

# P500

## Doseringspump

### P500MSGSSD10H PUMP WITH GEARBOX AND BASEPLATE



- Flöde 7 - 1600 l/h
- Tryck max. 172 bar
- Metallutförande
- Tätningslös och klarar torrkörning

## Produktinformation

Wanner HydraCell är en serie mycket robusta membranpumpar speciellt lämpade för dosering även vid höga tryck och svåra pumpmedier, som också kan vara slitande.

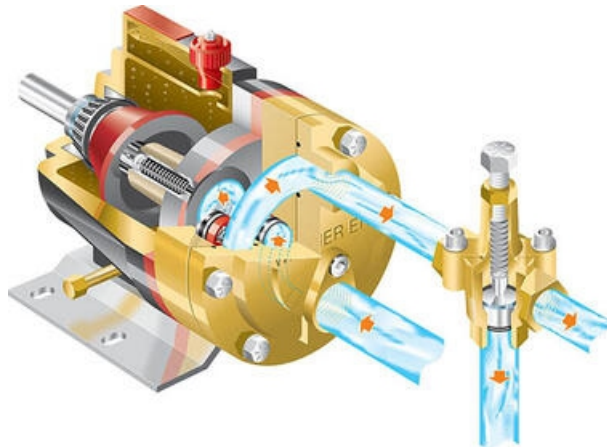
Pumparna har ingen genomgående axel med tätningar och mediet kommer aldrig i kontakt med mekanismen.

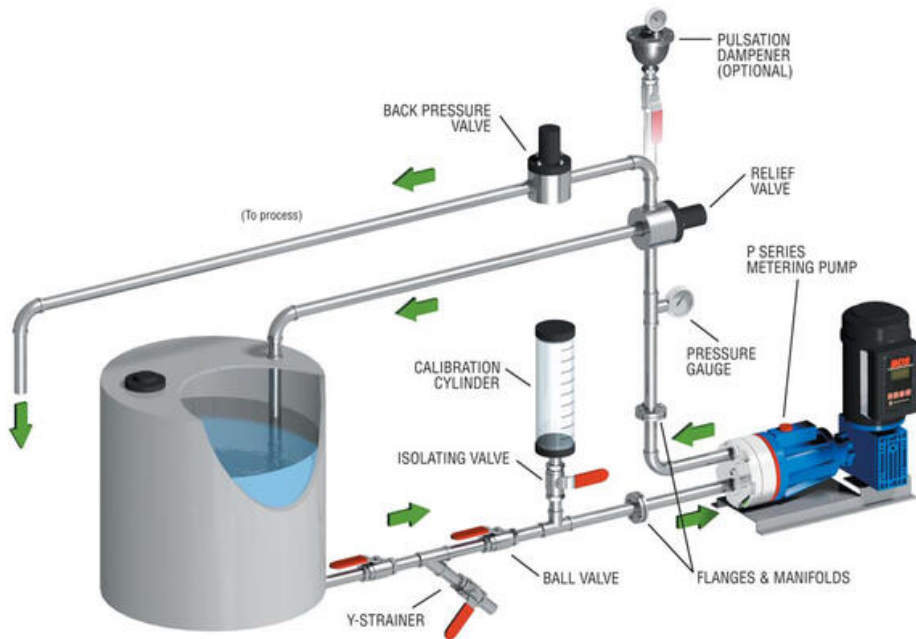
Membranen är avlastade med jämnt tryck över hela ytan, vilket ger dem mycket lång livslängd.

HydraCell-pumparna som arbetar enligt förträngningsprincipen, energisnåla och torrkörningssäkra.

Hydra-Cell pumparna möter de flesta och överträffar flara av kraven i standarden för doseringspumpar API 675.

De finns i många olika materialkombinationer och går även att få i ATEX-utförande för explosionsfarlig miljö.





