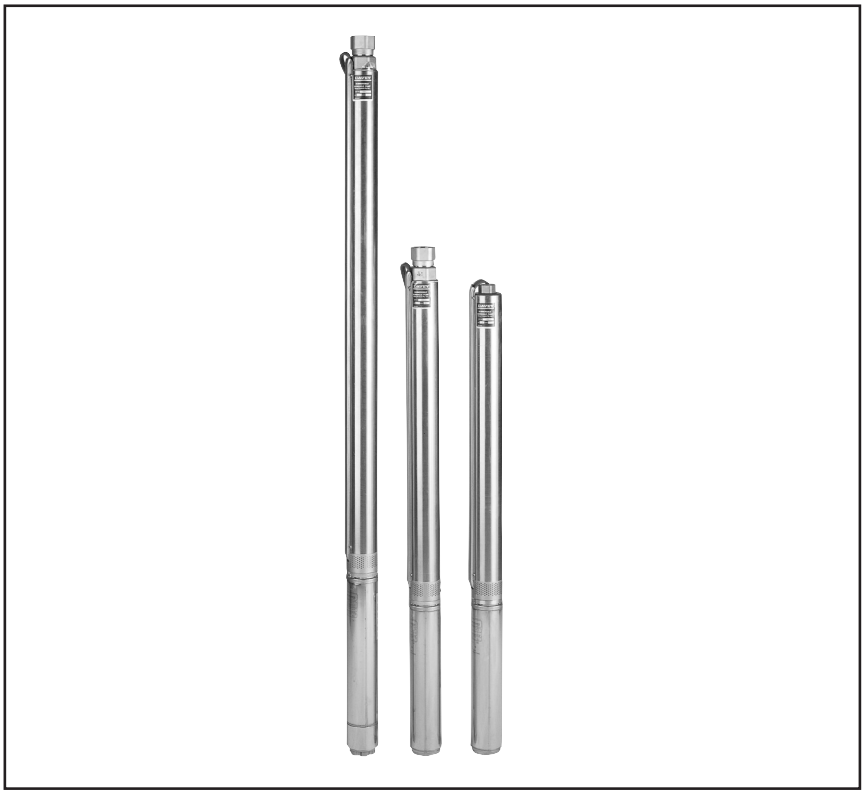
4" SUBMERSIBLE BOREHOLE PUMPS
J SERIES

DEPEND ON
DAVEY

WATER PRODUCTS



4" BOREHOLE PUMPS

PRODUCT DESCRIPTION

Slimline submersible borehole pumps suitable for 4" or larger bore holes. Manufactured from corrosion & abrasion resistant materials. Close coupled to a submersible electric motor. Designed for flow rates up to 325 lpm & heads up to 275 metres.

APPLICATIONS

- Domestic water supply
- Turf watering
- Irrigation
- Stock watering
- Dewatering
- Water treatment

FEATURES & BENEFITS

- Proven & reliable design for harsh Australian conditions
- Manufactured from quality corrosion resistant materials for long life
- Specific impeller material selection ensures optimal performance in sandy bores
- 25, 40 & 60 lpm models feature independently floating centrifugal (radial) impellers to provide easy starting and long life - automatically adjusting to pumping conditions for each application
- 80, 110, 160 & 250 lpm models feature locked stack partial mixed flow impellers with open waterways to provide easy starting and long life
- Heavy duty stainless steel outer casing shell providing protection and accurate alignment of internal components
- High quality shaft bearings providing low friction and high wear resistance
- Pump & motor are easily serviceable
- Heavy duty cast stainless steel discharge bowl with large durable lifting eye and built-in check valve for long life and ease of installation
- Strong hexagonal section drive shaft of premium stainless steel ensures positive impeller drive and longer life
- Standard 2 pole speed motor (2850rpm) limits internal velocities for longer life

OPERATING LIMITS

Nominal flows	25, 40, 60, 80, 110, 160 & 250 lpm
Maximum flow	325 lpm (19.5m³/hr)
Heads	275 metres
Motors	0.37kW (½hp) to 3.7kW (10hp)
Maximum water temperature	Up to 30°C after which special motor cooling and derating applies up to 55°C (see page 8)

