



Experts in water.

DAVEY

APPLICATIONS

- Water supply
- Turf watering
- Irrigation
- Mine dewatering
- Water treatment



6" Stainless Steel Submersible Borehole Pumps

Model Numbers: SS Series

6" stainless steel submersible borehole pump manufactured from corrosion and abrasion resistant stainless steel. Close coupled to Nema standard submersible electric motor. Designed for flow rates to 80m³/hr, 1,333 lpm from standard 6" ID bore casing.

WHY CHOOSE DAVEY 6" STAINLESS STEEL SUBMERSIBLE BOREHOLE PUMPS?

Advanced stainless steel manufacturing technology

State of the art stainless steel construction

Complete 304SS hydraulic design

- High efficiency pump design
- Flexible stage construction
- Unique sand handling capabilities

High efficiency impeller design

Radial flow impeller for 19 & 30m³/hr models

Axial flow impeller for 46 & 65m³/hr models

- Maximum efficiency
- Reduced power consumption
- Maximum performance from 6" ID bore

Silicon carbide sleeve running in a fluted nitrile bearing

- Wear resistant for longer pump life
- Unique sand handling design

Check valve assembly incorporated into discharge head

Stainless steel up thrust washer

- Pump & motor protection
- Horizontal or vertical operation

Hexagonal shaft design

Single outer casing

Flexible stage design

- Maximum pump strength
- Maximum operating pressure
- Matched pump performance
- Easy to install & service