Exempel på installation

|                      |                                                                                                                                                             |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pumphus              | Mässing, 316L, Hastelloy C                                                                                                                                  |
| Membran O-ringar     | Aflas, FKM, Buna-N                                                                                                                                          |
| Ventilsäten          | Nitronic 50, Hastelloy C, Tungstenkarbid                                                                                                                    |
| Ventiler             | Nitronic 50, Hastelloy C, Tungstenkarbid                                                                                                                    |
| Fjäder               | Elgiloy, Hastelloy C                                                                                                                                        |
| Fjäderhållare        | Hastelloy C                                                                                                                                                 |
| Flöde                | 3 - 1600 l/h                                                                                                                                                |
| Tryck                | Max. 173 bar                                                                                                                                                |
| Inloppstryck         | Max. 17 bar                                                                                                                                                 |
| Temperatur*          | Max. +120 °C (Beroende på materialval m.m.)*                                                                                                                |
| Partikelstorlek      | Max. 0,4 mm                                                                                                                                                 |
| Viskositet**         | Max. 1500 cP (Beroende på installation och varvtal)**                                                                                                       |
| ATEX***              | EEx II 2G k ia IIB T4 (max. mediatemp. 90 °C, omgivningstemp - 10 till 40 °C)<br>EEx II 3G k IIC T4 (max. mediatemp. 90 °C, omgivningstemp - 10 till 40 °C) |
| Kel-Cell             | Nej                                                                                                                                                         |
| Anslutningar (In/Ut) | 1/2" BSPT / 3/8" BSPT (NPT eller flänsar på förfrågan)                                                                                                      |
| Rotationsriktning    | Valfri                                                                                                                                                      |
| Oljevolym hydrauldel | ca. 2,1 l (Oljenivån skall vara ca. 1 - 2 cm under helt fylld hydrauldel)                                                                                   |
| Vikt                 | 73 kg                                                                                                                                                       |

\* För applikationer där temperaturen går under +10 eller över +80°C kontakta oss.

\*\* Vid viskositeter över 500 cP kontakta oss.

\*\*\* För applikationer i explosionsfarlig miljö kontakta oss.

|                         |                       |
|-------------------------|-----------------------|
| Flöde max               | 402 l/h               |
| Tryck max               | 172 bar               |
| Systemtryck max         | 34 bar                |
| Anslutning inlopp       | 1 1/4" BSPT           |
| Anslutning utlopp       | 3/4" BSPT             |
| Material Bottenplatta   | Epoxlackerat stål     |
| Material Fjäderhållare  | Hastelloy C           |
| Material Membran        | FKM                   |
| Material Pumphus        | SS 316L               |
| Material Ventiler       | Nitronic 50           |
| Material Ventilfjädrar  | Elgiloy               |
| Material Ventilsäten    | SS 316L               |
| Axeldimension           | Hålåxel 28 mm         |
| Rotation                | Valfri                |
| Utväxling               | 10:1 - IEC 112-B14    |
| Temperaturområde till   | 120 °C                |
| Viskositet max          | 1500 cP               |
| Olja                    | Livsmedelsolja H1 (K) |
| Oljevolym Hydrauldel    | 2,1 l                 |
| 1098_Particle size (mm) | Max. 0,5mm            |
| Vikt                    | 88,5 kg               |

[illegible][illegible]

- 1. The mass loss rate based on ambient temperature condition is  $< 0.1 \text{ g/g}$ . The ambient temperature about  $40^\circ\text{C}$ , please contact Borealis International.
- 2. Capacity data is shown for purges with fluorinated diaphanous Contact Factory for performance characteristics of purges with PPS diaphanous.
- 3. Contact factory for performance specifications.
- 4. Based on using 30 meters.
- 5. Maximum continuous heater applied is 1000 g/g or full pressure.
- 6. For maximum in reduced pressure duties, please contact Borealis International.

P500 Specifications (Cont'd)

Performance Maximum Flow at Designated Pressure - Imperial \*

| Metallic Pump Heads (gpi) |             | Pump        |             | Gear    |         | Motor |
|---------------------------|-------------|-------------|-------------|---------|---------|-------|
| 100 psi                   | 150 psi     | 200 psi     | 250 psi     | 300 psi | 350 psi |       |
| 17.48 (202)               | 16.38 (202) | 15.14 (202) | 14.47 (202) | 30      | 40.1    | 1000  |
| 20.97 (202)               | 20.43 (202) | 19.11 (202) | 17.71 (202) | 38      | 50.1    |       |
| 24.39 (202)               | 23.73 (202) | 22.29 (202) | 20.67 (202) | 48      | 60.1    |       |
| 28.27 (202)               | 27.47 (202) | 25.81 (202) | 24.00 (202) | 60      | 70.1    |       |
| 32.27 (202)               | 31.47 (202) | 29.81 (202) | 27.91 (202) | 72      | 80.1    |       |
| 36.27 (202)               | 35.47 (202) | 33.81 (202) | 31.91 (202) | 90      | 100.1   |       |
| 40.27 (202)               | 39.47 (202) | 37.81 (202) | 35.91 (202) | 110     | 120.1   |       |
| 44.27 (202)               | 43.47 (202) | 41.81 (202) | 39.91 (202) | 140     | 150.1   |       |
| 48.27 (202)               | 47.47 (202) | 45.81 (202) | 43.91 (202) | 180     | 190.1   |       |
| 52.27 (202)               | 51.47 (202) | 49.81 (202) | 47.91 (202) | 240     | 250.1   |       |
| 56.27 (202)               | 55.47 (202) | 53.81 (202) | 51.91 (202) | 300     | 310.1   | 3000  |
| 60.27 (202)               | 59.47 (202) | 57.81 (202) | 55.91 (202) | 360     | 370.1   |       |
| 64.27 (202)               | 63.47 (202) | 61.81 (202) | 59.91 (202) | 420     | 430.1   |       |
| 68.27 (202)               | 67.47 (202) | 65.81 (202) | 63.91 (202) | 480     | 490.1   |       |
| 72.27 (202)               | 71.47 (202) | 69.81 (202) | 67.91 (202) | 540     | 550.1   |       |
| 76.27 (202)               | 75.47 (202) | 73.81 (202) | 71.91 (202) | 600     | 610.1   |       |
| 80.27 (202)               | 79.47 (202) | 77.81 (202) | 75.91 (202) | 660     | 670.1   |       |
| 84.27 (202)               | 83.47 (202) | 81.81 (202) | 79.91 (202) | 720     | 730.1   |       |
| 88.27 (202)               | 87.47 (202) | 85.81 (202) | 83.91 (202) | 780     | 790.1   |       |
| 92.27 (202)               | 91.47 (202) | 89.81 (202) | 87.91 (202) | 840     | 850.1   |       |