H/O & MFG SCORESBY Certified System™ Environment ISO 14001

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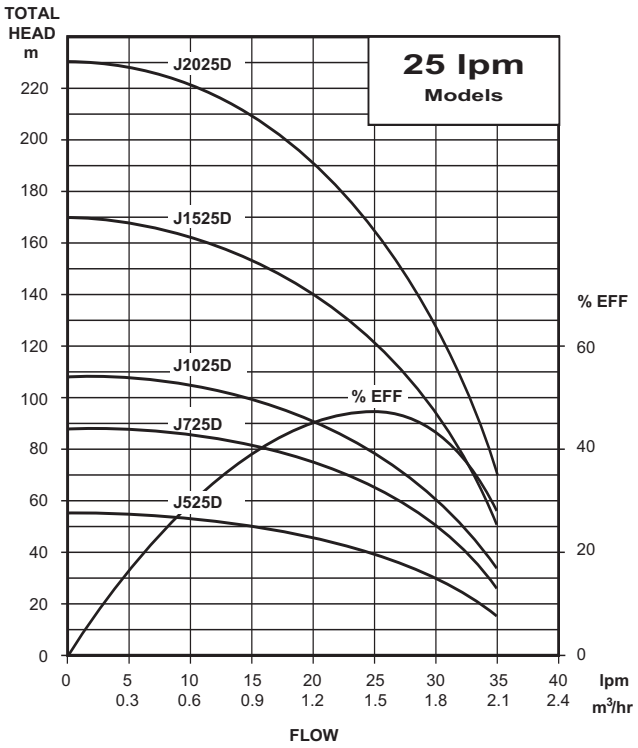
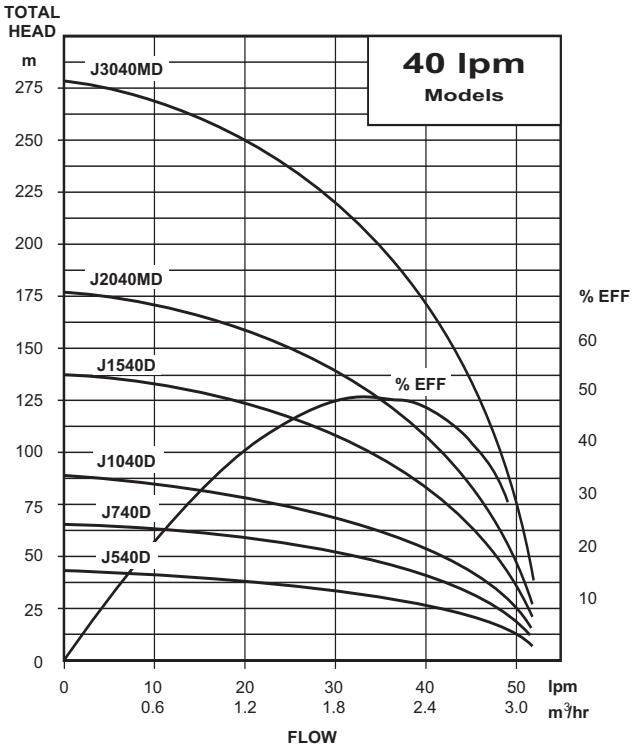
PERFORMANCE CURVES - 25, 40, 60 & 80 lpm

25 lpm MODELS



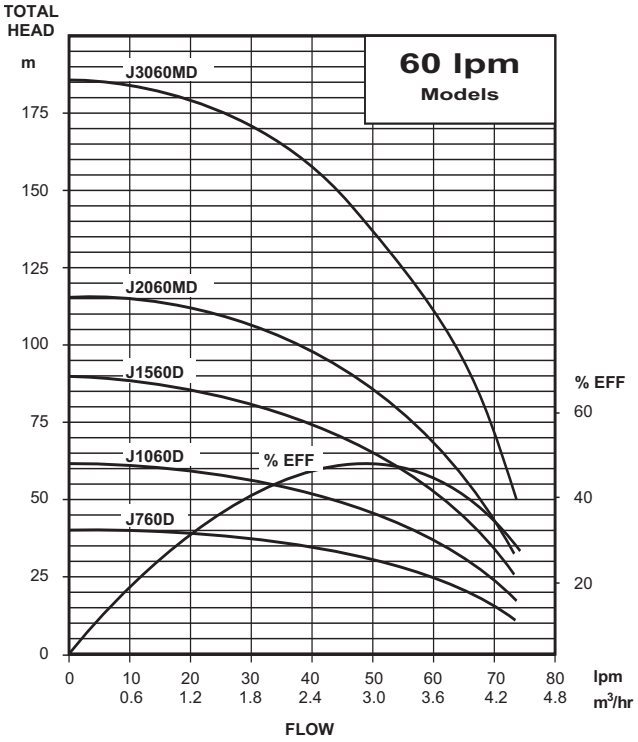
	Motor kW (P_2)				
	0.37	0.56	0.75	1.1	1.5
Model	J525D	J725D	J1025D	J1525D	J2025D

