



## Single Pump Operating Specifications

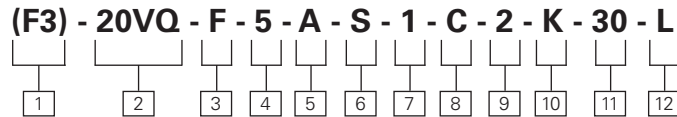
| Model Series | Delivery USgpm @ 1200 r/min 7 bar (100 psi) | Displ. cm <sup>3</sup> /r (in <sup>3</sup> /r) | Max. r/min | Max. bar (psi) | Typical del. L/min (USgpm) @ max. speed & pressure | Typical input kW (hp) @ max. speed & pressure | Weight kg (lb) |
|--------------|---|--|------------|----------------|--|---|----------------|
| 20VQ         | 5   | 18,0 (1.10)                                    | 2700       | 210 (3000)     | 42,3 (11)  | 17,9 (24)                                     | 11,8 (26)      |
|              | 8   | 27,4 (1.67)                                    | 2700       | 210 (3000)     | 65,4 (17)  | 26,1 (35)                                     |                |
|              | 11  | 36,4 (2.22)                                    | 2700       | 210 (3000)     | 88,5 (23)  | 35,4 (47.5)                                   |                |
|              | 12  | 39,5 (2.41)                                    | 2700       | 160 (2300)     | 98,1 (25.5)  | 28,4 (38)                                     |                |
|              | 14  | 45,9 (2.80)                                    | 2700       | 140 (2000)     | 115,4 (30)   | 29,1 (39)                                     |                |
| 25VQ         | 12  | 40,2 (2.45)                                    | 2700       | 210 (3000)     | 88,5 (23)  | 41,0 (55)                                     | 14,5 (32)      |
|              | 14  | 45,4 (2.77)                                    | 2700       | 210 (3000)     | 103,8 (27)   | 46,6 (62.5)                                   |                |
|              | 17  | 55,2 (3.37)                                    | 2500       | 210 (3000)     | 119,2 (31)   | 51,8 (69.5)                                   |                |
|              | 21  | 67,5 (4.12)                                    | 2500       | 210 (3000)     | 146,2 (38)   | 61,9 (83)                                     |                |
| 35VQ         | 25  | 81,6 (4.98)                                    | 2500       | 210 (3000)     | 173,1 (45)   | 75,3 (101)                                    | 22,7 (50)      |
|              | 30  | 97,7 (5.96)                                    | 2500       | 210 (3000)     | 211,5 (55)   | 87,7 (117.5)                                  |                |
|              | 35  | 112,8 (6.88)                                   | 2400       | 210 (3000)     | 230,8 (60)   | 98,5 (132)                                    |                |
|              | 38  | 121,6 (7.42)                                   | 2400       | 210 (3000)     | 250,0 (65)   | 104,4 (140)                                   |                |
| 45VQ         | 42  | 138,7 (8.46)                                   | 2200       | 175 (2500)     | 255,8 (66.5)                                       | 91,4 (122.5)                                  | 34,1 (75)      |
|              | 50  | 162,3 (9.90)                                   | 2200       | 175 (2500)     | 303,8 (79)   | 105,2 (141)                                   |                |
|              | 60  | 193,4 (11.80)                                  | 2200       | 175 (2500)     | 369,2 (96)   | 126,8 (170)                                   |                |

Performance constants: SAE 10W fluid @ 82° C (180° F), and pump inlet @ 0 PSIG (14.7 PSIA)

**Note:** Outlet pressure must always be higher than inlet pressure.  
See page 7 for details.

## Model Codes

Single Pump



**1 F3 – Viton seals**  
Omit if not required.

**2 Intravane pump series**

**3 Integral valve options**  
Omit if not required

**F** – Flow control and relief  
**P** – Priority valve and relief

**4 Geometric displacement**  
Code = SAE rating (USgpm) at  
1200 r/min, 7 bar (100 psi)

| Code | cm <sup>3</sup> /r | in <sup>3</sup> /r |
|------|--------------------|--------------------|
| 5    | 18,0               | 1.10               |
| 8    | 27,4               | 1.67               |
| 11   | 36,4               | 2.22               |
| 12   | 39,5               | 2.41               |
| 14   | 45,9               | 2.80               |

**5 Port connections**

| Series  | Code | Inlet                 | Outlets               |
|---------|------|-----------------------|-----------------------|
| 20VQ    | A    | SAE<br>4-bolt flg.    | SAE<br>4-bolt flg.    |
| 20VQ    | AM*  | Metric<br>4-bolt flg. | Metric<br>4-bolt flg. |
| 20VQF&P | B    | SAE<br>Str. thd.      | SAE<br>Str. thd.      |
| 20VQF&P | C    | SAE<br>4-bolt flg.    | SAE<br>Str. thd.      |

\* Same as code "A" port connections, except metric threads for fastening flanges.

**6 Mounting & shaft seal assembly**  
**F** – Foot mount with single shaft seal  
**S** – Flange mount and double shaft seal

Omit for flange mount with single shaft seal.

