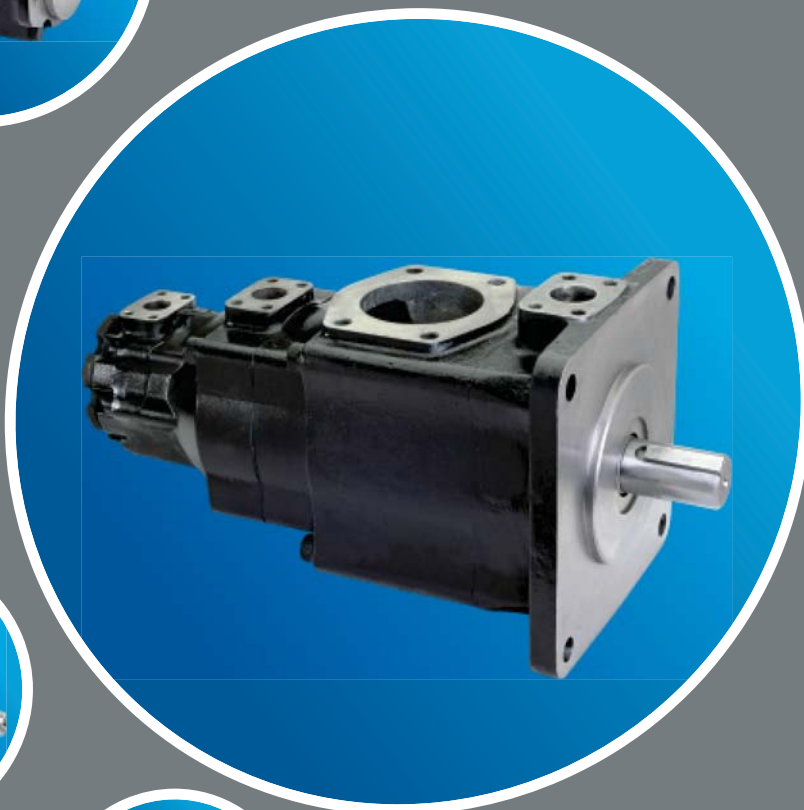
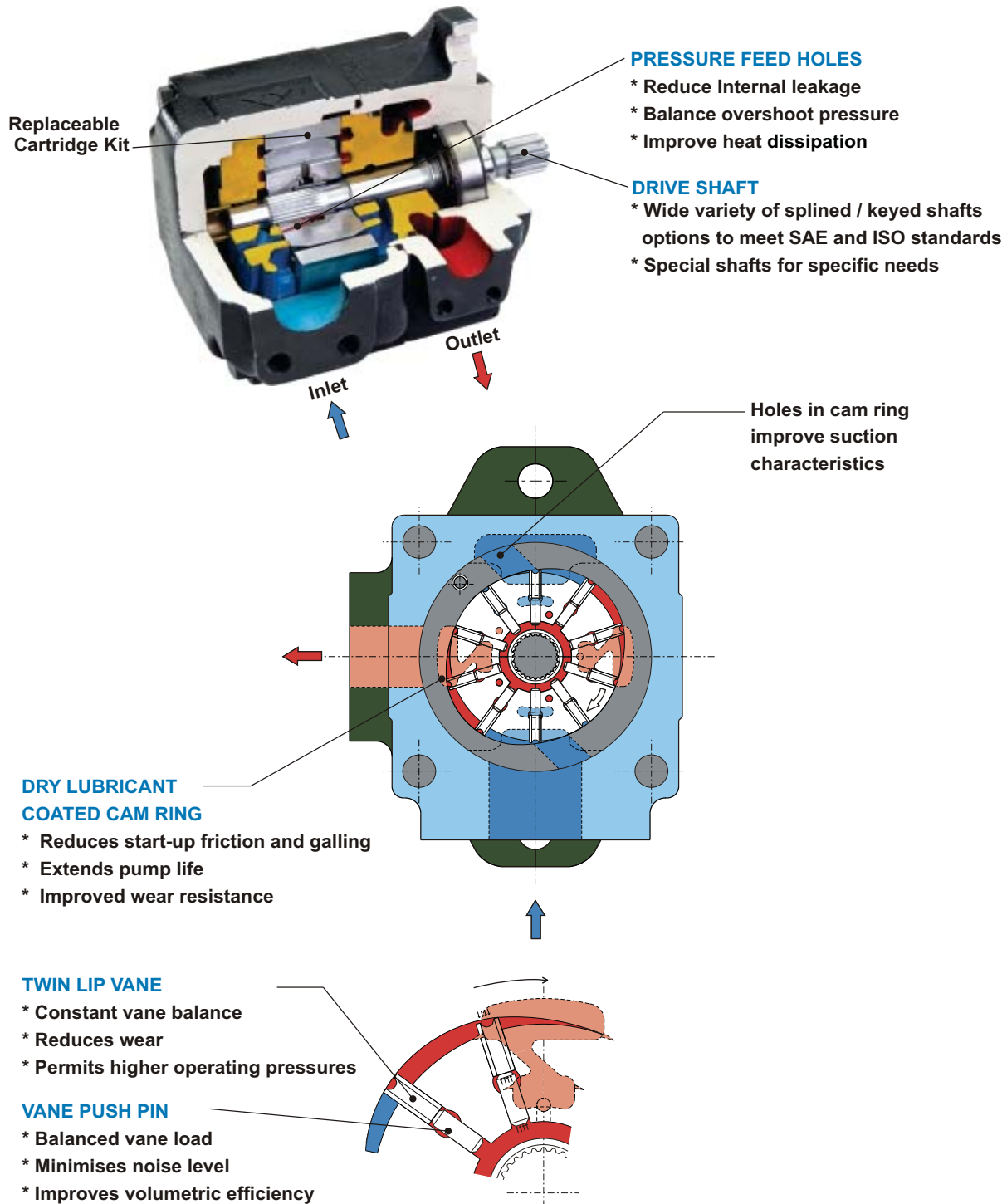




VANE PUMPS & MOTORS
PRODUCT CATALOGUE

VELJAN VANE PUMP

INHERENT ADVANTAGES - A CLOSE-UP VIEW



- ▶ 10 Vane design shown
- ▶ 12 Vane design with higher pressure rating and lower noise levels also available

A SINGLE VANE PUMPS



B DOUBLE VANE PUMPS



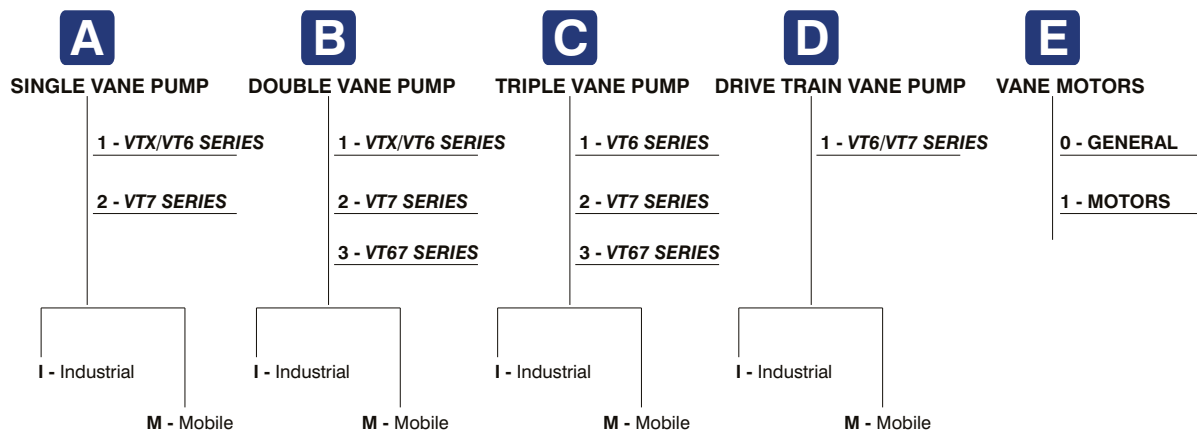
C TRIPLE VANE PUMPS



D DRIVE TRAIN VANE PUMPS



E VANE MOTORS



A - SINGLE VANE PUMPS , B- DOUBLE VANE PUMPS, C- TRIPLE VANE PUMPS, D- DRIVE TRAIN VANE PUMPS, E- VANE MOTORS

I - INDUSTRIAL, M - MOBILE

1 - VTX/VT6 SERIES, 2 - VT7 SERIES, 3- VT67 SERIES

REFERENCES Eg: AI-1-9 FOR VT6E MODEL SINGLE VANE PUMP

Note:- Performance characteristics shown are based on our laboratory test conditions and these may vary under different operating conditions. Product details are liable to change without prior notice.



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SINGLE VANE PUMPS

SP

SINGLE VANE PUMPS



Model	VTXB
Maximum Pressure	3000 psi 210 bar
Maximum Displacement	0.40 - 2.80 in ³ /rev 6 - 46 cm ³ /rev
Maximum Speed	2500 rpm

Page No.	AI-1-1
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Model	VT6B
Maximum Pressure	3500 psi 240 bar
Maximum Displacement	0.40 - 2.42 in ³ /rev 6 - 40 cm ³ /rev
Maximum Speed	2500 rpm

Page No.	AI-1-4
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Model	VT6C
Maximum Pressure	4000 psi 275 bar
Maximum Displacement	0.66 - 6.10 in ³ /rev 11 - 100 cm ³ /rev
Maximum Speed	2800 rpm

Page No.	AI-1-6
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Model	VT6CSH
Maximum Pressure	4000 psi 275 bar
Maximum Displacement	0.66 - 6.10 in ³ /rev 11 - 100 cm ³ /rev
Maximum Speed	2800 rpm

THESE ARE LOW NOISE PUMPS HAVING THICK HOUSING ABSORB THE HIGH FREQUENCIES RESULTING IN LOWER NOISE LEVELS THAN STANDARD VT6C PUMPS.

Page No.	AI-1-8
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SINGLE VANE PUMPS



Model	VT6D
Maximum Pressure	3500 psi 240 bar
Maximum Displacement	2.90 - 11.62 in ³ /rev 48 - 190 cm ³ /rev
Maximum Speed	2500 rpm

Page No.	AI-1-10
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Model	VT6E
Maximum Pressure	3500 psi 240 bar
Maximum Displacement	8.07 - 16.40 in ³ /rev 132 - 270 cm ³ /rev
Maximum Speed	2200 rpm

Page No.	AI-1-12
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Model	VT6CM
Maximum Pressure	4000 psi 275 bar
Maximum Displacement	0.66 - 6.10 in ³ /rev 11 - 100 cm ³ /rev
Maximum Speed	2800 rpm

Page No.	AM-1-1
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Model	VT6GC
Maximum Pressure	4000 psi 275 bar
Maximum Displacement	0.66 - 6.10 in ³ /rev 11 - 100 cm ³ /rev
Maximum Speed	2800 rpm

THESE ARE DESIGNED FOR PTO DRIVES FOR DIRECT INSTALLATION AND THE SHAFT CAN TAKE HIGH RADIAL LOAD THAN VT6C PUMP (UP TO 7500 N). THESE ARE PROVIDED WITH A DOUBLE ROW BALL BEARING WITH ADDITIONAL NEEDLE BEARING AND TWO SHAFT SEALS.

Page No.	AM-1-3
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SINGLE VANE PUMPS

SP

SINGLE VANE PUMPS

SP

SINGLE VANE PUMPS



Model	VT6CP
Maximum Pressure	4000 psi 275 bar
Maximum Displacement	2.81 - 6.10 in ³ /rev 46.0 - 100 cm ³ /rev
Maximum Speed	2800 rpm
THESE PUMPS ARE DESIGNED FOR USING 'C' CARTRIDGE WITH VT6D PUMP SIZE AND DOUBLE SHAFT SEAL.	

Page No.	AM-1-5
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Model	VT6DM
Maximum Pressure	3500 psi 240 bar
Maximum Displacement	2.90 - 11.62 in ³ /rev 48 - 190 cm ³ /rev
Maximum Speed	2500 rpm

Page No.	AM-1-7
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Model	VT6EM
Maximum Pressure	3500 psi 240 bar
Maximum Displacement	8.07 - 16.40 in ³ /rev 132 - 270 cm ³ /rev
Maximum Speed	2200 rpm

Page No.	AM-1-9
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Model	VT7B/VT7BS
Maximum Pressure	4650 psi 320 bar
Maximum Displacement	0.35 - 3.05 in ³ /rev 6.0 - 50 cm ³ /rev
Maximum Speed	3600 rpm

Page No.	AM-2-1
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SINGLE VANE PUMPS



Model VT7QC1/VT7QC2

Maximum Pressure	4350 psi 300 bar
Maximum Displacement	0.66 - 6.10 in ³ /rev 11 - 100 cm ³ /rev
Maximum Speed	3000 rpm

THESE ARE LOW NOISE PUMPS HAVING THICK HOUSING (TO INCREASE MASS & STIFFNESS) AND A 12-VANE CARTRIDGE RESULTING IN LOWER NOISE LEVELS THAN STANDARD VT6C PUMPS

Page No. AM-2-3



Model VT7D/V7DS

Maximum Pressure	4350 psi 300 bar
Maximum Displacement	2.68 - 9.64 in ³ /rev 44 - 158 cm ³ /rev
Maximum Speed	3000 rpm

Page No. AM-2-5



Model VT7DSW

Maximum Pressure	4350 psi 300 bar
Maximum Displacement	2.68 - 9.64 in ³ /rev 44 - 158 cm ³ /rev
Maximum Speed	3000 rpm

Page No. AM-2-7



Model VT7E/VT7ES

Maximum Pressure	3500 psi 240 bar
Maximum Displacement	8.07 - 16.40 in ³ /rev 132 - 270 cm ³ /rev
Maximum Speed	2200 rpm

Page No. AM-2-9

SINGLE VANE PUMPS

SP

DOUBLE VANE PUMPS



Model	VTXB
Maximum Pressure	3000 psi 210 bar
Maximum Displacement	0.79 - 5.61 in ³ /rev 12 - 92 cm ³ /rev
Maximum Speed	2500 rpm

Page No. BI-1-1



Model	VT6BB
Maximum Pressure	3500 psi 240 bar
Maximum Displacement	0.79 - 5.61 in ³ /rev 12 - 92 cm ³ /rev
Maximum Speed	2500 rpm

Page No. BI-1-5



Model	VT6CB
Maximum Pressure	4000 psi 275 bar
Maximum Displacement	1.05 - 8.52 in ³ /rev 17 - 140 cm ³ /rev
Maximum Speed	2500 rpm

Page No. BI-1-9



Model	VT6CC
Maximum Pressure	4000 psi 275 bar
Maximum Displacement	1.32 - 12.20 in ³ /rev 22.0 - 200 cm ³ /rev
Maximum Speed	2800 rpm

Page No. BI-1-12



Model	VT6CCSH
Maximum Pressure	4000 psi 275 bar
Maximum Displacement	1.32 - 12.20 in ³ /rev 22.0 - 200 cm ³ /rev
Maximum Speed	2800 rpm

THESE ARE LOW NOISE PUMPS HAVING THICK HOUSING ABSORB THE HIGH FREQUENCIES RESULTING IN LOWER NOISE LEVELS THAN STANDARD VT6CC PUMPS.

Page No. BI-1-14

DOUBLE VANE PUMPS

	Model	VT6DC
	Maximum Pressure	4000 psi 275 bar
	Maximum Displacement	3.56 - 17.75 in ³ /rev 59.0 - 290 cm ³ /rev
	Maximum Speed	2500 rpm
	Page No.	BI-1-16
	Model	VT6DDS
	Maximum Pressure	3500 psi 240 bar
	Maximum Displacement	5.80 - 23.3 in ³ /rev 96.0 - 380 cm ³ /rev
	Maximum Speed	2500 rpm
	Page No.	BI-1-18
	Model	VT6EC
	Maximum Pressure	4000 psi 275 bar
	Maximum Displacement	8.73 - 22.56 in ³ /rev 143 - 370 cm ³ /rev
	Maximum Speed	2200 rpm
	Page No.	BI-1-20
	Model	VT6ED
	Maximum Pressure	3500 psi 240 bar
	Maximum Displacement	11.0 - 28.06 in ³ /rev 180 - 460 cm ³ /rev
	Maximum Speed	2200 rpm
	Page No.	BI-1-22
	Model	VT6EE/VT6EES
	Maximum Pressure	3500 psi 240 bar
	Maximum Displacement	16.1 - 32.8 in ³ /rev 264 - 540 cm ³ /rev
	Maximum Speed	2200 rpm
	Page No.	BI-1-24

DP

DOUBLE VANE PUMPS

DOUBLE VANE PUMPS

DP

DOUBLE VANE PUMPS



Model	VT6CCM
Maximum Pressure	4000 psi 275 bar
Maximum Displacement	1.32 - 12.20 in ³ /rev 22.0 - 200 cm ³ /rev
Maximum Speed	2800 rpm

Page No.	BM-1-1
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Model	VT6CCZ
Maximum Pressure	4000 psi 275 bar
Maximum Displacement	1.32 - 12.20 in ³ /rev 22.0 - 200 cm ³ /rev
Maximum Speed	2800 rpm
THESE ARE DESIGNED TO CARRY HIGH SHAFT LOADS AND ARE WELL ADAPTED TO APPLICATIONS OF PUMP DRIVEN BY CARDAN. THE PUMP SHAFT PROVIDED WITH A DOUBLE ROW BALL BEARING AT THE FRONT AND NEEDLE BALL BEARING AT THE REAR.	

Page No.	BM-1-4
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Model	VT6GCC
Maximum Pressure	4000 psi 275 bar
Maximum Displacement	1.32 - 12.20 in ³ /rev 22.0 - 200 cm ³ /rev
Maximum Speed	2800 rpm
THESE ARE DESIGNED FOR PTO DRIVES FOR DIRECT INSTALLATION AND THE SHAFT CAN TAKE HIGH RADIAL LOAD THAN VT6C PUMP (UP TO 7500 N). THESE ARE PROVIDED WITH A DOUBLE ROW BALL BEARING WITH ADDITIONAL NEEDLE BEARING AND TWO SHAFT SEALS.	

Page No.	BM-1-7
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Model	VT6DCM
Maximum Pressure	4000 psi 275 bar
Maximum Displacement	3.56 - 17.75 in ³ /rev 59.0 - 290 cm ³ /rev
Maximum Speed	2500 rpm

Page No.	BM-1-9
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Model	VT6ECM
Maximum Pressure	4000 psi 275 bar
Maximum Displacement	8.73 - 22.56 in ³ /rev 143 - 370 cm ³ /rev
Maximum Speed	2200 rpm

Page No.	BM-1-11
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DOUBLE VANE PUMPS



Model	VT6EDM
Maximum Pressure	3500 psi 240 bar
Maximum Displacement	11.0 - 28.06 in ³ /rev 180 - 460 cm ³ /rev
Maximum Speed	2200 rpm

Page No. BM-1-13



Model	VT7BB/VT7BBS
Maximum Pressure	4650 psi 320 bar
Maximum Displacement	0.67 - 6.10 in ³ /rev 12 - 100 cm ³ /rev
Maximum Speed	3600 rpm

Page No. BM-2-1



Model	VT7QCC
Maximum Pressure	4350 psi 300 bar
Maximum Displacement	1.32 - 12.20 in ³ /rev 22 - 200 cm ³ /rev
Maximum Speed	3000 rpm

THESE ARE LOW NOISE PUMPS HAVING THICK HOUSING (TO INCREASE MASS & STIFFNESS) AND A 12-VANE CARTRIDGE RESULTING IN LOWER NOISE LEVELS THAN STANDARD VT6CC PUMPS

Page No. BM-2-3



Model	VT7DB/VT7DBS
Maximum Pressure	4350 psi 300 bar
Maximum Displacement	3.03 - 12.69 in ³ /rev 50 - 208 cm ³ /rev
Maximum Speed	2500 rpm

Page No. BM-2-5



Model	VT7QDC
Maximum Pressure	4350 psi 300 bar
Maximum Displacement	3.34 - 15.74 in ³ /rev 55 - 258 cm ³ /rev
Maximum Speed	2500 rpm

Page No. BM-2-7

DP

DOUBLE VANE PUMPS

DOUBLE VANE PUMPS

DP

DOUBLE VANE PUMPS



Model VT7DD/VT7DDS

Maximum Pressure	3600 psi 250 bar
Maximum Displacement	5.36 - 19.28 in ³ /rev 88 - 316 cm ³ /rev
Maximum Speed	2500 rpm

Page No. BM-2-9



Model VT7EB/VT7EBS

Maximum Pressure	4350 psi 300 bar
Maximum Displacement	8.42 - 19.45 in ³ /rev 138 - 319 cm ³ /rev
Maximum Speed	2200 rpm

Page No. BM-2-11



Model VT7QEC

Maximum Pressure	4350 psi 300 bar
Maximum Displacement	8.73 - 22.56 in ³ /rev 143 - 370 cm ³ /rev
Maximum Speed	2200 rpm

Page No. BM-2-13



Model VT7ED/VT7EDS

Maximum Pressure	3600 psi 250 bar
Maximum Displacement	10.7 - 26 in ³ /rev 176 - 427 cm ³ /rev
Maximum Speed	2200 rpm

Page No. BM-2-15



Model VT67BB

Maximum Pressure	4350 psi 300 bar
Maximum Displacement	0.35 - 3.05 in ³ /rev 12 - 200 cm ³ /rev
Maximum Speed	2800 rpm

Page No. BI-3-1

DOUBLE VANE PUMPS

	Model	VT67CB
	Maximum Pressure	4350 psi 300 bar
	Maximum Displacement	1.01 - 9.15 in ³ /rev 17 - 150 cm ³ /rev
	Maximum Speed	2800 rpm
Page No.		BI-3-3
	Model	VT67DB
	Maximum Pressure	4350 psi 300 bar
	Maximum Displacement	3.25 - 14.7 in ³ /rev 54 - 240 cm ³ /rev
	Maximum Speed	2500 rpm
Page No.		BI-3-5
	Model	VT67DC
	Maximum Pressure	4000 psi 275 bar
	Maximum Displacement	2.68 - 9.64 in ³ /rev 44 - 156 cm ³ /rev
	Maximum Speed	2500 rpm
Page No.		BI-3-7
	Model	VT67EB
	Maximum Pressure	4350 psi 300 bar
	Maximum Displacement	8.42 - 19.45 in ³ /rev 138 - 320 cm ³ /rev
	Maximum Speed	2200 rpm
Page No.		BI-3-9
	Model	VT67EC
	Maximum Pressure	4000 psi 275 bar
	Maximum Displacement	8.73 - 22.5 in ³ /rev 143 - 370 cm ³ /rev
	Maximum Speed	2200 rpm
Page No.		BI-3-11

DP

DOUBLE VANE PUMPS



Model	VT6CBB
Maximum Pressure	4000 psi 275 bar
Maximum Displacement	1.46 - 11.7 in ³ /rev 23 - 180 cm ³ /rev
Maximum Speed	2500 rpm

Page No.	CI-1-1
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Model	VT6CCB
Maximum Pressure	4000 psi 275 bar
Maximum Displacement	1.72 - 15 in ³ /rev 28 - 240 cm ³ /rev
Maximum Speed	2500 rpm

Page No.	CI-1-6
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Model	VT6DCB
Maximum Pressure	4000 psi 275 bar
Maximum Displacement	3.96 - 20.5 in ³ /rev 65 - 330 cm ³ /rev
Maximum Speed	2500 rpm

Page No.	CI-1-9
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Model	VT6DCC
Maximum Pressure	4000 psi 275 bar
Maximum Displacement	4.22 - 23.94 in ³ /rev 70 - 390 cm ³ /rev
Maximum Speed	2500 rpm

Page No.	CI-1-12
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Model	VT6DDCS
Maximum Pressure	4000 psi 275 bar
Maximum Displacement	6.46 - 29.34 in ³ /rev 107 - 480 cm ³ /rev
Maximum Speed	2500 rpm

Page No.	CI-1-15
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TRIPLE VANE PUMPS

	Model	VT6DCCM
	Maximum Pressure	4000 psi 275 bar
	Maximum Displacement	4.22 - 23.94 in ³ /rev 70.0 - 390 cm ³ /rev
	Maximum Speed	2500 rpm
Page No.		CM-1-1
	Model	VT6EDC/VT6EDCS
	Maximum Pressure	4000 psi 275 bar
	Maximum Displacement	11.63 - 34.15 in ³ /rev 191 - 560 cm ³ /rev
	Maximum Speed	2200 rpm
Page No.		CI-1-18
	Model	VT7DBB/VT7DBBS
	Maximum Pressure	4350 psi 300 bar
	Maximum Displacement	3.35 - 15.74 in ³ /rev 56 - 258 cm ³ /rev
	Maximum Speed	2500 rpm
Page No.		CM-2-1
	Model	VT7QDCB
	Maximum Pressure	4350 psi 300 bar
	Maximum Displacement	3.66 - 18.79 in ³ /rev 61 - 308 cm ³ /rev
	Maximum Speed	2500 rpm
Page No.		CM-2-3
	Model	VT7QDCC
	Maximum Pressure	4000 psi 275 bar
	Maximum Displacement	3.96 - 21.84 in ³ /rev 66 - 358 cm ³ /rev
	Maximum Speed	2500 rpm
Page No.		CM-2-6

TP

TRIPLE VANE PUMPS

TRIPLE VANE PUMPS

TP

TRIPLE VANE PUMPS

	Model	VT7DDB/VT7DDBS
	Maximum Pressure	4350 psi 300 bar
	Maximum Displacement	5.67 - 22.33 in ³ /rev 94 - 366 cm ³ /rev
	Maximum Speed	2500 rpm
	Page No.	CM-2-9
	Model	VT7EDB/T7EDBS
	Maximum Pressure	4350 psi 300 bar
	Maximum Displacement	11.1 - 29.1 in ³ /rev 182 - 478 cm ³ /rev
	Maximum Speed	2200 rpm
	Page No.	CM-2-12
	Model	VT7QEDC/VT7QEDCS
	Maximum Pressure	4350 psi 300 bar
	Maximum Displacement	11.34 - 32.15 in ³ /rev 187 - 528 cm ³ /rev
	Maximum Speed	2200 rpm
	Page No.	CM-2-15
	Model	VT67DBB
	Maximum Pressure	4350 psi 300 bar
	Maximum Displacement	3.59 - 17.75 in ³ /rev 60.0 - 290 cm ³ /rev
	Maximum Speed	2500 rpm
	Page No.	CI-3-1
	Model	VT67DCB
	Maximum Pressure	4350 psi 300 bar
	Maximum Displacement	3.91 - 20.8 in ³ /rev 64 - 341 cm ³ /rev
	Maximum Speed	2200 rpm
	Page No.	CI-3-3

TRIPLE VANE PUMPS

Model		VT67DCC
	Maximum Pressure	4000 psi 275 bar
	Maximum Displacement	4.0 - 21.84 in ³ /rev 66 - 358 cm ³ /rev
	Maximum Speed	2200 rpm
Page No.		CI-3-6

Model		VT67DDCS
	Maximum Pressure	4000 psi 275 bar
	Maximum Displacement	6.0 - 25.38 in ³ /rev 99 - 416 cm ³ /rev
	Maximum Speed	2200 rpm
Page No.		CI-3-9

Model		VT67EDB
	Maximum Pressure	4350 psi 300 bar
	Maximum Displacement	11.28 - 31.11 in ³ /rev 186 - 510 cm ³ /rev
	Maximum Speed	2500 rpm
Page No.		CI-3-12

Model		VT67EDC
	Maximum Pressure	4000 psi 275 bar
	Maximum Displacement	11.41 - 32.14 in ³ /rev 187 - 528 cm ³ /rev
	Maximum Speed	2200 rpm
Page No.		CI-3-15

TP

TRIPLE VANE PUMPS

	Model	VT6CR
	Maximum Pressure	4000 psi 275 bar
	Maximum Displacement	0.66 - 6.10 in ³ /rev 11 - 100 cm ³ /rev
	Maximum Speed	2800 rpm
	Page No.	DI-1-1
	Model	VT6DR
	Maximum Pressure	3500 psi 240 bar
	Maximum Displacement	2.90 - 11.65 in ³ /rev 48 - 190 cm ³ /rev
	Maximum Speed	2500 rpm
	Page No.	DI-1-3
	Model	VT6ER
	Maximum Pressure	3500 psi 240 bar
	Maximum Displacement	8.07 - 16.40 in ³ /rev 132 - 270 cm ³ /rev
	Maximum Speed	2200 rpm
	Page No.	DI-1-5
	Model	VT6EE/VT6EES
	Maximum Pressure	3500 psi 240 bar
	Maximum Displacement	16.1 - 32.8 in ³ /rev 264 - 540 cm ³ /rev
	Maximum Speed	2200 rpm
	Page No.	DI-1-7
	Model	VT6DCCR
	Maximum Pressure	4000 psi 275 bar
	Maximum Displacement	4.22 - 23.84 in ³ /rev 70 - 390 cm ³ /rev
	Maximum Speed	2500 rpm
	Page No.	DI-1-9

DRIVE TRAIN VANE PUMPS

Model VT6EDCR	
	Maximum Pressure 4000 psi 275 bar
	Maximum Displacement 11.63 - 34.15 in ³ /rev 191 - 560 cm ³ /rev
	Maximum Speed 2200 rpm
Page No.	DI-1-12

Model VT7EE/VT7EES	
	Maximum Pressure 3500 psi 240 bar
	Maximum Displacement 16.1 - 32.8 in ³ /rev 264 - 540 cm ³ /rev
	Maximum Speed 2200 rpm
Page No.	DI-1-15

Model VT6CRM	
	Maximum Pressure 4000 psi 275 bar
	Maximum Displacement 0.66 - 6.10 in ³ /rev 11 - 100 cm ³ /rev
	Maximum Speed 2800 rpm
Page No.	DM-1-1

Model VT6DRM	
	Maximum Pressure 3500 psi 240 bar
	Maximum Displacement 2.90 - 11.65 in ³ /rev 48 - 190 cm ³ /rev
	Maximum Speed 2500 rpm
Page No.	DM-1-3

Model VT6ERM	
	Maximum Pressure 3500 psi 240 bar
	Maximum Displacement 8.07 - 16.40 in ³ /rev 132 - 270 cm ³ /rev
	Maximum Speed 2200 rpm
Page No.	DM-1-5

DT

DRIVE TRAIN VANE PUMPS

	Model	VM3B/VM3B1
	Maximum Pressure	3000 psi 210 bar
	Maximum Displacement	0.56 - 2.26 in ³ /rev 9 - 37 cm ³ /rev
	Maximum Speed	4000 rpm
	Torque	0.09 - 0.37 lb-in/psi 0.15 - 0.58 Nm/bar
Page No.		E1-1
	Model	VM4C/VM4C1
	Maximum Pressure	2500 psi 175 bar
	Maximum Displacement	1.49 - 4.89 in ³ /rev 24 - 80 cm ³ /rev
	Maximum Speed	4000 rpm
	Torque	0.24 - 0.78 lb-in/psi 0.39 - 1.27 Nm/bar
Page No.		E1-3
	Model	VM4D/VM4D1
	Maximum Pressure	2500 psi 175 bar
	Maximum Displacement	3.97 - 8.81 in ³ /rev 65 - 144 cm ³ /rev
	Maximum Speed	4000 rpm
	Torque	0.63 - 1.40 lb-in/psi 1.04 - 2.30 Nm/bar
Page No.		E1-5
	Model	VM4E/VM4E1
	Maximum Pressure	2500 psi 175 bar
	Maximum Displacement	9.67 - 13.55 in ³ /rev 158 - 222 cm ³ /rev
	Maximum Speed	3600 rpm
	Torque	1.54 - 2.16 lb-in/psi 2.52 - 3.53 Nm/bar
Page No.		E1-7

HYDRAULIC VALVES



Series	Size		Max. flow		Max. Pr.		Mounting Options
	in	mm	gpm	lpm	psi	bar	
Pressure Controls							
VR4* 03	3/8"	10	24	90	5000	350	Subplate / Threaded / Cartridge
VR4* 06	3/4"	20	80	300	5000	350	Subplate / Threaded / Cartridge
VR4* 10	1¼"	32	159	600	5000	350	Subplate / Threaded / Cartridge
VR5* 06	3/4"	20	24	90	5000	350	Flange
VR5* 08	1"	25	80	300	5000	350	Flange
VR5* 10	1¼"	32	159	600	5000	350	Flange
VR5* 12	1½"	38	159	600	5000	350	Flange
VR1E02	1/4"	6	1.7	6.6	5000	350	Subplate / Panel / Foot / Cartridge
VV01	—	—	1	3.8	5000	350	Stackable (vent valve)

* V - Relief, U - Unloader, S - Sequence, R - Reducing



Series	Size		Max. flow		Max. Pr.		Mounting Options
	in	mm	gpm	lpm	psi	bar	
Pressure Controls							
VIC03	3/8"	10	13	50	4500	350	Threaded
VIC06	3/4"	20	53	200	4500	350	Threaded
VIC10	1¼"	32	106	400	4500	350	Threaded
VC4V03	3/8"	10	48	180	5000	350	Subplate / Threaded / Cartridge
VC4V06	3/4"	20	95	360	5000	350	Subplate / Threaded / Cartridge
VC4V10	1½"	38	119	450	5000	350	Subplate / Threaded / Cartridge
VC5V06	3/4"	20	26	100	3000	210	Flange
VC5V08	1"	25	53	200	3000	210	Flange
VC5V10	1¼"	32	106	400	3000	210	Flange
VC5V12	1½"	38	198	750	3000	210	Flange
VC5V16	2"	50	198	750	3000	210	Flange
Pilot Operated Check Valves							
VC4V03	3/8"	10	48	180	5000	350	Subplate / Threaded / Cartridge
VC4V06	3/4"	20	95	360	5000	350	Subplate / Threaded / Cartridge
VC4V10	1½"	38	119	450	5000	350	Subplate / Threaded / Cartridge
Air Bleed Off Valve							
VAB04	1/4"	6	—	—	5000	350	Threaded



DIRECTIONAL CONTROL VALVES

Series	Size		Max. flow		Max. Pr.		Mounting Options
	in	mm	gpm	lpm	psi	bar	
V4D01	1/4"	6	24	90	5000	350	Subplate
V4D02	3/8"	10	32	120	4600	315	Subplate
* V4D03	5/8"	16	80	300	5000	350	Subplate
V4D06	3/4"	20	132	500	5000	350	Subplate

* Will be available from a later date.

HYDRAULIC POWER UNITS & MANIFOLDS

Design and manufacture of Hydraulic Power Packs and Manifolds as per requirements of customers. Specialised in supply of high pressure systems for Steel Mills, Sugar Industry, Textile Machinery, Material Handling, Food Processing etc.



NOTE : We also make other products not shown here



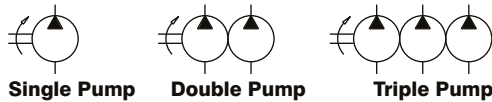
HYDRAULIC VALVES

Series	Type	Size		Max. flow		Max. Pr.		Mounting Options
		in	mm	gpm	lpm	psi	bar	
Seat Valves - On/Off								
VD4S03	Body Type	3/8"	10	47	180	5000	350	Subplate / Threaded
VD4S06	Body Type	1"	25	95	360	5000	350	Subplate / Threaded
VD4S10	Body Type	1½"	38	158	600	5000	350	Subplate / Threaded
VD5S03	2/3 Port	3/4"	10	24	90	5000	350	SAE Flange
VD5S06	2/3 Port	1"	25	80	300	5000	350	SAE Flange
VD5S08	2/3 Port	1¼"	32	158	600	4000	280	SAE Flange
VD5S10	3 Port	1½"	38	158	600	5000	350	SAE Flange
VCID / VCIC	Cavity as per DIN 24342	1/2"	16	53	200	5000	350	Cartridge
VCID / VCIC		1"	25	119	450	5000	350	Cartridge
VCID / VCIC		1¼"	32	198	750	5000	350	Cartridge
VCID / VCIC		1½"	40	330	1250	5000	350	Cartridge
VCID / VCIC		2"	50	528	2000	5000	350	Cartridge
VCID / VCIC		2½"	63	792	3000	5000	350	Cartridge
VCAR4	Cavity as per	1/2"	12	47	180	5000	350	Cartridge
VCAR2	VELJAN std.	1½"	38	158	600	5000	350	Cartridge
Stack Valves								
VZDV03	Pressure Relief	1/4"	6	16	60	5000	350	CETOP 03
VZDV05		3/8"	10	32	120	4500	315	CETOP 05
VZDV08		3/4"	20	110	500	4500	315	CETOP 08
VZDR03	Pressure Reducing	1/4"	6	16	60	5000	350	CETOP 03
VZDR05		3/8"	10	32	120	4500	315	CETOP 05
VZRD03	Throttle with Check	1/4"	6	16	60	5000	350	CETOP 03
VZRD05		3/8"	10	32	120	4500	315	CETOP 05
VZRD08		3/4"	20	110	500	4500	315	CETOP 08
VZRE03	Check (Pilot Operated)	1/4"	6	16	60	5000	350	CETOP 03
VZRE05		3/8"	10	32	120	4500	315	CETOP 05
VZRE08		3/4"	20	110	500	4500	315	CETOP 08
VZRV03	Check (Direct Operated)	1/4"	6	11	40	5000	350	CETOP 03
VZRV05		3/8"	10	26	100	4500	315	CETOP 05

Series	Size		Max. flow		Max. Pr.		Mounting Options
	in	mm	gpm	lpm	psi	bar	
Inline Throttle Valves							
VITC03	3/8"	10	13	50	4500	315	Threaded
VITC06	3/4"	20	53	200	4500	315	Threaded
VITC10	1 ¼"	32	106	400	4500	315	Threaded
Throttle without Check Valves							
VDV7 06	3/8"	10	25	95	5000	350	Subplate / Threaded
VDV7 08	1/2"	12	25	95	5000	350	Subplate / Threaded
VDV7 12	3/4"	18	50	190	5000	350	Subplate / Threaded
VDV7 16	1"	25	50	190	5000	350	Subplate / Threaded
VDV7 20	1 ¼"	32	119	450	5000	350	Subplate / Threaded
VDV7 24	1 ½"	38	119	450	5000	350	Subplate / Threaded
Throttle with Check Valves							
VDRV7 06	3/8"	10	25	95	5000	350	Subplate / Threaded
VDRV7 08	1/2"	12	25	95	5000	350	Subplate / Threaded
VDRV7 12	3/4"	18	50	190	5000	350	Subplate / Threaded
VDRV7 16	1"	25	50	190	5000	350	Subplate / Threaded
VDRV7 20	1 ¼"	32	119	450	5000	350	Subplate / Threaded
VDRV7 24	1 ½"	38	119	450	5000	350	Subplate / Threaded
Flow Controls							
V2FIC 02	3/8"	10	13	52	4000	280	Subplate
V2FIC 03	3/4"	20	29	110	5000	350	Subplate

FEATURES

Veljan VT* series Vane Pumps are high-performance fixed displacement pin vane design available in Single, Double, Triple and Drive Train configurations. These can be driven by fixed or variable speed prime movers.



LONG SERVICE LIFE

Due to hydraulic pressure compensation and a rigid bearing arrangement, an outstanding operational life can be achieved by using Veljan Vane Pumps.

LARGE POWER RANGE

Veljan Vane Pumps offer a comprehensive range of Single, Double and Triple Vane Pumps in a large variety of flow capacities. Based on the individual maximum operating pressures, the corresponding power range varies. All pumps are light weight and compact in design, resulting in an exceptional power-to-weight ratio.

GREATER FLOW RANGE

Within the frame size of a pump, greater flow is achieved by increased displacement cam rings. "B" - 15 gpm, "C" - 31 gpm, "D" - 61gpm, "E" - 85 gpm.

LOW NOISE LEVEL

Reduced noise levels are well within the acceptable limits of the industry. Large size cartridge displacements optimize operation for the lowest noise level in the smallest envelope. Uni-directional cartridge pumps are more quiet in operation in comparison to bi-directional cartridge pumps.

MOUNTING FLEXIBILITY

Flexible and economical instillation - inlet and outlet ports can be arranged in different configurations, 4 positions for single pumps, 32 for double pumps and 128 for triple pumps.

MAXIMUM SPEED RATINGS

Speeds are influenced by specific gravity, viscosity and suction head. Maximum speed rating: 3600 rpm. Minimum speed rating: 400 rpm for mobile and 600 rpm for industrial applications. For specific speed, flow and pressure ratings of each series, please refer the general characteristics of Vane Pumps.

CARTRIDGE DESIGN

Veljan Vane Pumps feature pre-assembled cartridge kits which can be easily and quickly replaced without any major disassembly. The displacement of the pump within the same series can be changed by changing the camring or cartridge.

RELIABILITY

Excellent cold start capability and superior resistance to seizure make Veljan Vane Pumps highly reliable and efficient.

HIGHER PRESSURE

High pressure capability upto 4650 psi (320 bar).

HIGH EFFICIENCY

High volumetric efficiency (typically 94%) reduces heat generation, allows low speeds at full pressure and high mechanical efficiency (typically 94%) reduces energy consumption. Better efficiency under load increases productivity.

WIDER RANGE OF ACCEPTABLE VISCOSITIES

Viscosities from 2000 to 10 cst, permit colder starts and hotter running. The balanced design compensates for wear and temperature changes. Optimum operating viscosity of the oil should be between 16 cst (80 SUS) and 40 cst (180 SUS).

VERSATILE APPLICATIONS

Veljan Vane Pumps are used in all industrial and mobile applications of the industry and can be operated with mineral oils as well as fire resistant fluids.

FIRE RESISTANT FLUIDS

Phosphate esters, chlorinated hydrocarbons, water glycols and invert emulsions may be pumped at high pressures and with longer service life by these pumps.

ADVANTAGES

- ▶ Low ripple pressure reduces piping noise and increases life of other components in the circuit.
- ▶ High resistance to particle contamination because of double lip vane increases pump life.
- ▶ Large variety of options (cam displacement, shaft, port-positions) allows customized installation.
- ▶ Low speed, low pressure, high viscosity allows application in cold environments with minimum energy consumption and without risk of seizure.
- ▶ Camrings are dry lubricant coated and suitable for severe duty applications. This special coating helps in lubrication of the cam surface, especially during cold starts as also while in operation. Additionally this reduces wear which in turn extends life of the pump.
- ▶ Side feed holes reduce internal leakage, help balance internal pressures, improve lubrication and provide a cooling effect.
- ▶ Vane loading pins load the vane against the cam ring. Loading is in direct proportion to pump discharge pressure, which minimizes wear and prevents overshoot pressure and vane blow-off.
- ▶ The shaft option T (SAE J718c), allows direct drive (at 540 or 1000 RPM) on tractors.
- ▶ The double shaft seal (VT6* P) version and drain hole allow direct mounting onto gear boxes.

GENERAL CHARACTERISTICS

Series	Mounting Standard (SAE J744c ISO/3019-1)	Displacement (cm³/ rev)	Speed		Max. Pressure		Weight (without connectors and bracket)		SAE 4-bolt J518-ISO/DIS 6162-1			Moment of Inertia		
			max	min	(psi)	(bar)	(lbs)	(kg)	suction	Pressure		lb.in²	Kg m²x10 ⁻⁴	
VTXB1	SAE - A	6 - 46	2500	600	3000	210	21.34	9.7	1" or 1¼"	3/4" or 5/8"	1.1	3		
VTXB2	SAE - B						23.98	10.9						
VT6B	SAE - A	6 - 46	2500	600	3500	240	3.6	8.0	1¼"	¾"	1.1	3		
VT6C / VT6CM	SAE - B	10.8 - 100.0	2800 ¹⁾	600 400	4000 ⁴⁾	275 ⁴⁾	34.0	15.5	1½"	1"	2.6	7.5		
VT6CSH / VT6CSHM	SAE - B	10.8 - 100.0	2800 ¹⁾	600 400	4000 ⁴⁾	275 ⁴⁾	55.0	24.9	1½"	1" or ¾"	2.6	7.5		
VT6CP	SAE - C	10.8 - 100.0	2800 ¹⁾	400	4000 ⁴⁾	275 ⁴⁾	39.7	18.0	2"	1¼"	2.7	7.8		
VT6D / VT6DM	SAE - C	47.6 - 190.5	2500 ²⁾	600 400	3500 ⁴⁾	240 ⁴⁾	52.9	24.0	2"	1¼"	8.0	23.3		
VT6E / VT6EM	SAE - C	132.3 - 269.8	2200 ³⁾	600 400	3500 ⁵⁾	240 ⁵⁾	95.5	43.3	3"	1½"	17.7	51.5		
VT6GC	R.17-102	10.8 - 100.0	2800 ¹⁾	400	4000 ⁴⁾	275 ⁴⁾	39.7	18.0	1½"	1" SAE		3.1	9.1	
VTXBB1	SAE -A	12 - 92	2500	600	3000	210	33	15.0	2"	P1	P2	2.53	7.4	
VTXBB2	SAE -B									¾" or 1/16"	¾" or 1/16"			
VT6BB	SAE -B	12 - 92	2500	600	3500	240	46.2	21.0	2"	¾"	¾"	2.53	7.4	
VT6CB	SAE - B	17 - 140	2500	600	4000	275	53.9	24.5	2½"	1"	¼"	4.04	11.8	
VT6CC / VT6CCM	SAE - B	P1 = 10.8 - 100.0 P2 = 10.8 - 100.0	2800	600 400	4000	275	57.4	26.0	2½" or 3"	1"	1" or ¾"	5.1	14.9	
VT6CCSH / VT6CCSHM	SAE - B	P1 = 10.8 - 100.0 P2 = 10.8 - 100.0	2800	600 400	4000	275	75.0	34.0	2½" or 3"	1"	1" or ¾"	5.1	14.9	
VT6GCC	R.17-102	P1 = 10.8 - 100.0 P2 = 10.8 - 100.0	2800	400	4000	275	60.0	27.2	2½" or 3"	1"	1" or ¾"	5.5	15.9	
VT6DC / VT6DCM	SAE - C	P1 = 47.6 - 190.5 P2 = 10.8 - 100.0	2500	600 400	3500 4000	240 275	80.7	36.6	3"	1¼"	1" or ¾"	10.4	30.4	
VT6DDS	SAE - C	P1 = 47.6 - 190.5 P2 = 47.6 - 190.5	2500	600	3500	240	123.4	56.0	4"	1¼"	1¼"	12.4	35.9	
VT6EC / VT6ECM	SAE - C	P1 = 132.3 - 269.8 P2 = 10.8 - 100.0	2200	600 400	3500 4000	240 275	121.0	55.0	3½"	1½"	1"	25.0	73.4	
VT6ED / VT6EDM	SAE - C	P1 = 132.3 - 269.8 P2 = 47.6 - 190.5	2200	600 400	3500 3500	240 240	145.5	66.0	4"	1½"	1¼"	25.0	73.4	
VT6EE	ISO-3019-2 250 B4 HW	P1 = 132.3 - 269.8 P2 = 132.3 - 269.8	2200	600	3500	240	209.4	95.0	4"	1½"	1¼"	33.2	96.0	
VT6EES	SAE - E													
VT6CBB	SAE - B	P1 = 10.8 - 100.0 P2 = 6.5 - 39.7 P3 = 6.5 - 39.7	2500	600 400	4000 3500	275 240	70.4	32.0	2"	P1	P2	P3	--	--
VT6CCB	SAE - B	P1 = 10.8 - 100.0 P2 = 10.8 - 100.0 P3 = 6.5 - 39.7								1"	3/4"	3/4"		
VT6DCB	SAE - C	P1 = 47.6 - 190.5 P2 = 10.8 - 100.0 P3 = 6.5 - 39.7	2500	600 400	4000 3500 3500	275 240 240	125.4	57.0	3"	1¼"	1"	3/4"	--	--
VT6DCC / VT6DCCM	SAE - C	P1 = 47.6 - 190.5 P2 = 10.8 - 100.0 P3 = 10.8 - 100.0	2500	600 400	3500 4000	240 275	134.5	61.0	4"	1¼"	1"	1" or ¾"	12.8	37.3
VT6DDCS	SAE - C	P1 = 47.6 - 190.5 P2 = 47.6 - 190.5 P3 = 10.8 - 100.0	2500	600	3500 4000	240 275	145.2	66.0	4"	1¼"	1¼"	1" or ¾"	14.6	42.6
VT6EDC	ISO/3019-2 250 B4 HW	P1 = 132.3 - 269.8 P2 = 47.6 - 190.5 P3 = 10.8 - 100.0	2200	600 400	3500 3500 3500	240 240 275	220.4	100.0	4"	1½"	1¼"	1¾"	27.6	80.2
VT6EDCS / VT6EDCM	SAE E													
VT6CR / VT6CRM	SAE - B	10.8 - 100.0	2800	600 400	4000	275	37.6	17.1	1½"	1"			2.6	7.6
VT6DR / VT6DRM	SAE - C	47.6 - 190.5	2500	600 400	3500	240	63.9	29.0	2"	1¼"			8.16	23.4
VT6ER / VT6ERM	SAE - C	132.3 - 269.8	2200	600 400	3500	240	86.4	39.2	3"	1½"			17.7	51.6
VT6DCCR	SAE - C	P1 = 47.6 - 190.5 P2 = 10.8 - 100.0 P3 = 10.8 - 100.0	2500	600	3500 4000	240 275	136.7	62.0	4"	1¼"	1"	1" or ¾"	12.8	37.4
VT6EDCR	ISO/3019-2 250 B4 HW	P1 = 132.3 - 269.8 P2 = 47.6 - 190.5 P3 = 10.8 - 100.0	2200	600	3500 3500 4000	240 240 275	220.4	100.0	4"	1½"	1¼"	1" or ¾"	27.6	80.3

1) Cartridges 025-028-031 = 2500 rpm max. 2) Cartridges 042-045-050-061 = 2200 rpm max. 3) Cartridges 085 = 2000 rpm max. 4) Cartridges 028-025-031-050(D) = 210 bar (3000 psi) max.int
4) 061 (D) = 120 bar (1740 psi) max.int 061 = 80 bar (1160 psi) cont. 5) 085 (E) = 1232 psi (90 bar) max.int 085 (E) = 75 bar (1087 psi) cont.

* For operation with petroleum based fluids that contain additives which impart high anti-wear properties. (see page A0-8)

GENERAL CHARACTERISTICS

Series	Mounting Standard	Displacement (cm³/rev)	Speed		Max. Pressure		Weight (without connectors and bracket)		SAE 4-bolts J518-ISO/DIS 6162-1			Moment of Inertia		
			max	min	(psi)	(bar)	suction		Pressure	Lb.in²	Kg m²x10⁴			
							(lbs)	(kg)						
VT7B	ISO 3019-2 100 A2 HW	5.7 - 50	3600 ¹⁾	600	4640 ⁴⁾	320 ⁴⁾	50.7	23.0	1½"	1" or ¾"	1.1	3.2		
VT7BS	SAE J744 SAE B													
VT7QC1	SAE B	10.8-100.0	3000 ²⁾	600	4350 ⁵⁾	300 ⁵⁾	50.7	23.0	1½"	1" or ¾"	2.6	7.5		
VT7QC2	SAE C													
VT7D	ISO 3019-2 125 A2 HW	43.9 - 158.0	3000 ²⁾	600	4350 ⁶⁾	300 ⁶⁾	57.3	26.1	2"	1¼"	5.7	19.5		
VT7DS	SAE J744 SAE C													
VT7E	ISO 3019-2 125 A2 HW	132.2 - 268.7	2200 ³⁾	600	3500 ⁷⁾	240 ⁷⁾	95.4	43.0	2"	1¼"	21.3	61.8		
VT7ES	SAE J744 SAE C													
VT7BB	ISO 3019-2 100 A2 HW	P1 = 5.7 - 50 P2 = 5.7 - 50	2200	600	4640	320	75.5	34.0	2½"	P1	P2	2.3	6.75	
VT7BBS	SAE J744 SAE B									1" or ¾"	¾"			
VT7QCC1	SAE B	P1 = 10.8-100.0 P2 = 10.8-100.0	3000	600	4350	300	75.5	34.0	2½"	1"	1" or ¾"	5.8	14.9	
VT7QCC2	SAE C													
VT7DB	ISO 3019-2 125 A2 HW	P1 = 43.9 - 158.0 P2 = 5.7 - 50	2500	600	3630 4350	250 300	85.1	38.0	3"	1¼"	1" or ¾"	9.0	26.3	
VT7DBS	SAE J744 SAE C													
VT7QDC	SAE J744 SAE C	P1 = 43.9-158.0 P2 = 10.8-100.0	2500	600	3630 4350	250 300	115.0	52.3	3"	1¼"	1" or 3/4"	10.4	30.4	
VT7DD	ISO 3019-2 125 B4 HW	P1 = 43.9 - 158.0 P2 = 43.9 - 158.0	2500	600	3500	250	123.4	56.0	4"	1¼"	1¼"	12.4	35.9	
VT7DDS	SAE J744 SAE C													
VT7EB	ISO 3019-2 125 A2 HW	P1 = 132.2 - 268.7 P2 = 5.7 - 50.0	2200	600	3500 4350	240 300	121.2	55.0	4"	1½"	1¼"	22.5	65.8	
VT7EBS	SAE J744 SAE C													
VT7QEC	SAE J744 SAE C	P1 = 132.2-268.7 P2 = 10.8-100.0	2200	600	3500 4350	240 300	121.0	55.0	3½"	1½"	1"	25.0	73.4	
VT7ED	ISO 3019-2 125 A2 HW	P1 = 132.2 - 268.7 P2 = 43.9 - 158.0	2200	600	3500 3630	240 250	145.5	66.0	4"	1½"	1¼"	27.2	78.9	
VT7EDS	SAE J744 SAE C													
VT7EE	ISO 3019-2 250 B4 HW	P1 = 132.2 - 268.7 P2 = 132.2 - 268.7	2200	600	3500	240	209.4	95.2	4"	1½"	1¼"	33.2	90.0	
VT7EES	SAE J744 SAE E													
VT7DBB	SAE C	P1 = 43.9-158.0 P2 = 5.7-50.0 P3 = 5.7-50.0	2500	600	3500 4350	240 300	134.5	61.0	4"	P1	P2	P3	11.5	33.7
VT7QDCB	SAE C									1¼"	1"	1" or ¾"		
VT7QDCC	SAE C									12.8	37.3			
VT7DDB	ISO 3019-2 125 B4 HW	P1 = 43.9-158.0 P2 = 43.9-158.0 P3 = 5.7-50.0	2500	600	3630 4350	250 300	145.5	66.0	4"	1¼"	1¼"	1" or ¾"	13.5	39.6
VT7DDBS	SAE J744 SAE C													
VT7EDB	ISO 3019-2 250 B4 HW	P1 = 132.2-268.7 P2 = 43.9-158.0 P3 = 5.7-50.0	2200	600	3500 3630 4350	240 250 300	224.9	102.0	3"	1½"	1¼"	1" or ¾"	26.1	75.7
VT7EDBS	SAE J744 SAE E													
VT7QEDC	ISO 3019-2 250 B4 HW	P1 = 132.2-268.7 P2 = 43.9-158.0	2200	600	3500 3630	240 250	224.9	102.0	3"	1½"	1¼"	1" or ¾"	27.6	80.2
VT7QEDCS	SAE J744 SAF F													

1) Cartridges B11-B12-B14-B15 = 3000 rpm max.

3) Cartridges 085 = 2000 rpm max.

4) Cartridges B11-B12-B14 = 300 bar (4350 psi) max.int

5) Cartridges 022 = 275 bar (4000 psi) max. int

6) Cartridges B35-B38 = 280 bar (4060 psi) max. int

7) Cartridges 085 = 90 bar (1300 psi) max. int

2) Cartridges 025-028-031 = 2500 rpm max.

Cartridge B15 = 280 bar (4060 psi) max.int

Cartridge 025 = 240 bar (3500 psi) max.int

Cartridge B42 = 260 bar (3770 psi) max.int

2) Cartridges 045-050 = 2200 rpm max.

Cartridge 028-031 = 210 bar (3000 psi) max.int

Cartridge 045 = 240 bar (3500 psi) max.int

B35-B38 = 2800 rpm max. B42 = 2500 rpm max.

Cartridge 050 = 210 bar (3000 psi) max.int

GENERAL CHARACTERISTICS

Series	Mounting Standard	Displacement (cm ³ /rev)	Speed		Max. Pressure		Weight (without connectors and bracket)		suction	SAE 4-bolts J518-ISO/DIS 6162-1			Moment of Inertia	
			max	min	(psi)	(bar)	(lbs)	(kg)		Pressure			Lb.in ²	Kg m ² x10 ⁻⁴
VT67BB	SAE B	12 - 100	2800	600	4350	300	57.2	26.0	2 1/2"	P1 1"	P2 1/4"		3.9	11.4
VT67CB	SAE J744 SAE B	P1 = 10.8-100.0 P2 = 5.7-50.0	2800	600	4350	300	57.2	26.0	2 1/2"	1"	3/4"		3.9	11.4
VT67DB	SAE J744 SAE C	P1 = 47.6-190.5 P2 = 5.7-50.0	2500	600	4350	300	80.5	36.6	3"	1 1/4"	3/4"		9.1	26.7
VT67EB	SAE J744 SAE C	P1 = 132.2-269.8 P2 = 5.7-50.0	2200	600	4350	300	122.1	55.0	3 1/2"	1 1/2"	3/4"		23.8	69.8
VT67EC	SAE J744 SAE C	P1 = 132.2-268.7 P2 = 10.8 - 100	2200	600	4000	275	121.2	55.0	3 1/2"	1 1/2"	1"		24.2	70.66
VT67DBB	SAE J744 SAE C	P1 = 47.6-190.5 P2,P3 = 5.7-50.0	2500	600	4350	300	134.5	61.0	4"	P1 1 1/4"	P2 1"	P3 3/4"	11.5	33.7
VT67DCB		P1 = 47.6-190.5 P2 = 10.8-100.0 P3 = 5.7-50.0												
VT67DCC	SAE J744 SAE C	P1 = 43.9-158 P2,P3 = 10.8-100.0	2200	600	4000	275	134.5	61.0	4"	1 1/4"	1"	1"or 3/4"	11.4	33.2
VT67DDCS	SAE J744 SAE C	P1,P2 = 43.9-158 P3 = 10.8-100.0	2200	600	4000	275	145.5	66.1	4"	1 1/4"	1 1/4"	1"or 3/4"	14.7	42.9
VT67EDB	ISO 3019-2 250 B4 HW	P1 = 132.2-269.8 P2 = 47.6-190.5 P3 = 5.7-50.0	2200	600	4350	300	220.4	100.0	4"	1 1/2"	1 1/4"	3/4"	26.1	76.6
VT67EDC	ISO 2019-2	P1 = 132.2-269.8 P2 = 43.9-158 P3 = 10.8-100.0	2200	600	4000	275	224.9	102.2	4"	1 1/2"	1 1/4"	1"or 3/4"	27.4	80.0

Calculations

To resolve	Performances required		
Volumetric			
Displacement Vp [cm ³ /rev]	Requested flow	Q [l/min]	
Available flow Q [l/min]	Speed	n [rev/min]	
Input Power P [kW]	Pressure	p [bar]	

Routine
1. First calculation $V_p = \frac{1000 Q}{n}$
2. Choose Vp of pump immediatly greater (see tabulation)
3. Theoretical flow of this pump $Q_{th} = \frac{V \times n}{1000}$
4. Find Qs leakage function of pressure Qs = f(p) on curve at 10 or 24 cSt
5. available flow $Q_{th} = Q - Q_s$
Note: If this flow is too small or greater, other calculation must be done with other pump displacement.
6. Theoretical Input power $P_{th} = \frac{Q_{th} \times p}{600}$
7. Find Ps hydrodynamic power loss on curve.
8. Calculation of necessary Input Power $P_{in} = P + P_s$
9. Results
These calculations steps must be followed for each application

Example
Q = 60 n = 1500 p = 150
$V_p = \frac{1000 \times 60}{1500} = 40 \text{ cm}^3/\text{rev}$
VT6C 014 Vp = 46 cm ³ / rev
$Q_{th} = \frac{46 \times 1500}{1000} = 69 \text{ l/min}$
VT6C (AI-1-3): Qs = 5 l/min at 150 bar, 24 cSt
Q = 69 - 5 = 64 l/min
$P_{th} = \frac{69 \times 150}{600} = 17.3 \text{ kW}$
VT6C (AI-1-3): Ps at 1500 rev/min, 150 bar = 1.5 kW
P = 17.3 + 1.5 = 18.8 kW
$V = 46 \text{ cm}^3/\text{rev}$ $Q = 64 \text{ l/min}$ $P = 18.8 \text{ kW}$
} VT6C 014

INTERMITTENT PRESSURE RATING

VT6 units may be operated intermittently at pressures higher than the recommended continuous rating when the time weighted average of pressure is less than or equal to the continuous duty pressure rating.

This intermittent pressure rating calculation is only valid if other parameters; speed, fluid, viscosity and contamination level are respected.

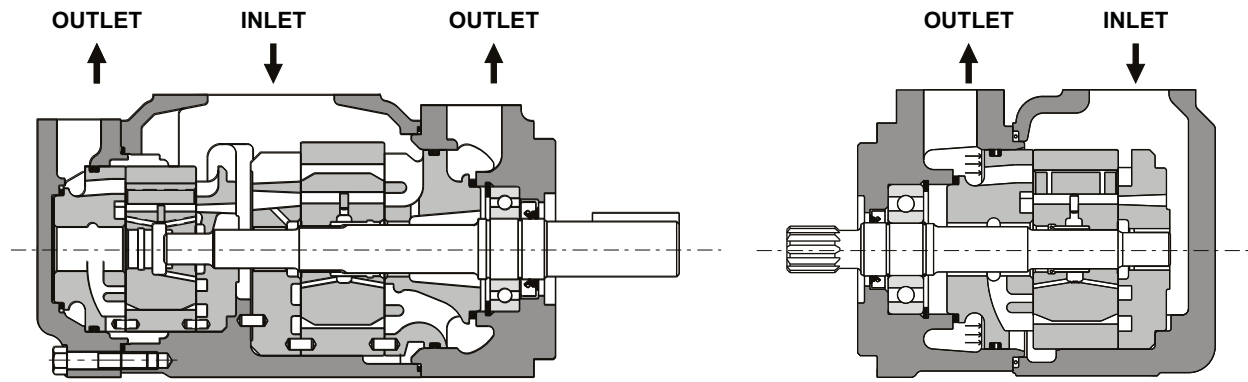
For total cycle time more than 15 minutes please consult your VELJAN representative.

Example: VT6C-014

Duty cycle 4 min. at 275 bar
1 min. at 35 bar
5 min. at 160 bar

$$\frac{(4 \times 275) + (1 \times 35) + (5 \times 160)}{10} = 193.5 \text{ bar}$$

193.5 bar is lower than 240 bar allowed as continuous pressure for VT6C-014 with HF-O Fluid.



PUMP DESCRIPTION

Veljan Vane Pumps have a hydrostatically balanced cartridge which offers flexibility in pump sizes within a single series. A firm but light force against the vane is provided by the pin in order to follow the contour of the cam ring. All pumps can be supplied with flange or foot bracket mounting.

CHARACTERISTICS

Due to hydrostatic balance, the rotor carries no radial forces and, therefore, only transmits the torque generated by the operating pressure. Leakage is reduced to a minimum since the floating port plate is loaded by system pressure.

A wide viscosity range allows for operation under extreme temperature conditions. Longer service life, however, can be achieved by observing the recommended operating viscosity. The ambient temperature normally has no influence on the functional safety of the vane pumps.

PRINCIPLE OF OPERATION

The operating principle of a vane pump is illustrated in the figure above. A slotted rotor is driven within the cam ring by the shaft, coupled to a power source. As the rotor turns, vanes fitted in the radial slots of rotor follow the inner contour of the cam ring and provide two complete suction and pressure cycles during one revolution. Because of the eccentric design of the cam ring from the center line of the rotor, the rotor is loaded by the vanes only when they are on the major and minor arcs of the cam contour.

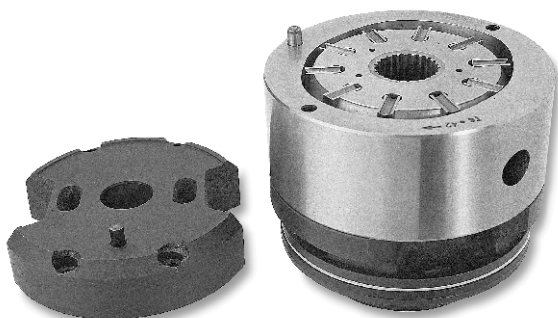
The displacement of the pump depends on the size of the cam ring and rotor and on the maximum distance the vane allowed to extend from the rotor surface to the cam ring surface.

The components of the cartridge are an elliptical cam ring, a slotted rotor, two port plates, vanes and vane pins fitted into the rotor slots. The inlet flow feeds through ports on both sides of the cartridge as well as through a large port through the cam ring at each suction ramp. This further permits greater displacement within the series, reduces wear and allows higher speed operation. As the outlet section is approached, the chamber volume decreases and the fluid is forced out into the system. System pressure is fed under the vanes, assuring their sealing contact against the camring during normal operation.

The pressure in the over-vane areas is equalized by the radial holes through the vanes. A firm but light force against the vane is provided by the pin subjected to the steady pin cavity pressure. This force assures smooth cam tracking by the vane. Thus in a light but steady contact, the vanes are held outward against the fluid film which separates them from the cam ring. Their radial position changes to follow the cam to adjust for fluid viscosity, contaminants and component wear.

The fluid film separates the rotor from the side port plates. The side port plates are clamped axially by an over balance of the internal pressure forces in the pumping cartridge. They accommodate dimensional changes due to temperature and pressure. Axial and radial running clearances, along with the lubricating oil film on the rotor and vanes, are optimized over the entire operating pressure range.

Rugged design and premium material selection, as well as the minimum number of rotating parts, contribute to the low noise levels and long efficient service life of Veljan Vane Pumps.



Pump cartridge

DOUBLE AND TRIPLE PUMPS

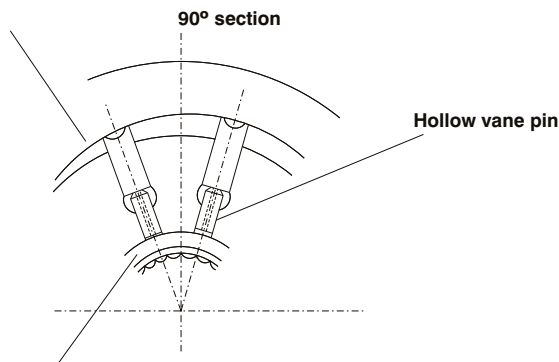
The VT* series Double Vane Pump is two hydraulic pumps in a single pump housing. Each is driven by the common shaft and is fed from the common inlet port. Each discharges from its separate outlet port and operates only at the pressure imposed on it. All pumps drain internally to the inlet port and hence no external drain is required.

MOBILE VERSION VANE PUMPS

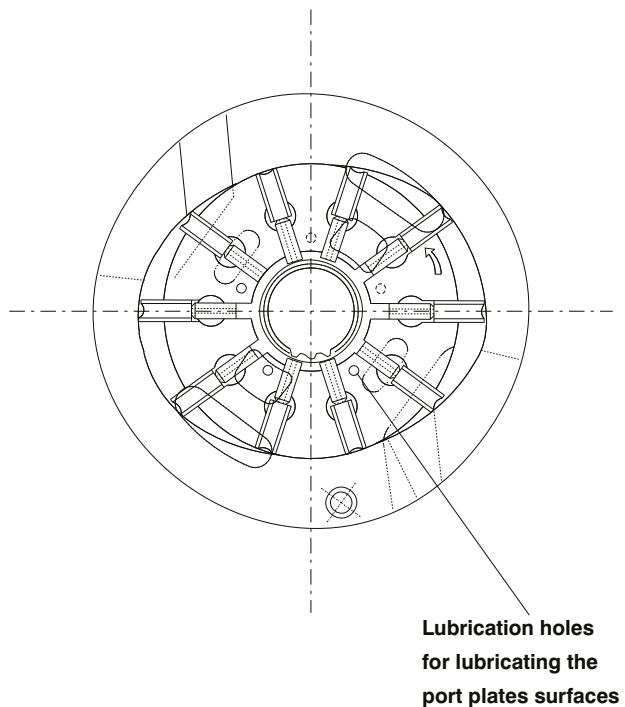
The working principle of operation of these pumps is same as industrial version except for a few modifications in the internal design of components. The cartridges offered in this version are bi-directional and indicated by "B" description in cartridge model number. Pump rotation is easy to change by changing position of cam ring on port plate dowel pin hole in the bi-directional design pumps.

The design features that differ from the normal industrial version Vane Pump are illustrated in the figures below:

Vane is urged outward at suction ramp by pin force and centrifugal force.



Pin cavity is at a steady pressure slightly higher than at discharge port.



GENERAL APPLICATION INSTRUCTIONS

1. Check speed range, pressure, temperature, fluid quality, viscosity and pump rotation.
2. Check Inlet conditions of the pump, if it can accept application requirement.
3. **Type of shaft:** If it would support operating torque.
4. Coupling must be chosen to minimize pump shaft load (weight, misalignment)
5. **Filtration:** Must be adequate for lowest contamination level.
6. **Environment of pump:** To avoid noise reflection, pollution and shocks.

PRIMING AT STARING

When the pump is set into operation for the first time, it must be primed at the lowest possible speed and pressure. When pressure relief valve is used at the outlet, it should be backed off to minimize return pressure. When possible an air bleed off should be provided in the circuit to facilitate purging of system air.

Never operate pump shaft at top speed and pressure without checking the pump priming is completed.

Absolute Inlet Pressure Pa min (bar)																						
Speed	Pump-cam								Pump-cam													
	VT6B								VT7B													
	rev/min	B02	B03	B04	B06	B08	B09	B12	B02	B03	B04	B05	B06	B07	B08	B09	B10	B11	B12	B14	B15	
1200	0.80	0.80	0.80	0.80	0.80	0.80	0.80		0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80		
1500	0.80	0.80	0.80	0.80	0.80	0.80	0.80		0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80		
1800	0.80	0.80	0.80	0.80	0.80	0.80	0.80		0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80		
2100	0.80	0.80	0.80	0.80	0.80	0.80	0.80		0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80		
2200	0.80	0.80	0.80	0.80	0.80	0.80	0.80		0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80		
2300	0.80	0.80	0.80	0.80	0.80	0.85	0.85		0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80		
2500	0.90	0.90	0.90	0.90	0.90	0.90	0.92		0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.85	0.85	
2800									0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.99	0.99	
3000									0.80	0.80	0.80	0.80	0.82	0.82	0.85	0.85	0.90	0.90	0.90	1.13	1.13	
3600									0.80	0.80	0.80	0.80	0.98	0.98	1.04	1.04	1.15					

Speed	Pump-cam VT6C												Pump-cam VT6D												Pump-cam VT6E											
	rev/min	003/ 008	010	012	014	015	017	022	025	028	031		014/ 020	024	028	031	035	038	042	045	050	061		042	045	050	052	057	062	066	072	085				
1200	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80		0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80		0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80				
1500	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80		0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80		0.80	0.80	0.80	0.80	0.80	0.80	0.85	0.80	0.85				
1800	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80		0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.85	0.80	0.80		0.85	0.80	0.80	0.80	0.85	0.85	0.95	0.85	0.95				
2100	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.85	0.90	0.90	0.90		0.80	0.82	0.85	0.90	0.92	0.95	0.95	0.98	0.98	0.98		0.98	0.90	0.90	0.90	0.95	0.95	1.00	0.95					
2200	0.80	0.80	0.80	0.80	0.80	0.80	0.85	0.90	0.95	0.98	0.98		0.88	0.88	0.92	0.95	0.98	1.00	1.02	1.05	1.05	1.05		1.02	1.00	1.05	1.00	1.00	1.00	1.09	1.00					
2300	0.80	0.85	0.85	0.90	0.90	0.90	0.90	0.95	0.98	1.00	1.00		0.95	0.95	1.00	1.00	1.02	1.05	1.08																	
2500	0.90	0.90	0.92	0.95	0.95	0.95	0.98	1.05	1.08	1.11			1.00	1.10	1.18	1.23	1.29	1.29																		
2800	1.00	1.00	1.00	1.00	1.00	1.00	1.03	1.05																												

Speed	Pump-cam VT7D												Pump-cam VT7E									
	rev/min	B14	B17	B20	B24	B28	B31	B35	B38	B42	045	050	042	045	050	052	057	062	066	072	085	
1200	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.85	0.85	0.90		
1500	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.85	0.85	0.90		
1800	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.85	0.85	0.85	0.80	0.80	0.80	0.85	0.85	0.95	0.85	1.00	
2100	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.98	0.98	0.90	0.90	0.90	0.90	0.95	0.95	1.00	1.00		
2200	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	1.05	1.08	1.00	1.00	1.00	1.00	1.00	1.00	1.09	1.05		
2300	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80												
2500	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.85	0.86	0.90												
2800	0.80	0.82	0.83	0.86	0.88	0.90	0.97	1.00														
3000	0.80	0.86	0.88	0.95	1.00	1.05																

Inlet pressure is measured at inlet flange with petroleum base fluids at viscosity between 10 to 65 cSt.

The difference between inlet pressure at the pump flange and atmospheric pressure must not exceed 0.2 bar to prevent aeration.

Multiply Absolute Pressure by 1.25 for HF-3, HF-4 fluids.

by 1.35 for HF-5 fluids.

Use highest cartridge absolute pressure for double pump.

INTERNAL LEAKAGE

While these pumps are designed for high volumetric efficiency, the internal leakage mainly depends on the load, viscosity of oil and the operating temperature. The typical internal leakage curves are shown in respective pump section.

INSTALLATION INSTRUCTIONS

1. Check direction of rotation as per the arrow mark shown on the pump body.
2. Ensure coupling connection to the driven shaft through proper coupling to minimize pump shaft load.
3. Check the filter suitability for lowest contamination level.
4. Check inlet conditions of the pump. Intake condition for all pumps should be suitable for easy flow of oil. As far as possible, try to avoid bends and use large size pipes as recommended.
5. Check the shaft suitability for supporting operating torque.
6. Suction line pressure - it is recommended to maintain a pressure at the inlet port between 0 to 1.5 bar.

Flow rate and power consumption are proportional to the rotational speed.

MOTOR-PUMP COUPLING

Vane Pumps can be installed in any position but axial and radial loads are not allowed on the shaft. Appropriate couplings and bell housing to be used as required.

LIMIT OF SHAFT TORQUE

The values of torque needed to operate the pumps are shown for each type of pump in the installation dimensions.

RECOMMENDED FLUIDS

Petroleum based antiwear R & O fluids.

These are the recommended fluids for VT* series pumps. Maximum catalog ratings and performance data are based on operation with these fluids. These fluids are covered by Denison HF-0 and HF-2 specification.

ACCEPTABLE ALTERNATE FLUIDS

The use of fluids other than petroleum based antiwear R & O fluids, reduces the maximum ratings of the pumps to be reduced. In some cases the minimum replenishment pressures must be increased. Consult specific sections for more details. These fluids are HF-1= Non antiwear petroleum base, HF-5= Synthetic fluids, HF-3= Water in oil emulsions, HF-4= Water glycols, Esters & Rapeseed base Biodegradable fluids.

VISCOSITY

Max (cold start, low speed & pressure)	
Industrial Pump	860 mm ² /s (cSt), 3900 SUS
Mobile Pump	2000 mm ² /s (cSt), 9240 SUS
Max (full speed & pressure)	108 mm ² /s (cSt), 500 SUS
Optimum (max life)	30 mm ² /s (cSt), 140 SUS
Min (full speed & pressure for HF-1, HF-3, HF-4 & 5 fluids)	18 mm ² /s (cSt), 90 SUS
Min (full speed & pressure for HF-0, HF-2 fluids)	10 mm ² /s (cSt), 60 SUS

VISCOSITY INDEX

90° min. Higher values extend range of operating temperatures.

Maximum Fluid Temperature (θ)°K

HF-0, HF-1, HF-2	= 373 (+ 100°C, + 212°F)
HF-3, HF-4	= 323 (+ 50°C, + 122°F)
HF-5	= 343 (+ 70°C, + 158°F)
Biodegradable fluids (esters & rapeseed base)	= 338 (+ 65°C, + 149°F)

Minimum fluid Temperature (θ)°K

HF-0, HF-1, HF-2, HF-5	= 255 (- 18°C, - 0.4°F)
HF-3, HF-4	= 283 (+ 10°C, + 50.0°F)
Biodegradable fluids (esters & rapeseed base)	= 253 (- 20.2°C, - 4.4°F)

FLUID CLEANLINESS

The fluid must be cleaned before and during operation to maintain contamination level of NAS 1638 class 8 (or ISO18/14) or better. Filters with 25 micron (or better, β₁₀ ≥ 100) nominal rating may be adequate but do not guarantee the required cleanliness levels. Suction strainers must be of adequate size to provide minimum inlet pressure specified. 100 mesh (149 micron) is the finest mesh recommended. Use oversize strainers or omit them altogether in applications which require cold start or use fire resistant fluids.

OPERATING TEMPERATURES AND VISCOSITIES

Operating temperatures are a function of fluid viscosities, fluid type, and the pump. Fluid viscosity should be selected to provide optimum viscosity at normal operating temperatures. For cold starts, the pumps should be operated at low speed and pressure until fluid warms up to an acceptable viscosity for full power operation.

WATER CONTAMINATION IN THE FLUID

Maximum acceptable content of water.

- ▶ 0.10 % for mineral base fluids.
- ▶ 0.05 % for synthetic fluids, crankcase oils, biodegradable fluids.

If amount of water is higher, then it should be drained off the circuit.

SHAFTS, COUPLINGS AND FEMALE SPLINES

- ▶ The mating female spline should be free to float and find its own center. If both members are rigidly supported, they must be aligned within 0.15 mm (0.006") TIR or less to reduce fretting. The angular alignment of two splines axes must be less than ± 0.05 mm per 25.4 mm radius. (± 0.002 " per 1" radius.).
- ▶ The coupling spline must be lubricated with a lithium molydi- sulfide grease or a similar lubricant.
- ▶ The coupling must be hardened to a hardness between 27 and 45 RC.
- ▶ The female spline must be made to conform to the class 1 fit as described in SAE-J498b (1971). This is described as a Flat Root Side Fit.

KEYED SHAFTS

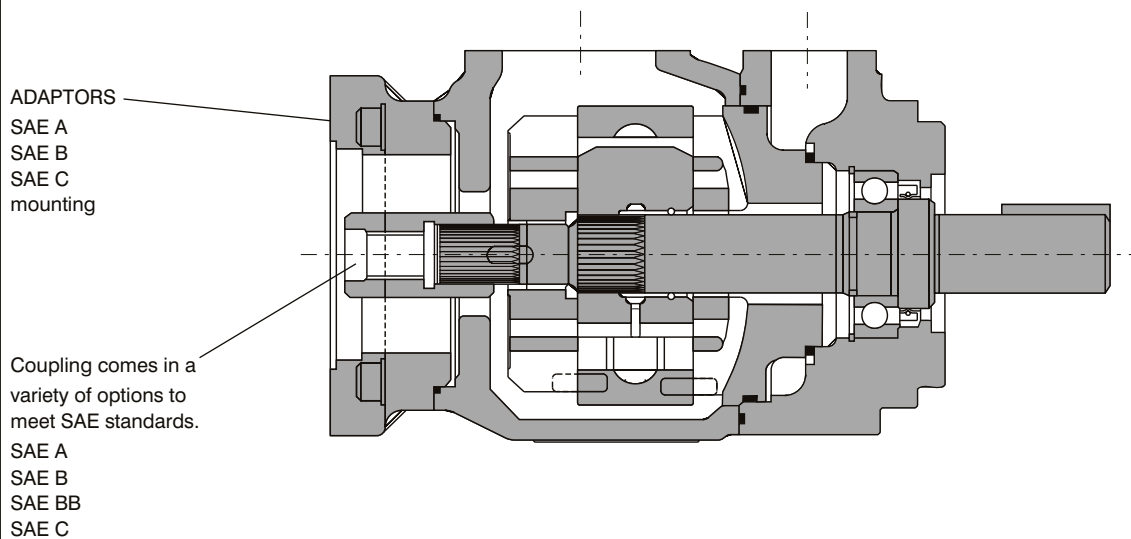
Veljan supplies the VT* series pin vane pumps with option of keyed & splined shafts. Keyed shafts are supplied with high strength heat-treated keys. Therefore, when installing or replacing these pumps, the heat-treated keys must be used in order to ensure maximum life in the application. If the key is replaced, it must be heat-treated between 27 and 34 RC hardness. The corners of the keys must be chamfered from 0.76mm to 1.02mm (0.03" to 0.04") at 45° to clear radii in the key way.

Alignment of keyed shafts must be within tolerances given for splined shafts.

SHAFT LOADS

These products are designed primarily for coaxial drives which do not impose axial or side loading on the shaft, which may include vibration and shock during operation of the machine or external load on the drive shaft. Please contact Veljan representative for further details.

DRIVE TRAIN VANE PUMP VT*R



CONCEPT

Veljan VT6*R series Drive Train Vane Pumps have a rear pad for directly mounting and driving an additional pump. Many different multi-pump arrangements are thus possible. These Vane Pumps incorporate a mounting pad and internal variable Gear / Vane / Piston Pump.

REAR DRIVE MOUNTING

- ▶ This unit accepts a hydraulic pump with a mounting configuration conforming to SAE J 744c and ISO 3019-1
- ▶ Single Vane Pumps: SAE A/B/C adaptors SAE A/B/BB/C coupling.
- ▶ Triple Vane Pumps: SAE A adaptor and coupling.

APPLICATION ADVANTAGES

- ▶ Reduces installation costs by providing a single drive source for multiple pumps.
- ▶ Eliminates external drive couplings and reduces requirements of double shaft extensions or multiple electric motors.
- ▶ These configurations also provide valuable circuit and application flexibility.
- ▶ Wide range of flow levels on a common electric motor.
- ▶ Flexible, serviceable, quiet and energy-efficient hydraulic systems.
- ▶ Available for both mobile and industrial applications.

FORMULA FOR	LETTER FORMULA	WORD FORMULA
FLUID PRESSURE, P (lbs/in ²)	PRESSURE = $\frac{\text{FORCE (lbs)}}{\text{AREA (in}^2\text{)}}$	$P = \frac{F}{A}$
CYLINDER AREA (in ²)	AREA = $\frac{\pi}{4} \times \text{diameter}^2(\text{in})$ or $\times \text{radius}^2(\text{in})$	$A = \frac{\pi D^2}{4}$ or $.785 D^2$ or πr^2
FORCE (PUSH OR PULL)	FORCE = PRESSURE (psi) x AREA (in ²)	F = PA
PUMP INPUT POWER, HP	HORSEPOWER = $\frac{\text{FLOW (gpm)} \times \text{PRESSURE (psi)}}{1714 \times \text{OVERALL EFFICIENCY}}$	$HP = \frac{Q \cdot P}{1714 \eta_o}$
VELOCITY or SPEED (ft./sec)	VELOCITY = $\frac{231 \times \text{FLOW RATE gpm}}{12 \times 60 \times \text{AREA (sq. inches)}}$	$V = \frac{231 Q}{720 A}$
VOLUME, V (gpm)	VOLUME = $\frac{\pi \times \text{RADIUS}^2 (\text{inches}) \times \text{STROKE (inches)}}{231}$	$V = \frac{\pi r^2 L}{720 A}$
FLOW, Q (gpm)	FLOW = $\frac{\text{Displacement (in}^3/\text{rev)} \times \text{speed (rpm)}}{231}$	$Q = \frac{d \cdot n}{231}$
VOLUMETRIC EFFICIENCY η_v (PUMP)	Vol. Eff = $\frac{\text{OUTPUT (gpm)}}{\text{THEORITICAL (gpm)}} \times 100$	
OVERALL EFFICIENCY, η_o	Ove. Eff = $\frac{\text{OUTPUT HP}}{\text{INPUT HP}} \times 100$	
MOTOR TORQUE, T (inlbs/psi)	TORQUE = $\frac{\text{PRESSURE (psi)} \times \text{MOTOR DISPLACEMENT (in}^3/\text{rev)}}{2 \pi}$	$T = \frac{P d}{2 \pi}$
MOTOR TORQUE	$= \frac{63025 \times \text{HORSE POWER}}{\text{Speed (rpm)}}$	$T = \frac{63025 \text{ HP}}{n}$
	$= \frac{36.77 \times \text{FLOW RATE (gpm)} \times \text{PRESSURE (psi)}}{\text{Speed (rpm)}}$	$T = \frac{36.77 Q P}{n}$
MOTOR TORQUE, T/100 psi	TORQUE/ 100 psi = $\frac{\text{MOTOR DISPLACEMENT (in}^3/\text{rev.)}}{0.0628}$	$T/100 \text{ psi} = \frac{d}{0.0628}$
MOTOR SPEED, n (rpm)	SPEED = $\frac{231 \times \text{FLOW RATE (gpm)}}{\text{MOTOR DISPLACEMENT (in}^3/\text{rev.)}}$	$n = \frac{231 Q}{d}$
MOTOR POWER, HP	HORSE POWER = $\frac{\text{TORQUE OUTPUT (inch pounds)} \times \text{Speed (rpm)}}{63025}$	$HP = \frac{T \cdot n}{63025}$
VOLUMETRIC EFFICIENCY, η_v (MOTOR)	Vol. Eff = $\frac{\text{THEORITICAL gpm}}{\text{INPUT (gpm)}} \times 100$	

Pipe volume varies as the square of the diameter; volume in gallons = $0.0034 D^2 L$

where D = inside diameter of pipe in inches L = length in inches

Velocity in feet per second = $\frac{0.408 \times \text{flow (gpm)}}{D}$

where D = inside diameter of pipe in inches

Specific gravity of oil is approximately 0.85

Thermal expansion of oil is about 1 cu. in. per 1 gallon per 10° F rise in temperature

Conversion Factors :

1 HP = 0.746 kW hr 1 bar = 14.5053 psi 1 kg = 2.2045 lbs

1 US gallon = 231 cubic inches. 3.8 lpm 1 kg = 9.8066 N

VANE PUMP CHARACTERISTICS OPERATING SPEED

Maximum rated speeds are based on inlet pressure of 14.7 psi with the pump at sea level and operating with SAE 10 W oil at 40° to 80° C.

Minimum recommended speed is generally 600 rpm for industrial series pumps and 400 rpm for mobile series pumps. Depending upon pump size, operating pressure and environmental conditions, these speeds can be reduced or increased.

SUCTION PRESSURE

Recommended Suction (Inlet) Pressure is 0 to 5 psi gauge and should not exceed 20 psi (1.4 bar).

PRESSURE RATING

Pumps should not be operated at rated pressures at idle speeds for longer periods. In case they are run, overheating and damage can occur.

POSITIVE PRESSURE

A pressurised reservoir system does not ensure positive (supercharge) pressure at the pump inlet. Until the system has warmed up and the positive pressure actually exists at the pump inlet, pump should not be operated at high speeds.

SHAFT ALIGNMENT

Concentricity and angular alignment of shafts are very important to pump life. Misalignment can cause heavy loads on bearings leading to premature failure. Flexible coupling alignment is preferred and the usage of these couplings should be as per the recommendations of manufacturers.

Ensure that shaft is not subjected to excess torque and side loads.

Universal Joints

For double Universal Joint Couplings, the shafts must be parallel and the yokes must be in line. Maximum allowable offset should be minimised as per the application conditions. There should not be any looseness in the close fit of the pump shaft to the universal diametrical fit.

MOUNTING ACCESSORIES

Pumps with splined shafts are recommended for applications where the pump is coupled directly into a gear box. This is preferred more in mobile applications.

The possibility of interference between the shaft and the mating splines of the transmission, due to tolerance stack-up, can exist. This is reduced with the usage of tooth spline fits. A side tooth fit and short length of engagement permits more flexibility and less tendency for side loading than does a major diameter fit spline or long length spline fit.

VANE MOTOR CHARACTERISTICS OPERATING SPEED

The Maximum speed (rpm) for the maximum pressure ratings of Veljan Vane Motors are as under :

	CONTINUOUS	INTERMITTENT
VM3B/VM3B1	3000	3600
VM4C/VM4C1 VM4SC/VM4SC1	2500	3600
VM4D/VM4D1 VM4SD/VM4SD1	2500	3000
VM4E/VM4E1 VM4SE/VM4SE1	2500	3000

Motors not to be operated for more than six seconds per minute of operation at the intermittent speeds.

Minimum operating speeds can be as low as 200 to 400 rpm. But as these motors are rated for high speed performance these are not very efficient at very low speeds. Depending upon torque requirements and characteristics of the driven load, lower operating speeds are recommended. Please contact Veljan representative for specific application of low speeds.

STALL TORQUE

Motor stall torque range between 60% and 100% of 1200 rpm running torque for a given pressure differential across the motor. This is dependent on the specific angular position of the shaft at stall and the volume of supply of oil to the motor.

HYDRAULIC BRAKING

Motors can be used as retarders but not as hydraulic brakes. Systems requiring positive holding capabilities must be provided with externally operated mechanical holding devices.

While using motor as a retarder, the maximum pressure is dependent on the speed. At speeds below 1200 rpm, maximum obtainable pressure is proportionally reduced relative to speed. Adequate pressure must be provided at the inlet port of the motor when it is used as a retarder, other wise cavitation can occur.

Consult Veljan representative for additional information for using motors as retarders.

DRIVE DATA

Veljan Vane units are designed for use on direct coaxial drives using spline connections or flexible coupling.

MOUNTING REQUIREMENTS

Dimensional control requirements of the mounting pad to which the pump or motor is fixed are as under :

The clearance between the male and female pilot diameters must be +0.0005 to 0.0020 in (+0.01 to 0.05 mm). Concentricity of the female pilot diameter relative to the effective axis of the female drive must be within 0.004 in (0.1mm).

Mounting face to which the pump or motor is assembled must be square to the axis of the female drive within 0.0015 inch per inch (0.0381 mm per mm).

Dimensions of keyed shaft receivers must be between +0.0001 and 0.0010 in (+0.003 to 0.03 mm) of the maximum shaft diameter shown in the installation dimensions of the Vane units.

CIRCUITARY REQUIREMENTS

In the event of acceleration or deceleration of the drive or driven unit, overrunning loads or system bleed off, the circuitary design and control valves must ensure a continuous supply of oil to the pump or motor. The oil supply should be adequate to prevent cavitation, but not excess which results in variation of speeds beyond the rated maximum speed.

Relief Valves must prevent surges from exceeding rated pressure ratings. Never assume that the relief valve setting is the maximum pressure a pump experiences. Shock conditions may exist which can exceed circuit and pump limitations.

PIPE LINES

Hydraulic Pipe Lines should be as short as possible with large inside diameters. For long lines, it is preferred to adapt larger capacity lines than the specified unit ports. Suction, outlet and drain lines should not be smaller than the nominal port size shown in installation drawings. usage of "Y" shaped inlet should be avoided to feed two separate pumps because one may be starved and cavitate.

The number of bends and fittings in the lines should be minimised as far as possible. In particular, bends to be avoided to the possible extent in the inlet line. High pressure lines and fittings are restrictive to flow and may result in excessive pressure drop through the system. They should be only used as required in the pressure line.

HOSES

Due to the movement of steering components during operation, the hydraulic lines should consist mainly of flexible hoses. Long lines may be partly flexible hose and partly rigid piping where flexibility is not required. While installing a hose, allow enough slack to avoid kinking. A taut hose will not allow movement with pressure surges. Slack in the line compensates for surges, relieving strain.

During installation or while in operation, the hose should not be twisted. Twisting will weaken the hose and loosen the connections.

For power steering pumps using a remote reservoir, connecting hoses should not exceed three feet in length. It is preferred to design the reservoir such that there is always a static head on the pump inlet port.

As far as possible, we should minimise long loops in a line by using extra fittings. Hoses should be clamped to prevent rubbing and entanglement with moving parts. The Hoses should be run through shielded metallic guards when they are subject to chafing.

FLUID CONSIDERATIONS

Normal pump operating at rated conditions is based on the use of SAE W oil in the 40° to 80° C range.

PERMISSIBLE VISCOSITY

When operating with SAE 10W oil in the 860 to 4 cSt (4000 to 180 SUS) range (oil temperature - 12° to 35°C) the speed and pressure ratings of the pump should be limited to 50% or less of the respective rated value until the system has warmed up. Precaution must be taken while starting the system when fluid viscosity is greater than 860 cSt (4000 SUS). In such condition, we must warm up the hydraulic oil. Remote components such as motors, cylinders should be actuated during the process of warm-up.

Fluid viscosities must not be less than 60 SUS, and temperatures should not exceed 90° C because the life expectancy of rotating components and seals will decrease.

Care should be taken to use the appropriate oil of prescribed viscosity depending upon the climatic conditions.

Consult Veljan representative for reduction in pressure ratings, and modifications for usage of other fluids as per the operating conditions.

FLUID CLEANLINESS

Use of proper fluid is essential for long life of hydraulic components and systems. Hydraulic fluid must have the correct balance of cleanliness, antiwear additives, proper viscosity and inclusion of air.

Recommended cleanliness levels for petroleum oils under normal conditions are based on the highest fluid pressure levels in the system as indicated below.

Product	System Pressure Level		
	1000 psi (70 bar)	2000 psi (140 bar)	3000 psi (210 bar)
Vane Pumps *	20/18/15	19/17/14	18/16/13
Vane Motors *			
(* fixed displacement)			

Fluids other than petroleum, severe service cycles or temperature extremes are cause for adjustment of these cleanliness codes.

AERATION

Circuit design and reservoir must prevent aeration of the oil. Proper care must be taken to ensure that joint, seals and gaskets will not leak or deteriorate. This is most important in low pressure and suction lines. Connections should be tightened properly to prevent air from entering the system.

It is recommended to use sight glasses in the reservoir in order to determine whether significant amounts of air is present in the fluid or not. Fluid bubbles on the surface of the reservoir may indicate the presence of excessive aeration.

Note: Do not operate if the fluid is milky and not clear.

RESERVOIRS

OIL LEVEL

Oil level of the reservoir should be as high as possible above the suction line opening. All return lines should discharge near the tank bottom, always below the oil level, and far away from the pump inlet.

Reservoirs should incorporate means (dip stick, sight gauge etc.) for easy checking of the oil level. In the absence of these devices, the oil level cannot be checked and in case of a leak, the pump can be starved and damaged due to loss of lubrication property.

It is preferable for location of reservoirs above the pumps. This causes flooded suction for the pump and reduces the possibility of pump cavitation.

SUCTION AND RETURN LINES

Pump inlet and tank return lines should be attached to the reservoir by flanges or welded heavy duty coupling. If the inlet (suction) line is connected to the bottom of the reservoir, the coupling should extend above the bottom inside the tank.

This prevents residual dirt entering the suction line when the tank is cleaned. Proper seals should be used on all the suction line connections so that they will not leak nor deteriorate.

BAFFLE PLATE

A baffle plate in the reservoir is recommended to separate the suction and return lines. The plate helps return oil to circulate around the outer wall of the reservoir for cooling before it reenters the pump. It also helps entrained air to separate from the oil. Cascade effects are minimised by providing baffle plate opening.

MAGNETS

Magnets in a reservoir should be able to pick up ferrous particles not retained by filters or strainers. Magnets should be assembled to the support bars located between suction and return lines, and should be accessible for cleaning.

FILLER-CUM-BREATHER

Reservoirs are vented to the atmosphere through an opening that lets air leave or enter the space above the oil as the fluid level rises or falls. A filler-cum-breather unit which can filter air, is used to handle the air flow required to maintain atmospheric pressure whether the tank is full or empty.

PUMP START-UP PROCEDURE PREPARATION PRIOR TO START-UP

The reservoir and the pipe lines should be cleaned properly prior to filling with fluid.

FLUSHING

The reservoir should be filled with filtered hydraulic oil to a sufficient level to prevent vortexing at the suction connection to pump inlet. It is recommended to clean the system by flushing and filtering, using an external pump.

Before putting the oil into the system, the user must clean it accurately. It is recommended to fill the reservoir using mobile filtration units.

FILLING AND REMOVING AIR

If the pump is mounted above the oil level, it should be filled with the oil through the outlet port. If the pump is mounted below the fluid level, the pump outlet fitting can be loosened to allow fluid to displace the air. It is desirable to loosen the fill cap on the reservoir to allow the flow freely. When a solid stream of fluid without air begins to drain through the fitting, then it should be retightened.

An air bleed valve in the outlet line of the system is recommended to remove trapped air. The pump should be filled with oil before start-up, if this device is used.

Note :- The pump should not be operated with the outlet pressure lower than the inlet pressure.

PUMP START-UP

The pump should be always started on no load condition. Start the engine and run the pump in idle condition for approximately five minutes. Once the pump is started, it should prime and pump within a few seconds. If it does not, check for no restrictions between the reservoir and the inlet of the pump and no leaks in the inlet line and connections. Also ensure that trapped air can escape from the outlet.

After smooth run of the pump, start operating the controls of the system. Extend all actuators to maximum safe limit to completely fill the system with fluid.

Ensure that the fluid level is not below the "LOW" limit. In case it is low, add fluid to the reservoir to bring the fluid to the normal fill level.

COLD START

When operating with SAE 10 W oil in the 860 to 54 cSt (4000 to 250 SUS) range, the pressure should be limited to half or less of its rated value until the system is warmed up. For mobile applications, the speed should be also limited to half or less. While starting pumps with fluids greater the 860 cSt (4000 SUS), extreme care should be taken to warm up the entire system including cylinders and motors.

OPERATING TEMPERATURES

Viscosities must not be less than the minimum values shown in below. Temperatures should not exceed 90°C because the expected life of cartridge kits, seals and gaskets will decrease considerably.

For operation at high temperatures, consult Veljan Representative for additional information.

ROTATION

Pumps are offered for clockwise (right hand) rotation or counter clockwise (left hand) rotation. Rotation is viewed from the shaft end of the pump. Irrespective of the direction of rotation, the inlet and outlet ports of the pump remain same.

SEALS

Nitrile seals are standard and suitable for use with petroleum, water-glycol, water-in oil emulsion and high water base fluids. Phosphate ester fluids require the use of special seals.

FLUID SELECTION

Fluid in a hydraulic system performs the multiple functions of transmission of power, lubrication of components and cooling. It is essential in a hydraulic system and proper selection is a necessity for satisfactory operation and life of components.

The basic requirements of a good petroleum oil for hydraulic systems are.

1. Sufficient anti-wear additives
2. Proper viscosity at the operating temperature
3. Adequate rust and oxidation inhibitors

A good quality fluid with high viscosity index and with anti frothing and anti-oxidizing agents conforming to international standards (ie. APIMS, VDMA 248 18, DIN 51524 and 51525) will provide these characteristics.

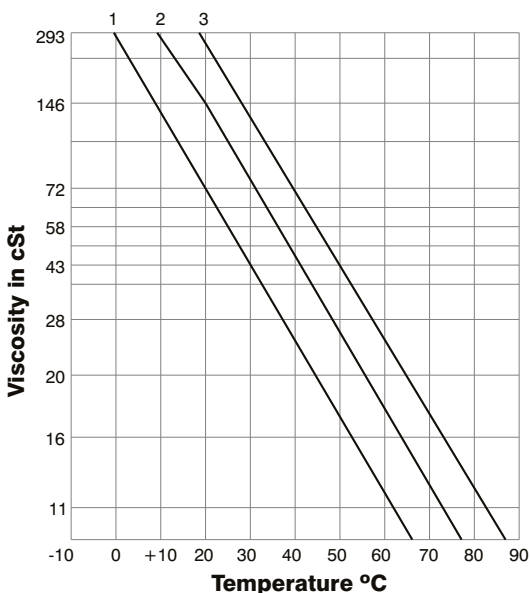
The oil viscosity should be suitable to the type of hydraulic pumps and motors installed and the operating temperatures of the circuit.

SUCTION PRESSURE AND OPERATING TEMPERATURE REQUIREMENTS

Application	Recommended Operating Suction Pressure range - gauge psi (bar)	Maximum Positive Suction Pressure - gauge psi (bar)	Minimum Suction Pressure - absolute psi (bar)	Maximum Operating Temperature °C
Industrial	0 to 5.0 (0 to 0.31)	20 (1.4)	12.0 (0.83)	66
Mobile			14.5 (1.0)	90

VISCOSITY REQUIREMENTS

Application	Recommended Operating Viscosity Range cSt	Maximum Viscosity at Startup cSt	Minimum Viscosity cSt	
			Continuous	intermittent
Industrial	15 to 54	865	15	10
Mobile			10	6.5



	1	2	3
DIN 51524 standard	H-LP 32	H-LP 46	H-LP 68
Viscosity cSt at 50° C	16-20	24-28	31-39
IP	Hydrus 32	Hydrus 46	Hydrus 68
BP	Energol HLP 32	Energol HLP 46	Energol HLP 68
CASTROL	Hyspin AWS 32	Hyspin AWS 46	Hyspin AWS 68
ESSO	Nuto H 32	Nuto H 46	Nuto H 68
SHELL	Tellus 32	Tellus 32	Tellus 32
CHEVRON	EP Hydraulic Oil 32	EP Hydraulic Oil 32	EP Hydraulic Oil 32
IOC	Servosystem 32	Servosystem 46	Servosystem 68

In the above diagram are shown the typical curves viscosity versus temperature for the commonly used oils. The oils are subdivided in three groups, each one with a different viscosity. In the table below the codes corresponding to different oil manufacturers are indicated.

In general, most hydraulic pumps and motors operate satisfactorily with an oil having a viscosity around 28 cSt at the operating temperature. Since the normal operating temperature of most hydraulic systems is about 50°C, the oil widely used is that corresponding to curve "2" of table having viscosity 24-28 cSt at 50°C.

If the operation temperature exceeds 50° C, an oil having viscosity as per curve "3" and for lower operation temperature an oil having viscosity as per curve "1" are to be used.

In actual usage, less viscous oils (10 cSt) at 50° C or more viscous oil (60-68 cSt) can be used. Please ensure that less viscous oils are used for lower pressure applications (to minimise pressure drop) and more viscous oils for higher pressure applications (to minimise internal leakage). Please note that a too viscous oil can bring more difficulty in the start at ambient temperature and can cause noise and cavitation damages to the pump. In view of this, check the recommendations of the manufacturer of pumps and motors.

The operation temperature has a catalytic action as for the pollution and for the chemical-physical ageing. In particular, the temperature allows the build-up of oxygen compounds and these oxides bring sludge and deposits in the oil.

The recommended operating temperature shall be in the range of 40° to 50° C and should avoid exceeding 70° C as beyond this limit the seals begin to wear faster.

The oil change must be made as a thumb rule for every 3000 hours. It is desirable to analyse oil samples to check its properties (chemical & physical) since the suggested time above is approximate and this depends only on the plant characteristics, operating characteristics, climatic conditions, accuracy of filtration and maintenance.

FIRE RESISTANT FLUIDS

(Phosphate Ester, Water Glycol)

The mineral oils have very low ignition and self combustion temperature. When they ignite, the combustion spreads and hence the danger is more. To prevent fire risk in case of leakage of such fluids, special materials are used which have great resistance to fire.

For Phosphate Ester Fluids, the installation should comply with :

- Suitable seals and flexible pipes (preferably Viton or PTFE)
- Inside surfaces of the reservoir and surfaces that can be in contact with the fluid need not be painted.
- Accurate and continuous filtration of the circuit due to higher fluid density.
- Ample sizing of components and pipings due to higher kinematic viscosity.

These fluids allow very high operation temperatures (even 100° C). They have high resistance and hence do not require special maintenance except frequent check of the water content. For Water-Glycol fluids (compound mixed with water 40 to 50% and ethylene or propylene glycol or polyethylene glycol), the combustion resistance is due to water content.

The installations for water glycol fluids should comply with :

- Suitable seals
- Not painting the inside surface of the reservoir
- Bigger size of the reservoir (generally 10 times the pump delivery)
- Efficient temperature control of the oil
- Reduction of pump speed (1000 to 1200 rpm)
- Reduction of rated pressure 1000 - 1300 psi (70-90 bar)
- Limited flow speed (max 3m/sec)

FILTRATION

The filtering function must eliminate the particles and micro particles that circulate in the system to ensure maximum efficiency and long life of the components.

The selection of the characteristics of the filter is based on the operating requirements and the components that need to be protected.

The normal ratings of filtration is as under :

- For industrial plants - 25 μ rating
- For system equipped with proportional valves - min. 5 μ

The location of the filter in the system should be such that they are easily accessible for periodical cleaning. Filters with visual or electric clogging indicators are generally proffered for better control.

VT6 -SINGLE

VANE PUMPS

VTXB 1 - B09 - 1 R 00 - D 1 02 *

Series

Mounting

- 1 - SAE A
- 2 - SAE B

Cam ring

Volumetric displacement cm^3/rev (in^3/rev)

- B02 = 5.8 (0.35)
- B03 = 9.8 (0.59)
- B04 = 12.8 (0.78)
- B05 = 15.9 (0.97)
- B06 = 19.8 (1.21)
- B07 = 22.5 (1.37)
- B08 = 24.9 (1.52)
- B09 = 28.0 (1.71)
- B10 = 31.8 (1.94)
- B11 = 34.9 (2.13)
- B12 = 41.0 (2.50) (cont. 175 bar, Max. int 210 bar)
- B14 = 45.0 (2.75) (cont. 140 bar, Max. int 175 bar)

Type of Shaft

TXB1

- 1 - Keyed (Non SAE)
- 2 - Keyed
- 3 - Splined
- 4 - Splined
- 5 - Keyed
- V - Splined

TXB2

- 1 - Keyed (Non SAE)
- 2 - Keyed
- 4 - Splined

Direction of rotation (view on shaft end)

- R - clockwise
- L - counter-clockwise

Modifications

Port connections

CODE	S	P
00	SAE 20 1" 5/8 12 UNF-2B	SAE 12 1" 1/16 12 UNF-2B
01	1" 1/4 SAE 4 bolt (UNC)	3/4" SAE 4 bolt (UNC)
M0	1" 1/4 SAE 4 bolt (METRIC)	3/4" SAE 4 bolt (METRIC)
02	1" 1/4 BSP	3/4" BSP
03	1" 1/4 NPTF	SAE 12 1" 1/16 12 UNF-2B
0X	1" 1/4 NPTF	3/4" NPTF
MX	Ø28 SAE 4 bolt (METRIC)	Ø15 SAE 4 bolt (METRIC)

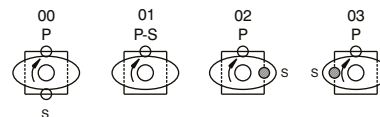
Seal class

- 1 - S1 (for mineral oil)
- 4 - S4 (for fire resistant fluids)
- 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination

00 - standard



S - Suction port P - Pressure port

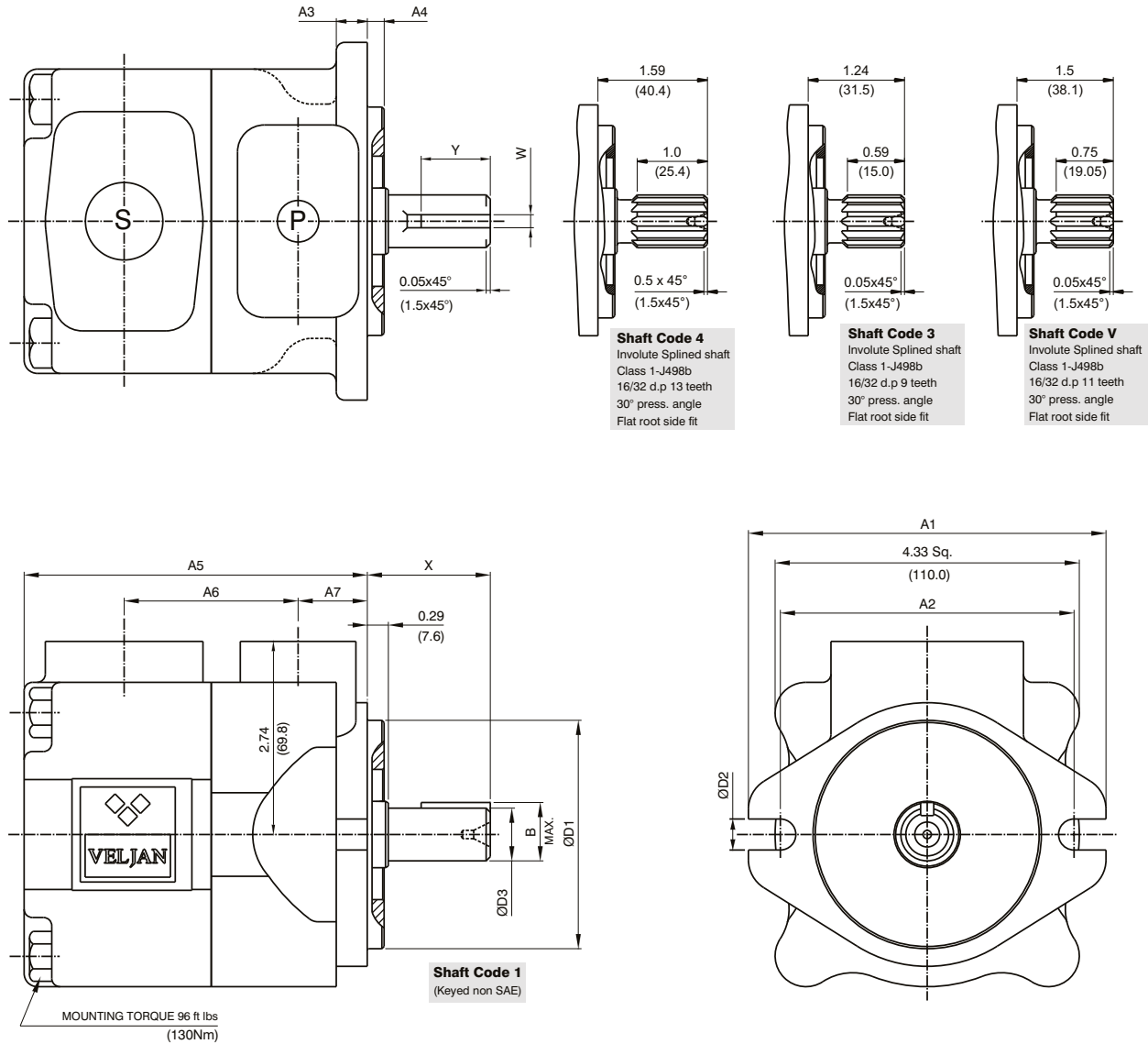
OPERATING CHARACTERISTICS (24 cSt)

Pressure port	Series	Volumetric Displacement V_p		Flow q & $n = 1500 \text{ rpm}$						Input power p & $n = 1500 \text{ rpm}$					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 210 bar (3000 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 210 bar (3000 psi)	
		in^3/rev	cm^3/rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
VTXB1 VTXB2	B02	0.35	5.8	2.30	8.7	1.4	5.9	--	--	0.53	0.4	2.81	2.1	--	--
	B03	0.59	9.8	3.88	14.7	2.9	11.9	--	--	0.67	0.5	3.62	2.7	--	--
	B04	0.78	12.8	5.08	19.2	4.33	16.4	3.97	15.0	0.93	0.7	5.23	3.9	10.06	7.5
	B05	0.97	15.9	6.31	23.8	5.55	21.0	5.18	19.6	1.00	0.75	6.64	4.9	11.2	8.3
	B06	1.21	19.8	7.85	29.7	7.12	26.9	6.66	25.2	1.07	0.8	8.05	6.0	12.34	9.2
	B07	1.37	22.5	8.92	33.7	8.17	30.9	7.80	29.5	1.20	0.9	9.05	6.7	14.02	10.4
	B08	1.52	24.9	9.89	37.4	9.15	34.6	8.78	33.2	1.34	1.0	10.05	7.5	15.69	11.7
	B09	1.71	28.0	11.11	42.0	10.37	39.2	10.00	37.8	1.47	1.1	11.94	8.9	23.60	17.6
	B10	1.94	31.8	12.61	47.7	11.87	44.9	11.51	43.5	1.6	1.2	13.0	9.7	26.0	19.6
	B11	2.13	34.9	13.85	52.3	13.09	49.5	12.72	48.1	1.7	1.3	14.0	10.5	28.0	21.0
	B12	2.50	41.0	16.27	61.5	15.53	58.7	*	*	1.8	1.4	15.02	11.2	*	*
	B14	2.75	45.0	17.86	67.5	17.12	64.7	**	**	2.1	1.6	15.42	11.5	**	**

– Not to use because internal leakage greater than 50% of theoretical flow.

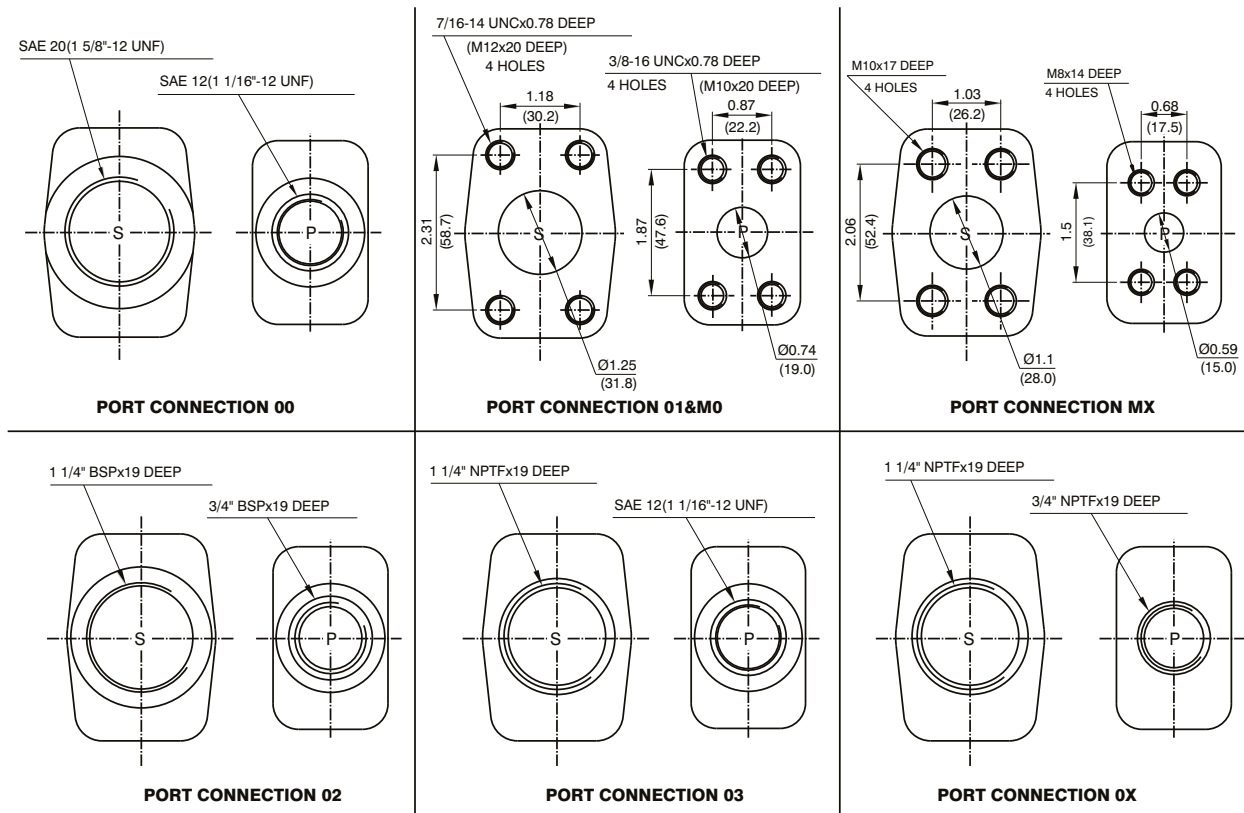
* B12= 210 bar(3000 psi) Max.Int

** B14= 175 bar(2500 psi) Max.Int

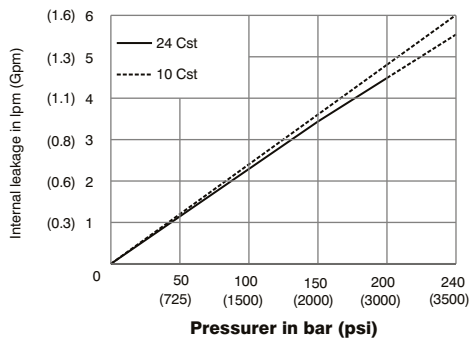


DIMENSIONS OF KEYED SHAFT in inches (mm)						
MODEL	CODE	X	Y	ØD3	B	W
TXB1	1	1.75(44.5)	0.98(25)	0.75/0.74(19.05/19.00)	0.83(21.1)	0.187/0.185(4.75/4.70)
	2	1.96(50.0)	0.98(25)	0.625/0.624(15.88/15.85)	0.69(17.7)	0.156/0.155(3.97/3.94)
	5	2.66(67.6)	1.61(41)	0.75/0.74(19.05/19.00)	0.83(21.1)	0.187/0.185(4.75/4.70)
TXB2	1	2.32(59.0)	1.25(32)	0.875/0.874(22.22/22.20)	0.96(24.5)	0.187/0.185(4.75/4.70)
	2	2.81(71.4)	1.49(38)	0.875/0.874(22.22/22.20)	0.96(24.5)	0.250/0.248(6.35/6.30)

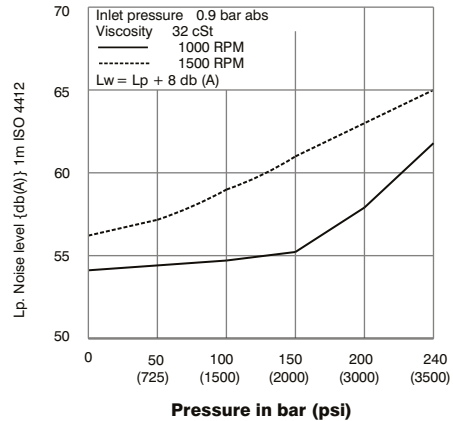
DIMENSIONS in inches (mm)									
MODEL	A1	A2	A3	A4	A5	A6	A7	ØD1	ØD2
TXB1	5.11(130.0)	4.18(106.2)	0.44(11.2)	0.24(6.1)	4.88(124.1)	2.47(62.9)	0.98(25.0)	3.25/3.24(82.55/82.50)	0.44(11.2)
TXB2	6.87(174.5)	5.74(146.0)	0.5(12.7)	0.38(9.7)	4.94(125.6)	2.29(58.4)	1.22(31.0)	4.00/3.99(101.60/101.55)	0.56(14.3)



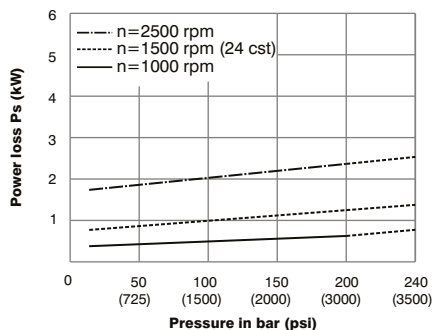
INTERNAL LEAKAGE (TYPICAL)



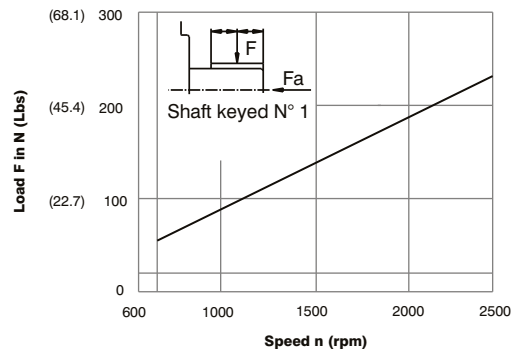
NOISE LEVEL (TYPICAL)



POWER LOSS HYDROMECHANIAL (TYPICAL)



PERMISSIBLE RADIAL LOAD



Maximum axial load permissable $F_a = 500 \text{ N (113.6 lbs)}$

Series VT6B - B09 - 1 R 00 - D 1 02 * Modifications

Cam ring

Volumetric displacement cm³/rev (in³/rev)

B02 = 5.8 (0.35)	B08 = 24.9 (1.52)
B03 = 9.8 (0.59)	B09 = 28.0 (1.71)
B04 = 12.8 (0.78)	B10 = 31.8 (1.94)
B05 = 15.9 (0.97)	B11 = 34.9 (2.13)
B06 = 19.8 (1.21)	B12 = 41.0 (2.50)(cont. 175 bar, Max. int 210 bar)
B07 = 22.5 (1.37)	B14 = 45.0 (2.75)(cont. 140 bar, Max. int 175 bar)

Type of Shaft

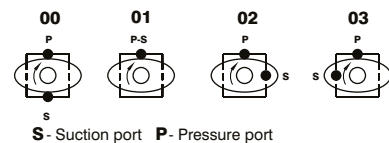
- 1 - Keyed (Non SAE)
- 2 - Keyed
- 3 - Splined (SAE A)
- 4 - Splined (SAE B)
- 5 - Splined SAE (11 teeth)
- 11 - Splined

Direction of rotation (view on shaft end)

- R - clockwise
- L - counter-clockwise

Porting combination

00 - standard



Port connections

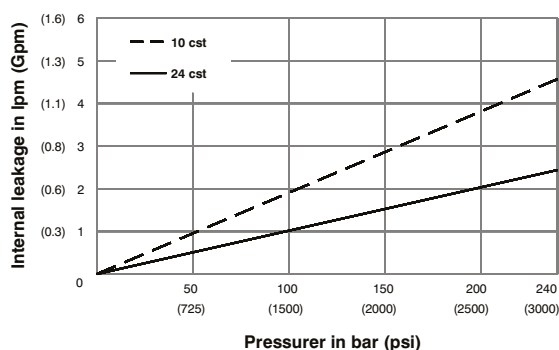
CODE	S	P
00	SAE 20 1-5/8" 12 UNF-2B	SAE 12 1-1/16" 12 UNF-2B
01	1-1/4" SAE 4 bolt (UNC)	3/4" SAE 4 bolt (UNC)
M0	1-1/4" SAE 4 bolt (METRIC)	3/4" SAE 4 bolt (METRIC)
02	1-1/4" BSP	3/4" BSP
03	1-1/4" NPTF	SAE 12 1-1/16" 12 UNF-2B
0X	1-1/4" NPTF	3/4" NPTF

Seal class

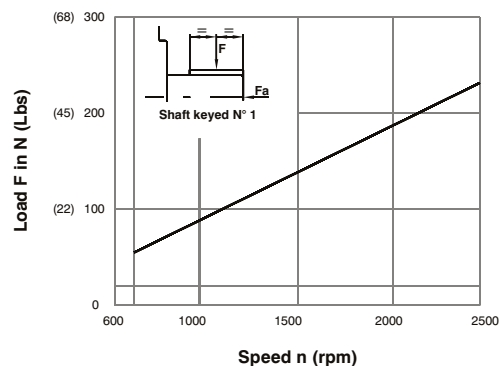
- 1 - S1 (for mineral oil)
- 4 - S4 (for fire resistant fluids)
- 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

INTERNAL LEAKAGE (TYPICAL)



PERMISSIBLE RADIAL LOAD



Maximum axial load permissible F_a = 500 N (113 Lbs)

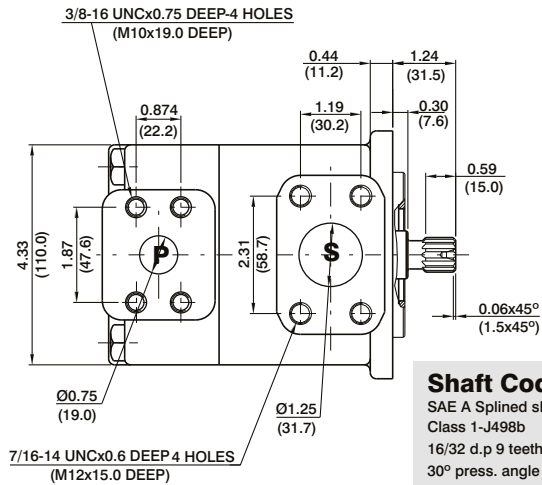
OPERATING CHARACTERISTICS (24 cSt)

Pressure port	Series	Volumetric Displacement V_p		Flow q & $n = 1500$ rpm						Input power p & $n = 1500$ rpm					
				$p = 0$ bar (0 psi)		$p = 140$ bar (2000 psi)		$p = 210$ bar (3000 psi)		$p = 7$ bar (100 psi)		$p = 140$ bar (2000 psi)		$p = 210$ bar (3000 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
VT6B	B02	0.35	5.8	2.30	8.7	1.4	5.9	--	--	0.53	0.4	2.81	2.1	--	--
	B03	0.59	9.8	3.88	14.7	2.9	11.9	--	--	0.67	0.5	3.62	2.7	--	--
	B04	0.78	12.8	5.08	19.2	4.33	16.4	3.97	15.0	0.93	0.7	5.23	3.9	10.06	7.5
	B05	0.97	15.9	6.31	23.8	5.55	21.0	5.18	19.6	1.00	0.75	6.64	4.9	11.2	8.3
	B06	1.21	19.8	7.85	29.7	7.12	26.9	6.66	25.2	1.07	0.8	8.05	6.0	12.34	9.2
	B07	1.37	22.5	8.92	33.7	8.17	30.9	7.80	29.5	1.20	0.9	9.05	6.7	14.02	10.4
	B08	1.52	24.9	9.89	37.4	9.15	34.6	8.78	33.2	1.34	1.0	10.05	7.5	15.69	11.7
	B09	1.71	28.0	11.11	42.0	10.37	39.2	10.00	37.8	1.47	1.1	11.94	8.9	23.60	17.6
	B10	1.94	31.8	12.61	47.7	11.87	44.9	11.51	43.5	1.6	1.2	13.0	9.7	26.0	19.6
	B11	2.13	34.9	13.85	52.3	13.09	49.5	12.72	48.1	1.7	1.3	14.0	10.5	28.0	21.0
	B12	2.50	41.0	16.27	61.5	15.53	58.7	*	*	1.8	1.4	15.02	11.2	*	*
	B14	2.75	45.0	17.86	67.5	17.12	64.7	**	**	2.1	1.6	15.42	11.5	**	**

-- Not to use because internal leakage greater than 50% of theoretical flow.

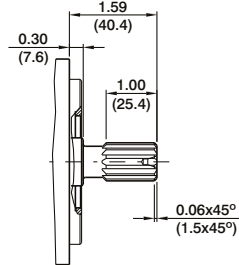
* B12= 210 bar(3000 psi) Max.Int

** B14= 175 bar(2500 psi) Max.Int



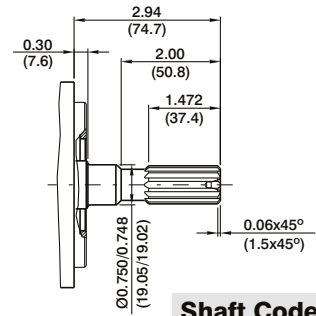
Shaft Code 3

SAE A Splined shaft
Class 1-J498b
16/32 d.p 9 teeth
30° press. angle
flat root side fit



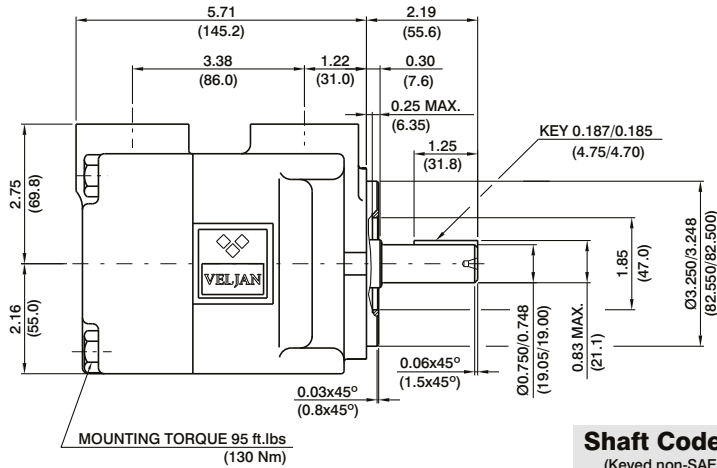
Shaft Code 4

SAE B Splined shaft
Class 1-J498b
16/32 d.p 13 teeth
30° press. angle
flat root side fit



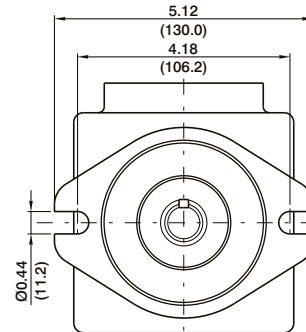
Shaft Code 11

Splined shaft
Class 1-J498b
16/32 d.p 11 teeth
30° press. angle
flat root side fit



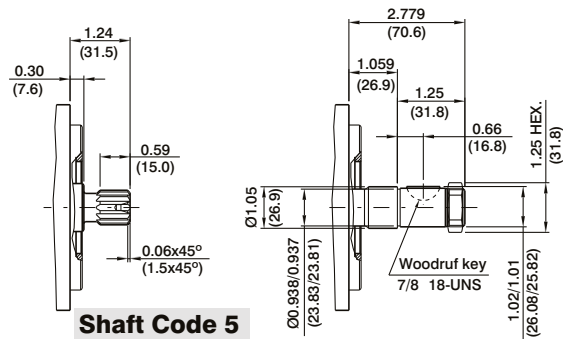
Shaft Code 1

(Keyed non-SAE)



Shaft torque limits in³/revxpsi(ml/revxbar)

Shaft	Vp x p max.
3	5119 (5780)
4	18246 (20600)



Shaft Code 5

SAE Splined shaft
Class 1-J498b
16/32 d.p 11 teeth
30° press. angle
flat root side fit

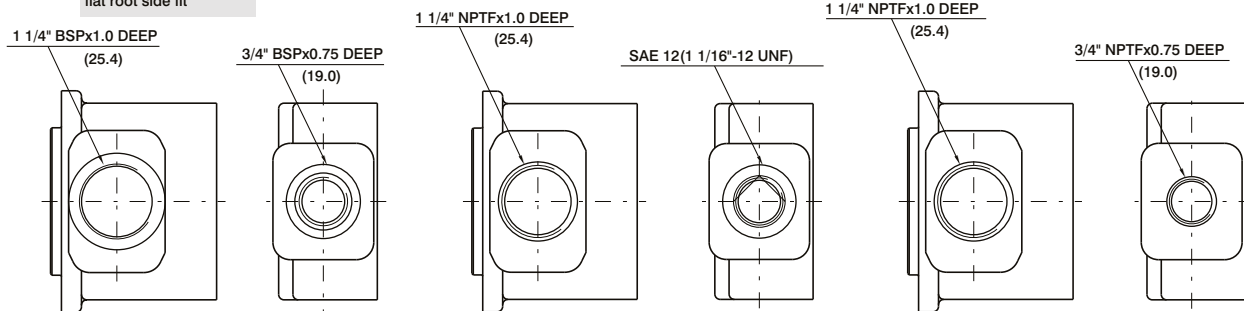
Shaft Code 2

Woodruff key
Recommended
nut Torque
125 ft.lbs (170 Nm)

SAE 20(1 5/8"-12 UNF)

SAE 12(1 1/16"-12 UNF)

PORT CONNECTION 00



PORT CONNECTION 02

PORT CONNECTION 03

PORT CONNECTION 0X

Series VT6C * - 022 - 1 R 00 - B 1 *

Y - Metric port connection, Omit for UNC

Cam ring

Volumetric displacement cm³/rev (in³/rev)

*003/B03/Y03 = 10.8 (0.66)	015/B15/Y15 = 50.5 (3.08)
005/B05/Y05 = 17.2 (1.05)	017/B17/Y17 = 58.3 (3.56)
006/B06/Y06 = 21.3 (1.30)	020/B20/Y20 = 63.8 (3.89)
008/B08/Y08 = 26.4 (1.61)	022/B22/Y22 = 70.3 (4.29)
010/B10/Y10 = 34.1 (2.08)	025/B25/Y25 = 79.3 (4.84)
012/B12/Y12 = 37.1 (2.26)	028/B28/Y28 = 88.8 (5.42)
014/B14/Y14 = 46.0 (2.81)	031/B31/Y31 = 100.0 (6.10)

*'0' - Uni - directional 'B' - Bi - directional 'Y' - Bi - directional for cold start

Type of shaft

1 - keyed (SAE B)
2 - keyed (no SAE)
3 - splined (SAE B)
4 - splined (SAE BB)

Modifications

Seal class
1 - S1 (for mineral oil)
4 - S4 (for fire resistant fluids)
5 - S5 (for mineral oil and fire resistant fluids)

Design letter

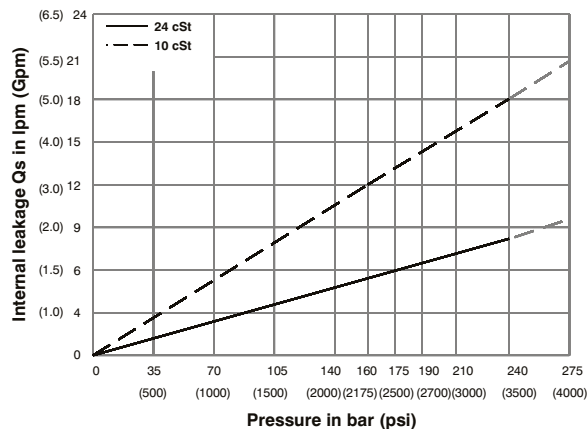
Porting combination
00 - standard

00 01 02 03

S - Suction port **P** - Pressure port

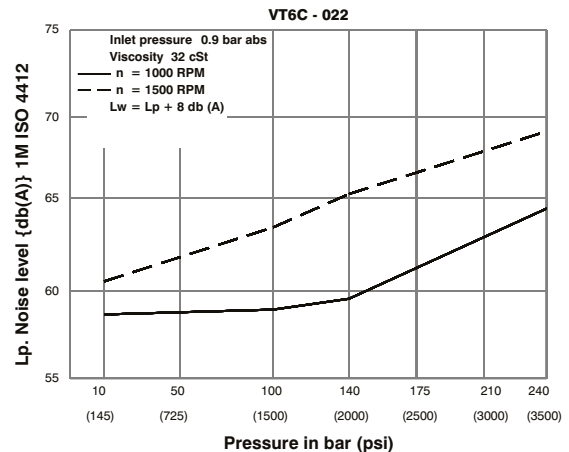
Direction of rotation (view on shaft end)
R - clockwise
L - counter-clockwise

INTERNAL LEAKAGE (TYPICAL)

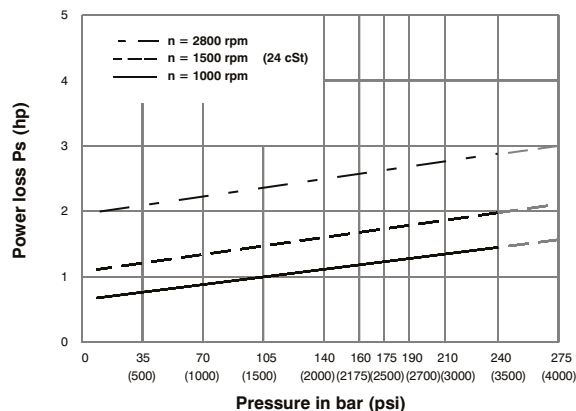


Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow.

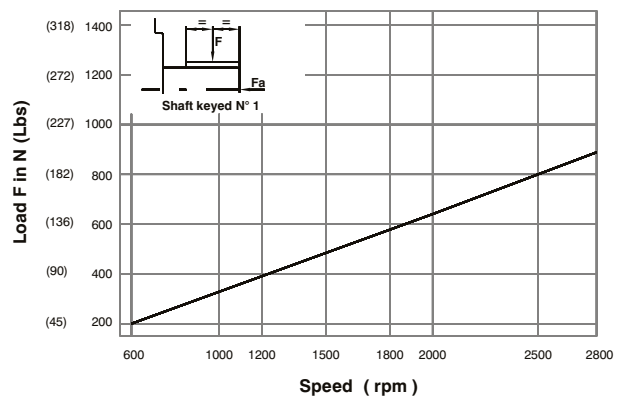
NOISE LEVEL (TYPICAL)



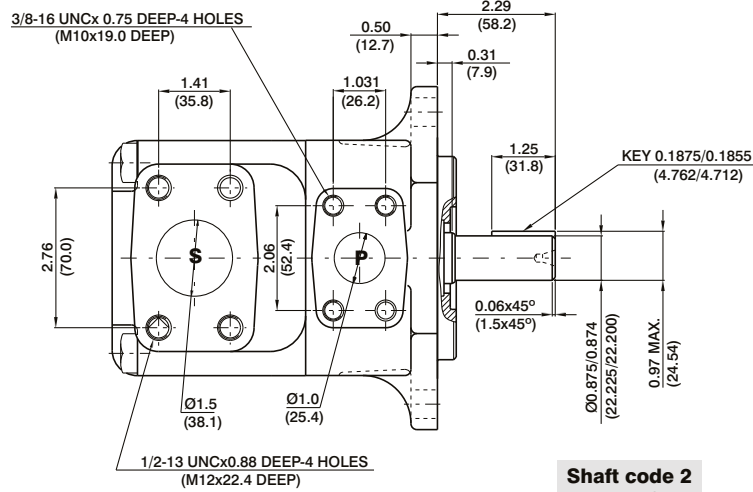
HYDROMECHANICAL POWER LOSS (TYPICAL)



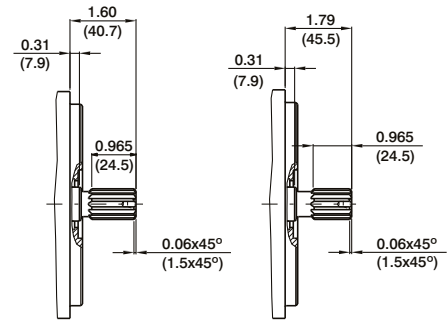
PERMISSIBLE RADIAL LOAD



Maximum axial load permissible F_a = 800 N (180 Lbs)

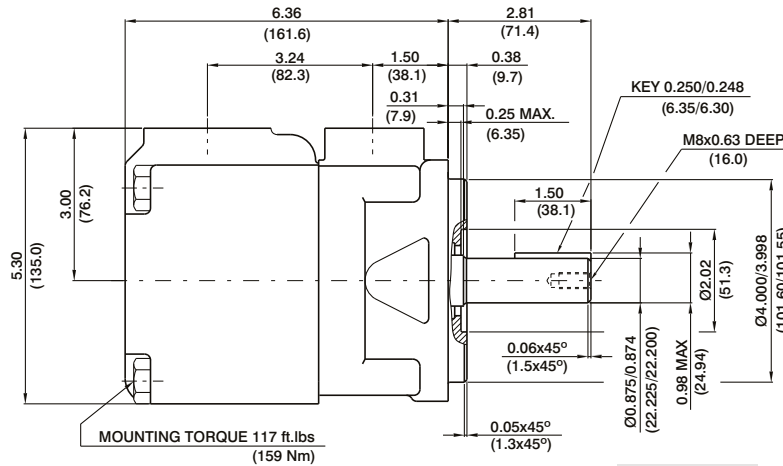


Shaft code 2
(Keyed no SAE)

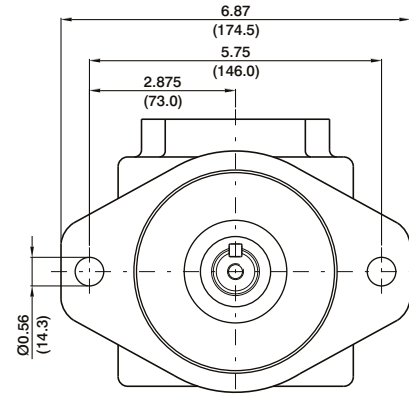


Shaft code 3
SAE B splined shaft
Class 1-J498b
16/32 dp. 13 teeth
30° pressure angle
flat root side fit

Shaft code 4
SAE BB splined shaft
Class 1-J498b
16/32 dp. 15 teeth
30° pressure angle
flat root side fit



Shaft code 1
(Keyed SAE B)



Shaft torque limits in ³ /rev x psi (ml/rev x bar)	
Shaft	Vp x p max.
1	14473 (16500)
2	12666 (14300)
3	18246 (20600)
4	19309 (21821)

OPERATING CHARACTERISTICS - TYPICAL (24 cST)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
VT6C	003	0.66	10.8	4.29	16.2	2.96	11.2	2.04	7.7	1.74	1.3	7.11	5.3	11.26	8.4
	005	1.05	17.2	6.83	25.8	5.50	20.8	4.57	17.3	1.88	1.4	10.06	7.5	16.36	12.2
	006	1.30	21.3	8.44	31.9	7.11	26.9	6.19	23.4	2.01	1.5	11.94	8.9	19.71	14.7
	008	1.61	26.4	10.48	39.6	9.15	34.6	8.22	31.1	2.15	1.6	14.35	10.7	22.93	17.7
	010	2.08	34.1	13.52	51.1	12.19	46.1	11.26	42.6	2.28	1.7	18.64	13.4	29.90	22.3
	012	2.26	37.1	14.71	55.6	13.36	50.6	12.46	47.1	2.28	1.7	19.31	14.4	32.32	24.1
	014	2.81	46.0	18.25	69.0	16.93	64.0	16.00	60.5	2.55	1.9	23.60	17.6	39.56	29.5
	015	3.08	50.5	20.00	75.6	18.73	73.2	19.02	67.5	2.68	2.0	25.61	19.1	42.91	32.0
	017	3.56	58.3	23.12	87.4	21.79	82.4	20.87	78.9	2.82	2.1	29.37	21.9	49.48	36.9
	020	3.89	63.8	25.32	95.7	23.99	90.7	23.07	87.2	2.95	2.2	31.92	23.8	53.91	40.2
	022	4.29	70.3	27.88	105.4	26.56	100.4	25.63	96.9	3.08	2.3	35.00	26.1	59.14	44.1
	025 ¹⁾	4.84	79.3	31.46	118.9	30.13	113.9	29.21	110.4	3.35	2.5	39.16	29.2	66.38	49.5
	028 ^{1,2)}	5.42	88.8	35.24	133.2	33.92	128.2	33.28	125.8	3.75	2.8	43.85	32.7	65.04	48.5
	031 ^{1,2)}	6.10	100.0	39.68	150.0	38.35	145.0	37.72	142.6	3.75	2.8	48.95	36.5	72.95	54.4

1) 025-028-031 = 2500 RPM. max.

2) 028-031 = 210 bar (3000 psi) max. int.

Series VT6CSH W * - 022 - 1 R 00 - B 1 - 00 *

Use for severe duty shaft only

One letter can be added to specify special parts in series

Cam ring

Volumetric displacement cm^3/rev (in^3/rev)

*003/B03/Y03 = 10.8 (0.66)	015/B15/Y15 = 50.5 (3.08)
005/B05/Y05 = 17.2 (1.05)	017/B17/Y17 = 58.3 (3.56)
006/B06/Y06 = 21.3 (1.30)	020/B20/Y20 = 63.8 (3.89)
008/B08/Y08 = 26.4 (1.61)	022/B22/Y22 = 70.3 (4.29)
010/B10/Y10 = 34.1 (2.08)	025/B25/Y25 = 79.3 (4.84)
012/B12/Y12 = 37.1 (2.26)	028/B28/Y28 = 88.8 (5.42)
014/B14/Y14 = 46.0 (2.81)	031/B31/Y31 = 100.0 (6.10)

* '0' - Uni - directional 'B' - Bi - directional 'Y' - Bi - directional for cold start

Type of shaft

1 - Keyed (SAE B)
3 - Splined (SAE B)
4 - Splined (SAE BB)

Severe duty shaft VT6CSHW

5 - Keyed (SAE BB)

Modifications

Mounting W/connection variables

	UNC		METRIC	
	00	01	M0	M1
P	1"	3/4"	1"	3/4"
S	1 1/2"			

Seal class

1 - S1 (for mineral oil)
4 - S4 (for fire resistant fluids)
5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination

00 - standard

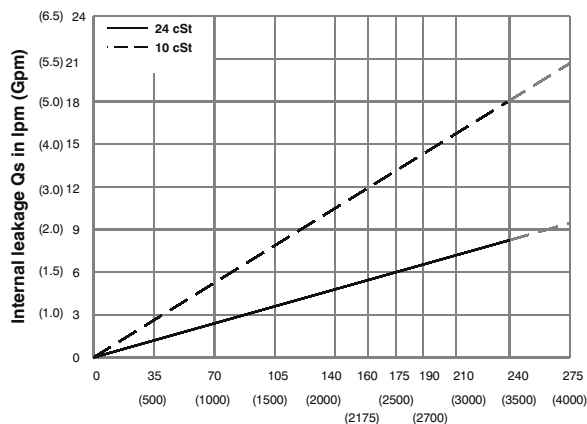
01 P-S
02 P S
03 P S

S - Suction port P - Pressure port

Direction of rotation (view on shaft end)

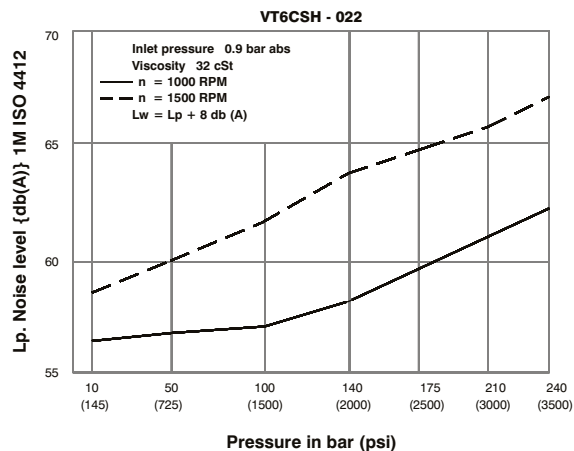
R - clockwise
L - counter-clockwise

INTERNAL LEAKAGE (TYPICAL)

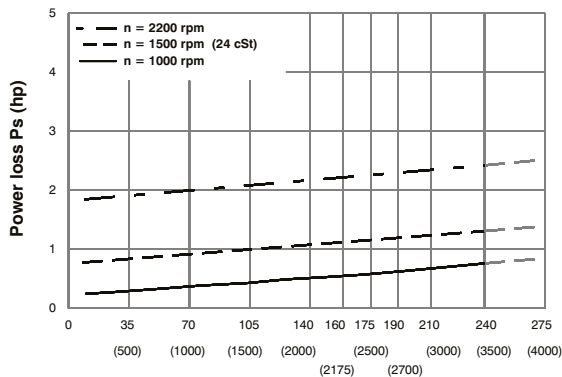


Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow.