40 lpm MODELS



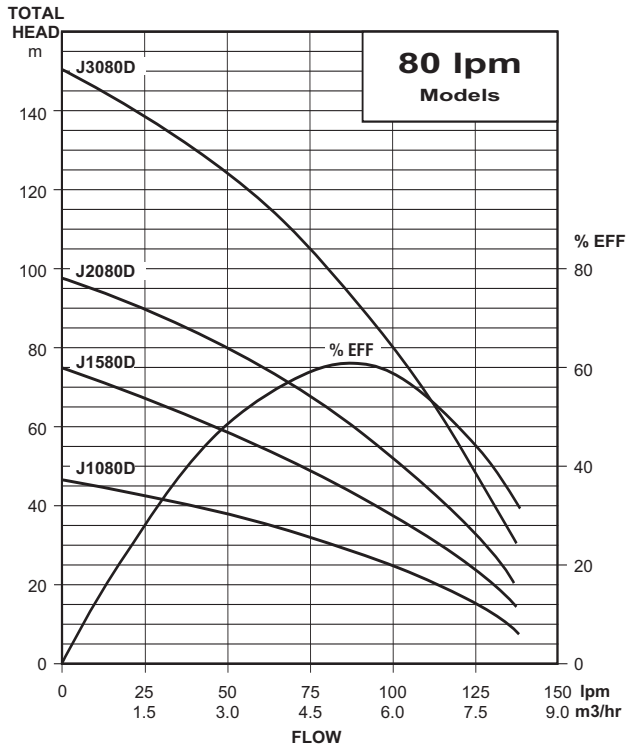
	Motor kW (P_2)					
	0.37	0.56	0.75	1.1	1.5	2.2
Model	J540D	J740D	J1040D	J1540D	J2040MD	J3040MD

60 lpm MODELS



	Motor kW (P_2)				
	0.56	0.75	1.1	1.5	2.2
Model	J760D	J1060D	J1560D	J2060MD	J3060MD