\*Capacity data shown is for pumps with elastomeric diaphragms. Consult factory for performance characteristics of pumps with PTFE diaphragms.

† Required Motor kW

Performance Maximum Flow at Designated Pressure - Metric \*

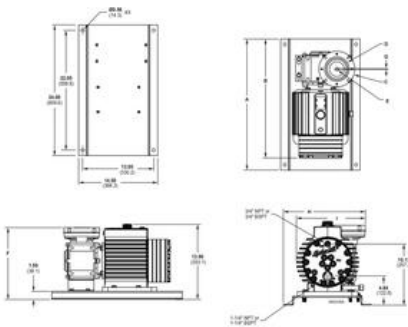
| Metallic Pump Heads (gpi) |             | Pump        |             | Gear   |        | Motor |
|---------------------------|-------------|-------------|-------------|--------|--------|-------|
| 7 bar                     | 10 bar      | 13 bar      | 17 bar      | 20 bar | 23 bar |       |
| 15.14 (202)               | 14.47 (202) | 13.41 (202) | 12.61 (202) | 25     | 40.1   | 1000  |
| 18.18 (202)               | 17.47 (202) | 16.29 (202) | 15.31 (202) | 30     | 50.1   |       |
| 21.22 (202)               | 20.47 (202) | 19.11 (202) | 17.71 (202) | 38     | 60.1   |       |
| 24.26 (202)               | 23.51 (202) | 22.15 (202) | 20.31 (202) | 48     | 70.1   |       |
| 27.30 (202)               | 26.55 (202) | 25.19 (202) | 23.31 (202) | 60     | 80.1   |       |
| 30.34 (202)               | 29.59 (202) | 28.23 (202) | 26.31 (202) | 72     | 90.1   |       |
| 33.38 (202)               | 32.63 (202) | 31.27 (202) | 29.31 (202) | 90     | 100.1  |       |
| 36.42 (202)               | 35.67 (202) | 34.31 (202) | 32.31 (202) | 110    | 120.1  |       |
| 39.46 (202)               | 38.71 (202) | 37.35 (202) | 35.31 (202) | 140    | 150.1  |       |
| 42.50 (202)               | 41.75 (202) | 40.39 (202) | 38.31 (202) | 180    | 190.1  |       |
| 45.54 (202)               | 44.79 (202) | 43.43 (202) | 41.31 (202) | 240    | 250.1  | 3000  |
| 48.58 (202)               | 47.83 (202) | 46.47 (202) | 44.31 (202) | 300    | 310.1  |       |
| 51.62 (202)               | 50.87 (202) | 49.51 (202) | 47.31 (202) | 360    | 370.1  |       |
| 54.66 (202)               | 53.91 (202) | 52.55 (202) | 50.31 (202) | 420    | 430.1  |       |
| 57.70 (202)               | 56.95 (202) | 55.59 (202) | 53.31 (202) | 480    | 490.1  |       |
| 60.74 (202)               | 60.00 (202) | 58.63 (202) | 56.31 (202) | 540    | 550.1  |       |
| 63.78 (202)               | 63.04 (202) | 61.67 (202) | 59.31 (202) | 600    | 610.1  |       |
| 66.82 (202)               | 66.08 (202) | 64.71 (202) | 62.31 (202) | 660    | 670.1  |       |
| 69.86 (202)               | 69.12 (202) | 67.75 (202) | 65.31 (202) | 720    | 730.1  |       |
| 72.90 (202)               | 72.16 (202) | 70.79 (202) | 68.31 (202) | 780    | 790.1  |       |

\*Capacity data shown is for pumps with elastomeric diaphragms. Consult factory for performance characteristics of pumps with PTFE diaphragms.