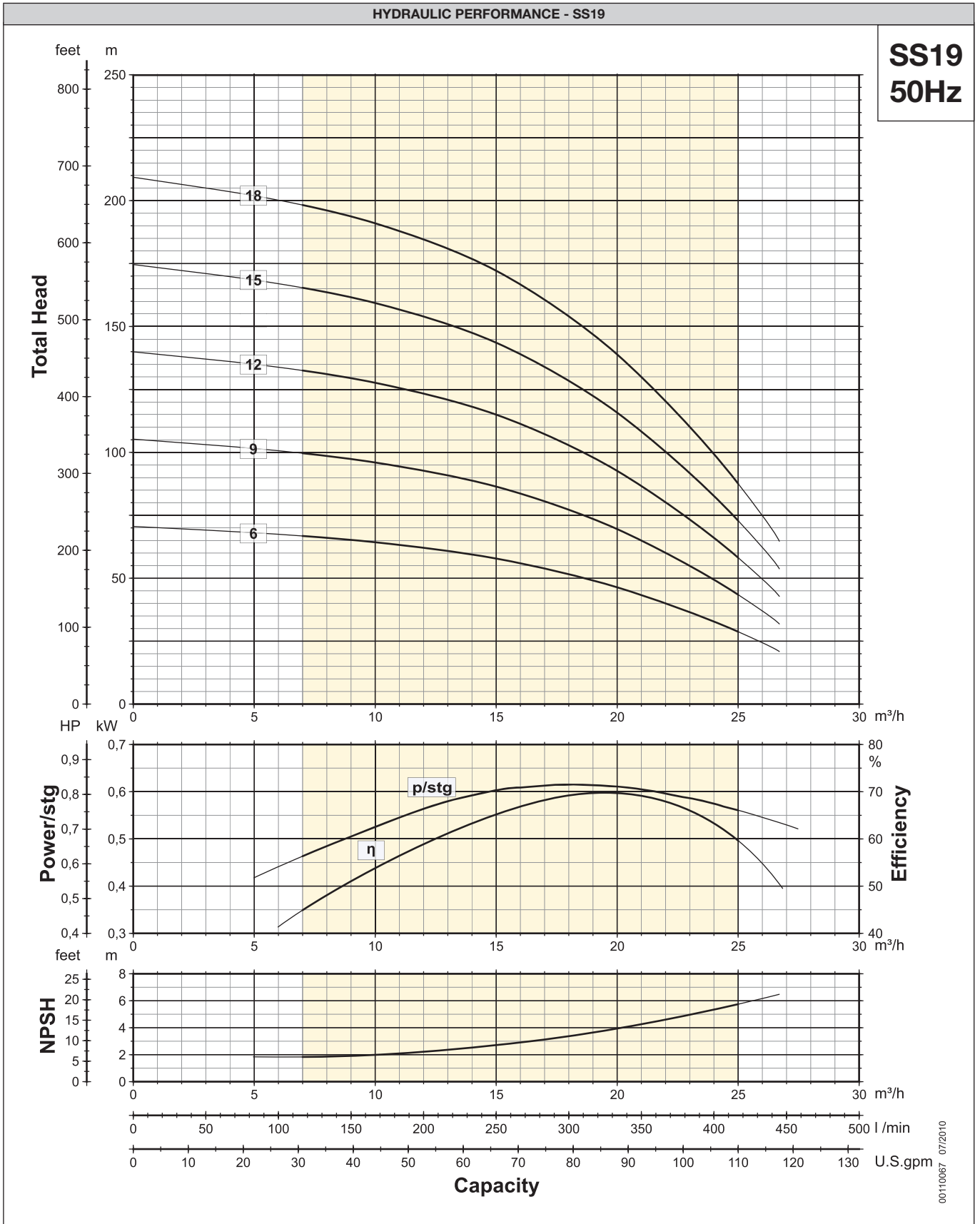


| MATERIALS OF CONSTRUCTION | |
|--|---------------------------|
| Part | Material |
| Outer case with motor adapter | 304 stainless steel |
| Discharge head with built-in check valve | 304 stainless steel |
| Sealing o-ring | Nitrile rubber |
| Pump shaft | 431 stainless steel |
| Coupling to motor | 431 / 329 stainless steel |
| Diffuser | 304 stainless steel |
| Floating neck ring | Teflon (PTFE) |
| Secondary bearing bush | Nitrile |
| Impeller | 304 stainless steel |
| Cable guard | 316 stainless steel |
| Suction strainer | 316 stainless steel |
| Outer case locking nuts | 316 stainless steel |
| Up-thrust washer | 316 stainless steel |
| Screws and washers | 316 stainless steel |