**7 Shaft type**  
**1** – Straight keyed  
**151** – Splined

**8 Outlet positions**  
(Viewed from cover end of pump)

**A** – Opposite inlet port  
**B** – 90° CCW from inlet  
**C** – In line with inlet  
**D** – 90° CW from inlet

**9 Controlled flow rate**  
(20VQF & 20VQP)

**3** – 11 L/min (3 USgpm)  
**4** – 15 L/min (4 USgpm)  
**6** – 23 L/min (6 USgpm)  
**7** – 27 L/min (7 USgpm)  
**8** – 30 L/min (8 USgpm)  
**10** – 38 L/min (10 USgpm)  
**11** – 42 L/min (11 USgpm)  
**12** – 45 L/min (12 USgpm)

**10 Relief valve setting**  
(20VQF & 20VQP)  
bar (psi)

|                      |                       |
|----------------------|-----------------------|
| <b>A</b> – 17 (250)  | <b>F</b> – 100 (1500) |
| <b>B</b> – 35 (500)  | <b>G</b> – 121 (1750) |
| <b>C</b> – 52 (750)  | <b>H</b> – 140 (2000) |
| <b>D</b> – 70 (1000) | <b>J</b> – 155 (2250) |
| <b>E</b> – 86 (1250) | <b>K</b> – 175 (2500) |

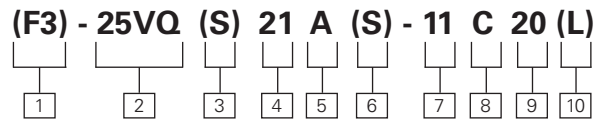
**11 Design**  
Subject to change. Installation dimensions remain the same for designs –30 through –39.

**12 Shaft Rotation**  
(Viewed from shaft end of pump)  
**L** – Left hand or counterclockwise.  
Omit for right hand.

**NOTE:** For options other than listed above, i.e. shafts, ports, displacements, and mountings, contact your Vickers representative.

## Model Codes

Single Pump



**1 F3 - Viton seals**  
Omit if not required.

**2 Intravane pump series**

|                  |                    |
|------------------|--------------------|
| Standard bearing | Heavy duty bearing |
| 25VQ             | 26VQ               |
| 35VQ             | 36VQ               |
| 45VQ             | -                  |

**3 Pilot designation**  
S – SAE per ISO 3019/1 (SAE J744)  
Omit for standard pilot.

**4 Geometric displacement**  
Code = SAE rating (USgpm) at 1200 r/min and 7 bar (100 psi)

**Frame**

| Size | Code | cm <sup>3</sup> /r | in <sup>3</sup> /r |
|------|------|--------------------|--------------------|
| 25V  | 12   | 40,2               | 2.45               |
|      | 14   | 45,4               | 2.77               |
|      | 17   | 55,2               | 3.37               |
|      | 21   | 67,5               | 4.12               |
| 35V  | 25   | 81,6               | 4.98               |
|      | 30   | 97,7               | 5.96               |
|      | 35   | 112,8              | 6.88               |
|      | 38   | 121,6              | 7.42               |
| 45V  | 42   | 138,7              | 8.46               |
|      | 50   | 162,3              | 9.90               |
|      | 60   | 193,4              | 11.80              |

**5 Port connections**

| Series | Code | Inlet                 | Outlets               |
|--------|------|-----------------------|-----------------------|
| All    | A    | SAE<br>4-bolt flg.    | SAE<br>4-bolt flg.    |
| All    | AM*  | Metric<br>4-bolt flg. | Metric<br>4-bolt flg. |
| 25VQ   | B    | SAE<br>str. thd.      | SAE<br>str. thd.      |
| 25VQ   | C    | SAE<br>4-bolt flg.    | SAE<br>str. thd.      |
| 25VQ   | D    | SAE<br>str. thd.      | SAE<br>4-bolt flg.    |

\*Same as code "A" port connections, except metric threads for fastening flanges.

**6 Mounting & shaft seal assembly**

**F** – Foot mounting with single shaft seal

**S** – Flange mount and double shaft seal

Omit for flange mount with single shaft seal.