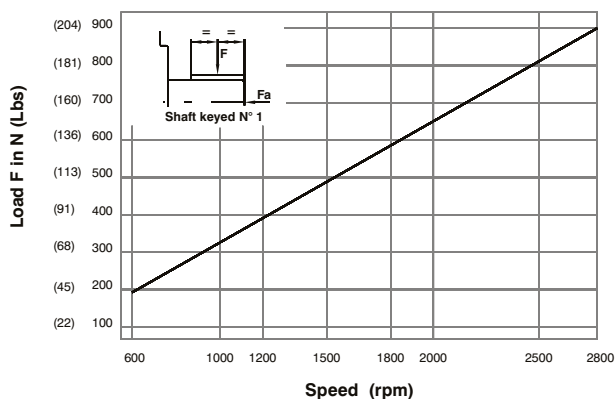
NOISE LEVEL (TYPICAL)



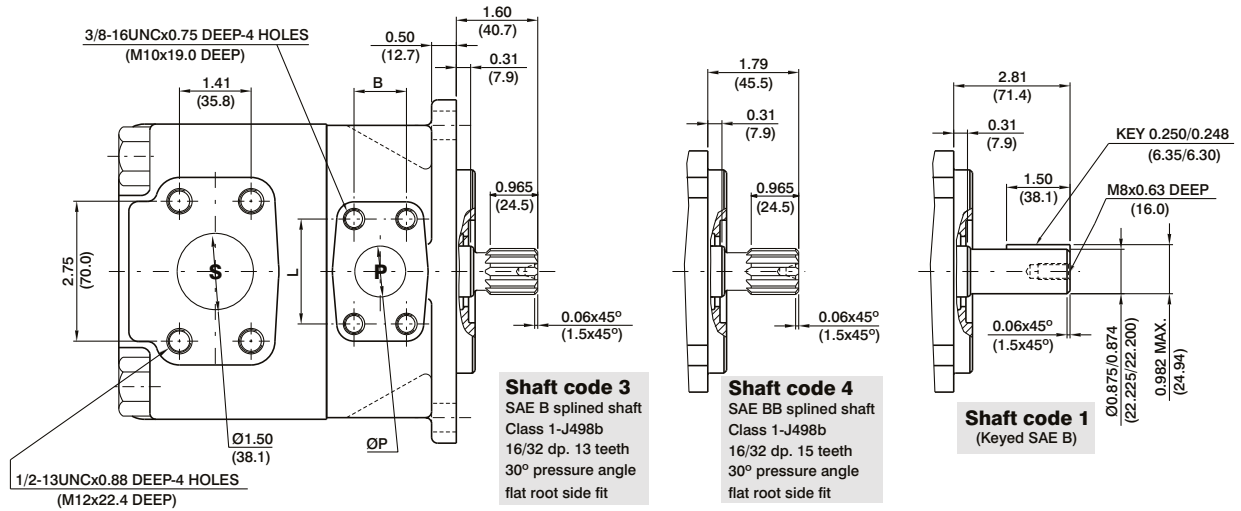
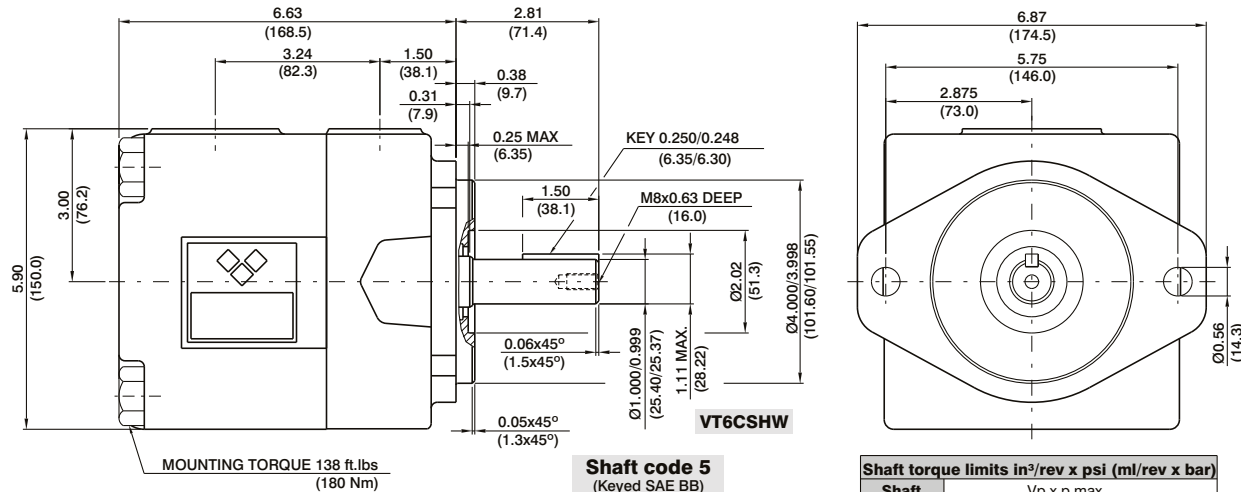
HYDROMECHANICAL POWER LOSS (TYPICAL)



PERMISSIBLE RADIAL LOAD



Maximum axial load permissible $F_a = 800 \text{ N (180 Lbs)}$



ØP	L	B
0.75 (19.05)	1.87 (47.6)	0.87 (22.2)
1.00 (25.4)	2.06 (52.4)	1.03 (26.2)

Shaft torque limits in ³ /rev x psi (ml/rev x bar)	
Shaft	Vp x p max.
1	14473 (16500)
3	18246 (20600)
4	19309 (21821)
5	18945 (21420)

OPERATING CHARACTERISTICS - TYPICAL (24 cSt)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm								Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)			
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw	hp	kw
VT6CSH	003	0.66	10.8	4.29	16.2	2.96	11.2	2.04	7.7	1.74	1.3	7.11	5.3	11.26	8.4		
	005	1.05	17.2	6.83	25.8	5.50	20.8	4.57	17.3	1.88	1.4	10.06	7.5	16.36	12.2		
	006	1.30	21.3	8.44	31.9	7.11	26.9	6.19	23.4	2.01	1.5	11.94	8.9	19.71	14.7		
	008	1.61	26.4	10.48	39.6	9.15	34.6	8.22	31.1	2.15	1.6	14.35	10.7	22.93	17.7		
	010	2.08	34.1	13.52	51.1	12.19	46.1	11.26	42.6	2.28	1.7	18.64	13.4	29.90	22.3		
	012	2.26	37.1	14.71	55.6	13.36	50.6	12.46	47.1	2.28	1.7	19.31	14.4	32.32	24.1		
	014	2.81	46.0	18.25	69.0	16.93	64.0	16.00	60.5	2.55	1.9	23.60	17.6	39.56	29.5		
	015	3.08	50.5	20.00	75.6	18.73	73.2	19.02	67.5	2.68	2.0	25.61	19.1	42.91	32.0		
	017	3.56	58.3	23.12	87.4	21.79	82.4	20.87	78.9	2.82	2.1	29.37	21.9	49.48	36.9		
	020	3.89	63.8	25.32	95.7	23.99	90.7	23.07	87.2	2.95	2.2	31.92	23.8	53.91	40.2		
	022	4.29	70.3	27.88	105.4	26.56	100.4	25.63	96.9	3.08	2.3	35.00	26.1	59.14	44.1		
	025 ¹⁾	4.84	79.3	31.46	118.9	30.13	113.9	29.21	110.4	3.35	2.5	39.16	29.2	66.38	49.5		
	028 ^{1,2)}	5.42	88.8	35.24	133.2	33.92	128.2	33.28	125.8	3.75	2.8	43.85	32.7	65.04	48.5		
	031 ^{1,2)}	6.10	100.0	39.68	150.0	38.35	145.0	37.72	142.6	3.75	2.8	48.95	36.5	72.95	54.4		

1) 025-028-031 = 2500 RPM. max.

2) 028-031 = 210 bar (3000 psi) max. int.

VT6D * * - 045 - 1 R 00 - B 1 *

Series

- N** - Shaft seal installed reverse
- Q** - Special mounting cap with ear orientation of 20° from standard
- Y** - Metric port connection (not for code 'Q')
Omit for UNC

Cam ring

Volumetric displacement cm³/rev (in³/rev)

*014/B14 = 47.6 (2.90)	035/B35 = 111.0 (6.77)
017/B17 = 58.2 (3.55)	038/B38 = 120.3 (7.34)
020/B20 = 66.0 (4.03)	042/B42 = 136.0 (8.30)
024/B24 = 79.5 (4.85)	045/B45 = 145.7 (8.89)
028/B28 = 89.7 (5.47)	050/B50 = 158.0 (9.64)
031/B31 = 98.3 (6.00)	061/B61 = 190.5 (11.62)

*'0' - Uni - directional 'B' - Bi - directional

Type of shaft

- 1 - keyed (SAE C)
- 2 - keyed (no SAE)
- 3 - splined (SAE C)
- 4 - splined (no SAE)

Modifications

Seal class

- 1 - S1 (for mineral oil)
- 4 - S4 (for fire resistant fluids)
- 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination

00 - standard

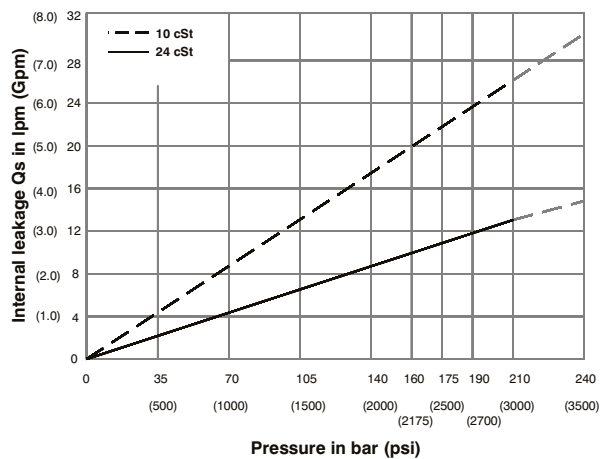
00 01 02 03

S - Suction port **P** - Pressure port

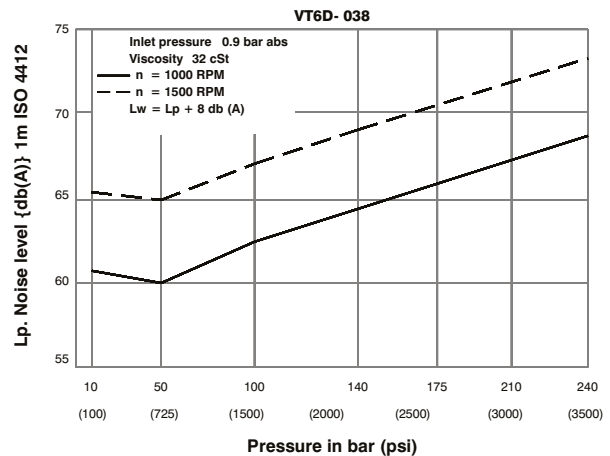
Direction of rotation (view on shaft end)

- R - clockwise
- L - counter-clockwise

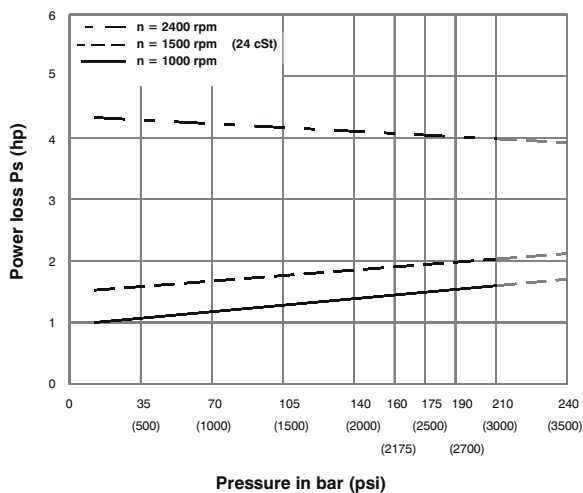
INTERNAL LEAKAGE (TYPICAL)



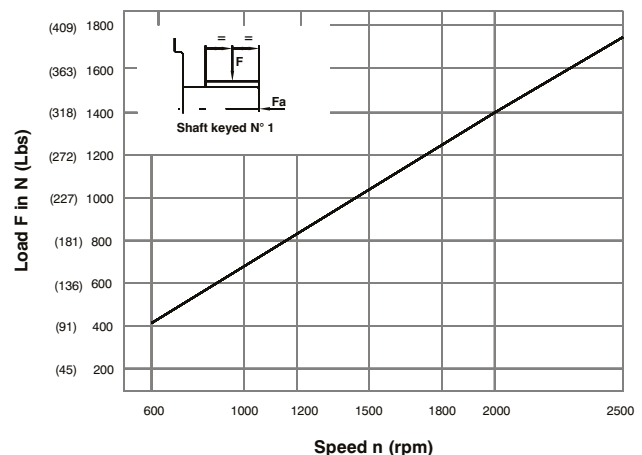
NOISE LEVEL (TYPICAL)



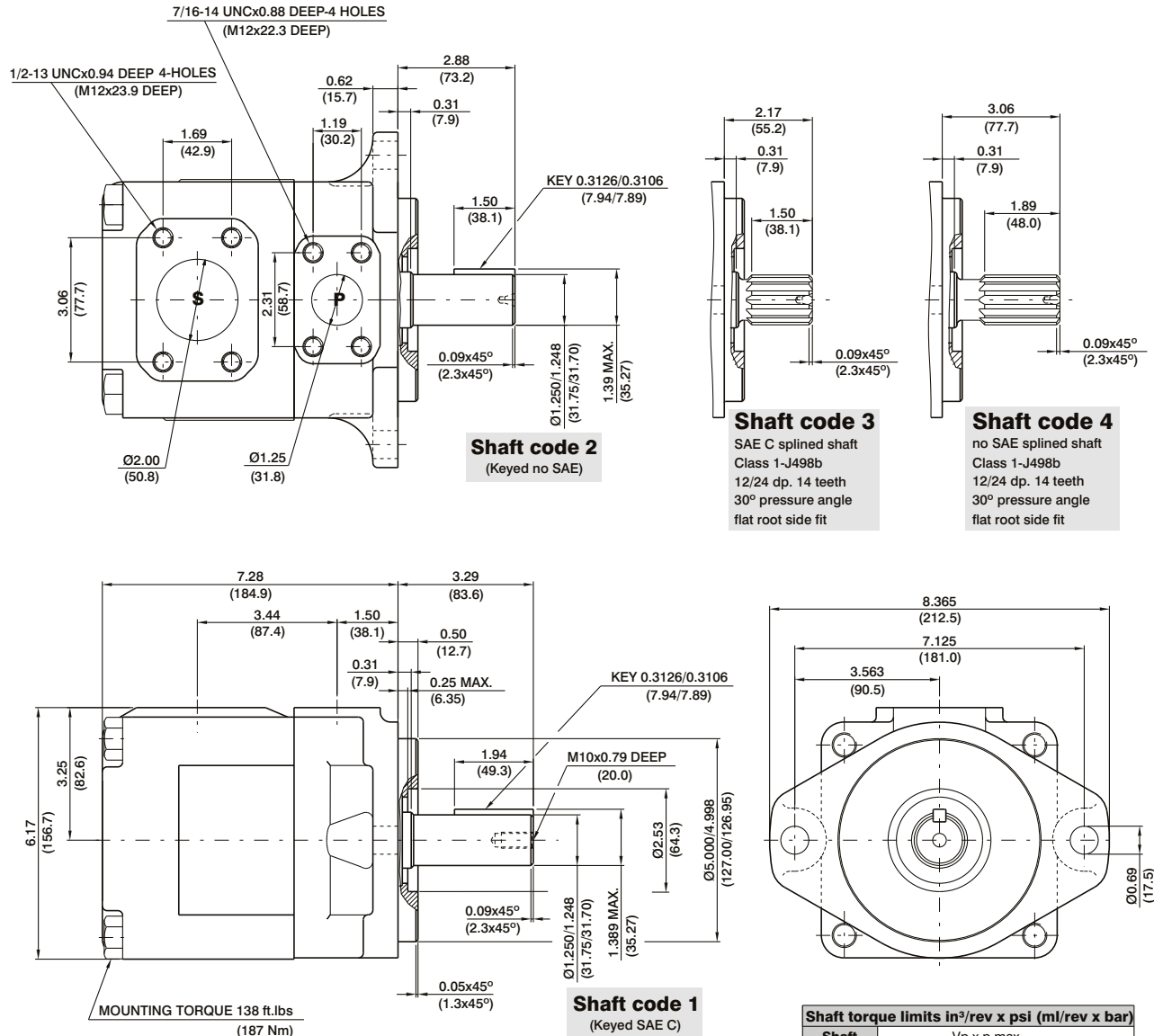
HYDROMECHANICAL POWER LOSS (TYPICAL)



PERMISSIBLE RADIAL LOAD



Maximum permissible axial load $F_a = 1200$ N (270 Lbs)



Shaft torque limits in ³ /rev x psi (ml/rev x bar)	
Shaft	Vp x p max.
1	38299 (43283)
2	30638 (34590)
3	54207 (61200)
4	54207 (61200)

OPERATING CHARACTERISTICS - TYPICAL (24 cST)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm								Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)			
		in³/rev	cm³/rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw		
VT6D VT6DQ VT6DN	014	2.90	47.6	18.88	71.4	16.42	62.1	14.78	55.9	3.08	2.3	24.81	18.5	41.03	30.6		
	017	3.55	58.2	23.1	87.3	20.6	78.0	18.99	71.8	3.35	2.5	29.77	22.2	49.62	37.0		
	020	4.00	66.0	26.19	99.0	23.73	89.7	22.08	83.5	3.75	2.8	33.39	24.9	55.92	41.7		
	024	4.80	79.5	31.56	119.3	29.10	110.0	27.46	103.8	4.02	3.0	39.69	29.6	66.78	49.8		
	028	5.50	89.7	35.58	134.5	33.12	125.2	31.48	119.0	4.29	3.2	44.52	33.2	74.96	55.9		
	031	6.00	98.3	39.00	147.5	36.53	138.1	34.89	131.9	4.42	3.3	48.54	36.2	81.80	61.0		
	035	6.80	111.0	44.04	166.5	41.58	157.2	39.94	151.0	4.69	3.5	54.58	40.7	92.13	68.7		
	038	7.30	120.3	47.72	180.4	45.26	171.1	43.62	164.9	4.96	3.7	58.87	43.9	99.64	74.3		
	042 ¹⁾	8.30	136.0	53.96	204.0	51.50	194.7	49.86	188.5	5.36	4.0	66.25	49.4	112.24	83.7		
	045 ¹⁾	8.89	145.7	57.80	218.5	55.34	209.2	53.70	203.0	5.50	4.1	70.81	52.8	120.02	89.5		
	050 ^{1, 2)}	9.64	158.0	62.69	237.0	60.23	227.7	59.25	224.0	5.90	4.4	76.44	57.0	113.98	85.0		
	061 ^{1, 3)}	11.62	190.5	76.25	285.7	73.54	278.0	--	--	6.16	4.6	81.26	60.6	--	--		

1) 042-045-050-061 = 2200 RPM max.

2) 050 = 210 bar (3000 psi) max. int.

3) 061 = 120 bar (1740 psi) max. int, 061 = 80 bar (1160 psi) cont.

Series VT6E * - 066 - 3 R 00 - A 1 *

Y - Metric port connection, Omit for UNC

Cam ring

Volumetric displacement cm³/rev (in³/rev)

042 = 132.3 (8.07)
 045 = 142.4 (8.69)
 050 = 158.5 (9.67)
 052 = 164.8 (10.06)
 057 = 180.7 (11.02)
 062 = 196.7 (12.00)
 066 = 213.3 (13.02)
 072 = 227.1 (13.86)
 085 = 269.8 (16.46)

Type of shaft

1 - keyed (SAE CC)
 2 - keyed (no SAE)
 3 - splined (SAE C)
 4 - splined (SAE CC)
 T - splined (SAE J718C)

Modifications

Seal class

1 - S1 (for mineral oil)
 4 - S4 (for fire resistant fluids)
 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination

00 - standard

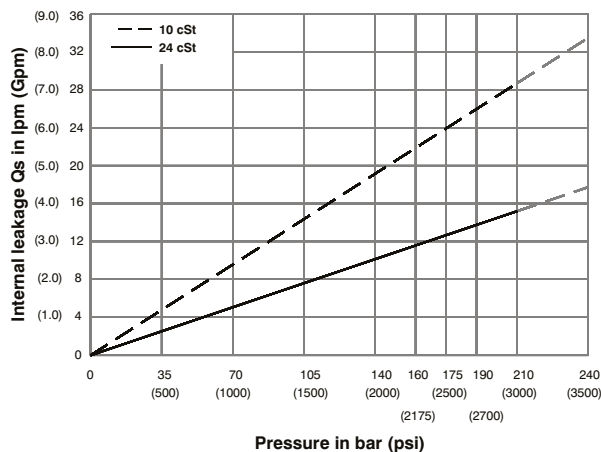
00 **01** **02** **03**

S - Suction port **P** - Pressure port

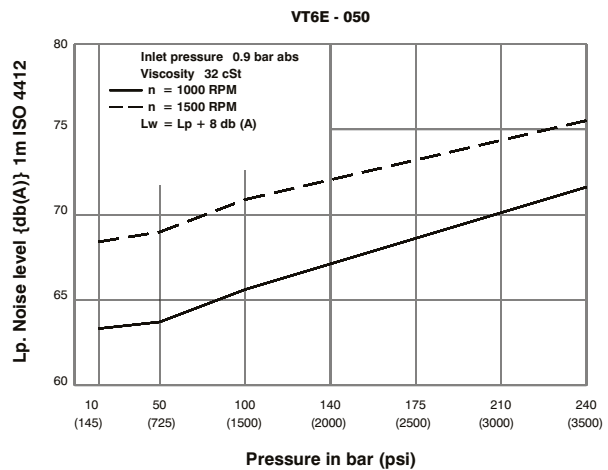
Direction of rotation (view on shaft end)

R - clockwise
 L - counter-clockwise

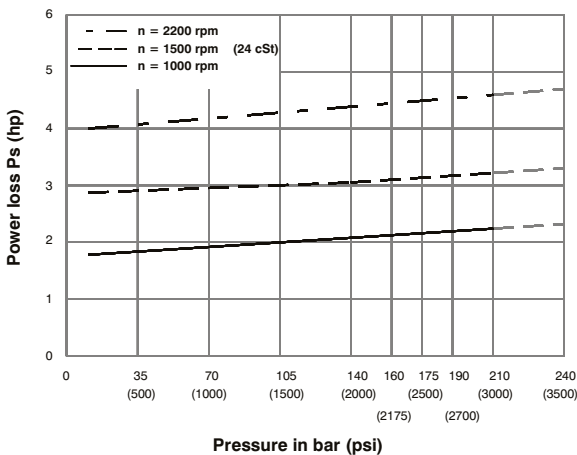
INTERNAL LEAKAGE (TYPICAL)



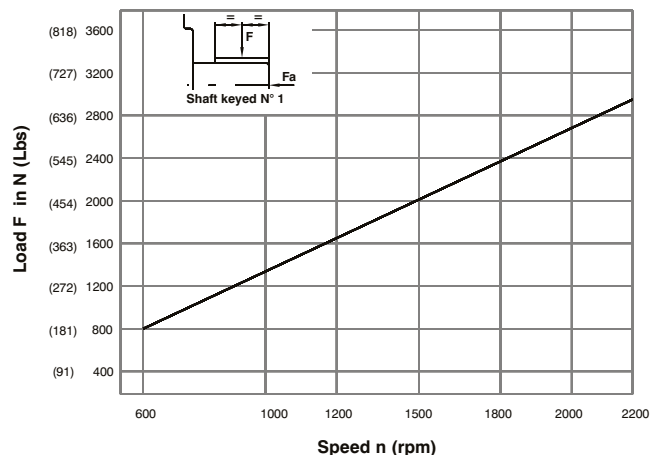
NOISE LEVEL (TYPICAL)

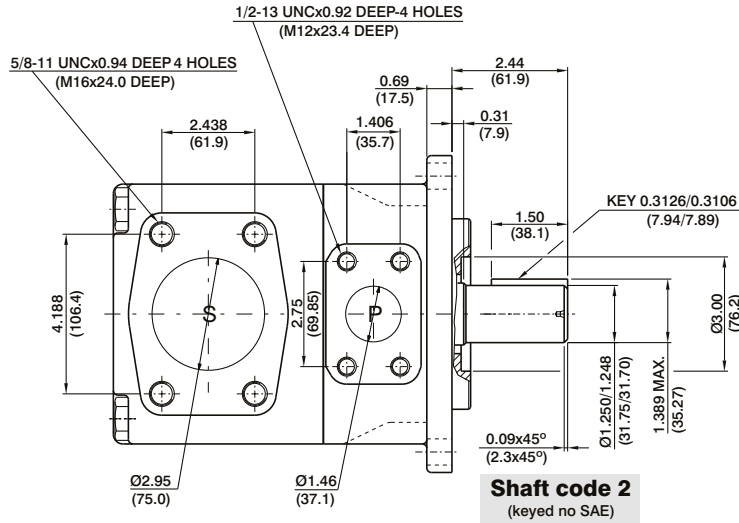
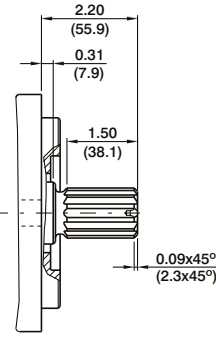


HYDROMECHANICAL POWER LOSS (TYPICAL)

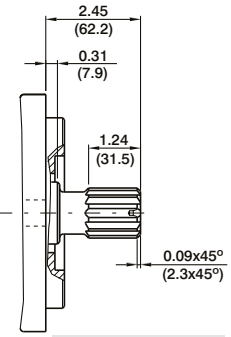


PERMISSIBLE RADIAL LOAD

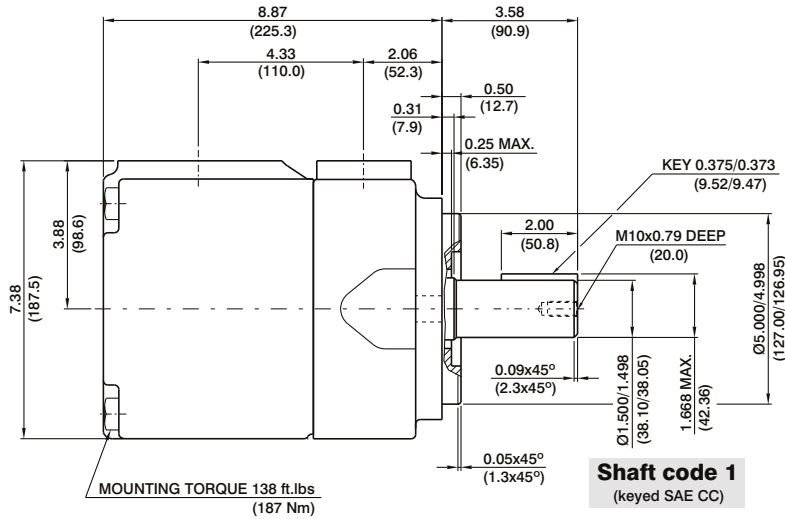




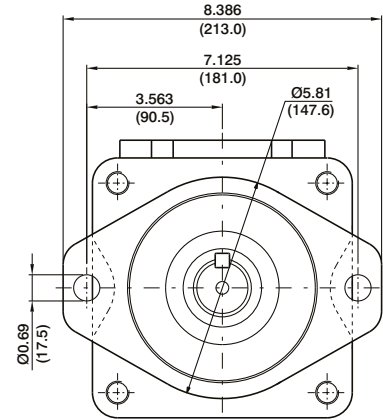
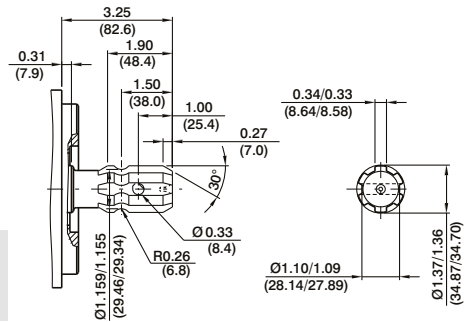
Shaft code 3
SAE C splined shaft
Class 1-J498b
12/24 dp. 14 teeth
30° pressure angle
flat root side fit



Shaft code 4
SAE CC splined shaft
Class 1-J498b
12/24 dp. 17 teeth
30° pressure angle
flat root side fit



Shaft code 1
(keyed SAE CC)



Shaft code T
SAE J718C
540 rpm power take-off
For Farm Tractor application

Shaft torque limits in ³ /rev x psi (ml/rev x bar)	
Shaft	Vp x p max.
1	48273 (54555)
2	30638 (34590)
3	54207 (61200)
4	54207 (61200)

OPERATING CHARACTERISTICS - TYPICAL (24 cST)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in³/rev	cm³/rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
VT6E	042	8.07	132.3	52.50	198.5	49.87	188.5	47.96	181.3	6.97	5.2	66.25	49.4	110.77	82.6
	045	8.70	142.4	56.51	213.6	53.86	203.6	51.98	196.5	7.24	5.4	70.94	52.9	118.95	88.7
	050	9.67	158.5	62.88	237.7	60.24	227.7	58.36	220.6	7.64	5.7	78.45	58.5	131.82	98.3
	052	10.00	164.8	65.40	247.2	62.75	237.2	60.87	230.1	7.78	5.8	81.53	60.8	136.92	102.1
	057	11.02	180.7	71.71	271.1	69.07	261.1	67.19	254.0	8.18	6.1	89.04	66.4	143.35	106.9
	062	12.00	196.7	78.04	295.0	75.40	285.0	73.52	277.9	8.58	6.4	96.42	71.9	162.67	121.3
	066	13.00	213.3	84.63	319.9	81.98	309.9	80.11	302.8	8.98	6.7	104.20	77.7	175.94	131.2
	072	13.86	227.1	90.11	340.6	87.46	330.6	85.58	323.5	9.25	6.9	110.77	82.6	187.07	139.5
	085 ^{1,2)}	16.40	269.8	107.00	404.7	105.21	397.7	--	--	9.78	7.3	87.56	65.3	--	--

1) 085 = 2000 RPM max.

2) 085 = 75 bar (1100 psi) cont.

085 = 90 bar (1300 psi) max. int.

Series VT6CM * - B22 - 1 R 00 - C 1 *

Y - Metric port connection, Omit for UNC

Cam ring

Volumetric displacement cm^3/rev (in^3/rev)

* B03/R03 = 10.8 (0.66)	B15/R15 = 50.5 (3.08)
B05/R05 = 17.2 (1.05)	B17/R17 = 58.3 (3.56)
B06/R06 = 21.3 (1.30)	B20/R20 = 63.8 (3.89)
B08/R08 = 26.4 (1.61)	B22/R22 = 70.3 (4.29)
B10/R10 = 34.1 (2.08)	B25/R25 = 79.3 (4.84)
B12/R12 = 37.1 (2.26)	B28/R28 = 88.8 (5.42)
B14/R14 = 46.0 (2.81)	B31/R31 = 100.0 (6.10)

* 'B' - for Mobile
'R' - for Mobile - spring assisted

Type of shaft

1 - keyed (SAE B)
2 - keyed (no SAE)
3 - splined (SAE B)
4 - splined (SAE BB)

Modifications

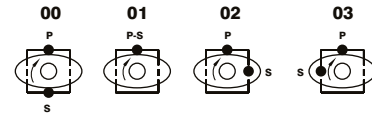
Seal class

- 1 - S1 (for mineral oil)
- 4 - S4 (for fire resistant fluids)
- 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination

00 - standard

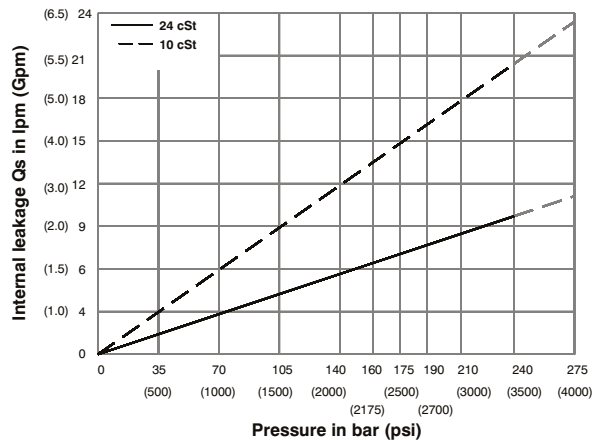


S - Suction port P - Pressure port

Direction of rotation (view on shaft end)

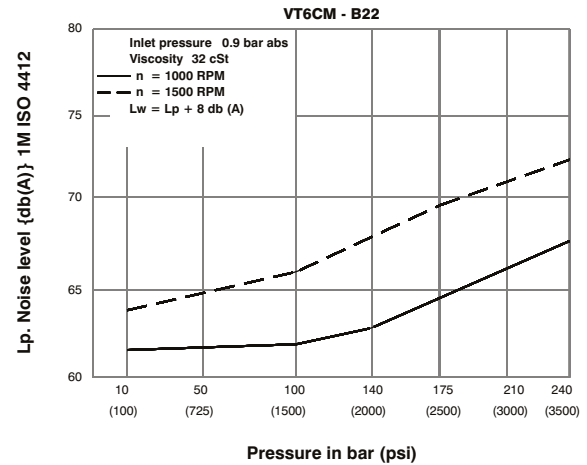
- R - clockwise
- L - counter-clockwise

INTERNAL LEAKAGE (TYPICAL)

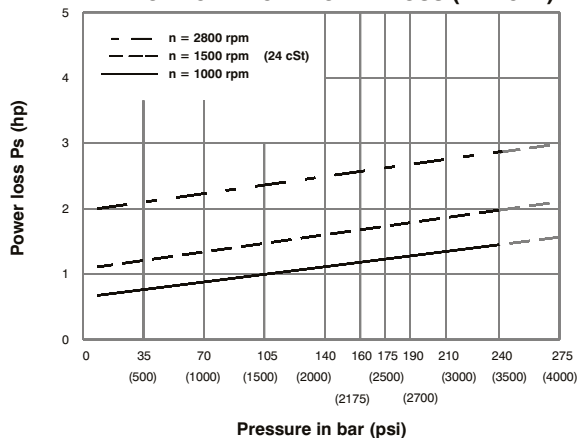


Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow.

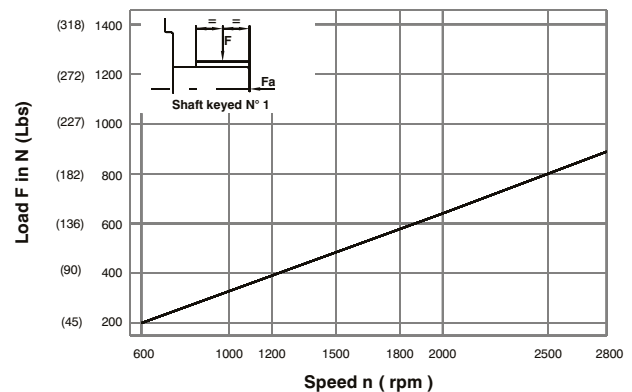
NOISE LEVEL (TYPICAL)



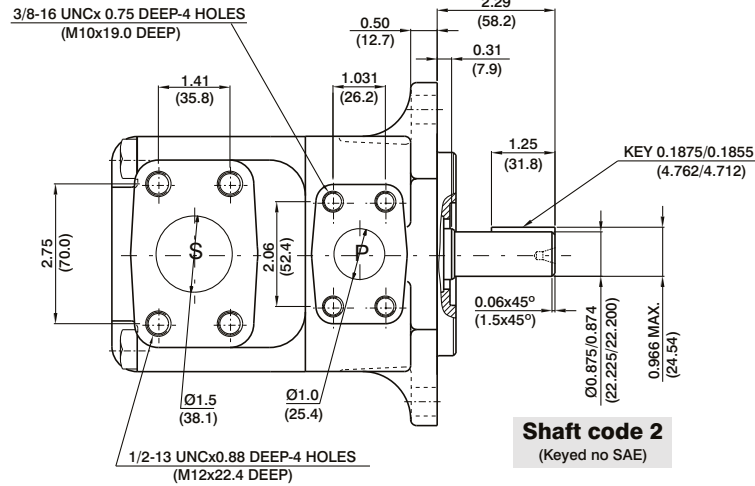
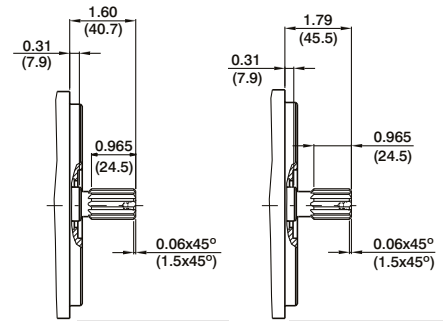
HYDROMECHANICAL POWER LOSS (TYPICAL)



PERMISSIBLE RADIAL LOAD

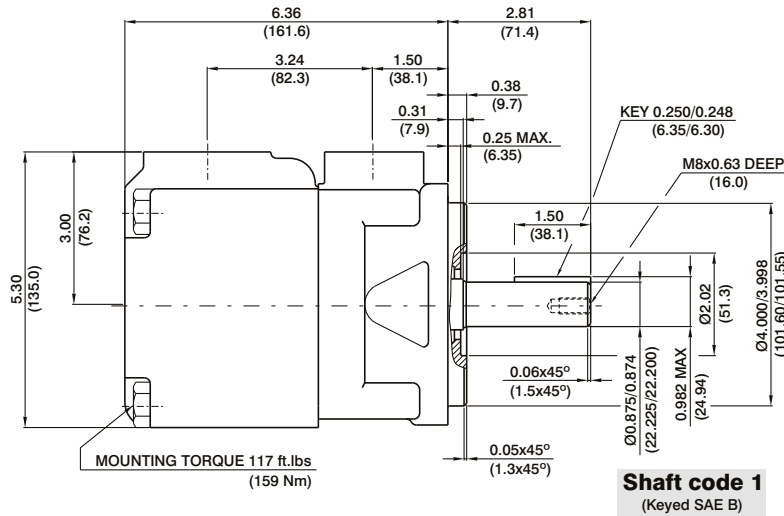
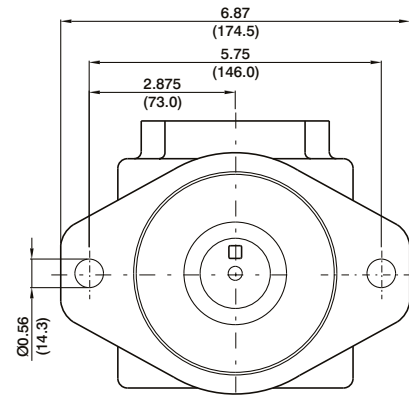


Maximum axial load permissible $F_a = 800 \text{ N}$ (180 Lbs)



Shaft code 3
SAE B splined shaft
Class 1-J498b
16/32 dp. 13 teeth
30° pressure angle
flat root side fit

Shaft code 4
SAE BB splined shaft
Class 1-J498b
16/32 dp. 15 teeth
30° pressure angle
flat root side fit



Shaft torque limits in ³ /rev x psi (ml/rev x bar)	
Shaft	Vp x p max.
1	14473 (16500)
2	12666 (14300)
3	18246 (20600)
4	19309 (21821)

OPERATING CHARACTERISTICS - TYPICAL (24 cST)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
VT6CM	B03	0.66	10.8	4.29	16.2	2.83	10.7	--	--	1.74	1.3	7.11	5.3	--	--
	B05	1.05	17.2	6.83	25.8	5.37	20.3	4.17	15.8	1.88	1.4	10.06	7.5	16.36	12.2
	B06	1.30	21.3	8.44	31.9	7.01	26.5	5.82	22.0	2.01	1.5	11.94	8.9	19.71	14.7
	B08	1.61	26.4	10.48	39.6	9.02	34.1	7.83	29.6	2.15	1.6	14.35	10.7	22.93	17.7
	B10	2.08	34.1	13.52	51.1	12.08	45.7	10.89	41.2	2.28	1.7	18.64	13.4	29.90	22.3
	B12	2.26	37.1	14.71	55.6	13.28	50.2	12.08	45.7	2.28	1.7	19.31	14.4	32.32	24.1
	B14	2.81	46.0	18.25	69.0	16.79	63.5	15.60	59.0	2.55	1.9	23.60	17.6	39.56	29.5
	B15	3.08	50.5	20.00	75.6	18.62	70.4	17.46	66.0	2.68	2.0	25.61	19.1	42.91	32.0
	B17	3.56	58.3	23.12	87.4	21.69	82.0	20.50	77.5	2.82	2.1	29.37	21.9	49.48	36.9
	B20	3.89	63.8	25.32	95.7	23.86	90.2	22.67	85.7	2.95	2.2	31.92	23.8	53.91	40.2
	B22	4.29	70.3	27.88	105.4	26.45	100.0	25.26	95.5	3.08	2.3	35.00	26.1	59.14	44.1
	B25 ¹⁾	4.84	79.3	31.46	118.9	30.02	113.5	28.83	109.0	3.35	2.5	39.16	29.2	66.38	49.5
	B28 ^{1,2)}	5.42	88.8	35.24	133.2	33.78	127.7	32.93	124.5	3.75	2.8	43.85	32.7	65.04	48.5
	B31 ^{1,2)}	6.10	100.0	39.68	150.0	38.22	144.5	37.38	141.3	3.75	2.8	48.95	36.5	72.95	54.4

1) B25-B28-B31 = 2500 R.P.M. max.

2) B28-B31 = 210 bar (3000 psi) max. int.

-- Not to use because internal leakage greater than 50% theoretical flow.

VT6GC - B22 - 6 R 00 - A 1 - 00 -

Series _____

Cam ring _____

Volumetric displacement cm³/rev (in³/rev)

B03 = 10.8 (0.66)	B15 = 50.5 (3.08)
B05 = 17.2 (1.05)	B17 = 58.3 (3.56)
B06 = 21.3 (1.30)	B20 = 63.8 (3.89)
B08 = 26.4 (1.61)	B22 = 70.3 (4.29)
B10 = 34.1 (2.08)	B25 = 79.3 (4.84)
B12 = 37.1 (2.26)	B28 = 88.8 (5.42)
B14 = 46.0 (2.81)	B31 = 100.0 (6.10)

Type of shaft _____

6 - splined (DIN 5462)

Modifications _____

Mounting W/connection variables

	UNC		METRIC	
	00	01	M0	M1
S=1 1/2"	SAE	SAE	SAE	SAE
P=1	BSPP	SAE	BSPP	SAE

Seal class

1 - S1

Design letter _____

Porting combination

00 - standard

Direction of rotation (view on shaft end)

R - clockwise

L - counter-clockwise

00

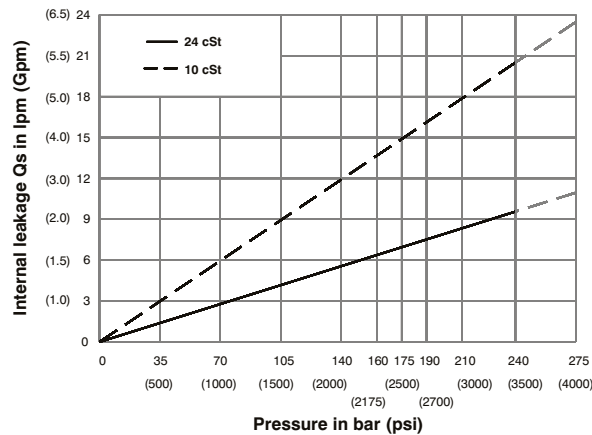
01

02

03

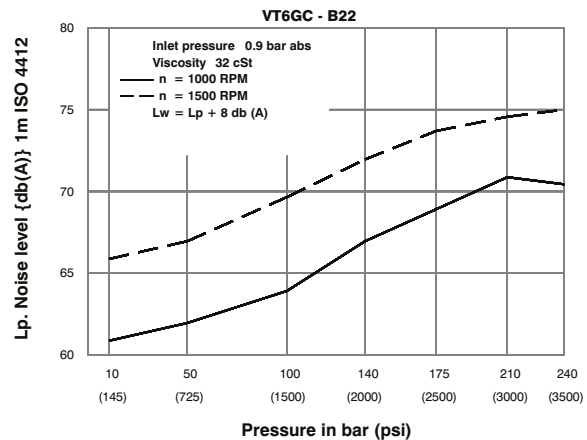
S - Suction port **P** - Pressure port

INTERNAL LEAKAGE (TYPICAL)

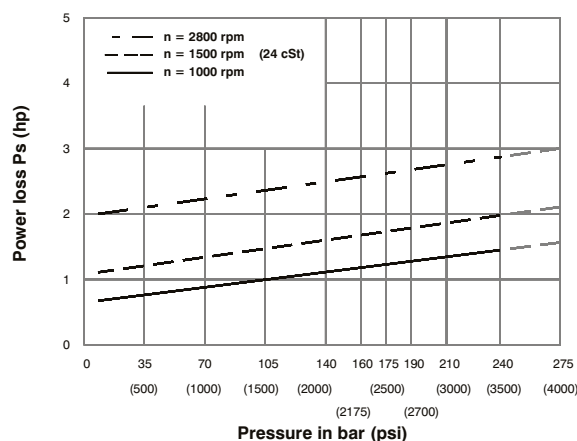


Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow.

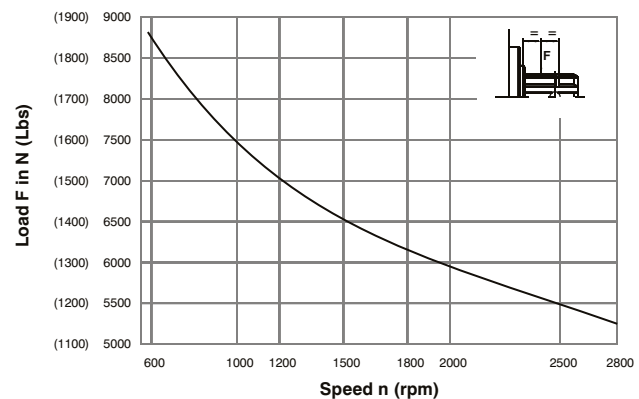
NOISE LEVEL (TYPICAL)



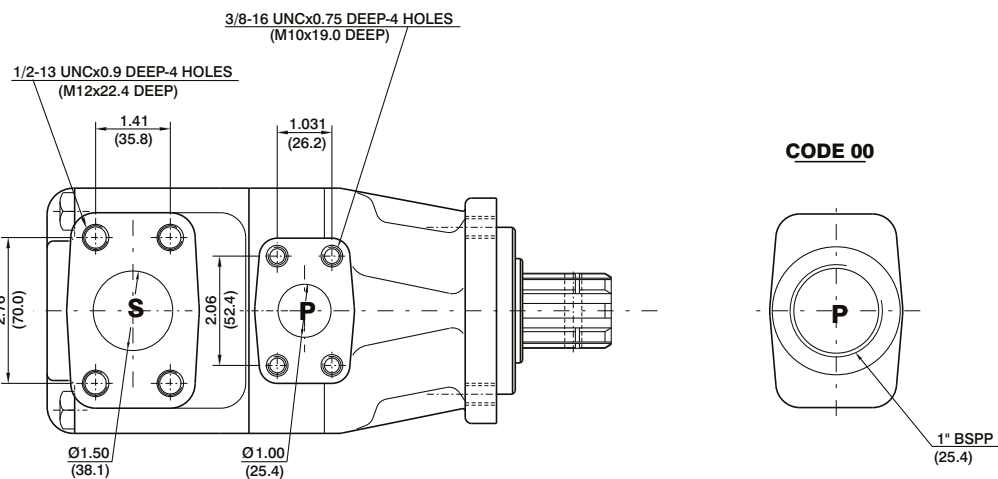
HYDROMECHANICAL POWER LOSS (TYPICAL)



PERMISSIBLE RADIAL LOAD



Life time 3000 hours when 70% of the time at 500 N and 30% at max. load.



Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)	p = 140 bar (2000 psi)	p = 240 bar (3500 psi)	p = 7 bar (100 psi)	p = 140 bar (2000 psi)	p = 240 bar (3500 psi)	p = 7 bar (100 psi)	p = 140 bar (2000 psi)	p = 240 bar (3500 psi)	p = 7 bar (100 psi)	p = 140 bar (2000 psi)	p = 240 bar (3500 psi)
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
VT6GC	B03	0.66	10.8	4.29	16.2	2.83	10.7	--	--	1.74	1.3	7.11	5.3	--	--
	B05	1.05	17.2	6.83	25.8	5.37	20.3	4.17	15.8	1.88	1.4	10.06	7.5	16.36	12.2
	B06	1.30	21.3	8.44	31.9	7.01	26.5	5.82	22.0	2.01	1.5	11.94	8.9	19.71	14.7
	B08	1.61	26.4	10.48	39.6	9.02	34.1	7.83	29.6	2.15	1.6	14.35	10.7	22.93	17.7
	B10	2.08	34.1	13.52	51.1	12.08	45.7	10.89	41.2	2.28	1.7	18.64	13.4	29.90	22.3
	B12	2.26	37.1	14.71	55.6	13.28	50.2	12.08	45.7	2.28	1.7	19.31	14.4	32.32	24.1
	B14	2.81	46.0	18.25	69.0	16.79	63.5	15.60	59.0	2.55	1.9	23.60	17.6	39.56	29.5
	B15	3.08	50.5	20.00	75.6	18.62	70.4	17.46	66.0	2.68	2.0	25.61	19.1	42.91	32.0
	B17	3.56	58.3	23.12	87.4	21.69	82.0	20.50	77.5	2.82	2.1	29.37	21.9	49.48	36.9
	B20	3.89	63.8	25.32	95.7	23.86	90.2	22.67	85.7	2.95	2.2	31.92	23.8	53.91	40.2
	B22	4.29	70.3	27.88	105.4	26.45	100.0	25.26	95.5	3.08	2.3	35.00	26.1	59.14	44.1
	B25 ¹⁾	4.84	79.3	31.46	118.9	30.02	113.5	28.83	109.0	3.35	2.5	39.16	29.2	66.38	49.5
	B28 ^{1, 2)}	5.42	88.8	35.24	133.2	33.78	127.7	32.93	124.5	3.75	2.8	43.85	32.7	65.04	48.5
	B31 ^{1, 2)}	6.10	100.0	39.68	150.0	38.22	144.5	37.38	141.3	3.75	2.8	48.95	36.5	72.95	54.4

-- Not to use because internal leakage greater than 50% theoretical flow.

Series VT6CP - B22 - 2 R 00 - A 1 *

Cam ring

Volumetric displacement cm^3/rev (in^3/rev)

- * B14/R14 = 46.0 (2.81)
- B15/R15 = 50.5 (3.08)
- B17/R17 = 58.3 (3.56)
- B20/R20 = 63.8 (3.89)
- B22/R22 = 70.3 (4.29)
- B25/R25 = 79.3 (4.84)
- B28/R28 = 88.8 (5.42)
- B31/R31 = 100.0 (6.10)

* 'B' - for Mobile
'R' - for Mobile - spring assisted

Type of shaft

- 2 - keyed (no SAE)
- 3 - splined (SAE C)
- X - splined

Modifications

Seal class

- 1 - S1 (for mineral oil)
- 4 - S4 (for fire resistant fluids)
- 5 - S5 (for mineral oil and fire **resistant fluids**)

Design letter

Porting combination

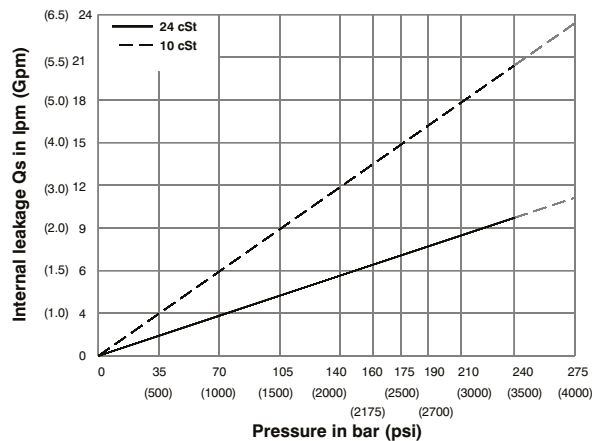
00 - standard

S - Suction port **P** - Pressure port

Direction of rotation (view on shaft end)

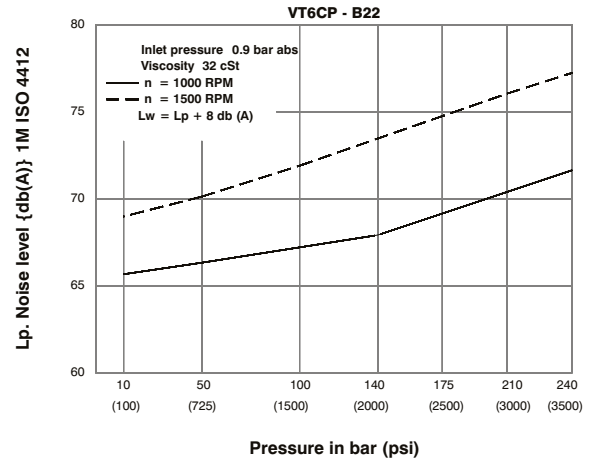
- R - clockwise
- L - counter-clockwise

INTERNAL LEAKAGE (TYPICAL)

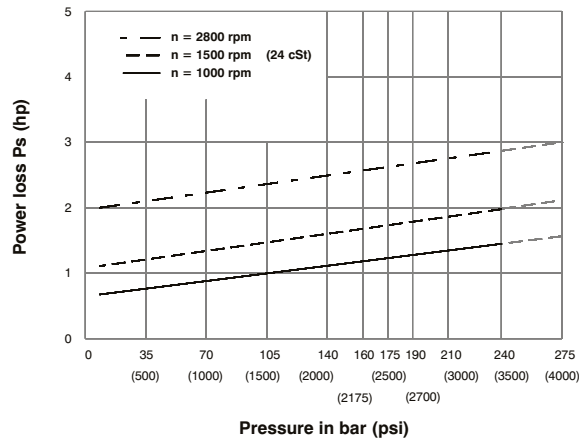


Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow.

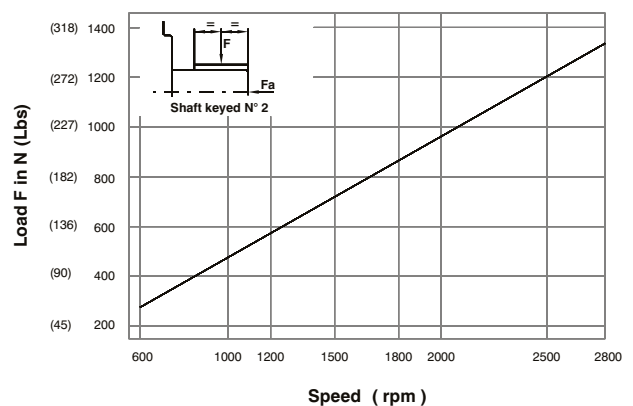
NOISE LEVEL (TYPICAL)



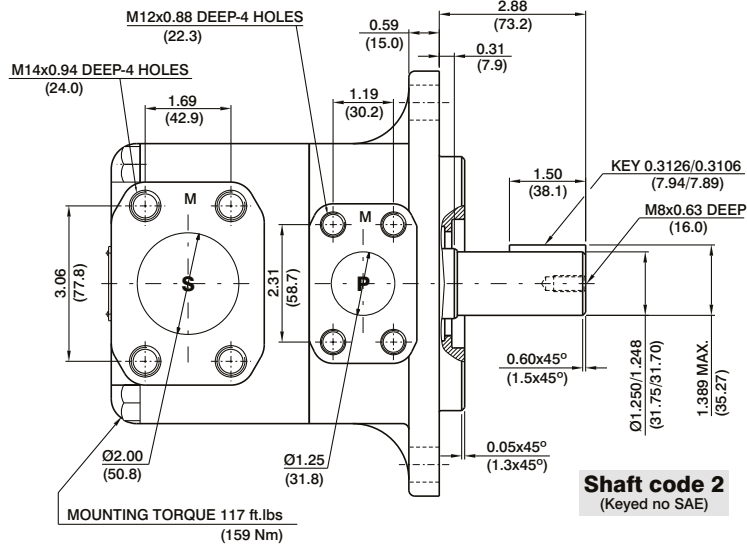
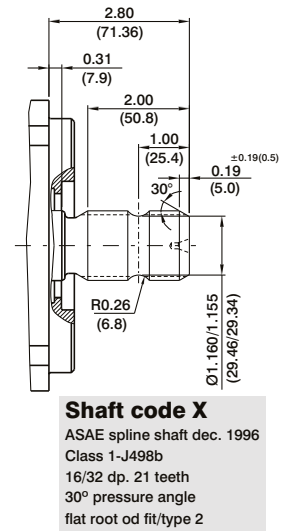
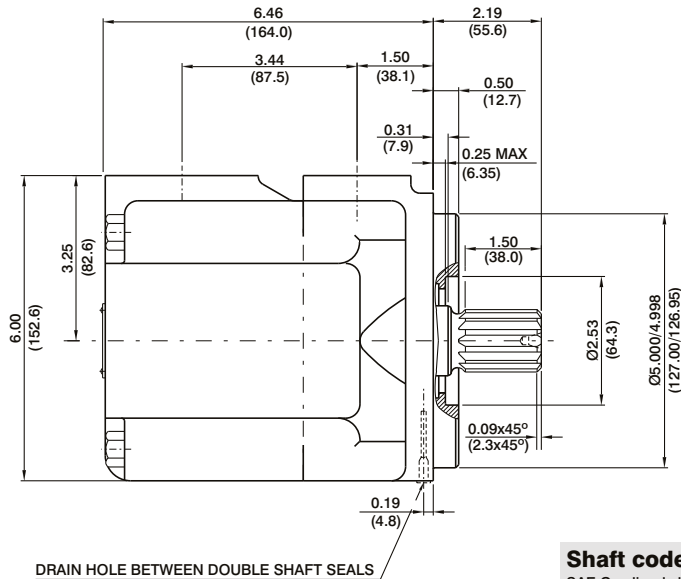
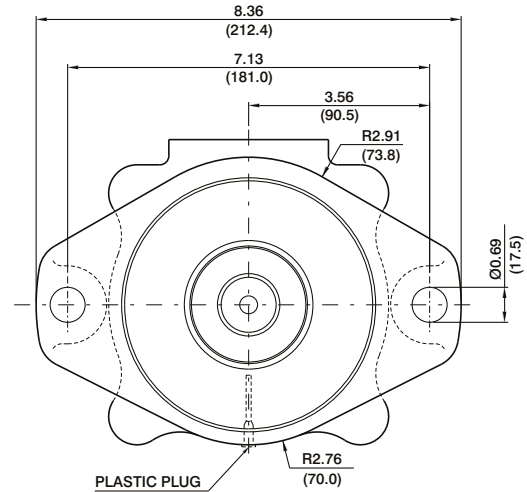
HYDROMECHANICAL POWER LOSS (TYPICAL)



PERMISSIBLE RADIAL LOAD



Maximum axial load permissible $F_a = 800 \text{ N}$ (180 Lbs)



OPERATING CHARACTERISTICS - TYPICAL (24 cST)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
VT6CP	B14	2.81	46.0	18.25	69.0	16.79	63.5	15.60	59.0	2.55	1.9	23.60	17.6	39.56	29.5
	B15	3.08	50.5	20.00	75.6	18.62	70.4	17.46	66.0	2.68	2.0	25.61	19.1	42.91	32.0
	B17	3.56	58.3	23.12	87.4	21.69	82.0	20.50	77.5	2.82	2.1	29.37	21.9	49.48	36.9
	B20	3.89	63.8	25.32	95.7	23.86	90.2	22.67	85.7	2.95	2.2	31.92	23.8	53.91	40.2
	B22	4.29	70.3	27.88	105.4	26.45	100.0	25.26	95.5	3.08	2.3	35.00	26.1	59.14	44.1
	B25 ¹⁾	4.84	79.3	31.46	118.9	30.02	113.5	28.83	109.0	3.35	2.5	39.16	29.2	66.38	49.5
	B28 ^{1,2)}	5.42	88.8	35.24	133.2	33.78	127.7	32.93	124.5	3.75	2.8	43.85	32.7	65.04	48.5
	B31 ^{1,2)}	6.10	100.0	39.68	150.0	38.22	144.5	37.38	141.3	3.75	2.8	48.95	36.5	72.95	54.4

1) B25-B28-B31 = 2500 R.P.M. max.

2) B28-B31 = 210 bar (3000 psi) max. int.

Series **VT6D** * * * - **B45** - **1** **R** **00** - **C** **1** *

N - Shaft seal installed reverse
Q - Special mounting cap with ear orientation of 20° from standard
M = Mobile 1 shaft seal
P = Mobile 2 shaft seal
Y - Metric port connection (not for code 'Q')
 Omit for UNC

Cam ring
 Volumetric displacement cm³/rev (in³/rev)
 *B14/R14 = 47.6 (2.90) B35/R35 = 110.0 (6.77)
 B17/R17 = 58.2 (3.55) B38/R38 = 120.3 (7.34)
 B20/R20 = 66.0 (4.03) B42/R42 = 136.0 (8.30)
 B24/R24 = 79.5 (4.85) B45/R45 = 145.7 (8.89)
 B28/R28 = 89.7 (5.47) B50/R50 = 158.0 (9.64)
 B31/R31 = 98.3 (6.00) B61/R61 = 190.5 (11.62)
 *'B' - for Mobile 'R' - for Mobile - spring assisted

Type of shaft

M version

- 1 - keyed (SAE C)
- 2 - keyed (no SAE)
- 3 - splined (SAE C)
- 4 - splined (no SAE)
- T - splined (SAE J718c)

P version

- 3 - splined (no SAE)
- 2 - keyed (no SAE)

Modifications

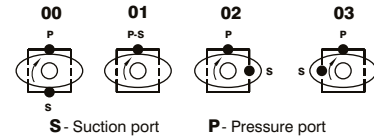
Seal class

- 1 - S1 (for mineral oil)
- 4 - S4 (for fire resistant fluids)
- 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination

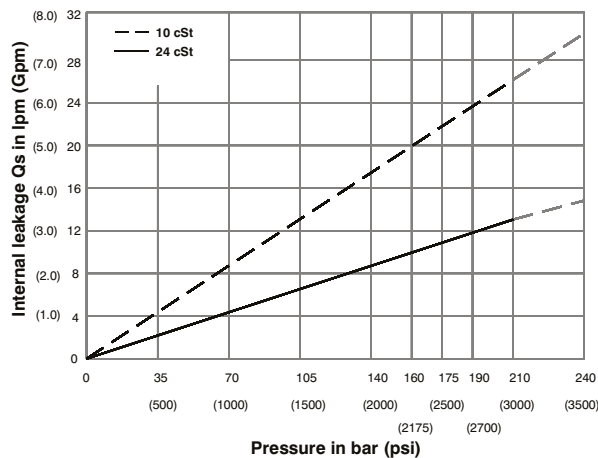
00 - standard



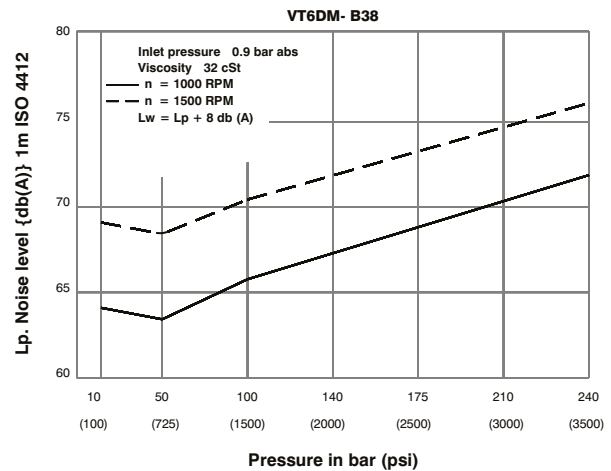
Direction of rotation (view on shaft end)

- R - clockwise
- L - counter-clockwise

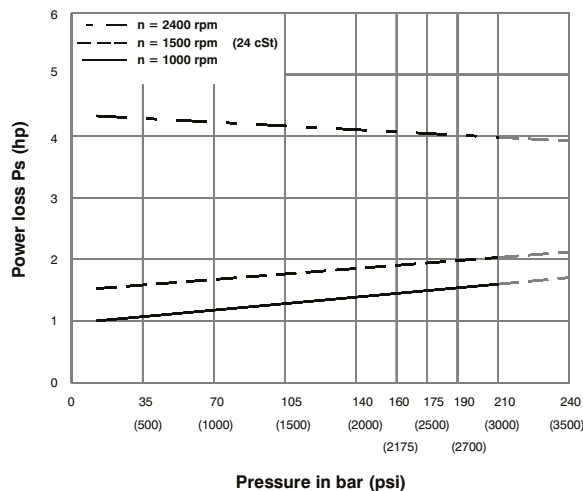
INTERNAL LEAKAGE (TYPICAL)



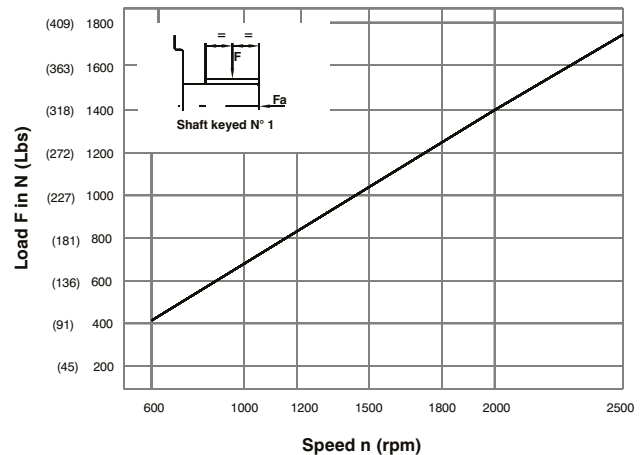
NOISE LEVEL (TYPICAL)



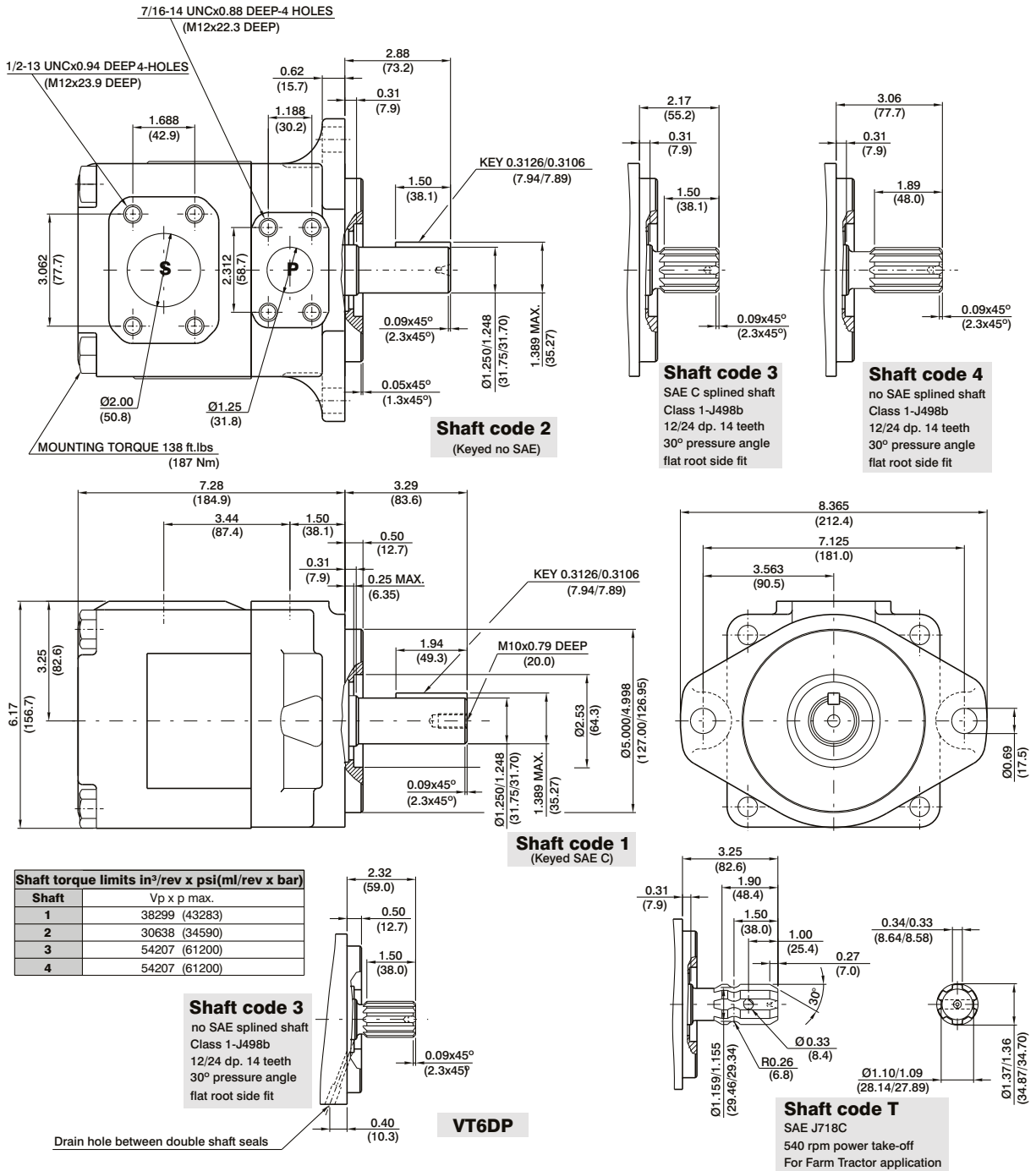
HYDROMECHANICAL POWER LOSS (TYPICAL)



PERMISSIBLE RADIAL LOAD



Maximum permissible axial load $F_a = 1200$ N (270 Lbs)



OPERATING CHARACTERISTICS - TYPICAL (24 cST)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
VT6DM VT6DP	B14	2.90	47.6	18.88	71.4	16.42	62.1	14.78	55.9	3.08	2.3	24.81	18.5	41.03	30.6
	B17	3.55	58.2	23.1	87.3	20.6	78.0	18.99	71.8	3.35	2.5	29.77	22.2	49.62	37.0
	B20	4.00	66.0	26.19	99.0	23.73	89.7	22.08	83.5	3.75	2.8	33.39	24.9	55.92	41.7
	B24	4.80	79.5	31.56	119.3	29.10	110.0	27.46	103.8	4.02	3.0	39.69	29.6	66.78	49.8
	B28	5.50	89.7	35.58	134.5	33.12	125.2	31.48	119.0	4.29	3.2	44.52	33.2	74.96	55.9
	B31	6.00	98.3	39.00	147.5	36.53	138.1	34.89	131.9	4.42	3.3	48.54	36.2	81.80	61.0
	B35	6.80	111.0	44.04	166.5	41.58	157.2	39.94	151.0	4.69	3.5	54.58	40.7	92.13	68.7
	B38	7.30	120.3	47.72	180.4	45.26	171.1	43.62	164.9	4.96	3.7	58.87	43.9	99.64	74.3
	B42 ¹⁾	8.30	136.0	53.96	204.0	51.50	194.7	49.86	188.5	5.36	4.0	66.25	49.4	112.24	83.7
	B45 ¹⁾	8.89	145.7	57.80	218.5	55.34	209.2	53.70	203.0	5.50	4.1	70.81	52.8	120.02	89.5
	B50 ^{1,2)}	9.64	158.0	62.69	237.0	60.23	227.7	59.25	224.0	5.90	4.4	76.44	57.0	113.98	85.0
	B61 ^{1,3)}	11.62	190.5	76.25	285.7	73.54	278.0	--	--	6.16	4.6	81.26	60.6	--	--

1) B42-B45-B50-B61=2200 RPM max.

2) B50=210 bar (3000 psi) max. int.

3) 061 = 120 bar (1740 psi) max. int.

061 = 80 bar (1160 psi) cont.

Series VT6E * * - 066 - 3 R 00 - B 1 *

M = Mobile 1 shaft seal
P = Mobile 2 shaft seal
Y - Metric port connection, Omit for UNC

Cam ring
 Volumetric displacement cm³/rev (in³/rev)

* 042/R42 = 132.3 (8.07)
 045/R45 = 142.4 (8.69)
 050/R50 = 158.5 (9.67)
 052/R52 = 164.8 (10.06)
 057/R57 = 180.7 (11.02)
 062/R62 = 196.7 (12.00)
 066/R66 = 213.3 (13.02)
 072/R72 = 227.1 (13.86)
 085/R85 = 269.8 (16.46)

'R' - for Mobile - spring assisted

Type of shaft

M version

- 1 - keyed (SAE CC)
- 2 - keyed (no SAE)
- 3 - splined (SAE C)
- 4 - splined (SAE CC)
- T - splined (SAE J718c)

P version

- 3 - splined (no SAE)
- 4 - splined (SAE CC)

Modifications

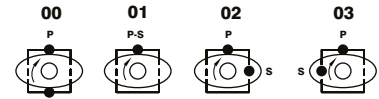
Seal class

- 1 - S1 (for mineral oil)
- 4 - S4 (for fire resistant fluids)
- 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination

00 - standard

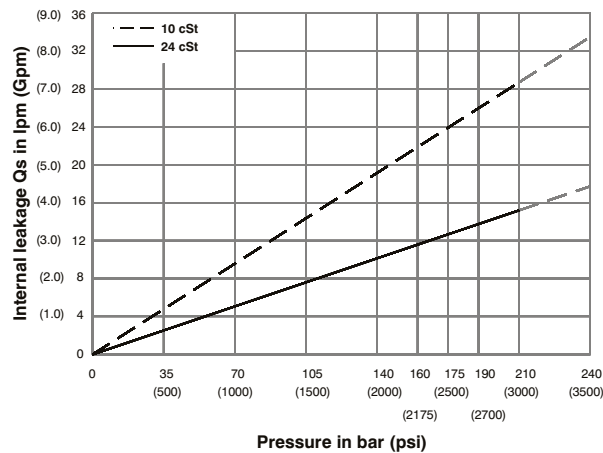


S - Suction port P - Pressure port

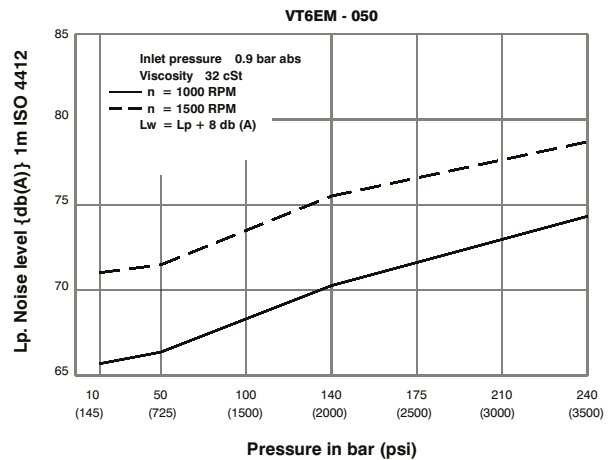
Direction of rotation (view on shaft end)

- R - clockwise
- L - counter-clockwise

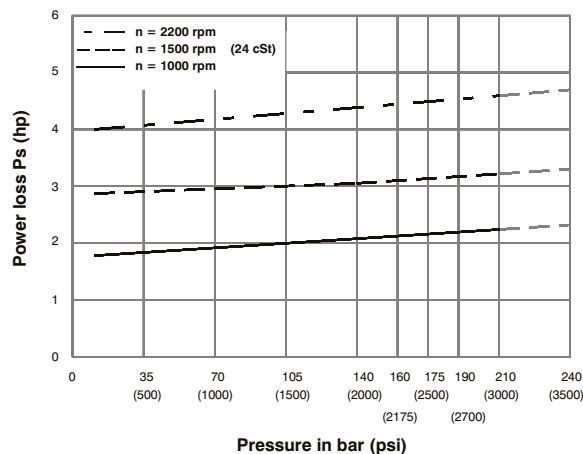
INTERNAL LEAKAGE (TYPICAL)



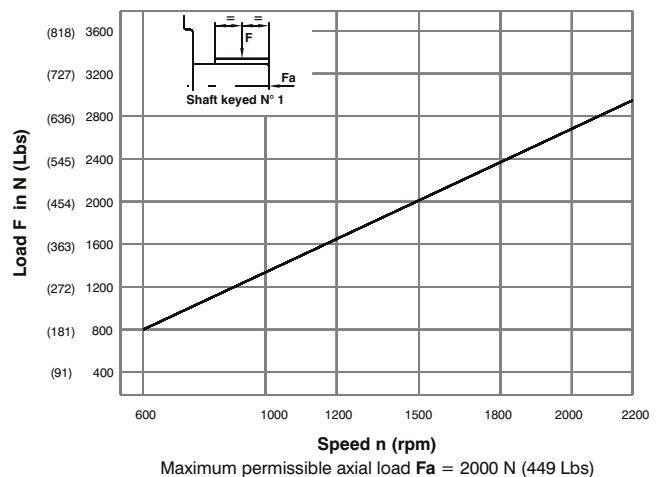
NOISE LEVEL (TYPICAL)

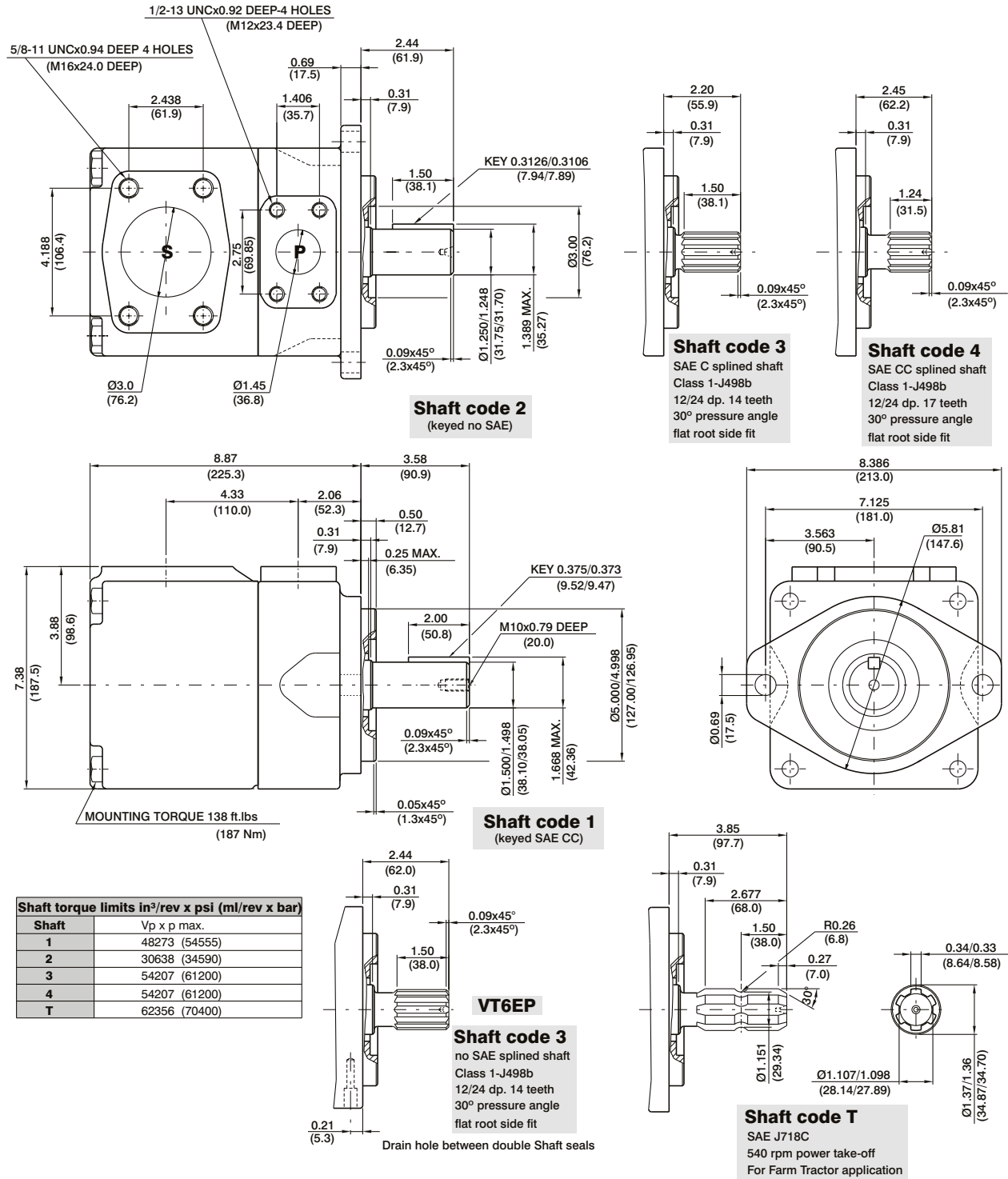


HYDROMECHANICAL POWER LOSS (TYPICAL)



PERMISSIBLE RADIAL LOAD





OPERATING CHARACTERISTICS - TYPICAL (24 cST)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
VT6EM VT6EP	042	8.07	132.3	52.50	198.5	49.87	188.5	47.96	181.3	6.97	5.2	66.25	49.4	110.77	82.6
	045	8.70	142.4	56.51	213.6	53.86	203.6	51.98	196.5	7.24	5.4	70.94	52.9	118.95	88.7
	050	9.67	158.5	62.88	237.7	60.24	227.7	58.36	220.6	7.64	5.7	78.45	58.5	131.82	98.3
	052	10.00	164.8	65.40	247.2	62.75	237.2	60.87	230.1	7.78	5.8	81.53	60.8	136.92	102.1
	057	11.02	180.7	71.71	271.1	69.07	261.1	67.19	254.0	8.18	6.1	89.04	66.4	143.35	106.9
	062	12.00	196.7	78.04	295.0	75.40	285.0	73.52	277.9	8.58	6.4	96.42	71.9	162.67	121.3
	066	13.00	213.3	84.63	319.9	81.98	309.9	80.11	302.8	8.98	6.7	104.20	77.7	175.94	131.2
	072	13.86	227.1	90.11	340.6	87.46	330.6	85.58	323.5	9.25	6.9	110.77	82.6	187.07	139.5
	085 ^{1,2)}	16.40	269.8	107.00	404.7	105.21	397.7	--	--	9.78	7.3	87.56	65.3	--	--

1) 085 = 2000 RPM max.

2) 085 = 75 bar (1100 psi) cont.

085 = 90 bar (1300 psi) max. int.

VT7 -SINGLE

VANE PUMPS

SP

VT7B or VT7BS - B10 - 1 R 00 - A 1 M0 -

Series

VT7B series - ISO 2 bolts 3019-2
mounting flange 100 A2 HW

VT7BS series - SAE B 2 bolts
Mounting flange J744C

Camring

Volumetric displacement cm^3/rev (in^3/rev)

B02 = 5.7 (0.35)	B09 = 28.0 (1.71)
B03 = 9.8 (0.60)	B10 = 31.8 (1.94)
B04 = 12.8 (0.78)	B11 = 34.9 (2.13)
B05 = 15.9 (0.97)	B12 = 40.9 (2.50)
B06 = 19.8 (1.21)	B14 = 45.1 (2.75)
B07 = 22.5 (1.37)	B15 = 50.0 (3.05)
B08 = 24.9 (1.52)	

Type of shaft VT7B-VT7BS

2 - Keyed (ISO R775)

Type of shaft VT7BS

1 - Keyed (SAE B)

3 - Splined (SAE B)

4 - Splined (SAE BB)

Direction of rotation (view on shaft end)

R - clockwise

L - counter-clockwise

Modifications

Mounting W/connection variables

4 bolts SAE flange (J518C)

	UNC VT7BS		METRIC VT7B-VT7BS	
	00	01	M0	M1
P	1"	3/4"	1"	3/4"
S	1 1/2"			

Seal class

1 - S1 (for mineral oil)

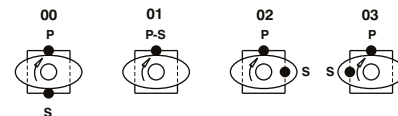
4 - S4 (for fire resistant fluids)

5 - S5 (for mineral oil and fire resistant fluids)

Design letter

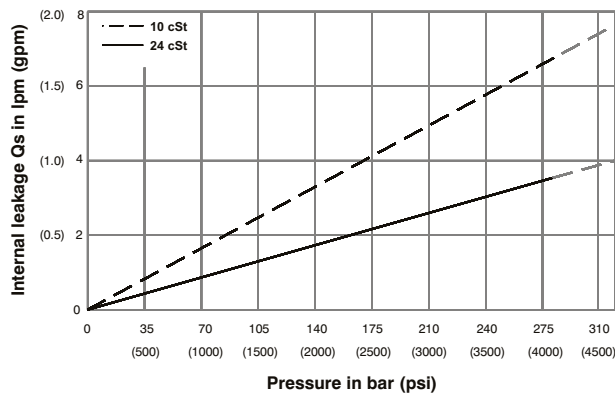
Porting combination

00 - standard



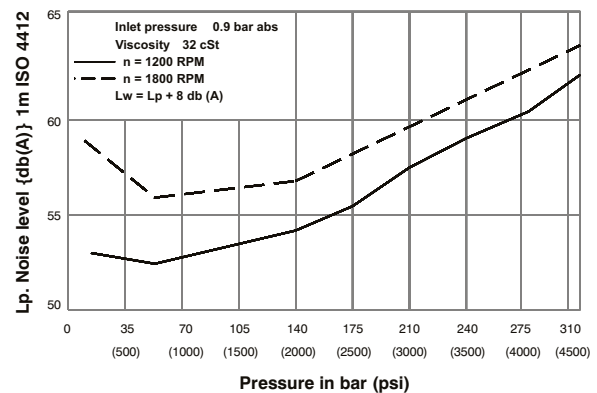
S - Suction port P - Pressure port

INTERNAL LEAKAGE (TYPICAL)

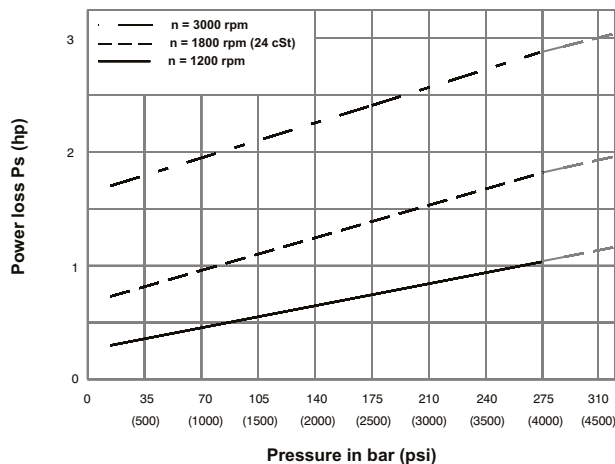


NOISE LEVEL (TYPICAL)

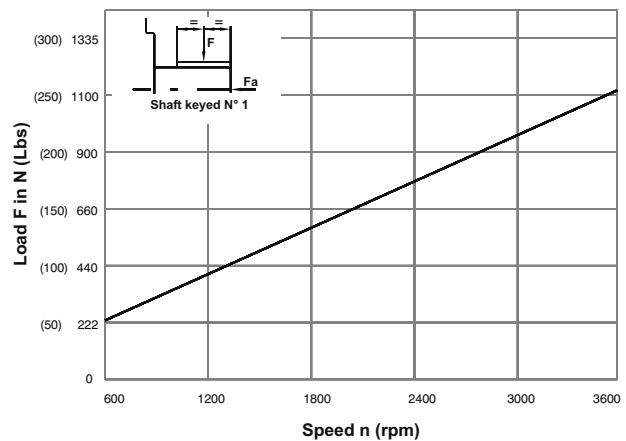
VT7B-B10



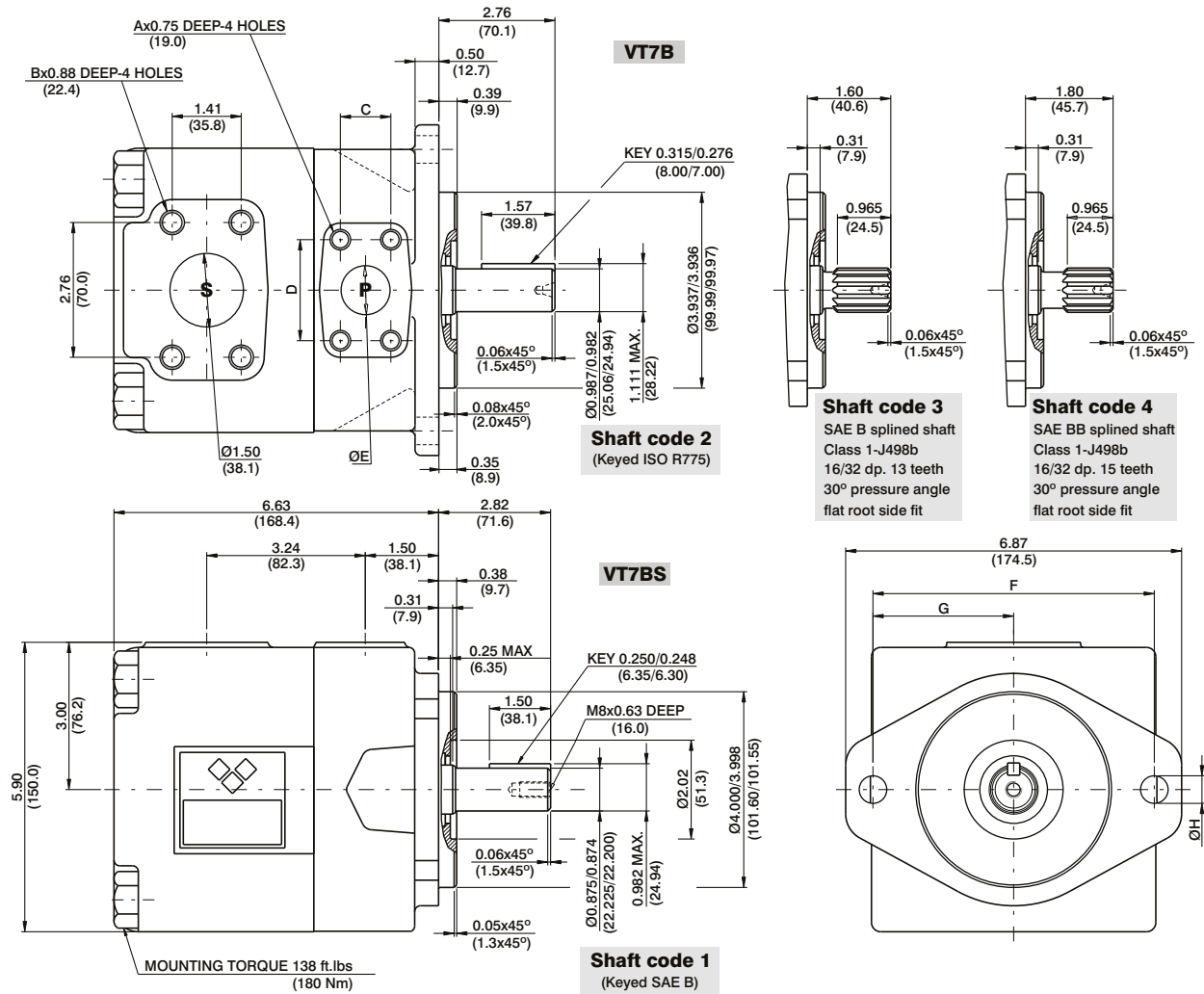
HYDROMECHANICAL POWER LOSS (TYPICAL)



PERMISSIBLE RADIAL LOAD



Maximum axial load permissible $F_a = 800 \text{ N}$ (180 Lbs)



	VT7BS		VT7B	
	00	01	M0	M1
A	3/8-16 UNC		M10	
B	1/2-13 UNC		M12	
C	1.03 (26.2)	0.874 (22.2)	1.03 (26.2)	0.874 (22.2)
D	2.06 (52.4)	1.874 (47.6)	2.06 (52.4)	1.874 (47.6)
ØE	1.00 (25.4)	0.75 (19.05)	1.00 (25.4)	0.75 (19.05)
F	5.75 (146.0)		5.51 (140.0)	
G	2.87 (73.0)		2.75 (70.0)	
ØH	0.56 (14.3)		0.55 (14.0)	

Shaft torque limits in ³ /rev x psi (ml/rev x bar)	
Shaft	Vp x p max.
1	14615 (16516)
2	18246 (20620)
3	18246 (20620)
4	18246 (20620)

OPERATING CHARACTERISTICS - TYPICAL (24 cST)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1800 rpm						Input power p & n = 1800 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 320 bar (4650 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 320 bar (4650 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
VT7B VT7BS	B02	0.35	5.7	2.76	10.4	2.33	8.8	1.73	6.5	0.74	0.55	4.02	2.99	8.59	6.40
	B03	0.60	9.8	4.66	17.6	4.23	15.9	3.70	13.7	0.85	0.63	6.24	4.65	13.75	10.25
	B04	0.78	12.8	6.09	23.0	5.66	21.4	5.06	19.2	0.94	0.70	7.90	5.89	17.62	13.13
	B05	0.97	15.9	7.56	28.6	7.13	26.9	6.53	24.7	1.02	0.76	9.62	7.17	21.62	16.12
	B06	1.21	19.8	9.42	35.6	8.99	33.9	8.39	31.7	1.13	0.84	11.79	8.79	26.66	19.88
	B07	1.37	22.5	10.70	40.4	10.27	38.8	9.67	36.5	1.20	0.89	13.29	9.91	30.14	22.47
	B08	1.52	24.9	11.84	44.7	11.41	43.1	10.81	40.9	1.27	0.94	14.62	10.90	33.24	24.78
	B09	1.71	28.0	13.31	50.3	12.87	48.6	12.28	46.4	1.36	1.01	16.35	12.19	37.25	27.77
	B10	1.94	31.8	15.12	57.2	14.69	55.5	14.09	53.4	1.46	1.11	18.45	13.75	42.14	31.42
	B11 ¹⁾	2.13	34.9	16.64	62.9	16.19	61.2	15.61	59.0	1.55	1.15	20.17	15.04	43.22	32.22
	B12 ¹⁾	2.50	40.9	19.50	73.7	19.07	72.1	18.54	70.1	1.72	1.28	23.55	17.56	50.58	37.71
	B14 ¹⁾	2.75	45.1	21.40	80.8	20.95	79.2	20.37	77.0	1.83	1.36	25.80	19.23	55.48	41.37
	B15 ¹⁾	3.05	50.0	23.78	89.8	23.35	88.3	22.88	86.5	1.97	1.47	28.55	21.28	57.35	42.76

1) B11-B12-B14 = 300 bar (4350 psi) & B15 = 280 bar (4060 psi) max. int. And Max. Speed = 3000 rpm

SP

VT7QC 1 - 022 - 1 R 00 - B 1 - 00 *

Series

Mounting

- 1 - SAE B
- 2 - SAE C

Camring

(Delivery @ 0 bar & 1500 rpm)

* 003/B03/Y03 = 16.2 l/min	015/B15/Y15 = 75.1 l/min
005/B05/Y05 = 25.8 l/min	017/B17/Y17 = 87.4 l/min
006/B06/Y06 = 31.9 l/min	020/B20/Y20 = 95.7 l/min
008/B08/Y08 = 39.6 l/min	022/B22/Y22 = 105.4 l/min
010/B10/Y10 = 51.1 l/min	025/B25/Y25 = 118.9 l/min
012/B12/Y12 = 55.6 l/min	028/B28/Y28 = 133.2 l/min
014/B14/Y14 = 69.0 l/min	031/B31/Y31 = 150.0 l/min

* '0' - Uni - directional 'B' - Bi - directional 'Y' - Bi - directional for cold start

Type of shaft

- 1 - Keyed (SAE B)
- 2 - Keyed (non SAE)
- 3 - Splined (SAE B)
- 4 - Splined (SAE BB)

Modifications

Mounting W/connection variables

	UNC		METRIC	
	00	01	M0	M1
P	1"	3/4"	1"	3/4"
S	1 1/2"			

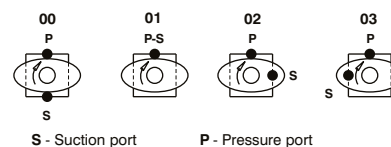
Seal class

- 1 - S1 (for mineral oil)
- 4 - S4 (for fire resistant fluids)
- 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination

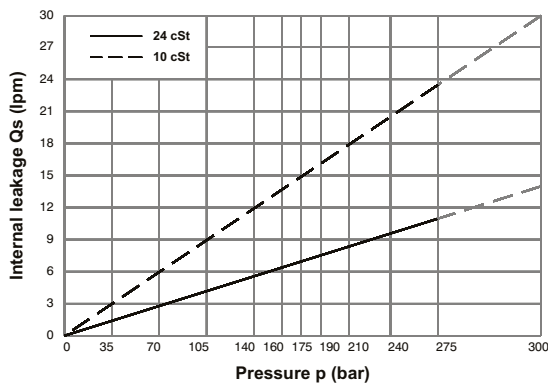
00 - standard



Direction of rotation (view on shaft end)

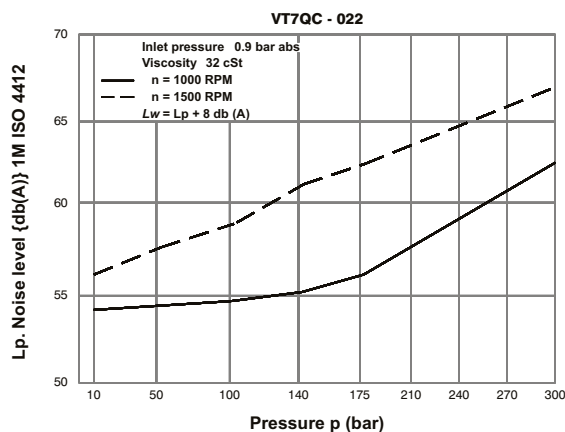
- R - clockwise
- L - counter-clockwise

INTERNAL LEAKAGE (TYPICAL)

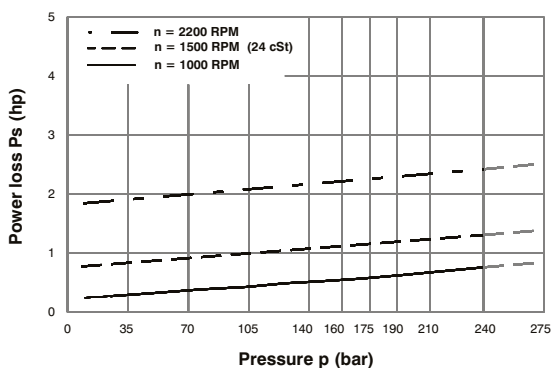


Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow.

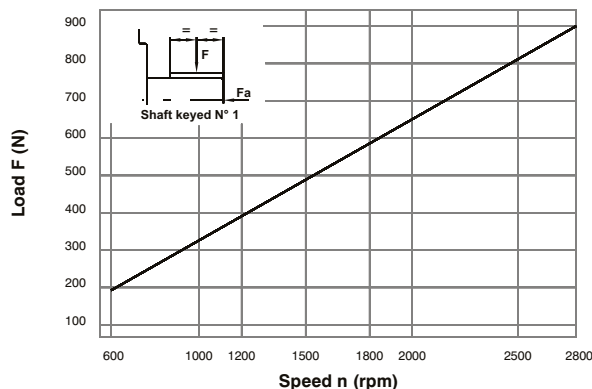
NOISE LEVEL (TYPICAL)



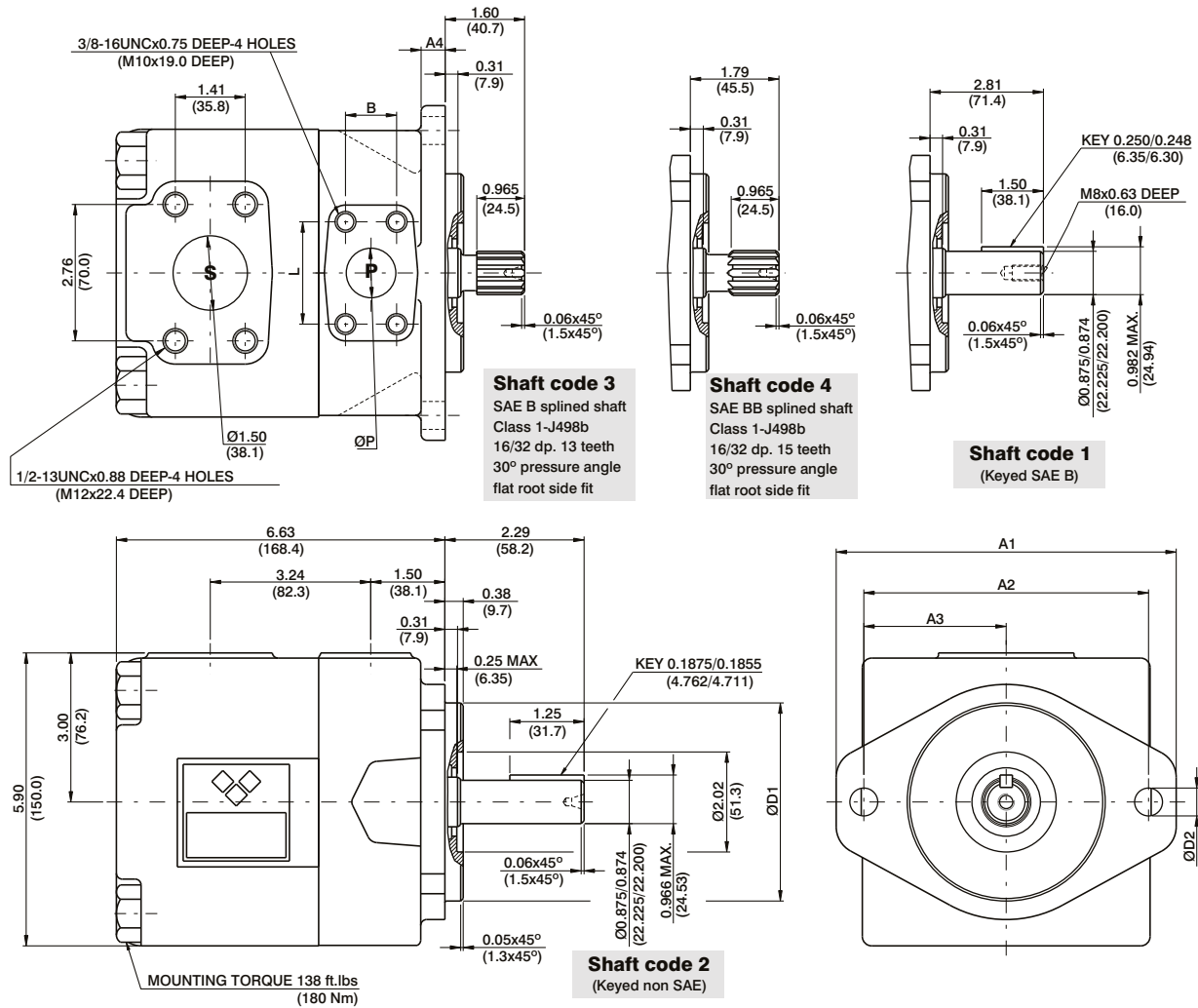
HYDROMECHANICAL POWER LOSS (TYPICAL)



PERMISSIBLE RADIAL LOAD



Maximum axial load permissible $F_a = 800$ N



	VT7QC1	VT7QC2
Mounting	SAE B	SAE C
ØD1	4.000 (101.60) 3.998 (101.55)	5.000 (127.00) 4.997 (126.94)
ØD2	0.56 (14.3)	0.69 (17.5)
A1	6.87 (174.5)	8.36 (212.5)
A2	5.75 (146.0)	7.13 (181.0)
A3	2.87 (73.0)	3.56 (90.5)
A4	0.5 (12.7)	0.62 (15.7)

ØP	L	B
0.75 (19.05)	1.874 (47.6)	0.874 (22.2)
1.00 (25.4)	2.06 (52.4)	1.03 (26.2)

Shaft	Vp x p max.
1	14473 (16500)
2	12666 (14300)
3	18246 (20600)
4	19309 (21820)

OPERATING CHARACTERISTICS - TYPICAL (24 cST)

Series	Volumetric Displacement Vp	Flow q (lpm) & n = 1500 rpm				Input power p (kW) & n = 1500 rpm			
		p = 0 bar	p = 140 bar	p = 240 bar	p = 300 bar	p = 7 bar	p = 140 bar	p = 240 bar	p = 300 bar
003	10.8 ml/rev	16.2	11.9	8.1	--	1.3	5.3	7.8	--
005	17.2 ml/rev	25.8	21.5	17.7	13.7	1.4	7.5	12.2	14.9
006	21.3 ml/rev	31.9	26.5	22.0	18.0	1.5	8.9	14.7	18.0
008	26.4 ml/rev	39.6	34.1	29.6	25.6	1.6	10.7	17.7	21.8
010	34.1 ml/rev	51.1	45.7	41.2	37.2	1.7	13.4	22.3	27.5
012	37.1 ml/rev	55.6	50.2	45.7	41.7	1.7	14.4	24.1	29.8
014	46.0 ml/rev	69.0	63.5	59.0	55.0	1.9	17.6	29.5	36.5
015	50.5 ml/rev	75.1	69.6	65.1	61.1	2.0	18.0	32.0	39.5
017	58.3 ml/rev	87.4	82.0	77.5	73.5	2.1	19.0	36.9	45.7
020	63.8 ml/rev	95.7	90.2	85.7	81.7	2.2	23.8	40.2	49.8
022 ²⁾	70.3 ml/rev	105.4	100.0	95.5	91.5	2.3	26.1	44.1	50.3
025 ^{1,3)}	79.3 ml/rev	118.9	113.5	109.0	--	2.5	29.2	49.5	--
028 ^{1,4)}	88.8 ml/rev	133.2	127.7	124.5	--	2.8	32.7	48.5	--
031 ^{1,4)}	100.0 ml/rev	150.0	144.5	141.3	--	2.8	36.5	54.4	--

1) 025-028-031 = 2500 R.P.M. max.

2) 022 = 275 bar max. int.

3) 025 = 240 bar max. Int.

4) 028-031 = 210 bar max. int.

-- Not to use because internal leakage greater than 50% of theoretical flow.

SP

VT7D or VT7DS - B42 - 1 R 00 - A 1 M0 -

Series

VT7D series-125 A2 HW
ISO 2 bolts 3019-2 mounting flange
VT7DS series- SAE C 2 bolts
Mounting flange J744

Camring

Volumetric displacement cm^3/rev (in^3/rev)

B14 = 43.9 (2.68)	B31 = 99.1 (6.05)
B17 = 55.0 (3.36)	B35 = 113.4 (6.92)
B20 = 66.0 (4.03)	B38 = 120.6 (7.36)
B22 = 70.3 (4.29)	B42 = 137.5 (8.39)
B24 = 81.1 (4.95)	045 = 145.7 (8.89)
B28 = 89.9 (5.49)	050 = 157.9 (9.64)

Type of shaft VT7DS

- 1 - keyed (SAE C 32-1)
- 2 - keyed (no SAE)
- 3 - splined (SAE C 32-4)
- 4 - splined (no SAE)

Type of shaft VT7D - VT7DS

- 5 - keyed (ISO 3019-2-G32M)

Direction of rotation (view on shaft end)

- R - clockwise
- L - counter-clockwise

Modifications

Mounting w/connection variables

4 bolts SAE flange J518

P = 1-1/4" S = 2"	
UNC	METRIC
VT7D	M0
VT7DS	00 M0 Y0 ¹⁾

1) 250 bar (3630 psi) max. int.

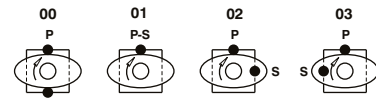
Seal class

- 1 - S1 (for mineral oil)
- 4 - S4 (for fire resistant fluids)
- 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

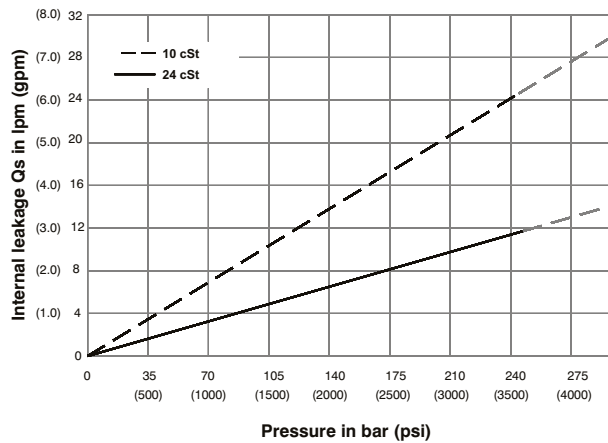
Porting combination

00 - standard



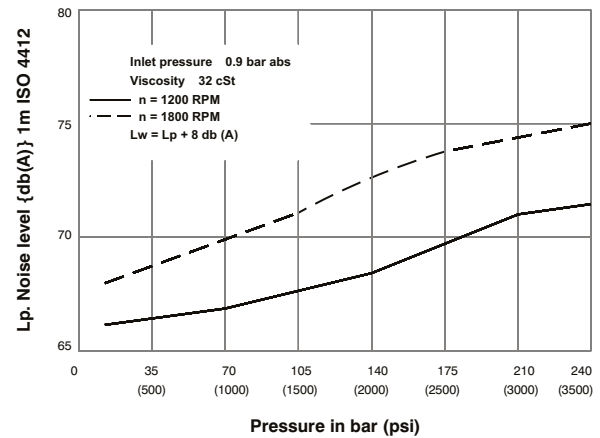
S - Suction port P - Pressure port

INTERNAL LEAKAGE (TYPICAL)

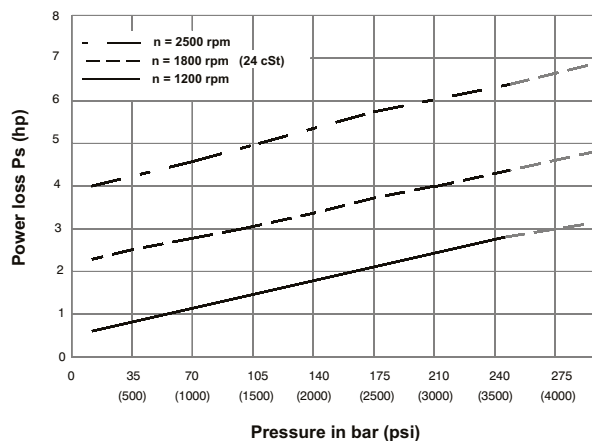


NOISE LEVEL (TYPICAL)

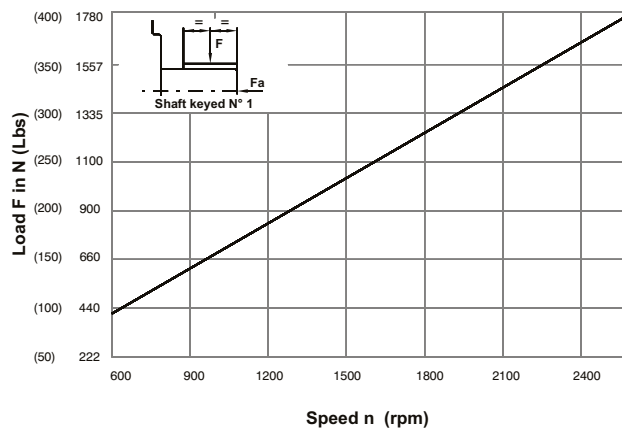
VT7D- B31



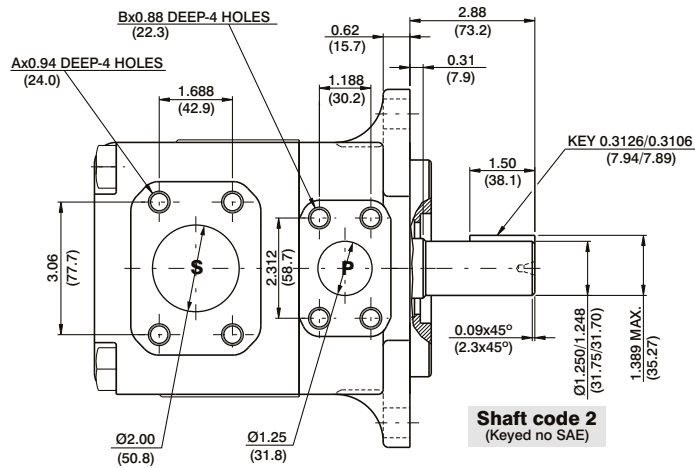
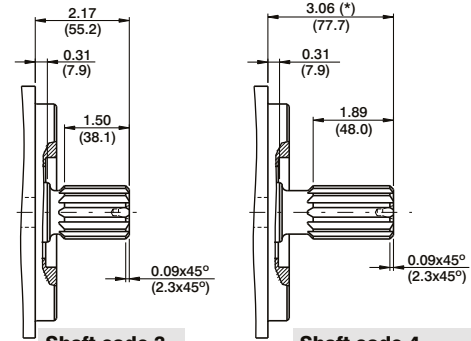
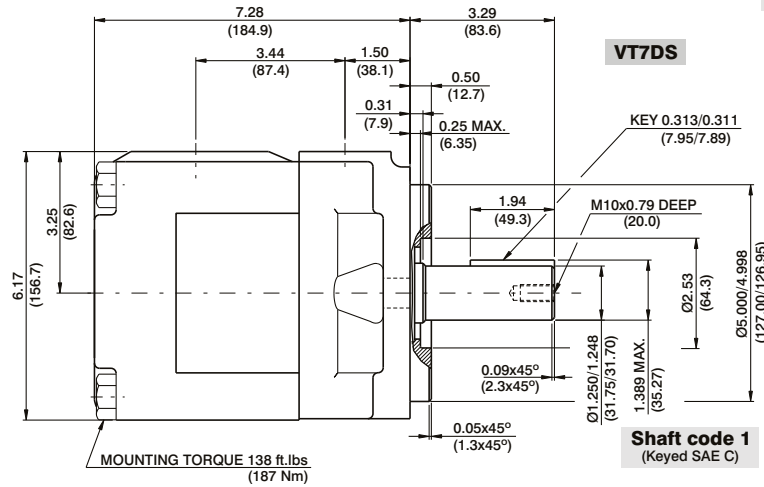
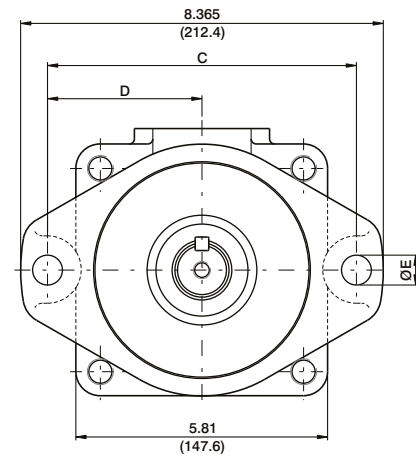
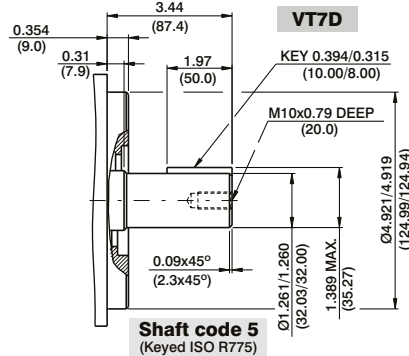
HYDROMECHANICAL POWER LOSS (TYPICAL)



PERMISSIBLE RADIAL LOAD



Maximum axial load permissible $F_a = 1200 \text{ N}$ (270 Lbs)



Shaft torque limits in ³ /rev x psi (ml/rev x bar)	
Shaft	Vp x p max.
1	38299 (43283)
2	30638 (34590)
3	54207 (61200)
4	54207 (61200)
5	39238 (44344)

	VT7DS		VT7D	
	00	M0	Y0 ¹⁾	M0
A	1/2-13 UNC	M12	M12	M12
B	7/16-14 UNC	M12	M10	M12
C	7.12 (181.0)		7.09 (180.0)	
D	3.56 (90.5)		3.54 (90.0)	
E	0.69 (17.5)		0.71 (18.0)	

1) 250 bar (3630 psi) max.int

OPERATING CHARACTERISTICS - TYPICAL (24 cST)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1800 rpm						Input power p & n = 1800 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 300 bar (4350 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 300 bar (4350 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
VT7D VT7DS	B14	2.68	43.9	20.92	79.1	19.18	72.5	17.19	64.9	3.46	2.6	27.77	20.7	58.49	43.6
	B17	3.36	55.0	26.16	98.8	24.41	92.3	22.42	84.7	3.77	2.8	33.88	25.3	71.92	53.6
	B20	4.03	66.0	31.39	118.6	29.64	112.0	27.65	104.5	4.07	3.0	39.98	29.8	85.35	63.6
	B22	4.29	70.3	33.43	126.4	31.69	119.8	29.70	112.3	4.19	3.1	42.37	31.6	90.60	67.6
	B24	4.95	81.1	38.57	145.8	36.82	139.2	34.83	131.6	4.49	3.4	48.36	36.1	103.78	77.4
	B28	5.49	89.9	42.80	161.8	41.06	155.2	39.06	147.6	4.74	3.5	53.30	39.7	114.65	85.5
	B31	6.05	99.1	47.18	178.3	45.43	171.7	43.44	164.2	4.99	3.7	58.41	43.6	125.88	93.7
	B35 ¹⁾	6.92	113.4	53.93	203.9	52.18	197.2	50.44	190.6	5.39	4.0	66.29	49.4	130.39	97.2
	B38 ¹⁾	7.36	120.6	57.35	216.8	55.61	210.2	53.87	203.6	5.59	4.2	70.28	52.4	138.38	103.2
	B42 ²⁾	8.39	137.5	65.39	247.2	63.65	240.6	62.15	234.9	6.05	4.5	79.66	59.4	149.39	111.4
	O45 ³⁾	8.89	145.7	69.29	262.0	67.11	253.6	65.47	247.5	6.74	5.0	83.75	62.4	144.41	107.7
	O50 ⁴⁾	9.64	157.9	75.14	284.0	72.96	275.8	71.78	271.3	7.08	5.3	90.58	67.5	134.54	100.3

1) B35-B38 = 280 bar (4060 psi) max.int.

2) B42 = 260 bar (3770 psi) max.int.

3) O45 = 240 bar (3500 psi) max. int.

4) O50 = 210 bar (3000 psi) max. int.

* special 2"1/2 (2.5 dia) suction also available - Please contact VELJAN

VT7DSW - B42 - X L 00 - A 1 W1 - **

Series

Camring

Volumetric displacement cm^3/rev (in^3/rev)

B14 = 43.9 (2.68)	B31 = 99.1 (6.05)
B17 = 55.0 (3.36)	B35 = 113.4 (6.92)
B20 = 66.0 (4.03)	B38 = 120.6 (7.36)
B22 = 70.3 (4.29)	B42 = 137.5 (8.39)
B24 = 81.1 (4.95)	045 = 145.7 (8.89)
B28 = 89.9 (5.49)	050 = 157.9 (9.64)

Type of shaft VT7DS

X - keyed (SAE C)
3 - keyed (SAE C)

Direction of rotation (view on shaft end)

R - clockwise
L - counter-clockwise

Modifications

IM 1115- Housing and mounting flange fluid connections are in the same plane

Mounting w/connection variables

4 bolts SAE flange J518

P = 1-1/4"	S = 2 1/2"
UNC	METRIC
VT7DSW	W1 M1

1) 250 bar (3630 psi) max. int.

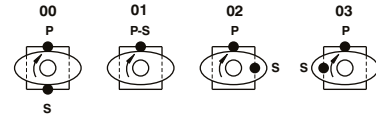
Seal class

1 - S1 (for mineral oil)
4 - S4 (for fire resistant fluids)
5 - S5 (for mineral oil and fire resistant fluids)

Design letter

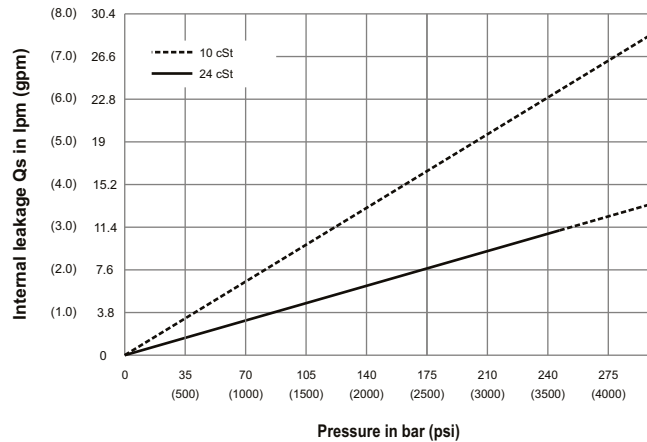
Porting combination

00 - standard

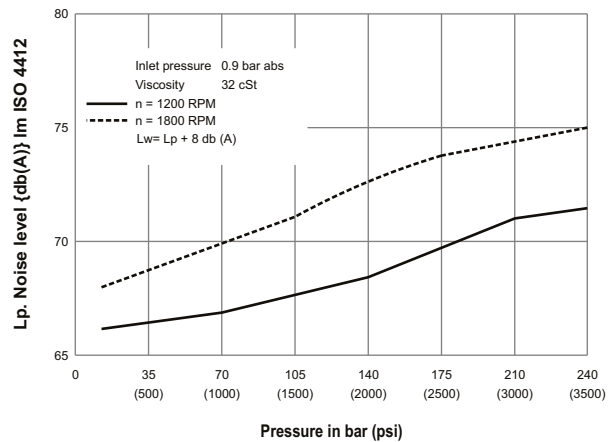


S - Suction port P - Pressure port

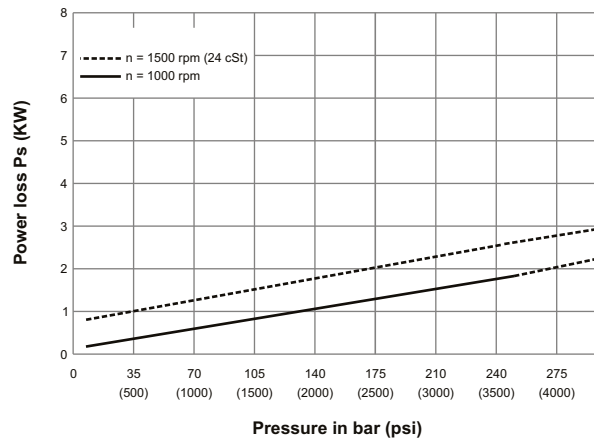
INTERNAL LEAKAGE (TYPICAL)



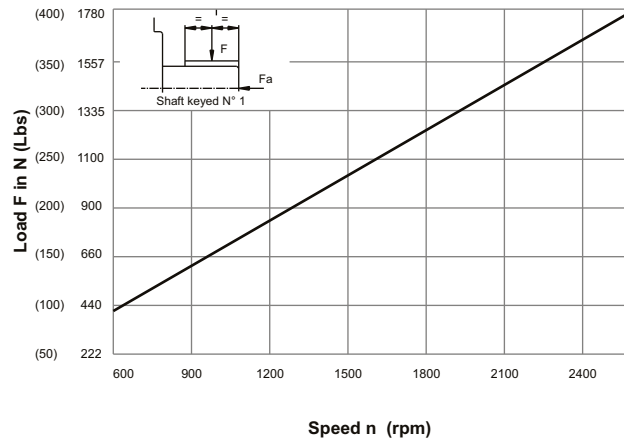
NOISE LEVEL (TYPICAL) VT7DSW- B31



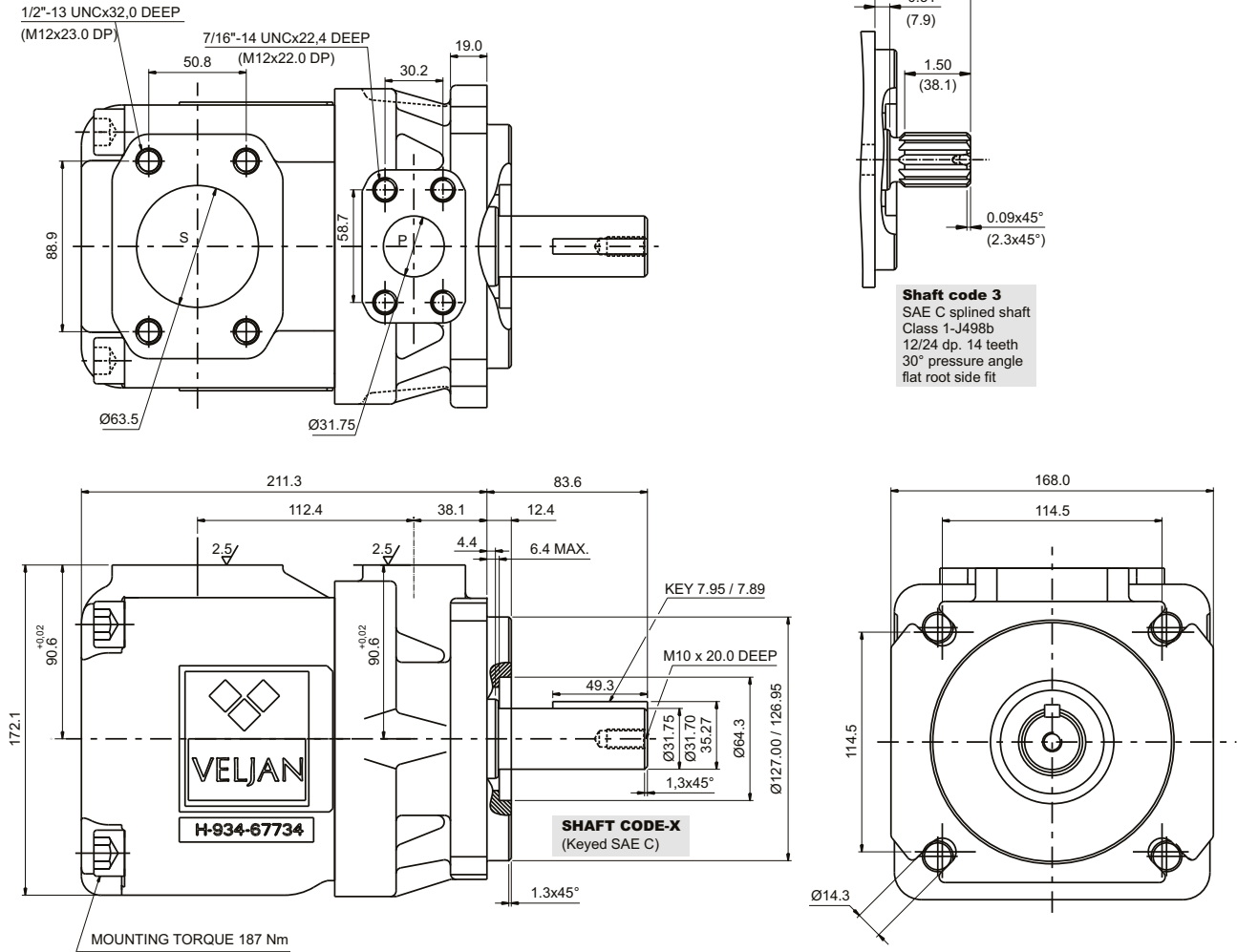
HYDROMECHANICAL POWER LOSS (TYPICAL)



PERMISSIBLE RADIAL LOAD



Maximum axial load permissible $F_a = 1200 \text{ N}$ (270 Lbs)



OPERATING CHARACTERISTICS - TYPICAL (24 cST)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 300 bar (4350 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 300 bar (4350 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
VT7DSW	B14	2.68	43.9	17.43	65.8	15.98	60.7	14.32	54.1	2.88	2.1	23.14	17.2	48.73	36.3
	B17	3.36	55.0	21.79	82.3	20.34	76.8	18.68	70.6	3.14	2.3	28.23	21.0	59.93	44.6
	B20	4.03	66.0	26.15	98.8	24.69	93.3	23.04	87.0	3.39	2.5	33.31	24.8	71.12	53.0
	B22	4.29	70.3	27.85	105.2	26.40	99.7	24.74	93.5	3.49	2.6	35.30	26.3	75.49	56.3
	B24	4.95	81.1	32.14	121.4	30.68	115.9	29.02	109.6	3.74	2.7	40.29	30.0	86.47	64.4
	B28	5.49	89.9	35.66	134.7	34.21	129.3	32.54	123.0	3.94	2.9	44.41	33.1	95.53	71.2
	B31	6.05	99.1	39.31	148.5	37.85	143.0	36.19	136.7	4.15	3.1	48.67	36.3	104.89	78.2
	B35	6.92	113.4	44.93	169.8	43.48	164.3	42.03 ¹⁾	158.8 ¹⁾	4.49	3.3	55.23	41.1	108.65 ¹⁾	81.0 ¹⁾
	B38	7.36	120.6	47.78	180.6	46.33	175.1	44.88 ¹⁾	169.6 ¹⁾	4.65	3.4	58.56	43.6	115.31 ¹⁾	85.9 ¹⁾
	B42	8.39	137.5	54.48	205.9	53.03	200.4	51.78 ³⁾	195.7 ³⁾	5.04	3.7	66.38	49.4	124.48 ³⁾	92.8 ³⁾
	045	8.89	145.7	57.73	218.2	55.92	211.3	54.55 ³⁾	206.1 ³⁾	5.61	4.1	69.78	52.0	120.33 ³⁾	89.7 ³⁾
	050	9.64	157.9	62.61	236.6	60.79	229.7	59.81 ⁴⁾	226.0 ⁴⁾	5.89	4.4	75.48	56.2	112.11 ⁴⁾	83.6 ⁴⁾

1) B35-B38 = 280 bar (4060 psi) max. int. 2) B42 = 260 bar (3770 psi) max. int. 3) 045 = 240 bar (3500 psi) max. int. 4) 050 = 210 bar (3000 psi) max. int.
^{*}special 2"1/2 (2.5 dia) suction also available - Please contact VELJAN

SP

VT7E or VT7ES - 072 - 1 R 00 - A 1 M0 -

Series

VT7E series-125 A2 HW

ISO 2 bolts 3019-2 mounting flange

VT7ES series- SAE C 2 bolts

Mounting flange J744

Camring

Volumetric displacement cm^3/rev (in^3/rev)

042 = 132.2 (8.07) 057 = 183.2 (11.18)

045 = 142.5 (8.70) 062 = 196.6 (12.0)

050 = 158.5 (9.67) 066 = 213.0 (13.0)

052 = 163.8 (10.0) 072 = 227.1 (13.86)

054 = 170.9 (10.43) 085 = 268.7 (16.40)

Type of shaft VT7E-VT7ES

5 - keyed (ISO R775-G38M)

Type of shaft VT7ES

1 - keyed (SAE CC)

2 - keyed (no SAE)

3 - splined (SAE C)

4 - splined (SAE CC)

Direction of rotation (view on shaft end)

R - clockwise

L - counter-clockwise

Modifications

Mounting w/connection variables

4 bolts SAE flange (J518)

P = 1-1/2" S = 3"

	UNC	METRIC
VT7E		M0
VT7ES	00	M0

Seal class

1 - S1 (for mineral oil)

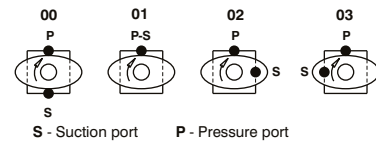
4 - S4 (for fire resistant fluids)

5 - S5 (for mineral oil and fire resistant fluids)

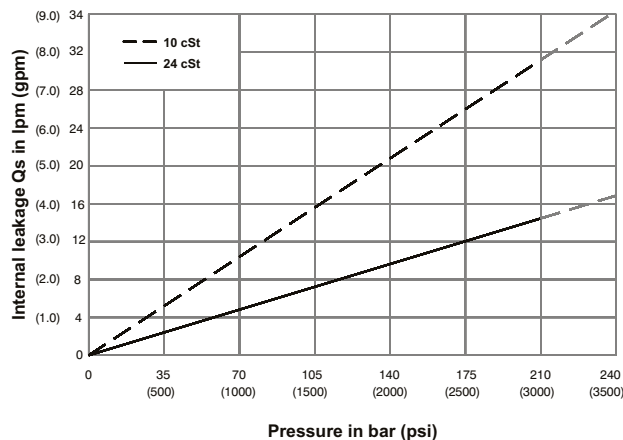
Design letter

Porting combination

00 - standard

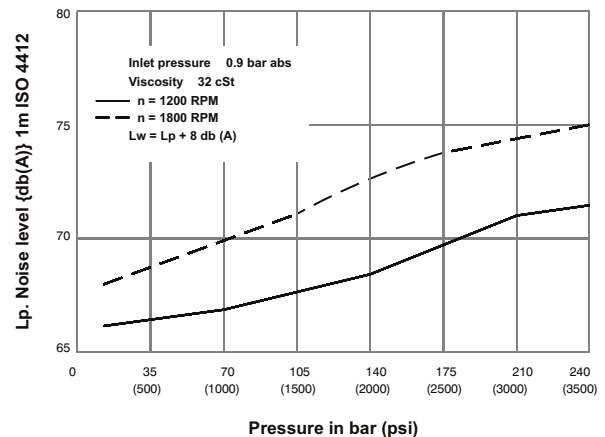


INTERNAL LEAKAGE (TYPICAL)

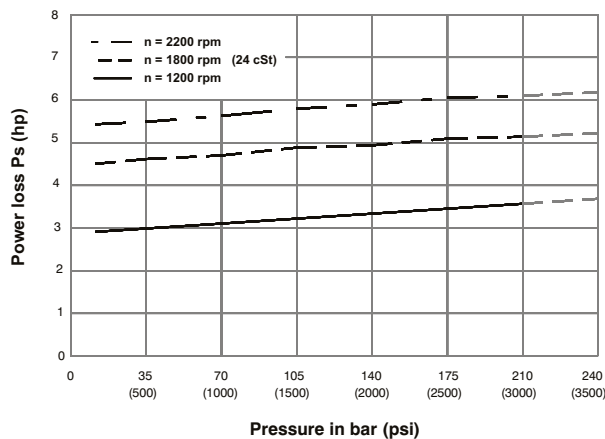


NOISE LEVEL (TYPICAL)

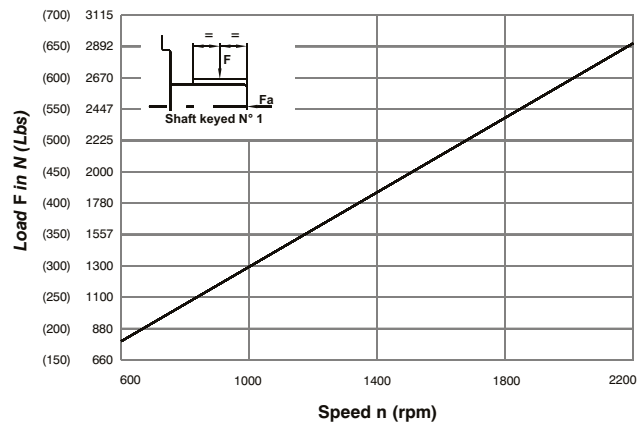
VT7E-050



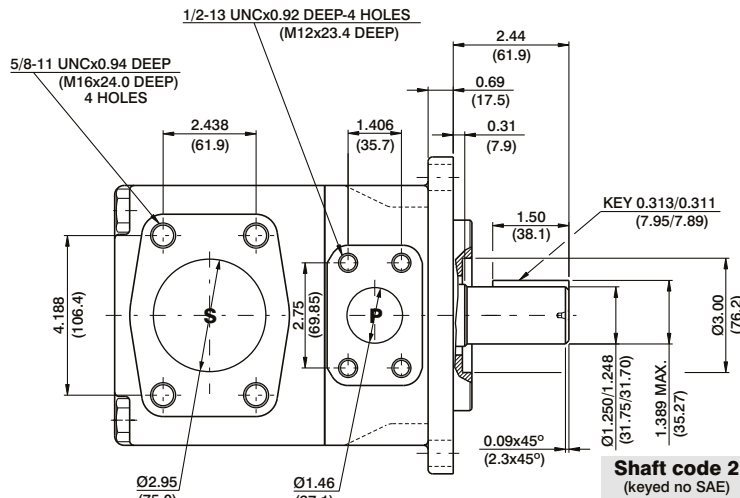
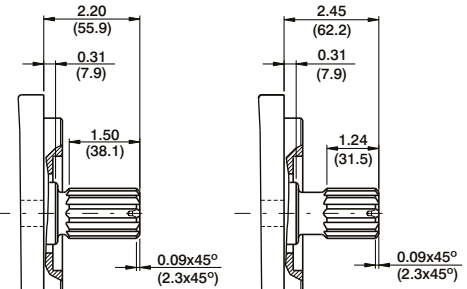
HYDROMECHANICAL POWER LOSS (TYPICAL)



PERMISSIBLE RADIAL LOAD

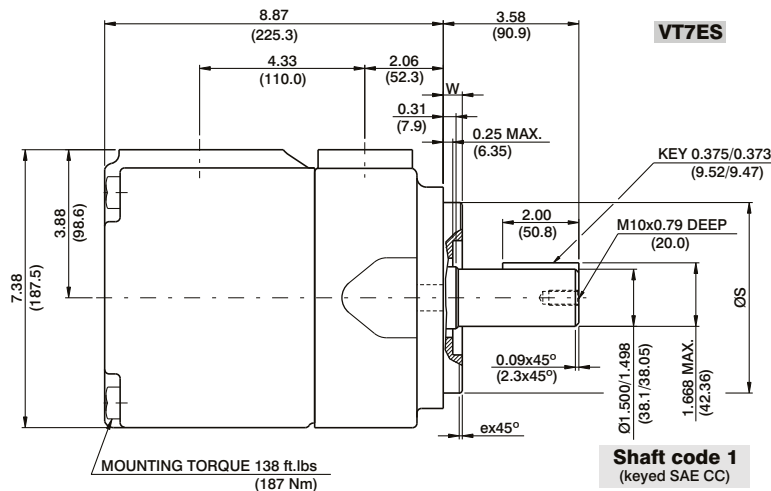


Maximum axial load permissible $F_a = 2000$ N (449 Lbs)

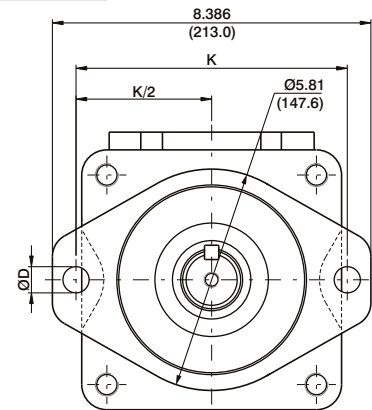


Shaft code 3
SAE C splined shaft
Class 1-J498b
12/24 dp. 14 teeth
30° pressure angle
flat root side fit

Shaft code 4
SAE CC splined shaft
Class 1-J498b
16/32 dp. 17 teeth
30° pressure angle
flat root side fit



Shaft code 1
(keyed SAE CC)



Shaft code 5
(Keyed ISO R775 - G38M)

Shaft torque limits in ³ /rev x psi (ml/rev x bar)	
Shaft	Vp x p max.
1	48273 (54555)
2	30638 (34590)
3	54207 (61200)
4	54207 (61200)
5	48273 (54555)

Alternate mounting flange					
Series	ØS		ex45°	W	K
	MAX.	Min.			
VT7E	4.921 (124.99)	4.919 (124.94)	0.079 (2.0)	0.374 (9.49)	7.087 (180.0)
VT7ES	5.00 (127.00)	4.998 (126.94)	0.051 (1.3)	0.50 (12.7)	7.126 (181.0)

OPERATING CHARACTERISTICS - TYPICAL (24 cST)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1800 rpm						Input power p & n = 1800 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
VT7E VT7ES	042	8.07	132.2	62.92	237.8	60.37	228.2	58.52	221.2	8.09	6.03	78.44	58.49	133.80	99.77
	045	8.70	142.5	67.72	255.9	65.17	246.3	63.32	239.3	8.37	6.24	84.04	62.66	143.60	107.08
	050	9.67	158.5	75.38	284.9	72.83	275.3	70.98	268.3	8.82	6.58	92.97	69.32	159.24	118.75
	052	10.00	163.8	78.37	296.2	75.82	286.6	73.97	279.6	8.99	6.70	96.47	71.94	165.36	123.31
	054	10.43	170.9	81.27	307.2	78.72	297.6	76.87	290.6	9.17	6.84	99.75	74.38	177.46	132.33
	057	11.18	183.2	87.12	329.3	84.57	319.7	82.72	312.7	9.51	7.09	106.57	79.47	189.84	141.56
	062	12.00	196.6	93.54	353.6	90.99	343.9	89.14	336.9	9.88	7.37	114.17	85.13	196.34	146.41
	066	13.00	213.0	101.44	383.4	98.89	373.8	97.04	366.8	10.34	7.71	123.38	92.0	212.46	158.43
	072	13.86	227.1	108.00	408.2	105.45	398.6	103.60	391.6	10.72	7.99	131.04	97.71	225.86	166.42
	085 ¹⁾	16.40	268.7	127.79	483.0	126.13	476.7	--	--	11.88	8.85	101.66	75.80	--	--

1) 085 = 90 bar (1300 psi) max.int. & 085 = 2000 rpm max.

* special 3/1 1/2 (3.5 dia) suction also available - Please contact VELJAN

VT6 -DOUBLE

VANE PUMPS

VTXBB 1 - B09 - B11 - 1 R 00 - D 1 00 *

Series _____

Mounting _____
 1 - SAE A
 2 - SAE B

Camring for "P1" & "P2" _____

Volumetric displacement cm³ / rev (in³ / rev)
 B02 = 5.8 (0.35)
 B03 = 9.8 (0.59)
 B04 = 12.8 (0.78)
 B05 = 15.9 (0.97)
 B06 = 19.8 (1.21)
 B07 = 22.5 (1.37)
 B08 = 24.9 (1.52)
 B09 = 28.0 (1.71)
 B10 = 31.8 (1.94)
 B11 = 34.9 (2.13)
 B12 = 41.0 (2.50)
 B14 = 45.0 (2.75)

Type of Shaft _____
 1 - Keyed (Non SAE)
 3 - Splined

Direction of rotation (view on shaft end) _____
 R - clockwise
 L - counter-clockwise

Modifications _____

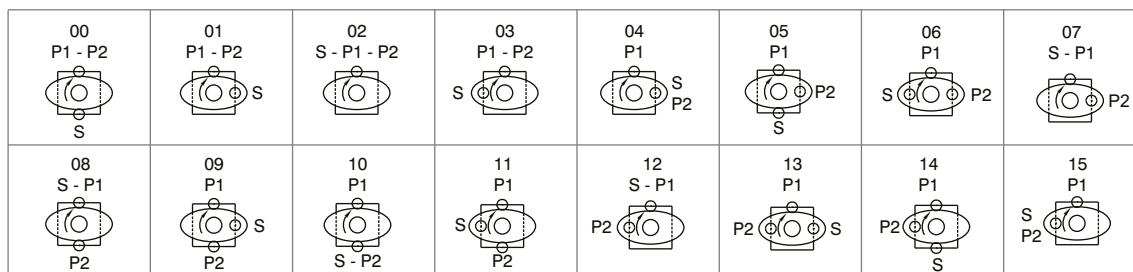
Port connections

CODE	S	P1 & P2
00	2" SAE 4 bolt (UNC)	SAE 12 1 1/16" 12 UNF-2B
01		3/4" SAE 4 bolt (UNC)
M0	2" SAE 4 bolt (METRIC)	3/4" SAE 4 bolt (METRIC)

Seal class
 1 - S1 (for mineral oil)
 4 - S4 (for fire resistant fluids)
 5 - S5 (for mineral oil and fire resistant fluids)

Design letter _____

Porting combination
 00 - standard



S: Suction port P1 & P2 : Pressure ports

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

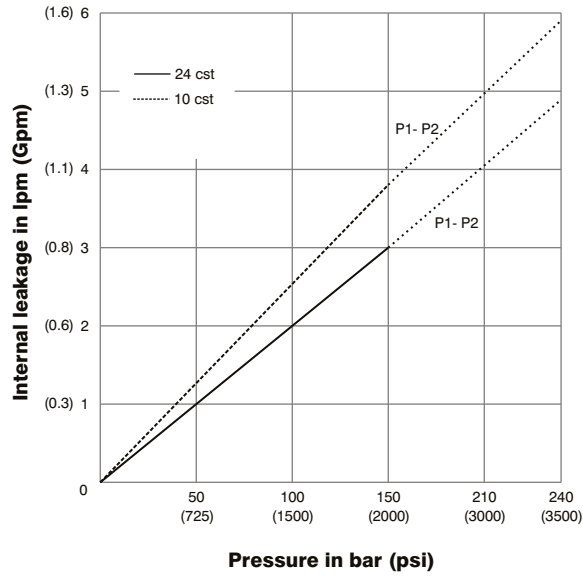
Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 210 bar (3000 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 210 bar (3000 psi)	
		in ³ / rev	cm ³ / rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1 & P2	B02	0.35	5.8	2.30	8.7	1.4	5.9	--	--	0.53	0.4	2.81	2.1	--	--
	B03	0.59	9.8	3.88	14.7	2.9	11.9	--	--	0.67	0.5	3.62	2.7	--	--
	B04	0.78	12.8	5.08	19.2	4.33	16.4	3.97	15.0	0.93	0.7	5.23	3.9	10.06	7.5
	B05	0.97	15.9	6.31	23.8	5.55	21.0	5.18	19.6	1.00	0.75	6.64	4.9	11.2	8.3
	B06	1.21	19.8	7.85	29.7	7.12	26.9	6.66	25.2	1.07	0.8	8.05	6.0	12.34	9.2
	B07	1.37	22.5	8.92	33.7	8.17	30.9	7.80	29.5	1.20	0.9	9.05	6.7	14.02	10.4
	B08	1.52	24.9	9.89	37.4	9.15	34.6	8.78	33.2	1.34	1.0	10.05	7.5	15.69	11.7
	B09	1.71	28.0	11.11	42.0	10.37	39.2	10.00	37.8	1.47	1.1	11.94	8.9	23.60	17.6
	B10	1.94	31.8	12.61	47.7	11.87	44.9	11.51	43.5	1.6	1.2	13.0	9.7	26.0	19.6
	B11	2.13	34.9	13.85	52.3	13.09	49.5	12.72	48.1	1.7	1.3	14.0	10.5	28.0	21.0
	B12	2.50	41.0	16.27	61.5	15.53	58.7	*	*	1.8	1.4	15.02	11.2	*	*
	B14	2.75	45.0	17.86	67.5	17.12	64.7	**	**	2.1	1.6	15.42	11.5	**	**

-- Not to use because internal leakage greater than 50 % of theoretical flow.

* B12= 210 bar(3000 psi) Max.Int

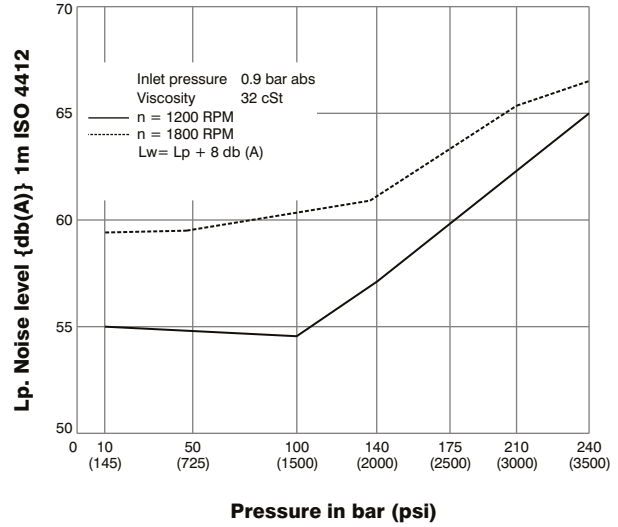
** B14= 175 bar(2500 psi) Max.Int

INTERNAL LEAKAGE (TYPICAL)



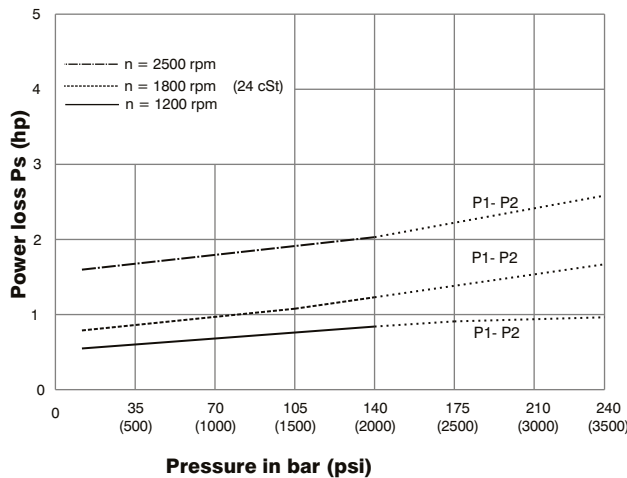
Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow.
Total leakage is the sum of each section loss at its operating conditions.

NOISE LEVEL (TYPICAL) VTXBB- B10-B09



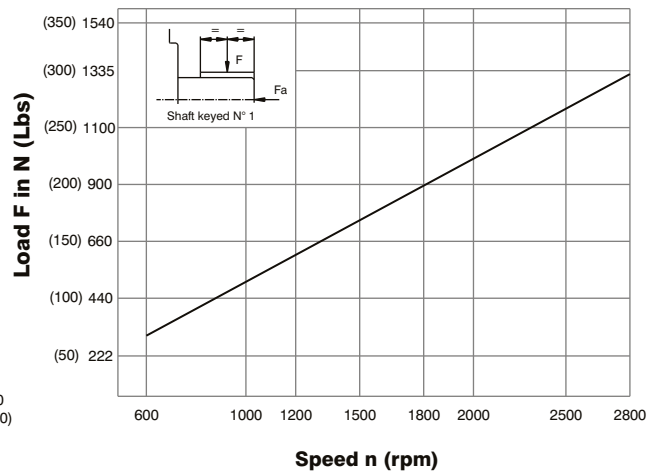
Double pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)

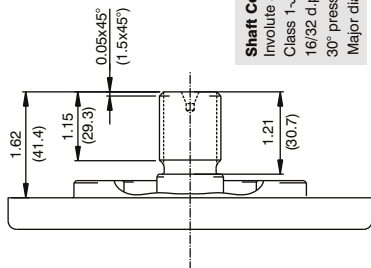


Total hydromechanical power loss is the sum of each section at its operating conditions.