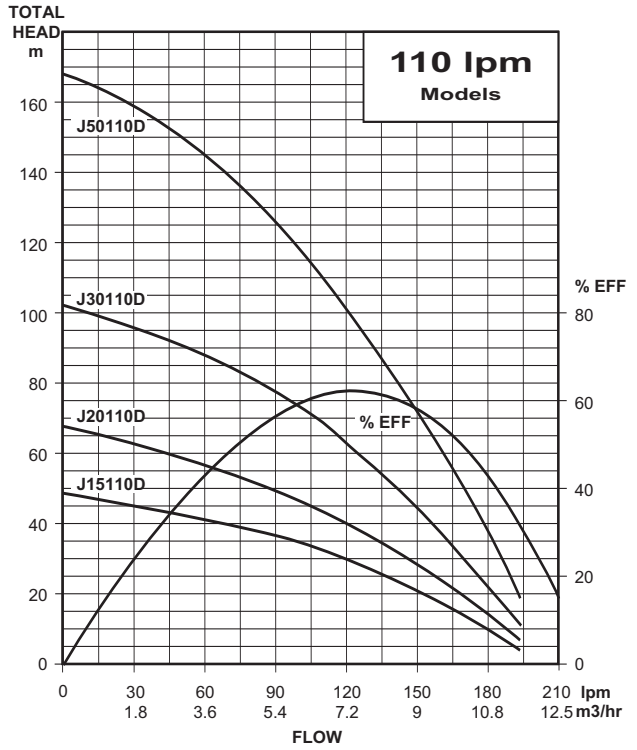
80 lpm MODELS



	Motor kW (P_2)			
	0.75	1.1	1.5	2.2
Model	J1080D	J1580D	J2080D	J3080D

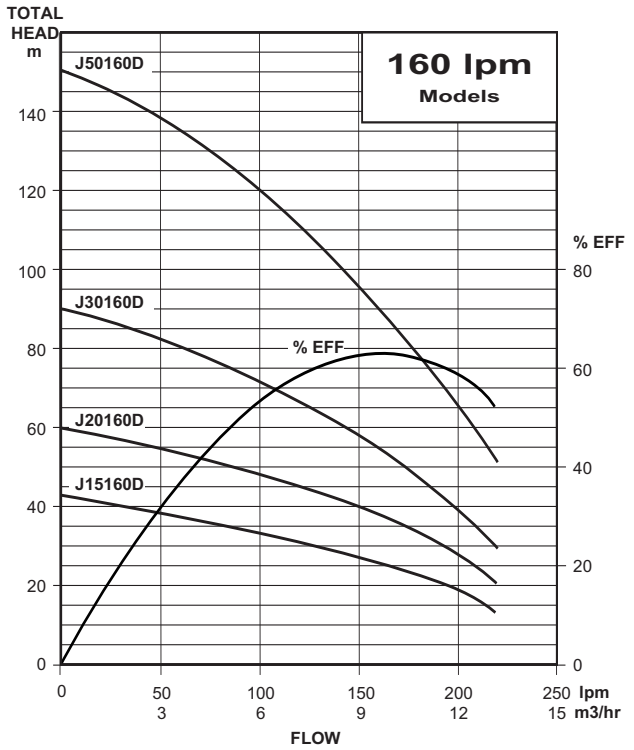
PERFORMANCE CURVES - 110, 160, 250 & 300 lpm

110 lpm MODELS



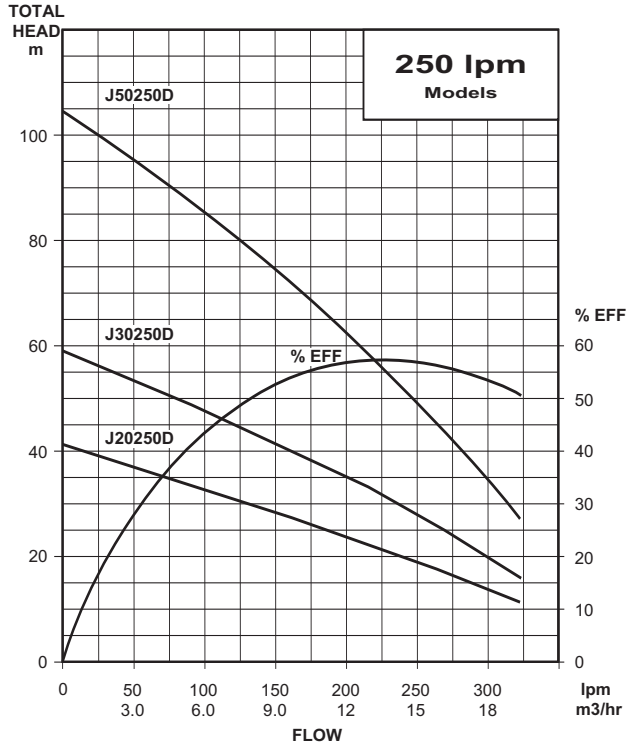
	Motor kW (P_2)			
	1.1	1.5	2.2	3.7
Model	J15110D	J20110D	J30110D	J50110D

160 lpm MODELS



	Motor kW (P_2)			
	1.1	1.5	2.2	3.7
Model	J15160D	J20160D	J30160D	J50160D

250 lpm MODELS



	Motor kW (P_2)		
	1.5	2.2	3.7
Model	J20250D	J30250D	J50250D

TECHNICAL SPECIFICATIONS

MATERIALS OF CONSTRUCTION

25, 40 & 60 lpm MODELS

PART	MATERIAL
Discharge	303 Stainless Steel
Impeller	Polyester with Teflon fill
Diffuser	Polyester with Teflon fill
Shaft guide bearing	Buna-N
Pump casing	304 Stainless Steel
Shaft & Coupling	303 Stainless Steel
Wear rings	304 Stainless Steel
Check valve	Polyester with Teflon fill
Cable guard	304 Stainless Steel
Thrust washer (ea. stage)	Phenolic
Fasteners	302-304 Stainless Steel
Lower mounting bracket	SS reinforced Composite for up to 1.1kW Full SS 1.5 & 2.2kW
Suction strainer	304 Stainless Steel
Design Features	
Impellers	Floating
Check valve	Internal non-spin

