

VARIABLE SPEED DRIVE SERIES

VANE PUMPS

SERVO PUMP T7 APPLICATION GUIDELINES

Veljan Denison's T7 hydrostatically balanced wear compensated pumps are well suited for applications where the pump will be run in variable speeds using a servo motor and associated drive setups. They are suited for both flow and pressure controlled modes. Complete systems including pumps, motors and drives can also be provided from a single source.

Available Pumps – Single, Double and Triple

All T7 series pumps in frame sizes A, B, C, and D are available in the servo configuration. They are also available as double or triple pumps. It is recommended to engage a Veljan Denison engineer prior to application as triple pumps.

Mounting orientation

Pumps can be mounted in any direction. However, mounting position and orientation should be designed to obtain optimum inlet pressures.

Inlet Pressure

Standard inlet pressure ratings as documented for T7 series of pumps apply. These are available on Page 07 – General Information section of the vane pumps and motors catalogue.

Care must also be taken to ensure that during deceleration the inlet pressure doesn't exceed specifications.

Special Circuitry Requirements

The pumps are designed for flow and pressure control. For closed loop pressure control, the pump can be optioned with integrated solenoid controlled valving to compensate for temperature and viscosity related instabilities while also ensuring minimum energy consumption. Please contact the Veljan Denison engineering team or your nearest sales representative prior to applying in a closed loop pressure control mode.

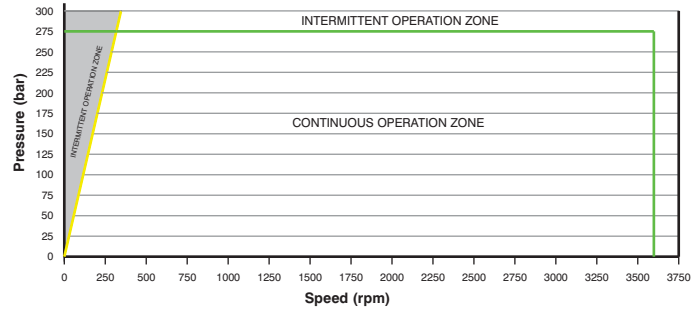


In case bleed circuits are being designed, it is recommended that the bleed flow rate is greater than the internal leakage characteristics of the pump as shown in the pump charts of this catalogue. The Veljan D4S flanged configuration consists of an outlet orifice which is sized to the pump.

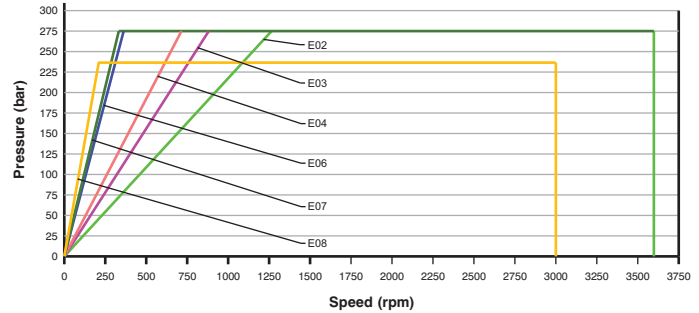
Reversing during decompression

Momentary reversing during decompression is allowed. In configurations where pump-integrated valving is specified, venting through the solenoid controlled valve during decompression can also be considered.

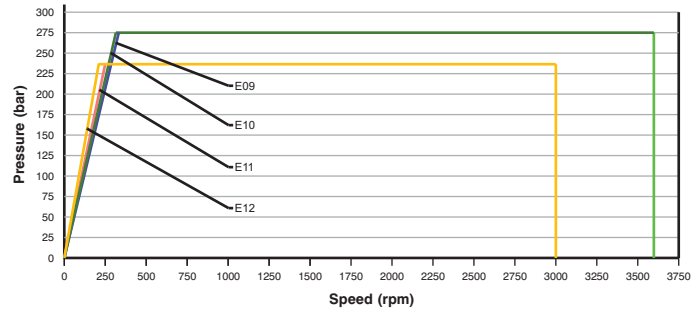
HOW TO READ PUMP OPERATING RANGE CHART



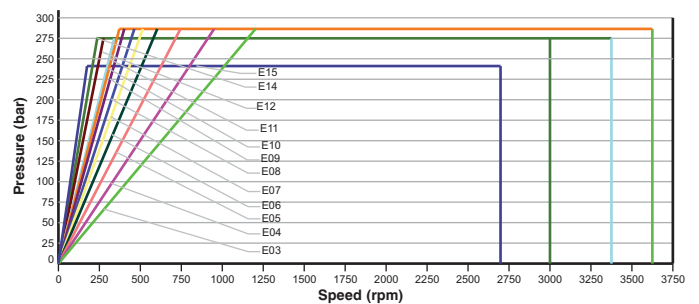
T7A/T7AS OPERATING RANGE



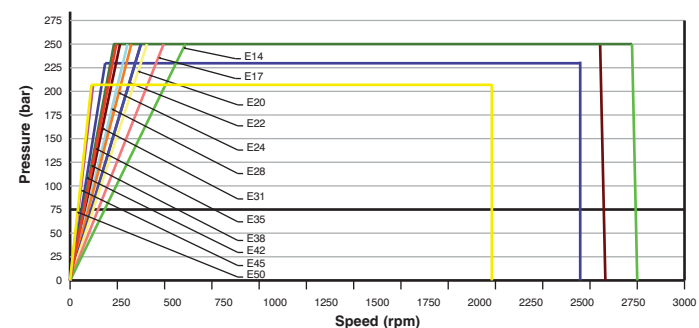
T7ASW OPERATING RANGE



T7B/T7BS OPERATING RANGE



T7D / T7DS OPERATING RANGE



VP
VS

VT7A or VT7AS - E06 - 1 R 00 - D 1 02 - --

Series

VT7A series - ISO 2 bolts 3019-2 mounting flange 80 A2 HW

VT7AS series - SAE B 2 bolts mounting flange J744C

Camring

Volumetric displacement in³/rev (cm³/rev)

- E02 = 0.38 (6.1)
- E03 = 0.61 (10.0)
- E04 = 0.76 (12.5)
- E05 = 1.10 (17.5)
- E06 = 1.19 (19.5)
- E07 = 1.34 (21.9)
- E08 = 1.57 (25.8)

Type of shaft

2 - Keyed (ISO R775)

Type of shaft

- 1 = Keyed (non SAE) 19.05 Dia
- 3 = Splined 16/32 (SAE B) 13 Teeth
- 4 = Splined 16/32 (SAE A) 11 Teeth

Direction of rotation (view on shaft end)

- R - clockwise
- L - counter-clockwise

Modifications

Port Connections

| CODE | S | P |
|------|---------------------|--------------|
| 00 | 4 Bolts SAE Flanges | |
| | 1" 1/4 UNC | 3/4" UNC |
| 02 | SAE Thread | |
| | 1"5/16 SAE20 | 1"1/16 SAE12 |
| 03 | NPTF Thread | |
| | 1"1/4 NPTF | 1"1/16NPTF |
| 04 | BSP Thread | |
| | 1"1/4 BSP | 3/4" BSP |

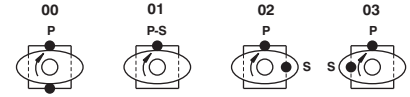
Seal class

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

Design letter

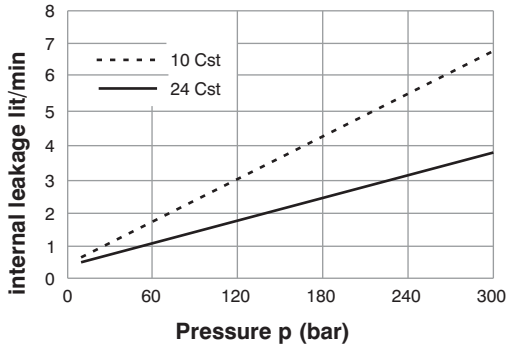
Porting combination

00 - standard



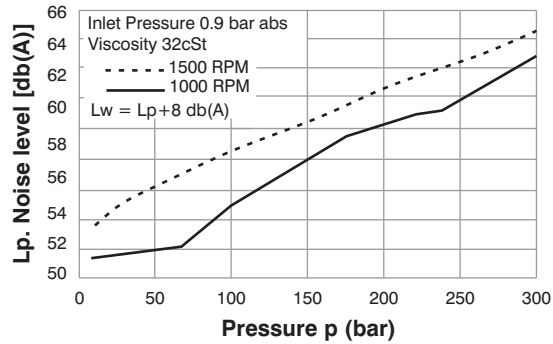
S - Suction port P - Pressure port

INTERNAL LEAKAGE (TYPICAL)

