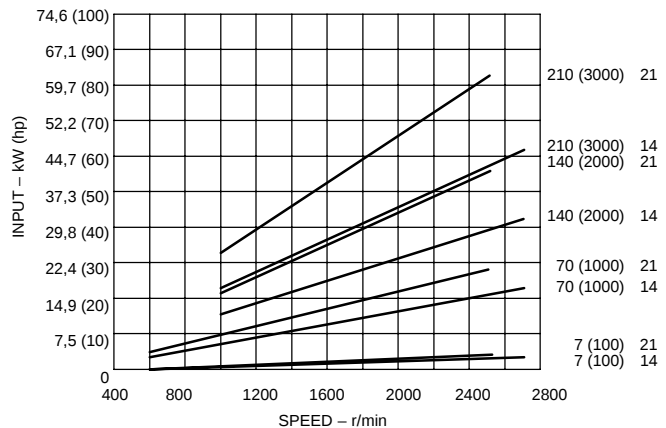
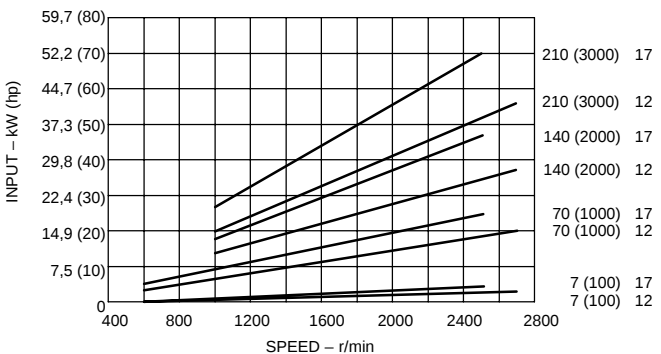
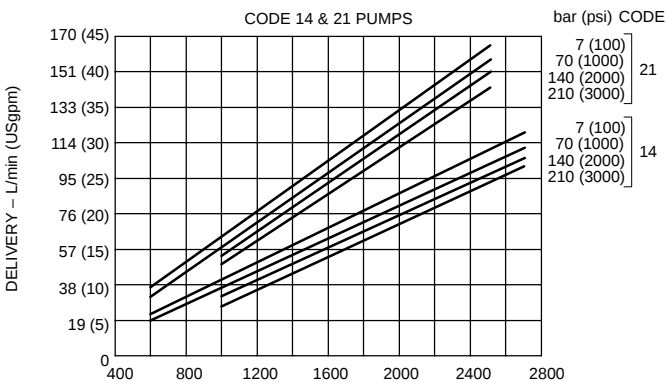
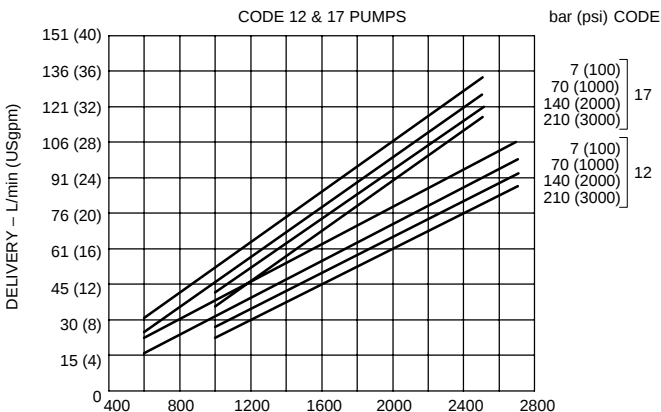


Typical Performance

Shaft End Pumps

2520VQ Double Pumps & 2520VQV10 Triple Pumps

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



Typical Performance

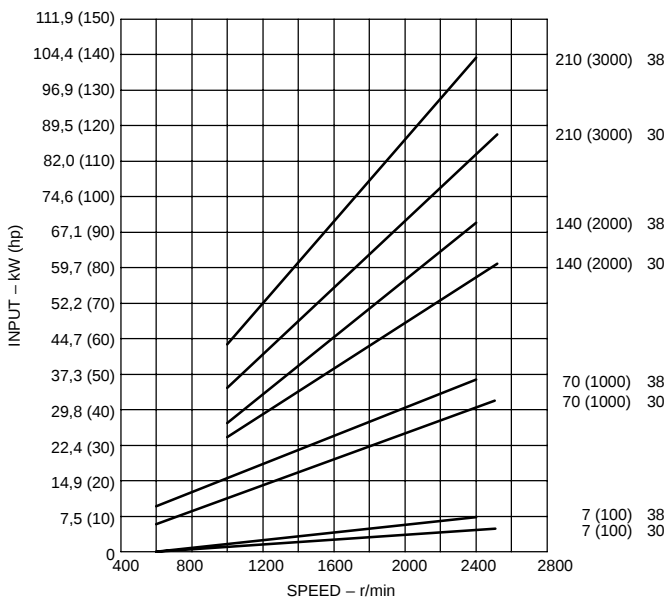
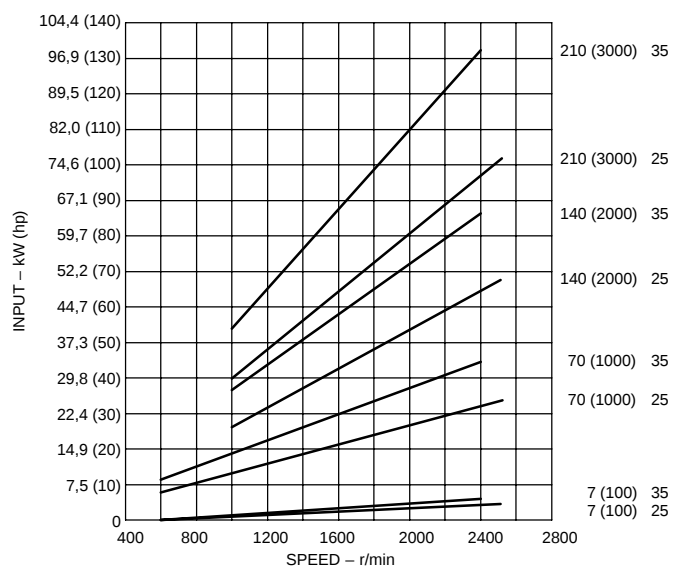
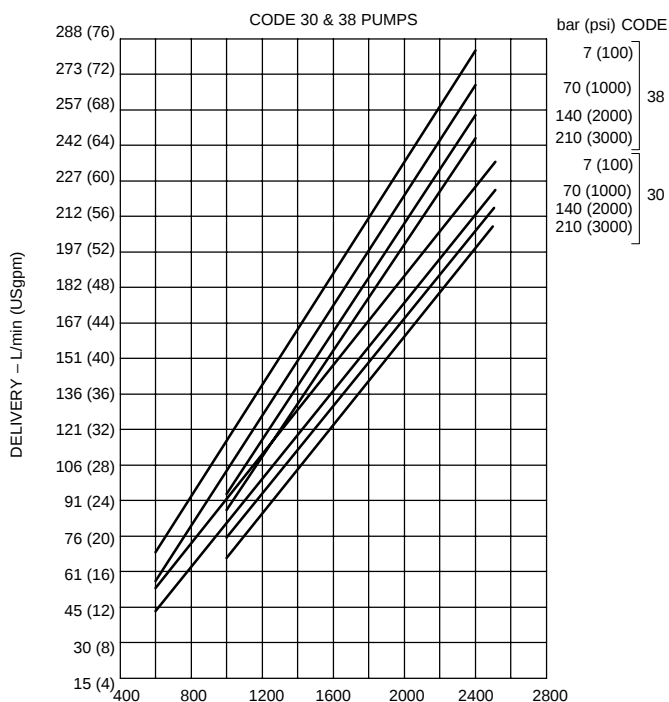
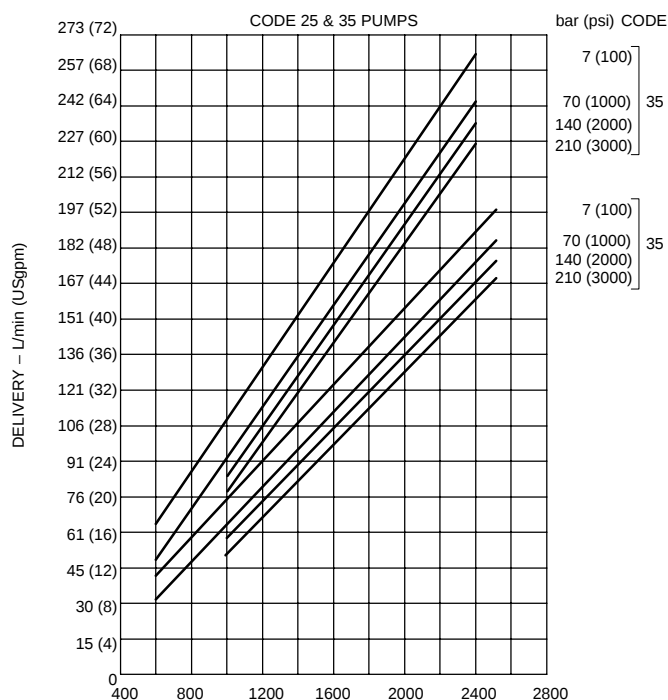
Shaft End Pumps