80, 110, 160 & 250 lpm MODELS

PART	MATERIAL
Discharge	303 Stainless Steel
Impeller	Glass-filled Polycarbonate
Diffuser	Glass-filled Polycarbonate
Shaft guide bearing	Buna-N
Pump casing	304 Stainless Steel
Shaft & Coupling	303 Stainless Steel
Wear rings	304 Stainless Steel
Check valve	303 Stainless Steel&Acetal
Cable guard	304 Stainless Steel
Thrust washer (ea. stage)	Nyloil
Fasteners	302-304 Stainless Steel
Lower mounting bracket	Stainless Steel
Suction strainer	Stainless Steel
Design Features	
Impellers	Fixed
Check valve	External

RECOMMENDED FLOW RANGE

Model	Minimum flow		Maximum flow	
	lpm	gpm	lpm	gpm
J25	15	3.3	31	6.8
J40	30	6.6	45	9.9
J60	44	9.7	70	15.4
J80	50	11.0	100	22.0
J110	80	17.6	140	30.8
J160	100	22.0	210	46.3
J250	150	33.0	310	68.3

DIMENSIONS & WEIGHTS

Model	Discharge BSP Female	Motor Power (P_2) kW	hp	Stages	Pump Details Length	Weight	Assembled Units * Single Phase Length	Weight	Three Phase Length	Weight
J525D	1¼"	0.37	½	8	432	4.1	674	12.2	655	11.2
J725D	1¼"	0.56	½	13	532	5.5	803	15	774	13.4
J1025D	1¼"	0.75	1	16	584	6.4	883	17	855	15.4
J1525D	1¼"	1.1	1½	25	826	8.2	1210	21.4	1125	19.2
J2025D	1¼"	1.5	2	33	990	11.8	1346	25.5	1318	23.8
J540D	1¼"	0.37	½	6	327	4.1	569	12.2	550	11.2
J740D	1¼"	0.56	½	9	396	4.8	667	14.3	638	12.7
J1040D	1¼"	0.75	1	12	466	5.4	765	16	737	14.4
J1540D	1¼"	1.1	1½	19	618	7	1002	20.2	917	18
J2040MD	1¼"	1.5	2	24	736	8.6	1092	22.3	1064	20.6
J3040MD	1¼"	2.2	3	38	1075	12.7	1536	30.4	1431	25.7
J760D	1¼"	0.56	½	6	352	4.3	623	13.8	594	12.2
J1060D	1¼"	0.75	1	9	431	5	730	15.6	702	14
J1560D	1¼"	1.1	1½	13	537	5.9	921	19.1	836	16.9
J2060MD	1¼"	1.5	2	17	646	7.3	1002	21	974	19.3
J3060MD	1¼"	2.2	3	27	929	10.9	1390	28.6	1285	23.9
J1080D	2"	0.75	1	8	513	6.1	812	16.7	784	15.1
J1580D	2"	1.1	1½	11	665	7.6	1049	20.8	964	18.6
J2080MD	2"	1.5	2	15	819	9.1	1175	22.8	1147	21.1
J3080MD	2"	2.2	3	23	1128	12.2	1589	29.9	1484	25.2
J15110D	2"	1.1	1½	8	618	8.2	1002	21.4	917	19.2
J20110D	2"	1.5	2	11	761	10	1117	23.7	1089	22
J30110D	2"	2.2	3	17	1040	13.7	1501	31.4	1396	26.7
J50110D	2"	3.7	5	28	1554	28.5	2252	57.5	2100	48.5
J15160D	2"	1.1	1½	7	652	7.6	1036	20.8	951	18.6
J20160D	2"	1.5	2	10	838	9.4	1194	23.1	1166	21.4
J30160D	2"	2.2	3	15	1148	12.5	1609	30.2	1504	25.5
J50160D	2"	3.7	5	25	1765	27.6	2463	56.6	2311	47.6
J20250D	2"	1.5	2	8	943	9	1299	22.7	1271	21
J30250D	2"	2.2	3	12	1293	20	1754	37.7	1649	33
J50250D	2"	3.7	5	21	2080	27.2	2778	56.2	2626	47.2

All dimensions in mm and weights in kg unless otherwise stated.
* Standard motor options shown.