† Required Motor kW

P500 Dimensions

P500 Models with Metallic Pumping Head



Dimensions in Inches (Millimeters)

| Input Flange Size | A              | B              | C              | D             | E             | F             | G             | H             | I             |
|-------------------|----------------|----------------|----------------|---------------|---------------|---------------|---------------|---------------|---------------|
| 1/2" (12.7)       | 1.75 (44.3)    | 1.50 (38.1)    | 1.00 (25.4)    | 0.75 (19.0)   | 0.50 (12.7)   | 0.25 (6.3)    | 0.12 (3.2)    | 0.12 (3.2)    | 0.12 (3.2)    |
| 3/4" (19.0)       | 2.12 (53.8)    | 1.87 (47.5)    | 1.25 (31.8)    | 0.87 (22.1)   | 0.62 (15.7)   | 0.31 (7.9)    | 0.15 (3.8)    | 0.15 (3.8)    | 0.15 (3.8)    |
| 1" (25.4)         | 2.50 (63.5)    | 2.25 (57.1)    | 1.62 (41.3)    | 1.12 (28.4)   | 0.87 (22.1)   | 0.50 (12.7)   | 0.25 (6.3)    | 0.25 (6.3)    | 0.25 (6.3)    |
| 1 1/4" (31.8)     | 3.12 (79.3)    | 2.87 (73.0)    | 2.12 (53.8)    | 1.50 (38.1)   | 1.12 (28.4)   | 0.75 (19.0)   | 0.37 (9.4)    | 0.37 (9.4)    | 0.37 (9.4)    |
| 1 1/2" (38.1)     | 3.50 (88.9)    | 3.25 (82.6)    | 2.50 (63.5)    | 1.87 (47.5)   | 1.50 (38.1)   | 1.00 (25.4)   | 0.50 (12.7)   | 0.50 (12.7)   | 0.50 (12.7)   |
| 2" (50.8)         | 4.12 (104.1)   | 3.87 (98.0)    | 3.12 (79.3)    | 2.25 (57.1)   | 2.00 (50.8)   | 1.25 (31.8)   | 0.75 (19.0)   | 0.75 (19.0)   | 0.75 (19.0)   |
| 2 1/2" (63.5)     | 4.75 (120.7)   | 4.50 (114.3)   | 3.75 (95.3)    | 2.62 (66.0)   | 2.37 (60.2)   | 1.62 (41.3)   | 1.00 (25.4)   | 1.00 (25.4)   | 1.00 (25.4)   |
| 3" (76.2)         | 5.37 (136.8)   | 5.12 (129.9)   | 4.37 (111.1)   | 3.00 (76.2)   | 2.75 (70.1)   | 2.00 (50.8)   | 1.25 (31.8)   | 1.25 (31.8)   | 1.25 (31.8)   |
| 3 1/2" (88.9)     | 5.99 (151.1)   | 5.74 (145.8)   | 4.99 (126.7)   | 3.37 (85.7)   | 3.12 (79.3)   | 2.37 (60.2)   | 1.50 (38.1)   | 1.50 (38.1)   | 1.50 (38.1)   |
| 4" (101.6)        | 6.61 (167.6)   | 6.36 (161.3)   | 5.61 (142.4)   | 3.75 (95.3)   | 3.50 (88.9)   | 2.75 (70.1)   | 1.75 (44.3)   | 1.75 (44.3)   | 1.75 (44.3)   |
| 4 1/2" (114.3)    | 7.23 (182.9)   | 6.98 (177.1)   | 6.23 (158.1)   | 4.12 (104.1)  | 3.87 (98.0)   | 3.12 (79.3)   | 2.00 (50.8)   | 2.00 (50.8)   | 2.00 (50.8)   |
| 5" (127.0)        | 7.85 (199.1)   | 7.60 (192.7)   | 6.85 (174.0)   | 4.50 (114.3)  | 4.25 (108.0)  | 3.50 (88.9)   | 2.25 (57.1)   | 2.25 (57.1)   | 2.25 (57.1)   |
| 5 1/2" (139.7)    | 8.47 (214.4)   | 8.22 (208.0)   | 7.47 (190.2)   | 4.87 (123.8)  | 4.62 (117.3)  | 3.87 (98.0)   | 2.50 (63.5)   | 2.50 (63.5)   | 2.50 (63.5)   |