**3520VQ & 3525VQ Double Pumps,
352*VQV10Triple Pumps,
3525VQT Double Thru-drive Pumps**

Performance Constants:

SAE 10W fluid @ 82°C (180°F)

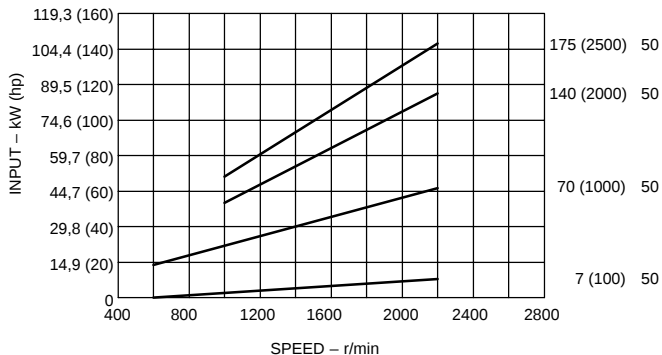
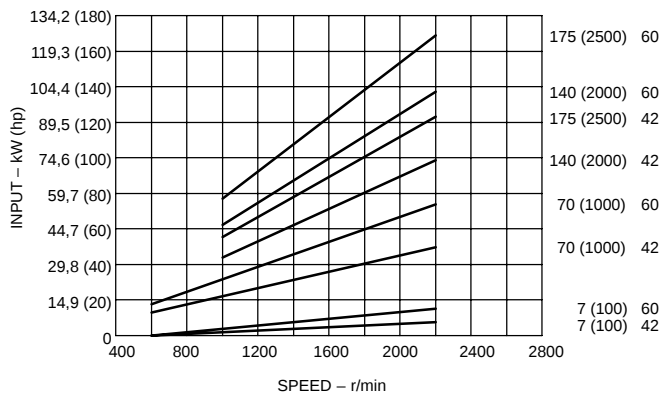
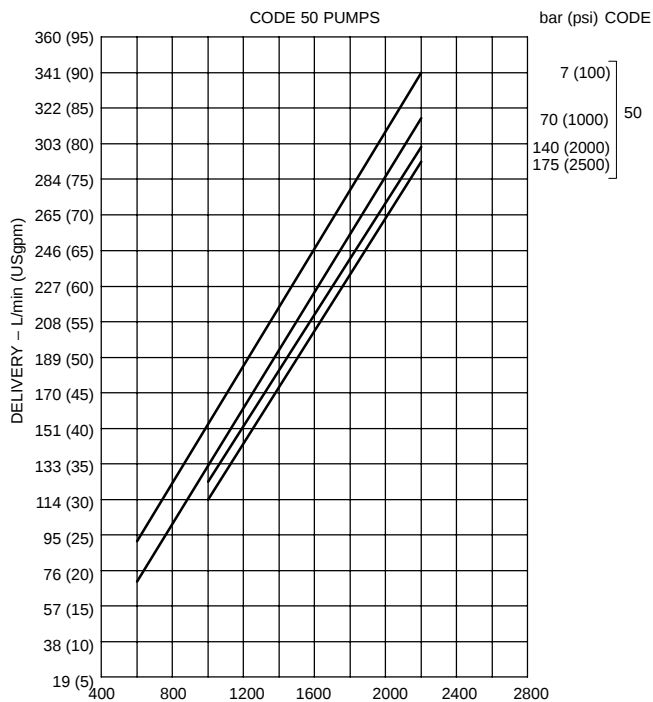
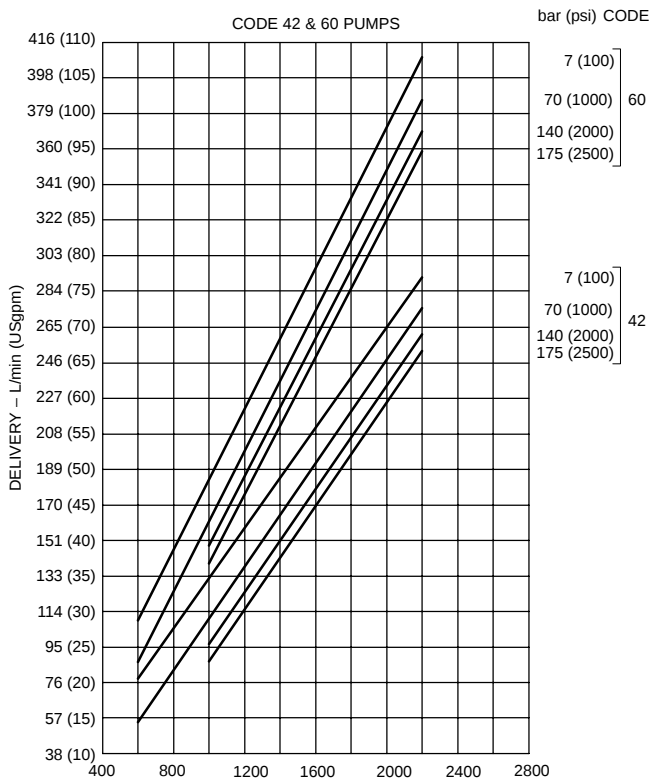
Pump inlet @ 0 psig (14.7 psia)