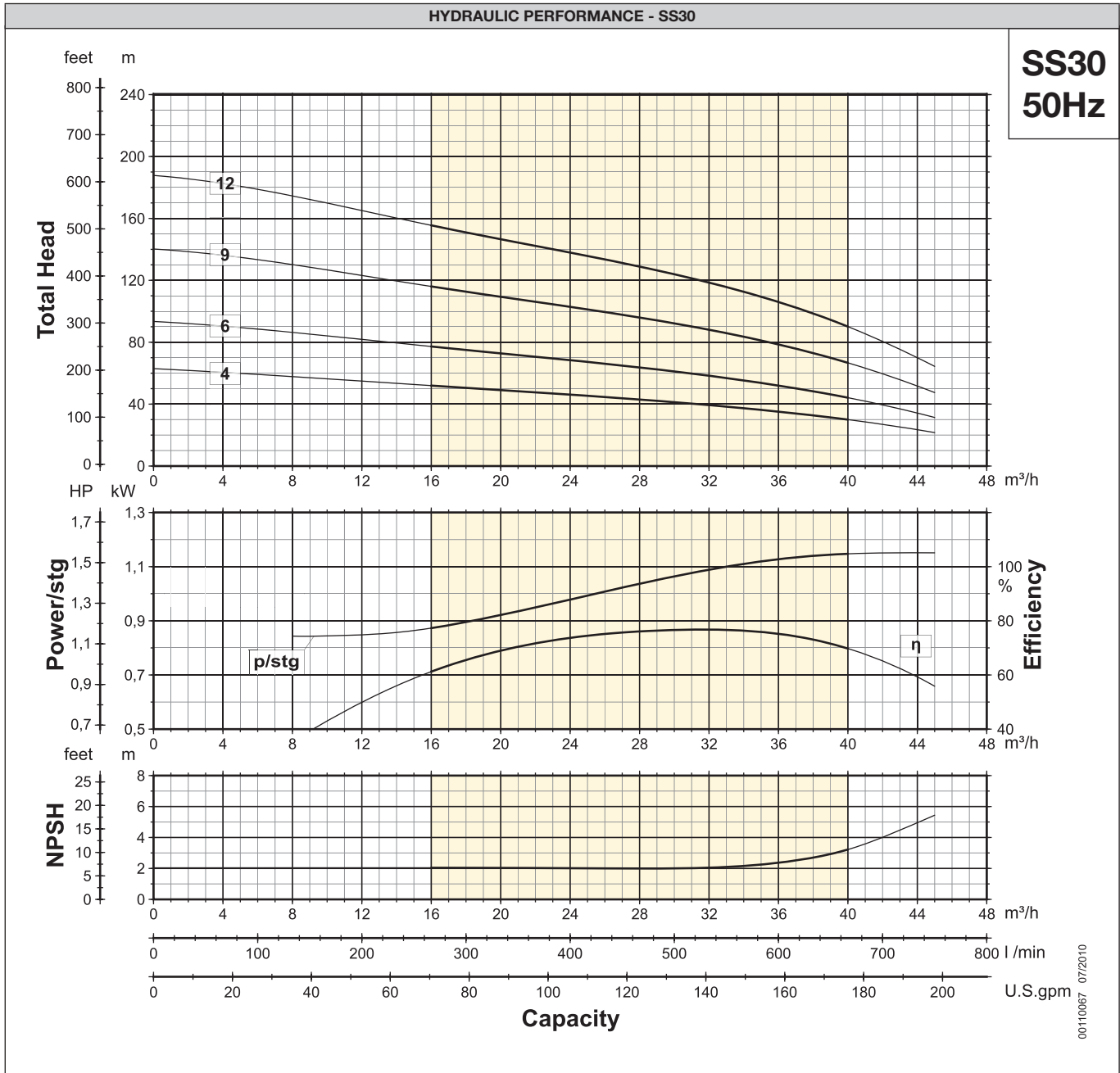
| OPERATING LIMITS | |
|--------------------------------|--|
| Capacity to | 80m ³ /hr 1330 lpm |
| Maximum total head | 210m |
| Maximum allowable sand content | 50g/m ³ |
| Water temperature | 10 to 50°C |
| Motor | 4kW to 22kW |
| Maximum diameter | 143m with standard motor |
| | Rotation counter clockwise when looking into discharge |
| Vertical mounting | Standard |
| Horizontal mounting | 4": up to 5.5kW |
| | 6": up to 15kW |
| Maximum starts per hour | 30 |