| 6" (152.4)        | 9.09 (230.6)   | 8.84 (224.2)   | 8.09 (205.1)   | 5.25 (133.0)  | 5.00 (127.0)  | 4.25 (108.0)  | 2.75 (70.1)   | 2.75 (70.1)   | 2.75 (70.1)   |
| 6 1/2" (165.1)    | 9.71 (246.8)   | 9.46 (240.4)   | 8.71 (221.4)   | 5.62 (142.4)  | 5.37 (136.8)  | 4.62 (117.3)  | 3.00 (76.2)   | 3.00 (76.2)   | 3.00 (76.2)   |
| 7" (177.8)        | 10.33 (263.0)  | 10.08 (256.6)  | 9.33 (236.7)   | 6.00 (152.4)  | 5.75 (145.8)  | 5.00 (127.0)  | 3.25 (82.6)   | 3.25 (82.6)   | 3.25 (82.6)   |
| 7 1/2" (190.5)    | 10.95 (278.3)  | 10.70 (271.9)  | 9.95 (252.0)   | 6.37 (161.9)  | 6.12 (155.4)  | 5.37 (136.8)  | 3.50 (88.9)   | 3.50 (88.9)   | 3.50 (88.9)   |
| 8" (203.2)        | 11.57 (293.5)  | 11.32 (287.1)  | 10.57 (268.3)  | 6.75 (172.7)  | 6.50 (165.1)  | 5.75 (145.8)  | 3.75 (95.3)   | 3.75 (95.3)   | 3.75 (95.3)   |
| 8 1/2" (215.9)    | 12.19 (308.8)  | 11.94 (302.4)  | 11.19 (283.6)  | 7.12 (181.0)  | 6.87 (174.0)  | 6.12 (155.4)  | 4.00 (101.6)  | 4.00 (101.6)  | 4.00 (101.6)  |
| 9" (228.6)        | 12.81 (324.0)  | 12.56 (317.6)  | 11.81 (299.1)  | 7.50 (190.5)  | 7.25 (184.3)  | 6.50 (165.1)  | 4.25 (108.0)  | 4.25 (108.0)  | 4.25 (108.0)  |
| 9 1/2" (241.3)    | 13.43 (339.3)  | 13.18 (332.9)  | 12.43 (314.4)  | 7.87 (200.0)  | 7.62 (193.0)  | 6.87 (174.0)  | 4.50 (114.3)  | 4.50 (114.3)  | 4.50 (114.3)  |
| 10" (254.0)       | 14.05 (354.5)  | 13.80 (348.1)  | 13.05 (329.7)  | 8.25 (209.5)  | 8.00 (203.2)  | 7.25 (184.3)  | 4.75 (120.7)  | 4.75 (120.7)  | 4.75 (120.7)  |
| 10 1/2" (266.7)   | 14.67 (369.8)  | 14.42 (363.4)  | 13.67 (345.0)  | 8.62 (218.8)  | 8.37 (212.4)  | 7.62 (193.0)  | 5.00 (127.0)  | 5.00 (127.0)  | 5.00 (127.0)  |
| 11" (279.4)       | 15.29 (385.0)  | 15.04 (378.6)  | 14.29 (360.3)  | 9.00 (228.6)  | 8.75 (221.3)  | 8.00 (203.2)  | 5.25 (133.0)  | 5.25 (133.0)  | 5.25 (133.0)  |
| 11 1/2" (291.8)   | 15.91 (400.3)  | 15.66 (393.9)  | 14.91 (375.6)  | 9.37 (238.1)  | 9.12 (230.7)  | 8.37 (212.4)  | 5.50 (139.7)  | 5.50 (139.7)  | 5.50 (139.7)  |
| 12" (304.8)       | 16.53 (415.5)  | 16.28 (409.1)  | 15.53 (390.9)  | 9.75 (247.7)  | 9.50 (241.3)  | 8.75 (221.3)  | 5.75 (145.8)  | 5.75 (145.8)  | 5.75 (145.8)  |
| 12 1/2" (317.5)   | 17.15 (430.8)  | 16.90 (424.4)  | 16.15 (406.2)  | 10.12 (257.1) | 9.87 (250.8)  | 9.12 (230.7)  | 6.00 (152.4)  | 6.00 (152.4)  | 6.00 (152.4)  |
| 13" (330.2)       | 17.77 (446.0)  | 17.52 (439.6)  | 16.77 (421.5)  | 10.50 (266.7) | 10.25 (269.9) | 9.50 (241.3)  | 6.25 (158.8)  | 6.25 (158.8)  | 6.25 (158.8)  |
| 13 1/2" (342.7)   | 18.39 (461.3)  | 18.14 (454.9)  | 17.39 (436.8)  | 10.87 (276.2) | 10.62 (269.9) | 9.87 (250.8)  | 6.50 (165.1)  | 6.50 (165.1)  | 6.50 (165.1)  |
| 14" (355.0)       | 19.01 (476.5)  | 18.76 (470.1)  | 18.01 (452.1)  | 11.25 (285.8) | 11.00 (279.4) | 10.25 (260.3) | 6.75 (171.5)  | 6.75 (171.5)  | 6.75 (171.5)  |