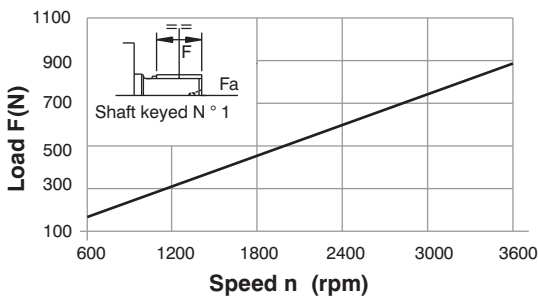


Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow

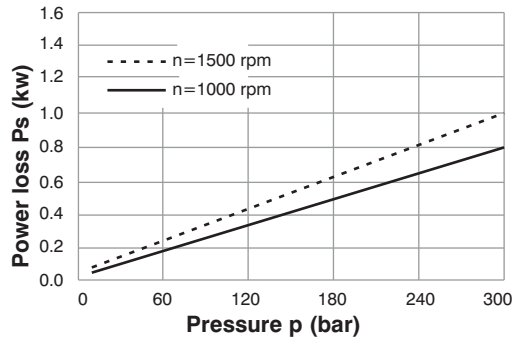
NOISE LEVEL

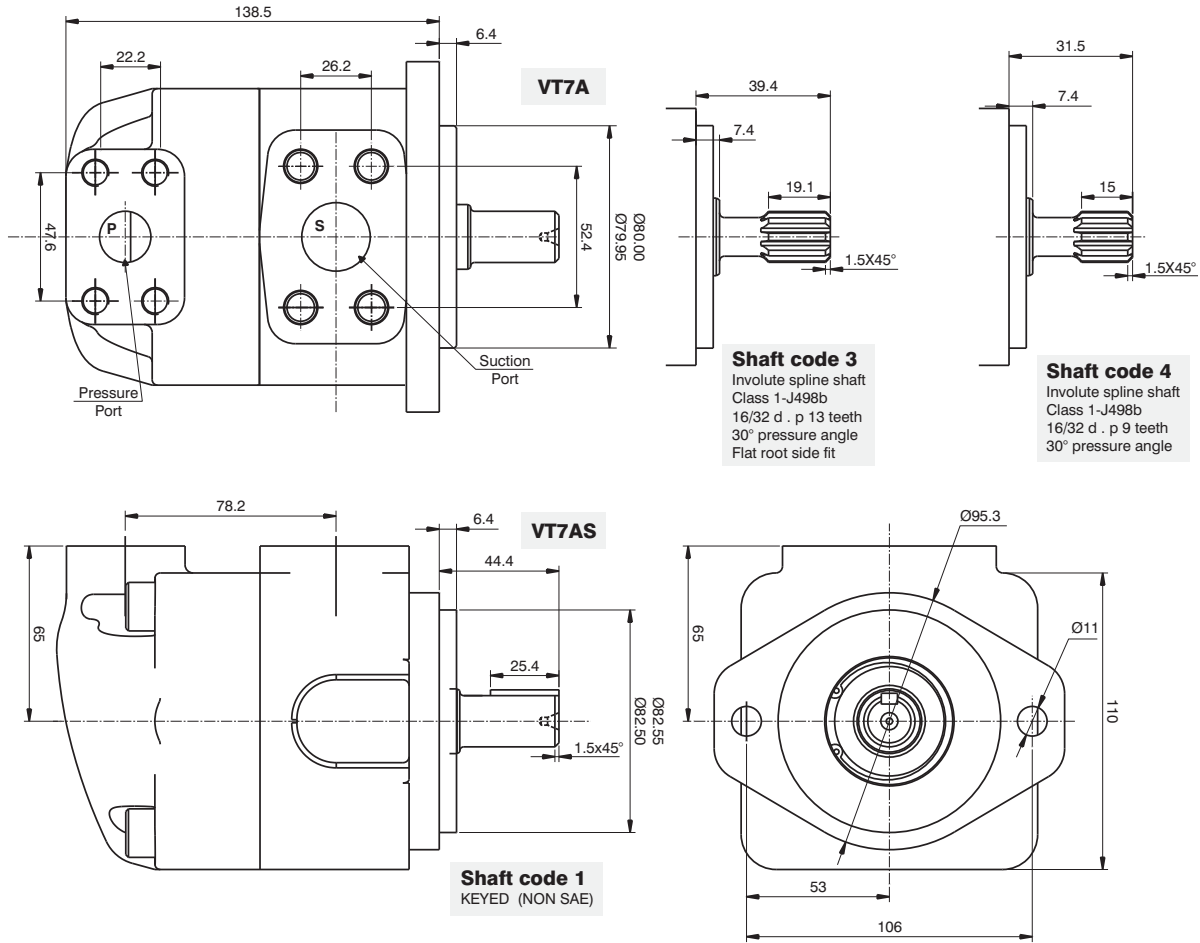


PERMISSIBLE RADIAL LOAD



POWER LOSS HYDROMECHANICAL(TYPICAL)





VP
VS

OPERATING CHARACTERISTICS - TYPICAL (24 cST)

| 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 = 320 bar(4650 psi) | | p = 7 bar(100 psi) | | p = 140 bar(2000 psi) | | p = 320 bar(4650 psi) | |
| | | | | gpm | lpm | gpm | lpm | gpm | lpm | hp | kw | hp | kw | hp | kw |
| VT7AS | E02 | 0.38 | 6.1 | 2.42 | 9.1 | 1.8 | 7.0 | 1.4 | 5.2 | 0.3 | 0.2 | 3.6 | 2.7 | 8.1 | 6.0 |
| | E03 | 0.61 | 10.0 | 3.96 | 14.9 | 3.4 | 13.0 | 3.0 | 11.2 | 0.4 | 0.3 | 5.5 | 4.1 | 12.1 | 9.0 |
| | E04 | 0.76 | 12.5 | 4.95 | 18.7 | 4.6 | 17.5 | 4.2 | 15.7 | 0.5 | 0.4 | 6.8 | 5.1 | 15.2 | 11.3 |
| | E05 | 1.1 | 17.5 | 6.93 | 26.2 | 6.5 | 24.5 | 6.0 | 22.7 | 0.67 | 0.5 | 8.86 | 6.6 | 19.6 | 14.6 |
| | E06 | 1.19 | 19.5 | 7.72 | 29.2 | 7.4 | 28.0 | 6.9 | 26.2 | 0.8 | 0.6 | 10.2 | 7.6 | 22.1 | 16.5 |
| | E07 | 1.34 | 21.9 | 8.67 | 32.8 | 8.5 | 32.1 | 8.0 | 30.2 | 0.8 | 0.6 | 11.4 | 8.5 | 24.9 | 18.6 |
| | E08 | 1.57 | 25.8 | 10.2 | 38.6 | 9.4 | 35.7 | 8.9 | 33.8 | 0.9 | 0.7 | 12.5 | 9.3 | 27.3 | 20.4 |

| Cartridge | Series | Volumetric Displacement VP | | Minimum Inlet Pressure (PSI Absolute/BAR) Allowed | | | | | | | | Min. Speed | Max. Speed | Maximum Pressure | | | | | | | | |
|-----------|--------|----------------------------|----------------------|---|------|------|------|------|------|------|------|------------|------------|------------------|------------------|------------|-----|------------------|-----|------|-----|------|
| | | in ³ /rev | cm ³ /rev | Speed in RPM | | | | | | | | | | HF-0, HF-1, HF-2 | HF-3, HF-4, HF-5 | HF-0, HF-2 | | HF-1, HF-4, HF-5 | | HF-3 | | |
| | | | | 1200 | 1500 | 1800 | 2100 | 2300 | 2500 | 2800 | 3000 | | | | | 3600 | RPM | bar | bar | bar | bar | bar |
| VT7AS | E02 | 0.38 | 6.1 | | | | | | | | | | 600 | 3600 | 1800 | 300 | 275 | 240 | 210 | 175 | 140 | |
| | E03 | 0.61 | 10.0 | | | | | | | | | | | | | | | | | | | |
| | E04 | 0.76 | 12.5 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | | | | | | | | | | |
| | E05 | 1.10 | 17.5 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | | | | | | | | | | |
| | E06 | 1.19 | 19.5 | | | | | | | | | 13.6 | | | | | | | | | | 0.94 |
| | E07 | 1.34 | 21.9 | | | | | | | | | 14.5 | | | | | | | | | | 1.00 |
| | E08 | 1.57 | 25.8 | | | | | | | | | 12.3 | | | | | | | | | | 0.85 |
| | | | | | | | | | | | | 3000 | | | | | | | | | | |

HF-0, HF-2 = Antiwear Petroleum Base HF-1 = Non Antiwear Petroleum base HF-3 = Water in oil Emulsion HF-4 = Water Glycols
 For any other information not covered in the above statement the customer may call engineering department for clarification

VT7ASW - E09 - 1 R 00 - D 1 02 - --

Series

Camring

Volumetric displacement in³/rev (cm³/rev)

- E09 = 1.71 (28.0)
- E10 = 1.87 (30.7)
- E11 = 2.21 (36.2)
- E12 = 2.42 (39.7)

Type of shaft

2 - Keyed (ISO R775)

Type of shaft

- 1 = Keyed (non SAE) 19.05 Dia
- 3 = Splined 16/32 (SAE B) 13 Teeth
- 4 = Splined 16/32 (SAE A) 11 Teeth

Direction of rotation (view on shaft end)

- R - clockwise
- L - counter-clockwise

Modifications

Port Connections

| CODE | S | P |
|------|---------------------|--------------|
| 00 | 4 Bolts SAE Flanges | |
| | 1" 1/4 UNC | 3/4" UNC |
| 02 | SAE Thread | |
| | 1"5/16 SAE20 | 1"1/16 SAE12 |
| 03 | NPTF Thread | |
| | 1"1/4 NPTF | 1"1/16NPTF |
| 04 | BSP Thread | |
| | 1"1/4 BSP | 3/4"BSP |

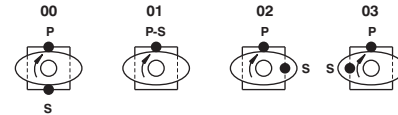
Seal class

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

Design letter

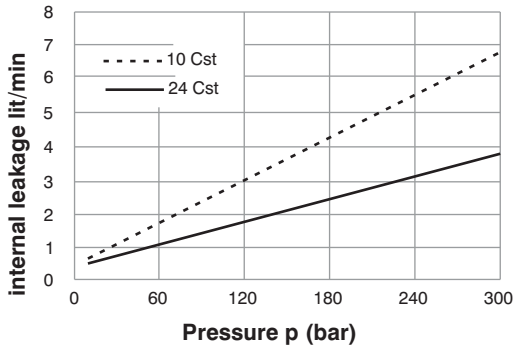
Porting combination

00 - standard

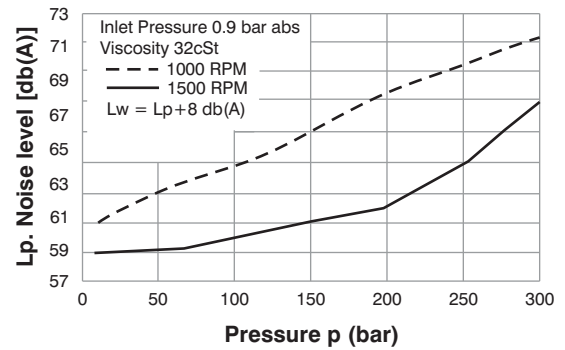


S - Suction port P - Pressure port

INTERNAL LEAKAGE (TYPICAL)