**7 Shaft type**

**With standard pilot, single shaft seal**

**1** – Straight keyed

**11** – Splined

**86** – Straight keyed, heavy duty

**With standard pilot, double shaft seal**

**123** – Splined (not available on 45VQ)

**130** – Splined (for 45VQ only)

**With SAE pilot, single or double shaft seal**

**203** – Straight keyed, heavy duty

**297** – Splined

**8 Outlet positions**  
(Viewed from cover end of pump)

**A** – Opposite inlet

**B** – 90° CCW from inlet

**C** – In line with inlet

**D** – 90° CW from inlet

**9 Design**  
Subject to change. Installation dimensions remain the same for designs –20 through –29

**10 Rotation**  
(Viewed from shaft end of pump)

**L** – Left hand (counterclockwise)

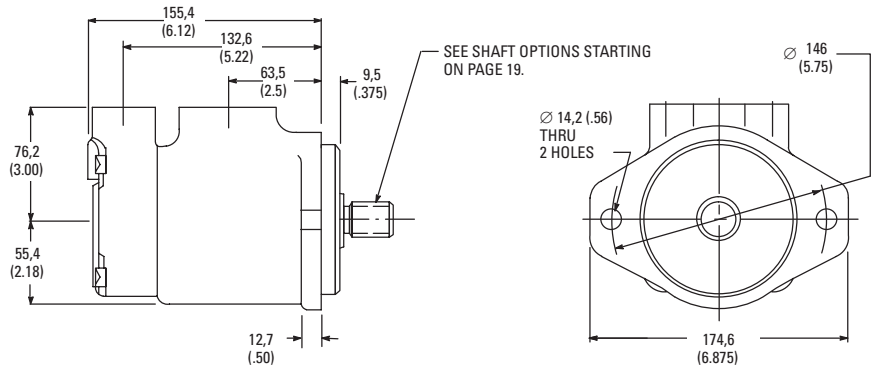
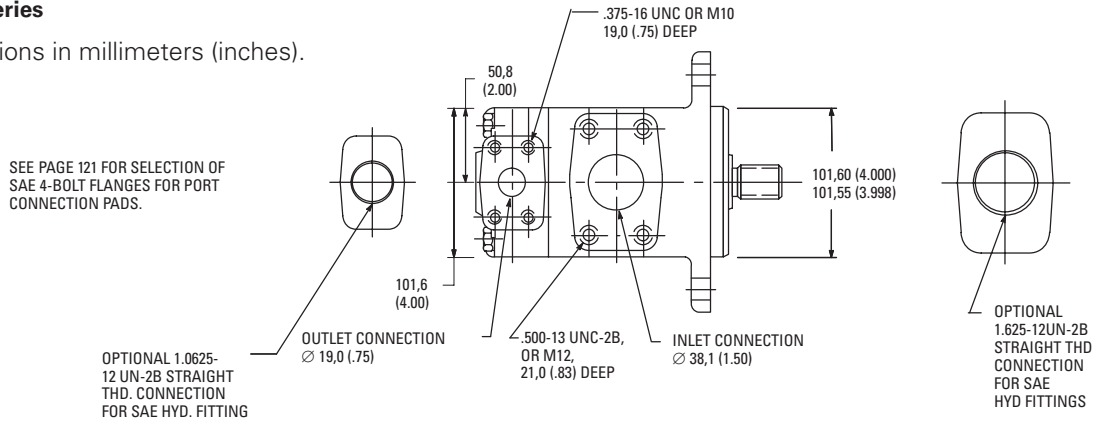
Omit for right hand.

**NOTE:** For options other than listed in the model code, i.e. shafts, ports, displacements and mountings, contact your Vickers representative.

# Installation Dimensions

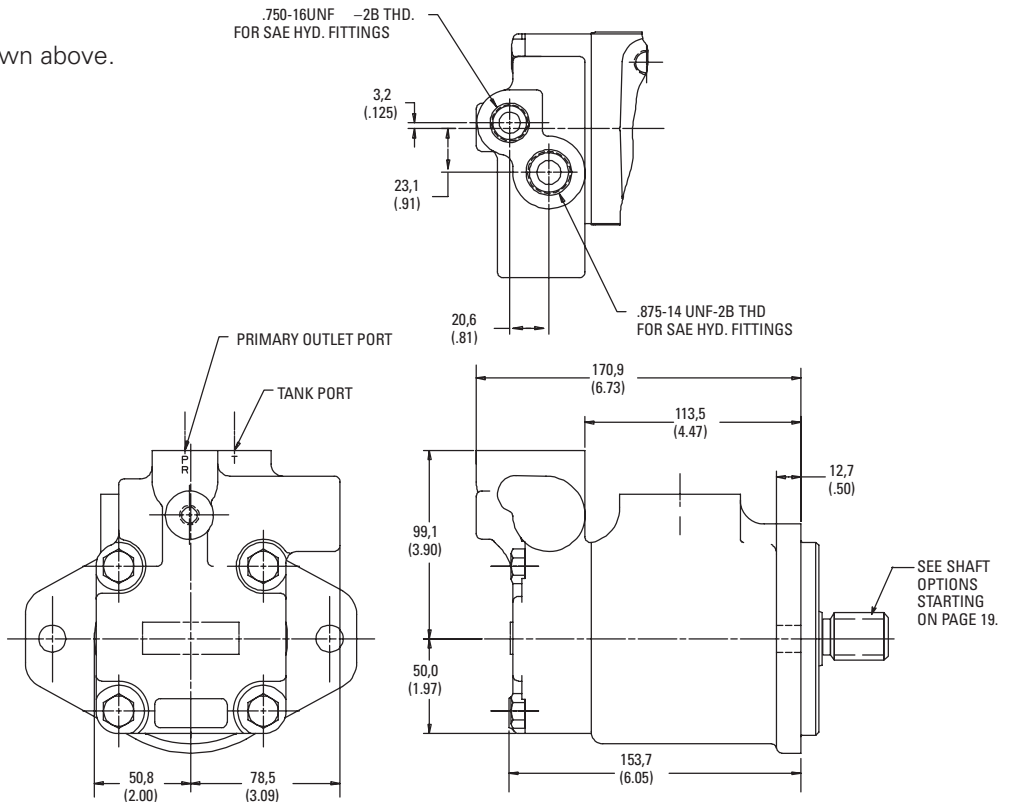
## 20VQ Series

Dimensions in millimeters (inches).