| DIMENSIONS | | | | | | | | | | |
|------------|-------------------|------------------------|--------------------|---------------------|------------------|------------------|-------------------|-------------------|-----------------------|-----------------------|
| Pump Model | Motors Power (kW) | Pump Discharge (B.S.P) | Pump Diameter (mm) | Motor Diameter (mm) | Pump Length (mm) | Pump Weight (kg) | Motor Length (mm) | Motor Weight (kg) | Pump Unit Length (mm) | Pump Unit Weight (kg) |
| SS19-06 | 4 | 2½" | 143 | 96 | 495 | 60.5 | 468 | 15.3 | 963 | 75.8 |
| SS19-09 | 5.5 | 2½" | 143 | 96 | 607.5 | 63 | 538 | 18.6 | 1145.5 | 81.6 |
| SS19-12 | 7.5 | 2½" | 143 | 96 | 720 | 67.5 | 810 | 27 | 1530 | 94.5 |
| SS19-15 | 9.3 | 2½" | 143 | 139 | 832.5 | 73 | 598 | 39 | 1430.5 | 112 |
| SS19-18 | 7.5 | 2½" | 143 | 139 | 945 | 78.5 | 698 | 42 | 1643 | 120.5 |
| SS30-04 | 5.5 | 3" | 143 | 96 | 705.5 | 65 | 538 | 18.6 | 1243.5 | 83.6 |
| SS30-06 | 7.5 | 3" | 143 | 96 | 876 | 71 | 810 | 27 | 1686 | 98 |
| SS30-09 | 11 | 3" | 143 | 139 | 1132.5 | 83.5 | 698 | 42 | 1830.5 | 125.5 |
| SS30-12 | 15 | 3" | 143 | 139 | 1389 | 99.5 | 758 | 48 | 2147 | 147.5 |
| SS46-04 | 5.5 | 3" | 143 | 96 | 819.5 | 67 | 538 | 18.6 | 1357.5 | 85.6 |
| SS46-05 | 7.5 | 3" | 143 | 96 | 933.5 | 71.5 | 810 | 27 | 1743.5 | 98.5 |
| SS46-08 | 11 | 3" | 143 | 139 | 1275 | 85 | 698 | 42 | 1973 | 127 |
| SS46-11 | 15 | 3" | 143 | 139 | 1617 | 103 | 758 | 48 | 2375 | 151 |
| SS46-14 | 18.5 | 3" | 143 | 139 | 1958.5 | 115 | 834 | 65 | 2792.5 | 180 |
| SS65-03 | 5.5 | 3" | 143 | 96 | 705.5 | 64 | 538 | 18.6 | 1243.5 | 82.6 |
| SS65-04 | 7.5 | 3" | 143 | 96 | 819.5 | 69 | 810 | 27 | 1629.5 | 96 |
| SS65-06 | 11 | 3" | 143 | 139 | 1047 | 80 | 698 | 42 | 1745 | 122 |
| SS65-09 | 15 | 3" | 143 | 139 | 1389 | 98 | 758 | 48 | 2147 | 146 |
| SS65-11 | 18.5 | 3" | 143 | 139 | 1617 | 107 | 834 | 65 | 2451 | 172 |
| SS65-13 | 22 | 3" | 143 | 139 | 1844.5 | 121.5 | 894 | 70 | 2738.5 | 191.5 |



