1.4301



CapSub3 System 2 80/55		
	Pump Stages	3
	Total Drop Weight (Pump + Motor + 1 x Flexibore Coupling)	$7.1 + 0.6 = 7.7\text{kg}$
	Additional Dry Drop Weight Per Metre (Flexibore + Cable)	$0.33 + 0.27 = 0.6\text{kg}$
	Dimensions	
	Max in-bore width	78mm (Suits 3" Wells)
DN	Outlet connection	1 1/4" FI BSP
A	Pump	200mm
B	Motor	270mm
C	Combined	470mm
	Sand Handling (Suited for clean water in well developed bores)	50gm ³