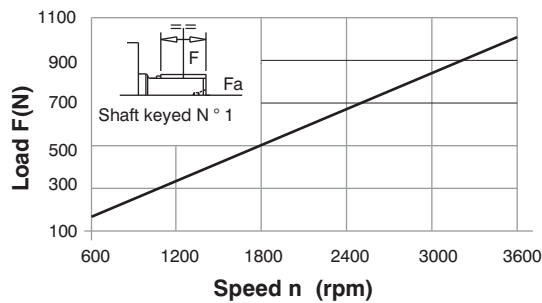


NOISE LEVEL

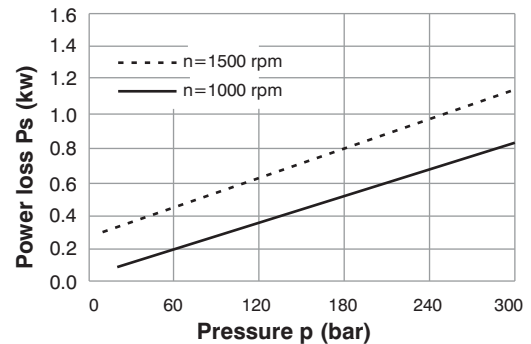


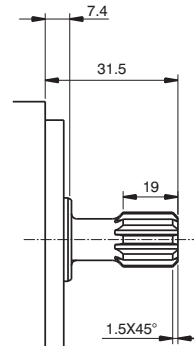
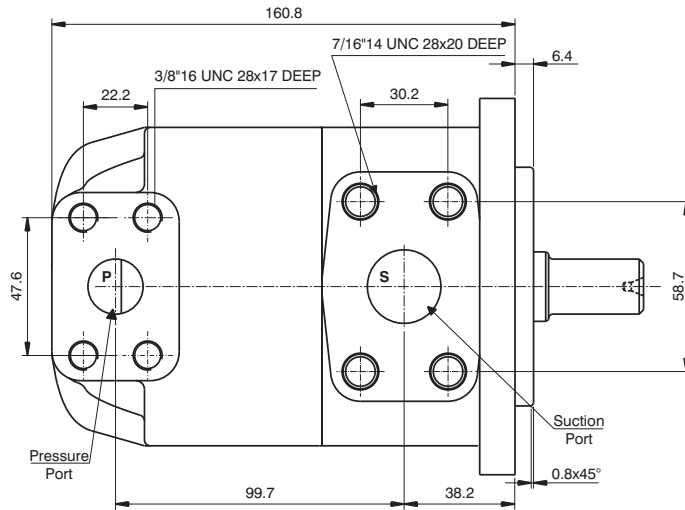
Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow

PERMISSIBLE RADIAL LOAD

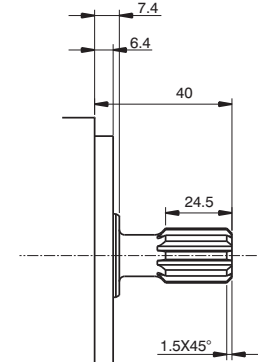


POWER LOSS HYDROMECHANICAL(TYPICAL)

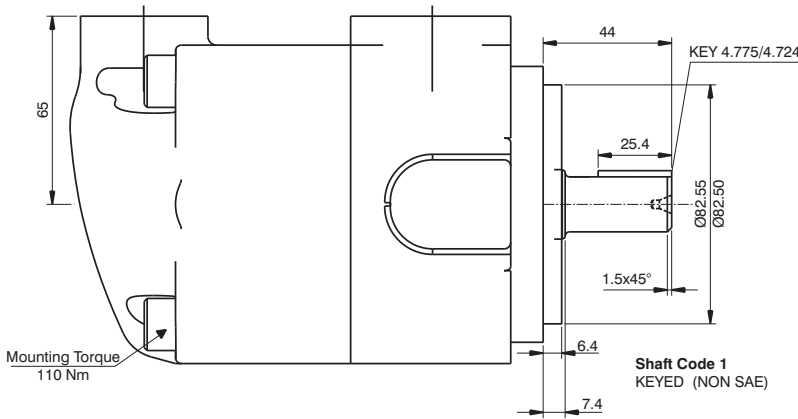




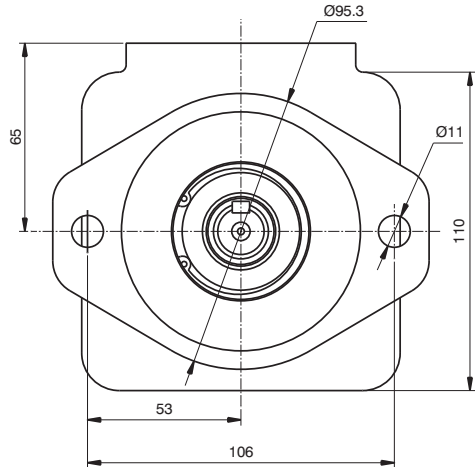
Shaft code 4
Involute spline shaft
Class 1-J498b
16/32 d . p 11 teeth
30° pressure angle



Shaft code 3
Involute spline shaft
Class 1-J498b
16/32 d . p 13 teeth
30° pressure angle
Flat root side fit



Shaft Code 1
KEYED (NON SAE)



VP
VS

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 = 300 bar (4350 psi) | | p = 7 bar (100 psi) | | p = 140 bar (2000 psi) | | p = 320 bar (4650 psi) | |
| | | | | gpm | lpm | gpm | lpm | gpm | lpm | hp | kw | hp | kw | hp | kw |
| VT7ASW | E09 | 1.71 | 28.0 | 11.1 | 41.9 | 10.6 | 40.3 | 10.2 | 38.5 | 1.2 | 0.9 | 13.7 | 10.2 | 29.6 | 22.1 |
| | E10 | 1.87 | 30.7 | 12.2 | 45.9 | 11.5 | 43.3 | 11.0 | 41.5 | 1.2 | 0.9 | 14.6 | 10.9 | 31.9 | 23.6 |
| | E11 | 2.21 | 36.2 | 14.3 | 54.1 | 13.8 | 52.3 | 13.4 | 50.5 | 1.3 | 1.0 | 17.4 | 13.0 | 37.7 | 28.1 |
| | E12 | 2.42 | 39.7 | 15.7 | 59.4 | 15.4 | 58.3 | 14.9 | 56.5 | 1.5 | 1.1 | 19.3 | 14.4 | 41.7 | 31.1 |

| Cartridge | Series | Volumetric Displacement VP | | Minimum Inlet Pressure (PSI Absolute/BAR) Allowed | | | | | | | | Max. Speed | | Maximum Pressure | | | | | |
|-----------|----------------------|----------------------------|------|---|------|------|------|------|------|------|------|------------------|------------------|------------------|------------------|------|------|-----|-----|
| | | | | | | | | | | | | HF-0, HF-1, HF-2 | HF-3, HF-4, HF-5 | HF-0, HF-2 | HF-1, HF-4, HF-5 | HF-3 | | | |
| | | | | Speed in RPM | | | | | | | | Int | Cont | Int | Cont | Int | Cont | | |
| Size | in ³ /rev | cm ³ /rev | 1200 | 1500 | 1800 | 2100 | 2300 | 2500 | 2800 | 3000 | 3600 | bar | bar | bar | bar | bar | bar | | |
| VT7ASW | E09 | 1.71 | 28.0 | | | | | | | | | 3600 | 1800 | 300 | 275 | 240 | 210 | 175 | 140 |
| | E10 | 1.87 | 30.7 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | 11.6 | | | | | | | | |
| | E11 | 2.21 | 36.2 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | | | | | | | | |
| | E12 | 2.42 | 39.7 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | | | | | | | | |

HF-0 , HF-2 =Antiwear Petroleum Base
 HF-1 = Non Antiwear Petroleum base
 HF-3 = Water in oil Emulsion
 HF-4 = Water Glycols

For any other information not covered in the above statement the customer may call engineering department for clarification

VT7B or VT7BS - E10 - 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 in³/rev (cm³/rev)

| | |
|-------------------|-------------------|
| E02 = 5.7 (0.35) | E09 = 28.0 (1.71) |
| E03 = 9.8 (0.60) | E10 = 31.8 (1.94) |
| E04 = 12.8 (0.78) | E11 = 34.9 (2.13) |
| E05 = 15.9 (0.97) | E12 = 40.9 (2.50) |
| E06 = 19.8 (1.21) | E14 = 45.1 (2.75) |
| E07 = 22.5 (1.37) | E15 = 50.0 (3.05) |
| E08 = 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" | | | |

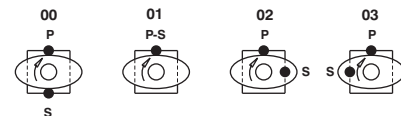
Seal class

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

Design letter

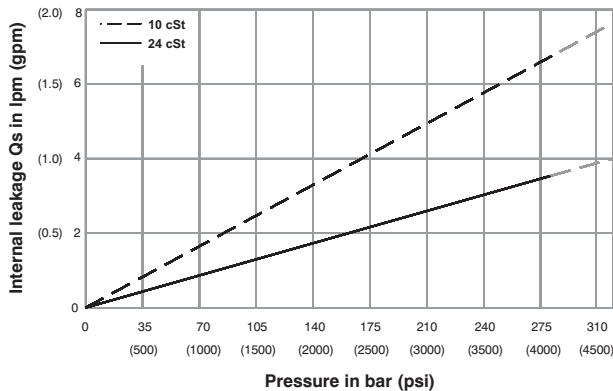
Porting combination

00 - standard



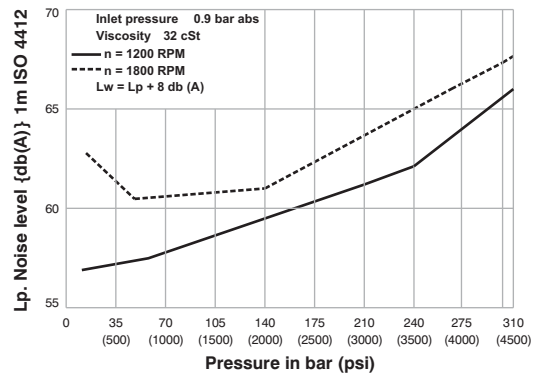
S - Suction port P - Pressure port

INTERNAL LEAKAGE (TYPICAL)