Shaft End Pumps

4520VQ, 4525VQ & 4535VQ Double
Pumps, 45*5VQV10 Triple Pumps,
4525VQT Double Thru-drive Pumps

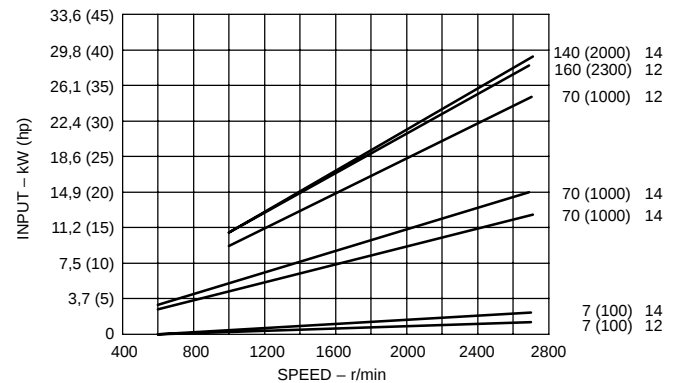
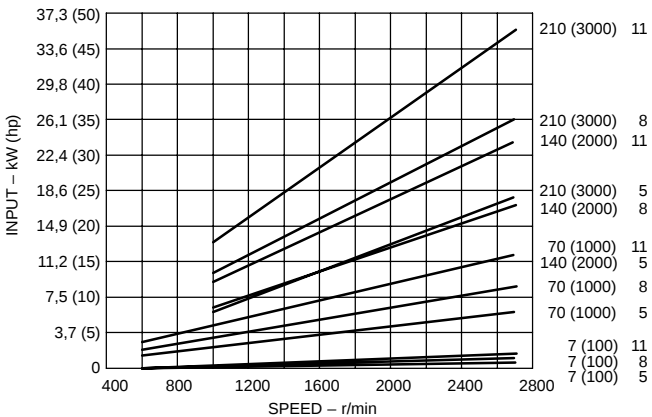
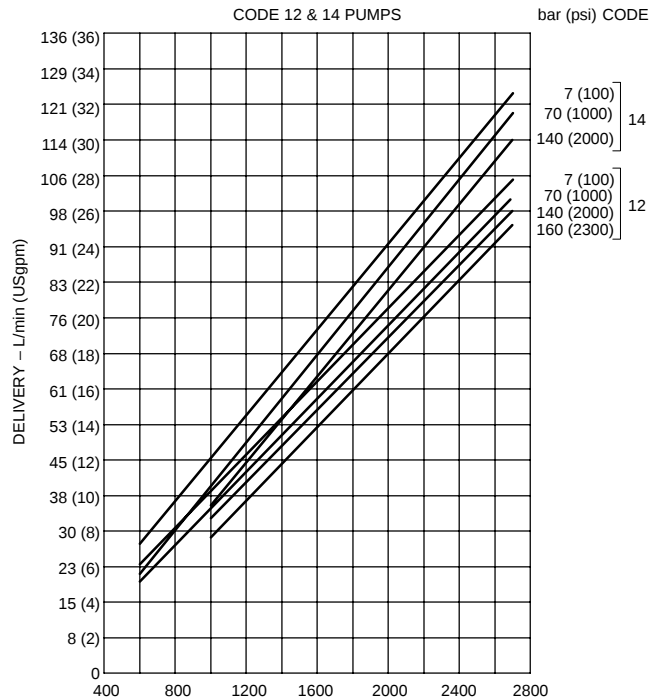
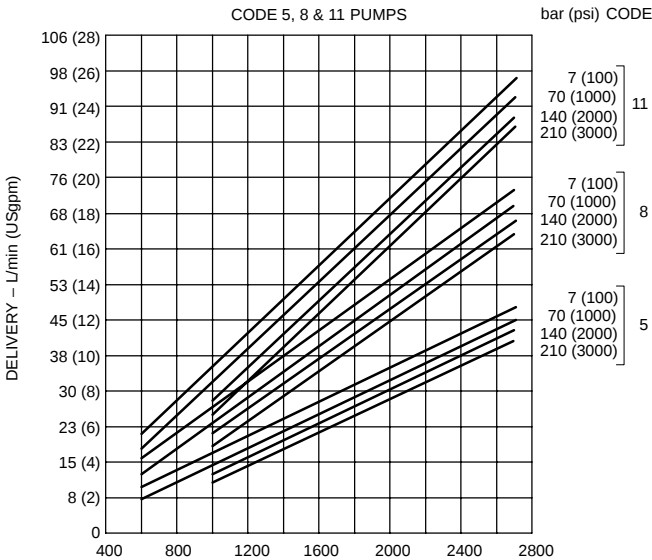
Performance Constants:
SAE 10W fluid @ 82°C (180°F)
Pump inlet @ 0 psig (14.7 psia)