FRANKLIN MOTOR SPECIFICATIONS

SINGLE PHASE - 4" MOTORS

Motor Size kW	Motor Type		Diameter Nom	Diameter mm	Full Load Current Amps @ Voltage 220V	230V	240V	LRC Amps	Efficiency @ Full Load	Thrust N	Weight kg	Length mm
0.37	SS	2W	4"	96	3.9	4	4.3	26.1	62.0%	1500	8.1	242
0.55	SS	2W	4"	96	6	6.4	7	36.6	63.0%	1500	9.5	271
0.75	SS	2W	4"	96	7.3	7.6	8.3	43.9	64.5%	1500	10.6	299
1.1	SS	2W	4"	96	10.6	10.7	10.9	52.9	64.0%	3000	13.2	384
1.5	SS	PSC	4"	96	10.6	10.2	9.8	35.2	68.0%	3000	13.7	356
0.75	SS	3W	4"	96	7.6	7.3	7.7	30.4	64.5%	1500	10.6	299
1.1	SS	3W	4"	96	9.6	8.9	9.3	42.4	68.0%	3000	13.2	356
1.5	SS	3W	4"	96	11.6	11.1	11.3	56.8	68.0%	3000	14.2	384
2.2	SS	3W	4"	96	16.7	15.9	17	84	70.5%	3000	17.7	461
2.2	HT	3W	4"	96	16.7	15.9	17	84	70.0%	6500	20	599
3.7	HT	3W	4"	96	23.7	22.7	22.5	123	76.0%	6500	29	752

THREE PHASE - 4" MOTORS

Motor Size kW	Motor Type	Diameter Nom	Diameter mm	Full Load Current Amps @ Voltage 415V	LRC Amps	Efficiency @ Full Load	Thrust N	Weight kg	Length mm
0.37	SS	4"	96	1.2	4.9	65.5%	1500	7.1	223
0.55	SS	4"	96	1.7	6.6	66.0%	1500	7.9	242
0.75	SS	4"	96	2.2	9.8	68.0%	1500	9	271
1.1	SS	4"	96	3.1	15.3	72.0%	3000	11	299
1.5	SS	4"	96	4.1	20.2	72.0%	3000	12	328
2.2	SS	4"	96	6.3	30.8	73.5%	3000	13	356
2.2	HT	4"	96	6.3	30.8	73.5%	6500	15.2	441
3	HT	4"	96	8.2	43.3	75.0%	6500	18.2	507
3.7	HT	4"	96	9.4	50	76.5%	6500	20	546
4	HT	4"	96	10.3	60	77.0%	6500	23.2	583

KEY
SS - Super Stainless
HT - High Thrust
2W - 2 Wire
PSC - Permanently Split Capacitor
3W - 3 Wire x requires control box

ELECTRICAL DATA - DROP CABLE DATA

SINGLE PHASE: 240V 50Hz 2 Wire Motor

4" Submersible Pumps								
	Cable Size in mm² - 2 core plus earth							
Motor kW	1.5	2.5	4.0	6.0	10.0	16.0	25.0	35.0
0.37	100	160	280	410	680	1000	1715	2200
0.55	70	110	185	265	450	700	1200	1540
0.75	50	85	135	205	340	540	920	1185
1.1	40	65	100	150	250	400	700	900

SINGLE PHASE: 240V 50Hz 3 Wire Motor

4" Submersible Pumps								
	Cable Size in mm² - 3 core plus earth							
Motor kW	1.5	2.5	4.0	6.0	10.0	16.0	25.0	35.0
0.75	60	100	170	250	430	670	1010	1380
1.1	40	70	120	180	300	470	710	980
1.5	30	60	90	130	230	360	550	760
2.2	20	40	60	90	150	230	350	490
3.7	-	20	40	60	100	160	250	340

THREE PHASE: 415V 50Hz

4" Submersible Pumps								
	Cable Size in mm² - 3 core plus earth							
Motor kW	1.5	2.5	4.0	6.0	10.0	16.0	25.0	35.0
1.1	270	470	730	1100	1800	2260	2860	4970
1.5	210	360	560	840	1400	1750	2990	3850
2.2	140	240	380	570	950	1320	2260	2900
3.7	80	150	230	350	590	800	1400	1900

- Cable size and length indicated in the above chart are based on the motor manufacturers requirements and provided for maximum voltage drop of + or -5% of 240 volts for single phase and 415 volts for three phase.
- The lengths indicated in the above charts are the maximum cable length from the service entrance through control box to the motor terminal.
- The above charts have been calculated in accordance with AS3008.1 - 1989.