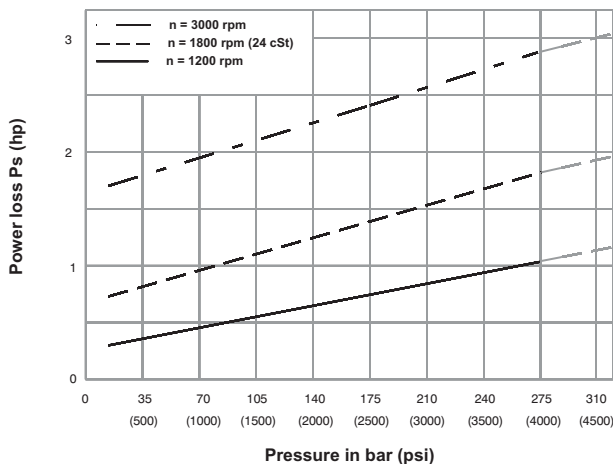
NOISE LEVEL (TYPICAL)

VT7B- E10-E04

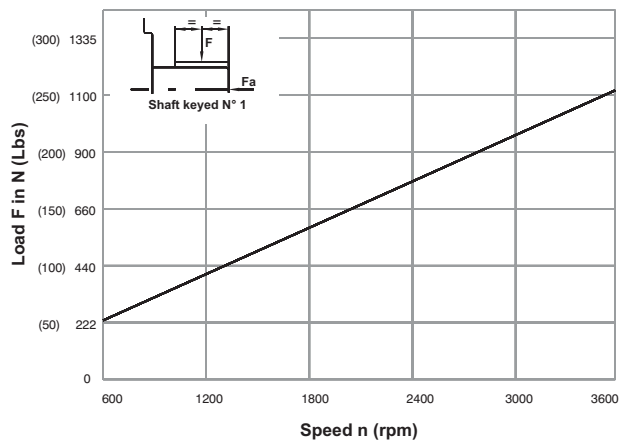


Double pump noise level is given with each section discharging at the pressure noted on the curve.

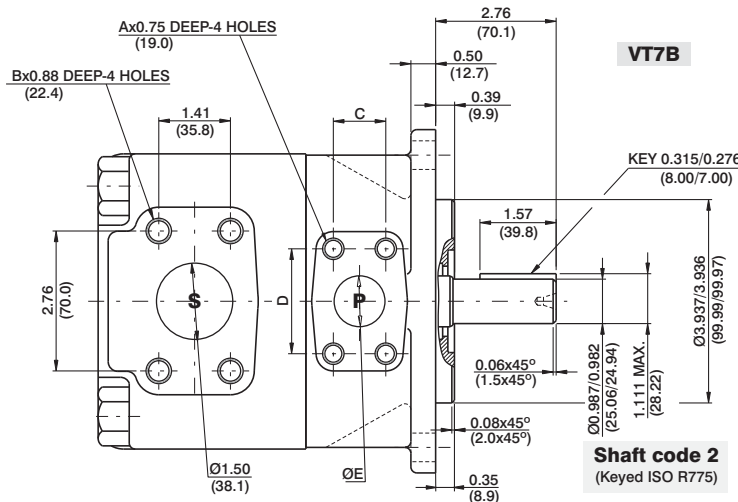
HYDROMECHANICAL POWER LOSS (TYPICAL)



PERMISSIBLE RADIAL LOAD

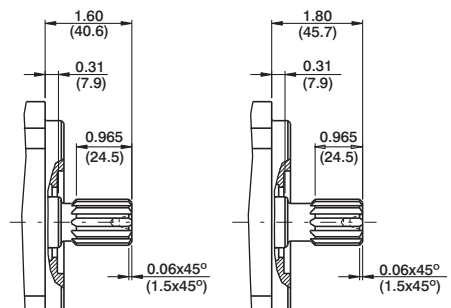


Maximum axial load permissible Fa = 800 N (180 Lbs)



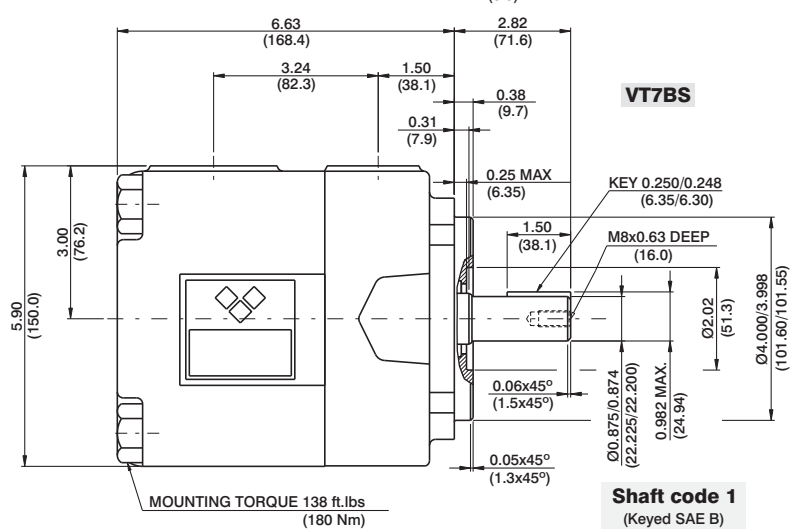
VT7B

Shaft code 2
(Keyed ISO R775)



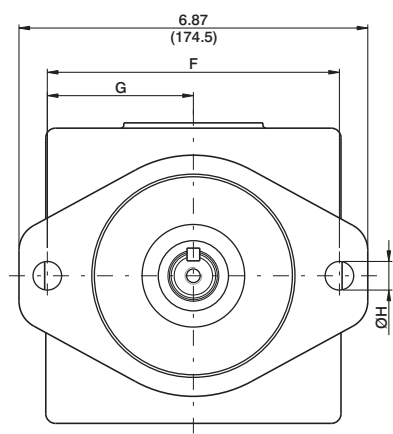
Shaft code 3
SAE B splined shaft
Class 1-J498b
16/32 dp. 13 teeth
30° pressure angle
flat root side fit

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



VT7BS

Shaft code 1
(Keyed SAE B)



VP
VS

| | 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 | E02 | 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 |
| | E03 | 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 |
| | E04 | 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 |
| | E05 | 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 |
| | E06 | 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 |
| | E07 | 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 |
| | E08 | 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 |
| | E09 | 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 |
| | E10 | 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 |
| | E11 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 |
| | E12 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 |
| | E14 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 |
| | E15 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) E11-E12-E14 = 300 bar (4350 psi) & E15 = 280 bar (4060 psi) max. int. And Max. Speed = 3000 rpm

VT7D or VT7DS - E42 - 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)

| | |
|-------------------|--------------------|
| E14 = 43.9 (2.68) | E31 = 99.1 (6.05) |
| E17 = 55.0 (3.36) | E35 = 113.4 (6.92) |
| E20 = 66.0 (4.03) | E38 = 120.6 (7.36) |
| E22 = 70.3 (4.29) | E42 = 137.5 (8.39) |
| E24 = 81.1 (4.95) | E45 = 145.7 (8.89) |
| E28 = 89.9 (5.49) | E50 = 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.

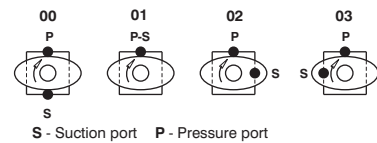
Seal class

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

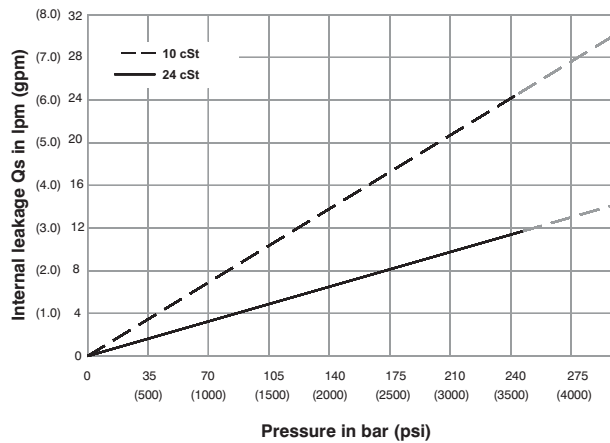
Design letter

Porting combination

00 - standard

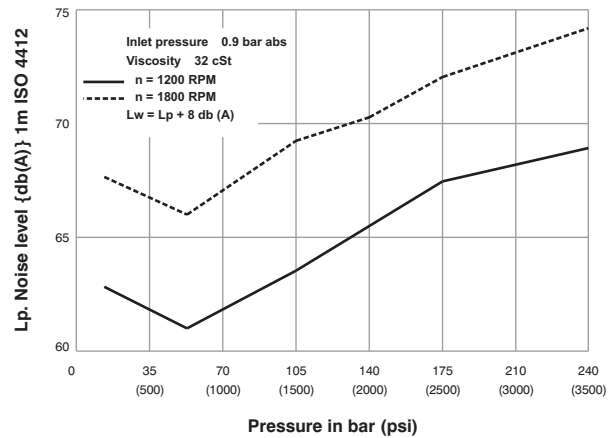


INTERNAL LEAKAGE (TYPICAL)