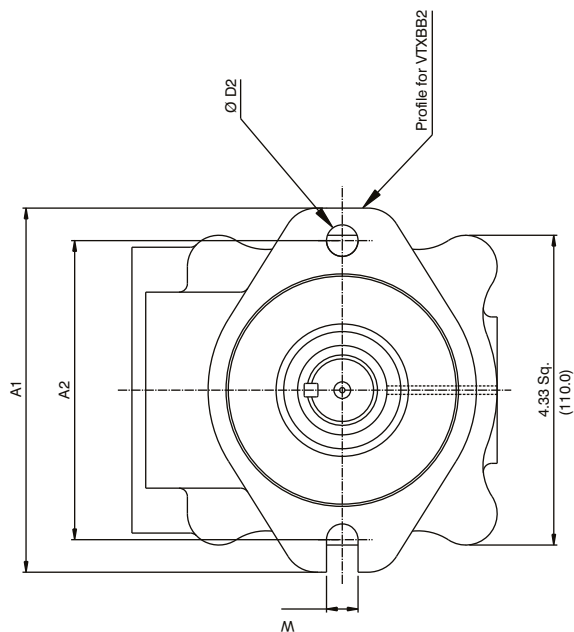
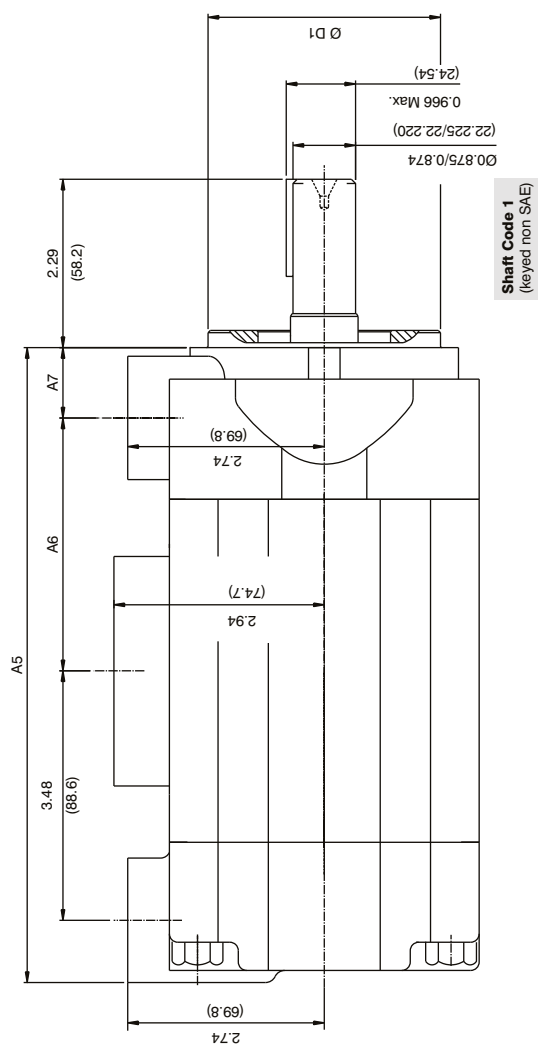
PERMISSIBLE RADIAL LOAD



Maximum permissible axial load Fa = 800N (180 lbs)



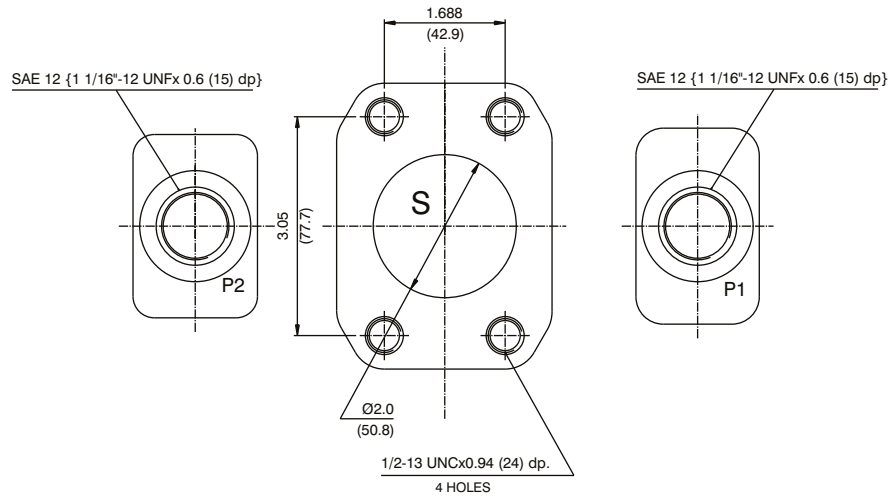
Shaft Code 3
Involute Splined shaft
Class 1-J498b
16/32 d.p 13 teeth
30° press. angle
Major dia. fit



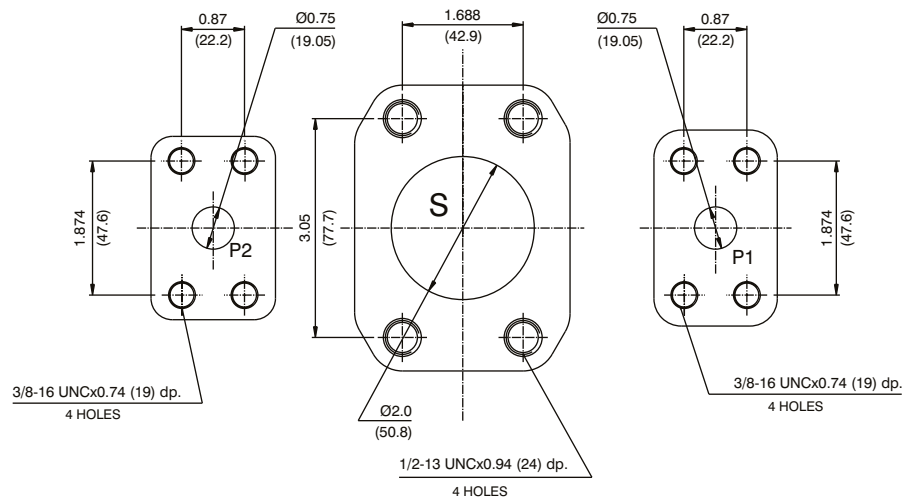
Shaft Code 1
(keyed non SAE)

DIMENSIONS																					
MODEL	A1		A2		A3		A4		A5		A6		A7		ØD1		W		ØD2		
	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	
VTXB1	5.11	130	4.18	106.2	0.44	11.2	0.24	6.1				3.53	89.9	0.98	25	3.25/3.24	82.55/82.50	0.44	11.2	--	--
VTXB2	6.87	174.5	5.74	146	0.5	12.7	0.37	9.4	8.85	225		3.36	85.4	1.22	31	4.00/3.99	101.60/101.55	--	--	0.56	14.3

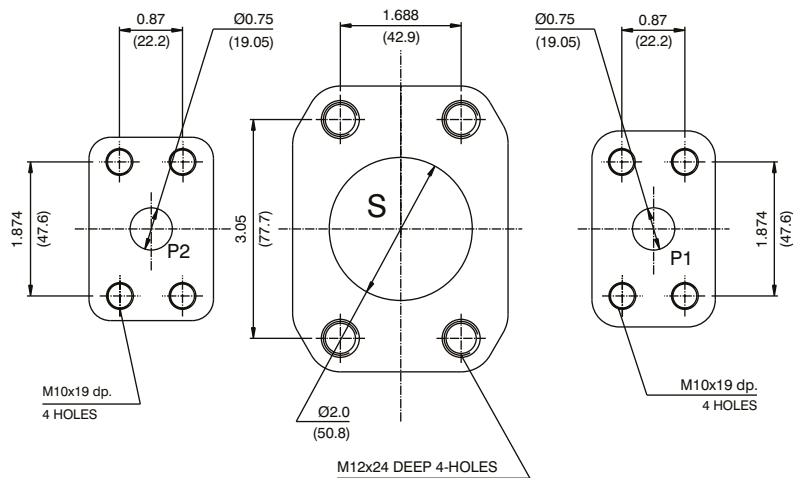
Port Connection : 00



Port Connection : 01



Port Connection : M0



VT6BB - B09 - B11 - 1 R 00 - A 1 00 *

Series

Cam ring for "P1" & "P2"

Volumetric displacement cm^3/rev (in^3/rev)

B02 = 5.8 (0.35)
 B03 = 9.8 (0.59)
 B04 = 12.8 (0.78)
 B05 = 15.9 (0.97)
 B06 = 19.8 (1.21)
 B07 = 22.5 (1.37)
 B08 = 24.9 (1.52)
 B09 = 28.0 (1.71)
 B10 = 31.8 (1.94)
 B11 = 34.9 (2.13)
 B12 = 41.0 (2.50)
 B14 = 45.0 (2.75)

Type of Shaft

1 - Keyed (Non SAE)
 3 - Splined

Direction of rotation (view on shaft end)

R - clockwise
 L - counter-clockwise

Porting combination

00 - standard

Modifications

Port connections

CODE	S	P1 & P2
00	2" SAE 4 bolt (UNC)	SAE 12 1 1/16" 12 UNF-2B
01		3/4" SAE 4 bolt (UNC)
M0	2" SAE 4 bolt (METRIC)	3/4" SAE 4 bolt (METRIC)

Seal class

1 - S1 (for mineral oil)
 4 - S4 (for fire resistant fluids)
 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

00 P1 - P2 	01 P1 - P2 	02 S - P1 - P2 	03 P1 - P2 	04 P1 	05 P1 	06 P1 	07 S - P1
08 S - P1 	09 P1 	10 P1 	11 P1 	12 S - P1 	13 P1 	14 P1 	15 P1

S - Suction port

P - Pressure port

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

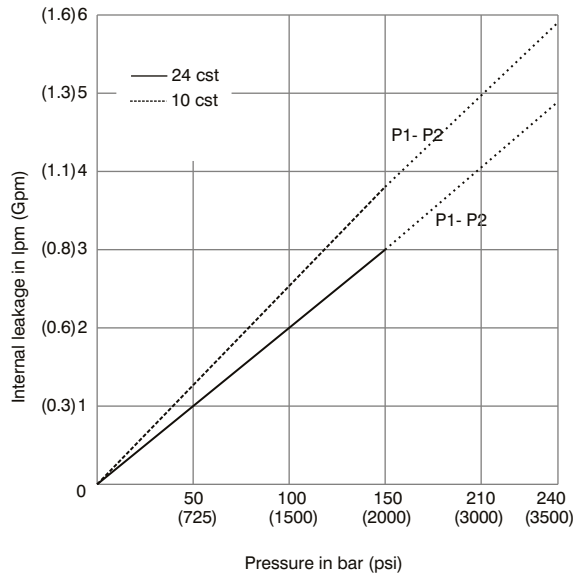
Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 210 bar (3000 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 210 bar (3000 psi)	
		in^3/rev	cm^3/rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1 & P2	B02	0.35	5.8	2.30	8.7	1.4	5.9	--	--	0.53	0.4	2.81	2.1	--	--
	B03	0.59	9.8	3.88	14.7	2.9	11.9	--	--	0.67	0.5	3.62	2.7	--	--
	B04	0.78	12.8	5.08	19.2	4.33	16.4	3.97	15.0	0.93	0.7	5.23	3.9	10.06	7.5
	B05	0.97	15.9	6.31	23.8	5.55	21.0	5.18	19.6	1.00	0.75	6.64	4.9	11.2	8.3
	B06	1.21	19.8	7.85	29.7	7.12	26.9	6.66	25.2	1.07	0.8	8.05	6.0	12.34	9.2
	B07	1.37	22.5	8.92	33.7	8.17	30.9	7.80	29.5	1.20	0.9	9.05	6.7	14.02	10.4
	B08	1.52	24.9	9.89	37.4	9.15	34.6	8.78	33.2	1.34	1.0	10.05	7.5	15.69	11.7
	B09	1.71	28.0	11.11	42.0	10.37	39.2	10.00	37.8	1.47	1.1	11.94	8.9	23.60	17.6
	B10	1.94	31.8	12.61	47.7	11.87	44.9	11.51	43.5	1.6	1.2	13.0	9.7	26.0	19.6
	B11	2.13	34.9	13.85	52.3	13.09	49.5	12.72	48.1	1.7	1.3	14.0	10.5	28.0	21.0
	B12	2.50	41.0	16.27	61.5	15.53	58.7	*	*	1.8	1.4	15.02	11.2	*	*
	B14	2.75	45.0	17.86	67.5	17.12	64.7	**	**	2.1	1.6	15.42	11.5	**	**

-- Not to use because internal leakage greater than 50 of theoretical flow.

*B12 = 210bar (3000psi) Max. Int

**B14 = 175bar (2500psi) Max. Int

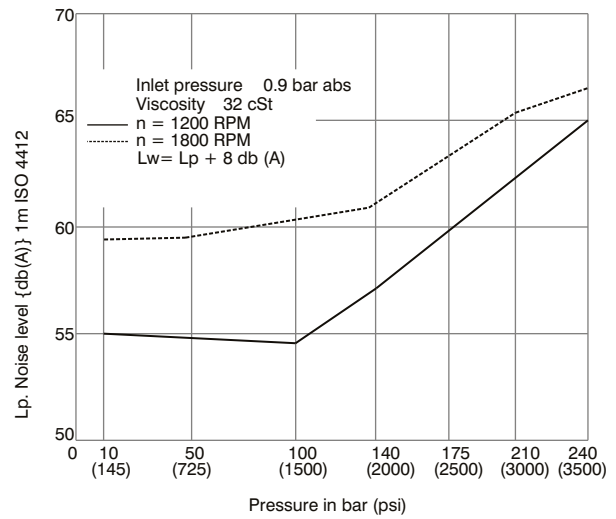
INTERNAL LEAKAGE (TYPICAL)



Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50 of theoretical flow.
Total leakage is the sum of each section loss at its operating conditions.

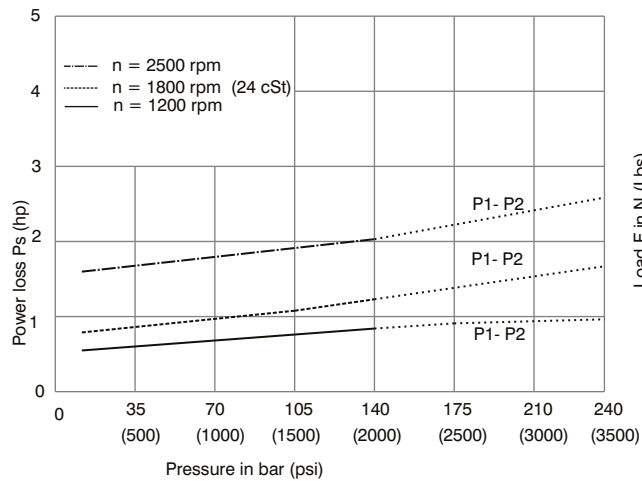
NOISE LEVEL (TYPICAL)

VT6BB- B10-B04



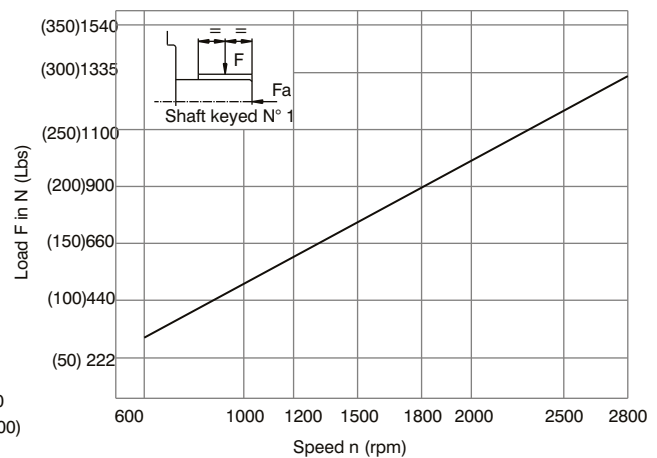
Double pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)



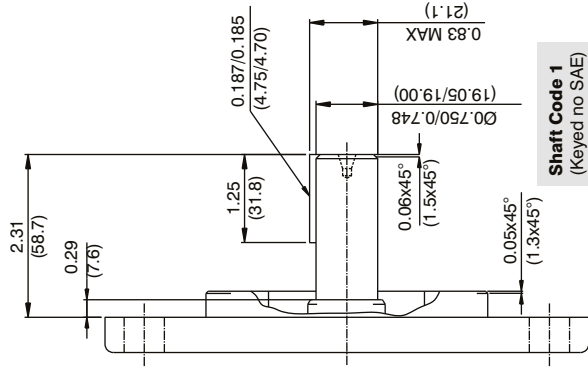
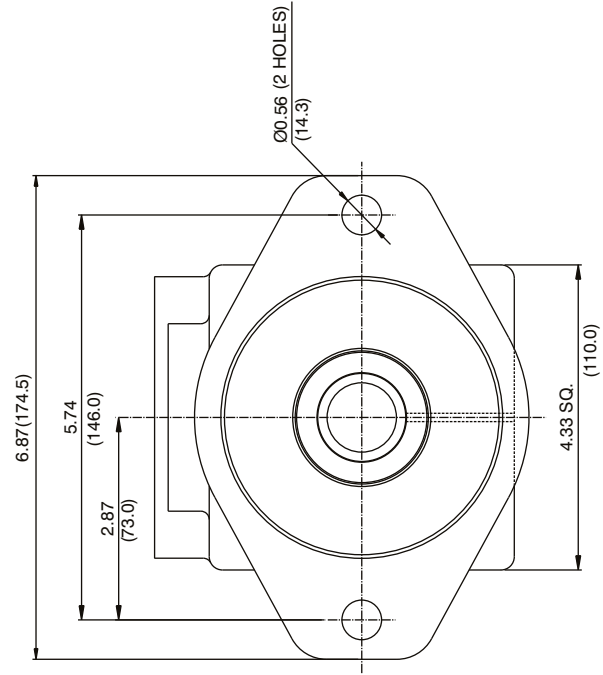
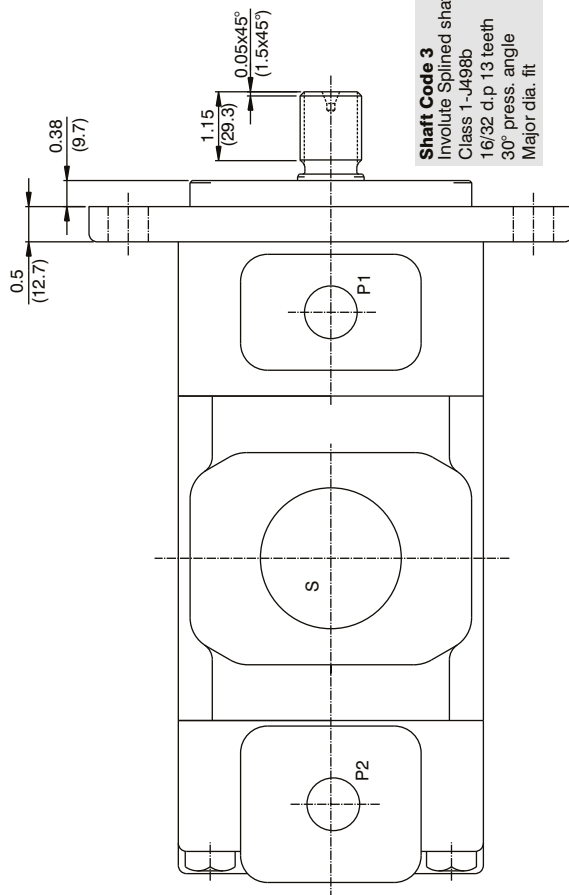
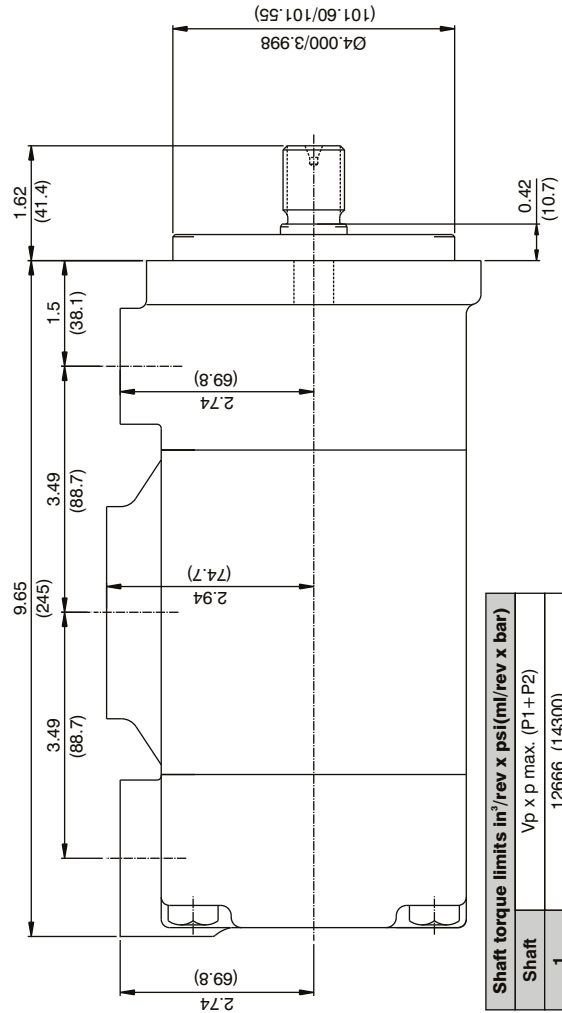
Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



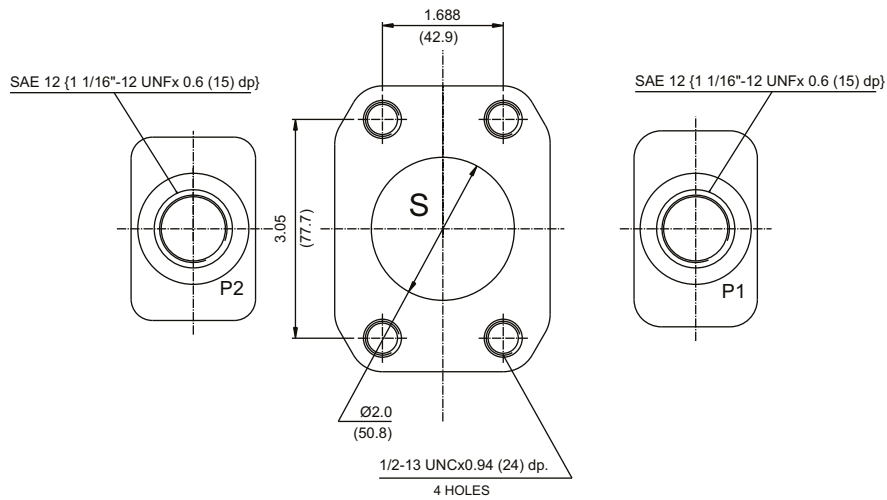
Maximum permissible axial load $F_a = 800\text{N}$ (180 lbs)

DP

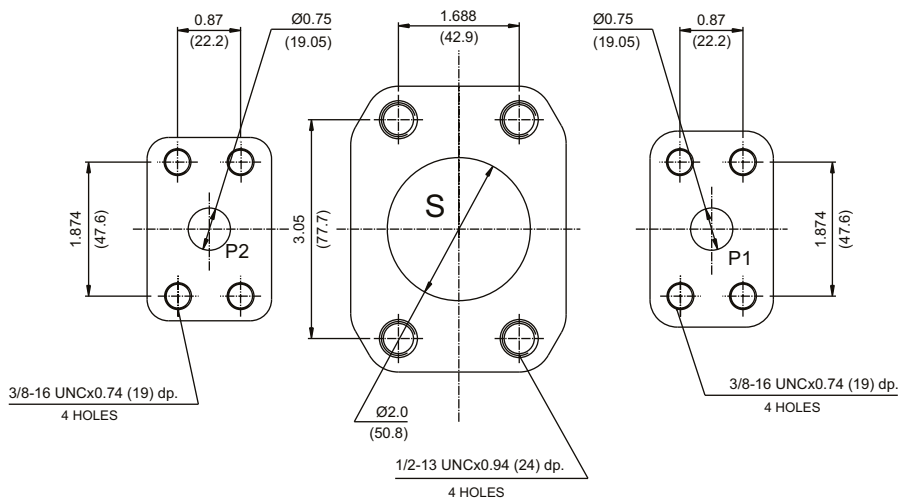


Shaft torque limits in ³ /rev x psi (ml/rev x bar)	
Shaft	Vp x p max. (P1 + P2)
1	12666 (14300)
3	18246 (20602)

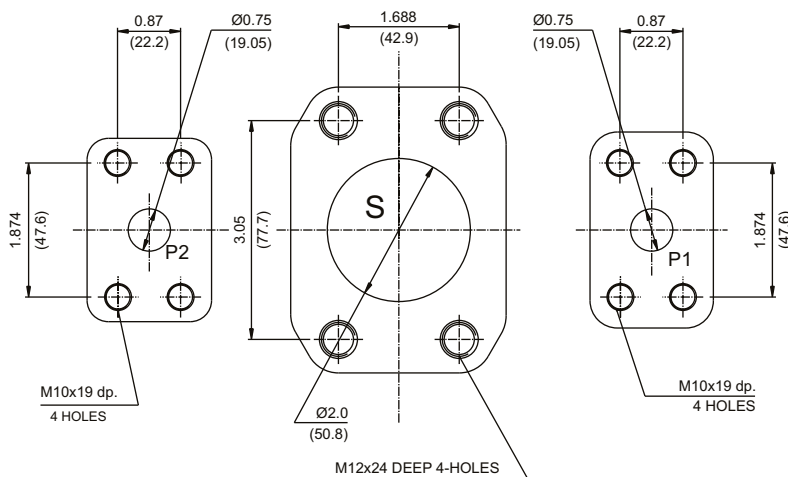
Port Connection : 00



Port Connection : 01



Port Connection : M0



VT6CB - 022 - B08-1 R 00 - C 1 - 02 *

Series

Camring for "P1"

Volumetric displacement cm^3/rev (in^3/rev)

*003/B03/Y03 = 10.8 (0.66)	015/B15/Y15 = 50.5 (3.08)
005/B05/Y05 = 17.2 (1.05)	017/B17/Y17 = 58.3 (3.56)
006/B06/Y06 = 21.3 (1.30)	020/B20/Y20 = 63.8 (3.89)
008/B08/Y08 = 26.4 (1.61)	022/B22/Y22 = 70.3 (4.29)
010/B10/Y10 = 34.1 (2.08)	025/B25/Y25 = 79.3 (4.84)
012/B12/Y12 = 37.1 (2.26)	028/B28/Y28 = 88.8 (5.42)
014/B14/Y14 = 46.0 (2.81)	031/B31/Y31 = 100.0 (6.10)

* '0' - Uni - directional 'B' - Bi - directional 'Y' - Bi - directional for cold start

Camring for "P2"

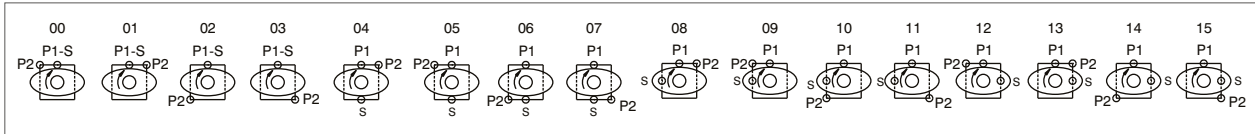
Volumetric displacement cm^3/rev (in^3/rev)

B02 = 5.8 (0.35)	B08 = 24.9 (1.52)
B03 = 9.8 (0.59)	B09 = 28.0 (1.71)
B04 = 12.8 (0.78)	B10 = 31.8 (1.94)
B05 = 15.9 (0.97)	B11 = 34.9 (2.13)
B06 = 19.8 (1.21)	B12 = 41.0 (2.50)(cont. 175 bar, Max. int 210 bar)
B07 = 22.5 (1.37)	B14 = 45.0 (2.75)(cont. 140 bar, Max. int 175 bar)

Type of shaft

- 1- keyed (no SAE)
3- splined

Porting combination



Modifications

Mounting W/connection variables

S = 2 1/2" SAE 4-Bolt Pad.

CODE	P1	P2
01	1" SAE 4 bolt Pad. (UNC)	3/4" SAE 4 bolt Pad. (UNC)
M1	1" SAE 4 bolt Pad. (Metric)	3/4" SAE 4 bolt Pad. (Metric)
02	SAE 16,1 5/16" 12 UNF-2B	SAE 12,1 1/16" 12 UNF-2B

Seal class

- 1 - S1 (for mineral oil)
4 - S4 (for fire resistant fluids)
5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination

00 - standard

Direction of rotation
(view on shaft end)
R - clockwise
L - counter-clockwise

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

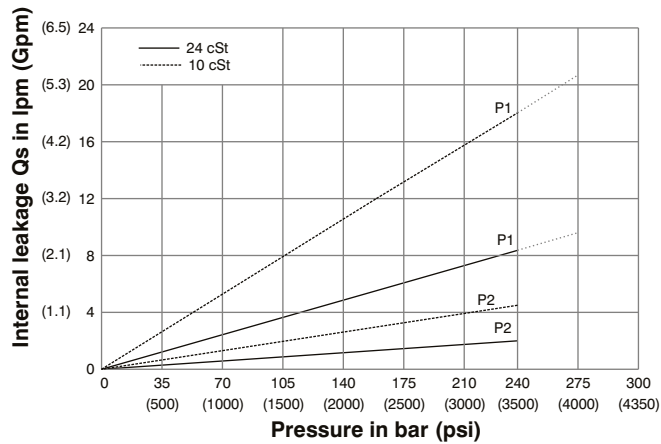
Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in^3/rev	cm^3/rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1	003	0.66	10.8	4.29	16.2	2.96	11.2	2.04	7.7	1.74	1.3	7.11	5.3	11.26	8.4
	005	1.05	17.2	6.83	25.8	5.50	20.8	4.57	17.3	1.88	1.4	10.06	7.5	16.36	12.2
	006	1.30	21.3	8.44	31.9	7.11	26.9	6.19	23.4	2.01	1.5	11.94	8.9	19.71	14.7
	008	1.61	26.4	10.48	39.6	9.15	34.6	8.22	31.1	2.15	1.6	14.35	10.7	22.93	17.7
	010	2.08	34.1	13.52	51.1	12.19	46.1	11.26	42.6	2.28	1.7	18.64	13.4	29.90	22.3
	012	2.26	37.1	14.71	55.6	13.36	50.6	12.46	47.1	2.28	1.7	19.31	14.4	32.32	24.1
	014	2.81	46.0	18.25	69.0	16.93	64.0	16.00	60.5	2.55	1.9	23.60	17.6	39.56	29.5
	015	3.08	50.5	20.00	75.6	18.73	73.2	19.02	67.5	2.68	2.0	25.61	19.1	42.91	32.0
	017	3.56	58.3	23.12	87.4	21.79	82.4	20.87	78.9	2.82	2.1	29.37	21.9	49.48	36.9
	020	3.89	63.8	25.32	95.7	23.99	90.7	23.07	87.2	2.95	2.2	31.92	23.8	53.91	40.2
	022	4.29	70.3	27.88	105.4	26.56	100.4	25.63	96.9	3.08	2.3	35.00	26.1	59.14	44.1
	025 ¹⁾	4.84	79.3	31.46	118.9	30.13	113.9	29.21	110.4	3.35	2.5	39.16	29.2	66.38	49.5
	028 ^{1,2)}	5.42	88.8	35.24	133.2	33.92	128.2	33.28	125.8	3.75	2.8	43.85	32.7	65.04	48.5
	031 ^{1,2)}	6.10	100.0	39.68	150.0	38.35	145.0	37.72	142.6	3.75	2.8	48.95	36.5	72.95	54.4
P2				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 210 bar (3000 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 210 bar (3000 psi)	
	B02	0.35	5.8	2.30	8.7	1.4	5.9	--	--	0.53	0.4	2.81	2.1	--	--
	B03	0.59	9.8	3.88	14.7	2.9	11.9	--	--	0.67	0.5	3.62	2.7	--	--
	B04	0.78	12.8	5.08	19.2	4.33	16.4	3.97	15.0	0.93	0.7	5.23	3.9	10.06	7.5
	B05	0.97	15.9	6.31	23.8	5.55	21.0	5.18	19.6	1.00	0.75	6.64	4.9	11.2	8.3
	B06	1.21	19.8	7.85	29.7	7.12	26.9	6.66	25.2	1.07	0.8	8.05	6.0	12.34	9.2
	B07	1.37	22.5	8.92	33.7	8.17	30.9	7.80	29.5	1.20	0.9	9.05	6.7	14.02	10.4
	B08	1.52	24.9	9.89	37.4	9.15	34.6	8.78	33.2	1.34	1.0	10.05	7.5	15.69	11.7
	B09	1.71	28.0	11.11	42.0	10.37	39.2	10.00	37.8	1.47	1.1	11.94	8.9	23.60	17.6
	B10	1.94	31.8	12.61	47.7	11.87	44.9	11.51	43.5	1.6	1.2	13.0	9.7	26.0	19.6
	B11	2.13	34.9	13.85	52.3	13.09	49.5	12.72	48.1	1.7	1.3	14.0	10.5	28.0	21.0
	B12	2.50	41.0	16.27	61.5	15.53	58.7	*	*	1.8	1.4	15.02	11.2	*	*
	B14	2.75	45.0	17.86	67.5	17.12	64.7	**	**	2.1	1.6	15.42	11.5	**	**

1) 025-028-031 = 2500 RPM. max. 2) 028-031 = 210 bar (3000 psi) max. int.

*B12 = 210 bar (3000 psi) max. int **B14 = 175 bar (2500 psi) max. int.

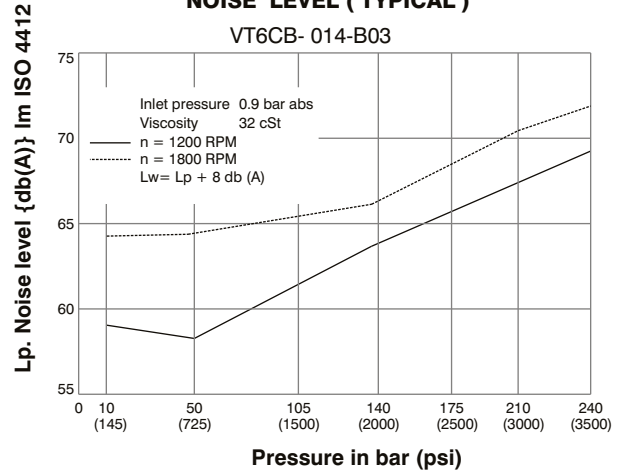
- Not to use because internal leakage greater than 50 % of theoretical flow.

INTERNAL LEAKAGE (TYPICAL)



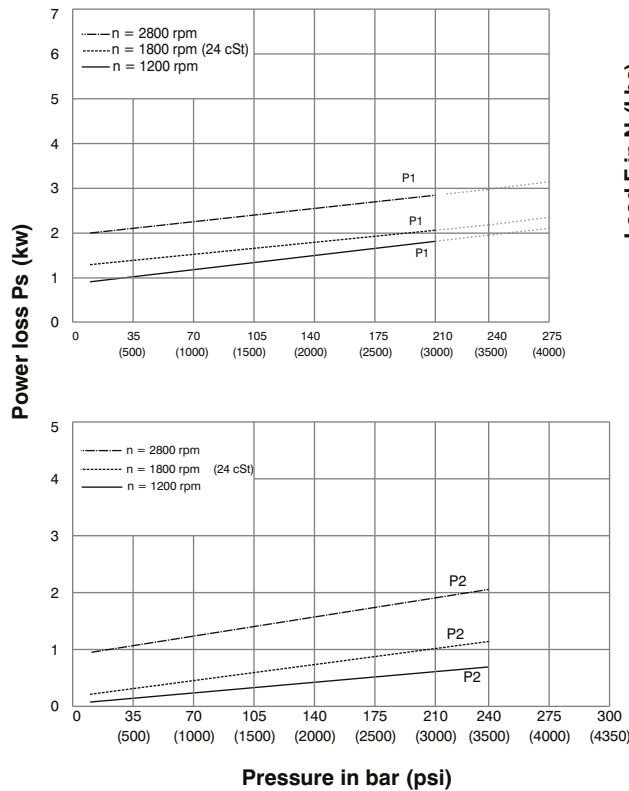
Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow.
Total leakage is the sum of each section loss at its operating conditions.

NOISE LEVEL (TYPICAL)



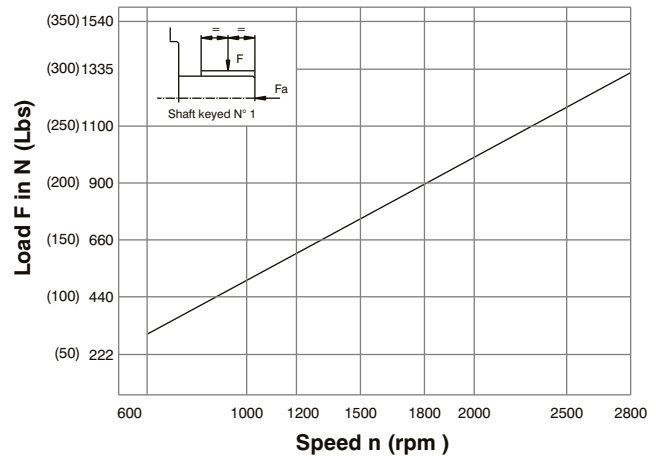
Double pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)

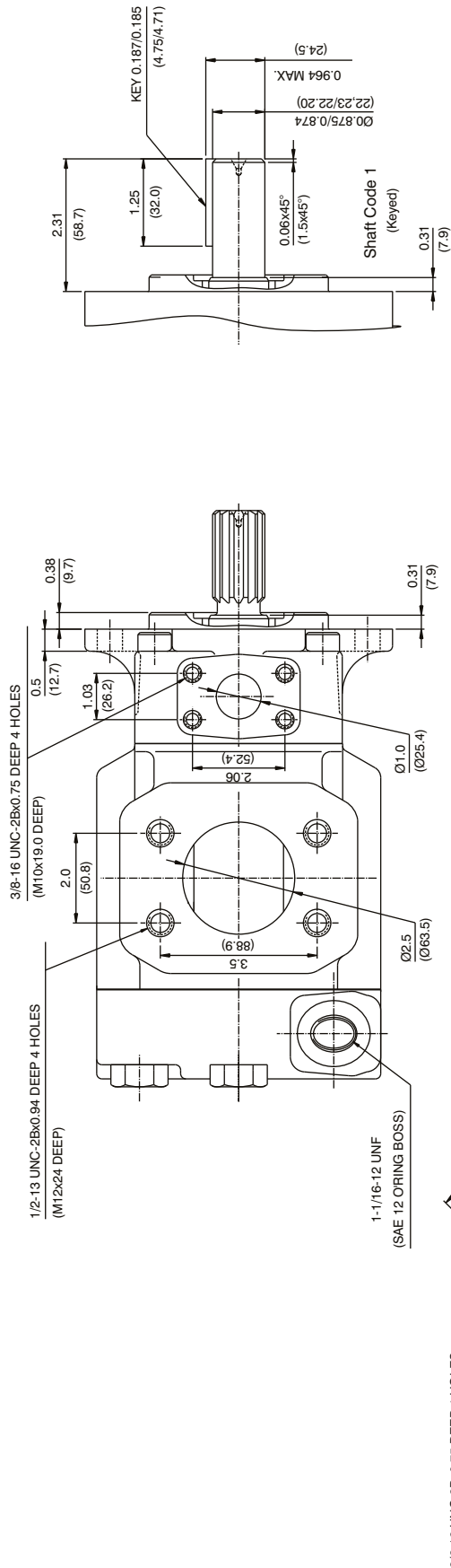
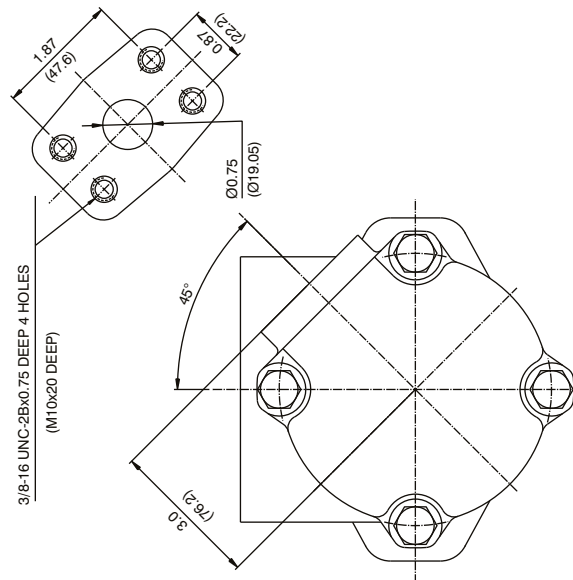
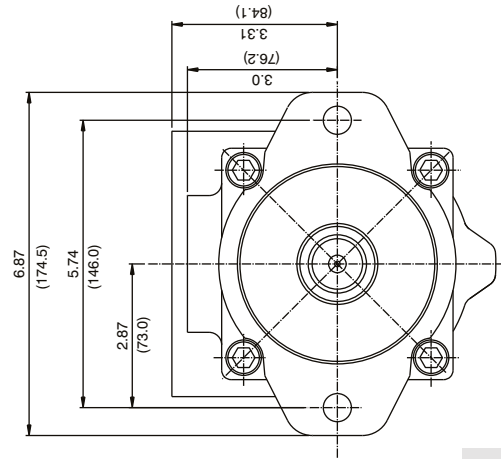
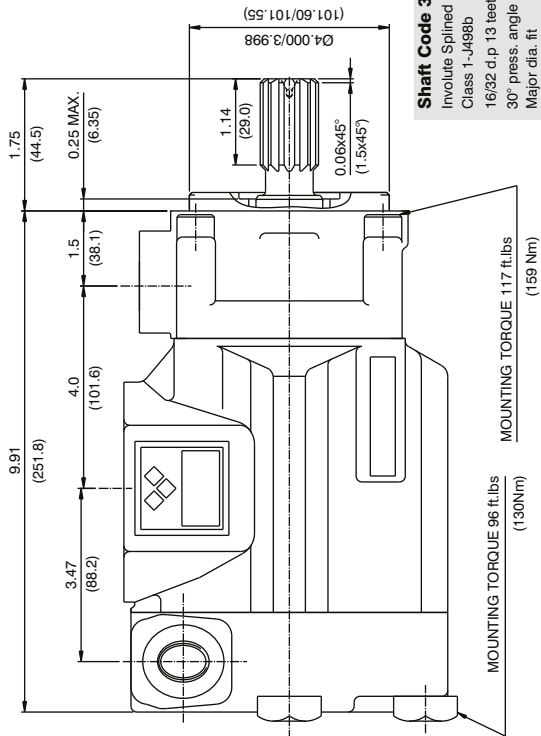


Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



DP



Series VT6CC W - 022 - 008 - 1 R 00 - C 1 - 00 *

Use for severe duty shaft only

Cam ring for "P1" & "P2"

Volumetric displacement cm³/rev (in³/rev)

*003/B03/Y03 = 10.8 (0.66)	015/B15/Y15 = 50.5 (3.08)
005/B05/Y05 = 17.2 (1.05)	017/B17/Y17 = 58.3 (3.56)
006/B06/Y06 = 21.3 (1.30)	020/B20/Y20 = 63.8 (3.89)
008/B08/Y08 = 26.4 (1.61)	022/B22/Y22 = 70.3 (4.29)
010/B10/Y10 = 34.1 (2.08)	025/B25/Y25 = 79.3 (4.84)
012/B12/Y12 = 37.1 (2.26)	028/B28/Y28 = 88.8 (5.42)
014/B14/Y14 = 46.0 (2.81)	031/B31/Y31 = 100.0 (6.10)

*'0' - Uni - directional 'B' - Bi - directional 'Y' - Bi - directional for cold start

Type of shaft

- 1 - keyed (no SAE)
- 3 - splined (SAE BB)
- 5 - splined (SAE B)

W version

- 2 - keyed (SAE BB)
- S - splined (DIN 5462)

Modifications

Mounting W/connection variables

P2	1"	3/4"	1"	3/4"
code	Unc	00	01	10
	Metric	0M	W0	1M

1) for 46 ml/rev max.
2) for 126 ml/rev max.
The large cartridge must be always mounted in the front.

Seal class

- 1 - S1 (for mineral oil)
- 4 - S4 (for fire resistant fluids)
- 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

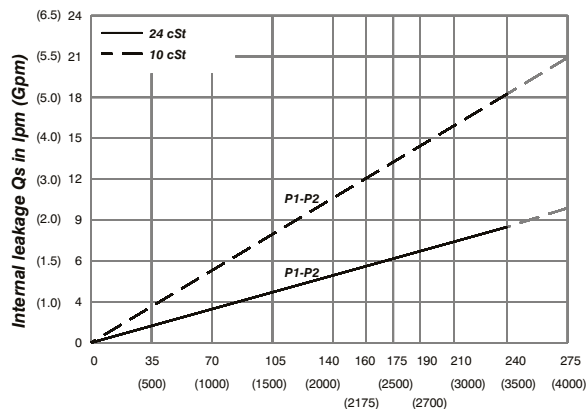
Porting combination (see page BM-1-5)

00 - standard

Direction of rotation (view on shaft end)

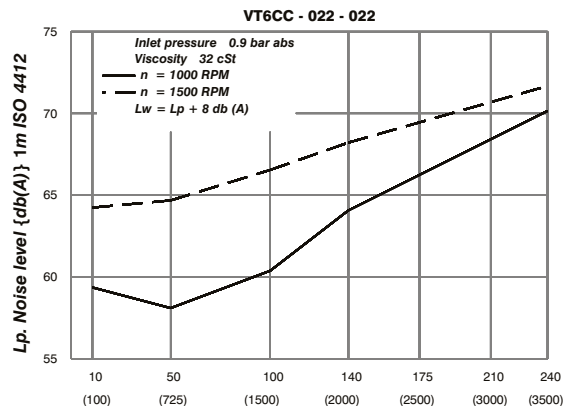
- R - clockwise
- L - counter-clockwise

INTERNAL LEAKAGE (TYPICAL)



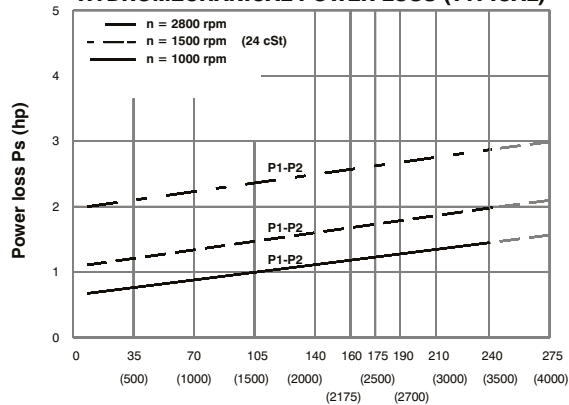
Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.

NOISE LEVEL (TYPICAL)



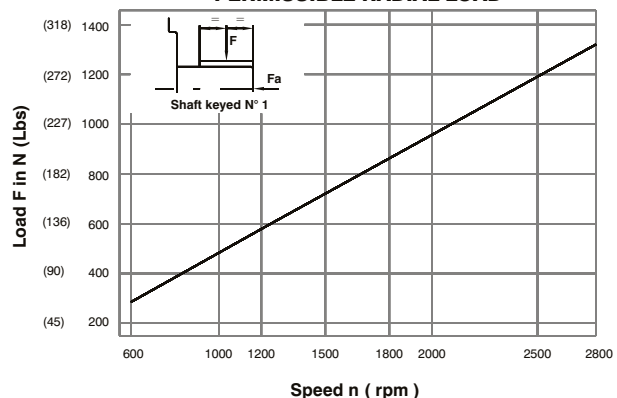
Double pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)



Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



Maximum axial load permissible F_a = 800 N (180 Lbs)

Series VT6CCSH * W - 022 - 008 - 1 R 00 - C 1 - 00 *
Modifications

One letter can be added to specify special parts in series

Use for severe duty shaft only

Cam ring for "P1" & "P2"

Volumetric displacement cm³/rev (in³/rev)

*003/B03/Y03 = 10.8 (0.66)	015/B15/Y15 = 50.5 (3.08)
005/B05/Y05 = 17.2 (1.05)	017/B17/Y17 = 58.3 (3.56)
006/B06/Y06 = 21.3 (1.30)	020/B20/Y20 = 63.8 (3.89)
008/B08/Y08 = 26.4 (1.61)	022/B22/Y22 = 70.3 (4.29)
010/B10/Y10 = 34.1 (2.08)	025/B25/Y25 = 79.3 (4.84)
012/B12/Y12 = 37.1 (2.26)	028/B28/Y28 = 88.8 (5.42)
014/B14/Y14 = 46.0 (2.81)	031/B31/Y31 = 100.0 (6.10)

* '0' - Uni - directional 'B' - Bi - directional 'Y' - Bi - directional for cold start

Type of shaft

- 1 - keyed (no SAE)
- 3 - splined (SAE BB)
- 5 - splined (SAE B)

MW version

- 2 - keyed (SAE BB)
- R - keyed special
- X - keyed special

P version

- 3 - splined (no SAE)
- 4 - splined (SAE BB)
- 6 - splined (no SAE)

(See Page No. BM-1-3)

W version

- 2 - keyed (SAE BB)
- S-splined (DIN 5462)
- V - keyed special
- T - splined (SAE J718c)
- Q - splined (SAE C)

Mounting W/connection variables

	P1=1" - S=3"	P1=1" - S = 2 1/8" (2)
P2	1"	3/4" (1)
code	Unc	1"
	00	01
code	Metric	1M
	0M	W0
		W1

1) for 46 ml/rev max.

2) for 126 ml/rev max.

The large cartridge must be always mounted in the front.

Seal class

- 1 - S1 (for mineral oil)
- 4 - S4 (for fire resistant fluids)
- 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page BM-1-5)

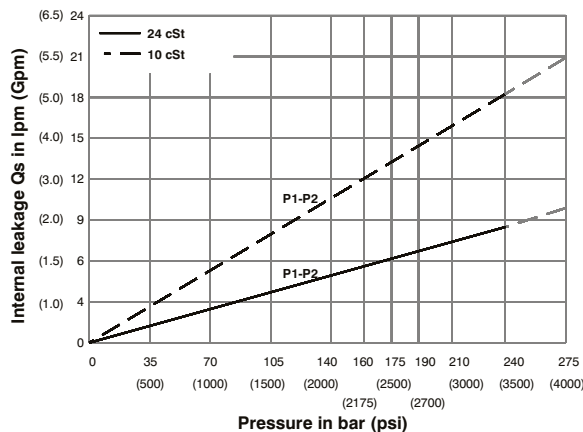
00 - standard

Direction of rotation
(view on shaft end)

R - clockwise

L - counter-clockwise

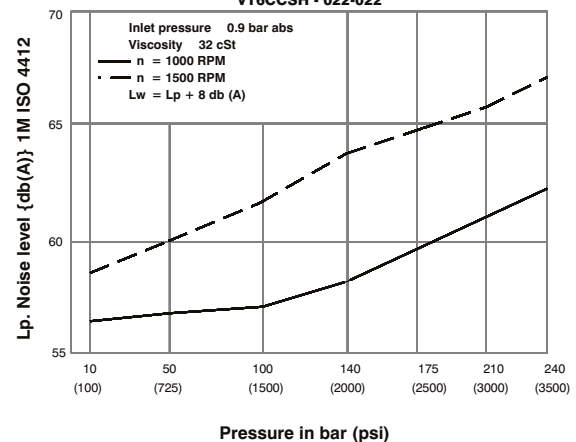
INTERNAL LEAKAGE (TYPICAL)



Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.

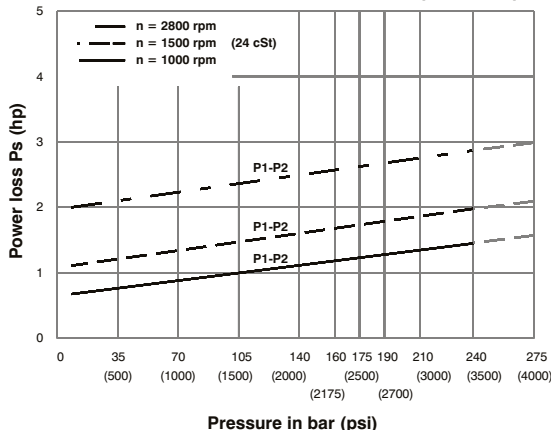
NOISE LEVEL (TYPICAL)

VT6CCSH - 022-022



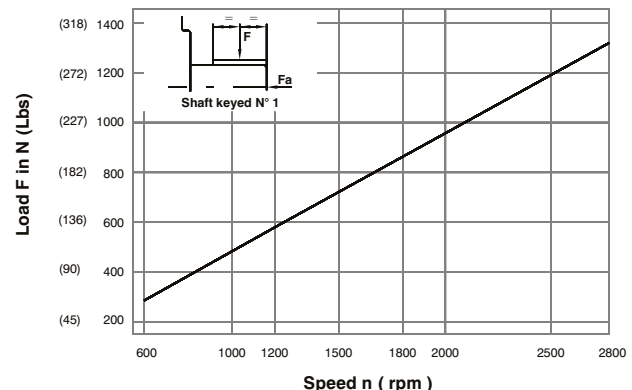
Double pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POER LOSS (TYPICAL)

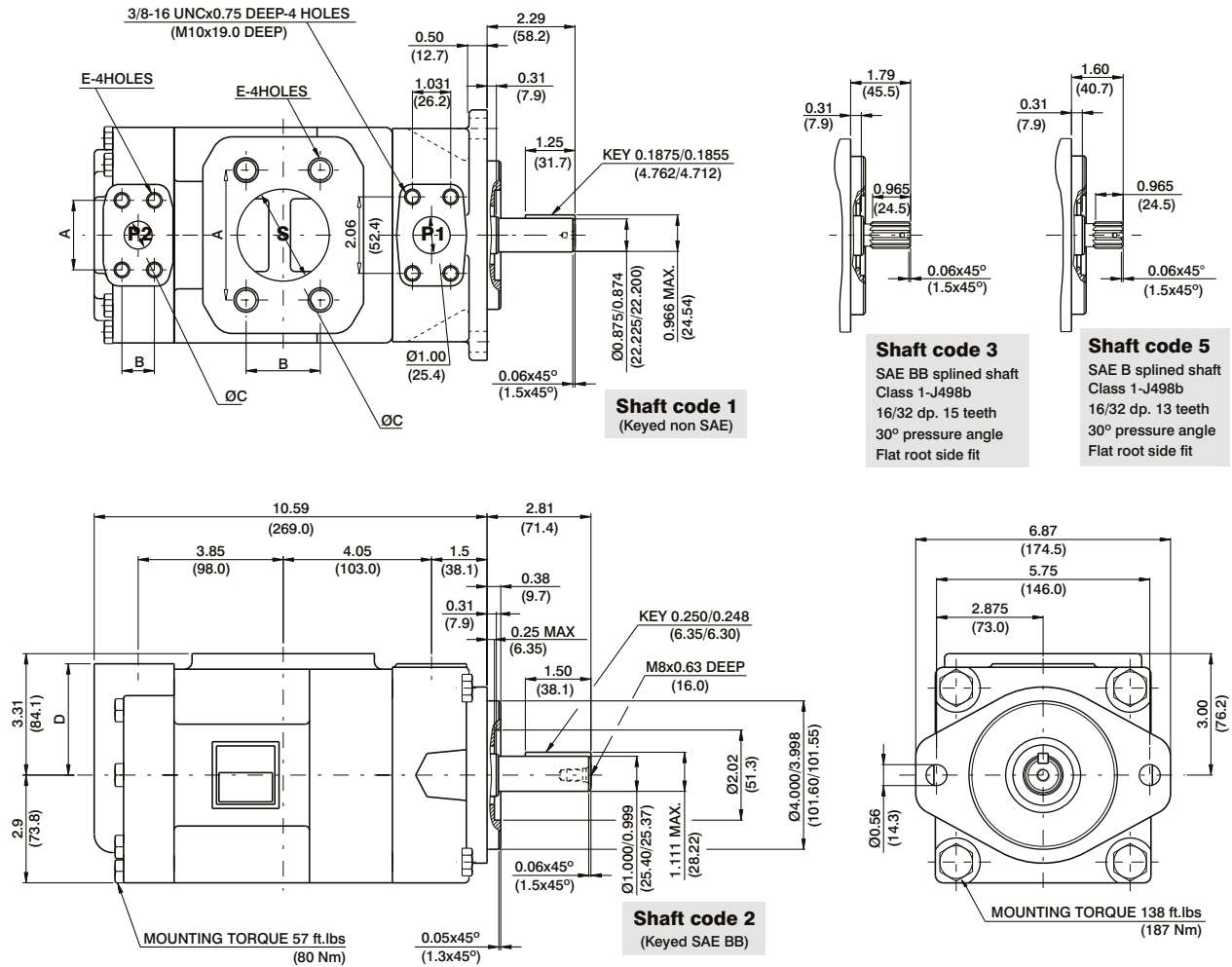


Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



Maximum permissible axial load Fa = 800 N (180 Lbs)



PORT	A	B	C	D	E
S	4.19 (106.4)	2.44 (61.9)	3.00 (76.2)		5/8-11UNCx1.12 DEEP (M16x28.4 DEEP)
S	3.50 (88.9)	2.00 (50.8)	2.50 (63.5)		1/2-13UNCx0.94 DEEP (M12x24.0 DEEP)
P2	1.874 (47.6)	0.874 (22.2)	0.75 (19.0)	3.00 (76.2)	3/8-16UNCx0.75 DEEP (M10x19.0 DEEP)
P2	2.06 (52.4)	1.03 (26.2)	1.00 (25.4)	2.94 (74.7)	

Shaft torque limits in ³ /revxpsi(ml/revxbar)	
Shaft	Vp x p max. (P1+P2)
1	12666 (14300)
2	18972 (21420)
3	28937 (32670)
5	18246 (20600)

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1 & P2	003	0.66	10.8	4.29	16.2	2.96	11.2	2.04	7.7	1.74	1.3	7.11	5.3	11.22	8.4
	005	1.05	17.2	6.83	25.8	5.50	20.8	4.57	17.3	1.88	1.4	10.06	7.5	16.36	12.2
	006	1.30	21.3	8.44	31.9	7.11	26.9	6.19	23.4	2.01	1.5	11.94	8.9	19.71	14.7
	008	1.61	26.4	10.48	39.6	9.15	34.6	8.22	31.1	2.15	1.6	14.35	10.7	22.93	17.7
	010	2.08	34.1	13.52	51.1	12.19	46.1	11.26	42.6	2.28	1.7	18.64	13.4	29.90	22.3
	012	2.26	37.1	14.71	55.6	13.36	50.6	12.46	47.1	2.28	1.7	19.31	14.4	32.32	24.1
	014	2.81	46.0	18.25	69.0	16.93	64.0	16.00	60.5	2.55	1.9	23.60	17.6	39.56	29.5
	015	3.08	50.5	20.00	75.6	18.73	73.2	19.02	67.5	2.68	2.0	25.61	19.1	42.91	32.0
	017	3.56	58.3	23.12	87.4	21.79	82.4	20.87	78.9	2.82	2.1	29.37	21.9	49.48	36.9
	020	3.89	63.8	25.32	95.7	23.99	90.7	23.07	87.2	2.95	2.2	31.92	23.8	53.91	40.2
	022	4.29	70.3	27.88	105.4	26.56	100.4	25.63	96.9	3.08	2.3	35.00	26.1	59.14	44.1
	025 ¹⁾	4.84	79.3	31.46	118.9	30.13	113.9	29.21	110.4	3.35	2.5	39.16	29.2	66.38	49.5
	028 ^{1,2)}	5.42	88.8	35.24	133.2	33.92	128.2	33.28	125.8	3.75	2.8	43.85	32.7	65.04	48.5
	031 ^{1,2)}	6.10	100.0	39.68	150.0	38.35	145.0	37.72	142.6	3.75	2.8	48.95	36.5	72.95	54.4

1) 025-028-031 = 2500 RPM. max.

2) 028-031 = 210 bar (3000 psi) max. int.

Series **VT6DC W - 038 - 022 1 R 00 - B 1 00 ***

severe duty shaft only

Cam ring for "P1"

Volumetric displacement cm³/rev (in³/rev)

*014/B14 = 47.6 (2.90)	035/B35 = 111.0 (6.77)
017/B17 = 58.2 (3.55)	038/B38 = 120.3 (7.34)
020/B20 = 66.0 (4.03)	042/B42 = 136.0 (8.30)
024/B24 = 79.5 (4.85)	045/B45 = 145.7 (8.89)
028/B28 = 89.7 (5.47)	050/B50 = 158.0 (9.64)
031/B31 = 98.3 (6.00)	061/B61 = 190.5 (11.62)

*'0' - Uni - directional 'B' - Bi - directional

Cam ring for "P2"

Volumetric displacement cm³/rev (in³/rev)

*003/B03/Y03 = 10.8 (0.66)	015/B15/Y15 = 50.5 (3.08)
005/B05/Y05 = 17.2 (1.05)	017/B17/Y17 = 58.3 (3.56)
006/B06/Y06 = 21.3 (1.30)	020/B20/Y20 = 63.8 (3.89)
008/B08/Y08 = 26.4 (1.61)	022/B22/Y22 = 70.3 (4.29)
010/B10/Y10 = 34.1 (2.08)	025/B25/Y25 = 79.3 (4.84)
012/B12/Y12 = 37.1 (2.26)	028/B28/Y28 = 88.8 (5.42)
014/B14/Y14 = 46.0 (2.81)	031/B31/Y31 = 100.0 (6.10)

*'0' - Uni - directional 'B' - Bi - directional 'Y' - Bi - directional for cold start

Modifications

Mounting W/connection variables

	UNC		METRIC	
	00	01	M0	M1
P2	1"	3/4"	1"	3/4"

Seal class

- 1 - S1 (for mineral oil)
- 4 - S4 (for fire resistant fluids)
- 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page BM-1-5)

00 - standard

Direction of rotation (view on shaft end)

- R - clockwise
- L - counter-clockwise

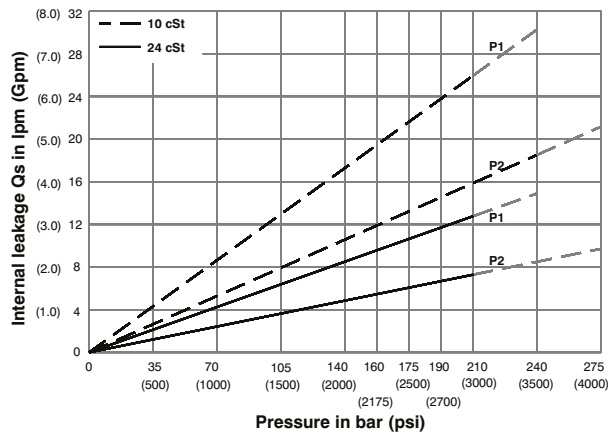
Type of shaft

- 1 - keyed (SAE C)
- 2 - keyed (no SAE)
- 3 - splined (SAE C)
- 4 - splined (no SAE)

Severe duty (VT6DCW only)

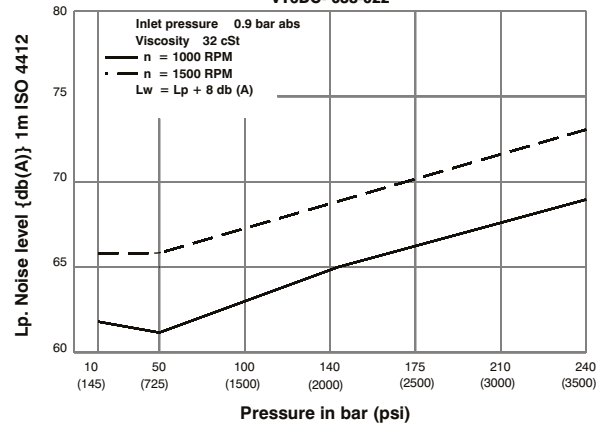
- 5 - keyed (no SAE)

INTERNAL LEAKAGE (TYPICAL)

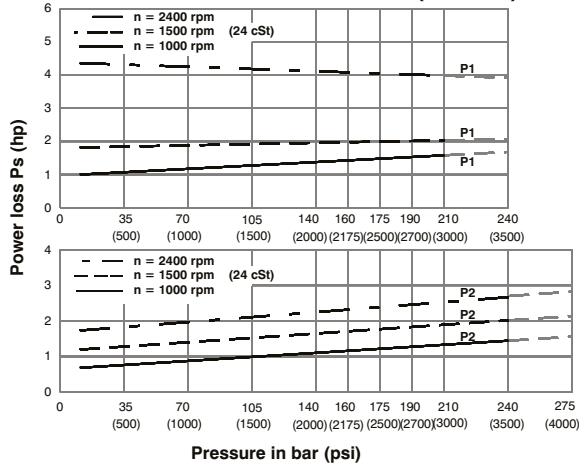


NOISE LEVEL (TYPICAL)

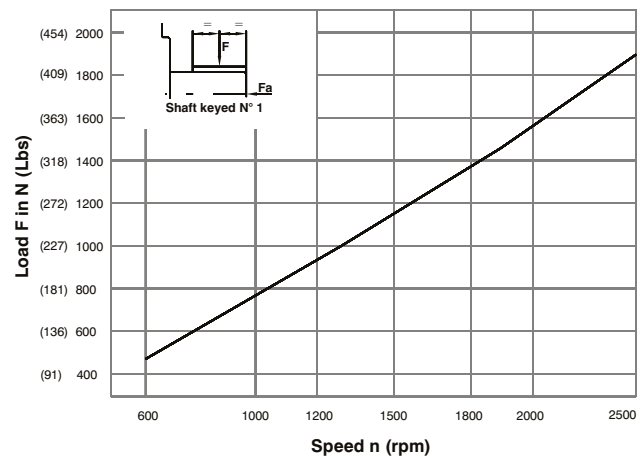
VT6DC- 038-022

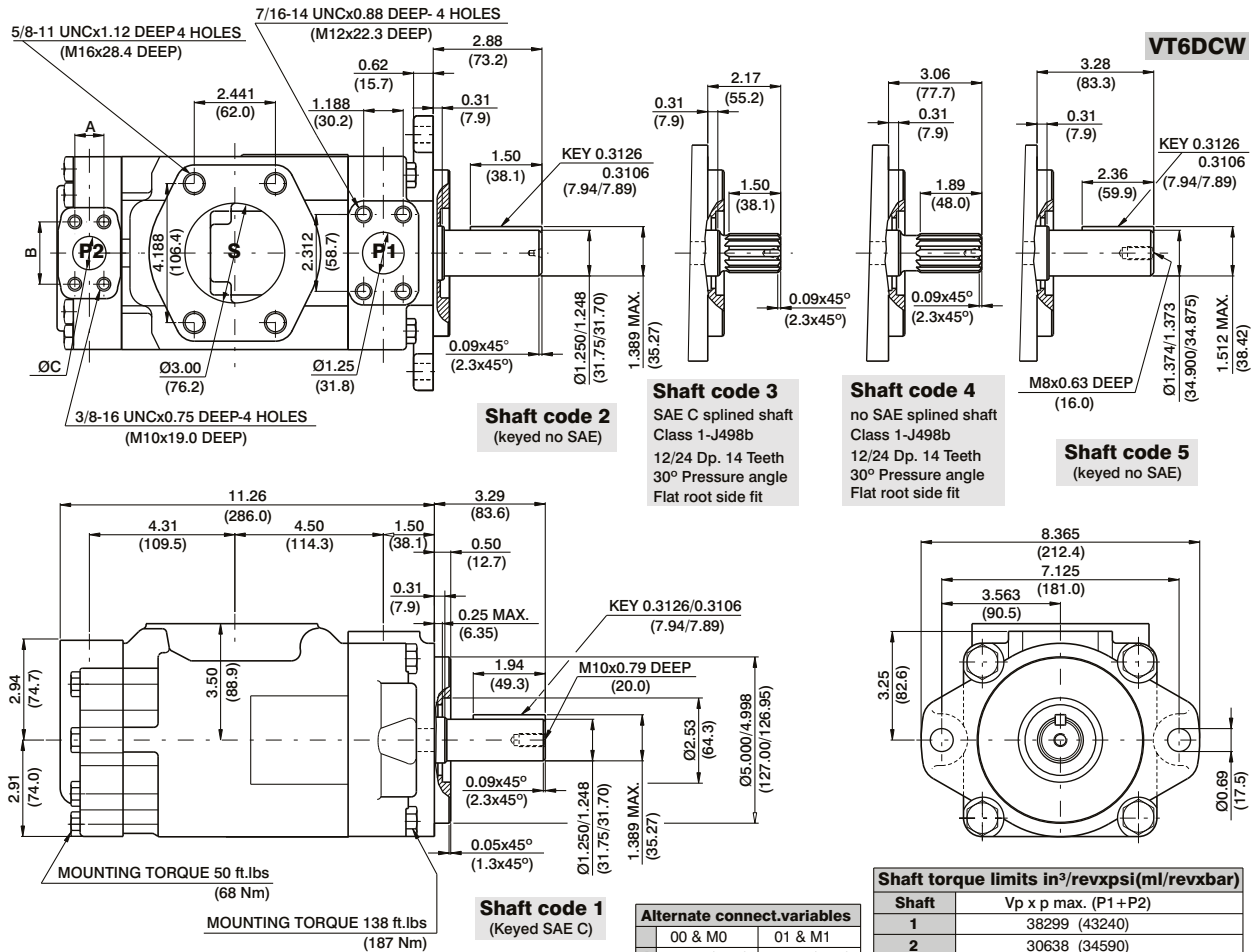


HYDROMECHANICAL POWER LOSS (TYPICAL)



PERMISSIBLE RADIAL LOAD





OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1	014	2.90	47.6	18.88	71.4	16.42	62.1	14.78	55.9	3.08	2.3	24.81	18.5	41.03	30.6
	017	3.55	58.2	23.1	87.3	20.6	78.0	18.99	71.8	3.35	2.5	29.77	22.2	49.62	37.0
	020	4.00	66.0	26.19	99.0	23.73	89.7	22.08	83.5	3.75	2.8	33.39	24.9	55.92	41.7
	024	4.80	79.5	31.56	119.3	29.10	110.0	27.46	103.8	4.02	3.0	39.69	29.6	66.78	49.8
	028	5.50	89.7	35.58	134.5	33.12	125.2	31.48	119.0	4.29	3.2	44.52	33.2	74.96	55.9
	031	6.00	98.3	39.00	147.5	36.53	138.1	34.89	131.9	4.42	3.3	48.54	36.2	81.80	61.0
	035	6.80	111.0	44.04	166.5	41.58	157.2	39.94	151.0	4.69	3.5	54.58	40.7	92.13	68.7
	038	7.30	120.3	47.72	180.4	45.26	171.1	43.62	164.9	4.96	3.7	58.87	43.9	99.64	74.3
	042 ¹⁾	8.30	136.0	53.96	204.0	51.50	194.7	49.86	188.5	5.36	4.0	66.25	49.4	112.24	83.7
	045 ¹⁾	8.89	145.7	57.80	218.5	55.34	209.2	53.70	203.0	5.50	4.1	70.81	52.8	120.02	89.5
	050 ^{1,2)}	9.64	158.0	62.69	237.0	60.23	227.7	59.25	224.0	5.90	4.4	76.44	57.0	113.98	85.0
	061 ^{1,3)}	11.62	190.5	76.25	285.7	73.54	278.0	--	--	6.16	4.6	81.26	60.6	--	--
P2	003	0.66	10.8	4.29	16.2	2.96	11.2	2.04	7.7	1.74	1.3	7.11	5.3	11.22	8.4
	005	1.05	17.2	6.83	25.8	5.50	20.8	4.57	17.3	1.88	1.4	10.06	7.5	16.36	12.2
	006	1.30	21.3	8.44	31.9	7.11	26.9	6.19	23.4	2.01	1.5	11.94	8.9	19.71	14.7
	008	1.61	26.4	10.48	39.6	9.15	34.6	8.22	31.1	2.15	1.6	14.35	10.7	22.93	17.7
	010	2.08	34.1	13.52	51.1	12.19	46.1	11.26	42.6	2.28	1.7	18.64	13.4	29.90	22.3
	012	2.26	37.1	14.71	55.6	13.36	50.6	12.46	47.1	2.28	1.7	19.31	14.4	32.32	24.1
	014	2.81	46.0	18.25	69.0	16.93	64.0	16.00	60.5	2.55	1.9	23.60	17.6	39.56	29.5
	015	3.08	50.5	20.00	75.6	18.73	73.2	19.02	67.5	2.68	2.0	25.61	19.1	42.91	32.0
	017	3.56	58.3	23.12	87.4	21.79	82.4	20.87	78.9	2.82	2.1	29.37	21.9	49.48	36.9
	020	3.89	63.8	25.32	95.7	23.99	90.7	23.07	87.2	2.95	2.2	31.92	23.8	53.91	40.2
	022	4.29	70.3	27.88	105.4	26.56	100.4	25.63	96.9	3.08	2.3	35.00	26.1	59.14	44.1
	025	4.84	79.3	31.46	118.9	30.13	113.9	29.21	110.4	3.35	2.5	39.16	29.2	66.38	49.5
	028 ²⁾	5.42	88.8	35.24	133.2	33.92	128.2	33.28	125.8	3.75	2.8	43.85	32.7	65.04	48.5
	031 ²⁾	6.10	100.0	39.68	150.0	38.35	145.0	37.72	142.6	3.75	2.8	48.95	36.5	72.95	54.4

1) 042-045-050-061=2200 RPM max.

2) 028-031- 050=210 bar (3000 psi) max. int.

3) 061 = 120 bar (1740 psi) max. int. 061 = 80 bar (1160 psi) cont.

Series - SAE C 6 bolts
Mounting flange J744c

Cam ring for "P1" & "P2"

Volumetric displacement cm³/rev (in³/rev)

*014/B14 = 47.6 (2.90)	035/B35 = 111.0 (6.77)
017/B17 = 58.2 (3.55)	038/B38 = 120.3 (7.34)
020/B20 = 66.0 (4.03)	042/B42 = 136.0 (8.30)
024/B24 = 79.5 (4.85)	045/B45 = 145.7 (8.89)
028/B28 = 89.7 (5.47)	050/B50 = 158.0 (9.64)
031/B31 = 98.3 (6.00)	061/B61 = 190.5 (11.62)

*'0' - Uni - directional 'B' - Bi - directional

Type of Shaft

- 1 - Keyed (SAE C)
- 2 - Keyed (SAE CC)
- 3 - Splined (SAE C)
- 4 - Splined (SAE BB)
- 5 - Keyed (non SAE)

VT6DDS - 038 - 028 - 1 R 00 - A 1 - 00 *

P1

P2

Modifications

Mounting W/connection variables

SAE 4 bolt flange (J518c)

P1 & P2=1-1/4"	S=4"
VT6DDS	UNC METRIC
00	M0

Seal class

- 1 - S1 (for mineral oil)
- 4 - S4 (for fire resistant fluids)
- 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

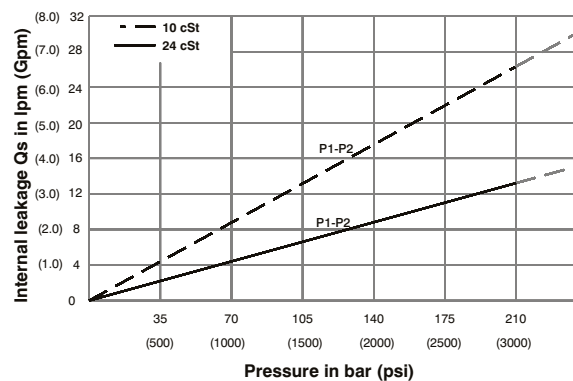
Porting combination (see page BM-1-5)

(00 = Standard)

Direction of rotation
(view on shaft end)

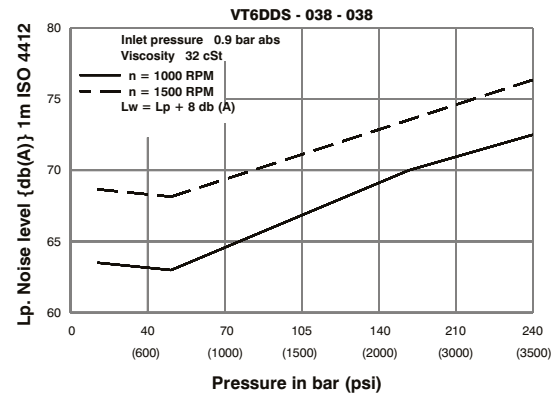
- R - Clockwise
- L - Counter - clockwise

INTERNAL LEAKAGE (TYPICAL)



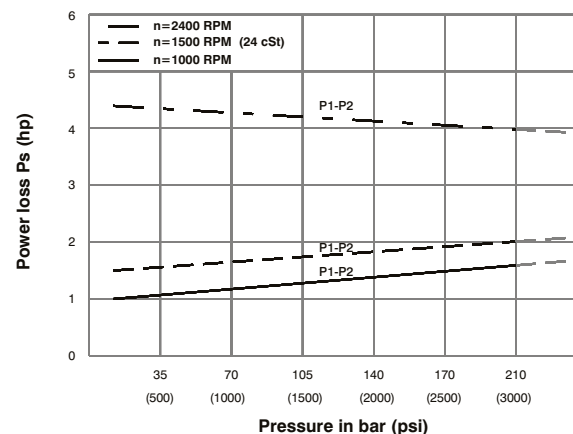
Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.

NOISE LEVEL (TYPICAL)



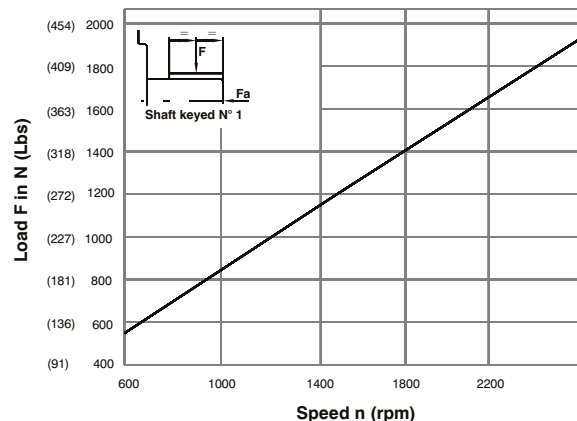
Double pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POER LOSS (TYPICAL)

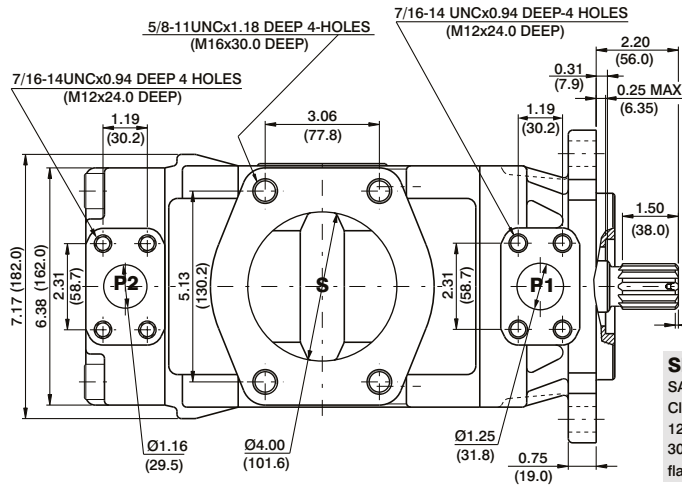


Total hydromechanical power loss is the sum of each section at its operating conditions.

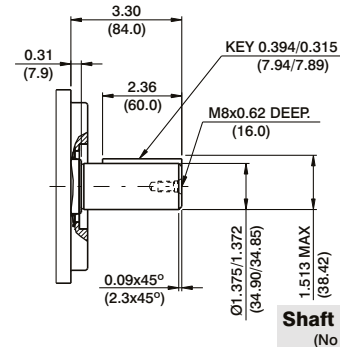
PERMISSIBLE RADIAL LOAD



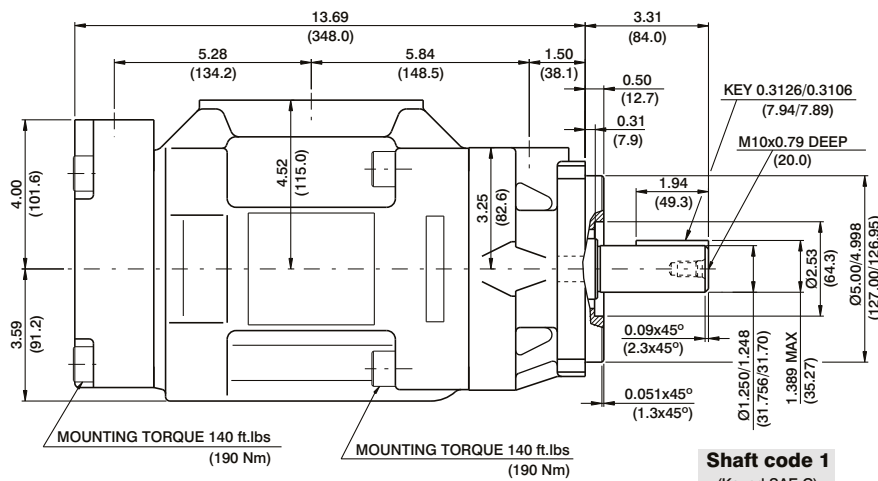
Maximum permissible axial load $F_a = 1200$ N (270 Lbs)



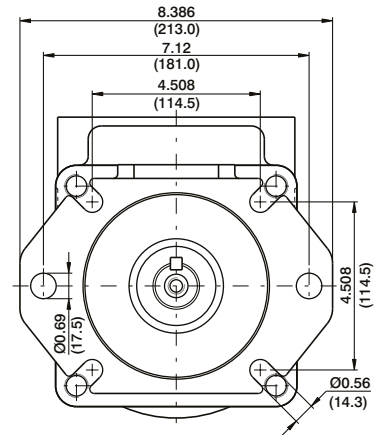
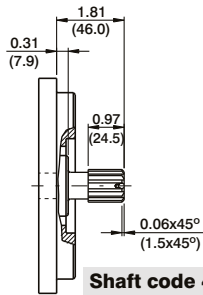
Shaft code 3
SAE C splined shaft
Class 1-J498b
12/24 dp. 14 teeth
30° pressure angle
flat root side fit



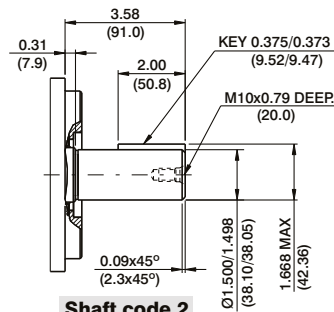
Shaft code 5
(No SAE)



Shaft code 1
(Keyed SAE C)



Shaft code 4
SAE BB splined shaft
Class 1-J498b
16/32 dp. 15 teeth
30° pressure angle
flat root side fit



Shaft code 2
(Keyed SAE CC)

Shaft torque limits in ³ /rev x psi (ml/rev x bar)	
Shaft	Vp x p max. (P1+P2)
1	38299 (43240)
3	54152 (61200)
4	31780 (35880)
5	40035 (55600)

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1 & P2	014	2.90	47.6	18.88	71.4	16.42	62.1	14.78	55.9	3.08	2.3	24.81	18.5	41.03	30.6
	017	3.55	58.2	23.1	87.3	20.6	78.0	18.99	71.8	3.35	2.5	29.77	22.2	49.62	37.0
	020	4.00	66.0	26.19	99.0	23.73	89.7	22.08	83.5	3.75	2.8	33.39	24.9	55.92	41.7
	024	4.80	79.5	31.56	119.3	29.10	110.0	27.46	103.8	4.02	3.0	39.69	29.6	66.78	49.8
	028	5.50	89.7	35.58	134.5	33.12	125.2	31.48	119.0	4.29	3.2	44.52	33.2	74.96	55.9
	031	6.00	98.3	39.00	147.5	36.53	138.1	34.89	131.9	4.42	3.3	48.54	36.2	81.80	61.0
	035	6.80	111.0	44.04	166.5	41.58	157.2	39.94	151.0	4.69	3.5	54.58	40.7	92.13	68.7
	038	7.30	120.3	47.72	180.4	45.26	171.1	43.62	164.9	4.96	3.7	58.87	43.9	99.64	74.3
	042 ¹⁾	8.30	136.0	53.96	204.0	51.50	194.7	49.86	188.5	5.36	4.0	66.25	49.4	112.24	83.7
	045 ¹⁾	8.89	145.7	57.80	218.5	55.34	209.2	53.70	203.0	5.50	4.1	70.81	52.8	120.02	89.5
	050 ^{1,2)}	9.64	158.0	62.69	237.0	60.23	227.7	59.25	224.0	5.90	4.4	76.44	57.0	113.98	85.0
	061 ^{1,3)}	11.62	190.5	76.25	285.7	73.54	278.0	--	--	6.16	4.6	81.26	60.6	--	--

1) 042-045-050-061=2200 RPM max.

2) 050=210 bar (3000 psi) max.

3) 061 = 120 bar (1740 psi) max. int, 061 = 80 bar (1160 psi) cont.

Series **VT6EC** * - **066** - **022** **1** **R** **00** - **B** **1** -

Y - Metric port connection, Omit for UNC

Cam ring for "P1"

Volumetric displacement cm³/rev (in³/rev)

042 = 132.3 (8.07)	062 = 196.7 (12.00)
045 = 142.4 (8.69)	066 = 213.3 (13.02)
050 = 158.5 (9.67)	072 = 227.1 (13.86)
052 = 164.8 (10.06)	085 = 269.8 (16.46)
057 = 180.7 (11.02)	

Cam ring for "P2"

Volumetric displacement cm³/rev (in³/rev)

*003/B03/Y03 = 10.8 (0.66)	015/B15/Y15 = 50.5 (3.08)
005/B05/Y05 = 17.2 (1.05)	017/B17/Y17 = 58.3 (3.56)
006/B06/Y06 = 21.3 (1.30)	020/B20/Y20 = 63.8 (3.89)
008/B08/Y08 = 26.4 (1.61)	022/B22/Y22 = 70.3 (4.29)
010/B10/Y10 = 34.1 (2.08)	025/B25/Y25 = 79.3 (4.84)
012/B12/Y12 = 37.1 (2.26)	028/B28/Y28 = 88.8 (5.42)
014/B14/Y14 = 46.0 (2.81)	031/B31/Y31 = 100.0 (6.10)

*'0' - Uni - directional 'B' - Bi - directional 'Y' - Bi - directional for cold start

Modifications

Seal class

1 - S1 (for mineral oil)
4 - S4 (for fire resistant fluids)
5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page BM-1-5)

00 - standard

Direction of rotation (view on shaft end)

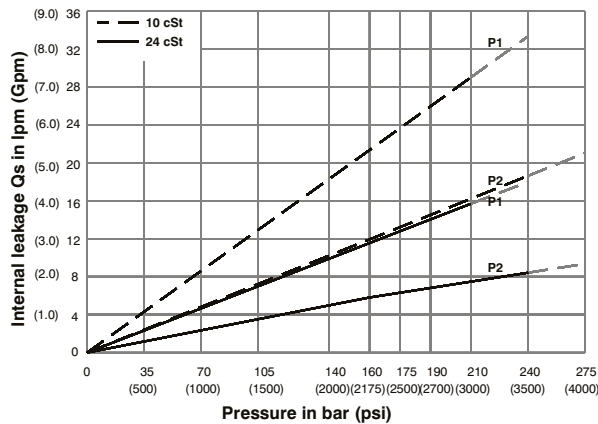
R - clockwise
L - counter-clockwise

Type of shaft

1 - keyed (SAE CC)
2 - keyed (no SAE)
3 - splined (SAE C)
4 - splined (SAE CC)

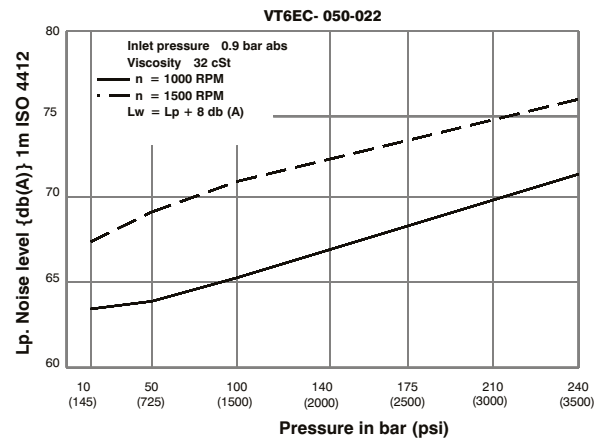


INTERNAL LEAKAGE (TYPICAL)



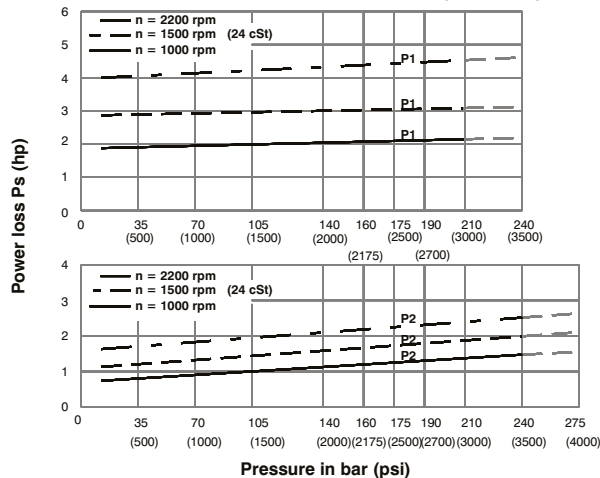
Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.

NOISE LEVEL (TYPICAL)



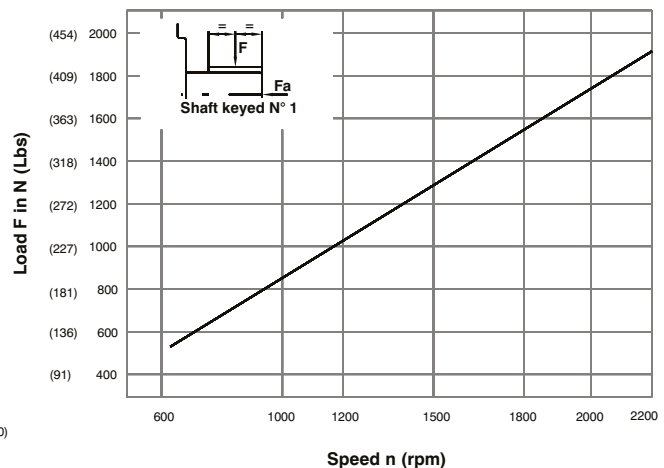
Double pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)

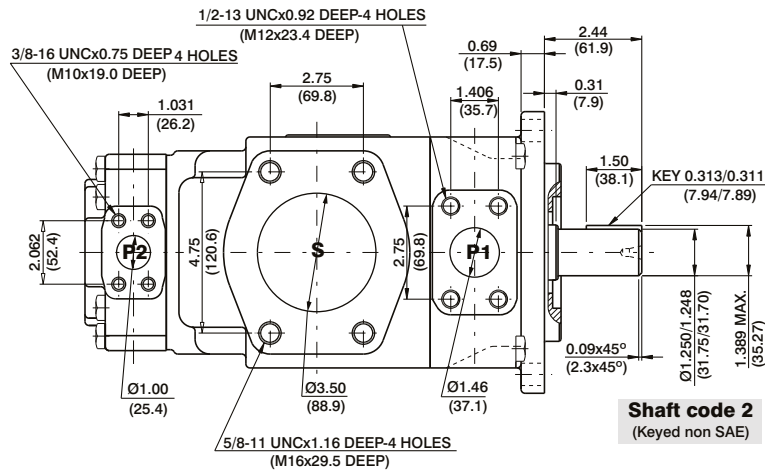
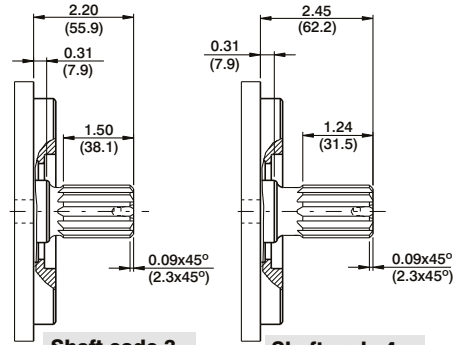
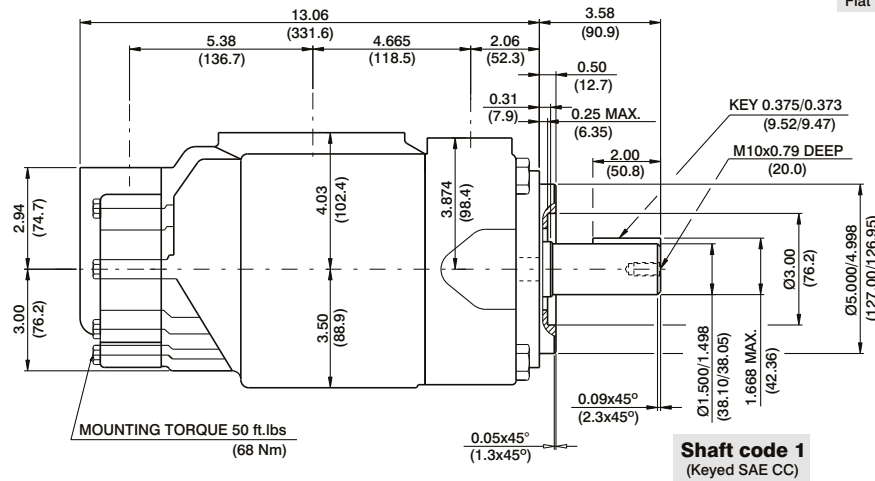
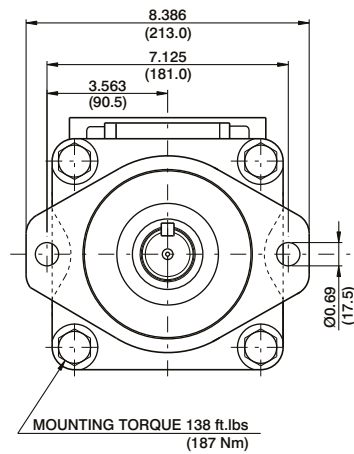


Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



Maximum permissible axial load $F_a = 2000 \text{ N (449 Lbs)}$



Shaft torque limits in ³ /rev x psi (ml/rev x bar)	
Shaft	Vp x p max. (P1+P2)
1	64044 (72306)
2	30638 (34590)
3	54207 (61200)
4	67582 (76376)

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm								Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)			
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw	hp	kw
P1	042	8.07	132.3	52.50	198.5	49.87	188.5	47.96	181.3	6.97	5.2	66.25	49.4	110.77	82.6		
	045	8.70	142.4	56.51	213.6	53.86	203.6	51.98	196.5	7.24	5.4	70.94	52.9	118.95	88.7		
	050	9.67	158.5	62.88	237.7	60.24	227.7	58.36	220.6	7.64	5.7	78.45	58.5	131.82	98.3		
	052	10.00	164.8	65.40	247.2	62.75	237.2	60.87	230.1	7.78	5.8	81.53	60.8	136.92	102.1		
	057	11.02	180.7	71.71	271.1	69.07	261.1	67.19	254.0	8.18	6.1	89.04	66.4	143.35	106.9		
	062	12.00	196.7	78.04	295.0	75.40	285.0	73.52	277.9	8.58	6.4	96.42	71.9	162.67	121.3		
	066	13.00	213.3	84.63	319.9	81.98	309.9	80.11	302.8	8.98	6.7	104.20	77.7	175.94	131.2		
	072	13.86	227.1	90.11	340.6	87.46	330.6	85.58	323.5	9.25	6.9	110.77	82.6	187.07	139.5		
	085 ^{1,2)}	16.40	269.8	107.00	404.7	105.21	397.7	--	--	9.78	7.3	87.56	65.3	--	--		
P2	003	0.66	10.8	4.29	16.2	2.96	11.2	2.04	7.7	1.74	1.3	7.11	5.3	11.22	8.4		
	005	1.05	17.2	6.83	25.8	5.50	20.8	4.57	17.3	1.88	1.4	10.06	7.5	16.36	12.2		
	006	1.30	21.3	8.44	31.9	7.11	26.9	6.19	23.4	2.01	1.5	11.94	8.9	19.71	14.7		
	008	1.61	26.4	10.48	39.6	9.15	34.6	8.22	31.1	2.15	1.6	14.35	10.7	22.93	17.7		
	010	2.08	34.1	13.52	51.1	12.19	46.1	11.26	42.6	2.28	1.7	18.64	13.4	29.90	22.3		
	012	2.26	37.1	14.71	55.6	13.36	50.6	12.46	47.1	2.28	1.7	19.31	14.4	32.32	24.1		
	014	2.81	46.0	18.25	69.0	16.93	64.0	16.00	60.5	2.55	1.9	23.60	17.6	39.56	29.5		
	015	3.08	50.5	20.00	75.6	18.73	73.2	19.02	67.5	2.68	2.0	25.61	19.1	42.91	32.0		
	017	3.56	58.3	23.12	87.4	21.79	82.4	20.87	78.9	2.82	2.1	29.37	21.9	49.48	36.9		
	020	3.89	63.8	25.32	95.7	23.99	90.7	23.07	87.2	2.95	2.2	31.92	23.8	53.91	40.2		
	022	4.29	70.3	27.88	105.4	26.56	100.4	25.63	96.9	3.08	2.3	35.00	26.1	59.14	44.1		
	025	4.84	79.3	31.46	118.9	30.13	113.9	29.21	110.4	3.35	2.5	39.16	29.2	66.38	49.5		
	028 ³⁾	5.42	88.8	35.24	133.2	33.92	128.2	33.28	125.8	3.75	2.8	43.85	32.7	65.04	48.5		
	031 ³⁾	6.10	100.0	39.68	150.0	38.35	145.0	37.72	142.6	3.75	2.8	48.95	36.5	72.95	54.4		

1) 085 = 2000 RPM max.

2) 085 = 75 bar (1100 psi) cont. 085 = 90 bar (1300 psi) max. int.

3) 028-031 = 210 bar (3000 psi) max. int.

Series **VT6ED** * - **066** - **038** **1** **R** **00** - **B** **1** *

Y - Metric port connection, Omit for UNC

Cam ring for "P1"

Volumetric displacement cm³/rev (in³/rev)

042 = 132.3 (8.07)	062 = 196.7 (12.00)
045 = 142.4 (8.69)	066 = 213.3 (13.02)
050 = 158.5 (9.67)	072 = 227.1 (13.86)
052 = 164.8 (10.06)	085 = 269.8 (16.46)
057 = 180.7 (11.02)	

Cam ring for "P2"

Volumetric displacement cm³/rev (in³/rev)

*014/B14 = 47.6 (2.90)	035/B35 = 111.0 (6.77)
017/B17 = 58.2(3.55)	038/B38 = 120.3 (7.34)
020/B20 = 66.0 (4.03)	042/B42 = 136.0 (8.30)
024/B24 = 79.5 (4.85)	045/B45 = 145.7 (8.89)
028/B28 = 89.7 (5.47)	050/B50 = 158.0 (9.64)
031/B31 = 98.3 (6.00)	061/B61 = 190.5 (11.62)

*'0' - Uni - directional 'B' - Bi - directional

Modifications

Seal class

- 1 - S1 (for mineral oil)
- 4 - S4 (for fire resistant fluids)
- 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page BM-1-5)

00 - standard

Direction of rotation (view on shaft end)

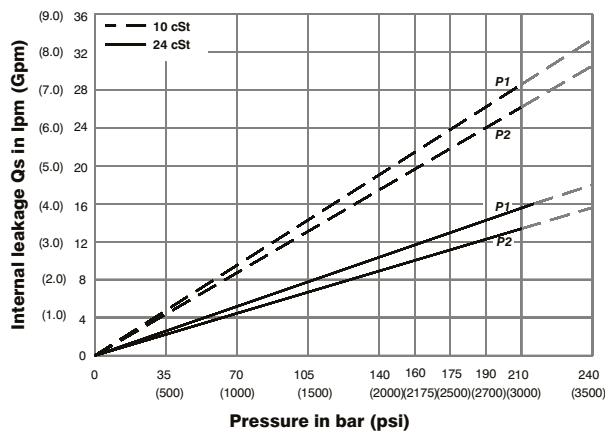
- R - clockwise
- L - counter-clockwise

Type of shaft

- 1 - keyed (SAE CC)
- 2 - keyed (no SAE)
- 3 - splined (SAE C)
- 4 - splined (SAE CC)

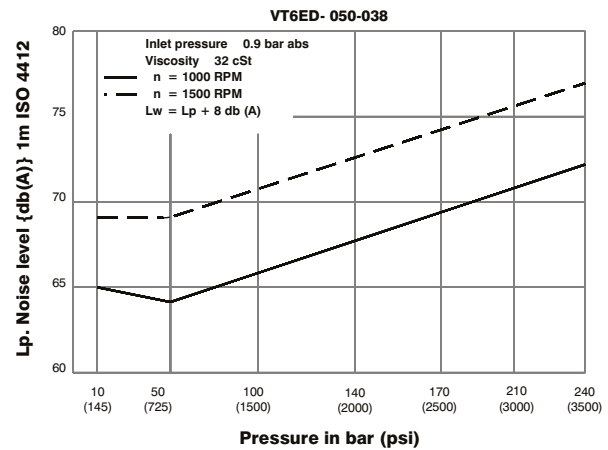


INTERNAL LEAKAGE (TYPICAL)



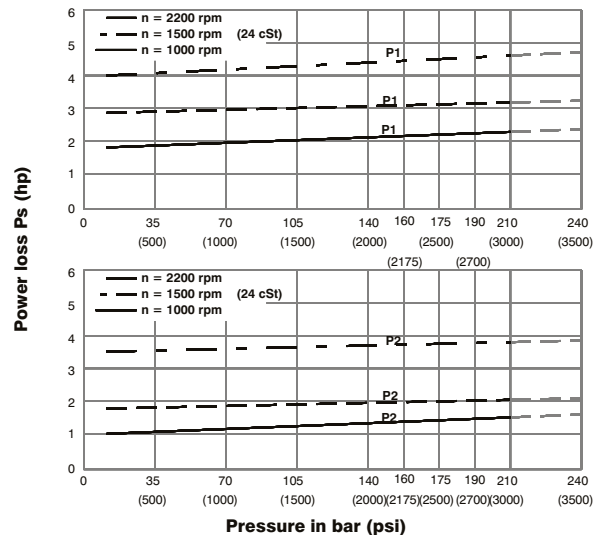
Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow.

NOISE LEVEL (TYPICAL)



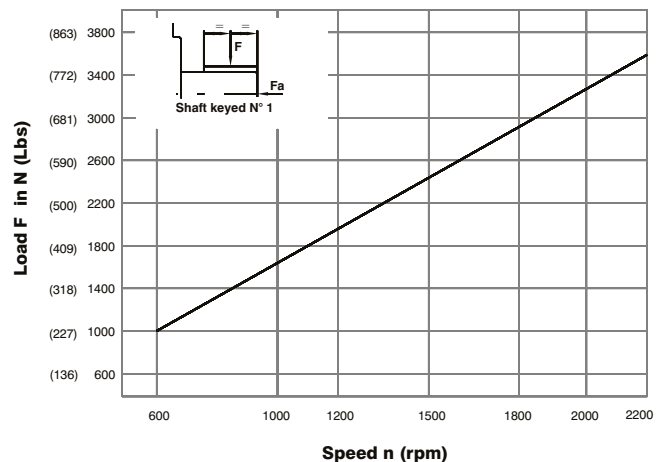
Double pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)

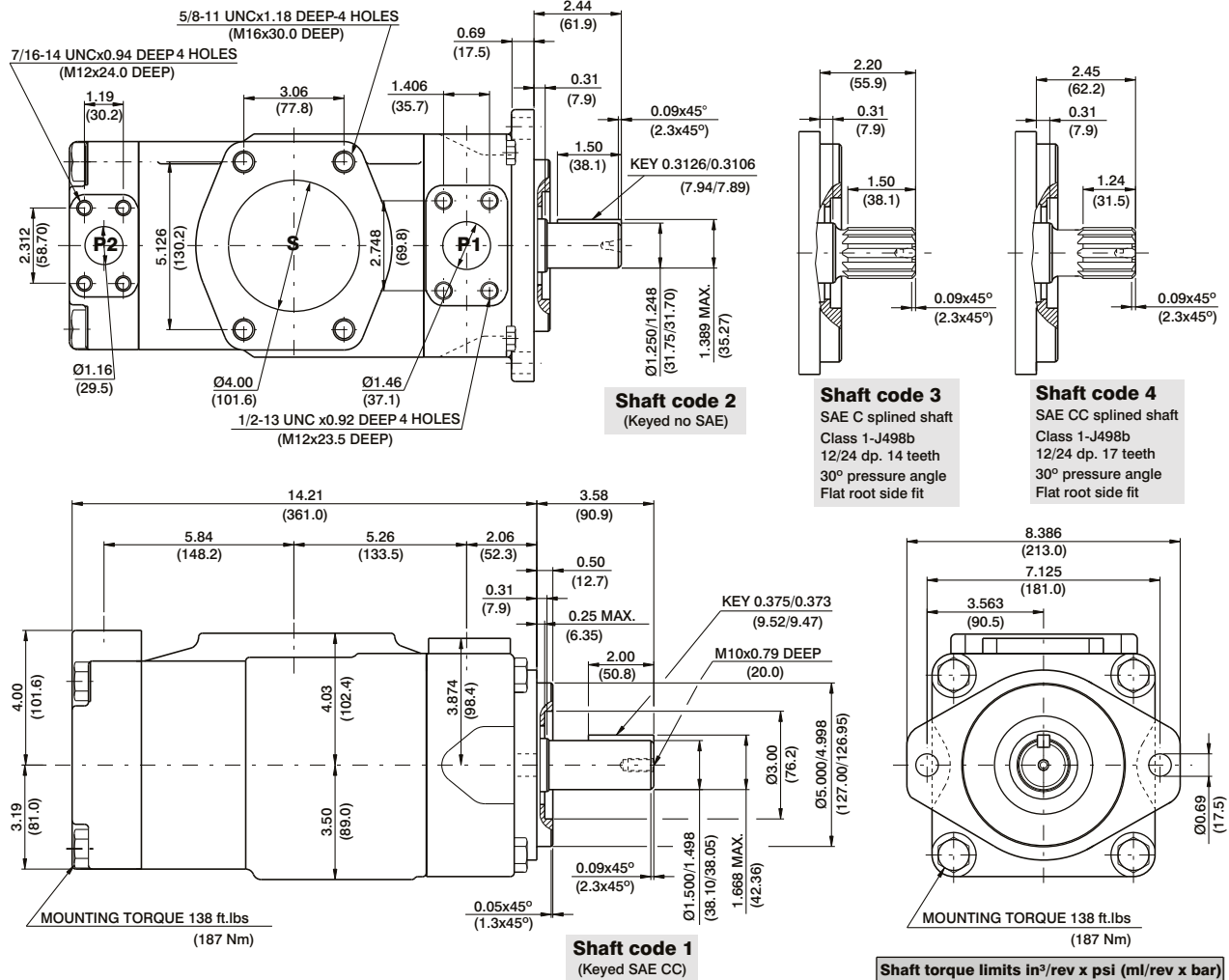


Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



Maximum permissible axial load Fa = 2000 N (449 Lbs)



OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm								Input power p & n = 1500 rpm							
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)					
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw	hp	kw	hp	kw
P1	042	8.07	132.3	52.50	198.5	49.87	188.5	47.96	181.3	6.97	5.2	66.25	49.4	110.77	82.6				
	045	8.70	142.4	56.51	213.6	53.86	203.6	51.98	196.5	7.24	5.4	70.94	52.9	118.95	88.7				
	050	9.67	158.5	62.88	237.7	60.24	227.7	58.36	220.6	7.64	5.7	78.45	58.5	131.82	98.3				
	052	10.00	164.8	65.40	247.2	62.75	237.2	60.87	230.1	7.78	5.8	81.53	60.8	136.92	102.1				
	057	11.02	180.7	71.71	271.1	69.07	261.1	67.19	254.0	8.18	6.1	89.04	66.4	143.35	106.9				
	062	12.00	196.7	78.04	295.0	75.40	285.0	73.52	277.9	8.58	6.4	96.42	71.9	162.67	121.3				
	066	13.00	213.3	84.63	319.9	81.98	309.9	80.11	302.8	8.98	6.7	104.20	77.7	175.94	131.2				
	072	13.86	227.1	90.11	340.6	87.46	330.6	85.58	323.5	9.25	6.9	110.77	82.6	187.07	139.5				
	085 ^{1,2)}	16.40	269.8	107.00	404.7	105.21	397.7	--	--	9.78	7.3	87.56	65.3	--	--				
P2	014	2.90	47.6	18.88	71.4	16.42	62.1	14.78	55.9	3.08	2.3	24.81	18.5	41.03	30.6				
	017	3.55	58.2	23.1	87.3	20.6	78.0	18.99	71.8	3.35	2.5	29.77	22.2	49.62	37.0				
	020	4.00	66.0	26.19	99.0	23.73	89.7	22.08	83.5	3.75	2.8	33.39	24.9	55.92	41.7				
	024	4.80	79.5	31.56	119.3	29.10	110.0	27.46	103.8	4.02	3.0	39.69	29.6	66.78	49.8				
	028	5.50	89.7	35.58	134.5	33.12	125.2	31.48	119.0	4.29	3.2	44.52	33.2	74.96	55.9				
	031	6.00	98.3	39.00	147.5	36.53	138.1	34.89	131.9	4.42	3.3	48.54	36.2	81.80	61.0				
	035	6.80	111.0	44.04	166.5	41.58	157.2	39.94	151.0	4.69	3.5	54.58	40.7	92.13	68.7				
	038	7.30	120.3	47.72	180.4	45.26	171.1	43.62	164.9	4.96	3.7	58.87	43.9	99.64	74.3				
	042	8.30	136.0	53.96	204.0	51.50	194.7	49.86	188.5	5.36	4.0	66.25	49.4	112.24	83.7				
	045	8.89	145.7	57.80	218.5	55.34	209.2	53.70	203.0	5.50	4.1	70.81	52.8	120.02	89.5				
	050 ³⁾	9.64	158.0	62.69	237.0	60.23	227.7	59.25	224.0	5.90	4.4	76.44	57.0	113.98	85.0				
	061 ⁴⁾	11.62	190.5	76.25	285.7	73.54	278.0	--	--	6.16	4.6	81.26	60.6	--	--				

1) 085 = 2000 RPM max. 2) 085 = 75 bar (1100 psi) cont. & 085 = 90 bar (1300 psi) max. int.

3) 050=210 bar (3000 psi) max. int.

4) 061 = 120 bar (1740 psi) max. int. 061 = 80 bar (1160 psi) cont.

VT6EE / VT6EES - 066 - 045 - 1 R 00 - B 1 0 - 00 *

Series
 VT6EE Series - 250 B4HW
 ISO 3019-2 mounting flange
 VT6EES Series - SAE 4 bolts
 Mounting flange J744c

Cam ring for "P1" & "P2"
 Volumetric displacement cm³/rev (in³/rev)
 042 = 132.3 (8.07)
 045 = 142.4 (8.69)
 050 = 158.5 (9.67)
 052 = 164.8 (10.06)
 057 = 180.7 (11.02)
 062 = 196.7 (12.00)
 066 = 213.3 (13.02)
 072 = 227.1 (13.86)
 085 = 269.8 (16.46)

Type of Shaft VT6EE
 2 - Keyed (G45N ISO 3019-2)

VT6EES
 1 - Keyed (SAE CC)
 3 - Splined (SAE CC)
 4 - Splined (SAE D&E)
 5 - Keyed (SAE D&E)

Modifications
Port connection variables
 SAE 4 bolt flange (J518c)

	UNC	METRIC
VT6EE		M0
VT6EES	00	M0

Coupling adaptor
 0 - None
 2 - SAE B
 3 - SAE BB

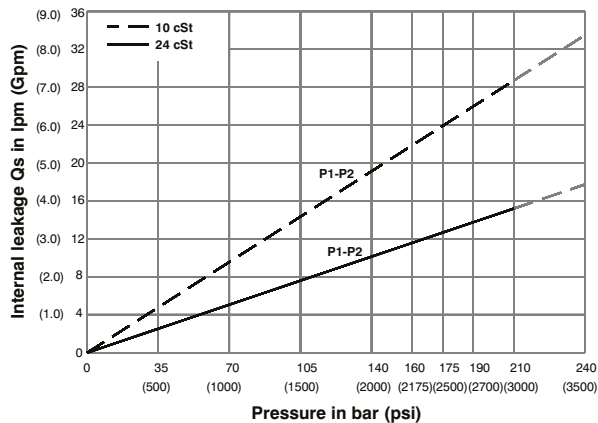
Seal class
 1 - S1 (for mineral oil)
 4 - S4 (for fire resistant fluids)
 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

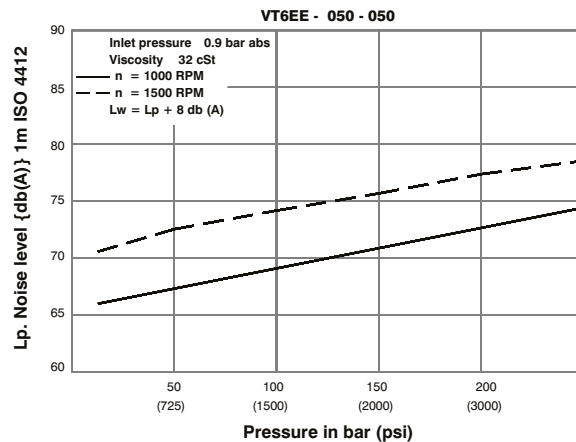
Porting combination (see page BM-1-5)
 00 = Standard

Direction of rotation (View on shaft end)
 R - Clockwise
 L - Counter - clockwise

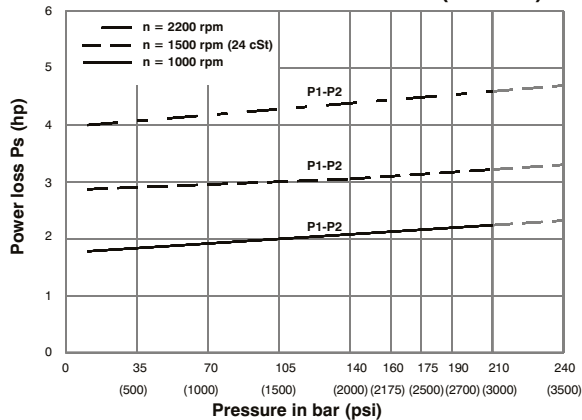
INTERNAL LEAKAGE (TYPICAL)



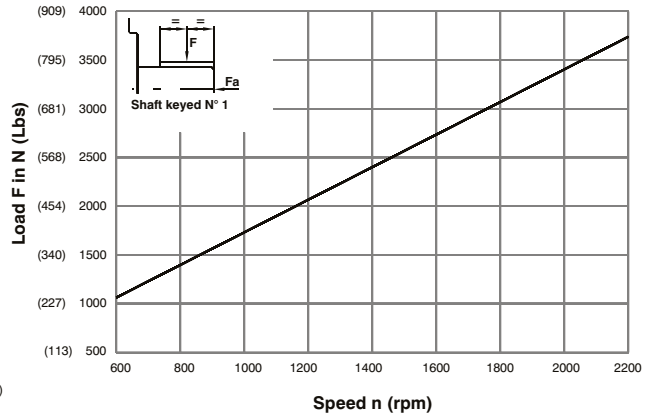
NOISE LEVEL (TYPICAL)

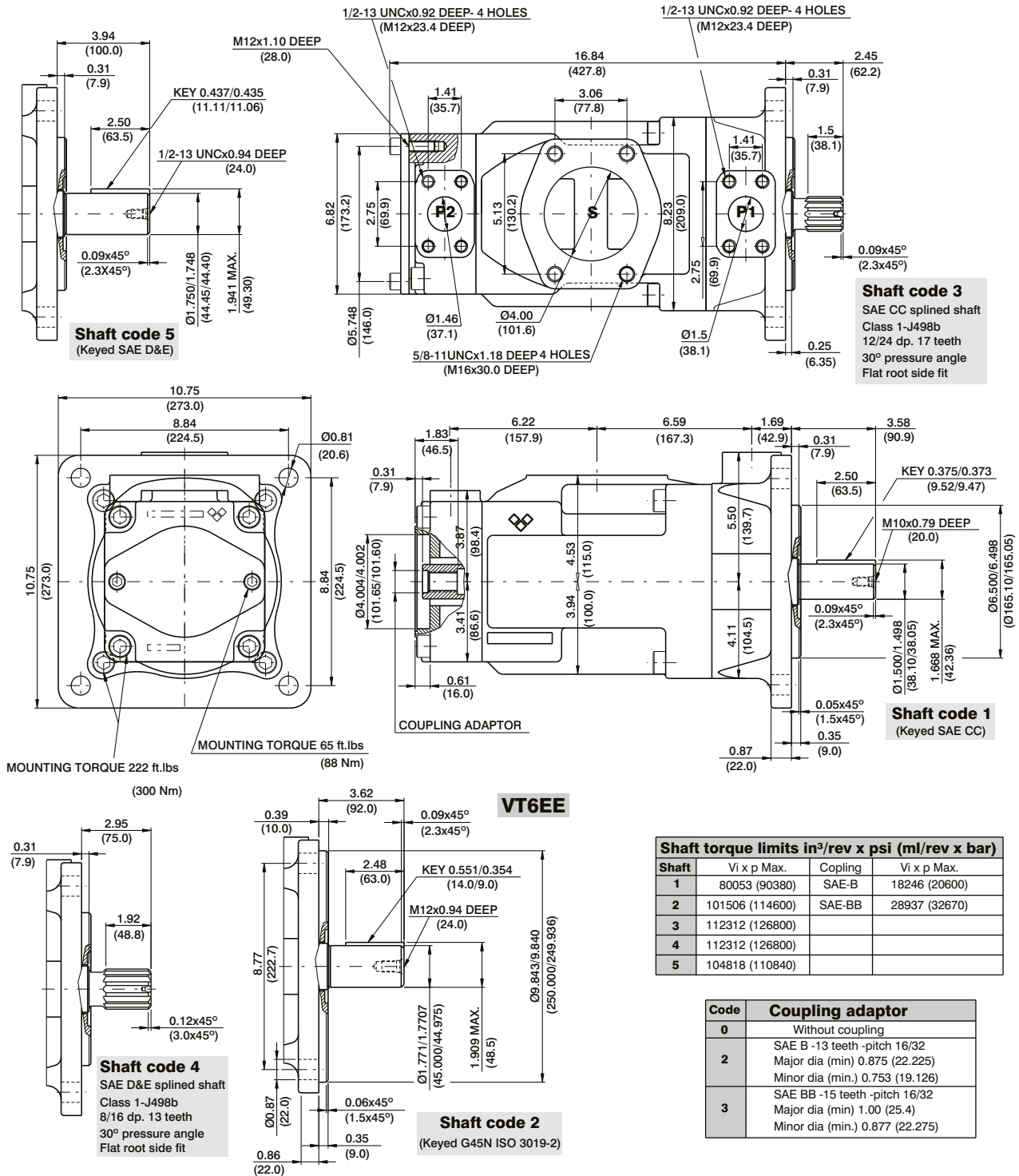


HYDROMECHANICAL POWER LOSS (TYPICAL)



PERMISSIBLE RADIAL LOAD





OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in³/rev	cm³/rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1 & P2	042	8.07	132.3	52.50	198.5	49.87	188.5	47.96	181.3	6.97	5.2	66.25	49.4	110.77	82.6
	045	8.70	142.4	56.51	213.6	53.86	203.6	51.98	196.5	7.24	5.4	70.94	52.9	118.95	88.7
	050	9.67	158.5	62.88	237.7	60.24	227.7	58.36	220.6	7.64	5.7	78.45	58.5	131.82	98.3
	052	10.00	164.8	65.40	247.2	62.75	237.2	60.87	230.1	7.78	5.8	81.53	60.8	136.92	102.1
	057	11.02	180.7	71.71	271.1	69.07	261.1	67.19	254.0	8.18	6.1	89.04	66.4	143.35	106.9
	062	12.00	196.7	78.04	295.0	75.40	285.0	73.52	277.9	8.58	6.4	96.42	71.9	162.67	121.3
	066	13.00	213.3	84.63	319.9	81.98	309.9	80.11	302.8	8.98	6.7	104.20	77.7	175.94	131.2
	072	13.86	227.1	90.11	340.6	87.46	330.6	85.58	323.5	9.25	6.9	110.77	82.6	187.07	139.5
	085 ^{1, 2)}	16.40	269.8	107.00	404.7	105.21	397.7	--	--	9.78	7.3	87.56	65.3	--	--

1) 085 = 2000 RPM max.

2) 085 = 75 bar (1100 psi) cont. 085 = 90 bar (1300 psi) max. int.

Series VT6CC * W - B22 - B08 - 1 R 00 - D 1 - 00 *

Modifications

Mounting W/connection variables

		P1=1"-S=3"		P1=1"-S=2 1/2" 2)	
		1"	3/4" 1)	1"	3/4" 1)
code	Unc	00	01	10	11
	Metric	0M	W0	1M	W1

1) for 46 ml/rev max.
2) for 126 ml/rev max.
The large cartridge must be always mounted in the front.

Seal class

1 - S1 (for mineral oil)
4 - S4 (for fire resistant fluids)
5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page BM-1-5)
00 - standard

Direction of rotation
(view on shaft end)
R - clockwise
L - counter-clockwise

Use for severe duty shaft only

Cam ring for "P1" & "P2"

Volumetric displacement cm³/rev (in³/rev)

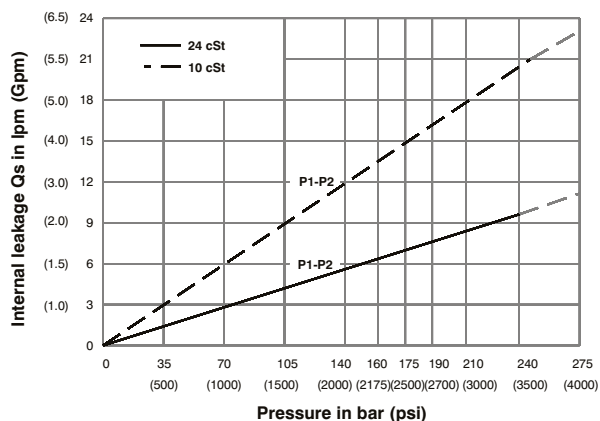
*B03/R03 = 10.8 (0.66)	B15/R15 = 50.5 (3.08)
B05/R05 = 17.2 (1.05)	B17/R17 = 58.3 (3.56)
B06/R06 = 21.3 (1.30)	B20/R20 = 63.8 (3.89)
B08/R08 = 26.4 (1.61)	B22/R22 = 70.3 (4.29)
B10/R10 = 34.1 (2.08)	B25/R25 = 79.3 (4.84)
B12/R12 = 37.1 (2.26)	B28/R28 = 88.8 (5.42)
B14/R14 = 46.0 (2.81)	B31/R31 = 100.0 (6.10)

*B' - for Mobile 'R' - for Mobile - spring assisted

Type of shaft

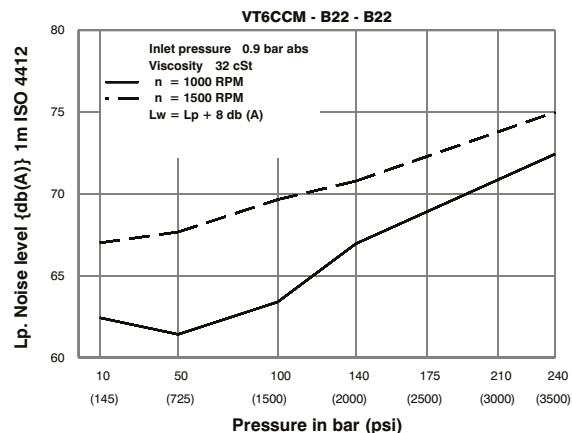
M version	MW version	P version
1 - keyed (no SAE)	2 - keyed (SAE BB)	3 - splined (no SAE)
3 - splined (SAE BB)	R - keyed special	4 - splined (SAE BB)
5 - splined (SAE B)	X - keyed special	6 - splined (no SAE)
	W - keyed special	
	V - keyed special	
	T- splined (SAE J718c)	
	S- splined (DIN5462)	
	Q- splined (SAE C)	

INTERNAL LEAKAGE (TYPICAL)



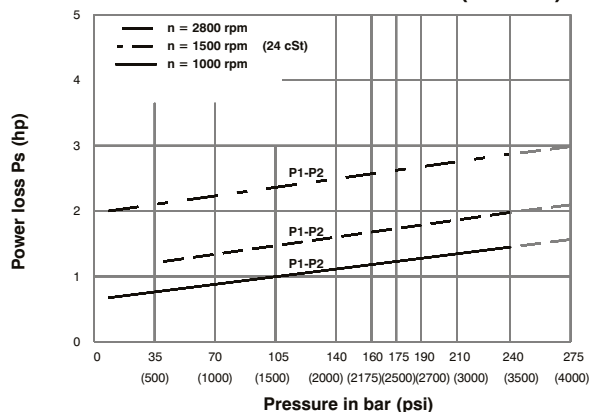
Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow.
Total leakage is the sum of each section loss at its operating conditions.

NOISE LEVEL (TYPICAL)



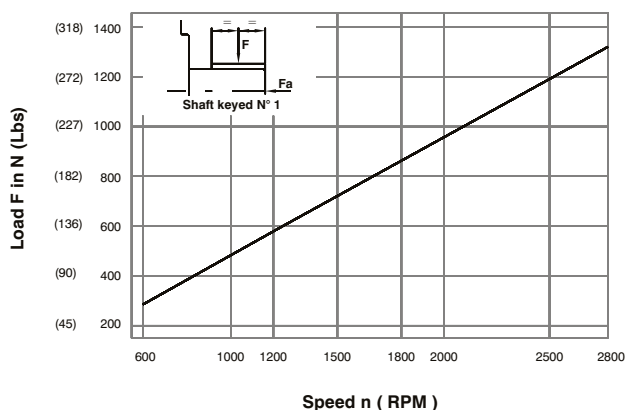
Double pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)

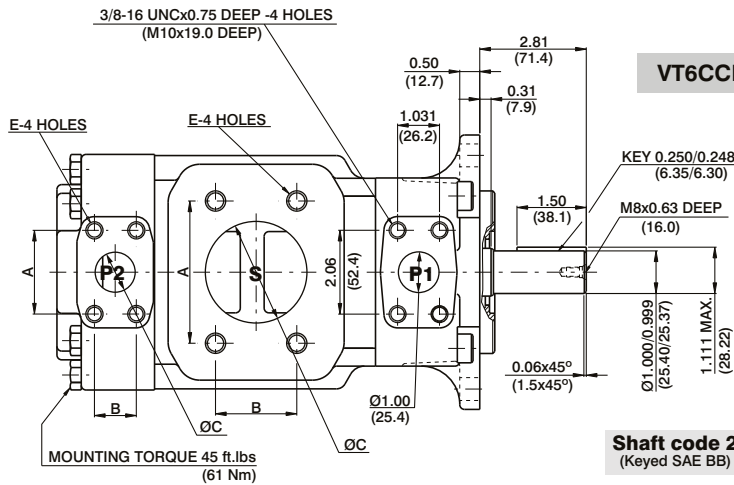
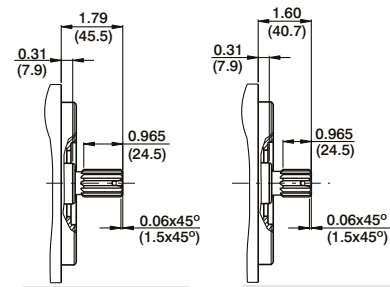


Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD

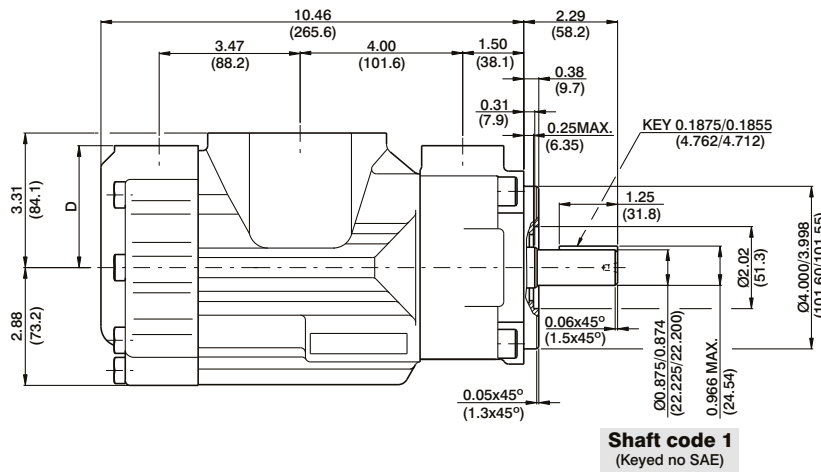
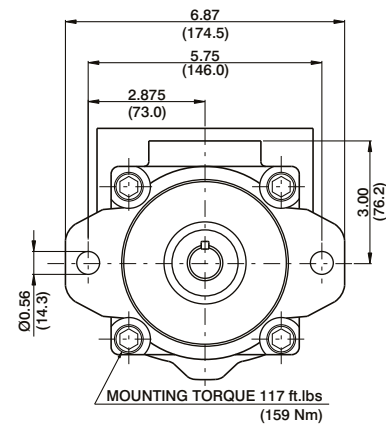


Maximum axial load permissible F_a = 800 N (180 Lbs)



Shaft code 3
SAE BB splined shaft
Class 1-J498b
16/32 dp. 15 teeth
30° pressure angle
Flat root side fit

Shaft code 5
SAE B splined shaft
Class 1-J498b
16/32 dp. 13 teeth
30° pressure angle
Flat root side fit



PORT	A	B	C	D	E
S	4.19 (106.4)	2.44 (61.9)	3.00 (76.2)		5/8-11UNCx1.12 DEEP (M16 x 28.4 DEEP)
S	3.50 (88.9)	2.00 (50.8)	2.50 (63.5)		1/2-13UNCx0.94 DEEP M12 x 24.0 DEEP
P1	1.874 (47.6)	0.874 (22.2)	0.75 (19.0)	3.00 (76.2)	3/8-16UNCx0.75 DEEP (M10x19.0 DEEP)
P2	2.06 (52.4)	1.03 (26.2)	1.00 (25.4)	2.94 (74.7)	

Shaft torque limits in ³ /rev x psi (ml/rev x bar)					
Shaft	Vp x p max. (P1+P2)				
1	12666 (14300)				
2	18972 (21420)				
3	28937 (32670)				
5	18246 (20600)				

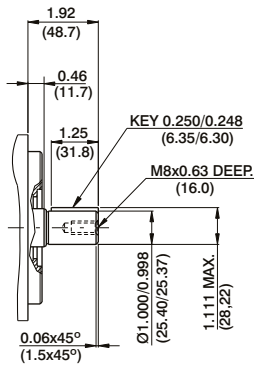
OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1 & P2	B03	0.66	10.8	4.29	16.2	2.83	10.7	--	--	1.74	1.3	7.11	5.3	--	--
	B05	1.05	17.2	6.83	25.8	5.37	20.3	4.17	15.8	1.88	1.4	10.06	7.5	16.36	12.2
	B06	1.30	21.3	8.44	31.9	7.01	26.5	5.82	22.0	2.01	1.5	11.94	8.9	19.71	14.7
	B08	1.61	26.4	10.48	39.6	9.02	34.1	7.83	29.6	2.15	1.6	14.35	10.7	22.93	17.7
	B10	2.08	34.1	13.52	51.1	12.08	45.7	10.89	41.2	2.28	1.7	18.64	13.4	29.90	22.3
	B12	2.26	37.1	14.71	55.6	13.28	50.2	12.08	45.7	2.28	1.7	19.31	14.4	32.32	24.1
	B14	2.81	46.0	18.25	69.0	16.79	63.5	15.60	59.0	2.55	1.9	23.60	17.6	39.56	29.5
	B15	3.08	50.5	20.00	75.6	18.62	70.4	17.46	66.0	2.68	2.0	25.61	19.1	42.91	32.0
	B17	3.56	58.3	23.12	87.4	21.69	82.0	20.50	77.5	2.82	2.1	29.37	21.9	49.48	36.9
	B20	3.89	63.8	25.32	95.7	23.86	90.2	22.67	85.7	2.95	2.2	31.92	23.8	53.91	40.2
	B22	4.29	70.3	27.88	105.4	26.45	100.0	25.26	95.5	3.08	2.3	35.00	26.1	59.14	44.1
	B25 ¹⁾	4.84	79.3	31.46	118.9	30.02	113.5	28.83	109.0	3.35	2.5	39.16	29.2	66.38	49.5
	B28 ^{1, 2)}	5.42	88.8	35.24	133.2	33.78	127.7	32.93	124.5	3.75	2.8	43.85	32.7	65.04	48.5
	B31 ^{1, 2)}	6.10	100.0	39.68	150.0	38.22	144.5	37.38	141.3	3.75	2.8	48.95	36.5	72.95	54.4

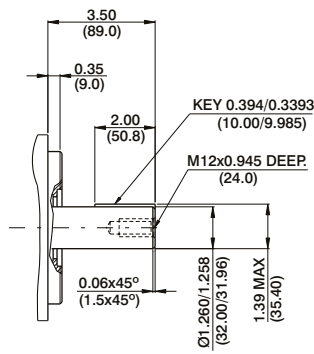
1) B25-B28-B31 = 2500 R.P.M. max.

2) B28-B31 = 210 bar (3000 psi) max. int.

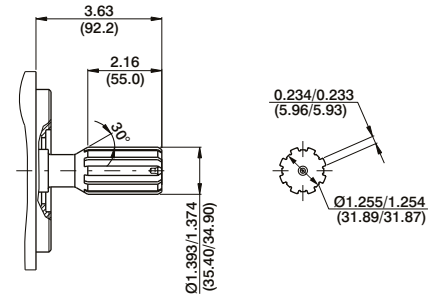
-- Not to use because internal leakage greater than 50% theoretical flow.



Shaft code R

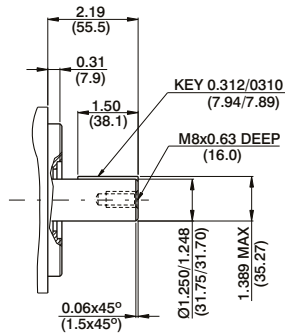


Shaft code V

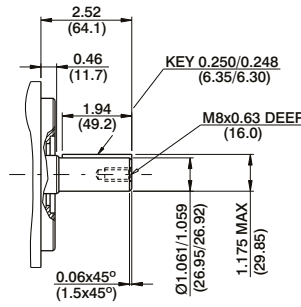


Shaft code S

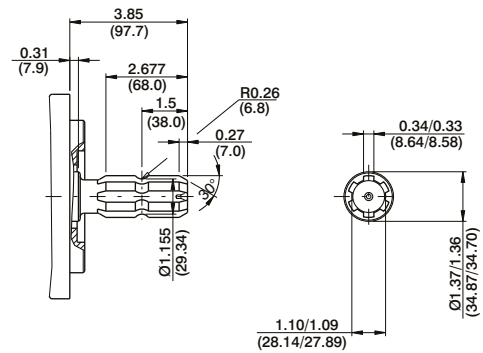
DIN 5462
B8x32x36



Shaft code W

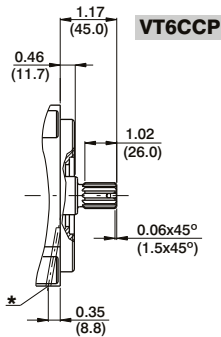


Shaft code X

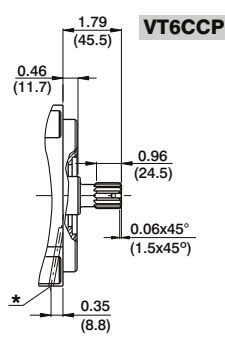


Shaft code T

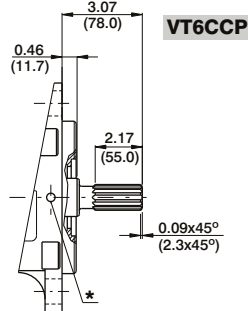
SAE J718C
540 rpm power take-off
For Farm Tractor application



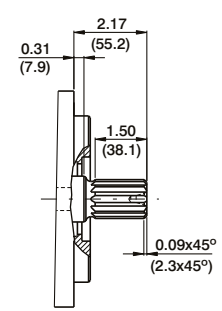
Shaft code 3
no SAE splined shaft
Class 1-J498b
16/32 dp. 13 teeth
30° pressure angle
Flat root side fit



Shaft code 4
SAE BB splined shaft
Class 1-J498b
16/32 dp. 15 teeth
30° pressure angle
Flat root side fit



Shaft code 6
non SAE splined shaft
Class 1-J498b
12/24 dp. 14 teeth
30° pressure angle
Flat root side fit



Shaft code Q
SAE C splined shaft
Class 1-J498b
12/24 Dp. 14 Teeth
30° Pressure angle
Flat root side fit

*Drain hole between double Shaft seals

Shaft torque limits in ³ /rev x psi (ml/rev x bar)		
VT6CCMW	Shaft	Vp x p max. (P1 + P2)
	R	16032 (18100)
	V	28937 (32670)
	W	28937 (32670)
X		22500 (25400)

Shaft torque limits in ³ /rev x psi (ml/rev x bar)		
VT6CCP	Shaft	Vp x p max. (P1 + P2)
	3	18246 (20600)
	4	28937 (32670)
6		28937 (32670)

Series - SAE B 2 bolts

Mounting flange J744 c

One letter can be added to specify special parts in series

Cam ring for "P1" & "P2"

Volumetric displacement cm³/rev (in³/rev)

*B03/R03 = 10.8 (0.66)	B15/R15 = 50.5 (3.08)
B05/R05 = 17.2 (1.05)	B17/R17 = 58.3 (3.56)
B06/R06 = 21.3 (1.30)	B20/R20 = 63.8 (3.89)
B08/R08 = 26.4 (1.61)	B22/R22 = 70.3 (4.29)
B10/R10 = 34.1 (2.08)	B25/R25 = 79.3 (4.84)
B12/R12 = 37.1 (2.26)	B28/R28 = 88.8 (5.42)
B14/R14 = 46.0 (2.81)	B31/R31 = 100.0 (6.10)

*'B' - for Mobile

'R' - for Mobile - spring assisted

Type of shaft

X - keyed

W - keyed

V - keyed

S - Splined (DIN 5462)

Z - Splined

Direction of rotation (view on shaft end)

R - clockwise

L - counter-clockwise

Modification

Mounting W/connection variables

	P1=1"-S=3"	P1=1"-S=2 1/2"
P2	1" 3/4" ¹⁾	1" 3/4" ¹⁾
code	Unc 00 01 10 11	
Metric	0M W0 1M W1	

1) for 46 ml/rev max.

2) for 126 ml/rev max.

The large cartridge must be always mounted in the front.

Seal class

1 - S1 (for mineral oil)

4 - S4 (for fire resistant fluids)

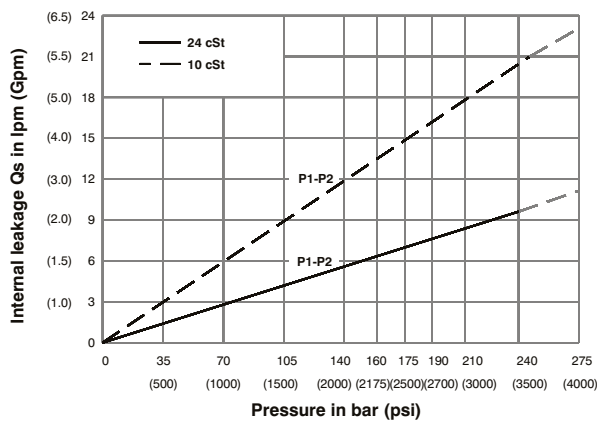
5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page BM-1-5)

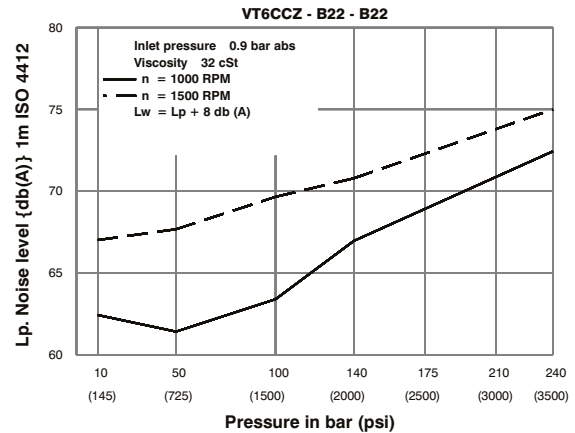
00 - standard

INTERNAL LEAKAGE (TYPICAL)



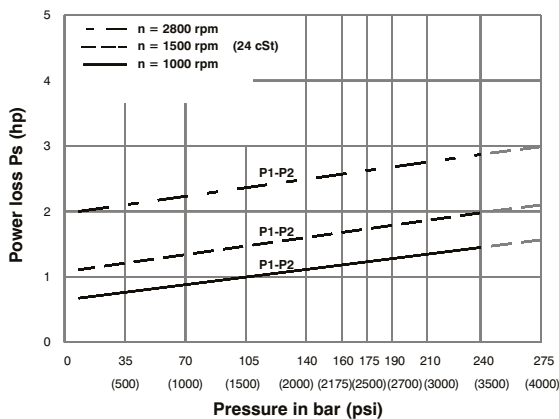
Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.

NOISE LEVEL (TYPICAL)



Double pump noise level is given with each section discharging at the pressure noted on the curve.

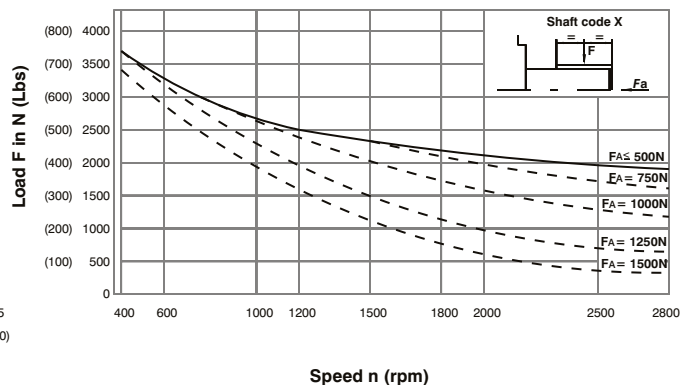
HYDROMECHANICAL POWER LOSS (TYPICAL)



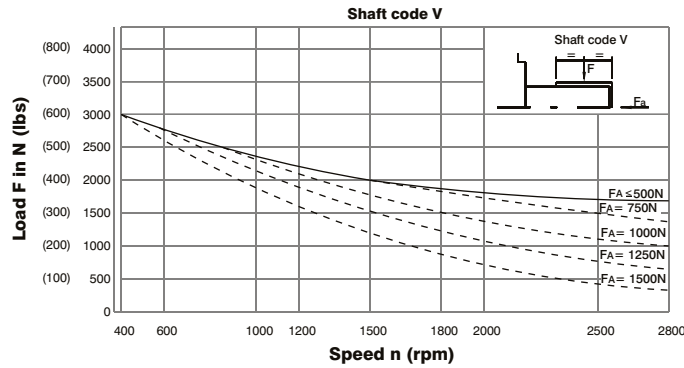
Total hydrodynamic power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD

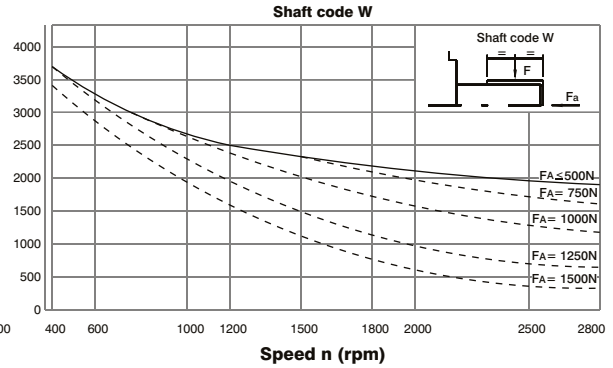
Shaft code X



PERMISSIBLE RADIAL LOAD



PERMISSIBLE RADIAL LOAD



These curves permit to simultaneously check the maximum permissible radial and axial load on the shaft involved. Those load value are determined for 10000 hours bearing lifetime at operating under F_a and F given. To get information for a different lifetime the radial load corrected is.

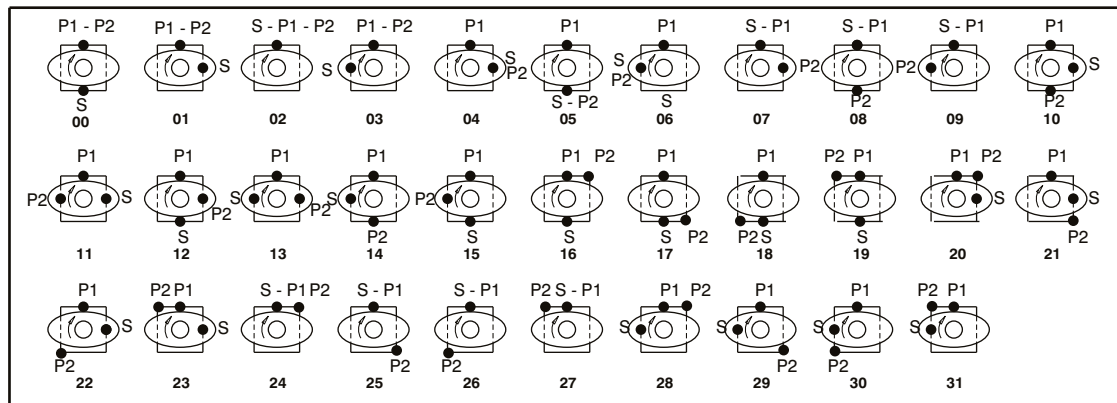
If F_a is smaller than minimum axial force on the curves then

$$\text{Correct } F = \frac{F \text{ curve}}{\left(\frac{LH \text{ Required}}{10000} \right)^{\frac{1}{3.33}}} \quad LH = \text{Lifetime in hours}$$

If F_a is higher than minimum axial force then F radial load is :

$$\text{Correct } F = \frac{F \text{ curve}}{\left(\frac{LH \text{ Required}}{10000} \right)^{\frac{1}{3}}}$$

Porting Diagrams

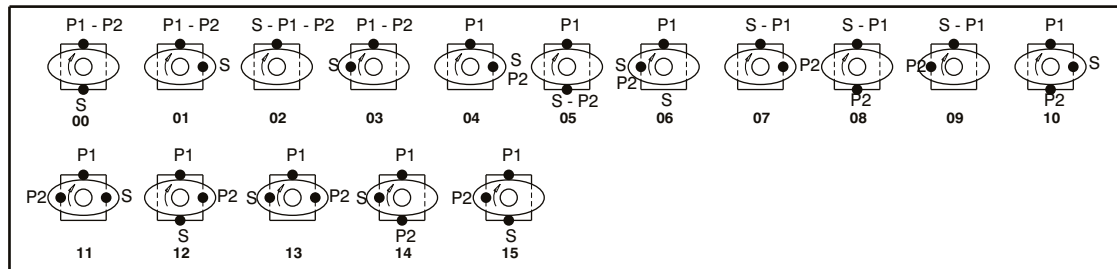


VT6CC/VT6CCM -VT6CCSH-VT6DC/VT6DCM -VT6EC/VT6ECM-VT6CP-VT6GCC

VT7BB/VT7BBS-VT7QCC-VT7DB/VT7DBS-VT7QDC

VT7EB/VT7EBS-VT7QEC

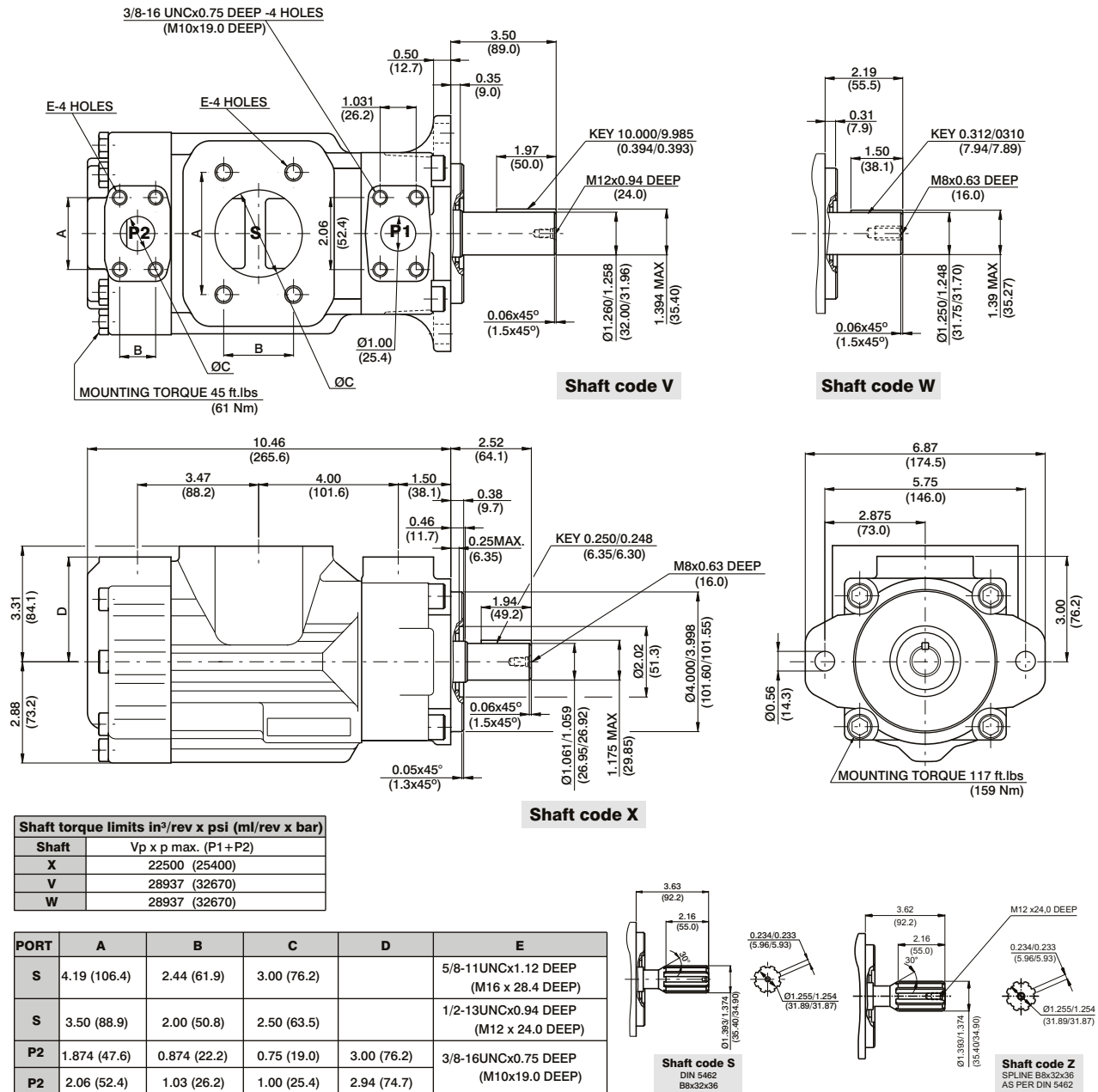
VT67CB-VT67DB-VT67EB-VT67BB-VT67CB-VT67EC



VT6DDS-VT6ED/VT6EDM-VT6EES

VT7DD/VT7DDS-VT7ED/VT7EDS

VT7EE/VT7EES



OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp	Flow q & n = 1500 rpm								Input power p & n = 1500 rpm							
			p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)	
			in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw	hp	kw
P1 & P2	B03	0.66	10.8	4.29	16.2	2.83	10.7	--	--	--	1.74	1.3	7.11	5.3	--	--	--	--
	B05	1.05	17.2	6.83	25.8	5.37	20.3	4.17	15.8	1.88	1.4	10.06	7.5	16.36	12.2	--	--	--
	B06	1.30	21.3	8.44	31.9	7.01	26.5	5.82	22.0	2.01	1.5	11.94	8.9	19.71	14.7	--	--	--
	B08	1.61	26.4	10.48	39.6	9.02	34.1	7.83	29.6	2.15	1.6	14.35	10.7	22.93	17.7	--	--	--
	B10	2.08	34.1	13.52	51.1	12.08	45.7	10.89	41.2	2.28	1.7	18.64	13.4	29.90	22.3	--	--	--
	B12	2.26	37.1	14.71	55.6	13.28	50.2	12.08	45.7	2.28	1.7	19.31	14.4	32.32	24.1	--	--	--
	B14	2.81	46.0	18.25	69.0	16.79	63.5	15.60	59.0	2.55	1.9	23.60	17.6	39.56	29.5	--	--	--
	B15	3.08	50.5	20.00	75.6	18.62	70.4	17.46	66.0	2.68	2.0	25.61	19.1	42.91	32.0	--	--	--
	B17	3.56	58.3	23.12	87.4	21.69	82.0	20.50	77.5	2.82	2.1	29.37	21.9	49.48	36.9	--	--	--
	B20	3.89	63.8	25.32	95.7	23.86	90.2	22.67	85.7	2.95	2.2	31.92	23.8	53.91	40.2	--	--	--
	B22	4.29	70.3	27.88	105.4	26.45	100.0	25.26	95.5	3.08	2.3	35.00	26.1	59.14	44.1	--	--	--
	B25 ¹⁾	4.84	79.3	31.46	118.9	30.02	113.5	28.83	109.0	3.35	2.5	39.16	29.2	66.38	49.5	--	--	--
	B28 ^{1,2)}	5.42	88.8	35.24	133.2	33.78	127.7	32.93	124.5	3.75	2.8	43.85	32.7	73.04	54.5	--	--	--
	B31 ^{1,2)}	6.10	100.0	39.68	150.0	38.22	144.5	37.38	141.3	3.75	2.8	48.95	36.5	82.95	61.4	--	--	--

1) B25-B28-B31 = 2500 R.P.M. max.