| 14 1/2" (367.6)   | 19.63 (491.8)  | 19.38 (485.4)  | 18.63 (467.4)  | 11.62 (295.3) | 11.37 (288.9) | 10.62 (269.9) | 7.00 (177.8)  | 7.00 (177.8)  | 7.00 (177.8)  |
| 15" (380.0)       | 20.25 (507.0)  | 19.99 (500.6)  | 19.25 (482.7)  | 12.00 (304.8) | 11.75 (298.1) | 11.00 (279.4) | 7.25 (184.3)  | 7.25 (184.3)  | 7.25 (184.3)  |
| 15 1/2" (392.7)   | 20.87 (522.3)  | 20.62 (515.9)  | 19.87 (498.0)  | 12.37 (314.3) | 12.12 (307.6) | 11.37 (288.9) | 7.50 (190.5)  | 7.50 (190.5)  | 7.50 (190.5)  |
| 16" (405.0)       | 21.49 (537.5)  | 21.24 (531.1)  | 20.49 (513.3)  | 12.75 (323.8) | 12.50 (317.2) | 11.75 (298.1) | 7.75 (196.5)  | 7.75 (196.5)  | 7.75 (196.5)  |
| 16 1/2" (417.6)   | 22.11 (552.8)  | 21.86 (546.4)  | 21.11 (528.6)  | 13.12 (333.3) | 12.87 (326.7) | 12.12 (307.6) | 8.00 (203.2)  | 8.00 (203.2)  | 8.00 (203.2)  |
| 17" (430.0)       | 22.73 (568.0)  | 22.48 (561.6)  | 21.73 (543.9)  | 13.50 (342.9) | 13.25 (336.2) | 12.50 (317.2) | 8.25 (209.5)  | 8.25 (209.5)  | 8.25 (209.5)  |
| 17 1/2" (442.5)   | 23.35 (583.3)  | 23.10 (576.9)  | 22.35 (559.2)  | 13.87 (352.4) | 13.62 (345.7) | 12.87 (326.7) | 8.50 (215.9)  | 8.50 (215.9)  | 8.50 (215.9)  |
| 18" (455.0)       | 23.97 (598.5)  | 23.72 (592.1)  | 22.97 (574.5)  | 14.25 (361.9) | 14.00 (355.3) | 13.25 (336.2) | 8.75 (221.3)  | 8.75 (221.3)  | 8.75 (221.3)  |
| 18 1/2" (467.6)   | 24.59 (613.8)  | 24.34 (607.4)  | 23.59 (589.8)  | 14.62 (371.4) | 14.37 (364.8) | 13.62 (345.7) | 9.00 (227.8)  | 9.00 (227.8)  | 9.00 (227.8)  |
| 19" (480.0)       | 25.21 (629.0)  | 24.96 (622.6)  | 24.21 (605.1)  | 15.00 (381.0) | 14.75 (374.3) | 14.00 (355.3) | 9.25 (233.9)  | 9.25 (233.9)  | 9.25 (233.9)  |
| 19 1/2" (492.5)   | 25.83 (644.3)  | 25.58 (637.9)  | 24.83 (620.4)  | 15.37 (390.5) | 15.12 (383.8) | 14.37 (364.8) | 9.50 (240.3)  | 9.50 (240.3)  | 9.50 (240.3)  |
| 20" (505.0)       | 26.45 (659.5)  | 26.20 (653.1)  | 25.45 (635.7)  | 15.75 (399.9) | 15.50 (393.4) | 14.75 (374.3) | 9.75 (246.3)  | 9.75 (246.3)  | 9.75 (246.3)  |
| 20 1/2" (517.5)   | 27.07 (674.8)  | 26.82 (668.4)  | 26.07 (651.0)  | 16.12 (409.4) | 15.87 (402.9) | 15.12 (383.8) | 10.00 (252.4) | 10.00 (252.4) | 10.00 (252.4) |
| 21" (530.0)       | 27.69 (689.9)  | 27.44 (683.5)  | 26.69 (666.3)  | 16.50 (418.9) | 16.25 (412.4) | 15.50 (393.4) | 10.25 (258.4) | 10.25 (258.4) | 10.25 (258.4) |
| 21 1/2" (542.5)   | 28.31 (705.2)  | 28.06 (698.8)  | 27.31 (681.6)  | 16.87 (428.4) | 16.62 (421.9) | 15.87 (402.9) | 10.50 (264.4) | 10.50 (264.4) | 10.50 (264.4) |
| 22" (555.0)       | 28.93 (720.4)  | 28.68 (714.0)  | 27.93 (696.9)  | 17.25 (437.9) | 17.00 (431.5) | 16.25 (412.4) | 10.75 (270.4) | 10.75 (270.4) | 10.75 (270.4) |