Typical Performance

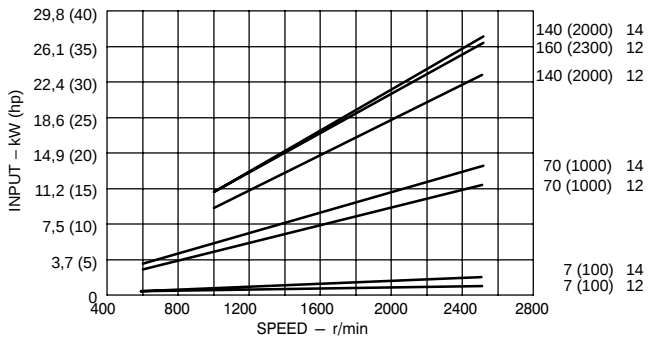
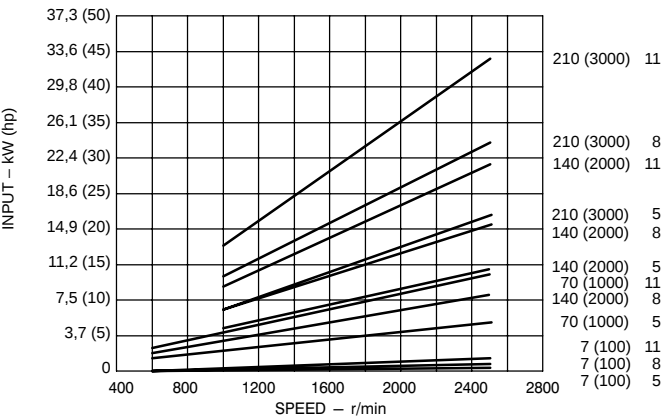
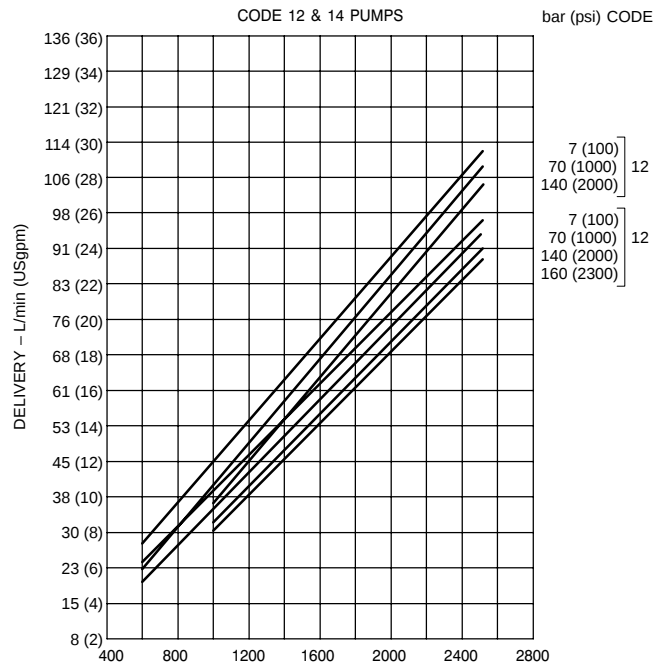
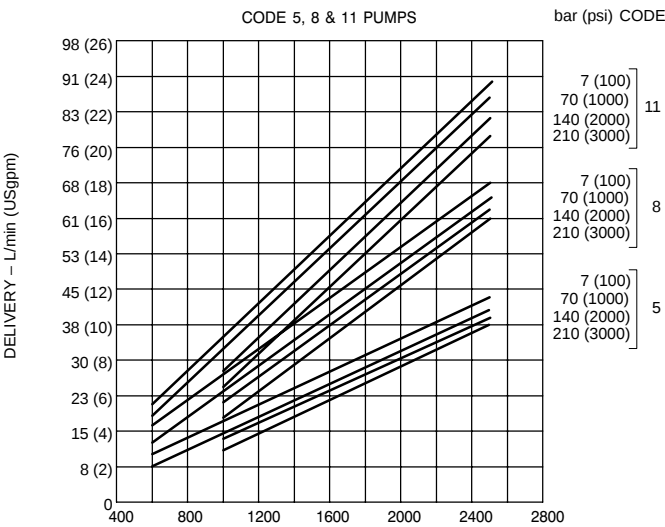
Cover-end Pumps of 2520VQ Double Pumps & Center Pumps of 2520VQV10 Triple Pumps

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



**Cover-end Pumps of 3520VQ Double
Pumps, Center Pumps of 3520VQV10
Triple Pumps, Rear Pumps of 3525VQT
Double Thru-drive Pumps**

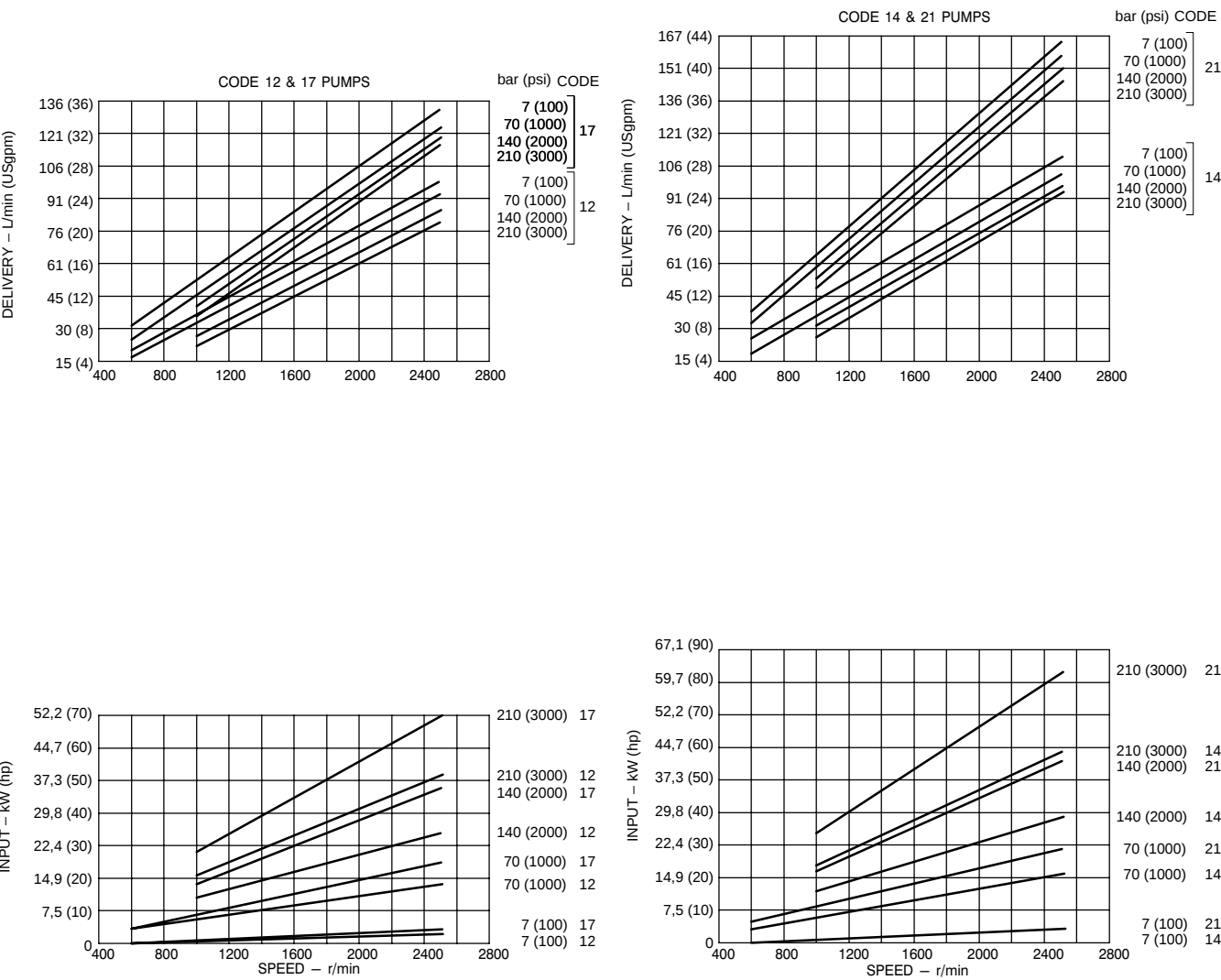
Performance Constants:
SAE 10W fluid @ 82°C (180°F)
Pump inlet @ 0 psig (14.7 psia)