2) B28-B31 = 210 bar (3000 psi) max. int.

-- Not to use because internal leakage greater than 50% theoretical flow.

VT6GCC - B22 - B08 - 6 R 00 - A 1 - 00 *

Series _____

Cam ring "P1" & "P2" _____

Volumetric displacement cm³/rev (in³/rev)

B03 = 10.8 (0.66)	B15 = 50.5 (3.08)
B05 = 17.2 (1.05)	B17 = 58.3 (3.56)
B06 = 21.3 (1.30)	B20 = 63.8 (3.89)
B08 = 26.4 (1.61)	B22 = 70.3 (4.29)
B10 = 34.1 (2.08)	B25 = 79.3 (4.84)
B12 = 37.1 (2.26)	B28 = 88.8 (5.42)
B14 = 46.0 (2.81)	B31 = 100.0 (6.10)

Type of shaft _____

6 - splined (DIN 5462)

Direction of rotation (view on shaft end) _____

R - clockwise
L - counter-clockwise

Modifications _____

Mounting W/connection variables

		P1=1"-S=3"		P1=1"-S=2 1/2"	
P2		1"	3/4"	1"	3/4"
code	Unc	00	01	10	11
	Metric	0M	M0	1M	M1

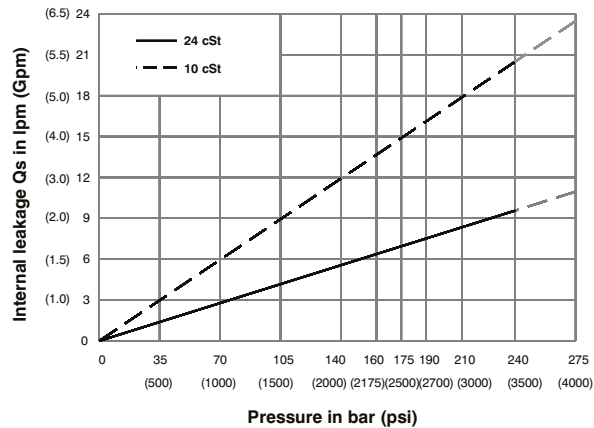
1) for 46 ml/rev. max.
2) for 126 ml/rev. max.
The large cartridge must be always mounted in the front.

Seal class
1 - S1

Design letter _____

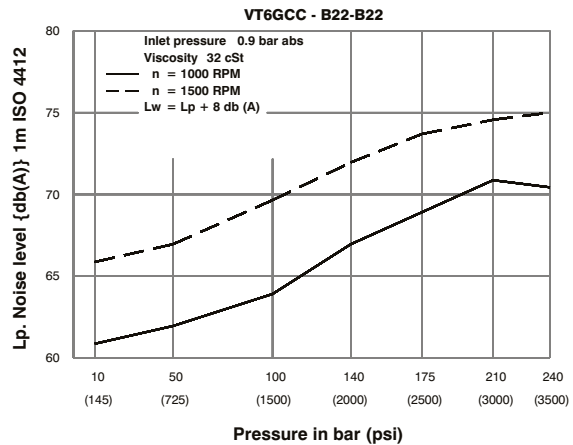
Porting combination (see page BM-1-5)
00 - standard

INTERNAL LEAKAGE (TYPICAL)



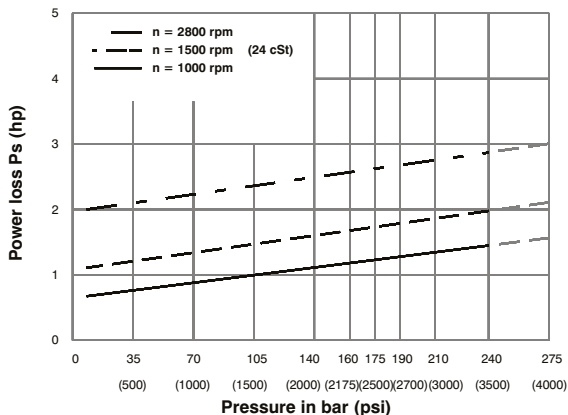
Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow.
Total leakage is the sum of each section loss at its operating conditions.

NOISE LEVEL (TYPICAL)



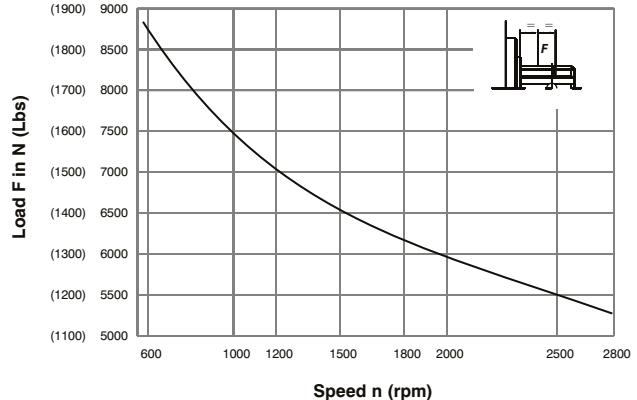
Double pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)

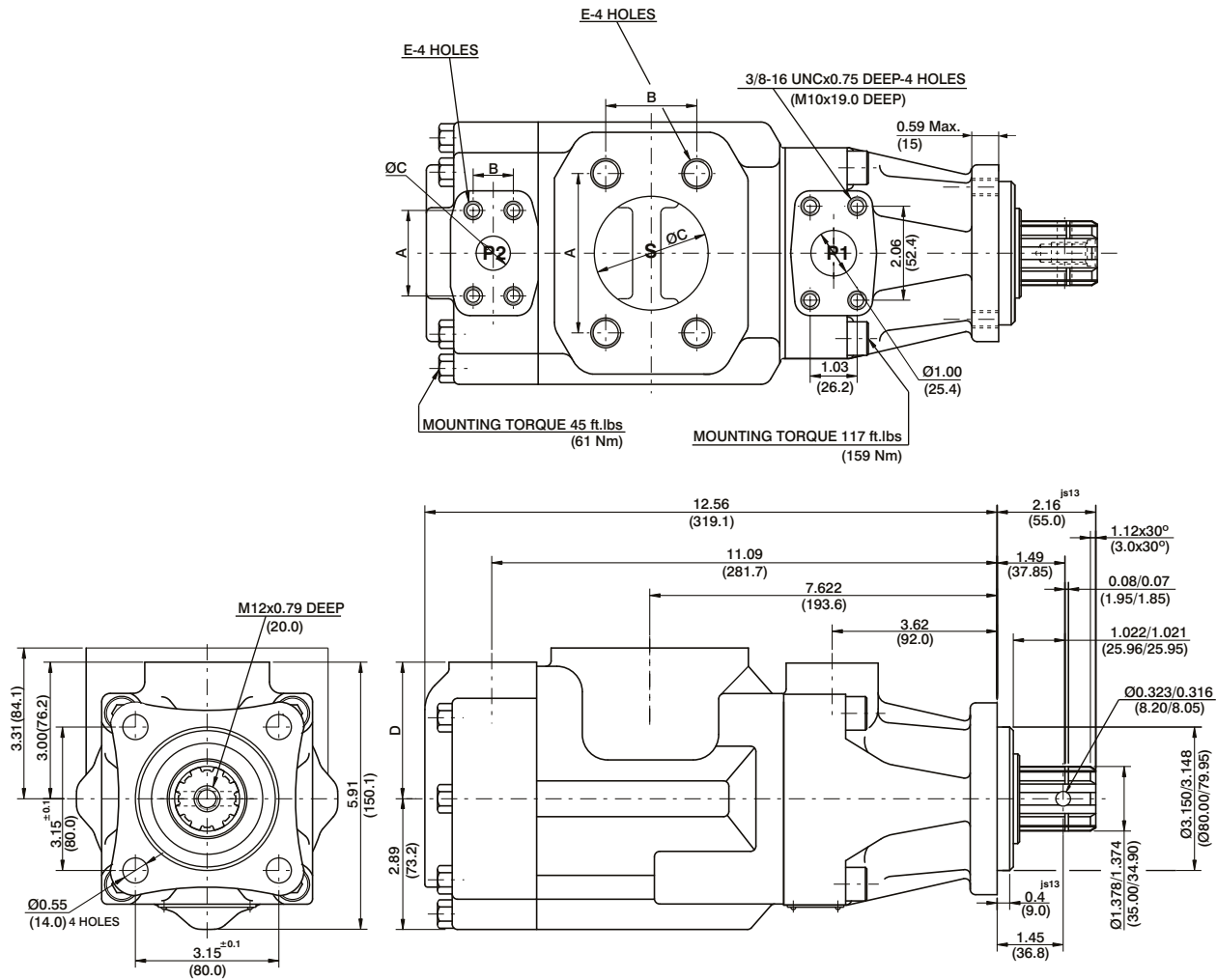


Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



Life time 3000 hours when 70% of the time at 500 N and 30% at max. load.



Shaft Code - 6
DIN5462B8x32x36

PORT	A	B	C	D	E
S	4.19 (106.4)	2.44 (61.9)	3.00 (76.2)		5/8-11UNCx1.12 DEEP (M16 x 28.4 DEEP)
S	3.50 (88.9)	2.00 (50.8)	2.50 (63.5)		1/2-13UNCx0.94 DEEP (M12 x 24.0 DEEP)
P2	1.88 (47.7)	0.88 (22.2)	0.75 (19.0)	3.00 (76.2)	3/8-16UNCx0.75 DEEP (M10x19.0 DEEP)
P2	2.06 (52.4)	1.03 (26.2)	1.00 (25.4)	2.94 (74.7)	

Shaft torque limits in ³ /rev x psi (ml/rev x bar)	
Shaft	Vp x p max. (P1+P2)
6	36921 (32670)

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1 & P2	B03	0.66	10.8	4.29	16.2	2.83	10.7	--	--	1.74	1.3	7.11	5.3	--	--
	B05	1.05	17.2	6.83	25.8	5.37	20.3	4.17	15.8	1.88	1.4	10.06	7.5	16.36	12.2
	B06	1.30	21.3	8.44	31.9	7.01	26.5	5.82	22.0	2.01	1.5	11.94	8.9	19.71	14.7
	B08	1.61	26.4	10.48	39.6	9.02	34.1	7.83	29.6	2.15	1.6	14.35	10.7	22.93	17.7
	B10	2.08	34.1	13.52	51.1	12.08	45.7	10.89	41.2	2.28	1.7	18.64	13.4	29.90	22.3
	B12	2.26	37.1	14.71	55.6	13.28	50.2	12.08	45.7	2.28	1.7	19.31	14.4	32.32	24.1
	B14	2.81	46.0	18.25	69.0	16.79	63.5	15.60	59.0	2.55	1.9	23.60	17.6	39.56	29.5
	B15	3.08	50.5	20.00	75.6	18.62	70.4	17.46	66.0	2.68	2.0	25.61	19.1	42.91	32.0
	B17	3.56	58.3	23.12	87.4	21.69	82.0	20.50	77.5	2.82	2.1	29.37	21.9	49.48	36.9
	B20	3.89	63.8	25.32	95.7	23.86	90.2	22.67	85.7	2.95	2.2	31.92	23.8	53.91	40.2
	B22	4.29	70.3	27.88	105.4	26.45	100.0	25.26	95.5	3.08	2.3	35.00	26.1	59.14	44.1
	B25 ¹⁾	4.84	79.3	31.46	118.9	30.02	113.5	28.83	109.0	3.35	2.5	39.16	29.2	66.38	49.5
	B28 ^{1,2)}	5.42	88.8	35.24	133.2	33.78	127.7	32.93	124.5	3.75	2.8	43.85	32.7	65.04	48.5
	B31 ^{1,2)}	6.10	100.0	39.68	150.0	38.22	144.5	37.38	141.3	3.75	2.8	48.95	36.5	72.95	54.4

1) B25-B28-B31 = 2500 R.P.M. max.

2) B28-B31 = 210 bar (3000 psi) max. int.

-- Not to use because internal leakage greater than 50% theoretical flow.

Series _____

Modifications

Mounting W/connection variables

	UNC		METRIC	
	00	01	M0	M1
P2	1"	3/4"	1"	3/4"

Seal class

1 - S1 (for mineral oil)

4 - S4 (for fire resistant fluids)

5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page BM-1-5)

00 - standard

Direction of rotation
(view on shaft end)

R - clockwise

L - counter-clockwise

Type of shaft

P version

3 - Splined (no SAE)

MW severe duty

5 - keyed (no SAE)

T - Splined (SAE J718c)

V - keyed

Type of shaft

1 - keyed (SAE C)

2 - keyed (no SAE)

3 - splined (SAE C)

4 - splined (no SAE)

Cam ring for "P1"

Volumetric displacement cm³/rev (in³/rev)

*B14/R14 = 47.6 (2.90) B35/R35 = 110.0 (6.77)

B17/R17 = 58.2 (3.55) B38/R38 = 120.3 (7.34)

B20/R20 = 66.0 (4.03) B42/R42 = 136.0 (8.30)

B24/R24 = 79.5 (4.85) B45/R45 = 145.7 (8.80)

B28/R28 = 89.7 (5.47) B50/R50 = 158.0 (9.64)

B31/R31 = 98.3 (6.00) B61/R61 = 190.5 (11.62)

*'B' - for Mobile 'R' - for Mobile - spring assisted

Cam ring for "P2"

Volumetric displacement cm³/rev (in³/rev)

*B03/R03 = 10.8 (0.66) B15/R15 = 50.5 (3.08)

B05/R05 = 17.2 (1.05) B17/R17 = 58.3 (3.56)

B06/R06 = 21.3 (1.30) B20/R20 = 63.8 (3.89)

B08/R08 = 26.4 (1.61) B22/R22 = 70.3 (4.29)

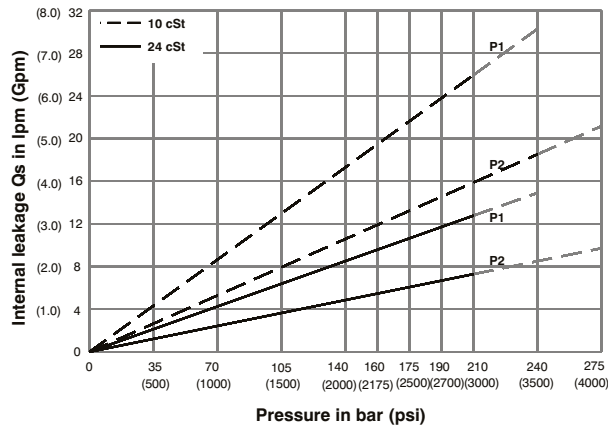
B10/R10 = 34.1 (2.08) B25/R25 = 79.3 (4.84)

B12/R12 = 37.1 (2.26) B28/R28 = 88.8 (5.42)

B14/R14 = 46.0 (2.81) B31/R31 = 100.0 (6.10)

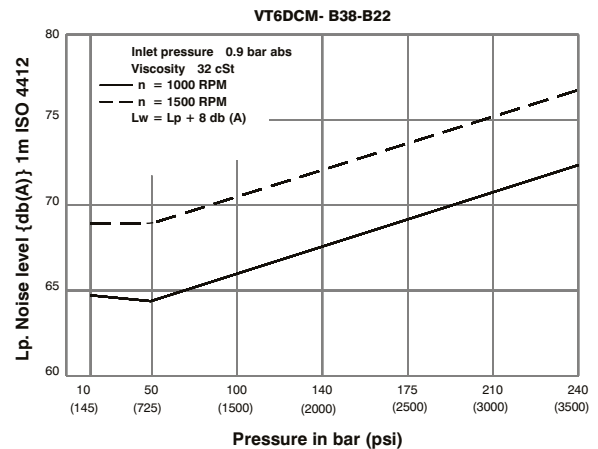
*'B' - for Mobile 'R' - for Mobile - spring assisted

INTERNAL LEAKAGE (TYPICAL)



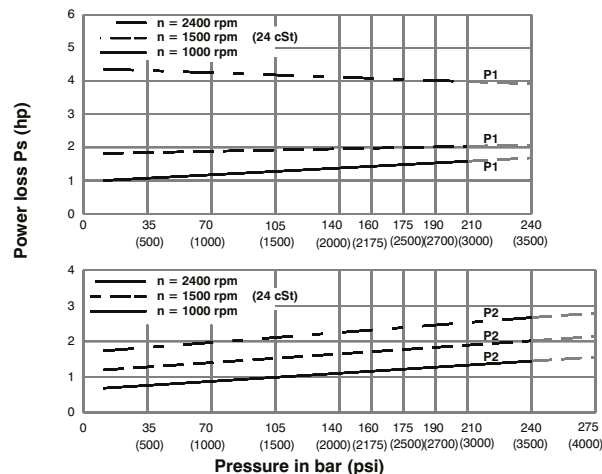
Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.

NOISE LEVEL (TYPICAL)



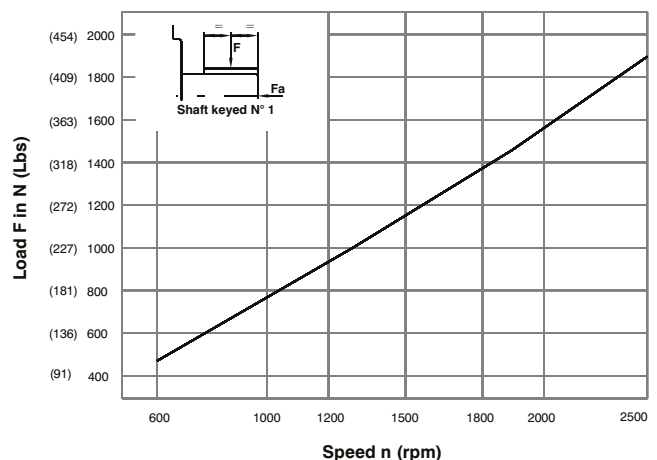
Double pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)

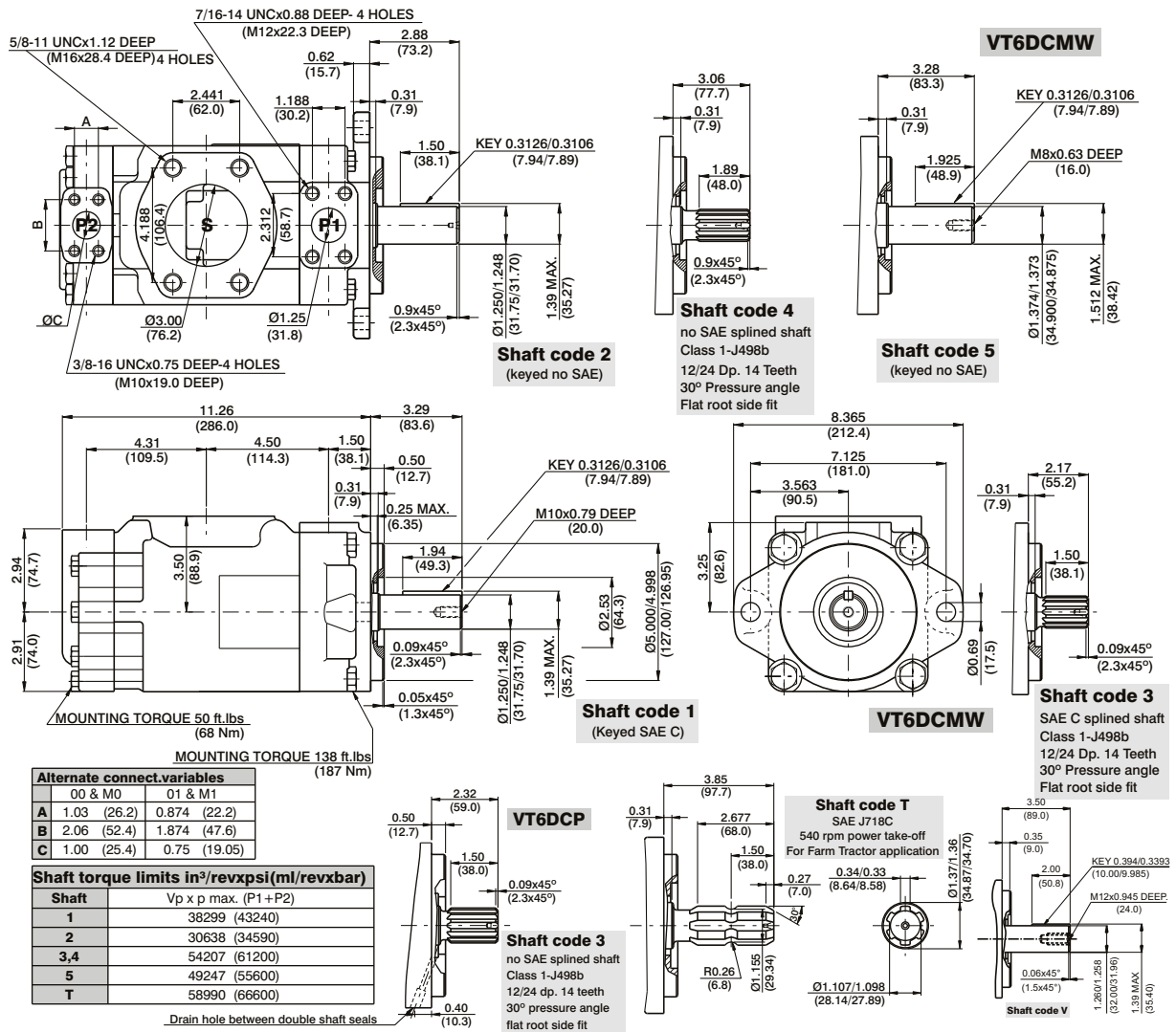


Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



Maximum permissible axial load Fa = 1200 N (270 Lbs)



OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1	B14	2.90	47.6	18.88	71.4	16.42	62.1	14.78	55.9	3.08	2.3	24.81	18.5	41.03	30.6
	B17	3.55	58.2	23.1	87.3	20.6	78.0	18.99	71.8	3.35	2.5	29.77	22.2	49.62	37.0
	B20	4.00	66.0	26.19	99.0	23.73	89.7	22.08	83.5	3.75	2.8	33.39	24.9	55.92	41.7
	B24	4.80	79.5	31.56	119.3	29.10	110.0	27.46	103.8	4.02	3.0	39.69	29.6	66.78	49.8
	B28	5.50	89.7	35.58	134.5	33.12	125.2	31.48	119.0	4.29	3.2	44.52	33.2	74.96	55.9
	B31	6.00	98.3	39.00	147.5	36.53	138.1	34.89	131.9	4.42	3.3	48.54	36.2	81.80	61.0
	B35	6.80	111.0	44.04	166.5	41.58	157.2	39.94	151.0	4.69	3.5	54.58	40.7	92.13	68.7
	B38	7.30	120.3	47.72	180.4	45.26	171.1	43.62	164.9	4.96	3.7	58.87	43.9	99.64	74.3
	B42 ¹⁾	8.30	136.0	53.96	204.0	51.50	194.7	49.86	188.5	5.36	4.0	66.25	49.4	112.24	83.7
	B45 ¹⁾	8.89	145.7	57.80	218.5	55.34	209.2	53.70	203.0	5.50	4.1	70.81	52.8	120.02	89.5
	B50 ^{1,2)}	9.64	158.0	62.69	237.0	60.23	227.7	59.25	224.0	5.90	4.4	76.44	57.0	113.98	85.0
	B61 ^{1,3)}	11.62	190.5	76.25	285.7	73.54	278.0	--	--	6.16	4.6	81.26	60.6	--	--
P2	B03	0.66	10.8	4.29	16.2	2.83	10.7	--	--	1.74	1.3	7.11	5.3	--	--
	B05	1.05	17.2	6.83	25.8	5.37	20.3	4.17	15.8	1.88	1.4	10.06	7.5	16.36	12.2
	B06	1.30	21.3	8.44	31.9	7.01	26.5	5.82	22.0	2.01	1.5	11.94	8.9	19.71	14.7
	B08	1.61	26.4	10.48	39.6	9.02	34.1	7.83	29.6	2.15	1.6	14.35	10.7	22.93	17.7
	B10	2.08	34.1	13.52	51.1	12.08	45.7	10.89	41.2	2.28	1.7	18.64	13.4	29.90	22.3
	B12	2.26	37.1	14.71	55.6	13.28	50.2	12.08	45.7	2.28	1.7	19.31	14.4	32.32	24.1
	B14	2.81	46.0	18.25	69.0	16.79	63.5	15.60	59.0	2.55	1.9	23.60	17.6	39.56	29.5
	B15	3.08	50.5	20.00	75.6	18.62	70.4	17.46	66.0	2.68	2.0	25.61	19.1	42.91	32.0
	B17	3.56	58.3	23.12	87.4	21.69	82.0	20.50	77.5	2.82	2.1	29.37	21.9	49.48	36.9
	B20	3.89	63.8	25.32	95.7	23.86	90.2	22.67	85.7	2.95	2.2	31.92	23.8	53.91	40.2
	B22	4.29	70.3	27.88	105.4	26.45	100.0	25.26	95.5	3.08	2.3	35.00	26.1	59.14	44.1
	B25	4.84	79.3	31.46	118.9	30.02	113.5	28.83	109.0	3.35	2.5	39.16	29.2	66.38	49.5
	B28 ²⁾	5.42	88.8	35.24	133.2	33.78	127.7	32.93	124.5	3.75	2.8	43.85	32.7	65.04	48.5
	B31 ²⁾	6.10	100.0	39.68	150.0	38.22	144.5	37.38	141.3	3.75	2.8	48.95	36.5	72.95	54.4

1) B42-B45-B50-B61=2200 RPM max. 2) B28-B31-B50=210 bar (3000 psi) max. int. 3) B61 = 120 bar (1740 psi) max. int, B61 = 80 bar (1160 psi) cont.

VT6EC * Y - 066 - B22

Series

M= Mobile 1 shaft seal

P= Mobile 2 shaft seal

Y - Metric port connection, Omit for UNC

Cam ring for "P1"

Volumetric displacement cm³/rev (in³/rev)

*042/R42 = 132.3 (8.07) 062/R62 = 196.7 (12.00)

045/R45 = 142.4 (8.69) 066/R66 = 213.3 (13.02)

050/R50 = 158.5 (9.67) 072/R72 = 227.1 (13.86)

052/R52 = 164.8 (10.06) 085/R85 = 269.8 (16.46)

057/R57 = 180.7 (11.02)

*'R' - for Mobile - spring assisted

Cam ring for "P2"

Volumetric displacement cm³/rev (in³/rev)

*B03/R03 = 10.8 (0.66) B15/R15 = 50.5 (3.08)

B05/R05 = 17.2 (1.05) B17/R17 = 58.3 (3.56)

B06/R06 = 21.3 (1.30) B20/R20 = 63.8 (3.89)

B08/R08 = 26.4 (1.61) B22/R22 = 70.3 (4.29)

B10/R10 = 34.1 (2.08) B25/R25 = 79.3 (4.84)

B12/R12 = 37.1 (2.26) B28/R28 = 88.8 (5.42)

B14/R14 = 46.0 (2.81) B31/R31 = 100.0 (6.10)

*'B' - for Mobile 'R' - for Mobile - spring assisted

Modifications

Seal class

1 - S1 (for mineral oil)

4 - S4 (for fire resistant fluids)

5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page BM-1-5)

00 - standard

Direction of rotation (view on shaft end)

R - clockwise

L - counter-clockwise

Type of shaft

P version

3 - Splined (no SAE)

Type of shaft

1 - keyed (SAE CC)

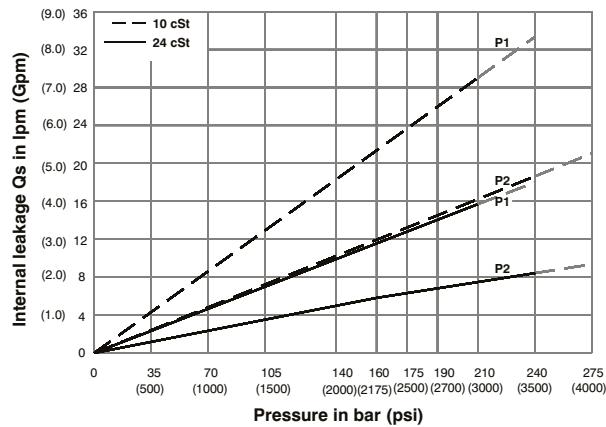
2 - keyed (no SAE)

3 - splined (SAE C)

4 - splined (SAE CC)

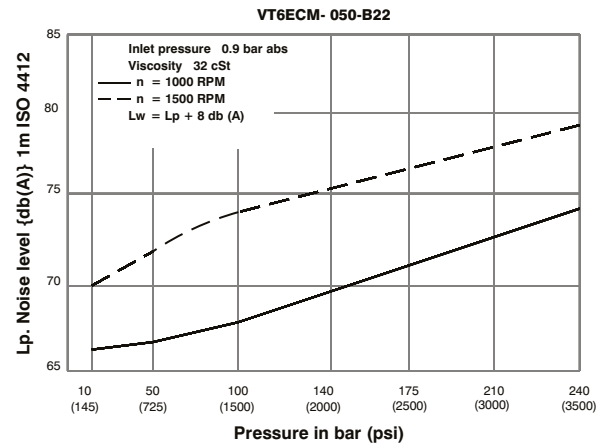
T - Splined (SAE J718c)

INTERNAL LEAKAGE (TYPICAL)



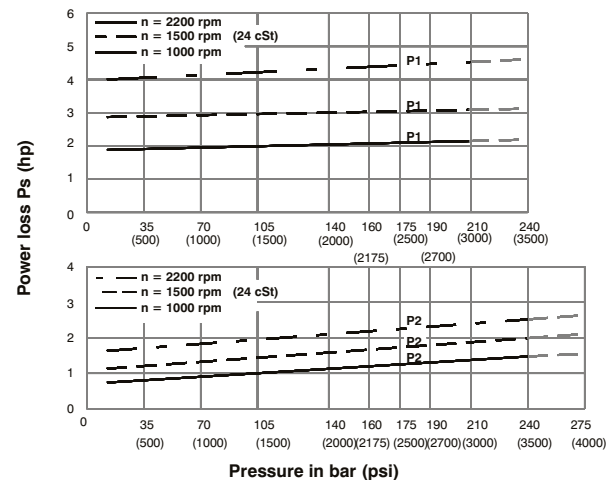
Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.

NOISE LEVEL (TYPICAL)



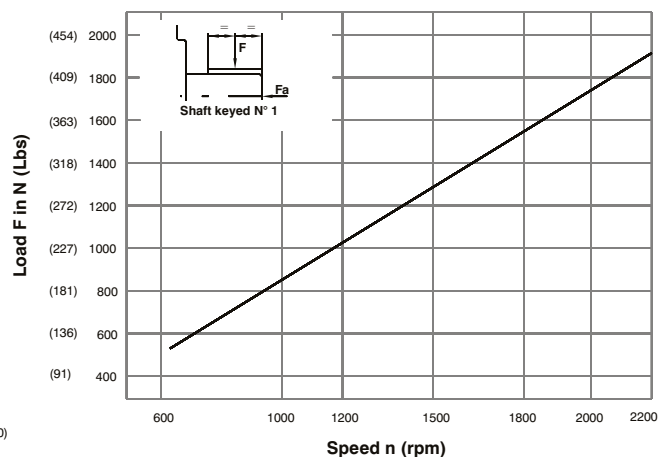
Double pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)

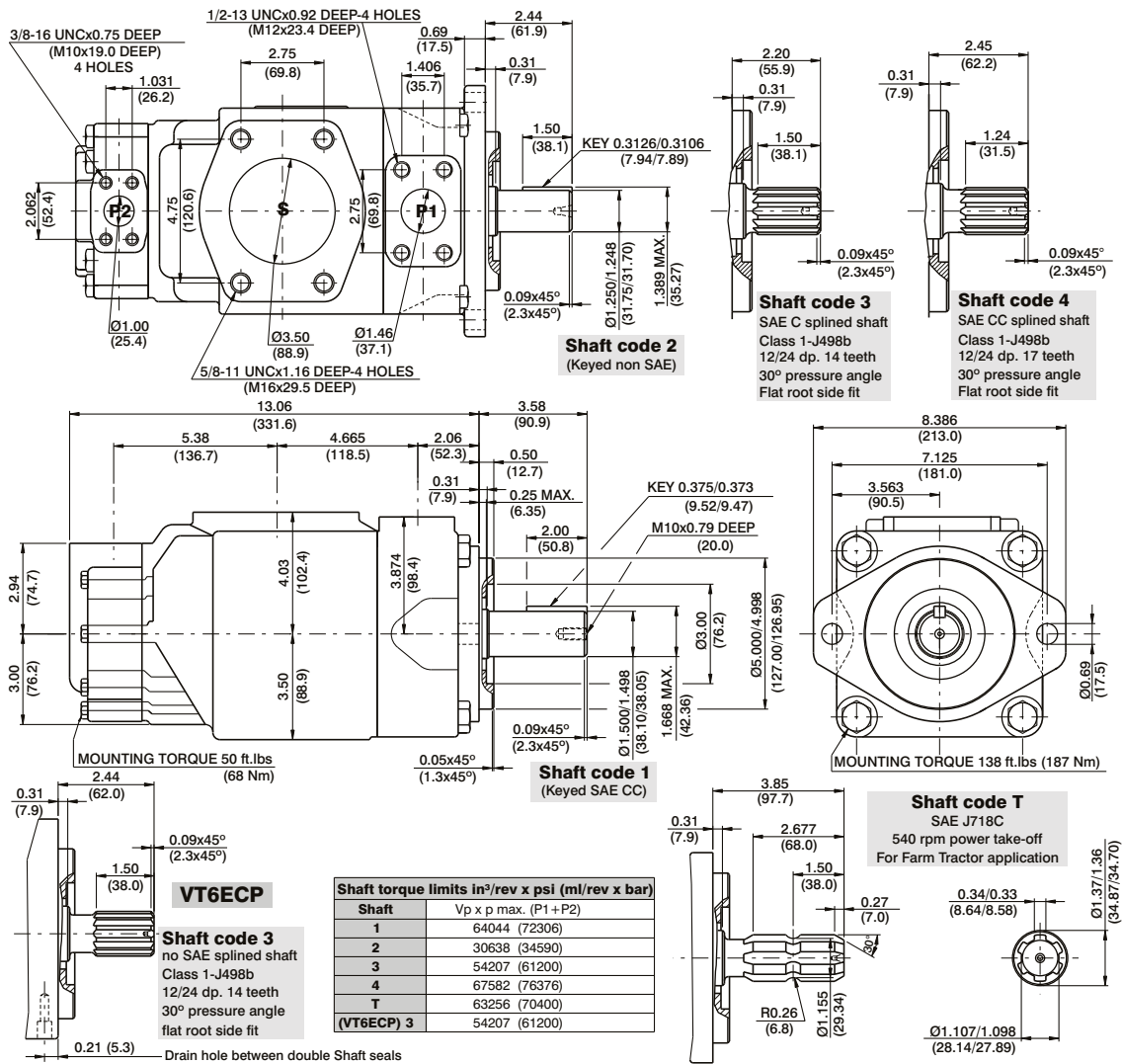


Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



Maximum permissible axial load F_a = 2000 N (449 Lbs)



OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in³/rev	cm³/rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1	042	8.07	132.3	52.50	198.5	49.87	188.5	47.96	181.3	6.97	5.2	66.25	49.4	110.77	82.6
	045	8.70	142.4	56.51	213.6	53.86	203.6	51.98	196.5	7.24	5.4	70.94	52.9	118.95	88.7
	050	9.67	158.5	62.88	237.7	60.24	227.7	58.36	220.6	7.64	5.7	78.45	58.5	131.82	98.3
	052	10.00	164.8	65.40	247.2	62.75	237.2	60.87	230.1	7.78	5.8	81.53	60.8	136.92	102.1
	057	11.02	180.7	71.71	271.1	69.07	261.1	67.19	254.0	8.18	6.1	89.04	66.4	143.35	106.9
	062	12.00	196.7	78.04	295.0	75.40	285.0	73.52	277.9	8.58	6.4	96.42	71.9	162.67	121.3
	066	13.00	213.3	84.63	319.9	81.98	309.9	80.11	302.8	8.98	6.7	104.20	77.7	175.94	131.2
	072	13.86	227.1	90.11	340.6	87.46	330.6	85.58	323.5	9.25	6.9	110.77	82.6	187.07	139.5
	085 ^{1, 2)}	16.40	269.8	107.00	404.7	105.21	397.7	--	--	9.78	7.3	87.56	65.3	--	--
P2	B03	0.66	10.8	4.29	16.2	2.83	10.7	--	--	1.74	1.3	7.11	5.3	--	--
	B05	1.05	17.2	6.83	25.8	5.37	20.3	4.17	15.8	1.88	1.4	10.06	7.5	16.36	12.2
	B06	1.30	21.3	8.44	31.9	7.01	26.5	5.82	22.0	2.01	1.5	11.94	8.9	19.71	14.7
	B08	1.61	26.4	10.48	39.6	9.02	34.1	7.83	29.6	2.15	1.6	14.35	10.7	22.93	17.7
	B10	2.08	34.1	13.52	51.1	12.08	45.7	10.89	41.2	2.28	1.7	18.64	13.4	29.90	22.3
	B12	2.26	37.1	14.71	55.6	13.28	50.2	12.08	45.7	2.28	1.7	19.31	14.4	32.32	24.1
	B14	2.81	46.0	18.25	69.0	16.79	63.5	15.60	59.0	2.55	1.9	23.60	17.6	39.56	29.5
	B15	3.08	50.5	20.00	75.6	18.62	70.4	17.46	66.0	2.68	2.0	25.61	19.1	42.91	32.0
	B17	3.56	58.3	23.12	87.4	21.69	82.0	20.50	77.5	2.82	2.1	29.37	21.9	49.48	36.9
	B20	3.89	63.8	25.32	95.7	23.86	90.2	22.67	85.7	2.95	2.2	31.92	23.8	53.91	40.2
	B22	4.29	70.3	27.88	105.4	26.45	100.0	25.26	95.5	3.08	2.3	35.00	26.1	59.14	44.1
	B25	4.84	79.3	31.46	118.9	30.02	113.5	28.83	109.0	3.35	2.5	39.16	29.2	66.38	49.5
	B28 ³⁾	5.42	88.8	35.24	133.2	33.78	127.7	32.93	124.5	3.75	2.8	43.85	32.7	65.04	48.5
	B31 ³⁾	6.10	100.0	39.68	150.0	38.22	144.5	37.38	141.3	3.75	2.8	48.95	36.5	72.95	54.4

1) 085 = 2000 RPM max.

2) 085 = 75 bar (1100 psi) cont. 085 = 90 bar (1300 psi) max. int.

3) B28-B31=210 bar (3000 psi) max. int.

-- Not to use because internal leakage greater than 50% theoretical flow.

Series

M = Mobile 1 shaft seal

P = Mobile 2 shaft seal

Y - Metric port connection, Omit for UNC

Cam ring for "P1"

Volumetric displacement cm³/rev (in³/rev)

*042/R42 = 132.3 (8.07) 062/R62 = 196.7 (12.00)

045/R45 = 142.4 (8.69) 066/R66 = 213.3 (13.02)

050/R50 = 158.5 (9.67) 072/R72 = 227.1 (13.86)

052/R52 = 164.8 (10.06) 085/R85 = 269.8 (16.46)

057/R57 = 180.7 (11.02)

*'R' - for Mobile - spring assisted

Cam ring for "P2"

Volumetric displacement cm³/rev (in³/rev)

*B14/R14 = 47.6 (2.90) B35/R35 = 110.0 (6.77)

B17/R17 = 58.2 (3.55) B38/R38 = 120.3 (7.34)

B20/R20 = 66.0 (4.03) B42/R42 = 136.0 (8.30)

B24/R24 = 79.5 (4.85) B45/R45 = 145.7 (8.89)

B28/R28 = 89.7 (5.47) B50/R50 = 158.0 (9.64)

B31/R31 = 98.3 (6.00) B61/R61 = 190.5 (11.62)

*'B' - for Mobile 'R' - for Mobile - spring assisted

Modifications

Seal class

1 - S1 (for mineral oil)

4 - S4 (for fire resistant fluids)

5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page BM-1-5)

00 - standard

Direction of rotation (view on shaft end)

R - clockwise

L - counter-clockwise

Type of shaft

P version

3 - Splined (no SAE)

Type of shaft

1 - keyed (SAE CC)

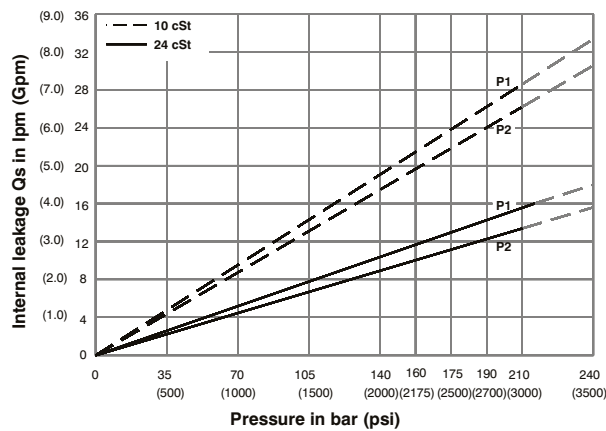
2 - keyed (no SAE)

3 - splined (SAE C)

4 - splined (SAE CC)

T - Splined (SAE J718c)

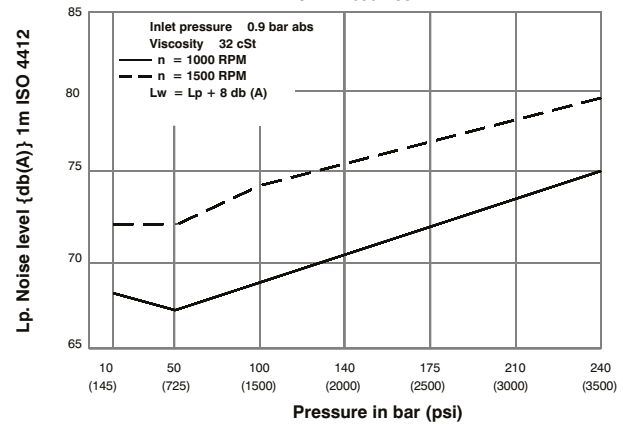
INTERNAL LEAKAGE (TYPICAL)



Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.

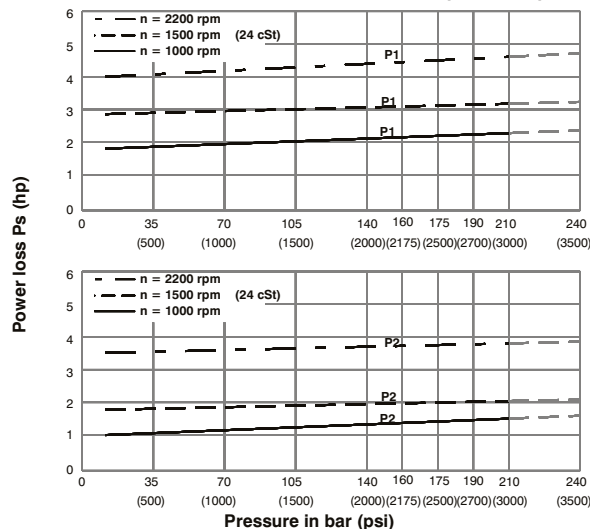
NOISE LEVEL (TYPICAL)

VT6EDM-050-B38



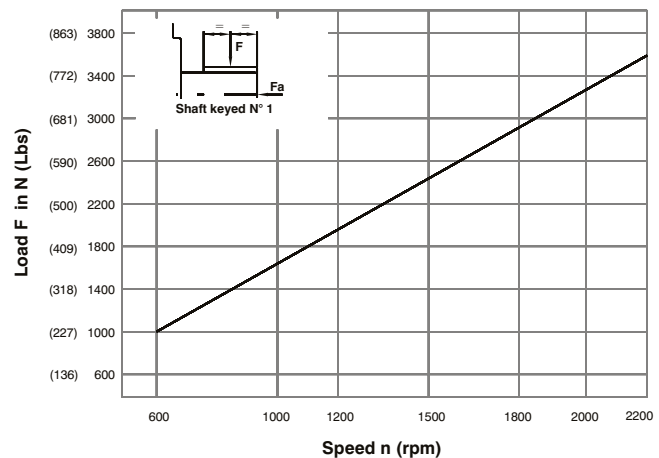
Double pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)

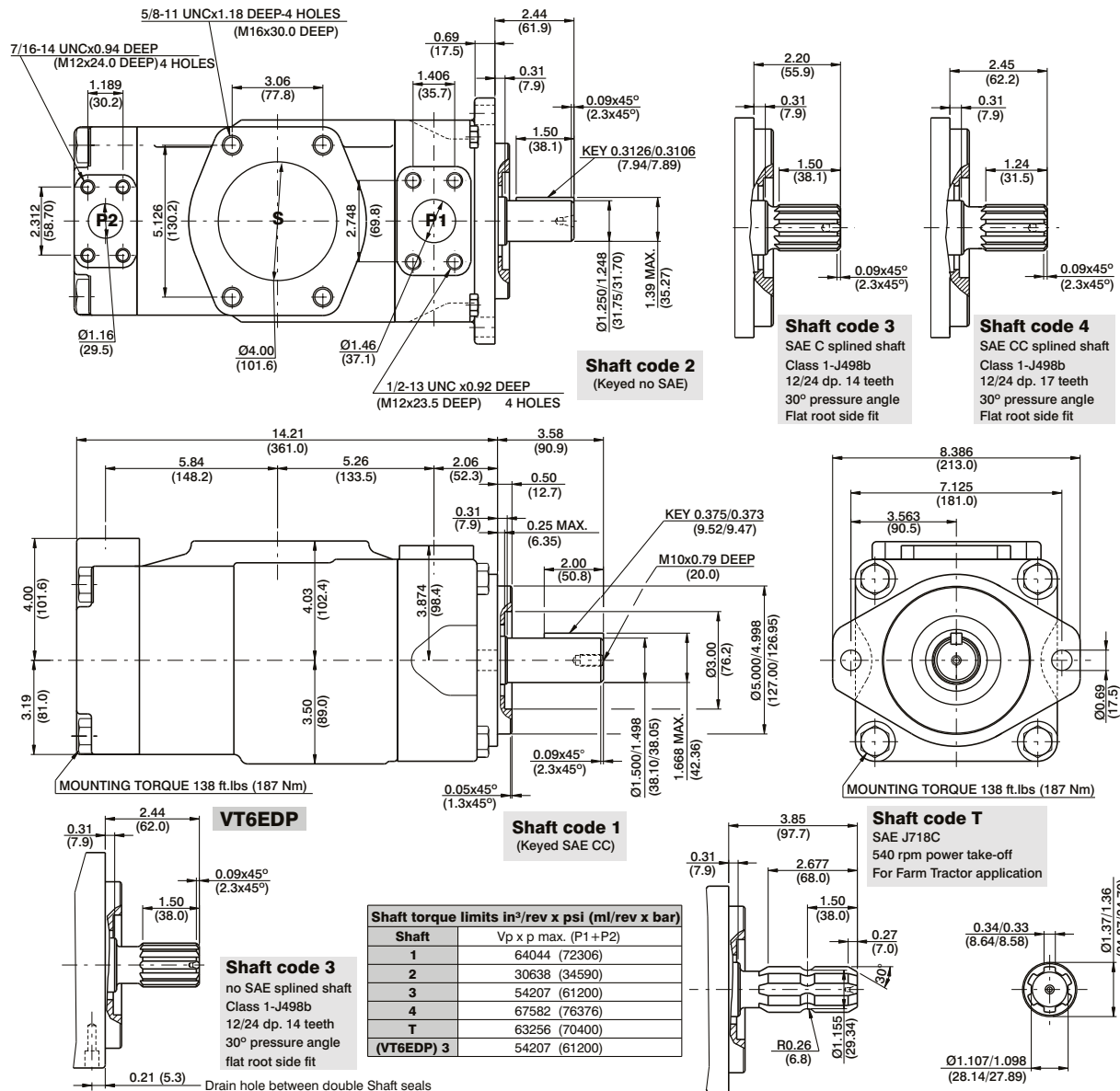


Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



Maximum permissible axial load F_a = 2000 N (449 Lbs)



OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm								Input power p & n = 1500 rpm					
		p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw	hp	kw
P1	042	8.07	132.3	52.50	198.5	49.87	188.5	47.96	181.3	6.97	5.2	66.25	49.4	110.77	82.6		
	045	8.70	142.4	56.51	213.6	53.86	203.6	51.98	196.5	7.24	5.4	70.94	52.9	118.95	88.7		
	050	9.67	158.5	62.88	237.7	60.24	227.7	58.36	220.6	7.64	5.7	78.45	58.5	131.82	98.3		
	052	10.00	164.8	65.40	247.2	62.75	237.2	60.87	230.1	7.78	5.8	81.53	60.8	136.92	102.1		
	057	11.02	180.7	71.71	271.1	69.07	261.1	67.19	254.0	8.18	6.1	89.04	66.4	143.35	106.9		
	062	12.00	196.7	78.04	295.0	75.40	285.0	73.52	277.9	8.58	6.4	96.42	71.9	162.67	121.3		
	066	13.00	213.3	84.63	319.9	81.98	309.9	80.11	302.8	8.98	6.7	104.20	77.7	175.94	131.2		
	072	13.86	227.1	90.11	340.6	87.46	330.6	85.58	323.5	9.25	6.9	110.77	82.6	187.07	139.5		
	085 ^{1,2)}	16.40	269.8	107.00	404.7	105.21	397.7	--	--	9.78	7.3	87.56	65.3	--	--		
	B14	2.90	47.6	18.88	71.4	16.42	62.1	14.78	55.9	3.08	2.3	24.81	18.5	41.03	30.6		
P2	B17	3.55	58.2	23.1	87.3	20.6	78.0	18.99	71.8	3.35	2.5	29.77	22.2	49.62	37.0		
	B20	4.00	66.0	26.19	99.0	23.73	89.7	22.08	83.5	3.75	2.8	33.39	24.9	55.92	41.7		
	B24	4.80	79.5	31.56	119.3	29.10	110.0	27.46	103.8	4.02	3.0	39.69	29.6	66.78	49.8		
	B28	5.50	89.7	35.58	134.5	33.12	125.2	31.48	119.0	4.29	3.2	44.52	33.2	74.96	55.9		
	B31	6.00	98.3	39.00	147.5	36.53	138.1	34.89	131.9	4.42	3.3	48.54	36.2	81.80	61.0		
	B35	6.80	111.0	44.04	166.5	41.58	157.2	39.94	151.0	4.69	3.5	54.58	40.7	92.13	68.7		
	B38	7.30	120.3	47.72	180.4	45.26	171.1	43.62	164.9	4.96	3.7	58.87	43.9	99.64	74.3		
	B42	8.30	136.0	53.96	204.0	51.50	194.7	49.86	188.5	5.36	4.0	66.25	49.4	112.24	83.7		
	B45	8.89	145.7	57.80	218.5	55.34	209.2	53.70	203.0	5.50	4.1	70.81	52.8	120.02	89.5		
	B50 ³⁾	9.64	158.0	62.69	237.0	60.23	227.7	59.25	224.0	5.90	4.4	76.44	57.0	113.98	85.0		
	B61 ⁴⁾	11.62	190.5	76.25	285.7	73.54	278.0	--	--	6.16	4.6	81.26	60.6	--	--		

1) 085 = 2000 RPM max.

2) 085 = 75 bar (1100 psi) cont. 085 = 90 bar (1300 psi) max. int.

3) B50 = 210 bar (3000 psi) max. int.

4) B61 = 120 bar (1740 psi) max. int. B61 = 80 bar (1160 psi) cont.

VT7 -DOUBLE

VANE PUMPS

VT7BB or VT7BBS - B10 - B10 - 1 R 00 - A 1 00 -

VT7BB series - ISO 2 bolts 3019-2

mounting flange 100 A2 HW

VT7BBS series- SAE B 2 bolts

Mounting flange J744

Cam ring for "P1" & "P2"

Volumetric displacement cm³/rev (in³/rev)

B02 = 5.8 (0.35) B09 = 28.0 (1.71)

B03 = 9.8 (0.60) B10 = 31.8 (1.94)

B04 = 12.8 (0.78) B11 = 34.9 (2.13)

B05 = 15.9 (0.97) B12 = 40.9 (2.50)

B06 = 19.8 (1.21) B14 = 45.1 (2.75)

B07 = 22.5 (1.37) B15 = 50.0 (3.05)

B08 = 24.9 (1.52)

Type of shaft VT7BBS

1 - keyed (no SAE)

2 - keyed (SAE BB)

3 - splined (SAE B)

4 - splined (SAE BB)

Type of shaft VT7BB- VT7BBS

5 - keyed (ISO R775)

Modifications

Mounting W/connection variables

	UNC VT7BBS		METRIC VT7BB-VT7BBS	
	00	01	M0	M1
P1	1"	3/4"	1"	3/4"
P2	3/4"			
S	2 1/2"			

Seal class

1 - S1 (for mineral oil)

4 - S4 (for fire resistant fluids)

5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page BM-1-5)

00 - standard

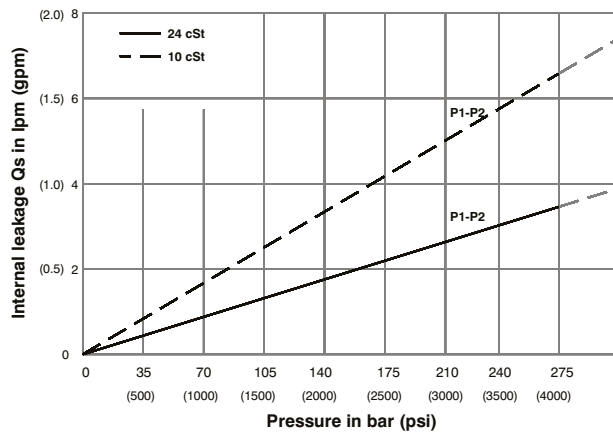
Direction of rotation

(view on shaft end)

R - clockwise

L - counter-clockwise

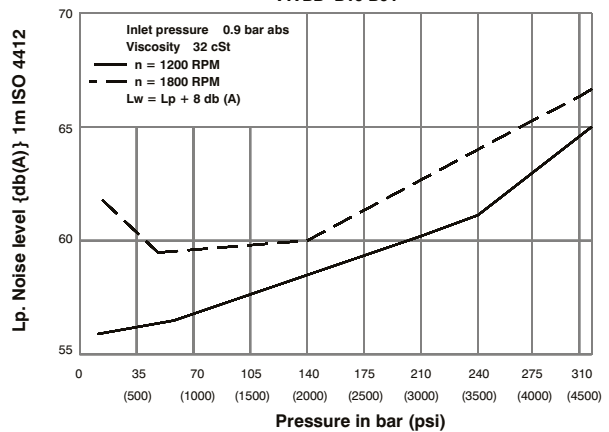
INTERNAL LEAKAGE (TYPICAL)



Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.

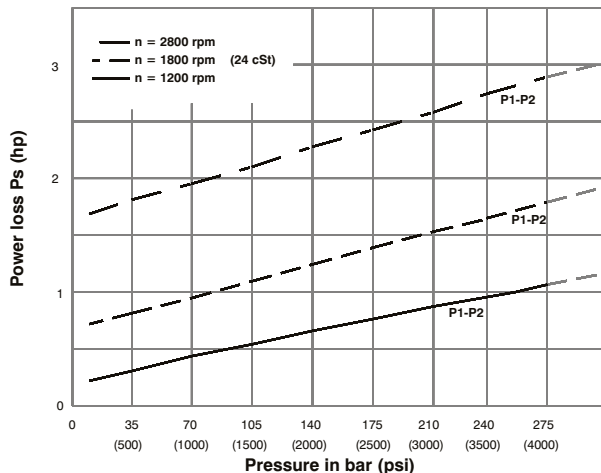
NOISE LEVEL (TYPICAL)

VT7BB- B10-B04



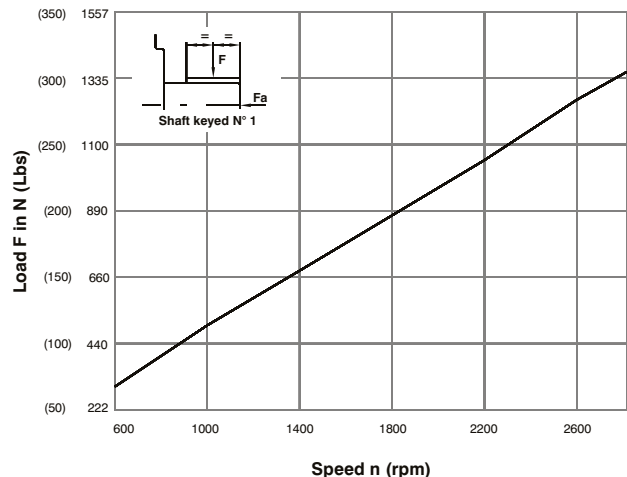
Double pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)

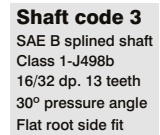
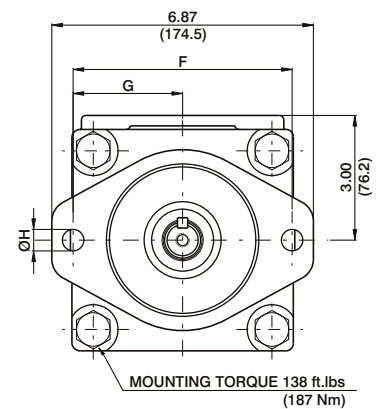


Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



Maximum permissible axial load F_a = 800 N (180 Lbs)

**Shaft code 2**
(Keyed SAE BB)

Technical drawing of a shaft with dimensions and a key. The shaft has a diameter of Ø10.875 (0.873) and a length of 2.29 (58.2). It features a key with a width of 0.31 (7.9) and a height of 1.25 (31.8). The key is labeled 'KEY 0.1875/0.1855 (4.76/4.71)'. The shaft has a fillet radius of 0.09x45° (2.3x45°) and a maximum length of 0.966 MAX. (24.54). The shaft is labeled 'Shaft code 1 (Keyed no SAE)'.

1) B11-B12-B14 = 300 bar (4350 psi) & B15 = 280 bar (4060 psi) max. int. And Max. Speed = 3000 rpm

Series VT7QCC 1 W - 022 - 008 - 1 R 00 - B 1 - 00 *

Mounting
 1 - SAE B
 2 - SAE C

Use for severe duty shaft only

Cam ring for "P1" & "P2"
 (Delivery @ 0 bar & 1500 rpm)

* 003/B03/Y03 = 16.2 l/min	015/B15/Y15 = 75.1 l/min
005/B05/Y05 = 25.8 l/min	017/B17/Y17 = 87.4 l/min
006/B06/Y06 = 31.9 l/min	020/B20/Y20 = 95.7 l/min
008/B08/Y08 = 39.6 l/min	022/B22/Y22 = 105.4 l/min
010/B10/Y10 = 51.1 l/min	025/B25/Y25 = 118.9 l/min
012/B12/Y12 = 55.6 l/min	028/B28/Y28 = 133.2 l/min
014/B14/Y14 = 69.0 l/min	031/B31/Y31 = 150.0 l/min

* '0' - Uni-directional 'B' - Bi-directional 'Y' - Bi-directional for cold start

Type of shaft
 1 - keyed (no SAE)
 3 - splined (SAE BB)
 5 - splined (SAE B)

Severe duty
 2 - keyed (SAE BB)
 B - keyed

Modifications

Mounting W/connection variables

	P1=1"-S=3"	P1=1"-S=2 1/2"
P2	1" 3/4"	1" 3/4"
code	Unc 00 01 10 11	Unc 00 01 10 11
Metric	OM W0 1M W1	OM W0 1M W1

1) for 46 ml/rev max.

2) for 126 ml/rev max.

The large cartridge must be always mounted in the front.

Seal class

1 - S1 (for mineral oil)

4 - S4 (for fire resistant fluids)

5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page BM-1-5)

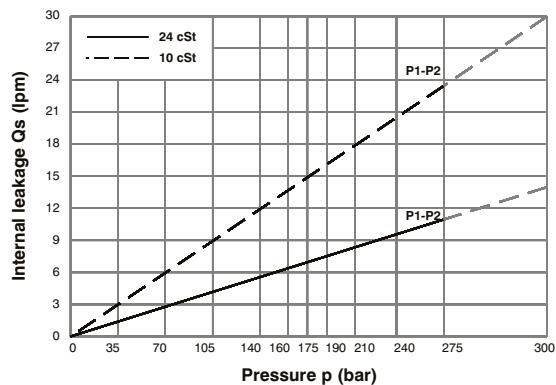
00 - standard

Direction of rotation (view on shaft end)

R - clockwise

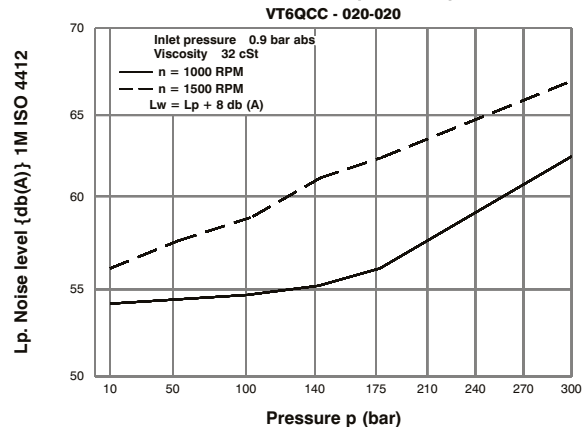
L - counter-clockwise

INTERNAL LEAKAGE (TYPICAL)



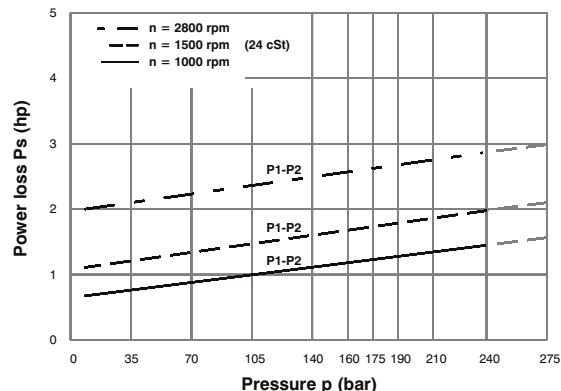
Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.

NOISE LEVEL (TYPICAL)



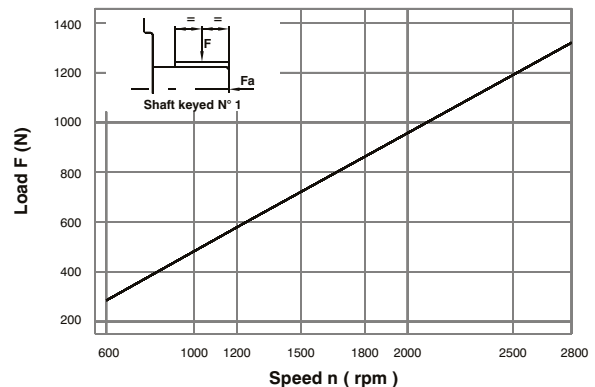
Double pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)

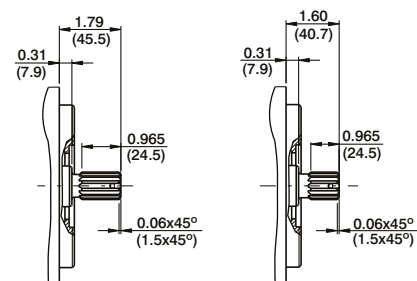


Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD

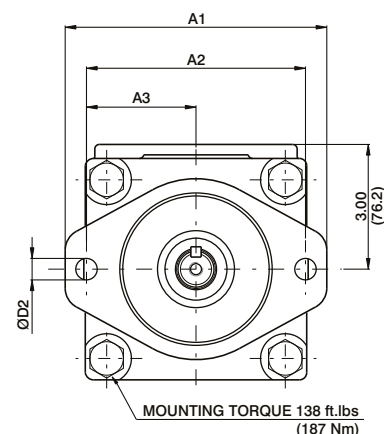


Maximum permissible axial load $F_a = 800$ N



SAE BB splined shaft
Class 1-J498b
16/32 dp. 15 teeth
30° pressure angle
Flat root side fit

SAE B splined shaft
Class 1-J498b
16/32 dp. 13 teeth
30° pressure angle
Flat root side fit



Shaft	Vp x p max. (P1+P2)
1	12666 (14300)
2	18972 (21420)
3	28937 (32670)
5	18246 (20600)

	VT7QCC1	VT7QCC2
Mounting	SAE B	SAE C
$\varnothing D1$	$\frac{4.000 \quad (101.60)}{3.998 \quad (101.55)}$	$\frac{5.000 \quad (127.00)}{4.997 \quad (126.94)}$
$\varnothing D2$	0.56 (14.3)	0.69 (17.5)
A1	6.87 (174.5)	8.36 (212.5)
A2	5.75 (146.0)	7.13 (181.0)
A3	2.87 (73.0)	3.56 (90.5)
A4	0.5 (12.7)	0.62 (15.7)

Series	Volumetric Displacement Vp	Flow q (lpm) & n = 1500 rpm				Input power p (kW) & n = 1500 rpm			
		p = 0 bar	p = 140 bar	p = 240 bar	p = 300 bar	p = 7 bar	p = 140 bar	p = 240 bar	p = 300 bar
003	10.8 ml/rev	16.2	11.9	8.1	--	1.3	5.3	7.8	--
005	17.2 ml/rev	25.8	21.5	17.7	13.7	1.4	7.5	12.2	14.9
006	21.3 ml/rev	31.9	26.5	22.0	18.0	1.5	8.9	14.7	18.0
008	26.4 ml/rev	39.6	34.1	29.6	25.6	1.6	10.7	17.7	21.8
010	34.1 ml/rev	51.1	45.7	41.2	37.2	1.7	13.4	22.3	27.5
012	37.1 ml/rev	55.6	50.2	45.7	41.7	1.7	14.4	24.1	29.8
014	46.0 ml/rev	69.0	63.5	59.0	55.0	1.9	17.6	29.5	36.5
015	50.5 ml/rev	75.1	69.6	65.1	61.1	2.0	18.0	32.0	39.5
017	58.3 ml/rev	87.4	82.0	77.5	73.5	2.1	19.0	36.9	45.7
020	63.8 ml/rev	95.7	90.2	85.7	81.7	2.2	23.8	40.2	49.8
022 ²⁾	70.3 ml/rev	105.4	100.0	95.5	91.5	2.3	26.1	44.1	50.3
025 ^{1, 3)}	79.3 ml/rev	118.9	113.5	109.0	--	2.5	29.2	49.5	--
028 ^{1, 4)}	88.8 ml/rev	133.2	127.7	124.5	--	2.8	32.7	48.5	--
031 ^{1, 4)}	100.0 ml/rev	150.0	144.5	141.3	--	2.8	36.5	54.4	--

1) 025-028-031 = 2500 R.P.M. max. 2) 022 = 275 bar max. int, 3) 025 = 240 bar max. int, 4) 028-031 = 210 bar max. int.
 -- Not to use because internal leakage greater than 50% of theoretical flow.

VT7DB or VT7DBS - B42 - B10 - 1 R 00 - A 1 00 -

VT7DB series-ISO 2 bolts 3019-2
mounting flange 125 A2 HW
VT7DBS series- SAE C 2 bolts
Mounting flange J744c

Cam ring for "P1"

Volumetric displacement cm³/rev (in³/rev)

B14 = 43.9 (2.68)	B31 = 99.1 (6.05)
B17 = 55.0 (3.36)	B35 = 113.4 (6.92)
B20 = 66.0 (4.03)	B38 = 120.6 (7.36)
B22 = 70.3 (4.29)	B42 = 137.5 (8.39)
B24 = 81.1 (4.95)	045 = 145.7 (8.89)
B28 = 89.9 (5.49)	050 = 157.9 (9.64)

Cam ring for "P2"

Volumetric displacement cm³/rev (in³/rev)

B02 = 5.7 (0.35)	B09 = 28.0 (1.71)
B03 = 9.8 (0.60)	B10 = 31.8 (1.94)
B04 = 12.8 (0.78)	B11 = 34.9 (2.13)
B05 = 15.9 (0.97)	B12 = 40.9 (2.50)
B06 = 19.8 (1.21)	B14 = 45.1 (2.75)
B07 = 22.5 (1.37)	B15 = 50.0 (3.05)
B08 = 24.9 (1.52)	

Modifications

Mounting W/connection variables

	UNC VT7DBS		METRIC VT7DB-VT7DBS	
	00	01	M0	M1
P2	1"	3/4"	1"	3/4"

Seal class

- 1 - S1 (for mineral oil)
- 4 - S4 (for fire resistant fluids)
- 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page BM-1-5)
00 - standard

Direction of rotation (view on shaft end)

- R - clockwise
- L - counter-clockwise

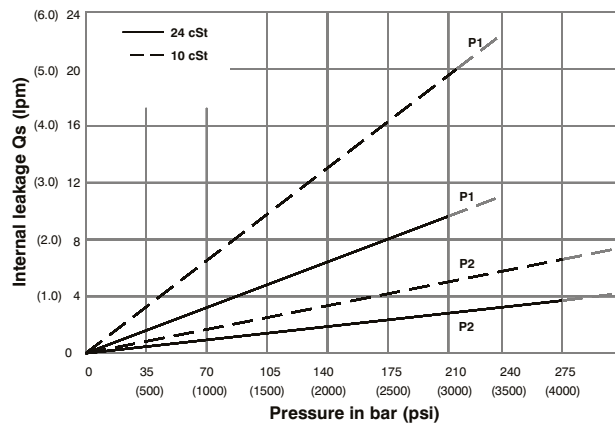
Type of shaft VT7DBS

- 1 - keyed (SAE C)
- 2 - keyed (no SAE)
- 3 - splined (SAE C)
- 4 - splined (spec. SAE C)

Type of shaft VT7DB- VT7DBS

- 5 - keyed (ISO 3019-2-G32M)

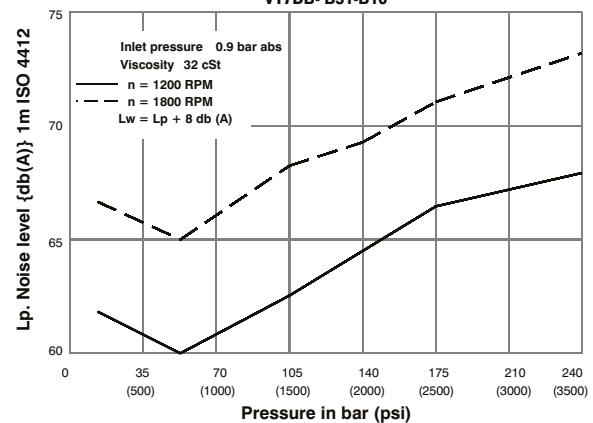
INTERNAL LEAKAGE (TYPICAL)



Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow.
Total leakage is the sum of each section loss at its operating conditions.

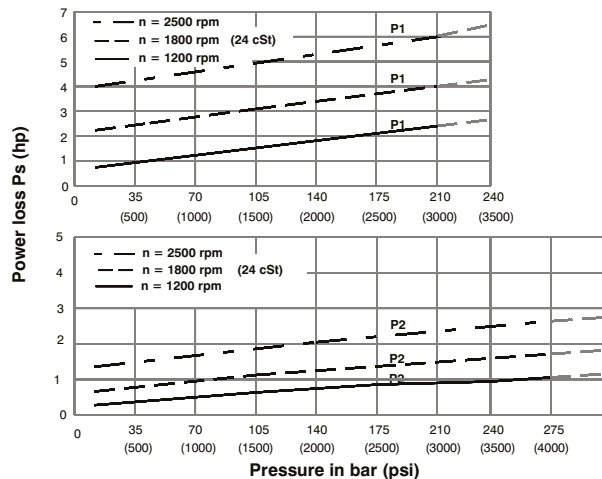
NOISE LEVEL (TYPICAL)

VT7DB- B31-B10



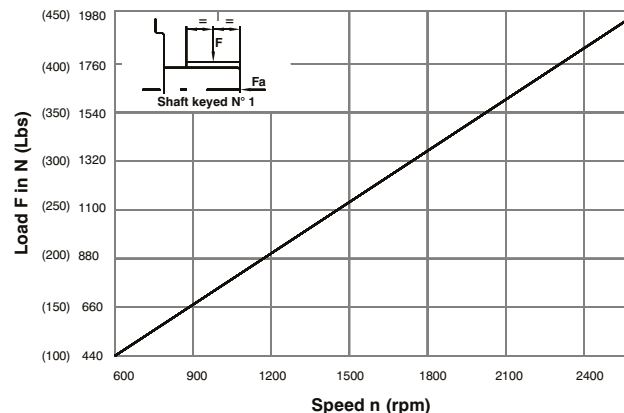
Double pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)

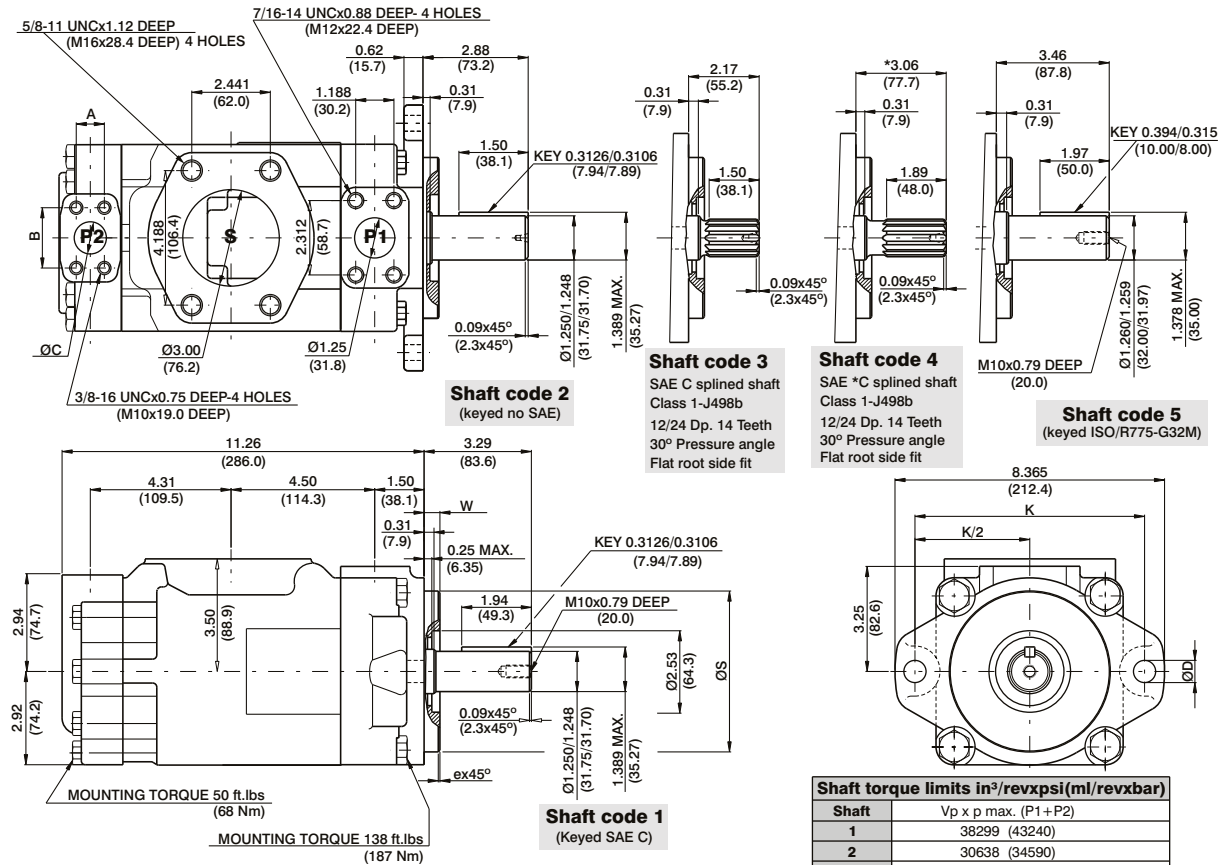


Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



Maximum permissible axial load $F_a = 1200 \text{ N (270 Lbs)}$



Series	ØS		ex45°	W	K	ØD
	MAX.	Min.				
VT7DB	4.921 (124.99)	4.919 (124.94)	0.079 (2.0)	0.374 (9.49)	7.087 (180.0)	0.709 (18.0)
VT7DBS	5.00 (127.00)	4.998 (126.94)	0.051 (1.3)	0.50 (12.7)	7.126 (181.0)	0.689 (17.5)

Shaft torque limits in ³ /revxpsi(ml/revxbar)	
Shaft	Vp x p max. (P1+P2)
1	38299 (43240)
2	30638 (34590)
3	54207 (61200)
4	54207 (61200)
5	37644 (42542)

Alternate connect.variables		
	00 & M0	01 & M1
A	1.031 (26.2)	0.874 (22.2)
B	2.06 (52.4)	1.874 (47.6)
C	1.00 (25.4)	0.75 (19.05)

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1800 rpm						Input power p & n = 1800 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 250 bar (3630 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 250 bar (3630 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1	B14	2.68	43.9	20.92	79.1	19.18	72.5	17.81	67.3	3.46	2.6	27.77	20.7	47.03	35.0
	B17	3.36	55.0	26.16	98.8	24.41	92.3	23.04	87.0	3.77	2.8	33.88	25.3	57.71	43.0
	B20	4.03	66.0	31.39	118.6	29.64	112.0	28.27	106.8	4.07	3.0	39.98	29.8	68.39	50.9
	B22	4.29	70.3	33.43	126.4	31.69	119.8	30.32	104.6	4.19	3.1	42.37	31.6	72.57	54.0
	B24	4.95	81.1	38.57	145.8	36.82	139.2	35.45	134.0	4.49	3.4	48.36	36.1	83.06	61.9
	B28	5.49	89.9	42.80	161.8	41.06	155.2	39.69	150.0	4.74	3.5	53.30	39.7	91.70	68.3
	B31	6.05	99.1	47.18	178.3	45.43	171.7	44.06	166.5	4.99	3.7	58.41	43.6	100.63	75.0
	B35 ¹⁾	6.92	113.4	53.93	203.9	52.18	197.2	50.81	192.0	5.39	4.0	66.29	49.4	114.42	85.3
	B38 ¹⁾	7.36	120.6	57.35	216.8	55.61	210.2	54.24	204.9	5.59	4.2	70.28	52.4	121.42	90.5
	B42 ²⁾	8.39	137.5	65.39	247.2	63.65	240.6	62.28	235.4	6.05	4.5	79.66	59.4	137.83	102.7
	045 ³⁾	8.89	145.7	69.29	262.0	67.11	253.6	65.31	246.8	6.74	5.0	83.75	62.4	145.79	108.7
	050 ⁴⁾	9.64	157.9	75.14	284.0	72.96	275.8	71.78	271.3	7.08	5.3	90.58	67.5	154.50	115.3
P2				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 300 bar (4350 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 300 bar (4350 psi)	
	B02	0.35	5.7	2.76	10.4	2.33	8.8	1.80	6.8	0.74	0.55	4.02	2.99	8.10	6.04
	B03	0.60	9.8	4.66	17.6	4.23	15.9	3.70	14.0	0.85	0.63	6.24	4.65	12.93	9.64
	B04	0.78	12.8	6.09	23.0	5.66	21.4	5.13	19.4	0.94	0.70	7.90	5.89	16.55	12.34
	B05	0.97	15.9	7.56	28.6	7.13	26.9	6.60	25.0	1.02	0.76	9.62	7.17	20.29	15.13
	B06	1.21	19.8	9.42	35.6	8.99	33.9	8.46	32.0	1.13	0.84	11.79	8.79	25.00	18.64
	B07	1.37	22.5	10.70	40.4	10.27	38.8	9.74	36.8	1.20	0.89	13.29	9.91	28.26	21.07
	B08	1.52	24.9	11.84	44.7	11.41	43.1	10.88	41.1	1.27	0.95	14.62	10.90	31.15	23.23
	B09	1.71	28.0	13.31	50.3	12.87	48.6	12.35	47.0	1.36	1.01	16.35	12.19	34.92	26.04
	B10	1.94	31.8	15.12	57.2	14.69	55.5	14.16	53.5	1.46	1.09	18.45	13.75	39.48	29.44
	B11 ⁵⁾	2.13	34.9	16.64	62.9	16.19	61.2	15.68	59.3	1.55	1.16	20.17	15.04	43.22	32.23
	B12 ⁵⁾	2.50	40.9	19.50	73.7	19.07	72.1	18.54	70.1	1.72	1.28	23.55	17.56	50.58	37.71
	B14 ⁵⁾	2.75	45.1	21.40	80.8	20.95	79.2	20.44	77.0	1.83	1.36	25.80	19.24	55.48	41.37
	B15 ⁵⁾	3.05	50.0	23.78	89.8	23.35	88.3	22.88	86.5	1.97	1.47	28.55	21.28	57.35	42.76

1) B35-B38 = 280 bar (4060 psi) max.int. 2) B42 = 260 bar (3770 psi) max.int. 3) 045 = 240 bar (3500 psi) max.int. 4) 050 = 210 bar (3000 psi) max.int.
5) B11-B12-B14 = 300 bar (4350 psi) & B15 = 280 bar (4060 psi) max.int. And Max. Speed = 3000 rpm

VT7QDC - B38 - 022 1 R 00 - A 1 00 *

Series

Cam ring for "P1"

Volumetric displacement cm^3/rev (in^3/rev)

B14 = 43.9 (2.68)	B31 = 99.1 (6.05)
B17 = 55.0 (3.36)	B35 = 113.4 (6.92)
B20 = 66.0 (4.03)	B38 = 120.6 (7.36)
B22 = 70.3 (4.29)	B42 = 137.5 (8.39)
B24 = 81.1 (4.95)	045 = 145.7 (8.89)
B28 = 89.9 (5.49)	050 = 157.9 (9.64)

Cam ring for "P2"

Volumetric displacement cm^3/rev (in^3/rev)

*003/B03/Y03 = 10.8 (0.66)	015/B15/Y15 = 50.5 (3.08)
005/B05/Y05 = 17.2 (1.05)	017/B17/Y17 = 58.3 (3.56)
006/B06/Y06 = 21.3 (1.30)	020/B20/Y20 = 63.8 (3.89)
008/B08/Y08 = 26.4 (1.61)	022/B22/Y22 = 70.3 (4.29)
010/B10/Y10 = 34.1 (2.08)	025/B25/Y25 = 79.3 (4.84)
012/B12/Y12 = 37.1 (2.26)	028/B28/Y28 = 88.8 (5.42)
014/B14/Y14 = 46.0 (2.81)	031/B31/Y31 = 100.0 (6.10)

*'0' - Uni - directional 'B' - Bi - directional 'Y' - Bi - directional for cold start

Modifications

Mounting W/connection variables

	UNC		METRIC	
	00	01	M0	M1
P2	1"	3/4"	1"	3/4"
P1	1 1/4"			
S	3"			

Seal class

- 1 - S1 (for mineral oil)
- 4 - S4 (for fire resistant fluids)
- 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page BM-1-5)

00 - standard

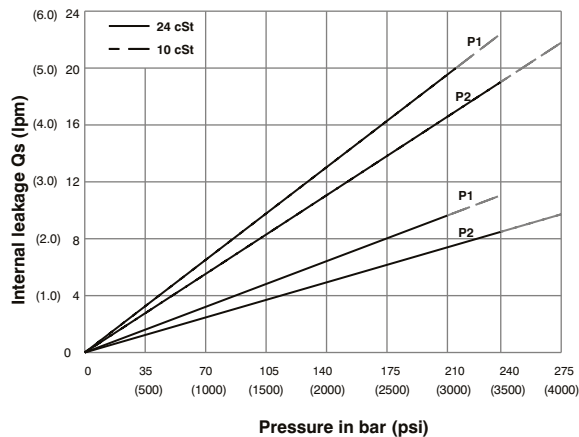
Direction of rotation (view on shaft end)

- R - clockwise
- L - counter-clockwise

Type of shaft

- 1 - keyed (SAE C)
- 2 - keyed (SAE CC)
- 3 - splined (SAE C)

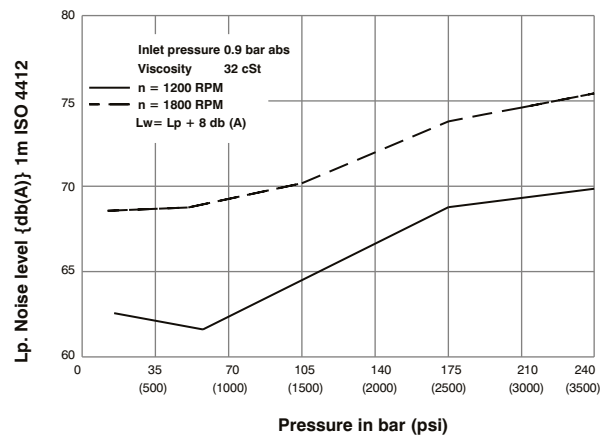
INTERNAL LEAKAGE (TYPICAL)



Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.

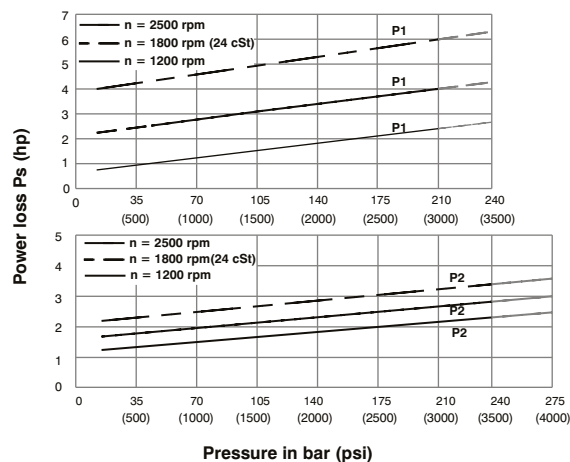
NOISE LEVEL (TYPICAL)

VT7QDC- B31-022



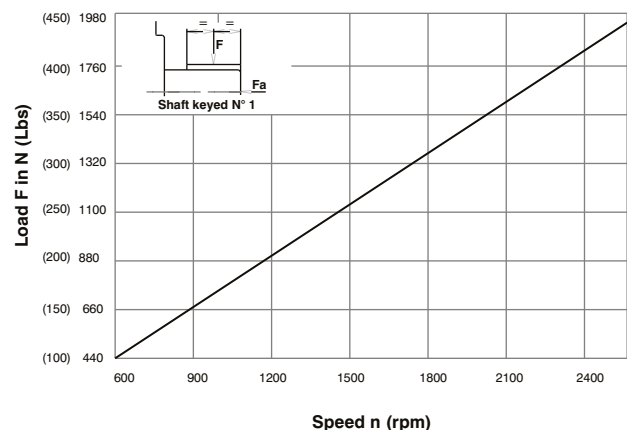
Double pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)

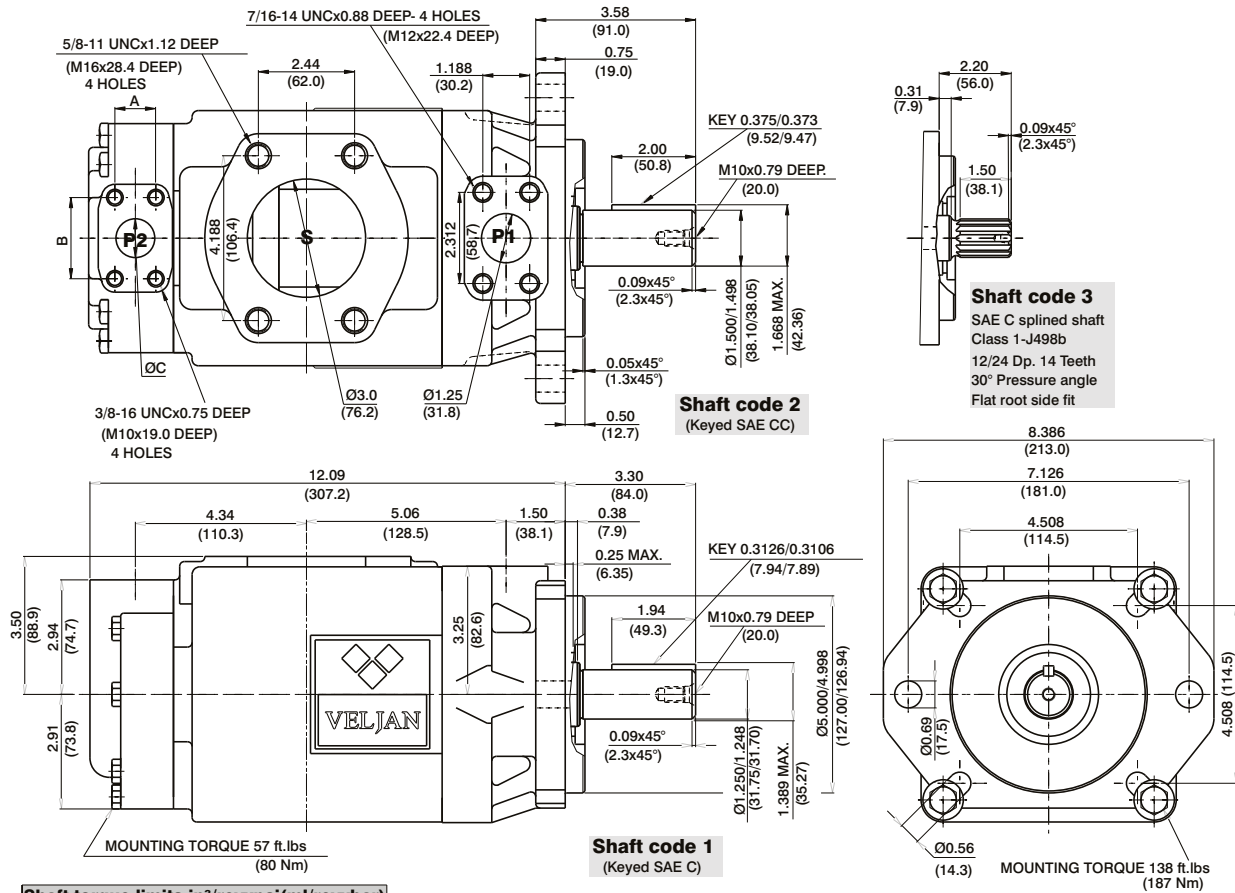


Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



Maximum permissible axial load $F_a = 1200 \text{ N}$ (270 Lbs)



OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1800 rpm						Input power p & n = 1800 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 250 bar (3630 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 250 bar (3630 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1	B14	2.68	43.9	20.92	79.1	19.18	72.5	17.81	67.30	3.46	2.60	27.77	20.70	47.03	35.00
	B17	3.36	55.0	26.16	98.8	24.41	92.3	23.04	87.00	3.77	2.80	33.88	25.30	57.71	43.00
	B20	4.03	66.0	31.39	118.6	29.64	112.0	28.27	106.80	4.07	3.00	39.98	29.80	68.39	50.90
	B22	4.29	70.3	33.43	126.4	31.69	119.8	30.32	104.60	4.19	3.10	42.37	31.60	72.57	54.00
	B24	4.95	81.1	38.57	145.8	36.82	139.2	35.45	134.00	4.49	3.40	48.36	36.10	83.06	61.90
	B28	5.49	89.9	42.80	161.8	41.06	155.2	39.69	150.00	4.74	3.50	53.30	39.70	91.70	68.30
	B31	6.05	99.1	47.18	178.3	45.43	171.7	44.06	166.50	4.99	3.70	58.41	43.60	100.63	75.00
	B35 ¹⁾	6.92	113.4	53.93	203.9	52.18	197.2	50.81	192.00	5.39	4.00	66.29	49.40	114.42	85.30
	B38 ¹⁾	7.36	120.6	57.35	216.8	55.61	210.2	54.24	204.90	5.59	4.20	70.28	52.40	121.42	90.50
	B42 ²⁾	8.39	137.5	65.39	247.2	63.65	240.6	62.28	235.40	6.05	4.50	79.66	59.40	137.83	102.70
P2	045 ³⁾	8.89	145.7	69.29	262.0	67.11	253.6	65.31	246.80	6.74	5.00	83.75	62.40	145.79	108.70
	050 ⁴⁾	9.64	157.9	75.14	284.0	72.96	275.8	71.78	271.30	7.08	5.30	90.58	67.50	134.50	100.30
	003	0.66	10.8	5.14	19.6	3.85	14.6	—	—	2.11	1.57	8.45	6.30	—	—
	005	1.05	17.2	8.18	30.9	6.89	26.0	4.34	16.44	2.29	1.70	12.00	8.94	23.97	17.88
	006	1.30	21.3	10.13	38.3	8.84	33.4	5.71	21.60	2.40	1.78	14.28	10.64	28.96	21.60
	008	1.61	26.4	12.55	47.4	11.26	42.6	8.12	30.72	2.54	1.89	17.11	12.75	35.08	26.16
	010	2.08	34.1	16.22	61.3	14.93	56.4	11.81	44.64	2.76	2.06	21.38	15.94	44.25	33.00
	012	2.26	37.1	17.64	66.7	16.35	61.8	13.24	50.04	2.84	2.11	23.05	17.18	47.47	35.40
	014	2.81	46.0	21.88	82.7	20.59	77.8	17.46	66.00	3.09	2.30	27.99	20.87	58.73	43.80
	015	3.08	50.5	23.99	90.7	22.83	86.3	19.39	73.32	3.21	2.40	30.30	22.60	63.56	47.40
P2	017	3.56	58.3	27.73	104.8	26.44	99.9	23.33	88.20	3.43	2.55	34.81	25.95	73.54	54.84
	020	3.89	63.8	30.34	114.7	29.05	109.8	25.93	98.04	3.58	2.66	37.86	28.23	80.14	59.76
	022 ⁶⁾	4.29	70.3	33.43	126.4	32.14	121.5	29.05	109.80	3.76	2.80	41.47	30.92	80.94	60.36
	025 ^{5,7)}	4.84	79.3	37.71	142.5	36.42	137.6	—	—	4.01	2.99	46.46	34.64	—	—
	028 ^{5,8)}	5.42	88.8	42.23	159.6	40.94	154.7	—	—	4.27	3.18	51.74	38.58	—	—
	031 ^{5,8)}	6.10	100.0	47.56	179.7	46.27	174.9	—	—	4.58	3.41	57.95	43.21	—	—

1) B35-B38 = 280 bar (4060 psi) max.int. 2) B42 = 260 bar (3770 psi) max.int. 3) 045 = 240 bar (3500 psi) max.int. 4) 050 = 210 bar (3000 psi) max.int.
5) 025-028-031 = 2500 R.P.M. max. 6) 022 = 275 bar max.int. 7) 025 = 240 bar max.int. 8) 028-031 = 210 bar (3000 psi) max.int.
-- Not to use because internal leakage greater than 50% of theoretical flow

Series **VT7DD or VT7DDS** - **B42 - B22 - 1 R 00 - A 1 M0**

Series

VT7DD series-ISO 4 bolts 3019-2

Mounting flange 125 B4 HW

VT7DDS series- SAE C 6 bolts

Mounting flange J744c

Camring for "P1" & "P2"

Volumetric displacement cm³/rev (in³/rev)

B14 = 43.9 (2.68)

B31 = 99.1 (6.05)

B17 = 55.0 (3.36)

B35 = 113.4 (6.92)

B20 = 66.0 (4.03)

B38 = 120.6 (7.36)

B22 = 70.3 (4.29)

B42 = 137.5 (8.39)

B24 = 81.1 (4.95)

045 = 145.7 (8.89)

B28 = 89.9 (5.49)

050 = 157.9 (9.64)

Type of shaft VT7DDS

1 - keyed (SAE C)

2 - keyed (SAE CC)

3 - splined (SAE C)

4 - splined (SAE BB)

Type of shaft VT7DD - VT7DDS

5 - keyed (ISO 3019-2-G32M)

Modifications

Mounting w/connection variables

4 bolts SAE flange (J518)

P1 & P2=1-1/4" S = 4"

	UNC	METRIC
VT7DD		M0
VT7DDS	00	M0

Seal class

1 - S1 (for mineral oil)

4 - S4 (for fire resistant fluids)

5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page BM-1-5)

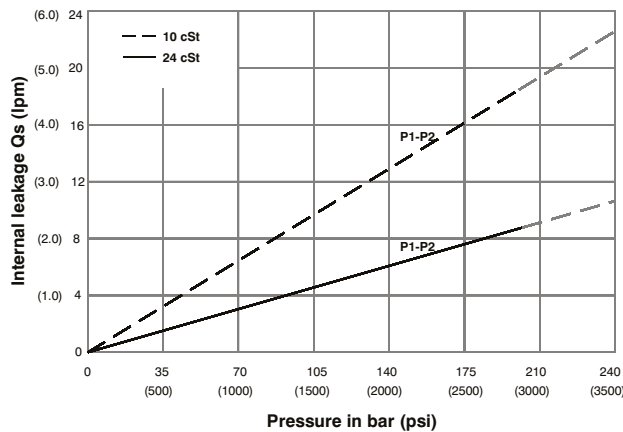
00 - standard

Direction of rotation (view on shaft end)

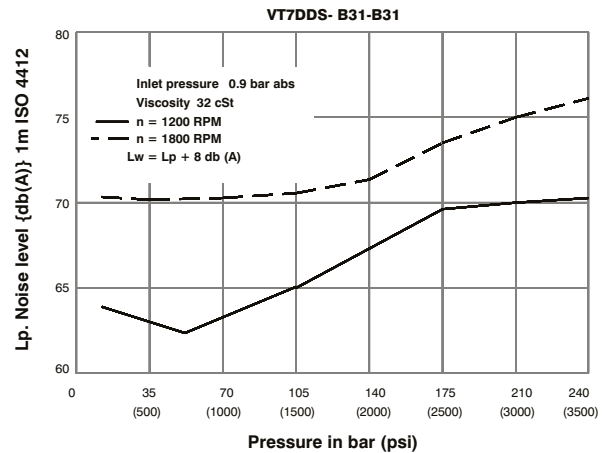
R - clockwise

L - counter-clockwise

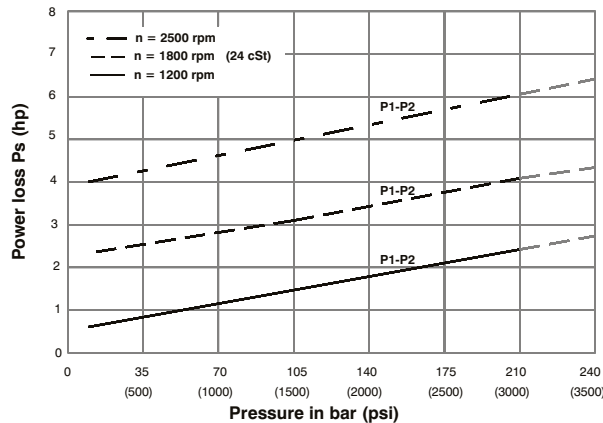
INTERNAL LEAKAGE (TYPICAL)



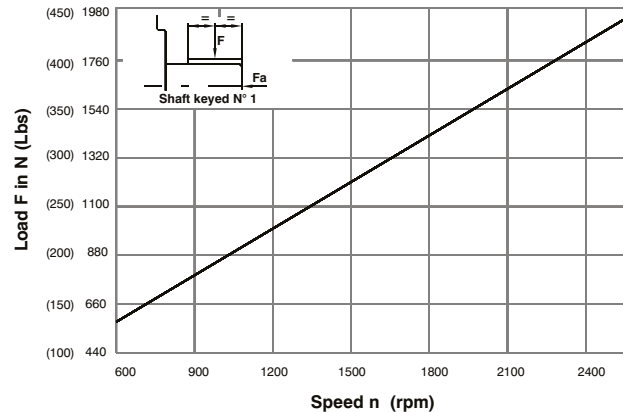
NOISE LEVEL (TYPICAL)

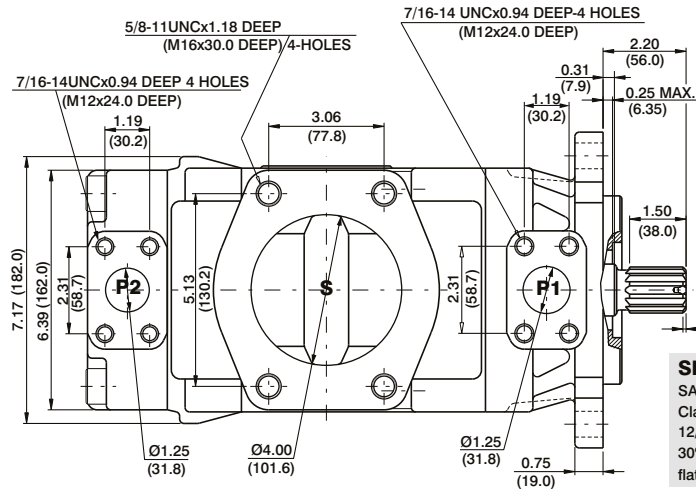
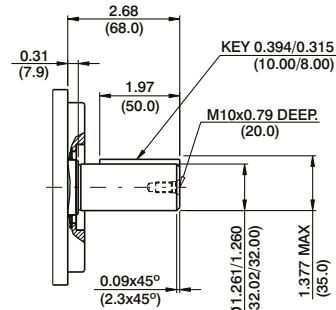
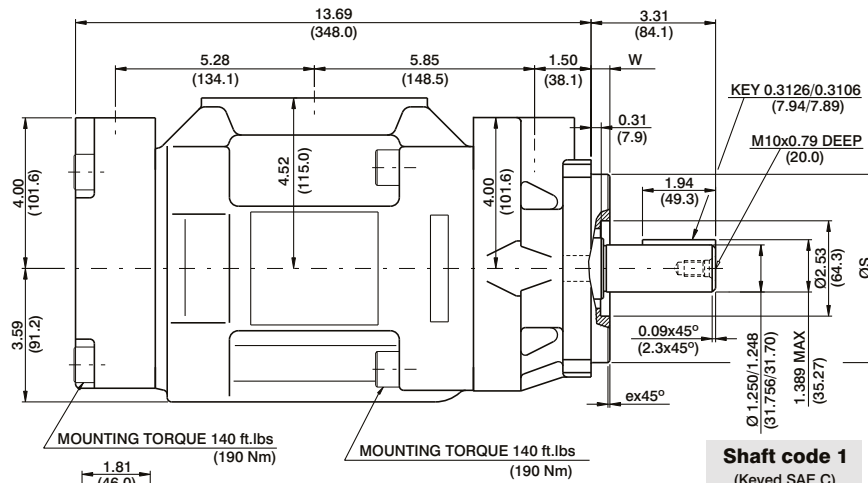
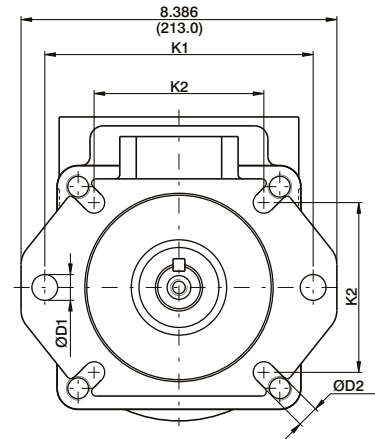
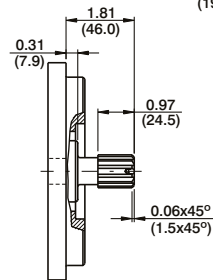


HYDROMECHANICAL POWER LOSS (TYPICAL)



PERMISSIBLE RADIAL LOAD





Shaft torque limits in ³ /rev x psi (ml/rev x bar)	
Shaft	Vp x p max. (P1 + P2)
1	38299 (43240)
2	63552 (71822)
3	54207 (61200)
4	31780 (28120)
5	40035 (35424)

Alternate mounting flange								
Series	ØS		ex45°	W	K1	ØD1	K2	ØD2
	MAX.	Min.						
VT7DD	4.921 (124.99)	4.919 (124.94)	0.079 (2.0)	0.374 (9.49)	7.087 (180.0)	0.709 (18.0)	4.454 (113.1)	0.551 (13.9)
VT7DDS	5.00 (127.00)	4.998 (126.94)	0.059 (1.5)	0.50 (12.7)	7.126 (181.0)	0.689 (17.5)	4.508 (114.5)	0.563 (14.3)

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1800 rpm						Input power p & n = 1800 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 250 bar (3630 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 250 bar (3630 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1 & P2	B14	2.68	43.9	20.92	79.1	19.18	72.5	17.81	67.3	3.46	2.6	27.77	20.7	47.03	35.07
	B17	3.36	55.0	26.16	98.8	24.41	92.3	23.04	87.0	3.77	2.8	33.88	25.3	57.71	43.03
	B20	4.03	66.0	31.39	118.6	29.64	112.0	28.27	106.8	4.07	3.0	39.98	29.8	68.39	50.99
	B22	4.29	70.3	33.43	126.4	31.69	119.8	30.32	104.6	4.19	3.1	42.37	31.6	72.57	54.11
	B24	4.95	81.1	38.57	145.8	36.82	139.2	35.45	134.0	4.49	3.4	48.36	36.1	83.06	61.93
	B28	5.49	89.9	42.80	161.8	41.06	155.2	39.69	150.0	4.74	3.5	53.30	39.7	91.70	68.38
	B31	6.05	99.1	47.18	178.3	45.43	171.7	44.06	166.5	4.99	3.7	58.41	43.6	100.63	75.03
	B35 ¹⁾	6.92	113.4	53.93	203.9	52.18	197.2	50.81	192.0	5.39	4.0	66.29	49.4	114.42	85.32
	B38 ¹⁾	7.36	120.6	57.35	216.8	55.61	210.2	54.24	204.9	5.59	4.2	70.27	52.4	121.42	90.54
	B42 ²⁾	8.39	137.5	65.39	247.2	63.65	240.6	62.28	235.4	6.05	4.5	79.66	59.4	137.83	102.77
	045 ³⁾	8.89	145.7	69.29	262.0	67.11	253.6	65.31	246.8	6.74	5.0	83.75	62.4	145.79	108.71
	050 ⁴⁾	9.64	157.9	75.14	284.0	72.96	275.8	71.78	271.3	7.08	5.3	90.58	67.5	154.50	113.30

1) B35-B38 = 280 bar (4060 psi) max. int.

2) B42 = 260 bar (3770 psi) max. int.

3) 045 = 240 bar (3500 psi) max. int.

4) 050 = 210 bar (3000 psi) max. int.

Series

VT7EB series-ISO 4 bolts 3019-2
Mounting flange 125-A2 HW

VT7EBS series- SAE C 2 bolts
Mounting flange J744c

Cam ring for "P1"

Volumetric displacement cm³/rev (in³/rev)

042 = 132.2 (8.07)	057 = 183.2 (11.18)
045 = 142.5 (8.70)	062 = 196.6 (12.0)
050 = 158.5 (9.67)	066 = 213.0 (13.0)
052 = 163.8 (10.0)	072 = 227.1 (13.86)
054 = 170.9 (10.43)	085 = 268.7 (16.40)

Cam ring for "P2"

Volumetric displacement cm³/rev (in³/rev)

B02 = 5.7 (0.35)	B09 = 28.0 (1.71)
B03 = 9.8 (0.60)	B10 = 31.8 (1.94)
B04 = 12.8 (0.78)	B11 = 34.9 (2.13)
B05 = 15.9 (0.97)	B12 = 40.9 (2.50)
B06 = 19.8 (1.21)	B14 = 45.1 (2.75)
B07 = 22.5 (1.37)	B15 = 50.0 (3.05)
B08 = 24.9 (1.52)	

Modifications

Mounting W/connection variables

P1=1-1/4" P2= 3/4" S=3-1/2"		
	VT7EBS	VT7EB-VT7EBS
Type	UNC	METRIC
code	01	M1

Seal class

1 - S1 (for mineral oil)
4 - S4 (for fire resistant fluids)
5 - S5 (for mineral oil and fire resistant fluids)

Design letter

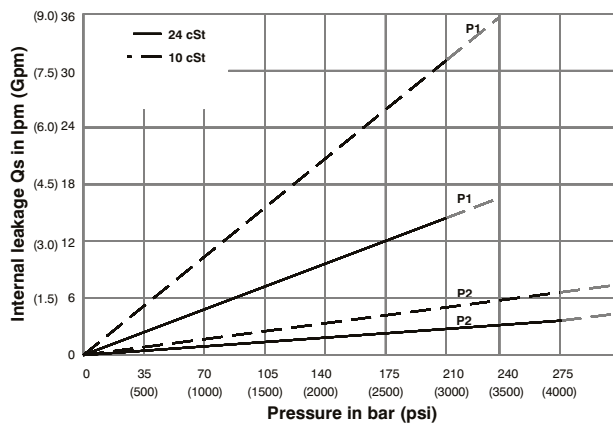
Porting combination (see page BM-1-5)
00 - standard

Direction of rotation
(view on shaft end)
R - clockwise
L - counter-clockwise

Type of shaft VT7EBS
1 - keyed (SAE CC) 3 - splined (SAE C)
2 - keyed (no SAE) 4 - splined (SAE CC)

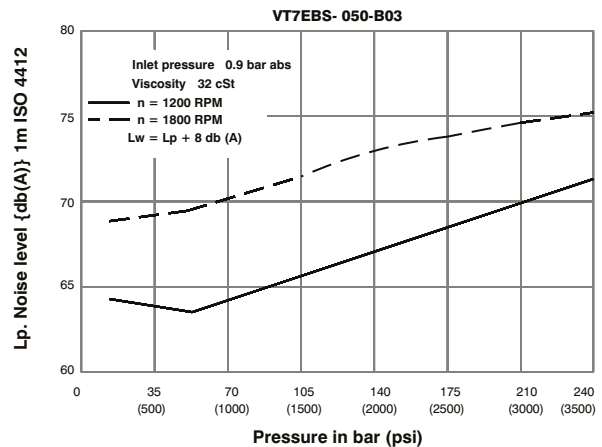
Type of shaft VT7EB- VT7EBS
5 - keyed (ISO/R775 -G38M)

INTERNAL LEAKAGE (TYPICAL)



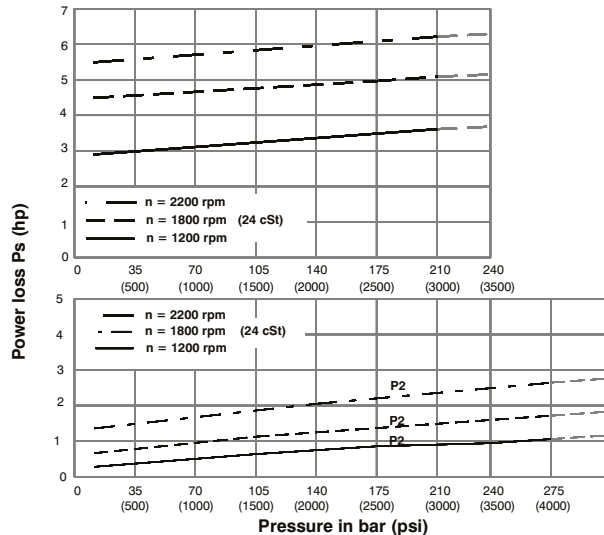
Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow.
Total leakage is the sum of each section loss at its operating conditions.

NOISE LEVEL (TYPICAL)



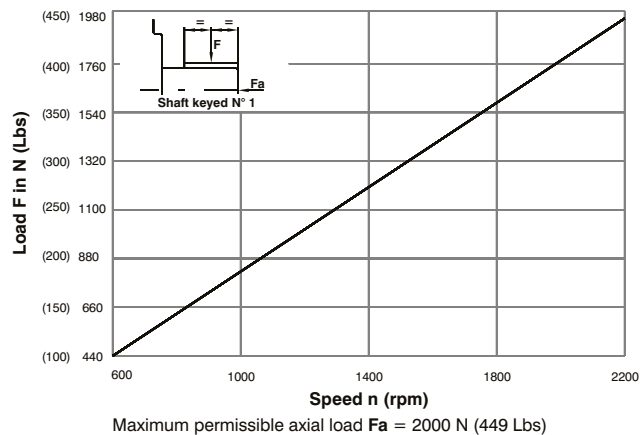
Double pump noise level is given with each section discharging at the pressure noted on the curve.

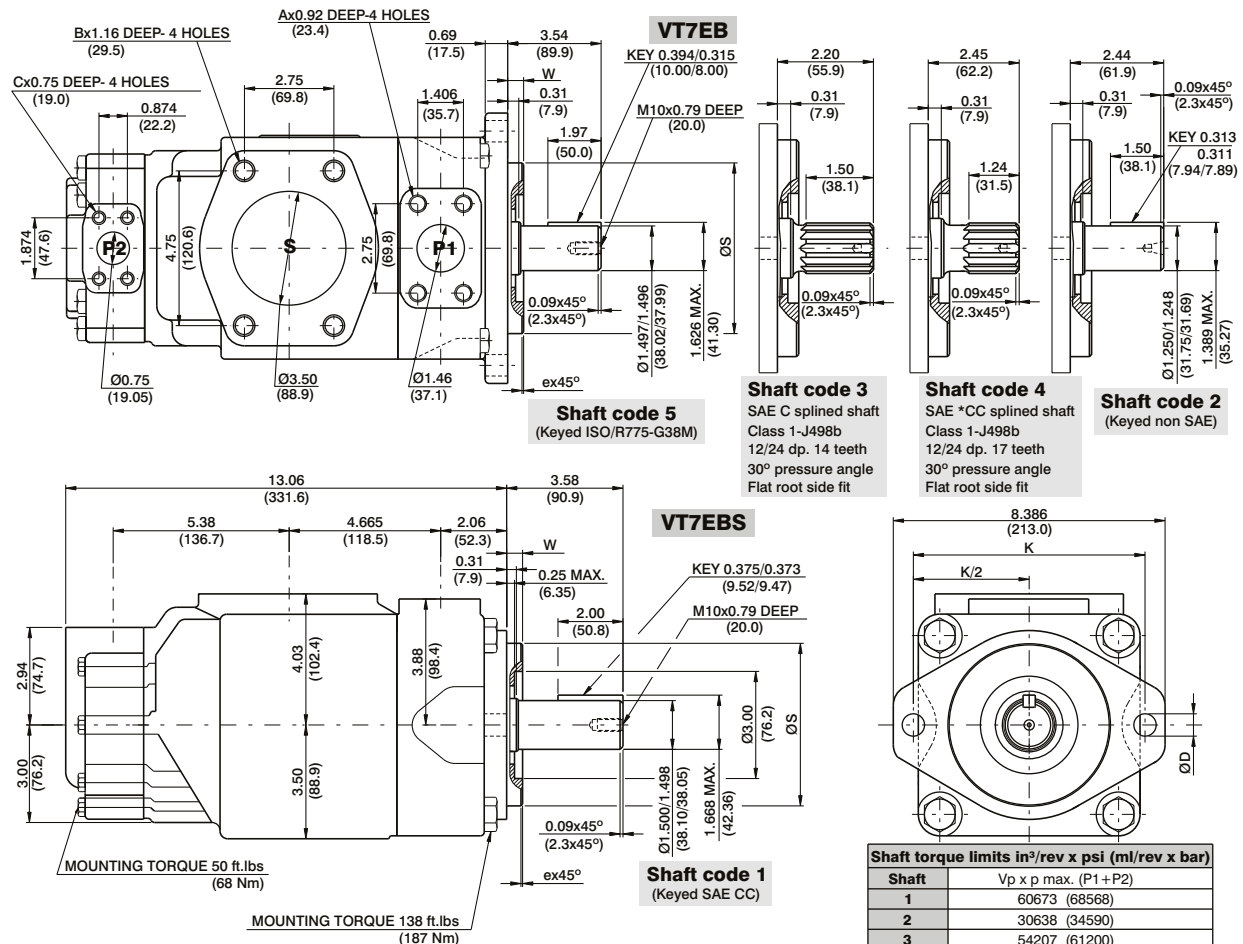
HYDROMECHANICAL POWER LOSS (TYPICAL)



Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD





Alternate mounting flange						
Series	ØS		ex45°	W	K	ØD
	MAX.	Min.				
VT7EB	4.921 (124.99)	4.919 (124.94)	0.079 (2.0)	0.374 (9.49)	7.087 (180.0)	0.709 (18.0)
VT7EBS	5.00 (127.00)	4.998 (126.94)	0.051 (1.3)	0.50 (12.7)	7.126 (181.0)	0.689 (17.5)

Shaft torque limits in ³ /rev x psi (ml/rev x bar)	
Shaft	Vp x p max. (P1+P2)
1	60673 (68568)
2	30638 (34590)
3	54207 (61200)
4	60673 (68568)
5	60673 (68568)

Alternate connect.variables		
	O1	M1
A	1/2-13 UNC	M12
B	5/8-11 UNC	M16
C	3/8-16 UNC	M10

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric		Flow q & n = 1800 rpm						Input power p & n = 1800 rpm					
		Displacement Vp		p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in³/rev	cm³/rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1	042	8.07	132.2	62.92	237.8	60.37	228.2	58.52	221.2	8.09	6.03	78.44	58.49	133.80	99.77
	045	8.70	142.5	67.72	255.9	65.17	246.3	63.32	239.3	8.37	6.24	84.04	62.66	143.60	107.08
	050	9.67	158.5	75.38	284.9	72.83	275.3	70.98	268.3	8.82	6.58	92.97	69.32	159.24	118.75
	052	10.00	163.8	78.37	296.2	75.82	286.6	73.97	279.6	8.99	6.70	96.47	71.94	165.36	123.31
	054	10.43	170.9	81.27	307.2	78.72	297.6	76.87	290.6	9.17	6.84	99.75	74.38	177.46	132.33
	057	11.18	183.2	87.12	329.3	84.57	319.7	82.72	312.7	9.51	7.09	106.57	79.47	189.84	141.56
	062	12.00	196.6	93.54	353.6	90.99	343.9	89.14	336.9	9.88	7.37	114.17	85.13	196.34	146.41
	066	13.00	213.0	101.44	383.4	98.89	373.8	97.04	366.8	10.34	7.71	123.38	92.0	212.46	158.43
	072	13.86	227.1	108.00	408.2	105.45	398.6	103.60	391.6	10.72	7.99	131.04	97.71	225.86	166.42
085 ¹⁾	16.40	268.7	127.79	483.0	126.13	476.7	--	--	11.88	8.85	101.66	75.80	--	--	
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 300 bar (4350 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 300 bar (4350 psi)	
P2	B02	0.35	5.7	2.76	10.4	2.33	8.8	1.80	6.8	0.74	0.55	4.02	2.99	8.10	6.04
	B03	0.60	9.8	4.66	17.6	4.23	15.9	3.70	14.0	0.85	0.63	6.24	4.65	12.93	9.64
	B04	0.78	12.8	6.09	23.0	5.66	21.4	5.13	19.4	0.94	0.70	7.90	5.89	16.55	12.34
	B05	0.97	15.9	7.56	28.6	7.13	26.9	6.60	25.0	1.02	0.76	9.62	7.17	20.29	15.13
	B06	1.21	19.8	9.42	35.6	8.99	33.9	8.46	32.0	1.13	0.84	11.79	8.79	25.00	18.64
	B07	1.37	22.5	10.70	40.4	10.27	38.8	9.74	36.8	1.20	0.89	13.29	9.91	28.26	21.07
	B08	1.52	24.9	11.84	44.7	11.41	43.1	10.88	41.1	1.27	0.94	14.62	10.90	31.15	23.22
	B09	1.71	28.0	13.31	50.3	12.87	48.6	12.35	47.0	1.36	1.01	16.35	12.19	34.92	26.03
	B10	1.94	31.8	15.12	57.2	14.69	55.5	14.16	53.5	1.46	1.09	18.45	13.76	39.48	29.44
	B11 ²⁾	2.13	34.9	16.64	62.9	16.19	61.2	15.68	59.3	1.55	1.15	20.17	15.04	43.22	32.23
	B12 ²⁾	2.50	40.9	19.50	73.7	19.07	72.1	18.54	70.1	1.72	1.28	23.55	17.56	50.58	37.71
	B14 ²⁾	2.75	45.1	21.40	80.8	20.95	79.2	20.44	77.0	1.83	1.36	25.80	19.23	55.48	41.37
	B15 ²⁾	3.05	50.0	23.78	89.8	23.35	88.3	22.88	86.5	1.97	1.47	28.55	21.28	57.35	42.76

1) 085 = 90 bar (1300 psi) max.int. & 085 = 2000 rpm max.

2) B11-B12-B14 = 300 bar (4350 psi) & B15 = 280 bar (4060 psi) max. int. And Max. Speed = 3000 rpm

Series VT7QEC * - 066 - 022 1 R 00 - A 1 -

Y- Metric port connection, Omit for UNC

Cam ring for "P1"

Volumetric displacement cm³/rev (in³/rev)

042 = 132.3 (8.07)	062 = 196.7 (12.00)
045 = 142.4 (8.69)	066 = 213.3 (13.02)
050 = 158.5 (9.67)	072 = 227.1 (13.86)
052 = 164.8 (10.06)	085 = 269.8 (16.46)
057 = 183.2 (11.18)	

Cam ring for "P2"

Volumetric displacement cm³/rev (in³/rev)

*003/B03/Y03 = 10.8 (0.66)	015/B15/Y15 = 50.5 (3.08)
005/B05/Y05 = 17.2 (1.05)	017/B17/Y17 = 58.3 (3.56)
006/B06/Y06 = 21.3 (1.30)	020/B20/Y20 = 63.8 (3.89)
008/B08/Y08 = 26.4 (1.61)	022/B22/Y22 = 70.3 (4.29)
010/B10/Y10 = 34.1 (2.08)	025/B25/Y25 = 79.3 (4.84)
012/B12/Y12 = 37.1 (2.26)	028/B28/Y28 = 88.8 (5.42)
014/B14/Y14 = 46.0 (2.81)	031/B31/Y31 = 100.0 (6.10)

*'0' - Uni - directional 'B' - Bi - directional 'Y' - Bi - directional for cold start

Modifications

Seal class

1 - S1 (for mineral oil)

4 - S4 (for fire resistant fluids)

5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page BM-1-5)

00 - standard

Direction of rotation (view on shaft end)

R - clockwise

L - counter-clockwise

Type of shaft

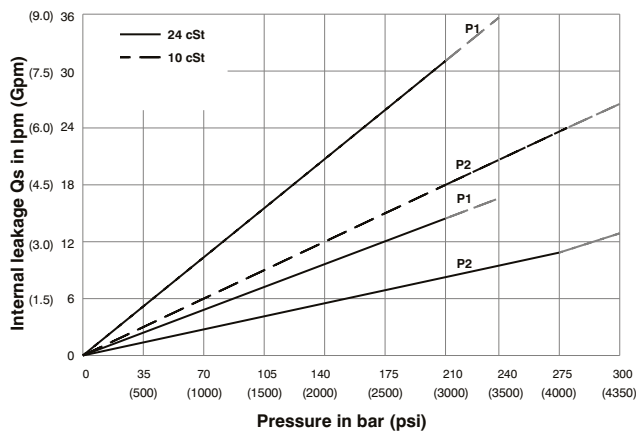
1 - keyed (SAE CC)

2 - keyed (no SAE)

3 - splined (SAE C)

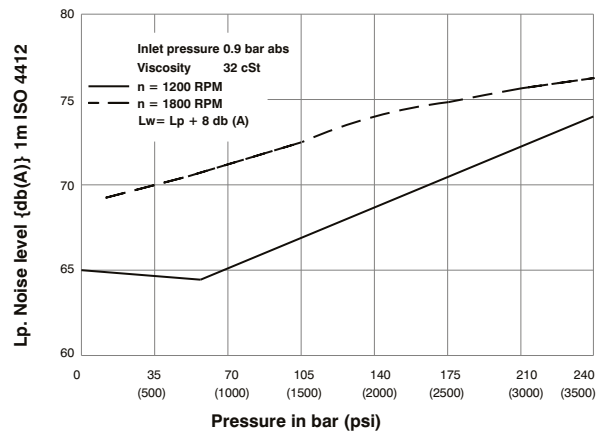
4 - splined (SAE CC)

INTERNAL LEAKAGE (TYPICAL)

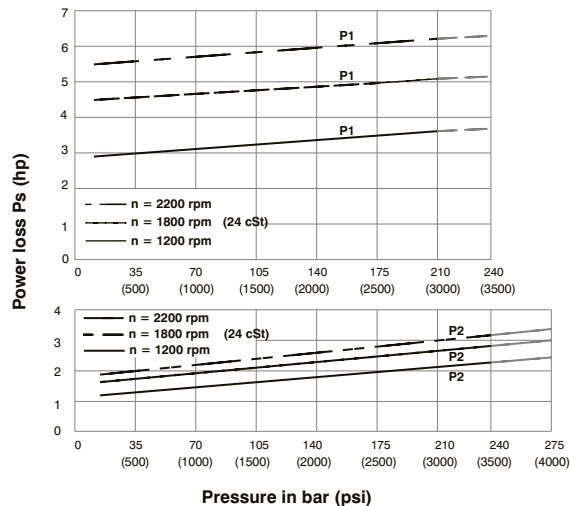


NOISE LEVEL (TYPICAL)

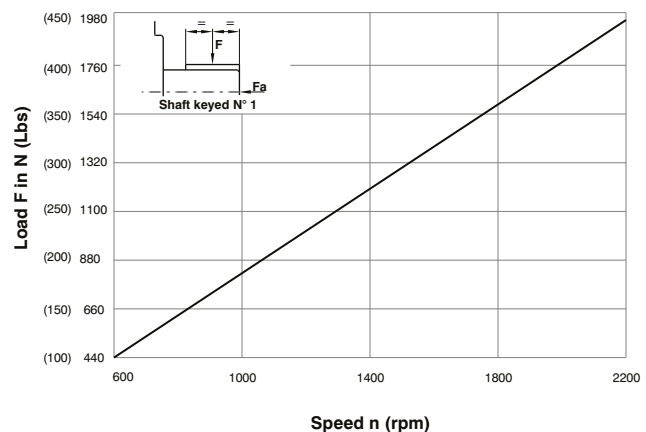
VT7QEC- 050-022

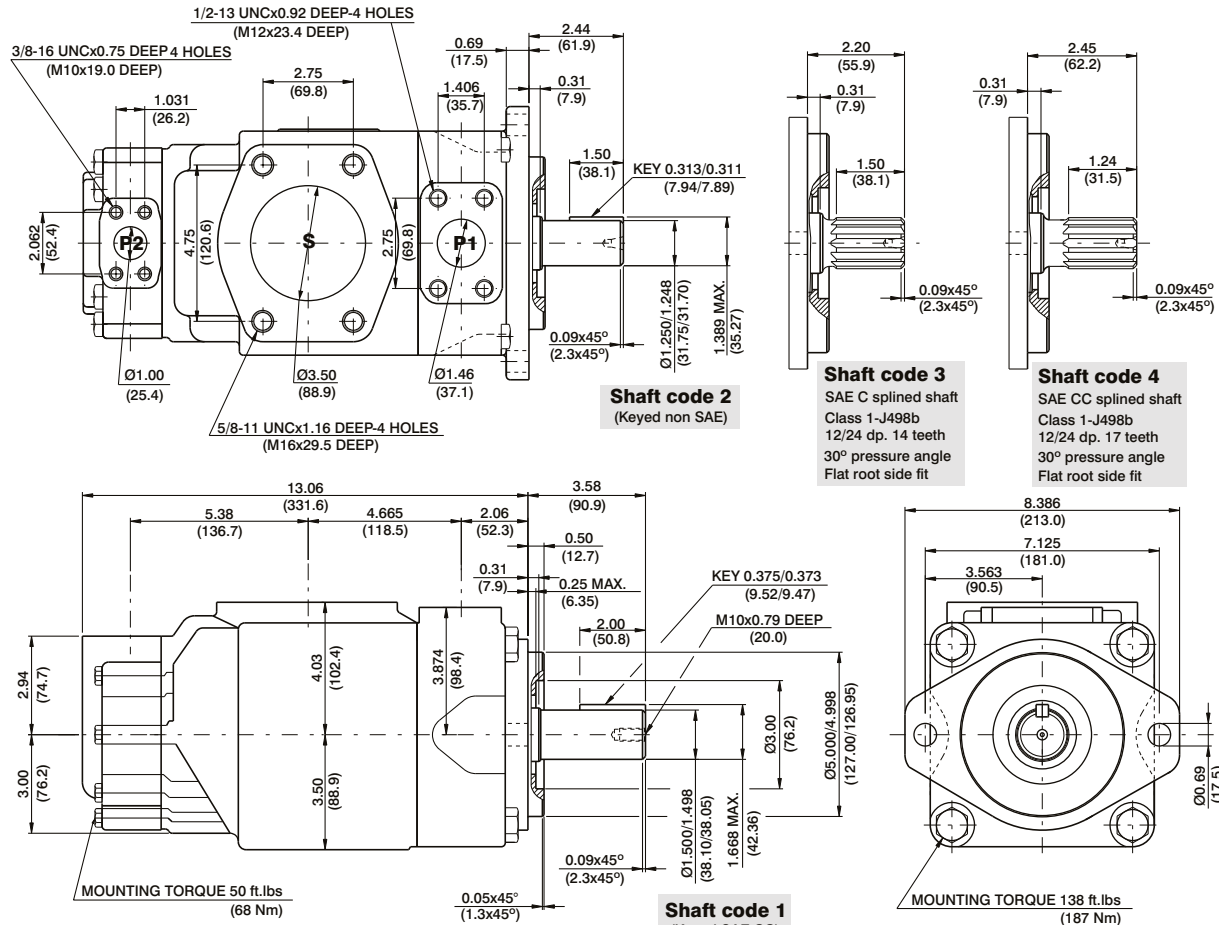


HYDROMECHANICAL POWER LOSS (TYPICAL)



PERMISSIBLE RADIAL LOAD





OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1800 rpm								Input power p & n = 1800 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)			
		in³/rev	cm³/rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw		
P1	042	8.07	132.2	62.92	237.8	60.37	228.2	58.52	221.2	8.09	6.03	78.44	58.49	133.80	99.77		
	045	8.70	142.5	67.72	255.9	65.17	246.3	63.32	239.3	8.37	6.24	84.04	62.66	143.60	107.08		
	050	9.67	158.5	75.38	284.9	72.83	275.3	70.98	268.3	8.82	6.58	92.97	69.32	159.24	118.75		
	052	10.00	163.8	78.37	296.2	75.82	286.6	73.97	279.6	8.99	6.70	96.47	71.94	165.36	123.31		
	054	10.43	170.9	81.27	307.2	78.72	297.6	76.87	290.6	9.17	6.84	99.75	74.38	177.46	132.33		
	057	11.18	183.2	87.12	329.3	84.57	319.7	82.72	312.7	9.51	7.09	106.57	79.47	189.84	141.56		
	062	12.00	196.6	93.54	353.6	90.99	343.9	89.14	336.9	9.88	7.37	114.17	85.13	196.34	146.41		
	066	13.00	213.0	101.44	383.4	98.89	373.8	97.04	366.8	10.34	7.71	123.38	92.00	212.46	158.43		
	072	13.86	227.1	108.00	408.2	105.45	398.6	103.60	391.6	10.72	7.99	131.04	97.71	225.86	166.42		
085 ¹⁾	16.40	268.7	127.79	483.0	126.13	476.7	-	-	11.88	8.85	101.66	75.80	-	-			
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 300 bar (4350 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 300 bar (4350 psi)			
P2	003	0.66	10.8	5.14	19.6	3.85	14.6	--	--	2.11	1.57	8.45	6.30	--	--		
	005	1.05	17.2	8.18	30.9	6.89	26.0	4.34	16.44	2.29	1.70	12.00	8.94	23.97	17.88		
	006	1.30	21.3	10.13	38.3	8.84	33.4	5.71	21.6	2.40	1.78	14.28	10.64	28.96	21.60		
	008	1.61	26.4	12.55	47.4	11.26	42.6	8.12	30.72	2.54	1.89	17.11	12.75	35.08	26.16		
	010	2.08	34.1	16.22	61.3	14.93	56.4	11.81	44.64	2.76	2.06	21.38	15.94	44.25	33.00		
	012	2.26	37.1	17.64	66.7	16.35	61.8	13.24	50.04	2.84	2.11	23.05	17.18	47.47	35.40		
	014	2.81	46.0	21.88	82.7	20.59	77.8	17.46	66.00	3.09	2.30	27.99	20.87	58.73	43.80		
	015	3.08	50.5	23.99	90.7	22.83	86.3	19.39	73.32	3.21	2.40	30.30	22.60	63.56	47.40		
	017	3.56	58.3	27.73	104.8	26.44	99.9	23.33	88.2	3.43	2.55	34.81	25.95	73.54	54.84		
	020	3.89	63.8	30.34	114.7	29.05	109.8	25.93	98.04	3.58	2.66	37.86	28.23	80.14	59.76		
	022 ³⁾	4.29	70.3	33.43	126.4	32.14	121.5	29.05	109.8	3.76	2.80	41.47	30.92	80.94	60.36		
	025 ^{2, 4)}	4.84	79.3	37.71	142.5	36.42	137.6	---	---	4.01	2.99	46.46	34.64	---	---		
	028 ^{2, 5)}	5.42	88.8	42.23	159.6	40.94	154.7	---	---	4.27	3.18	51.74	38.58	---	---		
	031 ^{2, 5)}	6.10	100.0	47.56	179.7	46.27	174.9	---	---	4.58	3.41	57.95	43.21	---	---		

1) 085 = 90 bar (1300 psi) max.int. & 085 = 2000 rpm max. 2) 025-028-031 = 2500 R.P.M. max. -- Not to use because internal leakage greater than 50% of theoretical flow
3) 022 = 275 bar max. int. 4) 025 = 240 bar max. int. 5) 028-031 = 210 bar max. int.

Series

VT7ED series-125-A2 HW
ISO 2 bolts 3019-2 mounting flange

VT7EDS series- SAE C 2 bolts
Mounting flange J744c

Cam ring for "P1"
Volumetric displacement cm³/rev (in³/rev)

042 = 132.2 (8.07)	057 = 183.2 (11.18)
045 = 142.5 (8.70)	062 = 196.6 (12.0)
050 = 158.5 (9.67)	066 = 213.0 (13.0)
052 = 163.8 (10.0)	072 = 227.1 (13.86)
054 = 170.9 (10.43)	085 = 268.7 (16.40)

Cam ring for "P2"
Volumetric displacement cm³/rev (in³/rev)

B14 = 43.9 (2.68)	B31 = 99.1 (6.05)
B17 = 55.0 (3.36)	B35 = 113.4 (6.92)
B20 = 66.0 (4.03)	B38 = 120.6 (7.36)
B22 = 70.3 (4.29)	B42 = 137.5 (8.39)
B24 = 81.1 (4.95)	045 = 145.7 (8.89)
B28 = 89.9 (5.49)	050 = 157.9 (9.64)

Type of shaft VT7ED- VT7EDS

1 - keyed (SAE CC)	3 - splined (SAE C)
2 - keyed (no SAE)	4 - splined (SAE CC)
5 - keyed (ISO/R775 -G38M)	

Modifications

Mounting W/connection variables
4 bolts SAE flange J518

P1= 1-1/2" P2= 1-1/4" S=4"
VT7EDS VT7ED-VT7EDS
Type UNC METRIC
code 01 M1

Seal class

- 1 - S1 (for mineral oil)
- 4 - S4 (for fire resistant fluids)
- 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page BM-1-5)
00 - standard

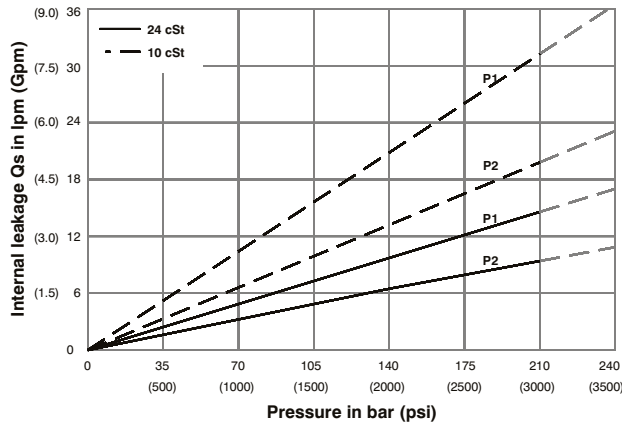
Direction of rotation
(view on shaft end)

- R - clockwise
- L - counter-clockwise

Type of shaft VT7EDS

- 1 - keyed (SAE CC)
- 3 - splined (SAE C)
- 2 - keyed (no SAE)
- 4 - splined (SAE CC)

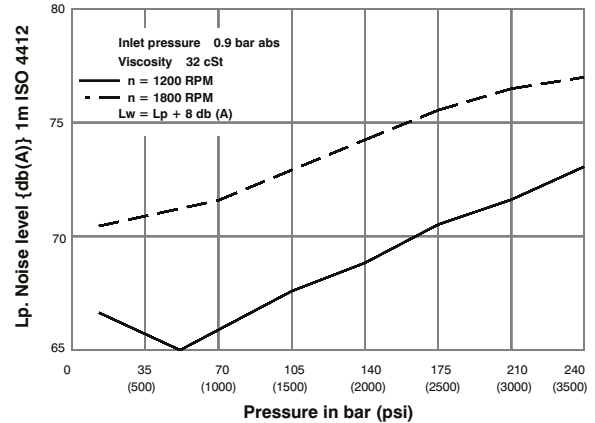
INTERNAL LEAKAGE (TYPICAL)



Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow.
Total leakage is the sum of each section loss at its operating conditions.

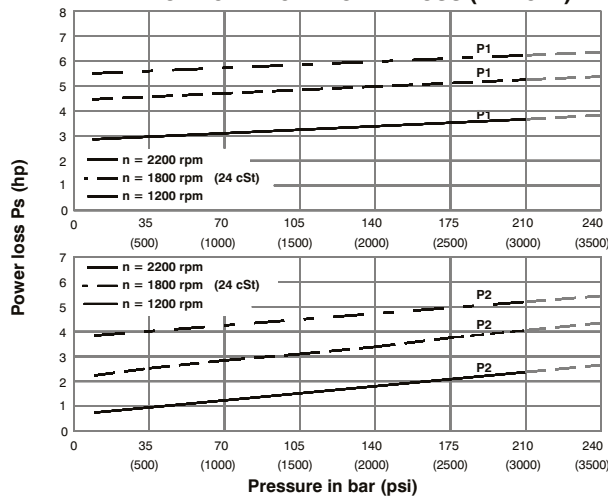
NOISE LEVEL (TYPICAL)

VT7EDS- 050-B31



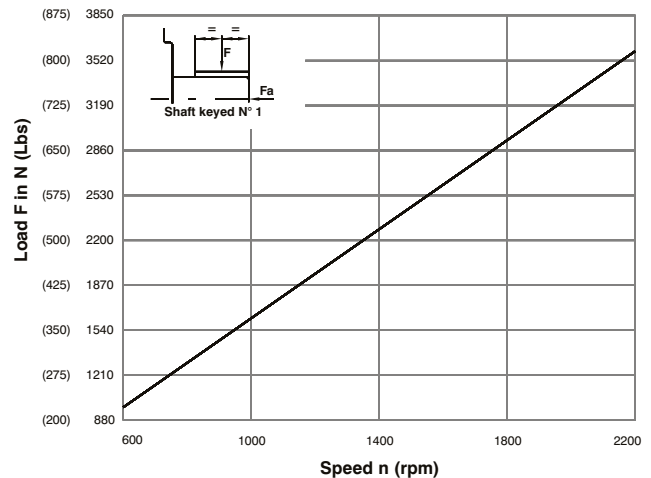
Double pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)

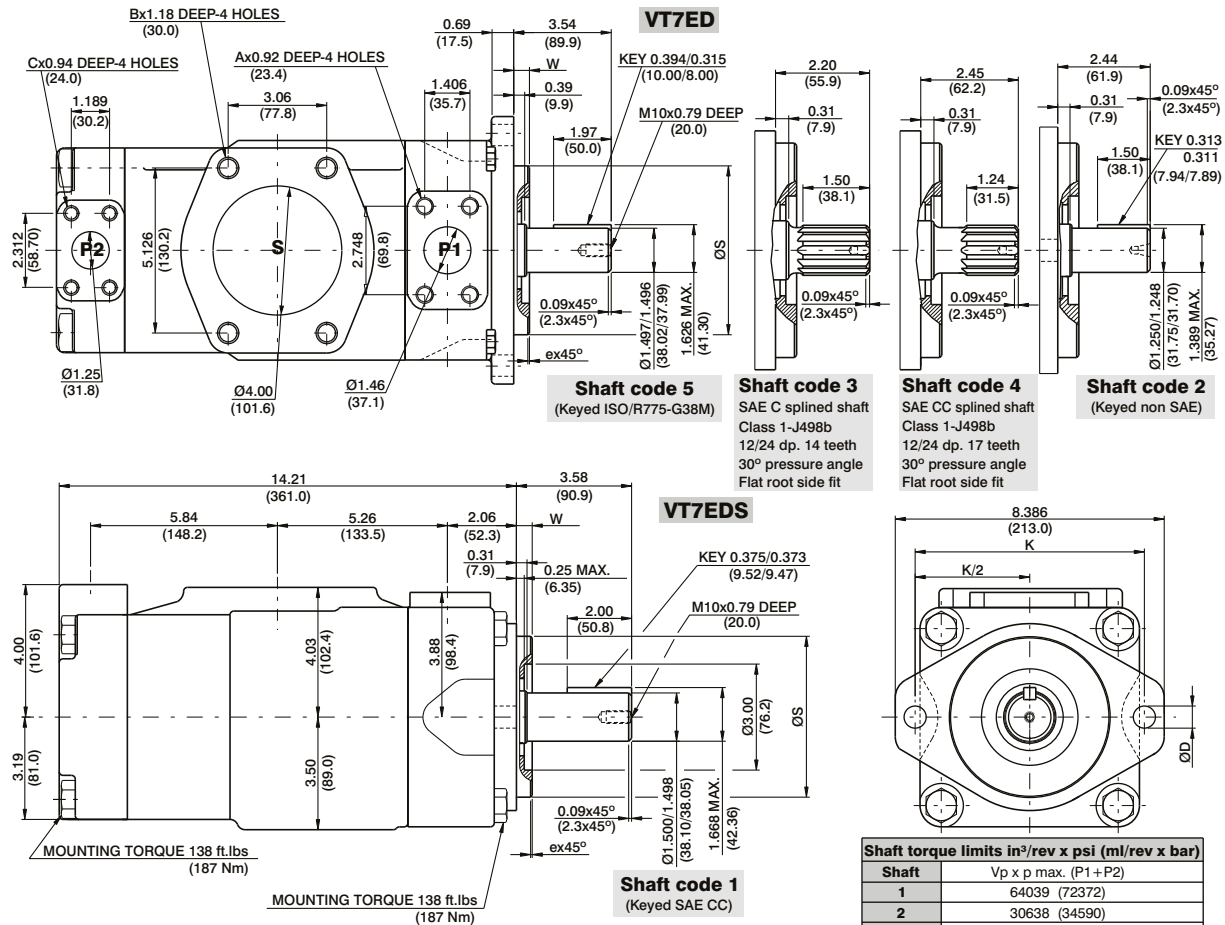


Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



Maximum permissible axial load F_a = 2000 N (449 Lbs)



Alternate mounting flange					
Series	ØS		ex45°	W	K
	MAX.	Min.			
VT7ED	4.921 (124.99)	4.919 (124.94)	0.079 (2.0)	0.374 (9.49)	7.087 (180.0)
VT7EDS	5.00 (127.00)	4.998 (126.94)	0.051 (1.3)	0.50 (12.7)	7.126 (181.0)

Shaft torque limits in ³ /rev x psi (ml/rev x bar)	
Shaft	Vp x p max. (P1 + P2)
1	64039 (72372)
2	30638 (34590)
3	54207 (61200)
4	60673 (68568)
5	60673 (68568)

Alternate connect.variables		
	O1	M1
A	1/2-13 UNC	M12
B	5/8-11 UNC	M16
C	7/16-14 UNC	M12

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1800 rpm						Input power p & n = 1800 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1	042	8.07	132.2	62.92	237.8	60.37	228.2	58.52	221.2	8.09	6.03	78.44	58.49	133.80	99.77
	045	8.70	142.5	67.72	255.9	65.17	246.3	63.32	239.3	8.37	6.24	84.04	62.66	143.60	107.08
	050	9.67	158.5	75.38	284.9	72.83	275.3	70.98	268.3	8.82	6.58	92.97	69.32	159.24	118.75
	052	10.00	163.8	78.37	296.2	75.82	286.6	73.97	279.6	8.99	6.70	96.47	71.94	165.36	123.31
	054	10.43	170.9	81.27	307.2	78.72	297.6	76.87	290.6	9.17	6.84	99.75	74.38	177.46	132.33
	057	11.18	183.2	87.12	329.3	84.57	319.7	82.72	312.7	9.51	7.09	106.57	79.47	189.84	141.56
	062	12.00	196.6	93.54	353.6	90.99	343.9	89.14	336.9	9.88	7.37	114.17	85.13	196.34	146.41
	066	13.00	213.0	101.44	383.4	98.89	373.8	97.04	366.8	10.34	7.71	123.38	92.0	212.46	158.43
	072	13.86	227.1	108.00	408.2	105.45	398.6	103.60	391.6	10.72	7.99	131.04	97.71	225.86	166.42
	085 ¹⁾	16.40	268.7	127.79	483.0	126.13	476.7	--	--	11.88	8.85	101.66	75.80	--	--
P2				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 250 bar (3630 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 250 bar (3630 psi)	
	B14	2.68	43.9	20.92	79.1	19.18	72.5	17.81	67.3	3.46	2.6	27.77	20.7	47.03	35.07
	B17	3.36	55.0	26.16	98.8	24.41	92.3	23.04	87.0	3.77	2.8	33.88	25.3	57.71	43.03
	B20	4.03	66.0	31.39	118.6	29.64	112.0	28.27	106.8	4.07	3.0	39.98	29.8	68.39	50.99
	B22	4.29	70.3	33.43	126.4	31.69	119.8	30.32	104.6	4.19	3.1	42.37	31.6	72.57	54.11
	B24	4.95	81.1	38.57	145.8	36.82	139.2	35.45	134.0	4.49	3.4	48.36	36.1	83.06	61.93
	B28	5.49	89.9	42.80	161.8	41.06	155.2	39.69	150.0	4.74	3.5	53.30	39.7	91.70	68.38
	B31	6.05	99.1	47.18	178.3	45.43	171.7	44.06	166.5	4.99	3.7	58.41	43.6	100.63	75.03
	B35 ²⁾	6.92	113.4	53.93	203.9	52.18	197.2	50.81	192.0	5.39	4.0	66.29	49.4	114.42	85.32
	B38 ³⁾	7.36	120.6	57.35	216.8	55.61	210.2	54.24	204.9	5.59	4.2	70.28	52.4	121.42	90.54
	B42 ³⁾	8.39	137.5	65.39	247.2	63.65	240.6	62.28	235.4	6.05	4.5	79.66	59.4	137.83	102.77
	045 ⁴⁾	8.89	145.7	69.29	262.0	67.11	253.6	65.31	246.8	6.74	5.0	83.75	62.4	145.79	108.71
	050 ⁵⁾	9.64	157.9	75.14	284.0	72.96	275.8	71.78	271.3	7.08	5.3	90.58	67.5	154.50	116.3

1) 085 = 90 bar (1300 psi) max.int. & 085 = 2000 rpm max. 2) B35-B38 = 280 bar (4060 psi) max.int. 3) B42 = 260 bar (3770 psi) max.int.
4) 045 = 240 bar (3500 psi) max. int. 5) 050 = 210 bar (3000 psi) max. int.