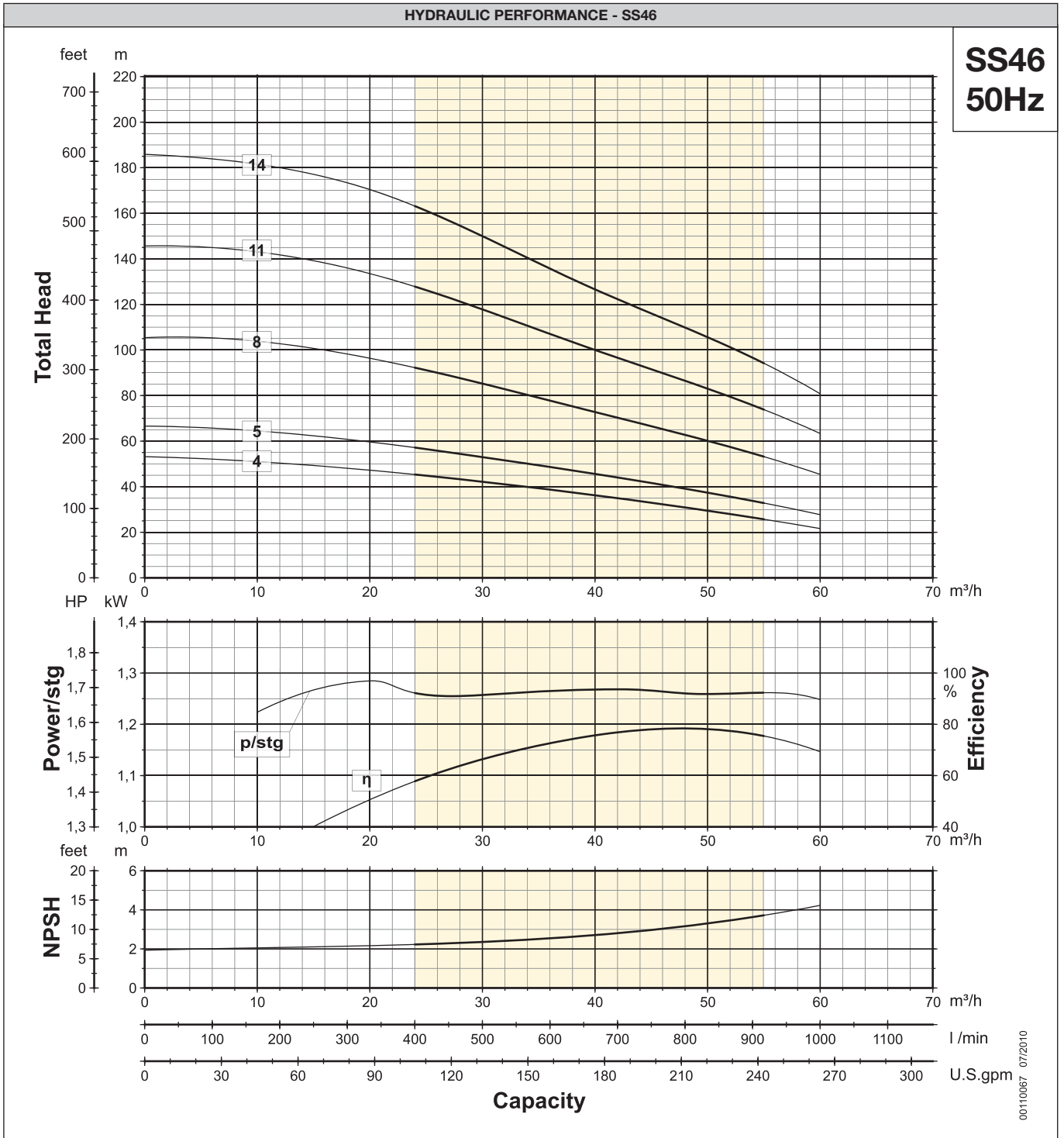


Performance characteristics are guaranteed to AS2417-2001 Annex A / ISO 9906 Annex A.



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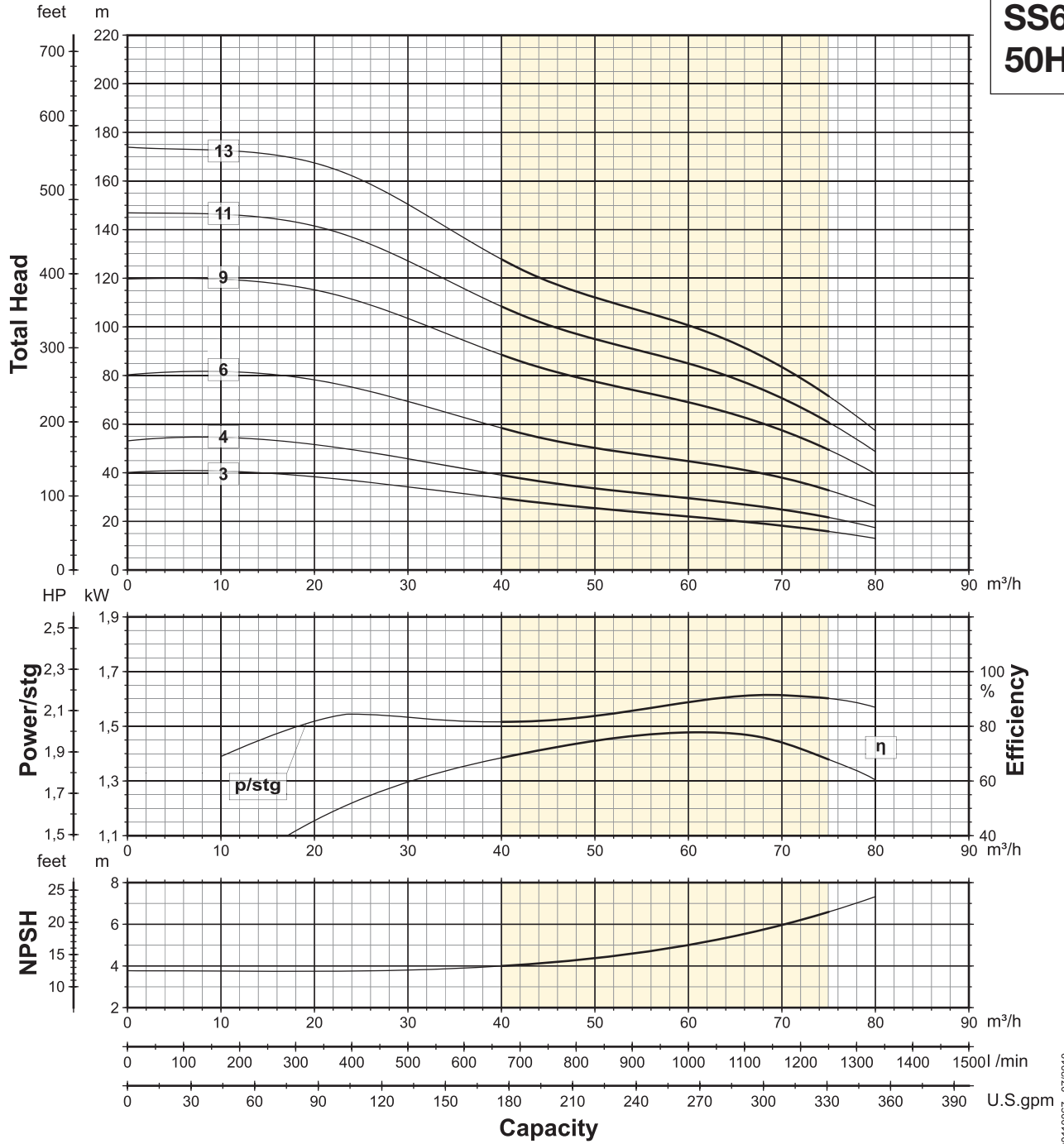
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HYDRAULIC PERFORMANCE - SS65