## 20VQF Series

Additional dimensions are shown above.



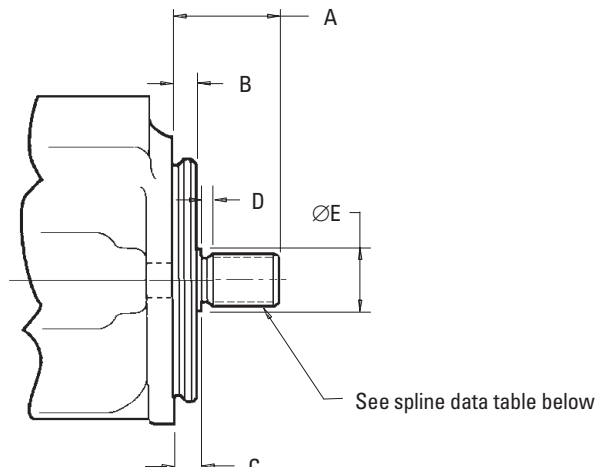




## Optional Shafts

### Splined Shafts

Dimensions in millimeters (inches)



| Pump                     | Shaft Code | A           | B           | C           | D         | ØE          | Spline Data (See below.) |
|--------------------------|------------|-------------|-------------|-------------|-----------|-------------|--------------------------|
| 20VQ,<br>20VQF,<br>20VQP | 151        | 44,1 (1.62) | 9,53 (.375) | 11,9 (.468) | 4,1 (.16) | 27,8 (1.09) | A                        |
|                          | 11         | 44,5 (1.75) | 9,53 (.375) | 11,1 (.437) | 4,1 (.16) | 27,8 (1.09) | A                        |
| 25VQ                     | 123        | 44,5 (1.75) | 9,53 (.375) | 15,7 (.62)  | 4,1 (.16) | 27,8 (1.09) | A                        |
|                          | 297        | 41,1 (1.62) | 9,53 (.375) | 7,9 (.31)   | 4,1 (.16) | 27,8 (1.09) | C                        |
| 35VQ                     | 11         | 58,7 (2.31) | 9,53 (.375) | 11,1 (.437) | 6,4 (.25) | 35,1 (1.38) | D                        |
|                          | 123        | 58,7 (2.31) | 9,53 (.375) | 15,2 (.60)  | 5,5 (.21) | 35,1 (1.38) | D                        |
|                          | 297        | 55,5 (2.19) | 12,7 (.500) | 7,9 (.31)   | 6,4 (.25) | 35,1 (1.38) | E                        |
| 45VQ                     | 11         | 61,9 (2.44) | 12,7 (.500) | 14,3 (.565) | 9,7 (.38) | 39,6 (1.56) | D                        |
|                          | 130        | 61,9 (2.44) | 12,7 (.500) | 15,2 (.60)  | 9,9 (.39) | 40,4 (1.59) | D                        |
|                          | 297        | 55,5 (2.19) | 12,7 (.500) | 7,9 (.31)   | 9,7 (.38) | 39,6 (1.56) | E                        |

### Spline Data Table

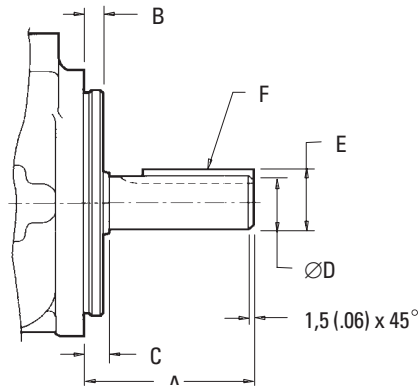
(Involute splines from above chart)

| Spline Data Reference | Number of Teeth | Pitch | Major Diameter                 | Form Diameter | Minor Diameter | Minor Diameter |
|-----------------------|-----------------|-------|--------------------------------|---------------|----------------|----------------|
| A                     | 13              | 16/32 | 22,17 (.873)<br>22,15 (.872)   | 19,03 (.749)  | 18,16 (.715)   | Major dia. fit |
| C                     | 13              | 16/32 | 21,8 (.858)<br>21,6 (.852)     | 19,03 (.749)  | 18,16 (.715)   | Side fit       |
| D                     | 14              | 12/24 | 31,70 (1.248)<br>31,67 (1.247) | 27,4 (1.08)   | 26,42 (1.040)  | Major dia. fit |
| E                     | 14              | 12/24 | 31,2 (1.229)<br>31,1 (1.223)   | 27,4 (1.08)   | 26,42 (1.040)  | Side fit       |



**Straight Key Shafts**

Dimensions in millimeters (inches)