VT67 -DOUBLE

VANE PUMPS

Series-SAE B 2 bolts
Mounting flange J744c

Use for severe duty shaft only

Cam ring for "P1" and "P2"

Volumetric displacement cm^3/rev (in^3/rev)

B02 = 5.8 (0.35)	B09 = 28.0 (1.71)
B03 = 9.8 (0.60)	B10 = 31.8 (1.94)
B04 = 12.8 (0.78)	B11 = 34.9 (2.13)
B05 = 15.9 (0.97)	B12 = 40.9 (2.50)
B06 = 19.8 (1.21)	B14 = 45.1 (2.75)
B07 = 22.5 (1.37)	B15 = 50.0 (3.05)
B08 = 24.9 (1.52)	

Type of shaft

- 1 - keyed (no SAE)
- 3 - splined (SAE BB)
- 5 - splined (SAE B)

Type of shaft- W version

- 2 - keyed (SAE BB)

Modifications

Mounting W/connection variables

- 11 = 4 bolts SAE flanges (J518c) UNC thread
- M1 = 4 bolts SAE flanges (J518c) Metric thread

Seal class

- 1 - S1 (for mineral oil)
- 4 - S4 (for fire resistant fluids)
- 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

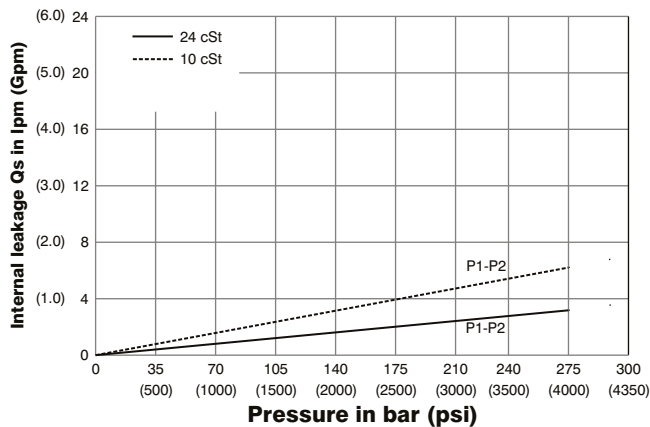
Porting combination (see page BM-1-5)

- 00 - standard

Direction of rotation (view on shaft end)

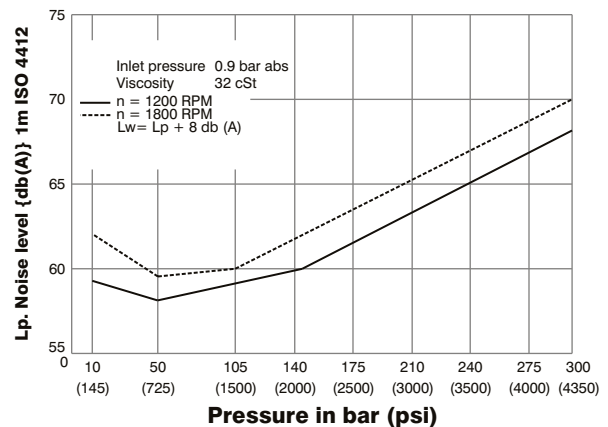
- R - clockwise
- L - counter-clockwise

INTERNAL LEAKAGE (TYPICAL)



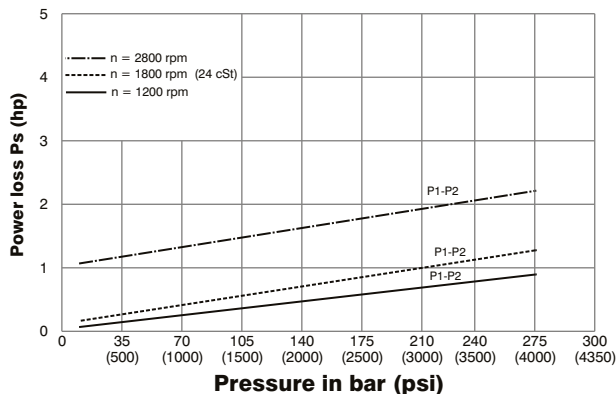
Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50 of theoretical flow.
Total leakage is the sum of each section loss at its operating conditions.

NOISE LEVEL (TYPICAL) VT67BB- B10-B03



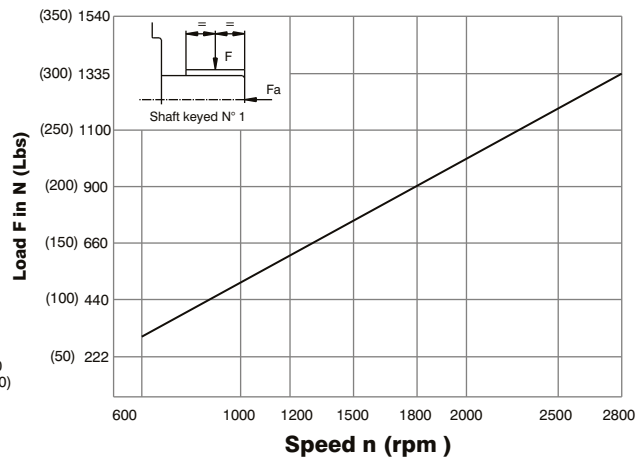
Double pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)

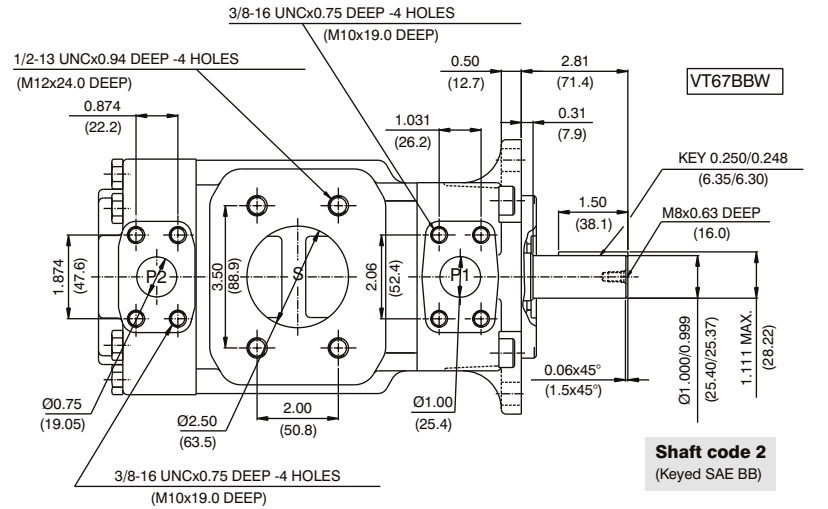
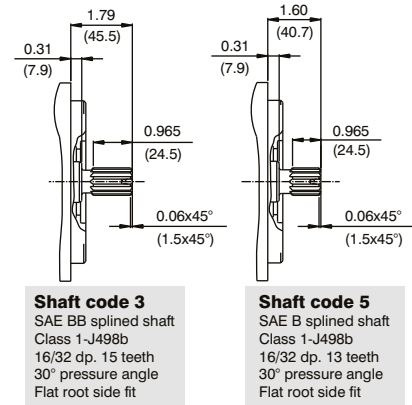
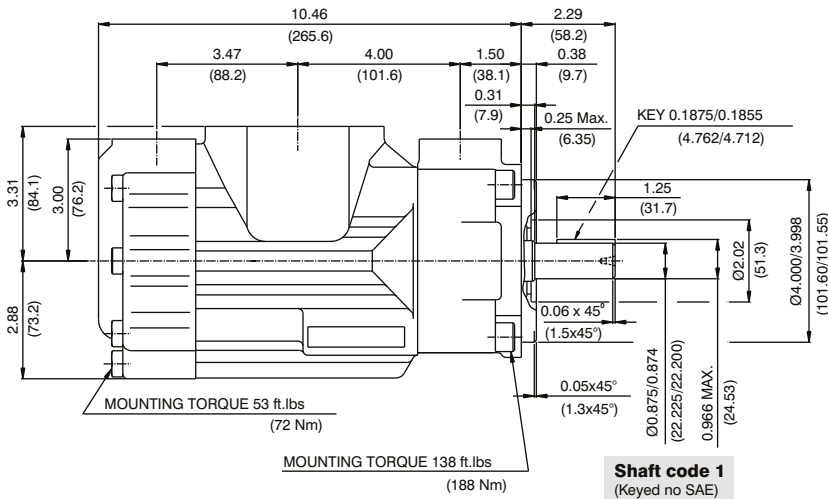
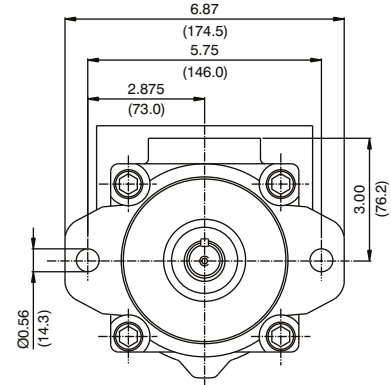


Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



Maximum permissible axial load $F_a = 800\text{N}$ (180 lbs)



Shaft torque limits in ³ /rev x psi (ml/rev x bar)	
Shaft	Vp x p max. (P1+P2)
1	12666 (14300)
2	18972 (21420)
3	28937 (32670)
5	18246 (20600)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1800 rpm						Input power p & n = 1800 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 300 bar (4350 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 300 bar (4350 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1 & P2	B02	0.35	5.7	2.76	10.4	2.33	8.8	1.80	6.8	0.74	0.55	4.02	2.99	8.10	6.40
	B03	0.60	9.8	4.66	17.6	4.23	15.9	3.70	14.0	0.85	0.63	6.24	4.65	12.93	10.25
	B04	0.78	12.8	6.09	23.0	5.66	21.4	5.13	19.4	0.94	0.70	7.90	5.89	16.55	13.13
	B05	0.97	15.9	7.56	28.6	7.13	26.9	6.60	25.0	1.02	0.76	9.62	7.17	20.29	16.12
	B06	1.21	19.8	9.42	35.6	8.99	33.9	8.46	32.0	1.13	0.84	11.79	8.79	25.00	19.88
	B07	1.37	22.5	10.70	40.4	10.27	38.8	9.74	36.8	1.20	0.89	13.29	9.91	28.26	22.47
	B08	1.52	24.9	11.84	44.7	11.41	43.1	10.88	41.1	1.27	0.94	14.62	10.90	31.15	24.78
	B09	1.71	28.0	13.31	50.3	12.87	48.6	12.35	47.0	1.36	1.01	16.35	12.19	34.92	27.77
	B10	1.94	31.8	15.12	57.2	14.69	55.5	14.16	53.5	1.46	1.11	18.45	13.75	39.48	31.42
	B11 ¹⁾	2.13	34.9	16.64	62.9	16.19	61.2	15.68	59.3	1.55	1.15	20.17	15.04	43.22	32.22
	B12 ¹⁾	2.50	40.9	19.50	73.7	19.07	72.1	18.54	70.1	1.72	1.28	23.55	17.56	50.58	37.71
	B14 ¹⁾	2.75	45.1	21.40	80.8	20.95	79.2	20.44	77.0	1.83	1.36	25.80	19.23	55.48	41.37
	B15 ¹⁾	3.05	50.0	23.78	89.8	23.35	88.3	22.88	86.5	1.97	1.47	28.55	21.28	57.35	42.7

1) B11-B12-B14 = 300 bar (4350 psi) & B15 = 280 bar (4060 psi) max. int. And Max. Speed = 3000 rpm

VT67CB W - 012 - B08 -1 R 00 - A 1 - 11 -

Series- SAE B 2 bolts

Mounting flange J744c

Use for severe duty shaft only

Cam ring for "P1"

Volumetric displacement cm³/rev (in³/rev)

*003/B03 = 10.8 (0.66)	015/B15 = 50.5 (3.08)
005/B05 = 17.2 (1.05)	017/B17 = 58.3 (3.56)
006/B06 = 21.3 (1.30)	020/B20 = 63.8 (3.89)
008/B08 = 26.4 (1.61)	022/B22 = 70.3 (4.29)
010/B10 = 34.1 (2.08)	025/B25 = 79.3 (4.84)
012/B12 = 37.1 (2.26)	028/B28 = 88.8 (5.42)
014/B14 = 46.0 (2.81)	031/B31 = 100.0 (6.10)

*'0' - Uni - directional 'B' - Bi - directional

Cam ring for "P2"

Volumetric displacement cm³/rev (in³/rev)

B02 = 5.7 (0.35)	B09 = 28.0 (1.71)
B03 = 9.8 (0.60)	B10 = 31.8 (1.94)
B04 = 12.8 (0.78)	B11 = 34.9 (2.13)
B05 = 15.9 (0.97)	B12 = 40.9 (2.50)
B06 = 19.8 (1.21)	B14 = 45.1 (2.75)
B07 = 22.5 (1.37)	B15 = 50.0 (3.05)
B08 = 24.9 (1.52)	

Type of shaft

- 1- keyed (no SAE) W version
- 3- splined (SAE BB) 2- keyed (SAE BB)
- 5- splined (SAE B)

Modifications

Mounting W/connection variables

P1=1" P2=3/4" S=2 1/2	
UNC	METRIC
11	M1

Seal class

- 1 - S1 (for mineral oil)
- 4 - S4 (for fire resistant fluids)
- 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

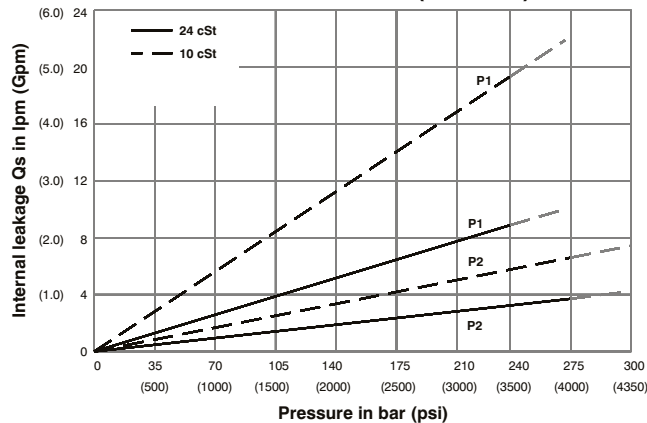
Porting combination (see page BM-1-5)

00 - standard

Direction of rotation
(view on shaft end)

- R - clockwise
- L - counter-clockwise

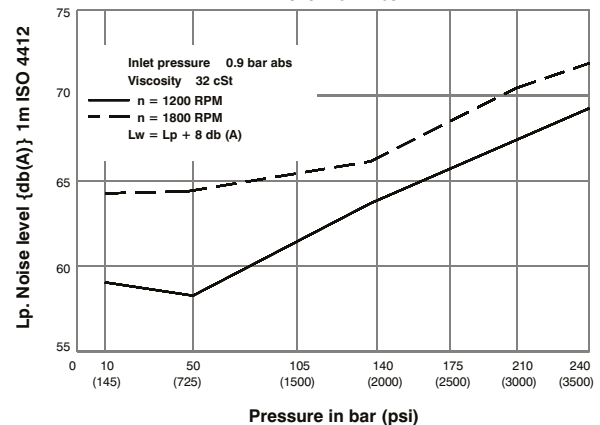
INTERNAL LEAKAGE (TYPICAL)



Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow.
Total leakage is the sum of each section loss at its operating conditions.

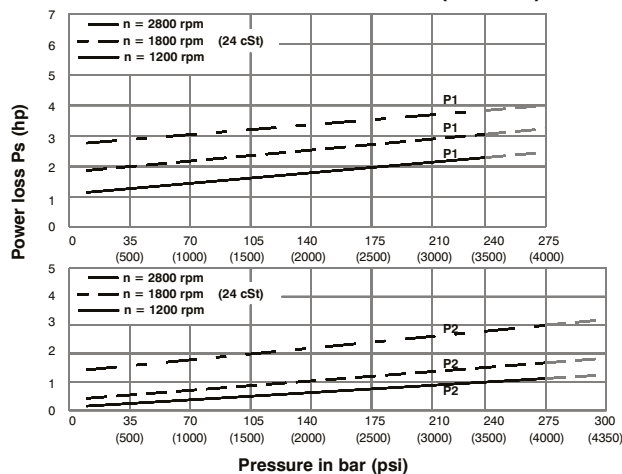
NOISE LEVEL (TYPICAL)

VT67CB- 014-B03



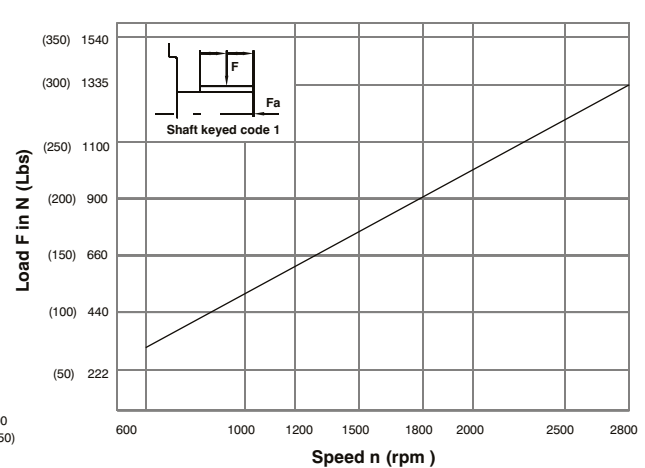
Double pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)

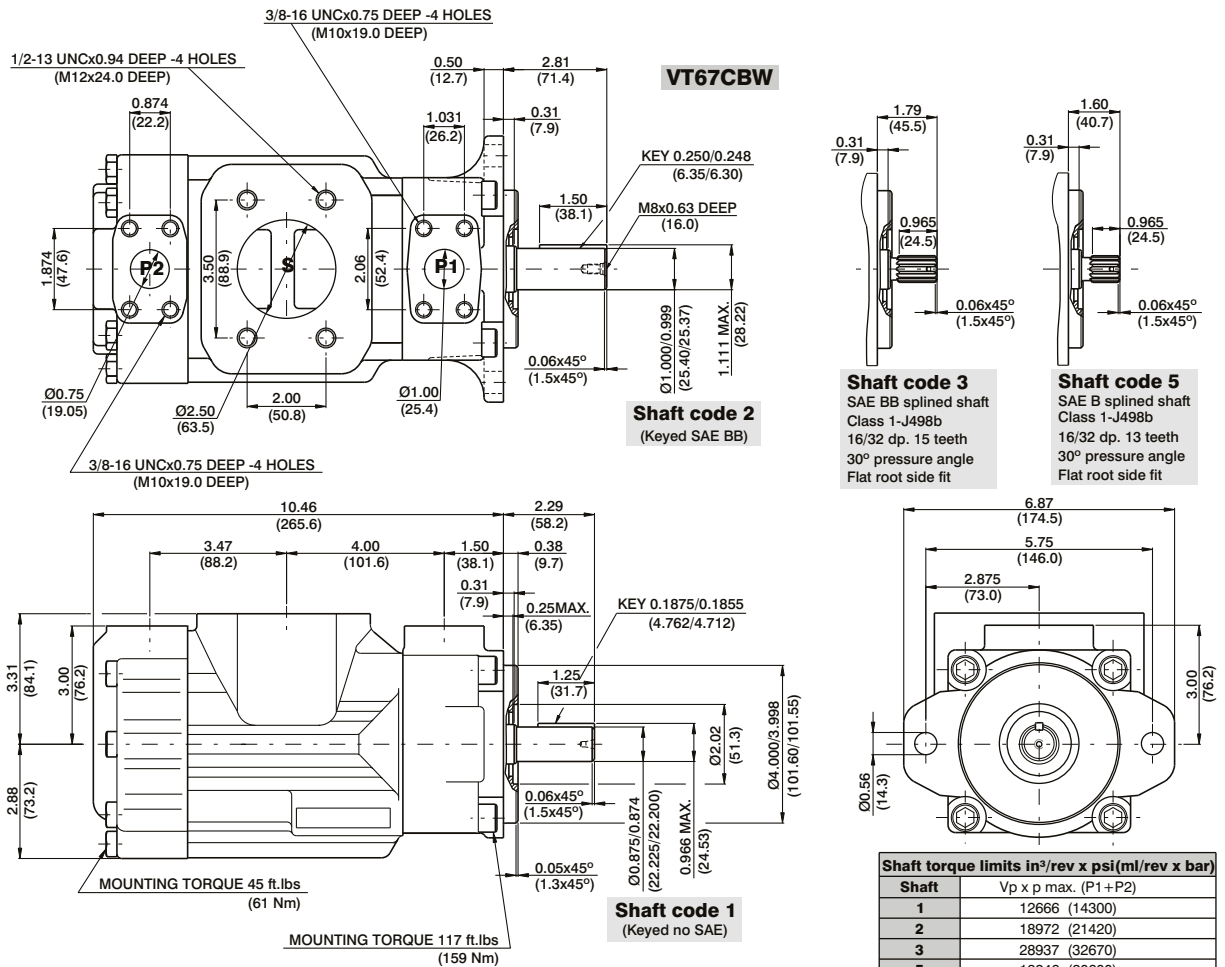


Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



Maximum permissible axial load Fa = 800N (180 lbs)



OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1800 rpm								Input power p & n = 1800 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 275 bar (4000 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 275 bar (4000 psi)		p = 7 bar (100 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw	hp	kw
P1	003	0.66	10.8	5.14	19.6	3.85	14.6	--	--	2.11	1.57	8.45	6.30	--	--	--	--
	005	1.05	17.2	8.18	30.9	6.89	26.0	5.68	21.5	2.29	1.70	12.00	8.94	19.81	14.77	--	--
	006	1.30	21.3	10.13	38.3	8.84	33.4	7.63	28.8	2.40	1.78	14.28	10.64	23.79	17.74	--	--
	008	1.61	26.4	12.55	47.4	11.26	42.6	10.05	37.9	2.54	1.89	17.11	12.75	28.75	21.43	--	--
	010	2.08	34.1	16.22	61.3	14.93	56.4	13.71	51.8	2.76	2.06	21.38	15.94	36.22	27.00	--	--
	012	2.26	37.1	17.64	66.7	16.35	61.8	15.14	57.2	2.84	2.11	23.05	17.18	39.14	29.18	--	--
	014	2.81	46.0	21.88	82.7	20.59	77.8	19.37	73.2	3.09	2.30	27.99	20.87	47.78	35.62	--	--
	015	3.08	50.5	23.99	90.7	22.83	86.3	21.56	81.5	3.21	2.40	30.30	22.60	51.36	38.30	--	--
	017	3.56	58.3	27.73	104.8	26.44	99.9	25.22	95.3	3.43	2.55	34.81	25.95	59.73	44.54	--	--
	020	3.89	63.8	30.34	114.7	29.05	109.8	27.84	105.2	3.58	2.66	37.86	28.23	65.07	48.52	--	--
	022	4.29	70.3	33.43	126.4	32.14	121.5	30.93	116.9	3.76	2.80	41.47	30.92	71.38	53.22	--	--
	025 ¹⁾	4.84	79.3	37.71	142.5	36.42	137.6	35.21	133.1	4.01	2.99	46.46	34.64	80.12	59.74	--	--
	028 ^{1,2)}	5.42	88.8	42.23	159.6	40.94	154.7	40.32	152.4	4.27	3.18	51.74	38.58	76.73	57.22	--	--
	031 ^{1,2)}	6.10	100.0	47.56	179.7	46.27	174.9	45.65	172.5	4.58	3.41	57.95	43.21	86.06	64.17	--	--
P2				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 300 bar (4350 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 300 bar (4350 psi)		p = 7 bar (100 psi)	
	B02	0.35	5.7	2.76	10.4	2.33	8.8	1.80	6.8	0.74	0.55	4.02	2.99	8.10	6.40	0.74	0.55
	B03	0.60	9.8	4.66	17.6	4.23	15.9	3.70	14.0	0.85	0.63	6.24	4.65	12.93	10.25	0.85	0.63
	B04	0.78	12.8	6.09	23.0	5.66	21.4	5.13	19.4	0.94	0.70	7.90	5.89	16.55	13.13	0.94	0.70
	B05	0.97	15.9	7.56	28.6	7.13	26.9	6.60	25.0	1.02	0.76	9.62	7.17	20.29	16.12	1.02	0.76
	B06	1.21	19.8	9.42	35.6	8.99	33.9	8.46	32.0	1.13	0.84	11.79	8.79	25.00	19.88	1.13	0.84
	B07	1.37	22.5	10.70	40.4	10.27	38.8	9.74	36.8	1.20	0.89	13.29	9.91	28.26	22.47	1.20	0.89
	B08	1.52	24.9	11.84	44.7	11.41	43.1	10.88	41.1	1.27	0.94	14.62	10.90	31.15	24.78	1.27	0.94
	B09	1.71	28.0	13.31	50.3	12.87	48.6	12.35	47.0	1.36	1.01	16.35	12.19	34.92	27.77	1.36	1.01
	B10	1.94	31.8	15.12	57.2	14.69	55.5	14.16	53.5	1.46	1.11	18.45	13.75	39.48	31.42	1.46	1.11
	B11 ³⁾	2.13	34.9	16.64	62.9	16.19	61.2	15.68	59.3	1.55	1.15	20.17	15.04	43.22	32.22	1.55	1.15
	B12 ³⁾	2.50	40.9	19.50	73.7	19.07	72.1	18.54	70.1	1.72	1.28	23.55	17.56	50.58	37.71	1.72	1.28
	B14 ³⁾	2.75	45.1	21.40	80.8	20.95	79.2	20.44	77.0	1.83	1.36	25.80	19.23	55.48	41.37	1.83	1.36
	B15 ³⁾	3.05	50.0	23.78	89.8	23.35	88.3	22.88	86.5	1.97	1.47	28.55	21.28	57.35	42.76	1.97	1.47

1) 025-028-031 = 2500 rpm max. 2) 028-031 = 210 bar (3000 psi) max. int.
3) B11-B12-B14 = 300 bar (4350 psi) & B15 = 280 bar (4060 psi) max. int. And Max. Speed = 3000 rpm

--- Not to use because internal leakage greater than 50 % theoretical flow.

Series- SAE C 2 bolts
Mounting flange J744c

severe duty shaft only

Cam ring for "P1"
Volumetric displacement cm³/rev (in³/rev)

*014/B14 = 47.6 (2.90)	035/B35 = 111.0 (6.77)
017/B17 = 58.2 (3.55)	038/B38 = 120.3 (7.34)
020/B20 = 66.0 (4.03)	042/B42 = 136.0 (8.30)
024/B24 = 79.5 (4.85)	045/B45 = 145.7 (8.89)
028/B28 = 89.7 (5.47)	050/B50 = 158.0 (9.64)
031/B31 = 98.3 (6.00)	061/B61 = 190.5 (11.62)

*0' - Uni-directional B' - Bi-directional

Cam ring for "P2"
Volumetric displacement cm³/rev (in³/rev)

B02 = 5.7 (0.35)	B09 = 28.0 (1.71)
B03 = 9.8 (0.60)	B10 = 31.8 (1.94)
B04 = 12.8 (0.78)	B11 = 34.9 (2.13)
B05 = 15.9 (0.97)	B12 = 40.9 (2.50)
B06 = 19.8 (1.21)	B14 = 45.1 (2.75)
B07 = 22.5 (1.37)	B15 = 50.0 (3.05)
B08 = 24.9 (1.52)	

Modifications

Mounting W/connection variables

P1=1-1/4" P2=3/4" S=3"	
UNC	METRIC
11	M1

Seal class

- 1 - S1 (for mineral oil)
- 4 - S4 (for fire resistant fluids)
- 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page BM-1-5)
00 - standard

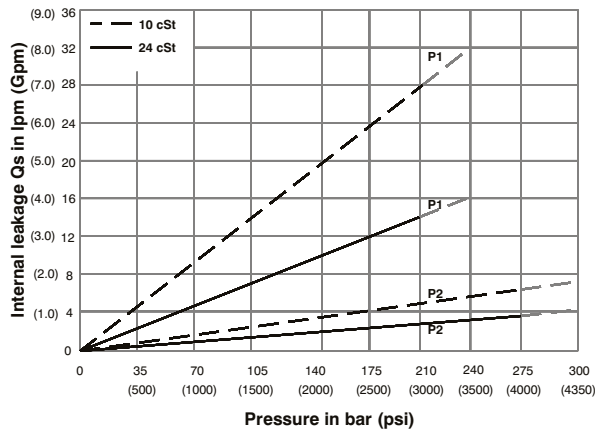
Direction of rotation (view on shaft end)
R - clockwise
L - counter-clockwise

Sever duty (VT67DBW only)
5 - keyed (no SAE)

Type of shaft

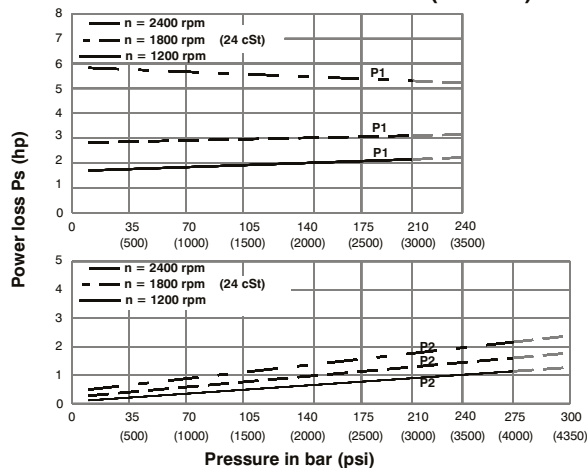
- 1 - keyed (SAE C)
- 2 - keyed (no SAE)
- 3 - splined (SAE C)
- 4 - splined (no SAE)

INTERNAL LEAKAGE (TYPICAL)



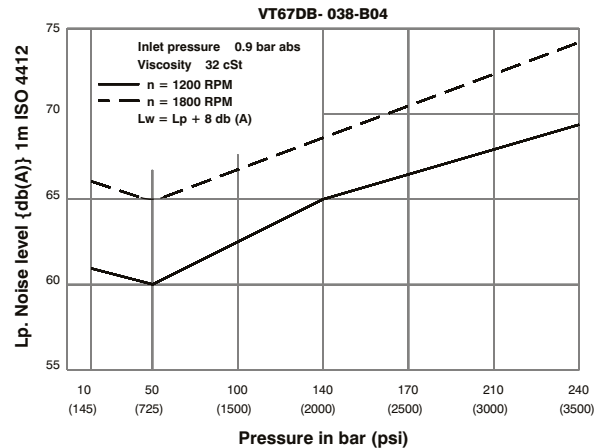
Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow.
Total leakage is the sum of each section loss at its operating conditions.

HYDROMECHANICAL POWER LOSS (TYPICAL)



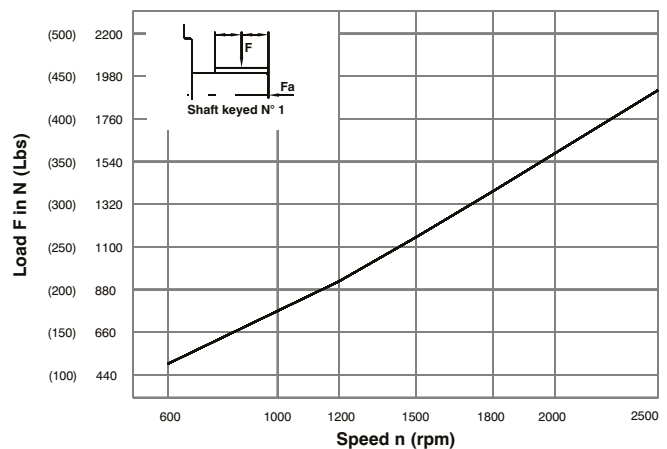
Total hydromechanical power loss is the sum of each section at its operating conditions.

NOISE LEVEL (TYPICAL)

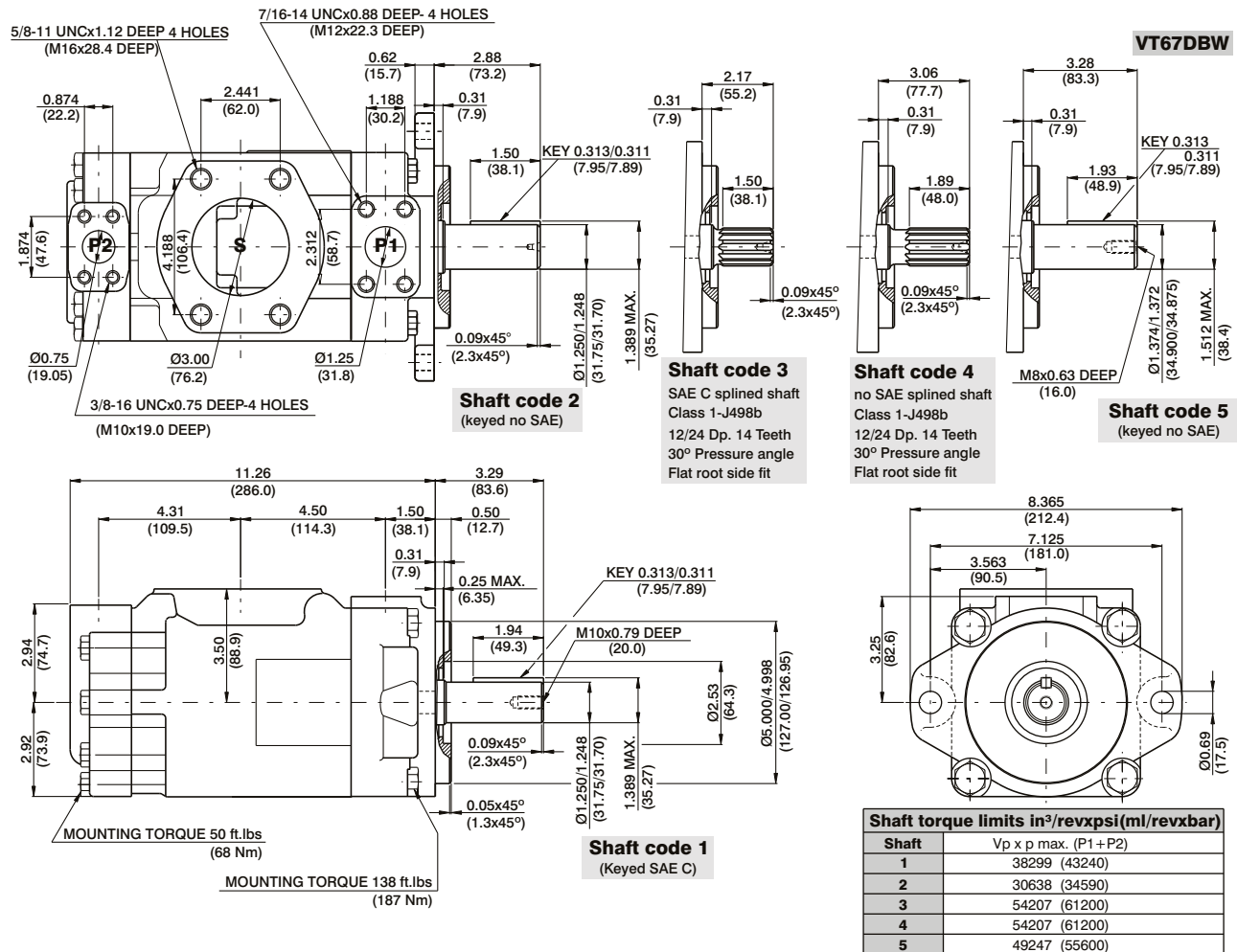


Double pump noise level is given with each section discharging at the pressure noted on the curve.

PERMISSIBLE RADIAL LOAD



Maximum permissible axial load F_a = 1200 N (270 Lbs)



OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1800 rpm						Input power p & n = 1800 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1	014	2.90	47.6	22.64	85.0	20.46	77.4	18.8	71.1	4.02	2.99	29.31	21.85	49.34	36.79
	017	3.55	58.2	23.1	87.3	20.6	78.0	18.99	71.8	3.35	2.5	29.77	22.2	49.62	37.0
	020	4.03	66.0	31.39	118.6	29.29	101.4	27.57	104.2	4.53	3.38	39.52	29.47	67.21	50.11
	024	4.85	79.5	37.81	142.8	35.63	134.6	33.99	128.5	4.91	3.66	47.02	35.06	80.32	59.89
	028	5.47	89.7	42.66	161.3	40.48	153.0	38.84	146.8	5.19	3.87	52.68	39.28	90.23	67.28
	031	6.00	98.3	46.75	176.7	44.57	168.5	42.93	162.3	5.43	4.09	57.45	42.84	98.58	73.51
	035	6.77	111.0	52.79	199.6	50.61	191.3	48.97	184.1	5.78	4.31	64.50	48.09	110.91	82.70
	038	7.34	120.3	57.21	216.3	55.03	208.1	53.39	201.8	6.04	4.50	69.66	51.94	111.94	83.47
	042 ¹⁾	8.30	136.0	64.68	244.5	62.50	236.3	60.86	230.1	6.47	4.83	78.37	58.44	135.19	100.81
	045 ¹⁾	8.89	145.7	69.29	261.9	67.11	253.7	65.47	247.5	6.74	5.02	83.75	62.45	144.61	107.83
	050 ^{1,2)}	9.64	158.0	75.14	284.1	72.96	275.8	71.78	271.3	7.08	5.27	90.58	67.54	134.54	100.32
	061 ^{1,2)}	11.62	190.4	75.6	285.8	73.54	278.0	--	--	7.37	5.50	97.49	72.69	--	--
P2				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 300 bar (4350 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 300 bar (4350 psi)	
	B02	0.35	5.8	2.76	10.4	2.33	8.8	1.80	6.8	0.74	0.55	4.02	2.99	8.10	6.40
	B03	0.60	9.8	4.66	17.6	4.23	15.9	3.70	14.0	0.85	0.63	6.24	4.65	12.93	10.25
	B04	0.78	12.8	6.09	23.0	5.66	21.4	5.13	19.4	0.94	0.70	7.90	5.89	16.55	13.13
	B05	0.97	15.9	7.56	28.6	7.13	26.9	6.60	25.0	1.02	0.76	9.62	7.17	20.29	16.12
	B06	1.21	19.8	9.42	35.6	8.99	33.9	8.46	32.0	1.13	0.84	11.79	8.79	25.00	19.88
	B07	1.37	22.5	10.70	40.4	10.27	38.8	9.74	36.8	1.20	0.89	13.29	9.91	28.26	22.47
	B08	1.52	24.9	11.84	44.7	11.41	43.1	10.88	41.1	1.27	0.94	14.62	10.90	31.15	24.78
	B09	1.71	28.0	13.31	50.3	12.87	48.6	12.35	47.0	1.36	1.01	16.35	12.19	34.92	27.77
	B10	1.94	31.8	15.12	57.2	14.69	55.5	14.16	53.5	1.46	1.11	18.45	13.75	39.48	31.42
	B11 ⁴⁾	2.13	34.9	16.64	62.9	16.19	61.2	15.68	59.3	1.55	1.15	20.17	15.04	43.22	32.22
	B12 ⁴⁾	2.50	40.9	19.50	73.7	19.07	72.1	18.54	70.1	1.72	1.28	23.55	17.56	50.58	37.71
	B14 ⁴⁾	2.75	45.1	21.40	80.8	20.95	79.2	20.44	77.0	1.83	1.36	25.80	19.23	55.48	41.37
	B15 ⁴⁾	3.05	50.0	23.78	89.8	23.35	88.3	22.88	86.5	1.97	1.47	28.55	21.28	57.35	42.76

1) 042-045-050-061=2200 RPM max. 2) 050=210 bar (3000 psi) max. int. 3) 061 = 120 bar (1740 psi) max. int. 061 = 80 bar (1160 psi) cont.

4) B11-B12-B14 = 300 bar (4350 psi) & B15 = 280 bar (4060 psi) max. int. And Max. Speed = 3000 rpm

VT67DC W - 038 - B08 1 R 00 - A 1 M1 -

Series

SAE B 2 bolts
Mounting flange J744c

use for severe duty
shaft only

Camring for "P1"

Volumetric displacement cm^3/rev (in^3/rev)

B14=2.68 (43.9) B31=6.05 (99.1)

B17=3.36 (55.0) B35=6.92 (113.4)

B20=4.03 (66.0) B38=7.36 (120.6)

B22=4.29 (70.3) B42=8.39 (137.5)

B24=4.95 (81.1) 045=8.89 (145.7)

B28=5.49 (89.9) 050=9.64 (157.9)

* '0' - Uni - directional 'B' - Bi - directional

Camring for "P2"

Volumetric displacement cm^3/rev (in^3/rev)

003/B03=0.66 (10.80) 015/B15=3.08 (50.50)

005/B05=1.05 (17.20) 017/B17=3.56 (58.30)

006/B06=1.30 (21.30) 020/B20=3.89 (63.80)

008/B08=1.61 (26.40) 022/B22=4.29 (70.30)

010/B10=2.08 (34.10) 025/B25=4.84 (79.30)

012/B12=2.26 (37.10) 028/B28=5.42 (88.80)

014/B14=2.81 (46.00) 031/B31=6.10 (100.00)

* '0' - Uni - directional 'B' - Bi - directional

Modifications

Mounting W/connection variables

	UNC		METRIC	
	00	01	M0	M1
P2	1"	3/4"	1"	3/4"

Seal class

- 1 - S1 (for mineral oil)
- 4 - S4 (for fire resistant fluids)
- 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination

00 - standard

Direction of rotation

(view on shaft end)

R - clockwise

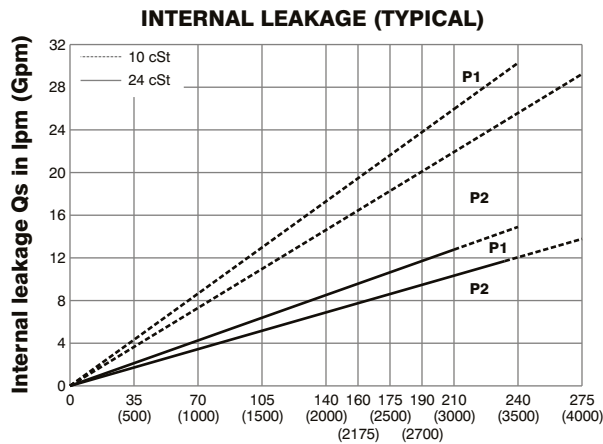
L - counter-clockwise

Type of shaft

- 1 - keyed (SAE C)
- 2 - keyed (no SAE)
- 3 - splined (SAE C)
- 4 - splined (no SAE)

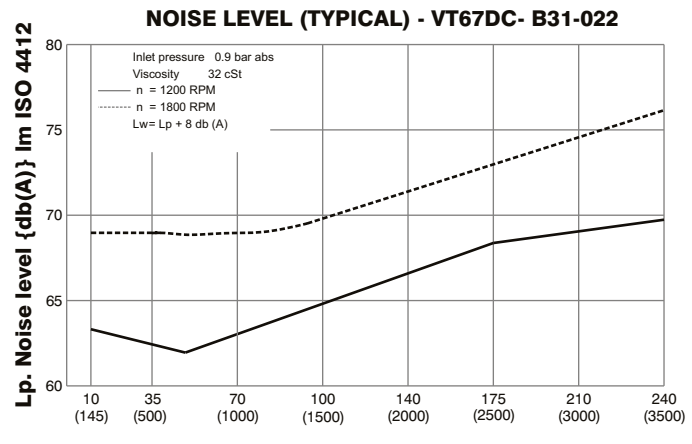
Sever duty (VT67DCW only)

5 - keyed (no SAE)



Pressure in bar (psi)

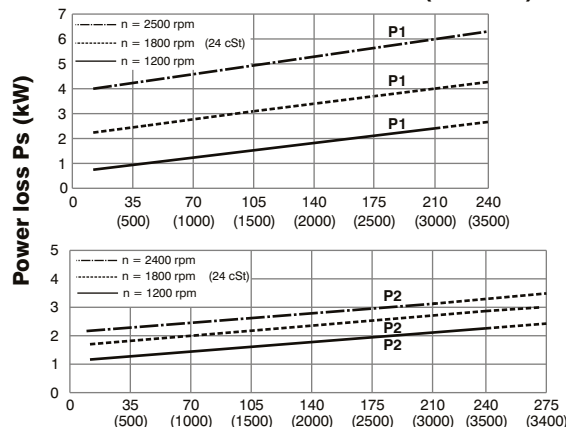
Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.



Pressure in bar (psi)

Double pump noise level is given with each section discharging at the pressure noted on the curve.

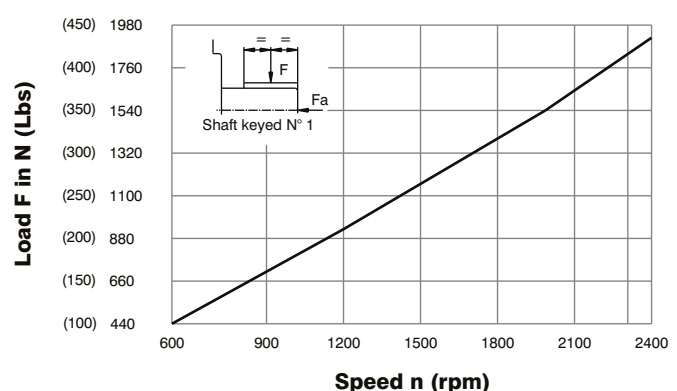
HYDROMECAHNICAL POWER LOSS (TYPICAL)



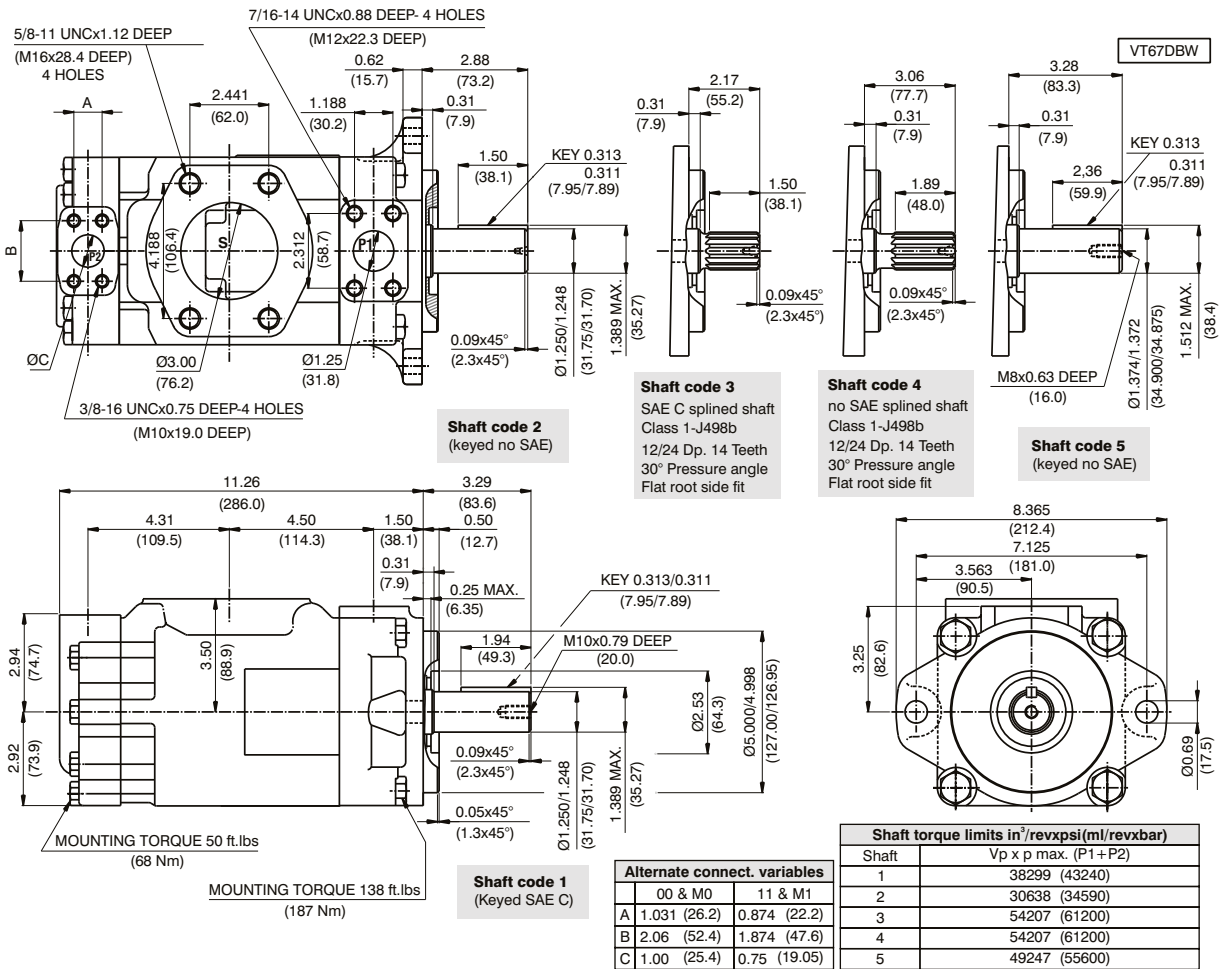
Pressure in bar (psi)

Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



Maximum permissible axial load $F_a = 1200 \text{ N}$ (270 Lbs)



OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1800 rpm								Input power p & n = 1800 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 250 bar (3630 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 250 bar (3630 psi)			
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw	hp	kw
P1	B14	2.68	43.9	20.92	79.1	19.18	72.5	17.81	67.3	3.46	2.6	27.77	20.7	47.03	35.07		
	B17	3.36	55.0	26.16	98.8	24.41	92.3	23.04	87.0	3.77	2.8	33.88	25.3	57.71	43.03		
	B20	4.03	66.0	31.39	118.6	29.64	112.0	28.27	106.8	4.07	3.0	39.98	29.8	68.39	50.99		
	B22	4.29	70.3	33.43	126.4	31.69	119.8	30.32	104.6	4.19	3.1	42.37	31.6	72.57	54.11		
	B24	4.95	81.1	38.57	145.8	36.82	139.2	35.45	134.0	4.49	3.4	48.36	36.1	83.06	61.93		
	B28	5.49	89.9	42.80	161.8	41.06	155.2	39.69	150.0	4.74	3.5	53.30	39.7	91.70	68.38		
	B31	6.05	99.1	47.18	178.3	45.43	171.7	44.06	166.5	4.99	3.7	58.41	43.6	100.63	75.03		
	B35	6.92	113.4	53.93	203.9	52.18	197.2	50.81	192.0	5.39	4.0	66.29	49.4	114.42	85.32		
	B38	7.36	120.6	57.35	216.8	55.61	210.2	54.24	204.9	5.59	4.2	70.28	52.4	121.42	90.54		
	B42	8.39	137.5	65.39	247.2	63.65	240.6	62.28	235.4	6.05	4.5	79.66	59.4	137.83	102.77		
	045	8.89	145.7	69.29	262.0	67.11	253.6	65.31	246.8	6.74	5.0	83.75	62.4	145.79	108.71		
P2	050	9.64	157.9	75.14	284.0	72.96	275.8	71.78 ¹⁾	271.3 ¹⁾	7.08	5.3	90.58	67.5	134.50 ¹⁾	100.3 ¹⁾		
				p=0 bar (0 psi)		p=140 bar (2000 psi)		p=275 bar (4000 psi)		p=7 bar (100 psi)		p=140 bar (2000 psi)		p=275 bar (4000 psi)			
	003	0.66	10.8	5.14	19.6	3.85	14.6	--	--	2.11	1.57	8.45	6.30	--	--		
	005	1.05	17.2	8.18	30.9	6.89	26.0	5.68	21.5	2.29	1.70	12.00	8.94	19.81	14.77		
	006	1.30	21.3	10.13	38.3	8.84	33.4	7.63	28.8	2.40	1.78	14.28	10.64	23.79	17.74		
	008	1.61	26.4	12.55	47.4	11.26	42.6	10.05	37.9	2.54	1.89	17.11	12.75	28.75	21.43		
	010	2.08	34.1	16.22	61.3	14.93	56.4	13.71	51.8	2.76	2.06	21.38	15.94	36.22	27.00		
	012	2.26	37.1	17.64	66.7	16.35	61.8	15.14	57.2	2.84	2.11	23.05	17.18	39.14	29.18		
	014	2.81	46.0	21.88	82.7	20.59	77.8	19.37	73.2	3.09	2.30	27.99	20.87	47.78	35.62		
	015	3.08	50.5	23.99	90.7	22.83	86.3	21.56	81.5	3.21	2.40	30.30	22.60	51.36	38.30		
	017	3.56	58.3	27.73	104.8	26.44	99.9	25.22	95.3	3.43	2.55	34.81	25.95	59.73	44.54		
	020	3.89	63.8	30.34	114.7	29.05	109.8	27.84	105.2	3.58	2.66	37.86	28.23	65.07	48.52		
	022	4.29	70.3	33.43	126.4	32.14	121.5	30.93	116.9	3.76	2.80	41.47	30.92	71.38	53.22		
	025	4.84	79.3	37.71	142.5	36.42	137.6	35.21	133.1	4.01	2.99	46.46	34.64	80.12	59.74		
	028	5.42	88.8	42.23	159.6	40.94	154.7	40.32 ²⁾	152.4 ²⁾	4.27	3.18	51.74	38.58	76.73 ²⁾	57.22 ²⁾		
	031	6.10	100.0	47.56	179.7	46.27	174.9	45.65 ²⁾	172.5 ²⁾	4.58	3.41	57.95	43.21	86.06 ²⁾	64.17 ²⁾		

– Not recommended to use as the internal leakage is over 50% of theoretical flow.

1) 050 = 210 bar (3000 psi) max. int 2) 028 - 031 = 210 bar (3000 psi) max.int

VT67EB - 066 - B08 1 R 00 - A 1 M1 -

Series- SAE C 2 bolts
Mounting flange J744c

Cam ring for "P1"

Volumetric displacement cm³/rev (in³/rev)

042 = 132.3 (8.07)	062 = 196.7 (12.00)
045 = 142.4 (8.69)	066 = 213.3 (13.02)
050 = 158.5 (9.67)	072 = 227.1 (13.86)
052 = 164.8 (10.06)	085 = 269.8 (16.46)
057 = 180.7 (11.02)	

Cam ring for "P2"

Volumetric displacement cm³/rev (in³/rev)

B02 = 5.7 (0.35)	B09 = 28.0 (1.71)
B03 = 9.8 (0.60)	B10 = 31.8 (1.94)
B04 = 12.8 (0.78)	B11 = 34.9 (2.13)
B05 = 15.9 (0.97)	B12 = 40.9 (2.50)
B06 = 19.8 (1.21)	B14 = 45.1 (2.75)
B07 = 22.5 (1.37)	B15 = 50.0 (3.05)
B08 = 24.9 (1.52)	

Type of shaft

- 1 - keyed (SAE CC)
- 2 - keyed (no SAE)
- 3 - splined (SAE C)
- 4 - splined (SAE CC)

Modifications

Mounting W/connection variables

P1=1-1/2"	P2=3/4"	S=3-1/2"
UNC		METRIC
01		M1

Seal class

- 1 - S1 (for mineral oil)
- 4 - S4 (for fire resistant fluids)
- 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

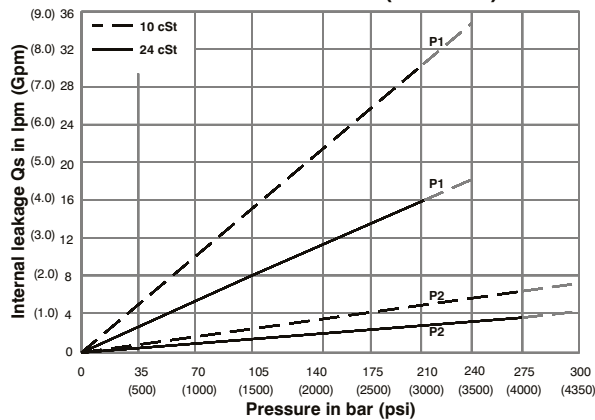
Porting combination (see page BM-1-5)

00 - standard

Direction of rotation (view on shaft end)

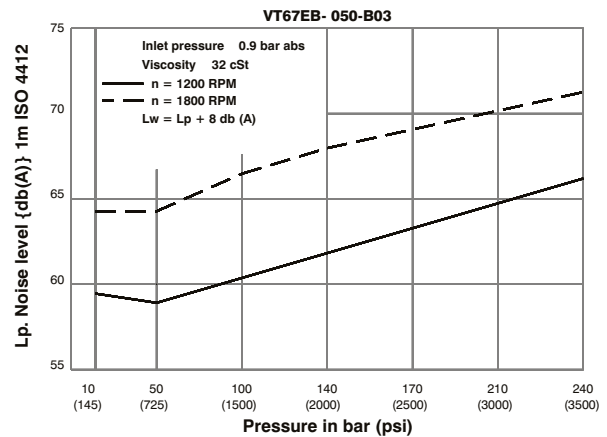
- R - clockwise
- L - counter-clockwise

INTERNAL LEAKAGE (TYPICAL)



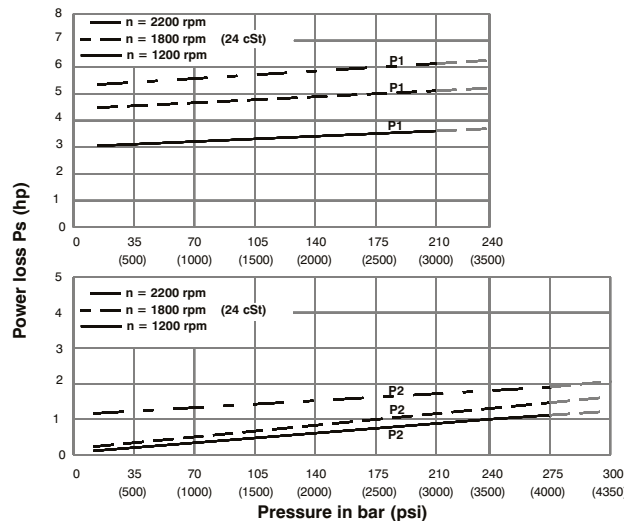
Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow.
Total leakage is the sum of each section loss at its operating conditions.

NOISE LEVEL (TYPICAL)



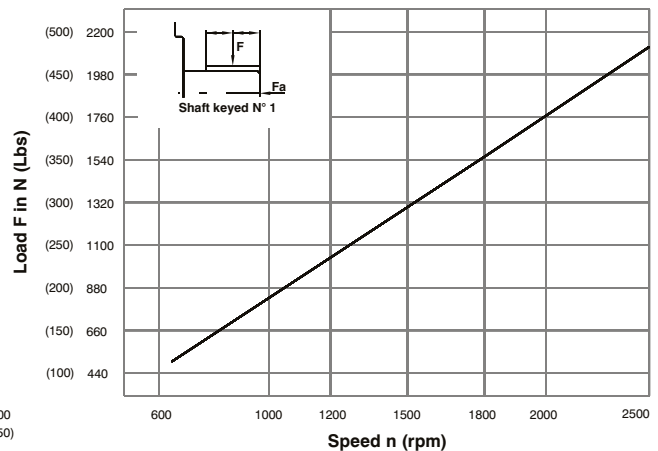
Double pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)

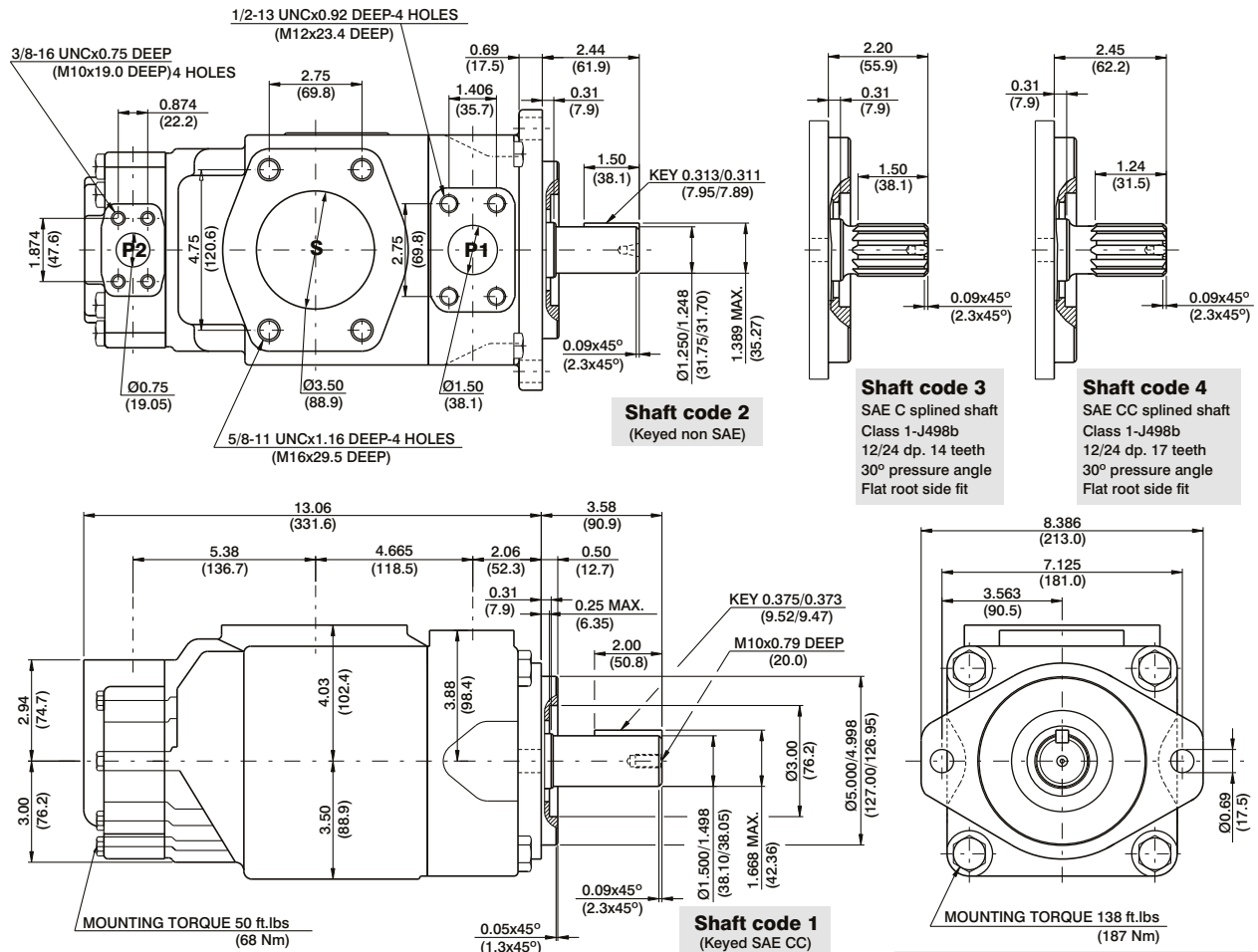


Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



Maximum permissible axial load Fa = 2000 N (449 Lbs)



Shaft torque limits in ³ /rev x psi (ml/rev x bar)	
Shaft	Vp x p max. (P1+P2)
1	64044 (72306)
2	30638 (34590)
3	54207 (61200)
4	67582 (76376)

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1800 rpm						Input power p & n = 1800 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1	042	8.07	132.3	62.92	237.8	60.37	228.2	58.52	221.2	8.09	6.03	78.44	58.49	133.80	99.78
	045	8.69	142.4	67.72	256.0	65.17	246.3	63.32	239.4	8.37	6.24	84.04	62.67	143.60	107.08
	050	9.67	158.5	75.38	285.0	72.83	275.3	70.98	268.3	8.82	6.58	92.97	69.30	159.24	118.7
	052	10.06	164.8	78.37	296.2	75.82	286.3	73.97	279.6	8.99	6.70	96.47	71.94	165.36	121.31
	057	11.02	180.7	71.70	325.3	69.07	261.1	80.63	304.8	9.40	7.00	114.30	85.14	172.10	128.30
	062	12.00	196.7	93.54	353.6	90.99	344.0	89.14	337.0	9.88	7.36	114.17	84.00	196.34	146.41
	066	13.02	213.3	101.44	383.4	98.89	373.8	97.04	366.8	10.34	7.71	123.38	92.01	212.46	158.43
	072	13.86	227.1	108.00	408.2	105.45	400.0	103.60	391.6	10.72	8.00	131.04	97.72	225.86	168.42
	085 ^{1,2)}	16.40	268.7	127.08	483.0	126.13	476.7	--	--	11.66	8.70	87.56	65.30	--	--
P2				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 300 bar (4350 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 300 bar (4350 psi)	
	B02	0.35	5.7	2.76	10.4	2.33	8.8	1.80	6.8	0.74	0.55	4.02	2.99	8.10	6.40
	B03	0.60	9.8	4.66	17.6	4.23	15.9	3.70	14.0	0.85	0.63	6.24	4.65	12.93	10.25
	B04	0.78	12.8	6.09	23.0	5.66	21.4	5.13	19.4	0.94	0.70	7.90	5.89	16.55	13.13
	B05	0.97	15.9	7.56	28.6	7.13	26.9	6.60	25.0	1.02	0.76	9.62	7.17	20.29	16.12
	B06	1.21	19.8	9.42	35.6	8.99	33.9	8.46	32.0	1.13	0.84	11.79	8.79	25.00	19.88
	B07	1.37	22.5	10.70	40.4	10.27	38.8	9.74	36.8	1.20	0.89	13.29	9.91	28.26	22.47
	B08	1.52	24.9	11.84	44.7	11.41	43.1	10.88	41.1	1.27	0.94	14.62	10.90	31.15	24.78
	B09	1.71	28.0	13.31	50.3	12.87	48.6	12.35	47.0	1.36	1.01	16.35	12.19	34.92	27.77
	B10	1.94	31.8	15.12	57.2	14.69	55.5	14.16	53.5	1.46	1.11	18.45	13.75	39.48	31.42
	B11 ³⁾	2.13	34.9	16.64	62.9	16.19	61.2	15.68	59.3	1.55	1.15	20.17	15.04	43.22	32.22
	B12 ³⁾	2.50	40.9	19.50	73.7	19.07	72.1	18.54	70.1	1.72	1.28	23.55	17.56	50.58	37.71
	B14 ³⁾	2.75	45.1	21.40	80.8	20.95	79.2	20.44	77.0	1.83	1.36	25.80	19.23	55.48	41.37
	B15 ³⁾	3.05	50.0	23.78	89.8	23.35	88.3	22.88	86.5	1.97	1.47	28.55	21.28	57.35	42.76

1) 085 = 2000 RPM max. 2) 085=75 bar (1087 psi)cont. 085=90 bar (1300 psi) max. int.

3) B11-B12-B14 = 300 bar (4350 psi) & B15 = 280 bar (4060 psi) max. int. And Max. Speed = 3000 rpm

VT67EC - 062 - 010 1 R 00 - A 1 00 - *

Series- SAE C 2 bolts

Mounting flange J744c

Cam ring for "P1"

Volumetric displacement cm^3/rev (in^3/rev)

042 = 132.2 (8.07)	057 = 183.2 (11.18)
045 = 142.5 (8.70)	062 = 196.6 (12.00)
050 = 158.5 (9.67)	066 = 213.0 (13.00)
052 = 163.8 (10.00)	072 = 227.1 (13.86)
054 = 170.9 (10.43)	085 = 268.7 (16.40)

Cam ring for "P2"

Volumetric displacement cm^3/rev (in^3/rev)

003 = 10.8 (0.66)	015 = 50.5 (3.08)
005 = 17.2 (1.05)	017 = 58.3 (3.56)
006 = 21.3 (1.30)	020 = 63.8 (3.89)
008 = 26.4 (1.61)	022 = 70.3 (4.29)
010 = 34.1 (2.08)	025 = 79.3 (4.84)
012 = 37.1 (2.26)	028 = 88.8 (5.42)
014 = 46.0 (2.81)	031 = 100.0 (6.10)

Type of shaft

- 1 - keyed (SAE CC)
- 2 - keyed (no SAE)
- 3 - splined (SAE C)
- 4 - splined (SAE CC)

Modifications

Mounting W/connection variables
4 bolts SAE flange J518

TYPE	P1 = 1 1/2" & S = 3 1/2"			
	Metric thread		UNC thread	
CODE	M0	M1	00	01
P2	1"	3/4"	1"	3/4"

Seal class

- 1 - S1 (for mineral oil)
- 4 - S4 (for fire resistant fluids)
- 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

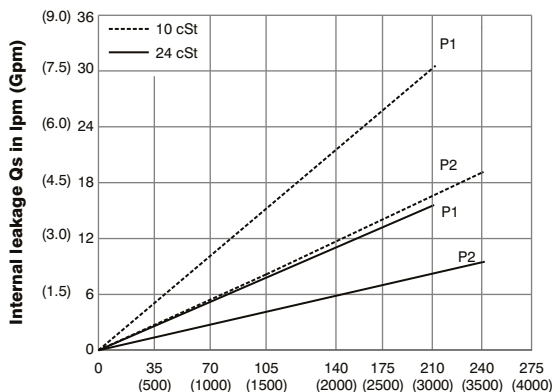
Porting combination (see page BM-1-5)

00 - standard

Direction of rotation (view on shaft end)

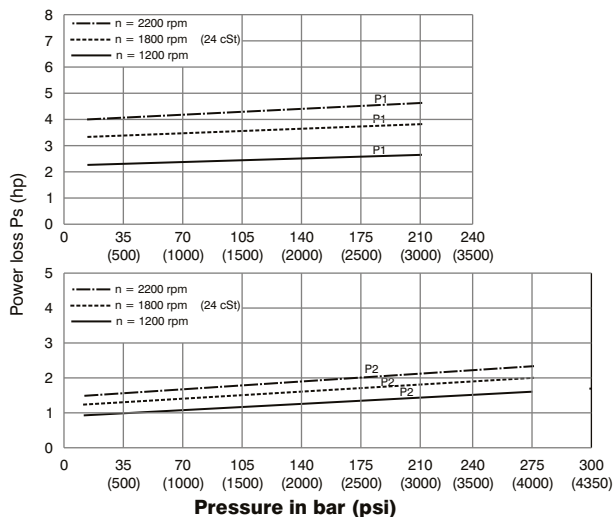
- R - clockwise
- L - counter-clockwise

INTERNAL LEAKAGE (TYPICAL)



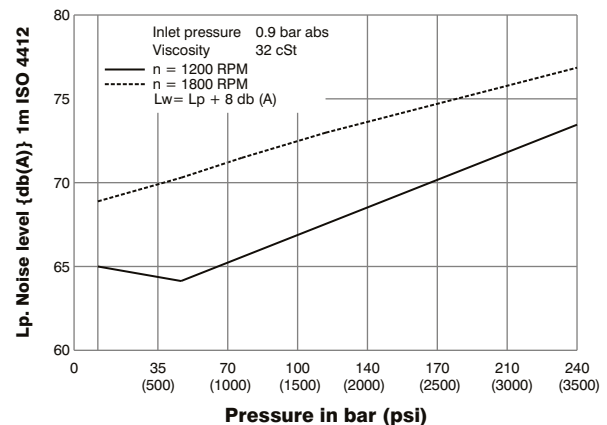
Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50 of theoretical flow.
Total leakage is the sum of each section loss at its operating conditions.

HYDROMECHANICAL POWER LOSS (TYPICAL)



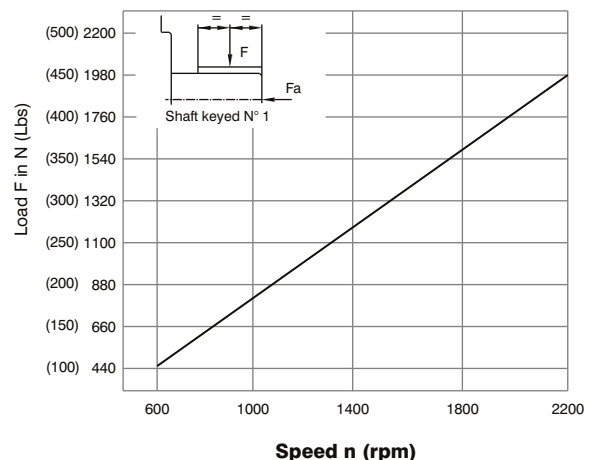
Total hydromechanical power loss is the sum of each section at its operating conditions.

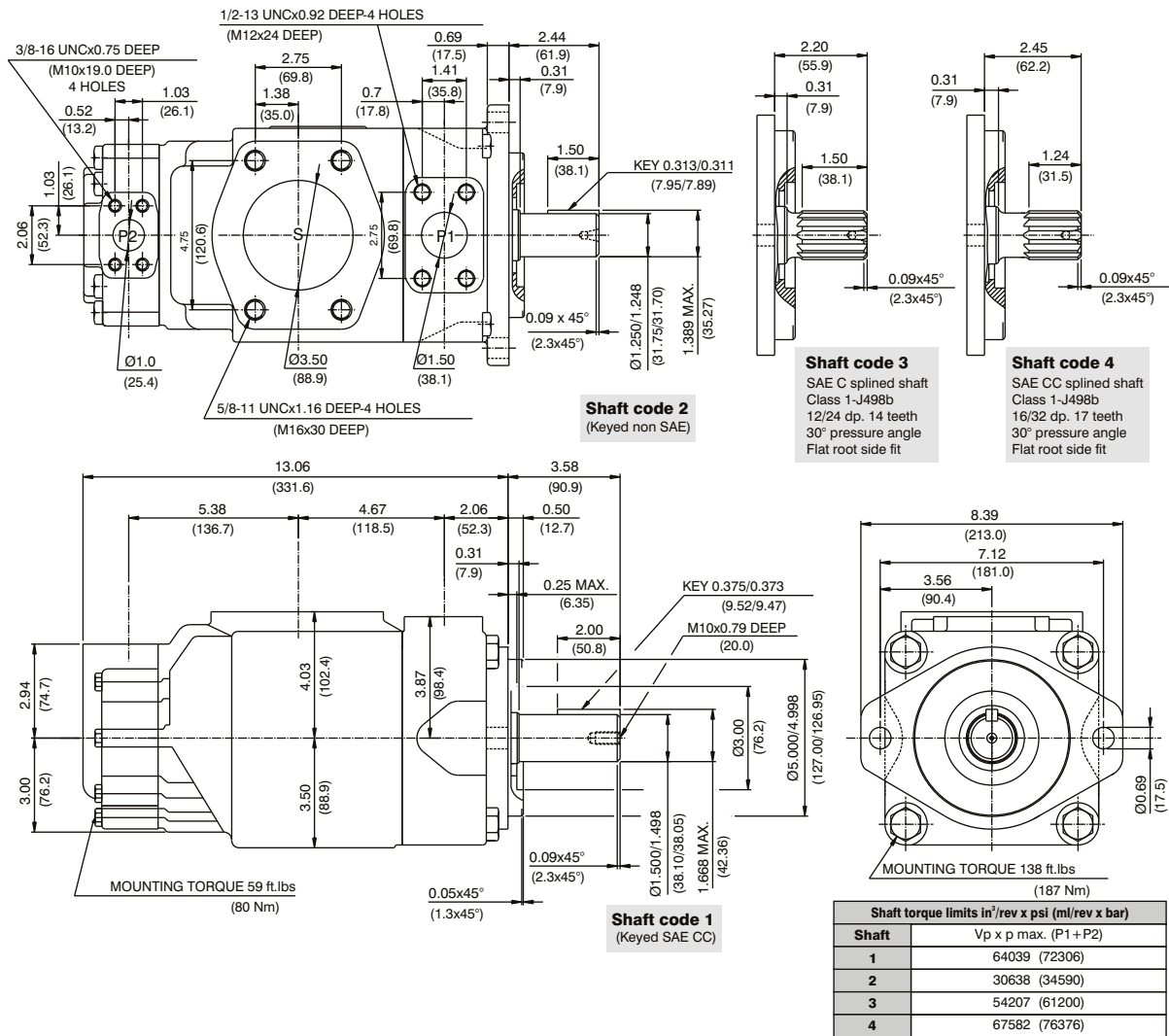
NOISE LEVEL (TYPICAL) VT67EC- 050-022



Double pump noise level is given with each section discharging at the pressure noted on the curve.

PERMISSIBLE RADIAL LOAD





OPERATING CHARACTERISTICS - TYPICAL (24 cSt) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1800 rpm						Input power p & n = 1800 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1	042	8.07	132.2	62.92	237.8	60.37	228.2	58.52	221.2	8.09	6.03	78.44	58.49	133.80	99.77
	045	8.70	142.5	67.72	255.9	65.17	246.3	63.32	239.3	8.37	6.24	84.04	62.66	143.60	107.08
	050	9.67	158.5	75.38	284.9	72.83	275.3	70.98	268.3	8.82	6.58	92.97	69.32	159.24	118.75
	052	10.00	163.8	78.37	296.2	75.82	286.6	73.97	279.6	8.99	6.70	96.47	71.94	165.36	123.31
	054	10.43	170.9	81.27	307.2	78.72	297.6	76.87	290.6	9.17	6.84	99.75	74.38	177.46	132.33
	057	11.18	183.2	87.12	329.3	84.57	319.7	82.72	312.7	9.51	7.09	106.57	79.47	189.84	141.56
	062	12.00	196.6	93.54	353.6	90.99	343.9	89.14	336.9	9.88	7.37	114.17	85.13	196.34	146.41
	066	13.00	213.0	101.44	383.4	98.89	373.8	97.04	366.8	10.34	7.71	123.38	92.01	212.46	158.43
	072	13.86	227.1	108.00	408.2	105.45	398.6	103.60	391.6	10.72	7.99	131.04	97.71	225.86	166.42
	085 ^{1, 2)}	16.40	268.7	127.79	483.0	126.13	476.7	--	--	11.88	8.85	101.66	75.80	--	--
P2				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 275 bar (4000 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 275 bar (4000 psi)	
	003	0.66	10.8	5.14	19.6	3.85	14.6	--	--	2.11	1.57	8.45	6.30	--	--
	005	1.05	17.2	8.18	30.9	6.89	26.0	5.68	21.5	2.29	1.70	12.00	8.94	19.81	14.77
	006	1.30	21.3	10.13	38.3	8.84	33.4	7.63	28.8	2.40	1.78	14.28	10.64	23.79	17.74
	008	1.61	26.4	12.55	47.4	11.26	42.6	10.05	37.9	2.54	1.89	17.11	12.75	28.75	21.43
	010	2.08	34.1	16.22	61.3	14.93	56.4	13.71	51.8	2.76	2.06	21.38	15.94	36.22	27.00
	012	2.26	37.1	17.64	66.7	16.35	61.8	15.14	57.2	2.84	2.11	23.05	17.18	39.14	29.18
	014	2.81	46.0	21.88	82.7	20.59	77.8	19.37	73.2	3.09	2.30	27.99	20.87	47.78	35.62
	015	3.08	50.5	23.99	90.7	22.83	86.3	21.56	81.5	3.21	2.40	30.30	22.60	51.36	38.30
	017	3.56	58.3	27.73	104.8	26.44	99.9	25.22	95.3	3.43	2.55	34.81	25.95	59.73	44.54
	020	3.89	63.8	30.34	114.7	29.05	109.8	27.84	105.2	3.58	2.66	37.86	28.23	65.07	48.52
	022 ⁴⁾	4.29	70.3	33.43	126.4	32.14	121.5	30.93	116.9	3.76	2.80	41.47	30.92	71.38	53.22
	025 ^{3, 5)}	4.84	79.3	37.71	142.5	36.42	137.6	35.21	133.1	4.01	2.99	46.46	34.64	80.12	59.74
	028 ^{3, 6)}	5.42	88.8	42.23	159.6	40.94	154.7	40.32	152.4	4.27	3.18	51.74	38.58	76.73	57.22
	031 ^{3, 6)}	6.10	100.0	47.56	179.7	46.27	174.9	45.65	172.5	4.58	3.41	57.95	43.21	86.06	64.17

1) 085 = 90 bar (1300 psi) max. int. 2) 085 = 2000 RPM max. 3) 025-028-031 = 2500 R.P.M. max. 4) 022 = 275 bar max. int.

5) 025 = 240 bar max. int. 6) 028-031 = 210 bar max. int.

-- Not recommended to use as the internal leakage is over 50 of theoretical flow.

VT6 -TRIPLE

VANE PUMPS

HIGH PERFORMANCE VANE PUMP VT6CBB



Series **VT6CBB - 022 - B09 - B02 - 1 R 00 - B 1 01 ***

Cam ring for "P1"
Volumetric displacement cm³/rev (in³/rev)

*003/B03 = 10.8 (0.66)	015/B15 = 50.5 (3.08)
005/B05 = 17.2 (1.05)	017/B17 = 58.3 (3.56)
006/B06 = 21.3 (1.30)	020/B20 = 63.8 (3.89)
008/B08 = 26.4 (1.61)	022/B22 = 70.3 (4.29)
010/B10 = 34.1 (2.08)	025/B25 = 79.3 (4.84)
012/B12 = 37.1 (2.26)	028/B28 = 88.8 (5.42)
014/B14 = 46.0 (2.81)	031/B31 = 100.0 (6.10)

*0' - Uni - directional 'B' - Bi - directional

Cam ring for "P2" & "P3"
Volumetric displacement cm³/rev (in³/rev)

B02 = 5.8 (0.35)
B03 = 9.8 (0.59)
B04 = 12.8 (0.78)
B05 = 15.9 (0.97)
B06 = 19.8 (1.21)
B07 = 22.5 (1.37)
B08 = 24.9 (1.52)
B09 = 28.0 (1.71)
B10 = 31.8 (1.94)
B11 = 34.9 (2.13)
B12 = 41.0 (2.50)
B14 = 45.0 (2.75)

Modifications

Port connections

CODE		S = 2 1/2" SAE 4-Bolt Pad.		
UNC	METRIC	P1	P2	P3
01	W0	1" SAE 4 bolt Pad.	3/4" SAE 4 bolt Pad.	SAE 8,3/4" 16 UNF-2B O'ring Boss
11	W1			3/4" SAE 4 bolt Pad.
02	W2	SAE 16,1 5/16" 12 UNF-2B O'ring Boss	SAE 12,1 1/16" 12 UNF-2B O'ring Boss	SAE 8,3/4" 16 UNF-2B O'ring Boss

Seal class

1 - S1 (for mineral oil)
4 - S4 (for fire resistant fluids)
5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page CI-1-4)
00 - standard

Direction of rotation (view on shaft end)

R - clockwise
L - counter-clockwise

Type of Shaft

1 = Keyed (no SAE)
2 = Keyed (SAE BB)
3 = Splined (SAE BB)
5 = Splined (SAE B)
E = Splined

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1	003	0.66	10.8	4.29	16.2	2.96	11.2	2.04	7.7	1.74	1.3	7.11	5.3	11.26	8.4
	005	1.05	17.2	6.83	25.8	5.50	20.8	4.57	17.3	1.88	1.4	10.06	7.5	16.36	12.2
	006	1.30	21.3	8.44	31.9	7.11	26.9	6.19	23.4	2.01	1.5	11.94	8.9	19.71	14.7
	008	1.61	26.4	10.48	39.6	9.15	34.6	8.22	31.1	2.15	1.6	14.35	10.7	22.93	17.7
	010	2.08	34.1	13.52	51.1	12.19	46.1	11.26	42.6	2.28	1.7	18.64	13.4	29.90	22.3
	012	2.26	37.1	14.71	55.6	13.36	50.6	12.46	47.1	2.28	1.7	19.31	14.4	32.32	24.1
	014	2.81	46.0	18.25	69.0	16.93	64.0	16.00	60.5	2.55	1.9	23.60	17.6	39.56	29.5
	015	3.08	50.5	20.00	75.6	18.73	73.2	19.02	67.5	2.68	2.0	25.61	19.1	42.91	32.0
	017	3.56	58.3	23.12	87.4	21.79	82.4	20.87	78.9	2.82	2.1	29.37	21.9	49.48	36.9
	020	3.89	63.8	25.32	95.7	23.99	90.7	23.07	87.2	2.95	2.2	31.92	23.8	53.91	40.2
	022	4.29	70.3	27.88	105.4	26.56	100.4	25.63	96.9	3.08	2.3	35.00	26.1	59.14	44.1
	025	4.84	79.3	31.46	118.9	30.13	113.9	29.21	110.4	3.35	2.5	39.16	29.2	66.38	49.5
P2 & P3	028 ¹⁾	5.42	88.8	35.24	133.2	33.92	128.2	33.28	125.8	3.75	2.8	43.85	32.7	65.04	48.5
	031 ¹⁾	6.10	100.0	39.68	150.0	38.35	145.0	37.72	142.6	3.75	2.8	48.95	36.5	72.95	54.4
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 210 bar (3000 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 210 bar (3000 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
	B02	0.35	5.8	2.30	8.7	1.4	5.9	--	--	0.53	0.4	2.81	2.1	--	--
	B03	0.59	9.8	3.88	14.7	2.9	11.9	--	--	0.67	0.5	3.62	2.7	--	--
	B04	0.78	12.8	5.08	19.2	4.33	16.4	3.97	15.0	0.93	0.7	5.23	3.9	10.06	7.5
	B05	0.97	15.9	6.31	23.8	5.55	21.0	5.18	19.6	1.00	0.75	6.64	4.9	11.2	8.3
	B06	1.21	19.8	7.85	29.7	7.12	26.9	6.66	25.2	1.07	0.8	8.05	6.0	12.34	9.2
	B07	1.37	22.5	8.92	33.7	8.17	30.9	7.80	29.5	1.20	0.9	9.05	6.7	14.02	10.4
	B08	1.52	24.9	9.89	37.4	9.15	34.6	8.78	33.2	1.34	1.0	10.05	7.5	15.69	11.7
	B09	1.71	28.0	11.11	42.0	10.37	39.2	10.00	37.8	1.47	1.1	11.94	8.9	23.60	17.6
	B10	1.94	31.8	12.61	47.7	11.87	44.9	11.51	43.5	1.6	1.2	13.0	9.7	26.0	19.6
	B11	2.13	34.9	13.85	52.3	13.09	49.5	12.72	48.1	1.7	1.3	14.0	10.5	28.0	21.0
	B12	2.50	41.0	16.27	61.5	15.53	58.7	*	*	1.8	1.4	15.02	11.2	*	*
	B14	2.75	45.0	17.86	67.5	17.12	64.7	**	**	2.1	1.6	15.42	11.5	**	**

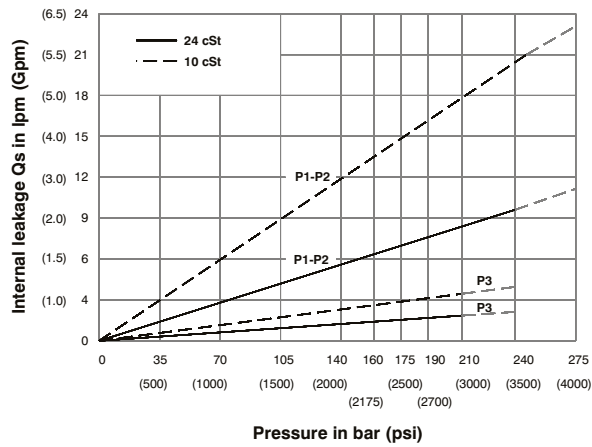
1) 028-031 = 210 bar (3000 psi) max. int.

*B12 = 210bar (3000psi) Max. Int

**B14 = 175bar (2500psi) Max. Int

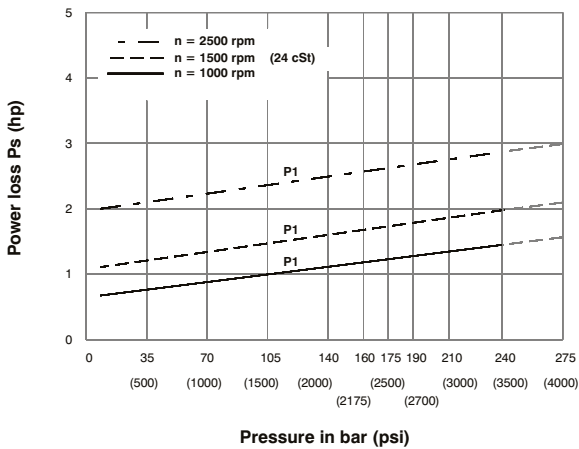
- Not to use because internal leakage greater than 50% of theoretical flow.

INTERNAL LEAKAGE (TYPICAL)



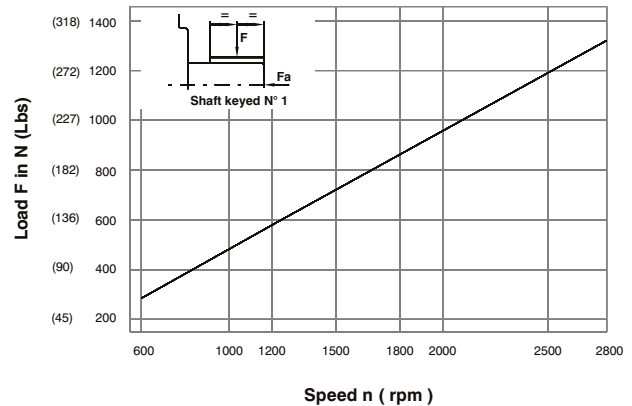
Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow.
Total leakage is the sum of each section loss at its operating conditions.

HYDROMECHANICAL POWER LOSS (TYPICAL)

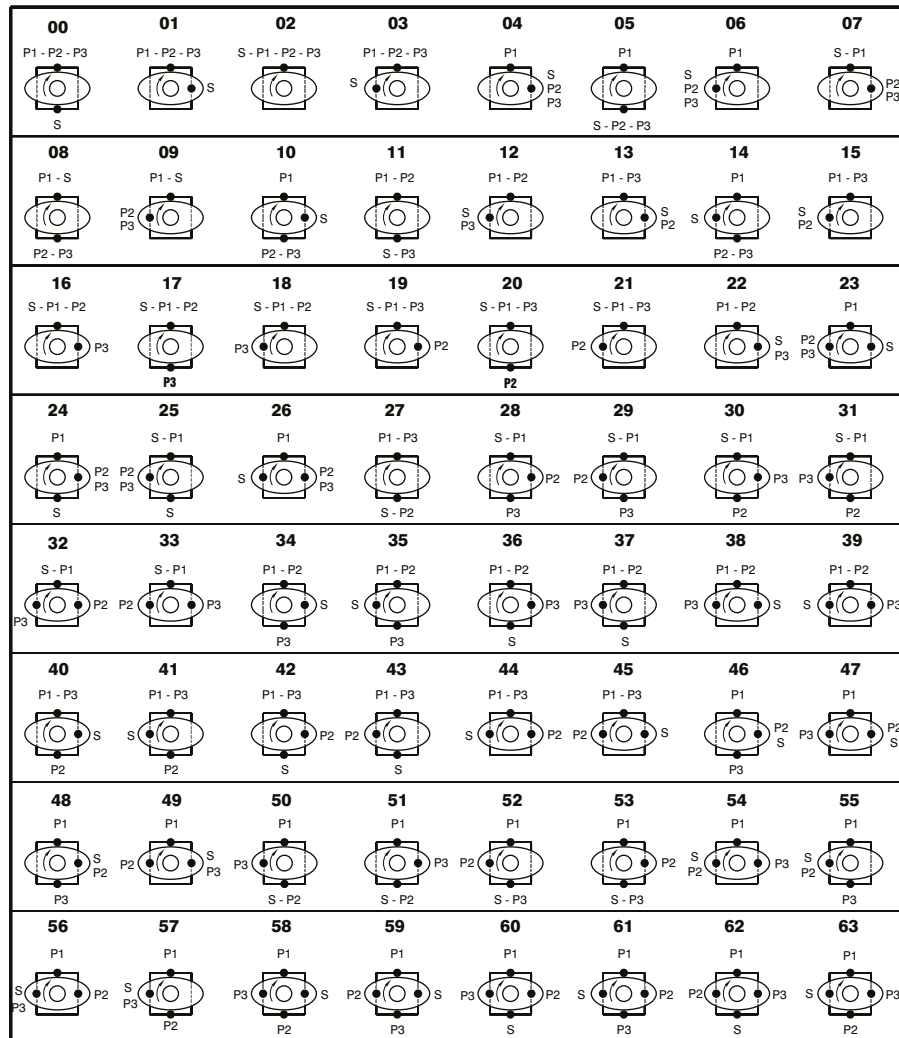


Total hydromechanical power loss is the sum of each section at its operating conditions.

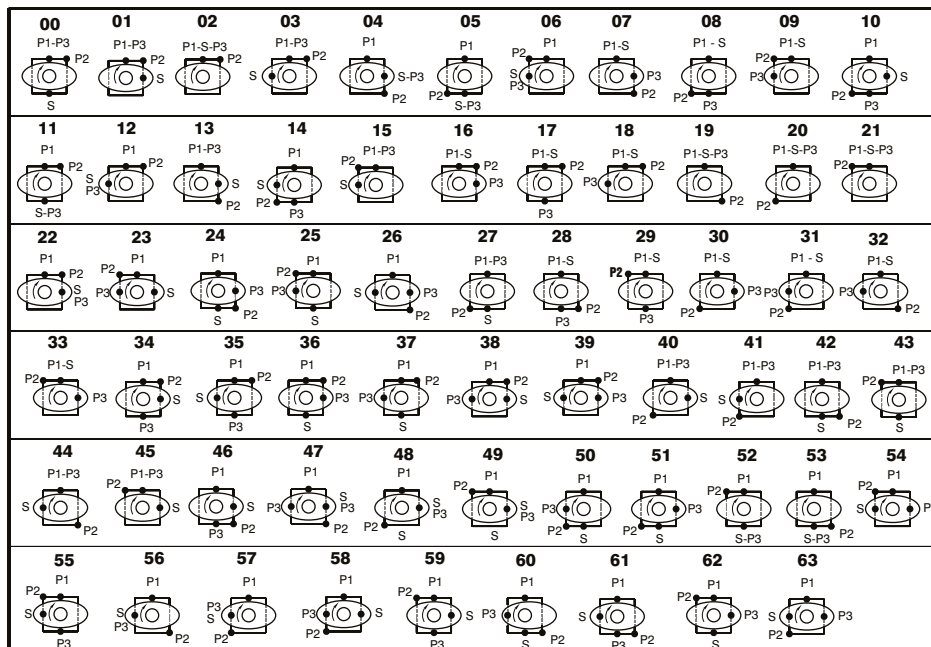
PERMISSIBLE RADIAL LOAD







VT6DCC-VT6DDCS - VT6EDC
VT7DBB/VT7DBBS-VT7QDCC-VT7QDCB-VT7DDB/VT7DBS-
VT7EDB/VT7EDBS-VT7QEDC/VT7QEDCS
VT67DBB-VT67DCB-VT67EDB-VT67EDC-VT67DDCS-VT67DCC



VT6DCB - VT6CBB



S	P2	P3				P2	P3			
		02	16	17	18		20	30	08	31
		19	07	28	32		21	33	29	09
		01	22	32	38		40	48	10	58
		13	04	46	47		45	49	59	23
		00	36	11	37		27	51	05	50
		42	24	53	60		43	62	52	25
		03	39	35	12		41	63	14	57
		44	26	61	56		15	54	55	06

VT6DCC-VT6DDCS - VT6EDC
VT7DBB/VT7DBBS-VT7QDCC-VT7QDCB-VT7DDB/VT7DDBS-
VT7EDB/VT7EDBS-VT7QEDC/VT7QEDCS
VT67DBB-VT67DCB-VT67EDB

00 P1-P2 	01 P1-P2 	02 P1-S-P2 	03 P1-P2 	04 P1-P2 	05 P1-P2 	06 P1-S-P2 	07 P1-P2 	08 P1-P2 	09 P1-P2 	10 P1-S-P2 	11 P1-P2
12 P1-P2 	13 P1-P2 	14 P1-S-P2 	15 P1-P2 	16 P1-S-P2 	17 P1-S-P2 	18 P1-S-P2 	19 P1-S 	20 P1-S 	21 P1-S 	22 P1-S 	23 P1-S
24 P1-S 	25 P1-S 	26 P1-S 	27 P1-S 	28 P1 	29 P1 	30 P1 	31 P1 	32 P1 	33 P1 	34 P1 	35 P1
36 P1 	37 P1 	38 P1 	39 P1 	40 P1 	41 P1 	42 P1 	43 P1 	44 P1 	45 P1 	46 P1 	47 P1
48 P1 	49 P1 	50 P1 	51 P1 	52 P1 	53 P1 	54 P1 	55 P1 	56 P1 	57 P1 	58 P1 	59 P1
60 P1 	61 P1 	62 P1 	63 P1 								

VT6CCB

VT6CCB - 022 - 017 - B02 - 1 R 00 - B 1 01 *

Series _____

Cam ring for "P1" & "P2" _____

Volumetric displacement cm³/rev (in³/rev)

*003/B03 = 10.8 (0.66)	015/B15 = 50.5 (3.08)
005/B05 = 17.2 (1.05)	017/B17 = 58.3 (3.56)
006/B06 = 21.3 (1.30)	020/B20 = 63.8 (3.89)
008/B08 = 26.4 (1.61)	022/B22 = 70.3 (4.29)
010/B10 = 34.1 (2.08)	025/B25 = 79.3 (4.84)
012/B12 = 37.1 (2.26)	028/B28 = 88.8 (5.42)
014/B14 = 46.0 (2.81)	031/B31 = 100.0 (6.10)

*'0' - Uni - directional 'B' - Bi - directional

Cam ring for "P3" _____

Volumetric displacement cm³/rev (in³/rev)

B02 = 5.8 (0.35)
B03 = 9.8 (0.59)
B04 = 12.8 (0.78)
B05 = 15.9 (0.97)
B06 = 19.8 (1.21)
B07 = 22.5 (1.37)
B08 = 24.9 (1.52)
B09 = 28.0 (1.71)
B10 = 31.8 (1.94)
B11 = 34.9 (2.13)
B12 = 41.0 (2.50)
B14 = 45.0 (2.75)

Modifications

Port connections

S=3" SAE 4-Bolt Pad
P1 & P2 = 1" SAE 4-Bolt Pad

UNC	METRIC	P3
01	W0	SAE 8, 3/4" 16 UNF - 2B O'Ring Boss
11	W1	3/4" SAE 4 Bolt Pad

Seal class

1 - S1 (for mineral oil)
4 - S4 (for fire resistant fluids)
5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page CI-1-5)
00 - standard

Direction of rotation (view on shaft end)

R - clockwise
L - counter-clockwise

Type of Shaft

1 - Keyed (no SAE)
2 - Keyed (SAE BB)
3 - Splined (SAE BB)
5 - Splined (SAE B)
E - Splined

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1 & P2	003	0.66	10.8	4.29	16.2	2.96	11.2	2.04	7.7	1.74	1.3	7.11	5.3	11.26	8.4
	005	1.05	17.2	6.83	25.8	5.50	20.8	4.57	17.3	1.88	1.4	10.06	7.5	16.36	12.2
	006	1.30	21.3	8.44	31.9	7.11	26.9	6.19	23.4	2.01	1.5	11.94	8.9	19.71	14.7
	008	1.61	26.4	10.48	39.6	9.15	34.6	8.22	31.1	2.15	1.6	14.35	10.7	22.93	17.7
	010	2.08	34.1	13.52	51.1	12.19	46.1	11.26	42.6	2.28	1.7	18.64	13.4	29.90	22.3
	012	2.26	37.1	14.71	55.6	13.36	50.6	12.46	47.1	2.28	1.7	19.31	14.4	32.32	24.1
	014	2.81	46.0	18.25	69.0	16.93	64.0	16.00	60.5	2.55	1.9	23.60	17.6	39.56	29.5
	015	3.08	50.5	20.00	75.6	18.73	73.2	19.02	67.5	2.68	2.0	25.61	19.1	42.91	32.0
	017	3.56	58.3	23.12	87.4	21.79	82.4	20.87	78.9	2.82	2.1	29.37	21.9	49.48	36.9
	020	3.89	63.8	25.32	95.7	23.99	90.7	23.07	87.2	2.95	2.2	31.92	23.8	53.91	40.2
	022	4.29	70.3	27.88	105.4	26.56	100.4	25.63	96.9	3.08	2.3	35.00	26.1	59.14	44.1
	025	4.84	79.3	31.46	118.9	30.13	113.9	29.21	110.4	3.35	2.5	39.16	29.2	66.38	49.5
P3	028 ¹⁾	5.42	88.8	35.24	133.2	33.92	128.2	33.28	125.8	3.75	2.8	43.85	32.7	65.04	48.5
	031 ¹⁾	6.10	100.0	39.68	150.0	38.35	145.0	37.72	142.6	3.75	2.8	48.95	36.5	72.95	54.4
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 210 bar (3000 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 210 bar (3000 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
	B02	0.35	5.8	2.30	8.7	1.4	5.9	--	--	0.53	0.4	2.81	2.1	--	--
	B03	0.59	9.8	3.88	14.7	2.9	11.9	--	--	0.67	0.5	3.62	2.7	--	--
	B04	0.78	12.8	5.08	19.2	4.33	16.4	3.97	15.0	0.93	0.7	5.23	3.9	10.06	7.5
	B05	0.97	15.9	6.31	23.8	5.55	21.0	5.18	19.6	1.00	0.75	6.64	4.9	11.2	8.3
	B06	1.21	19.8	7.85	29.7	7.12	26.9	6.66	25.2	1.07	0.8	8.05	6.0	12.34	9.2
	B07	1.37	22.5	8.92	33.7	8.17	30.9	7.80	29.5	1.20	0.9	9.05	6.7	14.02	10.4
	B08	1.52	24.9	9.89	37.4	9.15	34.6	8.78	33.2	1.34	1.0	10.05	7.5	15.69	11.7
	B09	1.71	28.0	11.11	42.0	10.37	39.2	10.00	37.8	1.47	1.1	11.94	8.9	23.60	17.6
	B10	1.94	31.8	12.61	47.7	11.87	44.9	11.51	43.5	1.6	1.2	13.0	9.7	26.0	19.6
	B11	2.13	34.9	13.85	52.3	13.09	49.5	12.72	48.1	1.7	1.3	14.0	10.5	28.0	21.0
	B12	2.50	41.0	16.27	61.5	15.53	58.7	*	*	1.8	1.4	15.02	11.2	*	*
	B14	2.75	45.0	17.86	67.5	17.12	64.7	**	**	2.1	1.6	15.42	11.5	**	**

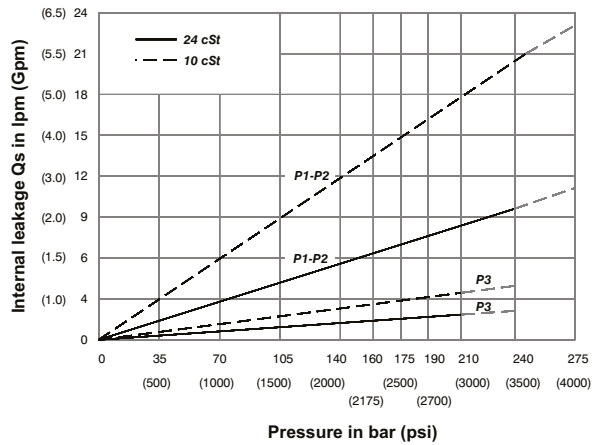
1) 028-031 = 210 bar (3000 psi) max. int.

*B12 = 210bar (3000psi) Max. Int

**B14 = 175bar (2500psi) Max. Int

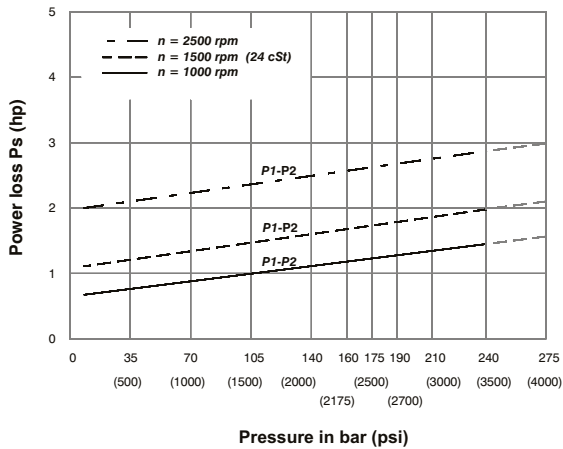
- Not to use because internal leakage greater than 50% of theoretical flow.

INTERNAL LEAKAGE (TYPICAL)



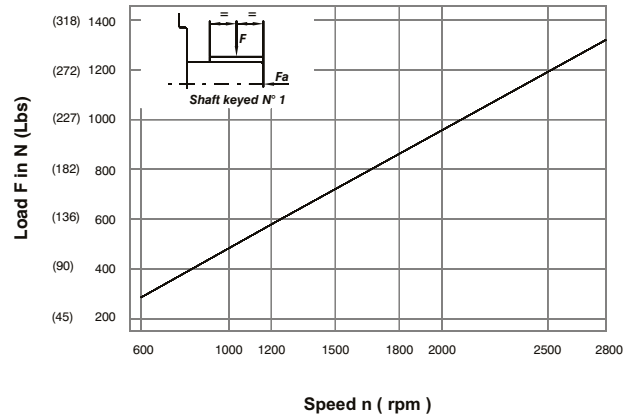
Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.

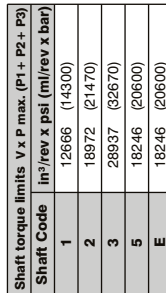
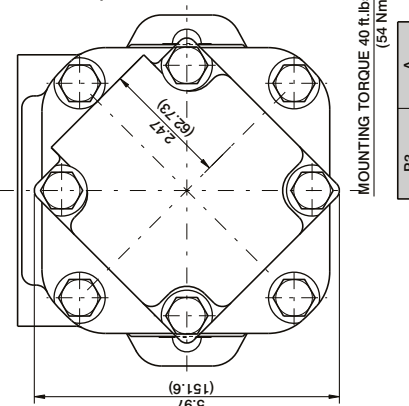
HYDROMECHANICAL POWER LOSS (TYPICAL)



Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD





P3	A
3/4"-16 UNF	2.47 (62.73)
3/4"SAE PAD	2.75 (69.8)

Series **VT6DCB - 038 - 017 - B02 - 1 R 00 - B 1 01 ***

Cam ring for "P2"
Volumetric displacement cm³/rev (in³/rev)
 *014/B14 = 47.6 (2.90) 035/B35 = 111.0 (6.77)
 017/B17 = 58.2 (3.55) 038/B38 = 120.3 (7.34)
 020/B20 = 66.0 (4.03) 042/B42 = 136.0 (8.30)
 024/B24 = 79.5 (4.85) 045/B45 = 145.7 (8.89)
 028/B28 = 89.7 (5.47) 050/B50 = 158.0 (9.64)
 031/B31 = 98.3 (6.00) 061/B61 = 190.5 (11.62)
 *'0' - Uni - directional 'B' - Bi - directional

Cam ring for "P2"
Volumetric displacement cm³/rev (in³/rev)
 *003/B03 = 10.8 (0.66) 012/B12 = 37.1 (2.26) 022/B22 = 70.3 (4.29)
 005/B05 = 17.2 (1.05) 014/B14 = 46.0 (2.81) 025/B25 = 79.3 (4.84)
 006/B06 = 21.3 (1.30) 015/B15 = 50.5 (3.08) 028/B28 = 88.8 (5.42)
 008/B08 = 26.4 (1.61) 017/B17 = 58.3 (3.56) 031/B31 = 100.0 (6.10)
 010/B10 = 34.1 (2.08) 020/B20 = 63.8 (3.89)
 *'0' - Uni - directional 'B' - Bi - directional

Cam ring for "P3"
Volumetric displacement cm³/rev (in³/rev)
 B02 = 5.8 (0.35) B06 = 19.8 (1.21) B10 = 31.8 (1.94)
 B03 = 9.8 (0.59) B07 = 22.5 (1.37) B11 = 34.9 (2.13)
 B04 = 12.8 (0.78) B08 = 24.9 (1.52) B12 = 41.0 (2.50)
 B05 = 15.9 (0.97) B09 = 28.0 (1.71) B14 = 45.0 (2.75)

Modifications
Port connections
 S=3" SAE 4-Bolt Pad
 P1= 1/4" & P2 = 1" SAE 4-Bolt Pad

UNC	METRIC	P3
01	W0	SAE 8, 3/4" 16 UNF - 2B O'Ring Boss
11	W1	3/4" SAE 4 Bolt Pad

Seal class
 1 - S1(for mineral oil)
 4 - S4(for fire resistant fluids)
 5 - S5(for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page CI-1-4)
 00 - standard

Direction of rotation (view on shaft end)
 R - clockwise
 L - counter-clockwise

Type of Shaft
 1 - Keyed (no SAE) 3 - Splined (SAE C)
 2 - Keyed (SAE CC) E - Splined (SAE C)

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
		in ³ /rev	cm ³ /rev	p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
				gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1	014	2.90	47.6	18.88	71.4	16.42	62.1	14.78	55.9	3.08	2.3	24.81	18.5	41.03	30.6
	017	3.55	58.2	23.1	87.3	20.6	78.0	18.99	71.8	3.35	2.5	29.77	22.2	49.62	37.0
	020	4.00	66.0	26.19	99.0	23.73	89.7	22.08	83.5	3.75	2.8	33.39	24.9	55.92	41.7
	024	4.80	79.5	31.56	119.3	29.10	110.0	27.46	103.8	4.02	3.0	39.69	29.6	66.78	49.8
	028	5.50	89.7	35.58	134.5	33.12	125.2	31.48	119.0	4.29	3.2	44.52	33.2	74.96	55.9
	031	6.00	98.3	39.00	147.5	36.53	138.1	34.89	131.9	4.42	3.3	48.54	36.2	81.80	61.0
	035	6.80	111.0	44.04	166.5	41.58	157.2	39.94	151.0	4.69	3.5	54.58	40.7	92.13	68.7
	038	7.30	120.3	47.72	180.4	45.26	171.1	43.62	164.9	4.96	3.7	58.87	43.9	99.64	74.3
	042 ¹⁾	8.30	136.0	53.96	204.0	51.50	194.7	49.86	188.5	5.36	4.0	66.25	49.4	112.24	83.7
	045 ¹⁾	8.89	145.7	57.80	218.5	55.34	209.2	53.70	203.0	5.50	4.1	70.81	52.8	120.02	89.5
	050 ^{1,2)}	9.64	158.0	62.69	237.0	60.23	227.7	59.25	224.0	5.90	4.4	76.44	57.0	113.98	85.0
	061 ^{1,3)}	11.62	190.5	76.25	285.7	73.54	278.0	--	--	6.16	4.6	81.26	60.6	--	--
P2	003	0.66	10.8	4.29	16.2	2.96	11.2	2.04	7.7	1.74	1.3	7.11	5.3	11.22	8.4
	005	1.05	17.2	6.83	25.8	5.50	20.8	4.57	17.3	1.88	1.4	10.06	7.5	16.36	12.2
	006	1.30	21.3	8.44	31.9	7.11	26.9	6.19	23.4	2.01	1.5	11.94	8.9	19.71	14.7
	008	1.61	26.4	10.48	39.6	9.15	34.6	8.22	31.1	2.15	1.6	14.35	10.7	22.93	17.7
	010	2.08	34.1	13.52	51.1	12.19	46.1	11.26	42.6	2.28	1.7	18.64	13.4	29.90	22.3
	012	2.26	37.1	14.71	55.6	13.36	50.6	12.46	47.1	2.28	1.7	19.31	14.4	32.32	24.1
	014	2.81	46.0	18.25	69.0	16.93	64.0	16.00	60.5	2.55	1.9	23.60	17.6	39.56	29.5
	015	3.08	50.5	20.00	75.6	18.73	73.2	19.02	67.5	2.68	2.0	25.61	19.1	42.91	32.0
	017	3.56	58.3	23.12	87.4	21.79	82.4	20.87	78.9	2.82	2.1	29.37	21.9	49.48	36.9
	020	3.89	63.8	25.32	95.7	23.99	90.7	23.07	87.2	2.95	2.2	31.92	23.8	53.91	40.2
	022	4.29	70.3	27.88	105.4	26.56	100.4	25.63	96.9	3.08	2.3	35.00	26.1	59.14	44.1
	025	4.84	79.3	31.46	118.9	30.13	113.9	29.21	110.4	3.35	2.5	39.16	29.2	66.38	49.5
P3	028 ²⁾	5.42	88.8	35.24	133.2	33.92	128.2	33.28	125.8	3.75	2.8	43.85	32.7	65.04	48.5
	031 ²⁾	6.10	100.0	39.68	150.0	38.35	145.0	37.72	142.6	3.75	2.8	48.95	36.5	72.95	54.4
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 210 bar (3000 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 210 bar (3000 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
	B02	0.35	5.8	2.30	8.7	1.4	5.9	--	--	0.53	0.4	2.81	2.1	--	--
	B03	0.59	9.8	3.88	14.7	2.9	11.9	--	--	0.67	0.5	3.62	2.7	--	--
	B04	0.78	12.8	5.08	19.2	4.33	16.4	3.97	15.0	0.93	0.7	5.23	3.9	10.06	7.5
	B05	0.97	15.9	6.31	23.8	5.55	21.0	5.18	19.6	1.00	0.75	6.64	4.9	11.2	8.3
	B06	1.21	19.8	7.85	29.7	7.12	26.9	6.66	25.2	1.07	0.8	8.05	6.0	12.34	9.2
	B07	1.37	22.5	8.92	33.7	8.17	30.9	7.80	29.5	1.20	0.9	9.05	6.7	14.02	10.4
	B08	1.52	24.9	9.89	37.4	9.15	34.6	8.78	33.2	1.34	1.0	10.05	7.5	15.69	11.7
	B09	1.71	28.0	11.11	42.0	10.37	39.2	10.00	37.8	1.47	1.1	11.94	8.9	23.60	17.6
	B10	1.94	31.8	12.61	47.7	11.87	44.9	11.51	43.5	1.6	1.2	13.0	9.7	26.0	19.6
	B11	2.13	34.9	13.85	52.3	13.09	49.5	12.72	48.1	1.7	1.3	14.0	10.5	28.0	21.0
	B12	2.50	41.0	16.27	61.5	15.53	58.7	*	*	1.8	1.4	15.02	11.2	*	*
	B14	2.75	45.0	17.86	67.5	17.12	64.7	**	**	2.1	1.6	15.42	11.5	**	**

1) 042-045-050-061=2200 RPM max.

2) 028-031- 050=210 bar (3000 psi) max. int.

2) 028-031= 210 bar (3000 psi) max. int.

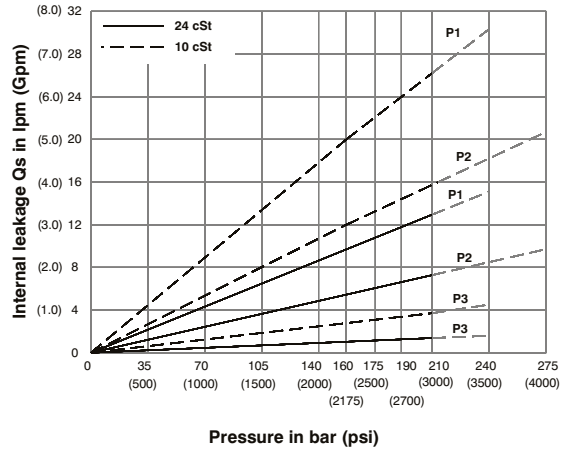
3) 061 = 120 bar (1740 psi) max. int, 061 = 80 bar (1160 psi) cont.

- Not to use because internal leakage greater than 50% of theoretical flow.

*B12 = 210bar (3000psi) Max. Int

**B14 = 175bar (2500psi) Max. Int

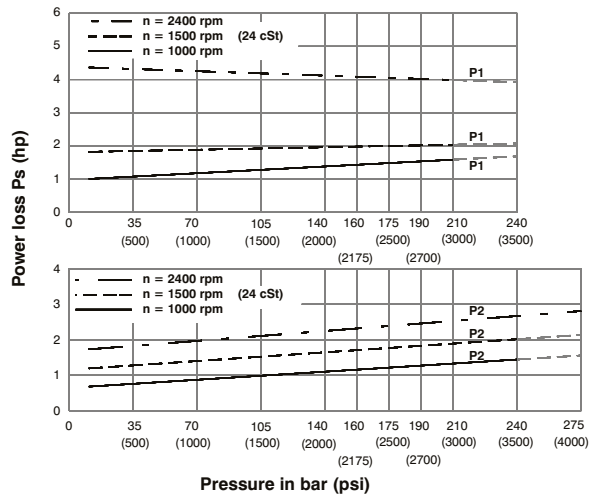
INTERNAL LEAKAGE (TYPICAL)



Don not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow.

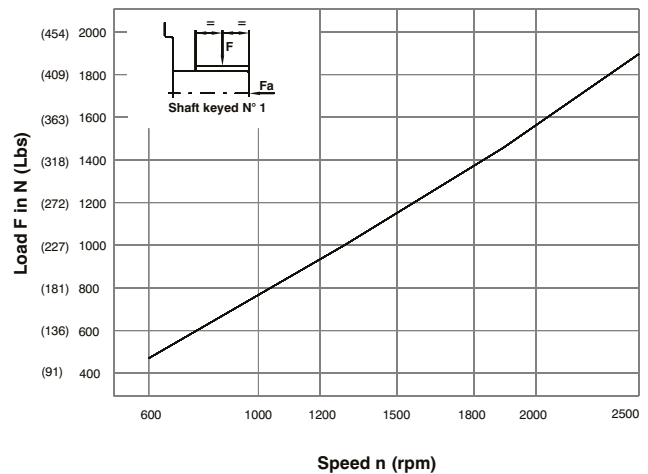
Total leakage is the sum of each section loss at its operating conditions.

HYDROMECAHNICAL POWER LOSS (TYPICAL)



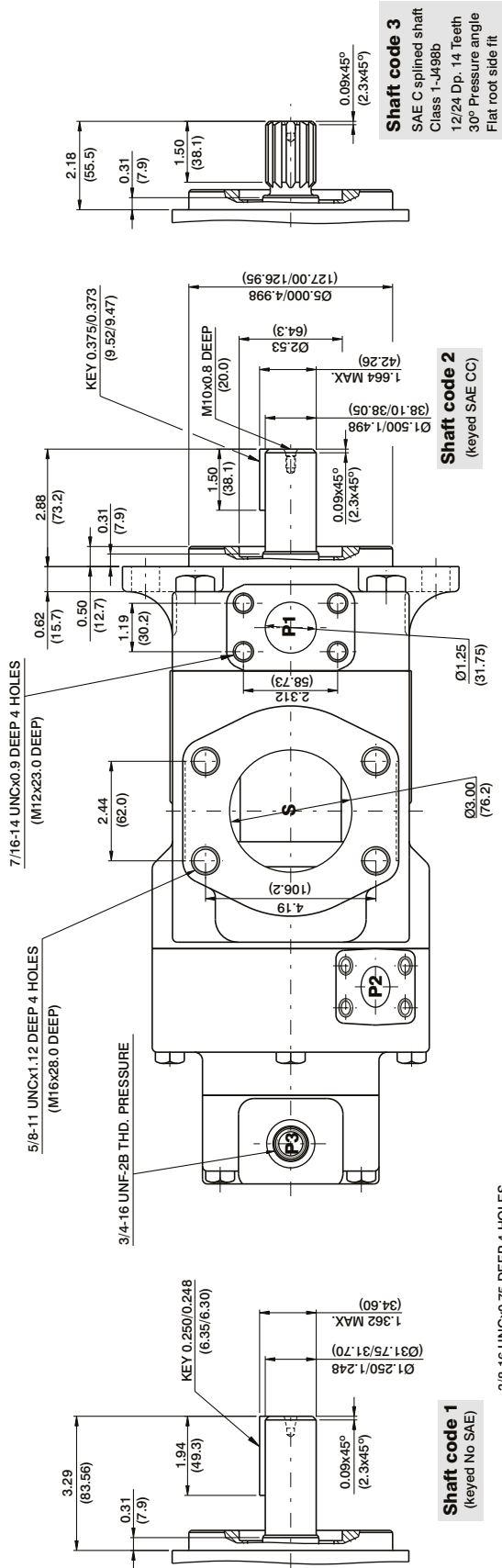
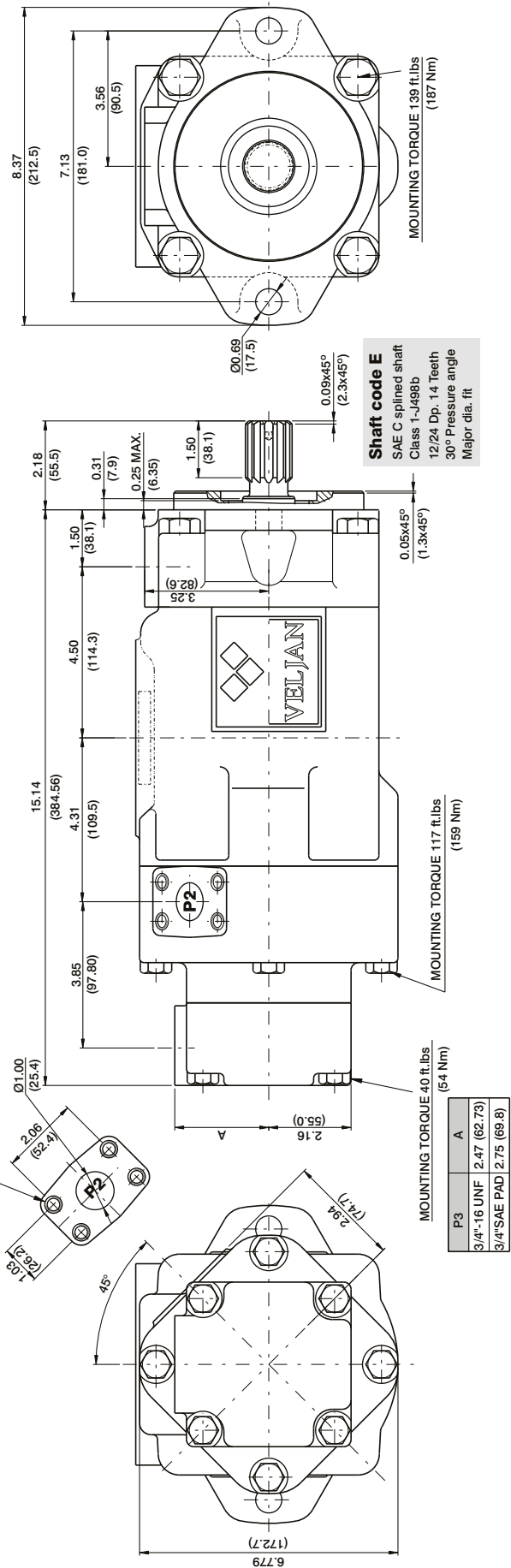
Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



Maximum permissible axial load $F_a = 1200$ N (270 Lbs)

TP



VT6DCC - 038 - 028 - 008 - 1 R 00 - A 1 - 00 - *

Series **P1** **P2** **P3**

Cam ring for "P1"
 Volumetric displacement cm³/rev (in³/rev)
 * 014/B14 = 47.6 (2.90) 035/B35 = 111.0 (6.77)
 017/B17 = 58.2 (3.55) 038/B38 = 120.3 (7.34)
 020/B20 = 66.0 (4.03) 042/B42 = 136.0 (8.30)
 024/B24 = 79.5 (4.85) 045/B45 = 145.7 (8.89)
 028/B28 = 89.7 (5.47) 050/B50 = 158.0 (9.64)
 031/B31 = 98.3 (6.00) 061/B61 = 190.5 (11.62)

***'0' - Uni - directional 'B' - Bi - directional**

Cam ring for "P2" & "P3"
 Volumetric displacement cm³/rev (in³/rev)
 * 003/B03 = 10.8 (0.66) 015/B15 = 50.5 (3.08)
 005/B05 = 17.2 (1.05) 017/B17 = 58.3 (3.56)
 006/B06 = 21.3 (1.30) 020/B20 = 63.8 (3.89)
 008/B08 = 26.4 (1.61) 022/B22 = 70.3 (4.29)
 010/B10 = 34.1 (2.08) 025/B25 = 79.3 (4.84)
 012/B12 = 37.1 (2.26) 028/B28 = 88.8 (5.42)
 014/B14 = 46.0 (2.81) 031/B31 = 100.0 (6.10)

*** '0' - Uni - directional 'B' - Bi - directional**

Modifications

Mounting w/connection variables

SAE	P1 = 1 1/4" S = 4" P2 = 1"			
	UNC		Metric	
P3	1"	3/4"	1"	3/4"
Code	00	01	M0	M1

Seal class
 1 - S1 (for mineral oil)
 4 - S4 (for fire resistant fluids)
 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page CI-1-4,5)
 00 = Standard

Direction of rotation (view on shaft end)
 R - Clockwise
 L - Counter - clockwise

Type of Shaft
 1 - Keyed (no SAE)
 2 - Keyed (SAE CC)
 3 - Splined (SAE C)
 4 - Splined (SAE CC)
 6 - Splined (no SAE)

TP

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

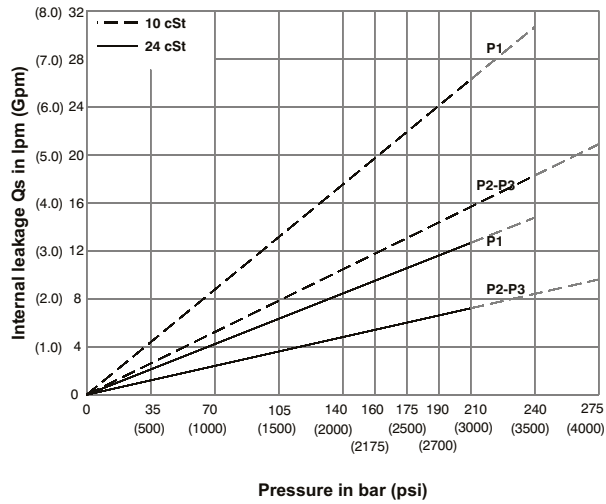
Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1	014	2.90	47.6	18.88	71.4	16.42	62.1	14.78	55.9	3.08	2.3	24.81	18.5	41.03	30.6
	017	3.55	58.2	23.1	87.3	20.6	78.0	18.99	71.8	3.35	2.5	29.77	22.2	49.62	37.0
	020	4.00	66.0	26.19	99.0	23.73	89.7	22.08	83.5	3.75	2.8	33.39	24.9	55.92	41.7
	024	4.80	79.5	31.56	119.3	29.10	110.0	27.46	103.8	4.02	3.0	39.69	29.6	66.78	49.8
	028	5.50	89.7	35.58	134.5	33.12	125.2	31.48	119.0	4.29	3.2	44.52	33.2	74.96	55.9
	031	6.00	98.3	39.00	147.5	36.53	138.1	34.89	131.9	4.42	3.3	48.54	36.2	81.80	61.0
	035	6.80	111.0	44.04	166.5	41.58	157.2	39.94	151.0	4.69	3.5	54.58	40.7	92.13	68.7
	038	7.30	120.3	47.72	180.4	45.26	171.1	43.62	164.9	4.96	3.7	58.87	43.9	99.64	74.3
	042 ¹⁾	8.30	136.0	53.96	204.0	51.50	194.7	49.86	188.5	5.36	4.0	66.25	49.4	112.24	83.7
	045 ¹⁾	8.89	145.7	57.80	218.5	55.34	209.2	53.70	203.0	5.50	4.1	70.81	52.8	120.02	89.5
	050 ^{1,2)}	9.64	158.0	62.69	237.0	60.23	227.7	59.25	224.0	5.90	4.4	76.44	57.0	113.98	85.0
	061 ^{1,3)}	11.62	190.5	76.25	285.7	73.54	278.0	--	--	6.16	4.6	81.26	60.6	--	--
P2 & P3	003	0.66	10.8	4.29	16.2	2.96	11.2	2.04	7.7	1.74	1.3	7.11	5.3	11.22	8.4
	005	1.05	17.2	6.83	25.8	5.50	20.8	4.57	17.3	1.88	1.4	10.06	7.5	16.36	12.2
	006	1.30	21.3	8.44	31.9	7.11	26.9	6.19	23.4	2.01	1.5	11.94	8.9	19.71	14.7
	008	1.61	26.4	10.48	39.6	9.15	34.6	8.22	31.1	2.15	1.6	14.35	10.7	22.93	17.7
	010	2.08	34.1	13.52	51.1	12.19	46.1	11.26	42.6	2.28	1.7	18.64	13.4	29.90	22.3
	012	2.26	37.1	14.71	55.6	13.36	50.6	12.46	47.1	2.28	1.7	19.31	14.4	32.32	24.1
	014	2.81	46.0	18.25	69.0	16.93	64.0	16.00	60.5	2.55	1.9	23.60	17.6	39.56	29.5
	015	3.08	50.5	20.00	75.6	18.73	73.2	19.02	67.5	2.68	2.0	25.61	19.1	42.91	32.0
	017	3.56	58.3	23.12	87.4	21.79	82.4	20.87	78.9	2.82	2.1	29.37	21.9	49.48	36.9
	020	3.89	63.8	25.32	95.7	23.99	90.7	23.07	87.2	2.95	2.2	31.92	23.8	53.91	40.2
	022	4.29	70.3	27.88	105.4	26.56	100.4	25.63	96.9	3.08	2.3	35.00	26.1	59.14	44.1
	025	4.84	79.3	31.46	118.9	30.13	113.9	29.21	110.4	3.35	2.5	39.16	29.2	66.38	49.5
	028 ²⁾	5.42	88.8	35.24	133.2	33.92	128.2	33.28	125.8	3.75	2.8	43.85	32.7	65.04	48.5
	031 ²⁾	6.10	100.0	39.68	150.0	38.35	145.0	37.72	142.6	3.75	2.8	48.95	36.5	72.95	54.4

1) 042-045-050-061 = 2200 RPM max.

2) 028-031- 050 = 210 bar (3000 psi) max. int.

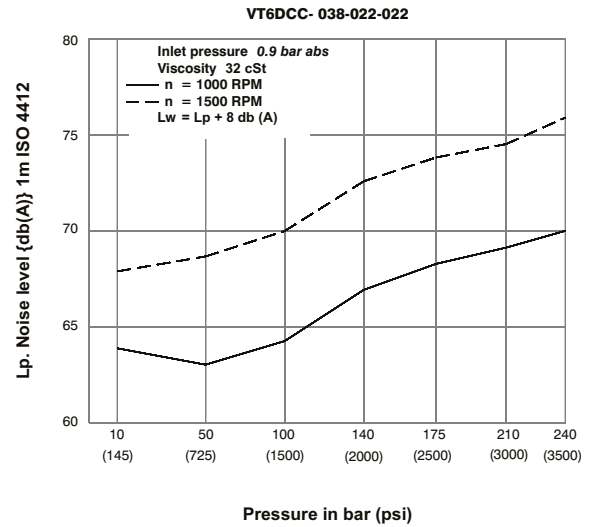
3) 061 = 120 bar (1740 psi) max. int, 061 = 80 bar (1160 psi) cont.

INTERNAL LEAKAGE (TYPICAL)



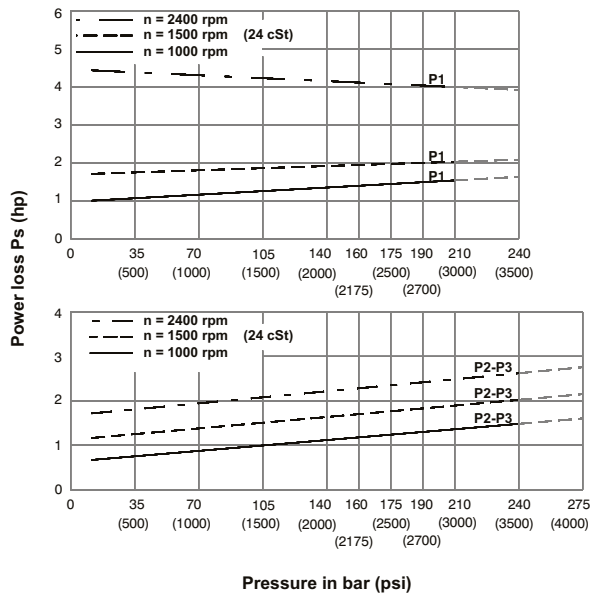
Total leakage is the sum of each section loss at its operating conditions.

NOISE LEVEL (TYPICAL)



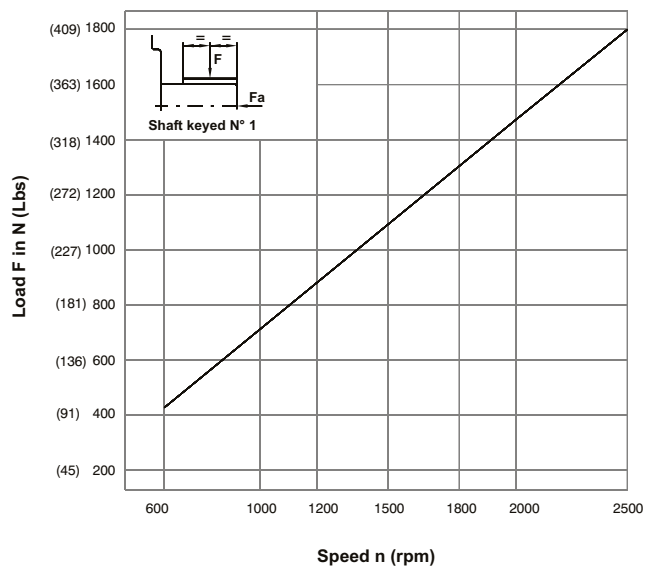
Triple pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)

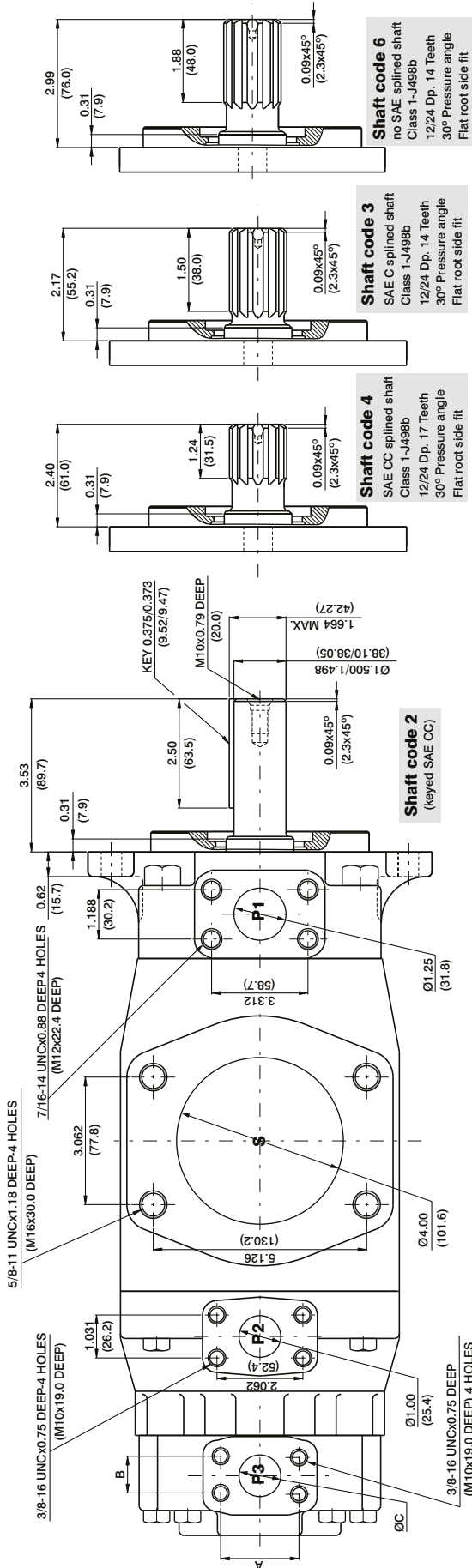
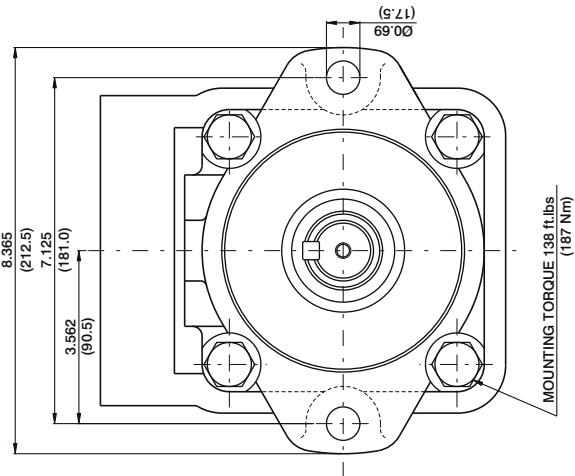
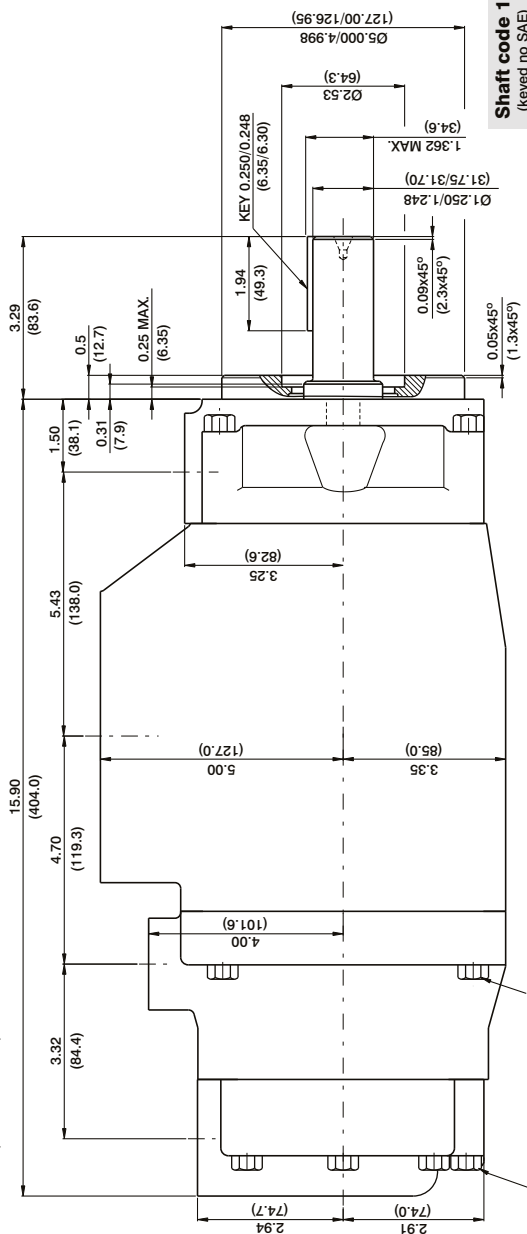


Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



Maximum axial load permissible $F_a = 1200$ N (270 Lbs)



Shaft	Vp x p max. (P1 + P2 + P3)
1	38299 (43240)
2	58901 (66500)
3	54027 (61200)
4	58901 (66500)

PORT	CODE	A	B	C
P3	00 & M0	2.06 (52.4)	1.03 (26.2)	1.00 (25.4)
	01 & M1	1.874 (47.6)	0.874 (22.2)	0.75 (19.05)

VT6DDCS - 038 - 038 - 028 - 1 R 00 - B 1 - 00 -

Series
SAE C 6 bolts
Mounting flange J744 SAE C

Cam ring for "P1" & "P2"
Volumetric displacement cm³/rev (in³/rev)
 *014/B14 = 47.6 (2.90) 035/B35 = 111.0 (6.77)
 017/B17 = 58.2 (3.55) 038/B38 = 120.3 (7.34)
 020/B20 = 66.0 (4.03) 042/B42 = 136.0 (8.30)
 024/B24 = 79.5 (4.85) 045/B45 = 145.7 (8.89)
 028/B28 = 89.7 (5.47) 050/B50 = 158.0 (9.64)
 031/B31 = 98.3 (6.00) 061/B61 = 190.5 (11.62)
 *'0' - Uni - directional 'B' - Bi - directional

Cam ring for "P3"
Volumetric displacement cm³/rev (in³/rev)
 *003/B03 = 10.8 (0.66) 015/B15 = 50.5 (3.08)
 005/B05 = 17.2 (1.05) 017/B17 = 58.3 (3.56)
 006/B06 = 21.3 (1.30) 020/B20 = 63.8 (3.89)
 008/B08 = 26.4 (1.61) 022/B22 = 70.3 (4.29)
 010/B10 = 34.1 (2.08) 025/B25 = 79.3 (4.84)
 012/B12 = 37.1 (2.26) 028/B28 = 88.8 (5.42)
 014/B14 = 46.0 (2.81) 031/B31 = 100.0 (6.10)
 *'0' - Uni - directional 'B' - Bi - directional

Modifications
Port connection variables
 SAE 4 bolt flange (J518c)

P1 & P2 = 1"1/4		S=4"	
Type	UNC	METRIC	
P3	1" 3/4"	1" 3/4"	
CODE	00 01	M0 M1	

Seal class
 1 - S1 (for mineral oil)
 4 - S4 (for fire resistant fluids)
 5 - S5 (for mineral oil and fire resistant fluids)
Design letter
Porting combination (see page CI-1-4,5)
 00 = Standard
Direction of rotation
 (view on shaft end)
 R - Clockwise
 L - Counter - clockwise
Type of Shaft
 1 - Keyed (SAE C)
 2 - Keyed (SAE CC)
 3 - Splined (SAE C)
 4 - Splined (SAE CC)
 5 - Keyed (non SAE)

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

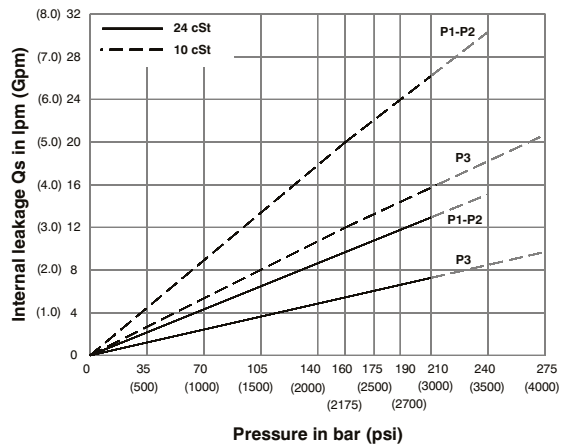
Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1 & P2	014	2.90	47.6	18.88	71.4	16.42	62.1	14.78	55.9	3.08	2.3	24.81	18.5	41.03	30.6
	017	3.55	58.2	23.10	87.3	20.6	78.0	18.99	71.8	3.35	2.5	29.77	22.2	49.62	37.0
	020	4.00	66.0	26.19	99.0	23.73	89.7	22.08	83.5	3.75	2.8	33.39	24.9	55.92	41.7
	024	4.80	79.5	31.56	119.3	29.10	110.0	27.46	103.8	4.02	3.0	39.69	29.6	66.78	49.8
	028	5.50	89.7	35.58	134.5	33.12	125.2	31.48	119.0	4.29	3.2	44.52	33.2	74.96	55.9
	031	6.00	98.3	39.00	147.5	36.53	138.1	34.89	131.9	4.42	3.3	48.54	36.2	81.80	61.0
	035	6.80	111.0	44.04	166.5	41.58	157.2	39.94	151.0	4.69	3.5	54.58	40.7	92.13	68.7
	038	7.30	120.3	47.72	180.4	45.26	171.1	43.62	164.9	4.96	3.7	58.87	43.9	99.64	74.3
	042 ¹⁾	8.30	136.0	53.96	204.0	51.50	194.7	49.86	188.5	5.36	4.0	66.25	49.4	112.24	83.7
	045 ¹⁾	8.89	145.7	57.80	218.5	55.34	209.2	53.70	203.0	5.50	4.1	70.81	52.8	120.02	89.5
	050 ^{1,2)}	9.64	158.0	62.69	237.0	60.23	227.7	59.25	224.0	5.90	4.4	76.44	57.0	113.98	85.0
	061 ^{1,3)}	11.62	190.5	76.25	285.7	73.54	278.0	--	--	6.16	4.6	81.26	60.6	--	--
P3	003	0.66	10.8	4.29	16.2	2.96	11.2	2.04	7.7	1.74	1.3	7.11	5.3	11.22	8.4
	005	1.05	17.2	6.83	25.8	5.50	20.8	4.57	17.3	1.88	1.4	10.06	7.5	16.36	12.2
	006	1.30	21.3	8.44	31.9	7.11	26.9	6.19	23.4	2.01	1.5	11.94	8.9	19.71	14.7
	008	1.61	26.4	10.48	39.6	9.15	34.6	8.22	31.1	2.15	1.6	14.35	10.7	22.93	17.7
	010	2.08	34.1	13.52	51.1	12.19	46.1	11.26	42.6	2.28	1.7	18.64	13.4	29.90	22.3
	012	2.26	37.1	14.71	55.6	13.36	50.6	12.46	47.1	2.28	1.7	19.31	14.4	32.32	24.1
	014	2.81	46.0	18.25	69.0	16.93	64.0	16.00	60.5	2.55	1.9	23.60	17.6	39.56	29.5
	015	3.08	50.5	20.00	75.6	18.73	73.2	19.02	67.5	2.68	2.0	25.61	19.1	42.91	32.0
	017	3.56	58.3	23.12	87.4	21.79	82.4	20.87	78.9	2.82	2.1	29.37	21.9	49.48	36.9
	020	3.89	63.8	25.32	95.7	23.99	90.7	23.07	87.2	2.95	2.2	31.92	23.8	53.91	40.2
	022	4.29	70.3	27.88	105.4	26.56	100.4	25.63	96.9	3.08	2.3	35.00	26.1	59.14	44.1
	025	4.84	79.3	31.46	118.9	30.13	113.9	29.21	110.4	3.35	2.5	39.16	29.2	66.38	49.5
	028 ²⁾	5.42	88.8	35.24	133.2	33.92	128.2	33.28	125.8	3.75	2.8	43.85	32.7	65.04	48.5
	031 ²⁾	6.10	100.0	39.68	150.0	38.35	145.0	37.72	142.6	3.75	2.8	48.95	36.5	72.95	54.4

1) 042-045-050-061=2200 RPM max.

2) 028-031-050=210 bar (3000 psi) max. int.

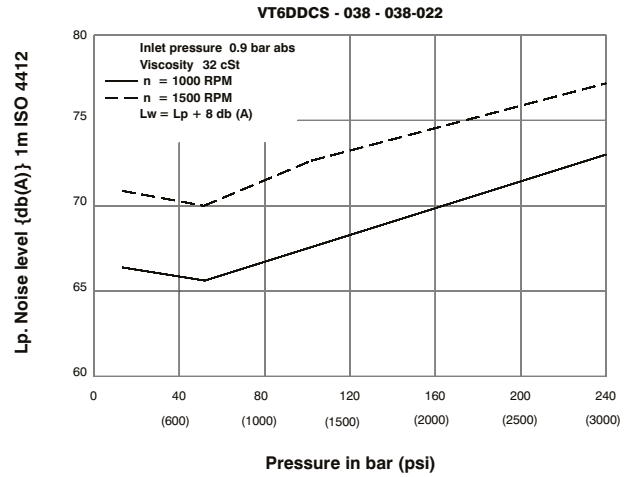
3) 061 = 120 bar (1740 psi) max. int, 061 = 80 bar (1160 psi) cont.