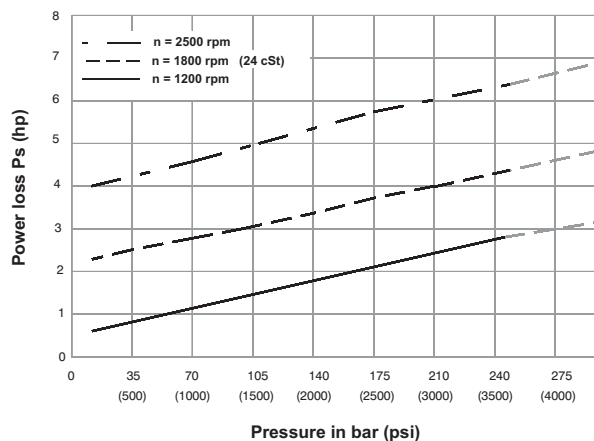
NOISE LEVEL (TYPICAL)

VT7D- E31-E10

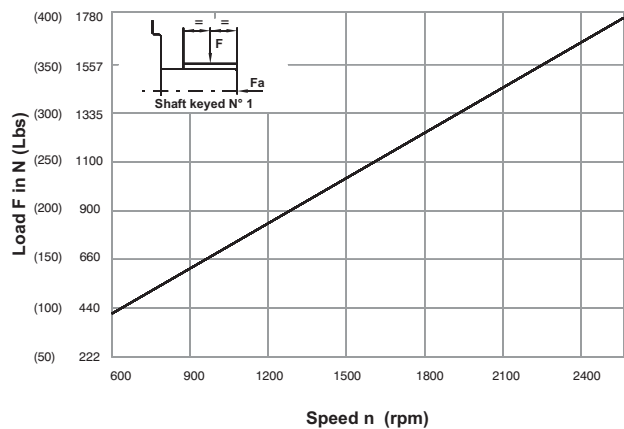


Double pump noise level is given with each section discharging at the pressure noted on the curve.

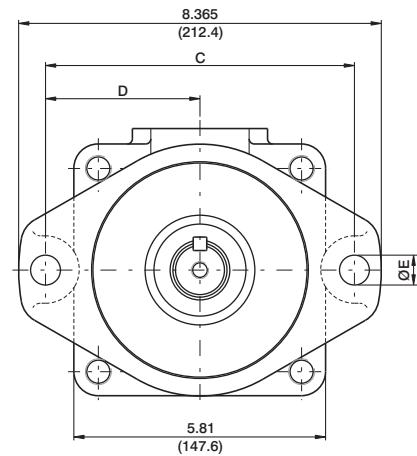
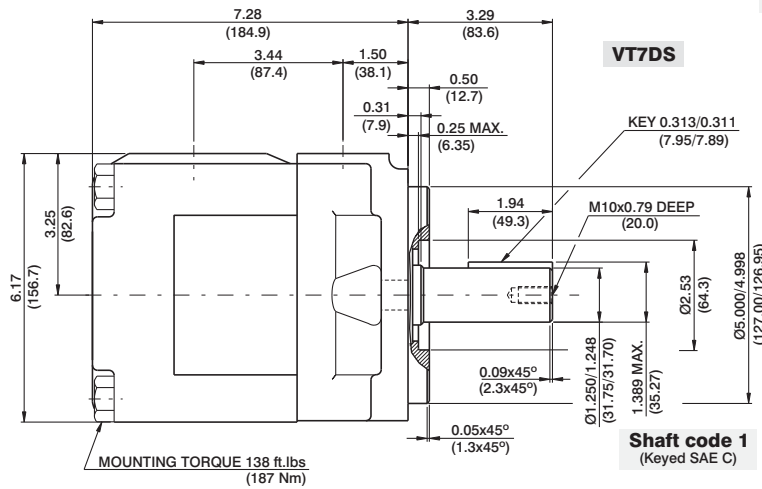
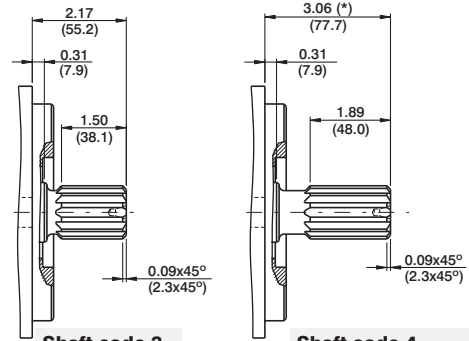
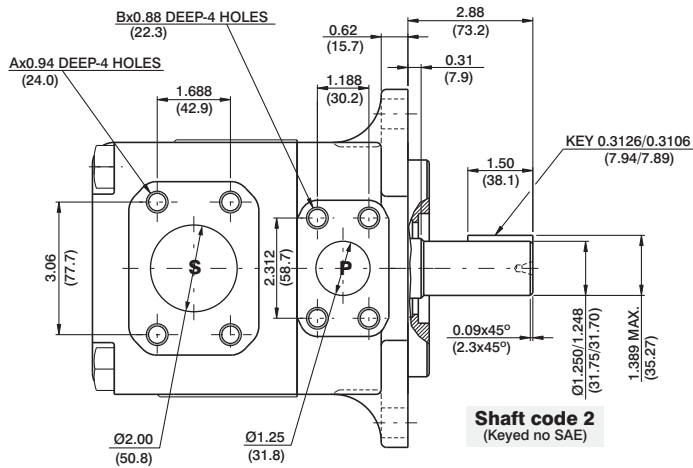
HYDROMECHANICAL POWER LOSS (TYPICAL)



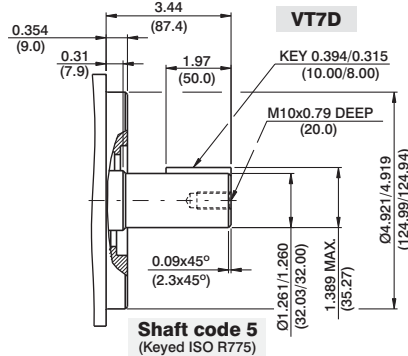
PERMISSIBLE RADIAL LOAD



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 | | | | | | |
|-------------------|-------------------|----------------------------|----------------------|-----------------------|-------|------------------------|-------|------------------------|------------------------------|---------------------|-------|------------------------|--------|------------------------|-------|
| | | in ³ /rev | cm ³ /rev | 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) | |
| | | | | gpm | lpm | gpm | lpm | gpm | lpm | hp | kw | hp | kw | hp | kw |
| VT7D VT7DS | E14 | 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 |
| | E17 | 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 |
| | E20 | 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 |
| | E22 | 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 |
| | E24 | 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 |
| | E28 | 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 |
| | E31 | 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 |
| | E35 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 |
| | E38 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 |
| | E42 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 |
| | E45 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 |
| E50 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) E35-E38 = 280 bar (4060 psi) max.int. 2) E42 = 260 bar (3770 psi) max.int. 3) E45 = 240 bar (3500 psi) max.int. 4) E50 = 210 bar (3000 psi) max.int.
* special 2" 1/2 (2.5 dia) suction also available - Please contact VELJAN

VT7BB or VT7BBS - E10 - E10 - 1 R 00 - A 1 00 -

Series

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)

| | |
|-------------------|-------------------|
| E02 = 5.8 (0.35) | E09 = 28.0 (1.71) |
| E03 = 9.8 (0.60) | E10 = 31.8 (1.94) |
| E04 = 12.8 (0.78) | E11 = 34.9 (2.13) |
| E05 = 15.9 (0.97) | E12 = 40.9 (2.50) |
| E06 = 19.8 (1.21) | E14 = 45.1 (2.75) |
| E07 = 22.5 (1.37) | E15 = 50.0 (3.05) |
| E08 = 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

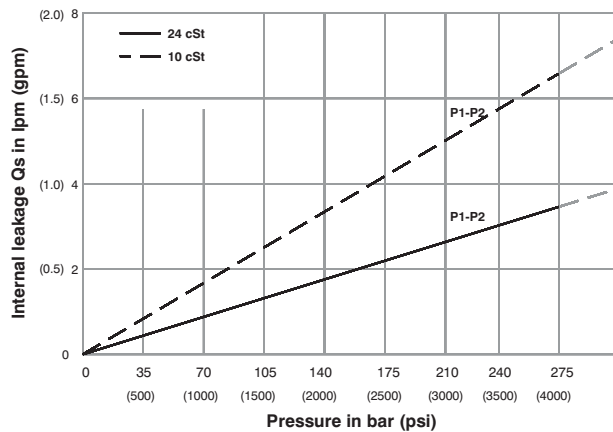
Porting combination (see page BM-1-5)

00 - standard

Direction of rotation (view on shaft end)

- R - clockwise
- L - counter-clockwise

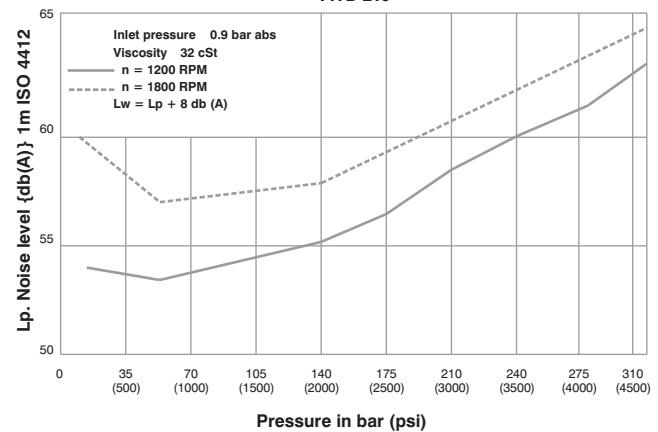
INTERNAL LEAKAGE (TYPICAL)



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 at its operating conditions.