| 22 1/2" (567.5)   | 29.55 (735.7)  | 29.30 (729.3)  | 28.55 (712.2)  | 17.62 (447.4) | 17.37 (441.0) | 16.62 (421.9) | 11.00 (276.4) | 11.00 (276.4) | 11.00 (276.4) |
| 23" (580.0)       | 30.17 (750.9)  | 29.92 (744.5)  | 29.17 (727.5)  | 18.00 (456.9) | 17.75 (450.6) | 17.00 (431.5) | 11.25 (282.4) | 11.25 (282.4) | 11.25 (282.4) |
| 23 1/2" (592.5)   | 30.79 (766.2)  | 30.54 (759.8)  | 29.79 (742.8)  | 18.37 (466.4) | 18.12 (460.1) | 17.37 (441.0) | 11.50 (288.4) | 11.50 (288.4) | 11.50 (288.4) |
| 24" (605.0)       | 31.41 (781.4)  | 31.16 (775.0)  | 30.41 (758.1)  | 18.75 (475.9) | 18.50 (469.7) | 17.75 (450.6) | 11.75 (294.4) | 11.75 (294.4) | 11.75 (294.4) |
| 24 1/2" (617.5)   | 32.03 (796.7)  | 31.78 (790.3)  | 31.03 (773.4)  | 19.12 (485.4) | 18.87 (479.2) | 18.12 (460.1) | 12.00 (300.4) | 12.00 (300.4) | 12.00 (300.4) |
| 25" (630.0)       | 32.65 (811.9)  | 32.40 (805.5)  | 31.65 (788.7)  | 19.50 (495.0) | 19.25 (488.8) | 18.50 (469.7) | 12.25 (306.4) | 12.25 (306.4) | 12.25 (306.4) |
| 25 1/2" (642.5)   | 33.27 (827.2)  | 33.02 (820.8)  | 32.27 (804.0)  | 19.87 (504.5) | 19.62 (498.3) | 18.87 (479.2) | 12.50 (312.4) | 12.50 (312.4) | 12.50 (312.4) |
| 26" (655.0)       | 33.89 (842.4)  | 33.64 (836.0)  | 32.89 (819.3)  | 20.25 (514.0) | 20.00 (507.9) | 19.25 (488.8) | 12.75 (318.4) | 12.75 (318.4) | 12.75 (318.4) |
| 26 1/2" (667.5)   | 34.51 (857.7)  | 34.26 (851.3)  | 33.51 (834.6)  | 20.62 (523.5) | 20.37 (517.4) | 19.62 (498.3) | 13.00 (324.4) | 13.00 (324.4) | 13.00 (324.4) |
| 27" (680.0)       | 35.13 (872.9)  | 34.88 (866.5)  | 34.13 (849.9)  | 21.00 (533.0) | 20.75 (527.0) | 20.00 (507.9) | 13.25 (330.4) | 13.25 (330.4) | 13.25 (330.4) |
| 27 1/2" (692.5)   | 35.75 (888.2)  | 35.50 (881.8)  | 34.75 (865.2)  | 21.37 (542.5) | 21.12 (536.5) | 20.37 (517.4) | 13.50 (336.4) | 13.50 (336.4) | 13.50 (336.4) |
| 28" (705.0)       | 36.37 (903.4)  | 36.12 (897.0)  | 35.37 (880.5)  | 21.75 (552.0) | 21.50 (546.1) | 20.75 (527.0) | 13.75 (342.4) | 13.75 (342.4) | 13.75 (342.4) |
| 28 1/2" (717.5)   | 36.99 (918.7)  | 36.74 (912.3)  | 35.99 (895.8)  | 22.12 (561.5) | 21.87 (555.6) | 21.12 (536.5) | 14.00 (348.4) | 14.00 (348.4) | 14.00 (348.4) |
| 29" (730.0)       | 37.61 (933.9)  | 37.36 (927.5)  | 36.61 (911.1)  | 22.50 (571.0) | 22.25 (565.2) | 21.50 (546.1) | 14.25 (354.4) | 14.25 (354.4) | 14.25 (354.4) |
| 29 1/2" (742.5)   | 38.23 (949.2)  | 37.98 (942.8)  | 37.23 (926.4)  | 22.87 (580.5) | 22.62 (574.7) | 21.87 (555.6) | 14.50 (360.4) | 14.50 (360.4) | 14.50 (360.4) |
| 30" (755.0)       | 38.85 (964.4)  | 38.60 (958.0)  | 37.85 (941.7)  | 23.25 (590.0) | 23.00 (584.3) | 22.25 (565.2) | 14.75 (366.4) | 14.75 (366.4) | 14.75 (366.4) |