**SS65
50Hz**



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Performance characteristics are guaranteed to AS2417-2001 Annex A / ISO 9906 Annex A.

DAVEY MOTOR SPECIFICATIONS – 415V, 50HZ, 3Ø

| Motor Model | Motor Size kW | Motor Diameter | | Thrust N | Mechanical Seal | Weight kg | Length mm | Cable m |
|-------------|---------------|----------------|-----|----------|------------------|-----------|-----------|---------|
| | | Nom | mm | | | | | |
| DM3400 | 4 | 4" | 96 | 2500 | Hard Face SiC/Al | 15.3 | 468 | 2.5 |
| DM3550 | 5.5 | 4" | 96 | 2500 | Hard Face SiC/Al | 18.6 | 538 | 3 |
| DM3750 | 7.5 | 4" | 96 | 4400 | Hard Face SiC/Al | 27 | 810 | 4 |
| DM6093 | 9.3 | 6" | 139 | 10,000 | Hard Face SiC/Al | 39 | 598 | 2.8 |
| DM6110 | 11 | 6" | 139 | 10,000 | Hard Face SiC/Al | 42 | 698 | 2.8 |
| DM6150 | 15 | 6" | 139 | 10,000 | Hard Face SiC/Al | 48 | 758 | 2.8 |
| DM6185 | 18.5 | 6" | 139 | 10,000 | Hard Face SiC/Al | 65 | 834 | 2.8 |
| DM6220 | 22 | 6" | 139 | 10,000 | Hard Face SiC/Al | 70 | 894 | 2.8 |

DAVEY MOTOR ELECTRICAL SPECIFICATIONS – 415V, 50HZ, 3Ø

| Motor Model | Motor Size kW | Amps | | Efficiency @ Full Load | RPM | Cos | Ts/Tn PSC | R (main) Ω |
|-------------|---------------|-------------|---------------|------------------------|------|------|-----------|------------|
| | | Run Current | Start Current | | | | | |
| DM3400 | 4 | 9.7 | 45 | 78% | 2825 | 0.82 | 2.8 | 3.86 |
| DM3550 | 5.5 | 13.5 | 55 | 78% | 2820 | 0.82 | 3.0 | 2.81 |
| DM3750 | 7.5 | 17 | 70 | 77% | 2820 | 0.78 | 3.2 | 2.09 |
| DM6093 | 9.3 | 21 | 95 | 78% | 2870 | 0.79 | 2.6 | - |
| DM6110 | 11 | 23.9 | 121 | 80% | 2870 | 0.80 | 2.4 | - |
| DM6150 | 15 | 29.7 | 160 | 81% | 2860 | 0.84 | 2.5 | - |
| DM6185 | 18.5 | 36.6 | 225 | 83% | 2860 | 0.82 | 2.2 | - |
| DM6220 | 22 | 47.6 | 250 | 82% | 2860 | 0.84 | 2.1 | - |