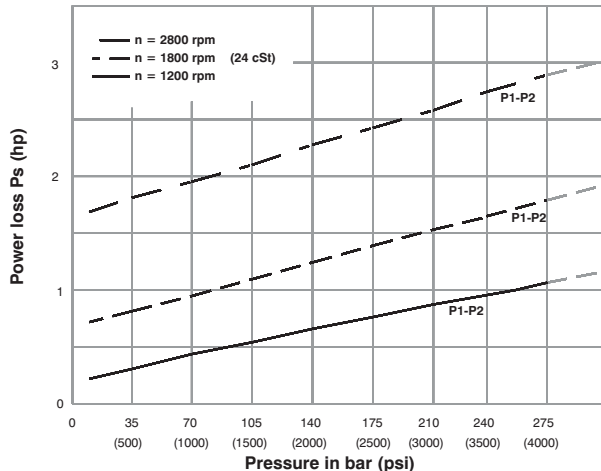
NOISE LEVEL (TYPICAL)

VT7B-E10



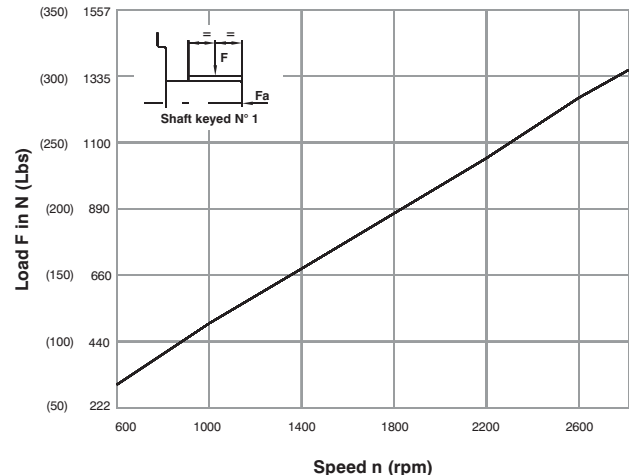
Double pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)

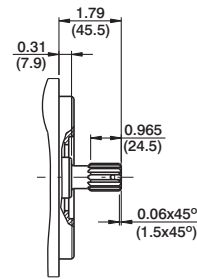
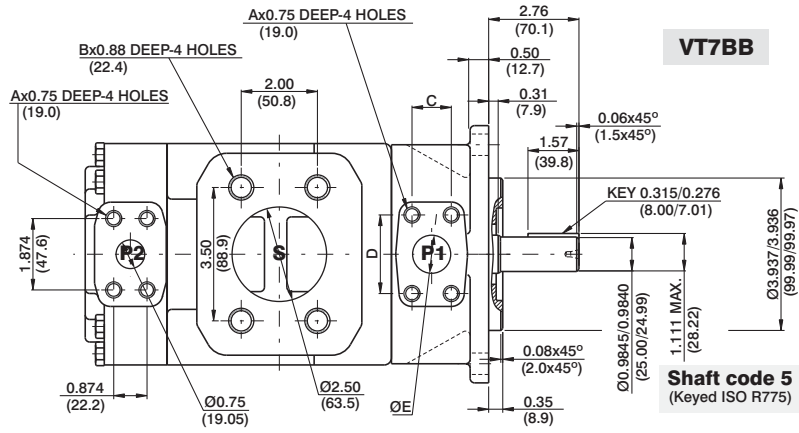


Total hydromechanical power loss is the sum of each section at its operating conditions.

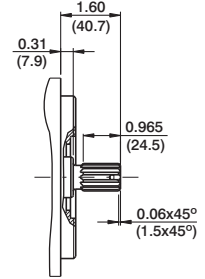
PERMISSIBLE RADIAL LOAD



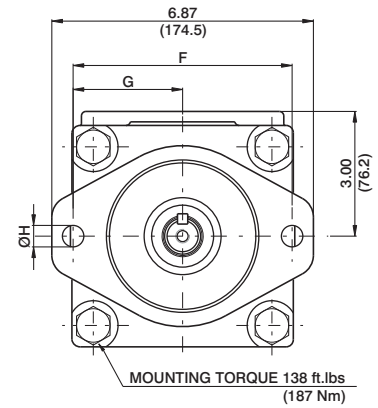
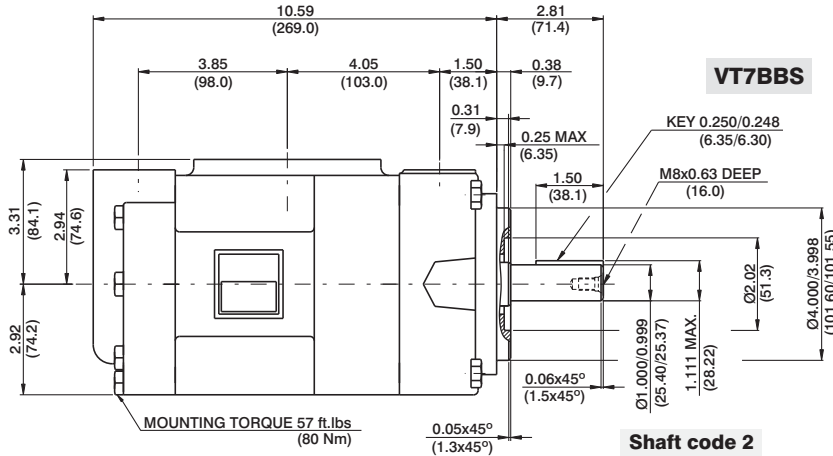
Maximum permissible axial load $F_a = 800$ N (180 Lbs)



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

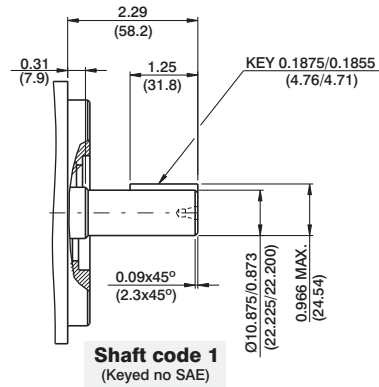


Shaft code 3
SAE B splined shaft
Class 1-J498b
16/32 dp. 13 teeth
30° pressure angle
Flat root side fit



| Shaft torque limits in ³ /rev x psi (ml/rev x bar) | |
|---|---------------------|
| Shaft | Vp x p max. (P1+P2) |
| 1 | 12666 (14300) |
| 2 | 18972 (21420) |
| 3 | 18246 (20620) |
| 4 | 28937 (32702) |
| 5 | 22409 (25325) |

| | VT7BBS | | VT7BB | |
|----|---------------|--------------|--------------|--------------|
| | 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 (146.05) | | 5.51 (140.0) | |
| G | 2.87 (73.0) | | 2.75 (70.0) | |
| ØH | 0.56 (14.3) | | 0.55 (14.0) | |



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 = 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 |
| P1 & P2 | E02 | 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 |
| | E03 | 0.60 | 9.8 | 4.66 | 17.6 | 4.23 | 15.9 | 3.63 | 13.7 | 0.85 | 0.63 | 6.24 | 4.65 | 13.75 | 10.25 |
| | E04 | 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 |
| | E05 | 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 |
| | E06 | 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 |
| | E07 | 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 |
| | E08 | 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 |
| | E09 | 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 |
| | E10 | 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 |
| | E11 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 |
| | E12 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 |
| | E14 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 |
| | E15 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⁾ E11-E12-E14 = 300 bar (4350 psi) & E15 = 280 bar (4060 psi) max. int. And Max. Speed = 3000 rpm

Note: Product details are liable to change without any notice

VT7DB or VT7DBS - E42 - E10 - 1 R 00 - A 1 00 -

Series

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)

| | |
|-------------------|--------------------|
| E14 = 43.9 (2.68) | E31 = 99.1 (6.05) |
| E17 = 55.0 (3.36) | E35 = 113.4 (6.92) |
| E20 = 66.0 (4.03) | E38 = 120.6 (7.36) |
| E22 = 70.3 (4.29) | E42 = 137.5 (8.39) |
| E24 = 81.1 (4.95) | E45 = 145.7 (8.89) |
| E28 = 89.9 (5.49) | E50 = 157.9 (9.64) |

Cam ring for "P2"

Volumetric displacement cm³/rev (in³/rev)

| | |
|-------------------|-------------------|
| E02 = 5.7 (0.35) | E09 = 28.0 (1.71) |
| E03 = 9.8 (0.60) | E10 = 31.8 (1.94) |
| E04 = 12.8 (0.78) | E11 = 34.9 (2.13) |
| E05 = 15.9 (0.97) | E12 = 40.9 (2.50) |
| E06 = 19.8 (1.21) | E14 = 45.1 (2.75) |
| E07 = 22.5 (1.37) | E15 = 50.0 (3.05) |
| E08 = 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

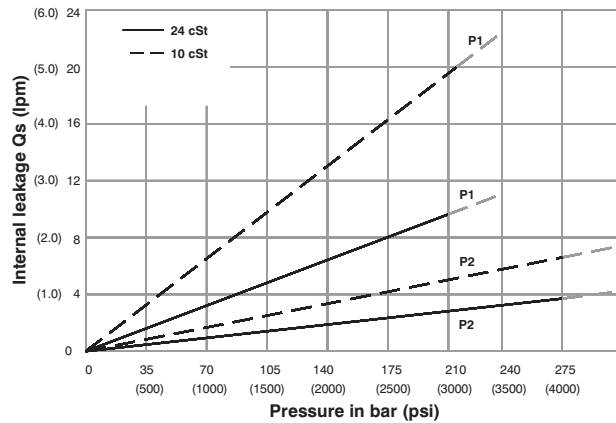
Type of shaft VT7DBS

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

Type of shaft VT7DB- VT7DBS

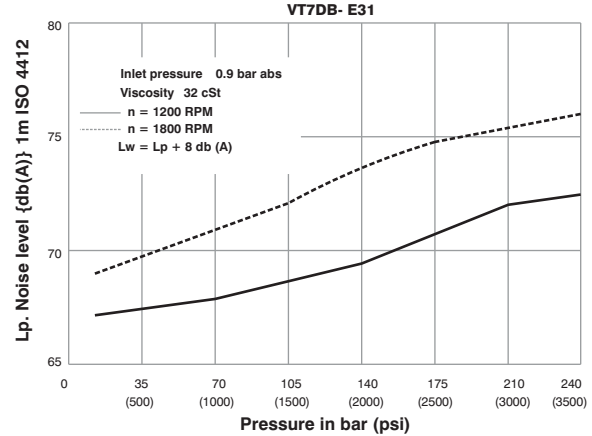
- 5 - keyed (ISO 3019-2-G32M)

INTERNAL LEAKAGE (TYPICAL)



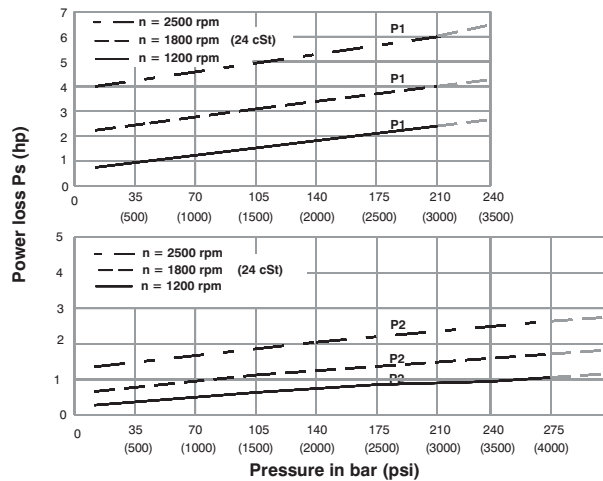
Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.