TECHNICAL SPECIFICATIONS

HYDRAULIC PERFORMANCE

Reduced motor loading in water over 30°C (86°F)

Water Temperature	Approximate Allowable % of Maximum Nameplate Amps		
	Through 3 hp (2.2 kW)	5-15 hp (3.7-11 kW)	Over 15 hp (11 kW)
35°C	100%	100%	90%
40°C	100%	90%	80%
45°C	90%	80%	70%
50°C	80%	70%	60%
55°C	70%	60%	45%

Do not use submersible motors in water over 55°C (130°F).

With proper water flow past the motor, Franklin submersible motors are designed to operate up to nameplate amperage rating in water as hot as 30°C. If the water temperature exceeds 30°C, reduce the load by changing pumps or throttling the pump discharge.

COOLING REQUIREMENTS @ 30°C

4" Franklin Motors				
Bore size		Minimum Flow Rate		
Inch	mm	lpm	gpm	m^3/hr
4	101.6	4.5	1.0	0.27
5	127	26.5	5.8	1.59
6	152.4	49.2	10.8	2.952
8	203.2	113.5	25.0	6.81
10	254	189.2	41.7	11.352

With proper water flow past the motor, Franklin submersible motors are designed to operate up to nameplate amperage rating in water as hot as 30°C. If the water temperature exceeds 30°C, reduce the load by changing pumps or throttling the pump discharge.

FREQUENCY OF STARTS

The average number of starts per day over a period of months or years influences the life of a submersible pumping system. Excessive cycling affects the life of control components such as pressure switches, starters, relays and capacitors, plus splines and bearings. Rapid cycling can also cause motor overheating and winding failures.

The pump size, tank size and other controls should be selected to keep the starts per day as low as practical for longest life. The maximum allowable number of starts per 24 hour day, are shown in the table below.

Motors should be allowed to run a minimum of one minute to dissipate heat build up from starting current.

Motor Rating		Average Number of Starts per 24 Hr. Day	
kW	hp	Single Phase	Three Phase
Up to .55	Up to 3/4	300	300
.75 to 4.0	1 to 5 1/2	100	300

PUMP MOUNTING POSITION

Motors are suitable for operation in mounting positions from vertical shaft to horizontal. If 4 inch motors are started more than 10 times per day, it is recommended the shaft be tilted up at least 15° from horizontal to minimise coast-down wear of the up thrust washer.

USE OF CHECK VALVES

All Davey submersible pumps are fitted with a check valve.

It is recommended that check valves be used in all submersible pump installations. A check valve should be installed in the discharge pipe within 7 metres of the pump, if the built-in check valve is not used.

Immediate motor or pump failure, or shortened service life can be the result of the following conditions:

Backspin: When no check valve is used or when a check valve becomes defective, the water in the drop pipe can flow back down when the pump stops. This back flow can keep thrust on the motor while it comes to a stop which can cause excessive thrust bearing wear.

Up thrust: When no check valve is used or the valve leaks the pump starts each time at no head. Many pumps exert an upward thrust on the impeller stack at low heads which can lift the rotor of the motor until the developing water column causes down thrust. Repeated up thrust at each start can cause wear and failure.

Water hammer: If the lowest check valve is more than 9 metres above the bore water level, the weight of the falling water column draws a vacuum or evacuates a void below the check valve when the pump stops. On the next pump start, water moving at a high velocity fills this void and strikes the closed valve and the stationary water in the pipe causing a hydraulic shock. This shock can split pipes, break joints or damage the pump and motor.

Visit Davey on-line for further information
davey.com.au

DEPEND ON DAVEY

WATER PRODUCTS

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DPM129-4/2K/0309/IPM supersedes DPM129-3a/0408/WEB and DPM129-3/3K/0806/SC