ELECTRICAL CABLE SELECTION

Cable for submersible motors must be suitable for submerged operation and adequate in size to operate within rated temperature and maintain adequate voltage at the motor.
 Cable may be twisted conductors with or without jacket or flat molded type.
 Cable selections from the following table maintain motor voltage to at least 95% of supply voltage with maximum rated running amps and maintain acceptable starting voltage and cable temperature.

ELECTRICAL CABLE SELECTION CHART – 3 x 415V SUPPLY

| Motor Size | | Metric Cable Size (mm ²) | | | | | | | | | |
|------------|-----|--------------------------------------|-----|-----|-----|-----|------|------|------|------|------|
| kW | HP | 1.5 | 2.5 | 4 | 6 | 10 | 16 | 25 | 35 | 50 | 70 |
| 4.0 | 5.5 | 90 | 160 | 265 | 391 | 678 | 1058 | 1599 | 2196 | 3070 | 4140 |
| 5.5 | 7.5 | 69 | 126 | 200 | 300 | 510 | 790 | 1220 | 1670 | 2330 | 3160 |
| 7.5 | 10 | 57 | 92 | 150 | 230 | 390 | 610 | 930 | 1280 | 1790 | 2440 |
| 11 | 15 | - | 57 | 100 | 150 | 260 | 410 | 630 | 860 | 1220 | 1660 |
| 15 | 20 | - | - | 80 | 120 | 200 | 310 | 470 | 660 | 920 | 1240 |
| 18.5 | 25 | - | - | - | 90 | 160 | 240 | 380 | 520 | 720 | 990 |
| 22 | 30 | - | - | - | 80 | 140 | 210 | 320 | 440 | 620 | 850 |

WATER TEMPERATURE

Reduced motor loading in water over 35°C.

| Water Temperature | Approx. allowable % of max. nameplate Amps | | |
|-------------------|--|-------------------|------------------|
| | Through 3hp (2.2kW) | 5-15hp (3.7-11kW) | Over 15hp (11kW) |
| 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.

With proper water flow past the motor, submersible motors are designed to operate up to nameplate amperage rating in water as hot as 35°C. If the water temperature exceeds 35°C, reduce the load by changing pumps or throttling the pump discharge.

COOLING REQUIREMENTS AT 35°C

| Bore Size | | Minimum Flow Rate | | |
|-----------|-------|-------------------|-------|--------------------|
| Inch | mm | lpm | gpm | m ³ /hr |
| 6 | 152.4 | 34 | 7.5 | 2.1 |
| 7 | 177.8 | 95 | 20.9 | 5.7 |
| 8 | 203.2 | 170 | 37.4 | 10.2 |
| 10 | 254.0 | 340 | 74.9 | 20.4 |
| 12 | 304.8 | 530 | 116.7 | 31.8 |
| 14 | 355.6 | 760 | 167.4 | 45.6 |

If flow rate is less than above or water is coming from above the pump a shroud must be fitted. A shroud is always required in an open body of water e.g. a dam or river, or a cascading bore.

FREQUENCY OF STARTS

The maximum number of starts per hour 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 hour as low as practical for longest life. The maximum allowable number of starts per hour 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 | Maximum Starts per hour |
|---------------|-------------------------|
| 4": 4 – 7.5 | 30 |
| 6": 9.3 – 2.2 | 30 |

OVERLOAD PROTECTION - 3Ø

Characteristics of submersible motors differ from standard motors and special overload protection is required. In order to provide sufficient protection against overload and locked rotor, the overload relay has to be of the following characteristics:

- Trip time of <10 sec. at 500% I_N (nameplate current) based on cold bi-metal
- Protection against single phasing
- Must trip at 120% I_N (nameplate current)
- Temperature compensated to avoid nuisance tripping