NOISE LEVEL (TYPICAL)



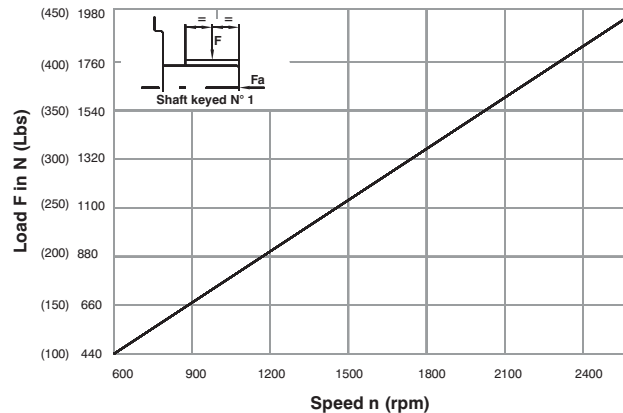
Double pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)

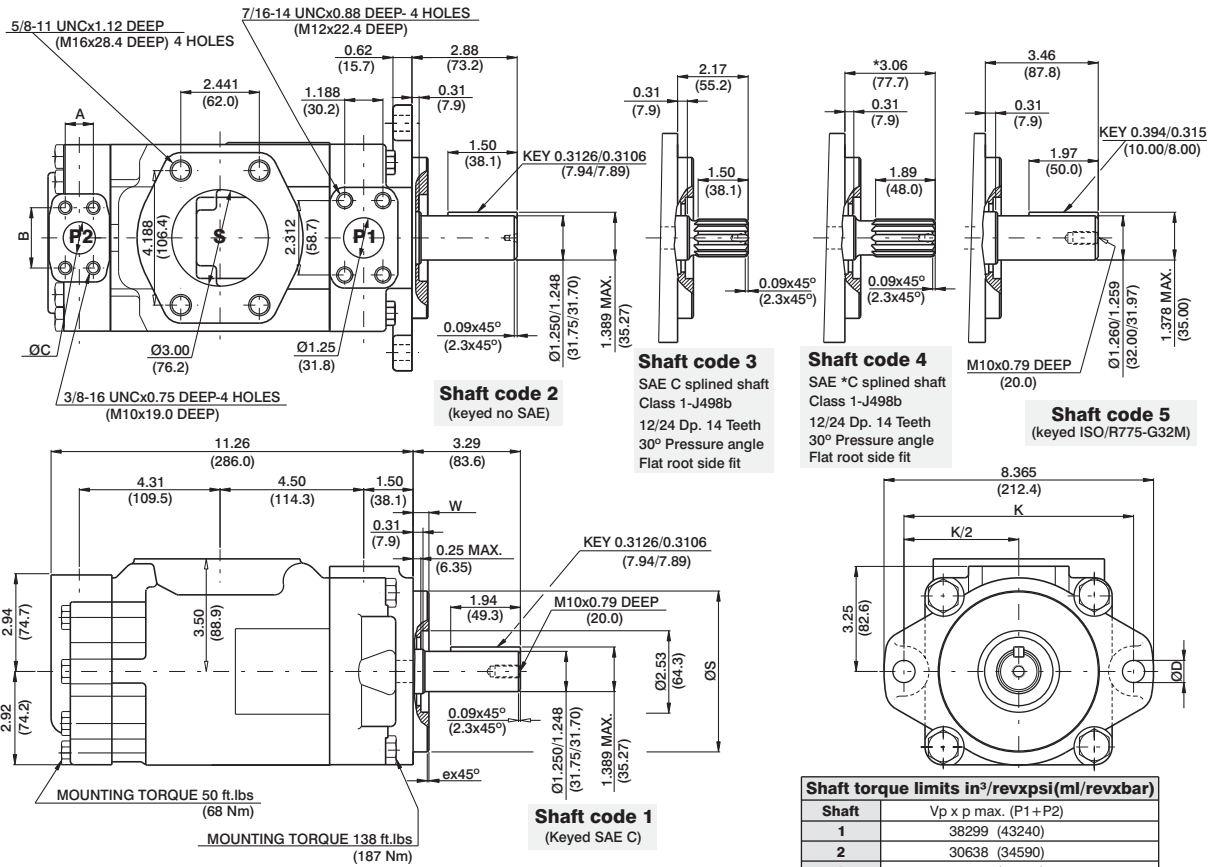


Total hydromechanical power loss is the sum of each section at its operating conditions.

PERMISSIBLE RADIAL LOAD



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



Shaft torque limits in³/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 | | | | | | | |
|-------------------|-------------------|----------------------------|-------|-----------------------|-------|-------------------|-------|------------------------|-------|------------------------------|-------|---------------------|--------|------------------------|-------|------------------------|--|
| | | in ³ /rev | | cm ³ /rev | | 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) | |
| | | gpm | lpm | gpm | lpm | gpm | lpm | gpm | lpm | hp | kw | hp | kw | hp | kw | | |
| P1 | E14 | 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 | | |
| | E17 | 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 | | |
| | E20 | 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 | | |
| | E22 | 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 | | |
| | E24 | 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 | | |
| | E28 | 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 | | |
| | E31 | 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 | | |
| | E35 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 | | |
| | E38 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 | | |
| | E42 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 | | |
| E45 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 | | | |
| E50 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 | | | |
| P2 | E02 | 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 | | |
| | E03 | 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 | | |
| | E04 | 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 | | |
| | E05 | 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 | | |
| | E06 | 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 | | |
| | E07 | 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 | | |
| | E08 | 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 | | |
| | E09 | 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 | | |
| | E10 | 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 | | |
| | E11 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 | | |
| | E12 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 | | |
| | E14 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 | | |
| | E15 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) E35-E38 = 280 bar (4060 psi) max.int. 2) E42 = 260 bar (3770 psi) max.int. 3) E45 = 240 bar (3500 psi) max.int. 4) E50 = 210 bar (3000 psi) max.int.
5) E11-E12-B14 = 300 bar (4350 psi) & E15 = 280 bar (4060 psi) max.int. And Max. Speed = 3000 rpm

VT7DD or VT7DDS - E42 - E22 - 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)
 E14 = 43.9 (2.68) E31 = 99.1 (6.05)
 E17 = 55.0 (3.36) E35 = 113.4 (6.92)
 E20 = 66.0 (4.03) E38 = 120.6 (7.36)
 E22 = 70.3 (4.29) E42 = 137.5 (8.39)
 E24 = 81.1 (4.95) E45 = 145.7 (8.89)
 E28 = 89.9 (5.49) E50 = 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

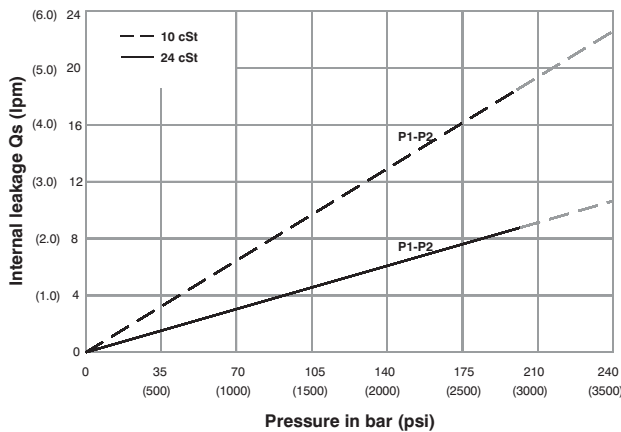
Porting combination (see page BM-1-5)

00 - standard

Direction of rotation (view on shaft end)

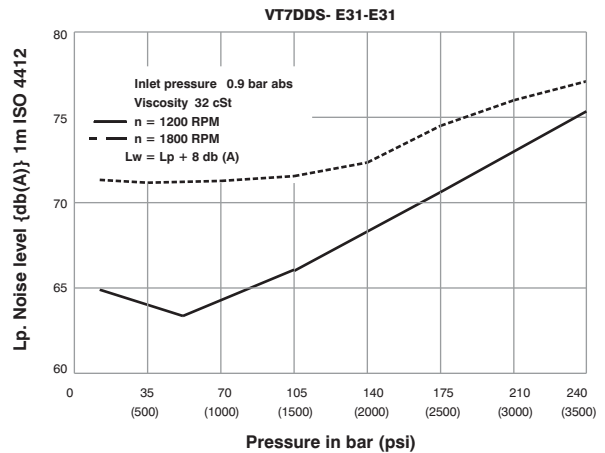
- R - clockwise
- L - counter-clockwise

INTERNAL LEAKAGE (TYPICAL)



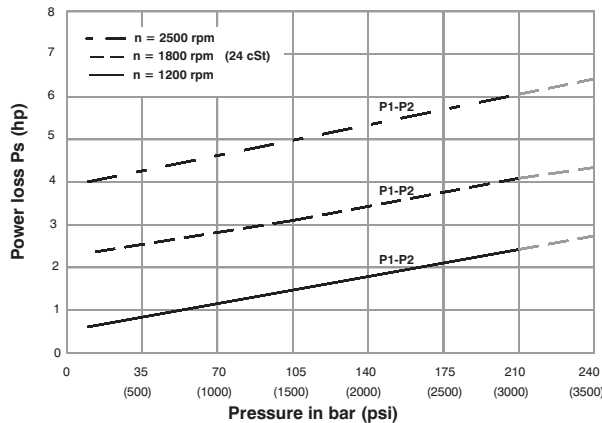
Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50% of theoretical flow. Total leakage is the sum of each section loss at its operating conditions.