INTERNAL LEAKAGE (TYPICAL)



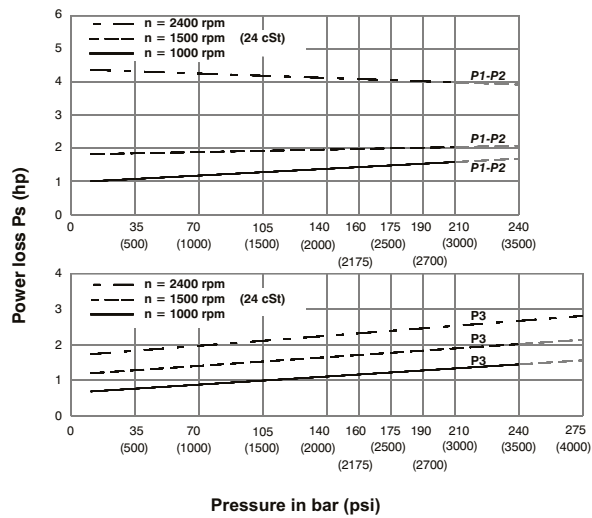
Don not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow.
Total leakage is the sum of each section loss at its operating conditions.

NOISE LEVEL (TYPICAL)



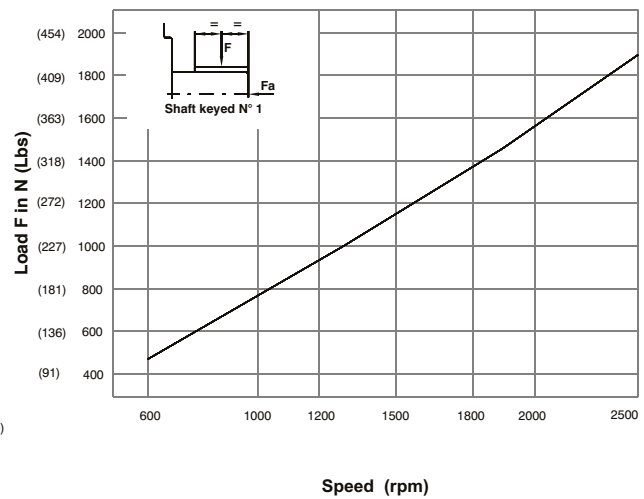
Triple pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)

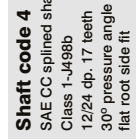


Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



Maximum axial load permissible $F_a=1200$ N (270 Lbs)



Shaft	$V_p \times p \text{ max. (P1 + P2 + P3)}$	Shaft torque limits in ³ /rev x psi (ml/rev x bar)
1	38299 (43240)	
2	63979 (72306)	
3	54207 (61200)	
5	49197 (55600)	

VT6DCCM - 038 - 028 - 008 - 1 R 00 - B 1 - 00 - *

Series P1 P2 P3

Cam ring for "P1"
 Volumetric displacement cm³/rev (in³/rev)
 * B14/R14 = 47.6 (2.90) B35/R35 = 110.0 (6.77)
 B17/R17 = 58.2 (3.55) B38/R38 = 120.3 (7.34)
 B20/R20 = 66.0 (4.03) B42/R42 = 136.0 (8.30)
 B24/R24 = 79.5 (4.85) B45/R45 = 145.7 (8.80)
 B28/R28 = 89.7 (5.47) B50/R50 = 158.0 (9.64)
 B31/R31 = 98.3 (6.00) B61/R61 = 190.5 (11.62)
 * 'B' - for Mobile 'R' - for Mobile - spring assisted

Cam ring for "P2" & "P3"
 Volumetric displacement cm³/rev (in³/rev)
 * B03/R03 = 10.8 (0.66) B15/R15 = 50.5 (3.08)
 B05/R05 = 17.2 (1.05) B17/R17 = 58.3 (3.56)
 B06/R06 = 21.3 (1.30) B20/R20 = 63.8 (3.89)
 B08/R08 = 26.4 (1.61) B22/R22 = 70.3 (4.29)
 B10/R10 = 34.1 (2.08) B25/R25 = 79.3 (4.84)
 B12/R12 = 37.1 (2.26) B28/R28 = 88.8 (5.42)
 B14/R14 = 46.0 (2.81) B31/R31 = 100.0 (6.10)
 * 'B' - for Mobile
 * 'R' - for Mobile - spring assisted

Modification

Mounting w/connection variables

SAE	P1 = 1 1/4" S = 4" P2 = 1"			
	UNC		Metric	
P3	1"	3/4"	1"	3/4"
Code	00	01	M0	M1

Seal class
 1 - S1 (for mineral oil)
 4 - S4 (for fire resistant fluids)
 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page CI-1-4,5)
 00 = Standard

Direction of rotation (view on shaft end)
 R - Clockwise
 L - Counter - clockwise

Type of Shaft
 1 - Keyed (no SAE)
 2 - Keyed (SAE CC)
 3 - Splined (SAE C)
 4 - Splined (SAE CC)
 6 - Splined (no SAE)

TP

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1	B14	2.90	47.6	18.88	71.4	16.42	62.1	14.78	55.9	3.08	2.3	24.81	18.5	41.03	30.6
	B17	3.55	58.2	23.1	87.3	20.6	78.0	18.99	71.8	3.35	2.5	29.77	22.2	49.62	37.0
	B20	4.00	66.0	26.19	99.0	23.73	89.7	22.08	83.5	3.75	2.8	33.39	24.9	55.92	41.7
	B24	4.80	79.5	31.56	119.3	29.10	110.0	27.46	103.8	4.02	3.0	39.69	29.6	66.78	49.8
	B28	5.50	89.7	35.58	134.5	33.12	125.2	31.48	119.0	4.29	3.2	44.52	33.2	74.96	55.9
	B31	6.00	98.3	39.00	147.5	36.53	138.1	34.89	131.9	4.42	3.3	48.54	36.2	81.80	61.0
	B35	6.80	111.0	44.04	166.5	41.58	157.2	39.94	151.0	4.69	3.5	54.58	40.7	92.13	68.7
	B38	7.30	120.3	47.72	180.4	45.26	171.1	43.62	164.9	4.96	3.7	58.87	43.9	99.64	74.3
	B42 ¹⁾	8.30	136.0	53.96	204.0	51.50	194.7	49.86	188.5	5.36	4.0	66.25	49.4	112.24	83.7
	B45 ¹⁾	8.89	145.7	57.80	218.5	55.34	209.2	53.70	203.0	5.50	4.1	70.81	52.8	120.02	89.5
	B50 ^{1,2)}	9.64	158.0	62.69	237.0	60.23	227.7	59.25	224.0	5.90	4.4	76.44	57.0	113.98	85.0
P2 & P3	B61 ^{1,3)}	11.62	190.5	76.25	285.7	73.54	278.0	--	--	6.16	4.6	81.26	60.6	--	--
	B03	0.66	10.8	4.29	16.2	2.83	10.7	--	--	1.74	1.3	7.11	5.3	--	--
	B05	1.05	17.2	6.83	25.8	5.37	20.3	4.17	15.8	1.88	1.4	10.06	7.5	16.36	12.2
	B06	1.30	21.3	8.44	31.9	7.01	26.5	5.82	22.0	2.01	1.5	11.94	8.9	19.71	14.7
	B08	1.61	26.4	10.48	39.6	9.02	34.1	7.83	29.6	2.15	1.6	14.35	10.7	22.93	17.7
	B10	2.08	34.1	13.52	51.1	12.08	45.7	10.89	41.2	2.28	1.7	18.64	13.4	29.90	22.3
	B12	2.26	37.1	14.71	55.6	13.28	50.2	12.08	45.7	2.28	1.7	19.31	14.4	32.32	24.1
	B14	2.81	46.0	18.25	69.0	16.79	63.5	15.60	59.0	2.55	1.9	23.60	17.6	39.56	29.5
	B15	3.08	50.5	20.00	75.6	18.62	70.4	17.46	66.0	2.68	2.0	25.61	19.1	42.91	32.0
	B17	3.56	58.3	23.12	87.4	21.69	82.0	20.50	77.5	2.82	2.1	29.37	21.9	49.48	36.9
	B20	3.89	63.8	25.32	95.7	23.86	90.2	22.67	85.7	2.95	2.2	31.92	23.8	53.91	40.2
	B22	4.29	70.3	27.88	105.4	26.45	100.0	25.26	95.5	3.08	2.3	35.00	26.1	59.14	44.1
	B25	4.84	79.3	31.46	118.9	30.02	113.5	28.83	109.0	3.35	2.5	39.16	29.2	66.38	49.5
	B28 ²⁾	5.42	88.8	35.24	133.2	33.78	127.7	32.93	124.5	3.75	2.8	43.85	32.7	65.04	48.5
	B31 ²⁾	6.10	100.0	39.68	150.0	38.22	144.5	37.38	141.3	3.75	2.8	48.95	36.5	72.95	54.4

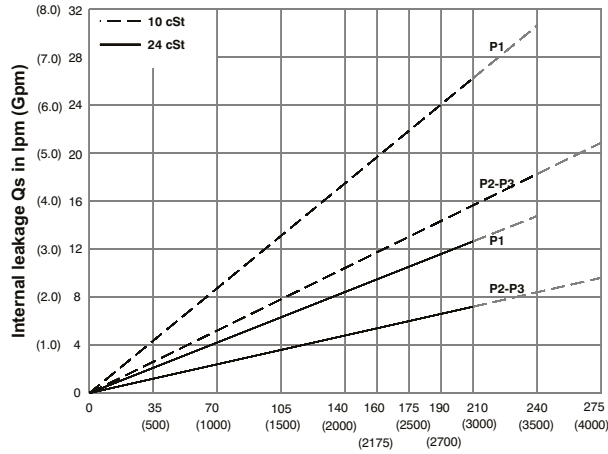
1) B42-B45-B50-B61=2200 RPM max.

2) B28-B31- B50=210 bar (3000 psi) max. int.

3) 061 = 120 bar (1740 psi) max. int, 061 = 80 bar (1160 psi) cont.

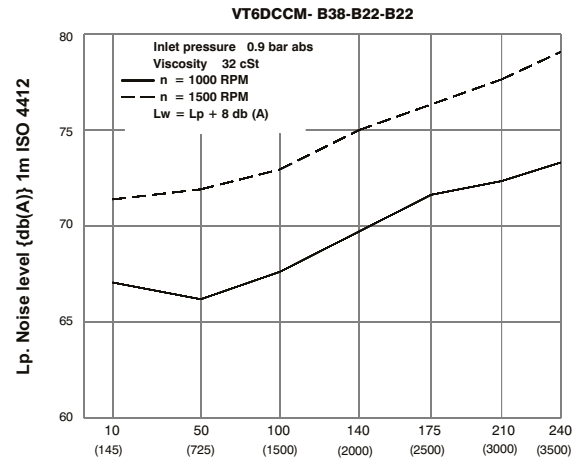
-- Not to use because internal leakage greater than 50% theoretical flow.

INTERNAL LEAKAGE (TYPICAL)



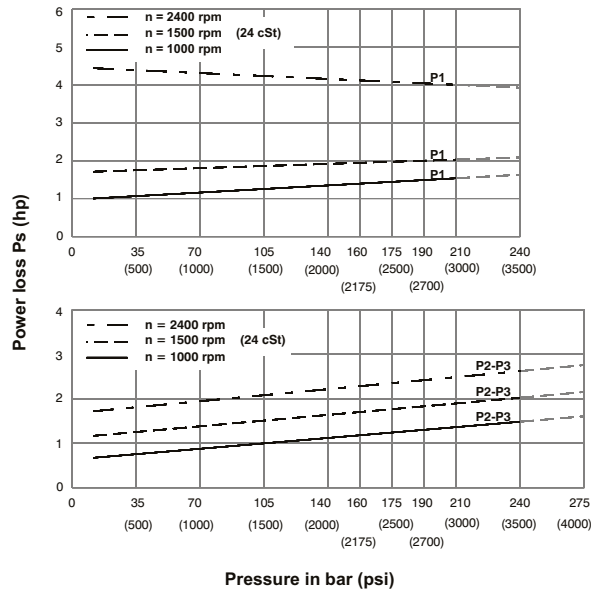
Total leakage is the sum of each section loss at its operating conditions.

NOISE LEVEL (TYPICAL)



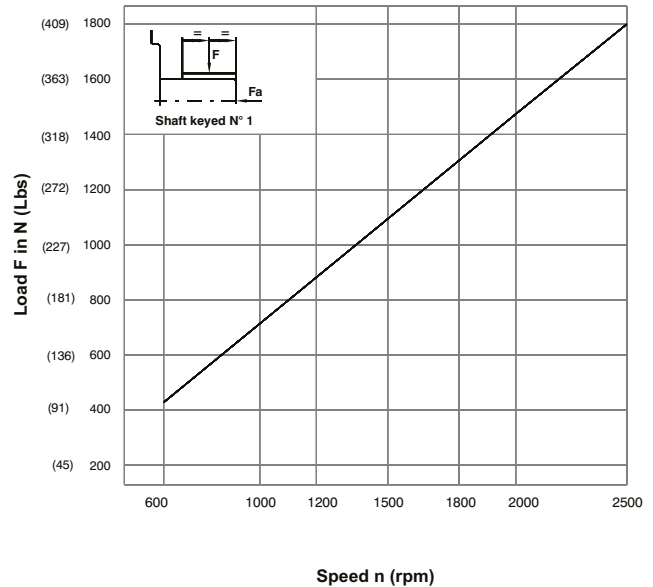
Triple pump noise level is given with each section discharging at the pressure noted on the curve.

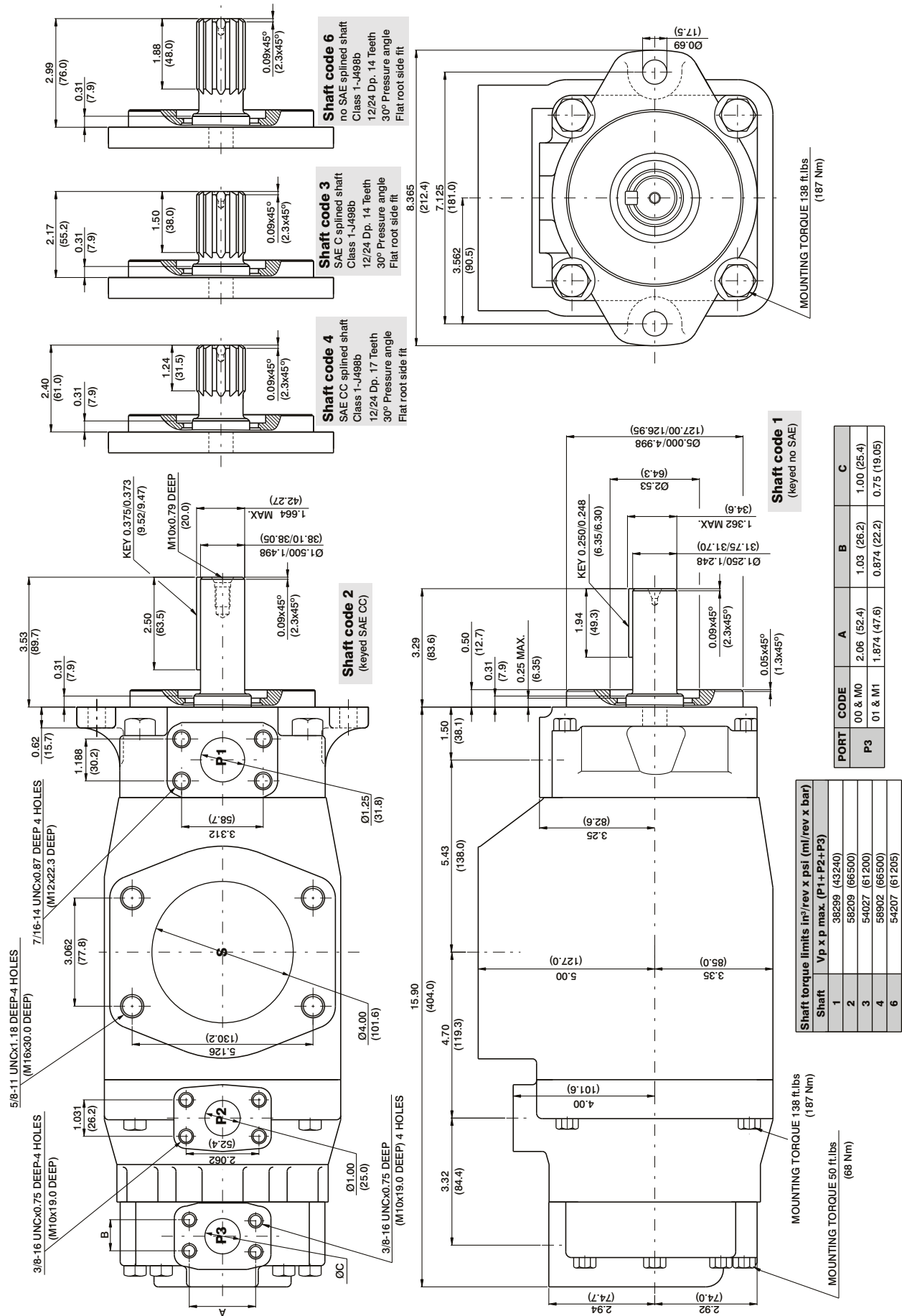
HYDROMECHANICAL POWER LOSS (TYPICAL)



Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD





Series **VT6EDC*** - **062** - **035** - **017** - **1** **R** **00** - **C** **1** - **P** - **0** - *****

Series
* = S for SAE Mtg. Flange

Cam ring for "P1"

Volumetric displacement cm³/rev (in³/rev)

042 = 132.3 (8.07)	062 = 196.7 (12.00)
045 = 142.4 (8.69)	066 = 213.3 (13.02)
050 = 158.5 (9.67)	072 = 227.1 (13.86)
052 = 164.8 (10.06)	085 = 269.8 (16.46)
057 = 180.7 (11.02)	

Cam ring for "P2"

Volumetric displacement cm³/rev (in³/rev)

* B14/R14 = 47.6 (2.90)	B35/R35 = 110.0 (6.77)
B17/R17 = 58.2 (3.55)	B38/R38 = 120.3 (7.34)
B20/R20 = 66.0 (4.03)	B42/R42 = 136.0 (8.30)
B24/R24 = 79.5 (4.85)	B45/R45 = 145.7 (8.80)
B28/R28 = 89.7 (5.47)	B50/R50 = 158.0 (9.64)
B31/R31 = 98.3 (6.00)	B61/R61 = 190.5 (11.62)

* 'B' - for Mobile 'R' - for Mobile - spring assisted

Cam ring for "P3"

Volumetric displacement cm³/rev (in³/rev)

* B03/R03 = 10.8 (0.66)	B15/R15 = 50.5 (3.08)
B05/R05 = 17.2 (1.05)	B17/R17 = 58.3 (3.56)
B06/R06 = 21.3 (1.30)	B20/R20 = 63.8 (3.89)
B08/R08 = 26.4 (1.61)	B22/R22 = 70.3 (4.29)
B10/R10 = 34.1 (2.08)	B25/R25 = 79.3 (4.84)
B12/R12 = 37.1 (2.26)	B28/R28 = 88.8 (5.42)
B14/R14 = 46.0 (2.81)	B31/R31 = 100.0 (6.10)

* 'B' - for Mobile 'R' - for Mobile - spring assisted

Modifications

Mounting w/connection variables

- 0 = P3 = 1" SAE
- 1 = P3 = 3/4" SAE

Mounting (pump)

- P= Pedestal mounting
- F= Face mounting

Seal class

- 1 - S1 (for minreal oil)
- 4 - S4 (for fire resistant fluids)
- 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page CI-1-4,5)

- 00 = Standard

Direction of rotation (view on shaft end)

- R - Clockwise
- L - Counter - clockwise

Type of Shaft

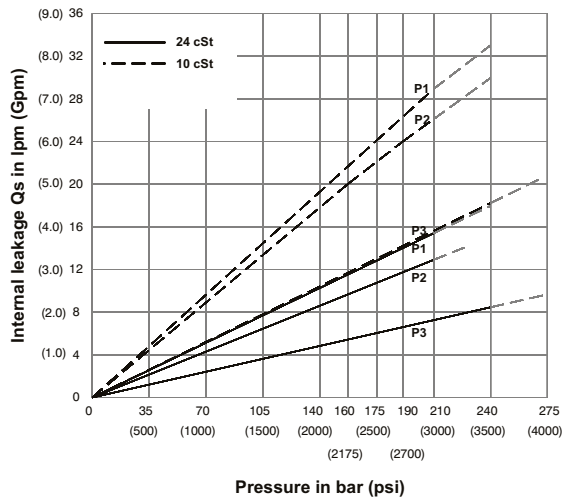
- 1 - Keyed (G45N-ISO 3019-2) (VT6EDC)
- 3 - Splined (SAE D&E) (VT6EDC & VT6EDCS)
- 2 - Keyed (SAE D&E) (VT6EDCS)

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1	042	8.07	132.3	52.50	198.5	49.87	188.5	47.96	181.3	6.97	5.2	66.25	49.4	110.77	82.6
	045	8.70	142.4	56.51	213.6	53.86	203.6	51.98	196.5	7.24	5.4	70.94	52.9	118.95	88.7
	050	9.67	158.5	62.88	237.7	60.24	227.7	58.36	220.6	7.64	5.7	78.45	58.5	131.82	98.3
	052	10.00	164.8	65.40	247.2	62.75	237.2	60.87	230.1	7.78	5.8	81.53	60.8	136.92	102.1
	057	11.02	180.7	71.71	271.1	69.07	261.1	67.19	254.0	8.18	6.1	89.04	66.4	143.35	106.9
	062	12.00	196.7	78.04	295.0	75.40	285.0	73.52	277.9	8.58	6.4	96.42	71.9	162.67	121.3
	066	13.00	213.3	84.63	319.9	81.98	309.9	80.11	302.8	8.98	6.7	104.20	77.7	175.94	131.2
	072	13.86	227.1	90.11	340.6	87.46	330.6	85.58	323.5	9.25	6.9	110.77	82.6	187.07	139.5
	085 ^{1,2)}	16.40	269.8	107.00	404.7	105.21	397.7	--	--	9.78	7.3	87.56	65.3	--	--
P2	B14	2.90	47.6	18.88	71.4	16.42	62.1	14.78	55.9	3.08	2.3	24.81	18.5	41.03	30.6
	B17	3.55	58.2	23.1	87.3	20.6	78.0	18.99	71.8	3.35	2.5	29.77	22.2	49.62	37.0
	B20	4.00	66.0	26.19	99.0	23.73	89.7	22.08	83.5	3.75	2.8	33.39	24.9	55.92	41.7
	B24	4.80	79.5	31.56	119.3	29.10	110.0	27.46	103.8	4.02	3.0	39.69	29.6	66.78	49.8
	B28	5.50	89.7	35.58	134.5	33.12	125.2	31.48	119.0	4.29	3.2	44.52	33.2	74.96	55.9
	B31	6.00	98.3	39.00	147.5	36.53	138.1	34.89	131.9	4.42	3.3	48.54	36.2	81.80	61.0
	B35	6.80	111.0	44.04	166.5	41.58	157.2	39.94	151.0	4.69	3.5	54.58	40.7	92.13	68.7
	B38	7.30	120.3	47.72	180.4	45.26	171.1	43.62	164.9	4.96	3.7	58.87	43.9	99.64	74.3
	B42 ³⁾	8.30	136.0	53.96	204.0	51.50	194.7	49.86	188.5	5.36	4.0	66.25	49.4	112.24	83.7
	B45 ³⁾	8.89	145.7	57.80	218.5	55.34	209.2	53.70	203.0	5.50	4.1	70.81	52.8	120.02	89.5
	B50 ^{3,4)}	9.64	158.0	62.69	237.0	60.23	227.7	59.25	224.0	5.90	4.4	76.44	57.0	113.98	85.0
P3	B61 ^{3,5)}	11.62	190.5	76.25	285.7	73.54	278.0	--	--	6.16	4.6	81.26	60.6	--	--
	B03	0.66	10.8	4.29	16.2	2.83	10.7	--	--	1.74	1.3	7.11	5.3	--	--
	B05	1.05	17.2	6.83	25.8	5.37	20.3	4.17	15.8	1.88	1.4	10.06	7.5	16.36	12.2
	B06	1.30	21.3	8.44	31.9	7.01	26.5	5.82	22.0	2.01	1.5	11.94	8.9	19.71	14.7
	B08	1.61	26.4	10.48	39.6	9.02	34.1	7.83	29.6	2.15	1.6	14.35	10.7	22.93	17.7
	B10	2.08	34.1	13.52	51.1	12.08	45.7	10.89	41.2	2.28	1.7	18.64	13.4	29.90	22.3
	B12	2.26	37.1	14.71	55.6	13.28	50.2	12.08	45.7	2.28	1.7	19.31	14.4	32.32	24.1
	B14	2.81	46.0	18.25	69.0	16.79	63.5	15.60	59.0	2.55	1.9	23.60	17.6	39.56	29.5
	B15	3.08	50.5	20.00	75.6	18.62	70.4	17.46	66.0	2.68	2.0	25.61	19.1	42.91	32.0
	B17	3.56	58.3	23.12	87.4	21.69	82.0	20.50	77.5	2.82	2.1	29.37	21.9	49.48	36.9
	B20	3.89	63.8	25.32	95.7	23.86	90.2	22.67	85.7	2.95	2.2	31.92	23.8	53.91	40.2
	B22	4.29	70.3	27.88	105.4	26.45	100.0	25.26	95.5	3.08	2.3	35.00	26.1	59.14	44.1
	B25	4.84	79.3	31.46	118.9	30.02	113.5	28.83	109.0	3.35	2.5	39.16	29.2	66.38	49.5
	B28 ⁶⁾	5.42	88.8	35.24	133.2	33.78	127.7	32.93	124.5	3.75	2.8	43.85	32.7	65.04	48.5
	B31 ⁶⁾	6.10	100.0	39.68	150.0	38.22	144.5	37.38	141.3	3.75	2.8	48.95	36.5	72.95	54.4

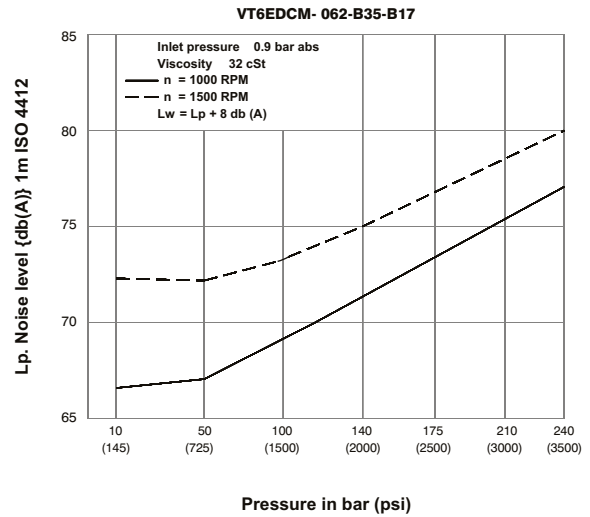
1) 085 = 2000 RPM max. 2) 085 = 75 bar (1100 psi) cont. & 085 = 90 bar (1300 psi) max. int. 3) B42-B45-B50-B61=2200 RPM max. 4) B28-B31-B50=210 bar (3000 psi) max. int.
5) B61 = 120 bar (1740 psi) max. int. B61 = 80 bar (1160 psi) cont. -- Not to use because internal leakage greater than 50% theoretical flow

INTERNAL LEAKAGE (TYPICAL)



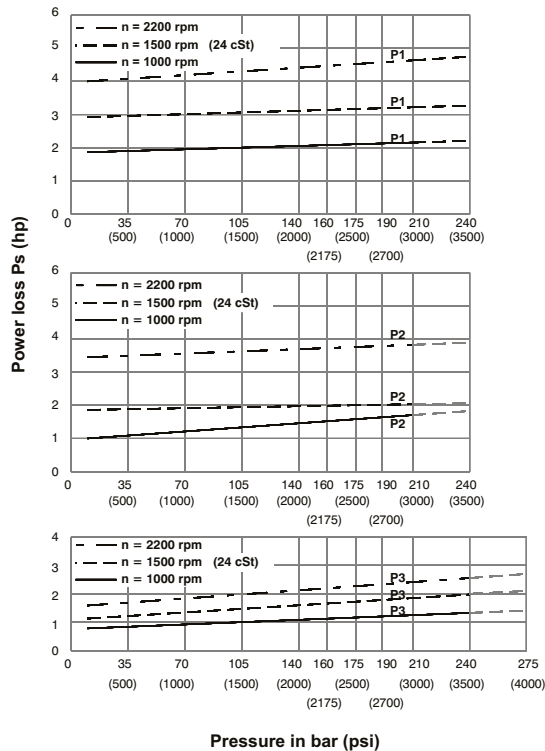
Total leakage is the sum of each section loss at its operating conditions.

NOISE LEVEL (TYPICAL)



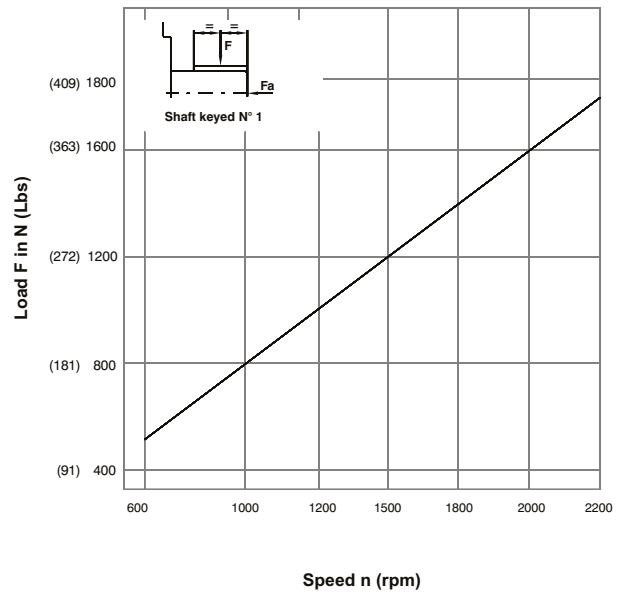
Triple pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)

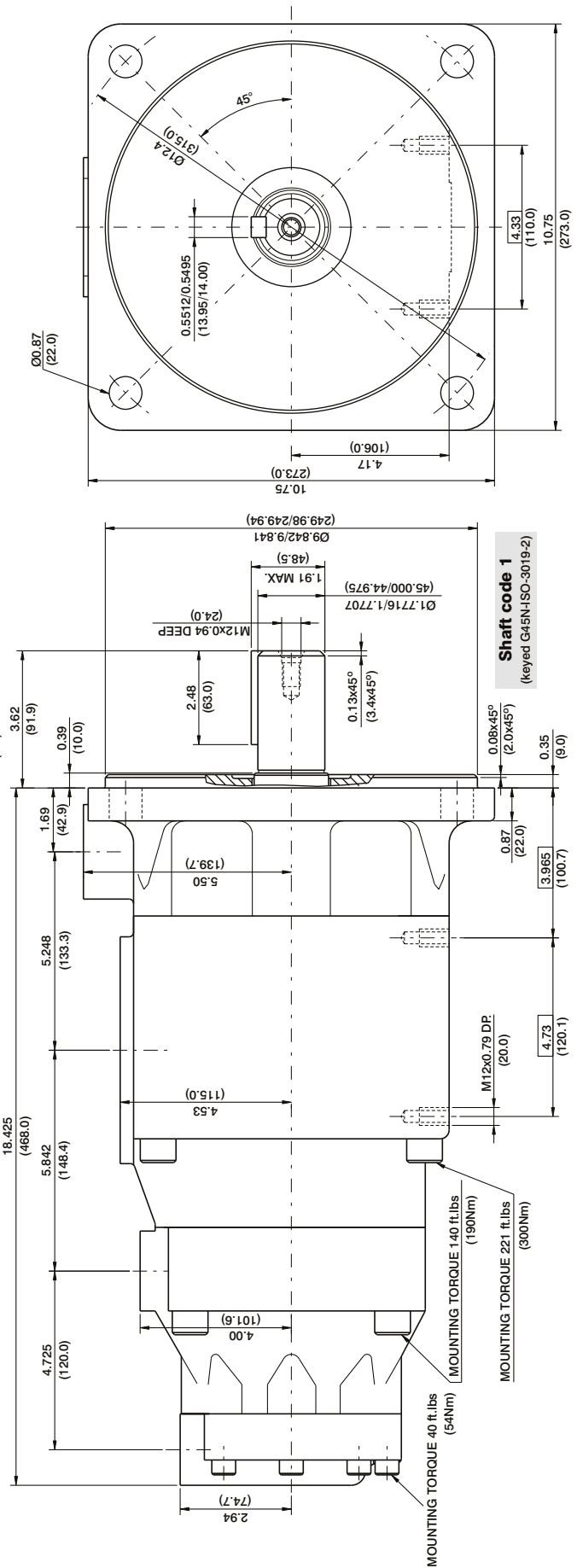


Total hydromechanical power loss is the sum of each section at its operating conditions

PERMISSIBLE RADIAL LOAD



Maximum axial load permissible $F_a = 2000$ N (449 lbs)



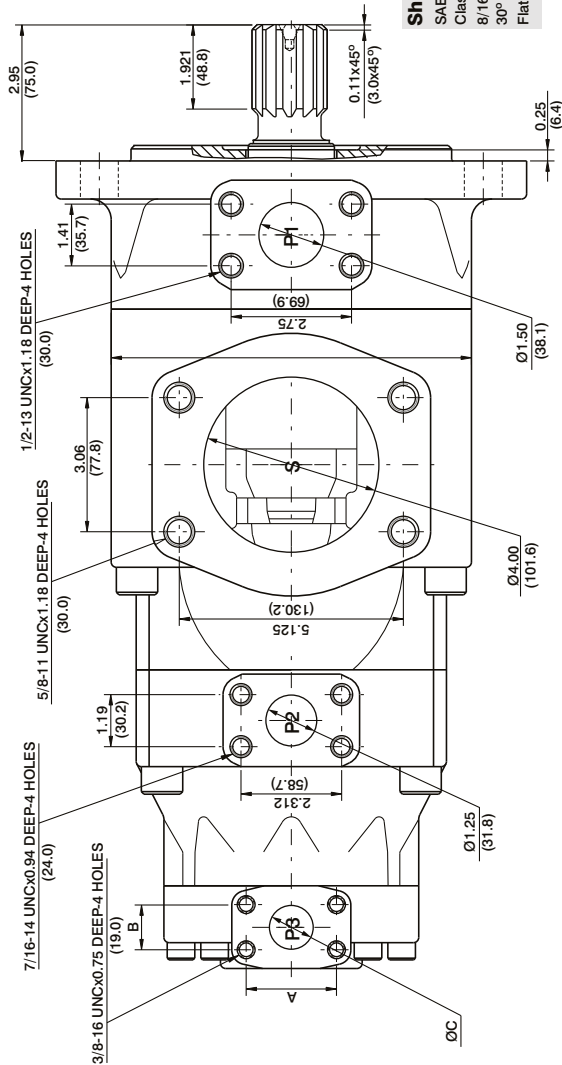
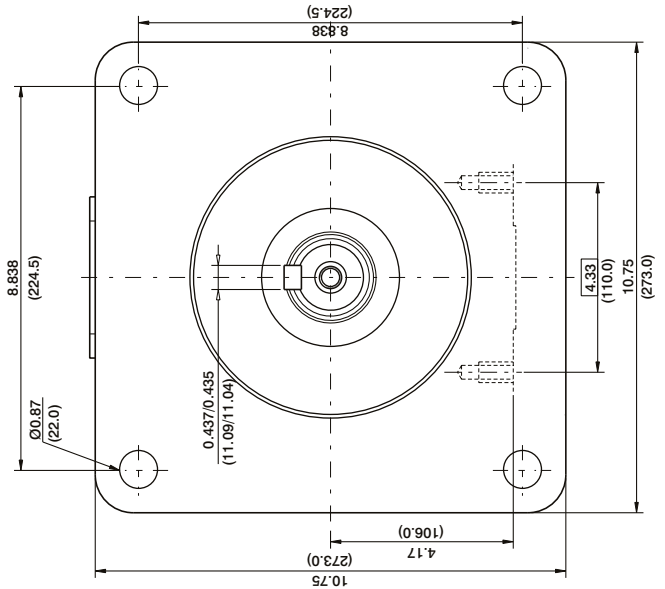
PORT	CODE	A	B	C
0		2.06 (52.4)	1.03 (26.2)	1.00 (25.4)
P3	1	1.874 (47.6)	0.874 (22.2)	0.75 (19.05)

Shaft	Vp x p max. (P1+P2+P3)
1	101506 (114715)
2	104818 (118346)
3	112312 (126807)

Shaft torque limits in³/rev x psi (ml/rev x bar)

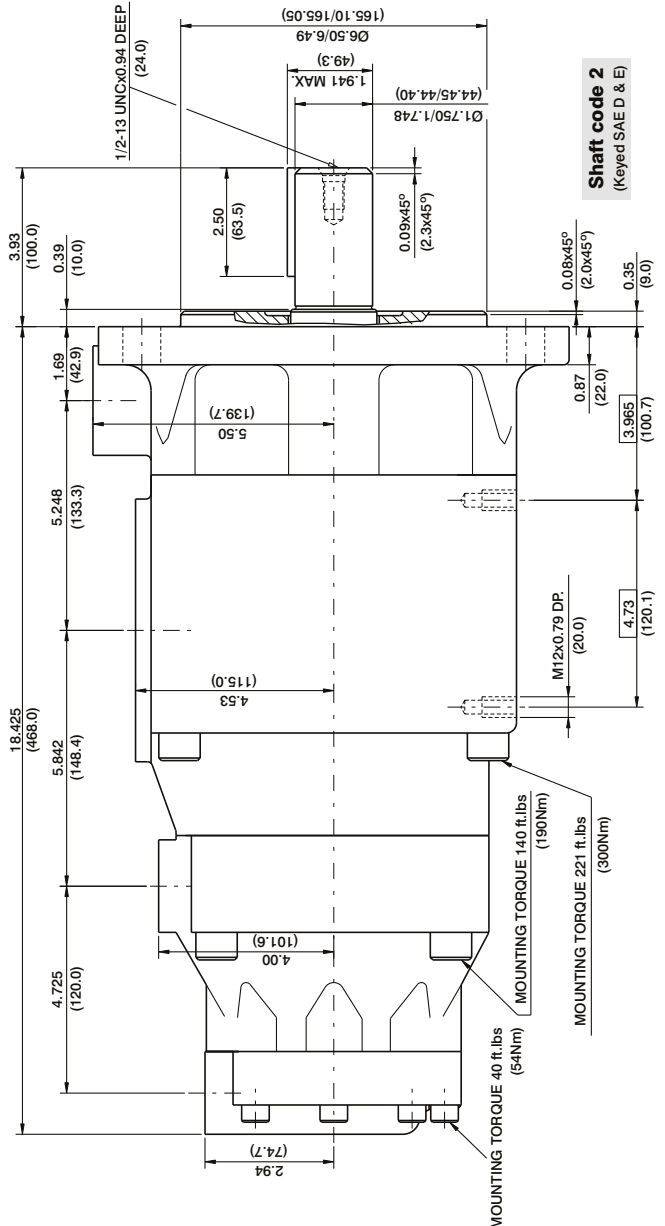
Shaft code 3

SAE D & E splined shaft
Class 1-J498b
8/16 Dp. 13 teeth
30° Pressure angle
Flat root side fit



Shaft code 2

(Keyed SAE D & E)



VT7 -TRIPLE

VANE PUMPS

VT7DBB - B38 - B14 - B08 - 1 R 00 - A 1 - M1- *

Series-SAE C 2 bolts
Mounting flange J744c

Cam ring for "P1"
Volumetric displacement cm³/rev (in³/rev)
 B14 = 43.9 (2.68) B31 = 99.1 (6.05)
 B17 = 55.0 (3.36) B35 = 113.4 (6.92)
 B20 = 66.0 (4.03) B38 = 120.6 (7.36)
 B22 = 70.3 (4.29) B42 = 137.5 (8.39)
 B24 = 81.1 (4.95) 045 = 145.7 (8.89)
 B28 = 89.9 (5.49) 050 = 157.9 (9.64)

Cam ring for "P2" & P3
Volumetric displacement cm³/rev (in³/rev)
 B02 = 5.7 (0.35) B09 = 28.0 (1.71)
 B03 = 9.8 (0.60) B10 = 31.8 (1.94)
 B04 = 12.8 (0.78) B11 = 34.9 (2.13)
 B05 = 15.9 (0.97) B12 = 40.9 (2.50)
 B06 = 19.8 (1.21) B14 = 45.1 (2.75)
 B07 = 22.5 (1.37) B15 = 50.0 (3.05)
 B08 = 24.9 (1.52)

Modifications

Mounting w/connection variables

P1=1 1/4" P2=1" P3=3/4" S=4"	
UNC	METRIC
01	M1

Seal class
 1 = S1 (for mineral oil)
 4 = S4 (for fire resistant fluids)
 5 = S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page CI-1-4,5)
 00 = Standard

Direction of rotation
 (view on shaft end)
 R - Clockwise
 L - Counter - clockwise

Type of Shaft
 1 - Keyed (no SAE)
 2 - Keyed (SAE CC)
 3 - Splined (SAE C)
 4 - Splined (SAE CC)

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1800 rpm						Input power p & n = 1800 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 250 bar (3630 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 250 bar (3630 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1	B14	2.68	43.9	20.92	79.1	19.18	72.5	17.81	67.3	3.46	2.6	27.77	20.7	47.03	35.0
	B17	3.36	55.0	26.16	98.8	24.41	92.3	23.04	87.0	3.77	2.8	33.88	25.3	57.71	43.0
	B20	4.03	66.0	31.39	118.6	29.64	112.0	28.27	106.8	4.07	3.0	39.98	29.8	68.39	50.9
	B22	4.29	70.3	33.43	126.4	31.69	119.8	30.32	104.6	4.19	3.1	42.37	31.6	72.57	54.0
	B24	4.95	81.1	38.57	145.8	36.82	139.2	35.45	134.0	4.49	3.4	48.36	36.1	83.06	61.9
	B28	5.49	89.9	42.80	161.8	41.06	155.2	39.69	150.0	4.74	3.5	53.30	39.7	91.70	68.3
	B31	6.05	99.1	47.18	178.3	45.43	171.7	44.06	166.5	4.99	3.7	58.41	43.6	100.63	75.0
	B35 ¹⁾	6.92	113.4	53.93	203.9	52.18	197.2	50.81	192.0	5.39	4.0	66.29	49.4	114.42	85.3
	B38 ¹⁾	7.36	120.6	57.35	216.8	55.61	210.2	54.24	204.9	5.59	4.2	70.28	52.4	121.42	90.5
	B42 ²⁾	8.39	137.5	65.39	247.2	63.65	240.6	62.28	235.4	6.05	4.5	79.66	59.4	137.83	102.7
	045 ³⁾	8.89	145.7	69.29	262.0	67.11	253.6	65.31	246.8	6.74	5.0	83.75	62.4	145.79	108.7
	050 ⁴⁾	9.64	157.9	75.14	284.0	72.96	275.8	71.78	271.3	7.08	5.3	90.58	67.5	154.50	116.3
P2 & P3				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 300 bar (4350 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 300 bar (4350 psi)	
	B02	0.35	5.7	2.76	10.4	2.33	8.8	1.80	6.8	0.74	0.55	4.02	2.99	8.10	6.04
	B03	0.60	9.8	4.66	17.6	4.23	15.9	3.63	14.0	0.85	0.63	6.24	4.65	12.93	9.64
	B04	0.78	12.8	6.09	23.0	5.66	21.4	5.13	19.4	0.94	0.70	7.90	5.89	16.55	12.34
	B05	0.97	15.9	7.56	28.6	7.13	26.9	6.60	25.0	1.02	0.76	9.62	7.17	20.29	15.13
	B06	1.21	19.8	9.42	35.6	8.99	33.9	8.46	32.0	1.13	0.84	11.79	8.79	25.00	18.64
	B07	1.37	22.5	10.70	40.4	10.27	38.8	9.74	36.8	1.20	0.89	13.29	9.91	28.26	21.07
	B08	1.52	24.9	11.84	44.7	11.41	43.1	10.88	41.1	1.27	0.95	14.62	10.90	31.15	23.23
	B09	1.71	28.0	13.31	50.3	12.87	48.6	12.35	47.0	1.36	1.01	16.35	12.19	34.92	26.04
	B10	1.94	31.8	15.12	57.2	14.69	55.5	14.16	53.5	1.46	1.09	18.45	13.75	39.48	29.44
	B11 ⁵⁾	2.13	34.9	16.64	62.9	16.19	61.2	15.68	59.3	1.55	1.16	20.17	15.04	43.22	32.23
	B12 ⁵⁾	2.50	40.9	19.50	73.7	19.07	72.1	18.54	70.1	1.72	1.28	23.55	17.56	50.58	37.71
	B14 ⁵⁾	2.75	45.1	21.40	80.8	20.95	79.2	20.44	77.0	1.83	1.36	25.80	19.24	55.48	41.37
	B15 ⁵⁾	3.05	50.0	23.78	89.8	23.35	88.3	22.88	86.5	1.97	1.47	28.55	21.28	57.35	42.76

1) B35-B38 = 280 bar (4060 psi) max.int.

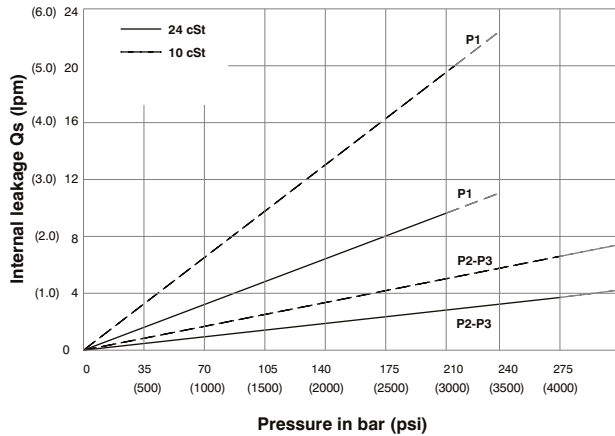
2) B42 = 260 bar (3770 psi) max.int.

3) 045 = 240 bar (3500 psi) max. int.

4) 050 = 210 bar (3000 psi) max. int.

5) B11-B12-B14 = 300 bar (4350 psi) & B15 = 280 bar (4060 psi) max. int. And Max. Speed = 3000 rpm

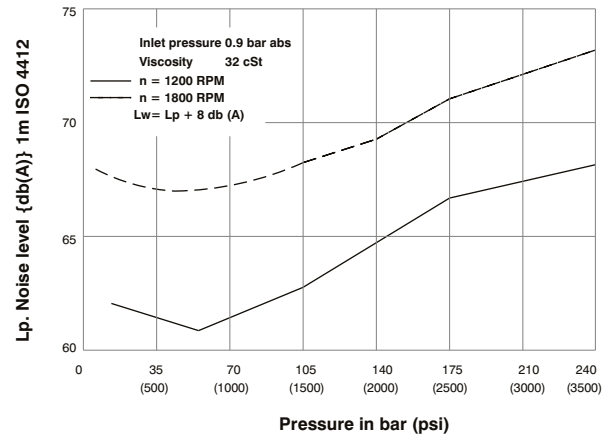
INTERNAL LEAKAGE (TYPICAL)



Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.

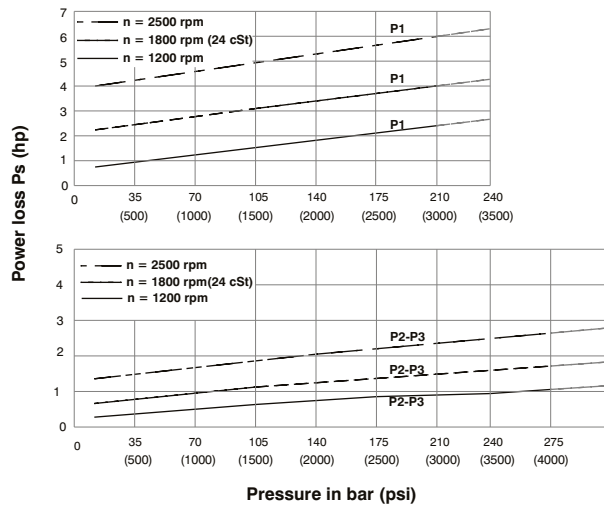
NOISE LEVEL (TYPICAL)

VT7DBB- B38-B06-B04



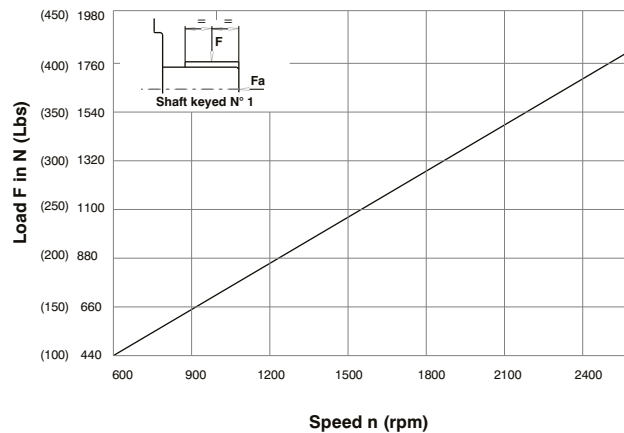
Triple pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)



Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



Maximum permissible axial load $F_a = 1200 \text{ N (270 Lbs)}$

VT7QDCB - B38 - 028 - B10 - 1 R 00 - A 1 - M1 - *

Series- SAE C 2 bolts
Mounting flange J744c

Cam ring for "P1"

Volumetric displacement cm³/rev (in³/rev)

B14 = 43.9 (2.68)	B31 = 99.1 (6.05)
B17 = 55.0 (3.36)	B35 = 113.4 (6.92)
B20 = 66.0 (4.03)	B38 = 120.6 (7.36)
B22 = 70.3 (4.29)	B42 = 137.5 (8.39)
B24 = 81.1 (4.95)	045 = 145.7 (8.89)
B28 = 89.9 (5.49)	050 = 157.9 (9.64)

Cam ring for "P2"

Volumetric displacement cm³/rev (in³/rev)

*003/B03/Y03 = 10.8 (0.66)	015/B15/Y15 = 50.5 (3.08)
005/B05/Y05 = 17.2 (1.05)	017/B17/Y17 = 58.3 (3.56)
006/B06/Y06 = 21.3 (1.30)	020/B20/Y20 = 63.8 (3.89)
008/B08/Y08 = 26.4 (1.61)	022/B22/Y22 = 70.3 (4.29)
010/B10/Y10 = 34.1 (2.08)	025/B25/Y25 = 79.3 (4.84)
012/B12/Y12 = 37.1 (2.26)	028/B28/Y28 = 88.8 (5.42)
014/B14/Y14 = 46.0 (2.81)	031/B31/Y31 = 100.0 (6.10)

*'O' - Uni - directional 'B' - Bi - directional 'Y' - Bi - directional for cold start

Cam ring for "P3"

Volumetric displacement cm³/rev (in³/rev)

B02 = 5.7 (0.35)	B07 = 22.5 (1.37)	B12 = 40.9 (2.50)
B03 = 9.8 (0.60)	B08 = 24.9 (1.52)	B14 = 45.1 (2.75)
B04 = 12.8 (0.78)	B09 = 28.0 (1.71)	B15 = 50.0 (3.05)
B05 = 15.9 (0.97)	B10 = 31.8 (1.94)	
B06 = 19.8 (1.21)	B11 = 34.9 (2.13)	

Modifications**Mounting w/connection variables**

P1=1 ¼" P2=1" P3=¾" S=4"	
UNC	METRIC
01	M1

Seal class

- 1 - S1 (for mineral oil)
- 4 - S4 (for fire resistant fluids)
- 5 - S5 (for mineral oil and fire resistant fluids)

Design letter**Porting combination** (see page CI-1-4,5)

00 = Standard

Direction of rotation

(view on shaft end)

- R - Clockwise
- L - Counter - clockwise

Type of Shaft

- 1 - Keyed (no SAE)
- 2 - Keyed (SAE CC)
- 3 - Splined (SAE C)
- 4 - Splined (SAE CC)

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1800 rpm						Input power p & n = 1800 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 250 bar (3630 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 250 bar (3630 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1	B14	2.68	43.9	20.92	79.1	19.18	72.5	17.81	67.3	3.46	2.6	27.77	20.7	47.03	35.0
	B17	3.36	55.0	26.16	98.8	24.41	92.3	23.04	87.0	3.77	2.8	33.88	25.3	57.71	43.0
	B20	4.03	66.0	31.39	118.6	29.64	112.0	28.27	106.8	4.07	3.0	39.98	29.8	68.39	50.9
	B22	4.29	70.3	33.43	126.4	31.69	119.8	30.32	104.6	4.19	3.1	42.37	31.6	72.57	54.0
	B24	4.95	81.1	38.57	145.8	36.82	139.2	35.45	134.0	4.49	3.4	48.36	36.1	83.06	61.9
	B28	5.49	89.9	42.80	161.8	41.06	155.2	39.69	150.0	4.74	3.5	53.30	39.7	91.70	68.3
	B31	6.05	99.1	47.18	178.3	45.43	171.7	44.06	166.5	4.99	3.7	58.41	43.6	100.63	75.0
	B35 ¹⁾	6.92	113.4	53.93	203.9	52.18	197.2	50.81	192.0	5.39	4.0	66.29	49.4	114.42	85.3
	B38 ¹⁾	7.36	120.6	57.35	216.8	55.61	210.2	54.24	204.9	5.59	4.2	70.28	52.4	121.42	90.5
	B42 ²⁾	8.39	137.5	65.39	247.2	63.65	240.6	62.28	235.4	6.05	4.5	79.66	59.4	137.83	102.7
	045 ³⁾	8.89	145.7	69.29	262.0	67.11	253.6	65.31	246.8	6.74	5.0	83.75	62.4	145.79	108.7
P2	050 ⁴⁾	9.64	157.9	75.14	284.0	72.96	275.8	71.78	271.3	7.08	5.3	90.58	67.5	134.50	100.3
				p = 0 bar (0 psi)	p = 140 bar (2000 psi)	p = 300 bar (4350 psi)	p = 7 bar (100 psi)	p = 140 bar (2000 psi)	p = 300 bar (4350 psi)						
	003	0.66	10.8	5.14	19.6	3.85	14.6	---	---	2.11	1.57	8.45	6.30	---	---
	005	1.05	17.2	8.18	30.9	6.89	26.0	4.34	16.44	2.29	1.70	12.00	8.94	23.97	17.88
	006	1.30	21.3	10.13	38.3	8.84	33.4	5.71	21.6	2.40	1.78	14.28	10.64	28.96	21.60
	008	1.61	26.4	12.55	47.4	11.26	42.6	8.12	30.72	2.54	1.89	17.11	12.75	35.08	26.16
	010	2.08	34.1	16.22	61.3	14.93	56.4	11.81	44.64	2.76	2.06	21.38	15.94	44.25	33.00
	012	2.26	37.1	17.64	66.7	16.35	61.8	13.24	50.04	2.84	2.11	23.05	17.18	47.47	35.40
	014	2.81	46.0	21.88	82.7	20.59	77.8	17.46	66.00	3.09	2.30	27.99	20.87	58.73	43.80
	015	3.08	50.5	23.99	90.7	22.83	86.3	19.39	73.32	3.21	2.40	30.30	22.60	63.56	47.40
	017	3.56	58.3	27.73	104.8	26.44	99.9	23.33	88.2	3.43	2.55	34.81	25.95	73.54	54.84
P3	020	3.89	63.8	30.34	114.7	29.05	109.8	25.93	98.04	3.58	2.66	37.86	28.23	80.14	59.76
	022 ⁶⁾	4.29	70.3	33.43	126.4	32.14	121.5	29.05	109.8	3.76	2.80	41.47	30.92	80.94	60.36
	025 ^{5,7)}	4.84	79.3	37.71	142.5	36.42	137.6	---	---	4.01	2.99	46.46	34.64	---	---
	028 ^{5,8)}	5.42	88.8	42.23	159.6	40.94	154.7	---	---	4.27	3.18	51.74	38.58	---	---
	031 ^{5,8)}	6.10	100.0	47.56	179.7	46.27	174.9	---	---	4.58	3.41	57.95	43.21	---	---
	B02	0.35	5.7	2.76	10.4	2.33	8.8	1.80	6.8	0.74	0.55	4.02	2.99	8.10	6.40
	B03	0.60	9.8	4.66	17.6	4.23	15.9	3.70	14.0	0.85	0.63	6.24	4.65	12.93	10.25
	B04	0.78	12.8	6.09	23.0	5.66	21.4	5.13	19.4	0.94	0.70	7.90	5.89	16.55	13.13
	B05	0.97	15.9	7.56	28.6	7.13	26.9	6.60	25.0	1.02	0.76	9.62	7.17	20.29	16.12
	B06	1.21	19.8	9.42	35.6	8.99	33.9	8.46	32.0	1.13	0.84	11.79	8.79	25.00	19.88
	B07	1.37	22.5	10.70	40.4	10.27	38.8	9.74	36.8	1.20	0.89	13.29	9.91	28.26	22.47
P3	B08	1.52	24.9	11.84	44.7	11.41	43.1	10.88	41.1	1.27	0.94	14.62	10.90	31.15	24.78
	B09	1.71	28.0	13.31	50.3	12.87	48.6	12.35	47.0	1.36	1.01	16.35	12.19	34.92	27.77
	B10	1.94	31.8	15.12	57.2	14.69	55.5	14.16	53.5	1.46	1.11	18.45	13.75	39.48	31.42
	B11 ⁹⁾	2.13	34.9	16.64	62.9	16.19	61.2	15.68	59.3	1.55	1.15	20.17	15.04	43.22	32.22
	B12 ⁹⁾	2.50	40.9	19.50	73.7	19.07	72.1	18.54	70.1	1.72	1.28	23.55	17.56	50.58	37.71
	B14 ⁹⁾	2.75	45.1	21.40	80.8	20.95	79.2	20.44	77.0	1.83	1.36	25.80	19.23	55.48	41.37
	B15 ⁹⁾	3.05	50.0	23.78	89.8	23.35	88.3	22.88	86.5	1.97	1.47	28.55	21.28	57.35	42.76

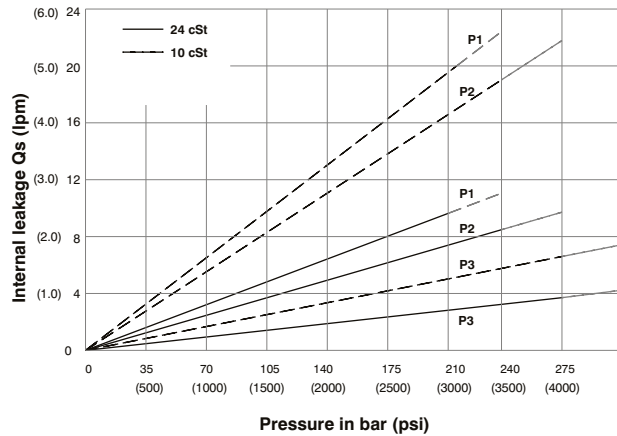
1) B35-B38 = 280 bar (4060 psi) max.int. 2) B42 = 260 bar (3770 psi) max.int. 3) 045 = 240 bar (3500 psi) max. int. 4) 050 = 210 bar (3000 psi) max. int.

5) 025-028-031 = 2500 R.P.M. max. 6) 022 = 275 bar max. int. 7) 025 = 240 bar max. int. 8) 028-031 = 210 bar max. int.

9) B11-B12-B14 = 300 bar (4350 psi) & B15 = 280 bar (4060 psi) max. int. And Max. Speed = 3000 rpm

-- Not to use because internal leakage greater than 50% of theoretical flow

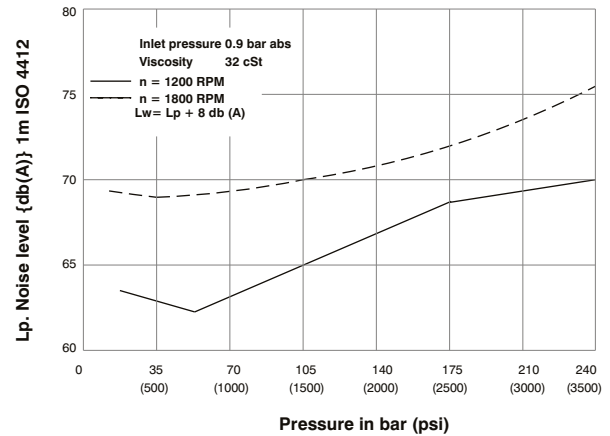
INTERNAL LEAKAGE (TYPICAL)



Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.

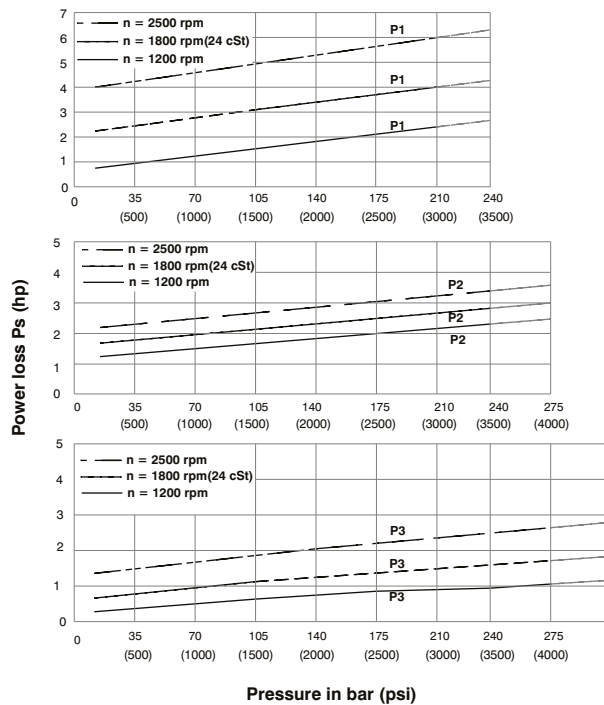
NOISE LEVEL (TYPICAL)

VT7QDCB- B38-022-B10



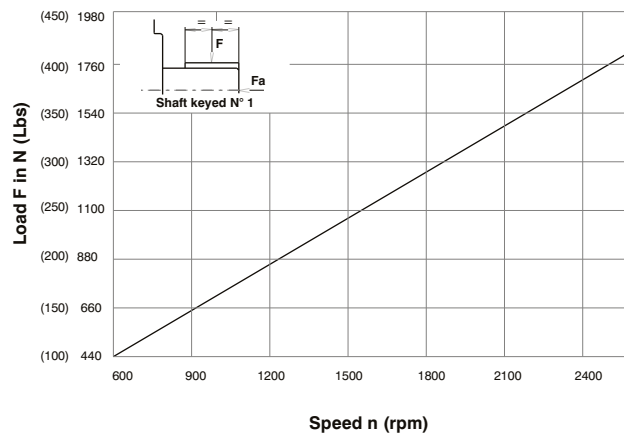
Triple pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)

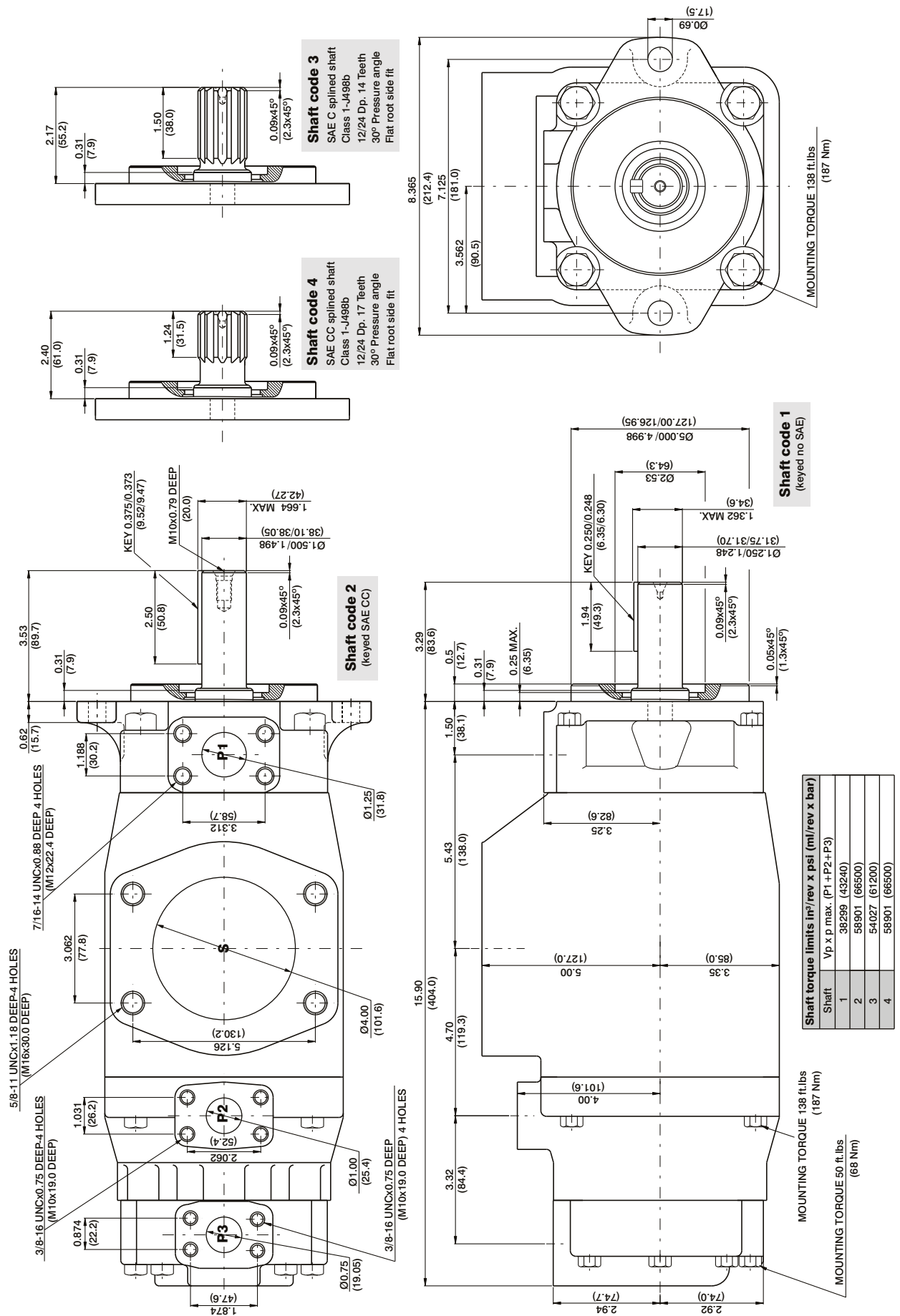


Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



Maximum permissible axial load $F_a = 1200$ N (270 Lbs)



VT7QDCC - 038 - 028 - 008 - 1 R 00 - A 1 - 00 - *

Series _____

Cam ring for "P1" _____

Volumetric displacement cm³/rev (in³/rev)

B14 = 43.9 (2.68)	B31 = 99.1 (6.05)
B17 = 55.0 (3.36)	B35 = 113.4 (6.92)
B20 = 66.0 (4.03)	B38 = 120.6 (7.36)
B22 = 70.3 (4.29)	B42 = 137.5 (8.39)
B24 = 81.1 (4.95)	045 = 145.7 (8.89)
B28 = 89.9 (5.49)	050 = 157.9 (9.64)

Cam ring for "P2" & "P3" _____

Volumetric displacement cm³/rev (in³/rev)

* 003/B03/Y03 = 10.8 (0.66)	015/B15/Y15 = 50.5 (3.08)
005/B05/Y05 = 17.2 (1.05)	017/B17/Y17 = 58.3 (3.56)
006/B06/Y06 = 21.3 (1.30)	020/B20/Y20 = 63.8 (3.89)
008/B08/Y08 = 26.4 (1.61)	022/B22/Y22 = 70.3 (4.29)
010/B10/Y10 = 34.1 (2.08)	025/B25/Y25 = 79.3 (4.84)
012/B12/Y12 = 37.1 (2.26)	028/B28/Y28 = 88.8 (5.42)
014/B14/Y14 = 46.0 (2.81)	031/B31/Y31 = 100.0 (6.10)

* '0' - Uni - directional 'B' - Bi - directional 'Y' - Bi - directional for cold start

Type of Shaft _____

- 1 - Keyed (no SAE)
- 2 - Keyed (SAE CC)
- 3 - Splined (SAE C)
- 4 - Splined (SAE CC)

Modifications _____

Mounting w/connection variables

	UNC		METRIC	
	00	01	M0	M1
P3	1"	3/4"	1"	3/4"

Seal class

- 1 - S1 (for mineral oil)
- 4 - S4 (for fire resistant fluids)
- 5 - S5 (for mineral oil and fire resistant fluids)

Design letter _____

Porting combination (see page CI-1-4,5)

00 = Standard

Direction of rotation (view on shaft end)

R - Clockwise
L - Counter - clockwise

TP

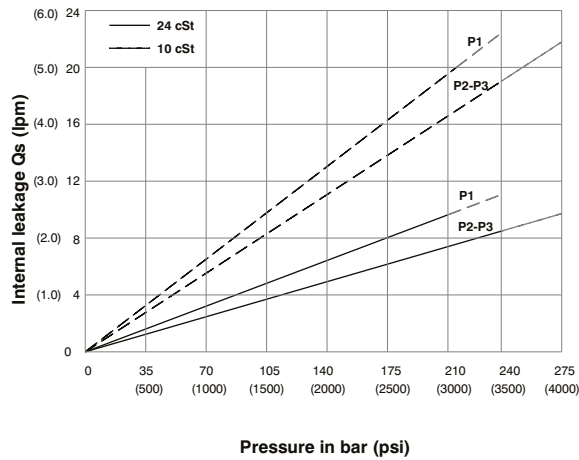
OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1800 rpm						Input power p & n = 1800 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 250 bar (3630 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 250 bar (3630 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1	B14	2.68	43.9	20.92	79.1	19.18	72.5	17.81	67.3	3.46	2.60	27.77	20.70	47.03	35.00
	B17	3.36	55.0	26.16	98.8	24.41	92.3	23.04	87.0	3.77	2.80	33.88	25.30	57.71	43.00
	B20	4.03	66.0	31.39	118.6	29.64	112.0	28.27	106.8	4.07	3.00	39.98	29.80	68.39	50.90
	B22	4.29	70.3	33.43	126.4	31.69	119.8	30.32	104.6	4.19	3.10	42.37	31.60	72.57	54.00
	B24	4.95	81.1	38.57	145.8	36.82	139.2	35.45	134.0	4.49	3.40	48.36	36.10	83.06	61.90
	B28	5.49	89.9	42.80	161.8	41.06	155.2	39.69	150.0	4.74	3.50	53.30	39.70	91.70	68.30
	B31	6.05	99.1	47.18	178.3	45.43	171.7	44.06	166.5	4.99	3.70	58.41	43.60	100.63	75.00
	B35 ¹⁾	6.92	113.4	53.93	203.9	52.18	197.2	50.81	192.0	5.39	4.00	66.29	49.40	114.42	85.30
	B38 ¹⁾	7.36	120.6	57.35	216.8	55.61	210.2	54.24	204.9	5.59	4.20	70.28	52.40	121.42	90.50
	B42 ²⁾	8.39	137.5	65.39	247.2	63.65	240.6	62.28	235.4	6.05	4.50	79.66	59.40	137.83	102.70
	045 ³⁾	8.89	145.7	69.29	262.0	67.11	253.6	65.31	246.8	6.74	5.00	83.75	62.40	145.79	108.70
P2 & P3	050 ⁴⁾	9.64	157.9	75.14	284.0	72.96	275.8	71.78	271.3	7.08	5.30	90.58	67.50	134.50	100.30
				p = 0 bar (0 psi)	p = 140 bar (2000 psi)	p = 300 bar (4350 psi)	p = 7 bar (100 psi)	p = 140 bar (2000 psi)	p = 300 bar (4350 psi)						
	003	0.66	10.8	5.14	19.6	3.85	14.6	---	---	2.11	1.57	8.45	6.30	---	---
	005	1.05	17.2	8.18	30.9	6.89	26.0	4.34	16.44	2.29	1.70	12.00	8.94	23.97	17.88
	006	1.30	21.3	10.13	38.3	8.84	33.4	5.71	21.6	2.40	1.78	14.28	10.64	28.96	21.60
	008	1.61	26.4	12.55	47.4	11.26	42.6	8.12	30.72	2.54	1.89	17.11	12.75	35.08	26.16
	010	2.08	34.1	16.22	61.3	14.93	56.4	11.81	44.64	2.76	2.06	21.38	15.94	44.25	33.00
	012	2.26	37.1	17.64	66.7	16.35	61.8	13.24	50.04	2.84	2.11	23.05	17.18	47.47	35.40
	014	2.81	46.0	21.88	82.7	20.59	77.8	17.46	66.00	3.09	2.30	27.99	20.87	58.73	43.80
	015	3.08	50.5	23.99	90.7	22.83	86.3	19.39	73.32	3.21	2.40	30.30	22.60	63.56	47.40
	017	3.56	58.3	27.73	104.8	26.44	99.9	23.33	88.2	3.43	2.55	34.81	25.95	73.54	54.84
	020	3.89	63.8	30.34	114.7	29.05	109.8	25.93	98.04	3.58	2.66	37.86	28.23	80.14	59.76
	022 ⁵⁾	4.29	70.3	33.43	126.4	32.14	121.5	29.05	109.8	3.76	2.80	41.47	30.92	80.94	60.36
	025 ^{5,7)}	4.84	79.3	37.71	142.5	36.42	137.6	---	---	4.01	2.99	46.46	34.64	---	---
	028 ^{5,8)}	5.42	88.8	42.23	159.6	40.94	154.7	---	---	4.27	3.18	51.74	38.58	---	---
	031 ^{5,8)}	6.10	100.0	47.56	179.7	46.27	174.9	---	---	4.58	3.41	57.95	43.21	---	---

1) B35-B38 = 280 bar (4060 psi) max.int. 2) B42 = 260 bar (3770 psi) max.int. 3) 045 = 240 bar (3500 psi) max. int. 4) 050 = 210 bar (3000 psi) max. int.
5) 025-028-031 = 2500 R.P.M. max. 6) 022 = 275 bar max. int. 7) 025 = 240 bar max. int. 8) 028-031 = 210 bar (3000 psi) max. int.

-- Not to use because internal leakage greater than 50% of theoretical flow

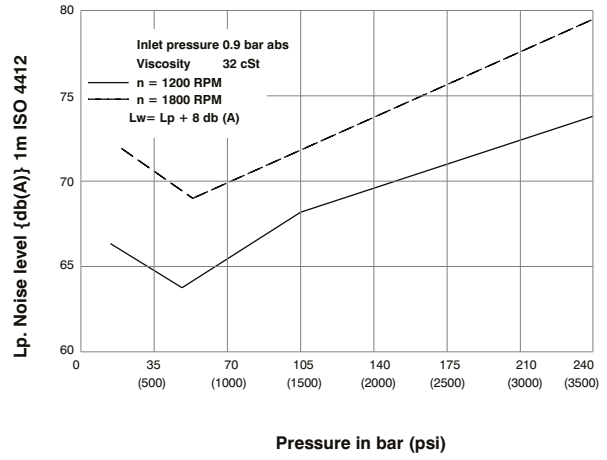
INTERNAL LEAKAGE (TYPICAL)



Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.

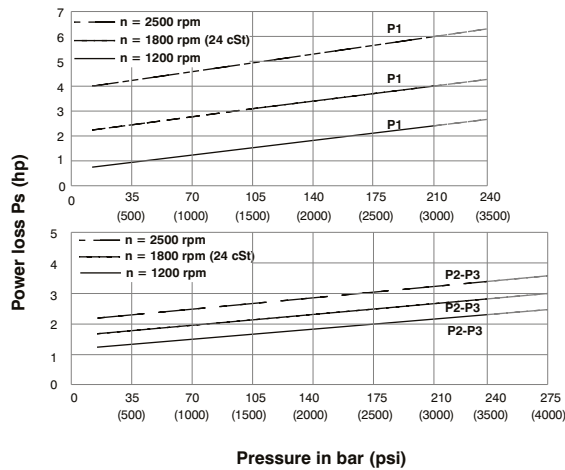
NOISE LEVEL (TYPICAL)

VT7QDCC- B31-022-022



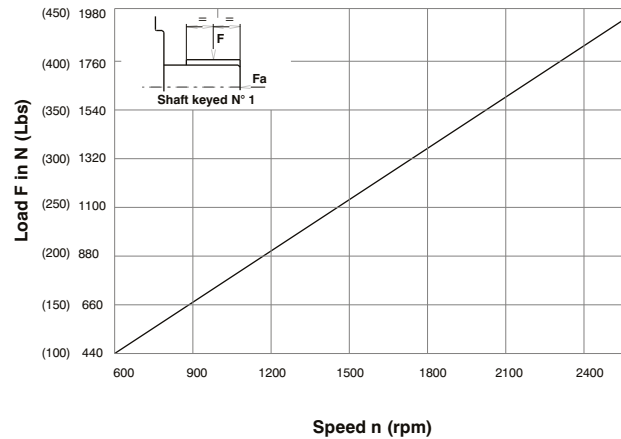
Triple pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)

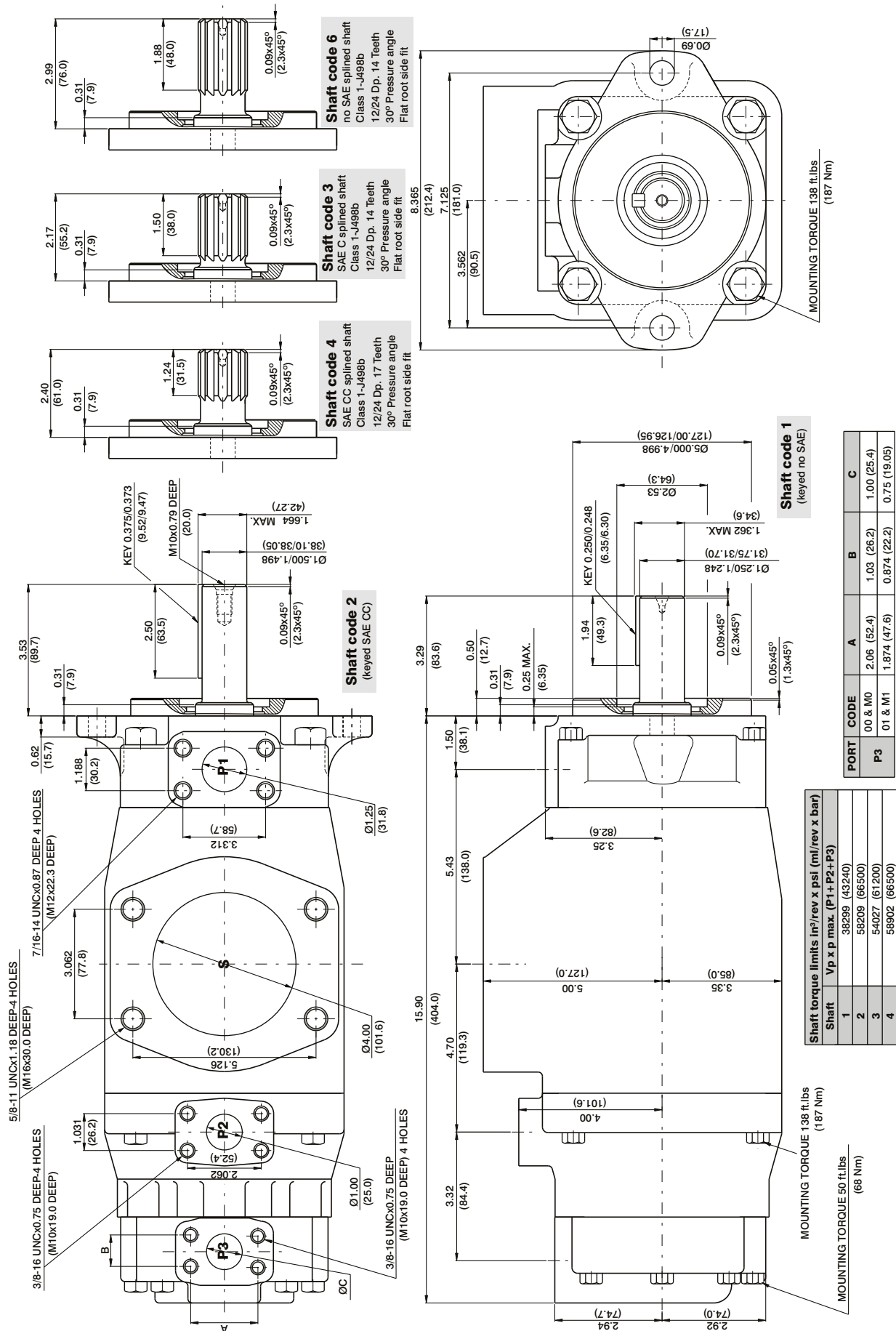


Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



Maximum axial load permissible $F_a = 1200$ N (270 Lbs)



VT7DDB or VT7DDBS - 050 - B28 - B10 - 1 R 00 - A 1 - 00 *

VT7DDB series - ISO 4 bolts 3019-2 mounting flange 125 B4 HW
VT7DDBS series - SAE C 6 bolts Mounting flange J744c

Cam ring for "P1" & "P2"
 Volumetric displacement cm³/rev (in³/rev)
 B14 = 43.9 (2.68) B31 = 99.1 (6.05)
 B17 = 55.0 (3.36) B35 = 113.4 (6.92)
 B20 = 66.0 (4.03) B38 = 120.6 (7.36)
 B22 = 70.3 (4.29) B42 = 137.5 (8.39)
 B24 = 81.1 (4.95) 045 = 145.7 (8.89)
 B28 = 89.9 (5.49) 050 = 157.9 (9.64)

Cam ring for "P3"
 Volumetric displacement cm³/rev (in³/rev)
 B02 = 5.7 (0.35) B09 = 28.0 (1.71)
 B03 = 9.8 (0.60) B10 = 31.8 (1.94)
 B04 = 12.8 (0.78) B11 = 34.9 (2.13)
 B05 = 15.9 (0.97) B12 = 40.9 (2.50)
 B06 = 19.8 (1.21) B14 = 45.1 (2.75)
 B07 = 22.5 (1.37) B15 = 50.0 (3.05)
 B08 = 24.9 (1.52)

Type of Shaft VT7DDBS
 1 - Keyed (SAE C)
 2 - Keyed (SAE CC)
 3 - Splined (SAE C)
 4 - Splined (SAE CC)

Type of Shaft VT7DDB-VT7DDBS
 5 - Keyed (ISO R775-G38M)

Modifications
Mounting w/connection variables
 4 bolts SAE flange (J518)

P1 & P2 = 1"1/4 S = 4"		P3 UNC METRIC	
	P3	UNC	METRIC
VT7DDB	1"		M0
VT7DDB	3/4"		M1
VT7DDBS	1"	00	M0
VT7DDBS	3/4"	01	M1

Seal class
 1 - S1 (for mineral oil)
 4 - S4 (for fire resistant fluids)
 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page CI-1-4,5)
 00 = Standard

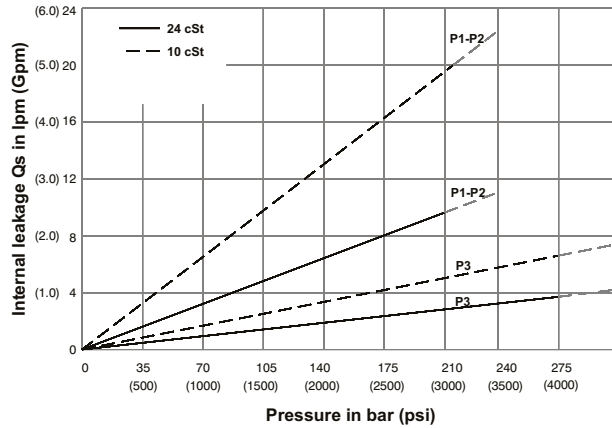
Direction of rotation (view on shaft end)
 R - Clockwise
 L - Counter - clockwise

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1800 rpm						Input power p & n = 1800 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 250 bar (3630 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 250 bar (3630 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1 & P2	B14	2.68	43.9	20.92	79.1	19.18	72.5	17.81	67.3	3.46	2.6	27.77	20.7	47.03	35.1
	B17	3.36	55.0	26.16	98.8	24.41	92.3	23.04	87.0	3.77	2.8	33.88	25.3	57.71	43.0
	B20	4.03	66.0	31.39	118.6	29.64	112.0	28.27	106.8	4.07	3.0	39.98	29.8	68.39	51.0
	B22	4.29	70.3	33.43	126.4	31.69	119.8	30.32	104.6	4.19	3.1	42.37	31.6	72.57	54.1
	B24	4.95	81.1	38.57	145.8	36.82	139.2	35.45	134.0	4.49	3.4	48.36	36.1	83.06	61.9
	B28	5.49	89.9	42.80	161.8	41.06	155.2	39.69	150.0	4.74	3.5	53.30	39.7	91.70	68.4
	B31	6.05	99.1	47.18	178.3	45.43	171.7	44.06	166.5	4.99	3.7	58.41	43.6	100.63	75.0
	B35 ¹⁾	6.92	113.4	53.93	203.9	52.18	197.2	50.81	192.0	5.39	4.0	66.29	49.4	114.42	85.3
	B38 ¹⁾	7.36	120.6	57.35	216.8	55.61	210.2	54.24	204.9	5.59	4.2	70.28	52.4	121.42	90.5
	B42 ²⁾	8.39	137.5	65.39	247.2	63.65	240.6	62.28	235.4	6.05	4.5	79.66	59.4	137.83	102.8
P3	045 ³⁾	8.89	145.7	69.29	262.0	67.11	253.6	65.31	246.8	6.74	5.0	83.75	62.4	145.79	108.7
	050 ⁴⁾	9.64	157.9	75.14	284.0	72.96	275.8	71.78	271.3	7.08	5.3	90.58	67.5	154.50	113.3
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 300 bar (4350 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 300 bar (4350 psi)	
	B02	0.35	5.7	2.76	10.4	2.33	8.8	1.80	6.8	0.74	0.55	4.02	3.0	8.10	6.0
	B03	0.60	9.8	4.66	17.6	4.23	15.9	3.70	14.0	0.85	0.63	6.24	4.7	12.93	9.6
	B04	0.78	12.8	6.09	23.0	5.66	21.4	5.13	19.4	0.94	0.70	7.90	5.9	16.55	12.3
	B05	0.97	15.9	7.56	28.6	7.13	26.9	6.60	25.0	1.02	0.76	9.62	7.2	20.29	15.1
	B06	1.21	19.8	9.42	35.6	8.99	33.9	8.46	32.0	1.13	0.84	11.79	8.8	25.00	18.6
	B07	1.37	22.5	10.70	40.4	10.27	38.8	9.74	36.8	1.20	0.89	13.29	9.9	28.26	21.1
	B08	1.52	24.9	11.84	44.7	11.41	43.1	10.88	41.1	1.27	0.95	14.62	10.9	31.15	23.2
	B09	1.71	28.0	13.31	50.3	12.87	48.6	12.35	47.0	1.36	1.01	16.35	12.2	34.92	26.1
	B10	1.94	31.8	15.12	57.2	14.69	55.5	14.16	53.5	1.46	1.10	18.45	13.8	39.48	29.4
	B11 ⁵⁾	2.13	34.9	16.64	62.9	16.19	61.2	15.68	59.3	1.55	1.16	20.17	15.0	43.22	32.2
	B12 ⁵⁾	2.50	40.9	19.50	73.7	19.07	72.1	18.54	70.1	1.72	1.28	23.55	17.6	50.58	37.7
	B14 ⁵⁾	2.75	45.1	21.40	80.8	20.95	79.2	20.44	77.0	1.83	1.36	25.80	19.2	55.48	41.4
	B15 ⁵⁾	3.05	50.0	23.78	89.8	23.35	88.3	22.88	86.5	1.97	1.45	28.55	21.3	57.35	42.7

1) B35-B38 = 280 bar (4060 psi) max.int. 2) B42 = 260 bar (3770 psi) max.int. 3) 045 = 240 bar (3500 psi) max. int. 4) 050 = 210 bar (3000 psi) max. int.
 5) B11-B12-B14 = 300 bar (4350 psi) & B15 = 280 bar (4060 psi) max. int. And Max. Speed = 3000 rpm

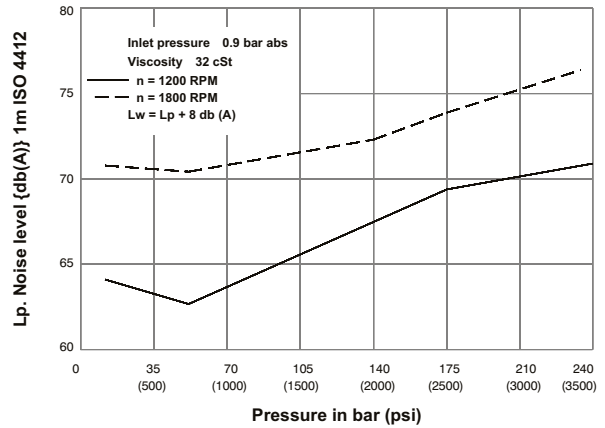
INTERNAL LEAKAGE (TYPICAL)



Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.

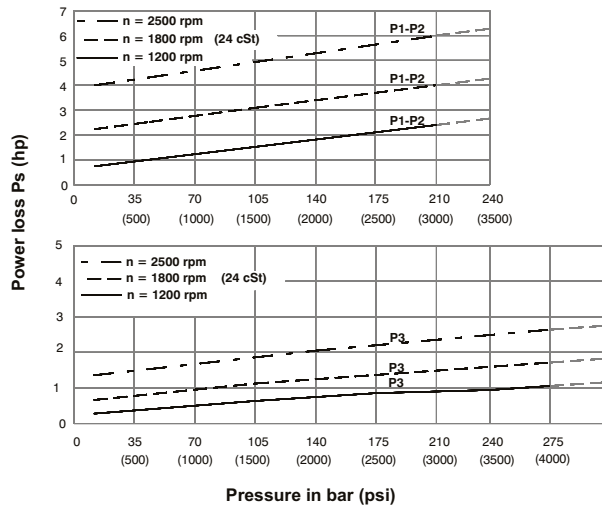
NOISE LEVEL (TYPICAL)

VT7DDB- B31-B31-B10



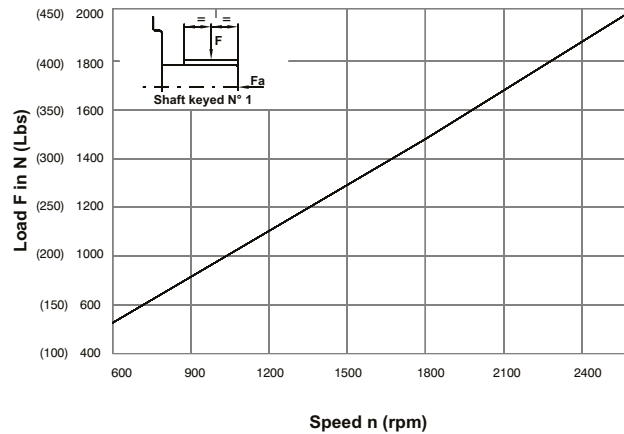
Triple pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)



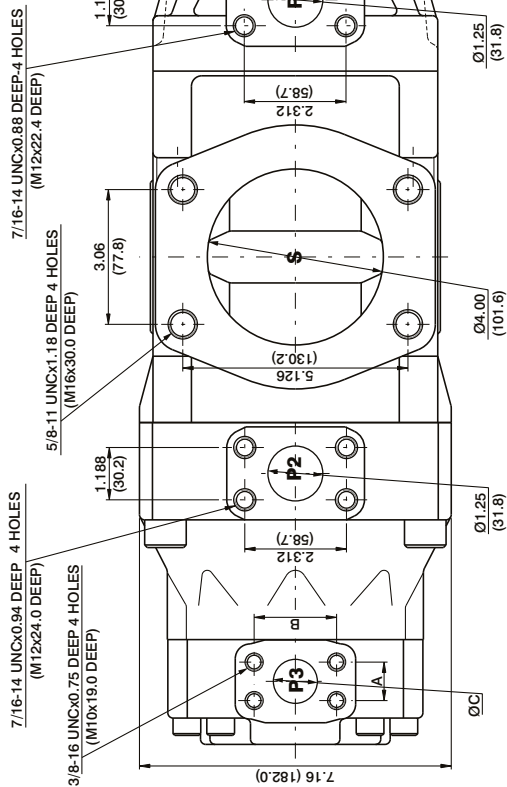
Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD

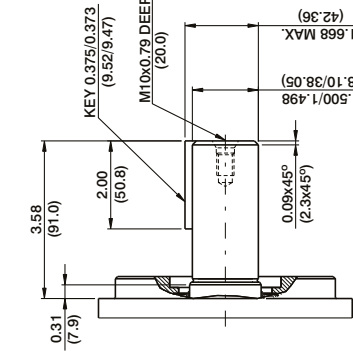


Maximum permissible axial load $F_a = 1200 \text{ N (270 Lbs)}$

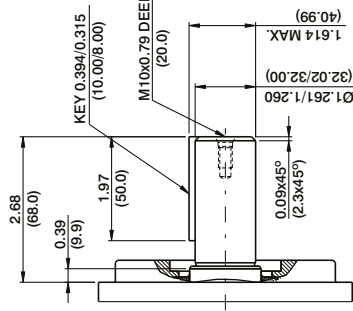
TP



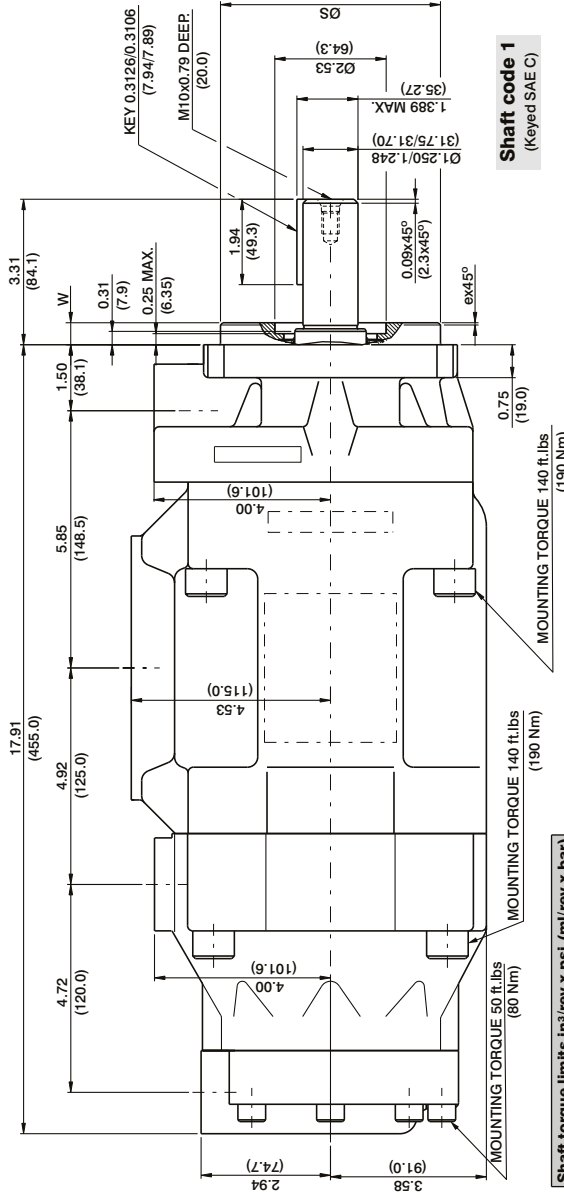
Shaft code 3
SAE C splined shaft
Class 1-J498b
12/24 dp, 14 teeth
30° pressure angle
flat root side fit



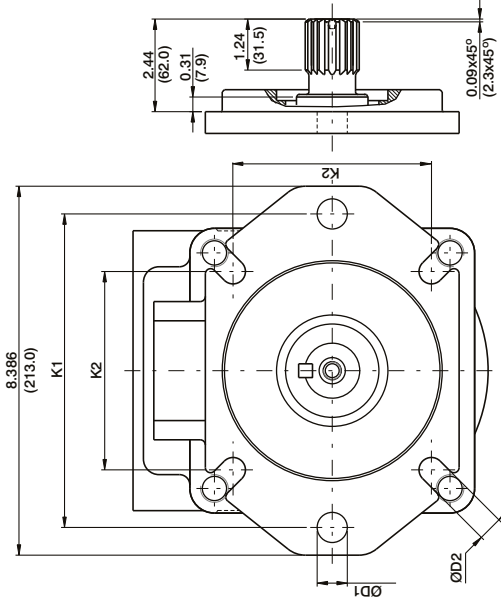
Shaft code 2
(Keyed SAE CC)



Shaft code 5
(Keyed ISO R775 - G38M)



Shaft code 1
(Keyed SAE C)



Shaft code 4
SAE CC splined shaft
Class 1-J498b
12/24 dp, 17 teeth
30° pressure angle
flat root side fit

Shaft	Vp x p max (P1+P2+P3)
1	38299 (43240)
2	64044 (72378)
3	54207 (61200)
4	58902 (66567)
5	47033 (53153)

Series	ØS		W	ex45°	Alternate mounting flange		
	MAX.	Min.			K1	ØD1	ØD2
VT7DDB	4.921 (124.99)	4.919 (124.94)	0.079 (2.0)	0.374 (9.49)	7.087 (180.0)	0.709 (18.0)	4.454 (113.1)
VT7DDBS	5.00 (127.00)	4.998 (126.94)	0.059 (1.5)	0.50 (12.7)	7.126 (181.0)	0.689 (17.5)	4.508 (114.5)

Alternate connect variables		
Ø0 & M0	Ø1 & M1	
A 1.03 (26.2)	0.874 (22.2)	
B 2.06 (52.4)	1.874 (47.6)	
C 1.00 (25.4)	0.75 (19.05)	

VT7EDB or VT7EDBS - 062 - B28 - B10 - 1 R 00 - A 1 - 00 *

VT7EDB series-ISO 4 bolts 3019-2

mounting flange 250 B4 HW

VT7EDBS series- SAE E 4 bolts

Mounting flange J744c

Cam ring for "P1"

Volumetric displacement cm³/rev (in³/rev)

042 = 132.2 (8.07)	057 = 183.2 (11.18)
045 = 142.5 (8.70)	062 = 196.6 (12.0)
050 = 158.5 (9.67)	066 = 213.0 (13.0)
052 = 163.8 (10.0)	072 = 227.1 (13.86)
054 = 170.9 (10.43)	085 = 268.7 (16.40)

Cam ring for "P2"

Volumetric displacement cm³/rev (in³/rev)

B14 = 43.9 (2.68)	B31 = 99.1 (6.05)
B17 = 55.0 (3.36)	B35 = 113.4 (6.92)
B20 = 66.0 (4.03)	B38 = 120.6 (7.36)
B22 = 70.3 (4.29)	B42 = 137.5 (8.39)
B24 = 81.1 (4.95)	045 = 145.7 (8.89)
B28 = 89.9 (5.49)	050 = 157.9 (9.64)

Cam ring for "P3"

Volumetric displacement cm³/rev (in³/rev)

B02 = 5.7 (0.35)	B08 = 24.9 (1.52)	B12 = 40.9 (2.50)
B03 = 9.8 (0.60)	B07 = 22.5 (1.37)	B14 = 45.1 (2.75)
B04 = 12.8 (0.78)	B09 = 28.0 (1.71)	B15 = 50.0 (3.05)
B05 = 15.9 (0.97)	B10 = 31.8 (1.94)	
B06 = 19.8 (1.21)	B11 = 34.9 (2.13)	

Modifications

Mounting w/connection variables

4 bolts SAE flange (J518)

	P1=1-1/2"	P2=1-1/4"	S = 4"
	P3	UNC	METRIC
VT7EDB	1"		M0
VT7EDB	3/4"		M1
VT7EDBS	1"	00	M0
VT7EDBS	3/4"	01	M1

Seal class

- 1 - S1(for minreal oil)
- 4 - S4(for fire resistant fluids)
- 5 - S5(for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page CI-1-4,5)

00 = Standard

Direction of rotation
(view on shaft end)

- R - Clockwise
- L - Counter - clockwise

Type of Shaft VT7EDB

- 1 - Keyed (G45N-ISO 3019-2)

Type of Shaft VT7EDBS

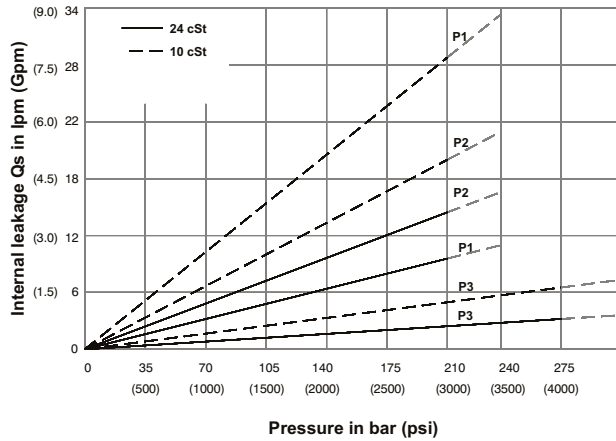
- 2 - Keyed (SAE D & E)
- 3 - Splined (SAE D & E)

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1800 rpm						Input power p & n = 1800 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1	042	8.07	132.2	62.92	237.8	60.37	228.2	58.52	221.2	8.09	6.03	78.44	58.49	133.80	99.77
	045	8.70	142.5	67.72	255.9	65.17	246.3	63.32	239.3	8.37	6.24	84.04	62.66	143.60	107.08
	050	9.67	158.5	75.38	284.9	72.83	275.3	70.98	268.3	8.82	6.58	92.97	69.32	159.24	118.75
	052	10.00	163.8	78.37	296.2	75.82	286.6	73.97	279.6	8.99	6.70	96.47	71.93	165.36	123.31
	054	10.43	170.9	81.27	307.2	78.72	297.6	76.87	290.6	9.17	6.83	99.75	74.38	177.46	132.33
	057	11.18	183.2	87.12	329.3	84.57	319.7	82.72	312.7	9.51	7.09	106.57	79.46	189.84	141.56
	062	12.00	196.6	93.54	353.6	90.99	343.9	89.14	336.9	9.88	7.36	114.17	85.13	196.34	146.41
	066	13.00	213.0	101.44	383.4	98.89	373.8	97.04	366.8	10.34	7.71	123.38	92.00	212.46	158.43
	072	13.86	227.1	108.00	408.2	105.45	398.6	103.60	391.6	10.72	7.99	131.04	97.71	225.86	168.42
P2	085 ¹⁾	16.40	268.7	127.79	483.0	126.13	476.7	--	--	11.88	8.85	101.66	75.80	--	--
				p = 0 bar (0 psi)	p = 140 bar (2000 psi)	p = 250 bar (3630 psi)	p = 7 bar (100 psi)	p = 140 bar (2000 psi)	p = 250 bar (3630 psi)						
	B14	2.68	43.9	20.92	79.1	19.18	72.5	17.81	67.3	3.46	2.6	27.77	20.7	47.03	35.07
	B17	3.36	55.0	26.16	98.8	24.41	92.3	23.04	87.0	3.77	2.8	33.88	25.3	57.71	43.03
	B20	4.03	66.0	31.39	118.6	29.64	112.0	28.27	106.8	4.07	3.0	39.98	29.8	68.39	50.99
	B22	4.29	70.3	33.43	126.4	31.69	119.8	30.32	104.6	4.19	3.1	42.37	31.6	72.57	54.12
	B24	4.95	81.1	38.57	145.8	36.82	139.2	35.45	134.0	4.49	3.4	48.36	36.1	83.06	61.93
	B28	5.49	89.9	42.80	161.8	41.06	155.2	39.69	150.0	4.74	3.5	53.30	39.7	91.70	68.38
	B31	6.05	99.1	47.18	178.3	45.43	171.7	44.06	166.5	4.99	3.7	58.41	43.6	100.63	75.03
	B35 ²⁾	6.92	113.4	53.93	203.9	52.18	197.2	50.81	192.0	5.39	4.0	66.29	49.4	114.42	85.32
	B38 ²⁾	7.36	120.6	57.35	216.8	55.61	210.2	54.24	204.9	5.59	4.2	70.28	52.4	121.42	90.54
	B42 ³⁾	8.39	137.5	65.39	247.2	63.65	240.6	62.28	235.4	6.05	4.5	79.66	59.4	137.83	102.77
	045 ⁴⁾	8.89	145.7	69.29	262.0	67.11	253.6	65.31	246.8	6.74	5.0	83.75	62.4	145.79	108.71
	050 ⁵⁾	9.64	157.9	75.14	284.0	72.96	275.8	71.78	271.3	7.08	5.3	90.58	67.5	154.50	116.03
P3				p = 0 bar (0 psi)	p = 140 bar (2000 psi)	p = 300 bar (4350 psi)	p = 7 bar (100 psi)	p = 140 bar (2000 psi)	p = 300 bar (4350 psi)						
	B02	0.35	5.7	2.76	10.4	2.33	8.8	1.80	6.8	0.74	0.55	4.02	2.99	8.10	6.04
	B03	0.60	9.8	4.66	17.6	4.23	15.9	3.70	14.0	0.85	0.63	6.24	4.65	12.93	9.64
	B04	0.78	12.8	6.09	23.0	5.66	21.4	5.13	19.4	0.94	0.70	7.90	5.89	16.55	12.34
	B05	0.97	15.9	7.56	28.6	7.13	26.9	6.60	25.0	1.02	0.76	9.62	7.17	20.29	15.13
	B06	1.21	19.8	9.42	35.6	8.99	33.9	8.46	32.0	1.13	0.84	11.79	8.79	25.00	18.64
	B07	1.37	22.5	10.70	40.4	10.27	38.8	9.74	36.8	1.20	0.89	13.29	9.91	28.26	21.07
	B08	1.52	24.9	11.84	44.7	11.41	43.1	10.88	41.1	1.27	0.95	14.62	10.90	31.15	23.23
	B09	1.71	28.0	13.31	50.3	12.87	48.6	12.35	47.0	1.36	1.02	16.35	12.19	34.92	26.03
	B10	1.94	31.8	15.12	57.2	14.69	55.5	14.16	53.5	1.46	1.09	18.45	13.76	39.48	29.44
	B11 ⁶⁾	2.13	34.9	16.64	62.9	16.19	61.2	15.68	59.3	1.55	1.16	20.17	15.04	43.22	32.22
	B12 ⁶⁾	2.50	40.9	19.50	73.7	19.07	72.1	18.54	70.1	1.72	1.28	23.55	17.56	50.58	37.71
	B14 ⁶⁾	2.75	45.1	21.40	80.8	20.95	79.2	20.44	77.0	1.83	1.36	25.80	19.23	55.48	41.37
	B15 ⁶⁾	3.05	50.0	23.78	89.8	23.35	88.3	22.88	86.5	1.97	1.47	28.55	21.28	57.35	42.76

1) 085 = 90 bar (1300 psi) max.int. & 085 = 2000 rpm max. 2) B35-B38 = 280 bar (4060 psi) max.int. 3) B42 = 260 bar (3770 psi) max.int. 4) 045 = 240 bar (3500 psi) max. int.
5) 050 = 210 bar (3000 psi) max. int. 6) B11-B12-B14 = 300 bar (4350 psi) & B15 = 280 bar (4060 psi) max. int. And Max. Speed = 3000 rpm

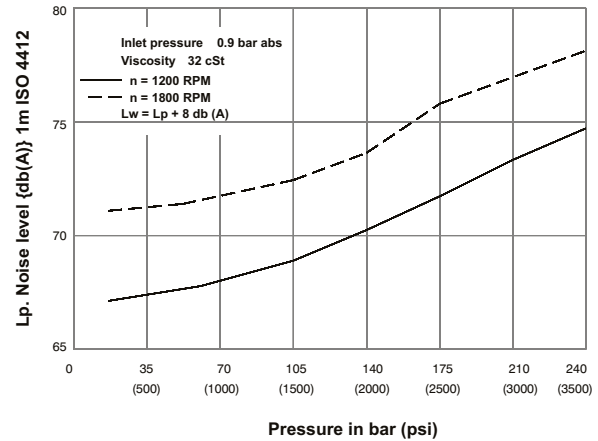
INTERNAL LEAKAGE (TYPICAL)



Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.

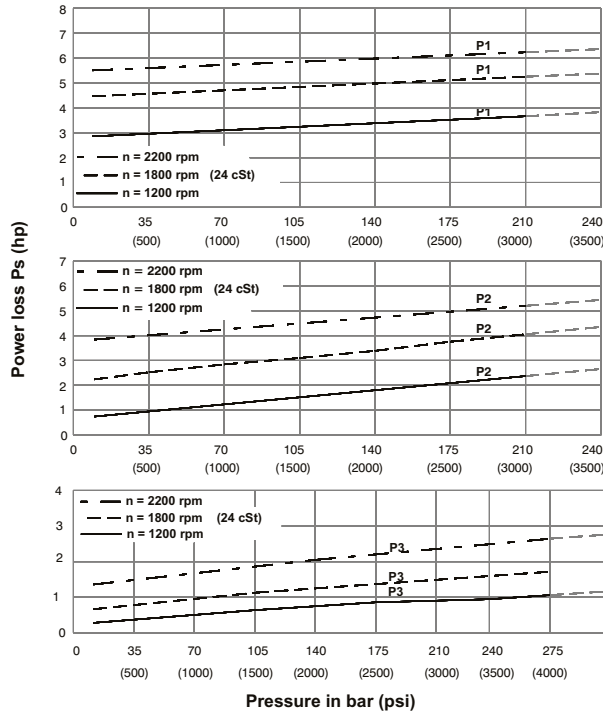
NOISE LEVEL (TYPICAL)

VT7EDB- 062-B35-B04



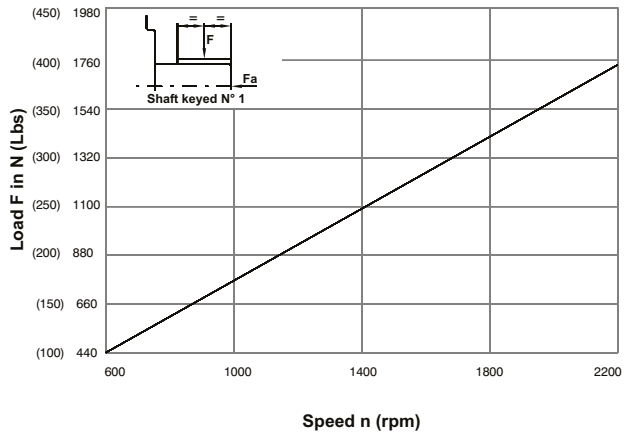
Triple pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)

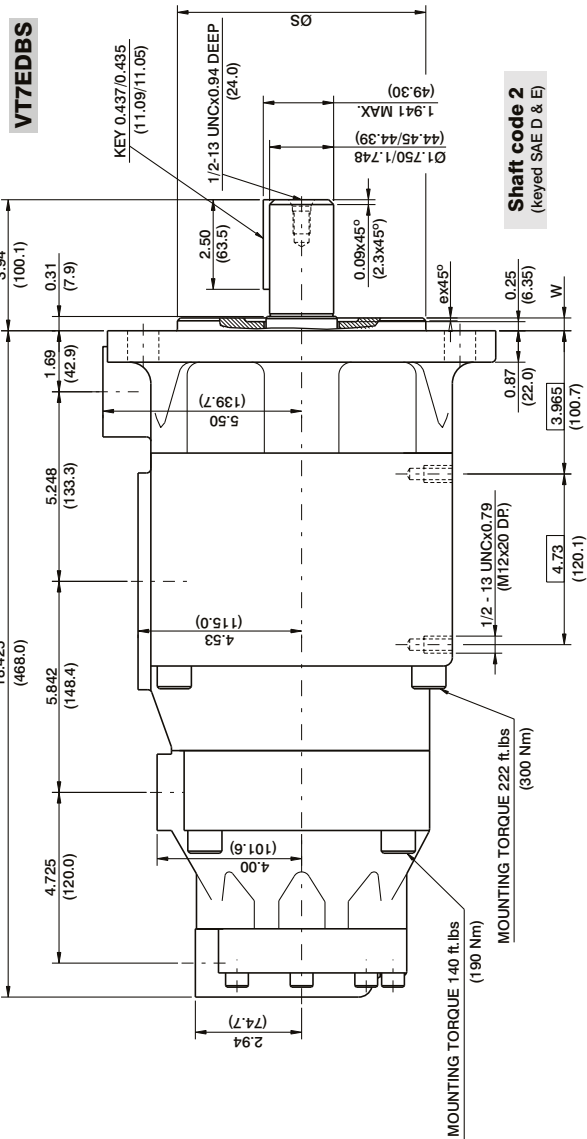
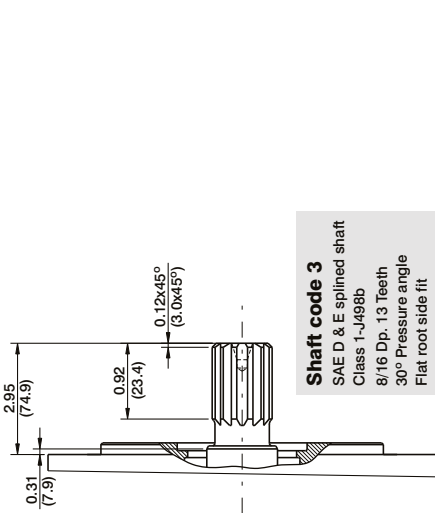
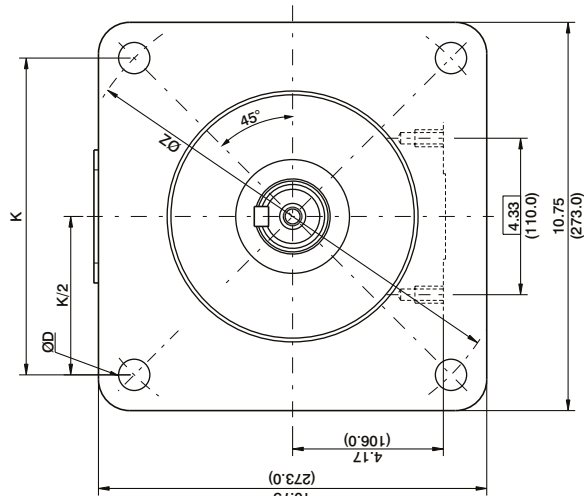


Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



Maximum permissible axial load $F_a = 2000 \text{ N (449 Lbs)}$



Shaft	Shaft torque limits in ³ /rev x psi (ml/rev x bar)
1	Vp x p max. (P1+ P2+P3) 101506 (114715)
2	104818 (118458)
3	112312 (126928)

Series	Internal thread - 1/2" - 20 UNF - 2A				
	ØS		ex45°	W	K
	MAX.	Min.			
V77EDB	9.842 (250.0)	9.840 (249.94)	0.079 (2.0)	0.354 (8.99)	
V77EDBS	6.50 (165.10)	6.498 (165.05)	0.079 (2.0)	0.354 (8.99)	12.401 (315.0)
				8.838 (224.5)	0.866 (21.99)
					0.811 (20.59)

PORT CODE	A	B	ØC
P3	00&M0	2.06 (52.4)	1.03 (26.2)
	01&M1	1.874 (47.6)	0.874 (22.2)
			0.75 (19.0)

VT7QEDC or VT7QEDCS - 062 - B28 - B10 - 1 R 00-A 1 - 00 *

VT7QEDC series-ISO 2 bolts 3019-2

mounting flange 250 B4 HW

VT7QEDCS series- SAE E 4 bolts

Mounting flange J744c

Cam ring for "P2"

Volumetric displacement cm³/rev (in³/rev)

042 = 132.2 (8.07) 057 = 183.2 (11.18)

045 = 142.5 (8.77) 062 = 196.6 (12.00)

050 = 158.5 (9.67) 066 = 213.0 (13.00)

052 = 163.8 (10.00) 072 = 226.1 (13.86)

054 = 170.9 (10.43) 085 = 268.7 (16.40)

Cam ring for "P2"

Volumetric displacement cm³/rev (in³/rev)

B14 = 43.9 (2.68) B31 = 99.1 (6.05)

B17 = 55.0 (3.36) B35 = 113.4 (6.92)

B20 = 66.0 (4.03) B38 = 120.6 (7.36)

B22 = 70.3 (4.29) B42 = 137.5 (8.39)

B24 = 81.1 (4.95) 045 = 145.7 (8.89)

B28 = 89.9 (5.49) 050 = 157.9 (9.64)

Cam ring for "P3"

Volumetric displacement cm³/rev (in³/rev)

* 003/B03/Y03 = 10.8 (0.66) 015/B15/Y15 = 50.5 (3.08)

005/B05/Y05 = 17.2 (1.05) 017/B17/Y17 = 58.3 (3.56)

006/B06/Y06 = 21.3 (1.30) 020/B20/Y20 = 63.8 (3.89)

008/B08/Y08 = 26.4 (1.61) 022/B22/Y22 = 70.3 (4.29)

010/B10/Y10 = 34.1 (2.08) 025/B25/Y25 = 79.3 (4.84)

012/B12/Y12 = 37.1 (2.26) 028/B28/Y28 = 88.8 (5.42)

014/B14/Y14 = 46.0 (2.81) 031/B31/Y31 = 100.0 (6.10)

*0 - Uni - directional 'B' - Bi - directional 'Y' - Bi - directional for cold start

Modifications

Mounting w/connection variables

4 bolts SAE flange (J518)

	P1 = 1 1/2"	P2 = 1 1/4"	S = 4"
	P3	UNC	METRIC
VT7QEDC	1"		M0
VT7QEDC	3/4"		M1
VT7QEDCS	1"	00	M0
VT7QEDCS	3/4"	01	M1

Seal class

1 - S1(for minreal oil)

4 - S4(for fire resistant fluids)

5 - S5(for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page CI-1-4,5)

00 = Standard

Direction of rotation

(view on shaft end)

R - Clockwise

L - Counter - clockwise

Type of Shaft VT7QEDC

1 - Keyed (G45N-ISO 3019-2)

Type of Shaft VT7QEDCS

2 - Keyed (SAE D & E)

3 - Splined (SAE D & E)

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

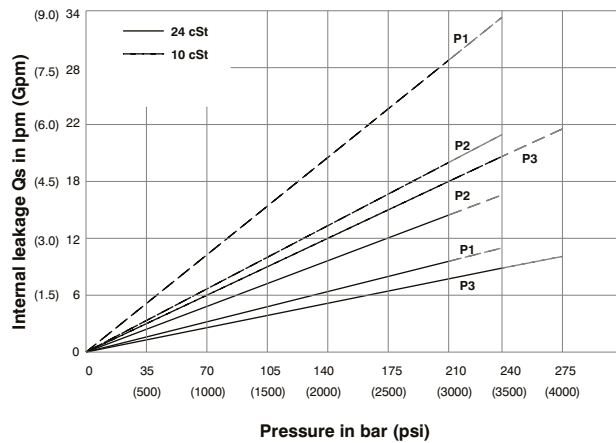
Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1800 rpm						Input power p & n = 1800 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1	042	8.07	132.2	62.92	237.8	60.37	228.2	58.52	221.2	8.09	6.03	78.44	58.49	133.80	99.77
	045	8.70	142.5	67.72	255.9	65.17	246.3	63.32	239.3	8.37	6.24	84.04	62.66	143.60	107.08
	050	9.67	158.5	75.38	284.9	72.83	275.3	70.98	268.3	8.82	6.58	92.97	69.32	159.24	118.75
	052	10.00	163.8	78.37	296.2	75.82	286.6	73.97	279.6	8.99	6.70	96.47	71.93	165.36	123.31
	054	10.43	170.9	81.27	307.2	78.72	297.6	76.87	290.6	9.17	6.83	99.75	74.38	177.46	132.33
	057	11.18	183.2	87.12	329.3	84.57	319.7	82.72	312.7	9.51	7.09	106.57	79.46	189.84	141.56
	062	12.00	196.6	93.54	353.6	90.99	343.9	89.14	336.9	9.88	7.36	114.17	85.13	196.34	146.41
	066	13.00	213.0	101.44	383.4	98.89	373.8	97.04	366.8	10.34	7.71	123.38	92.00	212.46	158.43
	072	13.86	227.1	108.00	408.2	105.45	398.6	103.60	391.6	10.72	7.99	131.04	97.71	225.86	168.42
	085 ¹⁾	16.40	268.7	127.79	483.0	126.13	476.7	-	-	11.88	8.85	101.66	75.80	-	-
P2				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 250 bar (3630 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 250 bar (3630 psi)	
	B14	2.68	43.9	20.92	79.1	19.18	72.5	17.81	67.3	3.46	2.60	27.77	20.7	47.03	35.07
	B17	3.36	55.0	26.16	98.8	24.41	92.3	23.04	87.0	3.77	2.80	33.88	25.3	57.71	43.03
	B20	4.03	66.0	31.39	118.6	29.64	112.0	28.27	106.8	4.07	3.00	39.98	29.8	68.39	50.99
	B22	4.29	70.3	33.43	126.4	31.69	119.8	30.32	104.6	4.19	3.10	42.37	31.6	72.57	54.12
	B24	4.95	81.1	38.57	145.8	36.82	139.2	35.45	134.0	4.49	3.40	48.36	36.1	83.06	61.93
	B28	5.49	89.9	42.80	161.8	41.06	155.2	39.69	150.0	4.74	3.50	53.30	39.7	91.70	68.38
	B31	6.05	99.1	47.18	178.3	45.43	171.7	44.06	166.5	4.99	3.70	58.41	43.6	100.63	75.03
	B35 ²⁾	6.92	113.4	53.93	203.9	52.18	197.2	50.81	192.0	5.39	4.00	66.29	49.4	114.42	85.32
	B38 ²⁾	7.36	120.6	57.35	216.8	55.61	210.2	54.24	204.9	5.59	4.20	70.28	52.4	121.42	90.54
	B42 ³⁾	8.39	137.5	65.39	247.2	63.65	240.6	62.28	235.4	6.05	4.50	79.66	59.4	137.83	102.77
	045 ⁴⁾	8.89	145.7	69.29	262.0	67.11	253.6	65.31	246.8	6.74	5.00	83.75	62.4	145.79	108.71
	050 ⁵⁾	9.64	157.9	75.14	284.0	72.96	275.8	71.78	271.3	7.08	5.30	90.58	67.5	154.50	116.30
P3				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 300 bar (4350 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 300 bar (4350 psi)	
	003	0.66	10.8	5.14	19.6	3.85	14.6	---	---	2.11	1.57	8.45	6.30	---	---
	005	1.05	17.2	8.18	30.9	6.89	26.0	4.34	16.44	2.29	1.70	12.00	8.94	23.97	17.88
	006	1.30	21.3	10.13	38.3	8.84	33.4	5.71	21.6	2.40	1.78	14.28	10.64	28.96	21.60
	008	1.61	26.4	12.55	47.4	11.26	42.6	8.12	30.72	2.54	1.89	17.11	12.75	35.08	26.16
	010	2.08	34.1	16.22	61.3	14.93	56.4	11.81	44.64	2.76	2.06	21.38	15.94	44.25	33.00
	012	2.26	37.1	17.64	66.7	16.35	61.8	13.24	50.04	2.84	2.11	23.05	17.18	47.47	35.40
	014	2.81	46.0	21.88	82.7	20.59	77.8	17.46	66.00	3.09	2.30	27.99	20.87	58.73	43.80
	015	3.08	50.5	23.99	90.7	22.83	86.3	19.39	73.32	3.21	2.40	30.30	22.60	63.56	47.40
	017	3.56	58.3	27.73	104.8	26.44	99.9	23.33	88.2	3.43	2.55	34.81	25.95	73.54	54.84
	020	3.89	63.8	30.34	114.7	29.05	109.8	25.93	98.04	3.58	2.66	37.86	28.23	80.14	59.76
	022 ⁷⁾	4.29	70.3	33.43	126.4	32.14	121.5	29.05	109.8	3.76	2.80	41.47	30.92	80.94	60.36
	025 ^{6,8)}	4.84	79.3	37.71	142.5	36.42	137.6	---	---	4.01	2.99	46.46	34.64	---	---
	028 ^{6,9)}	5.42	88.8	42.23	159.6	40.94	154.7	---	---	4.27	3.18	51.74	38.58	---	---
	031 ^{6,9)}	6.10	100.0	47.56	179.7	46.27	174.9	---	---	4.58	3.41	57.95	43.21	---	---

1) 085 = 90 bar (1300 psi) max.int. & 085 = 2000 rpm max. 2) B35-B38 = 280 bar (4060 psi) max.int. 3) B42 = 260 bar (3770 psi) max.int. 4) 045 = 240 bar (3500 psi) max. int.

5) 050 = 210 bar (3000 psi) max. int. 6) 025-028-031 = 2500 R.P.M. max. 7) 022 = 275 bar max. int. 8) 025 = 240 bar max. int. 9) 028-031 = 210 bar (3000 psi) max. int.

-- Not to use because internal leakage greater than 50% of theoretical flow

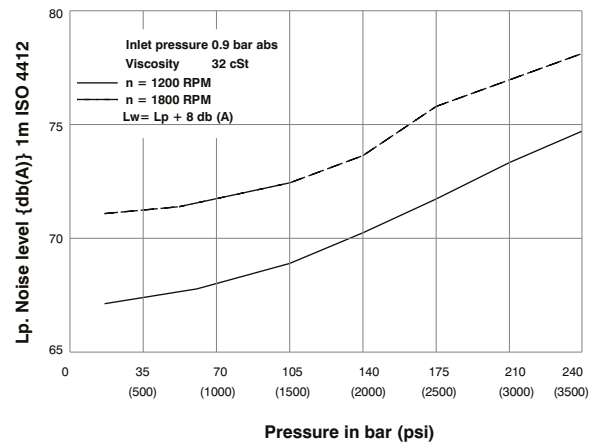
INTERNAL LEAKAGE (TYPICAL)



Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.

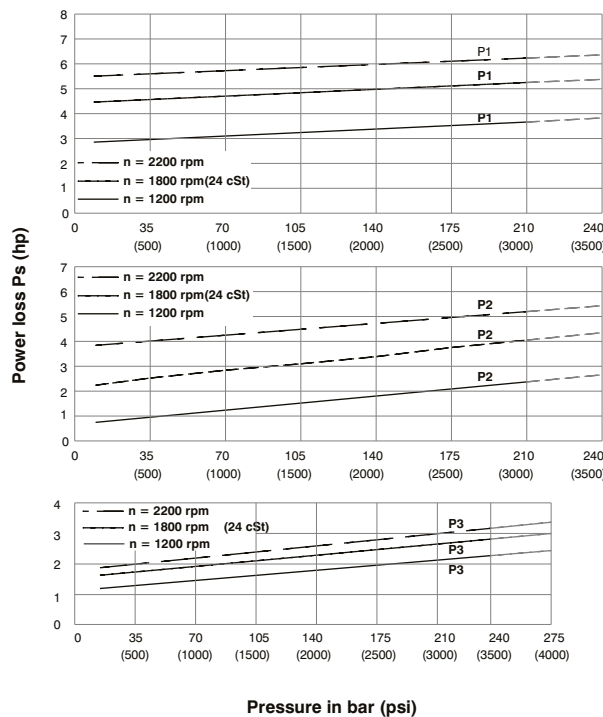
NOISE LEVEL (TYPICAL)

VT7QEDC- 062-B35-022



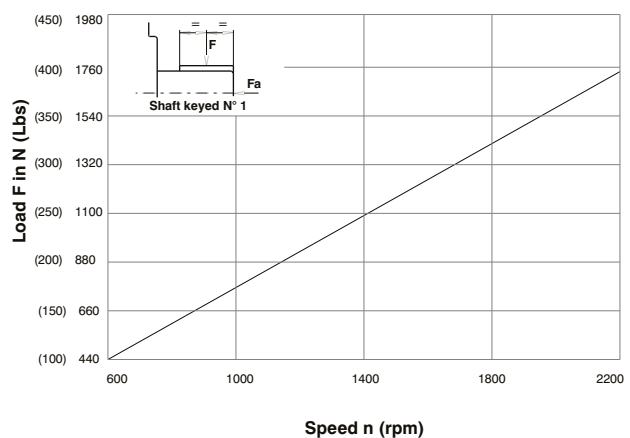
Triple pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)



Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



Maximum permissible axial load $F_a = 2000 \text{ N (449 Lbs)}$

PORT	CODE	A	B	ØC
P3	00&M0	2.06 (52.4)	1.03 (26.2)	1.00 (25.4)
	01&M1	1.874 (47.6)	0.874 (22.2)	0.75 (19.0)

VT67 -TRIPLE

VANE PUMPS

VT67DBB - 038 - B10 - B10 - 1 R 00 - A 1 - M1 - *

Series-SAE C 2 bolts
Mounting flange J744c

Cam ring for "P1"

Volumetric displacement cm³/rev (in³/rev)

*014/B14 = 47.6 (2.90)	035/B35 = 111.0 (6.77)
017/B17 = 58.2 (3.55)	038/B38 = 120.3 (7.34)
020/B20 = 66.0 (4.03)	042/B42 = 136.0 (8.30)
024/B24 = 79.5 (4.85)	045/B45 = 145.7 (8.89)
028/B28 = 89.7 (5.47)	050/B50 = 158.0 (9.64)
031/B31 = 98.3 (6.00)	061/B61 = 190.5 (11.62)

*'0' - Uni - directional 'B' - Bi - directional

Cam ring for "P2" & P3

Volumetric displacement cm³/rev (in³/rev)

B02 = 5.7 (0.35)	B09 = 28.0 (1.71)
B03 = 9.8 (0.60)	B10 = 31.8 (1.94)
B04 = 12.8 (0.78)	B11 = 34.9 (2.13)
B05 = 15.9 (0.97)	B12 = 40.9 (2.50)
B06 = 19.8 (1.21)	B14 = 45.1 (2.75)
B07 = 22.5 (1.37)	B15 = 50.0 (3.05)
B08 = 24.9 (1.52)	

Modifications

Mounting w/connection variables

P1=1 1/4"	P2=1"	P3=3/4"	S=4"
UNC	METRIC		
01	M1		

Seal class

- 1 - S1 (for mineral oil)
- 4 - S4 (for fire resistant fluids)
- 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page CI-1-4,5)

00 = Standard

Direction of rotation
(view on shaft end)

- R - Clockwise
- L - Counter - clockwise

Type of Shaft

- 1 - Keyed (no SAE)
- 2 - Keyed (SAE CC)
- 3 - Splined (SAE C)
- 4 - Splined (SAE CC)

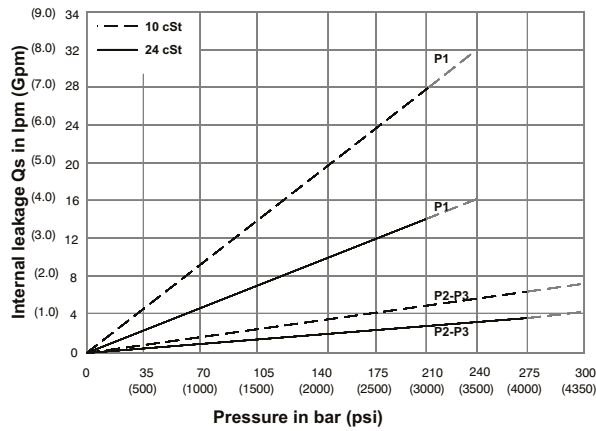
OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1800 rpm						Input power p & n = 1800 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1	014	2.90	47.6	22.64	85.0	20.46	77.4	18.8	71.1	4.02	2.99	29.31	21.85	49.34	36.79
	017	3.55	58.2	23.1	87.3	20.6	78.0	18.99	71.8	3.35	2.5	29.77	22.20	49.62	37.0
	020	4.03	66.0	31.39	118.6	29.29	101.4	27.57	104.2	4.53	3.38	39.52	29.47	67.21	50.11
	024	4.85	79.5	37.81	142.8	35.63	134.6	33.99	128.5	4.91	3.66	47.02	35.06	80.32	59.89
	028	5.47	89.7	42.66	161.3	40.48	153.0	38.84	146.8	5.19	3.87	52.68	39.28	90.23	67.28
	031	6.00	98.3	46.75	176.7	44.57	168.5	42.93	162.3	5.43	4.09	57.45	42.84	98.58	73.51
	035	6.77	111.0	52.79	199.6	50.61	191.3	48.97	184.1	5.78	4.31	64.50	48.09	110.91	82.70
	038	7.34	120.3	57.21	216.3	55.03	208.1	53.39	201.8	6.04	4.50	69.66	51.94	111.94	83.47
	042 ¹⁾	8.30	136.0	64.68	244.5	62.50	236.3	60.86	230.1	6.47	4.83	78.37	58.44	135.19	100.81
	045 ¹⁾	8.89	145.7	69.29	261.9	67.11	253.7	65.47	247.5	6.74	5.02	83.75	62.45	144.61	107.83
	050 ^{1,2)}	9.64	158.0	75.14	284.1	72.96	275.8	71.78	271.3	7.08	5.27	90.58	67.54	134.54	100.32
	061 ^{1,3)}	11.62	190.5	75.6	285.8	73.54	278.0	--	--	7.37	5.50	97.49	72.69	--	--
P2 & P3				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 300 bar (4350 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 300 bar (4350 psi)	
	B02	0.35	5.7	2.76	10.4	2.33	8.8	1.80	6.8	0.74	0.55	4.02	2.99	8.10	6.40
	B03	0.60	9.8	4.66	17.6	4.23	15.9	3.70	14.0	0.85	0.63	6.24	4.65	12.93	10.25
	B04	0.78	12.8	6.09	23.0	5.66	21.4	5.13	19.4	0.94	0.70	7.90	5.89	16.55	13.13
	B05	0.97	15.9	7.56	28.6	7.13	26.9	6.60	25.0	1.02	0.76	9.62	7.17	20.29	16.12
	B06	1.21	19.8	9.42	35.6	8.99	33.9	8.46	32.0	1.13	0.84	11.79	8.79	25.00	19.88
	B07	1.37	22.5	10.70	40.4	10.27	38.8	9.74	36.8	1.20	0.89	13.29	9.91	28.26	22.47
	B08	1.52	24.9	11.84	44.7	11.41	43.1	10.88	41.1	1.27	0.94	14.62	10.90	31.15	24.78
	B09	1.71	28.0	13.31	50.3	12.87	48.6	12.35	47.0	1.36	1.01	16.35	12.19	34.92	27.77
	B10	1.94	31.8	15.12	57.2	14.69	55.5	14.16	53.5	1.46	1.11	18.45	13.75	39.48	31.42
	B11 ⁴⁾	2.13	34.9	16.64	62.9	16.19	61.2	15.68	59.3	1.55	1.15	20.17	15.04	43.22	32.22
	B12 ⁴⁾	2.50	40.9	19.50	73.7	19.07	72.1	18.54	70.1	1.72	1.28	23.55	17.56	50.58	37.71
	B14 ⁴⁾	2.75	45.1	21.40	80.8	20.95	79.2	20.44	77.0	1.83	1.36	25.80	19.23	55.48	41.37
	B15 ⁴⁾	3.05	50.0	23.78	89.8	23.35	88.3	22.88	86.5	1.97	1.47	28.55	21.28	57.35	42.76

1) 042-045-050-061=2200 RPM max. 2) 050=210 bar (3000 psi) max. int. 3) 061 = 120 bar (1740 psi) max. int. 061 = 80 bar (1160 psi) cont.

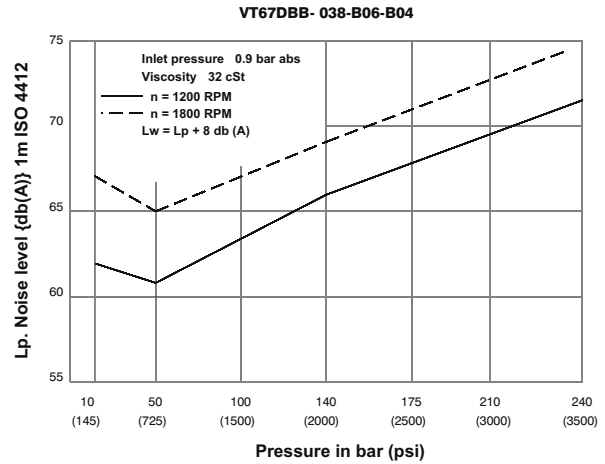
4) B11-B12-B14 = 300 bar (4350 psi) & B15 = 280 bar (4060 psi) max. int. And Max. Speed = 3000 rpm

INTERNAL LEAKAGE (TYPICAL)



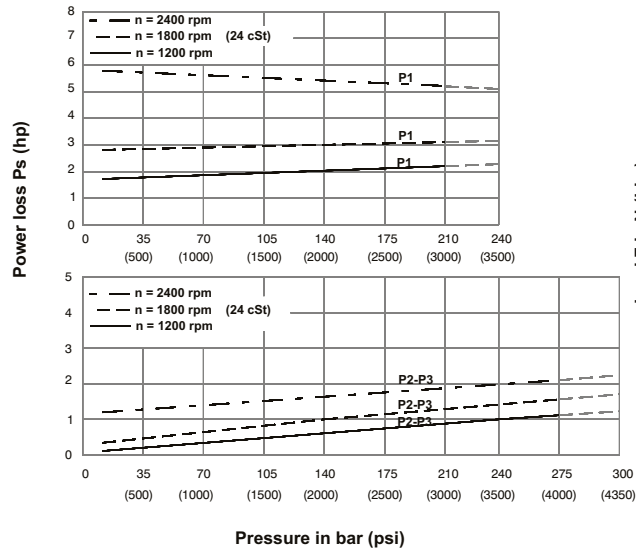
Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow.
Total leakage is the sum of each section loss at its operating conditions.

NOISE LEVEL (TYPICAL)



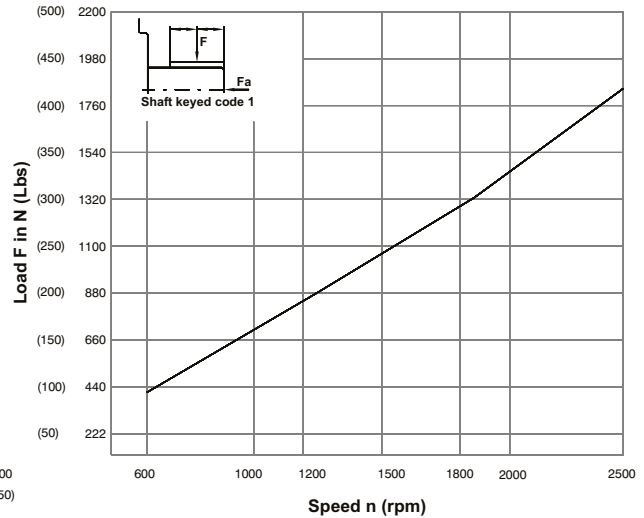
Triple pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)



Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



Maximum axial load permissible $F_a=800\text{N}$ (180 Lbs)

VT67DCB - 038 - 028 - B10 - 1 R 00 - A 1 - M1 - *

Series- SAE C 2 bolts
Mounting flange J744c

Cam ring for "P1"

Volumetric displacement cm³/rev (in³/rev)

*014/B14 = 47.6 (2.90)	035/B35 = 111.0 (6.77)
017/B17 = 58.2 (3.55)	038/B38 = 120.3 (7.34)
020/B20 = 66.0 (4.03)	042/B42 = 136.0 (8.30)
024/B24 = 79.5 (4.85)	045/B45 = 145.7 (8.89)
028/B28 = 89.7 (5.47)	050/B50 = 158.0 (9.64)
031/B31 = 98.3 (6.00)	061/B61 = 190.5 (11.62)

*'0' - Uni - directional 'B' - Bi - directional

Cam ring for "P2"

Volumetric displacement cm³/rev (in³/rev)

*003/B03 = 10.8 (0.66)	015/B15 = 50.5 (3.08)
005/B05 = 17.2 (1.05)	017/B17 = 58.3 (3.56)
006/B06 = 21.3 (1.30)	020/B20 = 63.8 (3.89)
008/B08 = 26.4 (1.61)	022/B22 = 70.3 (4.29)
010/B10 = 34.1 (2.08)	025/B25 = 79.3 (4.84)
012/B12 = 37.1 (2.26)	028/B28 = 88.8 (5.42)
014/B14 = 46.0 (2.81)	031/B31 = 100.0 (6.10)

*'0' - Uni - directional 'B' - Bi - directional

Cam ring for "P3"

Volumetric displacement cm³/rev (in³/rev)

B02 = 5.7 (0.35)	B08 = 24.9 (1.52)	B12 = 40.9 (2.50)
B03 = 9.8 (0.60)	B07 = 22.5 (1.37)	B14 = 45.1 (2.75)
B04 = 12.8 (0.78)	B09 = 28.0 (1.71)	B15 = 50.0 (3.05)
B05 = 15.9 (0.97)	B10 = 31.8 (1.94)	
B06 = 19.8 (1.21)	B11 = 34.9 (2.13)	

Modifications**Mounting w/connection variables**

P1=1¼"	P2=1"	P3=¾"	S=4"
UNC	METRIC		
01	M1		

Seal class

- 1 - S1 (for mineral oil)
- 4 - S4 (for fire resistant fluids)
- 5 - S5 (for mineral oil and fire resistant fluids)

Design letter**Porting combination (see page CI-1-4,5)**

00 = Standard

Direction of rotation (view on shaft end)

- R - Clockwise
- L - Counter - clockwise

Type of Shaft

- 1 - Keyed (no SAE)
- 2 - Keyed (SAE CC)
- 3 - Splined (SAE C)
- 4 - Splined (SAE CC)

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

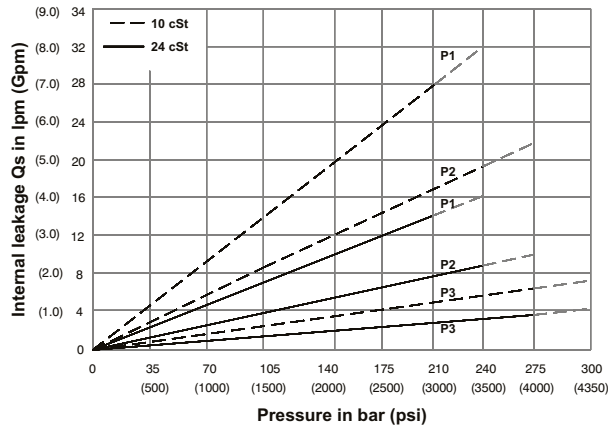
Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1800 rpm						Input power p & n = 1800 rpm					
		in ³ /rev	cm ³ /rev	P=0bar(0 psi)		P=140bar(2000psi)		P=240bar(3500 psi)		P=7bar(100psi)		P=140bar(2000psi)		P=240bar(3500 psi)	
				gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1	014	2.90	47.6	22.64	85.0	20.46	77.4	18.8	71.1	4.02	2.99	29.31	21.85	49.34	36.79
	017	3.55	58.2	23.1	87.3	20.6	78.0	18.99	71.8	3.35	2.50	29.77	22.2	49.62	37.0
	020	4.03	66.0	31.39	118.6	29.29	101.4	27.57	104.2	4.53	3.38	39.52	29.47	67.21	50.11
	024	4.85	79.5	37.81	142.8	35.63	134.6	33.99	128.5	4.91	3.66	47.02	35.06	80.32	59.89
	028	5.47	89.7	42.66	161.3	40.48	153.0	38.84	146.8	5.19	3.87	52.68	39.28	90.23	67.28
	031	6.00	98.3	46.75	176.7	44.57	168.5	42.93	162.3	5.43	4.09	57.45	42.84	98.58	73.51
	035	6.77	111.0	52.79	199.6	50.61	191.3	48.97	184.1	5.78	4.31	64.50	48.09	110.91	82.70
	038	7.34	120.3	57.21	216.3	55.03	208.1	53.39	201.8	6.04	4.50	69.66	51.94	111.94	83.47
	042 ¹⁾	8.30	136.0	64.68	244.5	62.50	236.3	60.86	230.1	6.47	4.83	78.37	58.44	135.19	100.81
	045 ¹⁾	8.89	145.7	69.29	261.9	67.11	253.7	65.47	247.5	6.74	5.02	83.75	62.45	144.61	107.83
	050 ^{1,2)}	9.64	158.0	75.14	284.1	72.96	275.8	71.78	271.3	7.08	5.27	90.58	67.54	154.54	100.32
P2	061 ^{1,3)}	11.62	190.5	75.6	285.8	73.54	278.0	--	--	7.37	5.50	97.49	72.69	--	--
				P=0bar(0 psi)	P=140bar(2000psi)	P=275bar(4000 psi)	P=7bar(100psi)	P=140bar(2000psi)	P=275bar(4000 psi)						
	003	0.66	10.8	5.14	19.6	3.85	14.6	--	--	2.11	1.57	8.45	6.30	--	--
	005	1.05	17.2	8.18	30.9	6.89	26.0	5.68	21.5	2.29	1.70	12.00	8.94	19.81	14.77
	006	1.30	21.3	10.13	38.3	8.84	33.4	7.63	28.8	2.40	1.78	14.28	10.64	23.79	17.74
	008	1.61	26.4	12.55	47.4	11.26	42.6	10.05	37.9	2.54	1.89	17.11	12.75	28.75	21.43
	010	2.08	34.1	16.22	61.3	14.93	56.4	13.71	51.8	2.76	2.06	21.38	15.94	36.22	27.00
	012	2.26	37.1	17.64	66.7	16.35	61.8	15.14	57.2	2.84	2.11	23.05	17.18	39.14	29.18
	014	2.81	46.0	21.88	82.7	20.59	77.8	19.37	73.2	3.09	2.30	27.99	20.87	47.78	35.62
	015	3.08	50.5	23.99	90.7	22.83	86.3	21.56	81.5	3.21	2.40	30.30	22.60	51.36	38.30
	017	3.56	58.3	27.73	104.8	26.44	99.9	25.22	95.3	3.43	2.55	34.81	25.95	59.73	44.54
P3	020	3.89	63.8	30.34	114.7	29.05	109.8	27.84	105.2	3.58	2.66	37.86	28.23	65.07	48.52
	022 ⁵⁾	4.29	70.3	33.43	126.4	32.14	121.5	30.93	116.9	3.76	2.80	41.47	30.92	71.38	53.22
	025 ^{4,6)}	4.84	79.3	37.71	142.5	36.42	137.6	35.21	133.1	4.01	2.99	46.46	34.64	80.12	59.74
	028 ^{4,7)}	5.42	88.8	42.23	159.6	40.94	154.7	40.32	152.4	4.27	3.18	51.74	38.58	76.73	57.22
	031 ^{4,7)}	6.10	100.0	47.56	179.7	46.27	174.9	45.65	172.5	4.58	3.41	57.95	43.21	86.06	64.17
				P=0bar(0 psi)	P=140bar(2000psi)	P=300bar(4350 psi)	P=7bar(100psi)	P=140bar(2000psi)	P=300bar(4350 psi)						
	B02	0.35	5.7	2.76	10.4	2.33	8.8	1.80	6.8	0.74	0.55	4.02	2.99	8.10	6.40
	B03	0.60	9.8	4.66	17.6	4.23	15.9	3.70	14.0	0.85	0.63	6.24	4.65	12.93	10.25
	B04	0.78	12.8	6.09	23.0	5.66	21.4	5.13	19.4	0.94	0.70	7.90	5.89	16.55	13.13
	B05	0.97	15.9	7.56	28.6	7.13	26.9	6.60	25.0	1.02	0.76	9.62	7.17	20.29	16.12
	B06	1.21	19.8	9.42	35.6	8.99	33.9	8.46	32.0	1.13	0.84	11.79	8.79	25.00	19.88
	B07	1.37	22.5	10.70	40.4	10.27	38.8	9.74	36.8	1.20	0.89	13.29	9.91	28.26	22.47
	B08	1.52	24.9	11.84	44.7	11.41	43.1	10.88	41.1	1.27	0.94	14.62	10.90	31.15	24.78
	B09	1.71	28.0	13.31	50.3	12.87	48.6	12.35	47.0	1.36	1.01	16.35	12.19	34.92	27.77
	B10	1.94	31.8	15.12	57.2	14.69	55.5	14.16	53.5	1.46	1.11	18.45	13.75	39.48	31.42
	B11 ⁸⁾	2.13	34.9	16.64	62.9	16.19	61.2	15.68	59.3	1.55	1.15	20.17	15.04	43.22	32.22
	B12 ⁹⁾	2.50	40.9	19.50	73.7	19.07	72.1	18.54	70.1	1.72	1.28	23.55	17.56	50.58	37.71
	B14 ⁸⁾	2.75	45.1	21.40	80.8	20.95	79.2	20.44	77.0	1.83	1.36	25.80	19.23	55.48	41.37
	B15 ⁹⁾	3.05	50.0	23.78	89.8	23.35	88.3	22.88	86.5	1.97	1.47	28.55	21.28	57.35	42.76

1) 042-045-050-061=2200 RPM max. 2) 050=210 bar (3000 psi) max. int. 3) 061 = 120 bar (1740 psi) max. int. 061 = 80 bar (1160 psi) cont. 4) 025-028-031 = 2500 R.P.M. max.