Typical Performance

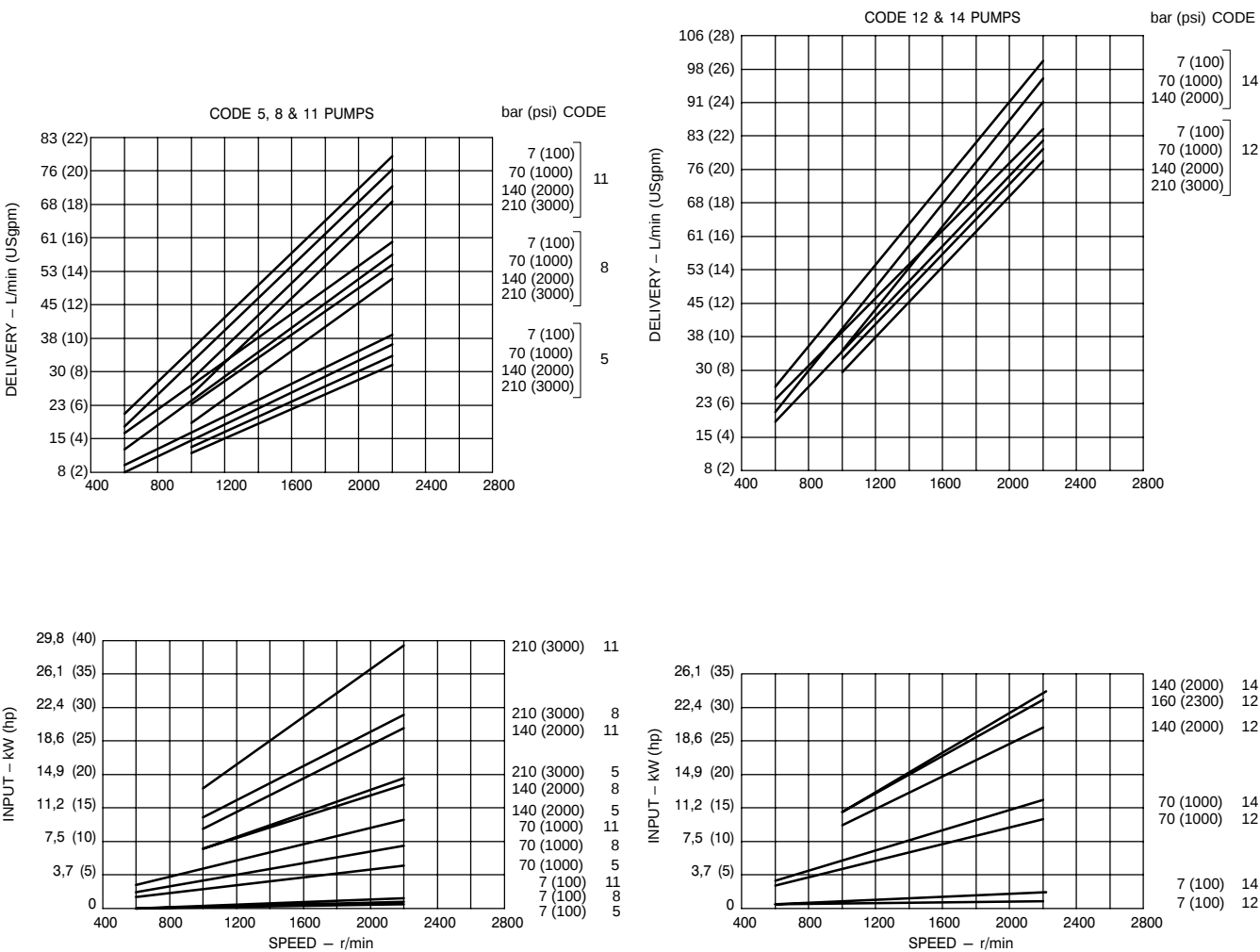
**Cover-end Pumps of
3525VQ Double Pumps &
Center Pumps of 3525VQV10
Triple Pumps**

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



**Cover-end Pumps of
4520VQ Double Pumps &
Center Pumps of 4520VQV10
Triple Pumps**

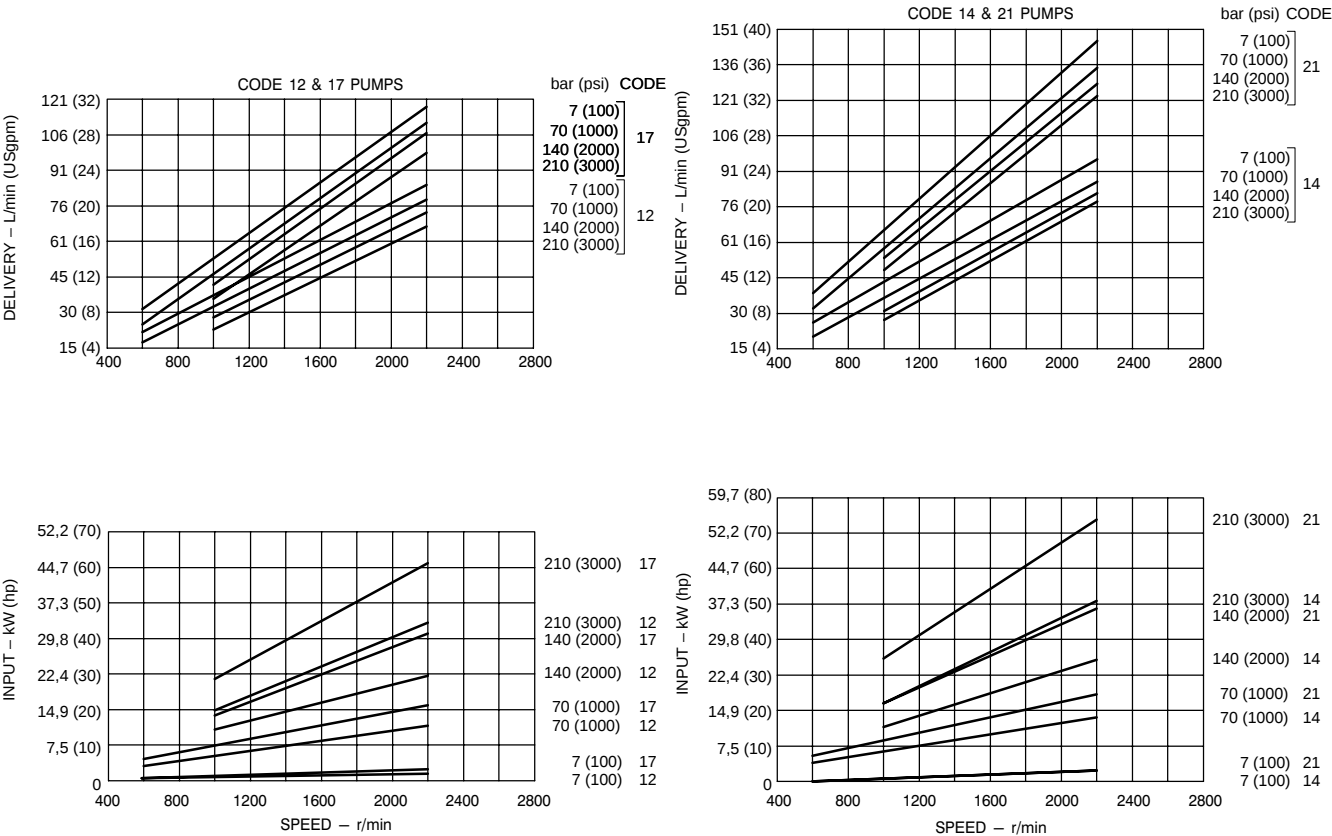
Performance Constants:
SAE 10W fluid @ 82°C (180°F)
Pump inlet @ 0 psig (14.7 psia)