NOISE LEVEL (TYPICAL)



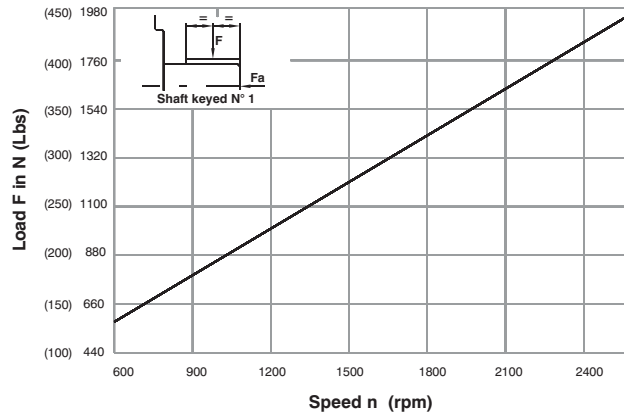
Double pump noise level is given with each section discharging at the pressure noted on the curve.

HYDROMECHANICAL POWER LOSS (TYPICAL)

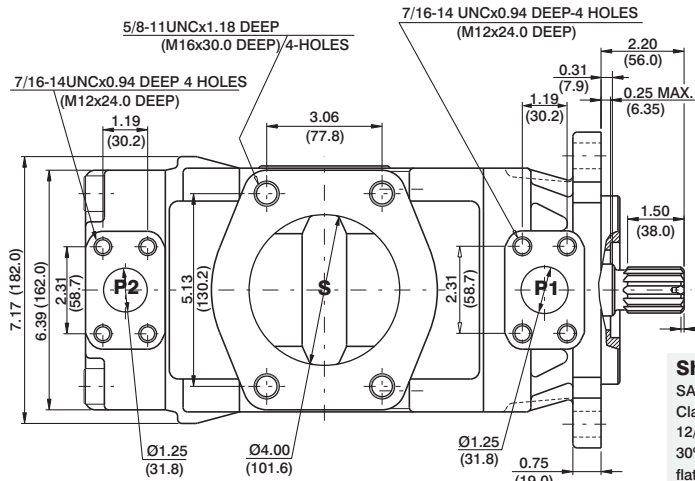


Total hydrodynamic power loss is the sum of each section at its operating conditions.

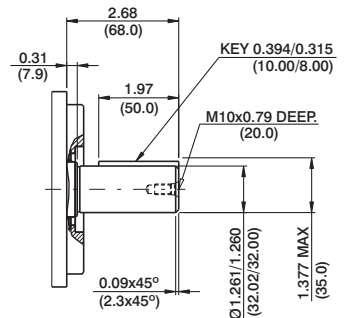
PERMISSIBLE RADIAL LOAD



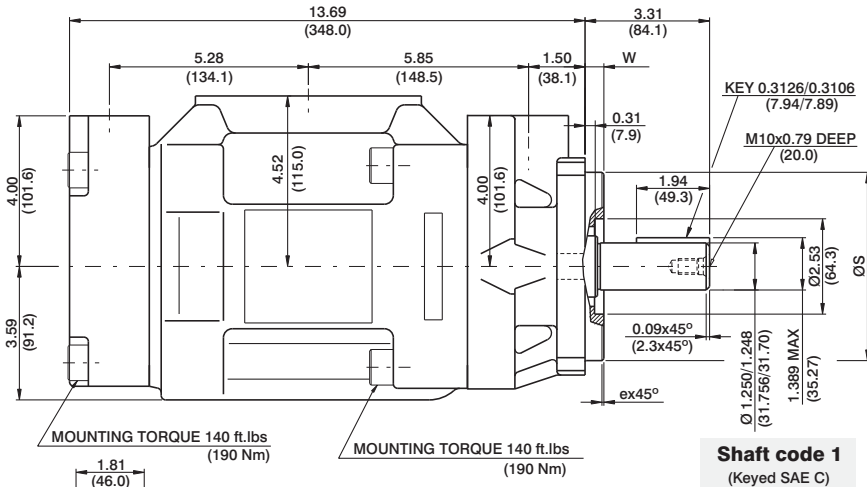
Maximum axial load permissible Fa = 800 N (180 Lbs)



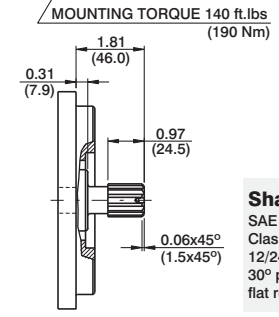
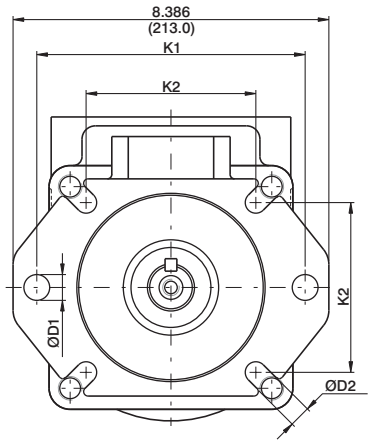
Shaft code 3
SAE C splined shaft
Class 1-J498b
12/24 dp. 14 teeth
30° pressure angle
flat root side fit



Shaft code 5
(Keyed ISO 3018/2-G32M)

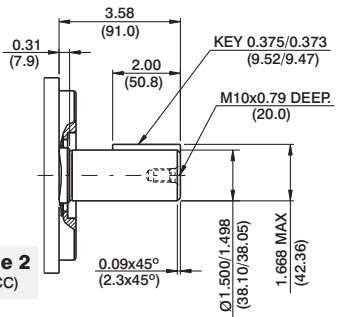


Shaft code 1
(Keyed SAE C)



Shaft code 4
SAE BB splined shaft
Class 1-J498b
12/24 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. (P1 + P2) |
| 1 | 38299 (43240) |
| 2 | 63552 (71822) |
| 3 | 54207 (61200) |
| 4 | 31780 (28120) |
| 5 | 40035 (35424) |



Shaft code 2
(Keyed SAE CC)

| Series | Alternate mounting flange | | | | | | | |
|--------|---------------------------|----------------|-------------|--------------|---------------|--------------|---------------|--------------|
| | 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) |

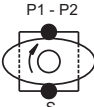
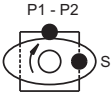
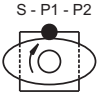
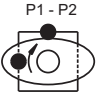
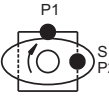
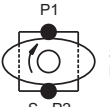
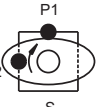
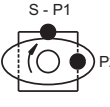
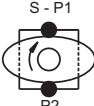
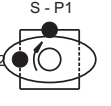
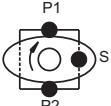
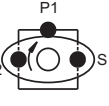
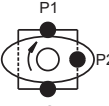
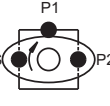
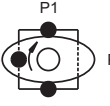
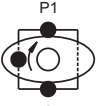
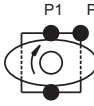
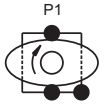
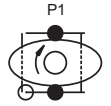
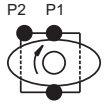
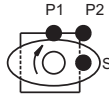
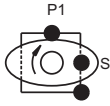
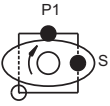
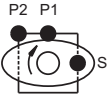
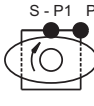
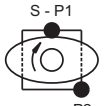
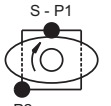
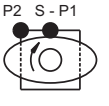
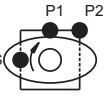
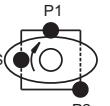
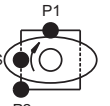
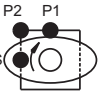
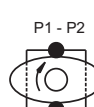
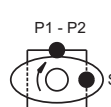
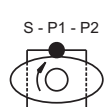
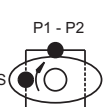
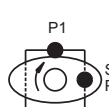
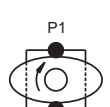
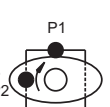
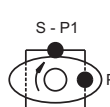
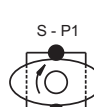
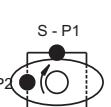
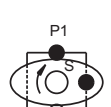
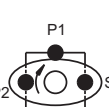
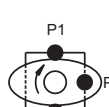
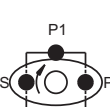
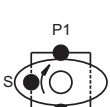
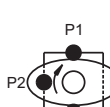
OPERATING CHARACTERISTICS - TYPICAL (24 CST) (Input power p (KW) for one cartridge only)

| 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 |
| P1 & P2 | E14 | 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 |
| | E17 | 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 |
| | E20 | 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 |
| | E22 | 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 |
| | E24 | 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 |
| | E28 | 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 |
| | E31 | 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 |
| | E35 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 |
| | E38 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 |
| | E42 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 |
| | E45 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 |
| | E50 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) E35-E38 = 280 bar (4060 psi) max. int. 2) E42 = 260 bar (3770 psi) max. int. 3) E45 = 240 bar (3500 psi) max. int. 4) E50 = 210 bar (3000 psi) max. int.

PUMP TYPE

PORTING DIAGRAMS

| | | | | | | | | |
|-------------|--|--|--|--|---|--|--|--|
| T7BB |  00 |  01 |  02 |  03 |  04 |  05 |  06 |  07 |
| |  08 |  09 |  10 |  11 |  12 |  13 |  14 |  15 |
| |  16 |  17 |  18 |  19 |  20 |  21 |  22 |  23 |
| |  24 |  25 |  26 |  27 |  28 |  29 |  30 |  31 |
| T7DD |  00 |  01 |  02 |  03 |  04 |  05 |  06 |  07 |
| |  08 |  09 |  10 |  11 |  12 |  13 |  14 |  15 |

VP
VS