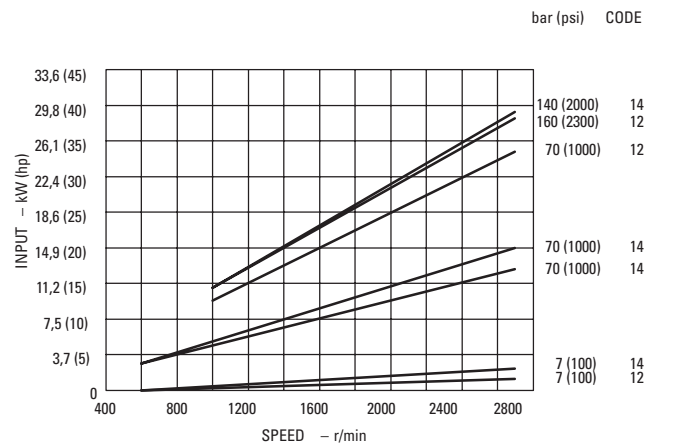
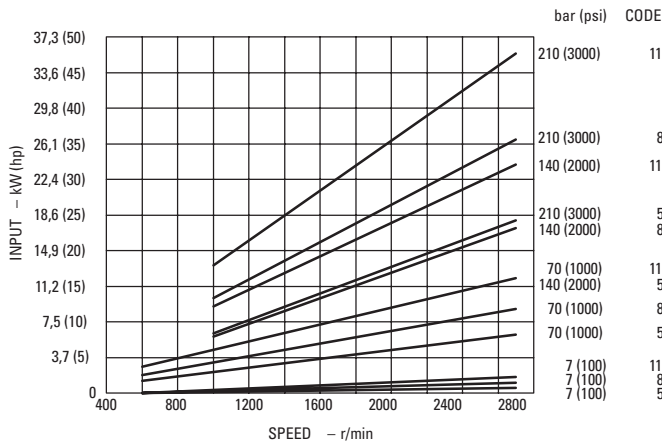
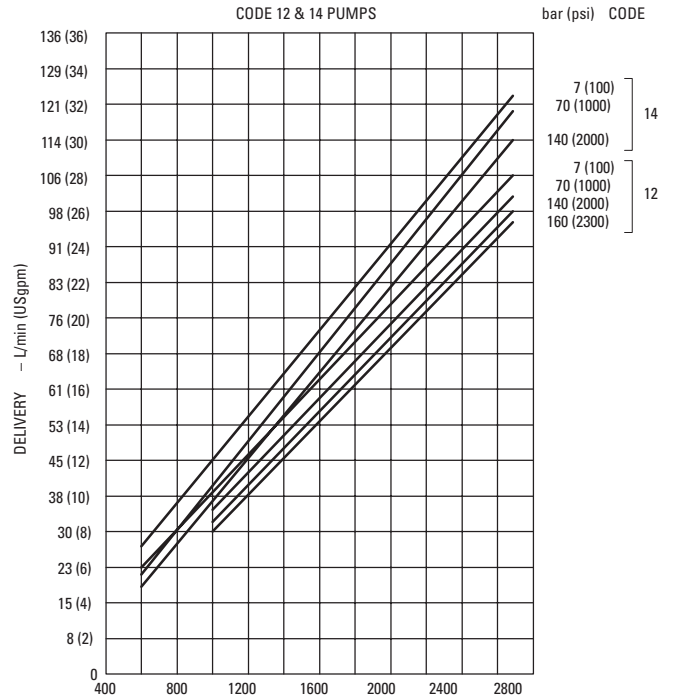
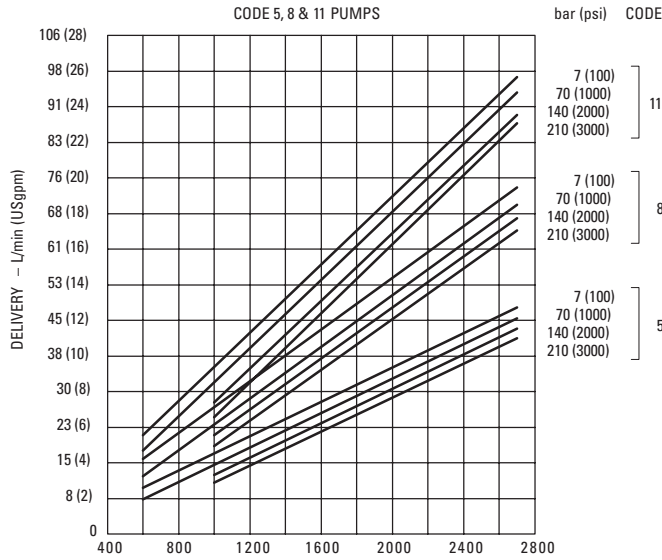
| Pump                     | Shaft Code | A           | B           | C            | ØD                             | E                            | F key width x length          |
|--------------------------|------------|-------------|-------------|--------------|--------------------------------|------------------------------|-------------------------------|
| 20VQ,<br>20VQF,<br>20VQP | 1          | 58,7 (2.31) | 9,53 (.375) | 11,9 (.468)  | 22,23 (.875)<br>22,20 (.874)   | 24,5 (.966)<br>24,4 (.961)   | 4,75 (.187)<br>x 32 (1.25)    |
|                          | 1          | 58,7 (2.31) | 9,53 (.375) | 11,1 (.435)  | 22,23 (.875)<br>22,20 (.874)   | 24,5 (.966)<br>24,4 (.961)   | 4,75 (.187)<br>x 32 (1.25)    |
| 25VQ                     | 86         | 77,7 (3.06) | 9,53 (.375) | 11,1 (.435)  | 25,37 (.999)<br>25,35 (.998)   | 28,3 (1.11)<br>28,1 (1.10)   | 6,36 (.250)<br>x 50,8 (2.00)  |
|                          | 203        | 77,7 (3.06) | 9,53 (.375) | 7,9 (.31) ▲  | 25,40 (1.00)<br>25,35 (.998)   | 28,20 (1.11)<br>27,94 (1.10) | 6,36 (.250)<br>x 49,2 (1.938) |
| 35VQ                     | 1          | 73,2 (2.88) | 9,53 (.375) | 11,1 (.435)  | 31,75 (1.250)<br>31,70 (1.248) | 35,36 (1.39)<br>34,10 (1.38) | 7,94 (.313)<br>x 38,1 (1.50)  |
|                          | 86         | 85,9 (3.38) | 9,53 (.375) | 11,1 (.435)  | 34,90 (1.374)<br>34,87 (1.373) | 38,6 (1.52)<br>38,3 (1.51)   | 7,92 (.312)<br>x 54 (2.13)    |
| 45VQ                     | 203        | 84,1 (3.31) | 12,7 (.500) | 7,9 (.31) ▲  | 34,90 (1.374)<br>34,87 (1.373) | 38,6 (1.52)<br>38,3 (1.51)   | 7,92 (.312)<br>x 54 (2.125)   |
|                          | 1          | 62,0 (2.44) | 12,7 (.500) | 14,22 (.560) | 31,75 (1.250)<br>31,70 (1.248) | 35,36 (1.39)<br>34,10 (1.38) | 7,92 (.312)<br>x 28,5 (1.12)  |
| 45VQ                     | 86         | 87,4 (3.44) | 12,7 (.500) | 14,22 (.560) | 38,07 (1.499)<br>38,05 (1.498) | 42,4 (1.67)<br>42,1 (1.66)   | 9,53 (.375)<br>x 50,8 (2.00)  |
|                          | 203        | 90,4 (3.56) | 12,7 (.500) | 7,9 (.31) ▲  | 38,07 (1.499)<br>38,05 (1.498) | 42,4 (1.67)<br>42,1 (1.66)   | 9,53 (.375)<br>x 57,1 (2.25)  |