Typical Performance

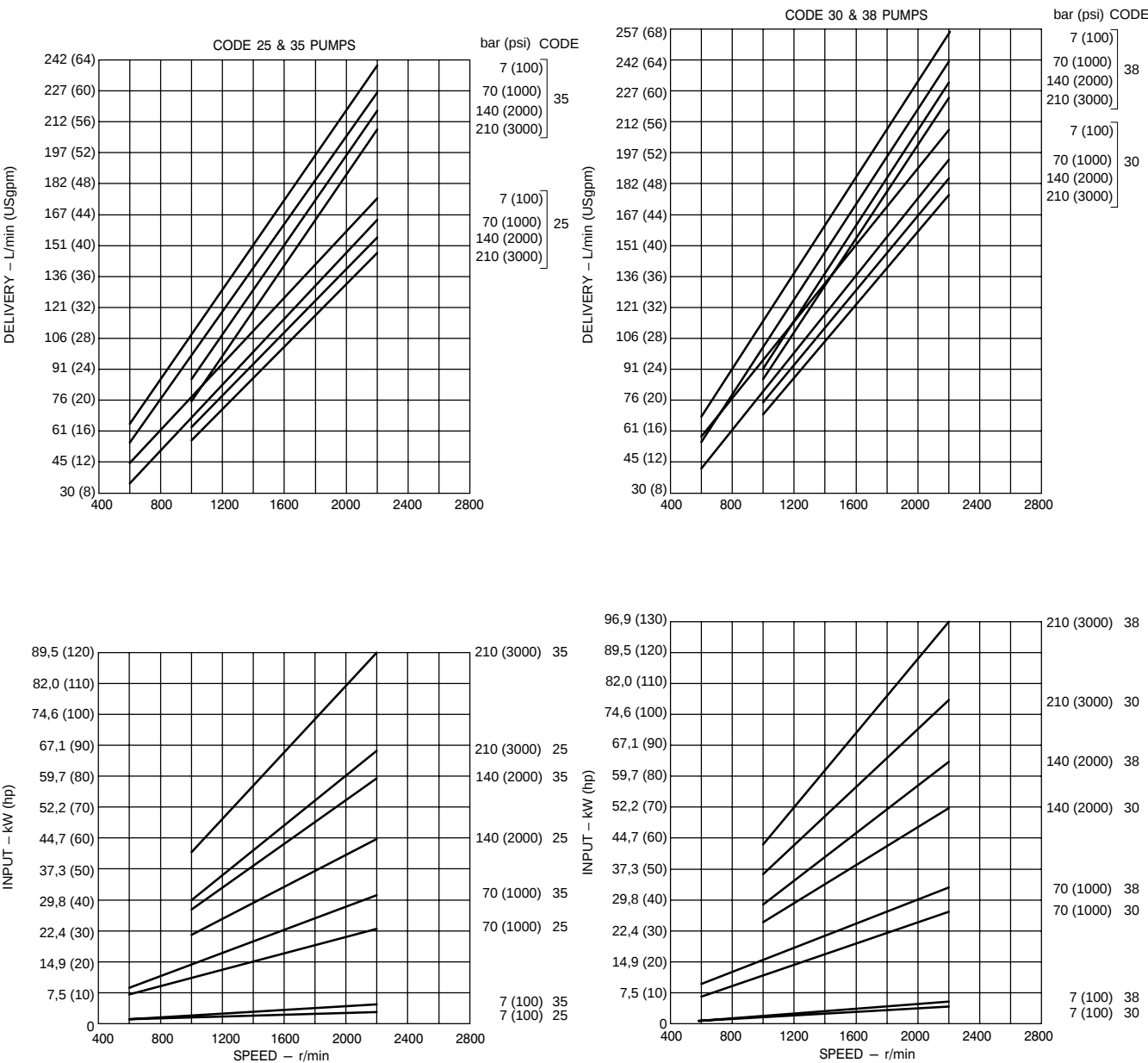
Cover-end Pumps of 4525VQ Double
Pumps, Center Pumps of 4525VQV10
Triple Pumps, Rear Pumps of 4525VQT
Double Thru-drive Pumps

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



**Cover-end Pumps of
4535VQ Double Pumps &
Center Pumps of 4535VQV10
Triple Pumps**

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



Triple Pump Operating Specifications

Maximum speed ratings for triple pumps are dependent upon V10 ring size. See chart below for ratings.

Pressure ratings are shown on page 23 for VQ sections and page 67 for V10 sections.