| 30 1/2" (767.5)   | 39.47 (979.7)  | 39.22 (971.6)  | 38.47 (957.0)  | 23.62 (599.5) | 23.37 (593.8) | 22.62 (574.7) | 15.00 (372.4) | 15.00 (372.4) | 15.00 (372.4) |
| 31" (780.0)       | 40.09 (994.9)  | 39.84 (986.3)  | 39.09 (972.3)  | 24.00 (609.0) | 23.75 (603.4) | 23.00 (584.3) | 15.25 (378.4) | 15.25 (378.4) | 15.25 (378.4) |
| 31 1/2" (792.5)   | 40.71 (1010.2) | 40.46 (1009.9) | 39.71 (987.6)  | 24.37 (618.5) | 24.12 (612.9) | 23.37 (593.8) | 15.50 (384.4) | 15.50 (384.4) | 15.50 (384.4) |
| 32" (805.0)       | 41.33 (1025.4) | 41.08 (1014.6) | 40.33 (1002.9) | 24.75 (628.0) | 24.50 (622.5) | 23.75 (603.4) | 15.75 (390.4) | 15.75 (390.4) | 15.75 (390.4) |
| 32 1/2" (817.5)   | 41.95 (1040.7) | 41.70 (1029.3) | 40.95 (1018.2) | 25.12 (637.5) | 24.87 (632.0) | 24.12 (612.9) | 16.00 (396.4) | 16.00 (396.4) | 16.00 (396.4) |
| 33" (830.0)       | 42.57 (1055.9) | 42.32 (1044.5) | 41.57 (1033.5) | 25.50 (647.0) | 25.25 (641.6) | 24.50 (622.5) | 16.25 (402.4) | 16.25 (402.4) | 16.25 (402.4) |
| 33 1/2" (842.5)   | 43.19 (1071.2) | 42.94 (1059.8) | 42.19 (1048.8) | 25.87 (656.5) | 25.62 (651.1) | 24.87 (632.0) | 16.50 (408.4) | 16.50 (408.4) | 16.50 (408.4) |
| 34" (855.0)       | 43.81 (1086.4) | 43.56 (1075.0) | 42.81 (1064.1) | 26.25 (666.0) | 26.00 (660.7) | 25.25 (641.6) | 16.75 (414.4) | 16.75 (414.4) | 16.75 (414.4) |
| 34 1/2" (867.5)   | 44.43 (1101.7) | 44.18 (1089.6) | 43.43 (1079.4) | 26.62 (675.5) | 26.37 (670.2) | 25.62 (651.1) | 17.00 (420.4) | 17.00 (420.4) | 17.00 (420.4) |
| 35" (880.0)       | 45.05 (1116.9) | 44.80 (1104.8) | 44.05 (1094.7) | 27.00 (685.0) | 26.75 (679.8) | 26.00 (660.7) | 17.25 (426.4) | 17.25 (426.4) | 17.25 (426.4) |
| 35 1/2" (892.5)   | 45.67 (1132.2) | 45.42 (1119.4) | 44.67 (1110.0) | 27.37 (694.5) | 27.12 (689.3) | 26.37 (670.2) | 17.50 (432.4) | 17.50 (432.4) | 17.50 (432.4) |
| 36" (905.0)       | 46.29 (1147.4) | 46.04 (1134.6) | 45.29 (1125.3) | 27.75 (704.0) | 27.50 (698.9) | 26.75 (679.8) | 17.75 (438.4) | 17.75 (438.4) | 17.75 (438.4) |
| 36 1/2" (917.5)   | 46.91 (1162.7) | 46.66 (1149.2) | 45.91 (1140.6) | 28.12 (713.5) | 27.87 (708.4) | 27.12 (689.3) | 18.00 (444.4) | 18.00 (444.4) | 18.00 (444.4) |
| 37" (930.0)       | 47.53 (1177.9) | 47.28 (1164.4) | 46.53 (1155.9) | 28.50 (723.0) | 28.25 (718.0) | 27.50 (698.9) | 18.25 (450.4) | 18.25 (450.4) | 18.25 (450.4) |
| 37 1/2" (942.5)   | 48.15 (1193.2) | 47.90 (1179.0) | 47.15 (1171.2) | 28.87 (732.5) | 28.62 (727.5) | 27.87 (708.4) | 18.50 (456.4) | 18.50 (456.4) | 18.50 (456.4) |
| 38" (955.0)       | 48.77 (1208.4) | 48.52 (1194.2) | 47.77 (118     |               |               |               |               |               |               |