5) 022= 275 bar max. int. 6) 025 = 240 bar max. int. 7) 028-031 = 210 bar (3000 psi) max. int.

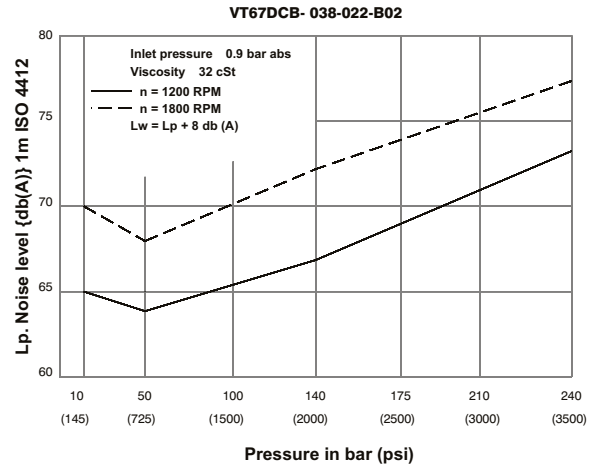
8) B11-B12-B14 = 300 bar (4350 psi) & B15 = 280 bar (4060 psi) max. int. And Max. Speed = 3000 rpm

INTERNAL LEAKAGE (TYPICAL)



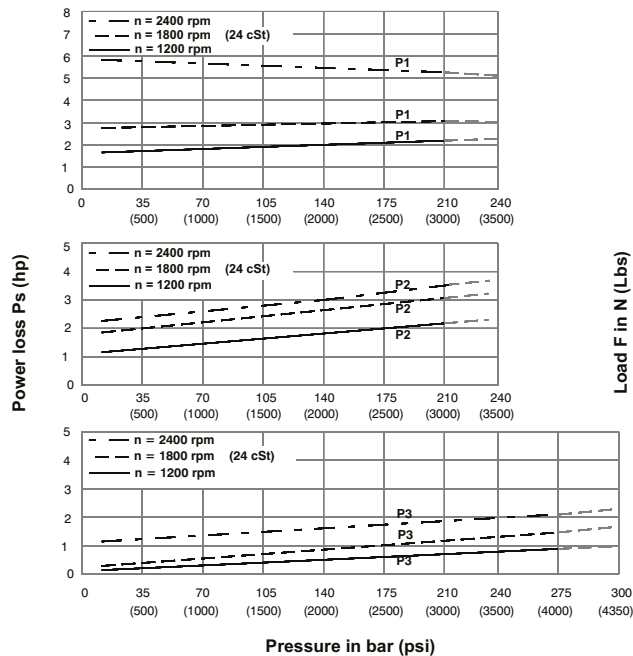
Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow.
Total leakage is the sum of each section loss at its operating conditions.

NOISE LEVEL (TYPICAL)



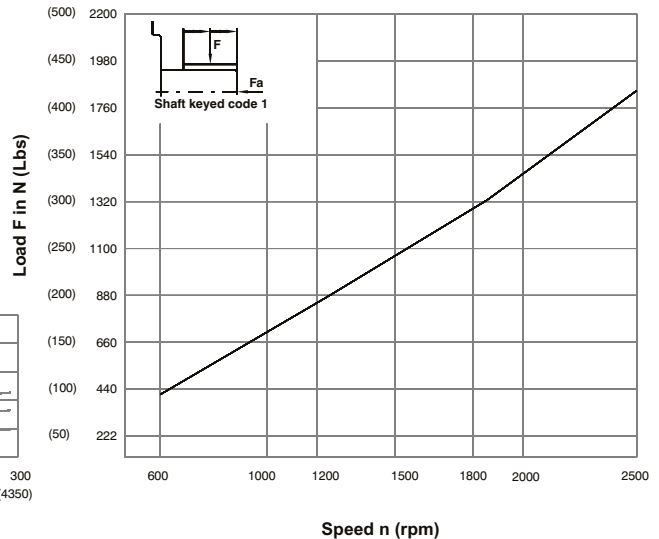
Triple pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)

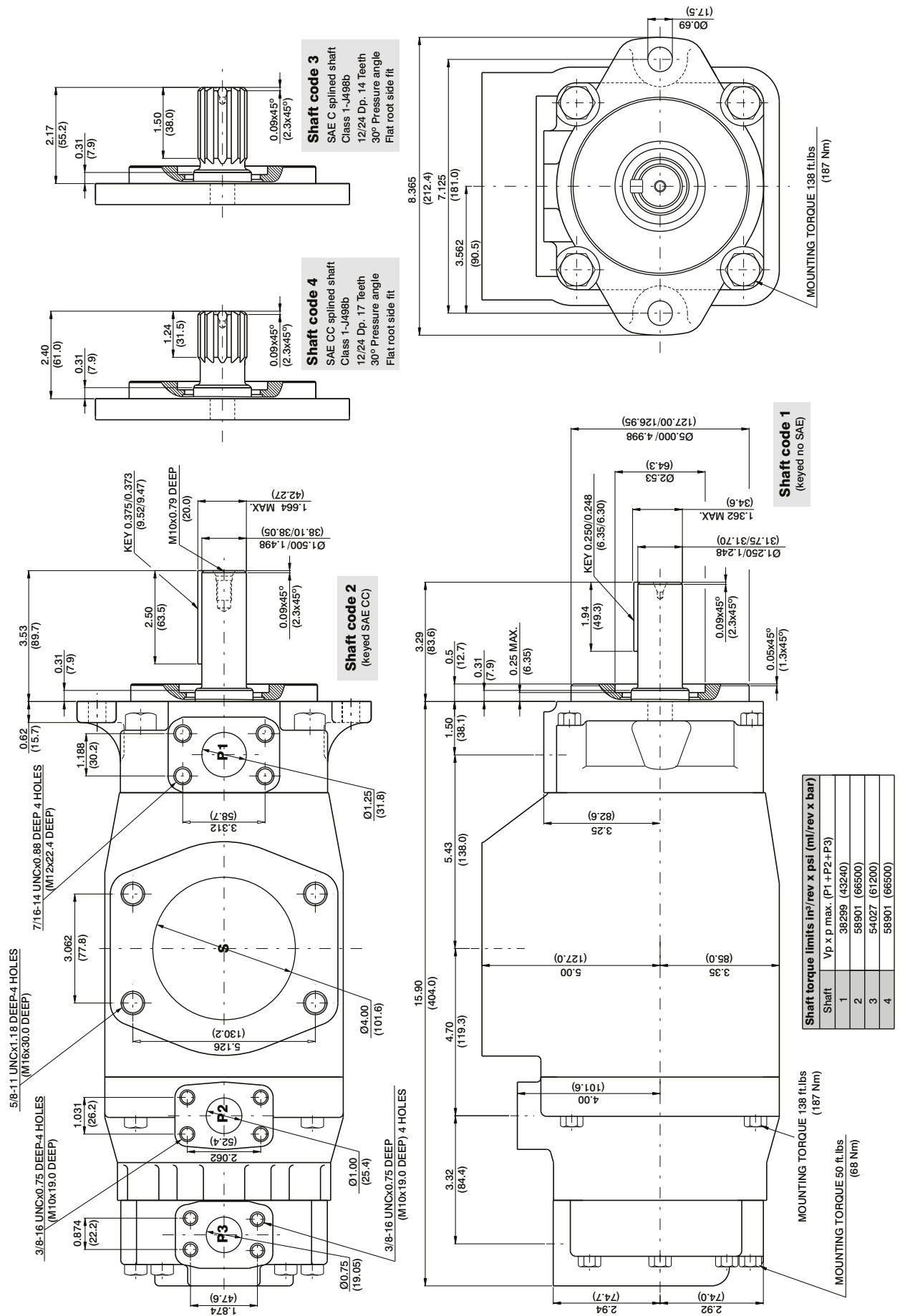


Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



Maximum axial load permissible $F_a=800\text{N}$ (180 Lbs)



VT67DCC - B35 - 025 - 008 - 1 R 00 - A 1 - M1 - *

Series - SAE C 2 bolts
Mounting flange J744c

Cam ring for "P1"
Volumetric displacement cm³/rev (in³/rev)
 B14 = 43.9 (2.68) B31 = 99.1 (6.05)
 B17 = 55.0 (3.36) B35 = 113.4 (6.92)
 B20 = 66.0 (4.03) B38 = 120.6 (7.36)
 B22 = 70.3 (4.29) B42 = 137.5 (8.39)
 B24 = 81.1 (4.95) 045 = 145.7 (8.89)
 B28 = 89.9 (5.49) 050 = 158.0 (9.64)

Cam ring for "P2" & "P3"
Volumetric displacement cm³/rev (in³/rev)
 003 = 10.8 (0.66) 015 = 50.5 (3.08)
 005 = 17.2 (1.05) 017 = 58.3 (3.56)
 006 = 21.3 (1.30) 020 = 63.7 (3.89)
 008 = 26.4 (1.61) 022 = 70.3 (4.29)
 010 = 34.1 (2.08) 025 = 79.3 (4.84)
 012 = 37.1 (2.26) 028 = 88.8 (5.42)
 014 = 46.0 (2.81) 031 = 100 (6.10)

Type of Shaft
 1 - Keyed (no SAE)
 2 - Keyed (SAE CC)
 3 - Splined (SAE C)
 4 - Splined (SAE CC)

Modifications
Mounting w/connection variables
 4 bolts SAE flange J518

P1=1 1/4" - P2=1" - S=4"		
	UNC	METRIC
P3 = 1"	00	M0
P3 = 3/4"	01	M1

Seal class
 1 = S1 (for mineral oil)
 4 = S4 (for fire resistant fluids)
 5 = S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page CI-1-4,5)
 00 = Standard

Direction of rotation (view on shaft end)
 R - Clockwise
 L - Counter - clockwise

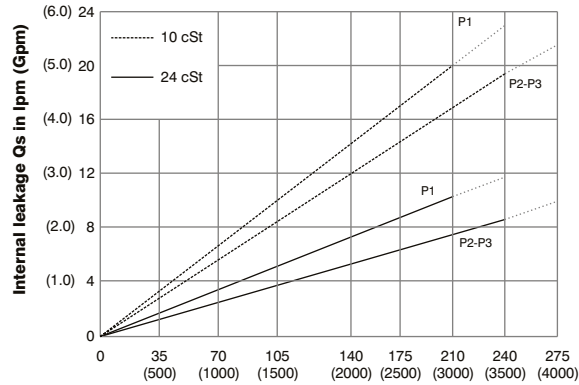
OPERATING CHARACTERISTICS - TYPICAL (24 cSt) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1800 rpm						Input power p & n = 1800 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 250 bar (3630 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 250 bar (3630 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1	B14	2.68	43.93	20.92	79.50	19.18	72.9	17.81	67.7	3.46	2.6	27.77	20.7	47.03	35.1
	B17	3.36	55.07	26.16	99.4	24.41	92.8	23.04	87.6	3.77	2.8	33.88	25.3	57.71	43.1
	B20	4.03	66.05	31.39	119.3	29.64	112.6	28.27	107.4	4.07	3.0	39.98	29.8	68.39	51.0
	B22	4.29	70.31	33.43	127	31.69	120.4	30.32	115.2	4.19	3.1	42.37	31.6	72.57	54.1
	B24	4.95	81.13	38.57	146.6	36.82	139.9	35.45	134.7	4.49	3.3	48.36	36.1	83.06	62
	B28	5.49	89.98	42.8	162.6	41.06	156	39.69	150.8	4.74	3.5	53.30	39.8	91.7	68.4
	B31	6.05	99.16	47.18	179.3	45.43	172.6	42.06	167.4	4.99	3.7	58.41	43.6	100.63	75.1
	B35	6.92	113.42	53.93	204.9	52.18	198.3	50.81	193.1	5.39	4.0	66.29	49.5	114.42	85.4
	B38	7.36	120.63	57.35	217.9	55.61	211.3	54.24	206.1	5.59	4.2	70.28	52.4	121.42	90.6
	B42 ¹⁾	8.39	137.51	65.39	248.5	63.65	241.9	62.28	236.7	6.05	4.5	79.66	59.4	137.83	102.8
P2 & P3	045 ¹⁾	8.89	145.71	69.29	263.3	67.11	255.0	65.31	248.2	6.74	5.0	83.75	62.5	145.79	108.8
	050 ^{1,2)}	9.64	158.00	75.14	285.5	72.96	277.2	71.78	272.8	7.08	5.3	90.58	67.6	154.5	110.3
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 275 bar (4000 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 275 bar (4000 psi)	
	003	0.66	10.82	5.14	19.53	3.85	14.63	--	--	2.11	1.6	8.45	6.3	--	--
	005	1.05	17.21	8.18	31.08	6.89	26.18	5.68	21.6	2.29	1.7	12.0	9.0	19.81	14.8
	006	1.30	21.31	10.13	38.49	8.84	33.59	7.63	29.0	2.4	1.8	14.28	10.7	23.79	17.7
	008	1.61	26.39	12.55	47.69	11.26	42.79	10.05	38.2	2.54	1.9	17.11	12.8	28.75	21.4
	010	2.08	34.09	16.22	61.64	14.93	56.73	13.71	52.1	2.76	2.1	21.38	15.9	36.22	27.0
	012	2.26	37.04	17.64	67.03	16.35	62.13	15.14	57.5	2.84	2.1	23.05	17.2	39.14	29.2
	014	2.81	46.06	21.88	83.14	20.59	78.24	19.37	73.6	3.09	2.3	27.99	20.9	47.78	35.6
P2 & P3	015	3.08	50.5	23.99	90.7	22.83	86.3	21.56	81.5	3.21	2.40	30.30	22.60	51.36	38.30
	017	3.56	58.35	27.73	105.37	26.44	100.47	25.22	95.8	3.43	2.6	34.81	26.0	59.73	44.6
	020	3.89	63.76	30.34	115.29	29.05	110.39	27.84	105.8	3.58	2.7	37.86	28.2	65.07	48.5
	022 ⁴⁾	4.29	70.31	33.43	127.03	32.14	122.13	30.93	117.5	3.76	2.8	41.47	30.9	71.38	53.2
	025 ^{3,5)}	4.84	79.33	37.71	143.3	36.42	138.40	35.21	133.8	4.01	3.0	46.46	34.7	80.12	59.8
	028 ^{3,6)}	5.42	88.83	42.23	160.47	40.94	155.60	40.32	153.2	4.27	3.2	51.74	38.6	76.73	57.2
	031 ^{3,6)}	6.10	99.98	47.56	180.73	46.27	175.83	45.65	173.5	4.58	3.4	57.95	43.2	86.06	64.2

-- We do not recommend to use this 003 at 275 bar (4000 psi) and 1500 rpm since internal leakage is over 50% of theoretical flow.

1) 042-045-050 = 2200 RPM max. 2) 050=210 bar (3000 psi) max. int.
 3) 025-028-031 = 2500 R.P.M. max. 4) 022= 275 bar max. int. 5) 025 = 240 bar max. int. 6) 028-031 = 210 bar (3000 psi) max. int.

INTERNAL LEAKAGE (TYPICAL)

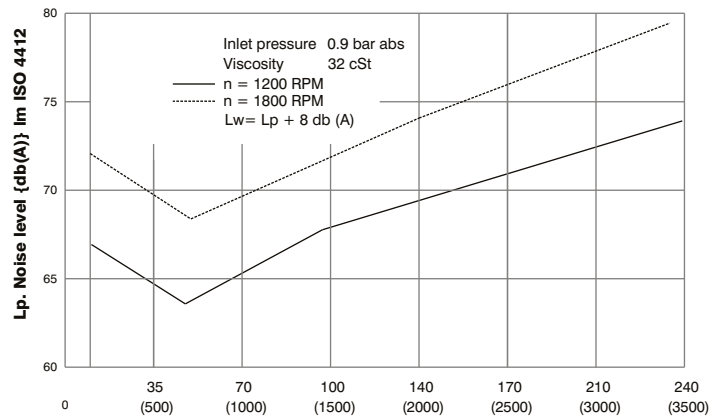


Pressure in bar (psi)

Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50 of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.

NOISE LEVEL (TYPICAL)

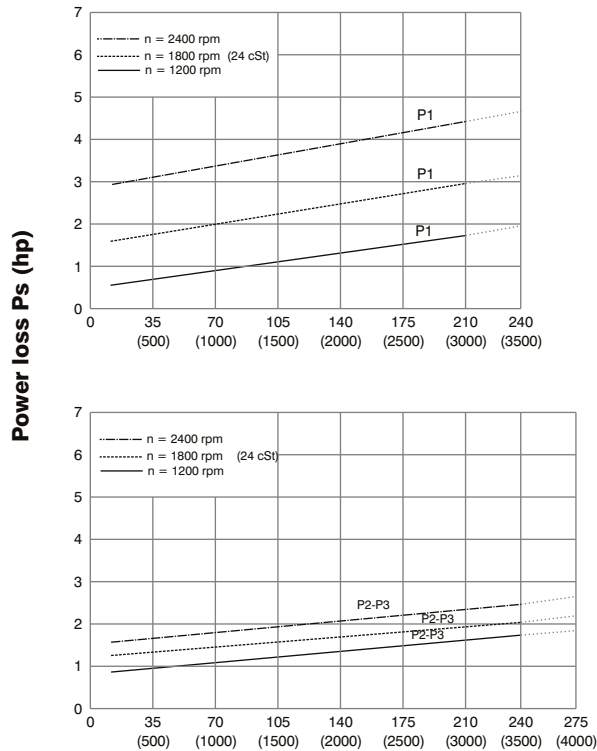
VT67DCC- B31-022-022



Pressure in bar (psi)

Triple pump noise level is given with each section discharging at the pressure noted on the curve.

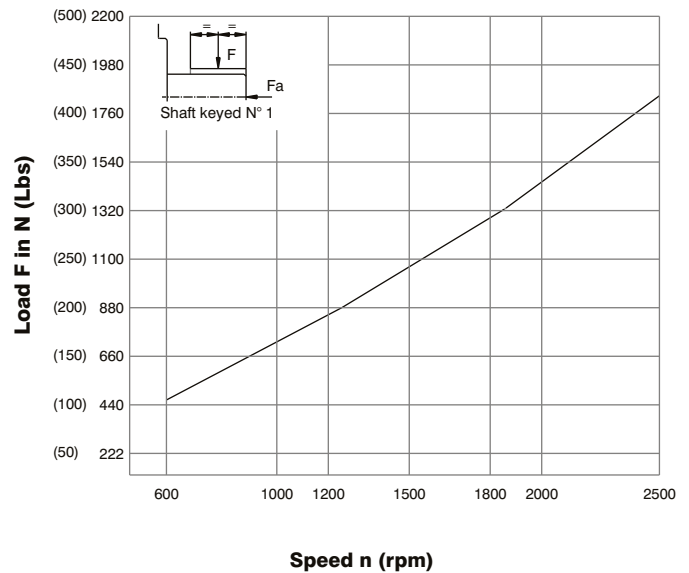
HYDROMECHANICAL POWER LOSS (TYPICAL)

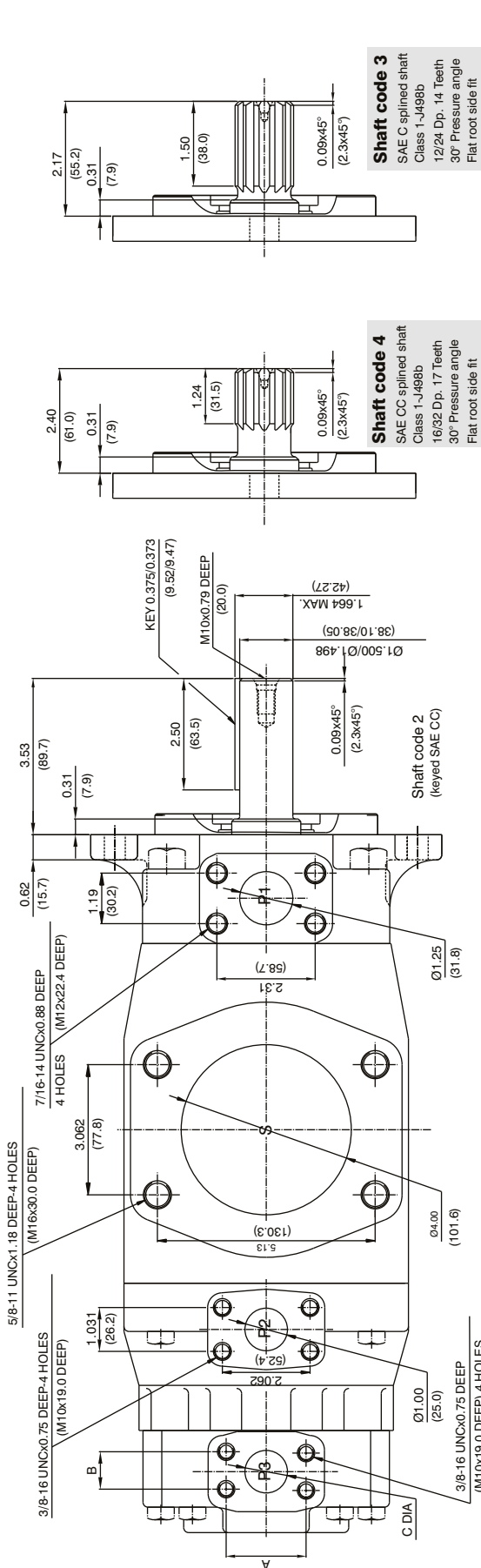
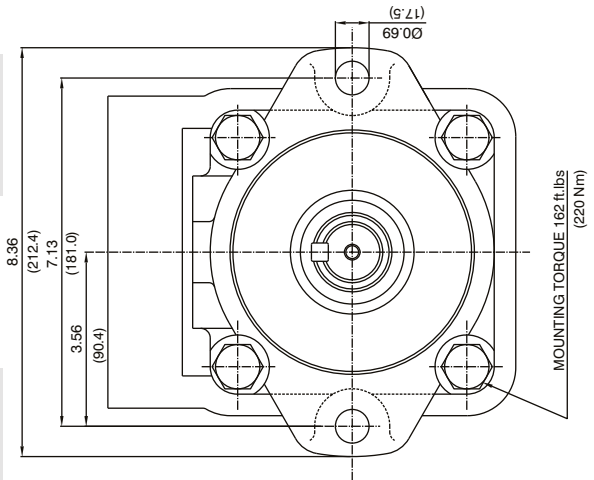
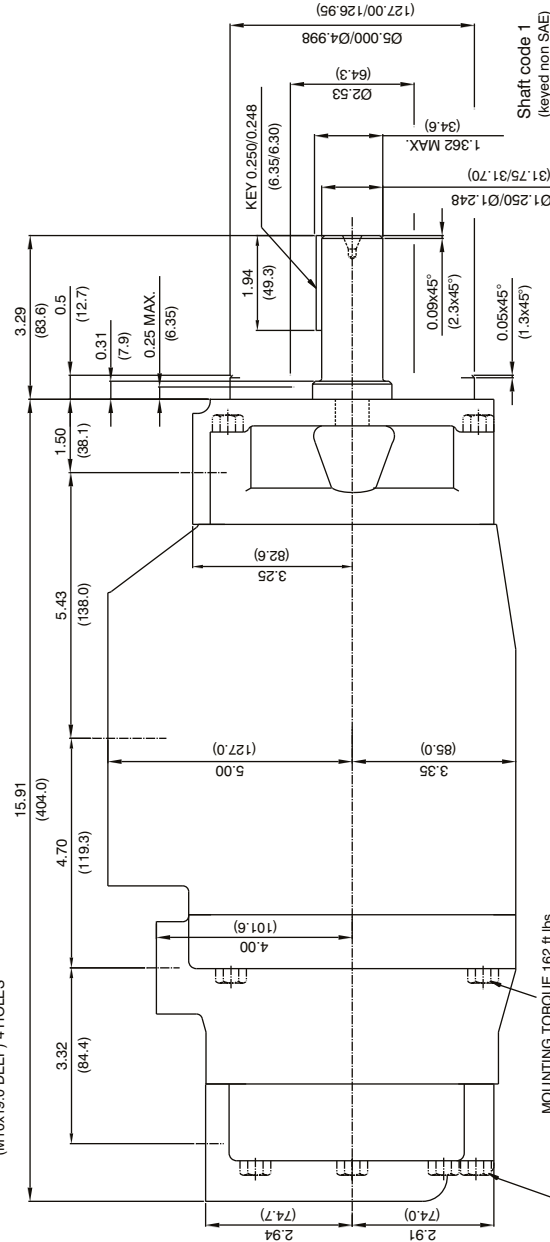


Pressure in bar (psi)

Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD





Shaft torque limits in ³ /rev x psi (ml/rev x bar)		
Shaft	Vp x p max. (P1+P2+P3)	
1	38289 (43240)	
2	58901 (66500)	
3	54207 (61200)	
4	58901 (66500)	

Alternate connection variables		
	Ø0 & M0	Ø1 & M1
A	2.063 (52.4)	1.874 (47.5)
B	1.031 (26.1)	0.874 (22.1)
C	1.000 (25.4)	0.748 (18.9)

VT67DDCS - 045 - B31 - 012 - 1 R 00 - A 1 - M0 *

Series -SAE C 6 bolts
Mounting flange J744

Cam ring for "P1" & "P2"

Volumetric displacement cm^3/rev (in^3/rev)

B14 = 43.9 (2.68)	B31 = 99.1 (6.05)
B17 = 55.0 (3.36)	B35 = 113.4 (6.92)
B20 = 66.0 (4.03)	B38 = 120.6 (7.36)
B22 = 70.3 (4.29)	B42 = 137.5 (8.39)
B24 = 81.1 (4.95)	045 = 145.7 (8.89)
B28 = 89.9 (5.49)	050 = 157.9 (9.64)

Cam ring for "P3"

Volumetric displacement cm^3/rev (in^3/rev)

003 = 10.8 (0.66)	017 = 58.3 (3.56)
005 = 17.2 (1.05)	020 = 63.8 (3.89)
006 = 21.3 (1.30)	022 = 70.3 (4.29)
008 = 26.4 (1.61)	025 = 79.3 (4.84)
010 = 34.1 (2.08)	028 = 88.8 (5.42)
012 = 37.1 (2.26)	031 = 100.0 (6.10)
014 = 46.0 (2.81)	

Type of Shaft

- 1 - Keyed (SAE C)
- 2 - Keyed (SAE CC)
- 3 - Splined (SAE C)
- 4 - Splined (SAE CC)
- 5 - Keyed (non SAE)

Modifications

Mounting w/connection variables
4 bolts SAE flange J518

P1 & P2= 1-1/4" S = 4"				
Type	UNC		METRIC	
P3	1"	3/4"	1"	3/4"
Code	00	01	M0	M1

Seal class

- 1 = S1 (for mineral oil)
- 4 = S4 (for fire resistant fluids)
- 5 = S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page CI-1-4,5)
00 = Standard

Direction of rotation (view on shaft end)

- R - Clockwise
L - Counter - clockwise

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

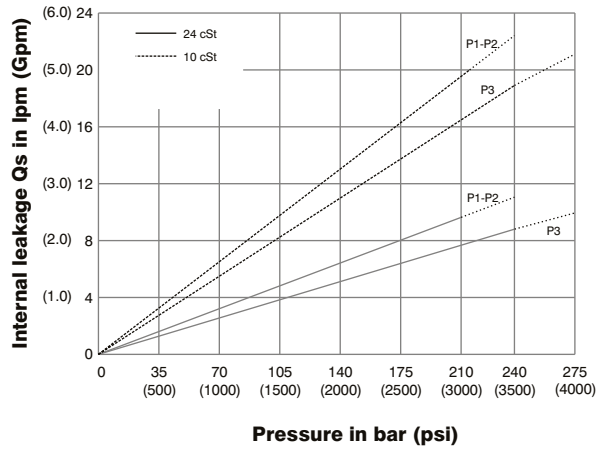
Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1800 rpm						Input power p & n = 1800 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 250 bar (3630 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 250 bar (3630 psi)	
		in^3/rev	cm^3/rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1 & P2	B14	2.68	43.9	20.92	79.50	19.18	72.9	17.81	67.7	3.46	2.6	27.77	20.7	47.03	35.1
	B17	3.36	55.0	26.16	99.4	24.41	92.8	23.04	87.6	3.77	2.8	33.88	25.3	57.71	43.1
	B20	4.03	66.0	31.39	119.3	29.64	112.6	28.27	107.4	4.07	3.0	39.98	29.8	68.39	51.0
	B22	4.29	70.3	33.43	127	31.69	120.4	30.32	115.2	4.19	3.1	42.37	31.6	72.57	54.1
	B24	4.95	81.1	38.57	146.6	36.82	139.9	35.45	134.7	4.49	3.3	48.36	36.1	83.06	62
	B28	5.49	89.9	42.8	162.6	41.06	156	39.69	150.8	4.74	3.5	53.30	39.8	91.7	68.4
	B31	6.05	99.1	47.18	179.3	45.43	172.6	42.06	167.4	4.99	3.7	58.41	43.6	100.63	75.1
	B35	6.92	113.4	53.93	204.9	52.18	198.3	50.81	193.1	5.39	4.0	66.29	49.5	114.42	85.4
	B38	7.36	120.6	57.35	217.9	55.61	211.3	54.24	206.1	5.59	4.2	70.28	52.4	121.42	90.6
	B42 ¹⁾	8.39	137.5	65.39	248.5	63.65	241.9	62.28	236.7	6.05	4.5	79.66	59.4	137.83	102.8
P3	045 ¹⁾	8.89	145.7	69.29	263.3	67.11	255.0	65.31	248.2	6.74	5.0	83.75	62.5	145.79	108.8
	050 ^{1, 2)}	9.64	157.9	75.14	285.5	72.96	277.2	71.78	272.8	7.08	5.3	90.58	67.6	134.5	100.3
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 275 bar (4000 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 275 bar (4000 psi)	
	003	0.66	10.8	5.14	19.53	3.85	14.63	--	--	2.11	1.6	8.45	6.3	--	--
	005	1.05	17.2	8.18	31.08	6.89	26.18	5.68	21.6	2.29	1.7	12.0	9.0	19.81	14.8
	006	1.30	21.3	10.13	38.49	8.84	33.59	7.63	29.0	2.4	1.8	14.28	10.7	23.79	17.7
	008	1.61	26.4	12.55	47.69	11.26	42.79	10.05	38.2	2.54	1.9	17.11	12.8	28.75	21.4
	010	2.08	34.1	16.22	61.64	14.93	56.73	13.71	52.1	2.76	2.1	21.38	15.9	36.22	27.0
	012	2.26	37.1	17.64	67.03	16.35	62.13	15.14	57.5	2.84	2.1	23.05	17.2	39.14	29.2
	014	2.81	46.0	21.88	83.14	20.59	78.24	19.37	73.6	3.09	2.3	27.99	20.9	47.78	35.6
	017	3.56	58.3	27.73	105.37	26.44	100.47	25.22	95.8	3.43	2.6	34.81	26.0	59.73	44.6
	020	3.89	63.8	30.34	115.29	29.05	110.39	27.84	105.8	3.58	2.7	37.86	28.2	65.07	48.5
	022 ⁴⁾	4.29	70.3	33.43	127.03	32.14	122.13	30.93	117.5	3.76	2.8	41.47	30.9	71.38	53.2
	025 ^{3, 5)}	4.84	79.3	37.71	143.3	36.42	138.40	35.21	133.8	4.01	3.0	46.46	34.7	80.12	59.8
	028 ^{3, 6)}	5.42	88.8	42.23	160.47	40.94	155.60	40.32	153.2	4.27	3.2	51.74	38.6	76.73	57.2
	031 ^{3, 6)}	6.10	100.0	47.56	180.73	46.27	175.83	45.65	173.5	4.58	3.4	57.95	43.2	86.06	64.2

-- We do not recommend to use this 003 at 275 bar (4000 psi) and 1500 rpm since internal leakage is over 50 of theoretical flow.

1) 042-045-050 = 2200 RPM max. 2) 050=210 bar (3000 psi) max. int. 3) 025-028-031 = 2500 R.P.M. max. 4) 022= 275 bar max. int.

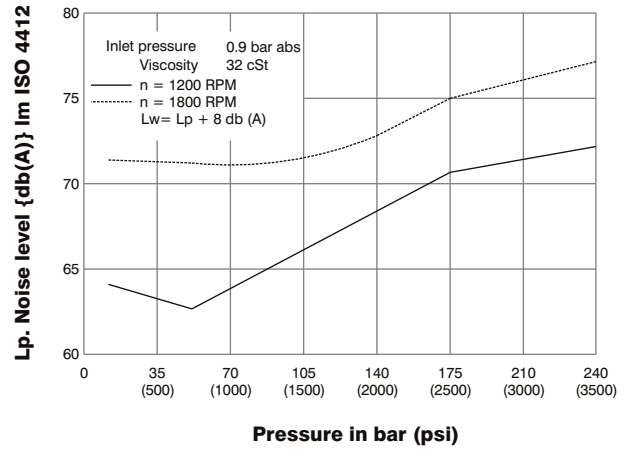
5) 025 = 240 bar max. int. 6) 028-031 = 210 bar (3000 psi) max. int.

INTERNAL LEAKAGE (TYPICAL)



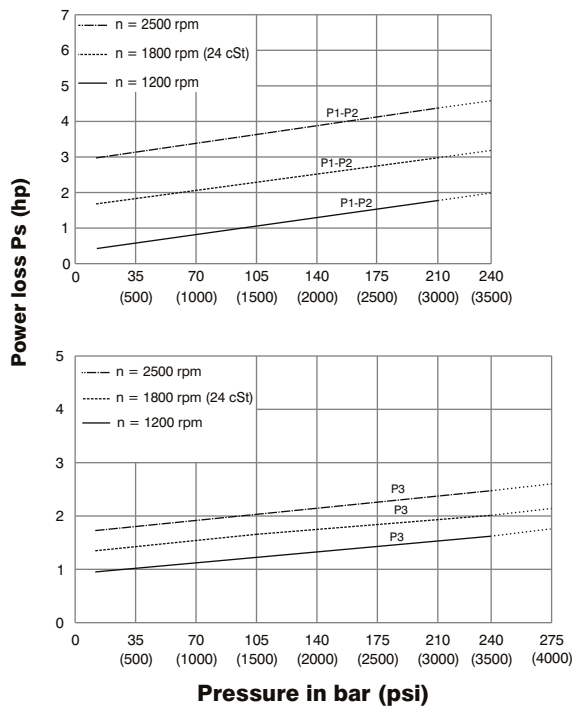
Do not operate pump for more than 5 seconds at any speed or viscosity if internal leakage is more than 50 of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.

NOISE LEVEL (TYPICAL) VT67DDCS- B31-B31-022



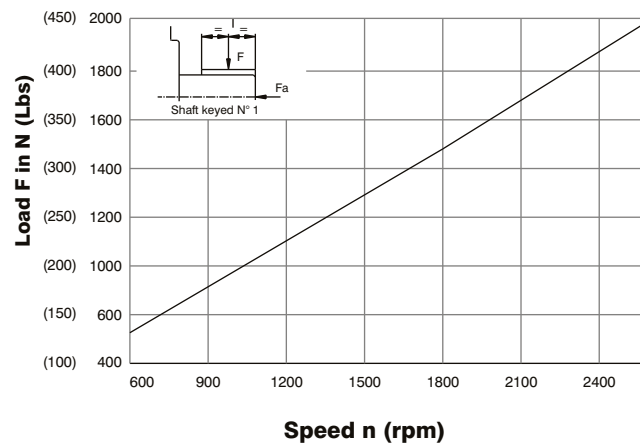
Triple pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)



Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD

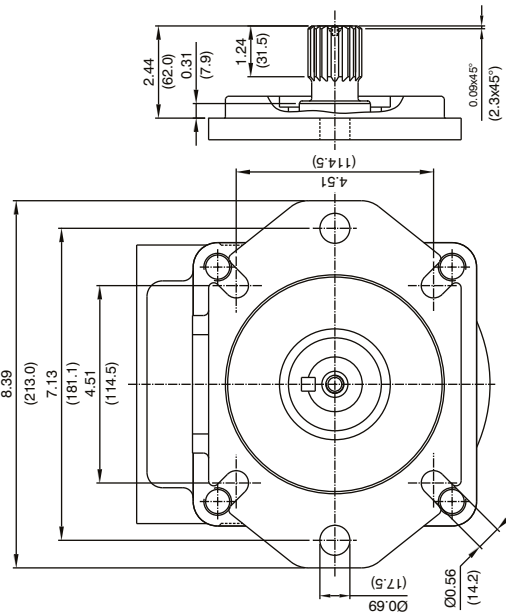


Maximum permissible axial load $F_a = 1200$ N (270 Lbs)

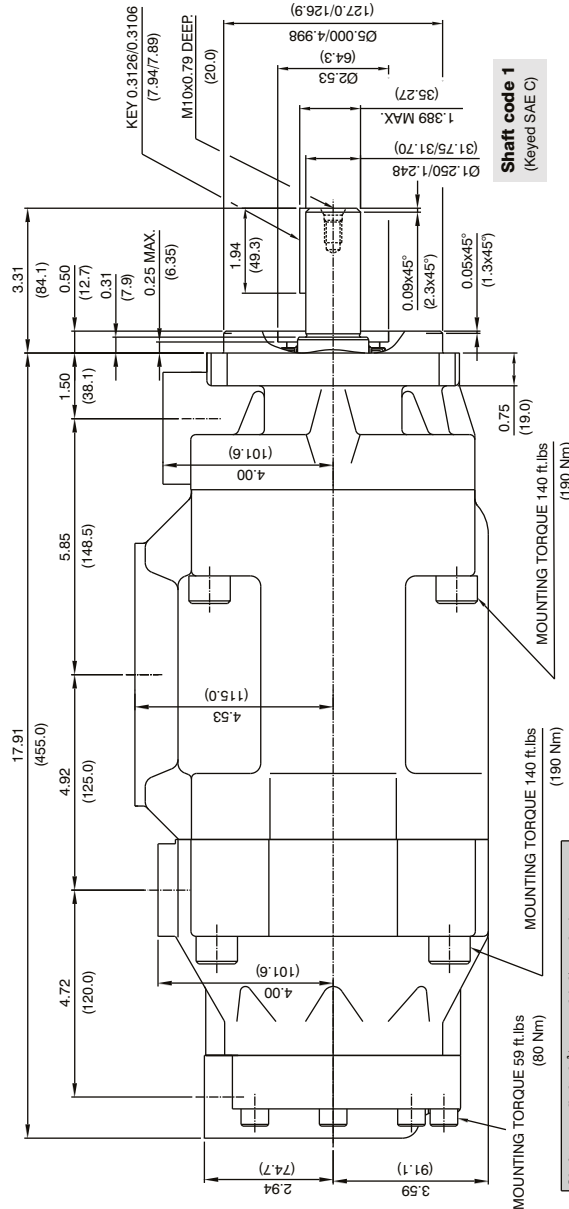
**Shaft code 5**
(Keyed no SAE)

Shaft code 2
(Keyed SAE CC)

Shaft code 3
SAE C splined shaft
Class 1-J498b
12/24 dp, 14 teeth
30° pressure angle
flat root side fit

**Shaft code 4**

SAE CC splined shaft
Class 1-J498b
12/24 dp, 17 teeth
30° pressure angle
flat root side fit



Shaft code 1
(Keyed SAF C)

(keyed SAE G)

Alternate port				
Port	Code	A	B	C
P3	00 - M0	2.063 (52.4)	1.031 (26.2)	1.000 (25.4)
	01 - M1	1.874 (47.6)	0.874 (22.2)	0.748 (18.99)

Shaft	Shaft torque limits in ³ rev x psi (mI/rev x bar)
1	Vp x p max. (P1+P2+P3) 38299 (43240)
2	64044 (72378)
3	54207 (61200)
4	58902 (66567)
5	49247 (55649)

VT67EDB		- 062 -	035 -	B10 - 1	R 00 -	A 1 -	P - 1 - *
Series - ISO 3019-2		P1	P2	P3			
Mounting flange 250 B4HW							
Cam ring for "P1"							
Volumetric displacement cm ³ /rev (in ³ /rev)							
042 = 132.3 (8.07)	062 = 196.7 (12.00)						
045 = 142.4 (8.69)	066 = 213.3 (13.02)						
050 = 158.5 (9.67)	072 = 227.1 (13.86)						
052 = 164.8 (10.06)	085 = 269.8 (16.46)						
057 = 180.7 (11.02)							
Cam ring for "P2"							
Volumetric displacement cm ³ /rev (in ³ /rev)							
*014/B14 = 47.6 (2.90)	035/B35 = 111.0 (6.77)						
017/B17 = 58.2 (3.55)	038/B38 = 120.3 (7.34)						
020/B20 = 66.0 (4.03)	042/B42 = 136.0 (8.30)						
024/B24 = 79.5 (4.85)	045/B45 = 145.7 (8.89)						
028/B28 = 89.7 (5.47)	050/B50 = 158.0 (9.64)						
031/B31 = 98.3 (6.00)	061/B61 = 190.5 (11.62)						
*0' - Uni - directional 'B' - Bi - directional							
Cam ring for "P3"							
Volumetric displacement cm ³ /rev (in ³ /rev)							
B02 = 5.7 (0.35)	B09 = 28.0 (1.71)						
B03 = 9.8 (0.60)	B10 = 31.8 (1.94)						
B04 = 12.8 (0.78)	B11 = 34.9 (2.13)						
B05 = 15.9 (0.97)	B12 = 40.9 (2.50)						
B06 = 19.8 (1.21)	B14 = 45.1 (2.75)						
B07 = 22.5 (1.37)	B15 = 50.0 (3.05)						
B08 = 24.9 (1.52)							

Modifications**Mounting w/connection variables**

4 bolts SAE flange
(J518c) Metric thread
1 = P3 = 3/4" SAE

Mounting (pump)

P= Pedestal mounting
F= Face mounting

Seal class

1 - S1 (for minreal oil)
4 - S4(for fire resistant fluids)
5 - S5(for mineral oil and fire resistant fluids)

Design letter**Porting combination (see page CI-1-4,5)**

00 = Standard

Direction of rotation**(view on the shaft)**

R - Clockwise
L - Counter - clockwise

Type of Shaft

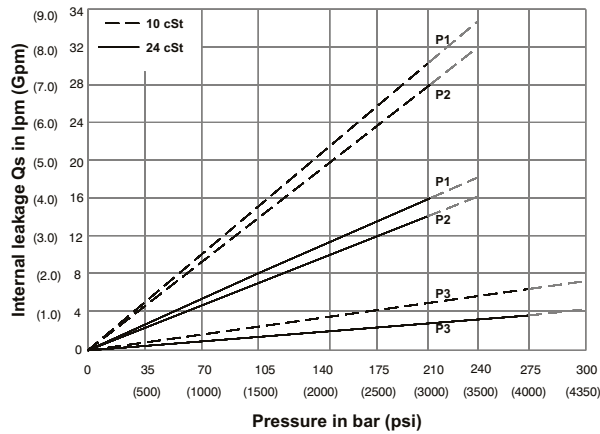
1 - Keyed (G45N-ISO 3019-2)

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1800 rpm						Input power p & n = 1800 rpm					
		in ³ /rev	cm ³ /rev	p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 300 bar (4350 psi)	
				gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1	042	8.07	132.3	62.92	237.8	60.37	228.2	58.52	221.2	8.09	6.03	78.44	58.49	133.80	99.78
	045	8.69	142.4	67.72	256.0	65.17	246.3	63.32	239.4	8.37	6.24	84.04	62.67	143.60	107.08
	050	9.67	158.5	75.38	285.0	72.83	275.3	70.98	268.3	8.82	6.58	92.97	69.30	159.24	118.7
	052	10.06	164.8	78.37	296.2	75.82	286.3	73.97	279.6	8.99	6.70	96.47	71.94	165.36	121.31
	057	11.02	180.7	71.70	325.3	69.07	261.1	80.63	304.8	9.40	7.00	114.30	85.14	172.10	128.30
	062	12.00	196.7	93.54	353.6	90.99	344.0	89.14	337.0	9.88	7.36	114.17	84.00	196.34	146.41
	066	13.02	213.3	101.44	383.4	98.89	373.8	97.04	366.8	10.34	7.71	123.38	92.01	212.46	158.43
	072	13.86	227.1	108.00	408.2	105.45	400.0	103.60	391.6	10.72	8.00	131.04	97.72	225.86	168.42
	085 ^{1,2)}	16.40	268.7	127.79	483.0	126.13	467.7	--	--	11.66	8.70	87.56	65.30	--	--
	014	2.90	47.6	22.64	85.0	20.46	77.4	18.8	71.1	4.02	2.99	29.31	21.85	49.34	36.79
P2	017	3.55	58.2	23.1	87.3	20.6	78.0	18.99	71.8	3.35	2.5	29.77	22.2	49.62	37.0
	020	4.03	66.0	31.39	118.6	29.29	101.4	27.57	104.2	4.53	3.38	39.52	29.47	67.21	50.11
	024	4.85	79.5	37.81	142.8	35.63	134.6	33.99	128.5	4.91	3.66	47.02	35.06	80.32	59.89
	028	5.47	89.7	42.66	161.3	40.48	153.0	38.84	146.8	5.19	3.87	52.68	39.28	90.23	67.28
	031	6.00	98.3	46.75	176.7	44.57	168.5	42.93	162.3	5.43	4.09	57.45	42.84	98.58	73.51
	035	6.77	111.0	52.79	199.6	50.61	191.3	48.97	184.1	5.78	4.31	64.50	48.09	110.91	82.70
	038	7.34	120.3	57.21	216.3	55.03	208.1	53.39	201.8	6.04	4.50	69.66	51.94	111.94	83.47
	042 ³⁾	8.30	136.0	64.68	244.5	62.50	236.3	60.86	230.1	6.47	4.83	78.37	58.44	135.19	100.81
	045 ³⁾	8.89	145.7	69.29	261.9	67.11	253.7	65.47	247.5	6.74	5.02	83.75	62.45	144.61	107.83
	050 ^{3,4)}	9.64	158.0	75.14	284.1	72.96	275.8	71.78	271.3	7.08	5.27	90.58	67.54	134.54	100.32
	061 ^{3,5)}	11.62	190.5	75.6	285.8	73.54	278.0	--	--	7.37	5.50	97.49	72.69	--	--
P3															
	B02	0.35	5.7	2.76	10.4	2.33	8.8	1.80	6.8	0.74	0.55	4.02	2.99	8.10	6.40
	B03	0.60	9.8	4.66	17.6	4.23	15.9	3.70	14.0	0.85	0.63	6.24	4.65	12.93	10.25
	B04	0.78	12.8	6.09	23.0	5.66	21.4	5.13	19.4	0.94	0.70	7.90	5.89	16.55	13.13
	B05	0.97	15.9	7.56	28.6	7.13	26.9	6.60	25.0	1.02	0.76	9.62	7.17	20.29	16.12
	B06	1.21	19.8	9.42	35.6	8.99	33.9	8.46	32.0	1.13	0.84	11.79	8.79	25.00	19.88
	B07	1.37	22.5	10.70	40.4	10.27	38.8	9.74	36.8	1.20	0.89	13.29	9.91	28.26	22.47
	B08	1.52	24.9	11.84	44.7	11.41	43.1	10.88	41.1	1.27	0.94	14.62	10.90	31.15	24.78
	B09	1.71	28.0	13.31	50.3	12.87	48.6	12.35	47.0	1.36	1.01	16.35	12.19	34.92	27.77
	B10	1.94	31.8	15.12	57.2	14.69	55.5	14.16	53.5	1.46	1.11	18.45	13.75	39.48	31.42
	B11 ⁶⁾	2.13	34.9	16.64	62.9	16.19	61.2	15.68	59.3	1.55	1.15	20.17	15.04	43.22	32.22
	B12 ⁶⁾	2.50	40.9	19.50	73.7	19.07	72.1	18.54	70.1	1.72	1.28	23.55	17.56	50.58	37.71
	B14 ⁶⁾	2.75	45.1	21.40	80.8	20.95	79.2	20.44	77.0	1.83	1.36	25.80	19.23	55.48	41.37
	B15 ⁶⁾	3.05	50.0	23.78	89.8	23.35	88.3	22.88	86.5	1.97	1.47	28.55	21.28	57.35	42.76

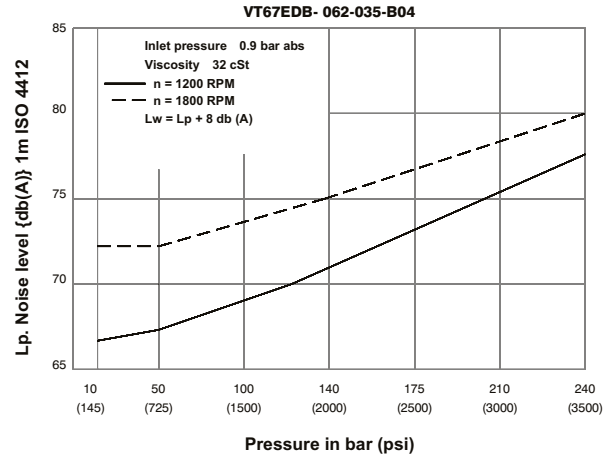
1) 085 = 75 bar (1087 psi) cont. 2) 085 = 90 bar (1300 psi) max. int. 3) 042-045-050-061-085 = 2000 RPM max. 4) 050=210 bar (3000 psi) max. int.
5) 061 = 120 bar (1740 psi) max. int. 061 = 80 bar (1160 psi) cont. 6) B11-B12-B14 = 300 bar (4350 psi) & B15 = 280 bar (4060 psi) max. int. And Max. Speed = 3000 rpm

INTERNAL LEAKAGE (TYPICAL)



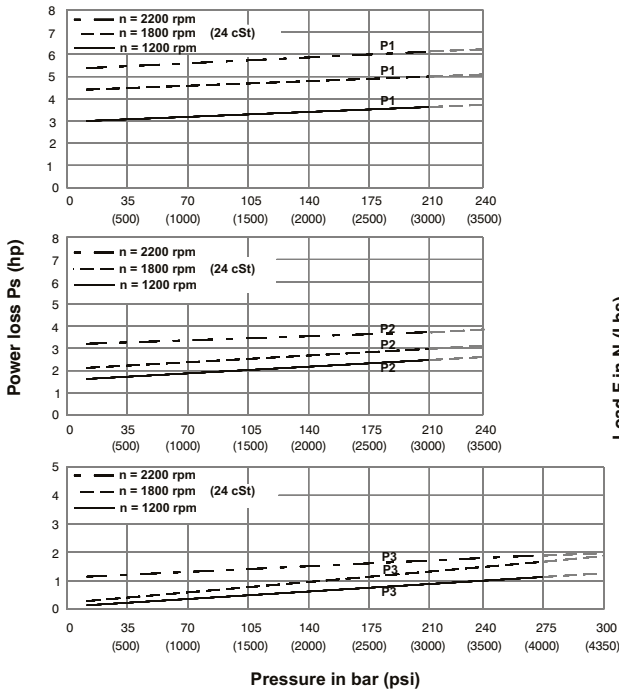
Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow.
Total leakage is the sum of each section loss at its operating conditions.

NOISE LEVEL (TYPICAL)



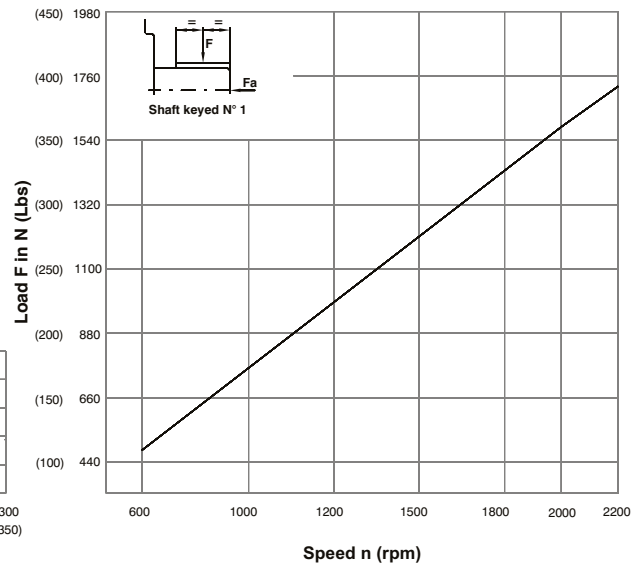
Triple pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)



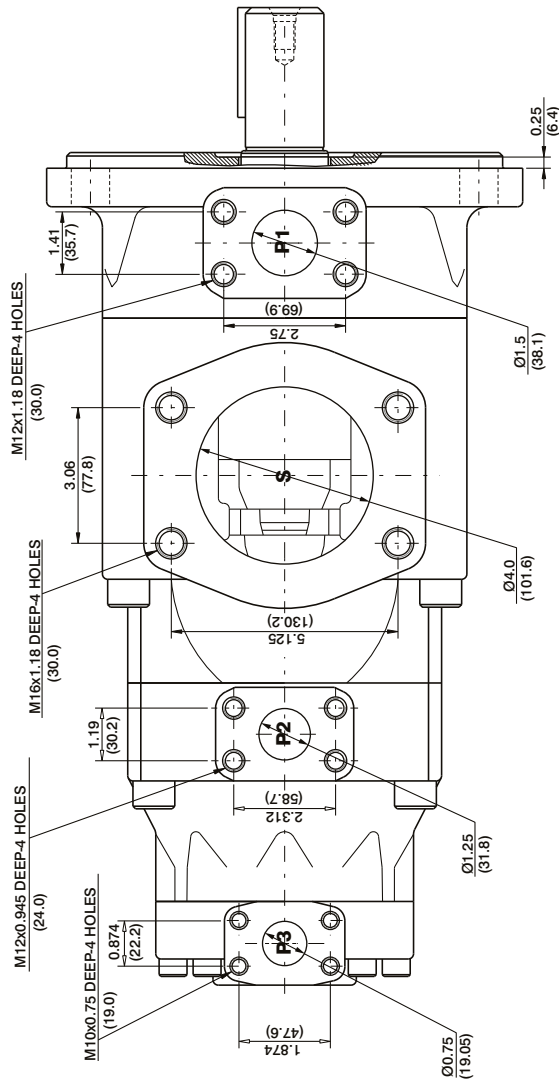
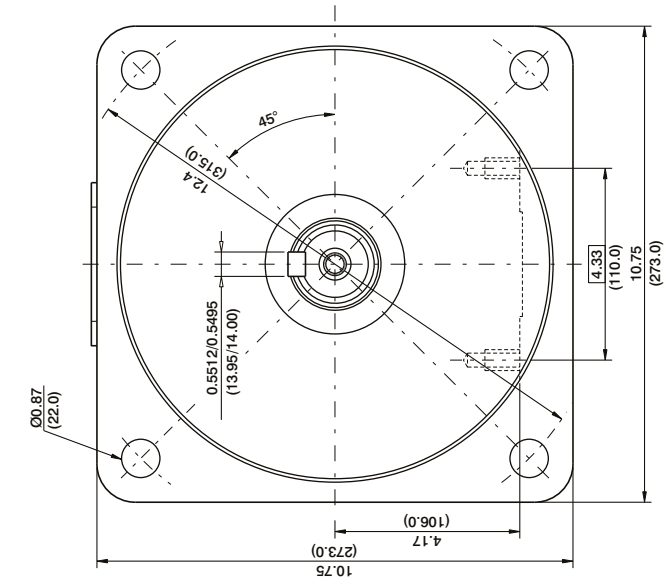
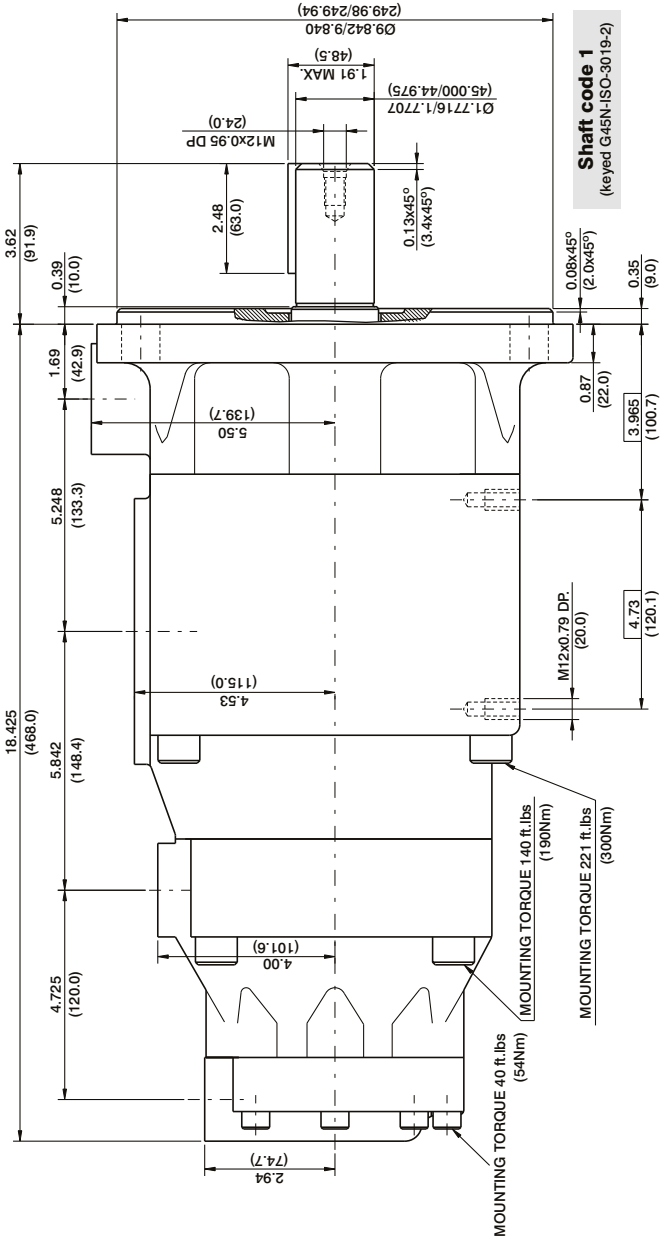
Total hydromechanical power loss is the sum of each section at its operating conditions

PERMISSIBLE RADIAL LOAD



Maximum axial load permissible $F_a = 2000 \text{ N (449 Lbs)}$

Shaft torque limits in ³ /rev x psi (ml/rev x bar)	
Shaft	Vp x p max. (P1 + P2 + P3)
1	101506 (114715)



Shaft code 1
(keyed G45N-ISO-3019-2)

MOUNTING TORQUE 40 ft.lbs (54Nm)
MOUNTING TORQUE 140 ft.lbs (190Nm)
MOUNTING TORQUE 221 ft.lbs (300Nm)

VT67EDC or T67EDCS

- 062 - B35 - 010 - 1 R 00 - A 1 - M1 - *

T67EDC Series-ISO 4 bolts 3019-2

Mounting flange 250 B4HW

T67EDCS Series - SAE E

Mounting flange J744c

Cam ring for "P1"

Volumetric displacement cm³/rev (in³/rev)

042 = 132.3 (8.07) 057 = 183.2 (11.18)

045 = 142.6 (8.70) 062 = 196.6 (12.00)

050 = 158.5 (9.67) 066 = 213.0 (13.00)

052 = 163.9 (10.00) 072 = 227.2 (13.86)

054 = 170.9 (10.43) 085 = 269.8 (16.40)

Cam ring for "P2"

Volumetric displacement cm³/rev (in³/rev)

B14 = 43.9 (2.68) B31 = 99.1 (6.05)

B17 = 55.0 (3.36) B35 = 113.4 (6.92)

B20 = 66.0 (4.03) B38 = 120.6 (7.36)

B22 = 70.3 (4.29) B42 = 137.5 (8.39)

B24 = 81.1 (4.95) 045 = 145.7 (8.89)

B28 = 89.9 (5.49) 050 = 158.0 (9.64)

Cam ring for "P3"

Volumetric displacement cm³/rev (in³/rev)

003 = 10.8 (0.66) 017 = 58.3 (3.56)

005 = 17.2 (1.05) 020 = 63.7 (3.89)

006 = 21.3 (1.30) 022 = 70.3 (4.29)

008 = 26.3 (1.61) 025 = 79.3 (4.84)

010 = 34.0 (2.08) 028 = 88.8 (5.42)

012 = 37.0 (2.26) 031 = 100 (6.10)

014 = 46.0 (2.81)

Modifications

Mounting w/connection variables

4 bolts SAE flanges J518

P1=1-1/2" P2=1-1/4" S=4"			
Type	P3	UNC	Metric
T67EDC	1"		M0
T67EDC	3/4"		M1
T67EDCS	1"	00	M0
T67EDCS	3/4"	01	M1

Seal class

1 = S1 (for minreal oil)

4 = S4 (for fire resistant fluids)

5 = S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page CI-1-4,5)

00 = Standard

Direction of rotation (view on the shaft)

R - Clockwise

L - Counter - clockwise

Type of Shaft T67EDC

1 - Keyed (G45N-ISO 3019-2)

Type of Shaft T67EDCS

2 - Keyed (SAE D&E)

3 - Splined (SAE D&E)

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

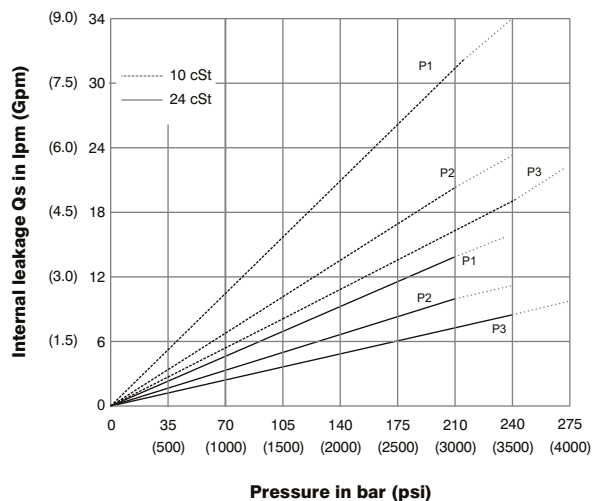
Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1800 rpm						Input power p & n = 1800 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 250 bar (3630 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1	042	8.07	132.3	62.92	239.1	60.37	229.4	58.52	222.4	8.09	6.03	78.44	58.49	133.80	99.8
	045	8.70	142.5	67.72	257.3	65.17	247.6	63.32	240.6	8.37	6.24	84.04	62.67	143.60	107.1
	050	9.67	158.5	75.38	286.3	72.83	276.8	70.98	269.7	8.82	6.58	92.97	69.30	159.24	118.8
	052	10.00	163.9	78.37	297.8	75.82	288.1	73.97	281.1	8.99	6.70	96.47	71.94	165.36	123.4
	054	10.43	170.9	81.27	308.8	78.72	299.1	76.87	292.1	9.17	6.84	99.75	74.40	177.46	132.4
	057	11.18	183.2	87.12	331.1	84.57	321.4	82.72	314.3	9.51	7.09	106.57	79.5	189.84	141.6
	062	12.00	196.7	93.54	355.5	90.99	345.8	89.14	338.7	9.88	7.37	114.17	85.2	196.34	146.5
	066	13.00	213.0	101.44	385.5	98.89	375.8	97.04	368.8	10.34	7.71	123.38	92.01	212.46	158.5
	072	13.86	227.1	108.00	410.4	105.45	400.7	103.60	393.7	10.72	8.00	131.04	97.8	225.86	168.5
	085 ¹⁾	16.40	268.7	127.79	485.6	126.13	479.3	--	--	11.88	8.86	101.66	75.8	--	--
P2				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 250 bar (3630 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 250 bar (3630 psi)	
	B14	2.68	43.93	20.92	79.50	19.18	72.88	17.81	67.7	3.46	2.6	27.77	20.7	47.03	35.1
	B17	3.36	55.07	26.16	99.41	24.41	92.76	23.04	87.6	3.77	2.8	33.88	25.3	57.71	43.1
	B20	4.03	66.05	31.39	119.28	29.64	112.63	28.27	107.4	4.07	3.0	39.98	29.8	68.39	51.0
	B22	4.29	70.31	33.43	127.03	31.69	120.42	30.32	115.2	4.19	3.1	42.37	31.6	72.57	54.1
	B24	4.95	81.13	38.50	146.30	36.82	139.92	35.45	134.7	4.49	3.3	48.36	36.1	83.06	62.0
	B28	5.49	89.98	42.80	162.64	41.06	156.03	39.69	150.8	4.74	3.5	53.3	39.8	91.7	68.4
	B31	6.05	99.16	47.18	179.28	45.43	172.63	44.06	167.4	4.99	3.7	58.41	43.6	100.63	75.1
	B35	6.92	113.42	53.93	204.93	52.18	198.28	50.81	193.1	5.39	4.0	66.29	49.5	114.42	85.4
	B38	7.36	120.63	57.30	217.74	55.61	211.32	54.24	206.1	5.59	4.2	70.28	52.4	121.42	90.6
	B42 ²⁾	8.39	137.51	65.30	248.14	63.35	240.73	62.28	236.7	6.05	4.5	79.66	59.4	137.83	102.8
	045 ²⁾	8.89	145.71	69.20	262.96	67.11	255.02	65.31	248.2	6.74	5.0	83.75	62.5	145.79	108.8
	050 ^{2,3)}	9.64	158	75.14	285.53	72.96	277.2	71.78	272.8	7.08	5.3	90.58	67.6	134.5	100.3
P3				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 275 bar (4000 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 275 bar (4000 psi)	
	003	0.66	10.82	5.14	19.53	3.85	14.6	--	--	2.11	1.6	8.45	6.3	--	--
	005	1.05	17.21	8.18	31.08	6.89	26.2	5.68	21.6	2.29	1.7	12.0	9.0	19.81	14.8
	006	1.30	21.31	10.13	38.49	8.84	33.6	7.63	29.0	2.4	1.8	14.28	10.7	23.79	17.7
	008	1.61	26.39	12.55	47.69	11.26	42.8	10.05	38.2	2.54	1.9	17.11	12.8	28.75	21.4
	010	2.08	34.09	16.22	61.64	14.93	56.7	13.71	52.1	2.76	2.1	21.38	15.9	36.22	27.0
	012	2.26	37.04	17.64	67.03	16.35	62.1	15.14	57.5	2.84	2.1	23.05	17.2	39.14	29.2
	014	2.81	46.06	21.88	83.14	20.59	78.2	19.37	73.6	3.09	2.3	27.99	20.9	47.78	35.6
	017	3.56	58.35	27.73	105.37	26.44	100.5	25.22	95.8	3.43	2.6	34.81	26.0	59.73	44.6
	020	3.89	63.76	30.34	115.29	29.05	110.4	27.84	105.8	3.58	2.7	37.86	28.2	65.07	48.5
	022 ⁵⁾	4.29	70.31	33.43	127.03	32.14	122.1	30.93	117.5	3.76	2.8	41.47	30.9	71.38	53.2
	025 ^{4,6)}	4.84	79.33	37.71	143.30	36.42	138.4	35.21	133.8	4.01	3.0	46.46	34.7	80.12	59.8
	028 ^{4,7)}	5.42	88.83	42.23	160.47	40.94	155.6	40.32	153.2	4.27	3.2	51.74	38.6	76.73	57.2
	031 ^{4,7)}	6.10	99.98	47.56	180.73	46.27	175.8	45.65	173.5	4.58	3.4	57.95	43.2	86.06	64.2

-- We do not recommend to use this 003 at 275 bar (4000 psi) and 1500 rpm since internal leakage is over 50% of theoretical flow.

1) 085 = 90 bar (1300 psi) max. int. 2) 042-045-050 = 2200 RPM max. 3) 050=210 bar (3000 psi) max. int.

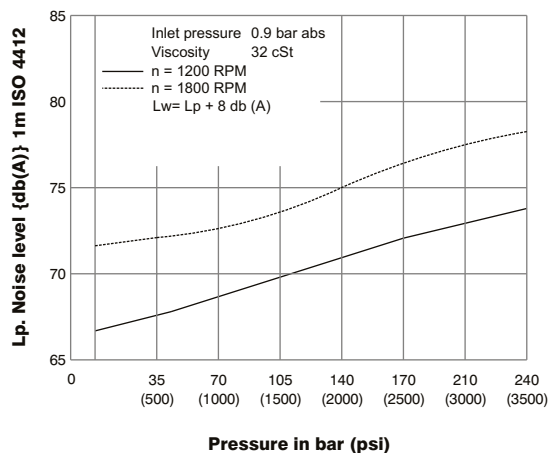
4) 025-028-031 = 2500 R.P.M. max. 5) 022= 275 bar max. int. 6) 025 = 240 bar max. int. 7) 028-031 = 210 bar (3000 psi) max. int.

INTERNAL LEAKAGE (TYPICAL)



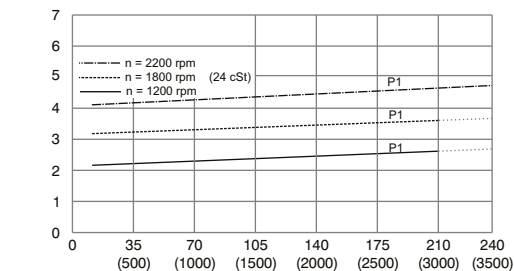
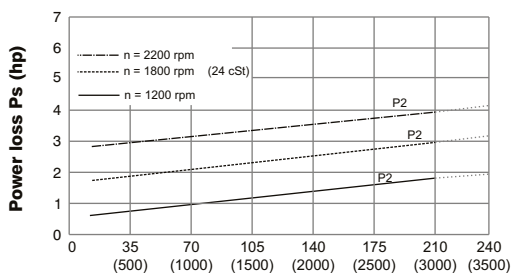
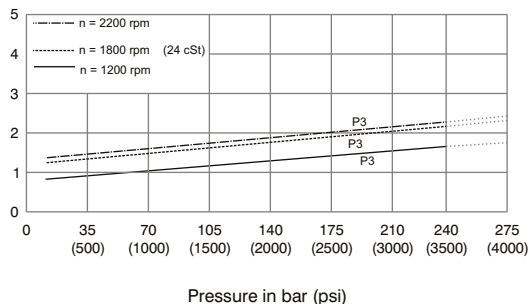
Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow.
Total leakage is the sum of each section loss at its operating conditions.

NOISE LEVEL (TYPICAL) VT67EDCS- 062-B35-022



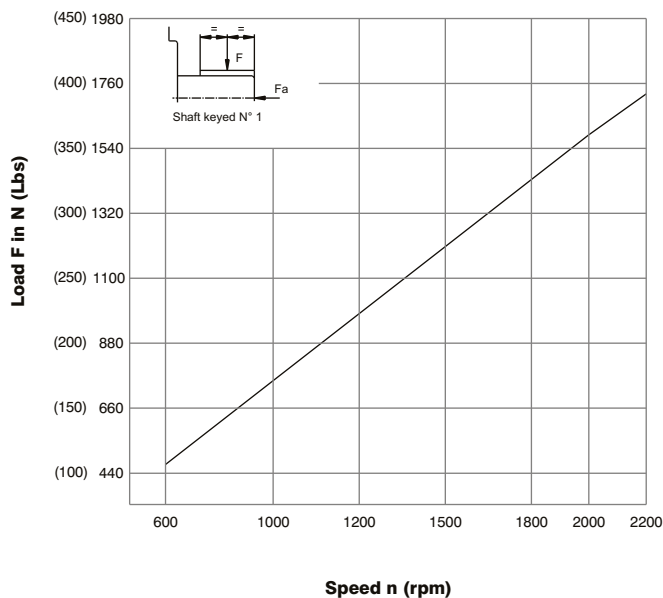
Triple pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)



Total hydromechanical power loss is the sum of each section at its operating conditions

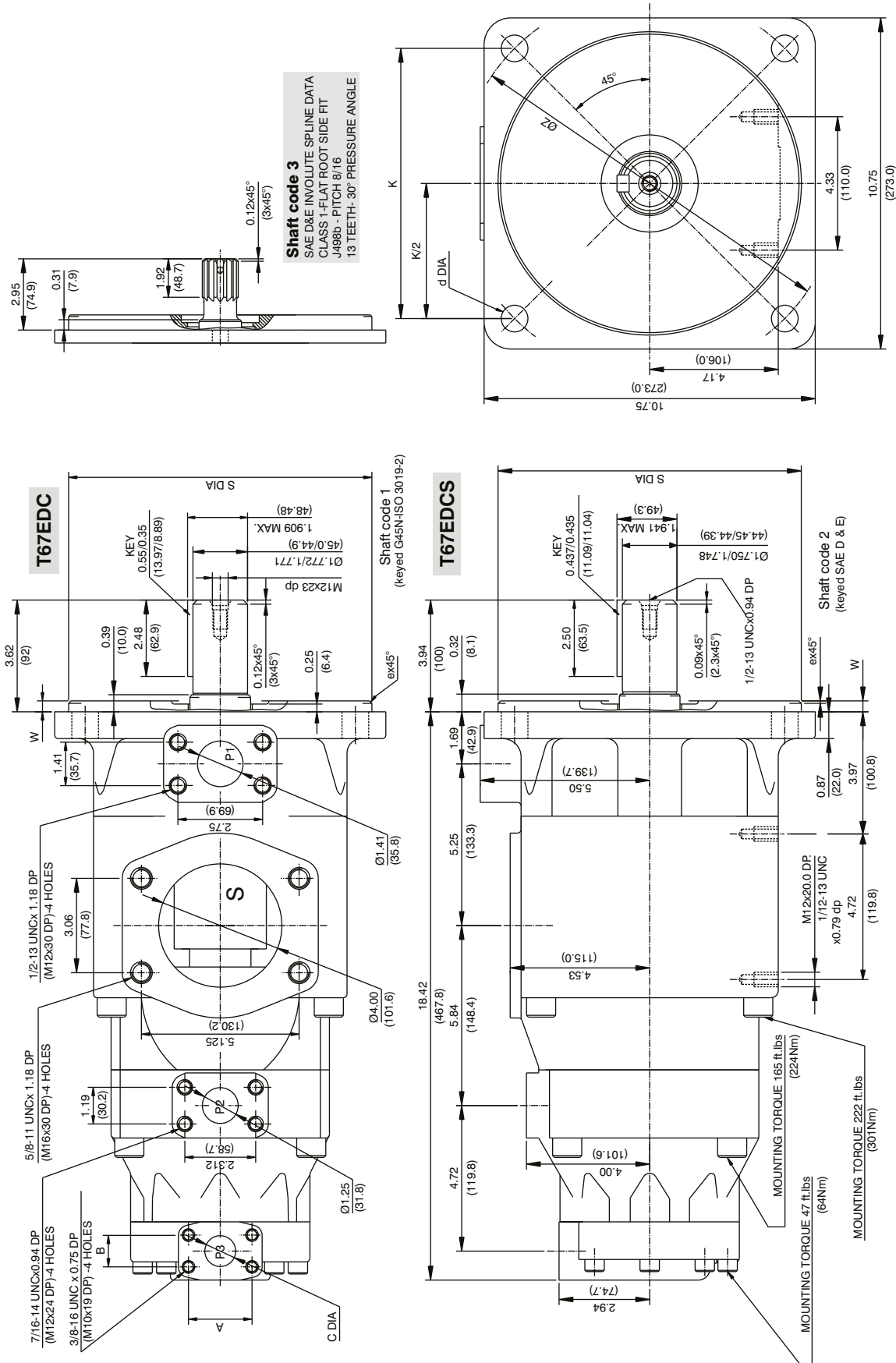
PERMISSIBLE RADIAL LOAD



HIGH PERFORMANCE VANE PUMP VT67EDC OR VT67EDCS



TP



	00 & M0	01 & M1
A	2.063(52.4)	1.874(47.5)
B	1.031(26.1)	0.874(22.1)
C	1.000(25.4)	0.748(18.9)

Series	S Dia	W	K	Z Dia	d Dia
T67EDC	9.842(249.98)	0.079(2)	0.354(8.9)	12.401(314.9)	0.866(21.9)
T67EDCS	6.500(165.1)	0.079(2)	0.354(8.9)	8.838(224.4)	0.811(20.5)

Shaft	Vp x p max. (P1+P2+P3)
1	101506 (114715)
2	104818 (118457)
3	112312 (126927)

DRIVE TRAIN



VANE PUMPS

VT6CR * - 022 - 1 R 00 - A 1 0 - A 1 *

Series _____

Y - Metric port connection, Omit for UNC

Cam ring for _____

Volumetric displacement cm³/rev (in³/rev)

* 003/B03/Y03 = 10.8 (0.66)	015/B15/Y15 = 50.5 (3.08)
005/B05/Y05 = 17.2 (1.05)	017/B17/Y17 = 58.3 (3.56)
006/B06/Y06 = 21.3 (1.30)	020/B20/Y20 = 63.8 (3.89)
008/B08/Y08 = 26.4 (1.61)	022/B22/Y22 = 70.3 (4.29)
010/B10/Y10 = 34.1 (2.08)	025/B25/Y25 = 79.3 (4.84)
012/B12/Y12 = 37.1 (2.26)	028/B28/Y28 = 88.8 (5.42)
014/B14/Y14 = 46.0 (2.81)	031/B31/Y31 = 100.0 (6.10)

* '0' - Uni - directional 'B' - Bi - directional 'Y' - Bi - directional for cold start

Type of Shaft _____

1 - Keyed (SAE BB)	4 - Splined (SAE BB)
2 - Keyed (no SAE)	5 - Keyed (no SAE)
3 - Splined (SAE B)	

Direction of rotation (view on shaft end) _____

R - Clockwise
L - Counter - clockwise

Porting combination _____

Modifications

Seal class

1 - S1 (for mineral oil)
4 - S4 (for fire resistant fluids)
5 - S5 (for mineral oil and fire resistant fluids)

Design letter _____

Porting adapter _____

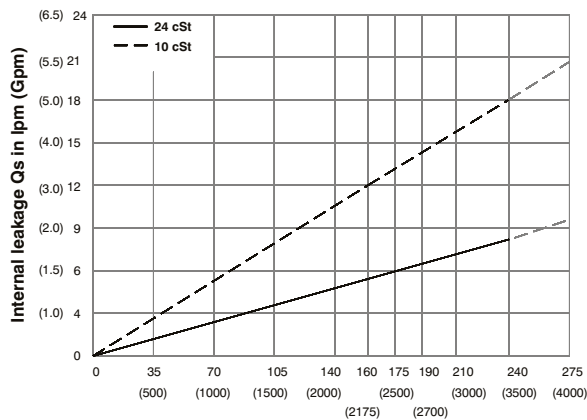
Coupling

1 - SAE A	4 - SAE C
2 - SAE B	5 - SAE J498b
3 - SAE BB	16/32-11 teeth

Adapter

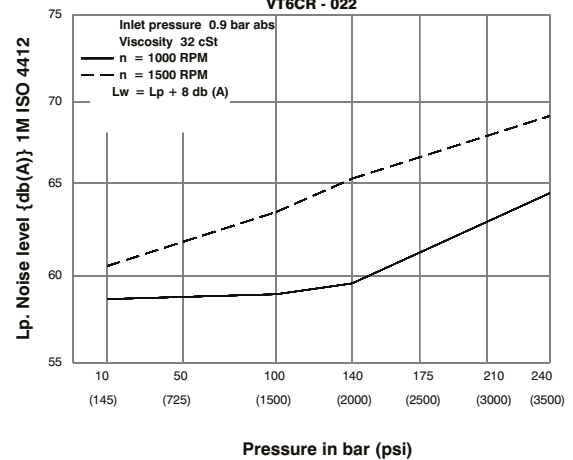
0 - None	B - SAE B
A - SAE A	C - SAE C

INTERNAL LEAKAGE (TYPICAL)

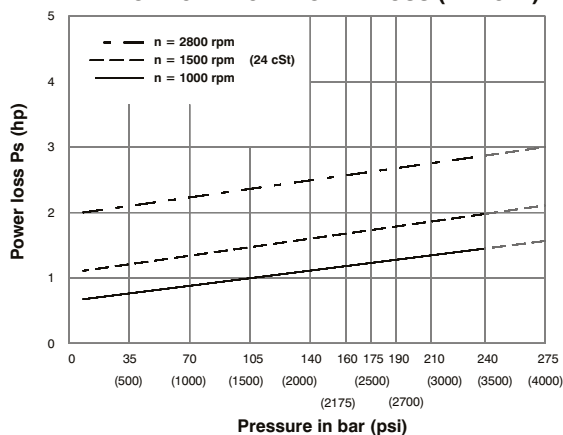


Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow.

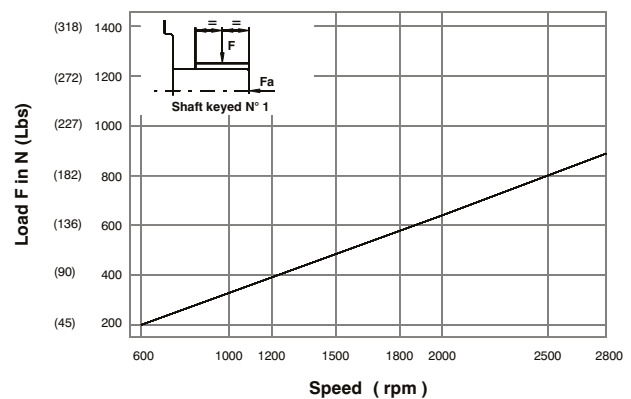
NOISE LEVEL (TYPICAL)
VT6CR - 022

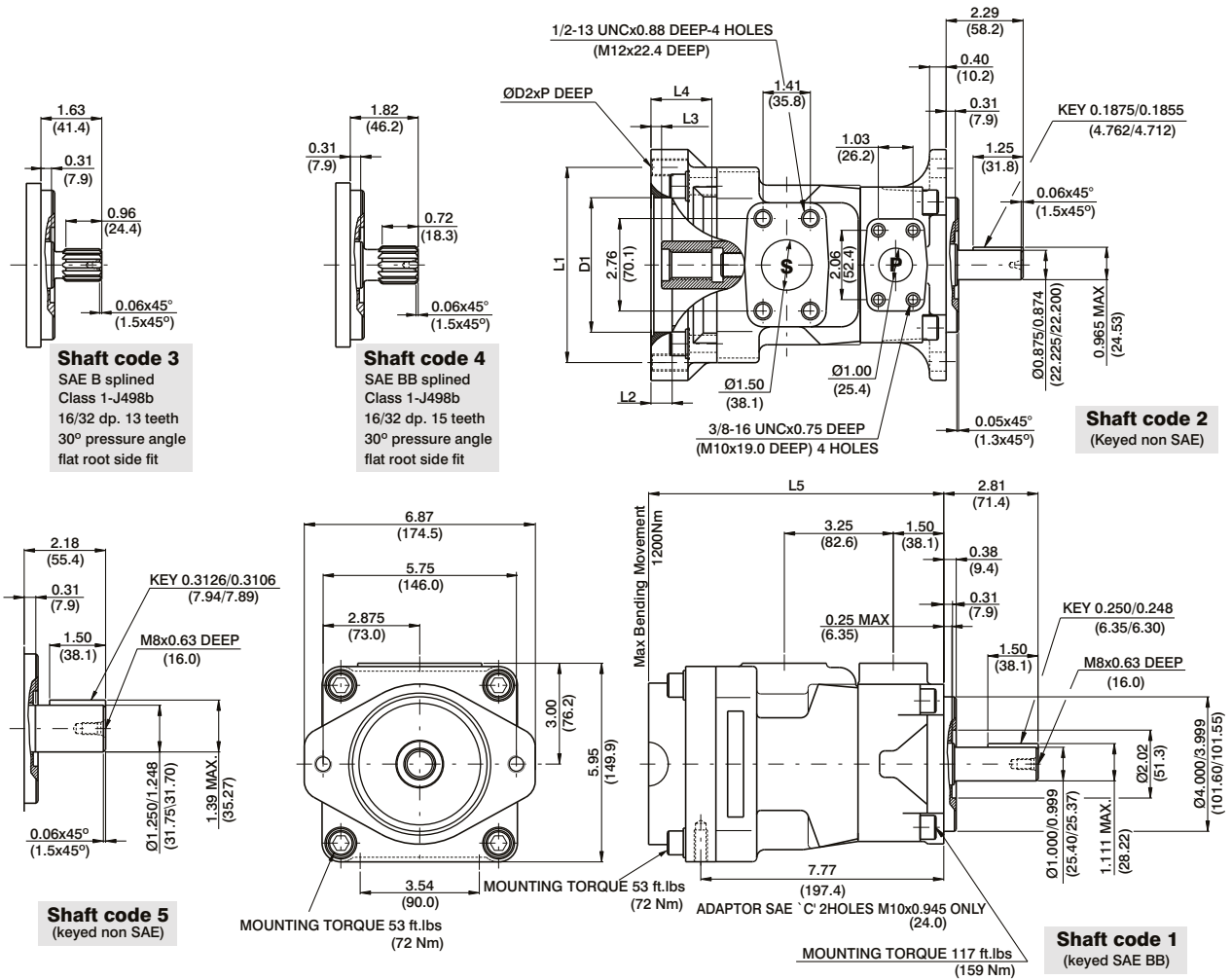


HYDROMECHANICAL POWER LOSS (TYPICAL)



PERMISSIBLE RADIAL LOAD





Adaptor	D1	D2	P	L1	L2	L3	L4	L5
SAE "A"	3.25 (82.60)	M10	0.94 (24)	4.19 (106.4)	0.43 (11)	0.31 (7.9)	1.26 (32)	8.23 (209)
SAE "B"	4.00 (101.65)	M12	1.10 (28)	5.75 (146.0)	0.63 (16)	0.31 (7.9)	1.81 (46)	8.78 (223)
SAE "C"	5.00 (127.10)	M16	-	7.12 (181.0)	0.63 (16)	0.31 (7.9)	2.20 (56)	9.17 (233)

Adaptor	SAE "A"			SAE "B"		SAE "C"
Coupling drive	SAE A	SAE (11teeth)	SAE B	SAE B	SAE BB	SAE C
Number of teeth	9	11	13	13	15	14
Pitch	16/32	16/32	16/32	16/32	16/32	12/24
Pressure angle	30°	30°	30°	30°	30°	30°
Major dia. (min)	0.625 (15.875)	0.750 (19.05)	0.875 (22.225)	0.875 (22.225)	1.00 (25.40)	1.250 (31.75)
Minor dia. (min)	0.500 (12.70)	0.630 (16.00)	0.753 (19.125)	0.753 (19.125)	0.877 (22.275)	1.086 (27.585)

Shaft torque limits in ³ /rev x psi (ml/rev x bar)					
Shaft	V x P max.	Coupling drive	V x P max.		
1	18972 (21420)	SAE "A"	9743 (11000)		
2	12666 (14300)	SAE "B"	18246 (20600)		
3	18246 (20600)	SAE "BB"	19530 (22050)		
4	28937 (32670)	SAE "C"	19530 (22050)		
5	30274 (34180)	SAE "11teeth"	14039 (15850)		

OPERATING CHARACTERISTICS - TYPICAL (24 cST)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
VT6CR	003	0.66	10.8	4.29	16.2	2.96	11.2	2.04	7.7	1.74	1.3	7.11	5.3	11.26	8.4
	005	1.05	17.2	6.83	25.8	5.50	20.8	4.57	17.3	1.88	1.4	10.06	7.5	16.36	12.2
	006	1.30	21.3	8.44	31.9	7.11	26.9	6.19	23.4	2.01	1.5	11.94	8.9	19.71	14.7
	008	1.61	26.4	10.48	39.6	9.15	34.6	8.22	31.1	2.15	1.6	14.35	10.7	22.93	17.7
	010	2.08	34.1	13.52	51.1	12.19	46.1	11.26	42.6	2.28	1.7	18.64	13.4	29.90	22.3
	012	2.26	37.1	14.71	55.6	13.36	50.6	12.46	47.1	2.28	1.7	19.31	14.4	32.32	24.1
	014	2.81	46.0	18.25	69.0	16.93	64.0	16.00	60.5	2.55	1.9	23.60	17.6	39.56	29.5
	015	3.08	50.5	20.00	75.6	18.73	73.2	19.02	67.5	2.68	2.0	25.61	19.1	42.91	32.0
	017	3.56	58.3	23.12	87.4	21.79	82.4	20.87	78.9	2.82	2.1	29.37	21.9	49.48	36.9
	020	3.89	63.8	25.32	95.7	23.99	90.7	23.07	87.2	2.95	2.2	31.92	23.8	53.91	40.2
	022	4.29	70.3	27.88	105.4	26.56	100.4	25.63	96.9	3.08	2.3	35.00	26.1	59.14	44.1
	025 ¹⁾	4.84	79.3	31.46	118.9	30.13	113.9	29.21	110.4	3.35	2.5	39.16	29.2	66.38	49.5
	028 ^{1,2)}	5.42	88.8	35.24	133.2	33.92	128.2	33.28	125.8	3.75	2.8	43.85	32.7	65.04	48.5
	031 ^{1,2)}	6.10	100.0	39.68	150.0	38.35	145.0	37.72	142.6	3.75	2.8	48.95	36.5	72.95	54.4

1) 025-028-031 = 2500 RPM. max.

2) 028-031 = 210 bar (3000 psi) max. int.

Series VT6DR **Modifications**

Y- Metric port connection, Omit for UNC

Cam ring for 045 **Seal class**

Volumetric displacement cm³/rev (in³/rev)

*014/B14 = 47.6 (2.90) 035/B35 = 111.0 (6.77)

017/B17 = 58.2 (3.55) 038/B38 = 120.3 (7.34)

020/B20 = 66.0 (4.03) 042/B42 = 136.0 (8.30)

024/B24 = 79.5 (4.85) 045/B45 = 145.7 (8.89)

028/B28 = 89.7 (5.47) 050/B50 = 158.0 (9.64)

031/B31 = 98.3 (6.00) 061/B61 = 190.5 (11.62)

*0' - Uni - directional 'B' - Bi - directional

Type of Shaft

1 - Keyed (SAE C)

2 - Keyed (SAE CC)

3 - Splined (SAE C)

5 - Keyed (no SAE)

Direction of rotation (view on shaft end)

R - Clockwise

L - Counter - clockwise

Porting combination

00 01 02 03

P S P-S S P S S

Design letter

Porting adapter

Coupling

1 - SAE A 4 - SAE C

2 - SAE B 5 - SAE J498b

3 - SAE BB 16/32-11 teeth

Adapter

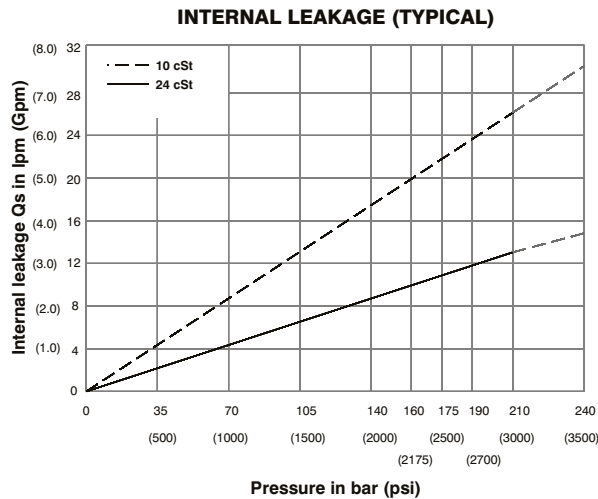
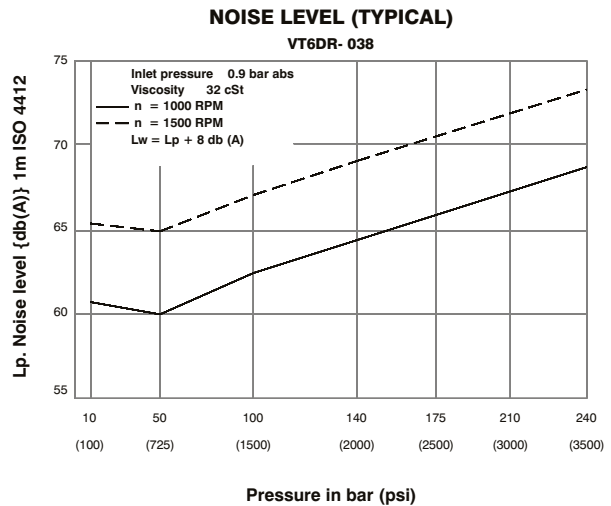
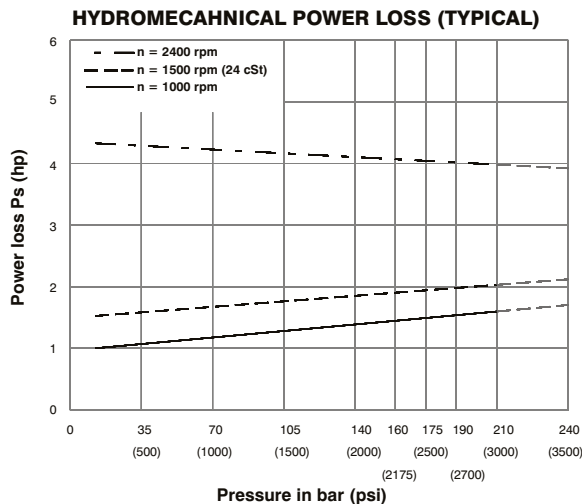
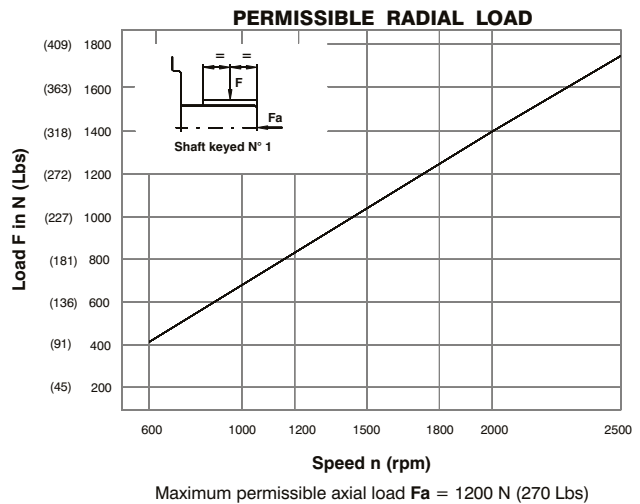
0 - None B - SAE B

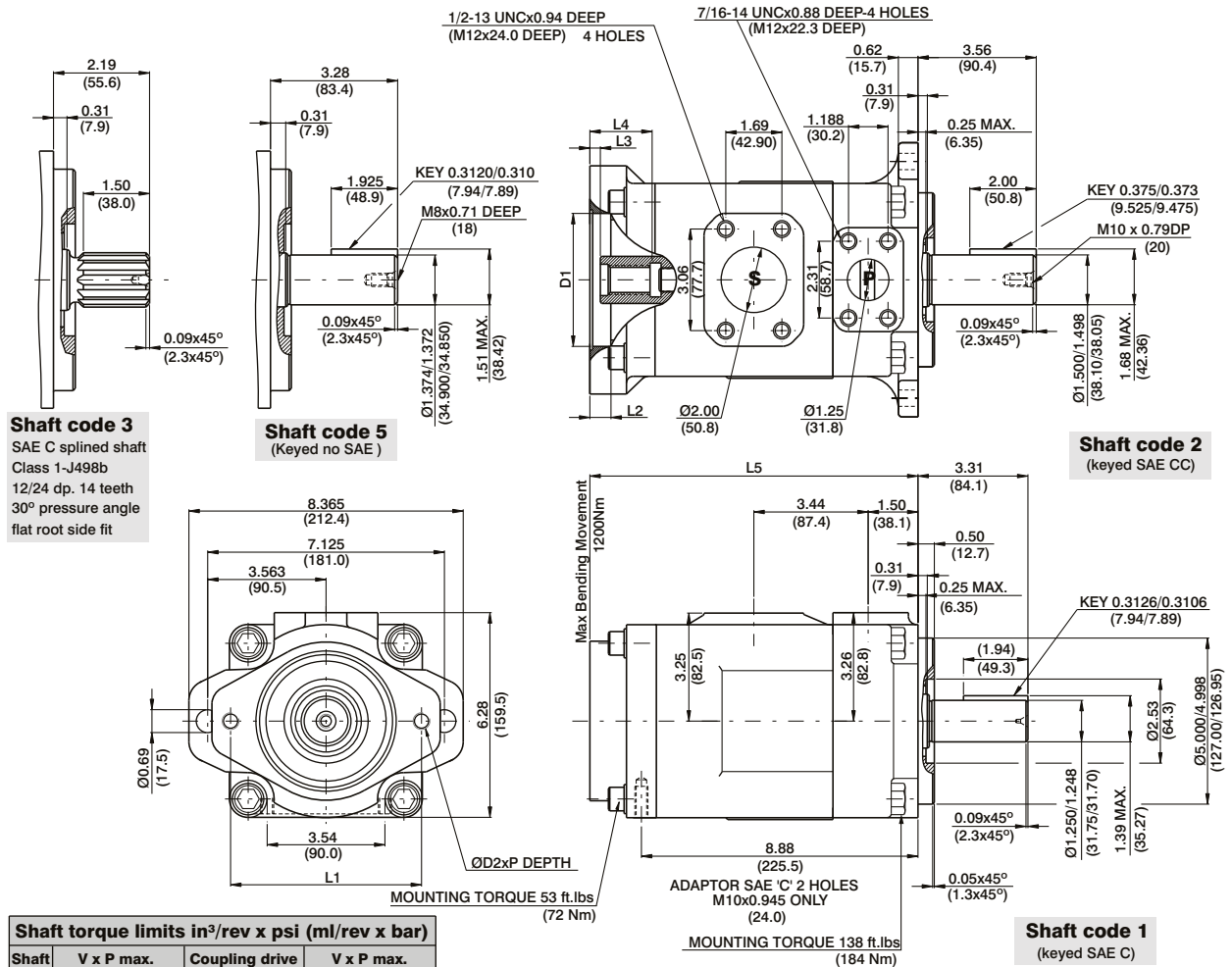
A - SAE A C - SAE C

0 1 2 3

SAE A - SAE B

SAE C





Shaft torque limits in ³ /rev x psi (ml/rev x bar)			
Shaft	V x P max.	Coupling drive	V x P max.
1	38300 (43240)	SAE"A"	9743 (11000)
2	58491 (66036)	SAE"B"	18246 (20600)
3	54207 (61200)	SAE"BB"	28937 (32670)
5	49247 (55600)	SAE"C"	33118 (37390)
		SAE"11teeth"	14039 (15850)

Adaptor	D1	D2	P	L1	L2	L3	L4	L5
SAE "A"	3.25 (82.60)	M10	0.94 (24)	4.19 (106.4)	0.43 (11)	0.31 (7.9)	1.26 (32)	9.33 (237)
SAE "B"	4.00 (101.65)	M12	1.10 (28)	5.75 (146.0)	0.63 (16)	0.31 (7.9)	1.81 (46)	9.88 (251)
SAE "C"	5.00 (127.10)	M16	-	7.12 (181.0)	0.63 (16)	0.31 (7.9)	2.20 (56)	10.27 (261)

Adaptor	SAE "A"			SAE "B"		SAE "C"
Coupling drive	SAE A	SAE (11teeth)	SAE B	SAE B	SAE BB	SAE C
Number of teeth	9	11	13	13	15	14
Pitch	16/32	16/32	16/32	16/32	16/32	12/24
Pressure angle	30°	30°	30°	30°	30°	30°
Major dia.(min)	0.625 (15.875)	0.750 (19.05)	0.875 (22.225)	0.875 (22.225)	1.00 (25.40)	1.250 (31.75)
Minor dia.(min)	0.500 (12.70)	0.630 (16.00)	0.753 (19.134)	0.753 (19.134)	0.877 (22.268)	1.086 (27.585)

OPERATING CHARACTERISTICS - TYPICAL (24 cST)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
VT6DR	014	2.90	47.6	18.88	71.4	16.42	62.1	14.78	55.9	3.08	2.3	24.81	18.5	41.03	30.6
	017	3.55	58.2	23.1	87.3	20.60	78.0	18.99	71.8	3.35	2.5	29.77	22.2	49.62	37.0
	020	4.00	66.0	26.19	99.0	23.73	89.7	22.08	83.5	3.75	2.8	33.39	24.9	55.92	41.7
	024	4.80	79.5	31.56	119.3	29.10	110.0	27.46	103.8	4.02	3.0	39.69	29.6	66.78	49.8
	028	5.50	89.7	35.58	134.5	33.12	125.2	31.48	119.0	4.29	3.2	44.52	33.2	74.96	55.9
	031	6.00	98.3	39.00	147.5	36.53	138.1	34.89	131.9	4.42	3.3	48.54	36.2	81.80	61.0
	035	6.80	111.0	44.04	166.5	41.58	157.2	39.94	151.0	4.69	3.5	54.58	40.7	92.13	68.7
	038	7.30	120.3	47.72	180.4	45.26	171.1	43.62	164.9	4.96	3.7	58.87	43.9	99.64	74.3
	042 ¹⁾	8.30	136.0	53.96	204.0	51.50	194.7	49.86	188.5	5.36	4.0	66.25	49.4	112.24	83.7
	045 ¹⁾	8.89	145.7	57.80	218.5	55.34	209.2	53.70	203.0	5.50	4.1	70.81	52.8	120.02	89.5
	050 ^{1,2)}	9.64	158.0	62.69	237.0	60.23	227.7	59.25	224.0	5.90	4.4	76.44	57.0	113.98	85.0
	061 ^{1,3)}	11.62	190.5	76.25	285.7	73.54	278.0	--	--	6.16	4.6	81.26	60.6	--	--

1) 042-045-050-061 = 2200 RPM max.

2) 050 = 210 bar (3000 psi) max.

3) 061 = 120 bar (1740 psi) max. int. 061 = 80 bar (1160 psi) cont.

Series VT6ER * - 066 - 1 R 00 - A 1 0 - A 1 *

Y - Metric port connection, Omit for UNC

Cam ring for

Volumetric displacement cm³/rev (in³/rev)

042 = 132.3 (8.07)	062 = 196.7 (12.00)
045 = 142.4 (8.69)	066 = 213.3 (13.02)
050 = 158.5 (9.67)	072 = 227.1 (13.86)
052 = 164.8 (10.06)	085 = 269.8 (16.46)
057 = 180.7 (11.02)	

Type of Shaft

1 - Keyed (SAE CC)
3 - Splined (SAE C)
4 - Splined (SAE CC)

Direction of rotation (view on shaft end)

R - Clockwise
L - Counter - clockwise

Porting combination

00 P S
01 P-S
02 P S
03 P S

Modifications

Seal class

1 = S1 (for mineral oil)
4 = S4 (for fire resistant fluids)
5 = S5 (for mineral oil and fire resistant fluids)

Design letter

Porting adapter

Coupling

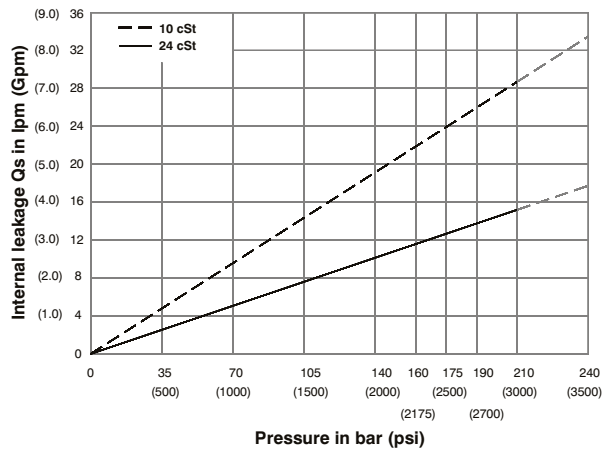
1 = SAE A 4 = SAE C
2 = SAE B 5 = SAE J498b
3 = SAE BB 16/32-11 teeth

Adapter

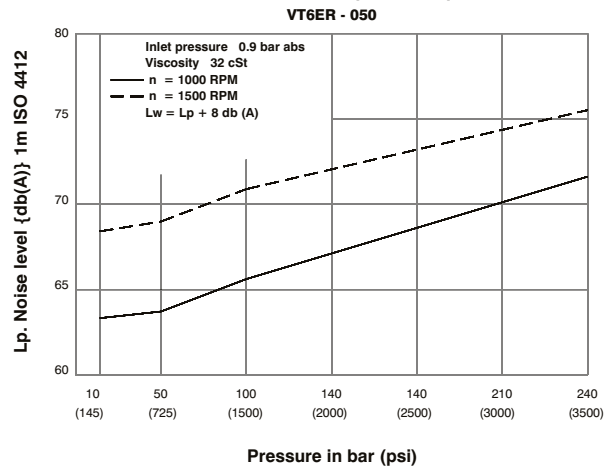
0 = None B = SAE B
A = SAE A C = SAE C

0 1 2 3
P P P P
SAE A - SAE B
SAE C

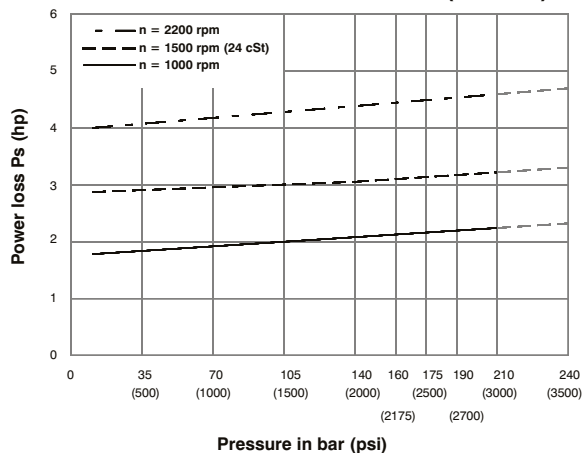
INTERNAL LEAKAGE (TYPICAL)



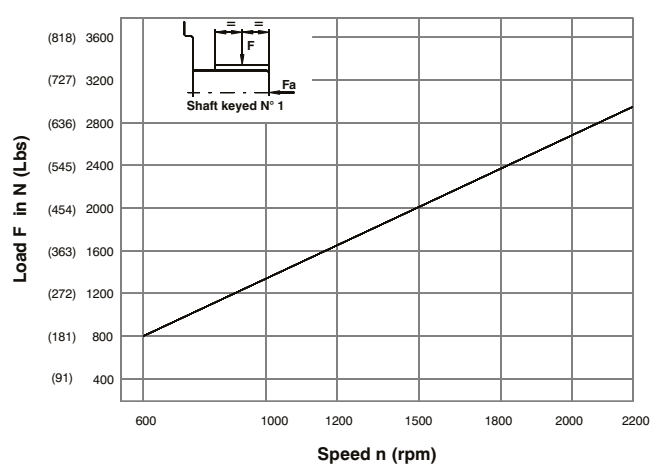
NOISE LEVEL (TYPICAL)



HYDROMECHANICAL POWER LOSS (TYPICAL)



PERMISSIBLE RADIAL LOAD



Maximum permissible axial load F_a = 2000 N (449 Lbs)

VT6EE / VT6EES - 066 - 045 - 1 R 00 - B 1 0 - 00 *

Series

VT6EE Series - ISO 3019-2

mounting flange 250 B4HW

VT6EES Series - SAE 4 bolts

Mounting flange J744c

Cam ring for "P1" & "P2"

Volumetric displacement cm³/rev (in³/rev)

042 = 132.3 (8.07)

045 = 142.4 (8.69)

050 = 158.5 (9.67)

052 = 164.8 (10.06)

057 = 180.7 (11.02)

062 = 196.7 (12.00)

066 = 213.3 (13.02)

072 = 227.1 (13.86)

085 = 269.8 (16.46)

Type of Shaft VT6EE

2 - Keyed (G45N ISO 3019-2)

VT6EES

1 - Keyed (SAE CC)

3 - Splined (SAE CC)

4 - Splined (SAE D&E)

5 - Keyed (SAE D&E)

Modifications

Port connection variables

SAE 4 bolt flange (J518c)

	UNC	METRIC
VT6EE		M0
VT6EES	00	M0

Coupling adaptor

0 - None

2 - SAE B

3 - SAE BB

Seal class

1 - S1 (for mineral oil)

4 - S4 (for fire resistant fluids)

5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page BM-1-5)

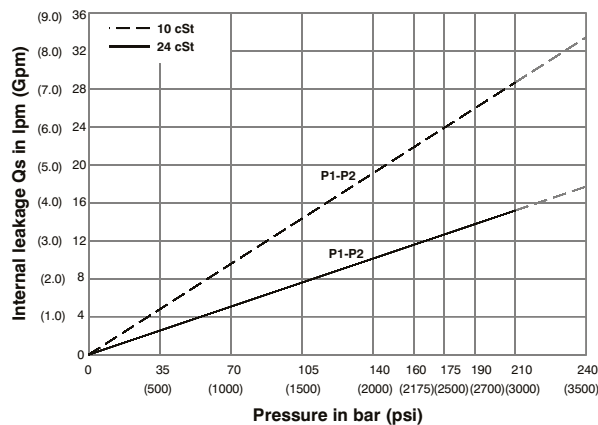
00 = Standard

Direction of rotation (View on shaft end)

R - Clockwise

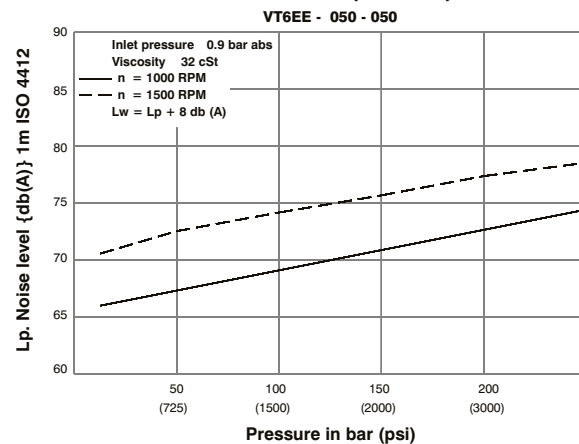
L - Counter - clockwise

INTERNAL LEAKAGE (TYPICAL)



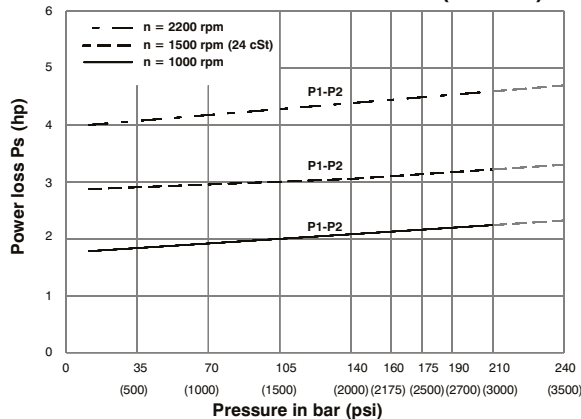
Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.

NOISE LEVEL (TYPICAL)



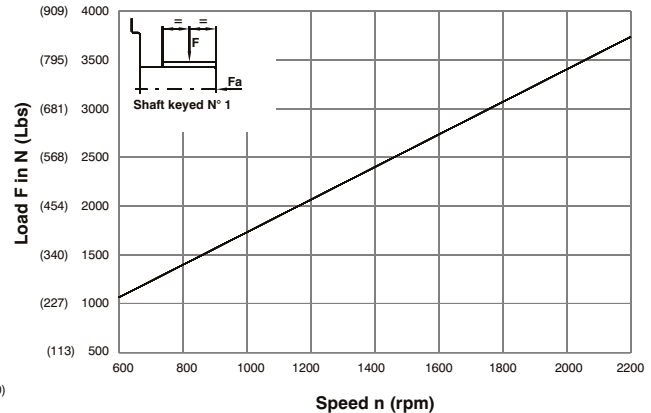
Double pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)

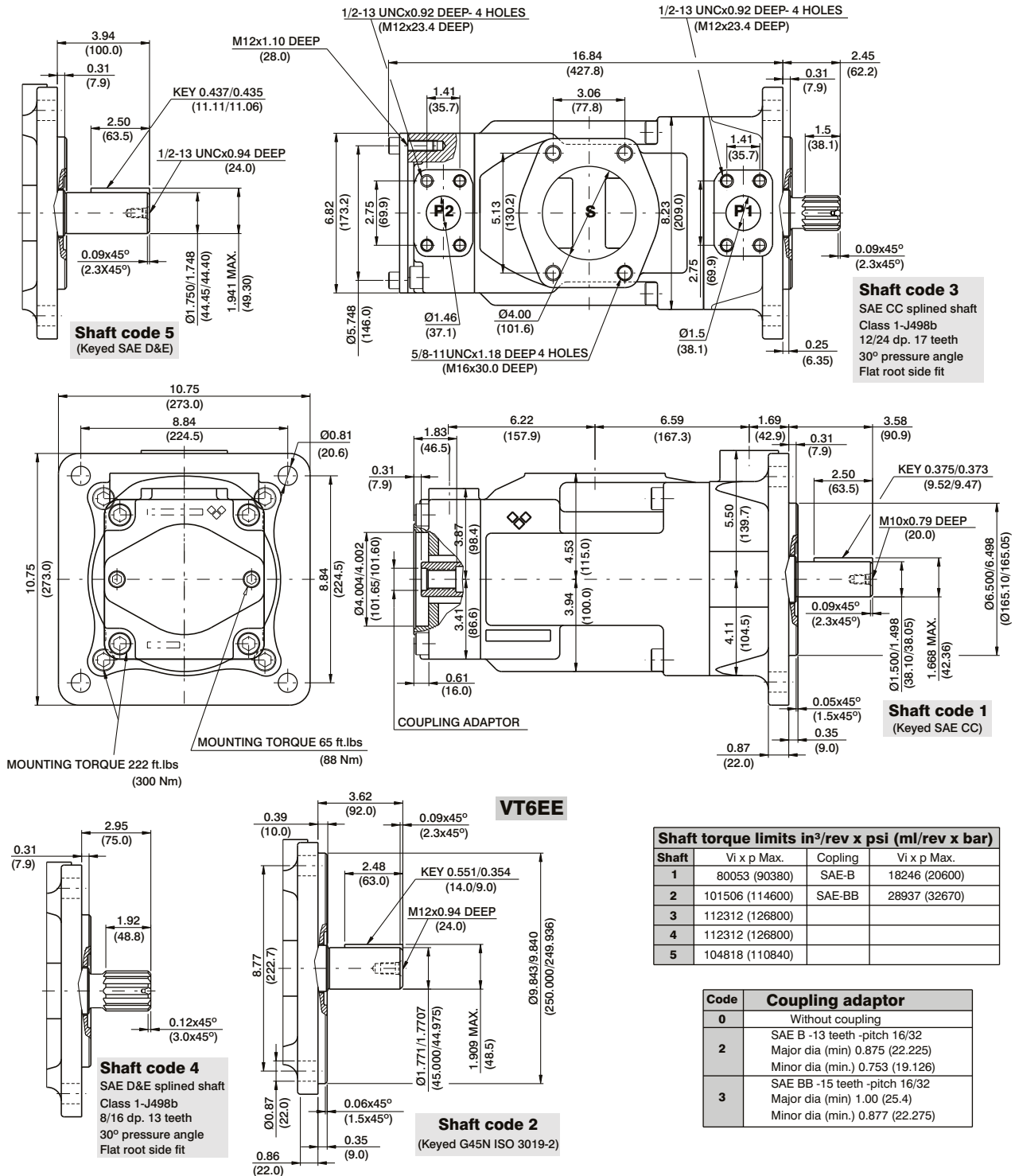


Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



Maximum permissible axial load Fa = 2000 N (449 Lbs)



OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm								Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)			
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw	hp	kw
P1 & P2	042	8.07	132.3	52.50	198.5	49.87	188.5	47.96	181.3	6.97	5.2	66.25	49.4	110.77	82.6		
	045	8.70	142.4	56.51	213.6	53.86	203.6	51.98	196.5	7.24	5.4	70.94	52.9	118.95	88.7		
	050	9.67	158.5	62.88	237.7	60.24	227.7	58.36	220.6	7.64	5.7	78.45	58.5	131.82	98.3		
	052	10.00	164.8	65.40	247.2	62.75	237.2	60.87	230.1	7.78	5.8	81.53	60.8	136.92	102.1		
	057	11.02	180.7	71.71	271.1	69.07	261.1	67.19	254.0	8.18	6.1	89.04	66.4	143.35	106.9		
	062	12.00	196.7	78.04	295.0	75.40	285.0	73.52	277.9	8.58	6.4	96.42	71.9	162.67	121.3		
	066	13.00	213.3	84.63	319.9	81.98	309.9	80.11	302.8	8.98	6.7	104.20	77.7	175.94	131.2		
	072	13.86	227.1	90.11	340.6	87.46	330.6	85.58	323.5	9.25	6.9	110.77	82.6	187.07	139.5		
	085 ^{1, 2)}	16.40	269.8	107.00	404.7	105.21	397.7	--	--	9.78	7.3	87.56	65.3	--	--		

1) 085 = 2000 RPM max.

2) 085 = 75 bar (1100 psi) cont. 085 = 90 bar (1300 psi) max. int.

VT6DCCR - 038 - 028 - 008 - 2 R 00 - A 1 - 00 - *

Series
Rear cap end for mounting
SAE "A" auxiliary pump
coupling adaptor
SAE "A" -9 teeth

Cam ring for "P1"
Volumetric displacement cm³/rev (in³/rev)
*014/B14 = 47.6 (2.90) 035/B35 = 111.0 (6.77)
017/B17 = 58.2 (3.55) 038/B38 = 120.3 (7.34)
020/B20 = 66.0 (4.03) 042/B42 = 136.0 (8.30)
024/B24 = 79.5 (4.85) 045/B45 = 145.7 (8.89)
028/B28 = 89.7 (5.47) 050/B50 = 158.0 (9.64)
031/B31 = 98.3 (6.00) 061/B61 = 190.5 (11.62)
*0 - Uni - directional 'B' - Bi - directional

Cam ring for "P2" & "P3"
Volumetric displacement cm³/rev (in³/rev)
*003/B03 = 10.8 (0.66) 015/B15 = 50.5 (3.08)
005/B05 = 17.2 (1.05) 017/B17 = 58.3 (3.56)
006/B06 = 21.3 (1.30) 020/B20 = 63.8 (3.89)
008/B08 = 26.4 (1.61) 022/B22 = 70.3 (4.29)
010/B10 = 34.1 (2.08) 025/B25 = 79.3 (4.84)
012/B12 = 37.1 (2.26) 028/B28 = 88.8 (5.42)
014/B14 = 46.0 (2.81) 031/B31 = 100.0 (6.10)
*0 - Uni - directional 'B' - Bi - directional

Modifications

Mounting w/connection variables

	UNC		METRIC	
	00	01	M0	M1
P3	1"	3/4"	1"	3/4"

Seal class
1 - S1 (for mineral oil)
4 - S4 (for fire resistant fluids)
5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page DI-1-17)
00 = Standard

Direction of rotation (view on shaft end)
R - Clockwise
L - Counter - clockwise

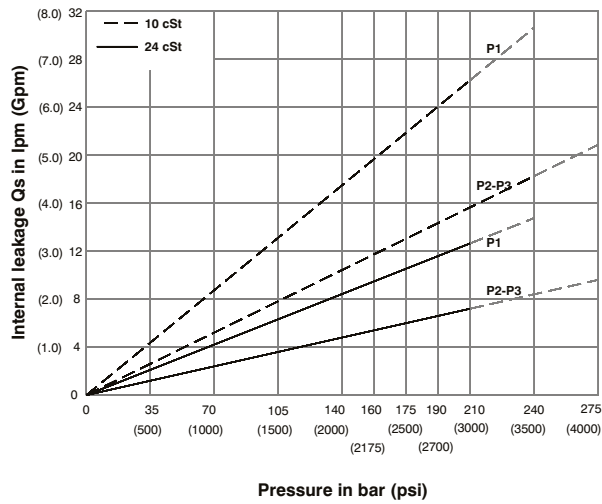
Type of Shaft
2 - Keyed (SAE CC)
3 - Splined (SAE D & E)

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

Pressure port	Series	Volumetric Displacement V _p		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1	014	2.90	47.6	18.88	71.4	16.42	62.1	14.78	55.9	3.08	2.3	24.81	18.5	41.03	30.6
	017	3.55	58.2	23.09	87.3	20.63	78.0	18.99	71.8	3.35	2.5	29.75	22.2	49.60	37.0
	020	4.00	66.0	26.19	99.0	23.73	89.7	22.08	83.5	3.75	2.8	33.39	24.9	55.92	41.7
	024	4.80	79.5	31.56	119.3	29.10	110.0	27.46	103.8	4.02	3.0	39.69	29.6	66.78	49.8
	028	5.50	89.7	35.58	134.5	33.12	125.2	31.48	119.0	4.29	3.2	44.52	33.2	74.96	55.9
	031	6.00	98.3	39.00	147.5	36.53	138.1	34.89	131.9	4.42	3.3	48.54	36.2	81.80	61.0
	035	6.80	111.0	44.04	166.5	41.58	157.2	39.94	151.0	4.69	3.5	54.58	40.7	92.13	68.7
	038	7.30	120.3	47.72	180.4	45.26	171.1	43.62	164.9	4.96	3.7	58.87	43.9	99.64	74.3
	042 ¹⁾	8.30	136.0	53.96	204.0	51.50	194.7	49.86	188.5	5.36	4.0	66.25	49.4	112.24	83.7
	045 ¹⁾	8.89	145.7	57.80	218.5	55.34	209.2	53.70	203.0	5.50	4.1	70.81	52.8	120.02	89.5
	050 ^{1,2)}	9.64	158.0	62.69	237.0	60.23	227.7	59.25	224.0	5.90	4.4	76.44	57.0	113.98	85.0
	061 ^{1,3)}	11.62	190.5	76.25	285.7	73.54	278.0	--	--	6.16	4.6	81.26	60.6 ³⁾	--	--
P2 & P3	003	0.66	10.8	4.29	16.2	2.96	11.2	2.04	7.7	1.74	1.3	7.11	5.3	11.22	8.4
	005	1.05	17.2	6.83	25.8	5.50	20.8	4.57	17.3	1.88	1.4	10.06	7.5	16.36	12.2
	006	1.30	21.3	8.44	31.9	7.11	26.9	6.19	23.4	2.01	1.5	11.94	8.9	19.71	14.7
	008	1.61	26.4	10.48	39.6	9.15	34.6	8.22	31.1	2.15	1.6	14.35	10.7	22.93	17.7
	010	2.08	34.1	13.52	51.1	12.19	46.1	11.26	42.6	2.28	1.7	18.64	13.4	29.90	22.3
	012	2.26	37.1	14.71	55.6	13.36	50.6	12.46	47.1	2.28	1.7	19.31	14.4	32.32	24.1
	014	2.81	46.0	18.25	69.0	16.93	64.0	16.00	60.5	2.55	1.9	23.60	17.6	39.56	29.5
	015	3.08	50.5	20.00	75.6	18.73	73.2	19.02	67.5	2.68	2.0	25.61	19.1	42.91	32.0
	017	3.56	58.3	23.12	87.4	21.79	82.4	20.87	78.9	2.82	2.1	29.37	21.9	49.48	36.9
	020	3.89	63.8	25.32	95.7	23.99	90.7	23.07	87.2	2.95	2.2	31.92	23.8	53.91	40.2
	022	4.29	70.3	27.88	105.4	26.56	100.4	25.63	96.9	3.08	2.3	35.00	26.1	59.14	44.1
	025	4.84	79.3	31.46	118.9	30.13	113.9	29.21	110.4	3.35	2.5	39.16	29.2	66.38	49.5
	028 ³⁾	5.42	88.8	35.24	133.2	33.92	128.2	33.28	125.8	3.75	2.8	43.85	32.7	65.04	48.5
	031 ³⁾	6.10	100.0	39.68	150.0	38.35	145.0	37.72	142.6	3.75	2.8	48.95	36.5	72.95	54.4

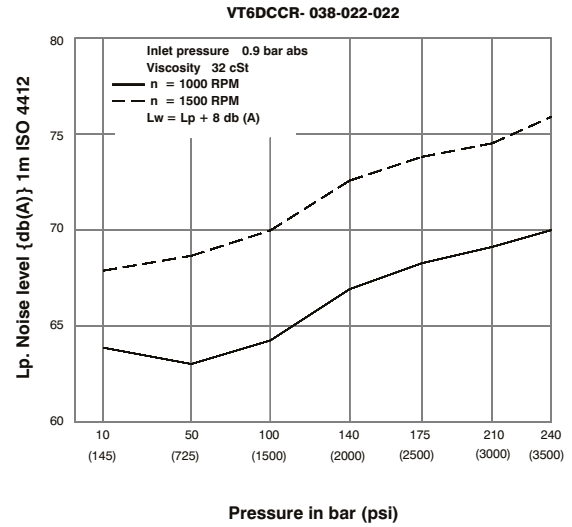
1) 042-045-050-061 = 2200 RPM max. 2) 028-031-050 = 210 bar (3000 psi) max. 3) 061 = 120 bar (1740 psi) max. int, 061 = 80 bar (1160 psi) cont.

INTERNAL LEAKAGE (TYPICAL)



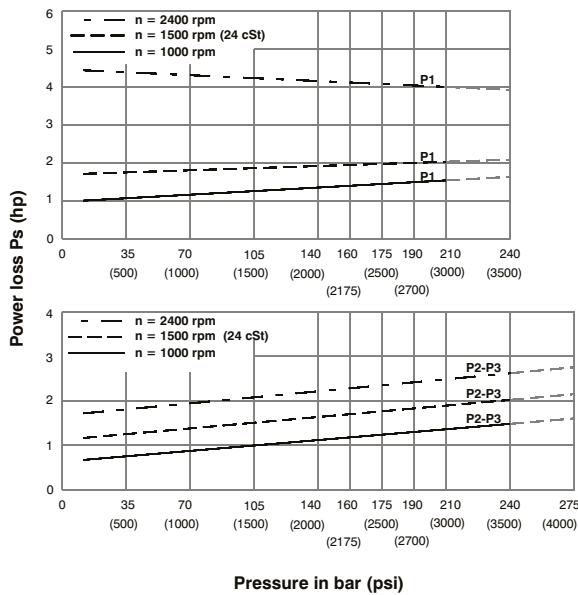
Total leakage is the sum of each section loss at its operating conditions.

NOISE LEVEL (TYPICAL)



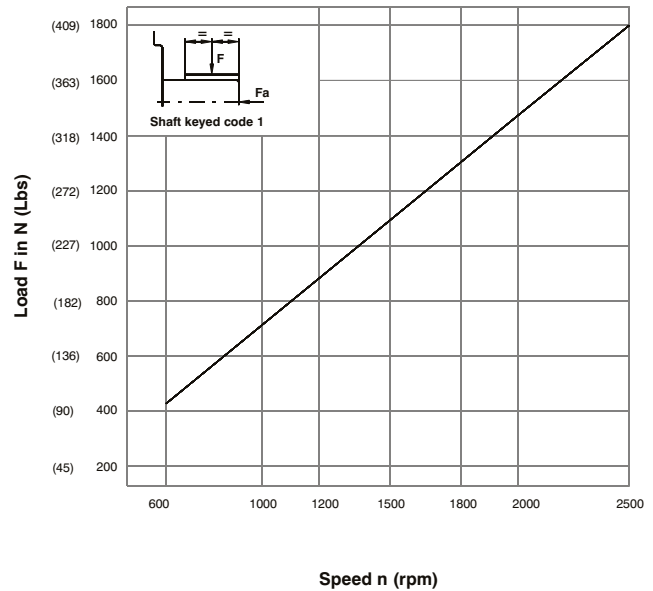
Triple pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECAHNICAL POWER LOSS (TYPICAL)



Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



Maximum axial load permissible $F_a = 1200$ N (449 Lbs)

PORT	CODE	A	B	C
P3	O0 & M0	2.06 (52.4)	1.03 (26.2)	1.00 (25.4)
	O1 & M1	1.874 (47.6)	0.874 (22.2)	0.75 (19.05)

Series **VT6EDCR - 062 - 035 - 017 - 1 R 00 - A 1 - P - 00 - ***

Rear cap end for mounting
SAE "A" auxiliary pump
coupling adaptor SAE "A" -9 teeth

Cam ring for "P1"

Volumetric displacement cm³/rev (in³/rev)

042 = 132.3 (8.07)	062 = 196.7 (12.00)
045 = 142.4 (8.69)	066 = 213.3 (13.02)
050 = 158.5 (9.67)	072 = 227.1 (13.86)
052 = 164.8 (10.06)	085 = 269.8 (16.46)
057 = 180.7 (11.02)	

Cam ring for "P2"

Volumetric displacement cm³/rev (in³/rev)

* 014/B14 = 47.6 (2.90)	035/B35 = 111.0 (6.77)
017/B17 = 58.2 (3.55)	038/B38 = 120.3 (7.34)
020/B20 = 66.0 (4.03)	042/B42 = 136.0 (8.30)
024/B24 = 79.5 (4.85)	045/B45 = 145.7 (8.89)
028/B28 = 89.7 (5.47)	050/B50 = 158.0 (9.64)
031/B31 = 98.3 (6.00)	061/B61 = 190.5 (11.62)

*0' - Uni - directional 'B' - Bi - directional

Cam ring for "P3"

Volumetric displacement cm³/rev (in³/rev)

*003/B03 = 10.8 (0.66)	015/B15 = 50.5 (3.08)
005/B05 = 17.2 (1.05)	017/B17 = 58.3 (3.56)
006/B06 = 21.3 (1.30)	020/B20 = 63.8 (3.89)
008/B08 = 26.4 (1.61)	022/B22 = 70.3 (4.29)
010/B10 = 34.1 (2.08)	025/B25 = 79.3 (4.84)
012/B12 = 37.1 (2.26)	028/B28 = 88.8 (5.42)
014/B14 = 46.0 (2.81)	031/B31 = 100.0 (6.10)

*0' - Uni - directional 'B' - Bi - directional

Modifications**Mounting w/connection variables**

00 = P3 = 1" SAE
01 = P3 = 3/4" SAE

Mounting (pump)

P = Pedestal mounting
F = Face mounting

Seal class

1 - S1 (for mineral oil)
4 - S4 (for fire resistant fluids)
5 - S5 (for mineral oil and fire resistant fluids)

Design letter**Porting combination (see page DI-1-17)**

00 = Standard

Direction of rotation (view on shaft end)

R - Clockwise
L - Counter - clockwise

Type of Shaft

1 - Keyed (G45N-ISO 3019-2)
3 - Splined (SAE D & E)

OPERATING CHARACTERISTICS - TYPICAL (24 cST) (Input power p (KW) for one cartridge only)

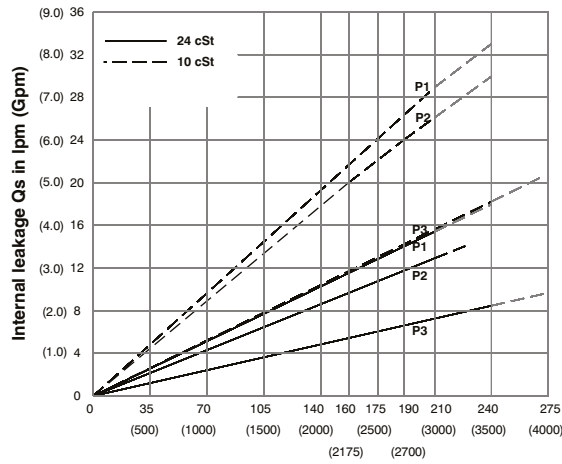
Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
P1	042	8.07	132.3	52.50	198.5	49.87	188.5	47.96	181.3	6.97	5.2	66.25	49.4	110.77	82.6
	045	8.70	142.4	56.51	213.6	53.86	203.6	51.98	196.5	7.24	5.4	70.94	52.9	118.95	88.7
	050	9.67	158.5	62.88	237.7	60.24	227.7	58.36	220.6	7.64	5.7	78.45	58.5	131.82	98.3
	052	10.00	164.8	65.40	247.2	62.75	237.2	60.87	230.1	7.78	5.8	81.53	60.8	136.92	102.1
	057	11.02	180.7	71.71	271.1	69.07	261.1	67.19	254.0	8.18	6.1	89.04	66.4	143.35	106.9
	062	12.00	196.7	78.04	295.0	75.40	285.0	73.52	277.9	8.58	6.4	96.42	71.9	162.67	121.3
	066	13.00	213.3	84.63	319.9	81.98	309.9	80.11	302.8	8.98	6.7	104.20	77.7	175.94	131.2
	072	13.86	227.1	90.11	340.6	87.46	330.6	85.58	323.5	9.25	6.9	110.77	82.6	187.07	139.5
	085 ^{1,2)}	16.40	269.8	107.00	404.7	105.21	397.7	--	--	9.78	7.3	87.56	65.3	--	--
	014	2.90	47.6	18.88	71.4	16.42	62.1	14.78	55.9	3.08	2.3	24.81	18.5	41.03	30.6
P2	017	3.55	58.2	23.09	87.3	20.63	78.0	18.99	71.8	3.35	2.5	29.75	22.2	49.60	37.0
	020	4.00	66.0	26.19	99.0	23.73	89.7	22.08	83.5	3.75	2.8	33.39	24.9	55.92	41.7
	024	4.80	79.5	31.56	119.3	29.10	110.0	27.46	103.8	4.02	3.0	39.69	29.6	66.78	49.8
	028	5.50	89.7	35.58	134.5	33.12	125.2	31.48	119.0	4.29	3.2	44.52	33.2	74.96	55.9
	031	6.00	98.3	39.00	147.5	36.53	138.1	34.89	131.9	4.42	3.3	48.54	36.2	81.80	61.0
	035	6.80	111.0	44.04	166.5	41.58	157.2	39.94	151.0	4.69	3.5	54.58	40.7	92.13	68.7
	038	7.30	120.3	47.72	180.4	45.26	171.1	43.62	164.9	4.96	3.7	58.87	43.9	99.64	74.3
	042	8.30	136.0	53.96	204.0	51.50	194.7	49.86	188.5	5.36	4.0	66.25	49.4	112.24	83.7
	045	8.89	145.7	57.80	218.5	55.34	209.2	53.70	203.0	5.50	4.1	70.81	52.8	120.02	89.5
	050 ³⁾	9.64	158.0	62.69	237.0	60.23	227.7	59.25	224.0	5.90	4.4	76.44	57.0	113.98	85.0
P3	061 ⁴⁾	11.62	190.5	76.25	285.7	73.54	278.0	--	--	6.16	4.6	81.26	60.6	--	--
	003	0.66	10.8	4.29	16.2	2.96	11.2	2.04	7.7	1.74	1.3	7.11	5.3	11.22	8.4
	005	1.05	17.2	6.83	25.8	5.50	20.8	4.57	17.3	1.88	1.4	10.06	7.5	16.36	12.2
	006	1.30	21.3	8.44	31.9	7.11	26.9	6.19	23.4	2.01	1.5	11.94	8.9	19.71	14.7
	008	1.61	26.4	10.48	39.6	9.15	34.6	8.22	31.1	2.15	1.6	14.35	10.7	22.93	17.7
	010	2.08	34.1	13.52	51.1	12.19	46.1	11.26	42.6	2.28	1.7	18.64	13.4	29.90	22.3
	012	2.26	37.1	14.71	55.6	13.36	50.6	12.46	47.1	2.28	1.7	19.31	14.4	32.32	24.1
	014	2.81	46.0	18.25	69.0	16.93	64.0	16.00	60.5	2.55	1.9	23.60	17.6	39.56	29.5
	015	3.08	50.5	20.00	75.6	18.73	73.2	19.02	67.5	2.68	2.0	25.61	19.1	42.91	32.0
	017	3.56	58.3	23.12	87.4	21.79	82.4	20.87	78.9	2.82	2.1	29.37	21.9	49.48	36.9
P3	020	3.89	63.8	25.32	95.7	23.99	90.7	23.07	87.2	2.95	2.2	31.92	23.8	53.91	40.2
	022	4.29	70.3	27.88	105.4	26.56	100.4	25.63	96.9	3.08	2.3	35.00	26.1	59.14	44.1
	025	4.84	79.3	31.46	118.9	30.13	113.9	29.21	110.4	3.35	2.5	39.16	29.2	66.38	49.5
	028 ³⁾	5.42	88.8	35.24	133.2	33.92	128.2	33.28	125.8	3.75	2.8	43.85	32.7	65.04	48.5
	031 ³⁾	6.10	100.0	39.68	150.0	38.35	145.0	37.72	142.6	3.75	2.8	48.95	36.5	72.95	54.4

1) 085 = 2000 RPM max. 2) 085 = 75 bar (1100 psi) cont. 085 = 90 bar (1300 psi) max. int.

4) 061 = 120 bar (1740 psi) max. int. 061 = 80 bar (1160 psi) cont.

3) 028-031-050=210 bar (3000 psi) max.

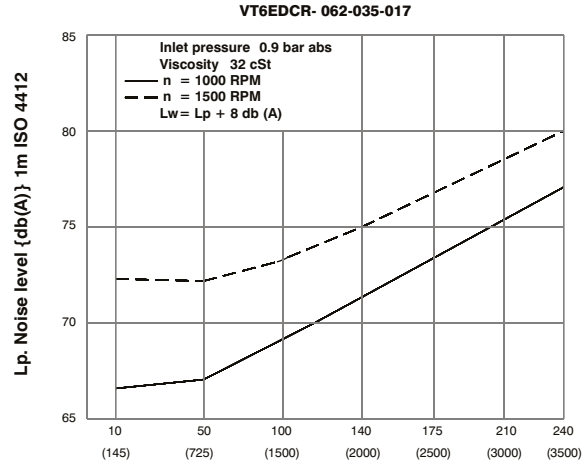
INTERNAL LEAKAGE (TYPICAL)



Pressure in bar (psi)

Total leakage is the sum of each section loss at its operating conditions.

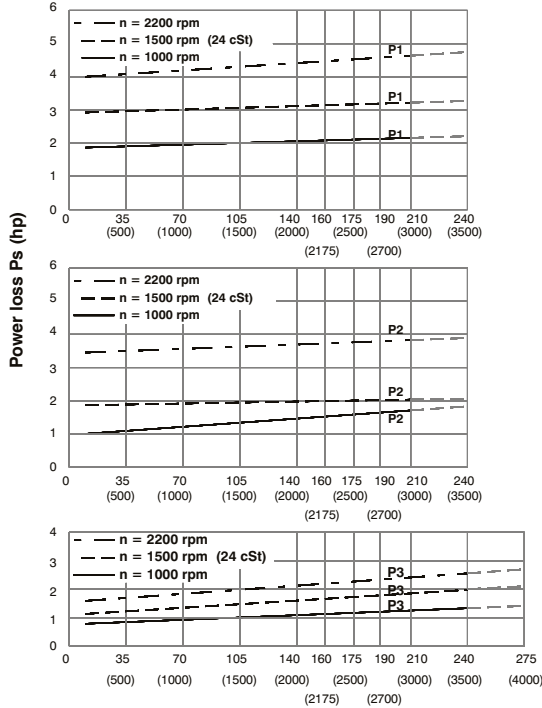
NOISE LEVEL (TYPICAL)



Pressure in bar (psi)

Triple pump noise level is given with each section discharging at the pressure noted on the curve.

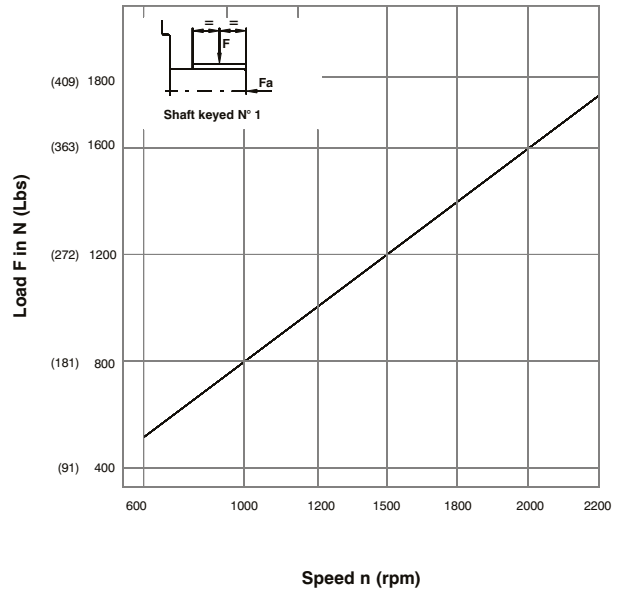
HYDROMECHANICAL POWER LOSS (TYPICAL)



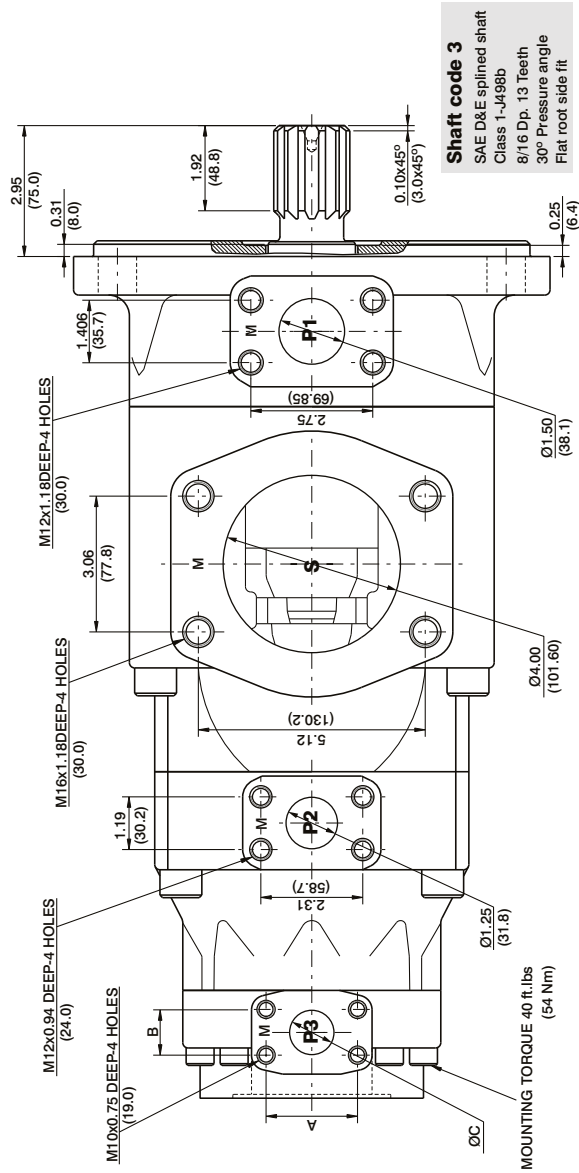
Pressure in bar (psi)

Total hydromechanical power loss is the sum of each section at its operating conditions

PERMISSIBLE RADIAL LOAD

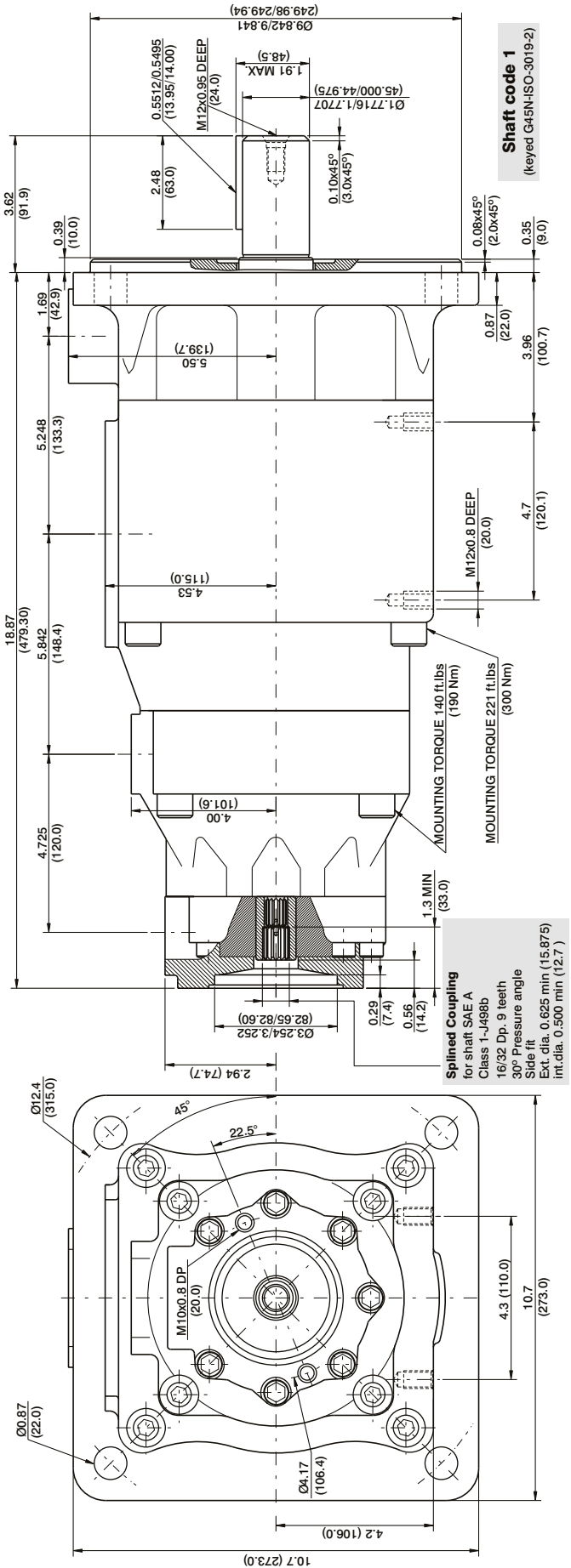


Maximum axial load permissible $F_a = 2000N(449 \text{ lbs})$



PORT CODE	A	B	C
P3	00	2.06 (52.4)	1.03 (26.2)
P1	01	1.874 (47.6)	0.874 (22.2)

Shaft torque limits in ³ /rev x psi (ml/rev x bar)	Shaft	Coupling drive	V x P max.
3	54207 (61200)	SAE'A'	3061 (3456)



Series **VT7EE or VT7EES - 066 - 045 - 1 R 00 - A 1 0 - 00 ***

VT7EE series - ISO 3019-2
mounting flange 250 B4HW

VT7EES series- SAE E 4 bolts
Mounting flange J744c

Cam ring for "P1" & "P2"
Volumetric displacement cm³/rev (in³/rev)

042 = 132.2 (8.07)	057 = 183.2 (11.18)
045 = 142.5 (8.70)	062 = 196.6 (12.0)
050 = 158.5 (9.67)	066 = 213.0 (13.0)
052 = 163.8 (10.0)	072 = 227.1 (13.86)
054 = 170.9 (10.43)	085 = 268.7 (16.40)

Type of shaft VT7EE
2 - keyed G45N(ISO/R775 -G38M)

Type of shaft VT7EES
1 - keyed (SAE CC)
3 - splined (SAE CC)
4 - splined (SAE D & E)
5 - splined (SAE D & E)

Modifications
Mounting W/connection variables

P1 & P2= 1-1/2" S=4"	
	VT7EES VT7EE-VT7EES
Type	UNC METRIC
code	00 M0

Coupling adaptor
0 - none
2 - SAE B
3 - SAE BB

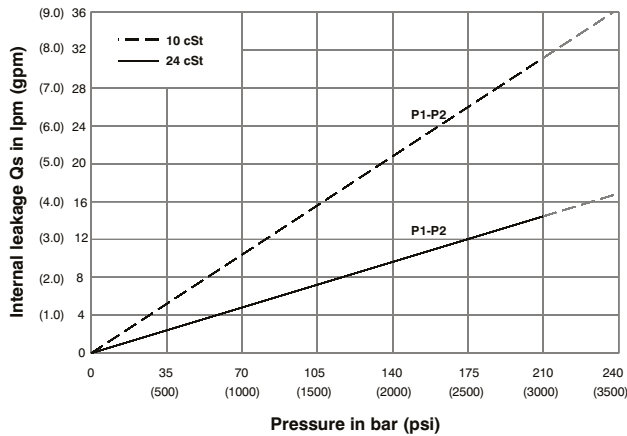
Seal class
1 - S1 (for mineral oil)
4 - S4 (for fire resistant fluids)
5 - S5 (for mineral oil and fire resistant fluids)

Design letter

Porting combination (see page BM-1-5)
00 - standard

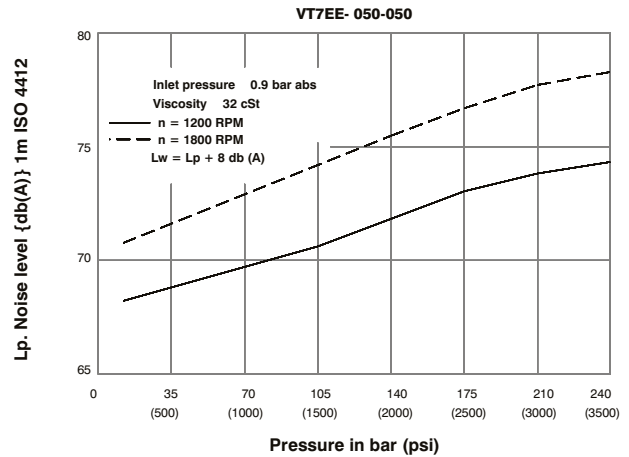
Direction of rotation (view on shaft end)
R - clockwise
L - counter-clockwise

INTERNAL LEAKAGE (TYPICAL)



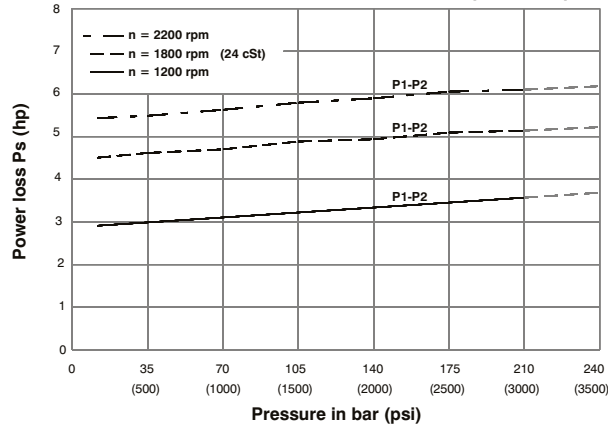
Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow.
Total leakage is the sum of each section loss at its operating conditions.