▲ Shaft shoulder inside recess in pilot.

# Typical Performance

## 20VQ Single Pumps

Performance Constants:  
SAE 10W fluid @ 82° C (180° F)  
Pump inlet @ 0 psig (14.7 psia)



## 25VQ Single & 25VQT\*S Thru-drive Pumps

Performance Constants:

SAE 10W fluid @ 82° C (180° F)

Pump inlet @ 0 psig (14.7 psia)

Maximum operating speeds shown on performance curves are for pumps operating at 0 psi inlet condition. To compute maximum operating speeds at other inlet conditions, use appropriate speed rating correction factor.

Example:

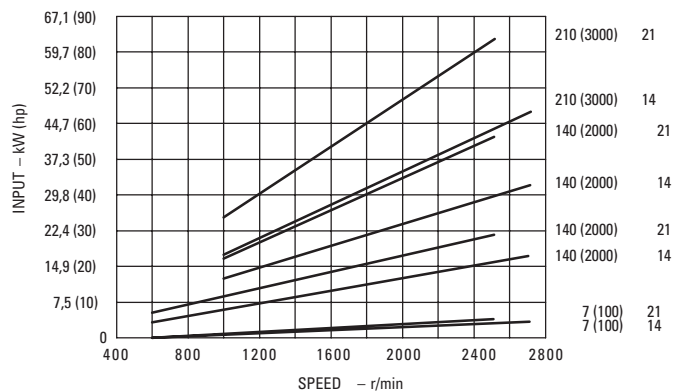
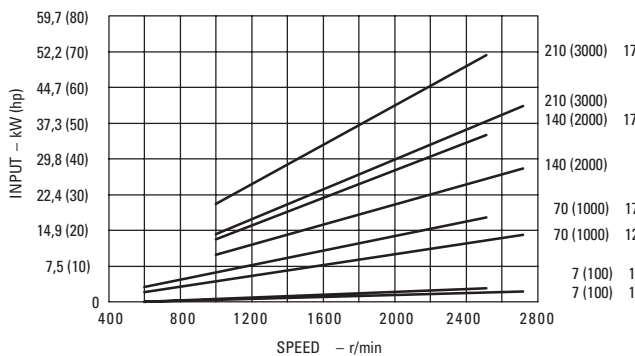
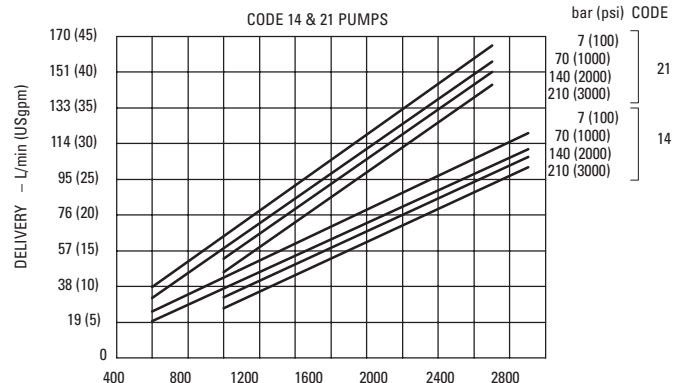
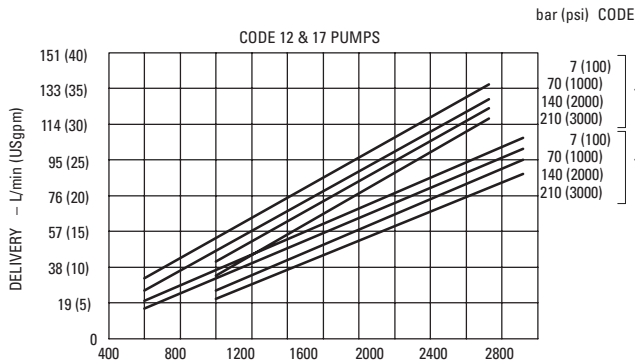
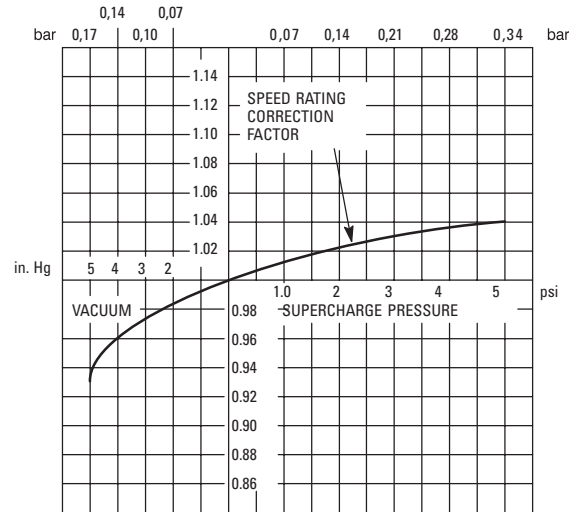
Max. speed @ 0 psi inlet      2700 r/min