Cover-end pump (V10) delivery/USgpm @ 1200 rpm and 100 psi	Maximum Speed - r/min				
	2520VQSV10	3520VQSV10	3525VQSV10	4525VQSV10	4535VQSV10
1	2700	2500	2500	2200	2200
2	2700	2500	2500	2200	2200
3	2700	2500	2500	2200	2200
4	2700	2500	2200* 2500+	2200	2200
5	2700	2500	2200* 2500+	2200	2200
6	2200* 2500+	2200* 2500+	2200* 2400+	2200	2200
7	1900* 2200+	1900* 2200+	2200	2000* 2200+	2100* 2200+

* With V10 pressure over 70 bar (1000 psi)

+ With V10 pressure to 70 bar (1000 psi)

Typical Performance

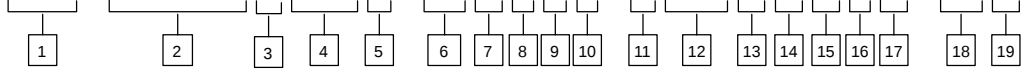
For triple pump performance, use curves listed in this table:

Triple pump model series	Shaft end pump	Center pump	Cover end pump	Page no.
2520VQSV10	25**VQ			32
		**20VQ		35
			V10	73, 76, 77
3520VQSV10	35**VQ			33
		**20VQ		36
			V10	73, 76, 77
3525VQSV10	35**VQ			33
		**25VQ		37
			V10	73, 76, 77
4525VQSV10	45**VQ			34
		**25VQ		39
			V10	73, 76, 77
4535VQSV10	45**VQ			34
		**35VQ		40
			V10	73, 76, 77

Model Codes

Triple Pump

(F3) - 2520VQ S V10 F - 17 A 8 T 3 - S 297 B C A 3 D - 20 R



1 F3 – Viton seals

Omit if not required.

2 Double pump series

First two numerals in the series denote shaft end of triple pump; second two numerals denote the center pump.

2520VQ 4525VQ
3520VQ 4535VQ
3525VQ

3 SAE mounting

S – SAE mounting per J 744

4 Single pump series

Cover end pump of triple pump

5 Cover options for V10 pump

S – Standard cover
F – Integral flow control & relief valve
P – Integral priority valve & relief

6 SAE rated flow, shaft-end pump

Refer to table 1.

7 Double pump port connections

A – All SAE 4-bolt flange
AM – Metric 4-bolt flange

8 SAE rated flow, center pump

Refer to table 1.

9 No. 3 outlet port connection

Standard Cover

S – .750-16 straight thread

Flow Control Cover

T – .750-16 straight thread, control port & tank port.

Priority Valve Cover

K – .5625-18 straight thread, primary port & tank port.
.750-16 straight thread, secondary port

10 SAE rated flow, cover end pump

Refer to table 1.

11 Shaft seal

S – Double seal
Blank – Single seal

12 Splined shaft

297 – All series

13 No. 1 outlet port position

Refer to table 2.

14 No. 2 outlet port position

Refer to table 2.

15 No. 3 outlet port position

Refer to table 2.

16 Controlled flow rate, V10F & V10P

Omit for standard cover.

3 – 11 L/min (3 USgpm)

4 – 15 L/min (4 USgpm)

5 – 19 L/min (5 USgpm)

6 – 23 L/min (6 USgpm)

7 – 27 L/min (7 USgpm)

8 – 30 L/min (8 USgpm)

17 Relief valve setting, V10F & V10P

Omit for standard cover.

A – 17 bar (250 psi) F – 100 bar (1500 psi)

B – 35 bar (500 psi) G – 121 bar (1750 psi)

C – 52 bar (750 psi) H – 140 bar (2000 psi)

D – 70 bar (1000 psi) J – 155 bar (2250 psi)

E – 86 bar (1250 psi) K – 175 bar (2500 psi)

18 Design

Subject to change. Installation dimensions remain the same for designs -20 through -29.

19 Shaft rotation

(Viewed from shaft end of pump)

L – Left hand (counterclockwise)

R – Right hand

Table 1

Rated Flow @ 1200 r/min & 100 psi – USgpm

Shaft-end pump 2520	Shaft-end pump 35**	Shaft-end pump 45**	Center pump **20	Center pump **25	Center pump **35	Cover-end pump V10
12	25	42	5	12	25	1
14	30	50	8	14	30	2
17	35	60	11	17	35	3
21	38		12	21	38	4
			14			5
						6
						7