NOISE LEVEL (TYPICAL)



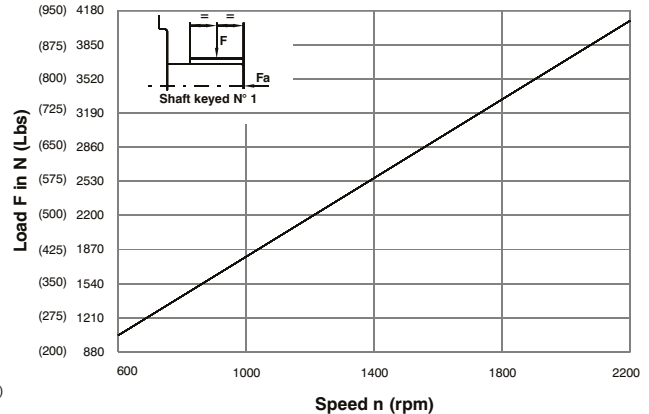
Double pump noise level is given with each section discharging at the pressure noted on the curve.

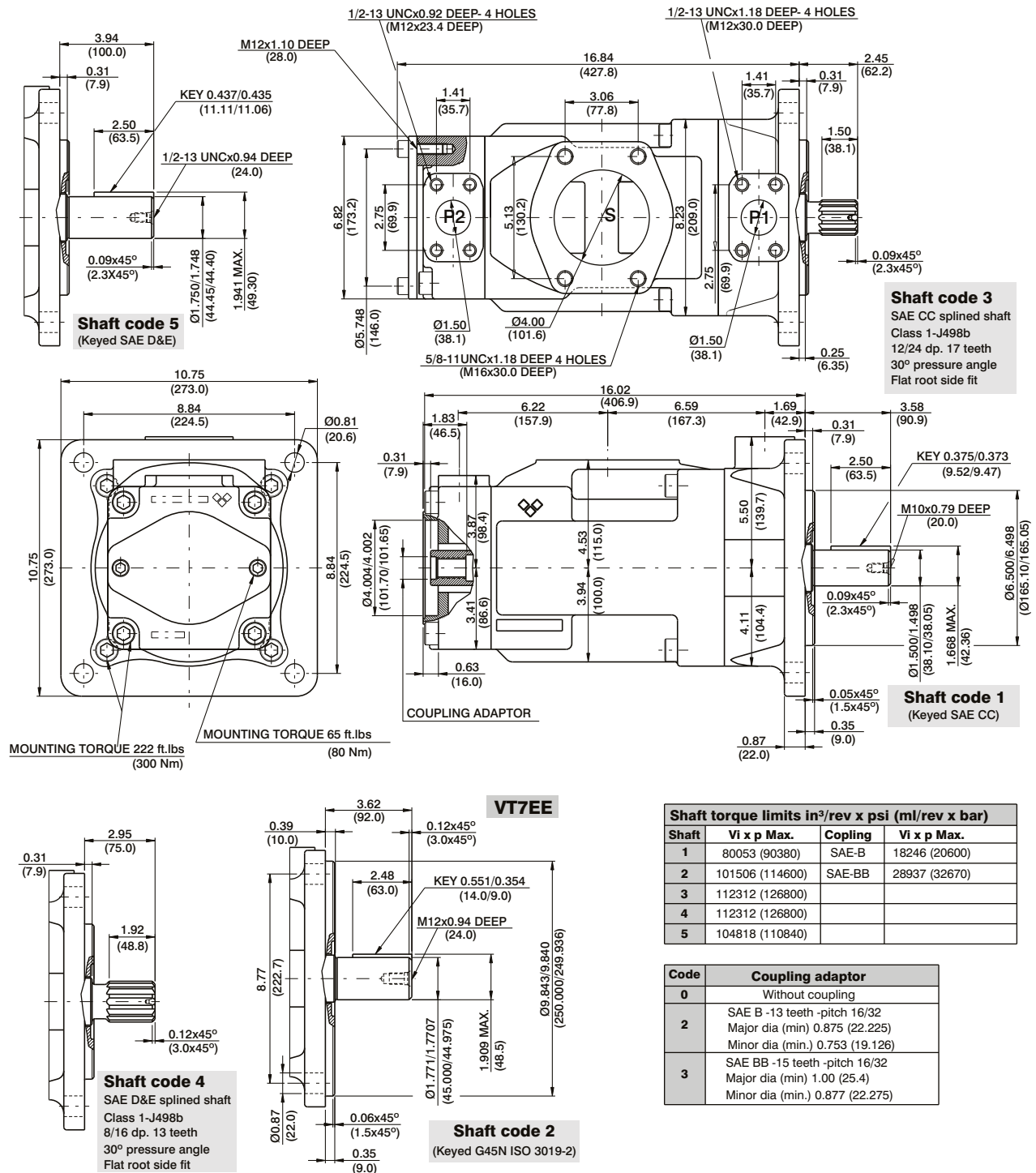
HYDROMECHANICAL POWER LOSS (TYPICAL)

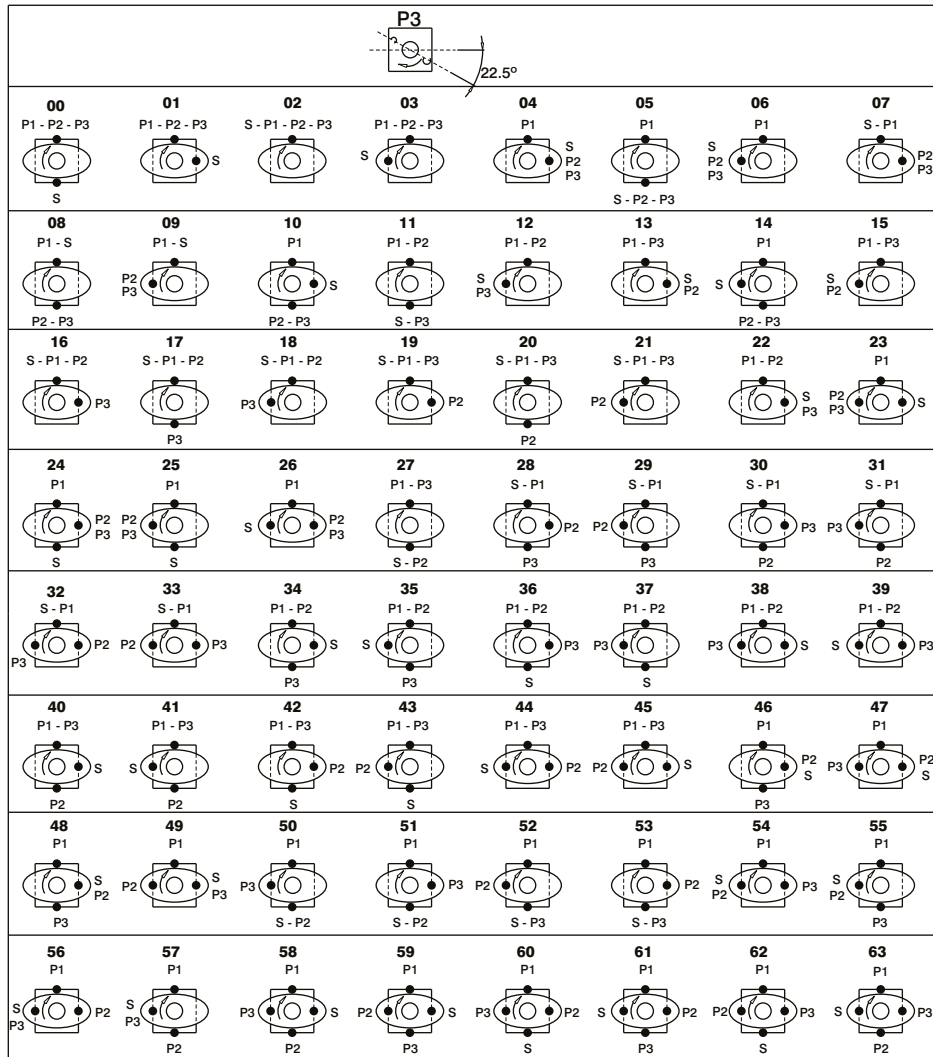


Total hydromechanical power loss is the sum of each section at its operating conditions.

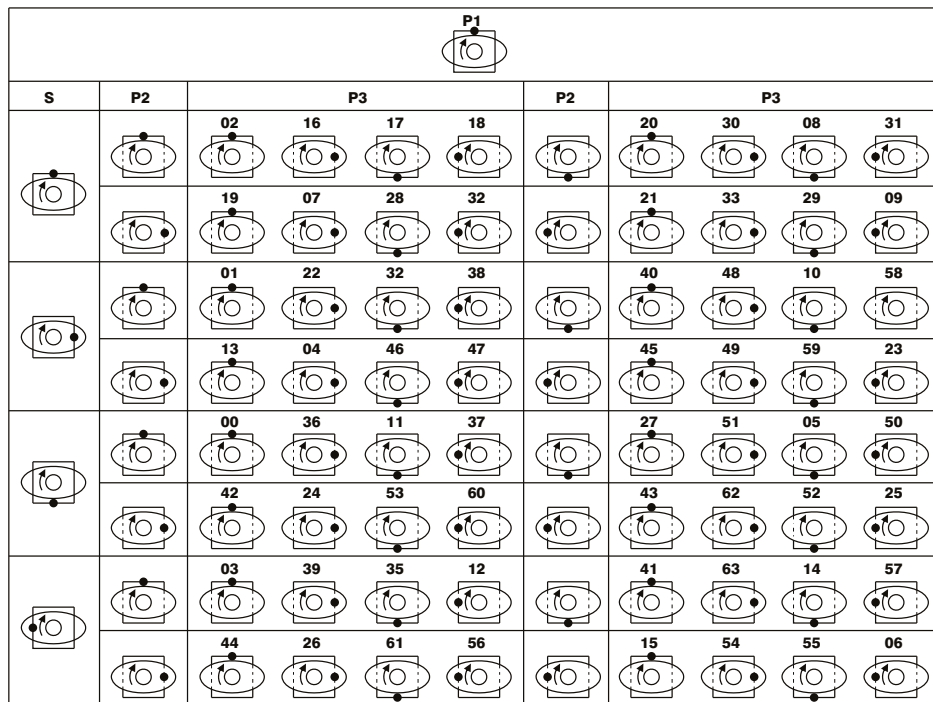
PERMISSIBLE RADIAL LOAD







VT6DCCR-VT6EDCR



VT6DCCR-VT6EDCR

DRIVE TRAIN

MOBILE VANE PUMPS

VT6CRM * - B22 - 1 R 00 - A 1 0 - A 1 *

Series _____

Y- Metric port connection, Omit for UNC _____

Cam ring for _____

Volumetric displacement cm³/rev (in³/rev)

* B03/R03 = 10.8 (0.66)	B15/R15 = 50.5 (3.08)
B05/R05 = 17.2 (1.05)	B17/R17 = 58.3 (3.56)
B06/R06 = 21.3 (1.30)	B20/R20 = 63.8 (3.89)
B08/R08 = 26.4 (1.61)	B22/R22 = 70.3 (4.29)
B10/R10 = 34.1 (2.08)	B25/R25 = 79.3 (4.84)
B12/R12 = 37.1 (2.26)	B28/R28 = 88.8 (5.42)
B14/R14 = 46.0 (2.81)	B31/R31 = 100.0 (6.10)

* 'B' - for Mobile
'R' - for Mobile - spring assisted

Type of Shaft

1 - Keyed (SAE BB)	4 - Splined (SAE BB)
2 - Keyed (no SAE)	5 - Keyed (no SAE)
3 - Splined (SAE B)	

Direction of rotation (view on shaft end) _____

R - Clockwise
L - Counter - clockwise

Porting combination _____

Modifications

Seal class

- 1 - S1 (for mineral oil)
- 4 - S4 (for fire resistant fluids)
- 5 - S5 (for mineral oil and fire resistant fluids)

Design letter _____

Porting adapter _____

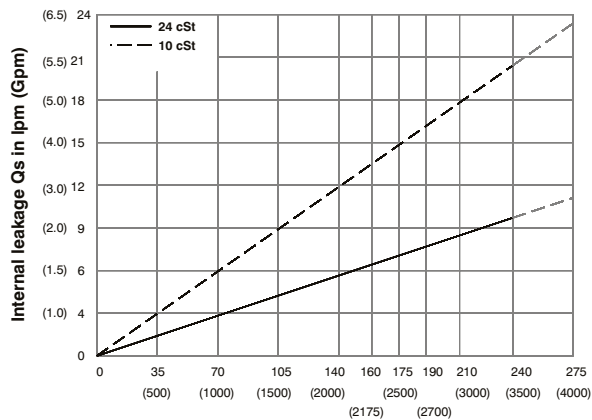
Coupling

1 - SAE A	4 - SAE C
2 - SAE B	5 - SAE J498b
3 - SAE BB	16/32-11 teeth

Adapter

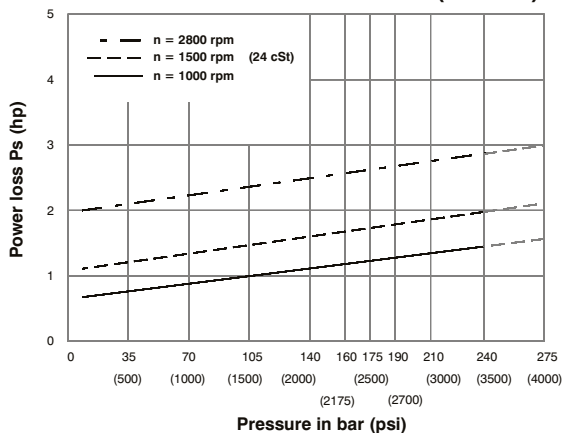
0 - None	B - SAE B
A - SAE A	C - SAE C

INTERNAL LEAKAGE (TYPICAL)

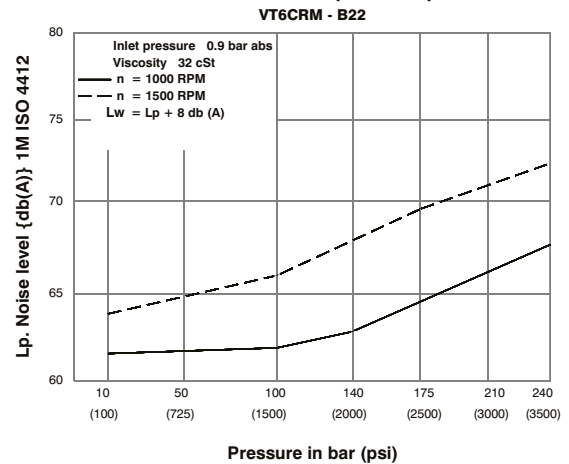


Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow.

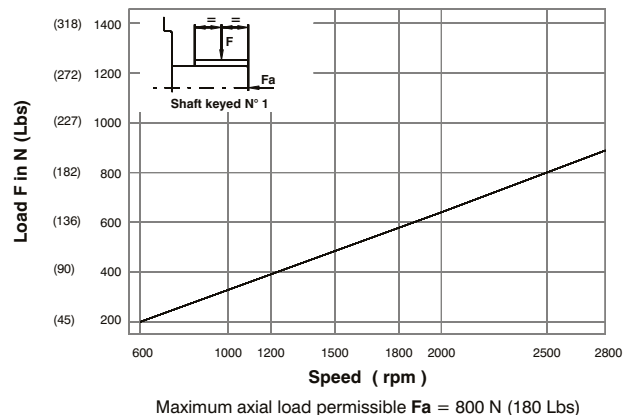
HYDROMECHANICAL POWER LOSS (TYPICAL)



NOISE LEVEL (TYPICAL)



PERMISSIBLE RADIAL LOAD



VT6DRM * - B45 - 1 R 00 - A 1 0 - A 1 *

Series _____

Y- Metric port connection, Omit for UNC

Cam ring for _____

Volumetric displacement cm³/rev (in³/rev)

* B14/R14 = 47.6 (2.90)	B35/R35 = 110.0 (6.77)
B17/R17 = 58.2 (3.55)	B38/R38 = 120.3 (7.34)
B20/R20 = 66.0 (4.03)	B42/R42 = 136.0 (8.30)
B24/R24 = 79.5 (4.85)	B45/R45 = 145.7 (8.89)
B28/R28 = 89.7 (5.47)	B50/R50 = 158.0 (9.64)
B31/R31 = 98.3 (6.00)	B61/R61 = 190.5 (11.62)

* 'B' - for Mobile
'R' - for Mobile - spring assisted

Type of Shaft _____

1 - Keyed (SAE C)
2 - Keyed (SAE CC)
3 - Splined (SAE C)
5 - Keyed (no SAE)

Direction of rotation (view on shaft end) _____

R - Clockwise
L - Counter - clockwise

Porting combination _____

00 P S
01 P-S
02 P S
03 P S

Modifications _____

Seal class
1 - S1 (for mineral oil)
4 - S4 (for fire resistant fluids)
5 - S5 (for mineral oil and fire resistant fluids)

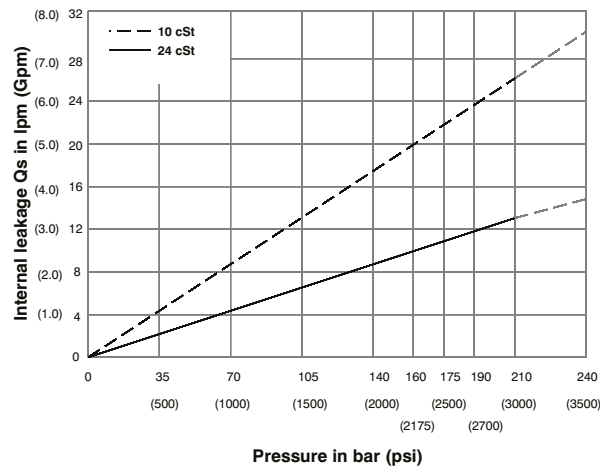
Design letter _____

Porting adapter _____

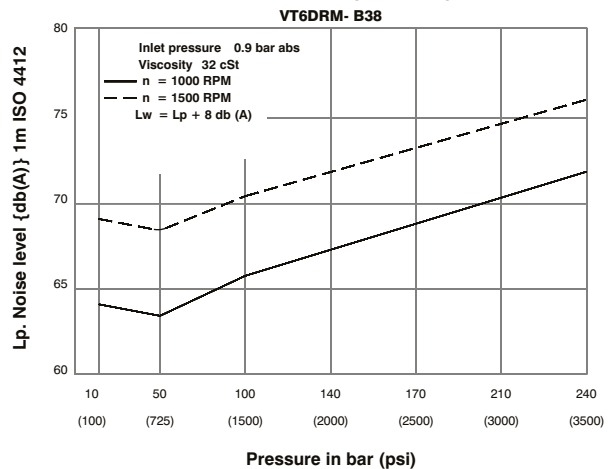
Coupling
1 - SAE A
2 - SAE B
3 - SAE BB
4 - SAE C
5 - SAE J498b
16/32-11 teeth

Adapter
0 - None
A - SAE A
B - SAE B
C - SAE C

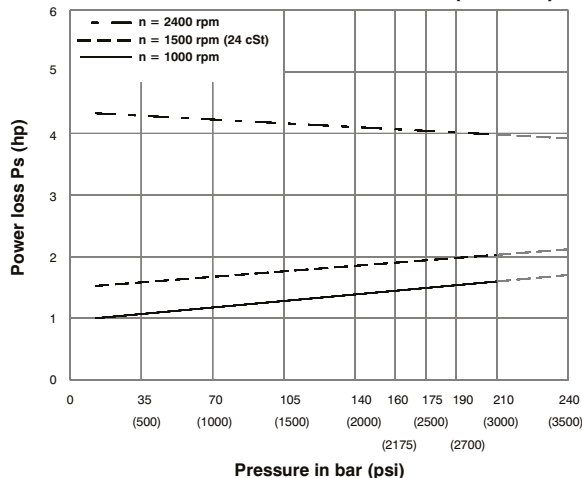
INTERNAL LEAKAGE (TYPICAL)



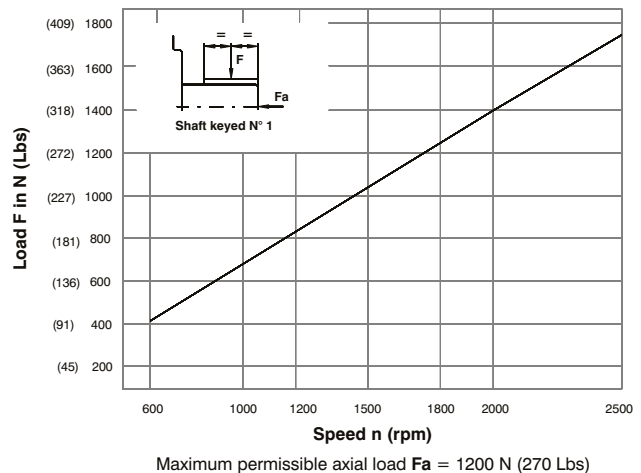
NOISE LEVEL (TYPICAL)

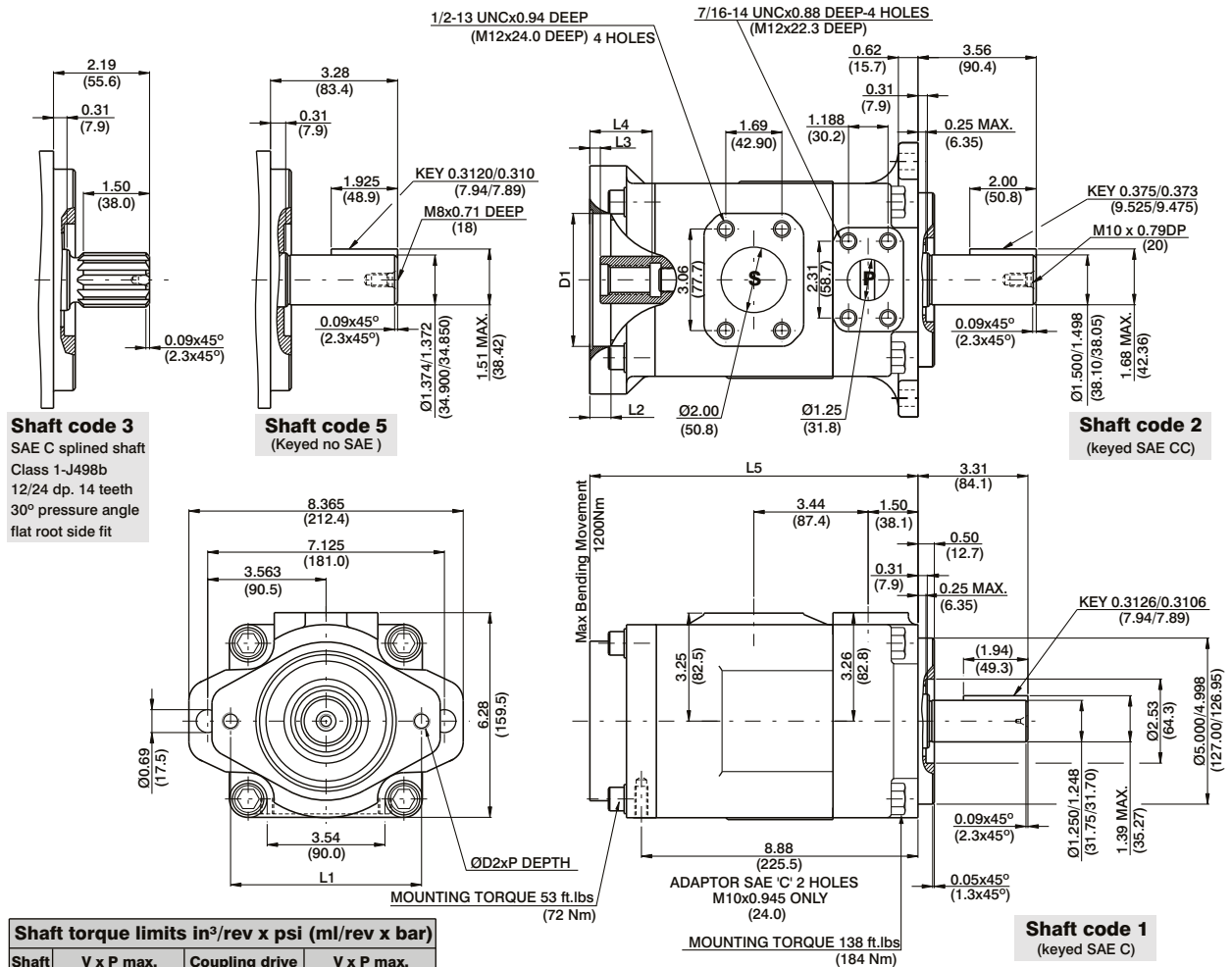


HYDROMECHANICAL POWER LOSS (TYPICAL)



PERMISSIBLE RADIAL LOAD





Shaft	V x P max.	Coupling drive	V x P max.
1	38300 (43240)	SAE "A"	9743 (11000)
2	58491 (66036)	SAE "B"	18246 (20600)
3	54207 (61200)	SAE "BB"	28937 (32670)
5	49247 (55600)	SAE "C"	33118 (37390)
		SAE "11teeth"	14039 (15850)

Adaptor	D1	D2	P	L1	L2	L3	L4	L5
SAE "A"	3.25 (82.60)	M10	0.94 (24)	4.19 (106.4)	0.43 (11)	0.31 (7.9)	1.26 (32)	9.33 (237)
SAE "B"	4.00 (101.65)	M12	1.10 (28)	5.75 (146.0)	0.63 (16)	0.31 (7.9)	1.81 (46)	9.88 (251)
SAE "C"	5.00 (127.10)	M16	-	7.12 (181.0)	0.63 (16)	0.31 (7.9)	2.20 (56)	10.27 (261)

Adaptor	SAE "A"			SAE "B"		SAE "C"
Coupling drive	SAE A	SAE (11teeth)	SAE B	SAE B	SAE BB	SAE C
Number of teeth	9	11	13	13	15	14
Pitch	16/32	16/32	16/32	16/32	16/32	12/24
Pressure angle	30°	30°	30°	30°	30°	30°
Major dia.(min)	0.625 (15.875)	0.750 (19.05)	0.875 (22.225)	0.875 (22.225)	1.00 (25.40)	1.250 (31.75)
Minor dia.(min)	0.500 (12.70)	0.630 (16.00)	0.753 (19.134)	0.753 (19.134)	0.877 (22.268)	1.086 (27.585)

OPERATING CHARACTERISTICS - TYPICAL (24 cST)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
				p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
		in ³ /rev	cm ³ /rev	gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
VT6DRM	B14	2.90	47.6	18.88	71.4	16.42	62.1	14.78	55.9	3.08	2.3	24.81	18.5	41.03	30.6
	B17	3.55	58.2	23.1	87.3	20.6	78.0	18.99	71.8	3.35	2.5	29.77	22.2	49.62	37.0
	B20	4.00	66.0	26.19	99.0	23.73	89.7	22.08	83.5	3.75	2.8	33.39	24.9	55.92	41.7
	B24	4.80	79.5	31.56	119.3	29.10	110.0	27.46	103.8	4.02	3.0	39.69	29.6	66.78	49.8
	B28	5.50	89.7	35.58	134.5	33.12	125.2	31.48	119.0	4.29	3.2	44.52	33.2	74.96	55.9
	B31	6.00	98.3	39.00	147.5	36.53	138.1	34.89	131.9	4.42	3.3	48.54	36.2	81.80	61.0
	B35	6.80	111.0	44.04	166.5	41.58	157.2	39.94	151.0	4.69	3.5	54.58	40.7	92.13	68.7
	B38	7.30	120.3	47.72	180.4	45.26	171.1	43.62	164.9	4.96	3.7	58.87	43.9	99.64	74.3
	B42 ¹⁾	8.30	136.0	53.96	204.0	51.50	194.7	49.86	188.5	5.36	4.0	66.25	49.4	112.24	83.7
	B45 ¹⁾	8.89	145.7	57.80	218.5	55.34	209.2	53.70	203.0	5.50	4.1	70.81	52.8	120.02	89.5
	B50 ^{1,2)}	9.64	158.0	62.69	237.0	60.23	227.7	59.25	224.0	5.90	4.4	76.44	57.0	113.98	85.0
	B61 ^{1,3)}	11.62	190.5	76.25	285.7	73.54	278.0	--	--	6.16	4.6	81.26	60.6	--	--

1) B42-B45-B50-B61=2200 RPM max.

2) B50=210 bar (3000 psi) max.

3) B61 = 120 bar (1740 psi) max. int., B61 = 80 bar (1160 psi) cont.

Series VT6ERM * - 066 - 1 R 00 - A 1 0 - A 1 *

Y - Metric port connection, Omit for UNC

Cam ring for
 Volumetric displacement cm³/rev (in³/rev)
 *042/R42 = 132.3 (8.07) 062/R62 = 196.7 (12.00)
 045/R45 = 142.4 (8.69) 066/R66 = 213.3 (13.02)
 050/R50 = 158.5 (9.67) 072/R72 = 227.1 (13.86)
 052/R52 = 164.8 (10.06) 085/R85 = 269.8 (16.46)
 057/R57 = 180.7 (11.02)
 *R' - for Mobile - spring assisted

Type of Shaft
 1 - Keyed (SAE CC)
 3 - Splined (SAE C)
 4 - Splined (SAE CC)

Direction of rotation (view on shaft end)
 R - Clockwise
 L - Counter - clockwise

Porting combination

00
P
S

01
P-S

02
P
S

03
P
S

Modifications

Seal class
 1 - S1 (for mineral oil)
 4 - S4 (for fire resistant fluids)
 5 - S5 (for mineral oil and fire resistant fluids)

Design letter

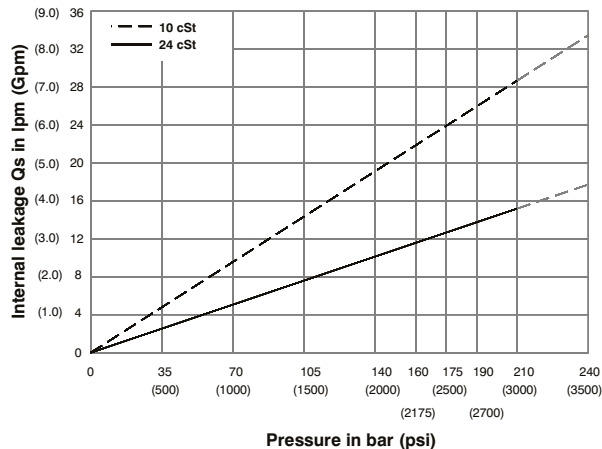
Porting adapter

Coupling
 1 = SAE A 4 = SAE C
 2 = SAE B 5 = SAE J498b
 3 = SAE BB 16/32-11 teeth

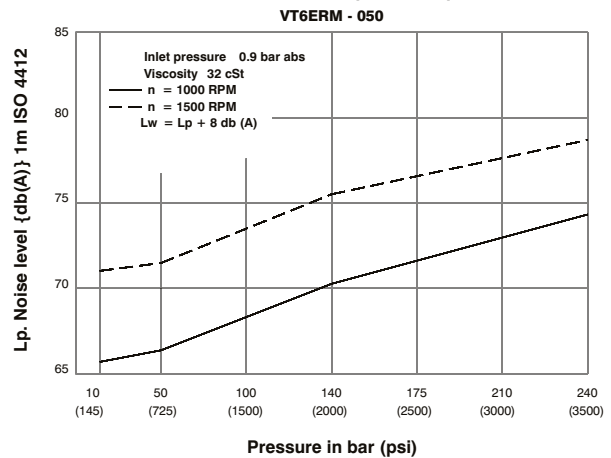
Adapter
 0 = None B = SAE B
 A = SAE A C = SAE C

SAE A - SAE B
SAE C

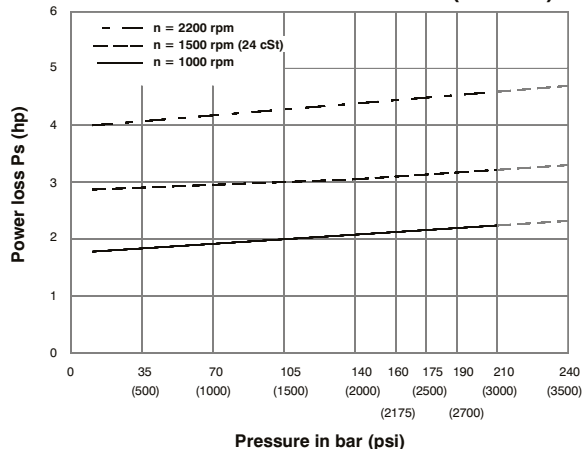
INTERNAL LEAKAGE (TYPICAL)



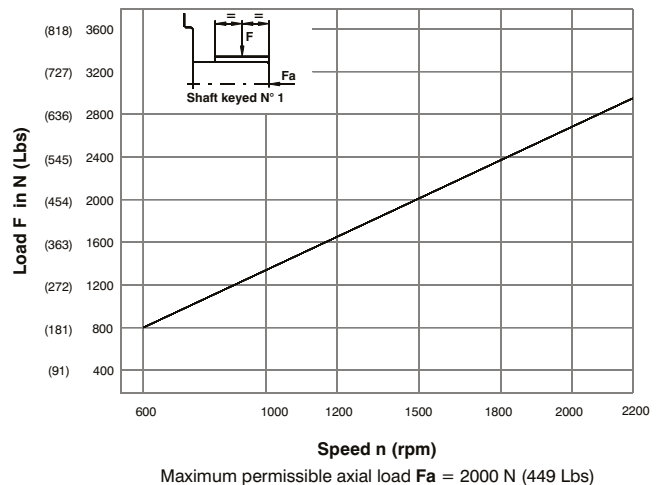
NOISE LEVEL (TYPICAL)

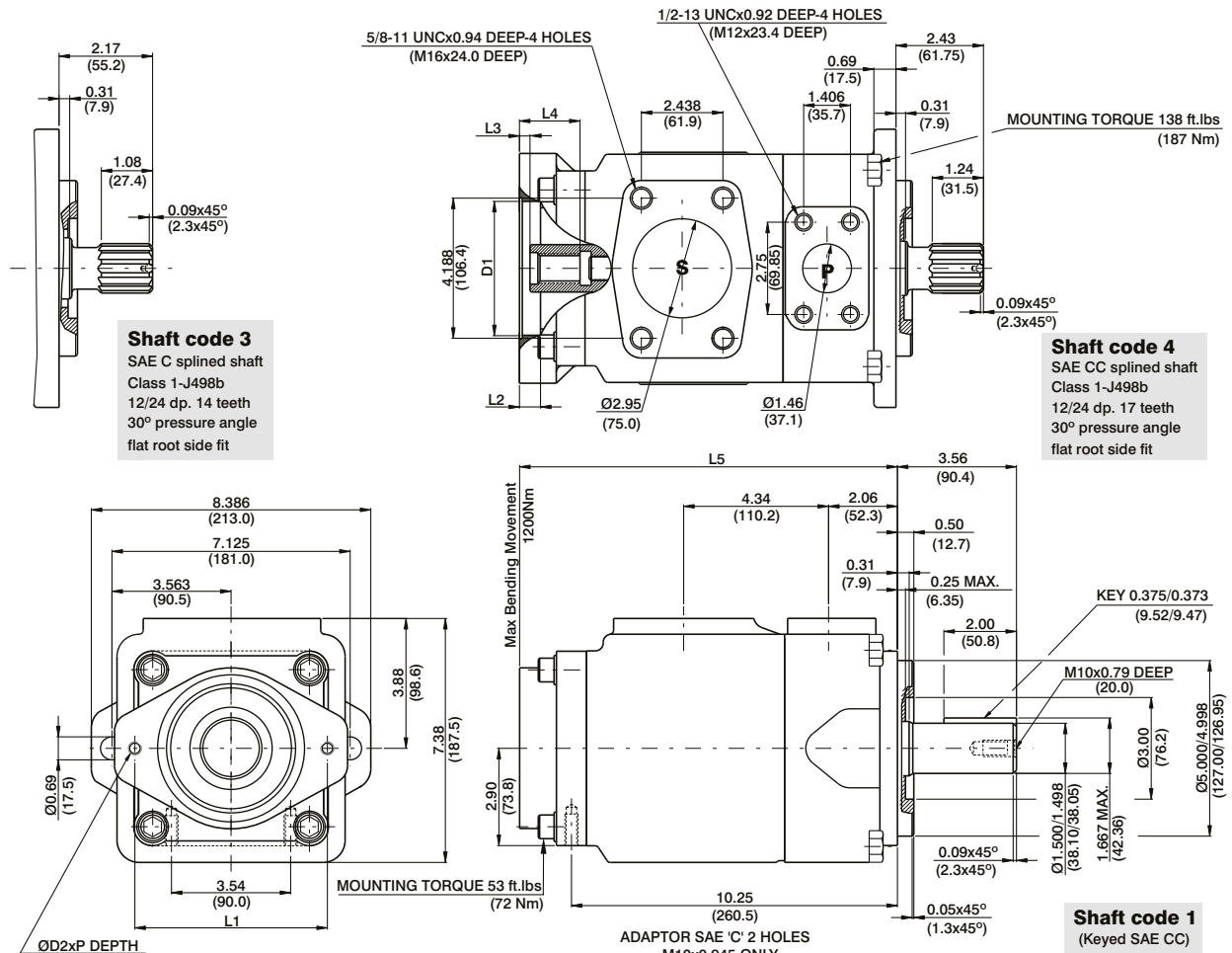


HYDROMECHANICAL POWER LOSS (TYPICAL)



PERMISSIBLE RADIAL LOAD





Shaft torque limits in³/rev x psi (ml/rev x bar)

Shaft	V x P max.	Coupling drive	V x P max.
1	71355 (80560)	SAE "A"	9743 (11000)
3	54207 (61200)	SAE "B"	18246 (20600)
4	106474 (120210)	SAE "BB"	28937 (32670)
		SAE "C"	58884 (66480)
		SAE "11teeth"	14039 (15850)

Adaptor	D1	D2	P	L1	L2	L3	L4	L5
SAE "A"	3.25 (82.60)	M10	0.94 (24)	4.19 (106.4)	0.43 (11)	0.31 (7.9)	1.26 (32)	10.71 (272)
SAE "B"	4.00 (101.65)	M12	1.10 (28)	5.75 (146.0)	0.63 (16)	0.31 (7.9)	1.81 (46)	11.26 (286)
SAE "C"	5.00 (127.10)	M16	-	7.12 (181.0)	0.63 (16)	0.31 (7.9)	2.20 (56)	11.65 (296)

Adaptor	SAE "A"			SAE "B"		SAE "C"
Coupling drive	SAE A	SAE (11teeth)	SAE B	SAE B	SAE BB	SAE C
Number of teeth	9	11	13	13	15	14
Pitch	16/32	16/32	16/32	16/32	16/32	12/24
Pressure angle	30°	30°	30°	30°	30°	30°
Major dia.(min)	0.625 (15.875)	0.750 (19.05)	0.875 (22.225)	0.875 (22.225)	1.00 (25.40)	1.250 (31.75)
Minor dia.(min)	0.500 (12.70)	0.630 (16.00)	0.753 (19.134)	0.753 (19.134)	0.877 (22.268)	1.086 (27.585)

OPERATING CHARACTERISTICS - TYPICAL (24 cST)

Pressure port	Series	Volumetric Displacement Vp		Flow q & n = 1500 rpm						Input power p & n = 1500 rpm					
		in ³ /rev	cm ³ /rev	p = 0 bar (0 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)		p = 7 bar (100 psi)		p = 140 bar (2000 psi)		p = 240 bar (3500 psi)	
				gpm	lpm	gpm	lpm	gpm	lpm	hp	kw	hp	kw	hp	kw
VT6ERM	042	8.07	132.3	52.50	198.5	49.87	188.5	47.96	181.3	6.97	5.2	66.25	49.4	110.77	82.6
	045	8.70	142.4	56.51	213.6	53.86	203.6	51.98	196.5	7.24	5.4	70.94	52.9	118.95	88.7
	050	9.67	158.5	62.88	237.7	60.24	227.7	58.36	220.6	7.64	5.7	78.45	58.5	131.82	98.3
	052	10.00	164.8	65.40	247.2	62.75	237.2	60.87	230.1	7.78	5.8	81.53	60.8	136.92	102.1
	057	11.02	180.7	71.71	271.1	69.07	261.1	67.19	254.0	8.18	6.1	89.04	66.4	143.35	106.9
	062	12.00	196.7	78.04	295.0	75.40	285.0	73.52	277.9	8.58	6.4	96.42	71.9	162.67	121.3
	066	13.00	213.3	84.63	319.9	81.98	309.9	80.11	302.8	8.98	6.7	104.20	77.7	175.94	131.2
	072	13.86	227.1	90.11	340.6	87.46	330.6	85.58	323.5	9.25	6.9	110.77	82.6	187.07	139.5
	085 ^{1, 2)}	16.40	269.8	107.00	404.7	105.21	397.7	--	--	9.78	7.3	87.56	65.3	--	--

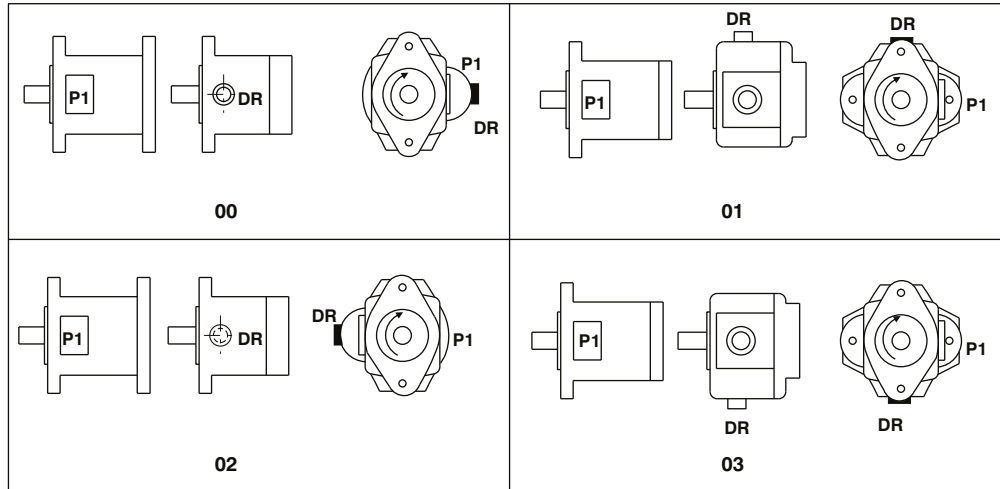
1) 085 = 2000 RPM max.

2) 085 = 75 bar (1100 psi) cont.

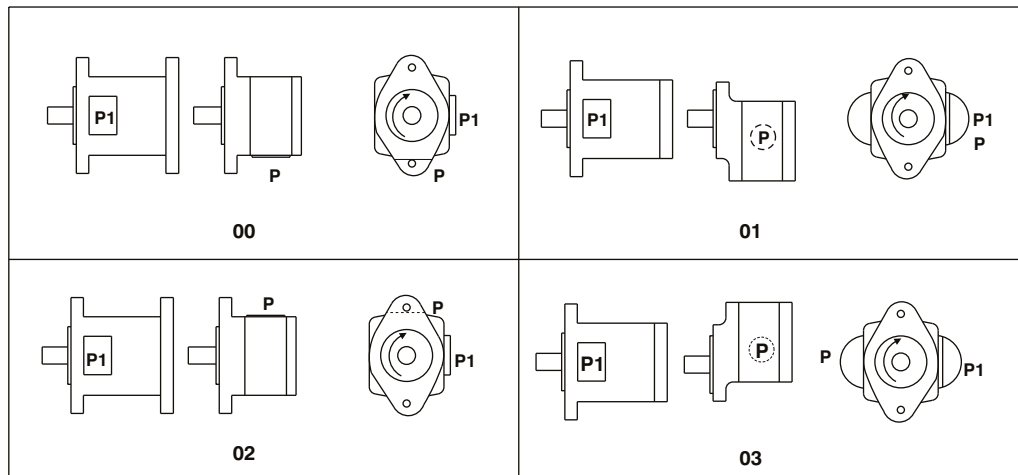
085 = 90 bar (1300 psi) max. int.

Assembly Porting Definition

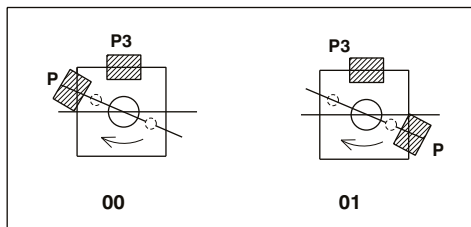
VVP&VWH type - F For the second pump the reference is the drain port on Piston Pump. (view from front shaft end)



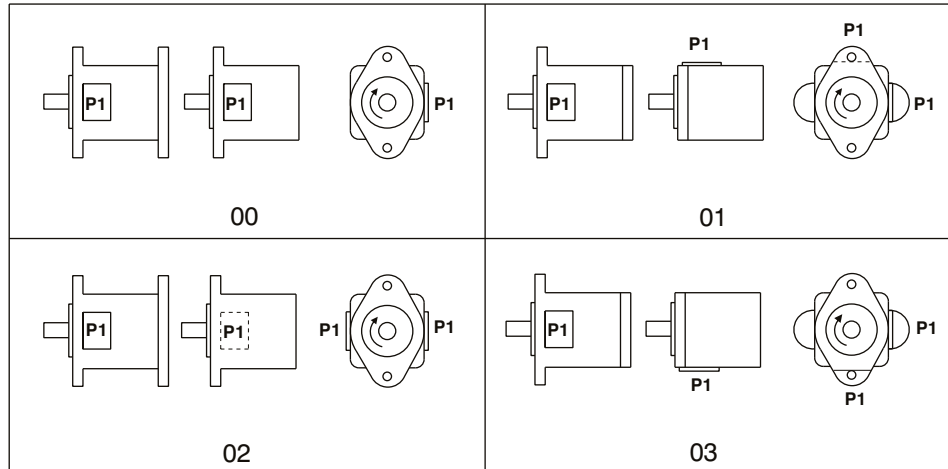
VVG type - Front Single Vane Pump (view from front shaft end.)



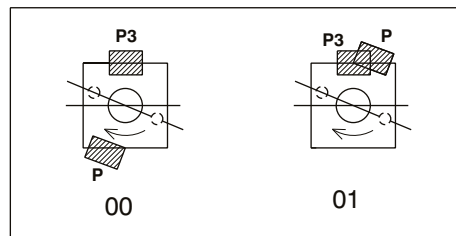
VVG type - Front Single Vane Pump (view from front shaft end.)



VVV type - For Single Vane Pump (view from front shaft end).



VVV type - For Triple Vane Pump (view from front shaft end).



Assembly - Ordering Code

Assembly Tandem

VVV = Vane pump + Vane Pump
 VVP = Vane pump + Piston Pump (PP)
 VVG = Vane pump + Gear Pump (GP)
 VVH = Vane pump + Hybrid Pump (HVP)

VVV-...

Porting combination
 00
 01
 02
 03

Assembly Screws

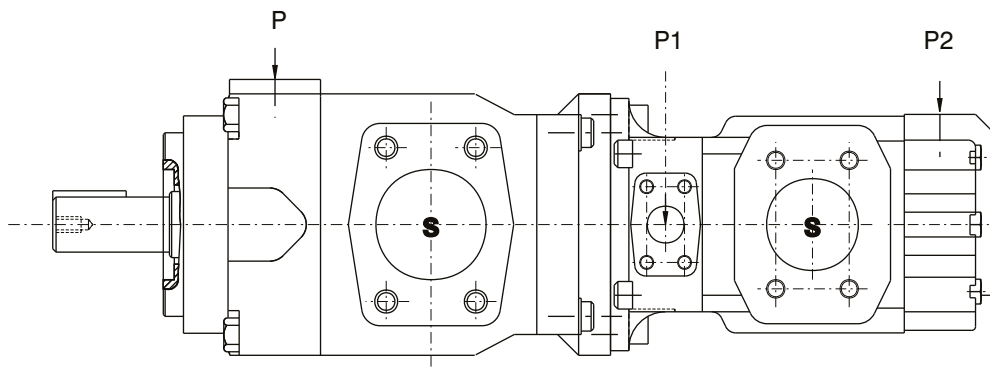
-SAE A rear mounting adaptor : 2 screws M10 x 1.18 (30.0) (Mounting torque = 433.6 in.lbf) = 49 NM
 -SAE B rear mounting adaptor : 2 screws M12 x 1.38 (35.0) (Mounting torque = 778.8 in.lbf) = 88 NM
 -SAE C rear mounting adaptor : 2 screws M16 x 1.57 (40.0) (Mounting torque = 1902 in.lbf) = 190 NM

Adaptor & Coupling Selection

Rear Pump		Drive Train Vane Pump			
		VT6* R (Single vane pump)		VT6*** R (Triple vane pump)	
Series	Shaft	Coupling	Adaptor	Coupling	Adaptor
VT6C*	3	2	B	Not Available	
VT6CR*					
VT6CSH	4	3	B	Not Available	
VT6CC*	3	3	B	Not Available	
	5	2	B		
VT6D*					
VT6DR*	3	4	C	Not Available	
VT6DC*					
VT6DCC*					
VT6E*					
VT6ER*	3	4	C	Not Available	
VT6EC*					
VT6ED*					
VT6B	4	1	A	Available with special coupling	
	3	5	A		
VT7B	3	2	B	Not Available	
VT6HC	4	3	B	Not Available	
VPV6	1	2	A	Available with special coupling	
VPV10	1	2	B	Not Available	
VPV15					
VPV20	1	4	C	Not Available	
VPV29					

For additional information on piston pumps and specific information on Gear Pumps, Please contact Veljan representative.

Example



VT6ER + VT6CC

1. Define front pump

VT6ER - *** - 1 R 02 - B21 - A1

2. Define rear pump

VT6CC - *** - *** - 5 R 01 - C1 - 00

3. Define mounting

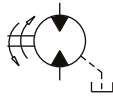
Assembly tandem VVV 03

VANE MOTORS

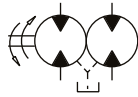


FEATURES

Veljan VM* series high speed, high pressure fixed displacement Vane Motors offer a wide choice of torque ratings, reversible shaft rotation, foot or flange mounting and choice of port locations.



Single Motor



Double Motor

HYDRAULICALLY BALANCED DESIGN

Veljan Vane Motors are hydraulically balanced to reduce wear and heat producing friction. The vane, rotor and cam ring are pressure balanced to increase life and efficiency over full speed range.

REPLACEABLE ROTARY KITS

The rotary kit assembly is easily replaceable. The torque capability of motors within the same series can be changed by changing the rotary kit or cam ring.

ROTATION

Motors may be stalled or reversed repeatedly under load without damage.

SPEED RANGE

Starting to maximum speed (4000 rpm) with full torque capability during acceleration. These motors can start smoothly at full load. To fully realize the smooth start characteristic, the designed maximum operating speed for single cartridge motors should be above 1200 rpm.

For optimum operating efficiency and life, minimum continuous operating speeds should be above 400 rpm, at differential pressure higher than 2000 psi (140 bar).

MOUNTING FLEXIBILITY

Ports and mounting conform to ISO-3019-1 standards, thus providing the most optimum mounting for connecting pipework.

LOW TORQUE RIPPLE AT LOW SPEED

While operating at very low speeds Veljan Vane Motors exhibit very low torque ripple.

HIGH EFFICIENCY

Veljan Vane Motors have high volumetric efficiency that is maintained throughout their operating life. The high starting torque efficiency of Vane Motors allow start under high load without pressure overshoots, jerks and high instantaneous horsepower loads. Efficiency varies with motor size, pressure, speed and fluid viscosity and temperature.

SEVERE DUTY VANE MOTORS

Veljan Vane Motors have been specially designed to suit severe duty application for pressure up to 3400 psi, high speed up to 4000 rpm and fluid lubricity. These are designated as VM4S series and recommended when both, pressure is over 2000 psi and speed is over 2000 rpm. They are also recommended for fluid viscosity below 25cSt and speed over 2000 rpm. VM4S motors have longer life at high efficiency.

FIRE RESISTANT FLUIDS

Easily used in the standard VM4S version of Vane Motors. These include phosphate or organic ester fluids and blends, water glycol solutions and water oil invert emulsions.

RELIABILITY

These high performance motors have been field proven on a wide variety of applications.

APPLICATIONS

These motors can be widely used in load hoist winch drives, swing drives, propulsion drives, traction drives, etc.

INTERNALLY DRAINED MOTORS

(VM4C1, VM4D1, VM4E1)

These motors may be alternately pressurized at ports A & B to 2500 psi (175 bar) max. Which ever port is at low pressure must not be subjected to more than 21psi (3.5bar) peak pressure 100 psi (7 bar)

EXTERNALLY DRAINED MOTORS

Single Cartridge Motors may be alternately pressurized at ports A & B to 2500 psi (175 bar) max. Which ever port is at low pressure should not be subject to more than 500 psi (35 bar).

PRESSURE, DRAIN PORT d, 3.5 bar max.

To ensure maximum motor performance in conjunction with your specific application, consult your Veljan representative if your application requires:

- Minimum speed of less than 100 rpm
- Overrunning loads
- Indirect drive
- Braking or retarding

SHAFTS

Veljan offers Vane Motors with option of keyed or splined shafts. Keyed shafts are supplied with high strength heat treated keys. If the key is replaced, it must be heat treated between 27 and 34 RC hardness. The corners of the keys must be chamfered 0.03" to 0.04" at 45° to clear radii in the key way. Alignment of keyed shaft must be within tolerances given for splined shaft.

SHAFTS, COUPLINGS AND FEMALE SPLINES

- ♦ The shaft will accept a maximum misalignment of .002" TIR when the pump is foot mounted and .001" when flange mounted. The angular alignment of two spline axes must be Less than 0.1° (0.002' per 1").
- ♦ The coupling spline must be lubricated with a lithium molydi-sulfide grease or a similar lubricant.
- ♦ The coupling must be hardened to a hardness between 27 and 45 RC
- ♦ The female spline must be made to conform to the Class 1 fit as described in SAE-J498b (1971). This is described as a Flat Root Side Fit.

RECOMMENDED FLUIDS

PETROLEUM BASED ANTIWEAR R & O FLUIDS

These fluids are recommended fluids for VM4 series Vane Motors. Maximum catalog ratings and performance data are based on operation with these fluids.

ALTERNATE FLUIDS

The use of fluids other than petroleum based antiwear R & O fluids requires that the maximum ratings of the motors be reduced. In some cases the minimum replenishment pressures must be increased. Contact Veljan representative for more details.

VISCOSITY

Max (cold start, low speed & pressure)	862mm ² /s(cSt)
Max (full speed & pressure)	108mm ² / s (cSt)
Optimum (max. life)	30mm ² / s (cSt)
Min (full speed & pressure)	10mm ² / s (cSt)

VISCOSITY INDEX

90 min. Higher values extend range of operating temperatures, and life time.

Fluid temperature (0°) F max. 353(+80°C)min.255(-18°C)

FLUID CLEANLINESS

The fluid must be cleaned before and during operation to maintain contamination level of NAS 1638 class 8 (or ISO 18/4)or better.

25 micron normal filters may be adequate but do not guarantee the required cleanliness levels.

REPLENISHMENT PRESSURE

The inlet port of the fluid motor must be supplied with minimum replenishment pressure as listed below to prevent cavitation During dynamic barking.

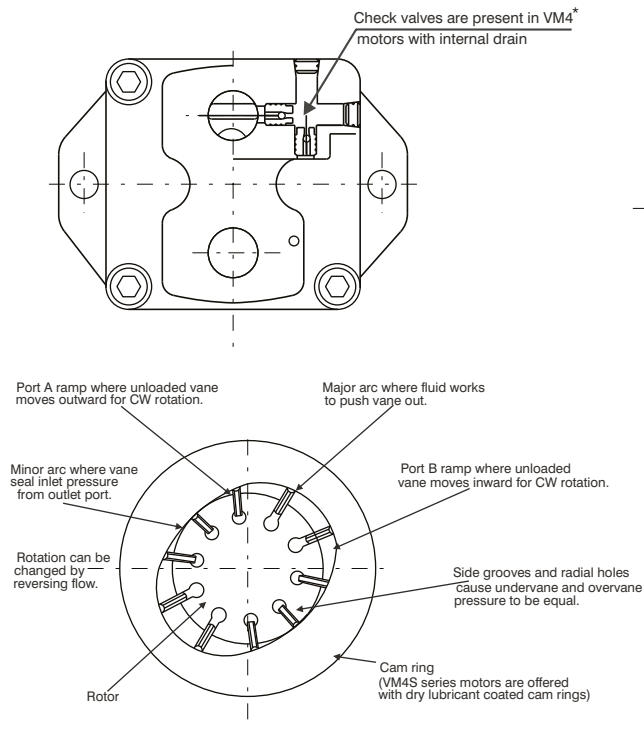
Series	Speed, rpm									
	500		1000		2000		3000		3600	
	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
VM3B	8.7	0.6	14.5	1.0	27.6	1.9	50.8	3.5	84.2	5.8
VM4C/ VM4SC	10	0.7	20	1.4	45	3.1	80	5.5	135	9.3
VM4D/ VM4SD	10	0.7	20	1.4	45	3.1	80	5.5	135	9.3
VM4E/ VM4SE	20	1.4	40	2.8	75	5.2	160	11.0	-	-

SHAFT LOADS

Axial or radial load are permissible. Both loads should not be applied simultaneously.

OPERATING TEMPERATURES AND VISCOSITIES

Operating temperatures are a function of fluid viscosities, fluid type and the motors. Fluid viscosity should be selected to provide optimum viscosity at nominal operating temperatures. For cold starts, the motors should be operated at low speed and pressure until fluid warms up to an acceptable viscosity for full power operation.

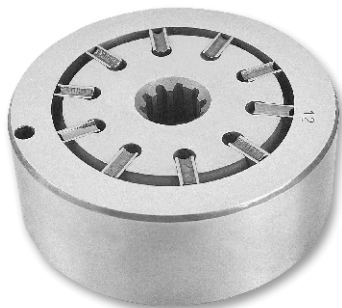


DESCRIPTION

Veljan Vane Motors are positive displacement, hydraulic balanced cartridge units, with drive speed dependent on the motor size and gpm delivery to the inlet port. The units are capable of operating at high speeds and high pressures, or higher speeds at lower pressures. These motors may be operated in either direction of rotation, reversed or stalled under load conditions without damage.

PRINCIPLE OF OPERATION

The operating principle of a Single Vane Motor is illustrated in the figure above. Rotation of the motor shaft is caused by differential pressure across the motor exerting a force against the vanes. This force is in effect tangential to the rotor and causes the rotor to turn, carrying the motor shaft with it.



Rotating kit

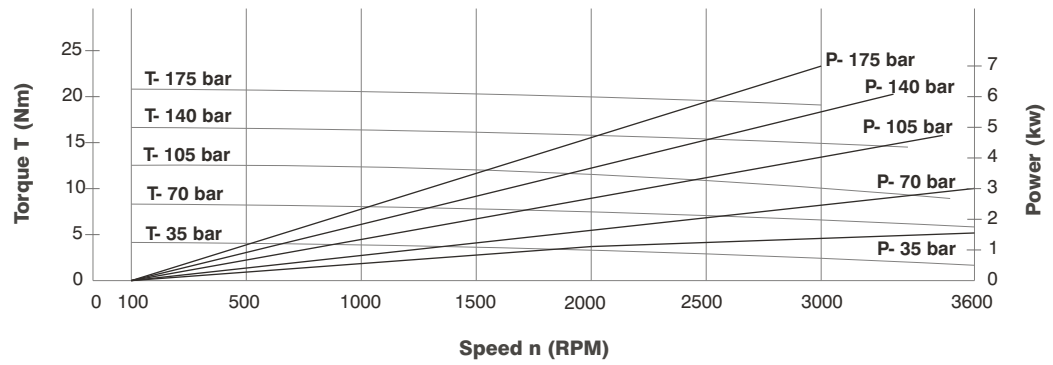
Vanes fitted in the slotted rotor slide radially and follow the elliptical contour of the cam ring and seal against it. The camring has two major and two minor radial sections joined by transitional sections called ramps. These contours and the pressures exposed to them are balanced diametrically.

Direction of shaft rotation is governed by the direction of fluid flow through the port connections located in the body cover. These motors are reversible by reversing flow to and from the Ports.

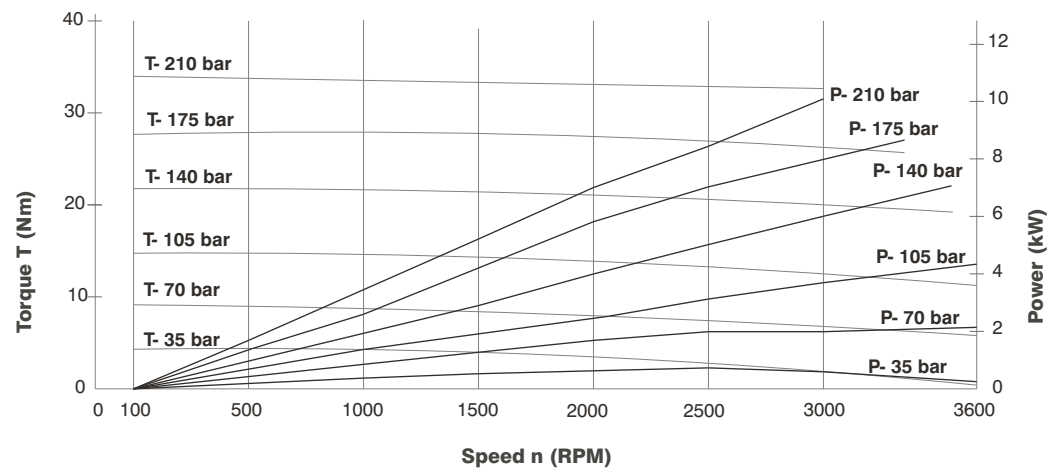
Light springs urge the vanes radially against the cam contour assuring a seal at zero speed so the motor can develop starting torque. The springs are assisted by centrifugal force at higher speeds. Radial grooves and holes through the vanes equalize radial hydraulic forces on the vanes at all times. Fluid enters and leaves the motor cartridge through openings in the side plates at the ramps. Each motor port connects to two diametrically opposed ramps. Pressurized fluid entering at port A torques the rotor clockwise. The rotor transports it to the ramp openings which connect to port B from which it returns to the low pressure side of the system. Pressure at port B torques the rotor counterclockwise. The fluid film separates the rotor axially from the side port plate surfaces. The front side plate is clamped against the camring by the pressure, maintains optimum clearance to accommodate dimensional changes due to temperature and pressure. A 3-way shuttle valve in the side plate causes clamping pressure to equal the pressure in port A or B, whichever is higher.

Series	Mounting Standard (SAE J744c ISO/3019-1)	Weight		Option for inlet & outlet port SAE 4 bolt SAE threaded J 718c ISO/DIS 6162-1	Moment of Inertia	
		lbs	kgs		lbsin ²	Kg m ² x 10 ⁻⁴
VM3B	SAE - A	18	8	3/4" BSPP threaded	1.03	3.0
VM4C-VMC1 VM4SC-VMSC1	SAE - B	34	15	1"	2.7	7.9
VM4D-VMD1 VM4SD-VMSD1	SAE - C	60	27	1 1/4"	1.4	4.11
VM4E-VME1 VM4SE-VMSE1	SAE - C	99	45	2"	20.0	58.7

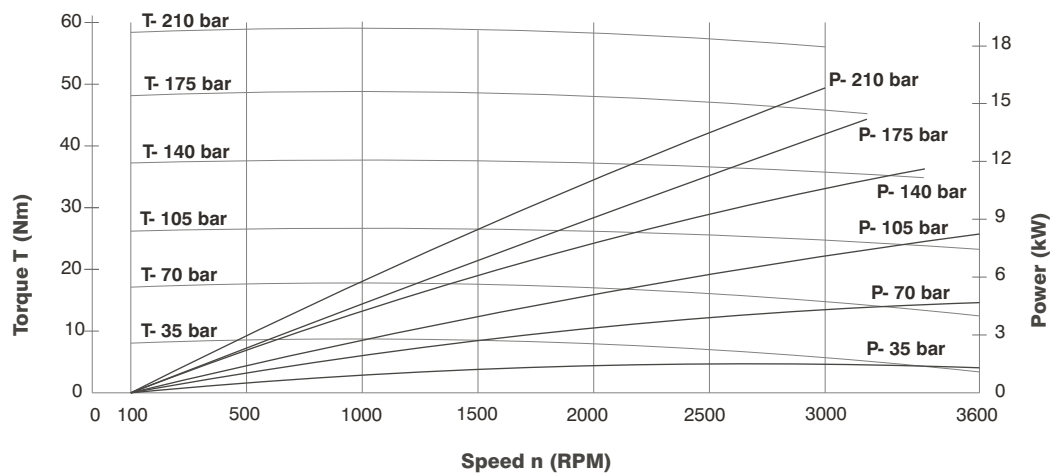
VM3B 009



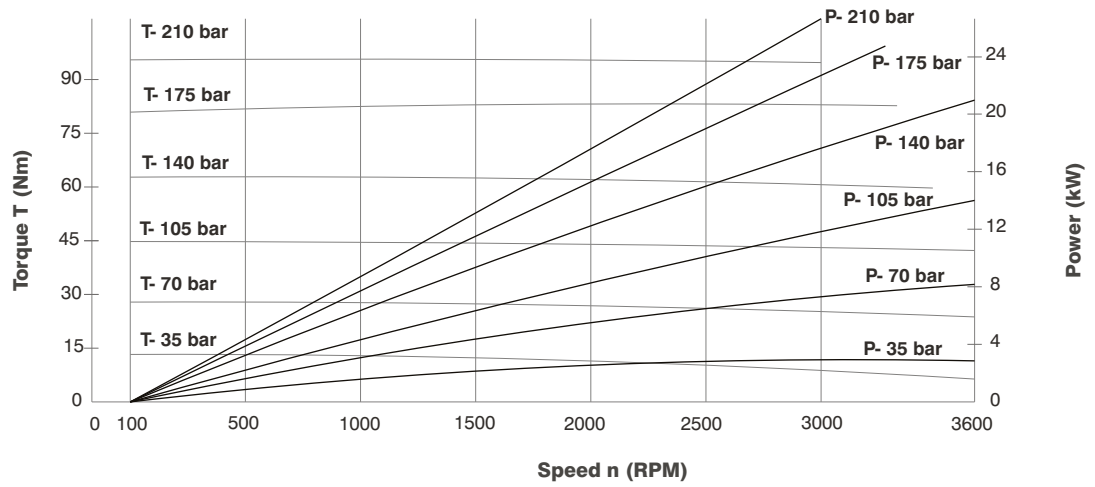
VM3B 012



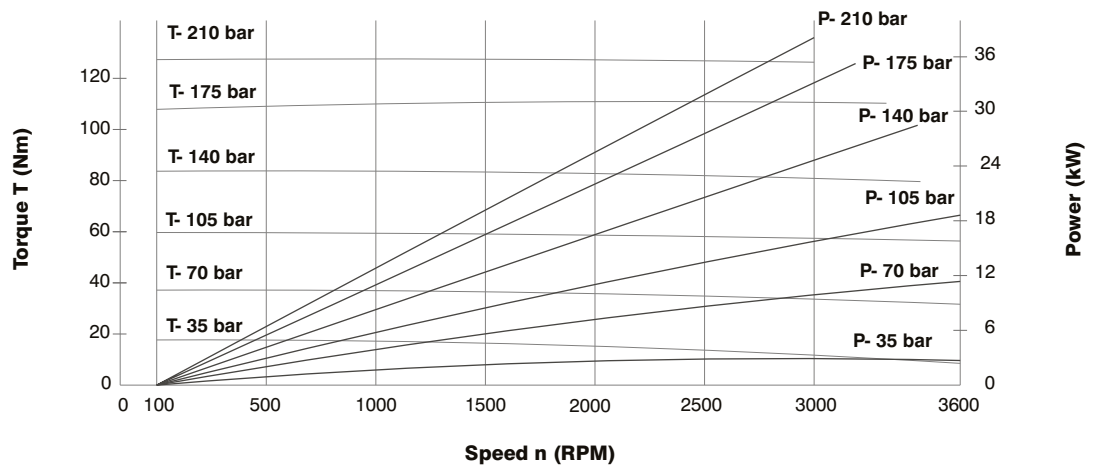
VM3B 018



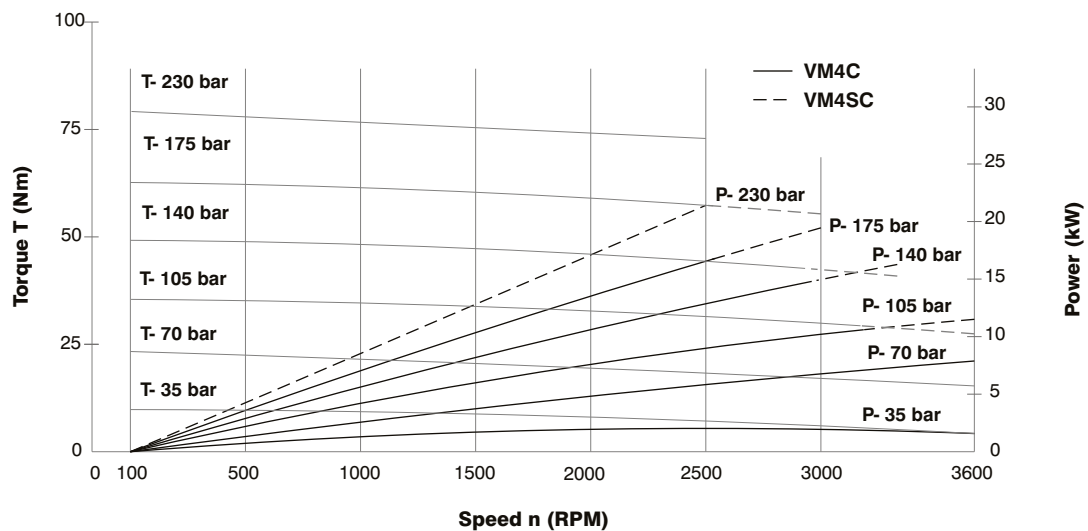
VM3B 027



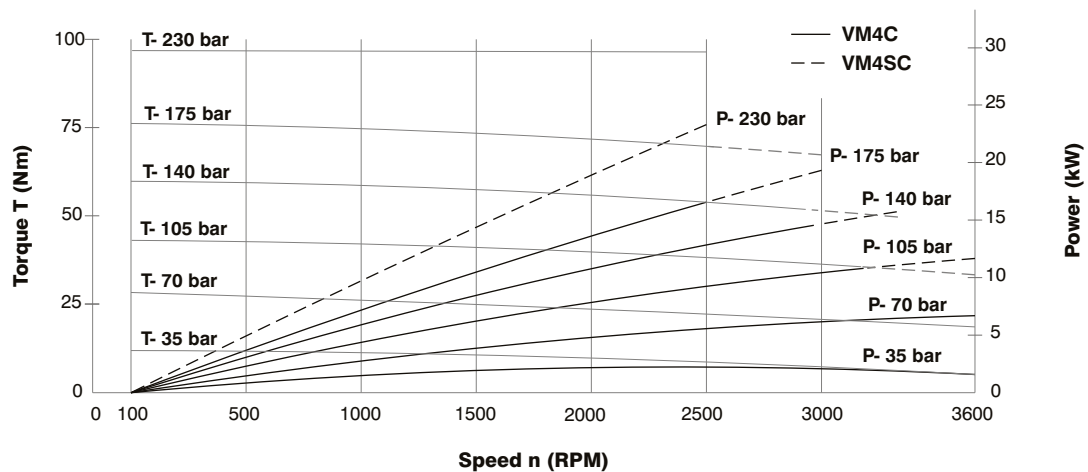
VM3B 036



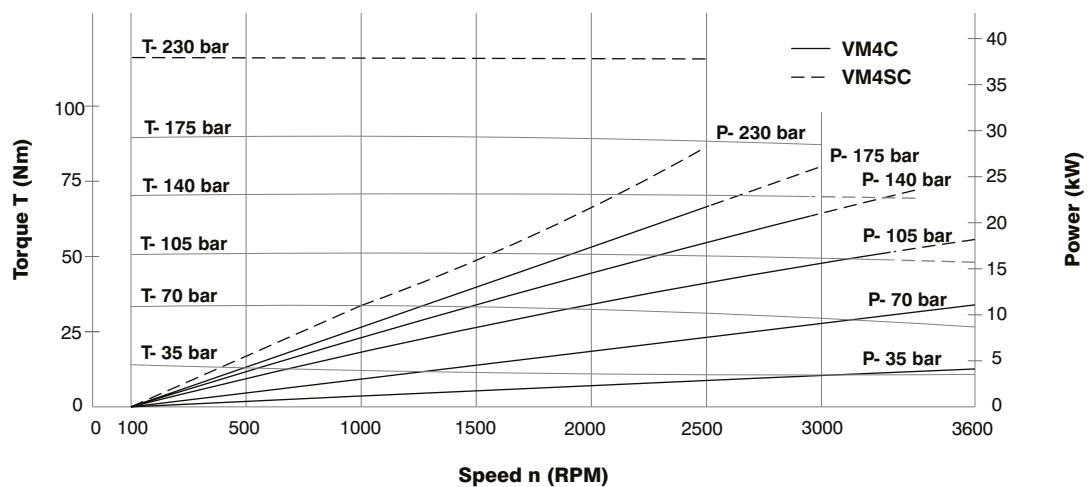
VM4C 024



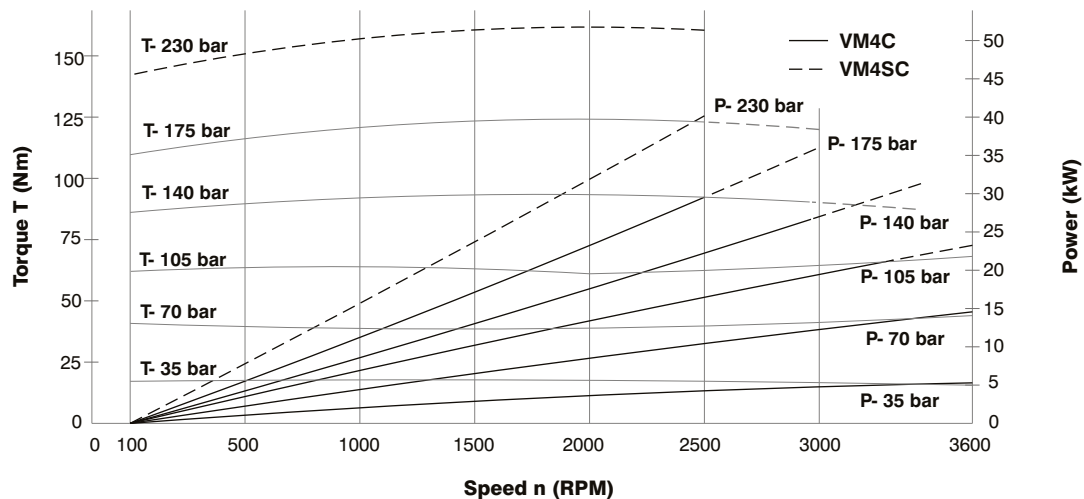
VM4C 027



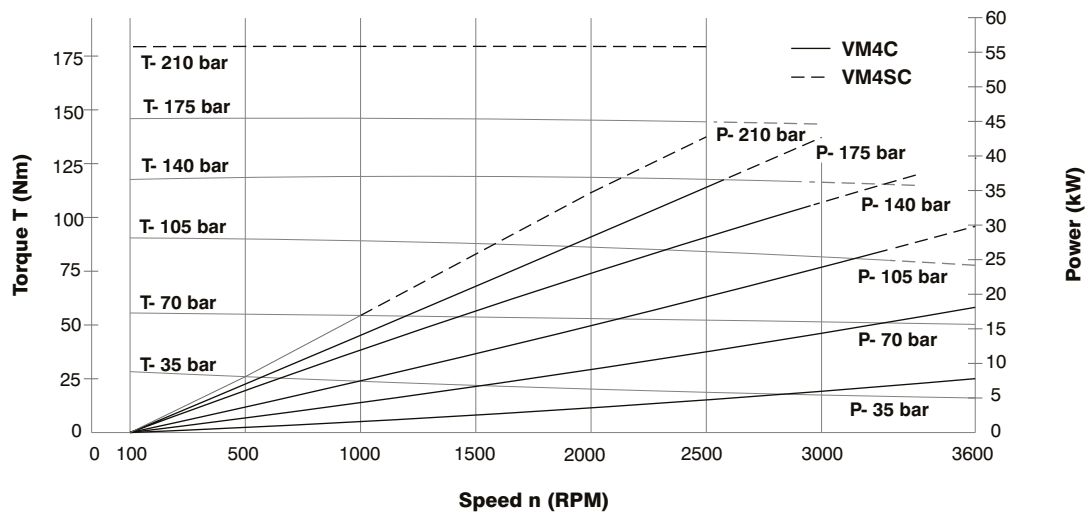
VM4C 031



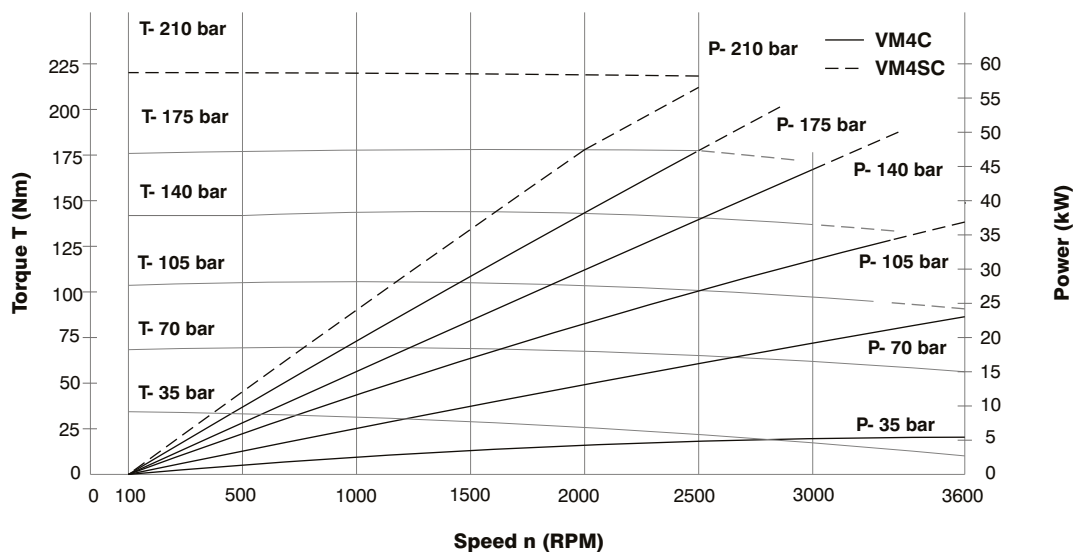
VM4C 043



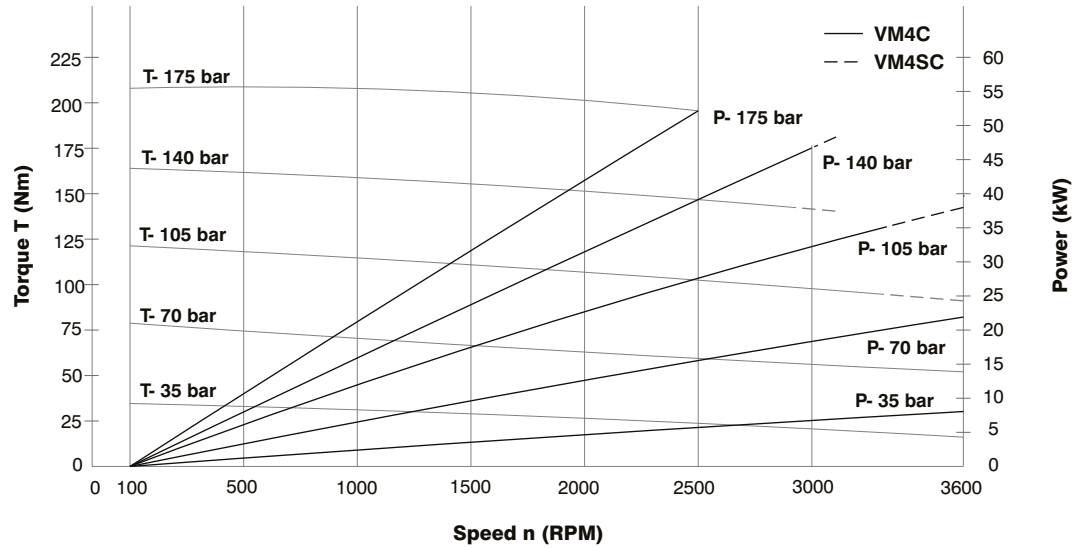
VM4C 055



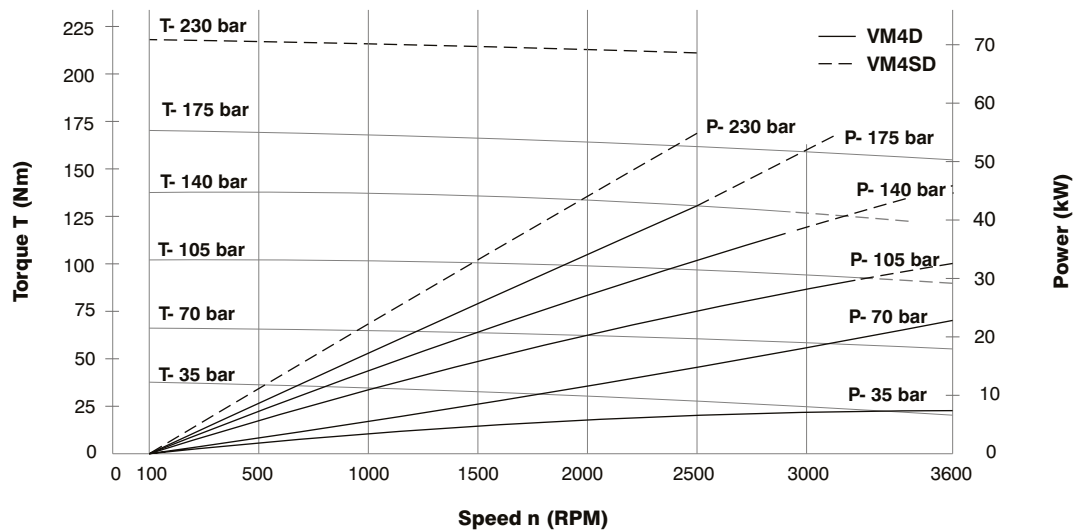
VM4C 067



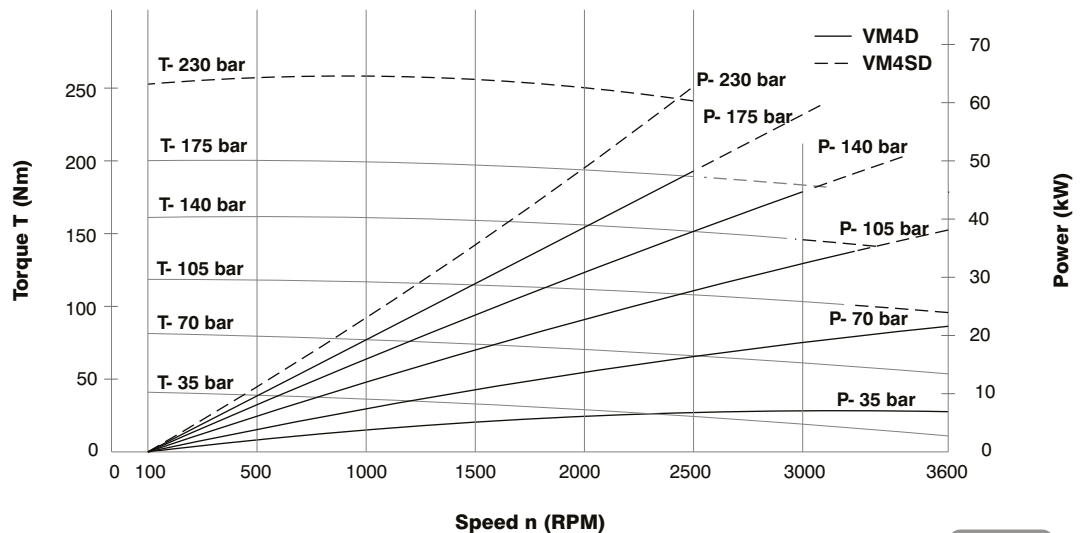
VM4C 075



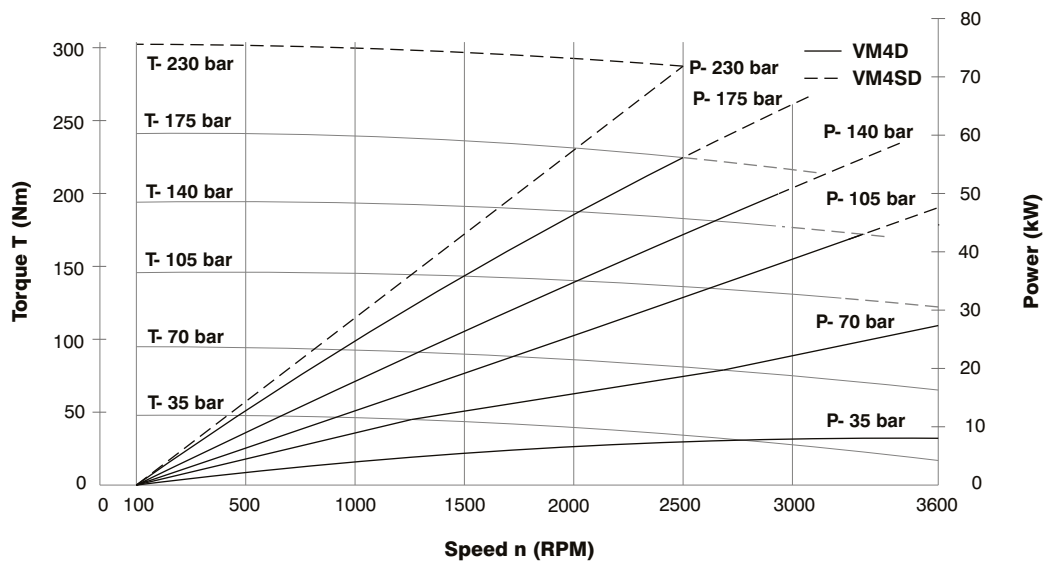
VM4D 062



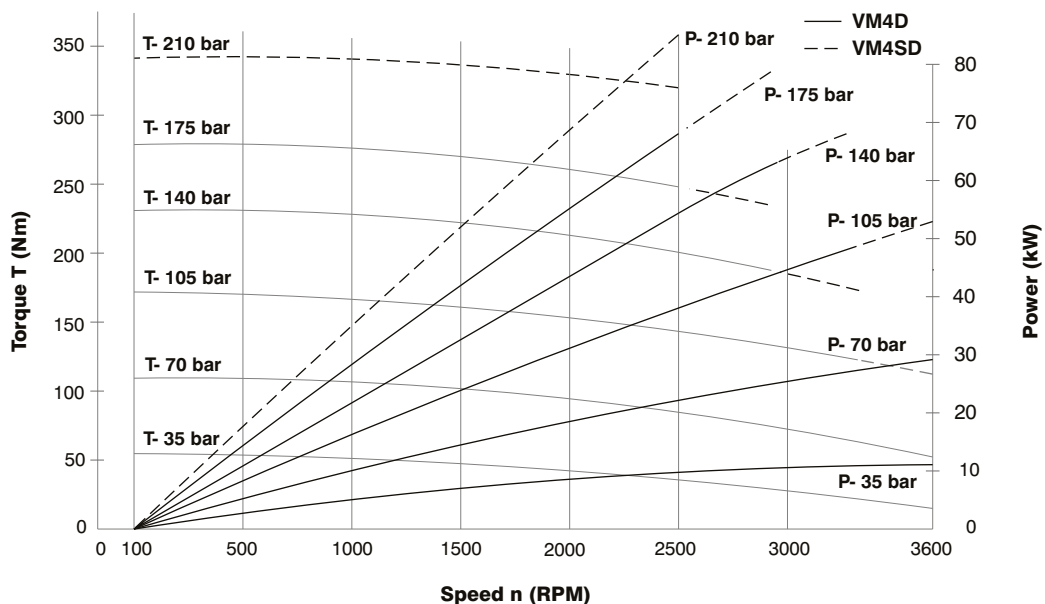
VM4D 074



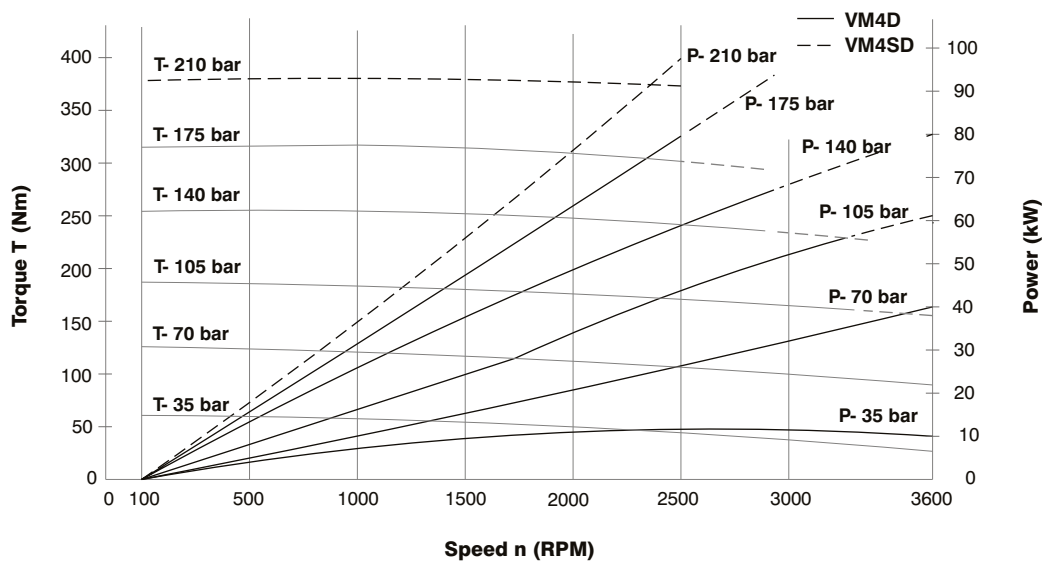
VM4D 088



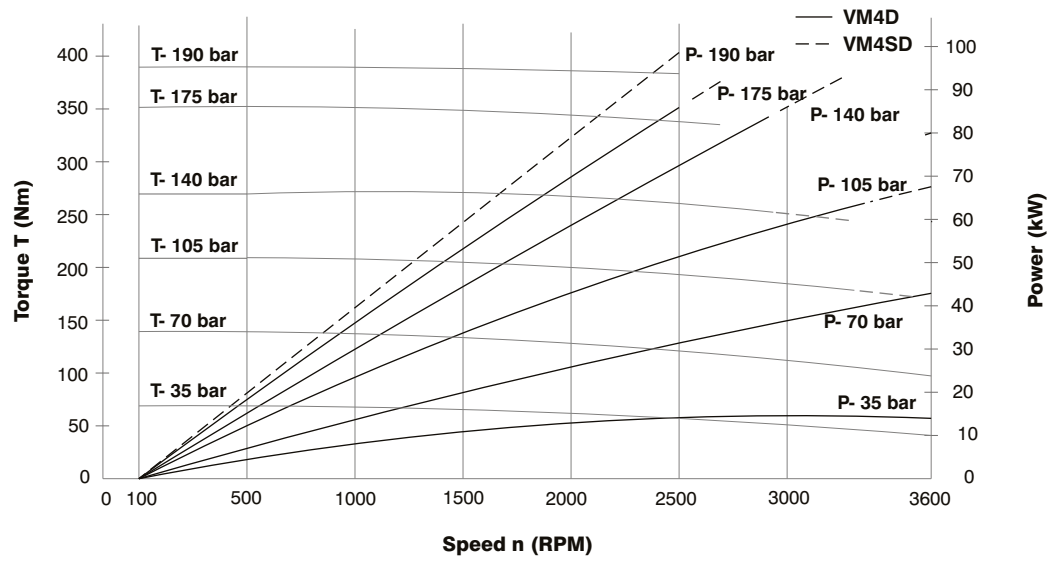
VM4D 102



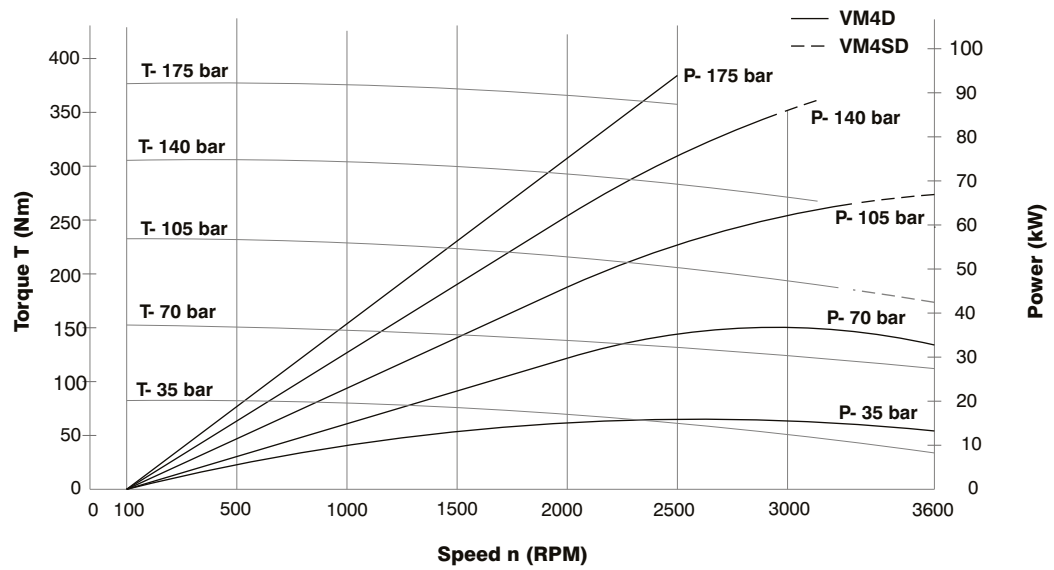
VM4D 113



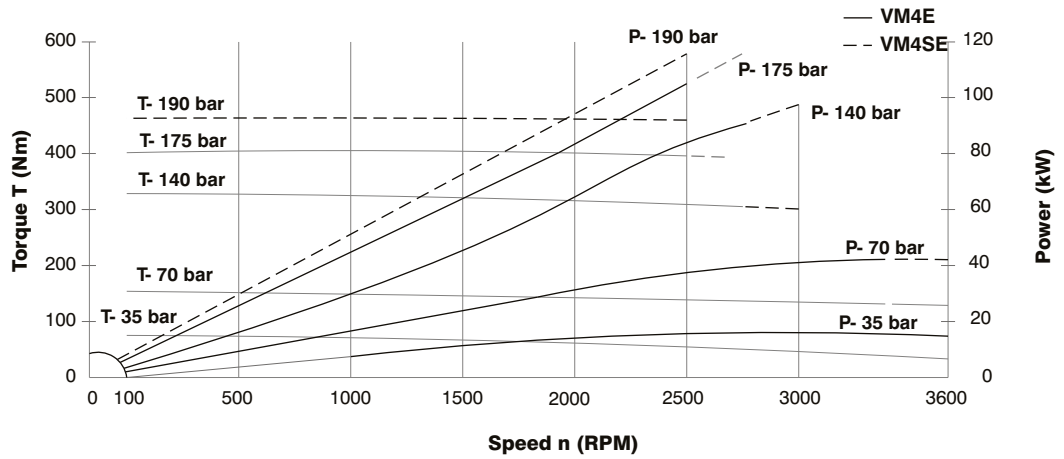
VM4D 128



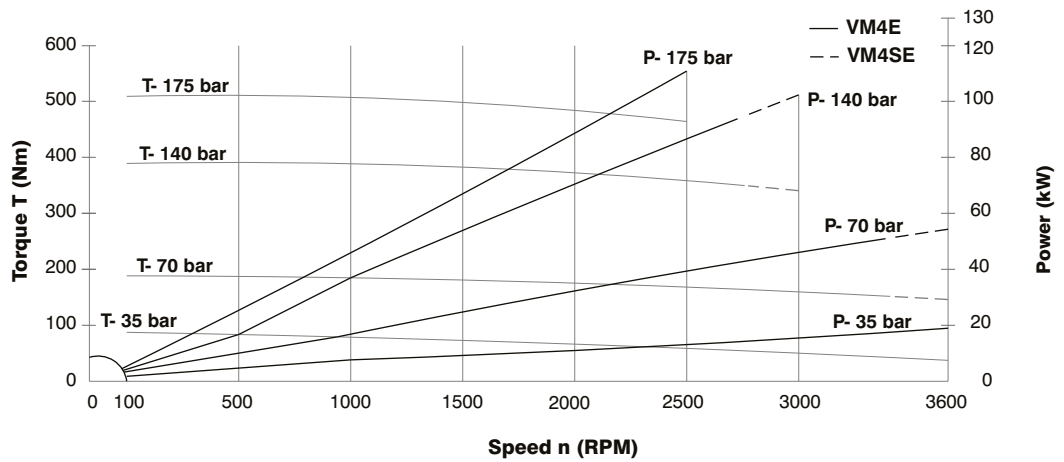
VM4D 138



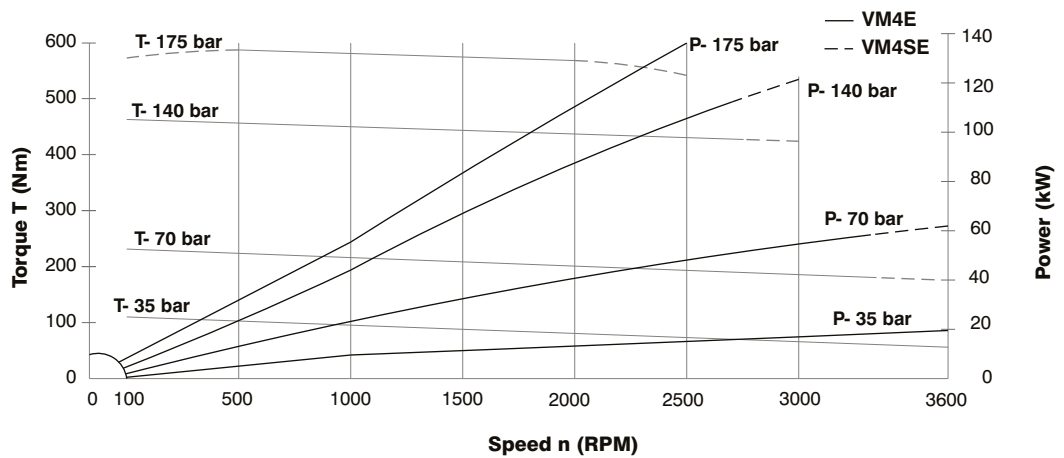
VM4E 153



VM4E 185



VM4E 214



Series	Size	Displ.	Max. pressure					Operating pressure range drain	Max. speed for low loaded condition ¹⁾	Max. speed for max. pressure ratings													
			HF-0 HF-2	HF-2A	HF-1	HF-3 HF-5	HF-4			HF-0, Cont.	HF-2 Int. ²⁾	HF-2A Cont. Int. ²⁾		HF-1 Cont. Int. ²⁾									
			bar	bar	bar	bar	bar			bar	RPM	RPM	RPM	RPM	RPM	RPM							
VM3	B B1	009	175					1.5	4000	3000	3600												
		012																					
		018	210																				
		027																					
		036																					
VM4	C C1	024	175	175	175			3.5	4000	2500	3600	2500	3000	2000	2500								
		027																					
		031																					
		043																					
		055																					
		067																					
		075																					
	SC SC1	024	230	230	175	175	140																
		027																					
		031																					
		043																					
		055																					
		067																					
	075	175														175							
	D D1	062	175	175	140				4000	2500	3600	2500	2800	2000	2500								
		074																					
		088																					
		102																					
		113																					
		128																					
		138																					
	SD SD1	062	230	190	140	140	140																
		074																					
		088																					
		102																					
		113																					
		128																					
	138	175														175							
	E E1	153	175	175	140				3600	2500	3000	2500	2800	1800	2200								
		185																					
		214																					
	SE SE1	153	190	175	140	140	140																
		185																					
		214																					

1) Low loaded condition 35 bar for VM3 and VM4, 80 bar max. for VM4S (see page 6).

2) Intermittent speed - Do not exceed 6 seconds per minute of operation.

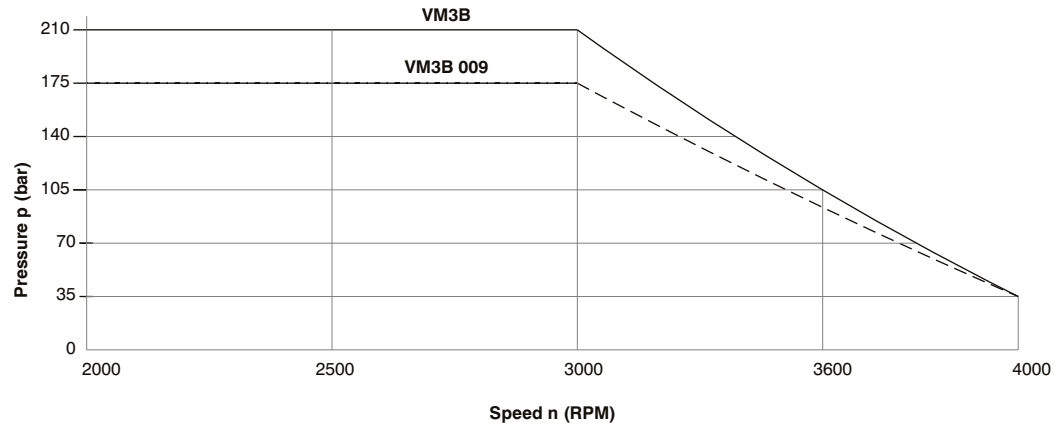
HF-0, HF-2 = Antiwear petroleum base. HF-2A = Crankcase. HF-1 = Now antiwear petroleum base. HF-5 = Synthetic fluids.

HF-3 = Water in oil emulsion. HF-4 = Water glycols.

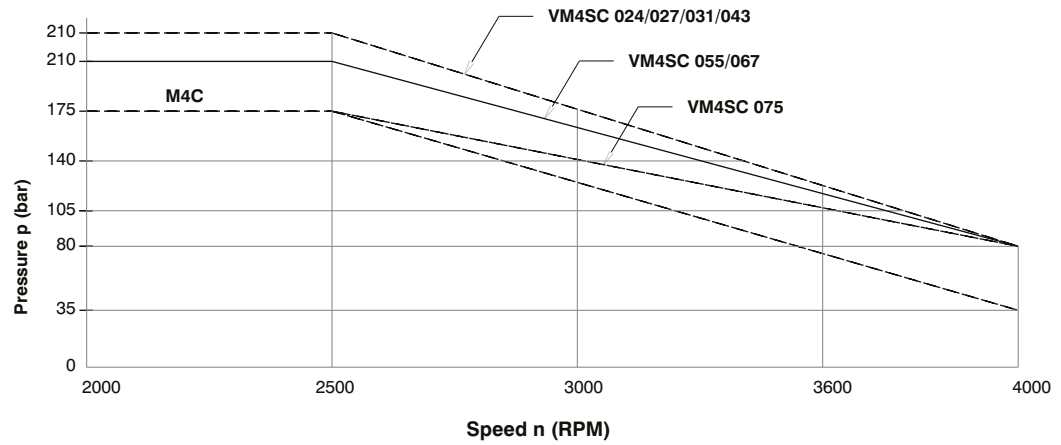
Internal drain : All these motors may be equipped with internal drain. Then the model numbers will VM3B1, VM4C1, VM4SC1, VM4D1 VM4SD1, VM4E1, VM4SE1.



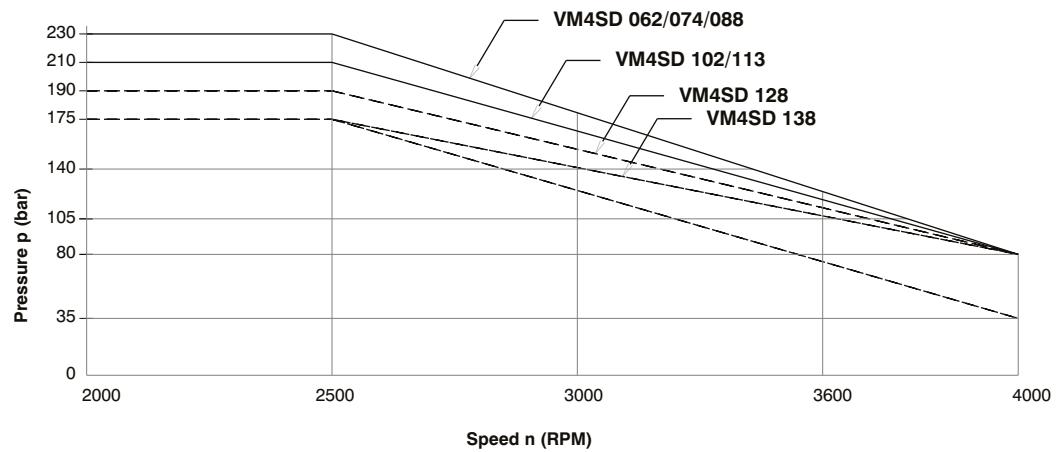
VM3B



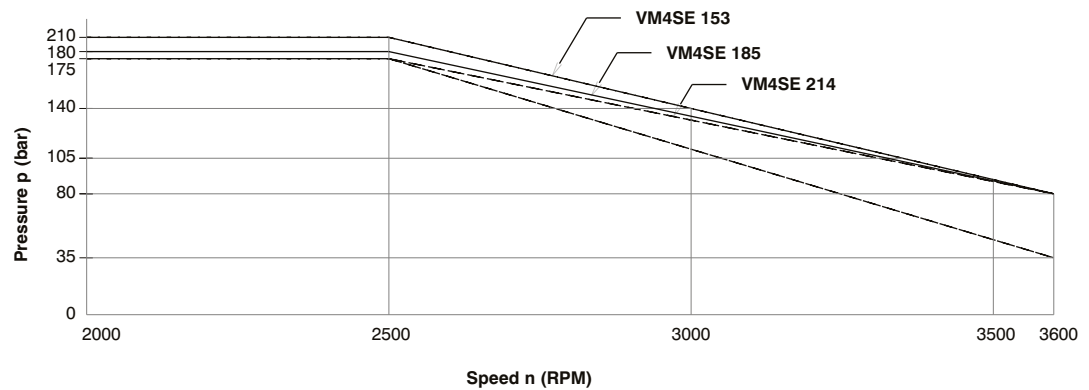
VM4C/M4SC



VM4D/M4SD



VM4E/M4SE



Performances required

Torque	T (N. m.)	140
Pump flow (available)		
at 24 cSt	q _{ve} (l/min)	115
Speed	n (RPM)	1500
Pressure	p (bar)	175

Two ways of calculation :

2a. Calculate V_i from T required torque

$$V_i = \frac{20\pi \times T}{p} = \frac{20\pi \times 140}{175} = 50,26 \text{ ml/rev.}$$

3a. Motor choose from V_i immediately greater
VM4C 055 V_i = 58,8 ml/rev.

4a. Check real motor pressure for

T = 140 Nm. around 1500 RPM

VM4C 055 T=140 N.m n = 1500 RPM

p = 163 bar (see page B0-7)

5a. Flow loss VM4C 055 at 163 bar at 24 cSt

q_{vS} = 16 l/min

Real flow used by the motor :

q_v = q_{ve} - q_{vS} = 115 - 16=99 l/min

6a. Real speed of the motor :

$$n = \frac{q_v \times 1000}{V_i} = \frac{99 \times 1000}{58.8} = 1680 \text{ RPM}$$

Real performances

V _i	= 58.8 ml/rev.	} VM4C 055
n	= 1680 RPM	
T	= 140 Nm	
p	= 163 bar	

1. Check if available power is compatible with required power (0.85 estimated overall efficiency).

$$0.85 \times \frac{Q_{Ve} \times p}{600} > \frac{T \times \pi \times n}{30 \times 1000}$$

$$0.85 \times \frac{115 \times 175}{600} > \frac{140 \times \pi \times 1500}{30 \times 1000}$$

$$28.5 > 22$$

2b. Calculate V_i from q_{ve} required torque

$$V_i = \frac{1000 \times 115}{1500} = 76.6 \text{ ml/rev.}$$

3b. Motor choose from V_i immediately smaller
VM4C 067 V_i = 71.1 ml/rev.

4a. Check motor press. with T = 140 Nm.

at 1500 RPM

VM4C 067 T=140 N.m n = 1500 RPM

p = 140 bar

5b. Flow loss VM4C 067 at 140 bar at 24 cSt

q_{vS} = 14 l/min

Real flow used by the motor :

q_v = q_{ve} - q_{vS} = 115 - 14=101 l/min

6b. Real speed of the motor :

$$n = \frac{q_v \times 1000}{V_i} = \frac{101 \times 1000}{71.1} = 1420 \text{ RPM}$$

Real performances

V _i	= 71.1 ml/rev.	} VM4C 067
n	= 1420 RPM	
T	= 140 Nm	
p	= 140 bar	

In each case always choose the smallest motor which will operate at the highest speed and pressure, and offers the most efficient solution.

Note:- Performance characteristics shown are based on our laboratory test conditions and these may vary under different operating conditions.
Product details are liable to change without prior notice.

VM3B - 1 - 036 - 1 N 00 - B 1 01 *

Series

Internal Drain
(Omit for External Drain)

Torque

009 = 0.130 Nm/bar
012 = 0.186 Nm/bar
018 = 0.304 Nm/bar
027 = 0.485 Nm/bar
036 = 0.624 Nm/bar

Type of shaft

1 - keyed (no SAE)
3 - splined (SAE A)
4 - splined (SAE B)

Rotation

N - bi-directional

View from shaft end:

CW rotation A = inlet
B = outlet

CCW rotation A = outlet
B = inlet

Modifications

Port connections

00 = SAE threaded port
SAE drain

01 = SAE 4 bolt flange
BSPP drain

02 = BSPP threaded port
BSPP drain

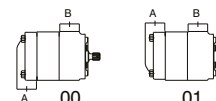
Seal class

1 - S1
4 - S4
5 - S5

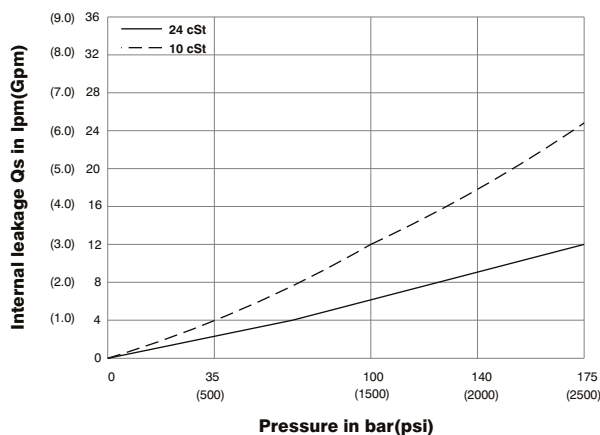
Design letter

Porting combination

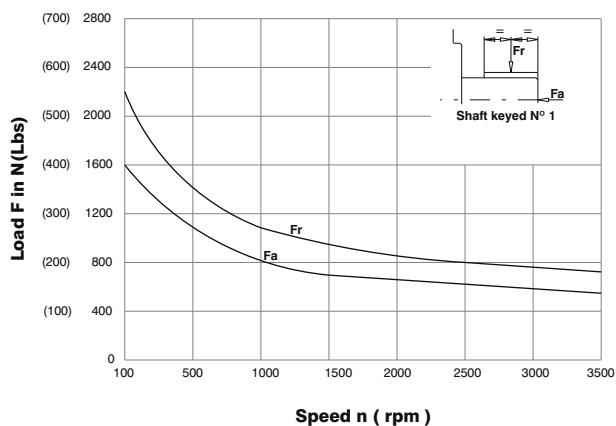
00 - standard



INTERNAL LEAKAGE



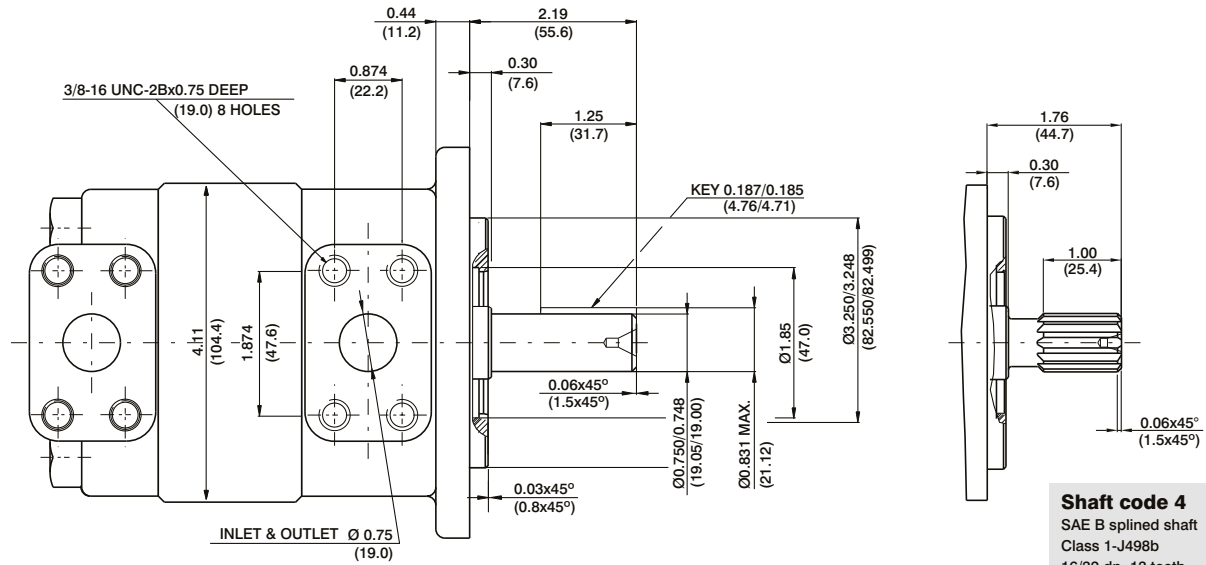
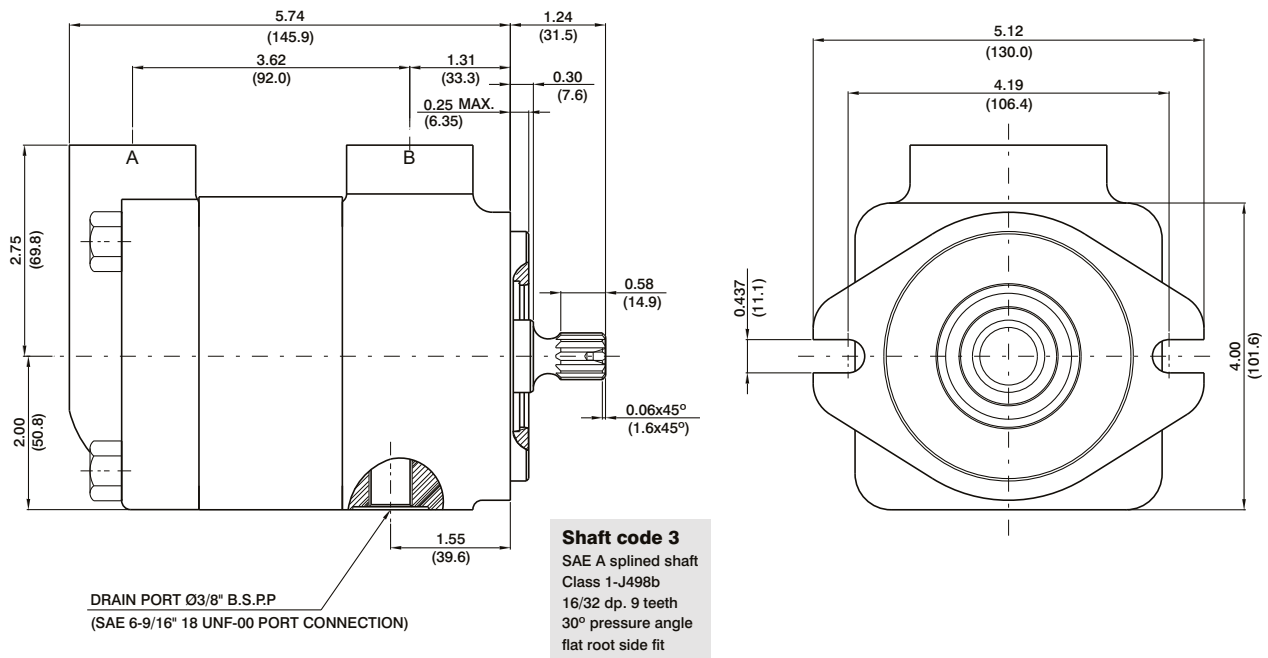
PERMISSIBLE RADIAL AND AXIAL LOADS



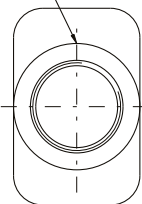
Do not apply Fr and Fa loads simultaneously

OPERATING CHARACTERISTICS - TYPICAL (24 cSt)

Model	Series	Volumetric Displacement Vi		Input flow at n = 2000 rpm				Torque T at n = 2000 rpm		Power output at n = 2000 rpm	
				Theoretical		at 175 bar (2500 psi) Δp		at 175 bar (2500 psi) Δp		at 175 bar (2500 psi) Δp	
		in³/rev	cm³/rev	GPM	l/min	GPM	l/min	lbf.in	Nm	HP	KW
VM3B	009	0.56	9.2	4.9	18.4	8.0	30.4	174.3	19.7	5.8	4.3
	012	0.75	12.3	6.5	24.6	9.7	36.6	236.3	26.7	7.8	5.8
	018	1.13	18.5	9.8	37.0	12.9	49.0	412.4	46.6	13.4	10.0
	027	1.70	27.8	14.7	55.6	17.8	67.6	680.5	77.4	21.8	16.3
	036	2.26	37.1	19.6	74.2	22.8	86.2	902.6	102.0	28.3	21.1

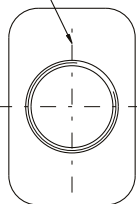


SAE 12(1 1/16"-12 UNF)



PORT CONNECTION 00

3/4 BSPP-0.75 DEEP
(19.0)



PORT CONNECTION 02

VM

Series

*S = Severe duty motor
Internal Drain
(Omit for External Drain)

Torque

024 = 0.39 Nm/bar
027 = 0.45 Nm/bar
031 = 0.55 Nm/bar
043 = 0.74 Nm/bar
055 = 0.93 Nm/bar
067 = 1.13 Nm/bar
075 = 1.27 Nm/bar

Type of shaft

1 - keyed (SAE B)
2 - keyed (no SAE)
3 - splined (SAE B)

Rotation

N - Bi-directional

VM4*C - 1 - 067 - 1 N 00 - A 1 02 *

Modifications

Port connections

01 = SAE threaded port
SAE drain
02 = SAE 4 bolt flange
UNC threaded - SAE drain
04 = SAE 4 bolt flange
UNC threaded - BSPP drain
M4 = SAE 4 bolt flange
metric threaded - BSPP drain

Seal class

1 - S1 (VM4C)
5 - S5 (VM4SC)

Design letter

Porting combination

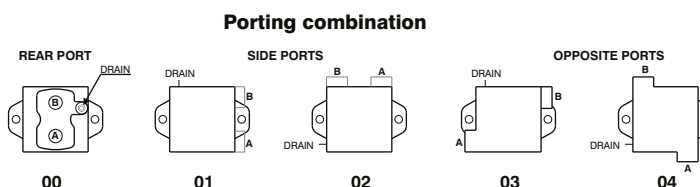
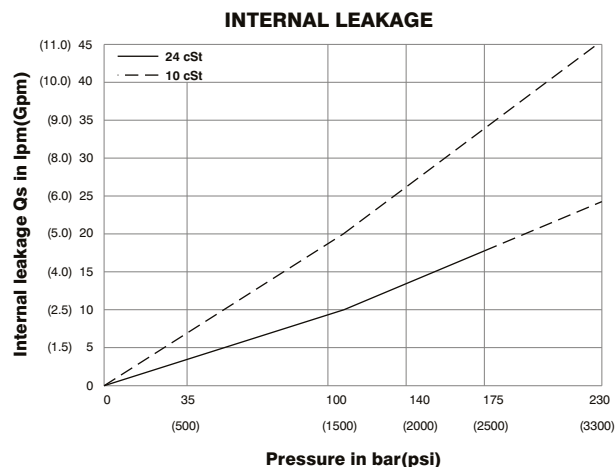
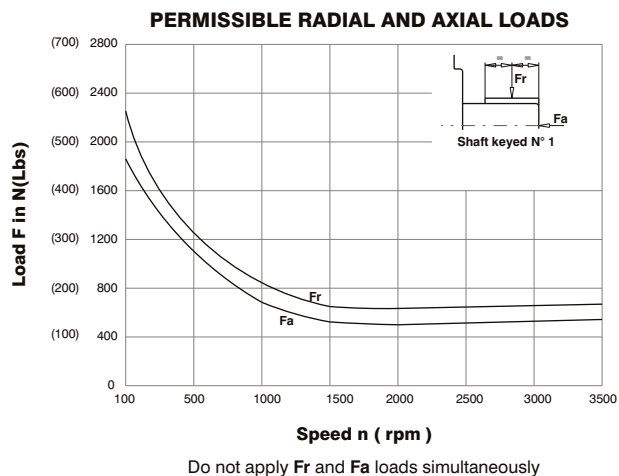
00 - standard

VM4C1-VM4SC1 : Drain port is plugged

View from shaft end:

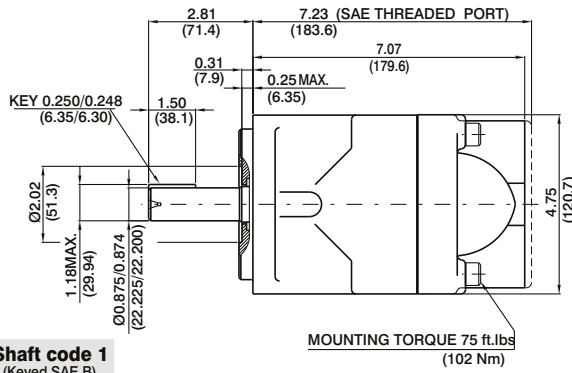
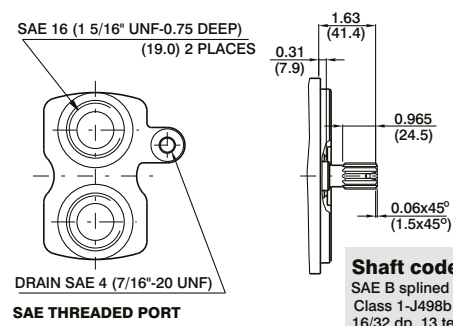
CW rotation A = inlet B = outlet

CCW rotation A = outlet B = inlet

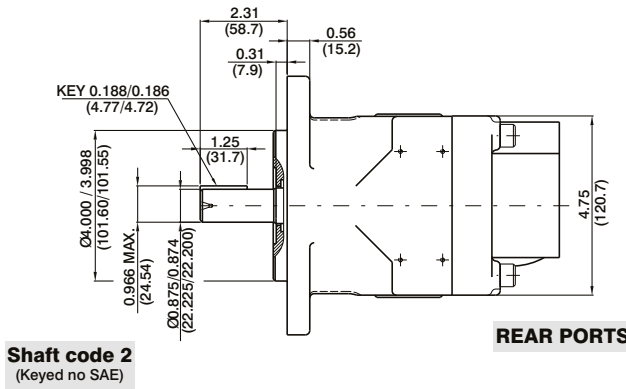
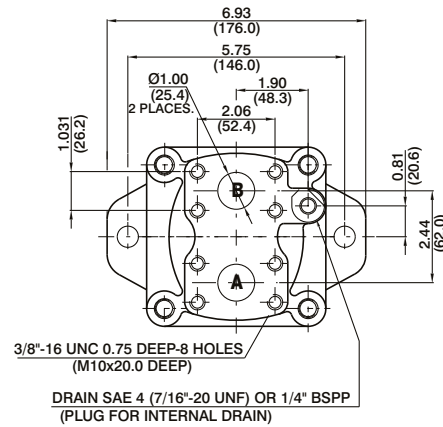
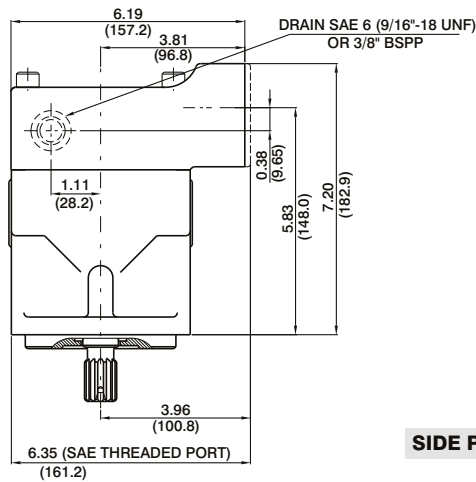


OPERATING CHARACTERISTICS - TYPICAL (24 cSt)

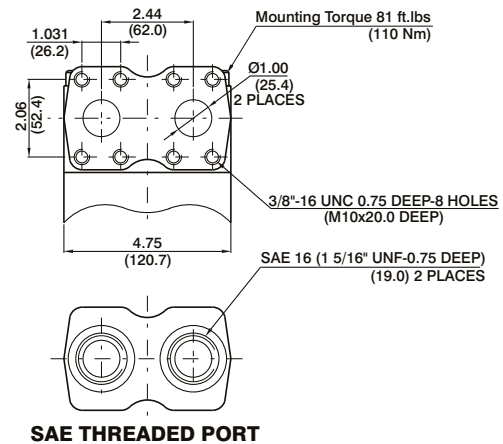
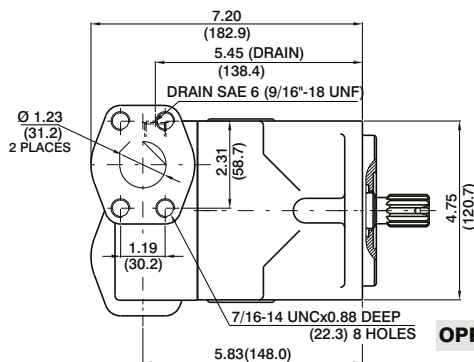
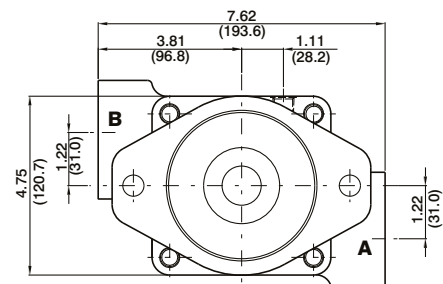
Model	Series	Volumetric Displacement V_i		Input flow at $n = 2000$ rpm				Torque T at $n = 2000$ rpm		Power output at $n = 2000$ rpm	
		in ³ /rev	cm ³ /rev	Theoretical at 175 bar (2500 psi) Δp				at 175 bar (2500 psi) Δp		at 175 bar (2500 psi) Δp	
				GPM	l/min	GPM	l/min	lbf.in	Nm	HP	KW
VM4C-VM4SC	024	1.49	24.4	13.0	49.0	17.7	67.0	535.4	60.5	17.0	12.7
	027	1.72	28.2	14.8	56.0	19.5	74.0	619.5	70.0	19.7	14.7
	031	2.11	34.5	18.5	69.0	23.2	87.0	768.0	86.8	24.0	18.0
	043	2.84	46.5	24.6	93.0	29.3	111.0	1062.0	120.0	33.6	25.1
	055	3.59	58.8	31.2	118.0	36.0	136.0	1318.6	149.0	41.8	31.2
	067	4.34	71.1	37.5	142.0	42.3	160.0	1504.5	170.0	47.7	35.6
	075	4.89	80.1	42.3	160.0	47.0	178.0	1752.2	198.0	55.6	41.5



Shaft code 3
SAE B splined shaft
Class 1-J498b
16/32 dp. 13 teeth
30° pressure angle
flat root side fit



SIDE PORTS



Series
 *S = Severe duty motor
 Internal Drain
 (Omit for External Drain)

Torque
 062 = 1.04 Nm/bar
 074 = 1.22 Nm/bar
 088 = 1.45 Nm/bar
 102 = 1.68 Nm/bar
 113 = 1.86 Nm/bar
 128 = 2.11 Nm/bar
 138 = 2.30 Nm/bar

Type of shaft
 1 - keyed (SAE C)
 3 - splined (SAE C)
 S - splined (SAE J718c)

Rotation
 N - Bi-directional

Modifications

Port connections
 01 = SAE threaded port
 SAE drain
 02 = SAE 4 bolt flange
 UNC threaded - SAE drain
 04 = SAE 4 bolt flange
 UNC threaded - BSPP drain
 M4 = SAE 4 bolt flange
 metric threaded - BSPP drain

Seal class
 1 - S1 (VM4D)
 5 - S5 (VM4SD)

Design letter

Porting combination
 00 - standard

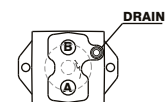
VM4*D - 1 - 138 - 1 N 00 - B 1 02 *

VM4D1-VM4SD1 : Drain port is plugged

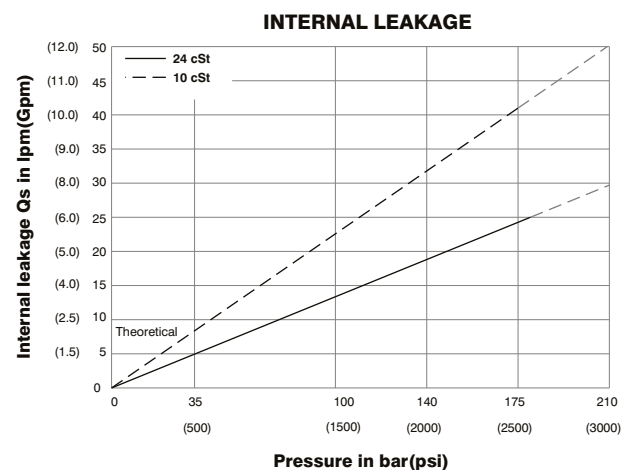
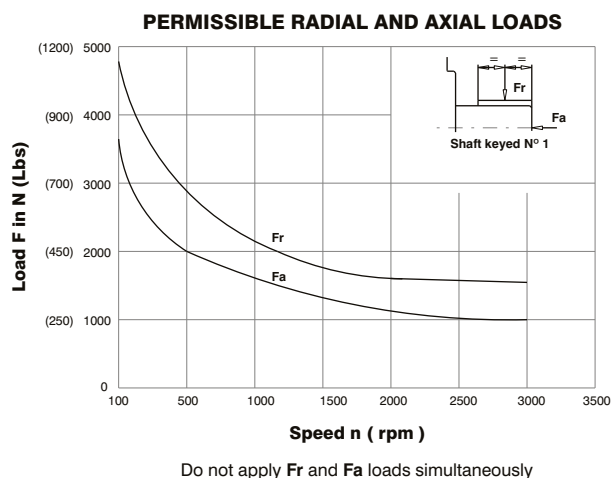
View from shaft end:

CW rotation A = inlet B = outlet

CCW rotation A = outlet B = inlet

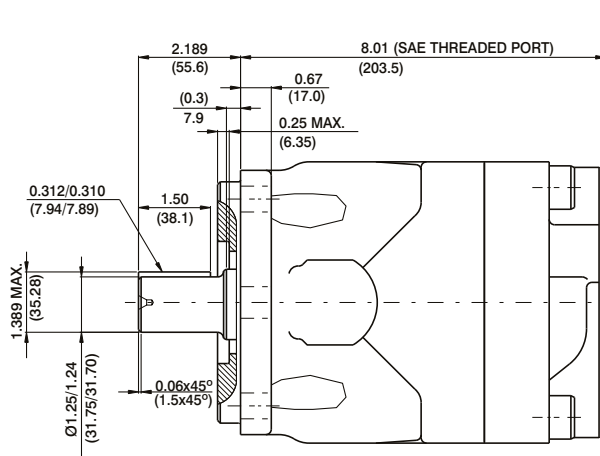


00

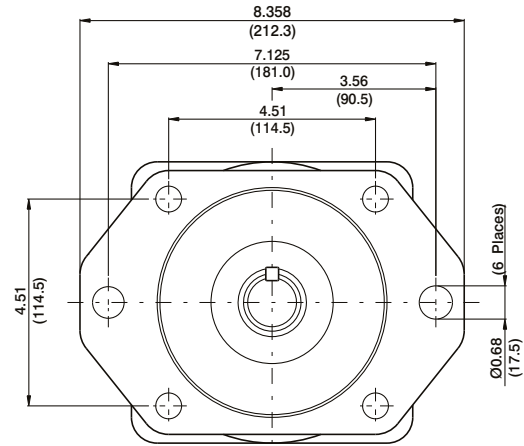
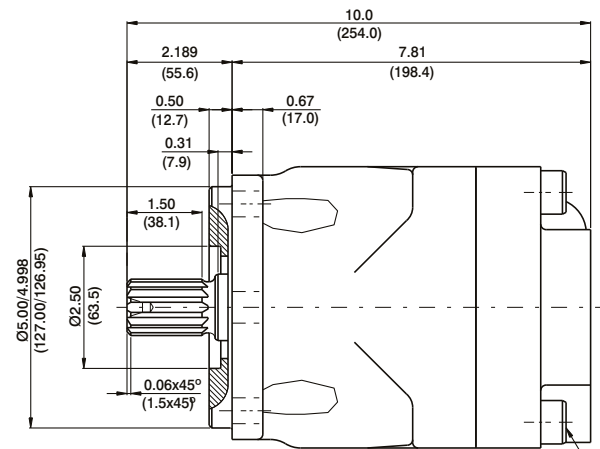


OPERATING CHARACTERISTICS - TYPICAL (24 cSt)

Model	Series	Volumetric Displacement V_i		Input flow at $n = 2000$ rpm				Torque T at $n = 2000$ rpm		Power output at $n = 2000$ rpm	
				Theoretical		at 175 bar (2500 psi) Δp		at 175 bar (2500 psi) Δp		at 175 bar (2500 psi) Δp	
		in ³ /rev	cm ³ /rev	GPM	l/min	GPM	l/min	lbf.in	Nm	HP	KW
VM4D-VM4SD	062	3.97	65.1	33.8	130.0	40.0	154.0	1460.0	165.0	46.4	34.6
	074	4.69	76.8	41.5	154.0	47.8	178.0	1770.0	200.0	56.2	41.9
	088	5.56	91.1	48.0	182.0	54.4	206.0	2088.5	236.0	66.2	49.4
	102	6.44	105.5	55.5	211.0	61.8	241.0	2336.3	264.0	74.1	55.3
	113	7.12	116.7	61.5	233.0	67.9	257.0	2655.0	300.0	84.2	62.8
	128	8.08	132.4	70.0	265.0	76.3	289.0	3009.0	340.0	95.5	71.2
	138	8.81	144.4	76.3	289.0	82.7	313.0	3292.0	372.0	104.5	77.9

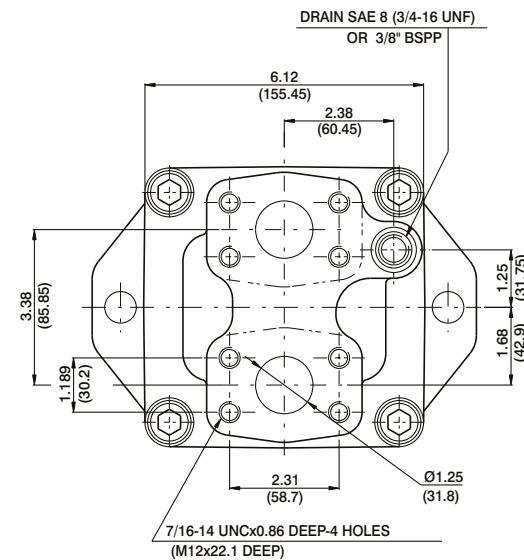
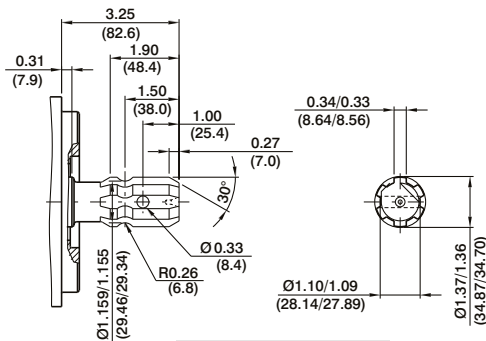


Shaft code 1
(Keyed SAE C)

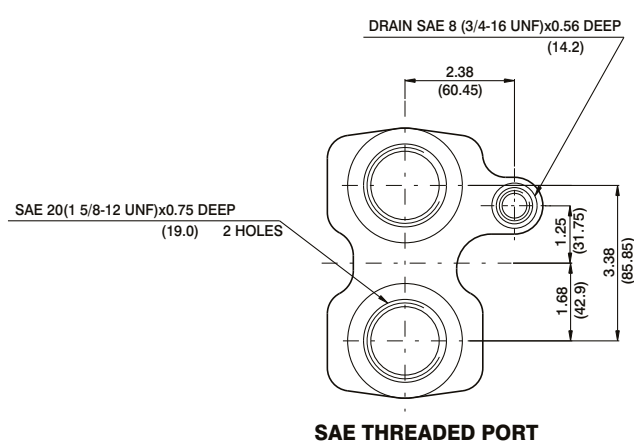


Shaft code 3
SAE C splined shaft
Class 1-J498b
12/24 dp. 14 teeth
30° pressure angle
Flat root side fit

MOUNTING TORQUE 133 ft.lbs
(180 Nm)



Shaft code S
SAE J718C
540 rpm power take-off
For Farm Tractor application



Series
 *S = Severe duty motor
 Internal Drain
 (Omit for External Drain)

Torque
 153 = 2.52 Nm/bar
 185 = 3.05 Nm/bar
 214 = 3.53 Nm/bar

Type of shaft
 1 - keyed (SAE C)
 3 - splined (SAE C)

Rotation
 N - Bi-directional

*S = Severe duty motor
 VM4E1-VM4SE1 : Drain port is plugged

View from shaft end:
 CW rotation A = inlet B = outlet
 CCW rotation A = outlet B = inlet

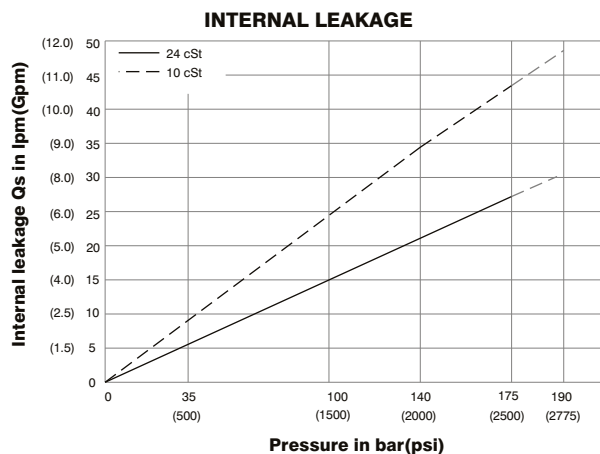
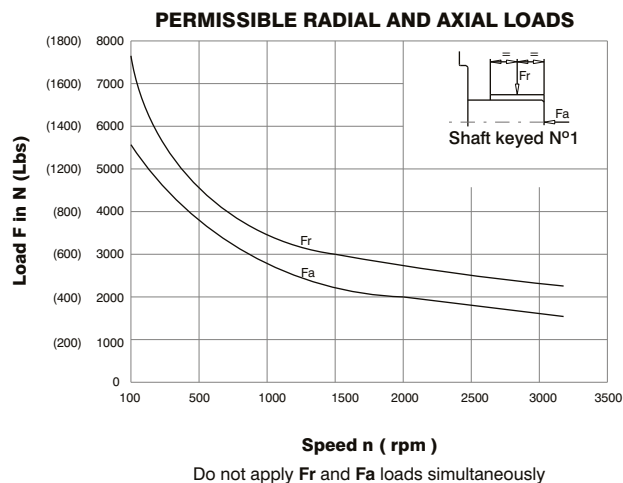
Modifications
 01 = SAE threaded port
 SAE drain
 02 = SAE 4 bolt flange
 UNC threaded - SAE drain
 04 = SAE 4 bolt flange
 UNC threaded - BSPP drain

Seal class
 5 - S5 (M4SE)
 1 - S1 (M4E)

Design letter

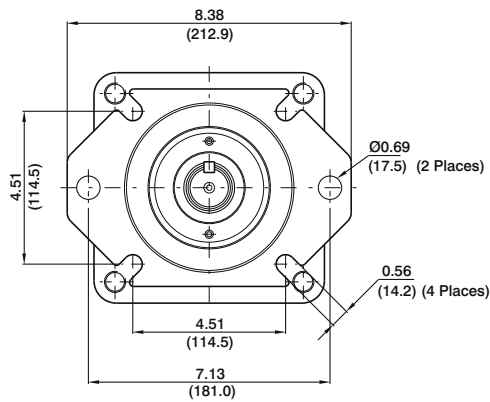
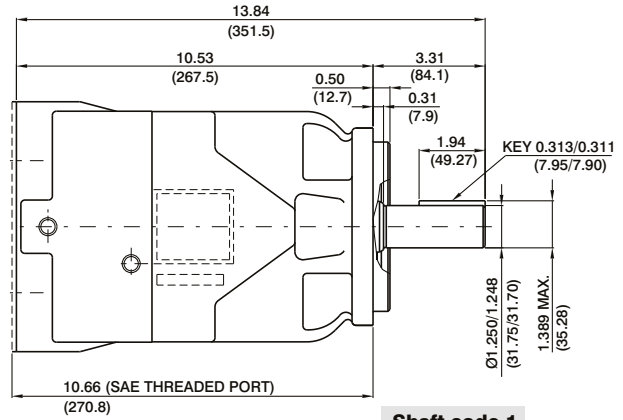
Porting combination
 00 - standard

00

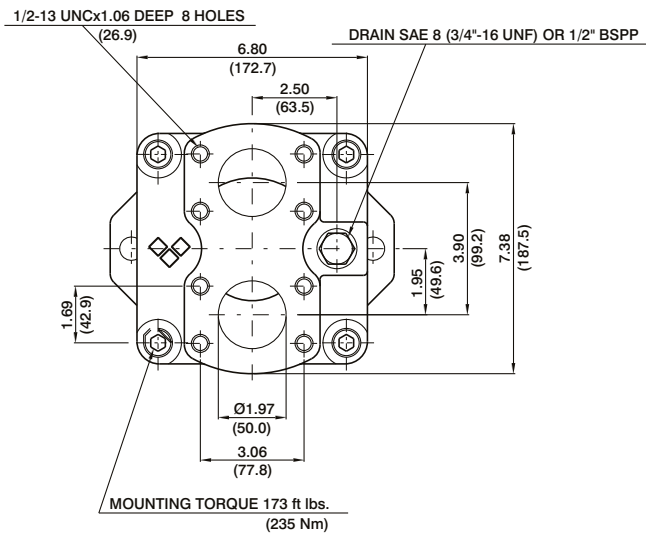
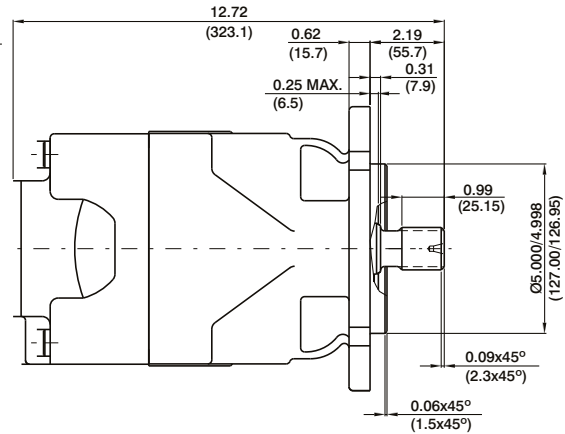


OPERATING CHARACTERISTICS - TYPICAL (24 cSt)

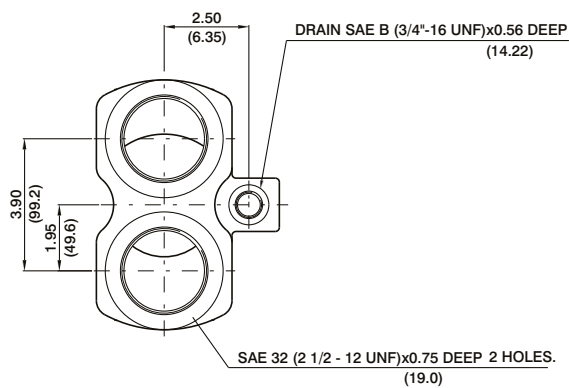
Model	Series	Volumetric Displacement V_i		Input flow at $n = 2000$ rpm				Torque T at $n = 2000$ rpm		Power output at $n = 2000$ rpm	
				at 175 bar (2500 psi) Δp				at 175 bar (2500 psi) Δp		at 175 bar (2500 psi) Δp	
		in ³ /rev	cm ³ /rev	GPM	l/min	GPM	l/min	lbf.in	Nm	HP	KW
VM4E-VM4SE	153	9.67	158.5	83.7	316.4	90.6	343.0	3522.0	398.0	111.8	83.4
	185	11.69	191.6	101.2	382.5	108.0	409.0	4283.2	484.0	136.0	101.4
	214	13.55	222.0	117.3	443.4	124.2	470.0	5017.7	567.0	159.3	118.8



Shaft code 1
(Keyed SAE C)



Shaft code 3
SAE C splined shaft
Class 1-J498b
12/24 dp. 14 teeth
30° pressure angle
Flat root side fit



SAE THREADED PORT





Hydraulic Pumps & Motors Plant



Hydraulic Valves Plant



Hydraulic Cylinders Plant

Veljan is a pioneer High Performance Hydraulics company in India and a leader in its own right.

Veljan has a wealth of experience in developing and manufacturing a wide range of Hydraulic Products and systems for over 45 years now at its manufacturing plants near Hyderabad. These plants are equipped with production and test facilities, supported by a strong skilled workforce.

HYDRAULICS :

Pumps

- Vane : • Fixed Displacement (Single / Double / Triple & Drive Train) 6 to 540 cc / rev and up to 320 bar pressure
- Variable Displacement Vane (11 & 22 cc / rev)
- Piston : • Variable Displacement Piston (Swash plate design for Open loop) 9 to 140 cc/rev and up to 280 bar pressure

Motors

- Vane : • 5 to 811 Nm Torque and Max. Pressure 4000 rpm
- Roller Cam: • 71 to 3040 Nm Torque & 400 to 750 rpm

Pressure Controls

- : • Relief / Reducing / Unloader / Sequence Valves (up to 350 Bar pressure with threaded or flanged ports) 3/8" to 1 1/2"

Check Valves

- : • Direct and Pilot operated (3/8" to 2")

Throttle Valves

- : • With & without free return flow check valve (3/8" to 1 1/2")

Flow Control Valves

- : • pressure and temperature compensated (3/8" to 3/4")

Directional Control Valves

- : • Manual / Pilot and Solenoid operated (1/4" to 3/4")

Mobile Valves

- : • 1 to 12 sections, 80 LPM flow and up to 350 bar pressure.

Cartridge & Seat valves

- : • Manifolds and Complete Power packs

Cylinders

- : • 40 to 1000 mm bore, up to 8500mm stroke and 500 bar pressure Tie Rod, Mill Duty, Mobile Duty, ISO Type and Custom designs

SYSTEMS :

- Ship Stabilizers & Steering Gear and complete Turnkey Hydraulic / Pneumatic / Hydro Mechanical systems

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