Correction factor @ 5 in. Hg     $\times .93$

Max. speed @ 5 in. Hg inlet    2511 r/min

Pump inlet suction should not exceed 5 in. Hg vacuum. Positive pressure on inlet should not exceed 1,4 bar (20 psi).

MAXIMUM OPERATING SPEED CORRECTION FACTORS BASED ON PUMP INLET CONDITIONS



# Typical Performance

## 35VQ Single & 35VQT\*S Thru-drive Pumps

Performance Constants:  
SAE 10W fluid @ 82° C (180° F)  
Pump inlet @ 0 psig (14.7 psia)

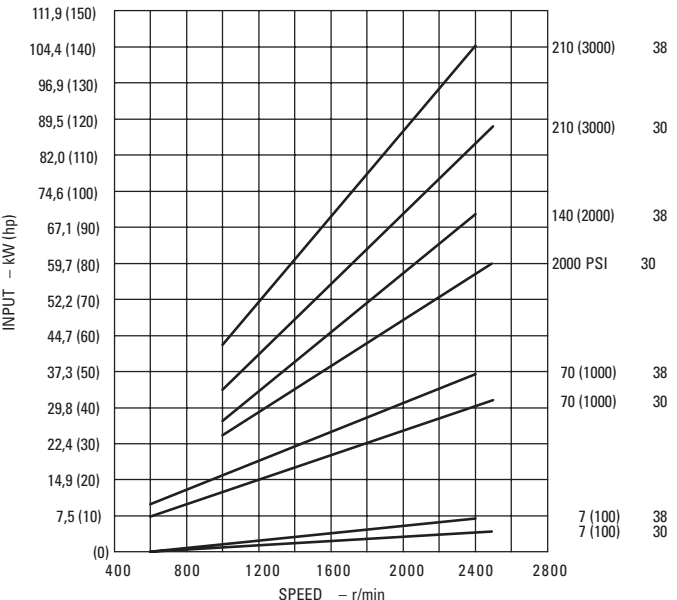
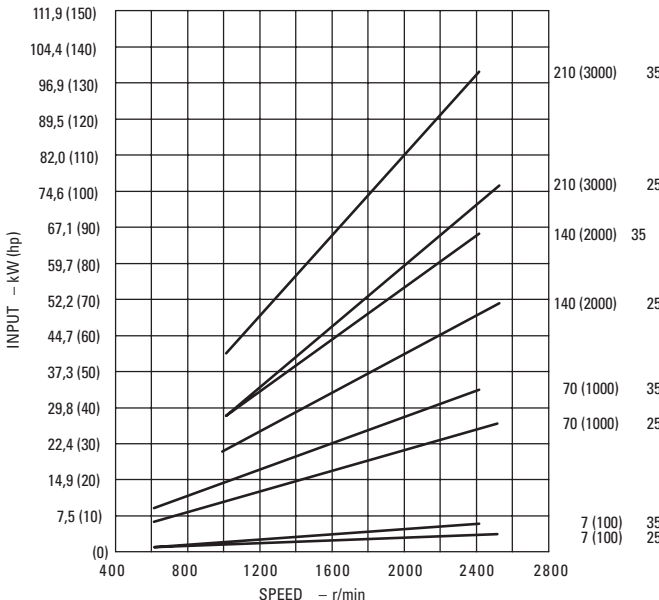
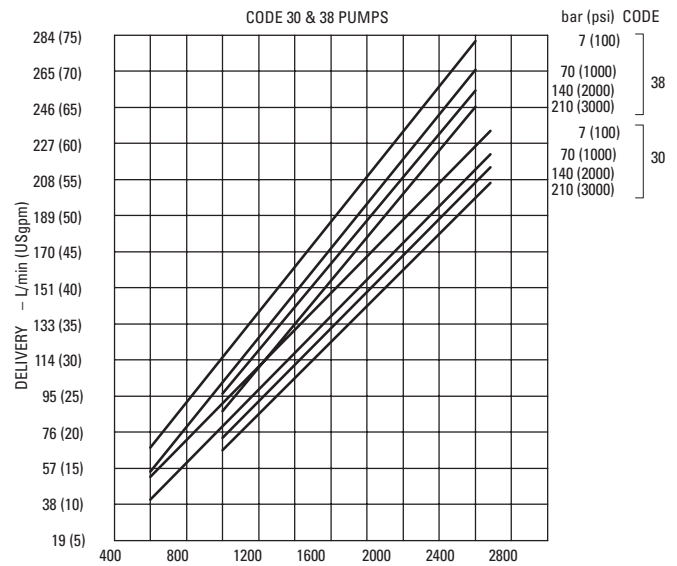
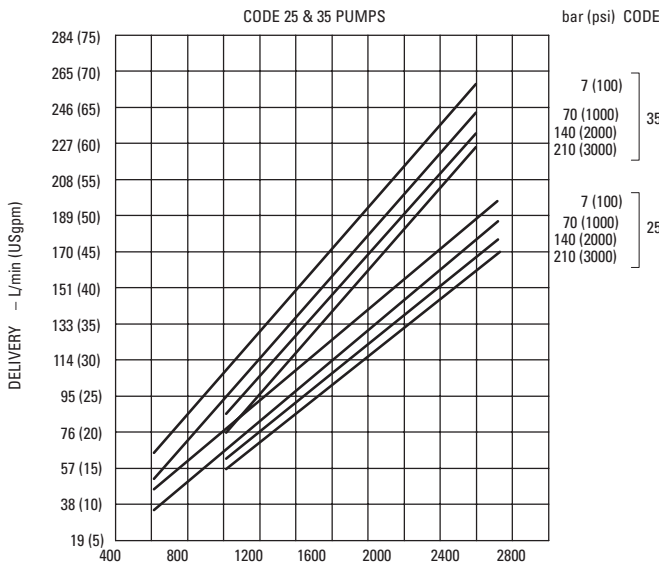
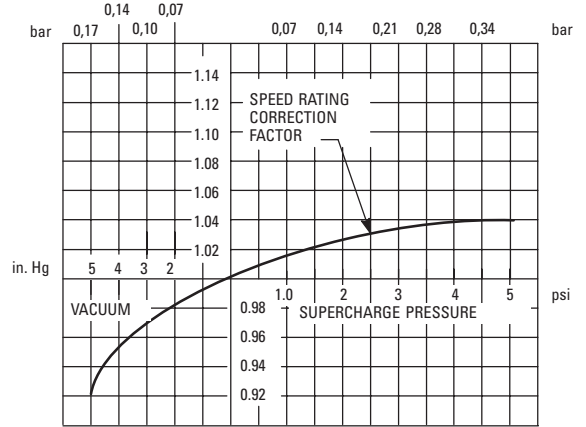
Maximum operating speeds shown on performance curves are for pumps operating at 0 psi inlet condition. To compute maximum operating speeds at other inlet conditions, use appropriate speed rating correction factor.

Example:

Max. speed @ 0 psi inlet      2500 r/min  
Correction factor @ 5 in. Hg     $\times .92$   
Max. speed @ 5 in. Hg inlet    2300 r/min

Pump inlet suction should not exceed 5 in. Hg vacuum. Positive pressure on inlet should not exceed 1,4 bar (20 psi).

MAXIMUM OPERATING SPEED CORRECTION FACTORS BASED ON PUMP INLET CONDITIONS



## 45VQ Single & 45VQT\*S Thru-drive Pumps

Performance Constants:

SAE 10W fluid @ 82° C (180° F)

Pump inlet @ 0 psig (14.7 psia)

Maximum operating speeds shown on performance curves are for pumps operating at 0 psi inlet condition. To compute maximum operating speeds at other inlet conditions, use appropriate speed rating correction factor.

Example:

Max. speed @ 0 psi inlet      2200 r/min

Correction factor @ 5 in. Hg     $\times .91$

Max. speed @ 5 in. Hg inlet    2002 r/min

Pump inlet suction should not exceed 5 in. Hg vacuum. Positive pressure on inlet should not exceed 1,4 bar (20 psi).

MAXIMUM OPERATING SPEED CORRECTION FACTORS BASED ON PUMP INLET CONDITIONS