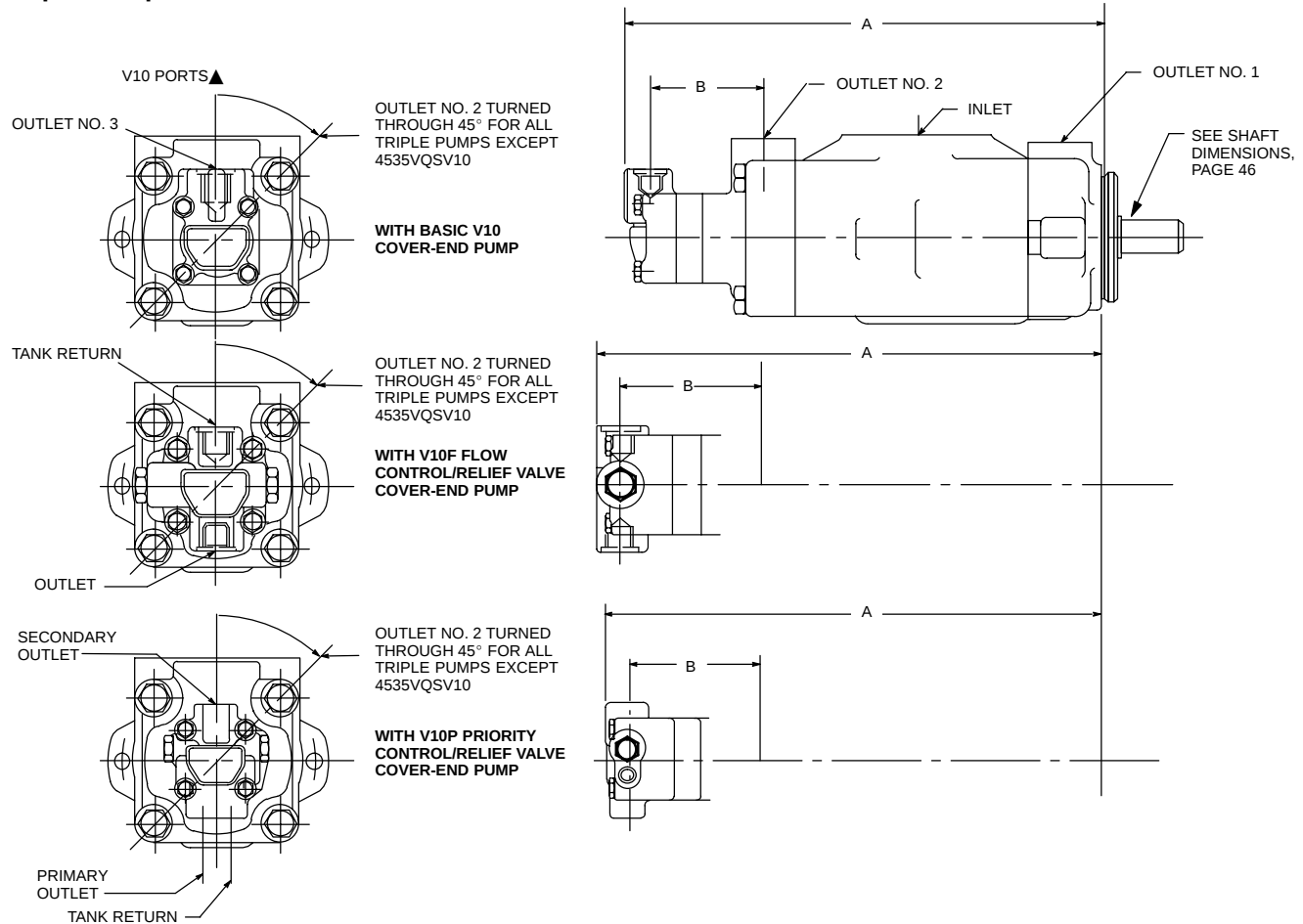
Table 2

Outlet position code

Position viewed from cover end	13	14	15
No. 1 outlet	No. 2 outlet	No. 3 outlet	
Opposite inlet	A	A (4535 only)	A
135° CCW from inlet	–	A	–
90° CCW from inlet	B	B (4535 only)	B
45° CCW from inlet	–	B	–
Inline with inlet	C	C (4535 only)	C
45° CW from inlet	–	C	–
90° CW from inlet	D	D (4535 only)	D
135° CW from inlet	–	D	–

Installation Dimensions

Triple Pumps



▲ V10 cover can be assembled in any of four positions; see model codes, page 44. 4535VQSV10 shown.

Model series	Dimensions mm (in.)					
	1, 2 & 3 USgpm*		4 & 5 USgpm*		6 & 7 USgpm*	
	A	B	A	B	A	B
2520VQSV10	350 (13.78)	87 (3.43)	356 (14.03)	94 (3.68)	361 (14.23)	99 (3.88)
2520VQSV10F	363 (14.30)	105 (4.12)	370 (14.55)	111 (4.38)	375 (14.75)	116 (4.58)
2520VQSV10P	364 (14.35)	105 (4.12)	371 (14.60)	111 (4.38)	376 (14.80)	116 (4.58)
3520VQSV10	372 (14.66)	87 (3.43)	379 (14.91)	94 (3.68)	384 (15.11)	99 (3.88)
3520VQSV10F	386 (15.18)	105 (4.12)	392 (15.43)	111 (4.37)	397 (15.63)	116 (4.57)
3520VQSV10P	387 (15.23)	105 (4.12)	393 (15.48)	111 (4.37)	398 (15.68)	116 (4.57)
3525VQSV10	381 (15.00)	86 (3.40)	387 (15.25)	93 (3.65)	392 (15.45)	98 (3.85)
3525VQSV10F	394 (15.52)	104 (4.09)	401 (15.77)	110 (4.34)	406 (15.97)	115 (4.54)
3525VQSV10P	395 (15.57)	104 (4.09)	402 (15.82)	110 (4.34)	407 (16.02)	115 (4.54)
4525VQSV10	420 (16.53)	86 (3.40)	426 (16.78)	93 (3.65)	431 (16.98)	98 (3.85)
4525VQSV10F	433 (17.05)	104 (4.09)	439 (17.30)	110 (4.34)	445 (17.50)	115 (4.54)
4525VQSV10P	434 (17.10)	104 (4.09)	441 (17.35)	110 (4.34)	446 (17.55)	115 (4.54)
4535VQSV10	445 (17.50)	84 (3.31)	451 (17.75)	90 (3.56)	456 (17.95)	96 (3.76)
4535VQSV10F	458 (18.02)	102 (4.00)	464 (18.27)	108 (4.25)	469 (18.47)	113 (4.45)
4535VQSV10P	459 (18.07)	102 (4.00)	465 (18.32)	108 (4.25)	470 (18.52)	113 (4.45)

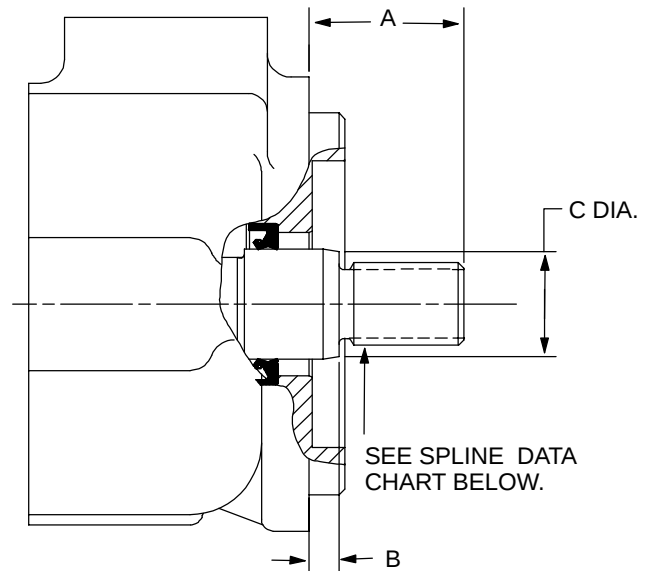
* SAE rated flows (@1200 rpm and 100 psi) of V10, V10F & V10P cover-end pump (see page 67).
 For detailed dimensions of double pump end, see pages 26 through 28; for V10 series cover-end pump, see pages 69 and 70.

Shaft – Triple Pumps

Dimensions – No. 297 shaft

Dimensions in millimeters (inches)

Model	A	B	C
2520VQSV10	41,1 (1.62)	7,9 (.31)	27,7 (1.09)
352*VQSV10	55,4 (2.18)	7,9 (.31)	35,1 (1.38)
45**VQSV10	55,4 (2.18)	7,9 (.31)	40,4 (1.59)



Spline data – No. 297 shaft

Dimensions in millimeters (inches)

Model	No. of teeth	Pitch	Major dia.	Form dia.	Minor dia.	Fit
2520VQSV10	13	16/32	21,8 (.858) 21,6 (.852)	19,0 (.749)	18,16 (.715)	Side fit
352*VQSV10	14	12/24	31,2 (1.229) 31,1 (1.223)	27,4 (1.08)	26,4 (1.040)	
45**VQSV10	14	12/24	31,2 (1.229) 31,1 (1.223)	27,4 (1.08)	26,4 (1.040)	

Shaft torque ratings – No. 297 shaft

Pump series	Drive shaft	Max. torque capability Nm (lb-in)
	Designation	
2520VQSV10	“B” per SAE J744C. 22-4 per SAE J744 Oct83	344 (3040)
352*VQSV10	“C” per SAE J744C. 32-4 per SAE J744 Oct83	791 (7000)
45**VQSV10	“C” per SAE J744C. 32-4 per SAE J744 Oct83	1017 (9000)